*DMWR 1-1520-240

DEPOT MAINTENANCE WORK REQUIREMENT
CONTAINING
NATIONAL MAINTENANCE REPAIR STANDARDS

FOR

CH-47D HELICOPTER
(NSN 1520-01-088-3669) (EIC: RCD)

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US ARMY AVIATION AND MISSILE COMMAND
REDSTONE ARSENAL, AL
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WARNING SUMMARY

This warning summary contains general safety warnings and hazardous material warnings that must be understood and applied during operation and maintenance of this equipment. Failure to observe these precautions could result in serious injury or death to personnel. Also included are explanations of the safety and hazardous materials icons used within the technical manual. Refer to the applicable Material Safety Data Sheet (MSDS) for health and physical hazards associated with any product.

EXPLANATION OF SAFETY ICONS

BURNS IRRITATE: Drops of liquid on hand show burns or irritation to human skin or tissue.

EYE INJURY: Person with goggles show that the material will injure the eyes.

FLAMMABLE: All regulations and instructions for handling fuels shall be strictly observed.

EXPLOSIVE HAZARD:

HOT PARTS:

GENERAL SAFETY WARNING DESCRIPTION

WARNING

Heated or chilled parts are used in the removal and installation procedures.
Death or severe burns may result if personal fail to observe safety precautions. It may be necessary to heat parts containing bushings and bearings to a temperature of 275° F (135° C). It may be necessary to chill parts to a temperature of -100° F (-73° C). Protective gloves should always be worn when handling heated or chilled parts.

WARNING

Wear approved mask, goggles, gloves, and apron during cleaning operations. Avoid contact with skin and eyes. If contact occurs, flush affected areas with water and change contaminated clothing. Seek medical aid immediately.

WARNING

Solvents with a flash point greater than 100 degree F (38 degree C) should be used unless otherwise specified.

GENERAL SAFETY WARNING DESCRIPTION - continued

WARNING

Observe all cautions and warnings on the containers of consumable materials specified for use in this DMWR. When applicable, wear approved protective clothing during handling and use.

WARNING

When drilling, wear goggles to prevent eye injury from flying particles. If eye injury occurs, seek medical aid immediately.

WARNING

Compressed air shall not be used for cleaning purposes except when reduced to less than 30 psi, and then only with effective chip guarding and personnel protection equipment.

WARNING

Prolonged or repeated inhalation of powders and vapors of cleaning solvents, developers, and emulsifiers used in fluorescent penetrant inspection can irritate mucous membrane areas of the body. Continual exposure to penetrant inspection materials and prolonged exposure of skin to light can inflame and damage the skin. Wear neoprene gloves when handling penetrant inspection materials. When using black light for fluorescent inspections, wear safety glasses.

WARNING

Preservative hydraulic fluids, MIL-H-46170 and MIL-PRF-6083 will not be used for preservation of army aircraft hydraulic components. Instead, substitute MIL-PER-83282 and MIL-H-5606 hydraulic fluids, respectively, for preservation of these components.

WARNING

The adapter, plate pack, and three bolts form part of a balanced assembly and only one bolt and nut may be loosed at one time. If more than one bolt is loosened at a time, the adapter assembly must be replaced.

EXPLANATION OF HAZARDOUS MATERIALS ICONS

FLAMMABLE: Flames shows that a material may ignite and cause burns.

VAPORS: Human figure in cloud of vapors shows that material vapors present a danger to life or health.

CANCER: Material has been determined to be a cancer risk in humans.

POISON: Skull and crossbones show that material is poisonous or is a danger to life.

HAZARDOUS MATERIALS DESCRIPTION

WARNING

ACETONE, TECHNICAL (6810-00-223-2739)

Acetone is a highly volatile and flammable liquid. Do not use near heat, spark, flame or other ignition sources. It must be used only in well-ventilated areas. Provide mechanical ventilation if used in confined spaces. Personnel must wear protective gloves and eye protection. Excessive inhalation of vapors or contact with skin must be avoided. If contact occurs with eyes or skin, flush area thoroughly with water. If ingestion occurs, induce vomiting. Seek medical attention in all cases. When handling large quantities of liquid (more than a gallon), use at air-exhausted workbench. Dispose of liquid-soaked rags in approved metal safety container. Store solvent in approved metal containers, which must be grounded to maintain electrical continuity. Ensure you read and understand the Material Safety Data Sheet (MSDS) for this product prior to use.

WARNING

ADHESIVE, BONDING, MMM-A-121 (8040-00-273-8716)
ADHESIVE, VELCRO No. 40 (8040-00-142-9947)
ADHESIVE, MMM-A-132 (8040-01-035-2845)
ADHESIVE, POLYURETHANE, EC-3549 (8040-01-016-4836)
ADHESIVE, EA 9309 NA (8040-01-163-3481)
ADHESIVE, EC-2216 (8040-00-932-1945)
ADHESIVE, EPON VI, MMM-A-134 (8040-00-200-4390)
ADHESIVE, EPON VIII, MMM-A-134 (8040-00-531-8030)
ADHESIVE, EPOCAST 50-A (8040-00-148-9849)
ADHESIVE, EPON 828 (8030-00-086-1506)
ADHESIVE, PROSEAL 719B (8040-01-105-9100)

HAZARDOUS MATERIALS DESCRIPTION – continued

ADHESIVE, PROSEAL 501 (8040-00-126-7798)
ADHESIVE, PR1710 (8040-00-142-9721)
ADHESIVE, PR9021 (8030-01-058-9968)
ADHESIVE, RTV102, MIL-A-46106 (8040-00-877-9872)
ADHESIVE, URALANE 5716 (8040-00-828-4936)

Adhesive is a flammable substance. Wear gloves and safety glasses. Use an approved respirator if exposure exceeds permissible exposure limits and/or threshold limit values. Provide mechanical ventilation if used in confined spaces. Contact of liquid with skin may cause dermatitis and irritation. If contact with skin or eyes occurs, wash skin with soap and water, and flush eyes with water for 15 minutes. Use an approved respirator if exposure exceeds permissible exposure limits and/or threshold limit values. If ingestion occurs, DO NOT induce vomiting. Seek medical attention in all cases. Ensure you read and understand the Material Safety Data Sheet (MSDS) for this product prior to use.

WARNING

ALCOHOL, DENATURED, O-E-760 (6810-00-543-7415)

Denatured Alcohol is a highly flammable liquid. Do not use near open flames, near welding areas, or on hot surfaces. Do not smoke when using it. Do not use it where others are smoking. Inhalation of vapors can cause drowsiness, dizziness, and headache. Use an approved respirator if exposure exceeds permissible exposure limits and/or threshold limit values. Provide mechanical ventilation if used in confined spaces. Contact of liquid with skin may cause dermatitis and irritation. If contact occurs with eyes or skin, immediately flush affected area thoroughly with water. May be fatal or cause permanent blindness if swallowed. Remove solvent saturated clothing. If vapors cause drowsiness, go to fresh air. Seek medical attention in all cases. Ensure you read and understand the Material Safety Data Sheet (MSDS) for this product prior to use.

WARNING

ASSEMBLY FLUID (9150-00-159-5012)

Assembly Fluid is a non-flammable liquid. Contact of liquid with skin may cause dermatitis and irritation. If contact occurs with eyes or skin, immediately flush affected area thoroughly with water for 15 minutes. If ingested induce vomiting; consume large amounts of water. Seek medical attention in all cases. Ensure you read and understand the Material Safety Data Sheet (MSDS) for this product prior to use.

HAZARDOUS MATERIALS DESCRIPTION - continued

WARNING

BERYLLIUM

Beryllium dust may be harmful to health. If beryllium gets on the skin, wash affected area immediately with soap and water. Remove clothing that comes in contact with beryllium and wash affected area as described above

WARNING

CLEANING COMPOUND, AIRCRAFT SURFACE, TURCO (6850-01-045-7929)

Cleaning Compound is a non-flammable liquid. Contact of liquid with skin may cause dermatitis and irritation. May be irritating to nose, throat, and respiratory tract when inhaled and is a mild eye irritant. Provide mechanical ventilation if used in confined spaces. Inhalation of vapors may cause central nervous system depression, drowsiness and narcosis. If ingested DO NOT induce vomiting. Keep head below hips to prevent aspiration of liquid into lungs. If contact occurs with eyes or skin, immediately flush affected area thoroughly with water. Seek medical attention in all cases. Ensure you read and understand the Material Safety Data Sheet (MSDS) for this product prior to use.

WARNING

CLEANING COMPOUND, SOLVENT, MIL-PRF-680 (6850-01-474-2313)

Cleaning Compound is a highly flammable liquid. Do not use near open flames, near welding areas, or on hot surfaces. Do not smoke when using it. Do not use it where others are smoking. Inhalation of vapors can cause drowsiness, dizziness, and headache and may cause central nervous system depression. Provide mechanical ventilation if used in confined spaces. Contact of liquid with skin may cause dermatitis and irritation. If contact occurs with eyes or skin, immediately flush affected area thoroughly with water. Remove solvent saturated clothing. If vapors cause drowsiness, go to fresh air. Seek medical attention in all cases. Coordinate use of this material with your supporting Industrial Hygiene and Safety Offices. Ensure you read and understand the Material Safety Data Sheet (MSDS) for this product prior to use.

HAZARDOUS MATERIALS DESCRIPTION - continued

WARNING

CLEANING COMPOUND, SOLVENT, POSITRON (6850-01-412-0028)
CLEANING COMPOUND, SOLVENT, ELECTRON (6850-01-375-5553)
CLEANING SOLVENT, GENERAL PURPOSE, DS-108 (7930-01-367-0995)

Cleaning Compound and Cleaning Solvent are highly flammable liquids. Do not use near heat, spark, or flame. Use in well-ventilated areas only; avoid prolonged breathing of vapors. Use an approved respirator (organic vapor respirator with dust and mist filter is recommended) if exposure exceeds permissible exposure limits and/or threshold limit values. Provide mechanical ventilation if used in confined spaces. Remove to fresh air if overexposure occurs. Wear gloves and safety glasses. If contact with skin or eyes occurs, wash skin with soap and water, and flush eyes with water. If ingestion occurs, DO NOT induce vomiting. Seek medical attention in all cases. These products are reactive with acids and oxidizers; do not mix or cross apply with other cleaners or chemicals. Keep containers closed between applications. Ensure you read and understand the Material Safety Data Sheet (MSDS) for these products prior to use.

WARNING

CORROSION PREVENTIVE COMPOUND (8030-00-244-1297)

Corrosion Preventive Compound is a flammable grease. Do not use near open flames, near welding areas, or on hot surfaces. Do not smoke when using it. Do not use it where others are smoking. Provide mechanical ventilation if used in confined spaces. Use an approved respirator if exposure exceeds permissible exposure limits and/or threshold limit values. Contact of liquid with skin may cause dermatitis and irritation. If contact occurs with eyes or skin, immediately flush affected area thoroughly with water. Seek medical attention in all cases. Ensure you read and understand the Material Safety Data Sheet (MSDS) for this product prior to use.

HAZARDOUS MATERIALS DESCRIPTION - continued

WARNING

CORROSION RESISTANT COATING, ALODINE (8030-00-065-0957)

Corrosion Resistant Coating is a non-flammable liquid. Wear gloves and safety glasses. If contact with eyes occurs, flush with water for 5 minutes, then with normal saline 30-60 minutes, lifting lids. Use an approved respirator if exposure exceeds permissible exposure limits and/or threshold limit values. Provide mechanical ventilation if used in confined spaces. If ingestion occurs induce vomiting, repeat until vomit is clear. Consume large amounts of water. If contact with skin occurs, wash skin with soap and water. Seek medical attention in all cases. Ensure you read and understand the Material Safety Data Sheet (MSDS) for this product prior to use.

WARNING

CURING AGENT

Curing agent can irritate skin and cause burns. Avoid contact with skin, eyes, or clothing. In case of contact, immediately flush skin or eyes with water for at least 15 minutes. Get medical attention for eyes.

WARNING

DRY ICE/METHANOL

Dry ice/methanol is toxic. It can irritate skin and cause burns. Avoid inhaling. Use only with adequate ventilation. Avoid contact with skin, eyes, or clothing. In case of contact, immediately flush skin or eyes with water for at least 15 minutes. Get medical attention for eyes.

HAZARDOUS MATERIALS DESCRIPTION - continued

WARNING

EPOXY COATING KIT (8010-01-033-7793)

Epoxy Coating is a flammable liquid. Do not use near open flames, near welding areas, or on hot surfaces. Do not smoke when using it. Do not use it where others are smoking. Inhalation of vapors can cause drowsiness, dizziness, and headache. Provide mechanical ventilation if used in confined spaces. Contact of liquid with skin may cause dermatitis and irritation. Exposure may cause impairment of the central nervous system. If contact occurs with eyes or skin, immediately flush affected area thoroughly with water. If vapors cause drowsiness, go to fresh air. If ingestion occurs, DO NOT induce vomiting. Seek medical attention in all cases. Keep away from oxidizing agents. Ensure you read and understand the Material Safety Data Sheet (MSDS) for this product prior to use.

WARNING

EPOXY PRIMER COATING KIT, MIL-P-23377 (8010-00-082-2450)

Epoxy Primer is a highly flammable liquid. Do not use near open flames, near welding areas, or on hot surfaces. Do not smoke when using it. Do not use it where others are smoking. Inhalation of vapors can cause drowsiness, dizziness, and headache. Provide mechanical ventilation if used in confined spaces. Contact of liquid with skin may cause dermatitis and irritation. If contact occurs with eyes or skin, immediately flush affected area thoroughly with water. Seek medical attention in all cases. If vapors cause drowsiness, go to fresh air. Use an approved respirator if exposure exceeds permissible exposure limits and/or threshold limit values. Ensure you read and understand the Material Safety Data Sheet (MSDS) for this product prior to use.

WARNING

FILLER

Filler can irritate skin and cause burns. Avoid contact with skin, eyes, or clothing. In case of contact, immediately flush skin or eyes with water for at least 15 minutes. Get medical attention for eyes.

HAZARDOUS MATERIALS DESCRIPTION - continued

WARNING

FUEL JP-4/JP-5/JP-8 FUEL MIL-T-5624

Fuel is flammable. Do not use near welding area, open flames, or on very hot surfaces. Use only with adequate ventilation. Avoid prolonged or repeated contact with skin. Prolonged contact may cause drying and irritation of skin. Remove saturated clothing immediately. Do not smoke when handling fuel. Do not take internally. Store in approved, metal safety containers.

WARNING

ISOPROPYL ALCOHOL, TECHNICAL (6810-00-983-8551)

Isopropyl Alcohol is a highly flammable liquid. Do not use near open flames, near welding areas, or on hot surfaces. Do not smoke when using it. Do not use it where others are smoking. Inhalation of vapors can cause drowsiness, dizziness, and headache. Provide mechanical ventilation if used in confined spaces. Contact of liquid with skin may cause dermatitis and irritation. If contact occurs with eyes or skin, immediately flush affected area thoroughly with water. Remove solvent saturated clothing. Seek medical attention in all cases. If vapors cause drowsiness, go to fresh air. Ensure you read and understand the Material Safety Data Sheet (MSDS) for this product prior to use.

WARNING

LACQUER

Lacquer is a highly flammable liquid. Do not use near open flames, near welding areas, or on hot surfaces. Do not smoke when using it. Do not use it where others are smoking. Inhalation of vapors can cause drowsiness, dizziness, and headache. Provide mechanical ventilation if used in confined spaces. Contact of liquid with skin may cause dermatitis and irritation. If contact occurs with eyes or skin, immediately flush affected area thoroughly with water. Seek medical attention in all cases. If vapors cause drowsiness, go to fresh air. Use an approved respirator if exposure exceeds permissible exposure limits and/or threshold limit values. Ensure you read and understand the Material Safety Data Sheet (MSDS) for this product prior to use.

HAZARDOUS MATERIALS DESCRIPTION - continued

WARNING

LUBRICANT, SOLID FILM, LUBRI-BOND (9150-00-754-0064)

Solid Film Lubricant is a flammable substance. Wear gloves and safety glasses. Use an approved respirator if exposure exceeds permissible exposure limits and/or threshold limit values. Provide mechanical ventilation if used in confined spaces. If contact with skin or eyes occurs, wash skin with soap and water, and flush eyes with water for 15 minutes. Use an approved respirator if exposure exceeds permissible exposure limits and/or threshold limit values. If ingestion occurs, DO NOT induce vomiting. Seek medical attention in all cases. Ensure you read and understand the Material Safety Data Sheet (MSDS) for this product prior to use.

WARNING

LUBRICATING OIL, AIRCRAFT TURBINE ENGINE, MIL-L-23699 (9150-00-985-7099)
LUBRICATING OIL, HELICOPTER TRANSMISSION, DOD-L-85734 (9150-01-209-3399)

Lubricating Oil is a non-flammable liquid. Contact of liquid with skin may cause dermatitis and irritation. If contact occurs with eyes or skin, immediately flush affected area thoroughly with water. Remove contaminated clothing. If ingestion occurs, DO NOT induce vomiting. Seek medical attention in all cases. Ensure you read and understand the Material Safety Data Sheet (MSDS) for this product prior to use.

WARNING

POLYURETHANE COATING, MIL-PRF-85285C (8010-01-293-0789)
POLYURETHANE TOPCOAT, MIL-PRF-85285C

Polyurethane topcoat is a highly flammable liquid. Do not use near open flames, near welding areas, or on hot surfaces. Do not smoke when using it. Do not use it where others are smoking. Inhalation of vapors can cause drowsiness, dizziness, and headache. Provide mechanical ventilation if used in confined spaces. Contact of liquid with skin may cause dermatitis and irritation. If contact occurs with eyes or skin, immediately flush affected area thoroughly with water. Seek medical attention in all cases. If vapors cause drowsiness, go to fresh air. Use an approved respirator if exposure exceeds permissible exposure limits and/or threshold limit values. Ensure you read and understand the Material Safety Data Sheet (MSDS) for this product prior to use.

HAZARDOUS MATERIALS DESCRIPTION - continued

WARNING

REMOVER, PAINT (8010-01-248-0846)

Paint Remover is a non-flammable liquid. It is a cancer risk to humans. It also may cause central nervous system effects, headache, dizziness, nausea, and unconsciousness. Wear gloves and safety glasses. Use an approved respirator if exposure exceeds permissible exposure limits and/or threshold limit values. Provide mechanical ventilation if used in confined spaces. If contact with skin or eyes occurs, wash skin with soap and water, and flush eyes with water for 15 minutes. If ingestion occurs, DO NOT induce vomiting. Seek medical attention in all cases. Ensure you read and understand the Material Safety Data Sheet (MSDS) for this product prior to use.

WARNING

RESIN COMPOUND

Resin compound can irritate skin and cause burns. Avoid contact with skin, eyes, or clothing. In case of contact, immediately flush skin or eyes with water for at least 15 minutes. Get medical attention for eyes.

WARNING

SEALING COMPOUND, MIL-S-8802 (8030-00-753-5009)
SEALING COMPOUND, PR-1428 (8030-01-365-3913)
SEALING COMPOUND, RP1250 (8030-00-830-1821)

Sealing Compound is a flammable substance. It is cancer risk to humans. Do not use near open flames, near welding areas, or on hot surfaces. Do not smoke when using it. Do not use it where others are smoking. Inhalation of vapors can cause drowsiness, dizziness, headache and impaired coordination. May cause eye, skin and nose irritation. Provide mechanical ventilation if used in confined spaces. Long-term exposure may lead to dermatitis, liver and kidney damage. Keep away from reducing agents and combustibles. If contact with skin or eyes occurs, wash skin with soap and water, and flush eyes with water for 15 minutes. If ingestion occurs, DO NOT induce vomiting. Seek medical attention in all cases. Ensure you read and understand the Material Safety Data Sheet (MSDS) for this product prior to use.

HAZARDOUS MATERIALS DESCRIPTION - continued

WARNING

SEALING COMPOUND (8040-01-129-7171)

Sealing Compound is a non-flammable substance. Wear gloves and safety glasses. If contact with skin or eyes occurs, wash skin with soap and water, and flush eyes with water for 15 minutes. If ingestion occurs, DO NOT induce vomiting. Seek medical attention in all cases. Ensure you read and understand the Material Safety Data Sheet (MSDS) for this product prior to use.

WARNING

THINNER

Thinner is flammable and toxic. It can irritate skin and cause burns. Use only with adequate ventilation away from heat or open flame. Avoid contact with skin, eyes, or clothing. In case of contact, immediately flush skin or eyes with water for at least 15 minutes. Get medical attention for eyes.

WARNING

TOLUENE, (6810-00-281-2002)

Toluene is a highly flammable liquid. Do not use near open flames, near welding areas, or on hot surfaces. Do not smoke when using it. Do not use it where others are smoking. Inhalation of vapors can cause drowsiness, dizziness, and headache. Provide mechanical ventilation if used in confined spaces. Contact of liquid with skin may cause dermatitis and irritation. If contact occurs with eyes or skin, immediately flush affected area thoroughly with water. Remove solvent saturated clothing. Seek medical attention in all cases. If vapors cause drowsiness, go to fresh air. Ensure you read and understand the Material Safety Data Sheet (MSDS) for this product prior to use.

HAZARDOUS MATERIALS DESCRIPTION - continued

WARNING

XYLENE

Xylene is a highly flammable liquid. Do not use near open flames, near welding areas, or on hot surfaces. Do not smoke when using it. Do not use it where others are smoking. Inhalation of vapors can cause drowsiness, dizziness, and headache. Provide mechanical ventilation if used in confined spaces. Contact of liquid with skin may cause dermatitis and irritation. If contact occurs with eyes or skin, immediately flush affected area thoroughly with water. Remove solvent saturated clothing. Seek medical attention in all cases. If vapors cause drowsiness, go to fresh air. Ensure you read and understand the Material Safety Data Sheet (MSDS) for this product prior to use.

END OF WORK PACKAGE

INSERT LATEST CHANGED PAGES/WORK PACKAGES: DESTROY SUPERSEDED DATA.

LIST OF EFFECTIVE PAGES / WORK PACKAGES

NOTE: A vertical line in the outer margins of the page indicates the portion of text affected by the changes. Miniature hands indicate changes to illustrations. Changes in wiring diagrams are indicated by shaded areas.

Dates of issue for original pages/work packages are:

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US ARMY AVIATION AND
MISSILE COMMAND
REDSTONE ARSENAL, AL 35898-5230
25 February 2005

DEPOT MAINTENANCE WORK REQUIREMENT
CONTAINING
NATIONAL MAINTENANCE REPAIR STANDARDS

CH-47D HELICOPTER

NSN 1520-01-088-3669 (EIC: RCD)

REPORTING ERRORS AND RECOMMENDING IMPROVEMENTS

You can help improve this manual. If you find any mistakes or if you know of a way to improve these procedures, please let us know. Mail your letter or DA Form 2028 (Recommended Changes to Publications and Blank Forms), located in the back of this manual directly to Commander, US Army Aviation and Missile Command, ATTN: AMSAM-MMC-MA-NP, Redstone Arsenal, AL 35898-5000. A reply will be furnished to you. You may also provide DA Form 2028 information to AMCOM via e-mail, fax, or the World Wide Web. Our fax number is: DSN 788-6546 or Commercial 256-842-6546. Our e-mail address is: 2028@redstone.army.mil. Instructions for sending an electronic 2028 may be found at the back of this manual immediately preceding the hard copy 2028. For the World Wide Web use: https://amcom2028.redstone.army.mil.

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*This publication supercedes DMWR 55-1500-210, 1 February 1976, including all changes.

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CHAPTER 1

DESCRIPTION AND THEORY OF OPERATION

DEPOT MAINTENANCE WORK REQUIREMENT
CH-47D HELICOPTER
GENERAL INFORMATION

SCOPE

These instructions are for use by DOD Depot and contractor personnel. This Airframe Depot Maintenance (ADM) process, in conjunction with supporting documentation, has all of the information required to modify, repair, and overhaul the CH-47D, NSN 1520-01-088-3669, Helicopter.

This Depot Maintenance Work Requirement (DMWR) lists the tools and types of materials to be used. It establishes requirements for disassembly, cleaning, inspecting, repair, rehabilitation, modification, re-assembly, servicing, testing, and storage of CH-47D helicopter.

Parts, components, subassemblies or assemblies found worn or defective beyond the repair limits established by this DMWR will be disposed of in accordance with applicable regulations.

The repair or restoration and reconditioning of equipment and components specified herein shall be accomplished in accordance with specific instructions set forth in the DMWR. Tolerance and limits set forth herein are the minimum acceptable standards. The depot/contractor will perform all necessary maintenance and repair required to prepare the aircraft for issue. The extent of maintenance and repair to be applied to such items as engines, dynamics, and condition components will be authorized in the maintenance allocation chart at intermediate level. Waivers may be authorized by Engineering (AMRDEC) or the Contracting Officer to prevent work stoppages or unnecessary costs.

MAINTENANCE FORMS, RECORDS, AND REPORTS

Department of the Army forms and procedures used for equipment maintenance will be those prescribed by DA PAM 738-751, Functional Users Manual for The Army Maintenance Management System – Aviation (TAMMS-A), TB 1-1500-341-01, Aircraft Components Requiring Maintenance Management and Historical Data Reports, AR 700-138, Army Logistics Readiness and Sustainability.

REPORTING EQUIPMENT IMPROVEMENT RECOMMENDATIONS (EIR)

If your CH-47D Helicopter needs improvement, let us know. Send us an EIR. You, the user, are the only one who can tell us what you don't like about your equipment. Let us know why you don't like the design or performance. Put it on a SF 368 (Product Quality Deficiency Report). Preparation instructions are contained in DA PAM 738-751, Functional Users Manual for The Army Maintenance Management System – Aviation (TAMMS-A), or as specified by the acquiring activity. We will send you a reply.

CORROSION PREVENTION AND CONTROL (CPC)

Corrosion Prevention and Control (CPC) of Army material is a continuing concern. It is important that any corrosion problems with this item be reported so that the problem can be corrected and improvements can be made to prevent the problem in future items.

While corrosion is typically associated with rusting of metals, it can also include deterioration of other materials, such as rubber and plastic. Unusual cracking, softening, swelling, or breaking of these materials may be a corrosion problem.

If a corrosion problem is identified, it can be reported using SF 368, Product Quality Deficiency Report. Use of key words such as "corrosion," "rust," "deterioration," or "cracking" will ensure that the information is identified as a CPC problem.

The form should be submitted to the address specified in DA PAM 738-751, "Functional Users Manual for The Army Maintenance Management System-Aviation (TAMMS-A)".

CORROSION PREVENTION AND CONTROL (CPC) - continued

Aircraft corrosion references include TM 1-1500-344-23, Aircraft Weapons Systems Cleaning and Corrosion Control, and TM 1-1500-343-23, Organization/Unit and Intermediate Maintenance For Avionic Cleaning and Corrosion Prevention / Control.

DESTRUCTION OF ARMY MATERIEL TO PREVENT ENEMY USE

For information and procedures pertaining to destruction of Army equipment to prevent enemy use, refer to TM 750-244-1-5, Procedures for the Destruction of Aircraft and Associated Equipment to Prevent Enemy Use.

LIST OF ABBREVIATIONS/ACRONYMS

Many abbreviations and acronyms are used in this manual. They are listed below.

ACE	Airframe Condition Evaluation
AFCS	Advanced Flight Control System
APU	Auxiliary Power Unit
ASAM	Aviation Safety Action Message
BL	Butt line
CPC	Corrosion Preventive and Control
CSI	Critical Safety Item
ECP	Engineering Change Proposal
EIR	Equipment Improvement Recommendation
FSCAP	Flight Safety Critical Aircraft Part
ILCA	Integrated Lower Control Actuators
Kg	Kilogram
KVA	Kilovolt Amperes
MEC	Maintenance Engineering Call
MEL	Maintenance Expenditure Limit
MIM	Maintenance Information Message
MOC	Maintenance Operational Check
MTF	Maintenance Test Flight
MTOE	Modified Table of Organization and Equipment
ODS	Ozone Depleting Substance
PM	Phase Maintenance
PMB	Plastic Media Blasting
PRON	Program Request Order Number
PSA	Pre-Shop Analysis
PTU	Power Transfer Unit
PWD	Project Work Directive
QA	Quality Assurance
sta	Station
TMDE	Test, Measurement and Diagnostic Equipment
WL	Water line

QUALITY ASSURANCE (QA)

The Depot/Contractor is responsible for complying with the quality assurance requirements contained in WP 0155 00 - Quality Assurance Requirement, WP 0160 00 – Critical Safety Items and Flight Safety Critical Aircraft Parts, and ISO 9001 2000 standards or equivalent. For quality assurance definitions and terms refer to ISO 8402 and FM 3-04.500. Any additional quality provisions shall be as specified by the applicable Procurement Request Order Number (PRON) or contract.

QUALITY OF MATERIAL

Parts and material used for replacement, repair, or modification must meet the requirements of this DMWR. If quality of material requirements is not stated in this DMWR, the material must meet the requirements of the equipment drawings, standards, specifications, or approved engineering change proposals applicable to the subject equipment.

SAFETY, CARE, AND HANDLING

Electromagnetic compatibility standards (MIL-STD-461), when applicable, apply to the equipment covered in this DMWR.

ENGINEERING CHANGE PROPOSALS

Engineering Change Proposals (ECPs) will be submitted using DD Form 1693 (Engineering Change Proposal [Short Form]). (Refer to MIL-STD-973, Configuration Management, for instructions.). Completed forms should be mailed directly to: Commander, US Army Aviation and Missile Command, ATTN: AMSAM-RD-SE-TD-CM Redstone Arsenal, AL 35898-5000. A reply will be furnished to you.

DEVIATIONS AND EXCEPTIONS

Requests for deviations or exceptions to this DMWR will be submitted to Engineering (AMRDEC) or the Contracting Officer for approval.

MOBILIZATION REQUIREMENTS

All requirements of this DMWR will be exempted or revised in the event of mobilization. Only those procedures necessary to return the CH-47D helicopter to a serviceable condition will be performed. Requests for exemptions or revisions will be submitted to Engineering (AMRDEC) or the Contracting Officer for approval.

FLIGHT SAFETY CRITICAL AIRCAFT PARTS (FSCAP)

A flight safety critical aircraft part is defined as any part, assembly, or installation whose failure, malfunction, or absence could cause loss of aircraft, serious damage to aircraft, death of personnel, or serious injury to personnel.

A critical characteristic is defined as a feature throughout the life cycle of a FSCAP, such as dimension, tolerance, finish, material or assembly, manufacturing process, inspection process, operation, field maintenance requirement, depot overhaul requirement, or other feature that if nonconforming, missing, or degraded, could cause failure or malfunction of a FSCAP.

Flight Safety Critical Aircraft Parts Procedures are detailed in WP 0160 00, Critical Safety Items (CSI) and Flight Safety Critical Aircraft Parts.

COST CONSIDERATIONS

This work requirement shall be the basis for establishing the extent of overhaul while taking into consideration cost factors. A determination shall be made on all subassemblies/assemblies to replace worn or damaged components, which are available in supply, if acquisition cost is less than the cost to repair and restore to the DMWR standard. The cost to repair/restore any individual item with an established Maintenance Expenditure Limit (MEL) to the DMWR standard shall not exceed the MEL, unless a waiver has been approved in accordance with AMC-R 750-51. This requirement does not apply to items exempted from MEL in accordance with AMC-R 750-51.

SUPPORTING INFORMATION FOR REPAIR PARTS, SPECIAL TOOLS, TMDE, AND SUPPORT EQUIPMENT

For authorized common tools and equipment, refer to the Modified Table of Organization and Equipment (MTOE), CTA 50-970, Expendable/Durable Items (Except: Medical, Class V, Repair Parts, and Heraldic Items), or CTA 8-100, Army Medical Department Expendable/Durable Items, as applicable to a CH-47D Helicopter Aviation Unit.

Special tools, TMDE, and support equipment are listed in Chapter 4, WP 0158 00, Tool Identification List.

Repair parts are listed and illustrated in the Repair Parts and Special Tools List, TM 55-1520-240-23P series manuals.

END OF WORK PACKAGE

DEPOT MAINTENANCE WORK REQUIREMENT
CH-47D HELICOPTER
DESCRIPTION AND THEORY OF OPERATION

DESCRIPTION

The CH-47D is a tandem rotor cargo helicopter. Two T55-L-712 or T55-GA-714A engines mounted on the aft cabin fuselage section provide the power. Torque from the engines is transmitted to rotary-wing blades through a series of mechanical transmissions. These transmissions are interconnected by a system of synchronizing drive shafts. Each rotor system consists of a rotary-wing head and three rotary-wing blades. Rotor systems are controllable from the cockpit by both pilot and co-pilot through dual hydraulic-boosted control systems. The helicopter has four landing gear, with dual wheels on each forward landing gear and a single wheel on each aft landing gear. Each aft gear can swivel 360 degrees. Power steering is connected to the right aft gear. A hydraulically operated cargo ramp and door is incorporated in the aft end of the fuselage. A hydraulically operated rescue and cargo-handling winch is located in the forward cabin area. An auxiliary power unit mounted above the cargo ramp area in the aft pylon permits operation of all helicopter systems without the use of a ground power source. Additional descriptive and operational data can be found in Operator's Manual, TM 55-1520-240-10. See Table 1 for tabulated descriptive data and Figure 1 for location and description of major components.

Beginning in the early 1960's, Boeing built approximately 750 CH-47 helicopters for the U.S. Army. Aircraft rolling out of the factory evolved in designation from CH-47A through CH-47B to CH-47C as new features were added and design improved. Between 1982 and the mid 90's, Boeing inducted 472 CH-47A, B, and C model aircraft from the U.S. Army, modified them to the CH-47D configuration, and returned them to the Army. Now the Army plans to upgrade the fleet thru overhaul of “D” to “D” or “D” to “F” models. These machines will be the U.S. Army’s heavy-lift helicopter through the first half of the 21st century. “F” model improvements include low maintenance rotor hub, improved airframe structure, digital cockpit, improved avionics, improved internal fuel tanks, and installation of the Honeywell T55-GA-714A engines.

ELECTROMAGNETIC ENVIRONMENT PROTECTION

Electrical wiring and components susceptible to electromagnetic radiation are hardened for electromagnetic environment (EME) protection to eliminate abnormal responses to external electromagnetic radiation. Electrical wiring for selected systems and components are equipped with pin filtered adapters or filtered plugs. Components susceptible to electromagnetic radiation are internally or externally modified with filters and gaskets. Mounting surfaces for EME components are metal with a chemical conversion coating or use bonding straps to provide low resistance to airframe ground.

EQUIPMENT DATA

Table 1. Tabulated Descriptive Data

Model	CH-47D Chinook Helicopter
Type	Medium Transport
Manufacturer	Boeing Co.
Rotor System:	
Type	Tandem-Mounted
No. Rotors	Two - Three Blades Ea.
Blade Composition	Fiber Glass
Drive Source	Each Engine thru Interconnecting Shafts
Rotor Drive System:	
No. Engines	Two
No. Transmissions	Five: Fwd, Aft, Combining and 2 Engines Transmissions
Rotor/Engine RPM Ratio	1:64

EQUIPMENT DATA - continued

Table 1. Tabulated Descriptive Data - continued

Fuselage:	
Type	Semi-Monocoque
Composition	Mainly Metal
Landing Gear:	
Type	Non-Retractable/Quadricycle
Wheels	Twin/FWD Position, Single/Rear Position
Shock Absorbers	Oleo Pneumatic
Rear Units	Fully Castering and Steerable
Power Steering	At R/H Rear Unit
Wheel Size	24 in. Diameter, 7.7 in. Wide
Tire Size	8.50-10
Brakes	Hydraulic, Two Single Disc - AFT Two Double Disc - FWD
Propulsion:	
Type	Turboshaft Engines
No Engines	Two
Engine Manufacturer	AVCO Lycoming/Honeywell
Engine Model	T55-L-712 or T55-GA-714A
Locations	Beside Rear Pylon
Std. Power Rating	3,750 SHP (T55-L-712) 5,625 SHP (T55-GA-714A)
Emergency Rating	4,500 SHP (T55-L-712) Not Available (T55-GA-714A)
Oil Capacity	12 qts (14 liters)
Fuel System:	
Type	Cells, Self-Sealing, Pressure Refueled, Crashworthy
Cell Nomenclature	Fwd Aux, Main, Aft Aux
Total Fuel Capacity	1,030 U.S. Gals, (3,899 Liters)
Accommodations:	
Crew Number	Two Pilots/1 Crew Engineer
Crew Controls	Two
Troop Seating/Main Cabin	33-34
Rear Loading Ramp	Controllable/Removable
R/H Main Cabin Door	Upper half-retractable section can be opened in flight; Lower half hinged.
Cargo Hook	Triple External
Alternating Current (AC) System:	
No. 1 & No. 2 AC Generators	Alternators, 115/200-Volt AC Three Phase, 40 KVA, Aft Transmission Driven

EQUIPMENT DATA - continued

Table 1. Tabulated Descriptive Data - continued

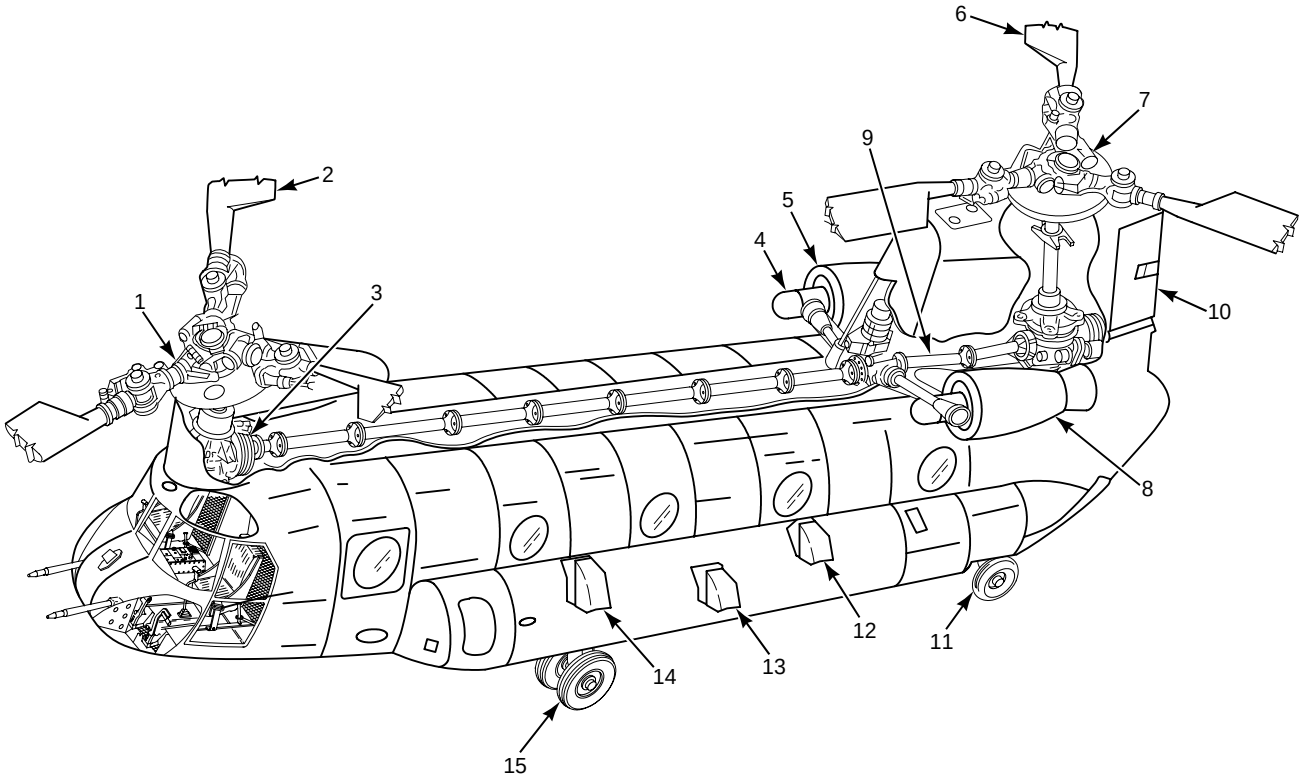
Auxiliary Power Unit (APU)	
Type	Gas Turbine, Auxiliary
No. Units	One
Model	T62-T-2B
Location	Aft cabin above ramp
Oil Capacity	3 qts
Function	Pressurizes utility hydraulic system for main engine start and ground checks APU Generator
APU Generator	Alternator, 115/200-Volt Three Phase, 40 KVA, APU Driven
AC External Power Receptacle	Accepts External AC Power
Direct Current (DC) System:	
Battery	24 Volt
No. 1 & No. 2 DC Sources	28 Volt, 200 Amp (Transformer Rectified from No. 1 & No. 2 AC Generator Outputs)
DC External Power Receptacle	Accepts External DC Power
External Dimensions:	
Diameter (Each Rotor)	60 ft 0 in (18.29m)
Rotor Blade Cord	2 ft 8 in (0.81m)
Distance Between Rotor Centers	38 ft 10 in (11.94m)
Length Overall (Rotors Turning)	98 ft 10 in (30.18m)
Fuselage Length	50 ft 9 in (15.54m)
Width (Rotors Folded)	12 ft 5 in (3.78m)
Height to top of rear Rotor Head	18 ft 7.8 in (5.68m)
Wheel Track (C/L of Shock Absorbers)	10 ft 6 in (3.20m)
Wheel Base	22 ft 6 in (6.86m)
Rear Loading Ramp Entrance:	
Height	6 ft 6 in (1.98m)
Width	7 ft 7 in (2.31m)
Height to Sill	2 ft 7 in (0.79m)
Cabin Internal Dimensions:	
Length (Excl. Flight Deck)	30 ft 2 in (9.20m)
Width (Mean)	7 ft 6 in (2.29m)
Width at Floor	8 ft 3 in (2.51m)
Height	6 ft 6 in (1.98m)
Floor Area	226 ft^2 ($21.0m^{2)}$
Usable Volume	1,474 ft^3 ($41.7m^{3)}$

EQUIPMENT DATA - continued

Table 1. Tabulated Descriptive Data - continued

Aircraft Weights	
Maximum T-O Weight	50,000 lbs (22,680kg)
Weight Empty	23,093 lbs (10,184kg)
Design Gross Weight	33,000 lbs (14,968kg)
Flight Control Hydraulic System:	
Operating Pressure	3,000 PSI
No. Pumps	Two
Pump Type	Variable Delivery
No. Systems	Dual
No. 1 Pump Drive Source	Fwd Transmission
No. 2 Pump Drive Source	Aft Transmission
Utility Hydraulic System	
Operating Pressure	3,350 PSI APU Motor Pump/3,000 PSI Utility Pump
No. Pumps	Two
Pump Type	Variable Delivery
Utility Pump Drive Source	APU/Aft Transmission
Heating System	200,000 BTU Heater/Blower

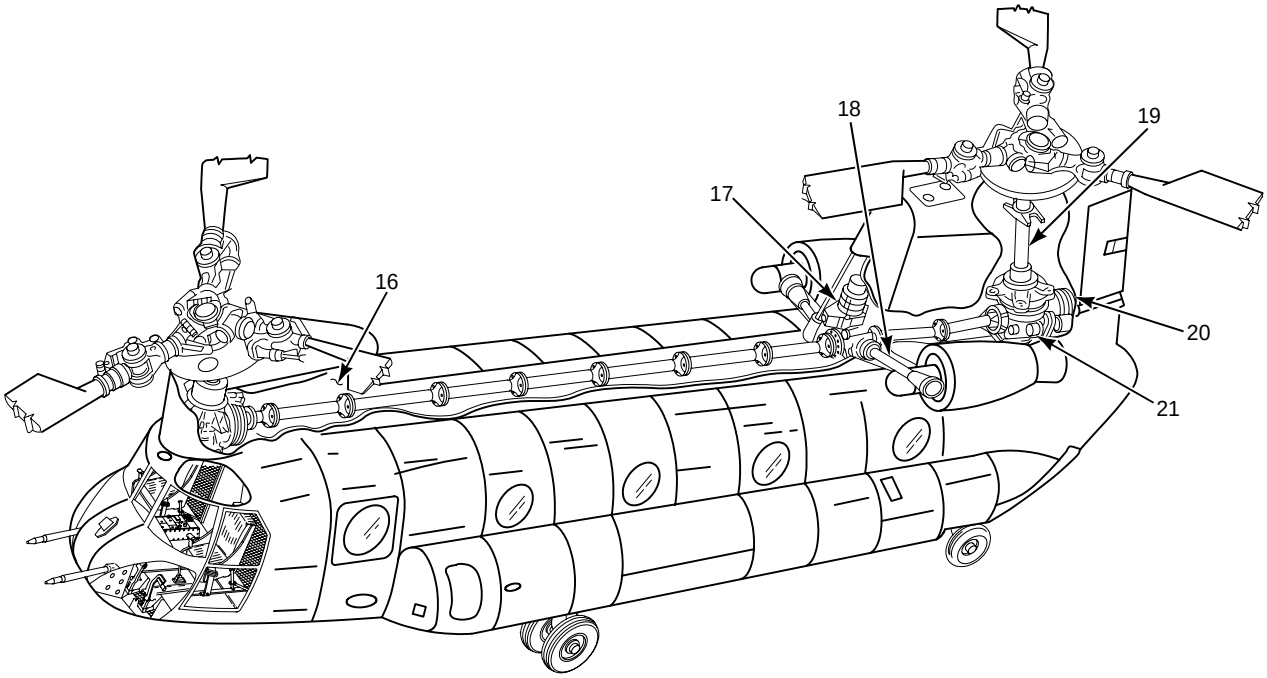
EQUIPMENT DATA - continued



1.	Fwd Rotary-Wing Head	Transmits power and flight control input to forward blades
2.	Fwd Rotary-Wing Blades	Provide lift to helicopter
3.	Fwd Transmission	Transmits power to forward rotor head
4.	Engine Transmission	Directs power from engine to combining transmission
5.	No. 2 Power Plant	Provides power to the helicopter
6.	Aft Rotary Blades	Provide lift to the helicopter
7.	Aft Rotary Wing Head	Transmits power and flight control input to the aft blades
8.	No. 1 Power Plant	Provides power to the helicopter
9.	Aft Drive Shaft	Transmits power from combining transmission to aft transmission
10.	Pylon	Encloses aft drive system components
11.	Aft Landing Gear	Supports and allows ground movement of helicopter
12.	Aft Fuel Tank	Holds fuel, transfers fuel to main tank
13.	Main Fuel Tank	Holds fuel for power plants and APU (LH) and Heater (RH)
14.	Forward Fuel Tank	Holds fuel, transfers fuel to main tank
15.	Forward Landing Gear	Supports and allows ground movement of helicopter

Figure 1. CH-47D Helicopter Components (Sheet 1 of 2)

EQUIPMENT DATA - continued



16.	16. Forward Drive Shafting	Transmits power from combining xmsn to forward transmission
17.	Combining Transmission	Combines power from the two engines
18.		Engine Shaft Transmits power from engine transmission to combining transmission
19.	Aft Rotor Shaft	Transmits power to aft rotary wing head
20.	Auxiliary Power Unit	Provides power for ground operation and powerplant starting
21.	Aft Transmission	Transmits power to the aft rotor shaft

Figure 1. CH-47D Helicopter Components – (Sheet 2 of 2)

REFERENCE LINES

Stations, waterlines, and butt lines provide an accurate method of locating parts and/or equipment in the airframe. (Refer to Figure 2.)

STATIONS

Stations (sta) are vertical reference lines indicating the distance in inches from a reference line forward of the nose section, which is sta 0.

WATERLINES

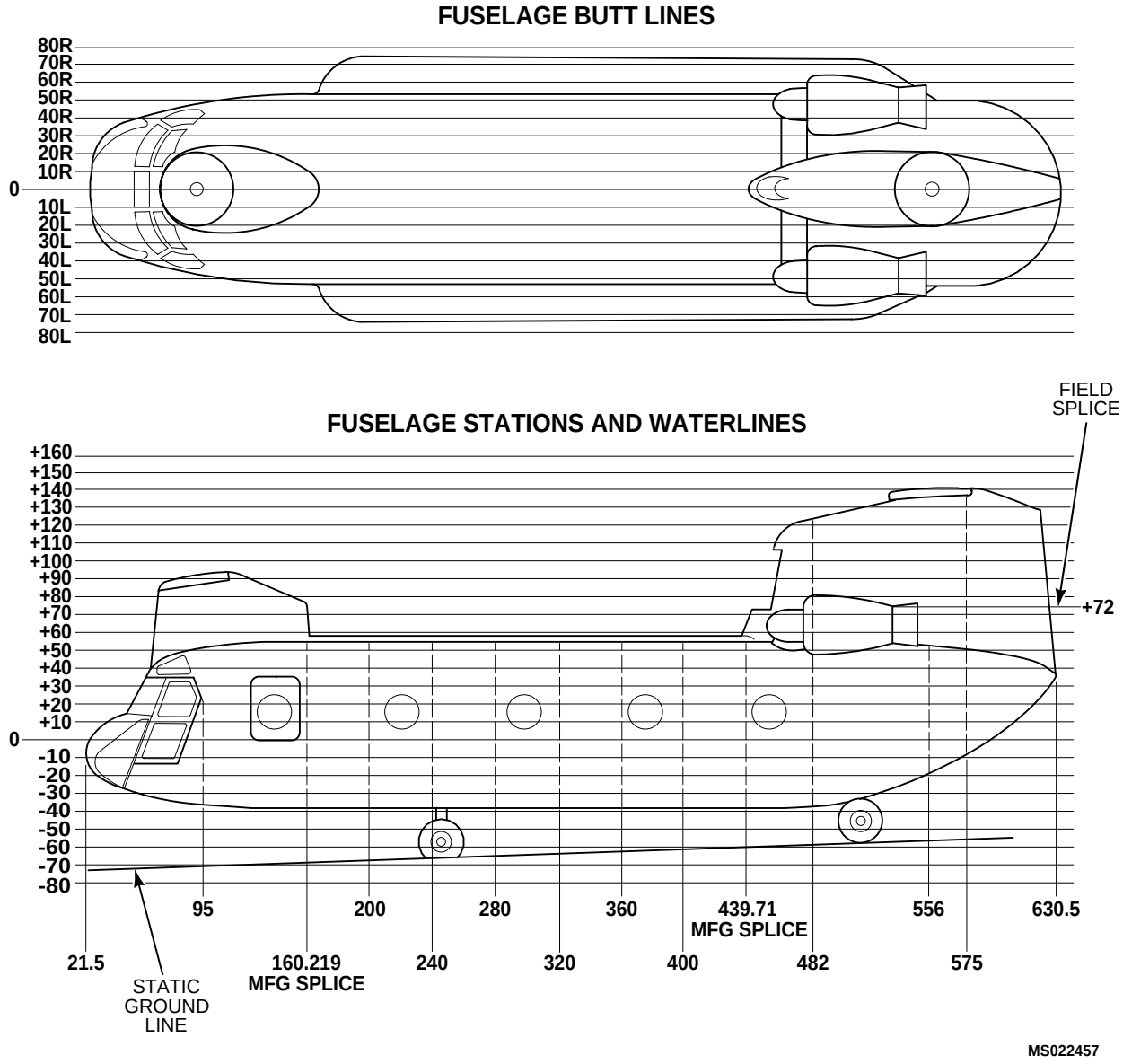
Waterlines (WL) are horizontal reference lines indicating the distance in inches from a reference line on the helicopter, which is waterline 0.

BUTT LINES

Butt lines (BL) are vertical reference lines indicating the distance in inches on the left and right side from the helicopter center line which is butt line 0.

PYLON STATIONS

Pylon stations are lines perpendicular to the centerline of the pylon indicating the distance in inches from the forward-most point of the pylon, which is pylon station 0.



NOTE

All dimensions are in inches.

Figure 2. CH-47 Helicopter Reference Lines

DATA PLATES

Helicopter Nameplate

Refer to Figure 3. This plate is located on the forward left side of the nose section by the co-pilot’s pedal controls. It is inscribed with the manufacturer's name, model number, aircraft serial number, manufacturer's serial number, date of manufacture, and contract number.

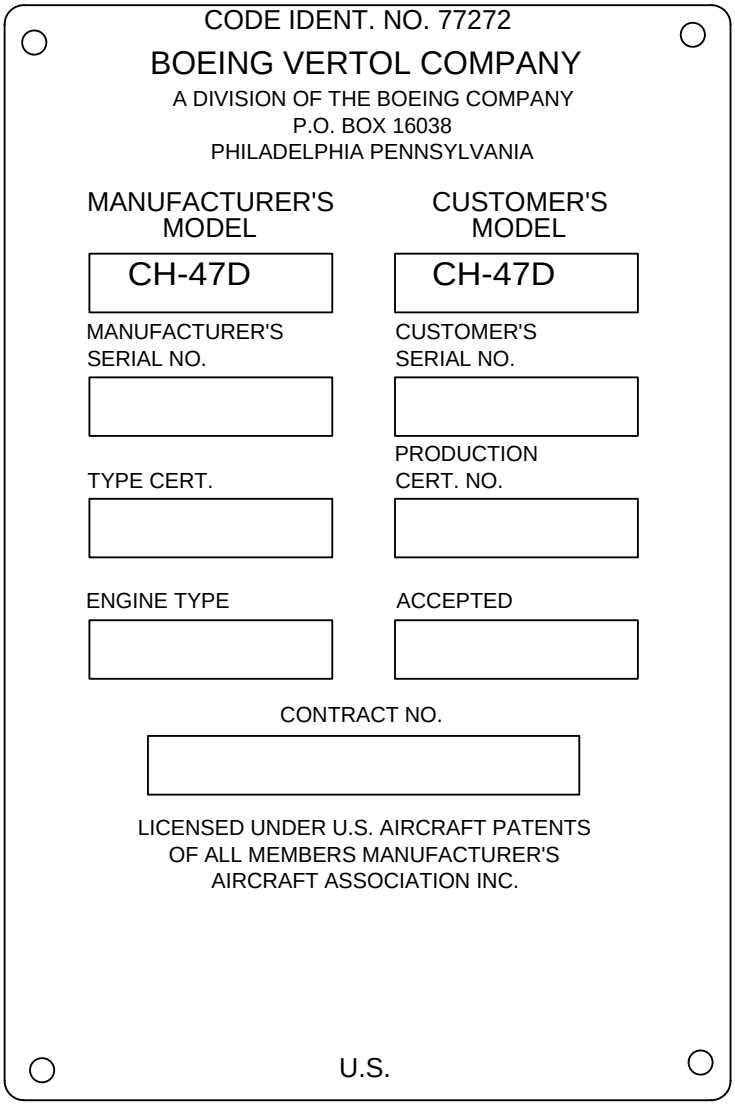


Figure 3. Helicopter Nameplate

AFT Pylon Identification Plate

Refer to Figure 4. This plate shows the aircraft model number, manufacturer's code, part number, contract number and aircraft serial number.

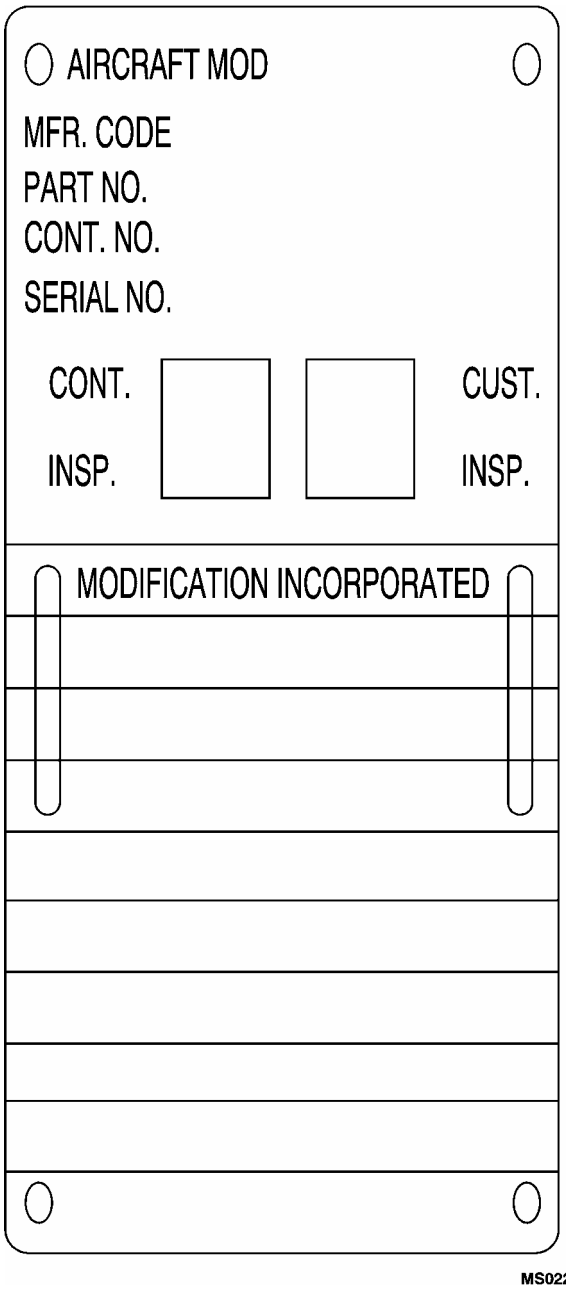


Figure 4. AFT Pylon Identification Plate

Overhaul Data Plate

Refer to Figure 5. This plate is positioned next to the helicopter nameplate. It is installed at the first overhaul and replaced at subsequent overhauls. The data plate includes part number, total operating hours since new, the initials of facility doing the overhaul, date of overhaul, and the contract number. For recapitalization aircraft, stamp “RECAP” and date with two digits for month and two digits for year.

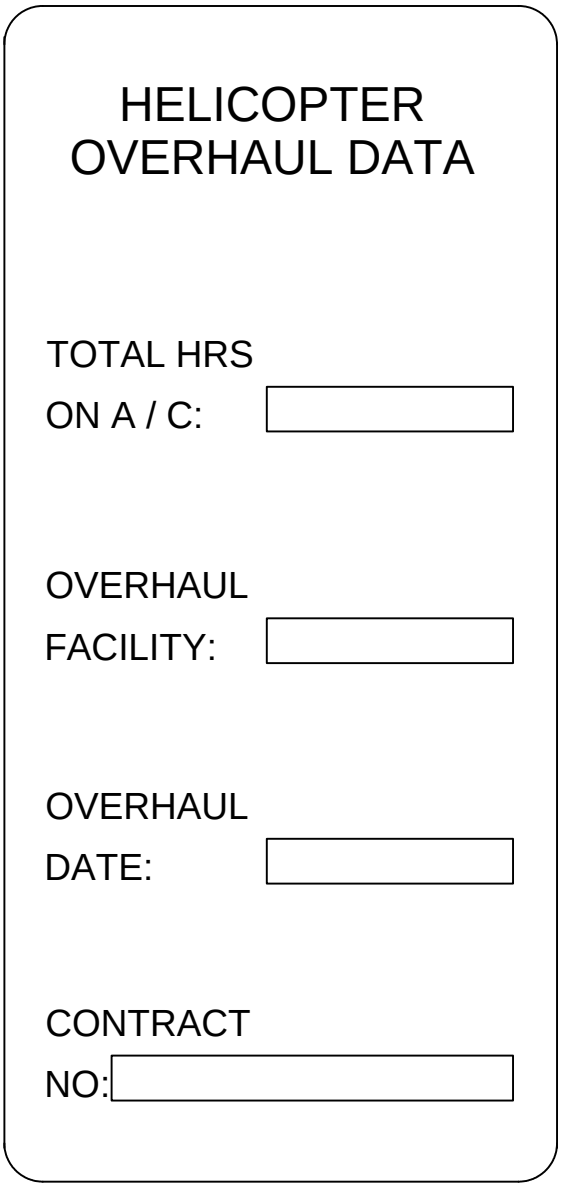


Figure 5. Overhaul Data Plate

Replacement of Data Plate

The data plate is made of adhesive-backed aluminum foil (Item 105, WP 0157 00). The data is stamped using 1/8-inch high letters and numbers (8 pt type). Stamp the required information on the data plate before installation.

END OF WORK PACKAGE

CHAPTER 2

TROUBLESHOOTING PROCEDURES

DEPOT MAINTENANCE WORK REQUIREMENT
CH-47D HELICOPTER
PRE-SHOP ANALYSIS

INITIAL SETUP

Test Equipment:
As Required

Tools and Special Tools:
As Required

Material/Parts:
As Required

Personnel Required:
As Required

References:
AR 700-138
AR 750-1
DA Pam 738-751
TB 1-1500 341-01
TB 43-0002-3
TM 1-1500-204-23 Series
TM 1-1500-328-23
TM 1-1500-335-23
TM 11-1520-240-23
TM 55-1500-323-24
TM 55-1520-240-PM
TM 55-1520-240-23 Series
WP 0076 00
WP 0147 00
WP 0151 00
WP 0155 00
Boeing Repair Manual, D8-0043, SR-114-8

Equipment Conditions:
As Required

Special Environmental Condition:
As Required

SCOPE

This work package discusses the Pre-Shop Analysis (PSA) phase of overhaul to include actions upon receipt of the aircraft by the overhaul facility, inspection work sheets, records checks, disassembly, cleaning, paint stripping, inspection items, damage limits, and recording of discrepancies found during inspection. Questions concerning scope of inspection should be addressed to the Contracting Officer.

PRE-SHOP ANALYSIS

Pre-Shop Analysis (PSA) is a thorough physical examination and evaluation of the aircraft and related components using visual and diagnostic test techniques. PSA shall determine the specific depth and extent of work to be performed and shall correctly annotate all aircraft, engine, and component records in accordance with DA PAM 738-751. After completion of PSA, a “cost and man-hour estimate” shall be developed and provided to the Contracting Officer. If the repair costs exceed the limitations provided in Chapter 3 of TB 43-0002-3, or the contract, annotate the “cost and man-hour estimate” with the maximum expenditure limits.

The following PSA instructions are provided to ensure a complete examination of the incoming aircraft. The information from this examination should be used by the overhaul facility in preparing estimates that will determine the extent of repair, modification, and replacement, needed to perform overhaul of the aircraft and make it a completely serviceable unit. Quality standards contained in the Depot Maintenance Work Requirement (DMWR) shall be strictly applied. Refer to WP 0155 00. Detailed cleaning and corrosion treatment methods have been included where applicable. Items pending performance of maintenance shall be preserved to prevent damage or deterioration due to corrosion or decay.

PRE-PSA ACTIONS

Helicopter Receipt

The aircraft, as specified in each Program Request Order Number (PRON) and Project Work Directive (PWD), will be delivered to the Depot/Contractor facility per instructions issued to the delivering crew by AMCOM CH-47 Program Management Office. Depot/Contractor personnel, along with members of the Aircraft-Owning Unit, shall perform Maintenance Operational Checks (MOC) and Maintenance Test Flights (MTFs).

Forms and Records

Depot/Contractor personnel will review all DA Form 2408 Aircraft Historical Records for completeness. If records are incomplete or missing, every effort shall be made to obtain required information from the shipping activity. The overhaul facility will certify the Aircraft and Avionics Inventory and submit front and backside copies of the DA Forms 2408-17, Aircraft Inventory Record, to the Contracting Officer for forwarding to AMCOM IMMC Cargo Directorate (AMSAM-MMC-AV-CA) and CH-47 PMO (SFAE-AV-CH-L). Equipment not installed per the Aircraft Receipt Inspection and Inventory (ARII) list, Aircraft Master Inventory Guide, and Avionics Configuration requires authorization documentation and shall be annotated correctly in the aircraft logbook. Modified Table of Organizational Equipment (MTOE)/property is the responsibility of the Owning Unit and shall not remain with the aircraft. For items not covered by DA Forms 2408-17, a list shall be prepared to include Description (Nomenclature), NSN, P/N, Serial Numbers if applicable, and Remarks. Forward list to the Contracting Officer, for further forwarding to AMCOM IMMC Cargo Directorate (AMSAM-MMC-AV-CA) and CH-47 PMO (SFAE-AV-CH-L). The overhaul facility will not accept the aircraft for induction until the Joint Acceptance Inspection criteria has been met, and the delivery crew has signed for or satisfied all noted/identified aircraft logbook discrepancies. The overhaul facility will notify the Contracting Officer for further forwarding to AMCOM IMMC Cargo Directorate (AMSAM-MMC-AV-CA) and CH-47 PMO (SFAE-AV-CH-L), when the owning unit has not met this DMWR requirement.

Initial review of aircraft records will determine the following minimums:

1. Modification Requirements - A physical inspection of the aircraft, in conjunction with a check of DA Forms 2408-5 and 2408-15, and review of the Modification Work Orders (MWOs) and Technical Bulletins (TBs) shall be accomplished to determine outstanding MWOs and TBs. Designated MWO's will be accomplished as specified in the statement of work or as directed by the Contracting Officer. MWO Kits, if available, shall be applied to all aircraft. For MWO compliance, kits shall be available prior to aircraft induction. If MWO Kits are not available, the Contracting Officer shall be contacted prior to aircraft induction.

2. CH-47 PMO Approved Engineering Change Proposals ECP(s) – ECP(s) shall be applied to all aircraft if the ECP Kits(s) and funding are available at time of induction. ECP noncompliance must receive a formal waiver from the CH-47 PMO, through the Contracting Officer.

3. Safety of Flight Messages - The overhaul facility shall ensure compliance regarding all applicable Safety of Flight (SOF) messages, Maintenance Information Messages (MIM), and Aviation Safety Action Messages (ASAM).

4. Army Aircraft Inventory, Status, and Flying Time Report (DA Form 1352) - Aircraft inducted for overhaul will be placed into the AMCOM account (B17). The overhaul facility shall prepare and submit DA Form 1352 IAW AR 700-138, for all aircraft.

5. Status of Time Change Items - A physical inspection of the aircraft will be made in conjunction with a check of DA Form 2408-16, time replacement items and DA Form 2408-18, calendar replacement items. Refer to TM 55-1520-240-23 and WP 0151 00 for current listing. Criteria for reuse of helicopter components shall be those listed in TM 1-1500-328-23 and AR 750-1, ensuring that the aircraft meets requirements for transfer from CONUS theater of operations to overseas theater of operations, unless otherwise directed by the Contracting Officer. DA Form 2410's shall be initiated for each time change item due replacement in accordance with DA PAM 738-751

Forms and Records - continued

6. Mission Essential Equipment - Mission essential equipment configuration will be determined based on the ultimate destination of the aircraft. This information can be obtained from the CH-47 PMO and/or Contracting Officer. All required mission essential equipment will be installed and functionally tested prior to release of the aircraft to the gaining unit.

7. Airframe Condition Evaluation
   a. The current Airframe Condition Evaluation (ACE) report shall be reviewed to ensure all noted discrepancies become a part of the work package and are included in the cost and man-hour estimate. The ACE report for a specific aircraft serial number can be obtained by e-mailing your request to the AMRDEC Aviation Engineering Division (AED), AMSAM-MMC-AV-CC, Corpus Christi, Texas, (acereport@amcom-cc.army.mil). If you experience any problems, call (361) 961-2000.
   b. An Airframe Condition Evaluation (ACE) will be completed by certified evaluators prior to issuing aircraft to operational units.

PARTS REMOVAL AND DISASSEMBLY REQUIREMENTS

TM 55-1520-240-23 series manuals shall be used for removal and reinstallation of components, parts, and subassemblies. Unless required as a maintenance expedient, parts removal and disassembly is limited to that specified by the PSA and the Work Packages of this DMWR.

PRE-PSA CLEANING REQUIREMENTS

Cleaning

1. Prior to cleaning with liquid detergents, vacuum the interior of the aircraft structure and cabin area, and remove as much loose debris as practicable. Visually inspect honeycomb panels for punctures that would expose the core to moisture. If punctures are detected, seal the holes.

2. After preparation and identification of stripping requirements, aircraft will be cleaned and stripped in accordance with procedures specified in WP 0076 00. Aircraft will then be returned to PSA for further evaluation.

Paint Stripping

The overhaul facility shall insure that only necessary and economical paint stripping is performed on all aircraft.

NOTE

Remove all overhaul, retirement, and life-limited components prior to cleaning and stripping. All time change finite life and condition items that require removal shall be removed prior to cleaning and stripping.

1. Prior to cleaning and stripping, PSA personnel shall conduct an examination of the exterior paint and identify those areas that require selective stripping. Selective stripping shall be employed if less than 35 percent of fuselage painted areas requires removal. If paint stripping is required in excess of these percentages, the entire fuselage shall be stripped. All nonstandard paint, aircraft tail numbers, and organizational insignia shall be removed. Refer to WP 0076 00.

2. Epoxy primer shall be stripped only in areas of deterioration and as specified for visual inspection.

NOTE

PSA may identify additional areas to be stripped for further visual interpretation. This is in addition to mandatory paint stripping requirements.

Paint Stripping - continued

3. Nondestructive Inspection requirements are detailed in WP 0147 00. The Contracting Officer may require additional NDI areas. Consult with the Contracting Officer and determine exact NDI to be performed. Some NDI requirements require paint stripping which should be performed during the paint stripping operation. Refer to WP 0076 00 for hand stripping procedures.

PSA PROCEDURES

PSA Items List - Refer to Table 1, for PSA Work Package List of areas to be inspected.

Table 1. Pre-Shop Analysis Work Package List

WORK PACKAGES	TITLE
WP 0003 00	Pre-Shop Analysis
WP 0004 00	Nose Exterior
WP 0005 00	Cockpit Enclosure
WP 0006 00	Nose Structure
WP 0007 00	Lower Console Structure
WP 0008 00	Nose Tub Assembly
WP 0009 00	Cockpit Floor Structure
WP 0010 00	Nose Frames
WP 0011 00	Beam Assemblies, BL 18
WP 0012 00	Forward Hydraulic Support
WP 0013 00	Auxiliary Drip Pan and Forward Transmission Drip Pan
WP 0014 00	Pilot and Copilot Seats
WP 0015 00	Heating and Ventilation
WP 0016 00	Cabin Exterior
WP 0017 00	Forward Pod Installation, Sta 160 to Sta 187
WP 0018 00	Fuel Pod and Access Panels
WP 0019 00	Cabin Crown Tunnel
WP 0020 00	Cabin Interior
WP 0021 00	Cabin Tub Exterior Skin and Stringers
WP 0022 00	Cabin Tub Formers and Beams
WP 0023 00	Cabin Flooring
WP 0024 00	Cabin Troop Seats
WP 0025 00	Cockpit and Cabin Acoustic Blankets
WP 0026 00	Aft Section Exterior
WP 0027 00	Aft Section Frames, Stringers, and Beams
WP 0028 00	Aft Section Tub Assembly
WP 0029 00	Tail Cone Assembly
WP 0030 00	Cargo Door Coaming
WP 0031 00	Aft Transmission Drip Pan

PSA Items List – continued

Table 1. Pre-Shop Analysis Work Package List - continued

WORK PACKAGES	TITLE
WP 0032 00	APU Drip Pan Assembly
WP 0033 00	Cargo Ramp Exterior
WP 0034 00	Cargo Ramp Interior
WP 0035 00	Cargo Ramp Flooring and Auxiliary Loading Ramps
WP 0036 00	Cargo Ramp Door Bonded Assembly
WP 0037 00	Aft Pylon Exterior
WP 0038 00	Aft Pylon Interior
WP 0039 00	Forward and Aft Landing Gear
WP 0040 00	Powerplant
WP 0041 00	Rotary-Wing Blades
WP 0042 00	Forward and Aft Rotor-Wing Heads
WP 0043 00	Drive System
WP 0044 00	Flight Control Hydraulic System
WP 0045 00	Utility Hydraulic System
WP 0046 00	Cargo Ramp and Door Hydraulic System
WP 0047 00	Cargo Hook Hydraulic Release System
WP 0048 00	Wheel Brake Hydraulic System
WP 0049 00	Instruments
WP 0050 00	Electrical Systems
WP 0051 00	Fuel System
WP 0052 00	Cockpit Flight Controls
WP 0053 00	Closet Flight Controls
WP 0054 00	Mixing Flight Controls
WP 0055 00	Forward Upper Flight Controls
WP 0056 00	Tunnel Flight Controls
WP 0057 00	Aft Fuselage and Aft Upper Flight Controls
WP 0058 00	Advanced Flight Control System
WP 0059 00	Windshield System
WP 0060 00	Fire Detection System
WP 0061 00	Fire Extinguishing System
WP 0062 00	Environmental Controls
WP 0063 00	Cargo Handling/Rescue Winch System
WP 0064 00	Auxiliary Power Unit (APU)
WP 0065 00	External Cargo Hook System
WP 0066 00	Emergency Equipment
WP 0067 00	Intercommunications System
WP 0068 00	Communications Systems
WP 0069 00	Navigation Systems
WP 0070 00	Aircraft Survivability
WP 0071 00	Aircraft Antennas

PSA INSPECTION

1. PSA is broken into various groups for clarity of presentation, and in no way should indicate the sequence of operations. Local formats may be adopted to fit physical plant layout. However, all PSA information including discrepancies noted and disposition made, will be available for each aircraft processed by the overhaul facility for a period of two years or as directed by the Contracting Officer. This information will provide objective evidence of PSA evaluation, findings, and corrective action taken, and will be immediately available to the Contracting Officer upon request.

2. The PSA Work Packages in this chapter show typical and specific areas to be inspected. Each area is identified with a number or letter callout on the associated figure. The limits specified are the reparable or acceptable limits. Unless otherwise stated, the item is to be replaced when the repair limits are exceeded. When inspection limits apply to general or multiple use items, i.e., hoses, tubes, shims, etc, the information is presented as a table. Reparable items on illustrations or listed in tables will reference the repair instructions contained in Chapter 3.

3. The pre-shop analysis (PSA) pertains to all helicopters inducted for overhaul under this DMWR.

PSA TEAM

The recommended working team required to perform the PSA is a quality inspector and a recorder. The inspector shall physically perform the analysis, determine the extent of the damage, and record the data. During various phases of the inspection, additional inspectors and recorders may be required.

CAUTION

Extreme care should be exercised while performing PSA to insure additional damage does not occur to aircraft. Observe safety precautions for work platforms and personal restraints while working atop the airframe.

NOTE

When this DMWR is used by a commercial contractor, government inspectors may participate in the performance of the PSA.

PSA WORKSHEET

The PSA Worksheet is a Depot/Contractor produced document used to record inspection results. Information and data collected will be used for determining the extent of repair, modification, or replacement, necessary to make the aircraft completely serviceable. Information and data collected will also be used for preparation of man-hour and cost estimates and for determining parts requirements. Table 1, PSA Work Package List, depicts the mandatory items to be inspected and is the basis for developing the Depot/Contractor specific PSA Worksheet.

GENERAL INSTRUCTIONS FOR DEVELOPING A PSA WORKSHEET

The PSA Worksheet shall list those items to be inspected, reference the appropriate figures, define the inspection criteria, and provide a space for recording appropriate inspection and disposition information. It is expected that the overhaul facility will develop the necessary process details required to conduct a PSA at their facilities. The use of locally designed and reproduced worksheets to facilitate recording of information is authorized, and is subject to approval by the Contracting Officer. As a minimum, the following information will be included in the design of a worksheet:

1 – Mission/Design/Series

Record CH-47D

GENERAL INSTRUCTIONS FOR DEVELOPING A PSA WORKSHEET - continued

2 – Nomenclature and Part Number

Record nomenclature and part number of specific component/part undergoing inspection. Obtain from the aircraft records, data plate and physically verify from part/component.

3 –Serial Number

Record serial number of both aircraft and component/part undergoing inspection. Obtain from the aircraft records, data plate and physically verify from part/component.

4 – Date

Annotate date specific work sheet initiated as day/month/year.

5 – Overall Condition

Define the aircraft condition as good, fair, poor. Take into account interior paint condition, condition of weather stripping, discoloration, and/or scratching of the plexiglass, condition of floor panels, effectiveness of door and cowling latches, and other similar indicators that exhibit the signs of wear and tear. It is advisable for inspection personnel to document aircraft conditions with still and/or video digital photography.

6 – Paint Condition

Visually examine the exterior paint of the aircraft. Look for areas not covered with paint, areas of non-adherence of paint, and evidence of weathering, burned, chipped, cracked, oxidized, and peeling of painted surfaces to the extent that complete stripping and repainting is necessary. Strip and repaint if a total of defects exceeds 35 percent or more of the aircraft. Contact Contracting Officer for directions if strip/repaint is in question.

7 - Maintenance Test Flight and Oil Analysis

Documentation of the maintenance test flight, if conducted, and oil analysis will become part of the PSA evaluation.

8 – Aircraft Records

1. Review all DA Form 2408 Aircraft Historical Records for completeness. If records are incomplete or missing, every effort shall be made to obtain required information from the shipping activity. Request instructions from the Contracting Officer in the event this information cannot be obtained.

2. A review will be made of all incoming aircraft records to determine, as a minimum, the following:
   a. Modification requirements
   b. Status of overhaul, retirement, and life limited components
   c. Aircraft Inventory
   d. Mission essential equipment

9 - Condition Items, Retirement Items, and Aircraft Inventory

A physical inspection of the aircraft will be made in conjunction with a check of DA Form 2408-16 and DA Form 2408-18 of all Time Condition Components listed in TM 55-1520-240-23. Criteria for reuse of aircraft components shall be those listed in TM 55-1500-328-23, AR 750-1, and specific performance criteria identified and/or referenced in this DMWR. Compliance with this requirement is mandatory to permit transfer from CONUS theater of operations to overseas theater of operations, unless otherwise specified by the Contracting Officer. DA Form 2410 shall be initiated, in accordance with DA PAM 738-751 and TB 1-1500-341-01, for each condition or retirement item due replacement.

USE OF VISUAL DATA

To aid in performance of the PSA, Figure 1,. Airframe Station Numbers, and Figure 2,. Airframe Butt Lines, Water Lines and Stations, are provided as a structural locator. The inspection work packages are fully illustrated and contain the following information:

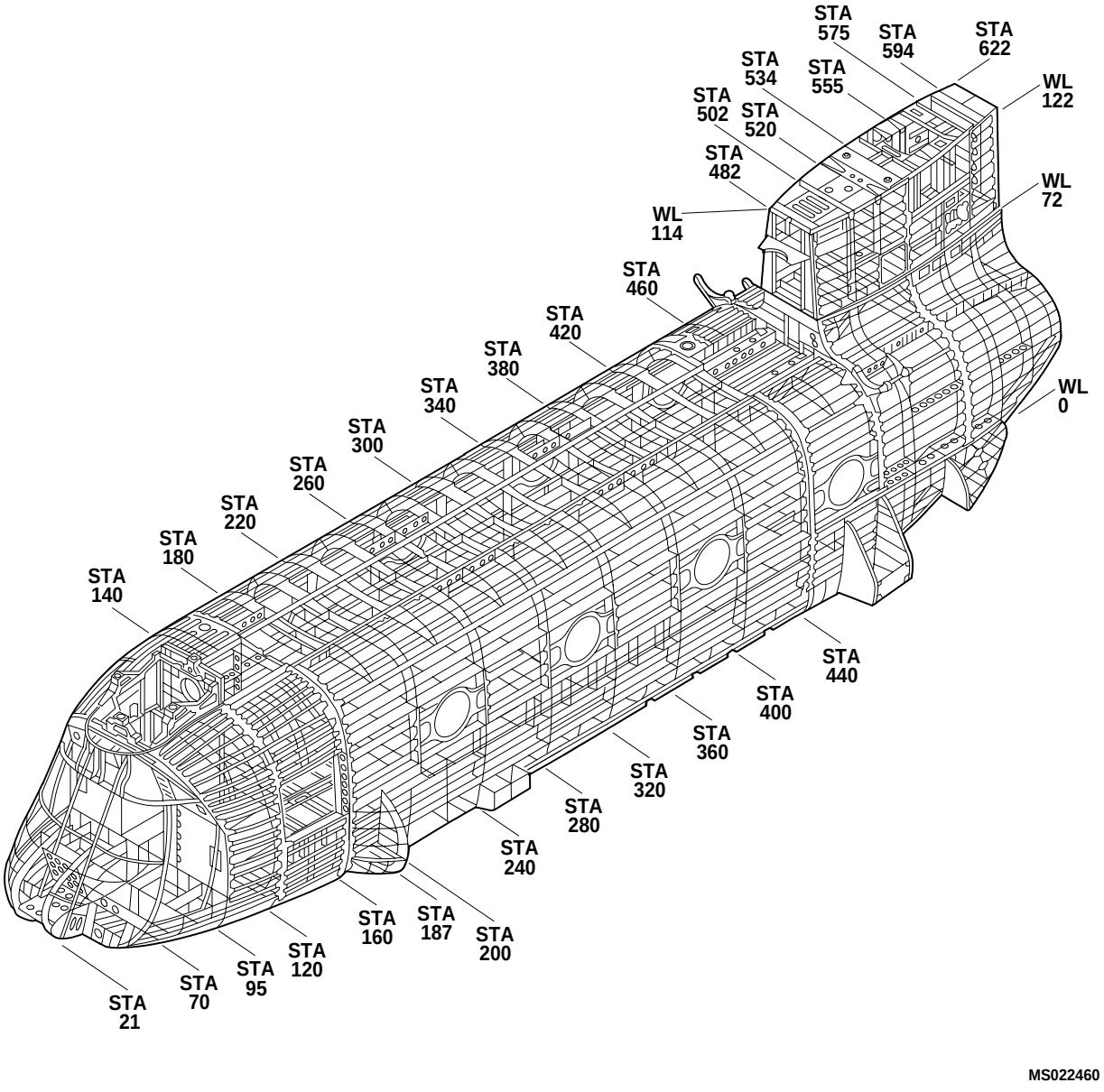


Figure 1. Airframe Station Numbers

USE OF VISUAL DATA – continued

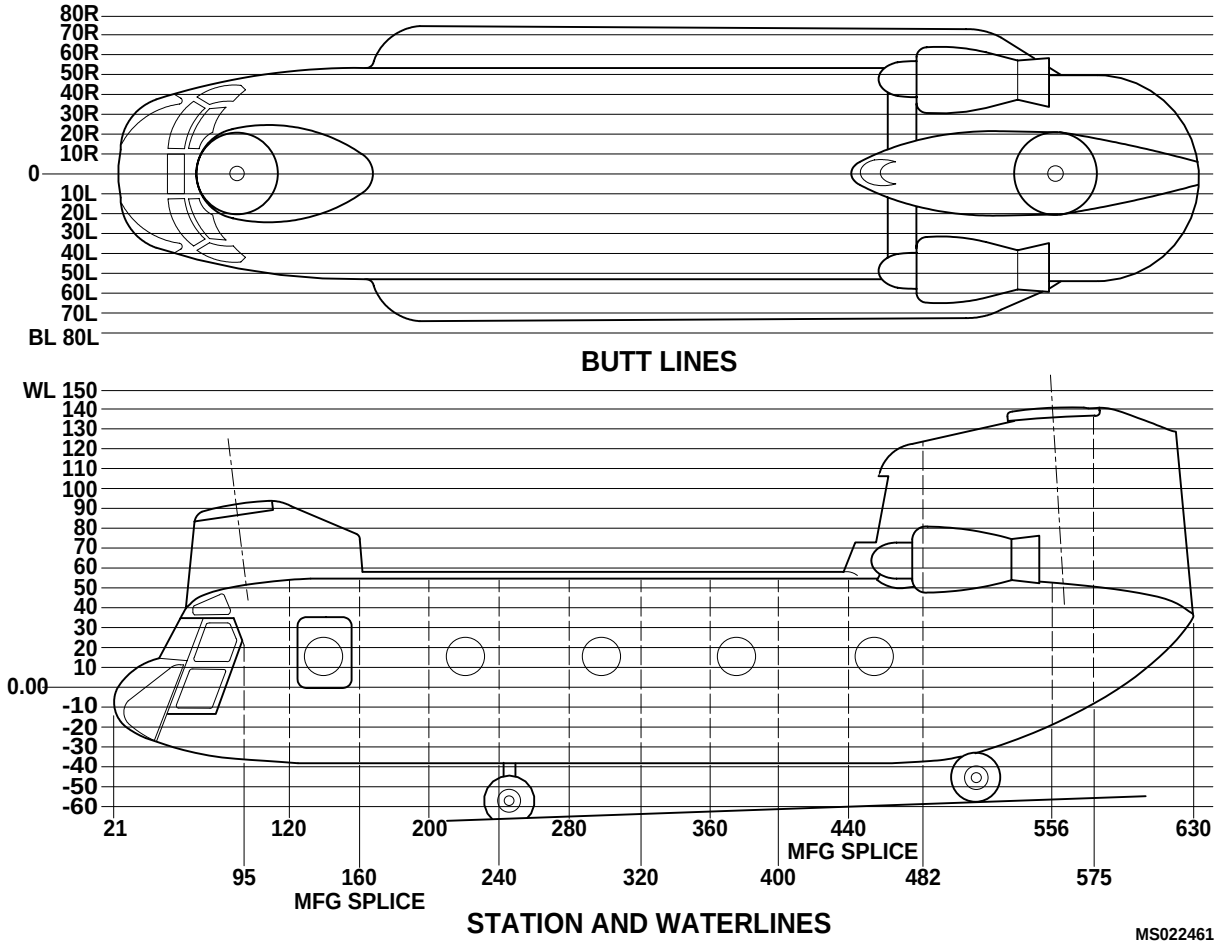


Figure 2. Airframe Butt Lines, Water Lines and Stations

Inspection Work Package Number

This number corresponds with the item and Work Package Number in Table 1, Pre-Shop Analysis (PSA) Work Package List.

Inspection Item

This includes the most commonly found defects for that particular part (e.g., cracks, dents, nicks, etc).

Limits

Limits provide the information to make the decision whether to repair or replace.

Repair

A quick reference to the applicable Repair Work Package(s) in Chapter 3 is listed with the Inspection Work Package.

ACCOMPLISHMENT OF PHASE MAINTENANCE SERVICES

ACCOMPLISHMENT OF PHASE MAINTENANCE SERVICES - continued

Overhaul shall include a complete Phase Maintenance (PM), 1 thru 4, IAW TM 55-1520-240-PM, plus all other required special inspections. An entry shall be made on the aircraft logbook DA Form 2408-13-1 indicating the inspection is complete. A completed PM Checklist shall accompany the aircraft records upon delivery to the gaining unit. An entry shall be made on the aircraft Historical Records, DA Form 2408-15, indicating the completion of the PM and the next PM due is PM #1. The overhaul facility may sign off PM Checklist Inspection Requirements "Action Taken" block by entering "Inspection OK" or by referencing the appropriate Shop Traveler. In referencing the Shop Traveler, it is incumbent upon the Overhaul Facility to ensure the action taken complies fully with the inspection requirement. Either procedure requires the initials, stamp, and date of the person completing the "Action Taken" block.

REMOVAL OF EQUIPMENT

The following items must be removed to perform specific PSA actions. When removed, they must be evaluated, and, if serviceable, retained for reinstallation. Request disposition of unserviceable components from the Contracting Officer.

1. Rotor blades and shock absorbers
2. Safety belts and shoulder harnesses
3. Troop commanders seat
4. Pilot and co-pilot seats
5. Troop seats
6. All acoustic blankets
7. Buffer Boards
8. Cabin and cockpit flooring
9. Tie down rails
10. Ramp hinge fitting cover
11. Cargo loading ramp door and flooring
12. Lower cockpit windows
13. Dynamic vibration absorbers
14. Fairings, inspection plates, and tunnel covers
15. Synchronizing and engine drive shafts
16. Hydraulic oil coolers
27. Landing gear stress plates
28. Pilots and co-pilot's jettisonable doors
29. Fuel pods and fuel cells
30. Engines
31. Engine transmissions
22. Combining transmission
23. Forward transmission
24. Cargo hooks and carriage
25. APU
26. All bellcranks and connecting links.
32. Bell crank supports, forward and aft sides of sta 482, and left side at BL 20
33. Forward and aft rotor heads
34. Forward and aft swashplates
30. Aft vertical shaft
31. Aft transmission
32. Battery
33. All electronic equipment from radio racks and pedestal

REMOVAL OF EQUIPMENT - continued

34. Fire extinguisher bottles and squibs
35. Remove the following antennas, prior to cleaning:
    GPS Antenna
    Glideslope Antenna
    VOR/LOC Antenna
    Doppler Antenna
    Sense Antenna
    Loop Antenna
    Radar Altimeter Antennas
    FM Homing Antenna
    Marker Beacon Antenna
    VHF AM/FM Antenna (Top)
    HF ARC-199/220 Antenna
    IFF Antenna (nose)
    IFF Antenna (ramp)
    VHF AM/FM Antenna (Bottom)
    Radar Detection Antennas (FWD)
    Radar Detection Antennas (AFT)
    Countermeasures Antennas

STRUCTURAL DESCRIPTION

Prior to performing the PSA, evaluation personnel shall become familiar with the structural configuration of the aircraft per TM 55-1520-240-23 series manuals.

ATTACHING HARDWARE

Inspect all rivets and fasteners for proper installation and security. All unserviceable rivets and fasteners shall be identified and replaced. All clamps securing tubing and wiring bundles shall be removed for inspection purposes and replaced as required.

STRUCTURAL ALIGNMENT

All aircraft, as a minimum, will receive an alignment IAW WP 0148 00 using alignment fixture, PN 114G1160-2, during aircraft reassembly. If aircraft records indicate an out of alignment condition, a partial alignment check shall be performed by the Depot/Contractor before the PSA to assist in developing the scope of repair work.

Crash damaged aircraft, aircraft that have experienced a hard landing, or aircraft undergoing extensive airframe repair may require placement in an appropriate airframe structural repair fixture to assist in repair. The fixture consists of the following components:

1. Aft Pylon Fixture Drawing Number LJ114S0400-1
2. Cockpit Section Fixture Drawing Number MIT144S0100-1
3. Aft Fuselage Fixture Drawing Number 2MIT114S0300-1
4. Center Cabin Fixture Drawing Number MIT114S0200-1

GENERAL DAMAGE LIMITS FOR AIRFRAME STRUCTURAL REPAIRS

Damage Classification Definitions

Structural damage is classified as minor or major.

1. Minor damage is that which can be repaired by burnishing or in some cases does not require repair.
2. Major damage is that which is serious enough that a patch, insertion, or part replacement is required.

Repair Limits

1. Minor dents in plain and formed sheet metal must be smooth and free from cracks. Smooth dents in aluminum alloy skins (0.020, 0.025, 0.032 thick) shall not exceed 2.00-inch diameter. Dent should be closely examined using a five power (5x) minimum magnifying device to insure no cracks. The total number of dents allowed must not exceed one (1) per square foot of skin panel and the minimum spacing (edge of dent to edge of dent) must be at least equal to the diameter of the larger dent. Example: A skin panel measuring 40-inch x 70-inch equals 19.44 square feet or a maximum allowable 19 minor dents. Refer to Table 1 for maximum allowable dent criteria.

Table 1. Allowable Minor Dent Criteria

DENT DIAMETER	SKIN THICKNESS – Note D		
	0.020	0.025	0.032
	MAXIMUM DENT DEPTH		
0.375	0.006	0.005	0.004
0.500	0.011	0.009	0.007
0.625	0.018	0.014	0.011
0.750	0.025	0.020	0.016
0.875	0.035	0.027	0.022
1.000	0.044	0.035	0.028
1.125	0.057	0.045	0.036
1.250	0.069	0.055	0.043
1.375	0.086	0.067	0.054
1.500	0.100	0.080	0.062
1.625	0.120	0.094	0.075
1.750	0.135	0.108	0.085
1.875	0.159	0.125	0.100
2.000	0.177	0.142	0.111

NOTES

A. Measure the dent diameter and depth and determine the thickness of the dented skin.
B. For irregularly shaped dents, use the average of the long and short dimensions as the diameter of the dent.
C. Use the diameter that is closest to, but not greater than, the measured diameter and determine the maximum dent depth for the skin thickness.
D. Minor dents in skins 0.040 thick require engineering evaluation for acceptability.

2. All dents exceeding limits for minor dents are classified as major and must be repaired by patching, insertion, or replacement. Dented extrusions used as fittings and control supports must be replaced.

Repair Limits – continued

3. Minor nicks, scratches and chafing which can be burnished out of the metal surface, excluding radii, without removing more than ten percent of the original metal thickness are considered minor. Nicks and scratches in a radius can be burnished to a depth equal to 5 percent of the thinner section which is joined by the radius.
4. All nicks, scratches and chafing exceeding the above limitations are major and must be repaired by patching, insertion, or part replacement. Major nicks, scratches, and chafing on forgings, castings, fittings, and support brackets require replacement unless special limits are documented for a specific part.
5. All cracks in sheet metal and rolled and extruded shapes must be repaired by removing the cracked material and making a patch or insertion repair. Part replacement should be used where it is cost effective or where the repairs would be unsightly. Cracked forgings and castings must be replaced.
6. Large area corrosion which can be completely removed without removing over five percent of the original thickness is classified as minor. When the part exhibits large area corrosion on both sides of an area, the total reduction of the original metal thickness is five percent. Corrosion exceeding these limits shall be repaired by patching, insertion, or parts replacement.
7. Isolated spots of corrosion which have a maximum major spot diameter of 2 1/2 -inches or 1/2 of the least dimension open area of skin or web, whichever is less, can be completely removed provided no more than ten percent of the original metal thickness is removed. Spots must be separated by 5-inches of sound, unrepaired, metal.
8. When the corroded spot is on a leg or web of an angle, zee channel, etc., the spot must be completely burnished out. Up to a maximum of ten percent of the original metal thickness may be removed. When the spot extends across two or more elements of a cross section, i.e., both legs of an angle, a leg and web of a channel, the spot must be completely burnished out. Up to a maximum of five percent of the original metal thickness may be removed.

Rivets

1. Loose rivets - Replace all loose rivets.

2. Missing rivets - Replace all missing rivets.

3. Sheared rivets - Determine reason rivets sheared and conduct search for hidden damage. Repair any hidden damage and replace all sheared rivets.

Tubing Assemblies

Inspection limits for tubing assemblies are shown in Table 2. Inspect all clamps IAW TM 1-1500-204-23 Series and replace as required.

Hose Assemblies

Inspection limits for hose assemblies are shown in Table 3. Inspect all clamps IAW TM 1-1500-204-23 Series and replace as required.

Electrical Wiring

Inspection limits for electrical wiring (AC and DC Systems) are shown in Table 4. Inspect all clamps IAW TM 1-1500-204-23 Series and replace as required.

Electrical Components

Inspection limits for relays, rheostats, switches, circuit breakers, fuses, plugs, connectors, receptacles, shunts, and shock mounts are shown in Table 5.

Control Rods, Tube Assemblies, and Connector Links

Inspection limits for control rods, tube assemblies, and connector links are shown in Table 6.

ACCEPTANCE OF REPAIRS

Replace all repairs that do not meet the criteria of this DMWR (ie, type and thickness of repair material). Only non-standard field repairs require replacement. Over-strength repairs can remain provided they are neat in appearance and meet the minimum requirements of this DMWR. The presence of temporary repairs preformed by field maintenance organizations is a factor that influences the decision to return an aircraft for depot maintenance. In order that they may be distinguished from temporary repairs, permanently label approved, nonstandard repairs to read “Nonstd Rep Auth By: (approving document identifier)”. Affix the label on or near the repair in such a manner that it can be viewed during access for routine maintenance. Do not affix labels to the aircraft exterior. The provisions of this paragraph only apply to the following structures:

1. Fuel Pods
2. Cabin Door Frame
3. Cockpit Section Bulkheads and Fittings, sta 95 and sta 120
4. Cabin Section Frame and Beams, sta 160 to sta 440
5. Combining Transmission Mount Beams and Fittings
6. Frames and Beams, sta 482, including Engine Mounts
7. Frames, sta 502
8. Frames and Bulkheads, sta 534
9. Torque Deck, WL 72
10. Aft Transmission Mount Beams
11. Forward Transmission Mount Beams

MAINTENANCE ENGINEERING CALL (MEC) - A MEC is a request for clarification of a repair procedure or a request for a one time deviation from standard repair procedures. It is specific to an aircraft tail number and/or component/part, serial number. Should questions arise concerning certain repairs, the Depot/Contractor should submit a MEC to the following address:

AMRDEC,AED, Maintenance Engineering Division
AMSAM-MMC-AV-CCA
308 Crecy Street, BLDG 131, Mail Stop 55
Corpus Christi, TX 78419-5260

NOTE

Corpus Christi Army Depot (CCAD) will submit MEC’s using the Depot unique system and Contractor will submit MEC’s via e-mail to the following address: amsam-mmc-av-cc@amcom-cc.army.mil

The following format will be used:

Aircraft Type:
Aircraft Serial Number:
Aircraft System:
Part Number, Serial Number, Nomenclature
Technical Publication(s)
Contractor Contact Person(s), telephone number, e-mail address

Problem:
Provide a detailed description of the problem. If possible, attach photos of damaged area. Provide location (i.e. sta, WL and BL) and size/depth of damage.

USE OF TABLE 2 AND PSA WORKSHEETS

Table 2. Pre-Shop Analysis Work Package List

The information contained in Table 2 represents the minimum requirements for performing a PSA on the aircraft. This information is in a logical sequence, which shall be maintained when information is placed on an overhaul facilities internally designed worksheets.

NOTE

In addition to those items specified in the PSA, the entire aircraft structure must be inspected for cracks, corrosion, nicks, scratches, dents, bent structure, tears, wrinkled skin, stretched skin, etc.

PSA Worksheets

Overhaul facility personnel will provide space on their PSA Worksheet for recording the condition of a particular inspected item such as: bent, buckled, burned, chipped, corroded, cracked, delaminated, missing, deteriorated, punctured, worn excessively, no damage, etc. Additionally, provisions shall be provided on this worksheet to record disposition directions, or actions required as a result of the conditions noted during the PSA. Disposition/actions/ directions should include, as a minimum, such phrases as no action, replace, do not remove, remove, clean, reinstall, repair, strip, splice, incorporate, complied with, not complied with, functional tests, etc.

QUALITY ASSURANCE DATA

Information and data collected shall be considered as objective evidence for Quality Assurance purposes and will be maintained accordingly.

NONDESTRUCTIVE INSPECTION METHODS - Nondestructive inspection requirements are located in WP 0147 00.

TUBING INSPECTION LIMITS

Table 2. Inspection Limits - All Tubing

INSPECTION LIMITS: ALL TUBING	REPAIR TASK
Dents – Smooth dents, free from sharp edges, nicks and scratches, in straight sections of tubing are permitted to diameters of 20 percent of tube diameter and depths up to 15 percent of dent diameter.	Do not repair
Dents in excess of above limits.	No repair – replace TM 55-1520-240-23 Series TM 1-1500-204-23 Series
Dents, nicks, and scratches in bend radius of tube are not allowed.	No repair – replace TM 55-1520-240-23 Series TM 1-1500-204-23 Series
Damage in excess of above limits.	No repair – replace TM 55-1520-240-23 Series TM 1-1500-204-23 Series
Nicks and scratches in straight sections of tubes may be burnished to maximum depth of 15 percent of tube wall thickness.	Repair per TM 1-1500-204-23 Series TM 55-1520-240-23 Series

HOSE INSPECTION LIMITS

NOTE

The replacement hose shall be a duplicate of hose removed as to length, inner diameter, outer diameter, and contour (except as directed).

Table 3. Inspection Limits - All Hose Assemblies

INSPECTION LIMITS: ALL HOSES	REPAIR TASK
Deterioration – Replace all hose or hose assemblies showing signs of deterioration indicated by separation of rubber cover or braid from inner tube, cracks, hardening, and lack of flexibility.	No repair – replace TM 55-1520-240-23 Series TM 1-1500-204-23 Series
Cold flow – Replace hose or hose assemblies showing signs of excessive cold flow indicated by deep permanent impressions and cracks in hose or cover produced by pressure of hose clamps and head of nipple chafing.	No repair – replace TM 55-1520-240-23 Series TM 1-1500-204-23 Series
Weather checking - Replace hose or hose assemblies with weather checking that is deep or wide enough to expose fabric.	No repair – replace TM 1-1500-204-23 TM 55-1520-240-23 Series
If two or more broken wires per plait, or more than six broken wires per lineal foot are found, or any broken wire in a position where kinking is suspected, the hose should be scrapped. Crossed-over reinforcement wires shall not be cause for scrapping. This applies to all external wire braid covered hose of all pressure ranges.	No repair – replace TM 55-1520-240-23 Series TM 1-1500-204-23
Hose twisted, insufficient slack, bent radii, or indication of leakage.	No repair – replace TM 55-1520-240-23 Series TM 1-1500-204-23 Series
Evidence of abrasion, corrosion, kinking, distortion, bulging, or sharp bends, including outer cover and sockets.	No repair – replace TM 55-1520-240-23 Series TM 1-1500-204-23 Series

ELECTRICAL WIRING INSPECTION LIMITS

NOTE

Functional test of the individual electrical circuits and components shall be conducted after installation, repair, or replacement of equipment.

Table 4. Inspection Limits – All Electrical Wiring (AC and DC Systems)

INSPECTION LIMITS:	**REPAIR TASK**
Improper routing, loose, missing, or improperly installed hardware.	Repair per TM 55-1500-323-24 TM 55-1520-240-23 Series TM 1-1500-204-23 Series
Fraying, chafing, presence of corrosion, deterioration, or overheating.	Repair per TM 55-1500-323-24 TM 55-1520-240-23 Series TM 1-1500-204-23 Series Refer to WP 0077 00 for corrosion treatment
Connector plugs for free pins, coaxial cable shielding for breakdown, environmental seals, and lockwired separately.	Repair per TM 55-1500-323-24 TM 55-1520-240-23 Series TM 1-1500-204-23 Series (See Table 5 Inspection Limits All Electrical Components)

ELECTRICAL COMPONENT INSPECTION LIMITS

NOTE

All electrical switches, circuit breakers, fuses and associated circuitry will be inspected for proper operation, adequacy of support, protection, and general condition throughout the aircraft.

Table 5. Inspection Limits – All Electrical Components

INSPECTION LIMITS:	**REPAIR TASK**
Relays for loose connections, broken contact pins or terminals, damaged case or insulation between contact pins, corrosion, pits, and discoloration Rheostats for security, corrosion, burned element, damaged wiper, cracks, and correct resistance. Switches for weak detents, security, corrosion, and continuity in both on and off positions.	Refer to TM 1-1500-204-23 Series TM 55-1520-240-23 Series TM 55-1500-323-24
Fuse and fuse holders for presence of corrosion and overheating.	No repair – replace corroded fuse. TM 1-1500-204-23 Series TM 55-1520-240-23 Series TM 55-1500-323-24 Clean fuse holders per WP 0077 00. If overheating is found, check for correct rating of fuse circuit breaker.
Circuit breakers for security, corrosion, actuation for circuit power on and power off, and reset retentions.	No repair – replace TM 1-1500-204-23 Series TM 55-1500-323-24 TM 55-1520-240-23 Series
Plugs, connectors, receptacles, and pin filtered adapters for security, contact corrosion, damaged contacts, faulty contacts, and insert cracks.	No repair – replace TM 1-1500-204-23 Series TM 55-1500-323-24 TM 55-1520-240-23 Series
Shunts for corrosion, security, deep scratches, and discoloration.	No repair – replace TM 1-1500-204-23 Series TM 55-1500-323-24 TM 55-1520-240-23 Series
Shock mounts for retention, security, cracks, distortion, corrosion, and bonding.	No repair – replace TM 1-1500-204-23 Series TM 55-1500-323-24 TM 55-1520-240-23 Series
Wiring cables and bundles, for proper support ties, and identification of newly installed wiring.	Refer to TM-55-1500-323-24 TM 55-1520-240-23 Series TM 1-1500-204-23 Series

FLIGHT CONTROL COMPONENTS INSPECTION LIMITS

Table 6. Inspection Limits For Control Rods, Tube Assemblies and Connecting Links

INSPECTION LIMITS	REPAIR TASK
Nicks and scratches on rods – 10 percent of wall thickness.	Refer to TM 1-1500-204-23 Series TM 55-1520-240-23 Series
Nicks, and scratches on end fitting – 10 percent of material thickness or .040 inches, whichever is less	Refer to TM 1-1500-204-23 Series TM 55-1520-240-23 Series
Dents – Divide connecting link tube into three equal sections. Check tube for dents in middle third. Check tube for dents in other two thirds.	Refer to TM 1-1500-204-23 Series TM 55-1520-240-23 Series
Visually check for out-of- roundness – If an out-of-round condition is found, determine the extent of this condition. Use calipers at out-of-round location to measure diameter. Move calipers 90 percent around link and repeat measurement. On tubes less than 2 inches in diameter, an out-of-round condition of 0.010 inch is permissible in middle one-third of tube. On tubes greater than 2 inches in diameter, an out-of-round condition of 0.015 inch is permissible. On any diameter tube, an out-of-round condition of 0.015 inch is permissible in each of end one-third portions of tube.	Refer to TM 1-1500-204-23 Series TM 55-1520-240-23 Series
Corrosion – 5 percent of wall thickness after removal. 10 percent of thickness of rod ends or fittings or 0.040 inch, whichever is less.	Refer to TM 1-1500-204-23 Series TM 55-1520-240-23 Series
Rod ends for looseness in rod – no looseness allowed.	Refer to TM 1-1500-204-23 Series TM 55-1520-240-23 Series
Check nuts on the adjustable end of the connecting link for looseness – If the check nut on the adjustable end of the connecting link is loose, install an internal star washer under the check nut as follows: FOR CHECK NUT – USE INTERNAL WASHER AN316-6R – MS35333-42 AN316-7R – MS35333-43 AN316-8R – MS35333-44 **NOTE** While torquing check nuts, make sure the rod of the tube nearest the check nut being torqued does not turn. Torque both check nuts evenly, 800 to 1100 in. lb. for P/N 114R3411 and 1050 to 1300 in. lb. for P/N 114R3611. Use additional torque to align cotter pin holes.	Refer to TM 1-1500-204-23 Series TM 55-1520-240-23 Series

FLIGHT CONTROL COMPONENTS INSPECTION LIMITS - continued

Table 6. Inspection Limits For Control Rods, Tube Assemblies and Connecting Links - continued

INSPECTION LIMITS	REPAIR TASK
Bearing for looseness. Dry type bearings 0.007 inch radial play max. 0.10 inch axial play max. Antifriction bearings 0.004 inch radial play max. Axial play on antifriction bearings can vary. It is not a satisfactory criterion for checking serviceability of antifriction bearings.	Refer to TM 55-1500-322-24 TM 55-1520-240-23 Series TM 1-1500-204-23 Series
Bolts and bushings used at moving connections - Max wear, bolt shank minimum diameter is no less than 0.001 inch below minimum production diameter unless otherwise directed. Max wear bushing hole maximum diameter no more than 0.001 inch above maximum production diameter.	Refer to TM 1-1500-204-23 Series TM 55-1520-240-23 Series

END OF WORK PACKAGE

DEPOT MAINTENANCE WORK REQUIREMENT
CH-47D HELICOPTER
NOSE SECTION EXTERIOR

INITIAL SETUP

Test Equipment:
As Required

Tools and Special Tools:
As Required

Material/Parts:
As Required

Personnel Required:
Examiner (PSA)

References:
TM 55-1520-240-23 Series
TM 1-1500-204-23 Series
WP 0059 00
WP 0077 00
WP 0080 00
WP 0082 00
WP 0086 00
WP 0087 00
WP 0097 00
WP 0128 00

Equipment Conditions:
As Required

Special Environmental Condition:
As Required

SCOPE

The nose section exterior consists of a nose compartment door, nose skins, side skins, stringers, crown skins and stringers, crown forward skin and stiffeners, windshield wiper system, crew doors, escape hatch, cabin door, forward pylon fixed and hinged fairing (work platform), forward weather protective shield, and glare shield. The nose compartment door consists of an outer and inner skin made of aluminum alloy, spot-welded together. The exterior skin sta 21 to sta 160, WL minus 40 to WL plus 94, are made of various aluminum alloys. The stringers, sta 42 to sta 160, WL minus 40 to WL plus 94, are formed or extruded sections riveted longitudinally to the bottom sides, and crown panels of the structure. The windshield wiper system consists of a motor, a five-position switch, resistors in the overhead panel, two wipers and blades, drive shafts, and actuators. The 28-volt direct current electric motor is mounted above the center windshield behind the overhead panel. It provides power to drive the wipers. Flexible drive shafts connect the motor and actuators. The actuator converts the fast rotary action of the motor to a slow back and forth motion to move the wipers. They are located inside the cockpit above the windshields. The pilot and copilot jettison doors are located on each side of the cockpit. The door consists of a door assembly, two fixed window panel assemblies, and a sliding window panel assembly. The window panels are made of acrylic plastic. The RH cabin upper and lower doors are spot welded assemblies made of aluminum alloy skin welded to an inner pan, hinges, latches, and aluminum angles. The escape hatch consists of a spot welded assembly, a window pane, seal, and seal filler. The welded assembly is made of aluminum outer skin spot welded to an inner pan and doublers. The window is made of acrylic plastic. The forward pylon fixed fairing has a forward and aft section. The forward weather protective cover is made of sandwich honeycomb and aluminum stiffeners. The forward section consists of inner and outer skins of aluminum and formers attached between the skins. The aft section consists of side and top skins made with laminated plastic-impregnated glass cloth. Formers and stiffeners are attached to the skins and maintain the contour in the aft section. The hinged fairing is a sandwiched construction. The glare shield is made of thermoplastic. Refer to WP 0080 00 for sealing requirements.

INSPECTION REQUIREMENTS

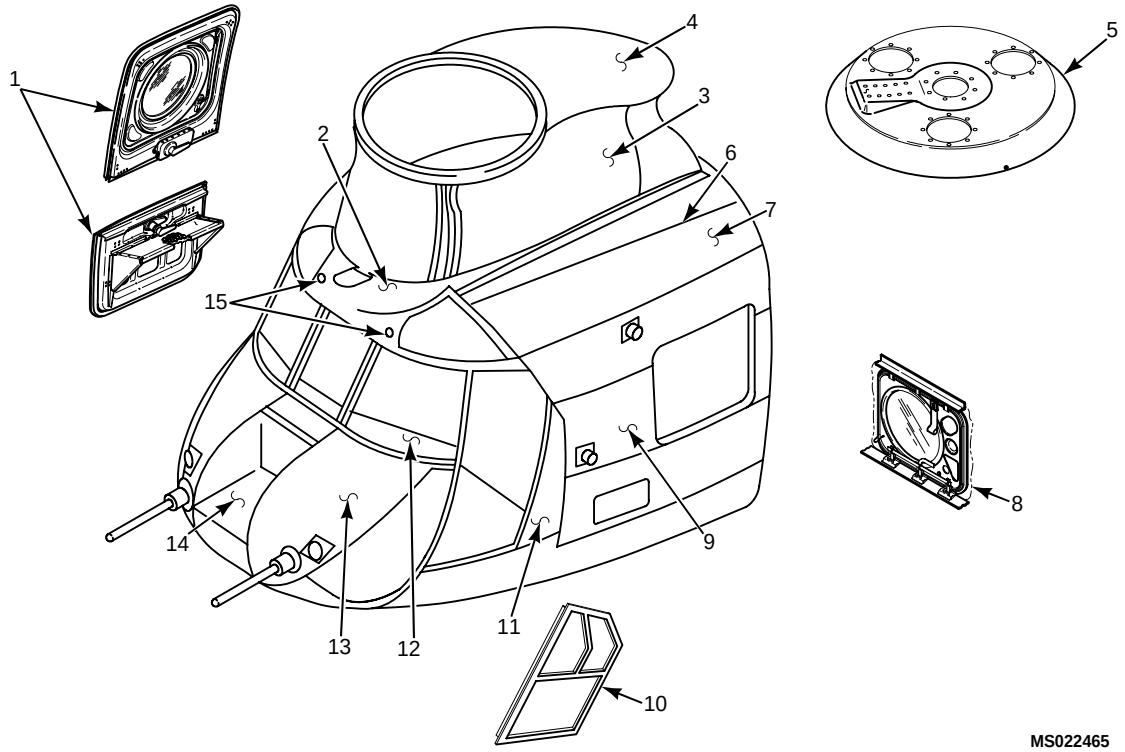


Figure 1. Nose Section Exterior

NOTE

The items in Figure 1 correspond to the respective item numbers in the following INSPECTION REQUIREMENTS.

1. Cabin Doors
   a. Inspect doors for cracks (no cracks allowed), gouges, scratches, damage, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Inspect door latches, hinges, brackets, and attaching hardware for damage or evidence of corrosion.
   d. Inspect door seals for cuts, breaks, and deterioration.
   e. Inspect window pane for cracks, crazing, pitting, and scratches.
   f. Minor damage after burnishing shall not exceed 10% of the material thickness.
   g. Refer to WP 0097 00 for accept/reject criteria and repair procedures.
   h. Refer to WP 0077 00 for corrosion removal and treatment.

2. Nose Forward Crown Skin
   a. Inspect for dents, holes, cracks (no cracks allowed), gouges, scratches, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Minor damage after burnishing shall not exceed 10% of the material thickness.
   d. Refer to WP 0097 00 for accept/ reject criteria and repair procedures.
   e. Refer to WP 0077 00 for corrosion removal and treatment.

INSPECTION REQUIREMENTS – continued

3. Hinged Platform (LH and RH work platform)
   a. Inspect for cracks (no cracks allowed), delamination, gouges, dents, scratches, holes, or evidence of corrosion.
   b. Inspect hinges, latches, cables, brackets, and attaching hardware for damage or evidence of corrosion.
   c. Inspect seals for cuts, breaks and deterioration.
   d. Refer to WP 0097 00 for accept/reject criteria and repair procedures.
   e. Refer to WP 0077 00 for corrosion removal and treatment.

4. Forward Pylon Fairing
   a. Inspect for dents, cracks (no cracks allowed), gouges, scratches, holes, or evidence of corrosion.
   b. Minor damage after burnishing shall not exceed 10% of the material thickness.
   c. Inspect for loose, missing, or damaged attaching hardware.
   d. Refer to WP 0097 00 for accept/reject criteria and repairs.
   e. Refer to WP 0077 00 for corrosion removal and treatment.

5. Weather Protective Cover, Forward
   a. Inspect for dents, cracks (no cracks allowed), gouges, nicks, holes, delamination, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to WP 0097 00 for accept/reject criteria and repair procedures.
   d. Refer to WP 0077 00 for corrosion removal and treatment.

6. Nose Stringers sta 85 to sta 160, WL minus 40 to WL plus 46 (LH and RH)
   a. Inspect for dents, cracks (no cracks allowed), nicks, scratches, gouges, holes, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Minor damage after burnishing shall not exceed 10% of thickness of thinnest leg of material.
   d. Refer to WP 0087 00 for accept/ reject criteria and repair procedures.
   e. Refer to WP 0077 00 for corrosion removal and treatment.

7. Nose Crown Skins sta 85 to sta 160, WL plus 46 to WL plus 52 (LH and RH)
   a. Inspect for dents, holes, cracks (no cracks allowed), gouges, nicks, scratches, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Minor damage after burnishing shall not exceed 10% of the material thickness.
   d. Refer to WP 0086 00 for accept/ reject criteria and repair procedures.
   e. Refer to WP 0077 00 for corrosion removal and treatment.

8. Escape Hatch
   a. Inspect hatch for cracks (no cracks allowed), gouges, scratches, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Inspect hatch latches, brackets, and attaching hardware for damage or evidence of corrosion.
   d. Inspect seals for cuts, breaks, or deterioration.
   e. Inspect window pane for cracks, crazing, pitting and scratches.
   f. Minor damage after burnishing shall not exceed 10% of the material thickness.
   g. Refer to WP 0097 00 for accept/reject criteria and repair procedures.
   h. Refer to WP 0077 00 for corrosion removal and treatment.

INSPECTION REQUIREMENTS - continued

9. Nose Side Skin sta 95 to sta 160, WL minus 40 to WL plus 46 (LH and RH)
   a. Inspect for dents, holes, cracks (no cracks allowed), gouges, scratches, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Minor damage after burnishing shall not exceed 10% of the material thickness.
   d. Refer to WP 0086 00 for accept/ reject criteria and repair procedures.
   e. Refer to WP 0077 00 for corrosion removal and treatment.

10. Pilot And Copilot Doors
   a. Inspect for dents, cracks (no cracks allowed), gouges, scratches, or evidence of corrosion.
   b. Inspect door latches, hinges, and brackets and attaching hardware for damage.
   c. Minor damage after burnishing shall not exceed 10% of the material thickness.
   d. Refer to WP 0097 00 for accept/reject criteria and repair procedures.
   e. Refer to WP 0077 00 for corrosion removal and treatment.

11. Nose Side Skins
   a. Inspect for dents, holes, cracks (no cracks allowed), gouges, scratches, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Minor damage after burnishing shall not exceed 10% of the material thickness.
   d. Refer to WP 0086 00 for accept/reject criteria and repair procedures.
   e. Refer to WP 0077 00 for corrosion removal and treatment.

12. Glare Shield
   a. Inspect for cracks (no cracks allowed), dents, gouges, or scratches.
   b. Inspect for loose, missing, or damaged hardware.
   c. Refer to WP 0082 00 for accept/reject criteria and repair procedures.

13. Nose Skin
   a. Inspect for nicks, scratches, cracks (no cracks allowed), dents, holes, gouges, buckling and canning, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Any minor damage after burnishing shall not exceed 10% of the material thickness.
   d. Refer to WP 0086 00 for accept/reject criteria and repair procedures.
   e. Refer to WP 0077 00 for corrosion removal and treatment.

14. Nose Compartment Door
   a. Inspect for dents, holes, cracks (no cracks allowed), gouges, scratches, or evidence of corrosion.
   b. Inspect door seal for cuts, breaks, and deterioration.
   c. Inspect hinges, struts, latches, brackets, and attaching hardware for damage or evidence of corrosion.
   d. Check for loose, missing, or damaged attaching hardware.
   e. Minor damage after burnishing shall not exceed 10% of the material thickness.
   f. Refer to WP 0097 00 for accept/reject criteria and repair procedures.
   g. Refer to WP 0077 00 for corrosion removal and treatment.

INSPECTION REQUIREMENTS - continued

15. Windshield Wiper System
    Refer to WP 0059 00 for inspection, accept/reject criteria.

END OF WORK PACKAGE

DEPOT MAINTENANCE WORK REQUIREMENT
CH-47D HELICOPTER
COCKPIT ENCLOSURE

INITIAL SETUP

Test Equipment:
As Required

Tools and Special Tools:
As Required

Material/Parts:
As Required

Personnel Required:
Examiner (PSA)

References:
DMWR 55-1560-275
TM 1-1500-204-23 Series
TM 55-1520-240-23 Series
WP 0004 00
WP 0077 00
WP 0080 00
WP 0091 00
WP 0098 00

Equipment Conditions:
As Required

Special Environmental Condition:
As Required

SCOPE

The cockpit enclosure consists of three sections of frames, three windshield assemblies, four panel assemblies, and a door assembly. The upper framing consists of three skins, riveted together, and is supported by a deck at WL plus 48 and formed channels attached vertically. The deck at WL plus 48 is a beaded web attached at sta 95 (canted) and to a stiffener, which maintains the contour of the upper framing in the forward area. The forward and side framing consists of forward, center, and aft support posts and upper and inner sill assemblies. The forward posts are made of rectangular aluminum alloy tubing. The center posts are made of formed channels riveted together, flange-to flange, to form a box section. The aft posts are single formed channels. The upper sill is a formed angle and has an extruded cap attached along the inboard edge. The inner sill consists of a frame and a shield, riveted together. The lower frame consists of a former assembly, a bulkhead, and a box assembly. The former assembly consists of two formed channels, one located on each side of the fuselage centerline. The bulkhead consists of a web bonded by extruded caps and is installed within the former assembly. The box assembly is similarly located within the former assembly and consists of a bottom and two side webs. Extruded caps join the webs. A typical windshield assembly is made of laminated plastic, which can be heated electrically by embedded elements. Certain helicopters may be equipped with laminated glass-plastic, which can be heated electrically by embedded elements. A typical window panel assembly, located in the crown and lower framework, consists of a section made of heat-resistant acrylic, reinforced along the edges with 20 ply, laminated acrylic resin impregnated glass cloth. Window panels in the lower enclosure contain cut outs for the AFCS yaw ports. Refer to WP 0080 00 for sealing requirements.

INSPECTION REQUIREMENTS

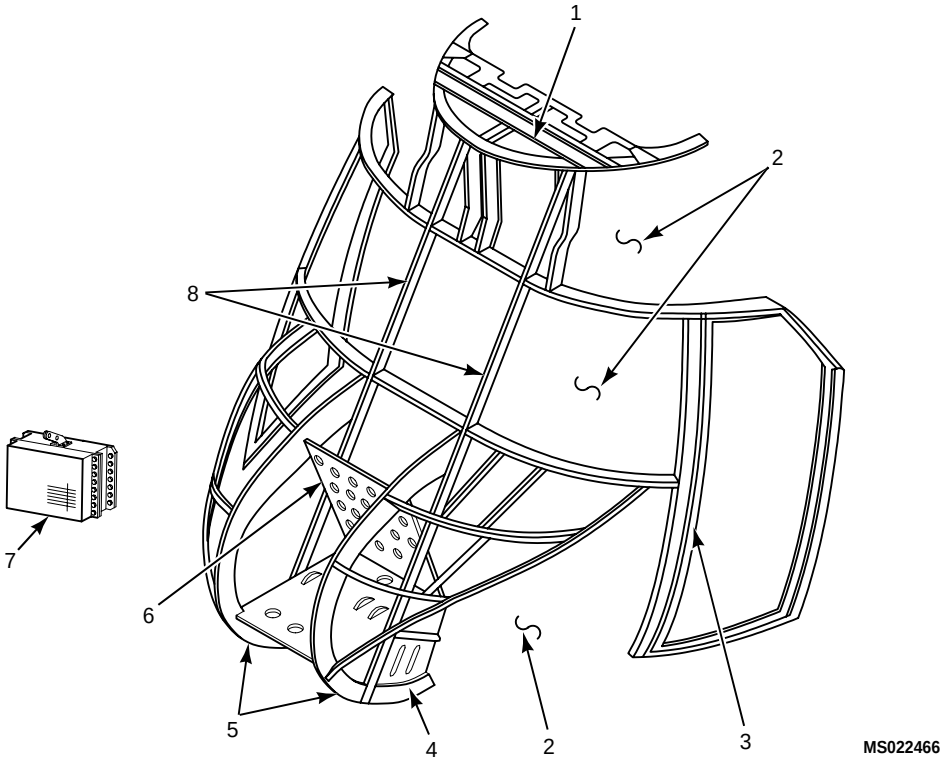


Figure 1. Cockpit Enclosure

NOTE

The items in Figure 1 correspond to the respective item numbers in the following INSPECTION REQUIREMENTS.

1. Upper Framing and Deck, WL plus 48
   a. Inspect for dents, scratches, cracks (no cracks allowed), nicks, holes, gouges, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to WP 0098 00 for accept/reject criteria and repair procedures.
   d. Refer to WP 0077 00 for corrosion removal and treatment.

2. Windshields, Overhead and Lower Window Panels
   a. Inspect for chips, cracks, or crazing (no cracks or crazing allowed), scratches, pitting, blemishes or discolorations.
   b. Inspect for loose, missing, or corroded screws bordering the windows.
   c. Inspect foam seal tape for cuts, voids, deterioration, or cracks.
   d. Inspect for evidence of leaking.
   e. Inspect free-air thermometer probe for security, evidence of leaking, or evidence of corrosion.
   f. Refer to WP 0091 00 for accept/reject criteria and repair procedures.
   g. Refer to WP 0077 00 for corrosion removal and treatment.

INSPECTION REQUIREMENTS - continued

3. Pilot and Copilot Door Frames
   a. Inspect for dents, scratches, cracks, (no cracks allowed), nicks, gouges, holes, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to WP 0098 00 for accept/reject criteria and repair procedures.
   d. Refer to WP 0077 00 for corrosion removal and treatment.

4. Box Assembly
   a. Inspect for dents, scratches, cracks (no cracks allowed), nicks, gouges, holes, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to WP 0098 00 for accept/reject criteria and repair procedures.
   d. Refer to WP 0077 00 for corrosion removal and treatment.

5. Nose Door Frame Assemblies
   a. Inspect for dents, scratches, cracks (no cracks allowed), nicks, gouges, holes, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to WP 0098 00 for accept/reject criteria and repair procedures.
   d. Refer to WP 0077 00 for corrosion removal and treatment.

6. Bulkhead Assembly
   a. Inspect for dents, scratches, cracks (no cracks allowed), nicks, gouges, holes, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to WP 0098 00 for accept/reject criteria and repair procedures.
   d. Refer to WP 0077 00 for corrosion removal and treatment.

7. Nose Dynamic Absorber
   a. Inspect exterior covers for cracks (no cracks allowed), dents, scratches, and corrosion.
   b. Refer to TM 55-1520-240-23 series for repair.
   c. Refer to DMWR 55-1560-275 for repair/overhaul.
   d. Refer to WP 0077 00 for corrosion removal and treatment.

8. Windshield Post and Frames
   a. Inspect for dents, scratches, cracks (no cracks allowed), nicks, gouges, holes, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to WP 0098 00 for accept/reject criteria and repair procedures.
   d. Refer to WP 0077 00 for corrosion removal and treatment.

9. Glare Shield
   Refer to WP 0004 00 for inspection criteria.

END OF WORK PACKAGE

DEPOT MAINTENANCE WORK REQUIREMENT
CH-47D HELICOPTER
NOSE STRUCTURE

INITIAL SETUP

Test Equipment:
As Required

Tools and Special Tools:
As Required

Material/Parts:
As Required

Personnel Required:
Examiner (PSA)

References:
TM 1-1500-204-23 Series
TM 55-1520-240-23 Series
WP 0077 00
WP 0099 00

Equipment Conditions:
As Required

Special Environmental Condition:
As Required

SCOPE

The nose structure, sta 21 to sta 51, consists of brackets, struts, formers, and stiffeners, which are made from aluminum sheet stock and aluminum alloy extrusions.

INSPECTION REQUIREMENTS

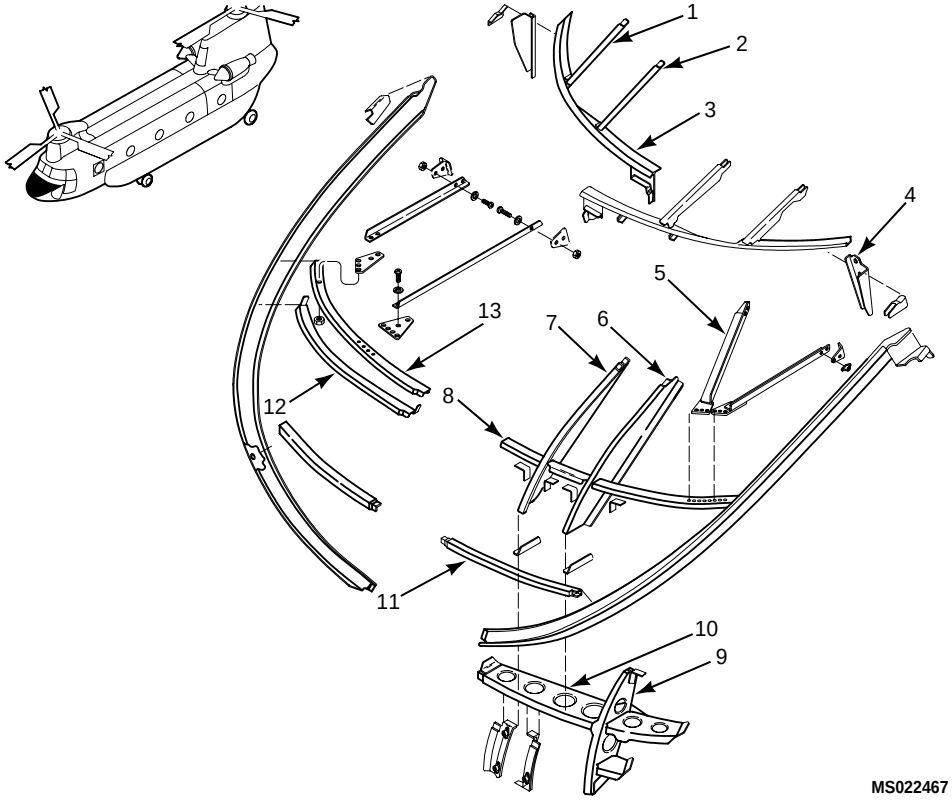


Figure 1. Nose Structure

INSPECTION REQUIREMENTS - continued

NOTE

The items in Figure 1 correspond to the respective item numbers in the following INSPECTION REQUIREMENTS.

1. Stiffeners (LH and RH) Aft Outboard
   a. Inspect for dents, scratches, cracks (no cracks allowed), nicks, gouges, holes, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to WP 0099 00 for accept/reject criteria and repair procedures.
   d. Refer to WP 0077 00 for corrosion removal and treatment.

2. Former (LH and RH) Aft Center
   a. Inspect for dents, scratches, cracks (no cracks allowed), nicks, gouges, holes, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to WP 0099 00 for accept/reject criteria and repair procedures.
   d. Refer to WP 0077 00 for corrosion removal and treatment.

3. Stiffeners (LH and RH) Aft
   a. Inspect for dents, scratches, cracks (no cracks allowed), nicks, gouges, holes, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to WP 0099 00 for accept/reject criteria and repair procedures.
   d. Refer to WP 0077 00 for corrosion removal and treatment.

4. Bracket (LH and RH) Aft
   a. Inspect for dents, scratches, cracks (no cracks allowed), nicks, gouges, holes, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to WP 0099 00 for accept/reject criteria and repair procedures.
   d. Refer to WP 0077 00 for corrosion removal and treatment.

5. Struts (LH and RH) Aft
   a. Inspect for dents, scratches, cracks (no cracks allowed), nicks, gouges, holes, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to WP 0099 00 for accept/reject criteria and repair procedures.
   d. Refer to WP 0077 00 for corrosion removal and treatment.

6. Former (LH and RH) Outboard
   a. Inspect for dents, scratches, cracks (no cracks allowed), nicks, gouges, holes, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to WP 0099 00 for accept/reject criteria and repairs.
   d. Refer to WP 0077 00 for corrosion removal and treatment.

INSPECTION REQUIREMENTS - continued

7. Former (LH and RH) Inboard
   a. Inspect for dents, scratches, cracks (no cracks allowed), nicks, gouges, holes, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to WP 0099 00 for accept/reject criteria and repair procedures.
   d. Refer to WP 0077 00 for corrosion removal and treatment.

8. Former (LH and RH) Center
   a. Inspect for dents, scratches, cracks (no cracks allowed), nicks, gouges, holes, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to WP 0099 00 for accept/reject criteria and repairs.
   d. Refer to WP 0077 00 for corrosion removal and treatment.

9. Former (LH and RH) Forward
   a. Inspect for dents, scratches, cracks (no cracks allowed), nicks, gouges, holes, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to WP 0099 00 for accept/reject criteria and repairs.
   d. Refer to WP 0077 00 for corrosion removal and treatment.

10. Former (LH and RH) Forward
   a. Inspect for dents, scratches, cracks (no cracks allowed), nicks, gouges, holes, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to WP 0099 00 for accept/reject criteria and repairs.
   d. Refer to WP 0077 00 for corrosion removal and treatment.

11. Stiffener (LH and RH) Forward.
   a. Inspect for dents, scratches, cracks (no cracks allowed), nicks, gouges, holes, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to WP 0099 00 for accept/reject criteria and repair procedures.
   d. Refer to WP 0077 00 for corrosion removal and treatment.

12. Stiffener (LH and RH) Forward
   a. Inspect for dents, scratches, cracks (no cracks allowed), nicks, gouges, holes, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to WP 0099 00 for accept/reject criteria and repair procedures.
   d. Refer to WP 0077 00 for corrosion removal and treatment.

13. Stiffeners (LH and RH) Forward
   a. Inspect for dents, scratches, cracks (no cracks allowed), nicks, gouges, holes, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to WP 0099 00 for accept/reject criteria and repair procedures.
   d. Refer to WP 0077 00 for corrosion removal and treatment.

END OF WORK PACKAGE

DEPOT MAINTENANCE WORK REQUIREMENT
CH-47D HELICOPTER
LOWER CONSOLE STRUCTURE

INITIAL SETUP

Test Equipment:
As Required

Tools and Special Tools:
As Required

Material/Parts:
As Required

Personnel Required:
Examiner (PSA)

References:
TM 55-1520-240-23 Series
TM 1-1500-204-23 Series
WP 0077 00
WP 0100 00

Equipment Conditions:
As Required

Special Environmental Condition:
As Required

SCOPE

The lower console consists of forward and aft side assemblies, aft web, web platform, top assembly, bottom web, pan assembly, beam support, and rail strip support, which are formed and extruded members made of aluminum sheet metal and aluminum alloy.

INSPECTION REQUIREMENTS

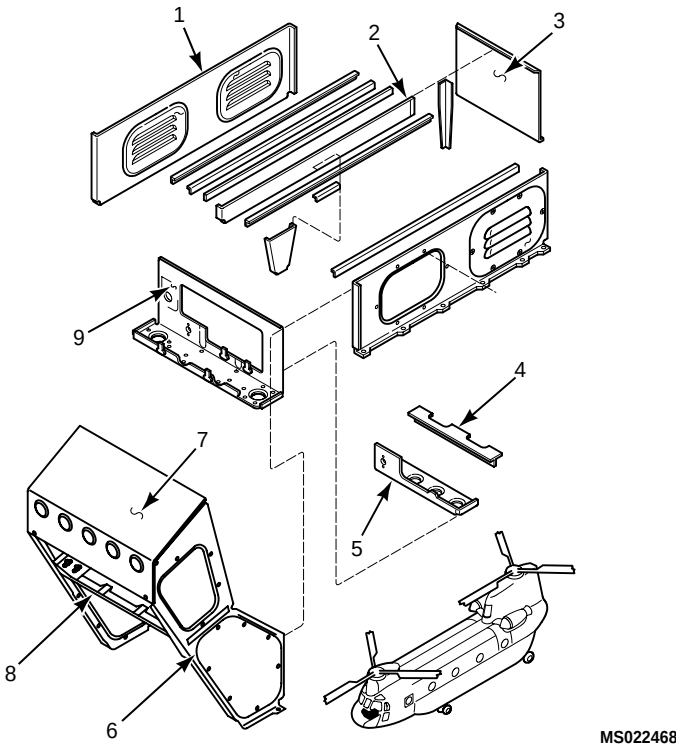


Figure 1. Lower Console Structure

INSPECTION REQUIREMENTS - continued

NOTE

The items in Figure 1 correspond to the respective item numbers in the following INSPECTION REQUIREMENTS.

1. Side Assemblies, LH and RH Aft
   a. Inspect for dents, scratches, cracks (no cracks allowed), nicks, gouges, holes, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to WP 0100 00 for accept/reject criteria and repair procedures.
   d. Refer to WP 0077 00 for corrosion removal and treatment.

2. Rail Strip Support
   a. Inspect for dents, scratches, cracks (no cracks allowed), nicks, gouges, holes, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to WP 0100 00 for accept/reject criteria and repair procedures.
   d. Refer to WP 0077 00 for corrosion removal and treatment.

3. Web Assembly Aft
   a. Inspect for dents, scratches, cracks (no cracks allowed), nicks, gouges, holes, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to WP 0100 00 for accept/reject criteria and repair procedures.
   d. Refer to WP 0077 00 for corrosion removal and treatment.

4. Beam Assembly
   a. Inspect for dents, scratches, cracks (no cracks allowed), nicks, gouges, holes, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to WP 0100 00 for accept/reject criteria and repair procedures.
   d. Refer to WP 0077 00 for corrosion removal and treatment.

5. Pan Assembly
   a. Inspect for dents, scratches, cracks (no cracks allowed), nicks, gouges, holes, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to WP 0100 00 for accept/reject criteria and repair procedures.
   d. Refer to WP 0077 00 for corrosion removal and treatment.

6. Side Assemblies (LH and RH) Forward
   a. Inspect for dents, scratches, cracks (no cracks allowed), nicks, gouges, holes, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to WP 0100 00 for accept/reject criteria and repair procedures.
   d. Refer to WP 0077 00 for corrosion removal and treatment.

INSPECTION REQUIREMENTS - continued

7. Top Web Assembly
   a. Inspect for dents, scratches, cracks (no cracks allowed), nicks, gouges, holes, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to WP 0100 00 for accept/reject criteria and repair procedures.
   d. Refer to WP 0077 00 for corrosion removal and treatment.

8. Forward Platform
   a. Inspect for dents, scratches, cracks (no cracks allowed), nicks, gouges, holes, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to WP 0100 00 for accept/reject criteria and repair procedures.
   d. Refer to WP 0077 00 for corrosion removal and treatment.

9. Bottom Web Assembly
   a. Inspect for dents, scratches, cracks (no cracks allowed), nicks, gouges, holes, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to WP 0100 00 for accept/reject criteria and repair procedures.
   d. Refer to WP 0077 00 for corrosion removal and treatment.

END OF WORK PACKAGE

DEPOT MAINTENANCE WORK REQUIREMENT
CH-47D HELICOPTER
NOSE TUB ASSEMBLY

INITIAL SETUP

Test Equipment:
As Required

Tools and Special Tools:
As Required

Material/Parts:
As Required

Personnel Required:
Examiner (PSA)

References:
TM 1-1500-204-23 Series
TM 55-1520-240-23 Series
DMWR 55-1560-275
WP 0077 00
WP 0080 00
WP 0083 00
WP 0086 00
WP 0088 00
WP 0101 00

Equipment Conditions:
As Required

Special Environmental Condition:
As Required

SCOPE

The nose tub assembly consists of six floor formers, exterior skin, sta 51 to sta 160, stringers, sta 51 to sta 160, and longerons L/H and R/H, WL minus 40, sta 95 to sta 160. The floor formers have webs reinforced with formed aluminum sheet metal or aluminum alloy extruded caps and stiffeners with the exception of sta 160, which contains a bonded honeycomb assembly. The longerons are aluminum extrusions. Refer to WP 0080 00 for sealing requirements.

INSPECTION REQUIREMENTS

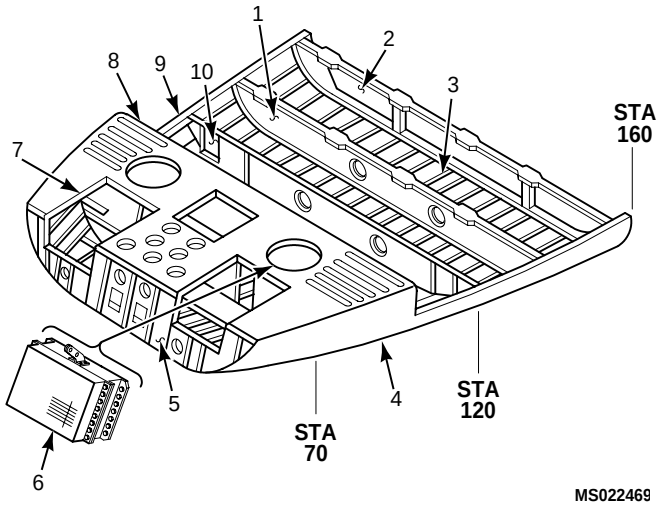


Figure 1. Nose Tub Assembly

INSPECTION REQUIREMENTS - continued

NOTE

The items in Figure 1 correspond to the respective item numbers in the following INSPECTION REQUIREMENTS.

1. Floor Former sta 140
   a. Inspect for dents, cracks, (no cracks allowed), nicks, gouges, holes, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to WP 0101 00 for accept/reject criteria and repair procedures.
   d. Refer to WP 0077 00 for corrosion removal and treatment.

2. Floor Former sta 160
   a. Inspect for dents, cracks, (no cracks allowed), nicks, gouges, holes, delamination, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to WP 0083 00 for accept/reject criteria and repair procedures.
   d. Refer to WP 0077 00 for corrosion removal and treatment

3. Nose Tub Stringers
   a. Inspect for dents, scratches, cracks, (no cracks allowed), nicks, gouges, holes, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to WP 0087 00 and WP 0088 00 for accept/reject criteria and repair procedures.
   d. Refer to WP 0077 00 for corrosion removal and treatment.

4. Tub Exterior Skin Assembly
   a. Inspect for dents, scratches, cracks, (no cracks allowed), nicks, gouges, holes, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to WP 0086 00 for accept/reject criteria and repair procedures.
   d. Refer to WP 0077 00 for corrosion removal and treatment.

5. Floor Former sta 51
   a. Inspect for dents, scratches, cracks, (no cracks allowed), nicks, gouges, holes, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to WP 0101 00 for accept/reject criteria and repair procedures.
   d. Refer to WP 0077 00 for corrosion removal and treatment.

6. Cockpit Dynamic Absorbers
   a. Inspect exterior covers for cracks (no cracks allowed), dents, scratches, and corrosion.
   b. Refer to TM 55-1520-240-23 series and DMWR 55-1560-275 for repair/overhaul.
   c. Refer to WP 0077 00 for corrosion removal and treatment.

INSPECTION REQUIREMENTS - continued

7. Floor Former sta 70
   a. Inspect for dents, scratches, cracks, (no cracks allowed), nicks, gouges, holes, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to WP 0101 00 for accept/reject criteria and repair procedures.
   d. Refer to WP 0077 00 for corrosion removal and treatment.

8. Floor Former sta 95
   a. Inspect for dents, scratches, cracks, (no cracks allowed), nicks, gouges, holes, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to WP 0101 00 for accept/reject criteria and repair procedures.
   d. Refer to WP 0077 00 for corrosion removal and treatment.

9. Longerons (LH and RH)
   a. Inspect for dents, scratches, cracks, (no cracks allowed), nicks, gouges, holes, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to WP 0087 00 and WP 0088 00 for accept/reject criteria and repair procedures.
   d. Refer to WP 0077 00 for corrosion removal and treatment.

10. Floor Former sta 120
   a. Inspect for dents, scratches, cracks, (no cracks allowed), nicks, gouges, holes, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to WP 0101 00 for accept/reject criteria and repair procedures.
   d. Refer to WP 0077 00 for corrosion removal and treatment.

END OF WORK PACKAGE

DEPOT MAINTENANCE WORK REQUIREMENT
CH-47D HELICOPTER
COCKPIT FLOOR STRUCTURE

INITIAL SETUP

Test Equipment:
As Required

Tools and Special Tools:
As Required

Material/Parts:
As Required

Personnel Required:
Examiner (PSA)

References:
TM 1-1500-204-23 Series
TM 55-1520-240-23 Series
WP 0077 00
WP 0083 00
WP 0102 00

Equipment Conditions:
As Required

Special Environmental Condition:
As Required

SCOPE

The floor consists of webs, angles, stiffeners, channels, cap angles, seat beams, and a honeycomb panel, sta 51 to sta 120, WL minus 8 to WL minus 18. The webs, angles, stiffeners, channels, and cap angles are formed and extruded members, made of aluminum. Refer to WP 0080 00 for sealing requirements.

INSPECTION EQUIREMENTS

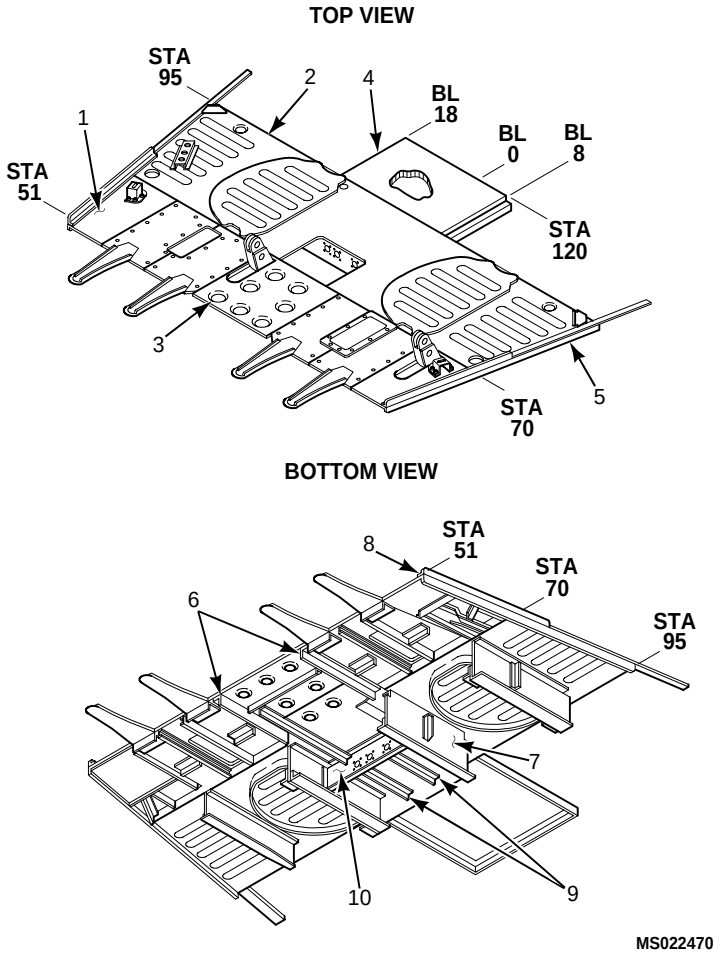


Figure 1. Cockpit Floor Structure

NOTE

The items in Figure 1 correspond to the respective item numbers in the following INSPECTION REQUIREMENTS.

1. Forward Web (LH and RH)
   a. Inspect for dents, scratches, cracks (no cracks allowed), nicks, gouges, holes, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to WP 0102 00 for accept/reject criteria and repair procedures.
   d. Refer to WP 0077 00 for corrosion removal and treatment.

2. Webs, Aft (LH and RH)
   a. Inspect for dents, scratches, cracks (no cracks allowed), nicks, gouges, holes, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to WP 0102 00 for accept/reject criteria and repair procedures.
   d. Refer to WP 0077 00 for corrosion removal and treatment

INSPECTION REQUIREMENTS – continued

3. Web, Forward Center
   a. Inspect for dents, scratches, cracks (no cracks allowed), nicks, gouges, holes, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to WP 0102 00 for accept/reject criteria and repair procedures.
   d. Refer to WP 0077 00 for corrosion removal and treatment.

4. Floor Panel sta 95 to sta 120
   a. Inspect for dents, scratches, cracks (no cracks allowed), nicks, gouges, holes, delamination, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to WP 0083 00 for accept/reject criteria and repair procedures.
   d. Refer to WP 0077 00 for corrosion removal and treatment.

5. Upper Forward Cap Angle (LH and RH)
   a. Inspect for dents, scratches, cracks (no cracks allowed), nicks, gouges, holes, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to WP 0102 00 for accept/reject criteria and repair procedures.
   d. Refer to WP 0077 00 for corrosion removal and treatment.

6. Angles (LH and RH) Fwd Center
   a. Inspect for dents, scratches, cracks (no cracks allowed), nicks, gouges, holes, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to WP 0102 00 for accept/reject criteria and repair procedures.
   d. Refer to WP 0077 00 for corrosion removal and treatment.

7. Seat Beams (LH and RH)
   a. Inspect for dents, scratches, cracks (no cracks allowed), nicks, gouges, holes, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to WP 0102 00 for accept/reject criteria and repair procedures.
   d. Refer to WP 0077 00 for corrosion removal and treatment.

8. Cap Angles (LH and RH) sta 51 to sta 95
   a. Inspect for dents, scratches, cracks (no cracks allowed), nicks, gouges, holes, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to WP 0102 00 for accept/reject criteria and repair procedures.
   d. Refer to WP 0077 00 for corrosion removal and treatment.

9. Stiffeners Aft Web Center
   a. Inspect for dents, scratches, cracks (no cracks allowed), nicks, gouges, holes, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to WP 0102 00 for accept/reject criteria and repair procedures.
   d. Refer to WP 0077 00 for corrosion removal and treatment.

INSPECTION REQUIREMENTS – continued

10. Channel Center sta 80
    a. Inspect for dents, scratches, cracks (no cracks allowed), nicks, gouges, holes, or evidence of corrosion.
    b. Inspect for loose, missing, or damaged attaching hardware.
    c. Refer to WP 0102 00 for accept/reject criteria and repair procedures.
    d. Refer to WP 0077 00 for corrosion removal and treatment.

END OF WORK PACKAGE

DEPOT MAINTENANCE WORK REQUIREMENT
CH-47D HELICOPTER
NOSE FRAMES

INITIAL SETUP

Test Equipment:
As Required

Tools and Special Tools:
As Required

Material/Parts:
As Required

Personnel Required:
Examiner (PSA)

References:
TM 1-1500-204-23 Series
TM 1-1500-335-23
TM 55-1520-240-23 Series
WP 0077 00
WP 0080 00
WP 0087 00
WP 0103 00
WP 0147 00

Equipment Conditions:
As Required

Special Environmental Condition:
As Required

SCOPE

The nose frames consist of seven frames, sta 95 to sta 160, three longerons, sta 95 to sta 160, BL 46 left, BL 37 right and BL 50 right, cabin door coaming, and sill assembly (bonded). The bulkhead, sta 95, consists primarily of six webs extending the full width of the body. All webs are reinforced with formed and extruded caps. Formed stiffeners are riveted laterally to the webs. Bulkhead top center, sta 95, contains the forward transmission forward mount fitting. The partial formers are located at sta 110 and sta 140. The crown and side of the partial former at sta 140 is flanged webs made of aluminum alloy and contains lightening holes. The full former at sta 120 contains the forward transmission's aft mount fitting. The full former at sta 160 is part of the splice with the cabin fuselage section. The crown formers, located at sta 130 and sta 150, are flanged webs made of aluminum alloy. The longerons consist of aluminum alloy formed channels riveted back to back and reinforced along the upper flanges with extruded or formed angles. The door coaming is made of molded 6-ply plastic impregnated glass cloth. Formed parts made of 6061-T6 aluminum alloy are riveted to the lower sides and bottom of the coaming. An angle made of 2024-T6 clad aluminum is riveted to the body skin across the top of the door opening. Coaming faying surfaces are sealed watertight. The cabin doorsill is a honeycomb panel, sta 120 to sta 160, WL minus 30, BL 45R. Refer to WP 0080 00 for sealing requirements.

INSPECTION REQUIREMENTS

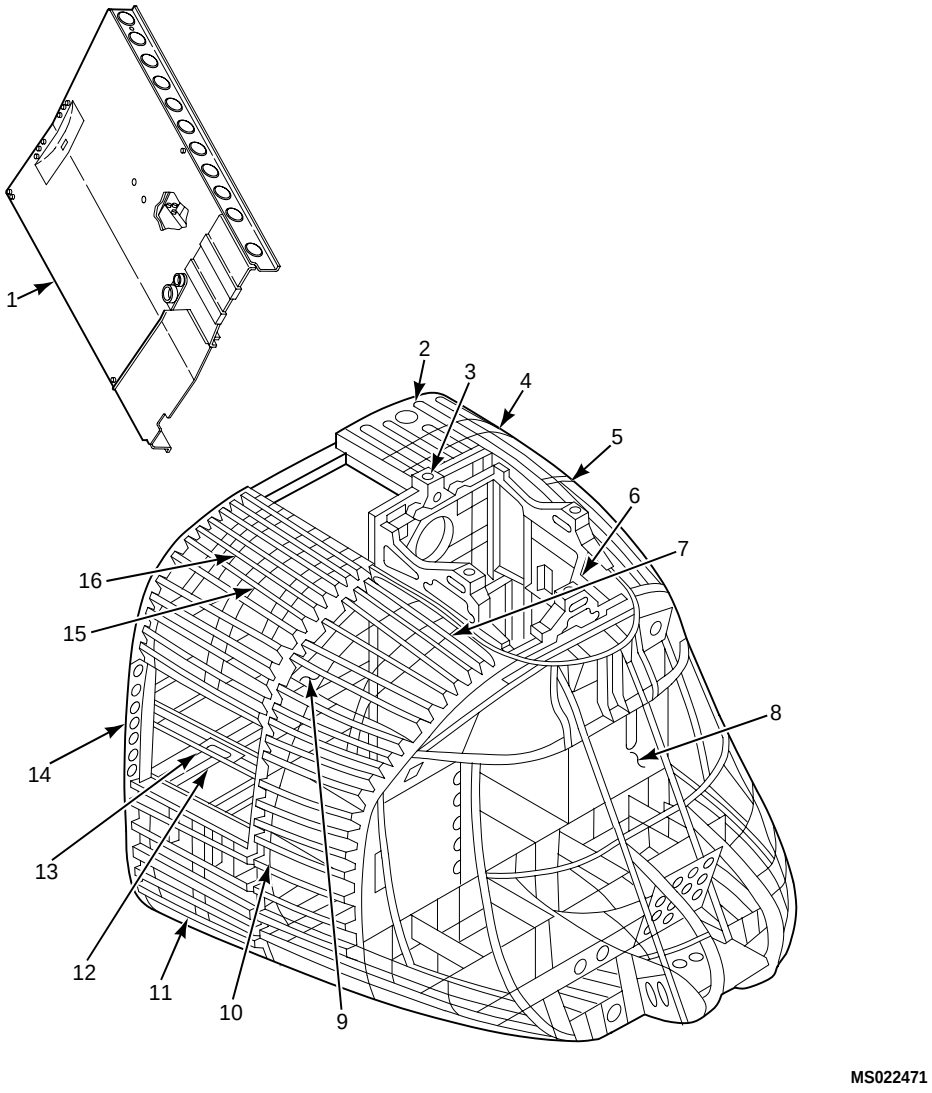


Figure 1. Nose Frames

NOTE

The items in Figure 1 correspond to the respective item numbers in the following INSPECTION REQUIREMENTS.

1. Trough Assembly
   a. Inspect for dents, scratches, cracks (no cracks allowed), nicks, gouges, holes, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to WP 0103 00 for accept/reject criteria and repair procedures.
   d. Refer to WP 0077 00 for corrosion removal and treatment.

INSPECTION REQUIREMENTS - continued

2. Crown Frame, sta 160
   a. Inspect for dents, scratches, cracks (no cracks allowed), nicks, gouges, holes, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to WP 0103 00 for accept/reject criteria and repair procedures.
   d. Refer to WP 0077 00 for corrosion removal and treatment.

3. Forward Transmission Aft Mount Fitting, sta 120
   a. Inspect for dents, scratches, cracks (no cracks allowed), nicks, gouges, holes, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. NDI mounting bolt pad surfaces at interface, including fillet radii and around barrel nut, and areas above roof deck per WP 0147 00.
   d. Refer to WP 0103 00 for accept/reject criteria and repair procedures.
   e. Refer to WP 0077 00 for corrosion removal and treatment.

4. Frame, sta 140 LH
   a. Inspect for dents, scratches, cracks (no cracks allowed), nicks, gouges, holes, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to WP 0103 00 for accept/reject criteria and repair procedures.
   d. Refer to WP 0077 00 for corrosion removal and treatment.

5. Longeron, sta 95 to sta 160, BL 37L, WL 50
   a. Inspect for dents, scratches, cracks (no cracks allowed), nicks, gouges, holes, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to WP 0087 00 for accept/reject criteria and repair procedures.
   d. Refer to WP 0077 00 for corrosion removal and treatment.

6. Forward Transmission Forward Mount Fitting, sta 95
   a. Inspect for dents, scratches, cracks (no cracks allowed), nicks, gouges, holes, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. NDI mounting bolt pad surfaces at interface, including fillet radii and around barrel nut, and areas above roof deck per WP 00147 00.
   d. Refer to WP 0103 00 for accept/reject criteria and repair procedures.
   e. Refer to WP 0077 00 for corrosion removal and treatment.

7. Crown Frame, sta 110 (LH and RH)
   a. Inspect for dents, scratches, cracks (no cracks allowed), nicks, gouges, holes, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to WP 0103 00 for accept/reject criteria and repair procedures.
   d. Refer to WP 0077 00 for corrosion removal and treatment.

8. Bulkhead, sta 95
   a. Inspect for dents, scratches, cracks (no cracks allowed), nicks, gouges, holes, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to WP 0103 00 for accept/reject criteria and repair procedures.
   d. Refer to WP 0077 00 for corrosion removal and treatment.

INSPECTION REQUIREMENTS - continued

9. Frames, sta 120 (LH and RH)
   a. Inspect for dents, scratches, cracks (no cracks allowed), nicks, gouges, holes, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to WP 0103 00 for accept/reject criteria and repair procedures.
   d. Refer to WP 0077 00 for corrosion removal and treatment.

10. Cabin Door Coaming
   a. Inspect for dents, scratches, cracks (no cracks allowed), nicks, gouges, holes, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to WP 0103 00 for accept/reject criteria and repair procedures.
   d. Refer to WP 0077 00 for corrosion removal and treatment.

11. Cabin Door Sill Panel
   a. Inspect for dents, scratches, cracks (no cracks allowed), nicks, gouges, holes, delamination, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to WP 0103 00 for accept/reject criteria and repair procedures.
   d. Refer to WP 0077 00 for corrosion removal and treatment.

12. Longeron, sta 95 to sta 160, BL 50R, WL 50R, and WL 46
   a. Inspect for dents, scratches, cracks (no cracks allowed), nicks, gouges, holes, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to WP 0087 00 for accept/reject criteria and repair procedures.
   d. Refer to WP 0077 00 for corrosion removal and treatment.

13. Crown Frame, sta 130
   a. Inspect for dents, scratches, cracks (no cracks allowed), nicks, gouges, holes, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to WP 0103 00 for accept/reject criteria and repair procedures.
   d. Refer to WP 0077 00 for corrosion removal and treatment.

14. Frame, sta 160 (LH and RH)
   a. Inspect for dents, scratches, cracks (no cracks allowed), nicks, gouges, holes, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to WP 0103 00 for accept/reject criteria and repair procedures.
   d. Refer to WP 0077 00 for corrosion removal and treatment.

15. Crown Frame, sta 140 (LH and RH)
   a. Inspect for dents, scratches, cracks (no cracks allowed), nicks, gouges, holes, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to WP 0103 00 for accept/reject criteria and repair procedures.
   d. Refer to WP 0077 00 for corrosion removal and treatment.

INSPECTION REQUIREMENTS - continued

16. Crown Frame, sta 150
    a. Inspect for dents, scratches, cracks (no cracks allowed), nicks, gouges, holes, or evidence of corrosion.
    b. Inspect for loose, missing, or damaged attaching hardware.
    c. Refer to WP 0103 00 for accept/reject criteria and repair procedures.
    d. Refer to WP 0077 00 for corrosion removal and treatment.

END OF WORK PACKAGE

DEPOT MAINTENANCE WORK REQUIREMENT

CH-47D HELICOPTER

BEAM ASSEMBLIES BL 18

INITIAL SETUP

Test Equipment:
As Required

Tools and Special Tools:
As Required

Material/Parts:
As Required

Personnel Required:
Examiner (PSA)

References:
TM 1-1500-204-23 Series
TM 1-1500-335-23
TM 55-1520-240-23 Series
WP 0077 00
WP 0080 00
WP 0104 00
WP 0147 00

Equipment Conditions:
As Required

Special Environmental Condition:
As Required

SCOPE

Beams are located at BL 18L and R, sta 95 to sta 120, and BL 10L sta 95 to sta 120. Each beam consists of webs reinforced with formed and extruded stiffeners. Extruded caps are riveted to the forward and aft edges of each beam. The BL 18 beam contains the forward transmission LH and RH mount fittings. Refer to WP 0080 00 for sealing requirements.

INSPECTION REQUIREMENTS

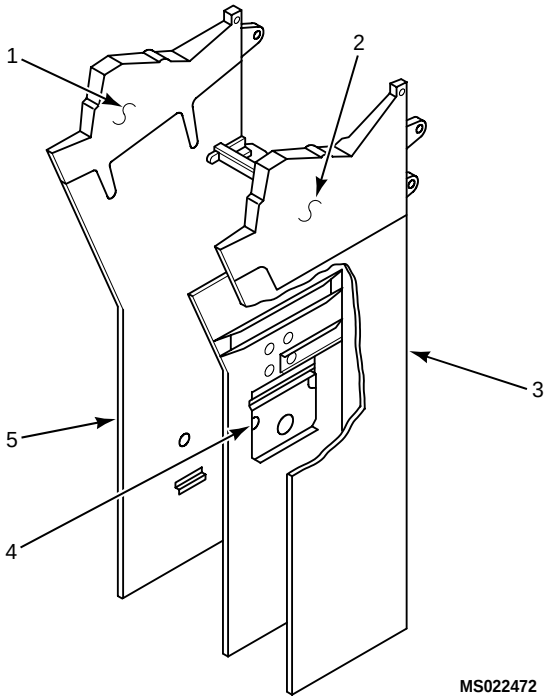


Figure 1. Beam Assemblies BL 18

INSPECTION REQUIREMENTS - continued

NOTE

The items in Figure 1 correspond to the respective item numbers in the following INSPECTION REQUIREMENTS.

1. RH Forward Transmission Mount Fitting
   a. Inspect for dents, scratches, cracks (no cracks allowed), nicks, gouges, holes, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. NDI mounting bolt pad surfaces at interface, including fillet radii, area around barrel nut, and areas above roof deck, per WP 0147 00.
   d. Refer to WP 0104 00 for accept/reject criteria and repair procedures.
   e. Refer to WP 0077 00 for corrosion removal and treatment.

2. LH Forward Transmission Mount Fitting
   a. Inspect for dents, scratches, cracks (no cracks allowed), nicks, gouges, holes, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. NDI mounting bolt pad surfaces at interface, including fillet radii, areas around barrel nut, and areas above roof deck, per WP 0147 00.
   d. Refer to WP 0104 00 for accept/reject criteria and repair procedures.
   e. Refer to WP 0077 00 for corrosion removal and treatment.

3. Beam, BL 18L
   a. Inspect for dents, scratches, cracks (no cracks allowed), nicks, gouges, holes, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to WP 0104 00 for accept/reject criteria and repair procedures.
   d. Refer to WP 0077 00 for corrosion removal and treatment.

4. Beam BL 10L
   a. Inspect for dents, scratches, cracks (no cracks allowed), nicks, gouges, holes, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to WP 0104 00 for accept/reject criteria and repair procedures.
   d. Refer to WP 0077 00 for corrosion removal and treatment.

5. Beam BL 18R
   a. Inspect for dents, scratches, cracks (no cracks allowed), nicks, gouges, holes, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to WP 0104 00 for accept/reject criteria and repair procedures.
   d. Refer to WP 0077 00 for corrosion removal and treatment.

END OF WORK PACKAGE

DEPOT MAINTENANCE WORK REQUIREMENT

CH-47D HELICOPTER

FORWARD HYDRAULIC SUPPORT

INITIAL SETUP

Test Equipment:
As Required

Tools and Special Tools:
As Required

Material/Parts:
As Required

Personnel Required:
Examiner (PSA)

References:
TM 1-1500-204-23 Series
TM 55-1520-240-23 Series
WP 0077 00
WP 0105 00

Equipment Conditions:
As Required

Special Environmental Condition:
As Required

SCOPE

The forward hydraulic support assembly consists of struts, supports, angles, a bracket, and a brace. The assembly is made of aluminum sheet metal, extruded aluminum alloy, and stainless steel.

INSPECTION REQUIREMENTS

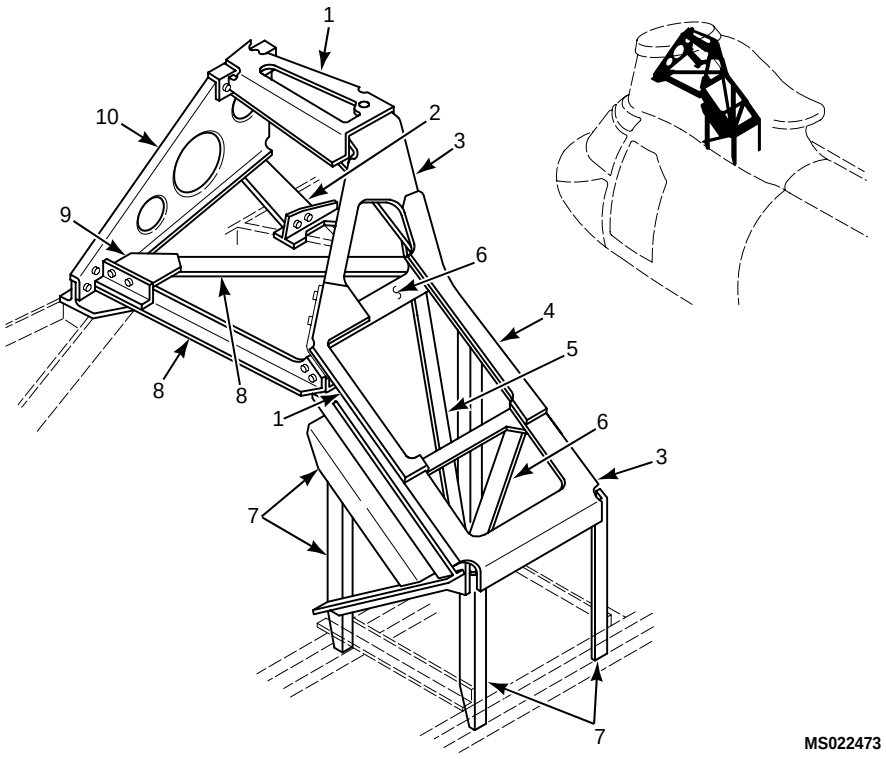


Figure 1. Forward Hydraulic Support

INSPECTION REQUIREMENTS- continued

NOTE

The items in Figure 1 correspond to the respective item numbers in the following INSPECTION REQUIREMENTS.

1. Supports
   a. Inspect for dents, scratches, crack, (no cracks allowed), nicks, gouges, holes, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to WP 0105 00 for accept/reject criteria and repair procedures.
   d. Refer to WP 0077 00 for corrosion removal and treatment.

2. Top Forward Strut
   a. Inspect for dents, scratches, cracks (no cracks allowed), nicks, gouges, holes, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to WP 0105 00 for accept/reject criteria and repair procedures.
   d. Refer to WP 0077 00 for corrosion removal and treatment.

3. Top Center Support
   a. Inspect for dents, scratches, cracks (no cracks allowed), nicks, gouges, holes, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to WP 0105 00 for accept/reject criteria and repair procedures.
   d. Refer to WP 0077 00 for corrosion removal and treatment.

4. Support (RH center)
   a. Inspect for dents, scratches, cracks (no cracks allowed), nicks, gouges, holes, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to WP 0105 00 for accept/reject criteria and repair procedures.
   d. Refer to WP 0077 00 for corrosion removal and treatment.

5. Strut (RH inboard)
   a. Inspect for dents, scratches, cracks (no cracks allowed), nicks, gouges, holes, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to WP 0105 00 for accept/reject criteria and repair procedures.
   d. Refer to WP 0077 00 for corrosion removal and treatment.

6. Angles, Center and RH
   a. Inspect for dents, scratches, cracks (no cracks allowed), nicks, gouges, holes, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to WP 0105 00 for accept/reject criteria and repair procedures.
   d. Refer to WP 0077 00 for corrosion removal and treatment.

INSPECTION REQUIREMENTS - continued

7. Supports
   a. Inspect for dents, scratches, cracks (no cracks allowed), nicks, gouges, holes, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to WP 0105 00 for accept/reject criteria and repair procedures.
   d. Refer to WP 0077 00 for corrosion removal and treatment.

8. Angles, Center and LH
   a. Inspect for dents, scratches, cracks (no cracks allowed), nicks, gouges, holes, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to WP 0105 00 for accept/reject criteria and repair procedures.
   d. Refer to WP 0077 00 for corrosion removal and treatment.

9. Bracket, LH Forward
   a. Inspect for dents, scratches, cracks (no cracks allowed), nicks, gouges, holes, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to WP 0105 00 for accept/reject criteria and repair procedures.
   d. Refer to WP 0077 00 for corrosion removal and treatment.

10. Brace Forward
   a. Inspect for dents, scratches, cracks (no cracks allowed), nicks, gouges, holes, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to WP 0105 00 for accept/reject criteria and repair procedures.
   d. Refer to WP 0077 00 for corrosion removal and treatment.

END OF WORK PACKAGE

DEPOT MAINTENANCE WORK REQUIREMENT
CH-47D HELICOPTER
AUXILIARY DRIP PAN AND FORWARD TRANSMISSION DRIP PAN

INITIAL SETUP

Test Equipment:
As Required

Tools and Special Tools:
As Required

Material/Parts:
As Required

Personnel Required:
Examiner (PSA)

References:
TM 1-1500-204-23 Series
TM 55-1520-240-23 Series
WP 0077 00
WP 0082 00
WP 0087 00

Equipment Conditions:
As Required

Special Environmental Condition:
As Required

SCOPE

The auxiliary drip pan is located in the forward pylon at approximately sta 110, WL plus 26, and BL 18R. The drip pan assembly consists of a pan formed from 2024-T4 clad aluminum alloy or molded polycarbonate, and supports formed from 2024-T4 clad aluminum alloy. The forward transmission drip pan is located between sta 95 to sta 120, WL plus 40. The drip pan consists of a pan, made from 3 or 4 ply laminated plastic-impregnated glass cloth, receptacle, and stud assemblies for attachment purposes and an aluminum cup and tube.

INSPECTION REQUIREMENTS

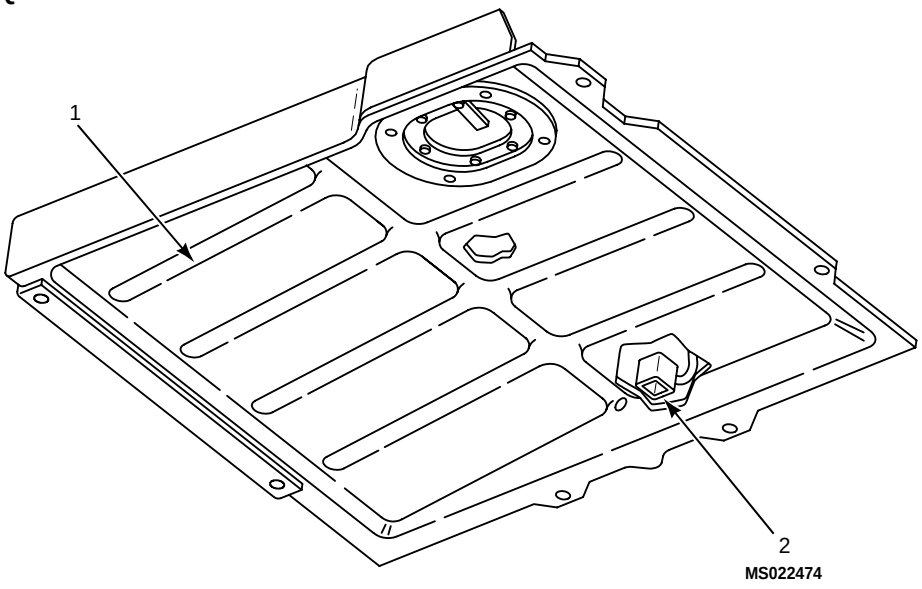


Figure 1. Auxiliary Drip Pan and Forward Transmission Drip Pan

INSPECTION REQUIREMENTS - continued

NOTE

The items in Figure 1 correspond to the respective item numbers in the following INSPECTION REQUIREMENTS.

1. Forward Transmission Drip Pan
   a. Inspect for dents, scratches, cracks (no cracks allowed), nicks, gouges, holes, wear, or evidence of corrosion.
   b. Inspect drain lines for obstruction and damage and security.
   c. Inspect for loose, missing, or damaged attaching hardware.
   d. Refer to WP 0082 00 accept/reject criteria and repair procedures.
   e. Refer to WP 0077 00 for corrosion removal and treatment.

2. Auxiliary Drip Pan
   a. Inspect for dents, scratches, cracks (no cracks allowed), nicks, gouges, holes, wear, or evidence of corrosion.
   b. Inspect drain lines for obstruction and damage and security.
   c. Inspect for loose, missing, or damaged attaching hardware.
   d. Refer to WP 0087 00 for accept/reject criteria and repair procedures.
   e. Refer to WP 0077 00 for corrosion removal and treatment.

END OF WORK PACKAGE

DEPOT MAINTENANCE WORK REQUIREMENT
CH-47D HELICOPTER
PILOT AND COPILOT SEATS

INITIAL SETUP

Test Equipment:
As Required

Tools and Special Tools:
As Required

Material/Parts:
As Required

Personnel Required:
Examiner (PSA)

References:
TM 1-1500-204-23 Series
TM 55-1520-240-23 Series
WP 0077 00
WP 0082 00

Equipment Conditions:
As Required

Special Environmental Condition:
As Required

SCOPE

The pilot and copilot seats are mounted on tracks in the cockpit floor. The seats are interchangeable. Both seats have aluminum framing, restraint systems, and forward, aft, and vertical adjustment.

INSPECTION REQUIREMENTS

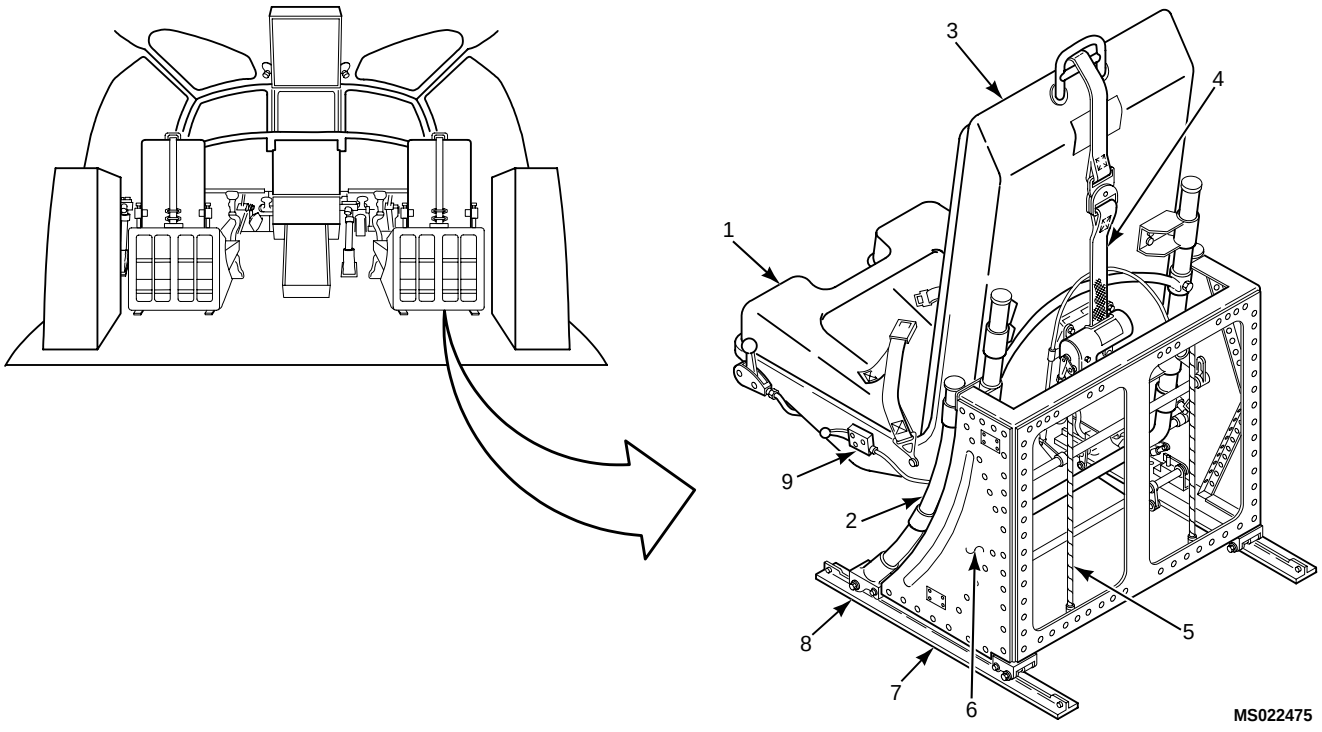


Figure 1. Pilot and Copilot Seats

INSPECTION REQUIREMENTS- continued

NOTE

The items in Figure 1 correspond to the respective item numbers in the following INSPECTION REQUIREMENTS.

1. Back and Bottom Seat Cushion
   a. Inspect cushions for cleanness, cuts, rips, tears, or deterioration and discoloring due to contact with foreign matter.
   b. Refer to TM 55-1520-240-23 for accept/reject criteria.

2. Armor Plating (if installed)
   a. Inspect for security, peeling, or spalling shield on exposed surfaces.
   b. Refer to TM 55-1520-240-23 for accept/reject criteria.

3. Seat Bucket
   a. Inspect for dents, scratches, cracks (no cracks allowed), nicks, gouges, holes, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to WP 0082 00 for accept/reject criteria and repair procedures.
   d. Refer to WP 0077 00 for corrosion removal and treatment.

4. Restraint System
   a. Inspect pilot and co-pilot lap belts for signs of rot, wear, cuts, deterioration and discoloring due to contact with foreign matter, fraying, loose or broken stitches, and proper operation.
   b. Inspect pilot and co-pilot shoulder harness webbing for signs of rot, wear, cuts, deterioration and discoloring due to contact with foreign matter, fraying, loose or broken stitches, and proper operation.
   c. Inspect inertia reels for scratches, cracks (no cracks allowed), nicks, gouges, holes, evidence of corrosion, and proper operation.
   d. Inspect inertia reel strap webbing for signs of rot, wear, cuts, deterioration and discoloring due to contact with foreign matter, fraying, and loose or broken stitches.
   e. Inspect for loose, missing, or damaged attaching hardware.
   f. Refer to TM 1-1500-204-23 and TM 55-1520-240-23 series for accept/reject criteria and repair procedures.
   g. Refer to WP 0077 00 for corrosion removal and treatment.

5. Bungee Cords
   a. Inspect bungee cords for security, cuts, tears, deterioration, and discoloring due to contact with foreign matter.
   b. Refer to TM 55-1520-240-23 for accept/reject criteria.

6. Seat Frame
   a. Inspect for dents, scratches, cracks (no cracks allowed), nicks, gouges, holes, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.
   d. Refer to WP 0077 00 for corrosion removal and treatment.

INSPECTION REQUIREMENTS - continued

7. Seat Rail
   a. Inspect for security, cracks (no cracks allowed), chafed and worn areas, corrosion, and elongated holes for seat locking pin holes.
   b. Refer to TM 55-1520-240-23 for accept/reject criteria.
   c. Refer to WP 0077 00 for corrosion removal and treatment.

8. Forward and Aft Seat Adjustment Mechanism
   a. Inspect fwd and aft seat adjustment mechanism for proper operation.
   b. Inspect for broken cables, loose, missing, or damaged attaching hardware, or evidence of corrosion.
   c. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.
   d. Refer to WP 0077 00 for corrosion removal and treatment.

9. Vertical Seat Adjustment Mechanism
   a. Inspect vertical seat adjustment for proper operation.
   b. Inspect for broken cables, loose, missing, or damaged attaching hardware, or evidence of corrosion.
   c. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.
   d. Refer to WP 0077 00 for corrosion removal and treatment.

END OF WORK PACKAGE

DEPOT MAINTENANCE WORK REQUIREMENT

CH-47D HELICOPTER

HEATING AND VENTILATION DUCTING

INITIAL SETUP

Test Equipment:
As Required

Tools and Special Tools:
As Required

Material/Parts:
As Required

Personnel Required:
Examiner (PSA)

References:
TM 1-1500-204-23 Series
TM 55-1520-240-23 Series
WP 0077 00
WP 0106 00

Equipment Conditions:
As Required

Special Environmental Condition:
As Required

SCOPE

The heating and ventilation ducting consist of cockpit ducts, and cabin ducts. Some ducts are made of aluminum. Other ducts are made of impregnated glass cloth, polycarbonate, or wire-wound flexible fiberglass hoses. The cabin ducts have an aluminum buffer board for protection**.**

INSPECTION REQUIREMENTS

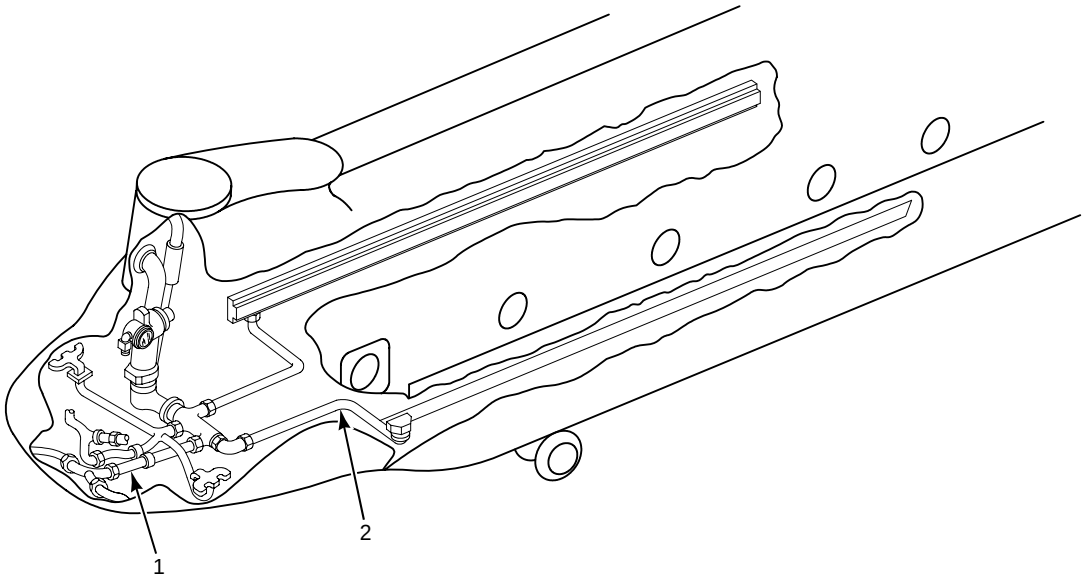


Figure 1. Heating and Ventilation Ducting

INSPECTION REQUIREMENTS - continued

NOTE

The items in Figure 1 correspond to the respective item numbers in the following INSPECTION REQUIREMENTS.

1. Cockpit Ducting
   a. Inspect for cracks, nicks, scratches, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to WP 0106 00 for accept/reject criteria and repair procedures.
   d. Refer to WP 0077 00 for corrosion removal and treatment.

2. Cabin Ducting and Buffer Board
   a. Inspect for cracks, nicks, scratches, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to WP 0106 00 for accept/reject criteria and repair procedures.
   d. Refer to WP 0077 00 for corrosion removal and treatment.

END OF WORK PACKAGE

DEPOT MAINTENANCE WORK REQUIREMENT
CH-47D HELICOPTER
CABIN EXTERIOR

INITIAL SETUP

Test Equipment:
As Required

Tools and Special Tools:
As Required

Material/Parts:
As Required

Personnel Required:
Examiner (PSA)

References:
TM 1-1500-204-23 Series
TM 55-1520-240-23 series
WP 0077 00
WP 0080 00
WP 0081 00
WP 0086 00
WP 0107 00

Equipment Conditions:
As Required

Special Environmental Condition:
As Required

SCOPE

The cabin exterior consists of three walkway panels, a crown, and LH and RH side skins, sta 160 to sta 440, WL minus 40 to WL plus 51, window panes and fairings, tunnel covers, and step assemblies RH side. The walkways panels consist of rigidized aluminum alloy bonded to a sandwich honeycomb structure. The crown and side skins are aluminum alloy panels. The RH step assemblies (6 ea) are made of fiberglass with hinged aluminum doors. The tunnel covers are bonded sandwich honeycomb structure. The window panels are made of acrylic plastic. The windows at sta 381 LH and RH are bubble type. The panes are retained in the fuselage by an aluminum frame, a rubber seal, and rubber seal filler. A nylon strap is looped over the seal filler for jettisoning purposes. Refer to WP 0080 00 for sealing requirements.

INSPECTION REQUIREMENTS

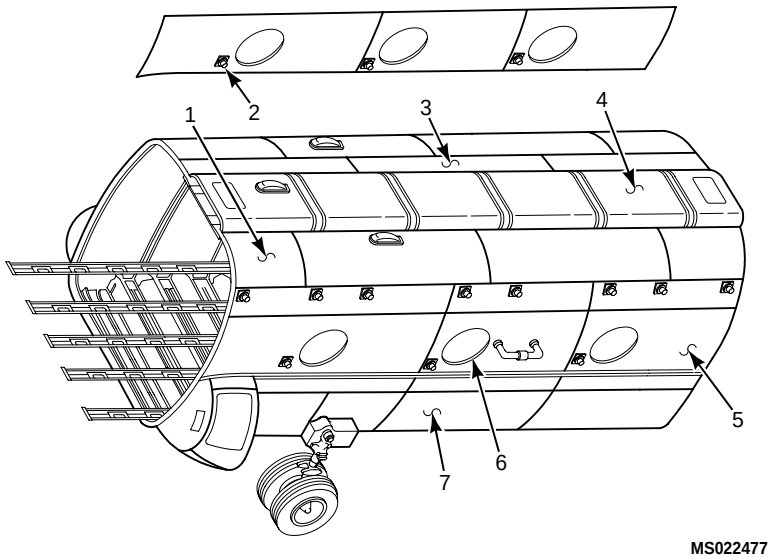


Figure 1. Cabin Exterior

INSPECTION REQUIREMENTS - continued

NOTE

The items in Figure 1 correspond to the respective item numbers in the following INSPECTION REQUIREMENTS.

1. Crown Skins (LH and RH), WL plus 42, BL 10L and BL 20R
   a. Inspect for dents, cracks (no cracks allowed), scratches, buckling or canning, gouges, nicks, holes, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to WP 0086 00 for accept/reject criteria and repair procedures.
   d. Refer to WP 0077 00 for corrosion removal and treatment.

2. Step Assemblies (RH)
   a. Inspect for dents, cracks (no cracks allowed), scratches, gouges, nicks, holes, delamination, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to WP 0081 00 for accept/reject criteria and repair procedures.
   d. Replace damaged hinge and broken spring.
   e. Refer to WP 0077 00 for corrosion removal and treatment.

3. Walkway Roof Panels (forward, center, and, aft)
   a. Inspect for dents, cracks (no cracks allowed), scratches, nicks, gouges, delaminations, holes, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to WP 0107 00 for accept/reject criteria and repair procedures.
   d. Refer to WP 0077 00 for corrosion removal and treatment.

4. Tunnel covers
   a. Inspect for dents, cracks (no cracks allowed), scratches, gouges, nicks, holes, delamination, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Inspect struts, hinges, straps, studs, retainers, and hardware for damage, inspect seals for cuts and damage.
   d. Refer to WP 0107 00 for accept/reject criteria and repair procedures.
   e. Refer to WP 0077 00 for corrosion removal and treatment.

5. Side Skins, sta 160 to sta 440, WL 0 to WL plus 42 (LH and RH)
   a. Inspect for dents, cracks (no cracks allowed), scratches, buckling or canning, gouges, nicks, holes, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to WP 0086 00 for accept/reject criteria and repair procedures.
   d. Refer to WP 0077 00 for corrosion removal and treatment.

INSPECTION REQUIREMENTS

6. Window Panes and Frames (LH and RH)
   a. Inspect windows for cracks, crazing, nicks, pitting, and scratches. Replace if cracked, pitted, or crazed.
   b. Inspect window frame for dents, nicks, cracks (no cracks allowed), scratches, or evidence of corrosion.
   c. Inspect frames for loose, missing, or damaged attaching hardware.
   d. Refer to WP 0107 00 for accept/reject criteria and repair.
   e. Refer to WP 0077 00 for corrosion removal and treatment.

7. Side Skins, sta 160 to sta 440, WL 0 to WL minus 40 (LH and RH)
   a. Inspect for dents, cracks (no cracks allowed), scratches, buckling of canning, gouges, nicks, holes, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to WP 0086 00 for accept/reject criteria and repair procedures.
   d. Refer to WP 0077 00 for corrosion removal and treatment.

END OF WORK PACKAGE

DEPOT MAINTENANCE WORK REQUIREMENT
CH-47D HELICOPTER
FORWARD POD INSTALLATION STA 160 TO STA 187

INITIAL SETUP

Test Equipment:
As Required

Tools and Special Tools:
As Required

Material/Parts:
As Required

Personnel Required:
Examiner (PSA)

References:
TM 1-1500-204-23 Series
TM 55-1520-240-23 series
WP 0077 00
WP 0080 00
WP 0083 00
WP 0086 00
WP 0087 00
WP 0108 00

Equipment Conditions:
As Required

Special Environmental Condition:
As Required

SCOPE

The forward pods (LH and RH) consist of aluminum exterior skins, formers, and access doors. The LH pod contains the battery, auxiliary power connection, access door, and coaming assemblies. The skins, formers, webs, and supports are made of 2024-T3 clad-aluminum. Refer to WP 0080 00 for sealing requirements.

INSPECTION REQUIREMENTS

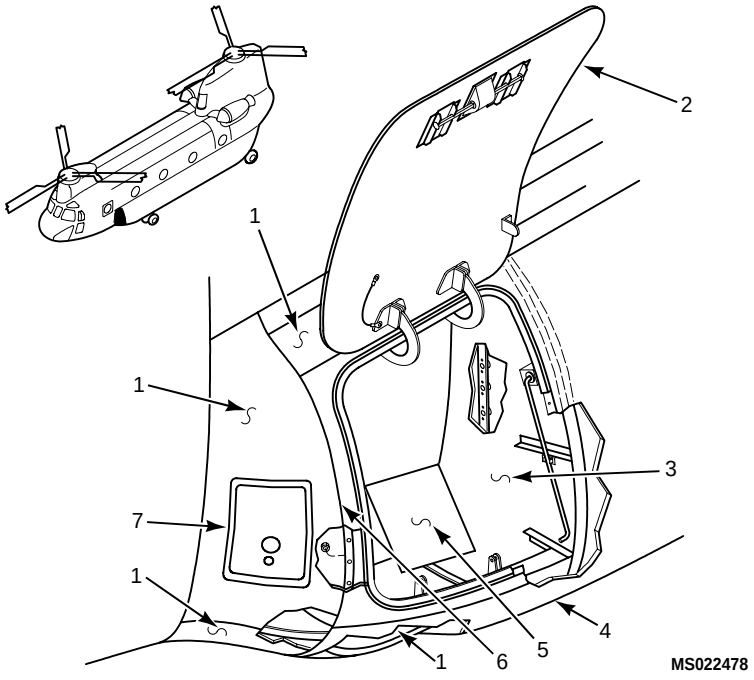


Figure 1. Forward Pod Installation sta 160 to sta 187

INSPECTION REQUIREMENTS - continued

NOTE

The items in Figure 1 correspond to the respective item numbers in the following INSPECTION REQUIREMENTS.

1. Exterior Skins (top, bottom, and forward, LH and RH)
   a. Inspect for dents, cracks (no cracks allowed), scratches, gouges, nicks, holes, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to WP 0086 00 for accept/reject criteria and repair procedures.
   d. Refer to WP 0077 00 for corrosion removal and treatment.

2. Access Doors (LH and RH)
   a. Inspect for dents, cracks (no cracks allowed), scratches, gouges, nicks, holes, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Inspect hinges, latches, strut, and supports for security, proper operation, and general condition.
   d. Refer to WP 0108 00 for accept/reject criteria and repair procedures.
   e. Refer to WP 0077 00 for corrosion removal and treatment.

3. Former, sta 187 (LH and RH)
   a. Inspect for dents, cracks (no cracks allowed), scratches, gouges, nicks, holes, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to WP 0108 00 for accept/reject criteria and repair procedures.
   d. Refer to WP 0077 00 for corrosion removal and treatment.

4. Coaming Assembly (LH and RH)
   a. Inspect for dents, cracks (no cracks allowed), scratches, gouges, nicks, holes, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Inspect door seals for cuts and tears.
   d. Refer to WP 0087 00 for accept/reject criteria and repair procedures.
   e. Refer to WP 0077 00 for corrosion removal and treatment.

5. Battery Shelf, LH/Electrical Shelf, RH
   a. Inspect for dents, cracks (no cracks allowed), delamination, gouges, nicks, holes, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to WP 0083 00 for accept/reject criteria and repair procedures.
   d. Refer to WP 0077 00 for corrosion removal and treatment.

6. Former, sta 170 (LH and RH)
   a. Inspect for dents, cracks (no cracks allowed), scratches, gouges, nicks, holes, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to WP 0108 00 for accept/reject criteria and repair procedures.
   d. Refer to WP 077 00 for corrosion removal and treatment.

INSPECTION REQUIREMENTS - continued

7. Auxiliary Power Access
   a. Inspect for dents, cracks (no cracks allowed), scratches, gouges, nicks, holes, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Inspect door hinge and spring for cracks and corrosion, replace damaged hinge and spring with original material.
   d. Refer to WP 0086 00 for accept/reject criteria and repair procedures.
   e. Refer to WP 0077 00 for corrosion removal and treatment.

END OF WORK PACKAGE

DEPOT MAINTENANCE WORK REQUIREMENT
CH-47D HELICOPTER
FUEL POD AND ACCESS PANELS

INITIAL SETUP

Test Equipment:
As Required

Tools and Special Tools:
As Required

Material/Parts:
As Required

Personnel Required:
Examiner (PSA)

References:
TM 1-1500-204-23 Series
TM 55-1520-240-23 series
WP 0077 00
WP 0080 00
WP 0081 00
WP 0109 00

Equipment Conditions:
As Required

Special Environmental Condition:
As Required

SCOPE

The pod segments are hinged to the fuselage structure allowing access to the fuel tanks. Hinged panels allow access to the electrical compartments and forward landing gear. The RH forward landing gear access contains the refuel valve support. Backer board assemblies are between each fuel tank and the fuselage outer skin. Isolator panel assemblies are mounted under each fuel tank. The fuel pods are made of nomex honeycomb /fiberglass skin, and formers reinforced with graphite rods top and bottom; strakes are attached to the underside of the pods. The landing gear doors and access panels are sandwich honeycomb construction. The RH refuel valve support consists of webs reinforced with formed and extruded supports. The backer board assemblies are made of laminated polyester-impregnated glass cloth. The isolator panel assemblies are constructed from laminated glass cloth with a nonmetallic honeycomb core. Refer to WP 0080 00 for sealing requirements.

INSPECTION REQUIREMENTS

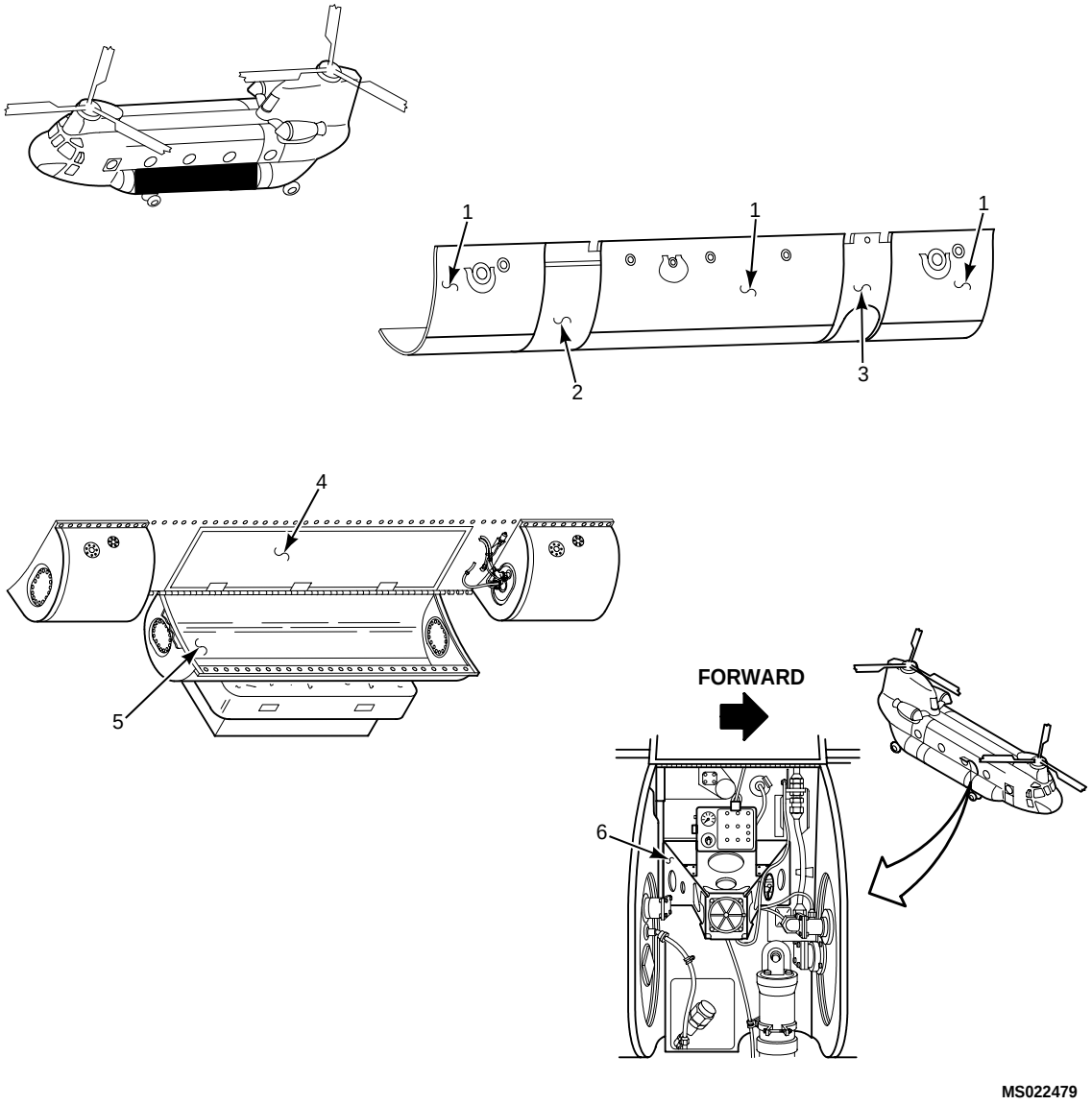


Figure 1. Fuel Pod and Access Panels

NOTE

The items in Figure 1 correspond to the respective item numbers in the following INSPECTION REQUIREMENTS.

1. Fuel Pods (LH and RH) (6ea)
   a. Inspect for dents, cracks (no cracks allowed), gouges, nicks, holes, delamination, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to WP 0109 00 for accept/reject criteria and repair procedures.
   d. Refer to WP 0077 00 for corrosion removal and treatment.

INSPECTION REQUIREMENTS - continued

2. Forward Landing Gear Doors (LH and RH)
   a. Inspect for dents, cracks (no cracks allowed), gouges, nicks, holes, delamination, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to WP 0109 00 for accept/reject criteria and repair procedures.
   d. Refer to WP 0077 00 for corrosion removal and treatment.

3. Electrical Compartment Doors and Access Panels (LH and RH)
   a. Inspect for dents, cracks (no cracks allowed), gouges, nicks, holes, delamination, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to WP 0109 00 for accept/reject criteria and repair procedures.
   d. Refer to WP 0077 00 for corrosion removal and treatment.

4. Backer Board Assemblies (LH and RH)
   a. Inspect for cracks, tears, and separations of laminate.
   b. Refer to WP 0081 00 for accept/reject criteria and repair procedures.

5. Isolator Panel Assemblies (LH and RH)
   a. Inspect for dents, cracks (no cracks allowed), delamination, gouges, nicks, holes, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to WP 0109 00 for accept/reject criteria and repair procedures.
   d. Refer to WP 0077 00 for corrosion removal and treatment.

6. Refuel Assembly Support (RH)
   a. Inspect for dents, cracks (no cracks allowed), scratches, gouges, nicks, holes, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to WP 0109 00 for accept/reject criteria and repair procedures.
   d. Refer to WP 0077 00 for corrosion removal and treatment.

END OF WORK PACKAGE

DEPOT MAINTENANCE WORK REQUIREMENT
CH-47D HELICOPTER
CABIN CROWN TUNNEL

INITIAL SETUP

Test Equipment:
As Required

Tools and Special Tools:
As Required

Material/Parts:
As Required

Personnel Required:
Examiner (PSA)

References:
TM 1-1500-204-23 Series
TM 55-1520-240-23 series
WP 0077 00
WP 0080 00
WP 0086 00
WP 0088 00
WP 0110 00

Equipment Conditions:
As Required

Special Environmental Condition:
As Required

SCOPE

The crown tunnel, sta 160 to sta 440, BL 10R to BL 20L, consists of an exterior skin and stiffeners, LH and RH support stringers, BL 10R and BL 20L; baffle installation sta 411; rescue hoist beam intercostals, BL 0, sta 160 to sta 440; litter support intercostals, BL 20L and BL 20R; dome light brackets, BL 5L sta 160 to sta 440; blade fold support LH and RH, BL 28, sta 300 to sta 320, drive shaft supports, sta 160, sta 200, sta 260, sta 310, sta 360, and sta 410; and six tunnel drain wells, BL 0, located under each drive shaft support. The brackets, skin, stiffeners, webs angles, and stringers, are made of aluminum alloy. Refer to WP 0080 00 for sealing requirements.

INSPECTION REQUIREMENTS

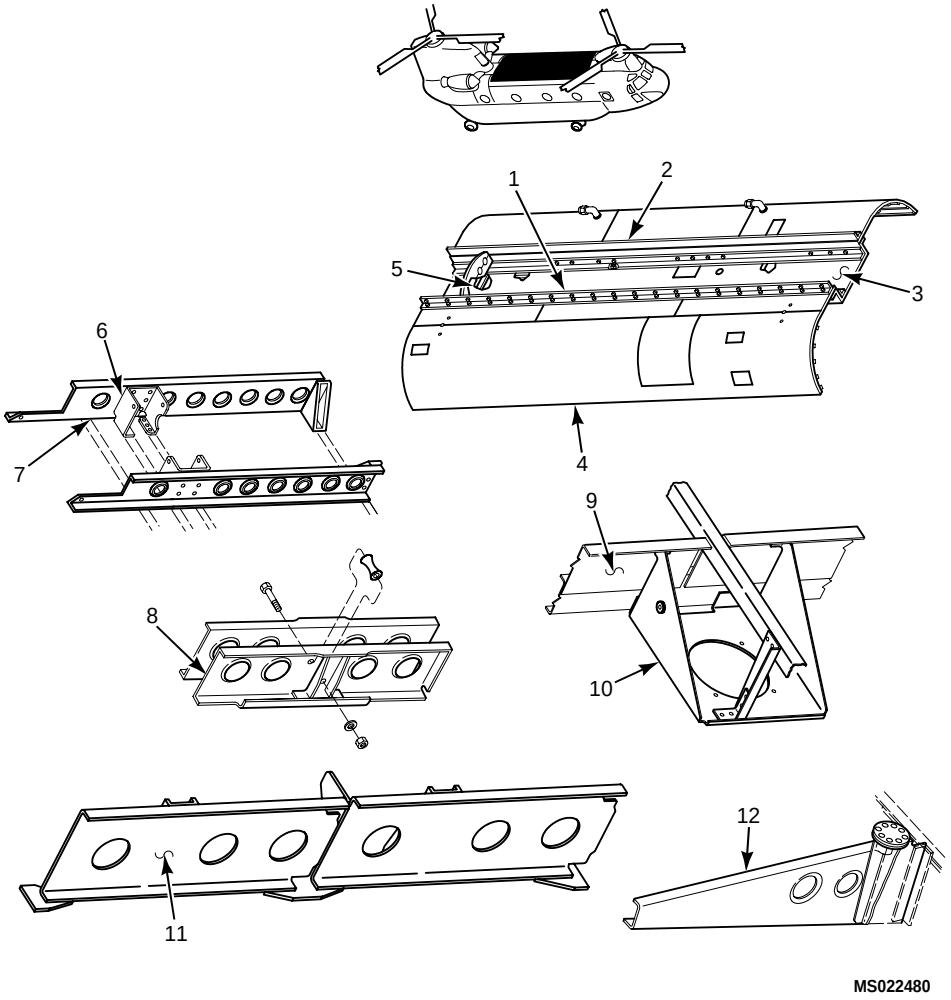


Figure 1. Cabin Crown Tunnel

NOTE

The items in Figure 1 correspond to the respective item numbers in the following INSPECTION REQUIREMENTS.

1. Stringer (RH), BL 10R
   a. Inspect for dents, cracks (no cracks allowed), scratches, gouges, nicks, holes, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to WP 0088 00 for accept/reject criteria and repair procedures.
   d. Refer to WP 0077 00 for corrosion removal and treatment.

2. Stringers (LH), BL 20L
   a. Inspect for dents, cracks (no cracks allowed), scratches, gouges, nicks, holes, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to WP 0088 00 for accept/reject criteria and repair procedures.
   d. Refer to WP 0077 00 for corrosion removal and treatment.

INSPECTION REQUIREMENTS - continued

3. Tunnel Skin and Stiffeners, sta 160 to sta 440
   a. Inspect for dents, cracks (no cracks allowed), scratches, gouges, nicks, holes, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to WP 0086 00 for accept/reject criteria and skin repair procedures.
   d. Refer to WP 0087 00 for accept/reject criteria and WP 0088 00 for stiffener repair procedures.
   e. Refer to WP 0077 00 for corrosion removal and treatment.

4. Crown Stringers, sta 160 to sta 440, LH and RH
   a. Inspect for dents, cracks (no cracks allowed), scratches, gouges, nicks, holes, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to WP 0086 00 for accept/reject criteria and skin repair procedures.
   d. Refer to WP 0087 00 for accept/reject criteria and WP 0088 00 for stringer repair procedures.
   e. Refer to WP 0077 00 for corrosion removal and treatment.

5. Baffle Installation, sta 411
   a. Inspect for dents, cracks (no cracks allowed), scratches, gouges, nicks, holes, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to WP 0110 00 for accept/reject criteria and repair procedures.
   d. Refer to WP 0077 00 for corrosion removal and treatment.

6. Drive Shaft Supports
   a. Inspect for dents, cracks (no cracks allowed), scratches, gouges, nicks, holes, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to WP 0110 00 for accept/reject criteria and repair procedures.
   d. Refer to WP 0077 00 for corrosion removal and treatment.

7. Tunnel Drain Wells
   a. Inspect for dents, cracks (no cracks allowed), scratches, gouges, nicks, holes, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to WP 0110 00 for accept/reject criteria and repair procedures.
   d. Refer to WP 0077 00 for corrosion removal and treatment.

8. Rescue Hoist Beam
   a. Inspect for dents, cracks (no cracks allowed), scratches, gouges, nicks, holes, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to WP 0110 00 for accept/reject criteria and repair procedures.

9. Intercostals, BL 0
   a. Inspect for dents, cracks (no cracks allowed), scratches, gouges, nicks, holes, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to WP 0110 00 for accept/reject criteria and repair procedures.
   d. Refer to WP 0077 00 for corrosion removal and treatment.

INSPECTION REQUIREMENTS - continued

10. Dome Light Brackets
    a. Inspect for dents, cracks (no cracks allowed), scratches, gouges, nicks, holes, or evidence of corrosion.
    b. Inspect for loose, missing, or damaged attaching hardware.
    c. Refer to WP 0110 00 for accept/reject criteria and repair procedures.
    d. Refer to WP 0077 00 for corrosion removal and treatment.

11. Litter Support Intercostals
    a. Inspect for dents, cracks (no cracks allowed), scratches, gouges, nicks, holes, or evidence of corrosion.
    b. Inspect for loose, missing, or damaged attaching hardware.
    c. Refer to WP 0110 00 for accept/reject criteria and repair procedures.
    d. Refer to WP 0077 00 for corrosion removal and treatment.

12. Support, Blade Fold, sta 300 to sta 320 (LH and RH), BL 28L and BL 28R
    a. Inspect for dents, cracks (no cracks allowed), scratches, gouges, nicks, holes, or evidence of corrosion.
    b. Inspect for loose, missing, or damaged attaching hardware.
    c. Refer to WP 0110 00 for accept/reject criteria and repair procedures.
    d. Refer to WP 0077 00 for corrosion removal and treatment.

END OF WORK PACKAGE

DEPOT MAINTENANCE WORK REQUIREMENT
CH-47D HELICOPTER
CABIN INTERIOR

INITIAL SETUP

Test Equipment:
As Required

Tools and Special Tools:
As Required

Material/Parts:
As Required

Personnel Required:
Examiner (PSA)

References:
TM 1-1500-204-23 Series
TM 1-1500-335-23
TM 55-1520-240-23 series
WP 0077 00
WP 0080 00
WP 0087 00
WP 0088 00
WP 0111 00

Equipment Conditions:
As Required

Special Environmental Condition:
As Required

SCOPE

The cabin interior structural assembly consists of 18 partial (side) formers, seven crown formers, and two full formers, sta 160 and sta 440. The partial (side) formers are made of formed sections of aluminum alloy with extruded caps. Partial formers in the crown panel section are made of flanged webs with extruded inner and outer caps. The crown formers are flanged webs made of aluminum alloy with extruded stiffeners. Extruded caps are riveted to the upper and lower edges of the web. The sides have three beams at WL plus 29, WL 0, and WL minus 16, made of aluminum alloy webs with extruded stiffeners and caps. The beams at WL minus 16, sta 140 to sta 482, BL 50L, sta 160 to sta 482, BL 50R, support the troop seats. The beams at WL plus 29, sta 160 to sta 482, BL 50 L&R, support the troop seat backrests and litter poles. The beams, WL 0, extend from sta 160 to sta 440. The longerons are a continuation of a stringer located at sta 160 to sta 200, WL plus 38, and sta 400 to sta 440, BL 31 L&R. The stringers are aluminum-extruded sections riveted longitudinally to the side and crown panels. They are connected to the formers through finger plates. Refer to WP 0080 00 for sealing requirements.

INSPECTION REQUIREMENTS

NOTE

The items in Figure 1, sheets 1 and 2, correspond to the respective item numbers in the INSPECTION REQUIREMENTS following each illustration.

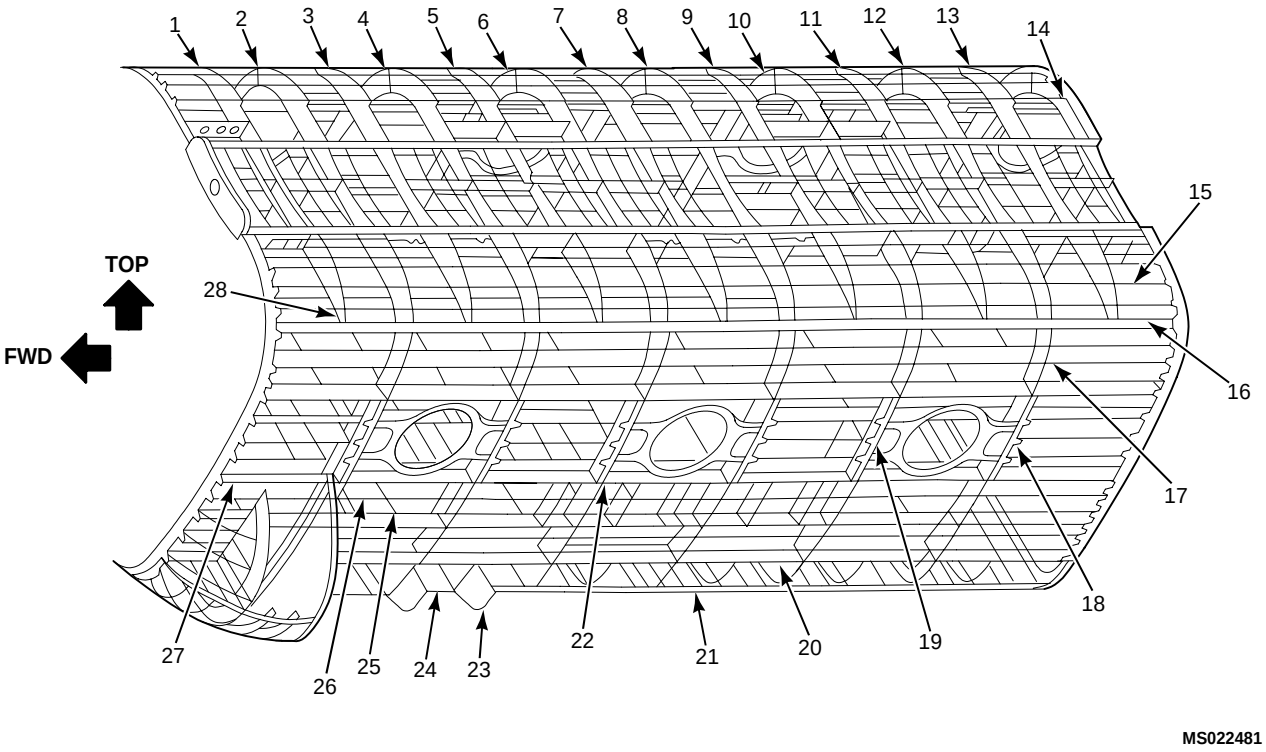


Figure 1. Cabin Interior (Sheet 1 of 2)

1. Crown Former, sta 180
   a. Inspect for dents, cracks (no cracks allowed), scratches, gouges, nicks, holes, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to WP 0111 00 for accept/reject criteria and repair procedures.
   d. Refer to WP 0077 00 for corrosion removal and treatment.

2. Crown Former, sta 200
   a. Inspect for dents, cracks (no cracks allowed), scratches, gouges, nicks, holes, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to WP 0111 00 for accept/reject criteria and repair procedures.
   d. Refer to WP 0077 00 for corrosion removal and treatment.

3. Crown Former, sta 220
   a. Inspect for dents, cracks (no cracks allowed), scratches, gouges, nicks, holes, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to WP 0111 00 for accept/reject criteria and repair procedures.
   d. Refer to WP 0077 00 for corrosion removal and treatment.

INSPECTION REQUIREMENTS - continued

4. Crown Former, sta 240
   a. Inspect for dents, cracks (no cracks allowed), scratches, gouges, nicks, holes, or evidence of corrosion.
   b. Inspect for loose, missing or damaged attaching hardware.
   c. Refer to WP 0111 00 for accept/reject criteria and repair procedures.
   d. Refer to WP 0077 00 for corrosion removal and treatment.

5. Crown Former, sta 260
   a. Inspect for dents, cracks (no cracks allowed), scratches, gouges, nicks, holes, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to WP 0111 00 for accept/reject criteria and repair procedures.
   d. Refer to WP 0077 00 for corrosion removal and treatment.

6. Crown Former, sta 280
   a. Inspect for dents, cracks (no cracks allowed), scratches, gouges, nicks, holes, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to WP 0111 00 for accept/reject criteria and repair procedures.
   d. Refer to WP 0077 00 for corrosion removal and treatment.

7. Crown Former, sta 300
   a. Inspect for dents, cracks (no cracks allowed), scratches, gouges, nicks, holes, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to WP 0111 00 for accept/reject criteria and repair procedures.
   d. Refer to WP 0077 00 for corrosion removal and treatment.

8. Crown Former, sta 320
   a. Inspect for dents, cracks (no cracks allowed), scratches, gouges, nicks, holes, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to WP 0111 00 for accept/reject criteria and repair procedures.
   d. Refer to WP 0077 00 for corrosion removal and treatment.

9. Crown Former, sta 340
   a. Inspect for dents, cracks (no cracks allowed), scratches, gouges, nicks, holes, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to WP 0111 00 for accept/reject criteria and repair procedures.
   d. Refer to WP 0077 00 for corrosion removal and treatment.

10. Crown Former, sta 360
    a. Inspect for dents, cracks (no cracks allowed), scratches, gouges, nicks, holes, or evidence of corrosion.
    b. Inspect for loose, missing, or damaged attaching hardware.
    c. Refer to WP 0111 00 for accept/reject criteria and repair procedures.
    d. Refer to WP 0077 00 for corrosion removal and treatment.

11. Crown Former, sta 380
    a. Inspect for dents, cracks (no cracks allowed), scratches, gouges, nicks, holes, or evidence of corrosion.
    b. Inspect for loose, missing, or damaged attaching hardware.

INSPECTION REQUIREMENTS - continued

c. Refer to WP 0111 00 for accept/reject criteria and repair procedures.
d. Refer to WP 0077 00 for corrosion removal and treatment.

12. Crown Former, sta 400
    a. Inspect for dents, cracks (no cracks allowed), scratches, gouges, nicks, holes, or evidence of corrosion.
    b. Inspect for loose, missing, or damaged attaching hardware.
    c. Refer to WP 0111 00 for accept/reject criteria and repair procedures.
    d. Refer to WP 0077 00 for corrosion removal and treatment.

13. Crown Former, sta 420
    a. Inspect for dents, cracks (no cracks allowed), scratches, gouges, nicks, holes, or evidence of corrosion.
    b. Inspect for loose, missing, or damaged attaching hardware.
    c. Refer to WP 0111 00 for accept/reject criteria and repair procedures.
    d. Refer to WP 0077 00 for corrosion removal and treatment.

14. Former, sta 440
    a. Inspect for dents, cracks (no cracks allowed), scratches, gouges, nicks, holes, or evidence of corrosion.
    b. Inspect for loose, missing, or damaged attaching hardware.
    c. Refer to WP 0111 00 for accept/reject criteria and repair procedures.
    d. Refer to WP 0077 00 for corrosion removal and treatment.

15 Stringers, sta 160 to sta 440 (LH and RH)
    a. Inspect for dents, cracks (no cracks allowed), scratches, gouges, nicks, holes, or evidence of corrosion.
    b. Inspect for loose, missing, or damaged attaching hardware.
    c. Refer to WP 0087 00 and WP 0088 00 for accept/reject criteria and repair procedures.
    d. Refer to WP 0077 00 for corrosion removal and treatment.

16. Longeron, sta 400 to sta 440, BL 31, (LH and RH)
    a. Inspect for dents, cracks (no cracks allowed), scratches, gouges, nicks, holes, or evidence of corrosion.
    b. Inspect for loose, missing, or damaged attaching hardware.
    c. Refer to WP 0088 00 for accept/reject criteria and repair procedures.
    d. Refer to WP 0077 00 for corrosion removal and treatment.

17. Beams, sta 160 to sta 482, WL plus 29, BL 50, (LH and RH)
    a. Inspect for dents, cracks (no cracks allowed), scratches, gouges, nicks, holes, or evidence of corrosion.
    b. Inspect for loose, missing, or damaged attaching hardware.
    c. Refer to WP 0111 00 for accept/reject criteria and repair procedures.
    d. Refer to WP 0077 00 for corrosion removal and treatment.

18. Side Former, sta 400 (LH and RH)
    a. Inspect for dents, cracks (no cracks allowed), scratches, gouges, nicks, holes, or evidence of corrosion.
    b. Inspect for loose, missing, or damaged attaching hardware.
    c. Refer to WP 0111 00 for accept/reject criteria and repair procedures.
    d. Refer to WP 0077 00 for corrosion removal and treatment.

INSPECTION REQUIREMENTS - continued

19. Side Former, sta 360 (LH and RH)
    a. Inspect for dents, cracks (no cracks allowed), scratches, gouges, nicks, holes, or evidence of corrosion.
    b. Inspect for loose, missing, or damaged attaching hardware.
    c. Refer to WP 0111 00 for accept/reject criteria and repair procedures.
    d. Refer to WP 0077 00 for corrosion removal and treatment.

20. Side Formers, sta 320 (LH and RH)
    a. Inspect for dents, cracks (no cracks allowed), scratches, gouges, nicks, holes, or evidence of corrosion.
    b. Inspect for loose, missing, or damaged attaching hardware.
    c. Refer to WP 0111 00 for accept/reject criteria and repair procedures.
    d. Refer to WP 0077 00 for corrosion removal and treatment.

21. Beams, WL 0 (LH and RH)
    a. Inspect for dents, cracks (no cracks allowed), scratches, gouges, nicks, holes, or evidence of corrosion.
    b. Inspect for loose, missing, or damaged attaching hardware.
    c. Refer to WP 0111 00 for accept/reject criteria and repair procedures.
    d. Refer to WP 0077 00 for corrosion removal and treatment.

22. Side Former, sta 280 (LH and RH)
    a. Inspect for dents, cracks (no cracks allowed), scratches, gouges, nicks, holes, or evidence of corrosion.
    b. Inspect for loose, missing, or damaged attaching hardware.
    c. Refer to WP 0111 00 for accept/reject criteria and repair procedures.
    d. Refer to WP 0077 00 for corrosion removal and treatment.

23. Forward Landing Gear Beams (LH and RH)
    a. Inspect for dents, cracks (no cracks allowed), scratches, gouges, nicks, holes, or evidence of corrosion.
    b. Inspect for loose, missing, or damaged attaching hardware.
    c. NDI mounting pad surfaces and around access hole.
    d. Refer to WP 0111 00 for accept/reject criteria and repair procedures.
    e. Refer to WP 0077 00 for corrosion removal and treatment.

24. Side Former, sta 240 (LH and RH)
    a. Inspect for dents, cracks (no cracks allowed), scratches, gouges, nicks, holes, or evidence of corrosion.
    b. Inspect for loose, missing, or damaged attaching hardware.
    c. Refer to WP 0111 00 for accept/reject criteria and repair procedures.
    d. Refer to WP 0077 00 for corrosion removal and treatment.

25. Beams, WL minus 16, sta 140 to sta 482, BL 50 L, , sta 160 to 482, BL 50R
    a. Inspect for dents, cracks (no cracks allowed), scratches, gouges, nicks, holes, or evidence of corrosion.
    b. Inspect for loose, missing, or damaged attaching hardware.
    c. Refer to WP 0111 00 for accept/reject criteria and repair procedures.
    d. Refer to WP 0077 00 for corrosion removal and treatment.

26. Side Former, sta 200 (LH and RH)
    a. Inspect for dents, cracks (no cracks allowed), scratches, gouges, nicks, holes, or evidence of corrosion.
    b. Inspect for loose, missing, or damaged attaching hardware.

INSPECTION REQUIREMENTS - continued

c. Refer to WP 0111 00 for accept/reject criteria and repair procedures.
d. Refer to WP 0077 00 for corrosion removal and treatment.

27. Former, sta 160
    a. Inspect for dents, cracks (no cracks allowed), scratches, gouges, nicks, holes, or evidence of corrosion.
    b. Inspect for loose, missing, or damaged attaching hardware.
    c. Refer to WP 0111 00 for accept/reject criteria and repair procedures.
    d. Refer to WP 0077 00 for corrosion removal and treatment.

28. Longerons, sta 160 to sta 200, WL plus 38, (LH and RH)
    a. Inspect for dents, cracks (no cracks allowed), scratches, gouges, nicks, holes, or evidence of corrosion.
    b. Inspect for loose, missing, or damaged attaching hardware.
    c. Refer to WP 0088 00 for accept/reject criteria and repair procedures.
    d. Refer to WP 0077 00 for corrosion removal and treatment.

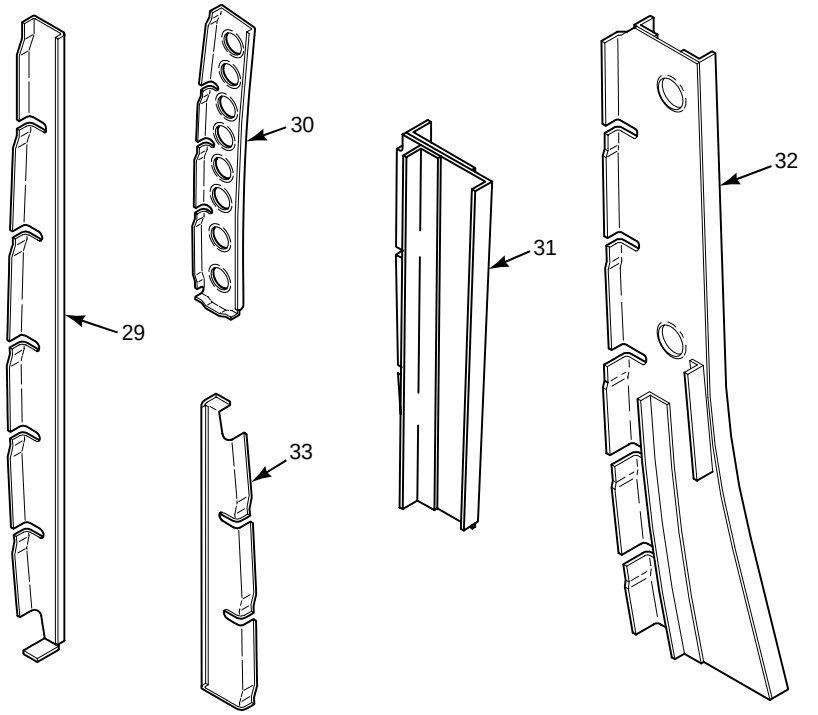


Figure 1. Cabin Interior (Sheet 2 of 2)

29. Partial Side Former (LH and RH), sta 212, sta 225, sta 270, sta 293, sta 306, sta 333, sta 346, sta 413, and 426
    a. Inspect for dents, cracks (no cracks allowed), scratches, gouges, nicks, holes, or evidence of corrosion.
    b. Inspect for loose, missing, or damaged attaching hardware.
    c. Refer to WP 0111 00 for accept/reject criteria and repair procedures.
    d. Refer to WP 0077 00 for corrosion removal and treatment.

INSPECTION REQUIREMENTS - continued

30. Partial Side Former (LH and RH), sta 180 and sta 419
    a. Inspect for dents, cracks (no cracks allowed), scratches, gouges, nicks, holes, or evidence of corrosion.
    b. Inspect for loose, missing, or damaged attaching hardware.
    c. Refer to WP 0111 00 for accept/reject criteria and repair procedures.
    d. Refer to WP 0077 00 for corrosion removal and treatment.

31. Partial Side Former (LH and RH), sta 189, sta 238, sta 262, and sta 372
    a. Inspect for dents, cracks (no cracks allowed), scratches, gouges, nicks, holes, or evidence of corrosion.
    b. Inspect for loose, missing, or damaged attaching hardware.
    c. Refer to WP 0111 00 for accept/reject criteria and repair procedures.
    d. Refer to WP 0077 00 for corrosion removal and treatment.

32. Partial Side Former (LH and RH), sta 260
    a. Inspect for dents, cracks (no cracks allowed), scratches, gouges, nicks, holes, or evidence of corrosion.
    b. Inspect for loose, missing, or damaged attaching hardware.
    c. Refer to WP 0111 00 for accept/reject criteria and repair procedures.
    d. Refer to WP 0077 00 for corrosion removal and treatment.

33. Partial Side Former (LH and RH), sta 372 and sta 389
    a. Inspect for dents, cracks (no cracks allowed), scratches, gouges, nicks, holes, or evidence of corrosion.
    b. Inspect for loose, missing, or damaged attaching hardware.
    c. Refer to WP 0111 00 for accept/reject criteria and repair procedures.
    d. Refer to WP 0077 00 for corrosion removal and treatment.

END OF WORK PACKAGE

DEPOT MAINTENANCE WORK REQUIREMENT
CH-47D HELICOPTER
CABIN TUB EXTERIOR SKIN AND STRINGERS

INITIAL SETUP

Test Equipment:
As Required

Tools and Special Tools:
As Required

Material/Parts:
As Required

Personnel Required:
Examiner (PSA)

References:
TM 1-1500-204-23 Series
TM 55-1520-240-23 series
WP 0077 00
WP 0080 00
WP 0086 00
WP 0087 00
WP 0112 00

Equipment Conditions:
As Required

Special Environmental Condition:
As Required

SCOPE

The tub consists of exterior skin, WL minus 30 to WL minus 40, bottom stiffeners, hinge angles, splice angles, rescue hatch coaming, and rescue hatch door. The bottom and side skins are made of aluminum alloy sheets. The skin stiffeners are located on the bottom and the bottom side panels. The transverse stiffeners on the bottom panel, except those encompassing the rescue hatch cutout, extend the full width of the panel (hinge to hinge). The longitudinal and transverse stiffeners on the bottom panel reinforce the area of the rescue hatch cutout. The LH and RH hinge angles and splice angles are made of aluminum alloy. The rescue hatch coaming consists of members attached to each side, forward and aft, an extruded retainer, brackets, latch receptacles, and plastic impregnated glass cloth. The rescue hatch door is of a sandwich construction. Refer to WP 0080 00 for sealing requirements.

INSPECTION REQUIREMENTS

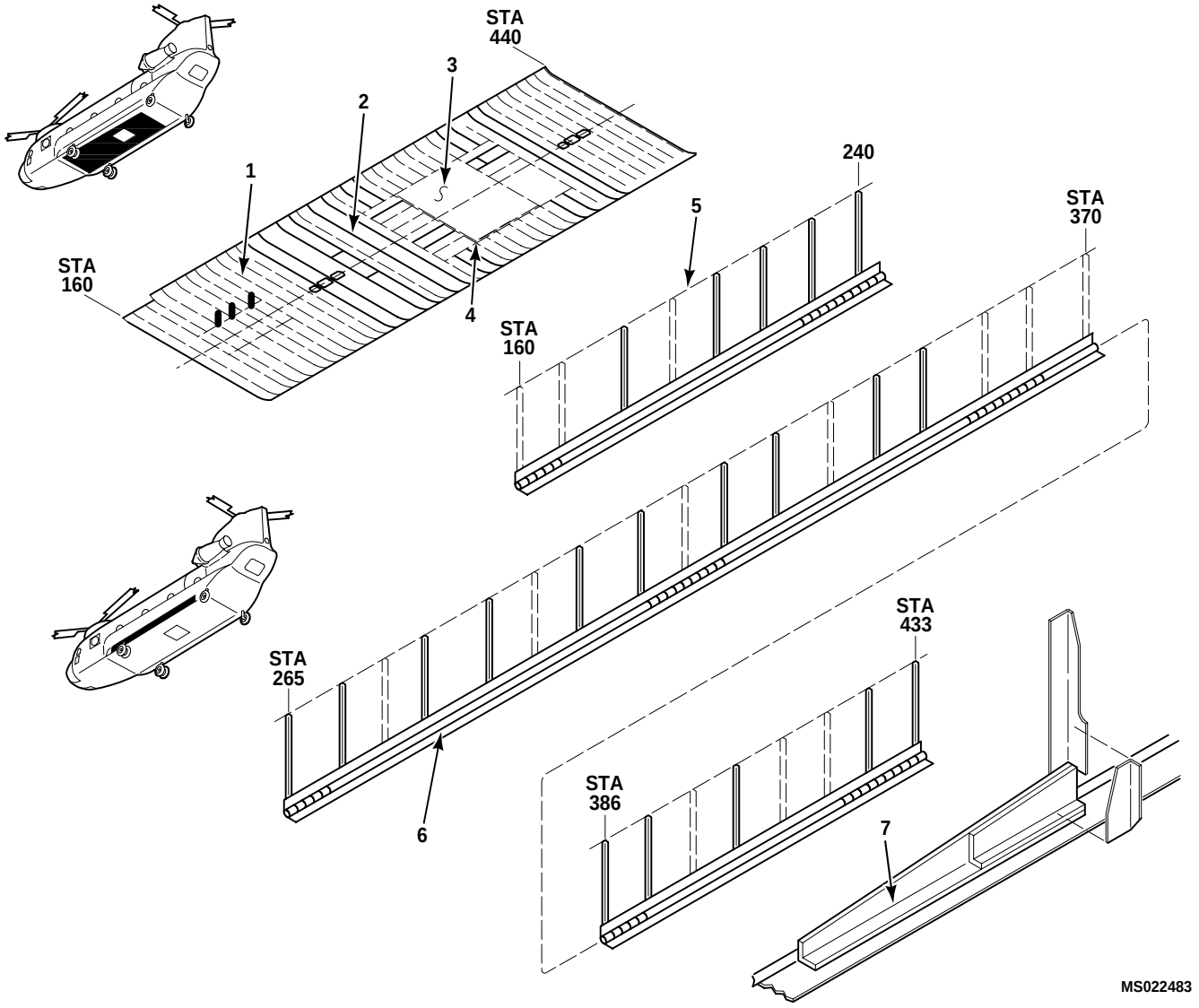


Figure 1. Cabin Tub Exterior Skin and Stringers

NOTE

The items in Figure 1 correspond to the respective item numbers in the following INSPECTION REQUIREMENTS.

1. Exterior Bottom Skin Stiffeners, sta 160 to sta 440
   a. Inspect for dents, cracks (no cracks allowed), scratches, gouges, nicks, holes, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to WP 0086 00 for accept/reject criteria and repair procedures.
   d. Refer to WP 0077 00 for corrosion removal and treatment.

INSPECTION REQUIREMENTS - continued

2. Cabin Bottom and Side Stiffeners, sta 160 to sta 440
   a. Inspect for dents, cracks (no cracks allowed), scratches, gouges, nicks, holes, voids, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to WP 0087 00 or WP 0088 00 for accept/reject criteria and repair procedures.
   d. Refer to WP 0077 00 for corrosion removal and treatment.

3. Rescue Hatch Lower Door
   a. Inspect for dents, cracks (no cracks allowed), gouges, and nicks, holes, delamination, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Inspect door mechanical mechanisms and actuator for proper operation, damage, and security.
   d. Refer to WP 0112 00 for accept/reject criteria and repair procedures.
   e. Refer to WP 0077 00 for corrosion removal and treatment.

4. Rescue Hatch Coaming
   a. Inspect for dents, cracks (no cracks allowed), scratches, gouges, nicks, holes, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Inspect seals for tears, deterioration, and debonding.
   d. Refer to WP 0112 00 for accept/reject criteria and repair procedures.
   e. Refer to WP 0077 00 for corrosion removal and treatment.

5. Exterior Side Skin, sta 160 to sta 440, WL minus 30 to minus 40
   a. Inspect for dents, cracks (no cracks allowed), scratches, gouges, nicks, holes, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to WP 0086 00 for accept/reject criteria and repair procedures.
   d. Refer to WP 0077 00 for corrosion removal and treatment.

6. Hinge Angles, (LH and RH)
   a. Inspect for dents, cracks (no cracks allowed), scratches, gouges, nicks, holes, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to WP 0087 00 or WP 0093 00 for accept/reject criteria and repair procedures.
   d. Refer to WP 0077 00 for corrosion removal and treatment.

7. Splice Angles, sta 265 (LH and RH)
   a. Inspect for dents, cracks (no cracks allowed), scratches, gouges, nicks, holes, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to WP 0112 00 for accept/reject criteria and repair procedures.
   d. Refer to WP 0077 00 for corrosion removal and treatment.

END OF WORK PACKAGE

DEPOT MAINTENANCE WORK REQUIREMENT
CH-47D HELICOPTER
CABIN TUB FORMERS AND BEAMS

INITIAL SETUP

Test Equipment:
As Required

Tools and Special Tools:
As Required

Material/Parts:
As Required

Personnel Required:
Examiner (PSA)

References:
TM 1-1500-204-23 Series
TM 55-1520-240-23 series
WP 0077 00
WP 0080 00
WP 0113 00

Equipment Conditions:
As Required

Special Environmental Condition:
As Required

SCOPE

The cabin tub consists of fifteen formers, sta 160 to sta 440, five cargo tie down adapter floor beams, sta 120 to sta 482, BL 0, BL 20 LH and RH, and BL 44 LH and RH, two rescue hatch beams, sta 300 to sta 380, BL 27 LH and RH, two beams, sta 160 to sta 200, BL 45 LH and RH, tandem cargo hook fittings, sta 240 to sta 260 and sta 400 to sta 420. The formers, sta 160 and sta 440 are made of extruded aluminum alloy angles. The cargo tie down adapter beams, BL 0 and BL 20 LH and RH, are made of aluminum alloy extrusions with receptacles and mounts. The cargo tie down adapter beams, BL 44 LH and RH, are made of aluminum extruded beams and longerons with receptacles and aluminum webs. The rescue hatch beams are made of aluminum alloy extruded caps, aluminum webs, and plastic impregnated glass cloth dust covers. The beams, sta 160 to sta 200, BL 45 LH and RH, are made of aluminum alloy fittings, webs, and cap angles. The forward and aft cargo hook fittings are made of aluminum alloy. The center cargo hook beam is made of aluminum alloy. Refer to WP 0080 00 for sealing requirements.

INSPECTION REQUIREMENTS

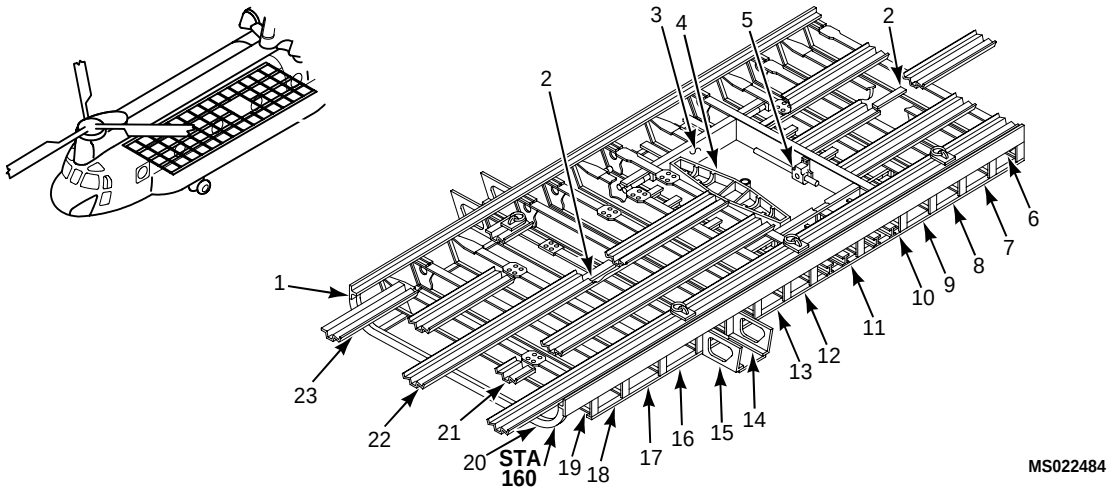


Figure 1. Cabin Tub Formers and Beams

INSPECTION REQUIREMENTS - continued

NOTE

The items in Figure 1 correspond to the respective item numbers in the following INSPECTION REQUIREMENTS.

1. Floor Beams, sta 160 to sta 200, BL 45 (LH and RH)
   a. Inspect for dents, cracks (no cracks allowed), scratches, gouges, nicks, holes, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to WP 0113 00 for accept/reject criteria and repair procedures.
   d. Refer to WP 0077 00 for corrosion removal and treatment.

2. Forward and Aft Cargo Hook Fittings
   a. Inspect for dents, cracks (no cracks allowed), scratches, gouges, nicks, holes, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to WP 0113 00 for accept/reject criteria and repair procedures.
   d. Refer to WP 0077 00 for corrosion removal and treatment.

3. Rescue Hatch Beams
   a. Inspect for dents, cracks (no cracks allowed), scratches, gouges, nicks, holes, voids, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to WP 0113 00 for accept/reject criteria and repair procedures.
   d. Refer to WP 0077 00 for corrosion removal and treatment.

4. Center Cargo Hook Beam Fitting
   a. Inspect for dents, cracks (no cracks allowed), scratches, gouges, nicks, holes, voids, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to WP 0113 00 for accept/reject criteria and repair procedures.
   d. Refer to WP 0077 00 for corrosion removal and treatment.

5. Rescue Hatch Lower Door Actuator, PN 114S2623-3 and PN 114S2623-6
   a. Inspect for dents, cracks (no cracks allowed), scratches, gouges, nicks, or evidence of corrosion.
   b. Comply with function test by making three complete revolutions of the gearbox output shaft in each direction using crank PN 114E4109-8. Check for operation and leakage. Operating torque shall be constant thru duty cycle. Actuator shall operate smoothly with no binding or rough spots. Wetting of case due to oil seepage at shaft seals is acceptable. Seepage sufficient to cause oil to drip is cause for rejection.
   c. No repairs for these actuators, replace if found unacceptable.
   d. Refer to WP 0077 00 for corrosion removal and treatment.

6. Former, sta 440
   a. Inspect for dents, cracks (no cracks allowed), scratches, gouges, nicks, holes, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to WP 0113 00 for accept/reject criteria and repair procedures.
   d. Refer to WP 0077 00 for corrosion removal and treatment.

INSPECTION REQUIREMENTS - continued

7. Floor Former, sta 420
   a. Inspect for dents, cracks (no cracks allowed), scratches, gouges, nicks, holes, delaminations, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to WP 0113 00 for accept/reject criteria and repair procedures.
   d. Refer to WP 0077 00 for corrosion removal and treatment.

8. Floor Former, sta 400
   a. Inspect for dents, cracks (no cracks allowed), scratches, gouges, nicks, holes, delaminations, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to WP 0113 00 for accept/reject criteria and repair procedures.
   d. Refer to WP 0077 00 for corrosion removal and treatment.

9. Floor Former, sta 380
   a. Inspect for dents, cracks (no cracks allowed), scratches, gouges, nicks, holes, delaminations, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to WP 0113 00 for accept/reject criteria and repair procedures.
   d. Refer to WP 0077 00 for corrosion removal and treatment.

10. Floor Former, sta 360
   a. Inspect for dents, cracks (no cracks allowed), scratches, gouges, nicks, holes, delaminations, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to WP 0113 00 for accept/reject criteria and repair procedures.
   d. Refer to WP 0077 00 for corrosion removal and treatment.

11. Floor Former, sta 340 (LH and RH)
   a. Inspect for dents, cracks (no cracks allowed), scratches, gouges, nicks, holes, delaminations, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to WP 0113 00 for accept/reject criteria and repair procedures.
   d. Refer to WP 0077 00 for corrosion removal and treatment.

12. Floor Former, sta 320
   a. Inspect for dents, cracks (no cracks allowed), scratches, gouges, nicks, holes, delaminations, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to WP 0113 00 for accept/reject criteria and repair procedures.
   d. Refer to WP 0077 00 for corrosion removal and treatment.

13. Floor Former, sta 300
   a. Inspect for dents, cracks (no cracks allowed), scratches, gouges, nicks, holes, delaminations, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.

INSPECTION REQUIREMENTS - continued

c. Refer to WP 0113 00 for accept/reject criteria and repair procedures.
d. Refer to WP 0077 00 for corrosion removal and treatment.

14. Floor Former, sta 280
    a. Inspect for dents, cracks (no cracks allowed), scratches, gouges, nicks, holes, delaminations, or evidence of corrosion.
    b. Inspect for loose, missing, or damaged attaching hardware.
    c. Refer to WP 0113 00 for accept/reject criteria and repair procedures.
    d. Refer to WP 0077 00 for corrosion removal and treatment.

15. Floor Former, sta 260
    a. Inspect for dents, cracks (no cracks allowed), scratches, gouges, nicks, holes, delaminations, or evidence of corrosion.
    b. Inspect for loose, missing, or damaged attaching hardware.
    c. Refer to WP 0113 00 for accept/reject criteria and repair procedures.
    d. Refer to WP 0077 00 for corrosion removal and treatment.

16. Floor Former, sta 240
    a. Inspect for dents, cracks (no cracks allowed), scratches, gouges, nicks, holes, delaminations, or evidence of corrosion.
    b. Inspect for loose, missing, or damaged attaching hardware.
    c. Refer to WP 0113 00 for accept/reject criteria and repair procedures.
    d. Refer to WP 0077 00 for corrosion removal and treatment.

17. Floor Former, sta 220
    a. Inspect for dents, cracks (no cracks allowed), scratches, gouges, nicks, holes, delaminations, or evidence of corrosion.
    b. Inspect for loose, missing, or damaged attaching hardware.
    c. Refer to WP 0113 00 for accept/reject criteria and repair procedures.
    d. Refer to WP 0077 00 for corrosion removal and treatment.

18. Floor Former, sta 200
    a. Inspect for dents, cracks (no cracks allowed), scratches, gouges, nicks, holes, delaminations, or evidence of corrosion.
    b. Inspect for loose, missing, or damaged attaching hardware.
    c. Refer to WP 0113 00 for accept/reject criteria and repair procedures.
    d. Refer to WP 0077 00 for corrosion removal and treatment.

19. Floor Former, sta 180
    a. Inspect for dents, cracks (no cracks allowed), scratches, gouges, nicks, holes, delaminations, or evidence of corrosion.
    b. Inspect for loose, missing, or damaged attaching hardware.
    c. Refer to WP 0113 00 for accept/reject criteria and repair procedures.
    d. Refer to WP 0077 00 for corrosion removal and treatment.

INSPECTION REQUIREMENTS - continued

20. Former, sta 160
    a. Inspect for dents, cracks (no cracks allowed), scratches, gouges, nicks, holes, delaminations, or evidence of corrosion.
    b. Inspect for loose, missing, or damaged attaching hardware.
    c. Refer to WP 0113 00 for accept/reject criteria and repair procedures.
    d. Refer to WP 0077 00 for corrosion removal and treatment.

21. Cargo Tie Down Beam, BL 20 (LH and RH)
    a. Inspect for dents, cracks (no cracks allowed), scratches, gouges, nicks, holes, or evidence of corrosion.
    b. Inspect for loose, missing, or damaged attaching hardware.
    c. Inspect cargo tie downs and associated hardware for cracks, scratches, nicks, security, or evidence of corrosion.
    d. Refer to WP 0113 00 for accept/reject criteria and repair procedures.
    e. Refer to WP 0077 00 for corrosion removal and treatment.

22. Cargo Tie Down Beam, BL 0
    a. Inspect for dents, cracks (no cracks allowed), scratches, gouges, nicks, holes, or evidence of corrosion.
    b. Inspect for loose, missing, or damaged attaching hardware.
    c. Inspect cargo tie downs and associated hardware for cracks, scratches, nicks, security, or evidence of corrosion.
    d. Refer to WP 0113 00 for accept/reject criteria and repair procedures.
    e. Refer to WP 0077 00 for corrosion removal and treatment.

23. Cargo Tie Down Beam, BL 44 (LH and RH)
    a. Inspect for dents, cracks (no cracks allowed), scratches, gouges, nicks, holes, or evidence of corrosion.
    b. Inspect for loose, missing, or damaged attaching hardware.
    c. Inspect cargo tie downs and associated hardware for cracks, scratches, nicks, security, or evidence of corrosion.
    d. Refer to WP 0113 00 for accept/reject criteria and repair procedures.
    e. Refer to WP 0077 00 for corrosion removal and treatment.

END OF WORK PACKAGE

DEPOT MAINTENANCE WORK REQUIREMENT

CH-47D HELICOPTER

CABIN FLOORING

INITIAL SETUP

Test Equipment:
As Required

Tools and Special Tools:
As Required

Material/Parts:
As Required

Personnel Required:
Examiner (PSA)

References:
TM 1-1500-204-23 Series
TM 55-1520-240-23 series
WP 0077 00
WP 0080 00
WP 0114 00

Equipment Conditions:
As Required

Special Environmental Condition:
As Required

SCOPE

The cabin flooring extends from sta 120 to sta 486. It consists of twelve similar panels made of extruded aluminum alloy, and a rescue hatch door. A typical panel consists of three extruded sections riveted together and isolator mounts. Raised areas on the extruded section serve as cargo rails. The outboard panel, outboard edges have up-stops. Splice plates are at sta 240 and sta 360 outboard. The rescue hatch door is of sandwich honeycomb construction. The center portion of the flooring is coated with walkway material to provide a nonskid area. Refer to WP 0080 00 for sealing requirements.

INSPECTION REQUIREMENTS

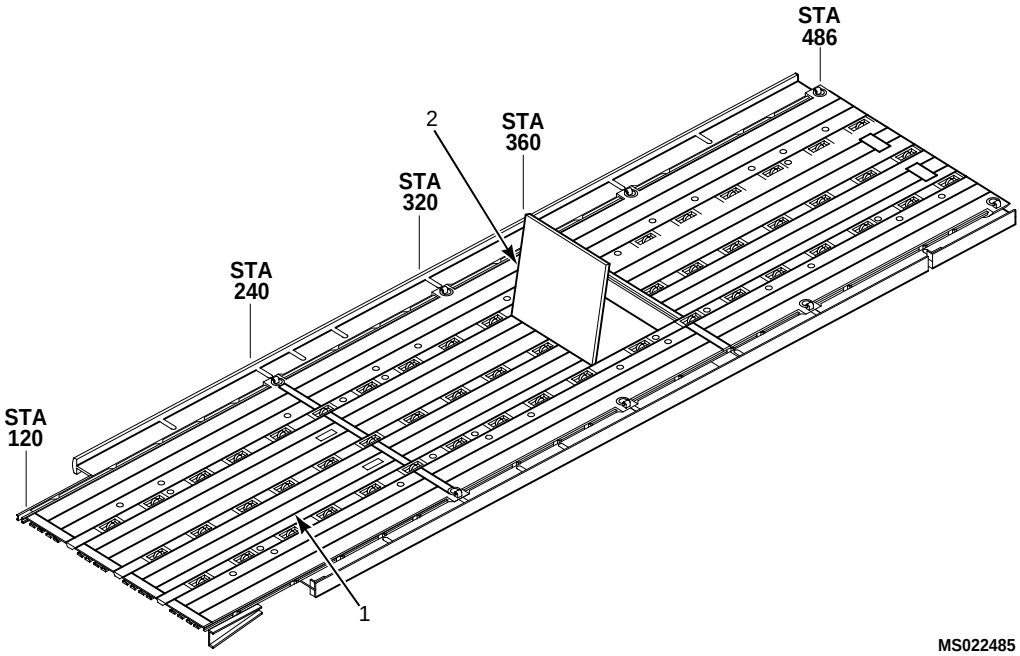


Figure 1. Cabin Flooring

INSPECTION REQUIREMENTS - continued

NOTE

The item numbers in Figure 1 correspond to the respective item numbers in the following INSPECTION REQUIREMENTS.

1. Floor Board, sta 120 to sta 486
   a. Inspect for dents, cracks (no cracks allowed), scratches, gouges, nicks, holes, or evidence of corrosion.
   b. Inspect tape faying surfaces on floor structure if cut or torn replace tape.
   c. Inspect for loose, missing, or damaged attaching hardware.
   d. Inspect isolator mounts for cracks, and deterioration.
   e. Refer to WP 0114 00 for accept/reject criteria and repair procedures.
   f. Refer to WP 0077 00 for corrosion removal and treatment.

2. Rescue Hatch Door
   a. Inspect for dents, cracks (no cracks allowed), gouges, nicks, holes, delaminations, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Inspect seals for tears, deterioration, and debonding.
   d. Refer to WP 0114 00 for accept/reject criteria and repair procedures.
   e. Refer to WP 0077 00 for corrosion removal and treatment.

END OF WORK PACKAGE

DEPOT MAINTENANCE WORK REQUIREMENT
CH-47D HELICOPTER
CABIN TROOP SEATS

INITIAL SETUP

Test Equipment:
As Required

Tools and Special Tools:
As Required

Material/Parts:
As Required

Personnel Required:
Examiner (PSA)

References:
TM 55-1520-240-23 Series
TM 1-1500-204-23 Series
WP 0077 00
WP 0094 00
WP 0096 00

Equipment Conditions:
As Required

Special Environmental Condition:
As Required

SCOPE

The cabin troop seats are one-man and three-man seats, constructed of fabric and metal tubing. The fabric for the seat bottom and lower back is nylon. The upper seat back is made of nylon webbing. An adjustable nylon restraint belt is provided for each seat.

INSPECTION REQUIREMENTS

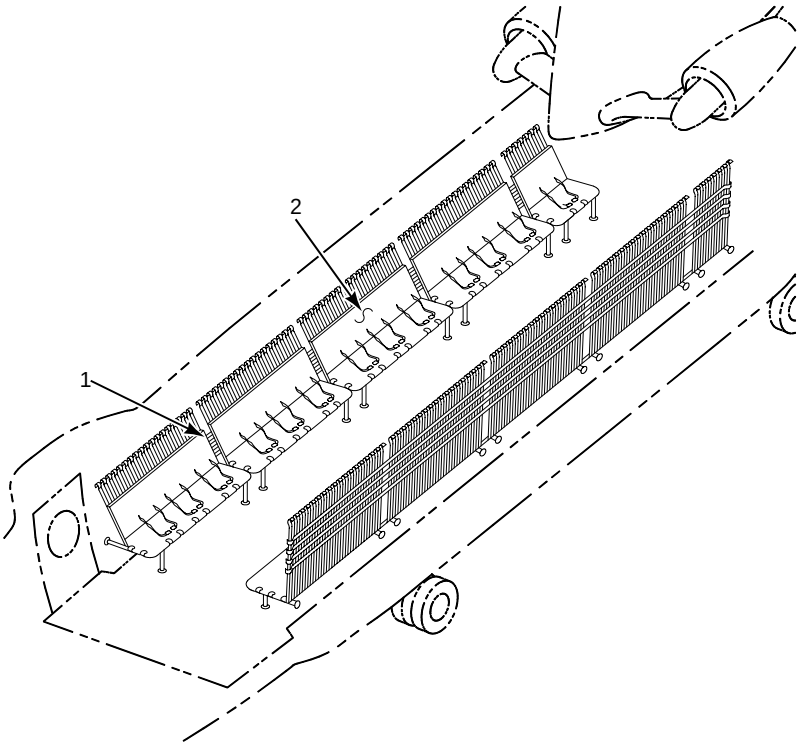


Figure 1. Cabin Troop Seats

INSPECTION REQUIREMENTS - continued

NOTE

The items in Figure 1 correspond to the respective item numbers in the following INSPECTION REQUIREMENTS.

1. Seat Frame
   a. Inspect for dents, cracks (no cracks allowed), scratches, gouges, nicks, holes, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to WP 0094 00 for accept/reject criteria and repair procedures.
   d. Refer to WP 0077 00 for corrosion removal and treatment.

2. Seat Fabric and Restraint Belt
   a. Inspect seat bottom, seat back, and restraint belt for cuts, tears, cleanliness, deterioration, discoloring due to contact with foreign matter, and fraying edges.
   b. Refer to WP 0096 00 and TM 55-1520-240-23 for accept/reject criteria and repair procedures.

END OF WORK PACKAGE

DEPOT MAINTENANCE WORK REQUIREMENT
CH-47D HELICOPTER
COCKPIT AND CABIN ACOUSTIC BLANKETS

INITIAL SETUP

Test Equipment:
As Required

Tools and Special Tools:
As Required

Material/Parts:
As Required

Personnel Required:
Examiner (PSA)

References:
TM 1-1500-240-23 Series
TM 55-1520-240-23 Series
WP 0079 00
WP 0096 00

Equipment Conditions:
As Required

Special Environmental Condition:
As Required

SCOPE

The cockpit and cabin acoustic blankets consist of one to three layers of 1/2-inch thick glass wool batting, quilted and bonded together on both sides. The edges and cut outs are trimmed and bonded together to prevent fraying.

INSPECTION REQUIREMENTS

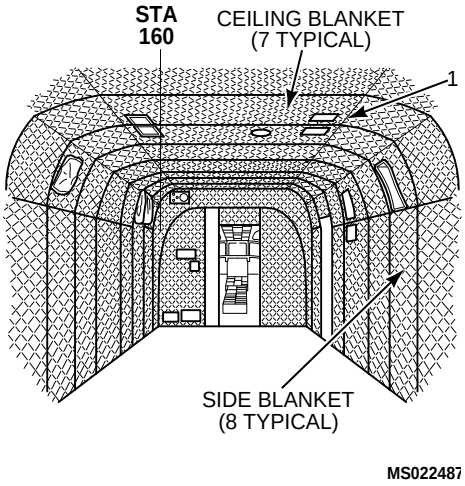


Figure 1. Acoustic Blankets

Acoustic Blankets (Figure 1, item 1)

1. Inspect for cuts, tears, and fraying edges.
2. Inspect for cleanliness.
3. Refer to WP 0079 00, WP 0096 00, and TM 55-1520-240-23 for accept/reject criteria and repair procedures.

END OF WORK PACKAGE

DEPOT MAINTENANCE WORK REQUIREMENT
CH-47D HELICOPTER
AFT SECTION EXTERIOR

INITIAL SETUP

Test Equipment:
As Required

Tools and Special Tools:
As Required

Material/Parts:
As Required

Personnel Required:
Examiner (PSA)

References:
TM 1-1500-240-23 Series
TM 55-1520-240-23 Series
WP 0077 00
WP 0080 00
WP 0081 00
WP 0086 00
WP 0097 00
WP 0115 00

Equipment Conditions:
As Required

Special Environmental Condition:
As Required

SCOPE

The aft section exterior skins consist of:
- Crown skins
- Lower pylon leading edge hinged fairing
- LH and RH window pane, framing, and handgrips
- LH and RH aft fairing, sta 555 to sta 575 at WL 0
- LH and RH lower pylon leading edge fixed fairing
- LH and RH drive shaft and engine mechanical transmission fairing
- LH and RH aft pod fairing
- LH and RH access panel installation, sta 440 to sta 460
- LH and RH aft pod assembly, sta 460 to sta 482
- LH and RH aft landing gear access panels
- LH and RH engine inlet fairing
- LH and RH engine covers
- LH and RH engine air inlet screens
- LH and RH engine exhaust pipe

The skin panels are aluminum alloy. Panel splices occur at primary transverse and longitudinal members. The aft gear fairings installation sta 520 to sta 534, BL 52 LH and RH, consists of aluminum alloy skin and formers. The engine access covers and fairings consist of formers, welded assemblies, supports, and skins. The air inlet screens protect the engines from foreign objects. The engine exhaust is expelled through exhaust pipes made of inconel steel. The windowpanes, framing, and handgrips on the aft section are identical to those in the cabin assembly. The aft fairings, LH and RH, sta 555 to sta 575, WL 0, are made of laminated plastic impregnated glass cloth. The lower fixed pylon fairings, sta 440 to sta 482, WL plus 56 to WL plus 72 are laminated plastic impregnated glass cloth. These fairings are riveted to ribs, angles, beams, and gussets made of aluminum alloy. The hinged pylon fairing, sta 440 to sta 475, WL plus 56 to WL plus 72 is made of a non-metallic sandwich honeycomb. Hinges are provided on each side at sta 473, WL plus 72. The drive shaft and engine mechanical transmission fairing extends laterally from the lower pylon leading edge and is hinged along sta 462. The shell assembly and drive shaft coverings are made of 6061-T6 aluminum alloy and is reinforced by angles, formers, and channels. The aft pod fairing and access panel assemblies, LH and RH, sta 440 to sta 460, are sandwich

SCOPE - continued

honeycomb construction, and hinge attached to the structure. The aft pod assemblies LH and RH, sta 460 to sta 482, are of honeycomb construction. The aft landing gear fairings consist of an access pod hinged to the pod fairing. It is made of inner and outer skins riveted to five formers and a pod work platform. The formers are made of aluminum alloy and the work platform is sandwich honeycomb. Refer to WP 0080 00 for sealing requirements.

INSPECTION REQUIREMENTS

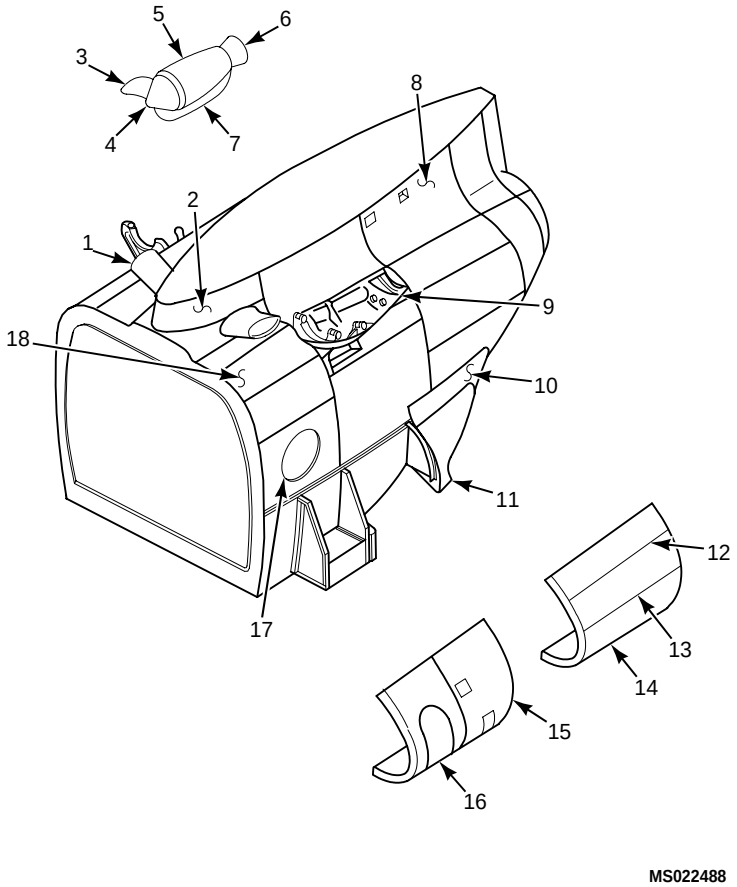


Figure 1. Aft Section Exterior

NOTE

The items in Figure 1 correspond to the respective item numbers in the following INSPECTION REQUIREMENTS.

1. Lower Pylon Leading Edge Fixed Fairing (LH and RH)
   a. Inspect for dents, cracks (no cracks allowed), delamination, gouges, nicks, holes, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to WP 0115 00 for accept/reject criteria and repair procedures.
   d. Refer to WP 0077 00 for corrosion removal and treatment.

INSPECTION REQUIREMENTS - continued

2. Lower Pylon Leading Edge Hinged Fairing
   a. Inspect for dents, cracks (no cracks allowed), delamination, gouges, nicks, holes, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to WP 0115 00 for accept/reject criteria and repair procedures.
   d. Refer to WP 0077 00 for corrosion removal and treatment.

3. Drive Shaft and Engine Mechanical Transmission Fairing (LH and RH)
   a. Inspect for dents, cracks (no cracks allowed), scratches, gouges, nicks, holes, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to WP 0115 00 for accept/reject criteria and repair procedures.
   d. Refer to WP 0077 00 for corrosion removal and treatment.

4. Engine Inlet Screens (LH and RH)
   a. Inspect for dents, cracks (no cracks allowed), scratches, gouges, nicks, holes, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to WP 0115 00 for accept/reject criteria and repair procedures.
   d. Refer to WP 0077 00 for corrosion removal and treatment.

5. Engine Covers (LH and RH)
   a. Inspect for dents, cracks (no cracks allowed), scratches, gouges, nicks, holes, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to WP 0115 00 for accept/reject criteria and repair procedures.
   d. Refer to WP 0077 00 for corrosion removal and treatment.

6. Engine Exhaust Pipes (LH and RH)
   a. Inspect for dents, cracks (no cracks allowed), scratches, gouges, nicks, holes, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to WP 0115 00 for accept/reject criteria and repair procedures.
   d. Refer to WP 0077 00 for corrosion removal and treatment.

7. Engine Inlet Fairings (LH and RH)
   a. Inspect for dents, cracks (no cracks allowed), scratches, gouges, nicks, holes, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to WP 0115 00 for accept/reject criteria and repair procedures.
   d. Refer to WP 0077 00 for corrosion removal and treatment.

8. Crown Skin (LH and RH), sta 440 to sta 594, WL plus 47 to WL plus 72
   a. Inspect for dents, cracks (no cracks allowed), scratches, gouges, nicks, holes, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to WP 0086 00 for accept/reject criteria and repair procedures.
   d. Refer to WP 0077 00 for corrosion removal and treatment.

9. Engine Mount Fairings, (LH and RH)
   a. Inspect for dents, cracks (no cracks allowed), scratches, gouges, nicks, holes, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.

INSPECTION REQUIREMENTS - continued

c. Refer to WP 0115 00 for accept/reject criteria and repair procedures.
d. Refer to WP 0077 00 for corrosion removal and treatment.

10. Aft Fairing (LH and RH), sta 555 to sta 575, WL 0
    a. Inspect for dents, cracks (no cracks allowed), delamination, gouges, nicks, holes, or evidence of corrosion.
    b. Inspect for loose, missing, or damaged attaching hardware.
    c. Refer to WP 0115 00 for accept/reject criteria and repair procedures.
    d. Refer to WP 0077 00 for corrosion removal and treatment.
    e. Refer to WP 0081 00 for hand grips accept/reject criteria and repair procedures.

11. Fairing Installation (LH and RH), sta 520 to sta 534, BL 52
    a. Inspect for dents, cracks (no cracks allowed), scratches, gouges, nicks, holes, or evidence of corrosion.
    b. Inspect for loose, missing, or damaged attaching hardware.
    c. Refer to WP 0115 00 for accept/reject criteria and repair procedures.
    d. Refer to WP 0077 00 for corrosion removal and treatment.

12. Aft Landing Pod Fairing and Work Platform (LH and RH)
    a. Inspect for dents, cracks (no cracks allowed), scratches, gouges, nicks, holes, delamination, or evidence of corrosion.
    b. Inspect for loose, missing, or damaged attaching hardware.
    c. Refer to WP 0115 00 for accept/reject criteria and repair procedures.
    d. Refer to WP 0077 00 for corrosion removal and treatment.

13. Aft Landing Gear Pod Assembly (LH and RH)
    a. Inspect for dents, cracks (no cracks allowed), scratches, gouges, nicks, holes, delamination, or evidence of corrosion.
    b. Inspect for loose, missing, or damaged attaching hardware.
    c. Refer to WP 0115 00 for accept/reject criteria and repair procedures.
    d. Refer to WP 0077 00 for corrosion removal and treatment.

14. Access Panel, Lower Aft Landing Fairing (LH and RH)
    a. Inspect for dents, cracks (no cracks allowed), scratches, gouges, nicks, holes, delamination, or evidence of corrosion.
    b. Inspect for loose, missing, or damaged attaching hardware.
    c. Refer to WP 0115 00 for accept/reject criteria and repair procedures.
    d. Refer to WP 0077 00 for corrosion removal and treatment.

15. Aft Pod Assembly, sta 460 to sta 482 (LH and RH)
    a. Inspect for dents, cracks (no cracks allowed), scratches, gouges, nicks, holes, delamination, or evidence of corrosion.
    b. Inspect for loose, missing, or damaged attaching hardware.
    c. Refer to WP 0115 00 for accept/reject criteria and repair procedures.
    d. Refer to WP 0077 00 for corrosion removal and treatment.

INSPECTION REQUIREMENTS – continued

16. Aft Pod and Access Panel Assembly, sta 440 to sta 460, (LH and RH)
    a. Inspect for dents, cracks (no cracks allowed), scratches, gouges, nicks, holes, delamination, or evidence of corrosion.
    b. Inspect for loose, missing, or damaged attaching hardware.
    c. Refer to WP 0115 00 for accept/reject criteria and repair procedures.
    d. Refer to WP 0077 00 for corrosion removal and treatment.

17. Window Panes, Framing, and Hand Grips (LH and RH)
    a. Inspect windows for cracks, crazing, nicks, pitting, and scratches; replace if cracked, pitted, or crazed.
    b. Inspect window frame for dents, nicks, cracks (no cracks allowed), scratches, or evidence of corrosion.
    c. Inspect handgrips for cracks, separation, chafed and frayed areas.
    d. Inspect frames for loose, missing, or damaged attaching hardware.
    e. Refer to WP 0097 00 for windows and window frames accept/reject criteria and repair.
    f. Refer to WP 0081 00 for hand grips accept/reject criteria and repair procedures.
    g. Refer to WP 0077 00 for corrosion removal and treatment.

18. Side Skins (LH and RH), sta 440 to sta 594, WL minus 40 to WL plus 47
    a. Inspect for dents, cracks (no cracks allowed), scratches, gouges, nicks, holes, or evidence of corrosion.
    b. Inspect for loose, missing, or damaged attaching hardware.
    c. Refer to WP 0086 00 for accept/reject criteria and repair procedures.
    d. Refer to WP 0077 00 for corrosion removal and treatment.

END OF WORK PACKAGE

DEPOT MAINTENANCE WORK REQUIREMENT
CH-47D HELICOPTER
AFT SECTION FRAMES, STRINGERS, AND BEAMS

INITIAL SETUP

Test Equipment:
As Required

Tools and Special Tools:
As Required

Material/Parts:
As Required

Personnel Required:
Examiner (PSA)

References:
TM 1-1500-204-23 Series
TM 1-1500-335-23
TM 55-1520-240-23 Series
WP 0077 00
WP 0080 00
WP 0087 00
WP 0116 00
WP 0117 00

Equipment Conditions:
As Required

Special Environmental Condition:
As Required

SCOPE

The aft section, sta 440 to sta 594, consists of formers, stringers, beams, longerons, and equipment support structures. The side and crown stringers are extruded aluminum alloy sections riveted longitudinally to the sides and crown of the structure through finger plates. There are nine formers of various configurations and consist of inner and outer caps, and webs. The former at sta 482 has forward engine mount support fittings and landing gear fittings as integral parts. The former at sta 502 has aft engine mount support fittings located between the crown and side sections. The formers at sta's 440, 460, 482, 502, 520, 534, and sta 594 consist of inner and outer caps and webs. The formers at sta 555 and sta 575 and crown former at sta 460 are of formed web construction. Beams are located on each side of the aircraft; one between sta 440 and sta 555, WL 0 and the other between sta 440 and sta 575, WL plus 29. Crown beams are located between sta 440 and sta 627, BL 42L&R, sta 440 to sta 482, BL 20R and BL 11L. The aft drive shaft support beam is located between sta 482 and sta 534, WL plus 56. The LH and RH lower canted beams are located between sta 482 and sta 594, BL 50 L&R. The longerons, located between sta 444 and sta 594, BL 45 L&R, are aluminum alloy extrusions. Refer to WP 0080 00 for sealing requirements.

INSPECTION REQUIREMENTS

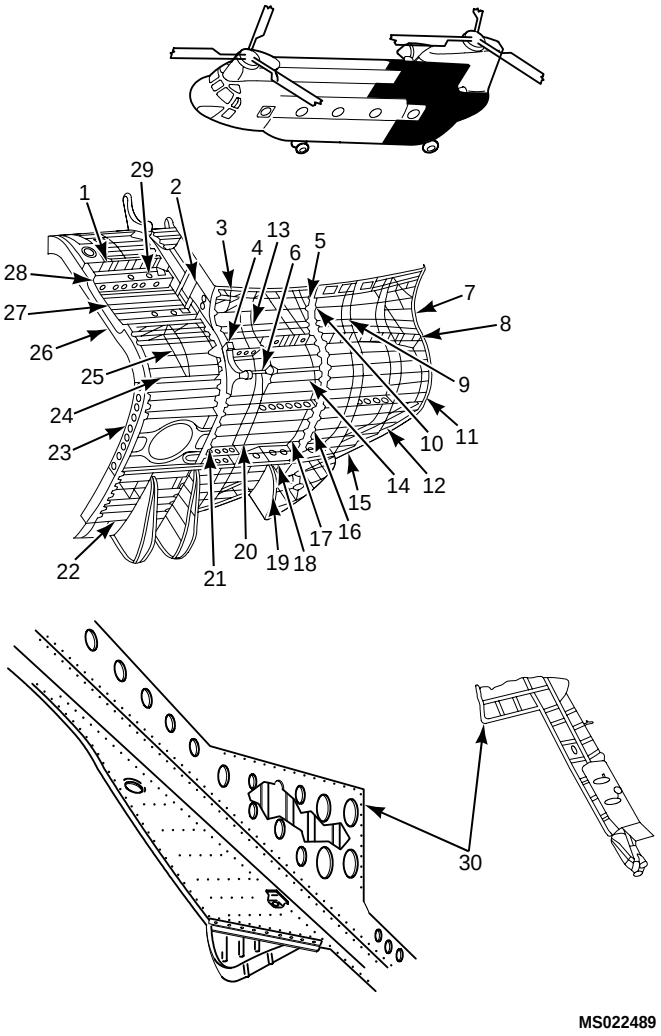


Figure 1. Aft Section Frames, Stringers, and Beams

NOTE

The items in Figure 1 correspond to the respective item numbers in the following INSPECTION REQUIREMENTS.

1. Crown Beam, BL 20R and BL 11L, sta 440 to sta 482
   a. Inspect for dents, cracks (no cracks allowed), scratches, gouges, nicks, holes, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to WP 0117 00 for accept/reject criteria and repair procedures.
   d. Refer to WP 0077 00 for corrosion removal and treatment.

2. Crown Former, sta 482
   a. Inspect for dents, cracks (no cracks allowed), scratches, gouges, nicks, holes, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.

INSPECTION REQUIREMENTS - continued

c. Refer to WP 0116 00 for accept/reject criteria and repair procedures.
d. Refer to WP 0077 00 for corrosion removal and treatment.

3. Aft Drive Shaft Support Beam, sta 482 to sta 534, WL plus 56
   a. Inspect for dents, cracks (no cracks allowed), scratches, gouges, nicks, holes, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to WP 0117 00 for accept/reject criteria and repair procedures.
   d. Refer to WP 0077 00 for corrosion removal and treatment.

4. Forward Engine Mount Fitting, LH and RH
   a. Inspect for dents, cracks (no cracks allowed), scratches, gouges, nicks, holes, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. NDI mounting bolt surfaces and entire exterior area per TM 1-1500-335-23.
   d. Refer to WP 0118 00 for accept/reject criteria and repair procedures.
   e. Refer to WP 0077 00 for corrosion removal and treatment.

5. Crown Beam LH and RH, sta 440 to sta 627
   a. Inspect for dents, cracks (no cracks allowed), scratches, gouges, nicks, holes, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to WP 0117 00 for accept/reject criteria and repair procedures.
   d. Refer to WP 0077 00 for corrosion removal and treatment.

6. Aft Engine Mount Fitting, LH and RH
   a. Inspect for dents, cracks (no cracks allowed), scratches, gouges, nicks, holes, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. NDI mounting bolt surfaces and entire exterior area per TM 1-1500-335-23.
   d. Refer to WP 0118 00 for accept/reject criteria and repair procedures.
   e. Refer to WP 0077 00 for corrosion removal and treatment.

7. Crown Former, LH and RH, sta 594
   a. Inspect for dents, cracks (no cracks allowed), scratches, gouges, nicks, holes, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to WP 0116 00 for accept/reject criteria and repair procedures.
   d. Refer to WP 0077 00 for corrosion removal and treatment.

8. Crown Former, LH and RH, sta 575
   a. Inspect for dents, cracks (no cracks allowed), scratches, gouges, nicks, holes, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to WP 0116 00 for accept/reject criteria and repair procedures.
   d. Refer to WP 0077 00 for corrosion removal and treatment.

9. Crown Former, LH and RH, sta 555
   a. Inspect for dents, cracks (no cracks allowed), scratches, gouges, nicks, holes, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to WP 0116 00 for accept/reject criteria and repair procedures.
   d. Refer to WP 0077 00 for corrosion removal and treatment.

INSPECTION REQUIREMENTS - continued

10. Crown Former, sta 534
    a. Inspect for dents, cracks (no cracks allowed), scratches, gouges, nicks, holes, or evidence of corrosion.
    b. Inspect for loose, missing, or damaged attaching hardware.
    c. Refer to WP 0116 00 for accept/reject criteria and repair procedures.
    d. Refer to WP 0077 00 for corrosion removal and treatment.

11. Side Former, LH and RH, sta 594
    a. Inspect for dents, cracks (no cracks allowed), scratches, gouges, nicks, holes, or evidence of corrosion.
    b. Inspect for loose, missing, or damaged attaching hardware.
    c. Refer to WP 0116 00 for accept/reject criteria and repair procedures.
    d. Refer to WP 0077 00 for corrosion removal and treatment.

12. Side Former, LH and RH, sta 575
    a. Inspect for dents, cracks (no cracks allowed), scratches, gouges, nicks, holes, or evidence of corrosion.
    b. Inspect for loose, missing, or damaged attaching hardware.
    c. Refer to WP 0116 00 for accept/reject criteria and repair procedures.
    d. Refer to WP 0077 00 for corrosion removal and treatment.

13. Crown Former, LH and RH, sta 502
    a. Inspect for dents, cracks (no cracks allowed), scratches, gouges, nicks, holes, or evidence of corrosion.
    b. Inspect for loose, missing, or damaged attaching hardware.
    c. Refer to WP 0116 00 for accept/reject criteria and repair procedures.
    d. Refer to WP 0077 00 for corrosion removal and treatment.

14. Stringers, sta 440 to sta 594
    a. Inspect for dents, cracks (no cracks allowed), scratches, gouges, nicks, holes, or evidence of corrosion.
    b. Inspect for loose, missing, or damaged attaching hardware.
    c. Refer to WP 0087 00 and WP 0088 00 for accept/reject criteria and repair procedures.
    d. Refer to WP 0077 00 for corrosion removal and treatment.

15. Side Formers, LH and RH, sta 555
    a. Inspect for dents, cracks (no cracks allowed), scratches, gouges, nicks, holes, or evidence of corrosion.
    b. Inspect for loose, missing, or damaged attaching hardware.
    c. Refer to WP 0116 00 for accept/reject criteria and repair procedures.
    d. Refer to WP 0077 00 for corrosion removal and treatment.

16. Beam, LH and RH, sta 440 to sta 575, WL plus 29
    a. Inspect for dents, cracks (no cracks allowed), scratches, gouges, nicks, holes, or evidence of corrosion.
    b. Inspect for loose, missing, or damaged attaching hardware.
    c. Refer to WP 0117 00 for accept/reject criteria and repair procedures.
    d. Refer to WP 0077 00 for corrosion removal and treatment.

INSPECTION REQUIREMENTS - continued

17. Side Formers, LH and RH, sta 534
    a. Inspect for dents, cracks (no cracks allowed), scratches, gouges, nicks, holes, or evidence of corrosion.
    b. Inspect for loose, missing, or damaged attaching hardware.
    c. Refer to WP 0116 00 for accept/reject criteria and repair procedures.
    d. Refer to WP 0077 00 for corrosion removal and treatment.

18. Beam, LH and RH, sta 440 to sta 555, WL 0
    a. Inspect for dents, cracks (no cracks allowed), scratches, gouges, nicks, holes, or evidence of corrosion.
    b. Inspect for loose, missing, or damaged attaching hardware.
    c. Refer to WP 0117 00 for accept/reject criteria and repair procedures.
    d. Refer to WP 0077 00 for corrosion removal and treatment.

19. Side Formers, LH and RH, sta 520
    a. Inspect for dents, cracks (no cracks allowed), scratches, gouges, nicks, holes, or evidence of corrosion.
    b. Inspect for loose, missing, or damaged attaching hardware.
    c. Refer to WP 0116 00 for accept/reject criteria and repair procedures.
    d. Refer to WP 0077 00 for corrosion removal and treatment.

20. Side Former, LH and RH, sta 502
    a. Inspect for dents, cracks (no cracks allowed), scratches, gouges, nicks, holes, or evidence of corrosion.
    b. Inspect for loose, missing, or damaged attaching hardware.
    c. Refer to WP 0116 00 for accept/reject criteria and repair procedures.
    d. Refer to WP 0077 00 for corrosion removal and treatment.

21. Side Formers, LH and RH, sta 482
    a. Inspect for dents, cracks (no cracks allowed), scratches, gouges, nicks, holes, or evidence of corrosion.
    b. Inspect for loose, missing, or damaged attaching hardware.
    c. Refer to WP 0116 00 for accept/reject criteria and repair procedures.
    d. Refer to WP 0077 00 for corrosion removal and treatment.

22. Side Former, LH and RH, sta 460, WL 0 to WL minus 30
    a. Inspect for dents, cracks (no cracks allowed), scratches, gouges, nicks, holes, or evidence of corrosion.
    b. Inspect for loose, missing, or damaged attaching hardware.
    c. Refer to WP 0116 00 for accept/reject criteria and repair procedures.
    d. Refer to WP 0077 00 for corrosion removal and treatment.

23. Side Formers, LH and RH, sta 440
    a. Inspect for dents, cracks (no cracks allowed), scratches, gouges, nicks, holes, or evidence of corrosion.
    b. Inspect for loose, missing, or damaged attaching hardware.
    c. Refer to WP 0116 00 and TM 55-1520 240-23 for accept/reject criteria and repair procedures.
    d. Refer to WP 0077 00 for corrosion removal and treatment.

24. Longeron, LH and RH, sta 444 to sta 594, BL 45
    a. Inspect for dents, cracks (no cracks allowed), scratches, gouges, nicks, holes, or evidence of corrosion.
    b. Inspect for loose, missing, or damaged attaching hardware.

INSPECTION REQUIREMENTS - continued

c. Refer to WP 0087 00 and WP 0088 00 for accept/reject criteria and repair procedures.
d. Refer to WP 0077 00 for corrosion removal and treatment.

25. Crown Former, sta 460, LH and RH
    a. Inspect for dents, cracks (no cracks allowed), scratches, gouges, nicks, holes, or evidence of corrosion.
    b. Inspect for loose, missing, or damaged attaching hardware.
    c. Refer to WP 0116 00 for accept/reject criteria and repair procedures.
    d. Refer to WP 0077 00 for corrosion removal and treatment.

26. Crown Former, sta 440
    a. Inspect for dents, cracks (no cracks allowed), scratches, gouges, nicks, holes, or evidence of corrosion.
    b. Inspect for loose, missing, or damaged attaching hardware.
    c. Refer to WP 0116 00 and TM 55-1520 240-23 for accept/reject criteria and repair procedures.
    d. Refer to WP 0077 00 for corrosion removal and treatment.

27. Combiner Drip Pan, LH web, RH web, center web, and drain pan
    a. Inspect for dents, cracks (no cracks allowed), scratches, gouges, nicks, holes, or evidence of corrosion.
    b. Inspect for loose, missing, or damaged attaching hardware.
    c. Refer to WP 0117 00 for accept/reject criteria and repair procedures.
    d. Refer to WP 0077 00 for corrosion removal and treatment.

28. Combiner Transmission Longitudinal Support Beam, LH and RH, sta 440 to sta 482
    a. Inspect for dents, cracks (no cracks allowed), scratches, gouges, nicks, holes, or evidence of corrosion.
    b. Inspect for loose, missing, or damaged attaching hardware.
    c. NDI top and sides of entire beam, sta 440 to sta 482, per TM 1-1500-335-23.
    d. Refer to WP 0117 00 for accept/reject criteria and repair procedures.
    e. Refer to WP 0077 00 for corrosion removal and treatment.

29. Combiner Support Mount Fittings, LH and RH
    a. Inspect for dents, cracks (no cracks allowed), scratches, gouges, nicks, holes, or evidence of corrosion.
    b. Inspect for loose, missing, or damaged attaching hardware.
    c. NDI bolt pad surfaces top and bottom, per TM 1-1500-335-23.
    d. Refer to WP 0117 00 for accept/reject criteria and repair procedures.
    e. Refer to WP 0077 00 for corrosion removal and treatment.

30. Lower Canted Beam, LH and RH, sta 482 to sta 594
    a. Inspect for dents, cracks (no cracks allowed), scratches, gouges, nicks, holes, or evidence of corrosion.
    b. Inspect for loose, missing, or damaged attaching hardware.
    c. Inspect ramp seal and retainer for cracks, tears, deterioration, or evidence of corrosion.
    d. Refer to WP 0117 00 for accept/reject criteria and repair procedures.
    e. Refer to WP 0077 00 for corrosion removal and treatment.

END OF WORK PACKAGE

DEPOT MAINTENANCE WORK REQUIREMENT

CH-47D HELICOPTER

AFT SECTION TUB ASSEMBLY

INITIAL SETUP

Test Equipment:
As Required

Tools and Special Tools:
As Required

Material/Parts:
As Required

Personnel Required:
Examiner (PSA)

References:
TM 1-1500-204-23 Series
TM 1-1500-335-23
TM 55-1520-240-23 Series
WP 0077 00
WP 0080 00
WP 0086 00
WP 0088 00
WP 0119 00

Equipment Conditions:
As Required

Special Environmental Condition:
As Required

SCOPE

The aft section tub assembly, sta 440 to sta 482, WL minus 30 to WL minus 40, consists of three floor formers, landing gear drag beams, skin, stringers, ramp hinge tunnel installation, ramp hinges, and aft landing gear trunnion fittings. The bottom and side skins, sta 440 to sta 482, are made of aluminum alloy. The stringers are extruded sections riveted longitudinally to the structure. The ramp hinge installation, sta 478 to sta 495, WL minus 30, BL 45L to BL 45R, consists of a finger plate, a floor panel assembly of sandwich honeycomb construction, two web assemblies, and a double hinge assembly. The ramp hinges, sta 482 to sta 495, are aluminum alloy. The landing gear trunnions at sta 485 are made of aluminum alloy. Refer to WP 0080 00 for sealing requirements.

INSPECTION REQUIREMENTS

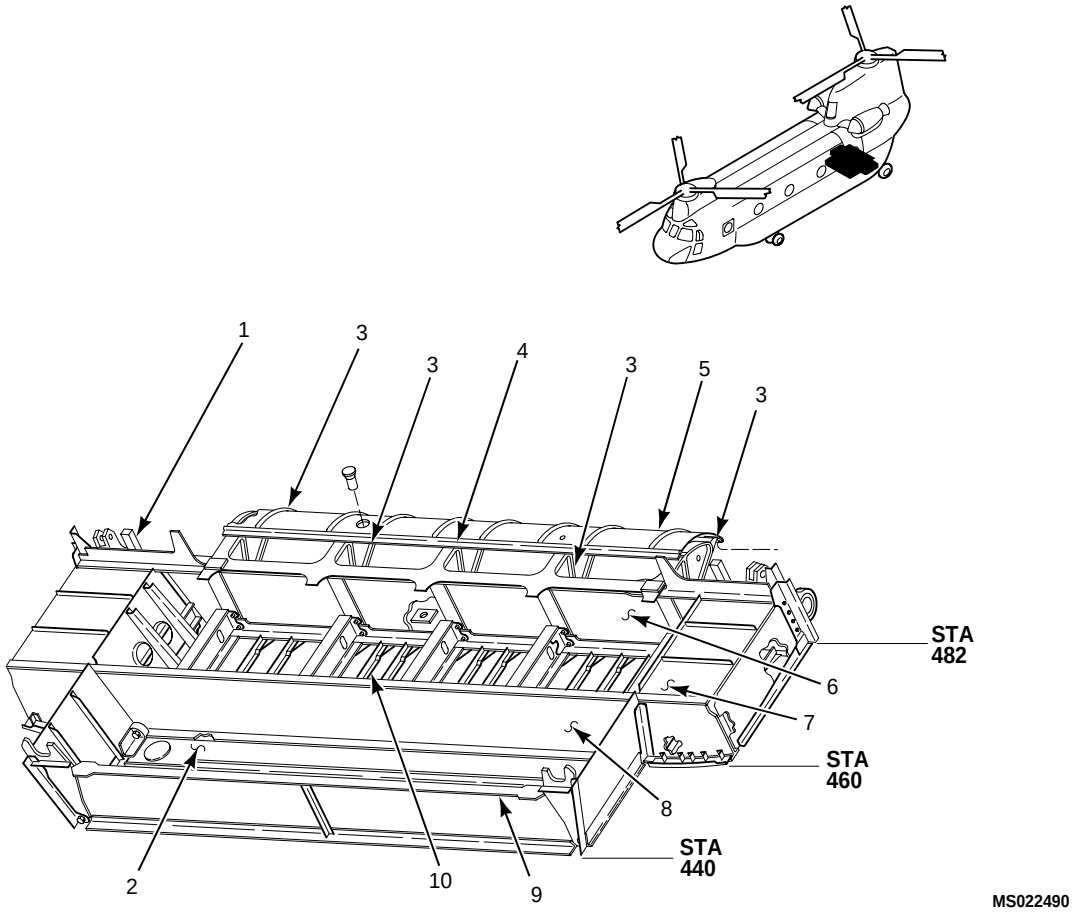


Figure 1. Aft Section Tub Assembly

NOTE

The item numbers in Figure 1 correspond to the respective item numbers in the following INSPECTION REQUIREMENTS.

1. Aft Landing Gear Trunnion Fittings, LH and RH
   a. Inspect for dents, cracks (no cracks allowed), scratches, gouges, nicks, holes, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. NDI trunnion fittings per TM 1-1500-335-23.
   d. Refer to WP 0119 00 for accept/reject criteria and repair procedures.
   e. Refer to WP 0077 00 for corrosion removal and treatment.

INSPECTION REQUIREMENTS – continued

2. Side and Bottom Skins
   a. Inspect for dents, cracks (no cracks allowed), scratches, gouges, nicks, holes, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to WP 0086 00 for accept/reject criteria and repair procedures.
   d. Refer to WP 0077 00 for corrosion removal and treatment.

3. Ramp Hinges
   a. Inspect for dents, cracks (no cracks allowed), scratches, gouges, nicks, holes, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to WP 0119 00 for accept/reject criteria and repair procedures.
   d. Refer to WP 0077 00 for corrosion removal and treatment.

4. Ramp Hinge Tunnel Installation
   a. Inspect for dents, cracks (no cracks allowed), scratches, gouges, nicks, holes, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to WP 0119 00 for accept/reject criteria and repair procedures.
   d. Refer to WP 0077 00 for corrosion removal and treatment.

5. Ramp Tunnel Panel Assembly
   a. Inspect for dents, cracks (no cracks allowed), scratches, gouges, nicks, holes, delamination, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to WP 0119 00 for accept/reject criteria and repair procedures.
   d. Refer to WP 0077 00 for corrosion removal and treatment.

6. Floor Former, sta 482
   a. Inspect for dents, cracks (no cracks allowed), scratches, gouges, nicks, holes, delamination, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to WP 0119 00 for accept/reject criteria and repair procedures.
   d. Refer to WP 0077 00 for corrosion removal and treatment.

7. Landing Gear Drag Beam, LH and RH
   a. Inspect for dents, cracks (no cracks allowed), scratches, gouges, nicks, holes, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to WP 0119 00 for accept/reject criteria and repair procedures.
   d. Refer to WP 0077 00 for corrosion removal and treatment.

8. Floor Former, sta 460
   a. Inspect for dents, cracks (no cracks allowed), scratches, gouges, nicks, holes, delamination, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to WP 0119 00 for accept/reject criteria and repair procedures.
   d. Refer to WP 0077 00 for corrosion removal and treatment.

INSPECTION REQUIREMENTS - continued

9. Floor Former, sta 440
   a. Inspect for dents, cracks (no cracks allowed), scratches, gouges, nicks, holes, delamination, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to WP 0119 00 for accept/reject criteria and repair procedures.
   d. Refer to WP 0077 00 for corrosion removal and treatment.

10. Side and Bottom Stringers
   a. Inspect for dents, cracks (no cracks allowed), scratches, gouges, nicks, holes, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to WP 0086 00 for skin accept/reject criteria and repair procedures.
   d. Refer to WP 0087 00 or WP 0088 00 for stringer accept/reject criteria and repair procedures.

END OF WORK PACKAGE

DEPOT MAINTENANCE WORK REQUIREMENT
CH-47D HELICOPTER
TAIL CONE ASSEMBLY

INITIAL SETUP

Test Equipment:
As Required

Tools and Special Tools:
As Required

Material/Parts:
As Required

Personnel Required:
Examiner (PSA)

References:
TM 1-1500-204-23 Series
TM 55-1520-240-23 Series
WP 0077 00
WP 0080 00
WP 0120 00

Equipment Conditions:
As Required

Special Environmental Condition:
As Required

SCOPE

The tail cone extends from sta 594 to sta 630. The tail cone is made of formed aluminum skins, lapped and riveted to internal formers made of aluminum alloy channels to maintain the skin shape. A deck, consisting of two outboard webs made of aluminum alloy formed channels and an exhaust plenum is located between sta 594 and sta 630, WL plus 59 to WL plus 72. Another deck at WL plus 72 consists of a web and formed sections made of aluminum alloy. The upper APU mount supports are attached to the bottom of the plenum between sta 612 and sta 618. The right APU mount supports are located from sta 606 to sta 612, WL plus 50. Refer to WP 0080 00 for sealing requirements.

INSPECTION REQUIREMENTS

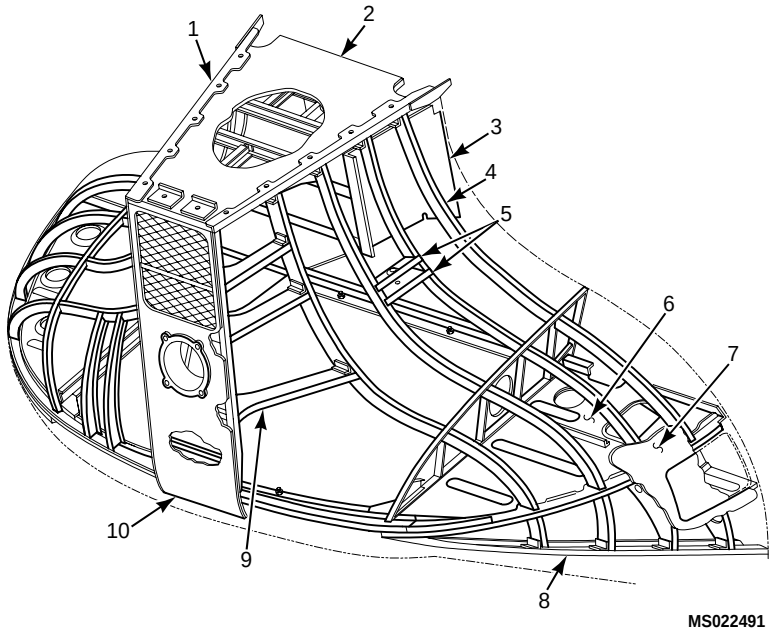


Figure 1. Tail Cone Assembly

INSPECTION REQUIREMENTS - continued

NOTE

The items in Figure 1 correspond to the respective item numbers in the following INSPECTION REQUIREMENTS.

1. Tail Cone Channels, sta 594 to sta 630, LH and RH
   a. Inspect for dents, cracks (no cracks allowed), scratches, gouges, nicks, holes, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to WP 0120 00 for accept/reject criteria and repair procedures.
   d. Refer to WP 0077 00 for corrosion removal and treatment.

2. Tail Cone Deck, WL plus 72
   a. Inspect for dents, cracks (no cracks allowed), scratches, gouges, nicks, holes, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to WP 0120 00 for accept/reject criteria and repair procedures.
   d. Refer to WP 0077 00 for corrosion removal and treatment.

3. Tail Cone Plenum
   a. Inspect for dents, cracks (no cracks allowed), scratches, gouges, nicks, holes, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to WP 0120 00 for accept/reject criteria and repair procedures.
   d. Refer to WP 0077 00 for corrosion removal and treatment.

4. Formers, sta 599 to sta 617 LH and RH
   a. Inspect for dents, cracks (no cracks allowed), scratches, gouges, nicks, holes, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to WP 0120 00 for accept/reject criteria and repair procedures.
   d. Refer to WP 0077 00 for corrosion removal and treatment.

5. Tail Cone APU Mount Supports
   a. Inspect for dents, cracks (no cracks allowed), scratches, gouges, nicks, holes, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to WP 0120 00 for accept/reject criteria and repair procedures.
   d. Refer to WP 0077 00 for corrosion removal and treatment.

6. Tail Cone Deck, sta 594 to sta 630, LH and RH
   a. Inspect for dents, cracks (no cracks allowed), scratches, gouges, nicks, holes, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to WP 0120 00 for accept/reject criteria and repair procedures.
   d. Refer to WP 0077 00 for corrosion removal and treatment.

7. Tail Cone Skin, sta 594 to sta 630, LH and RH
   a. Inspect for dents, cracks (no cracks allowed), scratches, gouges, nicks, holes, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.

INSPECTION REQUIREMENTS - continued

c. Refer to WP 0120 00 for accept/reject criteria and repair procedures.
d. Refer to WP 0077 00 for corrosion removal and treatment.

8. Longeron, sta 594 to sta 630, LH and RH
   a. Inspect for dents, cracks (no cracks allowed), scratches, gouges, nicks, holes, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to WP 0120 00 for accept/reject criteria and repair procedures.
   d. Refer to WP 0077 00 for corrosion removal and treatment.

9. Tail Cone Formers, sta 617 to sta 625
   a. Inspect for dents, cracks (no cracks allowed), scratches, gouges, nicks, holes, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to WP 0120 00 for accept/reject criteria and repair procedures.
   d. Refer to WP 0077 00 for corrosion removal and treatment.

10. Aft Web (center)
   a. Inspect for dents, cracks (no cracks allowed), scratches, gouges, nicks, holes, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to WP 0120 00 for accept/reject criteria and repair procedures.
   d. Refer to WP 0077 00 for corrosion removal and treatment.

END OF WORK PACKAGE

DEPOT MAINTENANCE WORK REQUIREMENT

CH-47D HELICOPTER

CARGO DOOR COAMING

INITIAL SETUP

Test Equipment:
As Required

Tools and Special Tools:
As Required

Material/Parts:
As Required

Personnel Required:
Examiner (PSA)

References:
TM 1-1500-204-23 Series
TM 55-1520-240-23 Series
WP 0077 00
WP 0080 00
WP 0121 00

Equipment Conditions:
As Required

Special Environmental Condition:
As Required

SCOPE

The cargo door coaming assembly is riveted to the aft section from sta 575 to sta 630 and consists of seals, coamings, formers, strip bonder, and seal clamps. The coaming, LH and RH, is made of plastic impregnated glass cloth. The formers at sta 594 are formed aluminum alloy. The seals are made of rubber. The seal clamps are aluminum alloy. Refer to WP 0080 00 for sealing requirements.

INSPECTION REQUIREMENTS

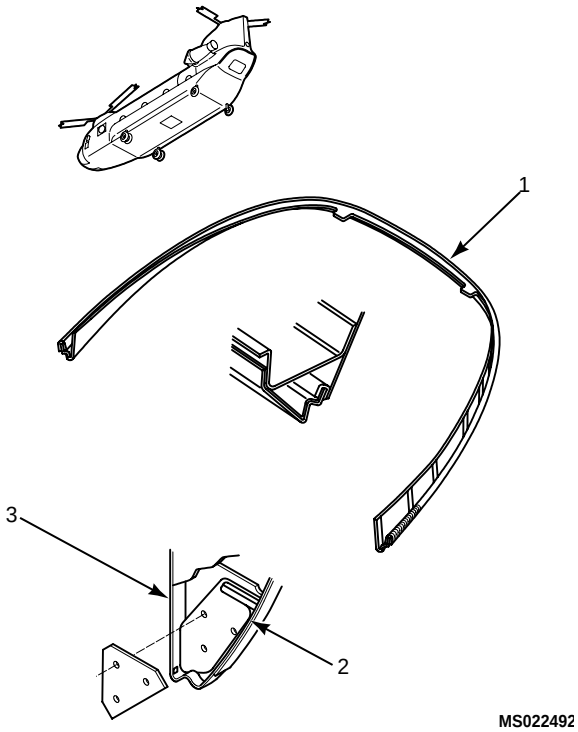


Figure 1. Cargo Door Coaming

INSPECTION REQUIREMENTS - continued

NOTE

The items in Figure 1 correspond to the respective item numbers in the following INSPECTION REQUIREMENTS.

1. Coaming, LH and RH
   a. Inspect for dents, cracks (no cracks allowed), gouges, nicks, holes, wear, delamination, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to WP 0121 00 for accept/reject criteria and repair procedures.
   d. Refer to WP 0077 00 for corrosion removal and treatment.

2. Seals and Clamps, LH and RH
   a. Inspect for dents, cracks (no cracks allowed), scratches, gouges, nicks, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to WP 0121 00 for accept/reject criteria and repair procedures.
   d. Refer to WP 0077 00 for corrosion removal and treatment.

3. Formers, sta 575 LH and RH
   a. Inspect for dents, cracks (no cracks allowed), scratches, gouges, nicks, holes, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to WP 0121 00 for accept/reject criteria and repair procedures.
   d. Refer to WP 0077 00 for corrosion removal and treatment.

END OF WORK PACKAGE

DEPOT MAINTENANCE WORK REQUIREMENT
CH-47D HELICOPTER
AFT TRANSMISSION DRIP PAN

INITIAL SETUP

Test Equipment:
As Required

Tools and Special Tools:
As Required

Material/Parts:
As Required

Personnel Required:
Examiner (PSA)

References:
TM 1-1500-204-23 Series
TM 55-1520-240-23 Series
WP 0077 00
WP 0122 00

Equipment Conditions:
As Required

Special Environmental Condition:
As Required

SCOPE

The aft transmission drip pan installation is located between sta 534 and sta 594, WL plus 48. It consists of a 2-ply laminated plastic impregnated glass cloth pan and a support made of aluminum alloy.

INSPECTION REQUIREMENTS

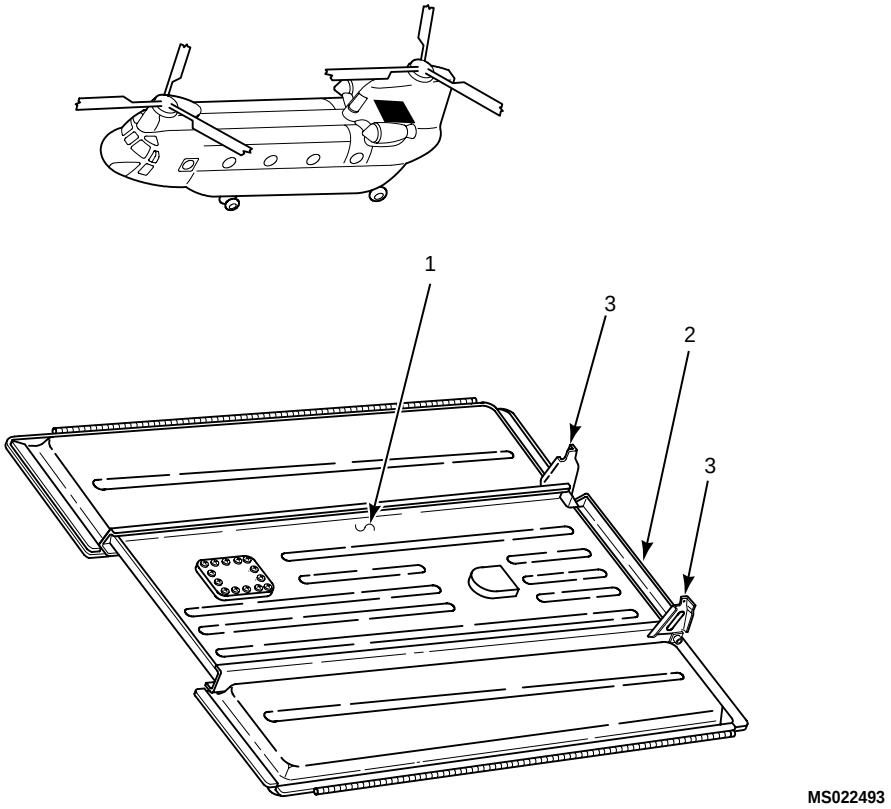


Figure 1. Aft Transmission Drip Pan

INSPECTION REQUIREMENTS - continued

NOTE

The items in Figure 1 correspond to the respective item numbers in the following INSPECTION REQUIREMENTS.

1. Drip Pan and Baffles
   a. Inspect for dents, cracks (no cracks allowed), gouges, nicks, holes, and delamination.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to WP 0122 00 for accept/reject criteria and repair procedures.
   d. Refer to WP 0077 00 for corrosion removal and treatment.

2. Drain
   a. Inspect for dents, cracks (no cracks allowed), gouges, nicks, holes, and delamination.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to WP 0122 00 for accept/reject criteria and repair procedures.
   d. Refer to WP 0077 00 for corrosion removal and treatment.

3. Support Assemblies, LH and RH
   a. Inspect for dents, cracks (no cracks allowed), scratches, gouges, nicks, holes, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to WP 0122 00 for accept/reject criteria and repair procedures.
   d. Refer to WP 0077 00 for corrosion removal and treatment.

END OF WORK PACKAGE

DEPOT MAINTENANCE WORK REQUIREMENT
CH-47D HELICOPTER
APU DRIP PAN ASSEMBLY

INITIAL SETUP

Test Equipment:
As Required

Tools and Special Tools:
As Required

Material/Parts:
As Required

Personnel Required:
Examiner (PSA)

References:
TM 1-1500-204-23 Series
TM 55-1520-240-23 Series
WP 0077 00
WP 0123 00

Equipment Conditions:
As Required

Special Environmental Condition:
As Required

SCOPE

The APU drip pan consists of a drip tray assembly and support arm assembly, LH and RH, sta 594 to sta 625. The drip tray is made of plastic impregnated glass cloth. The support arms are made of aluminum alloy.

INSPECTION REQUIREMENTS

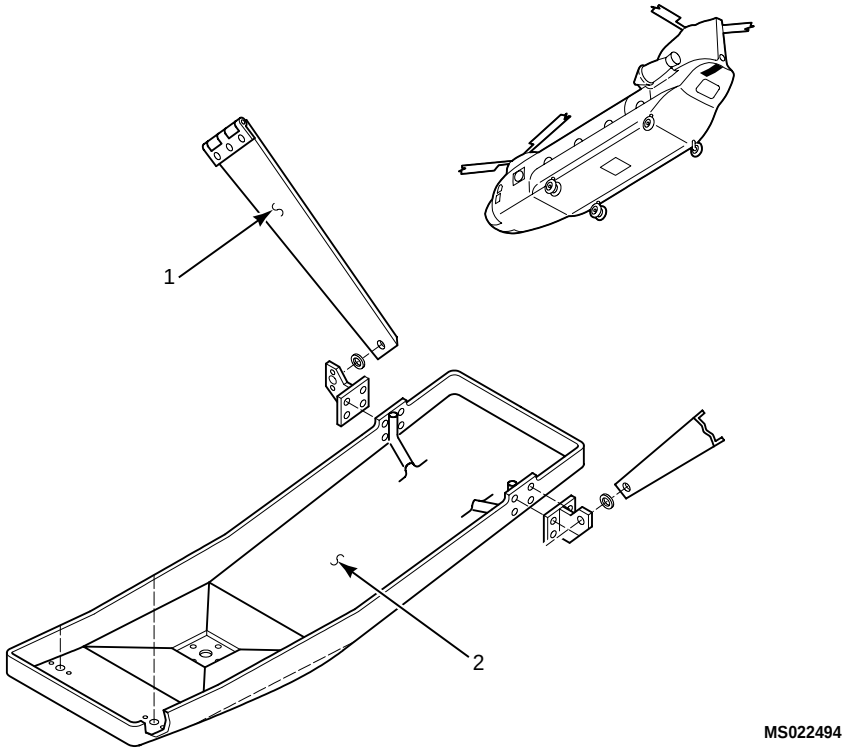


Figure 1. APU Drip Pan Assembly

INSPECTION REQUIREMENTS - continued

NOTE

The items in Figure 1 correspond to the respective item numbers in the following INSPECTION REQUIREMENTS.

1. Drip Tray Support Arms, LH and RH
   a. Inspect for dents, cracks (no cracks allowed), scratches, gouges, nicks, holes, chafing, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to WP 0123 00 for accept/reject criteria and repair procedures.
   d. Refer to WP 0077 00 for corrosion removal and treatment.

2. Drip Tray Assembly
   a. Inspect for dents, cracks (no cracks allowed), delamination, gouges, nicks, holes, and wear.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to WP 0123 00 for accept/reject criteria and repair procedures.
   d. Refer to WP 0077 00 for corrosion removal and treatment.

END OF WORK PACKAGE

DEPOT MAINTENANCE WORK REQUIREMENT
CH-47D HELICOPTER
CARGO RAMP EXTERIOR

INITIAL SETUP

Test Equipment:
As Required

Tools and Special Tools:
As Required

Material/Parts:
As Required

Personnel Required:
Examiner (PSA)

References:
TM 1-1500-204-23 Series
TM 55-1520-240-23 Series
WP 0077 00
WP 0080 00
WP 0093 00
WP 0124 00

Equipment Conditions:
As Required

Special Environmental Condition:
As Required

SCOPE

The cargo ramp exterior consists of aluminum alloy bottom skin panels, ramp sta 0 to ramp sta 38, and a composite honeycomb panel, ramp sta 38 to ramp sta 99. The side and top skins outboard of the ramp, BL 44 L & R, are made of aluminum alloy. Three strakes are located on the bottom of each side and are made of aluminum alloy. An aluminum piano type hinge is attached to the ramp at ramp sta 0. Refer to WP 0080 00 for sealing requirements.

INSPECTION REQUIREMENTS

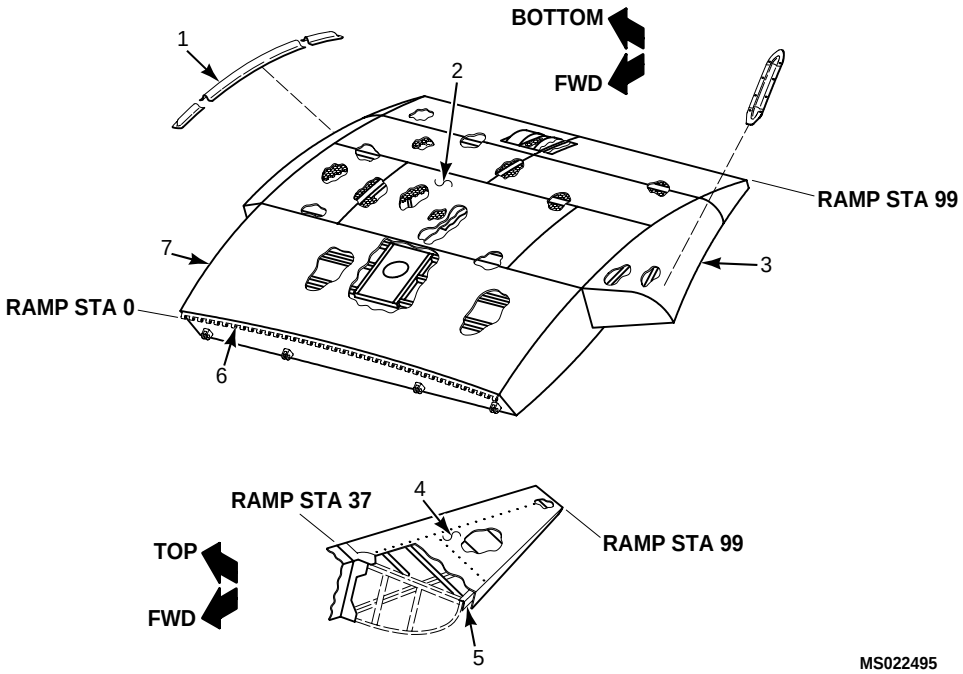


Figure 1. Cargo Ramp Exterior

INSPECTION REQUIREMENTS - continued

NOTE

The item numbers in Figure 1 correspond to the respective item numbers in the following INSPECTION REQUIREMENTS.

1. Strake (LH and RH), Nose, Center, and Tail
   a. Inspect for dents, cracks (no cracks allowed), scratches, gouges, nicks, holes, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to WP 0124 00 for accept/reject criteria and repair procedures.
   d. Refer to WP 0077 00 for corrosion removal and treatment.

2. Bottom Skin (Composite Panel), ramp sta 38 to ramp sta 99, BL 44L to BL 44R
   a. Inspect for dents, cracks (no cracks allowed), gouges, nicks, holes, or delamination.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to WP 0124 00 for accept/reject criteria and repair procedures.
   d. Refer to WP 0077 00 for corrosion removal and treatment.

3. Bottom Skins, ramp sta 38 to ramp sta 99, BL 44 to BL 60 L & R
   a. Inspect for dents, cracks (no cracks allowed), scratches, gouges, nicks, holes, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to WP 0124 00 for accept/reject criteria and repair procedures.
   d. Refer to WP 0077 00 for corrosion removal and treatment.

4. Top Skin, ramp sta 38 to ramp sta 99, BL 44 to BL 60 L & R
   a. Inspect for dents, cracks (no cracks allowed), scratches, gouges, nicks, holes, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to WP 0124 00 for accept/reject criteria and repair procedures.
   d. Refer to WP 0077 00 for corrosion removal and treatment.

5. Cap, ramp sta 50 to ramp sta 99, BL 60 to BL 53 L & R
   a. Inspect for dents, cracks (no cracks allowed), scratches, gouges, nicks, holes, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to WP 0124 00 for accept/reject criteria and repair procedures.
   d. Refer to WP 0077 00 for corrosion removal and treatment.

6. Hinge Assembly, ramp sta 0
   a. Inspect for dents, cracks (no cracks allowed), scratches, gouges, nicks, holes, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to WP 0093 00 for accept/reject criteria and repair procedures.
   d. Refer to WP 0077 00 for corrosion removal and treatment.

INSPECTION REQUIREMENTS – continued

7. Bottom Skin, ramp sta 0 to ramp sta 38, BL 44L to BL 44R
   a. Inspect for dents, cracks (no cracks allowed), scratches, gouges, nicks, holes, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to WP 0124 00 for accept/reject criteria and repair procedures.
   d. Refer to WP 0077 00 for corrosion removal and treatment.

END OF WORK PACKAGE

DEPOT MAINTENANCE WORK REQUIREMENT
CH-47D HELICOPTER
CARGO RAMP INTERIOR

INITIAL SETUP

Test Equipment:
As Required

Tools and Special Tools:
As Required

Material/Parts:
As Required

Personnel Required:
Examiner (PSA)

References:
TM 1-1500-204-23 Series
TM 55-1520-240-23 Series
WP 0077 00
WP 0080 00
WP 0125 00

Equipment Conditions:
As Required

Special Environmental Condition:
As Required

SCOPE

The cargo ramp interior consists of formers, beams, and a gate assembly. The formers are transverse members and are two types of construction. The formers at ramp sta 0 and ramp sta 99 are formed aluminum webs, aluminum cap angles, and stiffeners. The remaining formers are made of sandwich honeycomb construction. The beams are made of aluminum alloy webs with extruded caps and stiffeners. Two (full length) beams are installed laterally at ramp sta 24 and ramp sta 53 between BL 20 and BL 44 L & R. The other beams, including the tie down beams, are installed longitudinally at BL 20, BL 44, and BL 48 L & R. Forged aluminum attachment fittings are located on longitudinal beams, ramp sta 0, BL 20 and BL 44, L & R. Five beams are installed forward from ramp sta 0 to ramp sta 10 on each side of the cargo ramp centerline at BL 4, BL 11, BL 15, BL 29, and BL 36. Three aft beams are installed longitudinally from ramp sta 84 to ramp sta 99, BL 0 and BL 15 L & R. The gate assemblies (3 ea) consist of aluminum alloy formed channels and brackets, rollers, and hinges. Refer to WP 0080 00 for sealing requirements.

INSPECTION REQUIREMENTS

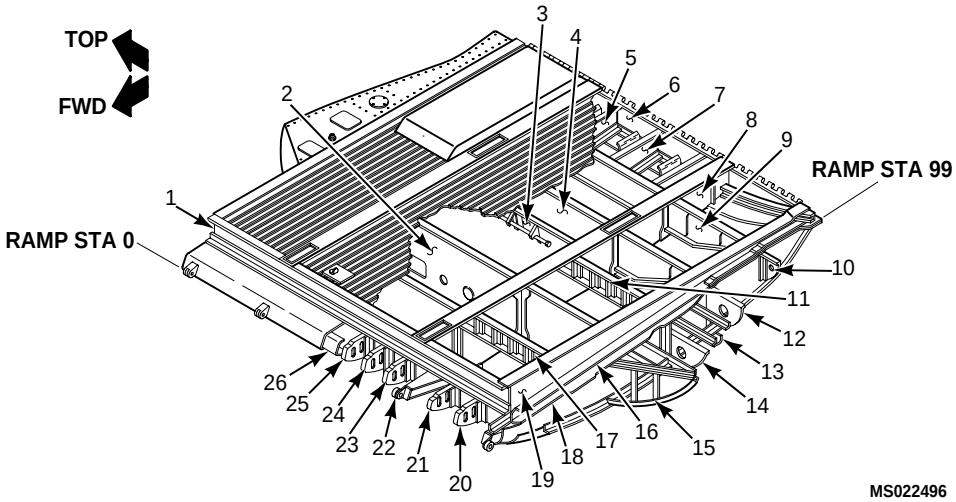


Figure 1. Cargo Ramp Interior

INSPECTION REQUIREMENTS - continued

NOTE

The item numbers in Figure 1 correspond to the respective item numbers in the following INSPECTION REQUIREMENTS.

1. Former, ramp sta 10, BL 48 L to BL 48 R
   a. Inspect for dents, cracks (no cracks allowed), scratches, gouges, nicks, holes, delamination, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to WP 0125 00 for accept/reject criteria and repair procedures.
   d. Refer to WP 0077 00 for corrosion removal and treatment.

2. Former, ramp sta 38, BL 48L to BL 48R
   a. Inspect for dents, cracks (no cracks allowed), scratches, gouges, nicks, holes, delamination, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to WP 0125 00 for accept/reject criteria and repair procedures.
   d. Refer to WP 0077 00 for corrosion removal and treatment.

3. Gate Assembly, ramp sta 68, BL 44L to BL 44R
   a. Inspect for dents, cracks (no cracks allowed), scratches, gouges, nicks, holes, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to WP 0125 00 for accept/reject criteria and repair procedures.
   d. Refer to WP 0077 00 for corrosion removal and treatment.

4. Former, ramp sta 68, BL 48L to BL 48R
   a. Inspect for dents, cracks (no cracks allowed), scratches, gouges, nicks, holes, delamination, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to WP 0125 00 for accept/reject criteria and repair procedures.
   d. Refer to WP 0077 00 for corrosion removal and treatment.

5. Beam, ramp sta 84 to ramp sta 99, BL 15L & R
   a. Inspect for dents, cracks (no cracks allowed), scratches, gouges, nicks, holes, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to WP 0125 00 for accept/reject criteria and repair procedures.
   d. Refer to WP 0077 00 for corrosion removal and treatment.

6. Former, ramp sta 99, BL 50L to BL 50R
   a. Inspect for dents, cracks (no cracks allowed), scratches, gouges, nicks, holes, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to WP 0125 00 for accept/reject criteria and repair procedures.
   d. Refer to WP 0077 00 for corrosion removal and treatment.

INSPECTION REQUIREMENTS - continued

7. Beam, ramp sta 84 to ramp sta 99, BL 0
   a. Inspect for dents, cracks (no cracks allowed), scratches, gouges, nicks, holes, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to WP 0125 00 for accept/reject criteria and repair procedures.
   d. Refer to WP 0077 00 for corrosion removal and treatment.

8. Beam, ramp sta 0 to ramp sta 99, BL 20L & R
   a. Inspect for dents, cracks (no cracks allowed), scratches, gouges, nicks, holes, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Inspect cargo door tracks L & R for cracks (no cracks allowed) and wear.
   d. Refer to WP 0125 00 for accept/reject criteria and repair procedures.
   e. Refer to WP 0077 00 for corrosion removal and treatment.

9. Former, ramp sta 84, BL 48L to BL 48R
   a. Inspect for dents, cracks (no cracks allowed), scratches, gouges, nicks, holes, delamination, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to WP 0125 00 for accept/reject criteria and repair procedures.
   d. Refer to WP 0077 00 for corrosion removal and treatment.

10. Former, ramp sta 87, BL 48 to BL 54 L & R
   a. Inspect for dents, cracks (no cracks allowed), scratches, gouges, nicks, holes, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to WP 0125 00 for accept/reject criteria and repair procedures.
   d. Refer to WP 0077 00 for corrosion removal and treatment.

11. Beam, ramp sta 53, BL 20 to BL 44 L & R
   a. Inspect for dents, cracks (no cracks allowed), scratches, gouges, nicks, holes, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to WP 0125 00 for accept/reject criteria and repair procedures.
   d. Refer to WP 0077 00 for corrosion removal and treatment.

12. Former, ramp sta 68, BL 48 to BL 59 L & R
   a. Inspect for dents, cracks (no cracks allowed), scratches, gouges, nicks, holes, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to WP 0125 00 for accept/reject criteria and repair procedures.
   d. Refer to WP 0077 00 for corrosion removal and treatment.

13. Former, ramp sta 61, BL 48 to BL 62 L & R
   a. Inspect for dents, cracks (no cracks allowed), scratches, gouges, nicks, holes, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to WP 0125 00 for accept/reject criteria and repair procedures.
   d. Refer to WP 0077 00 for corrosion removal and treatment.

INSPECTION REQUIREMENTS - continued

14. Former, ramp sta 53, BL 48 to BL 64 L & R
    a. Inspect for dents, cracks (no cracks allowed), scratches, gouges, nicks, holes, or evidence of corrosion.
    b. Inspect for loose, missing, or damaged attaching hardware.
    c. Refer to WP 0125 00 for accept/reject criteria and repair procedures.
    d. Refer to WP 0077 00 for corrosion removal and treatment.

15. Former, ramp sta 38, BL 48 to BL 48 L & R
    a. Inspect for dents, cracks (no cracks allowed), scratches, gouges, nicks, holes, or evidence of corrosion.
    b. Inspect for loose, missing, or damaged attaching hardware.
    c. Refer to WP 0125 00 for accept/reject criteria and repair procedures.
    d. Refer to WP 0077 00 for corrosion removal and treatment.

16. Former Actuator Support, ramp sta 26, BL 44 to BL 48 L & R
    a. Inspect for dents, cracks (no cracks allowed), scratches, gouges, nicks, holes, or evidence of corrosion.
    b. Inspect for worn and damaged bushings. Replace bushing if exceeds limits.
    c. Inspect for loose, missing, or damaged attaching hardware.
    d. Refer to WP 0125 00 for accept/reject criteria and repair procedures.
    e. Refer to WP 0077 00 for corrosion removal and treatment.

17. Beam, ramp sta 24, BL 20 to BL 44 L & R
    a. Inspect for dents, cracks (no cracks allowed), scratches, gouges, nicks, holes, or evidence of corrosion.
    b. Inspect for loose, missing, or damaged attaching hardware.
    c. Refer to WP 0125 00 for accept/reject criteria and repair procedures.
    d. Refer to WP 0077 00 for corrosion removal and treatment.

18. Beam, ramp sta 0 to ramp sta 99, BL 48 L & R
    a. Inspect for dents, cracks (no cracks allowed), scratches, gouges, nicks, holes, or evidence of corrosion.
    b. Inspect for loose, missing, or damaged attaching hardware.
    c. Refer to WP 0125 00 for accept/reject criteria and repair procedures.
    d. Refer to WP 0077 00 for corrosion removal and treatment.

19. Beam, ramp sta 0 to ramp sta 99, BL 44 L & R
    a. Inspect for dents, cracks (no cracks allowed), scratches, gouges, nicks, holes, or evidence of corrosion.
    b. Inspect for loose, missing, or damaged attaching hardware.
    c. Refer to WP 0125 00 for accept/reject criteria and repair procedures.
    d. Refer to WP 0077 00 for corrosion removal and treatment.

20. Beam, ramp sta 0 to ramp sta 10, BL 36 L & R
    a. Inspect for dents, cracks (no cracks allowed), scratches, gouges, nicks, holes, or evidence of corrosion.
    b. Inspect for loose, missing, or damaged attaching hardware.
    c. Refer to WP 0125 00 for accept/reject criteria and repair procedures.
    d. Refer to WP 0077 00 for corrosion removal and treatment.

INSPECTION REQUIREMENTS - continued

21. Beam, ramp sta 0 to ramp sta 10, BL 28 L & R
    a. Inspect for dents, cracks (no cracks allowed), scratches, gouges, nicks, holes, or evidence of corrosion.
    b. Inspect for loose, missing, or damaged attaching hardware.
    c. Refer to WP 0125 00 for accept/reject criteria and repair procedures.
    d. Refer to WP 0077 00 for corrosion removal and treatment.

22. Ramp Attach Fittings, ramp sta 0, BL 20 and BL 40 L & R
    a. Inspect for dents, cracks (no cracks allowed), scratches, gouges, nicks, holes, or evidence of corrosion.
    b. Inspect fittings for worn and damaged bushings. Replace bushing if exceeds limits.
    c. Inspect for loose, missing, or damaged attaching hardware.
    d. Refer to WP 0125 00 for accept/reject criteria and repair procedures.
    e. Refer to WP 0077 00 for corrosion removal and treatment.

23. Beam, ramp sta 0 to ramp sta 10, BL 15 L & R
    a. Inspect for dents, cracks (no cracks allowed), scratches, gouges, nicks, holes, or evidence of corrosion.
    b. Inspect for loose, missing, or damaged attaching hardware.
    c. Refer to WP 0125 00 for accept/reject criteria and repair procedures.
    d. Refer to WP 0077 00 for corrosion removal and treatment.

24. Beam, ramp sta 0 to ramp sta 10, BL 11 L & R
    a. Inspect for dents, cracks (no cracks allowed), scratches, gouges, nicks, holes, or evidence of corrosion.
    b. Inspect for loose, missing, or damaged attaching hardware.
    c. Refer to WP 0125 00 for accept/reject criteria and repair procedures.
    d. Refer to WP 0077 00 for corrosion removal and treatment.

25. Beam, ramp sta 0 to ramp sta 10, BL 4 L & R
    a. Inspect for dents, cracks (no cracks allowed), scratches, gouges, nicks, holes, or evidence of corrosion.
    b. Inspect for loose, missing, or damaged attaching hardware.
    c. Refer to WP 0125 00 for accept/reject criteria and repair procedures.
    d. Refer to WP 0077 00 for corrosion removal and treatment.

26. Former, ramp sta 0, BL 49L to BL 49R
    a. Inspect for dents, cracks (no cracks allowed), scratches, gouges, nicks, holes, or evidence of corrosion.
    b. Inspect for loose, missing, or damaged attaching hardware.
    c. Refer to WP 0125 00 for accept/reject criteria and repair procedures.
    d. Refer to WP 0077 00 for corrosion removal and treatment.

END OF WORK PACKAGE

DEPOT MAINTENANCE WORK REQUIREMENT
CH-47D HELICOPTER
CARGO RAMP FLOORING AND AUXILIARY LOADING RAMPS

INITIAL SETUP

Test Equipment:
As Required

Tools and Special Tools:
As Required

Material/Parts:
As Required

Personnel Required:
Examiner (PSA)

References:
TM 1-1500-204-23 Series
TM 55-1520-240-23 Series
WP 0077 00
WP 0080 00
WP 0126 00

Equipment Conditions:
As Required

Special Environmental Condition:
As Required

SCOPE

The cargo ramp flooring consists of four sections, the forward edge, center section, and two outboard sections. The forward edge, attached to the ramp at ramp sta 10 is an extruded section of magnesium alloy and serves as a bearing surface during operation of the ramp. The center section extends from ramp sta 10 to ramp sta 99, BL 20L & R. The outboard sections, ramp sta 10 to ramp sta 99, extend from BL 20 to BL 44L & R. These sections are aluminum extrusions riveted together. The three auxiliary cargo-loading ramps consist of a hinged assembly and structural members. The auxiliary ramps are hinged to the aft former of the ramp. The hinge and structural members are made of aluminum alloy extrusions. Refer to WP 0080 00 for sealing requirements.

INSPECTION REQUIREMENTS

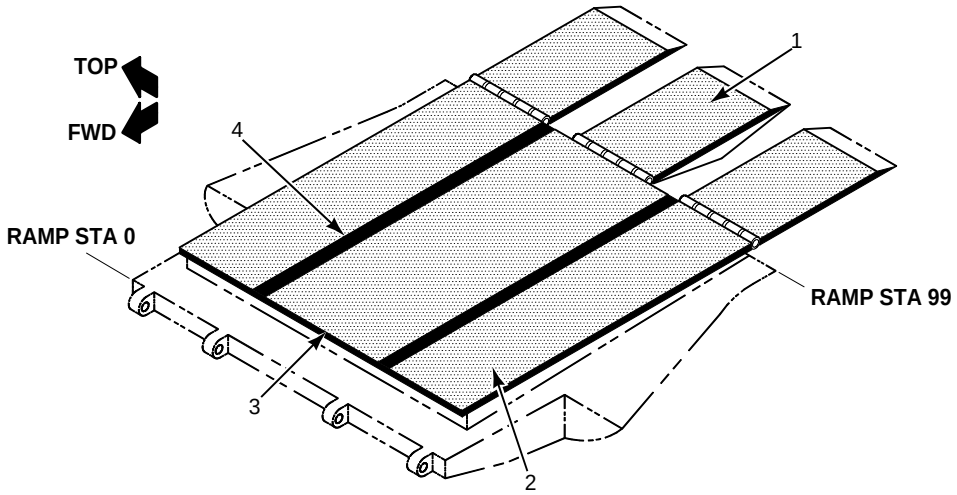


Figure 1. Cargo Ramp Flooring and Auxiliary Loading Ramps

INSPECTION REQUIREMENTS - continued

NOTE

The item numbers in Figure 1 correspond to the respective item numbers in the following INSPECTION REQUIREMENTS.

1. Auxiliary Ramp (3 ea, hinged)
   a. Inspect for dents, cracks (no cracks allowed), scratches, gouges, nicks, holes, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Inspect hinge assemblies for cracked or missing loops, broken or missing springs, or evidence of corrosion.
   d. Refer to WP 0126 00 for accept/reject criteria and repair procedures.
   e. Refer to WP 0077 00 for corrosion removal and treatment.

2. Floor Board, (LH and RH)
   a. Inspect for dents, cracks (no cracks allowed), scratches, gouges, nicks, holes, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to WP 0126 00 for accept/reject criteria and repair procedures.
   d. Refer to WP 0077 00 for corrosion removal and treatment.

3. Forward Edge, ramp sta 10
   a. Inspect for dents, cracks (no cracks allowed), scratches, gouges, nicks, holes, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to WP 0126 00 for accept/reject criteria and repair procedures.
   d. Refer to WP 0077 00 for corrosion removal and treatment.

4. Center Floor Board
   a. Inspect for dents, cracks (no cracks allowed), scratches, gouges, nicks, holes, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to WP 0126 00 for accept/reject criteria and repair procedures.
   d. Refer to WP 0077 00 for corrosion removal and treatment.

END OF WORK PACKAGE

DEPOT MAINTENANCE WORK REQUIREMENT
CH-47D HELICOPTER
CARGO RAMP DOOR BONDED ASSEMBLY

INITIAL SETUP

Test Equipment:
As Required

Tools and Special Tools:
As Required

Material/Parts:
As Required

Personnel Required:
Examiner (PSA)

References:
TM 1-1500-204-23 Series
TM 55-1520-240-23 Series
WP 0077 00
WP 0080 00
WP 0088 00
WP 0127 00

Equipment Conditions:
As Required

Special Environmental Condition:
As Required

SCOPE

The cargo ramp door bonded assembly is made of sandwich honeycomb construction. A silicon rubber seal is attached to the edge of the door to prevent entrance of water. The escape hatch door is made of aluminum alloy inner and outer skins. The inner skin is dished around cutouts and is spot-welded to the outer skin. The spacers located aft inboard are made of extruded material. The support assemblies are made of aluminum extrusions. A release mechanism is provided for emergency removal of the cargo ramp door. Refer to WP 0080 00 for sealing requirements.

INSPECTION REQUIREMENTS

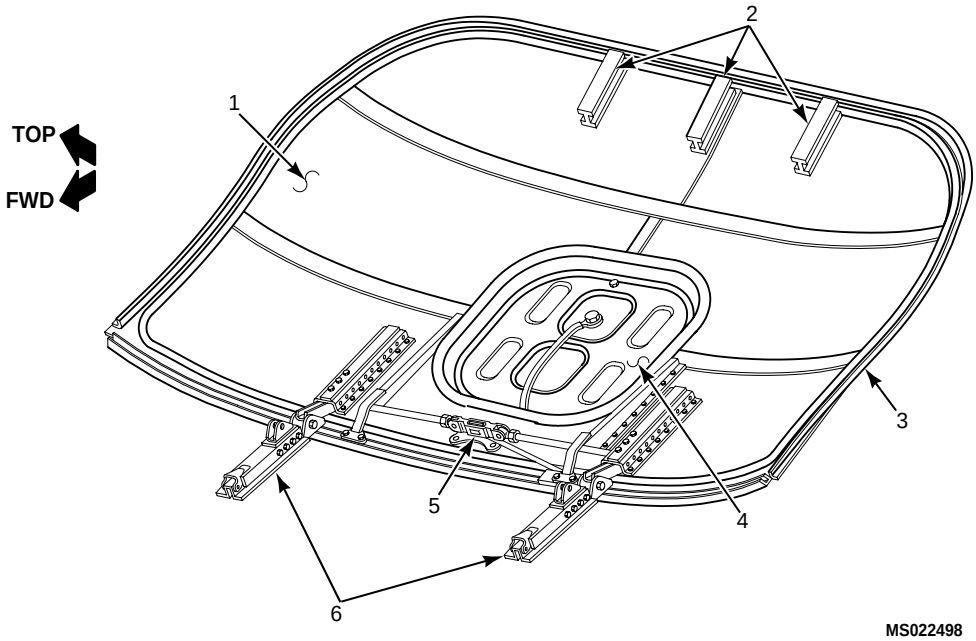


Figure 1. Cargo Ramp Door Bonded Assembly

INSPECTION REQUIREMENTS - continued

NOTE

The items in Figure 1 correspond to the respective item numbers in the following INSPECTION REQUIREMENTS.

1. Cargo Ramp Door
   a. Inspect for dents, cracks (no cracks allowed), scratches, gouges, nicks, holes, delamination, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to WP 0127 00 for accept/reject criteria and repair procedures.
   d. Refer to WP 0077 00 for corrosion removal and treatment.

2. Spacers
   a. Inspect for dents, cracks (no cracks allowed), scratches, gouges, nicks, holes, delamination, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Inspect pads for looseness, cuts, and tears.
   d. Refer to WP 0088 00 for accept/reject criteria and repair procedures.
   e. Refer to WP 0077 00 for corrosion removal and treatment.

3. Cargo Ramp Door Seals
   a. Inspect seal for cracks and tears, gouges and disbonding.
   b. Inspect seal retainer for cracks and corrosion.
   c. Inspect for loose, missing, or damaged attaching hardware.
   d. Refer to WP 0127 00 for accept/reject criteria and repair procedures.
   e. Refer to WP 0077 00 for corrosion removal and treatment.

4. Escape Hatch Door Assembly
   a. Inspect for dents, cracks (no cracks allowed), scratches, gouges, nicks, holes, or evidence of corrosion.
   b. Inspect seal for cracks, tears, gouges and disbonding.
   c. Inspect for loose, missing, or damaged attaching hardware.
   d. Refer to WP 0127 00 for accept/reject criteria and repair procedures.
   e. Refer to WP 0077 00 for corrosion removal and treatment.

5. Emergency Release Mechanism
   a. Inspect for dents, cracks (no cracks allowed), scratches, gouges, nicks, holes, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.
   d. Refer to WP 0077 00 for corrosion removal and treatment

INSPECTION REQUIREMENTS - continued

6. Support Assemblies
   a. Inspect for dents, cracks (no cracks allowed), scratches, gouges, nicks, holes, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.
   d. Refer to WP 0077 00 for corrosion removal and treatment.

END OF WORK PACKAGE

DEPOT MAINTENANCE WORK REQUIREMENT
CH-47D HELICOPTER
AFT PYLON EXTERIOR

INITIAL SETUP

Test Equipment:
As Required

Tools and Special Tools:
As Required

Material/Parts:
As Required

Personnel Required:
Examiner (PSA)

References:
TM 1-1500-204-23 Series
TM 55-1520-240-23 Series
WP 0077 00
WP 0080 00
WP 0128 00

Equipment Conditions:
As Required

Special Environmental Condition:
As Required

SCOPE

The aft pylon exterior consists of skins, leading edge hinged fairings, forward crown fairings, mid-crown fairing, aft crown, hinged fairings (work platforms), trailing edge fairings, and a weather protective cover. The exterior skins are aluminum alloy panels. Panel splices occur at locations of primary transverse and longitudinal members. The leading edge hinged fairing located forward at sta 482 consists of sandwich honeycomb composite skins. Formed sections and vertical stiffeners maintain skin shape. The forward crown fairing is fitted to the aft pylon structure aft of the leading edge hinged fairing, sta 481 to sta 534. This fairing consists of formers, beams, hinges, channels, stiffeners, and doublers. The mid-crown fairing forms the fuselage contour around the vertical shaft assembly. This fairing consists of a LH and RH assembly made of molded laminated plastic impregnated glass cloth to which aluminum alloy Zee sections are attached. The aft crown fairing consists of skins riveted to stiffeners and extruded sections. The pylon section work platforms are made of sandwich honeycomb construction. Fittings are bolted to each side for attachment of the support cables. The trailing section consists of aluminum skins riveted to stiffeners and extruded sections. The top skin is made of plastic impregnated glass cloth. The aft weather protective cover is made of sandwich honeycomb and aluminum stiffeners. Refer to WP 0080 00 for sealing requirements.

INSPECTION REQUIREMENTS

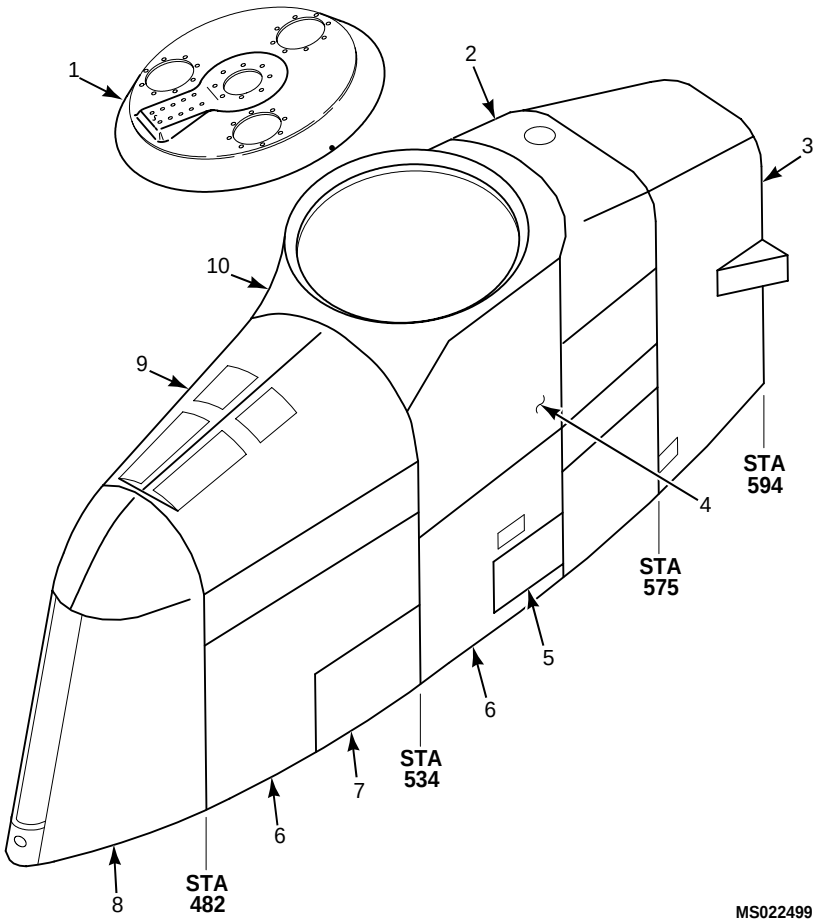


Figure 1. Aft Pylon Exterior

NOTE

The item numbers in Figure 1 correspond to the respective item numbers in the following INSPECTION REQUIREMENTS.

1. Weather Protective Cover, Aft
   a. Inspect for dents, cracks (no cracks allowed), gouges, nicks, holes, delamination, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to WP 0128 00 for accept/reject criteria and repair procedures.
   d. Refer to WP 0077 00 for corrosion removal and treatment.

2. Aft Crown Fairing
   a. Inspect for dents, cracks (no cracks allowed), scratches, gouges, nicks, holes, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.

INSPECTION REQUIREMENTS - continued

c. Refer to WP 0128 00 for accept/reject criteria and repair procedures.
d. Refer to WP 0077 00 for corrosion removal and treatment.

3. Trailing Edge Fairing
   a. Inspect for dents, cracks (no cracks allowed), scratches, gouges, nicks, holes, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to WP 0128 00 for accept/reject criteria and repair procedures.
   d. Refer to WP 0077 00 for corrosion removal and treatment.

4. Hinged Fairings (work platforms), LH and RH
   a. Inspect for dents, cracks (no cracks allowed), scratches, gouges, nicks, holes, delamination, latch mechanism for proper operation, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to WP 0128 00 for accept/reject criteria and repair procedures.
   d. Refer to WP 0077 00 for corrosion removal and treatment.

5. Door Assembly, sta 555 to sta 576, LH and RH
   a. Inspect for dents, cracks (no cracks allowed), scratches, gouges, nicks, holes, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to WP 0128 00 for accept/reject criteria and repair procedures.
   d. Refer to WP 0077 00 for corrosion removal and treatment.

6. Door Assembly, sta 502 to sta 534, LH and RH
   a. Inspect for dents, cracks (no cracks allowed), scratches, gouges, nicks, holes, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to WP 0128 00 for accept/reject criteria and repair procedures.
   d. Refer to WP 0077 00 for corrosion removal and treatment.

7. Aft Pylon Skin Sections, sta 482 to sta 594, WL plus 72 to WL plus 122, L & R
   a. Inspect for dents, cracks (no cracks allowed), scratches, gouges, nicks, holes, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to WP 0128 00 for accept/reject criteria and repair procedures.
   d. Refer to WP 0077 00 for corrosion removal and treatment.

8. Leading Edge Hinged Fairings (clamshell)
   a. Inspect for dents, cracks (no cracks allowed), scratches, gouges, nicks, holes, latch mechanism for proper operation, or evidence of corrosion.
   b. Inspect support struts, straps, fasteners and receptacles, improved cowl latch and clamp support strap for cracks, gouges, scratches, holes, or evidence of corrosion.
   c. Inspect for loose, missing, or damaged attaching hardware.
   d. Refer to WP 0128 00 for accept/reject criteria and repair procedures.
   e. Refer to WP 0077 00 for corrosion removal and treatment.

9. Forward Crown Fairing
   a. Inspect for dents, cracks (no cracks allowed), scratches, gouges, nicks, holes, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.

INSPECTION REQUIREMENTS - continued

c. Refer to WP 0128 00 for accept/reject criteria and repair procedures.
d. Refer to WP 0077 00 for corrosion removal and treatment.

10. Mid-Crown Fairing
    a. Inspect for dents, cracks (no cracks allowed), scratches, gouges, nicks, holes, delamination, or evidence of corrosion.
    b. Inspect for loose, missing, or damaged attaching hardware.
    c. Refer to WP 0128 00 for accept/reject criteria and repair procedures.
    d. Refer to WP 0077 00 for corrosion removal and treatment.

END OF WORK PACKAGE

DEPOT MAINTENANCE WORK REQUIREMENT
CH-47D HELICOPTER
AFT PYLON INTERIOR

INITIAL SETUP

Test Equipment:
As Required

Tools and Special Tools:
As Required

Material/Parts:
As Required

Personnel Required:
Examiner (PSA)

References:
TM 1-1500-204-23 Series
TM 1-1500-335-23
TM 55-1520-240-23 Series
WP 0077 00
WP 0080 00
WP 0129 00
WP 0147 00

Equipment Conditions:
As Required

Special Environmental Condition:
As Required

SCOPE

The aft pylon interior has three decks located longitudinally at WL plus 72, WL plus 91, and WL plus 119 (canted), four full formers, sta's 482, 534, 576, and 594, three partial formers, sta's 502, 517, and 555, and two beams, sta 534 to sta 575, BL 18 L & R. Stringers are formed or extruded sections riveted longitudinally to the side panels of the structure. Aft swiveling actuator support, RH, aft pivoting actuator supports, LH, and LH and RH bellcrank supports are made of aluminum alloy. The aft yoke assembly fitting is located at sta 534, WL plus 119. The lower deck, WL plus 72 consists of webs with extruded caps riveted to the outboard edges. The caps serve as primary members in the aft pylon structure for the aft fuselage structure splice. Formed and extruded sections are riveted across the webs. Extruded channels reinforce the cutouts. The transmission torque fittings are attached to channels. The mid deck, WL plus 91, consists of two webs, LH and RH, reinforced on their inboard and outboard edges with formed extruded sections. The upper deck, WL plus 119 (canted), contains six webs having extruded caps riveted to the outboard edges. The deck is stiffened with formed and extruded sections. The formers consist of one or more webs. The webs are reinforced with extruded angles. Tee and Zee sections with formed channels are attached horizontally and vertically to the webs. The aft pylon beams are thrust bearing support members and consist of webs reinforced with extrusions, former angles and stiffeners. Refer to WP 0080 00 for sealing requirements.

INSPECTION REQUIREMENTS

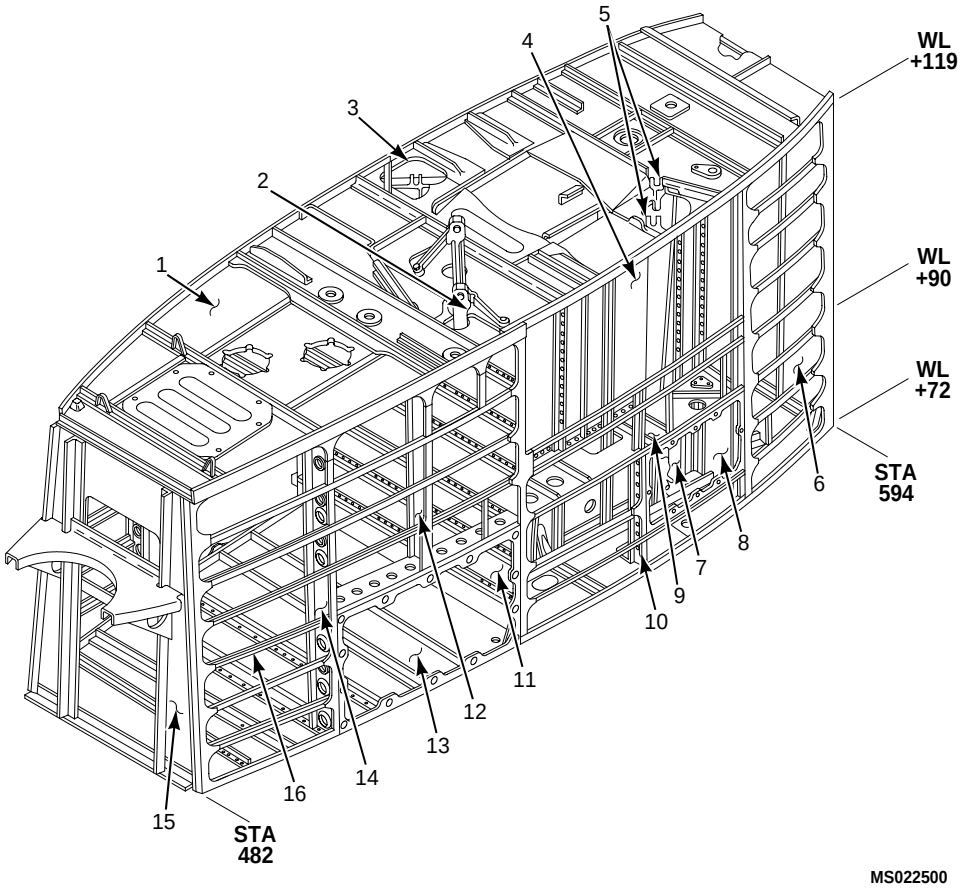


Figure 1. Aft Pylon Interior

NOTE

The item numbers in Figure 1 correspond to the respective item numbers in the following INSPECTION REQUIREMENTS.

1. Deck, WL plus 119
   a. Inspect for dents, cracks (no cracks allowed), scratches, gouges, nicks, holes, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to WP 0129 00 for accept/reject criteria and repair procedures.
   d. Refer to WP 0077 00 for corrosion removal and treatment.

2. Yoke Assembly Fitting (Beam), WL plus 119
   a. Inspect beam and channels for dents, cracks (no cracks allowed), scratches, gouges, nicks, holes, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to WP 0129 00 for accept/reject criteria and repair procedures.
   d. Refer to WP 0077 00 for corrosion removal and treatment.

INSPECTION REQUIREMENTS - continued

3. Swiveling Actuator Support, RH
   a. Inspect for dents, cracks (no cracks allowed), scratches, gouges, nicks, holes, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. NDI mount bolt lugs and surrounding area per WP 0147 00.
   d. Refer to WP 0129 00 for accept/reject criteria and repair procedures.
   e. Refer to WP 0077 00 for corrosion removal and treatment.

4. Beam, BL 18L and BL 18R
   a. Inspect for dents, cracks (no cracks allowed), scratches, gouges, nicks, holes, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to WP 0129 00 for accept/reject criteria and repair procedures.
   d. Refer to WP 0077 00 for corrosion removal and treatment.

5. Pivoting Actuator Supports LH
   a. Inspect for dents, cracks (no cracks allowed), scratches, gouges, nicks, holes, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. NDI mount bolt lugs and surrounding area per WP 0147 00.
   d. Refer to WP 0129 00 for accept/reject criteria and repair procedures.
   e. Refer to WP 0077 00 for corrosion removal and treatment.

6. Former, sta 594
   a. Inspect for dents, cracks (no cracks allowed), scratches, gouges, nicks, holes, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to WP 0129 00 for accept/reject criteria and repair procedures.
   d. Refer to WP 0077 00 for corrosion removal and treatment.

7. Aft Bellcrank Support, (LH and RH)
   a. Inspect for dents, cracks (no cracks allowed), scratches, gouges, nicks, holes, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to WP 0129 00 for accept/reject criteria and repair procedures.
   d. Refer to WP 0077 00 for corrosion removal and treatment.

8. Former, sta 576
   a. Inspect for dents, cracks (no cracks allowed), scratches, gouges, nicks, holes, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to WP 0129 00 for accept/reject criteria and repair procedures.
   d. Refer to WP 0077 00 for corrosion removal and treatment.

9. Deck, WL plus 91
   a. Inspect for dents, cracks (no cracks allowed), scratches, gouges, nicks, holes, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to WP 0129 00 for accept/reject criteria and repair procedures.
   d. Refer to WP 0077 00 for corrosion removal and treatment.

INSPECTION REQUIREMENTS - continued

10. Former, sta 555
    a. Inspect for dents, cracks (no cracks allowed), scratches, gouges, nicks, holes, or evidence of corrosion.
    b. Inspect for loose, missing, or damaged attaching hardware.
    c. Refer to WP 0129 00 for accept/reject criteria and repair procedures.
    d. Refer to WP 0077 00 for corrosion removal and treatment.

11. Former, sta 534
    a. Inspect for dents, cracks (no cracks allowed), scratches, gouges, nicks, holes, or evidence of corrosion.
    b. Inspect for loose, missing, or damaged attaching hardware.
    c. Refer to WP 0129 00 for accept/reject criteria and repair procedures.
    d. Refer to WP 0077 00 for corrosion removal and treatment.

12. Former, sta 518
    a. Inspect for dents, cracks (no cracks allowed), scratches, gouges, nicks, holes, or evidence of corrosion.
    b. Inspect for loose, missing, or damaged attaching hardware.
    c. Refer to WP 0129 00 for accept/reject criteria and repair procedures.
    d. Refer to WP 0077 00 for corrosion removal and treatment.

13. Deck WL plus 72
    a. Inspect for dents, cracks (no cracks allowed), scratches, gouges, nicks, holes, or evidence of corrosion.
    b. Inspect for loose, missing, or damaged attaching hardware.
    c. Refer to WP 0129 00 for accept/reject criteria and repair procedures.
    d. Refer to WP 0077 00 for corrosion removal and treatment.

14. Former, sta 502
    a. Inspect for dents, cracks (no cracks allowed), scratches, gouges, nicks, holes, or evidence of corrosion.
    b. Inspect for loose, missing, or damaged attaching hardware.
    c. Refer to WP 0129 00 for accept/reject criteria and repair procedures.
    d. Refer to WP 0077 00 for corrosion removal and treatment.

15. Former, sta 482
    a. Inspect for dents, cracks (no cracks allowed), scratches, gouges, nicks, holes, or evidence of corrosion.
    b. Inspect for loose, missing, or damaged attaching hardware.
    c. Refer to WP 0129 00 for accept/reject criteria and repair procedures.
    d. Refer to WP 0077 00 for corrosion removal and treatment.

16. Aft Pylon Stringers, sta 482 to sta 594
    a. Inspect for dents, cracks (no cracks allowed), scratches, gouges, nicks, holes, or evidence of corrosion.
    b. Inspect for loose, missing, or damaged attaching hardware.
    c. Refer to WP 0129 00 for accept/reject criteria and repair procedures.
    d. Refer to WP 0077 00 for corrosion removal and treatment.

END OF WORK PACKAGE

DEPOT MAINTENANCE WORK REQUIREMENT
CH-47D HELICOPTER
FORWARD AND AFT LANDING GEAR ASSEMBLIES

INITIAL SETUP

Test Equipment:
As Required

Tools and Special Tools:
As Required

Material/Parts:
As Required

Personnel Required:
Examiner (PSA)

References:
DMWR 55-1620-208
DMWR 55-1620-224
DMWR 55-1620-225
TM 1-1500-204-23 Series
TM 1-1500-335-23
TM 55-1500-322-24
TM 55-1520-240-23 Series
TM 55-2620-200-24
WP 0077 00
WP 0080 00
WP 0129 00
WP 0147 00

Equipment Conditions:
As Required

Special Environmental Condition:
As Required

SCOPE

The forward landing gear dual wheels are installed on a fixed axle. The axle is mounted on an air-oil shock strut bolted to the fuselage support structure. A torque arm keeps the assembly aligned. A disk brake unit is provided for each wheel. Hinged panels allow access to the forward landing gear assemblies. Each assembly has a tow and tiedown fitting. The wheels can be raised at jacking points on the lower torque arms. Left and right landing gear assemblies can be converted for use in either forward position.

An aft landing gear assembly is installed on each side of the fuselage. Each aft wheel is mounted on an axle supported by a spindle. The spindle rides on bearings in the swivel housing. Upper and lower drag links support the swivel housing. Both drag links are connected to fuselage fittings. A shock strut is mounted between the lower drag link and a fuselage fitting. The shock strut has a static lock mechanism to prevent strut extension during helicopter jacking. A disk brake unit is installed on each wheel. The aft wheels are free to swivel, or they can be locked in the trail position. A centering cam in the swivel housing centers each wheel in the trail position. A hydraulically operated swivel lock secures the wheel in the trail position. The power steering actuator is connected to the aft right landing gear swivel housing. A tow and tie down fitting is also attached to this housing. Static ground wires are installed on each landing gear axle housing. A proximity switch is mounted on the forward bulkhead of each aft landing gear compartment. Linkage from the upper drag link is connected to a target, which is sensed by each switch. The switches operate as the aft landing gear struts extend or retract during take off or landing. Extensions on the aft axles are used for connecting a tow bar. An aft landing gear assembly can be installed on either side of the helicopter. This requires disassembly and repositioning of certain components.

INSPECTION REQUIREMENTS

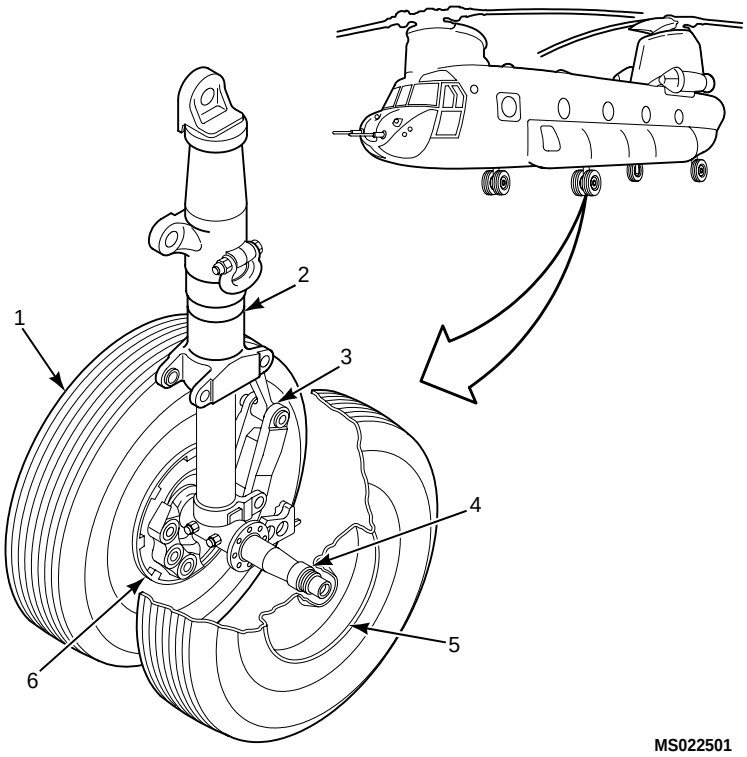


Figure 1. Forward Landing Gear

NOTE

The items in Figure 1 correspond to the respective item numbers in FORWARD LANDING GEAR ASSEMBLY INSPECTION REQUIREMENTS.

FORWARD LANDING GEAR ASSEMBLY INSPECTION REQUIREMENTS

1. Forward Landing Gear Tire
   Inspect, repair, and replace tires per TM 55-1520-240-23 and TM 55-2620-200-24

2. Forward Landing Gear Shock Strut

NOTE

Procedures are the same for all shock struts.

a. Inspect shock strut (left and right) for fluid leaks around seals and ports.
b. Inspect exposed piston for surface nicks, scratches, scoring, and cracks (no cracks allowed).
c. Inspect main landing gear shock strut (left and right) attachment points for distortion, wear, and general condition of spherical bearings.
d. Refer to WP 0077 00 for corrosion removal and treatment.
e. Refer to TM 55-1520-240-23 for accept/reject criteria.
f. Repair per DMWR 55-1620-208 when authorized by the Contracting Officer.

FORWARD LANDING GEAR ASSEMBLY INSPECTION REQUIREMENTS - continued

3. Torque Arm
   a. Inspect torque arm for cracks (no cracks allowed) and/or excessive play.
   b. Inspect bushings for damage or wear.
   c. NDI torque arm per TM 1-1500-335-23.
   d. Refer to TM 55-1520-240-23 for accept/reject criteria, repair, and replacement procedures.

4. Main Landing Gear Axle

NOTE

Procedures are the same for all axles.

   a. Inspect axle for cracks (no cracks allowed), bends, wear, and scratches.
   b. Refer to TM 55-1520-240-23 for accept/reject criteria, repair, and replacement procedures.

5. Forward Landing Gear Wheel Assembly
   a. NDI wheel halves for cracks (no cracks allowed) and structural damage per TM 1-500-335-23. Pay particular attention to bead seat, bolt boss, and valve hole areas. Replace wheel half if any crack is present. Repair minor damage per TM 55-1520-240-23.
   b. Inspect bearings, bearing cones, and bearing seals per TM 55-1520-240-23 and TM 55-1500-322-24.
   c. Inspect drive keys for wear per TM 55-1520-240-23.
   d. Inspect all threads for cleanliness and condition.
   e. Refer to TM 55-1520-240-23 for accept/reject criteria, repair, and replacement procedures.
   f. Refer to WP 0077 00 for corrosion removal and treatment.

6. Forward Landing Gear Brake Assembly

NOTE

Procedures are the same for all brakes.

   a. Inspect housing for cracks (no cracks allowed).
   b. Inspect housing cylinder walls for wear or scoring.
   c. Inspect bolts for stripped threads.
   d. Inspect brake disk for thickness.
   e. Measure width of key slots.
   f. Inspect brake disk for distortion.
   g. Measure distance between brake housing and disk.
   h. Inspect tube, fittings, and forward brake hose for leaks and damage.
   i. Inspect brake lining for thickness.
   j. Refer to TM 55-1520-240-23 for accept/reject criteria, repair, and replacement procedures.

AFT LANDING GEAR ASSEMBLY

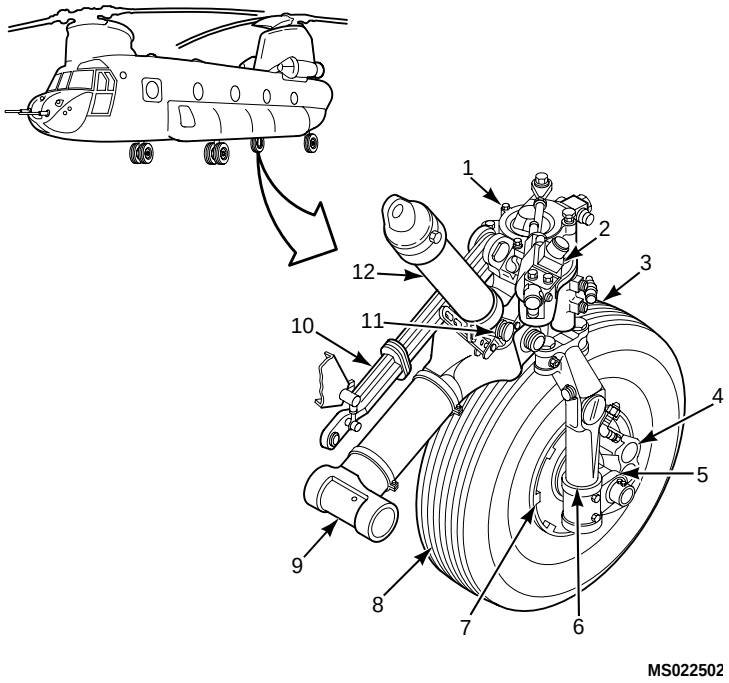


Figure 2. Aft Landing Gear

NOTE

The items in Figure 2 correspond to the respective item numbers in AFT LANDING GEAR ASSEMBLY INSPECTION REQUIREMENTS.

AFT LANDING GEAR ASSEMBLY INSPECTION REQUIREMENTS

1. Aft Landing Gear Swivel Housing
   a. Inspect aft landing gear swivel housing for cracks (no cracks allowed), distortion, scratches, nicks, scoring, pitting, leaks, and damaged threads.
   b. Refer to TM 55-1520-240-23 for accept/reject criteria, repair, and replacement procedures.

2. Aft Landing Gear Power Steering Actuator
   a. Inspect aft landing gear power steering actuator for cracks (no cracks allowed), nicks, dents, scratches, leaks, or evidence of corrosion.
   b. Inspect electrical connector for bent or missing pins, or evidence of corrosion.
   c. Refer to TM 55-1520-240-23 for accept/reject criteria.
   d. Repair per DMWR 55-1620-224 when authorized by the Contracting Officer.
   e. Refer to WP 0077 00 for corrosion removal and treatment.

3. Aft Landing Gear Swivel Lock Actuator
   a. Inspect aft landing swivel actuator for cracks (no cracks allowed), distortion, scratches, nicks, scoring, leakage, and pitting.

AFT LANDING GEAR ASSEMBLY INSPECTION REQUIREMENTS - continued

b. Replace all preformed packing, packing retainers, cotter pins, and retainer ring.
c. Refer to TM 55-1520-240-23 for accept/reject criteria, repair, and replacement procedures.

4. Aft Landing Gear Brake Assembly
   Refer to Forward Landing Gear Brake Assembly paragraph above for inspection procedures.

5. Aft Landing Gear Axle.
   Refer to Forward Landing Gear Axel paragraph above for inspection procedures.

6. Aft Landing Gear Spindle
   a. Inspect aft landing gear spindle for cracks (no cracks allowed), distortion, scratches, nicks, scoring, pitting, and damaged thread.
   b. Refer to WP 0077 00 for corrosion removal and treatment.
   c. Refer to TM 55-1520-240-23 for accept/reject criteria, repair, and replacement procedures.

7. Aft Landing Gear Wheel Assembly
   Refer to Forward Landing Gear Wheel Assembly paragraph above for inspection procedures.

8. Aft Landing Gear Tires
   Refer to Forward Landing Gear Tire paragraph above for inspection procedures.

9. Aft Landing Gear Lower Drag Link
   a. Inspect fulcrum pin and trunnion pin for distortion, cracks (no cracks allowed), nicks, scoring, or damaged thread.
   b. Inspect washers and bushings for cracks (no cracks allowed), scratches, nicks, scoring, or pitting.
   c. Inspect instruction plate for damage and legibility.
   d. Inspect bolt for distortion, cracks (no cracks allowed), nicks, scoring, or damaged threads.
   e. Inspect shock strut attachment spacer and static lock spacer for cracks, distortion, scratches, nicks, scoring, or pitting.
   f. Inspect fitting and retainer for cracks (no cracks allowed), scratches, scoring, or damaged thread.
   g. Inspect static lock mechanism and fork for cracks or distortion.
   h. Inspect bearing and bushings for cracks (no cracks allowed), scratches, nicks, or scoring.
   i. Inspect link for cracks (no cracks allowed), scratches, nicks, scoring, or excessive play.
   j. Refer to TM 55-1520-240-23 for accept/reject criteria, repair, and replacement procedures.

10. Aft Landing Gear Upper Drag Link
    a. Inspect bushing and bearings for excessive play and that bearings are seated (not popped), cracks (no cracks allowed), scratches, nicks, and scoring. Refer to TM 1-1500-204-23 for accept/reject criteria.
    b. Inspect drag link for cracks (no cracks allowed), distortion, gouges, and nicks.
    c. Refer to WP 0077 00 for corrosion removal and treatment.
    d. Refer to TM 55-1520-240-23 for accept/reject criteria, repair, and replacement procedures.

11. Static Lock Mechanism
    a. Inspect lock mechanism for cracks (no cracks allowed), nicks, gouges, scratches, distortion, or evidence of corrosion.
    b. Refer to WP 0077 00 for corrosion removal and treatment.
    c. Refer to TM 55-1520-240-23 for accept/reject criteria, repair, and replacement procedures.

AFT LANDING GEAR ASSEMBLY INSPECTION REQUIREMENTS - continued

12. Aft Landing Gear Shock Strut
    a. Refer to Forward Landing Gear Shock Strut paragraph above for inspection procedures.
    b. Refer to TM 55-1520-240-23 for accept/reject criteria.
    c. Repair per DMWR 55-1620-225 when authorized by the Contracting Officer.

END OF WORK PACKAGE

DEPOT MAINTENANCE WORK REQUIREMENT
CH-47D HELICOPTER
POWERPLANTS

INITIAL SETUP

Test Equipment:
As Required

Tools and Special Tools:
As Required

Material/Parts:
As Required

Personnel Required:
Examiner (PSA)

References:
DMWR 55-2840-254
DMWR 55-2995-107
DMWR 55-2995-108
TM 1-1500-204-23 Series
TM 1-2840-265-23
TM 55-1520-240-23 Series
TM 55-2840-254-23
WP 0003 00
WP 0077 00

Equipment Conditions:
As Required

Special Environmental Condition:
As Required

SCOPE

Two T55-L-712 or two T55-GA-714 powerplant assemblies, one mounted to each side of the pylon, supply torque to power the drive and rotor systems. Each powerplant includes a starter, fuel and hydraulic lines, and electrical wiring. Quick disconnect couplings at the fuselage allow for ease in changing powerplants.

INSPECTION REQUIREMENTS

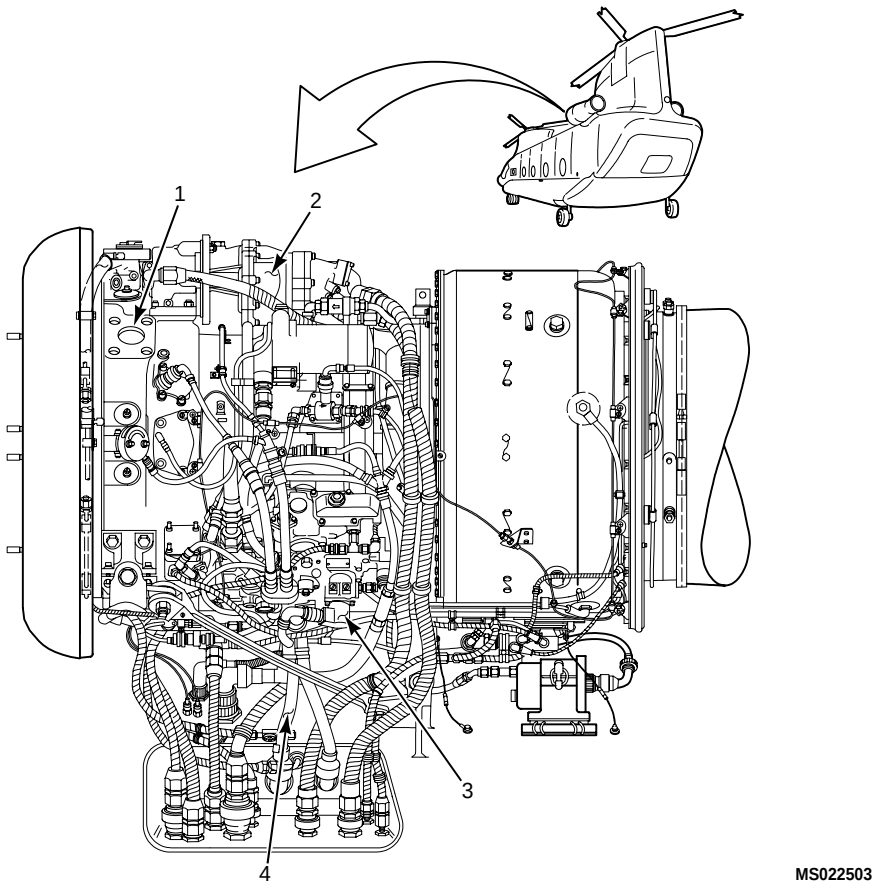


Figure 1. Powerplant

NOTE

The items in Figure 1 correspond to the respective item numbers in the following INSPECTION REQUIREMENTS.

1. Powerplant
   a. Inspect engines, T55-L-712, per TM 55-2840-254-23. Repair per DMWR 55-2840-254 when authorized by the Contracting Officer.
   b. Inspect engines, T55-GA-714, per TM 1-2840-265-23.

INSPECTION REQUIREMENTS - continued

2. Hydraulically Powered Starter
   a. Inspect hydraulically powered starter for cracks (no cracks allowed), nicks, dents, leakage, or evidence of corrosion.
   b. Starter P/N 114HS200-4 and P/N 420078 - refer to TM 55-1520-240-23 for corrosion removal and treatment, accept/reject criteria. Repair per DMWR 55-2995-108 when authorized by the Contracting Officer.
   c. Starter P/N 114HS200-5 and P/N 53WK16008 - refer to TM 55-1520-240-23 for corrosion removal and treatment, accept/reject criteria. Repair per DMWR 55-2995-107 when authorized by the Contracting Officer.

3. Electrical Harnesses
   a. Inspect electrical harnesses for evidence of fraying, chafing, overheating, cracking, and looseness.
   b. Inspect all electrical connectors for security and evidence of corrosion.
   c. T55-L-712 engines - refer to TM 55-2840-254-23 for accept/reject criteria.
   d. T55-GA-714 engines - refer to TM 1-2840-265-23 for accept/reject criteria.
   e. Refer to WP 0003 00, Tables 4 and 5, for all electrical wiring and connector inspection and repair criteria.
   f. Refer to WP 0077 00 for corrosion removal and treatment.

4. Engine Air and Oil Lines, Tubes, and Hoses
   a. Inspect engine air and oil lines, tubes, and hoses for evidence of leakage, cracks (no cracks allowed), or evidence of corrosion.
   b. Inspect for missing, loose, or damaged attaching hardware.
   c. T55-L-712 engines - refer to TM 55-2840-254-23 for accept/reject criteria.
   d. T55-GA-714 engines - refer to TM 1-2840-265-23 for accept/reject criteria.
   e. Refer to WP 0003 00, Tables 2 and 3, for all tubing and hose inspection and repair criteria.
   f. Refer to WP 0077 00 for corrosion removal and treatment.

END OF WORK PACKAGE

DEPOT MAINTENANCE WORK REQUIREMENT
CH-47D HELICOPTER
ROTARY-WING BLADES

INITIAL SETUP

Test Equipment:
As Required

Tools and Special Tools:
As Required

Material/Parts:
As Required

Personnel Required:
Examiner (PSA)

References:
TM 1-1500-204-23 Series
TM 55-1520-240-23 Series
WP 0077 00
WP 0080 00
WP 0129 00
WP 0147 00

Equipment Conditions:
As Required

Special Environmental Condition:
As Required

SCOPE

The rotary-wing blades are composite structures. They consist of a D-shaped fiberglass spar, a titanium nose cap, two composite pads, socket liner, shock absorber bracket, and nomex/fiberglass fairing bonded to the spar. The blades are tracked and balanced using the Aviation Vibration Analyzer. Lengthening or shortening the pitch links, bending the trim tab, or adding or removing balance weights are tasks which will adjust the blade track and balance. The spar is made up of center and wrap-around unidirectional straps. The wrap-around straps are continuous elements. They start at the blade tip, wrap around the vertical pin bore, and return to the tip. Several layers of cross-ply fiberglass cover the straps. These help to prevent twisting. Kevlar filament windings secure the shock absorber bracket to the spar. A replaceable composite sleeve lines the vertical pin bore. The nose of the spar is formed around a permanent balance weight. Tubes are provided at the tip end of the spar for tracking weights.

The spar root end pads, socket liner, and shock absorber bracket, made of fiberglass composite are bonded to the spar.

The titanium leading edge is bonded to the spar. A nickel erosion cap is bonded over the outboard 54 inches of the spar leading edge. The replaceable erosion cap protects that part of the blade most easily damaged by the elements.

The fairing is a nomex honeycomb covered by a fiberglass skin. Core and skin are bonded to the spar at the leading edge of the core. A wedge of fiberglass reinforces the core along its entire trailing edge. Lightning protection is provided by wire mesh positioned at intervals within the skin. A rubber rib at the inboard end and sealant at the tip end close the fairing.

Each blade has tracking and balance weights installed in the tip. The weights are accessible by removal of the cover plate. A maximum of 10 balance weights are attached to the inside of each cover plate. These weights are added or removed for balancing. The tracking weights are located in capped tubes behind the cover plate. Three tubes are in the leading edge of the spar. Two tubes are positioned at the aft end of the spar. Weights are moved to compensate for the weight of blade repairs. Targets are installed on the cover plate for blade tracking.

SCOPE - continued

Wire mesh is installed near the surface of the skin for lightning protection. The mesh extends to the trailing edge of the blade at the trim tab and at the tip. The mesh goes to the nose cap, and provides an electrical path to the jumper wire at the top and bottom inboard end of the blade spar. The jumper wires are connected to the oil manifold tube on the pitch housing.

The rotor blade trim tab is set at the factory. Rotor track is adjusted by bending the trim tab.

INSPECTION REQUIREMENTS

NOTE

The item numbers in Figure 1, sheets 1 and 2, correspond to the respective item numbers in the INSPECTION REQUIREMENTS following each illustration.

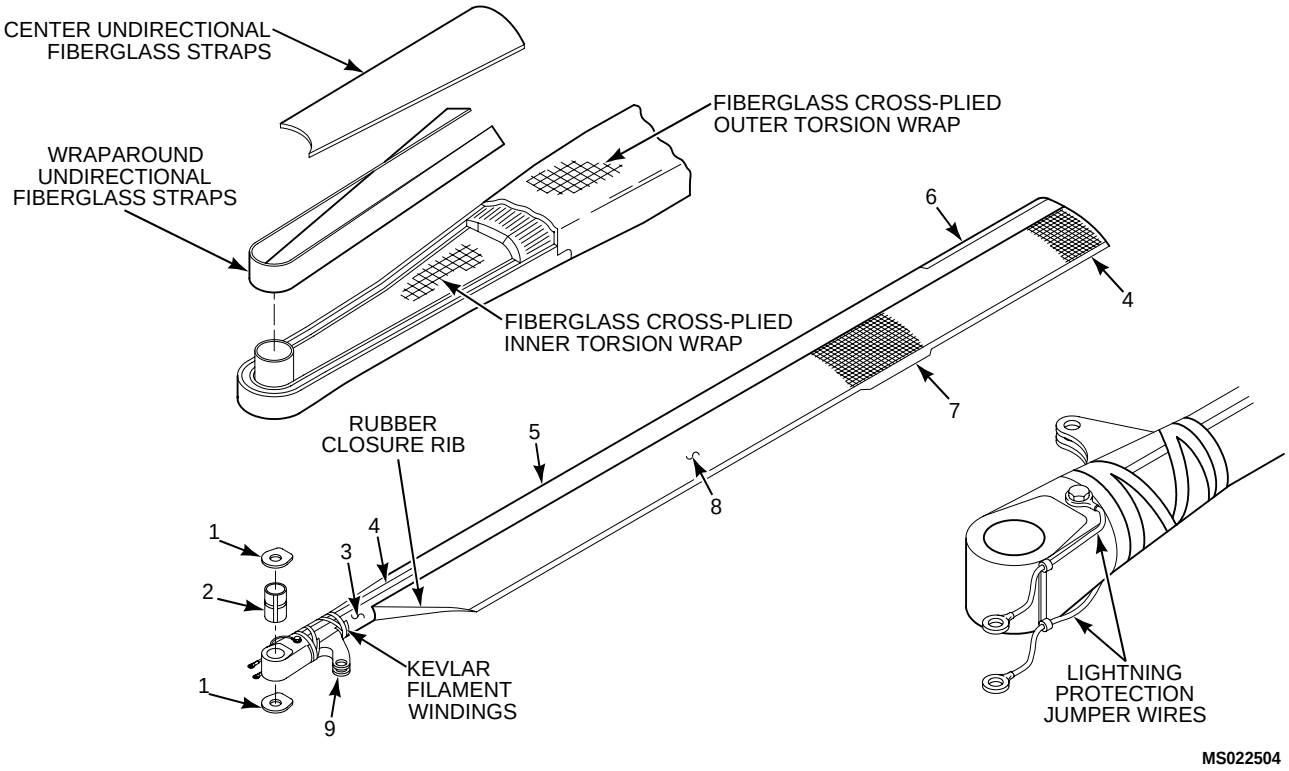


Figure 1. Rotary-Wing Blades (Sheet 1 of 2)

Blade Assembly, Rotary Wing **(CSI – WP 0160 00)**

1. Pads, Spar Root End
   a. Inspect pad for cracks (no cracks allowed), scratches, nicks, and delaminations.
   b. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

2. Liner, Spar Root End
   a. Inspect the liner for cracks (no cracks allowed), scratches, nicks, and delaminations
   b. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

INSPECTION REQUIREMENTS - continued

3. Blade Spar Root
   a. Inspect for cracks, dents, delamination, burns, or evidence of corrosion.
   b. Refer to WP 0077 00 for corrosion removal and treatment.
   c. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

4. Lightning Protection
   a. Inspect for frayed jumper wire, burned areas, pits, cracks, or evidence of corrosion.
   b. Inspect lightning jumper strip for debonding, burnt areas, cracks, or evidence of corrosion.
   c. Refer to WP 0077 00 for corrosion removal and treatment.
   d. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

5. Titanium Nose Cap
   a. Inspect for voids, nicks, chafing, dents, burns, and pitting.
   b. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

6. Nickel Erosion Cap
   a. Inspect for voids, nicks, chafing, dents, burns, and pitting.
   b. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

7. Trim Tab
   a. Inspect for cracks, voids, dents, bending, chafing, burns, and pitting.
   b. Refer to TM 55-1520-240 23 for accept/reject criteria and repair procedures.

8. Fairing and Wire Mesh
   a. Inspect for voids, punctures, nicks, dents, scratches, and burns.
   b. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

9. Bracket, Shock Absorber
   a. Inspect the bracket for cracks (no cracks allowed), scratches, nicks, or delamination.
   b. Inspect bushing for nicks, scratches, wear, or evidence of corrosion.
   c. Refer to WP 0077 00 for corrosion removal and treatment.
   d. Refer to TM 55-1520-240-23 for accept/eject criteria and repair procedures.

INSPECTION REQUIREMENTS - continued

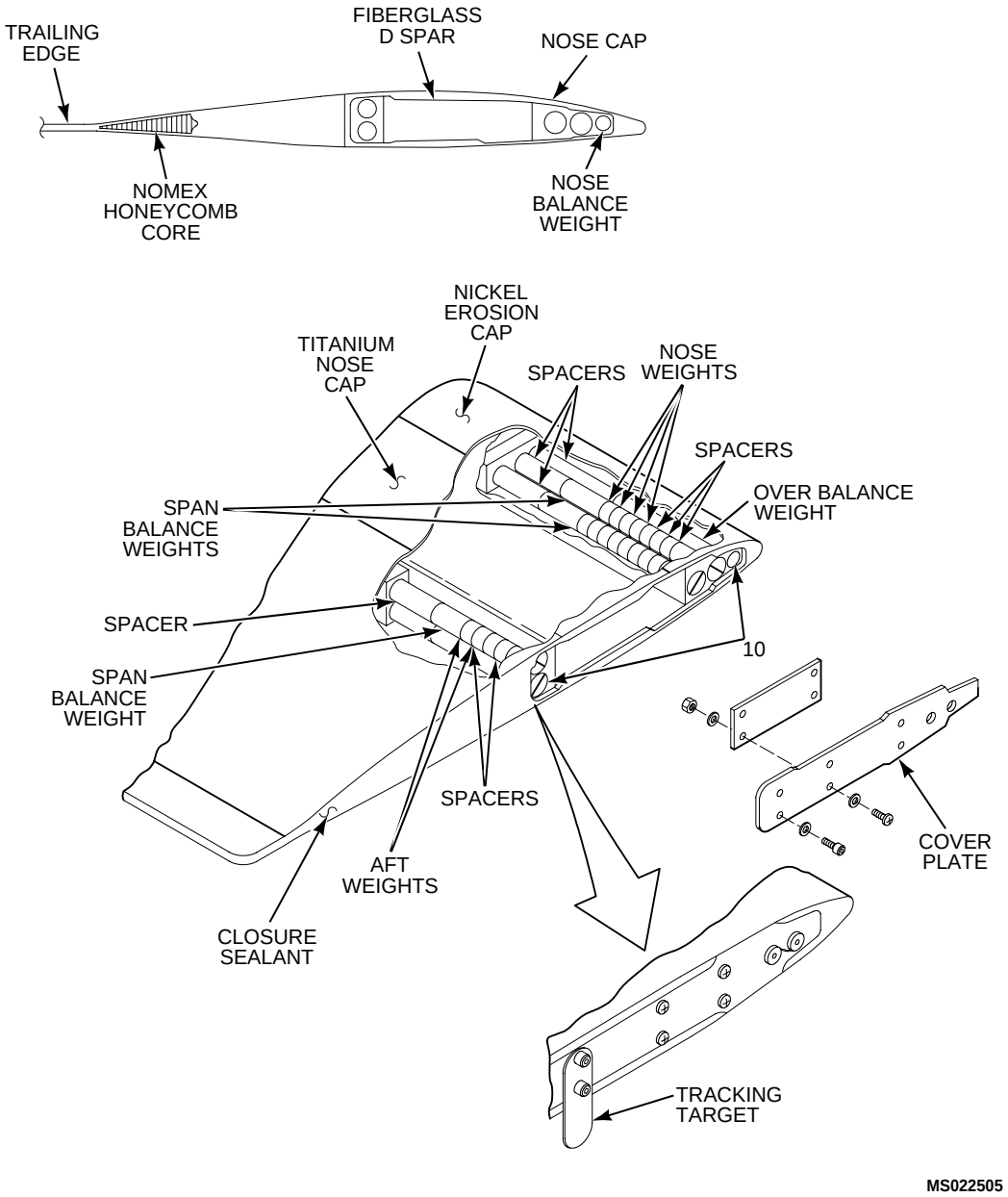


Figure 1. Rotary-Wing Blades (Sheet 2 of 2)

10. Tracking and Balance Weights
    a. Inspect for cracks, nicks, scratches, chafing, burns, or evidence of corrosion.
    b. Refer to WP 0077 00 for corrosion removal and treatment.
    c. Refer to TM 55-1520-240-23 for accept/eject criteria and repair procedures.

END OF WORK PACKAGE

DEPOT MAINTENANCE WORK REQUIREMENT
CH-47D HELICOPTER
FORWARD AND AFT ROTARY-WING HEAD ASSEMBLIES

INITIAL SETUP

Test Equipment:
As Required

Tools and Special Tools:
As Required

Material/Parts:
As Required

Personnel Required:
Examiner (PSA)

References:
TM 1-1500-204-23 Series
TM 55-1520-240-23 Series
DMWR 55-1615-296
DMWR 55-1615-297
DMWR 55-1650-166
WP 0077 00
WP 0160 00

Equipment Conditions:
As Required

Special Environmental Condition:
As Required

SCOPE

The forward and aft rotary-wing head assemblies consist of a rotor head, three pitch-varying housings, three pitch-varying shafts with droop stops, three shock absorbers, a swashplate, three pitch links, a drive collar and drive arms.
The rotor hub has splines that mate with splines on the rotor shaft. Pitch shafts are connected to the hub through three horizontal pins. These pins ride in bearings supported by the hub lugs. Caps retaining the pins and bearings are secured by locking beams. The beams connect the leading cap to one pin with the trailing cap of the next pin.

The pitch varying housings are connected to pitch-varying shafts by flexible, laminated steel tie bars. The laminated tie bar allows the pitch housing to rotate on the pitch shafts and to change blade pitch. The inboard end of the tie bar is connected to the inboard end of the pitch shaft. The outboard end of the tie bar is connected to the outboard end of the pitch-varying housing. The pitch arm on each housing is connected by a pitch link to a lug on the swashplate. The pitch link raises or lowers the pitch arm allowing it to rotate the housing on two roller bearings on the shaft. Lugs on the housing contain bearings for the vertical hinge pin. A single hub oil tank lubricates the horizontal pin bearings. Each pitch-varying housing has a pitch bearing oil tank and two vertical pin bearing oil tanks. An oil manifold tube connects the vertical pin tanks to each other. Sight indicators are provided for each tank, to check oil level.

Each pitch-varying housing is supported by a droop stop. These are installed on the bottom of the pitch shafts to limit droop at low rotor speed. The forward and aft rotor heads have fixed droop stops that rest directly against the hub. The centrifugal droop stop assembly is mounted on a splined plate under the aft rotor head. The droop stop contains three balance arms. These are connected by springs to lugs on the hub oil tank. Interposer blocks on the balancing arms are positioned between the fixed blocks and the hub. As rotor speed increases, the centrifugal droop stops swing out. This moves interposer blocks clear of the pitch shafts and allows more freedom for blade droop. As rotor speed decreases, the springs pull the arms in toward the hub. This positions the blocks between the hub and pitch shafts to reduce droop angle.

Each head has three shock absorbers. They are connected between lugs on the pitch-varying housing and brackets on the blades. The shock absorbers limit the lead and lag motion of the blades. Each shock absorber has a vent valve. The valve is opened for extreme cold weather operation. Changing the vent valve position allows the shock absorber to be used on the forward or aft head.

SCOPE – continued

The forward and aft swashplates transmit manual or automatic fight control movements to the rotary-wing blades. The swashplate can be tilted and moved vertically. This movement is transferred to the blades through the pitch links and pitch-varying housing. Forward and aft swashplates have aluminum rotating rings. The stationary ring on the aft swashplate is steel. On the forward swashplate this ring is aluminum. The stationary ring of each swashplate is mounted on a spherical bearing. This allows the swashplate to tilt in any direction. A ball bearing connects rotating and stationary rings. The swashplate is free to slide up and down on a slider shaft to change blade pitch angle. Lugs are provided on the rotating ring for connection of three pitch links and upper drive arm.

Drive arm lugs are located in two positions so the rotating ring can be used on the forward or aft swashplate. Lugs on the stationary ring provide for connection of two servo cylinders, fixed link, and longitudinal cyclic actuator. Two single interrupters, a double interrupter on the rotating ring, and a magnetic pickup on the stationary ring are used for rotor balancing.

The six pitch links, three on each rotary-wing head, are connected between the swashplate and pitch-varying housing. Tilting a swashplate up and down moves the pitch link and pitch arm in the same direction. This increases or decreases the blade pitch angle. Raising and lowering the swashplate on the slider shaft changes pitch on all three blades. Forward and aft pitch links are similar in design but not interchangeable. Each pitch link is adjustable to change the pitch of an individual blade. Moving the turnbuckle toward the plus mark makes the pitch link longer and increases blade pitch. A turn in the minus direction shortens the pitch link and decreases blade pitch.

The drive collar transmits torque to the swashplate through the upper and lower drive arms. The drive arms are hinged to allow the swashplate to slide up and down on the slider shaft. The splined drive collar mates with splines on the rotor shaft. A flange is located on the drive collar for installation of the weather-protective cover. Drive collar lugs are provided for connection to the upper drive arm. The upper drive arm is connected at the other end to the lower drive arm. Both connections are hinged. A spherical ball bearing on the lower drive is connected to the swashplate. This arrangement allows the swashplate to tilt.

INSPECTION REQUIREMENTS

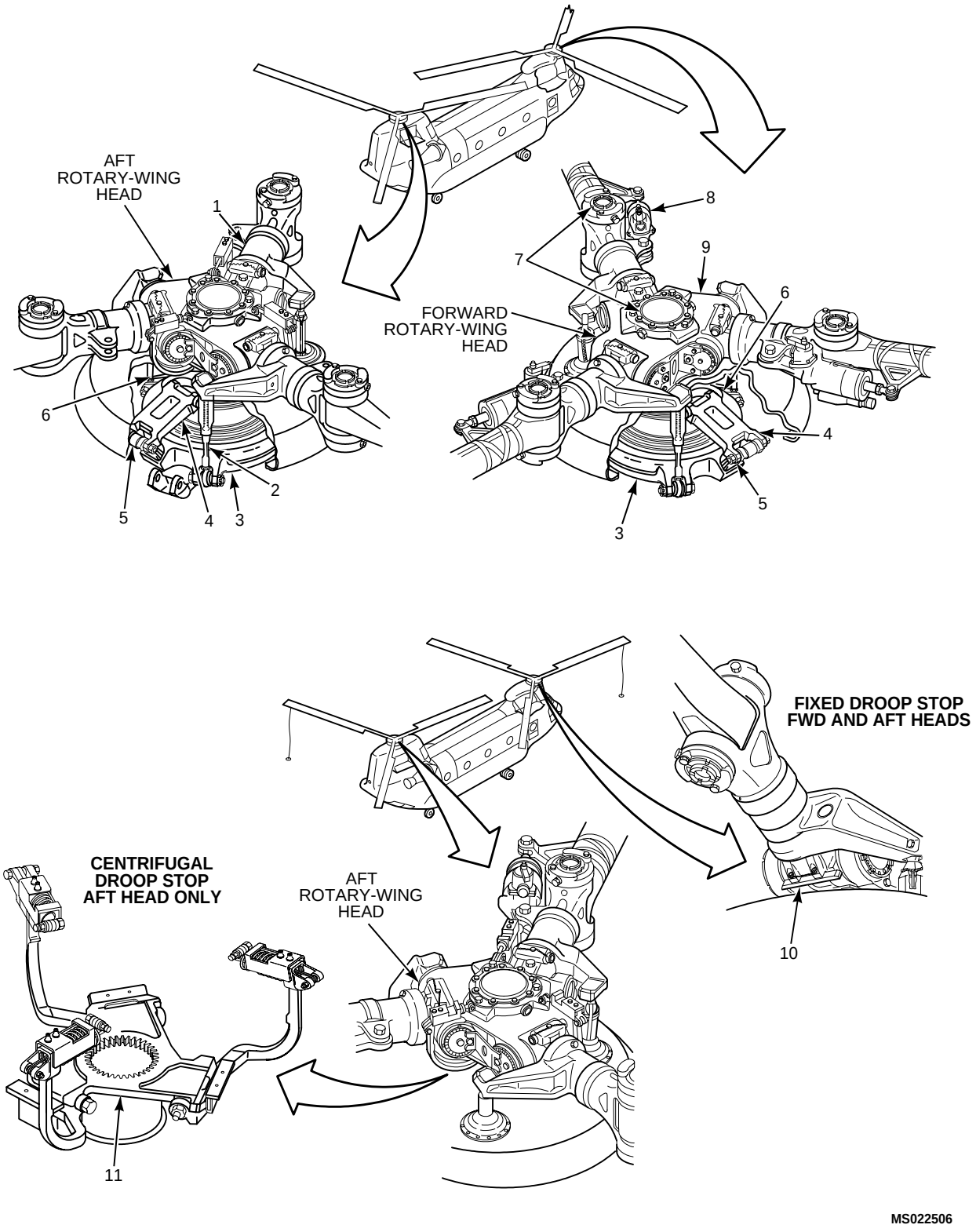


Figure 1. Forward and Aft Rotary–Wing Heads

INSPECTION REQUIREMENTS - continued

NOTE

The item numbers in Figure 1 correspond to the respective item numbers in the following INSPECTION REQUIREMENTS.

1. Pitch-Varying Housing **(CSI - WP 0160 00)**
   a. Inspect for cracks (no cracks allowed), nicks, scratches, gouges, scores, pits, burns, or evidence of corrosion.
   b. Inspect for loose, missing, improper, and damaged attaching hardware.
   c. Inspect for evidence of leakage.
   d. Refer to WP 0077 00 for corrosion removal and treatment.
   e. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.
   f. Repair as per DMWR 55-1615-296 when authorized by the Contracting Officer.

2. Pitch Links **(CSI - WP 0160 00)**
   a. Inspect bearings for play. Refer to TM 55-1520-240-23 for accept/reject criteria.
   b. Inspect locator pin for damage (no damage allowed).
   c. Inspect rod end for staking marks or cracks (no cracks allowed).
   d. Refer to WP 0077 00 for corrosion removal and treatment.
   e. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

3. Swashplate, Forward and Aft **(CSI - WP 0160 00)**
   a. Inspect for cracks (no cracks allowed), nicks, gouges, dents, scratches, pits, burns, or evidence of corrosion.
   b. Inspect for loose, missing, and damaged attaching hardware.
   c. Refer to WP 0077 00 for corrosion removal and treatment.
   d. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.
   e. Repair as per DMWR 55-1615-297 when authorized by the Contracting Officer.

4. Drive Arms, Upper **(CSI - WP 0160 00)**
   a. Inspect for cracks (no cracks allowed), nicks, chafes, scratches, dents, gouges, or evidence of corrosion.
   b. Inspect bearings for scores, tears, and fraying.
   c. Inspect for loose, missing, or damaged attaching hardware.
   d. Refer to WP 0077 00 for corrosion removal and treatment.
   e. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

5. Drive Arms, Lower **(CSI - WP 0160 00)**
   a. Inspect for cracks (no cracks allowed), nicks, chafes, scratches, dents, gouges, or evidence of corrosion.
   b. Inspect bearings for scores, tears, and fraying.
   c. Inspect for loose, missing, or damaged attaching hardware.
   d. Refer to WP 0077 00 for corrosion removal and treatment.
   e. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

INSPECTION REQUIREMENTS - continued

6. Drive Collar **(CSI - WP 0160 00)**
   a. Inspect for cracks (no cracks allowed), nicks, chafes, scratches, dents, gouges, or evidence of corrosion.
   b. Inspect bearings for scores, tears, and fraying.
   c. Inspect for loose, missing, or damaged attaching hardware.
   d. Refer to WP 0077 00 for corrosion removal and treatment.
   e. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

7. Lubrication System
   a. Inspect for cracks (no cracks allowed), nicks, scores, gouges, and or evidence of corrosion.
   b. Inspect sight indicators for leaks, cracks, and glass clarity.
   c. Inspect for loose, missing, or damaged attaching hardware.
   d. Refer to WP 0077 00 for corrosion removal and treatment.
   e. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

8. Shock Absorbers **(CSI - WP 0160 00)**
   a. Inspect for cracks, dents, chafing, nicks, pits, burns, gouges, scratches, and or evidence of corrosion.
   b. Inspect for loose, missing, improper, or damaged attaching hardware.
   c. Inspect for evidence of leakage.
   d. Refer to WP 0077 00 for corrosion removal and treatment.
   e. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.
   f. Repair per DMWR 55-1650-166 when authorized by the Contracting Officer.

9. Rotor Head Hub **(CSI - WP 0160 00)**
   a. Inspect for cracks (no cracks allowed), nicks, scratches, gouges, scores, pits, burns, and or evidence of corrosion.
   b. Inspect for loose, missing, improper, or damaged attaching hardware.
   c. Inspect for evidence of leakage.
   d. Inspect hub splines for nicks, scratches, gouges, scores, pits, or evidence of corrosion.
   e. Refer to WP 0077 00 for corrosion removal and treatment.
   f. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.
   g. Repair per DMWR 55-1615-296 when authorized by the Contracting Officer.

10. Droop Stops (Fixed) **(CSI - WP 0160 00)**
    a. Inspect for distortion, corrosion, cracks, breaks, and wear at anchor points.
    b. Inspect for loose, missing, improper, or damaged attaching hardware.
    c. Refer to WP 0077 00 for corrosion removal and treatment.
    d. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

INSPECTION REQUIREMENTS - continued

11. Droop Stop (Centrifugal) **(CSI - WP 0160 00)**
    a. Inspect springs and limiters for distortion, corrosion, cracks, breaks, and wear at anchor points.
    b. Inspect weights for corrosion and security.
    c. Inspect for loose, missing, improper, or damaged attaching hardware.
    d. Inspect balance arms for corrosion and distortion.
    e. Inspect interposer blocks, support, and striker blades for cracks, corrosion, and security.
    f. Inspect splines and supports for nicks, cracks, or evidence of corrosion.

    g. Refer to WP 0077 00 for corrosion removal and treatment.
    h. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

END OF WORK PACKAGE

DEPOT MAINTENANCE WORK REQUIREMENT

CH-47D HELICOPTER

DRIVE SYSTEM

INITIAL SETUP

Test Equipment:
As Required

Tools and Special Tools:
As Required

Material/Parts:
As Required

Personnel Required:
Examiner (PSA)

References:
TM 1-1500-204-23 Series
TM 55-1520-240-23 Series
DMWR 55-1615-321
DMWR 55-1615-322
DMWR 55-1615-323
DMWR 55-1615-324
DMWR 55-1615-325
WP 0003 00
WP 0077 00
WP 0160 00

Equipment Conditions:
As Required

Special Environmental Condition:
As Required

SCOPE

The drive system delivers torque from the engines to the rotary-wing heads and blades. It also drives the AC generators and hydraulic pumps for the flight control and utility hydraulic systems. The drive system consists of five transmissions, drive shafting to connect the transmissions, and an aft rotor shaft.

INSPECTION REQUIREMENTS

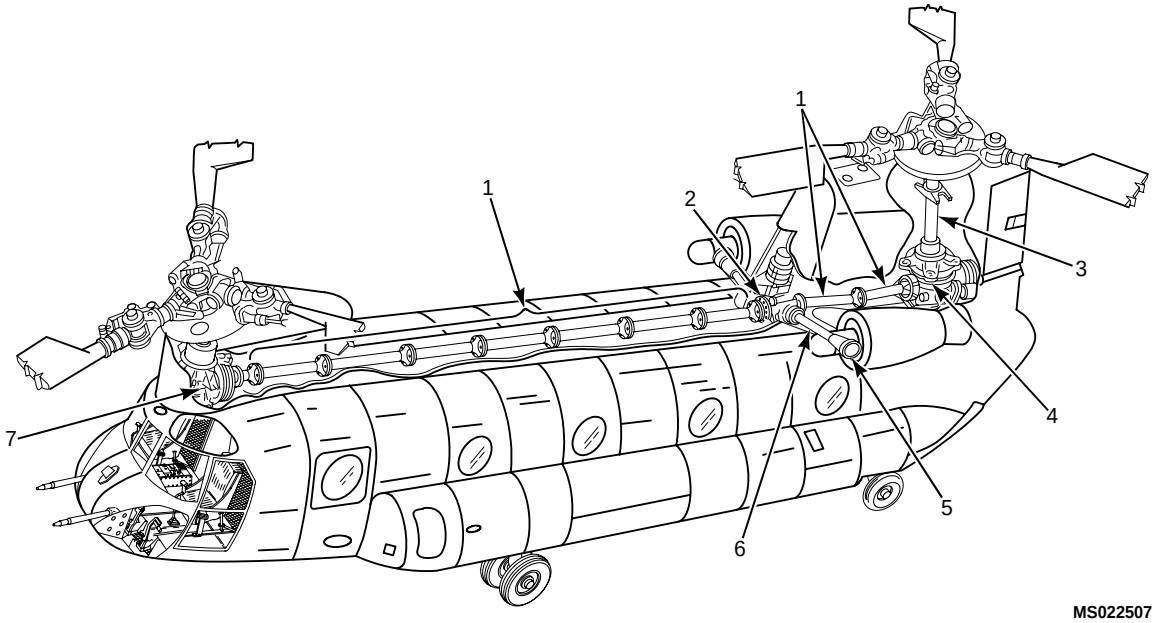


Figure 1. Drive System

INSPECTION REQUIREMENTS - continued

NOTE

The items in Figure 1 correspond to the respective item numbers in the following INSPECTION REQUIREMENTS.

1. Forward and Aft Drive Shafting **(CSI - WP 0160 00)**
   a. Inspect for cleanliness, cracks (no cracks allowed), dents, corrosion, and loose or cracked rivets.
   b. Inspect for excessive play or binding of the roller bearing, and foreign objects.
   c. Inspect mounting points and bushings for cracks (no cracks allowed), wear, distortion, or evidence of corrosion.
   d. Inspect the mount for swollen or torn rubber, and debonding of rubber from metal.
   e. Flexible Adapter Assembly – Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.
   f. Refer to WP 0077 00 for corrosion removal and treatment.
   g. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.
   h. Repair per DMWR 55-1615-322 when authorized by the Contracting Officer.

2. Combining Transmission **(CSI - WP 0160 00)**
   a. Inspect the housing for loose or missing hardware, cracks (no cracks allowed), damage, corrosion, leaks, overheating, and foreign objects.
   b. Inspect input pinion shafts, forward and aft output shafts on transmission for axial and radial play and damage.
   c. Inspect mounting points and bushings for cracks (no cracks allowed), wear, distortion or evidence of corrosion.
   d. Inspect electrical wiring and connectors for security, chafing, proper support, and insulation for cuts and fraying. Refer to WP 0003 00, Tables 4 and 5, for all electrical wiring and connector inspection and repair criteria.
   e. Refer to WP 0077 00 for corrosion removal and treatment.
   f. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.
   g. Repair per DMWR 55-1615-325 when authorized by the Contracting Officer.

3. Aft Rotor Shaft **(CSI - WP 0160 00)**
   a. Inspect aft vertical shaft and bearing for leaks and signs of overheating.
   b. Inspect aft vertical shaft at the top of the slider shaft for wear adjacent to the dust seal on the shaft and for proper clearance of the dust seal.
   c. Inspect slider shaft for nicks, scratches, pitting, wear, or evidence of corrosion.
   d. Inspect mount housing, and bushings for wear, cracks (no cracks allowed), distortion, or evidence of corrosion.
   e. Refer to WP 0077 00 for corrosion removal and treatment.
   f. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.
   g. Repair per DMWR 55-1615-322 when authorized by the Contracting Officer.

4. Aft Transmission **(CSI - WP 0160 00)**
   a. Inspect for cracks (no cracks allowed), scratches, nicks, gouges, loose or missing hardware, or evidence of corrosion.
   b. Inspect for evidence of leaks, overheating, and foreign objects.
   c. Inspect mounting points and bushings for cracks (no cracks allowed), wear, distortion, or evidence of corrosion.

INSPECTION REQUIREMENTS - continued

d. Inspect wire bundles and connectors for security, damage, and proper support. Refer to WP 0003 00, Tables 4 and 5, for all electrical wiring and connector inspection and repair criteria.
e. Refer to WP 0077 00 for corrosion removal and treatment.
f. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.
g. Repair per DMWR 55-1615-324 when authorized by the Contracting Officer

5. Engine Transmission **(CSI - WP 0160 00)**

NOTE

Inspection procedures are applicable to both left and right engine transmissions.

a. Inspect housing for corrosion, chafed areas, leaks, overheating, cracks (no cracks allowed), and fairing barrel nuts for condition.
b. Inspect output shaft for radial and axial play. Check splines for wear.
c. Inspect attaching hardware for loose, missing, or damage, and foreign objects.
d. Inspect wire bundles and connectors for security, damage, and proper support. Refer to WP 0003 00, Tables 4 and 5, for all electrical wiring and connector inspection and repair criteria.
e. Refer to WP 0077 00 for corrosion removal and treatment.
f. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.
g. Repair per DMWR 55-1615-323 when authorized by the Contracting Officer.

6. Engine Drive Shaft **(CSI - WP 0160 00)**

NOTE

Inspection procedures are applicable to both left and right shafts.

a. Inspect for cleanliness, cracks (no cracks allowed), dents, loose or cracked rivets, or evidence of corrosion.
b. Inspect nuts and bolts for scratches, cracks, nicks, pitting, damaged threads, or evidence of corrosion.
c. Flexible Adapter Assembly – Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.
d. Refer to WP 0077 00 for corrosion removal and treatment.
e. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.
f. Repair per DMWR 55-1615-322 when authorized by the Contracting Officer.

7. Forward Transmission **(CSI - WP 0160 00)**

a. Inspect for cracks (no cracks allowed), scratches, nicks, gouges, loose or missing hardware, or evidence of corrosion.
b. Inspect for evidence of leaks, overheating, and foreign objects.
c. Inspect mounting points and bushings for cracks (no cracks allowed), wear, distortion, or evidence of corrosion.
d. Inspect slider shaft for nicks, scratches, pitting, or evidence of corrosion.
e. Inspect wire bundles and connectors for security, damage, and proper support. Refer to WP 0003 00, Tables 4 and 5, for all electrical wiring and connector inspection and repair criteria.
f. Refer to WP 0077 00 for corrosion removal and treatment.

INSPECTION REQUIREMENTS - continued

g. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.
h. Repair per DMWR 55-1615-321 when authorized by the Contracting Officer.

END OF WORK PACKAGE

DEPOT MAINTENANCE WORK REQUIREMENT
CH-47D HELICOPTER
FLIGHT CONTROL HYDRAULIC SYSTEM

INITIAL SETUP

Test Equipment:
As Required

Tools and Special Tools:
As Required

Material/Parts:
As Required

Personnel Required:
Examiner (PSA)

References:
TM 1-1500-204-23 Series
TM 55-1520-240-23 Series
DMWR 55-1650-395
DMWR 55-1650-396
DMWR 55-1650-397
DMWR 55-1650-399
DMWR 55-1650-400
DMWR 55-1650-414
DMWR 55-4140-216
DMWR 55-4140-220
DMWR 55-4140-221
DMWR 55-4320-278
WP 0077 00
WP 0160 00

Equipment Conditions:
As Required

Special Environmental Condition:
As Required

SCOPE

The flight control hydraulic system consists of two identical but independent systems, identified as No 1 and No. 2 systems. The No. 1 system reservoir and module are located in the forward pylon fairing and the No. 2 system reservoir and module are is located in the aft pylon. The following components are common to both systems; fill module, hydraulic panel, maintenance panel, hydraulic pump, power control module, power transfer unit, servocylinders, reservoir coolers, lower control modules, and integrated lower control actuators (ILCA).

The fill module located at the right side of the cabin in the ramp area is used to add hydraulic fluid to both systems, and the utility hydraulic system.

A three-position switch is located on the HYDRAULIC panel of the cockpit overhead panel. Selecting either system disables and isolates the opposite system. There are two PWR XFR switches on the panel, one for each system. If the engines are shut down and the auxiliary power unit is running, either or both flight control systems can be pressurized.

The maintenance panel is mounted on the right side of the cabin ramp area. The panel has a hydraulic section with gages and indicator lights, which monitor the various system parameters.

A power transfer unit (PTU) in each system allows hydraulic pressure to be applied to the controls when the drive system is shut down. Each PTU consists of a pump driven by a hydraulic motor. The motor is powered by the APU motor pump, utility pump, or ground support equipment.

Pivoting and swiveling servocylinders are installed for each rotor system. The servocylinder receives 3,000-psi hydraulic pressure from each hydraulic system. Each servocylinder has individual manifolds and cylinders for the No.1 and No. 2 hydraulic systems.

SCOPE - continued

An integrated reservoir cooler module provides hydraulic fluid storage and cooling, with a separate fan for each system. An indicating rod on the reservoir provides visual fluid level monitoring. The maintenance panel allows for remote monitoring of fluid level.

A lower control module in each system reduces hydraulic pressure to the ILCA from 3,000 to 1,500 psi. A solenoid valve in each module shuts off hydraulic pressure to the advanced flight control system (AFCS) extensible links in each ICLA. The modules for each system are in the upper part of the flight control closet. The NO. 1 system module is at sta 100 and the NO. 2 system module is located at sta 95.

Four ILCA's are located in the flight control closet between sta 95 and sta 120. The actuators operate on 1,500 psi hydraulic pressure to provide flight control movement in the pitch, roll, yaw, and thrust axis and AFCS inputs to the pitch, roll, and yaw axis.

INSPECTION REQUIREMENTS

NOTE

The item numbers in Figure 1, sheets 1 through 3, correspond to the respective item numbers in the INSPECTION REQUIREMENTS following each illustration.

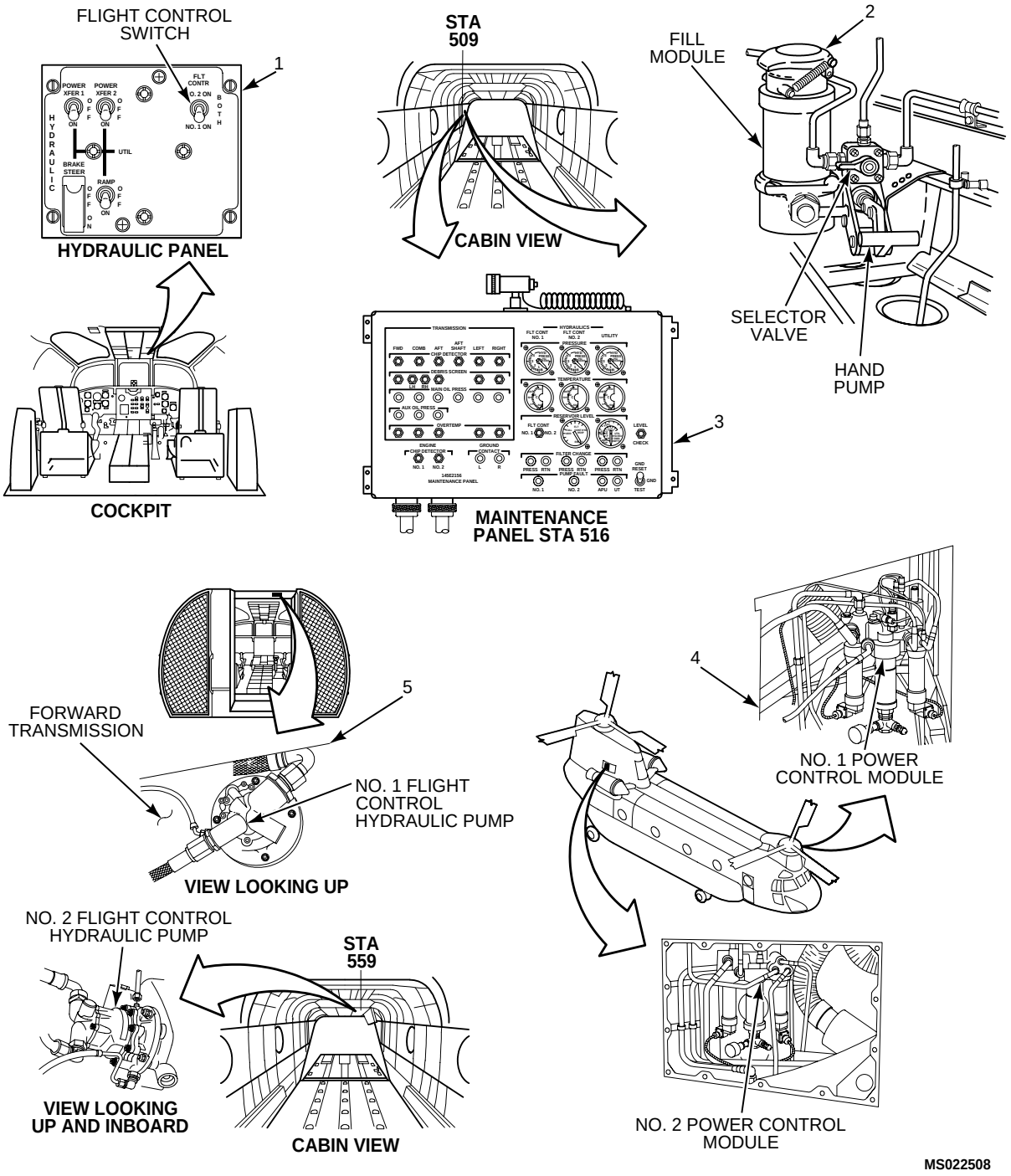


Figure 1. Flight Control Hydraulic System (Sheet 1of 3)

INSPECTION REQUIREMENTS - continued

CAUTION

Preservative hydraulic fluids, MIL-H-46170 and MIL-PRF-6083 will not be used for preservation of army aircraft hydraulic components. Instead, substitute MIL-PRF-83282 and MIL-H-5606 hydraulic fluids, respectively, for preservation of these components.

1. Hydraulic Panel
   a. Inspect for cracks (no cracks allowed), nicks, scratches, gouges, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Inspect switches for operation, damage, frayed wiring, burns, and arcing.
   d. Refer to WP 0077 00 for corrosion removal and treatment.
   e. Refer to WP 0003 00, Tables 4 and 5, for electrical wiring and electrical components inspection and repair procedures.
   f. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

2. Fill Module
   a. Inspect for cracks (no cracks allowed), nicks, gouges, dents, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Inspect for evidence of leakage and damaged tubing.
   d. Inspect cover for broken or damaged springs, and condition of seal.
   e. Inspect sight gauge for cracks and clarity.
   f. Refer to WP 0077 00 for corrosion removal and treatment.
   g. Refer to WP 0003 00, Table 2, for tubing inspection and repair procedures.
   h. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

3. Maintenance Panel
   a. Inspect for cracks (no cracks allowed), nicks, scratches, gouges, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Inspect switches and gages for operation, damage, frayed wiring, burns, and arcing.
   d. Refer to WP 0077 00 for corrosion removal and treatment.
   e. Refer to WP 0003 00, Tables 4 and 5, for electrical wiring and electrical components inspection and repair procedures.
   f. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

4. Power Control Module, No. 1 and No. 2 Systems
   a. Inspect modules for cracks (no cracks allowed), nicks, scratches, leaks, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to WP 0077 00 for corrosion removal and treatment.
   d. Refer to WP 0003 00, Table 2, for tubing inspection and repair procedures.
   e. Refer to WP 0003 00, Tables 4 and 5, for electrical wiring and electrical components inspection and repair procedures.
   f. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

INSPECTION REQUIREMENTS - continued

5. Hydraulic Pump, No. 1 and No. 2 Systems
   a. Inspect hydraulic pumps for cracks (no cracks allowed), nicks, scratches, leaks, or evidence of corrosion.
   b. Refer to WP 0003 00, Table 2, for tubing inspection and repair procedures.
   c. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.
   d. Repair per DMWR 55-1650-414, for Stratopower pumps or DMWR 55-4320-278 for Vickers pumps, when authorized by the Contracting Officer.

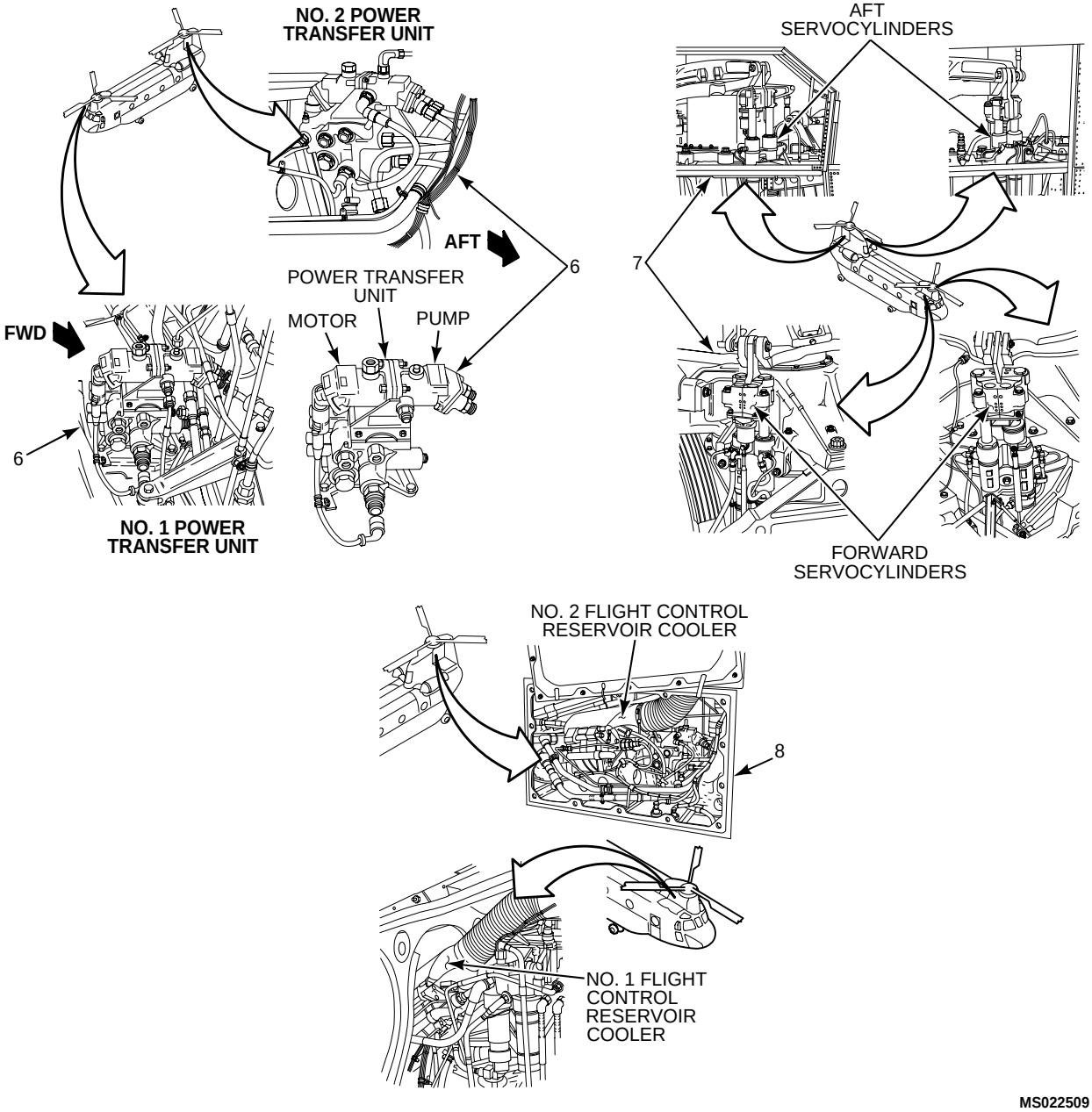


Figure 1. Flight Control Hydraulic System (Sheet 2 of 3)

INSPECTION REQUIREMENTS - continued

6. Power Transfer Unit, No. 1 and No. 2 Systems
   a. Inspect power transfer unit assembly for cracks (no cracks allowed), nicks, scratches, leaks, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to WP 0077 00 for corrosion removal and treatment.
   d. Refer to WP 0003 00, Table 2, for tubing inspection and repair procedures.
   e. Refer to WP 0003 00, Tables 4 and 5, for electrical wiring and electrical components inspection and repair procedures.
   f. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.
   g. Repair per DMWR 55-1650-399 when authorized by the Contracting Officer.

7. Servocylinders (forward and aft pivoting and swiveling)
   a. Inspect for cracks (no cracks allowed), nicks, scratches, leaks, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged hardware.
   c. Refer to WP 0003 00, Tables 2 and 3, for all tubing and hose inspection and repair procedures.
   d. Refer to WP 0077 00 for corrosion removal and treatment.
   e. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.
   f. Repair swiveling servocylinders per DMWR 55-1650-400 and pivoting servocylinders per DMWR 55-1560-395 when authorized by the Contracting Officer.

8. Reservoir Cooler, No. 1 and No. 2 Systems
   a. Inspect for cracks (no cracks allowed), nicks, scratches, leaks, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged hardware.
   c. Refer to WP 0003 00, Tables 2 and 3, for all tubing and hose inspection and repair procedures.
   d. Refer to WP 0003 00, Tables 4 and 5, for electrical wiring and electrical components inspection and repair procedures.
   e. Refer to WP 0077 00 for corrosion removal and treatment.
   f. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.
   g. Repair per DMWR 55-1650-396 when authorized by the Contracting Officer.

9. Cooling Fan, No. 2 System
   a. Inspect for cracks (no cracks allowed), nicks, scratches, evidence of overheating, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged hardware.
   c. Refer to WP 0003 00, Tables 4 and 5, for electrical wiring and electrical components inspection and repair procedures.
   d. Refer to WP 0077 00 for corrosion removal and treatment.
   e. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.
   f. Repair per DMWR 55-4140-220 for cooling fan P/N 145HS202-5 or DMWR 55-4140-221 for cooling fan P/N 145HS202-7 when authorized by the Contracting Officer.

INSPECTION REQUIREMENTS - continued

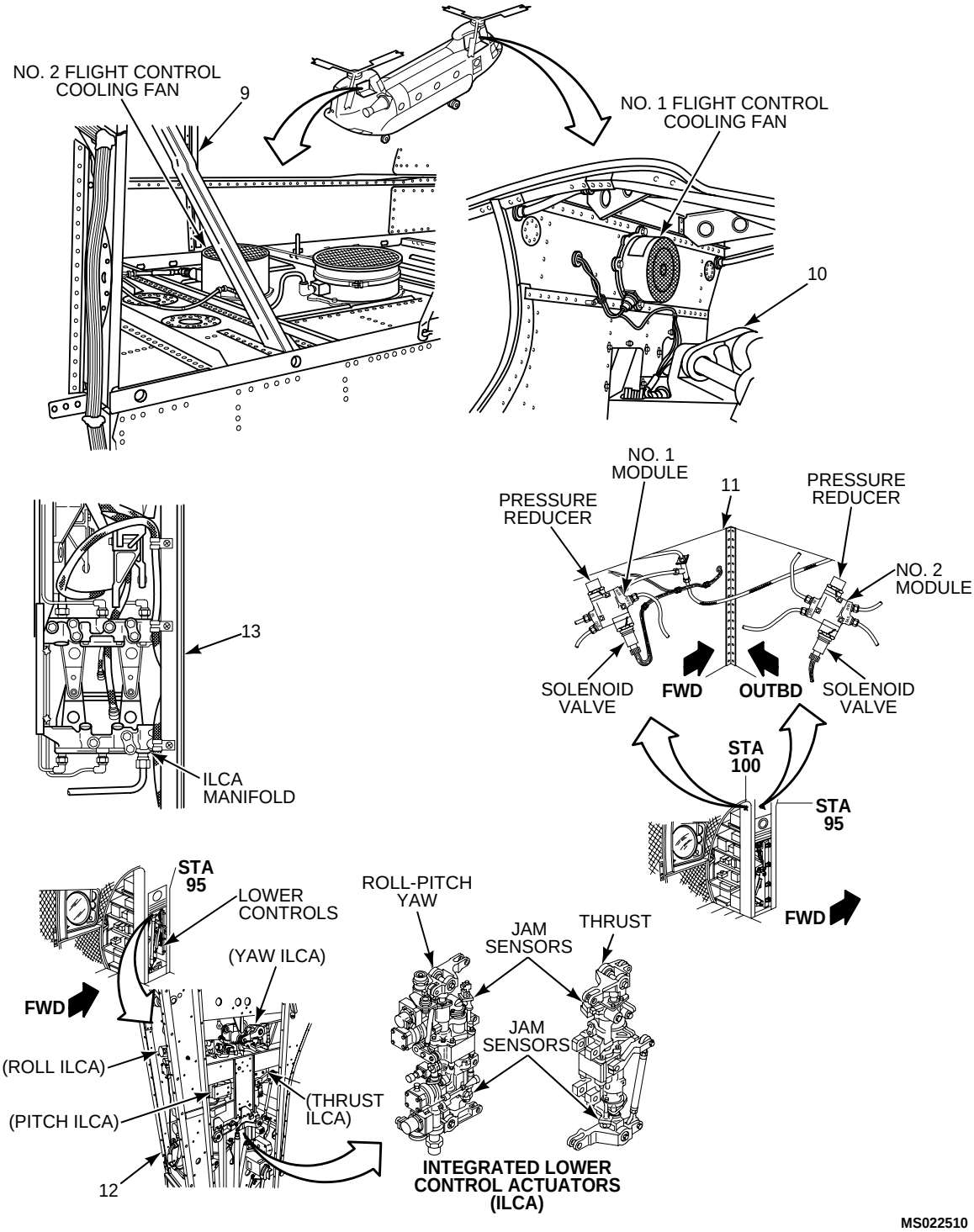


Figure 1. Flight Control Hydraulic System (Sheet 3 of 3)

INSPECTION REQUIREMENTS - continued

10. Cooling Fan, No. 1 System
    a. Inspect for cracks (no cracks allowed), nicks, scratches, evidence of overheating, or evidence of corrosion.
    b. Inspect for loose, missing, or damaged hardware.
    c. Refer to WP 0003 00, Tables 4 and 5, for electrical wiring and electrical component inspection and repair procedures.
    d. Refer to WP 0077 00 for corrosion removal and treatment.
    e. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.
    f. Repair per DMWR 55-4140-216 for cooling fan P/N 145HS202-4 or DMWR 55-4140-221 for cooling fan P/N 145HS202-6 when authorized by the Contracting Officer.

11. Lower Control Module Assembly, No. 1 and No. 2 Systems
    a. Inspect for nicks, dents, scratches, cracks (no cracks allowed), leaks, or evidence of corrosion.
    b. Inspect for loose, missing or damaged hardware.
    c. Refer to WP 0003 00,Table 2, for all tubing inspection and repair procedures.
    d. Refer to WP 0003 00, Tables 4 and 5, for electrical wiring and electrical component inspection and repair procedures.
    e. Refer to WP 0077 00 for corrosion removal and treatment.
    f. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

12. Integrated Lower Control Actuators (ILCA), No. 1 and No. 2 Systems **(CSI - WP 0160 00)**
    a. Inspect for cracks (no cracks allowed), nicks, scratches, leaks, or evidence of corrosion.
    b. Inspect for loose, missing, or damaged hardware.
    c. Refer to WP 0003 00, Tables 4 and 5, for electrical wiring and electrical component inspection and repair procedures.
    d. Refer to WP 0077 00 for corrosion removal and treatment.
    e. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.
    f. Repair per DMWR 55-1650-397 when authorized by the Contracting Officer.

13. Lower Controls Actuator Structural Manifold, No. 1 and No. 2 Systems
    a. Inspect for nicks, dents, scratches, cracks (no cracks allowed), leaks, or evidence of corrosion.
    b. Inspect for loose, missing, or damaged hardware.
    c. Refer to WP 0003 00, Table 2, for tubing inspection and repairs.
    d. Refer to WP 0077 00 for corrosion removal and treatment.
    e. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

END OF WORK PACKAGE

DEPOT MAINTENANCE WORK REQUIREMENT
CH-47D HELICOPTER
UTILITY HYDRAULIC SYSTEM

INITIAL SETUP

Test Equipment:
As Required

Tools and Special Tools:
As Required

Material/Parts:
As Required

Personnel Required:
Examiner (PSA)

References:
TM 1-1500-204-23 Series
TM 55-1520-240-23 series
DMWR 55-1650-396
DMWR 55-1650-398
DMWR 55-1650-412
DMWR 55-1650-414
DMWR 55-4140-220
WP 0003 00
WP 0077 00

Equipment Conditions:
As Required

Special Environmental Condition:
As Required

SCOPE

The utility hydraulic system provides hydraulic pressure to operate seven subsystems throughout the helicopter. These include engine start, cargo ramp and door, cargo winch, center cargo hook release, power steering and aft swivel locks, wheel brakes, and flight controls during ground checks. The following components are common to the system: Auxiliary Power Unit (APU) start accumulator, APU start module, APU motor pump, utility pump, pressure control module, return control module, reservoir/cooler, fill module, and hand-pump.

The APU accumulator stores hydraulic fluid under pressure to start the APU. It is located in the ramp area to the right of the aft transmission. In an emergency, the pressure in the accumulator can be used to operate the utility subsystems.

The utility pump, through the pressure control module, pressurizes the entire utility system when the engines are running and the rotor system is turning. The pressure control module receives input hydraulic pressure from the APU motor pump, utility pump, or an external ground power unit and distributes it to the various utility subsystems.

The return control module is the central collection point for all fluids returning from the various subsystems to the reservoir/cooler. A filter and a transfer cylinder are mounted on the module. The filter has a visual contamination indicator and a switch to light a caution light on the maintenance panel in the ramp area. The return module is located high in the aft cabin area at sta 534, to the left of the aft sync shafting.

The reservoir/cooler module stores and cools fluid for system operation. The cooler is mounted on top of the reservoir. It is connected by flexible ducting to a fan that is activated by a thermal switch in the cooler. Sensors in the unit send information on fluid temperature and level the maintenance panel.

The fill module is used to fill both the utility and flight control systems.

The hand-pump is a two-stage manually operated pump primarily used to pressurize the APU start accumulator. In an emergency, it can also be used to pressurize the cargo ramp, and cargo door.

INSPECTION REQUIREMENTS

NOTE

The item numbers in Figure 1, sheets 1 and 2, correspond to the respective item numbers in the INSPECTION REQUIREMENTS following each illustration.

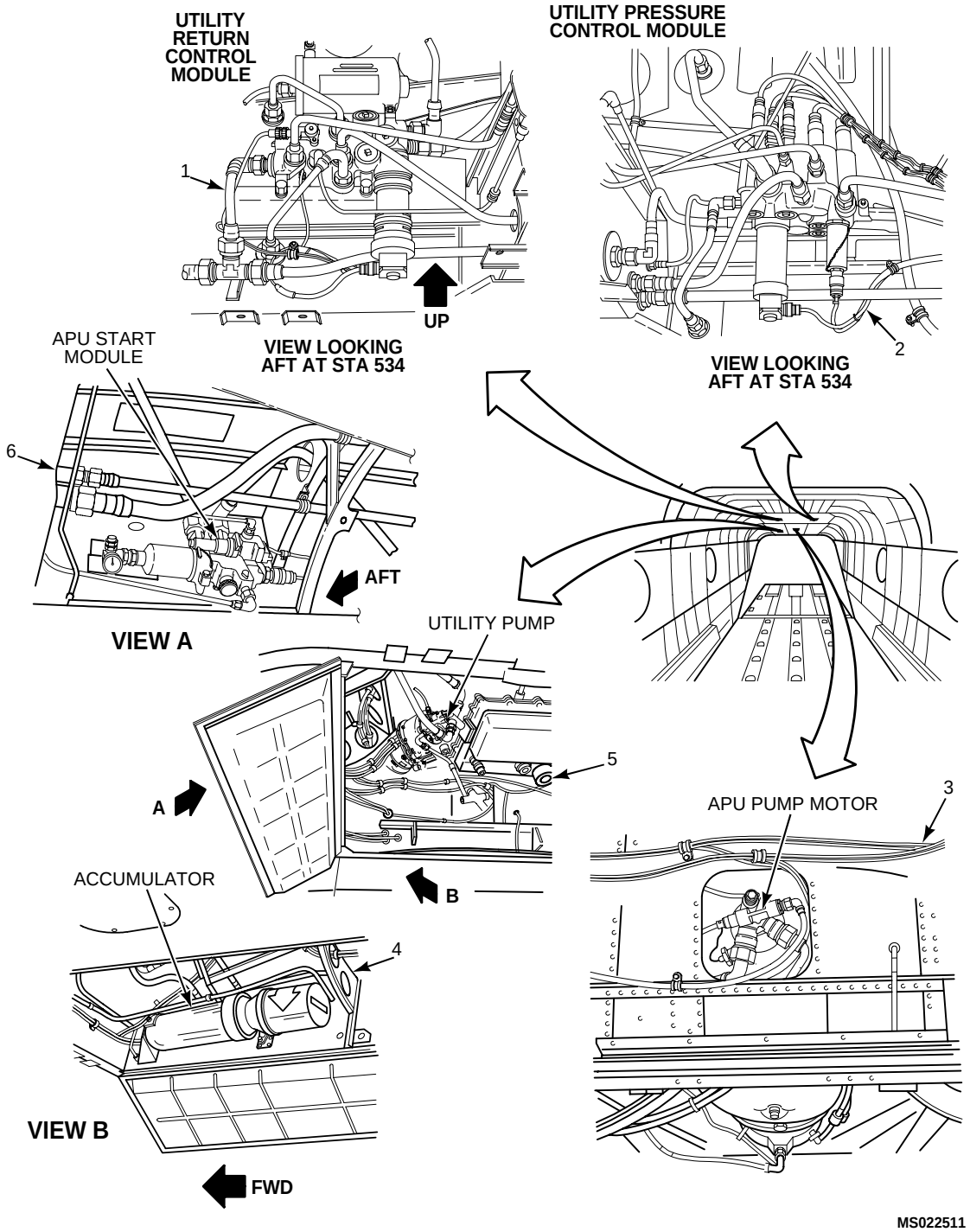


Figure 1. Utility Hydraulic System (Sheet 1 of 2)

INSPECTION REQUIREMENTS - continued

CAUTION

Preservative hydraulic fluids, MIL-H-46170 and MIL-PRF-6083 will not be used for preservation of Army aircraft hydraulic components. Instead, substitute MIL-PRF-83282 and MIL-H-5606 hydraulic fluids, respectively, for preservation of these components.

1. Utility Return Control Module
   a. Inspect for cracks (no cracks allowed), nicks, scratches, leaks, dents, gouges, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to WP 0003 00, Table 2, for tubing inspection and repair procedures.
   d. Refer to WP 0003 00, Tables 4 and 5, for electrical wiring and electrical component inspection and repair procedures.
   e. Refer to WP 0077 00 for corrosion removal and treatment.
   f. Refer to TM 55-1520-240-23 for accept/reject criteria, and repair procedures.

2. Utility Pressure Control Module
   a. Inspect for cracks (no cracks allowed), nicks, scratches, leaks, dents, gouges, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to WP 0003 00, Table 2, for tubing inspection and repair procedures.
   d. Refer to WP 0003 00, Tables 4 and 5, for electrical wiring and electrical component inspection and repair procedures.
   e. Refer to WP 0077 00 for corrosion removal and treatment.
   f. Refer to TM 55-1520-240-23 for accept/reject criteria, and repair procedures.

3. APU Motor Pump
   a. Inspect for cracks (no cracks allowed), nicks, scratches, leaks, gouges, dents, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to WP 0003 00, Table 2, for tubing inspection and repair procedures.
   d. Refer to WP 0077 00 for corrosion removal and treatment.
   e. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures..
   f. Repair per DMWR 55-1650-398 when authorized by the Contracting Officer.

4. APU Starter Accumulator
   a. Inspect the housing, manifold, and mount fittings for leaks, cracks (no cracks allowed), nicks, scratches, dents, gouges, or evidence of corrosion.
   b. Inspect accumulator gage sight glass for cracks (no cracks allowed), leakage, and clarity.
   c. Inspect for loose, missing, or damaged attaching hardware.
   d. Refer to WP 0003 00, Table 2, for tubing inspection and repair procedures.
   e. Refer to WP 0077 00 for corrosion removal and treatment.
   f. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.
   g. Repair per DMWR 55-1650-412 when authorized by the Contracting Officer.

INSPECTION REQUIREMENTS - continued

5. Utility Hydraulic Pump
   a. Inspect for cracks (no cracks allowed), nicks, scratches, leaks, gouges, dents, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to WP 0003 00, Table 3, for hose inspection and repair procedures.
   d. Refer to WP 0077 00 for corrosion removal and treatment.
   e. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.
   f. Repair per DMWR 55-1650-414 when authorized by the Contracting Officer.

6. APU Start Module
   a. Inspect for cracks (no cracks allowed), nicks, scratches, leaks, gouges, dents, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Inspect accumulator gage sight glass for cracks (no cracks allowed), leakage, and clarity.
   d. Refer to WP 0003 00, Table 2, for tubing inspection and repair procedures.
   e. Refer to WP 0003 00, Tables 4 and 5, for electrical wiring and electrical component inspection and repair procedures.
   f. Refer to WP 0077 00 for corrosion removal and treatment.
   g. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

INSPECTION REQUIREMENTS - continued

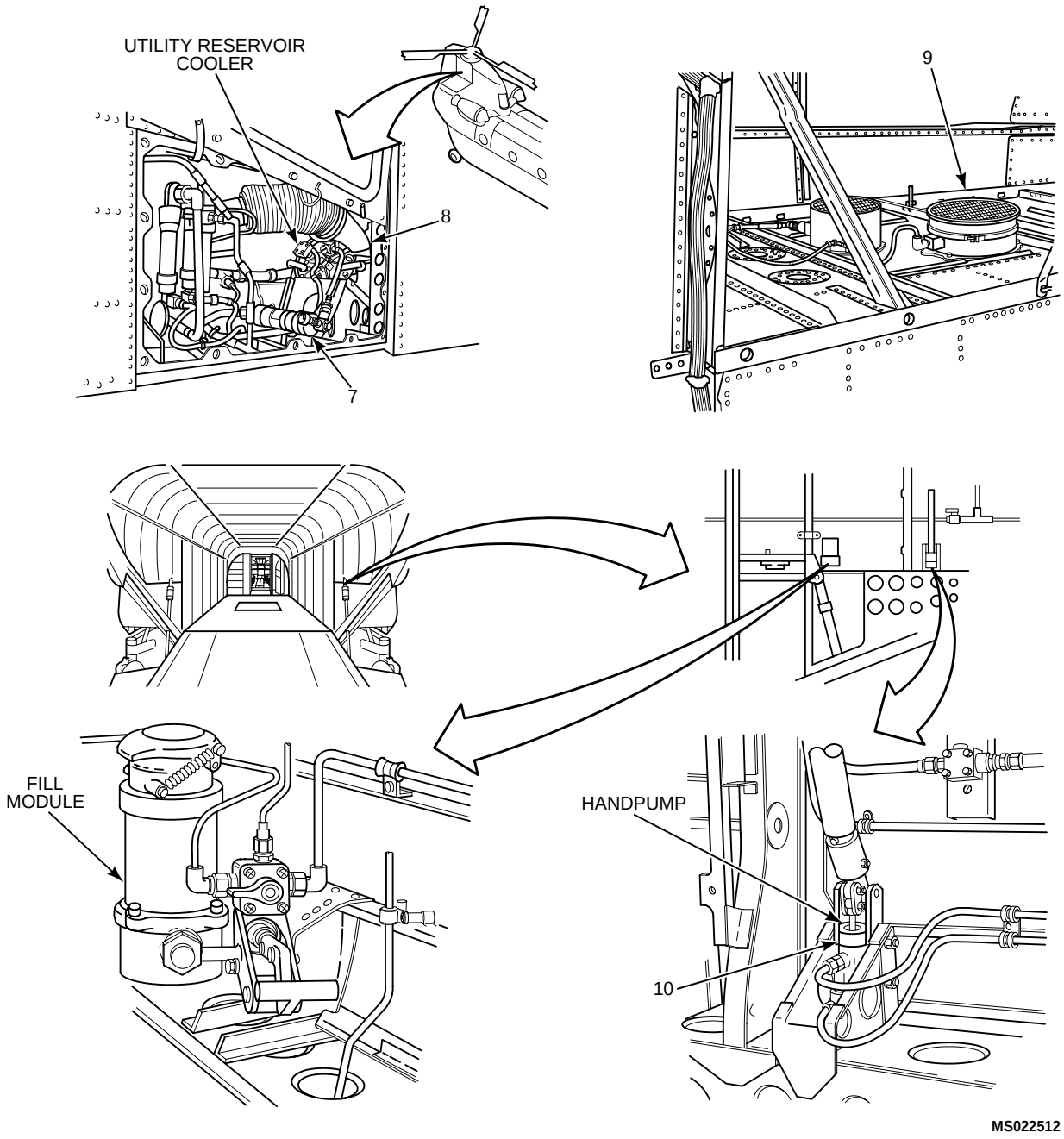


Figure 1. Utility Hydraulic System (Sheet 2 of 2)

7. Utility Hydraulic System Accumulator
   a. Inspect for cracks (no cracks allowed), nicks, scratches, dents, gouges, leaks, or evidence of corrosion.
   b. Inspect accumulator gage sight glass for cracks (no cracks allowed), leakage, and clarity.
   c. Inspect for loose, missing, or damaged hardware.
   d. Refer to WP 0003 00, Table 2, for tubing inspection and repair procedures.
   e. Refer to WP 0077 00 for corrosion removal and treatment.
   f. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

INSPECTION REQUIREMENTS – continued

8. Utility Reservoir Cooler
   a. Inspect for cracks (no cracks allowed), nicks, scratches, leaks, dents, gouges, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Inspect duct for deterioration, holes, and damage.
   d. Refer to WP 0003 00, Table 2, for tubing inspection and repair procedures.
   e. Refer to WP 0003 00, Tables 4 and 5, for all electrical wiring and electrical component inspection and repair procedures.
   f. Refer to WP 0077 00 for corrosion removal and treatment.
   g. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.
   h. Repair per DMWR 55-1650-396 when authorized by the Contacting Officer.

9. Utility Cooling Fan
   a. Inspect for cracks (no cracks allowed), nicks, scratches, dents, gouges, or evidence of overheating or corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to WP 0003 00, Tables 4 and 5, for electrical wiring and electrical component inspection and repair procedures.
   d. Refer to WP 0077 00 for corrosion removal and treatment.
   e. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.
   f. Repair per DMWR 55-4140-220 when authorized by the Contracting Officer.

10. Hand-Pump
   a. Inspect for cracks (no cracks allowed), nicks, scratches, dents, gouges, leaks, operation, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged hardware.
   c. Refer to WP 0003 00, Table 2, for tubing inspection and repair procedures.
   d. Refer to WP 0077 00 for corrosion removal and treatment.
   e. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

END OF WORK PACKAGE

DEPOT MAINTENANCE WORK REQUIREMENT
CH-47D HELICOPTER
CARGO RAMP AND DOOR HYDRAULIC SYSTEM

INITIAL SETUP

Test Equipment:
As Required

Tools and Special Tools:
As Required

Material/Parts:
As Required

Personnel Required:
Examiner (PSA)

References:
TM 1-1500-204-23 Series
TM 55-1520-240-23 Series
DMWR 55-1650-154
DMWR 55-1650-302
WP 0003 00
WP 0077 00

Equipment Conditions:
As Required

Special Environmental Condition:
As Required

SCOPE

The cargo ramp is hinged to the fuselage at the floor line and supported by two actuating cylinders. The cylinders are operated by hydraulic fluid, through a control valve, to raise or lower the ramp. The ramp lowers by gravity with the cylinders serving as hydraulic dampers. The cargo door is part of the ramp assembly. With the ramp up, the door can be fully extended to enclose the ramp area. When the ramp is down the door retracts into the ramp. The door extends and retracts by a motor inside the ramp that drives a sprocket and chain assembly. The motor is controlled through a sequence valve that times the door motion to the position of the ramp. An override valve allows the cargo door to remain open or closed regardless of ramp position.

INSPECTION REQUIREMENTS

NOTE

The item numbers in Figure 1, sheets 1 and 2 correspond to the respective item numbers in the INSPECTION REQUIREMENTS following each illustration.

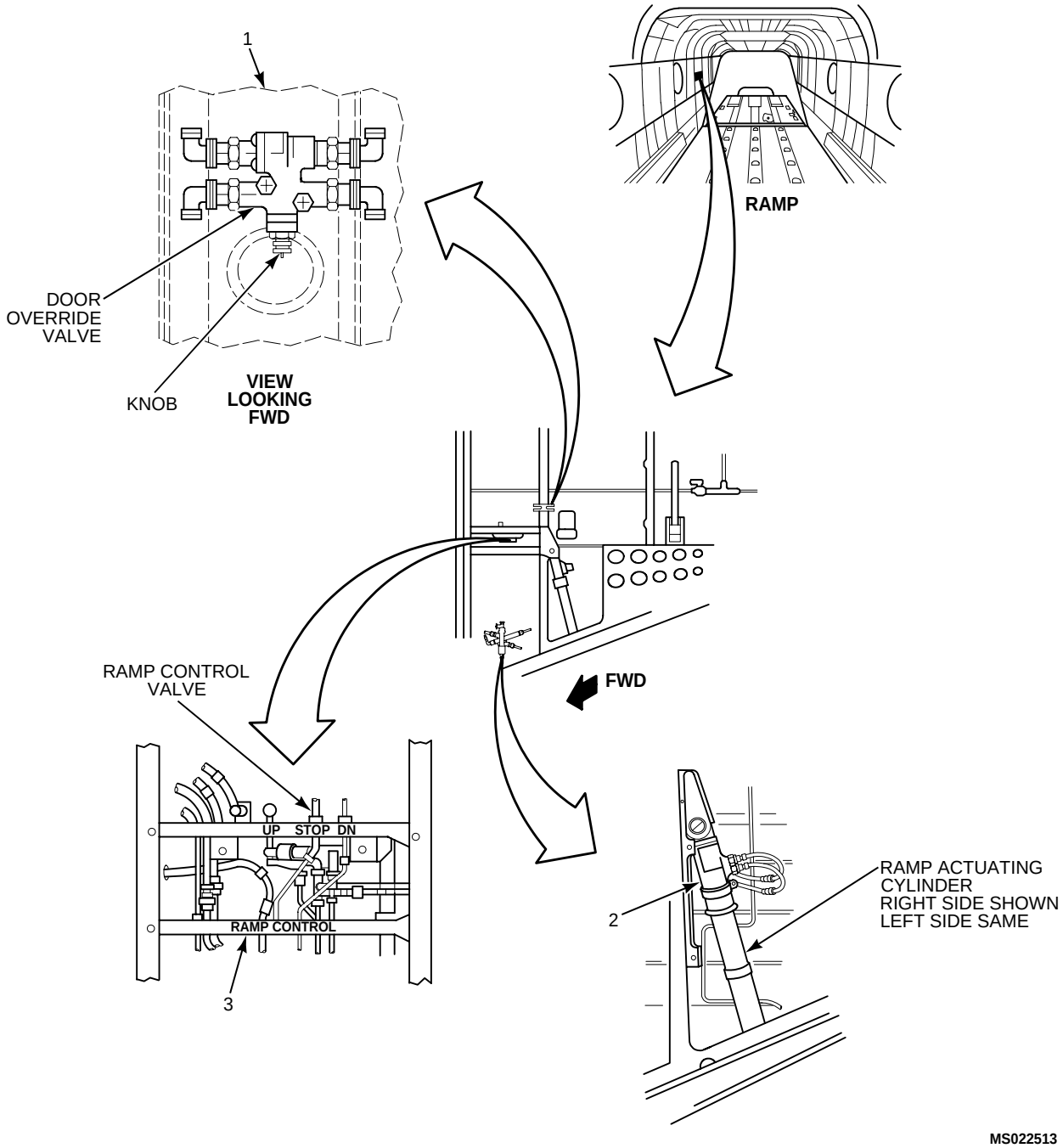


Figure 1. Cargo Ramp and Door Hydraulic System (Sheet 1 of 2)

INSPECTION REQUIREMENTS - continued

CAUTION

Preservative hydraulic fluids, MIL-H-46170 and MIL-PRF-6083 will not be used for preservation of Army aircraft hydraulic components. Instead, substitute MIL-PRF-83282 and MIL-H-5606 hydraulic fluids, respectively, for preservation of these components.

1. Door Override Valve
   a. Inspect for dents, cracks (no cracks allowed), scratches, gouges, nicks, leaks, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged hardware.
   c. Refer to WP 0003 00, Table 2, for tubing inspection and repair procedures.
   d. Refer to WP 0077 00 for corrosion removal and treatment.
   e. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

2. Ramp Actuating Cylinder
   a. Inspect for dents, cracks (no cracks allowed), scratches, gouges, nicks, leaks, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged hardware.
   c. Inspect actuator mount bearing for general condition.
   d. Operate actuator for fullness and smoothness of operation.
   e. Refer to WP 0003 00, Table 3, for hose inspection and repairs.
   f. Refer to WP 0077 00 for corrosion removal and treatment.
   g. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures..
   h. Repair per DMWR 55-1650-302 when authorized by the Contracting Officer.

3. Ramp Control Valve
   a. Inspect for dents, cracks (no cracks allowed), scratches, gouges, nicks, leaks, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged hardware.
   c. Operate valve for fullness and smoothness of operation.
   d. Refer to WP 0003 00, Table 2, for tubing inspection and repair procedures.
   e. Refer to WP 0077 00 for corrosion removal and treatment.
   f. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

INSPECTION REQUIREMENTS - continued

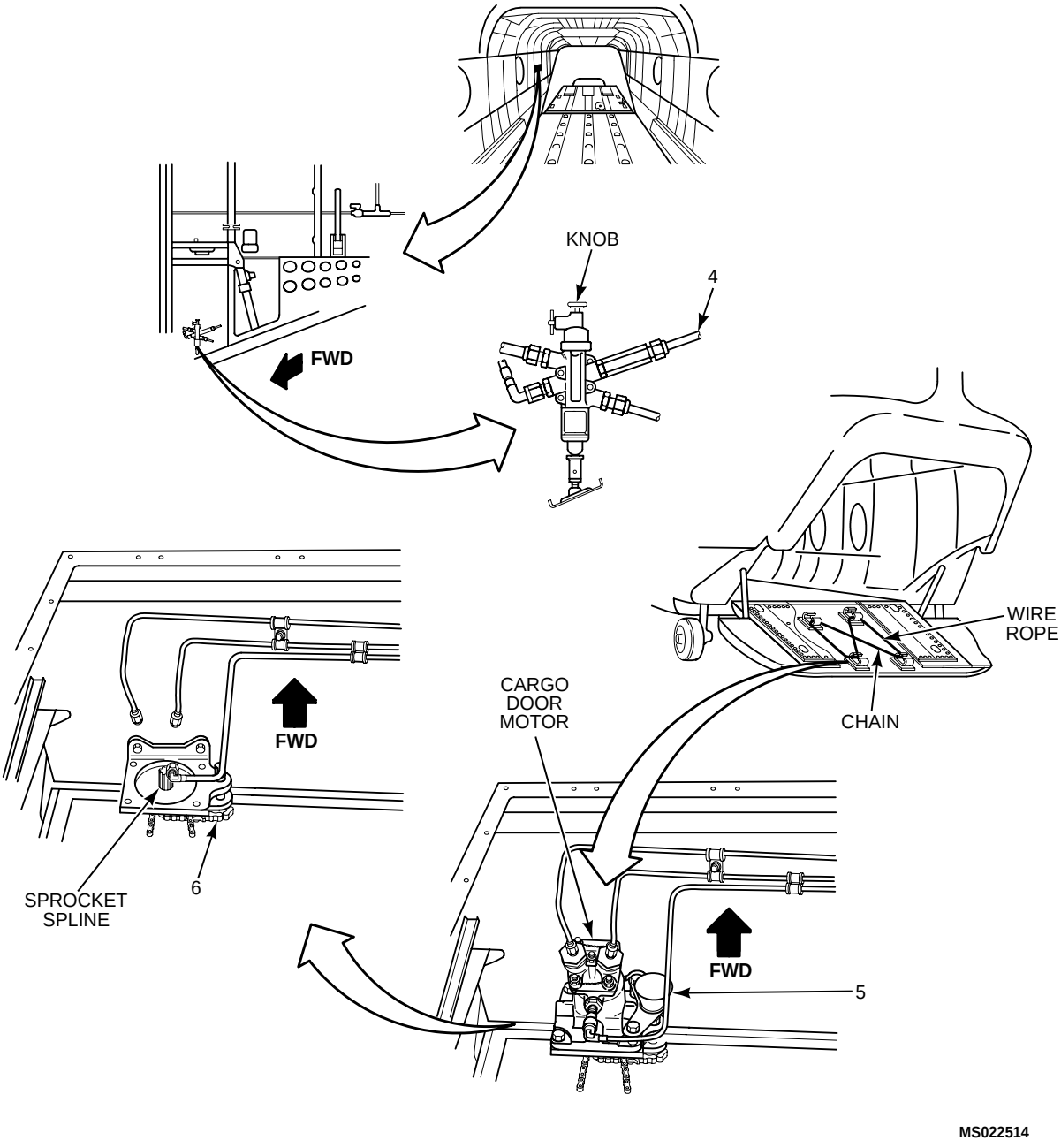


Figure 1. Cargo Ramp and Door Hydraulic System (Sheet 2 of 2)

4. Cargo Door Sequence Valve
   a. Inspect for dents, cracks (no cracks allowed), scratches, gouges, nicks, leaks, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged hardware.
   c. Refer to WP 0003 00, Table 2, for tubing inspection and repair procedures.
   d. Refer to WP 0077 00 for corrosion removal and treatment.
   e. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

INSPECTION REQUIREMENTS - continued

5. Cargo Door Motor
   a. Inspect for dents, cracks (no cracks allowed), scratches, gouges, nicks, leaks, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged hardware.
   c. Inspect motor mount fitting for damage.
   d. Inspect chain and cables for general condition.
   e. Refer to WP 0003 00, Table 2, for tubing inspection and repair procedures.
   f. Refer to WP 0077 00 for corrosion removal and treatment.
   g. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.
   h. Repair per DMWR 55-1650-154 when authorized by the Contracting Officer

6. Cargo Door Sprocket Spline
   a. Inspect for dents, cracks (no cracks allowed), scratches, gouges, nicks, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged hardware.
   c. Refer to WP 0077 00 for corrosion removal and treatment.
   d. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

END OF WORK PACKAGE

DEPOT MAINTENANCE WORK REQUIREMENT

CH-47D HELICOPTER

CARGO HOOK HYDRAULIC RELEASE SYSTEM

INITIAL SETUP

Test Equipment:
As Required

Tools and Special Tools:
As Required

Material/Parts:
As Required

Personnel Required:
Examiner (PSA)

References:
TM 1-1500-204-23 Series
TM 55-1520-240-23 Series
WP 0003 00
WP 0077 00

Equipment Conditions:
As Required

Special Environmental Condition:
As Required

SCOPE

The cargo hook hydraulic system directs hydraulic power to release the center cargo hook. (Fore and aft hooks are electrically released). The system consists of a hook release valve and cargo hook actuating cylinder. The release valve is located in the tunnel above the cabin at sta 334. The actuator is located on the hook.

INSPECTION REQUIREMENTS

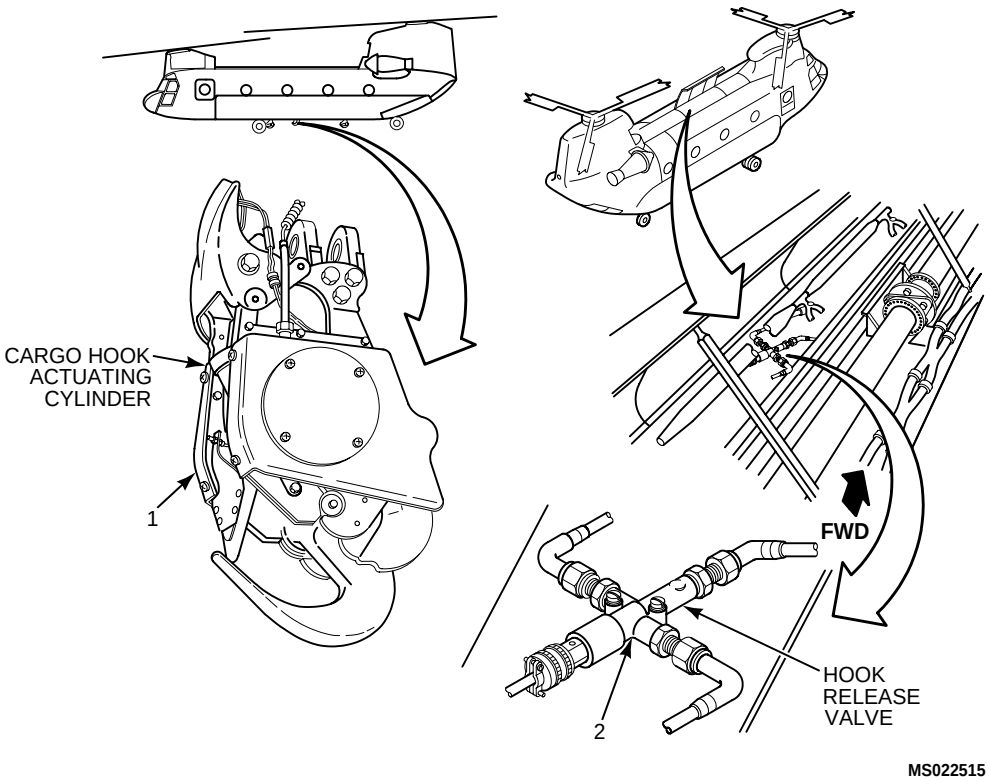


Figure 1. Cargo Hook Hydraulic Release System

INSPECTION REQUIREMENTS - continued

CAUTION

Preservative hydraulic fluids, MIL-H-46170 and MIL-PRF-6083 will not be used for preservation of Army aircraft hydraulic components. Instead, substitute MIL-PRF-83282 and MIL-H-5606 hydraulic fluids, respectively, for preservation of these components.

NOTE

The item numbers in Figure 1 correspond to the respective item numbers in the following INSPECTION REQUIREMENTS.

1. Cargo Hook Release Actuator
   a. Inspect for cracks (no cracks allowed), dents, scratches, nicks, gouges, leaks, or evidence of corrosion.
   b. Inspect for loose, missing or damaged hardware.
   c. Refer to WP 0003 00, Table 3, for hose inspection and repair procedures.
   d. Refer to WP 0003 00, Tables 4 and 5, for electrical wiring and electrical component inspection and repair procedures.
   e. Refer to WP 0077 00 for corrosion removal and treatment.
   f. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

2. Hook Release Valve
   a. Inspect for cracks (no cracks allowed), dents, scratches, nicks, gouges, leaks, or evidence of corrosion.
   b. Inspect for loose, missing or damaged hardware.
   c. Refer to WP 0003 00, Table 2, for tubing inspection and repair procedures.
   d. Refer to WP 0003 00, Tables 4 and 5, for electrical wiring and electrical component inspection and repair procedures.
   e. Refer to WP 0077 00 for corrosion removal and treatment.
   f. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

END OF WORK PACKAGE

DEPOT MAINTENANCE WORK REQUIREMENT
CH-47D HELICOPTER
WHEEL BRAKE HYDRAULIC SYSTEM

INITIAL SETUP

Test Equipment:
As Required

Tools and Special Tools:
As Required

Material/Parts:
As Required

Personnel Required:
Examiner (PSA)

References:
TM 1-1500-204-23 Series
TM 55-1520-240-23 Series
WP 0003 00
WP 0077 00

Equipment Conditions:
As Required

Special Environmental Condition:
As Required

SCOPE

The helicopter is fitted with a power-assisted self-adjusting disk brake assembly at each of four forward and two aft wheels. The pilot and copilot each have two brake pedals, mounted on the toe of the yaw pedals. Each pedal has its own master cylinder with its own pressure supply. Transfer valves in the left and right system combine pilot and copilot brake input to the corresponding brakes. A parking brake valve allows the brakes to be set and held on by keeping the lines between the valve and the brake pressurized. An accumulator maintains system pressure and has enough reserve to allow several power-assisted stops if the system is cut off. A pressure-reducing valve, located at sta 502, WL 44, cabin roof area, left side, reduces the pressure from 3,000 psi to 1,390 psi.

INSPECTION REQUIREMENTS

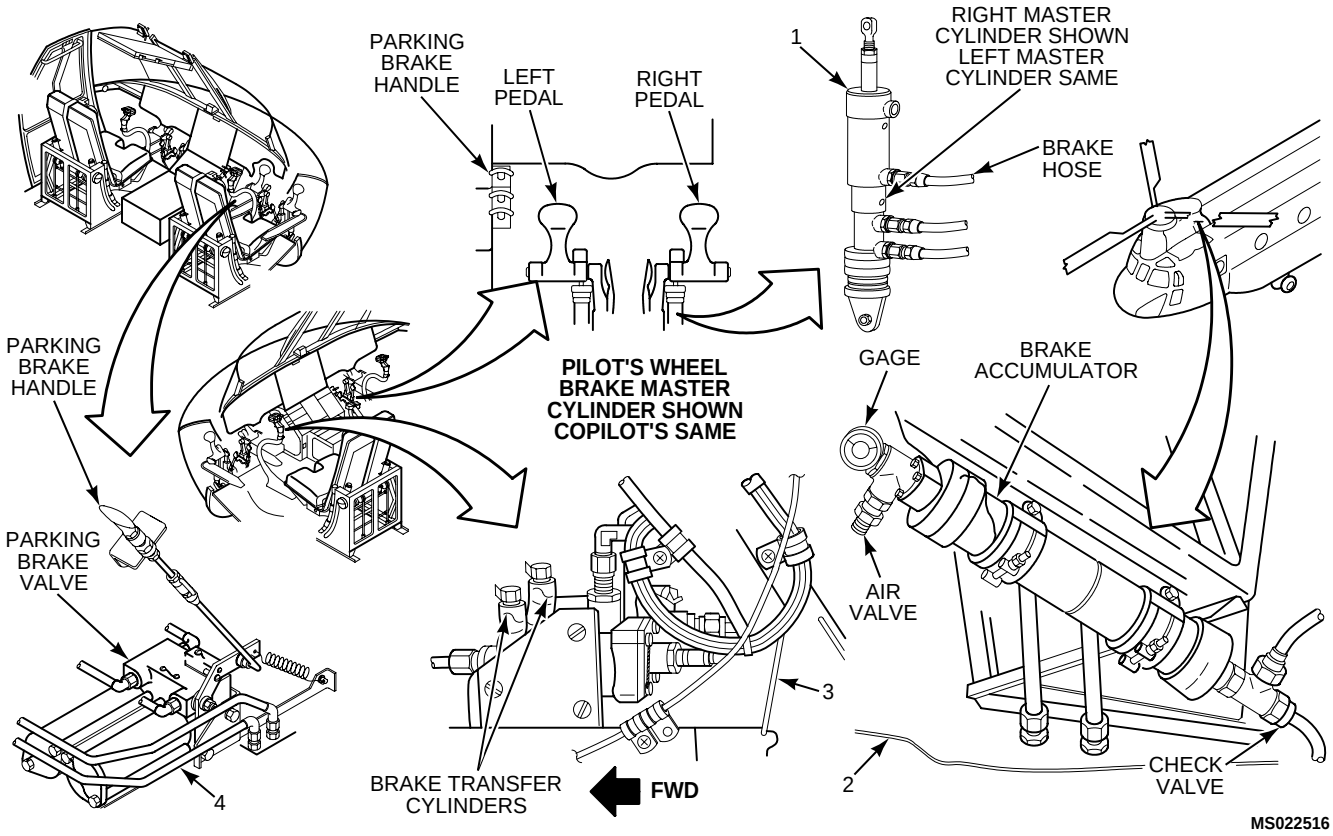


Figure 1. Wheel Brake Hydraulic System (Sheet 1 of 2)

CAUTION

Preservative hydraulic fluids, MIL-H-46170 and MIL-PRF-6083 will not be used for preservation of Army aircraft hydraulic components. Instead, substitute MIL-PRF-83282 and MIL-H-5606 hydraulic fluids, respectively, for preservation of these components.

NOTE

The item numbers in Figure 1, sheets 1 and 2 correspond to the respective item numbers in the INSPECTION REQUIREMENTS following each illustration.

1. Master Cylinder
   a. Inspect for cracks (no cracks allowed), dents, nicks, scratches, gouges, leaks, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Inspect brake pedals for cracks (no cracks allowed), dents, nicks, scratches, gouges, or evidence of corrosion.
   d. Refer to WP 0003 00, Table 3, for hose inspection and repair procedures.
   e. Refer to WP 0077 00 for corrosion removal and treatment.
   f. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

INSPECTION REQUIREMENTS - continued

2. Brake Accumulator
   a. Inspect for cracks (no cracks allowed), dents, nicks, scratches, gouges, leaks, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Inspect accumulator gage for cracks (no cracks allowed), dents, nicks, scratches, gouges, leaks, or evidence of corrosion.
   d. Inspect accumulator air valve for cracks (no cracks allowed), dents, nicks, scratches, gouges, leaks, or evidence of corrosion.
   e. Inspect accumulator check valve for cracks (no cracks allowed), dents, nicks, scratches, gouges, leaks, or evidence of corrosion.
   f. Refer to WP 0003 00, Table 2, for tubing inspection and repair procedures.
   g. Refer to WP 0077 00 for corrosion removal and treatment.
   h. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

3. Brake Transfer Valve
   a. Inspect for cracks (no cracks allowed), dents, nicks, scratches, gouges, leaks, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to WP 0003 00, Table 2, for tubing inspection and repair procedures.
   d. Refer to WP 0077 00 for corrosion removal and treatment.
   e. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

4. Parking Brake Valve
   a. Inspect for cracks (no cracks allowed), dents, nicks, scratches, gouges, leaks, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Inspect parking brake handle and linkage for cracks (no cracks allowed), dents, nicks, scratches, gouges, loose, missing or damaged attaching hardware, evidence of corrosion, and proper operation.
   d. Refer to WP 0003 00, Table 2, for tubing inspection and repair procedures.
   e. Refer to WP 0003 00, Tables 4 and 5, for electrical wiring and electrical component inspection and repair procedures.
   f. Refer to WP 0077 00 for corrosion removal and treatment.
   g. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

INSPECTION REQUIREMENTS - continued

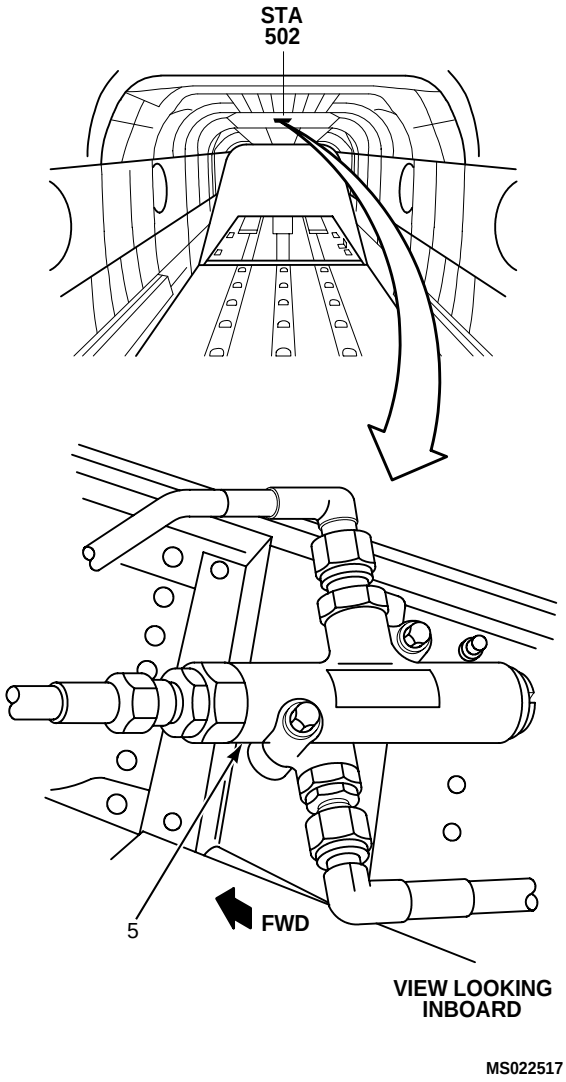


Figure 1. Wheel Brake Hydraulic System (Sheet 2 of 2)

5. Brake Pressure Reducing Valve
   a. Inspect for cracks (no cracks allowed), dents, nicks, scratches, gouges, leaks, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to WP 0077 00 for corrosion removal and treatment.
   d. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

END OF WORK PACKAGE

DEPOT MAINTENANCE WORK REQUIREMENT
CH-47D HELICOPTER
INSTRUMENTS

INITIAL SETUP

Test Equipment:
As Required

Tools and Special Tools:
As Required

Material/Parts:
As Required

Personnel Required:
Examiner (PSA)

References:
TM 1-1500-204-23 Series
TM 1-1520-240-10
TM 55-1520-240-23 Series
WP 0003 00
WP 0077 00

Equipment Conditions:
As Required

Special Environmental Condition:
As Required

SCOPE

The instruments are classified into three functional groups. These groups are the engine instruments, flight instruments, and miscellaneous instruments. The engine instruments include the power turbine inlet temperature and contingency power indicators, gas producer tachometer indicators, engine oil temperature indicators, engine torque indicators, and fuel flow indicators.

The flight instruments include the radar altimeters, barometric altimeters, vertical speed indicators, airspeed indicator, turn and slip indicator, magnetic compass, located at center attached to the glare shield, vertical and horizontal situation indicators, chronometer, and pitot-static system.

The miscellaneous instruments include the transmission oil pressure indicator, transmission oil temperature indicator, fuel quantity indicator, rotor tachometer indicator, hydraulic pressure indicator, and hydraulic temperature indicator.

The master caution panel gives a warning light indicating that the pressure, temperature, or other monitored parameter ranges has been exceeded.

The instrument panel is made of 0.225 2024-T3-aluminum sheets.

INSPECTION REQUIREMENTS

Center Instrument Panel

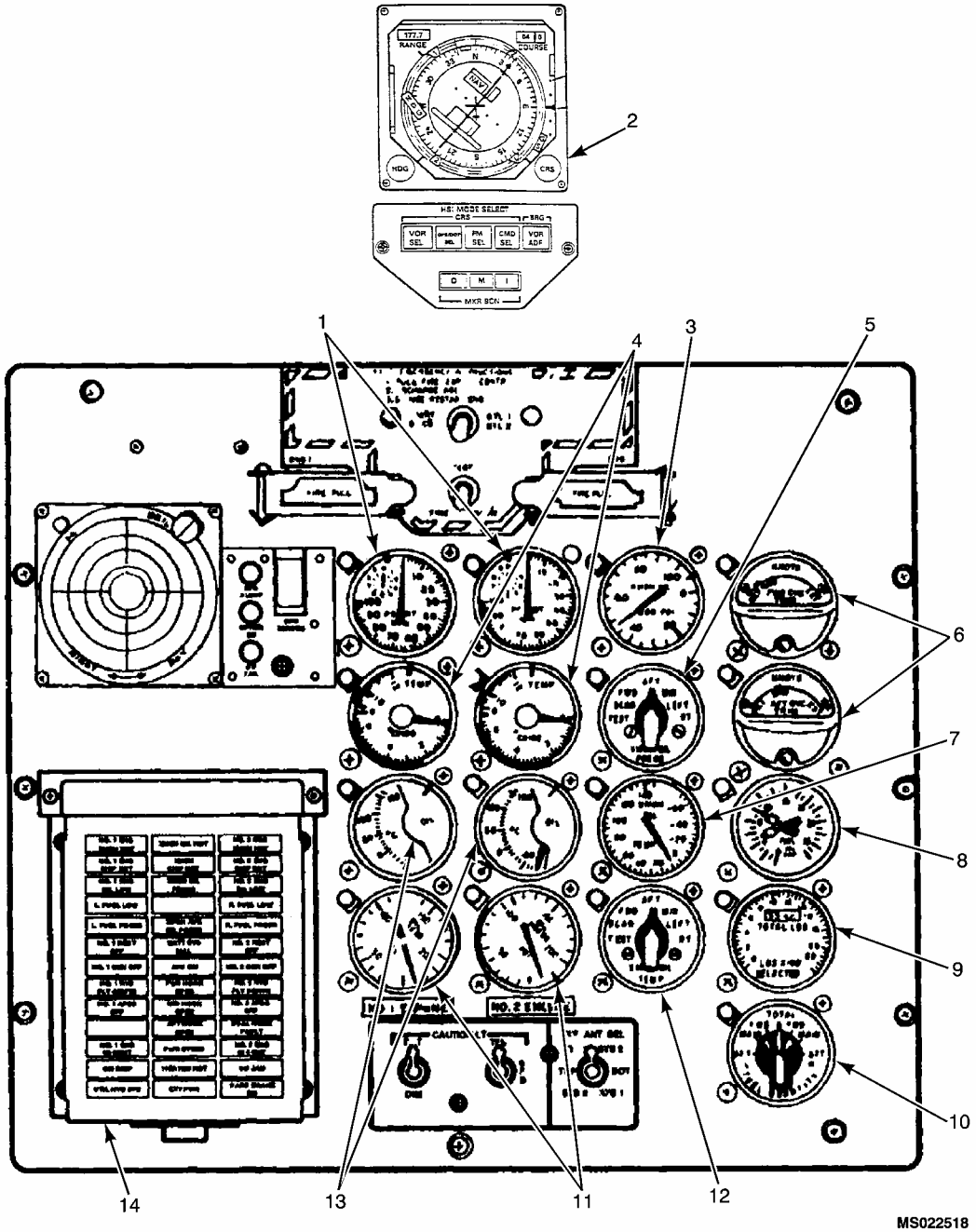


Figure 1. Center Instrument Panel

Center Instrument Panel – continued

NOTE

The items in Figure 1 correspond to the respective item numbers in the following INSPECTION REQUIREMENTS.

Check instruments for correct range markings and index marks, in accordance with TM 1-1520-240-10.

1. Gas Producer Tachometer
   a. Inspect dial glass for cracks, breaks, corrosion, or damage of instrument dial. Replace if damage or deterioration is found.
   b. Inspect instrument for integrity of hermetic seal. If seal is broken, replace instrument.
   c. Inspect for loose, damaged, or missing attaching hardware.
   d. Refer to WP 0003 00, Tables 4 and 5, for electrical wiring and electrical component accept/reject criteria and repair procedures.
   e. Refer to WP 0077 00 for corrosion removal and treatment.
   f. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

2. Magnetic Compass
   a. Inspect glass for cracks, breaks, corrosion, or damage of instrument dial. Replace if damage or deterioration is found.
   b. Inspect instrument for integrity of hermetic seal. If seal is broken, replace instrument.
   c. Inspect for loose, damaged, or missing attaching hardware.
   d. Inspect bracket for cracks (no cracks allowed), bent areas, or evidence of corrosion.
   e. Refer to WP 0003 00, Tables 4 and 5, for electrical wiring and electrical component accept/reject criteria and repair procedures.
   f. Refer to WP 0077 00 for corrosion removal and treatment.
   g. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

3. Transmission Oil Pressure Indicator
   a. Inspect dial glass for cracks, corrosion, breaks, or damage of instrument dial. Replace if damage or deterioration is found.
   b. Inspect instrument for integrity of hermetic seal. If seal is broken, replace instrument.
   c. Inspect for loose, damaged, or missing attaching hardware.
   d. Refer to WP 0003 00, Tables 4 and 5, for electrical wiring and electrical component accept/reject criteria and repair procedures.
   e. Refer to WP 0077 00 for corrosion removal and treatment.
   f. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

4. Power Turbine Inlet Temperature (PTIT) Indicator
   a. Inspect dial glass for cracks, breaks, corrosion, or damage of instrument dial. Replace if damage or deterioration is found.
   b. Inspect instrument for integrity of hermetic seal. If seal is broken, replace instrument.
   c. Inspect for loose, damaged, or missing attaching hardware.
   d. Refer to WP 0003 00, Tables 4 and 5, for electrical wiring and electrical component accept/reject criteria and repair procedures.
   e. Refer to WP 0077 00 for corrosion removal and treatment.
   f. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

Center Instrument Panel – continued

5. Transmission Oil Pressure Selector Switch
   a. Inspect switch for cracks, breaks, corrosion, or damage. Replace if damage or deterioration is found.
   b. Inspect for loose, damaged, binding, or missing knob and attaching hardware.
   c. Refer to WP 0003 00, Tables 4 and 5, for electrical wiring and electrical component accept/reject criteria and repair procedures.
   d. Refer to WP 0077 00 for corrosion removal and treatment.
   e. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

6. Forward and Aft Longitudinal Cyclic Trim (LCT) Indicator
   a. Inspect dial glass for cracks, breaks, corrosion, or damage of instrument dial. Replace if damage or deterioration is found.
   b. Inspect instrument for integrity of hermetic seal. If seal is broken, replace instrument.
   c. Inspect for loose, damaged, or missing attaching hardware.
   d. Refer to WP 0003 00, Tables 4 and 5, for electrical wiring and electrical component accept/reject criteria and repair procedures.
   e. Refer to WP 0077 00 for corrosion removal and treatment.
   f. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

7. Transmission Oil Temperature Indicator
   a. Inspect dial glass for cracks, breaks, corrosion, or damage of instrument dial. Replace if damage or deterioration is found.
   b. Inspect instrument for integrity of hermetic seal. If seal is broken, replace instrument.
   c. Inspect for loose, damaged, or missing attaching hardware.
   d. Refer to WP 0003 00, Tables 4 and 5, for electrical wiring and electrical component accept/reject criteria and repair procedures.
   e. Refer to WP 0077 00 for corrosion removal and treatment.
   f. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

8. Fuel Flow Indicator
   a. Inspect dial glass for cracks, corrosion, breaks, or damage of instrument dial. Replace if damage or deterioration is found.
   b. Inspect instrument for integrity of hermetic seal. If seal is broken, replace instrument.
   c. Inspect for loose, damaged, or missing attaching hardware.
   d. Refer to WP 0003 00, Tables 4 and 5, for electrical wiring and electrical component accept/reject criteria and repair procedures.
   e. Refer to WP 0077 00 for corrosion removal and treatment.
   f. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

9. Fuel Quantity Indicator
   a. Inspect dial glass for cracks, breaks, corrosion, or damage of instrument dial. Replace if damage or deterioration is found.
   b. Inspect instrument for integrity of hermetic seal. If seal is broken, replace instrument.
   c. Inspect for loose, damaged, or missing attaching hardware.
   d. Refer to WP 0003 00, Tables 4 and 5, for electrical wiring and electrical component, accept/reject criteria and repair procedures.

Center Instrument Panel – continued

e. Refer to WP 0077 00 for corrosion removal and treatment.
f. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

10. Fuel Quantity Selector Switch
    a. Inspect switch for cracks, breaks, corrosion, or damage. Replace if damage or deterioration is found.
    b. Inspect for loose, damaged, binding, or missing knob and attaching hardware.
    c. Refer to WP 0003 00, Tables 4 and 5, for electrical wiring and electrical component accept/reject criteria and repair procedures.
    d. Refer to WP 0077 00 for corrosion removal and treatment.
    e. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

11. Engine Oil Pressure Indicator
    a. Inspect dial glass for cracks, breaks, corrosion, or damage of instrument dial. Replace if damage or deterioration is found.
    b. Inspect instrument for integrity of hermetic seal. If seal is broken, replace instrument.
    c. Inspect for loose, damaged, or missing attaching hardware.
    d. Refer to WP 0003 00, Tables 4 and 5, for electrical wiring and electrical component accept/reject criteria and repair procedures.
    f. Refer to WP 0077 00 for corrosion removal and treatment.
    e. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

12. Transmission Oil Temperature Selector Switch
    a. Inspect for cracks, breaks, corrosion, or damage. Replace if damage or deterioration is found.
    b. Inspect for loose, damaged, binding, or missing knob and attaching hardware.
    c. Refer to WP 0003 00, Tables 4 and 5, for electrical wiring and electrical component accept/reject criteria and repair procedures.
    d. Refer to WP 0077 00 for corrosion removal and treatment.
    e. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

13. Engine Oil Temperature Indicator
    a. Inspect dial glass for cracks, corrosion, breaks, or damage of instrument dial. Replace if damage or deterioration is found.
    b. Inspect instrument for integrity of hermetic seal. If seal is broken, replace instrument.
    c. Inspect for loose, damaged, or missing attaching hardware.
    d. Refer to WP 0003 00, Tables 4 and 5, for electrical wiring and electrical component accept/reject criteria and repair procedures.
    e. Refer to WP 0077 00 for corrosion removal and treatment.
    f. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

14. Master Caution Panel
    a. Inspect for cracks, breaks, corrosion, or damage of indicators. Replace if damage or deterioration is found.
    b. Inspect filter for cracks, distortion, loose or missing hardware, and proper operation.
    c. Inspect for loose, damaged, or missing attaching hardware.
    d. Refer to WP 0003 00, Tables 4 and 5, for electrical wiring and electrical component accept/reject criteria and repair procedures.

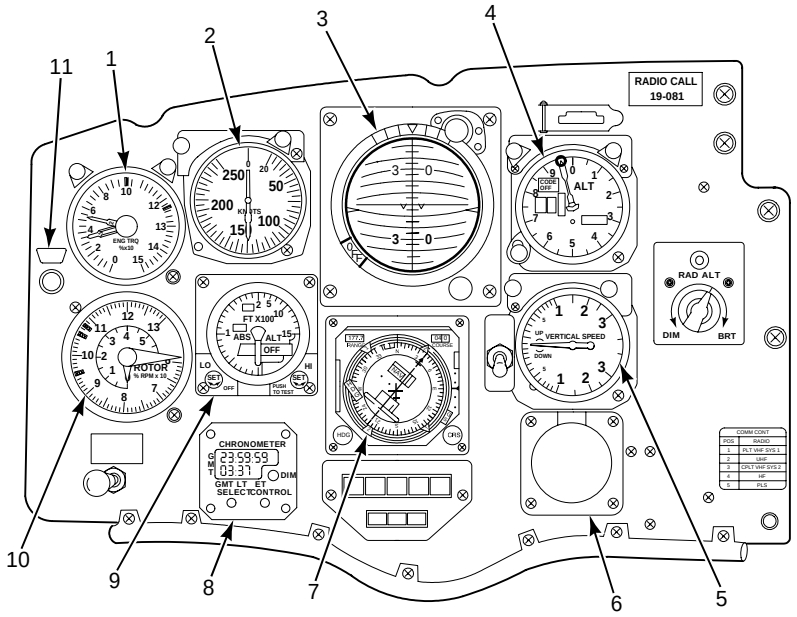
Center Instrument Panel – continued

e. Refer to WP 0077 00 for corrosion removal and treatment.

f. Refer to TM 55-1520-240-23 and for accept/reject criteria and repair procedures.

Copilot Instrument Panel

T55-L-712



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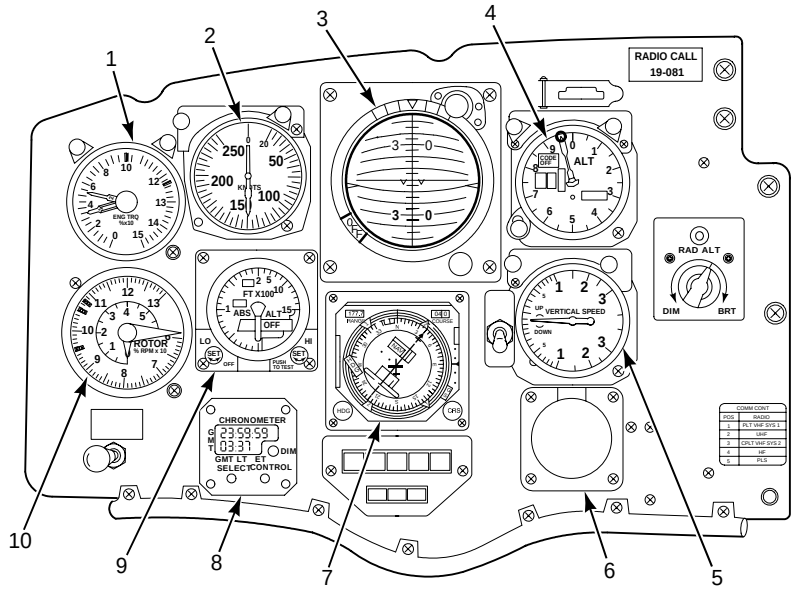

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Figure 2. Copilot Instrument Panel

Copilot Instrument Panel - continued

NOTE

The items in Figure 2 correspond to the respective item numbers in the following INSPECTION REQUIREMENTS.

Check instruments for correct range markings and index marks, in accordance with TM 1-1520-240-10.

1. Torquemeter
   a. Inspect dial glass for cracks, breaks, corrosion, or damage of instrument dial. Replace if damage or deterioration is found.
   b. Inspect instrument for integrity of hermetic seal. If seal is broken, replace instrument.
   c. Inspect for loose, damaged, or missing attaching hardware.
   d. Refer to WP 0003 00, Tables 4 and 5, for electrical wiring and electrical component accept/reject criteria and repair procedures.
   e. Refer to WP 0077 00 for corrosion removal and treatment.
   f. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

2. Airspeed Indicator
   a. Inspect dial glass for cracks, breaks, corrosion, or damage of instrument dial. Replace if damage or deterioration is found.
   b. Inspect instrument for integrity of hermetic seal. If seal is broken, replace instrument.
   c. Inspect for loose, damaged, or missing attaching hardware.
   d. Refer to WP 0003 00, Tables 4 and 5, for electrical wiring and electrical component accept/reject criteria and repair procedures.
   e. Refer to WP 0077 00 for corrosion removal and treatment.
   f. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

3. Attitude Indicator
   a. Inspect dial glass for cracks, breaks, corrosion, or damage of instrument dial. Replace if damage or deterioration is found.
   b. Inspect instrument for integrity of hermetic seal. If seal is broken, replace instrument.
   c. Inspect for loose, damaged, binding, or missing knobs and attaching hardware.
   d. Refer to WP 0003 00, Tables 4 and 5, for electrical wiring and electrical component accept/reject criteria and repair procedures.
   e. Refer to WP 0077 00 for corrosion removal and treatment.
   f. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

4. Altimeter
   a. Inspect dial glass for cracks, breaks, corrosion, or damage of instrument dial. Replace if damage or deterioration is found.
   b. Inspect instrument for integrity of hermetic seal. If seal is broken, replace instrument.
   c. Inspect for loose, damaged, binding, or missing knobs and attaching hardware.
   d. Refer to WP 0003 00, Tables 4 and 5, for electrical wiring and electrical component accept/reject criteria and repair procedures.
   e. Refer to WP 0077 00 for corrosion removal and treatment.
   f. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

Copilot Instrument Panel - continued

5. Vertical Speed Indicator (VSI)
   a. Inspect dial glass for cracks, breaks, corrosion, or damage of instrument dial. Replace if damage or deterioration is found.
   b. Inspect instrument for integrity of hermetic seal. If seal is broken, replace instrument.
   c. Inspect for loose, damaged, or missing attaching hardware.
   d. Refer to WP 0003 00, Tables 4 and 5, for electrical wiring and electrical component accept/reject criteria and repair procedures.
   e. Refer to WP 0077 00 for corrosion removal and treatment.
   f. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

6. Turn and Slip Indicator
   a. Inspect dial glass for cracks, breaks, corrosion, or damage of instrument dial. Replace if damage or deterioration is found.
   b. Inspect instrument for integrity of hermetic seal. If seal is broken, replace instrument.
   c. Inspect for loose, damaged, or missing attaching hardware.
   d. Refer to WP 0003 00, Tables 4 and 5, for electrical wiring and electrical component accept/reject criteria and repair procedures.
   e. Refer to WP 0077 00 for corrosion removal and treatment.
   f. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

7. Horizontal Situation Indicator
   a. Inspect dial glass for cracks, breaks, corrosion, or damage of instrument dial. Replace if damage or deterioration is found.
   b. Inspect instrument for integrity of hermetic seal. If seal is broken, replace instrument.
   c. Inspect for loose, damaged, binding, or missing knobs and attaching hardware.
   d. Refer to WP 0003 00, Tables 4 and 5, for electrical wiring and electrical component accept/reject criteria and repair procedures.
   e. Refer to WP 0077 00 for corrosion removal and treatment.
   f. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

8. Chronometer
   a. Inspect for cracks, breaks, corrosion, or damage of the instrument. Replace if damage or deterioration is found.
   b. Inspect for loose, damaged, binding, or missing buttons and attaching hardware.
   c. Refer to WP 0003 00, Tables 4 and 5, for all electrical wiring and electrical component inspection and repair procedures.
   d. Replace AA Alkaline 3-years life batteries.
   e. Refer to WP 0077 00 for corrosion removal and treatment.
   f. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

Copilot Instrument Panel - continued

9. Radar Altimeter
   a. Inspect dial glass for cracks, breaks, corrosion, or damage of instrument dial. Replace if damage or deterioration is found.
   b. Inspect instrument for integrity of hermetic seal. If seal is broken, replace instrument.
   c. Inspect for loose, damaged, binding, or missing knobs and attaching hardware.
   d. Refer to WP 0003 00, Tables 4 and 5, for electrical wiring and electrical component inspection and repair procedures.
   e. Refer to WP 0077 00 for corrosion removal and treatment.
   f. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

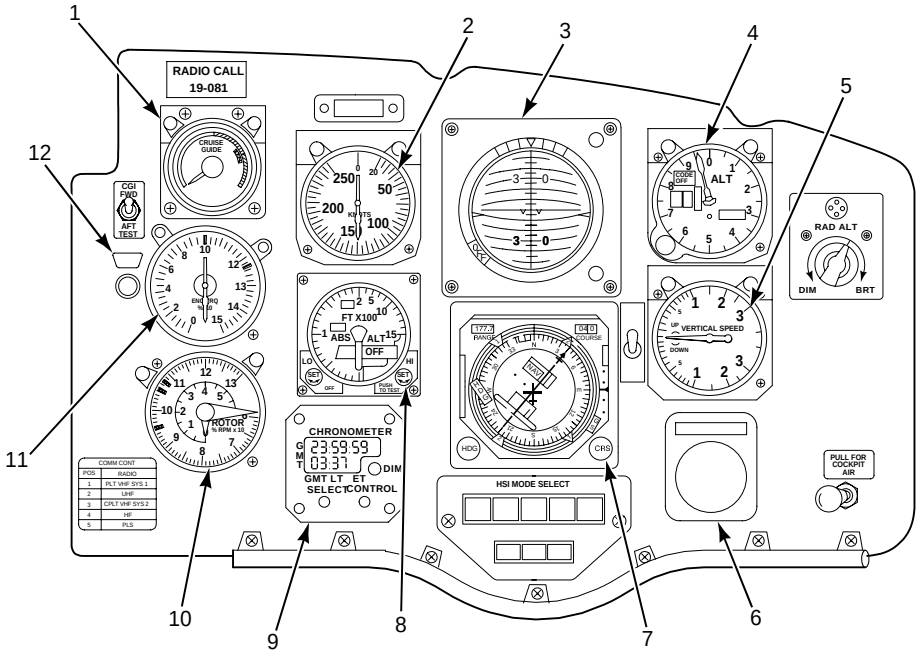
10. Rotor Tachometer
   a. Inspect dial glass for cracks, breaks, corrosion, or damage of instrument dial. Replace if damage or deterioration is found.
   b. Inspect instrument for integrity of hermetic seal. If seal is broken, replace instrument.
   c. Inspect for loose, damaged, or missing attaching hardware.
   d. Refer to WP 0003 00, Tables 4 and 5, for electrical wiring and electrical component inspection and repair procedures.
   e. Refer to WP 0077 00 for corrosion removal and treatment.
   f. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

11. Emergency Power Indicator Light (Aircraft with 712 Engines Only)
   a. Inspect indicator light for loose connections, cracks, breaks, corrosion, or damage that impairs proper operation. Replace if damage or deterioration is found.
   b. Refer to WP 0003 00, Tables 4 and 5, for electrical wiring and electrical component accept/reject criteria and repair procedures.
   c. Refer to WP 0077 00 for corrosion removal and treatment.
   d. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

INSPECTION REQUIREMENTS – continued

Pilot Instrument Panel

T55-L-712



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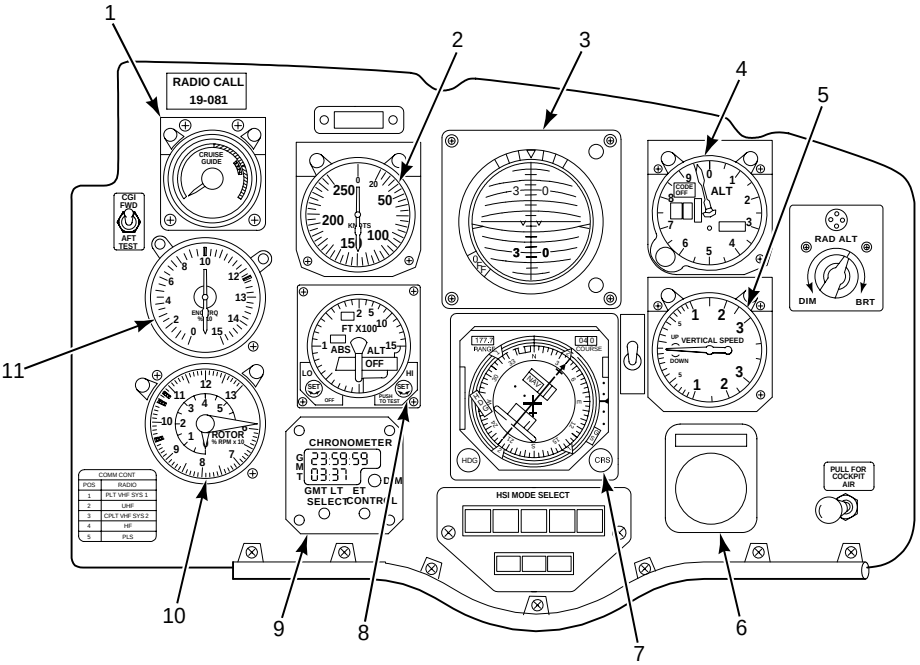

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Figure 3. Pilot Instrument Panel

Pilot Instrument Panel - continued

NOTE

The items in Figure 3 correspond to the respective item numbers in the following INSPECTION REQUIREMENTS.

Check instruments for correct range markings and index marks, in accordance with TM 1-1520-240-10.

1. Cruise Guide Indicator
   a. Inspect dial glass for cracks, breaks, corrosion, or damage of instrument dial. Replace if damage or deterioration is found.
   b. Inspect instrument for integrity of hermetic seal. If seal is broken, replace instrument.
   c. Inspect for loose, damaged, binding, or missing knobs and attaching hardware.
   d. Refer to WP 0003 00, Tables 4 and 5, for electrical wiring and electrical component inspection and repair procedures.
   e. Refer to WP 0077 00 for corrosion removal and treatment.
   f. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

2. Airspeed Indicator
   a. Inspect dial glass for cracks, breaks, corrosion, or damage of instrument dial. Replace if damage or deterioration is found.
   b. Inspect instrument for integrity of hermetic seal. If seal is broken, replace instrument.
   c. Inspect for loose, damaged, or missing attaching hardware.
   d. Refer to WP 0003 00, Tables 4 and 5, for electrical wiring and electrical component inspection and repair procedures.
   e. Refer to WP 0077 00 for corrosion removal and treatment.
   f. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

3. Attitude Indicator
   a. Inspect dial glass for cracks, breaks, corrosion, or damage of instrument dial. Replace if damage or deterioration is found.
   b. Inspect instrument for integrity of hermetic seal. If seal is broken, replace instrument.
   c. Inspect for loose, damaged, binding, or missing knobs and attaching hardware.
   d. Refer to WP 0003 00, Tables 4 and 5, for electrical wiring and electrical component inspection and repair procedures.
   e. Refer to WP 0077 00 for corrosion removal and treatment.
   f. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

4. Altimeter
   a. Inspect dial glass for cracks, breaks, corrosion, or damage of instrument dial. Replace if damage or deterioration is found.
   b. Inspect instrument for integrity of hermetic seal. If seal is broken, replace instrument.
   c. Inspect for loose, damaged, binding, or missing knobs and attaching hardware.
   d. Refer to WP 0003 00, Tables 4 and 5, for electrical wiring and electrical component inspection and repair procedures.
   e. Refer to WP 0077 00 for corrosion removal and treatment.
   f. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

Pilot Instrument Panel - continued

5. Vertical Speed Indicator (VSI)
   a. Inspect dial glass for cracks, breaks, corrosion, or damage of instrument dial. Replace if damage or deterioration is found.
   b. Inspect instrument for integrity of hermetic seal. If seal is broken, replace instrument.
   c. Inspect for loose, damaged, or missing knobs and attaching hardware.
   d. Refer to WP 0003 00, Tables 4 and 5, for electrical wiring and electrical component inspection and repair procedures.
   e. Refer to WP 0077 00 for corrosion removal and treatment.
   f. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

6. Turn and Slip Indicator
   a. Inspect dial glass for cracks, breaks, corrosion, or damage of instrument dial. Replace if damage or deterioration is found.
   b. Inspect instrument for integrity of hermetic seal. If seal is broken, replace instrument.
   c. Inspect for loose, damaged, or missing attaching hardware.
   d. Refer to WP 0003 00, Tables 4 and 5, for electrical wiring and electrical component inspection and repair procedures.
   e. Refer to WP 0077 00 for corrosion removal and treatment.
   f. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

7. Horizontal Situation Indicator
   a. Inspect dial glass for cracks, breaks, corrosion, or damage of instrument dial. Replace if damage or deterioration is found.
   b. Inspect instrument for integrity of hermetic seal. If seal is broken, replace instrument.
   c. Inspect for loose, damaged, binding, or missing knobs and attaching hardware.
   d. Refer to WP 0003 00, Tables 4 and 5, for electrical wiring and electrical component inspection and repair procedures.
   e. Refer to WP 0077 00 for corrosion removal and treatment.
   f. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

8. Radar Altimeter
   a. Inspect dial glass for cracks, breaks, corrosion, or damage of instrument dial. Replace if damage or deterioration is found.
   b. Inspect instrument for integrity of hermetic seal. If seal is broken, replace instrument.
   c. Inspect for loose, damaged, binding, or missing knobs and attaching hardware.
   d. Refer to WP 0003 00, Tables 4 and 5, for electrical wiring and electrical component inspection and repair procedures.
   e. Refer to WP 0077 00 for corrosion removal and treatment.
   f. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

Pilot Instrument Panel - continued

9. Chronometer
   a. Inspect for cracks, breaks, corrosion, or damage of instrument dial. Replace if damage or deterioration is found.
   b. Inspect for loose, damaged, binding, or missing buttons and attaching hardware.
   c. Refer to WP 0003 00, Tables 4 and 5, for electrical wiring and electrical component inspection and repair procedures.
   d. Replace AA Alkaline 3-years life batteries
   e. Refer to WP 0077 00 for corrosion removal and treatment.
   f. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

10. Rotor Tachometer
   a. Inspect dial glass for cracks, breaks, corrosion, or damage of instrument dial. Replace if damage or deterioration is found.
   b. Inspect instrument for integrity of hermetic seal. If seal is broken, replace instrument.
   c. Inspect for loose, damaged, or missing knobs and attaching hardware.
   d. Refer to WP 0003 00, Tables 4 and 5, for electrical wiring and electrical component inspection and repair procedures.
   e. Refer to WP 0077 00 for corrosion removal and treatment.
   f. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

11. Torquemeter
   a. Inspect dial glass for cracks, breaks, corrosion, or damage of instrument dial. Replace if damage or deterioration is found.
   b. Inspect instrument for integrity of hermetic seal. If seal is broken, replace instrument.
   c. Inspect for loose, damaged, or missing attaching hardware.
   d. Refer to WP 0003 00, Tables 4 and 5, for electrical wiring and electrical component inspection and repair procedures.
   e. Refer to WP 0077 00 for corrosion removal and treatment.
   f. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

12. Emergency Power Indicator Light (Aircraft with 712 Engines Only)
   a. Inspect indicator light for loose, cracks, breaks, corrosion, or damage that impairs proper operation. Replace if damage or deterioration is found.
   b. Refer to WP 0003 00 Tables 4 and 5 for electrical wiring and electrical component inspection and repair procedures.
   c. Refer to WP 0077 00 for corrosion removal and treatment.
   d. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

Pitot Static System

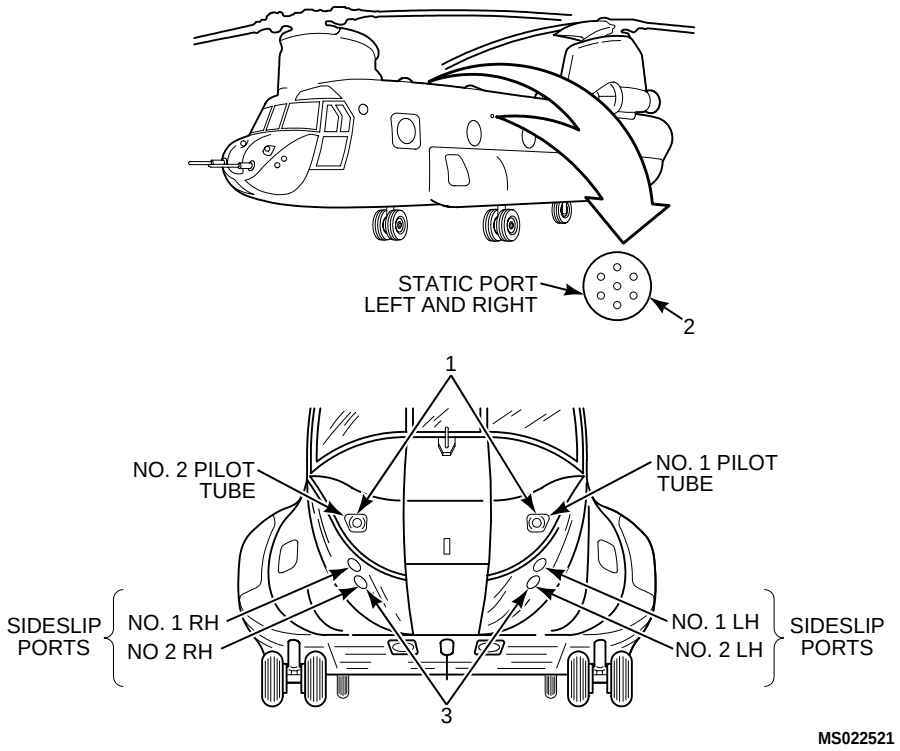


Figure 4. Pitot Static System

NOTE

The item numbers in Figure 4 correspond to the respective item numbers in the following INSPECTION REQUIREMENTS.

1. Pitot Tube
   a. Inspect openings for obstructions and damage.
   b. Inspect for elongation of screw holes on supports.
   c. Inspect pitot heater for proper operation..
   d. Inspect pitot tube for dents, corrosion, and deterioration of nickel plating.
   e. Inspect tubing for kinks, deterioration, moisture, and security.
   f. Refer to WP 0003 00, Tables 4 and 5, for electrical wiring and electrical component inspection and repair procedures.
   g. Refer to WP 0077 00 for corrosion removal and treatment.
   h. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

2. Static Port
   a. Inspect for obstructions, damage, or evidence of corrosion.
   b. Inspect tubing for kinks, moisture, deterioration, and security.
   c. Refer to WP 0077 00 for corrosion removal and treatment.
   d. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

Pitot Static System - continued

3. Side Slip Port
   a. Inspect for obstructions, damage, or evidence of corrosion.
   b. Inspect for elongation of screw holes on supports.
   c. Inspect tubing for kinks, moisture, deterioration, and security.
   d. Refer to WP 0003 00, Tables 4 and 5, for electrical wiring and electrical component inspection and repair procedures.
   e. Refer to WP 0077 00 for corrosion removal and treatment.
   f. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

END OF WORK PACKAGE

DEPOT MAINTENANCE WORK REQUIREMENT
CH-47D HELICOPTER
ELECTRICAL SYSTEMS

INITIAL SETUP

Test Equipment:
As Required

Tools and Special Tools:
As Required

Material/Parts:
As Required

Personnel Required:
Examiner (PSA)

References:
DMWR 1-6115-511
DMWR 55-1680-288
DMWR 55-6110-227
DMWR 55-6115-496
DMWR 55-6115-507
DMWR 55-6130-290
TM 1-1500-204-23 Series
TM 1-1520-240-10
TM 55-1500-323-24
TM 55-1520-240-23 Series
WP 0003 00
WP 0077 00

Equipment Conditions:
As Required

Special Environmental Condition:
As Required

SCOPE

The electrical system consists of an alternating current (AC) power system and a direct current (DC) power system. AC power is the primary source of electrical power for the helicopter. The power distribution system has four sources: two main generators, a secondary generator, and external power. The two main generators are mounted and driven by the aft transmission. The secondary generator is mounted on and driven by the auxiliary power unit (APU). A receptacle for connecting external power to the helicopter is located at the forward end of the left pod. Each power source delivers 115/200-volt, 3-phase power to one or both of two AC busses. The busses distribute the power to all AC electrical components on the helicopter. Each of the power sources has its own control unit, panel, or monitor that ensures that it is operating properly before its output is delivered to the busses.

There are four sources of DC power for the helicopter: two 200-ampere transformer-rectifiers (for the No. 1 and No. 2 DC systems), an 11-ampere-hour battery, and external DC power. Each source provides 28-volt DC to one or more of five separate busses, located within the No. 1 and No. 2 power distribution panels (PDP).

NOTE

Refer to TM 55-1500-323-24 for repair or replacement of aircraft electrical and electronic wiring.

The item numbers in Figure 1, sheets 1 and 2, correspond to the respective item numbers in the INSPECTION REQUIREMENTS following each illustration for Alternating Current Power System.

INSPECTION REQUIREMENTS

Alternating Current Power System

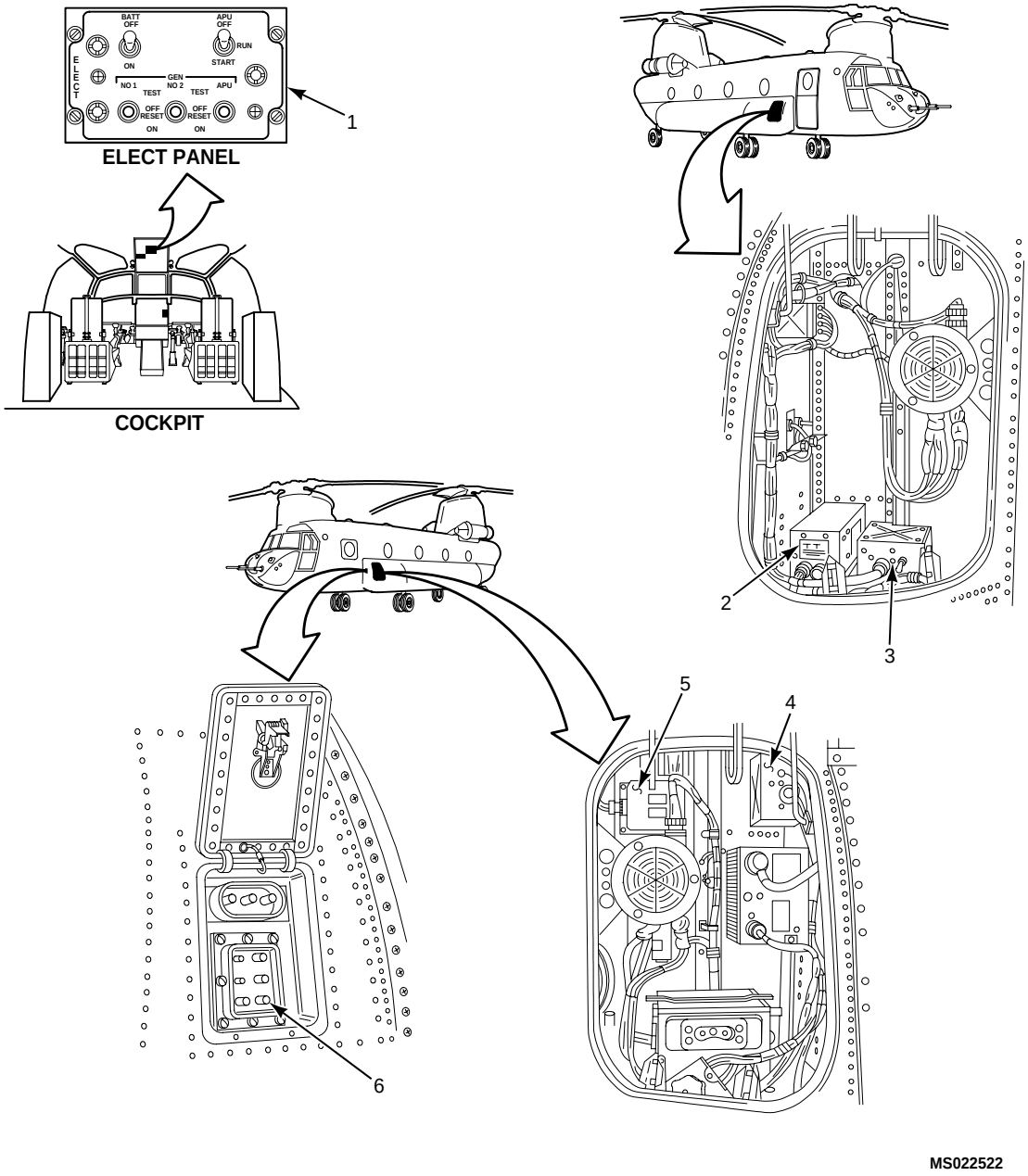


Figure 1. Electrical Systems (Sheet 1 of 2)

Alternating Current Power System - continued

1. Electrical Panel
   a. Inspect for cracks, scratches, gouges, identification markings, burned areas, or evidence of corrosion.
   b. Inspect for loose, damaged, or missing hardware, and foreign objects.
   c. Refer to WP 0003 00, Tables 4 and 5, for all electrical wiring and electrical component inspection and repair procedures.
   d. Refer to WP 0077 00 for corrosion removal and treatment.
   e. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

2. APU Generator Control Unit
   a. Inspect for cracks, scratches, gouges, burned areas, or evidence of corrosion.
   b. Inspect for loose, damaged, or missing hardware, and foreign objects.
   c. Refer to WP 0003 00, Tables 4 and 5, for all electrical wiring and electrical component, inspection and repair procedures.
   d. Refer to WP 0077 00 for corrosion removal and treatment.
   e. Refer to TM 55-1520-240-23 for accept/reject criteria.
   f. Repair per DMWR 55-1680-288 when authorized by the Contracting Officer.

3. No. 2 Generator Control Unit
   a. Inspect for cracks, scratches, gouges, burned areas, or evidence of corrosion.
   b. Inspect for loose, damaged, or missing hardware, and foreign objects.
   c. Refer to WP 0003 00, Tables 4 and 5, for all electrical wiring and electrical component inspection and repair procedures.
   d. Refer to WP 0077 00 for corrosion removal and treatment.
   e. Refer to TM 55-1520-240-23 for accept/reject criteria.
   f. Repair per DMWR 55-6110-227 when authorized by the Contracting Officer.

4. No. 1 Generator Control Unit
   a. Inspect for cracks, scratches, gouges, burned areas, or evidence of corrosion.
   b. Inspect for loose, damaged, or missing hardware, and foreign objects.
   c. Refer to WP 0003 00, Tables 4 and 5, for all electrical wiring and electrical component inspection and repair.
   d. Refer to WP 0077 00 for corrosion removal and treatment.
   e. Refer to TM 55-1520-240-23 for accept/reject criteria.
   f. Repair per DMWR 55-6110-227 when authorized by the Contracting Officer.

5. External Power Monitor
   a. Inspect for cracks, scratches, gouges, burned areas, or evidence of corrosion.
   b. Inspect for loose, damaged, or missing hardware, and foreign objects.
   c. Refer to WP 0003 00, Tables 4 and 5, for all electrical wiring and electrical component inspection and repair procedures.
   d. Refer to WP 0077 00 for corrosion removal and treatment.
   e. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

6. External Power Receptacle
   a. Inspect for nicks, scratches, cracks, dents, or evidence of corrosion.
   b. Inspect for bent or broken pins and foreign objects.
   c. Ensure sealant is properly placed as required.

Alternating Current Power System - continued

d. Inspect the back of the receptacle for security, damage, and burned areas.
e. Refer to WP 0003 00, Tables 4 and 5, for all electrical wiring and electrical component inspection and repair procedures.
f. Refer to WP 0077 00 for corrosion removal and treatment.
g. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

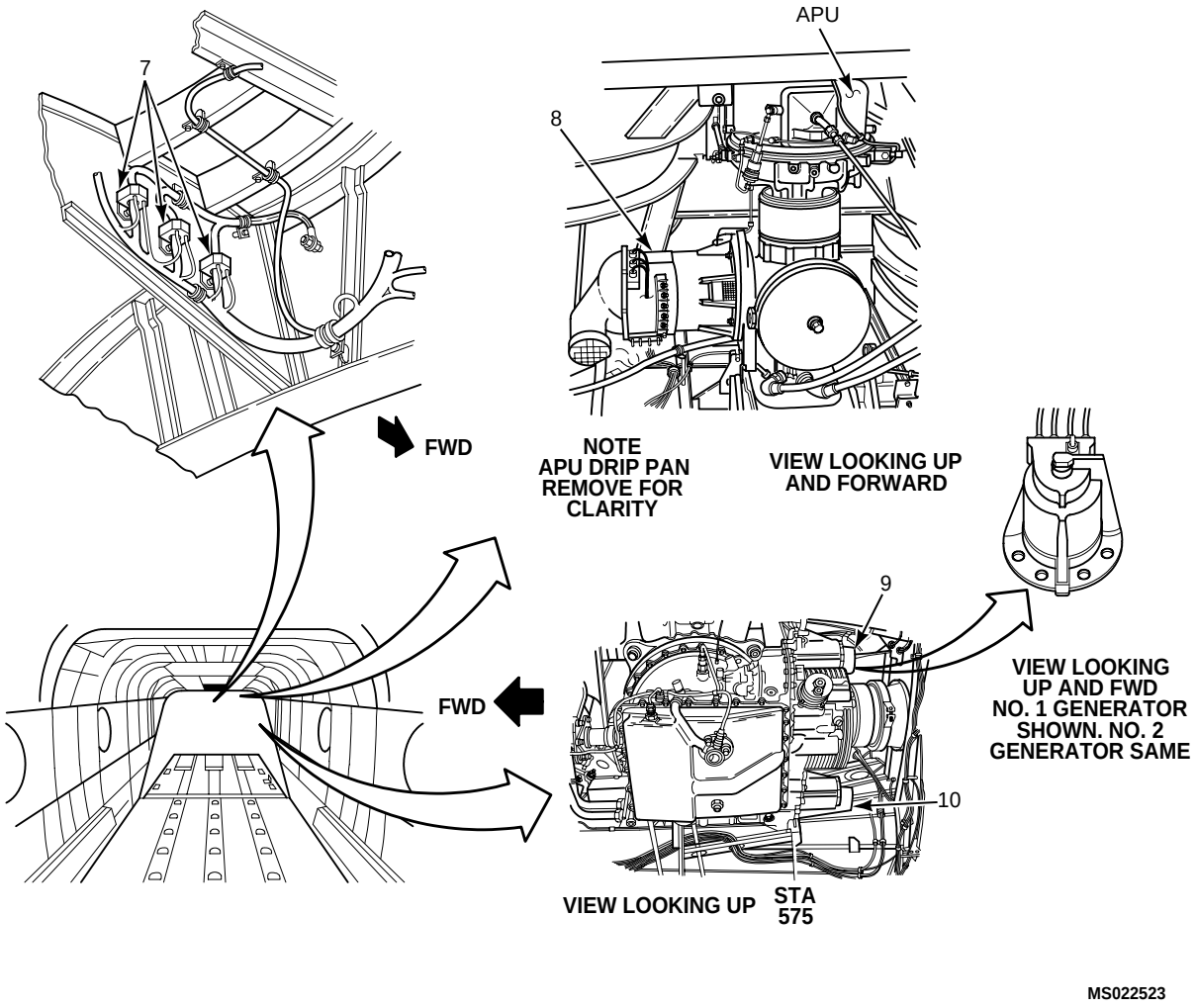


Figure 1. Electrical Systems (Sheet 2 of 2)

7. APU Generator Return Current Transformer
   a. Inspect for cracks, scratches, gouges, burned areas, or evidence of corrosion.
   b. Inspect for loose, damaged or missing hardware, and foreign objects.
   c. Refer to WP 0003 00, Tables 4 and 5, for all electrical wiring and electrical component inspection and repair procedures.
   d. Refer to WP 0077 00 for corrosion removal and treatment.
   e. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

Alternating Current Power System - continued

8. APU Generator
   a. Inspect for cracks, scratches, gouges, burned areas, or evidence of corrosion.
   b. Inspect for leaks, loose, damaged, or missing hardware, and foreign objects.
   c. Inspect the inlet screen and exhaust screen for blockage.
   d. Refer to WP 0003 00, Tables 4 and 5, for all electrical wiring and electrical component inspection and repair procedures.
   e. Refer to WP 0077 00 for corrosion removal and treatment.
   f. Refer to TM 55-1520-240-23 for accept/reject criteria.
   g. Repair per DMWR 55-6115-496 for generator, P/N 31161-001, and DMWR 1-6115-511 for generator, P/N AGH942-1, when authorized by the Contracting Officer.

9. No. 1 Generator
   a. Inspect for cracks, scratches, gouges, burned areas, or evidence of corrosion.
   b. Inspect for leaks, loose, damaged, or missing hardware, and foreign objects.
   c. Refer to WP 0003 00, Tables 4 and 5, for all electrical wiring and electrical component inspection and repair procedures.
   d. Refer to WP 0077 00 for corrosion removal and treatment.
   e. Refer to TM 55-1520-240-23 for accept/reject criteria.
   f. Repair per DMWR 55-6115-507 when authorized by the Contracting Officer.

10. No. 2 Generator
   a. Inspect for cracks, scratches, gouges, burned areas, or evidence of corrosion.
   b. Inspect for leaks, loose, damaged, or missing hardware, and foreign objects.
   c. Refer to WP 0003 00, Tables 4 and 5, for all electrical wiring and electrical component inspection and repair procedures.
   d. Refer to WP 0077 00 for corrosion removal and treatment.
   e. Refer to TM 55-1520-240-23 for accept/reject criteria.
   f. Repair per DMWR 55-6115-507 when authorized by the Contracting Officer.

Direct Current Power System

NOTE

The item numbers in Figure 2, sheets 1 and 2, correspond to the respective item numbers in the INSPECTION REQUIREMENTS following each illustration for Direct Current Power System.

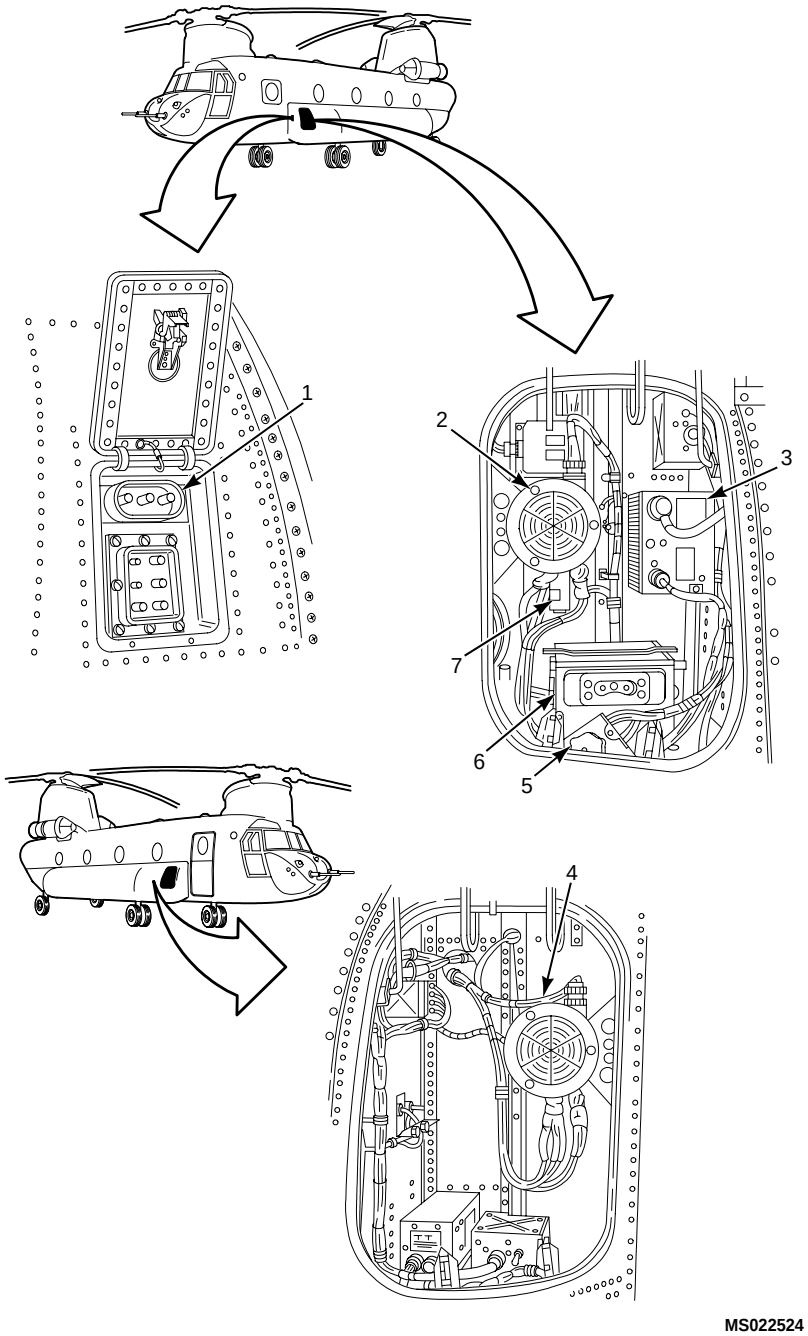


Figure 2. Electrical Systems (Sheet 1 of 2)

Direct Current Power System – continued

1. External power receptacle
   a. Inspect for nicks, scratches, cracks, dents, or evidence of corrosion.
   b. Inspect for bent or broken pins and foreign objects.
   c. Ensure sealant is properly placed as required.
   d. Inspect the back of the receptacle for security, damage, and burned areas.
   e. Refer to WP 0003 00, Tables 4 and 5, for all electrical wiring and electrical component inspection and repair procedures.
   f. Refer to WP 0077 00 for corrosion removal and treatment.
   g. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

2. No. 1 Transformer Rectifier
   a. Inspect for cracks, scratches, gouges, burned areas, or evidence of corrosion.
   b. Inspect for loose, damaged, or missing hardware, and foreign objects.
   c. Refer to WP 0003 00, Tables 4 and 5, for all electrical wiring and electrical component inspection and repair procedures.
   d. Refer to WP 0077 00 for corrosion removal and treatment.
   e. Refer to TM 55-1520-240-23 for accept/reject criteria.
   f. Repair per DMWR 55-6130-290 when authorized by the Contracting Officer.

3. Battery Charger
   a. Inspect for cracks, scratches, gouges, burned areas, or evidence of corrosion.
   b. Inspect for leaks, loose, damaged, or missing hardware, and foreign objects.
   c. Refer to WP 0003 00, Tables 4 and 5, for all electrical wiring and electrical component inspection and repair procedures.
   d. Refer to WP 0077 00 for corrosion removal and treatment.
   e. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

4. No. 2 Transformer Rectifier
   a. Inspect for cracks, scratches, gouges, burned areas, or evidence of corrosion.
   b. Inspect for loose, damaged, or missing hardware, and foreign objects.
   c. Refer to WP 0003 00, Tables 4 and 5, for all electrical wiring and electrical component inspection and repair procedures.
   d. Refer to WP 0077 00 for corrosion removal and treatment.
   e. Refer to TM 55-1520-240-23 for accept/reject criteria.
   f. Repair per DMWR 55-6130-290 when authorized by the Contracting Officer..

5. Battery Connector
   a. Inspect for loose, damaged, or missing hardware, corrosion, burned areas, or cracks.
   b. Refer to WP 0003 00, Tables 4 and 5, for all electrical wiring and electrical component inspection and repair procedures.
   c. Refer to WP 0077 00 for corrosion removal and treatment.
   d. Refer to TM 55-1520-240-23 for accept/reject criteria.

6. Battery
   a. Inspect for cracks, scratches, gouges, burned areas, or evidence of corrosion.
   b. Inspect for leaks, security, damaged or missing hardware, and foreign objects.

Direct Current Power System - continued

c. Refer to WP 0003 00, Tables 4 and 5, for all electrical wiring and electrical component inspection and repair procedures.
d. Refer to WP 0077 00 for corrosion removal and treatment.
e. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

7. Battery Relay
   a. Inspect for cracks, scratches, gouges, burned areas, or evidence of corrosion.
   b. Inspect for loose, damaged, or missing hardware, and foreign objects.
   c. Refer to WP 0003 00, Tables 4 and 5, for all electrical wiring and electrical component inspection and repair procedures.
   d. Refer to WP 0077 00 for corrosion removal and treatment.
   e. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

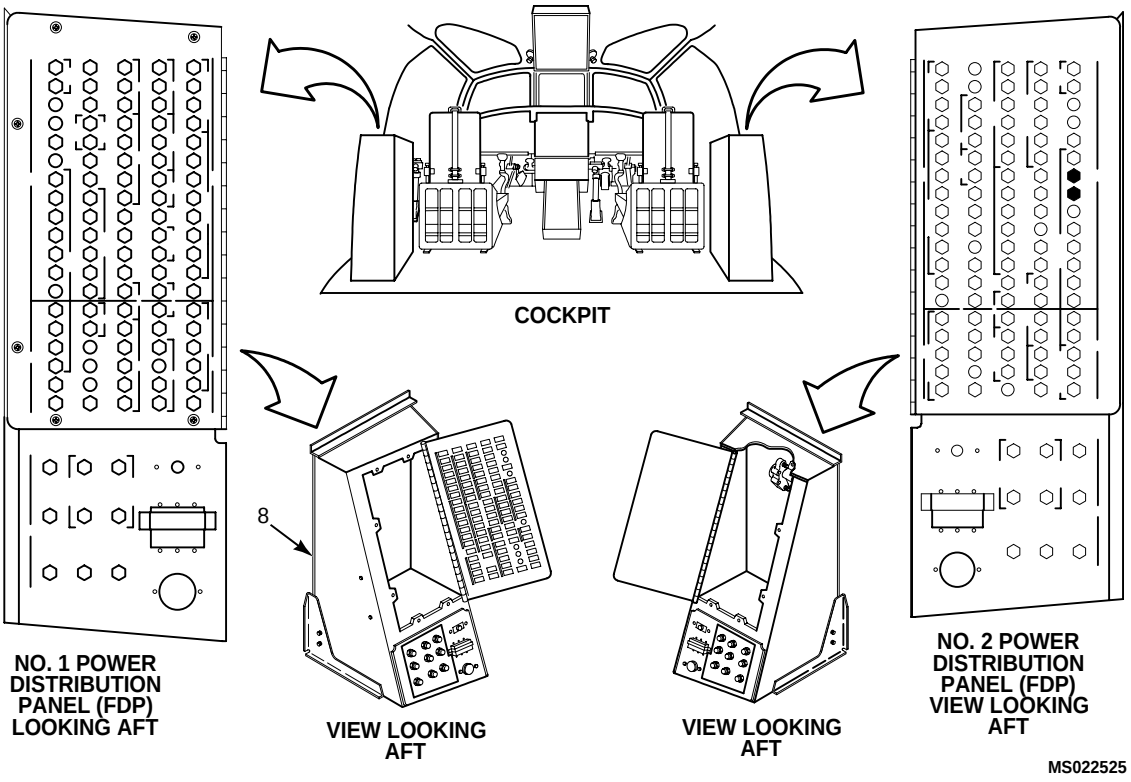


Figure 2. Electrical Systems (Sheet 2 of 2)

8. No. 1 and No. 2 Power Distribution System
   a. Inspect for evidence of water/moisture entry, arcing/burning, and discoloration.
   b. Inspect for cracks, loose, damaged or missing hardware, pinched wiring, chafing, fraying, foreign objects, or evidence of corrosion.
   c. Refer to WP 0003 00, Table 4 and 5, for all electrical wiring and electrical component inspection and repair procedures.
   d. Refer to WP 0077 00 for corrosion removal and treatment.
   e. Refer to TM 55-1520-240-23 for accept/reject criteria.

Exterior Lighting

NOTE

The item numbers in Figure 3 correspond to the respective item numbers in the following INSPECTION REQUIREMENTS for Exterior Lighting.

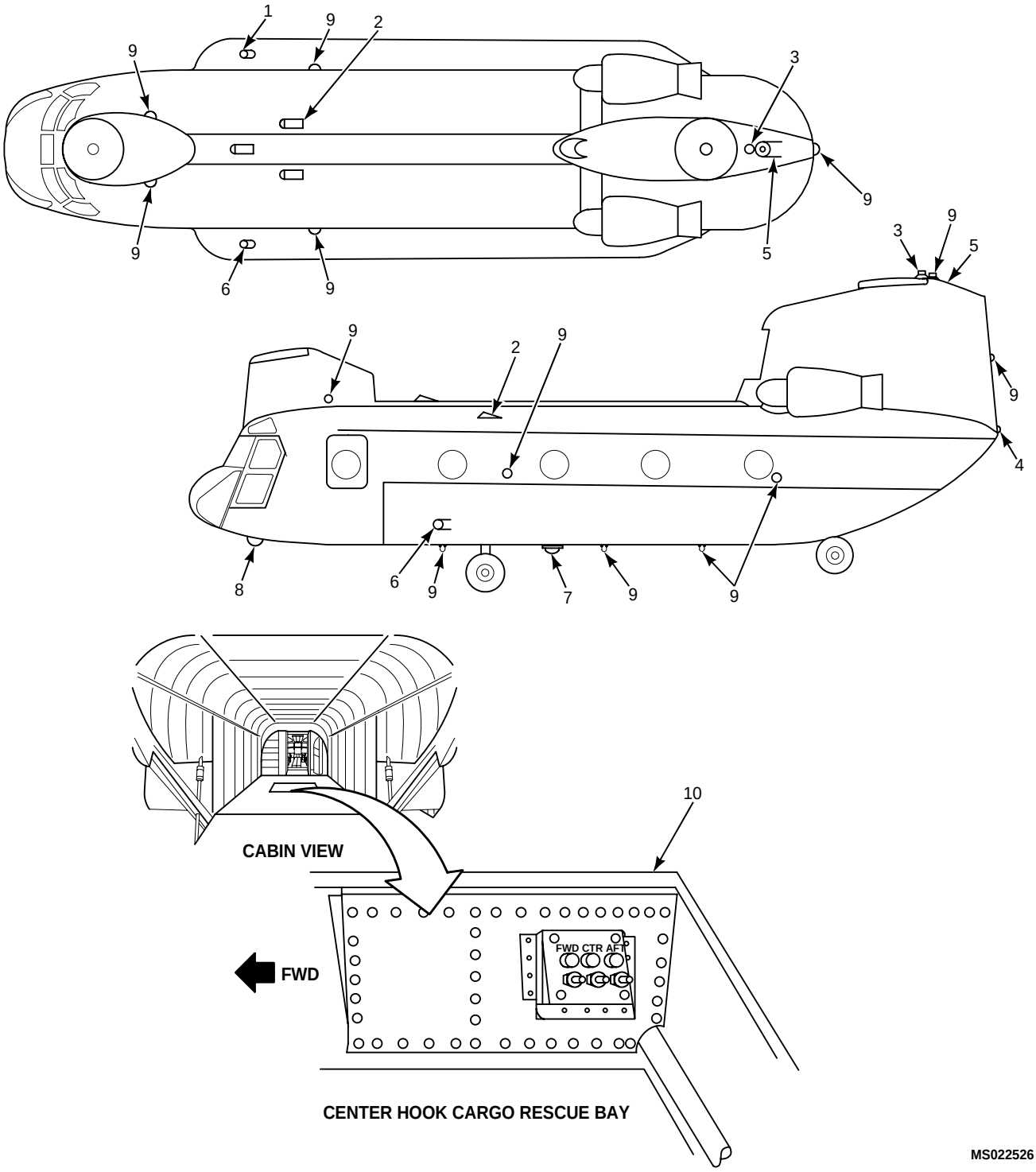


Figure 3. Aircraft Exterior Lighting

Exterior Lighting - continued

1. Right Position (Green)
   a. Inspect for evidence of water/moisture entry, burned areas, and discoloration.
   b. Inspect for cracks, loose, damaged or missing hardware, foreign objects, or evidence of corrosion.
   c. Refer to WP 0003 00, Tables 4 and 5, for all electrical wiring and electrical component inspection and repair procedures.
   d. Refer to WP 0077 00 for corrosion removal and treatment.
   e. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

2. Formation Lights
   a. Inspect for evidence of water/moisture entry, burned areas, and discoloration.
   b. Inspect for cracks, loose, damaged or missing hardware, foreign objects, or evidence of corrosion.
   c. Refer to WP 0003 00, Tables 4 and 5, for all electrical wiring and electrical component inspection and repair procedures.
   d. Refer to WP 0077 00 for corrosion removal and treatment.
   e. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

3. Anti-collision Light, Top
   a. Inspect for evidence of water/moisture entry, burned areas, and discoloration.
   b. Inspect for cracks, loose, damaged or missing hardware, foreign objects, or evidence of corrosion.
   c. Refer to WP 0003 00, Tables 4 and 5, for all electrical wiring and electrical component inspection and repair procedures.
   d. Refer to WP 0077 00 for corrosion removal and treatment.
   e. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

4. Tail Position Light (White)
   a. Inspect for evidence of water/moisture entry, burned areas, and discoloration.
   b. Inspect for cracks, loose, damaged or missing hardware, foreign objects, or evidence of corrosion.
   c. Refer to WP 0003 00, Tables 4 and 5, for all electrical wiring and electrical component inspection and repair procedures.
   d. Refer to WP 0077 00 for corrosion removal and treatment.
   e. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

5. Formation Lights
   a. Inspect for evidence of water/moisture entry, burned areas, and discoloration.
   b. Inspect for cracks, loose, damaged or missing hardware, foreign objects, or evidence of corrosion.
   c. Refer to WP 0003 00, Tables 4 and 5, for all electrical wiring and electrical component inspection and repair procedures.
   d. Refer to WP 0077 00 for corrosion removal and treatment.
   e. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

6. Left Position (Red)
   a. Inspect for evidence of water/moisture entry, burned areas, and discoloration.
   b. Inspect for cracks, loose, damaged or missing hardware, foreign objects, or evidence of corrosion.
   c. Refer to WP 0003 00, Tables 4 and 5, for all electrical wiring and electrical component inspection and repair procedures.
   d. Refer to WP 0077 00 for corrosion removal and treatment.
   e. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

Exterior Lighting - continued

7. Anti-collision Light, Bottom
   a. Inspect for evidence of water/moisture entry, burned areas, and discoloration.
   b. Inspect for cracks, loose, damaged or missing hardware, foreign objects, or evidence of corrosion.
   c. Refer to WP 0003 00, Tables 4 and 5, for all electrical wiring and electrical component inspection and repair procedures.
   d. Refer to WP 0077 00 for corrosion removal and treatment.
   e. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

8. Landing/Search Lights
   a. Inspect for evidence of water/moisture entry, burned areas, and discoloration.
   b. Inspect for cracks, loose, damaged or missing hardware, foreign objects, or evidence of corrosion.
   c. Refer to WP 0003 00, Tables 4 and 5, for all electrical wiring and electrical component inspection and repair procedures.
   d. Refer to WP 0077 00 for corrosion removal and treatment.
   e. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

9. NVG Formation Lights
   a. Inspect for evidence of water/moisture entry, burned areas, and discoloration.
   b. Inspect for cracks, loose, damaged or missing hardware, foreign objects, or evidence of corrosion.
   c. Refer to WP 0003 00, Tables 4 and 5, for all electrical wiring and electrical component inspection and repair procedures.
   d. Refer to WP 0077 00 for corrosion removal and treatment.
   e. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

10. Cargo Hook Lights (Exterior, 1 Per Hook) and Switch Box
   a. Inspect for cracks, security, damaged or missing hardware, burned areas, foreign objects, or evidence of corrosion.
   b. Refer to WP 0003 00, Tables 4 and 5, for all electrical wiring and electrical component inspection and repair procedures.
   c. Refer to WP 0077 00 for corrosion removal and treatment.
   d. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

Interior Lighting

NOTE

The item numbers in Figure 4, sheets 1 through 4, correspond to the respective item numbers in the INSPECTION REQUIREMENTS following each illustration for Interior Lighting.

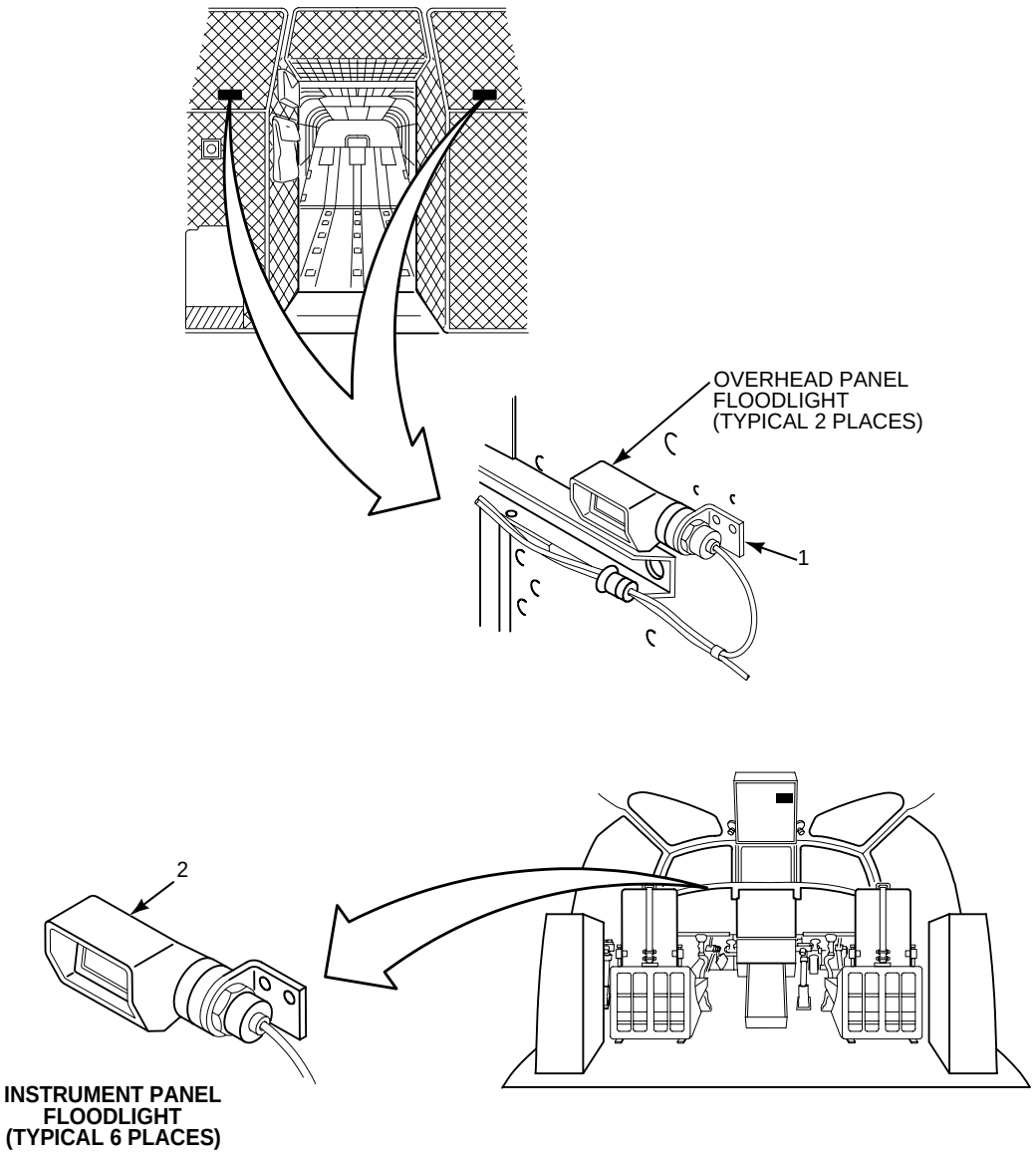


Figure 4. Aircraft Interior Lighting (Sheet 1 of 4)

Interior Lighting -continued

1. Overhead Panel Lights
   a. Inspect for cracks, loose, damaged or missing hardware, burned areas, foreign objects, or evidence of corrosion.
   b. Refer to WP 0003 00, Tables 4 and 5, for all electrical wiring and electrical component inspection and repair procedures.
   c. Refer to WP 0077 00 for corrosion removal and treatment.
   d. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

2. Instrument Panel Floodlights
   a. Inspect for cracks, loose, damaged or missing hardware, burned areas, foreign objects, binding, or evidence of corrosion.
   b. Refer to WP 0003 00, Table 4 and 5, for all electrical wiring and electrical component inspection and repair procedures.
   c. Refer to WP 0077 00 for corrosion removal and treatment.
   d. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

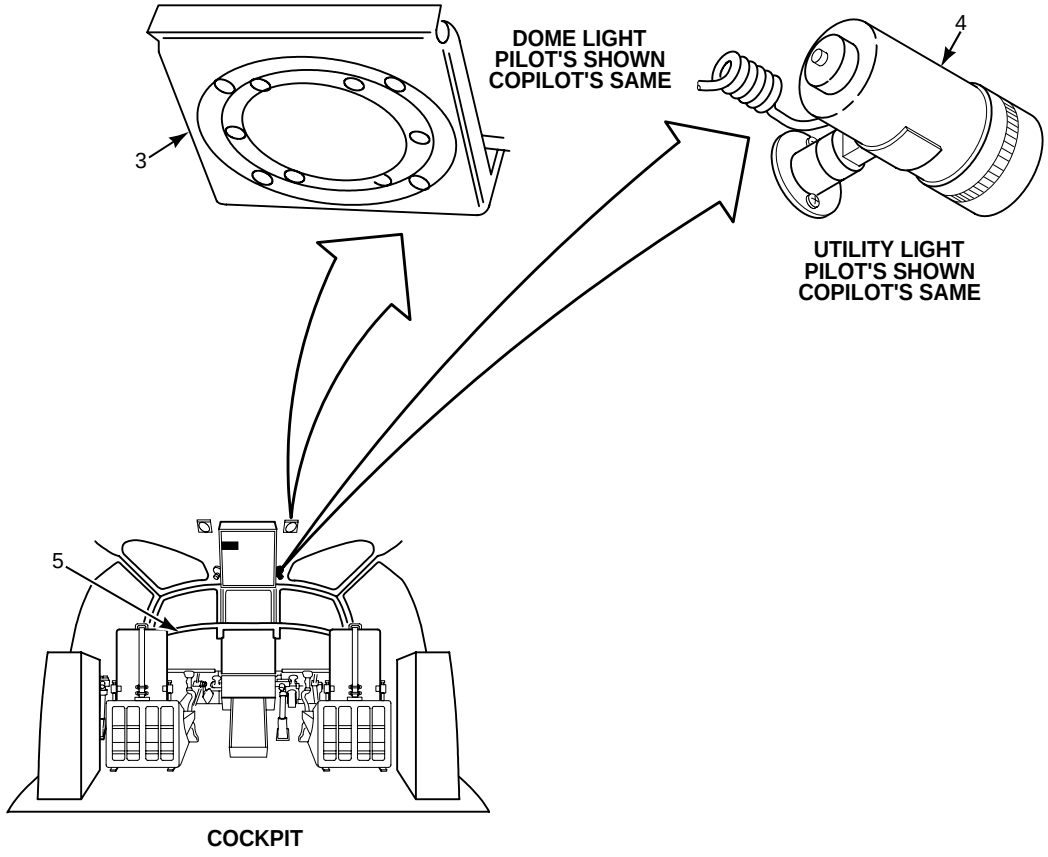


Figure 4. Aircraft Interior Lighting (Sheet 2 of 4)

Interior Lighting -continued

3. Cockpit Dome Light
   a. Inspect for cracks, loose, damaged or missing hardware, burned areas, foreign objects, or evidence of corrosion.
   b. Refer to WP 0003 00, Tables 4 and 5, for all electrical wiring and electrical component inspection and repair procedures.
   c. Refer to WP 0077 00 for corrosion removal and treatment.
   d. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

4. Utility Lights
   a. Inspect for cracks, loose, damaged or missing hardware, burned areas, foreign objects, or evidence of corrosion.
   b. Refer to WP 0003 00, Tables 4 and 5, for all electrical wiring and electrical component inspection and repair procedures.
   c. Refer to WP 0077 00 for corrosion removal and treatment.
   d. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

5. Instrument Panel Lights (Pilot, Center, and Co-Pilot)
   a. Inspect for cracks, loose, damaged or missing hardware, burned areas, foreign objects, or evidence of corrosion.
   b. Refer to WP 0003 00, Tables 4 and 5, for all electrical wiring and electrical component inspection and repair procedures.
   c. Refer to WP 0077 00 for corrosion removal and treatment.
   d. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

Interior Lighting -continued

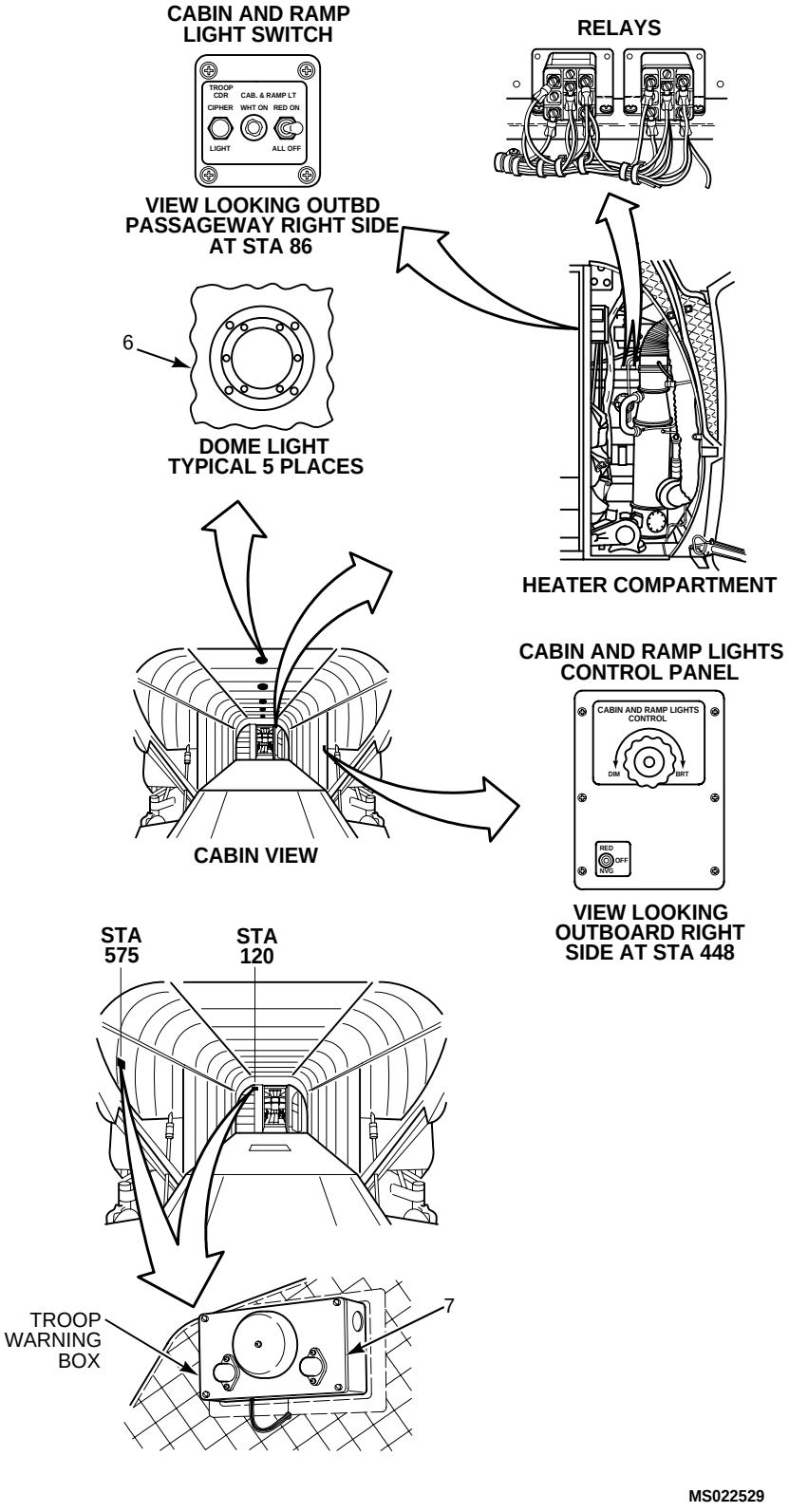


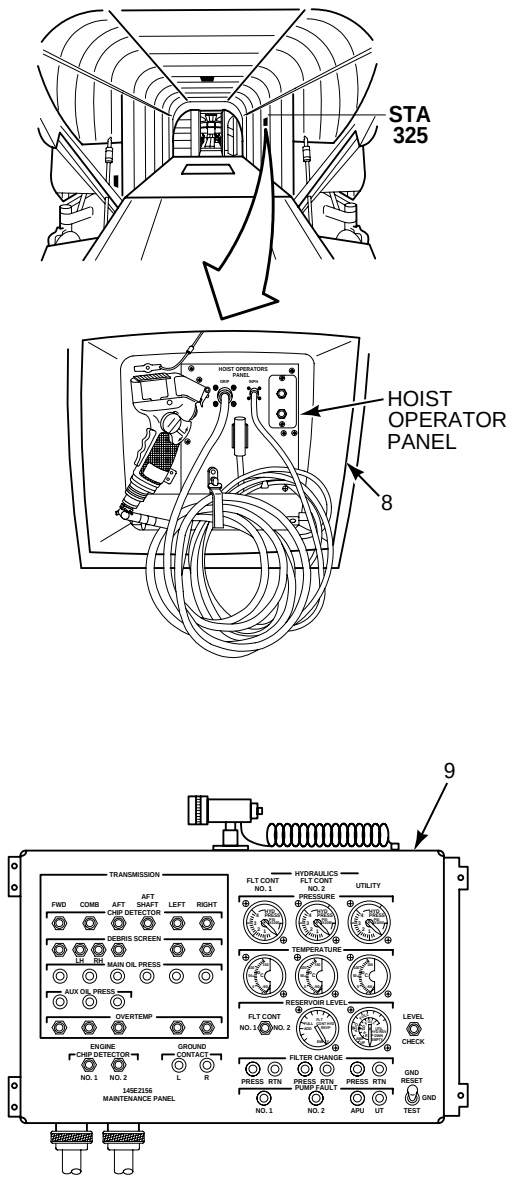
Figure 4. Aircraft Interior Lighting (Sheet 3 of 4)

Interior Lighting -continued

6. Cabin and Ramp Lights
   a. Inspect the two cabin light switches for cracks, security, damaged or missing hardware, burned areas, foreign objects, or evidence of corrosion.
   b. Inspect the two relays for cracks, security, damaged or missing hardware, burned areas, discoloration, foreign objects, or evidence of corrosion.
   c. Inspect the dome lights for cracks, security, damaged or missing hardware, burned areas, discoloration, foreign objects, or evidence of corrosion.
   d. Refer to WP 0003 00, Tables 4 and 5, for all electrical wiring and electrical component inspection and repair procedures.
   e. Refer to WP 0077 00 for corrosion removal and treatment.
   f. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

7. Troop Warning Box, sta 120 and sta 575
   a. Inspect for cracks, loose, damaged or missing hardware, burned areas, foreign objects, or evidence of corrosion.
   b. Refer to WP 0003 00, Tables 4 and 5, for all electrical wiring and electrical component inspection and repair procedures.
   c. Refer to WP 0077 00 for corrosion removal and treatment.
   d. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

Interior Lighting -continued



MS022728

Figure 4. Aircraft Interior Lighting (Sheet 4 of 4)

Interior Lighting -continued

8. Hoist Operators Grip Assembly and Hoist Operator Panel, sta 320
   a. Inspect for bent or broken pins, cracks, loose, damaged or missing hardware, burned areas, exposed wiring, foreign objects, or evidence of corrosion.
   b. Refer to WP 0003 00, Tables 4 and 5, for all electrical wiring and electrical component inspection and repair procedures.
   c. Refer to WP 0077 00 for corrosion removal and treatment.
   d. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

9. Maintenance Panel, sta 502
   a. Inspect for cracks, scratches, gouges, identification markings, burned areas, or evidence of corrosion.
   b. Inspect gages for cracks, breaks, or damage of instrument dial. Replace if damage or deterioration is found.
   c. Inspect for security, damaged or missing hardware, and foreign objects.
   d. Refer to WP 0003 00, Tables 4 and 5, for all electrical wiring and electrical component inspection and repair procedures.
   e. Refer to WP 0077 00 for corrosion removal and treatment.
   f. Refer to TM 1-1520-240-10 for markings.
   g. Refer to TM 55-1520-240-23 for accept/reject criteria.
   g. Repair per DMWR 55-6110-227 when authorized by the Contracting Officer.

END OF WORK PACKAGE

DEPOT MAINTENANCE WORK REQUIREMENT
CH-47D HELICOPTER
FUEL SYSTEM

INITIAL SETUP

Test Equipment:
As Required

Tools and Special Tools:
As Required

Material/Parts:
As Required

Personnel Required:
Examiner (PSA)

References:
DMWR 1-4810-229
DMWR 55-1680-360
DMWR 55-2910-200
DMWR 55-2915-168
DMWR 55-2915-296
DMWR 55-6620-326
DMWR 55-6680-333
TM 1-1500-204-23 Series
TM 55-1500-323-24
TM 55-1520-240-23 Series
T.O. 1-1-3
WP 0003 00
WP 0077 00

Equipment Conditions:
As Required

Special Environmental Condition:
As Required

SCOPE

The aircraft fuel system supplies fuel to the two engines, the APU, and the cabin heater. Fuel is contained in six fuel pods mounted to the outside of the helicopter between sta 189 and sta 438. The system has two subsystems, left and right. The left (No. 1) system supplies fuel to the No. 1 engine and the APU. The right (No. 2) system supplies fuel to the No. 2 engine and the heater. In case of an emergency, an engine cross feed system allows fuel from one system to supply both engines. Each subsystem is made up of three fuel tank assemblies (forward auxiliary, main, and aft auxiliary). The auxiliary tanks act as storage before fuel is transferred to the main tanks. The fuel system has provisions for connecting an Extended Range Fuel System (ERFS II).

REFUELING SYSTEM

There are two methods of refueling the helicopter.

Gravity Fill Refueling - Each tank has a gravity fill port, which is opened for individual tank refueling. About 30 minutes are necessary to refuel the helicopter by this method.

Single Point Pressure Refueling - The pressure refueling system allows the aircraft to be completely refueled in about 4 minutes with fuel supplied at 300 gallons per minute and 55 psi. A panel located in the right front intertank area controls refueling. Fuel enters the pressure-refueling adapter and goes to the forward auxiliary tanks through a breakaway fitting on the aft access door.

A fuel quantity selector switch and an indicator are on the center instrument panel and on the single-point pressure refueling panel in the right forward intertank bay areas. They receive input signals from the fuel quantity probes in the fuel tanks through a switch box located in the cabin at sta 232. The selection of which panel is in use is made at the overhead single-point fuel panel.

FERRY FUEL SYSTEM

Provisions exist in the helicopter for use of a ferry fuel system. The provisions consist of two ferry fuel fittings on the left and right side of the cabin at approximately sta 375 WL minus 10 and hose connections in the aft left and right intertank areas. They are connected to the main fuel tank system. In addition, 3 vent fittings are at the top of the cabin, left side at sta 240, sta 360 and sta 460. The Extended Range Fuel System (ERFS) and (ERFS II) utilizes the ferry fuel system connections and provides aircraft mission flexibility by extending aircraft range and by providing forward area refueling source.

INTERTANK AREA

There are two intertank areas, forward and aft, between the three fuel pods in each subsystem. The forward intertank areas are in the front landing gear bays. They are functionally similar except that the right inter-tank area has a pressure refueling adapter and a control panel. The right and left forward intertank areas each contain two check valves, five breakaway fittings, one pressure switch, a fuel vent tube from the forward fuel tank, and an evacuation line connected to the jet pump in each main tank. The aft intertank areas are between the main fuel pod and the aft auxiliary pod. The right aft intertank area has connections to the fuselage for the heater fuel feed, a solenoid valve, No. 2 engine fuel feed and ferry fuel. The left aft intertank area has fuselage connections for APU fuel feed, No. 1 engine fuel feed, and ferry fuel. The APU fuel boost pump, solenoid valve, and APU pump drain are also located in the left aft intertank area. Aft inter-tank areas have six breakaway fittings, two check valves, and two motor operated valves, one pressure switch, main tank vent tube, and plumbing. The aft tank fuel vent tube is in the area behind the aft auxiliary tank on each side.

FUEL TANK CELLS

Inside each pod is a fuel tank cell. Each cell is constructed of rubber/fabric laminates, with adapters and fittings bonded into the construction of the cell to provide for the mounting of internal components, access doors, and mounting clamps. Each cell is self-sealing against 50 caliber projectiles and is crash resistant. The tank cells are secured in the pods by bolts that are threaded into the tank supports from the exterior of the pod structure and by fuel tank components at their tank attachment points. Breakaway, self-sealing fittings are installed in each fuel line interconnecting fuel tanks to the fuselage structure. Fiberglass backing boards are taped to the fuselage behind the fuel pods to protect the self-sealing feature of the cells.

FUEL DELIVERY SYSTEM

The fuel pumps for all tanks operate on 115 volts AC from the number 1 or number 2 AC bus and are controlled by 28 volts DC. When the AC circuit for any pump is closed, 115 volts AC is connected to a relay in the fuel pump control relay box. The pump DC circuit breaker provides DC voltage to the pump control switch on the overhead fuel control panel.

Two thermistors are mounted on each auxiliary fuel pump. The thermistors ensure that the pumps operate when covered with fuel and do not shut down in response to fuel sloshing. During normal operation with all fuel pumps operating, each of the two main pumps in the left and right systems delivers fuel through its check valve to a common engine fuel line. Fuel passes through the feed line, a system check valve, a pressure switch, a main engine fuel valve and a fuel flow transmitter, to the engine fuel system.

FUEL LOW LEVEL WARNING SYSTEM

This system has two thermistor units (one on the center probe in each main tank), a dual control unit on the cockpit floor below the center console, and two lights on the master caution panel. The thermistors transmit a signal to the dual control unit and activate the warning lights on the caution panel when the fuel level drops below approximately 65 gallons.

ENGINE FUEL FEED SYSTEM

The No. 1 engine is supplied by the No. 1 fuel subsystem. The No. 2 engine is supplied by the No. 2 fuel subsystem. The fuel passes through a breakaway fitting in the rear wall of the main tank into the aft intertank area to a cross connector on the fuselage. The cross connector directs fuel through the fuselage and to a drain fitting

ENGINE FUEL FEED SYSTEM - continued

on the bottom skin of the intertank bay. The connector on the left side also directs fuel to the APU and on the right side to the heater.

Interconnecting the two-engine fuel feed systems is a fuel cross feed line with two motor operated shutoff valves. The cross feed system allows fuel from one system to supply both engines in case one system becomes inoperative. The No. 2 system has a manually operated valve for defueling purposes.

Engine fuel passes a pressure switch, motor-operated valve, and fuel flow transducer before passing through a fuselage quick-disconnect fitting on the way to the engine fuel boost pump. An engine feed suction line in each main tank works as a backup system in case both main tank boost pumps fail. When one main tank boost pump fails, the check valve for that pump closes to prevent reverse flow, or air being drawn into the engine feed line. When both boost pumps fail, the engine fuel boost pump draws fuel through a separate hose in the main tank. Flight altitude must not exceed 6000 feet in this condition.

APU FUEL FEED SYSTEM

The APU fuel feed system begins in the left aft intertank area. Fuel from the main tank enters the cross connector and passes into the APU line on top of the connector. The fuel passes through a boost pump and solenoid valve before entering the fuselage. Inside the fuselage, the fuel passes through a manual shutoff valve at sta 540. It passes a quick-disconnect fitting at sta 600 and enters the APU.

WARNING

FLAMMABLE

All regulations and instructions for handling fuels shall be strictly observed.

REFUELING SYSTEM

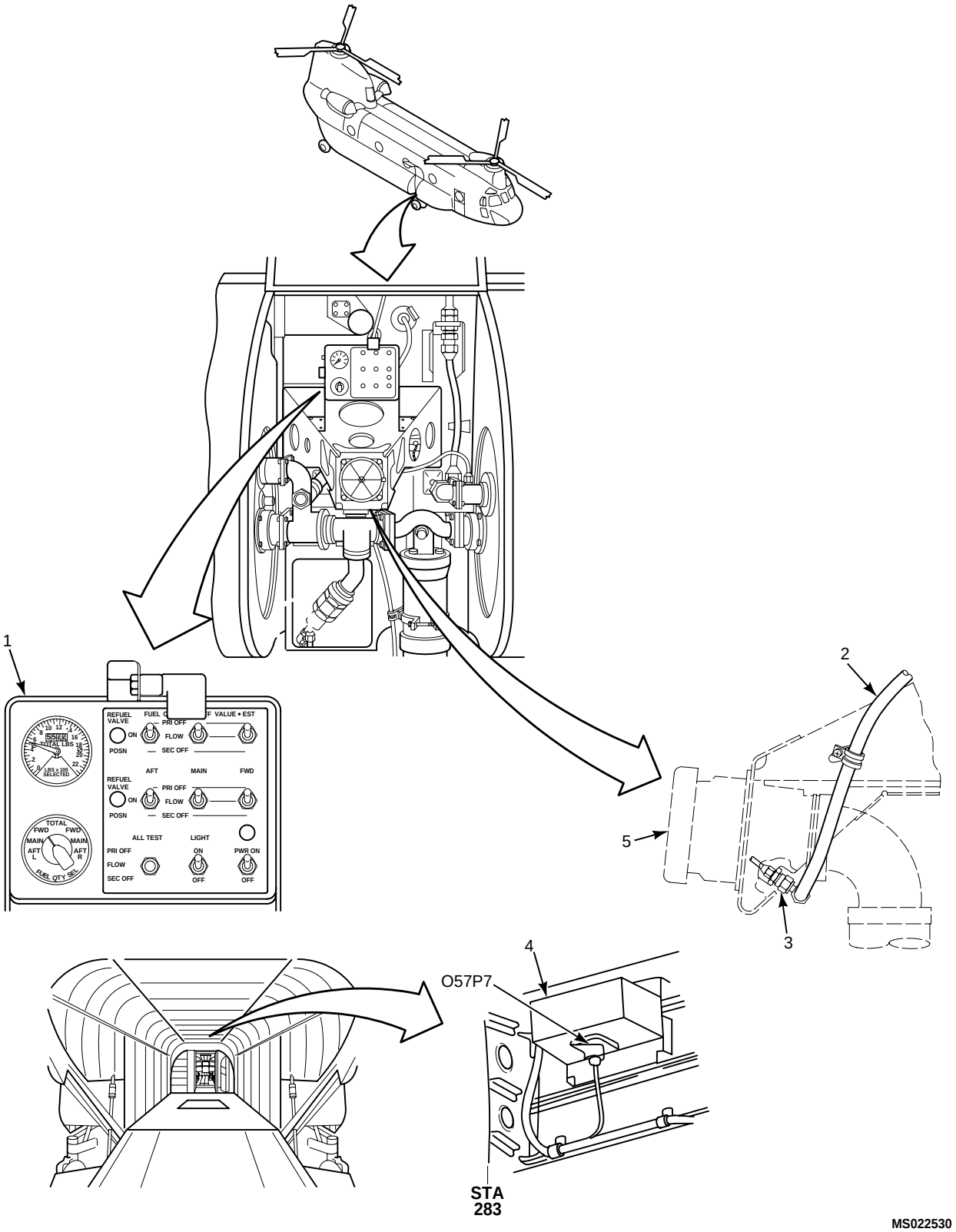


Figure 1. Refueling System (Sheet 1 of 2)

REFUELING SYSTEM - continued

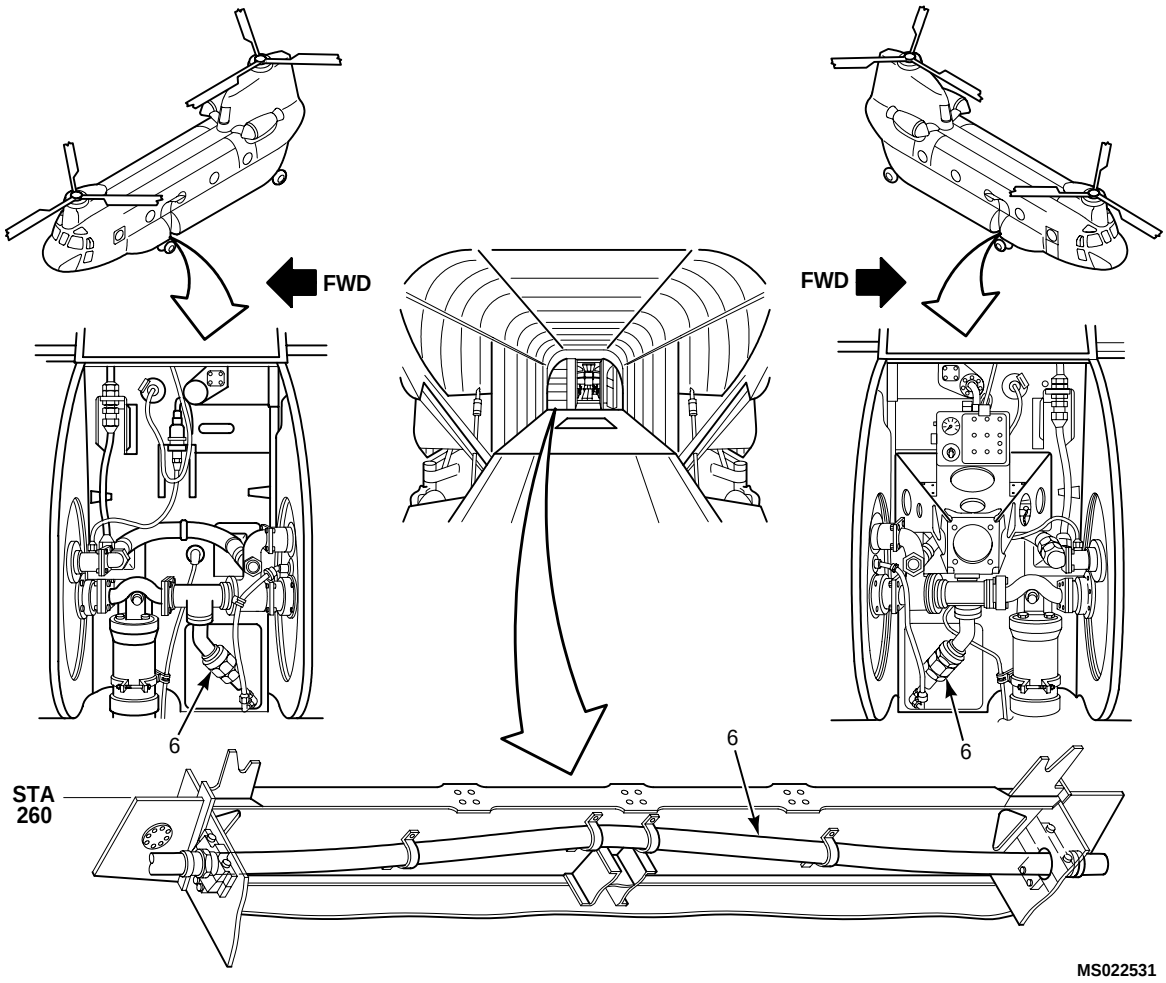


Figure 1. Refueling System (Sheet 2 of 2)

NOTE

The item numbers in Figure 1 correspond to the respective item numbers in the following INSPECTION REQUIREMENTS for Refueling System.

INSPECTION REQUIREMENTS

Refueling System

1. Single Pressure Refueling Station Control Panel
   a. Inspect control panel for looseness, missing or damaged hardware, evidence of overheating, or evidence of corrosion.
   b. Inspect control panel lights for looseness, missing or damaged hardware, evidence of overheating, or evidence of corrosion.
   c. Inspect control panel switches for looseness, missing or damaged hardware, evidence of overheating, or evidence of corrosion.
   d. Inspect control panel fuel quantity indicator for looseness, missing or damaged hardware, evidence of overheating, or evidence of corrosion.

Refueling System - continued

e. Inspect fuel quantity selector switch for looseness, missing or damaged hardware, evidence of overheating, or evidence of corrosion.
f. Refer to WP 0003 00, Tables 4 and 5, for electrical wiring and electrical component inspection and repair procedures.
g. Refer to WP 0077 00 for corrosion removal and treatment.
h. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

2. Single Point Pressure Refueling Vacuum Relief Valve Hose
   a. Inspect vacuum relief hose for looseness, missing or damaged hardware, evidence of corrosion, or evidence of leaks.
   b. Refer to WP 0077 00 for corrosion removal and treatment.
   c. Refer to WP 0003 00, Table 3, for all hose inspection and repair procedures.
   d. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

3. Single Point Pressure Refueling Vacuum Relief Valve
   a. Inspect vacuum relief valve hose for looseness, missing or damaged hardware, evidence of corrosion, or evidence of leaks.
   b. Refer to WP 0077 00 for corrosion removal and treatment.
   c. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

4 Single Point Pressure Refueling Station Inverter
   a. Inspect inverter for looseness, missing or damaged hardware, evidence of overheating, or evidence of corrosion.
   b. Refer to WP 0077 00 for corrosion removal and treatment.
   c. Refer to WP 0003 00, Tables 4 and 5, for electrical wiring and electrical component inspection and repair procedures.
   d. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

5 Single Point Pressure Refueling Adapter
   a. Inspect refueling adapter for looseness, missing or damaged hardware, evidence of corrosion, or evidence of leaks.
   b. Refer to WP 0077 00 for corrosion removal and treatment.
   c. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

6. Single Point Pressure Refueling Crossover Hose
   a. Inspect crossover hose for looseness, missing or damaged hardware, evidence of corrosion, or evidence of leaks.
   b. Refer to WP 0003 00, Table 3, for hose inspection and repair procedures.
   c. Refer to WP 0077 00 for corrosion removal and treatment.
   d. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

HEATER FUEL SYSTEM

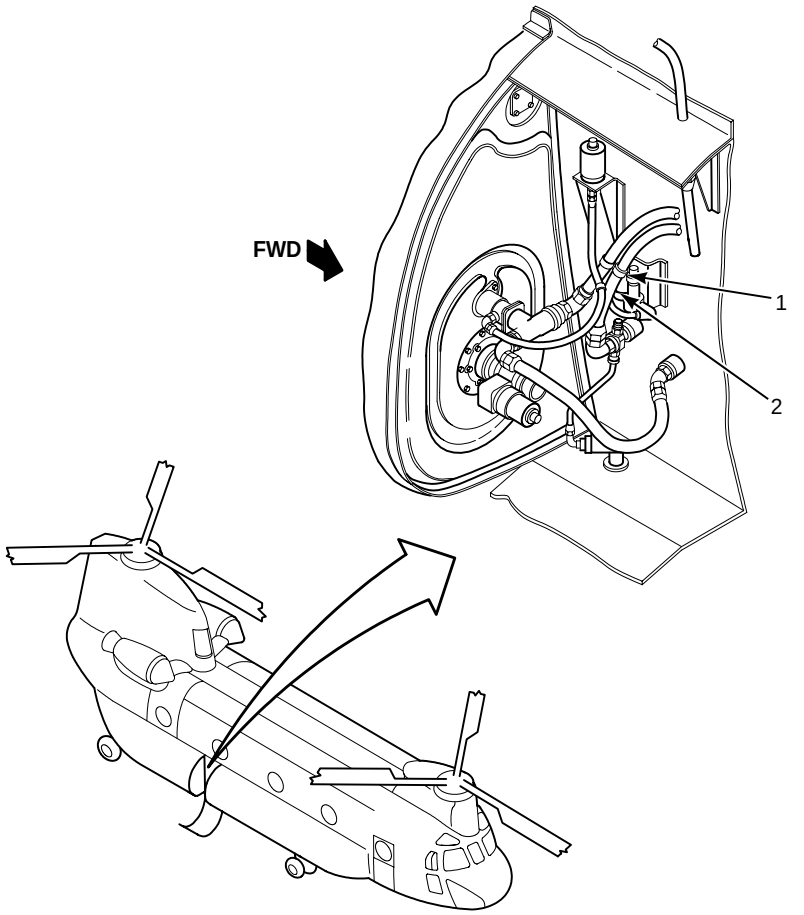


Figure 2. Heater Fuel System

NOTE

The item numbers in Figure 2 correspond to the respective item numbers in the following INSPECTION REQUIREMENTS for Heater Fuel System.

INSPECTION REQUIREMENTS

Heater Fuel System

1. Heater Fuel Feed Hose and Tubing Assemblies
   a. Inspect hoses, tubing, fittings, and attaching hardware along inside cabin area on the right side from sta 120 to sta 364 for looseness, missing or damaged hardware, evidence of corrosion, or evidence of leaks.
   b. Refer to WP 0003 00, Tables 2 and 3, for hose and tube inspection and repair procedures.

Heater Fuel System - continued

c. Refer to WP 0077 00 for corrosion removal and treatment.
d. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

2. Heater Solenoid Valve Assembly
   a. Inspect heater solenoid valve for looseness, missing or damaged hardware, evidence of corrosion, or evidence of leaks.
   b. Inspect electrical connection for looseness, missing or damaged hardware, evidence of overheating, or evidence of corrosion.
   c. Inspect heater fuel feed hoses, attaching hardware, and fittings in the Right Aft Intertank area for looseness, missing or damaged hardware, evidence of overheating, and for evidence of leaks.
   d. Refer to WP 0003 00, Table 3, for hose inspection and repair procedures.
   e. Refer to WP 0003 00, Tables 4 and 5, for electrical wiring and electrical component inspection and repair procedures.
   f. Refer to WP 0077 00 for corrosion removal and treatment.
   g. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

FERRY FUEL SYSTEM

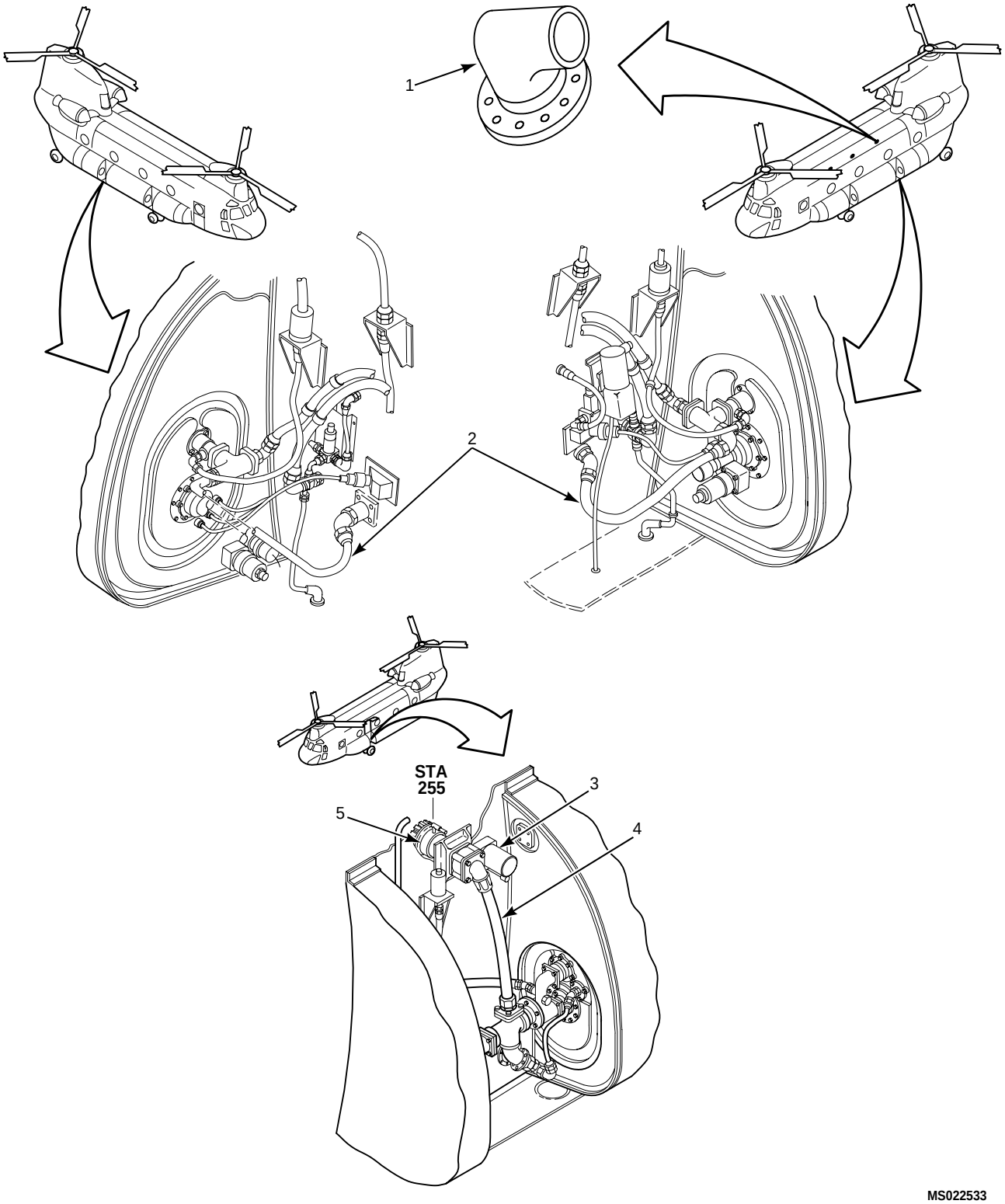


Figure 3. Ferry Fuel System

FERRY FUEL SYSTEM - continued

NOTE

The item numbers in Figure 3 correspond to the respective item numbers in the following INSPECTION REQUIREMENTS for Ferry Fuel System.

INSPECTION REQUIREMENTS

Ferry Fuel System

1. Ferry Fuel System Vents
   a. Inspect vent fittings located on the top left side of the cabin at sta 240, sta 360, and sta 460 for looseness, missing damaged hardware, or evidence of corrosion.
   b. Refer to WP 0077 00 for corrosion removal and treatment.
   c. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

2. Ferry Fuel System Fittings
   a. Inspect left and right fittings inside of the cabin at sta 375, WL minus 10, for looseness, missing or damaged hardware, evidence of corrosion, or evidence of leaks.
   b. Refer to WP 0003 00, Tables 2 and 3, for tubing and hose inspection and repair procedures.
   c. Refer to WP 0077 00 for corrosion removal and treatment.
   d. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

3. ERFS II Refuel Valve
   a. Inspect refuel valve for looseness, missing or damaged hardware, evidence of corrosion, or evidence of leaks.
   b. Inspect electrical connector and wiring for damage and security.
   c. Refer to WP 0003 00, Tables 4 and 5, for electrical wiring and electrical component inspection and repair procedures.
   d. Refer to WP 0077 00 for corrosion removal and treatment.
   e. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

4. ERFS II Fuel Feed Hose
   a. Inspect fuel feed hose for looseness, damage, evidence of corrosion, or evidence of leaks.
   b. Refer to WP 0003 00, Table 3, for hose inspection and repair procedures.
   c. Refer to WP 0077 00 for corrosion removal and treatment.
   d. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

5. ERFS II Coupling Assembly
   a. Inspect coupling assembly for looseness, missing or damaged hardware, evidence of corrosion, or evidence of leaks.
   b. Refer to WP 0077 00 for corrosion removal and treatment.
   c. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

FUEL SYSTEM, RH INTERTANK AREA

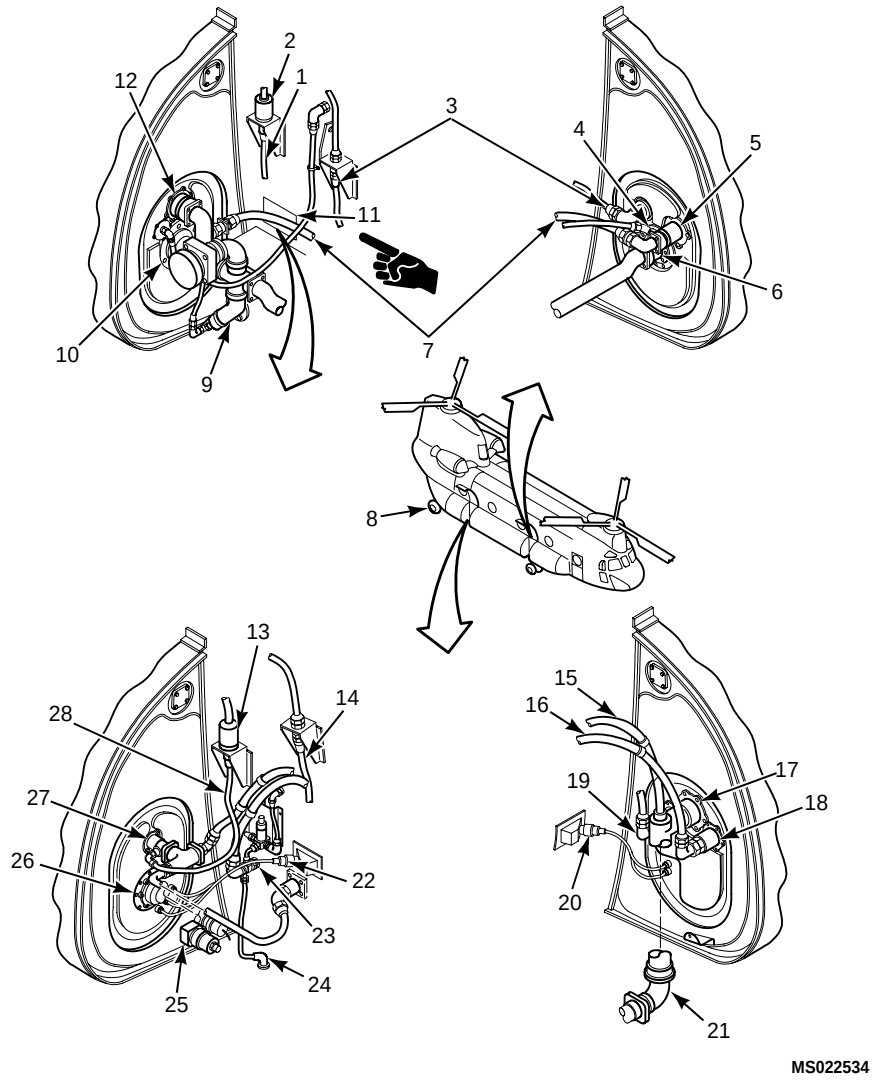


Figure 4. Fuel System, RH Intertank Area

NOTE

The item numbers in Figure 4 correspond to the respective item numbers in the following INSPECTION REQUIREMENTS for Fuel System RH Intertank Area.

INSPECTION REQUIREMENTS

Fuel System, RH Intertank Area

1. Forward Tank Fuel Pressure Switch Hose Assembly
   a. Inspect hose for security, damage, evidence of corrosion, or evidence of leaks.
   b. Refer to WP 0077 00 for corrosion removal and treatment.
   c. Refer to WP 0003 00, Table 3, for hose inspection and repair procedures
   d. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

Fuel System, RH Intertank Area - continued

2. Forward Tank Pressure Switch
   a. Inspect fuel pressure switch for security, missing or damaged hardware, evidence of corrosion, or evidence of leaks.
   b. Inspect fuel pressure switch bracket for security, evidence of corrosion, or damage.
   c. Inspect fuel pressure switch electrical connections and wiring for security, missing or damaged hardware.
   d. Refer to WP 0003 00, Tables 4 and 5, for electrical wiring and electrical component inspection and repair procedures.
   e. Refer to WP 0077 00 for corrosion removal and treatment.
   f. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

3. Forward Tank Vent and Hose Assembly
   a. Inspect vent and hose assembly for security, damage, evidence of corrosion, or evidence of leaks.
   b. Refer to WP 0003 00, Tables 2 and 3, for tubing and hose inspection and repair procedures.
   c. Refer to WP 0077 00 for corrosion removal and treatment.
   d. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

4. Forward Tank Electrical Wiring Harness Assembly
   a. Inspect wiring harness assembly and electrical connectors for security, damage, or evidence of corrosion.
   b. Refer to WP 0003 00, Tables 4 and 5, for electrical wiring and electrical component inspection and repair procedures.
   c. Refer to WP 0077 00 for corrosion removal and treatment.
   d. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

5. Forward Tank Fuel Transfer Coupling Assembly
   a. Inspect coupling assembly for security, missing or damaged hardware, evidence of corrosion, or evidence of leaks.
   b. Refer to WP 0077 00 for corrosion removal and treatment.
   c. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

6. Forward Tank Pressure Refueling Coupling Assembly
   a. Inspect coupling for security, missing or damaged hardware, evidence of corrosion, or evidence of leaks.
   b. Refer to WP 0077 00 for corrosion removal and treatment.
   c. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

7. Fuel Transfer Hose Assembly
   a. Inspect hose assembly for security, damage, evidence of corrosion, or evidence of leaks.
   b. Refer to WP 0003 00, Table 3, for hose inspection and repair procedures.
   c. Refer to WP 0077 00 for corrosion removal and treatment.
   d. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

8. Aft Tank Fuel Vent Coupling and Hose Assemblies
   a. Inspect vent assembly for security, missing or damaged hardware, evidence of corrosion, or evidence of leaks.
   b. Inspect hose for security, damage, evidence of corrosion, or evidence of leaks.
   c. Refer to WP 0003 00, Table 3, for hose inspection and repair procedures.
   d. Refer to WP 0077 00 for corrosion removal and treatment.
   e. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

Fuel System, RH Intertank Area - continued

9. Pressure Refueling Manifold
   a. Inspect manifold assembly for security, damage, evidence of corrosion, or evidence of leaks.
   b. Inspect manifold plumbing for security, missing or damaged hardware, evidence of corrosion, or evidence of leaks.
   c. Refer to WP 0077 00 for corrosion removal and treatment.
   d. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

10. Main Tank Pressure Refueling Coupling Assembly
   a. Inspect coupling assembly for security, damage, evidence of corrosion, or evidence of leaks.
   b. Refer to WP 0077 00 for corrosion removal and treatment.
   c. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

11. Main Tank Forward Electrical Wiring Harness Assembly
   a. Inspect wiring harness assembly and electrical connectors for security, damage, or evidence of corrosion.
   b. Refer to WP 0003 00, Tables 4 and 5, for electrical wiring and electrical component inspection and repair procedures.
   c. Refer to WP 0077 00 for corrosion removal and treatment.
   d. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

12. Split Manifold Pressure Refueling Coupling Assembly
   a. Inspect pressure refueling coupling assembly for security, damage, evidence of corrosion, or evidence of leaks.
   b. Refer to WP 0077 00 for corrosion removal and treatment.
   c. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

13. Aft Tank Pressure Switch
   a. Inspect fuel pressure switch and electrical connectors for security, missing or damaged hardware, evidence of corrosion, or evidence of leaks.
   b. Inspect fuel pressure switch bracket for security, damage or evidence of corrosion.
   c. Refer to WP 0003 00, Tables 4 and 5, for electrical wiring and electrical component inspection and repair procedures.
   d. Refer to WP 0077 00 for corrosion removal and treatment.
   e. Refer to TM 55-1520-24-23 for accept/reject criteria and repair procedures.

14. Main Tank Fuel Vent Hose Assembly
   a. Inspect hose for security, damage, evidence of corrosion, or evidence of leaks.
   b. Refer to WP 0077 00 for corrosion removal and treatment.
   c. Refer to WP 0003 00, Table 3, for hose inspection and repair procedures.
   d. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

15. Fuel Transfer Hose Assembly
   a. Inspect hose for security, damage, evidence of corrosion, or evidence of leaks.
   b. Refer to WP 0003 00, Table 3, for hose inspection and repair procedures.
   c. Refer to WP 0077 00 for corrosion removal and treatment.
   d. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

Fuel System, RH Intertank Area - continued

16. Engine Fuel Feed Hose Assembly
    a. Inspect hose for security, damage, evidence of corrosion, or evidence of leaks.
    b. Refer to WP 0003 00, Table 3, for hose inspection and repair procedures.
    c. Refer to WP 0077 00 for corrosion removal and treatment.
    d. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

17. Main Tank Fuel Transfer Coupling Assembly
    a. Inspect coupling for security, missing or damaged hardware, evidence of corrosion, or evidence of leaks.
    b. Refer to WP 0077 00 for corrosion removal and treatment.
    c. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

18. Engine Fuel Feed Coupling Assembly
    a. Inspect coupling for security, missing or damaged hardware, evidence of corrosion, or evidence of leaks.
    b. Refer to WP 0077 00 for corrosion removal and treatment.
    c. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

19. Main Tank Fuel Vent Coupling Assembly
    a. Inspect vent assembly for security, missing or damaged hardware, evidence of corrosion, or evidence of leaks.
    b. Refer to WP 0077 00 for corrosion removal and treatment.
    c. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

20. Main Tank Aft Electrical Wiring Harness Assembly
    a. Inspect wiring harness assembly and electrical connectors for security, damage, or evidence of corrosion.
    b. Refer to WP 0003 00, Tables 4 and 5, for electrical wiring and electrical component inspection and repair procedures.
    c. Refer to WP 0077 00 for corrosion removal and treatment.
    d. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

21. Aft Tank Pressure Refueling Manifold Assembly
    a. Inspect manifold assembly for security, damage, evidence of corrosion, or evidence of leaks.
    b. Inspect manifold plumbing for security, missing or damaged hardware, evidence of corrosion, or evidence of leaks.
    c. Refer to WP 0003 00, Table 2, for tubing inspection and repair procedures.
    d. Refer to WP 0077 00 for corrosion removal and treatment.
    e. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

22. Aft Tank Electrical Wiring Harness Assembly
    a. Inspect wiring harness assembly and electrical connectors for security, damage, or evidence of corrosion.
    b. Refer to WP 0003 00, Tables 4 and 5, for electrical wiring and electrical component inspection and repair procedures.
    c. Refer to WP 0077 00 for corrosion removal and treatment.
    d. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

23. Engine Fuel Feed Cross Connector
    a. Inspect fuel feed cross connector for security, missing or damaged hardware, evidence of corrosion, or evidence of leaks.

Fuel System, RH Intertank Area - continued

b. Refer to WP 0077 00 for corrosion removal and treatment.
c. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

24. Engine Fuel Feed Drain Valve
    a. Inspect drain valve for security, missing or damaged hardware, or evidence of corrosion.
    b. Inspect hose assembly for security, missing or damaged hardware, evidence of corrosion, or evidence of leaks.
    c. Refer to WP 0003 00, Table 3, for hose inspection and repair procedures.
    d. Refer to WP 0077 00 for corrosion removal and treatment.
    e. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

25. Aft Tank Motor Operated Valve
    a. Inspect valve for security, missing or damaged hardware, evidence of corrosion, or evidence of leaks.
    b. Inspect valve electrical connections for security, damage, or evidence of corrosion.
    c. Refer to WP 0077 00 for corrosion removal and treatment.
    d. Refer to WP 0003 00, Tables 4 and 5, for electrical wiring and electrical component inspection and repair procedures.
    e. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.
    f. Repair per DMWR 1-4810-229 or DMWR 55-1680-360 when authorized by the Contracting Officer.

26. Aft Tank Pressure Refueling Coupling Assembly
    a. Inspect coupling for security, missing or damaged hardware, evidence of corrosion, or evidence of leaks.
    b. Refer to WP 0077 00 for corrosion removal and treatment.
    c. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

27. Aft Tank Fuel Transfer Coupling Assembly
    a. Inspect coupling assembly for security, missing or damaged hardware, evidence of corrosion, or evidence of leaks.
    b. Refer to WP 0077 00 for corrosion removal and treatment.
    c. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

28. Aft Tank Pressure Switch Fuel Pressure Hose
    a. Inspect hose for security, damage, evidence of corrosion, or evidence of leaks.
    b. Refer to WP 0003 00, Table 3, for hose inspection and repair procedures.
    c. Refer to WP 0077 00 for corrosion removal and treatment.
    d. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

FUEL SYSTEM LH INTERTANK AREA

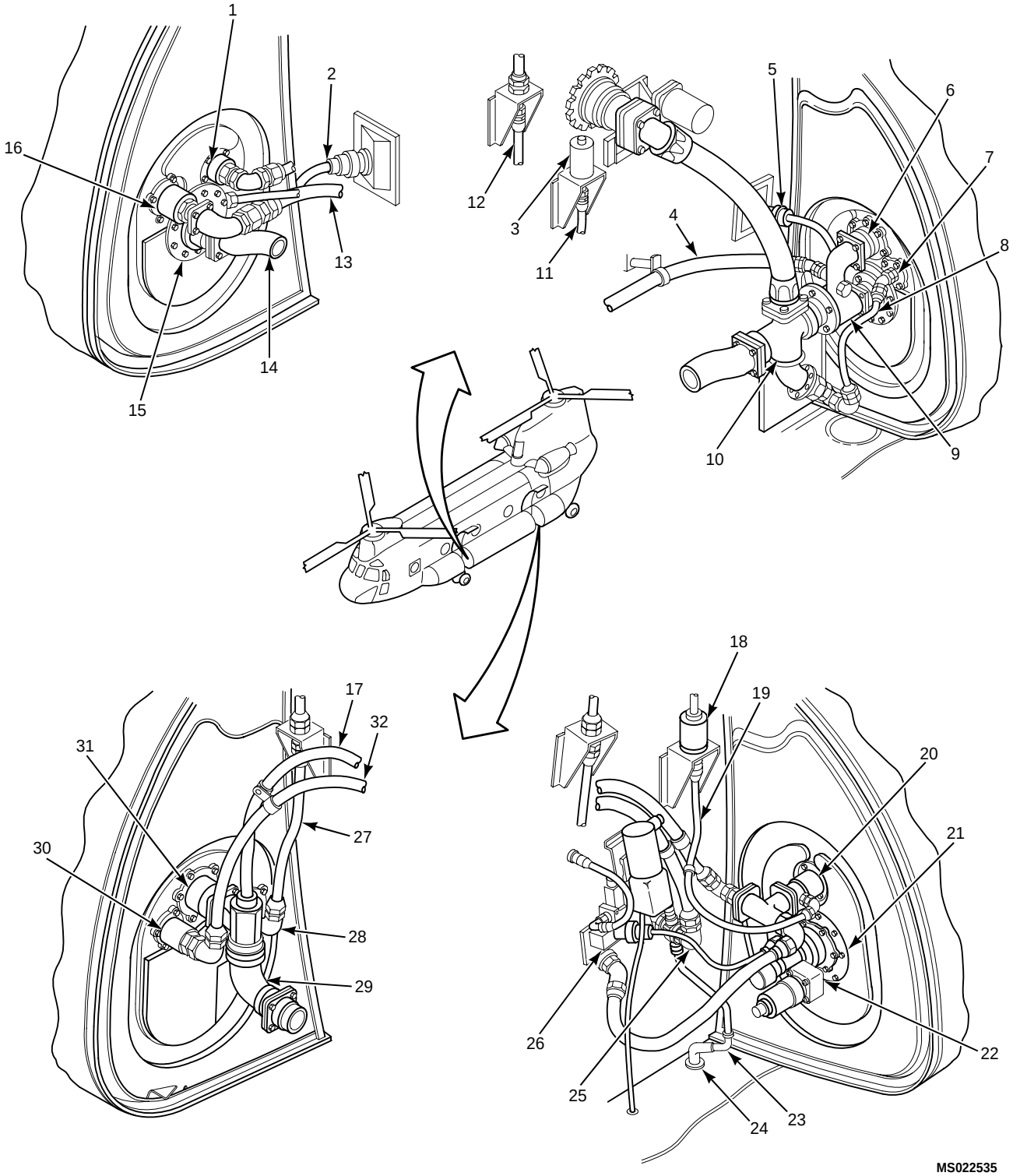


Figure 5. Fuel System, LH Intertank Area

FUEL SYSTEM LH INTERTANK AREA – continued

NOTE

The item numbers in Figure 5 correspond to the respective item numbers in the following INSPECTION REQUIREMENTS for Fuel System LH Intertank Area.

INSPECTION REQUIREMENTS

Fuel System, LH Intertank Area

1. Forward Tank Fuel Vent Assembly
   a. Inspect vent assembly for security, missing or damaged hardware evidence of corrosion, or evidence of leaks.
   b. Refer to WP 0003 00, Tables 2 and 3, for tubing and hose inspection and repair procedures.
   c. Refer to WP 0077 00 for corrosion removal and treatment.,
   d. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

2. Forward Tank Electrical Wiring Harness Assembly
   a. Inspect wiring harness assembly and electrical connectors for security, damage, or evidence of corrosion.
   b. Refer to WP 0003 00, Tables 4 and 5, for electrical wiring and electrical component inspection and repair procedures.
   c. Refer to WP 0077 00 for corrosion removal and treatment.
   d. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

3. Forward Tank Fuel Pressure Switch
   a. Inspect fuel pressure switch and electrical connectors for security, missing or damaged hardware, evidence of corrosion, or evidence of leaks.
   b. Inspect fuel pressure switch bracket for security, evidence of corrosion, or damage.
   c. Refer to WP 0003 00, Tables 4 and 5, for electrical wiring and electrical component inspection and repair procedures.
   d. Refer to WP 0077 00 for corrosion removal and treatment.
   e. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

4. Forward Tank Fuel Transfer Hose Assembly
   a. Inspect hose assembly for security, damage, evidence of corrosion, or evidence of leaks.
   b. Refer to WP 0003 00, Table 3, for hose inspection and repair procedures.
   c. Refer to WP 0077 00 for corrosion removal and treatment.
   d. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

5. Main Tank Electrical Wiring Harness Assembly
   a. Inspect wiring harness assembly and electrical connectors for security, damage, or evidence of corrosion.
   b. Refer to WP 0003 00, Tables 4 and 5, for electrical wiring and electrical component inspection and repair.
   c. Refer to WP 0077 00 for corrosion removal and treatment.
   d. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

6. Split Manifold Pressure Refueling Coupling Assembly
   a. Inspect pressure refueling coupling assembly for security, damage, evidence of corrosion, or evidence of leaks.

Fuel System, LH Intertank Area - continued

b. Refer to WP 0077 00 for corrosion removal and treatment.
c. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

7. Jet Pump Coupling Assembly
   a. Inspect jet pump coupling assembly for security, damage, evidence of corrosion, or evidence of leaks.
   b. Refer to WP 0077 00 for corrosion removal and treatment.
   c. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

8. Main Tank Pressure Refueling Coupling Assembly
   a. Inspect coupling assembly for security, damage, evidence of corrosion, or evidence of leaks.
   b. Refer to WP 0077 00 for corrosion removal and treatment.
   c. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

9. Jet Pump Hose Assembly
   a. Inspect hose assembly for security, damage, evidence of corrosion, or evidence of leaks.
   b. Refer to WP 0003 00, Tables 2 and 3, for tubing and hose inspection and repair procedures.
   c. Refer to WP 0077 00 for corrosion removal and treatment.
   d. Refer to TM 55-1520-240-23 for accept/reject criteria.

10. Pressure Refueling Manifold
    a. Inspect manifold assembly for security, damage, evidence of corrosion, or evidence of leaks.
    b. Inspect manifold plumbing for security, missing or damaged hardware, evidence of overheating, evidence of corrosion, or evidence of leaks.
    c. Refer to WP 0003 00, Tables 2 and 3, for tubing and hose inspection and repair procedures.
    d. Refer to WP 0077 00 for corrosion removal and treatment.
    e. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

11. Forward Tank Fuel Pressure Switch Hose Assembly
    a. Inspect hose for security, damage, evidence of corrosion, or evidence of leaks.
    b. Refer to WP 0003 00, Table 3, for hose inspection and repair procedures.
    c. Refer to WP 0077 00 for corrosion removal and treatment.
    d. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

12. Forward Tank Fuel Vent Hose Assembly
    a. Inspect hose for security, damage, evidence of corrosion, or evidence of leaks.
    b. Refer to WP 0003 00, Table 3, for hose inspection and repair procedures.
    c. Refer to WP 0077 00 for corrosion removal and treatment.
    d. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

13. Forward Tank Fuel Transfer Hose Assembly
    a. Inspect hose assembly for security, damage, evidence of corrosion, or evidence of leaks.
    b. Refer to WP 0003 00, Table 3, for hose inspection and repair procedures.
    c. Refer to WP 0077 00 for corrosion removal and treatment.
    d. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

Fuel System, LH Intertank Area - continued

14. Pressure Refueling Manifold
    a. Inspect manifold for security, damage, evidence of corrosion, or evidence of leaks.
    b. Inspect manifold plumbing for security, missing or damaged hardware, evidence of overheating, evidence of corrosion, or evidence of leaks.
    c. Refer to WP 0003 00, Tables 2 and 3, for tubing and hose inspection and repair procedures.
    d. Refer to WP 0077 00 for corrosion removal and treatment.
    e. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

15. Forward Tank Pressure Refueling Coupling Assembly
    a. Inspect coupling for security, missing or damaged hardware, evidence of corrosion, or evidence of leaks.
    b. Refer to WP 0077 00 for corrosion removal and treatment.
    c. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

16. Forward Tank Fuel Transfer Coupling Assembly
    a. Inspect coupling assembly for security, missing or damaged hardware, evidence of corrosion, or evidence of leaks.
    b. Refer to WP 0077 00 for corrosion removal and treatment.
    c. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

17. Fuel Transfer Hose Assembly
    a. Inspect hose for security, damage, evidence of corrosion, or evidence of leaks.
    b. Refer to WP 0003 00, Table 3, for hose inspection and repair procedures.
    c. Refer to WP 0077 00 for corrosion removal and treatment.
    d. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

18. Aft Tank Fuel Pressure Switch
    a. Inspect fuel pressure switch and electrical connectors for security, missing or damaged hardware, evidence of corrosion, or evidence of leaks.
    b. Inspect fuel pressure switch bracket for security, damage, or evidence of corrosion.
    c. Refer to WP 0003 00, Tables 4 and 5, for electrical wiring and electrical component inspection and repair procedures.
    d. Refer to WP 0077 00 for corrosion removal and treatment.
    e. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

19. Aft Tank Fuel Pressure Switch Hose Assembly
    a. Inspect hose for security, damage, evidence of corrosion, or evidence of leaks.
    b. Refer to WP 0003 00, Table 3, for hose inspection and repair procedures.
    c. Refer to WP 0077 00 for corrosion removal and treatment.
    d. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

20. Aft Tank Fuel Transfer Coupling Assembly
    a. Inspect coupling for security, missing or damaged hardware, evidence of corrosion, or evidence of leaks.
    b. Refer to WP 0077 00 for corrosion removal and treatment
    c. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

21. Aft Tank Pressure Refueling Coupling Assembly
    a. Inspect coupling for security, missing or damaged hardware, evidence of corrosion, or evidence of leaks.

Fuel System, LH Intertank Area - continued

b. Refer to WP 0077 00 for corrosion removal and treatment.
c. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

22 Aft Tank Motor Operated Valve
a. Inspect valve and electrical connectors for security, missing or damaged hardware, evidence of overheating, evidence of corrosion, or evidence of leaks.
b. Refer to WP 0003 00, Tables 4 and 5, for electrical wiring and electrical component inspection and repair procedures.
c. Refer to WP 0077 00 for corrosion removal and treatment.
d. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.
e. Repair per DMWR 1-4810-229 or DMWR 55-1680-360 when authorized by the Contracting Officer.

23. Engine Fuel Feed Drain Hose
a. Inspect hose for security, damage, evidence of corrosion, or evidence of leaks.
b. Refer to WP 0003 00, Table 3, for hose inspection and repair procedures.
c. Refer to WP 0077 00 for corrosion removal and treatment.
d. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

24. Engine Fuel Feed Drain Fitting
a. Inspect drain fitting for security, missing or damaged hardware, or evidence of corrosion.
b. Refer to WP 0077 00 for corrosion removal and treatment.
c. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

25. Engine Fuel Feed Cross Connector
a. Inspect cross connector for security, missing or damaged hardware,, evidence of corrosion, or evidence of leaks.
b. Refer to WP 0003 00, Table 3, for hose inspection and repair procedures.
c. Refer to WP 0077 00 for corrosion removal and treatment.
d. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

26. Aft/Main Tank Electrical Wiring Harness Assemblies
a. Inspect wiring harness assemblies and electrical connectors for security, damage, or evidence of corrosion.
b. Refer to WP 0003 00, Tables 4 and 5, for electrical wiring and electrical component inspection and repair.
c. Refer to WP 0077 00 for corrosion removal and treatment.
d. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

27. Main Tank Fuel Vent Hose Assembly
a. Inspect hose for security, damage, evidence of corrosion, or evidence of leaks.
b. Refer to WP 0003 00, Table 3, for hose inspection and repair procedures.
c. Refer to WP 0077 00 for corrosion removal and treatment.
d. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

28. Main Tank Fuel Vent Coupling Assembly
a. Inspect vent-coupling assembly for security, missing or damaged hardware, evidence of corrosion, or evidence of leaks.

Fuel System, LH Intertank Area - continued

b. Refer to WP 0077 00 for corrosion removal and treatment
c. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

29. Aft Tank Pressure Refueling Manifold Assembly
    a. Inspect manifold assembly for security, damage, evidence of corrosion, or evidence of leaks.
    b. Inspect manifold plumbing for security, missing or damaged hardware, evidence of corrosion, or evidence of leaks.
    c. Refer to WP 0003 00, Tables 2 and 3, for tubing and hose inspection and repair procedures.
    d. Refer to WP 0077 00 for corrosion removal and treatment.
    e. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

30. Engine Fuel Feed Coupling Assembly
    a. Inspect coupling for security, missing or damaged hardware, evidence of corrosion, or evidence of leaks.
    b. Refer to WP 0077 00 for corrosion removal and treatment.
    c. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

31. Main Tank Fuel Transfer Coupling Assembly
    a. Inspect coupling for security, missing or damaged hardware, evidence of corrosion, or evidence of leaks.
    b. Refer to WP 0077 00 for corrosion removal and treatment.
    c. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

32. Engine Fuel Feed Hose Assembly
    a. Inspect hose for security, damage, evidence of corrosion, or evidence of leaks.
    b. Refer to WP 0003 00, Table 3, for hose inspection and repair procedures.
    c. Refer to WP 0077 00 for corrosion removal and treatment.
    d. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

FUEL TANK ASSEMBLIES

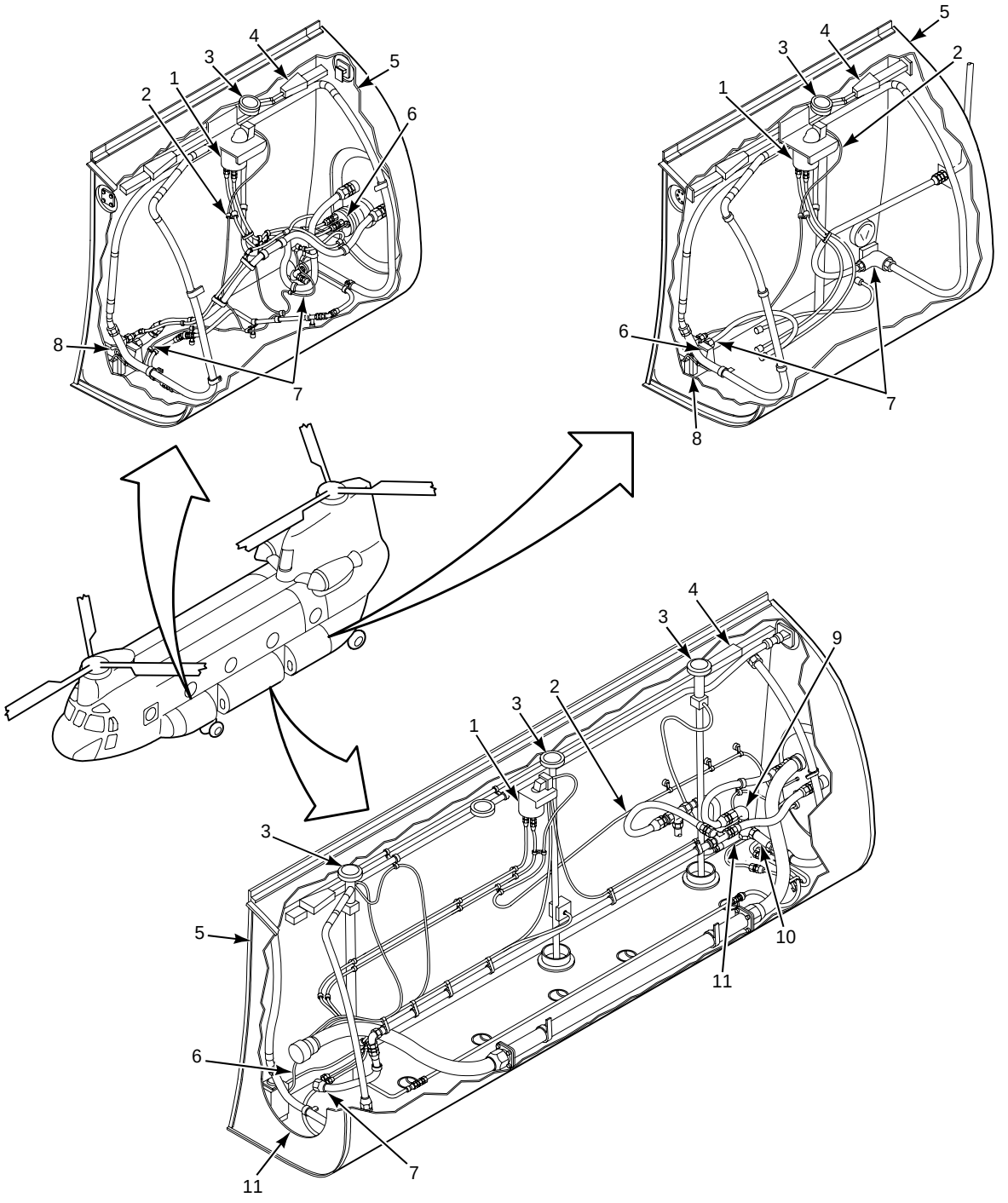


Figure 6. Fuel Tank Assemblies

FUEL TANK ASSEMBLIES – continued

NOTE

The item numbers in Figure 6 correspond to the respective item numbers in the following INSPECTION REQUIREMENTS for Fuel Tank Assemblies.

INSPECTION REQUIREMENTS

Fuel Tank Assemblies

1. Forward, Aft, and Main Tank High Level Control Valve
   a. Inspect valve for security, missing or damaged hardware, or evidence of corrosion.
   b. Inspect electrical wiring for security, missing or damaged hardware, evidence of overheating, or evidence of corrosion.
   c. Refer to WP 0003 00, Tables 4 and 5, for electrical wiring and electrical component inspection and repair procedures.
   d. Refer to WP 0077 00 for corrosion removal and treatment.
   e. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

2. Forward, Aft, and Main Tank Electrical Wiring
   a. Inspect electrical wiring for security, missing or damaged hardware, evidence of overheating, or evidence of corrosion.
   b. Refer to WP 0003 00, Tables 4 and 5, for electrical wiring and electrical component inspection and repair procedures.
   c. Refer to WP 0077 00 for corrosion removal and treatment.
   d. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

3. Forward, Aft, and Main Tank Fuel Quantity Probe
   a. Inspect probes for security, missing or damaged hardware, or evidence of corrosion.
   b. Inspect electrical wiring for security, missing or damaged hardware, evidence of overheating, or evidence of corrosion.
   c. Refer to WP 0003 00, Tables 4 and 5, for electrical wiring and electrical component inspection and repair procedures.
   d. Refer to WP 0077 00 for corrosion removal and treatment.
   e. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

4. Forward, Aft, and Main Tank Fuel Vent System
   a. Inspect vent system for security, missing or damaged hardware, or evidence of corrosion.
   b. Refer to WP 0003 00, Tables 2 and 3, for tubing and hose inspection and repair procedures.
   c. Refer to WP 0077 00 for corrosion removal and treatment.
   d. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

5. Forward, Aft, and Main Fuel Cells
   a. Clean, inspect, leak test, and repair in accordance with TM 55-1520-240-23.
   b. Refer to WP 0077 00 for corrosion removal and treatment.
   c. Refer to T.O. 1-1-3 for storage and preservation of cells when defueled.

6. Forward, Aft, and Main Tank Fuel Shutout Valve
   a. Inspect valve for security, missing or damaged hardware, or evidence of corrosion.

Fuel Tank Assemblies - continued

b. Inspect electrical wiring for security, missing or damaged hardware, evidence of overheating or evidence of corrosion.
c. Refer to WP 0003 00, Tables 4 and 5, for electrical wiring and electrical component inspection and repair procedures.
d. Refer to WP 0077 00 for corrosion removal and treatment.
e. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

7. Forward, Aft, and Main Tank Fuel Drain Valves
   a. Inspect drain valves for security, missing or damaged hardware, , evidence of corrosion, or evidence of leaks.
   b. Refer to WP 0077 00 for corrosion removal and treatment.
   c. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

8. Forward and Aft Tank Boost Pump Assemblies
   a. Inspect pump assemblies for security, missing or damaged hardware, evidence of overheating, or evidence of corrosion.
   b. Inspect electrical wiring for security, missing or damaged hardware, evidence of overheating or evidence of corrosion.
   c. Refer to WP 0003 00, Tables 4 and 5, for electrical wiring and electrical component inspection and repair procedures.
   d. Refer to WP 0077 00 for corrosion removal and treatment.
   e. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.
   f. Repair Boost Pump per DMWR 55-2915-296 when authorized by the Contracting Officer.

9. Main Tank Engine Feed Suction System
   a. Inspect check valve/bell-mouth assembly for security, missing or damaged hardware, evidence of corrosion, and for proper flow direction.
   b. Refer to WP 0003 Table 2 for tubing inspection and repair procedures.
   c. Refer to WP 0077 00 for corrosion removal and treatment.
   d. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

10. Main Tank Fuel Shutout Valve
    a. Inspect valve for security, missing or damaged hardware, or evidence of corrosion.
    b. Refer to WP 0077 00 for corrosion removal and treatment.
    c. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

11. Main Tank Boost Pump/Delta Pressure Check Valve
    a. Inspect pump assembly for security, missing or damaged hardware, evidence of overheating, or evidence of corrosion.
    b. Inspect check valve for security, damage, corrosion, and for proper flow direction.
    c. Inspect wiring for securing and damage.
    d. Refer to WP 0003 00, Tables 4 and 5, for electrical wiring and electrical component inspection and repair procedures.
    e. Refer to WP 0077 00 for corrosion removal and treatment.
    f. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.
    g. Repair Boost Pump per DMWR 55-2915-296 when authorized by the Contracting Officer.

FUEL DELIVERY SYSTEM

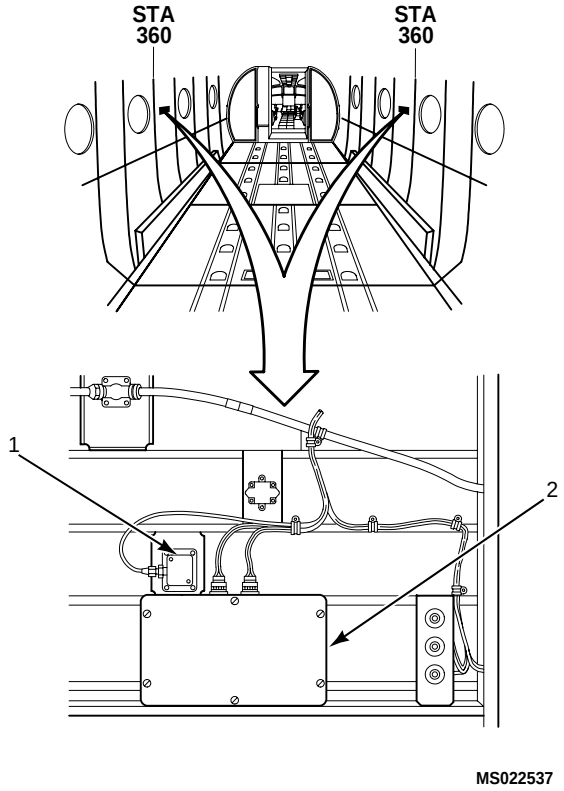


Figure 7. Fuel Delivery System

NOTE

The item numbers in Figure 7 correspond to the respective item numbers in the following INSPECTION REQUIREMENTS for Fuel Delivery System.

INSPECTION REQUIREMENTS

Fuel Delivery System

1. Thermistor Control Unit
   a. Inspect control unit for security, missing or damaged hardware, evidence of overheating, or evidence of corrosion.
   b. Inspect wiring for security and damage.
   c. Refer to WP 0003 00, Tables 4 and 5, for electrical wiring and electrical component inspection and repair procedures.
   d. Refer to WP 0077 00 for corrosion removal and treatment.
   e. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.
   f. Repair per DWMR 55-6680-333 when authorized by the Contracting Officer.

2. Fuel Pump Control Relay Box
   a. Inspect relay control box for security, missing or damaged hardware, evidence of overheating, or evidence of corrosion.
   b. Inspect connectors and wiring for security, damage, or evidence of corrosion.

Fuel Delivery System – continued

c. Refer to WP 0003 00, Tables 4 and 5, for electrical wiring and electrical component inspection and repair procedures.
d. Refer to WP 0077 00 for corrosion removal and treatment.
e. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

FUEL LOW LEVEL WARNING SYSTEM

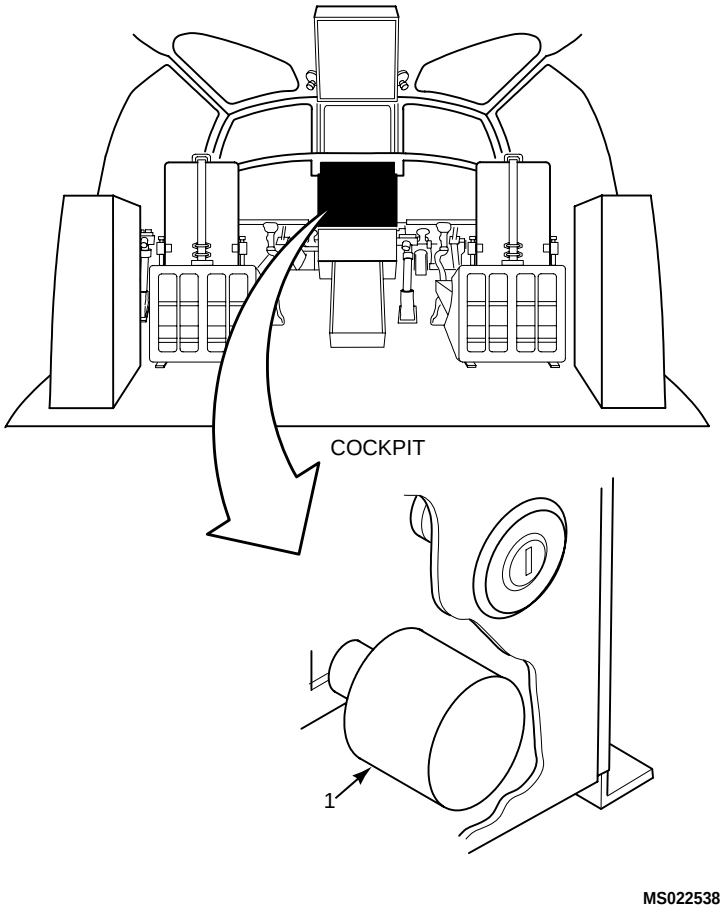


Figure 8. Fuel Low Level Warning System

NOTE

The item number in Figure 8 reflects the Dual Control Unit in the following INSPECTION REQUIREMENTS for Fuel Low Level Warning System.

INSPECTION REQUIREMENTS

Fuel Low Level Warning System

Dual Control Unit

1. Inspect control unit for security, missing or damaged hardware, evidence of overheating, or evidence of corrosion.
2. Inspect electrical wiring and connectors for security, damage, or evidence of corrosion.

Fuel Low Level Warning System - continued

3. Refer to WP 0003 00, Tables 4 and 5, for electrical wiring and electrical component inspection and repair procedures.
4. Refer to WP 0077 00 for corrosion removal and treatment.
5. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

ENGINE FUEL FEED SYSTEM

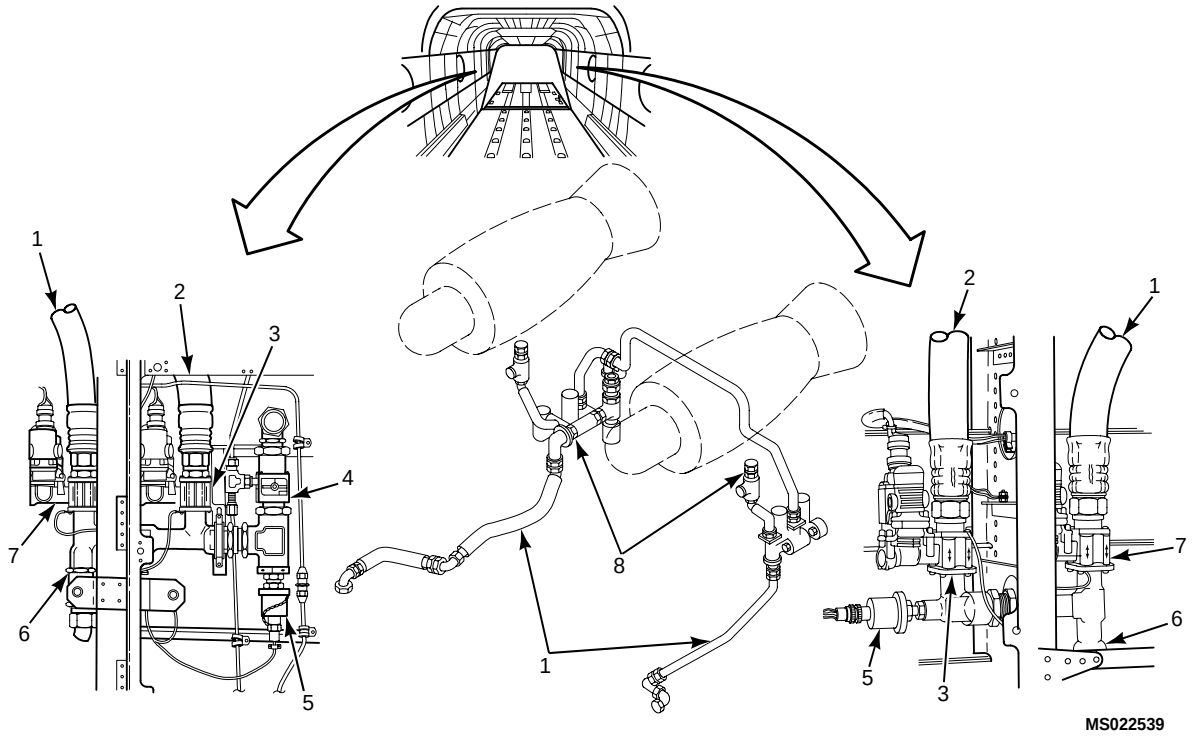


Figure 9. Engine Fuel Feed System

NOTE

The item numbers in Figure 9 correspond to the respective item numbers in the following INSPECTION REQUIREMENTS for Engine Fuel Feed System.

INSPECTION REQUIREMENTS

Engine Fuel Feed System

1. No. 1 and No. 2 Engine Fuel Feed Lines
   a. Inspect hose assemblies for security, missing or damaged hardware, leaks, or evidence of corrosion.
   b. Refer to WP 0003 00, Table 3, for hose inspection and repair procedures.
   c. Refer to WP 0077 00 for corrosion removal and treatment.
   d. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

2. Engine Crossfeed Line
   a. Inspect hose assemblies for security, missing or damaged hardware, leaks, or evidence of corrosion.
   b. Refer to WP 0003 00, Table 3, for hose inspection and repair procedures.

Engine Fuel Feed System - continued

c. Refer to WP 0077 00 for corrosion removal and treatment.
d. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

3. No. 1 and No. 2 Engine Crossfeed Motor Valve
   a. Inspect valve for security, missing or damaged hardware, evidence of overheating, leaks, or evidence of corrosion.
   b. Inspect electrical wiring and connectors for security, damage, or evidence of corrosion.
   c. Refer to WP 0003 00, Tables 4 and 5, for electrical wiring and electrical component inspection and repair procedures.
   d. Refer to WP 0077 00 for corrosion removal and treatment.
   e. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.
   f. Repair per DMWR 55-2915-168 when authorized by the Contracting Officer.

4. Defueling Valve
   a. Inspect valve for security, missing or damaged hardware, leaks, or evidence of corrosion.
   b. Refer to WP 0077 00 for corrosion removal and treatment.
   c. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

5. No. 1 and No. 2 Engine Fuel Pressure Switch
   a. Inspect pressure switch for security, missing or damaged hardware, evidence of overheating, leaks, or evidence of corrosion.
   b. Inspect electrical wiring and connectors for security, damage, or evidence of corrosion.
   c. Refer to WP 0003 00, Tables 4 and 5, for electrical wiring and electrical component inspection and repair procedures.
   d. Refer to WP 0077 00 for corrosion removal and treatment.
   e. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

6. No. 1 and No. 2 Engine Fuel Check Valve
   a. Inspect check valve for security, missing or damaged hardware, leaks, or evidence of corrosion.
   b. Refer to WP 0077 00 for corrosion removal and treatment.
   c. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

7. No. 1 and No. 2 Engine Fuel Motor Valve
   a. Inspect valve for security, missing or damaged hardware, evidence of overheating, leaks, or evidence of corrosion.
   b. Inspect electrical wiring and connectors for security, damage, or evidence of corrosion.
   c. Refer to WP 0003 00, Tables 4 and 5, for electrical wiring and electrical component inspection and repair procedures.
   d. Refer to WP 0077 00 for corrosion removal and treatment.
   e. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.
   f. Repair per DMWR 55-2915-168 when authorized by the Contracting Officer.

8. No. 1 and No. 2 Engine Fuel Flow Transmitter
   a. Inspect fuel flow transmitters for security, missing or damaged hardware, evidence of overheating, leaks, or evidence of corrosion.
   b. Inspect electrical wiring and connectors for security, damage, or evidence of corrosion.

Engine Fuel Feed System - continued

c. Refer to WP 0003 00, Tables 4 and 5, for electrical wiring and electrical component inspection and repair procedures.
d. Refer to WP 0077 00 for corrosion removal and treatment.
e. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.
f. Repair per DMWR 55-6620-326 when authorized by the Contracting Officer.

APU FUEL FEED SYSTEM

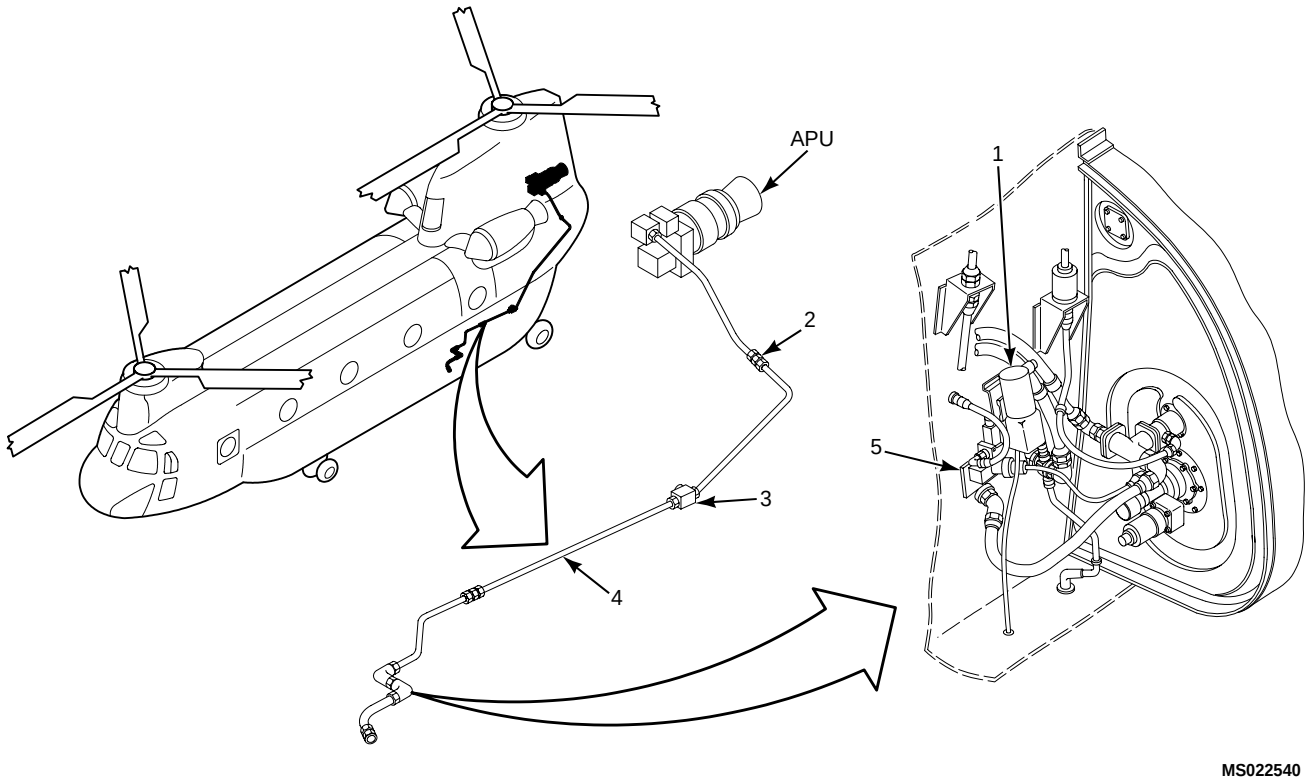


Figure 10. APU Fuel Feed System

NOTE

The item numbers in Figure 10 correspond to the respective item numbers in the following INSPECTION REQUIREMENTS for APU Fuel Feed System.

INSPECTION REQUIREMENTS

APU Fuel Feed System

1. APU Fuel Boost Pump
   a. Inspect boost pump for security, missing or damaged hardware, evidence of overheating, evidence of corrosion, or evidence of leaks.
   b. Inspect APU boost pump fuel hose assembly for security, damage, evidence of corrosion, or evidence of leaks.
   c. Inspect electrical wiring and connectors for security, damage, or evidence of corrosion.

APU Fuel Feed System - continued

d. Refer to WP 0003 00, Table 3, for hose inspection and repair procedures.
e. Refer to WP 0003 00, Tables 4 and 5, for electrical wiring and electrical component for inspection and repair procedures.
f. Refer to WP 0077 00 for corrosion removal and treatment.
g. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.
h. Repair per DMWR 55-2910-200 when authorized by the Contracting Officer.

2. APU Quick Disconnect, sta 600
   a. Inspect quick disconnect for security, damage, evidence of corrosion, or evidence of leaks.
   b. Refer to WP 0077 00 for corrosion removal and treatment.
   c. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

3. APU Manual Shutoff Valve, sta 540
   a. Inspect valve for security, damage, evidence of corrosion, or evidence of leaks.
   b. Refer to WP 0077 00 for corrosion removal and treatment.
   c. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

4. APU Fuel Lines
   a. Inspect fuel lines inside fuselage for security, missing or damaged hardware, evidence of corrosion, or evidence of leaks.
   b. Refer to WP 0003 00, Tables 2 and 3, for tubing and hose inspection and repair procedures.
   c. Refer to WP 0077 00 for corrosion removal and treatment.
   d. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

5. APU Fuel Solenoid Valve
   a. Inspect valve for security, missing or damaged hardware, evidence of overheating, evidence of corrosion, or evidence of leaks.
   b. Inspect solenoid valve fuel hose assembly for security, damage, evidence of corrosion, or evidence of leaks.
   c. Inspect wiring and electrical connectors for security, damage, or evidence of corrosion.
   d. Refer to WP 0003 00, Table 3, for hose inspection and repair procedures.
   e. Refer to WP 0003 00, Tables 4 and 5, for electrical wiring and electrical component inspection and repair procedures.
   f. Refer to WP 0077 00 for corrosion removal and treatment.
   g. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

END OF WORK PACKAGE

DEPOT MAINTENANCE WORK REQUIREMENT
CH-47D HELICOPTER
COCKPIT FLIGHT CONTROLS

INITIAL SETUP

Test Equipment:
As Required

Tools and Special Tools:
As Required

Material/Parts:
As Required

Personnel Required:
Examiner (PSA)

References:
TM 1-1500-204-23 Series
TM 55-1500-322-24
TM 55-1500-323-24
TM 55-1520-240-23 Series
WP 0003 00
WP 0077 00

Equipment Conditions:
As Required

Special Environmental Condition:
As Required

SCOPE

The pilot and copilot each have a set of flight controls. They are interconnected under the cockpit floor so that if one set is moved the other set moves in the same direction. Each set of controls contains a pitch and roll control stick (cyclic), a thrust control, yaw control pedals, and associated mechanical linkage.

INSPECTION REQUIREMENTS

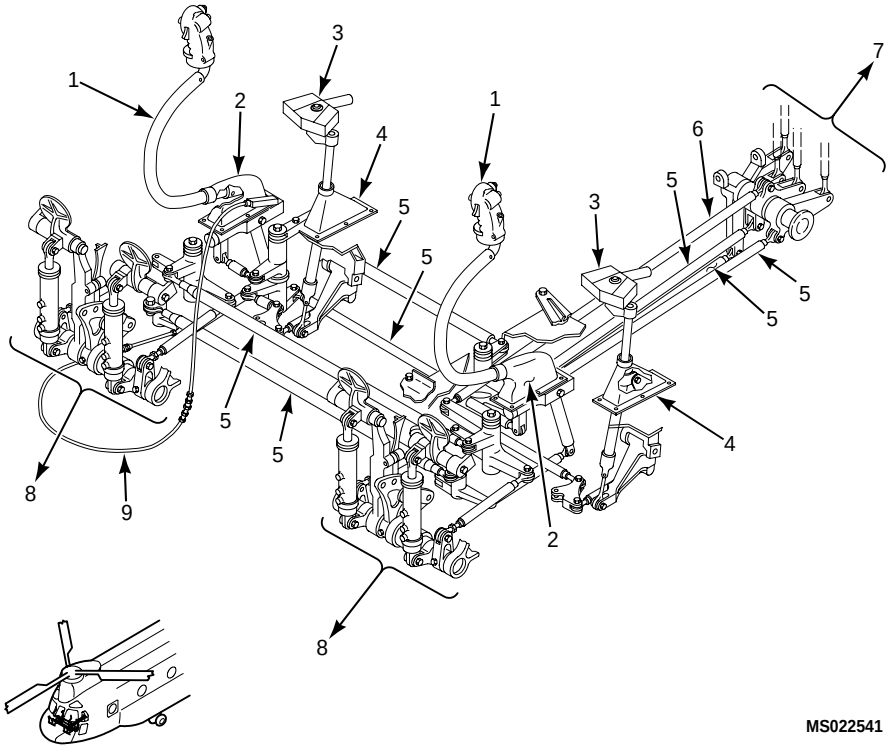


Figure 1. Cockpit Flight Controls

INSPECTION REQUIREMENTS - continued

NOTE

The item numbers in Figure 1 correspond to the respective item numbers in the following INSPECTION REQUIREMENTS.

1. Control Assembly, Cyclic (Pilot and Copilot)
   a. Inspect the grip for cracks, nicks, looseness, or evidence of corrosion.
   b. Inspect the switches for proper detent and serviceability.
   c. Inspect electrical wire for excessive wear and connectors for damage.
   d. Inspect the tube for dents, scratches, or evidence of corrosion.
   e. Refer to WP 0003 00, Tables 4 and 5, for electrical wiring and electrical component inspection and repair procedures.
   f. Refer to WP 0003 00, Table 6, for control rods, tube assemblies, and connecting links, inspection and repair procedures.
   g. Refer to WP 0077 00 for corrosion removal and treatment.
   h. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

2. Boots, Dust and Moisture, (Pilot and Copilot)
   a. Inspect for holes, cuts, and frayed or damaged Velcro strip.
   b. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

3. Thrust Control Assembly (Pilot and Copilot)
   a. Inspect the grip for cracks, nicks, looseness, or evidence of corrosion.
   b. Inspect the switches for proper detent and serviceability.
   c. Inspect electrical wire for excessive wear and connectors for damage.
   d. Inspect the tube for dents, scratches, or evidence of corrosion.
   e. Refer to WP 0003 00, Tables 4 and 5, for electrical wiring and electrical component inspection and repair procedures.
   f. Refer to WP 0003 00, Table 6, for control rods, tube assemblies, and connecting links, inspection and repair procedures.
   g. Refer to WP 0077 00 for corrosion removal and treatment.
   h. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

4. Boot Assembly, Control, (Pilot and Copilot)
   a. Inspect for holes, cuts and frayed or damaged Velcro strip.
   b. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

5. Connecting Link Assembly, **(CSI - WP 0160 00)**
   a. Inspect rods for cracks, nicks, scratches, gouges, chafed areas, dents, out-of-roundness, or evidence of corrosion.
   b. Inspect rod ends for looseness.
   c. Inspect bearings for radial and axial play.
   d. Refer to WP 0003 00, Table 6, for control rods, tube assemblies, and connecting links inspection and repair procedures.

INSPECTION REQUIREMENTS - continued

e. Refer to WP 0077 00 for corrosion removal and treatment.
f. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

6. Connecting Link Assembly
   a. Inspect rods for cracks, nicks, scratches, gouges, chafed areas, dents, out-of-roundness, or evidence of corrosion.
   b. Inspect rod ends for looseness.
   c. Inspect bearings for radial and axial play.
   d. Refer to WP 0003 00, Table 6, for control rods, tube assemblies, and connecting links inspection and repair procedures.
   e. Refer to WP 0077 00 for corrosion removal and treatment.
   f. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

7. Transfer Controls Assembly
   a. Inspect assembly for cracks, nicks, scratches, gouges, chafed areas, dents, out-of-roundness, or evidence of corrosion.
   b. Inspect bearings for radial and axial play.
   c. Refer to WP 0003 00, Table 6, for control rods, tube assemblies, and connecting links inspection and repair procedures.
   d. Refer to WP 0077 00 for corrosion removal and treatment.
   e. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

8. Control Assembly, (Pilot and Copilot, Control Box)
   a. Inspect supports for scratches, nicks, cracks, chafed areas, holes, gouges, or evidence of corrosion.
   b. Inspect links for loose swaged inserts, dents, thread damage, out-of-roundness, scratches, or evidence of corrosion.
   c. Inspect bearings for radial and axial play
   d. Refer to WP 0003 00, Table 6, for control rods, tube assemblies, and connecting links inspection and repair procedures.
   e. Refer to WP 0077 00 for corrosion removal and treatment.
   f. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

9. Cyclic Stick Pitch Position Indicator
   a. Inspect for kinks, deformation of tubing, chafing marks, freedom of operation, or evidence of corrosion.
   b. Inspect sight glass and gage for serviceability,
   c. Refer to WP 0077 00 for corrosion removal and treatment
   d. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

END OF WORK PACKAGE

DEPOT MAINTENANCE WORK REQUIREMENT
CH-47D HELICOPTER
CLOSET FLIGHT CONTROLS

INITIAL SETUP

Test Equipment:
As Required

Tools and Special Tools:
As Required

Material/Parts:
As Required

Personnel Required:
Examiner (PSA)

References:
TM 1-1500-204-23 Series
TM 55-1500-322-24
TM 55-1500-323-24
TM 55-1520-240-23 Series
DMWR 55-1680-341
DMWR 55-1680-350
DMWR 55-1680-351
WP 0003 00
WP 0077 00

Equipment Conditions:
As Required

Special Environmental Condition:
As Required

SCOPE

The integrated lower control actuators (ILCA), differential airspeed hold actuator (DASH), and two pallet assemblies are in the closet area. The pallet assemblies contain spring assemblies, magnetic brakes, cockpit control drive actuators (CCDA) with integral magnetic brakes, viscous dampers, and control position transducers. The spring assemblies and magnetic brakes provide artificial feel to the cockpit controls. Connecting links in the upper closet with Improved Heat Resistance of Flight Control System Bellcranks and Rods, have a special coating that increases their resistance to heat and fire. The dash actuator installed on the pitch control system consists of two electromechanical linear actuators mounted on an aluminum tube. Both actuators receive identical control signals from the Advanced Flight Control System (AFCS), which extends or retracts the actuators to position the helicopter as required by the control stick movements and to maintain the desired airspeed.

INSPECTION REQUIREMENTS

NOTE

The item numbers in Figure 1, sheets 1 through 4, correspond to the respective item numbers in the INSPECTION REQUIREMENTS following each illustration.

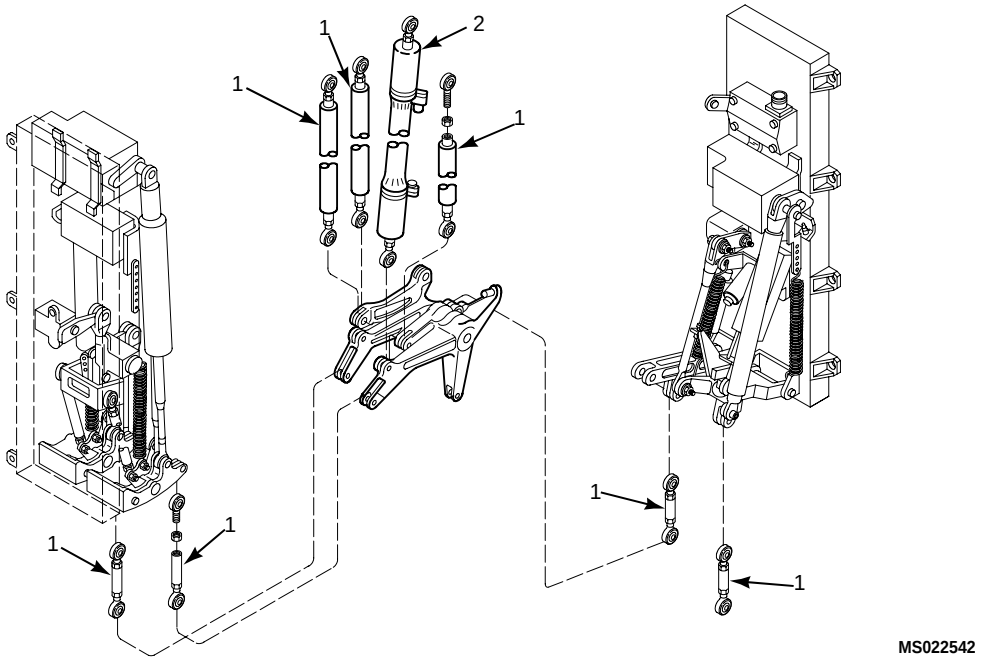


Figure 1. Closet Flight Controls (Sheet 1of 4)

1. Connection Link, Rigid **(CSI - WP 0160 00)**
   a. Inspect rod for cracks, dents, nicks, scratches, scores, out-of-roundness, or evidence of corrosion.
   b. Inspect rod ends for nicks, scratches, and loose fittings. Inspect bearing for axial and radial play.
   c. Inspect for loose, missing, or damaged attaching hardware.
   d. Refer to WP 0003 00, Table 6, for control rods, tube assemblies, and connecting links inspection and repair procedures.
   e. Refer to WP 0077 00 for corrosion removal and treatment.
   f. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

2. Actuator, Electromechanical (Dash Actuator) **(CSI - WP 0160 00)**
   a. Inspect for cracks, nicks, scratches, scores, evidence of overheating, or evidence of corrosion.
   b. Inspect rod end bearings for axial and radial play.
   c. Inspect for loose, missing, or damaged attaching hardware.
   d. Refer to WP 0003 00, Tables 4 and 5, for electrical wiring and electrical component inspection and repair procedures.
   e. Refer to WP 0003 00, Table 6, for control rods, tube assemblies, and connecting links inspection and repair procedures.
   f. Refer to WP 0077 00 for corrosion removal and treatment.
   g. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.
   h. Repair per DMWR 55-1680-351 when authorized by the Contracting Officer.

INSPECTION REQUIREMENTS – continued

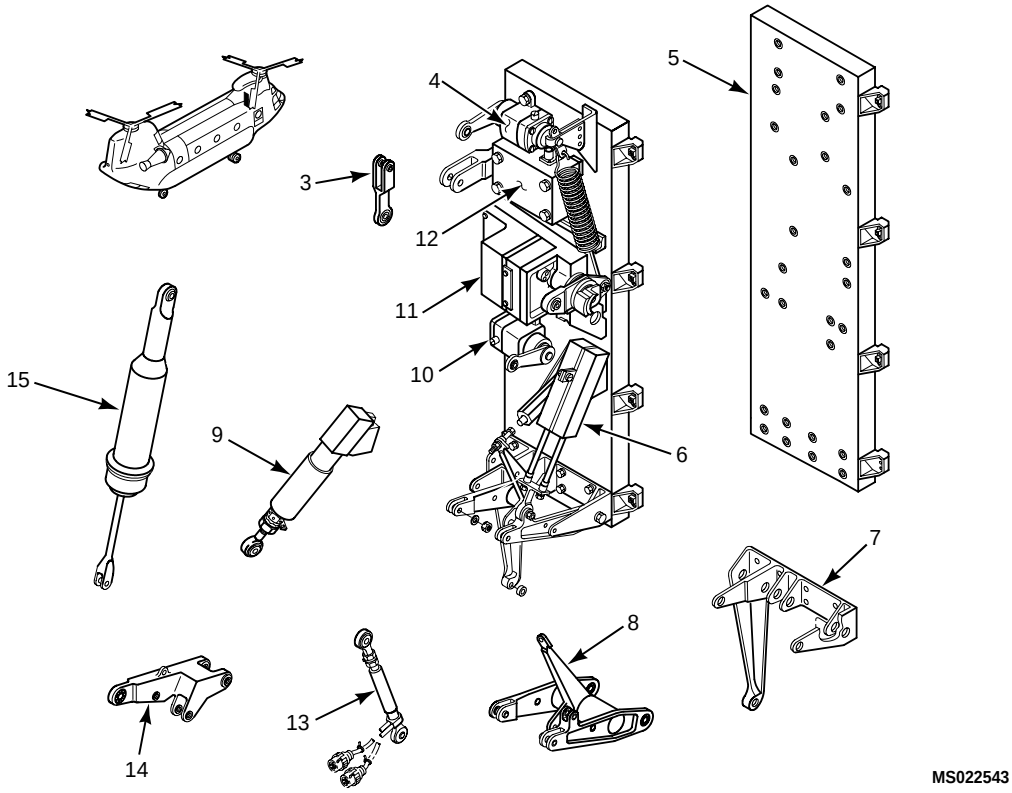


Figure 1. Closet Flight Controls (Sheet 2 of 4)

3. Link Assembly, Auxiliary **(CSI - WP 0160 00)**
   a. Inspect for nicks, scratches, scores, dents, chafed areas, or evidence of corrosion.
   b. Inspect bearing for radial and axial play.
   c. Inspect for loose, missing, or damaged attaching hardware.
   d. Refer to WP 0003 00, Table 6, for control rods, tube assemblies, and connecting links inspection and repair procedures.
   e. Refer to WP 0077 00 for corrosion removal and treatment.
   f. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

4. Viscous Damper, Yaw **(CSI - WP 0160 00)**
   a. Inspect for leaks, cracks, dents, scratches, nicks, or evidence of corrosion.
   b. Inspect damper lever bearings for radial and axial play.
   c. Inspect for loose, missing, or damaged attaching hardware.
   d. Refer to WP 0003 00, Table 6, for control rods, tube assemblies, and connecting links inspection and repair procedures.
   e. Refer to WP 0077 00 for corrosion removal and treatment.
   f. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

INSPECTION REQUIREMENTS – continued

5. Pallet Assembly, Support **(CSI - WP 0160 00)**
   a. Inspect for delaminations, cracks, dents, loose or missing inserts, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to WP 0077 00 for corrosion removal and treatment.
   d. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

6. Potentiometer (T55-L-712 Engine)
   a. Inspect for cracks, nicks, scratches, scores, chafed areas, evidence of overheating,or evidence of corrosion.
   b. Inspect bearings for axial and radial play.
   c. Inspect for loose, missing, or damaged attaching or damaged attaching hardware.
   d. Refer to WP 0003 00, Tables 4 and 5, for electrical wiring and electrical component inspection and repair procedures.
   e. Refer to WP 0077 00 for corrosion removal and treatment.
   f. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

7. Support Assembly **(CSI - WP 0160 00)**
   a. Inspect for cracks, nicks, scratches, scores, chafed areas, or evidence of corrosion.
   b. Inspect bushings for wear.
   c. Inspect for loose, missing, or damaged attaching or damaged attaching hardware.
   d. Refer to WP 0003 00, Table 6, for control rods, tube assemblies, and connecting links inspection and repair procedures.
   e. Refer to WP 0077 00 for corrosion removal and treatment.
   f. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

8. Idler Assembly, Thrust and Support **(CSI - WP 0160 00)**
   a. Inspect for cracks, nicks, scratches, scores, chafed areas, or evidence of corrosion.
   b. Inspect bearings for axial and radial play.
   c. Inspect for loose, missing, or damaged attaching or damaged attaching hardware.
   d. Refer to WP 0003 00, Table 6, for control rods, tube assemblies, and connecting links inspection and repair procedures.
   e. Refer to WP 0077 00 for corrosion removal and treatment.
   f. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

9. Transducer (T55-GA-714A Engine)
   a. Inspect for cracks, nicks, scratches, scores, chafed areas, evidence of overheating, or evidence of corrosion.
   b. Inspect bearings for axial and radial play.
   c. Inspect for loose, missing, or damaged attaching hardware.
   d. Refer to WP 0003 00, Tables 4 and 5, for electrical wiring and electrical component inspection and repair procedures.
   e. Refer to WP 0003 00, Table 6, for control rods, tube assemblies, and connecting links inspection and repair procedures.
   f. Refer to WP 0077 00 for corrosion removal and treatment.
   g. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

INSPECTION REQUIREMENTS - continued

10. Viscous Damper, Thrust **(CSI - WP 0160 00)**
    a. Inspect for leaks, cracks, dents, scratches, nicks, or evidence of corrosion.
    b. Inspect damper lever bearings for axial and radial play.
    c. Inspect for loose, missing, or damaged attaching hardware.
    d. Refer to WP 0003 00, Table 6, for control rods, tube assemblies, and connecting links inspection and repair procedures.
    e. Refer to WP 0077 00 for corrosion removal and treatment.
    f. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

11. Actuator, Electromechanical (Thrust CCDA Actuator) **(CSI - WP 0160 00)**
    a. Inspect for cracks, nicks, scratches, scores, dents, chafed areas, evidence of overheating, or evidence of corrosion.
    b. Inspect bearings for axial and radial play.
    c. Inspect for loose, missing, or damaged attaching hardware.
    d. Refer to WP 0003 00, Tables 4 and 5, for electrical wiring and electrical component inspection and repair procedures.
    e. Refer to WP 0003 00, Table 6, for control rods, tube assemblies, and connecting links inspection and repair procedures.
    f. Refer to WP 0077 00 for corrosion removal and treatment.
    g. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.
    h. Repair per DMWR 55-1680-350 when authorized by the Contracting Officer.

12. Magnetic Brake, Yaw **(CSI - WP 0160 00)**
    a. Inspect for cracks, nicks, scratches, scores, dents, chafed areas, evidence of overheating, or evidence of corrosion.
    b. Inspect lever for looseness and security.
    c. Inspect for loose, missing, or damaged attaching hardware.
    d. Refer to WP 0003 00, Table 6, for control rods, tube assemblies, and connecting links inspection and repair procedures.
    e. Refer to WP 0077 00 for corrosion removal and treatment.
    f. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.
    g. Repair per DMWR 55-1680-341 when authorized by the Contracting Officer.

13. Transducer, Linear (Yaw) **(CSI - WP 0160 00)**
    a. Inspect for cracks, nicks, scratches, scores, chafed areas, evidence of overheating, or evidence of corrosion.
    b. Inspect bearings for axial and radial play.
    c. Inspect for loose, missing, or damaged attaching hardware.
    d. Refer to WP 0003 00, Tables 4 and 5, for electrical wiring and electrical component inspection and repair procedures.
    e. Refer to WP 0003 00, Table 6, for control rods, tube assemblies, and connecting links inspection and repair procedures.
    f. Refer to WP 0077 00 for corrosion removal and treatment.
    g. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

14. Idler Assembly, Yaw **(CSI - WP 0160 00)**
    a. Inspect for cracks, nicks, scratches, scores, chafed areas, or evidence of corrosion.

INSPECTION REQUIREMENTS – continued

b. Inspect bearings for axial and radial play.
c. Inspect for loose, missing, or damaged attaching hardware.
d. Refer to WP 0003 00, Table 6, for control rods, tube assemblies, and connecting links inspection and repair procedures.
e. Refer to WP 0077 00 for corrosion removal and treatment.
f. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

15. Housing Assembly, Spring **(CSI - WP 0160 00)**
    a. Inspect for cracks, nicks, scratches, scores, chafed areas, or evidence of corrosion.
    b. Inspect bearings for axial and radial play.
    c. Inspect for loose, missing, or damaged attaching hardware.
    d. Refer to WP 0003 00, Table 6, for control rods, tube assemblies, and connecting links inspection and repair procedures.
    e. Refer to WP 0077 00 for corrosion removal and treatment.
    f. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

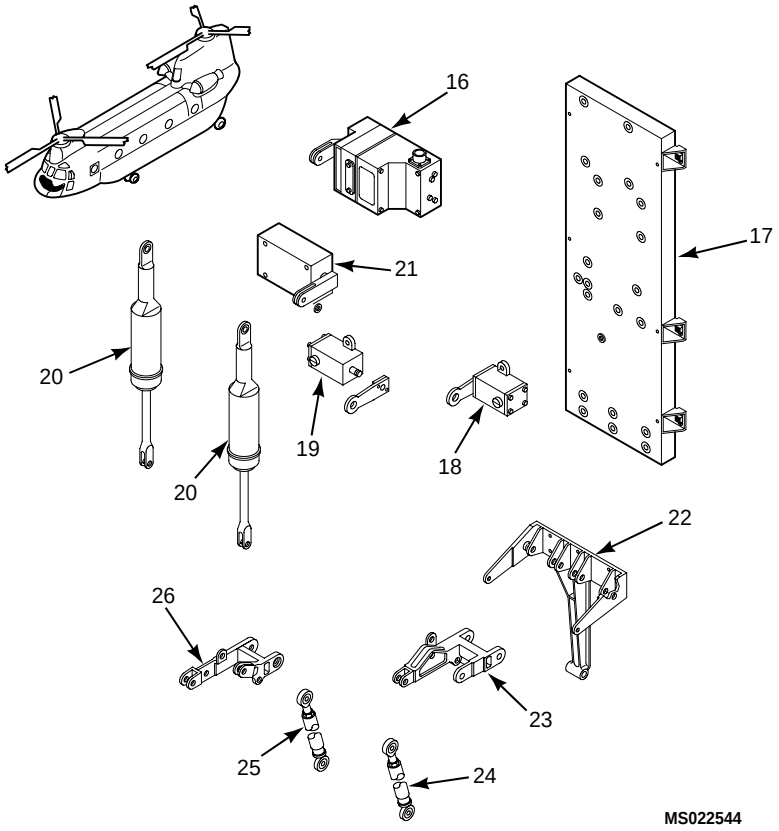


Figure 1. Closet Flight Controls (Sheet 3 of 4)

16. Actuator, Electromechanical (Pitch CCDA Actuator) **(CSI - WP 0160 00)**
    a. Inspect for cracks, nicks, scratches, scores, dents, chafed areas, evidence of overheating, or evidence of corrosion.
    b. Inspect bearings for axial and radial play.
    c. Inspect for loose, missing, or damaged attaching hardware.

INSPECTION REQUIREMENTS – continued

d. Refer to WP 0003 00, Tables 4 and 5, for electrical wiring and electrical component inspection and repair procedures.
e. Refer to WP 0003 00, Table 6, for control rods, tube assemblies, and connecting links inspection and repair procedures.
f. Refer to WP 0077 00 for corrosion removal and treatment.
g. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.
i. Repair per DMWR 55-1680-350 when authorized by the Contracting Officer.

17. Pallet Assembly, Support **(CSI - WP 0160 00)**
    a. Inspect for delaminations, cracks, dents, loose or missing inserts, or evidence of corrosion.
    b. Inspect for loose, missing, or damaged attaching hardware.
    c. Refer to WP 0077 00 for corrosion removal and treatment.
    d. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

18. Viscous Damper, Roll **(CSI - WP 0160 00)**
    a. Inspect for leaks, cracks, dents, scratches, nicks, or evidence of corrosion.
    b. Inspect damper lever bearings for axial and radial play.
    c. Inspect for loose, missing, or damaged attaching hardware.
    d. Refer to WP 0003 00, Table 6, for control rods, tube assemblies, and connecting links inspection and repair procedures.
    e. Refer to WP 0077 00 for corrosion removal and treatment.
    f. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

19. Viscous Damper, Pitch **(CSI - WP 0160 00)**
    a. Inspect for leaks, cracks, dents, scratches, nicks, or evidence of corrosion.
    b. Inspect damper lever bearings for axial and radial play.
    c. Inspect for loose, missing, or damaged attaching hardware.
    d. Refer to WP 0003 00, Table 6, for control rods, tube assemblies, and connecting links inspection and repair procedures.
    e. Refer to WP 0077 00 for corrosion removal and treatment.
    f. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

20. Housing Assembly, Spring **(CSI - WP 0160 00)**
    a. Inspect for cracks, nicks, scratches, scores, chafed areas, or evidence of corrosion.
    b. Inspect bearings for axial and radial play.
    c. Inspect for loose, missing, or damaged attaching hardware.
    d. Refer to WP 0003 00, Table 6, for control rods, tube assemblies, and connecting links inspection and repair procedures.
    e. Refer to WP 0077 00 for corrosion removal and treatment.
    f. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

21. Brake, Electromechanical **(CSI - WP 0160 00)**
    a. Inspect for cracks, nicks, scratches, scores, dents, chafed areas, evidence of overheating, or evidence of corrosion.
    b. Inspect lever for looseness and security.
    c. Inspect for loose, missing, or damaged attaching hardware.

INSPECTION REQUIREMENTS – continued

d. Refer to WP 0003 00, Tables 4 and 5, for electrical wiring and electrical component inspection and repair procedures.
e. Refer to WP 0077 00 for corrosion removal and treatment.
f. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.
g. Repair per DMWR 55-1680-341 when authorized by the Contracting Officer.

22. Support Assembly **(CSI - WP 0160 00)**
    a. Inspect for cracks, nicks, scratches, scores, chafed areas, or evidence of corrosion.
    b. Inspect bushings for wear.
    c. Inspect for loose, missing, or damaged attaching hardware.
    d. Refer to WP 0003 00, Table 6, for control rods, tube assemblies, and connecting links inspection and repair procedures.
    e. Refer to WP 0077 00 for corrosion removal and treatment.
    f. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

23. Idler Assembly, Roll **(CSI - WP 0160 00)**
    a. Inspect for cracks, nicks, scratches, scores, chafed areas, or evidence of corrosion.
    b. Inspect bearings for axial and radial play.
    c. Inspect for loose, missing, or damaged attaching hardware.
    d. Refer to WP 0003 00, Table 6, for control rods, tube assemblies, and connecting links inspection and repair procedures.
    e. Refer to WP 0077 00 for corrosion removal and treatment.
    f. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

24. Transducer, Linear (Roll) **(CSI - WP 0160 00)**
    a. Inspect for cracks, nicks, scratches, scores, chafed areas, evidence of overheating, or evidence of corrosion.
    b. Inspect bearings for axial and radial play.
    c. Inspect for loose, missing, or damaged attaching hardware.
    d. Refer to WP 0003 00, Tables 4 and 5, for electrical wiring and electrical component inspection and repair procedures.
    e. Refer to WP 0003 00, Table 6, for control rods, tube assemblies, and connecting links inspection and repair procedures.
    f. Refer to WP 0077 00 for corrosion removal and treatment.
    g. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

25. Transducer, Linear (Pitch) **(CSI - WP 0160 00)**
    a. Inspect for cracks, nicks, scratches, scores, chafed areas, evidence of overheating, or evidence of corrosion.
    b. Inspect bearings for axial and radial play.
    c. Inspect for loose, missing, or damaged attaching hardware.
    d. Refer to WP 0003 00, Tables 4 and 5, for electrical wiring and electrical component inspection and repair procedures.
    e. Refer to WP 0003 00, Table 6, for control rods, tube assemblies, and connecting links inspection and repair procedures.
    f. Refer to WP 0077 00 for corrosion removal and treatment.
    g. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

INSPECTION REQUIREMENTS – continued

26. Idler Assembly, Pitch **(CSI - WP 0160 00)**
    a. Inspect for cracks, nicks, scratches, scores, chafed areas, or evidence of corrosion.
    b. Inspect bearings for axial and radial play.
    c. Inspect for loose, missing, or damaged attaching hardware.
    d. Refer to WP 0003 00, Table 6, for control rods, tube assemblies, and connecting links inspection and repair procedures.
    e. Refer to WP 0077 00 for corrosion removal and treatment.
    f. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

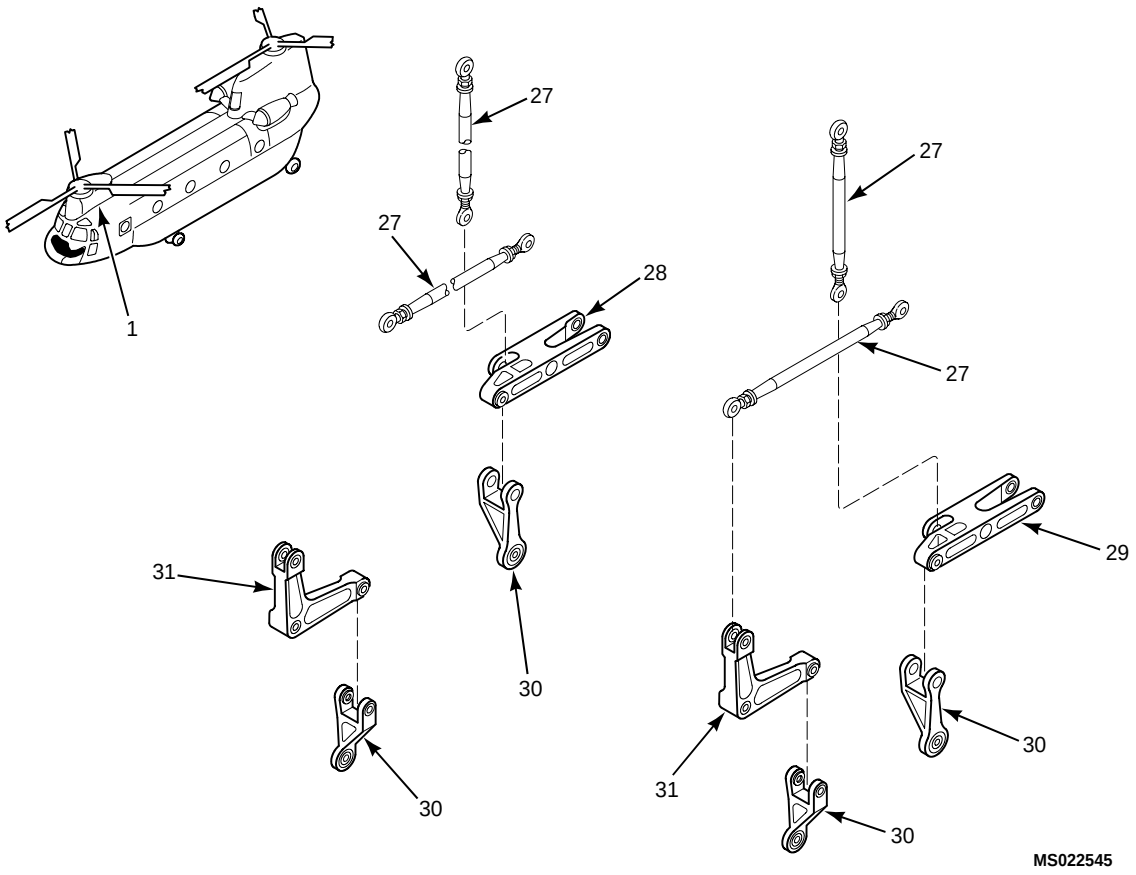


Figure 1. Closet Flight Controls (Sheet 4 of 4)

27. Connecting Link **(CSI - WP 0160 00)**
    a. Inspect rod for cracks, dents, nicks, scratches, scores, out-of-roundness, or evidence of corrosion.
    b. Inspect rod ends for nicks, scratches, and loose fittings. Inspect bearing for axial and radial play.
    c. Inspect for loose, missing, or damaged attaching hardware.
    d. Refer to WP 0003 00 Table 6 for control rods, tube assemblies, and connecting links inspection and repair procedures.
    e. Refer to WP 0077 00 for corrosion removal and treatment.
    f. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

INSPECTION REQUIREMENTS – continued

28. Idler Assembly, Pitch **(CSI - WP 0160 00)**
    a. Inspect for cracks, nicks, scratches, scores, chafed areas, or evidence of corrosion.
    b. Inspect bearings for axial and radial play and bushings for wear.
    c. Inspect for loose, missing, or damaged attaching hardware.
    d. Refer to WP 0003 00, Table 6, for control rods, tube assemblies, and connecting links inspection and repair procedures.
    e. Refer to WP 0077 00 for corrosion removal and treatment.
    f. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

29. Idler Assembly **(CSI - WP 0160 00)**
    a. Inspect for cracks, nicks, scratches, scores, chafed areas, or evidence of corrosion.
    b. Inspect bearings for axial and radial play and bushings for wear.
    c. Inspect for loose, missing, or damaged attaching hardware.
    d. Refer to WP 0003 00, Table 6, for control rods, tube assemblies, and connecting links inspection and repair procedures.
    e. Refer to WP 0077 00 for corrosion removal and treatment.
    f. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

30. Link Assembly **(CSI - WP 0160 00)**
    a. Inspect for nicks, scratches, scores, dents, chafed areas, or evidence of corrosion.
    b. Inspect bushings for wear and bearing for radial and axial play.
    c. Inspect for loose, missing, or damaged attaching hardware.
    d. Refer to WP 0003 00, Table 6, for control rods, tube assemblies, and connecting links inspection and repair procedures.
    e. Refer to WP 0077 00 for corrosion removal and treatment.
    f. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

31. Bellcrank **(CSI - WP 0160 00)**
    a. Inspect for nicks, scratches, scores, dents, chafed areas, or evidence of corrosion.
    b. Inspect bearing for radial and axial play.
    c. Inspect for loose, missing, or damaged attaching hardware.
    d. Refer to WP 0003 00, Table 6, for control rods, tube assemblies, and connecting links inspection and repair procedures.
    e. Refer to WP 0077 00 for corrosion removal and treatment.
    f. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

END OF WORK PACKAGE

DEPOT MAINTENANCE WORK REQUIREMENT
CH-47D HELICOPTER
MIXING FLIGHT CONTROLS

INITIAL SETUP

Test Equipment:
As Required

Tools and Special Tools:
As Required

Material/Parts:
As Required

Personnel Required:
Examiner (PSA)

References:
TM 1-1500-204-23 Series
TM 55-1500-322-24
TM 55-1520-240-23 Series
WP 0003 00
WP 0077 00

Equipment Conditions:
As Required

Special Environmental Condition:
As Required

SCOPE

The first stage controls are above the closet controls between sta 95 and sta 120. The second stage controls are aft of the forward transmission mounting structure. The first and second stage controls are connected by four connecting links. The first and second stage controls consist of bellcranks and linkages, which mix inputs from the thrust, pitch, roll, and yaw control motions into two motions. These two motions are transmitted directly to the forward and aft controls.

INSPECTION REQUIREMENTS

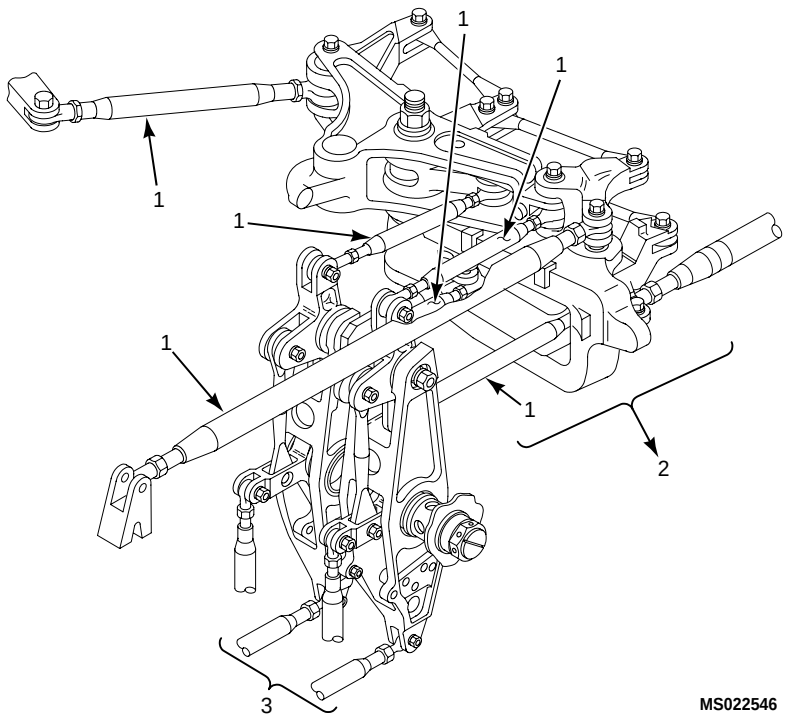


Figure 1. Mixing Flight Controls

INSPECTION REQUIREMENTS - continued

NOTE

The items in Figure 1 correspond to the respective item numbers in the following INSPECTION REQUIREMENTS.

1. Connecting Link, Rigid **(CSI - WP 0160 00)**
   a. Inspect rod for cracks, dents, nicks, scratches, scores, out-of-roundness, or evidence of corrosion.
   b. Inspect rod ends for nicks, scratches, and loose fittings. Inspect bearing for axial and radial play.
   c. Inspect for loose, missing, or damaged attaching hardware.
   d. Refer to WP 0003 00, Table 6, for control rods, tube assemblies, and connecting links inspection and repair procedures.
   e. Refer to WP 0077 00 for corrosion removal and treatment.
   f. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

2. Mixing Controls, Second Stage **(CSI - WP 0160 00)**
   a. Inspect bellcranks for cracks, nicks, scratches, scores, or evidence of corrosion.
   b. Inspect bushings for wear and bearings for radial and axial play.
   c. Inspect for loose, missing, or damaged attaching hardware.
   d. Refer to WP 0003 00, Table 6, for control rods, tube assemblies, and connecting links inspection and repair procedures.
   e. Refer to WP 0077 00 for corrosion removal and treatment.
   f. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

3. Mixing Controls, First Stage **(CSI - WP 0160 00)**
   a. Inspect bellcranks for cracks, nicks, scratches, scores, or evidence of corrosion.
   b. Inspect bushings for wear and bearings for radial and axial play.
   c. Inspect for loose, missing, or damaged attaching hardware.
   d. Refer to WP 0003 00, Table 6, for control rods, tube assemblies, and connecting links inspection and repair procedures.
   e. Refer to WP 0077 00 for corrosion removal and treatment.
   f. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

END OF WORK PACKAGE

DEPOT MAINTENANCE WORK REQUIREMENT
CH-47D HELICOPTER
FORWARD UPPER FLIGHT CONTROLS

INITIAL SETUP

Test Equipment:
As Required

Tools and Special Tools:
As Required

Material/Parts:
As Required

Personnel Required:
Examiner (PSA)

References:
DMWR 55-1615-316
DMWR 55-1680-289
TM 1-1500-204-23 Series
TM 55-1500-322-24
TM 55-1520-240-23 Series
WP 0003 00
WP 0077 00

Equipment Conditions:
As Required

Special Environmental Condition:
As Required

SCOPE

The forward upper flight controls are forward of the second stage controls on either side of the forward transmission. Links and bellcranks direct control motion to control valves located in two dual servo cylinders. The servo cylinders are connected to the forward transmission and the swashplate. A longitudinal cyclic trim (LCT) actuator, yoke, and fixed link are part of the forward flight controls, and are located on the aft side and below the forward swashplate.

INSPECTION REQUIREMENTS

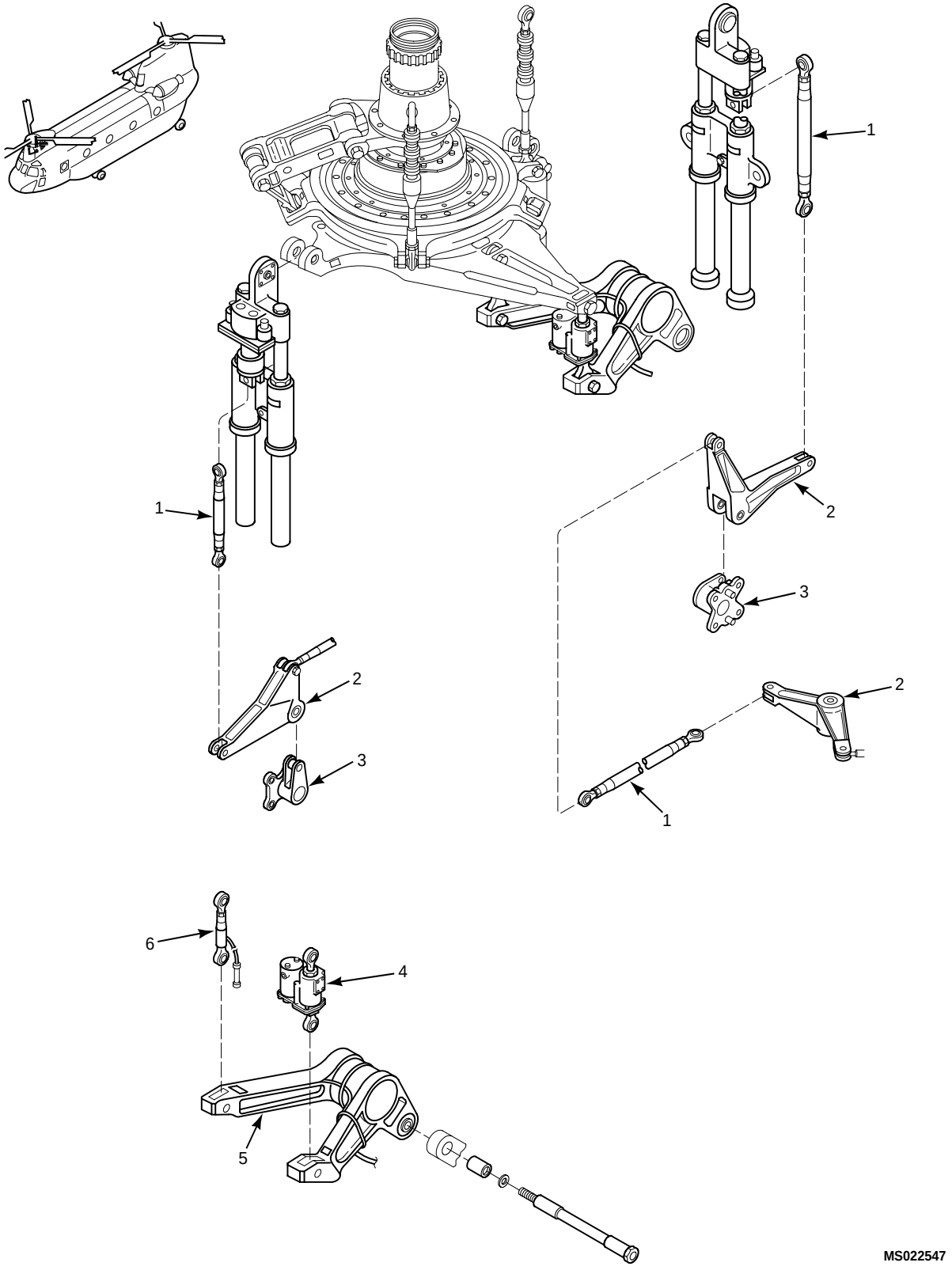


Figure 1. Forward Upper Flight Controls

INSPECTION REQUIREMENTS - continued

NOTE

The items in Figure 1 correspond to the respective item numbers in the following INSPECTION REQUIREMENTS.

1. Connecting Link, Rigid **(CSI - WP 0160 00**)
   a. Inspect rod for cracks, dents, nicks, scratches, scores, out-of-roundness, or evidence of corrosion.
   b. Inspect rod ends for nicks, scratches, and loose fittings. Inspect bearing for axial and radial play.
   c. Inspect for loose, missing, or damaged attaching hardware.
   d. Refer to WP 0003 00, Table 6, for control rods, tube assemblies, and connecting links inspection and repair procedures.
   e. Refer to WP 0077 00 for corrosion removal and treatment.
   f. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

2. Bellcrank Assembly **(CSI - WP 0160 00)**
   a. Inspect for nicks, scratches, scores, dents, chafed areas, or evidence of corrosion.
   b. Inspect bushings for wear and bearings for axial and radial play.
   c. Inspect for loose, missing, or damaged attaching hardware.
   d. Refer to WP 0003 00, Table 6, for control rods, tube assemblies, and connecting links inspection and repair procedures.
   e. Refer to WP 0077 00 for corrosion removal and treatment.
   f. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

3. Support Assembly, Pylon **(CSI - WP 0160 00)**
   a. Inspect for cracks, nicks, scratches, scores, chafed areas, or evidence of corrosion.
   b. Inspect bearings for axial and radial play.
   c. Inspect for loose, missing, or damaged attaching hardware.
   d. Refer to WP 0003 00, Table 6, for control rods, tube assemblies, and connecting links inspection and repair procedures.
   e. Refer to WP 0077 00 for corrosion removal and treatment.
   f. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

4. Actuator, Electromechanical (Fwd LCT Actuator) **(CSI - WP 0160 00)**
   a. Inspect for cracks, nicks, scratches, scores, evidence of overheating, or evidence of corrosion.
   b. Inspect bearings for axial and radial play.
   c. Inspect for loose, missing, or damaged attaching hardware.
   d. Refer to WP 0003 00, Tables 4 and 5, for electrical wiring and electrical component inspection and repair procedures.
   e. Refer to WP 0003 00, Table 6, for control rods, tube assemblies, and connecting links inspection and repair procedures.
   f. Refer to WP 0077 00 for corrosion removal and treatment.
   g. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.
   h. Repair per DMWR 55-1680-289 when authorized by the Contracting Officer.

INSPECTION REQUIREMENTS - continued

5. Yoke Assembly, (Fwd LCT Yolk) **(CSI - WP 0160 00)**
   a. Inspect for cracks, nicks, scratches, scores, or evidence of corrosion.
   b. Inspect bushings for wear and bearings for axial and radial play.
   c. Inspect for loose, missing, or damaged attaching hardware.
   d. Refer to WP 0003 00, Table 6, for control rods, tube assemblies, and connecting links inspection and repair procedures.
   e. Refer to WP 0077 00 for corrosion removal and treatment.
   f. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

6. Link Assembly, Swashplate (Fwd LCT Connecting Link) **(CSI - WP 0160 00)**
   a. Inspect for cracks, nicks, scratches, scores, chafed areas, evidence of overheating, or evidence of corrosion.
   b. Inspect bearings for axial and radial play.
   c. Inspect for loose, missing, or damaged attaching hardware.
   d. Refer to WP 0003 00, Tables 4 and 5, for electrical wiring and electrical component inspection and repair procedures.
   e. Refer to WP 0003 00, Table 6, for control rods, tube assemblies, and connecting links inspection and repair procedures.
   f. Refer to WP 0077 00 for corrosion removal and treatment.
   g. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.
   h. Repair per DMWR 55-1615-316 when authorized by the Contracting Officer.

END OF WORK PACKAGE

DEPOT MAINTENANCE WORK REQUIREMENT

CH-47D HELICOPTER

TUNNEL FLIGHT CONTROLS

INITIAL SETUP

Test Equipment:
As Required

Tools and Special Tools:
As Required

Material/Parts:
As Required

Personnel Required:
Examiner (PSA)

References:
TM 1-1500-204-23 Series
TM 55-1500-322-24
TM 55-1520-240-23 Series
WP 0003 00
WP 0077 00

Equipment Conditions:
As Required

Special Environmental Condition:
As Required

SCOPE

The tunnel controls are a series of connection links, idlers, and control arms mounted on top of the cabin section. The tunnel controls transmit second stage control motion to the aft flight controls.

INSPECTION REQUIREMENTS

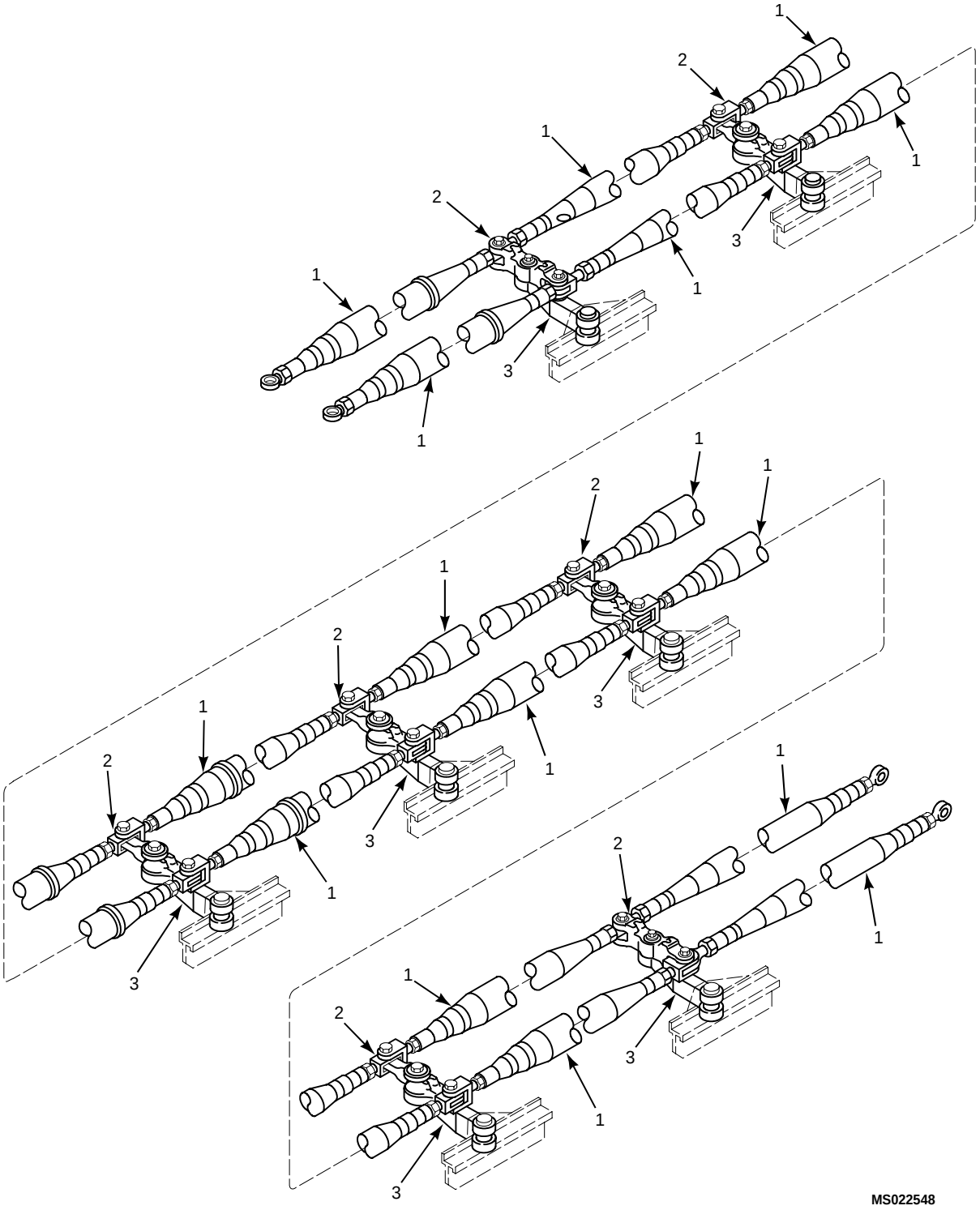


Figure 1. Tunnel Flight Controls

INSPECTION REQUIREMENTS - continued

NOTE

The items in Figure 1 correspond to the respective item numbers in the following INSPECTION REQUIREMENTS.

1. Link Assembly (Stainless Steel) **(CSI - WP 0160 00)**
   a. Inspect for nicks, dents, cracks, scratches, scores, loose or oversize rivets on rods, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Inspect the electrical lead ground wires for fraying, looseness, or evidence of corrosion.
   d. Inspect bearings for axial and radial play.
   e. Refer to WP 0003 00, Table 6, for control rods, tube assemblies, and connecting links inspection and repair procedures.
   f. Refer to WP 0077 00 for corrosion removal and treatment.
   g. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

2. Beam Assembly, Walking (Arm, Control) **(CSI - WP 0160 00)**
   a. Inspect for nicks, dents, cracks, scratches, scores, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Inspect bearings for axial and radial play.
   d. Refer to WP 0003 00, Table 6, for control rods, tube assemblies, and connecting links inspection and repair procedures.
   e. Refer to WP 0077 00 for corrosion removal and treatment.
   f. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

3. Idler Assembly **(CSI - WP 0160 00)**
   a. Inspect for nicks, dents, cracks, scratches, scores, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Inspect bearings for axial and radial play.
   d. Refer to WP 0003 00, Table 6, for control rods, tube assemblies, and connecting links inspection and repair procedures.
   e. Refer to WP 0077 00 for corrosion removal and treatment.
   f. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

END OF WORK PACKAGE

DEPOT MAINTENANCE WORK REQUIREMENT
CH-47D HELICOPTER
AFT FUSELAGE AND AFT UPPER FLIGHT CONTROLS

INITIAL SETUP

Test Equipment:
As Required

Tools and Special Tools:
As Required

Material/Parts:
As Required

Personnel Required:
Examiner (PSA)

References:
DMWR 55-1615-316
DMWR 55-1680-289
TM 1-1500-204-23 Series
TM 55-1500-322-24
TM 55-1520-240-23 Series
WP 0003 00
WP 0077 00

Equipment Conditions:
As Required

Special Environmental Condition:
As Required

SCOPE

The aft controls are in the aft pylon. Connecting links and bellcranks transmit tunnel motion to control valves located in two dual servo-cylinders. The servo-cylinders are connected to the structure and the controllable swashplate. A longitudinal cyclic trim (LCT) actuator, yoke, and forward fixed link are part of the aft flight controls and are located on the forward side and below the aft swashplate.

INSPECTION REQUIREMENTS

NOTE

The item numbers in Figure 1, sheets 1 and 2, correspond to the respective item numbers in the INSPECTION REQUIREMENTS following each illustration.

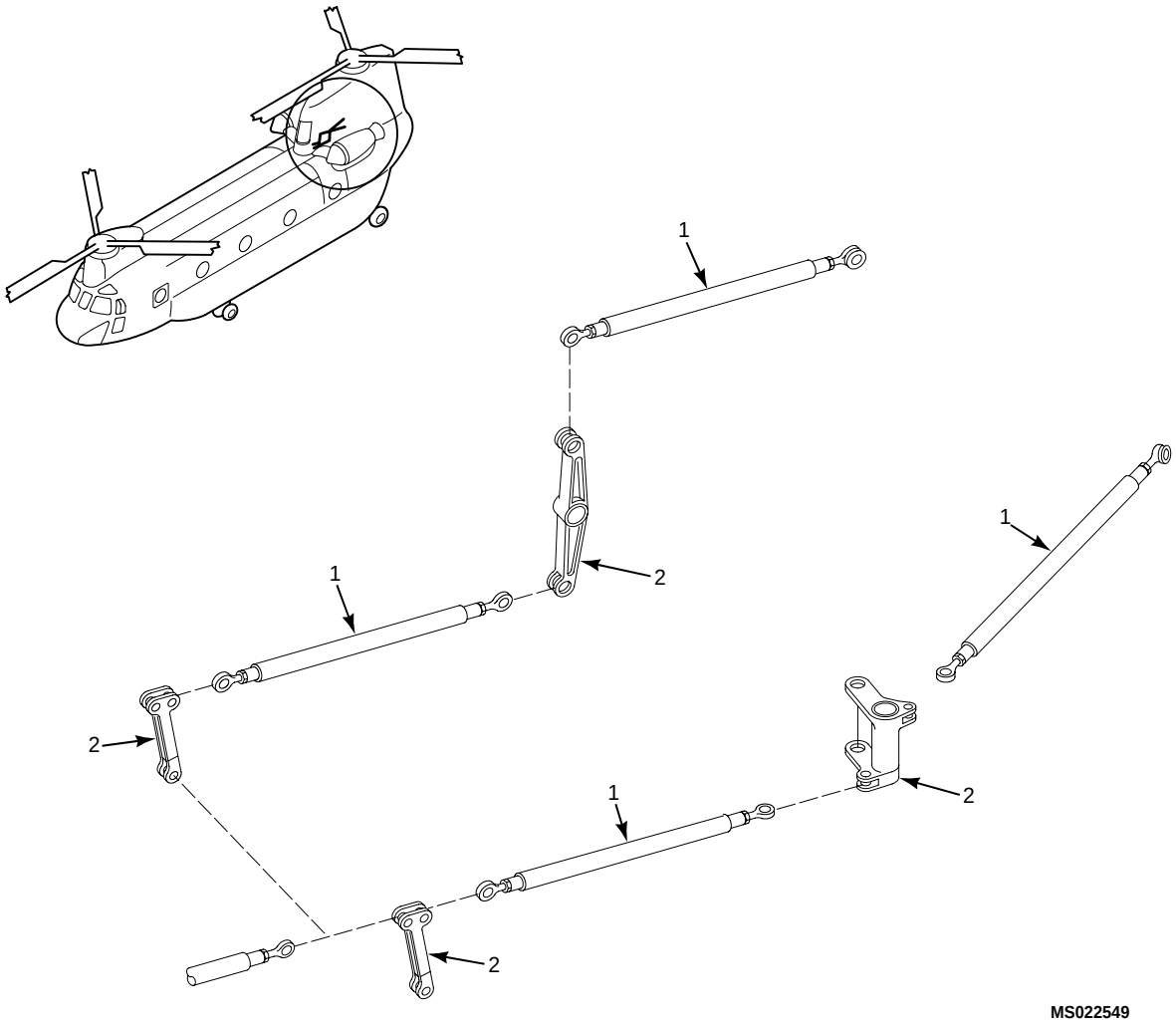


Figure 1. Aft Fuselage and Aft Upper Flight Controls (Sheet 1 of 2)

1. Connecting Link Rigid **(CSI - WP 0160 00)**
   a. Inspect rod for cracks, dents, nicks, scratches, scores, out-of-roundness, or evidence of corrosion.
   b. Inspect rod end for nicks, scratches, and loose fittings. Inspect bearings for axial and radial play.
   c. Inspect for loose, missing, or damaged attaching hardware.
   d. Refer to WP 0003 00, Table 6, for control rods, tube assemblies, and connecting links inspection and repair procedures.
   e. Refer to WP 0077 00 for corrosion removal and treatment.
   f. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

INSPECTION REQUIREMENTS - continued

2. Bellcrank Assembly **(CSI - WP 0160 00)**
   a. Inspect for cracks, nicks, scratches, scores, or evidence of corrosion.
   b. Inspect bushings for wear and bearings for axial and radial play.
   c. Inspect for loose, missing, or damaged attaching hardware.
   d. Refer to WP 0003 00, Table 6, for control rods, tube assemblies, and connecting links inspection and repair procedures.
   e. Refer to WP 0077 00 for corrosion removal and treatment.
   f. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

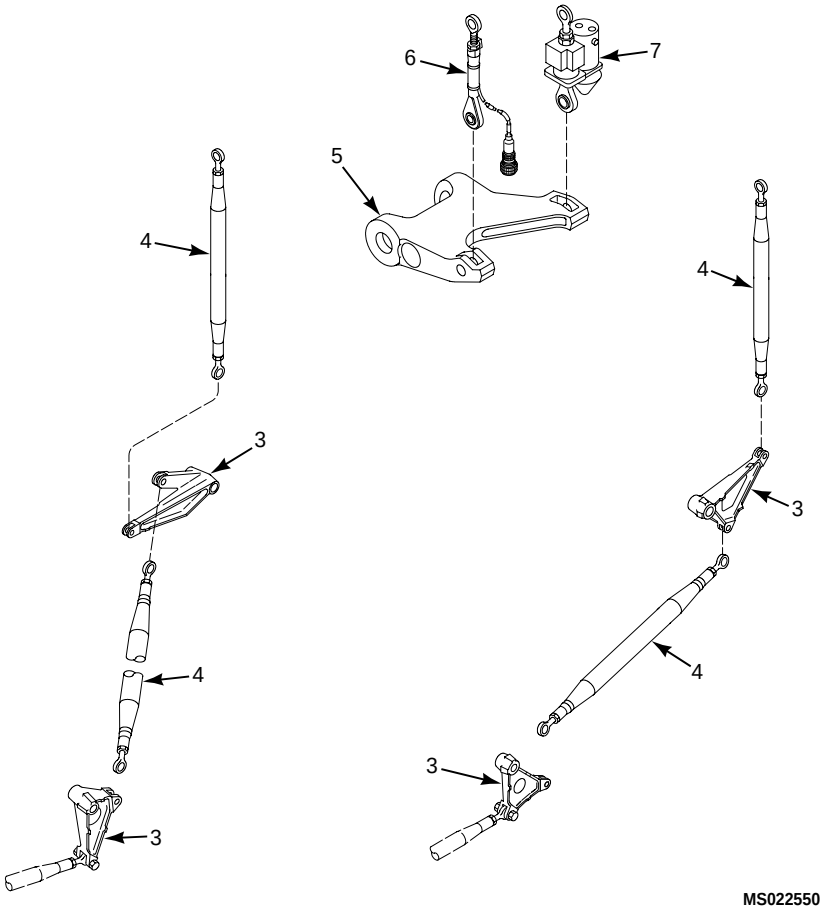


Figure 1. Aft Fuselage and Aft Upper Flight Controls (Sheet 2 of 2)

3. Bellcrank Assembly **(CSI - WP 0160 00)**
   a. Inspect for cracks, nicks, scratches, scores, or evidence of corrosion.
   b. Inspect bushings for wear and bearings for axial and radial play.
   c. Inspect for loose, missing, or damaged attaching hardware.
   d. Refer to WP 0003 00, Table 6, for control rods, tube assemblies, and connecting links inspection and repair procedures.
   e. Refer to WP 0077 00 for corrosion removal and treatment.
   f. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

INSPECTION REQUIREMENTS - continued

4. Connecting Link Assembly **(CSI - WP 0160 00)**
   a. Inspect for cracks, dents, nicks, scratches, scores, out-of-roundness, or evidence of corrosion.
   b. Inspect rod ends for nicks, scratches, and loose fittings. Inspect bearing for axial and radial play.
   c. Inspect for loose, missing, or damaged attaching hardware.
   d. Refer to WP 0003 00, Table 6, for control rods, tube assemblies, and connecting links inspection and repair procedures.
   e. Refer to WP 0077 00 for corrosion removal and treatment.
   f. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

5. Yoke Assembly (Aft LCT Yolk) **(CSI - WP 0160 00)**
   a. Inspect for cracks, nicks, scratches, scores, or evidence of corrosion.
   b. Inspect bushings for wear and bearings for axial and radial play.
   c. Inspect for loose, missing, or damaged attaching hardware.
   d. Refer to WP 0003 00, Table 6, for control rods, tube assemblies, and connecting links inspection and repair procedures.
   e. Refer to WP 0077 00 for corrosion removal and treatment.
   f. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

6. Link Assembly, Swashplate (Aft LCT Connecting Link) **(CSI - WP 0160 00)**
   a. Inspect for cracks, nicks, scratches, scores, chafed areas, evidence of overheating, or evidence of corrosion.
   b. Inspect bearings for axial and radial play.
   c. Inspect for loose, missing, or damaged attaching hardware.
   d. Refer to WP 0003 00, Tables 4 and 5, for electrical wiring and electrical component inspection and repair procedures.
   e. Refer to WP 0003 00, Table 6, for control rods, tube assemblies, and connecting links inspection and repair procedures.
   f. Refer to WP 0077 00 for corrosion removal and treatment.
   g. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.
   h. Repair per DMWR 55-1615-316 when authorized by the Contracting Officer.

7. Actuator, Electromechanical Linear (Aft LCT Actuator) **(CSI - WP 0160 00)**
   a. Inspect for cracks, nicks, scratches, scores, evidence of overheating, or evidence of corrosion.
   b. Inspect bearings for axial and radial play.
   c. Inspect for loose, missing, or damaged attaching hardware.
   d. Refer to WP 0003 00, Tables 4 and 5, for electrical wiring and electrical component inspection and repair procedures.
   e. Refer to WP 0003 00, Table 6, for control rods, tube assemblies, and connecting links inspection and repair procedures.
   f. Refer to WP 0077 00 for corrosion removal and treatment.
   g. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.
   h. Repair per DMWR 55-1680-289 when authorized by the Contracting Officer.

END OF WORK PACKAGE

DEPOT MAINTENANCE WORK REQUIREMENT
CH-47D HELICOPTER
ADVANCED FLIGHT CONTROL SYSTEM

INITIAL SETUP

Test Equipment:
As Required

Tools and Special Tools:
As Required

Material/Parts:
As Required

Personnel Required:
Examiner (PSA)

References:
TM 1-1500-204-23 Series
TM 55-1520-240-23 Series
WP 0003 00
WP 0044 00
WP 0053 00
WP 0055 00
WP 0057 00
WP 0077 00

Equipment Conditions:
As Required

Special Environmental Condition:
As Required

SCOPE

The Advanced Flight Control System (AFCS) stabilizes the helicopter about all axis and enhances control response. It automatically maintains desired airspeed, altitude, bank angle, and heading. An automatic turn feature, coupled to the pilot or copilot horizontal situation indicator (HSI) is also included in the AFCS.

The AFCS consists of the following components:

1. A cockpit control panel.
2. Two AFCS computers in the avionics compartment.
3. Three integrated lower control actuators (ILCA).
4. A differential airspeed hold (DASH) actuator in the flight controls closet.
5. Two longitudinal cyclic trim (LCT) actuators; one in the forward upper controls and the other in the aft upper controls.
6. Roll and yaw magnetic brakes, a longitudinal cockpit control driver actuator (CCDA), and a thrust CCDA. All are located in the flight control closet.
7. Three control position transducers.

Attitude changes sensed by the attitude gyros, a yaw rate gyro in each AFCS computer, and the directional gyro are processed by the AFCS computers and applied to the ILCA's. The ILCA's extend or retract and move the upper flight controls. This control input is not apparent to the pilot because AFCS control inputs do not move the cockpit controls. The pitch, roll, and yaw axis all operate in fundamentally the same manner. Should a hard over occur, the pilot can easily override the AFCS. Pitch attitude stability, airspeed hold, and a positive stick gradient from hover to maximum forward velocity are provided through the DASH actuator. The DASH actuator extends or retracts to maintain airspeed for a given stick position.

Built In Test Equipment (BITE) is installed in each AFCS computer. This equipment is intended for ground troubleshooting purposes only. An interlock circuit through the engine condition control box prevents BITE use anytime either engine condition lever (ECL) is out of STOP.

INSPECTION REQUIREMENTS

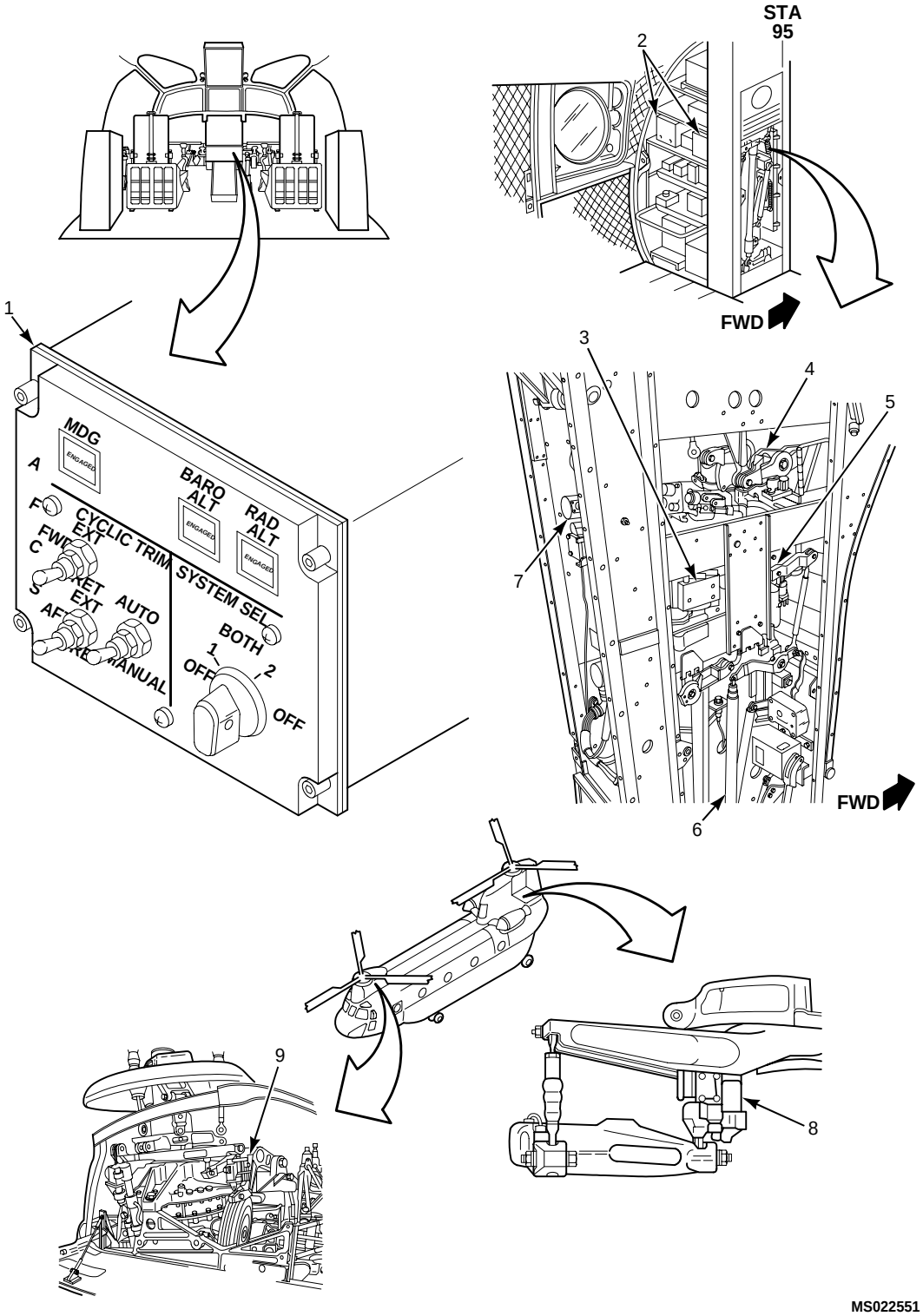


Figure 1. Advanced Flight Control System

INSPECTION REQUIREMENTS – continued

NOTE

The items in Figure 1 correspond to the respective item numbers in the following INSPECTION REQUIREMENTS.

1. AFCS Panel
   a. Inspect for cracks, dents, scratches, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to WP 0003 00 Tables 4 and 5 for electrical wiring and electrical component accept/reject criteria and repair procedures.
   d. Refer to WP 0077 00 for corrosion removal and treatment.
   e. Refer to TM 55-1520-240-23 for accept/reject criteria, and repair procedures.

2. AFCS Computers
   a. Inspect for cracks, dents, scratches, arcing, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to WP 0003 00 Tables 4 and 5 for electrical wiring and electrical component accept/reject criteria and repair procedures.
   d. Refer to WP 0077 00 for corrosion removal and treatment.
   e. Refer to TM 55-1520-240-23 for accept/reject criteria, and repair procedures.

3. Integrated Lower Control Actuator, Pitch
   Refer to WP 0044 00 for accept/reject criteria and repair procedures.

4. Integrated Lower Control Actuator, Yaw
   Refer to WP 0044 00 for accept/reject criteria and repair procedures.

5. Integrated Lower Control Actuator, Thrust
   Refer to WP 0044 00 for accept/reject criteria and repair procedures.

6. Differential Airspeed Hold (DASH), Actuator
   Refer to WP 0053 00 for accept/reject criteria and repair procedures.

7. Integrated Lower Control Actuator, Roll
   Refer to WP 0044 00 for accept/reject criteria and repair procedures.

8. Longitudinal Cyclic Trim (LCT) Actuator, AFT
   Refer to WP 0057 00 for accept/reject criteria and repair procedures.

9. Longitudinal Cyclic Trim (LCT) Actuator, FWD
   Refer to WP 0055 00 for accept/reject criteria and repair procedures.

END OF WORK PACKAGE

DEPOT MAINTENANCE WORK REQUIREMENT
CH-47D HELICOPTER
WINDSHIELD SYSTEM

INITIAL SETUP

Test Equipment:
As Required

Tools and Special Tools:
As Required

Material/Parts:
As Required

Personnel Required:
Examiner (PSA)

References:
TM 1-1500-204-23 Series
TM 55-1500-323-24
TM 55-1520-240-23 Series
WP 0003 00
WP 0077 00
WP 0091 00

Equipment Conditions:
As Required

Special Environmental Condition:
As Required

SCOPE

The windshield system consists of the three windshields, three switches on the overhead anti-ice panel, and three relays and control boxes behind the nose dynamic absorber. Each windshield is made of laminated layers with an imbedded temperature sensor. The inner surface of the outside layer is a transparent heating element. When the overhead anti-ice switches are operated, current passes through the transparent element, heating the windshield. The windshield anti-icing system operates independently on the three cockpit windshields. The pilot and copilot's windshields have anti-icing and anti-fogging systems. The center windshield has an anti-fogging system only. Electrical circuits for the three windshields are identical, except that the cut-in temperature for the center windshield is lower than the outer windshields.

INSPECTION REQUIREMENTS

NOTE

The item numbers in Figure 1, sheets 1 through 3 correspond to the respective item numbers in the INSPECTION REQUIREMENTS following each illustration.

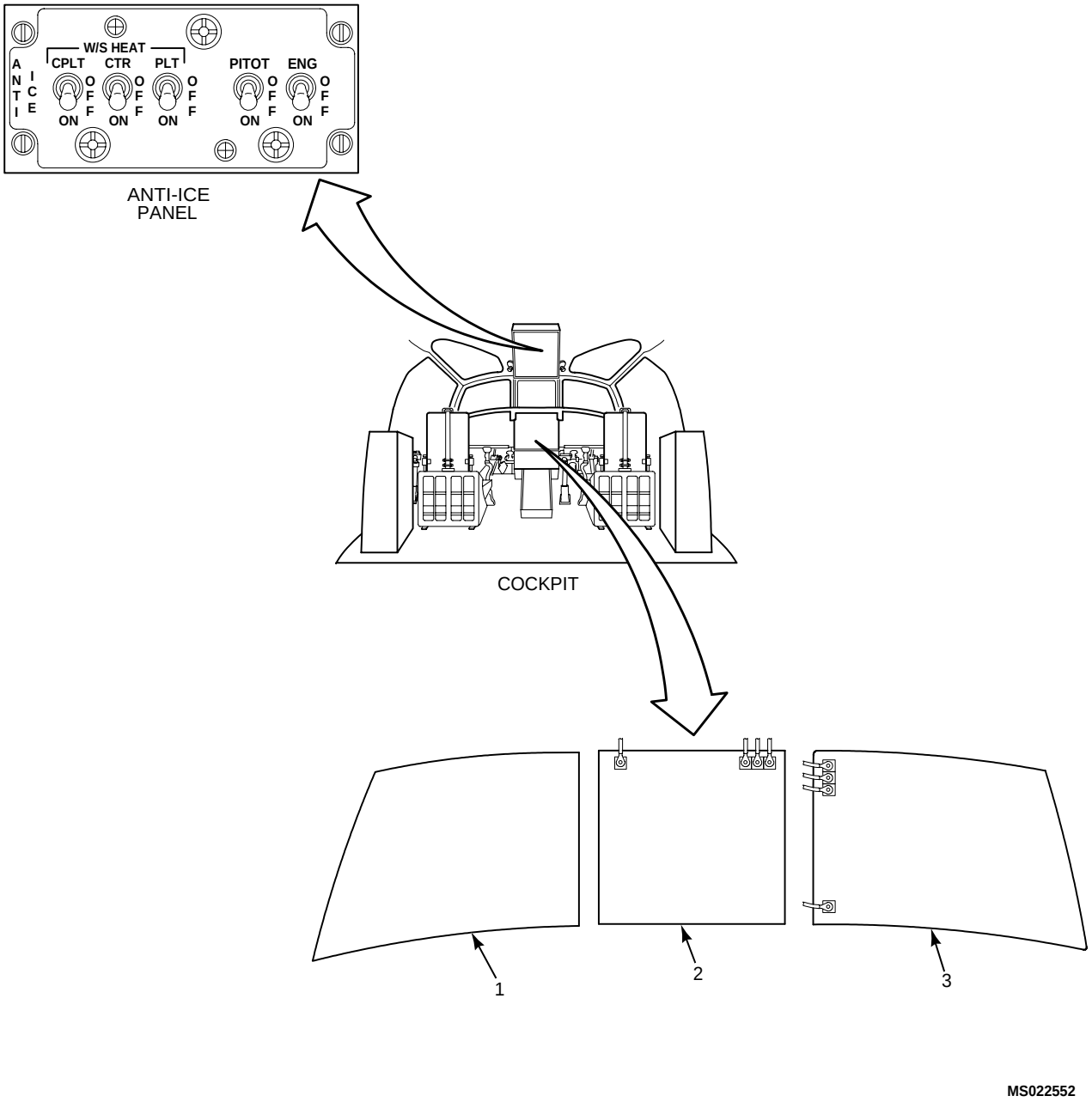


Figure 1. Windshield System (Sheet 1 of 3)

INSPECTION REQUIREMENTS - continued

1. Copilot's Windshield
   a. Inspect windshield for security, cracks (no cracks allowed), scratches, pitting, gouges, and discoloration.
   b. Inspect wiring to the windshield terminal for security, arcing, breaks, or evidence of corrosion.
   c. Refer to WP 0003 00 Tables 4 and 5 for electrical wiring and electrical component accept/reject criteria and repair procedures.
   d. Refer to WP 0077 00 for corrosion removal and treatment.
   e. Refer to WP 0091 00 for windshield repair procedures.
   f. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

2. Center Windshield
   a. Inspect windshield for security, cracks (no cracks allowed), scratches, pitting, gouges, and discoloration.
   b. Inspect wiring to the windshield terminal for security, arcing, breaks, or evidence of corrosion.
   c. Refer to WP 0003 00 Tables 4 and 5 for electrical wiring and electrical component accept/reject criteria and repair procedures.
   d. Refer to WP 0077 00 for corrosion removal and treatment.
   e. Refer to WP 0091 00 for windshield repair procedures.
   f. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

3. Pilot's Windshield
   a. Inspect windshield for security, cracks (no cracks allowed), scratches, pitting, gouges, and discoloration.
   b. Inspect wiring to the windshield terminal for security, arcing, breaks, or evidence of corrosion.
   c. Refer to WP 0003 00 Tables 4 and 5 for electrical wiring and electrical component accept/reject criteria and repair procedures.
   d. Refer to WP 0077 00 for corrosion removal and treatment.
   e. Refer to WP 0091 00 for windshield repair procedures.
   f. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

INSPECTION REQUIREMENTS - continued

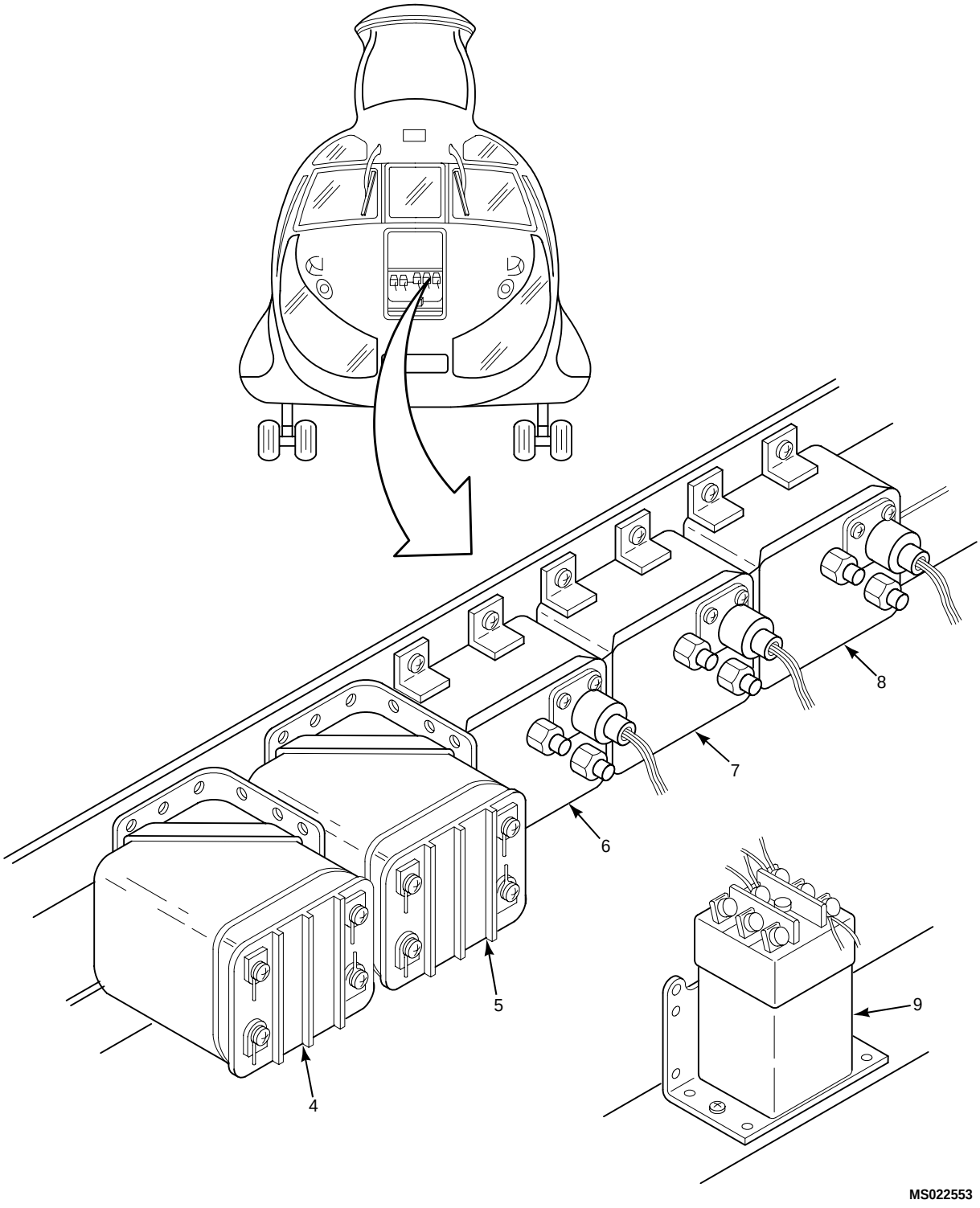


Figure 1. Windshield System (Sheet 2 of 3)

INSPECTION REQUIREMENTS - continued

4. Copilot's Anti-Icing Relay
   a. Inspect for security, cracks, arcing, discoloration, or evidence of corrosion.
   b. Refer to WP 0003 00 Tables 4 and 5 for electrical wiring and electrical component accept/reject criteria and repair procedures.
   c. Refer to WP 0077 00 for corrosion removal and treatment.
   d. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

5. Pilot's Anti-Icing Relay
   a. Inspect for security, cracks, arcing, discoloration, or evidence of corrosion.
   b. Refer to WP 0003 00 Tables 4 and 5 for electrical wiring and electrical component accept/reject criteria and repair procedures.
   c. Refer to WP 0077 00 for corrosion removal and treatment.
   d. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

6. Copilot's Windshield Anti-Icing Control Box
   a. Inspect for security, cracks, arcing, discoloration, or evidence of corrosion.
   b. Refer to WP 0003 00 Tables 4 and 5 for electrical wiring and electrical component accept/reject criteria and repair procedures.
   c. Refer to WP 0077 00 for corrosion removal and treatment.
   d. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

7. Pilot's Windshield Anti-Icing Control Box
   a. Inspect for security, cracks, arcing, discoloration, or evidence of corrosion.
   b. Refer to WP 0003 00 Tables 4 and 5 for electrical wiring and electrical component accept/reject criteria and repair procedures.
   c. Refer to WP 0077 00 for corrosion removal and treatment.
   d. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

8. Center Windshield Anti-Icing Control Box
   a. Inspect for security, cracks, arcing, discoloration, or evidence of corrosion.
   b. Refer to WP 0003 00 Tables 4 and 5 for electrical wiring and electrical component accept/reject criteria and repair procedures.
   c. Refer to WP 0077 00 for corrosion removal and treatment.
   d. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

9. Center Anti-Icing Relay
   a. Inspect for security, cracks, arcing, discoloration, or evidence of corrosion.
   b. Refer to WP 0003 00 Tables 4 and 5 for electrical wiring and electrical component accept/reject criteria and repair procedures.
   c. Refer to WP 0077 00 for corrosion removal and treatment.
   d. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

INSPECTION REQUIREMENTS - continued

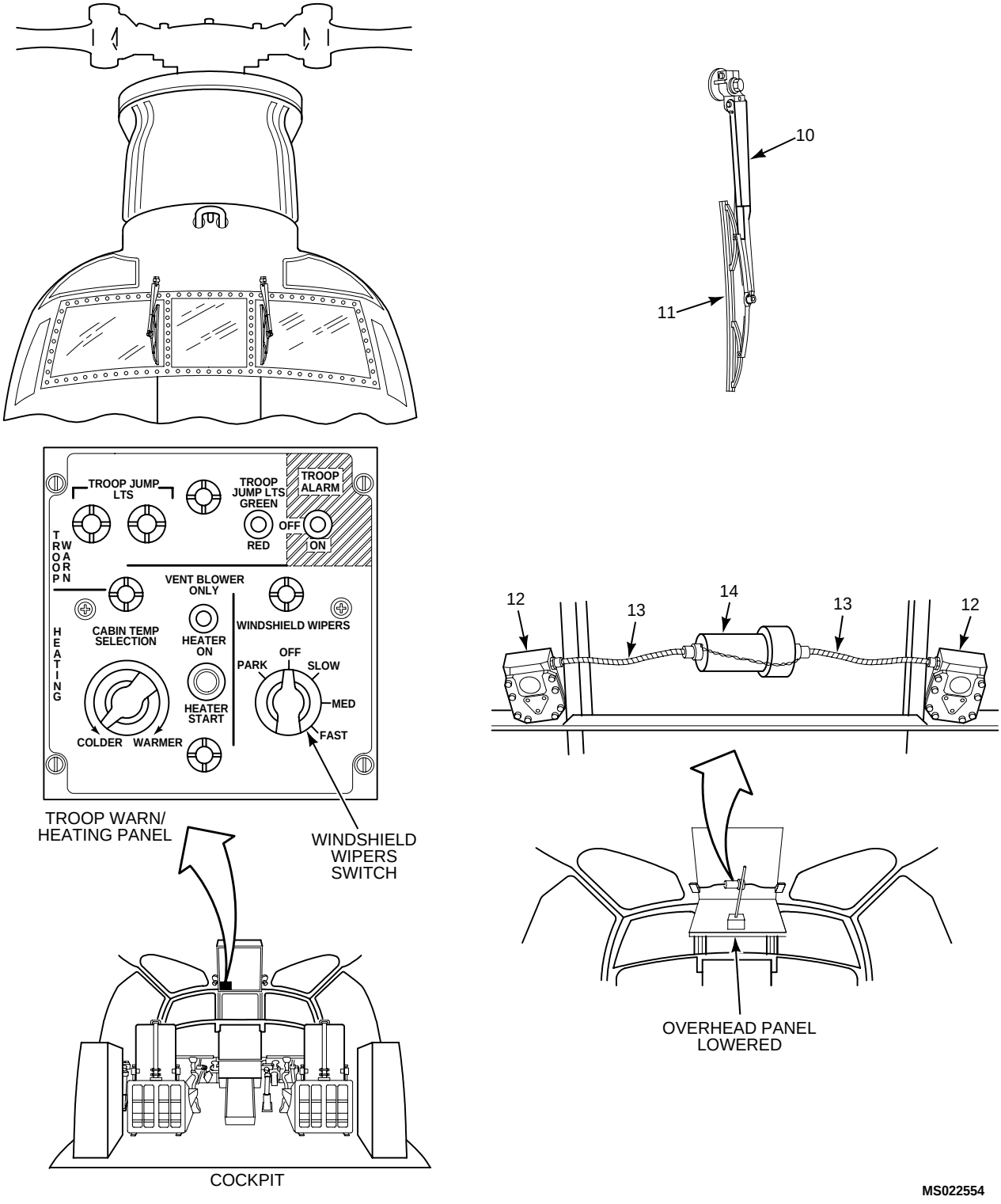


Figure 1. Windshield System (Sheet 3 of 3)

INSPECTION REQUIREMENTS - continued

10. Windshield Wiper Arms
    a. Inspect for cracks, bends, security, or evidence of corrosion.
    b. Inspect wiper arm for sufficient pressure against windshield.
    c. Refer to WP 0077 00 for corrosion removal and treatment.
    d. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

11. Windshield Wiper Blades
    a. Inspect for cracks, tears, security, condition of rubber wiper, or evidence of corrosion.
    b. Refer to WP 0077 00 for corrosion removal and treatment.
    c. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

12. Mechanical Actuators (Converters), LH and RH
    a. Inspect for security, cracks, loose, missing, or damaged attaching hardware, or evidence of corrosion.
    b. Inspect for proper operation.
    c. Refer to WP 0077 00 for corrosion removal and treatment.
    d. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

13. Flexible Shaft Assembly
    a. Inspect for security, cracks, kinks, unraveling of casing on shaft, or evidence of corrosion.
    b. Inspect for proper operation.
    c. Refer to WP 0077 00 for corrosion removal and treatment.
    d. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

14. Windshield Wiper Motor
    a. Inspect for security, cracks, arcing, discoloration, or evidence of corrosion.
    b. Inspect for proper operation.
    c. Refer to WP 0003 00 Tables 4 and 5 for electrical wiring and electrical component accept/reject criteria and repair procedures.
    d. Refer to WP 0077 00 for corrosion removal and treatment.
    e. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

END OF WORK PACKAGE

DEPOT MAINTENANCE WORK REQUIREMENT
CH-47D HELICOPTER
FIRE DETECTION SYSTEM

INITIAL SETUP

Test Equipment:
As Required

Tools and Special Tools:
As Required

Material/Parts:
As Required

Personnel Required:
Examiner (PSA)

References:
TM 1-1500-204-23 Series
TM 55-1500-323-24
TM 55-1520-240-23 series
WP 0003 00
WP 0077 00

Equipment Conditions:
As Required

Special Environmental Condition:
As Required

SCOPE

The fire detection system consists of a fire detection loop routed around each engine, a control unit for each of the two loops, and a test switch and indicator lights in the cockpit. Each fire detection loop consists of three sensing elements joined by connectors. Each element consists of a thin metallic tube with a wire running through the center, insulated from the tubing by a salt imbedded in a ceramic matrix. The resistance of the insulating salt drops and the salt becomes conductive at about 575 degrees F (302 degrees C). The tubing is connected to ground. The central wire is connected to the control unit. The three elements have a combined length of about 19 feet. The two control units are mounted in the cabin at sta 482 left and right. Each unit contains an AC powered magnetic amplifier and DC test circuit. Each unit is connected to its respective fire detection loop. The units are sealed, and maintenance is limited to replacement. A fire indicating light for each engine is located in the respective fire extinguisher handle on the cockpit center instrument panel. A test switch between the fire pull handles allows the light and electrical circuits to be checked.

INSPECTION REQUIREMENTS

NOTE

The item numbers in Figures 1 through 3 correspond to the respective item numbers in the INSPECTION REQUIREMENTS following the illustrations.

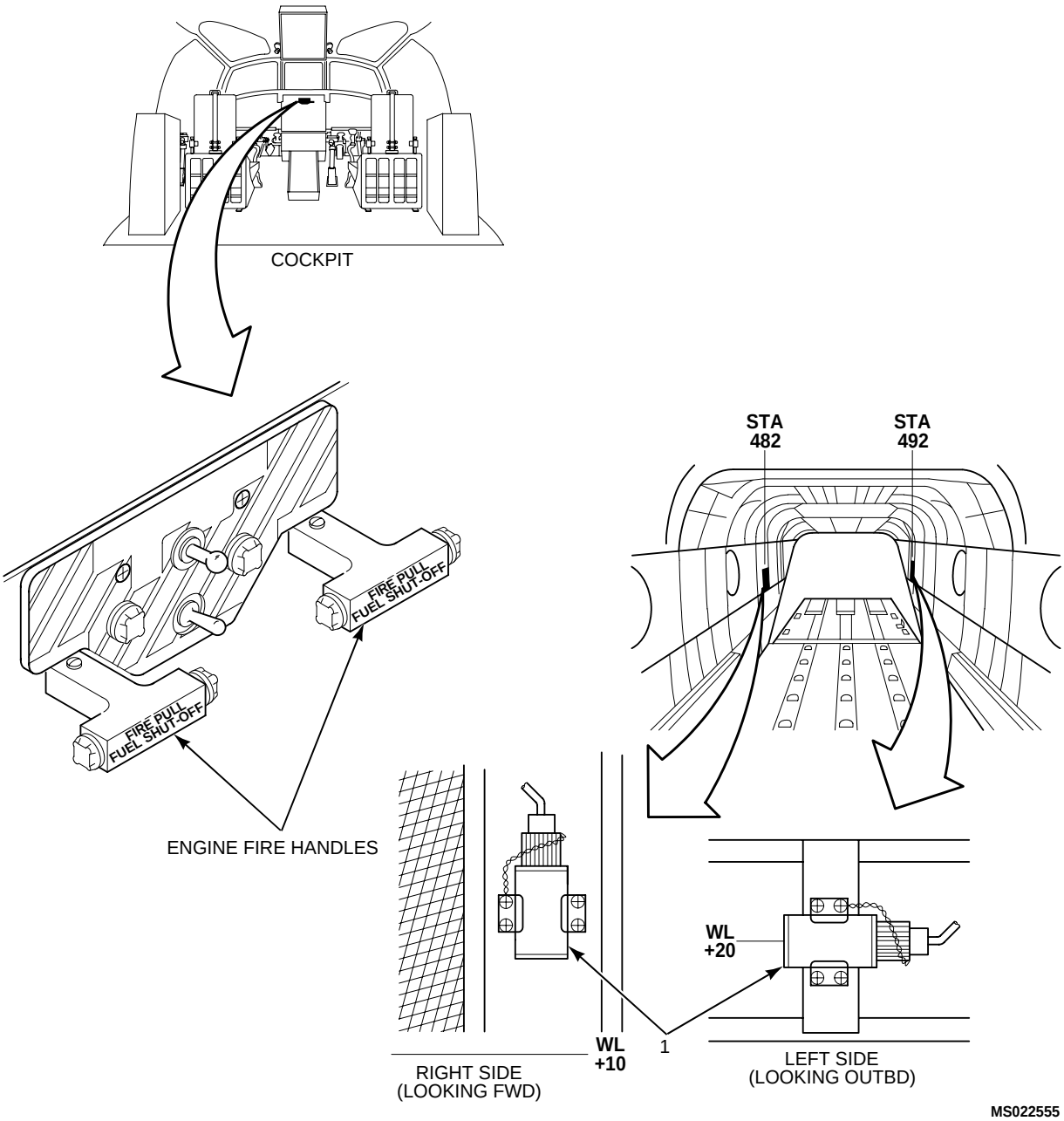


Figure 1. Fire Detection Controls

INSPECTION REQUIREMENTS - continued

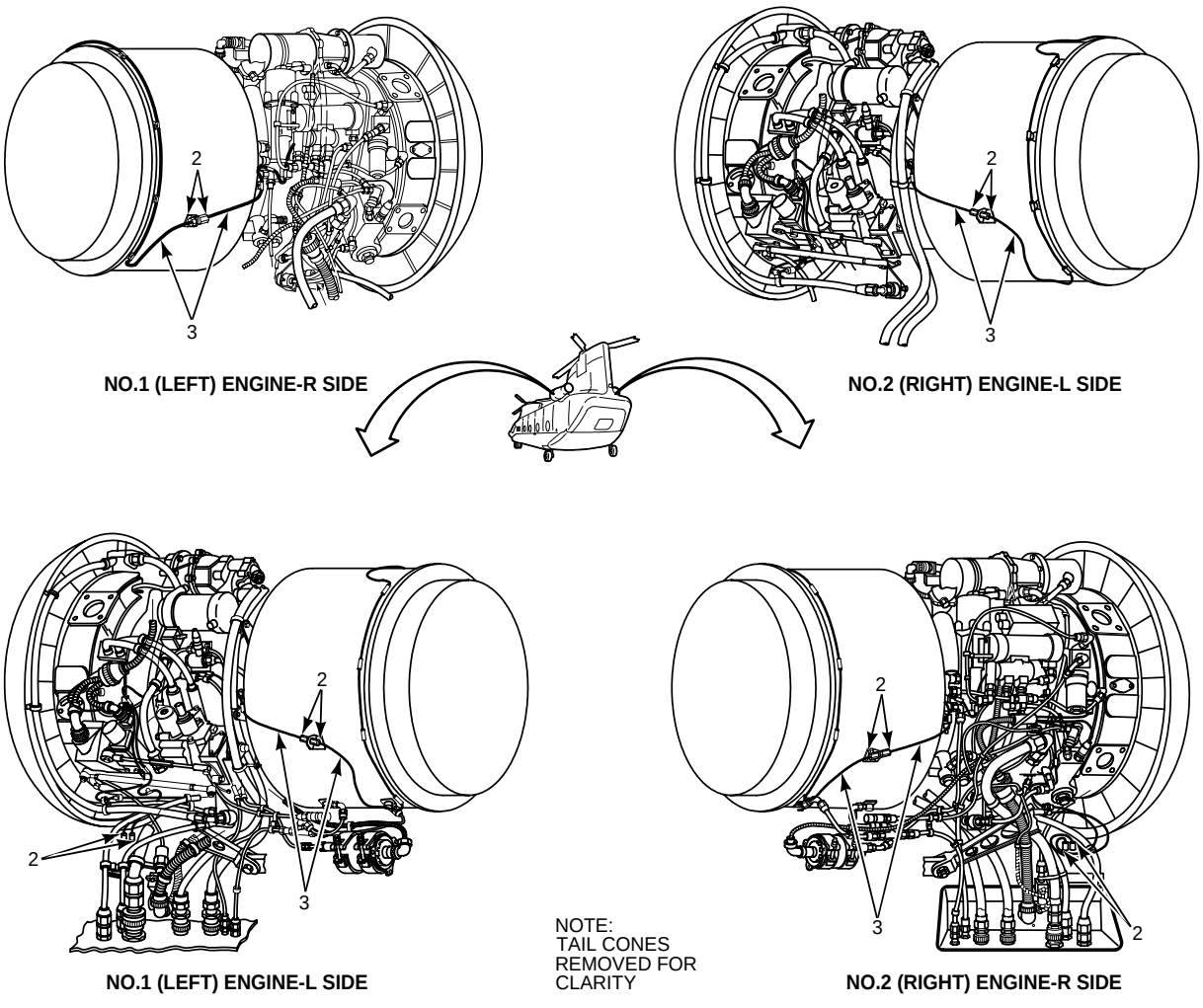


Figure 2. Fire Detection Sensing Elements, 712 Engine

INSPECTION REQUIREMENTS - continued

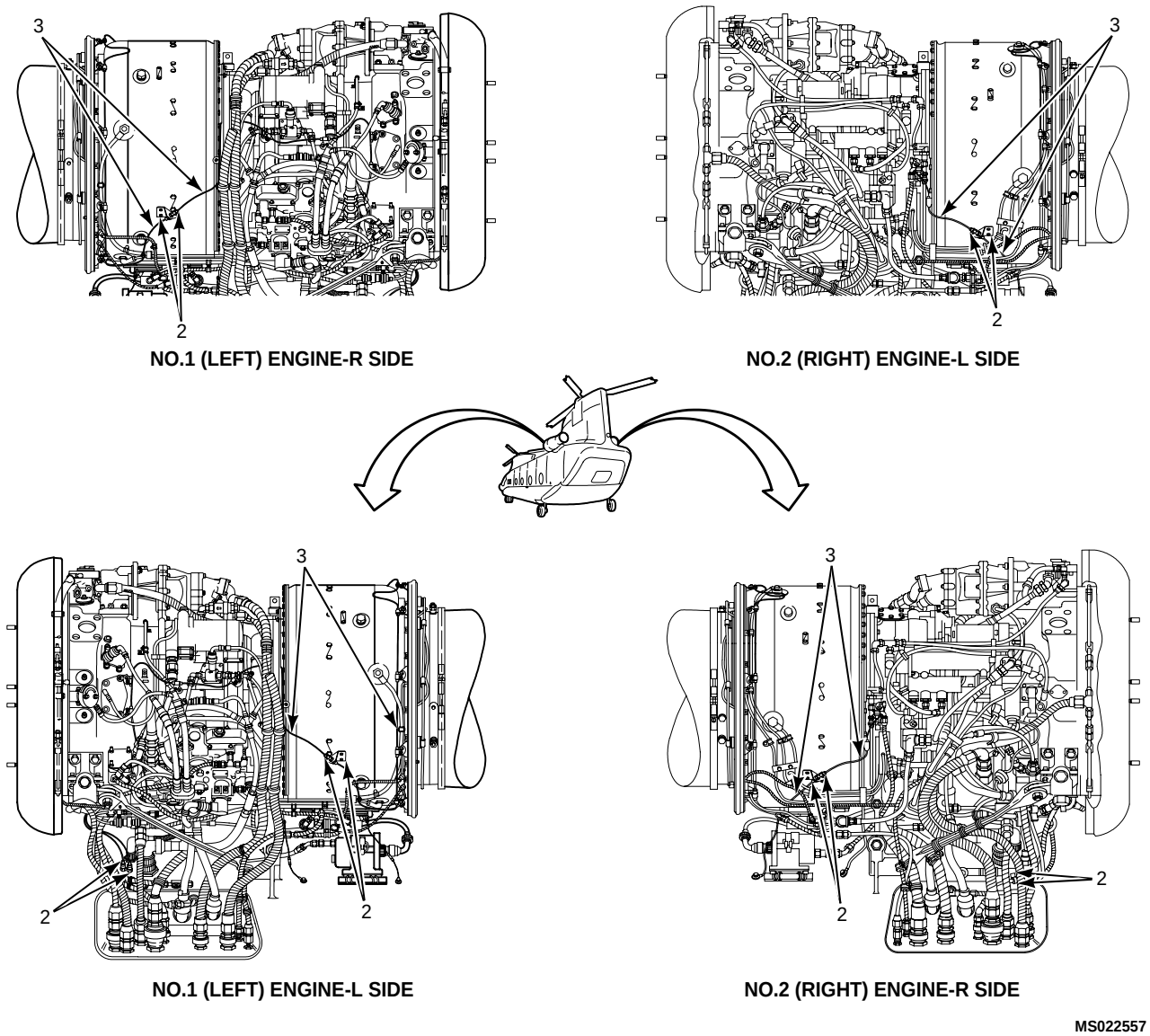


Figure 3. Fire Detection Sensing Elements, 714 Engine

INSPECTION REQUIREMENTS – continued

NOTE

Refer to TM 55-1500-323-24 for repair or replacement of aircraft electrical and electronic wiring.

1. Fire Detection Controls, LH and RH
   a. Inspect for security, missing or damaged hardware, cracks (no cracks allowed), arcing, or evidence of corrosion.
   b. Refer to WP 0003 00, Tables 4 and 5, for electrical wiring and electrical component accept/reject criteria and repair procedures.
   c. Refer to WP 0077 00 for corrosion removal and treatment.
   d. Refer to TM 55-1520-240-23 for accept/reject criteria.

2. Element Connectors
   a. Inspect for security, missing or damaged hardware, cracks (no cracks allowed), arcing, or evidence of corrosion.
   b. Refer to WP 0077 00 for corrosion removal and treatment.
   c. Refer to TM 55-1520-240-23 for accept/reject criteria.

3. Sensing Elements
   a. Inspect for security, kinked sections, missing or damaged hardware, breaks (no breaks allowed), arcing, or evidence of corrosion.
   b. Refer to WP 0077 00 for corrosion removal and treatment.
   c. Refer to TM 55-1520-240-23 for accept/reject criteria.

END OF WORK PACKAGE

DEPOT MAINTENANCE WORK REQUIREMENT
CH-47D HELICOPTER
FIRE EXTINGUISHING SYSTEM

INITIAL SETUP

Test Equipment:
As Required

Tools and Special Tools:
As Required

Material/Parts:
As Required

Personnel Required:
Examiner (PSA)

References:
DMWR 55-1680-246
TM 1-1500-204-23 Series
TM 55-1520-240-23 Series
WP 0003 00
WP 0077 00

Equipment Conditions:
As Required

Special Environmental Condition:
As Required

SCOPE

The fire extinguishing system includes two fire extinguishing agent containers, four discharge nozzles (one to each engine from each bottle), controls and switches in the cockpit, and associated tubing, wiring, and circuit breakers. Two containers filled with fire extinguishing agent are mounted in the base of the aft pylon, between the engines. In case of an engine fire, extinguishing agent in the containers can be discharged independently to the affected engine from the cockpit. Each container is a metal sphere that holds a three-pound charge of non-toxic extinguishing agent. The agent is pre-charged with nitrogen at 600 psi, and monitored by a gage on the bottle. Separate lengths of tubing lead from the bottle to each engine, ending in a pair of discharge nozzles in each engine compartment. The two containers share the nozzles at each engine. The discharge paths are kept separate by a double check valve and tee where the tubing from each container joins. Two pull handles control discharge of extinguishing agent to the engines, one for each engine, and a toggle switch on the center instrument panel. Pulling a handle shuts off fuel to that engine and arms the circuit to the containers.

INSPECTION REQUIREMENTS

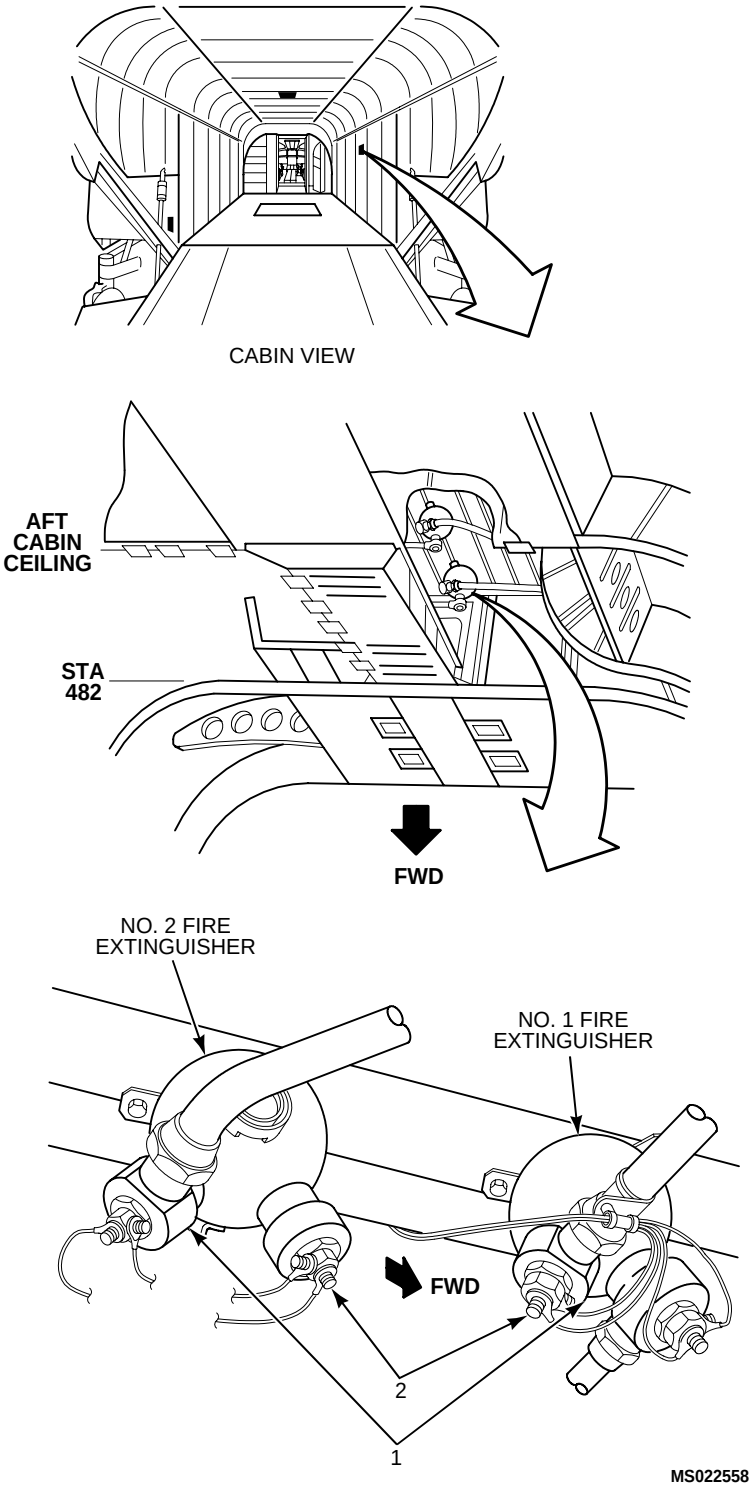


Figure 1. Fire Extinguisher Containers

INSPECTION REQUIREMENTS – continued

WARNING

EXPLOSIVE

When not mounted in helicopter, fire extinguishers (bottles) can become dangerous missiles if discharged. Do not detonate, discharge, or abuse fire extinguishers. Injury to personnel can result. Remove cartridges (squibs) when extinguishers are removed for storage.

NOTE

The item numbers in Figure 1 correspond to the respective items in the following INSPECTION REQUIREMENTS.

1. Fire Extinguisher, No. 1 and No. 2
   a. Inspect extinguisher for security, damage, nicks, cracks (no cracks allowed), chafing, scoring, scratches, dents or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Inspect gage for security, breaks, damage, and ensure pressure reading is within limits.
   d. Weigh extinguisher without the caps or protective plugs and compare weight-to-weight marked on decal.
   e. Check helicopter DA Form 2408-18 for servicing dates of extinguisher.
   f. Refer to WP 0077 00 for corrosion removal and treatment.
   g. Refer to WP 0003 00 Tables 4 and 5 for all electrical wiring and electrical component inspection and repair procedures.
   h. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.
   i. Repair as per DMWR 55-1680-246 when authorized by the Contracting Officer.

INSPECTION REQUIREMENTS – continued

2. Cartridge, Engine Fire Extinguisher (Squib)

WARNING

EXPLOSIVE

Cartridge is an explosive device and is dangerous to personnel. Be sure the electrical terminal is shunted to the ground terminal before the cartridge is removed. Place the cartridge in a protective container.

a. Inspect cartridge for general condition or evidence of corrosion.
b. Store IAW local procedures for explosive devices.
c. Check the helicopter DA Form 2408-18 for cartridge retirement date.
d. Refer to TM 55-1520-240-23 for accept/reject criteria.

INSPECTION REQUIREMENTS – continued

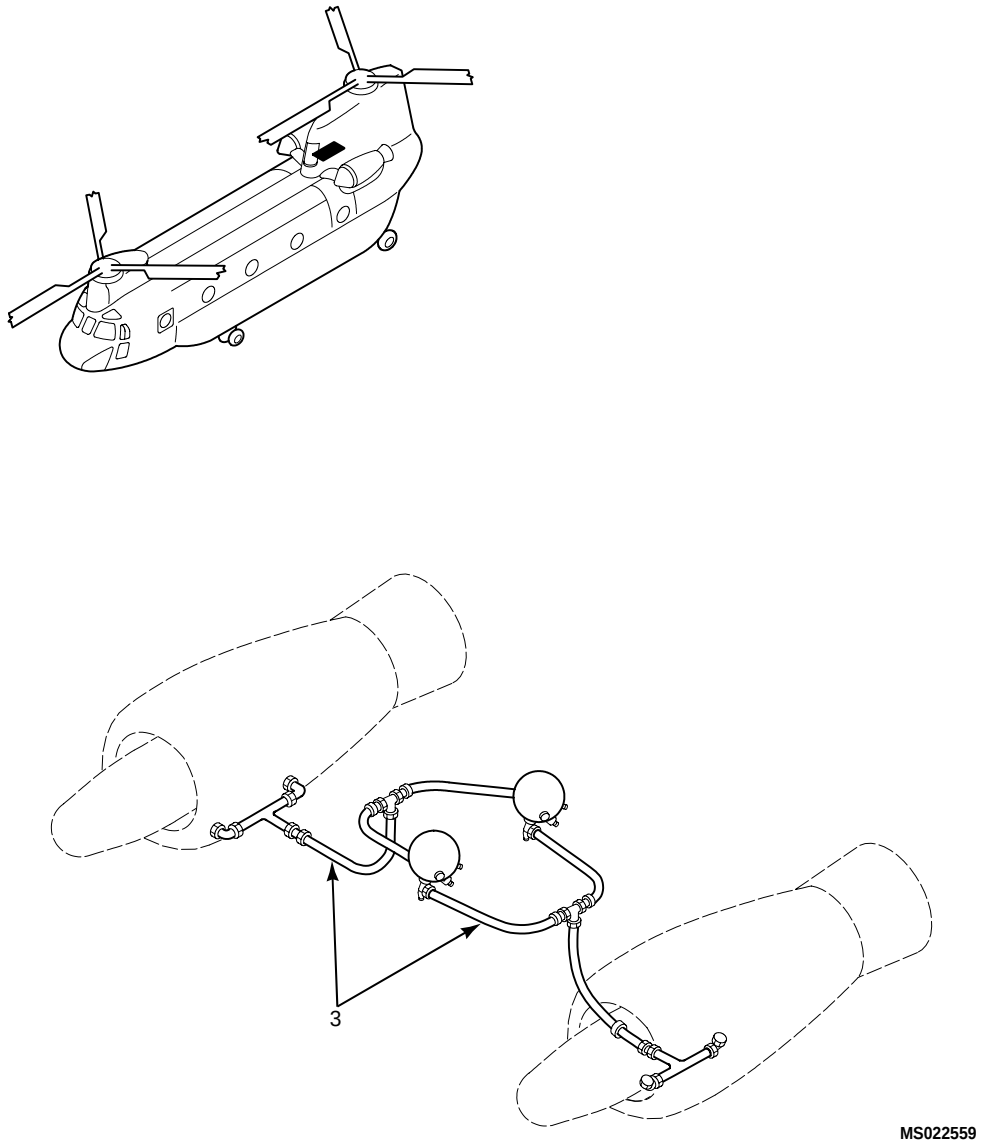


Figure 2. Fire Extinguisher Tubing

NOTE

The item number in Figure 2 corresponds to the following INSPECTION REQUIREMENT.

3. Tubing
   a. Inspect for cracks (no cracks allowed), nicks, scratches, dents, or evidence of corrosion.
   b. Inspect fittings for thread damage, general condition, or evidence of corrosion.
   c. Refer to WP 0077 00 for corrosion removal and treatment.
   d. Refer to WP 0003 00 Table 2 for tubing inspection and repair procedures.

END OF WORK PACKAGE

DEPOT MAINTENANCE WORK REQUIREMENT
CH-47D HELICOPTER
ENVIRONMENTAL CONTROL SYSTEM

INITIAL SETUP

Test Equipment:
As Required

Tools and Special Tools:
As Required

Material/Parts:
As Required

Personnel Required:
Examiner (PSA)

References:
TM 1-1500-204-23 Series
TM 55-1500-323-24
TM 55-1520-240-23 Series
DMWR 1-1660-206
DMWR 55-1680-225
WP 0003 00
WP 0077 00
WP 0092 00

Equipment Conditions:
As Required

Special Environmental Condition:
As Required

SCOPE

The environmental system provides heat and ventilation for the helicopter. The system consists of a heater, fan, exhaust, ignition unit, control switches, temperature controller, thermostat, cockpit and cabin ducting, and fuel delivery components.

The heater is located right hand forward of cabin, sta 95 to sta 120. It is capable of 200,000-BTU/HR output. The fuel control unit draws fuel from the right side fuel system and controls flow to the heater. The fan draws air from outside and forces it through the heater. Some air is mixed with fuel for the heater and some is heated and sent through a duct network. The fan can provide fresh air for ventilation. The heater system is protected from overheating by three thermostatic switches. A differential air pressure switch shuts down the heater when there is not enough air for safe operation. The thermostat located on the left hand side of the cabin, sta 335, maintains a steady temperature by causing the heater control relay located at sta 95 to open and close as the temperature fluctuates. Heat and ventilation push-pull controls are located in the cockpit.

INSPECTION REQUIREMENTS

NOTE

The item numbers in Figure 1, sheets 1 and 2 correspond to the respective item numbers in the INSPECTION REQUIREMENTS following each illustration.

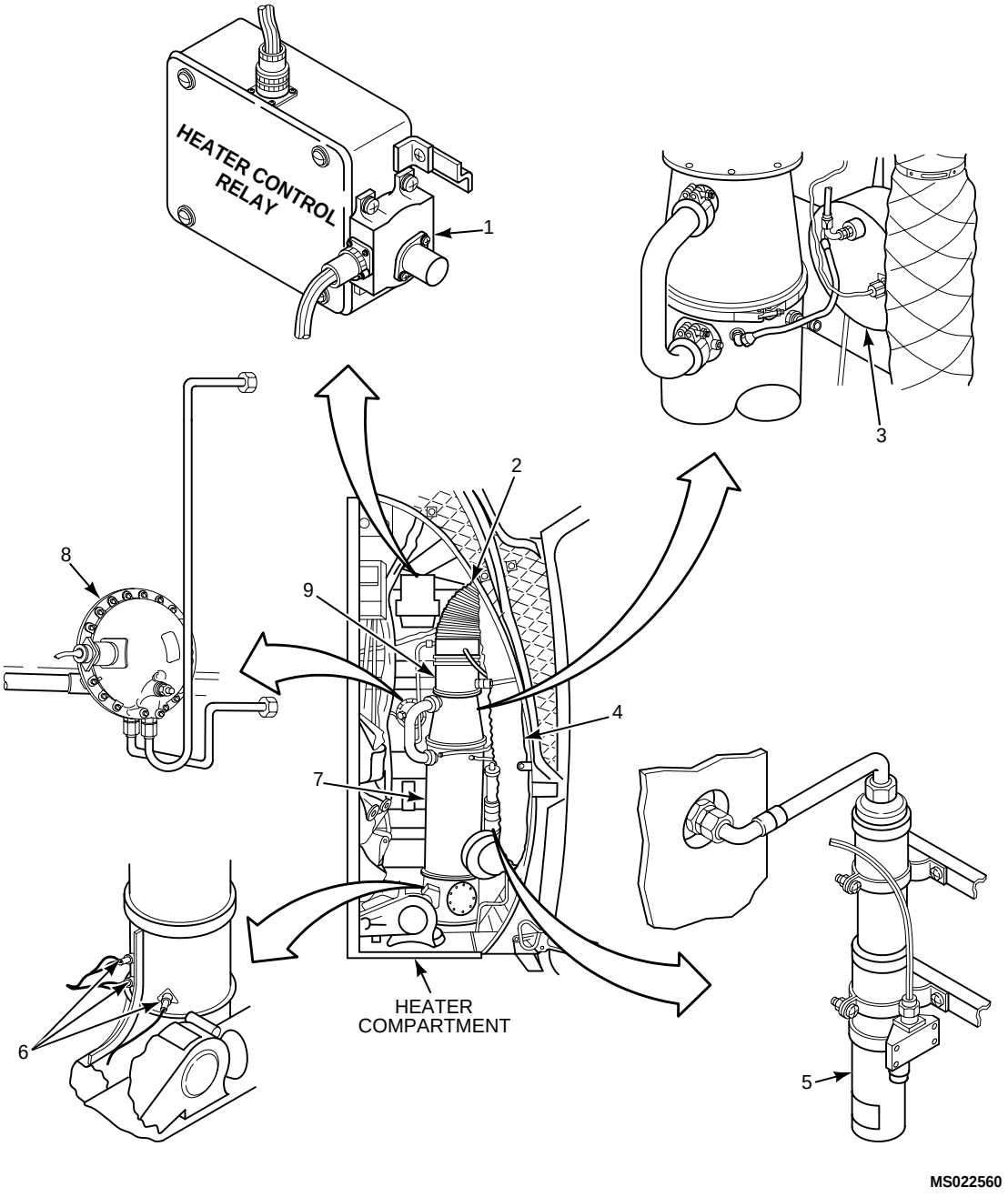


Figure 1. Environmental Control System (Sheet 1 of 2)

INSPECTION REQUIREMENTS - continued

1. Heater Control Relay and Thermostat
   a. Inspect for cracks (no cracks allowed), dents, scratches, evidence of overheating, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to WP 0003 00, Tables 4 and 5, for electrical wiring and electrical component inspection and repair procedures.
   d. Refer to WP 0077 00 for corrosion removal and treatment.
   e. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

2. Air Inlet Duct
   a. Inspect heater intake screen and duct for cracks (no cracks allowed), dents, tears, or evidence of corrosion.
   b. Inspection for loose, missing, or damaged attaching hardware.
   c. Refer to WP 0077 00 for corrosion removal and treatment.
   d. Refer to WP 0092 00 for spot welded parts repair procedures.
   e. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

3. Heater Fuel Control
   a. Inspect for cracks (no cracks allowed), dents, scratches, leaks, evidence of overheating, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to WP 0003 00, Tables 4 and 5, for electrical wiring and electrical component inspection and repair procedures.
   d. Refer to WP 0003 00, Tables 2 and 3, for tubing and hose inspection and repair procedures.
   e. Refer to WP 0077 00 for corrosion removal and treatment.
   f. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.
   g. Repair per DMWR 55-1680-225 when approved by the Contracting Officer.

4. Exhaust Pipe and Shroud
   a. Inspect exhaust pipe and shroud (shroud removed) for evidence of overheating, cracks (no cracks allowed), tears, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to WP 0077 00 for corrosion removal and treatment.
   d. Refer to WP 0092 00 for spot welded parts repair procedures.
   e. Refer to TM 55-1520-23 for accept/eject criteria and repair procedures.

5. Heater Ignition Unit
   a. Inspect for cracks (no cracks allowed), dents, scratches, evidence of overheating, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to WP 0003 00, Tables 4 and 5, for electrical wiring and electrical component inspection and repair procedures.
   d. Refer to WP 0077 00 for corrosion removal and treatment.
   e. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.
   f. Repair per DMWR 1-1660-206 when authorized by the Contracting Officer.

INSPECTION REQUIREMENTS - continued

6. Thermostatic Switches
   a. Inspect for cracks (no cracks allowed), dents, scratches, evidence of overheating, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to WP 0003 00, Tables 4 and 5, for electrical wiring and electrical component inspection and repair procedures.
   d. Refer to WP 0077 00 for corrosion removal and treatment.
   e. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

7. Heater Unit
   a. Inspect heater drain for proper installation and obstructions.
   b. Inspect heater and ducting for cracks (no cracks allowed), dents, evidence of overheating, tears, or evidence of corrosion.
   c. Inspect for loose, missing, or damaged attaching hardware.
   d. Remove, clean, and inspect spark plug.
   e. Refer to WP 0077 00 for corrosion removal and treatment.
   f. Refer to WP 0092 00 for spot welded parts repair procedures.
   g. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

8. Air Pressure Switch
   a. Inspect for cracks (no cracks allowed), dents, scratches, leaks, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to WP 0003 00, Tables 2 and 3, for tubing and hose inspection and repair procedures.
   d. Refer to WP 0003 00, Tables 4 and 5, for electrical wiring and electrical component inspection and repair procedures.
   e. Refer to WP 0077 00 for corrosion removal and treatment.
   f. Refer to TM 55-1520-240-23 for accept/reject criteria repair procedures.

9. Heater Fan
   a. Inspect for cracks (no cracks allowed), dents, binding, scratches, evidence of overheating, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to WP 0003 00, Tables 4 and 5, for electrical wiring and electrical component inspection and repair procedures.
   d. Refer to WP 0077 00 for corrosion removal and treatment.
   e. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

INSPECTION REQUIREMENTS – continued

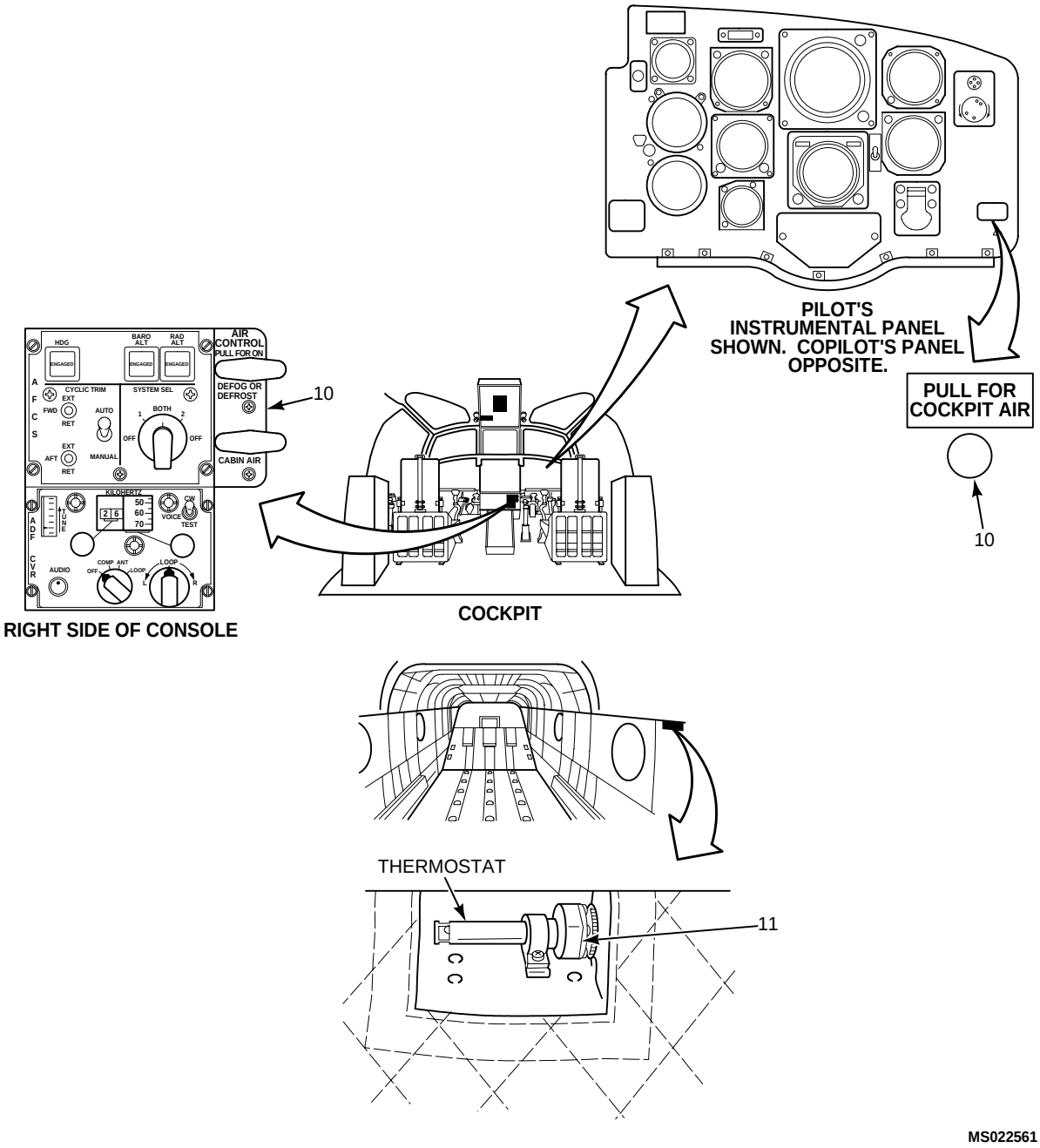


Figure 1. Environmental Control System (Sheet 2 of 2)

10. Air Control Push-Pull Controls
    a. Inspect for cracks (no cracks allowed), dents, binding, or evidence of corrosion.
    b. Inspect for loose, missing, or damaged attaching hardware.
    c. Refer to WP 0077 00 for corrosion removal and treatment.
    d. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

INSPECTION REQUIREMENTS – continued

11. Cabin Thermostat
    a. Inspect for cracks (no cracks allowed), dents, scratches, evidence of overheating, or evidence of corrosion.
    b. Inspect for loose, missing, or damaged attaching hardware.
    c. Refer to WP 0003 00, Tables 4 and 5, for electrical wiring and electrical component inspection and repair procedures.
    d. Refer to WP 0077 00 for corrosion removal and treatment.
    e. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

END OF WORK PACKAGE

DEPOT MAINTENANCE WORK REQUIREMENT
CH-47D HELICOPTER
CARGO HANDLING/RESCUE WINCH SYSTEM

INITIAL SETUP

Test Equipment:
As Required

Tools and Special Tools:
As Required

Material/Parts:
As Required

Personnel Required:
Examiner (PSA)

References:
DMWR 55-1680-133
TM 1-1500-204-23 Series
TM 1-1520-240-10
TM 55-1500-323-24
TM 55-1520-240-23 series
WP 0003 00
WP 0077 00

Equipment Conditions:
As Required

Special Environmental Condition:
As Required

SCOPE

The cargo handling system consists of a hydraulically operated winch and cable (150 feet, ¼-inch steel), a cable cutter, tackle blocks, and a remote-control grip and safety harness. Stowage bags in the heater compartment are provided for the cable cutter and tackle blocks when not in use. System power and control is provided through various hydraulic valves, electrical switches and receptacles. The heart of the cargo handling system is the winch, mounted to the floor of the heater compartment at the right forward corner of the cabin. It is powered by hydraulic pressure from the utility hydraulic system. By changing cable routing, the winch can be used to perform several different functions. Refer to TM 1-1520-240-10 for information on configuring aircraft for the following functions:

1. Loading cargo into the cabin through the open cargo door
2. Carrying or bringing on-board cargo through the open rescue hatch while in the air
3. Personnel rescue operations
4. Parachute static line retrieval

INSPECTION REQUIREMENTS

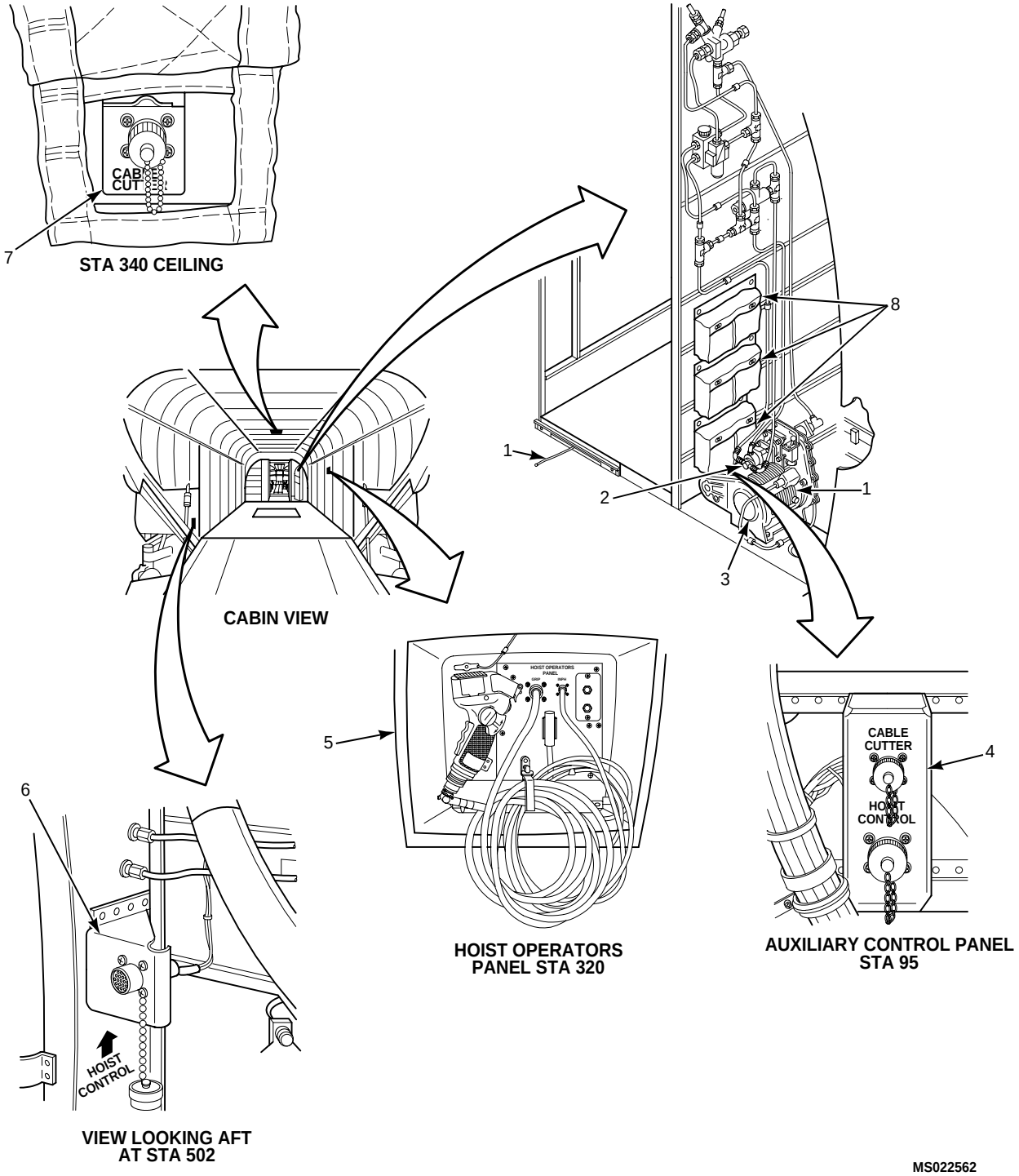


Figure 1. Cargo Handling/Rescue Winch System

INSPECTION REQUIREMENTS – continued

NOTE

The item numbers in Figure 1 correspond to the respective item numbers in the following INSPECTION REQUIREMENTS.

1. Cable
   a. Inspect the cable for bends, kinks, fraying, crushed or broken strands, or evidence of corrosion.
   b. Inspect the cable for 20 feet of red paint on both ends.
   c. Inspect the cable ball for security, damage, or evidence of corrosion.
   d. Refer to WP 0077 00 for corrosion removal and treatment.
   e. Refer to TM 55-1520-240-23 for accept/reject criteria.

2. Motor
   a. Inspect the motor for evidence of leaks, security, damage, discoloration, or evidence of corrosion.
   b. Inspect motor for loose, missing, or damaged attaching hardware.
   b. Refer to WP 0003 00, Table 3, for hose inspection and repair procedures.
   d. Refer to WP 0077 00 for corrosion removal and treatment.
   e. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

3. Winch
   a. Inspect the winch for security, damage, cracks, dents, evidence of overheating, or evidence of corrosion.
   b. Inspect winch for loose, missing, or damaged attaching hardware.
   c. Refer to WP 0003 00, Tables 4 and 5, for electrical wiring and electrical component inspection and repair procedures.
   d. Refer to WP 0077 00 for corrosion removal and treatment.
   e. Refer to TM 55-1520-240-23 for accept/reject criteria.
   f. Repair per DMWR 55-1680-133 when authorized by the Contracting Officer.

4. Auxiliary Control Panel, sta 95
   a. Inspect the cable cutter and hoist control receptacles for cracks, scratches, gouges, identification markings, burned areas, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged hardware.
   c. Refer to WP 0003 00, Tables 4 and 5, for electrical wiring and electrical component inspection and repair procedures.
   d. Refer to WP 0077 00 for corrosion removal and treatment.
   e. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

5. Hoist Operators Panel, sta 320
   a. Inspect the cable cutter and hoist control receptacles for cracks, scratches, gouges, identification markings, burned areas, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged hardware.
   c. Refer to WP 0003 00, Tables 4 and 5, for electrical wiring and electrical component inspection and repair procedures.
   d. Refer to WP 0077 00 for corrosion removal and treatment.
   e. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

INSPECTION REQUIREMENTS – continued

6. Hoist Control Receptacle, sta 502
   a. Inspect the cable cutter and hoist control receptacles for cracks, scratches, gouges, identification markings, burned areas, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged hardware.
   c. Refer to WP 0003 00, Tables 4 and 5, for electrical wiring and electrical component inspection and repair procedures.
   d. Refer to WP 0077 00 for corrosion removal and treatment.
   e. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

7. Cable Cutter Receptacle, sta 340 Ceiling
   a. Inspect the cable cutter and hoist control receptacles for cracks, scratches, gouges, identification markings, burned areas, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged hardware.
   c. Refer to WP 0003 00, Tables 4 and 5, for electrical wiring and electrical component inspection and repair procedures.
   d. Refer to WP 0077 00 for corrosion removal and treatment.
   e. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

8. Stowage Container (Bags)
   a. Inspect stowage container for proper installation, missing or damaged hardware, security, holes, tears, or evidence of corrosion.
   b. Refer to WP 0077 00 for corrosion removal and treatment. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

END OF WORK PACKAGE

DEPOT MAINTENANCE WORK REQUIREMENT

CH-47D HELICOPTER

AUXILIARY POWER UNIT (APU)

INITIAL SETUP

Test Equipment:
As Required

Tools and Special Tools:
As Required

Material/Parts:
As Required

Personnel Required:
Examiner (PSA)

References:
DMWR 1-6115-511
DMWR 55-1650-398
DMWR 55-2835-205
DMWR 55-6115-496
TM 1-1500-204-23 Series
TM 1-1520-240-10
TM 55-1500-322-24
TM 55-1500-323-24
TM 55-1520-240-23 Series
TM 55-2835-205-23
WP 0003 00
WP 0077 00

Equipment Conditions:
As Required

Special Environmental Condition:
As Required

SCOPE

The auxiliary power unit (APU) is a gas turbine engine that provides hydraulic and electrical power for engine starting and ground checks. The complete APU system includes the APU, electronic sequence unit (ESU), switches and relays, start module, and start accumulator. Fuel supply components include a fuel valve, boost pump, and manual shutoff valve.

A hydraulic motor-pump is mounted on the front of the APU. To start the APU, the motor-pump is driven by pressurized hydraulic fluid supplied by the start accumulator. An AC generator is driven by the APU to supply power to the electrical system during ground operation. The ESU is a microprocessor with built in test equipment (BITE) that monitors the APU operation. The ESU can stop the APU and show a fault display that gives reason for shutdown.

AUXILIARY POWER UNIT (APU) INSPECTION REQUIREMENTS

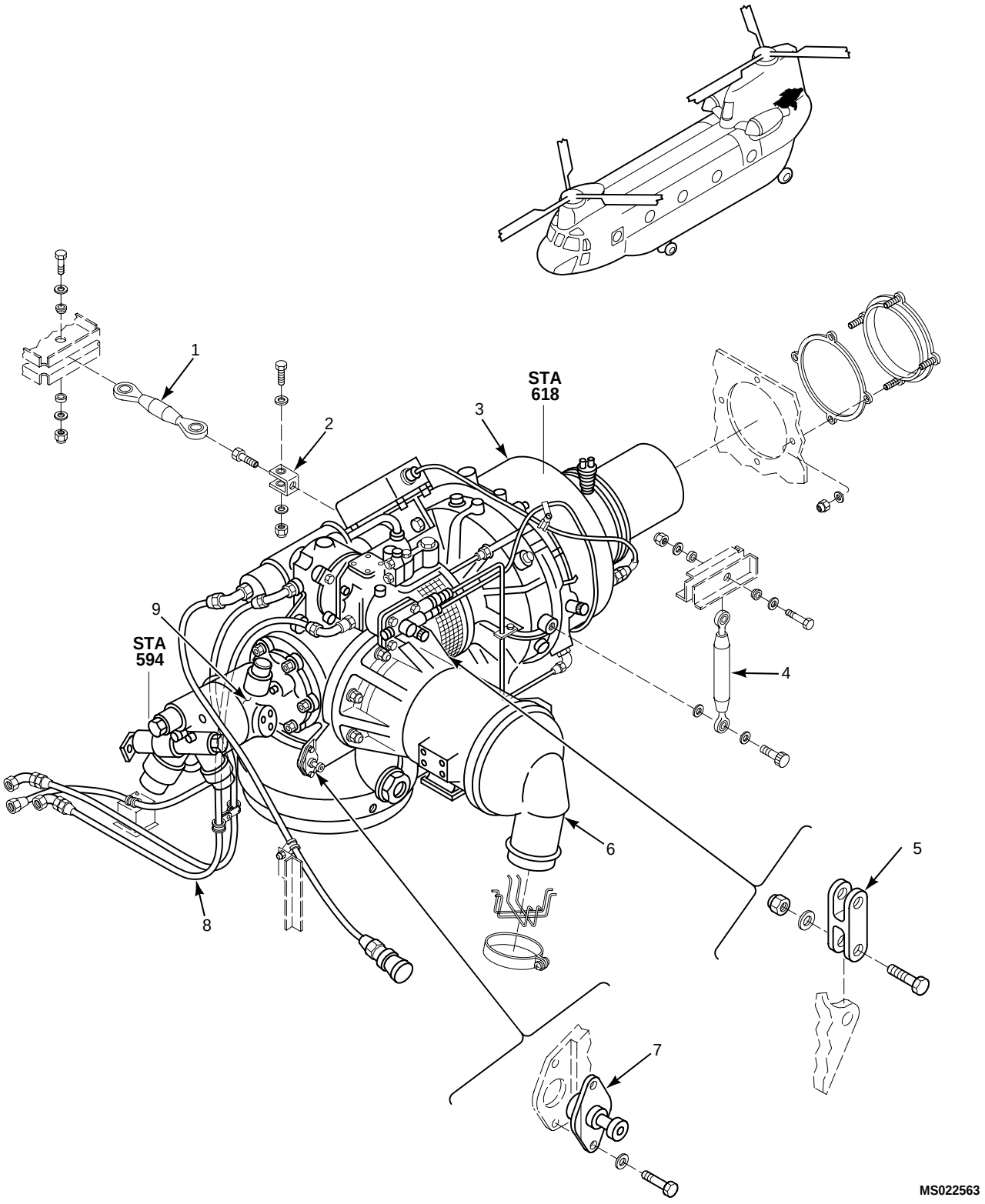


Figure 1. Auxiliary Power Unit

AUXILIARY POWER UNIT (APU) INSPECTION REQUIREMENTS – continued

NOTE

The item numbers in Figure 1 correspond to the respective item numbers in the following APU INSPECTION REQUIREMENTS.

1. Link Assembly (Lateral Aft)
   a. Inspect rod for cracks, dents, nicks, scratches, scores, out-of-roundness, or evidence of corrosion.
   b. Inspect rod ends for nicks, scratches, and loose fittings. Inspect bearing for axial and radial play.
   c. Inspect for loose, missing, or damaged attaching hardware.
   d. Refer to WP 0003 00 Table 6 for control rods, tube assemblies, and connecting links inspection and repair procedures.
   e. Refer to WP 0077 00 for corrosion removal and treatment.
   f. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

2. Clevis Assembly
   a. Inspect for cracks, nicks, scratches, or evidence of corrosion.
   b. Inspect bushing for wear.
   c. Inspect for loose, missing, or damaged attaching hardware.
   d. Refer to WP 0003 00 Table 6 for control rods, tube assemblies, and connecting links inspection and repair procedures.
   e. Refer to WP 0077 00 for corrosion removal and treatment.
   f. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

3. Auxiliary Power Unit
   a. Inspect screen for loose, missing, or cracked lacing hooks, dents, debris, and breaks in screen wire.
   b. Inspect engine for cracks, dents, chafed areas, frays, burns, or evidence of corrosion.
   c. Inspect for loose, missing, damaged, and improper hardware.
   d. Refer to WP 0003 00 Tables 2 and 3 for tubing and hose inspection and repair procedures.
   e. Refer to WP 0003 00 Tables 4 and 5 for electrical wiring and electrical component inspection and repair procedures.
   f. Refer to WP 0077 00 for corrosion removal and treatment.
   g. Refer to TM 55-2835-205-23 for accept/reject criteria and repair procedures
   h. Repair per DMWR 55-2835-205 when authorized by the Contracting Officer.

4. Link Assembly (Vertical Aft)
   a. Inspect rod for cracks, dents, nicks, scratches, scores, out-of-roundness, or evidence of corrosion.
   b. Inspect rod ends for nicks, scratches, and loose fittings. Inspect bearing for axial and radial play.
   c. Inspect for loose, missing, or damaged attaching hardware.
   d. Refer to WP 0003 00 Table 6 for control rods, tube assemblies, and connecting links inspection and repair procedures.
   e. Refer to WP 0077 00 for corrosion removal and treatment.
   f. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

5. Link Assembly
   a. Inspect for cracks, nicks, scratches, scores, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.

AUXILIARY POWER UNIT (APU) INSPECTION REQUIREMENTS – continued

c. Refer to WP 0003 00 Table 6 for control rods, tube assemblies, and connecting links inspection and repair procedures.
d. Refer to WP 0077 00 for corrosion removal and treatment.
e. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

6. APU Generator
   Refer to WP 0050 00 for inspection criteria.

7. Trunnion Support
   a. Inspect for cracks, nicks, scratches, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to WP 0077 00 for corrosion removal and treatment.
   d. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

8. Hose Assemblies
   a. Inspect for cracks, nicks, dents, scratches, leaks, or evidence of corrosion.
   b. Inspect for missing, loose, or damaged attaching hardware.
   c. Refer to WP 0003 00 Table 3 for hose inspection and repair procedures.
   d. Refer to WP 0077 00 for corrosion removal and treatment.
   e. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

9. APU Motor Pump
   Refer to WP 0045 00 for inspection criteria.

AUXILIARY POWER UNIT (APU) INSPECTION REQUIREMENTS – continued

ELECTRONIC SENSING UNIT (ESU) INSPECTION REQUIREMENTS

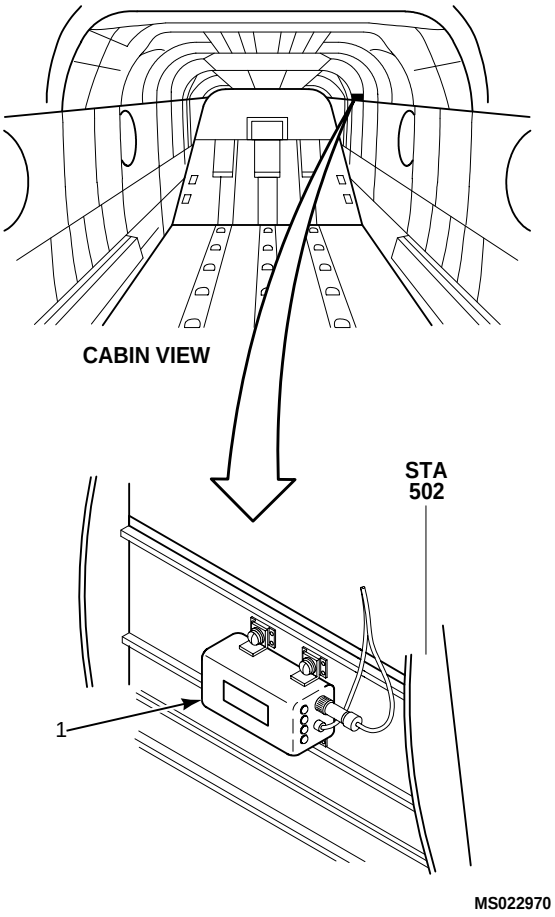


Figure 2. Electronic Sensing Unit (ESU)

NOTE

The item number in Figure 2 corresponds to the respective item number in the following ESU INSPECTION REQUIREMENTS.

1. Electronic Sensing Unit
   a. Inspect for cracks, gouges, scratches, evidence of overheating, or evidence of corrosion.
   b. Inspect BITE indicators for broken glass.
   c. Inspect missing, loose, or damaged attaching hardware.
   d. Refer to WP 0003 00 Tables 4 and 5 for electrical wiring and electrical component inspection and repair procedures.
   e. Refer to WP 0077 00 for corrosion removal and treatment.
   f. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

END OF WORK PACKAGE

DEPOT MAINTENANCE WORK REQUIREMENT
CH-47D HELICOPTER
EXTERNAL CARGO HOOK SYSTEM

INITIAL SETUP

Test Equipment:
As Required

Tools and Special Tools:
As Required

Material/Parts:
As Required

Personnel Required:
Examiner (PSA)

References:
TM 1-1500-204-23 Series
TM 55-1500-323-24
TM 55-1520-240-23 Series
WP 0003 00
WP 0077 00

Equipment Conditions:
As Required

Special Environmental Condition:
As Required

SCOPE

The external cargo hook system consists of three separate cargo hooks mounted on the underside of the helicopter. The system allows a single load to be suspended at up to three points or three separate loads to be carried at the same time.

The center cargo hook is suspended from a beam under the cabin floor at sta 331. The hook is attached to a beam with a bolt that allows the hook to swing side to side. The beam is carried in bearings attached to structure at the sides of the rescue hatch.. It can pivot forward and aft from the attaching points. When not in use, the hook is stowed between the cabin floor and the rescue hatch door. In use, the hatch door is opened and the hook is unstrapped to hang down through the open hatch. The hook lifting capacity is 26,000 pounds.

The forward and aft hooks are suspended from fittings attached to the floor beams at sta 249 and sta 409. Each fitting is a universal type that allows the hook to swing forward and aft and from side to side. The lifting capacity of each hook is 17,000 pounds. When used together, the two hooks can lift a combined load of 25,000 pounds.

All three hooks can be released in any one of three modes – normal, emergency, or manual.

INSPECTION REQUIREMENTS

NOTE

The item numbers in Figure 1, sheets 1 through 3 correspond to the respective item numbers in the INSPECTION REQUIREMENTS following each illustration.

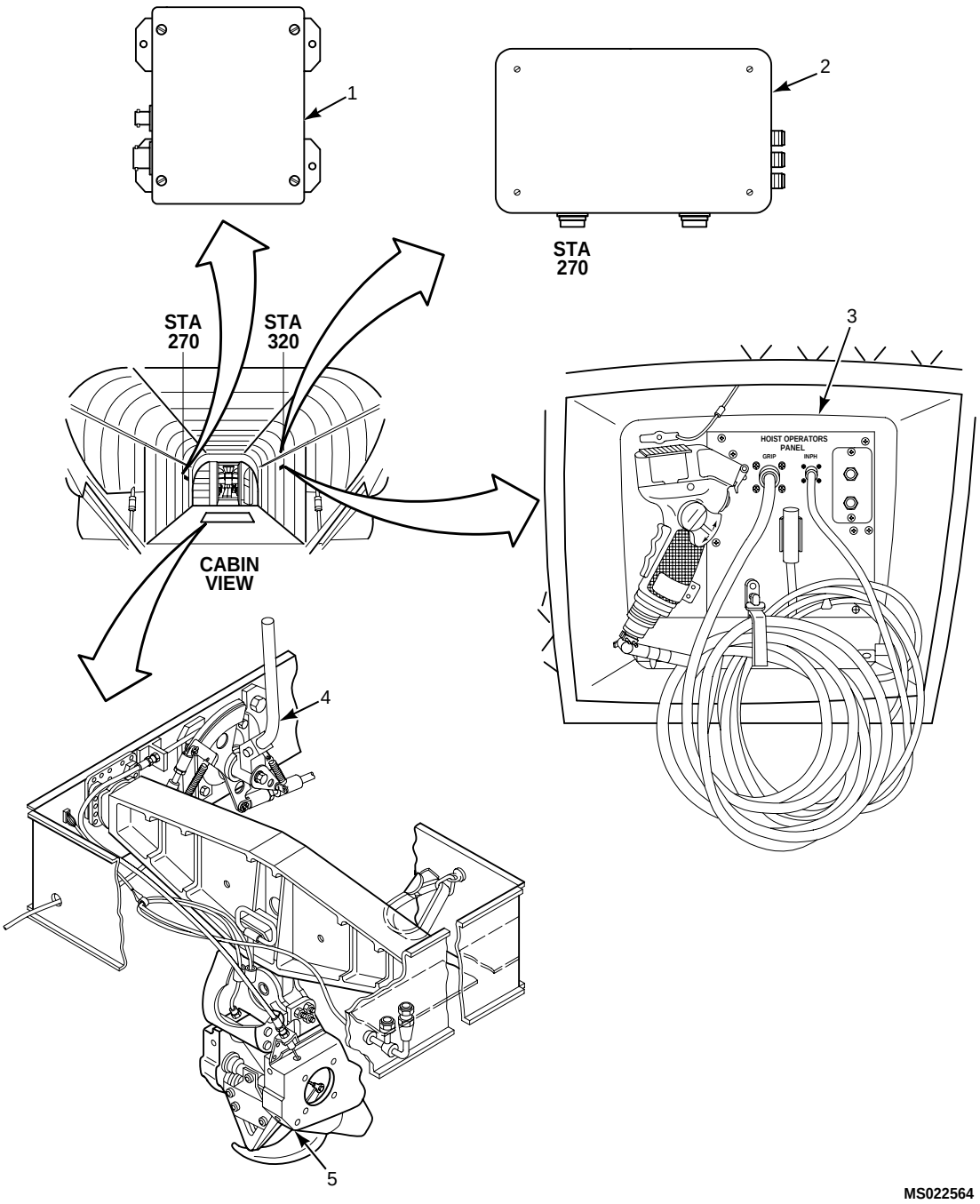


Figure 1. External Cargo Hook System (Sheet 1 of 3)

INSPECTION REQUIREMENTS - continued

1. Emergency Hook Release Relay Box, sta 270, Left Side
   a. Inspect for cracks, dents, scratches, evidence of overheating, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to WP 0003 00, Tables 4 and 5, for electrical wiring and electrical component inspection and repair procedures.
   d. Refer to WP 0077 00 for corrosion removal and treatment.
   e. Refer to TM 55-1520-240-23 for accept/reject criteria.

2. Dual Hook Relay Box, sta 270, Right Side
   a. Inspect for cracks, dents, scratches, evidence of overheating or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to WP 0003 00, Tables 4 and 5, for electrical wiring and electrical component inspection and repair procedures.
   d. Refer to WP 0077 00 for corrosion removal and treatment.
   e. Refer to TM 55-1520-240-23 for accept/reject criteria.

3. Hoist Operator Panel
   Refer to WP 0063 00 for inspection criteria.

4. Emergency Release Assembly
   a. Inspect for cracks, dents, scratches, bent handle, binding, or evidence of corrosion.
   b. Inspect cable assemblies for general condition or evidence of corrosion.
   c. Inspect for loose, missing, or damaged attaching hardware.
   d. Refer to WP 0077 00 for corrosion removal and treatment.
   e. Refer to TM 55-1520-240-23 for accept/reject criteria.

5. Center Cargo Hook
   a. Inspect for cracks, dents, scratches, leaks, evidence of arcing, proper operation, or evidence of corrosion.
   b. Inspect electrical switches for general condition, evidence of overheating, or evidence of corrosion.
   c. Inspect for loose, missing, or damaged attaching hardware.
   d. Inspect actuator gage for damage and proper charge.
   e. Refer to WP 0003 00, Tables 2 and 3, for tubing and hose inspection and repair procedures.
   f. Refer to WP 0003 00, Tables 4 and 5, for electrical wiring and electrical component inspection and repair procedures.
   g. Refer to WP 0077 00 for corrosion removal and treatment.
   h. Refer to TM 55-1520-240-23 for accept/reject criteria.

INSPECTION REQUIREMENTS - continued

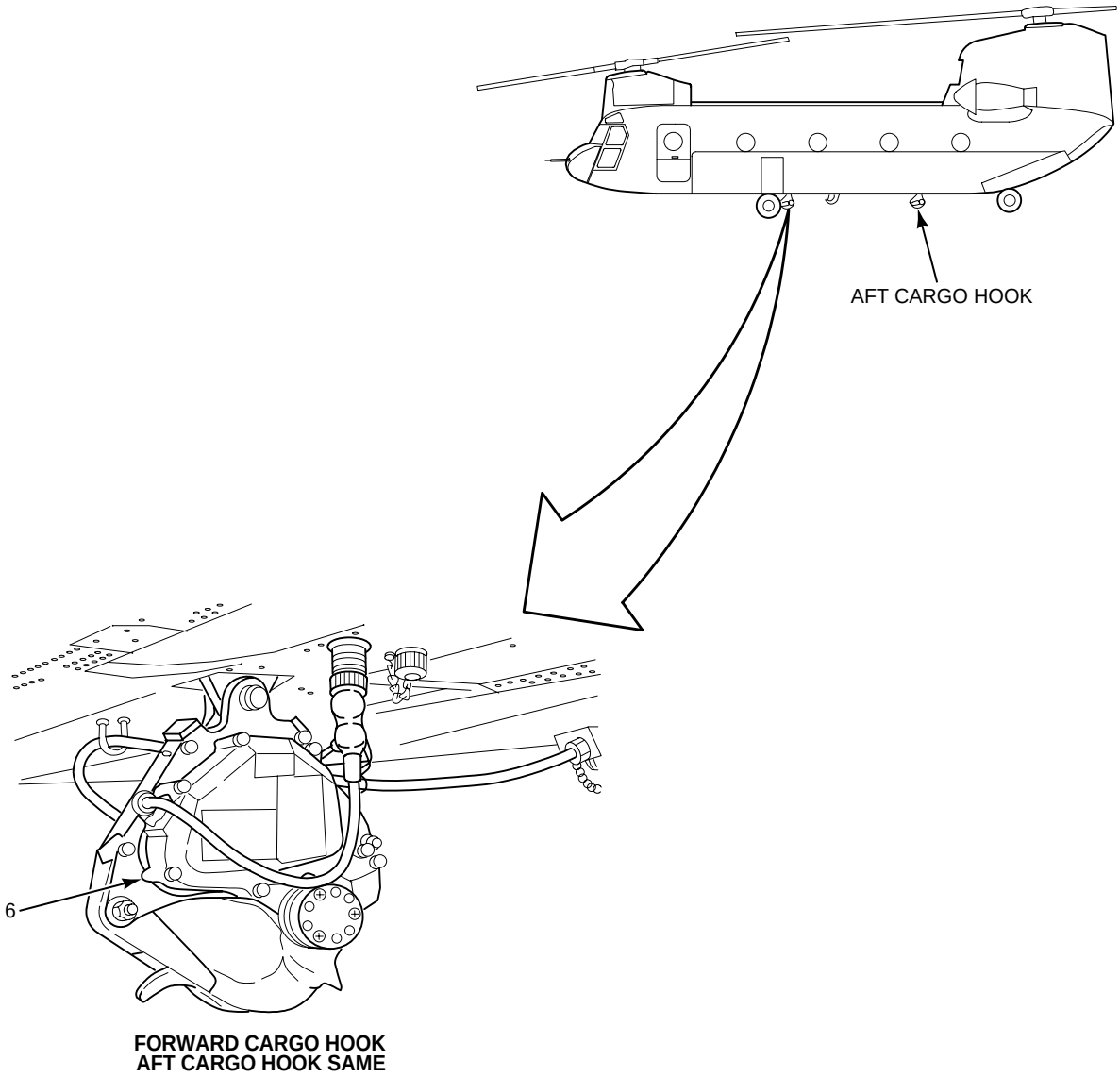


Figure 1. External Cargo Hook System (Sheet 2 of 3)

6. Forward and Aft Cargo Hooks
   a. Inspect for cracks, dents, scratches, evidence of arcing, proper operation, or evidence of corrosion.
   b. Inspect electrical switches for general condition, evidence of overheating, or evidence of corrosion.
   c. Inspect for loose, missing, or damaged attaching hardware.
   d. Refer to WP 0003 00, Tables 4 and 5, for electrical wiring and electrical component inspection and repair procedures.
   e. Refer to WP 0077 00 for corrosion removal and treatment.
   f. Refer to TM 55-1520-240-23 for accept/reject criteria.

INSPECTION REQUIREMENTS - continued

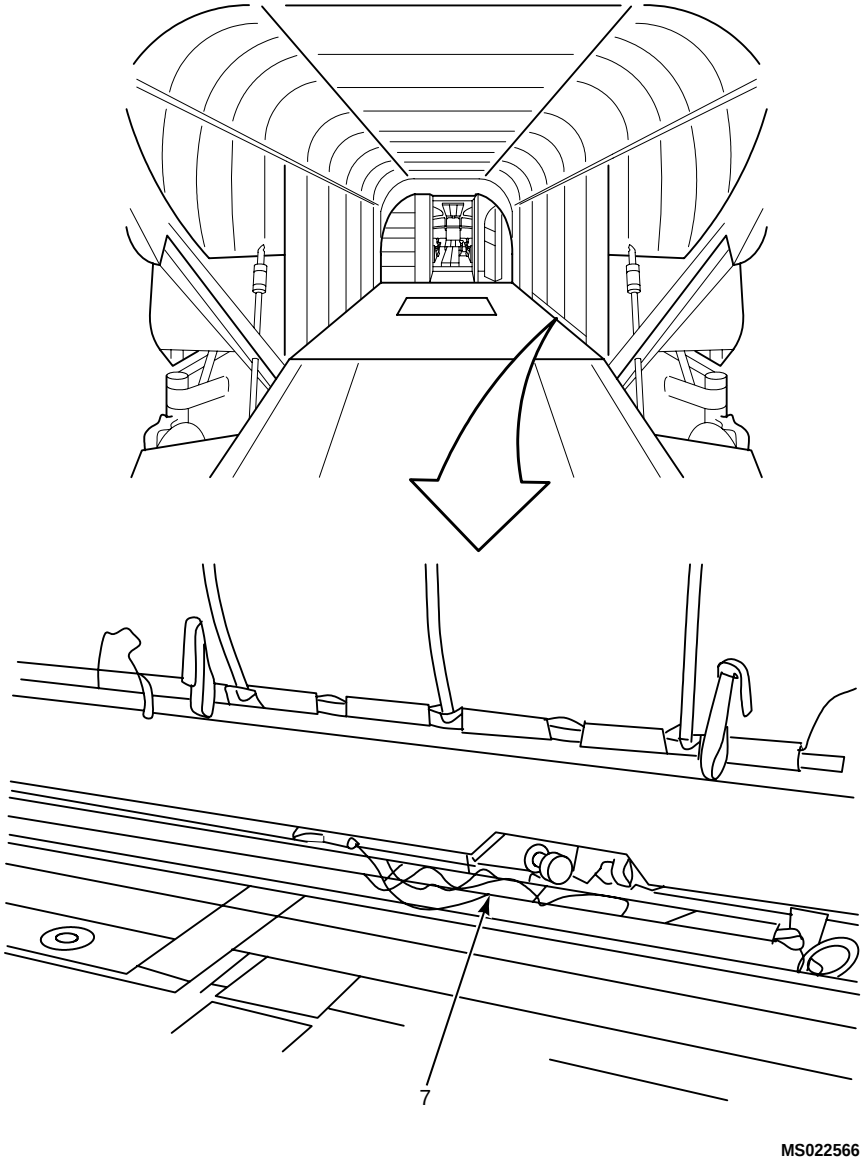


Figure 1. External Cargo Hook System (Sheet 3 of 3)

7. Cargo Hook Loading Pole
   a. Inspect for cracks, dents, scratches, evidence of arcing, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to WP 0003 00, Tables 4 and 5, for electrical wiring and electrical component inspection and repair procedures.
   d. Refer to WP 0077 00 for corrosion removal and treatment.
   e. Refer to TM 55-1520-240-23 for accept/reject criteria.

END OF WORK PACKAGE

DEPOT MAINTENANCE WORK REQUIREMENT
CH-47D HELICOPTER
EMERGENCY EQUIPMENT

INITIAL SETUP

Test Equipment:
As Required

Tools and Special Tools:
As Required

Material/Parts:
As Required

Personnel Required:
Examiner (PSA)

References:
DA Form 2408-18
DD Form 1574
TM 1-1500-204-23 Series
TM 55-1500-323-24
TM 55-1520-240-23 Series
WP 0003 00
WP 0050 00
WP 0077 00
WP 0081 00
WP 0082 00
WP 0087 00

Equipment Conditions:
As Required

Special Environmental Condition:
As Required

SCOPE

The emergency equipment consists of first aid kits, an emergency axe, portable fire extinguishers, and an emergency exit lighting system. There are seven first aid kits, one in the passageway and six in the cabin. The axe, located at sta 200, right side, is for emergency escape. There are three portable fire extinguishers; one on the cockpit floor, right of pilot's seat; one at forward end of the cabin, and one at the ramp area. The emergency lighting system consists of three lights at the exits. These lights can be turned on by a switch in the cockpit and are portable with rechargeable battery; an inertia switch will cause the lights to come on if a hard landing in excess of 3g's occurs.

INSPECTION REQUIREMENTS

NOTE

The item numbers in Figure 1, sheets 1 and 2 correspond to the respective item numbers in the INSPECTION REQUIREMENTS following each illustration.

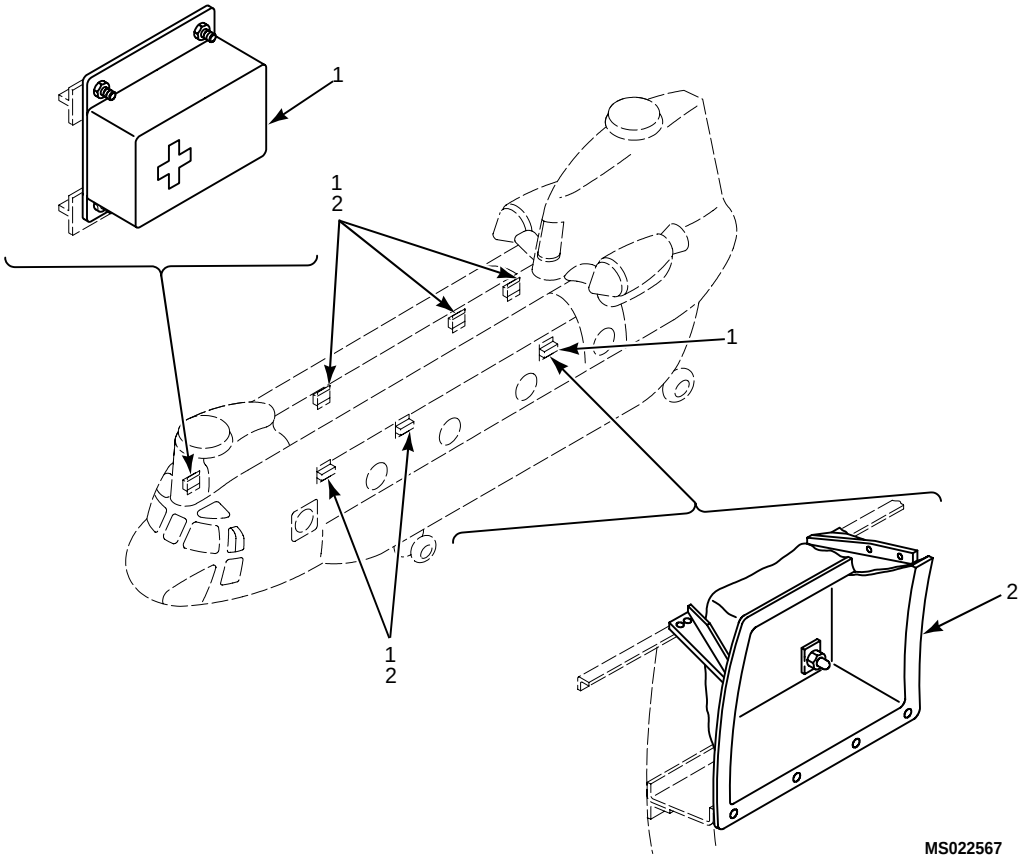


Figure 1. Emergency Equipment (Sheet 1 of 2)

1. First Aid Kit
   a. Inspect kit for tears, cleanliness, leaks (indicates broken contents), contents, and proper operation of zipper.
   b. Refer to TM 1-1500-204-23 for accept/reject criteria and repair procedures.
   c. Insure DA Form 2408-18 and DD Form 1574 reflect next inspection due date.

2. Support, Pan
   a. Inspect pan for cracks, loose Velcro tape, missing or damaged attaching hardware, or evidence of corrosion.
   b. Inspect supports for cracks or evidence of corrosion.
   c. Refer to WP 0077 00 for corrosion removal and treatment.
   d. Refer to WP 0081 00 and /or WP 0082 00 for pan accept/reject criteria and repair procedures.
   e. Refer to WP 0087 00 for support accept/reject criteria and repair procedures.
   f. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

INSPECTION REQUIREMENTS - continued

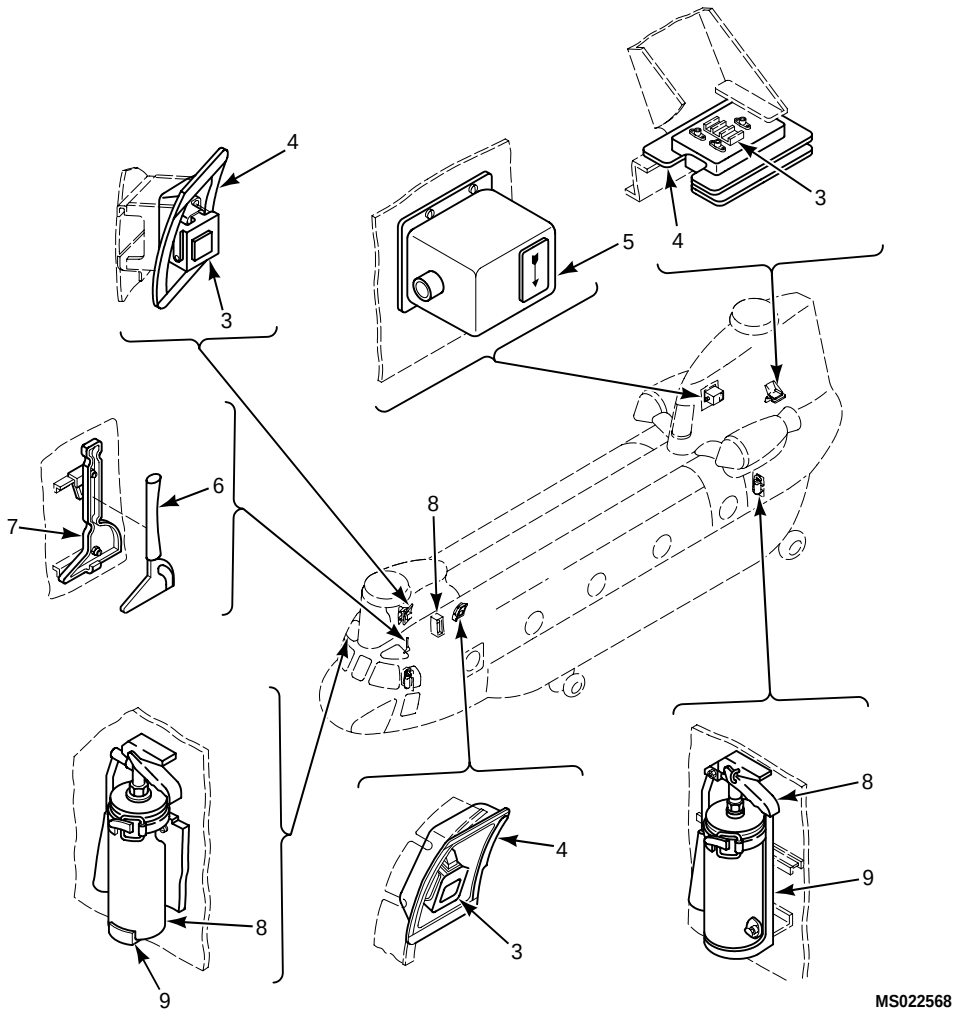


Figure 1. Emergency Equipment (Sheet 2 of 2)

3. Emergency Lights
   a. Inspect for cracks, dents, scratches, broken glass, proper operation, or evidence of corrosion.
   b. Refer to WP 0050 00 for Electrical System inspection procedures.
   c. Refer to WP 0077 00 for corrosion removal and treatment.
   d. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

4. Emergency Light Support Pan
   a. Inspect for cracks, loose Velcro tape, missing or damaged attaching hardware, or evidence of corrosion.
   b. Refer to WP 0077 00 for corrosion removal and treatment.
   c. Refer to WP 0081 00 and/or WP 0082 00 for pan accept/reject criteria and repair procedures.
   d. Refer to WP 0087 00 for support accept/reject criteria and repair procedures.
   e. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

INSPECTION REQUIREMENTS – continued

5. Inertia Switch
   a. Inspect for cracks, scratches, gouges, evidence of overheating, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to WP 0003 00, Tables 4 and 5, for electrical wiring and electrical component accept/reject criteria and repair procedures.
   d. Refer to WP 0077 00 for corrosion removal and treatment.
   e. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

6. Emergency Axe
   a. Inspect for damage or evidence of corrosion.
   b. Refer to WP 0077 00 for corrosion removal and treatment.
   c. Refer to TM 55-1520-240-23 for accept/reject criteria.

7. Axe Case Assembly
   a. Inspect for cracks, strap condition, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to WP 0077 00 for corrosion removal and treatment.
   d. Refer to WP 0081 00 and/or WP 0082 00 for pan accept/reject criteria and repair procedures.
   e. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.

8. Portable Fire Extinguisher
   a. Inspect for broken seal, general condition, legibility of data plate, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged hardware.
   c. Refer to TM 1-1500-204-23 for accept/reject criteria.
   d. Insure DA Form 2408-18 and DD Form 1574 reflect next inspection due date.

9. Extinguisher Bracket
   a. Inspect for cracks, proper operation, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to WP 0077 00 for corrosion removal and treatment.
   d. Refer to TM 55-1520-240-23 for accept/reject criteria.

END OF WORK PACKAGE

DEPOT MAINTENANCE WORK REQUIREMENT
CH-47D HELICOPTER
INTERCOMMUNICATION SYSTEM

INITIAL SETUP

Test Equipment:
As Required

Tools and Special Tools:
As Required

Material/Parts:
As Required

Personnel Required:
Examiner (PSA)

References:
TM 1-1500-204-23 Series
TM 11-1520-240-23
TM 55-1500-323-24
TM 55-1520-240-23 Series
WP 0003 00
WP 0077 00
WP 0087 00

Equipment Conditions:
As Required

Special Environmental Condition:
As Required

SCOPE

The intercommunication system is a multi-station intercommunication and radio control system for control of voice radio communication. It also monitors the output of navigation radio receivers and warning tones from IFF and radar warning sets. The basic components of the interphone system are six control panels. There is one panel each for the pilot, copilot, and troop commander located in the lower console, the two gunner stations located in the roof, sta 168 right and left, and flight engineer located left aft side. A foot switch is provided for the pilot, copilot, and right and left gunner positions. In addition, there is an interphone station for the hoist operator and two external interphone receptacles located right side, sta 110 and sta 489. The cables that connect to these are normally stowed in the aircraft. The 28-volt DC essential bus thru the INTPH circuit breakers on No. 1 and No. 2 power distribution panels supplies power for the system. Each gunner's foot switch is built into a mat. When pressed, it parallels the operation of the press-to-talk switch. The pilot and copilot have a foot switch on the floor. The switch is used for transmit/receive control of the interphone and radio systems.

INSPECTION REQUIREMENTS

NOTE

The item numbers in Figure 1, sheets 1 and 2 correspond to the respective item numbers in the INSPECTION REQUIREMENTS following each illustration.

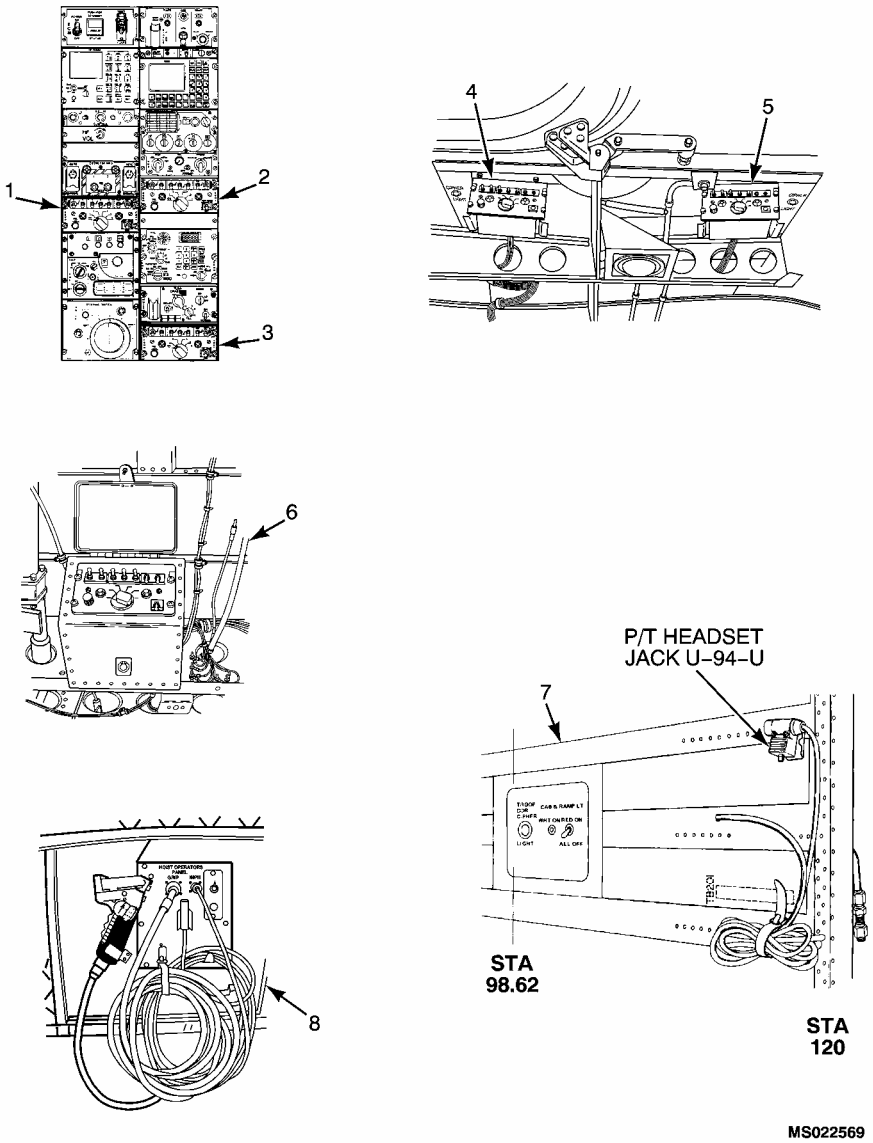


Figure 1. Intercommunication System (Sheet 1 of 2)

INSPECTION REQUIREMENTS - continued

1. Copilot Control Panel
   a. Inspect for cracks (no cracks allowed), evidence of over heating, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged hardware.
   c. Refer to WP 0003 00, Tables 4 and 5, for all electrical wiring and electrical component inspection and repair procedures.
   d. Refer to TM 11-1520-240-23 for removal, installation, or replacement.
   e. Refer to WP 0077 00 for corrosion removal and treatment.

2. Pilot Control Panel
   a. Inspect for cracks (no cracks allowed), evidence of overheating, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged hardware.
   c. Refer to WP 0003 00, Tables 4 and 5, for all electrical wiring and electrical component inspection and repair procedures.
   d. Refer to TM 11-1520-240-23 for removal, installation, or replacement.
   e. Refer to WP 0077 00 for corrosion removal and treatment.

3. Troop Commander Control Panel
   a. Inspect for cracks (no cracks allowed), evidence of overheating, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged hardware.
   c. Refer to WP 0003 00, Tables 4 and 5, for all electrical wiring and electrical component inspection and repair procedures.
   d. Refer to TM 11-1520-240-23 for removal, installation, or replacement.
   e. Refer to WP 0077 00 for corrosion removal and treatment.

4. Gunners Right Hand Control Panel
   a. Inspect for cracks (no cracks allowed), evidence of overheating, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged hardware.
   c. Refer to WP 0003 00, Tables 4 and 5, for all electrical wiring and electrical component inspection and repair procedures.
   d. Refer to TM 11-1520-240-23 for removal, installation, or replacement.
   e. Refer to WP 0077 00 for corrosion removal and treatment.

5. Gunners Left Hand Control Panel
   a. Inspect for cracks (no cracks allowed), evidence of overheating, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged hardware.
   c. Refer to WP 0003 00, Tables 4 and 5, for all electrical wiring and electrical component inspection and repair procedures.
   d. Refer to TM 11-1520-240-23 for removal, installation, or replacement.
   e. Refer to WP 0077 00 for corrosion removal and treatment.

6. Flight Engineer Control Panel
   a. Inspect for cracks (no cracks allowed), evidence of overheating, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged hardware.
   c. Refer to WP 0003 00, Tables 4 and 5, for all electrical wiring and electrical component inspection and repair procedures.
   d. Refer to TM 11-1520-240-23 for removal, installation, or replacement.
   e. Refer to WP 0077 00 for corrosion removal and treatment.

INSPECTION REQUIREMENTS - continued

7. Troop Commander Station
   a. Inspect for cracks (no cracks allowed), evidence of overheating, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged hardware.
   c. Refer to WP 0003 00, Tables 4 and 5, for all electrical wiring and electrical component inspection and repair procedures.
   d. Refer to TM 11-1520-240-23 for removal, installation, or replacement.
   e. Refer to WP 0077 00 for corrosion removal and treatment.

8. Hoist Operator Control Panel
   Refer to WP 0063 00 for inspection criteria.

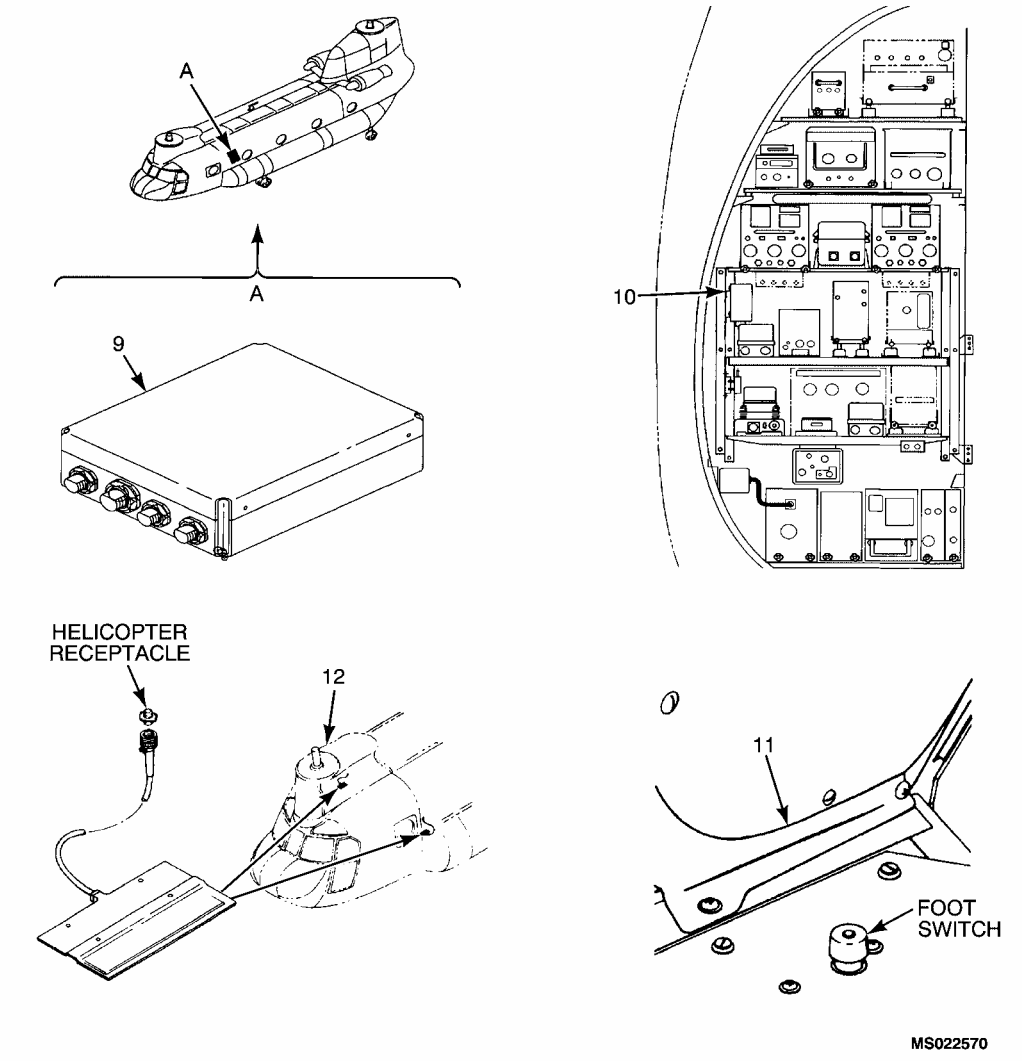


Figure 1. Intercommunication System (Sheet 2 of 2)

INSPECTION REQUIREMENTS - continued

9. Junction Box
   a. Inspect for cracks (no cracks allowed), dents, nicks, scratches, evidence of overheating, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged hardware.
   c. Inspect support bracket for damage. Refer to WP 0087 00 for repair procedures.
   d. Refer to WP 0003 00, Tables 4 and 5, for all electrical wiring and electrical component inspection and repair procedures.
   e. Refer to TM 11 1520-240-23 for removal, installation, or replacement.
   f. Refer to WP 0077 00 for corrosion removal and treatment.

10. Audio Threshold Device
   a. Inspect for cracks (no cracks allowed), evidence of overheating, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged hardware.
   c. Inspect support bracket for damage. Refer to WP 0087 00 for repair procedures.
   d. Refer to WP 0003 00, Tables 4 and 5, for all electrical wiring and electrical component inspection and repair procedures.
   e. Refer to TM 11-1520-240-23 for removal, installation, or replacement.
   f. Refer to WP 0077 00 for corrosion removal and treatment.

11. Pilot and Copilot Foot Switches
   a. Inspect for cracks (no cracks allowed), proper operation, or evidence of corrosion.
   b. Refer to WP 0003 00, Tables 4 and 5, for all electrical wiring and electrical component inspection and repair procedures.
   c. Refer to TM 11-1520-240-23 for removal, installation, or replacement.
   d. Refer to WP 0077 00 for corrosion removal and treatment.

12. Gunners Foot Switch (LH and RH)
   a. Inspect for cracks, proper operation, or evidence of corrosion.
   b. Refer to WP 0003 00, Tables 4 and 5, for all electrical wiring and electrical component inspection and repair procedures.
   c. Refer to TM 11-1520-240-23 for removal, installation, or replacement.
   d. Refer to WP 0077 00 for corrosion removal and treatment.

13. Exterior Connectors, sta 110 and sta 489
   a. Inspect for cracks, evidence of overheating, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged hardware.
   c. Inspect support bracket for damage. Refer to WP 0087 00 for repair procedures.
   d. Refer to WP 0003 00, Tables 4 and 5, for all electrical wiring and electrical component inspection and repair procedures.
   e. Refer to TM 11-1520-240-23 for removal, installation, or replacement.
   f. Refer to WP 0077 00 for corrosion removal and treatment.

END OF WORK PACKAGE

DEPOT MAINTENANCE WORK REQUIREMENT
CH-47D HELICOPTER
COMMUNICATIONS SYSTEM

INITIAL SETUP

Test Equipment:
As Required

Tools and Special Tools:
As Required

Material/Parts:
As Required

Personnel Required:
Examiner (PSA)

References:
TM 1-1500-204-23 Series
TM 11-1520-240-23
TM 55-1500-323-24
TM 55-1520-240-23 Series
WP 0003 00
WP 0067 00
WP 0071 00
WP 0077 00

Equipment Conditions:
As Required

Special Environmental Condition:
As Required

SCOPE

The communication system includes high-frequency (HF) liaison, ultrahigh-frequency (UHF) command, very high frequency (VHF) radio, identification friend or foe (IFF), and intercommunication with all crew stations. The following components make up the communications system. Figure 1 depicts systems and locations on the aircraft.

NOTE

Configuration of the communications system depends upon the MWO status of the aircraft. For example:

Provisions for AN/ARC-186 (FM position) were replaced by provisions for AN/ARC-201. Refer to MWO 55-1520-240-50-28.

Provisions for RT-1167 and RT-1518 were replaced with RT-1518C/ARC-164 because of CECOM modernization program for HAVEQUICK II.

RT-1354/ARC replaced with RT-1354B/ARC. Refer to MWO 1-1520-240-50-52 and MWO 11-5821-318-30-1.

AN/ARC-199 removed by provisions for AN/ARC-220. Refer to MWO 1-1520-240-50-74. Helicopter is configured with either the AN/ARC-199, or AN/ARC-220 HF Radio.

Insure a complete and accurate inventory is conducted upon receipt of the aircraft by the overhaul facility. Also, insure a complete review of MWO status to define the aircraft configuration. Insure that all TSEC equipment is retained by the owning unit.

Communications equipment will be checked during induction test flight. If test flight is not conducted, operational checks of all communications systems will be performed during induction. If equipment is found to be inoperable, request disposition from the Contracting Officer.

SCOPE - continued

COMMUNICATIONS SYSTEM

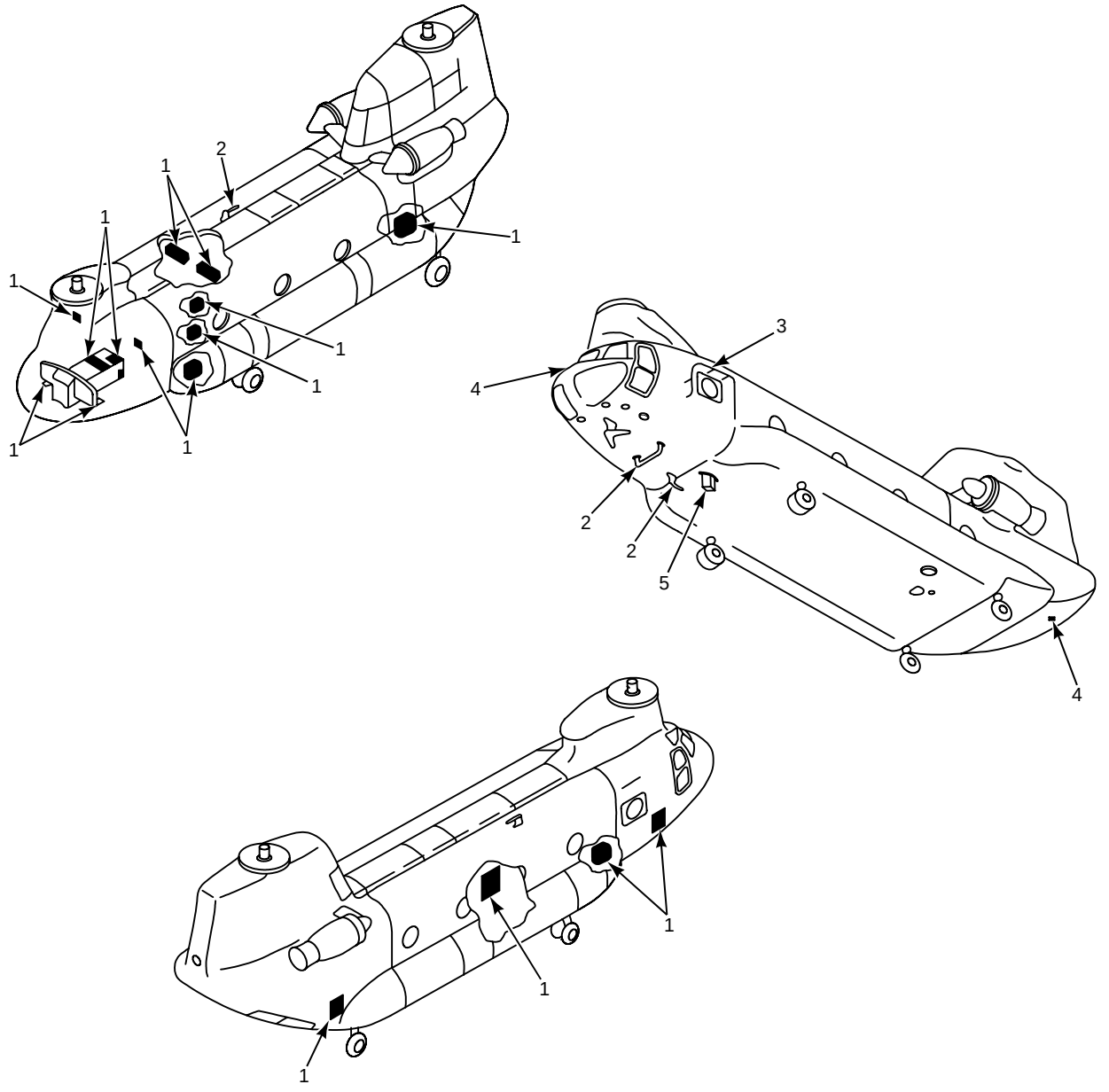


Figure 1. Communications System (Sheet 1 of 2)

COMMUNICATIONS SYSTEM - continued

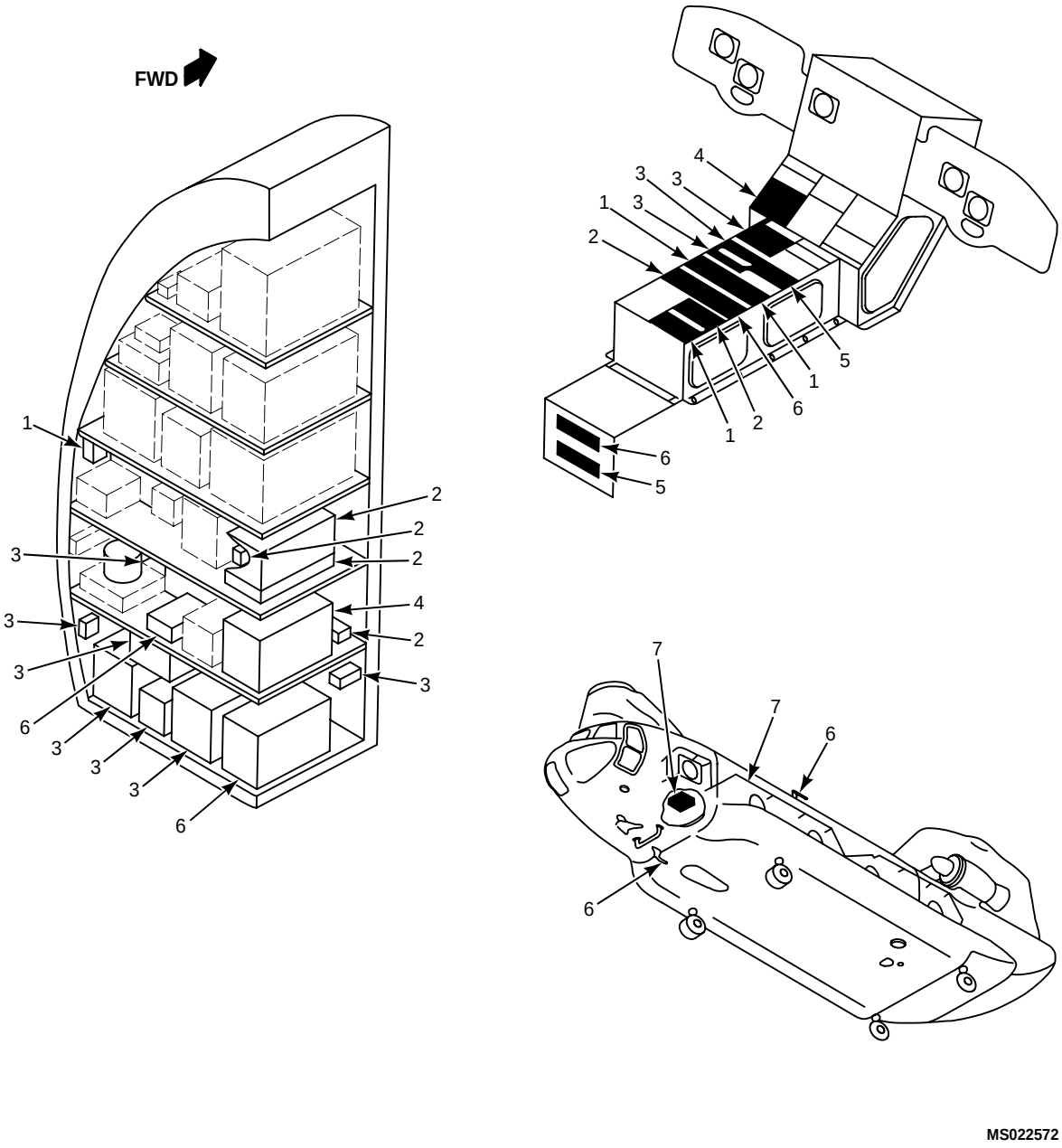


Figure 1. Communications System (Sheet 2 of 2)

NOTE

The items in Figure 1, sheets 1 and 2 correspond to the respective item numbers in the following listing.

1. Intercommunication System – See Work Package WP 0067 00 for breakdown, inspection, and repair procedures.

COMMUNICATIONS SYSTEM - continued

2.	VHF AM/FM System, AN/ARC-186	
	Receiver-Transmitter, RT-1354/ARC-186 or RT-1354A/ARC-186	2 ea
	Switch, Radio Frequency, 310C30100	1 ea
	Control Light Source, ON241740-L	1 ea
	Speech Security Equipment, TSEC/KY-58	1 ea
	TSEC/KY-58 Interface Assembly, Z-AHQ	1 ea
	TSEC/KY-58 Mount, MT-3082/ARC	1 ea
	Antenna, S65-8282-30	2 ea
	Antenna, AS-1922A/ARC	1 ea
3.	HF Radio Set AN/ARC-199	
	Control Display Unit, C-11245/U	1 ea
	Remote Control Unit, ON501520-2	1 ea
	Control Amplifier, DSK-9-05010-501	1 ea
	Antenna, AS-3938/ARC or DSK-9-04415	1 ea
	Receiver-Transmitter, RT-1432/U	1 ea
	Amplifier-Coupler, AM-7201/U	1 ea
	HF RT Mount, 200-3202-00	1 ea
	Cryptographic Speech, TSEC/KY-75	1 ea
	TSEC/KY-75 Tray Assembly, DSK-9-04209-501	1 ea
	Amplifier, Audio, DSK-9-04348-501	1 ea
	Coupler, Antenna, CU-2305/ARC-199	1 ea
	Cable Radio Frequency, CSK-9-04204-501	1 ea
	Remote Control Unit, ON501500-2	1 ea
	Panel Assembly, KY-75, DSK-9-04433-501	1 ea
4.	IFF Transponder APX-100	
	Receiver-Transmitter, RT-1558A/APX-100	1 ea
	Transponder Computer, Kit-1C/TSEC	1 ea
	Antenna, AT-884/APX-44	1 ea
	Antenna, AT-740/A	1 ea
5.	UHF Command System, AN/ARC-164	
	Receiver-Transmitter, RT-1518 (preferred) or RT-1167/ARC-164	1 ea
	Antenna,AT-256/ARC	1 ea
	Filter, High Pass, HPF40-01T	1 ea
6.	Sincgars VHF-FM Radio, AN/ARC-201	
	Receiver-Transmitter, RT-1476/ARC-201	1 ea
	Amplifier, Radio Frequency, AM-7189A/ARC	1 ea
	Mounting Base, Electrical, DSK-9-03602-502	1 ea
	Battery Box, CY-8515/ARC-201	1 ea
	Filter, Low Pass, AV802	1 ea
	Antenna, AS-3939/ARC	1 ea

COMMUNICATIONS SYSTEM - continued

7. HF Liaison System, AN/ARC-220 with KY-100 Secure Voice

Receiver-Transmitter, RT-1749/URC	1 ea
Mounting Base, 200-3202-00	1 ea
Control, Radio Set, C-12436/URC	1 ea
Control, Remote, TSEC, ON616650	1 ea
Processor, TSEC/KY-100, ON616604	1 ea
Battery Box, CY-8515/ARC-201	1 ea
Battery, Non-recharge, MN1400	5 ea
Power Amp Coupler, AM-7531/URC, (751-8935-001)	1 ea
Coupler Mount, 200-3438-00, (047-6697-02)	1 ea
HF Antenna, AV647	1 ea

INSPECTION REQUIREMENTS

VHF AM/FM SYSTEM, AN/ARC-186

NOTE

The items in Figure 2, sheets 1 through 6, correspond to the respective item numbers in the VHF AM/FM SYSTEM, AN/ARC 186 INSPECTION REQUIREMENTS following each illustration.

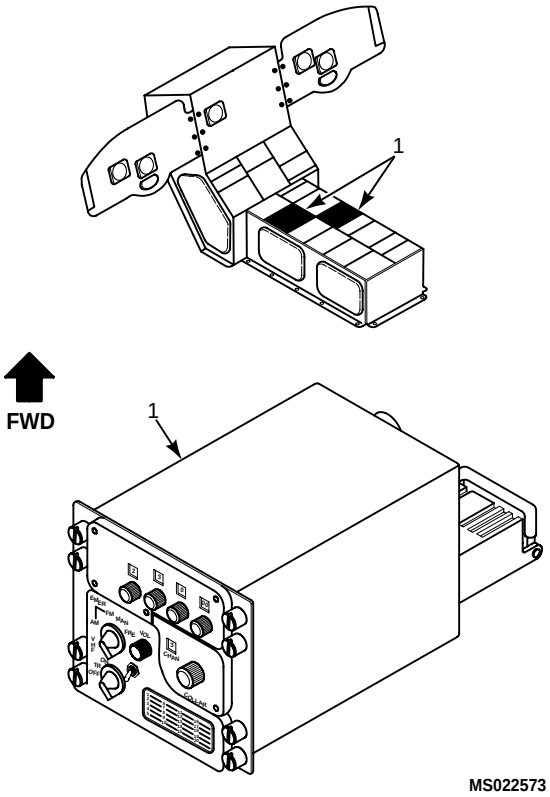


Figure 2. VHF AM/FM System, AN/ARC 186 (Sheet 1 of 6)

VHF AM/FM SYSTEM, AN/ARC-186 INSPECTION REQUIREMENTS

1. Receiver-Transmitter, RT-1354/ARC-186 or RT-1354A/ARC-186
   a. Inspect aircraft records for previous receive-transmit discrepancies.
   b. Inspect RT for cracks (no cracks allowed), dents, nicks, evidence of overheating, or evidence of corrosion.
   c. Inspect RT for broken, missing, loose, or unserviceable knobs, switches, or attaching hardware.
   d. Refer to WP 0003 00, Tables 4 and 5, for all electrical wiring and electrical component inspection and repair procedures.
   e. Refer to TM 11-1520-240-23 for RT removal and installation.
   f. Refer to WP 0077 00 for corrosion removal and treatment.

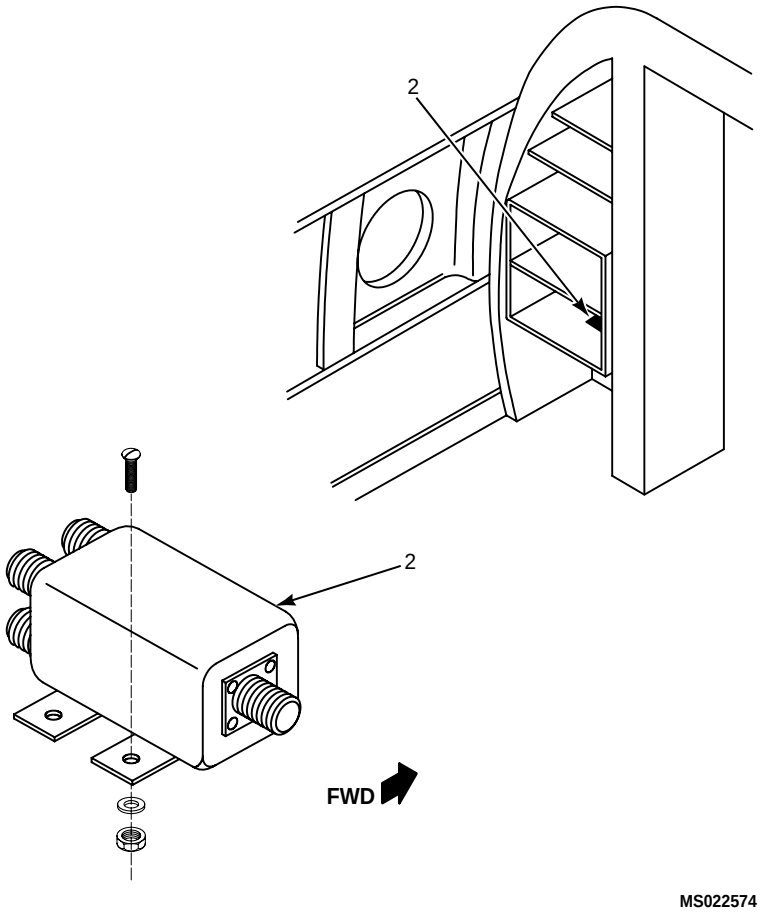


Figure 2. VHF AM/FM System, AN/ARC 186 (Sheet 2 of 6)

2. Switch, Radio Frequency, 310C30100
   a. Inspect switch for cracks (no cracks allowed), dents, nicks, evidence of overheating, or evidence of corrosion.
   b. Inspect switch for broken, missing, loose, or unserviceable connectors and attaching hardware.
   c. Refer to WP 0003 00, Tables 4 and 5, for all electrical wiring and electrical component inspection and repair procedures.
   d. Refer to TM 11-1520-240-23 for switch removal and installation.
   e. Refer to WP 0077 00 for corrosion removal and treatment.

VHF AM/FM SYSTEM, AN/ARC-186 INSPECTION REQUIREMENTS – continued

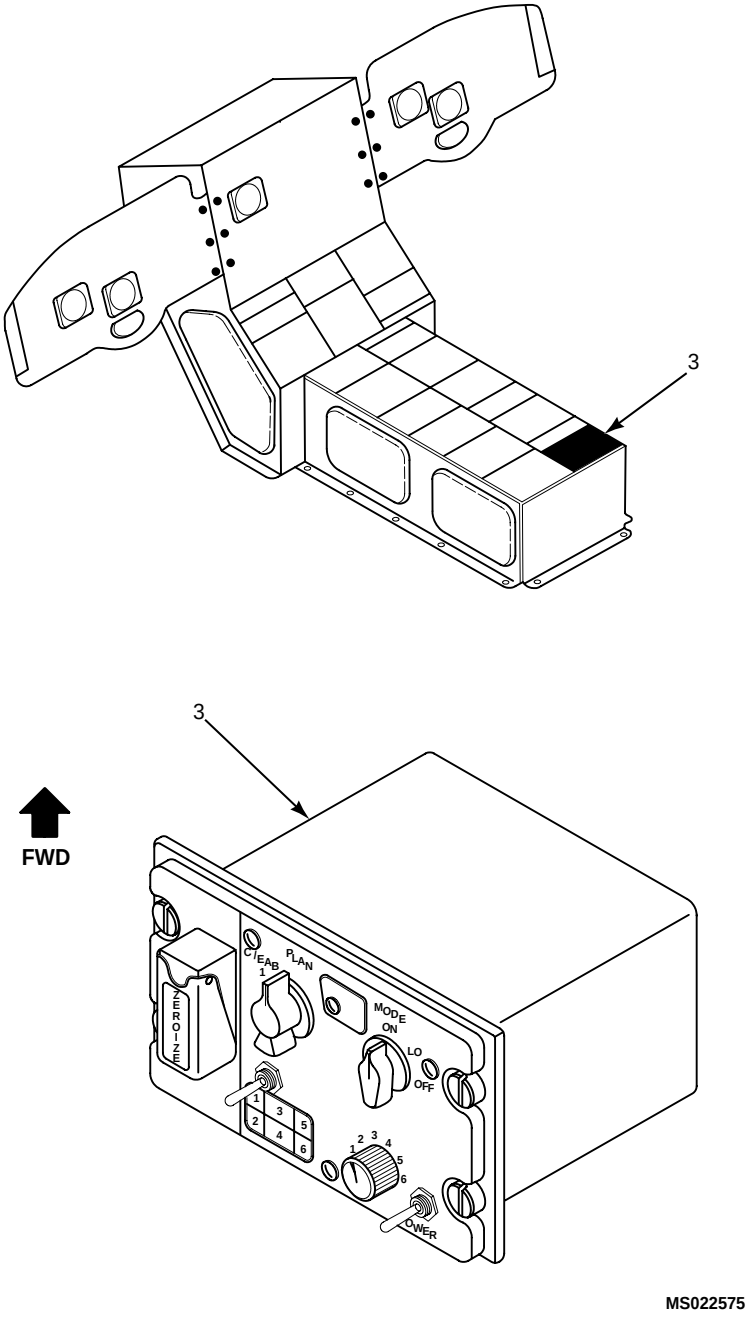


Figure 2. VHF AM/FM System, AN/ARC 186 (Sheet 3 of 6)

3. Control, Light Source, ON241740-L
   Equipment to remain with owning unit.

VHF AM/FM SYSTEM, AN/ARC-186 INSPECTION REQUIREMENTS - continued

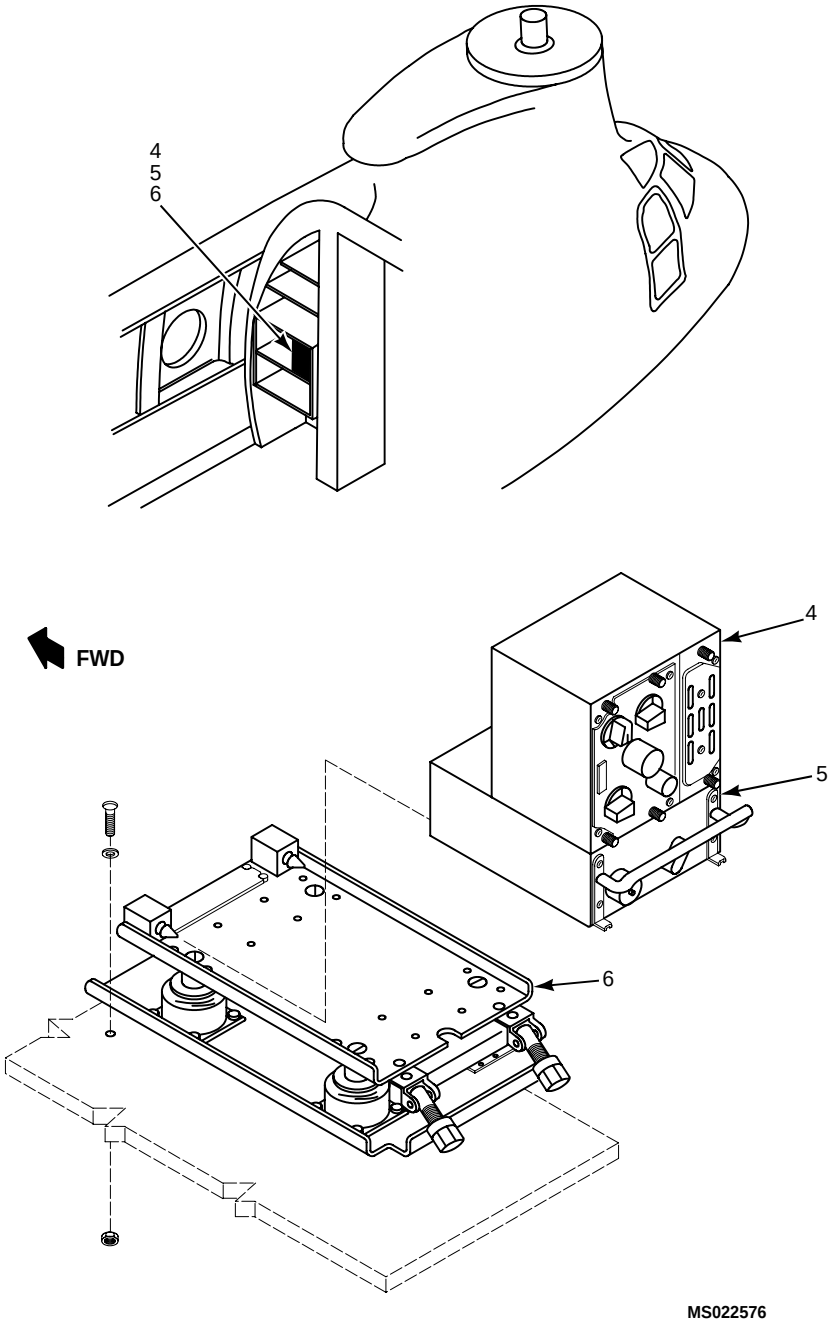


Figure 2. VHF AM/FM System, AN/ARC 186 (Sheet 4 of 6)

4. TSEC/KY-58, Speech Security Equipment
   Equipment to remain with owning unit.

5. TSEC/KY-58, Interface Assembly, Z-AHQ
   Equipment to remain with owning unit.

VHF AM/FM SYSTEM, AN/ARC-186 INSPECTION REQUIREMENTS - continued

6. TSEC/KY-58, Mount, MT-3082/ARC
   a. Inspect mount for cracks (no cracks allowed), dents, nicks, or evidence of corrosion.
   b. Inspect mount for cracked, loose, missing, or damaged attaching hardware.
   c. Refer to WP 0003 00, Tables 4 and 5, for electrical wiring and electrical component inspection and repair procedures.
   d. Damage to mount of 15% or less of cross-sectional area at point of damage is considered minor. Replace if damage exceeds this limit.
   e. Refer to TM 11-1520-240-23 for mount removal and installation.
   f. Refer to WP 0077 00 for corrosion removal and treatment.

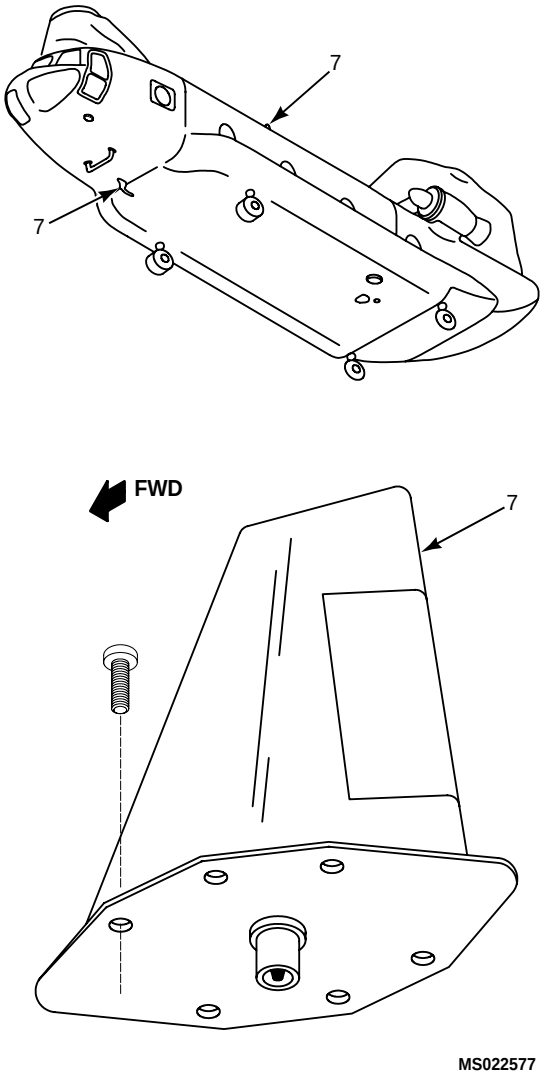


Figure 2. VHF AM/FM System, AN/ARC 186 (Sheet 5 of 6)

7. Antenna, S65-8282-30
   Refer to WP 0071 00 for inspection and repair procedures.

VHF AM/FM SYSTEM, AN/ARC-186 INSPECTION REQUIREMENTS - continued

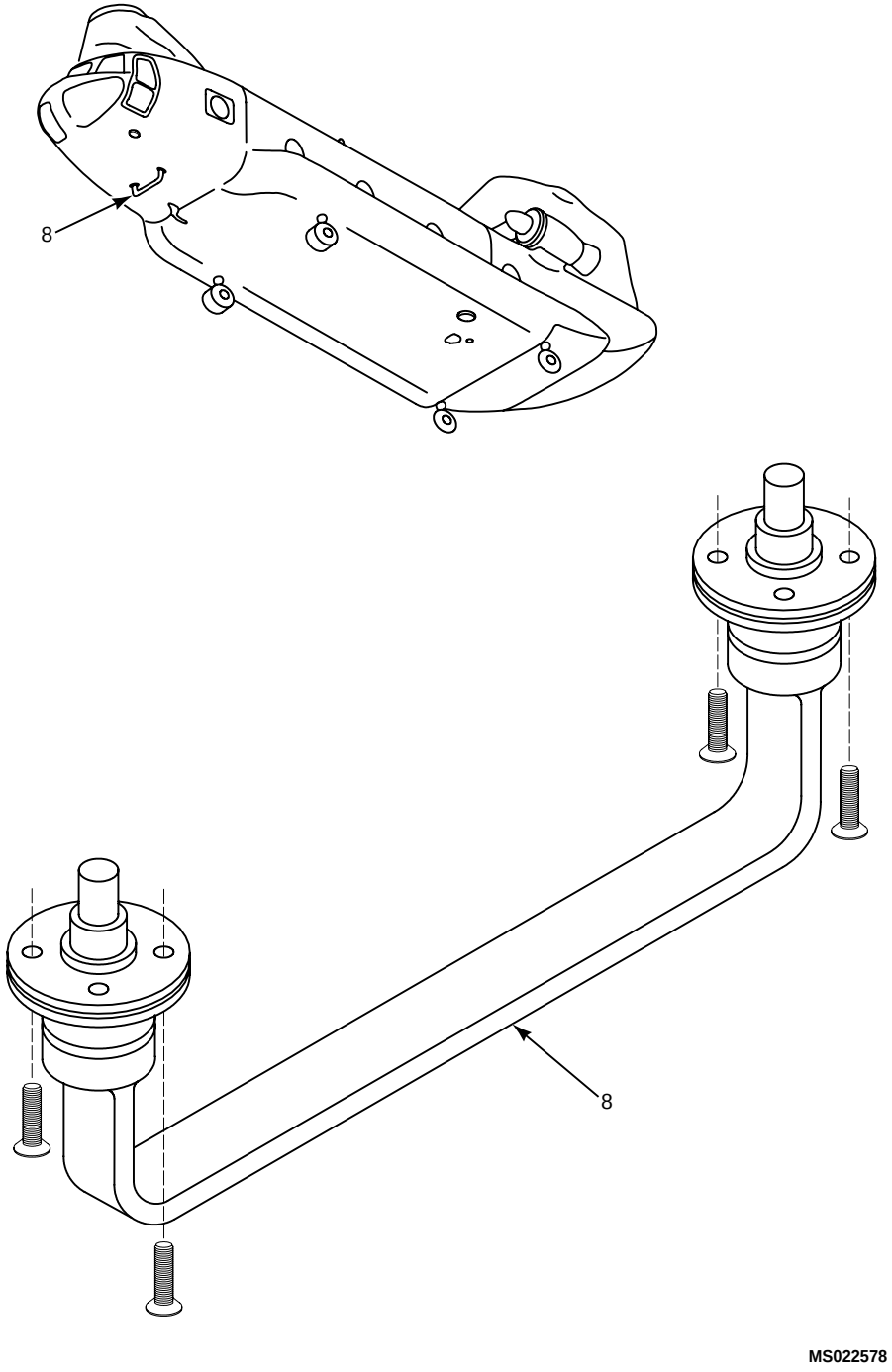


Figure 2. VHF AM/FM System, AN/ARC 186 (Sheet 6 of 6)

8. Antenna, AS-1922A/ARC
   Refer to WP 0071 00 for inspection and repair procedures.

HF RADIO SET, AN/ARC-199

NOTE

The items in Figure 3, sheets 1 through 6, correspond to the respective item numbers in the HF RADIO SET, AN/ARC 199 INSPECTION REQUIREMENTS following each illustration.

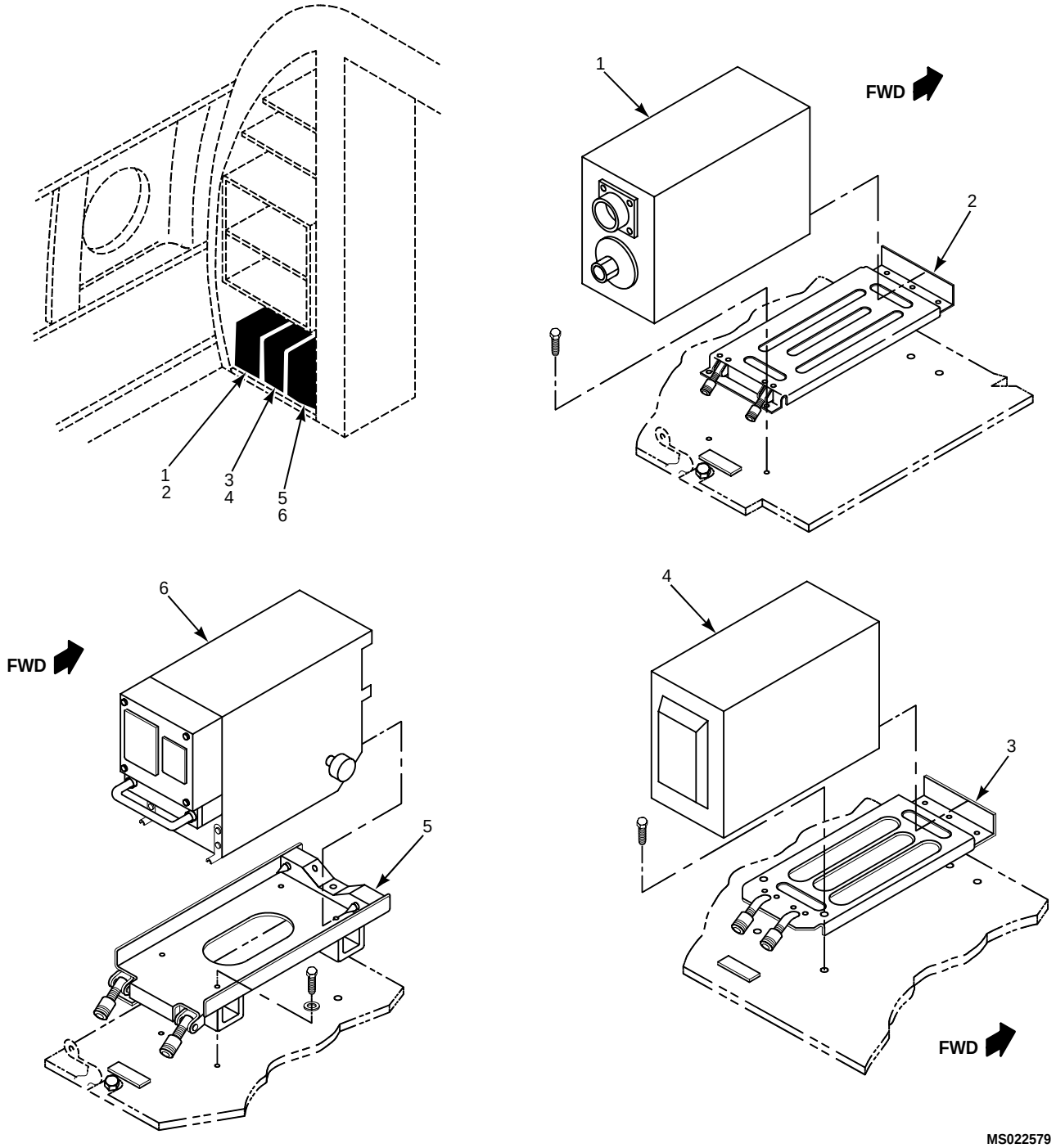


Figure 3. HF Radio Set, AN/ARC-199 (Sheet 1 of 6)

HF RADIO SET, AN/ARC-199 INSPECTION REQUIREMENTS

1. Amplifier-Coupler, AM-7201/U
   Equipment to remain with owning unit.

2. Mounting Tray, 200-3438-00
   a. Inspect mounting tray for cracks (no cracks allowed), dents, nicks, or evidence of corrosion.
   b. Inspect mounting tray for cracked, loose, missing, or damaged attaching hardware.
   c. Refer to WP 0003 00, Tables 4 and 5, for electrical wiring and electrical component inspection and repair procedures.
   d. Damage to mount of 15% or less of cross-sectional area at point of damage is considered minor. Replace if damage exceeds this limit.
   e. Refer to TM 11-1520-240-23 for mounting tray removal and installation.
   f. Refer to WP 0077 00 for corrosion removal and treatment.

3. HF RT Mount, 200-3202-00
   a. Inspect mount for cracks (no cracks allowed), dents, nicks, or evidence of corrosion.
   b. Inspect mount for cracked, loose, missing, or damaged attaching hardware.
   c. Refer to WP 0003 00, Tables 4 and 5, for electrical wiring and electrical component inspection and repair procedures.
   d. Damage to mount of 15% or less of cross-sectional area at point of damage is considered minor. Replace if damage exceeds this limit.
   e. Refer to TM 11-1520-240-23 for mount removal and installation.
   f. Refer to WP 0077 00 for corrosion removal and treatment.

4. Receiver-Transmitter, RT-1432/U
   Equipment to remain with owning unit.

5. TSEC/KY-75 Tray Assembly, DSK-9-04209-501
   a. Inspect tray assembly for cracks (no cracks allowed), dents, nicks, or evidence of corrosion.
   b. Inspect tray assembly for cracked, loose, missing, or damaged attaching hardware.
   c. Refer to WP 0003 00, Tables 4 and 5, for electrical wiring and electrical component inspection and repair procedures.
   d. Damage to tray assembly of 15% or less of cross-sectional area at point of damage is considered minor. Replace if damage exceeds this limit.
   e. Refer to TM 11-1520-240-23 for tray assembly removal and installation.
   f. Refer to WP 0077 00 for corrosion removal and treatment.

6. Cryptographic Speech, TSEC/KY-75
   Equipment to remain with owning unit.

HF RADIO SET, AN/ARC-199 INSPECTION REQUIREMENTS - continued

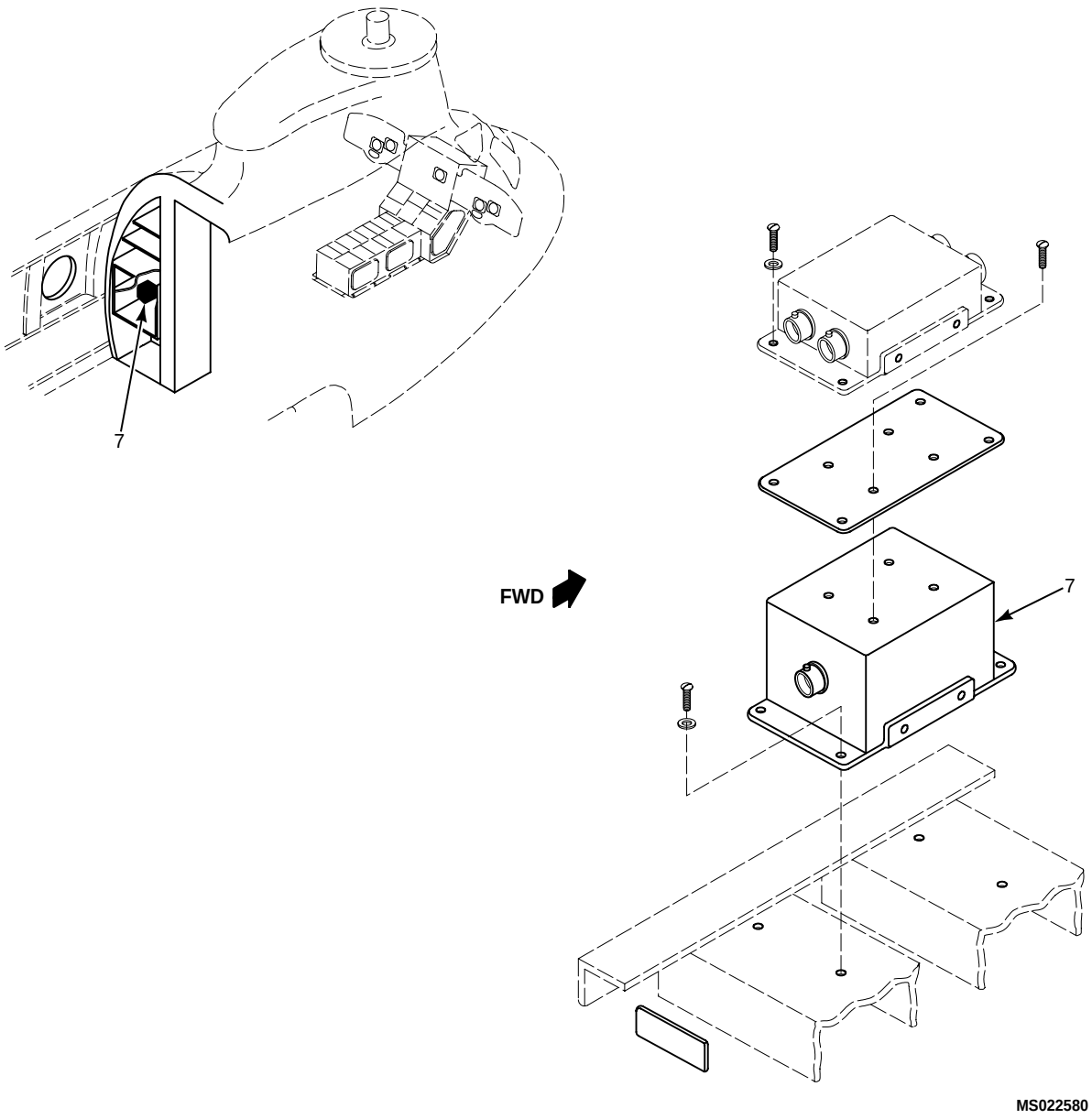


Figure 3. HF Radio Set, AN/ARC-199 (Sheet 2 of 6)

7. Amplifier Assembly, DSK-9-04348-501
   a. Inspect amplifier assembly for cracks (no cracks allowed), dents, nicks, evidence of overheating, or evidence of corrosion.
   b. Inspect amplifier assembly for broken, missing, loose, or damaged attaching hardware.
   c. Refer to WP 0003 00, Tables 4 and 5, for all electrical wiring and electrical component inspection and repair procedures.
   d. Refer to TM 11-1520-240-23 for amplifier assembly removal and installation.
   e. Refer to WP 0077 00 for corrosion removal and treatment.

HF RADIO SET, AN/ARC-199 INSPECTION REQUIREMENTS - continued

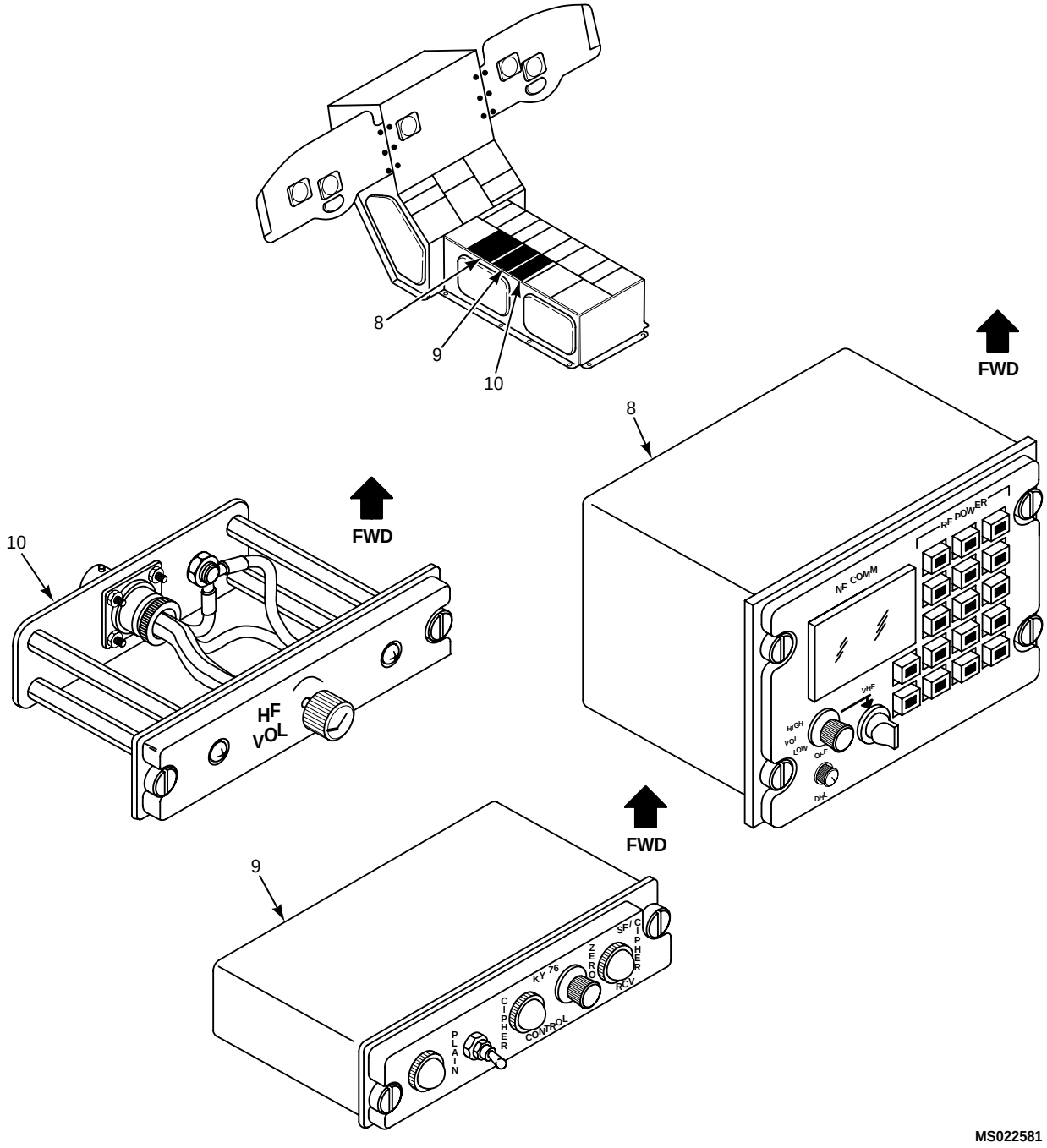


Figure 3. HF Radio Set, AN/ARC-199 (Sheet 3 of 6)

8. Control Display Unit, C-11245/U
   Equipment to remain with owning unit.

9. Remote Control Unit, ON501520-2
   Equipment to remain with owning unit.

HF RADIO SET, AN/ARC-199 INSPECTION REQUIREMENTS - continued

10. Control Amplifier, DSK-9-05010-501
    a. Inspect control amplifier for cracks (no cracks allowed), dents, nicks, evidence of overheating, or evidence of corrosion.
    b. Inspect control amplifier for broken, missing, loose, or unserviceable knobs, switches, and damaged attaching hardware.
    c. Refer to WP 0003 00, Tables 4 and 5, for all electrical wiring and electrical component inspection and repair procedures.
    d. Refer to TM 11-1520-240-23 for control amplifier removal and installation.
    e. Refer to WP 0077 00 for corrosion removal and treatment.

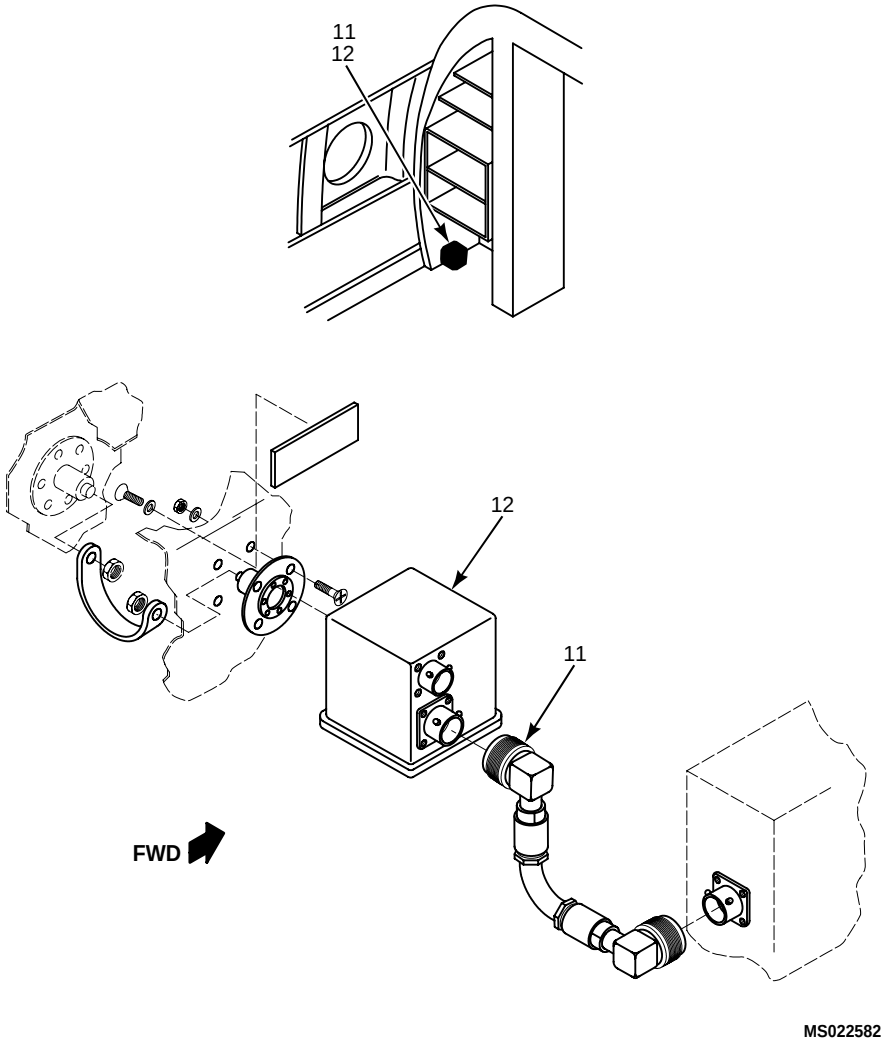


Figure 3. HF Radio Set, AN/ARC-199 (Sheet 4 of 6)

11. Cable, Radio Frequency, CSK-9-04204-501
    Equipment to remain with owning unit.

12. Coupler, Antenna, CU-2305/ARC-199
    Equipment to remain with owning unit.

HF RADIO SET, AN/ARC-199 INSPECTION REQUIREMENTS – continued

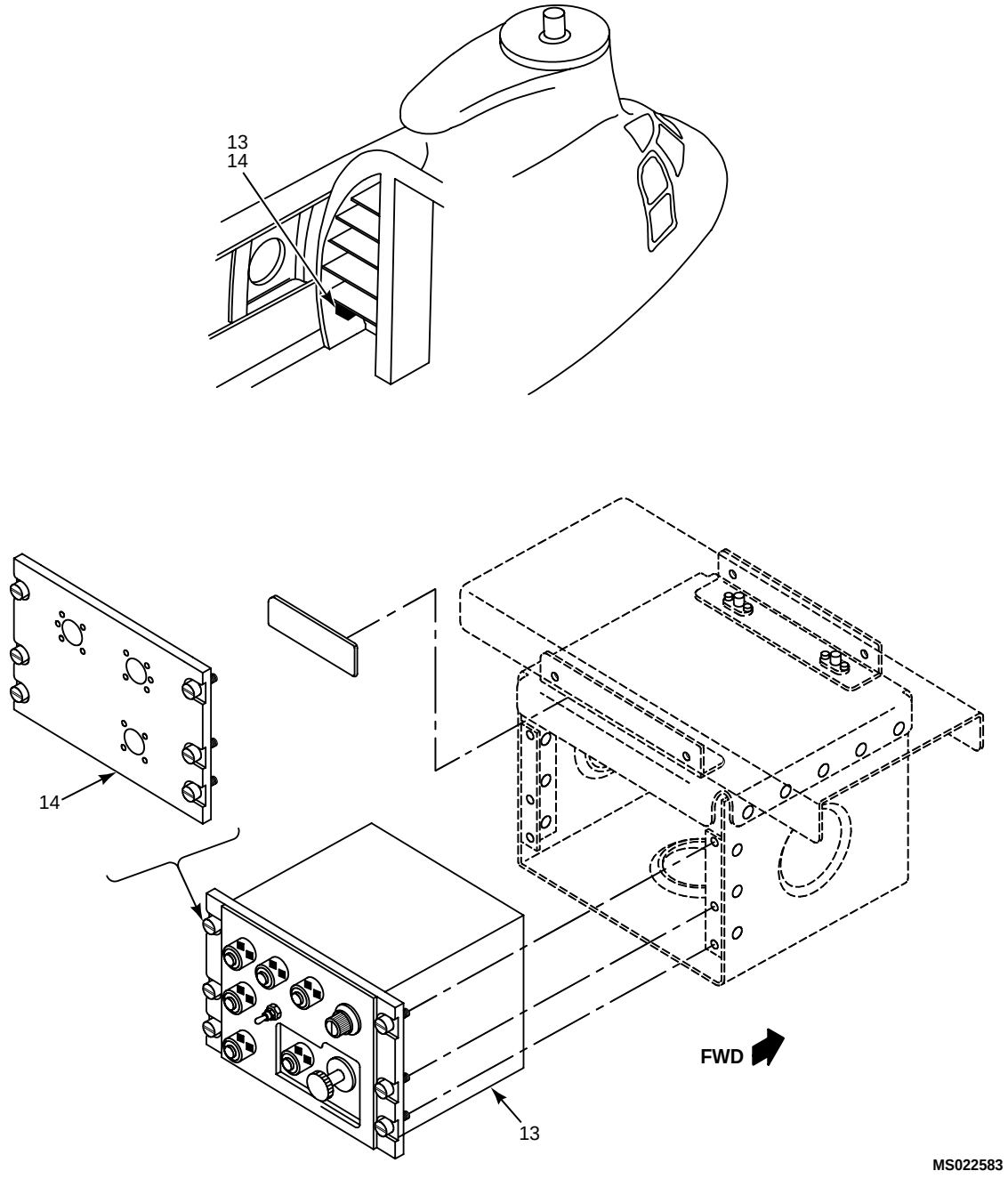


Figure 3. HF Radio Set, AN/ARC-199 (Sheet 5 of 6)

13. Remote Control Unit, KY-75, ON501500-2
    Equipment to remain with owning unit.

14. Panel Assembly, KY-75
    Inspect panel for cracks, dents, nicks, corrosion, or broken, missing, loose, or damaged attaching hardware.

HF RADIO SET, AN/ARC-199 INSPECTION REQUIREMENTS - continued

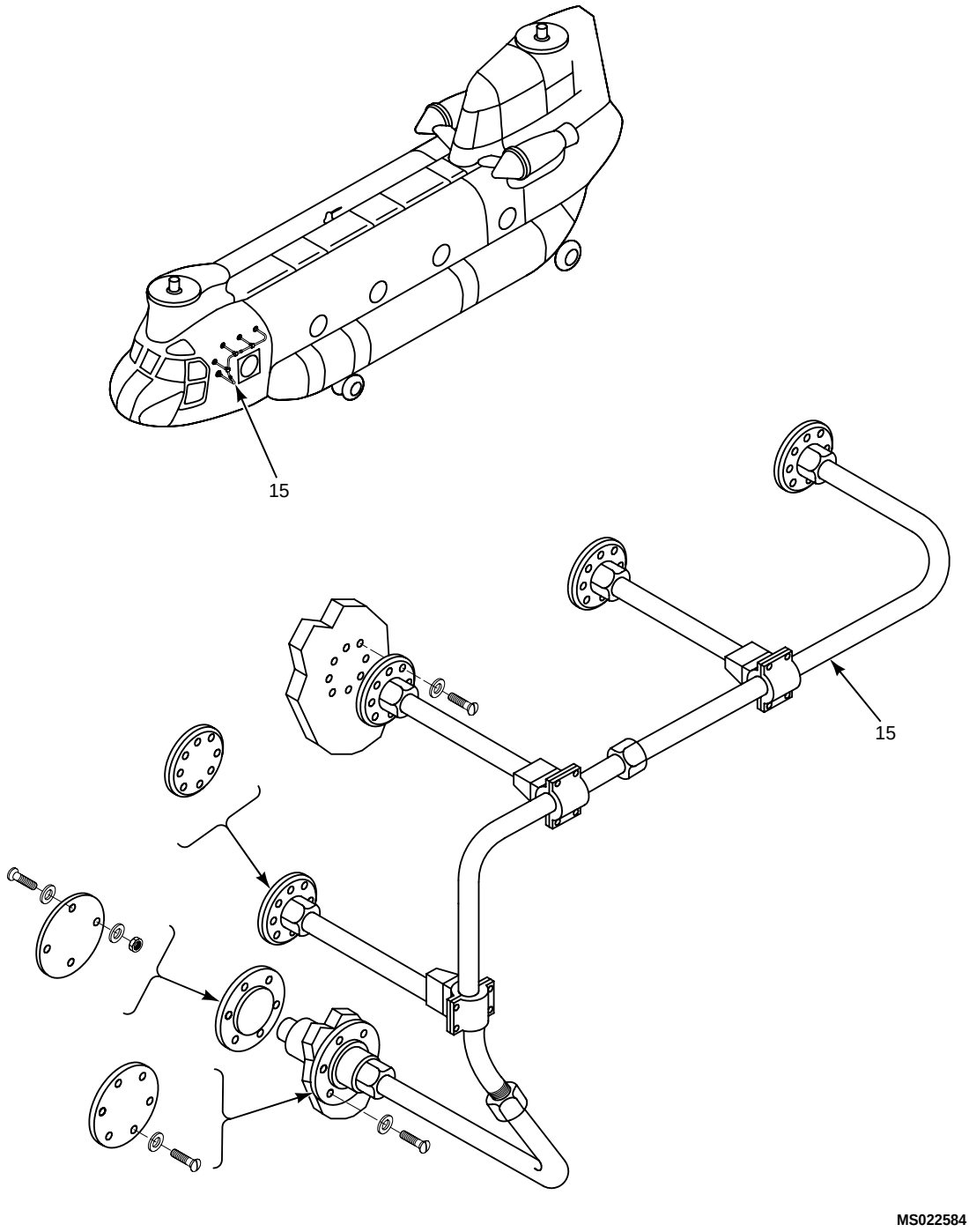


Figure 3. HF Radio Set, AN/ARC-199 (Sheet 6 of 6)

15. HF Antenna Installation, AS-3938/ARC
    Refer to WP 0071 00 for inspection and repair procedures.

IFF TRANSPONDER APX-100

NOTE

The items in Figure 4, sheets 1 through 4, correspond to the respective item numbers in the IFF TRANSPONDER, APX-100 INSPECTION REQUIREMENTS following each illustration.

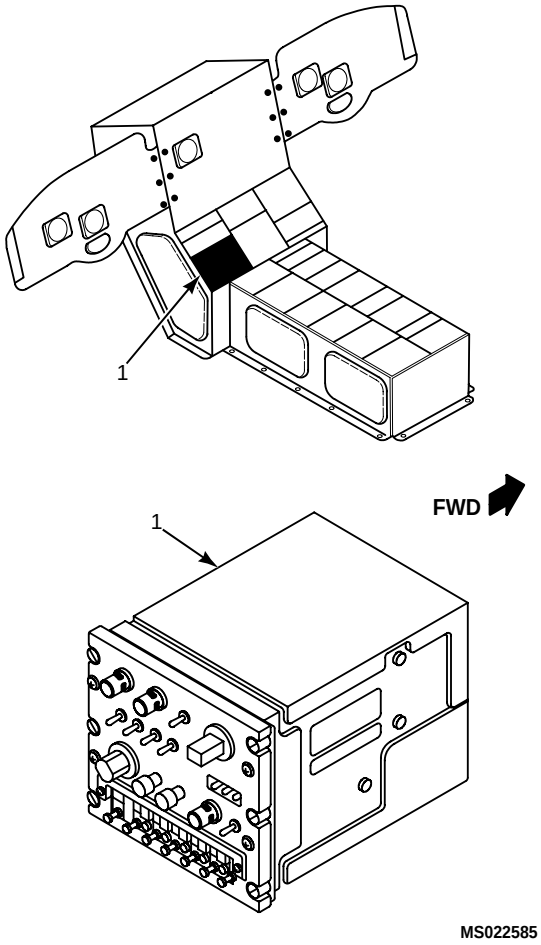


Figure 4. IFF Transponder, APX-100 (Sheet 1 of 4)

IFF TRANSPONDER, APX-100 INSPECTION REQUIREMENTS

1. Receiver-Transmitter, RT-1558A/APX-100
   a. Inspect aircraft records for previous receive-transmit discrepancies.
   b. Inspect RT for cracks (no cracks allowed), dents, nicks, evidence of overheating, or evidence of corrosion.
   c. Inspect RT for broken, missing, loose, or unserviceable knobs, switches, or damaged attaching hardware.
   d. Refer to WP 0003 00, Tables 4 and 5, for all electrical wiring and electrical component inspection and repair procedures.
   e. Refer to TM 11-1520-240-23 for RT removal and installation.
   f. Refer to WP 0077 00 for corrosion removal and treatment.

IFF TRANSPONDER, APX-100 INSPECTION REQUIREMENTS - continued

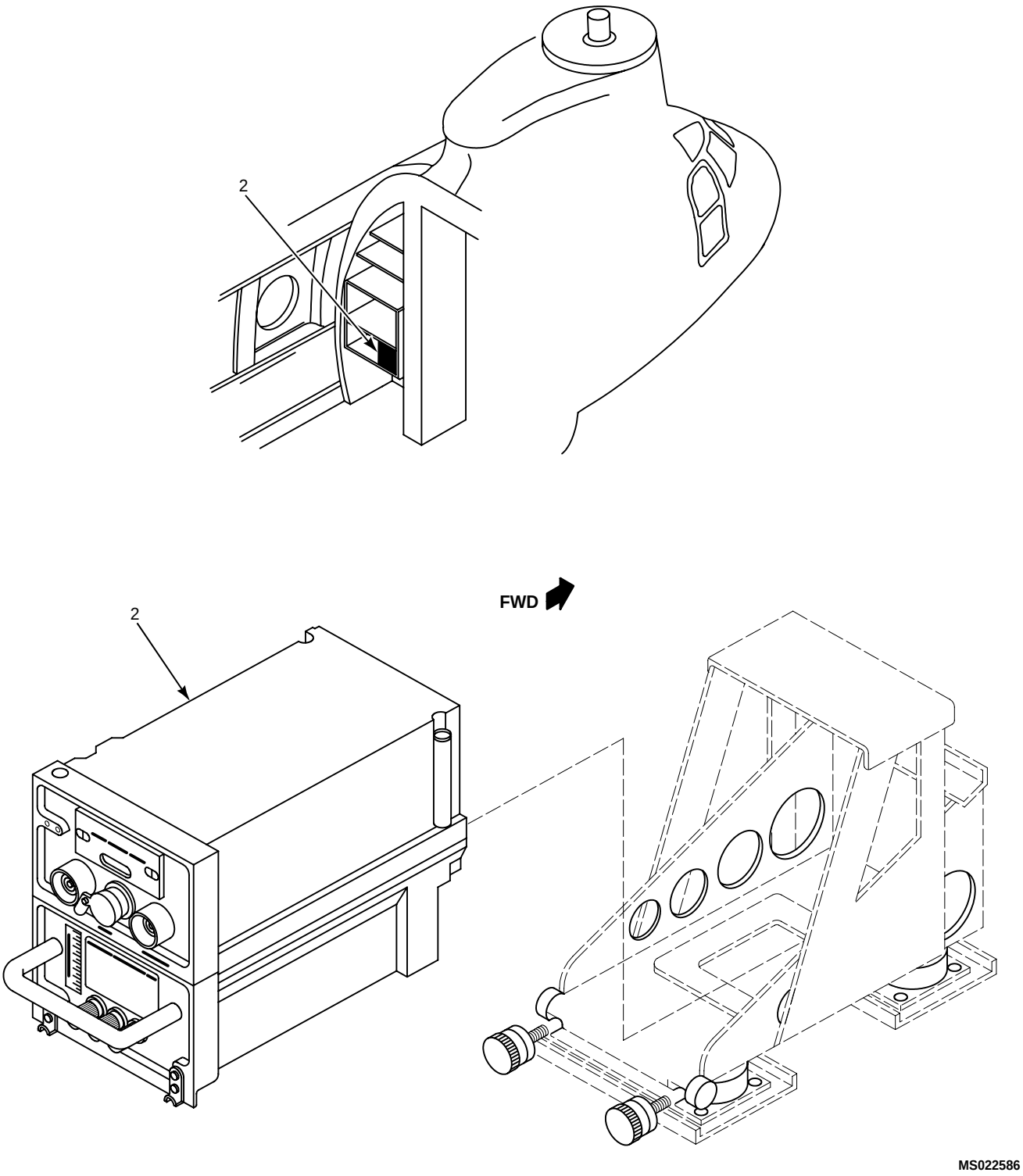


Figure 4. IFF Transponder, APX-100 (Sheet 2 of 4)

2. Transponder Computer, Kit-1C/TSEC
   Equipment to remain with owning unit.

IFF TRANSPONDER, APX-100 INSPECTION REQUIREMENTS - continued

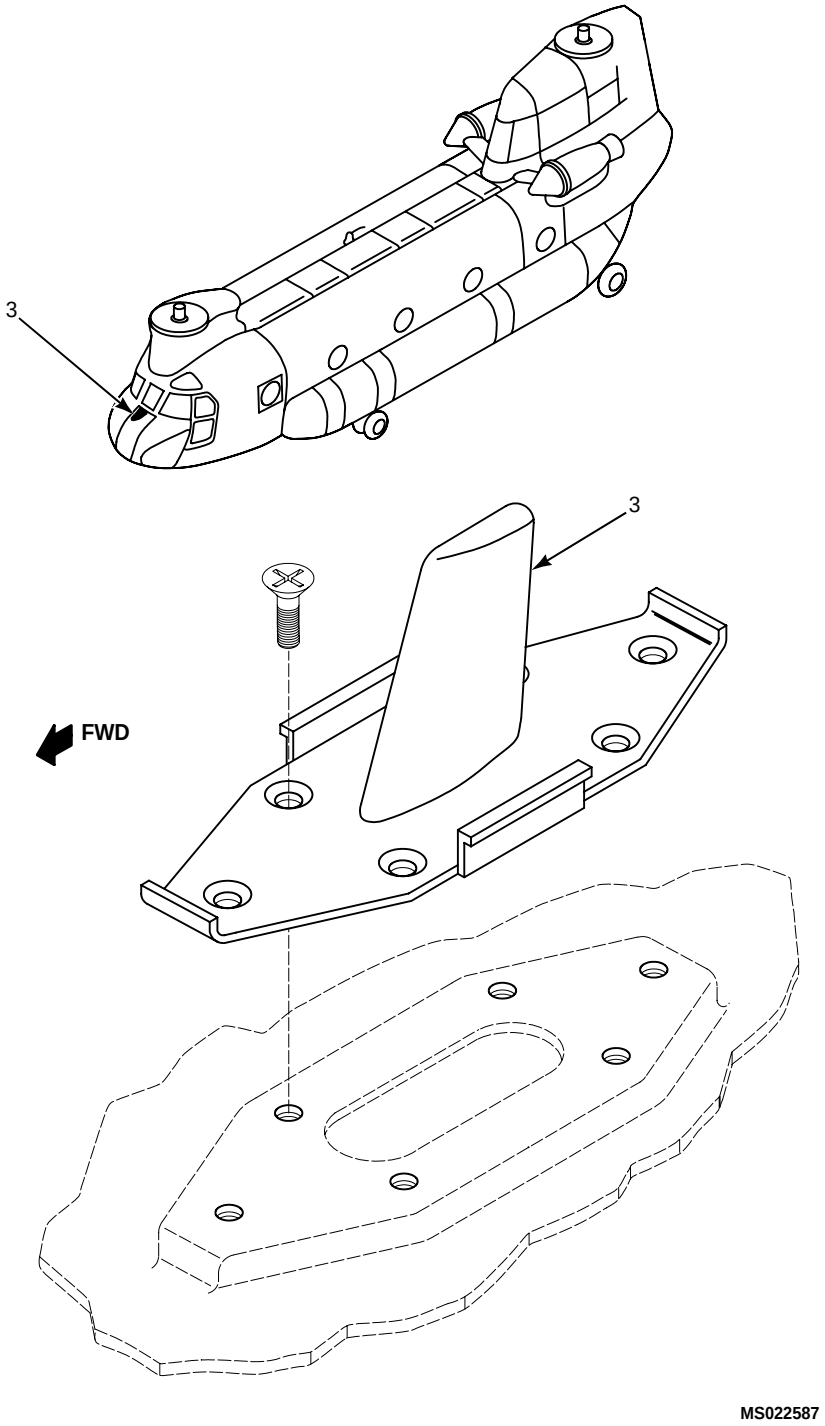


Figure 4. IFF Transponder, APX-100 (Sheet 3 of 4)

3. Antenna, AT-884/APX-44
   Refer to WP 0071 00 for inspection and repair procedures.

IFF TRANSPONDER, APX-100 INSPECTION REQUIREMENTS - continued

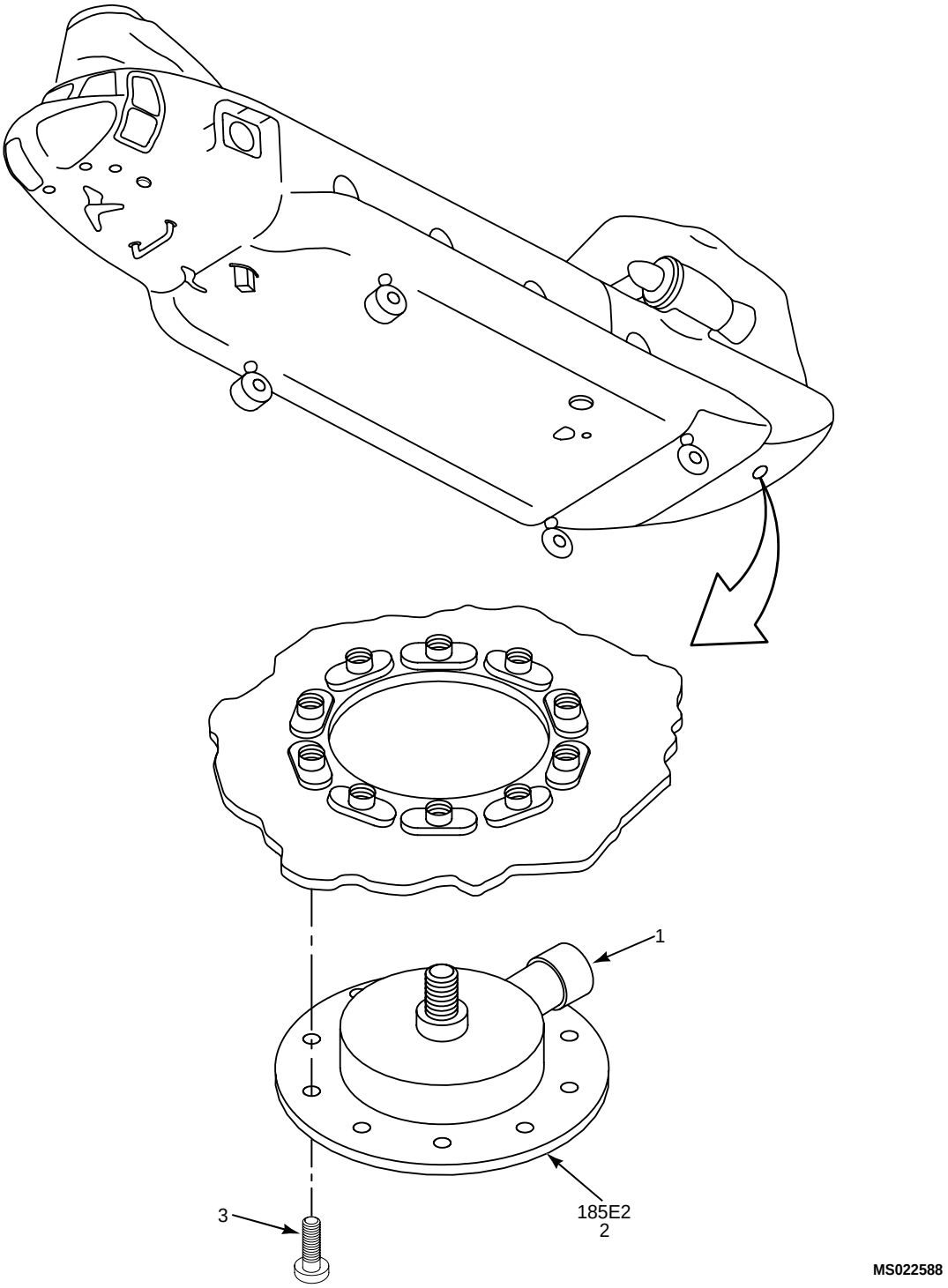


Figure 4. IFF Transponder, APX-100 (Sheet 4 of 4)

4. Antenna, AT-740/A
   Refer to WP 0071 00 for inspection and repair procedures.

UHF COMMAND SYSTEM, AN/ARC-164 INSPECTION REQUIREMENTS

NOTE

The items in Figure 5, sheets 1 through 5, correspond to the respective item numbers in the UHF COMMAND SYSTEM, AN/ARC-164 INSPECTION REQUIREMENTS following each illustration.

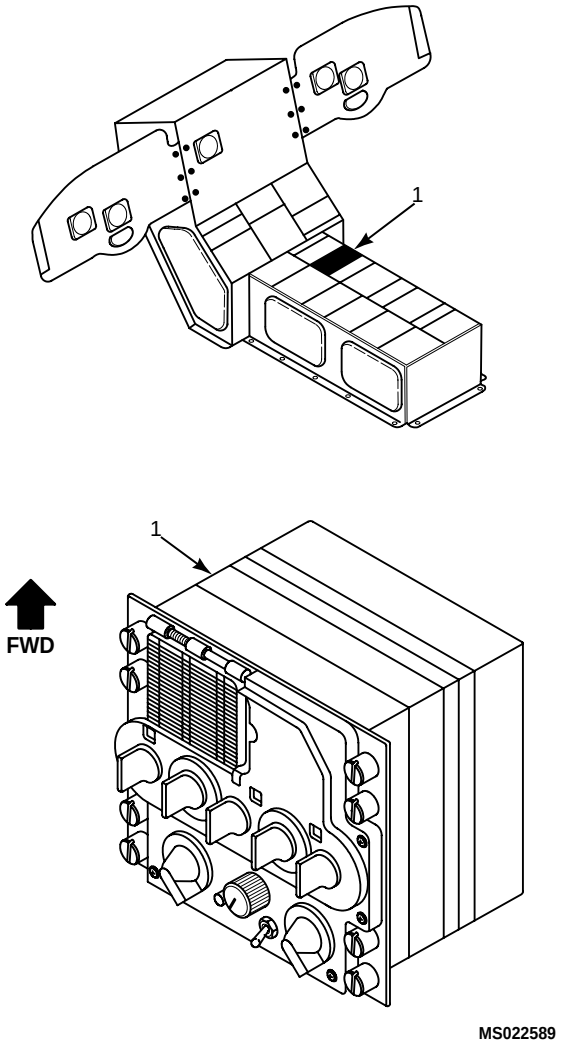


Figure 5. UHF Command System, AN/ARC-164 (Sheet 1 of 3)

1. Receiver-Transmitter, RT-1518 (preferred) or RT-1167/ARC-164
   a. Inspect aircraft records for previous receive-transmit discrepancies.
   b. Inspect RT for cracks (no cracks allowed), dents, nicks, evidence of overheating, or evidence of corrosion.
   c. Inspect RT for broken, missing, loose, or unserviceable knobs, switches, or damaged attaching hardware.
   d. Refer to WP 0003 00, Tables 4 and 5, for all electrical wiring and electrical component inspection and repair procedures.
   e. Refer to TM 11-1520-240-23 for RT removal and installation.
   f. Refer to WP 0077 00 for corrosion removal and treatment.

UHF COMMAND SYSTEM, AN/ARC-164 INSPECTION REQUIREMENTS - continued

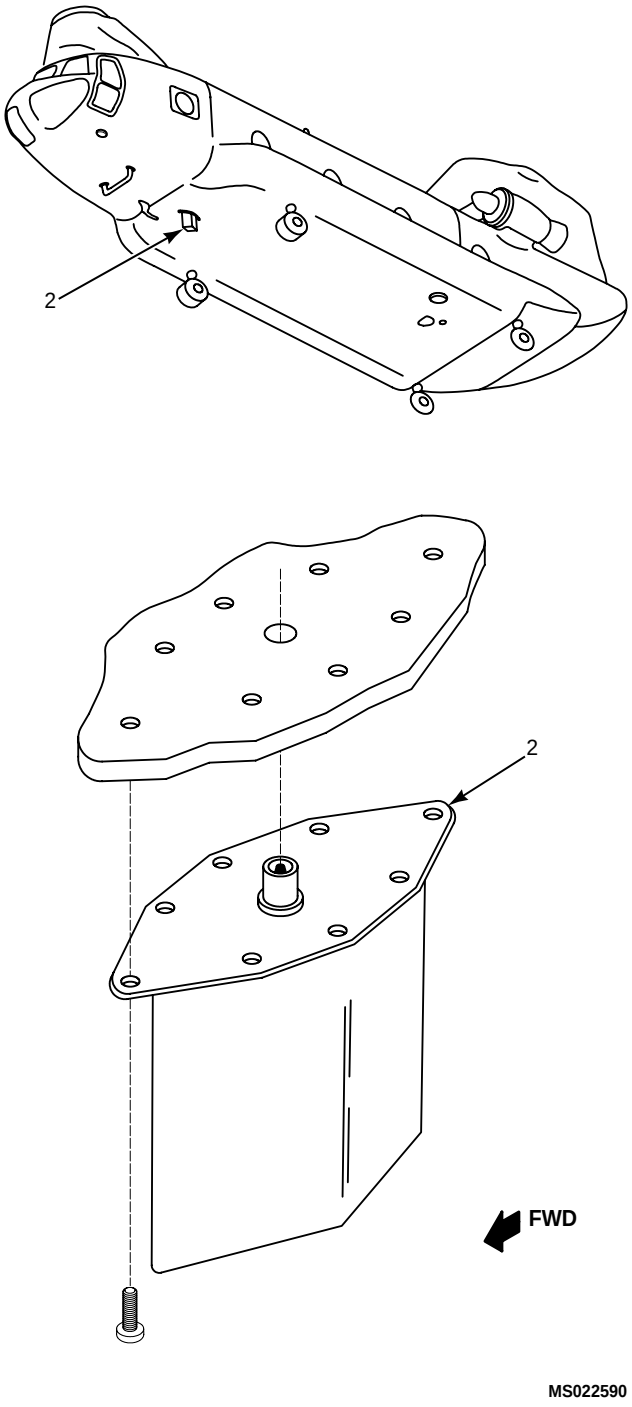


Figure 5. UHF Command System, AN/ARC-164 (Sheet 2 of 3)

2. Antenna, AT-256/ARC (M5815/1-01)
   Refer to Work Package WP 0071 00 for inspection and repair procedures.

UHF COMMAND SYSTEM, AN/ARC-164 INSPECTION REQUIREMENTS – continued

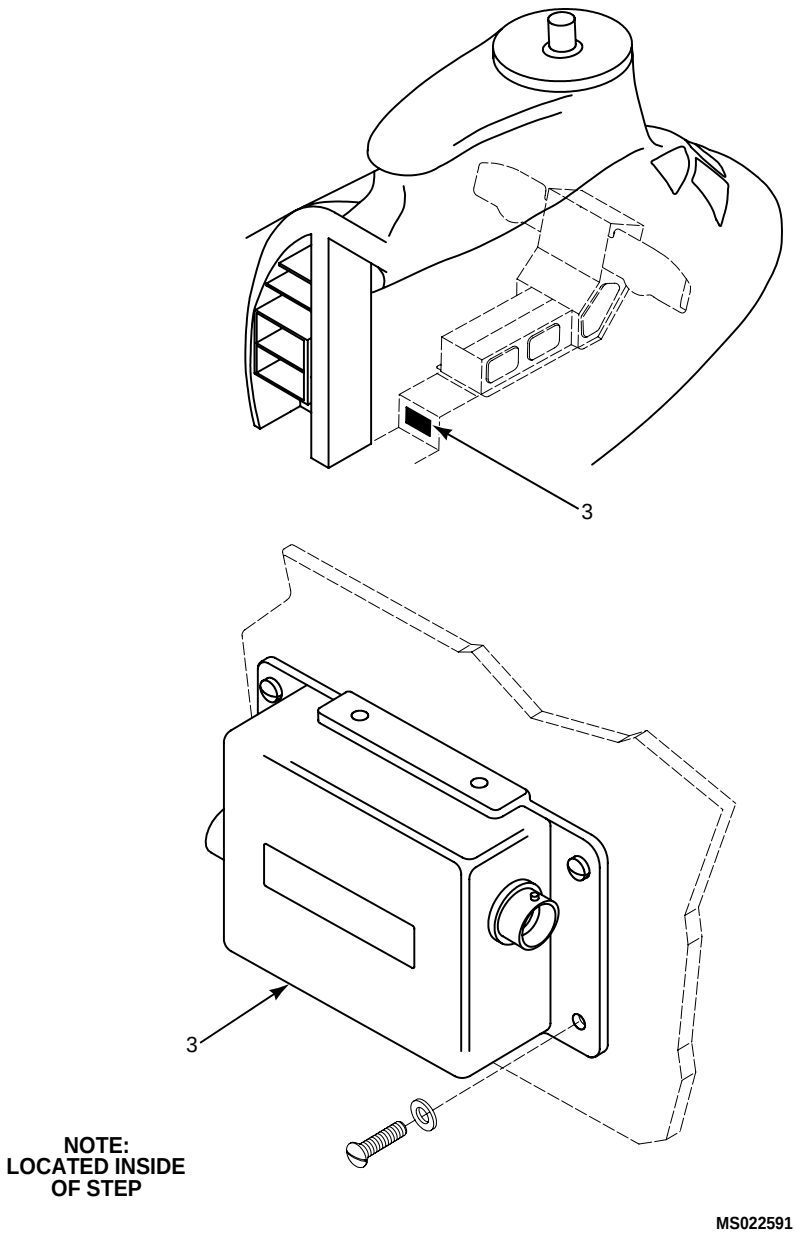


Figure 5. UHF Command System, AN/ARC-164 (Sheet 3 of 3)

3. Filter, High Pass, HPF40-01T
   a. Inspect filter for cracks (no cracks allowed), dents, nicks, evidence of overheating, or evidence of corrosion.
   b. Inspect filter for broken, missing, loose, or damaged attaching hardware.
   c. Refer to WP 0003 00, Tables 4 and 5, for all electrical wiring and electrical component inspection and repair procedures.
   d. Refer to TM 11-1520-240-23 for filter removal and installation.
   e. Refer to WP 0077 00 for corrosion removal and treatment.

SINCGARS VHF-FM RADIO, AN/ARC-201 INSPECTION REQUIREMENTS

NOTE

The items in Figure 6, sheets 1 through 5, correspond to the respective item numbers in the SINCGARS VHF FM RADIO, AN/ARC-201 INSPECTION REQUIREMENTS following each illustration.

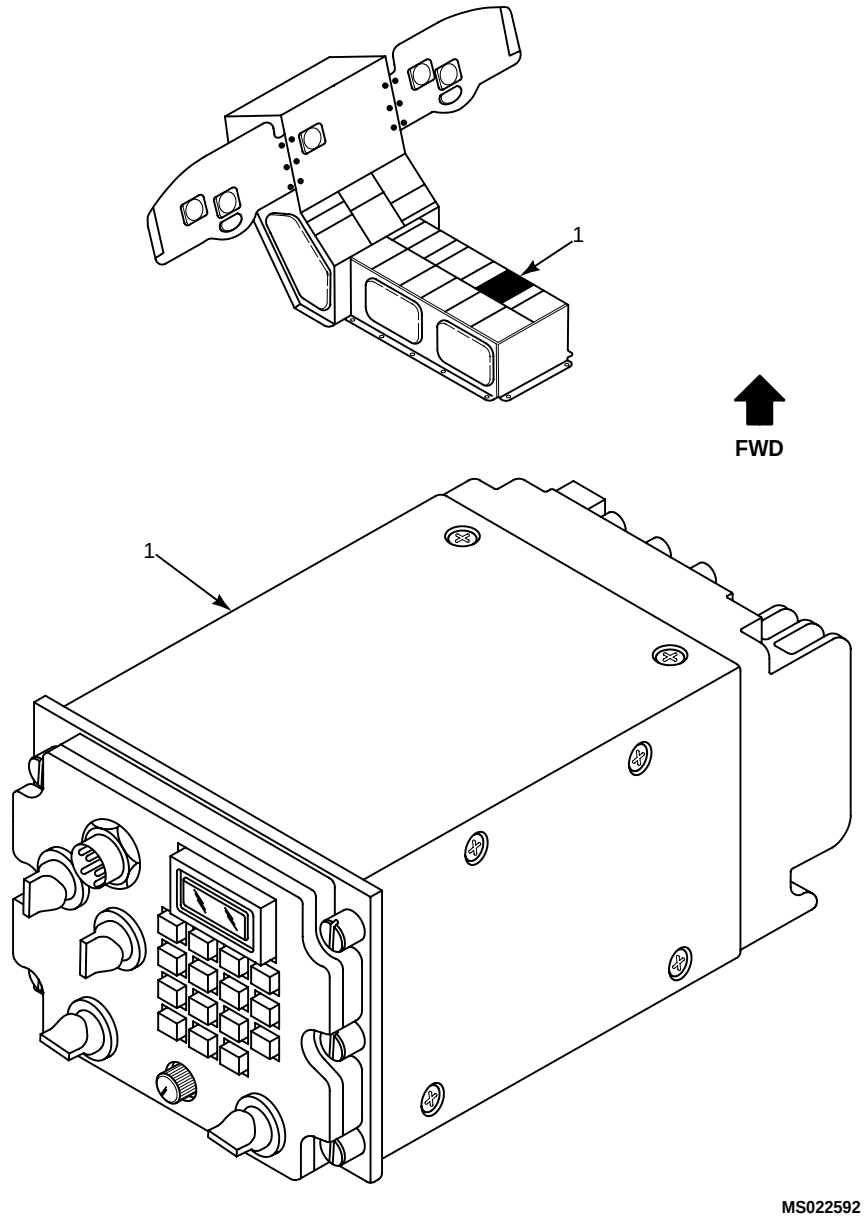


Figure 6. Sincgars VHF-FM Radio, AN/ARC-201 (Sheet 1 of 5)

1. Receiver-Transmitter, RT-1476/ARC-201
   Equipment to remain with owning unit.

SINCGARS VHF-FM RADIO, AN/ARC-201 INSPECTION REQUIREMENTS - continued

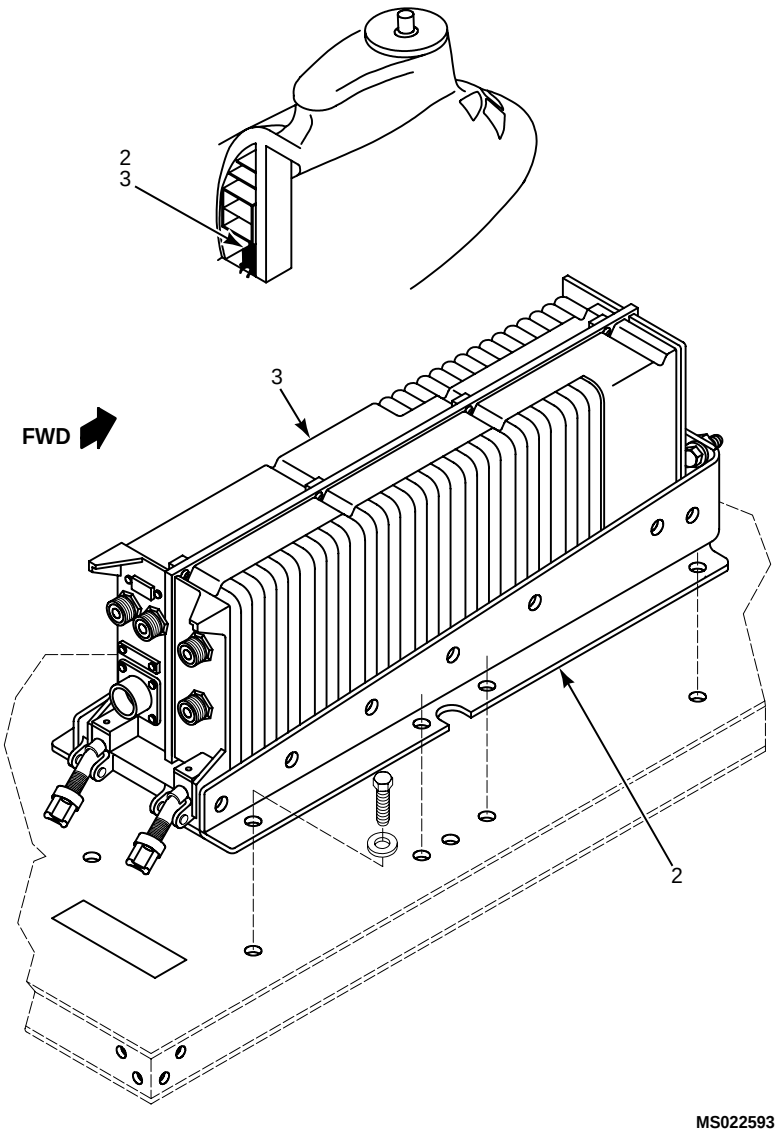


Figure 6. Sincgars VHF-FM Radio, AN/ARC-201 (Sheet 2 of 5)

2. Mounting Base, Electrical, DSK-9-03602-502
   a. Inspect mounting base for cracks (no cracks allowed), dents, nicks, or evidence of corrosion.
   b. Inspect mounting base for cracked, loose, missing, or damaged attaching hardware.
   c. Damage to mounting base of 15% or less of cross-sectional area at point of damage is considered minor. Replace if damage exceeds this limit.
   d. Refer to TM 11-1520-240-23 for mounting base removal and installation.
   e. Refer to WP 0077 00 for corrosion removal and treatment.

3. Amplifier, Radio Frequency, AM-7189A/ARC
   Equipment to remain with owning unit.

SINCGARS VHF-FM RADIO, AN/ARC-201 INSPECTION REQUIREMENTS - continued

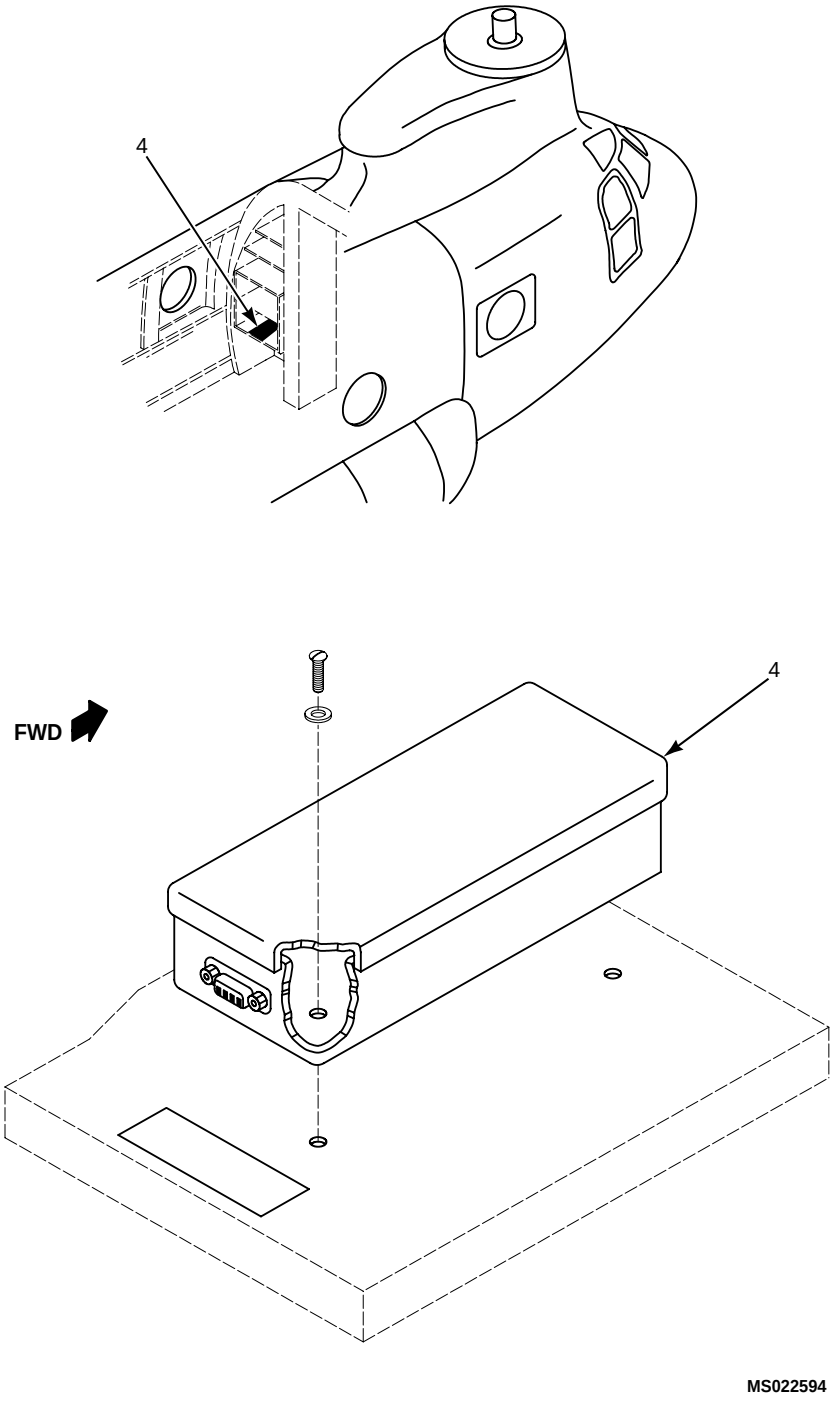


Figure 6. Sincgars VHF-FM Radio, AN/ARC-201 (Sheet 3 of 5)

4. Battery Box, CY-8515/ARC-201
   Equipment to remain with owning unit.

SINCGARS VHF-FM RADIO, AN/ARC-201 INSPECTION REQUIREMENTS - continued

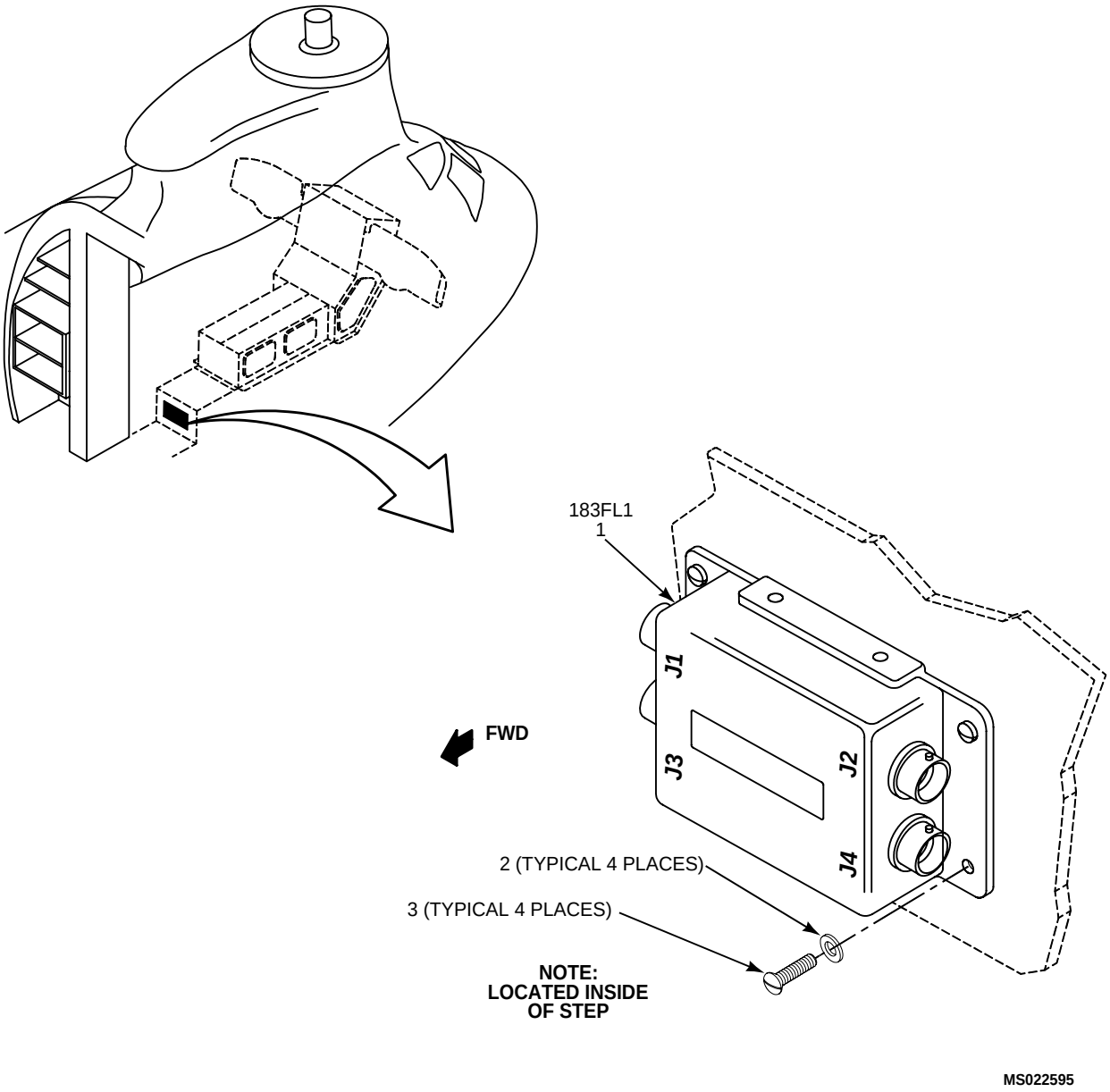


Figure 6. Sincgars VHF-FM Radio, AN/ARC-201 (Sheet 4 of 5)

5. Filter, Low Pass, AV802
   a. Inspect filter for cracks (no cracks allowed), dents, nicks, evidence of overheating, or evidence of corrosion.
   b. Inspect filter for broken, missing, loose, or damaged attaching hardware.
   c. Refer to WP 0003 00, Tables 4 and 5, for all electrical wiring and electrical component inspection and repair procedures.
   d. Refer to TM 11-1520-240-23 for filter removal and installation.
   e. Refer to WP 0077 00 for corrosion removal and treatment.

SINCGARS VHF-FM RADIO, AN/ARC-201 INSPECTION REQUIREMENTS - continued

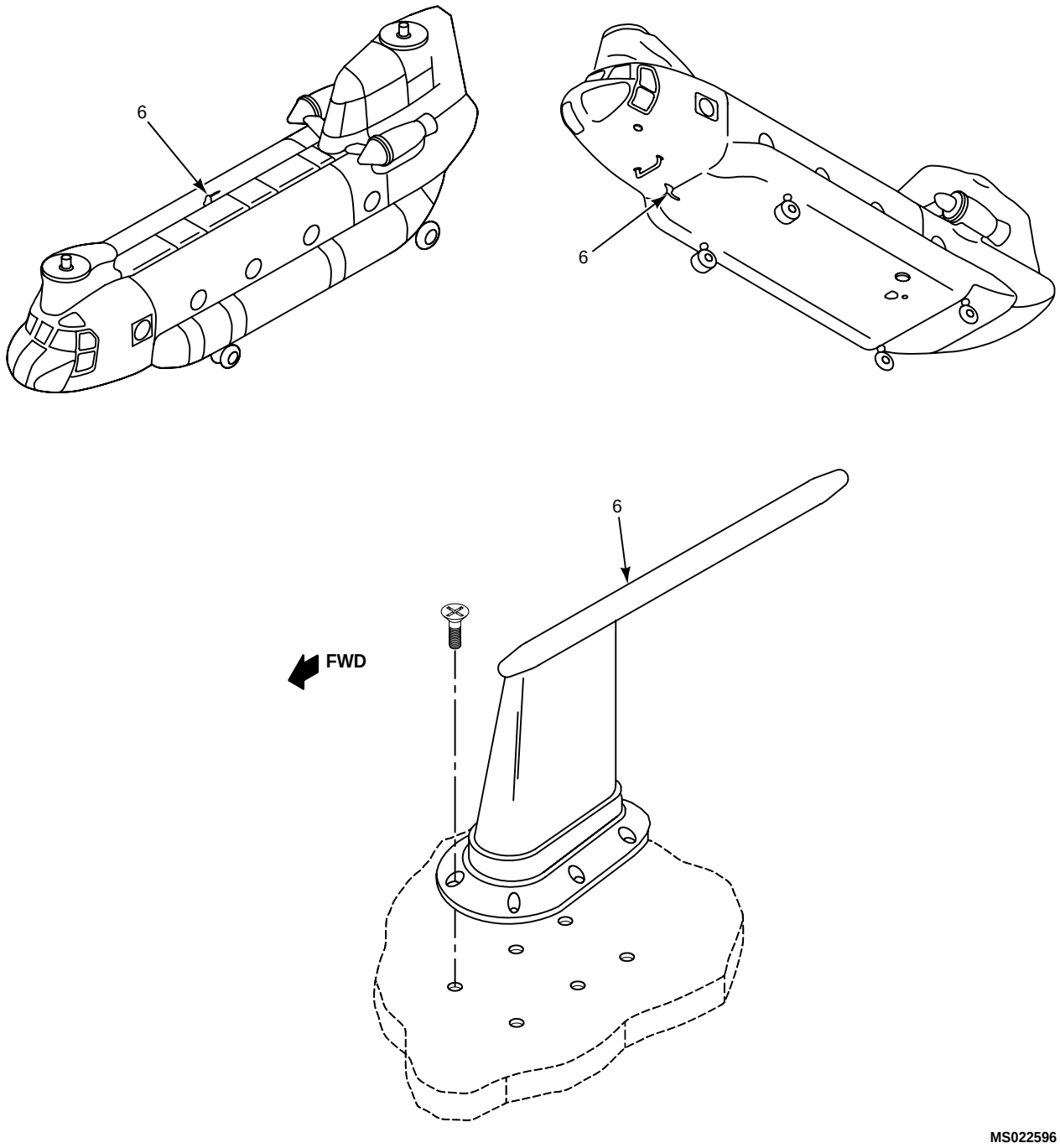


Figure 6. Sincgars VHF-FM Radio, AN/ARC-201 (Sheet 5 of 5)

6. Antenna, AS-3939/ARC
   Refer to WP 0071 00 for inspection and repair procedures.

HF LIAISON SYSTEM, AN/ARC-220 WITH KY-100 SECURE VOICE

NOTE

The items in Figure 7, sheets 1 through 5, correspond to the respective item numbers in the HF LIASON SYSTEM, AN/ARC-220 WITH KY-100 SECURE VOICE, INSPECTION REQUIREMENTS following each illustration.

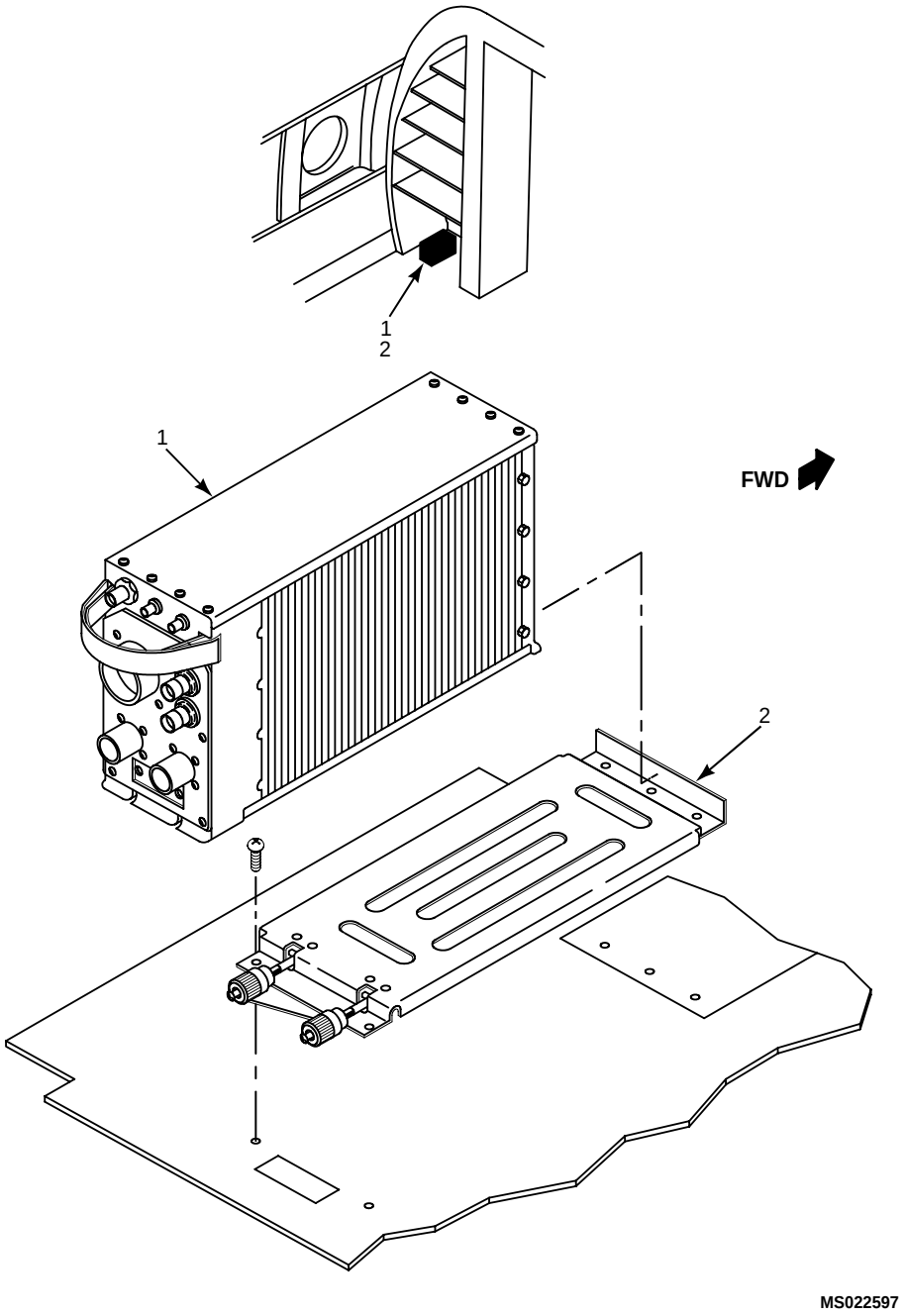


Figure 7. HF Liaison System, AN/ARC-220 With KY-100 Secure Voice (Sheet 1 of 5)

HF LIAISON SYSTEM, AN/ARC-220 WITH KY-100 SECURE VOICE INSPECTION REQUIREMENTS

1. Receiver-Transmitter, RT-1749/URC
   Equipment to remain with owning unit

2. Mounting Base, 200-3202-00
   a. Inspect mounting base for cracks (no cracks allowed), dents, nicks, or evidence of corrosion.
   b. Inspect mounting base for cracked, loose, missing, or damaged attaching hardware.
   c. Damage to mounting base of 15% or less of cross-sectional area at point of damage is considered minor. Replace if damage exceeds this limit.
   d. Refer to TM 11-1520-240-23 for mounting base removal and installation.
   e. Refer to WP 0077 00 for corrosion removal and treatment

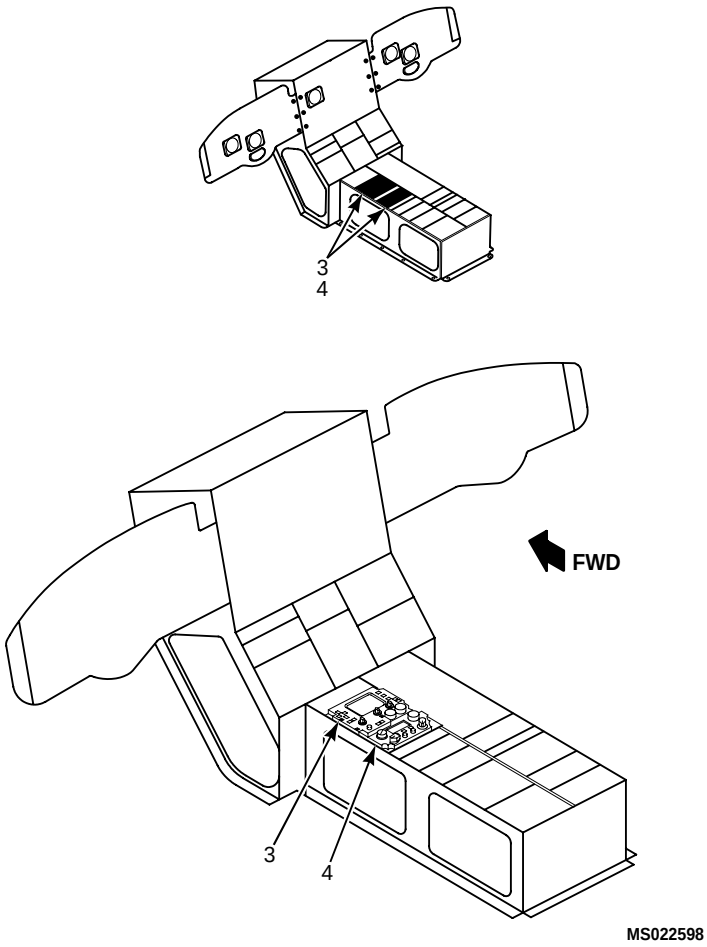


Figure 7. HF Liaison System, AN/ARC-220 With KY-100 Secure Voice (Sheet 2 of 5)

3. Control, Radio Set, C-12436/URC
   Equipment to remain with owning unit.

4. Control, Remote, TSEC, ON616650
   Equipment to remain with owning unit.

HF LIAISON SYSTEM, AN/ARC-220 WITH KY-100 SECURE VOICE INSPECTION REQUIREMENTS – continued

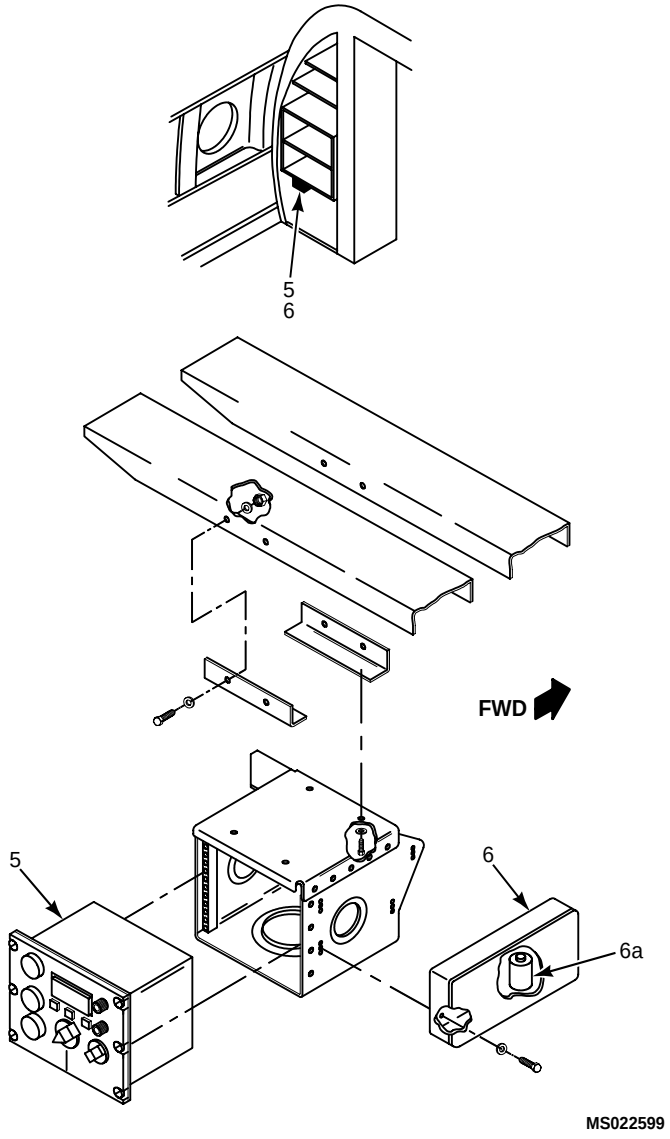


Figure 7. HF Liaison System, AN/ARC-220 With KY-100 Secure Voice (Sheet 3 of 5)

5. Processor, TSEC/KY-100, ON616604
   Equipment to remain with owning unit.

6. Battery Box, CY-8515/ARC-201
   Equipment to remain with owning unit.

6a. Battery, Non-recharge, MN1400
   Equipment to remain with owning unit.

HF LIAISON SYSTEM, AN/ARC-220 WITH KY-100 SECURE VOICE INSPECTION REQUIREMENTS - continued

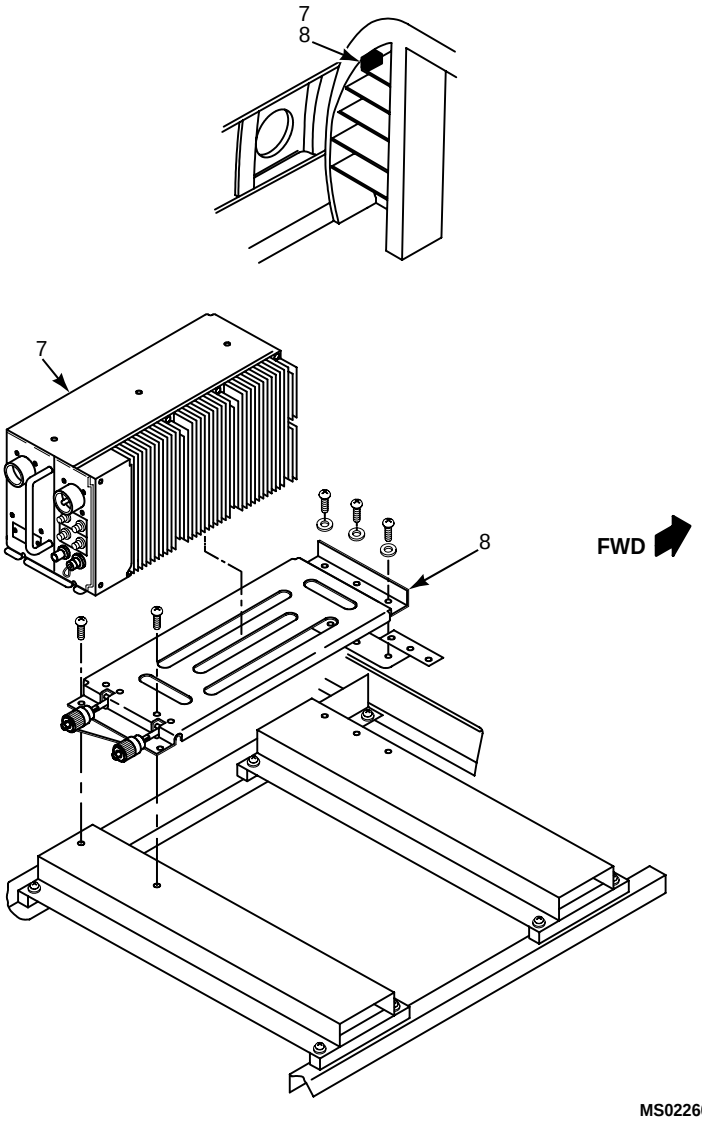


Figure 7. HF Liaison System, AN/ARC-220 With KY-100 Secure Voice (Sheet 4 of 5)

7. Power Amp Coupler, AM-7531/URC (751-8935-001)
   Equipment to remain with owning unit.

8. Coupler Mount,200-3438-00 (047-6697-02)
   a. Inspect mount for cracks (no cracks allowed), dents, nicks, or evidence of corrosion.
   b. Inspect mount for cracked, loose, missing, or damaged attaching hardware.
   c. Damage to mount of 15% or less of cross-sectional area at point of damage is considered minor. Replace if damage exceeds this limit.
   d. Refer to TM 11-1520-240-23 for mount removal and installation.
   e. Refer to WP 0077 00 for corrosion removal and treatment

HF LIAISON SYSTEM, AN/ARC-220 WITH KY-100 SECURE VOICE INSPECTION REQUIREMENTS - continued

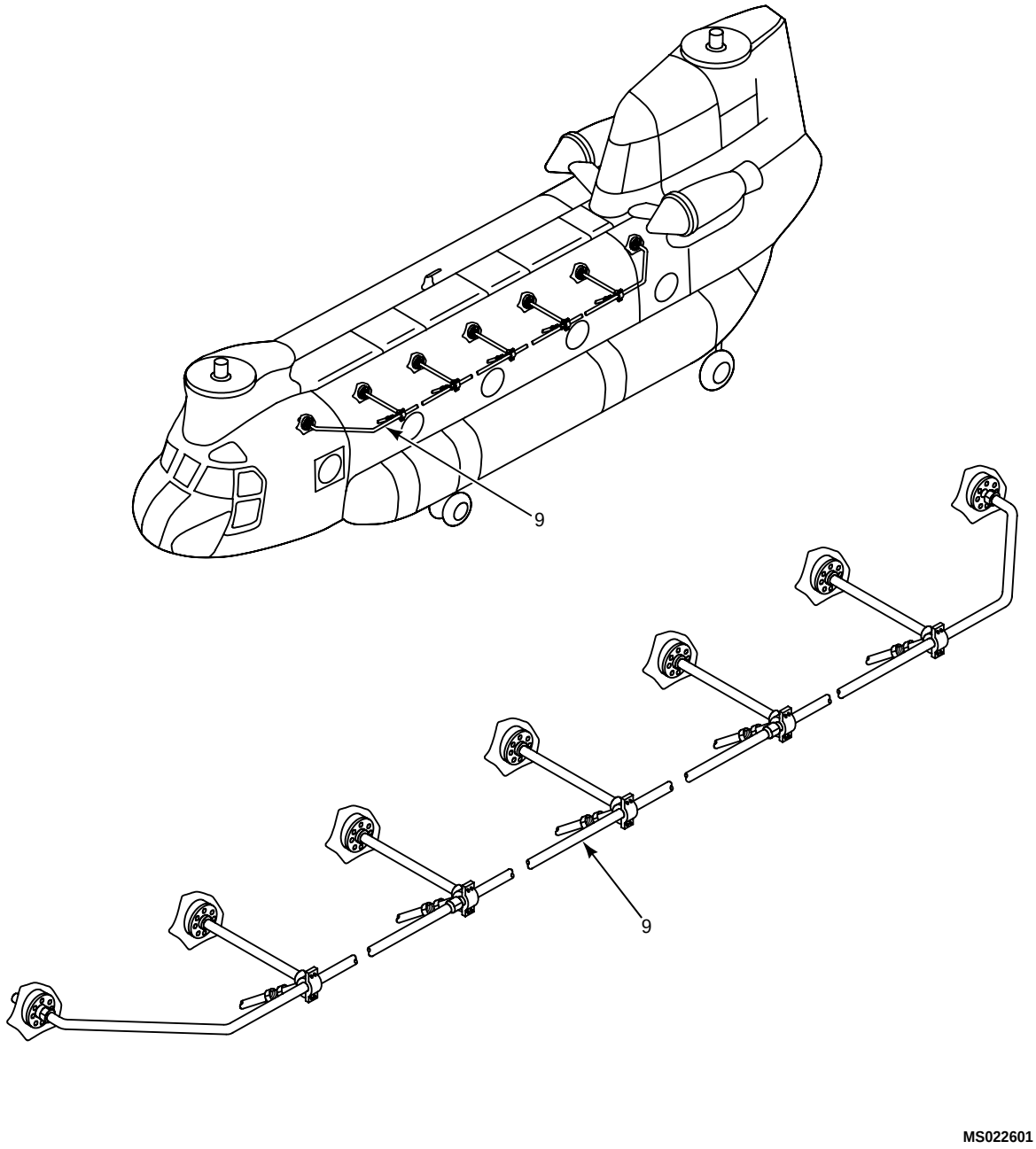


Figure 7. HF Liaison System, AN/ARC-220 With KY-100 Secure Voice (Sheet 5 of 5)

9. HF Antenna, AV647
   Refer to WP 0071 00 for inspection and repair procedures.

END OF WORK PACKAGE

DEPOT MAINTENANCE WORK REQUIREMENT
CH-47D HELICOPTER
NAVIGATION SYSTEMS

INITIAL SETUP

Test Equipment:
As Required

Tools and Special Tools:
As Required

Material/Parts:
As Required

Personnel Required:
Examiner (PSA)

References:
TM 1-1500-204-23 Series
TM 11-1520-240-23
TM 55-1500-323-24
TM 55-1520-240-23 Series
WP 0003 00
WP 0077 00

Equipment Conditions:
As Required

Special Environmental Condition:
As Required

SCOPE

The navigation system includes facilities that provide heading and bearing information, absolute altitude, and that permit use of VHF-omni directional ranges, runway localizers, low frequency radio direction finders, and FM homing. These functions are provided by:

a. Direction Finder Set, AN/ARN-89B
b. Radio Receiver Set, AN/ARN-123 (VOR/ILS)
c. Altimeter System, AN/APN-209A (V)
d. Gyro Magnetic Compass System, AN/ASN-43
e. Vertical Gyro Displacement System
f. Horizontal Situation Indicator (HSI)
g. Navigation Set, Doppler, AN/ASN-128A
h. Navigation Set, Doppler GPS, AN/ASN-128B
i. Airborne Navigation Set, Global Positioning System (GPS), AN/ASN-149 (V) 1

DIRECTION FINDER SET, AN/ARN-89B INSPECTION REQUIREMENTS

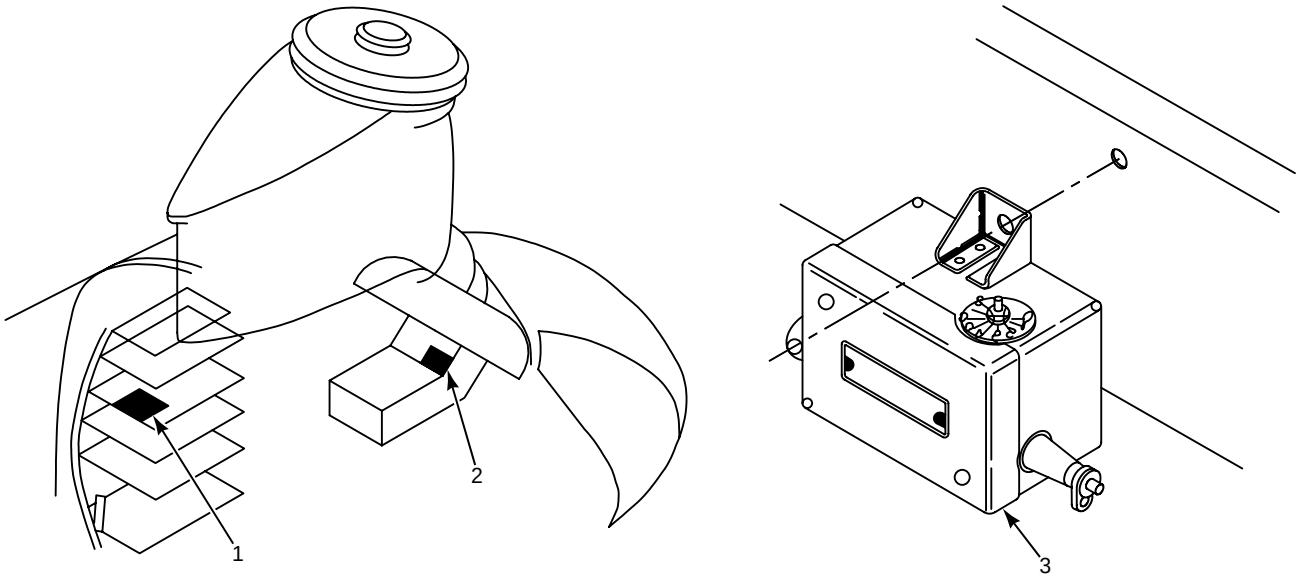


Figure 1. Direction Finder Set, AN/ARN-89B

NOTE

The items in Figure 1 correspond to the respective item numbers in the following DIRECTION FINDER SET, AN/ARN-89B INSPECTION REQUIREMENTS.

1. ADF Receiver, R-1496A/ARN-89
   a. Inspect the receiver for cracks (no cracks allowed), dents, nicks, evidence of overheating, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to WP 0003 00, Tables 4 and 5, for electrical wiring and electrical component inspection and repair procedures.
   d. Refer to TM 11-1520-240-23 for removal and installation.
   e. Refer to WP 0077 00 for corrosion removal and treatment.

2. Control ADF Set, C-7392A/ARN-89
   a. Inspect control for cracks (no cracks allowed), dents, nicks, evidence of overheating, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to WP 0003 00, Tables 4 and 5, for electrical wiring and electrical component inspection and repair procedures.
   d. Refer to TM 11-1520-240-23 for removal and installation.
   e. Refer to WP 0077 00 for corrosion removal and treatment.

DIRECTION FINDER SET, AN/ARN-89B INSPECTION REQUIREMENTS – continued

3. Impedance Matching Amplifier, AM-4859A/ARN-89
   a. Inspect the amplifier for cracks (no cracks allowed), dents, nicks, evidence of overheating, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to WP 0003 00, Tables 4 and 5, for electrical wiring and electrical component inspection and repair procedures.
   d. Refer to TM 11-1520-240-23 for removal and installation.
   e. Refer to WP 0077 00 for corrosion removal and treatment.

CIVIL VOR/ILS, AN/ARN-123 INSPECTION REQUIREMENTS

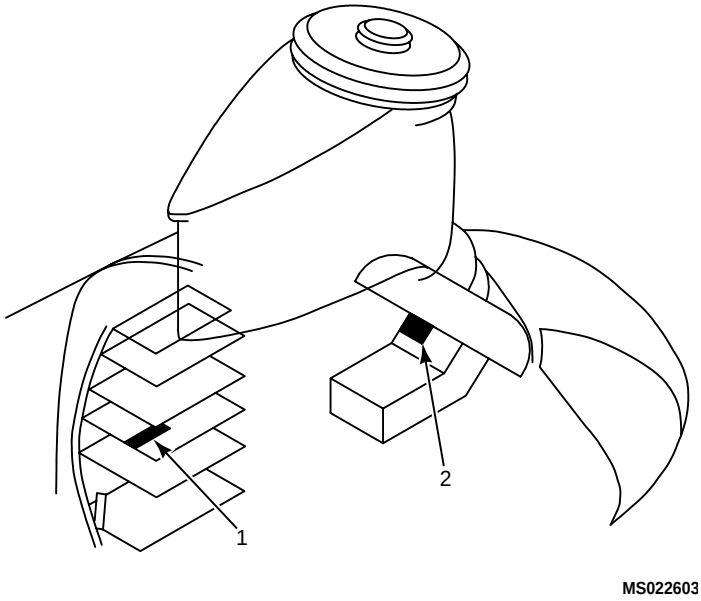


Figure 2. Civil VOR/ILS, AN/ARN-123

NOTE

The items in Figure 2 correspond to the respective item numbers in the following CIVIL VOR/ILS, AN/ARN-123 INSPECTION REQUIREMENTS.

1. Receiver, R-2023/ARN-123(V) and Mount, MT-4834/ARN-123(V)
   a. Inspect the receiver for cracks (no cracks allowed), dents, nicks, evidence of overheating, or evidence of corrosion.
   b. Inspect mount for cracks or loose, missing, or damaged attaching hardware.
   c. Damage to mount of 15% or less of cross-sectional area at point of damage is considered minor. If damage exceeds this limit, replace the mount bracket.
   d. Refer to WP 0003 00, Tables 4 and 5, for electrical wiring and electrical component inspection and repair procedures.
   e. Refer to TM 11-1520-240-23 for removal and installation.
   f. Refer to WP 0077 00 for corrosion removal and treatment.

CIVIL VOR/ILS, AN/ARN-123 INSPECTION REQUIREMENTS - continued

2. Control, C-10048/ARN-123(V)
   a. Inspect control for cracks (no cracks allowed), dents, nicks, evidence of overheating, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to WP 0003 00, Tables 4 and 5, for electrical wiring and electrical component inspection and repair procedures.
   d. Refer to TM 11-1520-240-23 for removal and installation.
   e. Refer to WP 0077 00 for corrosion removal and treatment.

RADAR ALTIMETER, AN/APN-209 INSPECTION REQUIREMENTS

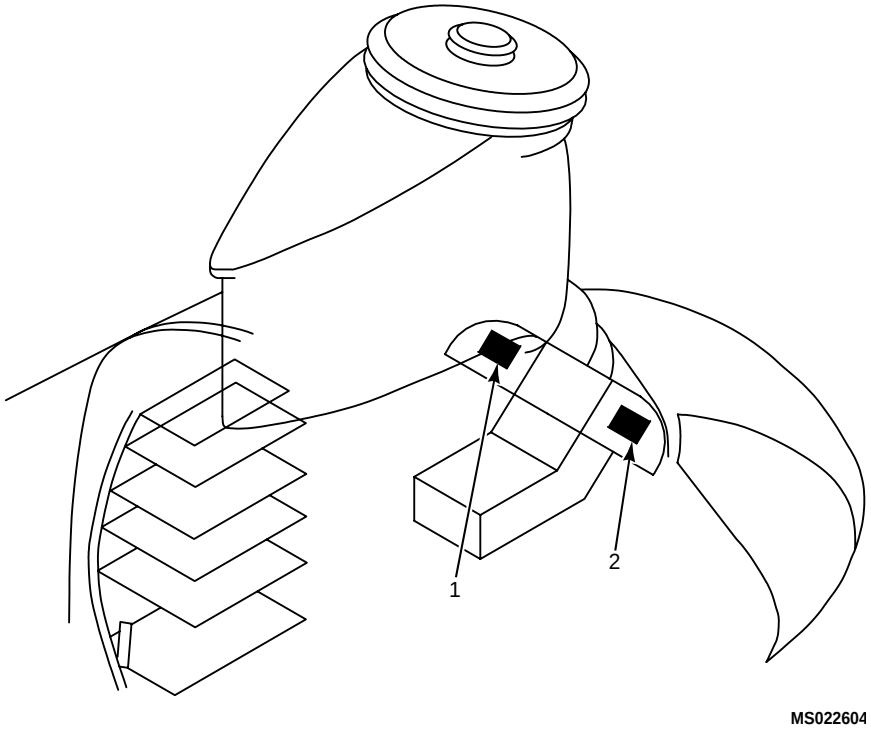


Figure 3. Radar Altimeter, AN/APN-209

NOTE

The items in Figure 3 correspond to the respective item numbers in the following RADAR ALTIMETER, AN/APN-209 INSPECTION REQUIREMENTS.

1. Pilot's Indicator/Receiver/Transmitter, RT-1115( ) APN-209
   a. Inspect pilot's indicator for cracks (no cracks allowed), dents, nicks, evidence of overheating, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to WP 0003 00, Tables 4 and 5, for electrical wiring and electrical component inspection and repair procedures.
   d. Refer to TM 11-1520-240-23 for removal and installation.
   e. Refer to WP 0077 00 for corrosion removal and treatment.

RADAR ALTIMETER, AN/APN-209 INSPECTION REQUIREMENTS - continued

2. Copilot's Indicator, ID-1917/APN-209(V)
   a. Inspect copilot's indicator for cracks (no cracks allowed), dents, nicks, evidence of overheating, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to WP 0003 00, Tables 4 and 5, for electrical wiring and electrical component inspection and repair procedures.
   d. Refer to TM 11-1520-240-23 for removal and installation.
   e. Refer to WP 0077 00 for corrosion removal and treatment.

GYROMAGNETIC COMPASS SET, AN/ASN-43 INSPECTION REQUIREMENTS

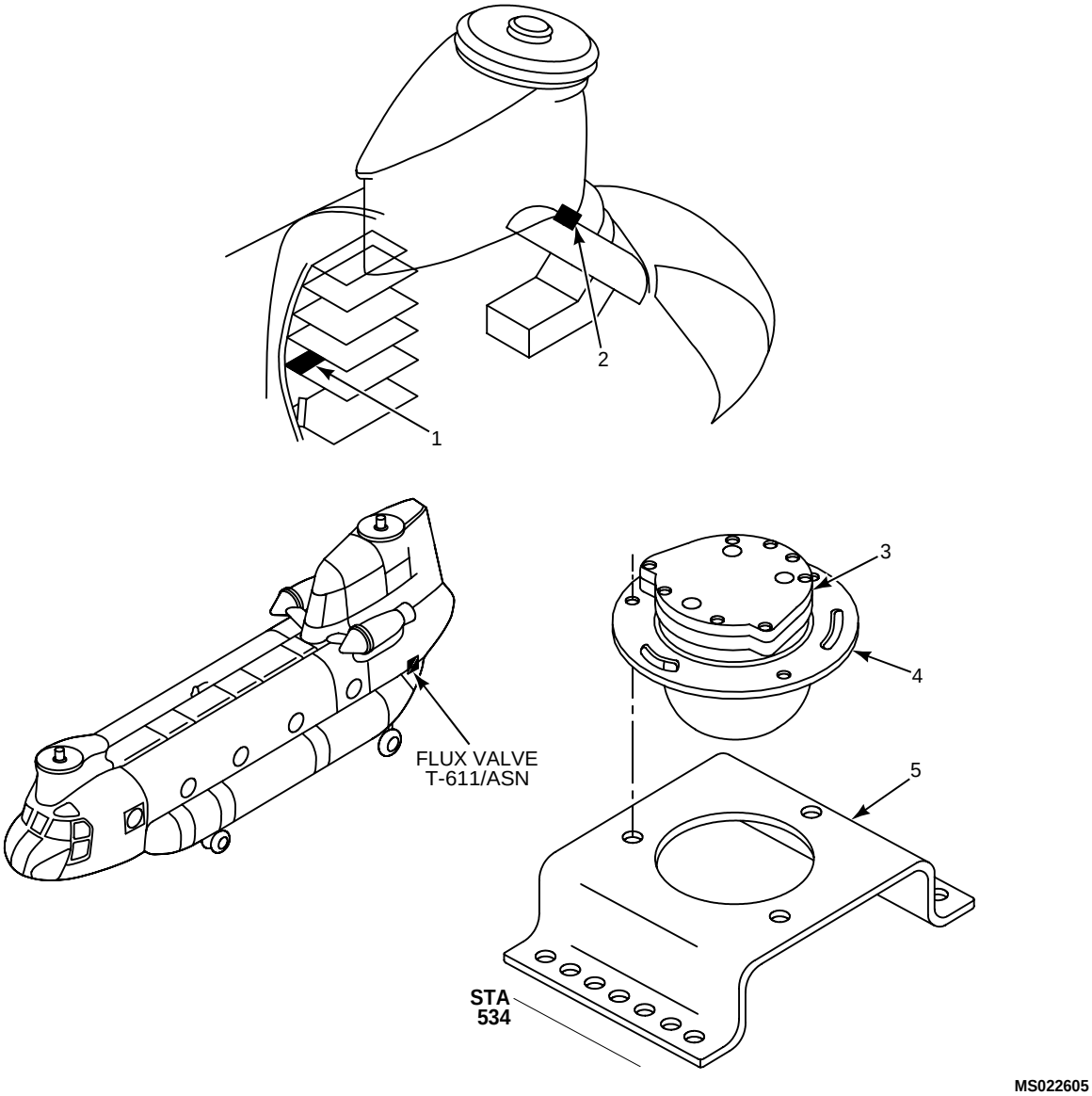


Figure 4. Gyromagnetic Compass Set, AN/ASN-43

GYROMAGNETIC COMPASS SET, AN/ASN-43 INSPECTION REQUIREMENTS - continued

NOTE

The items in Figure 4 correspond to the respective item numbers in the following GYROMAGNETIC COMPASS SET, AN/ASN-43 INSPECTION REQUIREMENTS.

1. Directional Gyro, CN-998/ASN-43
   a. Inspect the gyro for cracks (no cracks allowed), dents, nicks, evidence of overheating, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to WP 0003 00, Tables 4 and 5, for electrical wiring and electrical component inspection and repair procedures.
   d. Refer to TM 11-1520-240-23 for removal and installation.
   e. Refer to WP 0077 00 for corrosion removal and treatment.

2. Compass Control, C-8021A/ASN-75 (Overhead Console)
   a. Inspect control for cracks (no cracks allowed), dents, nicks, evidence of overheating, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to WP 0003 00, Tables 4 and 5, for electrical wiring and electrical component inspection and repair procedures.
   d. Refer to TM 11-1520-240-23 for removal and installation.
   e. Refer to WP 0077 00 for corrosion removal and treatment.

3. Magnetic Flux Compensator, CN-405/ASN
   a. Inspect the compensator for cracks (no cracks allowed), dents, nicks, evidence of overheating, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to WP 0003 00, Tables 4 and 5, for electrical wiring and electrical component inspection and repair procedures.
   d. Refer to TM 11-1520-240-23 for removal and installation.
   e. Refer to WP 0077 00 for corrosion removal and treatment.

4. Induction Compass Transmitter, T-611/ASN (Flux Valve)
   a. Inspect the transmitter for cracks (no cracks allowed), dents, nicks, evidence of overheating, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to WP 0003 00, Tables 4 and 5, for electrical wiring and electrical component inspection and repair procedures.
   d. Refer to TM 11-1520-240-23 for removal and installation.
   e. Refer to WP 0077 00 for corrosion removal and treatment.

5. Mounting Bracket
   a. Inspect mount bracket for cracks (no cracks allowed), loose, missing, or damaged attaching hardware, or evidence of corrosion.
   b. Damage to mount bracket of 15 percent or less of cross-sectional area at point of damage is considered minor. If damage exceeds this limit, replace the mount bracket.
   c. Refer to TM 11-1520-240-23 for accept/reject criteria and repair procedures.
   d. Refer to WP 0077 00 for corrosion removal and treatment.

VERTICAL GYRO INDICATOR (VGI) FACILITY INSPECTION REQUIREMENTS

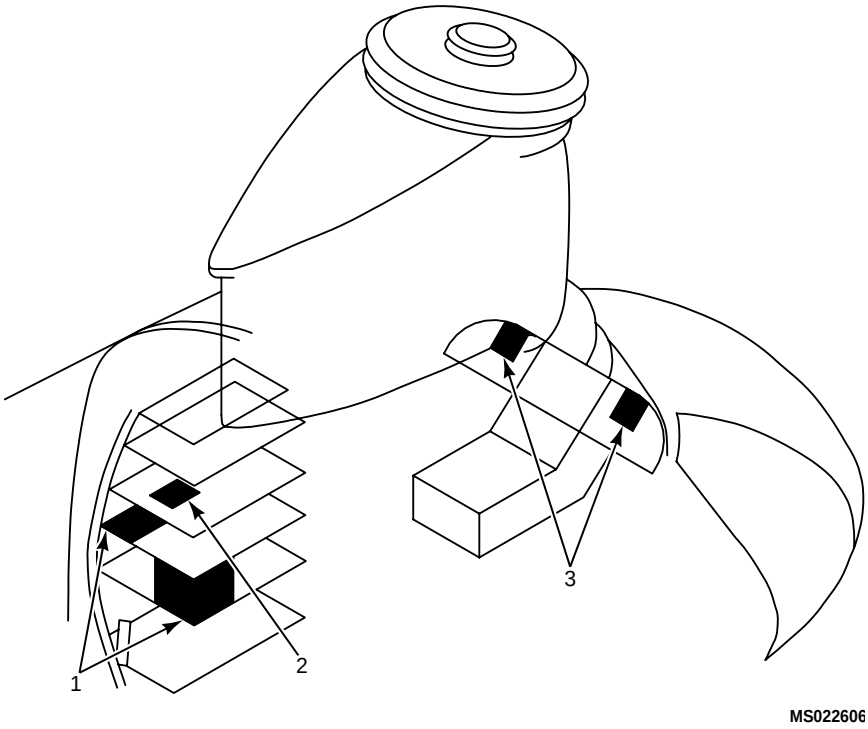


Figure 5. Vertical Gyro Indicator (VGI) Facility

NOTE

The items in Figure 5 correspond to the respective item numbers in the following VERTICAL GYRO INDICATOR (VGI) FACILITY INSPECTION REQUIREMENTS.

1. Displacement Gyro, CN-811( )/ASN
   a. Inspect the gyro for cracks (no cracks allowed), dents, nicks, evidence of overheating, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to WP 0003 00, Tables 4 and 5, for electrical wiring and electrical component inspection and repair procedures.
   d. Refer to TM 11-1520-240-23 for removal and installation.
   e. Refer to WP 0077 00 for corrosion removal and treatment.

2. Gyro Transfer Relay, 414E3330
   a. Inspect the gyro transfer relay for cracks (no cracks allowed), dents, nicks, evidence of overheating, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to WP 0003 00, Tables 4 and 5, for electrical wiring and electrical component inspection and repair procedures.
   d. Refer to TM 11-1520-240-23 for removal and installation.
   e. Refer to WP 0077 00 for corrosion removal and treatment.

VERTICAL GYRO INDICATOR (VGI) FACILITY INSPECTION REQUIREMENTS - continued

3. Attitude Indicator, ARU-12/A
   a. Inspect indicator for cracks (no cracks allowed), dents, nicks, evidence of overheating, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to WP 0003 00, Tables 4 and 5, for electrical wiring and electrical component inspection and repair procedures.
   d. If damage is noted, refer to TM 11-1520-240-23 for removal and installation.
   e. Refer to WP 0077 00 for corrosion removal and treatment.

HORIZONTAL SITUATION INDICATOR (HSI) SYSTEM INSPECTION REQUIREMENTS

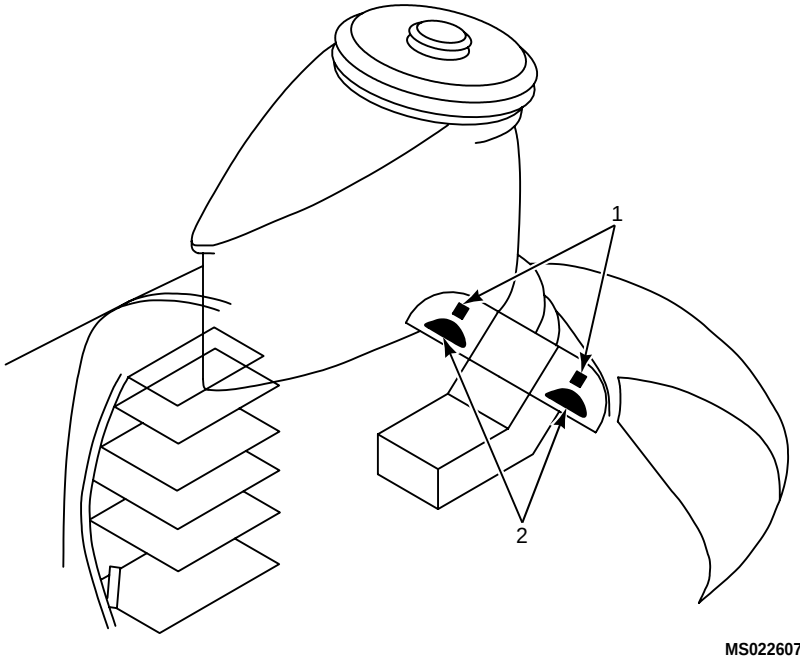


Figure 6. Horizontal Situation Indicator (HSI) System

NOTE

The items in Figure 6 correspond to the respective item numbers in the following HORIZONTAL SITUATION INDICATOR (HSI) SYSTEM INSPECTION REQUIREMENTS.

1. Horizontal Situation Indicator, ID-2103/A, Pilot/Copilot
   a. Inspect indicator for cracks (no cracks allowed), dents, nicks, evidence of overheating, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to WP 0003 00, Tables 4 and 5, for electrical wiring and electrical component inspection and repair procedures.
   d. Refer to TM 11-1520-240-23 for removal and installation.
   e. Refer to WP 0077 00 for corrosion removal and treatment.

HORIZONTAL SITUATION INDICATOR (HSI) SYSTEM INSPECTION REQUIREMENTS - continued

2. Mode Select Panel, 145E3134, or Modified Mode Selector Panel for GPS, Pilot/Copilot
   a. Inspect panel for cracks (no cracks allowed), dents, nicks, evidence of overheating, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to WP 0003 00, Tables 4 and 5, for electrical wiring and electrical component inspection and repair procedures.
   d. Refer to TM 11-1520-240-23 for removal and installation.
   e. Refer to WP 0077 00 for corrosion removal and treatment.

DOPPLER NAVIGATION SET, AN/ASN-128A OR -128B INSPECTION REQUIREMENTS

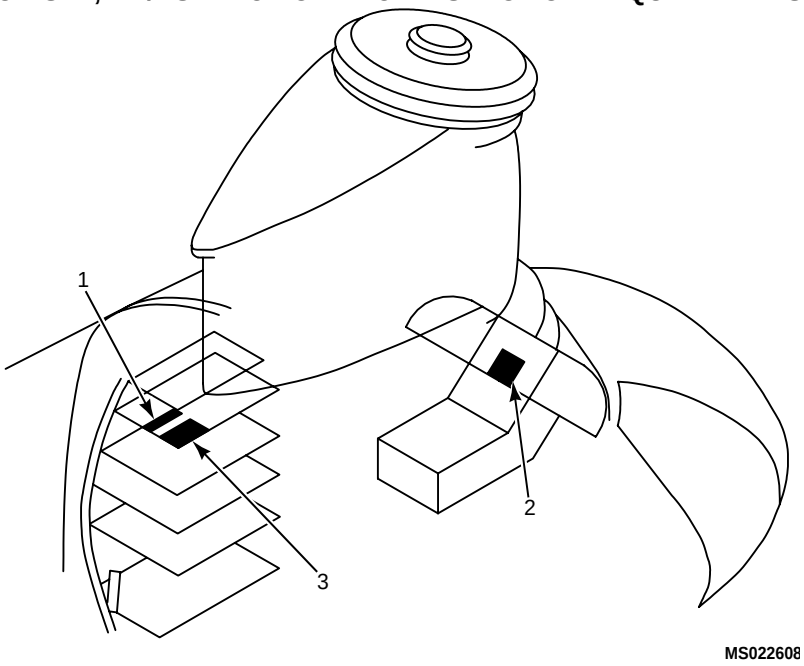


Figure 7. Doppler Navigation Set, AN/ASN-128A or -128B

NOTE

The items in Figure 7 correspond to the respective item numbers in the following DOPPLER NAVIGATION SET, AN/ASN-128A OR -128B INSPECTION REQUIREMENTS

1. Signal Data Converter, CV-3338( )/ASN-128A or CV-3338A/ASN-128B
   a. Inspect the converter for cracks (no cracks allowed), dents, nicks, evidence of overheating, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to WP 0003 00, Tables 4 and 5, for electrical wiring and electrical component inspection and repair procedures.
   d. Refer to TM 11-1520-240-23 for removal and installation.
   e. Refer to WP 0077 00 for corrosion removal and treatment.

DOPPLER NAVIGATION SET, AN/ASN-128A OR -128B INSPECTION REQUIREMENTS - continued

2. Computer Display Unit, CP-1252( )/ASN-128A or CP-1252C/ASN-128B
   a. Inspect the display unit for cracks (no cracks allowed), dents, nicks, evidence of overheating, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to WP 0003 00, Tables 4 and 5, for electrical wiring and electrical component inspection and repair procedures.
   d. Refer to TM 11-1520-240-23 for removal and installation.
   e. Refer to WP 0077 00 for corrosion removal and treatment.

3. GPS Data Loader Receptacle, 162571-01-01
   a. Inspect the data loader receptacle for cracks (no cracks allowed), dents, nicks, evidence of overheating, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to WP 0003 00, Tables 4 and 5, for electrical wiring and electrical component inspection and repair procedures.
   d. Refer to TM 11-1520-240-23 for removal and installation.
   e. Refer to WP 0077 00 for corrosion removal and treatment.

GLOBAL POSITIONING SYSTEM (GPS), AN/ASN-149 INSPECTION REQUIREMENTS

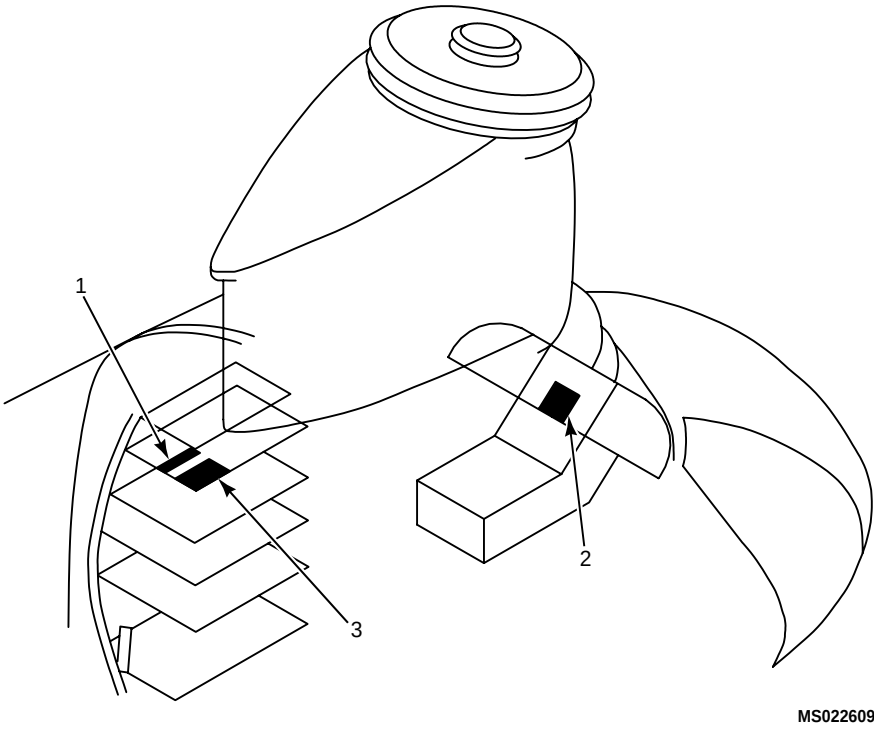


Figure 8. Global Positioning System (GPS), AN/ASN-149

GLOBAL POSITIONING SYSTEM (GPS), AN/ASN-149 INSPECTION REQUIREMENTS continued

NOTE

The items in Figure 8 correspond to the respective item numbers in the following GLOBAL POSITIONING SYSTEM (GPS), AN/ASN-149 INSPECTION REQUIREMENTS

1. GPS Receiver, R-2400( )/ASN-149 and Mount, DSK 9-04694-501
   a. Inspect the receiver for cracks (no cracks allowed), dents, nicks, evidence of overheating, or evidence of corrosion.
   b. Inspect mount for cracks or loose, missing, or damaged attaching hardware.
   c. Damage to mount of 15% or less of cross-sectional area at point of damage is considered minor. If damage exceeds this limit, replace the mount.
   d. Refer to WP 0003 00, Tables 4 and 5, for electrical wiring and electrical component inspection and repair procedures.
   e. Refer to TM 11-1520-240-23 for removal and installation.
   f. Refer to WP 0077 00 for corrosion removal and treatment.

2. Control-Indicator, C-11702/UR
   a. Inspect the indicator for cracks (no cracks allowed), dents, nicks, evidence of overheating, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to WP 0003 00, Tables 4 and 5, for electrical wiring and electrical component inspection and repair procedures.
   d. Refer to TM 11-1520-240-23 for removal and installation.
   e. Refer to WP 0077 00 for corrosion removal and treatment.

3. GPS Data Loader Receptacle, 162571-01-01
   a. Inspect the data loader receptacle for cracks (no cracks allowed), dents, nicks, evidence of overheating, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to WP 0003 00, Tables 4 and 5, for electrical wiring and electrical component inspection and repair procedures.
   d. Refer to TM 11-1520-240-23 for removal and installation.
   e. Refer to WP 0077 00 for corrosion removal and treatment.

END OF WORK PACKAGE

DEPOT MAINTENANCE WORK REQUIREMENT
CH-47D HELICOPTER
AIRCRAFT SURVIVABILITY EQUIPMENT

INITIAL SETUP

Test Equipment:
As Required

Tools and Special Tools:
As Required

Material/Parts:
As Required

Personnel Required:
Examiner (PSA)

References:
TM 1-1500-204-23 Series
TM 11-1520-240-23
TM 55-1500-323-24
TM 55-1520-240-23 Series
WP 0003 00
WP 0077 00

Equipment Conditions:
As Required

Special Environmental Condition:
As Required

SCOPE

The aircraft survivability equipment provides radar signal detection and airborne anti-aircraft missile detection. These two systems are the Radar Signal Detecting Set, AN/APR-39A(V)1, or Radar Signal Detecting Set, AN/APR-39(V), and the Countermeasures Set AN/ALQ-156.

INSPECTION REQUIREMENTS

NOTE

The item numbers in Figure 1, sheets 1 and 2, correspond to the respective item numbers in the INSPECTION REQUIREMENTS following each illustration.

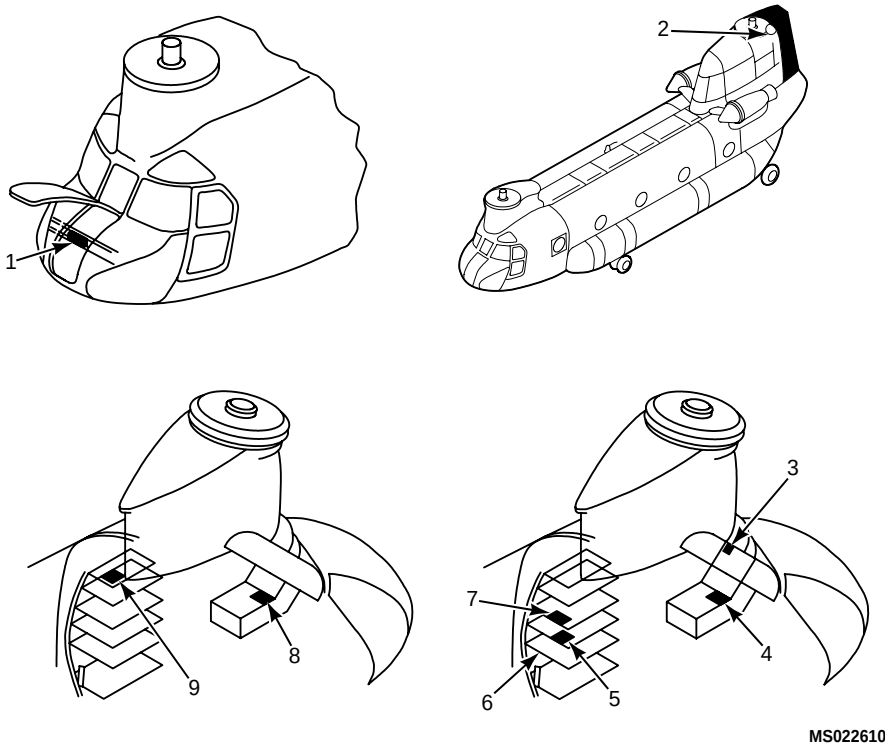


Figure 1. Aircraft Survivability Systems (Sheet 1 of 2)

1. Forward Receiver, R-1838/APR-39 or R-2218/APR-39A(V), and Mount
   a. Receiver, R-1838/APR-39 or R-2218/APR-39A(V) – Equipment to remain with owning unit
   b. Inspect the mount for cracks or loose, missing, or damaged attaching hardware or evidence of corrosion.
   c. Refer to WP 0088 00 for mount repair procedures.
   d. Damage to mount of 15% or less of cross-sectional area at point of damage is considered minor. If damage exceeds this limit, replace.
   e. Refer to WP 0003 00, Tables 4 and 5, for electrical wiring and electrical component inspection and repair.
   f. Refer to WP 0077 00 for corrosion removal and treatment.

2. Aft Pylon Radar Receiver, R-1838/APR-39(V) or R-2218/APR-39A(V), and Mounting Plate
   a. Receiver, R-1838/APR-39(V) or R-2218/APR-39A(V) – Equipment to remain with owning unit
   b. Inspect the mount for cracks, loose, missing, or damaged attaching hardware or evidence of corrosion.
   c. Damage to mounts of 15% or less of cross-sectional area at point of damage is considered minor. If damage exceeds this limit, replace.
   d. Refer to WP 0003 00, Tables 4 and 5, for electrical wiring and electrical component inspection and repair.
   e. Refer to WP 0077 00 for corrosion removal and treatment.

INSPECTION REQUIREMENTS - continued

3. Detection Set Indicator IP-1150/APR-39 or IP-1150A/APR-39(V)
   Equipment to remain with owning unit.

4. Detecting Set Control C-9326/APR-39 or C-11308/APR-39A(V)
   Equipment to remain with owning unit.

5. Comparator, CM-440/APR-39(V)
   Equipment to remain with owning unit.

6. Bandpass Filter, SM-C-991653, and Mount
   a. Filter, SM-C-991653 – Equipment to remain with owning unit.
   b. Inspect the mount for cracks, loose, missing, or damaged attaching hardware or evidence of corrosion.
   c. Damage to mounts of 15% or less of cross-sectional area at point of damage is considered minor. If damage exceeds this limit, replace the mount.
   d. Refer to WP 0003 00, Tables 4 and 5, for electrical wiring and electrical component inspection and repair.
   e. Refer to WP 0077 00 for corrosion removal and treatment.

7. Digital Processor, CP-1597/APR-39A(V)
   Equipment to remain with owning unit.

8. Control, Indicator C-1030/ALQ-156
   Equipment to remain with owning unit.

9. Countermeasure Set, AN/ALQ-156, Receiver-Transmitter, RT-1220/ALQ-156, and Mount 24323
   a. Countermeasure Set, AN/ALQ-156, Receiver-Transmitter, RT-1220/ALQ-156- Equipment to remain with owning unit.
   b. Inspect the mount for cracks, loose, missing, or damaged attaching hardware or evidence of corrosion.
   c. Damage to mounts of 15% or less of cross-sectional area at point of damage is considered minor. If damage exceeds this limit, replace.
   d. Refer to WP 0003 00, Tables 4 and 5, for electrical wiring and electrical component inspection and repair.
   e. Refer to WP 0077 00 for corrosion removal and treatment.

INSPECTION REQUIREMENTS - continued

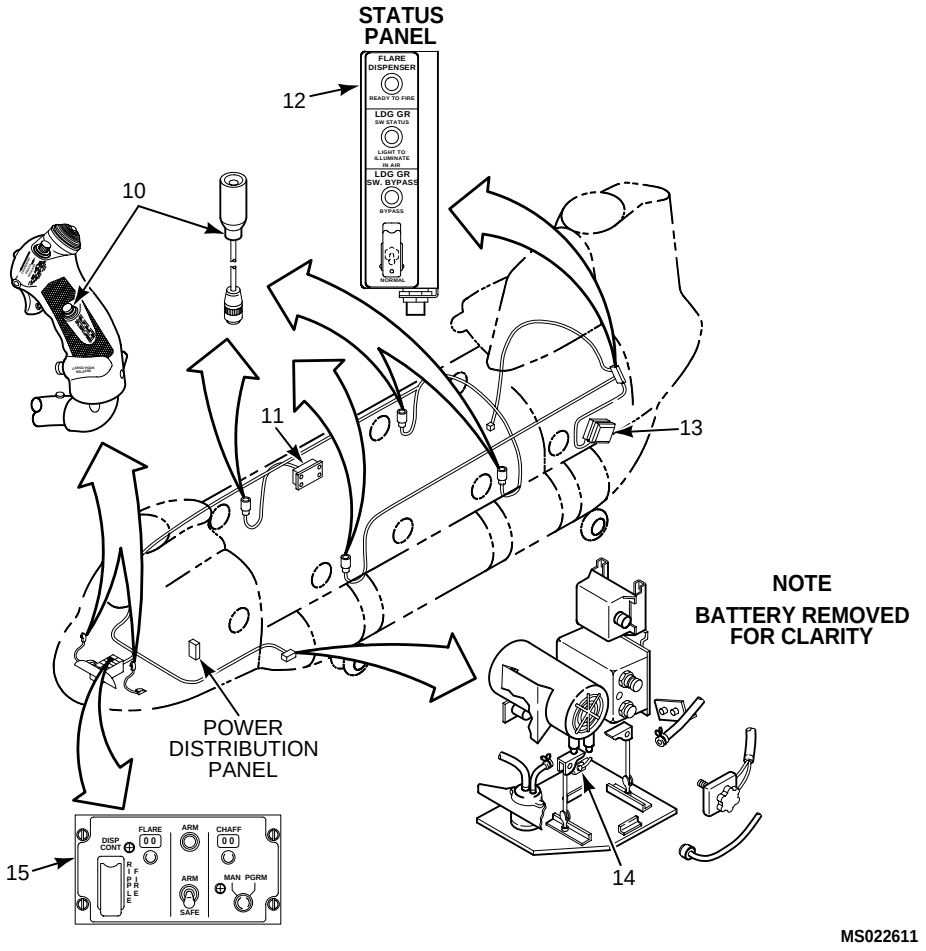


Figure 1. Aircraft Survivability Systems (Sheet 2 of 2)

10. Flare Dispenser Firing Switches
    a. Inspect switches for security, damage, proper operation or evidence of corrosion.
    b. Refer to TM 55-1500-323-24 for accept/reject criteria and repair procedures.
    c. Refer to WP 0003 00, Tables 4 and 5, for electrical wiring and electrical component inspection and repair.
    d. Refer to WP 0077 00 for corrosion removal and treatment.

11. Flare Dispenser Timer
    Equipment to remain with owning unit.

12. Flare Dispenser Status Panel
    a. Inspect the panel for cracks (no cracks allowed), dents, nicks, evidence of overheating, or evidence of corrosion.
    b. Inspect switches and lights for security, damage, and proper operation.
    c. Refer to TM 55-1520-240-23 for accept/reject criteria and repair procedures.
    d. Inspect the mount for cracks, loose, missing, or damaged attaching hardware or evidence of corrosion.
    e. Refer to WP 0003 00, Tables 4 and 5, for electrical wiring and electrical component inspection and repair.
    f. Refer to WP 0077 00 for corrosion removal and treatment.

INSPECTION REQUIREMENTS - continued

13. Flare Dispenser M-130 with Mounts
    a. Flare Dispenser M-130 - Equipment to remain with owning unit.
    b. Inspect the mounts for cracks, loose, missing, or damaged attaching hardware or evidence of corrosion.
    c. Refer to WP 0003 00, Tables 4 and 5, for electrical wiring and electrical component inspection and repair.
    d. Refer to WP 0077 00 for corrosion removal and treatment.

14. Flare Dispenser Safety Relay 147K1
    a. Inspect relay for cracks (no cracks allowed), security, loose terminals, burns, or evidence of corrosion.
    b. Inspect for loose, missing, or damaged attaching hardware.
    c. Refer to TM 55-1500-323-24 for accept/reject criteria and repair procedures.
    d. Refer to WP 0003 00, Tables 4 and 5, for electrical wiring and electrical component inspection and repair.
    e. Refer to WP 0077 00 for corrosion removal and treatment.

15. Dispenser Control Panel, M-130
    Equipment to remain with owning unit.

END OF WORK PACKAGE

DEPOT MAINTENANCE WORK REQUIREMENT
CH-47D HELICOPTER
AIRCRAFT ANTENNAS

INITIAL SETUP

Test Equipment:
As Required

Tools and Special Tools:
As Required

Material/Parts:
As Required

Personnel Required:
Examiner (PSA)

References:
TM 1-1500-204-23 Series
TM 11-1520-240-23
TM 55-1500-323-24
TM 55-1520-240-23 Series
WP 0003 00
WP 0077 00

Equipment Conditions:
As Required

Special Environmental Condition:
As Required

SCOPE

The helicopter is equipped with communications, navigation, and aircraft survivability antennas. Selected antennas are hardened for electromagnetic environment (EME) protection by pin-filtered adapters. The selected components are the Doppler antenna and radar altimeter antenna. Mounting surfaces of components to airframe have been chemically coated to provide low resistance to airframe ground.

Communication Antennas
- VHF/FM
- VHF/AM
- UHF/AM
- HF

Navigation Antennas
- Doppler
- GPS
- ADF
- VOR/LOC
- Glide Slope
- Marker Beacon
- Radar Altimeter
- IFF
- VHF/FM Homing

Aircraft Survivability Antennas
- Radar Detector Antenna
- Countermeasures Antenna

COMMUNICATIONS EQUIPMENT ANTENNAS INSPECTION REQUIREMENTS

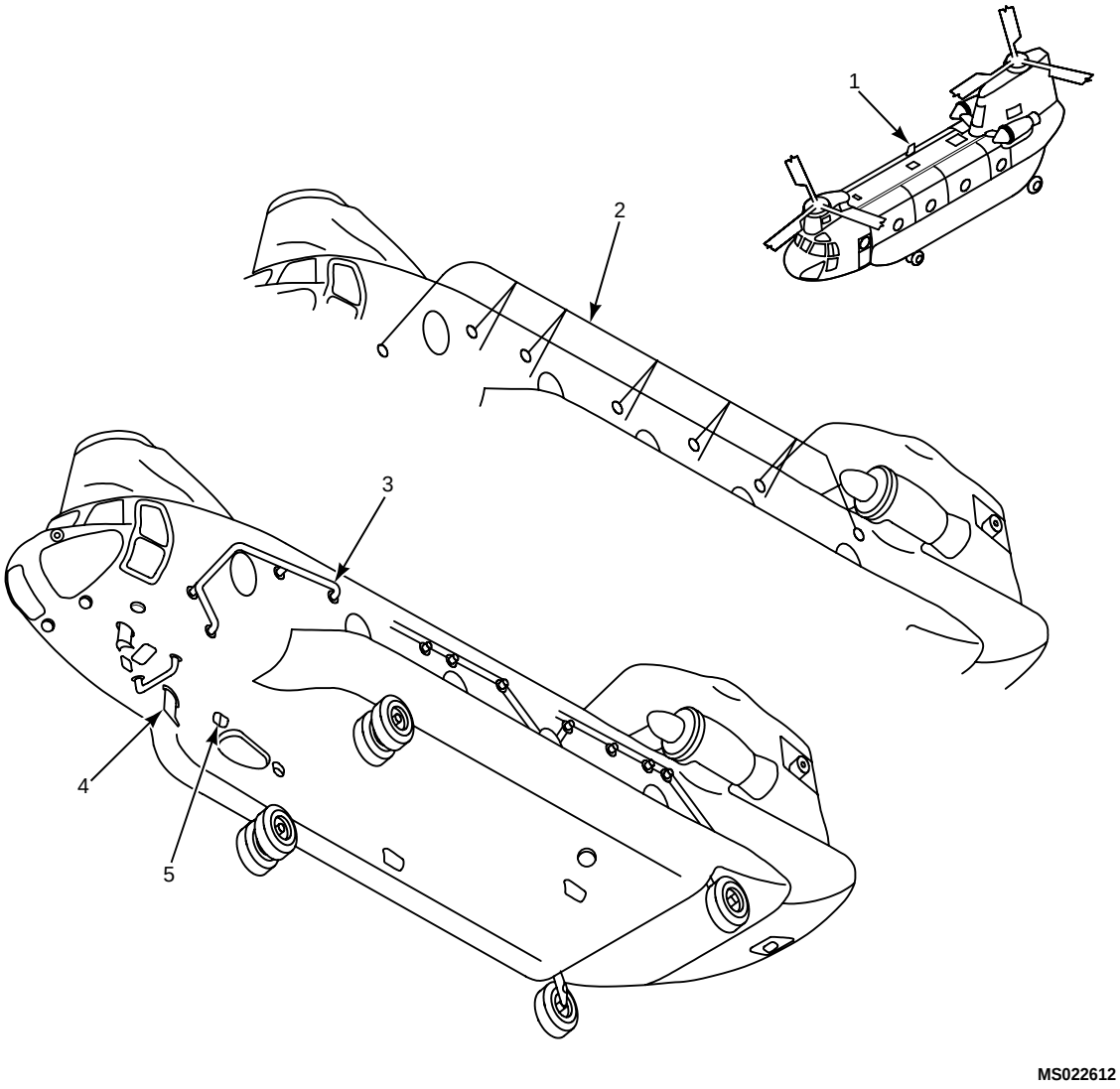


Figure 1. Communications Equipment Antenna Locations

NOTE

The item numbers in Figure 1 correspond to the respective item numbers in the following COMMUNICATIONS EQUIPMENT ANTENNAS INSPECTION REQUIREMENTS.

1. VHF AM/FM Antenna (Top)
   a. Inspect each antenna for cracks (no cracks allowed), dents, nicks, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to TM 11-1520-240-23 for accept/reject criteria and repair procedures.
   d. Refer to WP 0003 00 Tables 4 and 5 for all electrical wiring and electrical component inspection and repair.
   e. Refer to WP 0077 00 for corrosion removal and treatment.

COMMUNICATIONS EQUIPMENT ANTENNAS INSPECTION REQUIREMENTS - continued

2. HF ARC-220 Antenna
   a. Inspect each antenna for cracks (no cracks allowed), dents, nicks, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to TM 11-1520-240-23 for accept/reject criteria and repair procedures.
   d. Refer to WP 0003 00 Tables 4 and 5 for all electrical wiring and electrical component inspection and repair.
   e. Refer to WP 0077 00 for corrosion removal and treatment.

3. HF ARC-199 Antenna
   a. Inspect each antenna for cracks (no cracks allowed), dents, nicks, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to TM 11-1520-240-23 for accept/reject criteria and repair procedures.
   d. Refer to WP 0003 00 Tables 4 and 5 for all electrical wiring and electrical component inspection and repair.
   e. Refer to WP 0077 00 for corrosion removal and treatment.

4. VHF AM/FM Antenna (Bottom)
   a. Inspect each antenna for cracks (no cracks allowed), dents, nicks, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to TM 11-1520-240-23 for accept/reject criteria and repair procedures.
   d. Refer to WP 0003 00 Tables 4 and 5 for all electrical wiring and electrical component inspection and repair.
   e. Refer to WP 0077 00 for corrosion removal and treatment.

5. UHF Antenna
   a. Inspect each antenna for cracks (no cracks allowed), dents, nicks, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to TM 11-1520-240-23 for accept/reject criteria and repair procedures.
   d. Refer to WP 0003 00 Tables 4 and 5 for all electrical wiring and electrical component inspection and repair.
   e. Refer to WP 0077 00 for corrosion removal and treatment.

NAVIGATION EQUIPMENT ANTENNAS INSPECTION REQUIREMENTS

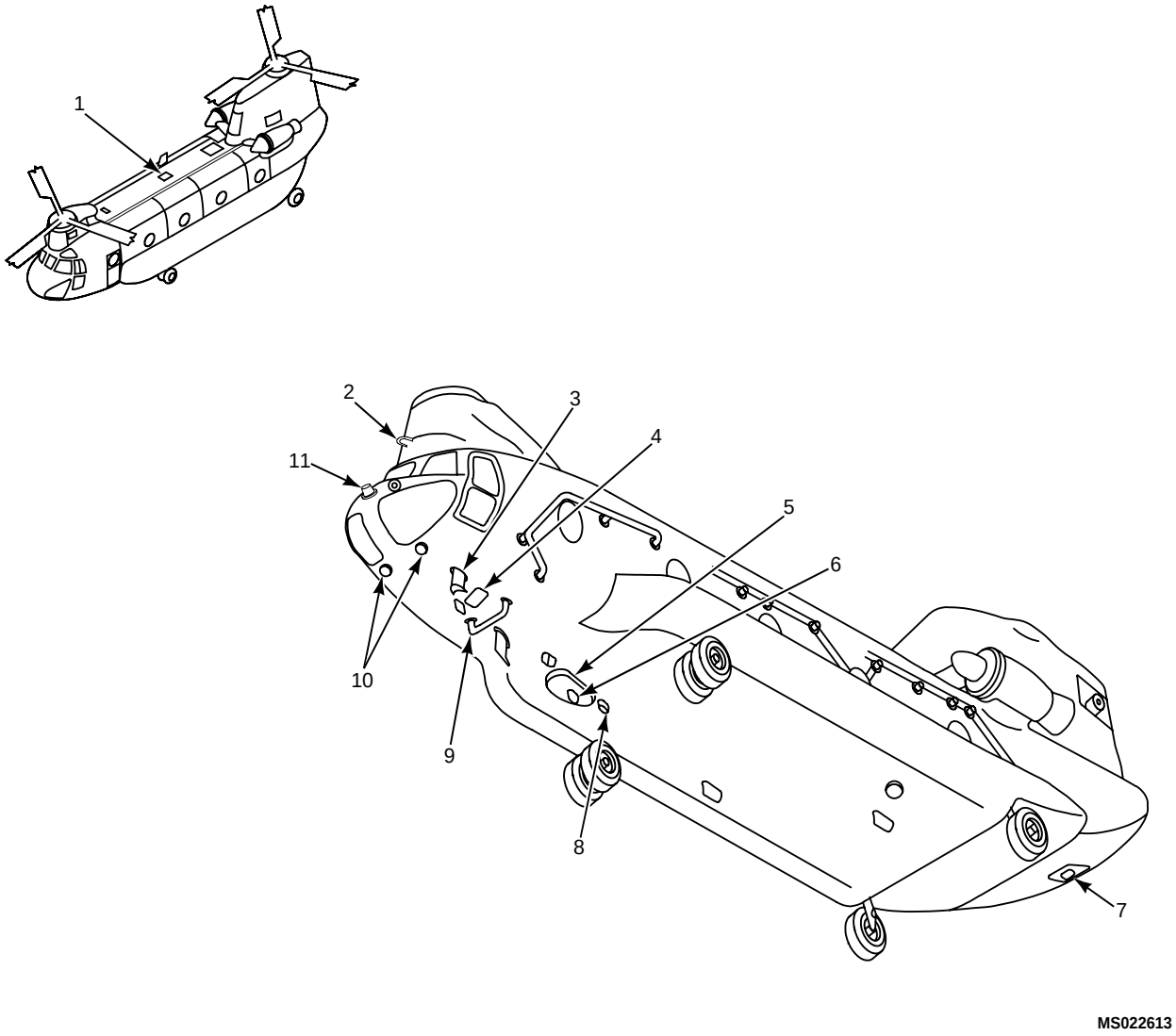


Figure 2. Navigation Equipment Antenna Locations

NOTE

The item numbers in Figure 2 correspond to the respective item numbers in the following NAVIGATION EQUIPMENT ANTENNAS INSPECTION REQUIREMENTS.

1. GPS Antenna
   a. Inspect each antenna for cracks (no cracks allowed), dents, nicks, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to TM 11-1520-240-23 for accept/reject criteria and repair procedures.
   d. Refer to WP 0003 00 Tables 4 and 5 for all electrical wiring and electrical component inspection and repair.
   e. Refer to WP 0077 00 for corrosion removal and treatment.

NAVIGATION EQUIPMENT ANTENNAS INSPECTION REQUIREMENTS - continued

2. Glideslope Antenna
   a. Inspect each antenna for cracks (no cracks allowed), dents, nicks, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to TM 11-1520-240-23 for accept/reject criteria and repair procedures.
   d. Refer to WP 0003 00 Tables 4 and 5 for all electrical wiring and electrical component inspection and repair.
   e. Refer to WP 0077 00 for corrosion removal and treatment.

3. VOR/LOC Antenna
   a. Inspect each antenna for cracks (no cracks allowed), dents, nicks, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to TM 11-1520-240-23 for accept/reject criteria and repair procedures.
   d. Refer to WP 0003 00 Tables 4 and 5 for all electrical wiring and electrical component inspection and repair.
   e. Refer to WP 0077 00 for corrosion removal and treatment.

4. Doppler Antenna
   a. Inspect each antenna for cracks (no cracks allowed), dents, nicks, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to TM 11-1520-240-23 for accept/reject criteria and repair procedures.
   d. Refer to WP 0003 00 Tables 4 and 5 for all electrical wiring and electrical component inspection and repair.
   e. Refer to WP 0077 00 for corrosion removal and treatment.

5. ADF Sense Antenna
   a. Inspect each antenna for cracks (no cracks allowed), dents, nicks, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to TM 11-1520-240-23 for accept/reject criteria and repair procedures.
   d. Refer to WP 0003 00 Tables 4 and 5 for all electrical wiring and electrical component inspection and repair.
   e. Refer to WP 0077 00 for corrosion removal and treatment.

6. ADF Loop Antenna
   a. Inspect each antenna for cracks (no cracks allowed), dents, nicks, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to TM 11-1520-240-23 for accept/reject criteria and repair procedures.
   d. Refer to WP 0003 00 Tables 4 and 5 for all electrical wiring and electrical component inspection and repair.
   e. Refer to WP 0077 00 for corrosion removal and treatment.

7. IFF Antenna (AFT)
   a. Inspect each antenna for cracks (no cracks allowed), dents, nicks, or evidence of corrosion.
   a. Inspect for loose, missing, or damaged attaching hardware.
   b. Refer to TM 11-1520-240-23 for accept/reject criteria and repair procedures.
   c. Refer to WP 0003 00 Tables 4 and 5 for all electrical wiring and electrical component inspection and repair.
   d. Refer to WP 0077 00 for corrosion removal and treatment.

NAVIGATION EQUIPMENT ANTENNAS INSPECTION REQUIREMENTS - continued

8. Marker Beacon Antenna
   a. Inspect each antenna for cracks (no cracks allowed), dents, nicks, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to TM 11-1520-240-23 for accept/reject criteria and repair procedures.
   d. Refer to WP 0003 00 Tables 4 and 5 for all electrical wiring and electrical component inspection and repair.
   e. Refer to WP 0077 00 for corrosion removal and treatment.

9. FM Homing Antenna
   a. Inspect each antenna for cracks (no cracks allowed), dents, nicks, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to TM 11-1520-240-23 for accept/reject criteria and repair procedures.
   d. Refer to WP 0003 00 Tables 4 and 5 for all electrical wiring and electrical component inspection and repair.
   e. Refer to WP 0077 00 for corrosion removal and treatment.

10. Radar Altimeter Antenna
   a. Inspect each antenna for cracks (no cracks allowed), dents, nicks, or evidence of corrosion.
   b. Inspect for loose, missing, or damaged attaching hardware.
   c. Refer to TM 11-1520-240-23 for accept/reject criteria and repair procedures.
   d. Refer to WP 0003 00 Tables 4 and 5 for all electrical wiring and electrical component inspection and repair.
   e. Refer to WP 0077 00 for corrosion removal and treatment.

11. IFF Antenna (FWD)
   a. Inspect each antenna for cracks (no cracks allowed), dents, nicks, or evidence of corrosion.
   a. Inspect for loose, missing, or damaged attaching hardware.
   b. Refer to TM 11-1520-240-23 for accept/reject criteria and repair procedures.
   c. Refer to WP 0003 00 Tables 4 and 5 for all electrical wiring and electrical component inspection and repair.
   d. Refer to WP 0077 00 for corrosion removal and treatment.

AIRCRAFT SURVIVABILITY EQUIPMENT ANTENNAS INSPECTION REQUIREMENTS

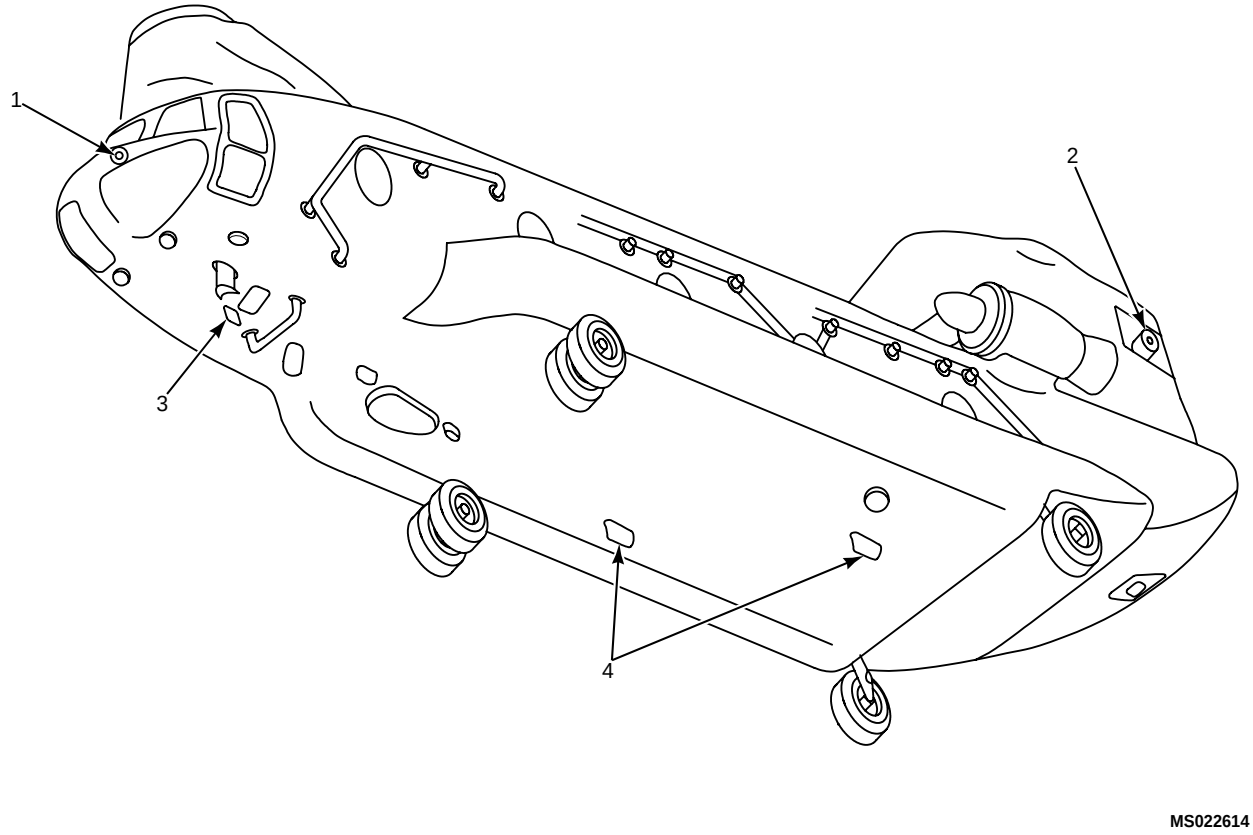


Figure 3. Aircraft Survivability Equipment Antenna Locations

NOTE

The item numbers in Figure 3 correspond to the respective item numbers in the following AIRCRAFT SURVIVABILITY EQUIPMENT ANTENNAS INSPECTION REQUIREMENTS.

1. Radar Detection Antennas (FWD)
   Equipment to remain with owning unit.

2. Radar Detection Antennas (AFT)
   Equipment to remain with owning unit.

3. Radar Detection Antenna (FWD Bottom)
   Equipment to remain with owning unit.

4. Countermeasures Antennas
   Equipment to remain with owning unit.

END OF WORK PACKAGE

CHAPTER 3

DEPOT MAINTENANCE INSTRUCTIONS

DEPOT MAINTENANCE WORK REQUIREMENT
CH-47D HELICOPTER
GENERAL REPAIRS

INTRODUCTION

Scope

Chapter 3 of this DMWR provides general and specific repair procedures. General repairs are normally referred to in TM 1-1500-204-23. Specific work package(s) (WP) are provided when a repair or replacement procedure is beyond the scope of a general WP or is unique to a particular component. Each WP is presented as a separate procedure. Utilize the pre-shop analysis inspection findings (Chapter 2) to determine which items require repair or replacement. There are no limitations to the number of repairs made in a given region, provided they do not overlap and are able to meet the requirements of that individual WP. Restrictions that may apply to the number of repairs and/or distance between repairs are stated in TM 1-1500-204-23 series, TM 55-1520-240-23 series, and in some cases, in the WP. If the repair or replacement is not specifically referred to in TM 1-1500-204-23 series, TM 55-1520-240-23 series, applicable MWO(s), ECP(s), DMWR(s), or other aircraft applicable publications, then repair or replacement may not be performed without engineering approval. The TM 55-1520-240-23 series manuals may be used as a reference for disassembly, assembly, rigging, and TM 55-1520-240-T series for electrical schematics to assist in repair procedures. In the event of a disagreement between this DMWR and other documentation, request engineering clarification. For engineering clarification and approval procedures, refer to WP 0003 00, “Maintenance Engineering Call (MEC)”.

CORROSION CONTROL, WATER INTEGRITY/WEATHER SEALING

Without proper protection, metals used in the helicopter structures are subject to corrosion. During manufacture, primers, sealants, and coatings are applied to the entire helicopter to shield against moisture, salts, chemicals, harmful vapors, and the electrolytic action caused by dissimilar metals in direct contact with each other. Sealants are used to prevent rain or splashed water from leaking through skin and window joints. When making repairs, the corrosion protection and water integrity of the entire structure must be carefully preserved. If parts are being repaired or replaced, sealant and coatings that were broken or removed in cleanup must be reapplied. Likewise, when new joints, fasteners, and overlaps are added, as would be done in making a skin patch, the specified corrosion protection and sealant must be carefully and thoroughly applied. Corrosion removal must be complete. Failure to remove corrosion completely will allow corrosion to continue. Detailed instructions are contained in WP 0077 00. Additional corrosion removal and treatment instructions may be found in TM 1-1500-344-23. Refer to WP 0080 00 for water integrity/weather sealing procedures.

INVESTIGATING DAMAGE

Thoroughly investigate and inspect any damage in the proposed repair area, regardless of how minor the damage may appear, especially if the damage resulted from impact. Carefully examine, not only local damage, but also surrounding structure for the presence of secondary damage. Severe force or sudden shock may be transmitted throughout the structure causing cracks, elongated fastener holes, misalignment, or other damage. Contact Examiner (PSA) for clarification of any damage not documented.

ATTACHING HARDWARE AND HOLES

Attaching Hardware Preparation

Attaching hardware such as nuts, bushings, spacers, washers, screws, self-tapping screws, self-locking nuts, clamps, etc., do not need to be painted in detail except when dissimilar metals are being joined. Dissimilar parts being joined, shall receive a wet or dry coat of primer at installation, or a coating of material conforming to MIL-C-16173, Grade 1.

ATTACHING HARDWARE AND HOLES - continued

Hole Preparation

All holes drilled or reworked must conform to the limits established IAW TM 1-1500-204-23. All holes drilled or reworked in aluminum alloys to receive bolts, bushings, screws, rivets or studs shall be treated per WP 0077 00. All holes drilled or reworked in steel components shall be treated per WP 0077 00.

GENERAL QUALITY REQUIREMENTS FOR RIVETED REPAIRS

Generally, the design of riveted joints is based on the theory that the total joint strength is the sum of the individual strengths of a group of rivets. If one rivet fails, the others of the group must carry the load; if they are unable to carry this added load, progressive joint failure will occur. Stress concentrations usually cause one rivet to fail first. Careful analysis of the failed rivet in a joint will indicate that it has been over loaded, with the possibility that adjacent rivets may have failed. Rivets are subject to three types of failures: shear, bearing, and head.

Shear Failure

Shear failure is the most common rivet failure. It is a failure of the rivet shank due to forces acting along the plane of two adjacent sheets, causing a slipping action that may be severe enough to break the rivet shank. If the shank becomes loaded beyond the yield point of the material, and remains overloaded, a permanent shift is established in the sheets and the rivet shank may become joggled.

Bearing Failure

Bearing failure occurs in sheet metal at the edge of the rivet hole if the rivet is excessively strong in shear. The application of large rivets in thin sheets brings about such a failure. In that case, the sheet is locally crushed or buckled, and the buckling destroys the rigidity of the joint. Vibrations set up by flight operations may cause the buckled portion to flutter and break off at the rivet head. If buckling occurs at the end of the sheet, a tear out may result. In either case, repair is necessary.

Head Failure

Head failure may result from complex loading at a joint, causing stress at the rivet head. The head may fail by shearing through the area corresponding to the rivet shank or, in thicker sheets, fail through a prying action that causes failure of the head itself. Any visible head distortion is cause for corrective action.

Rivet Inspection Procedures

Inspection consists of examining both the shop and manufactured heads and the surrounding skin and structural parts for damage. Refer to TM 1-1500-204-23 for inspection procedures.

REPAIR MATERIAL AND HARDWARE

Repair Material

The material used in all repairs shall be same as the original structure. If the repair cannot be made from the same material as the original part, select a substitute material per applicable aircraft manual. Substitution of material can create a corrosion hazard. If the substitution material is different than the original part (as when a 7075-T6 aluminum extrusion is reinforced with a 4130 steel strap), failure to insulate the metals from direct contact with each other will cause electrolytic corrosion. Insulation of dissimilar metals is extremely important; refer to WP 0078 00.

REPAIR MATERIAL AND HARDWARE – continued

Repair Hardware

TM 1-1500-204-23 provides general information on the selection and use of hardware. This information will be used as a guide rather than for specific applications. This DMWR provides specific instructions for the use and application of hardware. There is no document published that provides data on substitution of hardware. Substitution of hardware is authorized only by engineering approval. There is no general interchangeability of items listed in AN, MS, and NAS standards since each item listed is engineered to a specific standard.

1. Bolts in lieu of Hi-Lok and Hi-shear fasteners are not authorized without engineering approval. Where bolts have been used for field level repairs, they shall be replaced with the correct hardware.

2. Hardware requirements are listed in each WP, where applicable.

GENERAL REPAIR INSTRUCTIONS

Thickness of Repair Material

Ensure that the thickness of a splice or patch is at least equal to, or one gauge greater than the original material. Avoid abrupt changes in cross-sectional area to eliminate dangerous stress concentrations by tapering splices and making small skin patches round or elliptical shaped instead of rectangular.

Splicing

In structural members subjected to compression or bending, place splice on outside of repaired member to obtain higher bending strength. Use next higher gage material when possible.

Corners

Avoid all sharp corners by allowing generous corner radii.

Buckling

Replace or reinforce any member that has buckled with a member of equal strength. A buckled member shall not be depended upon to carry its original load.

Cracks

Treat all cracks as more than minor damage. All cracks shall be repaired .

REINFORCED PLASTIC REPAIRS

Equipment and Supplies

1. Glass fabric used for reinforced plastic repairs shall conform to specification SAE-AMS-C-9084, Class 2, and the resin systems shall conform to specification MIL-R-9300.

2. The reinforced plastic repairs in this DMWR are not intended for rotor blade repair.

3. Equipment and material used in the repair of reinforced plastic should duplicate, or be as close as possible to, those materials used in the manufacture of the original part.

REINFORCED PLASTIC REPAIRS - continued

4. Observe all CAUTIONS and WARNINGS on containers when using consumables. When applicable, wear necessary protective equipment during handling and use. If a consumable is flammable or explosive, make certain that the consumable and its vapors are kept away from heat, spark, or flame. Make certain the helicopter is properly grounded and firefighting equipment is available. For additional information on toxicity, flashpoints, and flammability of chemicals, refer to the applicable product Material Safety Data Sheet (MSDS).

5. Waxes and other similar release agents cannot be adequately removed from repair surfaces.. Poor bond and paint adhesion will result. Use film type agents only. Use release materials such as polyvinyl alcohol (PVA) film. Refer to TM 1-1500-204-23.

6. Assemble all equipment and repair materials before initiating repair. Use forms to repair large rounded areas. Vacuum bags or clamping plates should be used to provide pressure during cure. Heat lamps or heat guns should be used, when possible, to accelerate the curing or drying process.

Hazards

1. Plastic dust is a health hazard that requires proper protective equipment. The dust is very abrasive and may damage other equipment and/or contaminate parts. Have an exhaust system available for removing plastic dust resulting from cutting and sanding operations.

2. Use properly grounded and explosion-proof electrical equipment in work areas when using flammable materials.

3. Wear protective cotton or plastic gloves when handling materials. Wash hands before eating or smoking.

4. Post NO SMOKING signs in work areas and keep materials away from sparks or flames.

5. Operations of this nature must be conducted in an area that meets OSHA standards.

Types of Damage

1. Surface scratches are considered to be minor damage and do not require repair unless they penetrate into the fabric.

2. Type I damage penetrates one surface and is no more than 6 inches long.

3. Type II damage penetrates entirely through the part and is no more than 6 inches long.

NOTE

Strux is used as a filler or core in reinforced plastic fairings, doors, and hatches. The principal kinds of damage to Strux are cracks, gouges, holes, fractures, and damage that will require patching or replacement of the component. Strux sections require repair procedures similar to that of honeycomb sandwich sections and reinforced plastic. Foam, Type II, Grade 6 (Last-A-Foam, Item 104, WP 0157 00) shall be used to repair Strux.

6. Damage to Strux may be repaired if the repair will not adversely affect critical dimensions, fit, contour, general appearance, maximum weight allowance, and ultimate usage and strength of the component.

FASTENER LOCATIONS

Transfer of Holes

1. Accomplish transfer of holes from a drilled part to another part by placing the second part over the first part, using established holes as a guide. An alternate method is to scribe hole location from drilled part onto the part to be drilled and spot with a center punch.

2. In areas involving complete new sections first drill 0.098 inch pilot holes in member nearest operation. Locate and attach second member to first by two C clamps or spring fasteners; size drill through both members, separate sheets, and remove burrs from holes.

3. Drill flimsy members, such as light stringers, from skin surfaces after first marking fastener line along their length in pencil. When skin, predrilled with pilot holes, is placed over stringer, flex stringer to bring pencil line center with skin holes.

Hole Sizes

For metal and composite applications, refer to TM 1-1500-204-23 series.

EXTRUSIONS AND SHEET STOCK SUBSTITUTES

Extrusions

Extrusions are die-formed shapes made to specific cross-sectional dimensions and supplied in standard lengths. Because extrusions are used extensively throughout the helicopter, it is necessary that the proper replacement extrusion be used. If such replacement is not available, an approved substitute section may be available for selected extrusions. The substitute may be machined from a formed sheet or bar stock. The recommended sheet stock thickness and/or minimum bend radius is basic and should be used as a guide only.

Sheet Stock Substitutes

When making a sheet stock substitution for extrusions, refer to TM 1-1500-204-23 series.

STRIPPING AND REPAINTING

All helicopter stripping and repainting shall be performed IAW TM 55-1500-345-23. For special under floor corrosion treatment, prevention, and painting, refer to WP 0077 00, WP 0149 00, and WP 0161 00.

GENERAL TOOLING REQUIREMENTS

Jigs, holding fixtures, or tools must be used to guarantee structural alignment when major structural repair is being performed and the possibility exists that the airframe may shift. Every precaution must be taken to preclude movement or change in the dimensions from that of original manufacture.

END OF WORK PACKAGE

DEPOT MAINTENANCE WORK REQUIREMENTS
CH-47D HELICOPTER
AIRCRAFT ALIGNMENT VERIFICATION

INITIAL SETUP

Test Equipment:
As Required

Tools and Special Tools:
As Required

Material/Parts:
As Required

Personnel Required:
As Required

References:
WP 0148 00

Equipment Conditions:
As Required

Special Environmental Condition:
As Required

Refer to WP 0148 00 for alignment procedures.

END OF WORK PACKAGE

DEPOT MAINTENANCE WORK REQUIREMENT
CH-47D HELICOPTER
ADHESIVE BONDING

INITIAL SETUP

Test Equipment:
As Required

Tools and Special Tools:
Trip Balance, NSN 6670-00-401-7195
Heat Lamp
C-Clamps
Roller
Earthenware Container
Clamps

Material/Parts:
Abrasive Paper (Item 6 thru 17, WP 0157 00)
Acetone, Technical (Item 20, WP 0157 00)
Cheesecloth (Item 60, WP 0157 00)
Cloths (Item 73, WP 0157 00)
Polyethylene Cup (Item 98, WP 0157 00)
Gloves (Item 108, WP 0157 00)
Aliphatic Naphtha (Item 122, WP 0157 00)
Paint Remover (Item 126, WP 0157 00)
Soap (Item 165, WP 0157 00)
Tape, Masking (Item 175, WP 0157 00)
Teflon Sheet, (Item 182, WP 0157 00)
Temperature Indicating Strips (Item 187, WP 0157 00)
Tongue Depressor (Item 190, WP 0157 00)

Personnel Required:
As Required

References:
TM 1-1500-204-23 Series
TM 55-1520-240-23 Series
WP 0157 00

Equipment Conditions:
As Required

Special Environmental Condition:
As Required

SCOPE

This work package contains procedures for the mixing and application of bonding agents. These procedures should be used only when referenced in applicable technical data. For non-critical applications the procedures may be used without specific reference. To obtain optimum benefit from the information and tables, select the proper adhesive as follows:

1. Determine the type of the material to be bonded. Refer to Cross Reference Trade Name, Table 1.

2. Determine the appropriate adhesive system by matching materials in Figure 1. An adhesive system may include more than one type of adhesive, since several adhesives may be identical in physical properties and use.

3. Determine which adhesive system is most suitable. Refer to Adhesive System Criteria, Table 2.

4. Select the adhesive. Refer to Acceptable Adhesive, Table 3.

APPLICATION OF ADHESIVE SYSTEMS

This information is applicable to all adhesives and must be strictly adhered to.

NOTE

High temperatures and humidity shorten adhesive pot life. Low temperatures lengthen adhesive pot life. Urethanes crystallize below 40 degrees F (4 degrees C). Crystals must be warmed to 150 degrees F (66 degrees C) before mixing with other components.

1. If the adhesive or individual components of adhesive have been stored under refrigeration, allow adhesive or components to reach 70 degrees F (21 degrees C), prior to blending or use.
2. No addition or omission of ingredients, or deviation from mixing or blending procedures is permitted.
3. Thinning of adhesives is not permitted unless specifically allowed in the procedure.
4. All multiple-part adhesives must be blended by weight, within 2 1/2 percent. Use trip balance.
5. All multiple-part adhesives must be blended in clean, metal, glass, polyethylene, or teflon containers only.

PREPARATION OF BONDING SURFACES

WARNING

ACETONE, TECHNICAL

NAPHTHA, ALIPHATIC

Unless otherwise specified, all bonding surfaces except thermoplastic, phenolic, and melamine, must be thoroughly cleaned using clean cloths (Item 73, WP 0157 00) moistened with acetone, technical (Item 20, WP 0157 00). Thermoplastic, phenolic, and melamine must be lightly sanded to remove the glass and then cleaned with aliphatic naphtha (Item 122, WP 0157 00).

PREPARATION OF BONDING SURFACES - continued

Table 1. Cross Reference Trade Name

TRADE NAME	TYPE OF MATERIAL
Cellophane	Cellulose Film
Conolite	Polyester Resins and Laminates
Cymel	Melamine Molding
Dacron	Polyester Fiber
Dylene	Polystyrene
Estane	Urethane Elastomer
Kralastic	Acrylonitrile-Butadiene Styrene (ABS)
Kydex	Acrylic-Polyvinyl Chloride Alloy
Lexan	Polycarbonate
Lucite	Acrylic Sheet
Lusterlite	Pearlescent Acrylic Sheet
Marbond	Styrene
Mylar	Polyester Film
Nylasint	Sintered Nylon
Orion	Acrylic Fiber
Plexiglas	Acrylic Sheet
Seilon S-3	A-B-S Polymer Blend
Silastic	Silicone Rubber
Teflon	Fluorocarbon
Videne	Polyester Film
Zytel	Nylon Resin

PREPARATION OF BONDING SURFACES – continued

NOTE: TO SELECT THE ADHESIVE WHEN BINDING TWO MATERIALS TOGETHER, READ THE NUMBER OR NUMBERS IN THE BLOCK AT WHICH THEIR BARS INTERSECT. FOR EXAMPLE, WHEN BINDING FELT TO FABRICS, READ THE NUMBERS 1 AND 5. THESE NUMBERS REPRESENT THE ADHESIVE SYSTEM NUMBERS, GIVEN IN DETAIL IN THIS SECTION.

	ACRYLICS	CELLULOSIC	CORK	FABRICS	FELT	GLASS, CERAMICS	LEATHER	MELAMINE	METALS: ALUMINUM AND STEEL	METALS: BRASS AND STEEL	NYLON	PAPER, CARDBOARD	PHENOLICS	POLYCARBONATE	POLYESTERS AND EPOXY LAMINATES	POLYSTYRENE A-B-S	POLYURETHANE FOAM	POLYVINYLCHLORIDE-FLEXIBLE	POLYVINYLCHLORIDE-RIGID	RUBBER: BUNA-N	RUBBER: BUTYL	RUBBER: FLUOROSILICONE	RUBBER: NEOPRENE	RUBBER: POLYURETHANE	RUBBER: SILICONE	RUBBER: VITON	TEFLON	WOOD
ACRYLICS	13																											
CELLULOSIC	2	1																										
CORK	2	1	1.2.5																									
FABRICS	2	1	1.2.5	1.2.5																								
FELT	2	1	1.5	1.5	1																							
GLASS, CERAMICS	2	1	1.2.5	1.2.5	1.5	1.5																						
LEATHER	2	1	1.2.5	1.2.5	1.5	1.2.5	1.2																					
MELAMINE	2	1	1.5	1.5	1.5	5	1.5	5																				
METALS: ALUMINUM AND STEEL	2.5	1	1.5	1.5	1.5	1.5	1.2.5	1.5	1.5																			
METALS: BRASS AND STEEL	2.3	1	1	1.2	1	1.2	1.2	1.2	1.2	1																		
NYLON	2	1.2	1	1.2.5	1.5	1.5	1.2.5	1.5	1.5	1	5																	
PAPER, CARDBOARD	2	1.2	1.2	1.2	1	1.2	1.2	1.2	1.2	1.2	1.2	1.2																
PHENOLICS	2	1	1.2.5	1.5	1.5	1.5	1.5	1.5	1.5	1.2	1.5	1.2	1.5															
POLYCARBONATE	2							14	14	14			3	14														
POLYESTERS AND EPOXY LAMINATES	2	1	1.5	1.5	1.5	1.5	1.5	5.10	1.5	1	1.5	1.2.5	5	14	5.12													
POLYSTYRENE A-B-S	2	1	1.5	1.5	1.5	1.2.5	1.2.5	1.2.5	1.2.5	1.2	1.2.5	2	1.2.5		1.2.5	1.5												
POLYURETHANE FOAM	2	1.2	1.2	1	1	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2		1.2	1.2	1.2											
POLYVINYLCHLORIDE-FLEXIBLE	2	1	1	1	1	1	1	1	1	1	1	1	1	14	1	1	1	1										
POLYVINYLCHLORIDE-RIGID		1	1	1	1	1	1	1	1	1	1	1	1	14	1	1	1	1	1									
RUBBER: BUNA-N	2	1	1	1	1	1	1	1	1	1	1	1	1		1	1	1			1								
RUBBER: BUTYL	11	1	1		1	1	1	1	1	1	1	1	1		1	1					1							
RUBBER: FLUOROSILICONE								6	6	6			6		6							6					
RUBBER: NEOPRENE	11	1	1	1	1	1	1	1	1	1	1	1	1	14	1	1	1	1				1	1					
RUBBER: POLYURETHANE								14	14	14			14	14	14			14	14					14	14			
RUBBER: SILICONE	6	6	6	6	6	6	6	6	6	6	6	6	6		6	6	6									6		
RUBBER: VITON								4	4	4			4		4												4	
TEFLON	2	1	1.5	1.2.5	1	1.5	1.2	5	1.5	1	5		1.5		5	1.5	1.2	1	1	1	1		1			6		1.5
WOOD	2	1	1.2.5	1.2.5	1.5	1.5	1.2.5	1.2.5	1.5	1.2	1.5	2	5		5	1.5	1.2	1.5	1.5	1	1		1			6		5	5

MS022971

Figure 1. Adhesive System Selection

PREPARATION OF BONDING SURFACES - continued

Table 2. Adhesive System Criteria

ADHESIVE SYSTEM NO.	NO. OF COMP.	PHYSICAL PROPERTIES	POT LIFE AT 70 degrees F (21.1 degrees C)	FLASH POINT	SHELF LIFE	STORAGE TEMP.
1	1	Tough, flexible contact adhesive with good peel strength. Good resistance to fuel, oil, and water.	N/A	30 degrees F (-1 degrees C)	9 months	Below 80 degrees F (27 degrees C)
2	1	A flexible water resistant contact cement. Poor resistance to fuel and oil.	N/A	54 degrees F (12 degrees C)	9 months	40 degrees to 80 degrees F (4 degrees to 27 degrees C)
3	Deleted – Use System 14					
4	2	Cures to a tough flexible rubber; resistant to fuel and oil.	2 hours	50 degrees F (10 degrees C) for primer	12 months for adhesive. 90 days for primer	Below 80 degrees F (27 degrees C)
5	4	A rigid epoxy adhesive, high in tensile and shear strength. Resistant to fuel and oil; fair resistance to water.	2 hours	Part AB: 395 degrees F (202 degrees C) Part CD: 468 degrees F (242 degrees C)	2 years	Below 80 degrees F (27 degrees C)
6	1	Cures to a flexible rubber; resistant to fuel and oil.	30 minutes	50 degrees F (10 degrees C) for primer	8 months for adhesive. 12 months for primer	Below 80 degrees F (27 degrees C)
7	Deleted – Use System 6					
8	Deleted – Use System 6					
9	Deleted – Use System 5					
10	2	A tough flexible adhesive, resistant to water, fuel and oil; poor resistance to salt spray.	30 minutes	150 degrees F (66 degrees C)	6 months	Below 80 degrees F (27 degrees C)

PREPARATION OF BONDING SURFACES - continued

Table 2. Adhesive System Criteria - continued

ADHESIVE SYSTEM NO.	NO. OF COMP.	PHYSICAL PROPERTIES	POT LIFE AT 70 degrees F (21.1 degrees C)	FLASH POINT	SHELF LIFE	STORAGE TEMP.
11 SEE NOTE BELOW	2	Cures to a tough, flexible rubber with good peel strength. Resistant to fuel, water, and salt spray.	1/2 hr forB-1/2 1 hr for B-1 2 hr for B-2 4 hr for B-4 8 hr for B-8	80 degrees F (27 degrees C)	6 months	40 degrees to 80 degrees F (4 degrees to 27 degrees C)
12	2	A rigid adhesive high in shear and tensile strength.	20 to 30 minutes	395 degrees F (202 degrees C)	2 years	Below 80 degrees F (27 degrees C)
13	3	A rigid adhesive that will not craze acrylics.	10 minutes	-	1 year	Below 75 degrees F (24 degrees C)
14	2	A two-component room temperature curing urethane adhesive.	30 to 70 minutes	-	6 months	Below 100 degrees F (37.8 degrees C) (unopened containers only)

NOTE

The acceptable adhesives under this system are available in a choice of pot lives. For example, B-1/2 indicates a pot life of 30 minutes, B-1 a pot life of 1 hour, etc. The letters and numbers B-1/2, B-1, etc. will be found as part of the manufacturer's designation for these adhesives in Table 3.

Table 3. Acceptable Adhesive

ADHESIVE SYSTEM NO.	WP 0157 00 ITEM NO.	MANUFACTURER'S DESIGNATION
1	58 57	Pro-Seal 590M M6249
2	56 38	EC 1128 Tereco No. 68
3	Deleted - Use System 14	

PREPARATION OF BONDING SURFACES - continued

Table 3. Acceptable Adhesive - continued

ADHESIVE SYSTEM NO.	WP 0157 00 ITEM NO.	MANUFACTURER'S DESIGNATION
4	35 143	PR 1710 PR1711 Primer
5	28	Component A: EC-2216 Part A Component B: EC-2216 Part B
6	37 144	RTV 102 SS4004 Primer
7	Deleted - Use System 6	
8	Deleted - Use System 6	
9	Deleted - Use System 5	
10	34	Pro-Seal 501
11	33 36	Pro-Seal 719B PR9021
12	31 111	Epocast 50-A Hardener, Epocast 9816
13	59 54 146	Component A: PS18 Part A Component B: PS18 Part B Component C: PS18 Part C
14	25	EC-3549 B/A

APPLICATION OF ADHESIVE SYSTEM NO. 1

WARNING

ACETONE, TECHNICAL

ADHESIVE

1. Refer to Table 3 for list of acceptable adhesives. Clean the mating surfaces using acetone, technical (Item 20, WP 0157 00). Refer to preparation of bonding surfaces. Wear gloves (Item 108, WP 0157 00).

2. Stir adhesive thoroughly in its own container using a tongue depressor (Item 190, WP 0157 00). If adhesive is to be sprayed, thin with acetone, technical (Item 20, WP 0157 00). Use only enough thinner to permit spraying.

3. Brush or spray one coat of the adhesive on each mating surface.

4 Apply two coats of adhesive to porous surfaces such as cloth or wood. Allow first coat to dry completely before applying second coat.

APPLICATION OF ADHESIVE SYSTEM NO. 1 – continued

NOTE

Assembled parts may be handled immediately. Adhesive must cure 7 days at 70 degrees F (21 degrees C) or 6 hours at 200 degrees F (93 degrees C) to reach maximum strength.

5. Allow adhesive to dry completely. Join surfaces. Apply pressure to assure contact.

APPLICATION OF ADHESIVE SYSTEM NO. 2

WARNING

NAPHTHA, ALIPHATIC

ADHESIVE

1. Refer to Table 3 for list of acceptable adhesives. Clean mating surfaces using naphtha, aliphatic (Item 122, WP 0157 00). Wear gloves (Item 108, WP 0157 00).

NOTE

Adhesive settles during use.

2. Stir adhesive thoroughly in its container. Use tongue depressor (Item 190, WP 0157 00).

WARNING

ADHESIVE

NAPHTHA, ALIPHATIC

3. Stir adhesive several times during use.

4. Apply uniform coat of adhesive to mating surfaces.

5. Allow adhesive to dry until tacky. Touch lightly with knuckle. If adhesive does not stick to skin, parts may be joined.

6. When bonding a large area, let adhesive dry until no longer tacky. Activate adhesive. Wipe one surface using cheesecloth (Item 60, WP 0157 00) damp with naphtha, aliphatic (Item 122, WP 0157 00). Wear gloves (Item 108, WP 0157 00).

APPLICATION OF ADHESIVE SYSTEM NO. 2 - continued

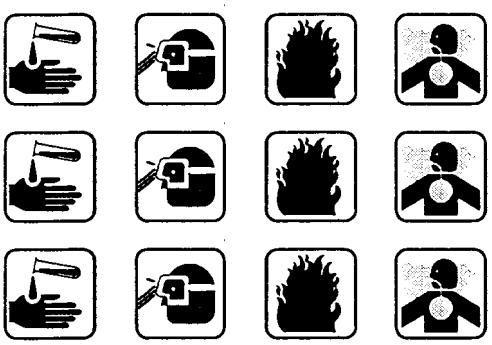
NOTE

Assembled parts may be handled immediately.

7. Press parts together. Apply enough pressure to assure complete contact without trapped air.

APPLICATION OF ADHESIVE SYSTEM N0. 4

WARNING



ACETONE, TECHNICAL

PRIMER

ADHESIVE

1. Refer to Table 3 for list of acceptable adhesives. Clean mating surfaces using acetone, technical (Item 20, WP 0157 00). Wear gloves (Item 108, WP 0157 00).

2. Brush uniform coat of primer (Item 144, WP 0157 00) on all mating surfaces except rubber. Allow 60 minutes for primer to dry.

NOTE

Pot life of blended adhesive is 24 hours.

3. Weigh 20 parts of adhesive and 1 part of accelerator. Use scales. Blend in polyethylene cup (Item 98, WP 0157 00). Use tongue depressor (Item 190, WP 0157 00).

4. Bond rubber to surfaces other than rubber as follows:

NOTE

Best results are obtained when coat is 0.002 to 0.003 inches thick.

a. Brush uniform coat of blended adhesive on rubber. Allow 60 minutes to dry.

b. Brush coat of adhesive on primed surface other than rubber. Allow to dry until tacky.

c. Join coated surfaces. Apply enough pressure to assure complete contact.

NOTE

Complete cure is achieved after 7 days at 70 degrees F (21 degrees C), or in 16 hours at 200 degrees F (93 degrees C).

d. Cure adhesive, under pressure, for 16 hours at 70 degrees F (21 degrees C) before handling.

APPLICATION OF ADHESIVE SYSTEM N0. 4 - continued

5. Bond rubber to rubber as follows:
   a. Brush uniform coat of blended adhesive on both mating surfaces. Allow 60 minutes to dry.
   b. Brush second coat on one surface. Allow to dry until tacky.
   c. Join coated surfaces. Use sufficient pressure to assure complete contact.

NOTE

Complete cure is achieved after 7 days at 70 degrees F (21 degrees C), or in 16 hours at 70 degrees F (21 degrees C), followed by 1 hour at 200 degrees F (93 degrees C).

   d. Cure adhesive, under pressure, for 16 hours at 70 degrees F (21degrees C) before handling.

APPLICATION OF ADHESIVE NO. 5

WARNING

ACETONE, TECHNICAL

ADHESIVE

1. Refer to Table 3 for list of acceptable adhesives. Clean all mating surfaces with acetone, technical (Item 20, WP 0157 00). Wear gloves (Item 108, WP 0157 00).
2. Blend adhesive as follows:
   a. Mix by weight, 100 parts of part B with 140 parts of part A. Use scales.
   b. Stir mixture in polyethylene cup (Item 98, WP 0157 00). Use tongue depressor (Item 190, WP 0157 00).
3. Apply thin, uniform coat of blended adhesive to mating surfaces.
4. Join parts. Apply enough pressure to assure complete contact.
5. Remove excess adhesive. Use acetone, technical (Item 20, WP 0157 00).

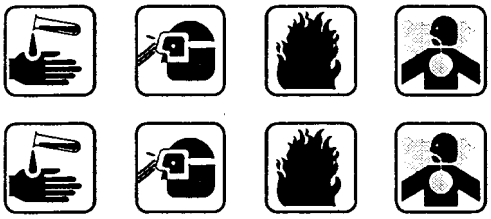
NOTE

Heat lamp and temperature indicating strips (Item 187, WP 0157 00) are required for steps a thru d.

6. Cure adhesive. Use one of these cycles:
   a. 6 minutes at 200 degrees F (93 degrees C)
   b. 2 hours at 170 degrees F (77 degrees C)
   c. 8 hours at 120 degrees F (49 degrees C)
   d. 11 hours at 104 degrees F (40 degrees C)
   e. 24 hours at 70 degrees F (21 degrees C)

APPLICATION OF ADHESIVE SYSTEM NO. 6

WARNING



ACETONE, TECHNICAL

ADHESIVE

1. Refer to Table 3 for list of acceptable adhesives. Clean mating surfaces, using acetone, technical (Item 20, WP 0157 00). Wear gloves (Item 108, WP 0157 00).

WARNING

PRIMER

2. Brush two coats of primer on all surfaces except rubber. Allow 45 minutes for drying after each coat.
3. Brush uniform coat of adhesive on both mating surfaces. Join coated surfaces immediately.

NOTE

A bond line 0.015-inch thick will give best results.

4. Apply enough pressure to assure complete contact. Do not cause excessive squeeze out.

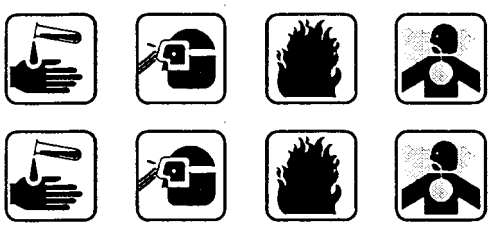
NOTE

Complete bond strength is achieved in 3 days.

5. Cure adhesive 24 hours at 75 degrees F (24 degrees C).

APPLICATION OF ADHESIVE SYSTEM NO. 10

WARNING



ACETONE, TECHNICAL

ADHESIVE

1. Refer to Table 3 for list of acceptable adhesives. Clean mating surfaces using acetone, technical (Item 20, WP 0157 00). Wear gloves (Item 108, WP 0157 00).
2. Mix each component thoroughly in its own container.
3. Weigh 30 parts of accelerator and 100 parts of base. Use trip balance. Blend in polyethylene cup (Item 98, WP 0157 00). Use tongue depressor (Item 190, WP 0157 00).
4. Apply uniform coat of blended adhesive to both surfaces.
5. Join parts. Apply enough pressure to assure complete contact.
6. Remove squeeze out. Use acetone, technical (Item 20, WP 0157 00).

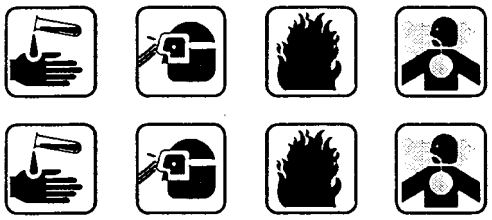
NOTE

Full cure is attained after 48 hours.

7. Cure adhesive 12 hours at 70 degrees F (21 degrees C).

APPLICATION OF ADHESIVE SYSTEM NO. 11

WARNING



ACETONE, TECHNICAL

ADHESIVE

1. Refer to Table 3 for list of acceptable adhesives. Clean mating surfaces using acetone, technical (Item 20, WP 0157 00). Wear gloves (Item 108, WP 0157 00).
2. Blend base with activator. Follow instructions on container.

APPLICATION OF ADHESIVE SYSTEM NO. 11 - continued

3. Apply thin uniform coat of adhesive to both mating surfaces.

4. Assemble parts immediately. Apply enough pressure to assure complete contact.

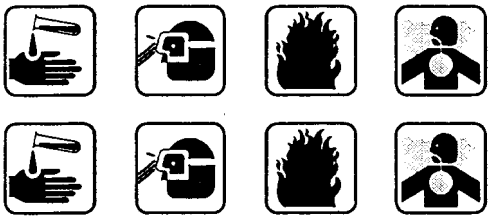
NOTE

Cure times are for holding only. Full cure is achieved in 7 days or more.

5. Cure adhesive at 70 degrees F (21 degrees C) as follows:
   a. Class B1/2 – 16 hours.
   b. Class B1 – 36 hours.
   c. Class B2 – 48 hours.
   d. Class B4 – 60 hours.

APPLICATION OF ADHESIVE SYSTEM NO. 12

WARNING



ADHESIVE

NAPHTHA, ALIPHATIC

1. Refer to Table 3 for list of acceptable adhesives. Clean all mating surfaces using naphtha, aliphatic (Item 122, WP 0157 00). Wear gloves (Item 108, WP 0157 00).

2. Weigh 9 parts of curing agent and 100 parts of adhesive. Use trip balance. Mix well in polyethylene cup (Item 98, WP 0157 00). Use tongue depressor (Item 190, WP 0157 00). Wear gloves (Item 108, WP 0157 00) through step 5.

3. Brush coat of adhesive on each ply of repair part.

4. Assemble plies on teflon sheet (Item 182, WP 0157 00).

5. Brush final coat of adhesive on assembled plies.

6. Position plies on repair area with teflon sheet (Item 182, WP 0157 00) facing outward.

7. Remove air bubbles from repair. Use rollers.

8. Apply slight pressure to repaired areas. Use wooden blocks and C-clamps.

NOTE

Heat lamp and temperature indicating strips (Item 187, WP 0157 00) are required for step 9 if the 1-hour at 160 degrees F (71 degrees C) is used.

9. Cure repaired area 4 hours at 70 degrees F (21 degrees C) or 1 hour at 160 degrees F (71 degrees C).

10. Remove blocks, clamps, and teflon sheet (Item 182, WP 0157 00).

APPLICATION OF ADHESIVE SYSTEM NO. 13

WARNING

ADHESIVE

NAPHTHA, ALIPHATIC

1. Refer to Table 3 for list of acceptable adhesives.
2. Roughen mating surfaces. Use abrasive paper (Item 8, WP 0157 00).
3. Clean mating surfaces using naphtha, aliphatic (Item 122, WP 0157 00). Allow to dry completely. Wear gloves (Item 108, WP 0157 00).
4. Mask areas around repair area. Use masking tape (Item 175, WP 0157 00).
5. Pour 4 ounces of cement resin in clean earthenware container.
6. Add one 2.4-gram capsule of catalyst to resin. Stir until capsule is dissolved. Use tongue depressor (Item 190, WP 0157 00).

NOTE

Mixture can be kept usable for 24 hours by refrigerating at 40 degrees F (4 C) or lower.

7. Pour 5cc of promoter into clean polyethylene cup (Item 98, WP 0157 00).

NOTE

Pot life of adhesive mix with promoter added is 10 minutes.

8. Add promoter to cement resin/catalyst mixture. Stir well.
9. Brush thin uniform coat of cement on both mating surfaces.
10. Join coated surfaces immediately. Hold together gently 20 seconds before applying pressure.
11. Apply pressure equally. Use clamps.
12. Scrape excess cement onto masked area.
13. After 12 hours, remove clamps.
14. Cure 2 hours at 70 degrees F (21 degrees C).
15. Allow assembly to set 4 hours at 168 degrees F (64 degrees C). Use heat lamp and temperature indicating strips (Item 187, WP 0157 00).

APPLICATION OF ADHESIVE SYSTEM NO. 14

WARNING

ACETONE, TECHNICAL

PAINT REMOVER

ADHESIVE

1. Clean primed mating surfaces using cloth (Item 73, WP 0157 00) damp with acetone, technical (Item 20, WP 0157 00). Wear gloves (Item 108, WP 0157 00).

2. If surface primer is flaking or deteriorated, remove as required. Use paint remover (Item 126, WP 0157 00). Remove primer only from bonding area. Wear gloves (Item 108, WP 0157 00).

3. Clean surface where primer was removed. Use cloth (Item 73, WP 0157 00) damp with acetone, technical (Item 20, WP 0157 00). Wear gloves (Item 108, WP 0157 00).

NOTE

Fabric from new roll requires no cleaning.

4. Clean soiled fabric using acetone, technical (Item 20, WP 0157 00). Wait until ketone odor is gone before bonding fabric. Wear gloves (Item 108, WP 0157 00).

NOTE

Complete mixing is required to obtain maximum adhesive performance.

5. Refer to Table 3 for list of acceptable adhesives. Mix adhesive as follows:
   a. Weigh 100 parts of base and 109 parts of accelerator. Use trip balance.
   b. Mix completely in polyethylene cup (Item 98, WP 0157 00). Use tongue depressor (Item 190, WP 0157 00).

6. Apply uniform coat of adhesive to both mating surfaces.

7. Join parts. Apply enough pressure to assure complete contact.

8. Remove squeeze out. Use cloth (Item 73, WP 0157 00) damp with acetone, technical (Item 20, WP 0157 00). Cure adhesive 48 hours at 70 degrees F (21 degrees C).

END OF WORK PACKAGE

DEPOT MAINTENANCE WORK REQUIREMENT
CH-47D HELICOPTER
GENERAL SURFACE CLEANING

INITIAL SETUP

Test Equipment:
As Required

Tools and Special Tools:
As Required

Material/Parts:
As Required

Personnel Required:
As Required

References:
TM 1-1500-204-23 Series
TM 1-1500-344-23
TM 55-1520-240-23 Series
WP 0076 00

Equipment Conditions:
As Required

Special Environmental Condition:
As Required

SCOPE

Proper and frequent cleaning is the most important part of a corrosion control program. Frequency of cleaning and related treatment will depend on type of aircraft and local conditions. Aircraft shall be washed and cleaned every 30 days, unless aircraft are stationed within two miles of salt water. Extended or low level operations over salt water require daily fresh water rising. External corrosion prone areas will require more frequent cleaning. Perform aircraft cleaning in accordance with TM 1-1500-204-23, and TM 55-1520-240-23 manuals.

In accordance with TM 1-1500-344-23, the preferred cleaning solution is listed in appendix A, Table A.1, as MIL-PRF-85570, Type II. For stubborn or exceptionally oily areas, MIL-PRF-680, Type II or III is an approved substitution. For aircraft surface cleaning, AMCOM has approved products, which comply with MIL-PRF-87937, Type II and MIL-PRF-85570, Type II specifications. Check qualified products list (QPL), QPL-85570 and QPL-87937 for list of approved products. Any deviations from established cleaning procedures or substitution of cleaning materials must be approved by AMCOM.

Refer to WP 0076 00 for Paint Removal.

END OF WORK PACKAGE

DEPOT MAINTENANCE WORK REQUIREMENT

CH-47D HELICOPTER

PAINT REMOVAL (STRIPPING) USING PLASTIC MEDIA BLASTING (PMB)

INITIAL SETUP

Test Equipment:
As Required

Tools and Special Tools:
As Required

Material/Parts:
Abrasive, Plastic, (Item 18, WP 0157 00)
Cleaning Compound, Aircraft Surface, (Item 66, WP 0157 00)
Tape Pressure Sensitive, (Item 113, WP 0157 00)
N-Hexane, (Item 124, WP 0157 00)
Cleaning Compound Solvent, (Item 130, WP 0157 00)
Plastic Sheet, (Item 132, WP 0157 00)
Tape, Blast, (Item 172, WP 0157 00)
Tape, Gray Duct, (Item 174, WP 0157 00)
Tape, Masking, (Item 175, WP 0157 00)

Personnel Required:
As Required

References:
29CFR1910.9
AR 11-27
NFPA 13, Vol. 1
OSHA 1910.159
TM 1-1500-344-23
TM 55-1500-345-23
TM 55-1520-240-23 Series
T.O. 1-1-1
WP 0157 00
Refer to “Applicable Documents” in this WP

Equipment Conditions:
As Required

Special Environmental Condition:
As Required

SCOPE

All helicopter paint removal (stripping) shall be done per TM 55-1500-345-23. The specific method for stripping existing paint to bare metal is determined by the accessibility of the area, the degree or type of corrosion, and degree of flaking or peeling of paint. Stripping may be accomplished by chemical remover, mechanical means, or a combination of both.

One mechanical means is abrasive blasting, which consists of bombarding a surface with an abrasive at high velocity. The abrasive may be glass beads, steel grit, or organic materials, and is carried to the surface by air at high velocity. Another mechanical means is the Boeing FLASHJET Process. This process is proprietary to The Boeing Company and uses a xenon flashtube and carbon dioxide pellet stream to remove the paint.

GENERAL SPECIFICATIONS FOR REMOVAL OF ORGANIC COATINGS FROM ARMY AIRCRAFT USING PLASTIC MEDIA BLASTING (PMB)

1. Application
   a. This work package outlines the requirements and procedures for removing organic coatings (paint, primers, or lacquers) from Army aircraft structural components using plastic media blasting techniques.
   b. PMB procedures cited apply to open blasting only.
   c. Plastic media blasting shall be used on metal and the following composite surfaces only:
      (1) fiberglass (honeycomb and laminated)

GENERAL SPECIFICATIONS FOR REMOVAL OF ORGANIC COATINGS FROM ARMY AIRCRAFT USING PLASTIC MEDIA BLASTING (PMB) - continued

(2) carbon fiber

(3) boron and graphite/epoxy

(4) Kevlar

2. Limitations - The plastic media blasting procedures cited herein for the removal of organic coatings from structure are satisfactory, except for the following materials:

   a. Engineering plastics with design requirements that specify they must remain transparent or translucent.

   b. Substrates from which airborne concentrations are extremely limited for worker health reasons. (Example: cadmium, in most localities).

3. Classification - The plastic media used shall conform to Military Specifications MIL-P-85891 as follows:

   a. Type V, Acrylic (Thermoplastic) - Refer to paragraph 1.2.1 of MIL-P-85891

   b. Color No. 5, white to light gray - Refer to MIL-P-85891

   c. Part Number – The part numbering system shall be in accordance with paragraph 6.7 of MIL-P-85891.

4. Applicable Documents - The following specifications and standards form a part of this work package to the extent specified herein. Unless otherwise specified, the issue of these documents shall be those listed in the Department of Defense Index of Specifications and Standards (DODISS) and those cited in this work package.

   a. Federal Specifications

      (1) QQ-A-250/4 - Aluminum alloy, 2024, plate and sheet

      (2) QQ-A-250/2 - Aluminum alloy, 7075, plate and sheet

   b. Military Specifications

      (1) MIL-C-5541 - Chemical Conversion Coatings on Aluminum and Aluminum Alloys

      (2) MIL-P-23377 - Primer Coating, Epoxy Polyamide, Chemical and Solvent Resistant

      (3) MIL-C-38334 – Corrosion Removal Compound Pre-Paint for Aircraft Aluminum Surfaces

      (4) MIL-C-43616 – Aircraft Surface Cleaning Compound

      (5) MIL-C-81706 – Chemical Conversion Materials for Coating Aluminum and Aluminum Alloys

      (6) MIL-PRF-87937 – Coating Polyurethane, Aircraft and Support Equipment

      (7) MIL-P-85891 – Plastic Media, for Removal of Organic Coatings

      (8) MIL-PRF-85285 – Cleaning Compound, Aircraft Exterior Surfaces, Water Dilutable

   c. Standard – Military Adopted

      (1) SAE AMS-S-13165 – Shot Peening of Metal Parts

   d. Other Government Documents

      (1) TM 1-1500-344-23 – Weapons System Cleaning, Corrosion Prevention and Control

      (2) TM 55-1500-345-23 – Painting and Marking of Army Aircraft

GENERAL SPECIFICATIONS FOR REMOVAL OF ORGANIC COATINGS FROM ARMY AIRCRAFT USING PLASTIC MEDIA BLASTING (PMB) - continued

e. Other Publications

(1) Boeing Process Specification D6-54705, dated 14 Nov 88 – Plastic Media Stripping of Organic Finishes

(2) Compressed Gas Association Commodity Specification G-7.1-1966

(3) National Electric Code for Class II, Division I Locations

MATERIAL REQUIREMENTS

1. The plastic media shall be manufactured from acrylic plastic in accordance with the requirements stated for Type V plastic media in MIL-P-85891.

2. The particle shape of the media shall be irregular with sharp, angular edges and corners, and should have a hardness of 46 to 54 BARCOL.

3. The particular size of the media shall normally be 20 to 30 mesh with the same particle size distribution shown in Table 1. If the minimum stripping rate of 0.50 foot per minute cannot be met, the addition of 16 to 20 mesh media is authorized, as long as a maximum arc height of less than 10 mils, as shown in Table 2, is maintained.

Table 1. Particle Size Distribution

U.S. Standard	**12/16 Maximum %**		**16/20 Maximum %**		**20/30 Maximum %**		**30/40 Maximum %**	
Mesh Size	Retain	Pass	Retain	Pass	Retain	Pass	Retain	Pass
10	0.1	--	--	--	--	--	--	--
12	5.0	--	0.1	--	--	--	--	--
16	--	20.0	15.0	--	0.1	--	--	--
20	--	5.0	--	20.0	15.0	--	--	--
25	--	--	--	--	--	--	0.1	--
30	--	--	--	5.0	--	20.0	15.0	--
40	--	--	--	--	--	5.0	--	20.0
60	--	--	--	--	--	--	--	5.0
100	--	1.0	--	1.0	--	2.0	--	3.0

Table 2. Maximum Arc Height Limits

U.S. STANDARD SCREEN SIZE	**MAXIMUM ARC HEIGHT (mils)**
12/16	<15.0
16/20	<12.0
20/30	<10.0
30/40	< 7.0

NOTE

U.S. standard screens can be purchased from Allied Fischer Scientific or equivalent.

MATERIAL REQUIREMENTS – continued

4. Chemical and Physical: The chemical and physical properties of Type V acrylic product shall be IAW Table 1 of MIL-P-85891.

5. Source of Plastic Stock: An infrared spectrogram of the plastic media shall be identical to that depicted in Figure 5, MIL-P-58591, when analyzed in accordance with paragraph 4.5.2 of MIL-P-85891.

6. Media Contamination:

   a. Media having a high density particle contamination level of 250-300 parts per million (ppm) can cause structural fatigue, and is not permitted for airframe substrate PMB.

   b. New and existing media is to be tested as a first article and as required thereafter per paragraph entitled “Media Contamination Test Procedures” of this work package.

EQUIPMENT REQUIREMENTS

1. PMB equipment used to remove organic coatings from aircraft surfaces shall be a direct pressure feed abrasive blasting unit capable of propelling a controlled and continuous stream of plastic media. This equipment also requires indicator and regulation devices.

2. Siphon fed abrasive blasting equipment shall not be used for plastic media blasting.

3. PMB equipment shall have a classification system (i.e., cyclone separator, vibratory screening system, dust bags, or water filter removing particles such as paint chips, dust, sand, metallic particles, etc. produced by the blasting operation).

4. PMB equipment shall be capable of maintaining acceptable levels of size and cleanliness IAW Table I, MIL-P-85891, and paragraph entitled “Sampling of Plastic Media Before Blasting Operations” of this work package.

5. PMB equipment shall be designed with a recovery system consisting of the following:

   a. Cyclone Separator: Separates light dust from plastic media.

   b. Rotary Airlock: Passes heavier plastic media through rotary vanes into the magnetic separator.

   c. Magnetic Separator: Separates and removes ferrous material impurities from the plastic media.

   d. Screen Separator: Vibrating screen separates small undersize media from heavier media by passing the smaller size media through a screen into a waste container. Heavier media falls into storage hoppers for reuse. A double chamber pressure pot shall be utilized to maintain a continuous media stream.

   e. Operator Equipment: Operator safety equipment is required and shall include intercommunication devices, respiratory equipment, blast hood, and hearing protection. The operator equipment consists of the following:

      (1) Breathing Air: The system shall include, as a minimum, all breathing air purification equipment necessary to provide Class D breathing air as described in the Compressed Gas Association Commodity Specification G-7.1-1966. If a compressor is used to supply the air, it shall either be a breathing air compressor or a compressor equipped with both a carbon monoxide and high temperature alarm.

      (2) A breathing air filter shall be provided to remove particulars, moisture, and oil vapor, Chemco Industries, Model CPF-80 or equivalent.

      (3) A carbon monoxide monitor shall be provided, Dynamation, Inc. Model ABL-50 or equivalent.

      (4) Voice Communication: Radio headset.

      (5) Hearing Protection: As required for operator safety.

      (6) Blast Suit: “Apollo” helmet with leather front, suit, and gloves, Clemco Industries or equivalent.

EQUIPMENT REQUIREMENTS - continued

6. Equipment Maintenance:
   a. PMB equipment shall be operated and maintained in accordance with the equipment manufacturers instruction manual.
   b. The blasting nozzle and plastic media transport hoses shall be visually inspected for excessive wear. Replace these items as required.

FACILITY REQUIREMENTS

1. Utilities: The PMB facility shall meet the requirements of OSHA 29CFR1910.9.

WARNING

EXPLOSIVE HAZARD:

Plastic media dust accumulation in a confined area may produce explosive conditions.

   a. Ventilation: A minimum cross-draft ventilation rate of 75 cubic feet per minute per square foot of open face area shall be provided.
   b. Dust Collector: The dust collector system shall be capable of removing 99.7 percent of the particles 0.3 micron, or greater, in size from the re-circulation system.
   c. Dust Monitor: The dust monitor equipment shall be capable of continuously monitoring explosive conditions of air in the PMB facility.
   d. Lighting: A minimum of 55 foot candles (55 lumens/sq. ft.) of illumination at the working surface is required. Portable lighting shall be provided as required to prevent shadows on the side and bottom of the work piece. All lighting shall meet requirements of the National Electric Code for Class II, Division 1 locations (dust ignition proof). Refer to Army Regulation 11-27.
   e. Compressed Air: Compressed air shall have a maximum relative humidity of 60 percent at 70 degrees F (21 degrees C). Air shall be filtered to remove moisture, oil, and solid particles.

NOTE

Moisture or oil in compressed air will cause the plastic media to clump, thus clogging the metering valve and producing erratic performance.

2. Safety Requirements:
   a. A flashing safety warning light shall operate during PMB operations and shall be located outside all PMB room doors.
   b. All doors shall be designed to open outward.
   c. All electric equipment, i.e., motors, lighting, and outlets, shall meet all requirements of the National Electrical Code Class II.
   d. Utilities associated with installation shall meet the requirements identified in Article 512 of the National Code Electrical Code.
   e. Static straps/grounding cords and grounding points are required in the PMB facility per individual aircraft technical manuals.

FACILITY REQUIREMENTS - continued

CAUTION

Sensitive electronic and avionics equipment must be properly grounded to preclude electro-static discharge damage.

f. A closed-head, wet/dry automatic sprinkler system that complies with OSHA 1910.159 and NFPA 13, Vol. 1 is required in each room and enclosure.

g. Operators shall periodically sweep the PMB room walls to prevent dust accumulation.

h. Integrated emergency lighting is required in the facility to illuminate exits in case of a power failure.

i. Illuminated exit signs are required inside the facility.

j. A digital dust concentration system for the PMB room is required. The airflow should be continuously monitored to ensure that the airborne concentration does not exceed 15 percent of the maximum explosive dust level inside the PMB room. Refer to Section 6.6 of MIL-P-85891.

k. The PMB operators shall have protection from noise levels exceeding 85 decibels measured on the “A” weighting scale. Refer to TB MED 501.

l. The Noise level outside the PMB room shall not exceed 85 decibels measured on the “A” weighting scale at a radius of 10 feet from the PMB equipment and enclosure. Readings shall be taken from a height of five feet above the floor (ear level). Refer to 29CFR 1910.95.

TRAINING REQUIREMENTS

1. Personnel performing and supervising the PMB removal of organic coatings (lacquers, primers, and top coats) from aircraft and component parts shall complete a three-phase training program leading to certification.

2. AMCOM Readiness Directorate, New Equipment Training Division, identifies training sources. Contact the Contracting Officer for information pursuant to training.

3. Phase I shall consist of lectures and demonstrations with sufficient examinations given to access the candidate’s comprehension of the subject matter. Training shall include, but not be limited to, the following topics:

   a. General knowledge of the abrasive stripping theory.

   b. General knowledge of the facility and media cleanliness requirements, and an understanding of their importance.

   c. Thorough understanding of the contents of this work package as they relate to PMB parameters and applicable substrates.

   d. Specific knowledge of the aircraft surfaces, parts, and coating systems to be removed.

   e. Specific knowledge of masking techniques and materials required to prevent plastic media intrusions into the aircraft interior.

   f. Specific knowledge of pre-operation cleaning and inspection requirements.

   g. Knowledge of personal protective equipment use and maintenance.

4. Phase II shall consist of actual PMB equipment use on test panels and scrap aircraft parts to remove their organic coatings. Phases I and II will be approximately eight hours.

5. Phase III shall consist of practical exercises for at least 32 hours. During the exercises, the new operator(s) will be supervised by certified personnel. Exercises will be conducted using production aircraft and/or components/parts.

MECHANICAL REMOVAL OF ORGANIC COATINGS

1. Sampling of Plastic Media Before Blasting Operations
   a. Media having a high-density particle contamination level of 250-300 parts per million (ppm) can cause structural fatigue, and is not permitted for airframe substrate PMB.
   b. New and existing media is to be tested as a first article and as required thereafter per paragraph entitled "Media Contamination Test Procedures" in order to assure that maximum levels of contamination are not exceeded. Media found to have an unacceptable level of contamination shall be purged from the system and replaced with new media.

MECHANICAL REMOVAL OF ORGANIC COATINGS - continued

CAUTION

PMB with heavily contaminated media may permanently damage aircraft substrate surfaces.

2. Preparation of Aircraft for PMB - Cleaning and Masking
   a. Remove, open, or protect all cowlings, doors, power train components (engines, transmissions, gearboxes, etc.), avionic components, fuel and oil lines, and fuel cells per aircraft specific requirements.
   b. Clean aircraft surfaces/components per the requirements of TM 1-1500-344-23.
   c. Mask aircraft door openings using blast tape, (Item 172, WP 0157 00); seal door areas using Gray Duct Tape, (Item 174 WP 0157 00) and plastic sheet (Item 132, WP 0157 00).
   d. Mask aircraft cowling openings with the same tapes and techniques cited above and reinstall the cowlings.
   e. Seal cabin door seams and any other gaps with a bead of hot glue (Item 113, WP 0157 00). This material is used to seal seam covers and access panel gaps less than 3/16 inch.

WARNING

HOT PARTS:

Molten plastic can severely burn exposed skin. Operators must wear gloves while hot gluing.

   f. Cover all transparent plastic and glass surfaces. Fabricate form-fitting shields for canopies and blisters from 0.125 inch black rubber floor matting (NSN 7220-01-057-1897). Use blast tape (Item 172, WP 0157 00) to mask transparency edges.

CAUTION

Transparent surfaces may be permanently damaged during PMB operations, if not properly masked or covered as specified.

   g. Mask or plug all remaining holes and gaps on the aircraft/component to prevent intrusion of plastic media into its interior areas. Also mask bearings, drive shafts, scuppers (drains), and all moving surfaces, actuators, and linkages. Mask all cadmium plated or conversion coated/anodized hardware that will not be replaced in subsequent operations.

MECHANICAL REMOVAL OF ORGANIC COATINGS - continued

h. Mask or protect parts so that oil passages or other openings will not be obstructed by media, media will not be entrapped inside of the part, and finished or close tolerance surfaces will not be damaged.

i. When stripping cockpit or cabin interior panels, additional masking is required to exclude media from smaller compartments and electrical items, such as wiring and connectors.

NOTE

Masking material may include cork, wood, foam, hot melt adhesive sticks, etc.

3. Mapping

a. The mapping technique (unique for each Army aircraft model) provides a certified PMB operator with information allowing him to know what pressures, stand-off distances, and angle of attack to use in removing the coatings from the painted aircraft panels having different skin thickness, thus imparting a minimum stress and damage to the aircraft skins during the PMB operations.

b. The mapping procedure is as follows:

(1) Develop a color chart based on the information in TM 55-1520-240-23, this DMWR, and the manufacturer's blueprints.

(2) Use the referenced technical data to locate the aircraft panels, determine their respective skin thicknesses, and the material composition of each panel (e.g., aluminum, fiberglass).

(3) For the skin thickness of each panel and category, refer to Table 3, and assign a specific color.

(4) Outline each panel with spray paint using the same color assigned to the panels on the map. Repeat this procedure until all aircraft panels are outlined with their assigned colors.

4. Aircraft Coating Removal Procedures

a. Position the cleaned and masked aircraft/components at the PMB site.

b. Dress PMB operators in the appropriate protective gear.

c. Using a hypodermic needle gage, verify the indicated pressure readings at the nozzle (taken at a 45 degree angle away from the flow of the media) meets the requirements of Table 3.

NOTE

The flow rate will be verified whenever media is changed or new media is added.

d. Ground all equipment and aircraft components.

e. Remove the organic coatings from the aircraft surface using plastic media, Type V, and the operating parameters specified in Table 3. Begin the PMB stripping operation under the belly of the aircraft by removing the coating from panels with the lowest thickness values and continue to the next group of panels with increasing thickness. Continue this procedure with the remaining fuselage surfaces (top and sides) and the aft pylon. When the aircraft has been previously painted with Chemical Agent Resistant Coating (CARC) and is intended to continue with CARC, remove only the topcoat, leaving as much of the MIL-P-23377 primer as possible. The same applies to aircraft primed with TT-P-1757 when that aircraft is intended to continue with TT-P-1757.

MECHANICAL REMOVAL OF ORGANIC COATINGS - continued

NOTE

A minimum removal rate of 0.50 ft/min shall be maintained.

f. The certified operator(s) should keep the nozzle moving at all times and maintain the stand-off distances, pressures, and impingement angles (angle of attack) specified in Table 3. This technique will enable the operator to remove one layer of organic coating at a time and will decrease the dwell time spent in any one area. Dwell time should not exceed Table 3 specifications.

NOTE

Since PMB operations are physically tiring, the operators should be relieved at least every three hours by another certified operator. These rotations are necessary to maintain PMB operator efficiency.

g. PMB stripping of KEVLAR panels will result in fibrillation (fuzzing) of the composite material. Fibrillation of KEVLAR is known to cause a degradation of mechanical properties. On nonstructural KEVLAR panels the KEVLAR fuzz can be removed. To effect repair, a thin coating of resin is reapplied to the substrate composite and allowed to cure. Any remaining fibers are then wet sanded until removed using very fine grit sandpaper. Care should be exercised not to cause additional fibrillation through sanding. Once the resin surface has been readied for primer, a yellow epoxy-polyamide (MIL-P-23377) primer is applied, see NOTE below. The yellow color will be used as an indicator for future PMB stripping of the composite panel. Care should be exercised not to blast off the yellow primer with plastic media during subsequent paint removal cycles. When stripping KEVLAR panels, speed of coating removal should take secondary precedence for the PMB operator over substrate protection.

NOTE

The yellow primer is not always present with the original paint from the manufacturer. The first time each CH-47D has the coatings removed from the KEVLAR panels, it will be particularly difficult for the PMB operator to detect when all coatings are removed. The operator should take extra care not to dwell on the bare KEVLAR, as this will lead to rapid destruction of the composite.

MECHANICAL REMOVAL OF ORGANIC COATINGS - continued

Table 3. Type V, Plastic Media Blasting (PMB) Parameters

METAL Material Thickness (inch)	**Supported/ Unsupported (Note A)**	**Air Pressure (psi) (Note B)**	**Media Flow Rate (lbs/hour) (Note C)**	**Standoff Distance (inch)**	**Impingement Angle (degree)**	**Clad/ Nonclad**	**Dwell Time (seconds)**
0.016 - 0.031	Supported	30 - 32	450 - 480	18 - 24	15 - 30	Either	<=1
	Unsupported	30 - 32	450 - 480	18 - 24	<= 15	Either	<=1
0.032 - 0.063	Supported	30 - 32	450 - 480	18 - 24	15 - 30	Either	<=1
	Unsupported	30 - 32	450 - 480	18 - 24	15 - 30	Either	<=1
0.064 and greater	Supported	30 - 32	450 - 480	18 - 24	60 - 80	Alclad	<=1
	Unsupported	30 - 32	450 - 480	18 - 24	45 - 60	Either	<=1
COMPOSITE Material Thickness (inch)	**Supported/ Unsupported (Note A)**	**Air Pressure (psi) (Note B)**	**Media Flow Rate (lbs/hour) (Note C)**	**Standoff Distance (inch)**	**Impingement Angle (degree)**	**Clad/ Nonclad**	**Dwell Time (seconds)**
All	Either	18 - 20	450 - 480	24 - 30	<= 15	N/A	0

NOTES

A. Unsupported - no backing structure to surface being treated.

B. Taken at a 45 degree angle away from linear flow of the media.

C. All parameters based on a nozzle diameter of 0.50 inches.

CAUTION

Certified PMB operators shall never direct a nozzle at other personnel. If more than one operator is engaged in the blasting operation at the same time, each operator shall be located on opposite sides and/or ends of the aircraft or equipment, to ensure a safe separation distance. Moreover, operator(s) shall be equipped with intercommunication devices to enable them to communicate with each other during the PMB operations.

5. Clean-Up after PMB Operations
   a. When the necessary organic coatings are removed by PMB, thoroughly vacuum all surfaces of the aircraft, equipment, or component with a heavy duty, pneumatic type wet/dry vacuum cleaner to remove all plastic media dust and residual media.
   b. Remove all masking materials.
   c. Inspect previously masked interior areas and crevices for dust or media particle presence and vacuum as required.

6. Component Part Clean-up After PMB
   a. The part shall be free of dust, powder, or smut.
   b. Remove all blasting media dust by blowing with dry compressed air (30 psig maximum).

MECHANICAL REMOVAL OF ORGANIC COATINGS - continued

NOTE

Make certain there are no oil passages, or other openings blocked, and that there is no media trapped inside the part. When necessary, use a flashlight, mirror, magnifying glass, and boroscope to assure that all media has been removed.

Some parts might require cleaning with dry cleaning solvent (Item 69, WP 0157 00) to remove fine dust left on the part. Blow the part dry with dry, filtered compressed air.

c. Flush all oil passages with pressurized dry cleaning solvent (Item 69, WP 0157 00), and assure passageways are not blocked. After this test, remove the excess solvent by blowing with filtered, dry compressed air.

d. The part shall meet all drawing requirements for dimensional tolerances and for surface roughness.

e. Substrate coatings (anodize, conversion coating, alclad) shall show no evidence of damage.

PREPARATION OF AIRCRAFT FOR REPAINTING

1. Clean IAW TM 1-1500-344-23.

2. Prepare for repainting IAW TM 55-1500-345-23.

QUALITYASSURANCE (QA) REQUIREMENTS

1. QA shall monitor the PMB process, and examine the end items, to insure that procedures are being followed.

2. QA shall verify and maintain records documenting that only certified operators perform the PMB process.

3. QA shall verify that only an approved and properly maintained blast facility is used.

4. QA shall verify that only certified plastic media is used.

5. PMB stripping of the fuselage should be permanently recorded in the aircraft logbook.

DISPOSAL GUIDELINES FOR USED PLASTIC MEDIA

1. MIL-P-85891, Type V acrylic resin is classified as a non-hazardous material, and its use, transportation, and storage are not subject to environmental restrictions. As such, its resin or dust may be recycled or disposed of in a sanitary landfill in accordance with federal, state, and local regulations.

2. However, when acrylic plastic abrasive is used to remove aircraft coatings containing heavy metal pigments of arsenic, barium, cadmium, chromium, lead, mercury, selenium, or silver, the dust may be classified as hazardous waste, which may be determined by an EPA toxicity test. If the waste is found to be hazardous, its disposal should be in accordance with EPA (Federal), state, and local regulations where the plastic media operation takes place.

MEDIA CONTAMINATION TEST PROCEDURES

This procedure is for use in installation laboratories.

1. Equipment/Materials Required:
   a. One 500 Mulliter Separatory Funnel
   b. Rod Stand, for separatory funnel
   c. Holding Rings, for funnels
   d. Cleaning Compound Solvent, 3M PIN PF-5060, CAGE 28112 (Building 223-6F-04)
   e. N-Hexane, reagent grade, NSN 6810-01-063-4534
   f. One Glass Funnel, 3-inch nominal diameter
   g. One Glass Powder Funnel (large stem), 4-inch nominal diameter
   h. Whatman number 42 (or equal) filter paper, 12.5 cm, to fit above funnel
   i. Scale, 1000 grams capacity, 0.1 gram sensitivity
   j. Analytical balance, 100 grams capacity, 0.001 gram sensitivity
   k. Costly dual range balances are available which offer bulk weighing and precision weighing in a single instrument. These may be substituted for the above two units, but have limited capacity.
   l. 500-600 mi tall form Pyrex beaker
   m. 250 mi Pyrex beaker
   n. 500 mi graduated glass cylinder
   o. Two jug-type glass storage bottles, 1-gal, with screw caps
   p. Hydrometer, 1.60-1.80 specific gravity
   q. Pyrex watch glass, 75-90mm diameter
   r. Nalgene polyethylene wash bottles, 250 mi.
   s. Spatula, stainless steel
   t. Glass stirring rods, 10-inch
   u. Neoprene gloves, size as required
   v. Specimen forceps

2. Sampling Procedure: Collect approximately two liters of media.
   a. Used Media: The best representative sample is obtained by collecting media directly from the blast nozzle; but if this is not feasible, collect the sample from media hoppers (located after separation equipment in recovery reclamation system).
   b. New Media: The best representative sample is obtained by agitating the shipping container to thoroughly mix media prior to sampling. Given the size and weight of shipping containers, this could be difficult. So, new media may be sampled from the shipping container without agitation if necessary.

MEDIA CONTAMINATION TEST PROCEDURES - continued

3. Contamination Test Procedure:

   a. Ensure all glassware is clean and dry.

WARNING

SOLVENTS:

Use solvents with caution. Keep away from heat and open flame. Keep container closed. Use only with adequate ventilation. Avoid prolonged or repeated contact with skin. Avoid swallowing**.**

   b. Prepare a mixture of five percent by volume hexane and 95 percent by volume perfluorohexane. In order to facilitate mixing, add hexane to the mixing vessel first, and then add the cleaning compound solvent (Item 130, WP 0157 00). The function of the perfluorohexane is to separate any dense particles from the plastic media. The specific gravity of the perfluorohexane is high enough to float the light plastic media while permitting any dense particles to settle. The purpose of the hexane is to resolve a problem with particles adhering to the sides of the separatory funnel in the following procedure. Care must be taken not to exceed the five percent content of hexane because it reduces the specific gravity and affects the flotation property of the mixture. The specific gravity of the mixture should read approximately 1.66 as determined with a hydrometer, but should never be below 1.60. A quantity of the mixture may be prepared in advance and stored until needed; however, storage should be in an appropriate small-neck storage bottle with a tight-fitting cap.

   c. Add approximately 300-350 ml (bulk dry volume) of sample media to 500 ml beaker. Weigh beaker and media to the nearest tenth gram (0.1 gm) and record (Weight #1) gross weight. Pour media into 500 ml separatory funnel (stopcock closed) and ensure there is no spillage. Obtain tare weight of 500 ml beaker and record (Weight #2) to the nearest tenth gram (0.1 gm).

   d. Add the fluid to separatory funnel leaving some air space in the funnel for ease of agitation. Swirl the mixture. A swirling motion is more appropriate than shaking to reduce entrainment of air and suspension of particles. Media samples may contain some dust sized particles, which may be suspended in the fluid after agitation. Tapping the side of the funnel should dislodge any particles adhering to the sides. Place the separatory funnel on the rod stand using holding ring. Allow 10 minutes for the suspended dust to settle or rise. Higher density particles will accumulate in the bottom of the separatory funnel on top of the stopcock.

   e. Fold the filter paper in a standard filter fold and place it in a three-inch glass filter funnel. Position the filtering funnel in a holding ring on the rod stand beneath the separatory funnel and place a beaker beneath the filtering funnel. Higher density particles will be settled out in the bottom of separatory funnel (on top of stopcock). Use short duration opening of stopcock in order to drain higher density particles into filter funnel. Tapping the side of the separatory funnel may help to remove the high density particles. Do not allow fluid level to get too low, which might allow some floating media to be deposited with the high density contaminants. Additional fluid may be added to the separatory funnel. Take care not to agitate mixture. If agitation occurs, allow 10 minutes for suspended dust particles to float/settle prior tocontinuation of decantation. To separate all of the high density particles, the process has to be repeated until no particles will separate out of the plastic media. One attempt will not extract them all.

MEDIA CONTAMINATION TEST PROCEDURES - continued

f. Place the filter and filtrate in a vented, dust free location (preferably a laboratory hood) to dry for one hour. Measure the weight of the filter paper and filtrate to 0.001 gm precision. Allow the filter paper to dry an additional 30 minutes and reweigh. If there is a change greater than 0.001 gm, continue to dry the sample, checking the weight every 30 minutes until the weight between intervals does not change. Obtain the tare weight of a watch glass. Carefully remove the filtrate from the filter paper onto the watch glass by tapping. Unfold the filter paper and remove the remaining particles with a hard instrument, such as a metal spatula. Do not use a brush. Fine particles or dust may have impregnated the filter paper. This residue is not a major concern and may be disregarded because fine particles (less than 80 mesh, U.S. Standard Sieve) are not damaging to aircraft materials or structure. Depending upon the balance used, weigh or calculate the weight of the dense particles to 0.001 gm precision and record as Weight #3.

g. The mixed test fluid should be retained for reuse. Filter the used fluid mixture through a funnel with clean filter paper. Store in a separate, small-neck, tightly closed and properly labeled container. Recheck specific gravity with a hydrometer to assure it is in the proper range prior to reuse.

h. Calculations: Gross weight of media and 500 ml beaker (Weight #1) minus tare weight of 500 ml beaker (Weight #2) equals net weight of media.

Weight #1 - Weight #2 = Media Weight

Weight #3 = Dense Particles Weight

The Dense Particles Weight divided by the Media Weight equals the weight fraction of dense particles in the sample. Multiply the weight fraction by 100 to find the weight percent of dense particles in the sample.

(Dense Particles Weight/Media Weight) x 100 = Percent Media Weight

i. The contamination level (percentage) is a measure of all possible heavy contaminants listed earlier in this section. The high density contamination level (percentage) is a measure of silicates and metal particles. The high density contaminants (sand and glass in particular) tend to cause the most fatigue life degradation. The level of high density particles shall not exceed 0.02 percent as calculated above when the media is used to strip aerospace equipment

DETERMINING RESIDUAL STRESSES TO METALLIC SUBSTRATES

1. This test is used to assess the implied residual stress due to plastic media blasting.

2. Test Method:

a. Shear a minimum of ten Almen strips (0.75" x 3.00") designed per AMS-S-13165 from 0.032 inch 2024-T3 bare aluminum sheet (Fed Spec QQ-A-250/4). Orient the 3.00-inch dimension of the Almen strip in the rolling direction.

b. Subject the base aluminum Almen strips to 30 seconds of continuous exposure from the plastic media and blast at a 30 psi nozzle pressure and a 30 degree angle of attack using a 3/8 inch nozzle diameter and a minimum mass flow rate of 300 lbs/hr. Also use an 18 inch stand-off distance.

c. Measure the average of ten Almen arc heights to the nearest 0.1 mil with a dial indicator. The average value is not to exceed the arc heights for the different mesh sizes shown below for any plastic abrasive used. Mesh size classification for the varying size of plastic abrasive is defined in MIL-P-85891 (AS) and is shown below:

DETERMINING RESIDUAL STRESSES TO METALLIC SUBSTRATES - continued

Table 4. Maximum Arc Height Limits

U.S. STANDARD SCREEN SIZE	MAXIMUM ARC HEIGHT (MILS)
12/16	<15.0
16/20	<12.0
20/30	<10.0
30/40	< 7.0

NOTE

U.S. standard screens can be purchased from Allied Fischer Scientific or equivalent.

Table 5. Particle Size Distribution

U.S. Standard	12/16 Maximum %		16/20 Maximum %		20/30 Maximum %		30/40 Maximum %	
Mesh Size	Retain	Pass	Retain	Pass	Retain	Pass	Retain	Pass
10	0.1	--	--	--	--	--	--	--
12	5.0	--	0.1	--	--	--	--	--
16	--	20.0	15.0	--	0.1	--	--	--
20	--	5.0	--	20.0	15.0	--	--	--
25	--	--	--	--	--	--	0.1	--
30	--	--	--	5.0	--	20.0	15.0	--
40	--	--	--	--	--	5.0	--	20.0
60	--	--	--	--	--	--	--	5.0
100	--	1.0	--	1.0	--	2.0	--	3.0

DETERMINING MINIMUM STRIPING RATE OF PLASTIC MEDIA

1. Preparation of Test Panels - Prepare test panels of 2024-T3 bare aluminum (6" x 12") for plastic media stripping as follows:
   a. Alkaline clean using detergent material conforming to MIL-C-38334.
   b. Deoxidize test panels using material conforming to MIL-C-38334.
   c. Within four hours, chemically conversion treat the test panels using MIL-C-81706 materials applied IAW MIL-C-5541.
   d. Apply epoxy primer (MIL-P-23377 Type II) to the chemically converted surface of the test panels to a dry film thickness of 0.0006 to 0.0009 inch. Allow primer to dry for at least 30 minutes.
   e. Apply polyurethane topcoat (MIL-C-83286, FED STD 595, Color No. 36495) to primed surfaces of the test panels to a dry film thickness of 0.0017 to 0.0023 inch.
   f. Cure painted test panels for seven days in a controlled environment maintained at 72 degrees F and 50 percent relative humidity or conduct an accelerated cure of the test panels by curing in an oven maintained at 210 degrees F plus 25 degrees F for a 96-hour period.

DETERMINING MINIMUM STRIPING RATE OF PLASTIC MEDIA – continued

2. Monitoring Painted Test Panel Thickness:

   a. Monitor primer and topcoat thickness of each test panel to ensure paint thickness tolerance. Film thickness measurements should be directly measured to the substrate surfaces at six locations for each panel.

   b. Film thickness measurements should be made IAW ASTM Standards B499 and 8244 using a coating thickness gap to a resolution of 0.01 mils.

3. Determine Stripping Rates

   a. Blast at least five painted test panels using a 3/8-inch diameter nozzle, a mass flow rate of 300 lbs/hr, 18-inch stand-off distance, and a 30 degree angle of attack, and 30 psi nozzle pressure.

   b. Record the paint stripping times to the nearest 0.1 seconds and average the results for five painted test panels and, express the results in square feet per minute.

Table 6. Minimum Paint Stripping Rates

U.S. STANDARD MESH SIZE	MINIMUM MEAN STRIP RATE (FT/MIN)
12/16	0.35
16/20	0.30
20/30	0.20
30/40	0.10

DETERMINING PLASTIC PARTICLE BREAKDOWN

Minimum breakdown rates for plastic abrasives are needed for both economic reasons and to minimize dust in the work environment. The following procedure will be used to determine plastic particle breakdown.

1. Blast a 10 pound U.S. Standard 20/30 mesh sample (conforming to particle size distribution in MIL-P-85891 (AS) against an aluminum plate, 15" x 15" x 0.25" conforming to QQ-A-250112, T6 temper, until all of the charge abrasive medium is consumed.

2. Blasting should be conducted in a pressure pot blast cabinet with the media reclamation system turned off or disabled. Blasting parameters are 1/4 inch nozzle at 60 psi nozzle pressure, 90 degree angle of attack to the plate with a 10-inch stand-off distance, and a minimum mass flow rate of 60 lbs/hr of media.

DETERMINING PLASTIC PARTICLE BREAKDOWN - continued

After each blast cycle, collect the media and recharge the system. Repeat this procedure until five complete blast cycles are completed. The particle size distribution of the collected abrasives after five blast cycles shall be measured in accordance with MIL-P-85891 (AS). Particle size distribution of the blasting media shall exceed the following:

Table 7. Particle Size Distribution After Five Blast Cycles

U.S. STANDARD MESH SIZE	MINIMUM PERCENT RETAINED
40	40
60	60

NOTE

Starting material is 20/30 mesh abrasive.

END OF WORK PACKAGE

DEPOT MAINTENANCE WORK REQUIREMENT
CH-47D HELICOPTER
CORROSION REMOVAL TREATMENT

INITIAL SETUP

Test Equipment:
As Required

Tools and Special Tools:
Trip Balance, NSN 6670-00-401-7195
Heat Lamp
C-Clamps
Roller
Earthenware Container
Clamps

Material/Parts:
Abrasive, cloth (Item 1, WP 0157 00)
Abrasive, mat (Item 2, WP 0157 00)
Alcohol, isopropyl (Item 42, WP 0157 00)
Applicator, cotton-tipped (Item 44, WP 0157 00)
Beads, glass, vacu-blast (Item 47, WP 0157 00)
Brush, acid (Item 48, WP 0157 00)
Brush, tooth (Item 51, WP 0157 00)
Brush, typewriter (Item 52, WP 0157 00)
Cheesecloth (Item 60, WP 0157 00)
Corrosion-resistant Coating, Chemical (Item 96, WP 0157 00)
Chromic Acid Pickle Solution (Item 62, WP 0157 00)
Cleaner, pipe (Item 63, WP 0157 00)
Cleaning Compound, Solvent (Item 69, WP 0157 00)
Cloth, cleaning (Item 73, WP 0157 00)
Cloth, cleaning and polishing (Item 74, WP 0157 00)
Cloth, cleaning, low-lint (Item 75, WP 0157 00)
Compound, cleaning (Item 66, WP 0157 00)
Compound, coating (Item 82, WP 0157 00)

Material/Parts: - continued
Corrosion preventive compound (Item 87, WP 0157 00)
Corrosion preventive compound (Item 90, WP 0157 00)
Corrosion preventive compound (Item 94, WP 0157 00)
Compound, corrosion removing and treatment (Item 97, WP 0157 00)
Eraser, block (Item 101, WP 0157 00)
Eraser, typewriter (Item 102, WP 0157 00)
Plastic coating compound (Item 131, WP 0157 00)
Primer coating (Item 137, WP 0157 00)
Pumice (Item 147, WP 0157 00)
Sealing compound (Item 164, WP 0157 00)
Sealing compound (Item 162, WP 0157 00)
Steel wool (Item 170, WP 0157 00)
Wheel Abrasive (Item 195, WP 0157 00)

Personnel Required:
As Required

References:
TM 1-1500-204-23 Series
TM 1-1500-344-23
TM 11-1520-240-23
TM 55-1500-323-24
TM 55-1500-345-23
TM 55-1520-240-23 Series
WP 0075 00
WP 0157 00

Equipment Conditions:
As Required

Special Environmental Condition:
As Required

SCOPE

This work package provides procedures for the removal and treatment of corrosion on the following material/areas:

1. Corrosion on Aluminum or Magnesium
2. Corrosion on Steel
3. Corrosion on Avionics Mounting Racks, Frames, Shock Mounts, and Avionics Component Covers
4. Corrosion on Internal Avionics Components

SCOPE – continued

5. Corrosion on Electrical Switches
6. Corrosion on Electrical Relay and Circuit Breakers
7. Corrosion on Electrical Connectors
8. Corrosion on Coaxial Connectors
9. Corrosion on Grounding/Bonding Connectors
10. Corrosion on Antennas
11. Corrosion on Pitot-Static Tubes

CORROSION ON ALUMINUM OR MAGNESIUM

1. Remove paint from corroded area.

NOTE

Make sure paint is removed from area; refer to TM 55-1500-345-23.

2. Remove corrosion as follows:

WARNING

EYE INJURY

   a. Remove small areas of corrosion using 320-400 grit abrasive cloth (Item 1, WP 0157 00) or abrasive mat (Item 2, WP 0157 00).
   b. Remove heavy deposits of corrosion using glass bead vacu-blast (Item 47, WP 0157 00) or abrasive wheel (Item 195, WP 0157 00).

3. Treat aluminum or magnesium surfaces as follows:
   a. Feather undamaged paint surrounding repaired area.
   b. Clean area to be treated per WP 0075 00.
   c. Check for cleanliness and water break-free condition. Refer to Figure 1.

CORROSION ON ALUMINUM OR MAGNESIUM - continued

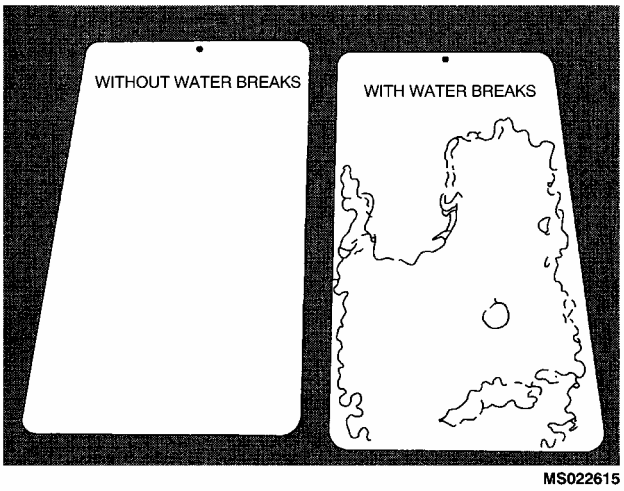


Figure 1. Water Breaks

WARNING

CORROSION RESISTANT COATING

4. While surface is still wet, apply chemical conversion coating material as follows:
   a. For aluminum, apply corrosion resistant coating (Item 96, WP 0157 00) to surface area.
      (1) Allow coating to remain on surface for five minutes.
      (2) Rinse area thoroughly using fresh water.

NOTE

Thorough rinsing is important. If conversion coating material becomes entrapped or allowed to remain on the surface, chemical reaction will continue and will result in further corrosion.

   b. For magnesium, apply chromic acid pickle solution (Item 62, WP 0157 00) to surface area.
      (1) Allow coating to remain on surface until surface color becomes greenish-brown.
      (2) Rinse thoroughly with fresh water.

NOTE

Thorough rinsing is important. If conversion coating material becomes entrapped or allowed to remain on the surface, chemical reaction will continue and will result in further corrosion.

5. Allow a minimum of 30 minutes for surface to dry.

CORROSION ON STEEL

1. Remove paint from corroded area.
2. Remove corrosion as follows:
   a. Remove light corrosion using steel wool (Item 170, WP 0157 00) or 320-400 grit abrasive cloth (Item 1, WP 0157 00).
   b. Remove difficult or heavy corrosion as follows:
      (1) Apply corrosion removing and treatment compound (Item 97, WP 0157 00) to corroded area using cheesecloth (Item 60, WP 0157 00).
      (2) Rub heavily corroded area with steel wool (Item 170, WP 0157 00) while compound is on the area.

CAUTION

Do not allow compound to remain on the part or area for more than 15 minutes.

      (3) Remove compound by sponging off with damp cheesecloth (Item 60, WP 0157 00) frequently rinsed in clean water.
      (4) Inspect area for complete removal of corrosion. If necessary, repeat sub-steps (1) through (4).
3. After corrosion has been completely removed, clean area per WP 0075 00.
4. Treat area by applying coating compound (Item 82, WP 0157 00) to exposed area.
5. Refer to WP 0078 00 and TM 55-1500-345-23 for protective finishes application.

CORROSION ON AVIONICS MOUNTING RACKS, FRAMES, SHOCK MOUNTS, AND AVIONICS COMPONENT COVERS

1. Remove corroded item(s) from helicopter.
2. Remove paint from corroded area per TM 55-1500-345-23.
3. Clean affected area using a solution of one part cleaning compound (Item 66, WP 0157 00) mixed with nine parts fresh water. Apply solution with cleaning cloth (Item 73, WP 0157 00).
4. Rinse area with fresh water and wipe dry.
5. Apply appropriate chemical conversion coating for aluminum, magnesium and or steel.
6. Touch up repaired area with primer (Item 137, WP 0157 00) and finish per WP 0078 00 (Finishing of Metal Parts) and TM 55-1500-345-23.

CORROSION ON INTERNAL AVIONICS COMPONENTS

WARNING

ISOPROPYL ALCOHOL

1. Remove dirt and/or corrosion using cleaning and polishing cloth (Item 74, WP 0157 00).
2. Rinse area with isopropyl alcohol (Item 42, WP 0157 00).
3. Remove corrosion and tarnish using typewriter eraser (Item 102, WP 0157 00).
4. Clean affected area with isopropyl alcohol (Item 42, WP 0157 00). Wipe area with cleaning cloth (Item 73, WP 0157 00).
5. Allow surface to air dry completely.

WARNING

CORROSION PREVENTIVE COMPOUND

6. Apply a thin film of corrosion preventive compound (Item 87, WP 0157 00) to surfaces. Remove excess compound using cleaning cloth (Item 73, WP 0157 00).

CORROSION ON ELECTRICAL SWITCHES

WARNING

CLEANING COMPOUND, SOLVENT

1. Apply cleaning solvent (Item 69, WP 0157 00) to corroded electrical switch, using acid brush (Item 48, WP 0157 00) or a toothbrush (Item 51, WP 0157 00). Scrub the switch to remove corrosion.
2. Clean any residue with cleaning solvent (Item 69, WP 0157 00).

CORROSION ON ELECTRICAL SWITCHES – continued

3. Wipe dry with cleaning cloth (Item 73, WP 0157 00).

WARNING

CORROSION PREVENTIVE COMPOUND

NOTE

Do not apply corrosion preventive compounds to electric switch contacts.

4. Apply a light film of corrosion preventive compound (Item 90, WP 0157 00) to switch assembly but not to switch contacts.

5. Wipe sliding contacts, cams, and other contact points with cotton-tipped applicator (Item 44, WP 0157 00) dampened with cleaning solvent (Item 69, WP 0157 00).

CORROSION IN ELECTRICAL RELAYS AND CIRCUIT BREAKERS

CAUTION

Corrosion (tarnish) acts as an insulator on contacts. While removing corrosion from contacts, care should be taken not to remove the highly conductive metal plating. If this plating is removed, the exposed base metal is vulnerable to corrosion.

NOTE

Do not use corrosion preventive compound on any contacts.

1. Remove light to moderate corrosion from relay contacts by rubbing contact surfaces with typewriter eraser (Item 102, WP 0157 00), or block eraser (Item 101, WP 0157 00).

WARNING

ISOPROPYL ALCOHOL

2. Clean residue with cotton-tipped applicator (Item 44, WP 0157 00) saturated with isopropyl alcohol (Item 42, WP 0157 00).

3. Remove corrosion from relay or circuit breaker assemblies with an acid brush (Item 48, WP 0157 00).

NOTE

Use pipe cleaner (Item 63, WP 0157 00) to remove corrosion from hard-to-reach areas.

4. Wipe relay or circuit breaker with cleaning cloth (Item 73, WP 0157 00). Allow to air dry.

CORROSION IN ELECTRICAL RELAYS AND CIRCUIT BREAKERS - continued

WARNING

CORROSION PREVENTIVE COMPOUND

5. Apply a light coat of corrosion preventive compound (Item 90, WP 0157 00) to all areas except contact and mating areas.

WARNING

ISOPROPYL ALCOHOL

6. Wipe contacts and mating surfaces with cotton-tipped applicator (Item 44, WP 0157 00) dampened with isopropyl alcohol (Item 42, WP 0157 00).

CORROSION ON ELECTRICAL CONNECTORS

1. Remove corrosion from connector exterior as follows:
   a. Disassemble connector split-shell by removing assembly nut and cable clamp.
   b. Remove corrosion from split-shell by scrubbing with cleaning and polishing cloth (Item 74, WP 0157 00). Make sure mating surfaces, threads, and shell interior are clean.
   c. Wipe residue with cleaning cloth (Item 73, WP 0157 00).

WARNING

ISOPROPYL ALCOHOL

   d. Apply isopropyl alcohol (Item 42, WP 0157 00) to affected area.

NOTE

For difficult areas, scrub shell with typewriter brush (Item 52, WP 0157 00) or tooth brush (Item 51, WP 0157 00).

   e. Wipe clean with cleaning cloth (Item 73, WP 0157 00).

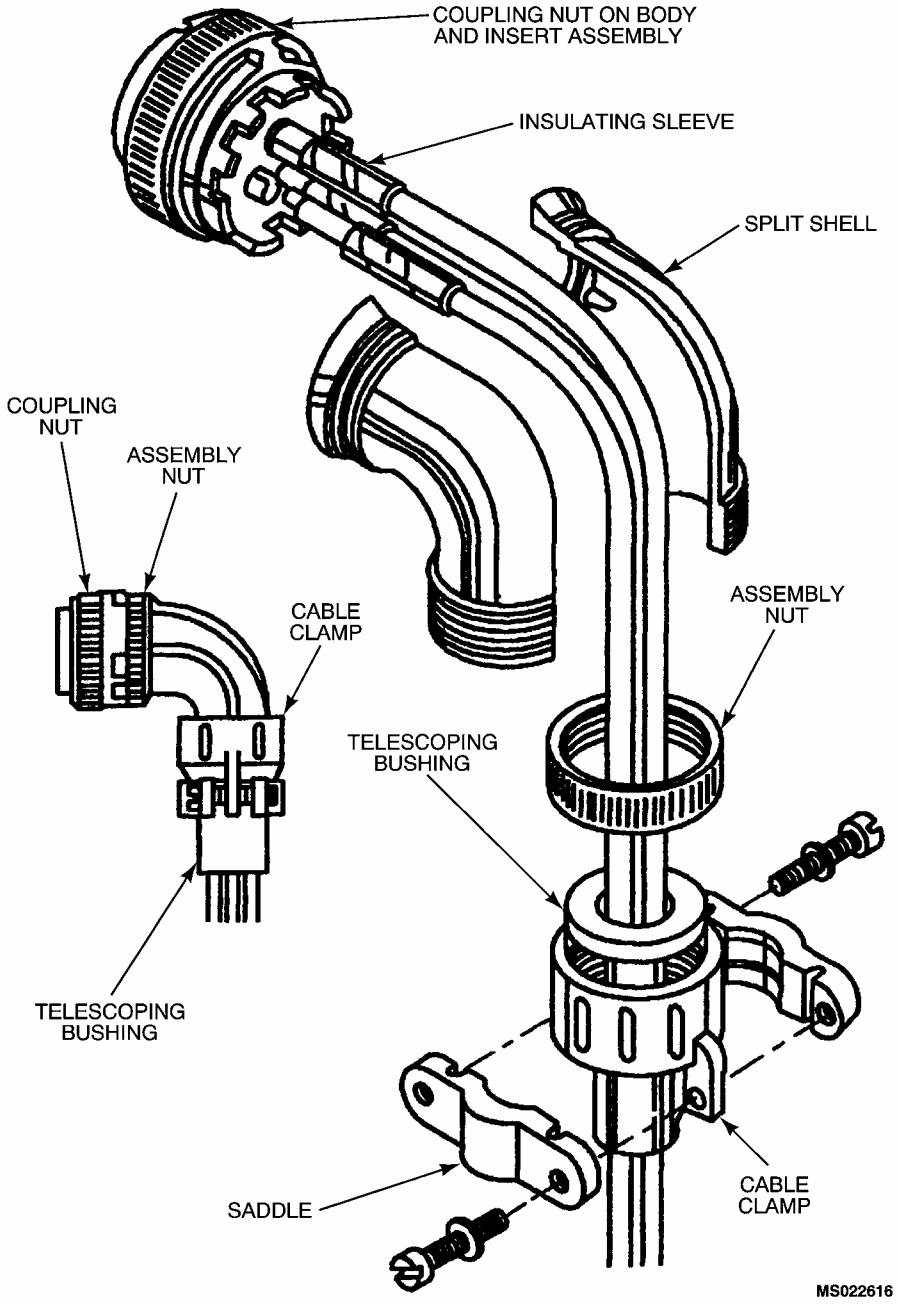


Figure 2. Cannon Plug Class B Connector

CORROSION ON ELECTRICAL CONNECTORS - continued

2. Remove corrosion from connector interior by doing the following:

WARNING

ISOPROPYL ALCOHOL

a. Apply Isopropyl alcohol (Item 42, WP 0157 00) to affected area. Scrub with acid brush (Item 48, WP 0157 00).

NOTE

On most connectors, the receptacle (female) contacts are difficult to clean. If corrosion is found, the most practical solution is pin replacement.

b. Wipe clean with cleaning cloth (Item 73, WP 0157 00).

WARNING

CORROSION PREVENTIVE COMPOUND

CAUTION

Do not substitute water displacing corrosion preventive compound, MIL-C-81309, Type II, or any other corrosion preventive compound for water displacing corrosion preventive compound, MIL-C-81309, Type III (Item 90, WP 0157 00). MIL-C-81309, Type III, is a diluted form of MIL-C-81309, Type II. Both Type II and Type III are nonconductive. MIL-C-81309, Type III, is suitable for use in applications where there is wiping or slipping action on electrical contact points. Where there is no wiping or slipping action, preservative must be removed for proper function of electrical contact points. MIL-C-81309, Type II and Type III, can be removed using isopropyl alcohol (Item 42, WP 0157 00).

NOTE

Use pipe cleaner (Item 63, WP 0157 00) to remove solvent from pin area.

c. Apply a light film of corrosion preventive compound (Item 90, WP 0157 00) to internal sections of connector. Avoid excessive applications of preservative.

d. Apply a light film of corrosion preventive compound (Item 90, WP 0157 00) to threads of shell halves.

e. Assemble connector.

f. Apply a light film of corrosion preventive compound (Item 90, WP 0157 00) to exterior surfaces of connector.

CORROSION ON COAXIAL CONNECTORS

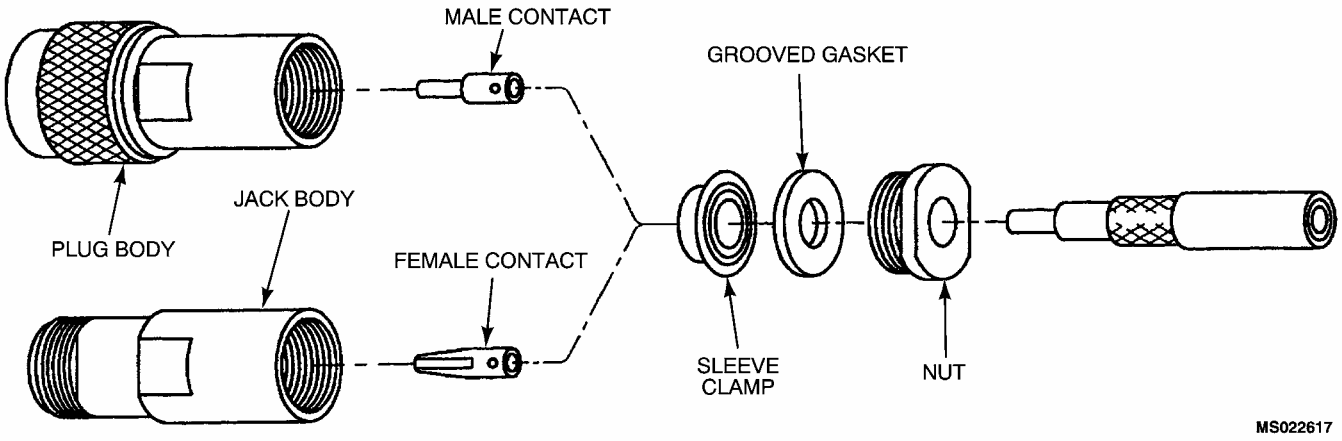


Figure 3. Coaxial Connector

CAUTION

When working with coaxial cable, do not step or place anything heavy on the cable. Do not bend the cable sharply. This may flatten the cable and change its electrical characteristics.

1. Carefully disassemble nut, gasket, and sleeve clamp from plug or jack body.
2. Remove corrosion from connector using cleaning and polishing cloth (Item 74, WP 0157 00).

WARNING

ISOPROPYL ALCOHOL

CORROSION PREVENTIVE COMPOUND

3. Clean affected area with isopropyl alcohol (Item 42, WP 0157 00).
4. Wipe area dry using cleaning cloth (Item 73, WP 0157 00).
5. Apply light coat of corrosion preventive compound (Item 90, WP 0157 00) to repaired area.
6. Reassemble connector.

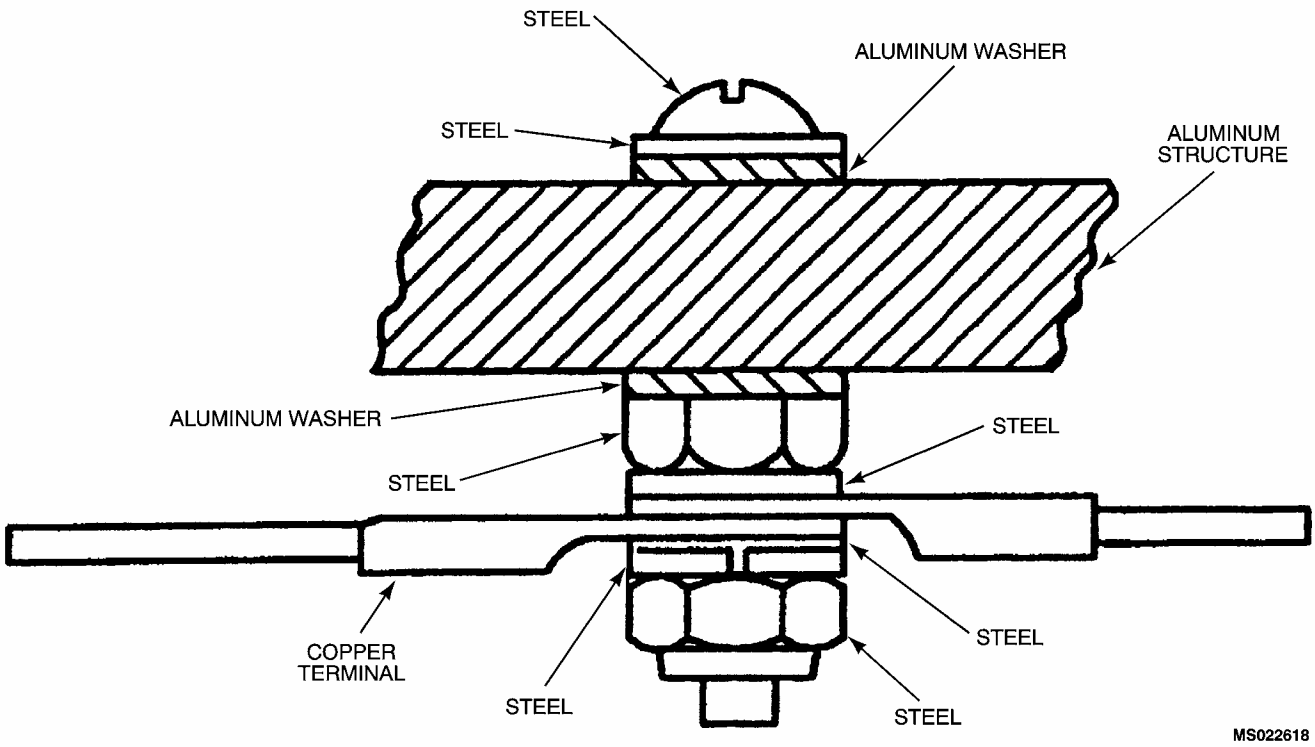


Figure 4. Ground/Bonding Connector

CORROSION ON GROUNDING/BONDING CONNECTORS

NOTE

Steel screw (or bolt), washers and nuts are cadmium plated. Aluminum washers are anodic when assembled in contact with steel and will corrode readily. When corrosion is found on aluminum washers, replace with same type and size.

1. Disassemble grounding/bonding connections, which appear corroded. Note order and position of washers, terminals, and nuts.

NOTE

When cleaning corrosion from grounding/bonding connections, replace corroded aluminum washers with new washers of the same type.

2. Remove corrosion from structure surrounding grounding/bonding attachment using abrasive cloth (Item 1, WP 0157 00) or abrasive mat (Item 2, WP 0157 00).

WARNING

CLEANING COMPOUND, SOLVENT

3. Clean affected area with cleaning solvent (Item 69, WP 0157 00). Wipe dry with cleaning cloth (Item 73, WP 0157 00).

WARNING

PRIMER COATING

NOTE

If corroded area contains aluminum or magnesium, treat affected area with appropriate chemical conversion coating.

4 Apply primer coating (Item 137, WP 0157 00) to treated area.

CORROSION ON GROUNDING/BONDING CONNECTORS - continued

WARNING

ISOPROPYL ALCOHOL

5. Remove corrosion from grounding/bonding strap with low-lint cleaning cloth (Item 75, WP 0157 00) wet with isopropyl alcohol (Item 42, WP 0157 00). If necessary, scrub strap with typewriter brush (Item 52, WP 0157 00) until corrosion is removed.

6. Wipe strap clean with cleaning cloth (Item 73, WP 0157 00).

WARNING

CORROSION PREVENTIVE COMPOUND

SEALING COMPOUND

NOTE

For grounding/bonding connections that require frequent disassembly, apply a light coat of corrosion preventive compound (Item 90, WP 0157 00) followed by a coat of corrosion preventive compound (Item 94, WP 0157 00) to connection area. For grounding/bonding connections that seldom require disassembly, apply sealing compound (Item 164 or Item 162, WP 0157 00).

7. Apply corrosion preventive compound (Item 87, WP 0157 00) to grounding/bonding strap.

CORROSION ON ANTENNAS

1. Remove antenna per TM 11-1520-240-23.

WARNING

CLEANING COMPOUND, SOLVENT

2. Clean any grease, oil, or dirt from antenna and mounting area using cleaning cloth (Item 73, WP 0157 00) and cleaning solvent (Item 69, WP 0157 00).

3. Remove corrosion from antenna, antenna mount, and mounting surface using abrasive mat (Item 2, WP 0157 00).

4. Clean antenna, antenna mount, and antenna to-helicopter contact area using cleaning cloth (Item 73, WP 0157 00) dampened with solution of nine parts water to one part cleaning compound (Item 66, WP 0157 00).

CORROSION ON ANTENNAS -continued

5. Rinse area using cleaning cloth (Item 73, WP 0157 00) wet with fresh water.

WARNING

ISOPROPYL ALCOHOL

6. Spray affected areas of antenna components with isopropyl alcohol (Item 42, WP 0157 00). Wipe off residue with cleaning cloth (Item 73, WP 0157 00). Allow to air dry.

7. Treat aluminum surfaces per WP 0078 00 and TM 55-1500-345-23.

8. Install antenna per TM 11-1520-240-23.

CORROSION ON PITOT-STATIC TUBES

WARNING

BERYLLIUM

NOTE

Pitot-Static riser contains beryllium. Do not blast, weld, or cut.

1. If painted, mask and strip per WP 0076 00. Mask pitot-static head and fittings on mount area, leaving copper-beryllium riser bare. No leakage allowed.

2. Mask with plastic coating compound (Item 131, WP 0157 00) as before. No leakage allowed. Strip plating per MIL-STD-871 using Solution 14.

3. Rinse in high-pressure water. Repeat step 2 if plating is still present.

4. Immerse tube in water and using abrasive mat (Item 2, WP 0157 00) and pumice (Item 147, WP 0157 00), clean by hand.

5. Blow-dry using high-pressure air.

6. Paint IAW TM 55-1500-345-23.

END OF WORK PACKAGE

DEPOT MAINTENANCE WORK REQUIREMENT
CH-47D HELICOPTER
FINISHING METAL PARTS

INITIAL SETUP

Test Equipment:
As Required

Tools and Special Tools:
As Required

Material/Parts:
Abrasive, Paper, (Item 5, WP 0157 00)
Cleaning Compound, Solvent (Item 69, WP 0157 00)
Cloth, Cleaning (Item 73, WP 0157 00)
Lacquer, Acid-resistant (Item 116, WP 0157 00)
Lacquer, Clear (Item 117, WP 0157 00)
Lacquer, Lusterless Black (Item 118, WP 0157 00)
Naphtha, Aromatic (Item 123, WP 0157 00)
Paper, Wrapping (Item 129, WP 0157 00)
Primer, Epoxy (Item 140, WP 0157 00)
Primer, Wash (Item 145, WP 0157 00)
Tape, Masking (Item 175, WP 0157 00)
Tape, Pressure Sensitive (Item 179, WP 0157 00)
Toluene, Technical (Item 189, WP 0157 00)
Walkway Material, Type I (smooth) black, color No. 37038 (Item 191, WP 0157 00)

Material/Parts: - continued
Walkway Material, Type I (smooth) gray, color No.36231 (Item 192, WP 0157 00)
Walkway Material, Type II (rough) black, color No.37038 (Item 193, WP 0157 00)
Walkway Material, Type II (rough) gray, color No.36231 (Item 194, WP 0157 00)
Xylene (Item 197, WP 0157 00)

Personnel Required:
As Required

References:
TM 1-1500-204-23 Series
TM 1-1500-344-23
TM 55-1500-345-23
TM 55-1520-240-23 Series
WP 0149 00
WP 0157 00

Equipment Conditions:
As Required

Special Environmental Condition:
As Required

INTERIOR STRUCTURES, DETAIL, OR REPAIR PARTS - NONFAYING SURFACES AND SIMILAR METAL CONTACT

Prior to the installation of interior repair or replacement parts, which will not be contacting surfaces of a dissimilar metal, a primer finish, as described in subsequent steps should be applied.

WARNING

EPOXY PRIMER

1. Apply one coat of epoxy primer (Item 140, WP 0157 00) to aluminum alloy parts and two additional coats in the following areas:
   a. Entire cockpit fuselage section under cockpit floor, from forward canted bulkhead to sta 160 including bottom of floor.
   b. Entire cabin fuselage section under floor, from sta 160 to sta 440 excluding bottom of floor.

INTERIOR STRUCTURES, DETAIL, OR REPAIR PARTS - NONFAYING SURFACES AND SIMILAR METAL CONTACT - continued

c. Entire aft fuselage section under floor, from sta 440 to sta 482 excluding bottom of floor, and all internal areas from WL 0 downward, between sta 502 and sta 554, except where a final finish is required.

d. Entire cargo loading ramp under floor, except bottom of floor.

e. Entire pod installation, from WL 0 downward, including wheel wells, except areas to be finished same as external areas.

WARNING

EPOXY PRIMER

NOTE

Refer to WP 0149 00 for Stripping and Reapplication of Coatings in the CH-47 Bilge Area, sta 95 to sta 495.

2. Apply three coats of epoxy primer (Item 140, WP 0157 00) to magnesium alloy parts, except as noted in step (3) unless a final finish coating is to be applied. In this case, only two coats are required. Apply one coat of wash primer (Item 145, WP 0157 00) to magnesium alloy forging prior to application of epoxy primer.

3. Apply one coat of wash primer (Item 145, WP 0157 00) and a heavy coat of epoxy primer (Item 140, WP 0157 00) to extruded ZK60 magnesium alloy parts.

4. Apply one coat of wash primer (Item 145, WP 0157 00) and one coat of epoxy primer (Item 140, WP 0157 00) to cadmium-plate and un-plated carbon and low-alloy steel parts.

INTERIOR STRUCTURES, DETAIL, AND REPAIR PARTS - FAYING SURFACES DISSIMILAR METALS

Prior to assembly of repair or replacement parts, make sure that all existing corrosion has been removed in area and that parts are properly insulated one from the other.

1. Where corrosion exists, remove the corrosive products and finishes at external lap joints.

WARNING

EPOXY PRIMER

2. Where magnesium alloys are involved, apply a minimum of two coats of epoxy primer (Item 140, WP 0157 00) on each faying surface. In addition insert pressure sensitive tape (Item179, WP 157 00) between faying surfaces. Pressure sensitive tape must extend beyond the edge of faying surfaces at least 1/4 inch. If trimmed close, the tape will not insulate properly. Where use of tape is impractical, assemble parts wet with epoxy primer (Item 140, WP 0157 00) and provide an adequate primer fillet at joined boundaries.

3. Where steel alloys are involved, apply two coats of epoxy primer (Item 140, WP 0157 00) to each surface.

4. Apply an additional coat of epoxy primer (Item 140, WP 0157 00) on exterior edges of faying surfaces where magnesium and steel alloy parts are assembled.

5. Install all rivets, bolts, nuts, and washers wet with epoxy primer (Item 140, WP 0157 00).

6. Apply an additional coat of epoxy primer (Item 140, WP 0157 00) to heads of aluminum alloy rivets driven through corrosion-resistant steel.

FINAL FINISH - INTERIOR METAL STRUCTURES

After priming, repair or replacement parts should have a final finish applied to match adjacent structures. The final finish may be applied before or after assembly of the detail part.

WARNING

LACQUER

1. Finish all parts of cockpit fuselage section, which will reflect in windshields, including switch panels, with one coat of lacquer (Item 118, WP 0157 00).

2. Finish all other parts that will be exposed after assembly such as floors, walls, seats, console, pedestal, foot pedals, and instrument panels and apply internal markings. Refer to TM 55-1500-345-23.

FINAL FINISH - EXTERIOR METAL STRUCTURES

All exteriors finish and markings shall be applied IAW TM 55-1500-345-23.

FINISHING OF IMPREGNATED GLASS PARTS

Subsequent information is provided for the refinishing of all impregnated glass cloth parts, except the rotary-wing blades, which are to be refinished IAW TM 55-1520-240-23.

WARNING

NAPHTHA

1. Wash part three times using cleaning cloth (Item 73, WP 0157 00) soaked with naphtha, aromatic (Item 123, WP 0157 00).
2. Rub part lightly with abrasive paper (Item 5, WP 0157 00).
3. Repeat step (1).

WARNING

EPOXY PRIMER

4. Apply one coat of epoxy primer (Item 140, WP 0157 00).

WARNING

LACQUER

5. Apply two coats of lacquer. The color must match adjacent structures.

ACID PROOFING

WARNING

EPOXY PRIMER

Surfaces subject to acid spillage or spray within 12 inches of lead acid storage batteries (if used) and those surfaces within 24 inches of relief tubes should be given one coat of epoxy primer (Item 140, WP 0157 00) and a finish coat of acid-resistant lacquer (Item 116, WP 0157 00). The color of the lacquer (black or white), should afford maximum contrast with adjacent areas.

DECAL OVERCOATING

Subsequent information is provided for the over-coating of decals used aft of sta 440, interior and exterior, to prevent deterioration.

WARNING

NAPHTHA

1. Remove all oil or other contamination from decal and clean area approximately 6-inches wide, around decal, using cleaning cloth (Item 73, WP 0157 00) soaked with naphtha, aromatic (Item 123, WP 0157 00).

2. If decal cannot be cleaned satisfactorily replace it or use stenciled lacquer markings. Stenciled lacquer markings must be used when rework is required for "STEP" legends.

WARNING

LACQUER

CAUTION

Do not apply lacquer wet or heavy as edge lifting of the decal can result.

3. Apply a 0.001-inch dry film thickness of lacquer (Item 117, WP 0157 00) to decal. Spraying a minimum of four passes should achieve this thickness.

WALKWAYS

Subsequent steps contain information on the application of Type 1 (Smooth) and Type II (Rough) walkway materials (Items 191, 192, 193, and 194, WP 0157 00). Where reference is made throughout the manual to these steps, the type material, color, and the number of coats, as specified in the referencing paragraphs should be used.

1. Remove all wax, grease, oil, dirt, and other foreign material from areas to be coated.

WARNING

CLEANING SOLVENT, GENERAL PURPOSE

2. Clean metal surfaces with a cleaning cloth (Item 73, WP 0157 00), soaked in cleaning solvent (Item 69, WP 0157 00).

3. Mask adjacent areas using masking tape (Item 175, WP 0157 00), and wrapping paper (Item 129, WP 0157 00).

WALKWAYS - continued

WARNING

EPOXY PRIMER

4. Spray two coats of epoxy primer (Item 140, WP 0157 00). Allow each coat to dry.

5. Prepare desired type and color of walkway material in accordance with manufacturer's directions on container.

WARNING

TOLUENE

XYLENE

6. Apply an initial, thin, uniform coat of walkway material to primed surfaces. Allow it to dry thoroughly.

NOTE

Walkway materials should be applied un-thinned. However, the material may be thinned with either toluene (Item 189, WP 0157 00) or xylene (Item 197, WP 0157 00) for brushing or spraying purposes.

Type 1 (Smooth) walkway material (Items 191 or 192, WP 0157 00) may be applied with a brush or spray. Type II (Rough) walkway materials (Items 193 or 194, WP 0157 00) should be applied with a brush.

7. Apply successive coats in liberal quantities. Brush or spray on quickly. Cover a relatively small area at a time.

8. Allow each coat to dry thoroughly with a minimum of 30 minutes between coats. Avoid brushing or spraying over same-coated area immediately after it has been applied.

9. Apply approximately four to five brush coats or a maximum of 10 spray coats after initial coat, unless otherwise noted.

10. Allow coated surface to air-dry a minimum of 1 hour before handling. Allow a minimum of 24 hours drying time before subjecting coated surface to light traffic. Maximum hardness is attained after approximately 7 days of air-drying.

11. Sand edges of coated surface to feather in with adjacent areas.

AIRFRAME PAINT REQUIREMENTS

Table 1 lists paint specifications for the different areas of the helicopter. Refer to TM 55-1500-345-23 for specifics.

Table 1. Paint Requirements

AREA OR DETAILS	PAINT COLOR, TYPE AND SPECIFICATION	NUMBER OF COATS
Interior and exterior overall and all details	Epoxy Primer, TYPE I MIL-P-23377	One
Interior airframe of tub (sta 52 to sta 485)	Corrosion Preventive Compound, MIL –C-85054, Or Clean Polyurethane, MIL-C-83286	One
Exterior top coat-overall	Aircraft Green Aliphatic Polyurethane, NO 34031, MIL-C-46168	Two
Cabin floor undercoat	Epoxy Primer, TYPE 1, MIL-L-23377	One
Cabin interior top coat	Gray, Aliphatic Polyurethane, MIL-C-46168	Two
Cockpit interior top coat	Black, Aliphatic Polyurethane, No. 37038, MIL-C-46168	Two
Cabin emergency handle and letter markings	Orange Yellow Aliphatic Polyurethane, No. 33538, MIL-C-46168	One
Cabin emergency handle and letter markings emergency exit markings	Orange Yellow Aliphatic Polyurethane, No. 33538, MIL-C-46168	One
Cockpit glare shield stencil	White Epoxy Paint, No. 37875, MIL-C-22750	One
Stencils, step markings	Lusterless Black Aliphatic Polyurethane, No. 37038, MIL-C-46168	Two
Engine exhaust area	Lusterless Black Aliphatic Polyurethane, No. 37038, MIL-C-46168	Two
Battery area	Protective Neoprene Coating, No. N700-9, MIL-C-7439	Three
Walkways, steps, platforms, gunners window sill	Black, Non-Skid Coating, No. 37038, MIL-D-23003, Type II	Two
Cabin floor strips	Dark Gull Gray, Non-Skid Coating, No. 36231	One
Internal mechanical parts, control systems, linkages and supports, bellcranks levers, servos, etc	Lusterless Gray, MIL-C-46168, NO. 36321	Two
Pilot and copilot seat and frame assembly	Epoxy Polyamide Primer, MIL-P-23377, Type II Lusterless Black Aliphatic Polyurethane Coating MIL-C-46168, Type II, FED STD 595B, Color No. 37038	One mist coat One mist coat

END OF WORK PACKAGE

DEPOT MAINTENANCE WORK REQUIREMENT

CH-47D HELICOPTER

APPLICATION OF TAPES

INITIAL SETUP

Test Equipment:
As Required

Tools and Special Tools:
As Required

Material/Parts:
Acetone, Technical (Item 20, WP 0157 00)
Activator (Item 21, WP 0157 00)
Adhesive (Item 23, WP 0157 00)
Cleaning Compound, Solvent (Item 69, WP 0157 00)
Cloth, Cleaning (Item 73, WP 0157 00)
Naphtha, Aliphatic (Item 122, WP 0157 00)
Tape, Masking (Item 175, WP 0157 00)
Tape, Anti-chafing Tape (Item 180, WP 0157 00)
Tape, Velcro (Item 181, WP 0157 00)
Thread, Nylon (Item 185, WP 0157)

Personnel Required:
As Required

References:
TM 1-1500-204-23 Series
TM 55-1520-240-23 Series
WP 0157 00

Equipment Conditions:
As Required

Special Environmental Condition:
As Required

SCOPE

This work package provides removal and installation procedures for anti-chaffing tape and velcro tape.

APPLICATION OF ANTI-CHAFING TAPE

Anti-chafing tape (Item 180, WP 0157 00) is used if a smooth, nonabrasive surface is desired over rivet heads and seams.

CAUTION

Exposure of anti-chafing tape (Item 180, WP 0157 00) to sunlight for 4 hours will destroy its adhesive qualities. Storage of unused tape should be in a cool dark area.

1. Remove all burrs, rough and sharp edges, and loose primer in area to be taped.

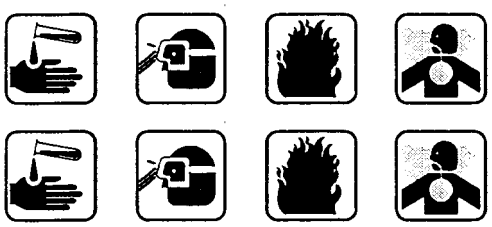
WARNING

EYE INJURY

2. Using an air blast, brush or dry cloth, remove loose metal clips, dust, and primer scale.

APPLICATION OF ANTI-CHAFING TAPE – continued

WARNING



CLEANING COMPOUND, SOLVENT

NAPHTHA, ALIPHATIC

NOTE

Cleaning solvent (Item 69, WP 0157 00) may be substituted for naphtha, aliphatic (Item 122, WP 0157 00). The solvent must be wiped dry and not allowed to evaporate on surfaces.

3. Using a cleaning cloth (Item 73, WP 0157 00) moistened with naphtha, aliphatic (Item 122, WP 0157 00), wipe all surfaces to be taped.

4. Repeat step 3 at least two times or until the surfaces are clean.

NOTE

Lengths of tape should be cut to allow protective paper line to extend beyond cut edge. This will make it easier to remove tape. Continuous lengths of tape should be used whenever possible.

5. Cut a length of tape as follows:

   a. If protrusions are less than 1/4-inch high, the tape should be cut to extend 1 to 2 inches each side of the protrusion.

   b. If protrusions are higher than 1/4-inch, the tape should be cut to extend 1½ to 2 inches each side of the protrusion.

6. Remove liner from tape.

CAUTION

The activator (Item 21, WP 0157 00) may have a harmful effect on some materials. Therefore, precautionary measures should be taken to prevent activator or items dampened with activator from contacting other materials.

7. Pour a sufficient amount of activator (Item 21, WP 0157 00) into a pan.

8. Use a wooden applicator to apply activator with a wiping motion. Apply activator to adhesive side of tape.

NOTE

All edges must be firmly bonded to surface. Small blisters and voids must be kept to a minimum. Voids around rivet and screw heads are permissible.

9. Apply activated tape to cleaned surfaces by starting tape at one end and pressing it down firmly. Smooth tape down with a wooden scraper and work tape from center to edge with sufficient pressure to eliminate air pockets and wrinkles and to ensure good adhesion.

REMOVAL OF ANTI-CHAFING TAPE

Rejected or improperly applied tape should be removed as follows:

WARNING

ACETONE, TECHNICAL

1. Saturate tape with acetone, technical (Item 20, WP 0157 00) Allow a few minutes for tape to soak. Then, carefully peel tape from surface.

2. Apply new tape.

APPLICATION OF VELCRO TAPE

NOTE

Tape must be applied to fabrics by stitching with nylon thread (Item 185, WP 0157 00) IAW ASTM-D-6193.

This procedure is used for the application of pre-coated adhesive-backed or un-coated Velcro hook and pile tape. This fastener is used for attachment and repair of sound proofing blankets and coverings.

WARNING

CLEANING COMPOUND, SOLVENT

1. Clean surface to where tape is to be applied. Use cleaning cloth (Item 73, WP 0157 00) soaked with cleaning compound, solvent (Item 69, WP 0157 00). Wipe surface with dry cloth before solvent evaporates.

2. Apply masking tape (Item 175, WP 0157 00) around surface to be covered.

WARNING

ADHESIVE

NOTE

For best results surface should be bare of prime-coat.

For adhesive shell life and storage procedures, refer to the manufacturers recommendations.

3. Brush a coat of adhesive (Item 23, WP 0157 00) to masked surfaces and Velcro tape (Item 181, WP 0157 00).
4. Press tape in place within five minutes of adhesive application, but not sooner than one minute.

APPLICATION OF VELCRO TAPE - continued

5. If tape is too long, insert a piece of wood between tape and coated surface. Trim tape with a sharp knife.

NOTE

Small voids around rivet and screw heads are permissible.

6. Check for acceptable bonding by gently pulling edges of tape with fingernail.

END OF WORK PACKAGE

DEPOT MAINTENANCE WORK REQUIREMENT
CH-47D HELICOPTER
FUSELAGE SEALING

INITIAL SETUP

Test Equipment:
As Required

Tools and Special Tools:
Trip Balance, NSN 6670-00-401-7195
3M Spray Gun (T170)

Material/Parts:
Abrasive Acetone, Technical (Item 20, WP 0157 00)
Brush (Item 50, WP 0157 00)
Cleaning Compound (Item 64, WP 0157 00)
Cleaning Compound, Windshield (Item 65, WP 0157 00)
Cleaning Compound, Solvent (Item 69, WP 0157 00)
Cloth, Cleaning (Item 73, WP 0157 00)
Cloth, Flannel (Item 77, WP 0157 00)
Epoxy Topcoat (Item 100, WP 0157 00)
Gloves (Item 108, WP 0157 00)
Corrosion Resistant, Alodine (Item 95, WP 0157 00)
Naphtha, Aliphatic (Item 122, WP 0157 00)
Epoxy Primer ((Item 140, WP 0157 00)
Sealant, Pro Seal 700 (Item 157, WP 0157 00)
Sealant (Item 160, WP 0157 00)

Personnel Required:
As Required

References:
TM 1-1500-204-23 Series
TM 55-1520-240-23 Series
WP 0157 00

Equipment Conditions:
As Required

Special Environmental Condition:
As Required

SCOPE

This work package provides procedures for fuselage sealing, preparation, and acceptable sealants.

SEALING PROCESS

1. Seal all fuselage external joints, seams, holes, skin laps, and fasteners. Refer to Fuselage Sealing, Figure 1 thru Figure 12 and Acceptable Sealants, Table 1.

2. Perform all operations, such as fitting, drilling, countersinking, deburring, or other rework before sealing. Mating surfaces are especially important. Cleaned area shall be larger than area to be sealed.

3. Prepare surface as follows:

   a. Clean acrylic plastic surfaces such as windshields and panes. Use flannel cloth (Item 77, WP 0157 00) and cleaning compound, windshield (Item 65, WP 0157 00) or cleaning compound (Item 64, WP 0157 00).

SEALING PROCESS - continued

WARNING

ACETONE, TECHNICAL

b. Clean plastic-impregnated glass cloth parts. Use cleaning cloth (Item 73, WP 0157 00) soaked with acetone, technical (Item 20, WP 0157 00). Dry parts using cleaning cloth (Item 73, WP 0157 00). Wear gloves (Item 108, WP 0157 00).

WARNING

CLEANING COMPOUND, SOLVENT

c. Clean all metal surfaces to be sealed, with cleaning cloth (Item 73, WP 0157 00) soaked with cleaning compound, solvent (Item 69, WP 0157 00).

d. Dry area before solvent evaporates. Use cleaning cloth (Item 73, WP 0157 00).

NOTE

Three solvent applications should be enough.

e. Repeat steps c and d until cleaning cloth stays clean.

WARNING

ALIPHATIC NAPHTHA

f. Clean metal surfaces with aliphatic naphtha (Item 122, WP 0157 00) when using sealant.

g. Scuff-sand zinc chromate primed areas with abrasive paper (Item 12 or finer, WP 0157 00).

WARNING

ALODINE

h. Apply a coat of alodine (Item 95, WP 0157 00) to prepared area. Use brush (Item 50, WP 0157 00).

SEALING PROCESS - continued

Table 1. Acceptable Sealants

SEALING COMPOUND	WORKING LIFE (HOURS)	CURE TIME (HOURS (NOTE 1)	USE METHOD OF APPLICATION
PRO9021A (Item 161)	1	36	
PRO9021A-2 (Item 161)	2	44	
PROSEAL719A-2 (Item 158)	2	44	Note 3
PRO9021A-4 (Item 161)	4	72	
Sealing Compound, Type II, Cl B (Item 160)	0.5	10	
PROSEAL 896 (Item 159)	2	48	Note 5
PROSEAL 700 (Item 157)	24	168	Note 6
Sealant (Item 160)	0	1 for Spray	Note 7
Sealant (Item 160)	0	2 for Brush	Note 7
Epoxy Primer (Item 140)	0	1 to 2	Note 7
Epoxy Topcoat (Item 100)	0	1	Note 7

NOTES

1. Cure temperature is 77 degree F (25 degree C) unless otherwise noted.
2. Mix sealing compound in accordance with instructions on container.
3. Apply with brush for fastener sealing.
4. Apply with pressure gun or wood spatula for fillets and mating surfaces.
5. Apply with pressure gun or wood spatula for hole filling.
6. Apply with pressure gun or wood spatula for firewall sealing only.
7. Apply with pressure gun or brush for coating/sealing.

PREPARATION OF TWO-PART SEALANT

Prepare two-part sealant as follows:

WARNING

SEALING COMPOUND

1. Weigh components of sealants listed in Acceptable Sealants, Table 1.

NOTE

Avoid whipping, which entraps air. Avoid overheating when using mixing machine. Overheating shortens storage and working life.

2. Mix components completely until color is uniform and free of streaks.

STORAGE OF PREPARED SEALANT

Store prepared sealant as follows:

STORAGE OF PREPARED SEALANT - continued

1. Refrigerate mixed sealing compounds, which cannot be used within the working life specified in Table 1. Refrigerate for 2 weeks maximum at 40 degree F (4 degree C).

NOTE

Thawing will usually take 20 to 30 minutes. For quicker thawing, place sealant in water at 120 degree F (49 degree C) for 10 minutes.

2. Allow sealants to warm to minimum of 60 degree F (16 degree C) before using. Working life of thawed sealants is same as freshly mixed sealants.

APPLICATION OF SEALANT

WARNING

EPOXY PRIMER

SEALING COMPOUND

Apply epoxy primer (Item 140, WP 0157 00) and sealant (Item 160, WP 0157 00) as follows:

1. Apply coat of epoxy primer (Item 140, WP 0157 00) and allow drying.

WARNING

EPOXY PRIMER

2. Apply a light coat of epoxy primer (Item 140, WP 0157 00). Allow epoxy to dry.
3. Apply two coats of epoxy topcoat (Item 100, WP 0157 00). Allow epoxy topcoat to dry between coats.

WARNING

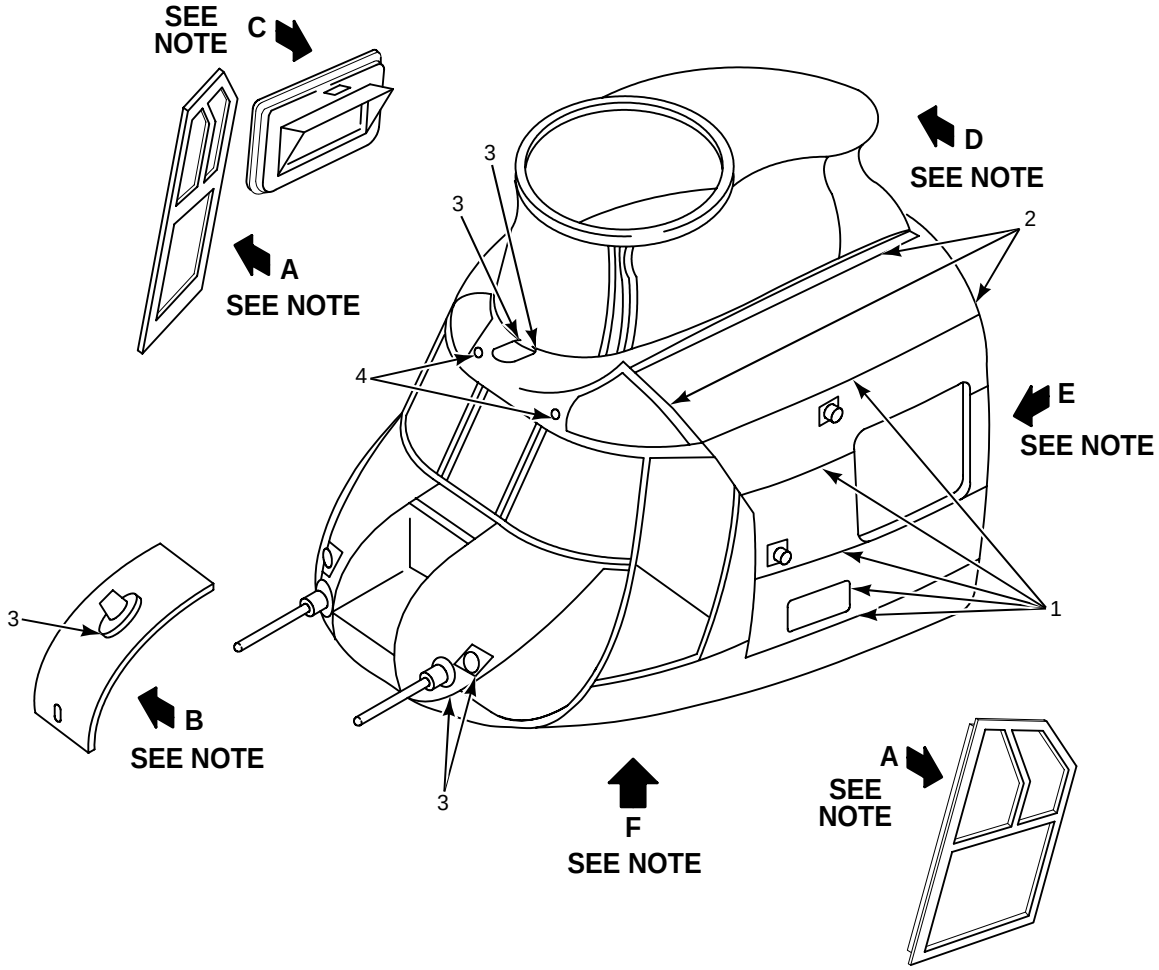
SEALING COMPOUND

NOTE

Do not use sealant (Item 160, WP 0157 00) if lumps, gel, grit or foreign materials are present, or if shrinking occurs.

4. Stir sealant (Item 160, WP 0157 00).
5. Apply sealant (Item 160, WP 0157 00) to areas described in the following figures.

APPLICATION OF SEALANT - continued

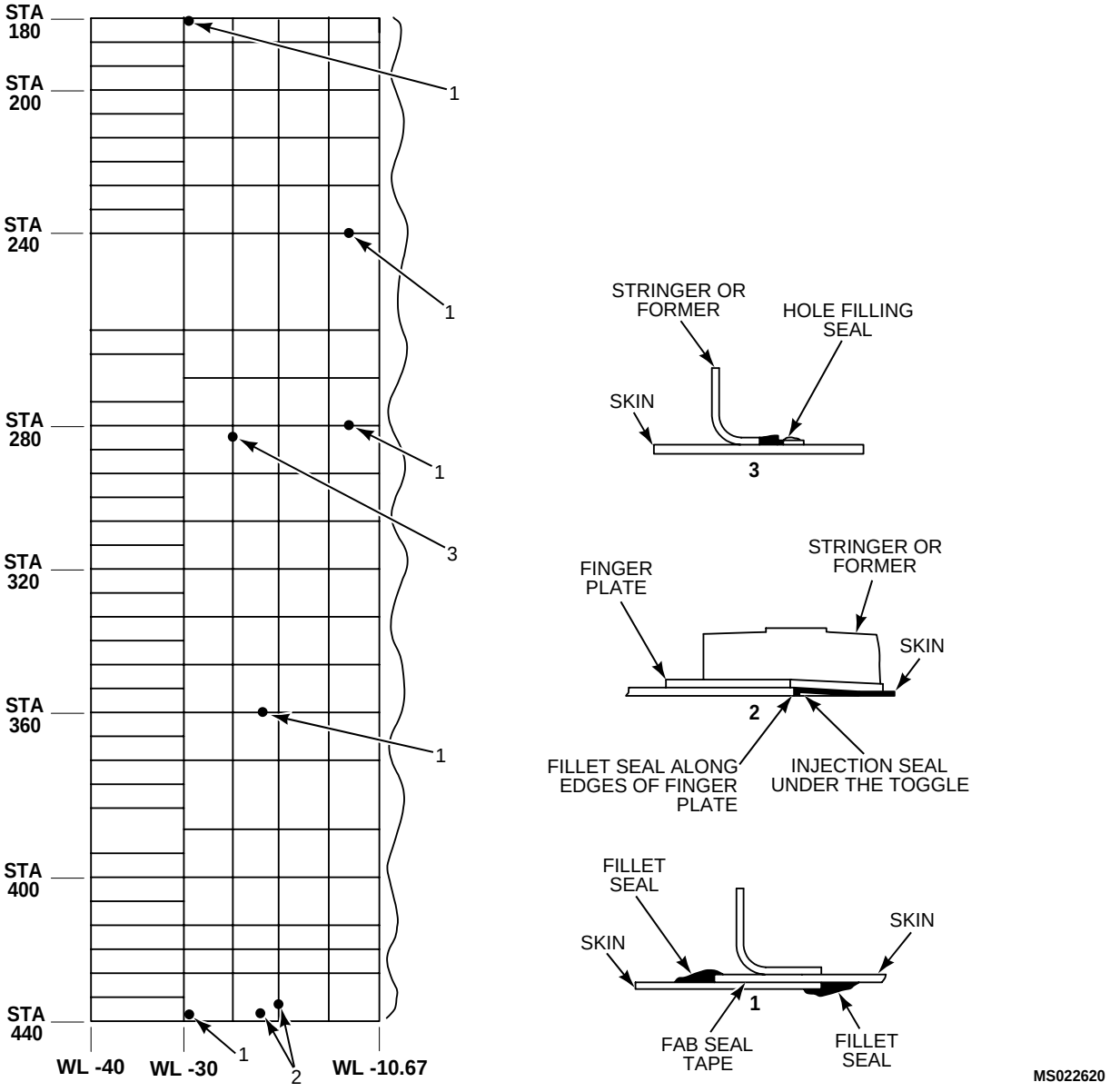


NOTES

A. Mating surface sealant between skin lap.
B. Mating surface sealant between skin and part.
C. Fillet seal along edge.
D. Fillet seal around windshield wiper post.
E. See the following Figures for A thru F detail views.

Figure 1. Fuselage Sealing

APPLICATION OF SEALANT - continued

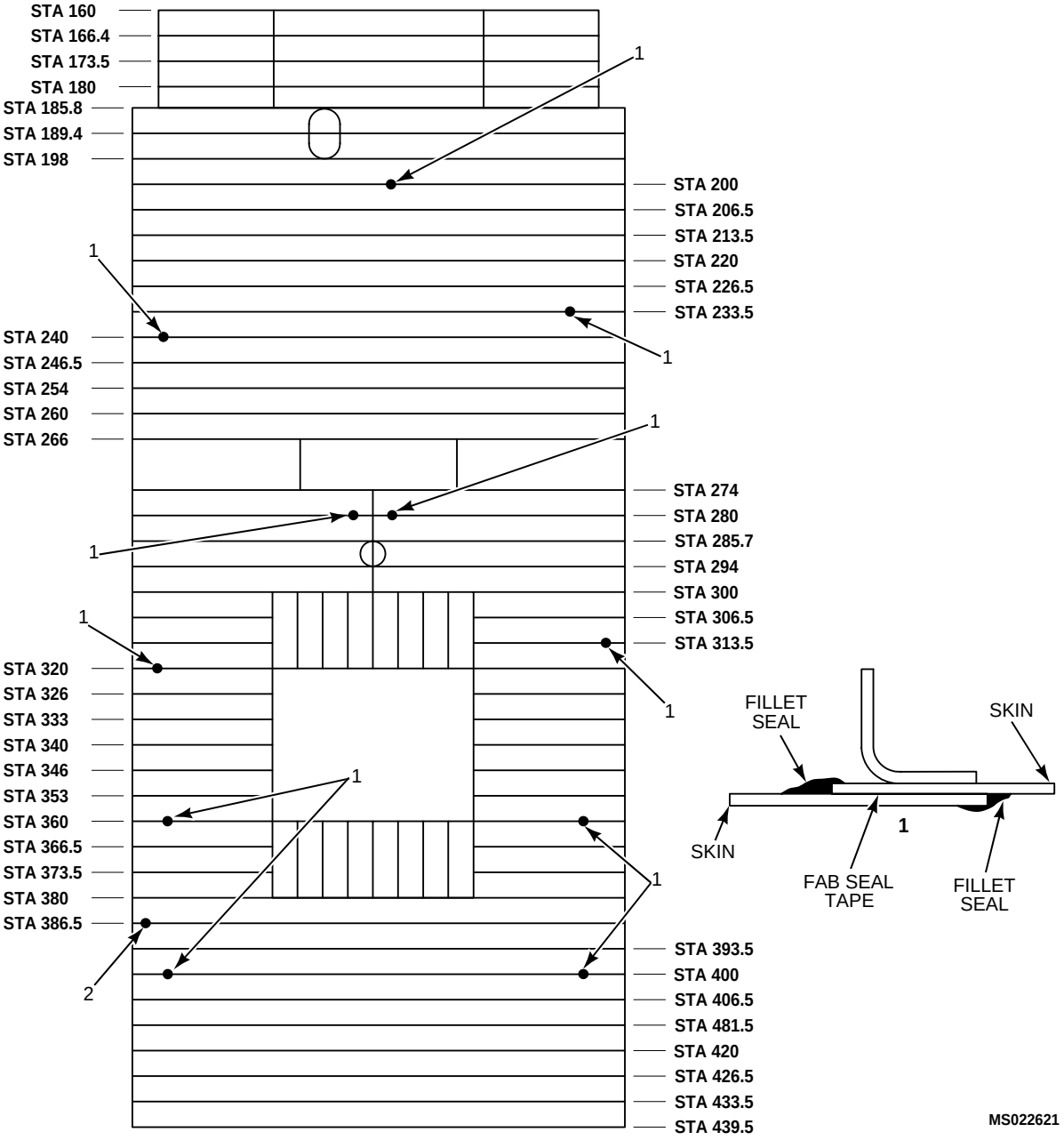


NOTES

1. Apply fillet seal along inside and outside edges of skins. If original skin joint sealant is Fabseal Tape, then:
   a. Skins sealed with faying surface sealant require no additional sealing.
   b. Fillet sealing not required inside fuselage if sealant, (Item 160, WP 0157 00), is used.
2. Seal all edges of fingerplates with fillet seal and fill space under stringer or former joggles with injection seal. Fillet sealing not required inside fuselage if sealant, (Item 160, WP 0157 00), is used.
3. Inspect all structural members for open holes. Fill each hole with hole filling seal. Fillet sealing not required inside fuselage if sealant, (Item 160, WP 0157 00), is used.

Figure 2. Fuselage Sealing

APPLICATION OF SEALANT - continued

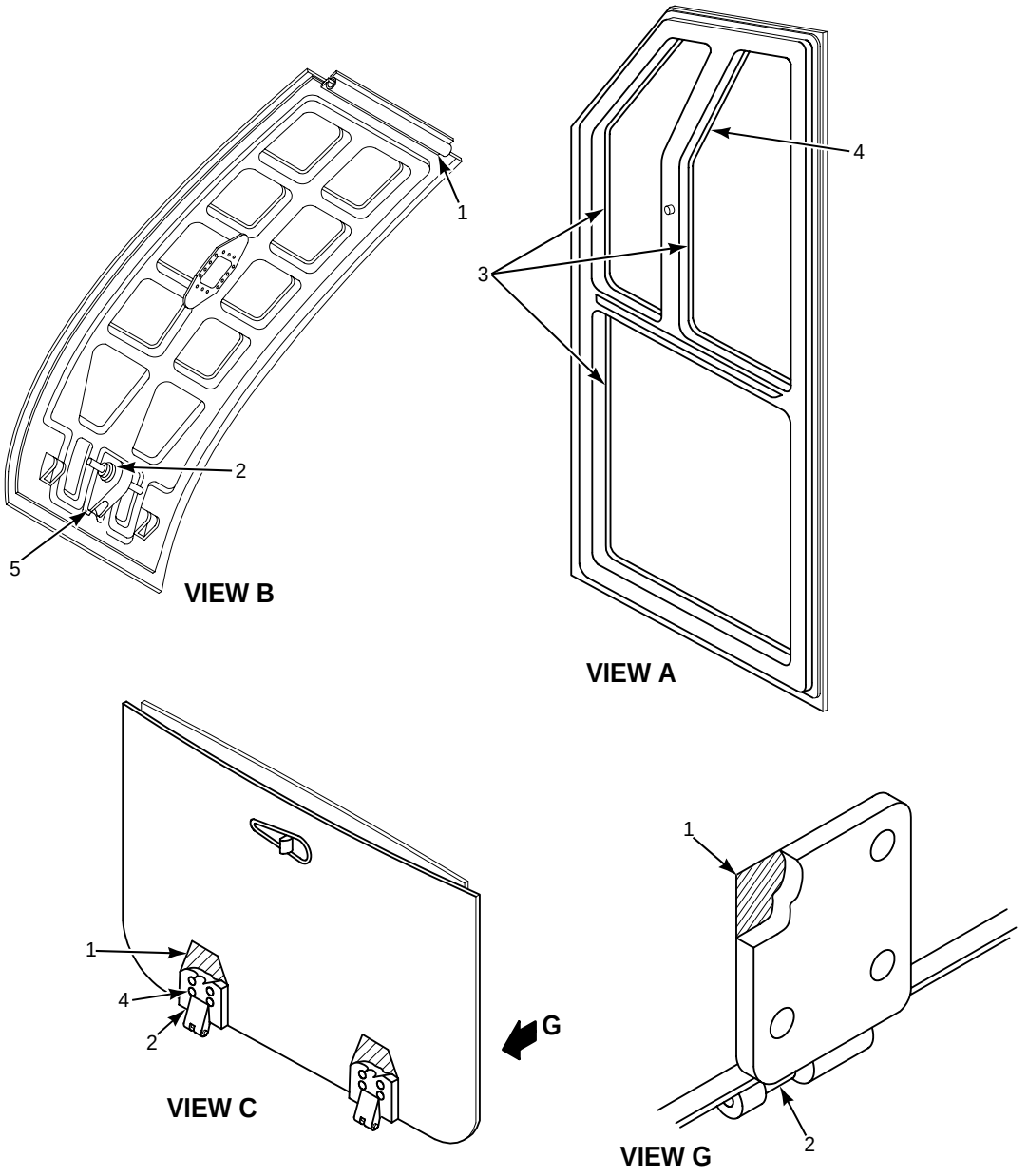


NOTES

1. Apply fillet seal along inside and outside edges of skins. If original skin joint sealant is Fabseal Tape, then:
   a. Skins sealed with faying surface sealant require no additional sealing.
   b. Fillet sealing not required inside fuselage if sealant, (Item 160, WP 0157 00), is used.
2. Seal all edges of fingerplates with fillet seal and fill space under stringer or former joggles with injection seal. Fillet sealing not required inside fuselage if sealant, (Item 160, WP 0157 00), is used.

Figure 3. Fuselage Sealing

APPLICATION OF SEALANT – continued

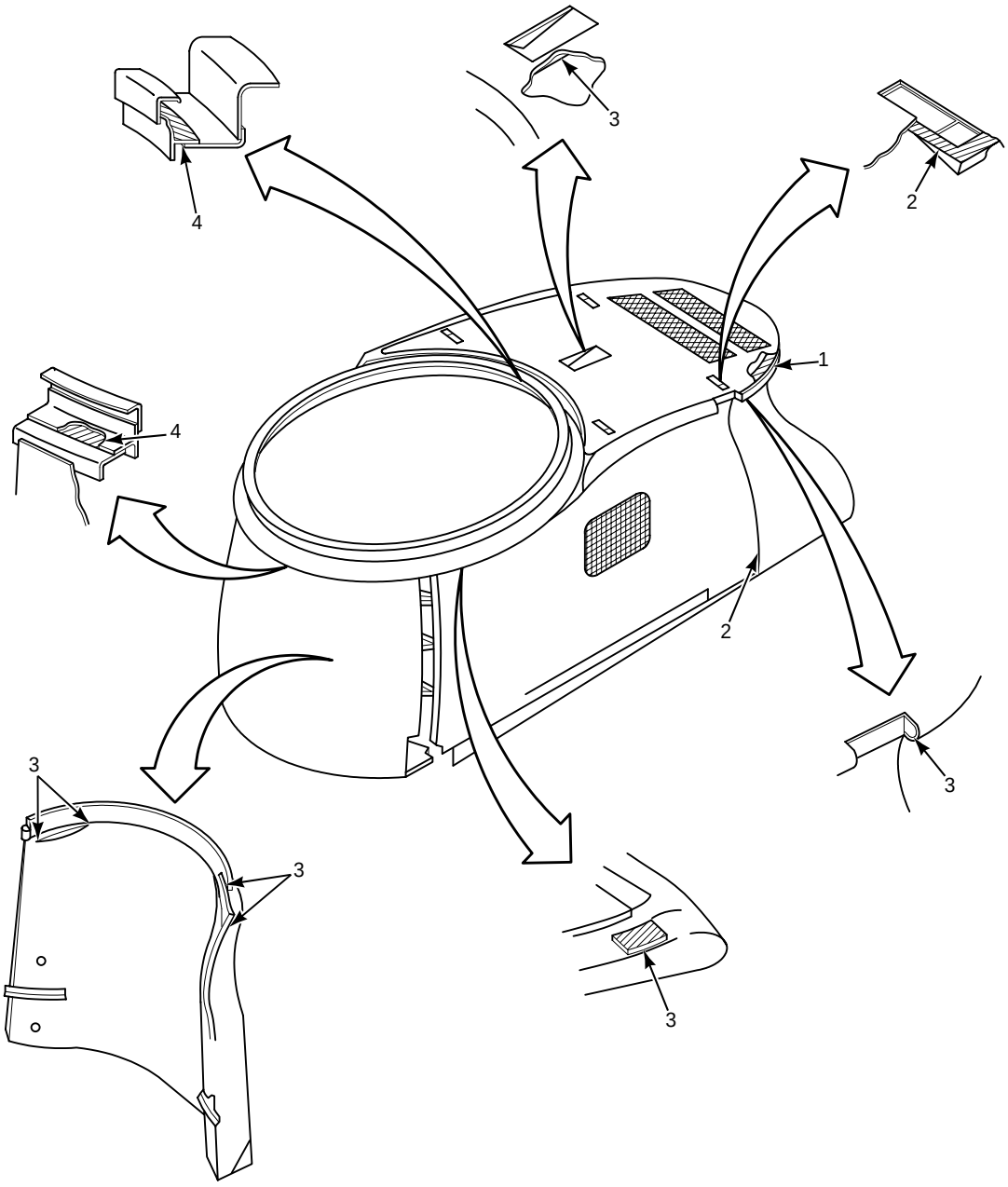


NOTES

1. Mating surface sealant between skin and part.
2. Fillet seal along edge.
3. Mating surface sealant on frame and parting agent on window.
4. Fillet seal around fastener head.
5. Mating surface and fillet between housing and inner skin.

Figure 4. Fuselage Sealing

APPLICATION OF SEALANT – continued

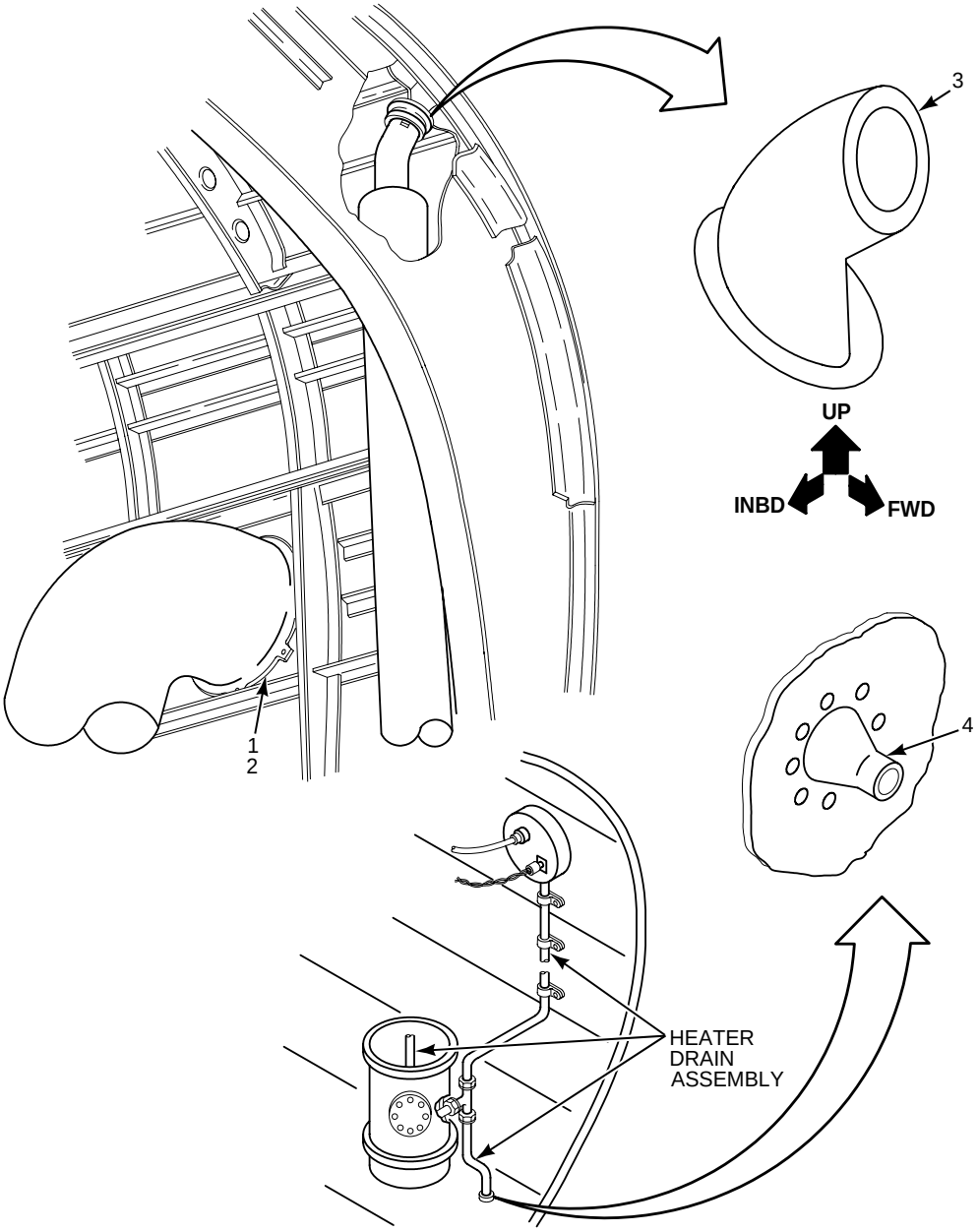


NOTES

1. Mating surface sealant between skin lap.
2. Mating surface sealant between skin and part.
3. Hole filling compound.
4. Surface sealant between tee and angle.

Figure 5. Fuselage Sealing

APPLICATION OF SEALANT – continued

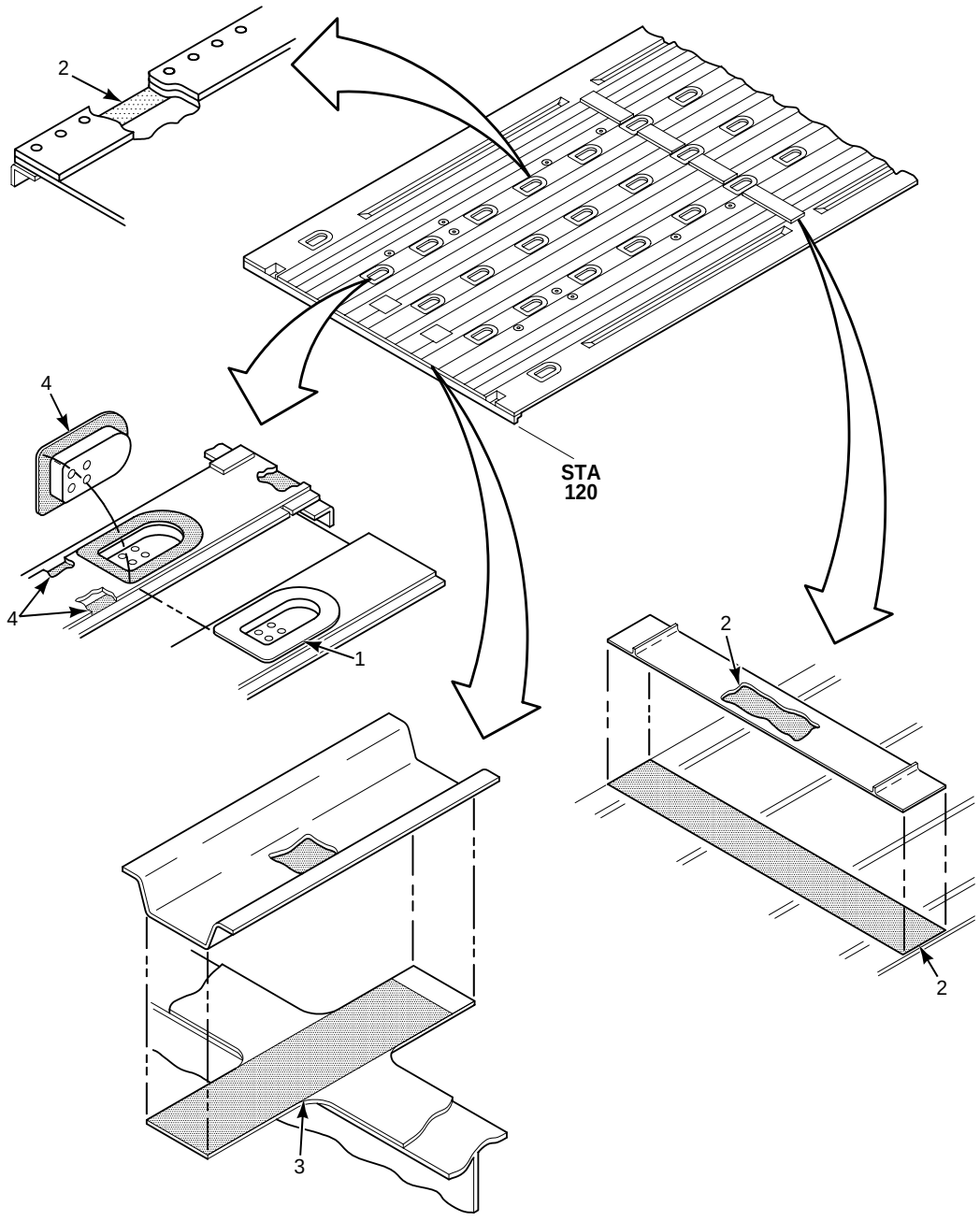


NOTES

1. Fillet seal along edge.
2. Cover fastener heads with sealing compound.
3. Fillet seal around edge of skin cutout and tube. Use sealant, (Item 157, WP 0157 00).
4. Fillet seal over grommet and around tube. Use sealant, (Item 160, WP 0157 00).

Figure 6. Fuselage Sealing

APPLICATION OF SEALANT – continued

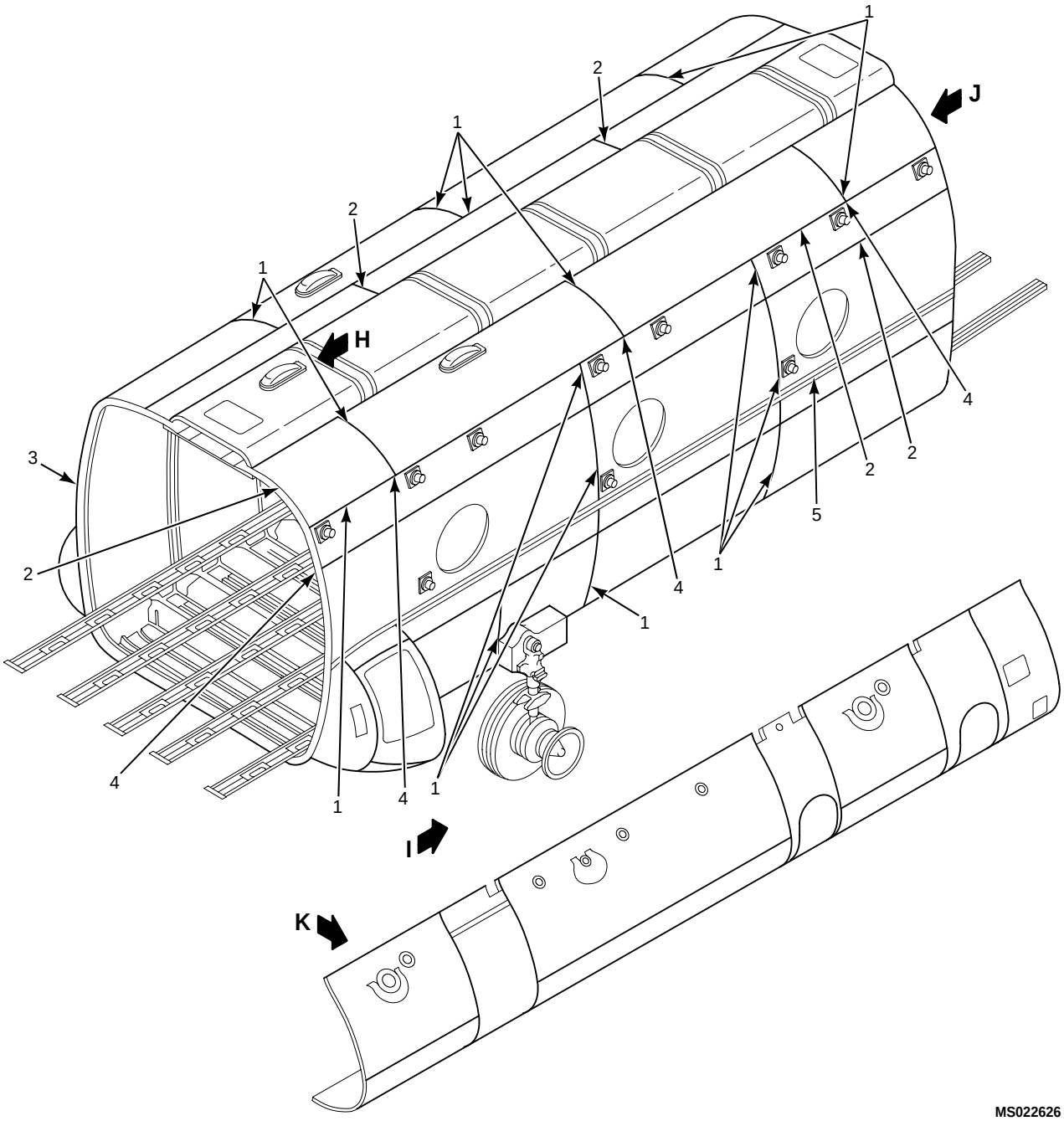


NOTES

1. Fillet seal along edge.
2. Mylar tape on floor panel, angle, and or splice plate with parting agent and mating surface sealant between mylar tapes.
3. Mating surface sealant on beam.
4. Apply mylar tape and mating surface sealant as shown.

Figure 7. Fuselage Sealing

APPLICATION OF SEALANT – continued

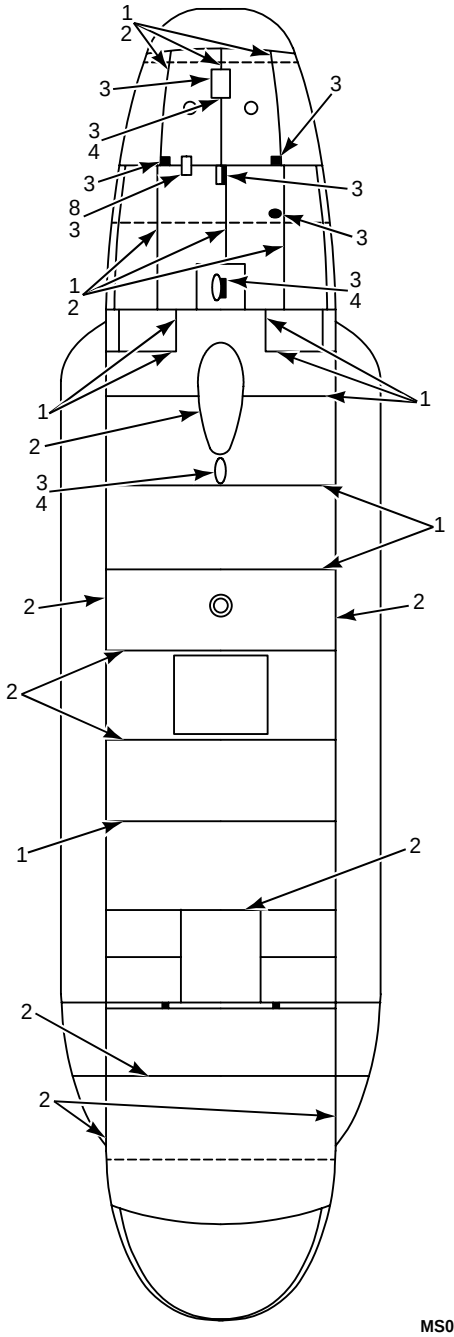


NOTES

1. Mating surface sealant between skin lap.
2. Mating surface sealant between skin and part.
3. Mating surface sealant and parting agent between formers.
4. Prepack sealant in joggle.
5. Mating surface sealant between beam and angle with parting agent on beam.

Figure 8. Fuselage Sealing

APPLICATION OF SEALANT – continued

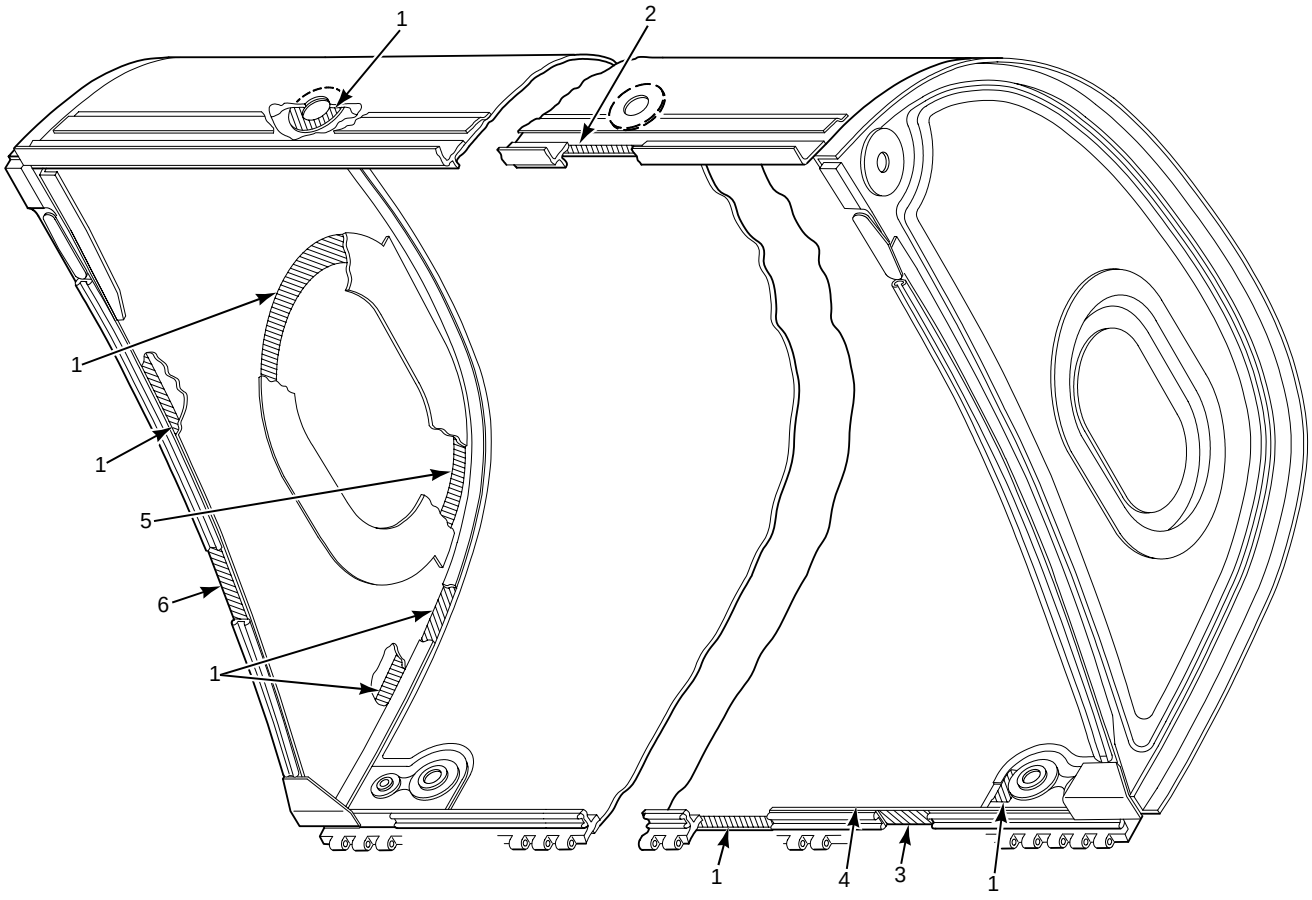


NOTES

1. Mating surface sealant between skin lap.
2. Mating surface sealant between skin and part.
3. Fillet seal along edge.
4. Cover fastener heads with sealing compound.

Figure 9. Fuselage Sealing

APPLICATION OF SEALANT – continued



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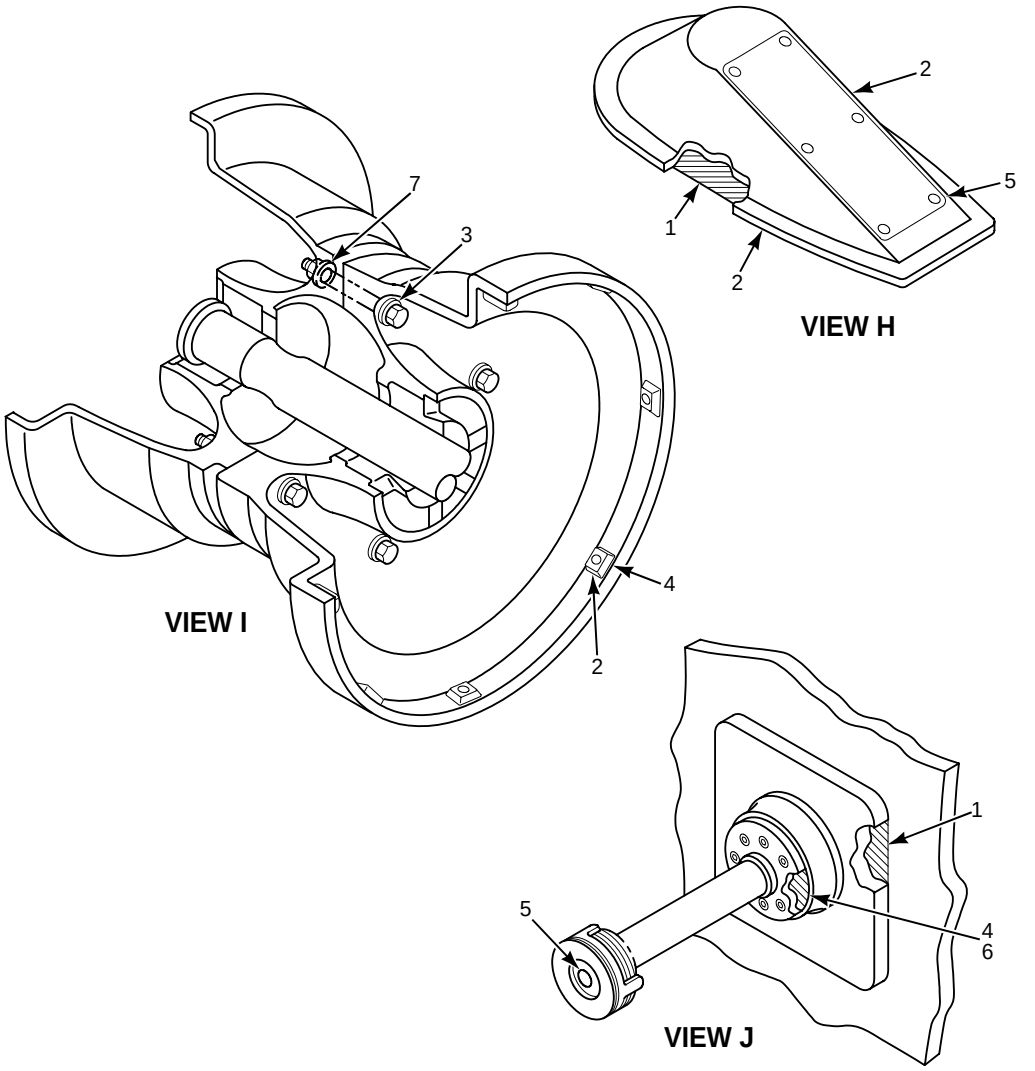
NOTES

1. Surface sealant between skin and part.
2. Surface sealant between skin lap.
3. Surface sealant between hinge and retainer.
4. Cover hinge fasteners with sealing compound.
5. Surface sealant between adapter and tee cap.
6. Surface sealant between channel and retainer.

Figure 10. Fuselage Sealing

APPLICATION OF SEALANT – continued

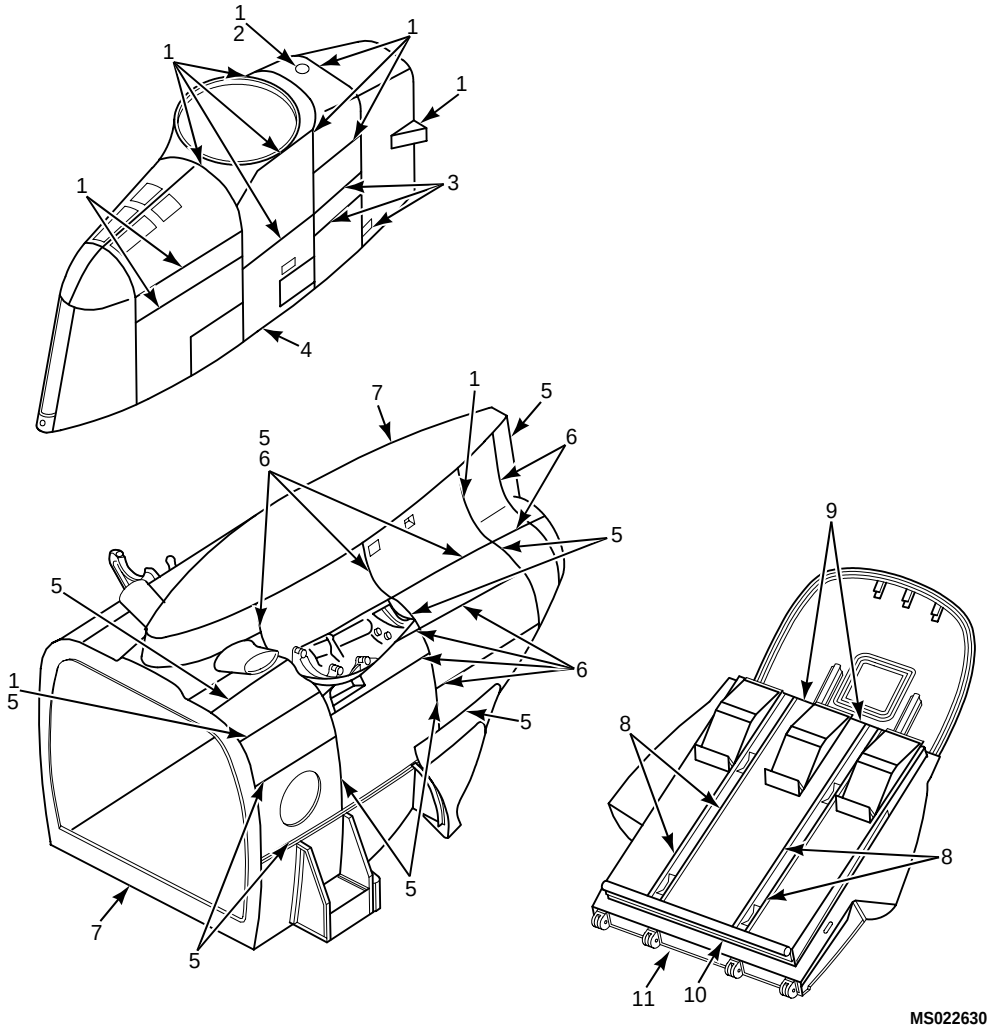


NOTES

1. Mating surface sealant between skin and part.
2. Fillet seal along edge.
3. Fillet seal around fastener head.
4. Cover fastener heads with sealing compound.
5. Apply sealant to fastener before installation.
6. Mating surface sealant on standoff attaching surface.
7. Apply parting agent to exposed surfaces of bolt, nut, and washer. Apply sealant over parting agent

Figure 11. Fuselage Sealing

APPLICATION OF SEALANT – continued



NOTES

1. Fillet seal along edge.
2. Cover fastener heads with sealing compound.
3. Mating surface sealant and parting agent between door and structure.
4. Apply fillet seal from sta 482 to sta 630 after joining crown panel and pylon.
5. Mating surface sealant between skin and part.
6. Mating surface sealant between skin lap.
7. Mating surface sealant and parting agent between formers.
8. Mating surface sealant between beam and plate.
9. Mylar tape and mating surface sealant between beam and hinge.
10. Mylar tape between beam and former (typical).
11. Mylar tape on floor panel, angle, and/or splice plate with parting agent and surface sealant between mylar tapes.

Figure 12. Fuselage Sealing

END OF WORK PACKAGE

DEPOT MAINTENANCE WORK REQUIREMENT
CH-47D HELICOPTER
REPAIR OF IMPREGNATED GLASS CLOTH

INITIAL SETUP

Test Equipment:
As Required

Tools and Special Tools:
Trip Balance, NSN 6670-00-401-7195
3M Spray Gun (T170)
Heat Lamp

Material/Parts:
Abrasive, Paper, (Item 12 or finer, WP 0157 00)
Acetone, Technical (Item 20, WP 0157 00)
Cellophane Sheet (Item 55, WP 0157 00)
Cloth, Glass (Item 79, WP 0157 00)
Resin, Paraplex, MIL-R-7575 (Item 151, WP 0157 00)
Resin, MIL-R-9300 (Item 151.1, WP 0157 00)
Tape, Masking (Item 175, WP 0157 00)

Personnel Required:
As Required

References:
TM 1-1500-204-23 Series
TM 55-1520-240-23 Series
WP 0157 00

Equipment Conditions:
As Required

Special Environmental Condition:
As Required

CLASSIFICATION OF DAMAGE

Small-crack damage is damage caused by flexing. This results in a tear less than 2 inches long, in which edges of tear remain closed, and tear does not extend through all laminations.

Large-crack damage is similar to small crack damage, except that two or more small cracks are close to each other. The cracks are longer than 2 inches, or they extend completely through all laminations.

Perforation damage is damage caused by a penetration of all laminations, causing ragged or jetting edges on either side.

Lack-of-material damage is damage caused by a partial loss of material on any surface or part.

Loss-of-material damage is damage caused by a partial or complete loss of all laminations, either on an edge or surface of part.

Miscellaneous damage is damage caused by a separation of laminations such as bubbles, blisters, and failure of bonding agents.

DAMAGE REPAIR

1. For Small-Crack Damage, Partial Loss-of-Material Damage, and Miscellaneous Damage, refer to Figure 1. Repair damage as follows:
   a. Stop-drill each end of crack. Use a 3/32-inch bit.
   b. Sand through crack to an uncracked lamination. Use 320-grit abrasive paper (Item 12, WP 0157 00).

DAMAGE REPAIR - continued

c. Roughen by sanding areas, which will be covered by patches. Use 320-grit abrasive paper (Item 12, WP 0157 00).

WARNING

ACETONE

d. Clean area with acetone (Item 20, WP 0157 00) to remove sanding residue.

e. Cut a patch from glass cloth (Item 79, WP 0157 00) large enough to extend at least, 0.5 inch beyond sanded area.

f. Cut a number of patches from glass cloth (Item 79, WP 0157 00) or recommended material from the specific technical manual large enough to extend at least 0.5 inch beyond previous patch, and equal to number of laminations sanded away. If the base material is unknown, use the instructions from the applicable aircraft maintenance manual.

g. Use bonding agent appropriate for material(s) and mix IAW manufactures instructions.

(1) For Class 1-Polyester Laminates, use Resin MIL-R-7575 (Item 151, WP 0157 00).

(2) For Class 2-Epoxy Laminates, use Resin MIL-R-9300 (Item 151.1, WP 0157 00).

h. Impregnate each prepared patch by brushing bonding agent into patch.

i. Repair damages as follows:

(1) Place smallest patch over area where laminates were removed.

(2) Place successively larger patches.

(3) Place a piece of cellophane sheet (Item 55, WP 0157 00) over patch, and press patch in place with continual smoothing to remove air pockets.

NOTE

If patch will not remain in place, apply masking tape (Item 175, WP 0157 00) across cellophane during cure.

(4) Remove cellophane and masking tape if patch will remain in place. Brush a coat of bonding agent over patch.

CAUTION

Do Not Exceed 175 Deg F.

NOTE

If cellophane is not removed, additional coats of bonding agent are not required.

(5) Cure repair with heat lamp until it is hard and tack-free.

2. For Large-Crack Damage, Perforation Damage, Complete Loss-of-Material Damage, and Miscellaneous Damage, refer to Figure 2. Repair damage as follows:

a. Cut laminations away to form a hole having a 15 to 30 degree edge taper.

DAMAGE REPAIR - continued

b. Roughen by sanding areas that will be covered by patches. Use 320-grit abrasive paper (Item 12, WP 0157 00).

WARNING

ACETONE

c. Clean area with acetone (Item 20, WP 0157 00) to remove sanding residue.

d. Cut a number of patches from glass cloth (Item 79, WP 0157 00), or recommended material from the specific technical manual, large enough to extend at least 0.5 inch beyond previous patch, and equal to number of laminations sanded away. If the base material is unknown, refer to applicable aircraft maintenance manual.

e. Cut a number of doublers from glass cloth (Item 79, WP 0157 00) equal to number of laminations in damaged area. Cut first doubler 1-inch larger in diameter than patches. Cut succeeding doublers to overlap first doubler by 0.5 inch.

f. Using masking tape (Item 175, WP 0157 00), attach a suitable support covered with cellophane sheet (Item 55, WP 0157 00) behind hole.

g. Mix sufficient bonding agent to complete repair.

h. Impregnate each patch and each doubler by brushing bonding agent into patch and doubler.

i. Repair damage as follows:

(1) Place impregnated patches in hole and against support.

(2) Place impregnated doublers over patches starting with smallest doubler. Center doublers over each other and over patches.

(3) Place a piece of cellophane (Item 55, WP 0157 00) over doublers and patch, and press it in place while continually smoothing it to remove air pockets.

NOTE

If the doublers or patches will not remain in place, apply masking tape (Item 175, WP 0157 00) across cellophane during cure.

(4) Remove cellophane and masking tape if doubler and patches remain in place, and brush a coat of bonding agent over the doublers.

CAUTION

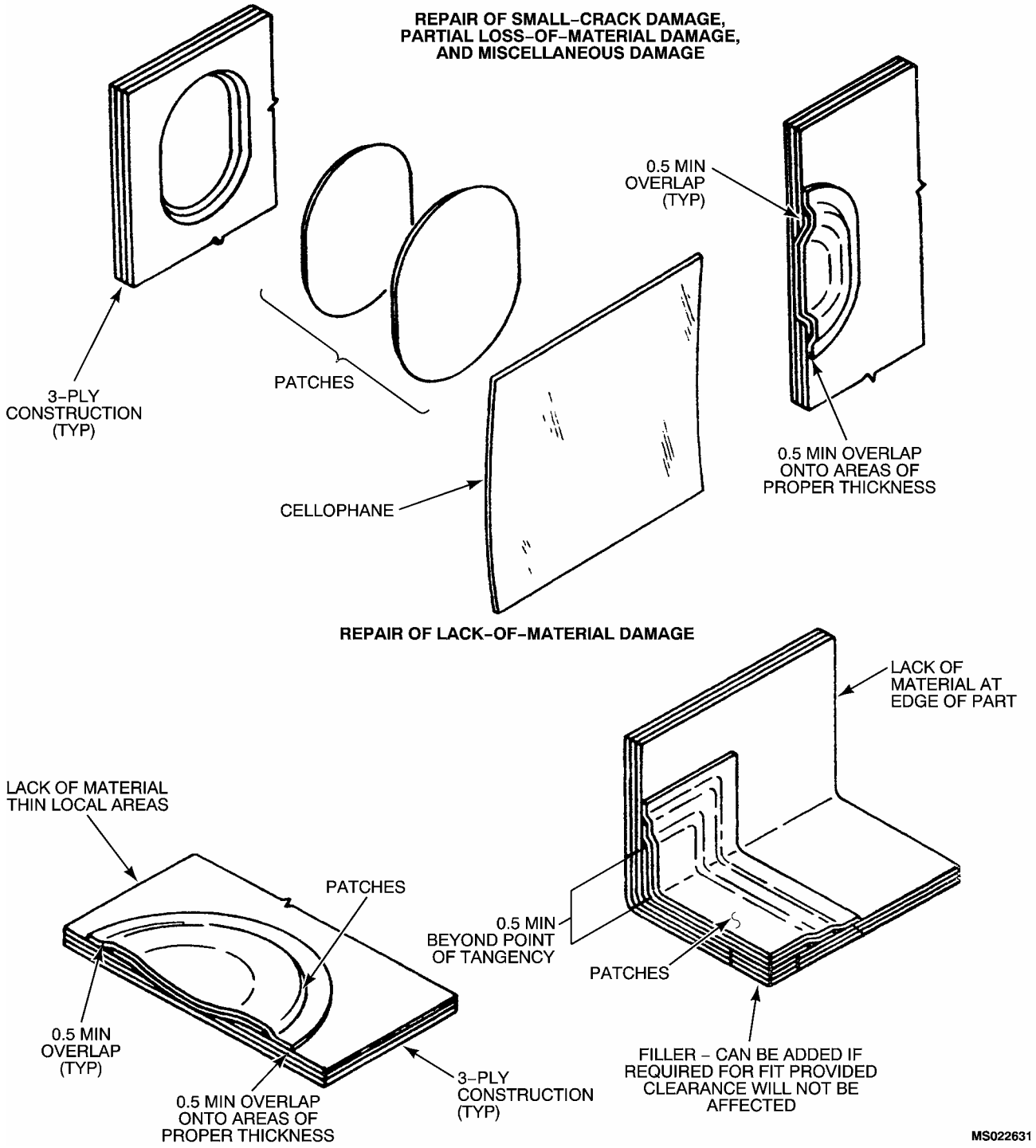
Do Not Exceed 175 Deg F.

NOTE

If cellophane is not removed, additional coats of bonding are not required.

(5) Cure repair with heat lamps until it is hard and tack-free.

DAMAGE REPAIR – continued

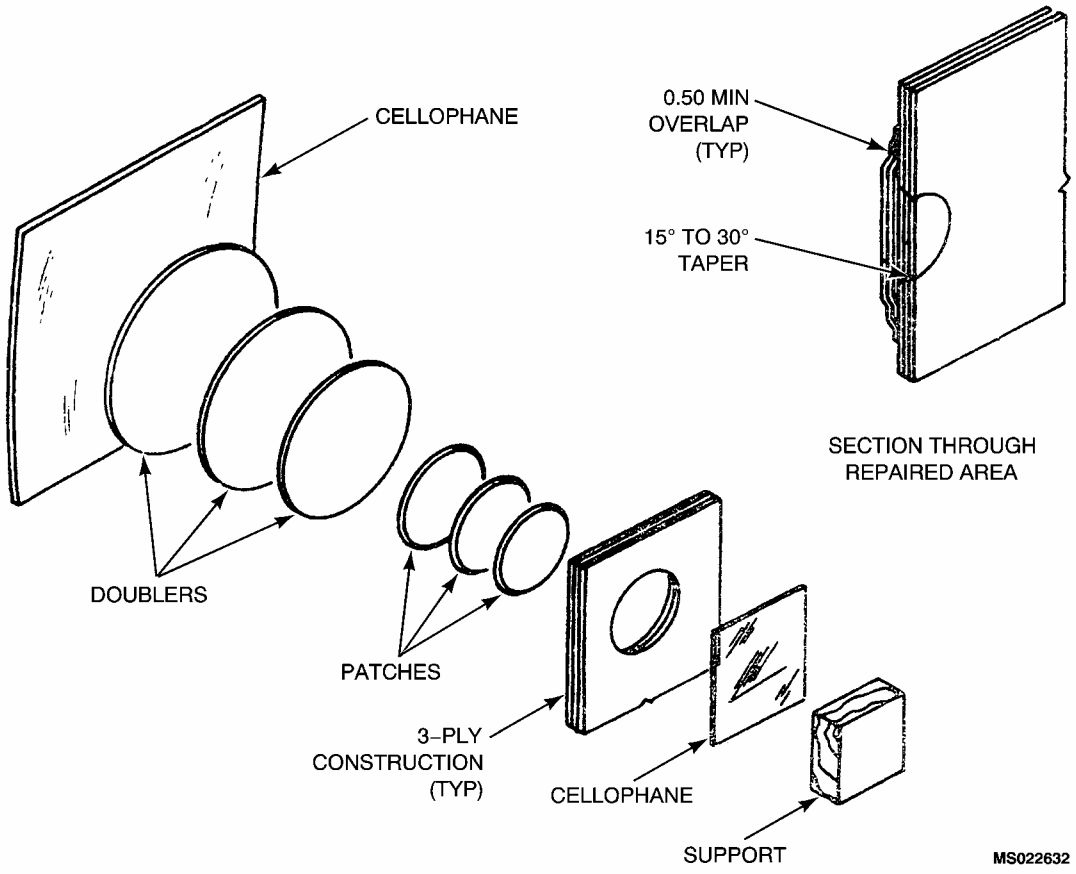


NOTE

All dimensions are in inches.

Figure 1. Repair of Small-Crack Damage, Partial Loss-of-Material Damage, and Miscellaneous Damage

DAMAGE REPAIR – continued



NOTE

All dimensions are in inches.

Figure 2. Repair of Large-Crack Damage, Perforation Damage, Complete Loss-of-Material Damage, and Miscellaneous Damage

END OF WORK PACKAGE

DEPOT MAINTENANCE WORK REQUIREMENT
CH-47D HELICOPTER
REPAIR OF THERMOPLASTIC PARTS

INITIAL SETUP

Test Equipment:
As Required

Tools and Special Tools:
As Required

Material/Parts:
Adhesive, (Item 25, WP 0157 00)
Abrasive, Paper, (Item 12 or finer, WP 0157 00)
Bake Coating (Item 45, WP 0157 00)
Cloth, Cleaning (Item 73, WP 0157 00)
Naphtha, Aliphatic (Item 122, WP 0157 00)
Polycarbonate Sheet (Item 134, WP 0157 00)
Thinner (Item 183, WP 0157 00)

Personnel Required:
As Required

References:
TM 1-1500-204-23 Series
TM 55-1520-240-23 Series
WP 0157 00

Equipment Conditions:
As Required

Special Environmental Condition:
As Required

SCOPE

This work package covers repair of parts made from polycarbonate sheets.

REPAIR

WARNING

NAPHTHA

1. Clean surfaces using cleaning cloth (Item 73, WP 0157 00) soaked with aliphatic naphtha (Item 122, WP 0157 00).
2. Lightly sand surfaces using 320-grit abrasive paper (Item 12, WP 0157 00).
3. Repeat step 1.
4. Prepare a patch and/or insert of polycarbonate sheet (Item 134, WP 0157 00) as follows:
   a. Patch and/or insert should be the same thickness as original material.
   b. Cut patch to extend a minimum of 0.5-inch from edge of hole.
   c. Form patch, if required, by heating it in an oven for 3 to 5 minutes at a temperature of 350 degrees F (177 degrees C).
   d. Clean patch. (Refer to steps 1, 2, and 3).

REPAIR - continued

WARNING

ADHESIVE

5. Prepare and apply adhesive (Item 25, WP 0157 00) to faying surfaces of part and patch. Refer to WP 0074 00.
6. Position patch on part and apply light pressure for cure time of 48 hours at 70 degrees F (21 degrees C).
7. Refinish repaired area, if required, as follows:
   a. Repeat Step 1.

WARNING

THINNER

   b. Prepare a mixture of 3 parts of bake coating (Item 45, WP 0157 00) of desired color, with 1 part, by volume, of thinner (Item 183, WP 0157 00).

CAUTION

HOT PARTS:

   c. Spray one coat of the mixture on area. Allow bake coat to air dry 30 minutes. Bake at 275 degrees F (135 degrees C) for 1 hour.
   d. Apply second bake coat. Cure per step c. above.

END OF WORK PACKAGE

DEPOT MAINTENANCE WORK REQUIREMENT
CH-47D HELICOPTER
SANDWICH HONEYCOMB REPAIRS

INITIAL SETUP

Test Equipment:
As Required

Tools and Special Tools:
Trowel
Heat Lamp

Material/Parts:
Abrasive Paper (Item 5, WP 0157 00)
Abrasive, Paper, (Item 14, WP 0157 00)
Acetone, Technical (Item 20, WP 0157 00)
Adhesive (Item 28, WP 0157 00)
Adhesive (Item 29, WP 0157 00)
Adhesive (Item 32, WP 0157 00)
Cloth, Cleaning (Item 73, WP 0157 00)
Cloth, Glass (Item 79, WP 0157 00)
Filler, Corfil 615 (Item 103, WP 0157)
Teflon Sheet (Item 182, WP 0157 00)

Personnel Required:
As Required

References:
TM 1-1500-204-23 Series
TM 55-1520-240-23 Series
WP 0074 00
WP 0078 00
WP 0081 00 through WP 0090 00
WP 0157 00

Equipment Conditions:
As Required

Special Environmental Condition:
As Required

SCOPE

The sandwich honeycomb structure used in the construction of this helicopter consists of an aluminum alloy honeycomb core (density and thickness vary) sandwiched between aluminum alloy skins (material, thickness, and face patterns vary). In some instances, pod formers, skin panels and edge members are made of Scotchply, a nonwoven, impregnated, glass fabric. It encloses the transition of skins and core. In other instances, such as work platforms, free edges are filled with Corfil 615. The effectiveness of repairs to these structures depends upon the analysis and classification of a particular damage and the proper type repair. Refer to Figure 1, Sheets 1 thru 7 for repairs to sandwich honeycomb parts. The repairs given in this work package are not authorized for use on CH-47D aircraft that have nomex/honeycomb fuel pods installed. For nomex/fiberglass repair information, refer to WP 0084 00.

CLASSIFICATION OF DAMAGE

These classifications should be used to associate specific repair procedures found in subsequent paragraphs, with information in referenced illustrations.

1. Missing core damage occurs when the core bond is broken or a core-to-core splice is unbonded over a small area. Locate by coin tapping both sides of the panel skins. The coin tapping results should be analyzed so that damage is not misread or confused with skin-core voids described below. X-ray can be used to confirm a missing core condition.

2. Skin-core voids occur when bond between skin and core is broken over a small area. Locate by coin-tapping one side of the panel. When skin-core voids occur on both sides of core at same location, X-ray can be used to confirm that there is not a missing core condition.

3. Skin-doubler voids occur when bond between skin and a doubler is broken. Locate void by coin tapping.

CLASSIFICATION OF DAMAGE - continued

4. Dents are limited to those in the surface skin only:
   a. Not exceeding 4 square inches in area.
   b. Not deeper than 10 percent of panel thickness or 0.1 inch, whichever is less. They must be free of fractures or punctures, and must not occur more than once in any 40-inch length of panel. The limitation on the number of allowable dents in a 40-inch length shall not apply to the outer ramp skin. As long as dents do not cover more than 60 percent of a given panel, they may be repaired.

5. Small single skin damage is damage such as cracks and small punctures through one skin, where core is not affected or where puncture is so small that core replacement is impractical.

6. Large single skin damage is damage to one skin where core replacement is practical and necessary. Such damages include large punctures through one skin, skin-core voids over a large area, or a missing core condition.

7. Double skin damage is damage that affects each skin and the core.

8. Scotch-ply edge member and Corfil edge filler damage includes delaminations, cracks, splits, and holes in the glass fabric edge members and loose, cracked, or missing edge filler.

MISSING CORE DAMAGE REPAIR

1. Missing core contained within an area of 3 square inches and limited to one repair panel may be repaired as follows:
   a. Drill one 0.098-inch diameter vent hole through skin near one end of damage, and one 0.25-inch diameter-filling hole through skin near other end of damage.

WARNING

ADHESIVE

   b. Mix a batch of adhesive (Item 29, WP 0157 00). Refer to manufacturer's instructions.
   c. Use an air driven-caulking gun equipped with a nozzle smaller than 1/4 inch diameter. Fill unbonded area with adhesive through filling hole until core is filled and adhesive comes out vent hole. Refer to Figure 1, Sheet 4 of 8.
   d. Allow adhesive to harden. Sand repair to fair with skin.
   e. Refinish repair to match adjacent area.

REPAIR OF SKIN-CORE VOIDS

Voids having a maximum area that can be covered by two, 2 inch-diameter circles, and not exceeding one repair in any 40- inch length of panel, may be repaired as follows:

1. Locate center of void and drill a 1/4 inch diameter filling hole.

2. Spoil core under bond void, down to opposite skin, by rotating an internal cutter inserted through filling hole. Refer to Figure 1, Sheet 4 of 8. The spoiled core area must not exceed 6.3 square inches.

REPAIR OF SKIN-CORE VOIDS - continued

NOTE

Internal cutters can be fabricated from Allen wrenches. Sharpen short leg of the wrench so that when rotated it will cut and push core material 1/4 inch beyond void to leave a clean hole.

3. Drill a 3/32-inch-diameter vent hole through skin at edge of spoiled core.

WARNING

ADHESIVE

4. Mix a batch of adhesive (Item 29, WP 0157 00). Refer to manufacturer's instructions.

5. Use an air-driven-caulking gun equipped with a nozzle smaller than 1/4 inch diameter. Fill spoiled area with adhesive through filling hole until area is filled and adhesive comes out vent hole. Refer to Figure 1, Sheet 4 of 8.

6. Allow adhesive to harden. Sand repair fair with skin.

7. Refinish repair to match adjacent area.

REPAIR OF SKIN-DOUBLER VOIDS

Voids between skin and doubler or between doubler and core can be repaired by Method A or B, depending on thickness of core. Refer to Figure 1, Sheet 4 of 8.

1. Method A. - When core is 0.255-inch thick or greater, proceed as follows:
   a. Locate center of void and drill a 3/16-inch diameter hole through skin and doubler.
   b. Using the 3/16-inch diameter holes for entrance, spoil the core.
   c. Drill 1/8-inch diameter holes through skin and doubler in a pattern around edge of spoiled core. Maintain a minimum distance of 5/8-inch and maximum of 1 inch between holes.

WARNING

ADHESIVE

   d. Mix a batch of adhesive (Item 28, WP 0157 00). Refer to manufacturer's instructions.
   e. Inject adhesive between skin and doubler, using a hypodermic syringe.
   f. Install rivets, MS20600AD4, through all but one of the 1/8-inch holes in skin and doubler, and the center 3/16-inch hole.
   g. Mix a batch of adhesive (Item 29, WP 0157 00). Refer to manufacturer's instructions.
   h. Use an air-driven caulking gun equipped with a nozzle smaller than 3/16-inch diameter. Fill spoiled area with adhesive through one of the two open holes until area is filled and adhesive comes out other hole.

REPAIR OF SKIN-DOUBLER VOIDS - continued

i. While adhesive is wet, install rivets MS20600AD6 and AD4, in remaining two holes.

j. Remove excess adhesive.

2. Method B. - When core thickness is less than 0.255 inch, proceed as follows:

a. Locate center of void and drill one, 3/16-inch diameter hole, and one, ¼-inch diameter hole, on opposite side of panel.

b. Using the 1/4 inch-diameter hole for entrance, spoil the core.

WARNING

ADHESIVE

c. Mix a batch of adhesive (Item 29, WP 0157 00). Refer to manufacturer's instructions.

d. Use an air driven caulking gun equipped with a nozzle smaller than 1/8-inch diameter. Fill spoiled core area with adhesive through one of the two holes until core is filled and adhesive comes out other hole.

e. Allow adhesive to harden. Sand repair flush with skin.

f. Drill 1/8 inch-diameter holes through skin, doubler, hardened adhesive, and skin on opposite side, in a pattern following periphery of spoiled core. Maintain a minimum distance of 5/8-inch, but not exceeding a maximum distance of 1 inch, between holes. Drill through hardened adhesive and skin on opposite side at hole originally drilled through skin and doubler in step (a). Use a 3/16 inch diameter drill.

g. Prepare a mixture of adhesive (Item 28, WP 0157 00). Refer to manufacturer's instructions.

h. Using a hypodermic syringe, inject mixture between skin and doubler.

i. While the adhesive is wet, install rivets, MS20470AD4, in holes drilled in step f, and one rivet, MS20470AD6, in the center filling hole.

j. Remove excess adhesive.

REPAIR OF DENTS

Small dents in surface skins can be filled as follows. Refer to Figure 1, Sheet 5 of 8.

WARNING

ACETONE, TECHNICAL

1. Prepare area by sanding it lightly with 400-grit abrasive paper (Item 14, WP 0157 00). Clean the area by wiping three or four separate times with cleaning cloth (Item 73, WP 0157 00) moistened with acetone (Item 20, WP 0157 00).

2. Flush area with water and inspect for breaks in water film. If any breaks occur in water film, repeat step 1.

REPAIR OF DENTS - continued

3. Prepare filler by thoroughly mixing 100 parts by weight of adhesive, part B and 140 parts by weight of adhesive, part A (Item 28, WP 0157 00).

4. Apply filler to dent, using a trowel.

CAUTION

Do not allow filler to exceed 200 degrees F (93 degree C) during accelerated curing as this will cause porosity and loss of strength.

NOTE

The working life of mixed filler is approximately 2 hours.

5. Allow filler to cure for 8 hours at 70 degrees F (21 degree C); or 2 hours at 150 to 160 degrees F (66 to 71 degrees C); or 45 minutes at 200 degrees F (93 degree C). Temperatures may be maintained using heat lamps.

6. Allow filler to cool. Blend repair to contour of adjacent surfaces. Use 400-grit abrasive paper (Item 14, WP 0157 00).

7. Refinish to match adjacent area.

REPAIR OF SMALL, SINGLE-SKIN DAMAGE

Cracks, not exceeding 6 inches, can be repaired as follows. Refer to Figure 1, Sheet 5 of 8.

1. Drill a 1/8-inch diameter hole at each end of crack.

2. Fabricate circular or oval skin reinforcement from same type material as original skin, but of next heavier thickness. The reinforcement should overlap crack a minimum of 3/4-inch.

3. Bond reinforcement to skin with adhesive. Refer to WP 0074 00.

REPAIR OF SMALL, SINGLE-SKIN HOLES

Small holes through one skin can be repaired as follows. Refer to Figure 1, Sheet 6 of 8.

1. Cut out damaged skin to form a circular or an oval hole.

2. Cut core back approximately 3/4-inch from edge of trimmed hole in skin.

3. Clean core and skin and fill cavity with Corfil 615 (Item 103, WP 0157). Refer to WP 0085 00.

4. Fabricate skin reinforcement from the same type material as original skin but of next heavier thickness. The reinforcement should overlap trimmed hole in skin by 3/4-inch.

5. Bond reinforcement to skin with adhesive. Refer to WP 0074 00.

NOTE

If the skin has a rigidized pattern, a circular row of rivets, MS20600AD6, should be installed at a pitch of 11/16-inch, through reinforcement and skin. In addition, a fillet of adhesive (Item 29, WP 0157 00) should be provided at edge of reinforcement.

REPAIR OF LARGE, SINGLE-SKIN DAMAGE

Damages not exceeding an area of 6 square inches and spaced a minimum of 9 inches apart can be repaired as follows. Refer to Figure 1, Sheet 6 of 8.

1. Cut out damaged skin and core to form a circular or an oval hole.

2. Fabricate a core replacement and a skin replacement from same type material as original.

WARNING

ADHESIVE

NOTE

If a doubler is in area that has been damaged and cut out, a doubler replacement should also be fabricated.

3. Bond core replacement to inner surface of undamaged skin and to existing core. Bond skin replacement to core replacement, using adhesive. Refer to WP 0074 00.

4. Fabricate a skin reinforcement from same type material as original, but of next heavier thickness. The reinforcement should overlap damage cutout by 3/4-inch.

5. Bond reinforcement to skin with adhesive. Refer to WP 0074 00.

6. Install a row of rivets, MS20600AD6, around damaged cutout through reinforcement and skin, at a pitch of 11/16-inch.

REPAIR OF DOUBLE-SKIN DAMAGE

Damage not exceeding 6 square inches in either skin, after trimming, can be repaired. If a flush patch is required in one skin, the 6 square inch repair limit applies to the skin with the non-flush patch. A minimum of nine inches of skin must remain between edges of damaged areas after trimming.

1. Damage which affects each skin and core, and where one flush surface is required, can be repaired as follows. Refer to Figure 1, Sheet 1 of 8.
   a. Cut out damaged skins and core to form a circular or oval hole.

NOTE

The skin on the non-flush surface and core must be cut to diameter 11/2-inch larger than skin on flush surface.

   b. Make skin replacement from same type material as original.
   c. Make core replacement from same type material as original. Trim core replacement to allow for thickness of skin reinforcement of flush surface.
   d. Make skin reinforcements from same type material as original, but next heavier thickness. The diameter of the reinforcements must overlap respective skin cutouts by 3/4-inch.

REPAIR OF DOUBLE-SKIN DAMAGE - continued

WARNING

ADHESIVE

e. For flush surface, bond skin replacement and skin reinforcement together with adhesive. Refer to WP 0074 00.

f. For non-flush surface, bond skin replacement, skin reinforcement, and core replacement, together with adhesive. Refer to WP 0074 00.

g. Install assembly, bonded in step e, and install rivets, MS20600AD6, at a minimum distance of 11/16-inch.

h. Install assembly, bonded in step f, and install rivets MS206AD6, at a minimum distance of 11/16-inch.

2. Damage which affects each skin and core, and where flush surfaces are not required, can be repaired as follows. Refer to Figure 1, Sheet 2 of 8.

   a. Cut out damaged skins and core to form a circular or oval hole.

   b. Make skin replacement from same type material as original.

   c. Make core replacement from same type material as original. Core thickness to be same as original.

   d. Make skin reinforcements from same type material as original, but of next heavier thickness. The diameter of the reinforcements must overlap respective skin cutouts by 3/4-inch.

WARNING

ADHESIVE

   e. For flush surface, bond skin replacement, and skin reinforcement together with adhesive. Refer to WP 0074 00.

   f. Bond remaining skin replacement and skin reinforcement together with adhesive. Refer to WP 0074 00.

   h. Install bonded assemblies and install rivets, MS20600AD6, at a minimum pitch of 11/16-inch.

REPAIR OF SCOTCHPLY EDGE MEMBER AND CORFIL EDGE FILLER DAMAGE

Damage which affects each skin and core, and where a flush surface is not required, can be repaired as follows:

1. Cut out damaged skins and core to form a circular or oval hole.

2. Make core replacement and skin replacements from same materials as original.

3. Make skin reinforcements from same material as original, but of next heavier thickness. The diameter of reinforcements must overlap skin cutout 3/4-inch.

REPAIR OF SCOTCHPLY EDGE MEMBER AND CORFIL EDGE FILLER DAMAGE – continued

WARNING

ADHESIVE

4. Bond skin replacements and core to one of skin reinforcements with adhesive. Refer to WP 0074 00.

5. Install bonded assembly in damage cutout.

6. Install other skin reinforcement and install the rivets, MS20600AD6, at a minimum pitch of 11/16-inch.

REPAIR OF HONEYCOMB PANEL EDGES

WARNING

ADHESIVE

Voids in the Scotch-ply edge members can be repaired by injecting adhesive (Item 32, WP 0157 00), with a hypodermic syringe, into the void through a gap along edge of member. Replace loose, cracked, or missing edge filler. Refer to WP 0074 00. Cracks, and similar damage can be repaired as follows. Refer to Figure 1, Sheet 3 of 8.

1. Scarf each existing ply of Scotch-ply 1/2 inch. Use abrasive paper (Item 5, WP 0157 00).

2. Fill exposed core with Corfil 615 (Item 103, WP 0157). Refer to WP 0085 00.

3. Cut patches from glass cloth (Item 79, WP 0157 00), equal to number of existing plies, so that each successive ply overlaps preceding ply by 1/2 inch.

4. Impregnate each patch with adhesive. Refer to WP 0081 00.

5. Place largest patch on a teflon sheet (Item 182, WP 0157 00). Place successively smaller patches, while wet, on largest patch.

6. Apply a final brush coat of adhesive (Refer to WP 0074 00) to assembled patches. Place assembly, with teflon sheet, on scarf area.

REPAIR OF BONDED FORMER ASSEMBLIES

Damage to bonded former assemblies which affects the cap only, or the cap and core, can be repaired. The size of the repair parts will vary with extent of damage. Therefore, exact dimensions for repair parts cannot be given. Refer to Figure 1, Sheet 7 of 8, Tables 1 and 2, and WP 0081 00 thru WP 0090 00. Care should be excised to maintain fit and proper fastening where adjoining structural members are involved. Refer to WP 0078 00 for information on methods of insulating dissimilar metals. In addition, all repairs must be completed before adhesive cures. Repairs must be watertight. Refer to WP 0080 00.

REPAIR OF CAP AND CORE DAMAGE

1. Cut out damaged cap, web, and core area. All edges should be filed smooth and corners rounded.

REPAIR OF CAP AND CORE DAMAGE - continued

2. Make a core replacement from a piece of core material. It must be same as original (Item 83 through 86, WP 0157 00), and fit damage cutout.

3. Make two web fillers of same material and thickness as original web to fit damage cutout. Refer to Table 2.

4. Make a web reinforcement from same material as original. Use next heavier thickness for each side of damage area. The length, width, and thickness can be determined by number of fasteners required, spacing to be maintained, and original thickness. Refer to Table 2.

5. Make a cap replacement from a section of extrusion, same as original, to fit damage cutout. If original extruded shape is not available, a replacement can be made from two formed angles and a filler of the same material as original cap or 4130 normalized steel. Refer to the alternate replacement as shown in Figure 1, sheet 7 of 8. The thickness of each part is to be selected to match original. Refer to Table 1 for cap extrusion part number.

6. Make a cap reinforcement from 7075-T6 aluminum alloy or 4130 normalized steel for each side of damage. Refer to Table 1 for minimum cross-sectional area required for reinforcement. The length of reinforcement is determined by size and number of fasteners required on each side of the damage.

7. Determine type, size and quantity of fasteners to be used on each side of the damage. Refer to Tables 1 and 2.

8. Maintain 2D edge distance and 4D spacing for fasteners, and 1/2-inch minimum radius on all internal corners.

WARNING

ADHESIVE

9. Mix a batch of adhesive and prepare surfaces to be bonded. Refer to WP 0074 00.

10. Apply the adhesive to edges of core replacement, cap replacement, and faying surfaces of all repair parts.

11. Assemble repair parts and install fasteners.

REPAIR OF CAP DAMAGE

Repairs for cap damage only, are the same as repairs where the cap and core are damaged, except that no core replacement is required.

FORMER STA 180 LOWER CAP (Refer to Figure 1, Sheet 7 of 8 and Tables 1 and 2).

Select fasteners required from Table 1. This requirement is fourteen, 3/16-inch-diameter steel lock bolts. On each side of the repair area, install seven fasteners in the vertical leg. To complete the repair, pick up original type and size fasteners through horizontal legs.

FORMER STA 180 UPPER CAP (Refer to Figure 1, Sheet 8 of 8 and Tables 1 and 2).

Select fasteners required from Table 1. This requirement is sixteen, 3/16-inch-diameter steel lock bolts in single shear. On each side of the repair area, install four fasteners in the forward and four fasteners in the aft horizontal legs. To complete the repair, place four fasteners through the vertical leg (double shear) on each side of the repair area.

LOWER CAP - SPECIAL CASES

The manufacturing splices at sta 160 and sta 440 are made with 3/16-inch and 1/4-inch diameter lock bolts. Obtain size, type, and quantity of fasteners required for each side of damage from Table 1 (single shear). Pick up required quantity (double shear) through vertical leg and install original type and size fasteners through horizontal legs.

Table 1. Repair Criteria For Bottom Former Assembly Caps

FORMER STA	ORIGINAL CAP 7075-T6		REQUIRED CAP REINFORCEMENT CROSS-SECTIONAL AREA		NO. OF STEEL LOCKBOLT FASTENERS UPPER CAP		NO. OF STEEL LOCKBOLT FASTENERS LOWER CAP	
	UPPER	LOWER	UPPER	LOWER	0.1875	0.250	0.1875	0.250
160	VS90302	VS90526*	0.48	0.76	15	-	23	-
180	VS90302	VS90303	0.51	0.45	16	-	14	-
200	VS90802	VS90303	0.48	0.46	16	-	14	-
220	VS90302	VS90303	0.61	0.46	18	-	14	-
240	VS90519	VS90308	0.96	0.96	-	17	-	17
260	VS90306	VS90303	0.71	0.60	22	-	18	-
280	VS90302	VS90303	0.48	0.46	16	-	14	-
300	VS90302	VS90303	0.61	0.46	18	-	14	-
320	VS90519	VS90309	0.93	0.94	-	16	-	16
340	VS90302	VS90303	0.46	0.46	14	-	14	-
360	VS90521	VS90303	0.66	0.46	17	-	14	-
380	VS90302	VS90303	0.61	0.46	18	-	14	-
400	VS90304	VS90303	0.66	0.86	17	-	20	-
420	VS90306	VS90306	0.88	0.88	21	-	-	15
440	VS90302	VS90111*	0.48	1.090	16	-	-	19
460	VS90306	VS90303	0.76	0.86	23	-	20	-
480	VS90523	VS90310	0.74	0.81	23	-	-	14

NOTES

A. All dimensions are in inches.

B. The asterisk (*) following extrusion number indicates an additional extrusion is used in that area.

LOWER CAP - SPECIAL CASES – continued

Table 2. Repair Criteria for Bottom Former Assembly Webs

FRAME STA	BASIC WEB 7075-T6 THICKNESS		FASTENERS WEB TO WEB REINFORCEMENT OR WEB AND DOUBLER TO WEB REINFORCEMENT (REFER TO NOTE B)			
			FWD		AFT	
	FWD	AFT	DIA	SPACING	DIA	SPACING
160	0.020	0.020	4	0.65 to 0.75	4	0.65 to 0.75
180	0.020	0.020	4	0.65 to 0.75	4	0.65 to 0.75
200	0.020	0.020	4	0.65 to 0.75	4	0.65 to 0.75
220	0.020	0.020	4	0.65 to 0.75	4	0.65 to 0.75
240	0.020	0.020	4	0.65 to 0.75	4	0.65 to 0.75
260	0.020	0.020	4	0.65 to 0.75	4	0.65 to 0.75
280	0.020	0.020	4	0.65 to 0.75	4	0.65 to 0.75
300	0.020	0.020	4	0.65 to 0.75	4	0.65 to 0.75
320	0.032	0.040	5	0.65 to 0.75	5	0.65 to 0.75
340	0.020	0.020	4	0.65 to 0.75	4	0.65 to 0.75
360	0.020	0.020	4	0.65 to 0.75	4	0.65 to 0.75
380	0.020	0.020	4	0.65 to 0.75	4	0.65 to 0.75
400	0.020	0.020	4	0.65 to 0.75	4	0.65 to 0.75
440	0.020	0.020	4	0.65 to 0.75	4	0.65 to 0.75
460	0.020	0.020	4	0.65 to 0.75	4	0.65 to 0.75
480	0.032	0.032	5	0.65 to 0.75	5	0.65 to 0.75

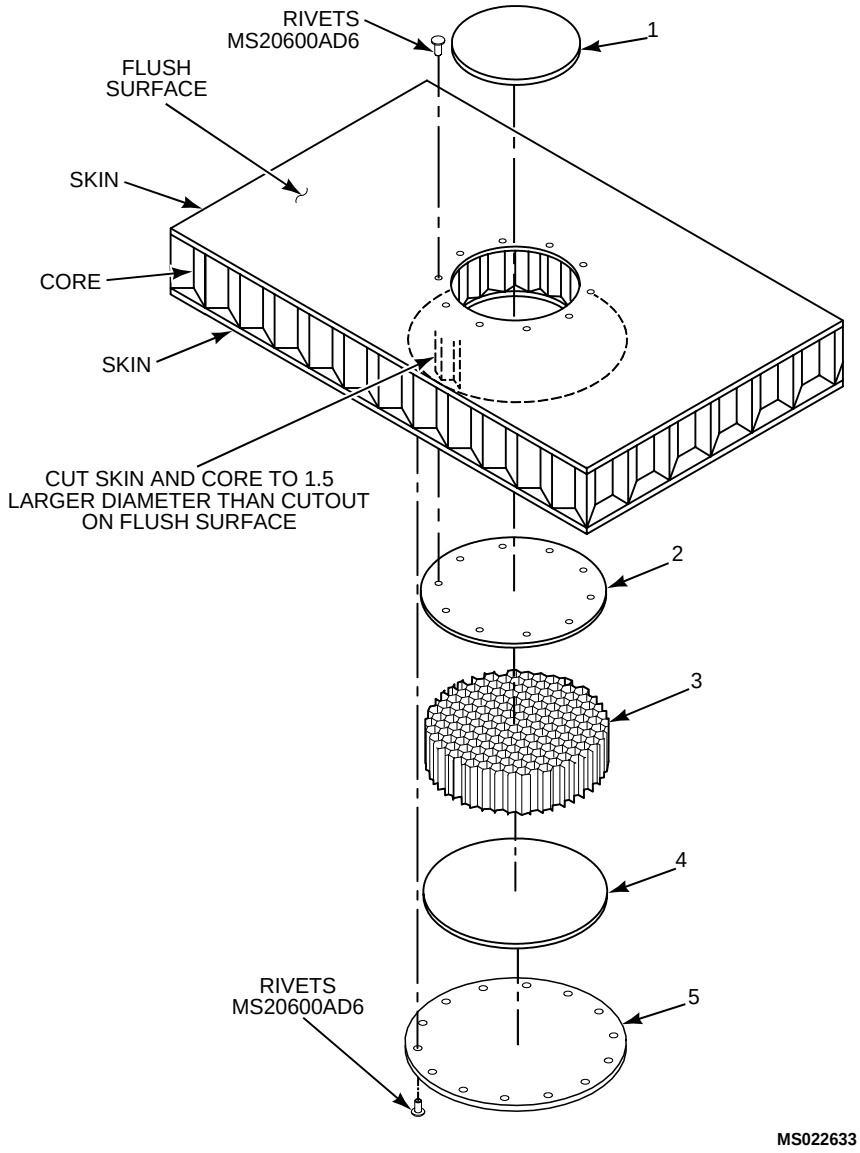
NOTES

A. All dimensions are in inches.

B. Maintain three rows of rivets, MS20600AD, around the damage cutout.

LOWER CAP - SPECIAL CASES – continued

DOUBLE-SKIN DAMAGE
(ONE FLUSH SURFACE REQUIRED)



Repair Parts

1. Skin replacement - Same type material as original.
2. Skin Reinforcement - Same type material as original, next heavier thickness.
3. Core Replacement - Same type material as original.
4. Skin Replacement - Same type material as original.
5. Skin Replacement - Same type material as original, next heavier thickness.

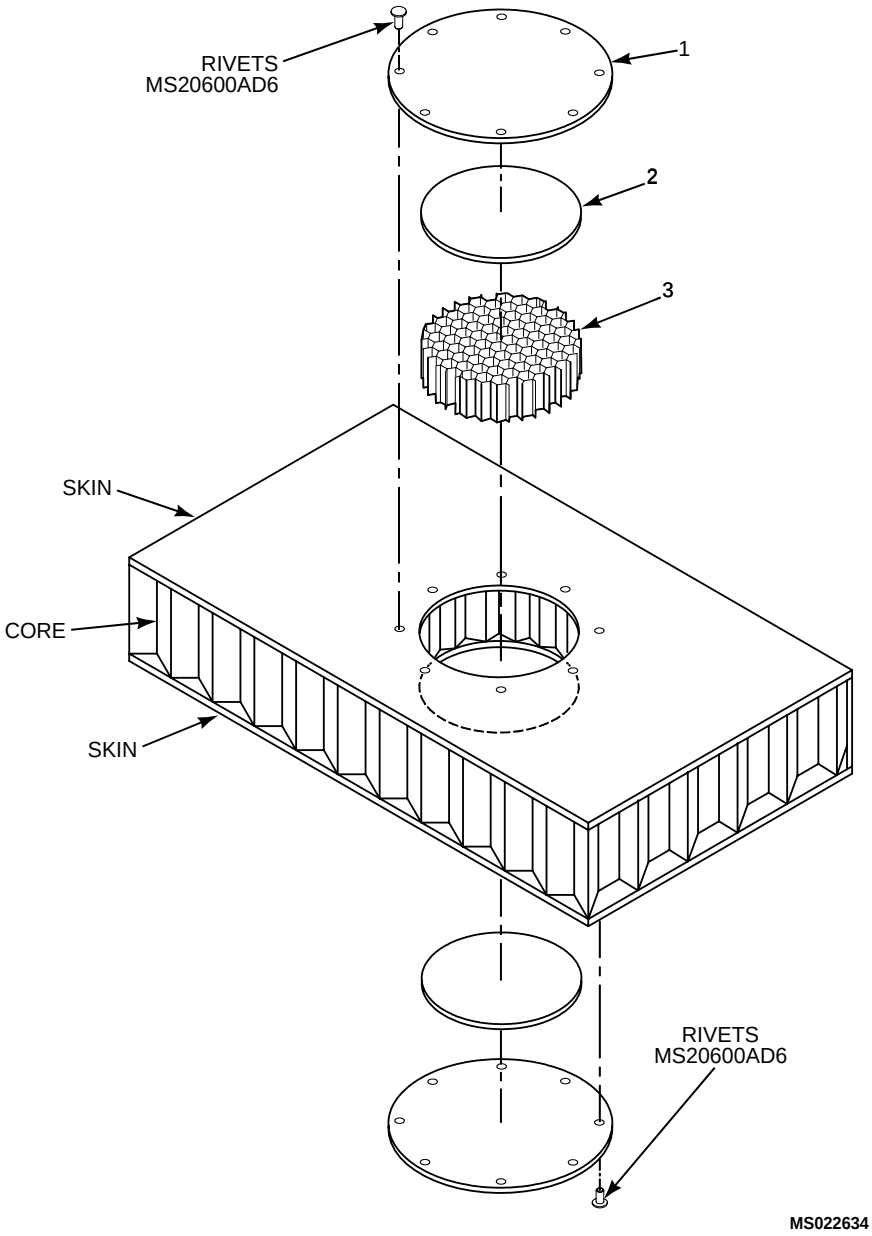
NOTE

All dimensions are in inches.

Figure 1. Sandwich Honeycomb Parts Repair (Sheet 1 of 8)

LOWER CAP - SPECIAL CASES – continued

DOUBLE-SKIN DAMAGE
(FLUSH SURFACE NOT REQUIRED)



Repair Parts

1. Skin Reinforcement - Same type material as original, next heavier thickness.
2. Skin replacement - Same type material as original.
3. Core Replacement - Same type material as original.

NOTE

All dimensions are in inches.

Figure 1. Sandwich Honeycomb Parts Repair (Sheet 2 of 8)

LOWER CAP - SPECIAL CASES – continued

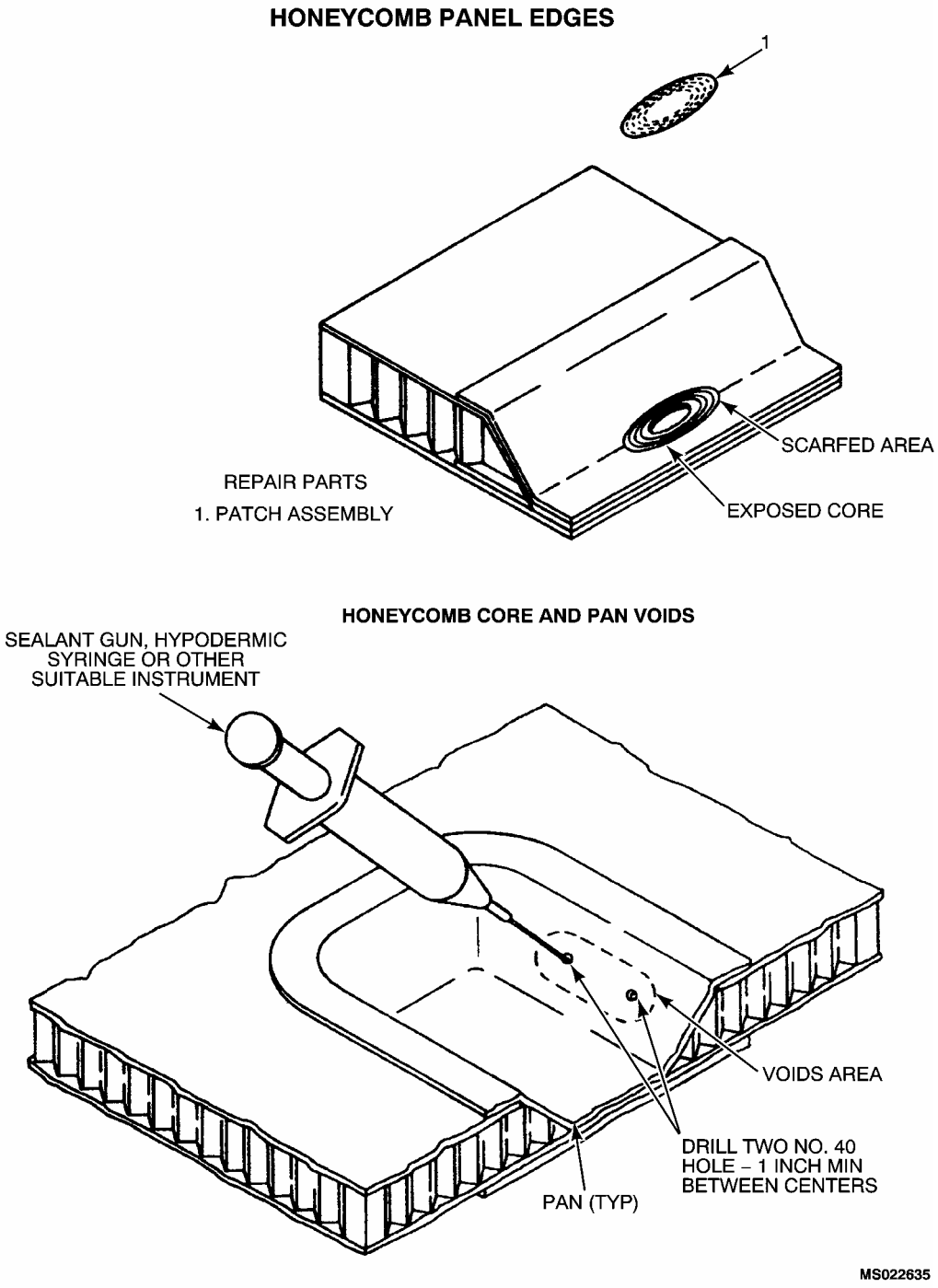
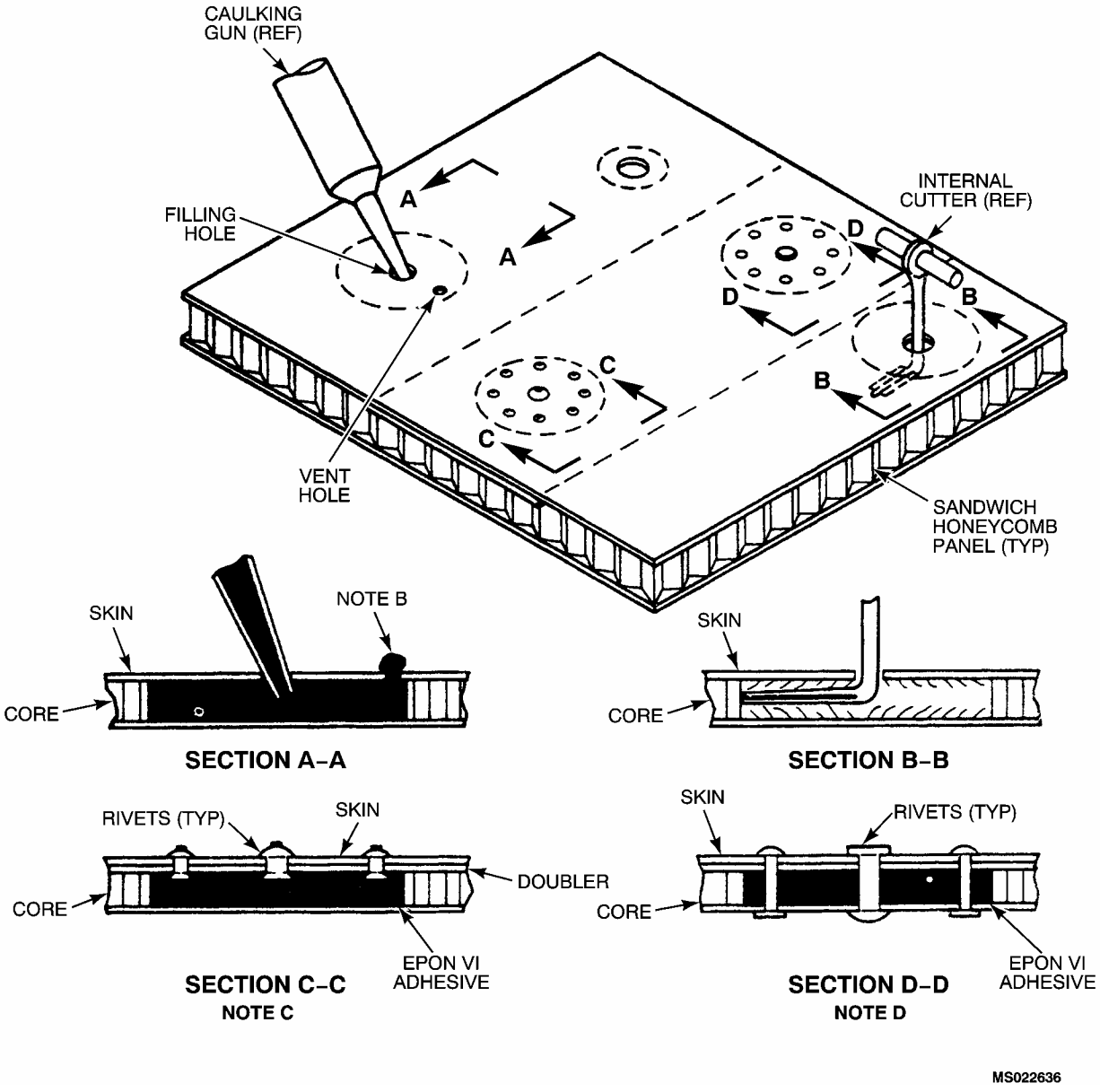


Figure 1. Sandwich Honeycomb Parts Repair (Sheet 3 of 8)

LOWER CAP - SPECIAL CASES – continued

SKIN–CORE AND SKIN–DOUBLER VOIDS



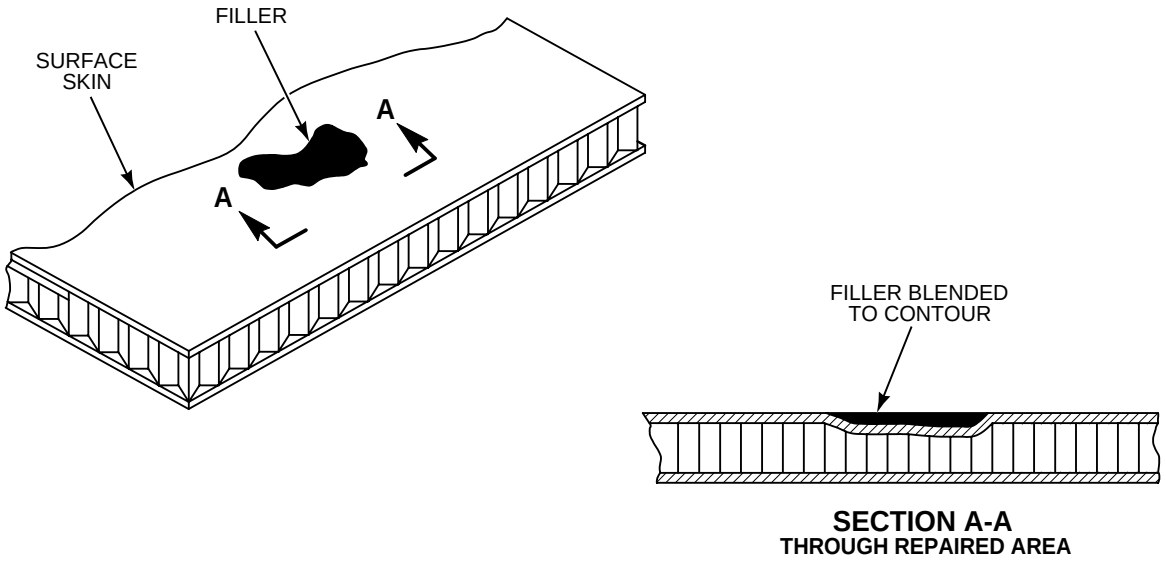
NOTES

A. All dimensions are in inches.
B. Mixed adhesive emerging from vent hole indicates complete filling of spoiled core area.
C. Typical repair for skin – doubler or core-doubler voids when core thickness is 0.255 or greater.
D. Typical repair for skin – doubler or core-doubler voids when core thickness is less than 0.255.

Figure 1. Sandwich Honeycomb Parts Repair (Sheet 4 of 8)

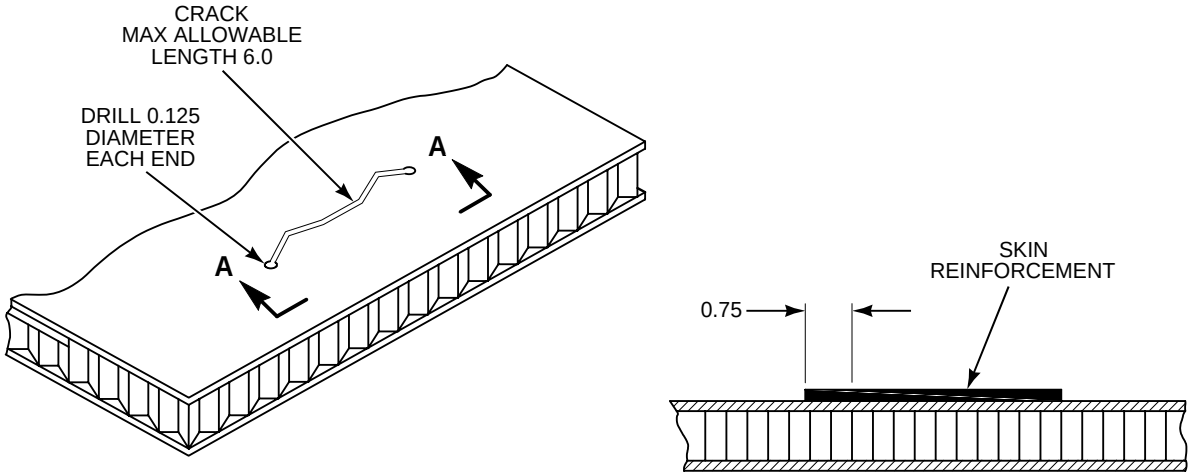
LOWER CAP - SPECIAL CASES – continued

REPAIR OF DENTS



SECTION A-A
THROUGH REPAIRED AREA

REPAIR OF SMALL SINGLE-SKIN DAMAGE



SECTION A-A
THROUGH REPAIRED AREA

MS022637

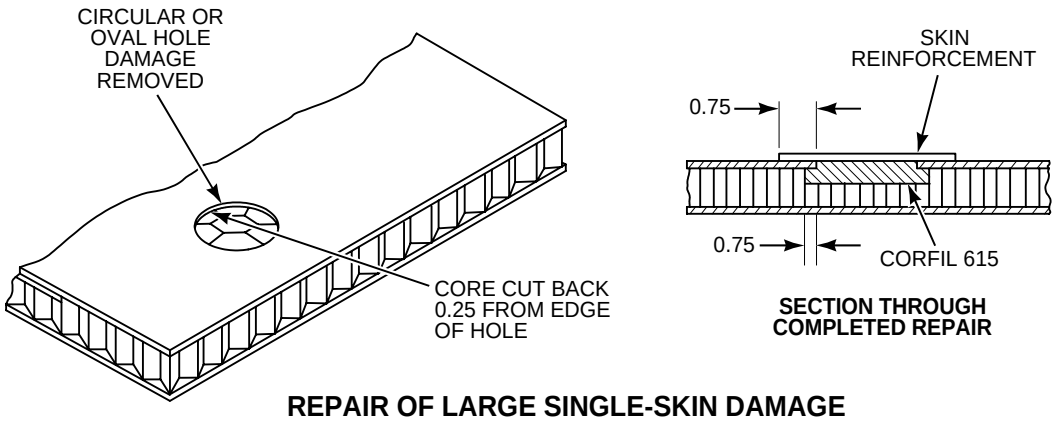
NOTE

All Dimensions are in inches.

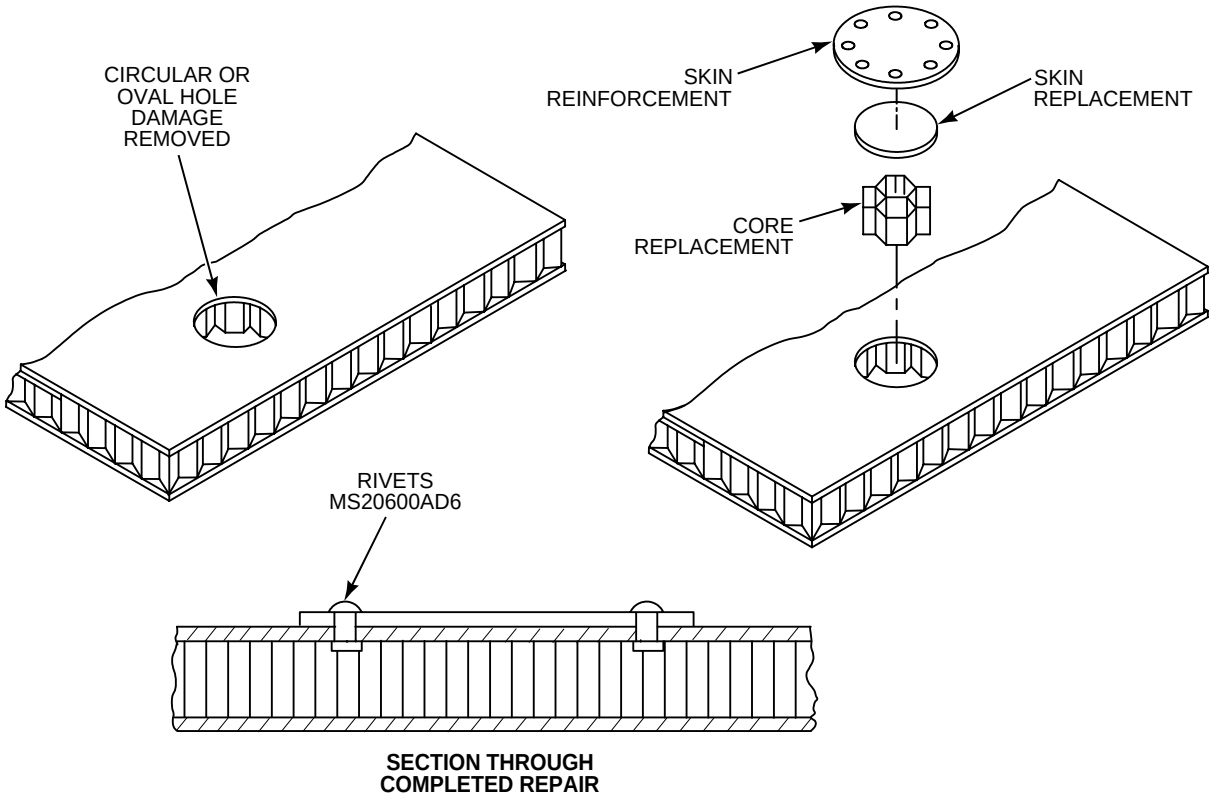
Figure 1. Sandwich Honeycomb Parts Repair (Sheet 5 of 8)

LOWER CAP - SPECIAL CASES – continued

REPAIR OF SMALL SINGLE-SKIN HOLES



REPAIR OF LARGE SINGLE-SKIN DAMAGE



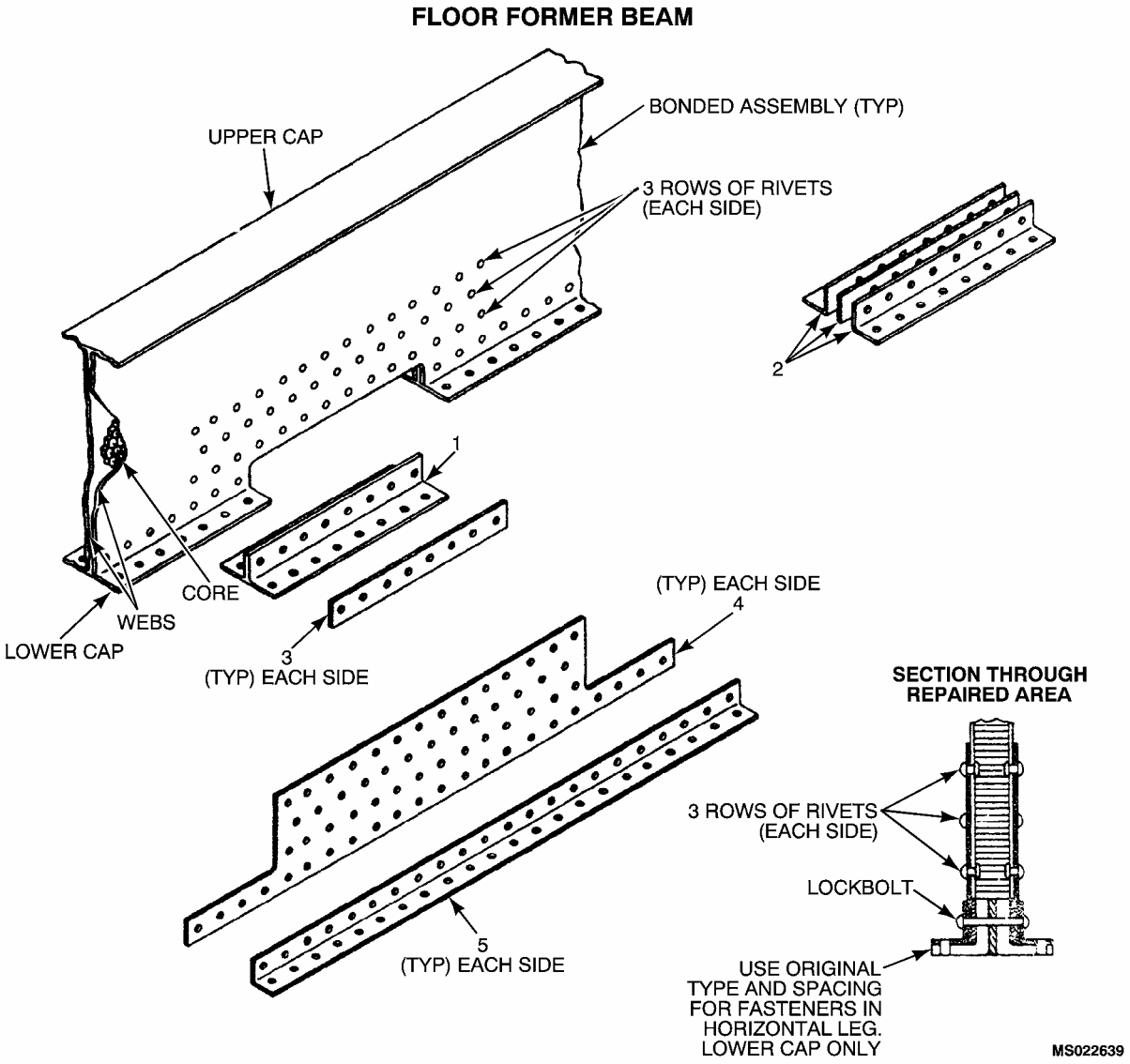
MS022638

NOTE

All Dimensions are in inches.

Figure 1. Sandwich Honeycomb Parts Repair (Sheet 6 of 8)

LOWER CAP - SPECIAL CASES – continued



Repair parts

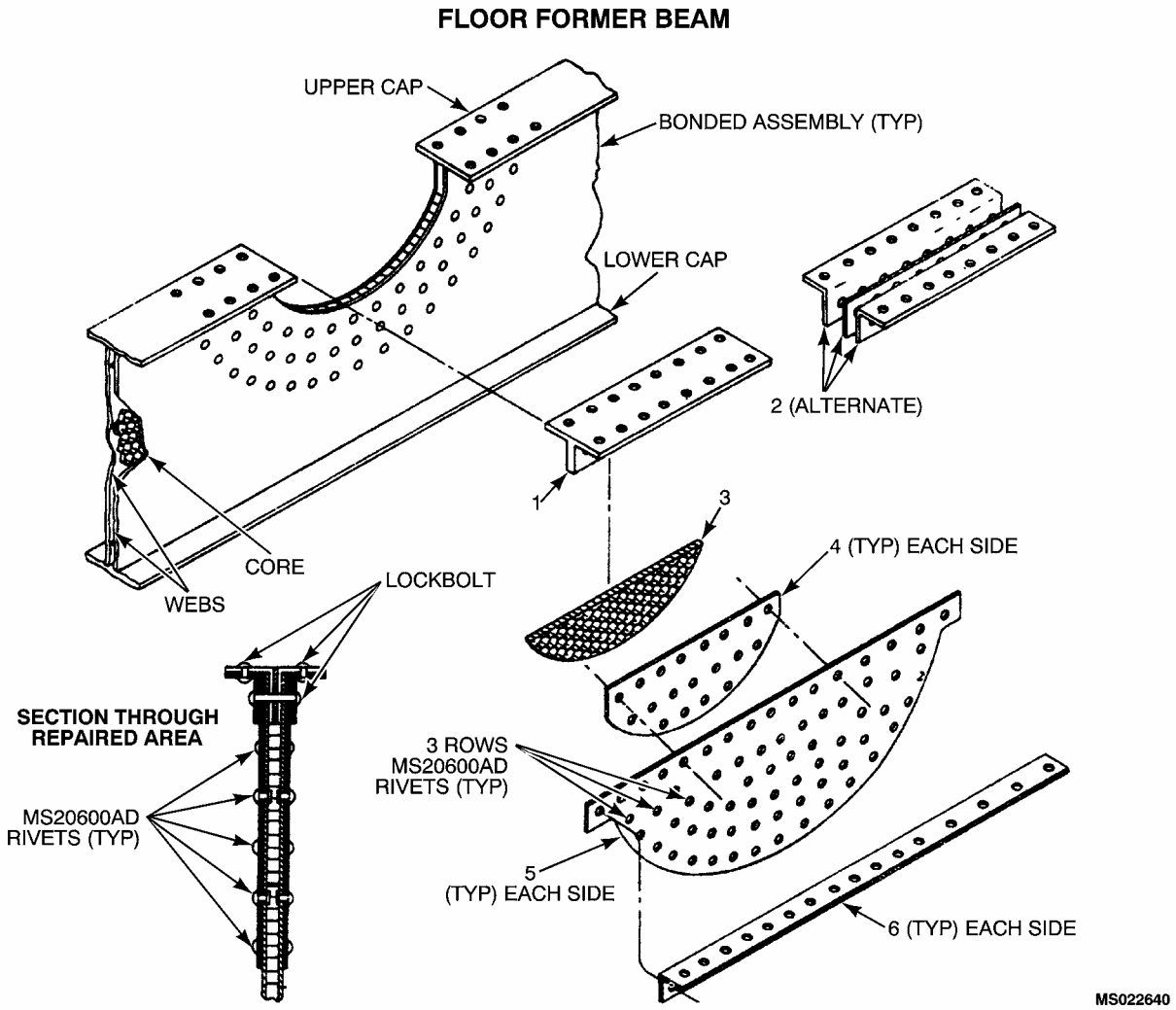
1. Cap Replacement – Section of extended shape same as original. One required.
2. Alternate Cap Replacement – Extruded or formed replacement of two angles and filler. Material and thickness selected to match original or 4130 normalized.
3. Web Filler – Same material and thickness as web. Two required.
4. Web Reinforcement – Same material as original in next heavier thickness. Two required.
5. Cap Reinforcement – Extruded or formed from 7075-T6 or 4130 normalized. Two required.

NOTE

All Dimensions are in inches.

Figure 1. Sandwich Honeycomb Parts Repair (Sheet 7of 8)

LOWER CAP - SPECIAL CASES – continued



Repair Parts

1. Cap Replacement – Section of extended shape same as original. One required.
2. Alternate Cap Replacement – Extruded or formed replacement of two angles and filler. Material and thickness selected to match original or 4130 normalized.
3. Core Replacement – Same type and thickness as original. Refer to applicable repair figure for core thickness.
4. Web Filler – Same material and thickness as web. Two required.
5. Web Reinforcement – Same material as original in next heavier thickness. Two required.
6. Cap Reinforcement – Extruded or formed from 7075-T6 or 4130 normalized. Two required.

NOTE

All Dimensions are in inches.

Figure 1. Sandwich Honeycomb Parts Repair (Sheet 8 of 8)

END OF WORK PACKAGE

DEPOT MAINTENANCE WORK REQUIREMENT
CH-47D HELICOPTER
COMPOSITE REPAIRS

INITIAL SETUP

Test Equipment:
As Required

Tools and Special Tools:
Heat Lamp
Roller
Vacuum Cleaner
Hole Saw or Router
Vacuum System

Material/Parts:
Abrasive Cloth, (Item 1, WP 0157 00)
Abrasive, Paper, (Item 7, WP 0157 00)
Abrasive, Paper, (Item 10, WP 0157 00)
Acetone, Technical (Item 20, WP 0157 00)
Adhesive, (Item 27, WP 0157 00)
Adhesive, (Item 30, WP 0157 00)
Adhesive, (Item 31, WP 0157 00)
Adhesive, (Item 32, WP 0157 00)
Cellophane, Sheet (Item 55, WP 0157 00)
Cloth, Cleaning, (Item 73, WP 0157 00)
Cloth, Glass, (Item 78, WP 0157 00)
Cloth, Glass, (Item 79, WP 0157 00)
Cloth, Glass, (Item 80, WP 0157 00)

Material/Parts – continued:
Cup, Polyethylene (Item 98, WP 0157 00)
Gloves, Anti Contact (Item 108, WP 0157 00)
Hardener, (Item 111, WP 0157 00)
Paper, Wrapping, (Item 129, WP 0157 00)
Tape, Masking (Item 175, WP 0157 00)
Temperature Indicating Strips (Item 187, WP 0157 00)
Tongue Depressor, (Item 190, WP 0157 00)
Wire Fabric, (Item 196, WP 0157 00)

Personnel Required:
As Required

References:
TM 1-1500-204-23 Series
TM 55-1520-240-23 Series
WP 0003 00
WP 0157 00

Equipment Conditions:
As Required

Special Environmental Condition:
As Required

SCOPE

The composite sandwich honeycomb structure consists of nomex honeycomb core (density and thickness very) sandwiched between fiberglass inner and outer skins. The skins are of multiply plies with doublers and reinforced at stress areas. The fuel pods, aft pylon work platforms, aft pylon forward fairing, and ramp aft exterior skin are of this construction.

INSPECTION OF COMPOSITE COMPONENTS

Inspect for cracks, dents, scratches, gouges, delaminations, punctures, and corrosion that can affect a single or both skins and core.

NEGLIGIBLE DAMAGE

Damage to panels and fuel pods consisting of 3 square inches and 0.10-inch deep can be classified as negligible.

REPAIRABLE DAMAGE

1. Damage to panels greater than negligible damage and less than 50 percent of panel area can be repaired. Damage that exceeds repair limits should have an engineering disposition. Refer to WP 0003 00 for engineering disposition request procedures.

REPAIRABLE DAMAGE - continued

2. Damage to fuel pods that exceeds negligible damage and less than 500 square inches can be repaired. Depressions exceeding 3 square inches and 0.10 deep shall be considered as a puncture, and be repaired accordingly. Damage that exceeds repair limits should have an engineering disposition. Refer to WP 0003 00 for engineering disposition request procedures.

DAMAGE REQUIRING REPLACEMENT

Damage that exceeds limits listed below should have an engineering disposition. Refer to WP 0003 00 for engineering disposition request procedures.

1. Replace pod sections that have cracks over 6 inches long, or voids over 1200 square inches.

2. Replace pod sections that have dents larger than 10 square inches, or deeper than 0.15-inches or 15 percent of material thickness. Total dents in a pod section shall not exceed 100 square inches. Dents shall be at least 20 inches apart.

3. Replace pod sections if skin damage exceeds 25 percent of skin area, or which interferes with structure boundary members.

4. Replace pod sections when skin damage in honeycomb section areas exceeds 100 square inches after trimming.

5. Replace pod sections with repairs areas closer than 20 inches together.

PREPARATION OF COMPOSITE PANEL DAMAGE AREA FOR REPAIR

WARNING

ACETONE. TECHNICAL

1. Clean damage area using cleaning cloth (Item 73, WP 0157 00) damp with acetone, technical (Item 20, WP 0157 00). Wear gloves (Item 108, WP 0157 00). Wipe dry with clean dry cloth.

2. Examine for type and location of damage. Note if damage is limited to surface skin only, or damage extends into core and bottom skin.

3. Check area around damage for skin delamination by tapping with a small metallic object, such as a coin. A dull sound indicates delamination.

4. If damage penetrates surface skin check core for water, oil, fuel, dirt, or other foreign matter.

5. If water or other fluids has entered core, remove it as follows:

   a. Cut away damaged skin to expose core in the damaged area.

   b. Remove standing fluid from core using a vacuum cleaner.

PREPARATION OF COMPOSITE PANEL DAMAGE AREA FOR REPAIR - continued

WARNING

SANDING OPERATIONS

NOTE

Removal of all adhesive clinging to core is not required.

c. Remove adhesive from top of core surface using abrasive paper (Item 10, WP 0157 00). Remove adhesive particles using a vacuum cleaner.

d. Dry the wet core by using wire fabric (Item 196, WP 0157 00) and glass cloth (Item 78, WP 0157 00); install a vacuum bag over the affected area and apply vacuum. Apply heat to the area using a heat lamp for 1 hour at 150 to 160 degrees F (68 to 71degrees C). Set heat lamp at 11 to 12 inches from repair area.

CAUTION

Do not exceed 160 degrees F (71degrees C) at surface. Damage will occur.

e. Remove vacuum and check exposed core for dryness.

REPAIR COMPOSITE POD SKIN WITH MINOR DAMAGE

Minor surface damage such as dents, scratches or pits in the resin where the damage does not penetrate first ply of fabric.

CAUTION

Reinforced plastic (fiberglass/epoxy) dust is very abrasive and may damage other equipment and/or contaminate parts with which it comes in contact. Cover or remove equipment from work area.

Repair

1. Determine size of repair required. Mask around damaged area as close as possible to final patch size. Allow one-inch minimum overlap beyond edge of damage.

WARNING

ACETONE, TECHNICAL

2. Remove finish from marked area using sanding block and abrasive paper (Item 7, WP 0157 00). Use cleaning cloth (Item 73, WP 0157 00) damp with acetone, technical (Item 20, WP 0157 00) as needed to soften finish. Wear gloves (Item 108, WP 0157 00).

REPAIR COMPOSITE POD SKIN WITH MINOR DAMAGE - continued

WARNING

ADHESIVE

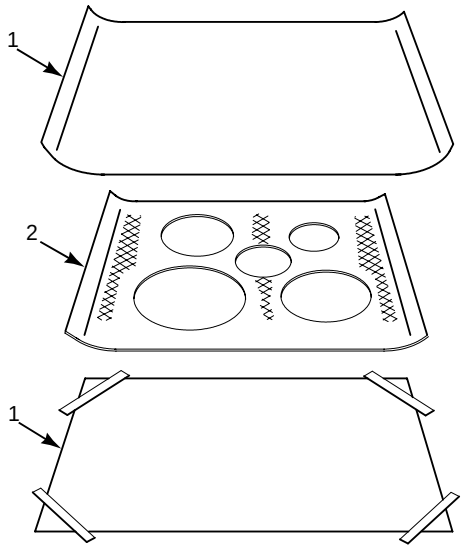
3. Prepare adhesive (Item 32, WP 0157 00) and apply to damaged area. Install vacuum system and allow adhesive to cure. After curing, remove tooling and sand area using abrasive cloth (Item 1, WP 0157 00). Blend repaired area as close as possible to original contour.

4. Touch up paint per WP 0078 00.

GLASS CLOTH PREPARATION FOR COMPOSITE REPAIRS

Preparation of glass cloth for repairs, refer to Figure 1.

CLASS CLOTH PREPARATION FOR REPAIRS



MS022642

1. Cellophane sheet
2. Glass cloth

NOTE

All dimensions are in inches.

Figure 1. Glass Cloth Preparation

1. Determine the size and number of plies needed for each repair.

2. Cut one piece of glass cloth (Item 79 or 80, WP 0157 00) large enough for cutting the number of plies needed.

3. Cut two pieces of cellophane sheet (Item 55, WP 0157 00) at least 1-inch larger, all around, than piece of glass cloth. Fasten one piece to a smooth surface using masking tape (Item 175, WP 0157 00).

GLASS CLOTH PREPARATION FOR COMPOSITE REPAIRS - continued

4. Prepare glass cloth adhesive as follows:

WARNING

ADHESIVE

   a. Weigh 101 parts adhesive (Item 32, WP 0157 00) and 14 parts hardener (Item 111, WP 0157 00) accurately.

   b. Mix weighed parts in polyethylene cup (Item 98, WP 0157 00) until color is uniform. Use a tongue depressor (Item 190, WP 0157 00) and wear gloves (Item 108, WP 0157 00). Working life of mixed adhesive is 30 minutes.

5. Spread adhesive mixture on cellophane sheet. Place a piece of cut glass cloth in adhesive.

6. Cover glass cloth with second piece of cellophane sheet and press using a roller. Continue until glass cloth is saturated with adhesive mixture and all entrapped air is squeezed out.

NOTE

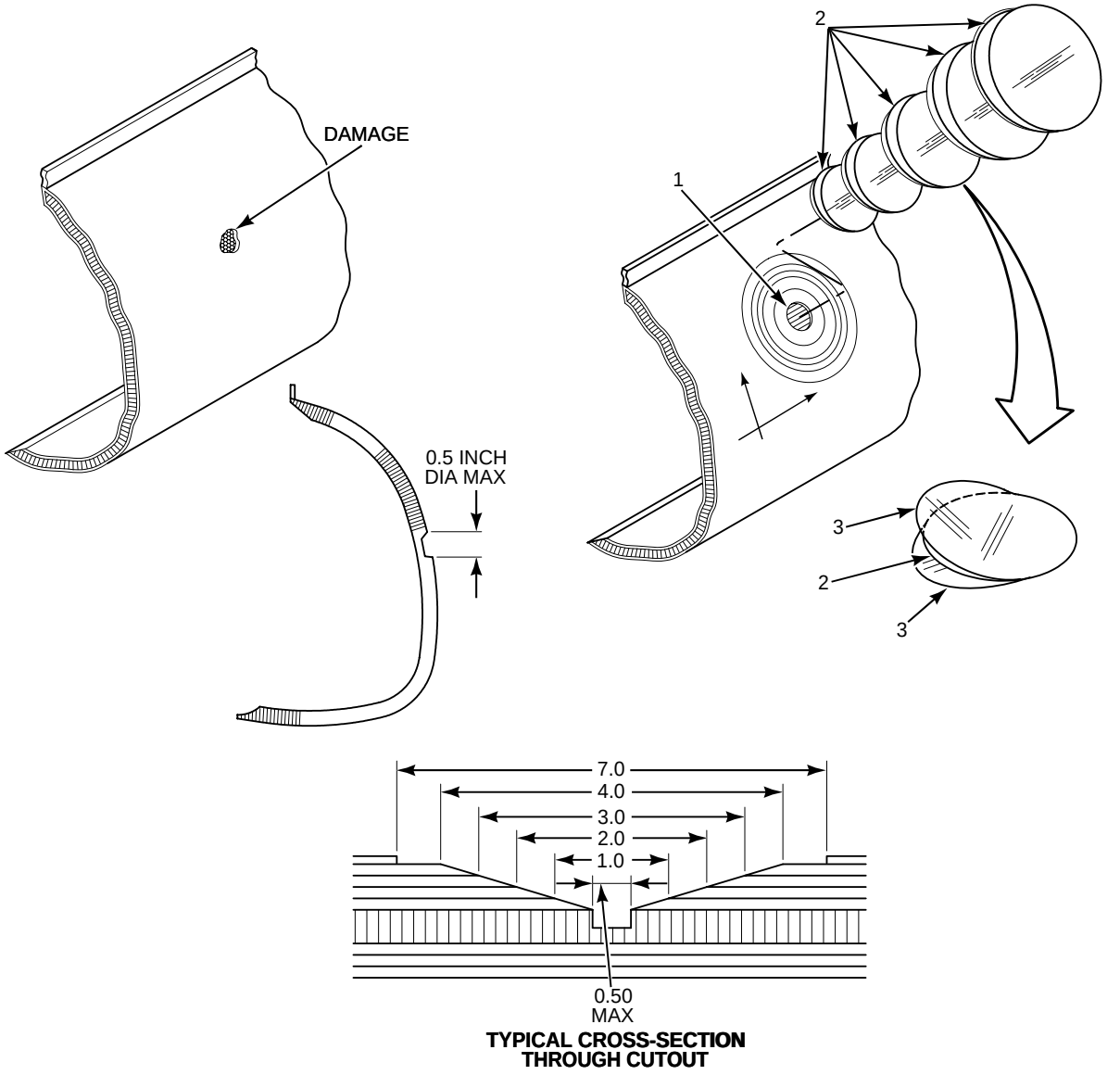
Cellophane decreases fraying of glass cloth edges while cutting.

7. Cut the glass cloth pieces so that the weave of the cloth will run horizontally and vertically. Do not remove the cellophane, cut through it and remove during installation of cloth.

REPAIR OF COMPOSITE POD SKIN PUNCTURE

For single skin puncture damage, refer to Figure 2.

COMPOSITE SINGLE SKIN PUNCTURE DAMAGE



TYPICAL CROSS-SECTION THROUGH CUTOUT

MS022643

NOTE

All dimensions are in inches.

1. Fill holes with adhesive (Item 32, WP 00157 00).
2. Cellophane sheet
3. Glass cloth

Figure 2. Single Skin Puncture Repair

REPAIR OF COMPOSITE POD SKIN PUNCTURE - continued

CAUTION

Reinforced plastic (fiberglass/epoxy) dust is very abrasive and may damage other equipment and/or contaminate parts with which it comes into contact. Cover or remove equipment from work area.

NOTE

This repair is limited to punctures 1/2-inch diameter or less through top skin and core.

Repair

1. Outline of damaged area shall have no corners. A circle or oblong outline is preferred. Use a compass and straight edge.

NOTE

Do not cut into undamaged plies.

2. Cut into damaged plies along outline and removed damaged plies by peeling away or by sanding.

3. Determine number of plies cut through on skin. Mask off area around removed plies equal to at least 1/2-inch for each ply in all directions, plus an additional one inch.

WARNING

ACETONE, TECHNICAL

4. Remove finish from marked area using sanding block and abrasive paper (Item 7, WP 0157 00). Use cleaning cloth (Item 73, WP 0157 00) damp with acetone, technical (Item 20, WP 0157 00) as needed to soften finish. Wear gloves (Item 108, WP 0157 00).

5. Taper edge of cut out plies 1/2-inch for each removed ply. Leave at least one inch between outside edge of taper and border of finish removal area.

WARNING

ACETONE, TECHNICAL

6. Remove sanding dust from repair area with a vacuum cleaner. Clean masked area with cleaning cloth (Item 73, WP 0157 00) damp with acetone, technical (Item 20, WP 0157 00) and wipe clean with dry cloth.

7. Determine number of pieces of glass cloth (Item 79 or 80, WP 0157 00) needed for repair. Number of pieces shall be equal to one more than number of plies removed. Each piece shall overlap previous piece 1/2-inch in all directions. All pieces shall be oriented so that weave of cloth will run horizontally and vertically.

8. In areas where the wire mesh is damaged, repair it is as follows:

   a. Cut a piece of wire fabric (Item 196, WP 0157 00) large enough to overlap existing mesh one inch in all directions.

REPAIR OF COMPOSITE POD SKIN PUNCTURE – continued

WARNING

ADHESIVE

b. Brush a coat of adhesive mixture (Item 30, WP 0157 00) over repair area and existing mesh.

c. Seat replacement mesh over repair area and existing mesh. Make sure mesh is in contact over entire one inch overlap.

d. Install vacuum system and allow adhesive to cure.

NOTE

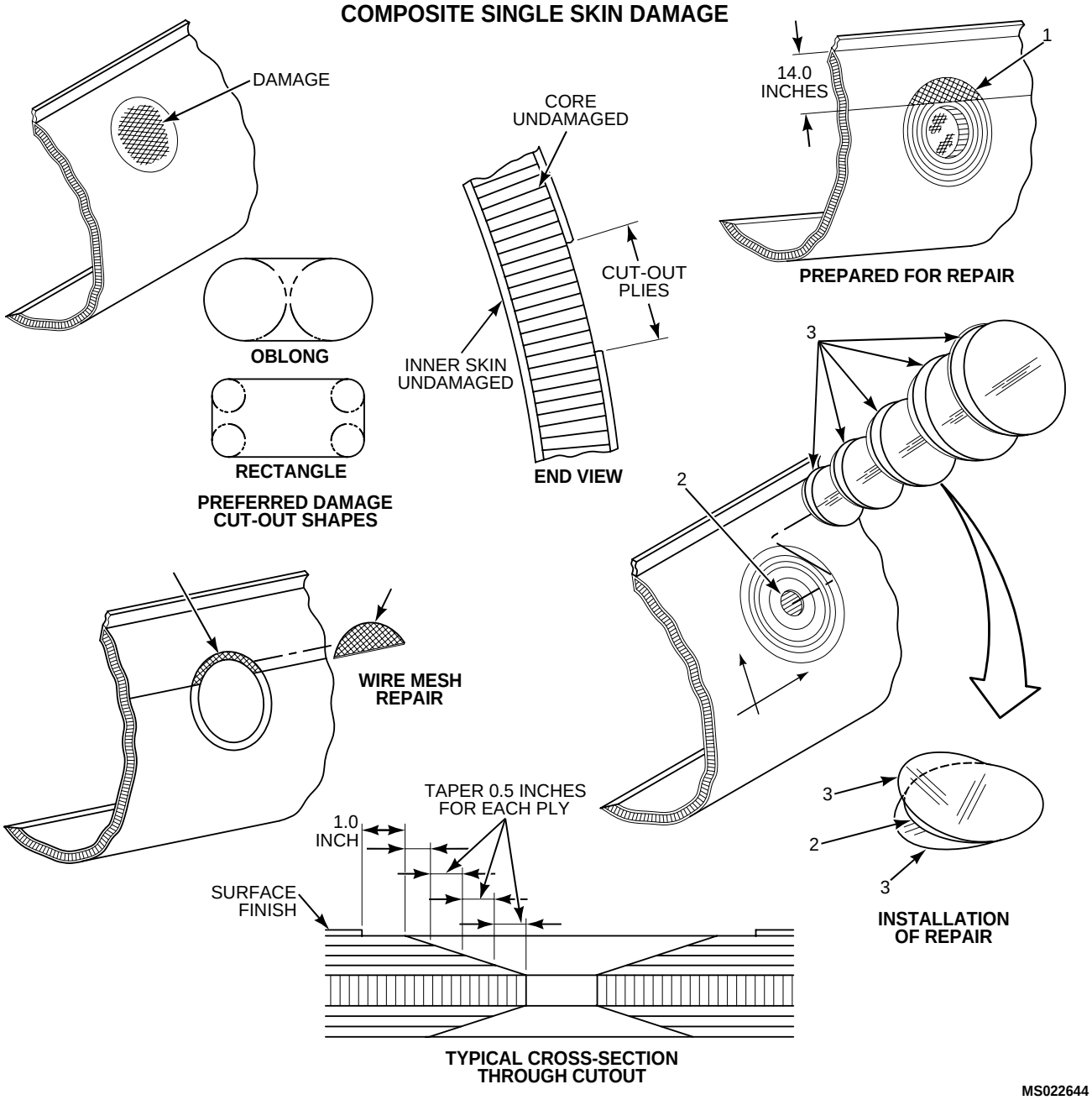
Serviceable cure can be achieved without heat at 70 to 80 degrees F (21 to 27 degrees C) in 24 hours. Vacuum may be removed after 8 hours. Cure may be accelerated by using heat lamp. Do not exceed 175 deg F and monitor with temperature indicating strip (Item 187, WP 0157 00).

9. Remove vacuum bagging material and inspect patch for pits, blisters, voids, and excessive resin deposits. If repair is not satisfactory, rework repair as needed.

10. Touch up paint per WP 0078 00.

REPAIR OF COMPOSITE POD SINGLE SKIN DAMAGE

For damage to single skin without core damage, refer to Figure 3.



NOTE

All dimensions are in inches.

1. Wire mesh
2. Glass cloth
3. Cellophane sheet
4. Wire mesh repair

Figure 3. Single Skin Damage Repair

REPAIR OF COMPOSITE POD SINGLE SKIN DAMAGE - continued

CAUTION

Reinforced plastic (fiberglass/epoxy) dust is very abrasive and may damage other equipment and/or contaminate parts with which it comes in contact. Cover or remove equipment from work area.

Repair

1. Outline of damaged area shall have no corners. A circle or oblong outline is preferred. Use a compass and straight edge.

NOTE

Do not cut into undamaged plies.

2. Cut into damaged plies along outline and removed damaged piles by peeling away or by sanding.

3. Determine number of plies cut through on skin. Mask off area around removed plies equal to at least 1/2-inch for each ply in all directions, plus an additional one inch.

WARNING

ACETONE, TECHNICAL

4. Remove finish from marked area using sanding block and abrasive paper (Item 7, WP 0157 00). Use cleaning cloth (Item 73, WP 0157 00) damp with acetone, technical (Item 20, WP 0157 00) as needed to soften finish. Wear gloves (Item 108, WP 0157 00).

5. Taper edge of cut out plies 1/2-inch for each removed ply. Leave at least one inch between outside edge of taper and border of finish removal area.

WARNING

ACETONE, TECHNICAL

6. Remove sanding dust from repair area with a vacuum cleaner. Clean masked area with cleaning cloth (Item 73, WP 0157 00) damp with acetone, technical (Item 20, WP 0157 00) and wipe clean with dry cloth.

7. Determine number of pieces of glass cloth (Item 79 or 80, WP 0157 00) needed for repair. Number of pieces shall be equal to one more than number of plies removed. Each piece shall overlap previous piece 1/2-inch in all directions. All pieces shall be oriented so that weave of cloth will run horizontally and vertically.

8. In areas where the wire mesh is damaged, repair it is as follows:

   a. Cut a piece of wire fabric (Item 196, WP 0157 00) large enough to overlap existing mesh one inch in all directions.

REPAIR OF COMPOSITE POD SINGLE SKIN DAMAGE - continued

WARNING

ADHESIVE

b. Brush a coat of adhesive mixture (Item 30, WP 0157 00) over repair area and existing mesh.

c. Seat replacement mesh over repair area and existing mesh. Make sure mesh is in contact over entire one inch overlap.

d. Install vacuum system and allow adhesive to cure.

NOTE

Serviceable cure can be achieved without heat at 70 to 80 degrees F (21 to 27 degrees C) in 24 hours. Vacuum may be removed after 8 hours. Cure may be accelerated by using heat lamp. Do not exceed 175 deg F and monitor with temperature indicating strip (Item 187, WP 0157 00).

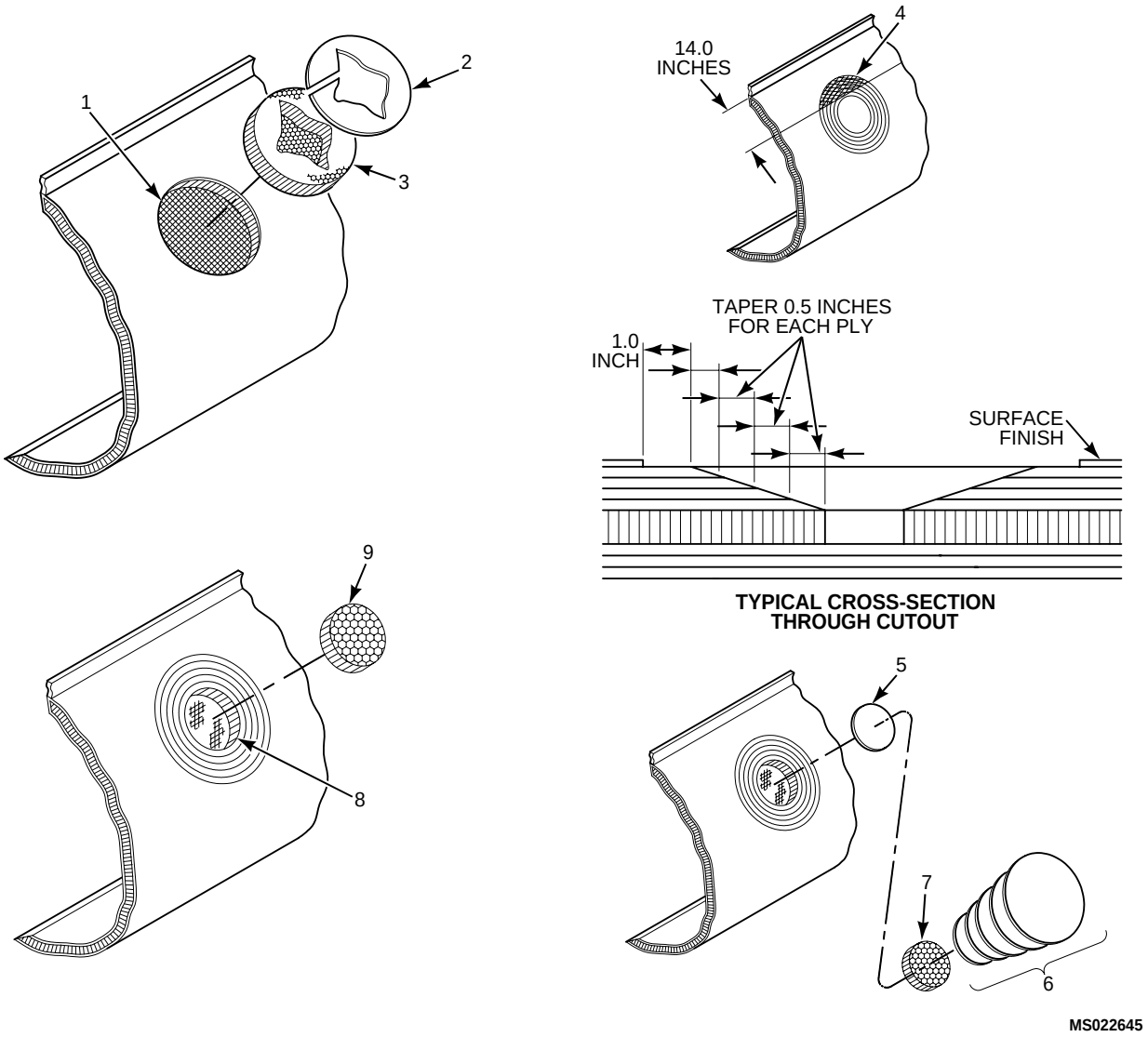
9. Remove vacuum bagging material and inspect patch for pits, blisters, voids, and excessive resin deposits. If repair is not satisfactory, rework repair as needed.

10. Touch up paint per WP 0078 00.

REPAIR OF COMPOSITE POD SINGLE SKIN AND CORE DAMAGE

For one skin and core damage, refer to Figure 4.

COMPOSITE SINGLE SKIN AND CORE DAMAGE



NOTE

All dimensions are in inches.

1. Opposite skin - do not damage.
2. Damaged skin
3. Damaged core
4. Wire mesh
5. Install one piece of glass cloth between opposite skin and new core.
6. Glass cloth plies required for repair.
7. Replacement core for damaged core.
8. Replacement core in shape or cutout.
9. Orient ribbon of core and replacement core in same direction.

Figure 4. Single Skin and Core Damage Repair

REPAIR OF COMPOSITE POD SINGLE SKIN AND CORE DAMAGE - continued

CAUTION

Reinforced plastic (fiberglass/epoxy) dust is very abrasive and may damage other equipment and/or contaminate parts with which it comes in contact. Cover or remove equipment from work area.

Repair

1. Outline of damaged area shall have no corners. A circle or oblong outline is preferred. Use a compass and straight edge.

2. Remove damaged skin and core within outline with hole saw or router. Cut through skin and core with router as follows:
   a. Measure radius of router base. Draw a guideline around repair area outline at a distance equal to the radius.
   b. Install router bit 8. Set depth equal to damaged skin and core thickness.
   c. Start router. Keep router under complete control. Grasp handles with both hands.
   d. Rest edge of router base on surface so that bit is centered on damaged area. Slowly lower router so that bit penetrates the surface skin.
   e. Slowly move router outward until router base just touches guideline. Follow guideline around in a counterclockwise direction.
   f. Keep edge of base just touching guideline.
   g. When cut is complete, move router into center of repair area. Turn off router and remove it.

3. Cut through damaged skin and core with hole saw as follows:
   a. Drill pilot hole at center of damaged area. Make hole the same size as center drill of hole size. If damage does not allow drilling, cover area with several layers of wrapping paper (Item 129, WP 0157 00) and masking tape (Item 175, WP 0157 00). Secure paper with tape.

NOTE

Hole saw shall be same diameter as curve of damage area outline.

   b. Insert center drill of hole saw into pilot hole. Hold saw lightly against skin and slowly turns it clockwise. Use wrench.
   c. Turn saw until it goes through skin.

4. Remove damaged skin and core as follows:
   a. Peel off cutout section of skin using pliers and chisel.

CAUTION

Do not cut or score opposite skin when removing damaged core.

   b. Cut through core to opposite skin. Use penknife with blunt point. Cut only deep enough to separate damaged core.
   c. Remove damaged core. Use pliers and chisel. Do not damage opposite skin.
   d. Sand skin where core was removed. Use abrasive paper (Item 7, WP 0157 00).

REPAIR OF COMPOSITE POD SINGLE SKIN AND CORE DAMAGE - continued

5. Taper edge of cut out plies 1/2-inch for each removed ply. Leave at least one inch between outside edge of taper and border of finish removal area.

WARNING

ACETONE, TECHNICAL

6. Remove sanding dust from repair area with a vacuum cleaner. Clean masked area with cleaning cloths (Item 73, WP 0157 00) damp with acetone, technical (Item 20, WP 0157 00) and wipe clean with dry cloth.

7. In areas where the wire mesh is damaged, replace it is as follows:

   a. Cut a piece of wire fabric (Item 196, WP 0157 00) large enough to overlap existing mesh one inch in all directions.

WARNING

ADHESIVE

   b. Brush a coat of adhesive mixture (Item 31, WP 0157 00) over repair area and existing mesh.

   c. Seat replacement mesh over repair area and existing mesh. Make sure mesh is in contact over entire one-inch overlap.

8. Determine number of pieces of glass cloth (Item 79 or 80, WP 0157 00) needed for repair. Number of pieces shall be equal to one more than number of plies removed. One piece shall be same size as cut out. Each piece shall overlap previous piece 1/2-inch in all directions. All pieces shall be oriented so that weave of cloth will run horizontally and vertically.

CAUTION

Wear gloves (Item 108, WP 0157 00) for remaining steps. Bare hands will contaminate materials, causing poor bonding.

NOTE

Core material must be clean and dry for adhesive to properly bond.

9. Make core plug in shape of cutout but 0.125-inch larger all around and same material as original core. Orient ribbon in the same direction as the existing core.

REPAIR OF COMPOSITE POD SINGLE SKIN AND CORE DAMAGE - continued

WARNING

ADHESIVE

10. Mix core adhesive (Item 30, WP 0157 00) as follows:
    a. Weigh 100 parts of resin and 23 parts of hardener.
    b. Mix weighed parts in polyethylene cup (Item 98, WP 0157 00) until color is uniform. Use tongue depressor (Item 190, WP 0157 00) and wear gloves (Item 108, WP 0157 00).

11. Bond repairs by applying enough pressure to keep repair from shifting. Install a vacuum pump until adhesive cures. Cure adhesive at 150 to 160 degrees F (66 to 71degrees C) for 2.5 hours. Use explosive-proof heat lamp set 11 to 12 inches from repair area. Monitor temperature with temperature indicating strips (Item 187, WP 0157 00).

NOTE

Serviceable cure can be achieved without heat at 70 to 80 degrees F (21 to 27 degrees C) in 24 hours. Vacuum may be removed after 8 hours.

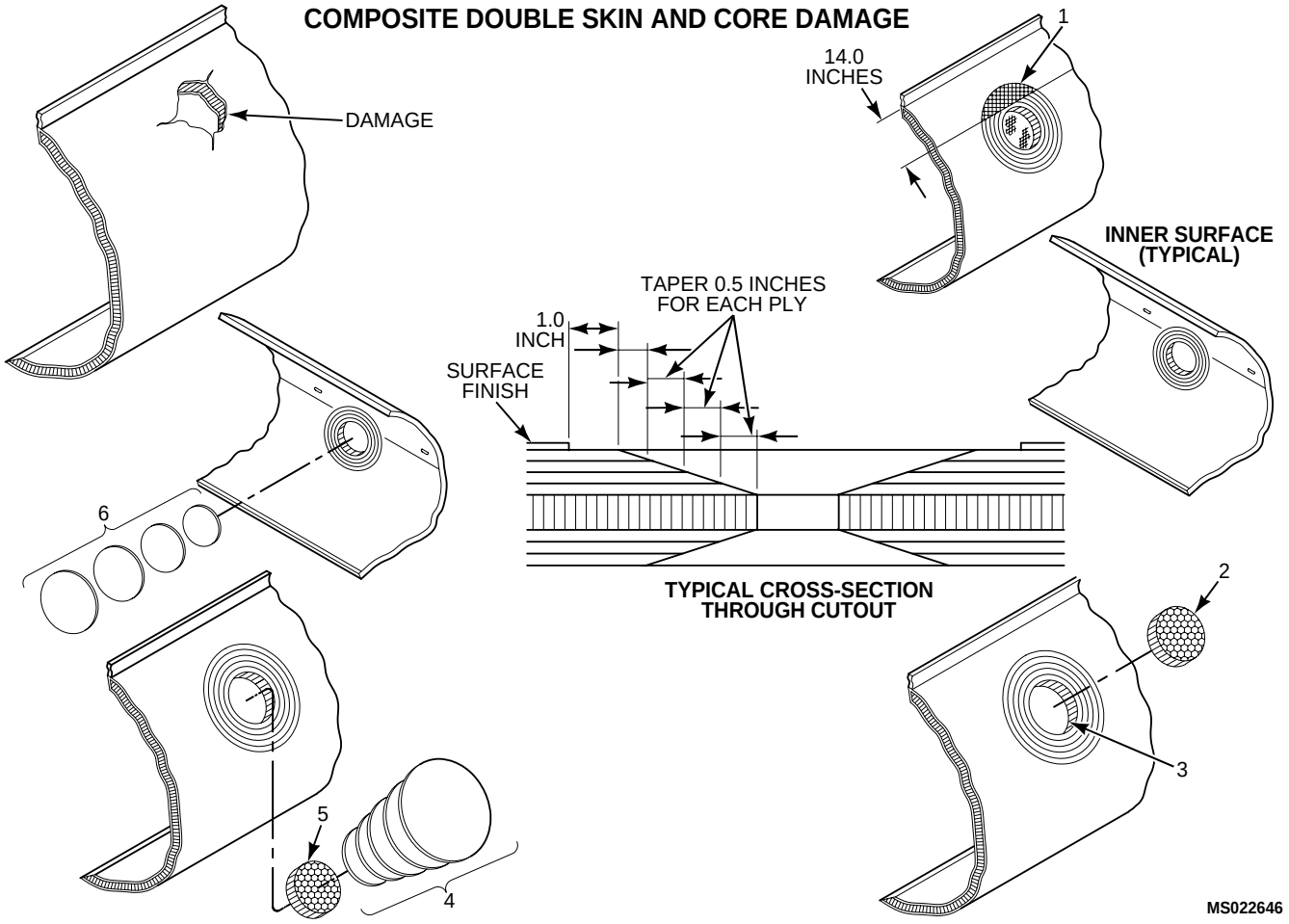
12. Remove vacuum bagging material and inspect patch for pits, blisters, voids, and excessive resin deposits. If repair is not satisfactory, rework repair as needed.

13. Touch up paint per WP 0078 00.

REPAIR OF COMPOSITE POD BOTH SKINS AND CORE DAMAGE

For inner and outer skin and core damage, refer to Figure 5.

REPAIR OF COMPOSITE POD SINGLE SKIN AND CORE DAMAGE - continued



1. Wire mesh
2. Replacement core in shape or cutout.
3. Orient ribbon of core and replacement core in same direction.
4. Glass cloth plies required for repair.
5. Replacement core in shape or cutout.
6. Glass cloth plies required for repair.

NOTE
All dimensions are in inches.

Figure 5. Inner and Outer Skin and Core Damage Repair

REPAIR OF COMPOSITE POD BOTH SKINS AND CORE DAMAGE - continued

CAUTION

Reinforced plastic (fiberglass/epoxy) dust is very abrasive and may damage other equipment and/or contaminate parts with which it comes in contact. Cover or remove equipment from work area.

Repair

1. Outline of damaged area shall have no corners. A circle or oblong outline is preferred. Use a compass and straight edge.

2. Remove damaged skin and core within outline with hole saw or router. Cut through skin and core with router as follows:

   a. Measure radius of router base. Draw a guideline around repair area outline at a distance equal to the radius.

   b. Install router bit 8. Set depth equal to damaged skin and core thickness.

   c. Start router. Keep router under complete control. Grasp handles with both hands.

   d. Rest edge of router base on surface so that bit is centered on damaged area. Slowly lower router so that bit penetrates the surface skin.

   e. Slowly move router outward until router base just touches guideline. Follow guideline around in a counterclockwise direction. Keep edge of base just touching guideline.

   f. When cut is complete, move router into center of repair area. Turn off router and remove it.

3. Cut through damaged skin and core with hole saw as follows:

   a. Drill pilot hole at center of damaged area. Make hole the same size as center drill of hole size. If damage does not allow drilling, cover area with several layers of wrapping paper (Item 129, WP 0157 00) and masking tape (Item 175, WP 0157 00). Secure paper with tape.

NOTE

Hole saw shall be same diameter as curve of damage area outline.

   b. Insert center drill of hole saw into pilot hole. Hold saw lightly against skin and slowly turn it clockwise. Use wrench.

   c. Turn saw until it goes through skin.

4. Remove damaged skin and core as follow:

   a. Peel off cutout section of skin using pliers and chisel.

CAUTION

Do not cut or score opposite skin when removing damaged core.

   b. Cut through core to opposite skin. Use penknife with blunt point. Cut only deep enough to separate damaged core.

   c. Remove damaged core. Use pliers and chisel. Do not damage opposite skin.

   d. Sand skin where core was removed. Use abrasive paper (Item 7, WP 0157 00).

REPAIR OF COMPOSITE POD BOTH SKINS AND CORE DAMAGE - continued

5. Taper edge of cut out plies 1/2-inch for each removed ply. Leave at least one inch between outside edge of taper and border of finish removal area.

WARNING

ACETONE

6. Remove sanding dust from repair area with a vacuum cleaner. Clean masked area with cleaning cloth (Item 73, WP 0157 00) damp with acetone, technical (Item 20, WP 0157 00) and wipe clean with dry cloth.

7. Determine number of pieces of glass cloth (Item 79 or 80, WP 0157 00) needed for repair. Number of pieces shall be equal to one more than number of plies removed. One piece shall be same size as cut out. Each piece shall overlap previous.

8. In areas where the wire mesh is damaged, replace it is as follows:

   a. Cut a piece of wire fabric (Item 196, WP 0157 00) large enough to overlap existing mesh one inch in all directions.

WARNING

ADHESIVE

   b. Brush a coat of adhesive mixture (Item 30, WP 0157 00) over repair area and existing mesh.

   c. Seat replacement mesh over repair area and existing mesh. Make sure mesh is in contact over entire one-inch overlap.

9. Make core plug in shape of cutout but 0.125-inch larger, all around, and same material as original core. Orient ribbon in same direction as existing core.

10. Mix core adhesive (Item 27, WP 0157 00) as follows:

    a. Weigh 100 parts of resin and 23 parts of hardener.

    b. Mix weighed parts in polyethylene cup (Item 98, WP 0157 00) until color is uniform. Use tongue depressor (Item 190, WP 0157 00) and wear gloves (Item 108, WP 0157 00).

11. Bond repairs by applying enough pressure to keep repair from shifting. Install a vacuum pump until adhesive cures. Cure adhesive at 150 to 160 degrees F (66 to 71 degrees C) for 2.5 hours. Use explosive-proof heat lamp set 11 to 12 inches from repair area.

NOTE

Serviceable cure can be achieved without heat at 70 to 80 degrees F (21 to 27 degrees C) in 24 hours. Vacuum may be removed after 8 hours. Cure may be accelerated by using heat lamp. Do not exceed 175 deg F and monitor with temperature indicating strip (Item 187, WP 0157 00).

REPAIR OF COMPOSITE POD BOTH SKINS AND CORE DAMAGE - continued

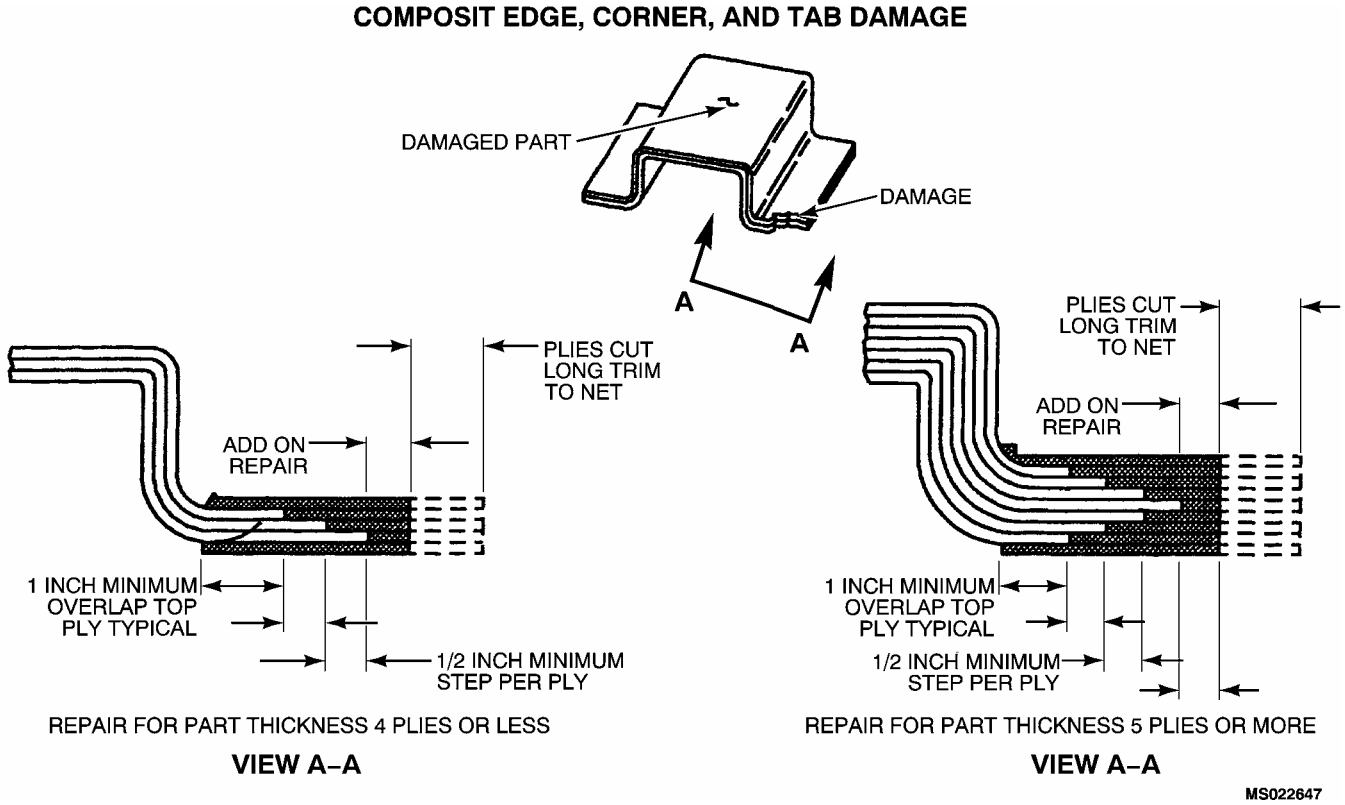
12. Remove vacuum bagging material and inspect patch for pits, blisters, voids, and excessive resin deposits. If repair is not satisfactory, rework repair as needed.

13. Touch up paint per WP 0078 00.

14. Refer to Figure 1 for repair glass cloth preparation.

REPAIR OF DAMAGED EDGE, TAB, AND CORNERS

For damage to edges, tab, and corners, refer to Figure 6.



NOTE

All dimensions are in inches.

Figure 6. Edge, Corner, and Tab Repair

CAUTION

Reinforced plastic (fiberglass/epoxy) dust is very abrasive and may damage other equipment and/or contaminate parts with which it comes in contact. Cover or remove equipment from work area.

Repair

1. Outline damaged edges or corners. Use a compass and straight edge.

2. Remove number of plies required for the repair. Taper edge of cut out plies 1/2-inch for each removed ply. Sand top and bottom surfaces, using abrasive paper (Item 7, WP 0157 00), at least one inch from edge of last ply to remove surface resin.

3. Remove sanding dust from repair area with a vacuum cleaner. Clean masked area with cleaning cloth (Item 73, WP 0157 00) damp with acetone, technical (Item 20, WP 0157 00) and wipe clean with dry cloth.

4. Cut plies of glass cloth (Item 79 or 80, WP 0157 00) needed for each step down for the repair. Cut two additional plies to overlap last step down by one inch.

REPAIR OF DAMAGED EDGE, TAB, AND CORNERS - continued

NOTE

Replacement plies of glass cloth should be cut to correspond to the fabric direction of the surface ply. When cutting plies of class cloth, allow extra length for trimming after curing.

5. Prepare plies per glass cloth preparation instructions below.

6. Bond repairs by applying enough pressure to keep repair from shifting. Vacuum bag, clamping plates, or weights and pressure plates may apply pressure until adhesive cures. Cure adhesive at 150 to 160 degrees F (68 to 71 degrees C) for 2.5 hours. Use explosive-proof heat lamp set 11 to 12 inches from repair area.

NOTE

Serviceable cure can be achieved without heat at 70 to 80 degrees F (21 to 27 degrees C) in 24 hours. Vacuum may be removed after 8 hours. Cure may be accelerated by using heat lamp. Do not exceed 175 deg F and monitor with temperature indicating strip (Item 187, WP 0157 00).

7. Remove vacuum bagging material and inspect patch for pits, blisters, voids, and excessive resin deposits. If repair is not satisfactory, rework repair as needed.

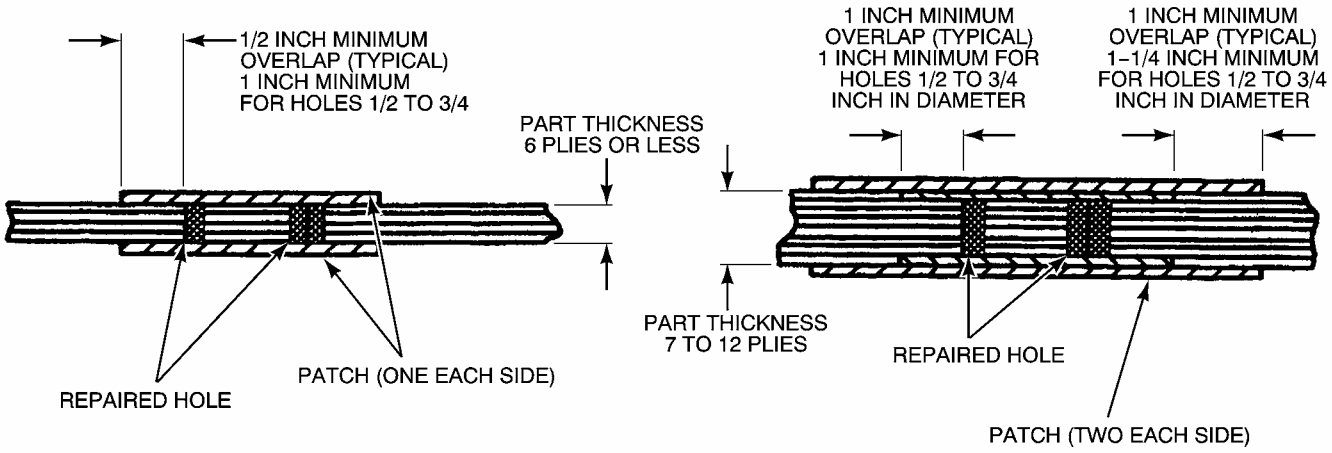
8. Touch up paint per WP 0078 00.

9. Refer to Figure 1 for repair glass cloth preparation.

REPAIR OF DAMAGED, MISLOCATED, AND OVERSIZE HOLES

Repair damaged, mislocated, and oversize holes; refer to Figure 7.

COMPOSITE DAMAGED, MISLOCATED, AND OVERSIZED HOLES



NOTE

All dimensions are in inches.

Figure 7. Hole Damage Repairs

CAUTION

Reinforced plastic (fiberglass/epoxy) dust is very abrasive and may damage other equipment and/or contaminate parts with which it comes in contact. Cover or remove equipment from work area.

Repair

NOTE

Step 1 applies if part thickness is 6 plies or less.
Step 2 applies if part thickness is 7plies or more.

1. Determine size of repair required. Mask around damaged area as close to final patch size as possible. Sand area to remove surface resin using abrasive cloth, (Item 1, WP 0157 00), on both sides. Allow 1/2-inch minimum overlap for holes less than 1/2-inch diameter. Allow one inch minimum overlap for holes 1/2 to 3/4-inch diameter. Mask both sides of part.

2. Determine size of repair required. Mask around damaged area as close to final patch size as possible. Sand area to remove surface resin using abrasive cloth, (Item 1, WP 0157 00), on both sides. Mark a 1/2-inch outline around holes less then 1/2-inch in diameter. Mark a 3/4-inch outline around holes 1/2 to 3/4-inch in diameter. Remove one ply in marked off area using abrasive cloth (Item 1, WP 0157 00). Allow one inch minimum overlap for holes less than 1/2-inch in diameter. Allow 1 3/4-inch minimum overlap for holes 1/2 to 3/4-inch in diameter. Mark both sides of part.

REPAIR OF DAMAGED, MISLOCATED, AND OVERSIZE HOLES

WARNING

ACETONE

3. Clean areas using cleaning cloth (Item 73, WP 0157 00) moistened with acetone, technical (Item 20, WP 0157 00). Allow repair area to dry. Protect area from contamination.

4. Cut glass cloth (Item 79 or 80, WP 0157 00) to correspond to the pattern of the required plies. Prepare adhesive (Item 31, WP 0157 00).

WARNING

ADHESIVE

5. Apply a coat of adhesive on repair area. Apply saturated glass cloth to repair. Fill damaged hole with adhesive, turn part over and apply saturated glass cloth to damaged area. Make sure the glass cloth weave is place in same direction as surface ply of part.

6. Place wrapping paper (Item 129, WP 0157 00) over repair area. Carefully work out all air bubbles and excess adhesive using a squeegee.

7. Apply pressure to repair to avoid shifting. Pressure to repair may be supplied by vacuum bag, clamping plates, or weights and pressure plates.

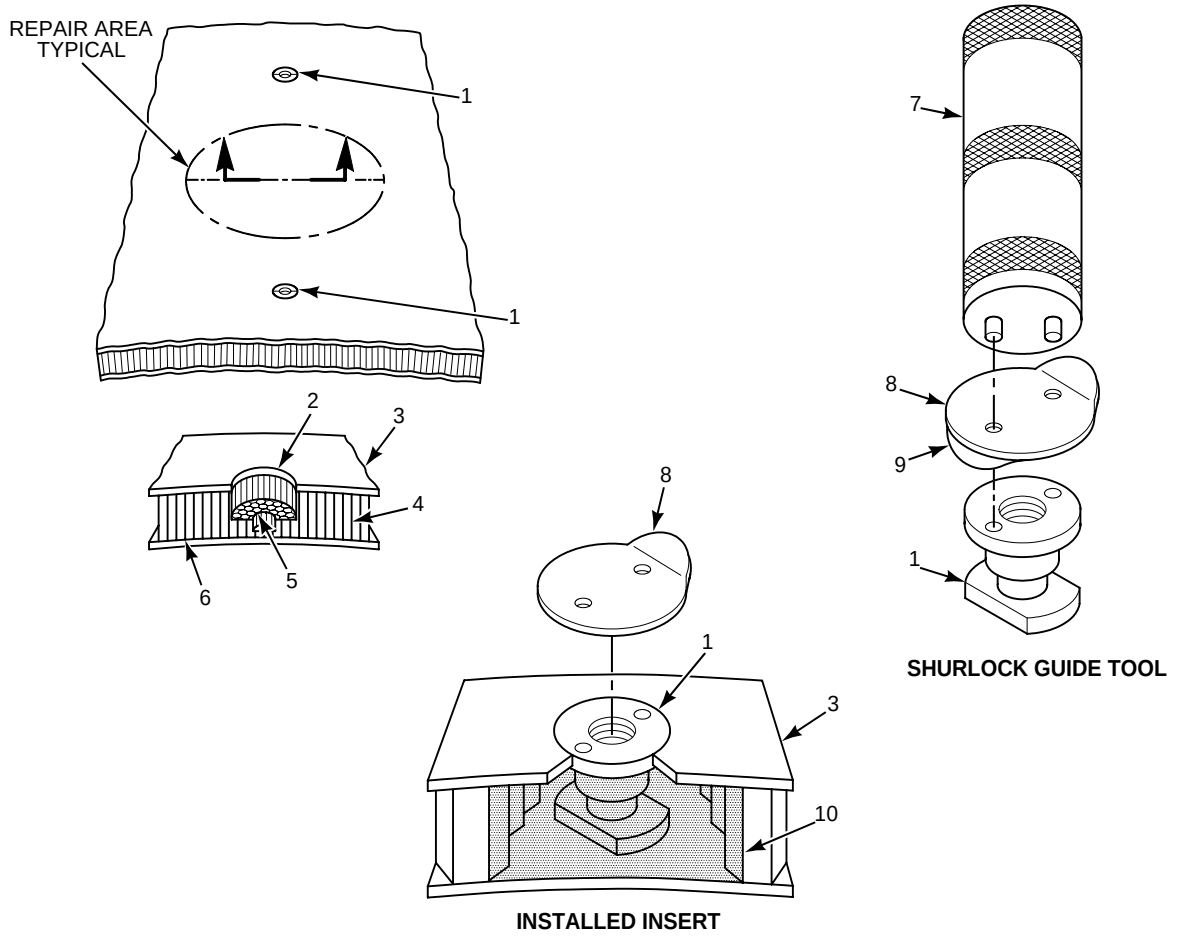
8. After repair has cured remove tools and bagging from repair. Blend repair as close as possible to original contour. Inspect repair for pits, blisters, voids, and excessive adhesive deposits. If repair is not satisfactory, rework repair as needed.

9. Touch up paint per WP 0078 00.

INSTALLATION AND REPLACEMENT OF SHUR-LOK INSERTS

For replacement or installation of damaged or missing inserts, refer to Figure 8.

COMPOSITE SHUR-LOK INSERT INSTALLATION



1. Replacement insert
2. Remove core material to depth of opposite skin.
3. Panel skin
4. Panel core material
5. Pilot hole for location of insert
6. Panel skin
7. Shur-lok guide tool
8. Tab, placed on guide tool pins
9. Remove paper backing for tab.
10. Adhesive for installing insert

NOTE
All dimensions are in inches.

Figure 8. Shur-Lok Installation

INSTALLATION AND REPLACEMENT OF SHUR-LOK INSERTS

CAUTION

Reinforced plastic (fiberglass/epoxy) dust is very abrasive and may damage other equipment and/or contaminate parts with which it comes in contact. Cover or remove equipment from work area.

Repair

1. Remove damaged insert and inspect surrounding area for delamination, oversize hole, and cleanliness.
2. Repair oversize or damaged holes using previous repair methods.
3. Determine proper location of insert or inserts.

CAUTION

Drilling into opposite skin will require repair of skin.

4. Carefully drill a pilot hole at proper location using a 1/8 inch drill.
5. Counterbore pilot hole to diameter of insert being installed and remove core to depth of opposing skin, being careful not to damage the skin.
6. Prepare guide tool by removing paper backing from tab, align hole, insert tool, and press firmly against side of tab.

WARNING

ADHESIVE

7. Prepare adhesive (Item 31, WP 0157 00). Weigh 100 parts of adhesive, 25 parts of hardener (Item 111, WP 0157 00), and mix until color is uniform.

NOTE

Working life of adhesive is about 30 minutes.

8. Fill hole about half full of mixed adhesive. Install insert in center of hole, press tab to imbed insert into adhesive and remove tab. Inject adhesive through either hole in insert using hypodermic injector to complete proper fill of adhesive. Wipe off excessive adhesive from top of insert use cleaning cloth (Item 73, WP 0157 00) and allow adhesive to cure.
9. Touch up paint per WP 0078 00.

END OF WORK PACKAGE

DEPOT MAINTENANCE WORK REQUIREMENT
CH-47D HELICOPTER
APPLICATION OF FILLERS

INITIAL SETUP

Test Equipment:
As Required

Tools and Special Tools:
Trip Balance, NSN 6670-00-401-7195
Rubber Spatula
Heat Lamp

Material/Parts:
Abrasive Paper (Item 10, WP 0157 00)
Accelerator (Item 19, WP 0157 00)
Cloth, Cleaning (Item 73, WP 0157 00)
Cup, Polyethylene (Item 98, WP 0157 00)
Curing Agent (Item 99, WP 0157 00)
Cleaning Compound, Solvent (Item 69, WP 0157 00)
Filler, Corfil 615 (Item 103, WP 0157 00)
Gloves, Anti Contact (Item 108, WP 0157 00)
Naphtha, Aliphatic (Item 122, WP 0157 00)
Resin Compound (Item 150, WP 0157 00)
Tape, Masking (Item 175, WP 0157 00)
Temperature Indicating Strips (Items 187, 188, 188.2, 188.3, WP 0157 00)
Tongue Depressor (Item 190, WP 0157 00)

Personnel Required:
As Required

References:
TM 1-1500-204-23 Series
TM 55-1520-240-23 Series
WP 0078 00
WP 0157 00

Equipment Conditions:
As Required

Special Environmental Condition:
As Required

APPLICATION OF FILLER, CORFIL 615

WARNING

FILLER

This procedure is used when adding filler (Item 103, WP 0157 00) as an edge filler or core filler on aluminum alloy sandwich honeycomb structures.

WARNING

CURING AGENT

1. Weigh 7 parts of curing agent (Item 99, WP 0157 00) and 100 parts of filler (Item 103, WP 0157 00). Use trip balance. Mix thoroughly in polyethylene cup (Item 98, WP 0157 00). Use tongue depressor (Item 190, WP 0157 00).

APPLICATION OF FILLER, CORFIL 615 - continued

NOTE

Working life of filler is 30 minutes to 2 hours. Handling material in flat shallow tray can extend life to 2 hours.

WARNING

NAPHTHA, ALIPHATIC

2. Remove all loose filler or dirt from damaged area. Clean area. Apply naphtha, aliphatic (Item 122, WP 0157 00). Use brush. Wear goggles.
3. Wait until naphtha dries completely.
4. Mask all areas around damage. Use masking tape (Item 175, WP 0157 00).
5. Pour filler material into damaged area to a height slightly higher than core or edge.
6. Allow material to harden for 6 hours at 70 degrees F (21 degrees C), or use heat lamps to cure at 120 degrees (48 degrees C) for 1 hour. Use temperature indicating strip (Item 188.3, WP 0157 00) to monitor temperature.
7. Blend repairs. Use abrasive paper (Item 10, WP 0157 00).
8. Remove sanding dust and chips.
9. Refinish repaired area per WP 0078 00.

APPLICATION OF PALMER 611 RESIN COMPOUND

WARNING

RESIN COMPOUND

1. Apply resin compound (Item 150, WP 0157 00) at edge on insert fairings as follows:
   a. Weigh 95 parts of compound (Item 150, WP 0157 00) and 5 parts of accelerator (Item 19, WP 0157 00). Wear gloves (Item 108, WP 0157 00).
   b. Stir components in polyethylene cup (Item 98, WP 0157 00) using tongue depressor (Item 190, WP 0157 00).

NOTE

Working life of compound is 2 1/2 to 3 1/2 hours at 75 degrees F (24 degrees C).

APPLICATION OF PALMER 611 RESIN COMPOUND - continued

WARNING

CLEANING COMPOUND, SOLVENT

c. Clean parts. Use cleaning cloth (Item 73, WP 0157 00) soaked with cleaning compound, solvent (Item 69, WP 0157 00).

d. Roughen cleaned surface lightly. Use abrasive paper (Item 10, WP 0157 00). Repeat step c.

e. Apply compound and work in with tongue depressor (Item 190, WP 0157 00) or rubber spatula.

f. Remove excess compound using rubber spatula.

2. Cure compound. Use any of following cycles. Use heat lamp and appropriate temperature indicating strips.

   a. 16 hours at 120 degrees F (49 degrees C). Use temperature indicating strip (Item 188.3, WP 0157 00).

   b. 1 hour at 150 degrees F (66 degrees C); then 16 hours at 70 degrees F (21 degrees C). Use temperature indicating strip (Item 187, WP 0157 00).

   c. 1 hour at 200 degrees F (93 degrees C). Use temperature indicating strip (Item 188, WP 0157 00).

END OF WORK PACKAGE

DEPOT MAINTENANCE WORK REQUIREMENT

CH-47D HELICOPTER

SKIN AND WEB REPAIRS

INITIAL SETUP

Test Equipment:
As Required

Tools and Special Tools:
As Required

Material/Parts:
Gloves, Protective, (Item 106, WP 0157 00)
Primer, Epoxy, (Item 140, WP 0157 00)
Sealant, (Item 156, WP 0157 00)

Personnel Required:
As Required

References:
TM 1-1500-204-23 Series
TM 55-1520-240-23 Series
WP 0003 00
WP 0080 00
WP 0081 00
WP 0107 00
WP 0157 00

Equipment Conditions:
As Required

Special Environmental Condition:
As Required

SKINS AND WEBS

The skin panels and webs of the fuselage and aft pylon are aluminum alloy. Variances in skin fabrication materials such as sandwich-honeycomb or fiberglass are described in the component definition. Skin panels and repairs are sealed watertight.

MINOR DAMAGE

1. Minor damage is defined as nicks or scratches, whose depth, after burnishing, does not exceed 10 percent of the thickness of the material.

2. Holes and cracks may be considered minor damage, but must be repaired.

3. All minor damage must clear bolts, rivets, and radii a minimum of 3/4-inch.

REPAIRABLE DAMAGE

Repairable damage is more extensive damage. Repairable damage shall not affect more then 25 percent of the skin area between boundary members and clears structural members. Repairable damage requires less than full skin insertion.

REPLACEMENT DAMAGE

Replacement damage may be caused by extensive skin damage or numerous isolated damages where replacement of a full panel is necessary. Skin panels are replaced along original boundary members. Joints and seams are sealed the same as the original installation.

SKIN AND WEB REPAIR

This WP will not attempt to describe the many skin and web repair schemes that are possible on the CH-47 airframe. A few of the more common and frequently used procedures will be described. For more repair procedures refer to TM 55-1520-240-23 and/or TM 1-1500-204-23. If a specific repair procedure is not described in the referenced TM's or this DMWR, the Depot/Contractor should submit a Maintenance Engineering Call (MEC)

SKIN AND WEB REPAIR - continued

to Engineering (AMRDEC) IAW WP 0003 00, requesting repair instructions for the particular noted damage to the airframe.

Table 1, in conjunction with Figure 1, Sheet 1 thru Sheet 3, depicts the various aircraft exterior skins, the original manufacture materials, and the recommended repair materials. For more detail, refer to manufacturer's drawings.

Table 1. Fuselage Exterior Skin

INDEX NO.	NOMENCLATURE	ORIGINAL MATERIAL	REPAIR MATERIAL
1	Skin Panel	0.040 2024-T3 Clad	0.050 2024-T3 Clad
2	Skin Panel	0.032 2024-T3 Clad	0.040 2024-T3 Clad
3	Skin Panel	0.025 2024-T3 Clad	0.032 2024-T3 Clad
4	Skin Panel	0.032 2024-T3 Clad	0.040 2024-T3 Clad
5	SHELF	0.040 321 (OR 347) ANL CRES	0.040 321 (OR 347) ANL CRES
6	Skin Panel	0.020 301 ANL CRES	0.025 301 ANL CRES
7	Skin Panel	0.025 2024-T3 Clad	0.032 2024-T3 Clad
8	Skin Panel	0.063 2024-T3 Clad	0.063 2024-T3 Clad
9	Trailing Edge Closure Panel	0.025 2024-T3 Clad	0.032 2024-T3 Clad
10	Skin Panel	0.040 7075-T6 Clad	0.050 7075-T6 Clad
11	Skin Panel	0.032 7075-T6 Clad	0.040 7075-T6 Clad
12	Skin Panel	0.025 2024-T3 Clad	0.032 2024-T3 Clad
13	Strap	0.063 7075-T6 Clad	0.063 7075-T6 Clad
14	Finger Plate	0.100 7075-T6 Bare	0.100 7075-T6 Clad
15	Finger Plate	0.100 7075-T6 Bare	0.100 7075-T6 Clad
16	Cover	0.032 2024-T3 Clad	0.032 2024-T3 Clad
17	Cover	0.032 7075-T6 Clad	0.032 7075-T6 Clad
18	Skin Panel	0.040 2024-T3 Clad	0.050 2024-T3 Clad
19	Skin Panel	0.050 7075-T6 Clad	0.063 7075-T6 Clad
20	Skin Panel	0.050 2024-T3 Clad	0.063 2024-T3 Clad
21	Skin Panel	0.071 2024-T3 Clad	0.071 2024-T3 Clad
22	Skin Panel	0.070 2024-T3 Clad	0.070 2024-T3 Clad
23	Skin Panel	0.050 2024-T3 Clad	0.063 2024-T3 Clad
24	Skin Panel	0.025 7075-T6 Clad	0.032 7075-T6 Clad
25	Skin Panel	0.063 7075-T6 Clad	0.063 7075-T6 Clad
26	Skin Panel	0.020 2024-T3 Clad	0.025 2024-T3 Clad
27	Skin Panel	0.020 2024-T4 Clad	0.025 2024-T3 Clad
28	Panel	Refer To Note E	
29	Access Panel	Refer To Note F	
30	Walkway	Refer To Note G	
31	Skin Panel Chem Mill	0.110 7075-T73 Bare Note H	0.110 7075-T6 Clad
32	Skin Panel	0.025 2024-T3 Clad Note H	0.032 2024-T3 Clad
33	Skin Panel	0.032 2024-T3 Clad Note H	0.040 2024-T3 Clad

SKIN AND WEB REPAIR - continued

Table 1. Fuselage Exterior Skin - continued

INDEX NO.	NOMENCLATURE	ORIGINAL MATERIAL	REPAIR MATERIAL
34	Skin Panel	0.025 2024-T3 Clad Note H	0.032 2024-T3 Clad
35	Skin Panel	0.050 2024-T3 Clad Note H	0.063 2024-T3 Clad
36	Skin Panel	0.040 2024-T3 Clad Note H	0.050 2024-T3 Clad
37	Skin Panel	0.050 7075-T6 Clad Note H	0.063 2024-T3 Clad
38	Skin Panel	0.025 2024-T3 Clad Note H	0.032 2024-T3 Clad
39	Skin Panel	0.063 2024-T3 Clad Note H	0.063 2024-T3 Clad
40	Skin Panel	0.063 7075-T6 Clad Note H	0.063 7075-T6 Clad
41	Skin Panel	0.020 7075-T6 Clad Note H	0.063 7075-T6 Clad

NOTES

A. All dimensions are in inches.

B. Stations and waterlines represent the centerline of skin joints.

C. Refer to this WP for information on oil can inspection and repair. Refer to WP 0080 00 for information on watertight sealing.

D. Refer to this WP and referenced TM's for minor damage to skin panels.

E. The panels (Index # 28) are sandwich honeycomb structures. Refer to WP 0083 00 for repair information.

F. Refer to WP 0081 00 for information on repair of access doors and panels.

G. The cabin crown walkways (Index # 30) are sandwich honeycomb structures. Refer to WP 0107 00 for repair procedures.

H. This part is used on aircraft serial number 92-0367 and 92-0368.

SKIN AND WEB REPAIR - continued

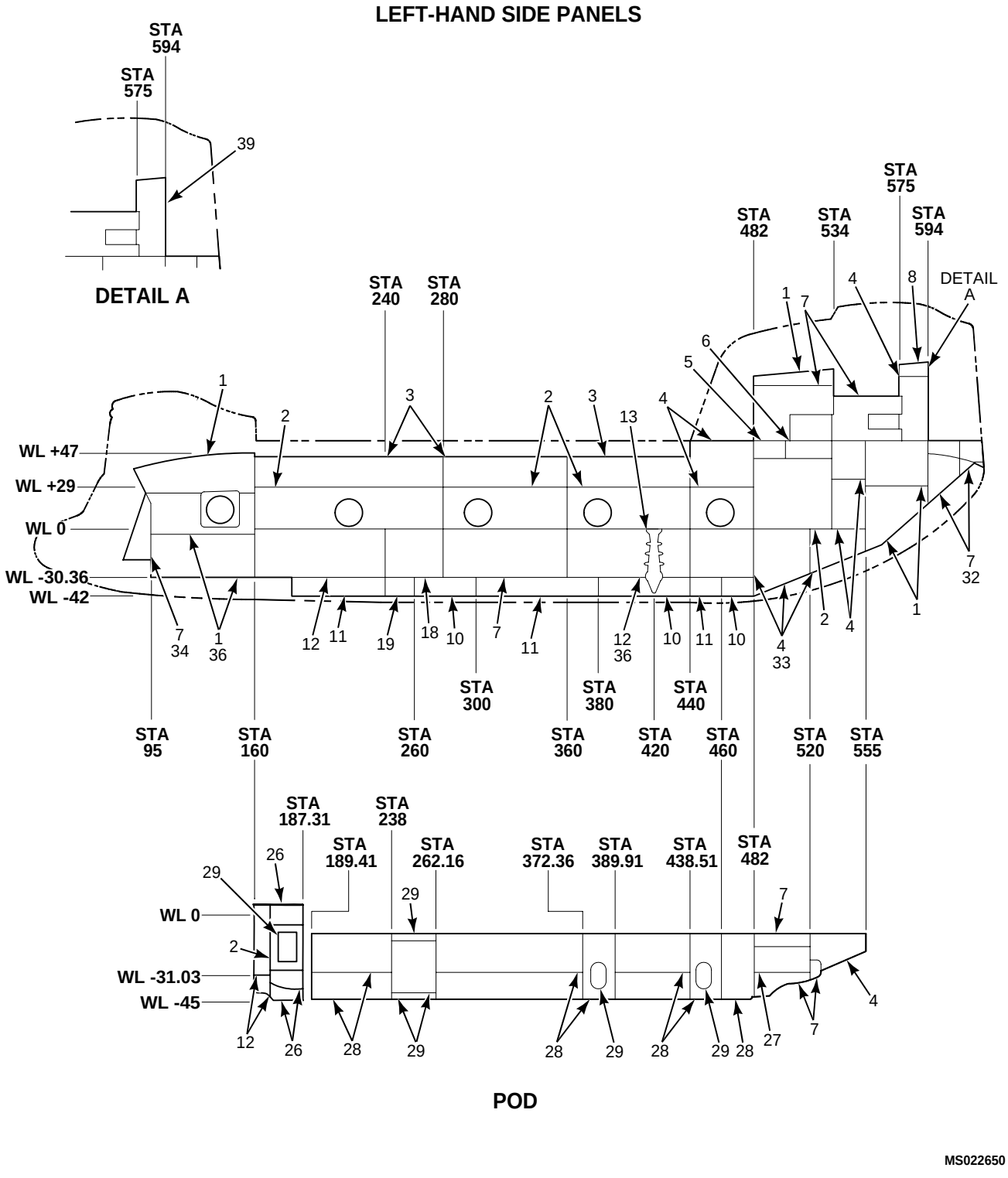


Figure 1. Fuselage Exterior Skin Panels (Sheet 1 of 3)

SKIN AND WEB REPAIR - continued

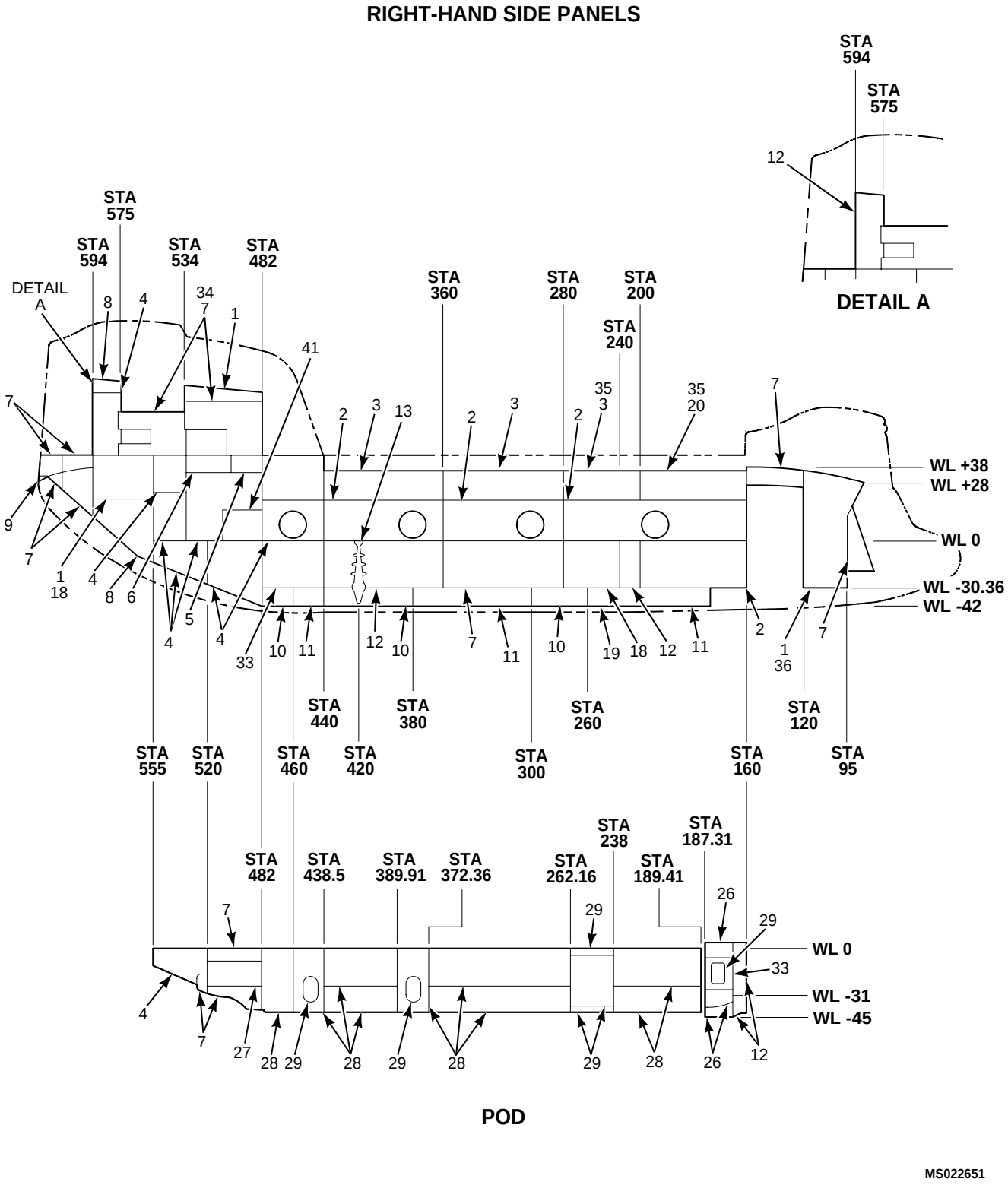


Figure 1. Fuselage Exterior Skin Panels (Sheet 2 of 3)

SKIN AND WEB REPAIR - continued

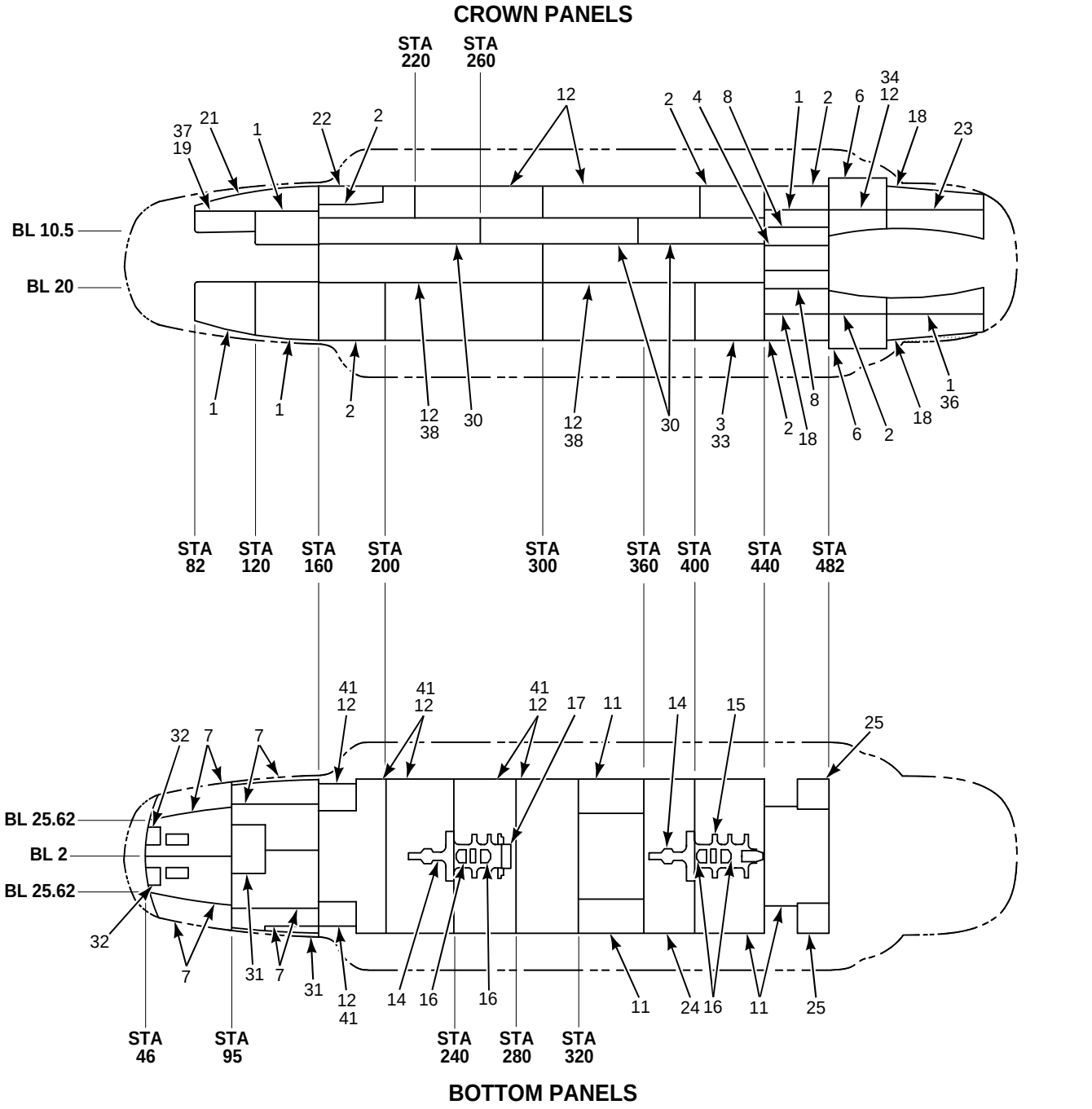


Figure 1. Fuselage Exterior Skin Panels (Sheet 3 of 3)

Subsequent paragraphs in conjunction with Table 2, Table 3, and Figure 2, Sheet 1 thru Sheet 8, describe procedures for coin patch repair of skins, backing plate repair for webs, and oil can repairs. Refer to TM 1-1500-204-23 for rivet type and spacing. Maintain a minimum clearance of 5/8-inch between cutouts and edge of replacements, unless otherwise noted. Insulate dissimilar metals.

COIN PATCH REPAIR FOR SKINS

This repair is for dents, punctures, tears, and small cracks that can be cut out from 1/2 to 11/2-inches in diameter. Maintain a minimum clearance of 5/8-inch between cutouts and edge of replacements, unless otherwise noted. No more than two patches are permitted for each skin panel. Panels not less than 15 x 50 inches, between longer longerons and sta 160 and sta 482, may have a maximum of four patches. All patches must clear adjacent structural members by 1/8-inch and be sealed. Refer to WP 0080 00 for sealing procedures.

1. Cut out damage and make a coin patch of same material and thickness as skin. The patch should have a diameter of 5/16-inch less than the cutout.

2. Make a circular backing plate three times the diameter of the coin patch and from the same material, but in next heavier thickness.

3. Smooth edges of cutout, coin patch, and backing plate with a file. Center coin patch on backing plate and drill rivet holes through coin patch and backing plate. The size and number of rivet holes are determined by size of rivet to be used. In most cases MS20470AD3 rivets can be used.

4. Install and set rivets.

WARNING

EPOXY PRIMER

5. Apply coat of primer (Item 140, WP 0157 00) on all surfaces of coin patch. Allow primer to dry. Wear gloves (Item 106, WP 0157 00).

6. Insert coin patch in cutout from inside. Drill rivet holes through backing plate and skin. Use MS20470AD4 rivets for 0.025-inch thick skin, and MS20470AD5 rivets for skin 0.030-inch or thicker. Rivet pitch should be about 3/4-inch.

WARNING

SEALANT

7. Remove coin patch from cutout after establishing a rivet pattern and seal faying surfaces of cutout and coin patch. Apply sealant (Item 156, WP 0157 00) to coin patch and cutout. Wear gloves (Item 106, WP 0157 00).

8. Position coin patch and backing plate in cutout. Install rivets.

9. If damage is less than 1/2-inch and larger than 3/16-inch and is located over undamaged frame or stiffener, do not use a backplate. Rivet coin patch to frame or stiffener.

BACKING PLATE REPAIR FOR WEBS

This repair is intended for damage occurring in webs, such as holes, tears, or sharp dents that can be cut out. It must be repaired within an area not to exceed 11/2-inches diameter. When repaired, it must clear next structure by 1/8-inch. Not more than two repairs are permitted in any web.

1. Remove damage by cutting or drilling. The diameter of cutout should not be less than 3/16-inch.

2. Smooth edges of cutout with a file.

3. If damage can be removed by drilling, drill a 3/16-inch diameter hole or smaller. Insert a MS20470AD rivet and install a AN960D washer of a size to fit shank of rivet. Set rivet.

4. If diameter of cutout is larger than 3/16-inch, make a circular backing plate from same material as web in the next heavier thickness.

NOTE

The backing plate must be large enough to cover cutout and overlap web a minimum of four times diameter of rivet. If backing plate cannot be circular, all corners must have a minimum radius of 1/4-inch.

5. Smooth edges of backing plate with a file.

6. Center backing plate over cutout. Drill a rivet pattern having a pitch of 1/2 to 3/4-inch. The number of rivet holes will be determined by size of backing plate. Maintain a pattern that will allow a minimum edge distance of two times the diameter of the rivet. Use MS20470AD4 rivets for webs not thicker than 0.025-inch. Use MS20470AD5 rivets for webs 0.03-inch or thicker. Use monel rivets for corrosion-resistant steel webs.

WARNING

EPOXY PRIMER

7. Apply a thin even coat of primer (Item 140, WP 0157 00) to faying surfaces of backing plate and web. Allow primer to dry.

8. Assemble backing plate to web by installing and setting rivets.

OIL CAN REPAIRS

Trapped skin is evidenced by an outward or inward bulge between attaching hardware. It is normally caused by improper repair techniques and is not acceptable. Correct this condition by removing attaching hardware, as required, allowing skin to shift, and installing next larger size fasteners.

Loose skins and skins having unacceptable oil can should be repaired using stiffeners with the following exceptions:

1. Stiffeners are not permitted within areas on bottom of cabin fuselage section between lower longerons, sta 160 to sta 482.

2. Stiffeners are not permitted externally on the helicopter.

OIL CAN REPAIRS - continued

3. Stiffeners are not permitted in areas where they will interfere with installation and functions, or operation of any component.

4. Determine locations where a minimum number of stiffeners will correct oil canning or loose skin.

5. Add stiffeners as required. Stiffeners must be attached to primary structure at each end, such as longeron to longeron or frame to frame. The method of attachment should eliminate discrepancy without transferring oil can to another area. Comply with the following methods:

   a. Stiffeners must be next heavier thickness than skin to which they are attached and are to be formed from 2024-T3 Clad aluminum alloy. Stiffeners exceeding 30 inches in length must be made from Alcoa 33372 extrusion or equivalent.

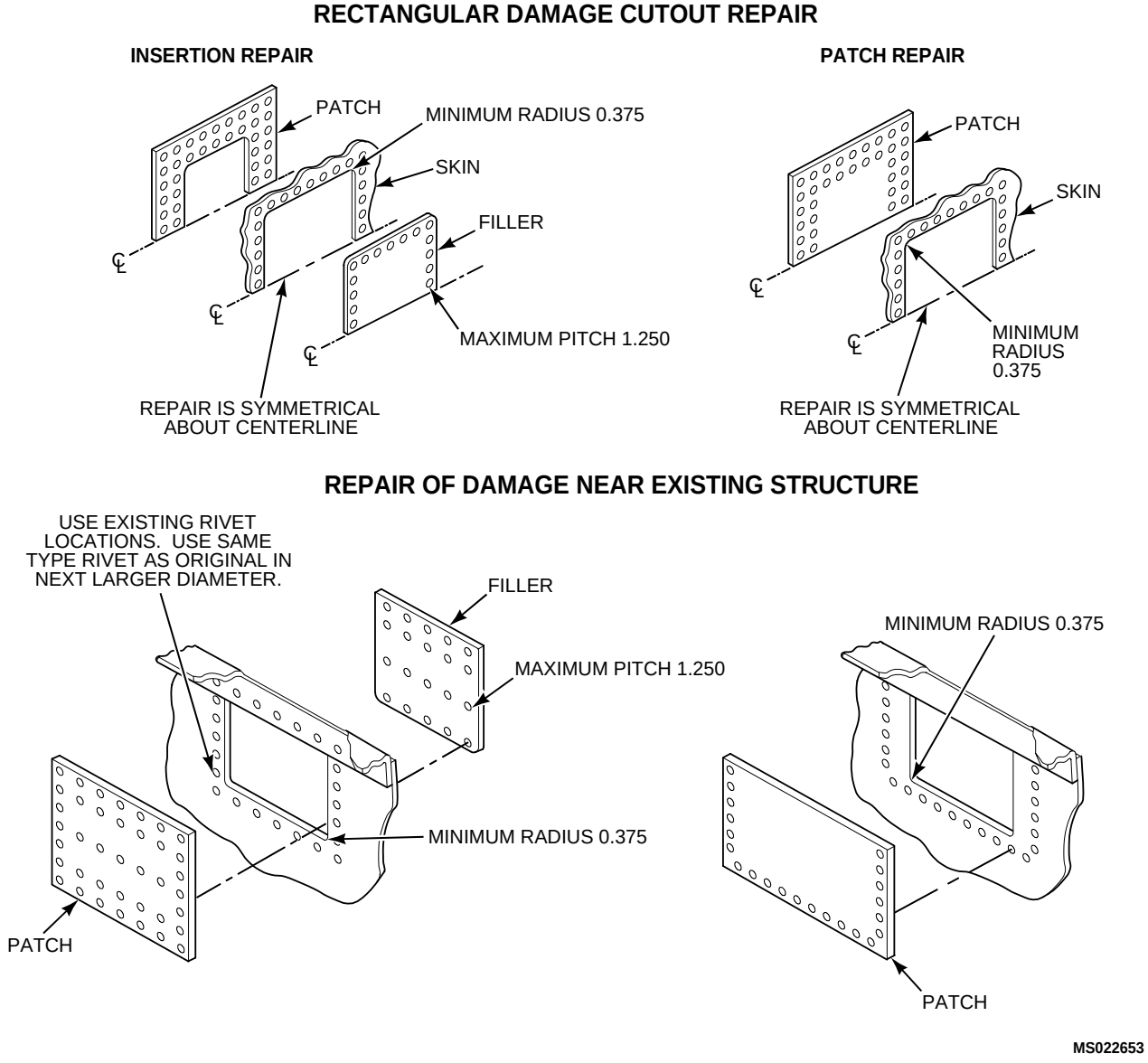
   b. If attaching clips are used, make them from 2024-T3 Clad aluminum alloy. They must be the same thickness as stiffener to which they are attached.

   c. Install MS2047AD4 rivets at approximately 3/4-inch pitch for attachment of stiffeners not thicker than 0.040-inch.

   d. Install MS2047AD5 rivets at approximately 7/8-inch pitch for attachment of stiffeners thicker than 0.040-inch.

   e. Seal and refinish stiffeners and clips to match adjacent structure. Refer to WP 0078 00 and WP 0080 00.

SKIN AND WEB REPAIRS



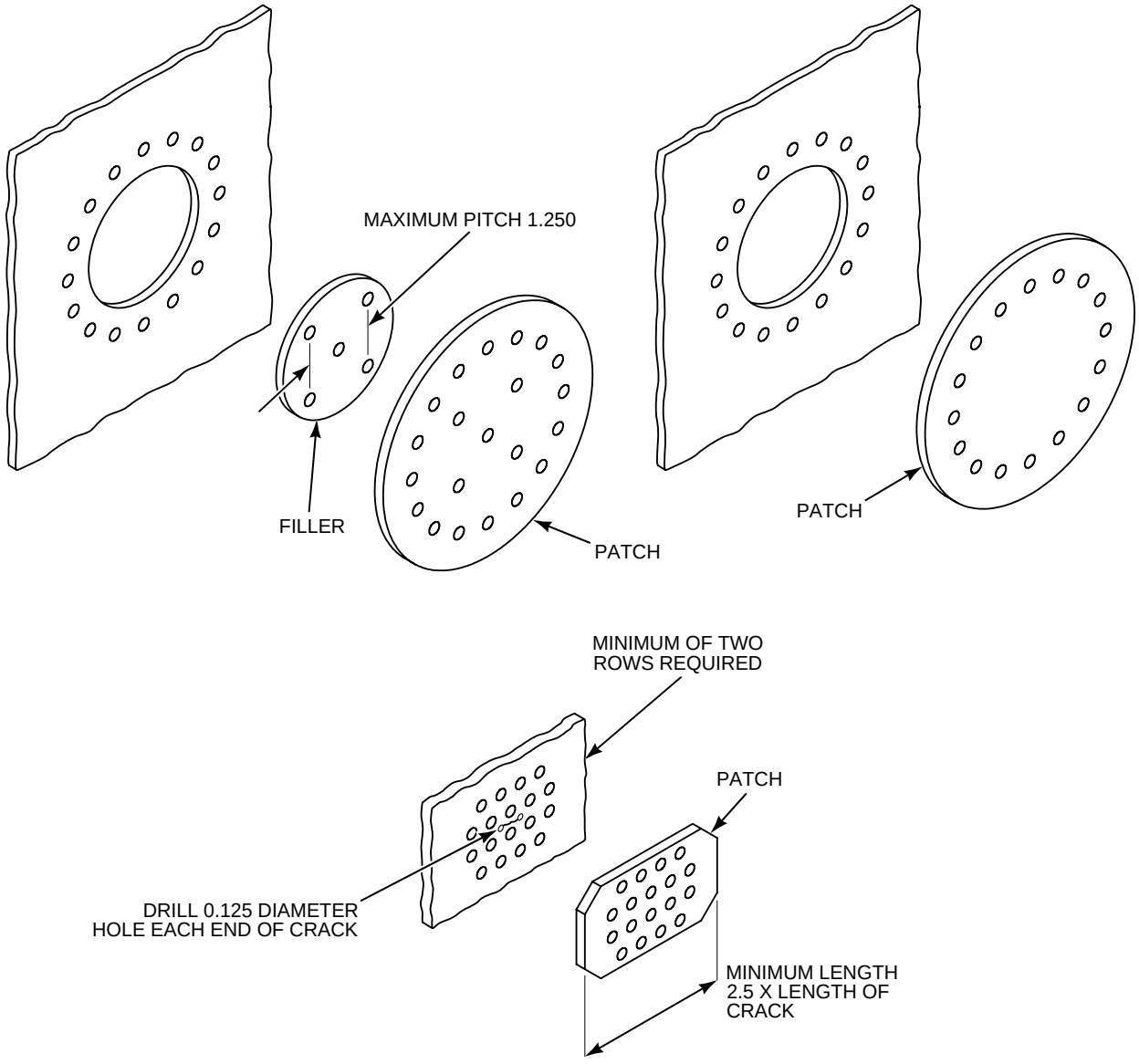
NOTES

1. All dimensions are in inches.
2. Damage near existing structure repair parts:
   A. Reinforcement – Refer to Table 2 for repair material and thickness. Use same material and thickness as original if specific figure does not exist.
   B. Replacement – Use same material and thickness as original. Refer to Table 2 for original.

Figure 2. Skin and Web Repairs - Lightly Stressed Areas (Sheet 1 of 8)

SKIN AND WEB REPAIRS - continued

CIRCULAR DAMAGE REPAIR



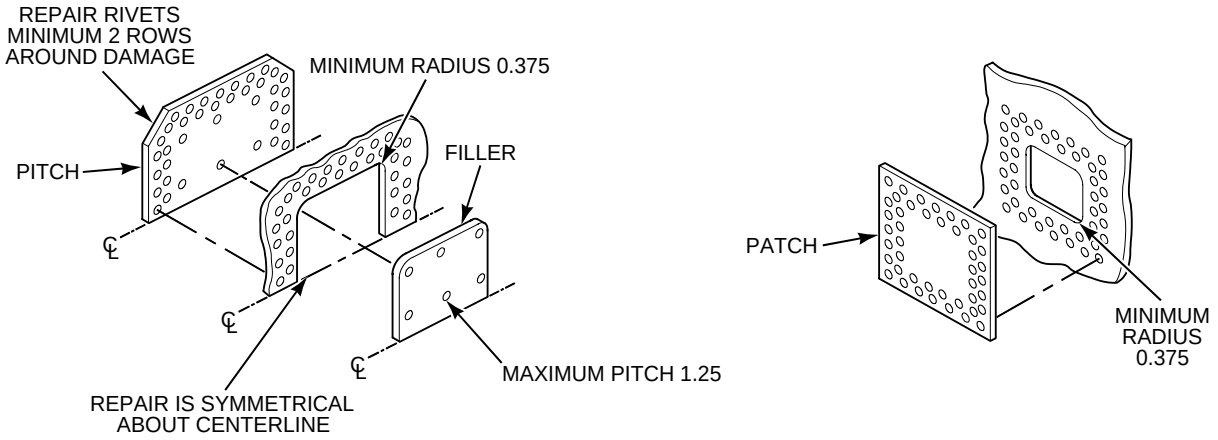
NOTES

1. All dimensions are in inches.
2. Crack repair parts:
   A. Reinforcement – Refer to Table 2 for repair material and thickness.
      Use same material and thickness as original if specific figure does not exist.
   B. Replacement – Use same material and thickness as original.
      Refer to Table 2 for original.

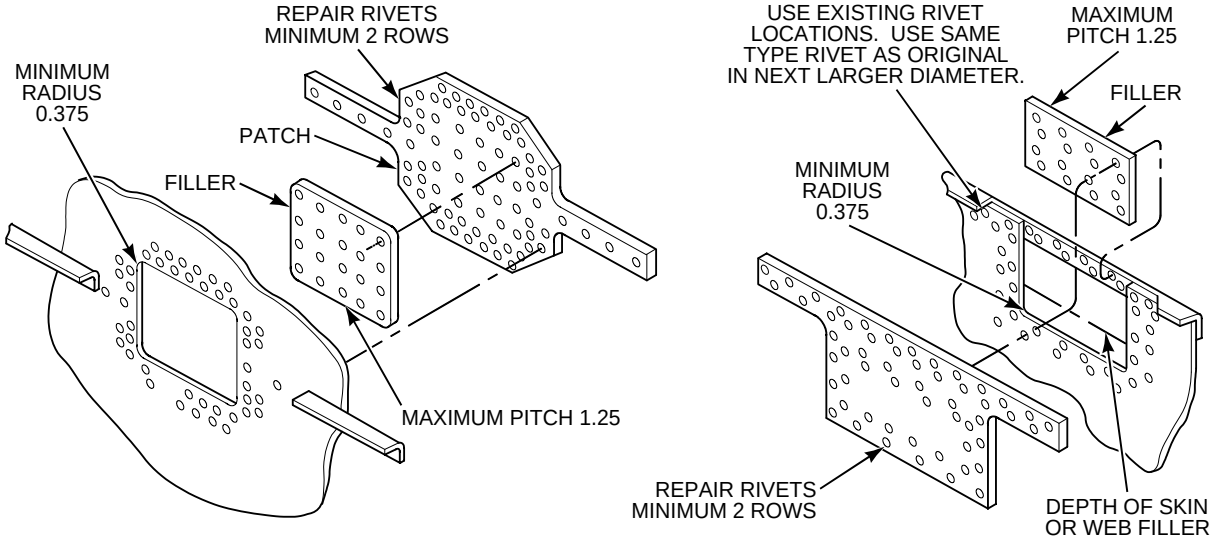
Figure 2. Skin and Web Repairs - Lightly Stressed Areas (Sheet 2 of 8)

SKIN AND WEB REPAIRS - continued

RECTANGULAR DAMAGE REPAIR



DAMAGE REPAIR NEAR EXISTING STRUCTURE



MS022655

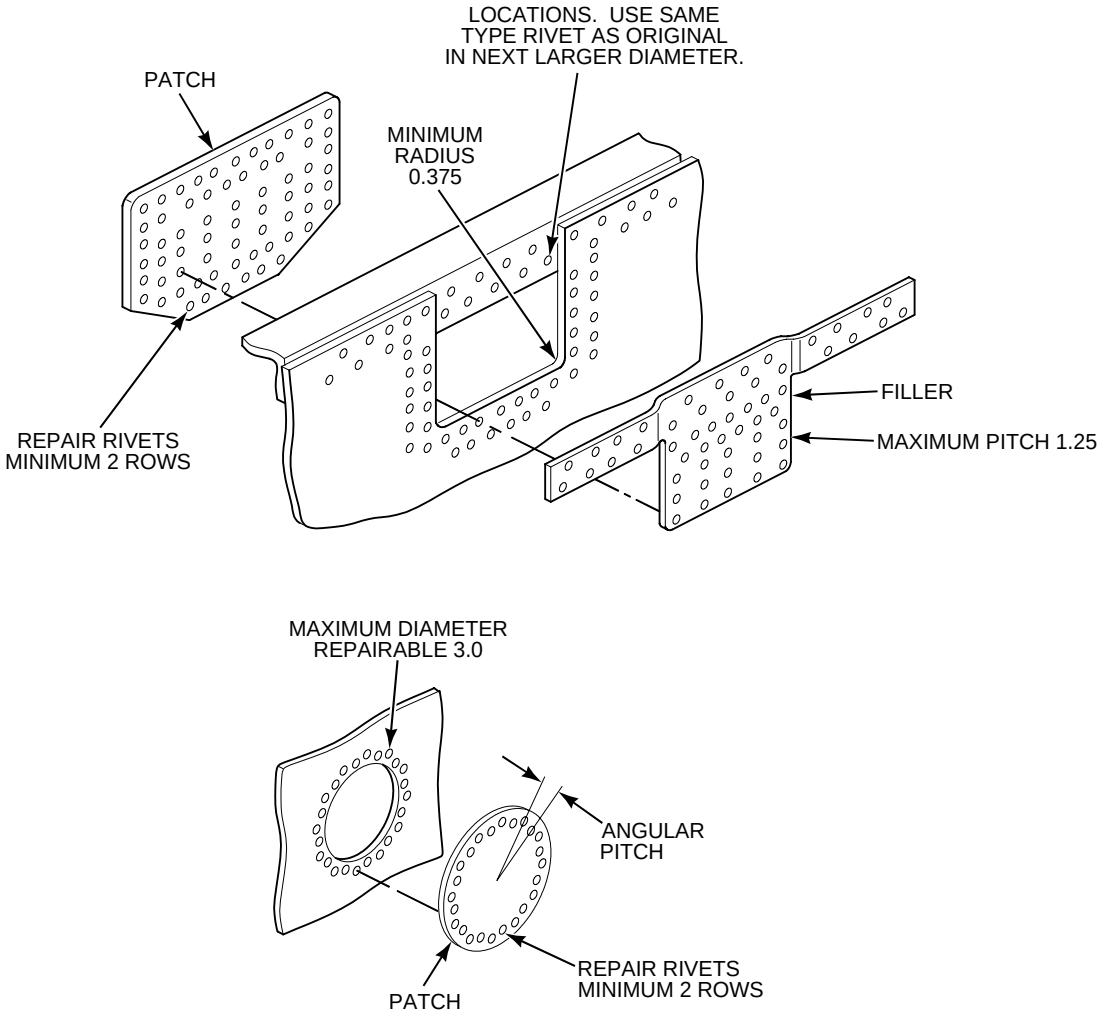
NOTES

1. All dimensions are in inches.
2. A strap patch, shown on Figure 2, Sheet 6 can be used as an alternate for the tabs shown on reinforcements (patch).
3. Repair Parts:
   A. Reinforcement – Refer to Table 2 for repair material and thickness.
      Use same material and thickness as original if specific figure does not exist.
   B. Replacement – Use same material and thickness as original. Refer to Table 2 for original.
   C. Filler – Use same material and thickness as original. Refer to Table 2 for original.

Figure 2. Skin and Web Repairs - Heavily Stressed Areas (Sheet 3 of 8)

SKIN AND WEB REPAIRS - continued

DAMAGE REPAIR NEAR PRIMARY HORIZONTAL MEMBER



	HOLE DIAMETER		
DESIGNATION	**1.0**	**2.0**	**3.0**
OD OF CIRCULAR REINFORCEMENT	**2.50**	**5.0**	**7.50**
DIAMETER OF OUTER RIVET CIRCLE	**1.750**	**4.0**	**6.50**
DIAMETER OF INNER RIVET CIRCLE	**-**	**3.0**	**4.0**
ANGULAR RIVET PITCH	**45°**	**22° 30 MIN**	**15°**
NUMBER OF RIVETS REQUIRED (MINIMUM)	**8**	**16**	**-**

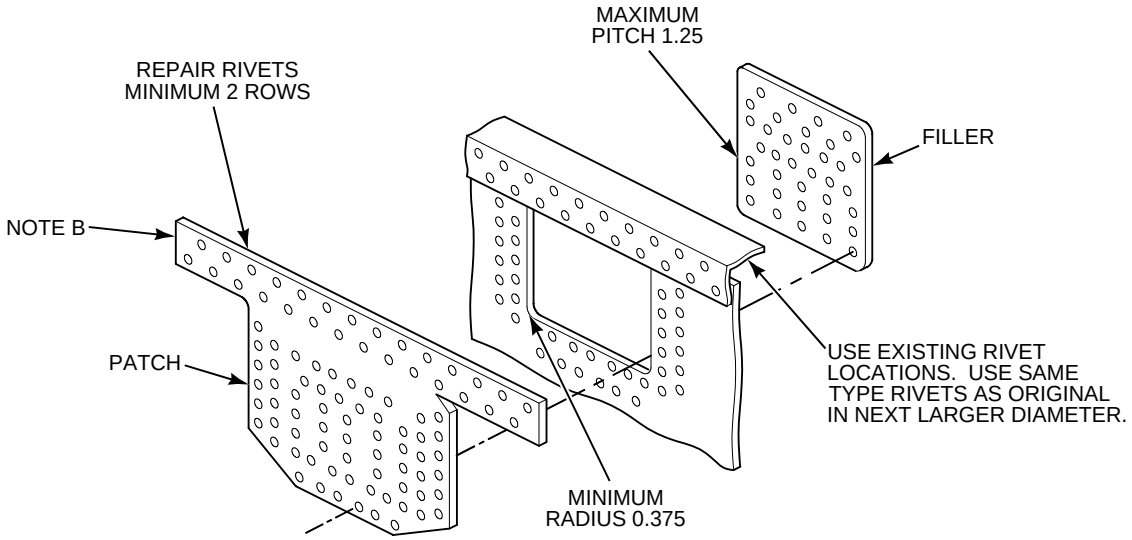
MS022656

NOTE

All dimensions are in inches.

Figure 2. Skin and Web Repairs - Heavily Stressed Areas (Sheet 4 of 8)

SKIN AND WEB REPAIRS - continued



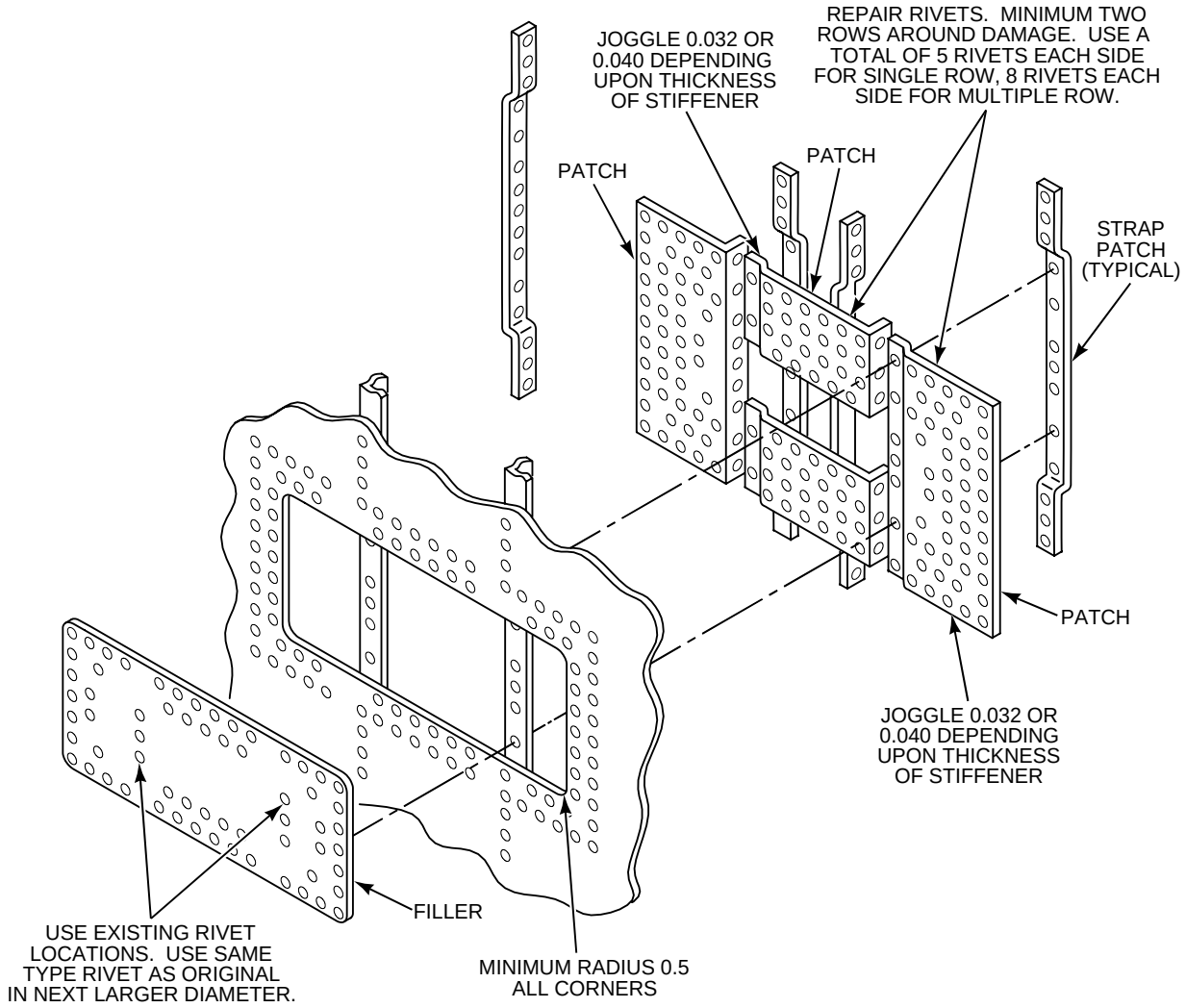
MS022657

NOTES

1. All dimensions are in inches.
2. A strap patch, shown on Figure 2 Sheet 6, can be used as an alternate for the tabs shown on reinforcements (patch).
3. Damage near adjacent member – repair parts:
   A. Reinforcement – Refer to Table 2 for repair material and thickness.
      Use same material and thickness as original if specific figure does not exist.
   B. Replacement – Use same material and thickness as original. Refer to Table 2 for original.

Figure 2. Skin and Web Repairs - Heavily Stressed Areas (Sheet 5 of 8)

SKIN AND WEB REPAIRS - continued



MS022658

NOTES

1. All dimensions are in inches.
2. Where damaged area crosses a stiffener or stringer, widen the reinforcement to form tabs, or add a strap patch, as shown. Pick up a total of five rivets each side of single row patterns. Eight rivets each side for multiple-row patterns.
   A. Reinforcement – Refer to Table 2 for repair material and thickness. Use same material and thickness as original if specific figure does not exist.
   B. Replacement – Use same material and thickness as original. Refer to Table 2 for original.

Figure 2. Skin and Web Repairs - Insertion Skin Repair Across Stiffeners (Sheet 6 of 8)

SKIN AND WEB REPAIRS - continued

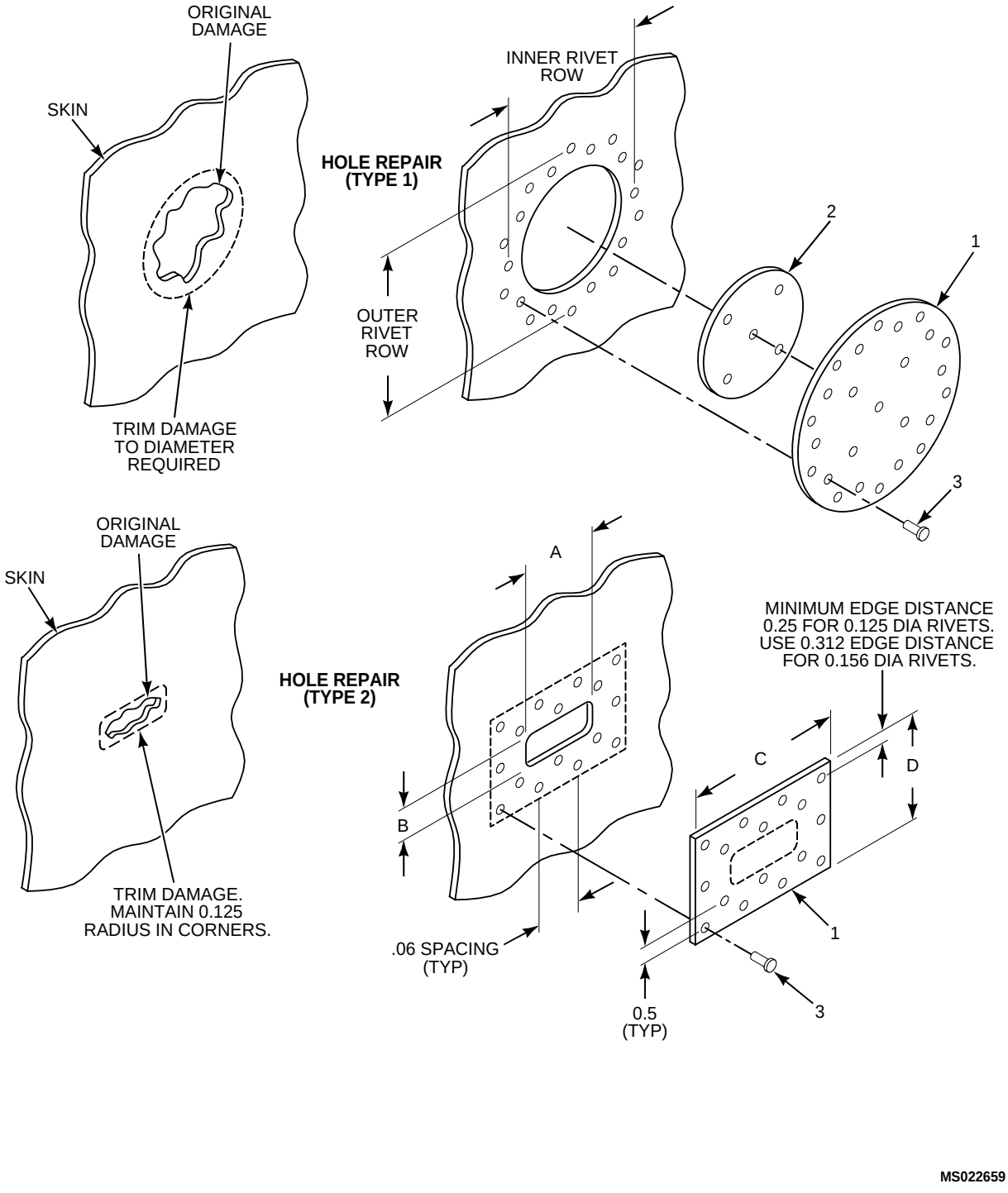
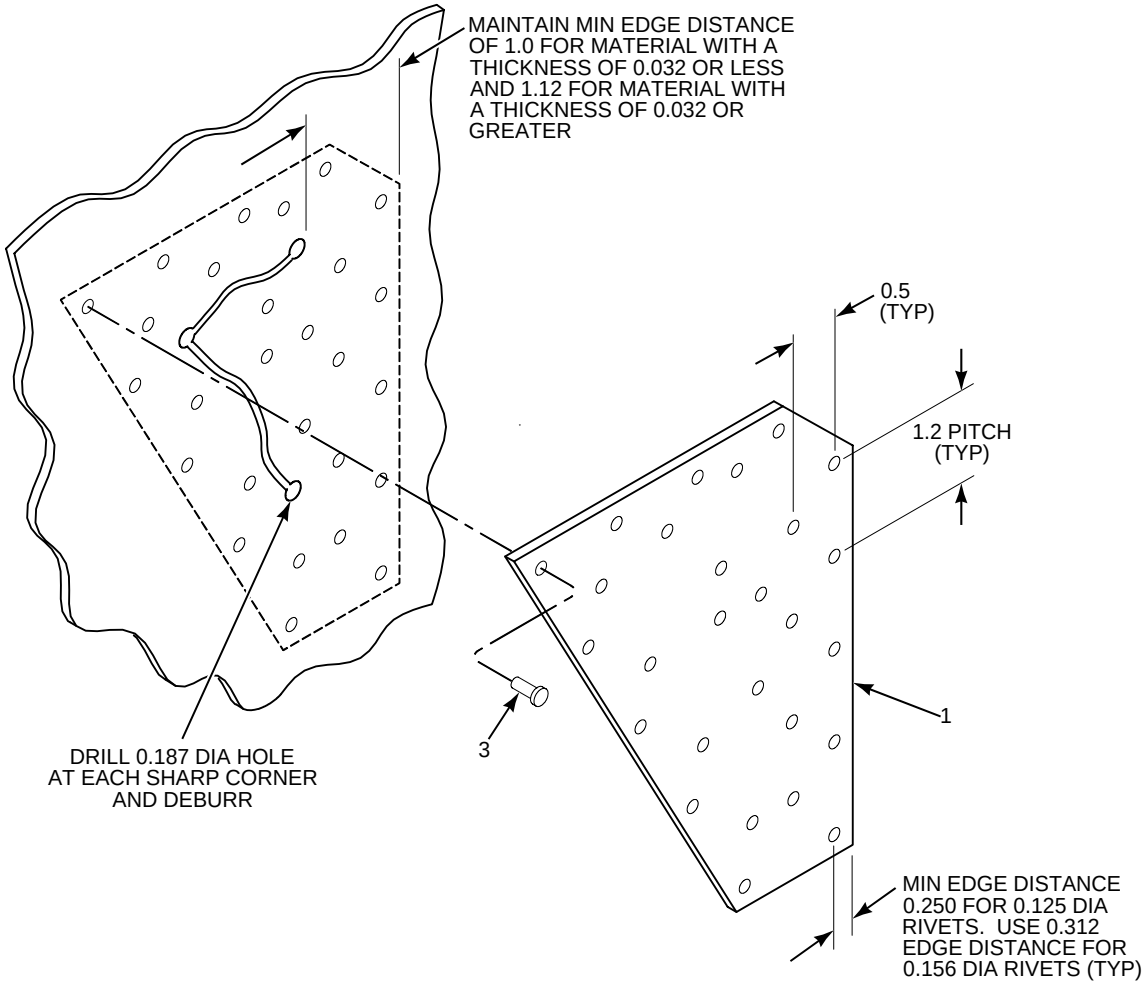


Figure 2. Skin and Web Repairs (Sheet 7 of 8)

SKIN AND WEB REPAIRS - continued



MS022660

NOTES

1. Reinforcement – Use same material and thickness as original.
2. Replacement – Use same material and thickness as original. Maintain minimum clearance of 0.0625-inch between cutout and replacement. Refer to note B.
4. Rivets – Use 0.125-inch diameter MS20615 rivets, for material with a thickness of 0.032-inch or less. Use 0.156-inch diameter rivets for material with a thickness of 0.032-inch or greater.
5. Repair Parts
   A. All dimensions are in inches.
   B. Required only when flush surface is needed. Replacement must be attached before reinforcement is installed. Maintain proper edge distance for rivets used.

Figure 2. Skin and Web Repairs (Sheet 8 of 8)

SKIN AND WEB REPAIRS - continued

Table 2. Repair Reinforcement Selection

2024–T3 AND T4 REPAIR WITH 2024–T3, AND 7075–T6 REPAIR WITH 7075–T6	
ORIGINAL THICKNESS	**REINFORCEMENT THICKNESS**
0.012	0.016
0.016	0.020
0.020	0.025
0.025	0.032
0.032	0.040
0.040	0.050
0.050	0.050
0.063	0.063
0.071	0.071
0.080	0.081
0.090	0.090
0.100	0.100
0.125	0.125
7075-T6 REPAIR WITH 2024-T3	
ORIGINAL THICKNESS	**REINFORCEMENT THICKNESS**
0.012	0.020
0.016	0.025
0.020	0.032
0.025	0.040
0.032	0.050
0.040	0.063
0.050	0.071
0.063	0.080
0.071	0.090
0.080	0.100
0.090	0.125
0.100	0.160
0.125	0.160

SKIN AND WEB REPAIRS - continued

Table 2. Repair Reinforcement Selection - continued

301 AND 302 REPAIR WITH SAME MATERIAL	
ORIGINAL THICKNESS	**REINFORCEMENT THICKNESS**
0.012	0.016
0.016	0.020
0.020	0.025
0.025	0.032
0.032	0.036
0.036	0.040
0.040	0.040

NOTES

A. All dimensions are in inches.

B. These charts may be used to select a reinforcement when a figure denoting a specific repair material does not exist for a particular part.

Table 3. Criteria for Hole Repair

REPLACEMENT DIAMETER	RIVET ROW DIAMETER				PATCH DIAMETER	
	INNER		OUTER			
– –	0.75	0.87	1.25	1.37	1.75	1.87
– –	0.875	0.995	1.375	1.495	1.875	1.995
0.50	1.0	1.12	1.5	1.62	2.0	2.12
0.625	1.125	1.245	1.625	1.745	2.125	2.245
0.75	1.25	1.37	1.75	1.87	2.225	2.37
0.875	1.375	1.495	1.875	1.995	2.375	2.495
1.0	1.5	1.62	2.0	2.12	2.5	2.62
1.25	1.75	1.87	2.225	2.37	2.75	2.87
1.50	2.0	2.12	2.5	2.62	3.0	3.12
1.75	2.25	2.37	2.75	2.87	3.25	3.337

NOTE

Reference Table 3 categories of inner and outer rivet row diameter and patch diameter; dimensions in the left column are for material thickness less than 0.032-inch and those in the right column are for material thickness greater than 0.032-inch.

END OF WORK PACKAGE

DEPOT MAINTENANCE WORK REQUIREMENT
CH-47D HELICOPTER
FORMED PARTS REPAIRS

INITIAL SETUP

Test Equipment:
As Required

Tools and Special Tools:
As Required

Material/Parts:
As Required

Personnel Required:
As Required

References:
TM 1-1500-204-23 Series
TM 55-1520-240-23 Series
WP 0003 00
WP 0078 00

Equipment Conditions:
As Required

Special Environmental Condition:
As Required

SCOPE

This work package describes repair procedures for formed parts located throughout the aircraft. Refer to WP 0003 00, for General Damage Limits for Airframe Structural Repairs.

FORMERS

1. Formers are members spaced at intervals through the fuselage, ramp, and aft pylon. Depending on location and function, formers are called partial, full, crown, floor, or bottom formers.

2. Formers provide structural reinforcement in a crosswise (transverse) direction. Also, formers serve as attaching points for stringers, boundary members for major skin splices, and as a base for structural fittings.

3. Damage to formers shall be classified as minor, repairable, or damage requiring replacement.

MINOR DAMAGE

1. Minor damage is damage that can be repaired easily by burnishing nicks and scratches and removal of small damaged areas.

2. Damage must clear bolts, rivets, and radii a minimum of 0.75-inch.

3. Damage to a fitting is limited to burnishing, which will not reduce area thickness more than 10 percent.

4. Certain splice attachment hardware holes may be 0.015-inch oversize.

REPAIRABLE DAMAGE

1. Damage more extensive than minor but not exceeding one-half web cross section shall be repaired by patching.

2. Damage to more than one-half of web cross section, or damage that removes the heel of an extruded section shall be repaired by insertion.

REPAIRABLE DAMAGE - continued

3. Extensive damage such as the loss of a major portion of a former, or numerous isolated damaged areas requires replacement in whole or part.

4. Damage to a fitting joining the bottom sections to the side sections requires replacement of bottom (bonded assembly) section.

5. Damaged fittings, clips, and small brackets or supports require replacement.

FORMED PARTS REPAIRS

This WP will not attempt to describe the many formed parts repair schemes that are possible on the CH-47 airframe. A few of the more common and frequently used procedures will be described. For more repair procedures refer to TM 55-1520-240-23 and/or TM 1-1500-204-23. If a specific repair procedure is not described in the referenced TMs or this DMWR, the Depot/Contractor should submit a Maintenance Engineering Call (MEC) to Engineering (AMRDEC) IAW WP 0003 00, requesting repair instructions for the particular noted damage.

Tables 1 and 2, in conjunction with Figure 1 thru Figure 5, depict the original materials, repair materials, and repair procedures for zee sections, angles, formed flanges, frames, and channels. Insulate dissimilar metals as per WP 0078 00.

Table 1. Reinforcement Selection - Aluminum and Steel

ORIGINAL MATERIAL 2024-T4 OR 7075-T6	2024-T3 REINFORCE-MENT FOR 2024-T4	2024-T3 REINFORCE-MENT FOR 7075-T6	7075-T6 REINFORCE-MENT FOR 7075-T6	4130 REINFORCE-MENT FOR 2024-T4 OR 7075-T6
0.020	0.025	0.032	0.025	0.025
0.025	0.032	0.040	0.032	0.032
0.032	0.040	0.050	0.040	0.036
0.040	0.050	0.063	0.050	0.050
0.050	0.063	0.080	0.063	0.063
0.063	0.063	0.100	0.071	0.071
0.071	0.071	0.125	0.080	0.080
0.080	0.080	0.125	0.090	0.080
0.090	0.090	0.160	0.100	0.100
0.100	0.100	0.160	0.125	0.112
0.125	0.125	0.160	0.160	0.125

FORMED PARTS REPAIRS – continued

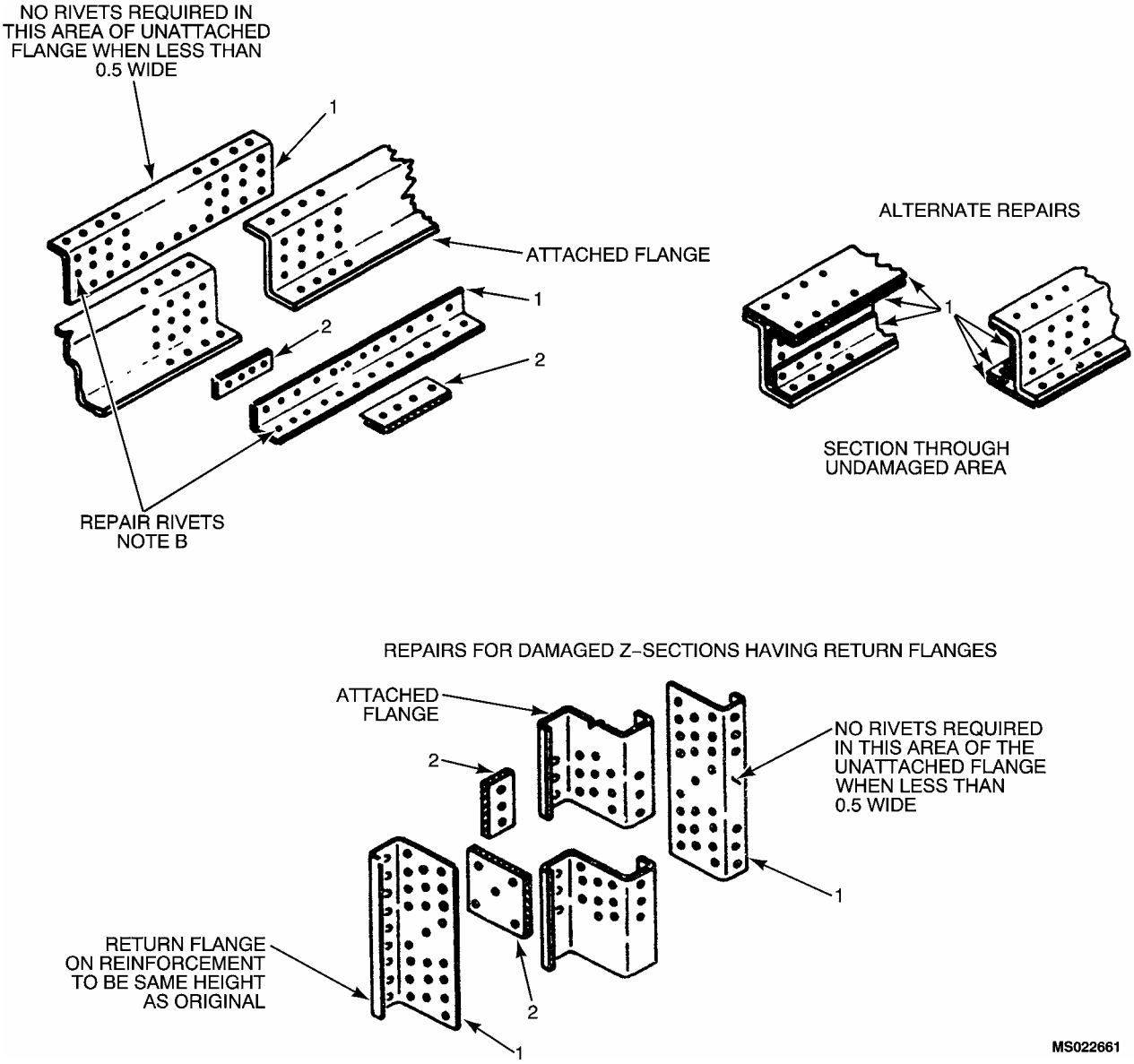
Table 2. Reinforcement Selection - Corrosion Resistant Steel

ORIGINAL MATERIAL	REINFORCEMENT (NOTE B)
301 ANL	301 ANL, 1/4H, 1/2H, 3/4H, H, 302 ANL, 17-7PH ANL, 180 KSI
301 1/4H	301 1/4H, 1/2H, 3/4H, H, 17-7PH ANL, 180 KSI
301 1/2H	301 1/2H, 3/4H, H, 17-7PH 180 KSI
301 3/4H	301 3/4H, H
301H	301 H
302 ANL	301 1/4H, 1/2H, 3/4H, H, 302 ANL, 17-7PH ANL, 180 KSI
17-7 ANL	17-7PH ANL, 180 KSI
17-7 180 KSI	17-7PH, 180 KSI

NOTES

1. All dimensions are in inches.
2. Reinforcement material thickness to be same as original.

FORMED PARTS REPAIRS – continued



Repair Parts

1. Reinforcement – Refer to the applicable figure for repair material and thickness or Figure 5 if a specific repair figure does not exist.
2. Filler – Use same material and thickness as original.

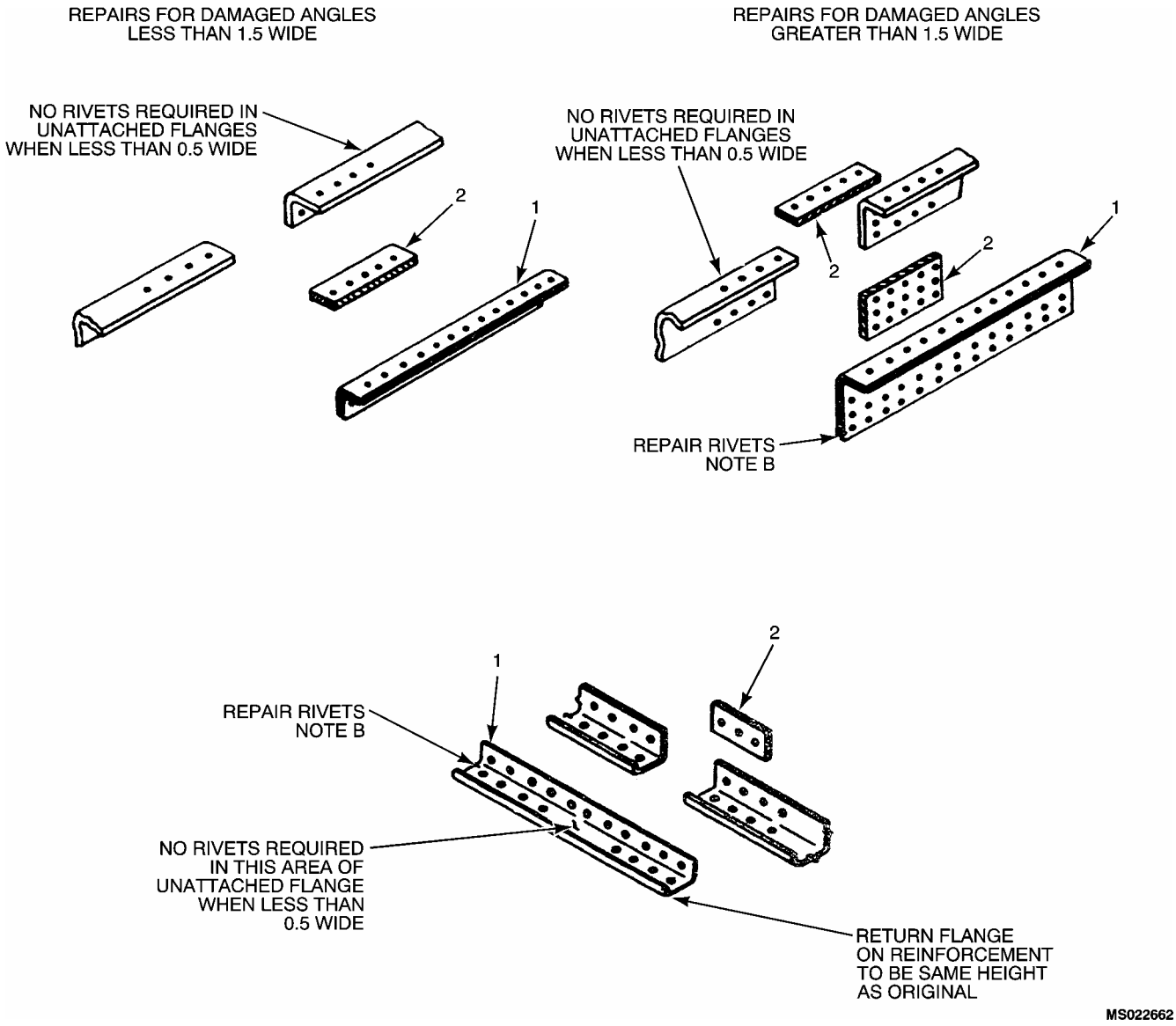
NOTES

A. All dimensions are in inches.

B. The minimum number of rivets in each row and each side of damage is: four in 2024, and six in 7075 and corrosion resistant steel.

Figure 1. Damaged Zee Section Repair

FORMED PARTS REPAIRS – continued



Repair Parts

1. Reinforcement – Refer to the applicable figure for repair material and thickness or Figure 5 if a specific repair figure does not exist.
2. Filler – Use same material and thickness as original.

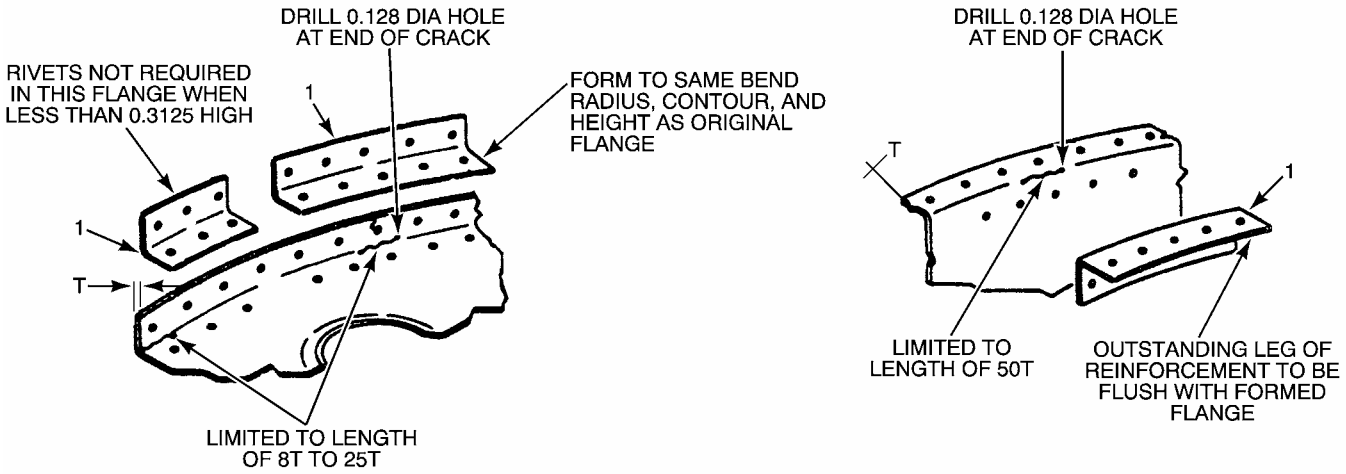
NOTES

A. All dimensions are in inches.

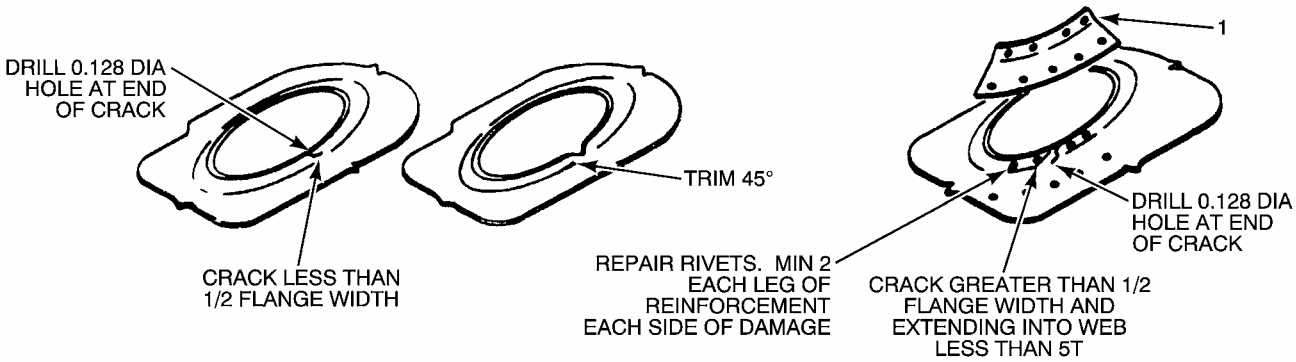
B. The minimum number of rivets in each row and each side of damage is: four in 2024, and six in 7075 and corrosion resistant steel.

Figure 2. Damaged Angle Repair

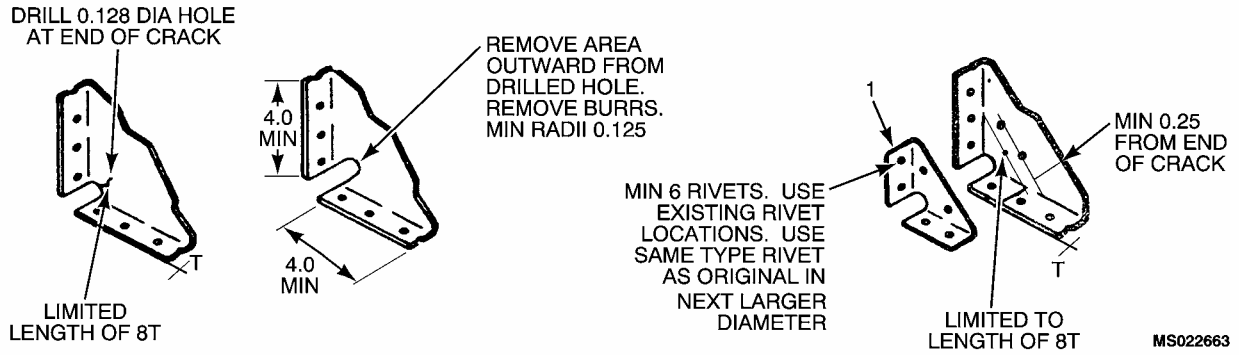
FORMED PARTS REPAIRS – continued



REPAIRS FOR CRACKS IN STANDARD STRAIGHT FLANGED LIGHTENING HOLES



REPAIRS FOR CORNER CRACKS IN DOUBLE FORMED FLANGE



Repair Parts

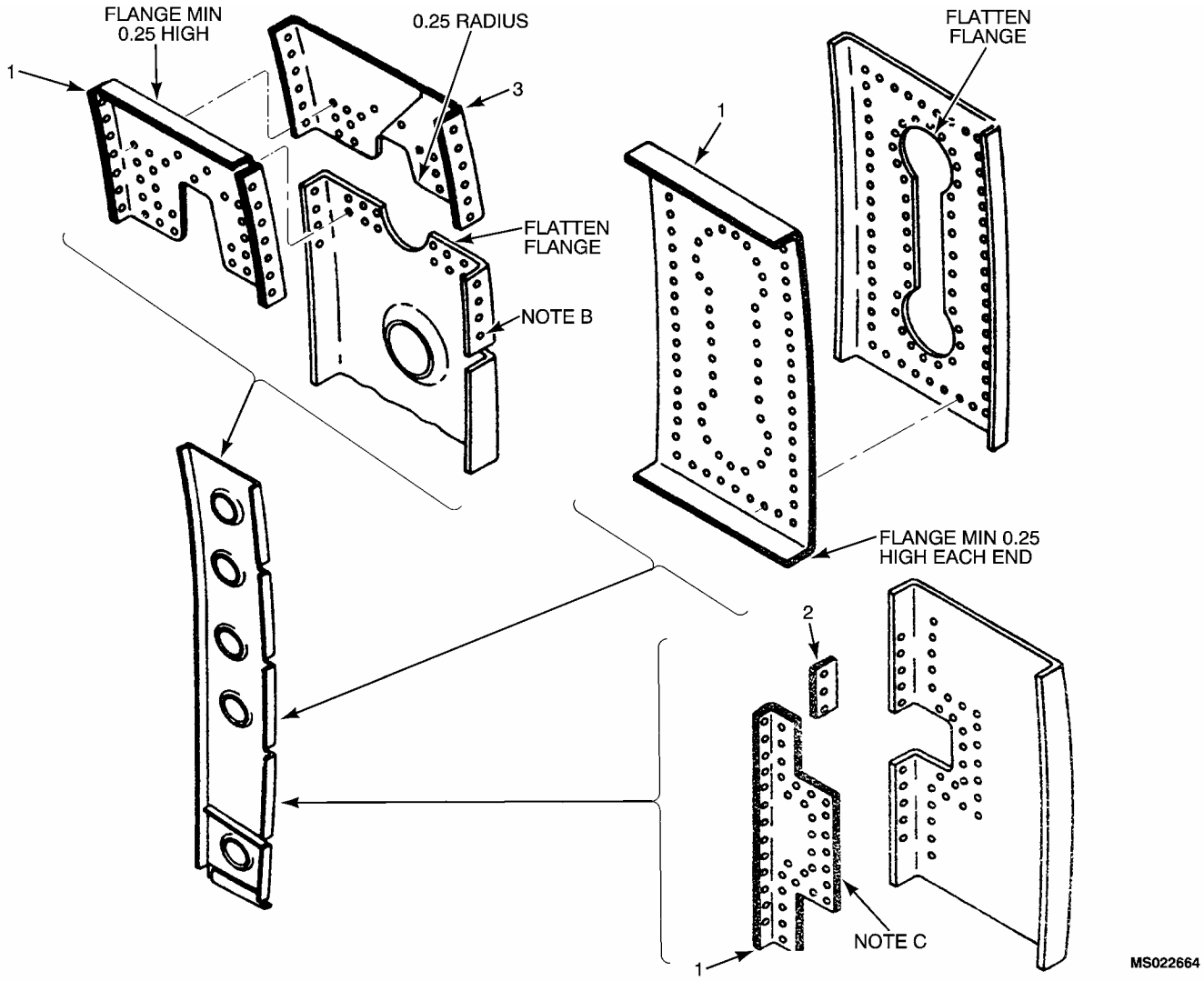
Reinforcement – Refer to the applicable figure for repair material and thickness or Figure 5 if a specific repair figure does not exist.

NOTE

All dimensions are in inches.

Figure 3. Repair of Cracks in Single Formed Flange

FORMED PARTS REPAIRS – continued



Repair Parts

1. Reinforcement – Refer to the applicable figure for repair material and thickness or Figure 5 if a specific repair figure does not exist.
2. Filler – Use same material and thickness as original. Refer to the applicable figure for original.
3. Replacement – Use same material and thickness as original. Refer to the applicable figure for original.

NOTES

A. All dimensions are in inches.

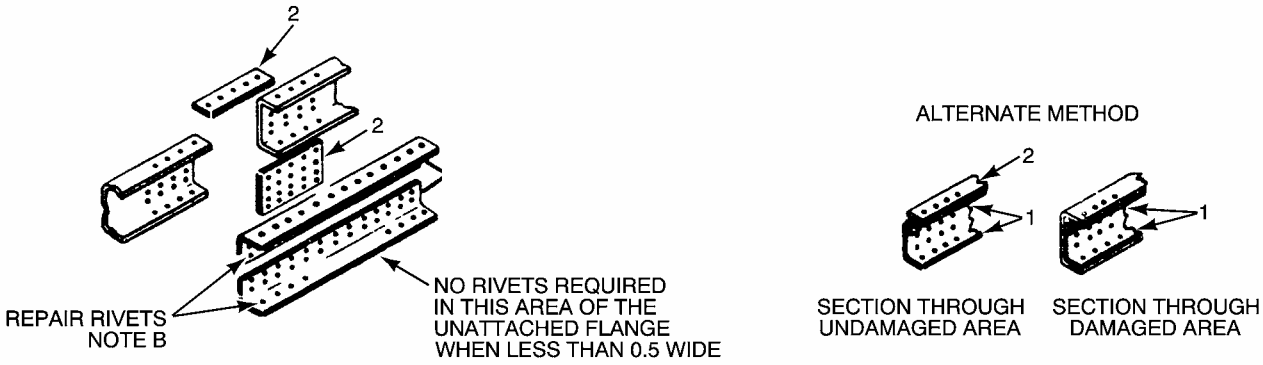
B. Use original rivet locations and same type rivet in next larger diameter, or substitute blind rivets in original locations.

C. Use existing rivet locations, and a minimum of five rivets, each side of damage, in flange area.

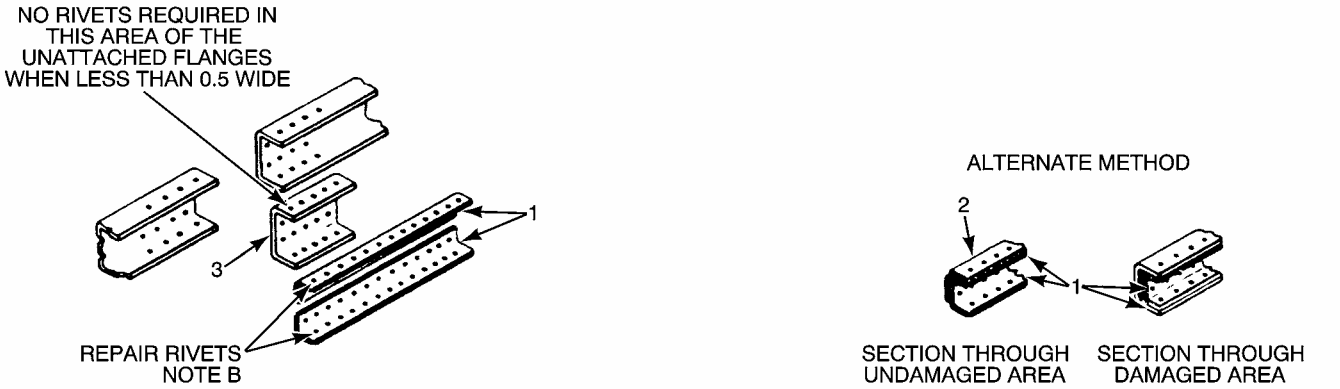
Figure 4. Frame Repair

FORMED PARTS REPAIRS – continued

REPAIRS FOR DAMAGED CHANNELS HAVING A WEB GREATER THAN 1.5 WIDE



REPAIRS FOR DAMAGED CHANNELS HAVING A WEB LESS THAN 1.5 WIDE



Repair Parts

1. Reinforcement – Refer to the applicable figure for repair material and thickness or Figure 5 if a specific repair figure does not exist.
2. Filler – Use same material and thickness as original. Refer to applicable figure for original.
3. Replacement – Use same material and thickness as original. Refer to applicable figure for original.

NOTES

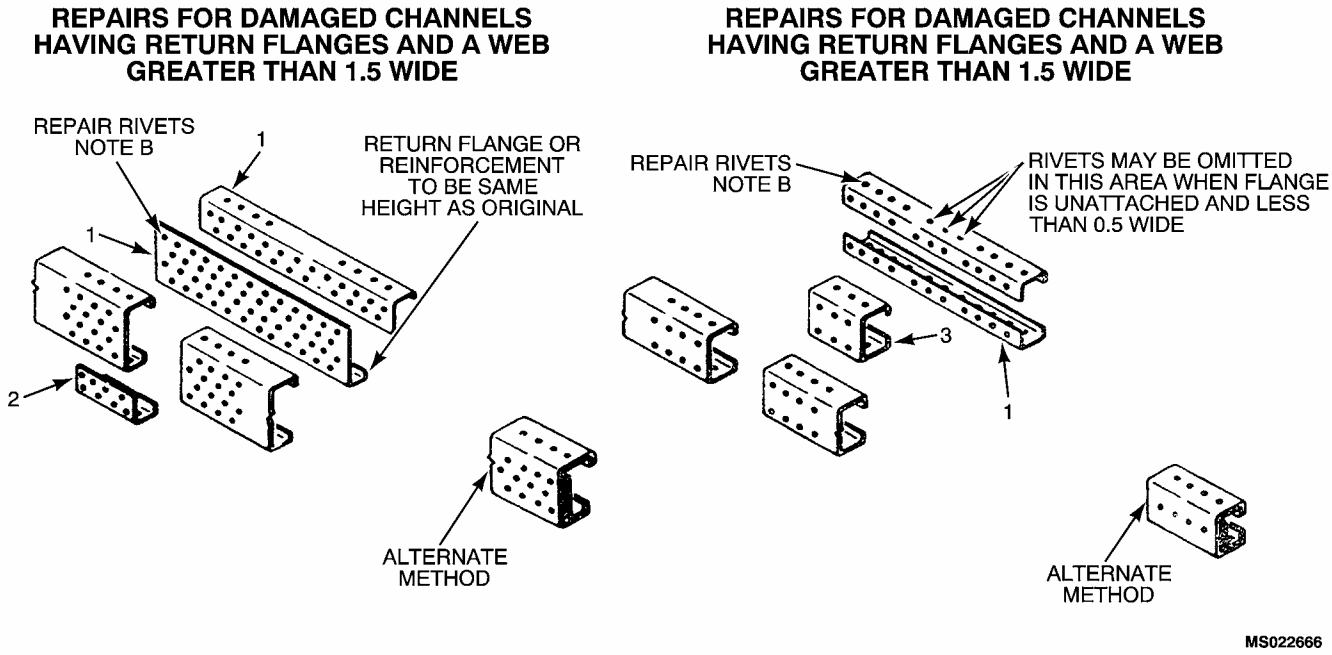
A. All dimensions are in inches.

B. Use original rivet locations and same type rivet in next larger diameter, or substitute blind rivets in original locations.

C. Use existing rivet locations, and a minimum of five rivets, each side of damage, in flange area.

Figure 5. Repair of Damaged Channels (Sheet 1 of 2)

FORMED PARTS REPAIRS – continued



REPAIRS FOR DAMAGED CHANNELS HAVING RETURN FLANGES AND A WEB GREATER THAN 1.5 WIDE

REPAIRS FOR DAMAGED CHANNELS HAVING RETURN FLANGES AND A WEB GREATER THAN 1.5 WIDE

Repair Parts

1. Reinforcement – Refer to the applicable figure for repair material and thickness or Figure 5 if a specific repair figure does not exist.
2. Filler – Use same material and thickness as original. Refer to applicable figure for original.
3. Replacement – Use same material and thickness as original. Refer to applicable figure for original.

NOTES

A. All dimensions are in inches.

B. Use original rivet locations and same type rivet in next larger diameter, or substitute blind rivets in original locations.

C. Use existing rivet locations, and a minimum of five rivets, each side of damage, in flange area.

Figure 5. Repair of Damaged Channels (Sheet 2 of 2)

END OF WORK PACKAGE

DEPOT MAINTENANCE WORK REQUIREMENT

CH-47D HELICOPTER

EXTRUDED PARTS REPAIRS

INITIAL SETUP

Test Equipment:
As Required

Tools and Special Tools:
As Required

Material/Parts:
Epoxy Primer, (Item 140, WP 0157 00)

Personnel Required:
As Required

References:
TM 1-1500-204-23 Series
TM 55-1520-240-23 Series
WP 0003 00
WP 0078 00
WP 0086 00
WP 0087 00
WP 0157 00

Equipment Conditions:
As Required

Special Environmental Condition:
As Required

SCOPE

This WP covers most repairs of extruded parts. The die number of the original extrusion, sectional view, and dimensions of a corresponding formed replacement is shown in this WP. All dimensions shown are in inches unless otherwise noted. When repairing a damaged extrusion from a repair illustration, make a formed replacement to the required dimensions. Repair the extrusion as shown in this WP. A combination of two or more available thickness can be used, providing the specified dimensions are maintained. Also, a single piece of stock material can be used and machined to the required dimensions. Replacements can also be formed from the same material as original, providing they are tempered to the same condition as original, after forming. Dissimilar metals used in combination must be insulated to prevent corrosion per WP 0078 00. Composite and formed replacements can be used where no interference of adjacent structure exists and where no rivets ride the radius of the replacement. When a replacement is not listed, an extruded section having the same die number, as the original extrusion should be used.

CAUTION

Precautions should be taken to prevent damage to surrounding materials and members. The majority of extrusion applications in the structure are in highly stressed areas and serve as important load carrying members. These include longerons, stringers, stiffeners, and caps. When using pneumatic riveting equipment, it is important that a frequent check be made of dimensions and of adjacent rivets to determine if any deformation or loss of rivet heads has occurred.

NEGLIGIBLE DAMAGE

WARNING

EPOXY PRIMER

Negligible damage is damage that can be corrected by a simple procedure, such as removing dents and small damaged areas, and the plugging of small holes. Refer to Figure 2 for examples of negligible damage to extruded parts. Nicks, scratches, and small damaged areas can be removed by burnishing, provided the dimensions shown in Figure 2 are not exceeded. The depth, after burnishing, must not be greater than 10 percent of the thickness of the thinnest leg of the extrusion. Punctures, rough dents, cracks, nicks, and scratches, which exceed the maximum burnished depth, are negligible only if they can be cleaned out as a round hole which can be classified as negligible. Plug all negligible damage holes 3/16-inch diameter or over with a tight-fitting rivet or bolt. Holes, plugged or open, and burnished areas, must clear all radii, and must clear all fasteners a minimum of 3/4-inch. Smooth dents not exceeding the maximum burnished depth and a maximum of 1/2-inch diameter are negligible. Two adjacent dents to be classified as negligible must be separated by a four-inch length of undamaged original extrusion. Measure the distance at the edges of the burnished areas. Apply two coats of epoxy primer (Item 140, WP 0157 00) to burnished areas and edges of holes.

CAUTION

The use of heat to remove a dent is not permitted as the properties of the original part may be altered.

REPAIRABLE DAMAGE

Repairable damage is damage more extensive than negligible, but can be repaired. Damage at any one location affecting only one leg and not extending into the heel is reparable by patching. When filler is used to replace the thickness of the original extrusion, refer to Figure 1 and to WP 0086 00 and WP 0087 00. Damage that affects more than one leg or extends into the heel should be repaired. The insertion of a partial replacement can be made, provided the material and sectional dimensions shown in this WP are used.

DAMAGE NECESSITATING REPLACEMENT

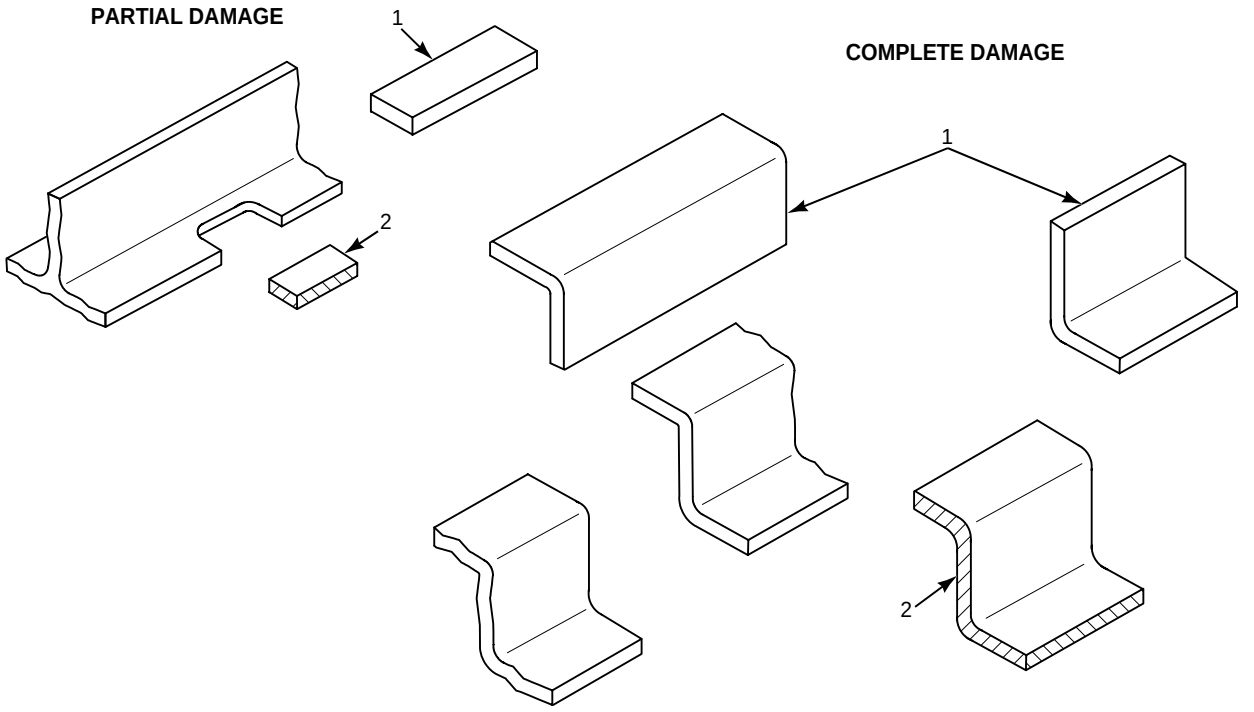
Damage resulting in the loss of a major portion of an extrusion, numerous isolated damages, or complexity of adjacent structure, necessitates replacement with an extruded section having the same die number and material characteristics as the original extrusion.

EXTRUDED PARTS REPAIR

This WP will not attempt to describe the many extruded parts repair schemes that are possible on the CH-47 airframe. The more common and frequently used procedures will be described. For more repair procedures, refer to TM 55-1520-240-23 and/or TM 1-1500-204-23. If a specific repair procedure is not described in the referenced TM's or this DMWR, the Depot/Contractor should submit a Maintenance Engineering Call (MEC) to Engineering (AMRDEC) IAW WP 0003 00, requesting repair instructions for the particular noted damage.

The Figures and Tables in this WP depict repair procedures for negligible and minor damage plus replacement repairs for angles, bulb angles, Tee sections, special Tee sections, Zee sections, special Zee sections, standard channels, special channels, and miscellaneous sections. Insulate dissimilar metals per WP 0078 00.

EXTRUDED PARTS REPAIR - continued



Repair Parts

1. Reinforced angle or plate, normalized. Refer to Note D.
2. Filler or formed replacement, 4130, same thickness as original extrusion. Refer to Note D.

NOTES

A. All dimensions are in inches.

B. The repair of partial damage is made using the same thickness, size, type, and number of attachments as used in the repair of complete damage.

C. Where no original fasteners existed in a given leg, flange or web, it is preferred, if possible, that fasteners in that leg, flange, or web be staggered with respect to fasteners in other areas of the part being repaired.

D. Repair parts can be made from the same material as the part being repaired, providing that the condition or temper of the original material is achieved before assembly.

E. Refer to TM 1-1500-204-23 for minimum allowable bend radii of annealed steel sheet.

F. All attachments used are MS2047AD rivets, unless otherwise noted.

G. Use original rivet locations on each side of the damaged area where possible, and locate as many new attachment locations as possible.

Figure 1. Extruded Parts Repairs

EXTRUDED PARTS REPAIR - continued

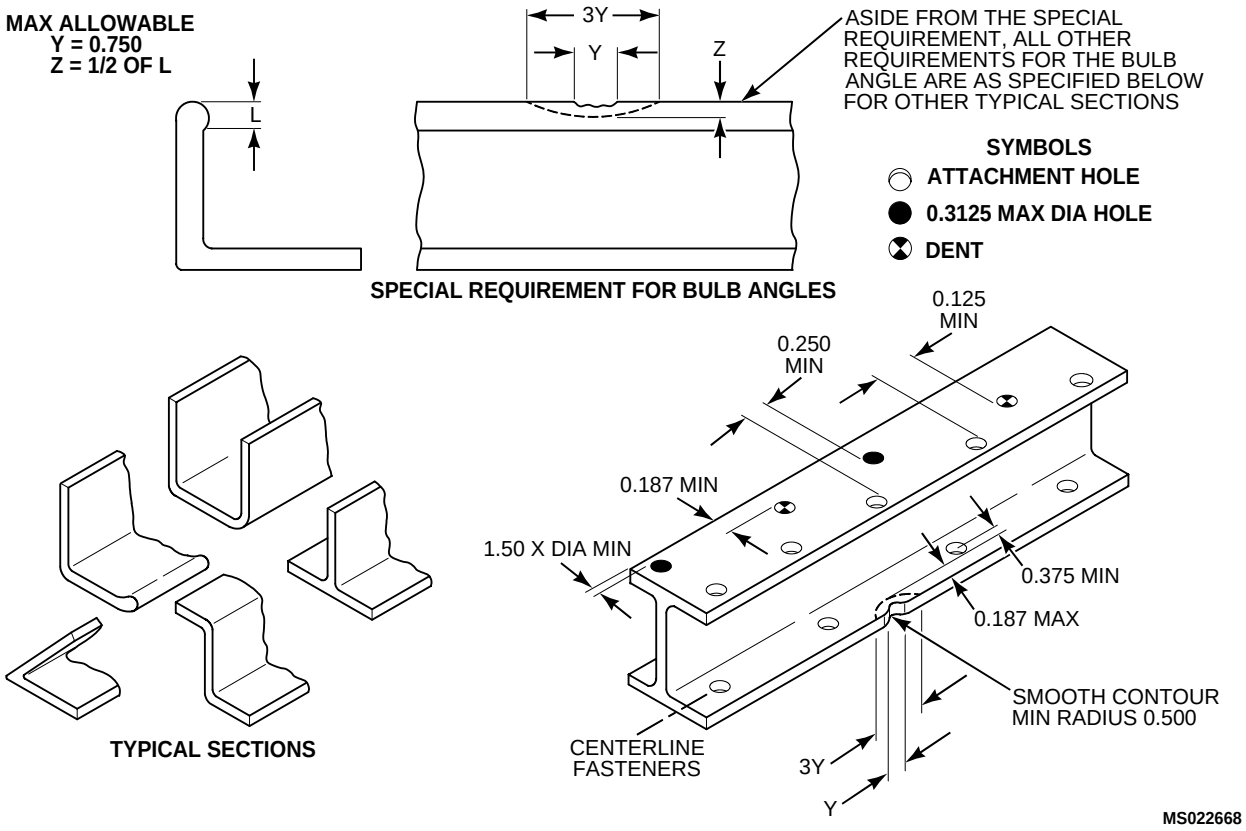
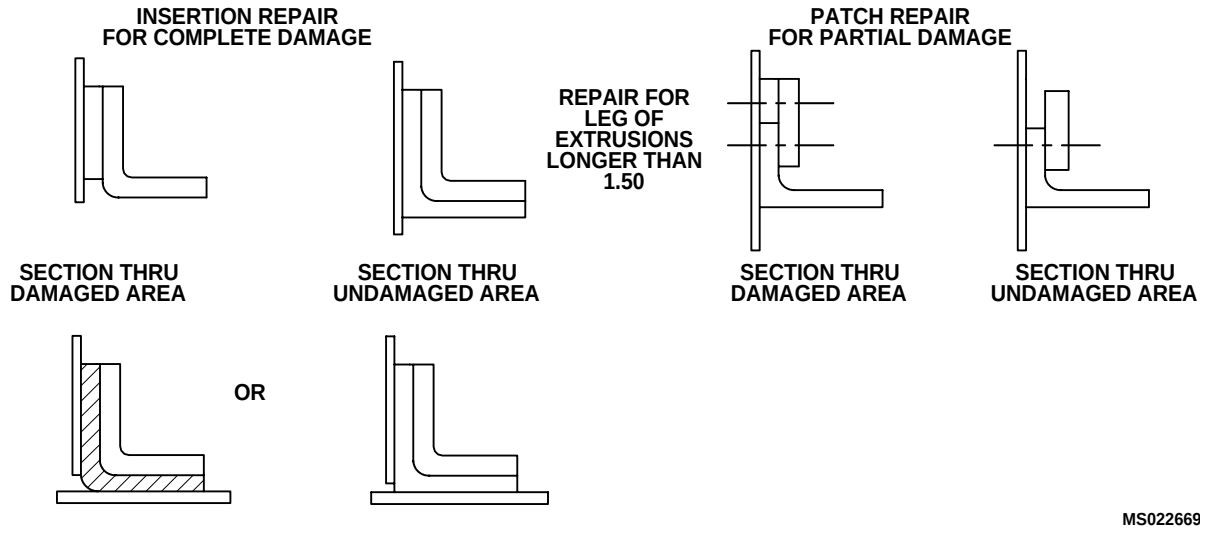


Figure 2. Extruded Parts Repairs (Minor Damage)



NOTE

Refer to Figure 1 for repair parts and notes.

Figure 3. Angles

EXTRUDED PARTS REPAIR - continued

Table 1. Riveting Information – Angle Repairs

EXTRUSION DIE NO.	(Short Leg) NO. ROWS EACH SIDE OF DAMAGE	(Short Leg) MIN NO. PER ROW	(Short Leg) DIA 32nds	(Long Leg) NO. ROWS EACH SIDE OF DAMAGE	(Long Leg) MIN NO. PER ROW	(Long Leg) DIA 32nds
AND10133-0601	1	5	5	1	5	5
-0602	1	4	6**	1	4	6**
-0603	1	3	8*	1	3	8*
-0701	1	4	6**	1	4	6**
-1001	1	4	6**	1	4	6**
-1002	1	5	6**	1	5	6**
-1201	1	5	6**	1	5	6**
-1202	1	3	8*	1	3	8*
-1203	1	3	8*	1	3	8*
-1404	1	5	8*	1	5	8*
-2003	2	3	8*	2	3	8*
-3002	2	5	8*	2	5	8*
AND10134-0501	1	5	5	1	5	5
-0601	1	4	5	1	4	5
-0701	1	3	6**	1	3	6**
-0702	1	3	6**	1	3	6**
-1003	1	3	6**	1	3	6**
-1005	1	4	6**	1	4	6**
-1006	1	5	6**	1	5	6**
-1201	1	4	6**	1	4	6**
-1202	1	5	6**	1	5	6**
-1204	1	4	6**	1	4	6**
-1205	1	3	8*	1	3	8*
-1401	1	5	6**	2	4	6**
-1402	1	5	6**	2	5	6**
-1403	1	5	6**	2	4	6**
-1405	1	5	8*	1	5	8*
-1406	1	5	8*	1	5	8*
-1407	1	5	8*	1	5	8*
-1408	1	5	8*	1	5	8*
-1601	1	3	8*	1	3	8*
-1602	1	5	8*	1	5	8*
-1604	1	5	8*	1	5	8*
-2001	1	4	8*	1	4	8*
-2008	1	5	8*	2	3	8*
-2401	1	3	8*	2	3	8*
-2403	1	5	8*	2	4	8*
AND10134-2405	1	3	8*	2	3	8*
-2408	1	4	8*	2	4	8*
ALCOA 78J	1	4	6**	1	4	6**
734Q	3	5	8*	5	5	8*
5401	1	5	5	1	5	5

EXTRUDED PARTS REPAIR - continued

Table 1. Riveting Information – Angle Repairs - continued

EXTRUSION DIE NO.	(Short Leg) NO. ROWS EACH SIDE OF DAMAGE	(Short Leg) MIN NO. PER ROW	(Short Leg) DIA 32nds	(Long Leg) NO. ROWS EACH SIDE OF DAMAGE	(Long Leg) MIN NO. PER ROW	(Long Leg) DIA 32nds
9484	1	5	6**	1	5	6**
9802	1	4	5	1	4	5
10854	1	4	5	1	4	5
11638	2	4	6**	2	4	6**
11820	1	4	6**	2	4	6**
12883	1	4	5	1	4	5
13637	1	4	5	1	4	5
13816	2	6	6**	3	6	6**
14202	2	5	6**	2	5	6**
15820	1	5	6**	1	5	6**
16869	1	5	6**	1	5	6**
16871	2	5	6**	2	4	6**
22477	1	5	4	1	5	4
22509	1	4	5	1	4	5
22526	1	5	5	1	5	5
22653	1	4	6**	1	4	6**
22878	1	3	6**	1	3	6**
22885	1	3	6**	1	3	6**
22892	1	5	6**	1	5	6**
22991	1	5	6**	1	5	6**
24761	1	3	8*	1	3	8*
27076	1	4	6**	1	4	6**
27778	1	5	6**	2	5	6**
28144	1	5	6**	2	5	6**
28546	1	4	5	1	4	5
29222	1	4	8*	1	4	8*
30022	1	3	6**	1	3	6**
30145	2	5	8*	3	4	8*
30201	1	4	8*	1	4	8*
30796	1	3	8*	1	3	8*
30934	1	3	6**	2	3	6**
31177	1	4	8*	1	4	8*
31683	1	3	8*	1	3	8*
31823	1	5	8*	2	5	8*
32155	1	4	8*	1	4	8*
32975	1	5	6**	1	5	6**
33811	1	5	8*	1	5	8*
43821	1	5	8*	1	5	8*
44076	1	4	5	1	4	5
45827	1	5	6**	1	5	6**
51406	1	5	6**	1	5	6**
51919	1	5	6**	1	5	6**

EXTRUDED PARTS REPAIR - continued

Table 1. Riveting Information – Angle Repairs - continued

EXTRUSION DIE NO.	(Short Leg) NO. ROWS EACH SIDE OF DAMAGE	(Short Leg) MIN NO. PER ROW	(Short Leg) DIA 32nds	(Long Leg) NO. ROWS EACH SIDE OF DAMAGE	(Long Leg) MIN NO. PER ROW	(Long Leg) DIA 32nds
52735	1	3	6**	1	3	6**
56066	1	4	6**	1	4	6**
59148	1	5	8*	2	5	8*
59195	1	5	6**	2	3	6**
59409	1	3	6**	1	3	6**
59574	1	5	8*	1	5	8*
59810	1	5	8*	2	3	8*
60242	1	5	6**	2	4	6**
60278	1	4	8*	1	4	8*
60654	1	5	8*	1	5	8*
60806	1	5	6**	1	5	6**
60830	1	3	8*	1	3	8*
61971	1	4	6**	1	4	6**
62564	1	5	6**	1	5	6**
66428	1	5	6**	1	5	6**
67576	1	5	8*	1	5	8*
67580	1	3	5	1	5	5
67987	1	3	8*	1	3	8*
71369	1	4	6**	1	4	6**
76983	1	5	8*	4	5	8*
80759	1	3	8*	1	3	8*
80788	2	4	8*	2	4	8*
Harvey Alum 11301-3	1	6	6**	1	6	6**
15078	1	5	5	1	5	5
16119	1	6	6**	1	6	6**
16264	1	4	8*	3	4	8*
17335	1	3	8*	1	3	8*
17413	1	4	8*	2	4	8*
17716	1	5	6**	1	5	6**
21741	1	4	8*	1	4	8*
Reynolds Alum 372	1	3	5	1	3	5
4165	2	5	8*	2	5	8*
5761	1	5	6**	2	3	6**
6033	1	5	8*	1	5	8*
7825	1	5	8*	1	5	8*
8158	2	3	8*	3	3	8*
8993	1	5	8*	1	5	8*
19273	1	5	6**	1	6	6**
19292	1	5	5	1	5	5
26807	1	4	8*	1	4	8*

EXTRUDED PARTS REPAIR – continued

Table 1. Riveting Information – Angle Repairs - continued

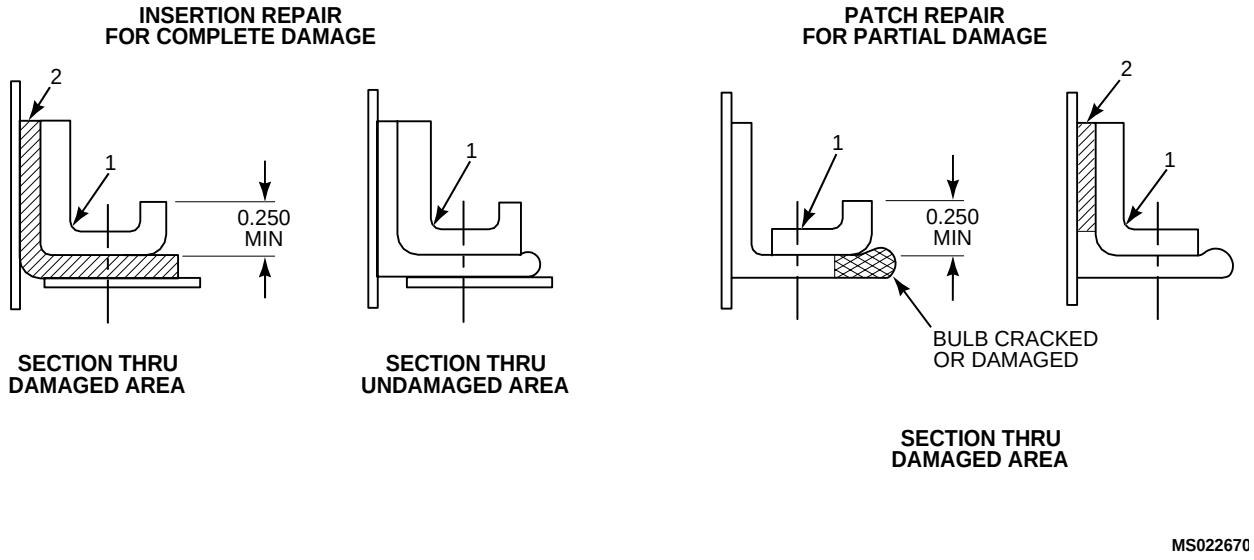
EXTRUSION DIE NO.	(Short Leg) NO. ROWS EACH SIDE OF DAMAGE	(Short Leg) MIN NO. PER ROW	(Short Leg) DIA 32nds	(Long Leg) NO. ROWS EACH SIDE OF DAMAGE	(Long Leg) MIN NO. PER ROW	(Long Leg) DIA 32nds
Texas Alum						
T-2070	1	5	6**	1	6	6**
Vertol Std						
90109	1	5	6**	2	5	6**
90110	1	5	6**	2	5	6**
90112	1	5	8*	1	5	8*
90114	1	5	8*	1	5	8*
90115	1	5	8*	1	5	8*
90116	1	5	8*	1	5	8*
90117	1	4	8*	1	4	8*
90118	1	4	8*	1	4	8*
90119	1	3	8*	1	3	8*
BAC1503-1420	1	5	4	1	5	4
-2731	1	4	6**	1	4	6**
-100019	1	5	8*	1	5	8*
-100037	1	5	6**	2	3	6**
100043	1	5	6**	2	4	6**
BAC 1514-157	1	3	8*	2	4	8*
-539	1	3	8*	2	4	8*

NOTES

*Steel Lockbolts, 0.250–inch diameter

**DD type rivets

EXTRUDED PARTS REPAIR – continued



NOTE

Refer to Figure 1 for repair parts and notes.

Figure 4. Bulb Angles

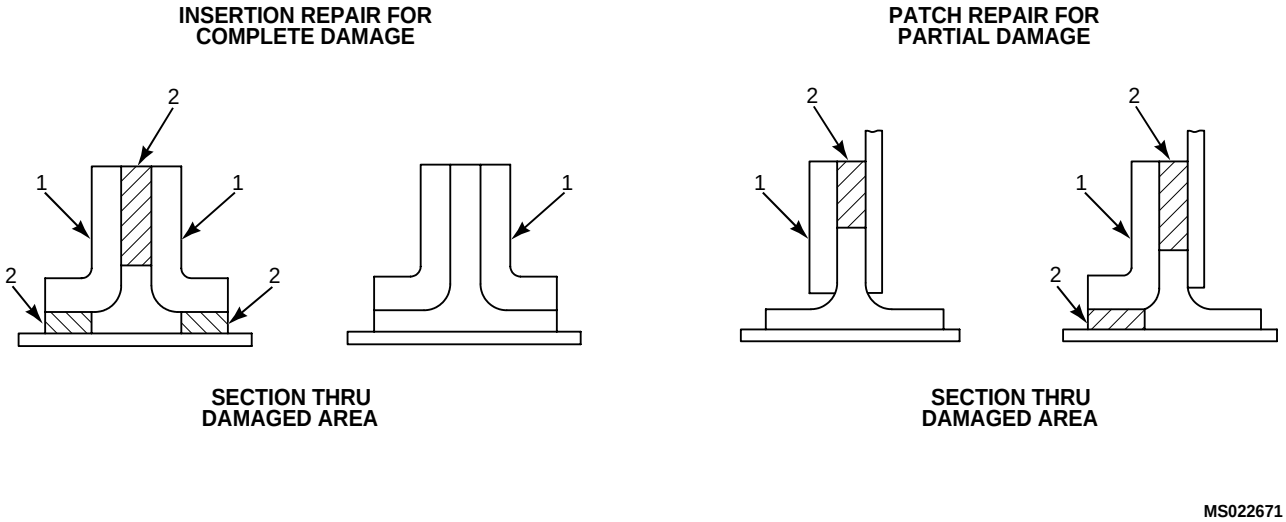
Table 2. Riveting Information – Bulb Angle Repairs

EXTRUSION DIE NO.	(Short Leg) NO. ROWS EACH SIDE OF DAMAGE	(Short Leg) MIN NO. PER ROW	(Short Leg) DIA 32nds	(Long Leg) NO. ROWS EACH SIDE OF DAMAGE	(Long Leg) MIN NO. PER ROW	(Long Leg) DIA 32nds
AND10135-1002	1	4	6**	1	4	6**
-1004	1	5	6**	1	5	6**
-1005	1	5	6**	1	5	6**
-1501	1	5	6**	2	5	6**
ALCOA 28172	1	4	6**	1	4	6**
ALCOA 83264	1	5	5	1	5	5

NOTE

** DD type rivets

EXTRUDED PARTS REPAIR – continued



NOTE

Refer to Figure 1 for repair parts and notes.

Figure 5. Tee Sections

Table 3. Riveting Information – Tee Sections

EXTRUSION DIE NO.	(Web) NO. ROWS EACH SIDE OF DAMAGE	(Web) MIN NO. PER ROW	(Web) DIA 32nds	(Each Flange) NO. ROWS EACH SIDE OF DAMAGE	(Each Flange) MIN NO. PER ROW	(Each Flange) DIA 32nds
AND10137-1301	1	4	8*	1	4	5
-1304	1	4	6**	1	4	6**
-1401	1	4	6**	1	5	6**
-1405	1	4	6**	1	4	6**
-1406	1	5	6**	1	5	6**
-1501	1	3	8*	1	3	8*
-1601	1	5	6**	1	5	6**
-1603	1	5	6**	1	5	6**
-1605	1	3	8*	1	3	8*
-2001	1	5	8*	1	5	8*
-2002	1	5	8*	1	5	8*
-2004	1	5	8*	1	5	8*
-2006	1	5	8*	1	5	8*
-2008	1	3	8*	1	3	8*
-2403	1	3	8*	1	3	8*
-2405	2	3	8*	1	5	8*
-2406	2	3	8*	1	5	8*

EXTRUDED PARTS REPAIR – continued

Table 3. Riveting Information – Tee Sections - continued

EXTRUSION DIE NO.	(Web) NO. ROWS EACH SIDE OF DAMAGE	(Web) MIN NO. PER ROW	(Web) DIA 32nds	(Each Flange) NO. ROWS EACH SIDE OF DAMAGE	(Each Flange) MIN NO. PER ROW	(Each Flange) DIA 32nds
-2407	2	3	8*	1	5	8*
-3001	1	5	8*	2	3	8*
-3005	2	3	8*	2	3	8*
ALCOA 12756	1	5	8*	1	5	8*
13892	1	3	8*	1	3	8*
22008	1	5	6**	1	5	6**
22981	1	4	5	1	5	5
23160	1	5	6**	1	5	6**
27622	1	5	8*	1	5	8*
27695	1	3	6**	1	3	6**
29075	1	4	8*	1	3	8*
30670	1	5	6**	1	5	6**
30674	1	5	5	1	5	5
31543	1	3	8*	1	3	8*
31901	2	5	6**	1	5	6**
32220	1	3	6**	1	3	6**
33185	1	3	8*	1	3	8*
33495	2	4	6**	1	5	6**
37289	2	3	8*	1	5	8*
43774	1	3	8*	1	3	8*
44132	1	5	8*	2	3	8*
49225	1	5	6**	1	5	6**
51670	3	5	8*	1	5	8*
51994	2	5	8*	1	5	8*
52057	1	5	8*	1	4	8*
52233	2	5	8*	1	5	8*
52361	2	3	8*	1	5	8*
52515	2	4	8*	1	4	8*
52966	3	4	6**	1	5	6**
52985	2	5	8*	1	5	8*
52986	1	5	8*	1	4	8*
55794	2	4	6**	1	5	6**
59331	2	4	8*	1	4	8*
62409	1	4	8*	1	3	8*
66017	1	4	8*	1	3	8*
66211	2	4	8*	1	5	8*
66517	1	5	6**	2	5	6**
69464	1	3	8*	1	3	8*
76062	3	5	8*	1	5	8*

EXTRUDED PARTS REPAIR – continued

Table 3. Riveting Information – Tee Sections - continued

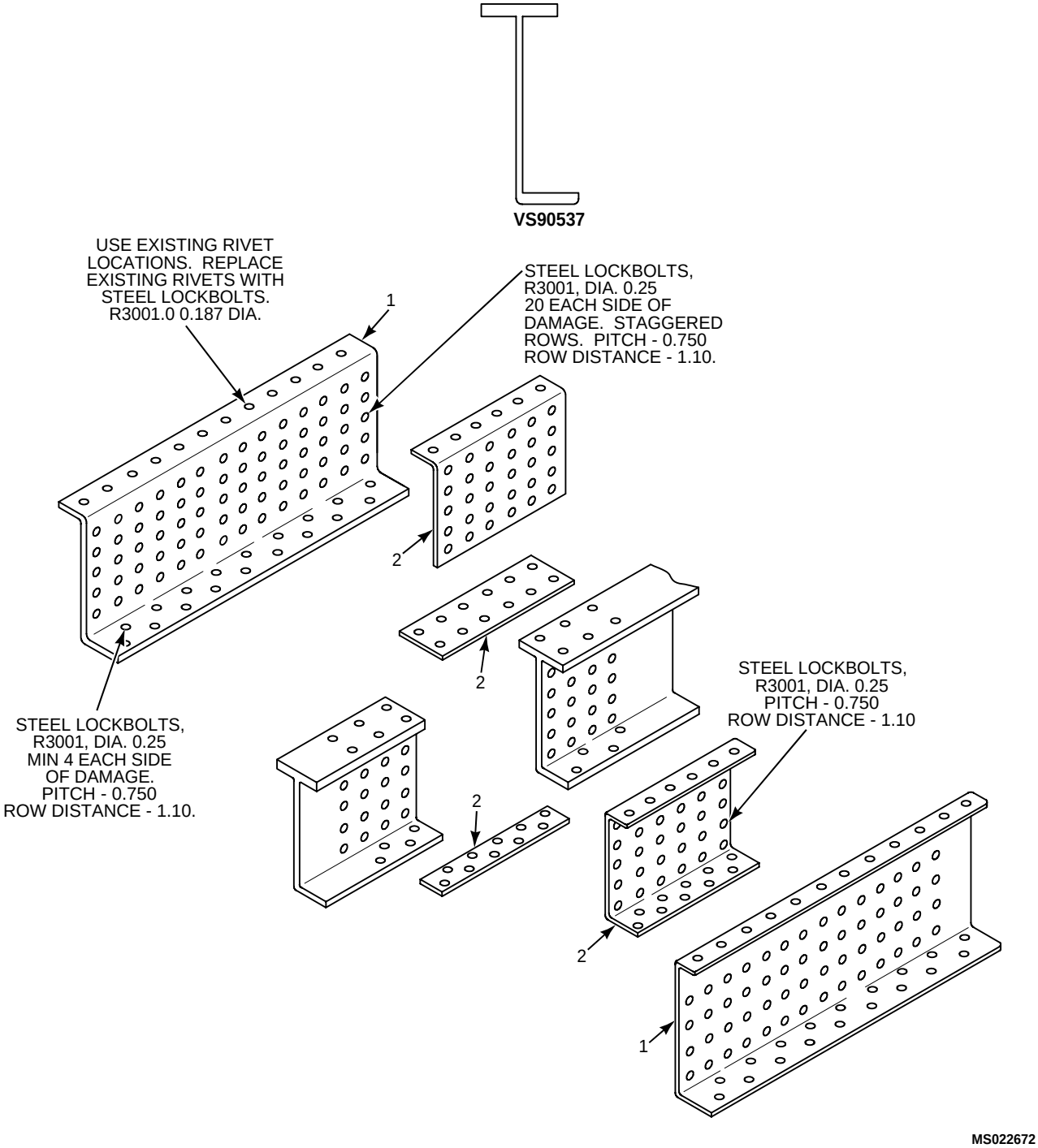
EXTRUSION DIE NO.	(Web) NO. ROWS EACH SIDE OF DAMAGE	(Web) MIN NO. PER ROW	(Web) DIA 32nds	(Each Flange) NO. ROWS EACH SIDE OF DAMAGE	(Each Flange) MIN NO. PER ROW	(Each Flange) DIA 32nds
76959	1	4	8*	1	4	8*
Harvey						
Alum 15152	1	5	6**	1	5	6**
Reynolds						
Alum 11416	1	4	6**	1	4	6**
11730	2	4	6**	1	5	6**
16908	2	4	6**	1	5	6**
18637	2	5	8*	1	5	8*
22769	2	4	8*	1	4	8*
6447	2	5	8*	1	5	8*
9097	2	3	8*	1	5	8*
Vertol Stds						
90302	1	5	8*	1	5	8*
90303	2	3	8*	1	5	8*
90304	1	4	8*	1	4	8*
90305	1	5	6**	1	6	6**
90306	1	4	8*	1	4	8*
90307	2	3	8*	1	5	8*
90308	1	5	8*	1	5	8*
90309	1	5	8*	1	5	8*
90310	1	5	8*	1	5	8*
90311	2	3	8*	1	5	8*
90312	1	4	8*	1	4	8*
90313	1	5	8*	1	5	8*
90314	2	3	8*	2	3	8*
90315	1	5	6**	1	5	6**
90316	1	5	8*	1	5	8*
90317	1	3	8*	1	3	8*
90318	3	5	8*	1	5	8*
90321	1	4	5	1	4	5

NOTES

*Steel Lockbolts, 0.250–inch diameter

**DD type rivets

EXTRUDED PARTS REPAIR – continued

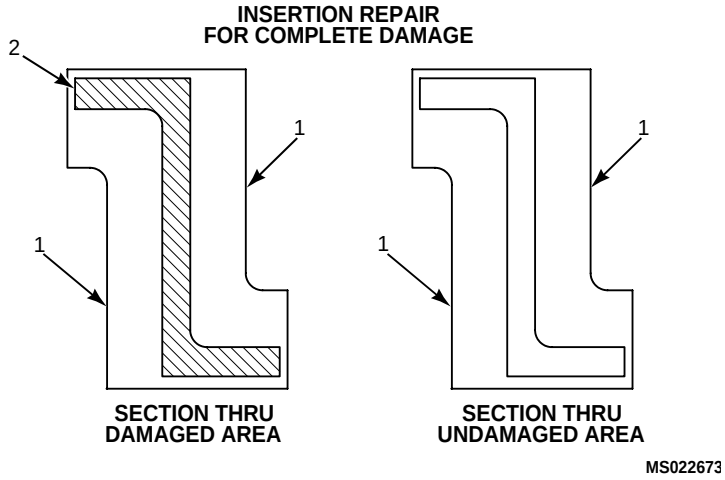


Repair Parts

1. Reinforcement: 0.20–inch 7075-T6
2. Replacement

Figure 6. Special Tee Sections

EXTRUDED PARTS REPAIR – continued



Repair Parts

1. Reinforcement: 0.20–inch 7075-T6
2. Replacement

Figure 7. Zee Sections

Table 4. Riveting Information – Zee Sections

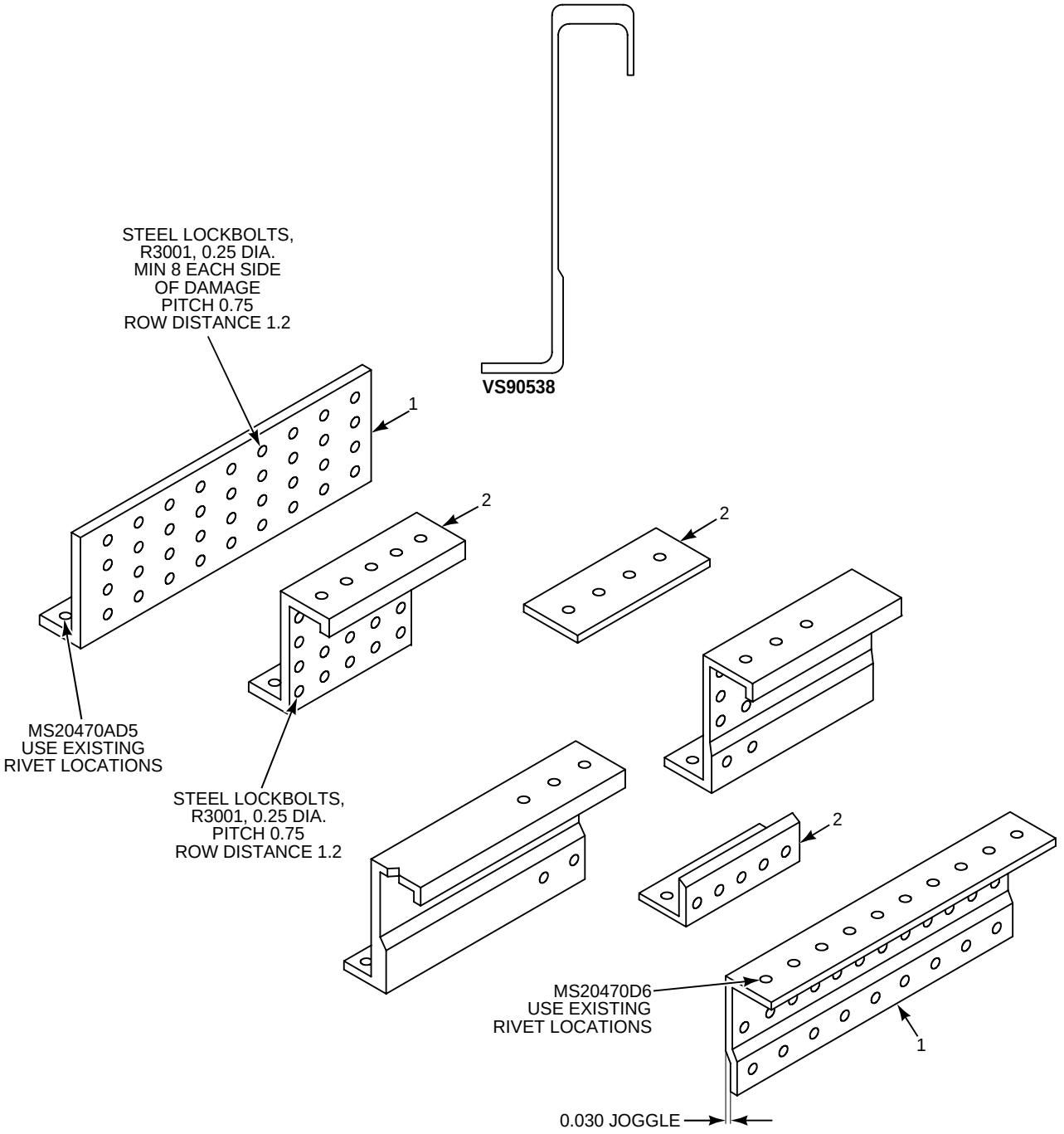
EXTRUSION DIE NO.	(Web) NO. ROWS EACH SIDE OF DAMAGE	(Web) MIN NO. PER ROW	(Web) DIA 32nds	(Each Leg) NO. ROWS EACH SIDE OF DAMAGE	(Each Leg) MIN NO. PER ROW	(Each Leg) DIA 32nds
AND10138-0403	1	4	5	1	4	5
-1004	1	4	6**	1	4	6**
-1005	1	4	6**	1	4	6**
-1009	1	4	6**	1	4	6**
AND10139-0505	1	4	6**	1	4	6**
-0707	1	4	6**	1	4	6**
-1106	1	4	6**	1	4	6**
ALCOA 59675	1	4	5	1	4	5
85491	2	4	8*	1	5	8*
Reynolds Alum 10270	1	3	8*	1	3	8*
Vertol Stds 90601	2	4	6**	1	4	6**
90602	1	4	6**	1	4	6**
90603	2	4	8*	1	4	8*
90604	2	4	6**	1	4	6**

NOTES

*Steel Lockbolts, 0.250–inch diameter

**DD type rivets

EXTRUDED PARTS REPAIR – continued

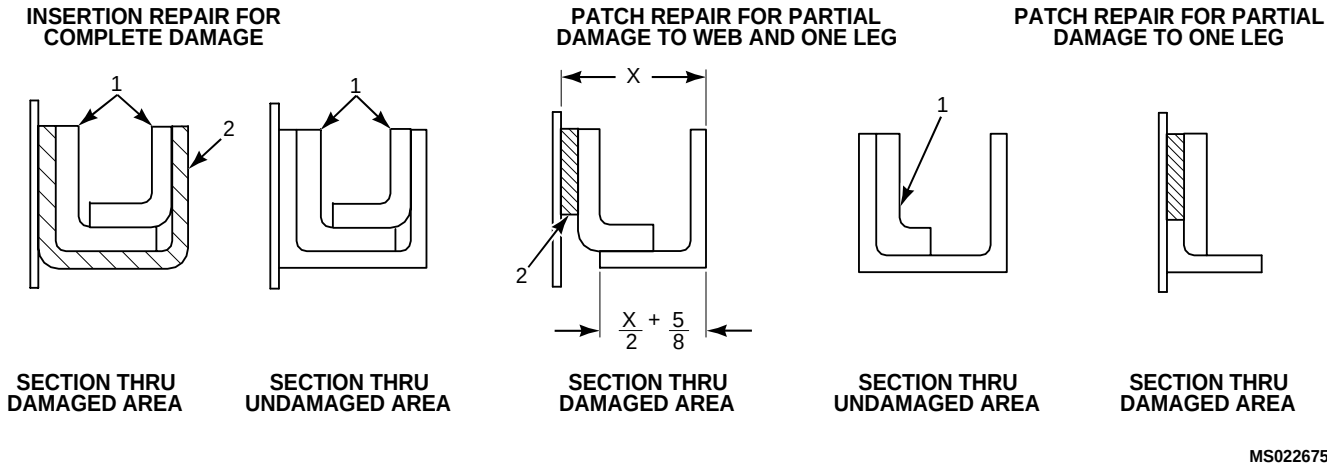


Repair Parts

1. Reinforcement: 0.090–inch 4130
2. Replacement

Figure 8. Special Zee Sections

EXTRUDED PARTS REPAIR – continued



NOTE

Refer to Figure 1 for repair parts and notes.

Figure 9. Standard Channels

Table 5. Riveting Information – Standard Channels

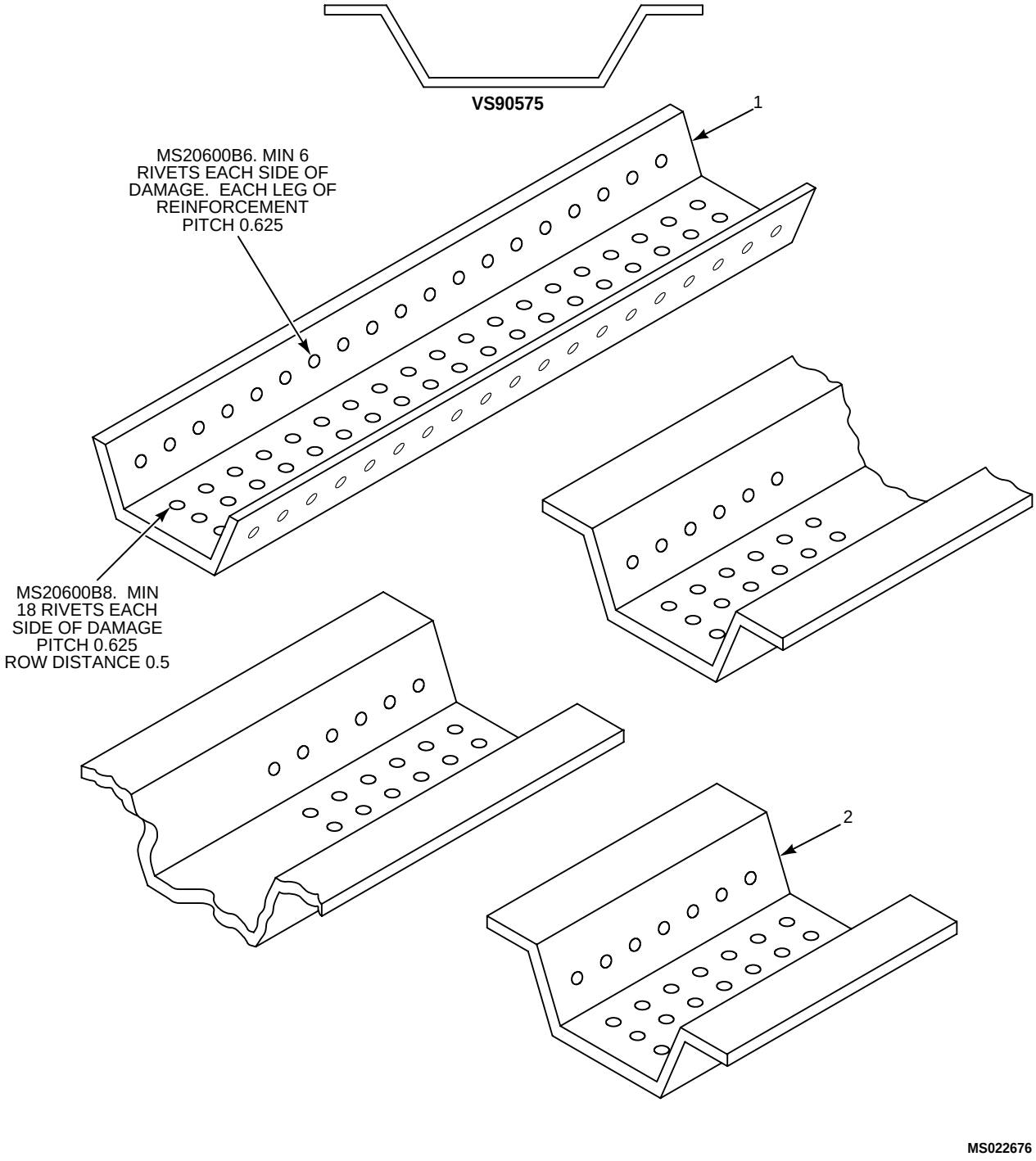
EXTRUSION DIE NO.	(Web) NO ROWS EACH SIDE OF DAMAGE	(Web) MIN NO PER ROW	(Web) DIA 32nds	(Each Leg) NO ROWS EACH SIDE OF DAMAGE	(Each Leg) MIN NO PER ROW	(Each Leg) DIA 32nds
AND10137-0707	1	3	6**	1	3	6**
-1005	1	3	6**	1	3	6**
-1405	2	5	6**	1	5	6**
-1406	1	3	8*	1	3	8*
-1612	2	4	8*	1	4	8*
-2009	1	3	8*	1	3	8*
-2404	1	3	8*	1	3	8*
-2405	1	4	8*	1	4	8*
-2601	1	3	8*	1	3	8*
NAS345-126	1	4	8*	1	4	8*
-134	3	3	8*	2	6	8*
ALCOA 2129	1	5	5	1	5	5
58914	1	5	5	1	5	5
59258	2	5	5	1	5	5
60414	1	4	8*	1	4	8*
Vertol Std 90408	3	3	8*	2	4	8*

NOTES

*Steel Lockbolts, 0.250–inch diameter

**DD type rivets

EXTRUDED PARTS REPAIR – continued

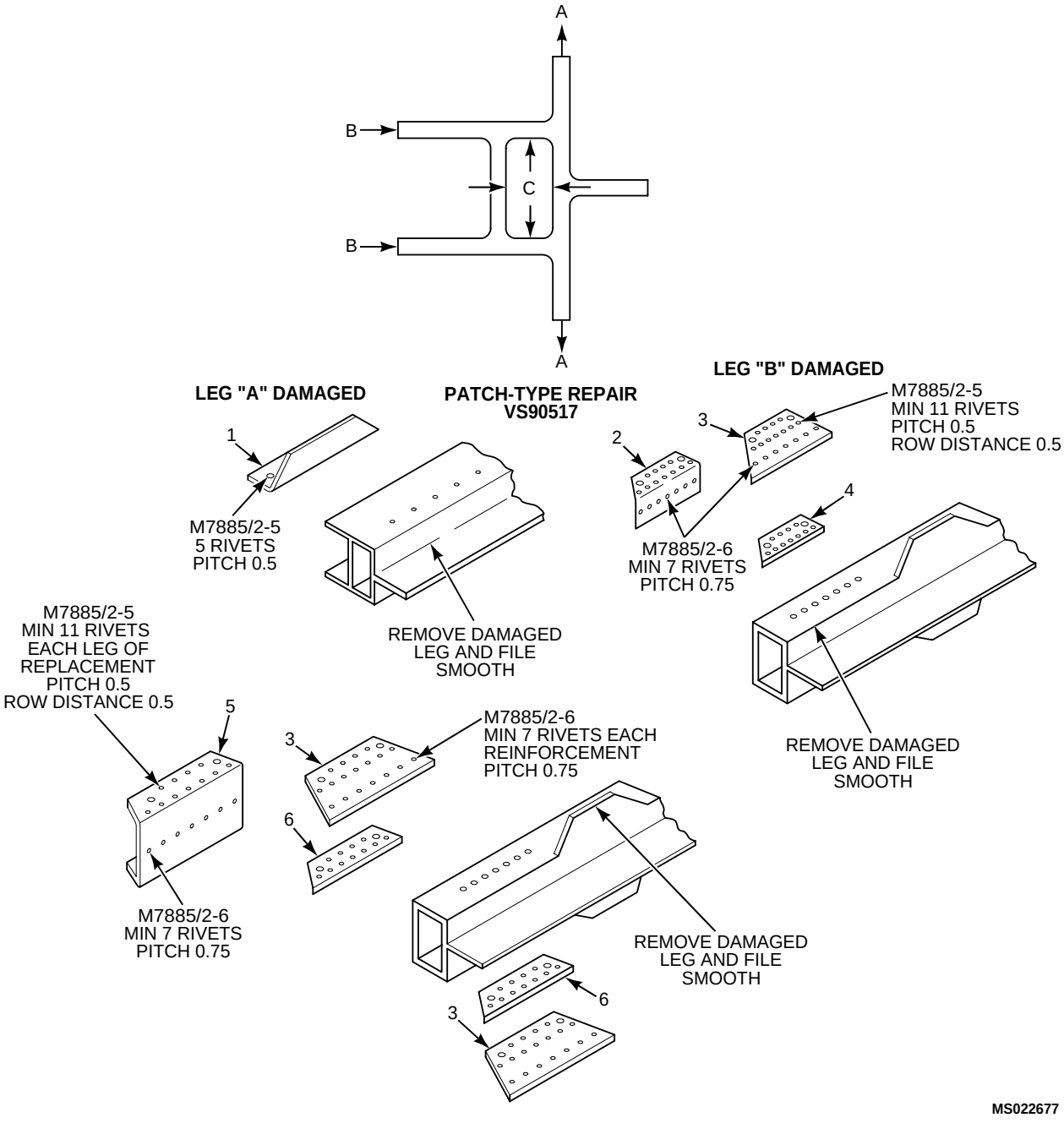


Repair Parts

1. Reinforcement: 0.090–inch 7075-T6
2. Replacement: VS90575, ZD60A-75

Figure 10. Special Channels

EXTRUDED PARTS REPAIR – continued

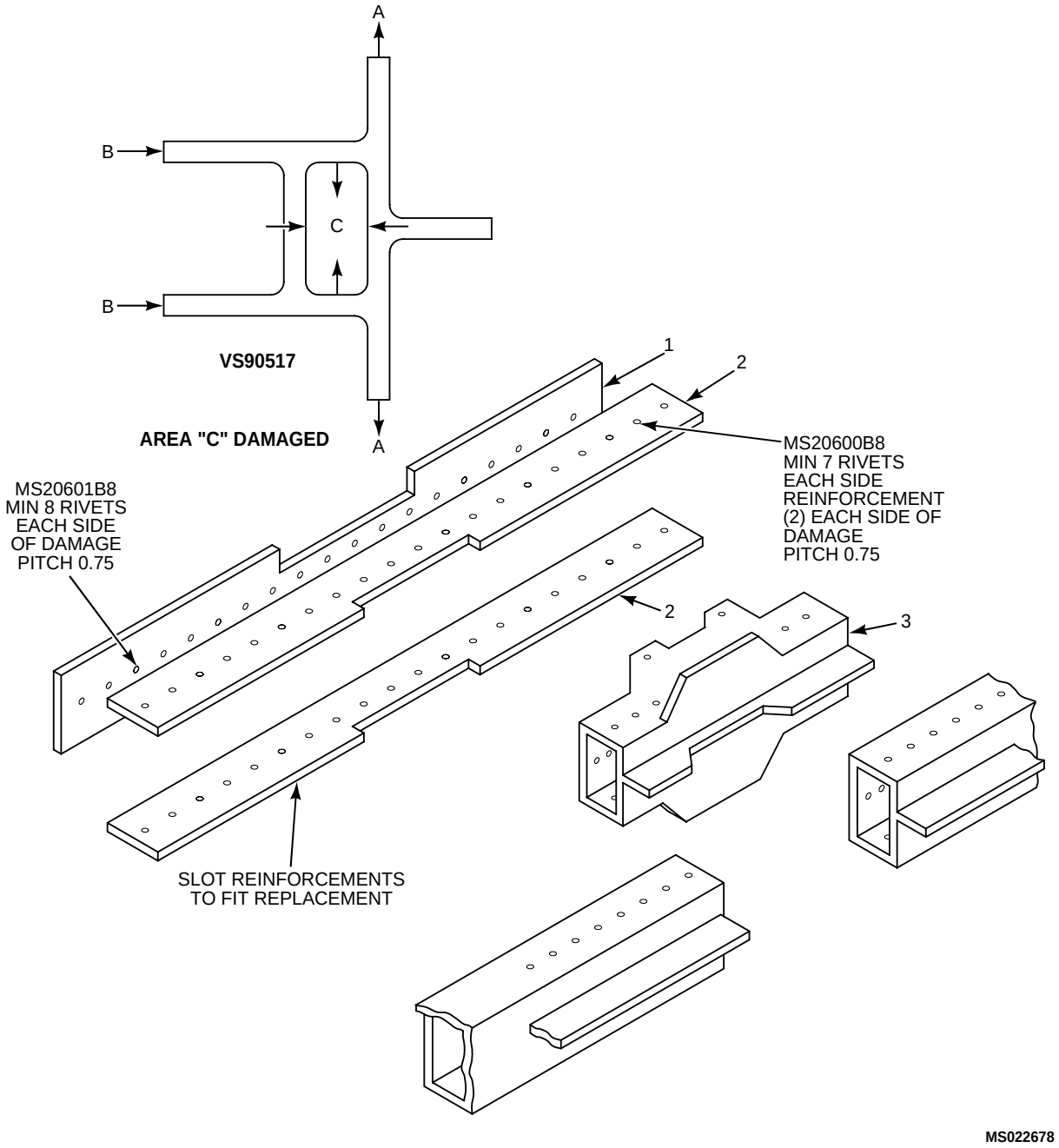


Repair Parts

1. Leg Replacement: AND 10133-0703, 2024-T4
2. Leg Replacement: AND 10134-1205, 2024-T4
3. Reinforcement: 0.012-inch 4130
4. Filler: 0.06-inch 2024-T4
5. Leg Replacement: AND 10137-1205, 2024-T4
6. Filler: 0.025-inch 2024-T4

Figure 11. Miscellaneous Sections (Sheet 1 of 2)

EXTRUDED PARTS REPAIR – continued



Repair Parts

1. Top Reinforcement: 0.10-inch 4130
2. Side Reinforcement: 0.20-inch 4130
3. Replacement: VS90517, ED60A-T5 (Machine to configuration of original damaged section)

Figure 11. Miscellaneous Sections (Sheet 2 of 2)

END OF WORK PACKAGE

DEPOT MAINTENANCE WORK REQUIREMENT
CH-47D HELICOPTER
ATTACHING HOLE REPAIRS

INITIAL SETUP

Test Equipment:
As Required

Tools and Special Tools:
As Required

Material/Parts:
As Required

Personnel Required:
As Required

References:
TM 1-1500-204-23 Series
TM 55-1520-240-23 Series
WP 0078 00

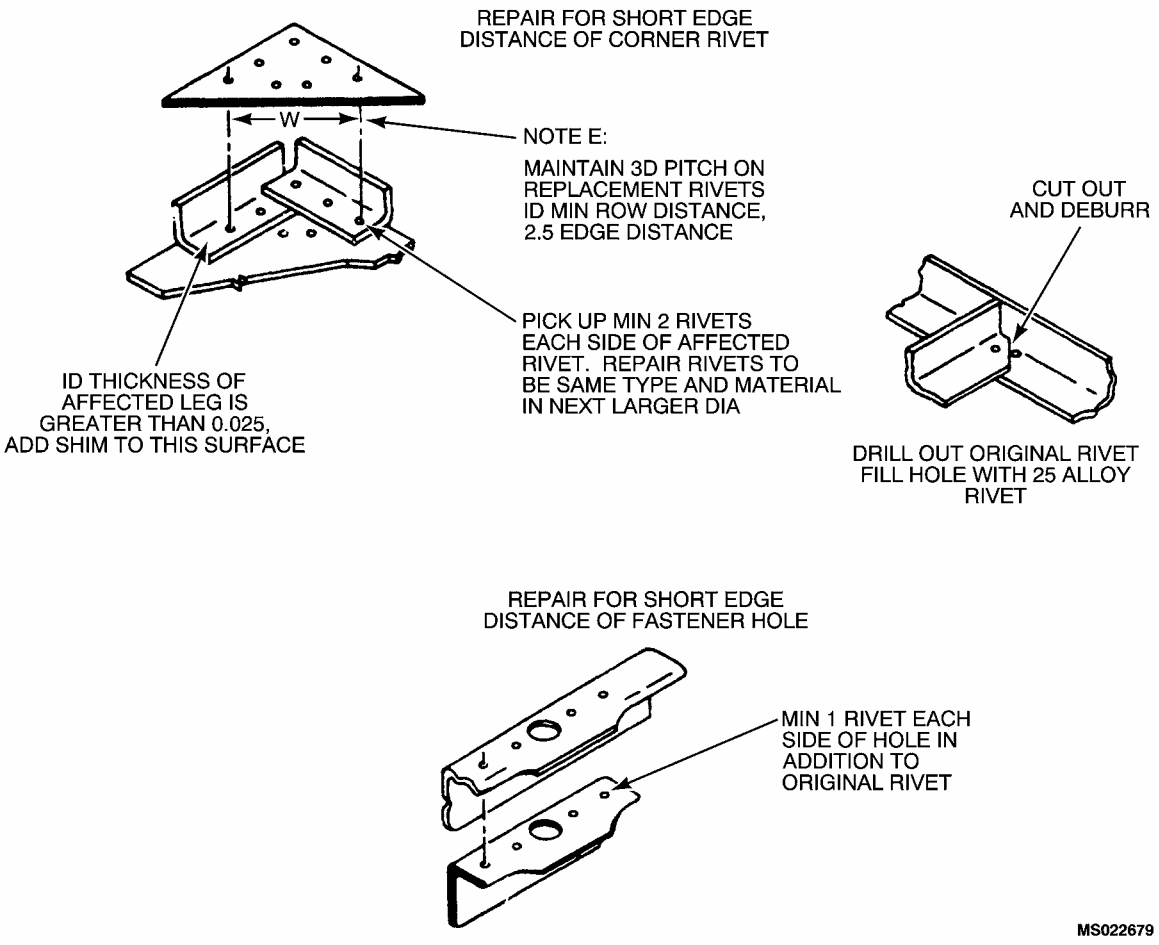
Equipment Conditions:
As Required

Special Environmental Condition:
As Required

SCOPE

This work package covers the repair of mis-located rivets, and defective rivet holes; refer to Figure 1, Sheet 1 thru Sheet 5. Also refer to WP 0078 00 for insulation of dissimilar metals.

REPAIR



NOTES

A. All dimensions are in inches.

B. Drill No. 40 hole at ends of each crack that does not terminate at a rivet hole.

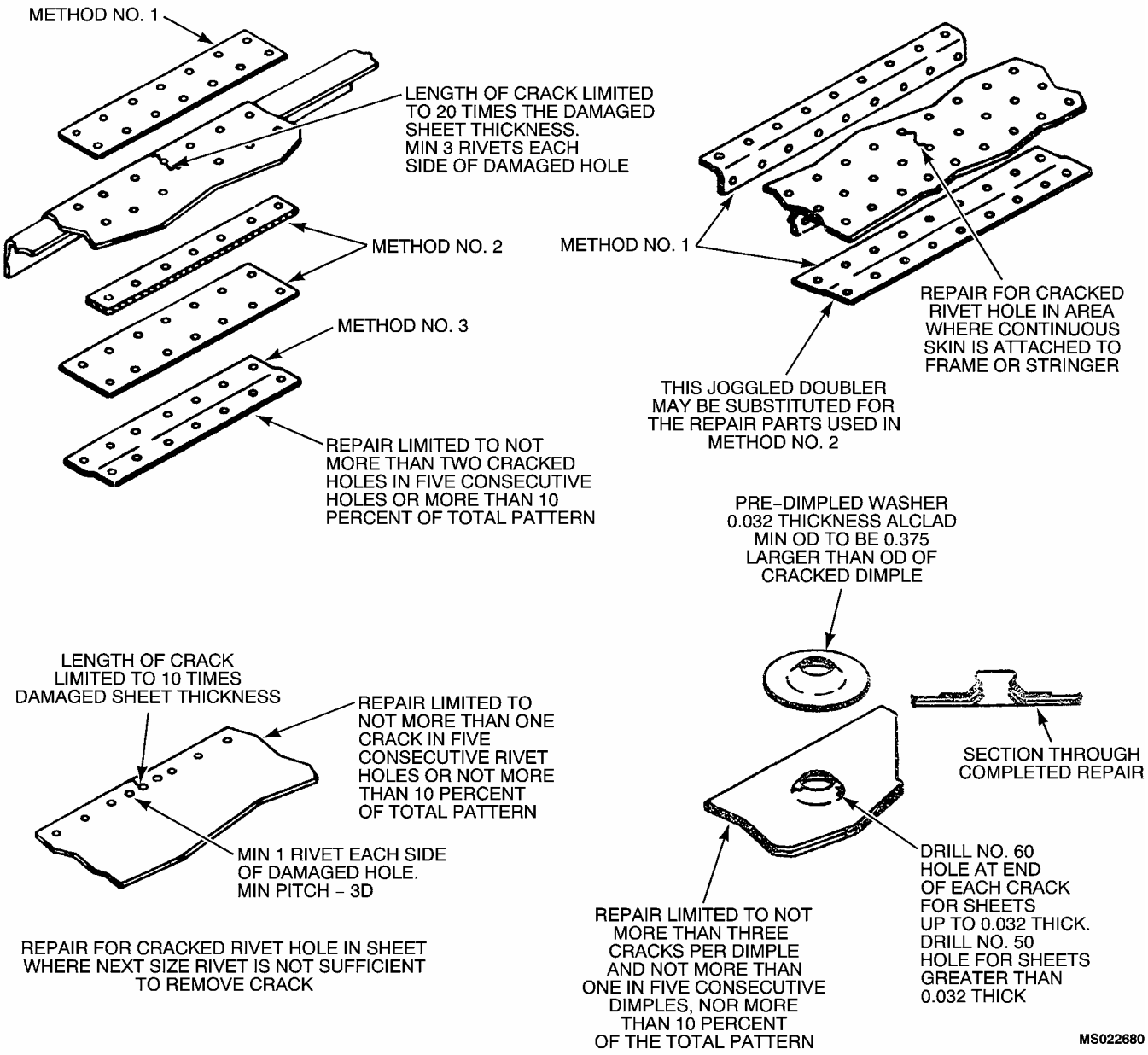
C. All repair rivets to be same type, material, and diameter as original.

D. All repair parts to be same thickness and material, as damaged sheet.

E. If thickness of stringers is greater than 0.025–inch and dimension “W” is more than 2.0 inches, add filler in this area under reinforcement. Add extra rivets at 0.750–inch pitch. Filler is not required when reinforcement is used on reverse side.

Figure 1. Attaching Hole Repairs (Sheet 1 of 5)

REPAIR - continued



NOTES

A. All dimensions are in inches.

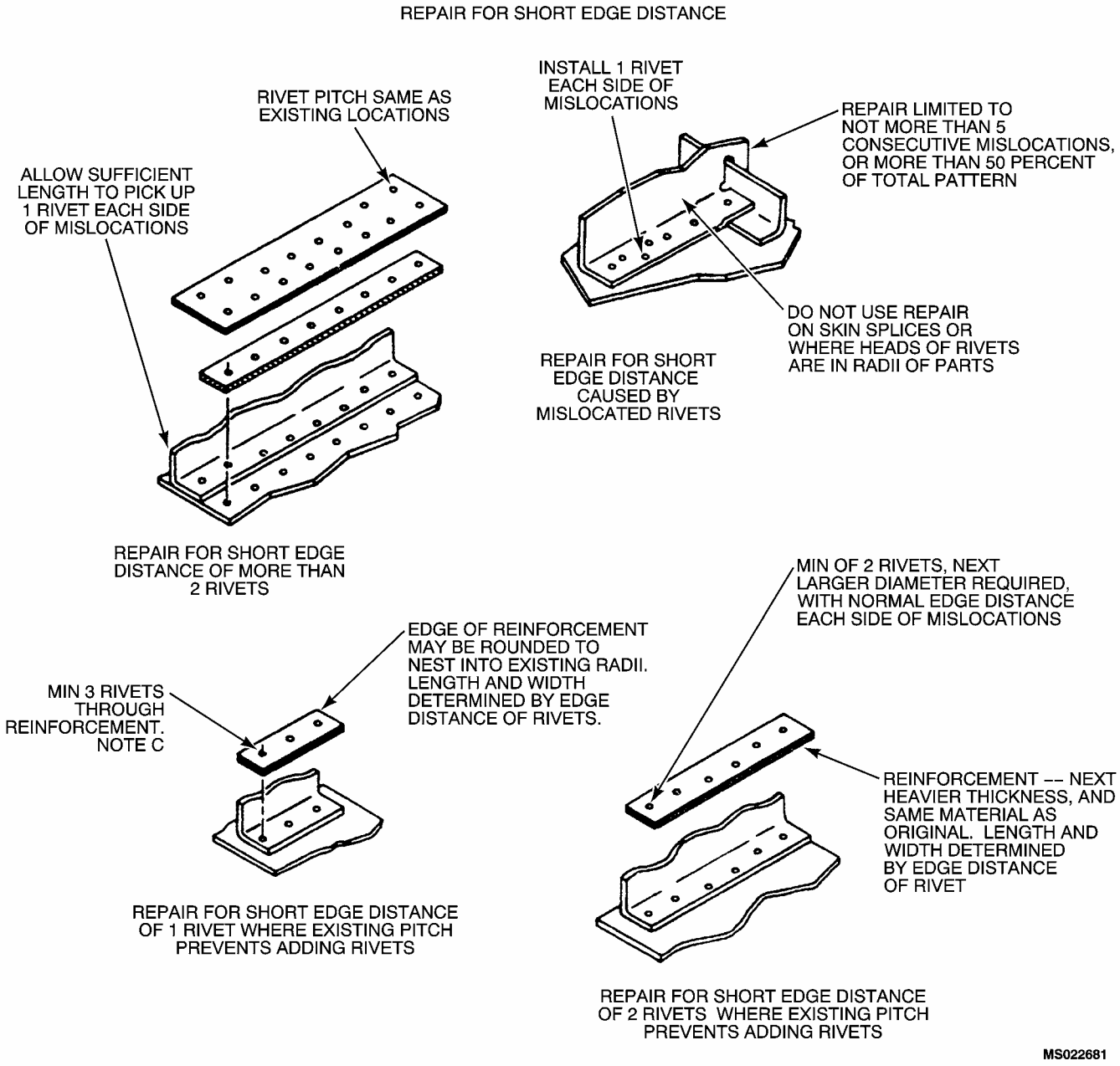
B. Drill No. 40 hole at ends of each crack that does not terminate at a rivet hole.

C. All repair rivets to be same type, material, and diameter as original.

D. All repair parts to be same thickness and material, as damaged sheet.

Figure 1. Attaching Hole Repairs (Sheet 2 of 5)

REPAIR - continued



NOTES

A. All dimensions are in inches.

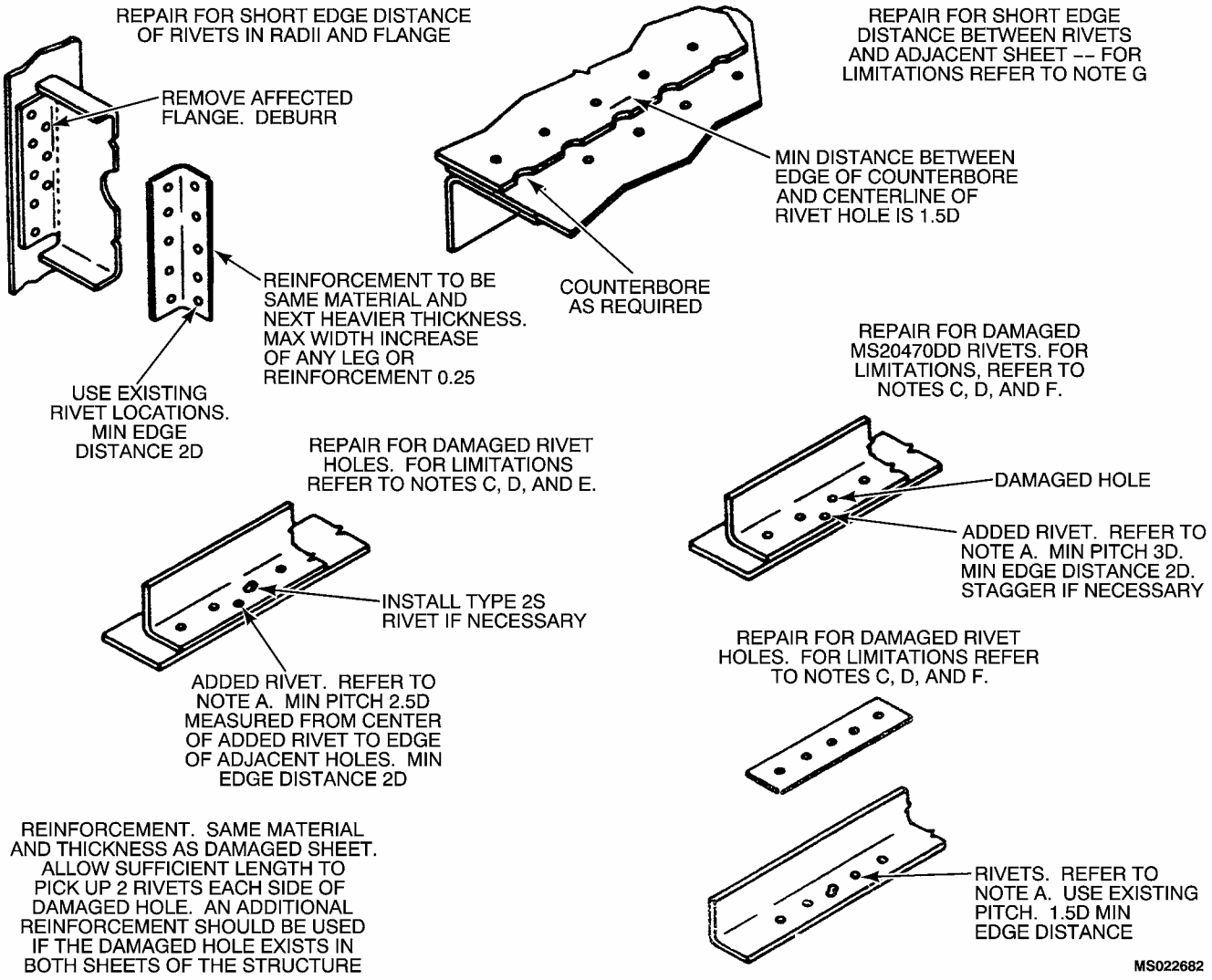
B. Drill No. 40 hole at ends of each crack that does not terminate at a rivet hole.

C. All repair rivets to be same type, material, and diameter as original.

D. All repair parts to be same thickness and material as damaged sheet.

Figure 1. Attaching Hole Repairs (Sheet 3 of 5)

REPAIR - continued

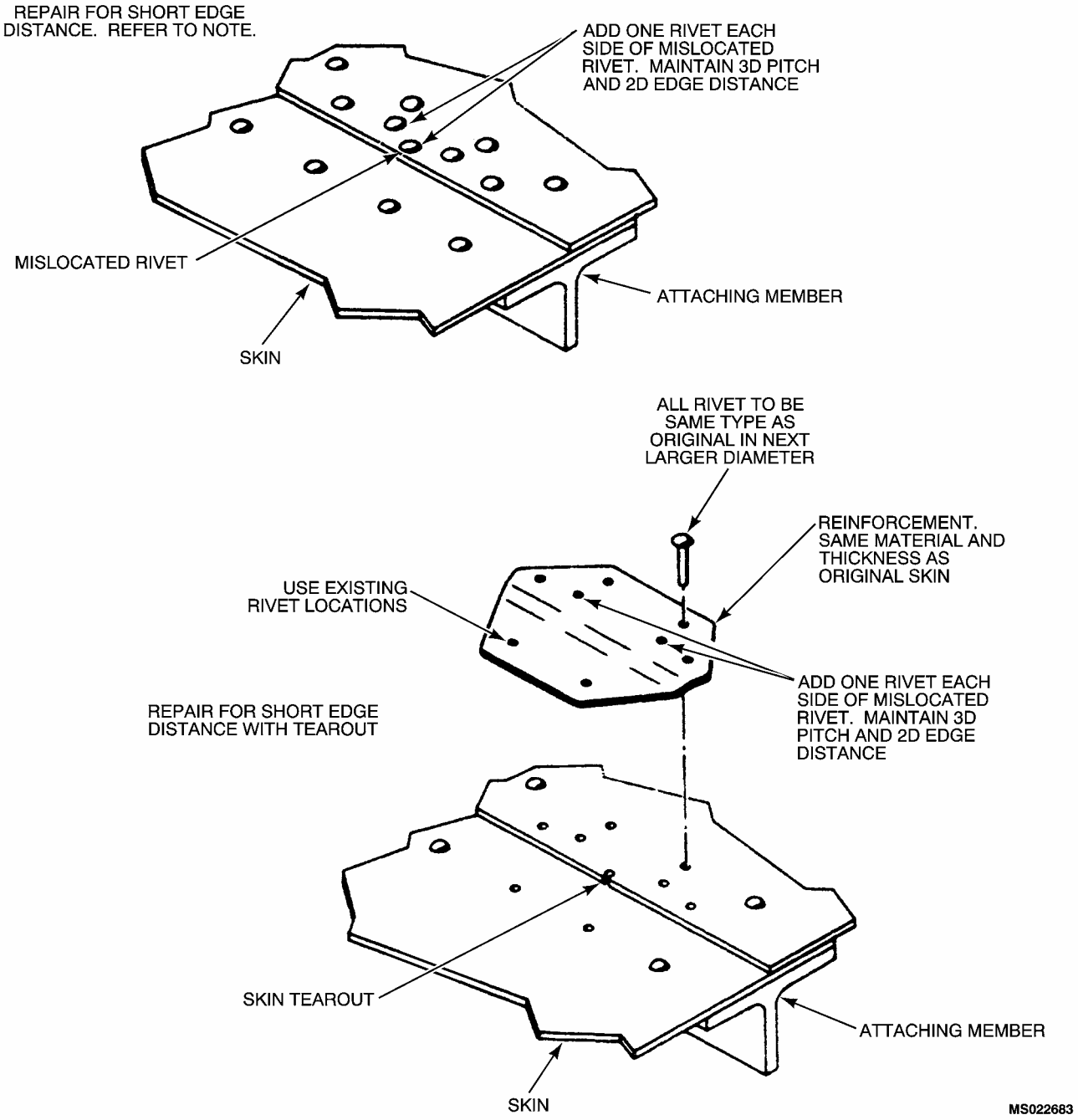


NOTES

A. All dimensions are in inches.
B. All repair rivets to be same type, material, and diameter as original.
C. This repair is not applicable to patterns of less than five rivets. A maximum of one rivet or one rivet hole may be repaired in patterns containing a maximum of 10 rivets. A maximum of 10 percent of the rivet pattern may be repaired for patterns containing more than 10 rivets. Damaged rivet holes are not to be consecutive.
D. This repair is not applicable for rivet diameter 0.1875-inch or larger. Any size rivet may be counted to determine total pattern.
E. This repair is not applicable for rivet holes elongated more than 1.5 times the diameter of the original hole.
F. This repair is not applicable for rivet holes elongated less than 1.5 times the diameter of the original hole.
G. This repair is not applicable on the edge of a part where a rivet is picked up, nor can it be used as a substitute for installing a rivet by counter-boring the part.

Figure 1. Attaching Hole Repairs (Sheet 4 of 5)

REPAIR - continued



NOTE

Generally, the minimum acceptable edge distance is 2D.

Figure 1. Attaching Hole Repairs (Sheet 5 of 5)

END OF WORK PACKAGE

DEPOT MAINTENANCE WORK REQUIREMENT
CH-47D HELICOPTER
ELIMINATING GAPS AND UNLEVEL CONDITIONS

INITIAL SETUP

Test Equipment:
As Required

Tools and Special Tools:
As Required

Material/Parts:
Epoxy Primer, (Item 140, WP 0157 00)

Personnel Required:
As Required

References:
TM 1-1500-204-23 Series
TM 55-1520-240-23 Series
WP 0157 00

Equipment Conditions:
As Required

Special Environmental Condition:
As Required

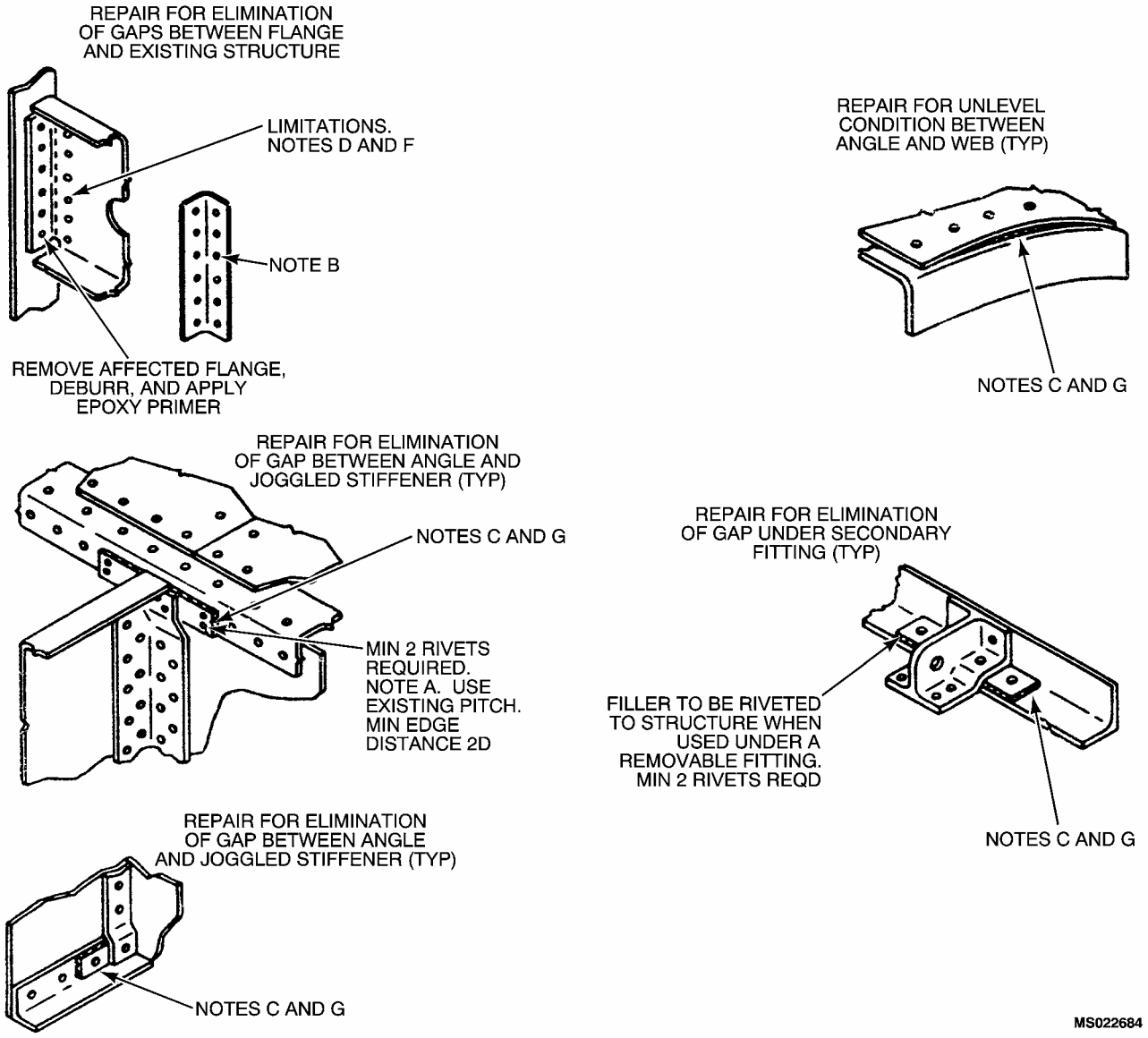
SCOPE

This work package provides procedures for eliminating gaps and correction of unlevel conditions. Refer to Figure 1.

WARNING

EPOXY PRIMER

PROCESS



NOTES

A. All dimensions are in inches.
B. Repair rivets to be same type and material as original.
C. Unless otherwise noted, all repair parts to be same thickness and material as original structure.
D. Repair limited to max gap or interference of 0.25-inch.
E. Repair not applicable to main structural fittings, such as transmission and engine supports.
F. Max removal of flange, where interference exists, is limited to 0.25-inch.
G. Max thickness of filler is 0.0625-inch.

Figure 1. Eliminating Gaps and Unlevel Conditions

END OF WORK PACKAGE

DEPOT MAINTENANCE WORK REQUIREMENT
CH-47D HELICOPTER
WINDSHIELD AND WINDOW REPAIRS

INITIAL SETUP

Test Equipment:
As Required

Tools and Special Tools:
Rubber Block
Stitched Buffing Wheel
Portable Disk Sander

Material/Parts:
Abrasive Paper (Item 11 thru Item 15, WP 0157 00)
Buffing Compound (Item 53, WP 0157 00)
Cloth, Flannel, Cotton (Item 77, WP 0157 00)
Rouge (Item 152, WP 0157 00)
Tape, Masking (Item 175, WP 0157 00)

Personnel Required:
As Required

References:
TM 1-1500-204-23 Series
TM 55-1520-240-23 Series
WP 0157 00

Equipment Conditions:
As Required

Special Environmental Condition:
As Required

SCOPE

This work package covers the inspection of glass windshields and glass cockpit side windows. It also covers inspection and repair of plastic cockpit and cabin windows.

GLASS WINDSHIELDS

1. Inspect glass windshield and glass side windows for cracks (no cracks allowed, replace), nicks, dents, scratches, blemishes, and discolorations in critical areas. If defects block or limit pilot's vision, replace windshield and/or windows.

NOTE

Dark brown and gold discolorations between layers of glass are indications of burnout. Do not mistake burnout colors for light gold tint of heating element.

2. Inspect windshield for burnout. Replace windshield if burnout blocks or limits pilot's vision.

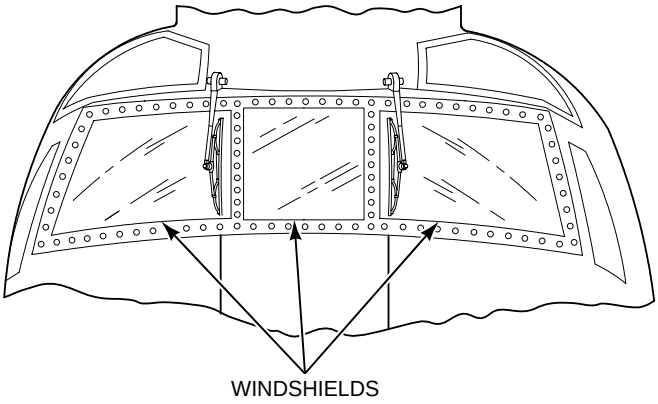
NOTE

Delaminating in windshield appears as blisters and bubbles between layers.

3. Inspect windshield for delamination (separation of layers). Replace windshield if delamination blocks or limits pilot's vision.

4. Refer to Figure 1 for windshield critical areas, semi-critical areas, non-critical areas, and wiper path. Keep in mind that small blemishes in the windshield are magnified when using night vision goggles. Therefore, if there is any question about serviceability, replace the windshield and/or glass side windows.

GLASS WINDSHIELDS – continued



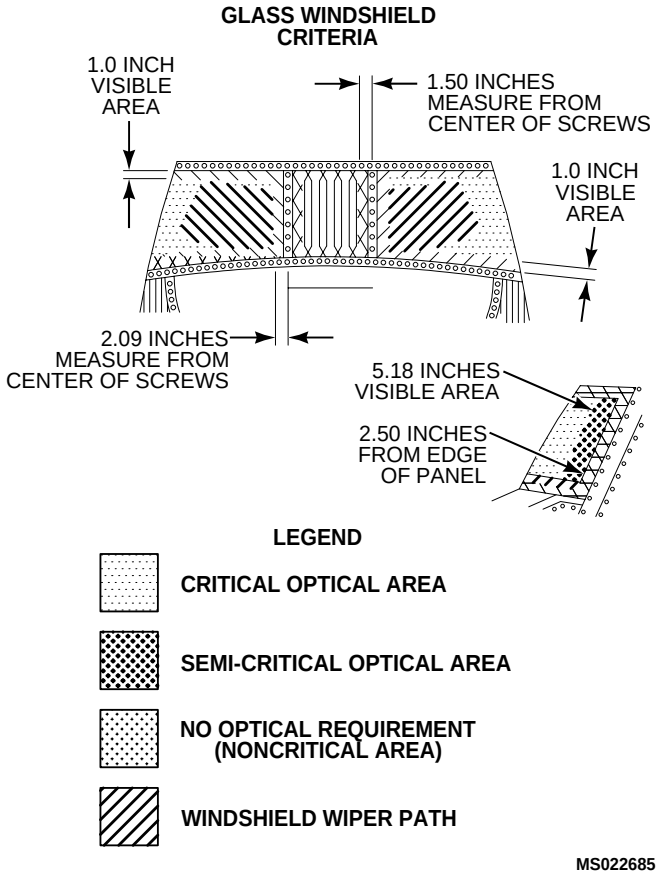


Figure 1. Windshield Criteria

PLASTIC WINDOWS

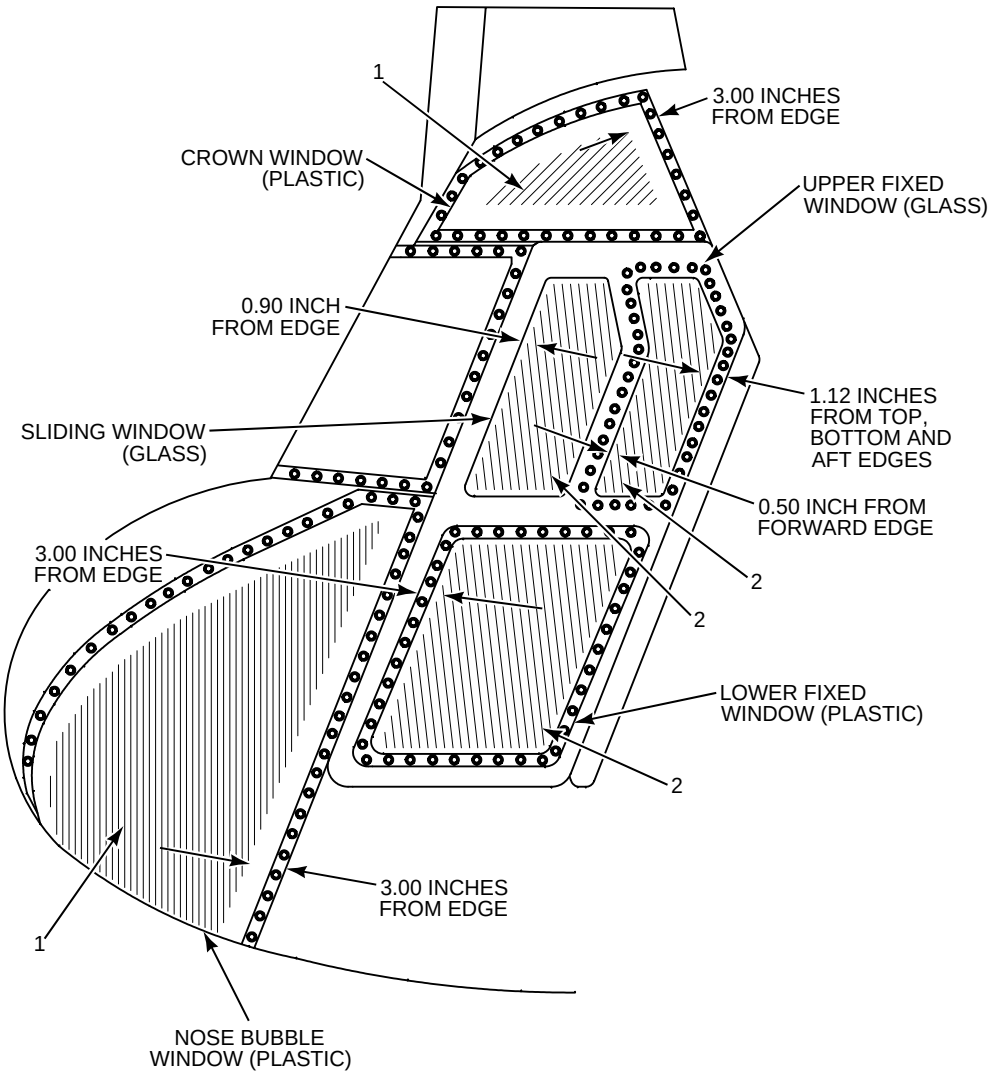
1. Inspect the crown windows (2 each), nose bubble windows (2 each), lower fixed windows (2 each), escape hatch window, cabin door window, and cabin windows (8 each), for cracks, crazing, nicks, dents, scratches, blemishes, and discolorations in semi-critical areas, and non-critical areas. If defects block or limit pilot's vision, replace window. Escape hatch windows and cabin windows are non-critical.

PLASTIC WINDOWS - continued

2. Refer to Figure 2, Sheets 1 and 2 for window locations and critical and semi-critical areas. Keep in mind that small blemishes in the window are magnified when using night vision goggles. Therefore, if there is any question about serviceability, replace the window.

NOTE

Window discoloration will appear as a light brown or gold colored area.



NOTES

1. Semi-Critical Area
2. Critical Area

Figure 2. Window Criteria (Sheet 1 of 2)

PLASTIC WINDOWS - continued

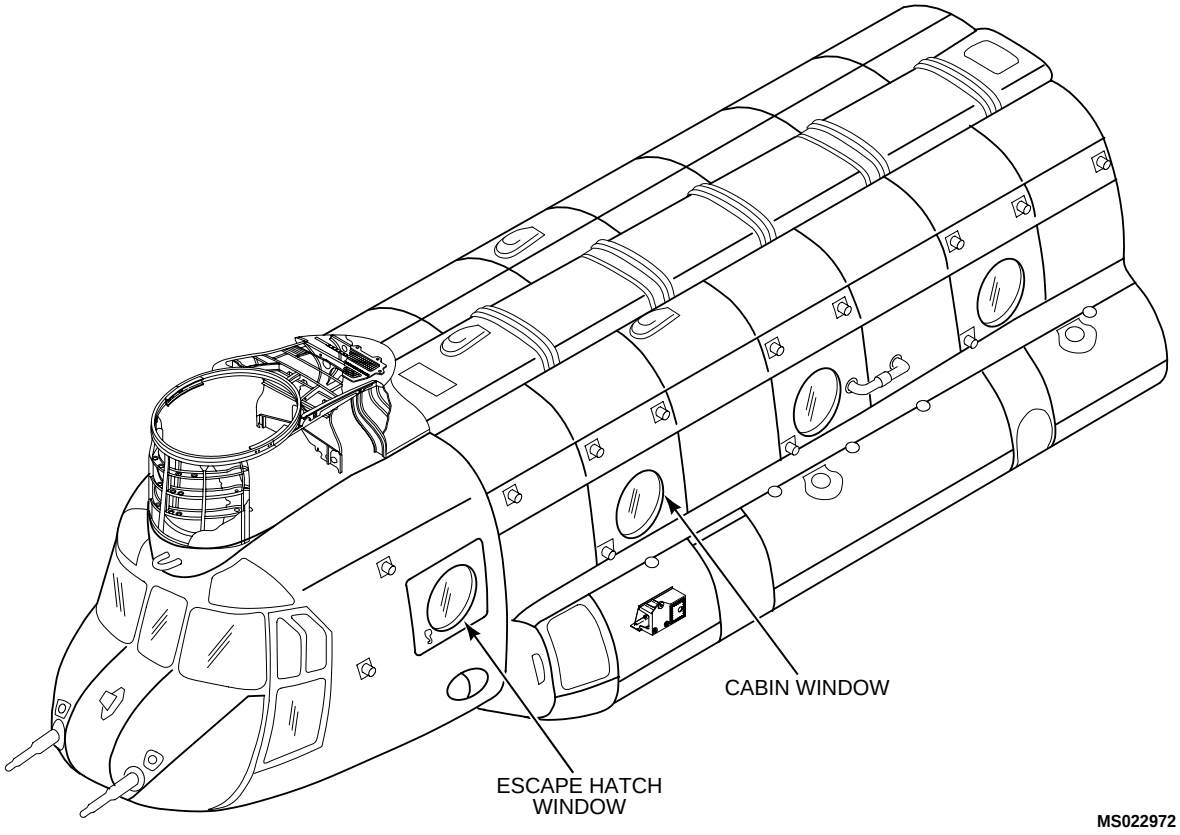


Figure 2. Window Criteria (Sheet 2 of 2)

REPAIR OF PLASTIC WINDOWS

NOTE

For purposes of this DMWR, repair procedures for plastic windows as prescribed in TM 1-1500-204-23 will not be used unless authorized by the Contracting Officer. However, IAW MEO A2388 dtd 28 July 2004, EZClear Polishing System may be used to repair plastic windows in place of the following procedure.

1. Mask areas adjacent to repair area to protect from damage. Use masking tape (Item 175, WP 0157 00).

WARNING

EYE INJURY

2. Wrap abrasive paper (Item 11, WP 0157 00) around rubber block.

REPAIR OF PLASTIC WINDOWS - continued

CAUTION

Surface to be repaired must be covered with water at all times to prevent further damage.

3. Sand the surface to be repaired. Use abrasive paper (Item 11, WP 0157 00) wet with water.

4. Using a finer grit abrasive paper (Item 11 thru Item 15, WP 0157 00), repeat step 3 until scratches are removed.

5. Flush repaired surface with water to remove loose foreign matter.

CAUTION

Machine polishing of critical optical areas by a qualified operator is mandatory. Only semi-critical and non-critical areas can be polished by hand. Use rouge (Item 152, WP 0157 00) applied with a water-moistened cotton flannel cloth (Item 77, WP 0157 00).

6. Polish sanded surface, using a stitched buffing wheel mounted in a portable disk sander and buffing compound (Item 53, WP 0157 00).

END OF WORK PACKAGE

DEPOT MAINTENANCE WORK REQUIREMENT
CH-47D HELICOPTER
SPOT WELDED PARTS REPAIRS

INITIAL SETUP

Test Equipment:
As Required

Tools and Special Tools:
Rubber Block
Stitched Buffing Wheel
Portable Disk Sander

Material/Parts:
As Required

Personnel Required:
As Required

References:
TM 1-1500-204-23 Series
TM 55-1520-240-23 Series
SAE-AMS-W-6858

Equipment Conditions:
As Required

Special Environmental Condition:
As Required

SCOPE

This work package covers repair of defective and damaged spot welded parts.

REPAIR

Table 1. Repair of Defective Spot Weld – Defect Exceeds Allowable Percentage (Refer to Table 3 for Allowable Percentage)

THICKNESS OF THINNEST OUTER SHEET (2 SHEET COMBINATIONS)	MINIMUM ACCEPTABLE RIVET DIA AND TYPE				DRILL NO.
	PROTRUDING		FLUSH		
	CRES	AL	CRES	AL	
0.016	M3	AD3	M3	AD3	41
0.020	M3	AD3	M3	AD3	41
0.025	M3	AD3	M3	AD3	41
0.032	M4	AD4	M4	AD4	30
0.040	M4	AD4	M4	AD4	30
0.050	M5	AD5	M5	AD5	21
0.063	--	AD6	--	AD6	11
0.071	--	AD6	--	AD6	11
0.080	--	AD6	--	AD6	11

NOTES

A. All dimensions are in inches.

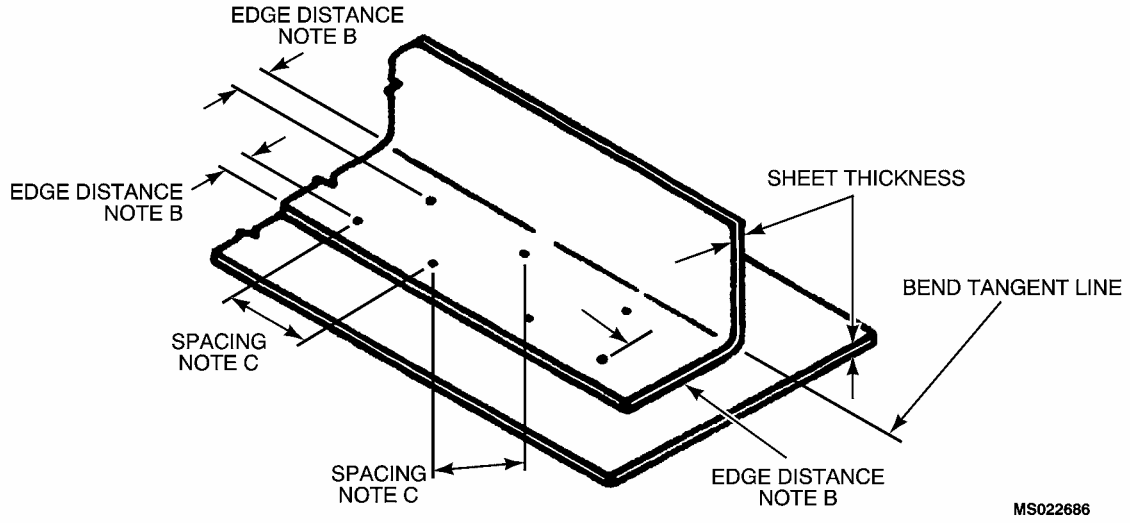
B. For three sheet combination or more, the thickness shown shall be that of thickest outer sheet.

C. For information on countersinking and dimpling, refer to TM 1-1500-204-23.

D. All rivets, minimum 2D edge distance. Rivets larger than those specified can be used provided minimum 2D edge distance is maintained.

E. Diameter of drill should be large enough to completely remove defect.

REPAIR - continued



NOTES

A. All dimensions are in inches.
B. Edge distance is measured from center of spot weld to the edge of sheet.
C. Spacing is measured from center-to-center of spot weld in any direction.

Figure 1. Spot Welded Parts (Sheet 1 of 4)

Table 2. Spot Welded Parts – Minimum Edge Distance and Spacing

MINIMUM THICKNESS OUTSIDE SHEET	ALUMINUM		STEEL		MAGNESIUM	
	MINIMUM EDGE DISTANCE	MINIMUM SPACING	MINIMUM EDGE DISTANCE	MINIMUM SPACING	MINIMUM EDGE DISTANCE	MINIMUM SPACING
0.012	0.15	0.31	0.15	0.31	0.15	0.31
0.016	0.19	0.38	0.19	0.38	0.19	0.38
0.020	0.19	0.38	0.19	0.38	0.19	0.38
0.025	0.22	0.38	0.22	0.38	0.22	0.45
0.032	0.25	0.38	0.25	0.40	0.25	0.55
0.036	0.26	0.40	0.25	0.45	0.25	0.60
0.040	0.28	.044	0.28	0.50	0.28	0.62
0.050 - 0.051	0.31	0.50	0.31	0.55	0.31	0.70
0.063 - 0.064	0.34	0.50	0.34	0.62	0.34	0.75
0.070 - 0.072	0.38	0.50	0.38	0.68	0.38	0.80
0.080 - 0.081	0.41	0.56	0.41	0.75	0.41	0.80
0.090 - 0.091	0.44	0.62	0.44	0.88	0.44	0.95
0.100	0.44	0.75	0.44	1.00	0.44	1.10
0.102	0.44	0.75	0.44	1.00	0.44	1.10
0.125	0.50	1.00	0.50	1.25	0.50	1.38

REPAIR - continued

Table 3. Repair of Defective Spot Welds - Allowable Percentage of Defective Spot Weld

	CONDITION I ACCEPTABLE WITHOUT REPAIR						CONDITION II ACCEPTABLE WITH REPAIR					
	MAXIMUM			MAXIMUM ADJACENT			MAXIMUM			MAXIMUM ADJACENT		
MATERIAL	**CRES**	**AL**		**CRES**	**AL**		**CRES**	**AL**		**CRES**	**AL**	
CLASS OF WELD	**A**	**A**	**B**	**A**	**A**	**B**	**A**	**A**	**B**	**A**	**A**	**B**
NATURE OF DEFECT												
A. Cracks open to surface	0	0	0	0	0	0	0	3	6	0	2	5
B. Edge Bulge Cracks	0	0	0	0	0	0	0	0	0	0	0	0
C. Sheet separation exceeding established limits	0	3	5	2	2	5	0	0	0	0	0	0
D. Blow Spots	0	0	0	0	0	0	0	0	3	0	0	0
E. Pits over 0.0625–inch dia	0	0	0	0	0	0	0	0	5	0	0	5
F. Pits less than 0.0625-inch dia, refer to Note D	3	3	5	2	2	5	0	3	5	0	2	5
G. Metal expulsion between sheets (spits)	5	3	5	2	2	5	0	0	5	0	2	5
H. Surface flashes and/orTip pick-up	2	2	3	2	2	3	0	0	3	0	0	5
I. Excessive indentation – Refer to Note E	5	5	10	2	2	10	0	0	0	0	0	0
J. Missing spot welds	0	0	0	0	0	0	0	3	5	0	0	0
K .Broken spot welds (sheet not damaged)	0	0	0	0	0	0	0	3	5	0	5	5
TOTAL PERCENTAGE	10	10	20	-	-	-	0	5	10	-	-	-

NOTES

A. All dimensions are in inches.

B. Refer to MIL-W-6858 for classification of spot weld.

C. The allowable number of defective spot welds is given in percentage of total number of welds in a specific joint.

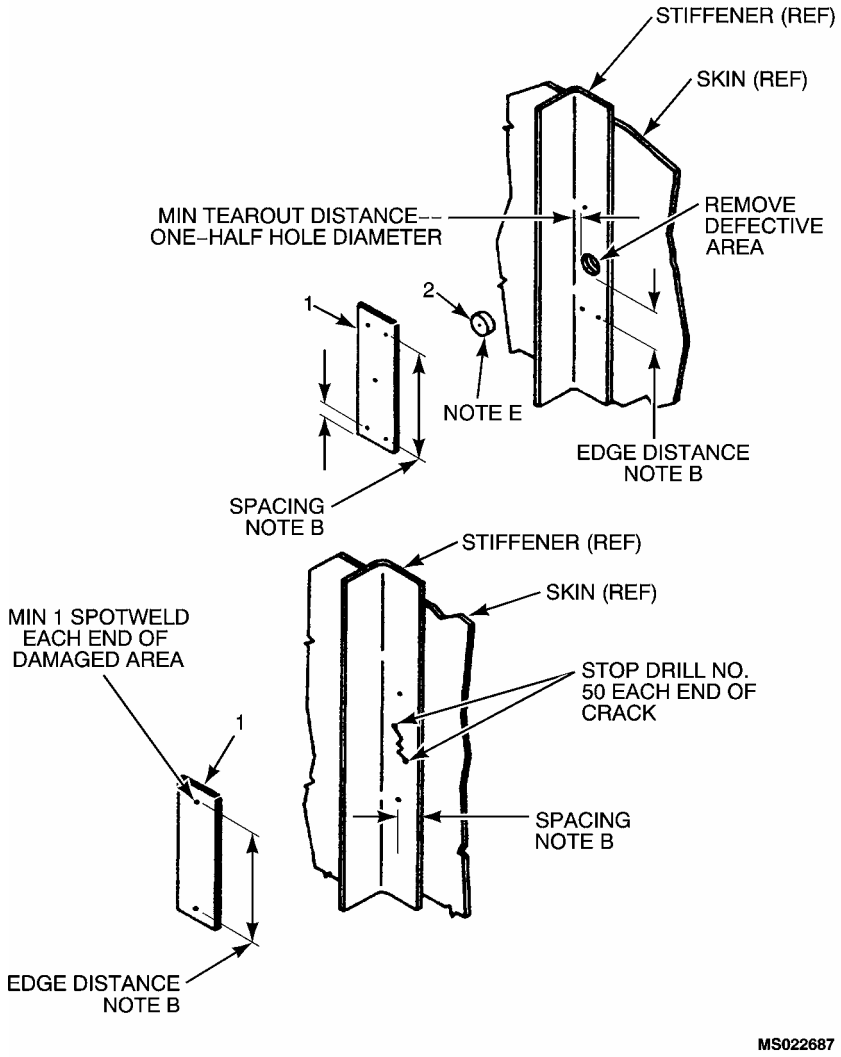
D. Class A welded joints are those whose failure could cause direct loss of helicopter or its control, a major component, or injury to personnel. Class B welded joints are those not included in class A.

E. When the number of defective spot welds less than 0.625-inch diameter exceeds three percent, but does not exceed six percent of defective spot welds, all defective spot welds must be repaired.

F. Excessive indentation is any electrode indentation that exceeds 10 percent but does not exceed 20 percent of the thickness of the thinnest sheet. Depth is limited to 0.004-inch in any area where aerodynamics may be influenced by excessive indentations.

G. Refer to Table 1 for repair of defective spot welds exceeding allowable percentages.

REPAIR - continued



Repair Parts

1. Reinforcement: Original material, next heavier thickness.
2. Replacement: Same material and thickness as original.

NOTES

A. All dimensions are in inches.

B. Refer to Table 2 for edge distance and spacing of spot welds.

C. All spot welding of aluminum alloys to be accomplished within 24 hours after cleaning.

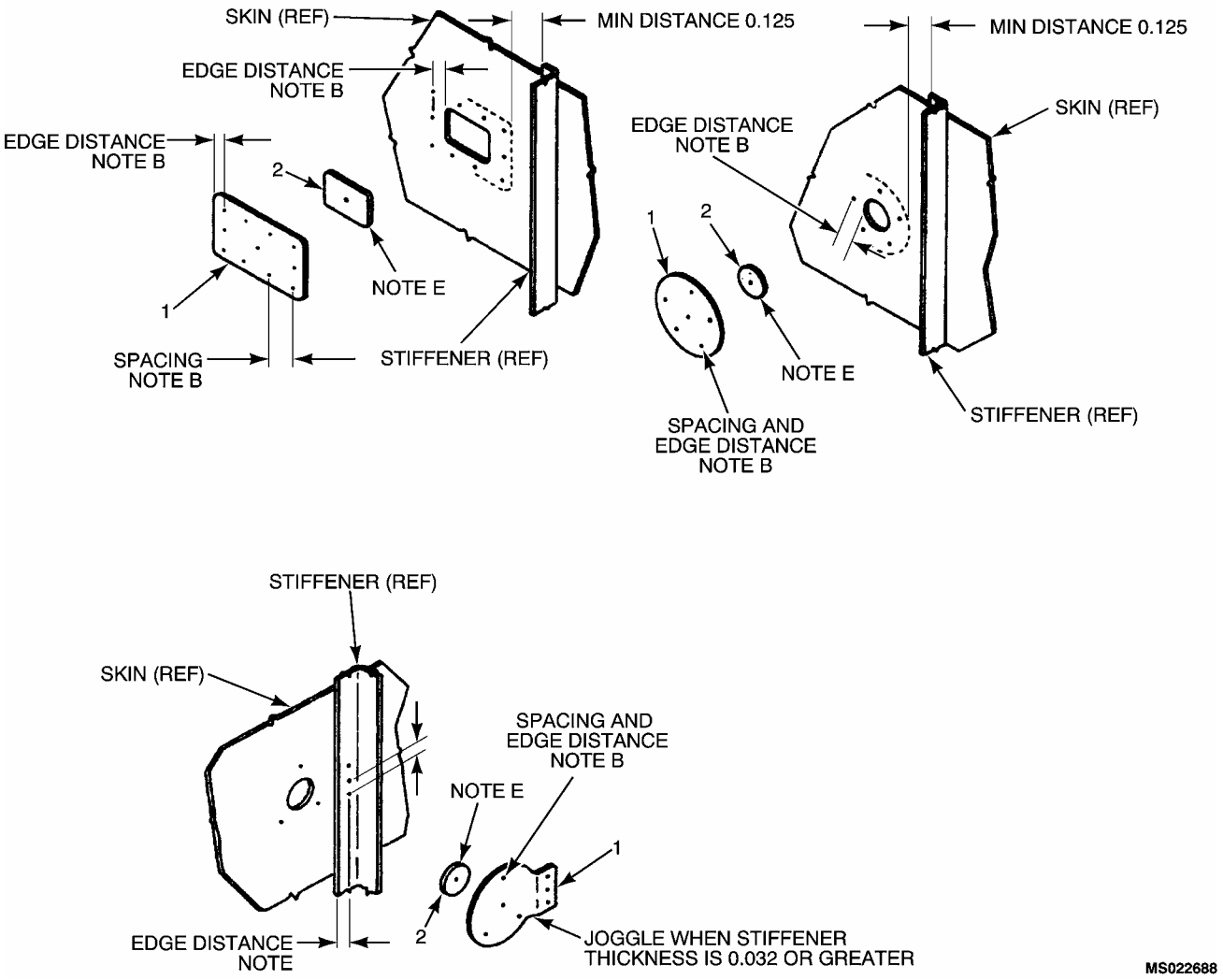
D. A maximum of three repairs may be made to each assembly. Maximum hole diameter 1.50-inches.

E. Use two spot welds to attach replacement (Item 2) of 0.50-inch diameter or greater. Refer to Note B.

F. Damaged areas having a cutout diameter of 0.187-inch or less may be repaired by inserting a MS20470, MS20615M, MS20426 or a MS20427 rivet of the proper alloy.

Figure 1. Spot Welded Parts (Sheet 2 of 4)

REPAIR - continued



Repair Parts

1. Reinforcement: Original material, next heavier thickness, dimensions as required.
2. Replacement: Same material and thickness as original; dimensions as required - clearance between patch and cutout to be 0.031-inch max.

NOTES

A. All dimensions are in inches.

B. Refer to Table 2 for edge distance and spacing of spot welds.

C. All spot welding of aluminum alloys to be accomplished within 24 hours after cleaning.

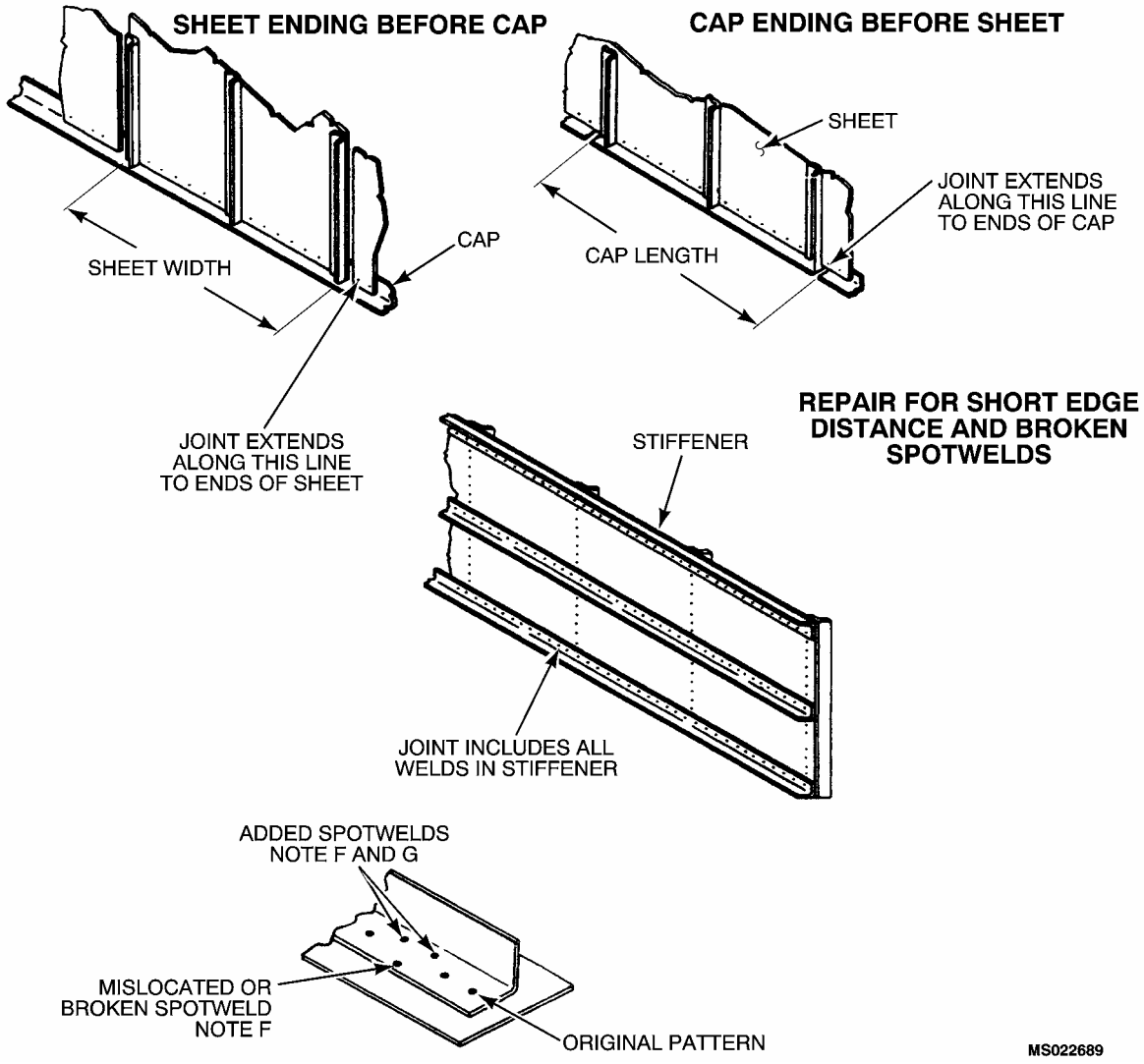
D. A maximum of three repairs may be made to each assembly. Maximum hole diameter 1.5-inches.

E. Use two spot welds to attach replacement (Item 2) 0.5-inch diameter or greater.

F. Damaged areas having a cutout diameter of 0.187-inch or less may be repaired by inserting a MS20470, MS20615M, MS20426 or a MS20427 rivet of the proper alloy.

Figure 1. Spot Welded Parts (Sheet 3 of 4)

REPAIR - continued



NOTES

A. All dimensions are in inches.

B. For information on allowable number of defective spot welds, and rivet diameter, refer to Table 1 and Table 3.

C. Defective spot welds at the beginning and end of a row should be replaced with rivets.

D. These repairs are not applicable where an end connection, in Class A welding with two or more members, contains more than one spot weld, but less than five spot welds.

E. The examples of structure, as shown, containing one or more parts to a joint, are associated with Class A welding. Class B welding is associated with a single part of joint.

F. Refer to Table 3 for typical acceptable limits for spot welds.

G. Two additional spot welds are desired, but where conditions prevent adding two, one additional spot weld is acceptable.

H. Spot welding of aluminum alloys should be accomplished within 24 hours after cleaning.

Figure 1. Spot Welded Parts (Sheet 4 of 4)

END OF WORK PACKAGE

DEPOT MAINTENANCE WORK REQUIREMENT
CH-47D HELICOPTER
HINGE REPAIRS

INITIAL SETUP

Test Equipment:
As Required

Tools and Special Tools:
Rubber Block
Stitched Buffing Wheel
Portable Disk Sander

Material/Parts:
As Required

Personnel Required:
As Required

References:
TM 1-1500-204-23 Series
TM 55-1520-240-23 Series

Equipment Conditions:
As Required

Special Environmental Condition:
As Required

SCOPE

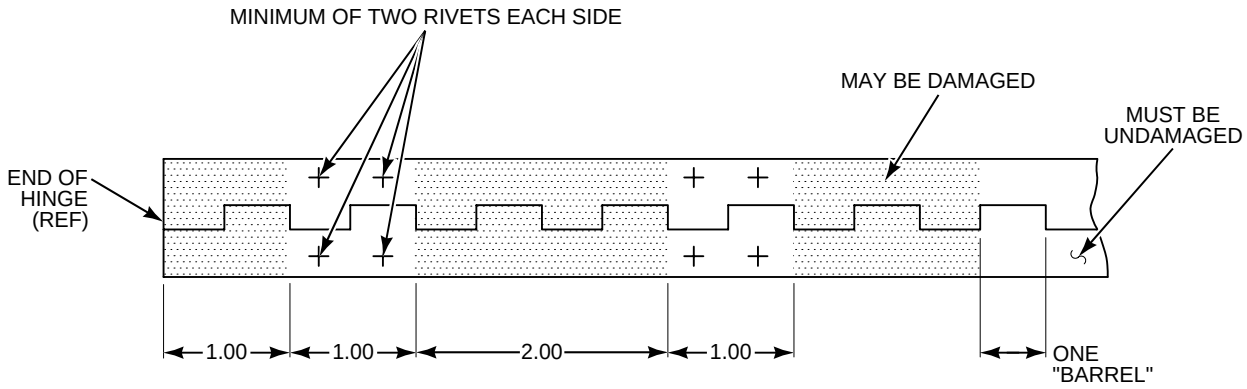
This work package describes repairs for the various hinges installed on the CH-47 Helicopter.

REPAIR OF HINGES

1. Repair hinges by removing segments or barrels. Determine maximum allowable damage prior to beginning repair. Refer to Table 1 for hinge part number, material, and type of repair.

2. Replace entire hinge assembly if damage exceeds allowable limit.

REPAIR OF HINGES - continued



DAMAGE CRITERIA, TYPE A – ALLOWABLE CONDITIONS

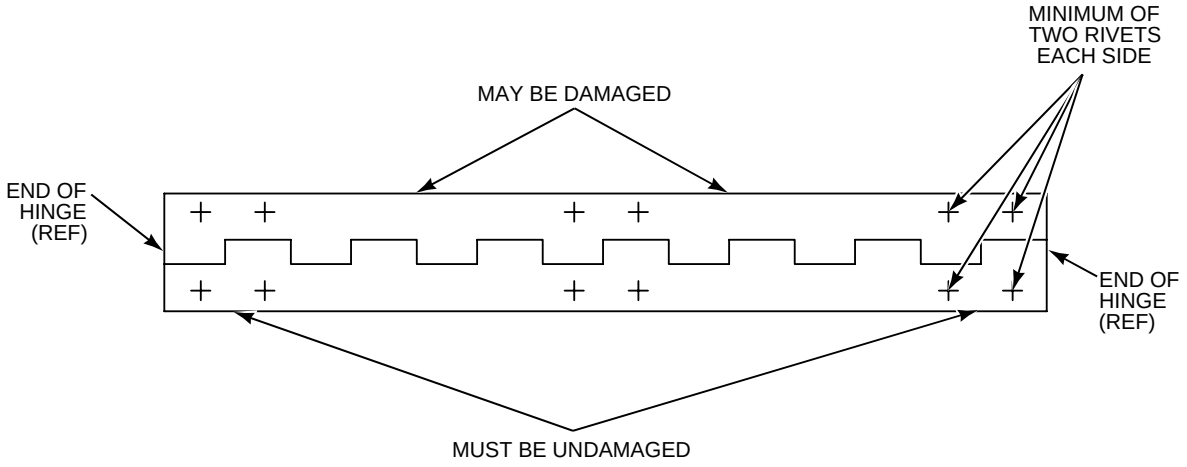
1. End of hinge may have two barrels failed provided:
   a. The next two barrels are undamaged.
   b. Each undamaged segment has at least two attachment rivets on each side.
2. Any four consecutive inner barrels (away from hinge end) may be failed provided:
   a. Two adjacent barrels on each end of the failed section are undamaged.
   b. Each undamaged segment has at least two attachment rivets on each side.

NOTES

A. All dimensions are in inches.
B. Remove all burrs and sharp edges and any distorted section that may cause subsequent damage.
C. Shaded areas may be completely missing.
D. Refer to Table 1 for specific applications.

Figure 1. Type A Installation

REPAIR OF HINGES - continued



DAMAGE CRITERIA, TYPE B – ALLOWABLE CONDITIONS

1. Each end must have two undamaged barrels with two attachment rivets on each side.
2. Any four consecutive inner barrels (away from hinge end) may be failed provided:
   a. Two adjacent barrels on each end of the failed section are undamaged.
   b. Each undamaged segment has at least two attachment rivets on each side.

NOTES

A. All dimensions are in inches.
B. Remove all burrs and sharp edges and any distorted section that may cause subsequent damage.
C. Shaded areas may be completely missing.
D. Refer to Table 1 for specific applications.

Figure 2. Type B Installation

REPAIR OF HINGES - continued

Table 1. Hinge Repairs

HINGE PART NO.	NOMENCLATURE	MATERIAL	TYPE OF INSTALLATION AND REPAIR
114S3607-79	Leaf-butt hinge-drip tray-aft xmsn	MS20001	A
114S2609-11	Hinge, asst-step-cabin-side	MS20001	F
114S1632-21	Leaf, butt hinge-door access-nose	MS20001PH4	A
114S1901-81	Hinge, fairing-fwd pylon	MS20001PH6	B
114S5901-71	Leaf, butt hinge-fwd pod sta 245	MS20001PH6	A
114S6107-43	Hinge, ramp sta 99	MS20001PH9	A
145S6102-5	Hinge, ramp sta 99	VS90560	A
114S5910-35	Hinge, half-fairing asst-aft	MS20001PH10	C
114S6701-31	Leaf, butt hinge-aft pod	MS20001PX12	C
114S6701-32	Leaf, butt hinge-former-ramp sta 99	MS20001PX12	C
114S6701-33	Leaf, butt hinge-former-ramp sta 99	MS20001PX14	C
114S3904-19	Hinge, door access	VS20101-1-2	C
114S3903-15	Leaf, butt hinge-access door-xmsn	VS20101-1-2	C
114S3903-17	Leaf, butt hinge-access door-xmsn	VS20101-1-2	C
114S5907-65	Leaf, butt hinge-aft pod-sta 482	VS20101-1-2	C
114S5907-63	Hinge, half-aft pod-sta 482	VS20101-1-2	C
114S3904-17	Hinge, door-access-sta 482 to sta 534	VS20101-1-2	C
114S3905-35	Hinge, half-access door-hyd. test	VS20101-1-4	G
114S1853-15	Hinge, asst-upper-cabin door	VS60904	D
114S1853-17	Hinge, asst-upper-cabin door	VS60904	C
114S2850-1	Hinge, asst-elect. pod compartment	VS60904	D
114S2506-69	Hinge, structural-bottom cabin-sta 180 to sta 440	VS90522	H
114S6604-21	Hinge, pad-cargo loading ramp-aux	VS90565-2014T6	E
114P8012-1	Hinge, half-cowl-eng	AL ALY 356T6	D
114P8013-2	Hinge, half-cowl-eng	AL ALY 356T6	D
114P8011-5	Leaf, asst-access cover-eng	AL ALY 2024-T4	D
114P8011-6	Leaf, asst-access cover-eng	AL ALY 2024-T4	D
114P8013-10	Leaf, asst-access cover	MIL-T-9046 Class II casting	D
114P8014-10	Hinge, half-cowl	Invest casting	D
114P8014-9	Hinge, half-cowl	SST casting 17-4PH	D
114S2610-35	Hinge, half-cowl	MS20001 PY4-400	C
114S3615-9	Hinge, panel asst-apu	MS20001PY4	CA
114S5612-12	Hinge, step-foldout-pod	MS00001H8-940	A
114S5612-19	Hinge, step-foldout-pod	MS00001H8-940	A
114S5901-65	Hinge, access panel instl-fwd sta 245	MS20001PH6	A
114S5901-66	Hinge, access panel instl-fwd sta 245	MS20001PH6	A
114S5901-72	Hinge, access panel instl-fwd sta 245	MS20001PH6	A
114S5901-115	Hinge, access panel instl-fwd sta 245	MS20001PH6	A
114S5901-121	Hinge, access panel instl-fwd sta 245	MS20001PH6	A
114S5901-128	Hinge, access panel instl-fwd sta 245	MS20001PH6	A

REPAIR OF HINGES - continued

Table 1. Hinge Repairs - continued

HINGE PART NO.	NOMENCLATURE	MATERIAL	TYPE OF INSTALLATION AND REPAIR
114S5901-129	Hinge, access panel instl-fwd sta 245	MS20001PH6	A
114S5901-130	Hinge, access panel instl-fwd sta 245	MS20001PH6	A
114S5901-131	Hinge, access panel instl-fwd sta 245	MS20001PH6	A
114S5901-19	Hinge, pnl, instr. ext pwr recep-sta 160 to sta 180	VS20101-2-2	C
114S5902-21	Hinge, pnl instr ext power recep	VS20101-2-2	C
114S5931-43	Hinge, access pnl, instl pod-sta 438 to sta 460	VS90528X18-7-7075T6	A
114S5931-44	Hinge, access pnl, instl pod	VS90528X18-7-7075T6	A
114S6710-2	Hinge, cargo loading ramp aux	VS20102-1	B
114S6710-3	Hinge, cargo loading ramp aux	VS20103-3	B
114S1632-33	Hinge, door assy-nose compartment	VS90527	B
114S4901-39	Hinge, leading edge fairing assembly	MS20001PH6	B
114S4901-40	Hinge, leading edge fairing assembly	MS20001PH6	B
114S4101-37	Hinge, aft pylon former sta 482	MS20001PH6	B
114S4101-38	Hinge, aft pylon former sta 482	MS20001PH6	B

DAMAGE CRITERIA - ALLOWABLE CONDITIONS

A. Type A installation.

1. End of hinge may have two barrels failed provided:
   a. The next two barrels are undamaged.
   b. Each undamaged segment has at least two attachment rivets on each side of the hinge.

2. Any four consecutive inner barrels (away from hinge end) may be failed provided:
   a. Two adjacent barrels on each end of the failed section are undamaged.
   b. Each undamaged segment has at least two attachment rivets on each side.

B. Type B installation.

1. Each end must have two undamaged barrels with two attachment rivets on each side.

2. Any four consecutive inner barrels (away from hinge end) may be failed provided:
   a. Two adjacent barrels on each end of the failed section are undamaged.
   b. Each undamaged segment has at least two attachment rivets on each side.

C. Type C installation - Non-continuous hinge. Replace hinge if either end has one full failed barrel.

D. Type D installation - Single connection hinge. Replace if failed.

E. Type E installation - Stress critical. Replace if any barrel has failed.

DAMAGE CRITERIA - ALLOWABLE CONDITIONS - continued

F. Type F installation - Spring type. Replace if more than two end barrels or one barrel adjacent to spring has failed.

G. Type G installation - Multiple section continuous hinge. Replace if more than one whole section of barrels has failed.

H. The following lug removal criteria apply:
   1. Between sta 180 and sta 374, a maximum of three successive lugs may be removed if a minimum of four undamaged lugs remains on each side of damaged lugs.
   2. Between sta 375 and sta 400, a maximum of four successive lugs may be removed if a minimum of seven undamaged lugs remains on each side of damaged lugs.
   3. Between sta 400 and sta 441, a maximum of three successive lugs may be removed if lugs adjacent to pod formers at sta's 400, 413, 425, 438, and 441 remain undamaged.

END OF WORK PACKAGE

DEPOT MAINTENANCE WORK REQUIREMENT
CH-47D HELICOPTER
STRUCTURAL ALUMINUM TUBE REPAIRS

INITIAL SETUP

Test Equipment:
As Required

Tools and Special Tools:
As Required

Material/Parts:
As Required

Personnel Required:
As Required

References:
TM 1-1500-204-23 Series
TM 55-1520-240-23 Series

Equipment Conditions:
As Required

Special Environmental Condition:
As Required

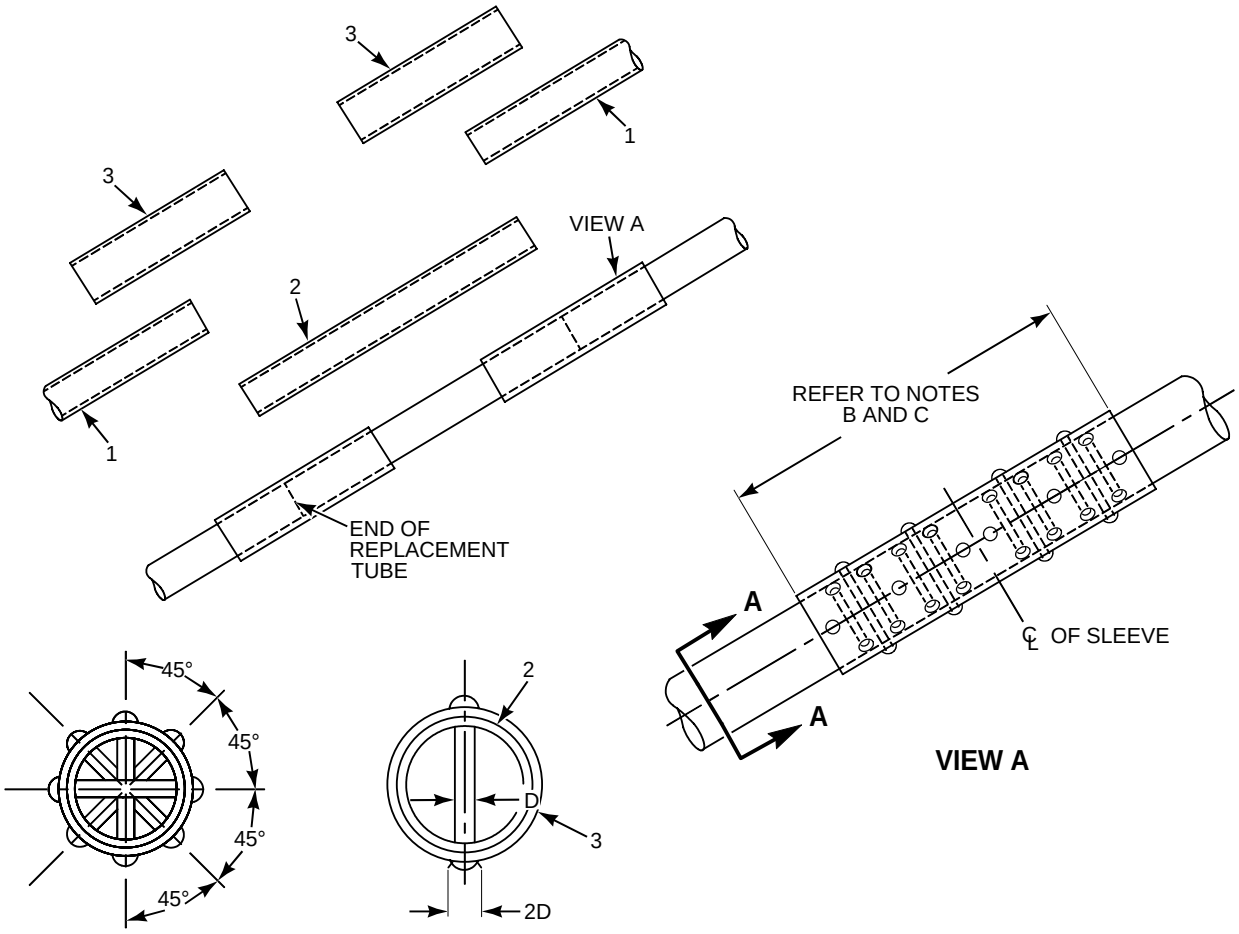
SCOPE

This work package contains repair procedures for structural aluminum tubing.

ALUMINUM TUBING REPAIRS

Repair aluminum tubing as shown in Figure 1. Refer to Table 1 for material and rivet specifications.

ALUMINUM TUBING REPAIRS - continued



MS022692

Repair Parts
Item No

1. Original material
2. Replacement tube
3. Sleeve

NOTES

A. All dimensions are in inches.
B. All rivets are 3D pitch.
C. Total number of rivets required - 18 each. Nine on each side of sleeve centerline.
D. Form shop heads by hammering lightly. Shop heads to be approximate height of manufactured head.
E. Use same type material as original for replacement tube and sleeve.
F. Repair is applicable to structure tubing only.

Figure 1. Structural Aluminum Tube Repairs

ALUMINUM TUBING REPAIRS - continued

Table 1. Aluminum Tubing Repair Dimensions

TUBE (Items 1 and 2)		SLEEVE (Item 3)			RIVET TYPE
DIA	WALL	DIA	WALL	LENGTH	
0.50	0.035	0.625	0.058	9.375	MS2070AD5
0.75	0.065	0.875	0.058	9.375	MS2070AD5
0.875	0.065	1.0	0.058	9.375	MS2070AD5
1.0	0.065	1.125	0.058	11.25	MS2070AD6
1.25	0.065	1.25	0.058	11.25	MS2070AD6
1.25	0.058	1.357	0.058	11.25	MS2070AD6
1.375	0.058	1.5	0.058	11.25	MS2070AD6
1.5	0.058	1.625	0.058	15.0	MS2070AD8
1.625	0.058	1.75	0.058	15.0	MS2070AD8
1.75	0.058	1.875	0.058	15.0	MS2070AD8
1.875	0.058	2.0	0.058	15.0	MS2070AD8

END OF WORK PACKAGE

DEPOT MAINTENANCE WORK REQUIREMENT
CH-47D HELICOPTER
RUBBER SEAL REPAIRS

INITIAL SETUP

Test Equipment:
As Required

Tools and Special Tools:
As Required

Material/Parts:
As Required

Personnel Required:
As Required

References:
TM 1-1500-204-23 Series
TM 55-1520-240-23 Series
WP 0074 00

Equipment Conditions:
As Required

Special Environmental Condition:
As Required

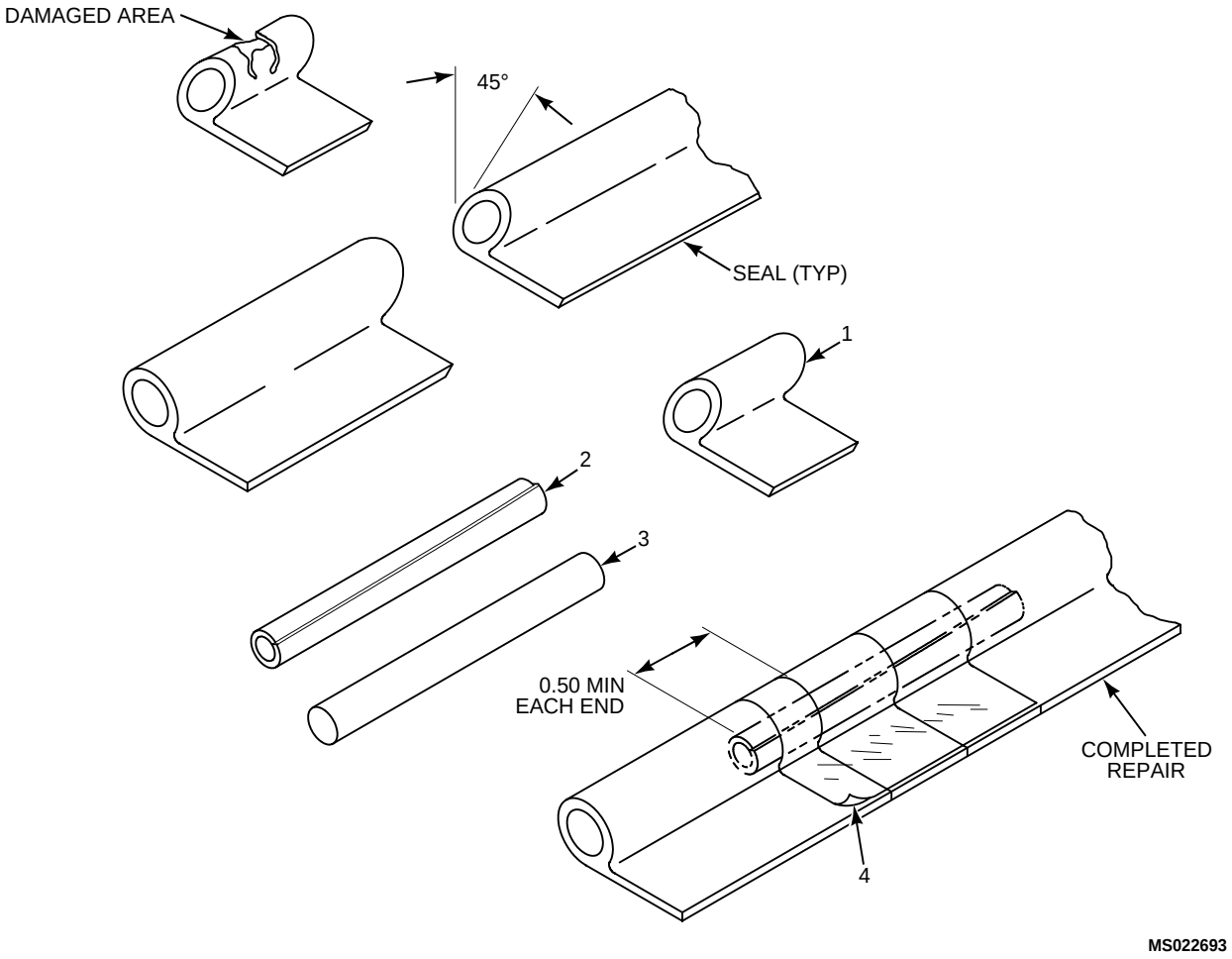
SCOPE

This work package covers the various rubber seal materials and methods of repair. For the purpose of this DMWR, only minor damage will be considered for repair. Replace the seal if damage exceeds minor limits.

RUBBER SEAL REPAIR

Repair damaged seals as depicted in Figure 1, Sheet 1 of 4. The type of cement required depends on the composition of the seal material. Refer to WP 0074 00 for selection of appropriate adhesive. Damage to seals consisting of one or more integral parts, such as retainers or cloth covers, will be impractical to repair in most cases and the seal should be replaced.

RUBBER SEAL REPAIR - continued



Repair Parts

1. Insert. Section of original type seal.
2. Splice. Rubber sheet of same composition as seal. Tube may be substituted if of proper diameter or split to fit.
3. Splice alternate. Sponge rubber of same composition as seal, may be used when no other material is available.
4. Film. Clear plastic to restore moisture protection on sponge seals with facings.

NOTES

A. All dimensions are in inches.

B. Peel damaged area from structure. Nest section of original type seal with damaged area. Cut out damaged area and through section of original material on 45 degrees angle to obtain maximum faying surface.

C. Install a splice, and center as shown. All faying surfaces to be coated with the applicable adhesive. Refer to WP 0074 00 for information on adhesive selection. Repair shown is applicable to hollow seals only.

D. Seals shown on subsequent sheets, without a material symbol, are made of silicone rubber.

Figure 1. Rubber Seal Repairs (Sheet 1 of 4)

RUBBER SEAL REPAIR – continued

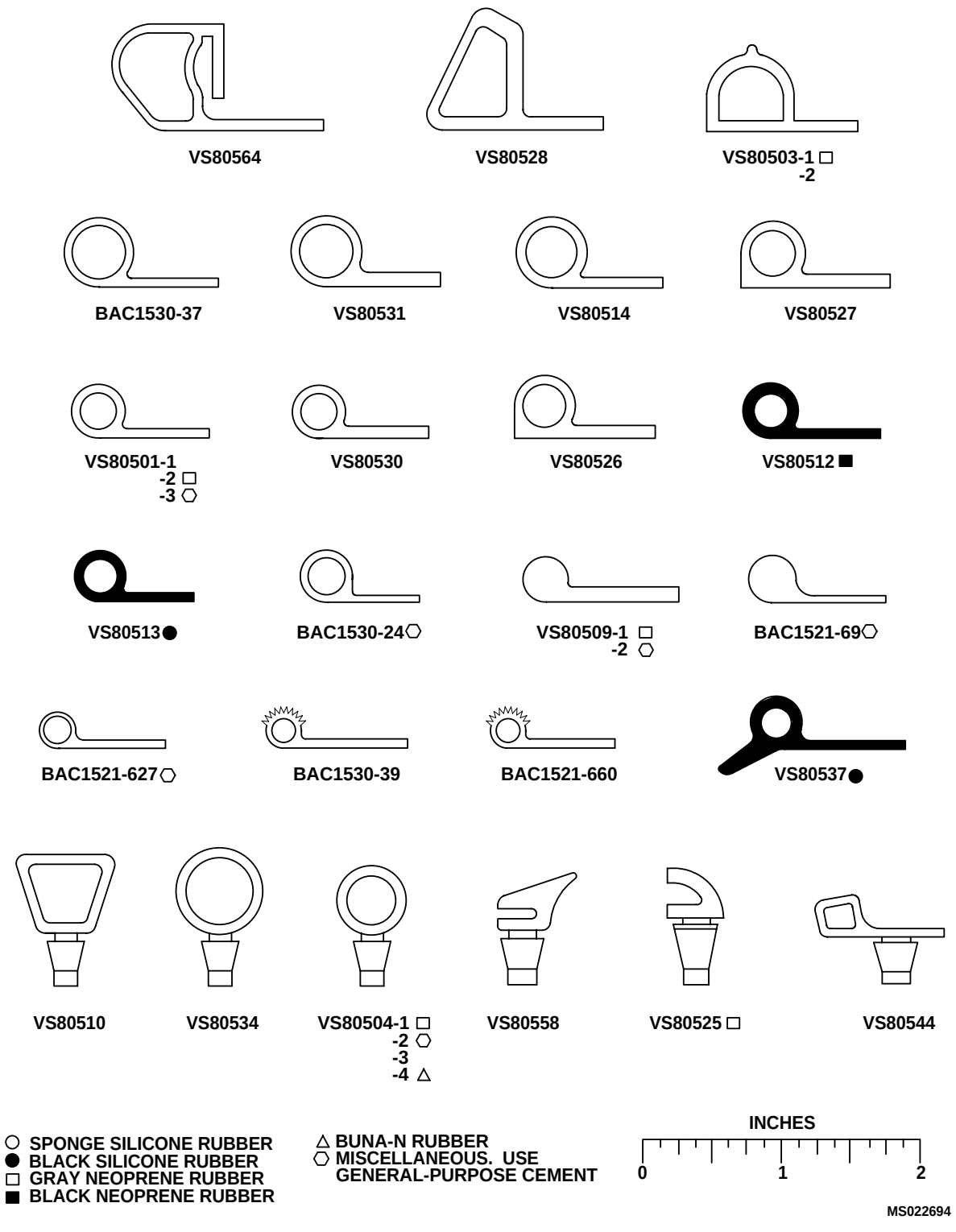


Figure 1. Rubber Seal Repairs (Sheet 2 of 4)

RUBBER SEAL REPAIR – continued

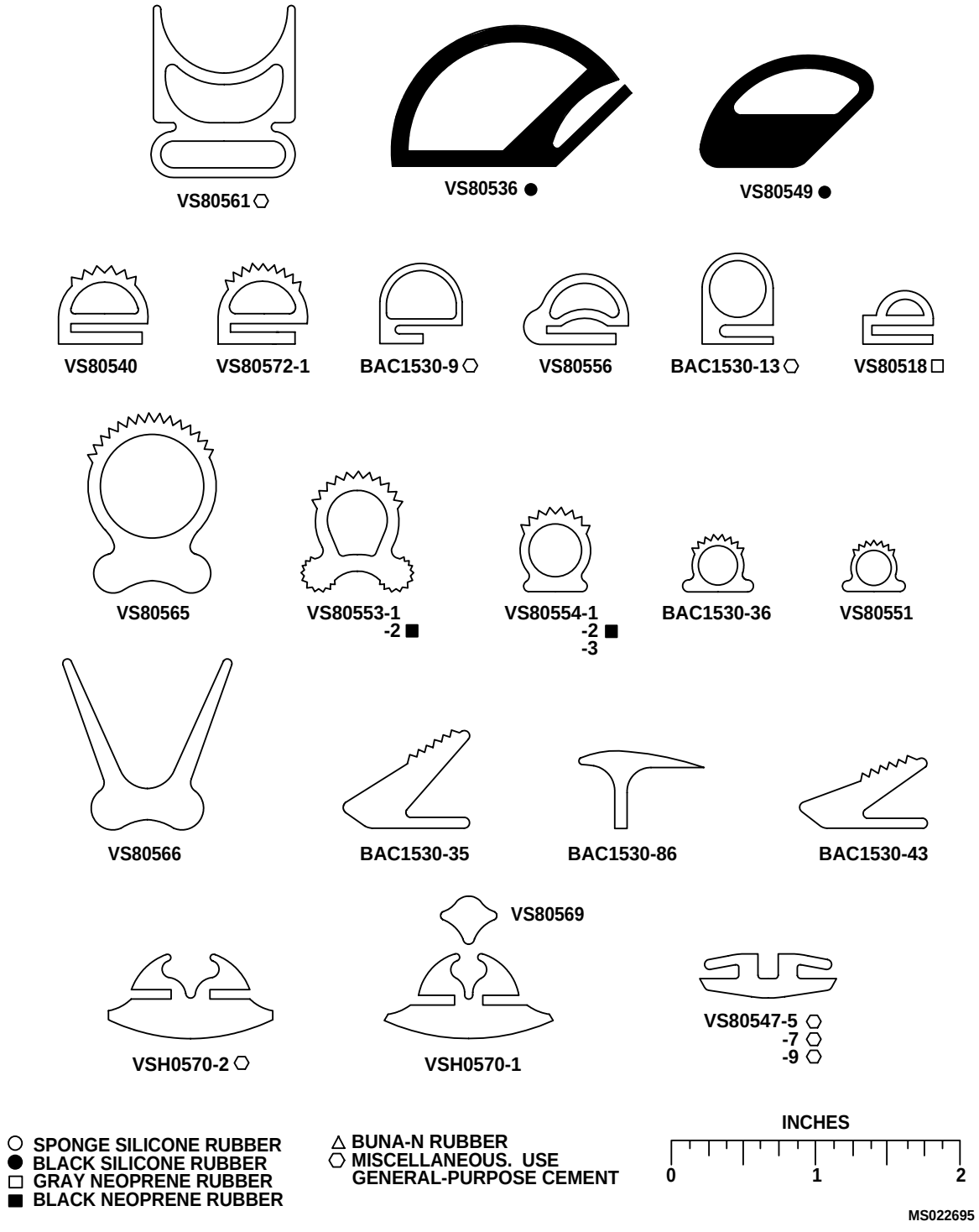


Figure 1. Rubber Seal Repairs (Sheet 3 of 4)

RUBBER SEAL REPAIR – continued

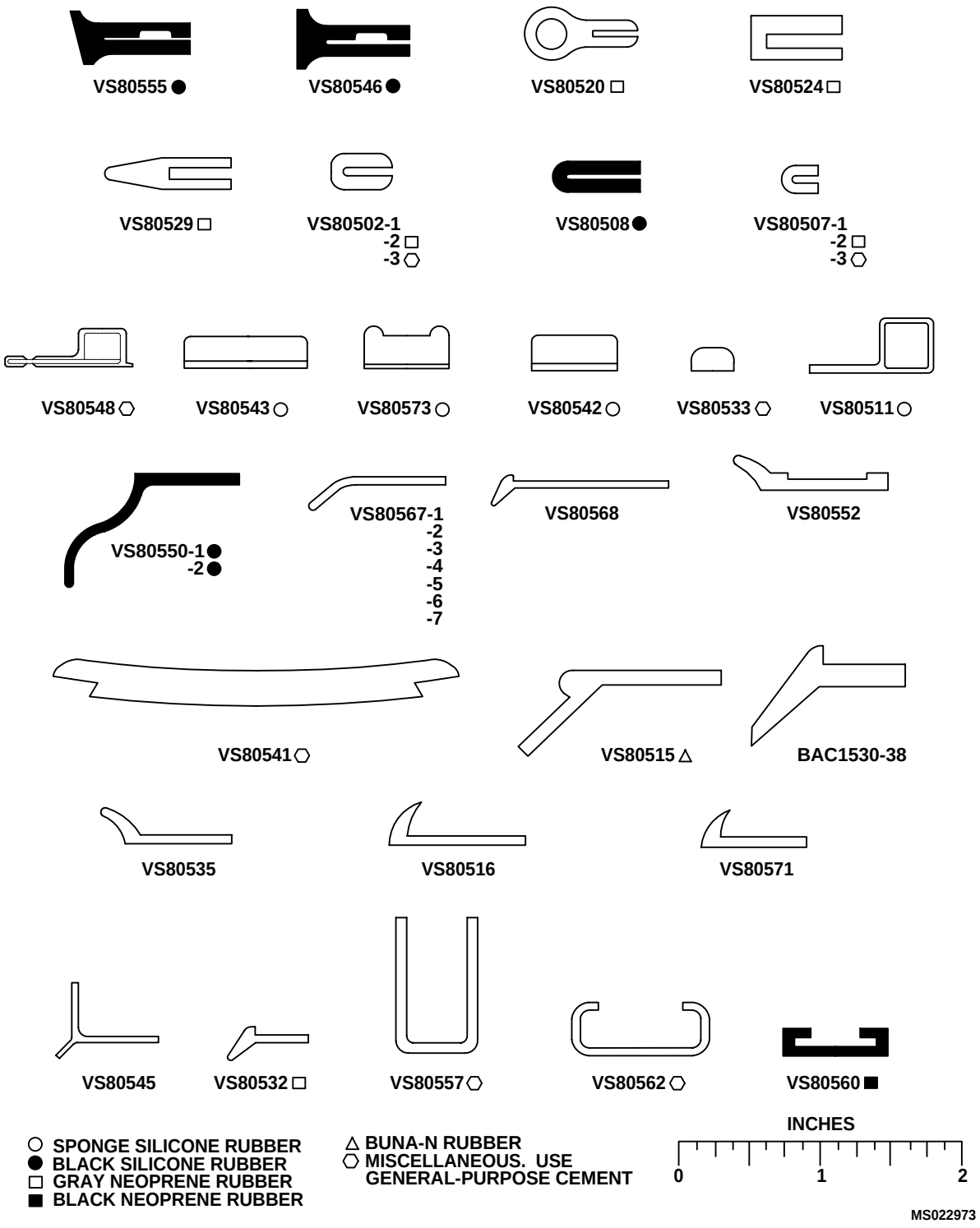


Figure 1. Rubber Seal Repairs (Sheet 4 of 4)

END OF WORK PACKAGE

DEPOT MAINTENANCE WORK REQUIREMENT
CH-47D HELICOPTER
CANVAS AND WEBBING REPAIRS

INITIAL SETUP

Test Equipment:
As Required

Tools and Special Tools:
As Required

Material/Parts:
Thread (Item 185, WP 0157 00)

Personnel Required:
As Required

References:
TM 1-1500-204-23 Series
TM 55-1520-240-23 Series
ASTM-D-6193
WP 0157 00

Equipment Conditions:
As Required

Special Environmental Condition:
As Required

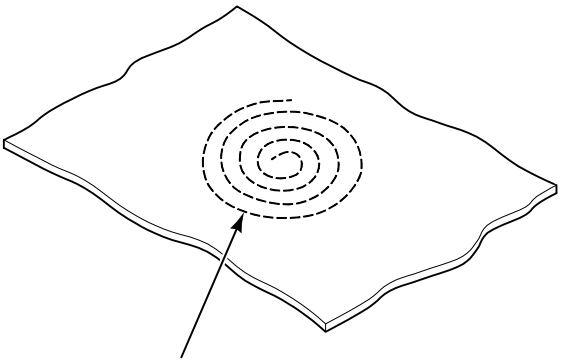
CANVAS AND WEBBING REPAIR

Repair canvas and webbing as shown in Figure 1.

CANVAS AND WEBBING REPAIR – continued

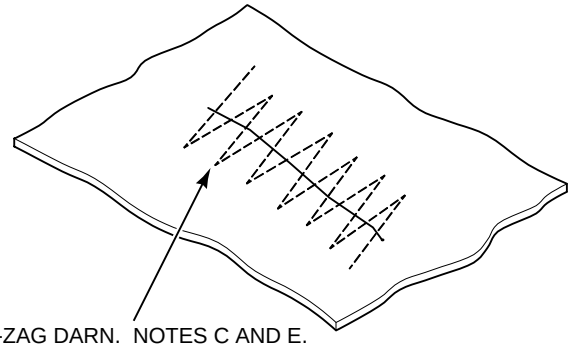
CANVAS AND WEB REPAIR

HOLES OR WORN AREAS LESS THAN 0.50



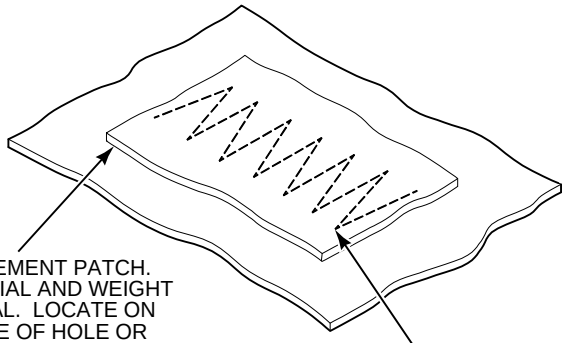
CIRCLE DARN. NOTES C AND E. NO REINFORCEMENT PATCH REQUIRED.

TEARS LESS THAN 0.50 LONG



ZIG-ZAG DARN. NOTES C AND E. NO REINFORCEMENT PATCH REQUIRED.

HOLES OR TEARS 0.500 TO 0.750 DIAMETER OR LENGTH



REINFORCEMENT PATCH. SAME MATERIAL AND WEIGHT AS ORIGINAL. LOCATE ON UNDERSIDE OF HOLE OR TEAR BEFORE DARNING.

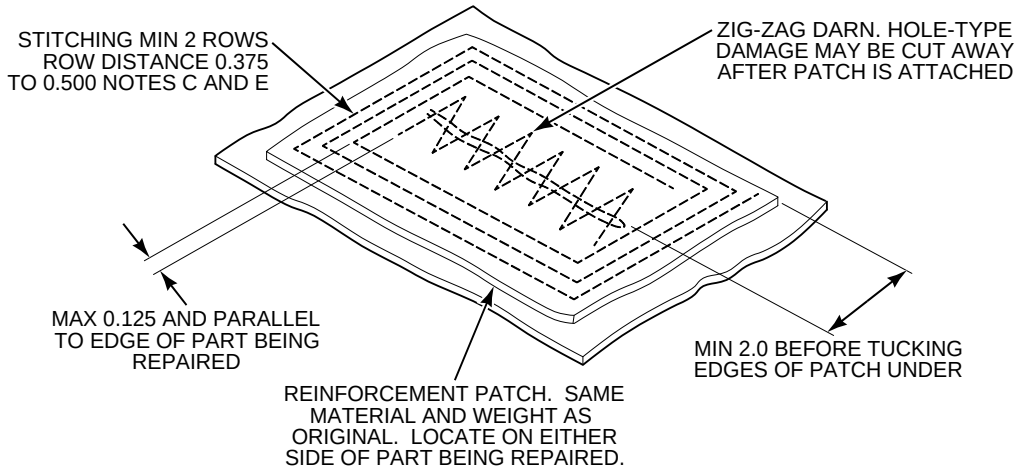
ZIG-ZAG OR CIRCULAR DARN. NOTES C AND E

MS022696

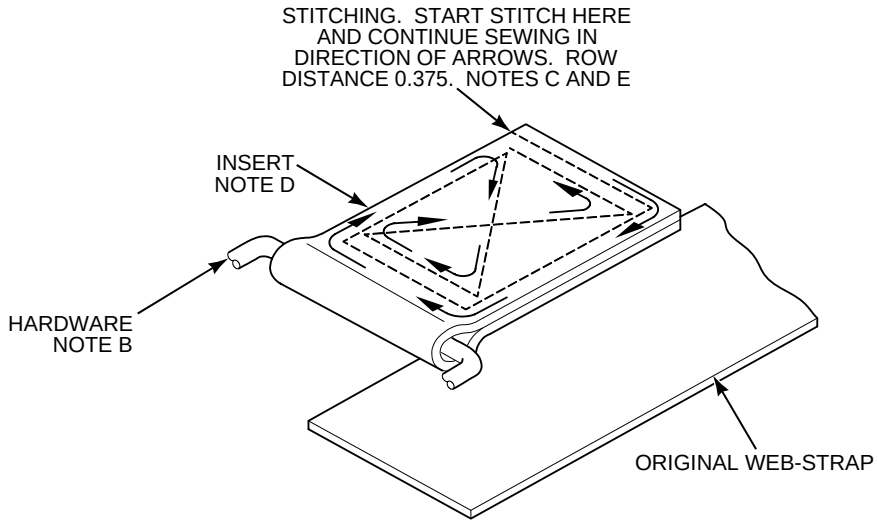
Figure 1. Canvas and Webbing Repair (Sheet 1 of 2)

CANVAS AND WEBBING REPAIR – continued

REPAIR FOR HOLES AND TEARS EXCEEDING 0.750 DIAMETER IN CANVAS



REPLACEMENT OF WEB-STRAP HARDWARE



MS022697

NOTES

A. All dimensions are in inches.

B. Use same part number hardware as original.

C. Stitching to be in accordance with ASTM-D-6193, five to eight stitches per inch depending upon weight of material. Use fewer stitches per inch for material heavier than original.

D. Insert to be same material and weight as original.

E. Use thread (Item 185, WP 0157 00). Color to match color of original.

Figure 1. Canvas and Webbing Repair (Sheet 2 of 2)

END OF WORK PACKAGE

DEPOT MAINTENANCE WORK REQUIREMENT
CH-47D HELICOPTER
NOSE EXTERIOR REPAIRS

INITIAL SETUP

Test Equipment:
As Required

Tools and Special Tools:
As Required

Material/Parts:
Walkway Material (Item 193, WP 0157 00)

Personnel Required:
As Required

References:
TM 1-1500-204-23 Series
TM 55-1520-240-23 Series
WP 0053 00
WP 0078 00
WP 0080 00
WP 0081 00
WP 0083 00
WP 0086 00
WP 0087 00
WP 0093 00
WP 0094 00
WP 0157 00

Equipment Conditions:
As Required

Special Environmental Condition:
As Required

SCOPE

This work package details repair procedures for the following helicopter exterior nose section components. Refer to Figure 1.

1. Upper and Lower Cabin Doors
2. Forward Transmission Fairing
3. Barrier Panel
4. Work Platforms
5. Escape Hatch
6. Pilot and Copilot Doors
7. Forward Weather Protective Cover (Rain Shield)
8. Nose Door

REPAIRS

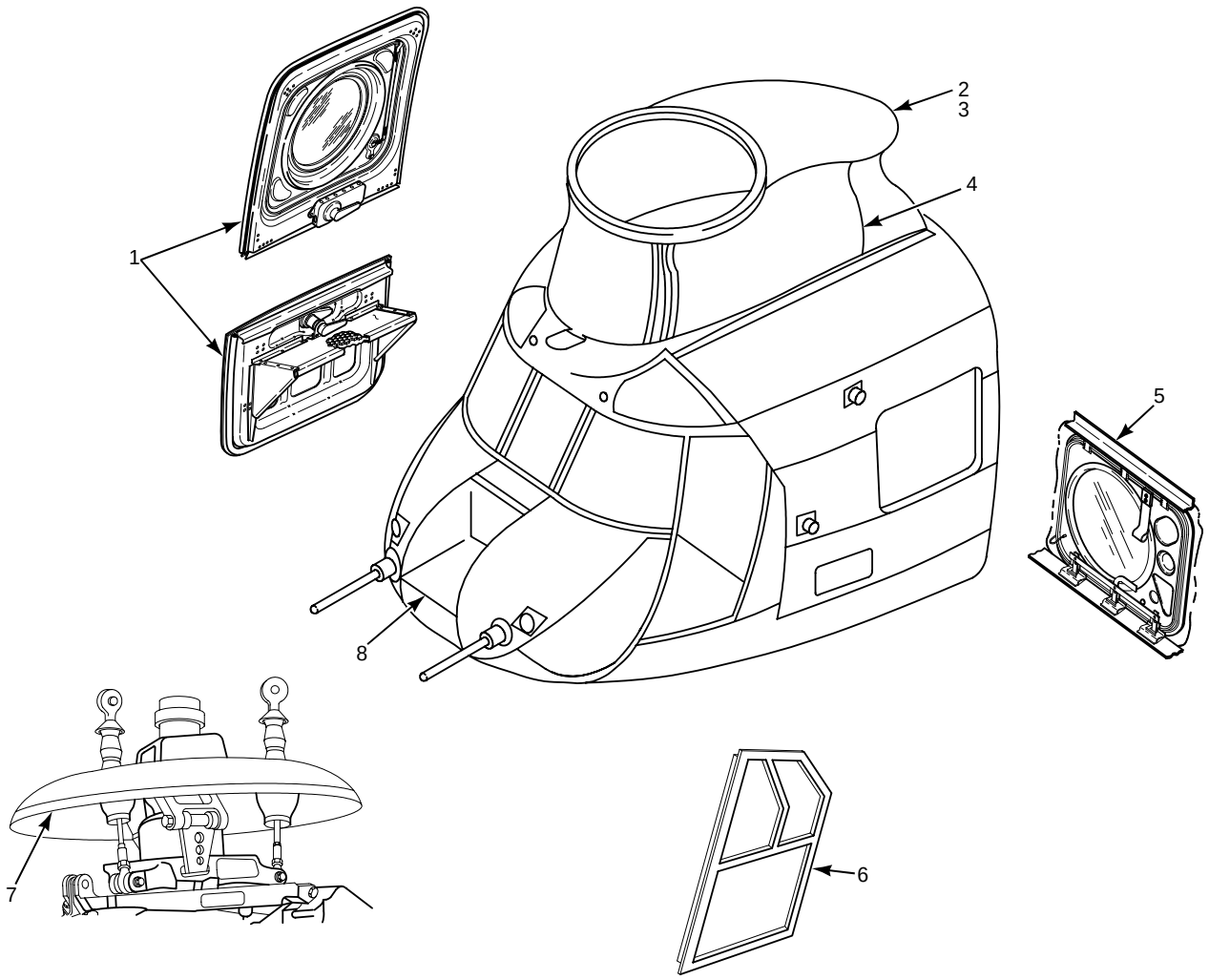


Figure 1. Exterior Nose Section

REPAIRS – continued

NOTE

Refer to Table 1 for index number reference.

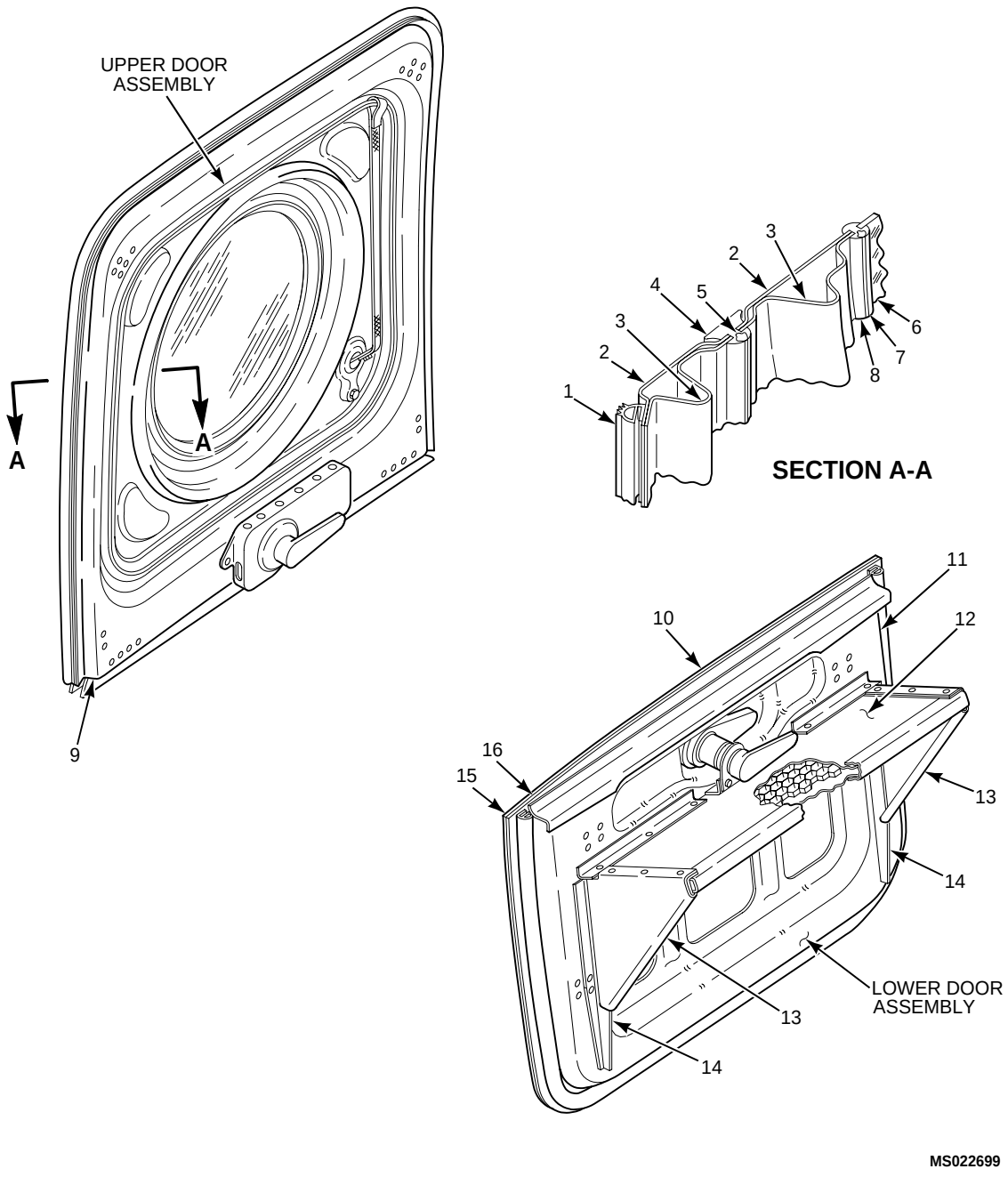


Figure 2. Upper and Lower Cabin Door (Sheet 1 of 2)

REPAIRS – continued

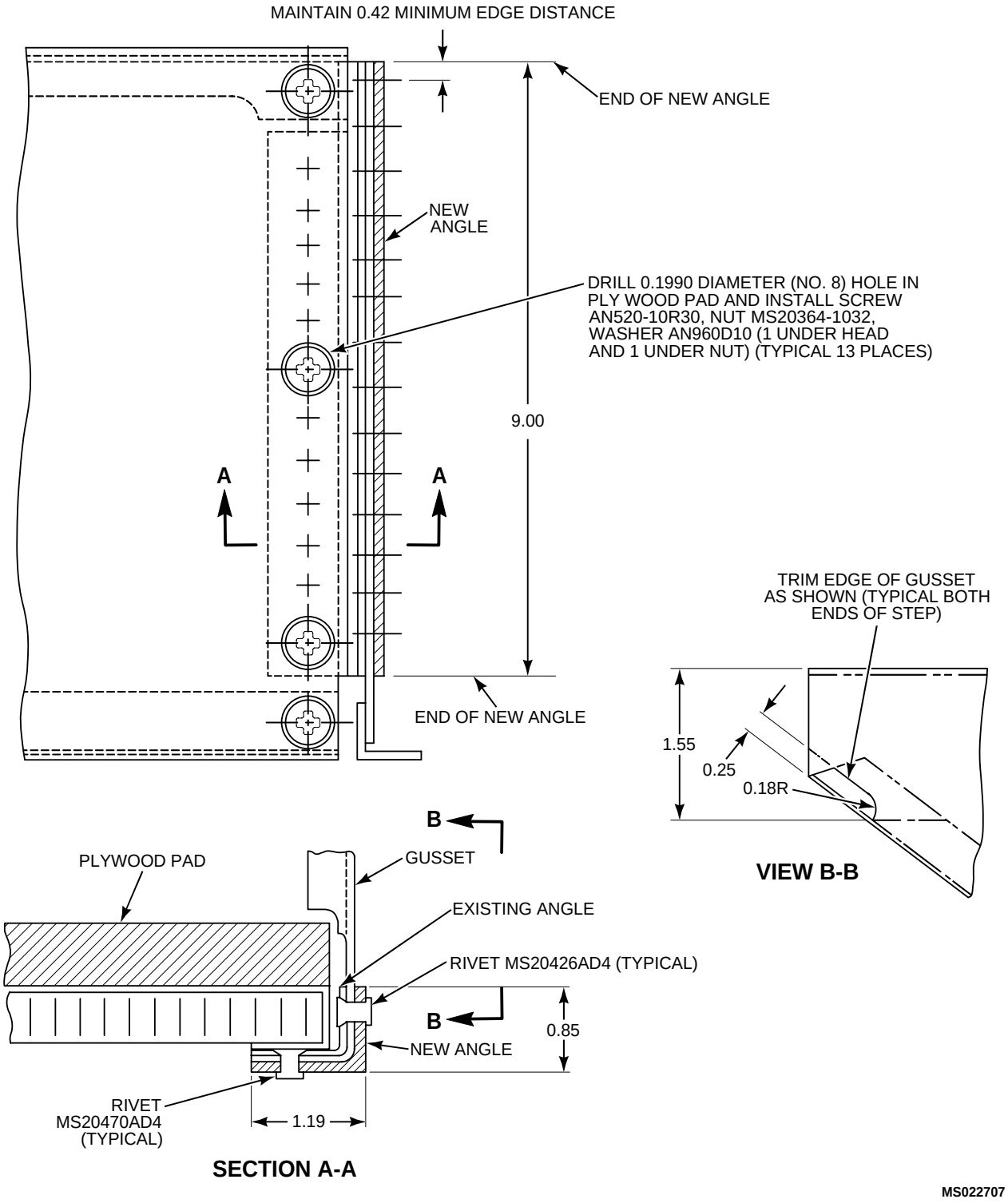


Figure 2. Upper and Lower Cabin Door (Sheet 2 of 2)

REPAIRS – continued

Table 1. Upper And Lower Cabin Doors

INDEX NO.	NOMENCLATURE	ORIGINAL MATERIAL	REPAIR MATERIAL	WORK PACKAGE
1	Seal	Note B	--	--
2	Outer Skin	0.032 2024-T4 Clad	0.040 2024-T3 Clad	0087 00
3	Inner Skin	0.032 2024-T4	0.040 2024-T3 Clad	0087 00
4	Seal	Note C	--	--
5	Seal Filler	Note D	--	--
6	Pane	Note E	--	0091 00
7	SeaL Filler	Note G	--	--
8	Seal	Note F	--	--
9	Seal	NotE H	--	--
10	Outer Skin	0.020 2024-T4 Clad	0.025 2024-T3 Clad	0087 00
11	Inner Skin	0.032 2024-T4 Clad	0.040 2024-T3 Clad	0087 00
12	Step	Note I	--	0083 00
13	Gusset	0.040 2024 T4 clad	0.050 2024 T3 Clad	0087 00
14	Angle	ALCOA 22509 7075-T6	--	0088 00
15	Seal	Note J	--	--
16	Zee	0.050 2024-T4	0.063 2024-T3 Clad	0088 00

NOTES

A. All dimensions are in inches.

B. Replace with new seal, 114S1621-9.

C. Replace with new seal, 114S1621-5.

D. Replace with new seal filler, 114S1621-7.

E. The windowpane is made of 0.080-inch thick acrylic sheet, MIL-P-25690.

F. Replace with new seal, 114S2901-16.

G. Replace with new seal filler, 114S2901-15.

H. Replace with new seal, 114S1621-11.

I. The step assembly is a sandwich honeycomb structure. The top skin is 0.020-inch 2024-T4 clad aluminum alloy. The core is 0.540-inch, 4.3-1/4-20NP-3003 aluminum honeycomb. The bottom skin is 0.016-inch 7075-T6 clad aluminum alloy.

J. Replace with new seal, 114S1620-43.

REPAIRS – continued

NOTE

Refer to Table 2 for index number reference.

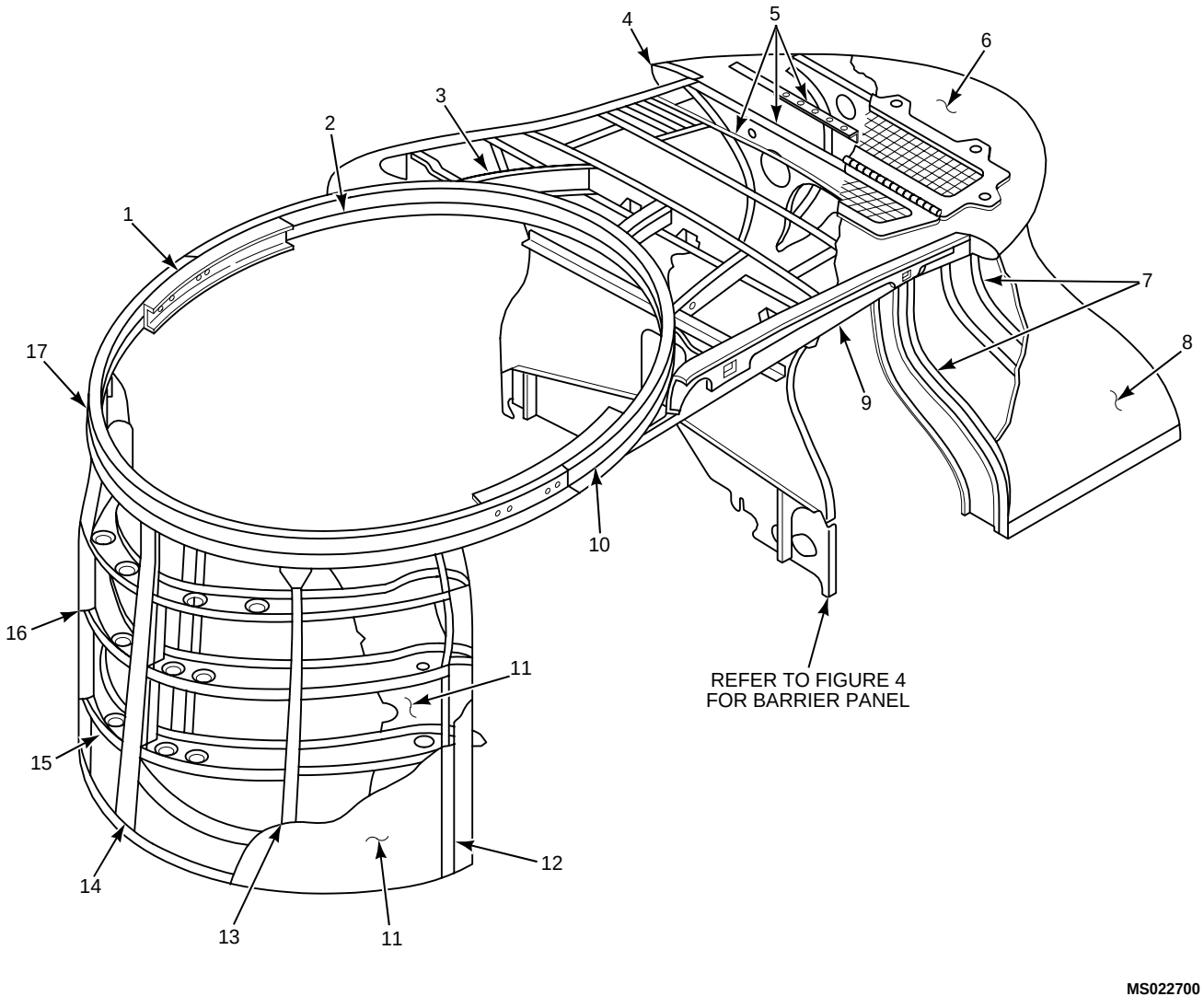


Figure 3. Forward Transmission Fairing (Sheet 1 of 2)

REPAIRS – continued

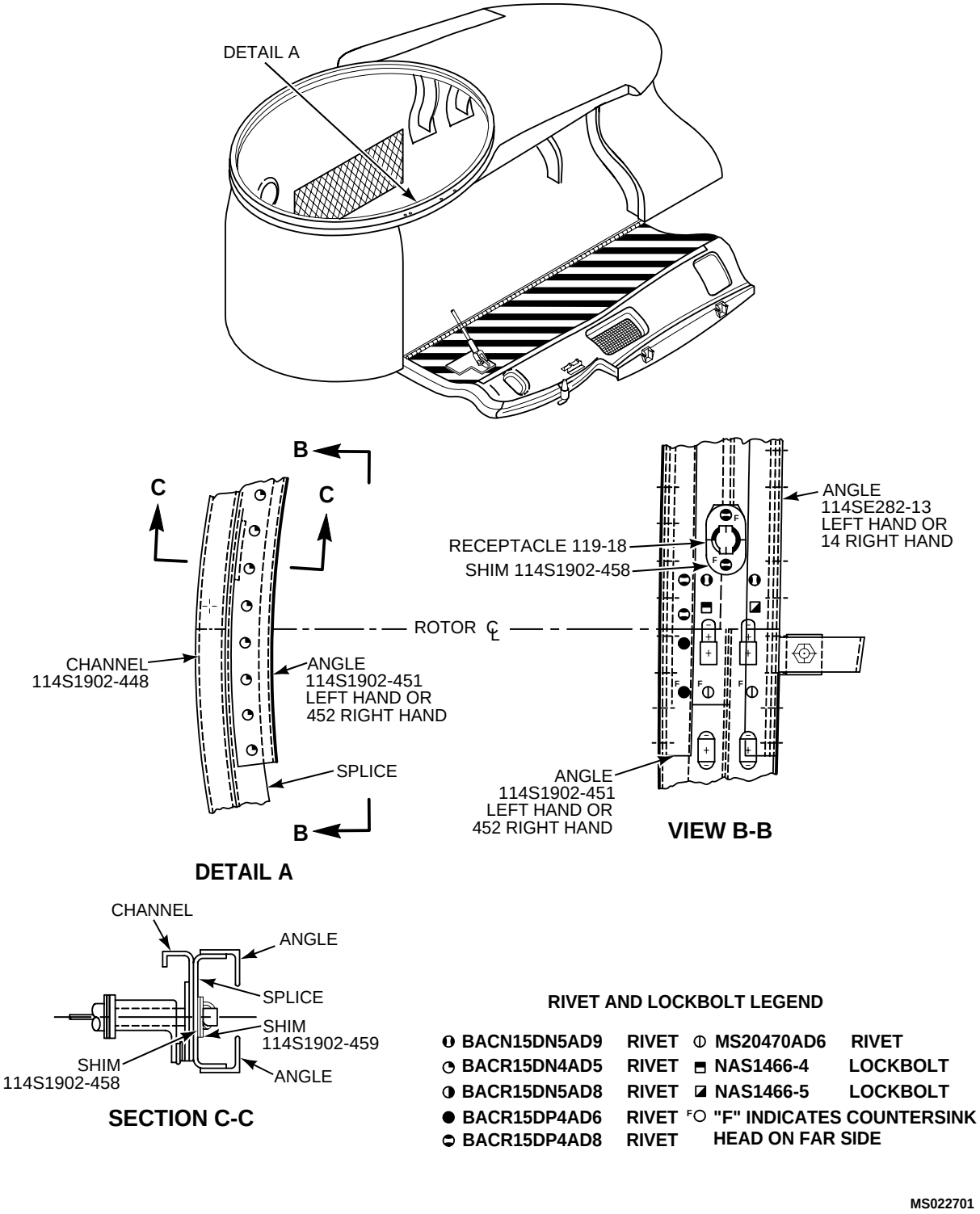


Figure 3. Forward Transmission Fairing (Sheet 2 of 2)

REPAIRS – continued

Table 2. Forward Transmission Fairing

INDEX NO.	NOMENCLATURE	ORIGINAL MATERIAL	REPAIR MATERIAL	WORK PACKAGE
1	Splice	0.080 7075-T6 Bare	0.090 7075-T6 Clad	0087 00
		0.080 7075-T6 Clad	0.090 7075-T6 Clad	Note C, 0087 00
2	Tee	ALCOA 22981 7075-T6	0.025 4130	0087 00
3	Stiffener	0.025 2024-T4 Clad	0.032 2024-T3 Clad	0087 00
		0.025 2024-T3 Clad	0.032 2024-T3 Clad	Note C, 0087 00
4	Former	0.032 2024-T4 Clad	0.040 2024-T3 Clad	0087 00
	Stiffener	0.025 2024-T3 Bare	0.032 2024-T3 Clad	Note C, 0087 00
5	Stiffener	0.025 2024-T4 Clad	0.032 2024-T3 Clad	0087 00
		0.025 2024-T3 Clad	0.032 2024-T3 Clad	Note C, 0087 00
6	Skin	3-Ply Glass Cloth		Note B, 0081 00
7	Former	0.025 6061-T6 Bare	0.032 6061-T6 Bare	0087 00
8	Skin	2-Ply Glass Cloth		Note B, 0081 00
9	Channel	0.025 2024-T3 Clad	0.032 2024-T3 Clad	0087 00
		0.025 2024-T3 Clad	0.032 2024-T3 Clad	Note C, 0087 00
10	Channel	0.025 2024-T4 Clad	0.032 2024-T3 Clad	0087 00
		0.050 2024-T3 Clad	0.063 2024-T3 Clad	Note C, 0087 00
11	Skin	0.025 2024-T4 Clad	0.025 2024-T3 Clad	0086 00
12	Spoiler	0.050 2024-T3 Clad	0.050 2024-T3 Clad	0087 00
13	Former	0.025 2024-T4 Clad	0.032 2024-T3 Clad	0087 00
		0.032 2024-T3 Clad	0.040 2024-T3 Clad	Note C, 0087 00
14	Stiffener	0.025 2024-T4 Clad	0.032 2024-T3 Clad	0087 00
	Tee	BAC23760, 7075-T6 Extrusion	0.024 4130	0087 00
15	Former	0.025 6061-T6 Bare	0.032 6061-T6 Clad	0087 00
		0.040 2024-T3 Clad	0.050 2024-T3 Clad	Note C, 0087 00
16	Former	0.020 6061-T6 Bare	0.025 6061-T6 Bare	0087 00
		0.040 2024-T3 Clad	0.050 2024-T3 Clad	Note C, 0087 00
17	Angle	0.032 2024-T4 Clad	0.040 2024-T3 Clad	0087 00
	Tee	BAC 0505-23760	0.040 7075-0	Note C, 0087 00

NOTES

A. All dimensions are in inches.

B. The skin is laminated polyester No. 181 impregnated glass cloth MIL-P-8013, Type I, reinforced with 60 ends, 830 glass cloth roving, impregnated with resin in accordance with MIL-R- 7575.

C. This part is used on aircraft serial numbers Serial Numbers 92-0367 and 92-0368.

REPAIRS – continued

NOTE

Refer to Table 3 for index number reference.

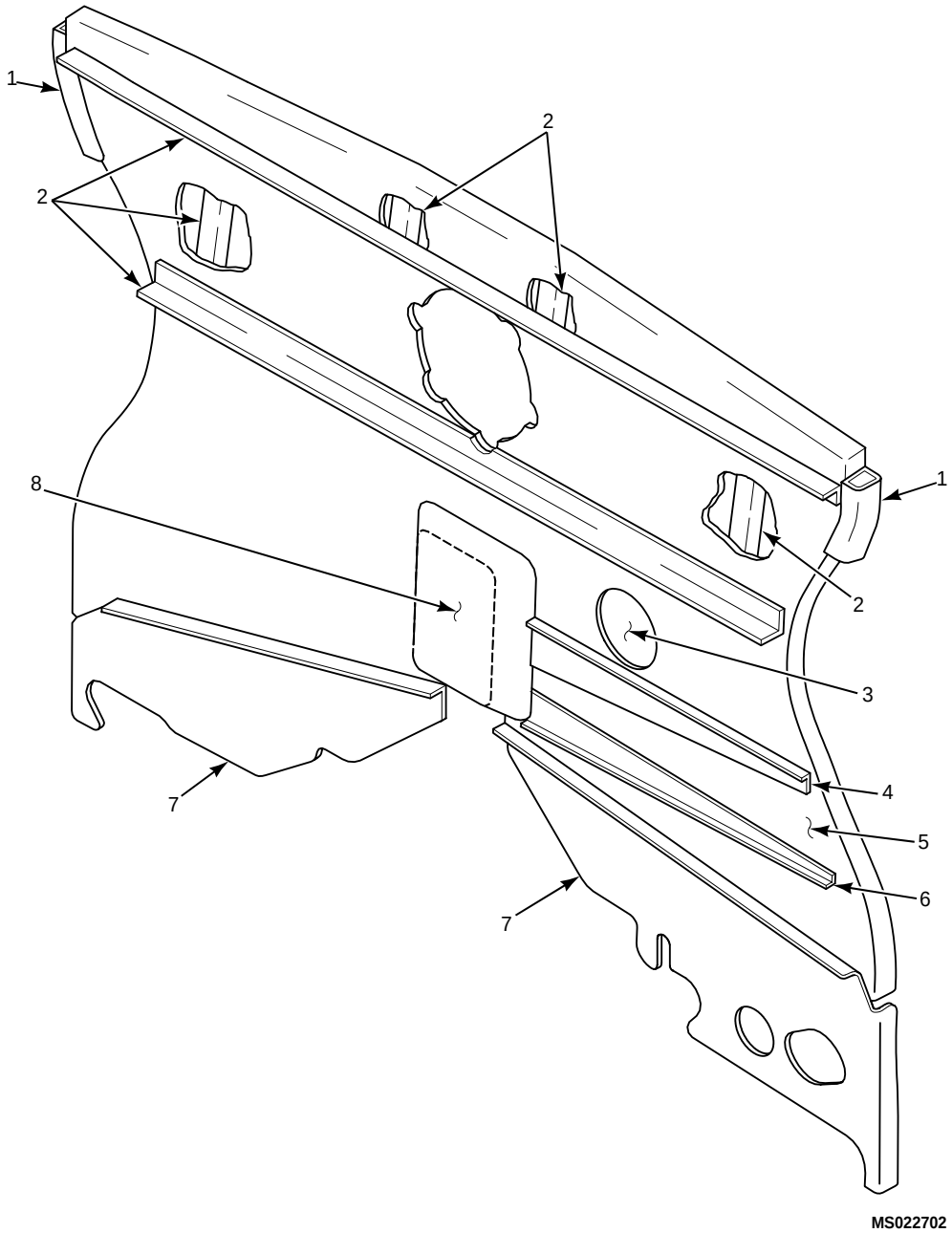


Figure 4. Barrier Panel

REPAIRS – continued

Table 3. Barrier Panel

INDEX NO.	NOMENCLATURE	ORIGINAL MATERIAL	REPAIR MATERIAL	WORK PACKAGE
1	Seal	VS80872-2	Note B	0095 00
2	Stiffener	0.032 2024-T3 Clad	0.040 2024-T3 Clad	0087 00
3	Cover	0.032 2024-T3 Clad	Note B	0086 00
4	Angle	0.032 2024-T3 Clad	0.040 2024-T3 Clad	0087 00
5	Web	0.032 2024-T3 Clad	0.040 2024-T3 Clad	0086 00
6	Angle	0.032 2024-T3 Clad	0.040 2024-T3 Clad	0087 00
7	Web	0.040 2024-T3 Clad	0.050 2024-T3 Clad	0086 00
8	Cover	0.080 & 9049.5 Kydex	Note B	0081 00

NOTES

A. All dimensions are in inches.

B. Replace with same material as original.

NOTE

Refer to Table 4 for index number reference.

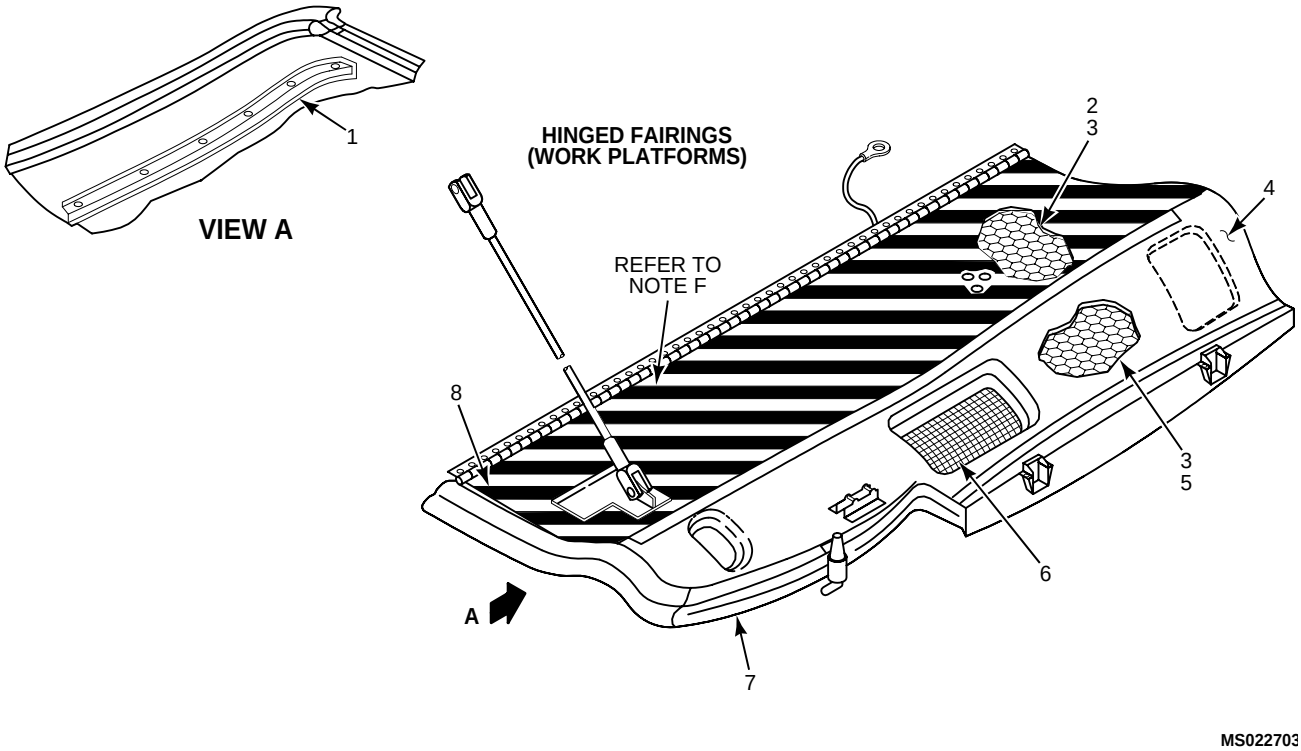


Figure 5. Work Platforms (Sheet 1 of 2)

REPAIRS – continued

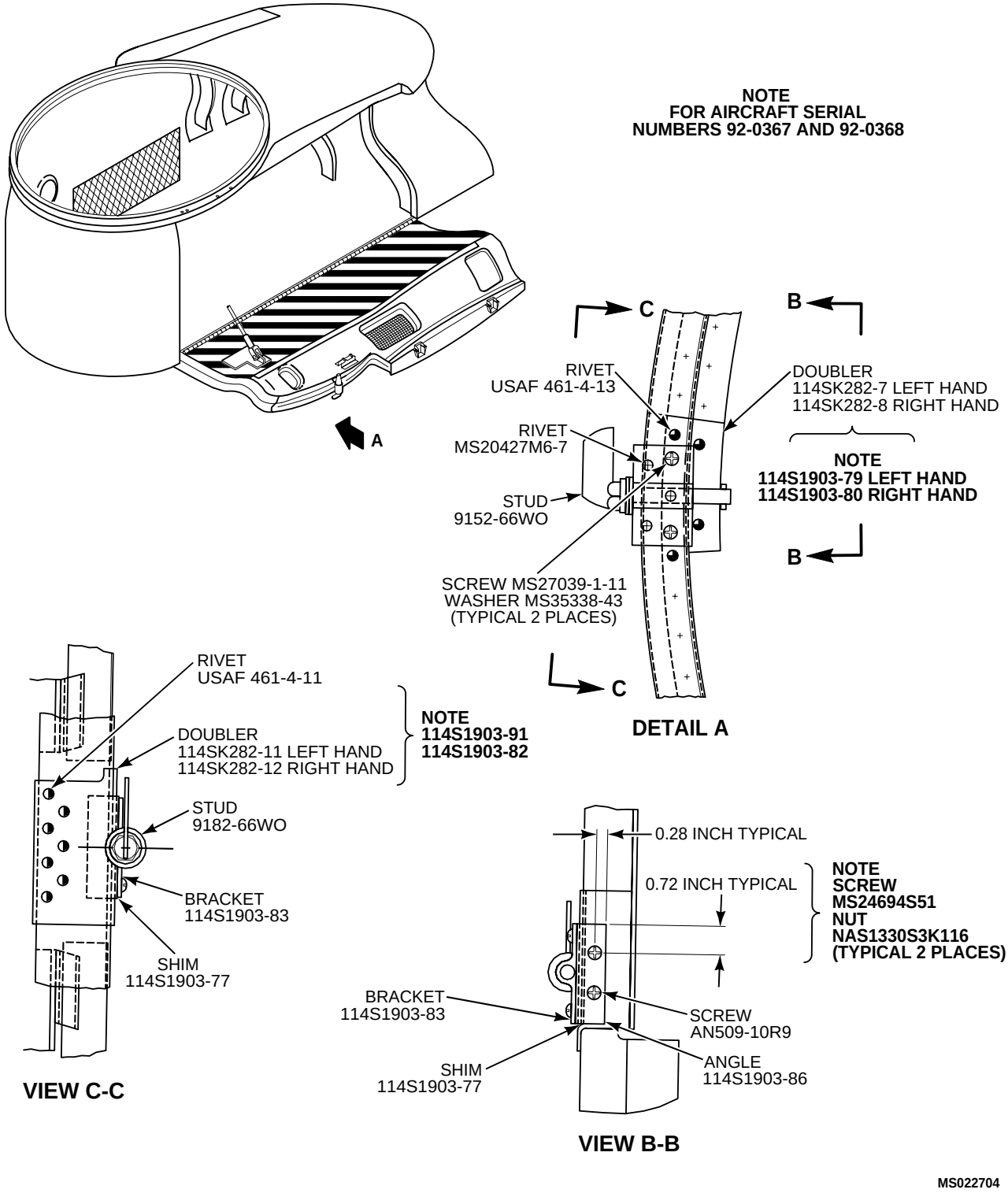


Figure 5. Work Platforms (Sheet 2 of 2)

REPAIRS – continued

Table 4. Work Platforms

INDEX NO.	NOMENCLATURE	ORIGINAL MATERIAL	REPAIR MATERIAL	WORK PACKAGE
1	Spoiler Angle	0.050 2024-T3 Clad	Note H	0087 00
2	Core Lower	0.750 BMS4-4, 4-15N Form B	Note J	0083 00
3	Core Insert	0.710 BMS4-4, 3-2 ON, Form B	Notes B & J	0083 00
4	Skin	Pre-impregnated Glass Fiber	Note D or Note G & Note J	0081 00
5	Core	0.0710,5.4-3/16-20N5052	Note B	0083 00
	Core Upper	0.750 BMS4-4, 4-10N Form B	Notes B & J	0083 00
6	Screen	0.041 Dia Cloth 0.50 X 0.50 Mesh 316 Stainless Steel	Note I	--
7	Skin	Pre-impregnated Glass Fiber	Note D or Note E & Note J	0081 00
8	Hinge	MS20001PH6	Note C	0093 00
		MS20001PH6	Notes C & J	0093 00

NOTES

A. All dimensions are in inches.

B. The platform area is of sandwich honeycomb.

C. Machine to configuration of original damaged section.

D. Laminated: consisting of one continuous layer of BP407-120A next to the core, two plies of BP407-181A and two plies of BP407-120A in the upper area, and one continuous ply of BP407-120A on the outside of the lay-up.

E. Laminated: consisting of two plies of BMS8-79, Type 1581 or 7781 in lower area and three plies of BMS8-79, Type 120 in upper area including one ply of continuous BMS8-79, Type 120 next to core and one ply of continuous BMS8-79 Type 120 on outside of lay-up.

F. Apply walkway material (Item 193, WP 0157 00), as directed in WP 0078 00, following repairs to this area or as required by wear.

G. Laminated: consisting of two plies of BMS-79, Type 1581 or 7781 in lower area and three plies of BMS8-79, Type 120 in upper area including one ply of continuous BMS8-79, Type 120 on outside of lay-up plus one ply of spun nylon fabric scoured and heat set (Style SN-52).

H. Replace with new spoiler angle, 114S1981-1 LH or -2 RH.

I. Replace with material similar to original.

J. This material is used on aircraft serial numbers 92-0367 and 92-0368.

REPAIRS – continued

NOTE

Refer to Table 4 for index number reference.

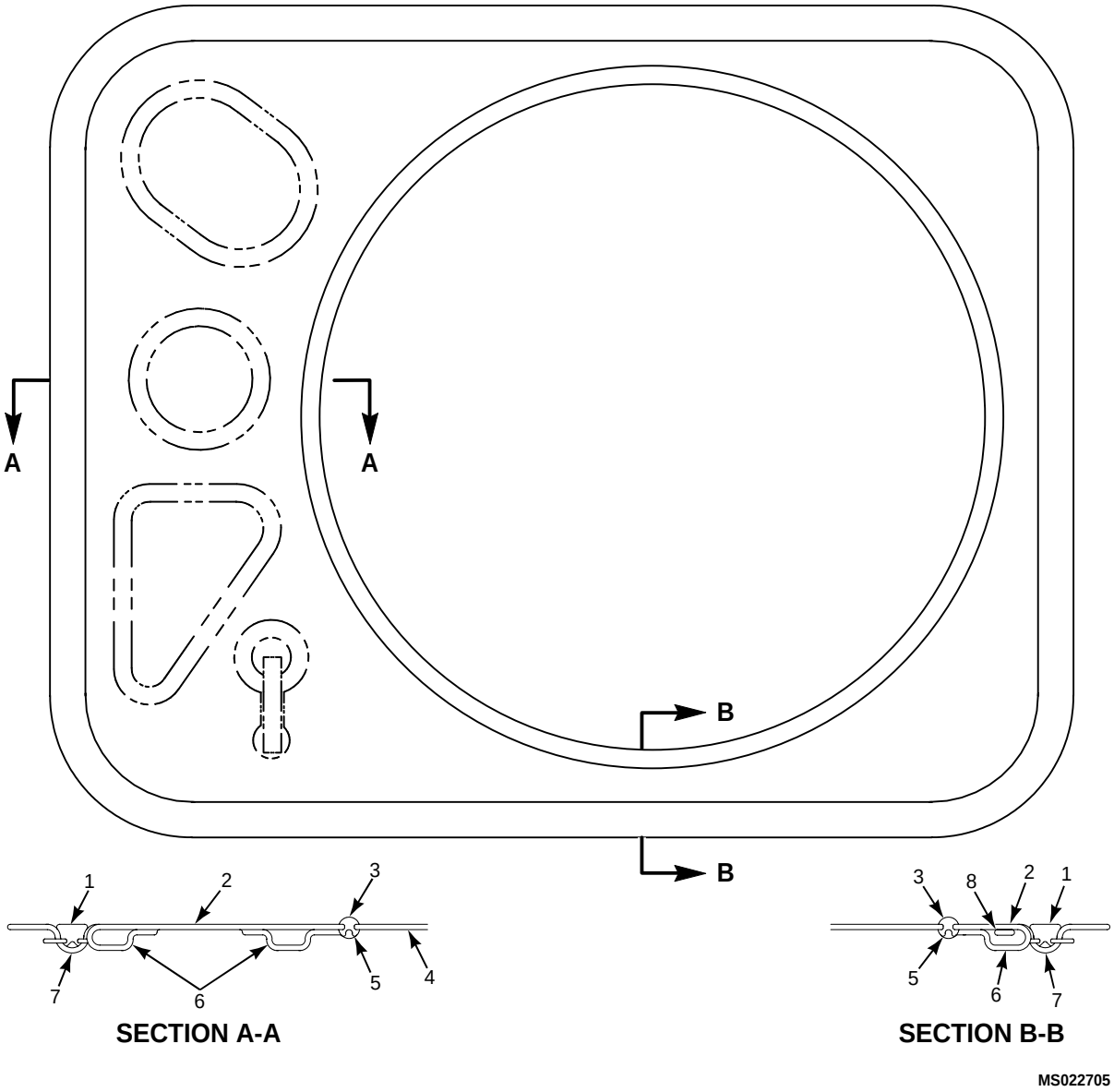


Figure 6. Escape Hatch

REPAIRS – continued

Table 5. LH and RH Escape Hatch

INDEX NO.	NOMENCLATURE	ORIGINAL MATERIAL	REPAIR MATERIAL	WORK PACKAGE
1	Seal	Note D	--	--
2	Skin	0.025 2024-T4 Clad	0.032 2024-T3 Clad	0086 00
3	Seal	Note C	--	--
4	Windowpane	Note B	--	0091 00
5	Seal Filler	Note F	--	--
6	Pan	0.032 2024-T4 Clad	0.040 2024-T3 Clad	0087 00
7	Seal Filler	Note E	--	--
8	Doubler	0.050 2024-T4 Clad	0.050 2024-T3 Clad	0086 00

NOTES

A. All dimensions are in inches.
B. The windowpane is made of 0.080-inch thick acrylic sheet, MIL-P-25690.
C. Replace with new seal, 114S2904-044.
D. Replace with new seal, 114S1619-21.
E. Replace with new seal filler, 114S1619-23.
F. Replace with new seal filler, 114S2901-05.

NOTE

Refer to Table 6 for index number reference.

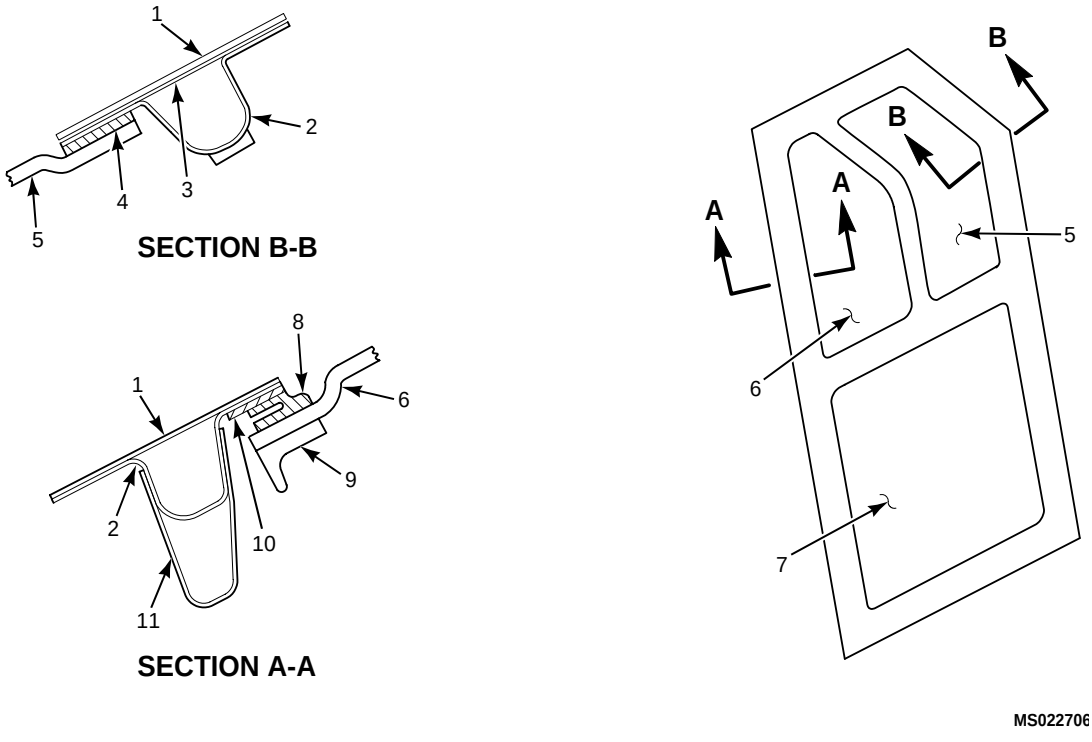


Figure 7. Pilot and Copilot Doors

REPAIRS – continued

Table 6. Pilot and Copilot Doors

INDEX NO.	NOMENCLATURE	ORIGINAL MATERIAL	REPAIR MATERIAL	WORK PACKAGE
1	Outer Skin	0.025 2024-T4 Clad	0.032 2024-T3 Clad	0086 00
2	Inner Pan	0.040 2024-T4 Clad	0.050 2024-T3 Clad	0087 00
3	Doubler	0.020 2024-T4 Clad	Note B	0086 00
4	Seal	0.125 Syn Rubber Sheet	Note C	--
5	Pane	0.150 Acrylic Plastic	Note E	0091 00
6	Pane	0.150 Acrylic Plastic	Note E	0091 00
7	Pane	0.187 Acrylic Plastic	Note E	0091 00
8	Seal	Molded Silicon Rubber	Note D	--
9	Frame	Aluminum Alloy Casting	Note F	--
10	Seal	0.090 Silicone Rubber Sponge	Note C	--
11	Support	0.040 2024-T4 Clad	0.050 2024-T3 Clad	0087 00

NOTES

A. All dimensions are in inches.

B. Damage to doublers necessitates replacement of damaged portion with same material as original.

C. Replace with new seal, same as original.

D. Replace with new seal, 114S5668-1 or -2.

E. Refer to WP 0091 00 for repair and refinishing of pane assemblies.

F. Replace with new part, same as original.

G. The LH door is shown. Repair materials and referenced repair figures are same for RH door.

REPAIRS – continued

NOTE

Refer to Table 7 for index number reference.

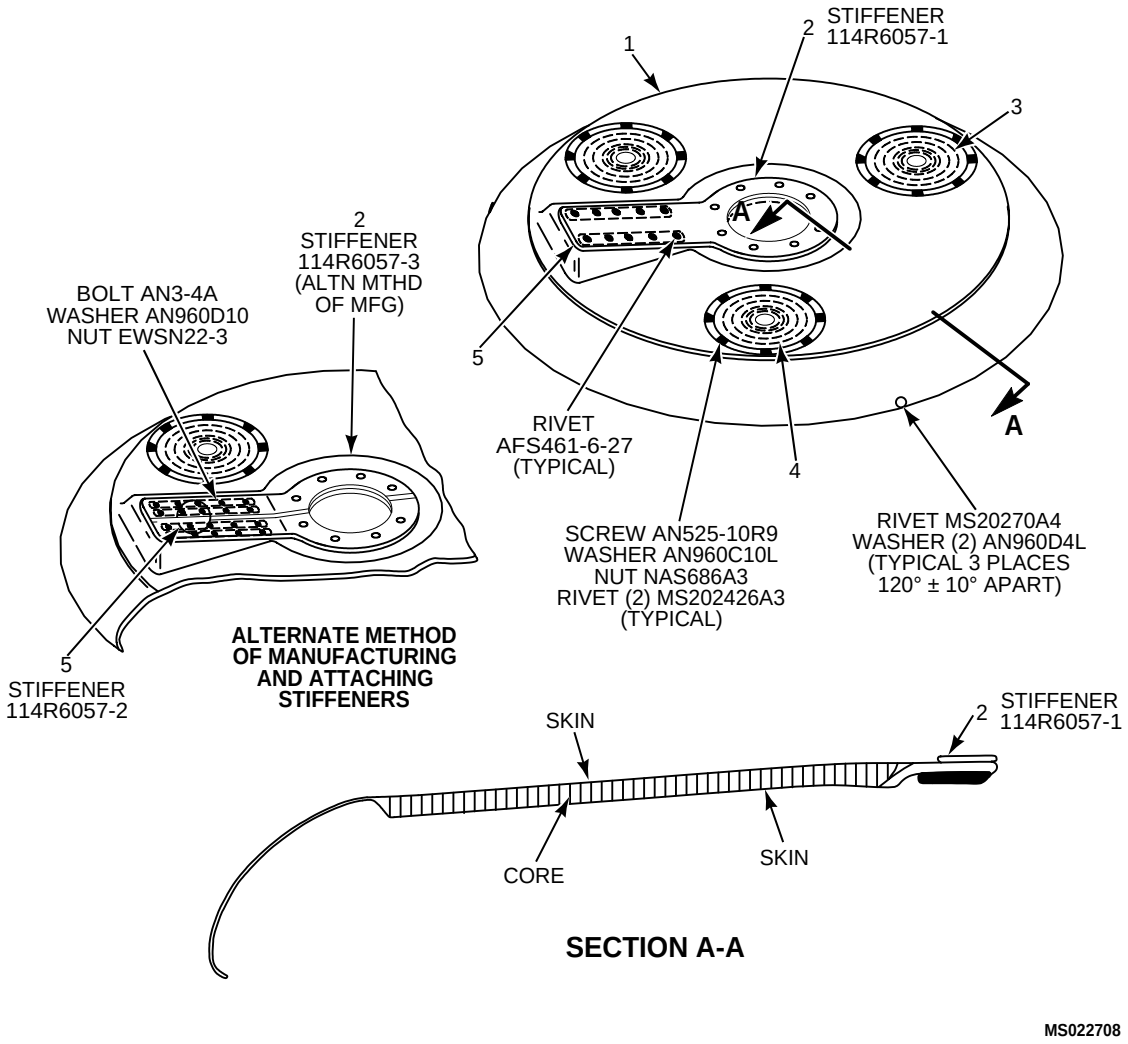
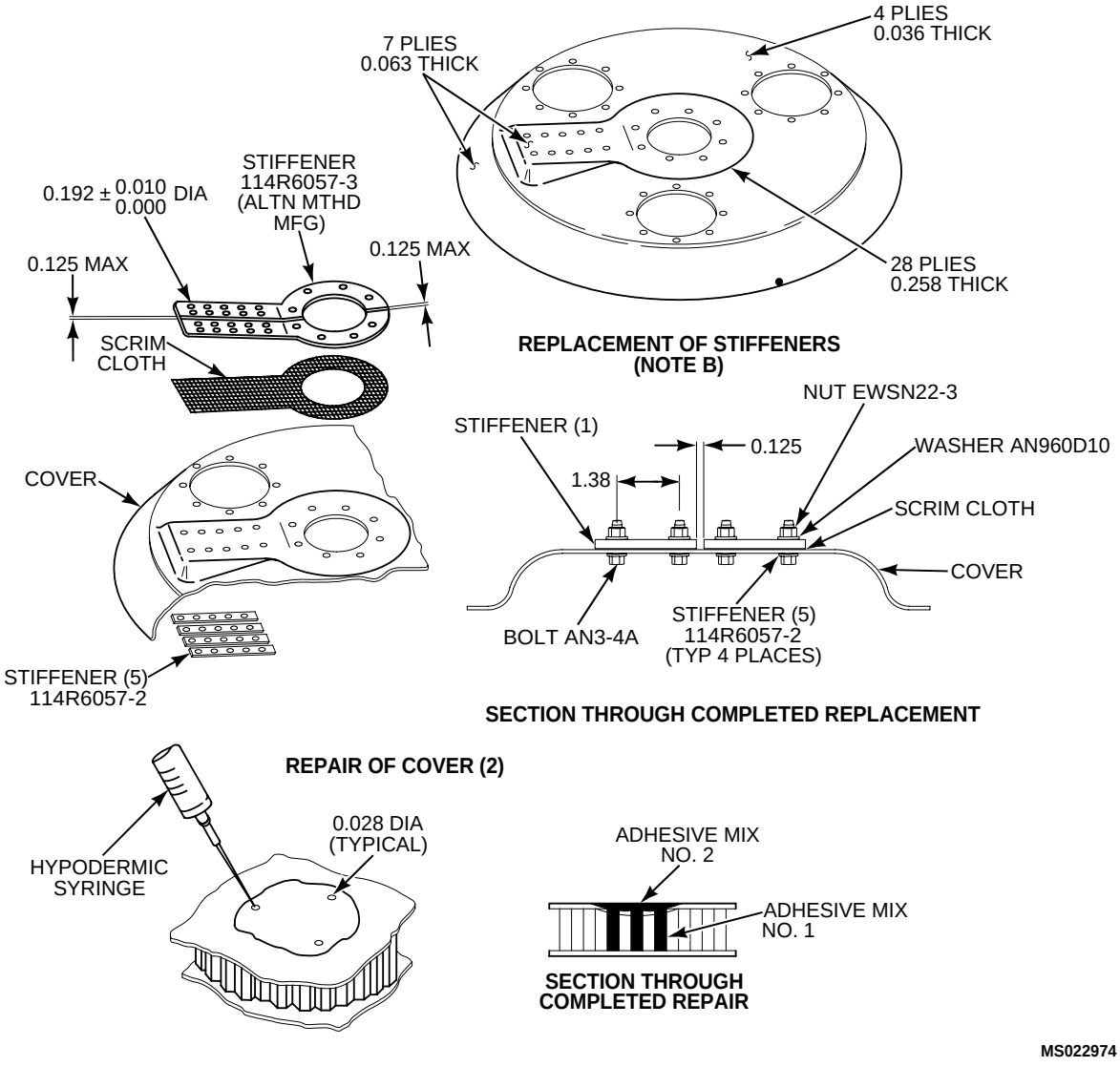


Figure 8. Forward Weather Protective Cover (Sheet 1 of 3)

REPAIRS – continued



NOTES

A. All dimensions are in inches.

B. Remove attaching hardware. Use heat 200 degrees F to 250 degrees F (93 degrees C to 121 degrees C) to remove damaged stiffener. Bond new stiffeners, 114R6057-3, to cover, using scrim cloth (Item 155, WP 0157 00) and adhesive (Item 24, WP 0157 00). Install attaching hardware after adhesive has cured.

C. Torque nuts from 18 to 20 inch-lbs above friction torque.

Figure 8. Forward Weather Protective Cover (Sheet 2 of 3)

REPAIRS – continued

Table 7. Forward Weather Protective Cover

INDEX NO.	NOMENCLATURE	ORIGINAL MATERIAL	REPAIR MATERIAL	WORK PACKAGE
1	Cover	Note C	Note C	0083 00
2	Stiffener	0.090 2024-T3 Clad	Note B	--
3	Boot Assy	--	Note D	--
4	Ring	0.063 6061-T6 Clad	Note E	--
5	Stiffener	0.032 6061-T4	Note B	--

NOTES

A. All dimensions are in inches.

B. No cracks allowed. Fabricate replacement part from 0.190-inch thick corrosion resistant steel; Condition A, Annealed, MIL-S-25043. If corrosion resistant steel is not available, use original material as alternate.

C. The core of the cover is 0.50-inch thick expanded perforated honeycomb MIL-L-7438, 3-3¼- ISN (50-52). Replace damaged sections with section corresponding to the original. The skin over core and remainder of cover are laminates of impregnated glass cloth, (Item 78, WP 0157 00).

D. If repair not feasible, replace with boot assembly, 114R6055-1.

E. Replace with new ring.

NOTE

Refer to Table 8 for index number reference.

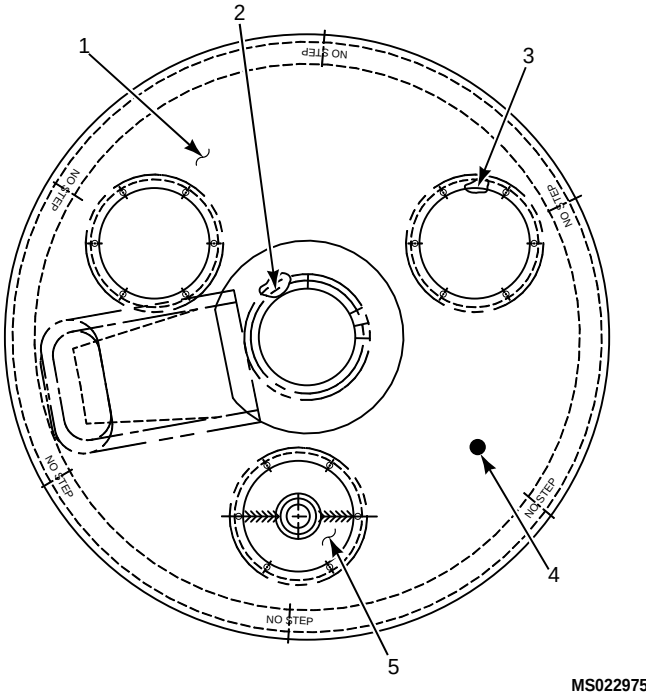


Figure 8. Forward Weather Protective Cover (Sheet 3 of 3)

REPAIRS – continued

Table 8. Forward Weather Protective Cover

INDEX NO.	NOMENCLATURE	ORIGINAL MATERIAL	REPAIR MATERIAL	WORK PACKAGE
1	Cover	Pre-Preg Glass Fabric Type 1581 or 7781	Note B	0083 00
2	Collar	Nema Grade G-10 Laminate	Note C	0083 00
3	Ring Assy	BMA8-79 Glass Fiber Pre-Preg Type 1581 or 7781	Note D	0081 00
4	Core	Stock 0.75 BMS8-124,CI Type I Grade 4	0.75 BMS8-124,CI Type I Grade 4	0053 00
5	Boot Assy	Note E	--	--

NOTES

A. All dimensions are in inches.

B. Top and bottom skin are made of four plies of fiberglass type 1581 of 7781.

C. The collar is made of two plies of Nema Grade G-10 laminated fiber cloth top and bottom.

D. Replace with new ring assembly, 414R6001-5.

E. If repair not feasible, replace with boot assembly, 114R6055-17.

NOTE

Refer to Table 9 for index number reference.

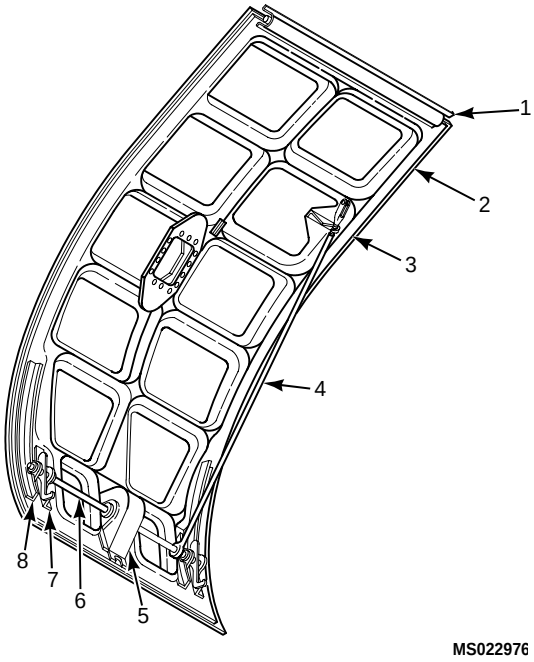


Figure 9. Nose Door

REPAIRS – continued

Table 9. Nose Door

INDEX NO.	NOMENCLATURE	ORIGINAL MATERIAL	REPAIR MATERIAL	WORK PACKAGE
1	Hinge	NOTE D	--	0093 00
2	Skin, Outer	0.025 2024-T4 Clad	0.032 2024-T3 Clad	0086 00
3	Skin, Inner	0.025 2024-T4 Clad	0.032 2024-T4 Clad	0087 00
4	Strut	0.050 Smls Tube 0.035 6061-T6	Note F	--
5	Housing	Note C	--	0081 00
6	Shaft	0.31 Sq Rolled Bar 2024-T4	Note E	--
7	Angle	0.032 2024-T4 Clad	Note H	--
8	Angle	0.320 2024-T4 Clad	Note G	--

NOTES

A. All dimensions are in inches.

B. Refer to WP 0080 00 for fuselage sealing when repairs are made on the nose compartment door assembly.

C. The housing is made of six plies of No.181 impregnated glass cloth, MIL-P-8013, Type I, for impregnated glass cloth structures. Refer to WP 0081 00 for repair procedures.

D. The hinge is made of 2024-T4 aluminum alloy extrusion. Refer to WP 0093 00 for repair of hinges.

E. Replace with new shaft, P/N 114S1632-35.

F. Refer to WP 0094 00 for tube repairs.

G. Replace with new angle, 114S1632-17 LH or -18 RH.

H. Replace with new angle, 114S1632-19 LH or -20 RH.

END OF WORK PACKAGE

DEPOT MAINTENANCE WORK REQUIREMENT
CH-47D HELICOPTER
COCKPIT ENCLOSURE REPAIRS

INITIAL SETUP

Test Equipment:
As Required

Tools and Special Tools:
As Required

Material/Parts:
As Required

Personnel Required:
As Required

References:
TM 1-1500-204-23 Series
TM 55-1520-240-23 Series
WP 0086 00
WP 0087 00
WP 0088 00
WP 0095 00

Equipment Conditions:
As Required

Special Environmental Condition:
As Required

SCOPE

This work package covers repair of the cockpit enclosure structure components.

1. Figure 1, Cockpit Enclosure
2. Figure 2, Upper Cockpit Enclosure
3. Figure 3, Lower Cockpit Enclosure

REPAIRS

NOTE

Refer to Table 1 for index number reference.

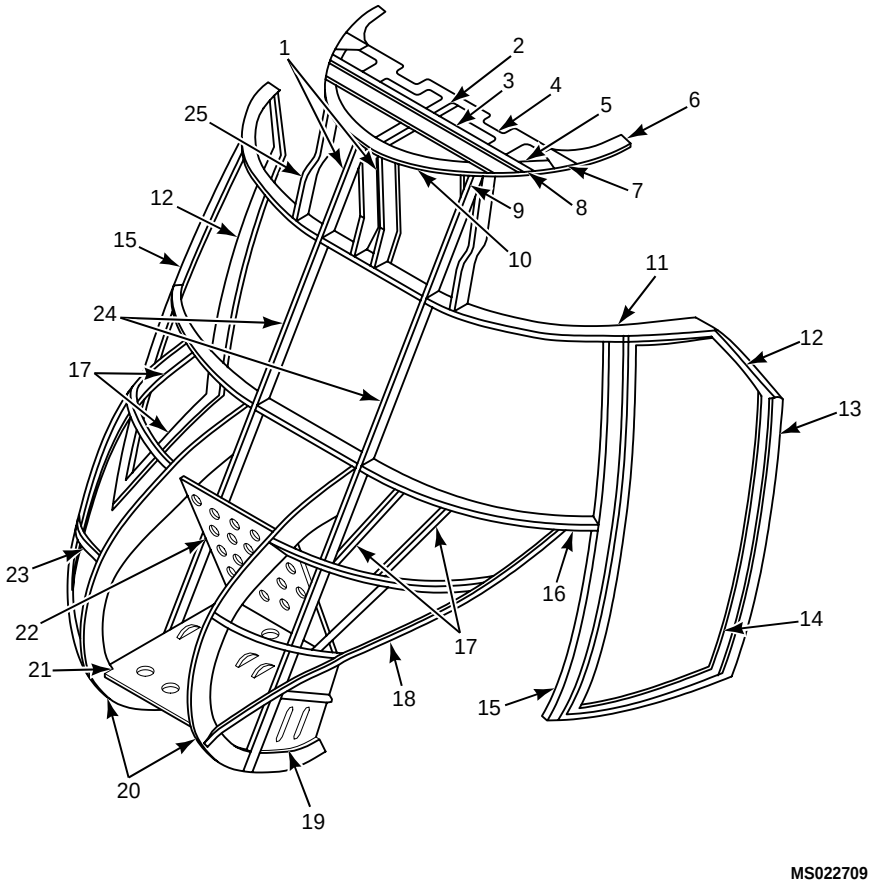


Figure 1. Cockpit Enclosure

Table 1. Cockpit Enclosure

INDEX NO.	NOMENCLATURE	ORIGINAL MATERIAL	REPAIR MATERIAL	WORK PACKAGE
1	Channel	0.032 2024-T4 Clad	0.040 2024-T3 Clad	0087 00
2	Former	0.040 2024-T4 Clad	0.050 2024-T3 Clad	0087 00
3	Former	0.040 2024-T4 Clad	0.050 2024-T3 Clad	0087 00
4	Web	0.025 2024-T4 Clad	0.032 2024-T3 Clad	0086 00
5	Former	0.040 2024-T4 Clad	0.050 2024-T3 Clad	0087 00
6	Web	0.025 7075-T6 Bare	0.032 7075-T6 Clad	0086 00
7	Channel	0.032 2024-T4 Clad	0.040 2024-T3 Clad	0087 00
8	Seal	Molded Silicone Rubber	Note B & Note C	0095 00

REPAIRS – continued

Table 1. Cockpit Enclosure - continued

INDEX NO.	NOMENCLATURE	ORIGINAL MATERIAL	REPAIR MATERIAL	WORK PACKAGE
9	Post	ALCOA T364 7075-T6 0.065 WX100X1.75 4130	ALCOA T364 7075-T6 0.065 WX100X1.75 4130	0088 00
10	Stiffener	0.032 2024-T4 Bare	0.050 2024-T3 Clad	0087 00
11	Tee Fitting	145SS107 Note D	145SS107 Note D	0088 00
12	Fitting	0.080 4130 Norm	0100 4130 Norm	0088 00
13	Channel	0.032 2024-T4 Bare	0.050 2024-T3 Clad	0087 00
14	Web	0.036 4130 Norm	0.050 4130 Norm	0086 00
15	Web	0.032 2024-T4 Bare	0.040 2024-T3 Clad	0086 00
16	Web	0.025 7075-T6 Bare	0.032 7075-T6 Bare	0086 00
17	Stiffener	0.032 2024-T4 Clad	0.040 2024-T3 Clad	0087 00
18	Former	0.040 2024-T4 Clad	0.050 2024-T3 Clad	0087 00
19	Stiffener	0.032 2024-T4 Clad	0.040 2024-T3 Clad	0087 00
20	Former	0.040 2024-T4 Clad	0.050 2024-T3 Clad	0087 00
21	Former	0.040 2024-T4 Clad	0.050 2024-T3 Clad	0087 00
22	Stiffener	0.032 2024-T4 Clad	0.050 2024-T3 Clad	0087 00
23	Former	0.040 2024-T4 Clad	0.050 2024-T3 Clad	0087 00
24	Gusset Upper Former	0.032 2024-T3 Clad	0.040 2024-T3 Clad Note F	0087 00
25	Gusset	0.036 4130 Norm Heat Treat	0.050 4130 Norm Note D	0088 00

NOTES

A. All dimensions are in inches.

B. Repair with original material.

C. If damage is other than minor, replace with new seal, 114SS5664-7 LH or -8 RH.

D. Heat-treat to 125 to 145 KSI.

E. Replace with new fitting, 145S1837-1.

F. This part is used on aircraft serial number 92-0367 and 92-0368.

REPAIRS – continued

NOTE

Refer to Table 2 for index number reference.

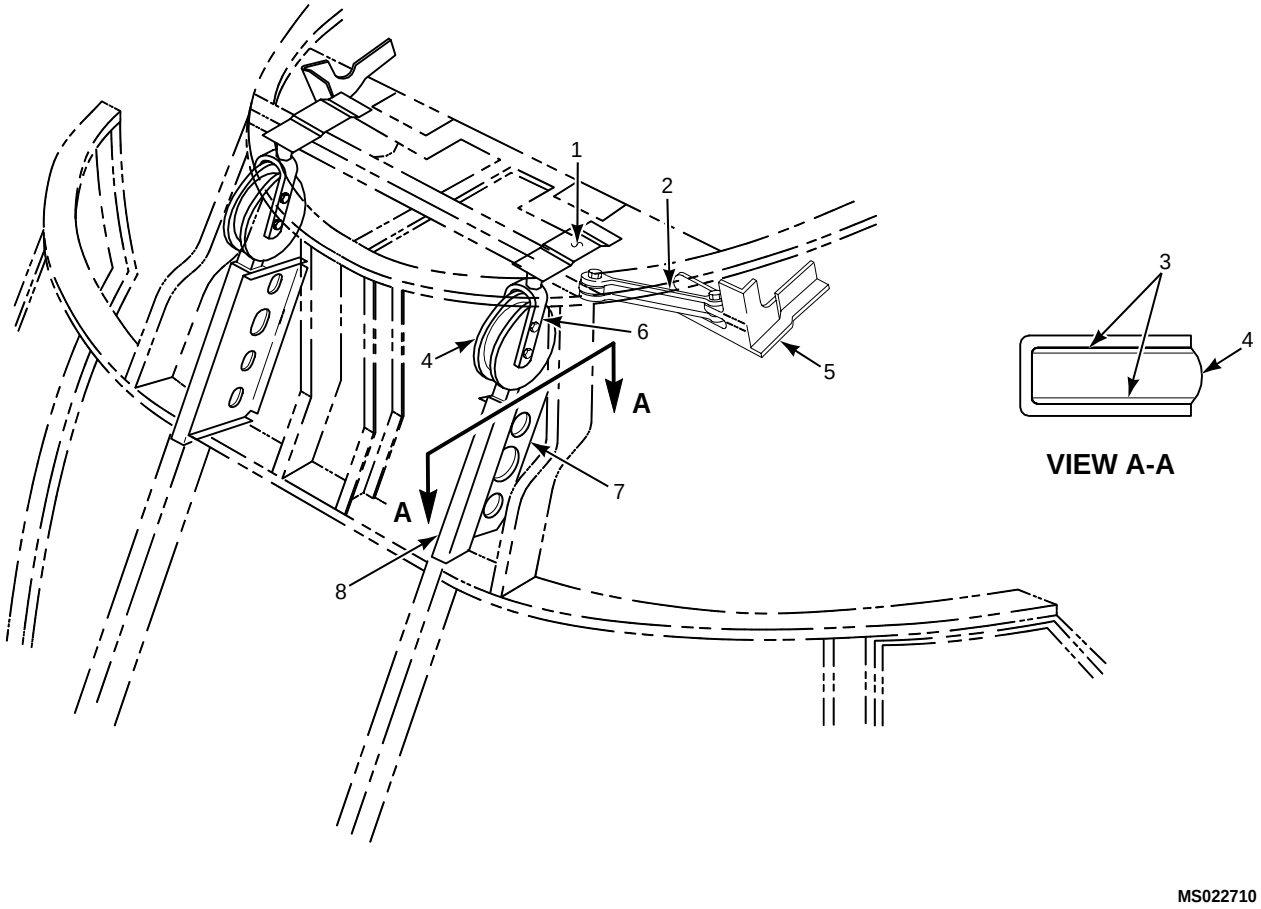


Figure 2. Upper Cockpit Enclosure

REPAIRS – continued

Table 2. Upper Cockpit Enclosure

INDEX NO	NOMENCLATURE	ORIGINAL MATERIAL	REPAIR MATERIAL	WORK PACKAGE
1	Fitting	4340 Normalized Steel	Note G	--
2	Link	4340 Normalized Steel	Note E	--
3	Shim	0.033 AL Laminate	Note C	Note D
4	Isolator	--	Note D	--
5	Fitting	4340 Normalized Steel	Note H	--
6	Link	4130-T Steel	Note F	--
7	Bracket	0.032 2024-T3 Clad	0.040 2024-T3 CLAD	0087 00
8	Former	0.065 W 4130-T2 Steel	0.065 W 4130-T2 Steel	0088 00

NOTES

A. All dimensions are in inches.
B. Replace tube using same material.
C. Replace entire part with BAC1534-33 material of the same size and shape.
D. Repair is limited to replacing the entire isolator assembly IAW TM 55-1520-240-23.
E. Replace with new fitting, 145S1883-1.
F. Replace with new fitting, 145S1837-1.
G. Replace with new fitting, 145S1882-3 LH and -4 RH.
H. Replace with new fitting, 145S1884-5 LH and -4 RH.

REPAIRS – continued

NOTE

Refer to Table 3 for index number reference.

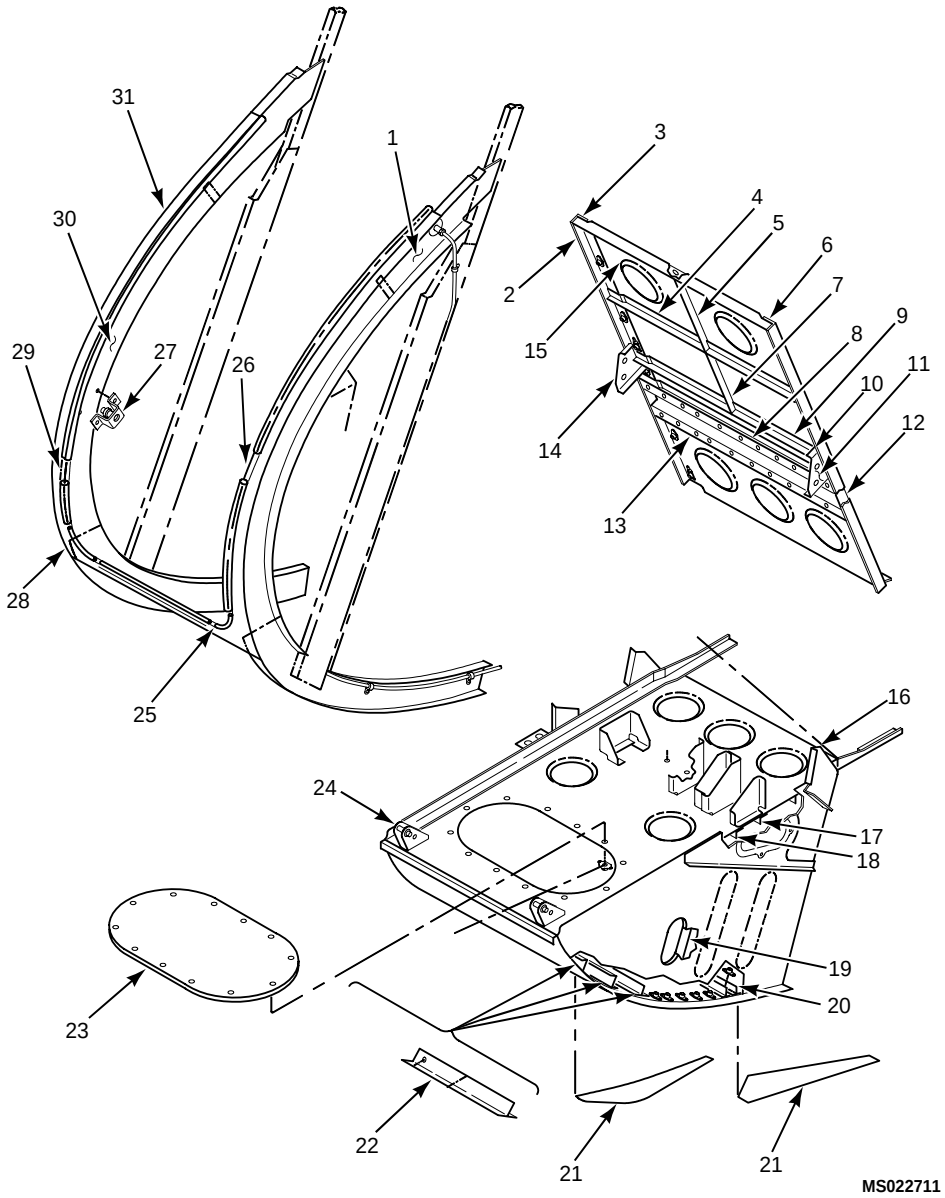


Figure 3. Lower Cockpit Enclosure

REPAIRS – continued

Table 3. Lower Cockpit Enclosure

INDEX NO.	NOMENCLATURE	ORIGINAL MATERIAL	REPAIR MATERIAL	WORK PACKAGE
1	Former	0.040 2024-T4 Clad	0.050 2024-T3 Clad	0087 00
2	Stiffener	0.040 70785-T6 Bare	0.040 7075-T6 Clad	0087 00
3	Cap	ALCOA 22509	Note B	0088 00
4	Stiffener	ALCOA 22477	Note B	0088 00
5	Stiffener	ALCOA 22477	Note B	0088 00
6	Cap	ALCOA 22509	Note B	0088 00
7	Stiffener	0.040 7075-T6 Bare	Note B	0087 00
8	Filler	0.040 7075-T6 Bare	0.040 7075-T6 Clad	0086 00
9	Stiffener	0.040 7075-T6 Clad	Note B	0087 00
10	Support	AND10138-10003	Note B	0088 00
11	Bracket	0.040 7075-T6 Clad	Note B	0087 00
12	Stiffener	0.040 7075-T6 Clad	0.040 7075-T6 Clad	0088 00
13	Stiffener	VS7075-2	Note B	0088 00
14	Stiffener	VS7075-2	Note B	0088 00
15	Bracket	0.040 7075-T6 Clad	Note B	0087 00
16	Stiffener	ALCOA 22477	Note B	0088 00
17	Stiffener	ALCOA 22477	Note B	0088 00
18	Stiffener	ALCOA 22477	Note B	0088 00
19	Channel	0.040 2024-T3 Clad	0.050 2024-T3 Clad	0087 00
20	Stiffener	AND10138-0604 7075-T6	Note B	0088 00
21	Strap	0.050 2024-T4 Clad	Note B	0086 00
22	Tee	AND10136-1401 7075-T6	Note B	0088 00
23	Door	0.032 2024-T4 Clad	Note B	0086 00
24	Channel	0.050 2024-T4 Clad	Note B	0087 00
25	Strip	0.025 2024-T4 Clad	Note B	0086 00
26	Strip	0.025 2024-T4 Clad	Note B	0086 00
27	Bracket	0.040 2024-T4 Clad	Note B	0087 00
28	Strip	0.025 2024-T4 Clad	Note B	0086 00
29	Strip	0.025 2024-T4 Clad	Note B	0086 00
30	Former	0.040 2054-T4 Clad	0.050 2024-T3 Clad	0087 00
31	Seal	VS80572-3	Note B	0091 00

NOTES

A. All dimensions are in inches.

B. Replace or repair with original material.

END OF WORK PACKAGE

DEPOT MAINTENANCE WORK REQUIREMENT
CH-47D HELICOPTER
NOSE STRUCTURE REPAIRS

INITIAL SETUP

Test Equipment:
As Required

Tools and Special Tools:
As Required

Material/Parts:
As Required

Personnel Required:
As Required

References:
TM 1-1500-204-23 Series
TM 55-1520-240-23 Series
WP 0087 00

Equipment Conditions:
As Required

Special Environmental Condition:
As Required

SCOPE

This work package covers repair for the nose structure components.

REPAIR

NOTE

Refer to Table 1 for index number reference.

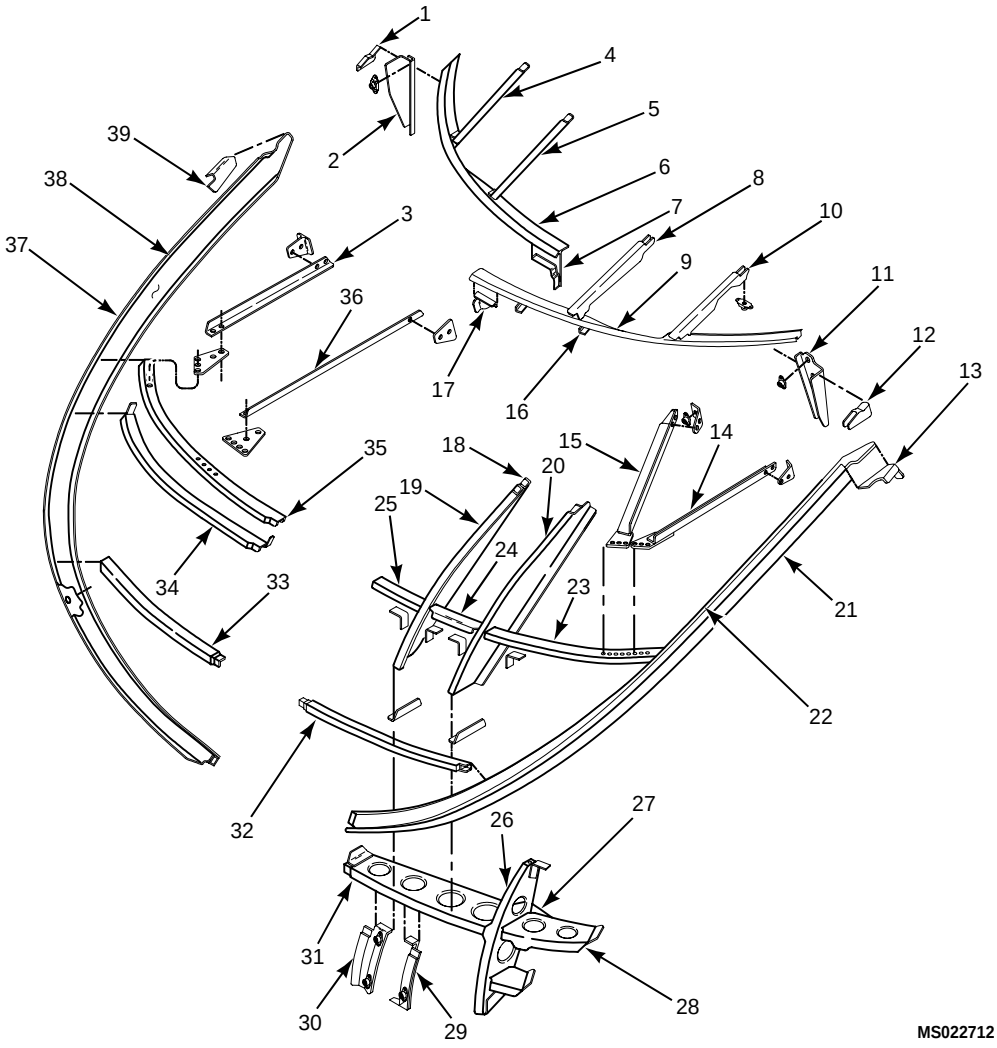


Figure 1. Nose Structure

Table 1. Nose Structure

INDEX NO.	NOMENCLATURE	ORIGINAL MATERIAL	REPAIR MATERIAL	WORK PACKAGE
1	Clip	0.032 2024-T4 Clad	0.040 2024-T3 Clad	0087 00
2	Bracket	0.040 2024-T4 Clad	0.050 2024-T3 Clad	0087 00
3	Strut	ALCOA 5401 7075-T6	Note B	--
4	Stiffener	0.032 2024-T4 Clad	0.040 2024-T3 Clad	0087 00
5	Stiffener	0.032 2024-T4 Clad	0.040 2024-T3 Clad	0087 00

REPAIR - continued

Table 1. Nose Structure - continued

6	Stiffener	0.050 2024-T4 Clad	0.050 2024-T3 Clad	0087 00
7	Bracket	0.040 2024-T4 Clad	Note B	--
8	Stiffener	0.032 2024-T3 Clad	0.040 2024-T3 Clad	0087 00
9	Stiffener	0.050 2024-T3 Clad	0.050 2024-T3 Clad	0087 00
10	Stiffener	0.032 2024-T4 Clad	0.040 2024-T3 Clad	0087 00
11	Bracket	0.040 2024-T4 Clad	0.050 2024-T3 Clad	0087 00
12	Bracket	0.032 2024-T4 Clad	0.040 2024-T3 Clad	0087 00
13	Bracket	0.040 2024-T4 Clad	0.050 2024-T3 Clad	0087 00
14	Angle	ALCOA 5041 7075-T6	Note B	--
15	Strut	ALCOA 5041 7075-T6	Note B	--
16	Clip	0.040 2024-T4 Clad	Note B	--
17	Bracket	0.040 2024-T4 Clad	Note B	--
18	Clip	0.040 2024-T4 Clad	Note B	--
19	Former LH and RH	0.040 2024-T4 Clad	0.050 2024-T3 Clad	0087 00
20	Former LH and RH	0.040 2024-T3 Clad	0.050 2024-T3 Clad	0087 00
21	Plate	0.040 2024-T4 Clad	0.050 2024-T3 Clad	0087 00
22	Former	0.040 2024-T4 Clad	0.040 2024-T3 Clad	0087 00
23	Former	0.032 2024-T3 Clad	0.040 2024-T3 Clad	0087 00
24	Former	0.032 2024-T3 Clad	0.040 2024-T3 Clad	0087 00
25	Former	0.032 2024-T3 Clad	0.040 2024-T3 Clad	0087 00
26	Former	0.032 2024-T4 Clad	0.040 2024-T3 Clad	0087 00
27	Plate	0.040 2024-T4 Clad	Note B	--
28	Former	0.032 2024-T4 Clad	0.040 2024-T3 Clad	0087 00
29	Zee Angle	0.040 2024-T3 Clad	Note B	--
30	Zee Angle	0.040 2024-T3 Clad	Note B	--
31	Former	0.032 2024-T4 Clad	0.040 2024-T3 Clad	0087 00
32	Stiffener	0.032 2024-T4 Clad	0.040 2024-T3 Clad	0087 00
33	Stiffener	0.032 2024-T4 Clad	0.040 2024-T3 Clad	0087 00
34	Stiffener	0.040 2024-T3 Clad	0.040 2024-T3 Clad	0087 00
35	Stiffener	0.032 2024-T4 Clad	0.040 2024-T3 Clad	0087 00
36	Strut	ALCOA 5401 7075-T6	Note B	--
37	Former	0.040 2024-T4 Clad	0.050 2024-T3 Clad	0087 00
38	Former	0.040 2024-T4 Clad	0.050 2024-T3 Clad	0087 00
39	Bracket	0.040 2024-T4 Clad	0.050 2024-T3 Clad	0087 00

NOTES

A. All dimensions are in inches.

B. No repair, replace with original material.

END OF WORK PACKAGE

DEPOT MAINTENANCE WORK REQUIREMENT
CH-47D HELICOPTER
LOWER CONSOLE STRUCTURE REPAIRS

INITIAL SETUP

Test Equipment:
As Required

Tools and Special Tools:
As Required

Material/Parts:
As Required

Personnel Required:
As Required

References:
TM 1-1500-204-23 Series
TM 55-1520-240-23 Series
WP 0086 00
WP 0087 00

Equipment Conditions:
As Required

Special Environmental Condition:
As Required

SCOPE

This work package covers repair of the lower console, forward and aft, structural components.

REPAIR

NOTE

Refer to Table 1 for index number reference.

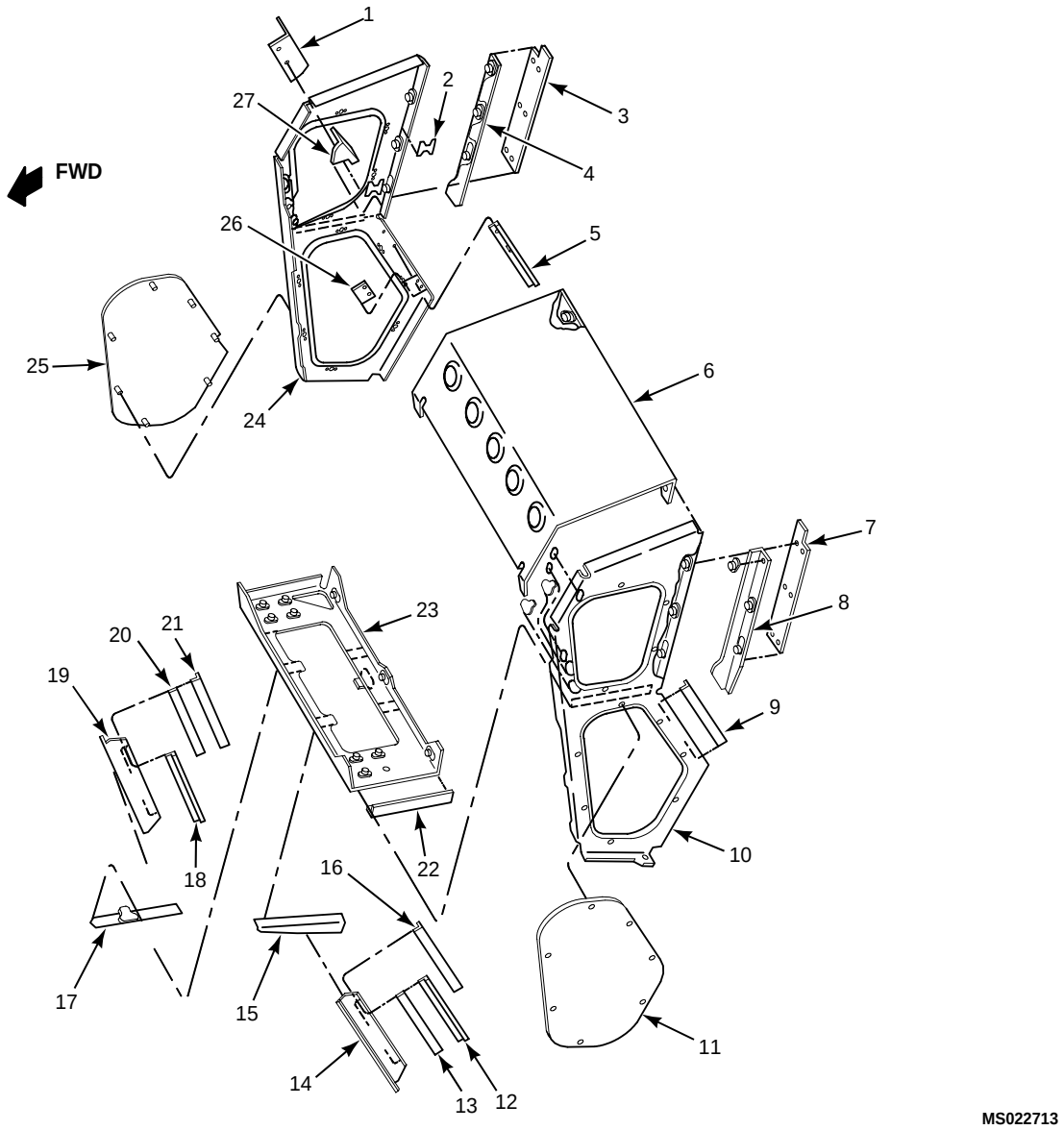


Figure 1. Lower Console, Forward

REPAIR - continued

Table 1. Lower Console, Forward

INDEX NO.	NOMENCLATURE	ORIGINAL MATERIAL	REPAIR MATERIAL	WORK PACKAGE
1	Support	0.040 2024-T4 Clad	Note B	--
2	Block, Mounting	Note C	--	--
3	Plate Shear	0.040 2024-T4 Clad	Note B	--
4	Plate Shear	0.032 2024-T4 Clad	Note B	--
5	Rail	BACS22A22	Note B	--
6	Top	0.025 2024-T4 Clad	0.032 2024-T4 Clad	0087 00
7	Plate Shear	0.040 2024-T4 Clad	Note B	--
8	Angle, Support	0.032 2024-T4 Clad	Note B	--
9	Rail	BACS22A22	Note B	--
10	Side LH	0.040 2024-T4 Clad	0.050 2024-T3 Clad	0087 00
11	Panel	0.025 2024-T4 Clad	Note B	--
12	Rail	BACS22A23	Note B	--
13	Spacer	Note B	--	--
14	Support Rail	0.040 2024-T4 Clad	Note B	--
15	Angle, Support	0.032 2024-T4 Clad	Note B	--
16	Rail	BACS22A22	Note B	--
17	Angle, Support	0.032 2024-T4 Clad	Note B	--
18	Rail	BACS22A22	Note B	--
19	Support Rail	0.040 2024-T4 Clad	Note B	--
20	Spacer	Note B	--	--
21	Rail	BACS22A22	Note B	--
22	Angle	0.032 2024-T4 Clad	Note B	--
23	Web	0.040 2024-T4 Clad	0.040 2024-T3 Clad	0087 00
24	Angle, Support	0.032 2024-T4 Clad	Note B	--
25	Plate	0.025 2024-T4 Clad	Note B	--
26	Filler	Note B	--	--
27	Clip	0.060 2024-T4 Clad	Note B	--

NOTES

A. All dimensions are in inches.

B. No repair, replace with original material.

C. No repair, replace with new part, TC342.

REPAIR - continued

NOTE

Refer to Table 2 for index number reference.

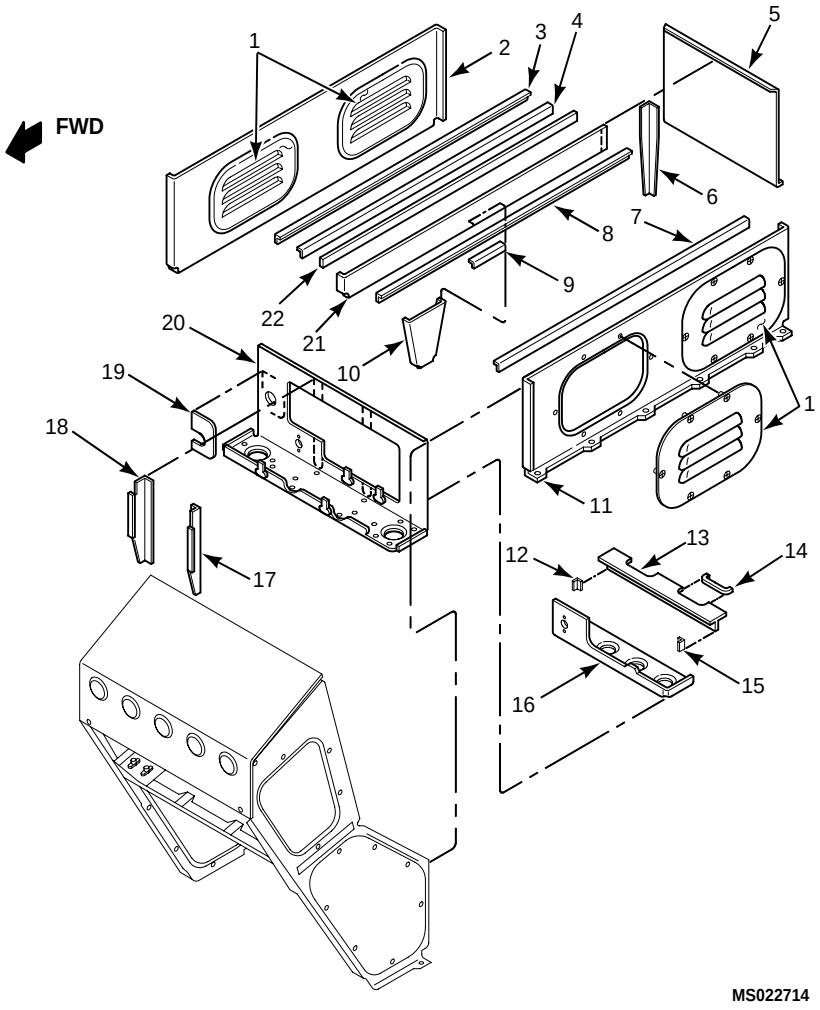


Figure 2. Lower Console, Aft

REPAIR - continued

Table 2. Lower Console, Aft

INDEX NO.	NOMENCLATURE	ORIGINAL MATERIAL	REPAIR MATERIAL	WORK PACKAGE
1	Door	0.025 2024-T4 Clad	0.032 2024-T3 Clad	0087 00
2	Web, R/H	0.040 2024-T4 Clad	0.050 2024-T3 Clad	0086 00
3	Rail	BACS22A67	Note B	--
4	Rail	BACS22A66	Note B	--
5	Web Aft	0.040 2024-T4 Clad	0.050 2024-T3 Clad	0086 00
6	Angle, Support	0.040 2024-T4 Clad	0.050 2024-T3 Clad	0087 00
7	Rail	BACS22A67	Note B	--
8	Rail	BACS22A66	Note B	--
9	Angle	0.040 2024-T4 Clad	Note B	--
10	Support	0.040 2024-T4 Clad	Note B	--
11	Web L/H	0.040 2024-T4 Clad	0.050 2024-T3 Clad	0086 00
12	Clip	0.032 2024-T4 Clad	Note B	--
13	Beam Support	Note B	--	--
14	Grommet	MS21266-3N	Note B	--
15	Clip	0.032 2024-T4 Clad	Note B	--
16	Pan	0.025 2024-T4 Clad	0.032 2024-T3 Clad	0087 00
17	Angle	0.032 2024-T4 Clad	Note B	--
18	Angle	0.032 2024-T4 Clad	Note B	--
19	Filler	0.025 2024-T4 Clad	Note B	--
20	Web, Partition	0.025 2024-T4 Clad	0.032 2024-T3 Clad	0087 00
21	Support, Rail	0.040 2024-T4 Clad	0.050 2024-T3 Clad	0087 00
22	Spacer	Note B	--	--

NOTES

A. All dimensions are in inches.

B. No repair, replace with original material.

END OF WORK PACKAGE

DEPOT MAINTENANCE WORK REQUIREMENT
CH-47D HELICOPTER
NOSE TUB REPAIRS

INITIAL SETUP

Test Equipment:
As Required

Tools and Special Tools:
As Required

Material/Parts:
Primer, Epoxy (Item 140, WP 0157 00)
Steel, Sheet (Item 168, WP 0157 00)
Steel, Sheet (Item 169, WP 0157 00)

Personnel Required:
As Required

References:
TM 1-1500-204-23 Series
TM 55-1520-240-23 Series
WP 0078 00
WP 0080 00
WP 0083 00
WP 0086 00
WP 0087 00
WP 0088 00
WP 0102 00
WP 0157 00

Equipment Conditions:
As Required

Special Environmental Condition:
As Required

SCOPE

This work package covers repair of the nose tub formers and right longeron. Refer to Figure 1.

1. Right Nose Tub Longeron
2. Floor Former, sta's 51 (Canted), 70, 95, 120, 140, and 160
3. Cockpit Floor Structure; refer to WP 0102 00 for repair procedures.

REPAIR

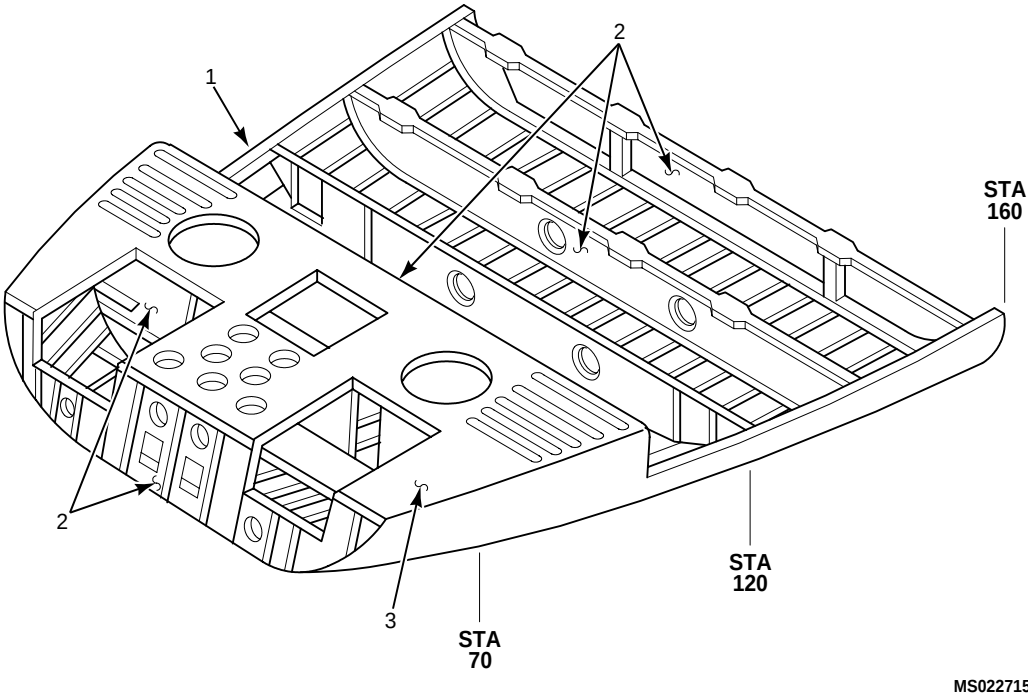


Figure 1. Nose Tub

NOTE

Refer to Table 1 for index number reference.

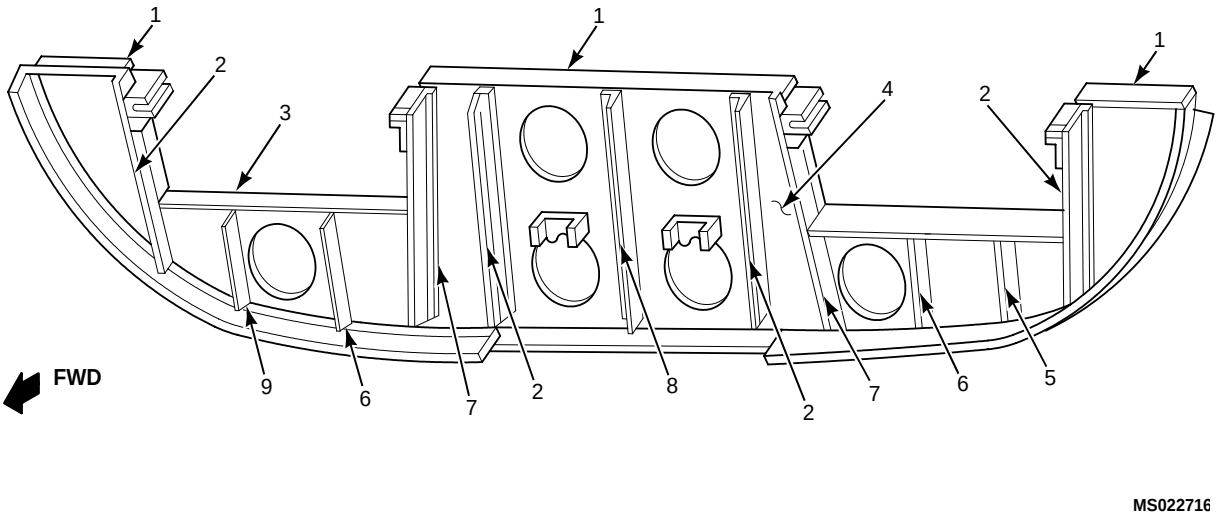


Figure 2. Floor Former, Sta 51 (Canted)

REPAIR - continued

Table 1. Floor Former, Sta 51 (Canted)

INDEX NO.	NOMENCLATURE	ORIGINAL MATERIAL	REPAIR MATERIAL	WORK PACKAGE
1	Cap	0.040 7075-T6 Bare	0.050 7075-T6 Clad	0088 00
	Cap	0.050 7075-T6 Bare	0.050 7075-T6 Clad Note C	0088 00
2	Stiffener	ALCOA 22477 7075-T6	0.050 4130	0088 00
3	Cap	ALCOA 9802 7075-T6	0.063 4130	0088 00
	Cap	ALCOA 11892 7075-T6 Extr	0.063 4130 Note C	0088 00
4	Web	0.025 7075-T6 Bare	0.302 7075-T6 Clad	0086 00
	Web	0.040 7075-T6 Bare	0.040 7075-T6 Clad Note C	0086 00
5	Stiffener	0.032 7075-T6 Bare	0.040 7075-T6 Clad	0088 00
6	Stiffener	0.025 7075-T6 Bare	0.032 7075-T6 Clad	0088 00
7	Stiffener	ALCOA 9802 7075-T6	0.063 4130	0088 00
8	Stiffener	0.025 7075-T6 Bare	0.032 7075-T6 Clad	0088 00
	Stiffener	VS70754-2 7075-T6 Bare	0.032 7075-T6 Clad Note C	0088 00
9	Stiffener	0.032 7075-T6 Bare	0.032 7075-T6 Clad	0088 00
	Stiffener, Doubler	0.050 2024-T3 Clad	0.063 2024-T3 Clad Note C	0088 88

NOTES

A. All dimensions are in inches.

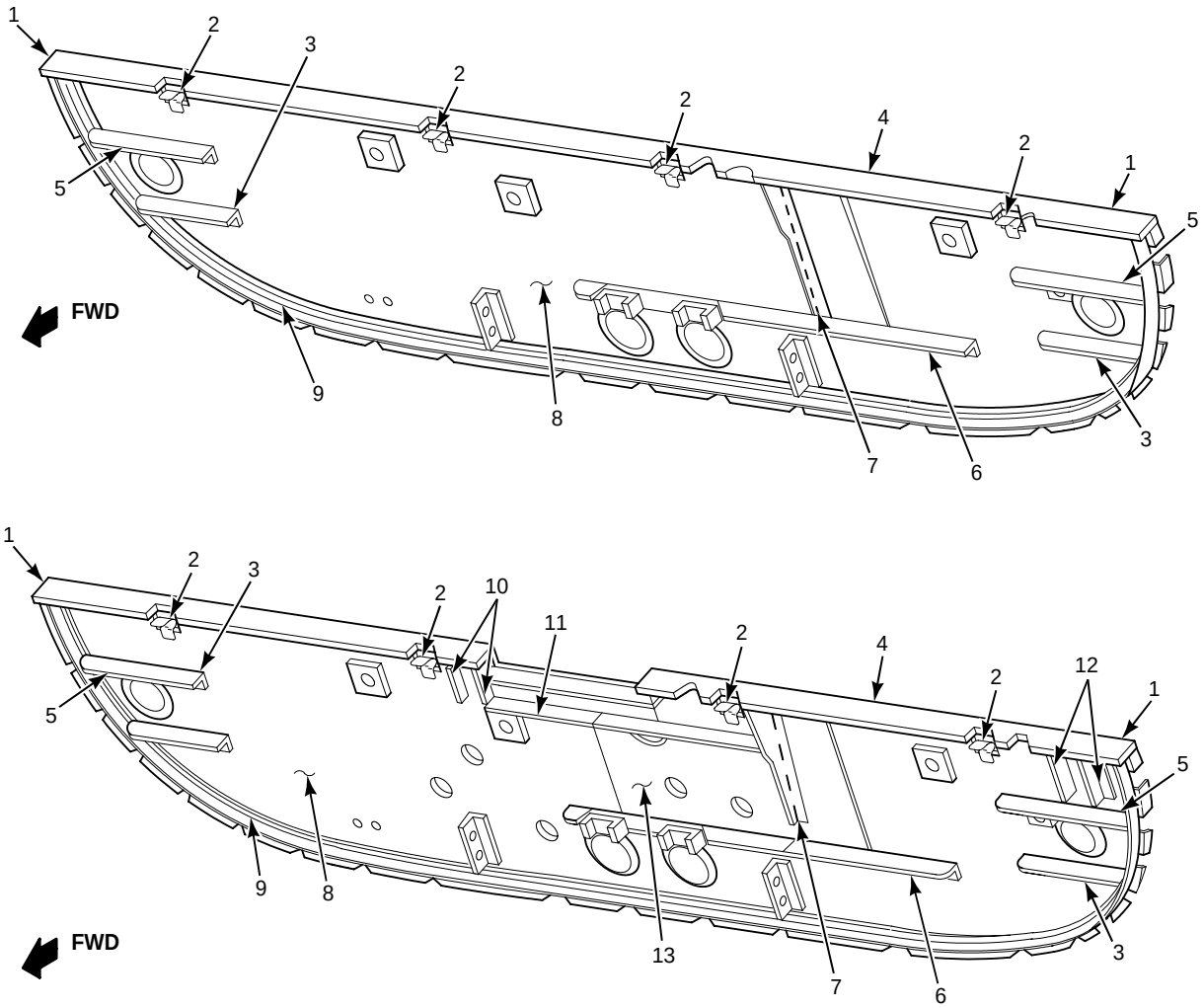
B. Replace fittings with sections of original material.

C. This part is used on aircraft serial numbers 92-0367 and 92-0368.

REPAIR - continued

NOTE

Refer to Table 2 for index number reference.



SERIAL NUMBERS 92-0367 AND 92-0368

MS022717

Figure 3. Floor Former, Sta 70

REPAIR - continued

Table 2. Floor Former, Sta 70

INDEX NO.	NOMENCLATURE	ORIGINAL MATERIAL	REPAIR MATERIAL	WORK PACKAGE
1	Skirt	0.020 310 CRES	0.025 301 Cres	0087 00
2	Fitting	ALCOA 76959 7075-T6	Note B	--
3	Stiffener	0.025 7075-T6 Bare	0.032 7075-T6 Clad	0088 00
4	Cap	Reynolds 11416 7075-T6 Bare	0.071 4130	0088 00
5	Stiffener	0.025 2024-T4 Bare	0.032 2024-T3 Clad	0088 00
6	Stiffener	ALCOA 18546 7075-T6	0.071 4130	0088 00
7	Stiffener	0.025 7075-T6 Bare	0.032 7075-T6 Clad	0088 00
8	Web	0.020 7075-T6 Bare	0.025 7075-T6 Clad	0086 00
9	Cap	ALCOA 67590 7075-T6	0.063 4130 Note C	0088 00
10	Stiffener	BAC 1503-2731 7075-T6 Extr	0.050 4130 Note C	0088 00
11	Channel	0.050 2024-T3	0.050 2024-T3 Note C	0088 00
12	Stiffener	Harvey 15048 7075-T6 Extr	0.050 4130 Note C	0088 00
13	Doubler	0.032 7075-T6 Bare	0.040 7075-T6 Clad Note C	0086 00

NOTES

A. All dimensions are in inches.
B. Replace fittings with sections of original material.
C. This part is used on aircraft serial numbers 92-0367 and 92-0368.

REPAIR - continued

NOTE

Refer to Table 3 for index number reference.

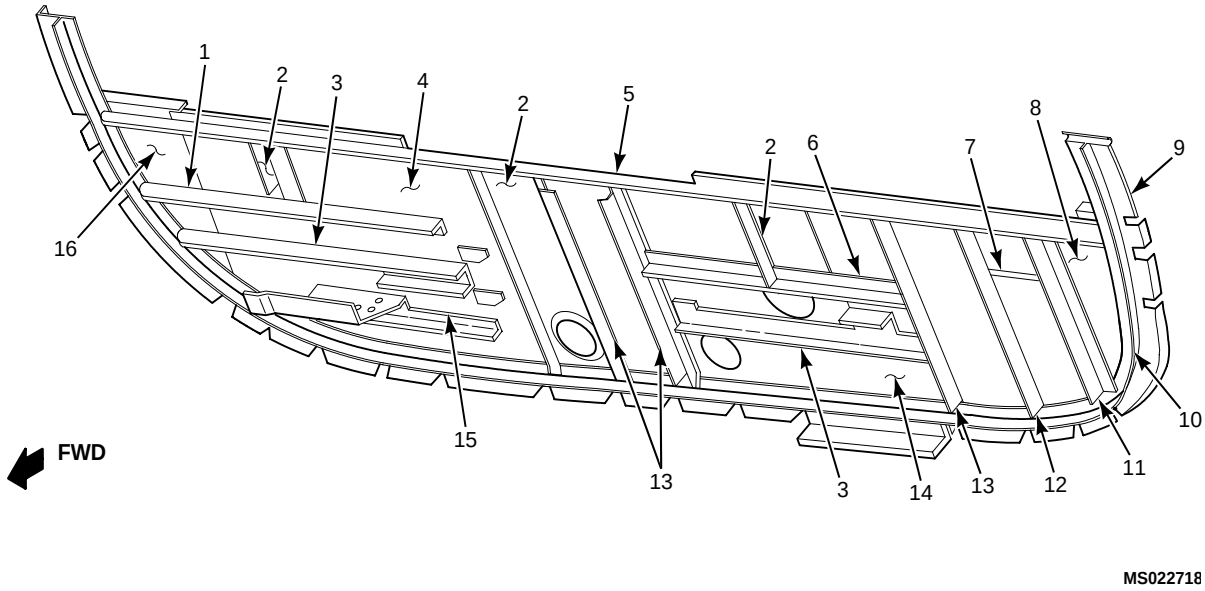


Figure 4. Floor Former, Sta 95

Table 3. Floor Former, Sta 95

INDEX NO.	NOMENCLATURE	ORIGINAL MATERIAL	REPAIR MATERIAL	WORK PACKAGE
1	Stiffener	ALCOA 22477 7075-T6	0.050 4130	0088 00
2	Support	AND10134-1201 7075-T6	0.071 4130	0088 00
3	Stiffener	0.063 2024-T4 Clad	0.063 2024-T3 Clad	0088 00
4	Web	0.032 7075-T6 Bare	0.040 7075-T6 Clad	0086 00
	Web	0.050 7075-T6 Bare	0.063 7075-T6 Clad Note C	0086 00
5	Cap	AND10134-1205 7075-T6	0.100 4130	0088 00
6	Stiffener	AND10134-1003 7075-T6	0.071 4130	0088 00
7	Stiffener	0.040 7075-T6 Bare	0.050 7075-T6 Clad	0088 00
	Stiffener	AND10133-0601 7075-T6 Extr	0.050 4130 Note C	0088 00
8	Web	0.032 7075-T6 Bare	0.040 7075-T6 Clad	0088 00

REPAIR - continued

Table 3. Floor Former, Sta 95 - continued

9	Skirt	0.050 7075-T6 Bare	0.050 7075-T6 Clad	0087 00
10	Cap	ALCOA 80759 7075-T6	0.190 4130	0088 00
	Cap	511 Extr	Note C	0088 00
11	Stiffener	AND10133-0601 7075-T6	0.071 4130	0088 00
12	Stiffener	ALCOA 22653 7075-T6	0.080 4130	0088 00
	Stiffener	AND10133-1201 7075-T6 Extr	0.050 4130 Note C	0088 00
13	Stiffener	ALCOA 59675 7075-T6	0.050 4130	0088 00
14	Web	0.050 7075-T6 Bare	0.050 7075-T6 Clad	0086 00
15	Stiffener	0.040 7075-T6 Bare	0.050 7075-T6 Clad	0088 00
16	Web	0.040 7075-T6 Bare	0.050 7075-T6 Clad	0088 00

NOTES

A. All dimensions are in inches.

B. Replace fittings with sections of original material.

C. This part is used on aircraft serial numbers 92-0367 and 92-0368.

REPAIR - continued

NOTE

Refer to Table 4 for index number reference.

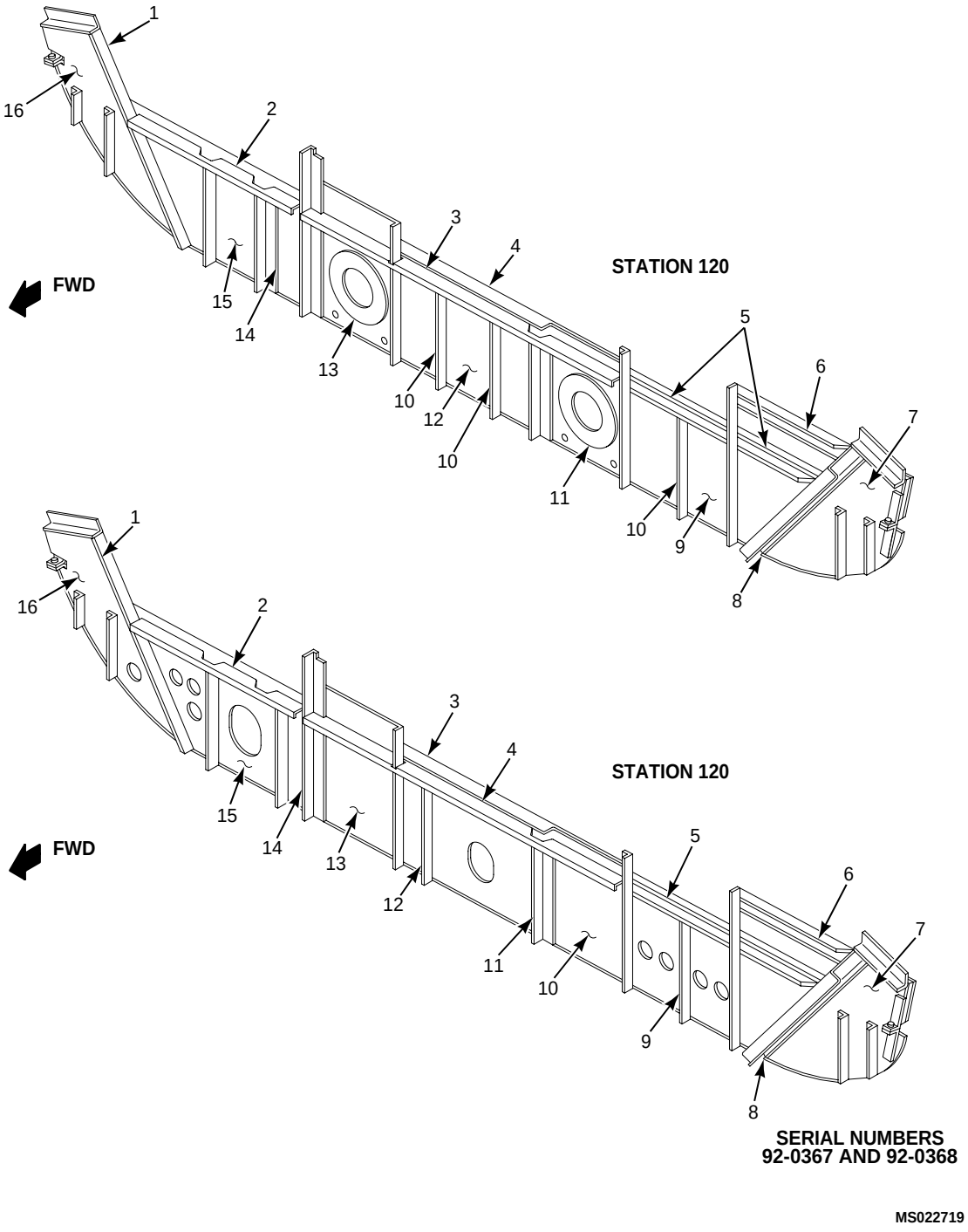


Figure 5. Floor Former, Sta 120

REPAIR - continued

Table 4. Floor Former, Sta 120

INDEX NO.	NOMENCLATURE	ORIGINAL MATERIAL	REPAIR MATERIAL	WORK PACKAGE
1	Cap	0.090 7075-T6 Bare	0.100 7075-T6 Clad	0088 00
2	Channel	0.040 2024-T4 CLAD	0.050 2024-T3 Clad	0088 00
3	Cap	0.040 2024-T4 CLAD	0.050 2024-T3 Clad	0088 00
4	Channel	0.063 2024-T3 CLAD	0.070 2024-T3 Clad	0088 00
5	Angle	0.040 2024-T4 CLAD	0.050 2024-T3 Clad	0088 00
	Support	AND10134-1205 7075-T6511	0.100 7075-T6 Clad Note C	0088 00
6	Channel	0.032 2024-T4 CLAD	0.040 2024-T3 Clad	0087 00
7	Web	0.050 7075-T6 Bare	0.050 7075-T6 Clad	0086 00
8	Cap	ALCOA 2129 7075-T6	0.160 4130	0088 00
	Cap	ALCOA 27076 7075-T6	0.050 4130 NOTE C	0088 00
9	Web	0.025 7075-T6 Bare	0.032 7075-T6 Clad	0086 00
	Web	0.025 7075-T6 Bare	0.050 7075-T6 Clad Note C	0086 00
10	Angle	ALCOA 9802 7075-T6	0.063 4130	0088 00
11	Web	0.040 7075-T6 Bare	0.050 7075-T6 Clad	0086 00
12	Web	0.025 7075-T6 Bare	0.032 7075-T6 Clad	0086 00
13	Web	0.040 7075-T6 Bare	0.050 7075-T6 Clad	0086 00
14	Stiffener	ALCOA 67580 7075-T6	0.063 4130	0088 00
15	Web	0.025 7075-T6 Bare	0.032 7075-T6 Clad	0086 00
16	Web	0.050 7075-T6 Bare	0.050 7075-T6 Clad	0086 00

NOTES

A. All dimensions are in inches.

B. Replace fittings with sections of original material.

C. This part is used on aircraft serial numbers 92-0367 and 92-0368.

REPAIR - continued

NOTE

Refer to Tables 5 and 6 for index number reference.

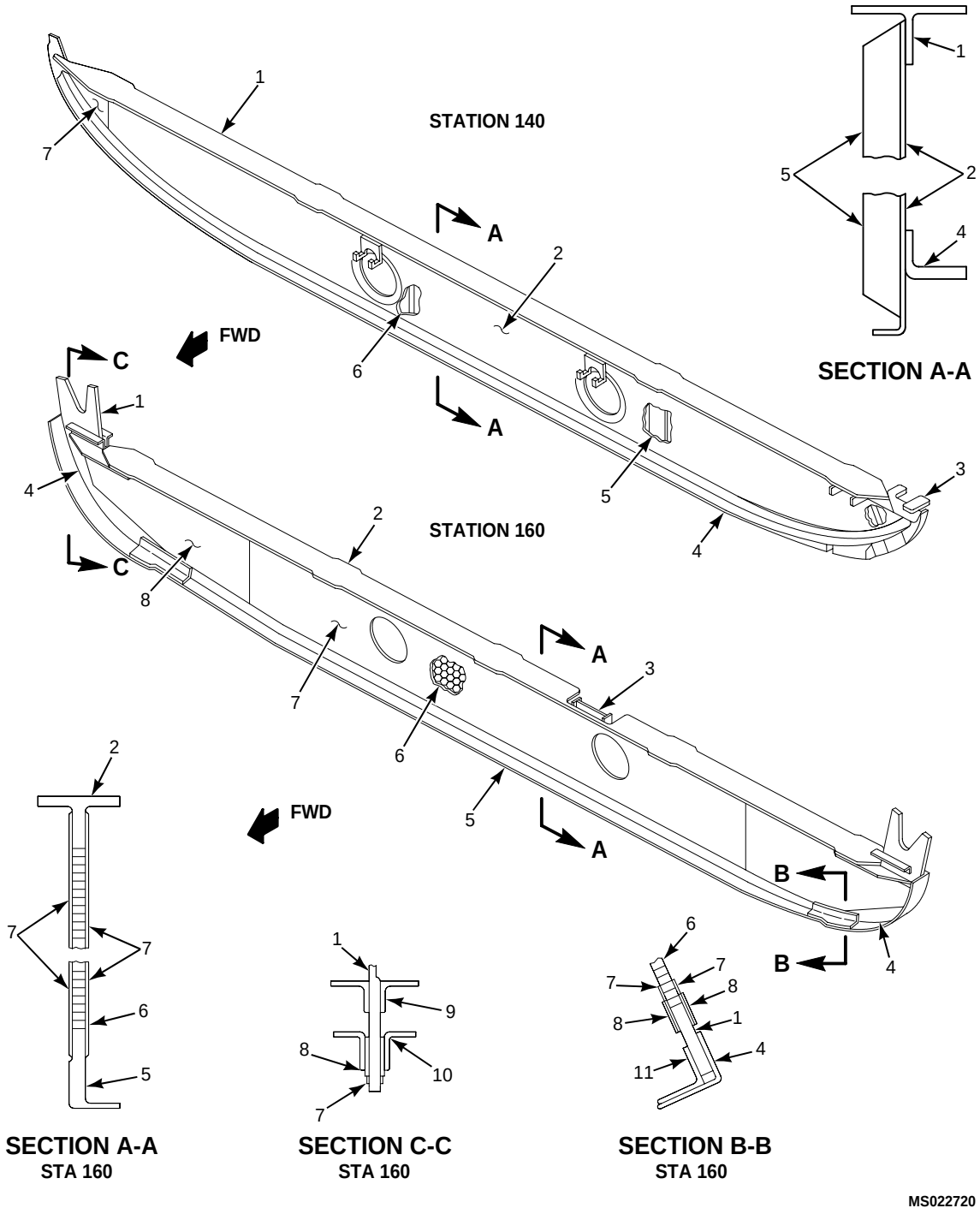


Figure 6. Floor Formers, Sta 140 and Sta 160 (Sheet 1 of 2)

REPAIR - continued

Table 5. Floor Former, Sta 140

INDEX NO.	NOMENCLATURE	ORIGINAL MATERIAL	REPAIR MATERIAL	WORK PACKAGE
1	Cap	ALCOA 12756 7075-T6	0.160 4130	0088 00
2	Web	0.040 7075-T6 Bare	0.050 7075-T6 Clad	0086 00
3	Attachment	Reynolds 7075-T6 6447	Note C	0083 00
4	Cap	PHS90104 2025-T6	NOTE B	0088 00
5	Stiffener	ALCOA 22981 7075-T6	0.063 4130	0088 00
6	Stiffener	ALCOA 12883 7075-T6	0.063 4130	0088 00
7	Plate	0.080 7075-T6 Bare	0.090 7075-T6 Clad	0088 00

NOTES

A. All dimensions are in inches.
B. Replace damaged section with a corresponding section of original material.
C. Replace with new attachment 114S1835-5.
D. Bonded sandwich honeycomb structural assembly
E. Replace with new bracket 114E4054-9.

Table 6. Floor Former, Sta 160

INDEX NO.	NOMENCLATURE	ORIGINAL MATERIAL	REPAIR MATERIAL	WORK PACKAGE
1	Attachment	0.250 7075-T6 Bare	Note D	0083 00
2	Cap	VS90302 7075-T6	Note D	0083 00
3	Bracket	0.025 2024-T4 Clad	Note E	--
4	Cap	ALCOA 7075-T6	0.100 4130	0088 00
5	Cap	VS90526 7057-T6	Note D	0083 00
6	Core	0.255 3.0 3/8 20N-3003	Note D	0083 00
7	Skin	0.020 7075-T6 Bare	Note D	0083 00
8	Doubler	0.016 7075-T6 Bare	0.020 7075-T6 Clad	0083 00
9	Angle	0.080 7075-T6 Bare	0.090 7075-T6 Clad	0088 00
10	Angle	ALCOA 7075-T6	0.050 4130	0088 00
11	Angle	ALCOA 7075-T6	0.087 4130	0088 00

NOTES

A. All dimensions are in inches.
B. Replace damaged section with a corresponding section of original material.
C. Replace with new attachment 114S1835-5.
D. Bonded sandwich honeycomb structural assembly
E. Replace with new bracket 114E4054-9.

REPAIR - continued

NOTE

Refer to Tables 7 and 8 for index number reference.

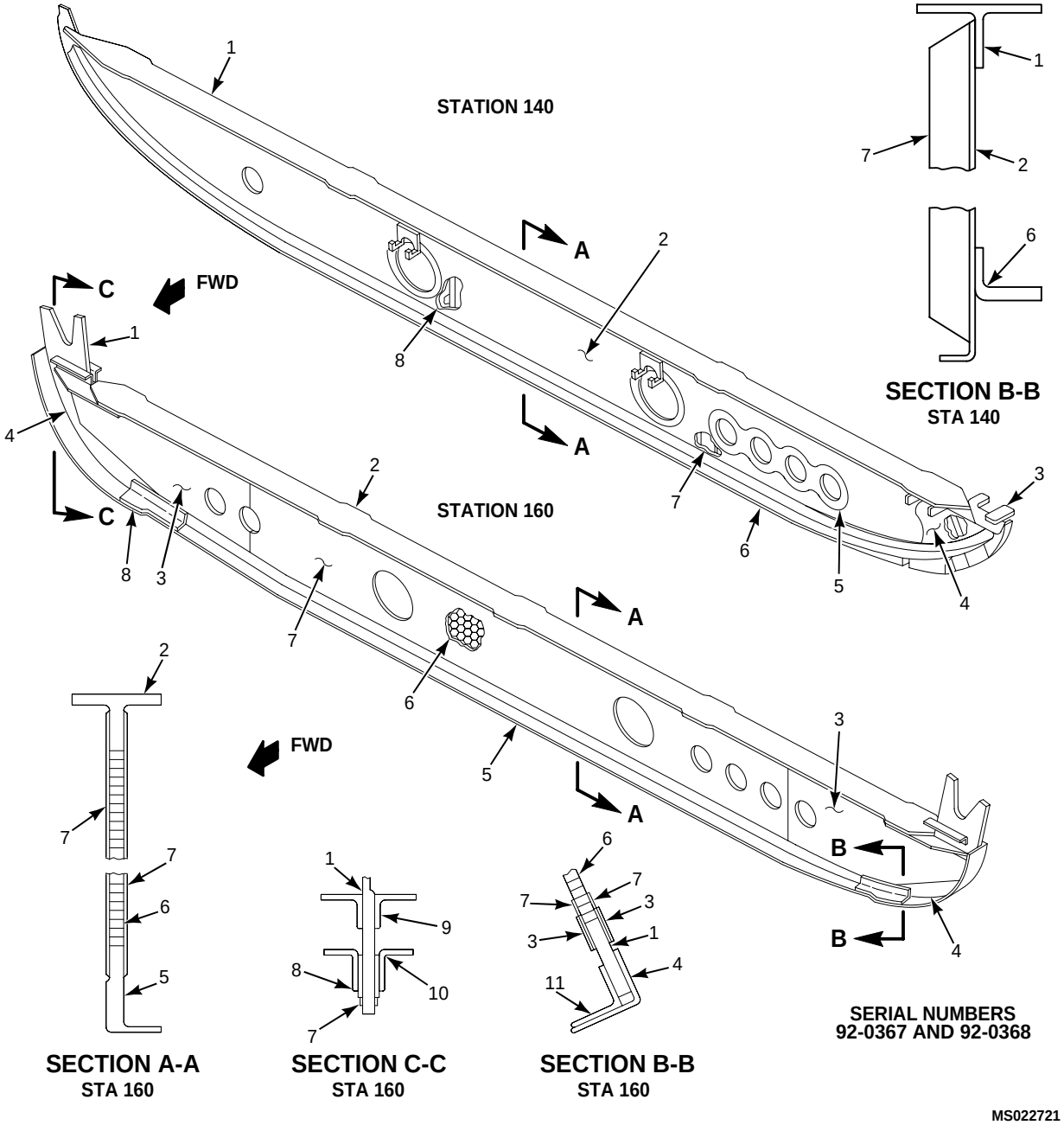


Figure 6. Floor Formers, Sta 140 and Sta 160 (Sheet 2 of 2)
Aircraft Serial No. 92-0367 and 92-03678

REPAIR - continued

Table 7. Floor Former, Sta 140 – Note E

INDEX NO.	NOMENCLATURE	ORIGINAL MATERIAL	REPAIR MATERIAL	WORK PACKAGE
1	Cap	ALCOA 12756 7075-T6	0.160 4130	0088 00
2	Web	0.040 7075-T6 Bare	0.050 7075-T6 Clad	0083 00
3	Attachment	Reynolds 7075-T6 6447	Note C	--
4	Plate	0.080 7075-T6 Bare	0.090 7075-T6 Clad	0086 00
5	Doubler	0.050 7075-T6 Bare	0.050 7075-T6 Clad	0086 00
6	Cap	PHS90104 7075-T6	Note B	0088 00
7	Stiffener	ALCOA 12883 7075-T6	0.063 7075-T6 Clad	0088 00
8	Stiffener	ALCOA 12883 7075-T6	0.063 7075-T6 Clad	0088 00

NOTES

A. All dimensions are in inches.

B. Replace damaged section with same material as original.

C. Replace with new attachment 114S1833-5.

D. Bonded sandwich honeycomb structural assembly

E. Floor beams, sta 140 and sta 160, containing these parts are used on aircraft serial numbers 92-0367 and 92-0368.

Table 8. Floor Former, Sta 160 – Note E

INDEX NO.	NOMENCLATURE	ORIGINAL MATERIAL	REPAIR MATERIAL	WORK PACKAGE
1	Attachment	0.250 7075-T6 Bare	Note D	0083 00
2	Cap	VS90 302 7075-T6	Note D	0083 00
3	Doubler	0.016 7075-T6 Bare	0.020 7075-T6 Clad	0083 00
4	Cap	ALCOA 11638 7075-T6	0.100 4130	0088 00
5	Cap	VS90526 7075-T6	Note D	0083 00
6	Core	0.255 0.005 X AL Honeycomb BMS4-4, 6-20N Form B	Note D	0083 00
7	Skin	0.020 7075-T6 Bare	Note D	0083 00
8	Attachment	0.025 7075-T6 Bare	Note D	0083 00
9	Angle	ALCOA 22477 7075-T6	0.050 7075-T6 Clad	0088 00

REPAIR - continued

Table 8. Floor Former, Sta 160 – Note E - continued

10	Angle	ALCOA 7075-T6	0.071 4130	0088 00
11	Angle	0.080 7075-T6 Bare	0.090 7075-T6 Clad	0088 00

NOTES

A. All dimensions are in inches.
B. Replace damaged section with same material as original.
C. Replace with new attachment 114S1833-5.
D. Bonded sandwich honeycomb structural assembly
E. Floor beams, sta 140 and sta 160, containing these parts are used on aircraft serial numbers 92-0367 and 92-0368.

RIGHT LOWER NOSE TUB LONGERON REPAIR – Refer to Figure 7

1. Remove lower cabin door, 114S1620-57, including two hinge and stop fittings, 114S1865-1.

2. Remove forward RH floor panel assembly, 114S2554-7, -27, or -32.

3. Remove two forward lower door coamings including brackets (aluminum coaming 114S1623-13 and fiberglass coaming 114S1623-19).

4. Remove doorsill assembly, 114S1622-3, at bottom of door opening.

5. Remove two bolts NAS264-15, washers MS20002C4 and MS20000-4, and nuts EB048, used to join upper and lower tension fittings at sta 120, WL minus 30, and BL 48 RH.

6. Remove tiedown ring and adapter assembly, 114S2604-2, and tiedown receptacle, 114S2711-1, at sta 124 and BL 44 RH.

7. If required, due to tool limitation, additional access to work area may be obtained by unfastening and peeling back the skin at laps along sta 120 and WL minus 30.

8. Inspect all adjacent areas, to the cracked longeron, for damage.

9. Repair horizontal flange of longeron as follows:
   a. Unfasten and raise floor doubler, 114S1553-37 or -43, from tie-down beam. Begin at sta 120 and work aft until doubler can be raised enough to provide access to floor plate, 114S1553-27.
   b. Remove floor plate from horizontal flange of longeron. Remove rivets beginning at sta 120 and working aft. Remove a minimum of 16 rivets.

CAUTION

Do not damage supporting structure beneath floor plate.

   c. Cut floor plate at approximately sta 126 between outboard edge and BL 46 RH.
   d. Remove cut portion of floor plate from sta 119 aft to the cut.
   e. Make a repair angle from steel sheet (Item 168, WP 0157 00) or steel sheet (Item 169, WP 0157 00).

RIGHT LOWER NOSE TUB LONGERON REPAIR – Refer to Figure 7 - continued

NOTE

Finished angle size may vary because of location. Use stock size 18.4 inches long and 4.7 inches wide. Shape repair angle same as removed section of floor plate except in areas shown.

f. Fit repair angle to longeron. Locate 16 holes aft of crack and 8 holes forward. Locate 4 holes for rivets forward of sta 120. Locate three holes for rivets where repair angle overlaps floor plate. Locate tension fittings hardware bolts holes.

g. Drill and deburr holes as required.

h. Apply dissimilar metal protection to the repair angle, refer to WP 0078 00.

i. Apply fuselage sealing, refer to WP 0080 00.

j. Position the repair angle on the longeron and install the rivets.

WARNING

EPOXY PRIMER

k. Install rivets wet, use epoxy primer (Item 140, WP 0157 00).

l. Install two bolts NAS624-15, washers MS20002C4 and MS20002-4, and nuts EB048, in upper and lower tension fittings. Torque nuts to 90 to 100 inch-pounds**.**

m. Position floor doubler, 114S1553-37 or -43, and tiedown receptacle, 114S2711-1. Apply dissimilar metal protection to the repair angle, refer to WP 0078 00.

n. Install rivets, MS2047B6 and USAF461-15 and -6, in floor doubler and receptacle.

10. Repair vertical flange on longeron as follows:

a. Temporarily install outside skin in its original position.

b. Temporarily install aluminum door coaming, 114S1623-13.

c. Make a repair strip from steel sheet (Item 168, WP 0157 00) or steel sheet (Item 169, WP 0157 00).

NOTE

The finished dimensions of strap vary due to exact location of crack.

d. Drill a minimum of 27 holes in strap for installation of 11 rivets, BACR15DN5AD, aft of crack, 12 rivets, BACR15DN5AD, forward of crack, and 4 rivets, USAF461-5, at sta 120. Pick up rivet hole pattern from existing holes in skin.

e. Fit strap to skin. Fill gaps under strap at skin laps using 0.020-inch thick shim stock.

f. Provide dissimilar metal protection for strap and shims, refer to WP 0078 00..

g. Apply fuselage sealing, refer to WP 0080 00.

h. Install strap, shims, and rivets.

RIGHT LOWER NOSE TUB LONGERON REPAIR – Refer to Figure 7 - continued

WARNING

EPOXY PRIMER

NOTE

Install rivets wet with epoxy primer (Item 140, WP 0157 00).

i. Install rivets, as required, in skin laps and door coaming. Maintain original rivet pattern.

NOTE

Maintain fuselage sealing, refer to WP 0080 00. Install attaching screws wet with epoxy primer (Item 140, WP 0157 00).

j. Install doorsill assembly, 114S1622-3, and two forward lower door coamings (aluminum 114S1623-13 and fiberglass 114S1623-19). Six additional holes will be required in repair angle to install door coaming brackets in their original positions. Refer to WP 0080 00 for sealing requirements.

k. Install tie-down rings and adapter assembly, 114S2406-2.

l. Install forward RH floor panel assembly, 114S2554-7, -27 or -32.

m. Install lower cabin door, 114S1620-57, and two hinge and stop fittings, 114S1865-1 and -3.

n. Refinish repaired areas, refer to WP 0078 00.

RIGHT LOWER NOSE TUB LONGERON REPAIR – Refer to Figure 7 - continued

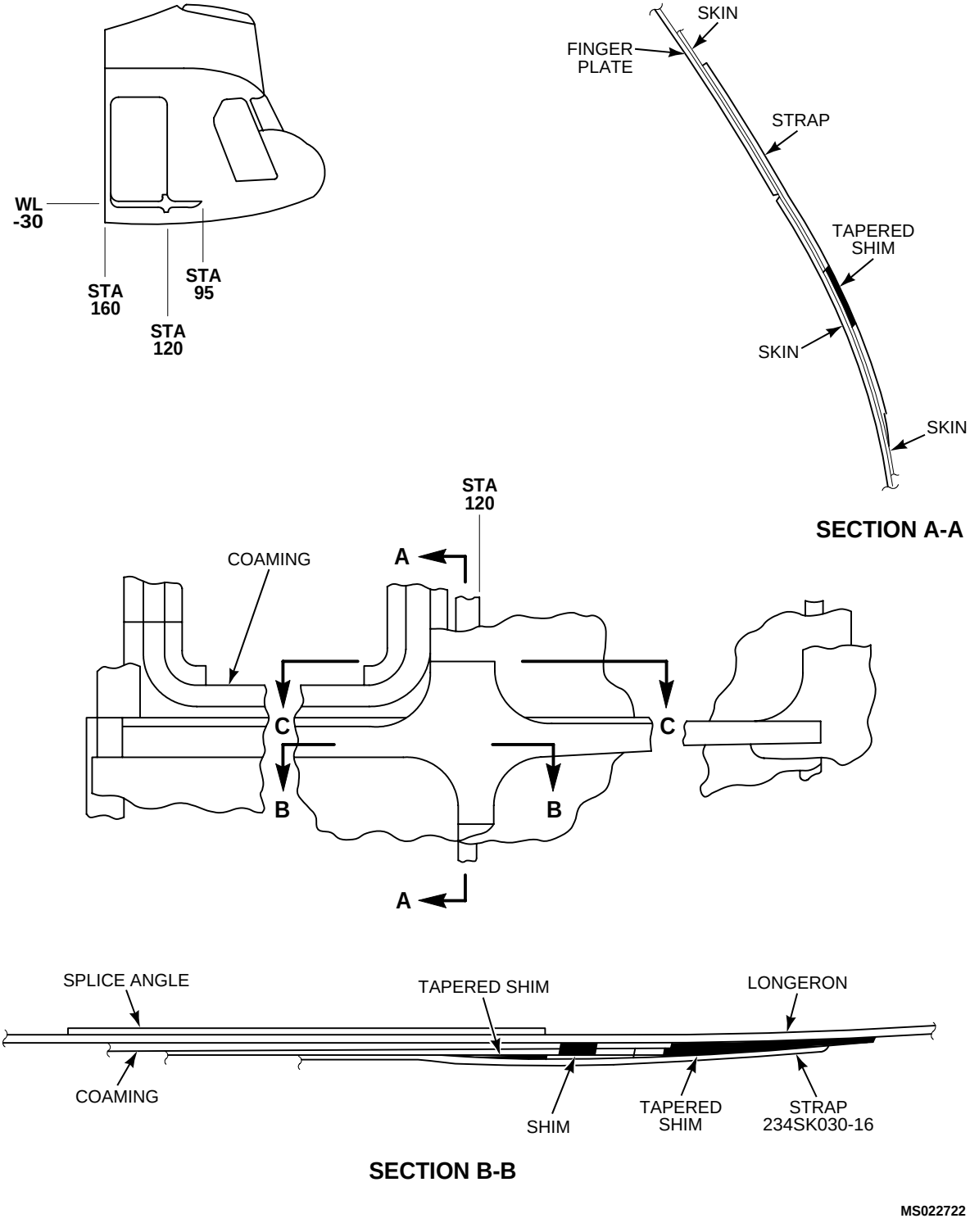


Figure 7. Right Lower Nose Tub Longeron (Sheet 1 of 2)

RIGHT LOWER NOSE TUB LONGERON REPAIR – Refer to Figure 7 - continued

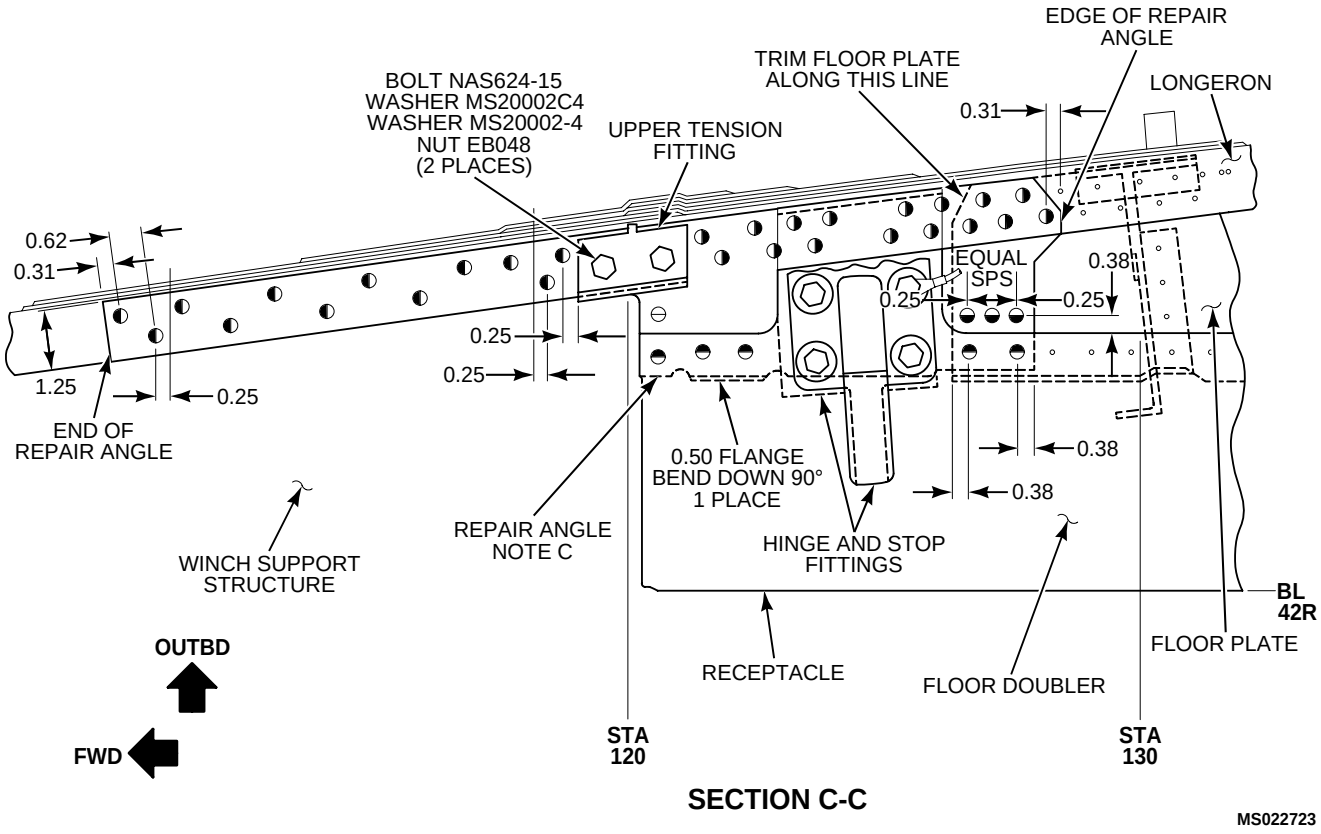


Figure 7. Right Lower Nose Tub Longeron (Sheet 2 of 2)

END OF WORK PACKAGE

DEPOT MAINTENANCE WORK REQUIREMENT
CH-47D HELICOPTER
COCKPIT FLOOR STRUCTURE REPAIRS

INITIAL SETUP

Test Equipment:
As Required

Tools and Special Tools:
As Required

Material/Parts:
Paint, Non-skid (Item 125, WP 0157 00)

Personnel Required:
As Required

References:
TM 1-1500-204-23 Series
TM 55-1520-240-23 Series
WP 0083 00
WP 0086 00
WP 0087 00
WP 0088 00
WP 0157 00

Equipment Conditions:
As Required

Special Environmental Condition:
As Required

SCOPE

This work package covers repair of the cockpit floor structural components. Refer to Figure 1.

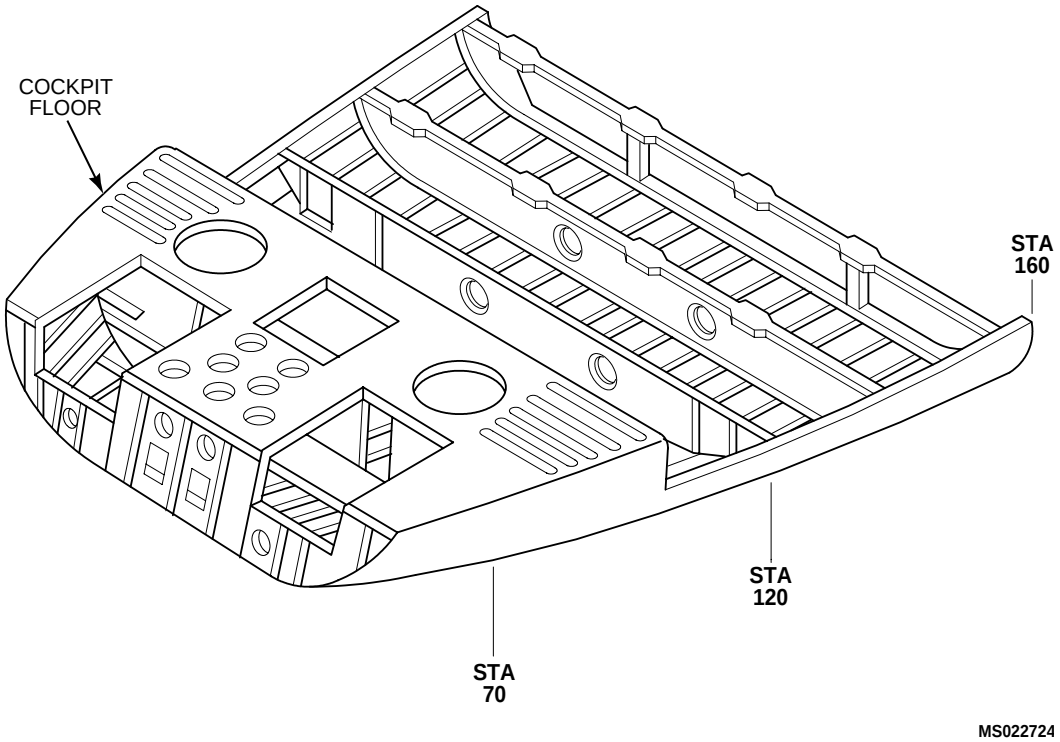


Figure 1. Cockpit Floor

REPAIR

NOTE

Refer to Table 1 for index number reference.

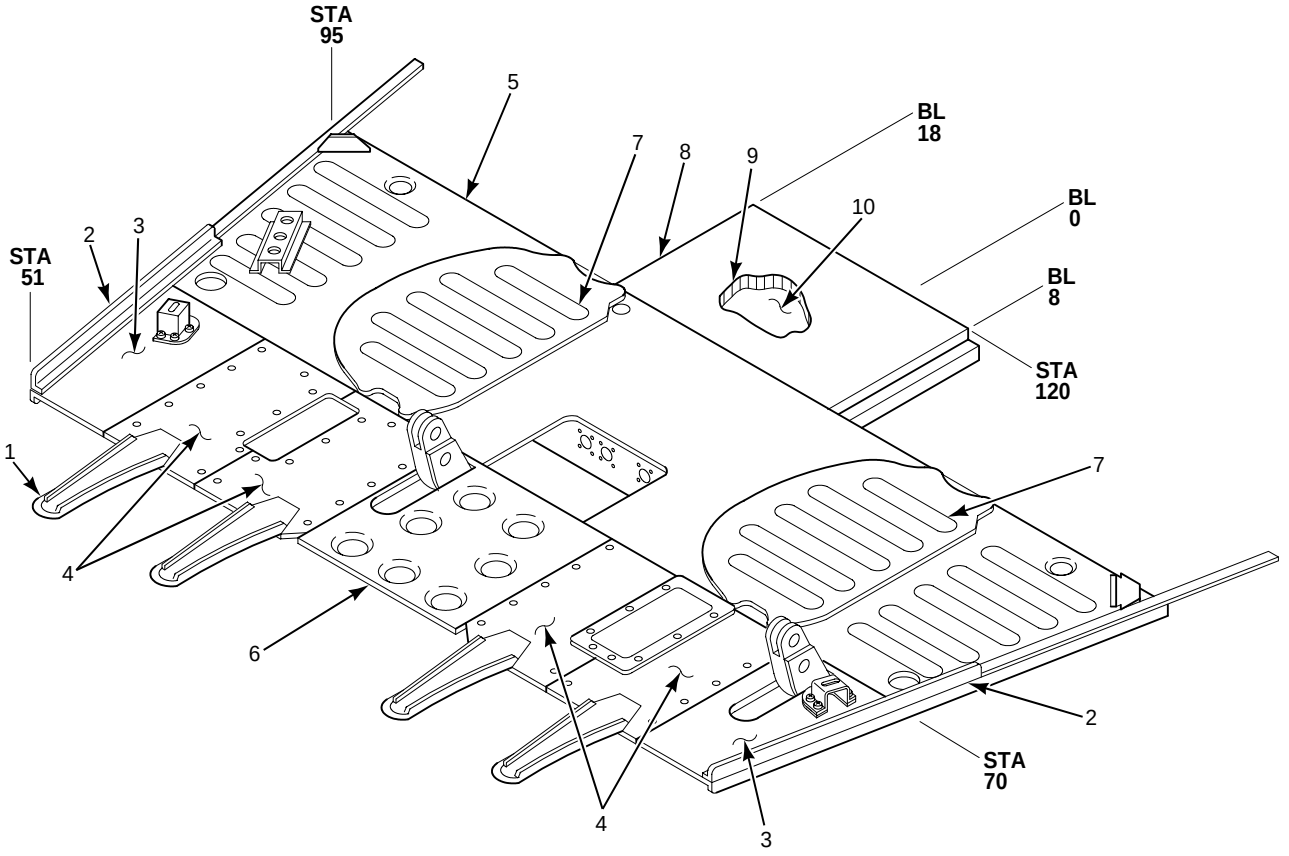


Figure 2. Cockpit Floor, Top View

Table 1. Cockpit Floor, Top View

INDEX NO.	NOMENCLATURE	ORIGINAL MATERIAL	REPAIR MATERIAL	WORK PACKAGE
1	Heel Slide	0.025 17-7 PH Cres	Note B	--
2	Angle	0.050-7075-T6 Bare	0.063 7075-T6 Clad	0088 00
3	Web	0.040 7075-T6 Bare	0.040 7075-T6 Clad	0086 00
4	Cover	0.050 AZ31B-H24 Mag	0.050 AZ31B-H24Mag	0086 00
5	Web	0.040 2024-T3 Clad	0.050 2024-T3 Clad	0086 00
6	Web	0.032 7075-T6 Bare	0.040 7075-T6 Clad	0086 00
7	Door	0.032 2024-T3 Clad	0.040 2024-T3 Clad	0086 00
8	Top Skin	0.020 2024-T4 Clad (Rigidized)	Notes C & D	0083 00

REPAIR – continued

Table 1. Cockpit Floor, Top View - continued

9	Core	304-1/4-15N-3003	Note C	0083 00
10	Bottom Skin	0.016 7075-T6 Clad	Note C	0083 00

NOTES

A. All dimensions are in inches.
B. Replace with new heel slide, 114S1551-171.
C. Refer to WP 0083 00 for typical sandwich honeycomb structure repair.
D. Apply non-skid paint (Item 125, WP 0157 00) if repairs are made within walkway or if existing coating is worn.

NOTE

Refer to Table 2 for index number reference.

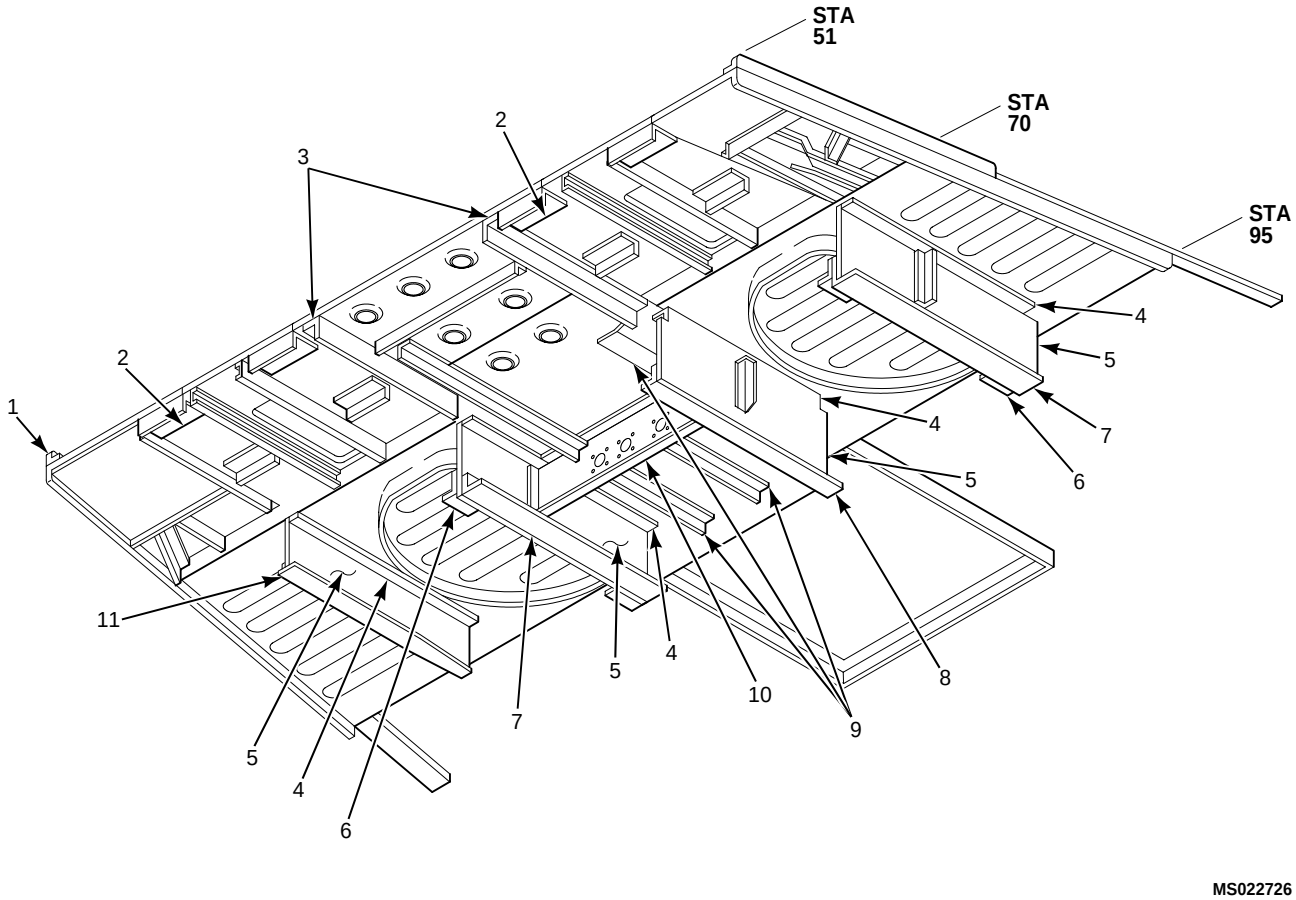


Figure 3. Cockpit Floor, Bottom View

REPAIR – continued

Table 2. Cockpit Floor, Bottom View

INDEX NO.	NOMENCLATURE	ORIGINAL MATERIAL	REPAIR MATERIAL	WORK PACKAGE
1	Cap	0.063 7075-T6 Bare	0.071 7075-T6 Clad	0088 00
2	Cover Rest	0.050 2024-T4 Clad	0.063 2024-T3 Clad	0086 00
3	Channel	0.050 7075-T6 Bare	0.063 7075-T6 Clad	0088 00
4	Cap	AND10136-1603 7075-T6	0.100 4130	0088 00
5	Web	0.040 2024-T4 Clad	0.050 2024-T3 CLad	0086 00
6	Angle	AND10133-0301 7075-T6	0.071 4130	0088 00
7	Angle	BAC1530-2731 7075-T6	0.063 4130	0088 00
8	Cap	AND10133-0601 7075-T6	0.071 4130	0088 00
9	Stiffener	ALCOA 22885 7075-T6	0.063 4130	0087 00
10	Channel	0.040 2024-T3 Clad	0.050 2024-T3 Clad	0088 00
11	Cap	ALCOA 33495 7075-T6	0.071 4130	0088 00

NOTE

All dimensions are in inches.

END OF WORK PACKAGE

DEPOT MAINTENANCE WORK REQUIREMENT
CH-47D HELICOPTER
NOSE FRAMES REPAIRS

INITIAL SETUP

Test Equipment:
As Required

Tools and Special Tools:
As Required

Material/Parts:
Adhesive (Item 32, WP 0157 00)
Cloth, Glass (Item 78, WP 0157 00)
Cellophane Sheet (Item 55, WP 0157 00)
Gloves (Item 108, WP 0157 00)

Personnel Required:
As Required

References:
TM 1-1500-204-23 Series
TM 55-1520-240-23 Series
WP 0081 00
WP 0086 00
WP 0087 00
WP 0088 00
WP 0101 00
WP 0157 00

Equipment Conditions:
As Required

Special Environmental Condition:
As Required

SCOPE

This work package covers repair procedures for the following nose section components. Refer to Figure 1.

1. Former, sta 160
2. Former, sta 150
3. Former, sta 140
4. Former, sta 130
5. Former, sta 120
6. Side Former, sta 110 LH
7. Bulkhead, sta 95
8. Trough Assembly
9. Former, sta 100
10. Cabin Door Coaming

REPAIR

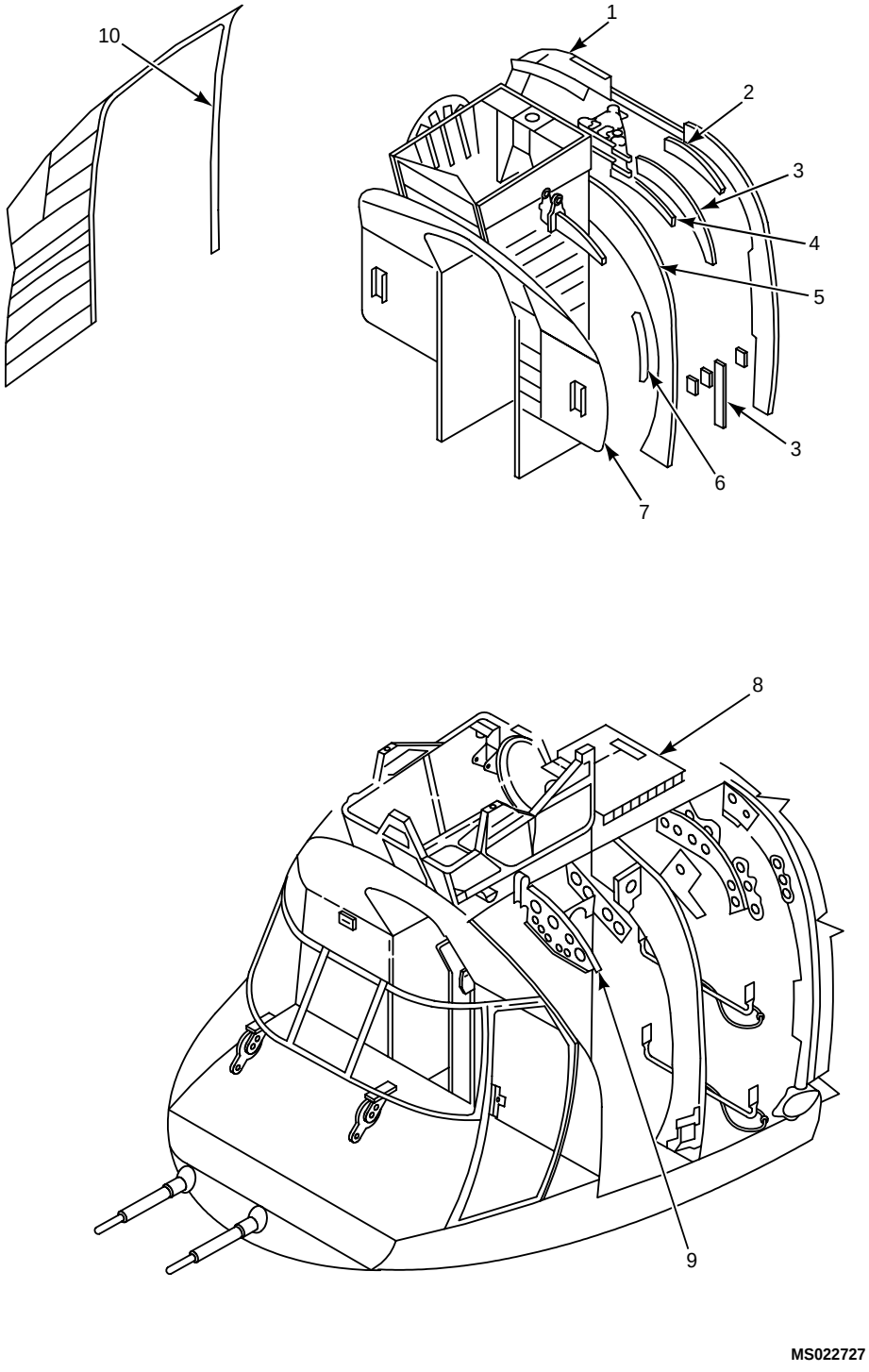


Figure 1. Nose Section Formers

REPAIR – continued

NOTE

Refer to Table 1 for index number reference.

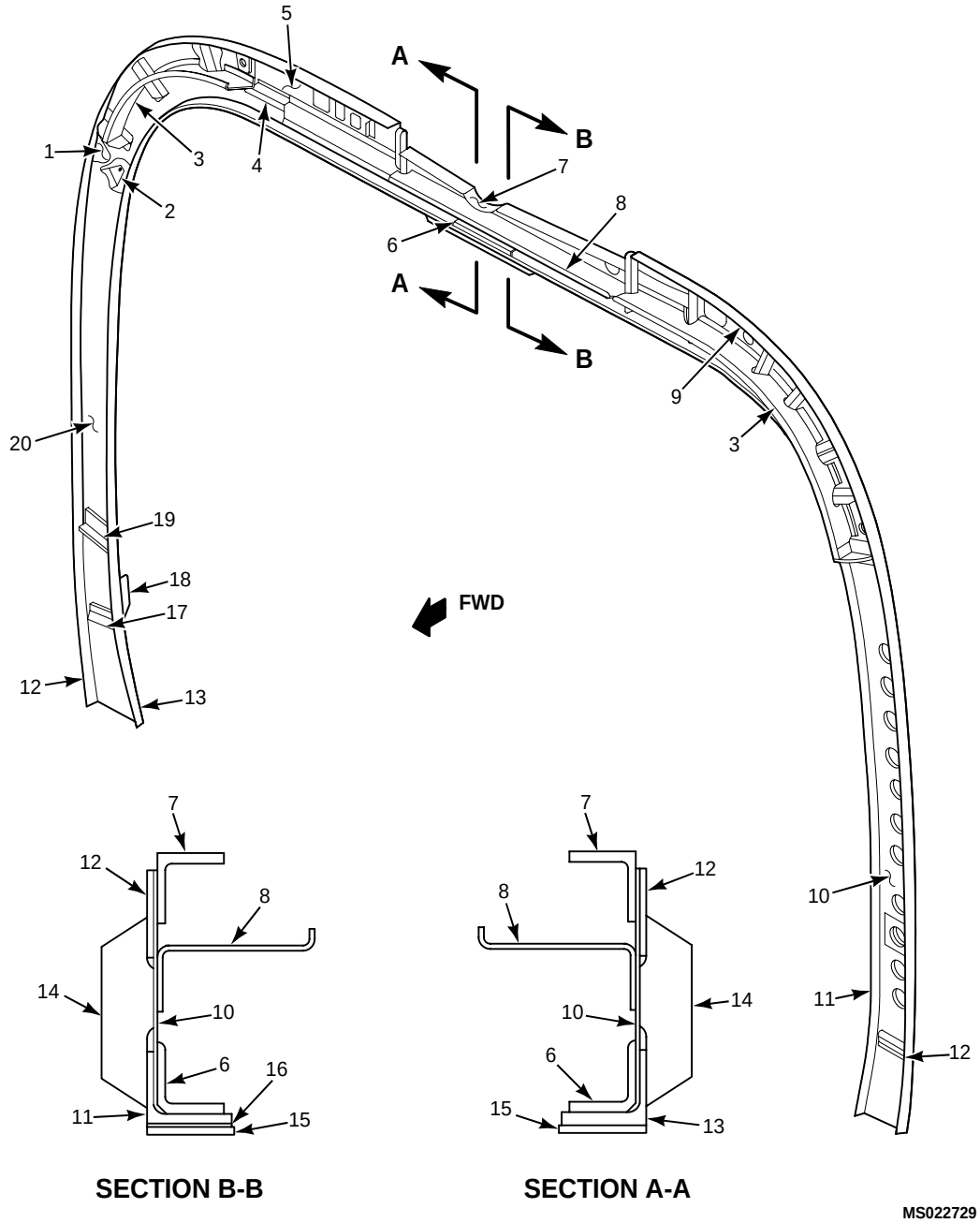


Figure 2. Former, Sta 160

REPAIR– continued

Table 1. Former, Sta 160

INDEX NO.	NOMENCLATURE	ORIGINAL MATERIAL	REPAIR MMATERIAL	WORK PACKAGE
1	Doubler	0.063 7075-T6 Bare	0.080 7075-T6 Clad	0086 00
2	Clip	0.050 2024-T4 Clad	0.063 2024-T3 Clad	0087 00
3	Channel	0.032 2024-T4 Clad	0.040 2024-T3 Clad	0087 00
4	Angle	AND10134-1006 7075-T6	0.063 4130	NOTE D
5	Doubler	0.063 7075-T6 Bare	0.063 7075-T6 Clad	NOTE D
6	Splice Angle	0.071 301 ½ Cres	Note C	0088 00
7	Attachment	7075-T6 Forging	Note B	0088 00
8	Zee	0.032 2024-T4 Clad	0.040 2024-T3 Clad	0088 00
9	Doubler	0.050 7075-T6 Bare	0.063 7075-T6 Clad	NOTE D
10	Web	0.040 7075-T6 Bare	0.050 7075-T6 Clad	0086 00
11	Cap	ALCOA 14202 7075-T6	0.160 4130	0088 00
12	Cap	ALCOA 16871 7075-T6	0.100 4130	0088 00
13	Cap	ALCOA 60278 7075-T6	0.200 4130	0088 00
14	Stiffener	ALCOA 31543 7075-T6	0.125 4130	0088 00
15	Splice Plate	0.063 301 ½ H Cres	Note C	0090 00
16	Filler	0.040 301 ½ H Cres	Note C	0090 00
17	Stiffener	ALCOA 27695 7075-T6	0.036 4130	0088 00
18	Angle	ALCOA 45827 7075-T6	0.080 4130	0088 00
19	Angle	0.040 2024-T4 Clad	0.050 2024-T3 Clad	0087 00
20	Web	0.063 7075-T6 Bare	0.063 7075-T6 Clad	0086 00

NOTES

A. All dimensions are in inches.

B. Damage other than minor, replace with new attachment, 114S2867-1.

C. Damage other than minor, replace with new part, same as original material.

D. This is part used on aircraft serial numbers 92-0367 and 92-0368.

REPAIR – continued

NOTE

Refer to Table 2 for index number reference.

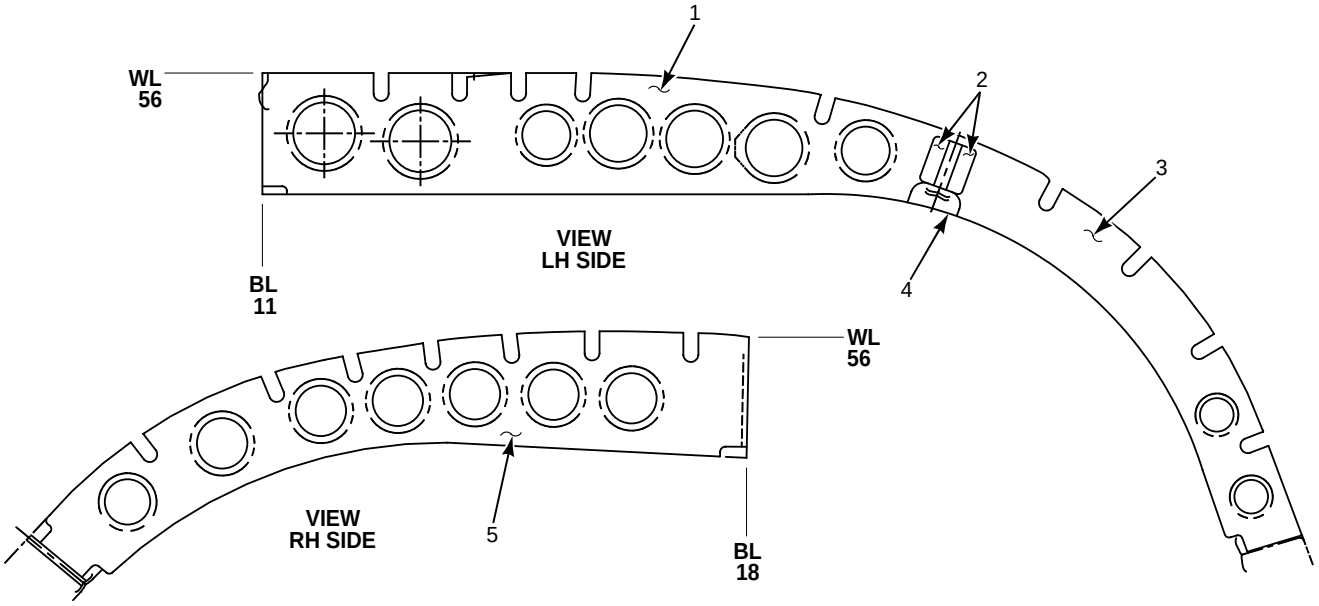


Figure 3. Former, Sta 150

Table 2. Former, Sta 150

INDEX NO.	NOMENCLATURE	ORIGINAL MATERIAL	REPAIR MATERIAL	WORK PACKAGE
1	Former	0.040 7075-T6 Bare	0.050 7075-T6 Clad	0087 00
2	Bracket	AND10133-060 7075-T6	AND10133-060 7075-T6	Note B
3	Former	0.040 7075-T6 Bare	0.040 7075-T6 Clad	0087 00
4	Strap	0.040 7075-T6 Bare	0.040 7075-T6 Clad	Note B
5	Former	0.040 7075-T6 Bare	0.050 7075-T6 Clad	0087 00

NOTES

A. All dimensions are in inches.

B. Replace if repair is not practical. Manufacture using original material listed in Table 2.

REPAIR - continued

NOTE

Refer to Table 3 for index number reference.

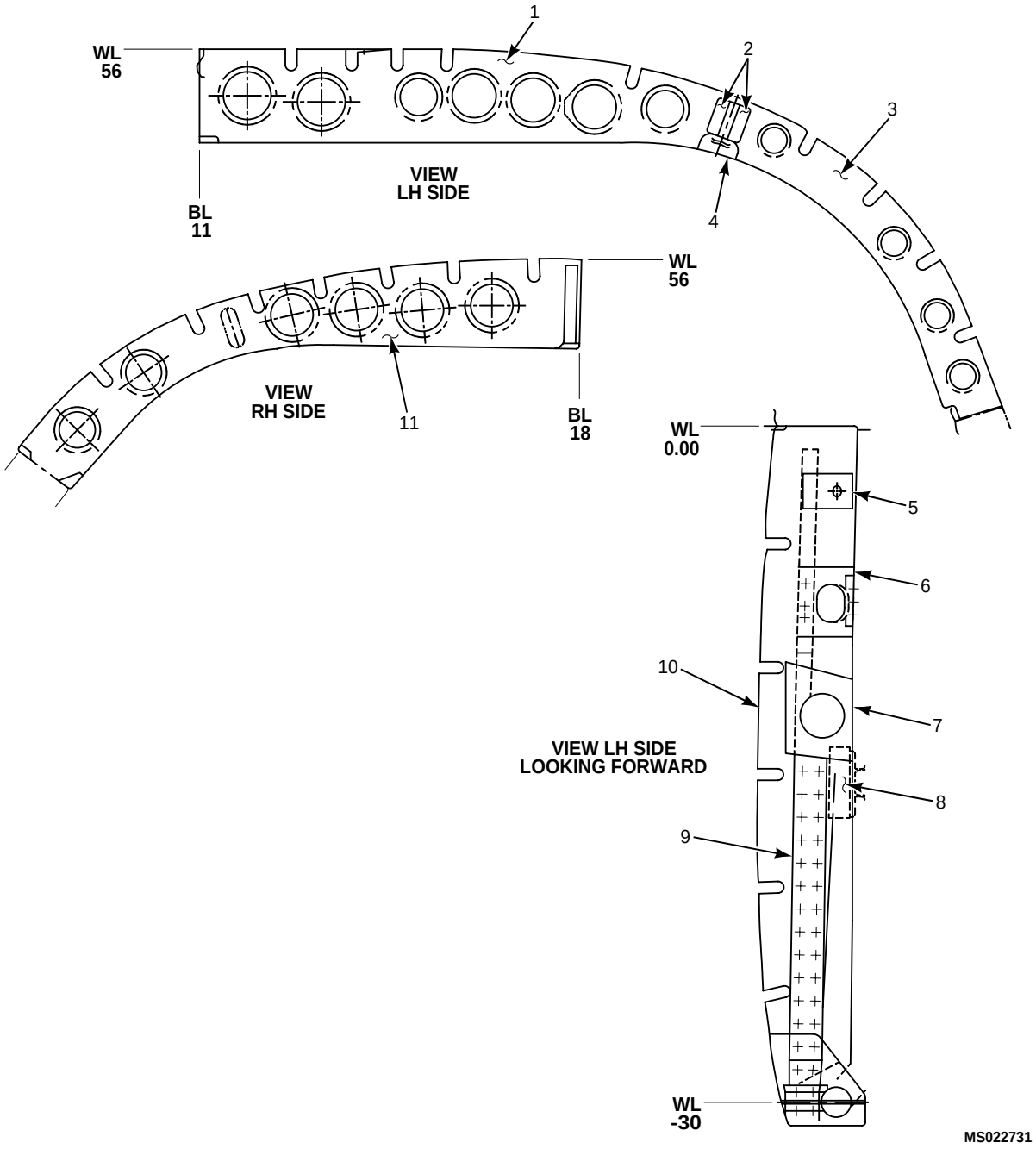


Figure 4. Former, Sta 140

REPAIR – continued

Table 3. Former, Sta 140

INDEX NO.	NOMENCLATURE	ORIGINAL MATERIAL	REPAIR MATERIAL	WORK PACKAGE
1	Former	0.040 7075-T6 Bare	0.050 7075-T6 Clad	0087 00
2	Bracket	AND10133-060 7075-T6	AND10133-060 7075-T6	Note B
3	Former	0.040 7075-T6 Bare	0.050 7075-T6 Clad	0087 00
4	Strap	0.040 7075-T6 Bare	0.040 7075-T6 Clad	Note B
5	Doubler	0.040 7075-T6 Bare	0.040 7075-T6 Bare	Note B
6	Doubler	0.040 7075-T6 Bare	0.040 7075-T6 Bare	Note B
7	Doubler	0.040 7075-T6 Bare	0.040 7075-T6 Bare	Note B
8	Seat Rail Support	--	--	Note C
9	Channel	ALCOA 59256 7075-T6	ALCOA 59256 7075-T6	Note D
10	Former	0.040 7075-T6 Bare	0.050 7075-T6 Clad	0087 00
11	Former	0.040 7075-T6 Bare	0.050 7075-T6 Clad	0087 00

NOTES

A. All dimensions are in inches.

B. Replace if repair is not practical. Manufacture using original material listed in Table 3.

C. Refer to Work Package 0088 00 for repair procedures.

D. Damage other than minor, repair with original material.

REPAIR – continued

NOTE

Refer to Table 4 for index number reference.

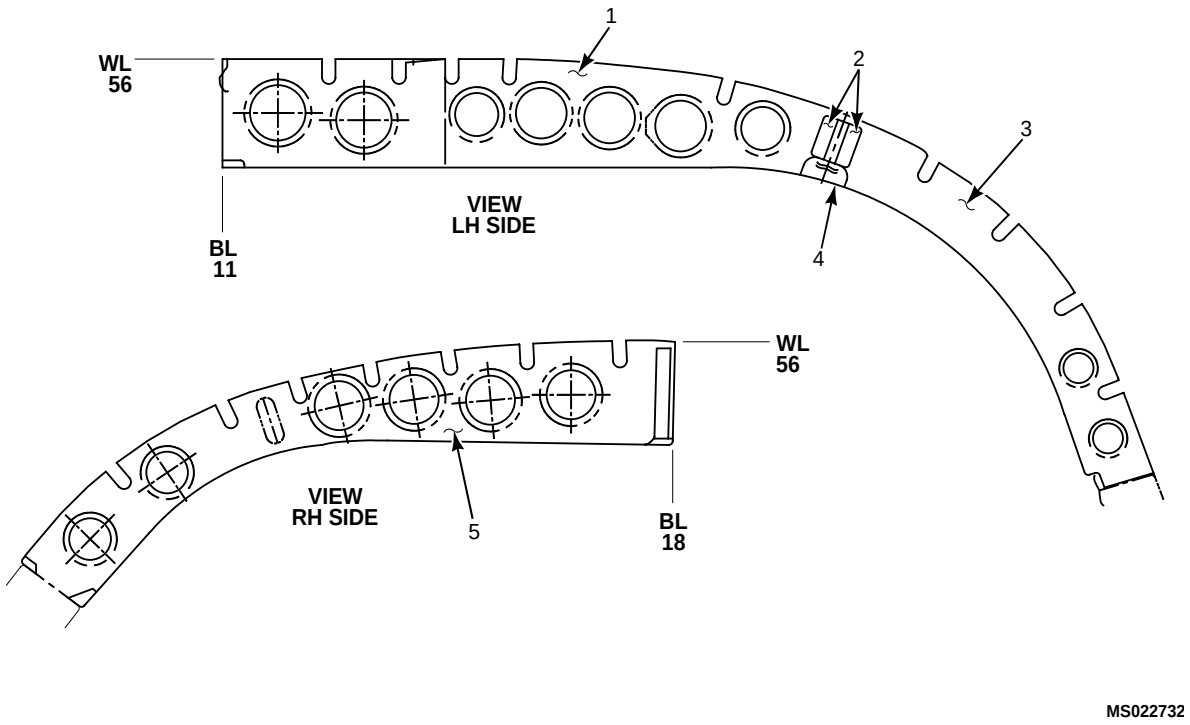


Figure 5. Former, Sta 130

Table 4. Former, Sta 130

INDEX NO.	NOMENCLATURE	ORIGINAL MATERIAL	REPAIR MATERIAL	WORK PACKAGE
1	Former	0.040 7075-T6 Bare	0.050 7075-T6 Clad	0087 00
2	Bracket	AND10133-060 7075-T6	AND10133-060 7075-T6	Note B
3	Former	0.040 7075-T6 Bare	0.040 7075-T6 Clad	0087 00
4	Strap	0.040 7075-T6 Bare	0.040 7075-T6 Clad	Note B
5	Former	0.040 7075-T6 Bare	0.050 7075-T6 Clad	0087 00

NOTES

A. All dimensions are in inches.

B. Replace if repair is not practical. Manufacture using original material listed in Table 4.

REPAIR – continued

NOTE

Refer to Table 5 for index number reference.

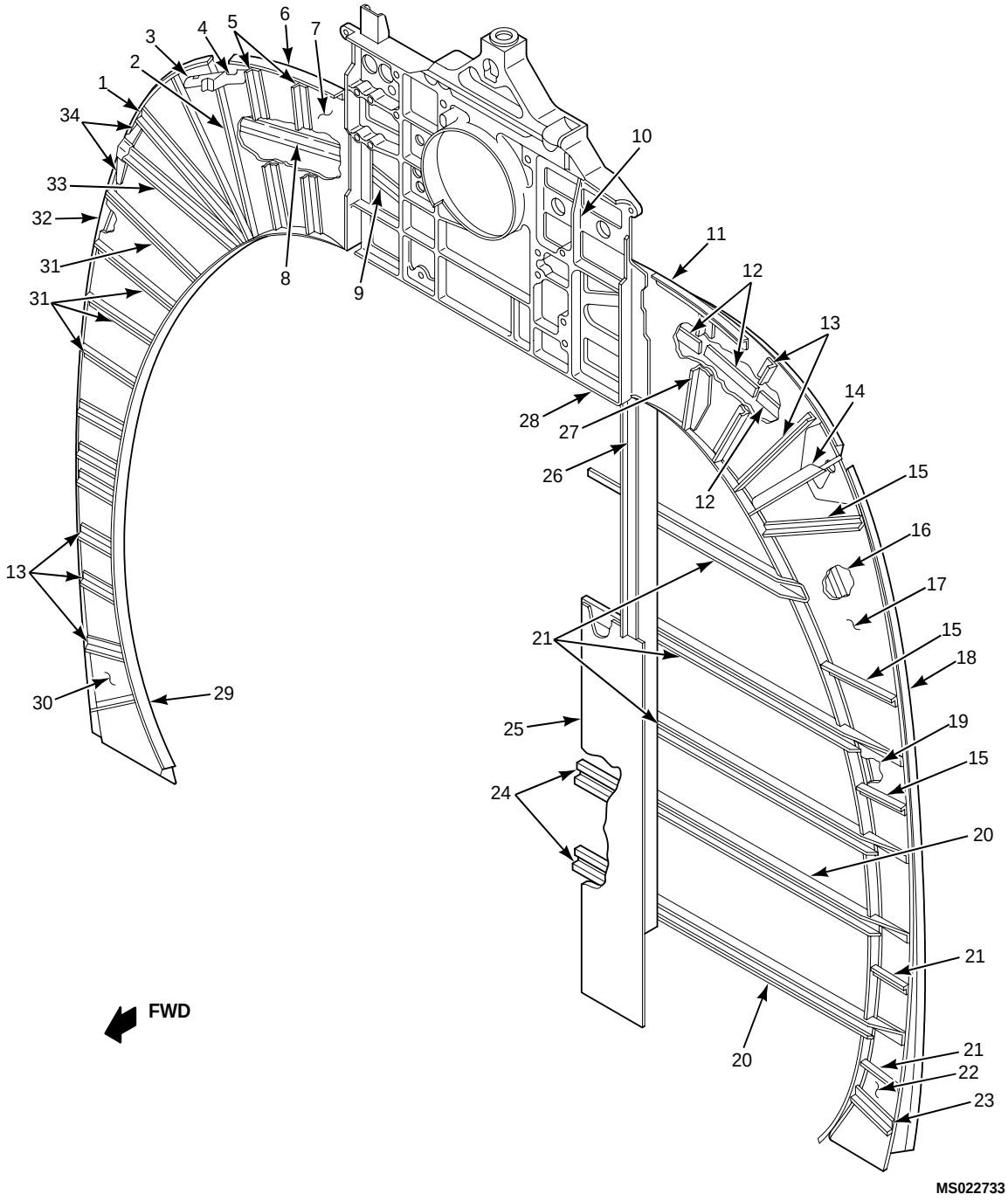


Figure 6. Former, Sta 120

REPAIR – continued

Table 5. Former, Sta 120

INDEX NO.	NOMENCLATURE	ORIGINAL MATERIAL	REPAIR MATERIAL	WORK PACKAGE
1	Stiffener	AND10133-0601 7075-T6	0.063 4130	0088 00
2	Stiffener	ALCOA 00820 7075-T6511	0.080 7075-T6 Clad	0088 00
3	Fitting	2014-T6	Note F	--
4	Fitting	2014-T6	Note E	--
5	Stiffener	ALCOA 11820 7075-T6511	0.080 7075-T6 Clad	0088 00
6	Cap	0.050 7075-T6 Bare	0.050 7075-T6 Clad	0088 00
7	Web	0.063 7075-T6 Bare	0.063 7075-T6 Clad	0086 00
8	Zee	0.032 2024-T3	0.032 2024-T3	0088 00
9	Zee	0.032 2024-T3	0.032 2024-T3	0088 00
10	Fitting	7075-T73652	Note B	--
11	Cap	7075-T73652	Note C	--
12	Channel	0.032 2024-T3	0.032 2024-T3	0087 00
13	Stiffener	ALCOA 00820 7075-T6511	0.080 7075-T6511	0088 00
14	Stiffener	AND10134-1003 7075-T6511	0.062 7075-T6511	0088 00
15	Stiffener	ALCOA 22477 7075-T6	0.050 4130	0088 00
16	HAT	0.040 2024-T4 Clad	0.050 2024-T3 Clad	0088 00
17	Web	0.025 7075-T6 Bare	0.040 7075-T6 Clad	0088 00
18	Cap	AND10134 1401 7075-T6	0.100 4130	0088 00
19	Cap	ALCOA 22892 7075-T6	0.100 4130	0088 00
20	Channel	0.040 2024-T4 Clad	0.050 2024-T3 Clad	0087 00
21	Stiffener	ALCOA 67580 7075-T6	0.036 4130	0088 00
22	Web	0.032 7075-T6 Bare	0.050 7075-T6 Clad	0086 00
23	TEE	AND10136-1501 7075-T6	0.080 4130	0088 00
24	HAT	0.063 2024-T4 Clad	0.063 2024-T3 Clad	0088 00
25	Web	0.025 2024-T4 Clad	0.040 2024-T3 Clad	0086 00
26	Bracket	0.032 2024-T4 Clad	0.040 2024-T3 Clad	0088 00
27	Stiffener	AND10134 7075-T6511	0.125 7075-T6511	0088 00
28	Cap	ALCOA 22892 7075-T6	0.095 7075-T6	0088 00
29	Cap	ALCOA 12756 7075-T6	0.160 4130	0088 00
30	Web	0.040 7075-T6 Bare	0.063 7075-T6 Clad	0086 00
31	Stiffener	ALCOA 12883 7075-T6	0.063 4130	0088 00
32	Cap	AND01134-1403 7075-T6	0.100 4130	0088 00
33	Stiffener	ALCOA 60246 7075-T6	0.071 4130	0088 00
34	Fitting	2014-T6	Note D	--

NOTES

A. All dimensions are in inches.
B. Replace with new fitting, 145S1806-1.
C. Replace with new fitting, 145S1842-1.
D. Replace with new fitting, 114S1824-1 upper, 114S1824-3 lower.
E. Replace with new fitting, 114S1832-1 fwd, 114S1151-72 aft.
F. Replace with new fitting, 114S1832-3 fwd, 114S1831-3 aft.

REPAIR – continued

NOTE

Refer to Table 6 for index number reference.

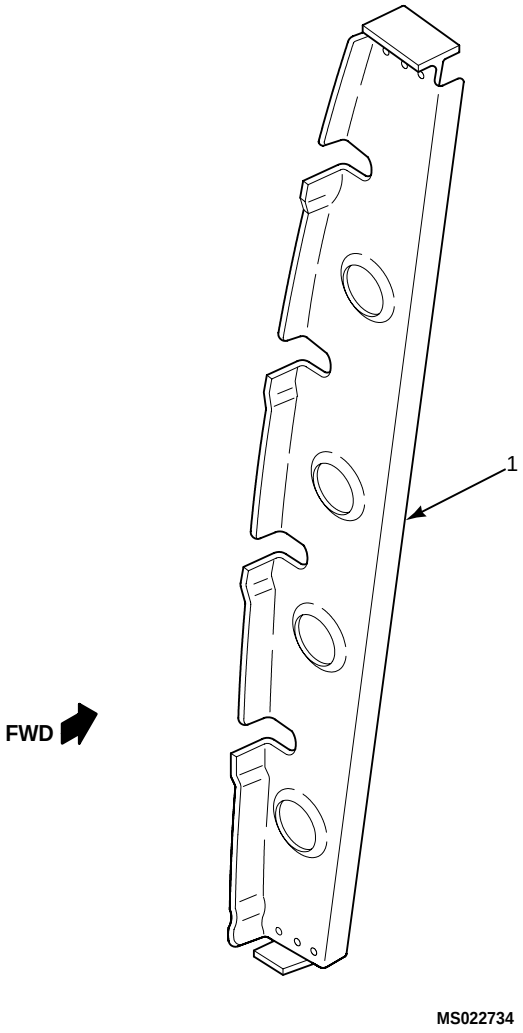


Figure 7. Side Former, Sta 110, LH Side

Table 6. Side Former Sta 110, LH Side

INDEX NO.	NOMENCLATURE	ORIGINAL MATERIAL	REPAIR MATERIAL	WORK PACKAGE
1	Former	0.040 2024-T3 Clad	0.050 2024-T3 Clad	0087 00

NOTE

All dimensions are in inches.

REPAIR – continued

NOTE

Refer to Table 7 for index number reference.

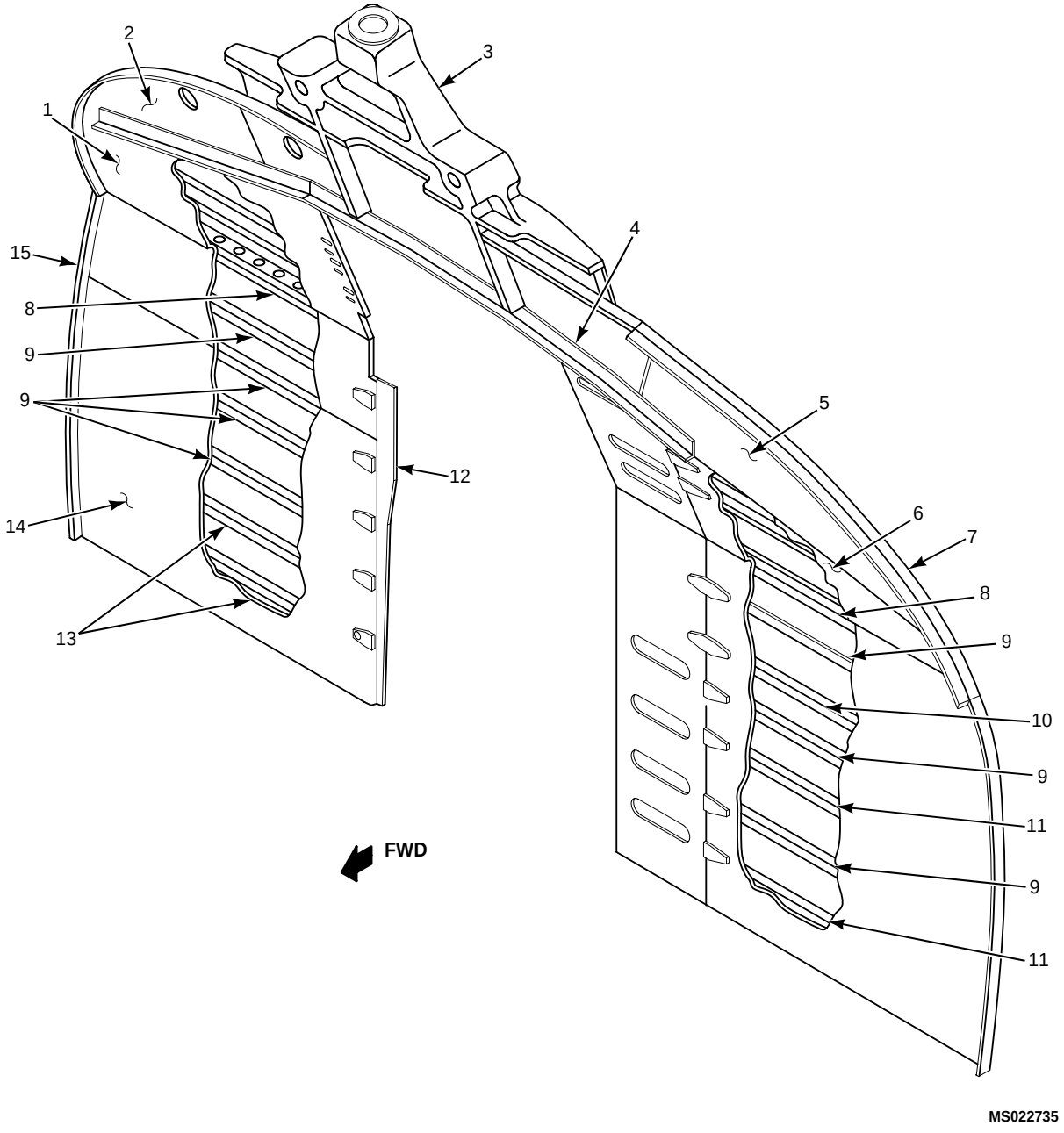


Figure 8. Bulkhead, Sta 95 (Sheet 1 of 2)

REPAIR – continued

Table 7. Bulkhead, Sta 95

INDEX NO.	NOMENCLATURE	ORIGINAL MATERIAL	REPAIR MATERIAL	WORK PACKAGE
1	Web	0.032 7075-T6 Bare	0.040 7075-T6 Clad	0086 00
2	Web	0.071 7075-T6 Bare	0.071 7075-T6 Clad	0086 00
3	Fitting	7075T73652	Note B	--
4	Cap	AND10134-1407 7075-T6	0.160 4130	0088 00
5	Web	0.071 7075-T6 Bare	0.071 7075-T6 Clad	0086 00
6	Web	0.040 7075-T6 Bare	0.040 7075-T6 Clad	0086 00
7	Cap	ALCOA 16871 7075-T6	0.112 4130	0088 00
8	Channel	0.071 2024-T4 Clad	0.071 2024-T3 Clad	0087 00
9	Stiffener	VS70503-3 7075-T6	0.040 7075-T6 Clad	0088 00
10	Stiffener	0.040 7075-T6 Bare	0.040 7075-T6 Clad	0088 00
11	Stiffener	0.040 7075-T6 Bare	0.050 7075-T6 Clad	0088 00
12	Cap	AND10133-0701 7075-T6	0.063 4130	0088 00
13	Stiffener	0.040 2024-T4 Clad	0.050 2024-T3 Clad	0088 00
14	Web	0.020 7075-T6 Bare	0.025 7075-T6 Clad	0086 00
15	Cap	0.063 7075-T6 Bare	0.071 7075-T6 Clad	0088 00

NOTES

A. All dimensions are in inches.

B. Replace with new fitting, 1451801-1.

REPAIR – continued

NOTE

Refer to Table 8 for index number reference.

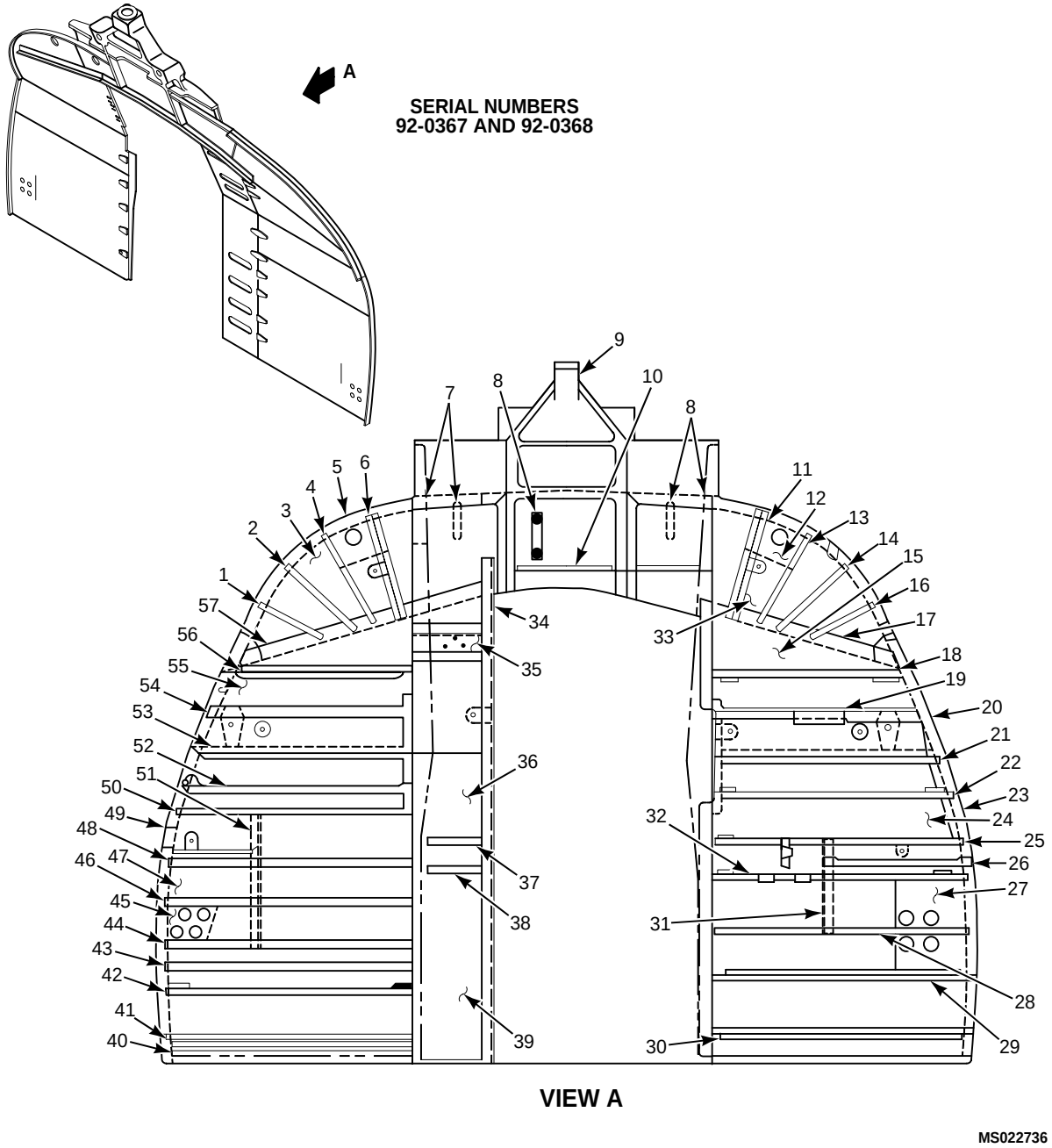


Figure 8. Bulkhead, Sta 95, Aircraft Serial Numbers 92-0367 and 92-0368 (Sheet 2 of 2)

REPAIR – continued

Table 8. Bulkhead Sta 95, Aircraft Serial Numbers 92-0367 and 92-0368

INDEX NO.	NOMENCLATURE	ORIGINAL MATERIAL	REPAIR MATERIAL	WORK PACKAGE
1	Angle	ALCOA 51406 7075-T6511	0.040 4130	0088 00
2	Angle	ALCOA 51406 7075-T6511	0.040 4130	0088 00
3	Web	0.071 7075-T6 Bare	0.071 7075-T6 Clad	0086 00
4	Angle	ALCOA 51403 7075-T6511	0.040 4130	0088 00
5	Angle	0.063 7075-T6 Bare	0.071 7075-T6	0088 00
6	TEE	AND10136-1402 7075-T6511	0.063 41302	0088 00
7	Bracket	0.032 2024-T3 Bare	0.040 2024-T3 Clad	0087 00
8	Bracket	0.063 2024-T3 Clad	0.070 2024-T3 Clad	0087 00
9	Fitting	7075-T73652	Note B	--
10	Angle	0.040 2024-T3 Bare	0.050 2024-T3 Clad	0088 00
11	Tee	AND10136-1402 7075-T6511	0.063 4130	0088 00
12	Angle	0.090 7275-T6 Bare	0.100 7075-T6 Clad	0088 00
13	Angle	ALCOA 51406 7075-T6511	0.040 4130	0088 00
14	Angle	0.080 7075-T6 Bare	0.090 7075-T6 Clad	0088 00
15	Web	0.032 7075-T6 Bare	0.040 7075-T6 Clad	0086 00
16	Angle	0.080 7075-T6 Bare	0.090 7075-T6 Clad	0088 00
17	Angle	AND10134-1407 7075-T6511	0.080 4130	0088 00
18	Support	0.040 2024-T3 Bare	0.050 2024-T3 Clad	0087 00
19	Support	0.040 2024-T3 Bare	0.050 2024-T3 Clad	0087 00
20	Channel	0.040 2024-T3 Bare	0.050 2024-T3 Clad	0087 00
21	Channel	0.040 2024-T3 Bare	0.050 2024-T3 Clad	0087 00
22	Stiffener	BAC1517-1523 7075-T6 Bare	0.050 7075-T6 Clad	0088 00
23	Cap	0.063 7075-T6 Bare Note C	0.071 7075-T6 Clad	0088 00
24	Web	0.032 7075-T6 Bare	0.032 7075-T6 Clad	0086 00
25	Stiffener	BAC1517-1523 7075-T6 Bare	0.050-7075-T6 Clad	0088 00
26	Stiffener	0.050 2024-T3 Clad	0.063 2024-T3 Clad	0088 00
27	Doubler	0.040 7075-T6 Bare Note C	0.040 7075-T6 Clad	0086 00
28	Stiffener	BAC1503-1509 7075-T6511	BAC0503-1509 7075-T6511	0088 00
29	Stiffener	0.040 2024-T3 Bare	0.050 2024-T3 Clad	0088 00
30	Stiffener	0.040 2024-T3 Clad	0.050 2024-T3 Clad	0087 00
31	Angle	0.050 2024-T3 Clad	0.063 2024-T3 Clad	0087 00
32	Stiffener	BAC1517-1523 7075-T6 Bare	0.050 7075-T6 Clad	0088 00
33	Web	0.063 7075-T6 Bare	0.071 7075-T6 Clad	0086 00
34	Cap	AND10133-0701 7075-T6511 Note C	0.040 4130	0088 00
35	Bracket	0.032 2024-T3 Bare	0.040 2024-T3 Clad	0088 00
36	WEB	0.020 7075-T6 Bare	0.025 7075-T6 Clad	0086 00
37	Stiffener	0.032 2024-T3 Clad	0.040 2024-T3 Clad	0088 00
38	channel	0.032 2024-T3 Bare	0.040 2024-T3 Clad	0088 00
39	web	0.032 7075-T6 Bare	0.040 7075-T6 Clad	0086 00
40	Stiffener	0.040 7075-T6 Bare	0.040 7075-T6 Clad	0088 00

REPAIR – continued

Table 8. Bulkhead Sta 95, Aircraft Serial Numbers 92-0367 and 92-0368 - continued

41	Angle	0.040 7075-T6 Bare	0.040 7075-T6 Clad	0088 00
42	Stiffener	VS70503-3 7075-T6	0.050 7075-T6 Clad	0088 00
43	Stiffener	0.040 7075-T6 Bare	0.040 7075-T6 Clad	0088 00
44	Stiffener	0.040 7075-T6 Bare	0.040 7075-T6 Clad	0088 00
45	Doubler	0.040 7075-T6 Bare Note C	0.040 7075-T6 Clad	0086 00
46	Stiffener	0.040 7075-T6 Bare	0.040 7075-T6 Clad	0088 00
47	Web	0.032 7075-T6 Bare	0.040 7075-T6 Clad	0086 00
48	Stiffener	0.040 7075-T6 Bare	0.040 7075-T6 Clad	0088 00
49	Cap	0.063 7075-T6 Bare Note C	0.071 7075-T6 Clad	0088 00
50	Stiffener	BAC1517-1523 7075-T6 Bare	0.050 7075-T6 Clad	0088 00
51	Angle	0.050 2024-T3 Bare	0.050 7075-T6 Clad	0088 00
52	Angle	0.063 2024-T3 Bare	0.063 7075-T6 Clad	0088 00
53	Channel	0.040 2024-T3 Bare	0.050 2024-T3 Clad	0087 00
54	Channel	0.050 2024-T3 Bare	0.063 2024-T3 Clad	0087 00
55	Web	0.040 7075-T6 Bare	0.050 7075-T6 Clad	0086 00
56	Stiffener	0.040 2024-T3 Clad	0.050 2024-T3 Clad	0087 00
57	Angle	AND10134-1407 7075-T6511	0.080 4130	0088 00

NOTES

A. All dimensions are in inches.

B. Replace with new fitting, 145S1801-4.

C. This table and Figure 8 show material for aircraft serial numbers 92-0367 and 92-0368.

REPAIR – continued

NOTE

Refer to Table 9 for index number reference.

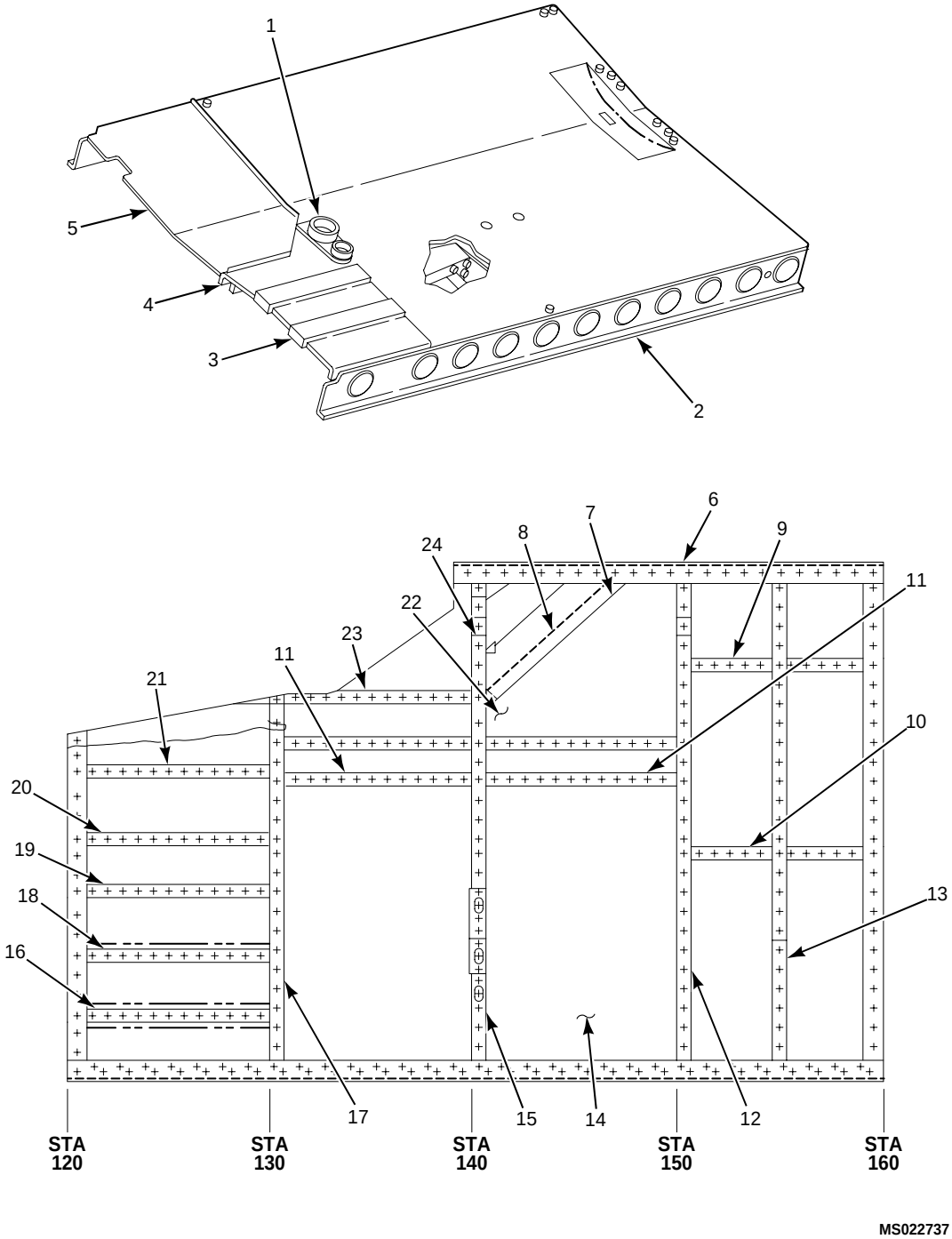


Figure 9. Trough Assembly

REPAIR – continued

Table 9. Trough Assembly

INDEX NO.	NOMENCLATURE	ORIGINAL MATERIAL	REPAIR MATERIAL	WORK PACKAGE
1	Support Assy	Note B	--	--
2	Former	0.050 2024-T6 Bare	0.050 2024-T6 Clad	0087 00
3	Fitting, Stop	Note E	--	--
4	Fitting Support	Note D	--	--
5	Fitting Support	Note C	--	--
6	Support	0.032 2024-T4 Clad	0.040 2024-T3 Clad	0087 00
7	Support	0.040 2024-T4 Clad	0.050 2024-T3 Clad	0087 00
8	Support	0.040 2024-T4 Clad	0.050 2024-T3 Clad	0087 00
9	Angle	VS70504-4	Note F	0088 00
10	Angle	VS70504-4	Note F	0088 00
11	Stiffener	0.032 2024-T4 Clad	0.040 2024-T3 Clad	0087 00
12	Former	0.032 7075-T6 Bare	0.032 7075-T6 Clad	0087 00
13	Channel	0.032 2024-T4 Clad	0.040 2024-T4 Clad	0087 00
14	Skin	0.025 7075-T6 Clad	0.032 7075-T6 Clad	0086 00
15	Former	0.032 7075-T6 Bare	0.032 7075 T6 Clad	0087 00
16	Stiffener	AND10134-1202	Note F	0088 00
17	Former	0.072 7075-T6 Bare	0.072 7075-T6 Clad	0087 00
18	Angle	ALCOA28546 7075-T6	Note F	0088 00
19	Angle	AND10134 1202	Note F	0088 00
20	Support	0.040 2024-T4 Clad	Note F	0087 00
21	Stiffener	ALCOA22509 7075-T6	Note F	0088 00
22	Support	0.032 2024-T4 Clad	0.040 2024-T3 Clad	0087 00
23	Angle	ALCOA28546 7075-T6	Note F	0088 00
24	Angle	ALCOA 4484 7075-T6	Note F	0088 00

NOTES

A. All dimensions are in inches.
B. Damage other than minor, replace with 145S1830-1.
C. Damage other than minor, replace with 145S1839-1.
D. Damage other than minor, replace with 145S1876-1.
E. Damage other than minor, replace with 145S1881-3.
F. Replace or repair with original material.

REPAIR – continued

NOTE

Refer to Table 10 for index number reference.

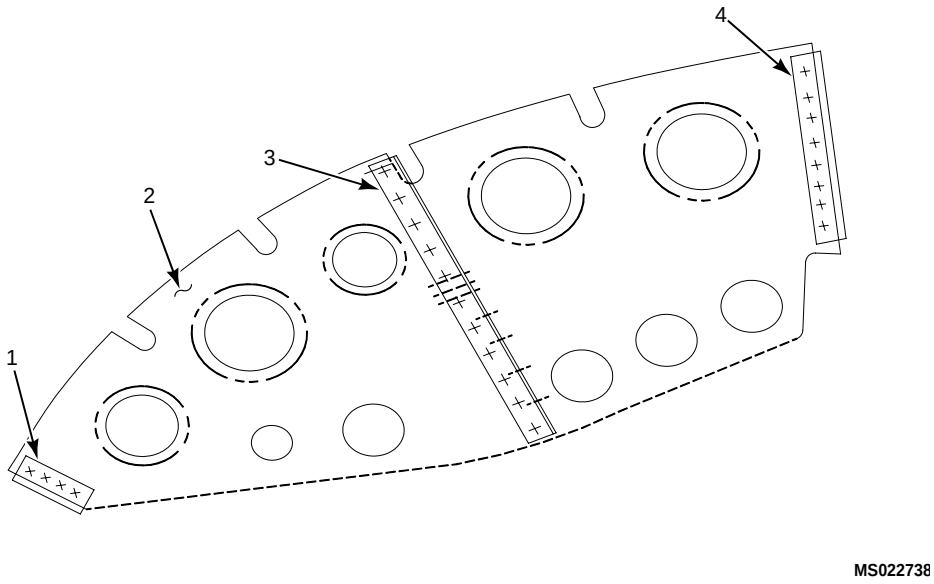


Figure 10. Former, Sta 100

Table 10. Former, Sta 100

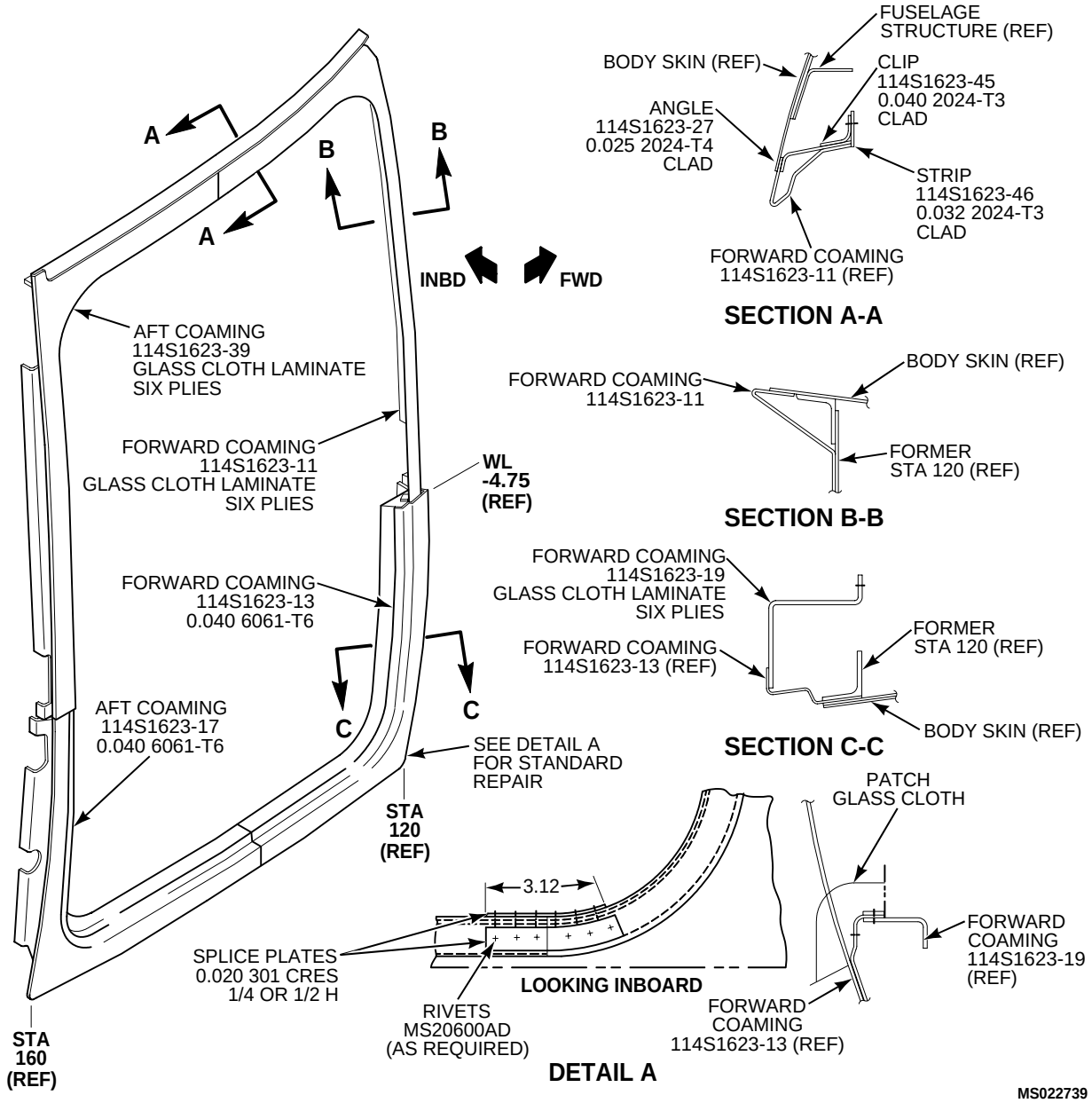
INDEX NO.	NOMENCLATURE	ORIGINAL MATERIAL	REPAIR MATERIAL	WORK PACKAGE
1	Angle	0.050 2024-T3	Note B	--
2	Former	0.040 2024-T3 Clad	0.050 2024-T4 Clad	0087 00
3	Support	0.040 2024-T42 Clad	0.050 2024-T4 Clad	0087 00
4	Angle	0.050 2024-T3	Note B	--

NOTES

A. All dimensions are in inches.

B. If repair is not practical, replace with original material.

REPAIR – continued



NOTES

A. All dimensions are in inches.

B. Patch, glass cloth material, (Item 78, WP 0157 00). Refer to WP 0081 00 for repair procedures.

Figure 11. Cabin Door Coaming

CABIN DOOR COAMING REPAIR

1. The coaming is made of molded six ply, laminated, plastic impregnated glass cloth. Formed aluminum alloy 6060-T6 parts are riveted to the lower sides and bottom of coaming.

CABIN DOOR COAMING REPAIR – continued

2. An angle made of 2024-T4 clad aluminum alloy is riveted to body skin across top of door opening.

3. Repair damage to impregnated glass cloth parts such as slight voids, small wrinkles, or holes that can be filled with Type A rivet.

4. Repair minor damage to formed metal parts such as nicks, dents, and scratches by burnishing. Fill small holes with Type A rivet.

5. Damage shall not destroy sealing quality of coaming and must not interfere with door operation.

CABIN DOOR COAMING, FORWARD LOWER CORNER REPAIR

Repair damage to formed metal parts not affecting a radius by patching. Repair cracks in forward lower corner of coming as follows:

NOTE

The coaming may be cracked because the lower side longeron is cracked. Refer to work package 0101 00 for repair procedures.

1. Stop drill cracks and remove damaged material. Sand, roughen, and clean area to be repaired.

2. Cut a patch of glass cloth (Item 78, WP 0157 00). This patch shall be bonded to existing coaming and shall be covered by two stainless steel plates. Patch is used to provide a watertight seal.

3. Fabricate two splice plates from 0.020-inch thick 301 stainless steel 1/4 or 1/2 hard. Drill necessary holes in splice plates and coaming. Do not install rivets at this time.

WARNING

ADHESIVE

4. Impregnate patch of glass cloth with prepared adhesive (Item 32, WP 0157 00) wearing gloves (Item 108, WP 0157 00).

5. Install glass cloth patch over damage, removing air pockets by pressing a piece of cellophane sheet (Item 55, WP 0157 00) over the repair.

6. Place splice plates on patch using MS20600AD blind rivets.

7. Cure patch with heat lamp (10 to 12 inches from patch) until exposed portions of patch are hard and tack-free.

REPLACEMENT OF DAMAGE

Extensive damage to forward or aft coaming shall be repaired by splicing in a section of original coaming.

NOTE

Loss of more than 50 percent of length of member or numerous isolated damages are considered extensive damage and shall be replaced.

END OF WORK PACKAGE

DEPOT MAINTENANCE WORK REQUIREMENT
CH-47D HELICOPTER
BEAM ASSEMBLY BL 18 REPAIRS

INITIAL SETUP

Test Equipment:
As Required

Tools and Special Tools:
As Required

Material/Parts:
As Required

Personnel Required:
As Required

References:
TM 1-1500-204-23 Series
TM 55-1520-240-23 Series
WP 0086 00
WP 0087 00
WP 0088 00

Equipment Conditions:
As Required

Special Environmental Condition:
As Required

SCOPE

This work package covers repair of beam assemblies, BL 18, sta 95 to sta 120.

REPAIR

NOTE

Refer to Table 1 for index number reference.

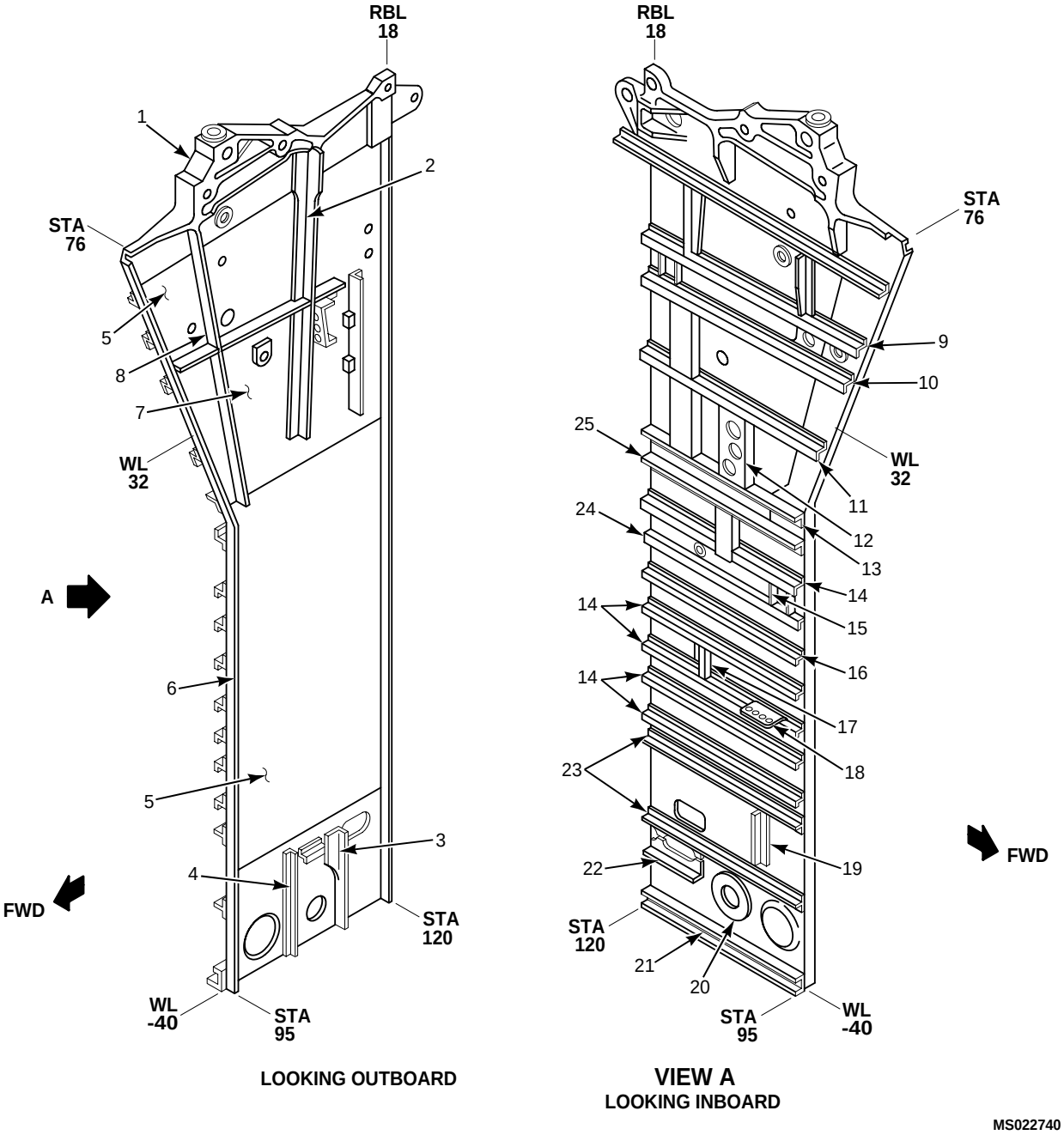


Figure 1. Right Hand Beam Assembly, BL 18, Sta 95 to Sta 120

REPAIR - continued

Table 1. Right Hand Beam Assembly, BL 18, Sta 95 to Sta 120

INDEX NO.	NOMENCLATURE	ORIGINAL MATERIAL	REPAIR MATERIAL	WORK PACKAGE
1	Fitting	7075-T73652	Note C	--
2	Angle	0.050 7075-T73	0.063 7075-T6 Clad	0088 00
3	Tee	ALCOA 32220 7075-T6 Extr	Note B	0088 00
4	Stiffener	AND10136-1403 7075-T6 Extr	Note B	0088 00
5	Web	0.025 7075-T6 Bare	0.032 7075-T6 Clad	0086 00
6	Cap	AND10134-2407 7075-T6 Extr	0.125 4130	0088 00
7	Web	0.050 7075-T6 Bare	0.100 4130	0088 00
8	Angle	AND10134-1604 7075-T6511 Extr	0.125 4130	0088 00
9	Stiffener	0.050 7075-T6 Bare	0.063 7075-T6 Clad	0088 00
10	Angle	0.032 7075-T6 Bare	0.040 7075-T6 Clad	0088 00
11	Stiffener	AND10139-0707 7075-T6511 extr	0.071 4130	0088 00
12	Bracket	0.040 2024-T3 Bare	Note B	0087 00
13	Stiffener	AND10133-1203 7075-T6511 Extr	0.125 4130	0088 00
14	Stiffener	0.032 2024-T3 Clad	0.040 2024-T3 Clad	0088 00
15	Doubler	0.032 2024-T3 Clad	Note B	0086 00
16	Stiffener	0.032 2024-T3 Clad	0.040 2024-T3 Clad	0088 00
17	Zee	0.032 2024-T3 Clad	Note B	0088 00
18	Bracket	0.050 2024-T3 Clad	Note B	0086 00
19	Stiffener	AND10136-1403 7075-T6 Extr	Note B	0088 00
20	Doubler	0.050 7075-T6 Bare	Note B	0086 00
21	Stiffener	ALCOA 22477 7075-T6 Extr.	0.040 4130	0088 00
22	Angle	0.040 2024-T3B Clad	Note B	0087 00
23	Stiffener	AND10136-2001 7075-T6 Extr	0.080 4130	0088 00
24	Stiffener	0.050 2024-T3 Clad	0.063 2024-T3 Clad	0087 00
25	Zee	0.063 7075-T72 Bare	Note B	0088 00

NOTES

A. All dimensions are in inches.

B. Replace or repair with original and clad material.

C. Damage other than minor, replace with 145S1868-2.

REPAIR - continued

NOTE

Refer to Table 2 for index number reference.

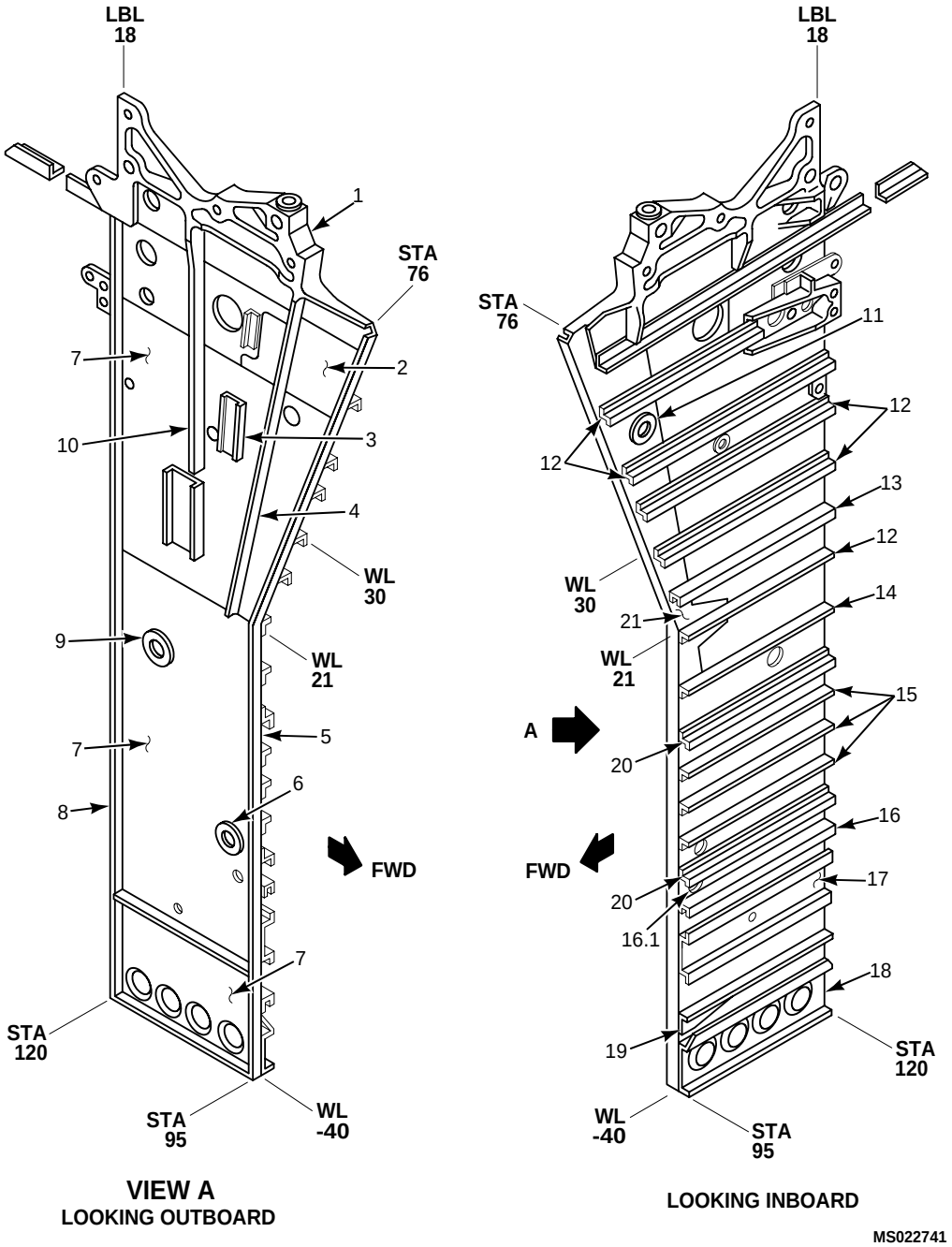


Figure 2. Left Hand Beam Assembly, BL 18, Sta 95 to Sta 120

REPAIR - continued

Table 2. Left Hand Beam Assembly, BL 18, Sta 95 to Sta 120

INDEX NO.	NOMENCLATURE	ORIGINAL MATERIAL	REPAIR MATERIAL	WORK PACKAGE
1	Fitting	7075-T73652	Note D	--
2	Web	0.040 7075-T6 Bare	0.050 7075-T6 Clad	0086 00
3	Channel	0.063 7075-T6 Bare	Note B	0087 00
4	Angle	0.090 7075-T6 Bare	0.090 7075-T6 Clad	0088 00
5	Cap	AND10134-2407 7075-T6511 Extr	0.125 4130	0088 00
6	Doubler	0.032 7075-T6 Bare	Note B	0086 00
7	Web	0.025 7075-T6 Bare	0.032 7075-T6 Clad	0086 00
8	Cap	AND10134-2430 7075-T6511 Extr	0.125 4130	0088 00
9	Doubler	VS25604D58J1	Note B	0086 00
10	Angle	0.071 7075-T6 Bare	0.071 7075-T6 Clad	0088 00
11	Doubler	0.063 7075-T6 Bare	Note B	0086 00
12	Stiffener	0.080 7075-T6 Bare	0.080 7075-T6 Clad	0088 00
13	Channel	0.050 7075-T6 Bare	0.063 7075-T6 Clad	0088 00
14	Angle	0.063 7075-T6 Bare	0.063 7075-T6 Clad	0088 00
15	Stiffener	AND10134-1003 7075-T6511 Extr	0.071 4130	0088 00
16	Channel	0.032 7075-T6 Bare	0.040 7075-T6 Clad	0088 00
16.1	Doubler	0.032 7075-T6 Bare	Note B & Note C	0086 00
17	Channel	0.050 2024-T3 Clad	0.063 2024-T3 Clad	0087 00
18	Channel	0.063 7075-T6 Bare	0.063 7075-T6 Clad	0088 00
19	Support	0.050 2024-T3 Clad	0.063 2024-T3 Clad	0088 00
20	Stiffener	0.063 2024-T3 Clad	0.040 2024-T3 Clad	0088 00
21	Gusset	0.071 7075-T6 Bare	0.071 7075-T6 Clad	0086 00

NOTES

A. All dimensions are in inches.
B. Replace or repair with original and clad material.
C. This part is used on aircraft serial numbers 92-0367 and 92-0368.
D. Damage other than minor, replace with 145S1867-2.

END OF WORK PACKAGE

DEPOT MAINTENANCE WORK REQUIREMENT
CH-47D HELICOPTER
FORWARD HYDRAULIC SUPPORT REPAIRS

INITIAL SETUP

Test Equipment:
As Required

Tools and Special Tools:
As Required

Material/Parts:
As Required

Personnel Required:
As Required

References:
TM 1-1500-204-23 Series
TM 55-1520-240-23 Series
WP 0087 00
WP 0088 00

Equipment Conditions:
As Required

Special Environmental Condition:
As Required

SCOPE

This work package details repair procedures for the forward hydraulic support. Figure 2., along with Table 2, prescribes procedures specific to aircraft serial numbers 92-0367 and 92-0368.

REPAIR

NOTE

Refer to Table 1 for index number reference.

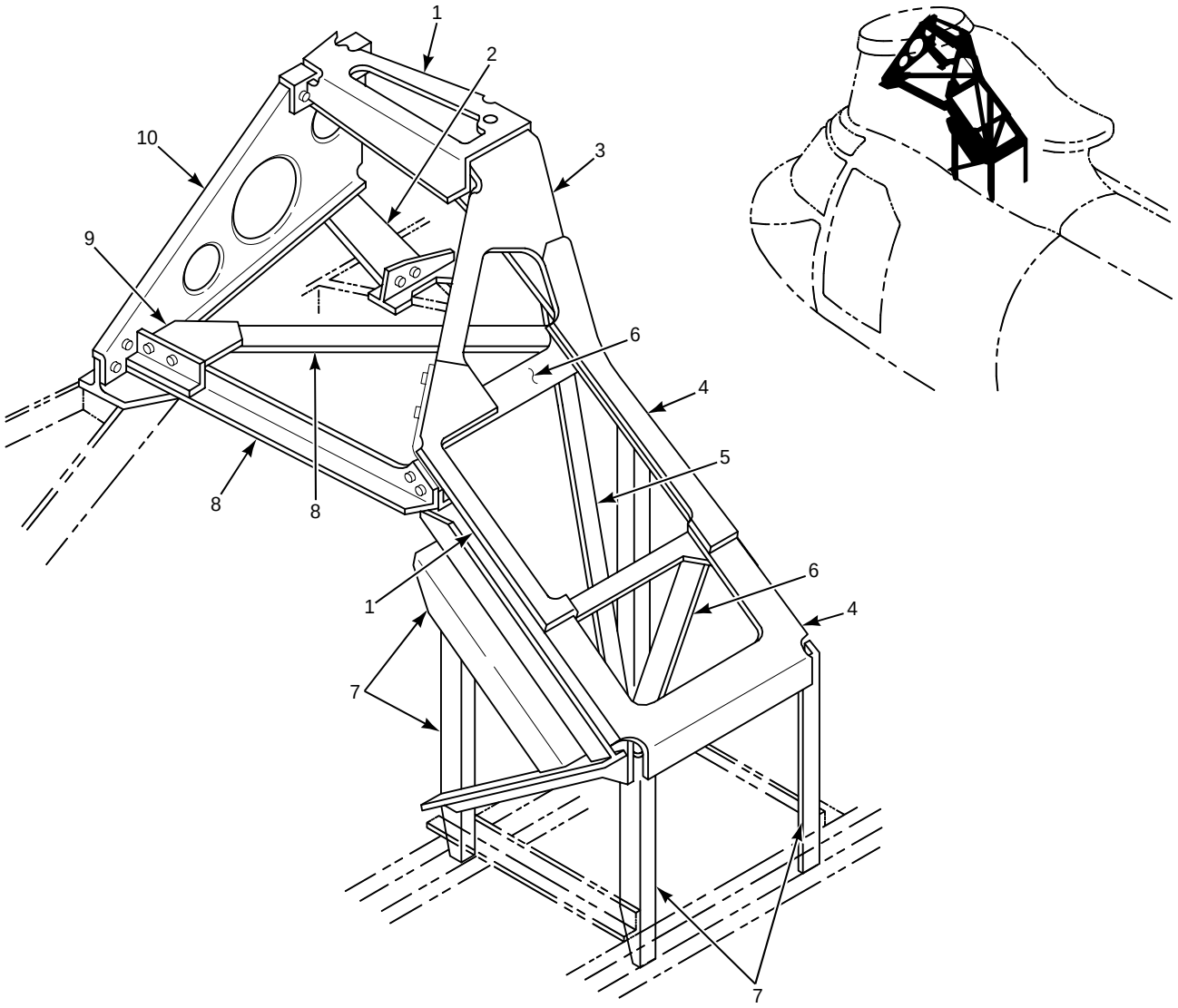


Figure 1. Forward Hydraulic Support

REPAIR - continued

Table 1. Forward Hydraulic Support

INDEX NO.	NOMENCLATURE	ORIGINAL MATERIAL	REPAIR MATERIAL	WORK PACKAGE
1	Support	0.063 301 ¼ HD Cres	0.063 301 ¼ HD Cres	0088 00
2	Strut	0.071 2024-T3 Clad	0.080 2024-T3 Clad	0087 00
3	Support	0.063 2024-T3 Clad	0.080 2024-T3 Clad	0087 00
4	Support	0.063 CRES 17-7 PH HT-TR 180-200 KSI	0.071 CRES 17-7 PH HT-TR 180-200 KIS	0088 00
5	Strut	AND10133-0701 7075-T6	0.063 7075-T6	0088 00
6	Angle	0.063 2024-T3 Clad	0.080 2024-T3 Clad	0088 00
7	Support	0.063 2024-T3 Clad	0.080 2024-T3 Clad	0088 00
8	Brace	0.063 2024-T3 Clad	0.080 2024-T3 Clad	0087 00
9	Angle	0.063 2024-T3 Clad	0.080 2024-T3 Clad	0088 00
10	Bracket	0.063 301 ¼ HD Cres	0.080 301 ¼ HD Cres	0088 00

NOTE

All dimensions are in inches.

REPAIR - continued

NOTE

Refer to Table 2 for index number reference.

FORWARD HYDRAULIC SUPPORT

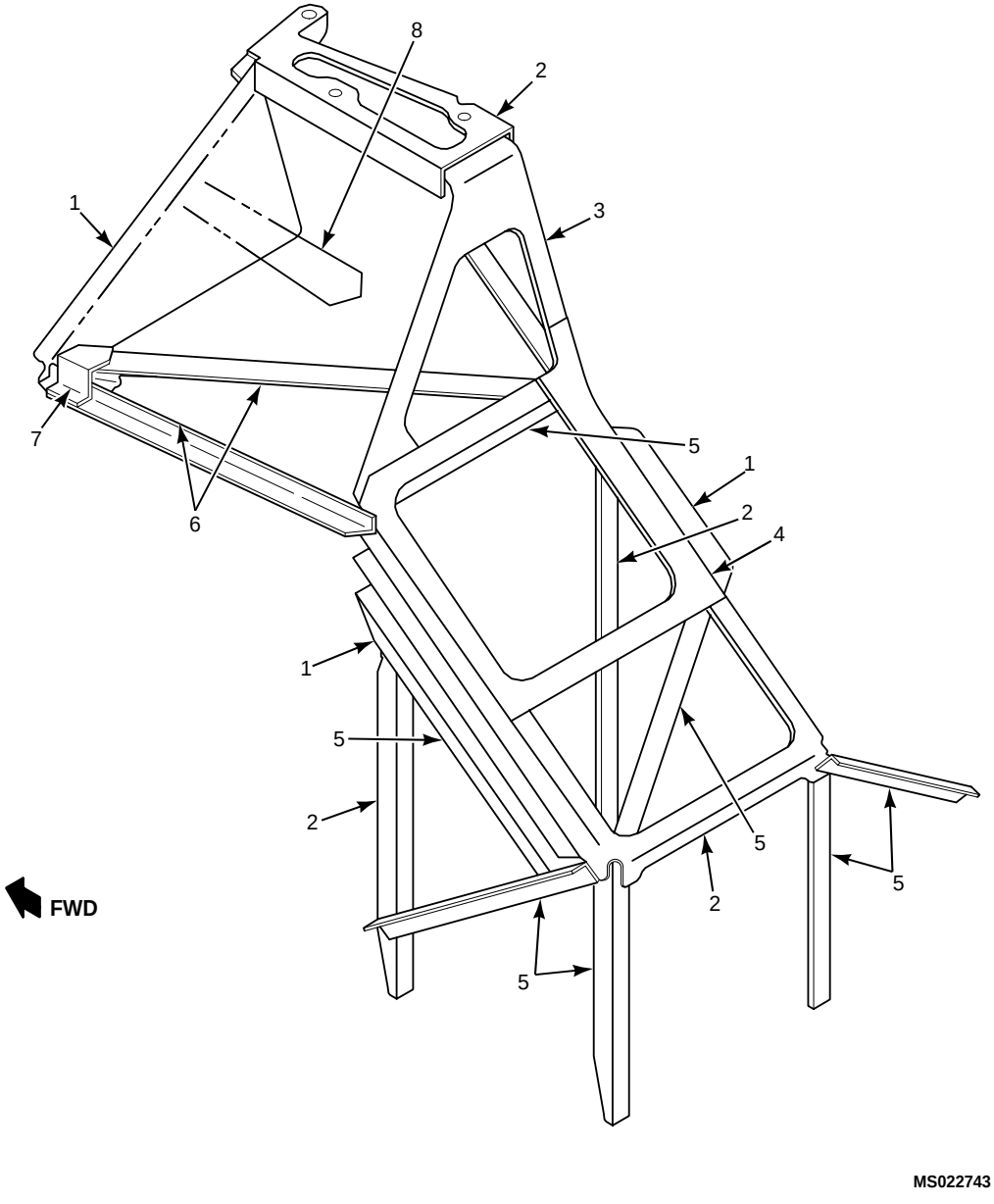


Figure 2. Forward Hydraulic Support

REPAIR - continued

Table 2. Forward Hydraulic Support

INDEX NO.	NOMENCLATURE	ORIGINAL MATERIAL	REPAIR MATERIAL	WORK PACKAGE
1	Support	0.063 2024-T3 Clad	0.080 2024-T3 Clad	Note B
2	Support	0.063 301 ¼ HD Cres	0.063 301 ¼ HD Cres	Note B
3	Channel	0.063 2024-T3 Clad	0.080 2024-T3 Clad	Note B
4	Support	0.063 2024-T3 Clad	0.080 2024-T3 Clad	Note B
5	Angle	0.063 2024-T3 Clad	0.080 2024-T3 Clad	Note B
6	Angle	0.063 2024-T3 Clad	0.080 2024-T3 Clad	Note B
7	Bracket	0.036 301 ¼ HD Cres	0.063 301 ¼ HD Cres	Note B
8	Strut	0.071 2024-T3 Clad	0.080 2024-T3 Clad	Note B

NOTES

A. All dimensions are in inches.

B. This part is used on aircraft serial numbers 92-0367 and 92-0368. Refer to WP 0087 00 and WP 0088 00 for repair procedures.

END OF WORK PACKAGE

DEPOT MAINTENANCE WORK REQUIREMENT
CH-47D HELICOPTER
HEATING AND VENTILATION DUCTING REPAIRS

INITIAL SETUP

Test Equipment:
As Required

Tools and Special Tools:
As Required

Material/Parts:
As Required

Personnel Required:
As Required

References:
TM 1-1500-204-23 Series
TM 55-1520-240-23 Series
WP 0081 00
WP 0086 00
WP 0095 00

Equipment Conditions:
As Required

Special Environmental Condition:
As Required

SCOPE

This work package provides repair procedures for the heat and ventilation ductwork in the cockpit, heater assembly, and the cabin.

REPAIR

NOTE

Refer to Table 1 for index number reference.

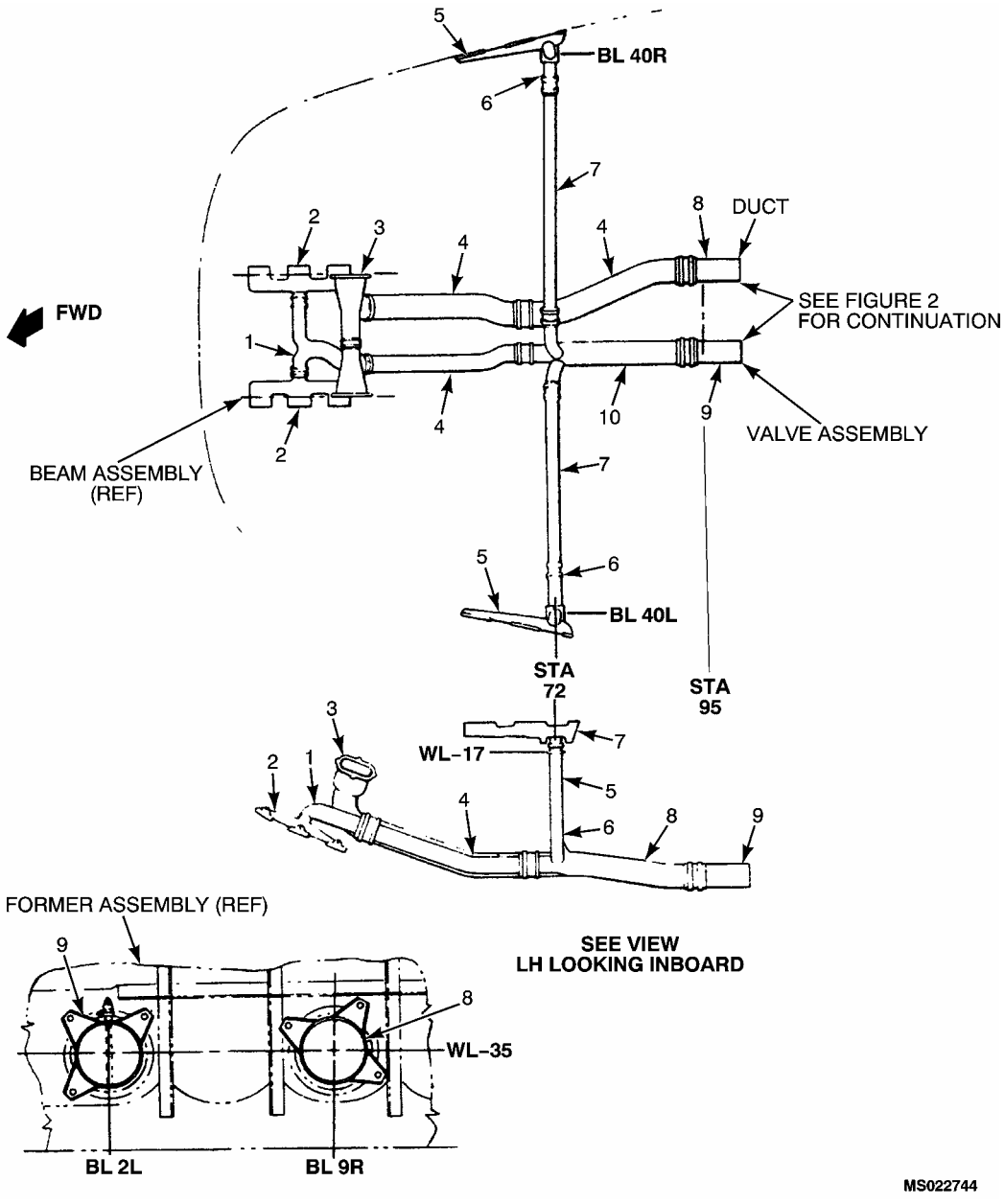


Figure 1. Cockpit Heat and Ventilation Ducting

REPAIR – continued

Table 1. Cockpit Heat and Ventilation Ducting

INDEX NO.	NOMENCLATURE	ORIGINAL MATERIAL	REPAIR MATERIAL	WORK PACKAGE
1	Duct	2 Ply No. 181 Glass Cloth	Note B	0081 00
2	Outlet Duct	2 Ply No. 181 Glass Cloth	Note B	0081 00
3	Outlet Duct	2 Ply No. 181 Glass Cloth	Note B	0081 00
4	Duct	2 Ply No. 181 Glass Cloth	Notes B & E	0081 00
5	Nozzle	2 Ply No. 181 Glass Cloth	Notes C, D, & E	0081 00
6	Elbow	2 Ply No. 181 Glass Cloth	Notes C, D, & E	0081 00
7	Duct	0.020 3003-H14 Tube	0.025 2024-T4 Clad	0086 00
8	Duct	0.049 6061-T6 Bare	0.050 7075-T6 Clad	0086 00
9	Valve Assy	0.049 6061-T6 Tube	Note H	0081 00
10	T-Duct	2 Ply No. 181 Glass Cloth	Notes C, F, & G	0081 00

NOTES

A. All dimensions are in inches.
B. An area 1.50-inches long, each end, is reinforced with two additional plies of original material.
C. An area 1.25-inches long, each end, is reinforced with two additional plies of original material.
D. An area 1.50 to 1.60-inches long, each end, is reinforced with an additional ply of original material.
E. An additional two plies of original material reinforce the flange.
F. An area 1.75-inches long, each end, is reinforced with an additional ply.
G. An additional two plies of original material reinforce the curved portion of the elbow end.
H. Damage other than minor, replace with new part.

REPAIR – continued

NOTE

Refer to Table 2 for index number reference.

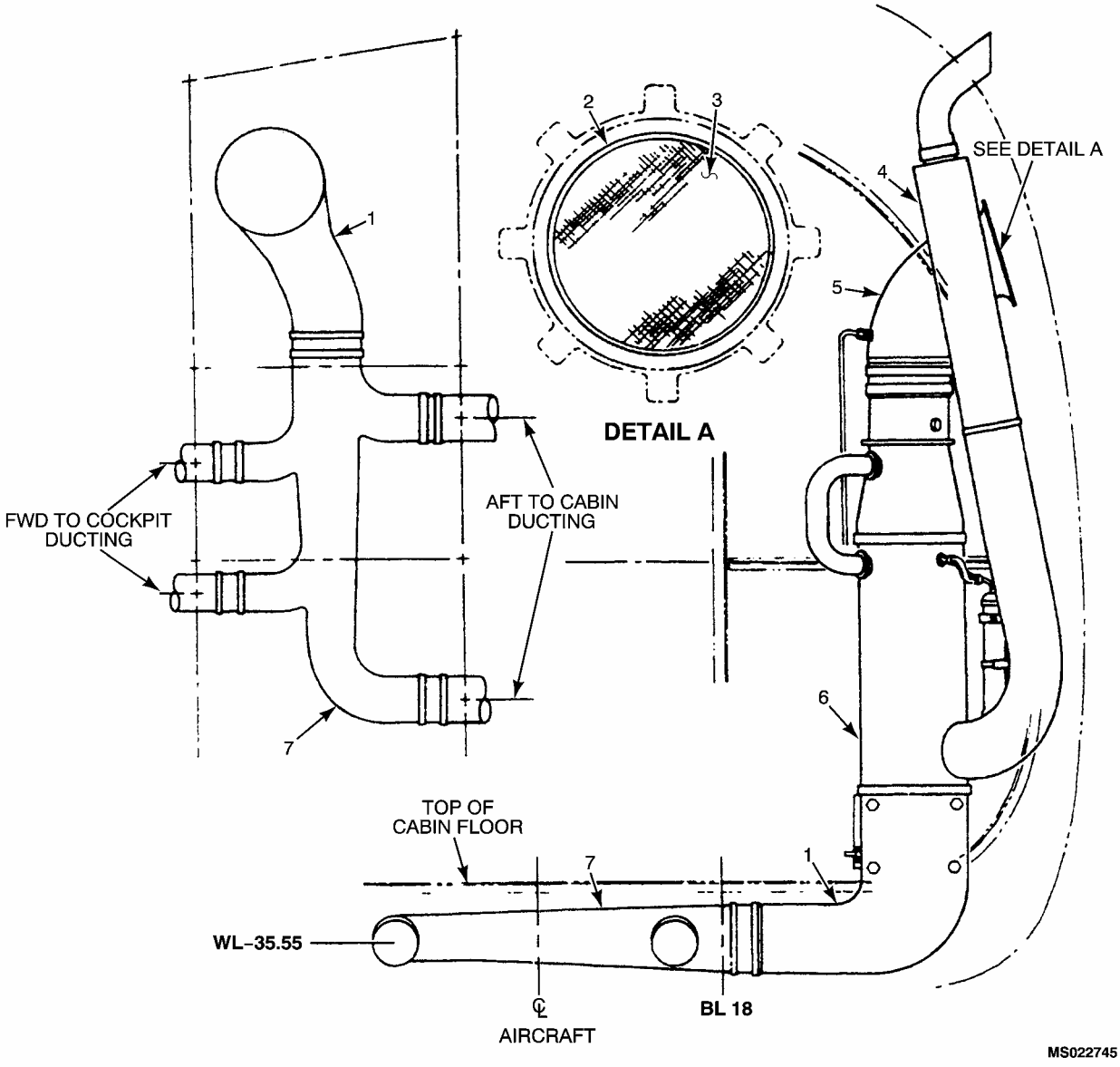


Figure 2. Heater Assembly– Heat and Ventilation Ducting

REPAIR – continued

Table 2. Heater Assembly Ducting

INDEX NO.	NOMENCLATURE	ORIGINAL MATERIAL	REPAIR MATERIAL	WORK PACKAGE
1	Transition Assy	114E406-28	Note B	--
2	Retainer	VS80507-2	Note C	0095 00
3	Screen	Square 4 Mesh Wire Cloth 0.035 AL Alloy	Note C	--
4	Exhaust	114E4076	Note B	--
5	Air Inlet	2 Ply No. 181 Glass Cloth	Notes D & E	0081 00
6	Heater	B52C98	Note B	--
7	Distributor	3 Ply No. 128 Glass Cloth	Notes F & G	0081 00

NOTES

A. All dimensions are in inches.
B. Refer to TM 55-1520-240-23 for repair procedures.
C. Damage other than minor, replace with new part.
D. An area 1.50-inches long, each end, is reinforced with two additional plies of original material.
E. An additional two plies of original material reinforce the flange.
F. An area 1.25-inches long, each end, is reinforced with two additional plies of original material.
G. An additional two plies of original material reinforce the curved portion of the elbow end.

REPAIR – continued

NOTE

Refer to Table 3 for index number reference.

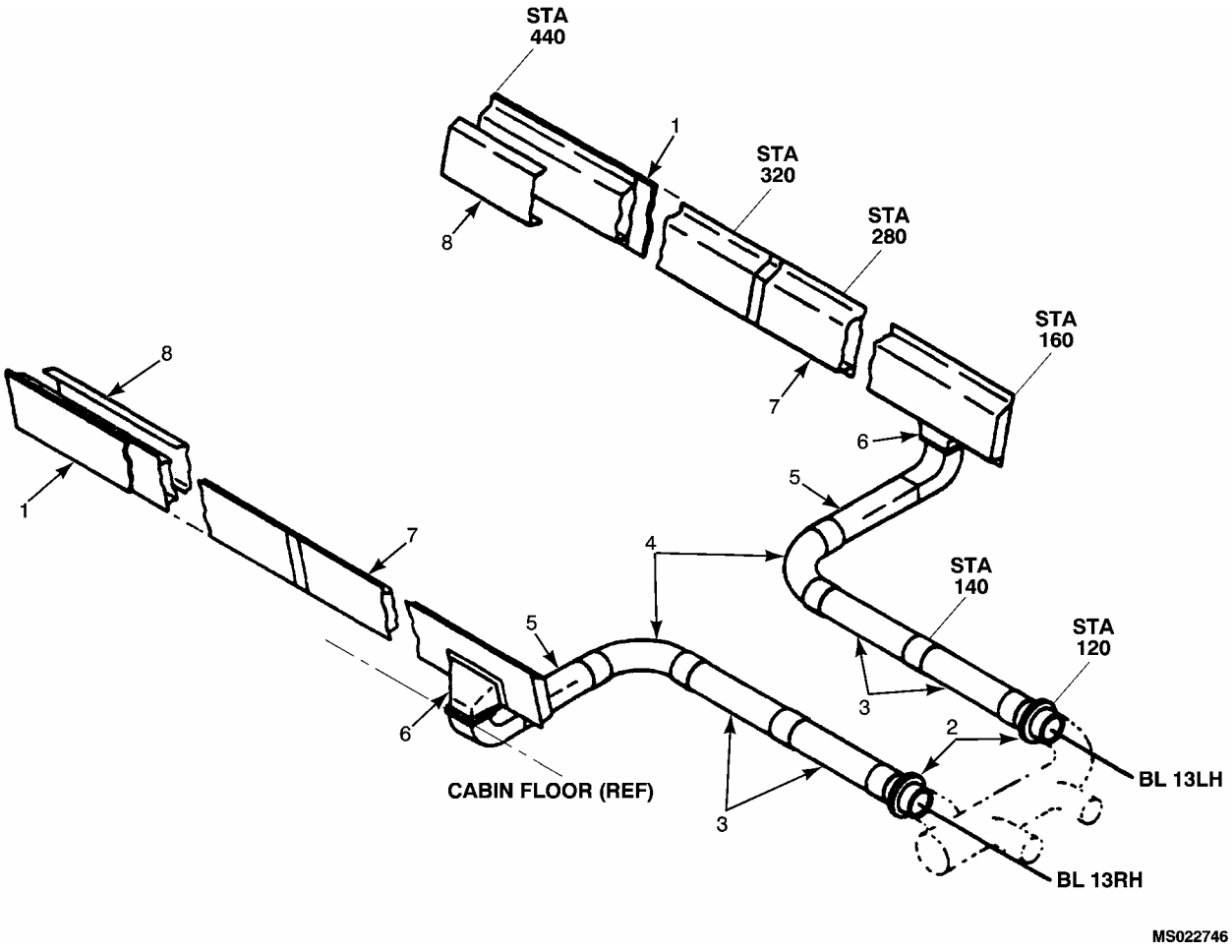


Figure 3. Cabin Section – Heat and Ventilation Ducting

REPAIR – continued

Table 3. Cabin Section - Heat and Ventilation Ducting

INDEX NO.	NOMENCLATURE	ORIGINAL MATERIAL	REPAIR MATERIAL	WORK PACKAGE
1	Back Plate	0.012 2024-T3 Clad	0.016 2024-T3 Clad	0086 00
2	Valve Assy	0.065 6061-T6 Clad	Note B	--
3	Duct	0.012 2024-T4 Clad	Note C	0086 00
4	Elbow	3 Ply No. 128 Glass Cloth.	Note D	0081 00
5	Transition Elbow Assy	2 Ply No. 181 Glass Cloth	Note D	0081 00
6	Transition Adapter	2 Ply No.181 Glass Cloth	Note D	0081 00
7	Channel	0.016 2024-T3 Clad	0.020 2024-T3 Clad	0086 00
8	Buffer Board	0.125 2024-T3 Clad	0.125 2024-T3 Clad	0086 00

NOTES

A. All dimensions are in inches.

B. Damage other than minor, replace part with new valve assembly, 114E4060-29.

C. Damage other than minor, replace with new part.

D. An area 1.25-inches long, each end, is reinforced with an additional two plies of original material.

END OF WORK PACKAGE

DEPOT MAINTENANCE WORK REQUIREMENT
CH-47D HELICOPTER
CABIN EXTERIOR REPAIRS

INITIAL SETUP

Test Equipment:
As Required

Tools and Special Tools:
As Required

Material/Parts:
As Required

Personnel Required:
As Required

References:
TM 1-1500-204-23 Series
TM 55-1520-240-23 Series
WP 0083 00
WP 0086 00
WP 0087 00
WP 0091 00
WP 0093 00
WP 0095 00

Equipment Conditions:
As Required

Special Environmental Condition:
As Required

SCOPE

This work package describes repair procedures for the following exterior cabin components. Refer to Figure 1.

1. Cabin Crown Walkway
2. Tunnel Covers
3. Cabin Windows

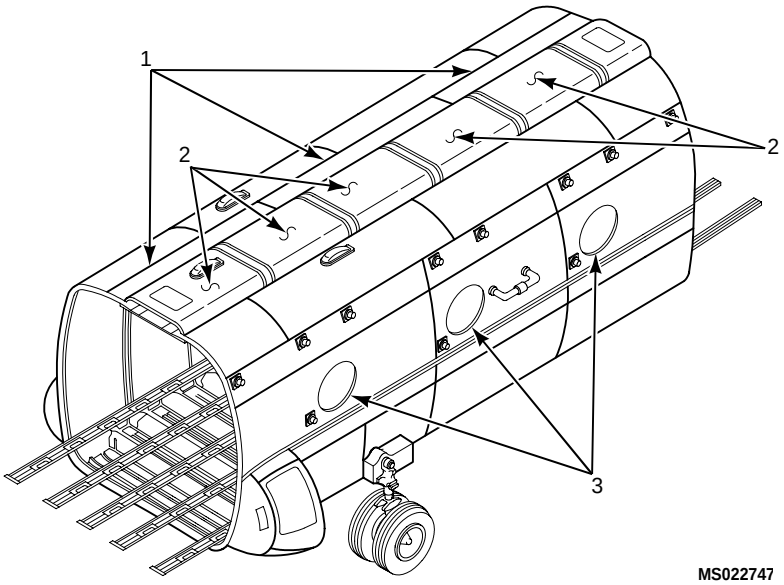


Figure 1. Cabin Exterior

REPAIR

NOTE

Refer to Table 1 for index number reference.

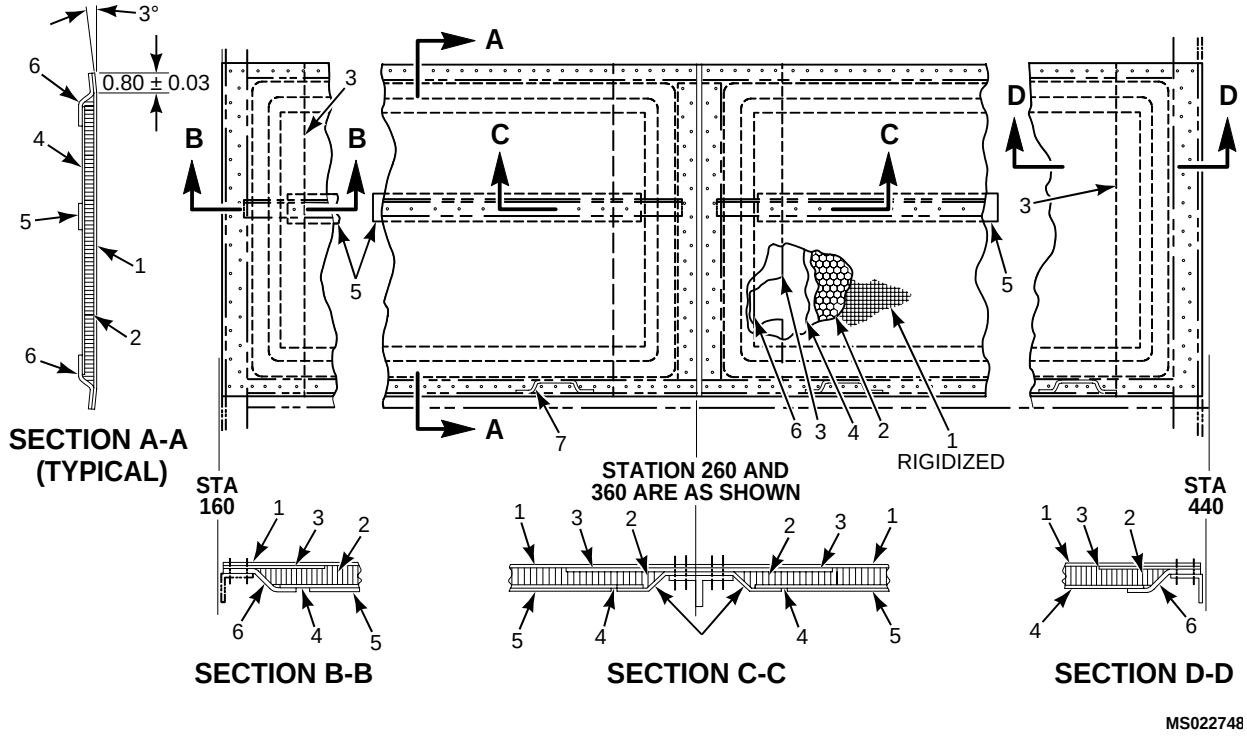


Figure 2. Cabin Crown Walkway

Table 1. Cabin Crown Walkway

INDEX NO.	NOMENCLATURE	ORIGINAL MATERIAL	REPAIR MATERIAL	WORK PACKAGE
1	AL Alloy Sheet	0.016 2024-T4 CLAD	Note B	0083 00
2	Core	0.50 3.4-1/4-15N-3003	Note B	0083 00
3	Doubler	0.012 7075-T6 CLAD	Note B	0083 00
4	Skin	0.012 7075-T4 CLAD	Note B	0083 00
5	Doubler	0.016 7075-T6 CLAD	Note B	0083 00
6	Edge Member	NOTE C	Note B	0083 00
7	Drain Cup	6061 AL ALLOY	Note D	--

NOTES

A. All dimensions are in inches.

B. Member of bonded assembly, repair using original material.

C. Scotch ply-two layers cross type XP-114 (0.028-inch thick) and one layer cross ply Type 1002 (0.020-inch thick) non-woven continuous filament.

D. Replace with 414S2503-35 typical, 15 places.

REPAIR - continued

NOTE

Refer to Table 2 for index number reference.

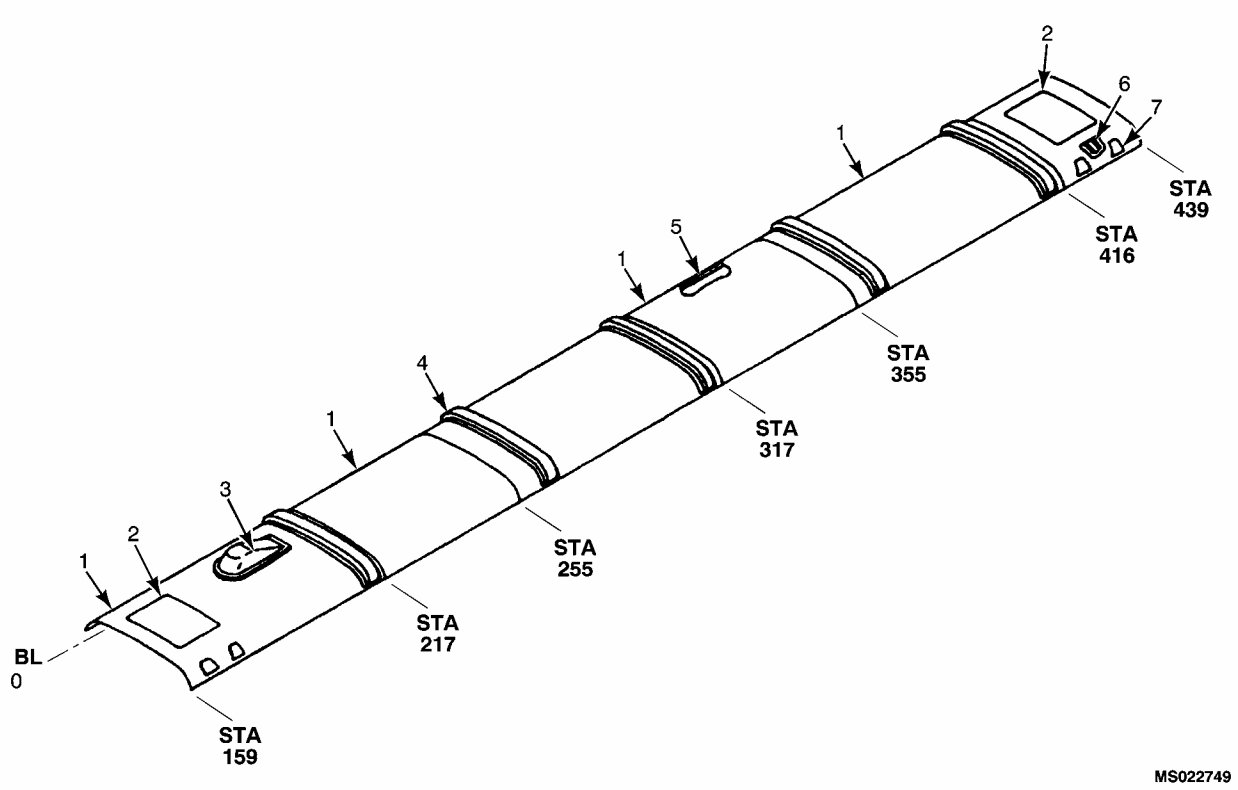
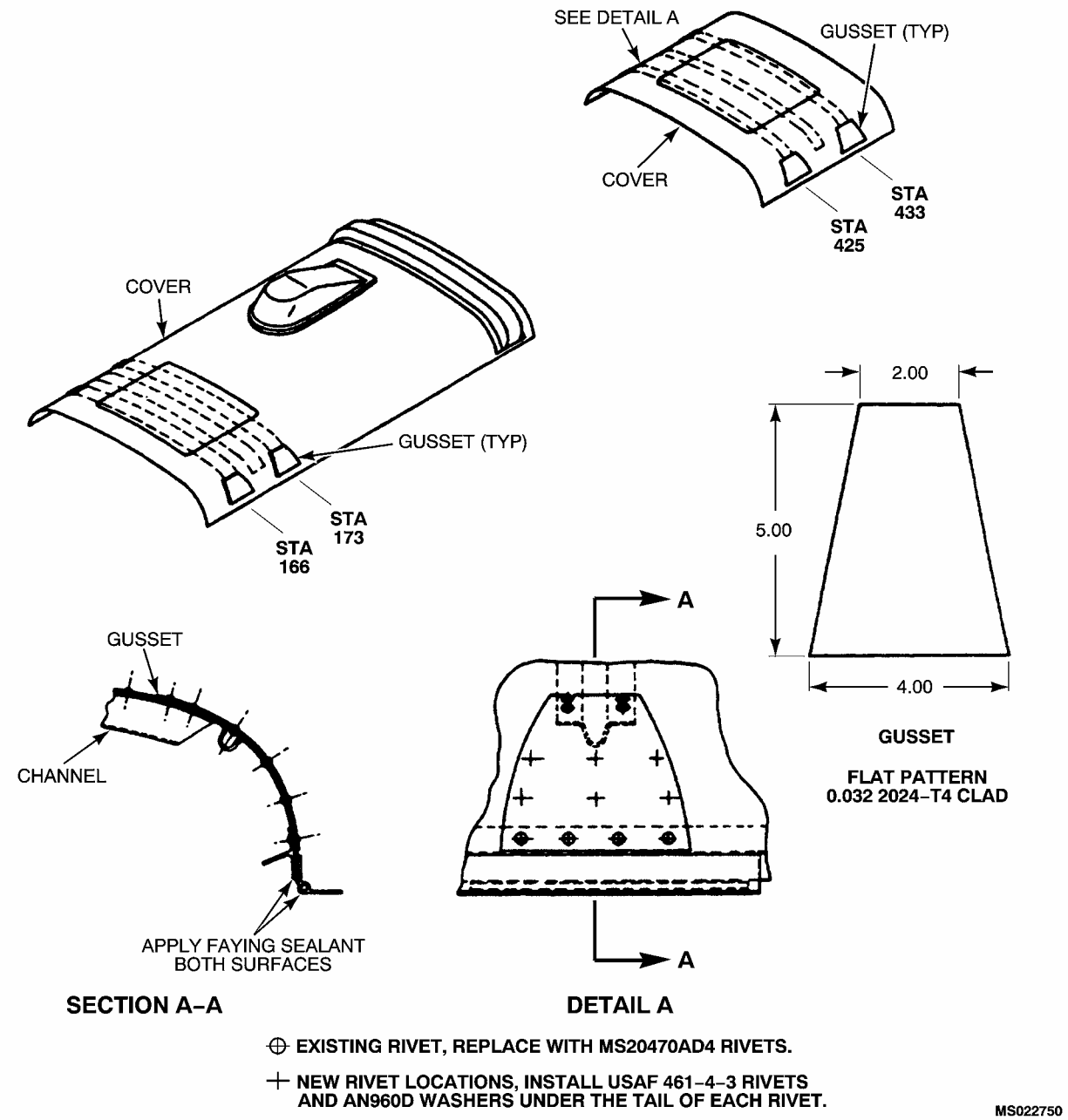


Figure 3. Tunnel Cover - Glass Cloth Type (Sheet 1 of 2)

REPAIR - continued



NOTE

All dimensions are in inches.

Figure 3. Tunnel Cover - Glass Cloth Type (Sheet 2 of 2)

REPAIR - continued

Table 2. Tunnel Cover - Glass Cloth Type

INDEX NO.	NOMENCLATURE	ORIGINAL MATERIAL	REPAIR MATERIAL	WORK PACKAGE
1	Cover	2 PLY. NO. 181 Glass Cloth	--	0083 00
2	Step Plate	0.016 7075-T6 Clad	NOTE B	--
3	Support Assy	4 PLY. NO. 181 Glass Cloth	NOTE D	0083 00
4	Stiffener	4 PLY. NO. 181 Glass Cloth	NOTE D	0083 00
5	Seal	--	NOTE C	095 00
6	Channel	0.032 2024-T4 Clad	0.040 2024-T3 Clad	0087 00
7	Gusset	0.032 2024-T4 Clad	0.040 2024-T3 Clad	0086 00

NOTES

A. All dimensions are in inches.

B. Replace step plate with 114S2905-137.

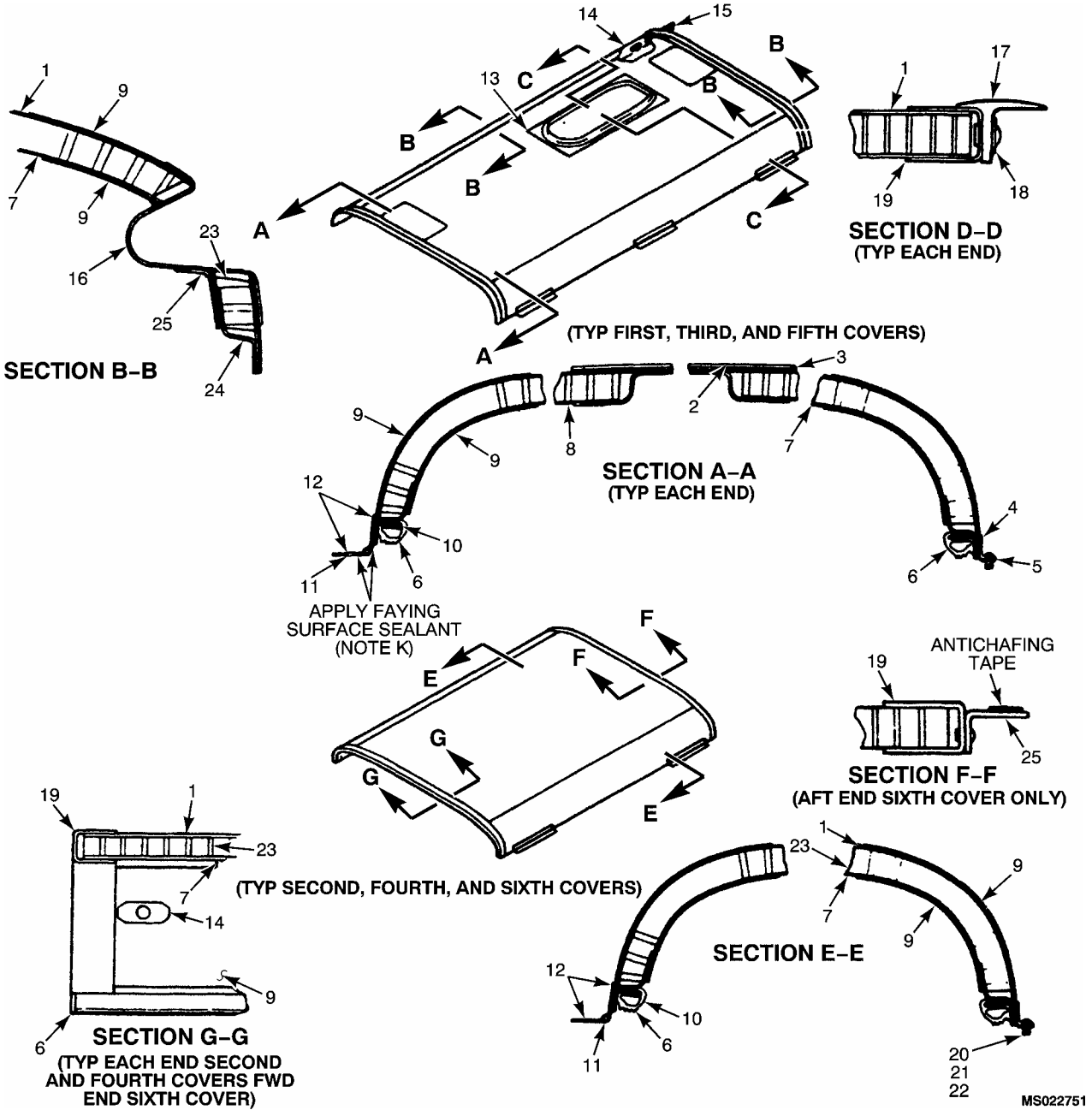
C. Replace with new seal VS80544.

D. Unless other wise noted, the tunnel covers are similar in materials and methods of construction.

REPAIR - continued

NOTE

Refer to Table 3 for index number reference.



NOTE

All dimensions are in inches

Figure 4. Tunnel Cover – Honeycomb Sandwich Type (Sheet 1 of 2)

REPAIR - continued

NOTE

Refer to Table 3 for index number reference.

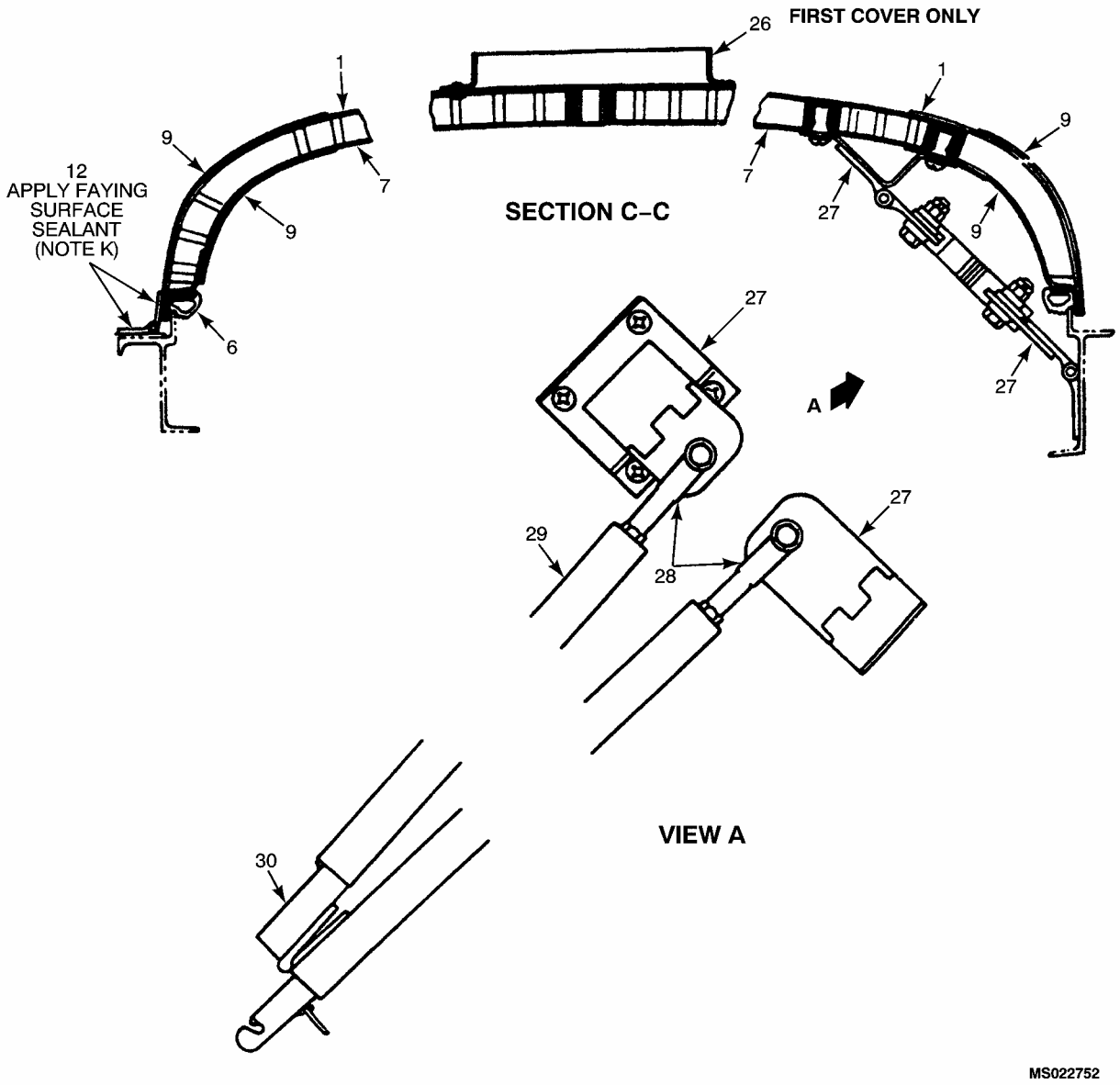


Figure 4. Tunnel Cover - Honeycomb Sandwich Type (Sheet 2 of 2)

REPAIR - continued

Table 3. Tunnel Cover - Honeycomb Sandwich Type

INDEX NO.	NOMENCLATURE	ORIGINAL MATERIAL	REPAIR MATERIAL	WORK PACKAGE
1	Skin	0.020 2024-T3 Clad	0.020 2024-T3Clad	0083 00
2	Doubler	0.050 2024-T3 Clad	Note C	0083 00
3	Filler	0.050 2024-T3	Note H	--
4	Angle	BAC1503-2731	Note H	--
5	Seal	114S2905-323	Note C	--
6	Seal	VS80572-1	Note C	0095 00
7	Skin	0.016 2024-T3 Clad	0.016 2024-T3 Clad	0083 00
8	Pan	0.050 2024-T42 Clad	Note D	0083 00
9	Doubler	0.020 2024-T3 Clad	0.020 2024-T3 Clad	0083 00
10	Retainer	0.020 2024-T3 Clad	0.032 2024-T3 Clad	0086 00
11	Pin	MS20253-2-740	MS20253-2-740	--
12	Hinge	MS20257-4-7	Note I & K	0093 00
13	Doubler	0.032 2024-T3 Clad	Note C	0083 00
14	Stud	BACS21AR1	Note H	--
15	Strap	Nylon Webbing	Note G	--
16	Hand Grip	0.050 6061-T3	Note F	0083 00
17	Seal	BAC1530-86	Note C	0095 00
18	Retainer	0.032 2024-T3 Clad	0.032 2024-T3 Clad	0086 00
19	Channel	0.032 2024-T3 Clad	Note E	0083 00
20	Spring	114S3910-161	Note H	--
21	Grommet	GA5-312	Note H	--
22	Stud	AJ5-55	Note H	--
23	Core	0.560 5052 Flex-Core	Note B	0083 00
24	Zee	0.032 2024-T3 Clad	Note E	0083 00
25	Angle	0.032 2024-T42	Note E	0083 00
26	Support	114S2633-1	Note H	--
27	Hinge	MS2000-PH-12	Note J	0093 00
28	Bearing	MS20200K3L	Note H	--
29	Strut	A297-1	Note H	--
30	Shield	BACT6159-0	Note H	--

NOTES

A. All dimensions are in inches.

B. Honeycomb sandwich repair, refer to WP 0083 00.

C. Replace with same material as original.

D. Replace with new pan 114S2915-92 or -94 in cover assembly 114S2915-70 or -75, or new pan 114S2915-92 or -93 in cover assembly 114S2915-72 or -77.

E. Part of bonded assembly. Replace with same material as original.

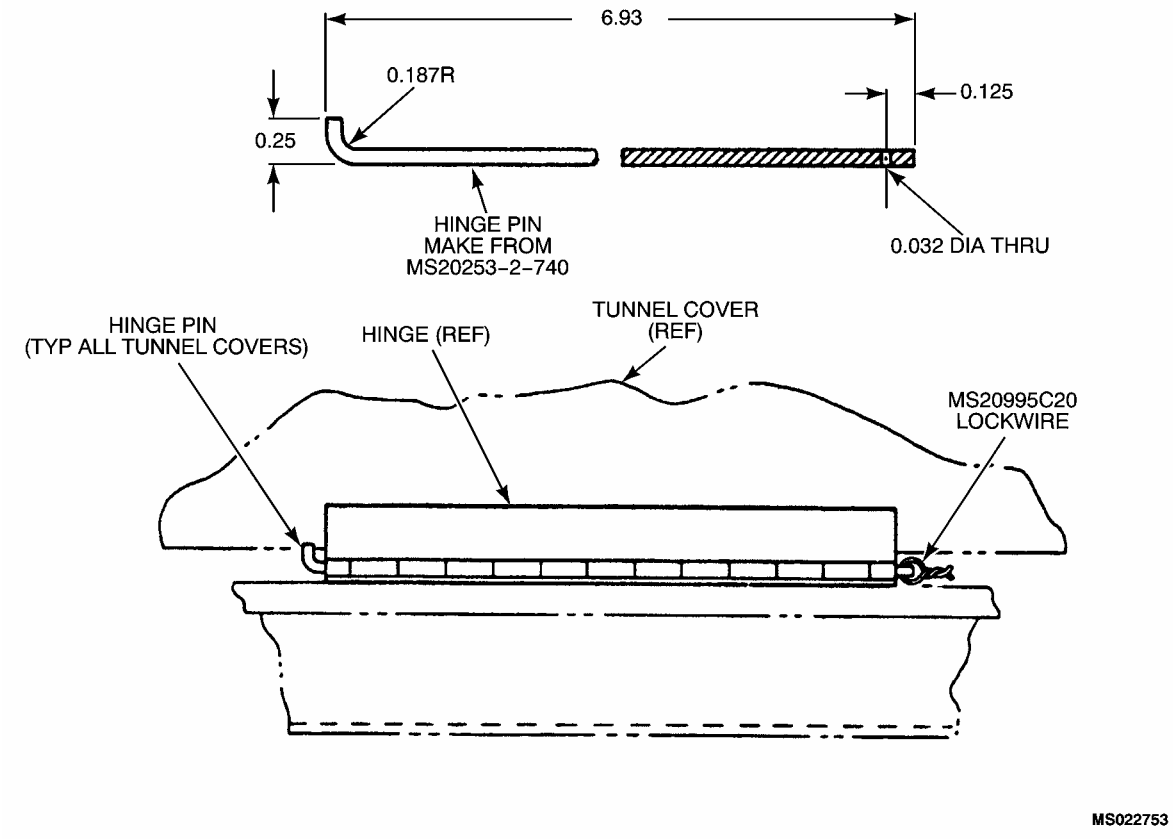
F. Replace with new grip 114S2915-52.

G. Replace with new strap 114S2915-79.

H. Replace with new part same as original.

I. Replace with new hinge assembly 114S2915-60 on cover assembly or 114S2915-59 on fuselage structure. Apply faying surface sealant between hinge half, fuselage, and tunnel cover.

REPAIR - continued

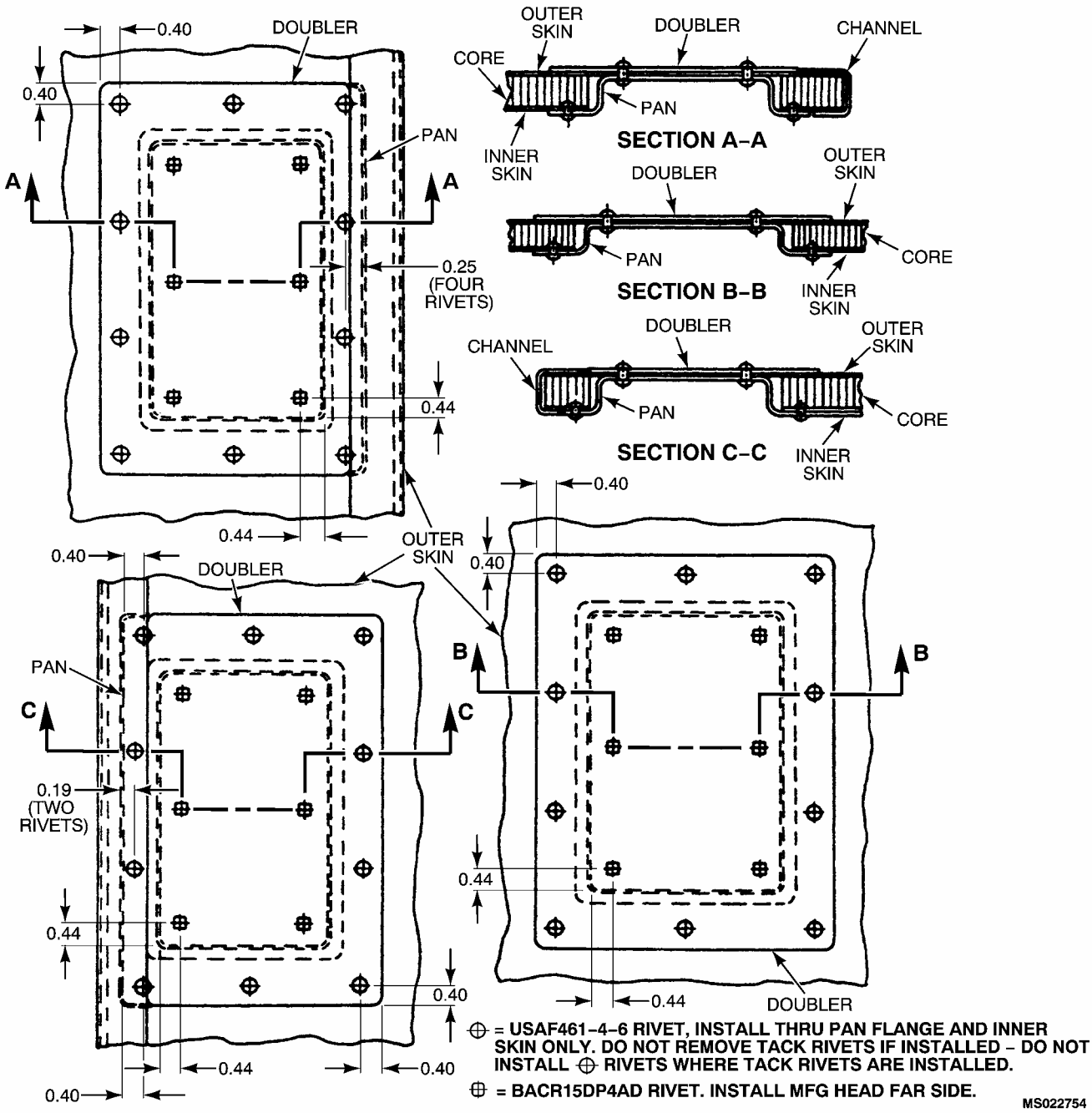


NOTE

All dimensions are in inches.

Figure 5. Tunnel Cover Hinge

REPAIR - continued



NOTE

All dimensions are in inches.

Figure 6. Tunnel Cover Pan

REPAIR - continued

NOTE

Refer to Table 4 for index number reference.

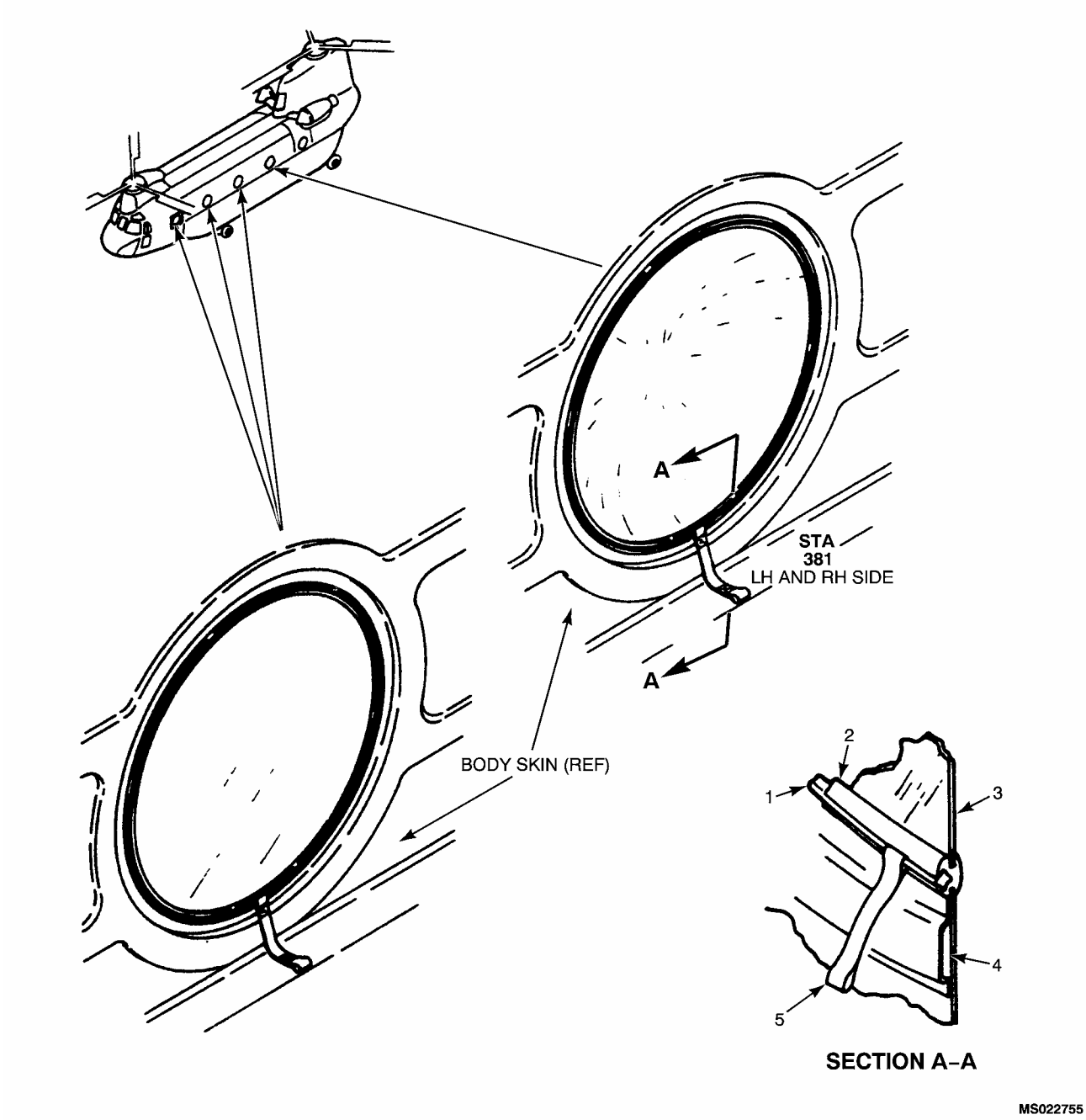


Figure 7. Cabin Windows

REPAIR - continued

Table 4. Cabin Windows

INDEX NO.	NOMENCLATURE	ORIGINAL MATERIAL	REPAIR MATERIAL	WORK PACKAGE
1	Seal Filler	Note B	--	--
2	Seal	Note C	--	0095 00
3	Pane	Note D		0091 00
4	Frame	0.040 2024-T4 Clad	0.040 2024-T3 Clad	0087 00
5	Strap	Note E	--	--

NOTES

A. All dimensions are in inches.

B. Replace with new seal filler 173S2904-5.

C. Replace with new seal 173S2904-4.

D. The windowpane is made of .080-inch thick acrylic sheet, MIL-P-25690.

E. Replace with new strap 114S2901-11.

F. Negligible damage to the aluminum frame is limited to nicks, dents, or scratches, which can be removed by burnishing, or to small holes, which can be filled with a Type A rivet. Damage must not interfere with the removal, installation, or function of the windowpane.

END OF WORK PACKAGE

DEPOT MAINTENANCE WORK REQUIREMENT
CH-47D HELICOPTER
FORWARD POD STA 160 TO STA 187 REPAIR

INITIAL SETUP

Test Equipment:
As Required

Tools and Special Tools:
As Required

Material/Parts:
As Required

Personnel Required:
As Required

References:
TM 1-1500-204-23 Series
TM 55-1520-240-23 Series
WP 0081 00
WP 0086 00
WP 0087 00
WP 0088 00

Equipment Conditions:
As Required

Special Environmental Condition:
As Required

SCOPE

This work package covers repair of the following forward pod, sta 160 to sta 187, and components. Refer to Figure 1.

1. Formers, sta 170 to sta 187
2. Electrical Compartment Access Door

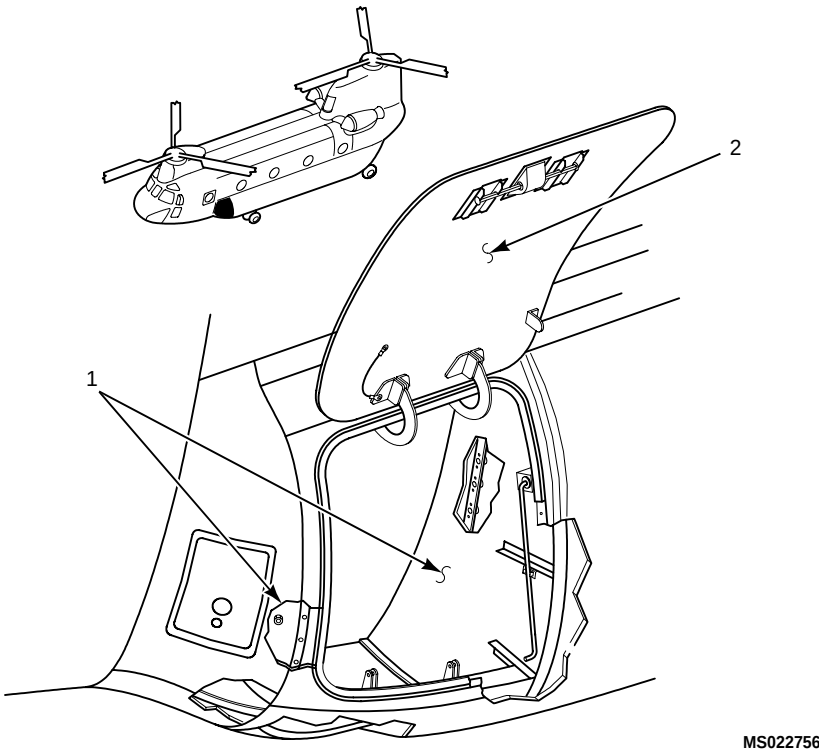


Figure 1. Forward Pod, Sta 160 to Sta 187

REPAIR

NOTE

Refer to Table 1 for index number reference.

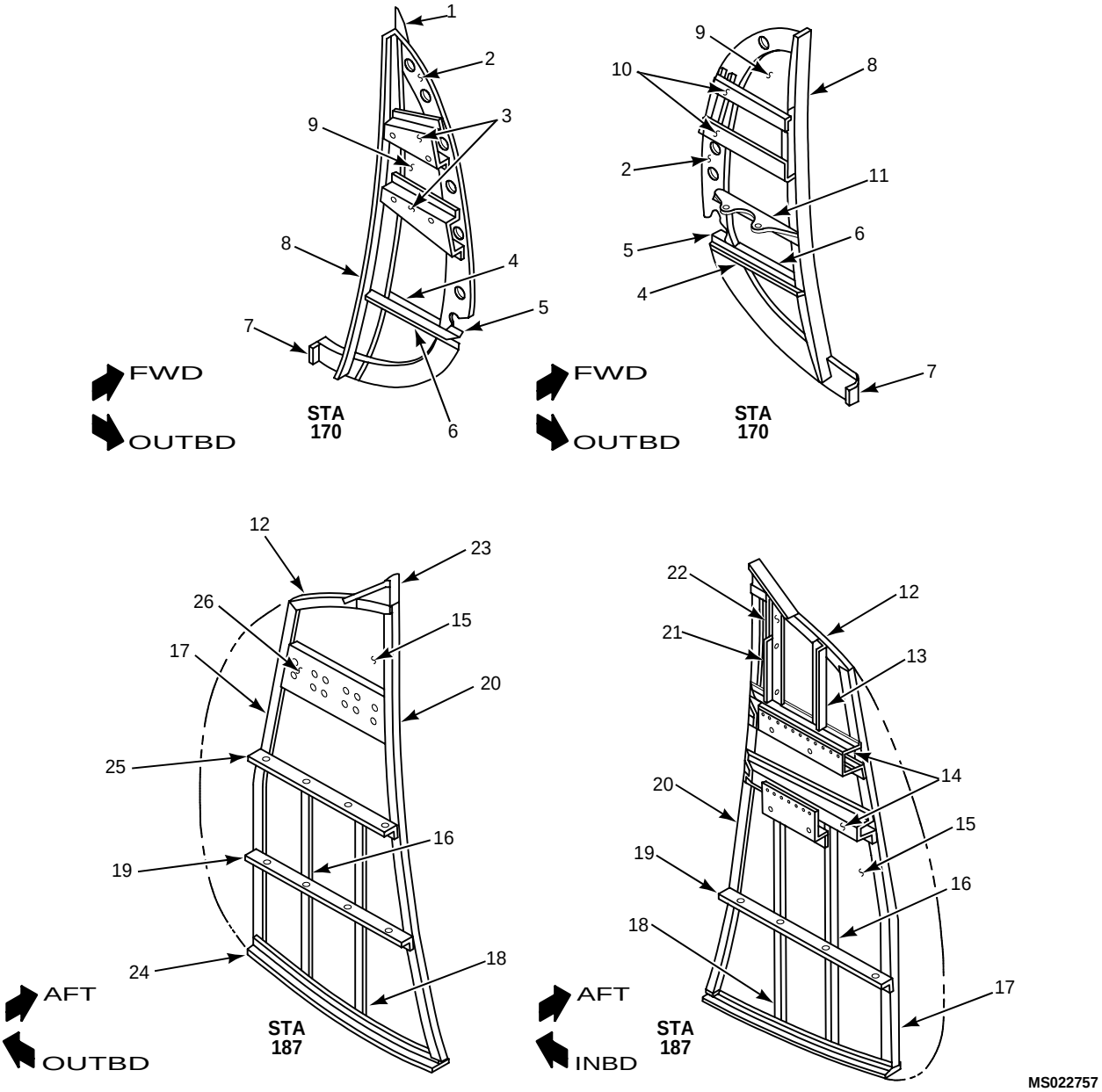


Figure 2. Formers, Sta 170 and Sta 187

REPAIR – continued

Table 1. Formers, Sta 170 and Sta 187

INDEX NO.	NOMENCLATURE	ORIGINAL MATERIAL	REPAIR MATERIAL	WORK PACKAGE
1	Filler	181 Glass Cloth	Note C	0081 00
2	Former	0.040 2024-T3 Clad	0.050 2024-T3 Clad	0087 00
3	Support	0.040 2024-T3 Bare	0.050 2024-T3 Clad	0087 00
4	Support	ALCOA 59409 7075-T6	0.063 4130	0088 00
5	Support	ALCOA 59409 7075-T6	0.063 4130	0088 00
6	Support	ALCOA 59409 7075-T6	0.063 4130	0088 00
7	Bracket	BAC 1503-1420 7075-T6	Note B	--
8	Cap	Reynolds 11730 7075-T6	0.090 4130	0088 00
9	Web	0.020 2024-T3 Clad	0.025 2024-T3 Clad	0086 00
10	Support	0.040 2024-T3 Clad	0.050 2024-T3 Clad	0087 00
11	Support	0.040 2024-T3 Clad	0.050 2024-T3 Clad	0087 00
12	Cap	ALCOA 22008 7075-T6	0.071 4130	0088 00
13	Angle	Reynolds 19292 7075-T6	Note B	--
14	Support	0.040 2024-T3 Clad	0.050 2024-T3 Clad	0087 00
15	Web	0.032 2024-T3 Clad	0.040 2024-T3 Clad	0086 00
16	Support	ALCOA 44076 7075-T6	0.063 4130	0088 00
17	Angle	ALCOA 44076 7075-T6	0.063 4130	0088 00
18	Angle	ALCOA 44076 7075-T6	0.063 4130	0088 00
19	Support	AND10134-1204 7075-T6	0.100 4130	0088 00
20	Angle	ALCOA 22885 7075-T6	0.080 4130	0088 00
21	Angle	ALCOA 28546 7075-T6	Note B	--
22	Support	0.050 2024-T4 Bare	0.063 2024-T3 Clad	0088 00
23	Filler	181 Glass Cloth	Note C	0081 00
24	Cap	ALCOA 22008	0.071 4130	0088 00
25	Support	AND10134-1204 7075-T6	0.100 4130	0088 00
26	Support	0.032 2024-63 Clad	0.040 2024-T3 Clad	0087 00

NOTES

A. All dimensions are in inches.

B. Repair not practical, replace part.

C. Four ply, No. 181 polyester impregnated cloth

REPAIR – continued

NOTE

Refer to Table 2 for index number reference.

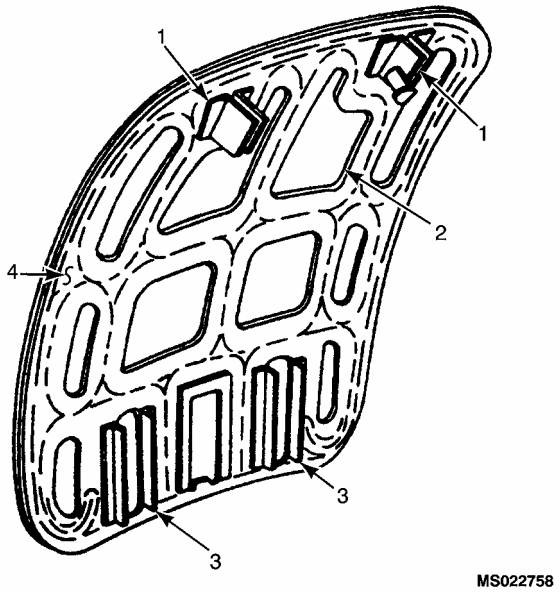


Figure 3. Electrical Compartment Access Door

Table 2. Electrical Compartment Access Door

INDEX NO.	NOMENCLATURE	ORIGINAL MATERIAL	REPAIR MATERIAL	WORK PACKAGE
1	Stiffener	0.032 2024-T4 Clad	0.040 2024-T3 Clad	0087 00
2	Skin, Inner	0.025 2024-T4 Clad	0.032 2024-T3 Clad	0087 00
3	Support	ALCOA 13816 7075-T6	0.100 4130	0088 00
4	Skin, Outer	0.020 2024-T4 Clad	0.025 2024-T3 Clad	0086 00

NOTE

All dimensions are in inches.

END OF WORK PACKAGE

DEPOT MAINTENANCE WORK REQUIREMENT
CH-47D HELICOPTER
FUEL POD AND ACCESS PANELS REPAIRS

INITIAL SETUP

Test Equipment:
As Required

Tools and Special Tools:
As Required

Material/Parts:
As Required

Personnel Required:
As Required

References:
TM 1-1500-204-23 Series
TM 55-1520-240-23 Series
WP 0079 00
WP 0081 00
WP 0083 00
WP 0086 00
WP 0087 00
WP 0088 00
WP 0095 00
WP 0157 00

Equipment Conditions:
As Required

Special Environmental Condition:
As Required

SCOPE

This work package covers repair of fuel pod formers, T caps, strakes, isolator panel, landing gear access door, and refuel relief valve support. Refer to Figure 1.

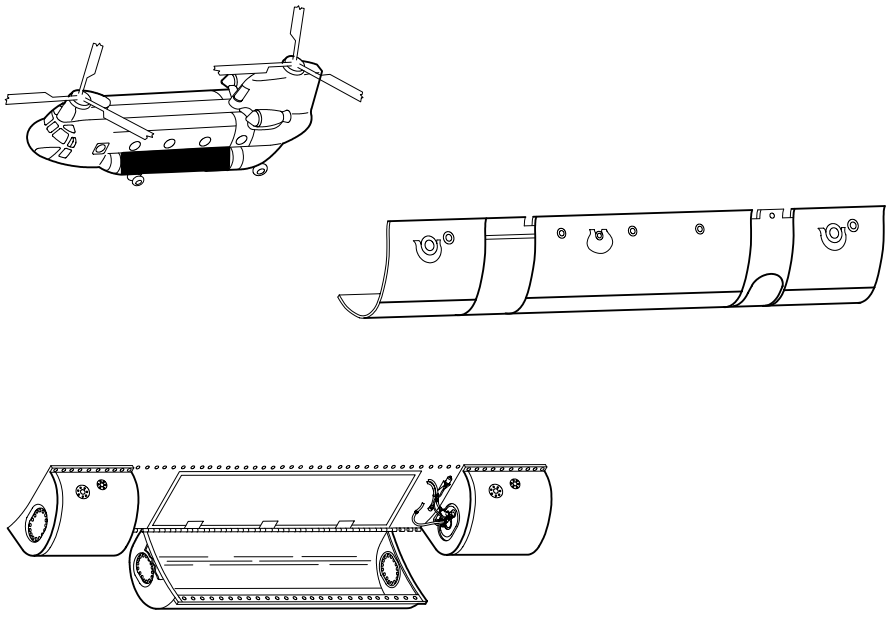


Figure 1. Fuel Pod

REPAIR

NOTE

Refer to Table 1 for index number reference.

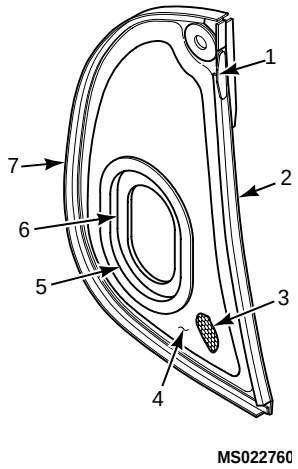


Figure 2. Former, Sta's 189, 238, 262, 372, 389, and 438

Table 1. Former, Sta's 189, 238, 262, 372, 389 and 438

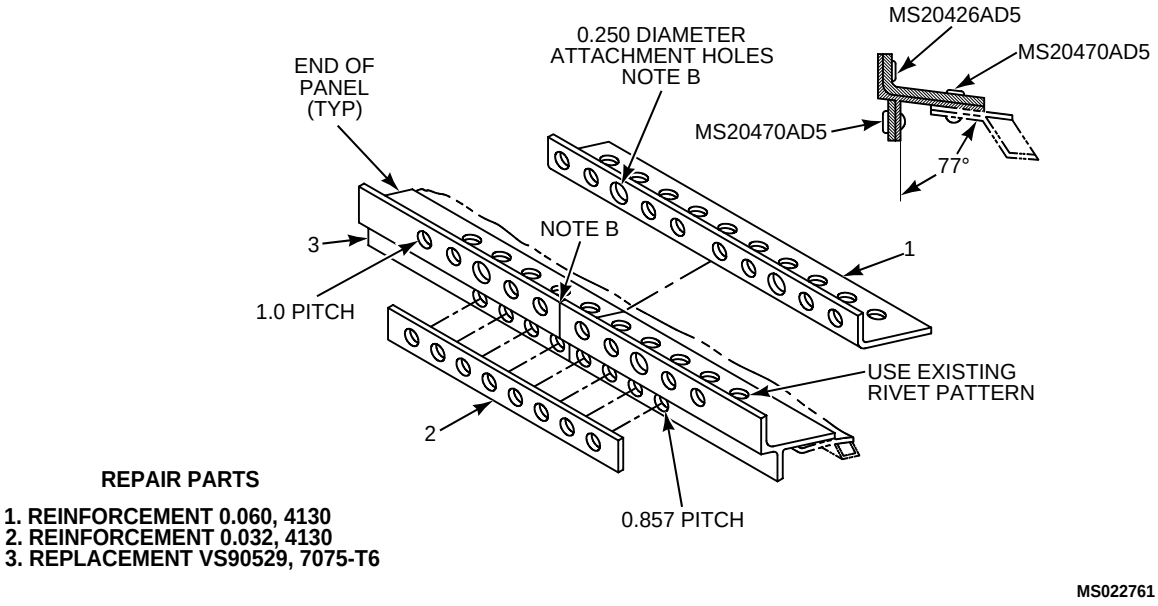
INDEX NO.	NOMENCLATURE	ORIGINAL MATERIAL	REPAIR MATERIAL	WORK PACKAGE
1	Adapter	Note D	--	--
2	Cap	AND10137-0707 7075-T6	0.063 4130	0088 00
3	Core	0.640, 3.1-3/16-10N 3003	Note E	0083 00
3a	Core	0.640, 3.4-1/4-15N 3003	Note E	0083 00
4	Skin	7075-T6 Clad	Note E	0083 00
5	Adapter	Note B	--	--
6	Adapter	Note C	--	--
7	Cap	ALCOA 22008 7075-T6	0.071 4130	0088 00
7a	Cap	VS90332 7075-T6	0.071 4130	0088 00

NOTES

A. All dimensions are in inches.
B. Damage other than minor, replace with adapter, 114S5836-2.
C. Damage other than minor, replace with adapter, 114S5831-1.
D. Damage other than minor, replace with adapter, 114S5838-1.
E. Sandwich honeycomb construction, repair using original material, refer to WP 0083 00.

Item No. 3 - Used at sta's 189, 238, 372, 389, and 438 only.
Item No. 3a - Used at sta 260 only.
Item No. 7 - Used at sta's 238, 262, 372, 389, and 438 only.
Item No. 7a - Used at sta 189 only.

REPAIR - continued



WARNING

EPOXY PRIMER

NOTES

A. All dimensions are in inches.

B. Remove the damaged tee cap back to the centerline of the next fuselage frame.

C. Insulate dissimilar metals, refer to WP 0078 00.

D. To prevent chafing of the fuel tank, apply anti-chafing tape, refer to WP 0079 00. Apply two coats of epoxy primer, (Item 140, WP 0157 00) to all bare metal parts.

E. Attachment holes shown are for reference only. Use hole finder to determine the exact location of the attachment holes with pod temporarily installed on helicopter.

Figure 3. Forward Pod Tee Cap Repair

REPAIR OF FUEL POD TEE CAP EXTRUSION

NOTE

The following procedures require removal and installation of the pod from the helicopter to facilitate repair.

1. Remove sections of damaged tee cap back to and in line with nearest primary former.

2. Replace it with a corresponding length of new extrusion or formed equivalent, and clamp in place.

REPAIR OF FUEL POD TEE CAP EXTRUSION - continued

3. Drill 0.161-inch diameter holes in extrusion using existing rivet locations in pod skin and temporarily fasten extrusion in place.

4. Remove five rivets through existing extrusion and pod skin.

5. Fabricate a splice angle from 0.060–inch 4130 steel 6 ¾ inches long, 2 inches wide, and 77 degrees (see Figure 3).

6. Position splice angle as shown to pick up five rivet holes each side of splice joint and clamp in place.

NOTE

Splice angle must fit contour of extrusion.

7. Drill five holes each side, using a 0.161-inch diameter drill.

WARNING

EPOXY PRIMER

8. Remove all clamps, temporary fasteners, and replacement parts. Deburr all holes. Apply two coats of epoxy primer (Item 140, WP 0157 00) to all exposed metal and faying surfaces in repair area.

9. Install replacement parts and splice angle, using rivets. Position heads as shown.

10. Install pod on helicopter temporarily and locate pod attachment holes in replacement parts with a hole finder.

11. Remove pod from helicopter and drill required attachment holes in tee cap using a 1/4-inch diameter drill.

12. Locate and drill four 0.161-inch diameter holes, each side of splice, in area of splicing angle. Space holes to avoid interference with pod attachment holes.

13. Countersink and deburr holes.

14. Fabricate a flat splice plate from 0.032-inch 4130 steel, 71/2-inches long and 3/4-inch wide.

15. Position splice plate to pick up holes drilled in step 12. Space rivets 7/8-inch if a pattern does not exist.

16. Drill 0.161-inch diameter holes through splice plate and lower leg of tee cap.

WARNING

EPOXY PRIMER

17. Remove splice plate, deburr holes, and apply two coats of epoxy primer (Item 140, WP 0157 00) to exposed metal and faying surfaces of splice plate.

18. Install splice plate using rivets at location as shown.

19. To prevent chafing of the fuel tank, apply anti-chafing tape, refer to WP 0079 00, over all repair protrusions.

REPAIR OF FUEL POD TEE CAP EXTRUSION - continued

NOTE

Refer to Table 2 for index number reference.

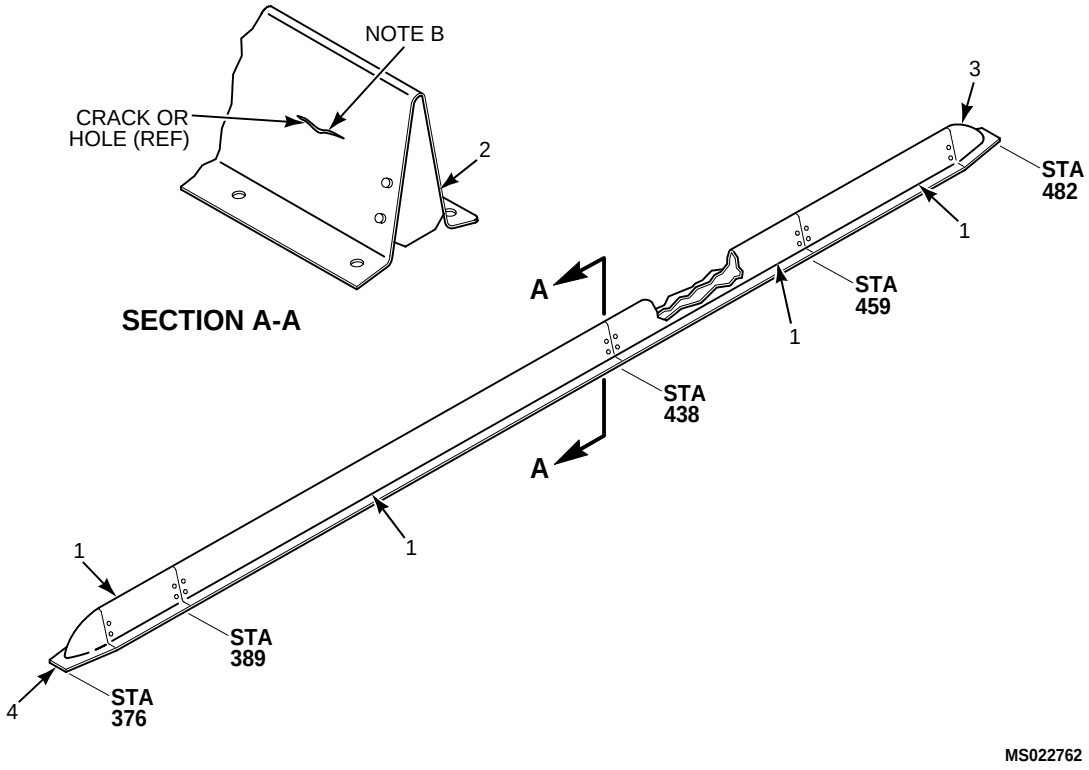


Figure 4. Fuel Pod Strake

Table 2. Fuel Pod Strake

INDEX NO.	NOMENCLATURE	ORIGINAL MATERIAL	REPAIR MATERIAL	WORK PACKAGE
1	Strake	0.050 2024-T4 Clad	0.050 2024-T3 Clad	0087 00
2	Cap	0.025 2024-T4 Clad	0.025 2024-T3 Clad	0087 00
3	Strake Tail Piece	6 Ply No.181-75 Glass Cloth	Note C	0081 00
4	Strake Nose Piece	6 Ply No. 181-75 Glass Cloth	Note C	0081 00

NOTES

A. All dimensions are in inches.

B. External repairs not permitted. Use insertion type repairs.

C. Repair with original material.

REPAIR OF FUEL POD TEE CAP EXTRUSION - continued

NOTE

Refer to Table 3 for index number reference.

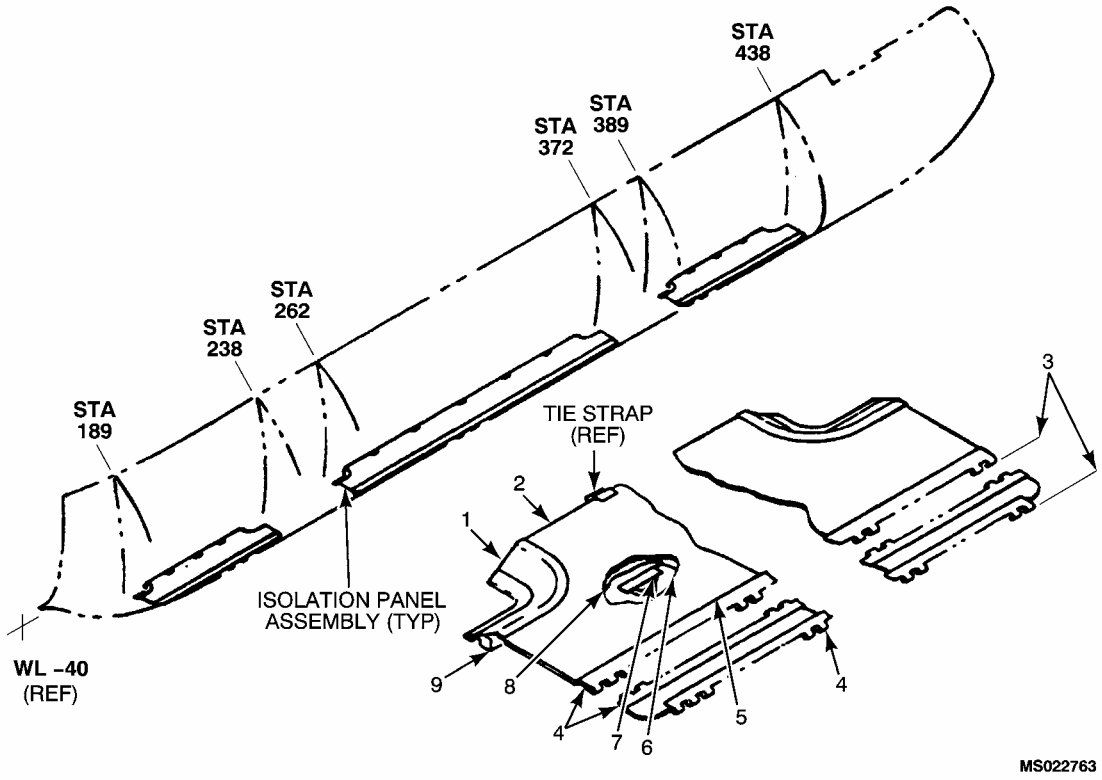


Figure 5. Isolator Panel Assembly

REPAIR OF FUEL POD TEE CAP EXTRUSION - continued

Table 3. Isolator Panel Assembly

INDEX NO.	NOMENCLATURE	ORIGINAL MATERIAL	REPAIR MATERIAL	WORK PACKAGE
1	Strip	0.020 2024-T3 Clad	0.020 2024-T3 Clad	0083 00
2	Upper Skin	2 Ply No. 181 Glass Cloth	Note B	0081 00
3	Hinge Pin	MS20253-2-5500	Note C	--
4	Hinge Half	MS20001PH5-5500	Note C	0093 00
5	Film	Tedlar Film	Note E	--
6	Lower Skin	2 PLY NO. 181 Glass Cloth	Note B	0081 00
7	Isolator	6063-T6	Note D	--
8	Core	8.1-1/8 X 20N 3003 MIL-C-7438	Note B	0083 00
9	Edge Strip	0.125 Silicone Rubber	0.125 Silicone Rubber Strip of Sheet AMS3345 or AMS3346	0095 00

NOTES

A. All dimensions are in inches.
B. Sandwich honeycomb construction, repair or replace with original material. Refer to WP 0083 00.
C. Replace hinge half with MS20001PH5-5000 and pin MS20253-2-5500.
D. If damage is other than minor, replace with new isolator, 114SS674-1.
E. Tedlar film is bonded to upper and lower surfaces of isolator panels.

REPAIR OF FUEL POD TEE CAP EXTRUSION – continued

NOTE

Refer to Table 4 for index number reference.

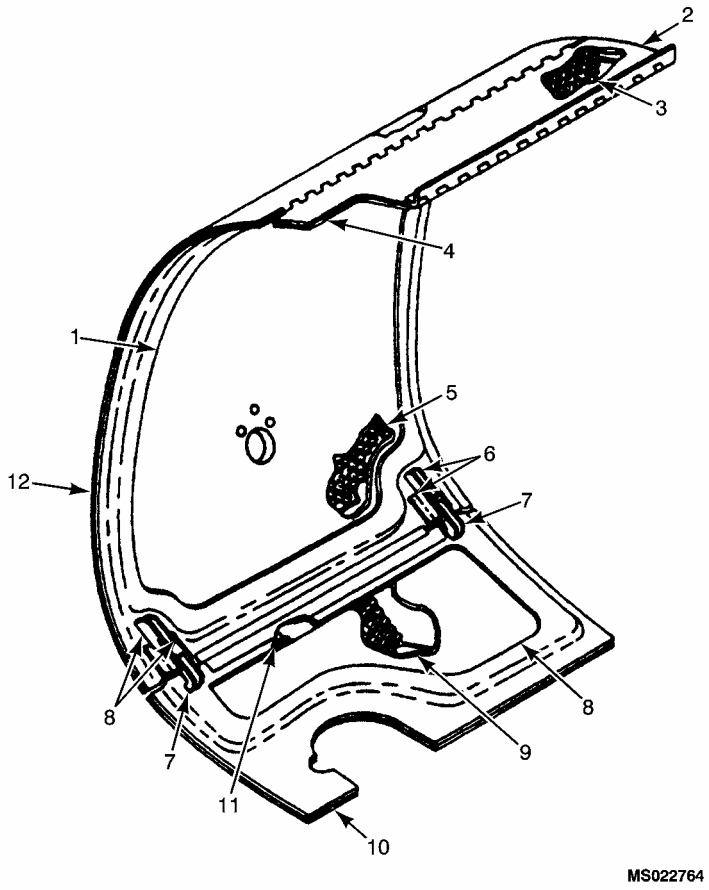


Figure 6. Forward Landing Gear Access Door

REPAIR OF FUEL POD TEE CAP EXTRUSION - continued

Table 4. Forward Landing Gear Access Door

INDEX NO.	NOMENCLATURE	ORIGINAL MATERIAL	REPAIR MATERIAL	WORK PACKAGE
1	Skin	0.012 7075-T6 Clad	Note B	0083 00
2	Skin	0.016 7075-T6 Clad	Note B	0083 00
3	Core	0.590, 2.3-1/4-10N-3003	Note B	0083 00
4	Skin	0.012 7075-T6 Clad	Note B	0083 00
5	Core	0.509, 2.3-1/4-10N-3003	Note B	0083 00
6	Bracket	ALCOA 22991	0.071 4130	0088 00
7	Bracket	0.063 7075-T6 Clad	0.063 7075-T6 Clad	0088 00
8	Skin	0.016 7075-T6 Clad	Note B	0083 00
9	Core	0.590, 2.3-1/4-10N-3003	Note B	0083 00
10	Skin	0.016 7075-T6 Clad	Note B	0083 00
11	Core	0.590, 23.4-1/8-60N-3003	Note B	0083 00
12	Skin	0.016 7075-T6 Clad	Note B	0083 00

NOTES

A. All dimensions are in inches.

B. Sandwich honeycomb construction, refer to WP 0083 00.

C. Repair or replace with original material.

REPAIR OF FUEL POD TEE CAP EXTRUSION - continued

NOTE

Refer to Table 5 for index number reference.

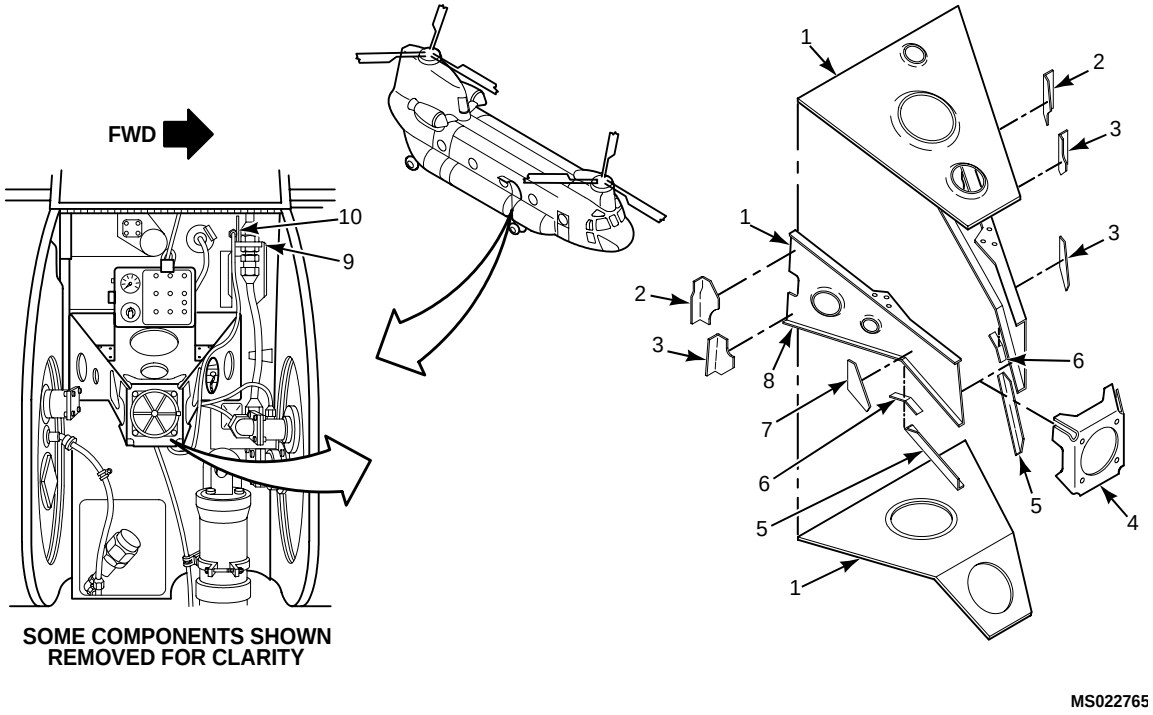


Figure 7. Refuel Relief Valve Support

Table 5. Refuel Relief Valve Support

INDEX NO.	NOMENCLATURE	ORIGINAL MATERIAL	REPAIR MATERIAL	WORK PACKAGE
1	Web	0.040 2024-T3 Clad	Note B	0086 00
2	Clip	0.090 2024-T3 Clad	Note B	0087 00
3	Clip	0.080 2024-T3 Clad	Note B	0087 00
4	Face Plate	0.125 7075-T6 Clad	Note B	0087 00
5	Angle	0.063 2024-T3 Clad	Note B	0088 00
6	Clip	0.050 2024-T3 Clad	Note B	0087 00
7	Gusset	0.050 2024-T3 Clad	Note B	0086 00
8	Frame	0.063 2024-T3 Clad	Note B	0087 00
9	Bracket	0.063 2024-T3 Clad	Note B	0088 00
10	Bracket	BAC1503-11780 Extr.	Note B	0088 00

NOTES

A. All dimensions are in inches.

B. Repair or replace with original material.

END OF WORK PACKAGE

DEPOT MAINTENANCE WORK REQUIREMENT
CH-47D HELICOPTER
CABIN CROWN TUNNEL REPAIRS

INITIAL SETUP

Test Equipment:
As Required

Tools and Special Tools:
As Required

Material/Parts:
Primer, Epoxy (Item 140, WP 0157 00)

Personnel Required:
As Required

References:
TM 1-1500-204-23 Series
TM 55-1520-240-23 Series
WP 0086 00
WP 0087 00
WP 0088 00
WP 0148 00

Equipment Conditions:
As Required

Special Environmental Condition:
As Required

SCOPE

This work package covers repairs for the following cabin crown tunnel structural components. Refer to Figure 1.

1. Tunnel Smoke Baffle
2. Rescue Hoist Beam
3. Litter Strap Support
4. Blade Fold Support
5. Drive Shaft Support
6. Dome Light Bracket
7. Locating Fixture, Drive Shaft Support Brackets (Not shown in Figure 1)
8. Installation of Drive Shaft Support Bracket Locating Fixture (Not shown in Figure 1)
9. Locating of Drive Shaft Mounting Hole - Alternate Method (Not shown in Figure 1)

REPAIR

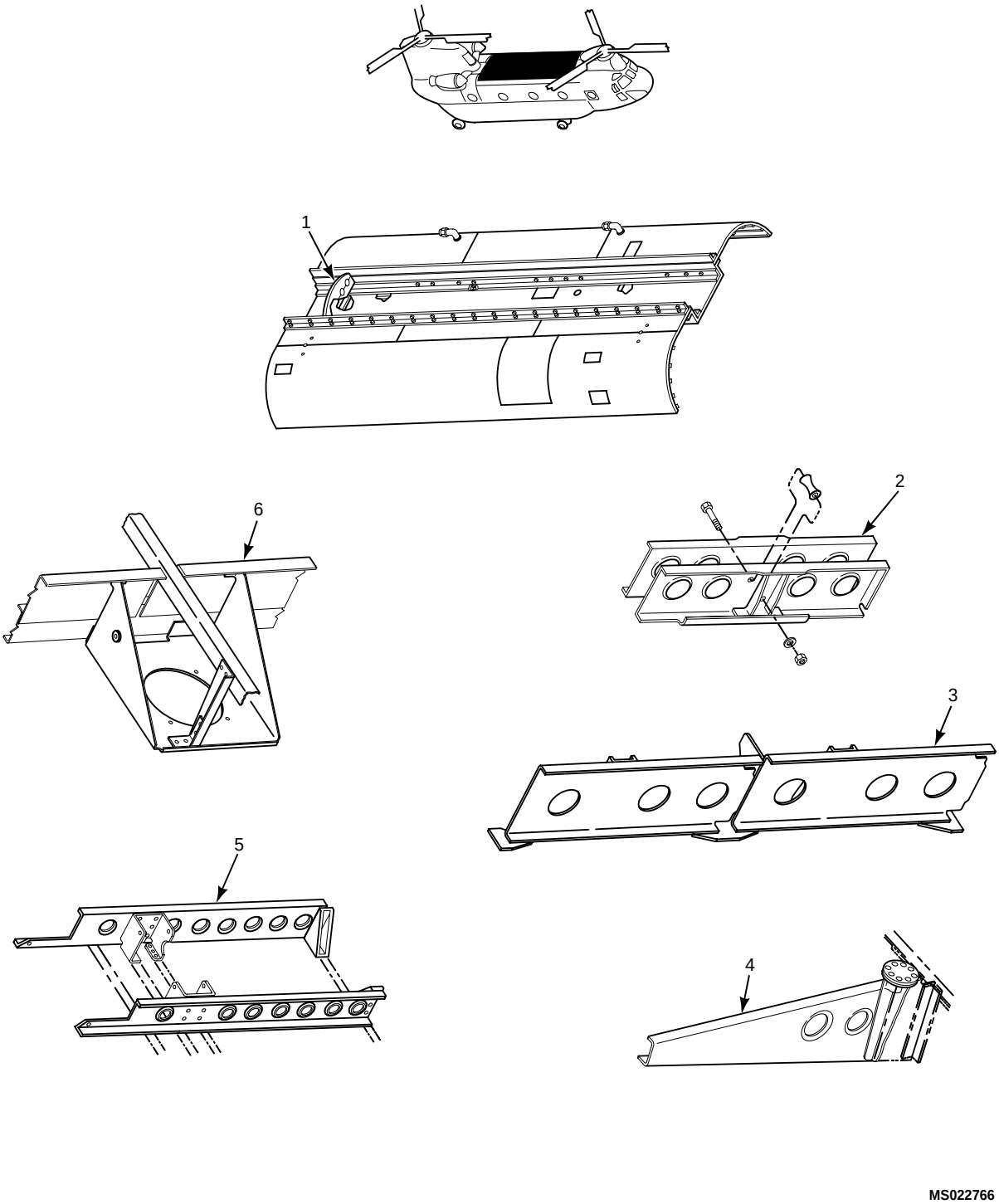


Figure 1. Cabin Crown Tunnel

REPAIR – continued

NOTE

Refer to Table 1 for index number reference.

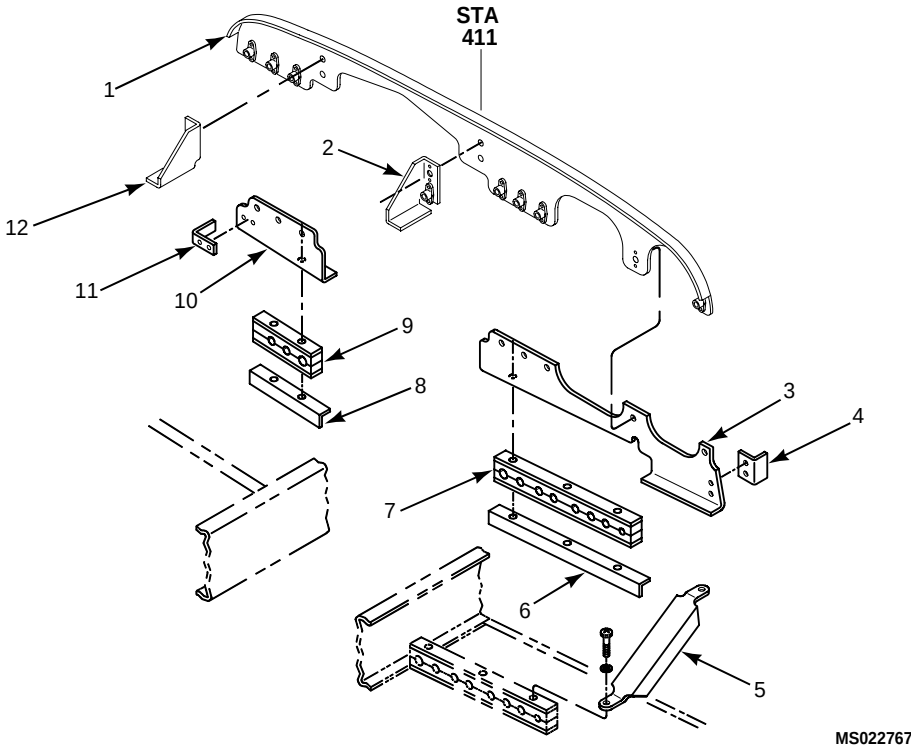


Figure 2. Tunnel Smoke Baffle

REPAIR – continued

Table 1. Tunnel Smoke Baffle

INDEX NO.	NOMENCLATURE	ORIGINAL MATERIAL	REPAIR MATERIAL	WORK PACKAGE
1	Flange Upper	0.025 2024-T4 Clad	0.032 2024-T3 Clad	0087 00
2	Bracket	0.032 2024-T4 Clad	0.040 2024-T3 Clad	0087 00
3	Flange Outbd	0.032 2024-T4 Clad	0.040 2024-T3 Clad	0087 00
4	Clip	0.032 2024-T4 Clad	Note C	--
5	Channel	0.032 2024-T4 Clad	0.040 2024-T3 Clad	0087 00
6	Angle	BAC1503 1420 7075-T6	Note C	0088 00
7	Block, Hyd.	Note B	--	--
8	Angle	BAC1503-1420 7075-T6	Note C	0088 00
9	Block, Hyd.	Note B	--	--
10	Flange Outbd	0.032 2024-T4 Clad	0.040 2024-T3 Clad	0087 00
11	Clip	0.032 2024-T4 Clad	Note C	--
12	Bracket	0.032 2024-T3 Clad	0.040 2024-T3 Clad	0087 00

NOTES

A. All dimensions are in inches.

B. Replace items 7 and 9 with TA3050-0006.

C. Replace or repair with original material.

REPAIR – continued

NOTE

Refer to Table 2 for index number reference.

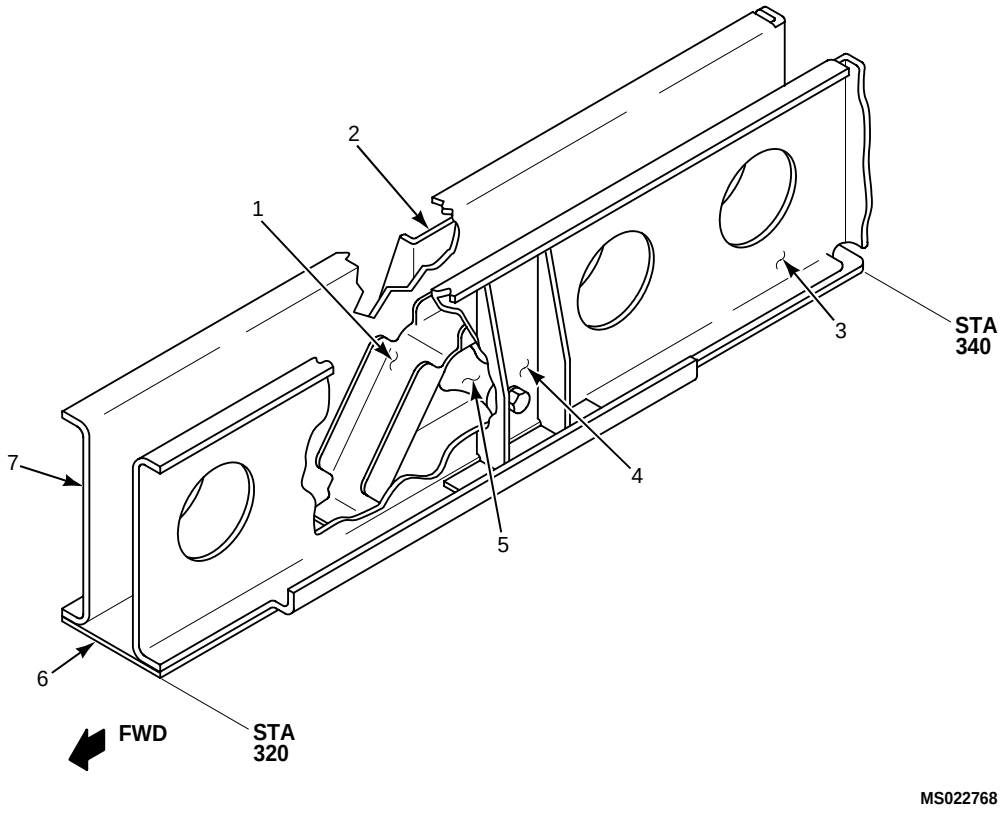


Figure 3. Rescue Hoist Beam

Table 2. Rescue Hoist Beam

INDEX NO.	NOMENCLATURE	ORIGINAL MATERIAL	REPAIR MATERIAL	WORK PACKAGE
1	Cover	0.016 2024-T4 Clad	0.025 2024-T3 Clad	0087 00
2	Channel	0.040 2024-T4 Clad	0.050 2024-T3 Clad	0087 00
3	Channel	0.032 2024-T4 Clad	0.040 2024-T3 Clad	0087 00
4	Channel	0.040 2024-T4 Clad	0.050 2024-T3 Clad	0087 00
5	Fitting	1.0 DIA 7075-T6 Rd Bar	Note B	--
6	Closing Plate	0.032 2024-T4 Clad	0.032 2024-T3 Clad	0086 00
7	Channel	0.032 2024-T4 Clad	0.040 2024-T3 Clad	0087 00

NOTES

A. All dimensions are in inches.

B. Replace with new fitting, 114S2839-1.

REPAIR – continued

NOTE

Refer to Table 3 for index number reference.

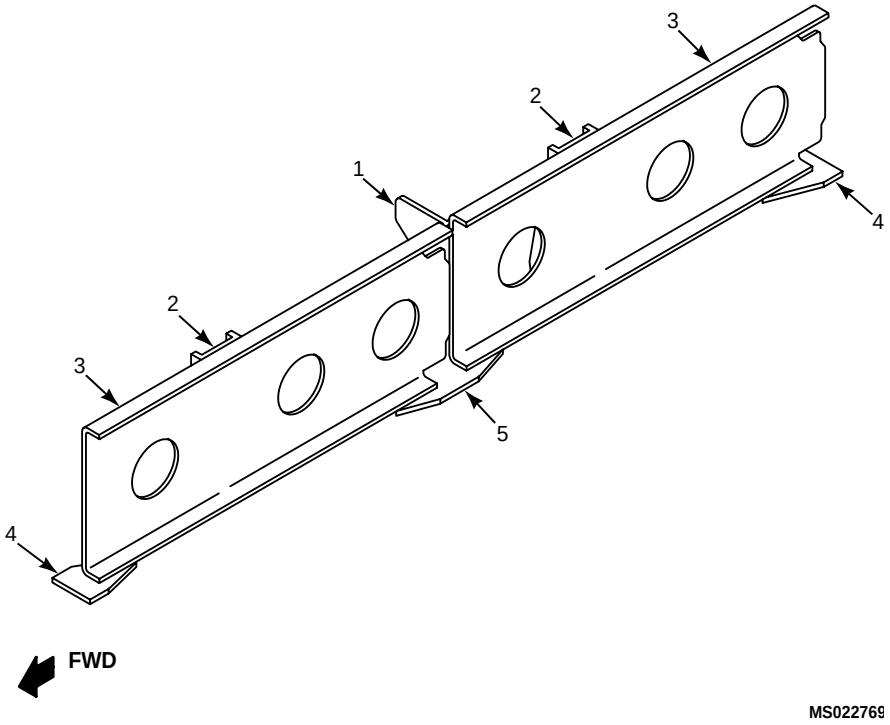


Figure 4. Litter Strap Support

Table 3. Litter Strap Support

INDEX NO.	NOMENCLATURE	ORIGINAL MATERIAL	REPAIR MATERIAL	WORK PACKAGE
1	Angle	0.032 7075-T6	Note E	--
2	Bracket	0.063 2024-T4 Clad	0.063 2024-T3 Clad	0087 00
3	Web	0.025 7075-T6 Clad	0.032 7075-T6 Clad	0087 00
4	Gusset	0.032 2024-T4 Clad	Note C	--
5	Gusset	0.032 2024-T4 Clad	Note D	--

NOTES

A. All dimensions are in inches.

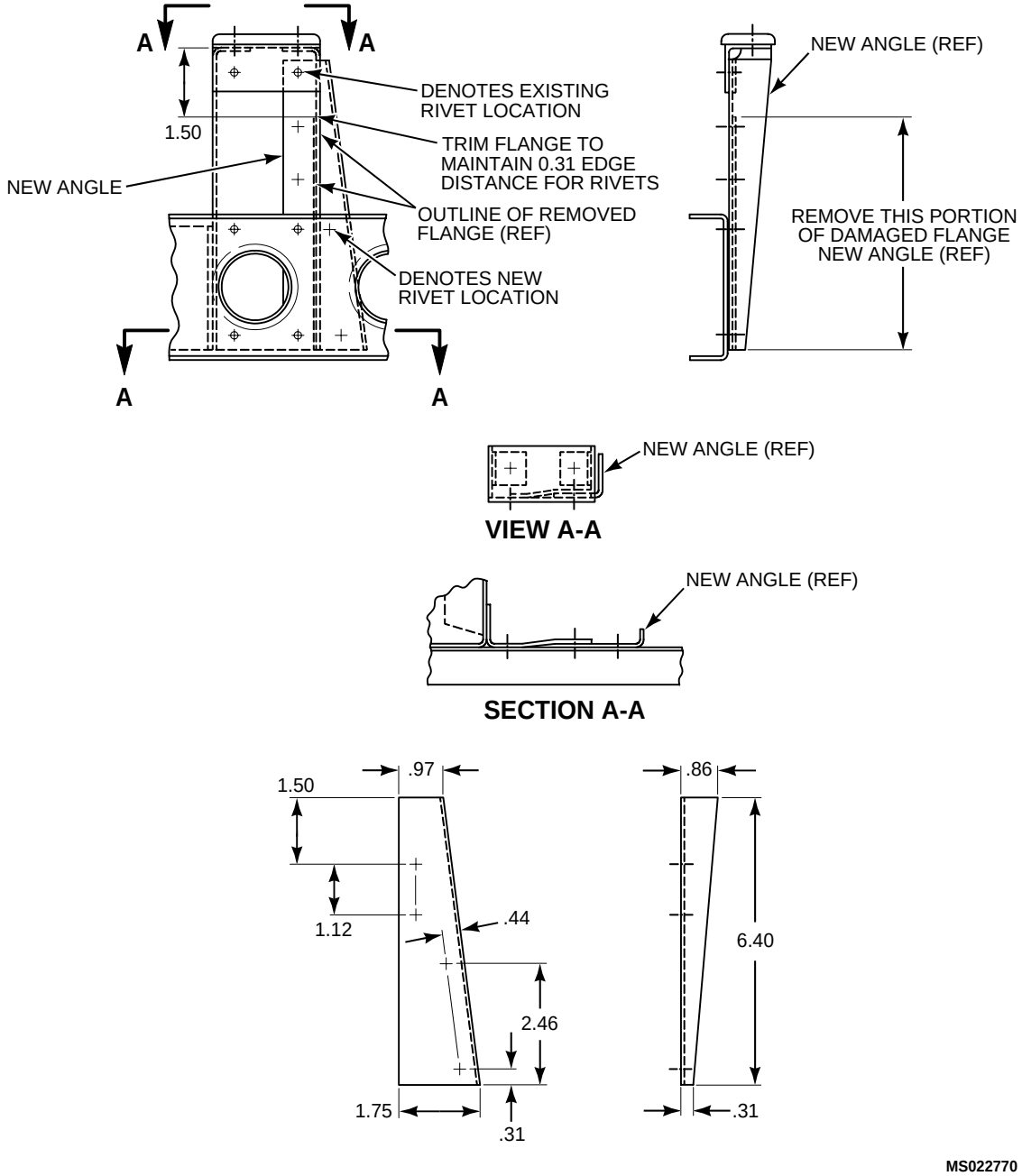
B. The RH beam is shown. The LH beam is similar in construction. Repair data listed is applicable to both configurations.

C. Replace with new gusset, 114S2351-23 LH and RH.

D. Replace with new gusset, 114S2351-21 LH and RH.

E. Replace with new angle, 114S2351-29 LH and 114S2351-31 RH.

REPAIR – continued



NOTES

A. All dimensions are in inches.

B. Rivets symbol: &plus denotes new rivet locations; use rivet, MS20470AD5.

C. Section A-A, detail on new angle. Make from 0.050-inch 2024-T3 clad aluminum. Bend radius 0.19-inch.

Figure 5. Blade Fold Support

REPAIR – continued

NOTE

Refer to Tables 4 and 5 for index number reference.

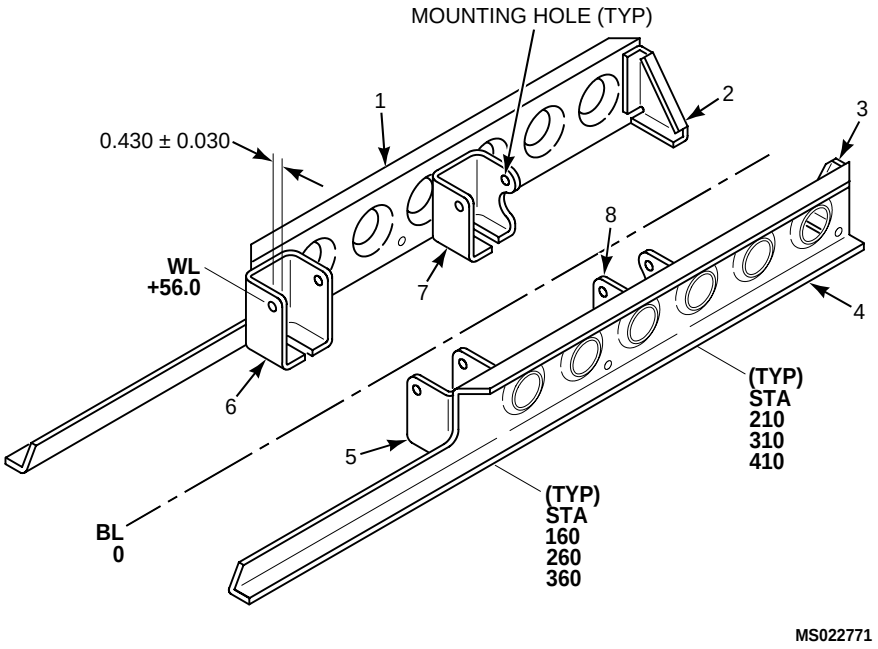


Figure 6. Drive Shaft Supports, Sta's 160, 260, 360, 210, 310, and Sta 410

Table 4. Drive Shaft Supports Sta's 160, 260, and Sta 360

INDEX NO.	NOMENCLATURE	ORIGINAL MATERIAL	REPAIR MATERIAL	WORK PACKAGE
1	Support	0.032 2024-T4 Clad	0.040 2024-T3 Clad	0087 00
2	Bracket	0.032 2024-T4	Note C	--
4	Support	0.032 2024-T4 Clad	0.040 2024-T3 Clad	0087 00
5	Bracket	0.080 2024-T4 Clad	Note B	--
6	Bracket	0.080 2024-T4 Clad	Note B	--
8	Bracket	0.080 2024-T4 Clad	Note D	--

NOTES

A. All dimensions are in inches.

B. Replace with new bracket 114S2352-37 LH and 114S2352-38 RH for sta 160 only; 114S2352-39 LH and 114S2352-40 RH for sta 260 only; and 114S2352-41 LH and 114S2352-42 RH for sta 360.

C. Replace with new bracket 114S2745-1.

D. Replace with new bracket 114S2352-35 LH and 114S2352-36 RH for sta's 210, 310, and 410.

REPAIR – continued

Table 5. Drive Shaft Supports Sta's 210, 310, and Sta 410

INDEX NO.	NOMENCLATURE	ORIGINAL MATERIAL	REPAIR MATERIAL	WORK PACKAGE
2	Support	0.032 2024-T4 Clad	0.040 2024-T3 Clad	0087 00
3	Bracket (2 Reqd)	0.032 2024-T4 Clad	Note C	--
4	Bracket (2 Reqd)	0.032 2024-T4 Clad	Note C	--
5	Bracket	0.080 2024-T4 Clad	Note D	--
6	Support	0.032 2024-T4 Clad	0.040 2024-T3 Clad	0087 00
7	Bracket	0.080 2024-T4 Clad	Note D	--

NOTES

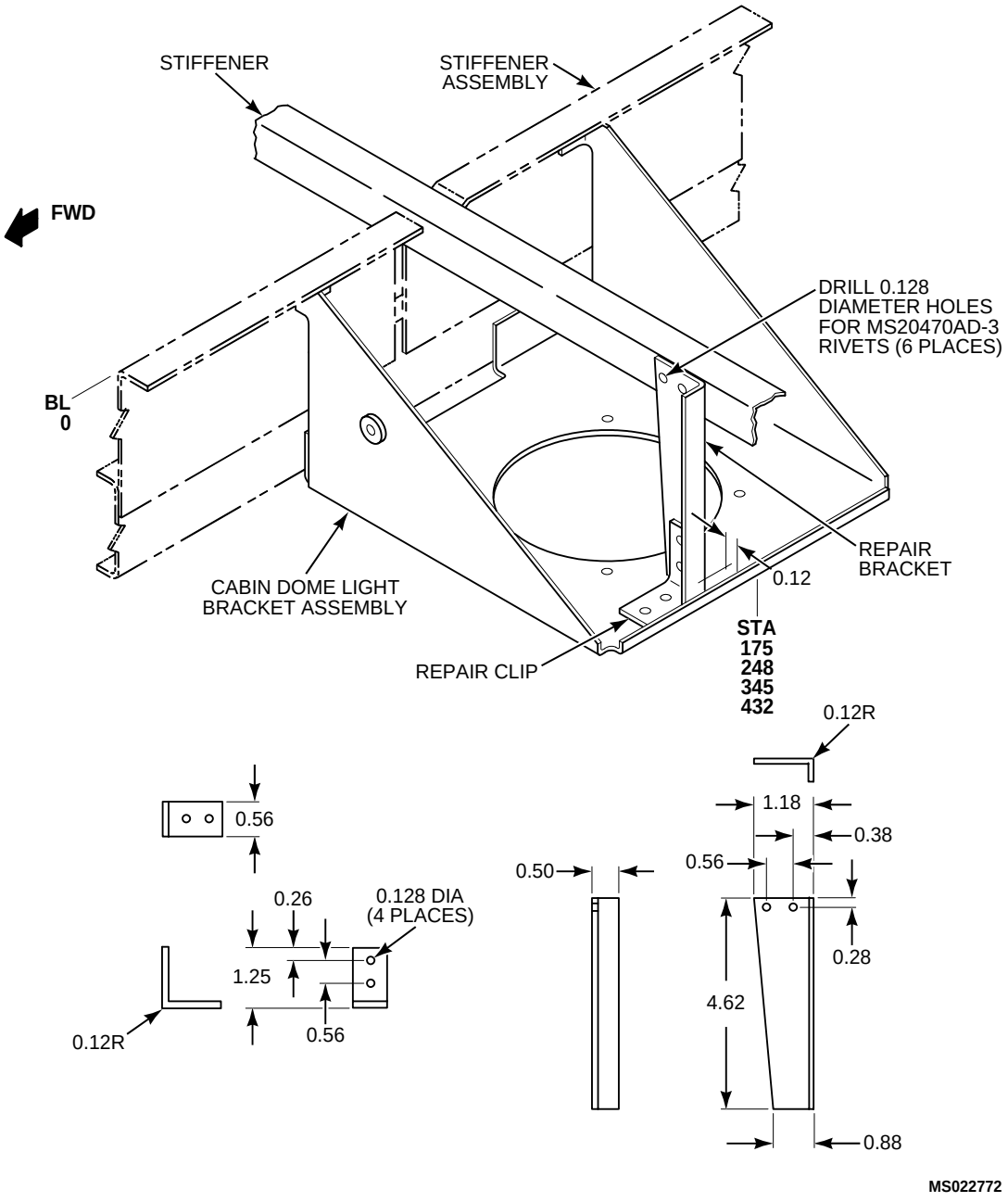
A. All dimensions are in inches.

B. Replace with new bracket 114S2352-37 LH and 114S2352-38 RH for sta 160 only; 114S2352-39 LH and 114S2352-40 RH for sta 260 only; and 114S2352-41 LH and 114S2352-42 RH for sta 360.

C. Replace with new bracket 114S2745-1.

D. Replace with new bracket 114S2352-35 LH and 114S2352-36 RH for sta's 210, 310, and 410.

REPAIR – continued

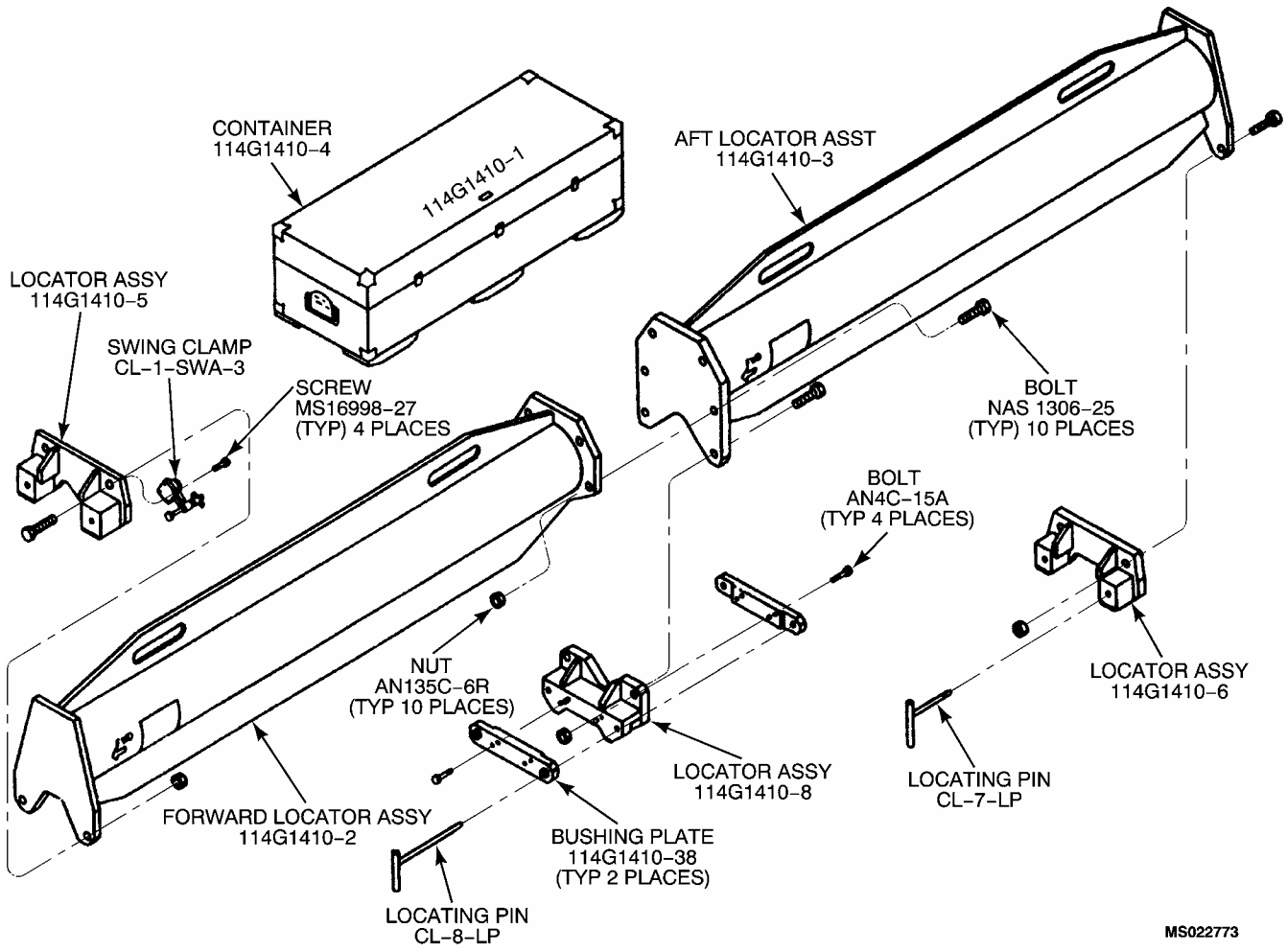


NOTES

A. All dimensions are in inches.
B. It may be necessary to relocate a drain tube standoff adjacent to the repair bracket.
C. Repair bracket - make from 0.032-inch 2024-T3 clad aluminum.
D. Repair clip - make from 0.032-inch 2024-T3 clad aluminum.

Figure 7. Dome Light Bracket

REPAIR – continued



NOTE

This locating fixture may also be used to repair drive shaft supports at sta's 160, 210, and sta 410.

Figure 8. Locating Fixture, Drive Shaft Support Brackets

REPAIR – continued

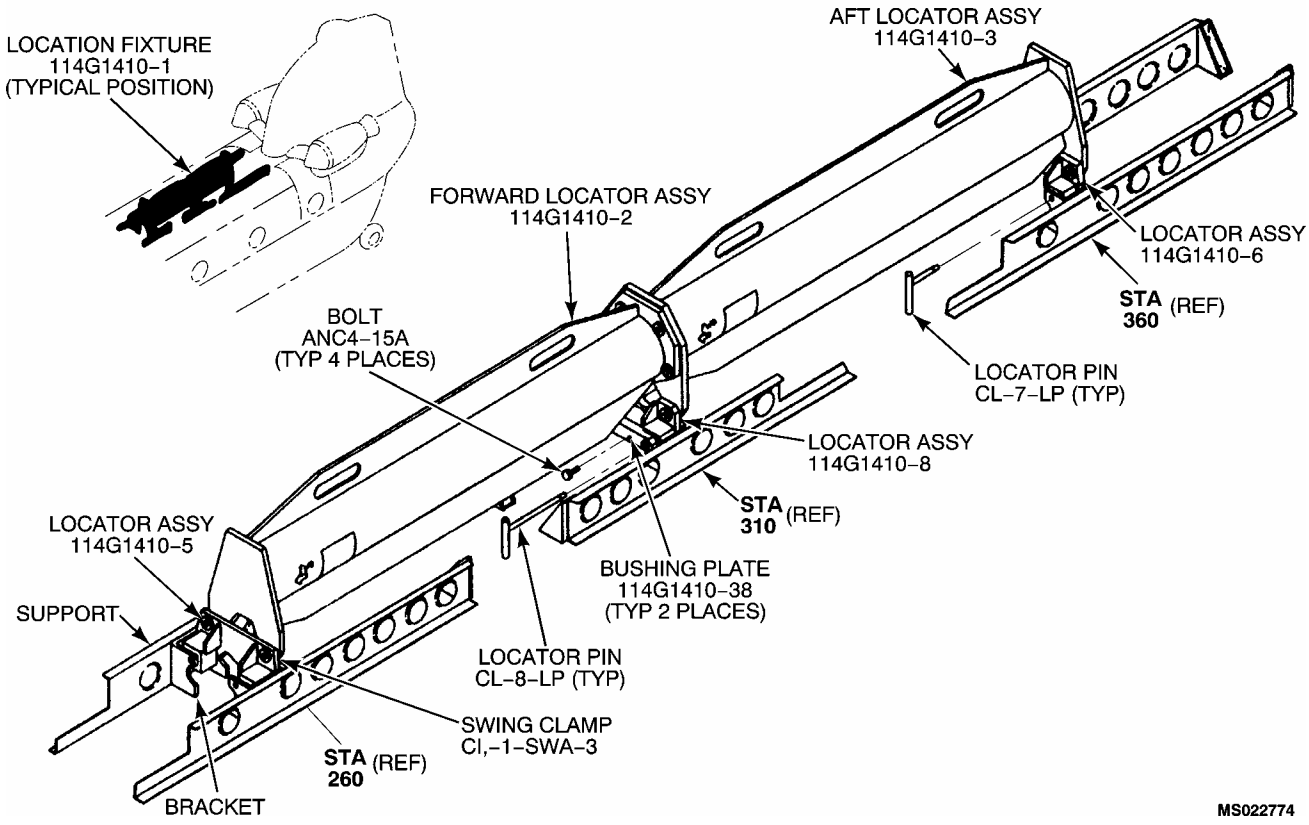


Figure 9. Installation of Drive Shaft Support Bracket Locating Fixture

INSTALLATION OF DRIVE SHAFT SUPPORT BRACKET LOCATING FIXTURE, 114G1410-1

1. Gain access to three adjacent drive shaft supports. Remove applicable drive shafts, if installed. Refer to TM 55-1520-240-23.

2. Place forward locator assembly, 114G1410-2, on cabin crown walkway.

3. Place aft locator assembly, 114G1410-3, on cabin crown walkway.

CAUTION

Improper hardware will reduce accuracy of locating fixture and may cause excessive misalignment of helicopter drive system.

4. Install locator assembly, 114D1410-5, on forward end of locator assembly 114G1410-2. Use two bolts, NAS1306-25, and two nuts, AN315C6R.

5. Install locator assembly, 114G1410-6, on aft end of locator assembly 114G1410-3. Use two bolts, NAS1306-25, and two nuts, AN315C6R.

INSTALLATION OF DRIVE SHAFT SUPPORT BRACKET LOCATING FIXTURE, 114G1410-1 - continued

6. Install locator assembly, 114G1410-8, on forward end of locator assembly 114G1410-3. Use two bolts, NAS1306-25, and two nuts, AN135C6R.

CAUTION

Improper installation of locator assembly can cause damage to drive shaft support brackets.

NOTE

Locator assembly 114G1410-7 is to be used on helicopters equipped with 114S2717 series drive shaft support brackets. Locator assembly 114G1410-8 is to be used on helicopters equipped with 114S2352 series brackets.

Do not install locator assembly 114G1410-7 as a substitute for locator assembly114G1410-8.

7. Carefully lower aft locator assembly, 114G4140-3, onto the four applicable drive shaft support brackets. Attach locator assembly to brackets using pins, CL-8-LP, as required.

CAUTION

Do not lower aft end of forward locator assembly prior to installation of attaching hardware**.**

8. Carefully place forward locator assembly, 114G1410-2, and attached parts on the two applicable drive shaft supports.

9. Attach forward locator assembly to aft locator assembly. Use four bolts, NAS1306-25, and four nuts, AN315C6R.

10. Attach forward locator assembly to drive shaft support brackets. Use locating pins, CL-7-LP, as required.

11. Install swing clamp, CL-1SWA-3, on locator assembly 114G1410-5. Use four screws, MS16998-27.

12. Install bushing plates, 114G1410-38, on locator assembly 114G1410-1 or 114G1410-8, if required. Use four bolts, AN4C15A.

13. Check that all fasteners are tight and that all locating pins are properly installed.

USE OF DRIVE SHAFT SUPPORT BRACKET LOCATING FIXTURE 114G1410-1.

The locating fixture may be used to locate and drill mounting holes in any drive shaft support bracket on the cabin crown. The fixture may also be used when replacing entire brackets. Operations may be performed on two brackets at the same time. If more than two brackets on any three adjacent drive shaft supports require rework, the drive system alignment check fixture 114G1168-2 must be used. Refer to WP 0148 00. Specific procedures for the application of the locating fixture will vary with each repair. In general proceed as follows:

1. Jack the aircraft. Refer to TM 55-1520-240-23.

2. Level the aircraft.

USE OF DRIVE SHAFT SUPPORT BRACKET LOCATING FIXTURE 114G1410-1 - continued.

3. Make sure the locating fixture is securely attached to at least four undamaged supports brackets. Attach the fixture to a fifth bracket if only one repair is required.

CAUTION

The presence of personnel on the cabin crown panel can cause up to 0.050-inch deflections of the aircraft structure.

4. Clear the aircraft of all unnecessary personnel.

5. Drill a hole through the new or repaired brackets. The hole must have a diameter of 0.3125-inch plus 0.0070-inch or minus 0.0010-inch.

6. Carefully disassemble and remove fixture. Removal is the reverse of installation, except it is not necessary to remove bushing plates, 114G1410-38, the swing clamp, CL-1-SWA-3, or their attaching hardware.

7. Carefully clean components of fixture prior to placing them in container, 114G1410-4. Foreign matter remaining on mating surfaces of fixture may cause interference and misalignment on reassembly.

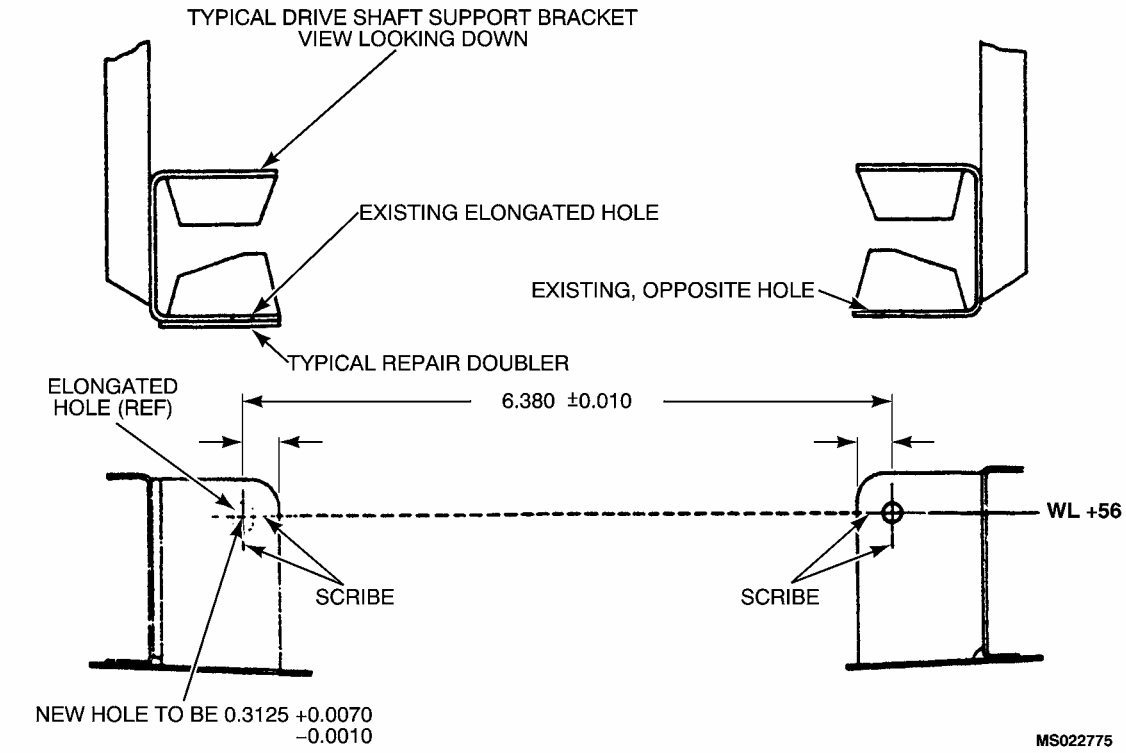
WARNING

EPOXY PRIMER

8. Deburr holes drilled in support bracket and apply epoxy primer (Item 140, WP 0157 00).

ALTERNATE METHOD OF LOCATING DRIVE SHAFT MOUNTING HOLE

Refer to Figure 10 for alternate method of locating drive shaft mounting hole.



NOTES

A. All dimensions are in inches.
B. Doubler shown on LH bracket, RH installation is opposite.
C. If Fixture 114G1410-1 has not been used to locate holes, perform main rotor group alignment check IAW WP 0148 00 after repairs are complete.

Figure 10. Locating Drive Shaft Mounting Hole - Alternate Method

END OF WORK PACKAGE

DEPOT MAINTENANCE WORK REQUIREMENT
CH-47D HELICOPTER
CABIN INTERIOR REPAIRS

INITIAL SETUP

Test Equipment:
As Required

Tools and Special Tools:
As Required

Material/Parts:
Primer, Epoxy (Item 140, WP 0157 00)

Personnel Required:
As Required

References:
TM 1-1500-204-23 Series
TM 55-1520-240-23 Series
WP 0083 00
WP 0086 00
WP 0087 00
WP 0088 00
WP 0157 00

Equipment Conditions:
As Required

Special Environmental Condition:
As Required

SCOPE

This work package covers repair of the following cabin interior components. Refer to Figure 1, Sheet 1 and Sheet 2.

1. Formers sta's 160 and 440
2. Formers sta's 200, 240, 280, 320, 360, and 400
3. Bottom Formers sta's 240, 260, 400, and 420
4. Side Formers
5. Partial Former sta 260
6. Crown Formers sta's 180, 220, 260, 300, 340, 380, and 420
7. Beams WL minus 16
8. Beams WL 0
9. Troop Seat Back Rest and Litter Pole Beams WL 29
10. Forward Landing Gear Support Beam

REPAIR

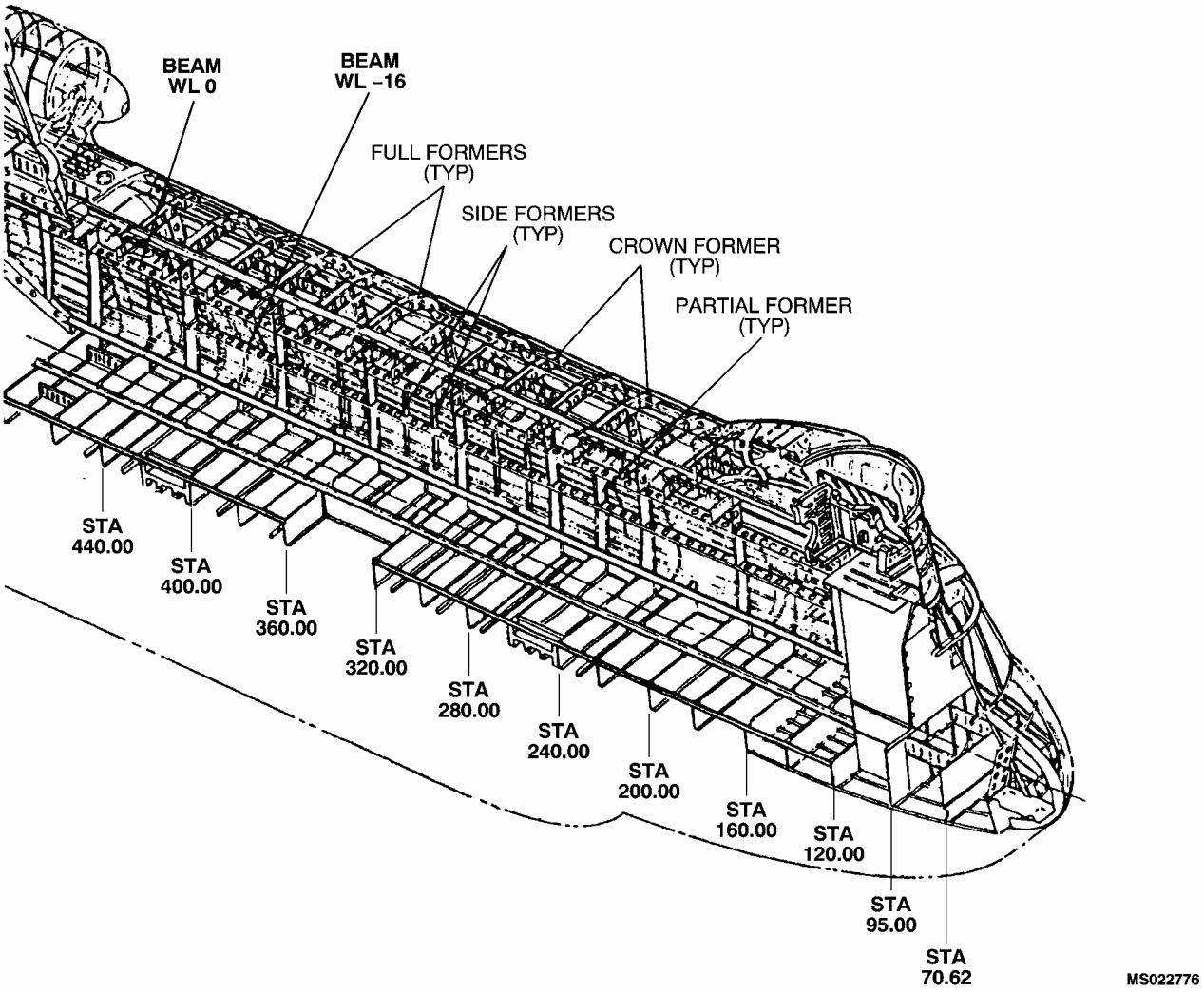


Figure 1. Cabin Interior (Sheet 1 of 2)

REPAIR - continued

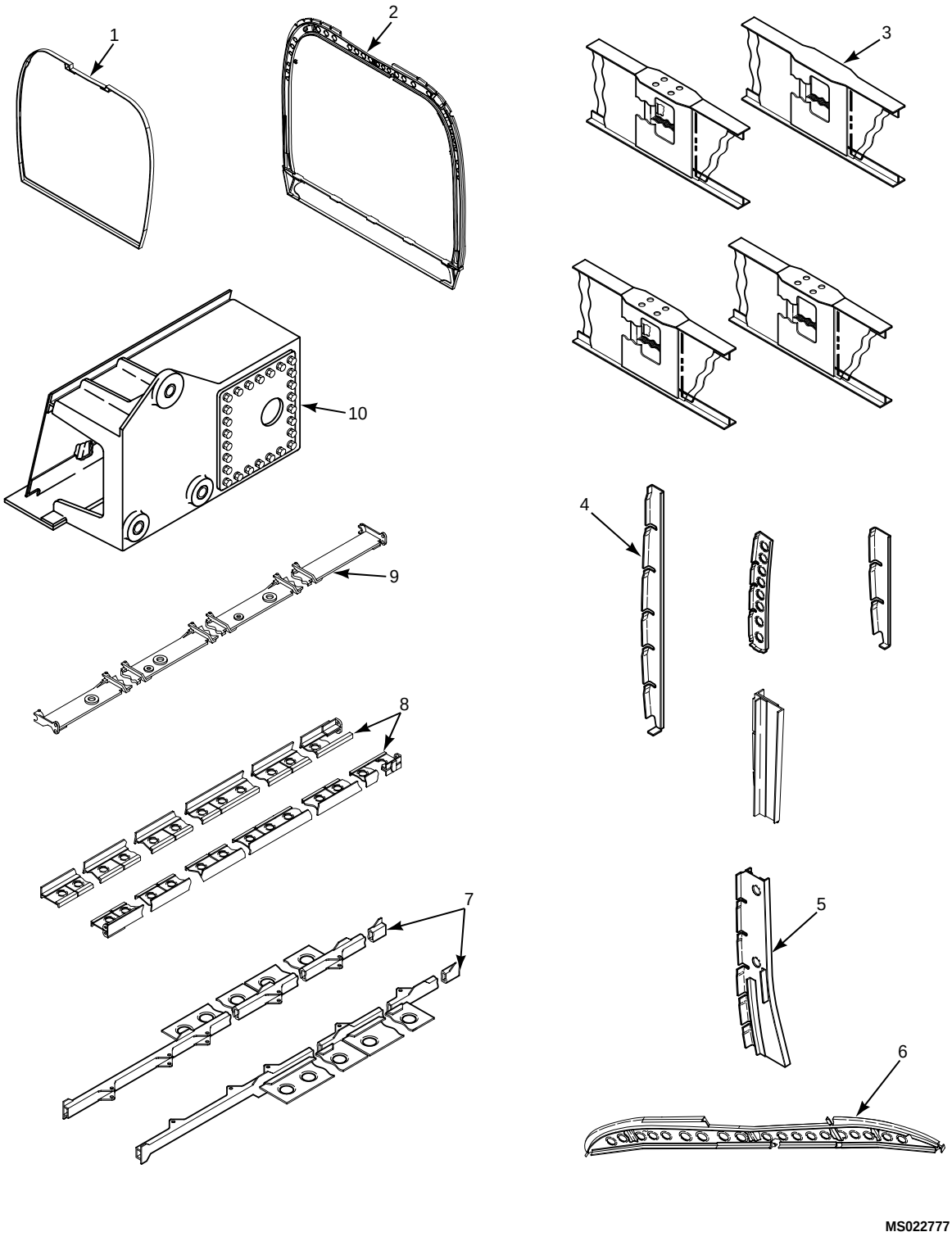


Figure 1. Cabin Interior (Sheet 2 of 2)

REPAIR - continued

NOTE

Refer to Table 1 for index number reference.

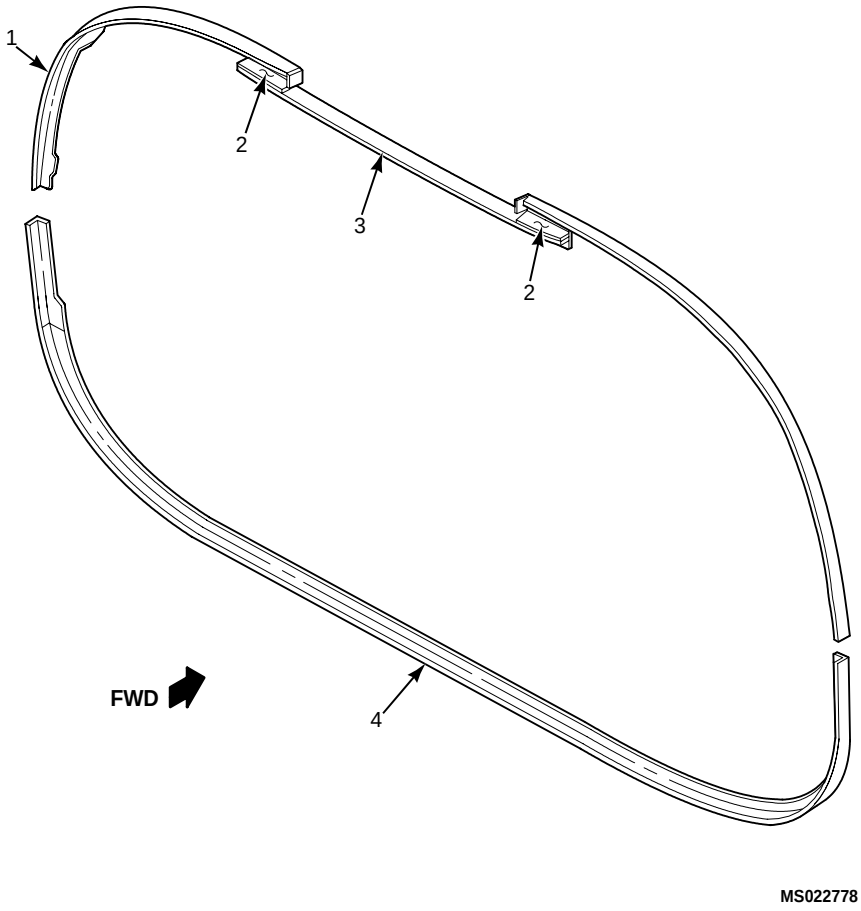


Figure 2. Former, Sta 160

Table 1. Former, Sta 160

INDEX NO.	NOMENCLATURE	ORIGINAL MATERIAL	REPAIR MATERIAL	WORK PACKAGE
1	Cap	ALCOA 59159 7075-T6	0.071 4130	0088 00
2	Angle	0.063 7075-T6 Bare	0.063 7075-T6 Clad	0088 00
3	Cap	ALCOA 30934 7075-T6	0.071 4130	0088 00
4	Cap	VS90110 7075-T6	0.090 4130	0088 00

NOTE

All dimensions are in inches.

REPAIR – continued

NOTE

Refer to Table 2 for index number reference.

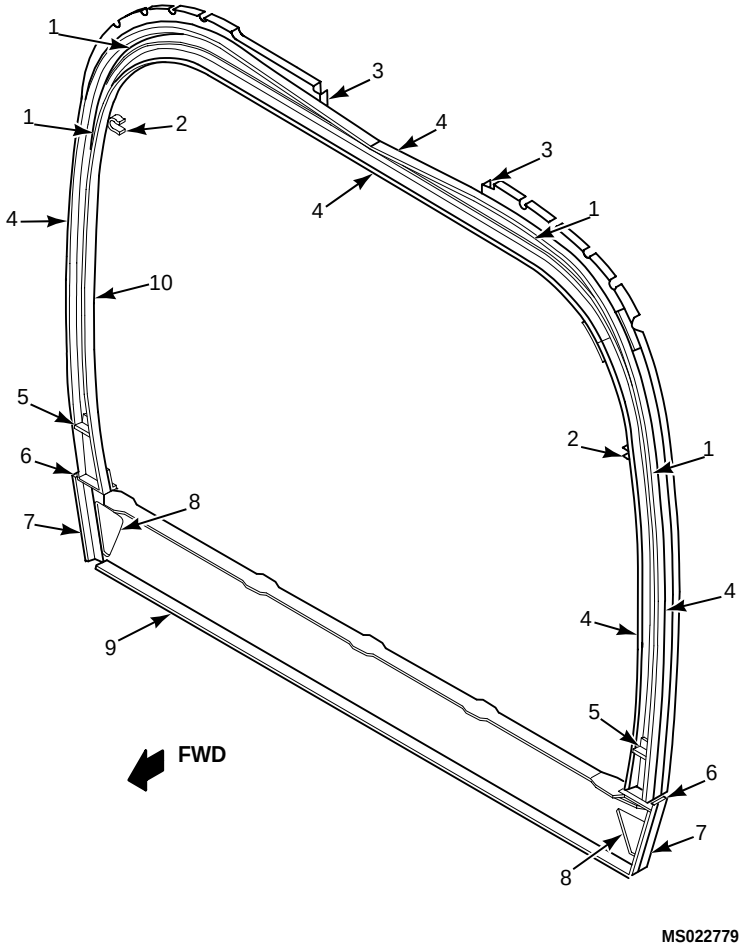


Figure 3. Former, Sta 200

Table 2. Former, Sta 200

INDEX NO.	NOMENCLATURE	ORIGINAL MATERIAL	REPAIR MATERIAL	WORK PACKAGE
1	Web	0.050 2024-T4 Bare	0.063 2024-T3 Clad	0086 00
2	Fitting	2014-T6	Note D	--
3	Stiffener	ALCOA 22477 7075-T6	0.050 4130	0087 00
4	Cap	0.125 4130	0.160 4130	0087 00
5	Stiffener	ALCOA 30670 7075-T6	0.125 4130	0088 00
6	Angle	0.040 7075-T6 Bare	0.050 7075-T6 Clad	0088 00
7	Angle	AND1033-0601 7075-T6	0.071 4130	0088 00
8	Fitting	0.250 7075-T6 Bare	Note C	--

REPAIR - continued

Table 2. Former, Sta 200 - continued

9	Bonded Panel	0.255, 3.0-3/8-20N-3003	Note B	0083 00
10	Cap	Reynolds 6033 6075-T6	0.125 4130	0087 00

NOTES

A. All dimensions are in inches.

B. The bonded assembly is sandwich honeycomb construction.

C. Fitting is integral part of the bonded assembly. Damage other than minor necessitates replacement of bonded assembly.

D. Replace with new fitting, 114S2836-1 LH or 114S2836-2 RH.

REPAIR – continued

NOTE

Refer to Table 3 for index number reference.

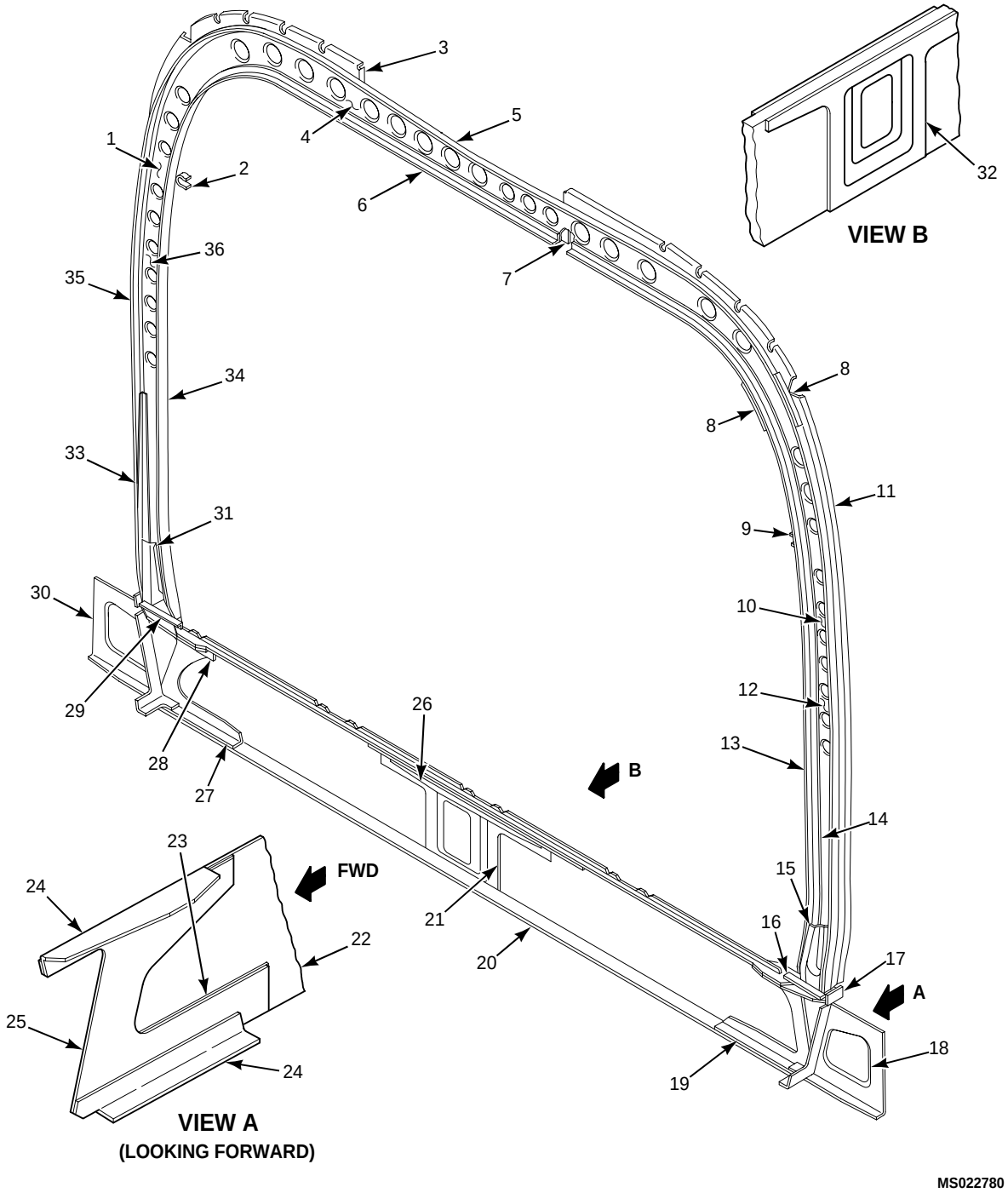


Figure 4. Former, Sta 240

REPAIR - continued

Table 3. Former, Sta 240

INDEX NO.	NOMENCLATURE	ORIGINAL MATERIAL	REPAIR MATERIAL	WORK PACKAGE
1	Web	0.040 2024-T4 Clad	0.050 2024-T3 Clad	0086 00
2	Fitting	2014-T6	Note D	--
3	Stiffener	ALCOA 22477 7075-T6	0.050 4130	0087 00
4	Web	0.032 2024-T4 Clad	0.040 2024-T3 Clad	0086 00
5	Cap	AND10133-0601 7075-T6	0.071 4130	0087 00
6	Cap	AND10135-1002 7075-T6	0.071 4130	0087 00
7	Stiffener	ALCOA 22477 7075-T6	0.050 4130	0087 00
8	Strap	0.090 7075-T6 Bare	0.190 4130	0088 00
9	Fitting	2014-T6	Note D	--
10	Web	0.040 2024-T4 Clad	0.050 2024-T3 Clad	0086 00
11	Cap	VS90115 7075-T6	0.125 4130	0087 00
12	Web	0.063 2024-T4 Clad	0.063 2024-T3 Clad	0086 00
13	Cap	VS90115 7075-T6	0.125 4130	0087 00
14	Cap	Reynolds 7825 7075-T6	0.190 4130	0087 00
15	Cap	AND10134-1407 7075-T6	0.160 4130	0088 00
16	Angle	0.040 7075-T6 Bare	0.190 4130	0088 00
17	Angle	AND10133-1404 7075-T6	0.190 4130	0088 00
18	Fitting	7075-T6 Forging	Note C	--
19	Angle	AND10133-1404 7075-T6	0.190 4130	0088 00
20	Bonded Panel	0.405, 3.02-3/8-20N-3003	Note B	0083 00
21	Doubler (Fwd)	0.020 7075-T6 Bare	0.020 7075-T6 Bare Note B	0083 00
22	Doubler, Aft	0.016 7075-T6 Bare	0.016 7075-T6 Bare Note B	0083 00
23	Shim	0.020 7075-T6 Bare	0.020 7075-T6 Bare Note B	0083 00
24	Angle	7075-T6	AND10133-1404 x 11.0	0088 00
25	Doubler, Splice	0.020 7075-T6 Bare	0.020 7075-T6 Bare Note B	0083 00
26	Strap	0.050 7075-T6 Bare	0.050 7075-T6 Bare Note B	0083 00
27	Angle	AND10133-1404 7075-T6	0.190 4130	0088 00
28	Angle	AND10133-0404 7075-T6	0.190 4130	0088 00
29	Angle	0.040 7075-T6 Bare	0.050 7075-T6 Clad	0088 00
30	Fitting	7075-T6 Forging	Note C	--
31	Cap	AND10134-1407	0.160 4130	0088 00
32	Doubler (Aft)	0.050 7075-T6 Bare	0.050 7075-T6 Bare Note B	0083 00

REPAIR – continued

Table 3. Former, Sta 240 - continued

INDEX NO.	NOMENCLATURE	ORIGINAL MATERIAL	REPAIR MATERIAL	WORK PACKAGE
33	Cap	Reynolds 7825 7075-T6	0.0190 4130	0087 00
34	Cap	VS90115 7075-T6	0.125 4130	0087 00
35	Cap	VS90115 7075-T6	0.125 4130	0087 00
36	Web	0.063 2024-T4 Clad	0.063 2024-T3 Clad	0086 00

NOTES

A. All dimensions are in inches.

B. The bonded assembly is sandwich honeycomb construction. Repair with original material.

C. The fitting is a part of the bonded assembly. Damage other than minor necessitates replacement of the bonded assembly.

D. Replace with new fitting, 114S2836-1 LH or 114S2836-2 RH.

REPAIR – continued

NOTE

Refer to Tables 4 through 7 for index number reference according to Sta number.

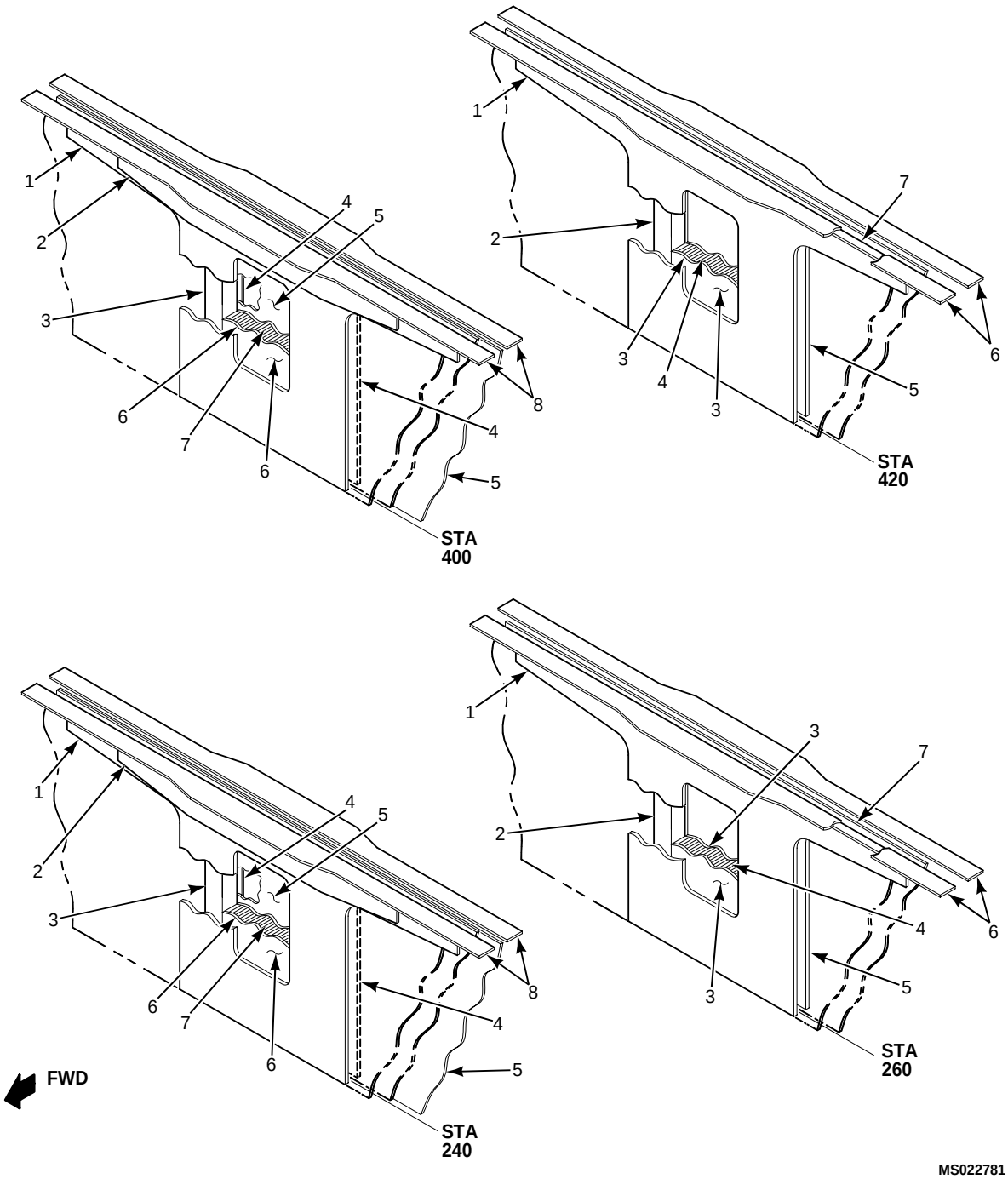


Figure 5. Bottom Former, Cargo Hook Installation, Sta's 240, 260, 400, and 420

REPAIR – continued

Table 4. Bottom Former, Cargo Hook Installation, Sta 240

INDEX NO.	NOMENCLATURE	ORIGINAL MATERIAL	REPAIR MATERIAL	WORK PACKAGE
1	Doubler, Fwd	0.020 7075-T6 Bare	0.020 7075-T6 Clad	0083 00
2	Reinforcement Strap	0.050 7075-T6 Bare	0.050 7075-T6 Clad	NOTE B
3	Insert	0.500 7075-T6 Bare	0.500 7075-T6 Clad	0083 00
4	Doubler, Aft	0.050 7075-T6 Bare	0.050 7075-T6 Clad	0083 00
5	Doubler, Aft	0.016 7075-T6 Bare	0.016 7075-T6 Clad	0083 00
6	Face Sheet	0.020 7075-T6 Bare	0.025 7075-T6 Clad	0083 00
7	Core	0.405, 3.0-3/8-20N-3003	0.405, 3.0-3/8-20N-3003	0083 00
8	Reinforcement Strap	0.190 7075-T6 Bare	0.190 7075-T6 Clad	Note B

NOTES

A. All dimensions are in inches.

B. Replace with same material as original.

Table 5. Bottom Former, Cargo Hook Installation, Sta 260

INDEX NO.	NOMENCLATURE	ORIGINAL MATERIAL	REPAIR MATERIAL	WORK PACKAGE
1	Doubler, Fwd	0.050 7075-T6 Bare	0.050 7075-T6 Clad	0083 00
2	Insert	0.375 7075-T6 Bare	0.375 7075-T6 Clad	0083 00
3	Face Plate	0.020 7075-T6 Bare	0.025 7075-T6 Clad	0083 00
4	Core	0.255, 3.0-3/8-20N-3003	0.255, 3.0-3/8-20N-3003	0083 00
5	Doubler, Aft	0.020 7075-T6 Bare	0.020 7075-T6 Clad	0083 00
6	Reinforcement Strap	0.190 7075-T6 Bare	0.190 7075-T6 Clad	Note B
7	Reinforement Strap	0.125 7075-T6 Bare	0.125 7075-T6 Clad	Note B

NOTES

A. All dimensions are in inches.

B. Replace with same material as original.

REPAIR – continued

Table 6. Bottom Former, Cargo Hook Installation, Sta 400

INDEX NO.	NOMENCLATURE	ORIGINAL MATERIAL	REPAIR MATERIAL	WORK PACKAGE
1	Doubler, Fwd	0.020 7075-T6 Bare	0.020 7075-T6 Clad	0083 00
2	Reinforcement Strap	0.125 7075-T6 Bare	0.125 7075-T6 Clad	Note B
3	Insert	0.375 7075-T6 Bare	0.375 7075-T6 Clad	0083 00
4	Doubler, Aft	0.050 7075-T6 Bare	0.050 7075-T6 Clad	0083 00
5	Doubler, Aft	0.016 7075-T6 Bare	0.016 7075-T6 Clad	0083 00
6	Face Plate	0.020 7075-T6 Bare	0.025 7075-T6 Clad	0083 00
7	Core	0.255, 3.0-3/8-20N-3003	0.225, 3.0-3/8 20N 3003	0083 00
8	Reinforcement Strap	0.375 7075-T6 Bare	0.375 7075-T6 Clad	Note B

NOTES

A. All dimensions are in inches.

B. Replace with same material as original.

Table 7. Bottom Former, Cargo Hook Installation, Sta 420

INDEX NO.	NOMENCLATURE	ORIGINAL MATERIAL	REPAIR MATERIAL	WORK PACKAGE
1	Doubler, Fwd	0.050 7075-T6 Bare	0.050 7075-T6 Clad	0083 00
2	Insert	0.375 7075-T6 Bare	0.375 7075-T6 Clad	0083 00
3	Face Plate	0.020 7075-T6 Bare	0.025 7075-T6 Clad	0083 00
4	Core	0.255, 3.0-3/8-20N-3003	0.255, 3.0-3/8-20N-3003	0083 00
5	Doubler, Aft	0.020 7075-T6 Bare	0.025 7075-T6 Bare	0083 00
6	Reinforcement Strap	0.375 7075-T6 Bare	0.375 7075-T6 Clad	Note B
7	Reinforcement Strap	0.125 7075-T6 Bare	0.125 7075-T6 Clad	Note B

NOTES

A. All dimensions are in inches.

B. Replace with same material as original.

REPAIR – continued

NOTE

Refer to Tables 8 through 11 for index number reference according to Sta number.

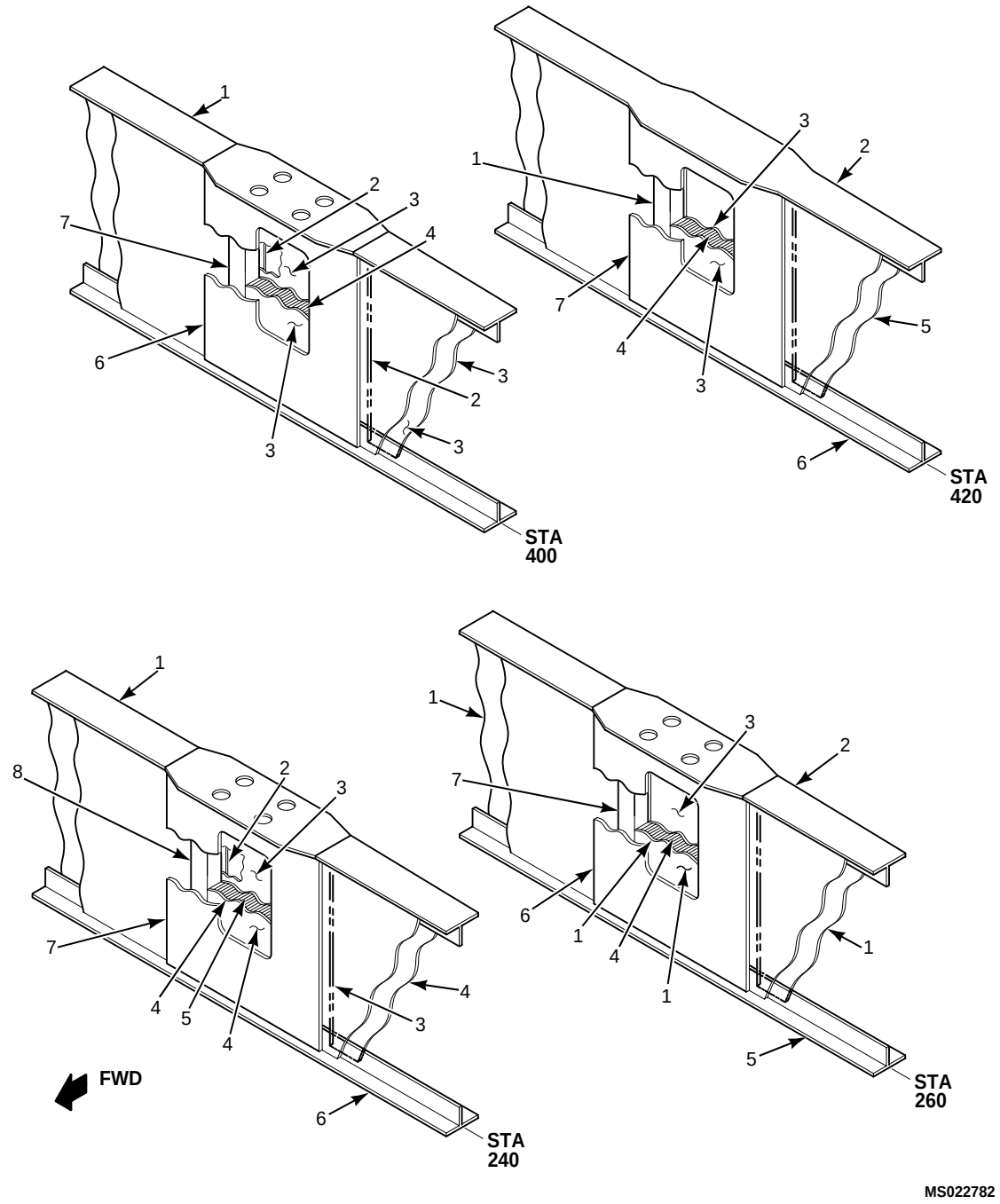


Figure 6. Bottom Former, Cargo Hook Installation, Sta's 240, 260, 400, and 420 - Aircraft Serial Numbers 92-0367 and 92-0368

REPAIR – continued

Table 8. Bottom Former, Cargo Hook Installation, Sta 240 – Aircraft Serial Numbers 92-0367 and 92-0368

INDEX NO.	NOMENCLATURE	ORIGINAL MATERIAL	REPAIR MATERIAL	WORK PACKAGE
1	Cap	BAC1505-10132 7075-T6	BACP1505-132 7075-T6	0083 00
2	Doubler, Aft	0.025 7075-T6 Bare	0.032 7075-T6 Clad	0083 00
3	Doubler, Aft	0.025 7075-T6 Bare	0.032 7075-T6 Clad	0083 00
4	Face Plate	0.032 7075-T6 Bare	0.040 7075-T6 Clad	0083 00
5	Core	Stock 0.405 Porm BMS4-4, 6-20N Form B 0.005 AL Honeycomb	Note B	0083 00
6	Cap	VS90308 7075-T6	VS90308 7075-T6	0083 00
7	Doubler, Fwd	0.025 7075-T6 Bare	0.032 7075-T6 Clad	0083 00
8	Insert	0.500 7075-T6 Bare	0.500 7075-T6 Clad	0083 00

NOTES

A. All dimensions are in inches.

B. Replace with same material as original.

Table 9. Bottom Former, Cargo Hook Installation, Sta 260 – Aircraft Serial Numbers 92-0367 and 92-0368

INDEX NO.	NOMENCLATURE	ORIGINAL MATERIAL	REPAIR MATERIAL	WORK PACKAGE
1	Face Sheet	0.032 7075-T6 Bare	0.040 7075-T6 Clad	0083 00
2	Cap	BAC 1505-100119 7075-T6511	BAC 1505-100119 7075-T6511	0083 00
3	Doubler, Aft	0.040 7075-T6 Bare	0.050 7075-T6 Clad	0083 00
4	Core	STOCK 0.255 Porm 0.005 AL Honeycomb BM4-4, Type 6-20, Class N	NOTE B	0083 00
5	Cap	VS90303 7075-T6	VS90303 7075-T6	0083 00
6	Doubler, Fwd	0.025 7075-T6 Bare	0.032 7075-T6 Clad	0083 00
7	Insert	0.250 7075-T6 Bare	0.250 7075-T6 Clad	0083 00

NOTES

A. All dimensions are in inches.

B. Replace with same material as original.

REPAIR – continued

Table 10. Bottom Former, Cargo Hook Installation, Sta 400 – Aircraft Serial Numbers 92-0367 and 92-0368

INDEX NO.	NOMENCLATURE	ORIGINAL MATERIAL	REPAIR MATERIAL	WORK PACKAGE
1	Cap	BAC1505-100119 7075-T6511 Extr	BAC1505-100119 7075-T6511 Extr	0083 00
2	Doubler, Aft	0.025 7075-T6 Bare	0.032 7075-T6 Clad	0083 00
3	Face Sheet	0.032 7075-T6 Bare	0.040 7075-T6 Clad	0083 00
4	Core	Stock 0.255 AL Honeycomb BM4-4, 6-20N, Form B	Note B	0083 00
5	Cap	VS90303 7075-T6 Bare	VS90303 7075-T6 Bare	0083 00
6	Doubler, Fwd	0.032 7075-T6 Bare	0.040 7075-T6 Clad	0083 00
7	Insert	0.025 7075-T6 Bare	0.025 7075-T6 Clad	0083 00

NOTES

A. All dimensions are in inches.

B. Replace with same material as original.

Table 11. Bottom Former, Cargo Hook Installation, Sta 420 – Aircraft Serial Numbers 92-0367 and 92-0368

INDEX NO.	NOMENCLATURE	ORIGINAL MATERIAL	REPAIR MATERIAL	WORK PACKAGE
1	Insert	0.025 7075-T6 Bare	0.025 7075-T6 Clad	0083 00
2	Cap	BAC1505-100119 7075-T6511	BAC1505-100119 7075-T6511	0083 00
3	Face Sheet	0.032 7075-T6 Bare	0.032 7075-T6 Clad	0083 00
4	Core	STOCK 0.255 Porm 0.005 AL Honeycomb BMS4-4 TYPE 6-20 Class N Form B	Note B	0083 00
5	Doubler, Aft	0.016 7075-T6 Bare	0.020 7075-T6 Clad	0083 00
6	Cap	VS90303 7075-T6 Bare	VS90303 7075-T6 Bare	0083 00
7	Doubler, Fwd	0.025 7075-T6 Bare	0.032 7075-T6 Clad	0083 00

NOTES

A. All dimensions are in inches.

B. Replace with same material as original.

REPAIR – continued

NOTE

Refer to Table 12 for index number reference.

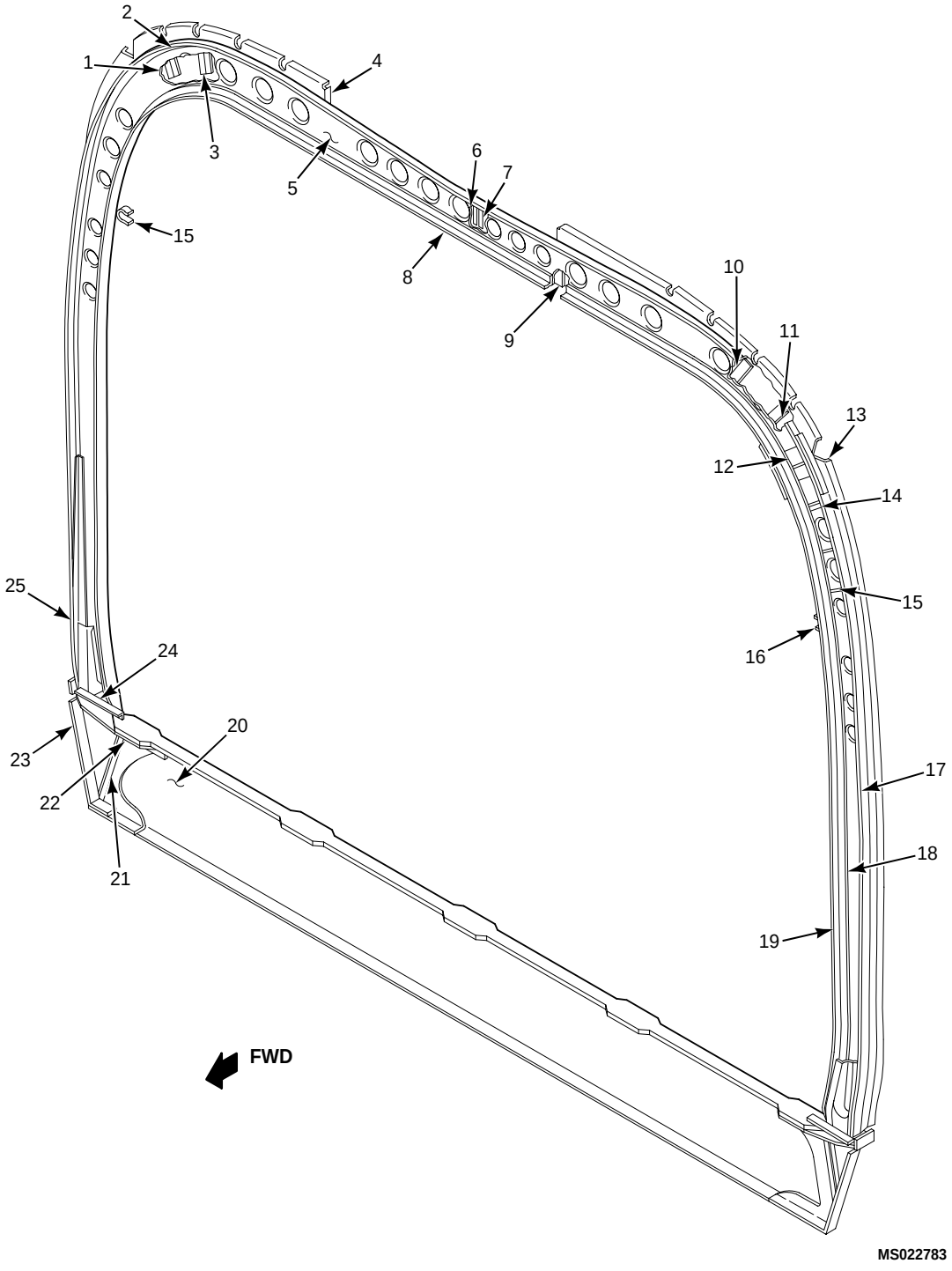


Figure 7. Former, Sta's 280 and 320

REPAIR – continued

Table 12. Formers, Sta's 280 and 320

INDEX NO.	NOMENCLATURE	ORIGINAL MATERIAL	REPAIR MATERIAL	WORK PACKAGE
1	Angle	ALCOA 9802 7075-T6	ALCOA 9802 7075-T6	0088 00
2	Cap	0.125 4130	0.160 4130	0088 00
4	Support	BAC1503 7075-T6	BAC1503 7075-T6	0088 00
5	Web	0.050 2024-T4 Clad	0.063 2024-T3 Clad	0088 00
6	Angle	Harvey 15078 7075-T6	HARVEY 15078 7075-T6	0088 00
6	Angle	ALCOA 9802 7075-T6	ALCOA 9802 7075-T6	0088 00
7	Angle	Harvey 15078 7075-T6	HARVEY 15078 7075-T6	0088 00
8	Cap	0.125 4130	0.160 4130	0088 00
10	Angle	ALCOA 9802 7075-T6	ALCOA 9802 7075-T6	0088 00
10	Angle	ALCOA 9802 7075-T6	ALCOA 9802 7075-T6	0088 00
11	AnglE	ALCOA 9802 7075-T6	ALCOA 9802 7075-T6	0088 00
12	Attachment	ALCOA 43774 7075-T6	ALCOA 43774 7075-T6	0088 00
13	Splice	0.125 4130	0.160 4130	0088 00
14	Angle	ALCOA 9802 7075-T6	ALCOA 9802 7075-T6	0088 00
15	Fitting	2014-T6	NOTE D	--
16	Angle	ALCOA 9802 7075-T6	ALCOA 9802 7075-T6	0088 00
17	Cap	0.125 4130	0.160 4130	0088 00
18	Web	0.050 2024-T4 Clad	0.063 2024-T3 Clad	0088 00
19	Cap	AND10133-0701 7075-T6	0.071 4130	0088 00
20	Bonded Assy	0.255.3.0-3/8-20N-3003	Notes B & C	0083 00
21	Angle	AND10133-0601 7075-T6	0.071 4130	0088 00
22	Angle	AND10134-1402 7075-T6	0.060 4130	0088 00
23	Angle	AND10133-0601 7075-T6	0.071 4130	0088 00
24	Angle	0.040 7075-T6	0.063 7075-T6	0088 00
25	Fitting	0.400 7075-T6 Bare	Note E	--

NOTES

A. All dimensions are in inches.

B. The bonded assembly is sandwich honeycomb construction. Repair with original material.

C. Damage to integral parts of assembly other than minor necessitates replacement of bonded assembly.

D. Replace with new fitting, 114S2836-1 LH or 114S2836-2 RH, if damage is greater than minor.

E. Replace with new fitting, 114S2409-23 LH or 114S2409-24 RH if damage is greater than minor.

REPAIR – continued

NOTE

Refer to Tables 13 and 14 for index number reference according to Sta number.

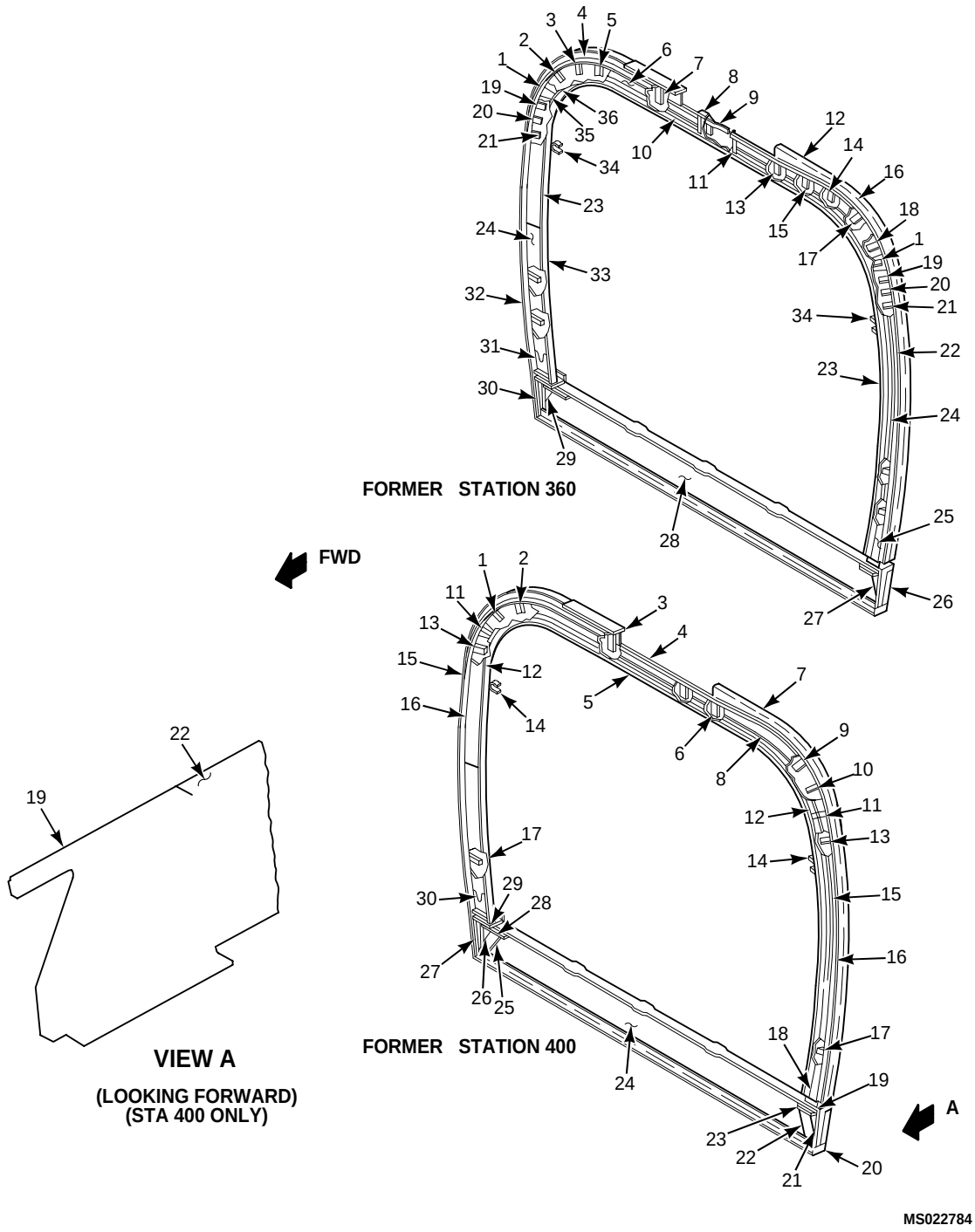


Figure 8. Former, Sta's 360 and 400

REPAIR – continued

Table 13. Former, Sta 360

INDEX NO.	NOMENCLATURE	ORIGINAL MATERIAL	REPAIR MATERIAL	WORK PACKAGE
1	Splice	0.125 4130	0.160 4130	0088 00
2	Angle	ALCOA 9802 7075-T6	ALCOA 9802-7075-T6	0088 00
3	Angle	ALCOA 9802 7075-T6	ALCOA 9802-7075-T6	0088 00
4	Cap	0.125 4130	0.160 4130	0088 00
5	Angle	ALCOA 9802 7075-T6	ALCOA 9802-7075-T6	0088 00
6	Web	0.050 2024-T4 Clad	0.063 2024-T3 Clad	0086 00
7	Support	BAC1503-1591 7075-T6	BAC1503-1591 7075-T6	0088 00
8	Angle	ALCOA 9802 7075-T6	ALCOA 9802 7075-T6	0088 00
9	Attachment	4130-STLBAR	Note E	--
10	Cap	0.125 4130	0.160 4130	0088 00
11	Angle	ALCOA 9802 7075-T6	ALCOA 9802 7075-T6	0088 00
12	Cap	AND10136-2001 7075-T6	0.080 4130	0088 00
13	Angle	ALCOA 9802 7075-T6	ALCOA 9802 7075-T6	0088 00
14	Angle	ALCOA 9802 7075-T6	ALCOA 9802 7075-T6	0088 00
15	Support	BAC1503-1591 7075-T6	BAC1503-1591 7075-T6	0088 00
16	Cap	0.125 4130	0.160 4130	0088 00
17	Angle	ALCOA 9802 7075-T6	ALCOA 9802 7075-T6	0088 00
18	Angle	ALCOA 9802 7075-T6	ALCOA 9802 7075-T6	0088 00
19	Angle	ALCOA 9802 7075-T6	ALCOA 9802 7075-T6	0088 00
20	Angle	ALCOA 9802 7075-T6	ALCOA 9802 7075-T6	0088 00
21	Angle	ALCOA 9802 7075-T6	ALCOA 9802 7075-T6	0088 00
22	Cap	0.125 4130	0.160 4130	0088 00
23	Cap	0.125 4130	0.160 4130	0088 00
24	Web	0.050 2024-T4 Clad	0.063 2024-T3 Clad	0086 00
25	Fitting	0.250 7075-T6 Bare	Note C	--
26	Angle	AND10133-0601 7075-T6	0.071 4130	0088 00
27	Angle	0.040 7075-T6 Bare	0.063 7075-T6 Clad	0088 00
28	Bonded Assy	0.255.3.0/8-20N-3003	Note B	0083 00
29	Angle	0.040 7075-T6 Bare	0.063 7075-T6 Clad	0088 00
30	Angle	AND10133-0601 7075-T6	0.071 4130	0088 00
31	Fitting	0.250 7075-T6 Bare	Note C	--
32	Cap	Reynolds 19273 7075-T6	0.160 4130	0088 00
33	Cap	Texas T2070 7075-T6	0.160 4130	0088 00
34	Fitting	2014-T6	Note D	--
35	Attachment	ALCOA 43774 7075-T6	ALCOA 43774 7075-T6	0088 00
36	Splice	0.125 4130	0.160 4130	0088 00

NOTES

A. All dimensions are in inches.

B. The bonded assembly is sandwich honeycomb construction. Repair with original material.

C. Integral part of bonded assembly. Damage other than minor necessitates replacement.

D. Replace with new fitting, 114S2836-1 LH or 114S2846-2 RH if damage is greater than minor.

E. Replace with new attachment if damage is greater than minor.

REPAIR – continued

Table 14. Former, Sta 400

INDEX NO.	NOMENCLATURE	ORIGINAL MATERIAL	REPAIR MATERIAL	WORK PACKAGE
1	Stiffener	AND10133-0601 7075-T6	0.071 4130	0088 00
2	Stiffener	AND10133-0601 7075-T6	0.071 4130	0088 00
3	Stiffener	ALCOA 22477 7075-T6	0.050 4130	0088 00
4	Cap	ALCOA 67580 7075-T6	0.063 4130	0088 00
5	Cap	ALCOA 28172 7075-T6	ALCOA 28172 7075-T6	0088 00
6	Stiffener	ALCOA 22990 7075-T6	0.071 4130	0088 00
7	Stiffener	AND10133-0601 7075-T6	0.071 4130	0088 00
8	Web	0.025 2024-T4 Clad	0.032 2024–T3 Clad	0086 00
9	Stiffener	AND10133-0601 7075-T6	0.071 4130	0088 00
10	Stiffener	AND10133-0601 7075-T6	0.071 4130	0088 00
11	Attachment	ALCOA 43774 7075-T6	ALCOA 43774 7075-T6	0088 00
12	Cap	VS90109 7075-T6	0.080 4130	0088 00
13	Stiffener	ALCOA 9802 7075-T6	ALCOA 9802 7075-T6	0088 00
14	Fitting	2014-T6	Note D	--
15	Cap	ALCOA 62564 7075-T6	0.080 4130	0088 00
16	Web	0.032 2024-T4 Clad	0.040 2024-T3 Clad	0086 00
17	Stiffener	ALCOA 22477 7075-T6	0.050 4130	0088 00
18	Attachment	0.250 7075-T6	Note C	--
19	Angle	0.040 7075-T6 Bare	0.050 7075-T6 Clad	0088 00
20	Angle	AND10133-0601 7075-T6	0.071 4130	0088 00
21	Angle	AND10133-0601 7075-T6	0.071 4130	0088 00
22	Doubler	0.032 7075-T6 Bare	Note C	--
23	Angle	AND10134-1405 7075-T6	AND10134-1405 X 6.6	0088 00
24	Bonded Assy	0.255.3.0-3/8-20N-3003	Note B	0083 00
25	Doubler	0.032 7075-T6 Bare	Note C	0083 00
26	Angle	AND10133-0601 7075-T6	0.071 4130	0088 00
27	Angle	AND10133-0601 7075-T6	0.071 4130	0088 00
28	Angle	AND10134-1405 7075-T6	AND10134-1405 X 6.6	0088 00
29	Angle	0.040 7075-T6 Bare	0.050 7075-T6 Clad	0088 00
30	Attachment	0.250 7075-T6	Note C	0083 00

NOTES

A. All dimensions are in inches.

B. The bonded assembly is sandwich honeycomb construction. Repair with original material.

C. Integral part of bonded assembly. Damage other than minor necessitates replacement.

D. Replace with new fitting 114S2836-1 LH or 114S2836-2 RH if damage is greater than minor.

REPAIR – continued

NOTE

Refer to Table 15 for index number reference.

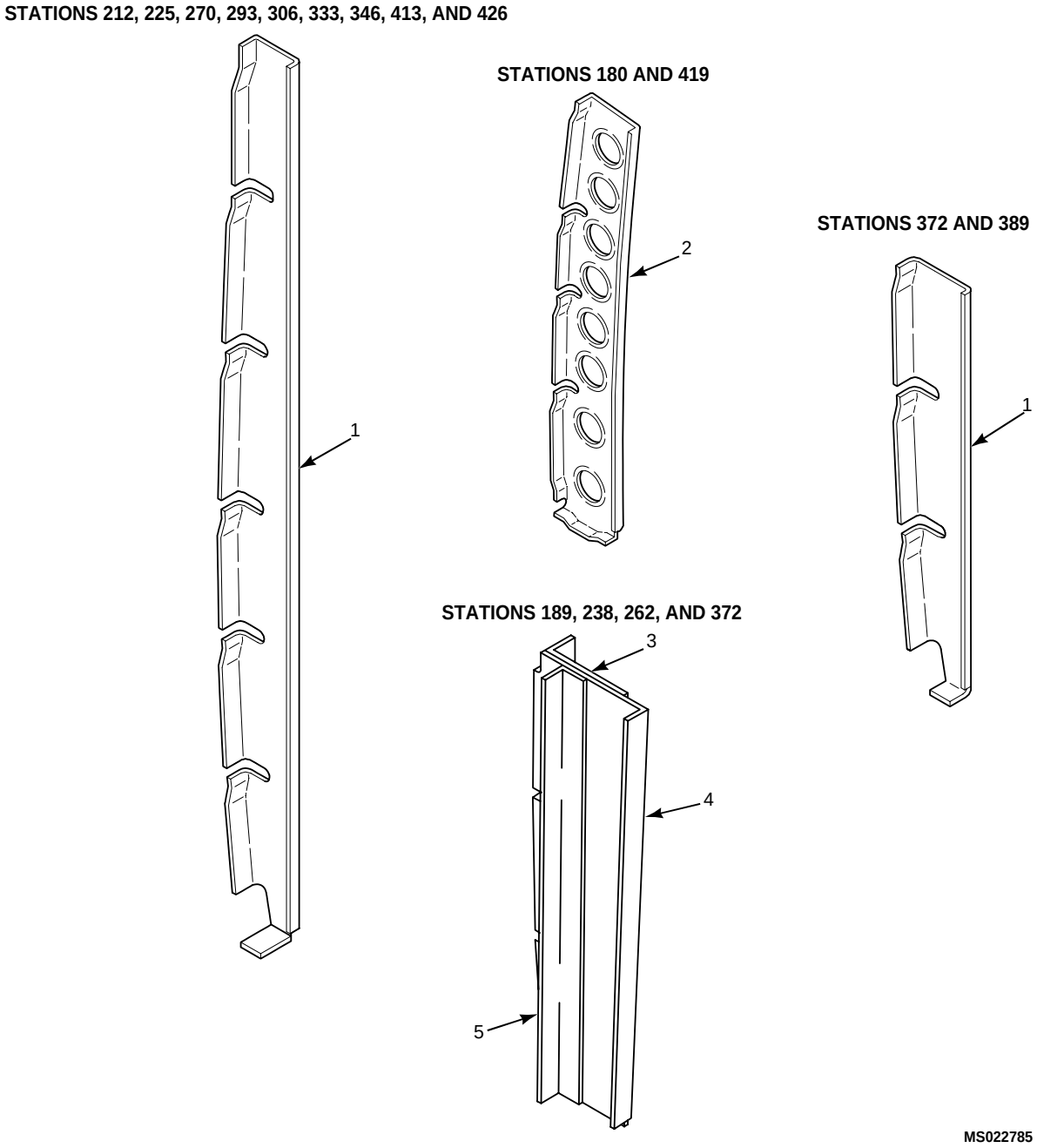


Figure 9. Side Former, Sta's 180, 189, 212, 225, 238, 262, 270, 293, 306, 333, 346, 372, 372, 389, 413, 419, and 426

REPAIR – continued

Table 15. Side Former, Sta's 180, 189, 212, 225, 238, 262, 270, 293, 306, 333, 346, 372, 372, 389, 413, 419, and 426

INDEX NO.	NOMENCLATURE	ORIGINAL MATERIAL	REPAIR MATERIAL	WORK PACKAGE
1.	Former	0.040 2024-T3 Clad	0.050 2024-T3 Clad	0087 00
2.	Former	0.025 2024-T4 Clad	0.032 2024-T3 Clad	0087 00
3	Tension Fitting	--	Note C	--
4	Former	0.040 2024-T3 Clad	0.050 2024-T3 Clad	0087 00
5	Angle	AND10134-0702 2024 T6 Clad	0.071 4130	0088 00

NOTES

A. All dimensions are in inches.

B. In all cases, the LH former is shown. The RH former is similar in construction. Original and repair materials are applicable to both.

C. Replace with new fitting, 114S2857-1 LH or 114S2857-2 RH.

NOTE

Refer to Table 16 for index number reference.

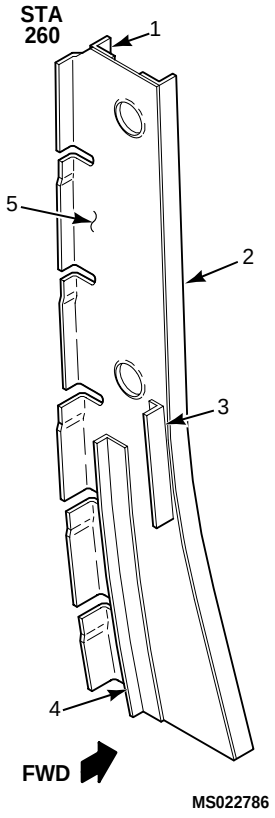


Figure 10. Partial Former, Sta 260

REPAIR – continued

Table 16. Partial Former, Sta 260

INDEX NO.	NOMENCLATURE	ORIGINAL MATERIAL	REPAIR MATERIAL	WORK PACKAGE
1	Cap	Harvey 16119 7075-T6	0.160 4130	0088 00
2	Cap	Reynolds 19273 7075-T6	0.080 4130	0088 00
3	Support	ALCOA 62564 7075-T6	Note C	--
4	Cap	Harvey 00301-3 7075-T6	0.125 4130	0088 00
5	Web	0.040 7075-T6 Clad	0.050 7075-T6 Clad	0086 00

NOTES

A. All dimensions are in inches.

B. The LH former is shown. The RH former is similar in construction. Original and repair materials are applicable to both.

C. Replace with new support, 114S2106-19 LH or 114S2106-20 RH.

NOTE

Refer to Tables 17 through 21 for index number reference according to Sta number.

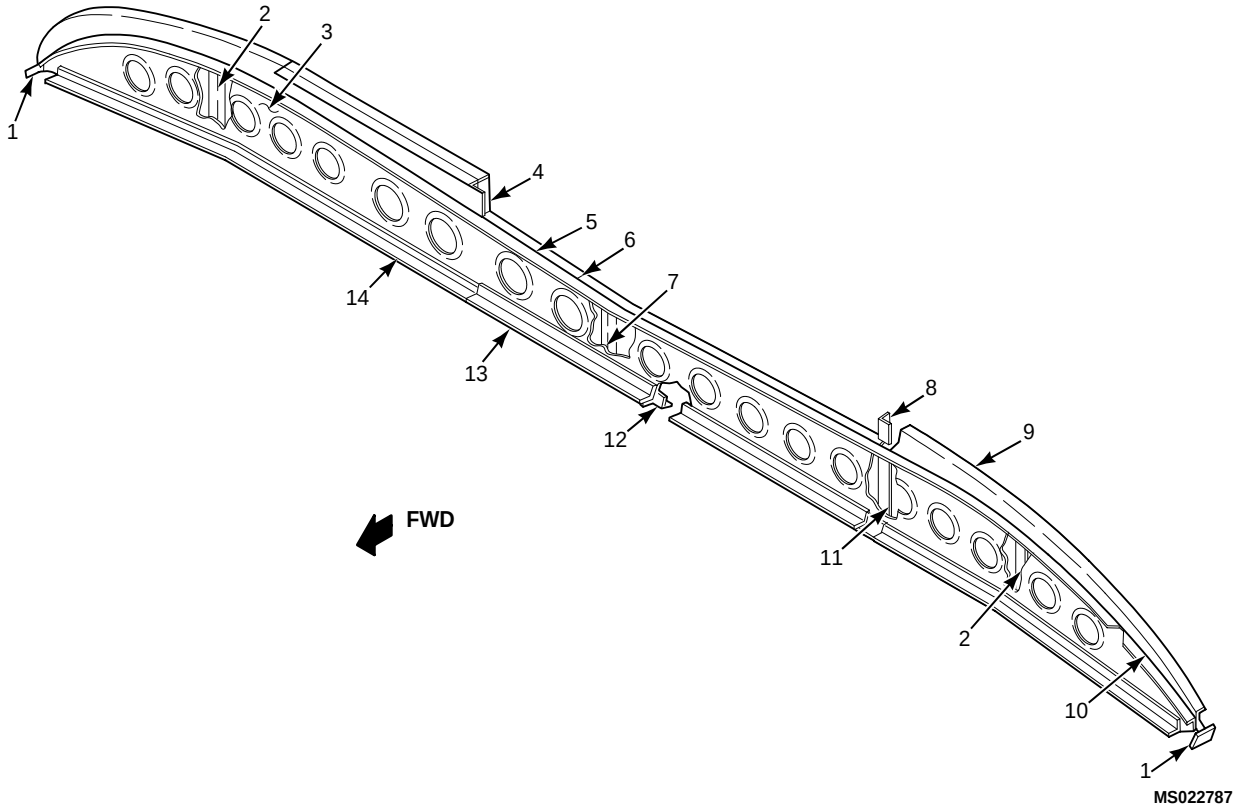


Figure 11. Crown Former, Sta's 180, 220, 260, 300, 340, 380, and 420

REPAIR – continued

Table 17. Crown Former, Sta 180

INDEX NO.	NOMENCLATURE	ORIGINAL MATERIAL	REPAIR MATERIAL	WORK PACKAGE
1	Clip	ALCOA 52966 7075-T6	0.090 4130 Note B	0088 00
2	Stiffener	ALCOA 22477 7075-T6	0.050 4130	0088 00
3	Web	0.025 2024-T4 Clad	0.032 2024-T3 Clad	0086 00
4	Stiffener	ALCOA 22477 7075-T6	0.050 4130	0088 00
5	Cap	ALCOA 15820 7075-T6	0.080 4130	0088 00
7	Stiffener	ALCOA 22477 7075-T6	0.050 4130	0088 00
10	Cap	ALCOA 15820 7075-T6	0.050 4130	0088 00
11	Stiffener	ALCOA 22477 7075-T6	0.050 4130	0088 00
14	Cap	ALCOA 67580 7075-T6	0.063 4130	0088 00

NOTES

A. All dimensions are in inches.

B. For damage other than minor, replace clip with new part, 114S2716-1.

Table 18. Crown Former, Sta's 220, 300, and 420

INDEX NO.	NOMENCLATURE	ORIGINAL MATERIAL	REPAIR MATERIAL	WORK PACKAGE
1	Clip	ALCOA 52966 7075-T6	0.090 4130	0088 00
3	Web	0.025 2024-T4 Clad	0.032 2024-T3 Clad	0086 00
4	Stiffener	ALCOA 22477 7075-T6	0.050 4130	0088 00
5	Cap	ALCOA 67580 7075-T6	0.050 4130	0088 00
11	Stiffener	ALCOA 22477 7075-T6	0.050 4130	0088 00
14	Cap	ALCOA 67580 7075-T6	0.063 4130	0088 00

NOTE

All dimensions are in inches.

REPAIR – continued

Table 19. Crown Former, Sta 260

INDEX NO.	NOMENCLATURE	ORIGINAL MATERIAL	REPAIR MATERIAL	WORK PACKAGE
1	Clip	ALCOA 52966 7075-T6	0.090 4130	0088 00
2	Stiffener	ALCOA 22477 7075-T6	0.050 4130	0088 00
3	Web	0.032 2024-T4 Clad	0.040 2024-T3 Clad	0086 00
4	Stiffener	ALCOA 22477 7075-T6	0.050 4130	0088 00
5	Cap	VS90109 7075-T6	0.125 4130	0088 00
7	Stiffener	ALCOA 22981 7075-T6	0.063 4130	0088 00
8	Clip	ALCOA 67580 7075-T6	0.063 4130	0088 00
9	Cap	AND10136-2001 7075-T6	0.100 4130	0088 00
11	Stiffener	ALCOA 67580 7075-T6	0.063 4130	0088 00
13	Cap	0.063 2024-T4 Clad	0.071 4130	0088 00
14	Cap	ALCOA 15820 7075-T6	0.080 4130	0088 00

NOTE

All dimensions are in inches.

Table 20. Crown Former, Sta 340

INDEX NO.	NOMENCLATURE	ORIGINAL MATERIAL	REPAIR MATERIAL	WORK PACKAGE
1	Clip	ALCOA 52966 7075-T6	0.090 4130	0088 00
2	Stiffener	ALCOA 22477 7075-T6	0.050 4130	0088 00
3	Web	0.025 2024-T3 Clad	0.032 2024-T3 Clad	0086 00
4	Stiffener	ALCOA 22477 7075-T6	0.050 4130	0088 00
5	Cap	ALCOA 15820 7075-T6	0.080 4130	0088 00
6	Cap	ALCOA 22477 7075-T6	0.050 4130	0088 00
8	Clip	ALCOA 67580 7075-T6	0.063 4130	0088 00
11	Stiffener	ALCOA 67580 7075-T6	0.063 4130	0088 00
12	Cap	ALCOA 22477 7075-T6	0.050 4130	0088 00
14	Cap	ALCOA 67580 7075-T6	0.063 4130	0088 00

NOTE

All dimensions are in inches.

REPAIR – continued

Table 21. Crown Former, Sta 380

INDEX NO.	NOMENCLATURE	ORIGINAL MATERIAL	REPAIR MATERIAL	WORK PACKAGE
1	Clip	ALCOA 52966 7075-T6	0.090 4130	0088 00
2	Stiffener	ALCOA 22477 7075-T6	0.050 4130	0088 00
3	Web	0.025 2024-T4 Clad	0.032 2024-T4 Clad	0086 00
4	Stiffener	ALCOA 22477 7075-T6	0.050 4130	0088 00
5	Cap	ALCOA 15820 7075-T6	0.080 4130	0088 00
7	Stiffener	ALCOA 22477 7075-T6	0.050 4130	0088 00
10	Cap	ALCOA 15820 7075-T6	0.080 4130	0088 00
11	Stiffener	ALCOA 22477 7075-T6	0.050 4130	0088 00
14	Cap	ALCOA 67580 7075-T6	0.063 4130	0088 00

NOTE

All dimensions are in inches.

REPAIR – continued

NOTE

Refer to Table 22 for index number reference.

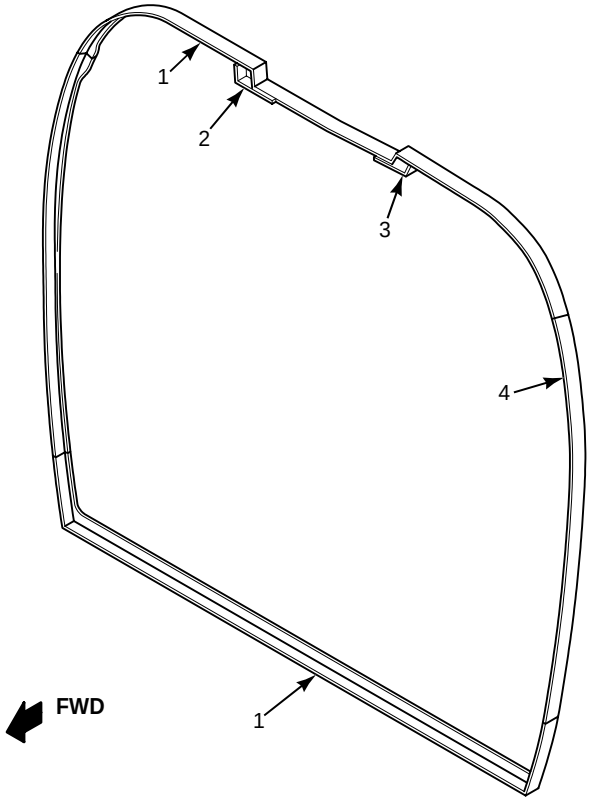


Figure 12. Frame, Sta 440

Table 22. Frame, Sta 440

INDEX NO.	NOMENCLATURE	ORIGINAL MATERIAL	REPAIR MATERIAL	WORK PACKAGE
1	Cap	VS90110 7075-T6	0.090 4130	0088 00
2	Gusset	0.063 2024-T4 Clad	0.063 2024-T3 Clad	0086 00
3	Gusset	0.063 2024-T4 Clad	0.063 2024-T3 Clad	0086 00
4	Angle	0.040 7075-T6 Bare	0.050 7075-T6 Clad	0088 00

NOTE

All dimensions are in inches.

REPAIR – continued

NOTE

Refer to Table 23 for index number reference.

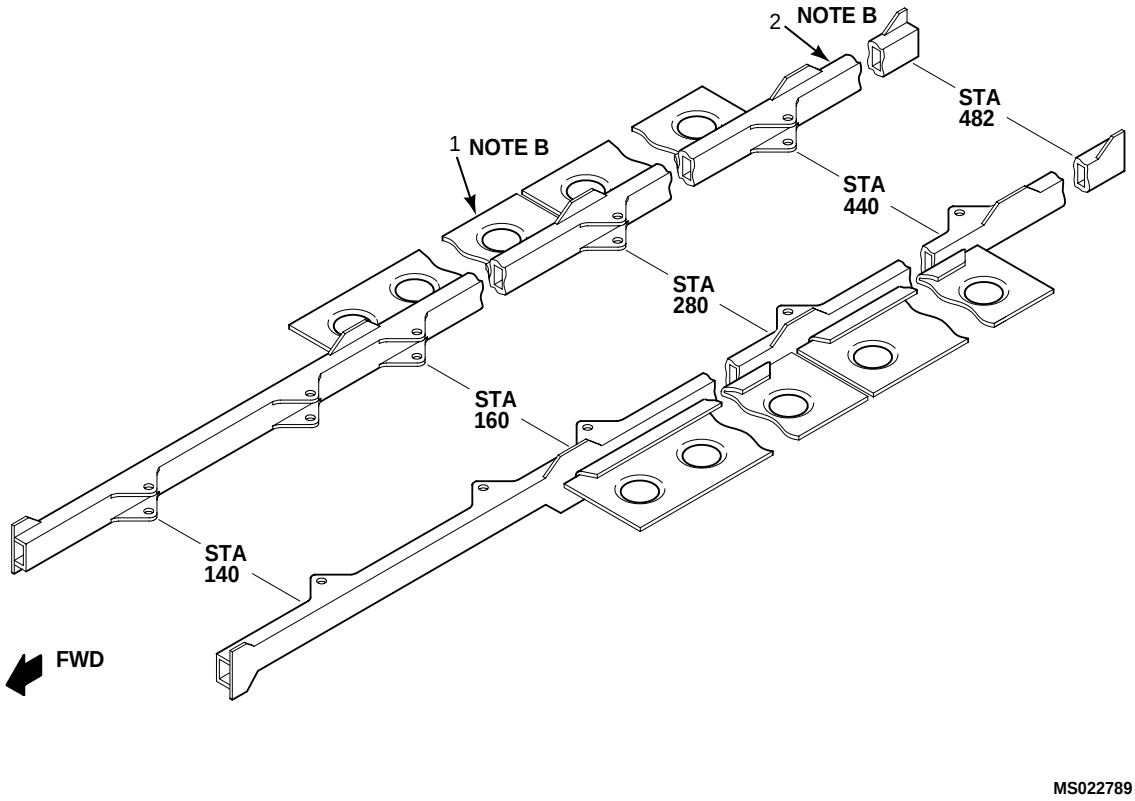


Figure 13. Beams, WL Minus 16

Table 23. Beams, WL minus 16

INDEX NO.	NOMENCLATURE	ORIGINAL MATERIAL	REPAIR MATERIAL	WORK PACKAGE
1	Web	0.032 2024-T4 Clad	0.040 2024-T3 Clad	0086 00
2	Seat Rail	VS90517 MAG ZK60A-T5	Note C	0088 00

NOTES

A. All dimensions are in inches.

B. All webs and seat rail supports are similar in construction. Original and repair material, and figure references, are applicable to all web and seat rail supports.

C. If the seat rail support (Index No. 2) is damaged, a length of extrusion machined to the configuration of the original section should be used.

REPAIR – continued

NOTE

Refer to Table 24 for index number reference.

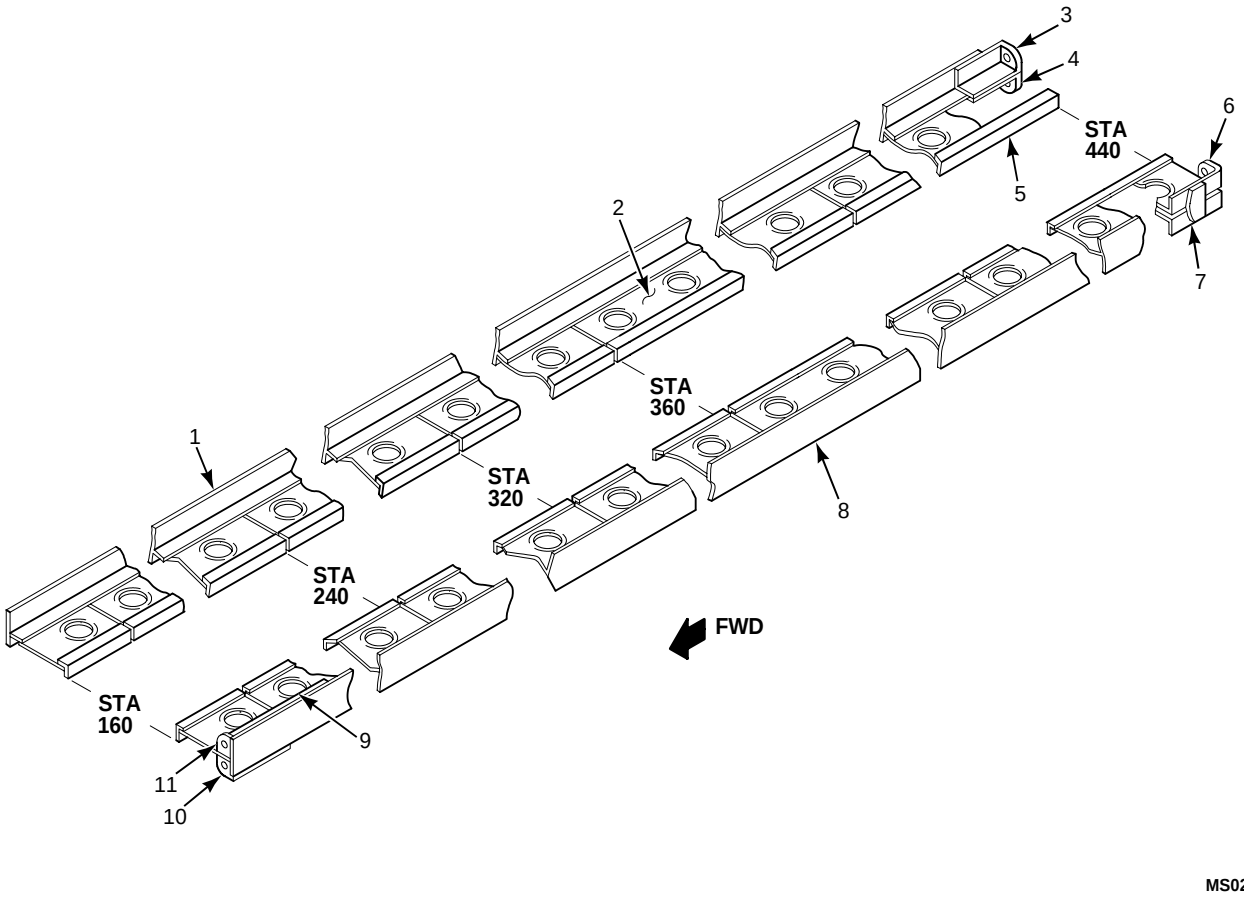


Figure 14. Beams, WL 0

REPAIR – continued

Table 24. Beams, WL 0

INDEX NO.	NOMENCLATURE	ORIGINAL MATERIAL	REPAIR MATERIAL	WORK PACKAGE
1	Stringer, RH	VS90315 7075-R6	0.090 4130	0088 00
2	Web	0.040 2024-T4 Clad	0.050 2024-T3 Clad	0086 00
3	Fitting	7075-T6 Extrusion	Note C	--
4	Fitting	7075-T6 Extrusion	Note D	--
5	Cap	AND10133-0601 7075-T6	0.071 4130	0088 00
6	Fitting	7075-T6 Extrusion	Note C	--
7	Fitting	7075-T6 Extrusion	Note D	--
8	Stringer, LH	VS90315 7075-T6	0.090 4130	0088 00
9	Filler	0.063 2024-T4 Clad	0.063 2024-T3 Clad	--
10	Fitting	7075-T6 Extrusion	Note D	--
11	Fitting	7075-T6 Extrusion	Note E	--

NOTES

A. All dimensions are in inches.

B. Web (Index No. 2) and Cap (Index No. 5) LH and RH are of similar construction. Original and repair material are applicable to both LH and RH parts.

C. Replace with new fitting 114S2818-7 LH or 114S2818-8 RH.

D. Replace with new fitting 114S2818-9 LH or 114S2818-10 RH.

E. Replace with new fitting 114S2818-5 LH or 114S2818-6 RH.

REPAIR – continued

NOTE

Refer to Table 25 for index number reference.

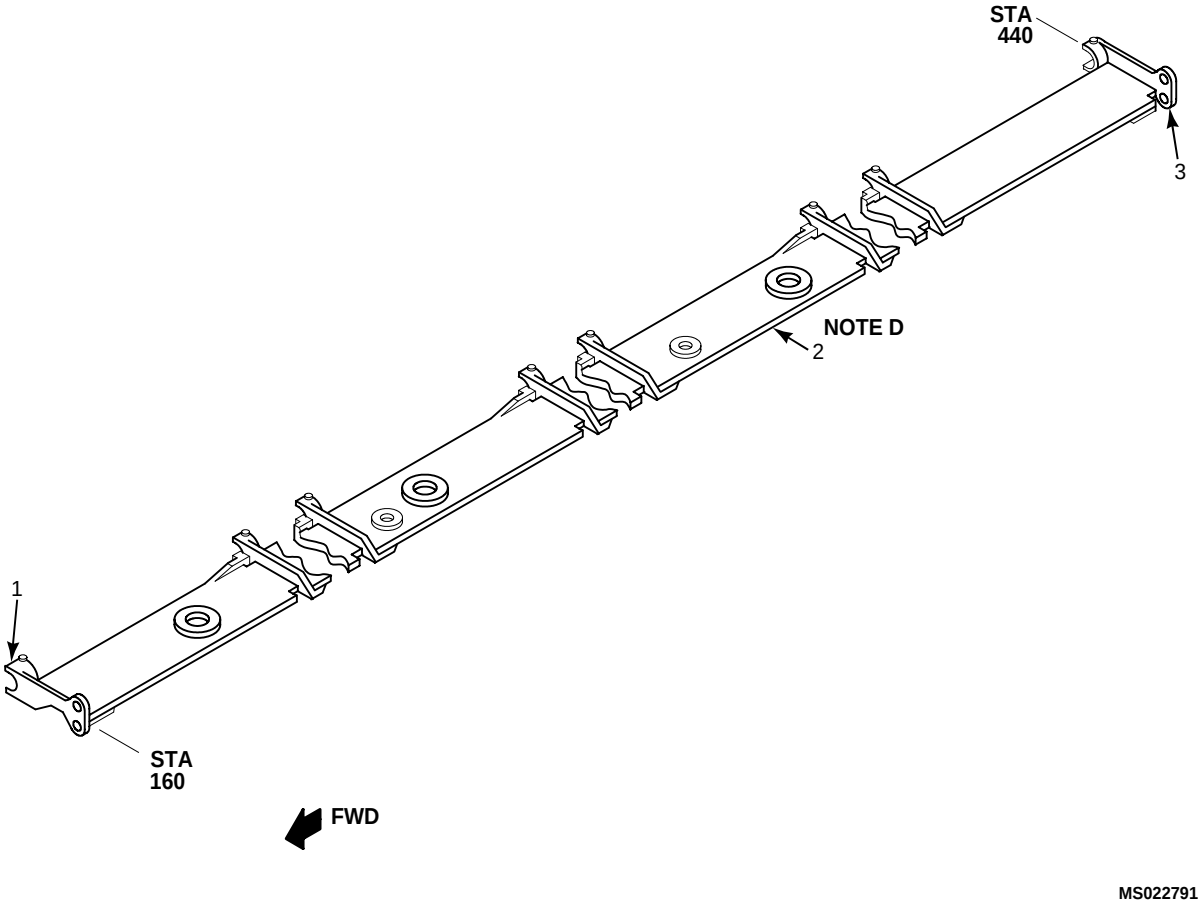


Figure 15. Troop Seat Back Rest and Litter Pole Beams, WL 29

Table 25. Troop Seat Back Rest and Litter Pole Beams, WL 29

INDEX NO.	NOMENCLATURE	ORIGINAL MATERIAL	REPAIR MATERIAL	WORK PACKAGE
1	Fitting	7075-T6 Forging	Note B	--
2	Beam	0.020 7075-T6 Clad	0.032 7075-R6 Clad	0086 00
3	Fitting	7075-T6 Forging	Note C	--

NOTES

A. All dimensions are in inches.

B. Replace with new fitting 114S2837-3 LH or 114S2837-2 RH.

C. Replace with new fitting 114S2837-1 LH or 114S2837-5 RH.

D. The LH beam is shown. The RH beam is similar in construction. Repair data is applicable to both.

REPAIR – continued

NOTE

Refer to Table 26 for index number reference.

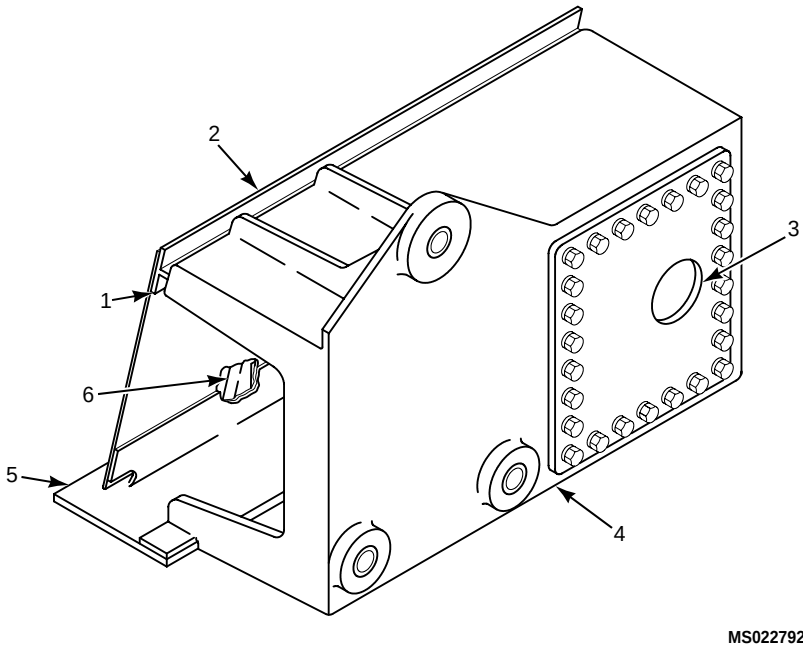


Figure 16. Forward Landing Gear Support Beams

Table 26. Forward Landing Gear Support Beams

INDEX NO.	NOMENCLATURE	ORIGINAL MATERIAL	REPAIR MATERIAL	WORK PACKAGE
1	Skin	0.050 7075-T6 Clad	0.063 7075-T6 Clad	0086 00
2	T-Section	VS90311 7075-T6	Note B	--
3	Access Door	0.125 7075-T6 Bare 0.250 7075-T6 Bare	0.125 7075-T6 Clad 0.250 7075-T6 Clad	0086 00 Note E
4	Fitting Assy	2014-T6 Forging	Note C	--
5	T-Section	VS90314 7075-T6	Note B	--
6	Angle	AND10133-0601 7075-6T	0.063 4130	0088 00

NOTES

A. All dimensions are in inches.

B. Replace with new T-section of original material.

C. Replace with new fitting, 114S2818-1LH, -2 RH.

D. Patching is permissible. If the damage requires repair by insertion, the access door must be replaced.

E. This part is used on aircraft serial numbers 92-0367 and 92-0368.

END OF WORK PACKAGE

DEPOT MAINTENANCE WORK REQUIREMENT
CH-47D HELICOPTER
CABIN TUB EXTERIOR REPAIRS

INITIAL SETUP

Test Equipment:
As Required

Tools and Special Tools:
As Required

Material/Parts:
Primer, Epoxy (Item 140, WP 0157 00)
Corrosive Preventive Compound (Item 89, WP 0157 00)

Personnel Required:
As Required

References:
TM 1-1500-204-23 Series
TM 55-1520-240-23 Series
WP 0077 00
WP 0078 00
WP 0081 00
WP 0083 00
WP 0086 00
WP 0087 00
WP 0095 00
WP 0157 00

Equipment Conditions:
As Required

Special Environmental Condition:
As Required

SCOPE

This work package covers repair procedures for the lower rescue hatch coaming and lower rescue hatch door. Refer to Figure 1.

1. Lower rescue hatch coaming
2. Lower rescue hatch door

REPAIR

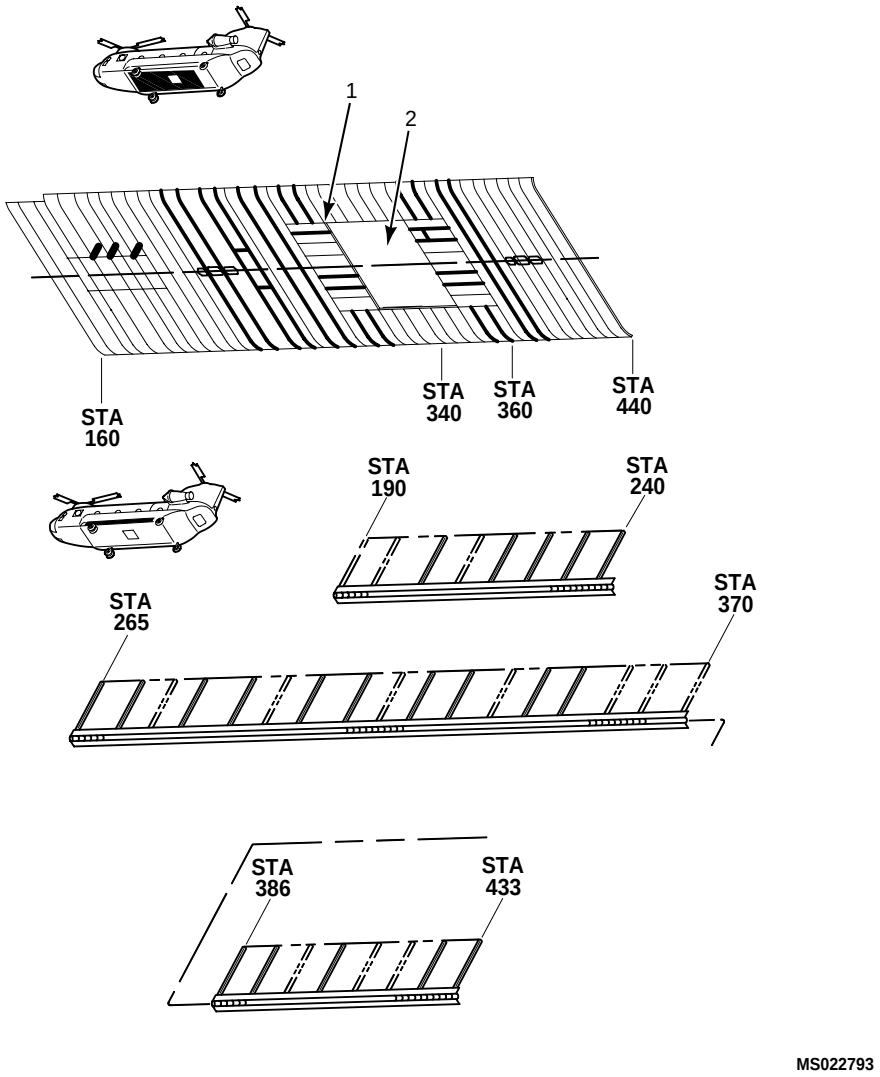


Figure 1. Cabin Tub Exterior

REPAIR - continued

NOTE

Refer to Table 1 for index number reference.

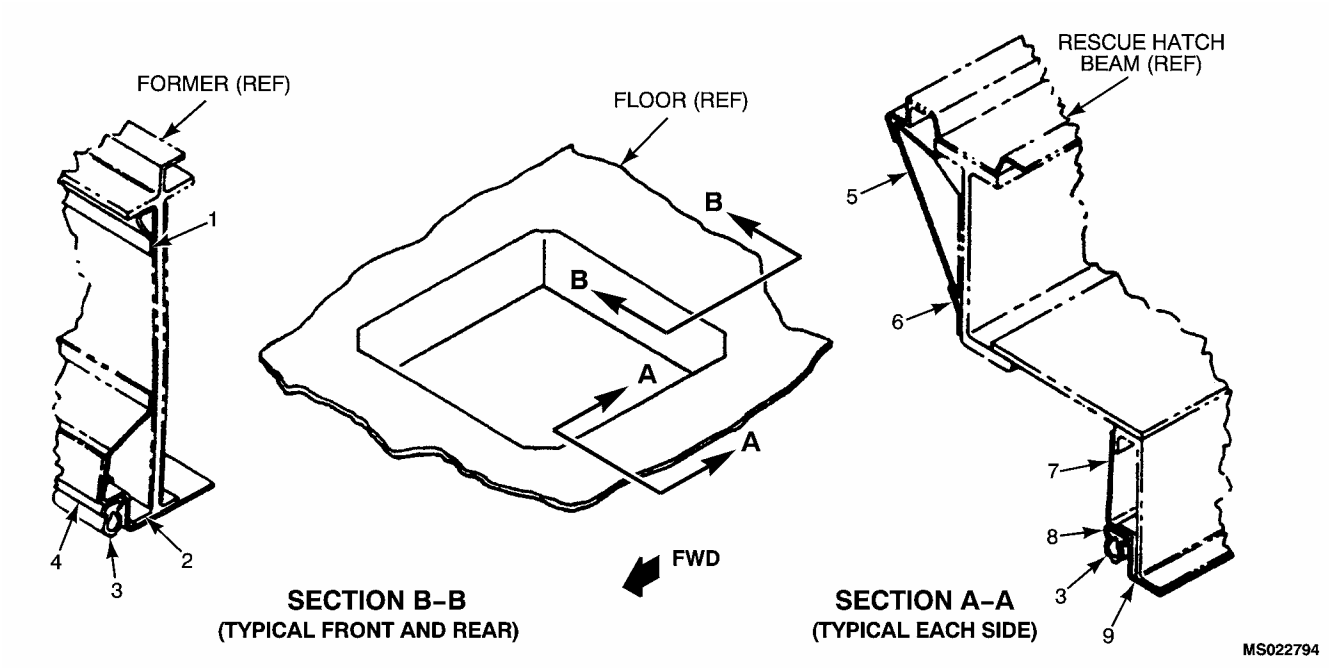


Figure 2. Lower Rescue Hatch Coaming (Sheet 1 of 2)

Table 1. Lower Rescue Hatch Coaming

INDEX NO.	NOMENCLATURE	ORIGINAL MATERIAL	REPAIR MATERIAL	WORK PACKAGE
1	Coaming	Note C	--	0081 00
2	Aft Rail	0.040 6061-T6 Bare	0.040 6061-T6 Bare	0087 00
3	Seal	--	Note D	0095 00
4	Retainer	VS90415 6061-T6	Note B	0086 00
5	Retainer	VS90415 6061-T6	Note B	0086 00
6	Stiffener	0.032 2024-T4 Clad	0.032 2024-T3 Clad	0087 00
7	Coaming	0.020 2024-T6 Clad	0.020 2024-T6 Clad	0086 00
8	Coaming	0.020 2024-T6 Clad	0.020 2024-T6 Clad	0086 00
9	Side Rail	0.040 6061-T6 Bare	0.040 6061-T6 Bare	0087 00

NOTES

A. All dimensions are in inches.
B. Replace with a section same as the original.
C. The coaming is made of three plies of plastic impregnated glass cloth.
D. Replace with new seal, 114SS658-5.

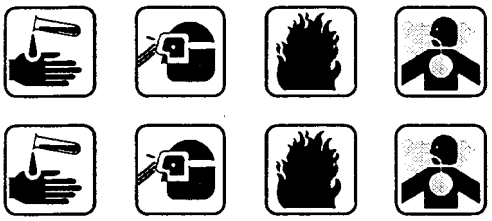
REPAIR - continued

MODIFICATION OF RESCUE HOIST COAMING TO ALLOW INSPECTION

The lower rescue hatch areas, LH and RH, sta 320 to sta 360, WL minus 37, cannot be properly cleaned, painted, or inspected due to installation of coaming, P/N's 114S29-6-129 and 114S29-6-130. In some cases, the referenced coaming P/N's are not installed.

1. Inspect areas or installation of coaming (Item 7, Figure 2).
2. If installed, remove coaming and inspect area for corrosion, dirt, mud, and other foreign objects.
3. Clean area of corrosion, dirt, mud, loose paint, and foreign objects.
4. Repair or replace any damaged parts found during inspection.

WARNING



EPOXY PRIMER

CORROSIVE PREVENTIVE COMPOUND

5. Treat (refer to WP 0077 00), prime with epoxy primer (Item 140, WP 0157 00), paint (refer to WP 0078 00), and apply CPC (Item 89, WP 0157 00).
6. Modify coaming to approximately 0.020 x 3.2 x 7.0 inches, at center point of installation of bracket, P/N 114S2906-95. Refer to Figure 2 for modification of coaming.
7. Install only the center coaming using rivets in existing holes. Do not install forward and aft coaming to facilitate inspection and assist with corrosion control.

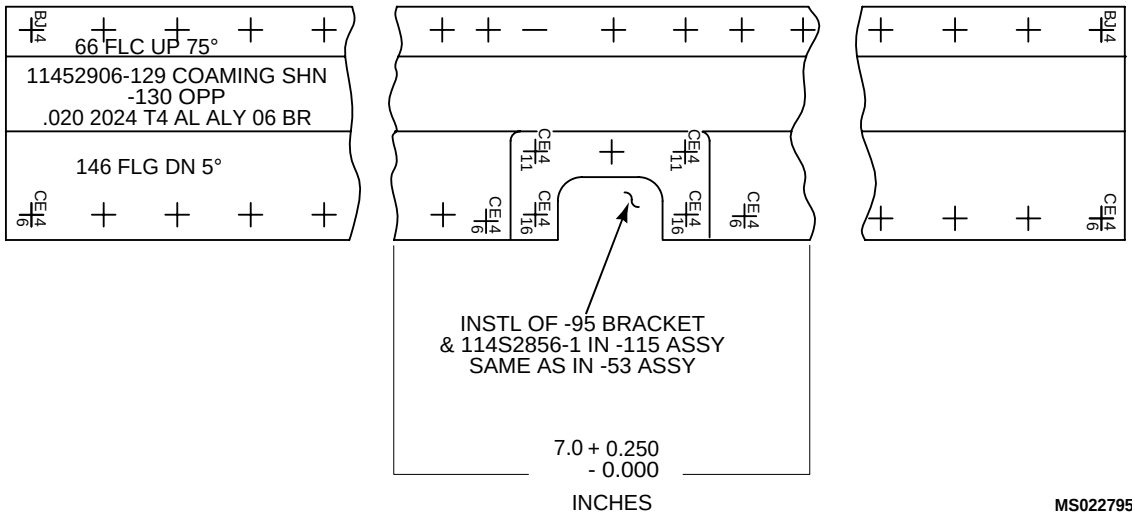


Figure 2. Lower Rescue Hatch Coaming (Sheet 2 of 2)

REPAIR – continued

NOTE

Refer to Table 2 for index number reference.

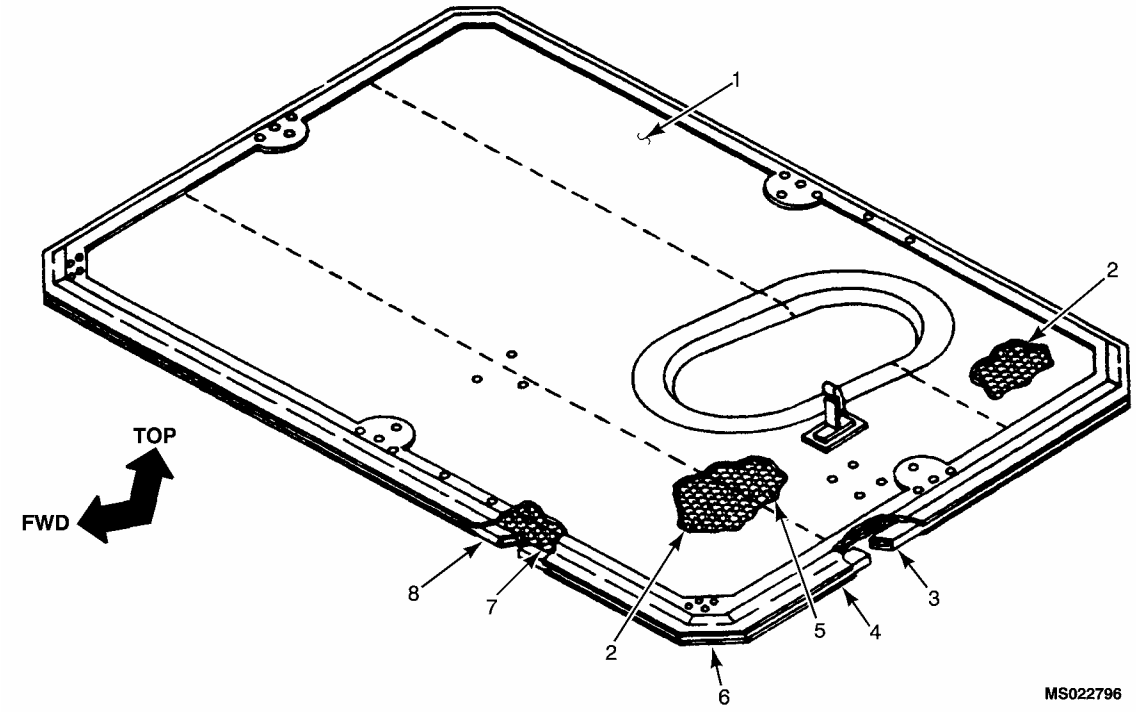


Figure 3. Lower Rescue Hatch Door

Table 2. Lower Rescue Hatch Door

INDEX NO.	NOMENCLATURE	ORIGINAL MATERIAL	REPAIR MATERIAL	WORK PACKAGE
1	Inner Skin	0.012 7075-T6 Clad	0.012 7075-T6 Clad	0083 00
2	Core	1.0, 3.4-1/4-15N-3003	1.0, 3.4-1/4-15N-3003	0083 00
3	Rail	114S2902-19	Note B	--
4	Outer Skin	0.016 7075-T6 Clad	0.016 7075-T6 Clad	0083 00
5	Core	1.0, 4.3-1/4-20N-3003	1.0, 4.3-1/4-20N-3003	0083 00
6	Rail	114S2902-21	Note B	--
7	Core	1.0, 2.3-1/4-10N-3003	1.0, 2.3-1/4-10N-3003	0083 00
8	Rail	114S2902-19	Note B	--

NOTES

A. All dimensions are in inches.

B. Replace with new rail, 114S2902-19

END OF WORK PACKAGE

DEPOT MAINTENANCE WORK REQUIREMENT
CH-47D HELICOPTER
CABIN TUB FORMER AND BEAM REPAIRS

INITIAL SETUP

Test Equipment:
As Required

Tools and Special Tools:
As Required

Material/Parts:
As Required

Personnel Required:
As Required

References:
TM 1-1500-204-23 Series
TM 55-1520-240-23 Series
WP 0081 00
WP 0083 00
WP 0085 00
WP 0086 00
WP 0087 00
WP 0088 00
WP 0111 00

Equipment Conditions:
As Required

Special Environmental Condition:
As Required

SCOPE

This work package covers repair of the following cabin tub formers and beams. Refer to Figure 1.

1. Cargo Tiedown Adaptors, BL 0 and BL 20
2. Cargo Tiedown Adaptors, BL 44, sta 120 to sta 174
3. Cargo Tiedown Adaptors, BL 44, sta 174 to sta 485
5. Beams, BL 45, sta 160 to sta 200
6. Rescue Hoist Cutout Beams, sta 320 to sta 360
7. Center Cargo Hook Hatch, Hand Hold
8. Forward and Aft Cargo Hook Fittings
9. Floor Formers

SCOPE - continued

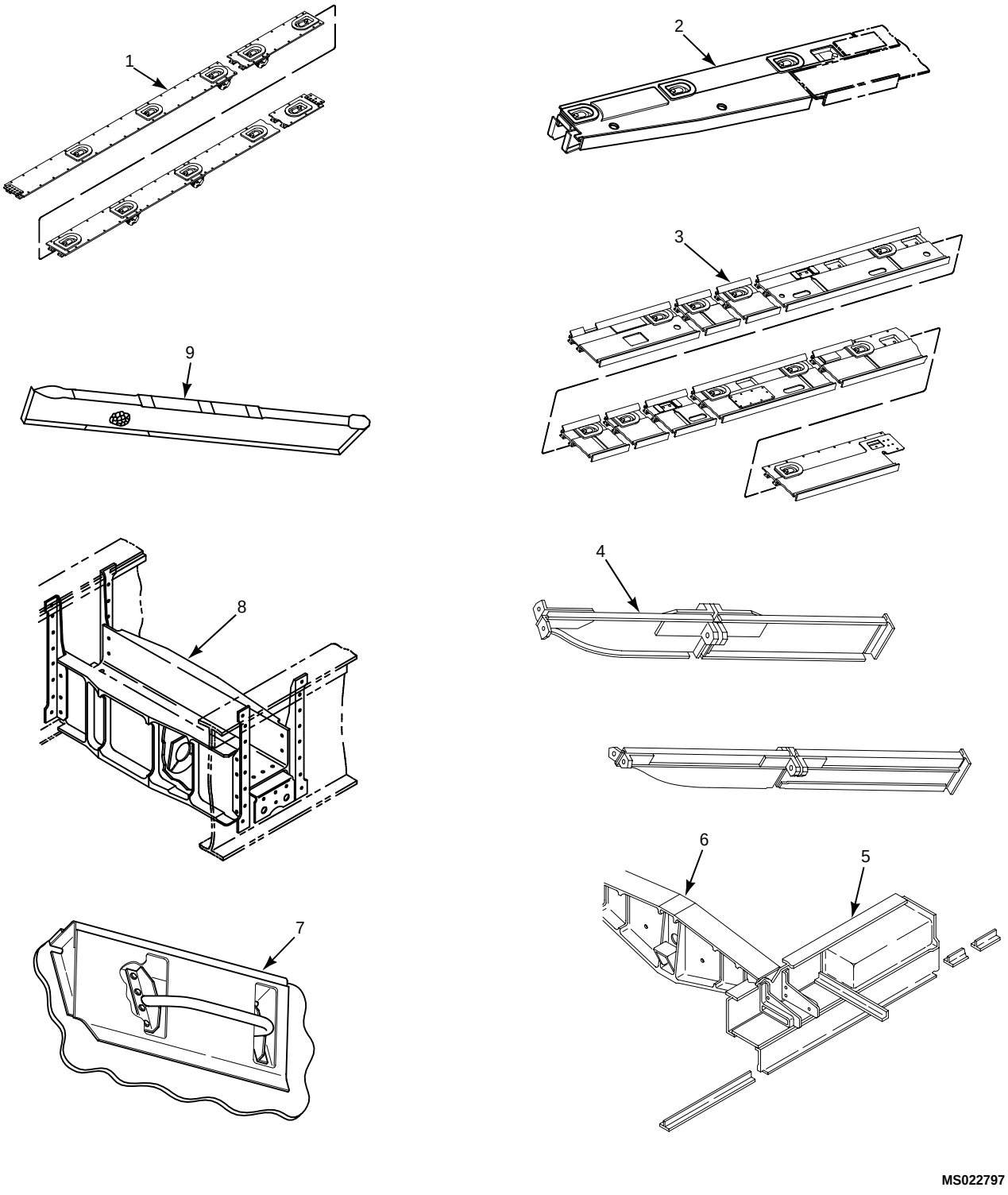


Figure 1. Cabin Tub Formers and Beams

REPAIR

NOTE

Refer to Table 1 for index number reference.

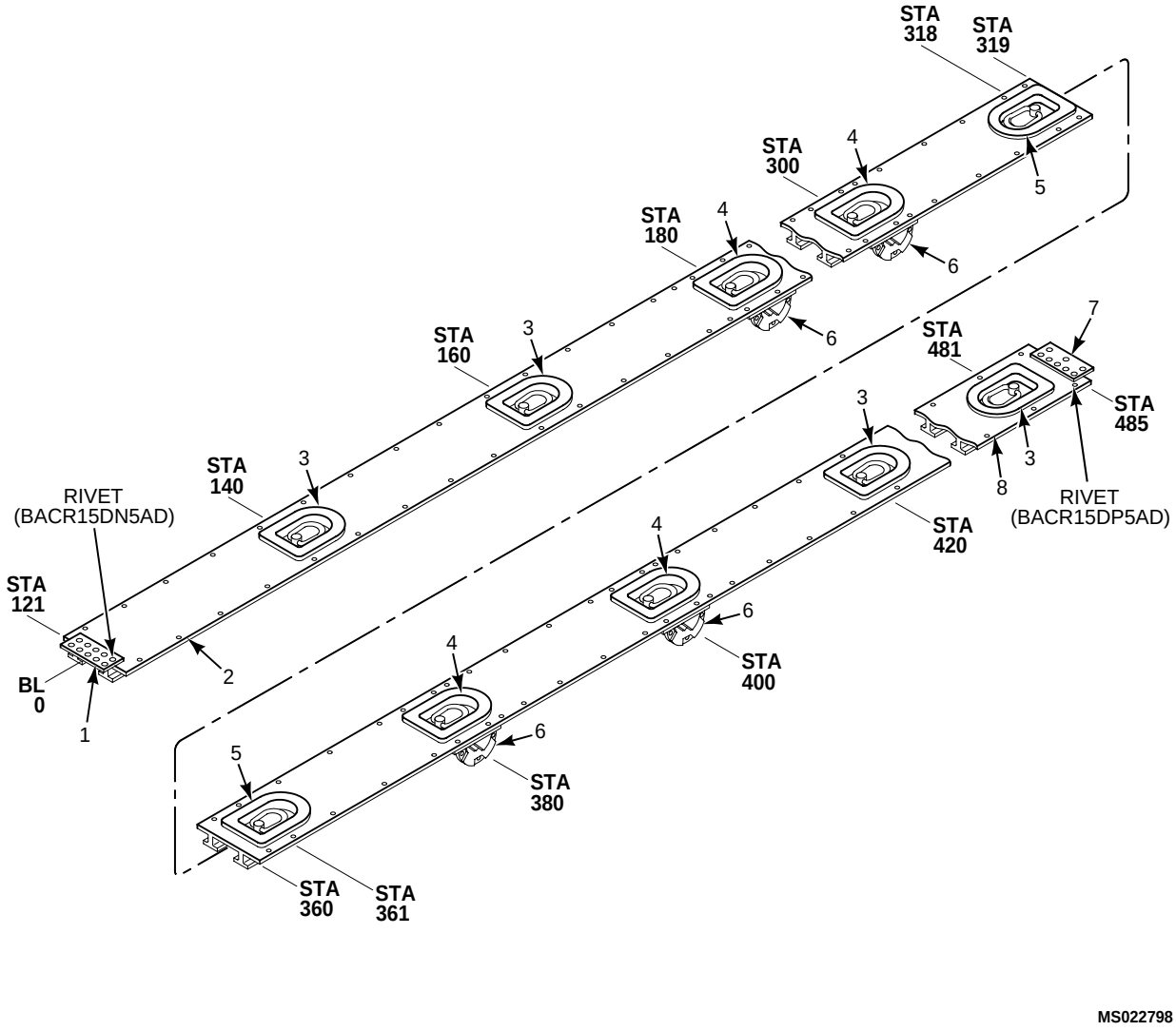


Figure 2. Cargo Tiedown Adapter Beam, BL 0

REPAIR - continued

Table 1. Cargo Tiedown Adapter Beam, BL 0

INDEX NO.	NOMENCLATURE	ORIGINAL MATERIAL	REPAIR MATERIAL	WORK PACKAGE
1	Plate	0.100 2024-T3 Clad	Note J	--
2	Beam	2024-T4 Bare Extr	Note D	0087 00
	Beam	2024-T4 BAC1510-920	Notes D & K	0087 00
3	Receptacle	7075-T6 Bare	Note E	--
4	Receptacle	7075-T6 Bare	Note F	--
5	Receptacle	7075-T6 Bare	Note G	--
6	Mount	--	Note H	--
7	Plate	0.050 2024-T3	Note J	--
8	Beam	2024-T4 BARE	Note I	0087 00
	Beam	2024-BAC1510-920	Note K	0087 00

NOTES

A. All dimensions are in inches.

B. All receptacles between sta 180 and sta 300 are 114S2893-7.

C. All receptacles between sta 420 and sta 481 are 114S2893-12.

D. Damage other than minor, replace with new beam, 114S2567-7.

E. Replace with new receptacle 114S2893-12 or 114S2893-11 on aircraft serial numbers 92-0367 and 92-0368.

F. Replace with new receptacle 114S2893-1 for aircraft serial numbers 92-0367 and 92-0368.

G. Replace with new receptacle 114S2893-8 or 114S2893-4 for aircraft serial numbers 92-0367 and 92-0368.

H. Replace with new mount, 114SS669-1.

I. Damage other than minor, replace with new beam 114S2568-4 or 114S2567-6 for aircraft serial numbers 92-0367 and 92-0368.

J. Replace with new part, same as original.

K. This material is used on aircraft serial numbers 92-0367 and 92-0368.

REPAIR - continued

NOTE

Refer to Table 2 for index number reference.

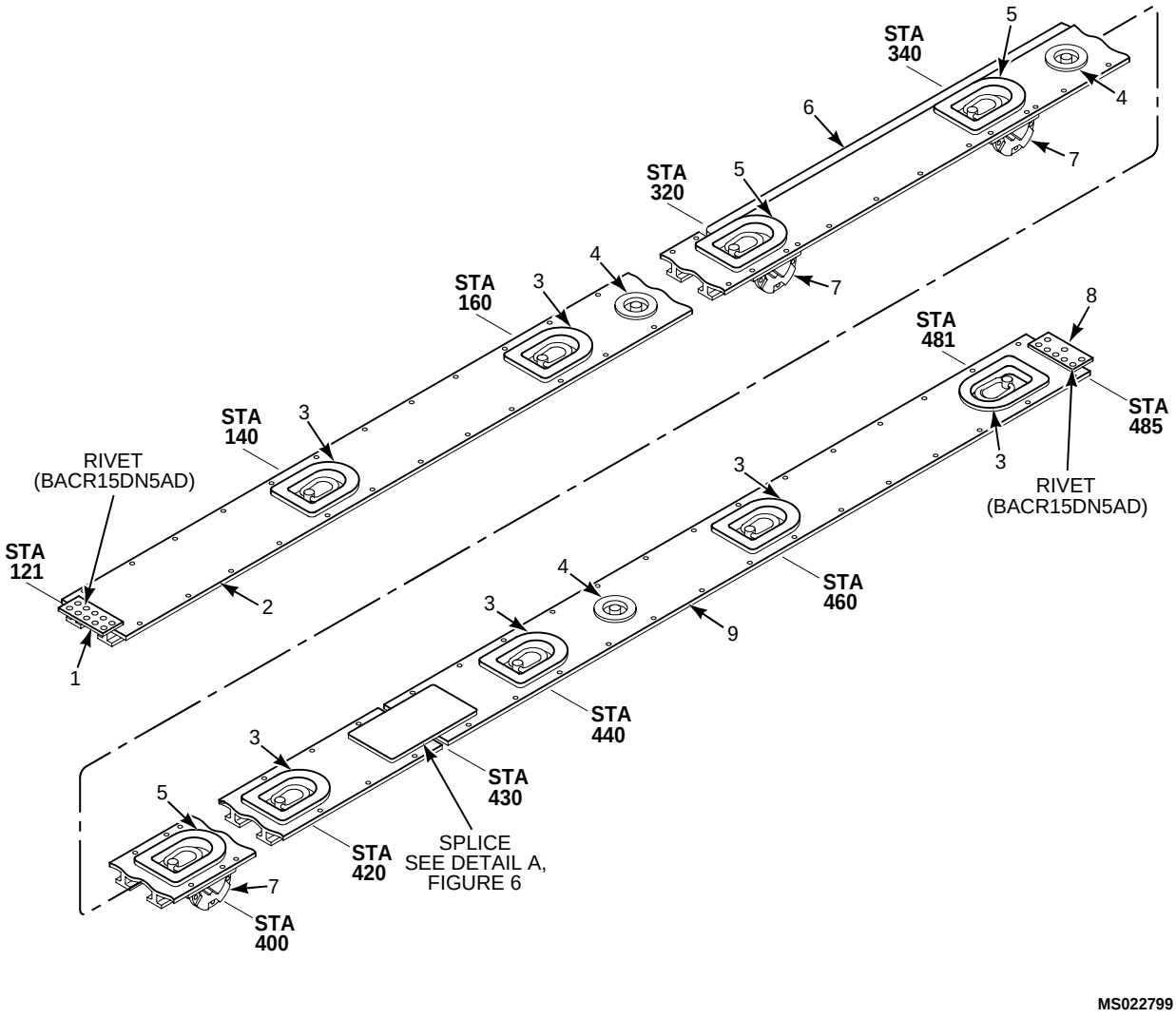


Figure 3. Cargo Tiedown Adapter Beam, BL 20

REPAIR - continued

Table 2. Cargo Tiedown Adapter Beam, BL 20

INDEX NO.	NOMENCLATURE	ORIGINAL MATERIAL	REPAIR MATERIAL	WORK PACKAGE
1	Plate	0.100 2024-T3	Note I	--
2	Beam	2024 BAC1510 920 73511	Note C	0087 00
3	Receptacle	7075-T6 Bare	Notes D & J	--
4	Adapter	--	Note E	--
5	Receptacle	7075-T6 Bare	Note F	--
6	Seal Support	BAC1517-1459 7075-T6	0.063 4130	0088 00
7	Mount	--	Note H	--
8	Plate	0.050 2024-T3 Clad	Note I	--
9	Beam	2024 BAC1510-920-T3511	Note H	0087 00

NOTES

A. All dimensions are in inches.

B. All receptacles between sta 180 and sta 400 are 114S2893-7. For exception see Note J.

C. Damage other than minor, replace with new beam, 114S2569-13 LH, 114S2568-14 RH (sta 121 to sta 430), or 114S2569-15 LH and RH (sta 430 to sta 485).

D. Replace with new receptacle, 114S2893-11.

E. Replace with new adapter, 114S2559-55.

F. Replace with new receptacle, 114S2893-7.

G. Damage other than minor, replace with new beam, 114S2569-6 LH and RH.

H. Replace with new mount, 114SS669-1.

I. Replace with new part same material as original.

J. Receptacle, 114S2893-1, is used on aircraft serial numbers 92-0367 and 92-0368.

REPAIR - continued

NOTE

Refer to Table 3 for index number reference.

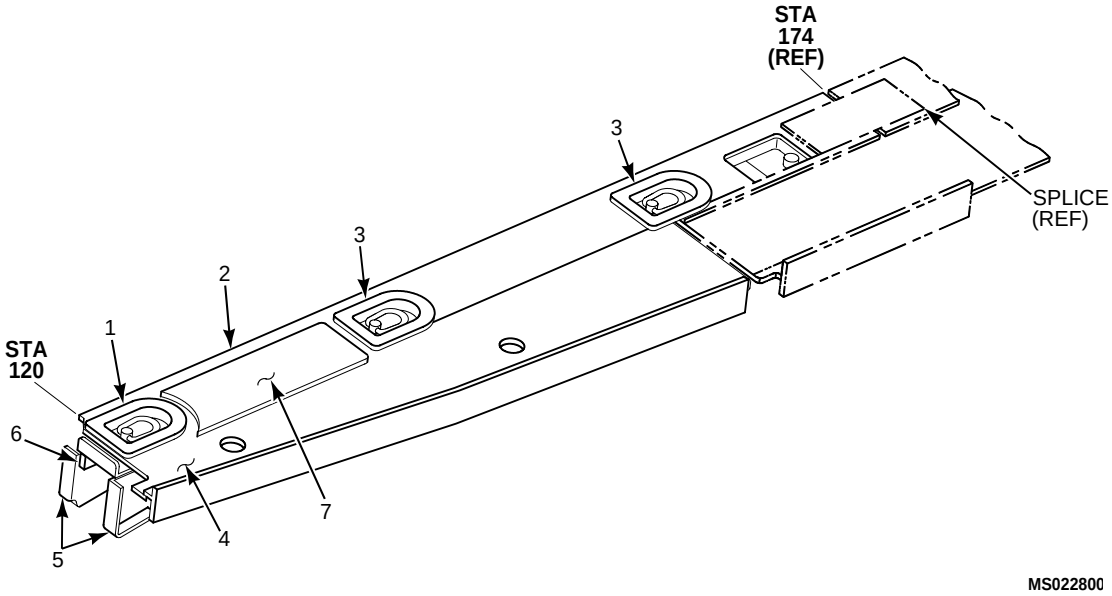


Figure 4. Cargo Tiedown Adapter Beam, BL 44, Sta 120 to Sta 174

Table 3. Cargo Tiedown Adapter Beam, BL 44, Sta 120 to Sta 174

INDEX NO.	NOMENCLATURE	ORIGINAL MATERIAL	REPAIR MATERIAL	WORK PACKAGE
1	Receptacle	7075-T6 Bare	Note C	--
2	Beam	2024-T4 Bare	Note B	0087 00
	Beam	BAC1510-921	Note F	0087 00
3	Receptacle	7075-T6 Bare	Note D	--
4	Plate	0.040 2024-T3 Clad	0.050 2024-T3 Clad	0086 00
5	Bracket	0.050 7075-T6 Bare	Note E	0087 00
6	Channel	AND10137-2405 7075-T6	Note E	0087 00
7	Doubler	0.050 2024-T3 Clad	Note E	0086 00

NOTES

A. All dimensions are in inches.

B. Damage other than minor, replace with new beam, 114S1555-30 LH or 114S1555-31 RH and 114S1555-43 LH or 114S1555-44 RH for aircraft serial numbers 92-0367 and 92-0368.

C. Replace with new receptacle, 114S2893-15.

D. Replace with new receptacle, 114S2893-13.

E. Damage other than minor, replace with new part, same as original.

F. This material is used on aircraft serial numbers 92-0367 and 92-0368.

REPAIR - continued

NOTE

Refer to Table 4 for index number reference.

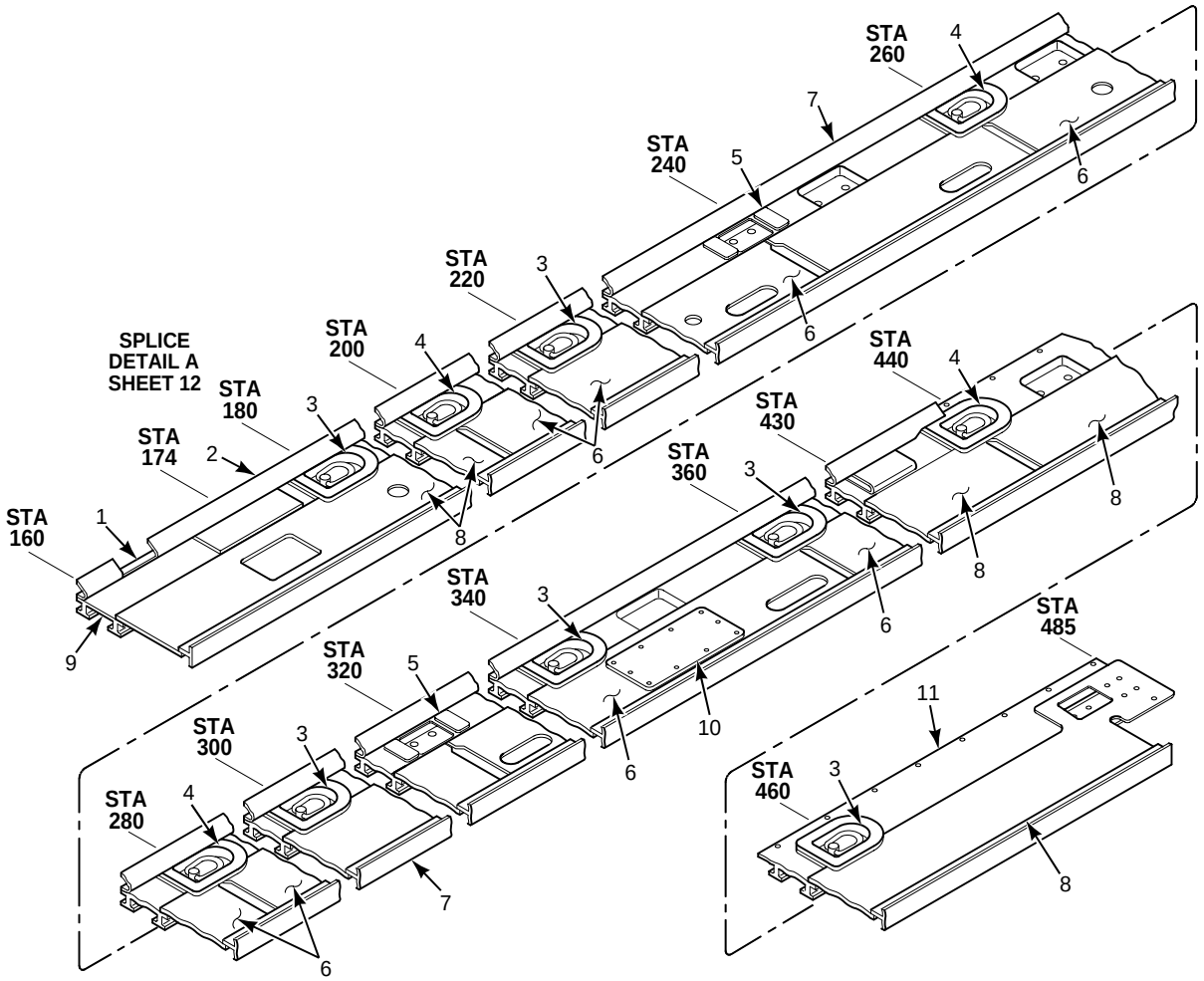


Figure 5. Cargo Tiedown Adapter Beam, BL 44, Sta 174 to Sta 485

REPAIR - continued

Table 4. Cargo Tiedown Adapter Beam, BL 44, Sta 174 to Sta 485

INDEX NO.	NOMENCLATURE	ORIGINAL MATERIAL	REPAIR MATERIAL	WORK PACKAGE
1	Retainer	0.032 2024-T3 Clad	0.032 2024-T3 Clad	0086 00
2	Seal	0.063 Urethane Sheet	0.063 Urethane Sheet	--
3	Receptacle	7075-T6 Bare	Note C	--
4	Receptacle	7075-T6 Bare	Note D	--
5	Spacer	0.040 2024-T3 Clad	0.040 2024-T3 Clad	0090 00
6	Plate	0.040 7075-T6 Clad	0.040 7075-T6 Clad	0086 00
7	Longeron	VS90305 7075-T6	0.100 4130	0088 00
8	Plate	0.050 7075-T6 Clad	0.050 7075-T6 Clad	0086 00
9	Beam	2024-T4 Bare	Note B	0087 00
10	Access Panel	0.100 MAG AZ31B-H24	Note F	--
11	Beam	2024-T4 Bare	Note E	0087 00

NOTES

A. All dimensions are in inches.

B. Damage other than minor, replace with new beam, 114S2570-49 LH or 114S2570-14 RH.

C. Replace with new receptacle, 114S2893-14. Aircraft serial numbers 92-0367 and 92-0368, replace with new receptacle, 114S2893-13.

D. Replace with new receptacle, 114D2893-9 LH or 114D2893-18 RH. Aircraft serial numbers 92-0367 and 92-0368 replace with new receptacle, 114S2893-5 LH or 114S2893-17 RH.

E. Damage other than minor, replace with new beam, 114S2570-51 LH or 114S2570-52 RH. Aircraft serial numbers 92-0367 and 92-0368 with damage other than minor, replace with new beam, 114S2570-51 LH of 114S2570-52 RH.

F. Replace with new access panel, 114S5657-1.

G. Between sta 360 and sta 420, all receptacles are 114S2893-14.

REPAIR - continued

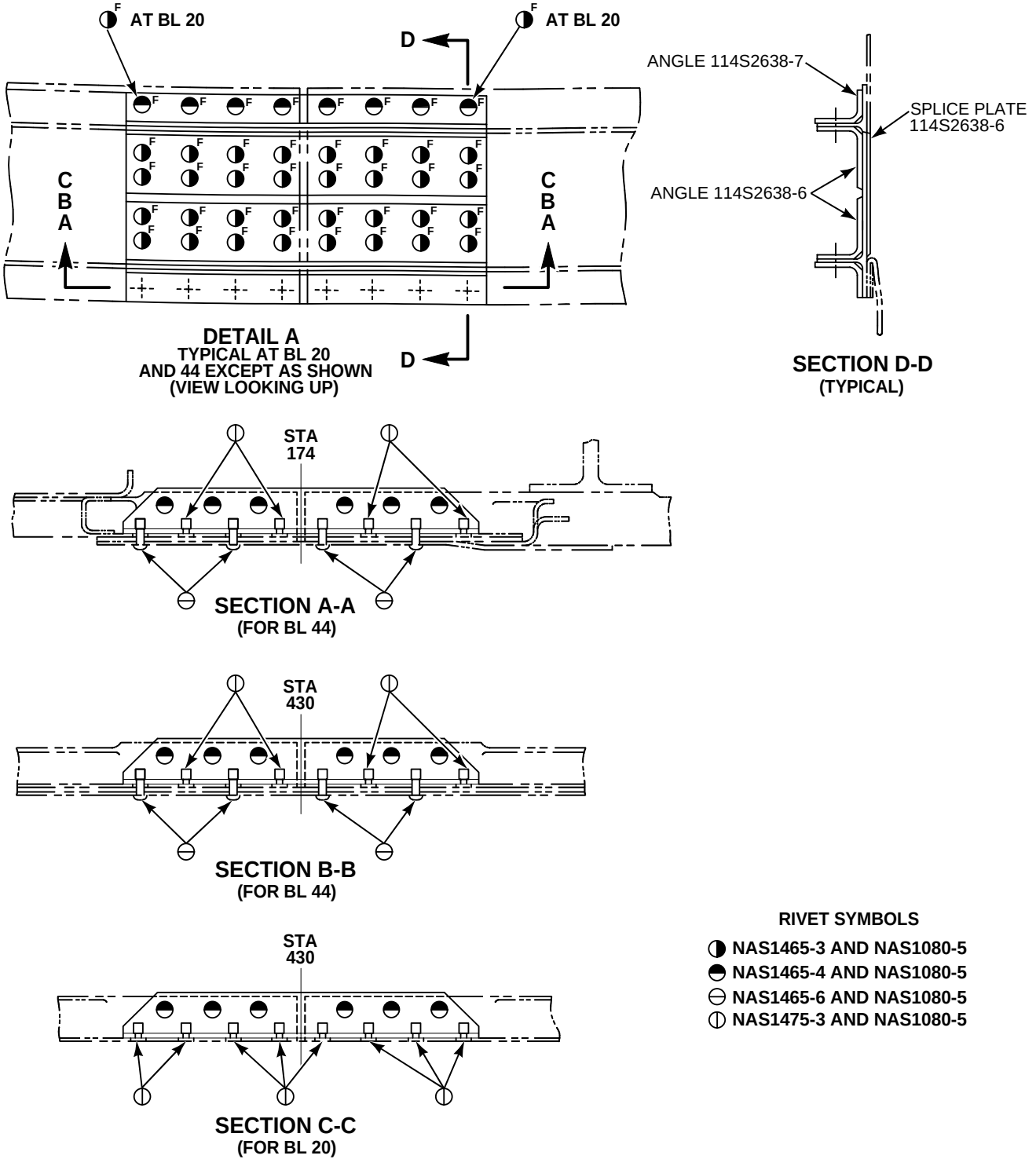
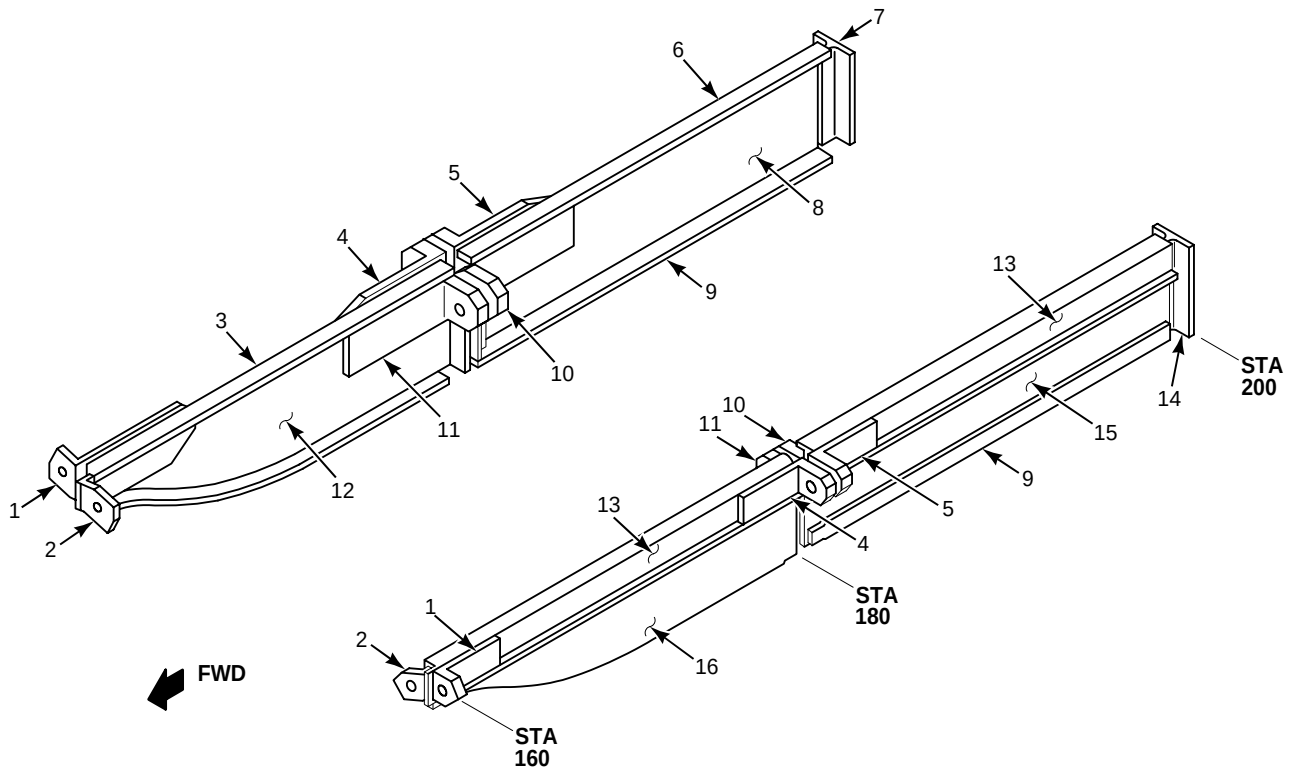


Figure 6. Cargo Tiedown Adapter Beam Splice

REPAIR - continued

NOTE

Refer to Table 5 for index number reference.



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NOTE

All dimensions are in inches.

Figure 7. Cabin Tub Beam, BL 45, Sta 160 to Sta 200

REPAIR - continued

Table 5. Cabin Tub Beam, BL 45, Sta 160 to Sta 200

INDEX NO.	NOMENCLATURE	ORIGINAL MATERIAL	REPAIR MATERIAL	WORK PACKAGE
1	Fitting	--	Note B	--
2	Fitting	--	Note B	--
3	Cap	Reynolds 10270 7075-T6	0.160 4130	0088 00
4	Fitting	--	Note B	--
5	Fitting	--	Note B	--
6	Cap	Reynolds 10270 7075-T6	0.160 4130	0088 00
7	Clip	AND10136-2001 7075-T6	Note C	--
8	Web	0.071 7075-T6 Clad	0.071 7075-T6 Clad	0085 00 & 0086 00
9	Cap	ALCOA 62564 7075-T6	0.090 4130	0088 00
10	Fitting	--	Note B	--
11	Fitting	--	Note B	--
12	Web	0.040 2024-T4 Clad	0.050 2024-T3 Clad	0085 00 & 0086 00
13	Cap	ALCOA 85491 7075-T6	0.160 4130	0088 00
14	Clip	ALCOA 62564 7075-T6	Note C	--
15	Web	0.063 7075-T6 Clad	0.063 7075-T6 Clad	0085 00 & 0086 00
16	Web	0.040 2024-T4 Clad	0.050 2024-T3 Clad	0085 00 & 0086 00

NOTES

A. All dimensions are in inches.

B. Damage other than minor, replace fittings (Item No's. 1, 2, 4, 5, 10, and 11, Figure 7) with new parts.

Item No. 1 - 114S2840-1 LH, 114S2840-11 RH.

Item No. 2 - 114S2840-19 LH, 114S2840-21RH.

Item No. 4 - 114S2840-5 LH, 114S2840-23 RH.

Item No. 5 - 114S2840-6 LH, 114S2840-25 RH.

Item No. 10 - 114S2840-5 LH, 114S2840-27 RH.

Item No. 11 - 114S2840-7 LH, 114S2840-28 RH.

C. Replace clips with a corresponding length of original material extrusion.

REPAIR – continued

NOTE

Refer to Table 6 for index number reference.

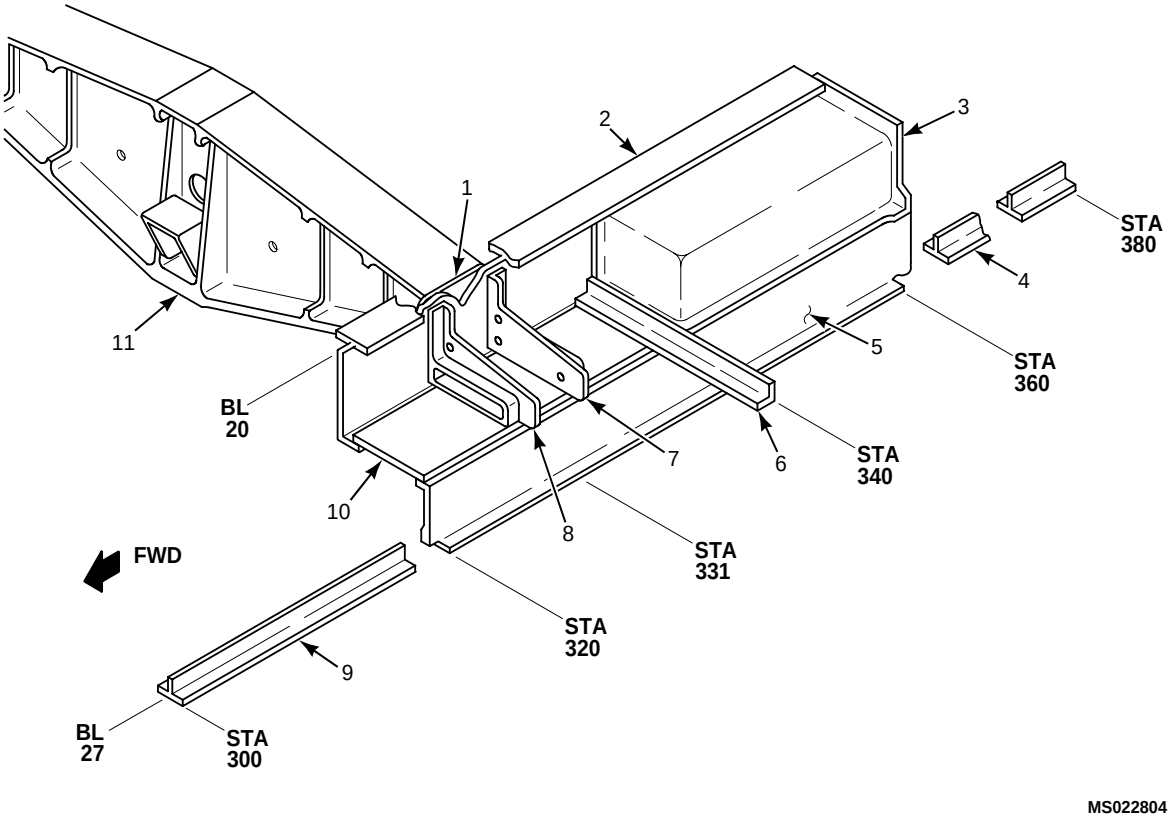


Figure 8. Rescue Hoist Cutout Beams, Sta 320 to Sta 360

Table 6. Rescue Hoist Cutout Beams, Sta 320 to Sta 360

INDEX NO.	NOMENCLATURE	ORIGINAL MATERIAL	REPAIR MATERIAL	WORK PACKAGE
1	Fitting	--	Note F	--
2	Beam	VS90537 7075-T6	0.250 4130	0088 00
3	Cover	--	Note C	0081 00
4	Cap	AND10136-2006 7075-T6	0.160 4130	0088 00
8	Beam	VS90538 7075-T6		0088 00
6	Clip	ALCOA 33811 7075-T6	0.125 4130	0088 00
7	Fitting	--	Note D	--
8	Fitting	--	Note E	--
9	Cap	AND10136-2006 7075-T6	0.160 4130	0088 00

REPAIR – continued

Table 6. Rescue Hoist Cutout Beams, Sta 320 to Sta 360 - continued

10	Web	0.125 7075-T6 Clad	0.125 7075-T6 Clad	0086 00
11	Beam	--	Note G	--

NOTES

A. All dimensions are in inches.

B. The LH beam is shown. The RH beam is similar in construction. Repair data listed is applicable to both configurations.

C. The cover is made of four plies of plastic impregnated glass cloth.

D. Replace with new fitting, 114S2841-1.

E. Replace with new fitting, 114S2841-2.

F. Replace with new fitting, 114S2831.

G. Refer to Figure 11 and Table 9.

REPAIR - continued

NOTE

Refer to Table 7 for index number reference.

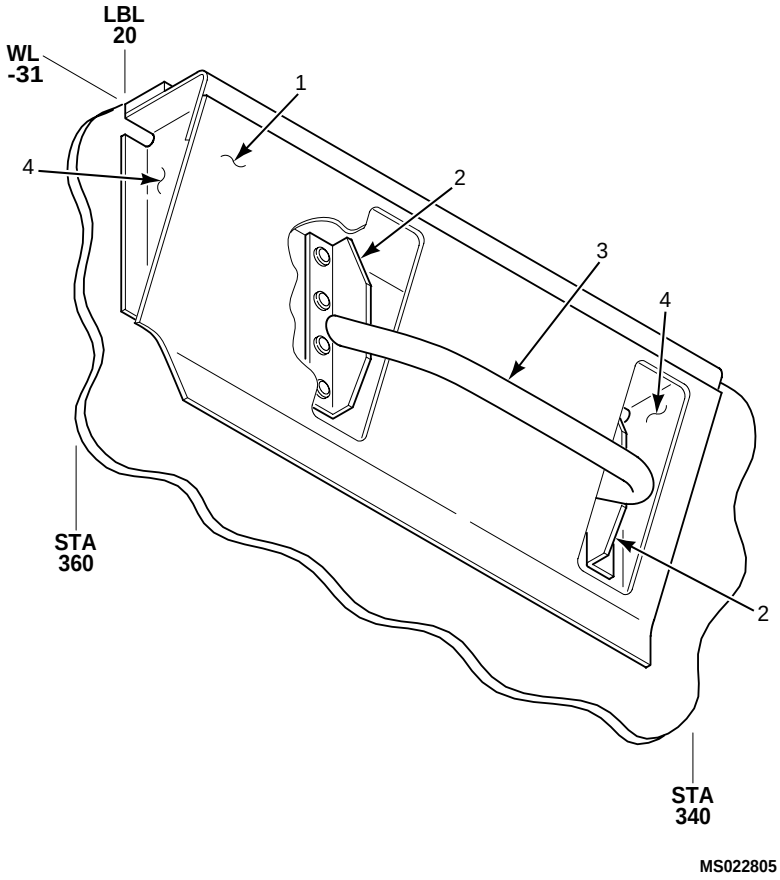


Figure 9. Center Cargo Hook Hatch, Hand Hold

Table 7. Center Cargo Hook Hatch, Hand Hold

INDEX NO.	NOMENCLATURE	ORIGINAL MATERIAL	REPAIR MATERIAL	WORK PACKAGE
1	Coaming	0.040 2024-T4 Clad	Note B	0086 00
2	Angle	321 CRES 0.100	Notes B &C	--
3	Handle	321 CRES 0.75D X 0.188 Wall	Notes B & C	--
4	Gusset	0.040 2024-T4 Clad	Note B	0087 00

NOTES

A. All dimensions are in inches.

B. Repair or replace with original material.

C. Use filler metal, ER347, when welding handle (tube) (Item No. 3, Figure 9) to angle (Item No. 2, Figure 9).

REPAIR – continued

NOTE

Refer to Table 8 for index number reference.

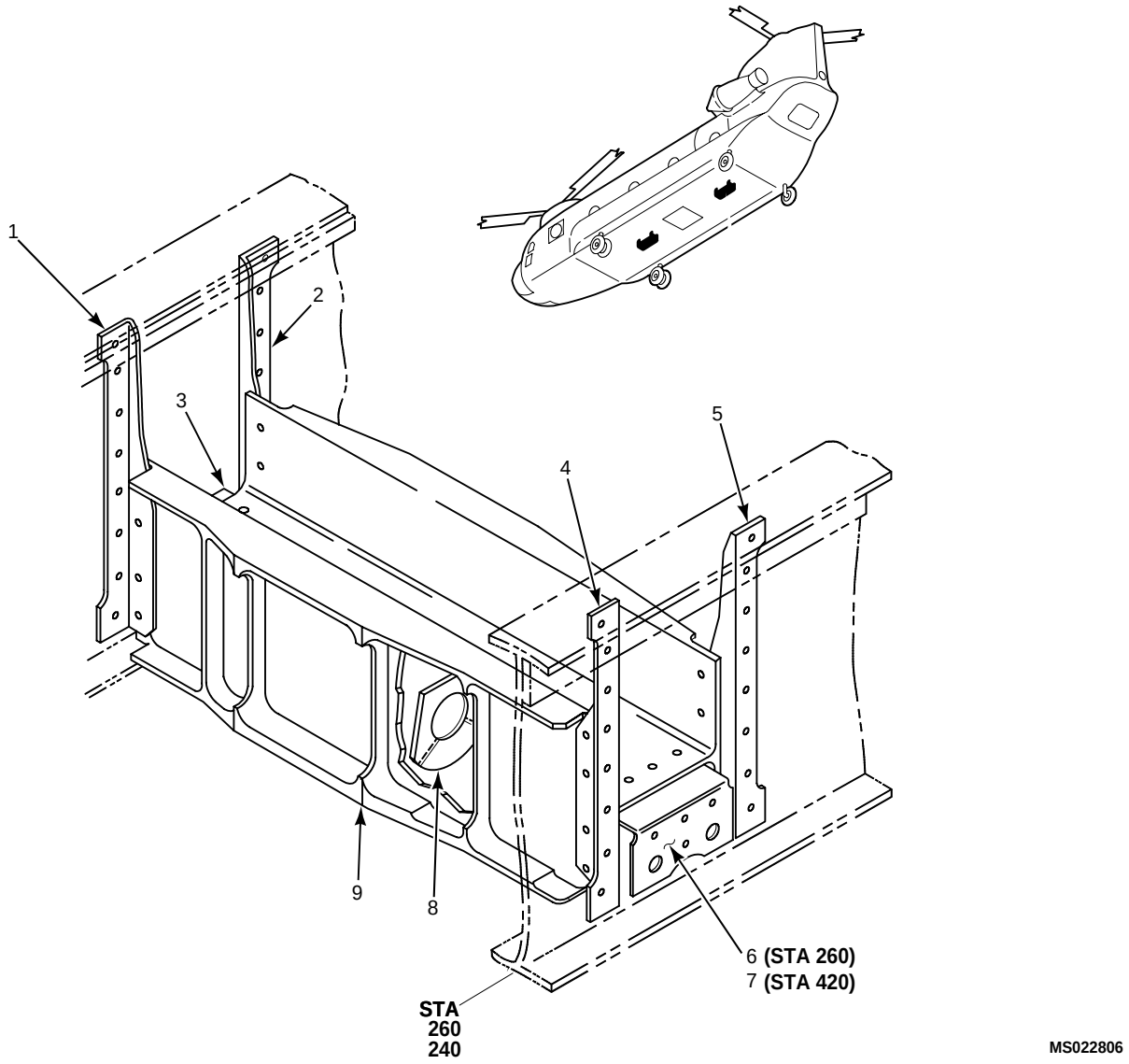


Figure 10. Forward and Aft Cargo Hook Fittings

REPAIR - continued

Table 8. Forward and Aft Cargo Hook Fittings

INDEX NO.	NOMENCLATURE	ORIGINAL MATERIAL	REPAIR MATERIAL	WORK PACKAGE
1	Clip	AND10134-1601 7075-T6	Note B	--
2	Clip	AND10134-1601 7075-T6	Note C	--
3	Clip	AND10133-2401 7075-T6	Note H	--
4	Clip	AND10134-1601 7075-T6	Note D	--
5	Clip	AND10134-1601 7075-T6	Note E	--
6	Clip	AND10133-2401 7075-T6	Note F	--
7	Clip	AND10133-2401 7075-T6	Note G	--
8	Bushing	--	Note I	--
9	Beam	Forging 7075-T736	Note J	--

NOTES

A. All dimensions are in inches.
B. Damage other than minor, replace with new clip, 145S2617-3.
C. Damage other than minor, replace with new clip, 145S2617-4.
D. Damage other than minor, replace with new clip, 145S2617-5.
E. Damage other than minor, replace with new clip, 145S2617-6.
F. Damage other than minor, replace with new clip, 145S2617-7.
G. Damage other than minor, replace with new clip, 145S2617-8.
H. Damage other than minor, replace with new clip, 145S2617-9.
I. Damage other than minor, replace with new bushing, 145S2809-1.
J. Damage other than minor, replace with new beam, 145S2821-2.

REPAIR - continued

NOTE

Refer to Table 9 for index number reference.

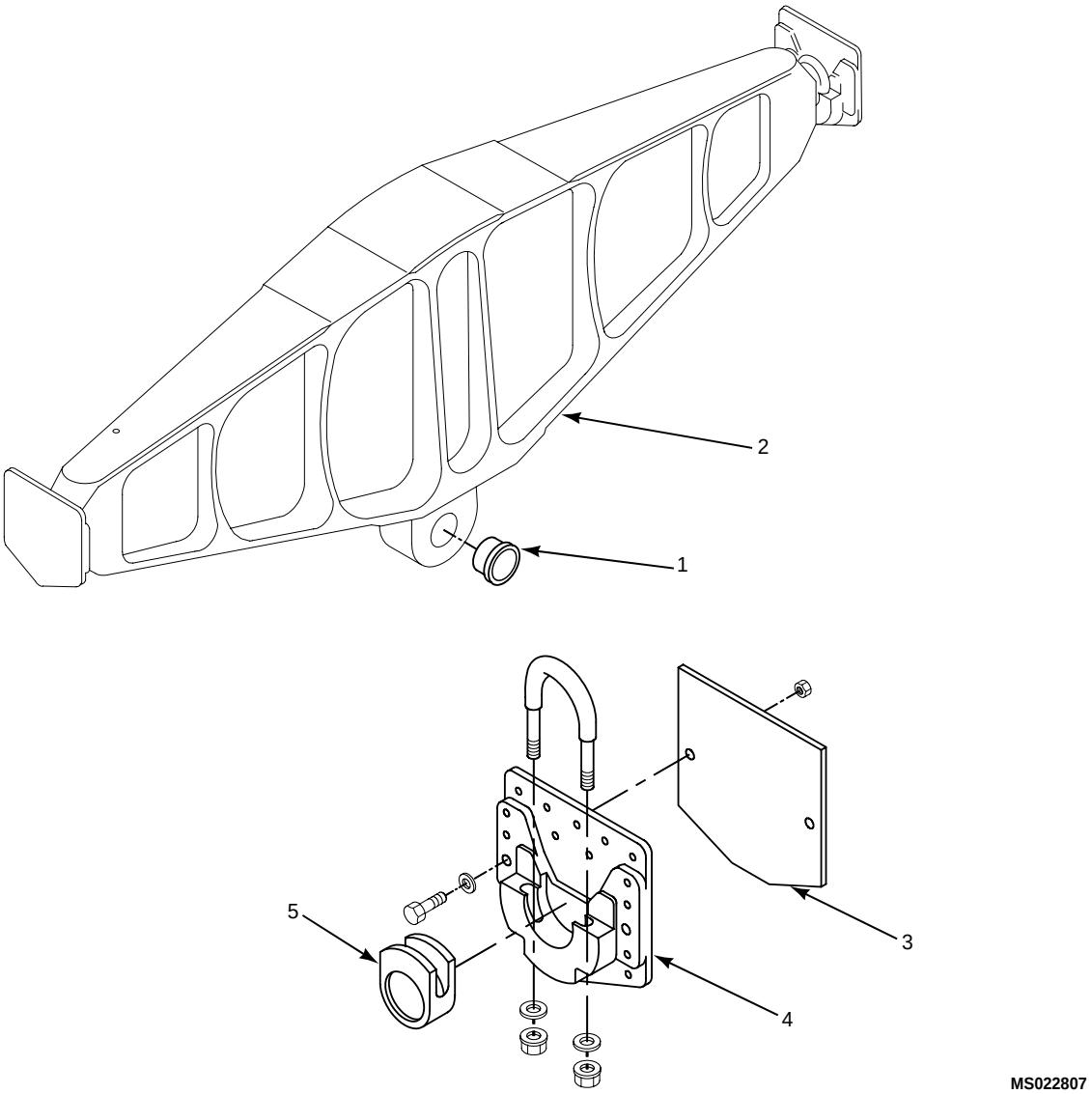


Figure 11. Center Cargo Hook Beam

REPAIR - continued

Table 9. Center Cargo Hook Beam

INDEX NO.	NOMENCLATURE	ORIGINAL MATERIAL	REPAIR MATERIAL	WORK PACKAGE
1	Bushing, Sleeve	--	Notes E & G	--
2	Beam	--	Note F	--
3	Shim	--	Note D	--
4	Support, Trolley	--	Note C	--
5	Bearing	--	Notes B & G	--

NOTES

A. All dimensions are in inches.

B. Damage other than minor, replace with new bearing, 414SS654-1.

C. Damage other than minor, replace with new support, 114S2834-3.

D. Damage other than minor replace with new shim, 145S2616-2.

E. Damage other than minor, replace with new bushing, MS21241-16C020.

F. Damage other than minor, replace with new beam, 414S2640-2.

G. Beam 414S2640, maximum bushing (2 ea) wear is 0.1007-inch. Maximum trunnion (2 ea) wear 0.137-inch.

REPAIR - continued

NOTE

Refer to Table 10 for index number reference.

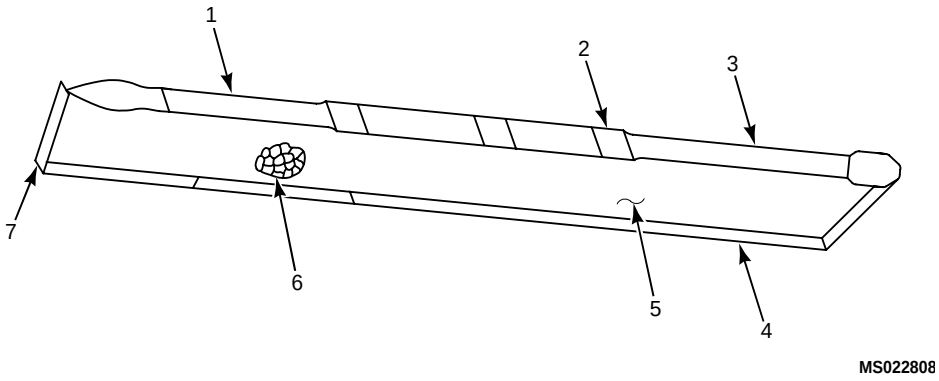


Figure 12. Former, Sta's 180 220, 300, and 420

Table 10. Former, Sta's 180, 220, 300, and 420

INDEX NO.	NOMENCLATURE	ORIGINAL MATERIAL	REPAIR MATERIAL	WORK PACKAGE
1	Cap	VS90302 7075-T6	VS90302 7075-T6	0088 00
2	Plate	0.032 301 CRES 3/4 HD	Note B	--
3	Pad	Nylon # 101	Note C	--
4	Cap	VS90303 7075-T6	VS90303 7075-T6	0088 00
5	Skin	0.020 7075-T6	Note D	0083 00
6	Core	0.255 MIL-C-7438 3.0 3/8-20N-3003	Note D	0083 00
7	Tee	VS90303 7075-T6	Note E	--

NOTES

A. All dimensions are in inches.
B. Do not repair. Replace with new plate, 114S2734-4.
C. Do not repair. Replace with new pad, 114S2733-33.
D. Bonded sandwich honeycomb construction. Repair with original material.
E. Do not repair. Replace with original material.

REPAIR - continued

NOTE

Refer to Table 11 for index number reference.

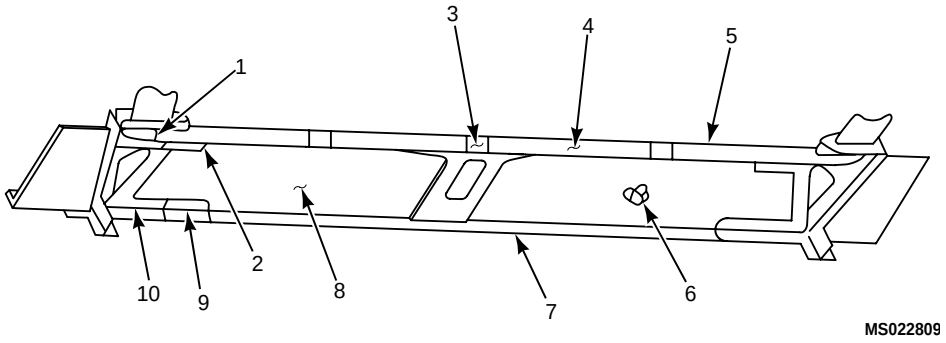


Figure 13. Former, Sta 260

Table 11. Former, Sta 260

INDEX NO.	NOMENCLATURE	ORIGINAL MATERIAL	REPAIR MATERIAL	WORK PACKAGE
1	Angle	ALCOA 59574 7075-T6	Note B	--
2	Angle	ALCOA 59574 7075-T6	Note B	--
3	Plate	0.032 301CRES 3/4 HD	Note C	--
4	Cap	VS90306 7075-T6	VS90306 7075-T6	0088 00
5	Pad	Nylon # 101	Note D	--
6	Core	0.225 MIL-C-7438 3.0-3/8-20N-3003	Note E	0083 00
7	Cap	VS90306 7075-T6	VS90306 7075-T6	0088 00
8	Skin	0.020 7075-T6	Note E	0083 00
9	Angle	AND 10134-1402 7075-T6	Note B	--
10	Angle	AND 10134-1402 7075-T6	Note B	--

NOTES

A. All dimensions are in inches.
B. Do not repair. Replace with original material.
C. Do not repair. Replace with new plate, 114S2734-4.
D. Do not repair. Replace with new pad, 114S2733-33.
E. Bonded sandwich honeycomb construction. Repair with original material.
F. Refer to WP 0111 00, Figure 5 and Figure 6, for forward cargo hook former repair procedures.

REPAIR - continued

NOTE

Refer to Table 12 for index number reference.

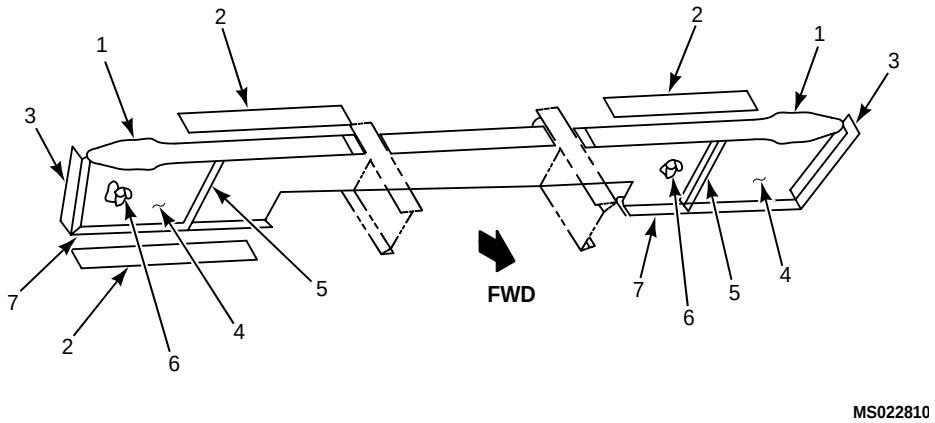


Figure 14. Former, Sta 340

Table 12. Former, Sta 340

INDEX NO.	NOMENCLATURE	ORIGINAL MATERIAL	REPAIR MATERIAL	WORK PACKAGE
1	Cap	VS90302 7075-T6	VS90302 7075-T6	0088 00
2	Pad	Nylon # 101	Note B	--
3	Tee	VS90603 7075-T6	Note C	--
4	Skin	0.020 7075-T6	Note D	0083 00
5	Angle	ALCOA 22477 7075-T6	Note C	--
6	Core	0.225 MIL-C-7438 3.0 3/8-20N-3003	Note D	0083 00
7	Cap	VS90303 7075-T6	VS90303 7075-T6	0088 00

NOTES

A. All dimensions are inches.

B. Do not repair. Replace with new pad, 114S2733-33.

C. Do not repair. Replace with original material.

D. Bonded sandwich honeycomb construction. Repair with original material.

REPAIR - continued

NOTE

Refer to Table 13 for index number reference.

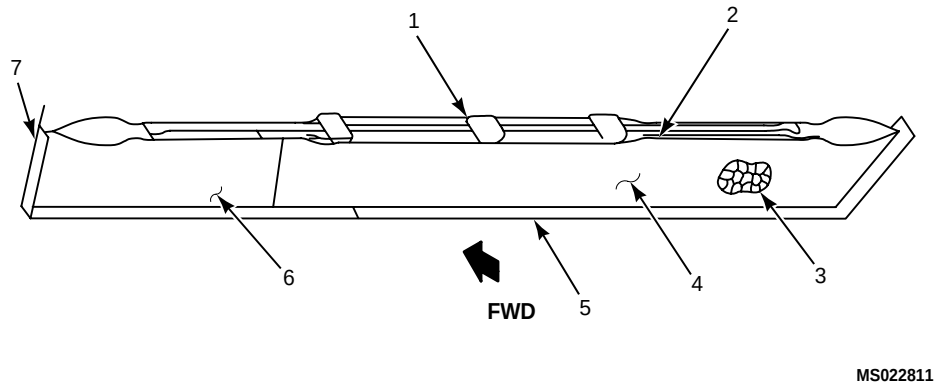


Figure 15. Former, Sta 420

Table 13. Former, Sta 420

INDEX NO.	NOMENCLATURE	ORIGINAL MATERIAL	REPAIR MATERIAL	WORK PACKAGE
1	Filler	MAG ALY AZ 31B-H24	MAG ALY AZ 31B-H24	0086 00
2	Cap	VS90306 7075-T6	VS90306 7075-T6	0088 00
3	Core	0.225 MIL-C-7438 3.0-3/8-20N-3003	Note B	0083 00
4	Skin	0.020 7075-T6	Note B	0083 00
5	Cap	VS90306 7075-T6	VS90306 7075-T6	0088 00
6	Doubler	0.016 7075-T6	Note B	0083 00
7	Tee	VS90303 7075-T6	Note C	--

NOTES

A. All dimensions are in inches.
B. Bonded sandwich honeycomb construction. Repair with original material.
C. Do not repair. Replace with original material.
D. Refer to WP 0111 00, Figure 5 and Figure 6, for aft cargo hook former repair procedures.

END OF WORK PACKAGE

DEPOT MAINTENANCE WORK REQUIREMENT
CH-47D HELICOPTER
CABIN FLOORING REPAIRS

INITIAL SETUP

Test Equipment:
As Required

Tools and Special Tools:
As Required

Material/Parts:
Primer, Epoxy (Item 140, WP 0157 00)
Sealing Compound (Item 162, WP 0157 00)
Paint, Non-Skid (Item 125, WP 0157 00)

Personnel Required:
As Required

References:
TM 1-1500-204-23 Series
TM 55-1520-240-23 Series
WP 0078 00
WP 0083 00
WP 0086 00
WP 0087 00
WP 0093 00
WP 0095 00
WP 0157 00

Equipment Conditions:
As Required

Special Environmental Condition:
As Required

SCOPE

This work package describes repair procedures for the cabin floor panels with web damage, web and one leg damage, web and two legs damaged, cargo rail damage, the hatch door framing, and non-skid paint application after repair. The Depot/Contractor may find magnesium floor panels installed in some aircraft. If found, advise the Contracting Officer and request permission to upgrade the cabin flooring to aluminum alloy panels in the interest of corrosion prevention.

FLOORING REPAIRS

1. Negligible Damage Repairs
   a. Dents, nicks, and scratches can be removed by burnishing.
   b. Holes up to 1/4-inch diameter can be plugged with a rivet.

2. Corrosion Damage - Maximum Allowed Limits
   a. Panel Surfaces
      (1) 15 percent reduction of thickness.
      (2) 1-inch holes provided they are sealed for water tightness and clear legs of panel.
   b. Panel legs - 10 percent reduction in thickness only. Missing material must be repaired.
   c. Channel tie down dishes, splices, and attaching parts - 10 percent reduction in thickness.
   d. Overall - 25 percent of entire panel affected by any or all of the above, is allowable.

3. Damage Necessitating Replacement - Loss of a major section of a panel or numerous isolated repairs to a panel.

FLOORING REPAIRS - continued

4. Panel Web Repairs

   a. Non-flush patches may be used on all areas of the floor panels.

   b. Make all patch material same as original material of panel. Material thickness can be 0.100-inch thick.

   c. Holes with a maximum dimension of two inches may be patched with an overlap of 0.64-inch and a single row of rivets spaced 0.60 to 0.70-inch apart. Larger patches require a one-inch overlap and two staggered rows of rivets with 0.32-inch edge distance and 0.70 to 0.80-inch spacing. The corner radius of the patch is 0.12-inch minimum. Continuity of the integral understructure must be maintained.

WARNING

EPOXY PRIMER

   d. Apply two coats of epoxy primer (Item 140, WP 0157 00) to each faying surface of the patch prior to assembly.

WARNING

SEALING COMPOUND

   e. Sealing compound (Item 162, WP 0157 00) must be used on all faying surfaces of the patch, and a fillet of sealer applied along all edges. Wipe the fillet to a 45 degree or slightly concaved cross section.

5. Floor and Ramp Panel Installation

   a. Floor must be sealed. Refer to WP 0080 00.

   b. After completion of repairs, reapply non-skid paint, (Item 125, WP 0157 00), to areas depicted in Figure 5.

FLOORING REPAIRS - continued

NOTE

Refer to Table 1 for index number reference.

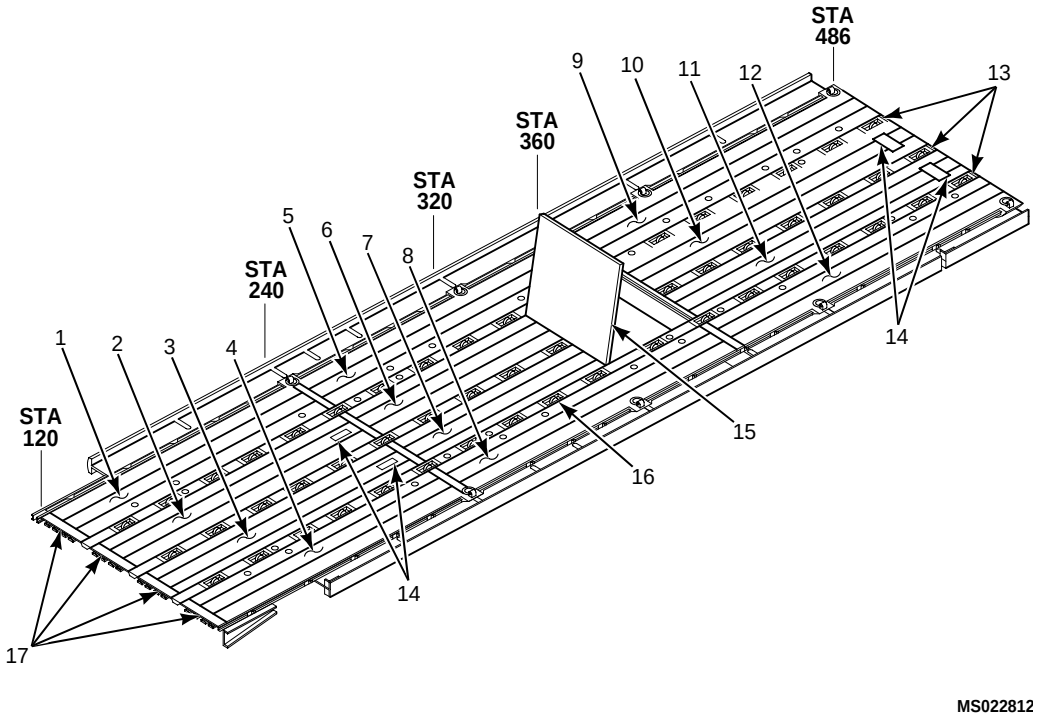


Figure 1. Cabin Flooring

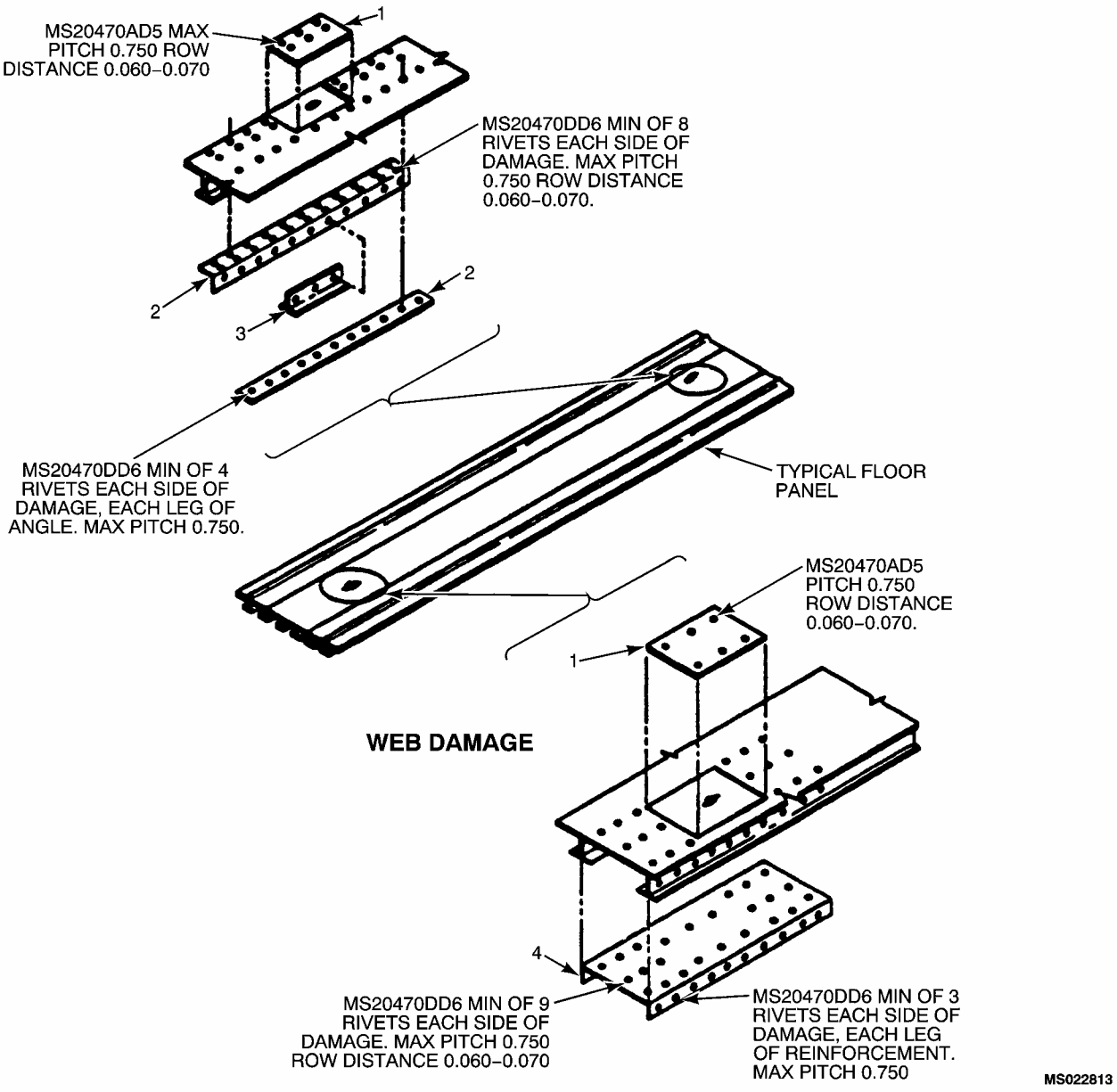
Table 1. Cabin Flooring

INDEX NO.	NOMENCLATURE	ORIGINAL MATERIAL	REPAIR MATERIAL	WORK PACKAGE
1-12	Panel	Note B	Note C	0087 00
13	Beams	Reference Only	--	--
14	Access Plate	7075-T6 AL ALY QQ-A-287	Note C	0086 00
15	Utility Hatch	Note E	Note C	0083 00
16	Receptacle	Reference Only	--	--
17	Plates	7075-T6 AL ALY QQ-A-287	Notes C & D	0086 00

NOTES

A. All dimensions are in inches.
B. Material BAC 1510 AL ALY EXTR 7075-173511.
C. Repair material, same as original.
D. Plates at sta 240 and sta 360 are same material as at sta 120.
E. Hatch is sandwich honeycomb construction.

FLOORING REPAIRS - continued

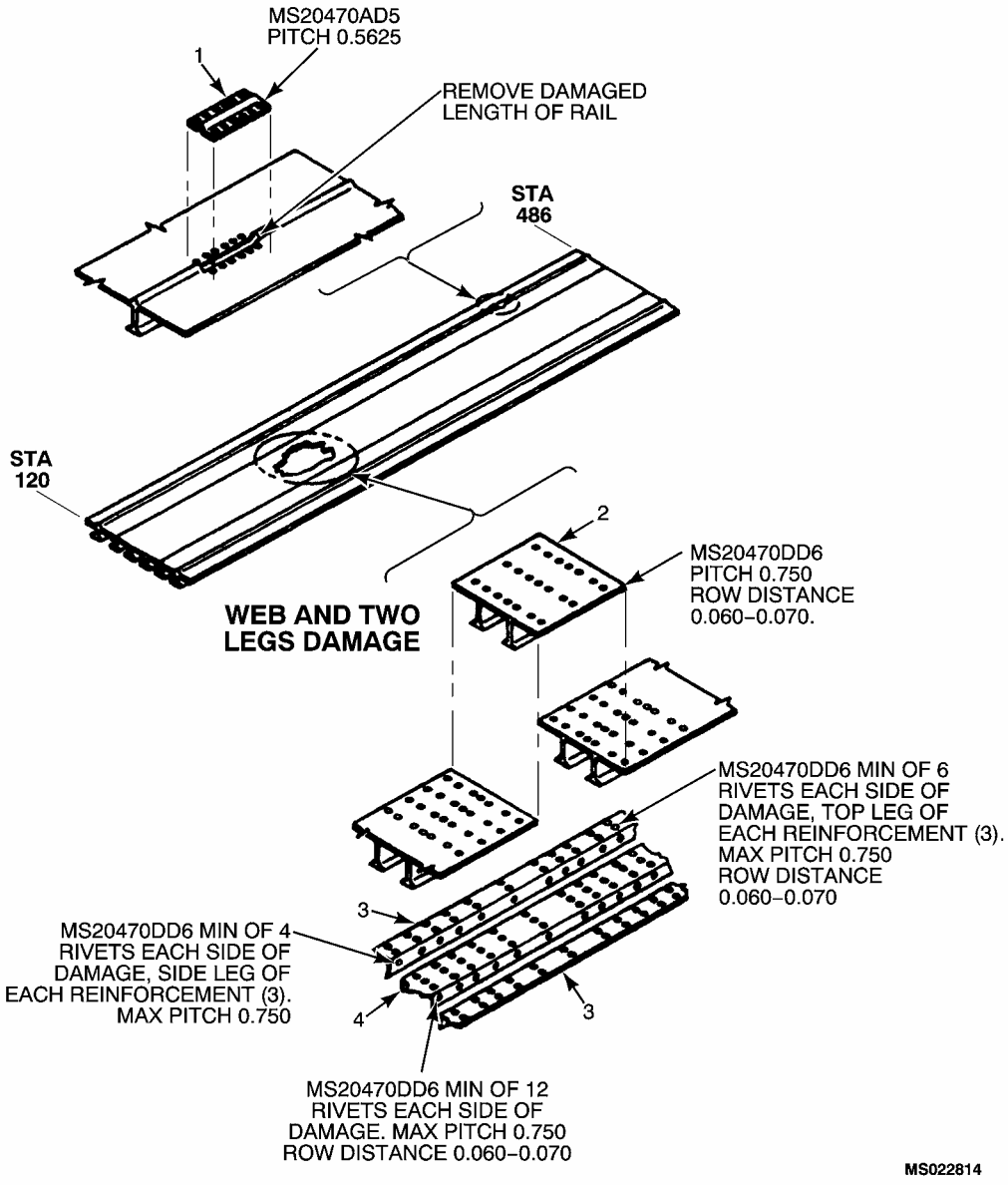


NOTES

1. Repair patch, use same material as original.
2. Web reinforcement 0.080-inch 2024-T3 clad material.
3. Make leg filler from AND10136-1303, 2024-T4 clad material.
4. Make web-leg reinforcement from 0.080-inch 2024-T3 clad material.
5. All dimensions are in inches.
6. Insulate dissimilar metals. Refer to WP 0078 00.

Figure 2. Cabin Flooring – Web and One-Leg Damage Repair

FLOORING REPAIRS - continued



NOTES

1. Repair rail using aluminum alloy extrusion 7075-T73511.
2. Replacement part, make from original material.
3. Reinforcement 0.080-inch 2024-T4 clad.
4. Reinforcement 0.080-inch 2024-T3 clad.
5. All dimensions are in inches.

Figure 3. Cabin Flooring – Cargo Rail and Web with Two-Leg Damage Repair

FLOORING REPAIRS - continued

NOTE

Refer to Table 2 for index number reference.

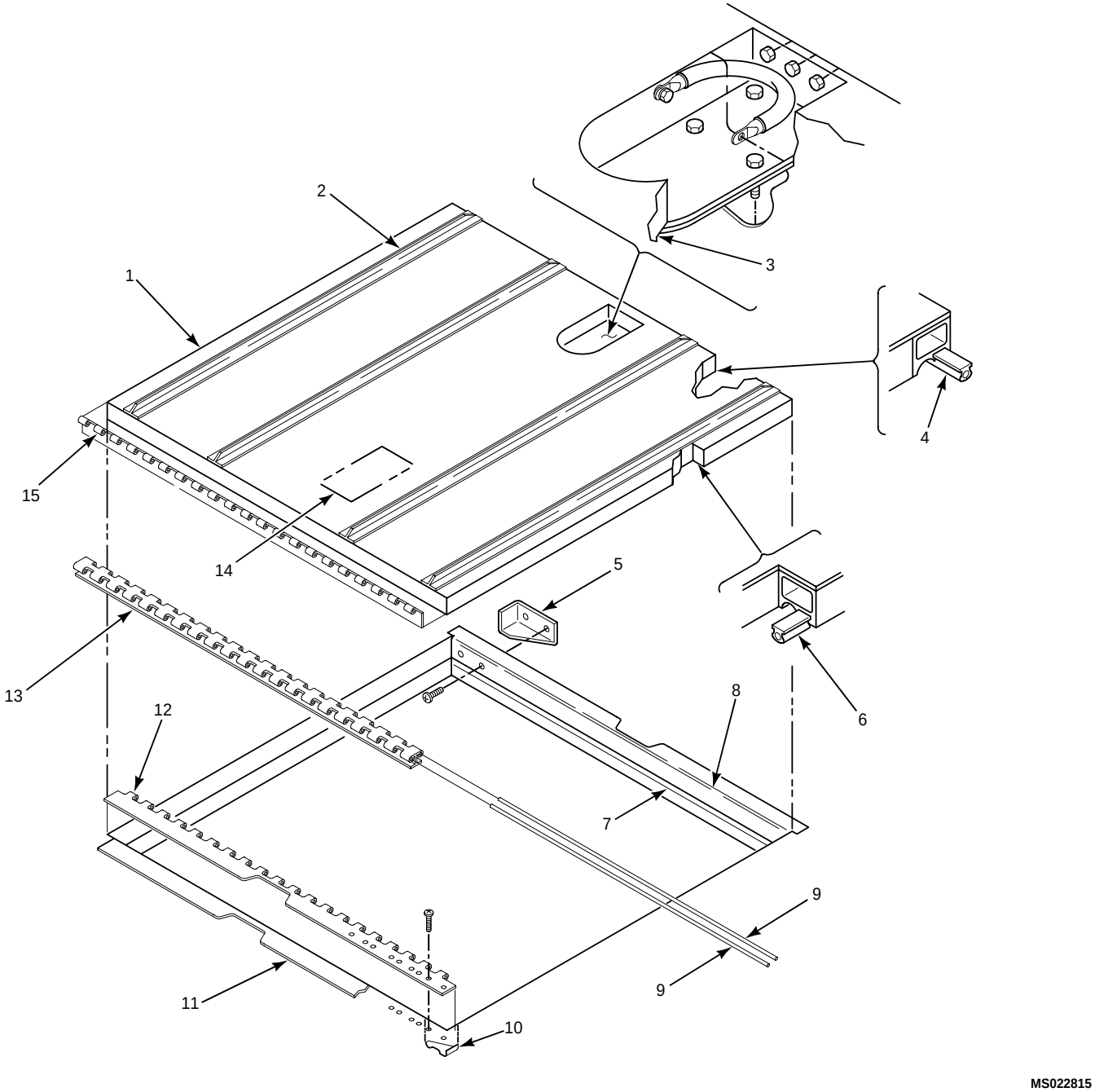


Figure 4. Hatch Door and Framing

FLOORING REPAIRS - continued

Table 2. Hatch Door and Framing

INDEX NO	NOMENCLATURE	ORIGINAL MATERIAL	REPAIR MATERIAL	WORK PACKAGE
1	Hatch	Note C	--	0083 00
2	Rail, Skid	VS90515 MAG AD9ER60A-T5	Note D	--
3	Latch Assy	Note B	--	--
4	Seal	VS80551	Note D	0095 00
5	Bracket	0.020 CRES 301	Note D	0087 00
6	Seal	VS80551	Note D	0095 00
7	Frame Assembly	AND10133-0701	Note D	0087 00
8	Hinge Pin	MS20253P2-3600	Note D	0093 00
9	Stop	0.50 2024-T4 Rd Bar	Note D	--
10	Bracket	0.020 CRES 301	Note D	0087 00
11	Plate Assy, Hinge	0.063 2024-T4 Clad	Note D	--
12	Hinge Half	MS20001PH4	Note D	0093 00
13	Plate, Ident	Note E	--	--
14	Hinge Half	VS2017-1	Note D	0093 00
15	Hinge Half	MS20001PH3	Note D	0093 00

NOTES

A. All dimensions are in inches.

B. Replace damaged latch with 34P1-156-531.

C. Hatch is sandwich honeycomb construction. Repair with original material.

D. Repair or replace with original material.

E. Replace with new plate, AN7510-2.

FLOORING REPAIRS - continued

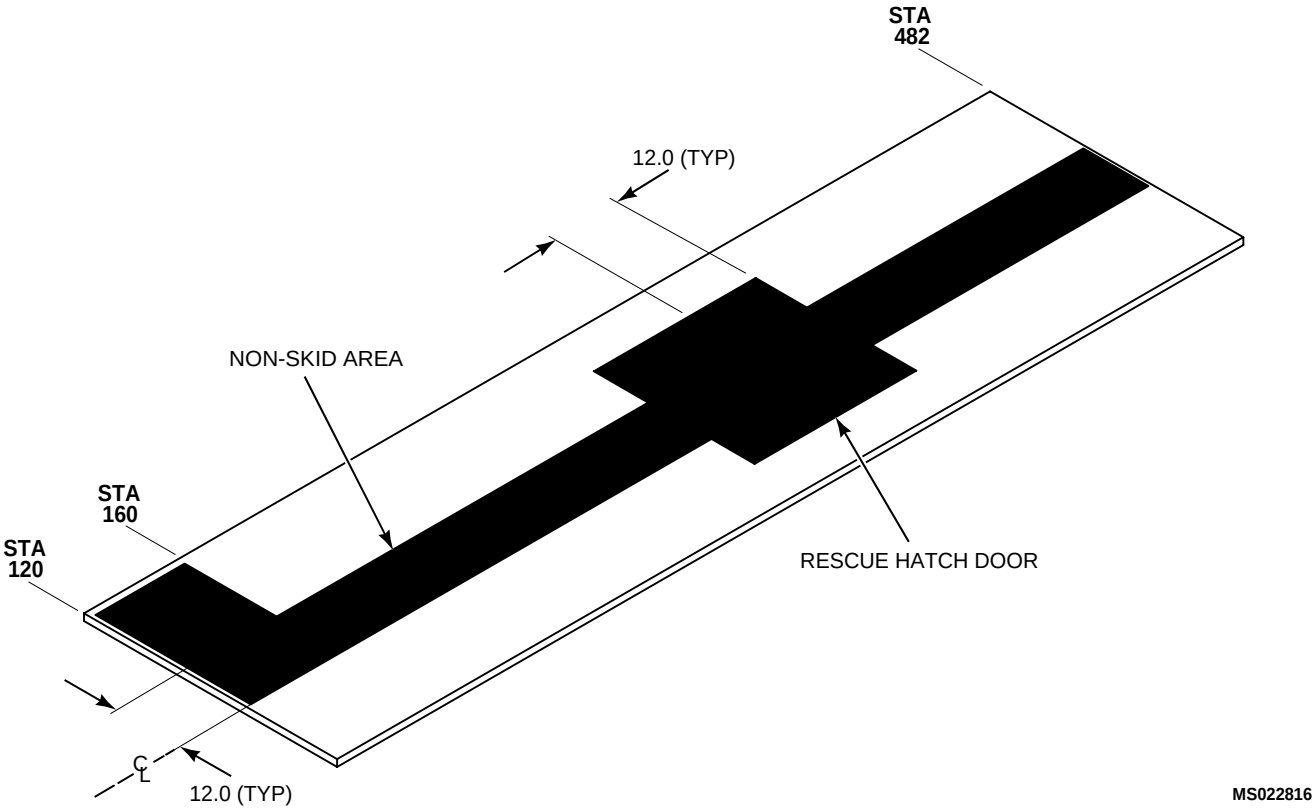


Figure 5. Cabin Flooring – Non-Skid Paint Application Area

END OF WORK PACKAGE

DEPOT MAINTENANCE WORK REQUIREMENT
CH-47D HELICOPTER
AFT SECTION EXTERIOR REPAIRS

INITIAL SETUP

Test Equipment:
As Required

Tools and Special Tools:
As Required

Material/Parts:
Cloth, Glass (Item 78, WP 0157 00)
Walkway Material (Item 193, WP 0157 00)

Personnel Required:
As Required

References:
TM 1-1500-204-23 Series
TM 55-1520-240-23 Series
WP 0078 00
WP 0083 00
WP 0086 00
WP 0087 00
WP 0093 00
WP 0095 00
WP 0157 00

Equipment Conditions:
As Required

Special Environmental Condition:
As Required

SCOPE

This work package covers repair of the following exterior aft section components – Refer to Figure 1.

1. Lower Pylon Leading Edge Fixed Fairing
2. Lower Pylon Leading Edge Hinged Fairing
3. Drive Shaft and Engine Mechanical Transmission Fairing
4. Engine Air Inlet Fairing
5. Engine Top Access Cover
6. Engine Exhaust Cone
7. Engine Side Access Cover
8. Engine Access and Fairing and Engine Shelf and Wash
9. Aft Landing Gear Fairing
10. Work Platform and Aft Landing Gear Pod Fairing
11. Aft Landing Gear Pod Fairing
12. Aft Landing Gear Access Panel
13. Aft Pod, sta 460 to sta 482
14. Aft Pod Access Panel
15. Engine Inlet Screen and Bypass Screen – Not shown in Figure 1

SCOPE – continued

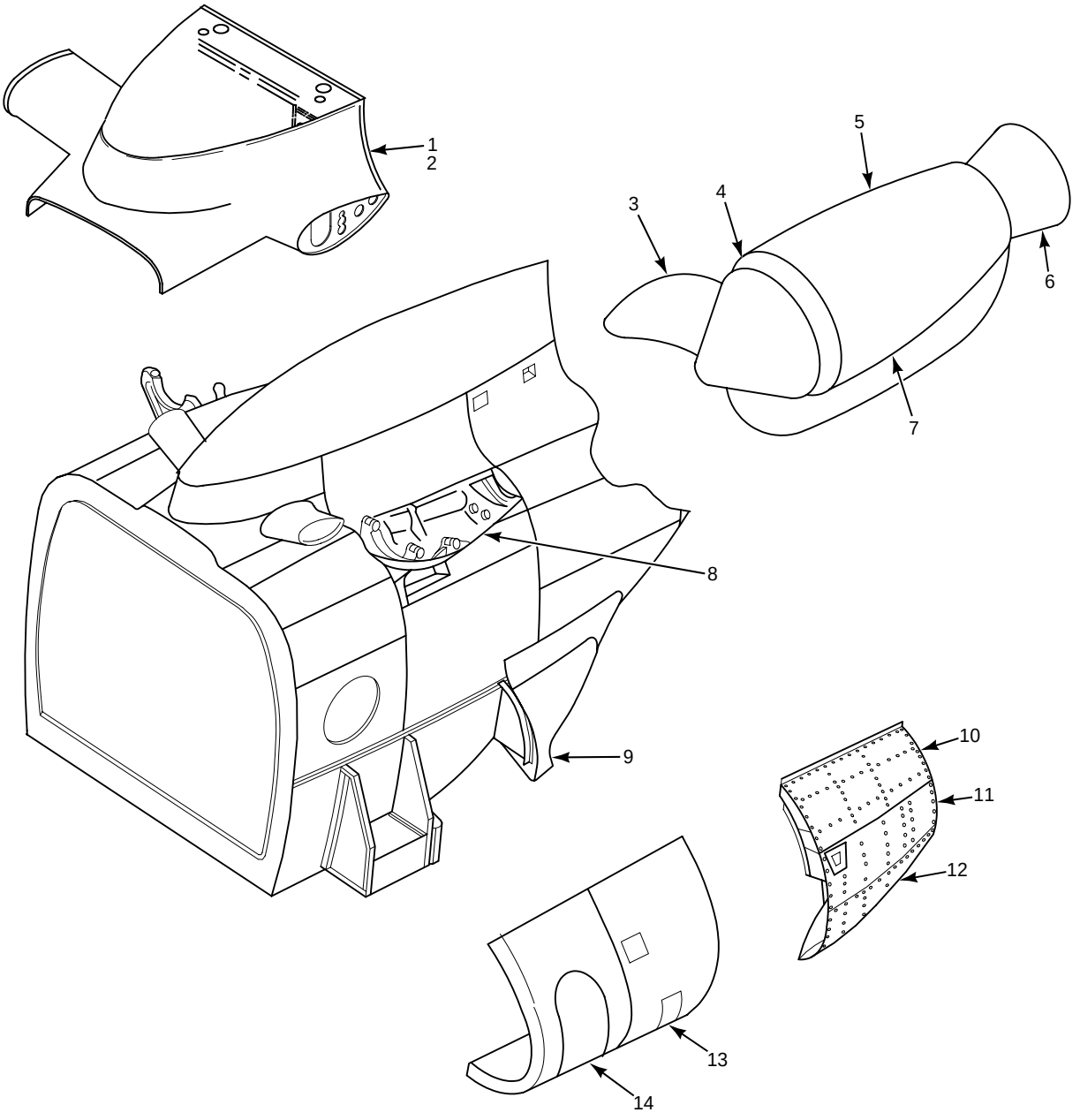


Figure 1. Aft Section Exterior

REPAIR

NOTE

Refer to Table 1 for index number reference.

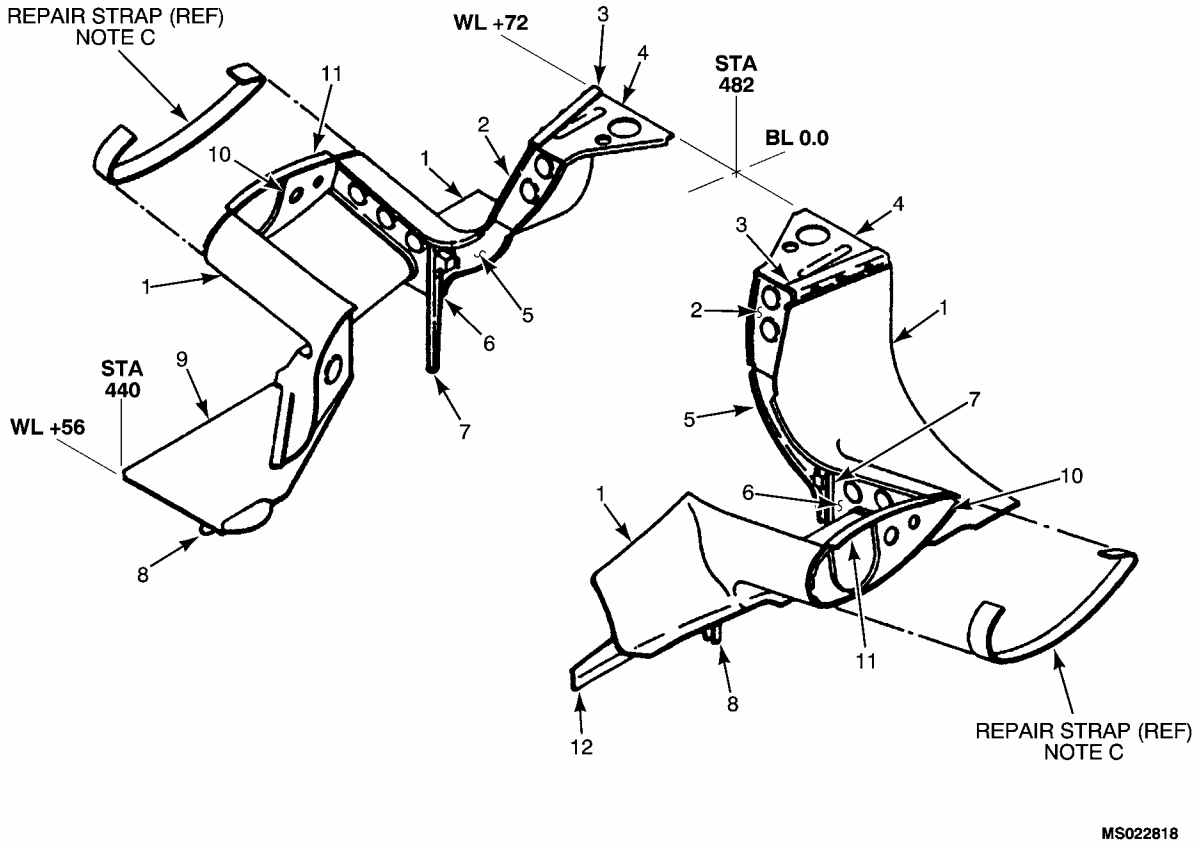


Figure 2. Lower Pylon Leading Edge Fixed Fairing (Sheet 1 of 2)

REPAIR - continued

Table 1. Lower Pylon Leading Edge Fixed Fairing

INDEX NO.	NOMENCLATURE	ORIGINAL MATERIAL	REPAIR MATERIAL	WORK PACKAGE
1	Skin	3-PLY, NO 181 Glass Cloth	Note B	0081 00
2	Rib	0.025 2024-T4 Clad	0.032 2024-T3 Clad	0087 00
3	Edge Member	0.032 2024-T4 Clad	0.040 2024-T3 Clad	0087 00
4	Pan	0.040 2024-T4 Clad	0.050 2024-T3 Clad	0087 00
5	Rib	0.025 6061-T6 Bare	0.032 6061-T6 Clad	0087 00
6	Rib	0.025 2024-T4 Clad	0.032 2024-T3 Clad	0087 00
7	Channel	0.032 2024-T4 Clad	0.040 2024-T3 Clad	0087 00
8	Gusset	0.032 2024-T4 Clad	0.040 2024-T3 Clad	0087 00
9	Pan	0.025 2024-T4 Clad	0.032 2024-T3 Clad	0087 00
10	Rib	0.032 2024-T4 Clad	0.040 2024-T3 Clad	0087 00
11	Cap	0.025 2024-T4 Clad	0.032 2024-T3 Clad	0087 00
12	Beam	0.025 2024-T4 Clad	0.032 2024-T3 Clad	0087 00

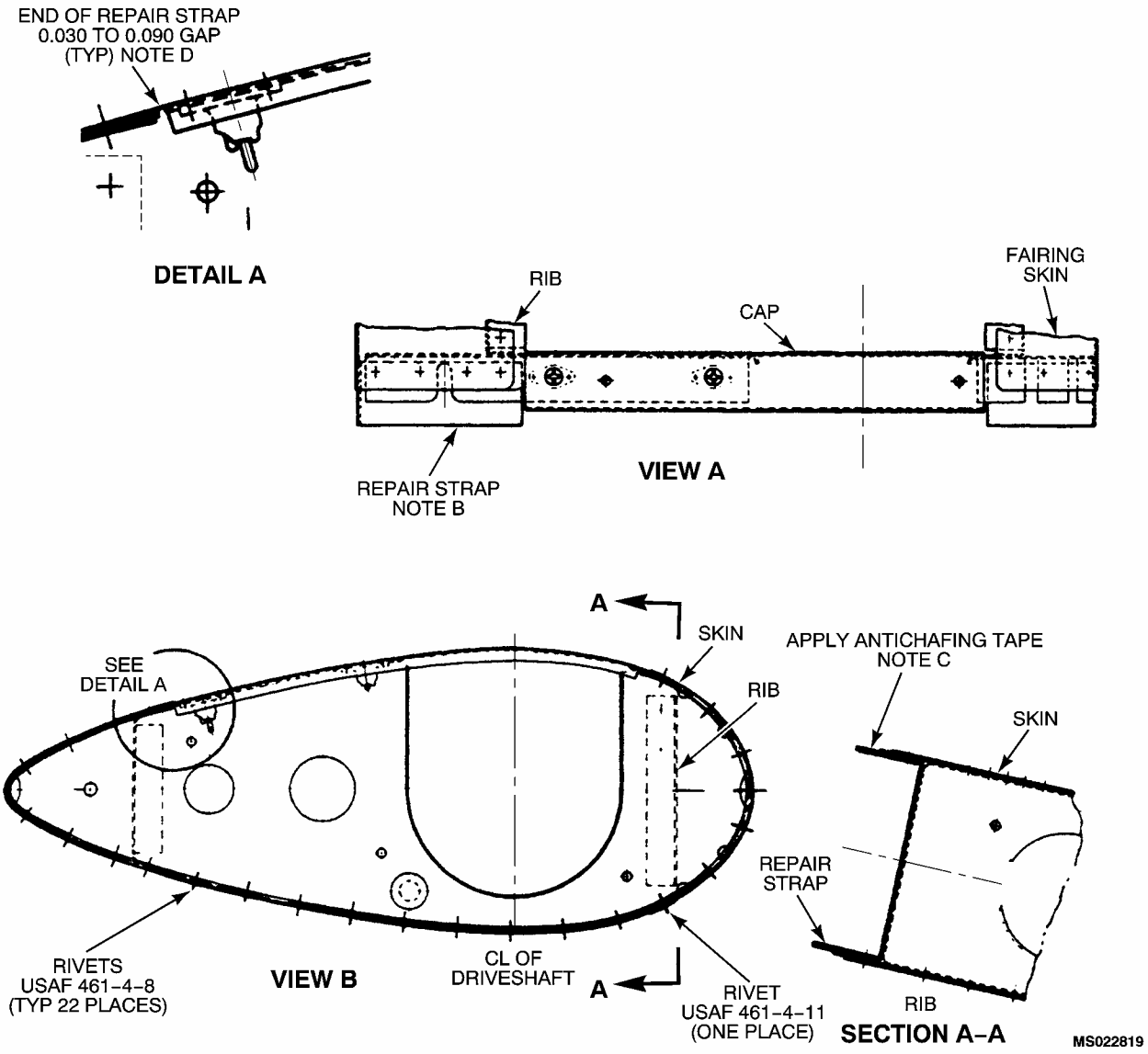
NOTES

A. All dimensions are in inches.

B. Repair with reinforced plastic impregnated glass cloth (Item 78, WP 0157 00).

C. Fabricate repair strips and install within flanges of ribs to correct the gap between hinged and fixed fairings. Refer to Figure 2, Sheet 1.

REPAIR - continued



NOTES

A. All dimensions are in inches.

B. Make repair strap from 0.040-inch 2024-T3 clad. Basic dimensions are 1.45 x 24.3 inches.

C. Apply antichafing tape, refer to WP 0079 00, to exposed surface of repair strap.

D. Trim repair strap after installation, as required, to provide a proper fit with the fairing.

Figure 2. Lower Pylon Leading Edge Fixed Fairing (Sheet 2 of 2)

REPAIR – continued

NOTE

Refer to Table 2 for index number reference.

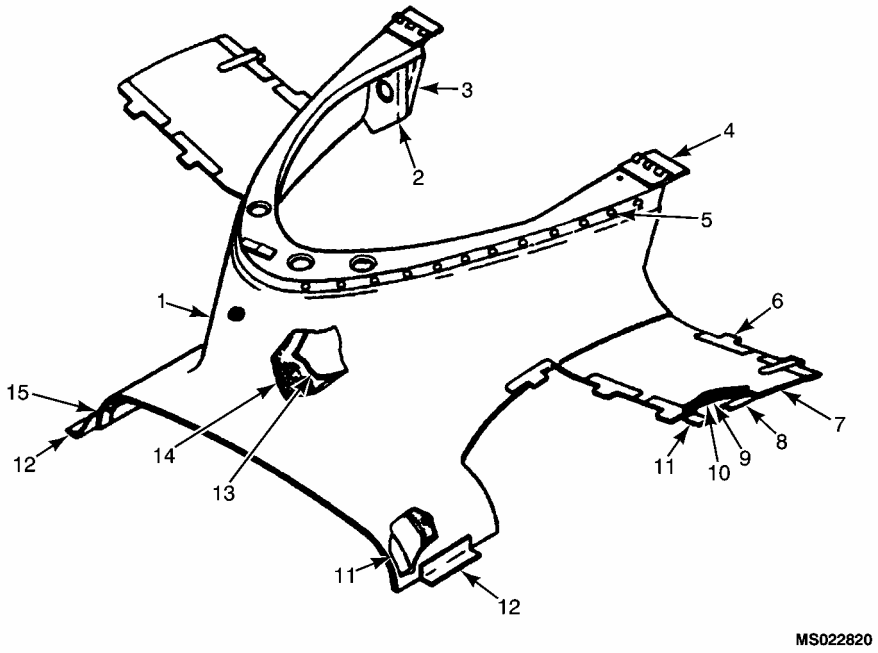


Figure 3. Lower Pylon Leading Edge Hinged Fairing

REPAIR – continued

Table 2. Lower Pylon Leading Edge Hinged Fairing

INDEX NO.	NOMENCLATURE	ORIGINAL MATERIAL	REPAIR MATERIAL	WORK PACKAGE
1	Outer Skin	3-PLY, NO, 181 Glass Cloth	Note B	0081 00
2	Channel	0.025 2024-T3 Clad	0.032 2024-T3 Clad	0087 00
3	Rib	0.025 2024-T3 Clad	0.032 2024-T3 Clad	0087 00
4	Hinge	MS20001P12	Note E	--
5	Bumper	Note D	--	--
6	Doubler	0.025 2024-T3 Clad	0.025 2024-T3 Clad	0086 00
7	Outer Skin	3-Ply, No. 181 Glass Cloth	Note B	0081 00
8	Edge Strip	0.020 2024-T3 Clad	0.020 2024-T3 Clad	0087 00
9	Core	0.550 Grade 3.0 Plastic	Note C	0083 00
10	Inner Skin	3-Ply, No. 181 Glass Cloth	Note B	0081 00
11	Edge Strip	0.016 2024-T3 Clad	0.020 2024-T3 Clad	0083 00
12	Edge Strip	0.020 2024-T3 Clad	0.025 2024-T3 Clad	0083 00
13	Inner Skin	3-Ply, No. 181 Glass Cloth	Note B	0081 00
14	Core	0.550 Grade 3.0 Plastic	Note C	0083 00
15	Angle	BAC 1503-2731 7075-T6	Note F	--

NOTES

A. All dimensions are in inches.
B. The skin is laminated plastic impregnated glass cloth (Item 78, WP 0157 00).
C. Honeycomb material is nonmetallic core, Nomex Class IV, or Type I Grade 3.0.
D. Replace damaged bumper with new bumper, P/N 600-045-2.
E. Replace damaged hinge with new hinge, MS20001P12 and pin, MS20253-2.
F. Replace with new angle made from original material.

REPAIR – continued

NOTE

Refer to Table 3 for index number reference.

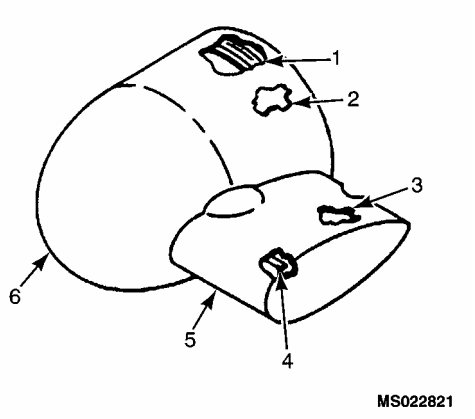


Figure 4. Drive Shaft and Engine Mechanical Transmission Fairing

Table 3. Drive Shaft and Engine Mechanical Transmission Fairing

INDEX NO.	NOMENCLATURE	ORIGINAL MATERIAL	REPAIR MATERIAL	WORK PACKAGE
1	Hat	0.032 2024-T4 Clad	0.040 2024-T3 Clad	0087 00
2	Inner Skin	Note B	6061-T6	0086 00
3	Inner Skin	0.032 6061-T6 Bare	0.050 6061-T6 Bare	0086 00
4	Channel	0.032 2024-T4 Clad	0.040 2024-T3 Clad	0087 00
5	Outer Skin	0.032 6061-T6 Bare	0.050 6061-T6 Bare	0086 00
6	Outer Shell	Note B	6061-T6	0086 00

NOTES

A. All dimensions are in inches.

B. The outer and inner skins vary in thickness between 0.025 and 0.040-inch. The inner skin may be 0.060-inch maximum thickness at the nose section. Repair should be made using the same material and thickness as original.

REPAIR – continued

NOTE

Refer to Table 4 for index number reference.

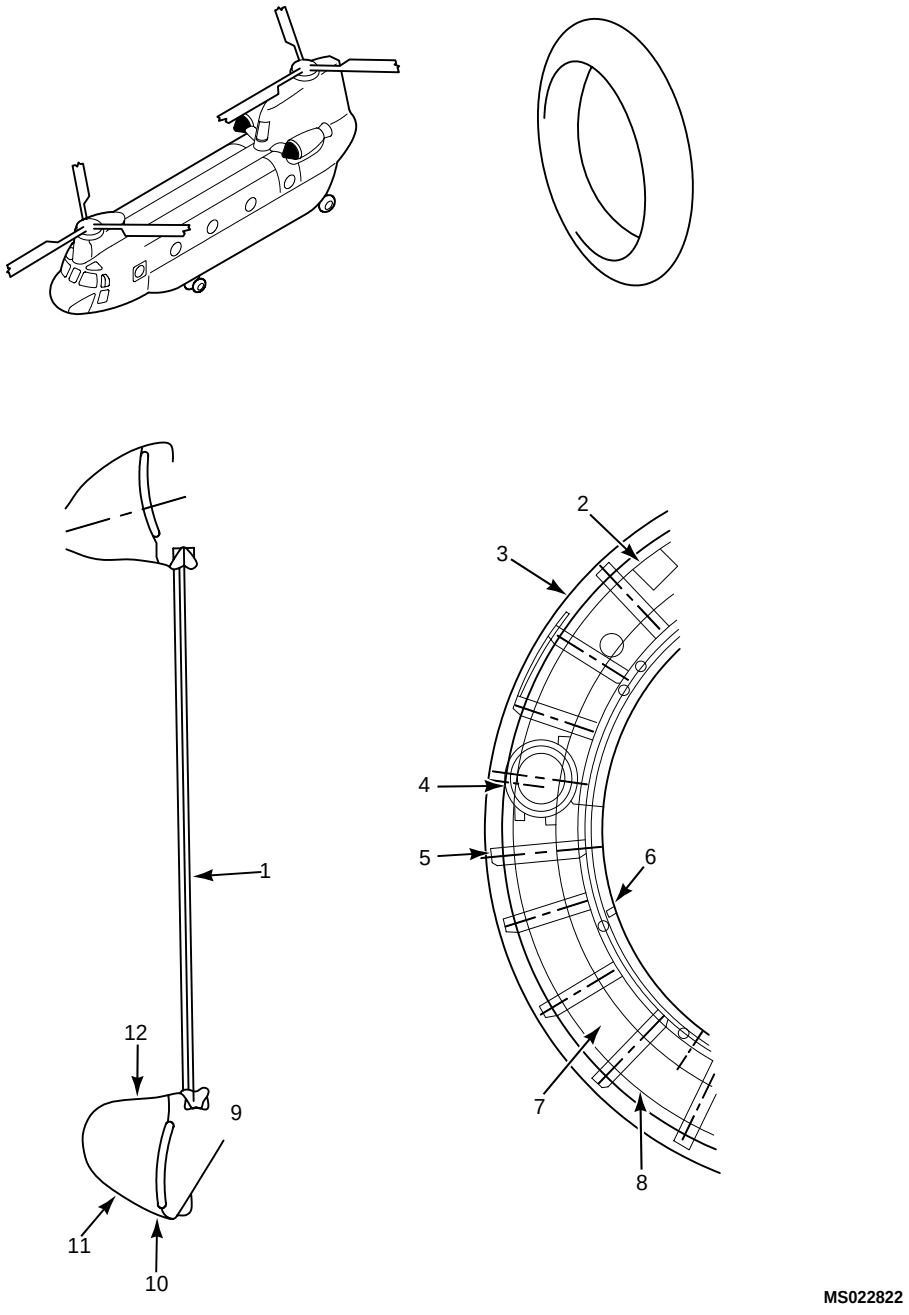


Figure 5. Engine Air Inlet Fairing

REPAIR – continued

Table 4. Engine Air Inlet Fairing

INDEX NO.	NOMENCLATURE	ORIGINAL MATERIAL	REPAIR MATERIAL	WORK PACKAGE
1	Ring	VS60904-6061-T6	Note D	--
2	Bracket	0.050 7075-T6 Clad	0.050 7075-T6 Clad	0087 00
3	Chafing Strip	Note E	--	--
4	Cover	0.032 6061-T6 Clad	0.032 6061-T6 Clad	--
5	Baffle Support	0.063 6061-T6 Clad	0.063 6061-T6 Clad	0087 00
6	Pin	VS10106-4C4	Note C	--
7	Baffle ring	0.032 6061-T6	0.032 6061-T6	0087 00
8	Ring	0.040 6061-T6	0.040 6061-T6	0087 00
9	Inner Strip	0.040 321 CRS	0.040 321 CRS	0086 00
10	Outer Strip	0.040 321 CRS	0.040 321 CRS	0086 00
11	Fairing Inner	Note B	--	0086 00
12	Fairing Outer	Note B	--	0086 00

NOTES

A. All dimensions are in inches.

B. Material stock size and thickness, as required. Finished part thickness to be no less than .025 or more than .040-inch.

C. Replace pin if damaged or missing.

D. Damage other than minor, replace with new ring.

E. Fluoro silicone rubber with glass cloth, MIL-R-25988

F. Original material, BAC5010 Type 4 Grade 1, as per MIL-I-8500.

REPAIR – continued

NOTE

Refer to Table 5 for index number reference.

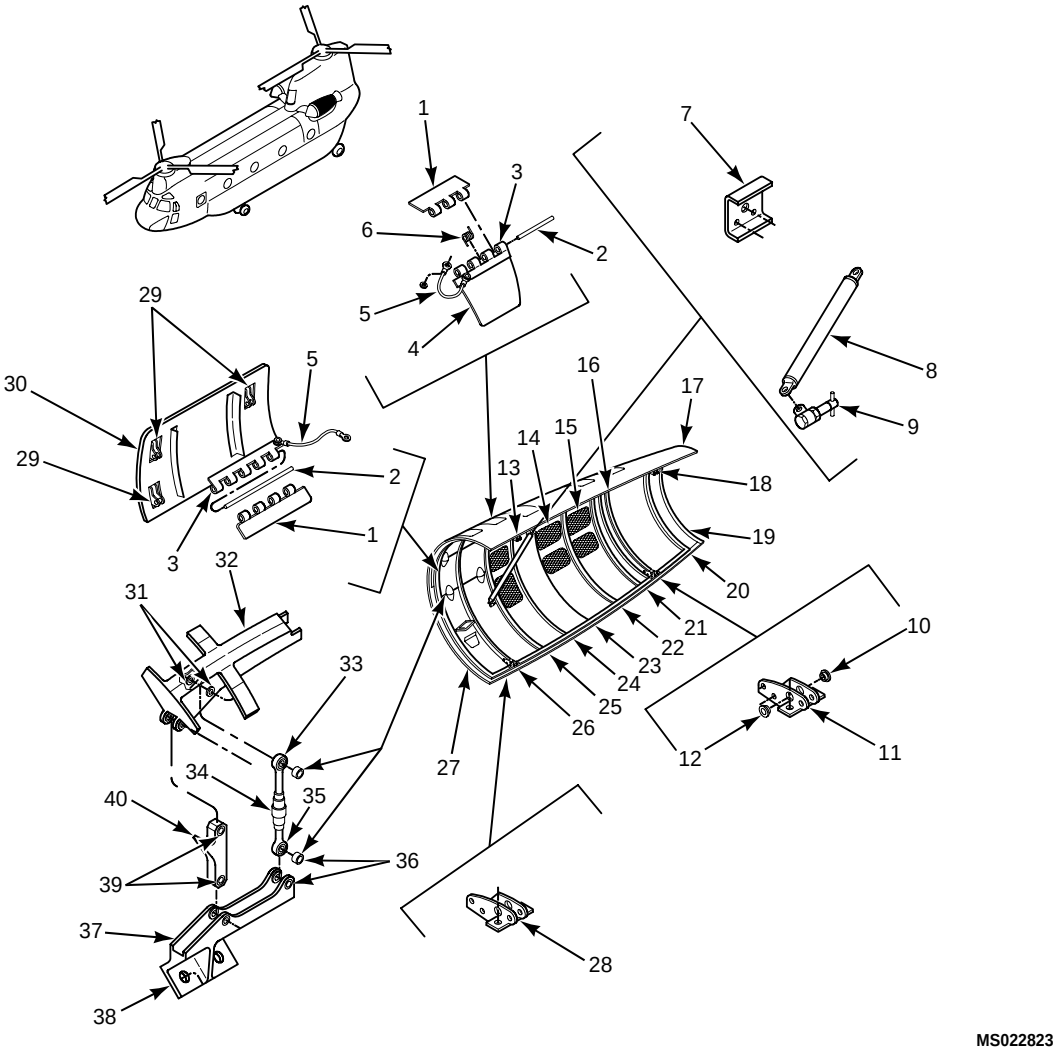


Figure 6. Engine Top Access Cover

REPAIR – continued

Table 5. Engine Top Access Cover

INDEX NO.	NOMENCLATURE	ORIGINAL MATERIAL	REPAIR MATERIAL	WORK PACKAGE
1	Hinge Half	MS20257HP4-7200	MS20257HP4-7200	0093 00
2	Pin, Hinge	MS20253-2-7200	AN235-2	0093 00
3	Hinge Half	MS20257PH4-7200	MS20257PH4-7200	0093 00
4	Door	0.032 2024-T4 Clad	0.032 2024-T4 Clad	0086 00
5	Lead, Elec.	Note G	--	--
6	Spring	Note F	--	--
7	Bracket	0.032 2024-T4 Clad	Note S	--
8	Rod Assy	Note E	--	--
9	Lock	Note D	--	--
10	Bushing	Note C	--	--
11	Bushing	Note C	--	--
12	Hinge Half	Note B	--	--
13	Hinge Half Assy Top	Note B	--	--
14	Screen	0.040 2024-T3 Clad	Note S	--
15	Screen	0.040 2024-T3 Clad	Note S	--
16	Former	0.070 321 Anl Cres	0.070 301 Cres ¼ Hd	0087 00
17	Skin	0.025 2024-T4 Clad	0.032 2024-T3 Clad	0086 00
18	Hinge Half Assy Top	Note B	--	--
19	Former	0.032 2024-T4 Clad	0.040 2024-T3 Clad	0087 00
20	Former	0.020 321 Anl Cres	0.020 301 Cres ¼ Hd	0087 00
21	Former	0.020 321 Anl Cres	0.020 301 Cres ¼ Hd	0087 00
22	FOrmer	0.032 2024-T4 Clad	0.040 2024-T3 Clad	0087 00
23	Stringer	0.040 2024-T4 Clad	0.050 2024-T3 Clad	0087 00
24	Former	0.032 2024-T4 Clad	0.040 2024-T3 Clad	0087 00
25	Former	0.032 2024-T4 Clad	0.040 2024-T3 Clad	0087 00
26	Former	0.032 7075-T6 Clad	0.032 7075-T6 Clad	0087 00
27	Former	0.032 2024-T4 Clad	0.040 2024-T3 Clad	0087 00
28	Hinge Half Assy Top	Note B	--	--
29	Latch Assembly	Note H	--	--
30	Door	0.032 2024-T4 Clad	0.032 2024-T4 Clad	0086 00
31	Bushing, Flanged	Note J	--	--
32	Fitting	Note I	--	--
33	End, Turnbuckle	Note M	--	--
34	Body, Turnbuckle	Note N	--	--
35	End, Turnbuckle	Note O	--	--
36	Spacer	Note P	--	--
37	Bushings	Note Q	--	--
38	Fitting	Note R	--	--
39	Bushing	Note L	--	--
40	Fitting	Note K	--	--

REPAIR – continued

Table 5. Engine Top Access Cover - continued

NOTES

A. All dimensions are in inches.
B. Damage other than minor, replace with new 114P8012-1 LH, -2 RH fwd or 114P8014-9 LH or -10 RH aft.
C. Damage other than minor, replace with new NAS 77-4-11 fwd or NAS 75-4-007 aft.
D. Replace lock if broken with new P/N 53951.
E. Damage other than minor, replace with new 234S8042-2.
F. Replace if broken, with new spring, P/N 114P8039-2.
G. Make from #12 wire and two terminals, MS25036-111.
H. Replace if broken, with new latch assembly, H5000-2-032-064.
I. Damage other than minor, replace with new 234S8101-19 LH or -20 RH.
J. Damage other than minor, replace with new NAS 77-4-011.
K. Damage other than minor, replace with new 234S8103-6.
L. Damage other than minor, replace with new NAS 75-4-017.
M. Damage other than minor, replace with new MS21254-5RS.
N. Damage other than minor, replace with new MS21251B5S.
O. Damage other than minor, replace with new MS21254-5LL.
P. Damage other than minor, replace with new NAS 43HT4-21.
Q. Damage other than minor, replace with new NAS 75-4-017.
R. Damage other than minor, replace with new 234S8102-11 LH or -12 RH
S. Damage other than minor, manufacture new part from original material.

REPAIR – continued

NOTE

Refer to Table 6 for index number reference.

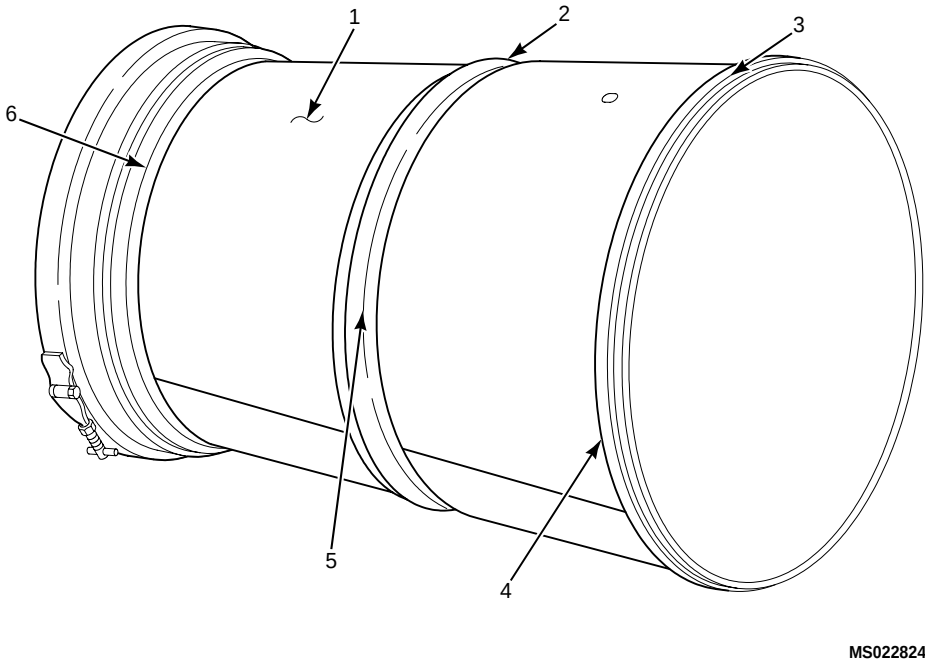


Figure 7. Engine Exhaust Cone

Table 6. Engine Exhaust Cone

INDEX NO.	NOMENCLATURE	ORIGINAL MATERIAL	REPAIR MATERIAL	WORK PACKAGE
1	Cone	0.025 N-155 Steel AMS 5532	0.025 INCONEL AMS 5599	0086 00
2	Stiffener	0.025 N-625 Steel AMS 5599	0.025 INCONEL AMS 5599	0087 00
3	Splice Plate	0.025 N-155 Sheet AMS 5532	0.025 INCONEL AMS 5599	0087 00
4	Stiffener	0.025 N-625 Sheet AMS 5599	0.025 INCONEL AMS 5599	0087 00
5	Splice Plate	0.025 N-155 Sheet AMS 5532	0.025 INCONEL AMS 5599	0087 00
6	Ring	VS60904	VS60904	0087 00

NOTE

All dimensions are in inches.

REPAIR – continued

NOTE

Numbered items in Figure 8 correspond to the respective items in Table 7.

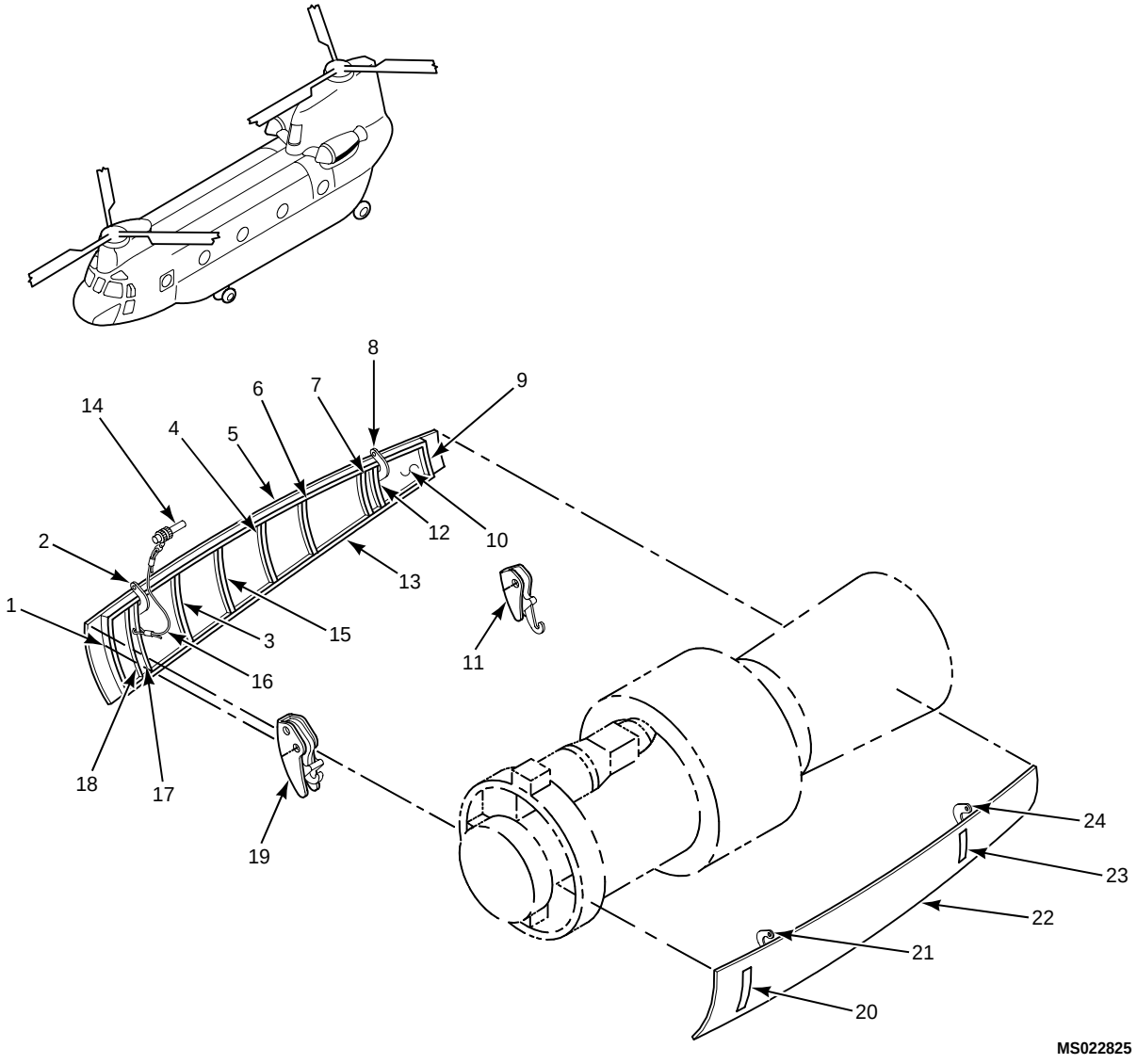


Figure 8. Engine Side Access Cover

REPAIR – continued

Table 7. Engine Side Access Cover

INDEX NO.	NOMENCLATURE	ORIGINAL MATERIAL	REPAIR MATERIAL	WORK PACKAGE
1	Former	0.032 2024-T4 Clad	0.040 2024-T3 Clad	0087 00
2	Hinge, Half	Note I	--	--
3	Former	0.025 2024-T4 Clad	0.032 2024-T3 Clad	0087 00
4	Former	0.032 2024-T4 Clad	0.040 2024-T3 Clad	0087 00
5	Stringer	0.032 2024-T4 Clad	0.040 2024-T3 Clad	0087 00
6	Former	0.032 2024-T4 Clad	0.040 2024-T3 Clad	0087 00
7	Former	0.020 321 ANL Cres	0.025 301 Cres ¼ Hd	0087 00
8	Hinge, Half	Note J	--	--
9	Former	0.020 321 ANL Cres	0.025 301 Cres ¼ Hd	0087 00
10	Skin, Inner	0.016 321 ANL CRES	0.020 301 Cres ¼ Hd	0086 00
11	Latch	Note G	--	--
12	Former	0.032 2024-T4 Clad	0.040 2024-T3 Clad	0087 00
13	Stringer	0.032 2024-T4 Clad	0.040 2024-T3 Clad	0087 00
14	Pin	Note H	--	--
15	Former	0.025 2024-T4 Clad	0.032 2024-T3 Clad	0087 00
16	Cable	Cable MIL-C-5424	Cable MIL-C-5424	--
17	Former	0.032 2024-T4 Clad	0.040 2024-T3 Clad	0087 00
18	Former	0.032 2024-T4 Clad	0.040 2024-T3 Clad	0087 00
19	Latch	Note F	--	--
20	Hinge, Half	Note C	--	--
21	Hinge, Half	Note E	--	--
22	Latch	Note D	--	--
23	Skin, Outer	0.025 2024-T4 Clad	0.032 2024-T3 Clad	0086 00
24	Latch	Note B	--	--

NOTES

A. All dimensions are in inches.
B. Damage other than minor, replace with new H313-4.
C. Damage other than minor, replace with new 114P8011-6.
D. Damage other than minor, replace with new H321-1.
E. Damage other than minor, replace with new 114P8059-1.
F. Damage other than minor, replace with new H313-3.
G. Damage other than minor, replace with new H312-2.
H. Damage other than minor, replace with new MS17984C306.
I. Damage other than minor, replace with new 114P8011-5.
J. Damage other than minor, replace with new 114P8059-2.

REPAIR – continued

NOTE

Numbered items in Figure 9 correspond to the respective items in Table 8.

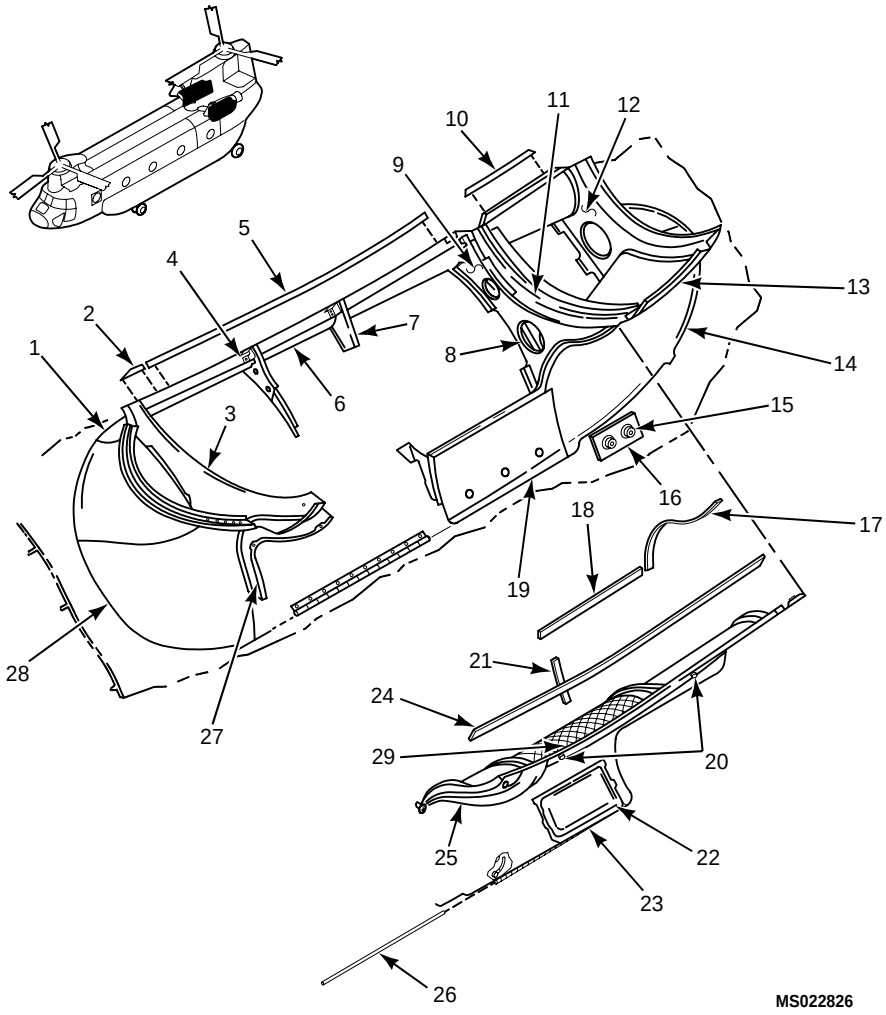


Figure 9. Engine Access and Fairing

REPAIR – continued

Table 8. Engine Access and Fairing

INDEX NO.	NOMENCLATURE	ORIGINAL MATERIAL	REPAIR MATERIAL	WORK PACKAGE
1	Fairing	Glass Cloth No. 181	Glass Cloth No. 181	0081 00
2	Seal	Note B	--	0095 00
3	Former	0.032 2024-T4 Clad	0.040 2024-T4 Clad	0087 00
4	Former	0.032 2024-T4 Clad	0.040 2024-T3 Clad	0087 00
5	Seal	Note B	--	0095 00
6	Fairing	0.032 2024-T4 Clad	0.040 2024-T3 Clad	0087 00
7	Former	0.032 2024-T4 Clad	0.040 2024-T3 Clad	0087 00
8	Former	0.076 Cres 304 ½ Hd	0.076 Cres 304 ½ Hd	0087 00
9	Former	0.032 2024-T4 Clad	0.040 2024-T3 Clad	0087 00
10	Seal	Note B	--	0095 00
11	Weld Assy	0.032 5052 H38	0.032 5052 H38	0086 00
12	Former	0.032 2024-T4 Clad	0.040 2024-T3 Clad	0087 00
13	Seal	Note B	--	0095 00
14	Weld Assy	0.032 5052 H38	0.032 5052 H38	0086 00
15	Adapter	Note E	--	--
16	Doubler	0.040 2024-T3 Clad	0.040 2024-T3 Clad	0086 00
17	Seal	Note B	--	0095 00
18	Seal	Note B	--	0095 00
19	Fairing	0.032 5052 H38	0.032 5052 H38	0086 00
20	Bumpers	Note C	--	--
21	Seal	Note B	--	0095 00
22	Fairing	Glass Cloth No. 181	Glass Cloth No. 181	0081 00
23	Hinge Half	MS20001P4	MS20001P	0093 00
24	Seal	Note B	--	0095 00
25	Fairing	Glass Cloth No.181	Glass Cloth No. 181	0081 00
25	Pin, Hinge	MS2023P2	MS2023-P2	0095 00
27	Seal	Note B	--	0095 00
28	Weld Assy	0.032 5052 H38	0.032 5052 H38	0086 00
29	Screen	Note D	--	--

NOTES

A. All dimensions are in inches.
B. Replace seal with synthetic rubber, 0.032-inch, MIL-R-6855 CLI GR 40.
C. Replace damaged bumpers with new 201-180401-00.
D. Replace with original material.
E. Damage other than minor, replace with P51001.

REPAIR – continued

NOTE

Numbered items in Figure 10 correspond to the respective items in Table 9.

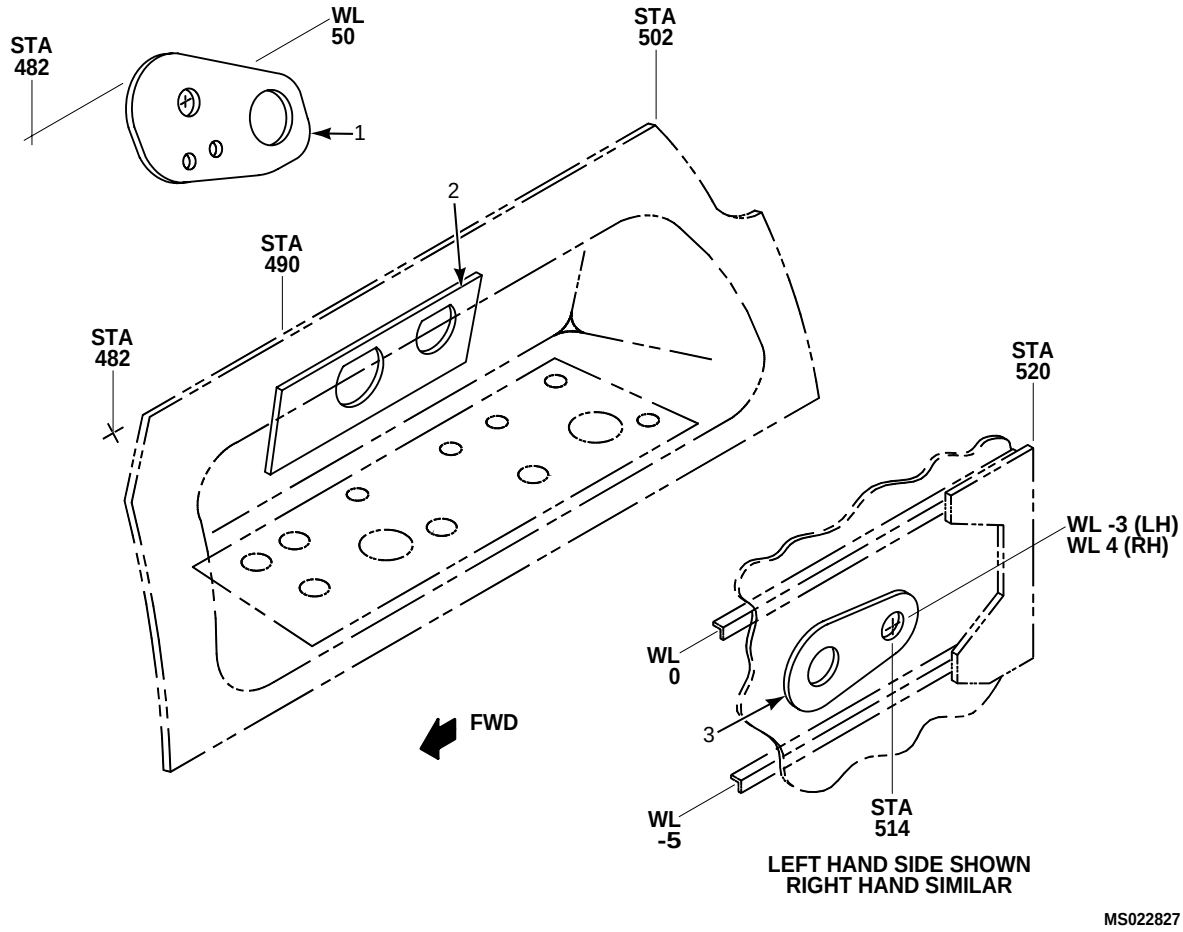


Figure 10. Engine Shelf and Wash

Table 9. Engine Shelf and Wash

INDEX NO.	NOMENCLATURE	ORIGINAL MATERIAL	REPAIR MATERIAL	WORK PACKAGE
1	Doubler	0.025 301 ANL Cres	Note B	0086 00
2	Doubler	0.032 301 ANL Cres	Note B	0086 00
3	Doubler	0.040 2024-T3 Clad	Note B	0086 00

NOTES

A. All dimensions are in inches.
B. Repair or replace with original material.

REPAIR – continued

NOTE

Refer to Table 10 for index number reference.

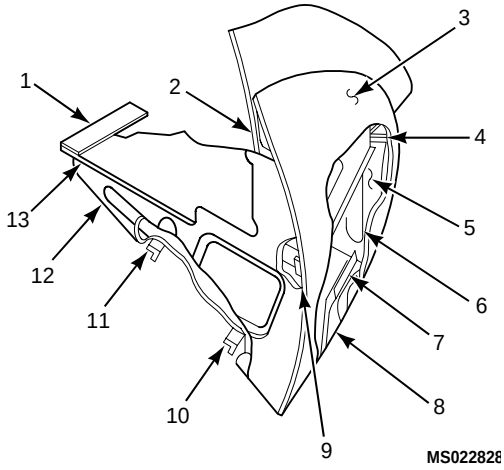


Figure 11. Aft Landing Gear Fairing

Table 10. Aft Landing Gear Fairing

INDEX NO.	NOMENCLATURE	ORIGINAL MATERIAL	REPAIR MATERIAL	WORK PACKAGE
1	Zee	0.032 2024-T4 CLAD	0.040 2024-T3 Clad	0087 00
2	Block	Phenolic MIL P 15035 Type FBM.	Note B	--
3	Skin	0.025 2024-T4 Clad	0.032 2024-T3 Clad	0086 00
4	Angle	0.032 2024-T4 Clad	0.040 2024-T3 Clad	0087 00
5	Former	0.032 2024-T4 Clad	0.040 2024-T3 Clad	0087 00
6	Angle	0.032 2024-T4 Clad	0.040 2024-T3 Clad	0087 00
7	Channel	0.032 2024-T4 Clad	0.040 2024-T3 Clad	0087 00
8	Doubler	0.025 2024-T4 Clad	0.040 2024-T3 Clad	0086 00
9	Clip	0.032 2024-T4 Clad	0.040 2024-T3 Clad	0087 00
10	Angle	0.032 2024-T4 Clad	0.040 2024-T3 Clad	0087 00
11	Angle	0.032 2024-T4 Clad	0.040 2024-T3 Clad	0087 00
12	Former	0.032 2024-T4 Clad	0.040 2024-T3 Clad	0087 00
13	Angle	0.032 2024-T4 Clad	0.040 2024-T3 Clad	0087 00

NOTES

A. All dimensions are in inches.

B. If damaged, replace with new block fabricated from original material.

REPAIR – continued

NOTE

Refer to Table 11 for index number reference.

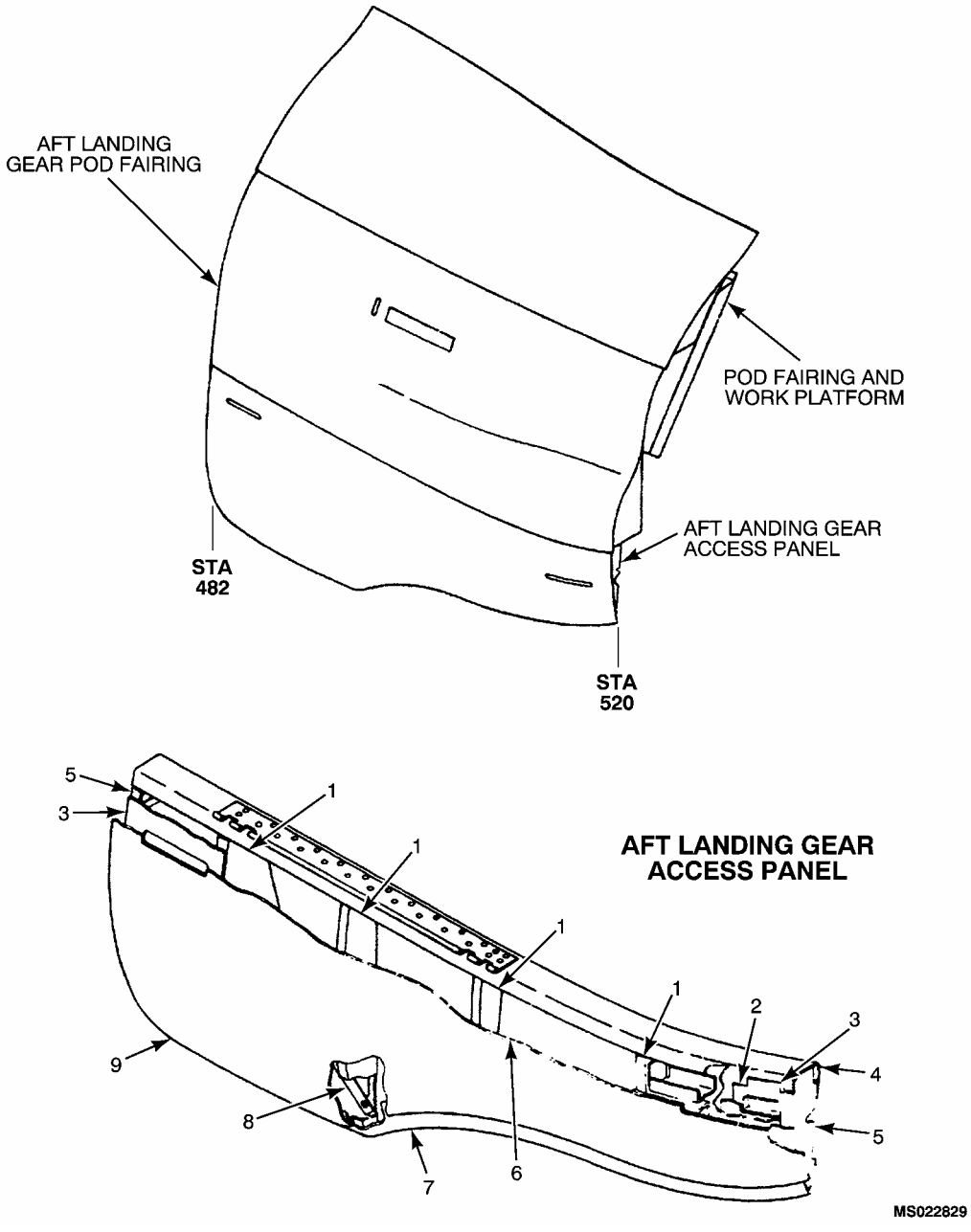


Figure 12. Aft Landing Gear Access Panel, Pod Fairing and Work Platform, and Aft Landing Gear Pod Fairing (Sheet 1 of 2)

REPAIR – continued

NOTE

Refer to Table 11 for index number reference.

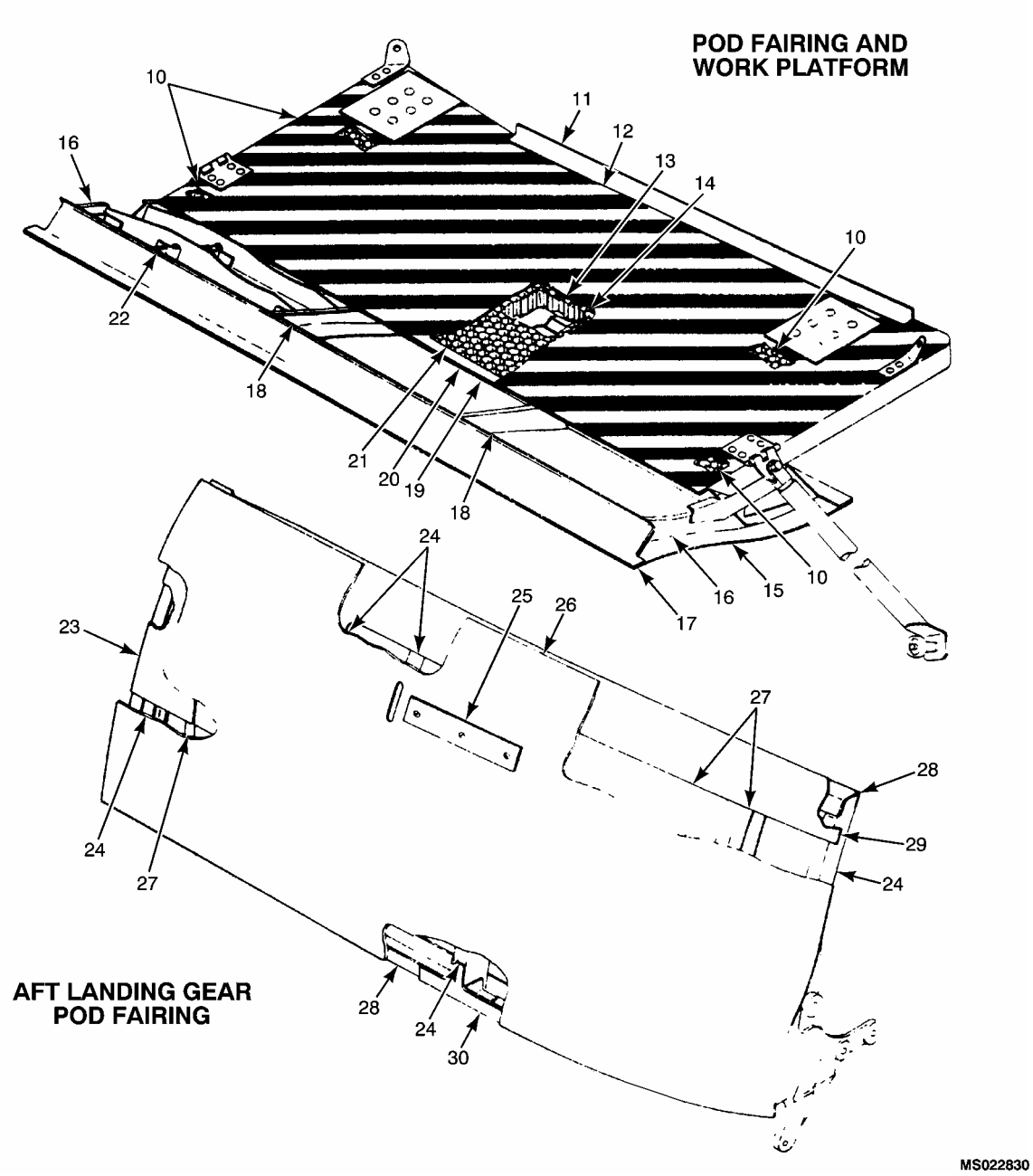


Figure 12. Aft Landing Gear Access Panel, Pod Fairing and Work Platform, and Aft Landing Gear Pod Fairing (Sheet 2 of 2)

REPAIR – continued

Table 11. Aft Landing Gear Access Panel, Pod Fairing and Work Platform, and Aft Landing Gear Pod Fairing

INDEX NO.	NOMENCLATURE	ORIGINAL MATERIAL	REPAIR MATERIAL	WORK PACKAGE
1	Former	0.025 2024-T4 Clad	0.032 2024-T3 Clad	0087 00
2	Cover	3 Ply, No 181 Glass Cloth	3 Ply, No 181 Glass Cloth	0081 00
3	Doubler	0.025 2024-T4 Clad	Note B	--
4	Channel	0.050 2024-T4 Clad	0.063 2024-T3 Clad	0087 00
5	Former	0.032 2024-T4 Clad	0.040 2024-T3 Clad	0087 00
6	Skin	0.025 2024-T4 Clad	0.032 2024-T3 Clad	0086 00
7	Angle	8-Ply, No. 181 Glass Cloth	8-Ply, No. 181 Glass Cloth	0081 00
8	Chafing Strip	0.125 Phenolic Laminate	Note D	--
9	Skin, Outer	0.025 2024-T4 Clad	0.032 2024-T3 Clad	0086 00
10	Core	1.222 3.4-1/4-15N 3003	Note C	0083 00
11	Angle	ALCOA 13637 7075-T6	0.050 4130	0088 00
12	Skin	0.016 2024-T4 Clad	0.020 2024-T3 Clad	0086 00
13	Skin	0.012 2024-T4 Clad	0.016 2024-T3 Clad	0086 00
14	Stiffener	0.040 2024-T4 Clad	0.050 2024-T3 Clad	0087 00
15	Skin	0.025 2024-T4 Clad	0.032 2024-T3 Clad	0086 00
16	Stiffener	0.025 2024-T4 Clad	0.032 2024-T3 Clad	0087 00
17	Stiffener	0.025 2024-T4 Clad	0.032 2024-T3 Clad	0087 00
18	Stiffener	0.025 2024-T4 Clad	0.032 2024-T3 Clad	0087 00
19	Stiffener	0.040 2024-T4 Clad	0.050 2024-T3 Clad	0087 00
20	Edge Member	3-Ply Scotchply	3-Ply Scotchply	0081 00
21	Core	1.222 23. 4-1/8-60N 3003	Note C	0083 00
22	Stiffener	0.032 2024-T4 Clad	0.040 2024-T3 Clad	0087 00
23	Stiffener	0.032 2024-T4 Clad	0.032 2024-T3 Clad	0087 00
24	Former	0.025 7075-T6 Clad	0.032 7075-T6 Clad	0087 00
25	Chafing Strip	Rigid Polyamide	Note D	--
26	Skin	0.020 2024-T4 Clad	0.025 2024-T3 Clad	0086 00
27	Former	0.040 7075-T6 Clad	0.050 7075-T6 Clad	0087 00
28	Channel	0.050 7075-T6 Clad	0.063 7075-T6 Clad	0087 00
29	Finger Plate	0.025 2024-T4 Clad	0.032 2024-T3 Clad	0087 00
30	Finger Plate	0.020 2024-T4 Clad	0.025 2024-T3 Clad	0087 00

NOTES

A. All dimensions are in inches.

B. Damage to doublers necessitates replacement of the damaged portion with original material.

C. Sandwich honeycomb construction, repair with original material.

D. Replace with new length of original material for damage other than negligible.

E. Apply walkway material (Item 193, WP 0157 00), as required.

REPAIR – continued

NOTE

Refer to Table 12 for index number reference.

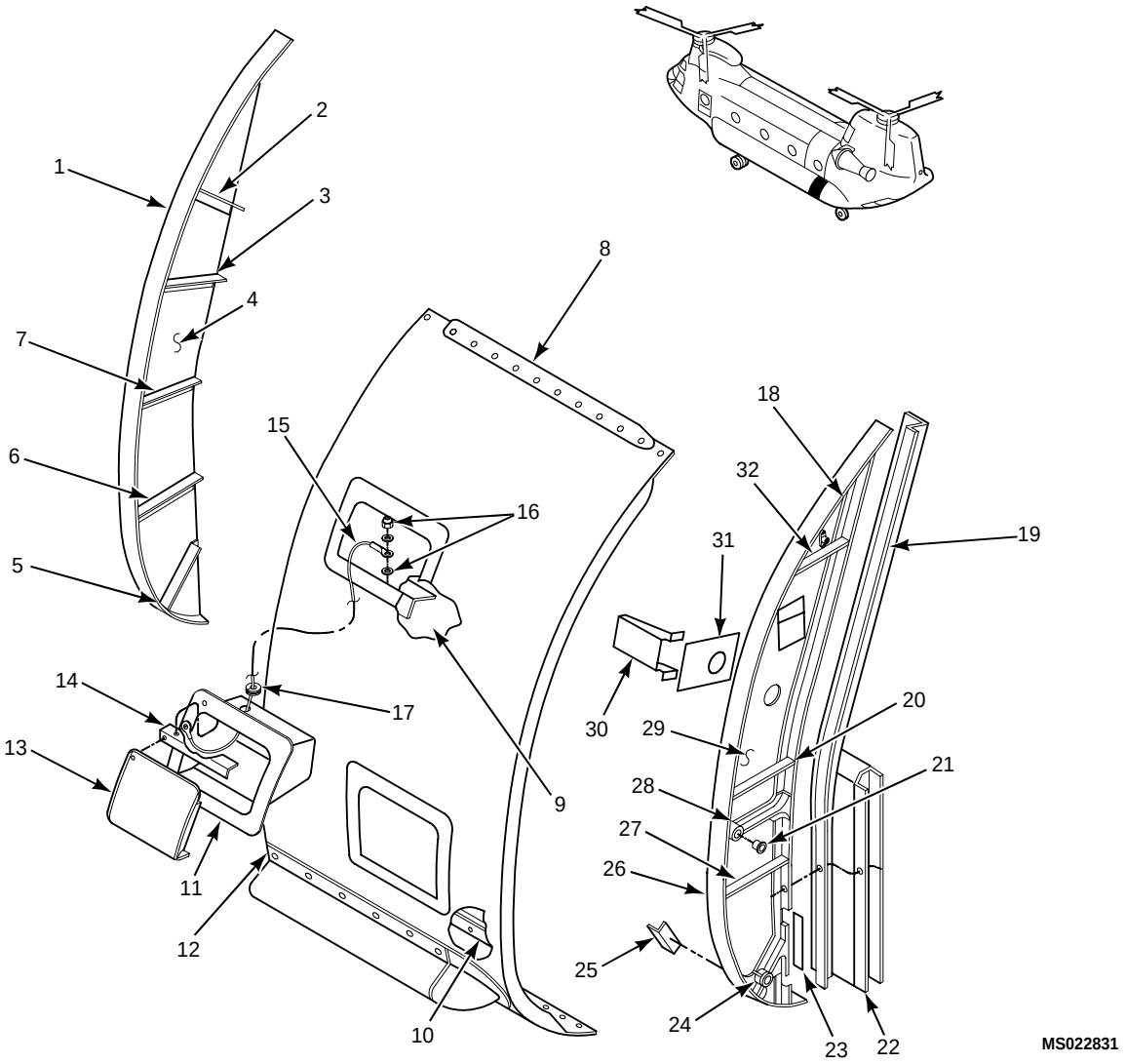


Figure 13. Pod, Sta 460 to Sta 482

Table 12. Pod, Sta 460 to Sta 482

INDEX NO.	NOMENCLATURE	ORIGINAL MATERIAL	REPAIR MATERIAL	WORK PACKAGE
1	Cap	ALCOA 22008 7075-T6	Note B	0088 00
2	Stiffener	ALCOA 22477 7075-T6	Note B	0088 00
3	Stiffener	ALCOA 22477	Note B	0088 00
4	Web	0.025 2024-T4 Clad	0.032 2024-T3 Clad	0086 00

REPAIR – continued

Table 12. Pod, Sta 460 to Sta 482 - continued

INDEX NO.	NOMENCLATURE	ORIGINAL MATERIAL	REPAIR MATERIAL	WORK PACKAGE
5	Stiffener	ALCOA 22477 7075-T6	Note B	0088 00
6	Stiffener	ALCOA 22477 7075-T6	Note B	0088 00
7	Stiffener	ALCOA 22477 7075-T6	Note B	0088 00
8	Step Guard	Note G	--	--
9	Angle	0.032 7075-T6 Clad	0.032 7075-T6 Clad	0087 00
10	Stiffener	0.040 7075-T6 Clad	0.040 7075-T6 Clad	0087 00
11	Step	0.032 2024-T4 Clad	0.040 2024-T3 Clad	0087 00
12	Skin Assy	Note F	--	0083 00
13	Door	0.032 2024-4 Clad	0.032 2024-T4 Clad	0086 00
14	Hinge Assy	Note B	--	0093 00
15	Jumper	MS25083-2AC3	Note B	--
16	Seal, Plain, Encased	MS2523C4R	Note B	--
17	Grommet	MS35490-2	Note B	--
18	Angle	ALCOA 44076 7075-T6	0.063 4130	0088 00
19	Attachment	0.050 7075-T6 Clad	0.063 7075-T6 Clad	0088 00
20	Stiffener	AND10133-0601 7075-T6	Note B	0088 00
21	Bushing, Flange	Note D	--	--
22	Channel	0.063 7075-T6 Clad	0.071 7075-T6 Clad	0088 00
23	Shim	Laminated	Note B	--
24	Latch Attach Assy.	Note E	--	--
25	Clip	0.063 7075-T6 Clad	Note B	0087 00
26	Cap	ALCOA 22008 7075-T6	0.071 4130	0088 00
27	Stiffener	AND10133-0601 7075-T6	0.071 4130	0088 00
28	Attachment	Note C	--	--
29	Web	0.032 7075-T6 Clad	0.040 7075-T6 Clad	0086 00
30	Bracket	0.040 2024-T4 Clad	0.040 2024-T4 Clad	0087 00
31	Doubler	0.040 2024-T4 Clad	0.040 2024-T4 Clad	0086 00
32	Stiffener	AND10133-0601 7075-T6	0.071 4130	0088 00

NOTES

A. All dimensions are in inches.
B. Repair or replace with original material.
C. Damage other than minor, replace with new 114S5807-1 LH or -2 RH.
D. Damage other than minor, replace with new NAS77-5-018.
E. Damage other than minor, replace with new 114S5807-3 LH or -4 RH.
F. Bonded sandwich honeycomb construction, use original material.
G. Damage other than minor, replace with 114S3914-3.

REPAIR – continued

NOTE

Refer to Table 13 for index number reference.

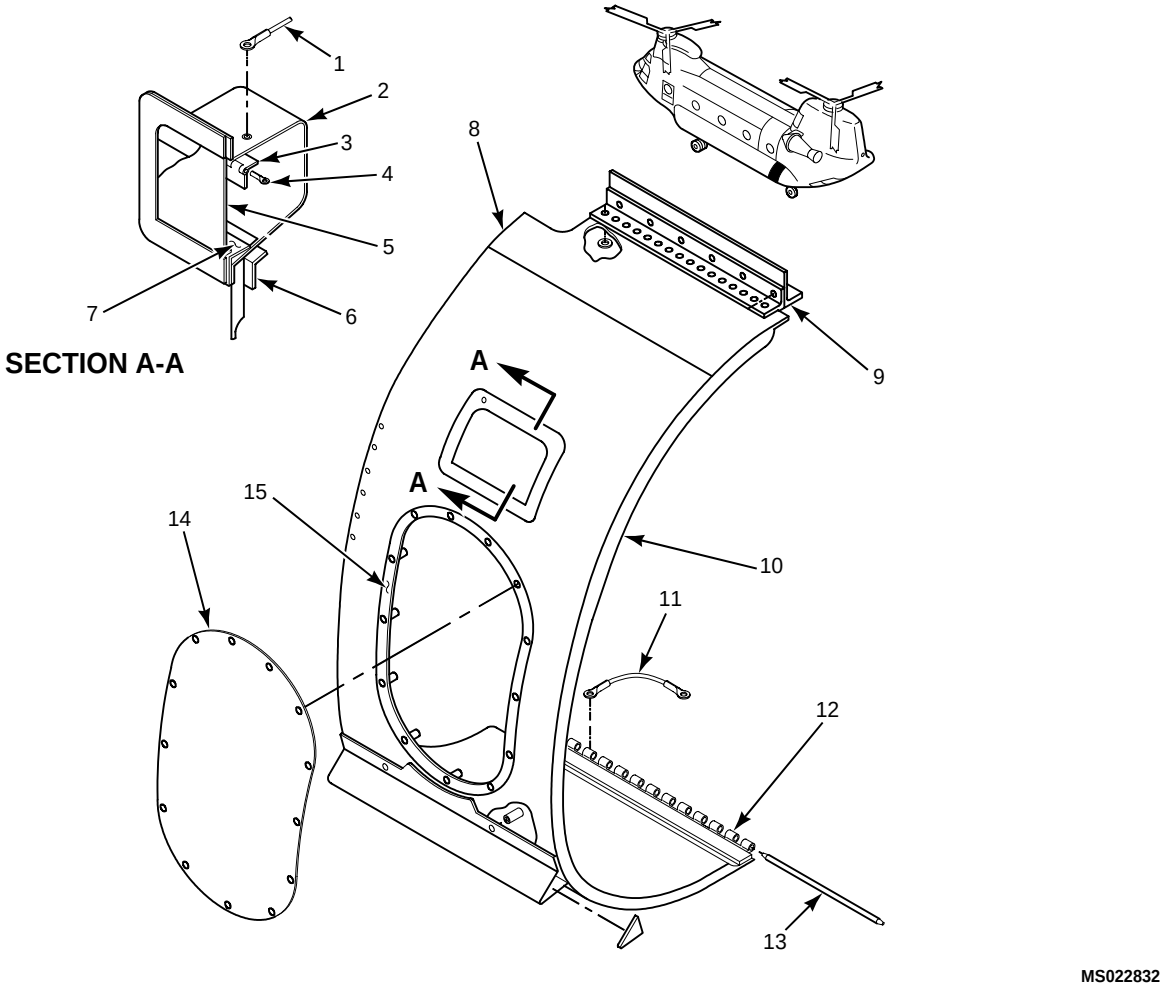


Figure 14. Aft Pod Access Panel

REPAIR – continued

Table 13. Aft Pod Access Panel

INDEX NO.	NOMENCLATURE	ORIGINAL MATERIAL	REPAIR MATERIAL	WORK PACKAGE
1	Jumper	Note D	--	--
2	Step	0.032 20245-T4 Clad	0.032 2024-T3 Clad	0087 00
3	Hinge Assy	MS20001P4	MS20001P4	0093 00
4	Jumper	Note D	--	--
5	Door	0.032 2024-T4 Clad	0.032 2024-T4 Clad	0086 00
6	Angle	0.032 7075-T6 Clad	0.040 7075-T6 Clad	0087 00
7	Member, Edge	0.032 7075-T6 Clad	0.040 7075-T6 Clad	0087 00
8	Skin Assy	Note B	Note C	0083 00
9	Angle	VS90529	Note C	0088 00
10	Panel Assy	Note B	--	0083 00
11	Jumper Assy	Note D	--	--
12	Hinge	VS90528	Note C	0093 00
13	Hinge Pin	MS202553P3	Note C	--
14	Access Door	Note B	--	0083 00
15	Retainer Assy	0.100 7075-T6 Clad	Note B	0083 00

NOTES

A. All dimensions are in inches.

B. Sandwich honeycomb construction; repair or replace with original material. Refer to WP 0083 00.

C. Repair or replace with original material.

D. If damaged, replace with new jumper, MS25083-3BB7. Make new jumper from MS25036-111 and MS25036-157 lugs.

REPAIR – continued

NOTE

Refer to Table 14 for index number reference.

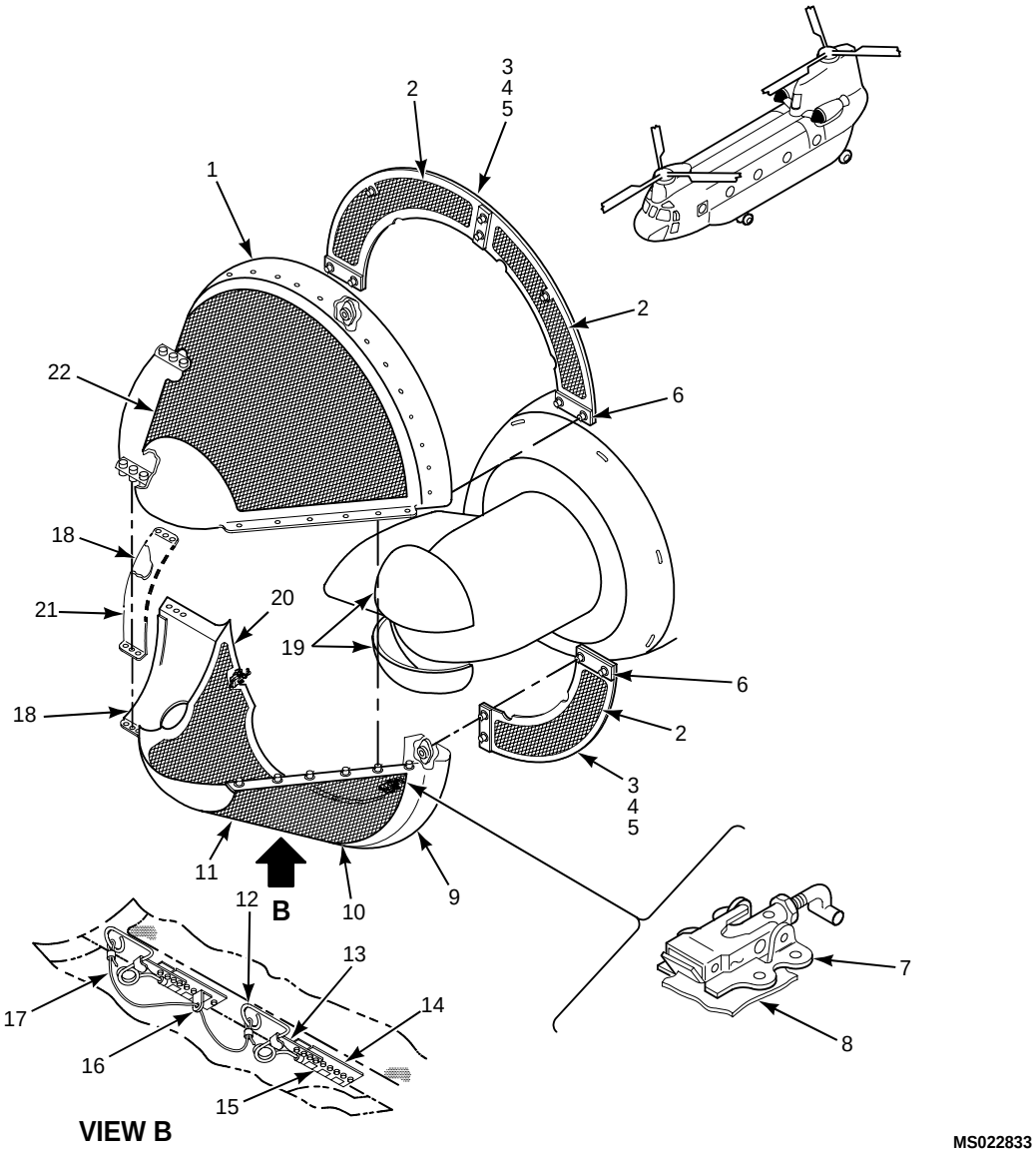


Figure 15. Engine Inlet Screen and Bypass Screen

REPAIR – continued

Table 14. Engine Inlet Screen and Bypass Screen

INDEX NO.	NOMENCLATURE	ORIGINAL MATERIAL	REPAIR MATERIAL	WORK PACKAGE
1	Lip Assy Upper	Note D	--	0081 00
2	Screen	Note B	--	--
3	Face Plate	0.063 2024-T3 Clad	0.063 2024-T3 Clad	0086 00
4	Spacer	0.160 2024-T3 Clad	0.160 2024-T3 Clad	0086 00
5	Face Plate	0.063 2024-T3 Clad	0.063 2024-T3 Clad	0086 00
6	Retainer	Note C	--	--
7	Latch Assy	Note G	--	--
8	Pad	0.125 Nyl Strip L-P-410a	Note H	--
9	Lip Assy Lower	Note D	--	0081 00
10	Hinge Assy	MS20001P8-7200	MS20001P8-7200	0093 00
11	Panel Assy Hinged	Note D	--	0081 00
12	Latch Pin	Note F	--	--
13	Clip	0.063 304 Cres ½ Hd	0.063 304 Cres ½ Hd	--
14	Latch	MS20001P8	--	0093 00
15	Latch	MS20001P8	--	0093 00
16	Eyelet	0.063 304 Cres ½ Hd	0.063 304 Cres ½ Hd	--
17	Cable Assy	BACC13Y3-100	--	--
18	Cushion	0.250 BMSI-23 Sii Rub.	Note H	0095 00
19	Cushion Nose	0.250 BMSI-23 Sil Rub	Note H	0095 00
20	Screen Assy Lower	Note D	--	0081 00
21	Strap	0.040 2024-T4 Clad	0.040 2024-T4 Clad	0086 00
22	Screen Assy Fine Mesh	Note E	--	--

NOTES

A. All dimensions are in inches.

B. Woven mesh, 304 stainless steel, 0.063-inch wire dia., 0.187-inch opening, double crimp, Federal Spec. RR-W-360A Type 1, Class 1.

C. Damage other than minor, replace with new D1020-1.

D. Pre-impregnated glass reinforcements; maximum panel thickness 0.080-inch.

E. Woven wire mesh, 304 stainless steel per RR-360A, Type E1 Class 1, 14 x 14 mesh, 0.020-inch wire diameter.

F. Damage other than minor, replace with new 234P5052-5 LH or -6 RH.

G. Replace broken latch with new 9170-Rev J.

H. Replace using original material.

END OF WORK PACKAGE

DEPOT MAINTENANCE WORK REQUIREMENT
CH-47D HELICOPTER
AFT SECTION FORMER REPAIRS

INITIAL SETUP

Test Equipment:
As Required

Tools and Special Tools:
As Required

Material/Parts:
Aluminum Sheet (Item 42.1, WP 0157 00)
Gloves, Chemical and Oil (Item 106, WP 0157 00)
Primer, Epoxy (Item 140, WP 0157 00)
Steel Sheet (Item 167, WP 0157 00)

Personnel Required:
As Required

References:
TM 1-1500-204-23 Series
TM 55-1520-240-23 Series
WP 0083 00
WP 0086 00
WP 0087 00
WP 0088 00
WP 0157 00

Equipment Conditions:
As Required

Special Environmental Condition:
As Required

SCOPE

This work package covers repair procedures for the following aft section formers. Refer to Figure 1.

1. Former, sta 440
2. Former, sta 460
3. Former, sta 482 and Bellcrank Support Fitting Doubler
4. Former, sta 502
5. Former, sta 520
6. Former, sta 534
7. Former, sta 555
8. Former, sta 575
9. Former, sta 594

SCOPE - continued

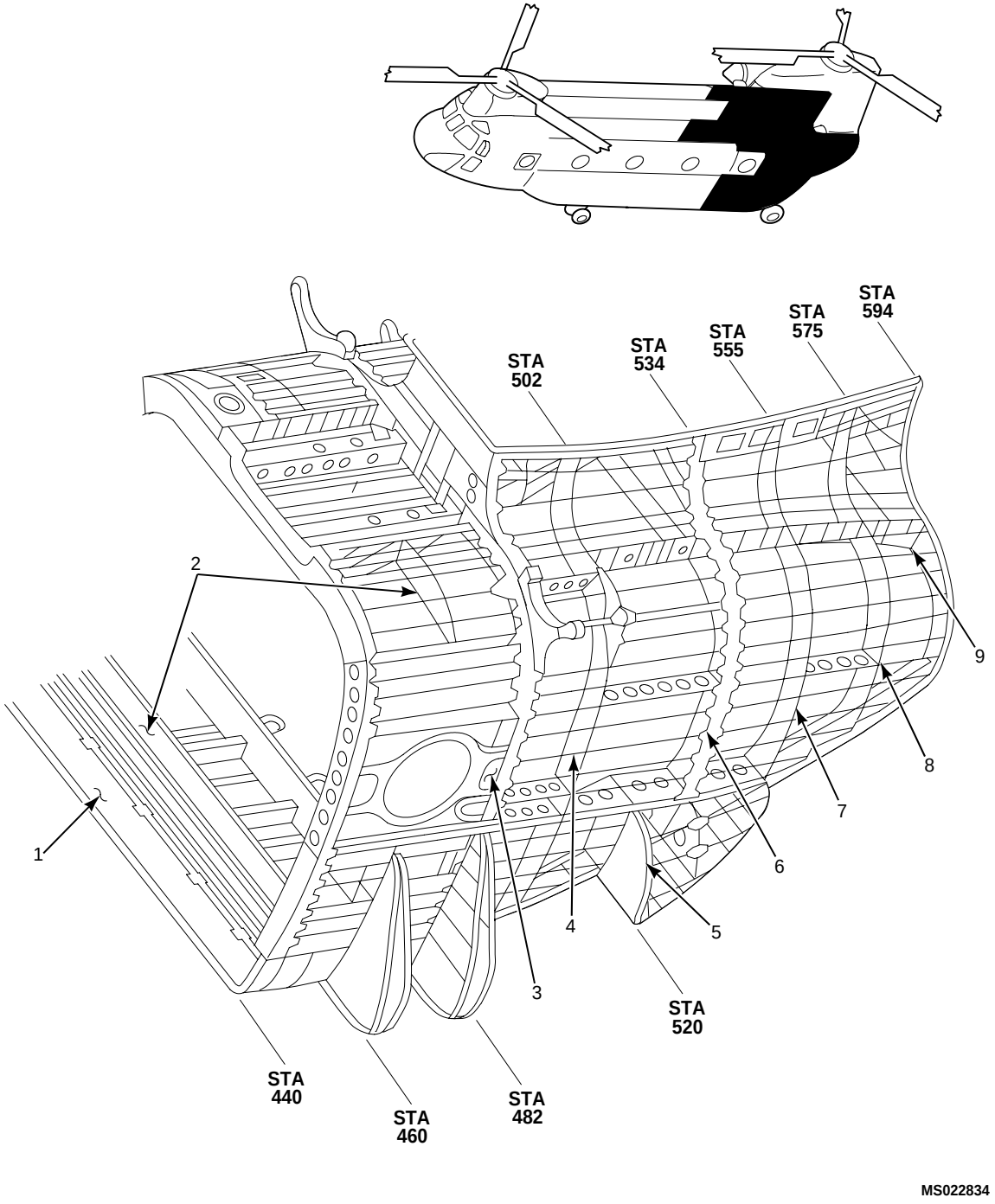


Figure 1. Aft Section Formers

REPAIR

NOTE

Refer to Table 1 for index number reference.

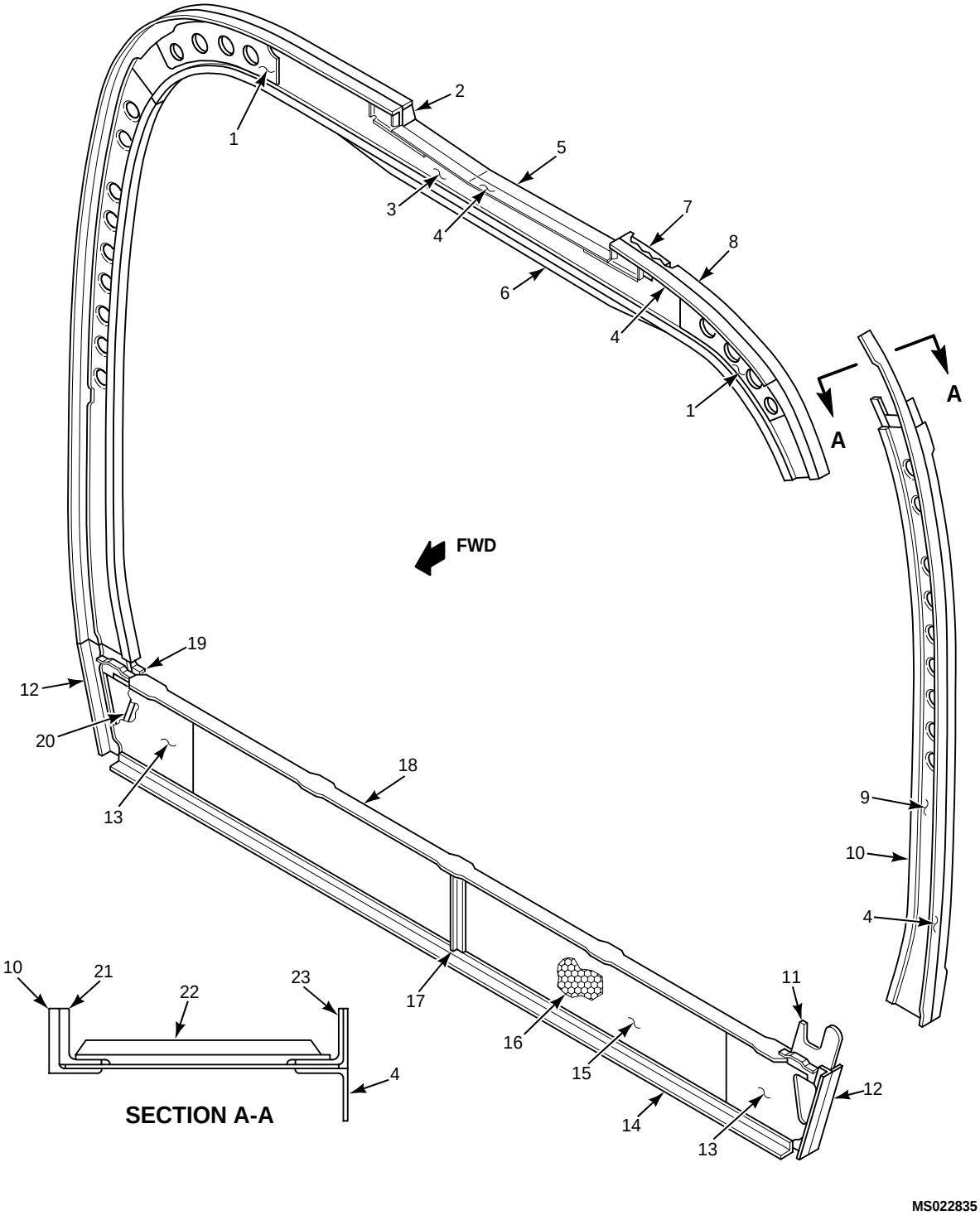


Figure 2. Former, Sta 440

REPAIR - continued

Table 1. Former, Sta 440

INDEX NO.	NOMENCLATURE	ORIGINAL MATERIAL	REPAIR MATERIAL	WORK PACKAGE
1	Doubler	0.375 7075-T651	0.375 7075-T651	0086 00
2	Attachment	2014-T6 Forging	Note C	--
3	Web	0.040 7075-T6 Clad	0.050 7075-T6 Clad	0086 00
4	Cap	VS90110 7075-T6	0.090 4130	0088 00
5	Cap	VS90114 7075-T6	0.190 4130	0088 00
6	Cap	VS90313 7075-T6	0.190 4130	0088 00
7	Attachment	2014 Forging	Note D	--
8	Cap	AOLCOA 13816 7075-T6	0.100 4130	0088 00
9	Web	0.040 2024-T3 Clad	0.060 2024-T3 Clad	0086 00
10	Cap	VS90112 7075-T6	0.190 4130	0088 00
11	Attachment	0.250 7075-T6 Bare	Note B	0083 00
12	Cap	VS90110 7075-T6	0.090 4130	0088 00
13	Doubler	0.050 7075-T6	Note B	0083 00
14	Cap	VS90111 7075-T6	Note B	0083 00
15	Skin	0.020 7075-T6	Note B	0083 00
16	Core	0.255 3.0 3/8-20N-3003	Note B	0083 00
17	Angle	ALCOA 62564 7075-T6	0.080 4130	0088 00
18	Cap	VS90302 7075-T6	Note B	0083 00
19	Angle	0.040 7075-T6 Bare	0.050 7075-T6 Clad	0088 00
20	Angle	AND10133-0601 7075-T6	0.071 4130	0088 00
21	Splice	VS90112 7075-T6	0.190 4130	0088 00
22	Doubler	ALCOA 44132 7075-T6	0.100 4130	0088 00
23	Splice	VS90110 7075-T6	0.090 4130	0083 00

NOTES

A. All dimensions are in inches.

B. Component of bonded assembly. Repair using procedure for sandwich honeycomb construction. Refer to WP 0083 00.

C. Replace with new attachment, 114S3830-5.

D. Replace with new attachment, 114S3829-1.

REPAIR - continued

NOTE

Refer to Table 2 for index number reference.

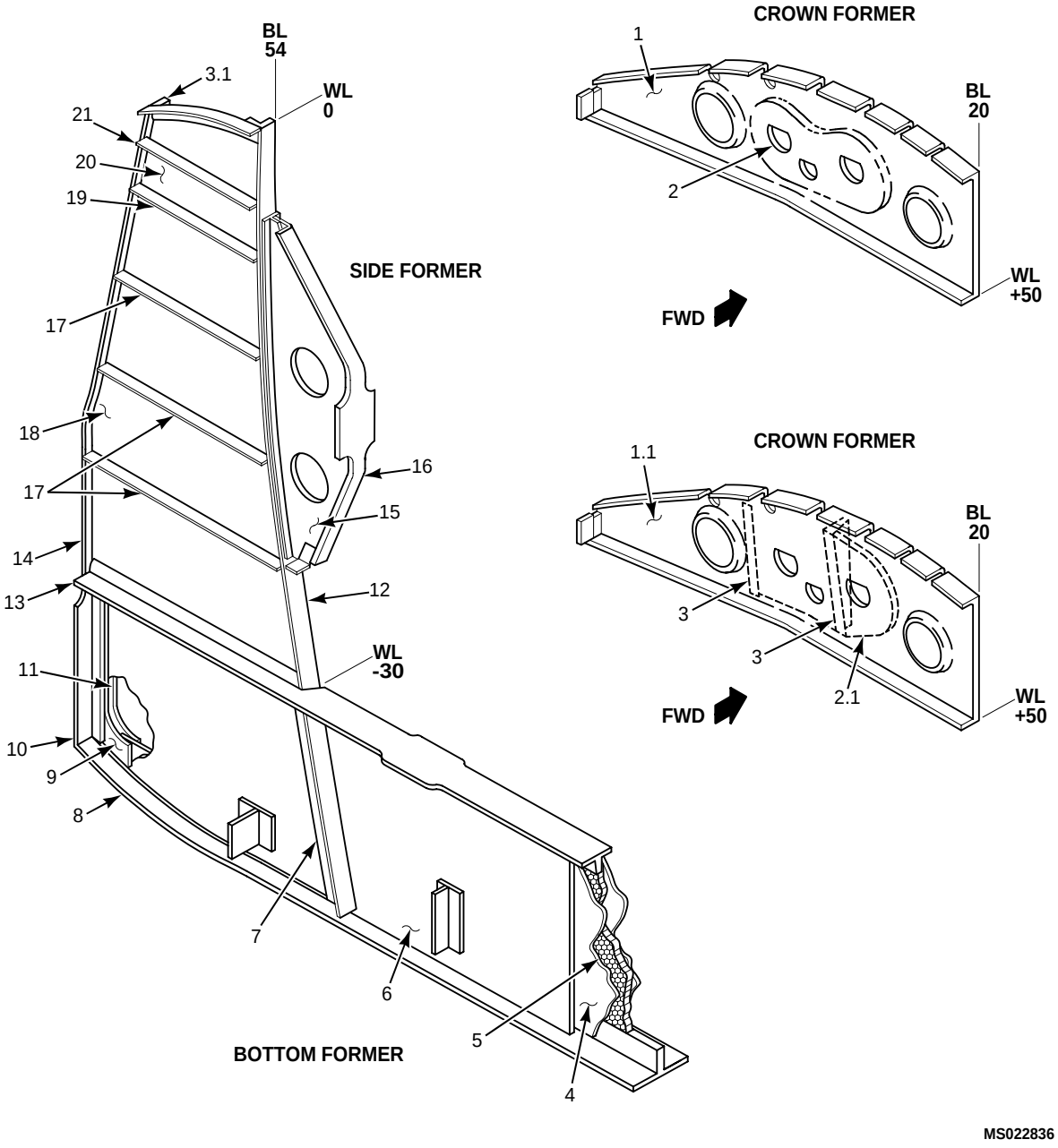


Figure 3. Former, Sta 460

REPAIR - continued

Table 2. Former, Sta 460

INDEX NO.	NOMENCLATURE	ORIGINAL MATERIAL	REPAIR MATERIAL	WORK PACKAGE
1	Web	0.032 2024-T4 Clad	0.040 2024-T3 Clad	0086 00
1.1	Web	0.032 2024-T3 Clad	0.040 2024-T3 Clad	0086 00 Note D
2	Doubler	0.032 7075-T6 Bare	0.032 7075-T6 Clad	0086 00
2.1	Doubler	0.050 7075-T6 Bare	0.050 7075-T6 Bare	0086 00 Note D
3	Angle	0.040 2024-T3 Bare	0.050 2024-T3 Bare	0086 00 Note D
3.1	Angle	AND10133-1001 7075-T6	0.071 4130	0088 00
4	Skin	0.020 7075-T6	Note C	0083 00
5	Core	0.255 3.0-3/8-20N-3003	Note C	0083 00
6	Doubler	0.032 7075-T6	0.040 7075-T6 Clad	0086 00
7	Angle	AND10133-1002 7075-T6	0.100 4130	0088 00
8	Cap	VS90303 7075-T6	0.125 4130	0088 00
9	Angle	ALCOA 22892 7075-T6	0.100 4130	0088 00
10	Doubler	0.032 7075-T6	0.040 7075-T6 Clad	0086 00
11	Doubler	0.050 7075-T6 Clad	0.050 7075-T6 Clad	0086 00
12	Cap	ALCOA 67576 7075-T6	0.160 4130	0088 00
13	Cap	VS90306 7075-T6	0.125 4130	0088 00
14	Cap	AND10133-1001 7075-T6	0.063 4130	0088 00
15	Web	0.032 2024-T4 Clad	0.040 2024-T3 Clad	0086 00
16	Cap	AND10136-1601 7075-T6	0.100 4130	0088 00
17	Stiffener	ALCOA 22477 7075-T6	0.050 4130	0088 00
18	Web	0.025 2024-T4 Clad	0.032 2024-T3 Clad	0086 00
19	Stiffener	ALCOA 22878 7075-T6	0.071 4130	0088 00
20	Web	0.040 2024-T4 Clad	0.050 2024-T3 Clad	0086 00
21	Stiffener	ALCOA 7075-T6	0.071 4130	0088 00

NOTES

A. All dimensions are in inches.

B. The LH formers are shown. The RH formers are similar in construction. The materials listed are applicable to the LH and RH configurations.

C. Bonded assembly is made of sandwich honeycomb construction.

D. With ferry fuel provisions, MWO 55-1520-240-50-6.

REPAIR - continued

NOTE

Refer to Table 3 for index number reference.

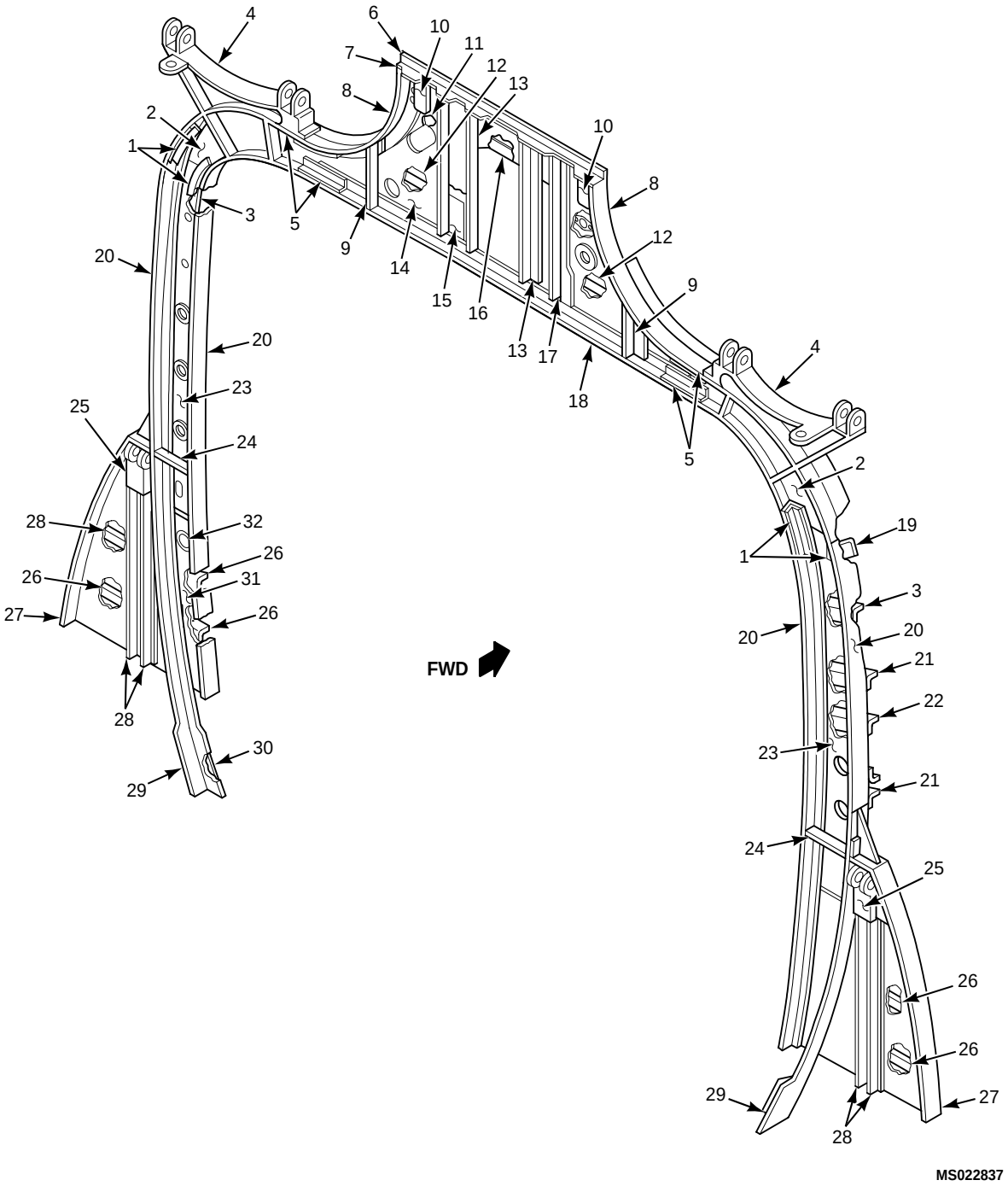


Figure 4. Former, Sta 482 and Bellcrank Support Fitting Doubler (Sheet 1 of 4)

REPAIR - continued

Table 3. Former, Sta 482 and Bellcrank Support Fitting Doubler

INDEX NO.	NOMENCLATURE	ORIGINAL MATERIAL	REPAIR MATERIAL	WORK PACKAGE
1	Strap	0.125 301 3/4H Cres	0.125 301 3/4H Cres	0087 00
2	Web	0.071 2024-T3 Clad	0.080 2024-T3 Clad	0086 00
3	Stiffener	AND10134-1006 7075-T6	0.100 4130	0088 00
4	Eng. Mount	2014-T6	Note D	--
5	Splice	AND10134-1604 7075-T6	0.160 4130	0088 00
6	Cap	ALCOA 13816 7075-T6	0.100 4130	0088 00
7	Angle	0.032 2024-T4 Clad	0.040 2024-T3 Clad	0088 00
8	Cap	AND10134 2008 7075-T6	0.190 4130	0088 00
9	Stiffener	Reynolds 9097 7075-T6	0.375 4130	0088 00
10	Attach Fitting	2014-T6	NOTE E	--
11	Doubler	0.091 7075-T6 Bare	0.091 7075-T6 Clad	0086 00
12	Stiffener	0.188 17-7PH Cres	0.188 17-7PH Cres	0088 00
13	Stiffener	AND10134 1408 7075-T6	0.160 4130	0088 00
14	Web	0.063 7075-T6 Bare	0.080 7075-T6 Clad	0086 00
15	Stiffener	AND10133-1002 7075-T6	0.100 4130	0088 00
16	Stiffener	ALCOA 33811 7075-T6	0.160 4130	0088 00
17	Stiffener	AND10134–602 7075-T6	0.125 4130	0088 00
18	CAP	ALCOA 44132 7075-T6	Note F	0088 00
19	Stiffener	Reynolds 6447 7075-T6	Note F	0088 00
20	Cap	ALCOA 51994 7075-T6	Note F	0088 00
21	Stiffener	AND10133-0601 7075-T6	0.071 4130	0088 00
22	Stiffener	AND10134-1003 7075-T6	0.071 4130	0088 00
23	Web	0.072 2024-T3 Clad	0.080 2024-T3 Clad	0086 00
24	Stiffener	ALCOA 59810 7075-T6	0.190 4130	0088 00
25	Fitting	--	Note B	--
26	Stiffener	ALCOA 62564 7075-T6	0.090 4130	0088 00
27	Cap	Reynolds 16908 7075-T6	0.125 4130	0088 00
28	Stiffener	AND10134-1602 7075-T6	0.125 4130	0088 00
29	Angle	BAC1503-9437 7075-T6	0.125 4130	0088 00
30	Cap	AND10134-2001 7075-T6	0.160 4130	0088 00
31	Web	0.063 7075-T6 Bare	0.080 7075-T6 Clad	0086 00
32	Doubler	0.080 7075-T6 Clad	0.080 7075-T6 Clad	0086 00

NOTES

A. All dimensions are in inches.
B. For damage other than minor, replace with new fitting, 114S3807-1 LH or 114S3807-2 RH.
C. Insulate dissimilar metals. Refer to WP 0078 00.
D. For damage other than minor, replace with new fitting, 114S3817-39 LH or 114S3817-41 RH.
E. For damage other than minor, replace with new fitting 114S3848-19 LH or 114S3848-21 RH.
F. For damage other than minor, replace with section of original material.

STA 482 BELLCRANK SUPPORT FITTING FORMER REPAIR – Refer to Figure 4, Sheet 2 thru Sheet 4

1. Drill out existing rivets. Remove doubler.
2. Drill stop holes at ends of cracks. Use a No. 41 drill bit.
3. Fabricate new doubler. Use steel sheet (Item 167, WP 0157 00) 0.090-inch thick.
4. Fabricate filler if required. Use aluminum sheet 0.040-inch thick (Item 42.1, WP 0157 00).
5. Fit doubler and filler to forward side of frame, sta 482.
6. Drill existing rivet holes in doubler and filler.
7. Drill 17 new rivet holes in doubler. Use No. 11 drill bit.
8. Stiffener (114S3304-49) and flange of doubler. Use No. 11 drill bit.
9. Countersink three holes under support assembly (114S3383) to 100 degrees.
10. Remove doubler and filler. Deburr as required.

WARNING

EPOXY PRIMER

11. Prime parts and drill seven new rivet holes. Use epoxy primer (Item 140, WP 0157 00). Wear gloves (Item 106, WP 0157 00).
12. Install doubler and filler.

STA 482 BELLCRANK SUPPORT FITTING FORMER REPAIR – Refer to Figure 4, Sheet 2 thru Sheet 4 – continued

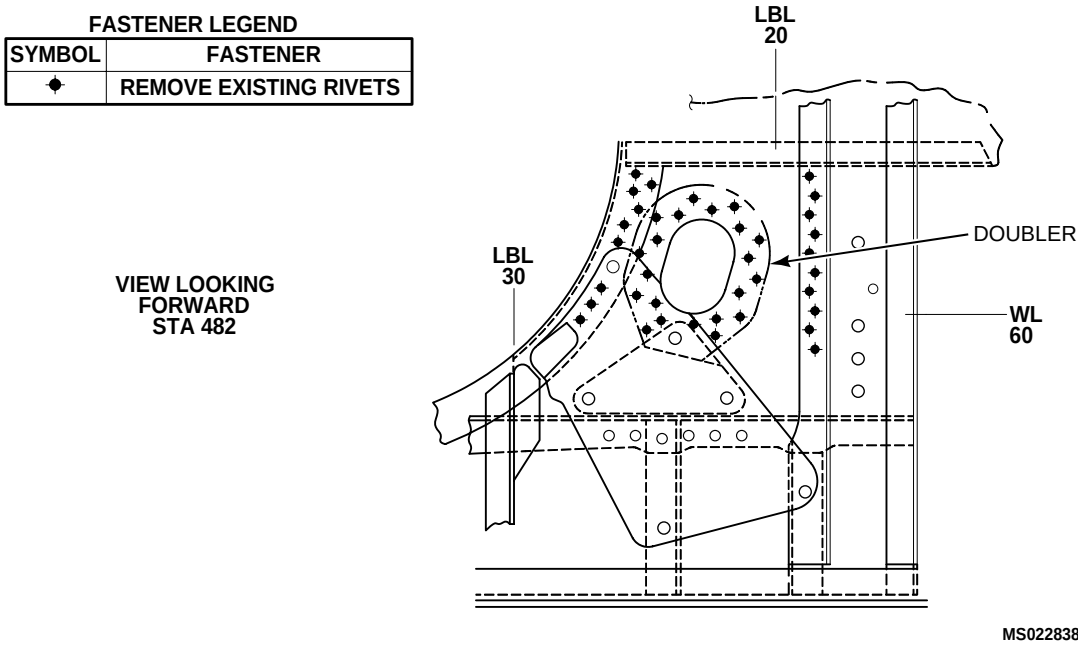


Figure 4. Former, Sta 482 and Bellcrank Support Fitting Doubler (Sheet 2 of 4)

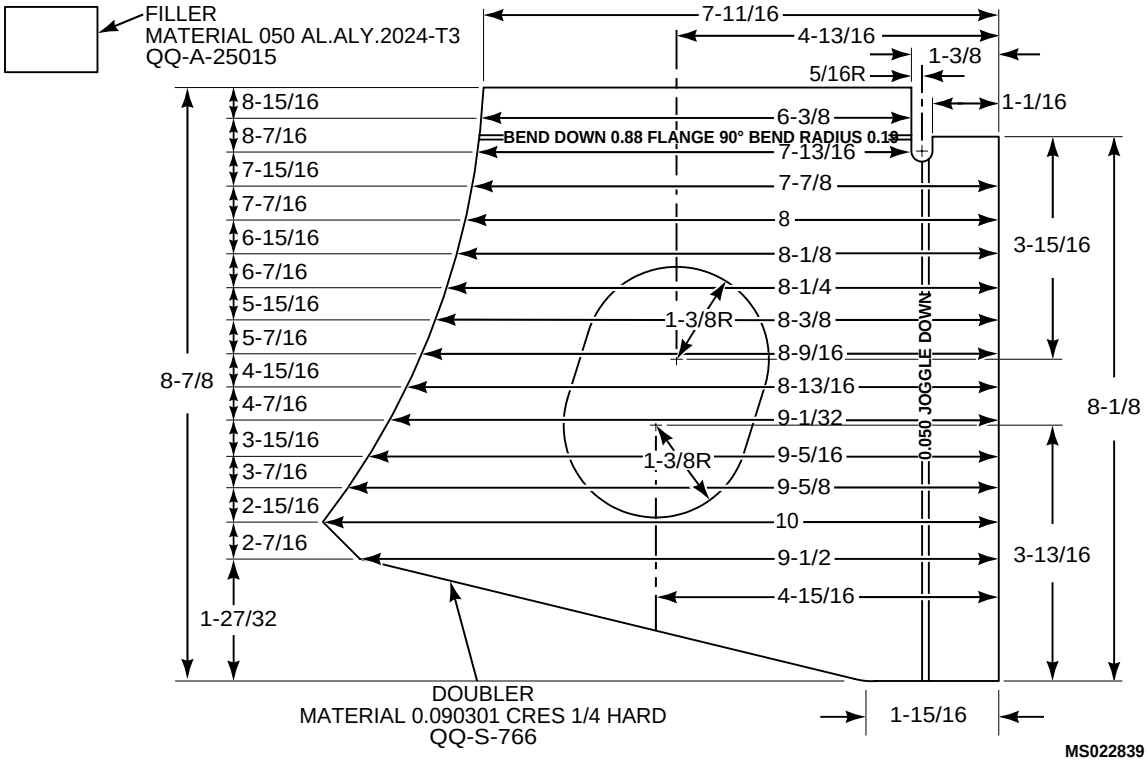


Figure 4. Former, Sta 482 and Bellcrank Support Fitting Doubler (Sheet 3 of 4)

STA 482 BELLCRANK SUPPORT FITTING FORMER REPAIR – Refer to Figure 4, Sheet 2 thru Sheet 4 – continued

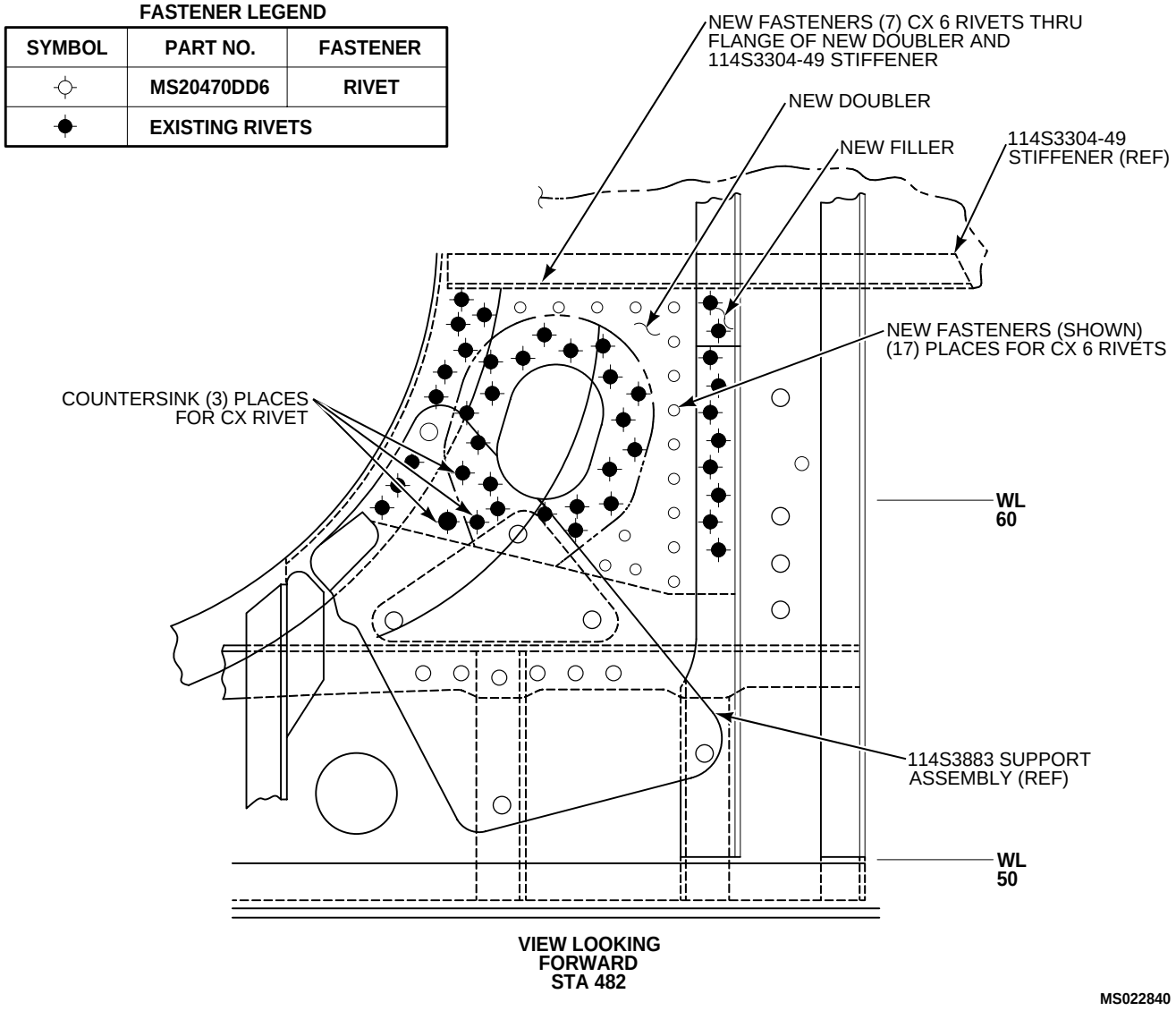


Figure 4. Former, Sta 482 and Bellcrank Support Fitting Doubler (Sheet 4 of 4)

STA 482 BELLCRANK SUPPORT FITTING FORMER REPAIR – Refer to Figure 4, Sheet 2 thru Sheet 4 – continued

NOTE

Refer to Table 4 for index number reference.

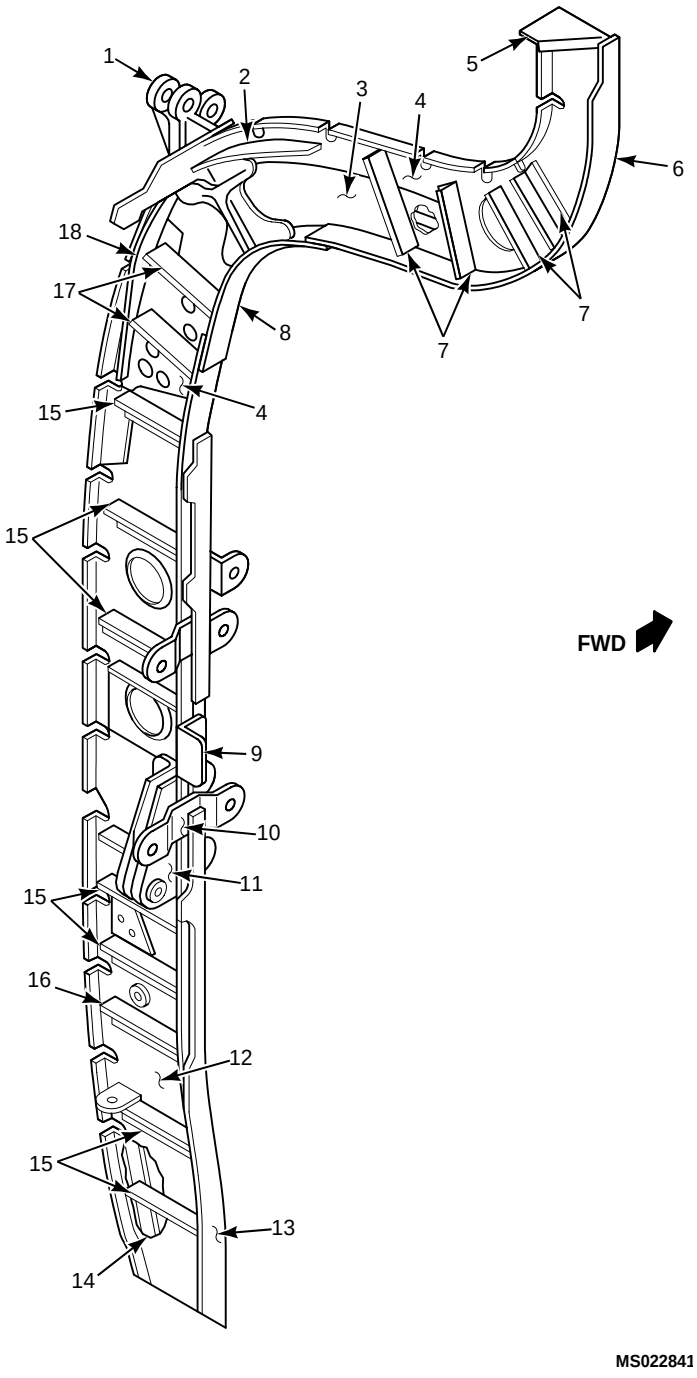


Figure 5. Former, Sta 502

STA 482 BELLCRANK SUPPORT FITTING FORMER REPAIR – Refer to Figure 4, Sheet 2 thru Sheet 4 – continued

Table 4. Former, Sta 502

INDEX NO.	NOMENCLATURE	ORIGINAL MATERIAL	REPAIR MATERIAL	WORK PACKAGE
1	Fitting	2014-T6	Note C	--
2	Angle	AND10134-1406 7075-T6	0.100 4130	0088 00
3	Web	0.050 2024-T3 Clad	0.050 2024-T3 Clad	0086 00
4	Doubler	0.032 2024-T3 Clad	0.032 2024-T3 Clad	0086 00
5	Bracket	0.032 7075-T6 Clad	0.040 7075-T6 Clad	0087 00
6	Cap	HARVEY 15152 7075-T6	0.071 4130	0088 00
7	Stiffener	ALCOA 22477 7075-T6	0.060 4130	0088 00
8	Strap	0.100 301 1/4H Cres	0.100 301 1/4H Cres	0086 00
9	Clip	ALCOA 61971 7075-T6	0.050 4130	0088 00
10	Angle	0.032 2024-T4 Clad	0.040 2024-T3 Clad	0088 00
11	Fitting	VS90530 7075-T6	Note B	--
12	Web	0.032 7075-6T Clad	0.040 7075-T6 Clad	0086 00
13	Cap	AND10136-2002 7075-T6	0.100 4130	0088 00
14	Cap	AND10134-1408 7075-T6	0.160 4130	0088 00
15	Stiffener	ALCOA 22477 7075-T6	0.050 4130	0088 00
16	Stiffener	ALCOA 67580 7075-T6	0.063 4130	0088 00
17	Stiffener	VS90112 7075-T6	0.190 4130	0088 00
18	Angle	AND10134-1408 7075-T6	0.160 4130	0088 00

NOTES

A. All dimensions are in inches.

B. For damage other than minor, replace with a new fitting, 114S3816-1 LH or 114S3816-2 RH.

C. For damage other than minor, replace with a new fitting, 114S3819-39 LH or 114S3819-41 RH.

STA 482 BELLCRANK SUPPORT FITTING FORMER REPAIR – Refer to Figure 4, Sheet 2 thru Sheet 4 – continued

NOTE

Refer to Table 5 for index number reference.

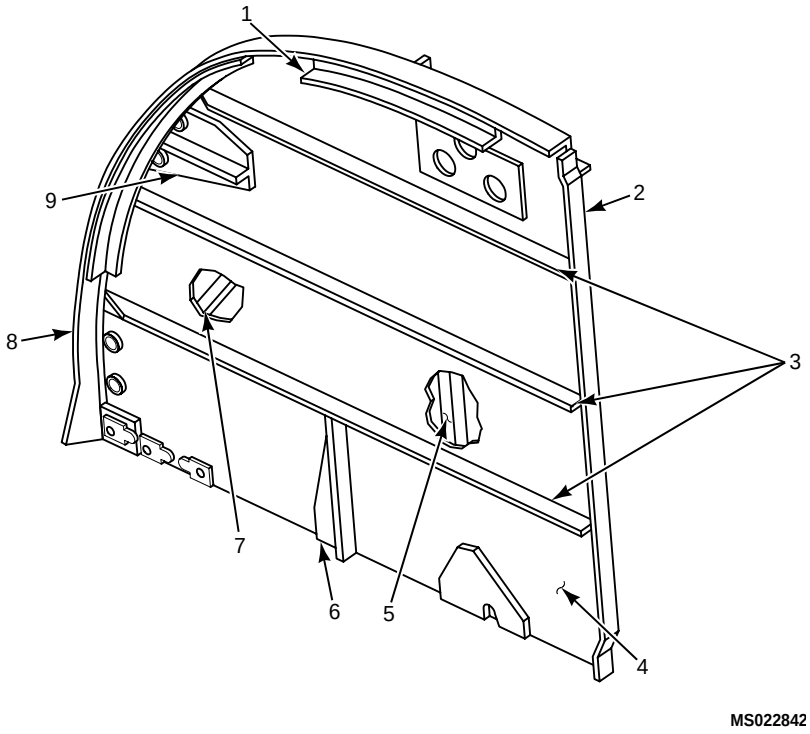


Figure 6. Former, Sta 520

Table 5. Former, Sta 520

INDEX NO.	NOMENCLATURE	ORIGINAL MATERIAL	REPAIR MATERIAL	WORK PACKAGE
1	Angle	0.040 301 1/4H Cres	0.040 301 1/4H Cres	0087 00
2	Cap	0.040 7075-T6 Bare	0.050 7075-T6 Clad	0087 00
3	Stiffener	ALCOA 22526 7075-T6	0.063 4130	0088 00
4	Web	0.025 7075-T6 Bare	0.032 7075-T6 Clad	0086 00
5	Cap	0.040 7075-T6 Bare	0.050 7075-T6 Clad	0088 00
6	Stiffener	0.040 7075-T6 Bare	0.050 7075-T6 Clad	0088 00
7	Stiffener	0.050 7075-T6 Bare	0.050 7075-T6 Clad	0088 00
8	Cap	0.040 7075-T6 Bare	0.050 7075-T6 Clad	0087 00
9	Stiffener	AND10136-3001 7075-T6	0.125 4130	0088 00

NOTES

A. All dimensions are in inches.

B. The LH former is shown. The RH former is similar in construction. The original and repair materials listed are applicable to LH and RH configuration.

STA 482 BELLCRANK SUPPORT FITTING FORMER REPAIR – Refer to Figure 4, Sheet 2 thru Sheet 4 – continued

NOTE

Refer to Table 6 for index number reference.

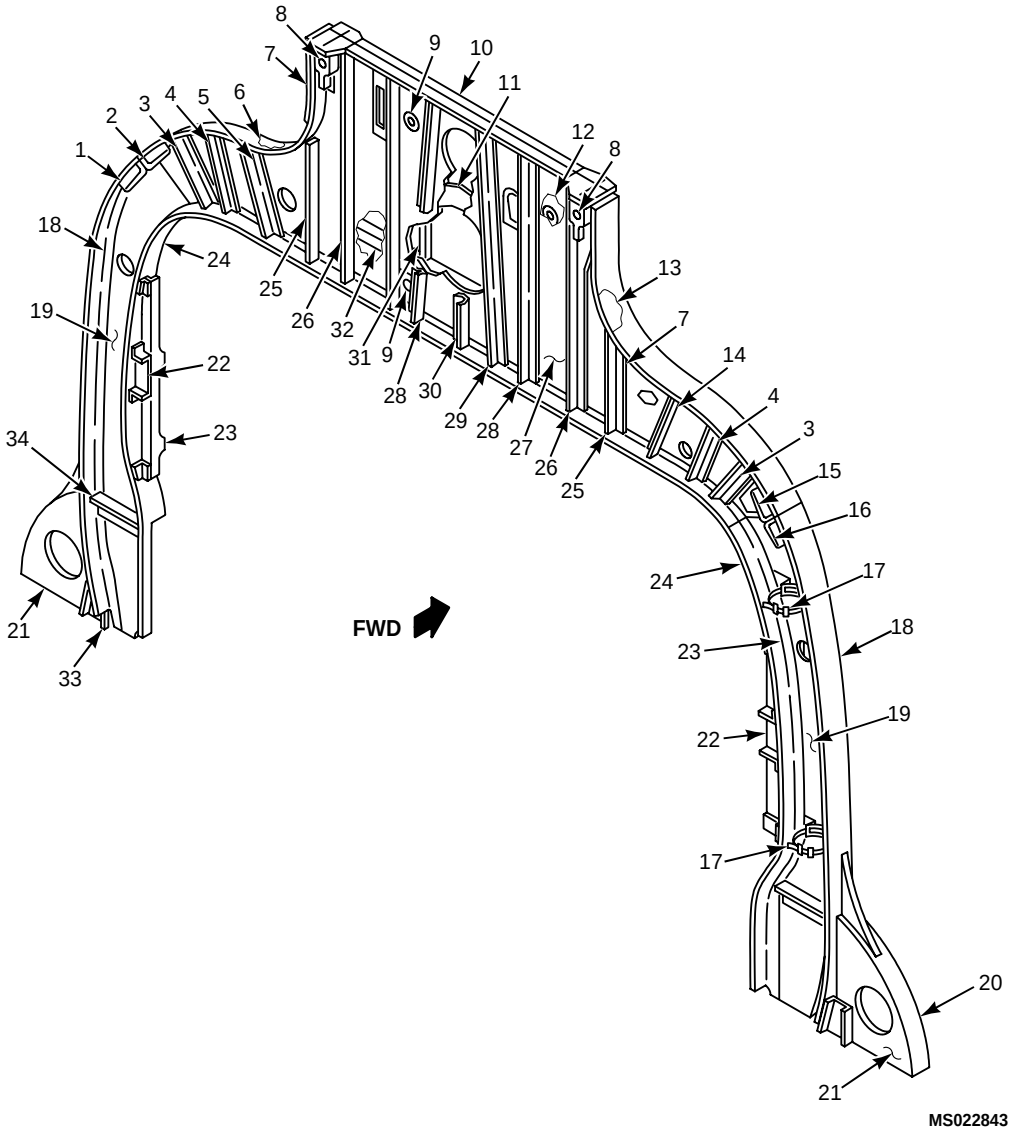


Figure 7. Former, Sta 534 (Sheet 1 of 11)

Table 6. Former, Sta 534

INDEX NO.	NOMENCLATURE	ORIGINAL MATERIAL	REPAIR MATERIAL	WORK PACKAGE
1	Fitting	2014-T6	Note B	--
2	Fitting	2014-T6	Note C	--
3	Stiffener	AND10136-1401 7075-T6	0.071 4130	0088 00

STA 482 BELLCRANK SUPPORT FITTING FORMER REPAIR – Refer to Figure 4, Sheet 2 thru Sheet 4 – continued

Table 6. Former, Sta 534 - continued

INDEX NO.	NOMENCLATURE	ORIGINAL MATERIAL	REPAIR MATERIAL	WORK PACKAGE
4	Stiffener	AND10136-1401 7075-T6	0.071 4130	0088 00
5	Angle	ALCOA 9484 7075-T6	0.100 4130	0088 00
6	Cap	ALCOA 43774 7075-T6	0.100 4130	0088 00
7	Cap Strip	0.050 Cres Sheet	0.050 Cres Sheet	0087 00
8	Fitting	2014-T6	Note D	--
9	Doubler	0.071 7075-T6 Bare	0.050 7075-T6 Clad	0086 00
10	Cap	ALCOA 33495 7075-T6	0.080 4130	0088 00
11	Stiffener	0.063 7075-T6 Bare	0.080 4130	0087 00
12	Doubler	0.071 7075-T6 Bare	0.050 7075-T6 Clad	0086 00
13	Cap	ALCOA 34774 7075-T6	0.100 4130	0088 00
14	Angle	AND10134-1006 7075-T6	0.100 4130	0088 00
15	Fitting	2014-T6	Note C	--
16	Fitting	2014-T6	Note B	--
17	Bracket	0.05 301 Cres	0.050 301 Cres	0087 00
18	Cap	ALCOA 43774 7075-T6	0.100 4130	0088 00
19	Web	0.032 2024-T4 Clad	0.040 2024-T3 Clad	0086 00
20	Cap	ALCOA 22477 7075-T6	0.050 4130	0088 00
21	Web	0.032 2024-T4 Clad	0.040 2024-T3 Clad	0086 00
22	Bracket	0.050 2024-T4 Clad	0.050 2024-T3 Clad	0087 00
23	Angle	0.032 2024-T4 Clad	0.040 2024-T3 Clad	0087 00
24	Cap	ALCOA 43774 7075-T6	0.100 4130	0088 00
25	Angle	AND10134-1006 7075-T6	0.100 4130	0088 00
26	Stiffener	ALCOA 66017 7075-T6	0.100 4130	0088 00
27	Web	0.050 7075-T6 Bare	0.050 7075-T6 Clad	0086 00
28	Stiffener	ALCOA 9484 7075-T6	0.080 4130	0088 00
29	Cap	VS90312 7075-T6	0.100 4130	0088 00
30	Stiffener	ALCOA 9484 7075-T6	0.080 4130	0088 00
31	Angle	ALCOA 52735 7075-T6	4130	0088 00
32	Stiffener	ALCOA 9484 7075-T6	0.080 4130	0088 00
33	Reinforcement	0.080 7075-T6 Clad	0.090 7075-T6 Clad	0087 00
34	Stiffener	0.032 2024-T4 Clad	0.040 2024-T3 Clad	0088 00

NOTES

A. All dimensions are in inches.

B. Replace with new fitting 114S3825-13 and -17 (aft and fwd LH respectively) or -15 and -19 (aft and fwd RH respectively).

C. Replace with new fitting 114S3825-21 and -23 (aft and fwd LH respectively) or -22 and -24 (aft and fwd R/H respectively).

D. Replace with new fitting 114S3848-11 and -17 (aft and fwd LH respectively) or -13 and -15 (aft and fwd RH respectively).

STA 482 BELLCRANK SUPPORT FITTING FORMER REPAIR – Refer to Figure 4, Sheet 2 thru Sheet 4 – continued

NOTE

Refer to Table 7 for index number reference.

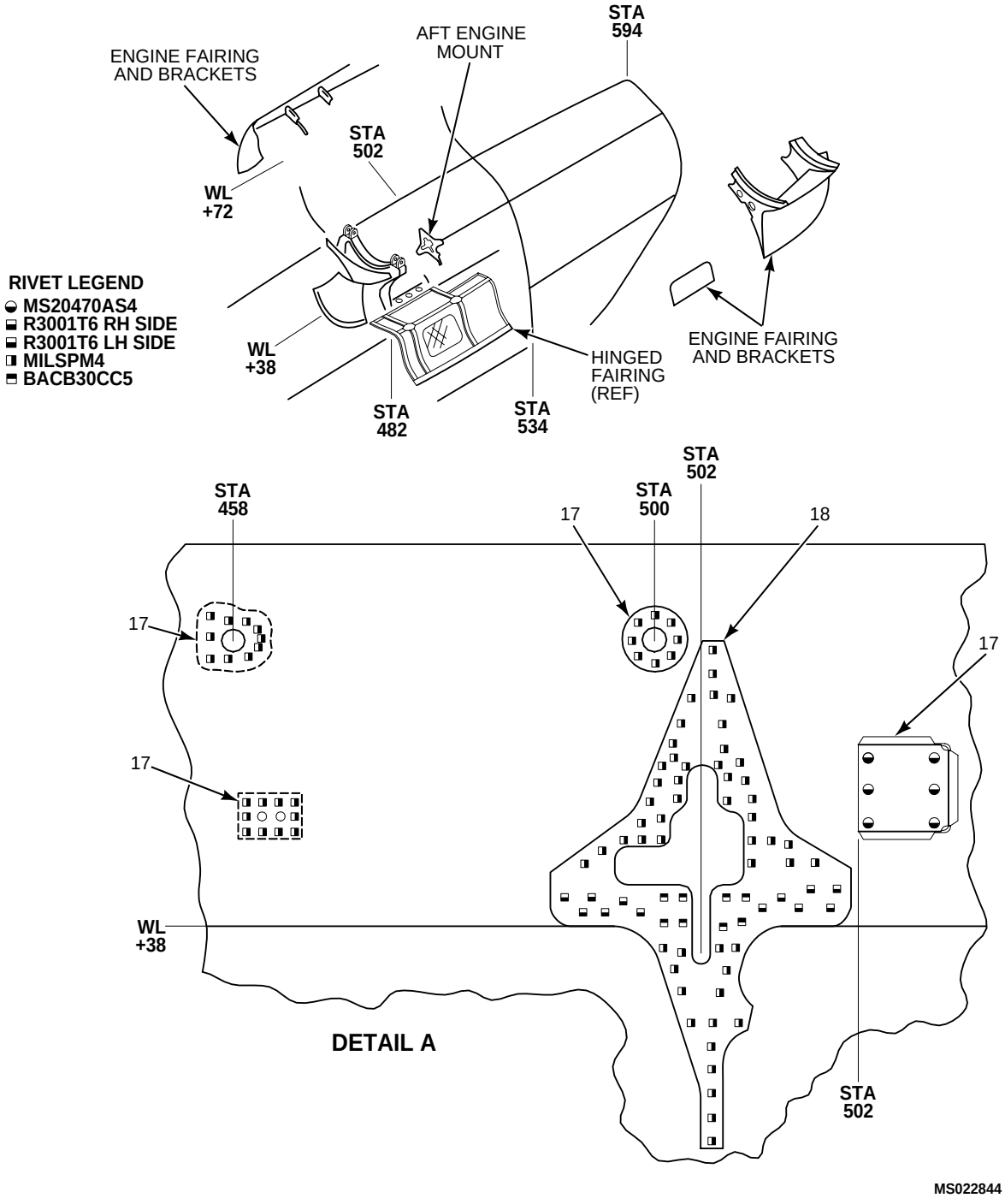
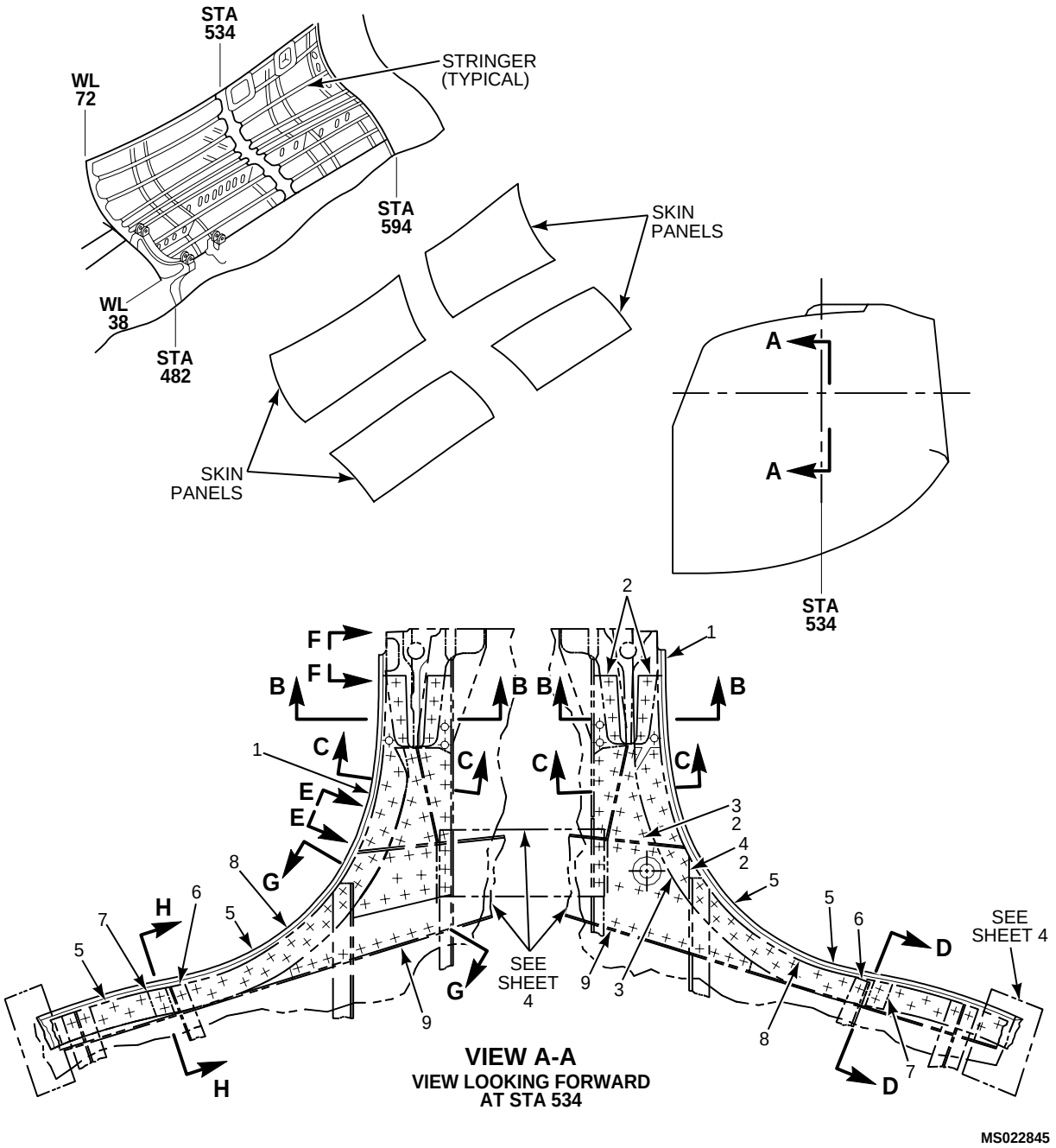


Figure 7. Former, Sta 534 Repair (Sheet 2 of 11)

STA 482 BELLCRANK SUPPORT FITTING FORMER REPAIR – Refer to Figure 4, Sheet 2 thru Sheet 4 – continued

NOTE

Refer to Table 7 for index number reference.



NOTE

Refer to Sheet 5 for rivet/fastener codes.

Figure 7. Former, Sta 534 Repair (Sheet 3 of 11)

STA 482 BELLCRANK SUPPORT FITTING FORMER REPAIR – Refer to Figure 4, Sheet 2 thru Sheet 4 – continued

NOTE

Refer to Table 7 for index number reference.

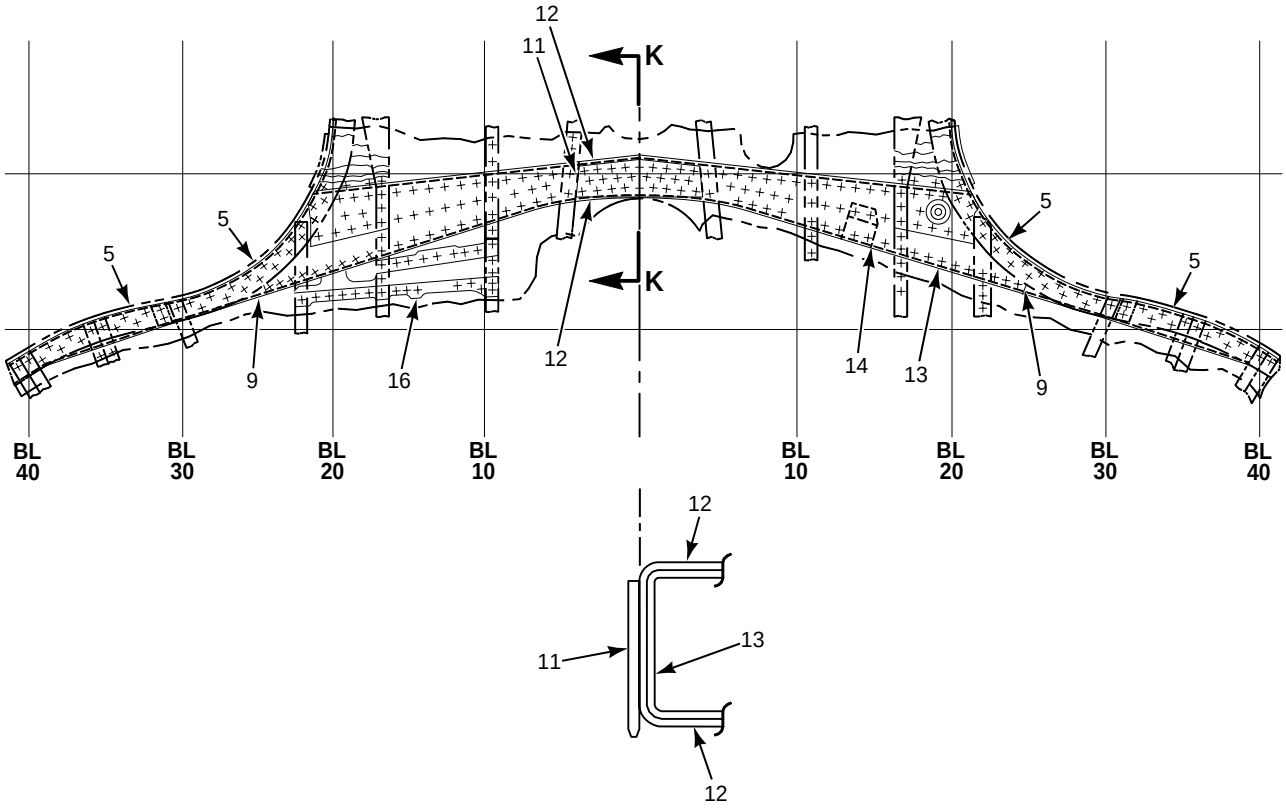
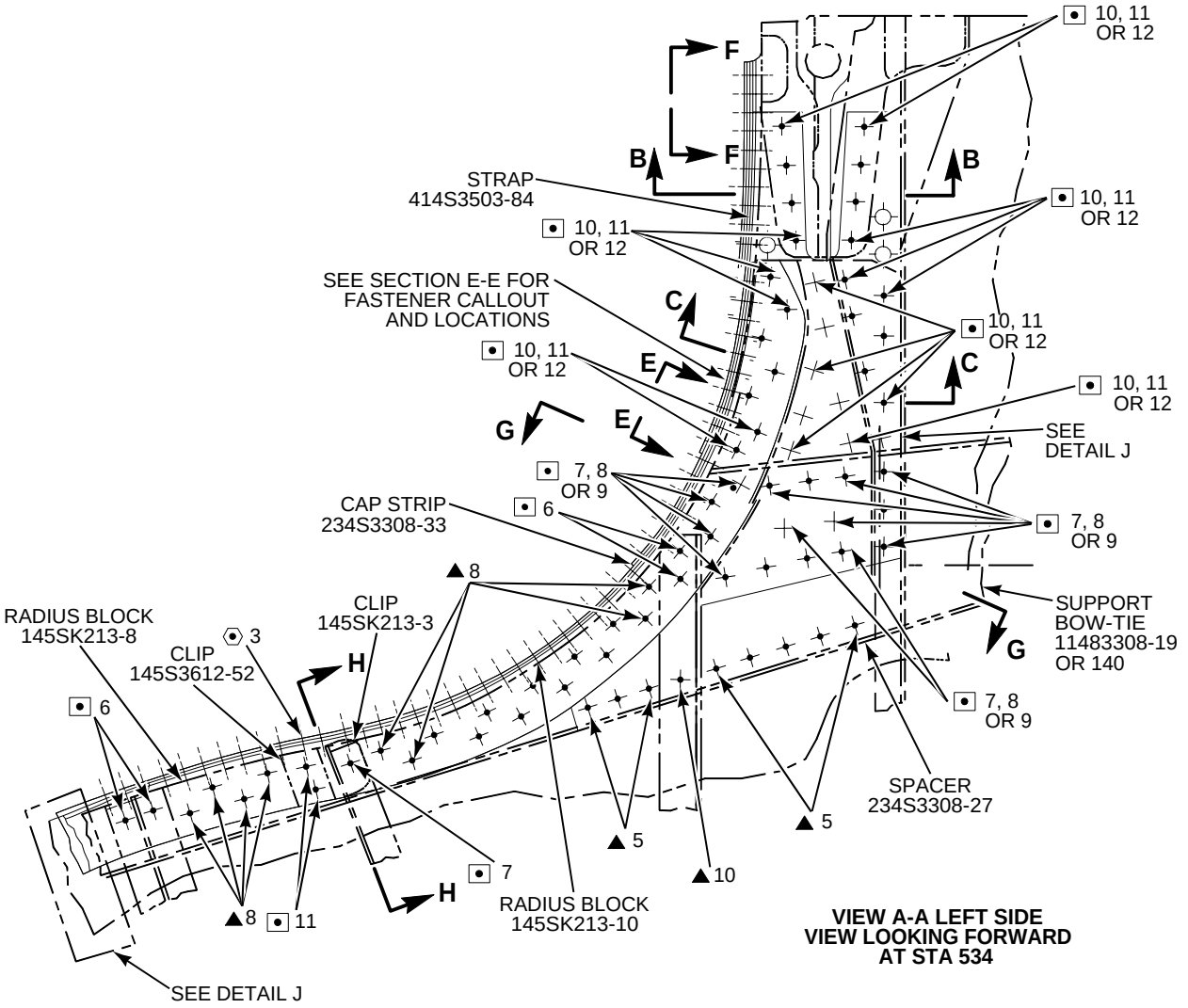


Figure 7. Former, Sta 534 Repair (Sheet 4 of 11)

STA 482 BELLCRANK SUPPORT FITTING FORMER REPAIR – Refer to Figure 4, Sheet 2 thru Sheet 4 – continued



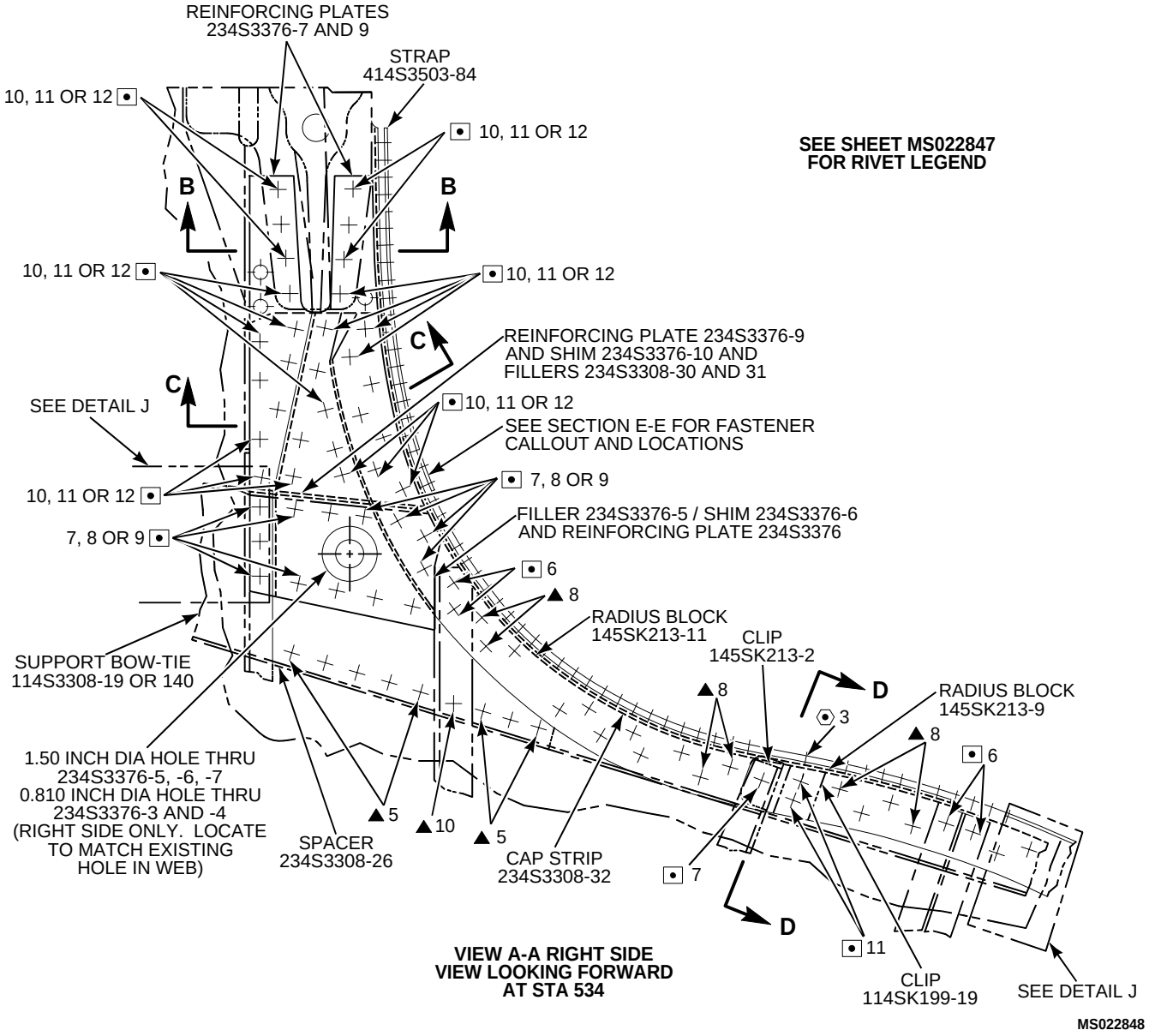
RIVET/FASTENER CODES

⊡	4	NAS1466-04 AND NAS1080-06	▲	4	BACR15DN6D4
⊡	6	NAS1466-06 AND NAS1080-06	▲	5	BACR15DN6D5
⊡	7	NAS1466-07 AND NAS1080-06	▲	6	BACR15DN6D6
⊡	8	NAS1466-08 AND NAS1080-06	▲	7	BACR15DN6D7
⊡	9	NAS1466-09 AND NAS1080-06	▲	8	BACR15DN6D8
⊡	10	NAS1466-10 AND NAS1080-06	▲	10	BACR15DN6D10
⊡	11	NAS1466-11 AND NAS1080-06	●	4	BACR15DN5AD4
⊡	12	NAS1466-12 AND NAS1080-06	●	6	BACR15DN5AD6
⊡	7, 8 OR 9	NAS1466-07, -08, OR -09 AND NAS1080-06	⊙	4	BACB30MB5-4 AND BACC30X5
⊡	10, 11 OR 12	NAS1466-10, -11, OR -12 AND NAS1080-06	⊙	6	BACB30MB5-6 AND BACC30X5
			⊙	8	BACB30MB5-8 AND BACC30X5
△	4	M7885/4-5-4	⊙	3	BACB30MB6-3 AND BACC30X5
△	6	M7885/4-5-6	⌖		LEAVE EXISTING RIVET INSTALLED
△	7	M7885/4-5-7	┼		NEW FASTENER LOCATION
			⌖		EXISTING FASTENER LOCATION

MS022847

Figure 7. Former, Sta 534 Repair (Sheet 5 of 11)

STA 482 BELLCRANK SUPPORT FITTING FORMER REPAIR – Refer to Figure 4, Sheet 2 thru Sheet 4 – continued

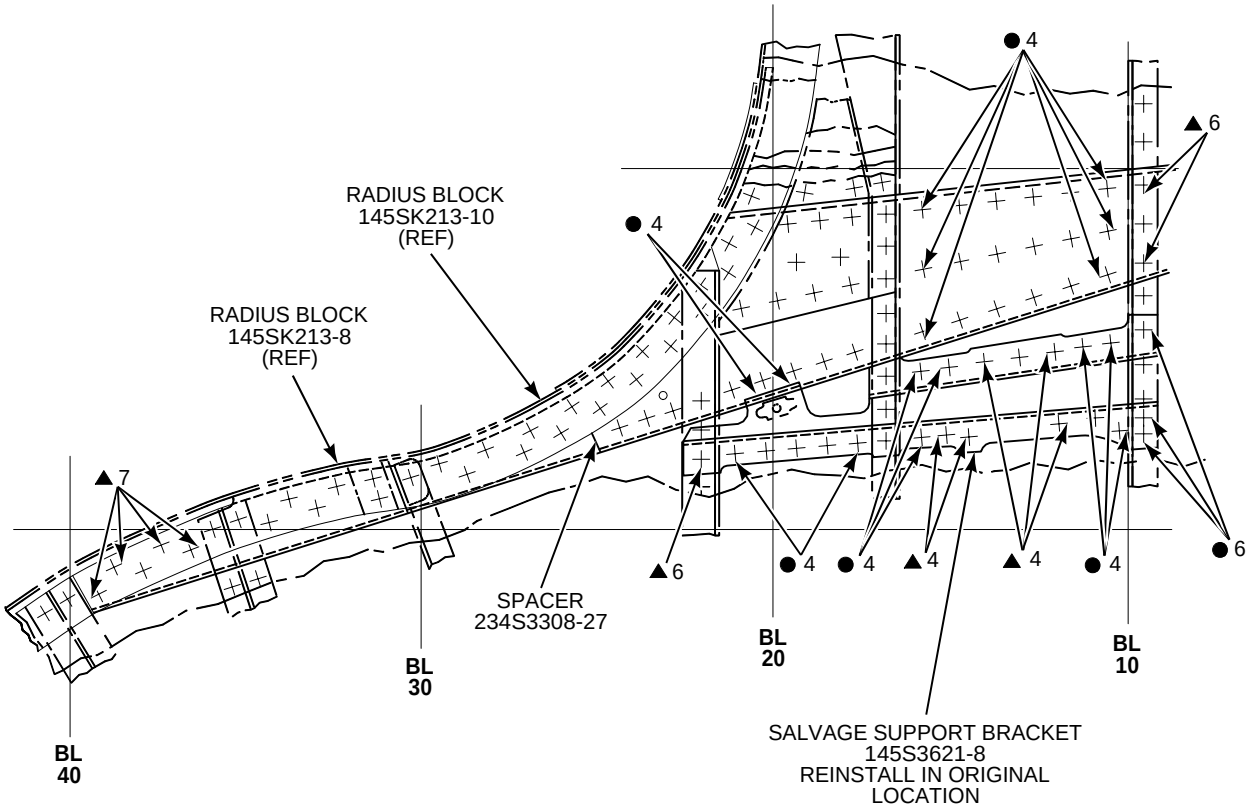


NOTE

Refer to Sheet 5 for rivet/fastener codes.

Figure 7. Former, Sta 534 Repair (Sheet 6 of 11)

STA 482 BELLCRANK SUPPORT FITTING FORMER REPAIR – Refer to Figure 4, Sheet 2 thru Sheet 4 – continued

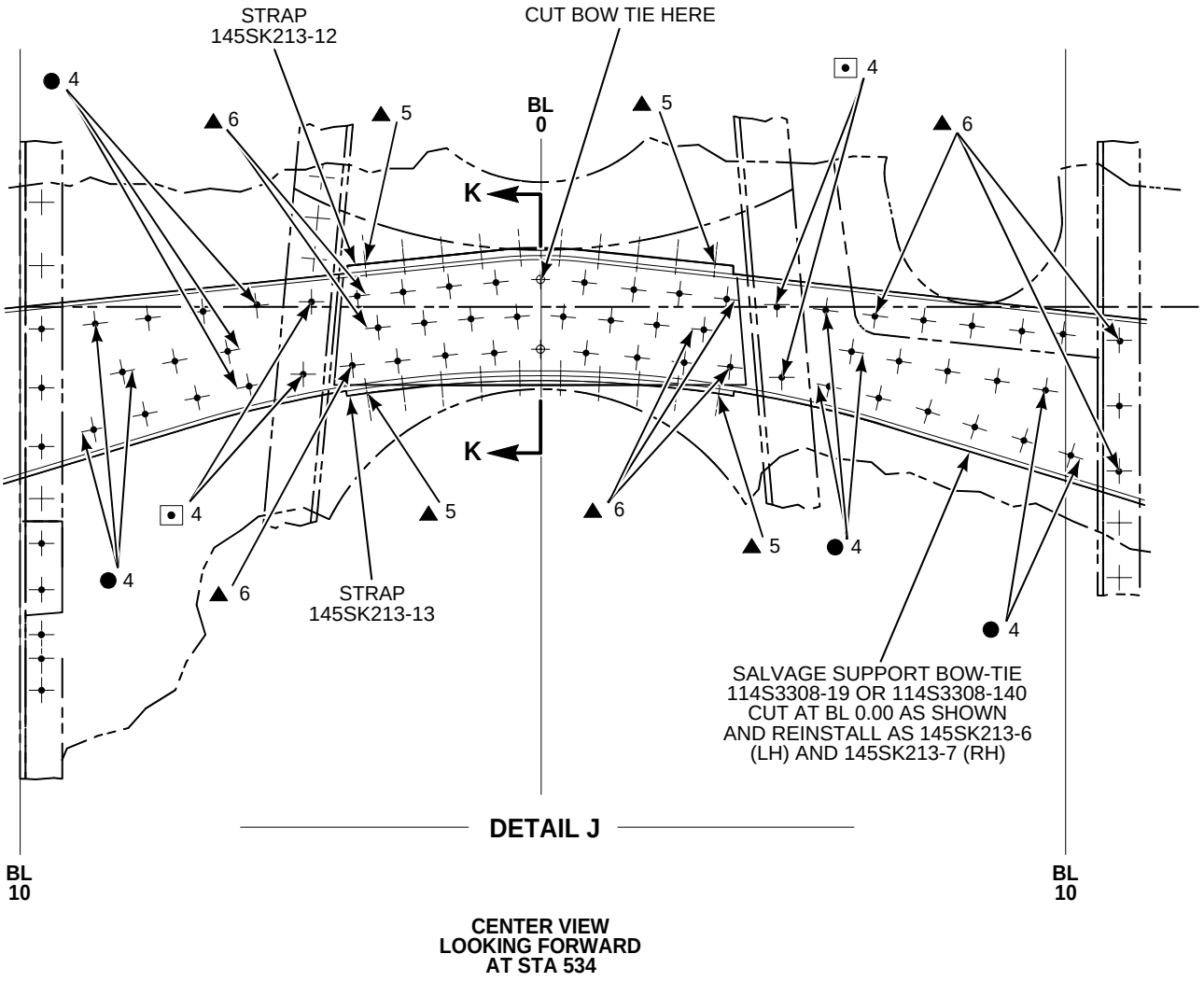


NOTE

Refer to Sheet 5 for rivet/fastener codes

Figure 7. Former, Sta 534 Repair (Sheet 7 of 11)

STA 482 BELLCRANK SUPPORT FITTING FORMER REPAIR – Refer to Figure 4, Sheet 2 thru Sheet 4 – continued

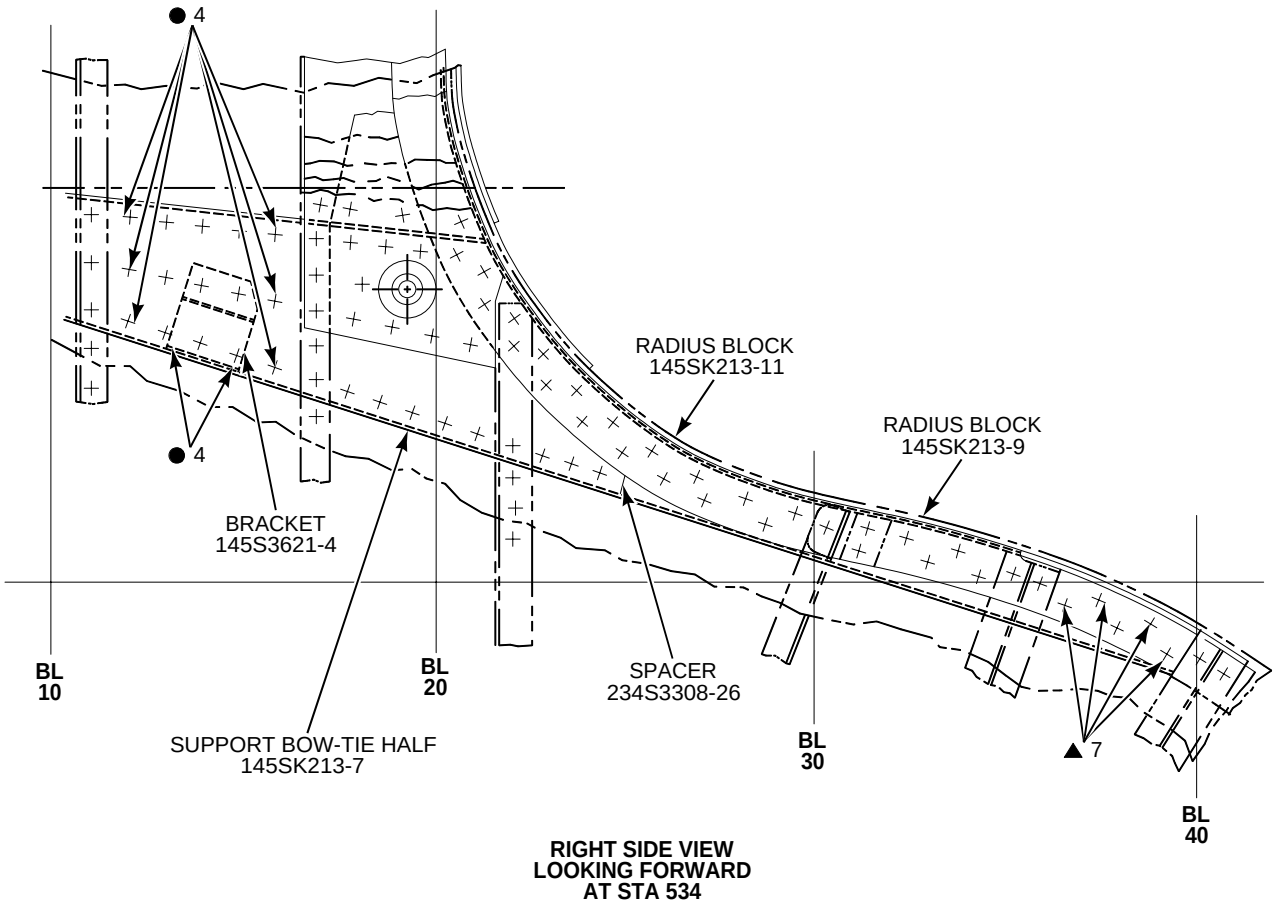


NOTE

Refer to Sheet 5 for rivet/fastener codes

Figure 7. Former, Sta 534 Repair (Sheet 8 of 11)

STA 482 BELLCRANK SUPPORT FITTING FORMER REPAIR – Refer to Figure 4, Sheet 2 thru Sheet 4 – continued



NOTE

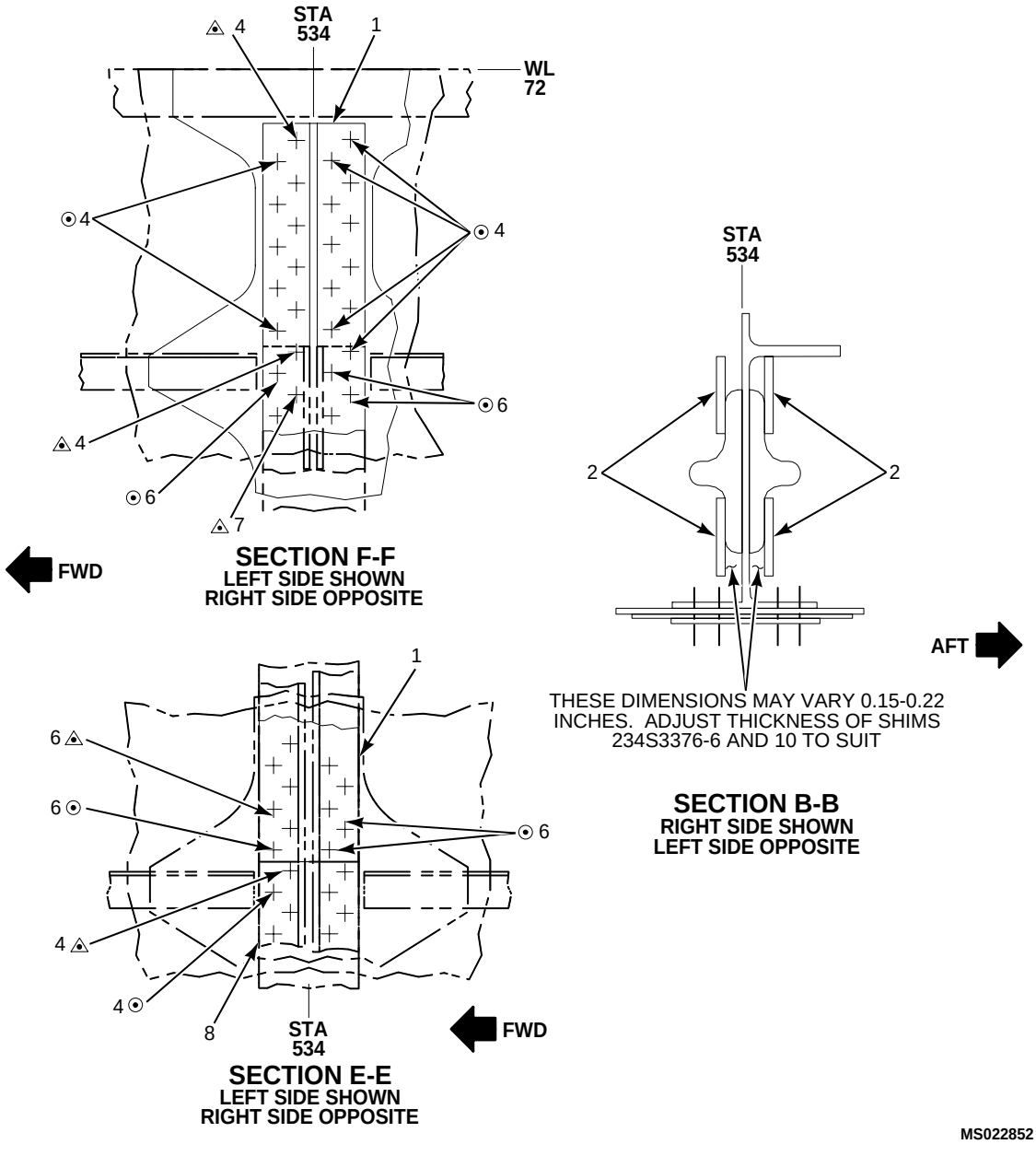
Refer to Sheet 5 for rivet/fastener codes

Figure 7. Former, Sta 534 Repair (Sheet 9 of 11)

STA 482 BELLCRANK SUPPORT FITTING FORMER REPAIR – Refer to Figure 4, Sheet 2 thru Sheet 4 – continued

NOTE

Refer to Table 7 for index number reference.



NOTES

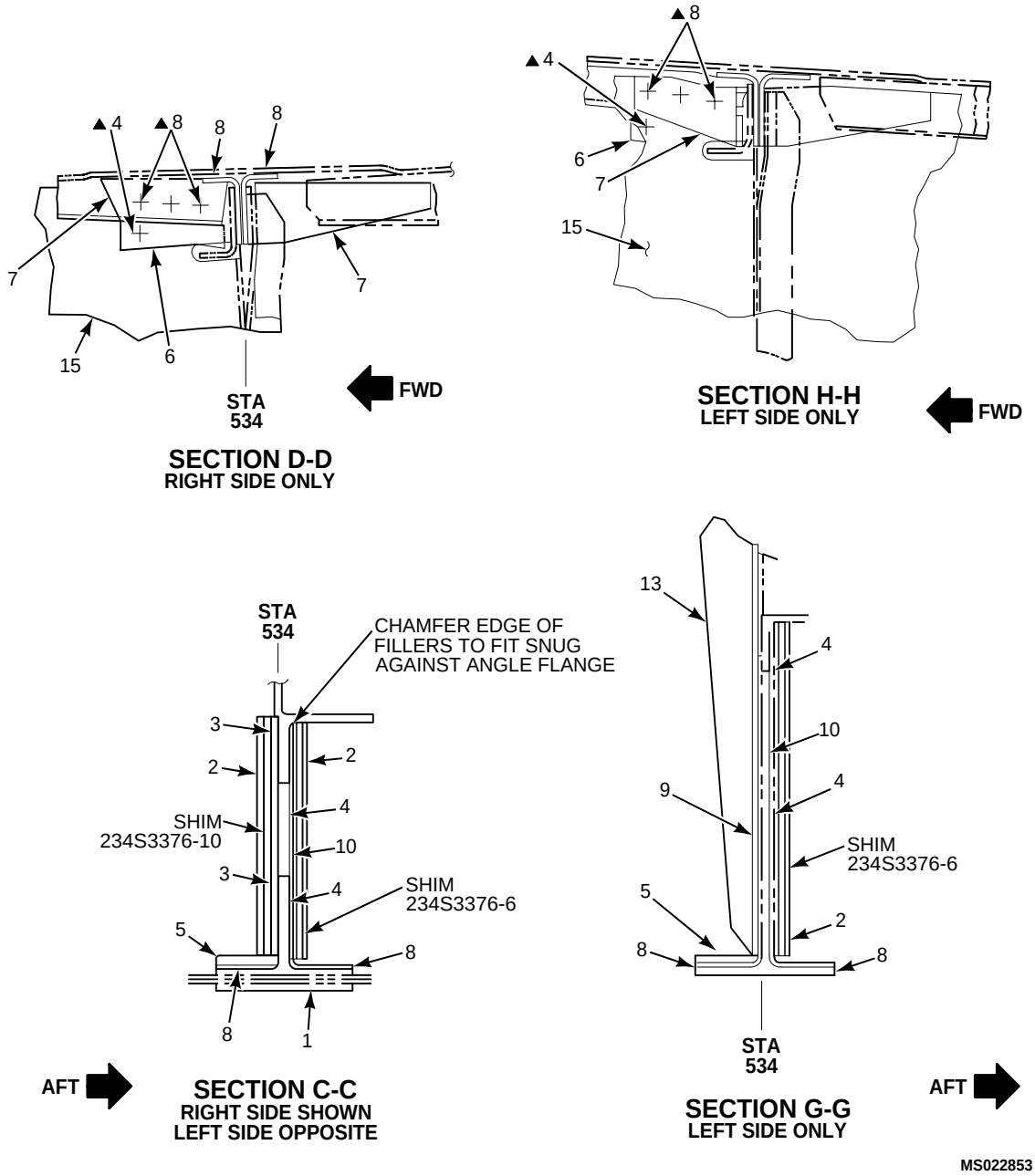
Refer to Sheet 5 for rivet/fastener codes.

Figure 7. Former, Sta 534 Repair (Sheet 10 of 11)

STA 482 BELLCRANK SUPPORT FITTING FORMER REPAIR – Refer to Figure 4, Sheet 2 thru Sheet 4 – continued

NOTE

Refer to Table 7 for index number reference.



NOTE

Refer to Sheet 5 for rivet/fastener codes.

Figure 7. Former, Sta 534 Repair (Sheet 11 of 11)

STA 482 BELLCRANK SUPPORT FITTING FORMER REPAIR – Refer to Figure 4, Sheet 2 thru Sheet 4 – continued

Table 7. Former, Sta 534 Repair

INDEX NO.	NOMENCLATURE	ORIGINAL MATERIAL	REPAIR MATERIAL	WORK PACKAGE
1	Strap	0.080 301 Cres	Note B	--
2	Reinforcement Plate	0.080 301 Cres 1/4H	Note B	--
3	Filler	0.050 2024-T3 Clad	Note B	--
4	Filler	0.050 2024-T3 Clad	Note B	--
5	Radius Block	0.125 2024-T3 Clad	Notes B & C	--
6	Clip	0.032 2024-T3 Clad	Notes B & C	--
7	Clip	ALCOA 31823 7075-T6	Note B	--
8	Cap Strip	0.050 Cres 17-7PH	Note B	--
9	Spacer	0.050 7075-T6 Clad	Note B	--
10	Filler	0.090 2024-T3 Clad	Note B	--
11	Splice	0.080 7075-T6 Clad	Notes B & C	--
12	Strap	0.080 7075-T6 Clad	Notes B & C	--
13	Support	0.063 7075-T6 Clad	Note B	--
14	Bracket	0.040 2024-T4 Clad	Note B	--
15	Web	0.032 2024-T3 Clad	0.040 2024-T3 Clad	0086 00
16	Support Bracket	0.050 2024-T4 Clad	Note B	--
17	Doubler	0.032 2024-T4 Clad	Note B	--
18	Finger Plate	0.032 2024-T4 Clad	Note B	--

NOTES

A. All dimensions are in inches.

B. Fabricate new part from same material as original.

C. Effective only for MFG Serial No. M3004 thru M3041, (81-23381 thru 81-23389), (82-23762 thru 82-23780), and (83- 24102 thru 83-24111). Refer to WP 0164 00.

STA 482 BELLCRANK SUPPORT FITTING FORMER REPAIR – Refer to Figure 4, Sheet 2 thru Sheet 4 – continued

NOTE

Refer to Table 8 for index number reference.

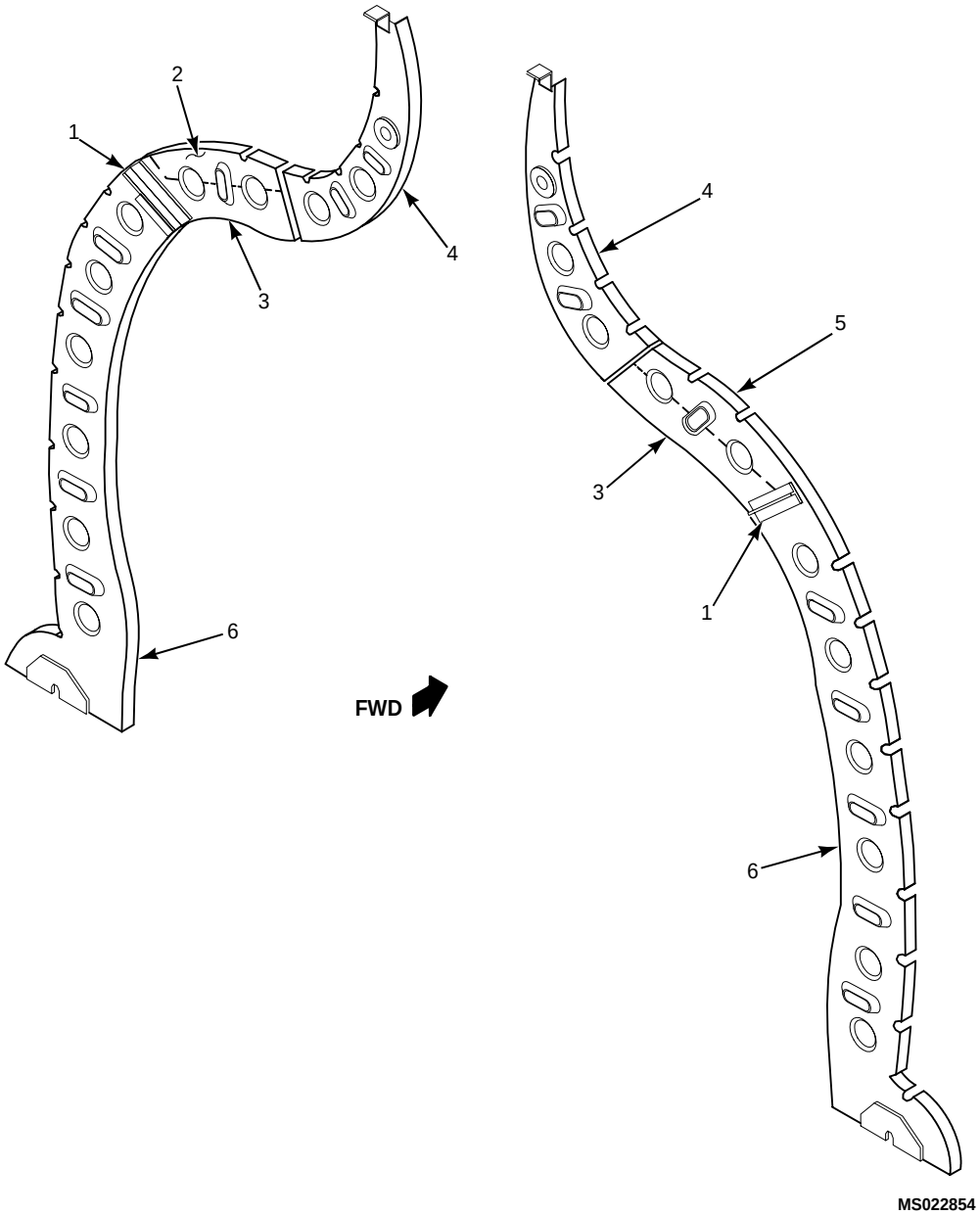


Figure 8. Former, Sta 555 (Sheet 1 of 2)

STA 482 BELLCRANK SUPPORT FITTING FORMER REPAIR – Refer to Figure 4, Sheet 2 thru Sheet 4 – continued

NOTE

Refer to Table 8 for index number reference.

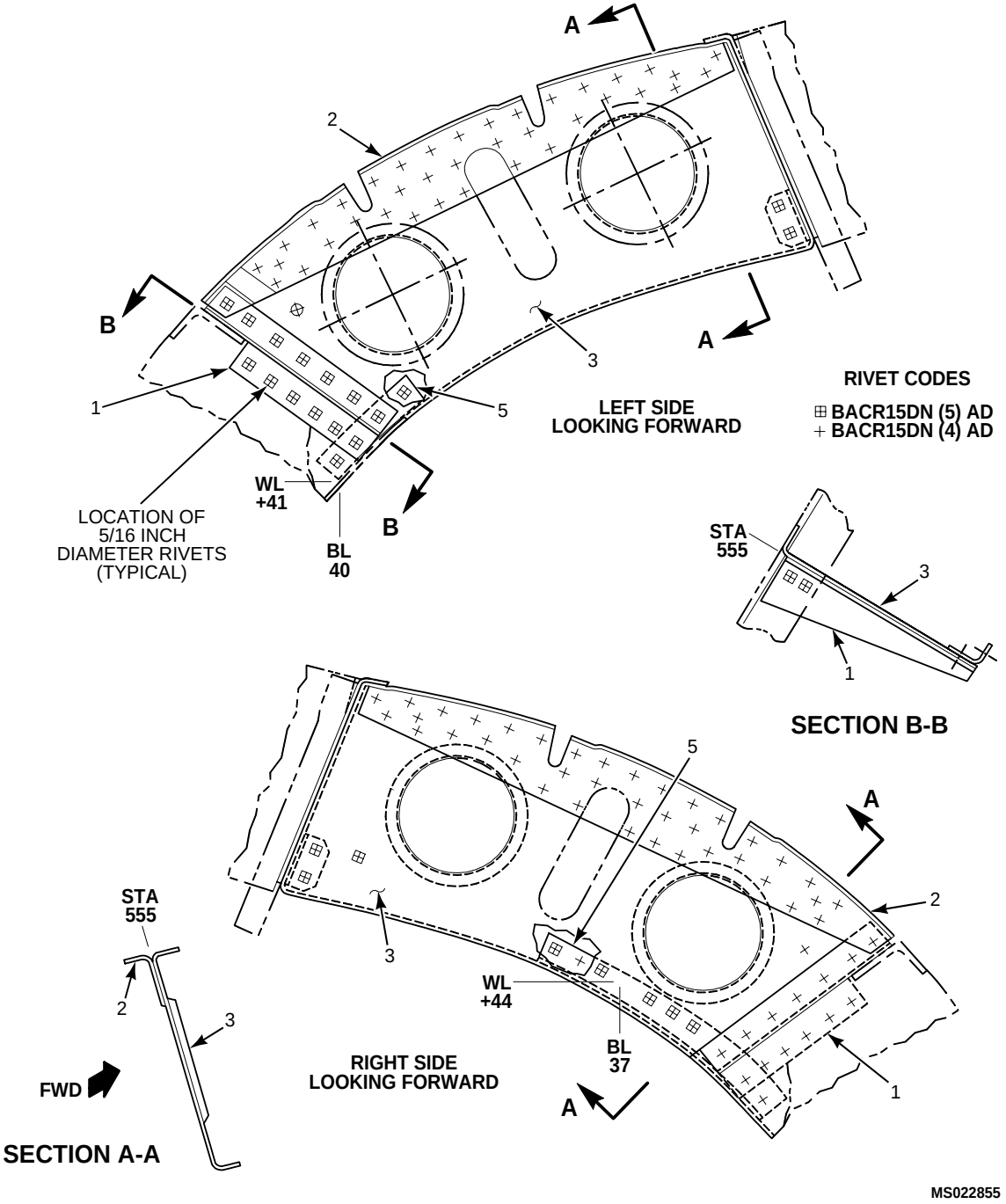


Figure 8. Former, Sta 555 (Sheet 2 of 2)

STA 482 BELLCRANK SUPPORT FITTING FORMER REPAIR – Refer to Figure 4, Sheet 2 thru Sheet 4 – continued

Table 8. Former, Sta 555

INDEX NO.	NOMENCLATURE	ORIGINAL MATERIAL	REPAIR MATERIAL	WORK PACKAGE
1	Fitting	AND10136-1601 7075-T6	0.100 4130	0088 00
2	Doubler	0.040 2024-T3 Clad	0.050 2024-T3 Clad	0086 00 Note B
3	Web	0.032 2024-T4 Clad	0.040 2024-T3 Clad	0086 00
4	Web	0.032 2024-T4 Clad 0.032 2024-T42 Clad	0.040 2024-T3 Clad	0086 00 --
5	Doubler	0.040 2024-T42 Clad	0.050 2024-T4 Clad	0086 00 Note B
6	Web	0.040 2024-T4 Clad	0.050 2024-T3 Clad	0086 00

NOTES

A. All dimensions are in inches.

B. This part is used on aircraft serial numbers 92-0367 and 92-0368.

NOTE

Refer to Table 9 for index number reference.

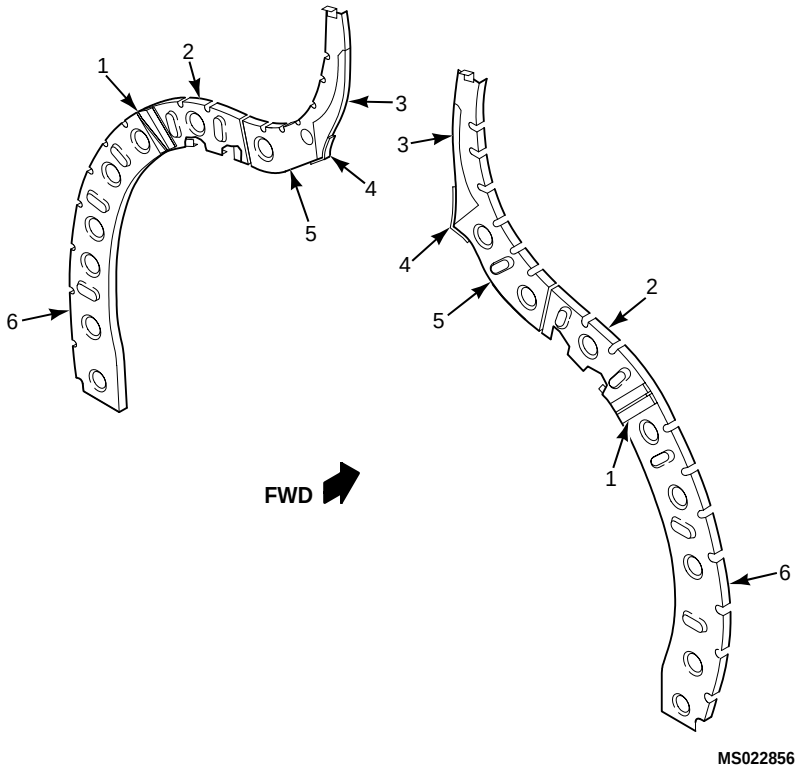


Figure 9. Former, Sta 575 (Sheet 1 of 2)

STA 482 BELLCRANK SUPPORT FITTING FORMER REPAIR – Refer to Figure 4, Sheet 2 thru Sheet 4 – continued

NOTE

Refer to Table 9 for index number reference.

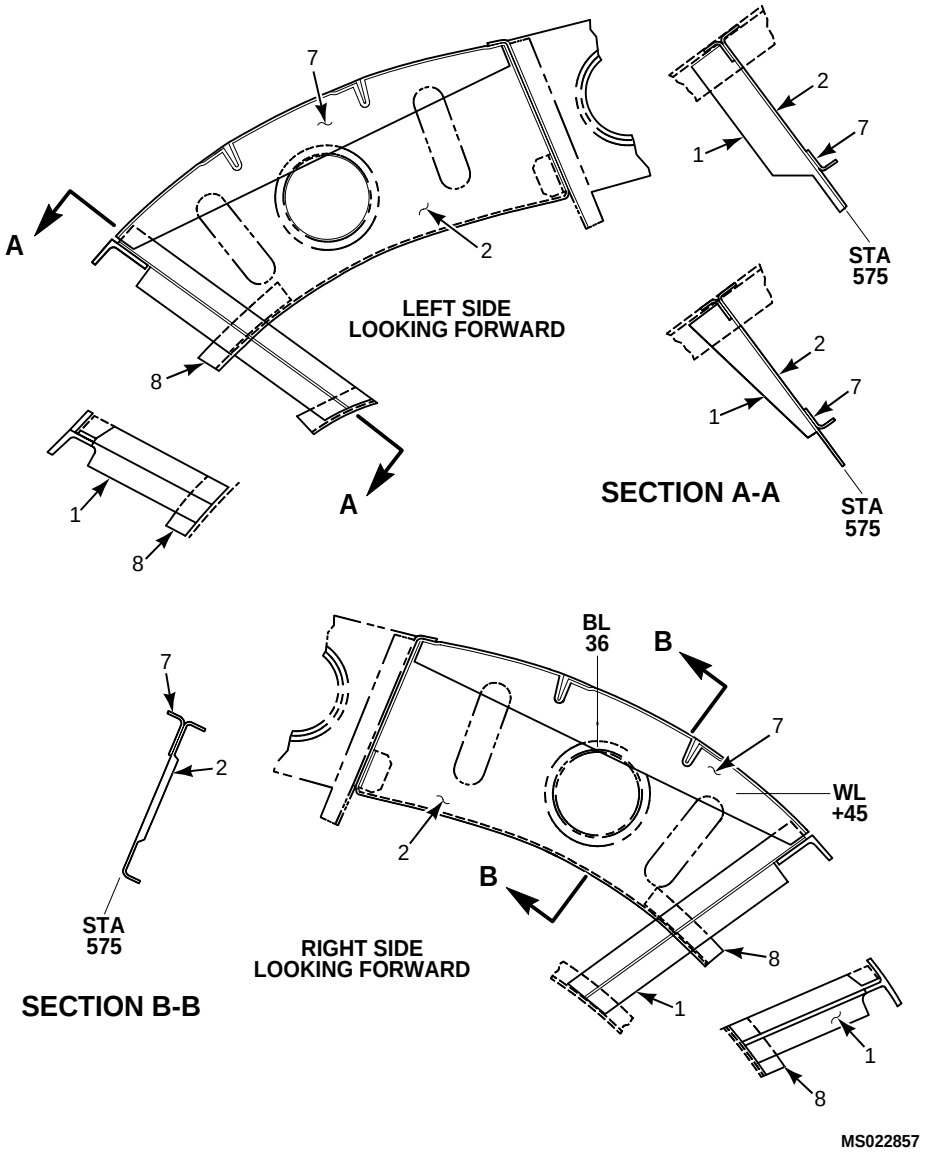


Figure 9. Former, Sta 575 (Sheet 2 of 2)

Table 9. Former, Sta 575

INDEX NO.	NOMENCLATURE	ORIGINAL MATERIAL	REPAIR MATERIAL	WORK PACKAGE
1	Tee	AND10136-1605 7075-T6	0.100 4130	0087 00
2	Web	0.032 2024-T3 Clad	0.040 2024-T3 Clad	0086 00

STA 482 BELLCRANK SUPPORT FITTING FORMER REPAIR – Refer to Figure 4, Sheet 2 thru Sheet 4 – continued

Table 9. Former, Sta 575 - continued

3	Channel	0.063 2024-T42 Bare 0.063 2024-T42 Bare	0.063 2024-T42 Clad 0.071 2024-T4 Clad	0086 00 Note B
4	Strap	0.050 2024-T3 Bare	0.050 2024-T3 Clad	0086 00
5	Former	0.040 2024-T42 Bare 0.040 2024-T42 Bare	0.040 2024-T3 Clad 0.050 2024-T4 Clad	0086 00 Note B
6	Web	0.040 2024-T3 Clad 0.040 2024-T42 Bare	0.050 2024-T3 Clad 0.050 2024-T42 Clad	0086 00 Note B
7	Doubler	0.040 2024-T3 Clad	0.050 2024-T3 Clad	0086 00
8	Angle	0.032 7075-T6 Clad	0.040 7075-T6 Clad	0088 00

NOTES

A. All dimensions are in inches.

B. This part is used on aircraft serial numbers 92-0367 and 92-0368.

STA 482 BELLCRANK SUPPORT FITTING FORMER REPAIR – Refer to Figure 4, Sheet 2 thru Sheet 4 – continued

NOTE

Refer to Table 10 for index number reference.

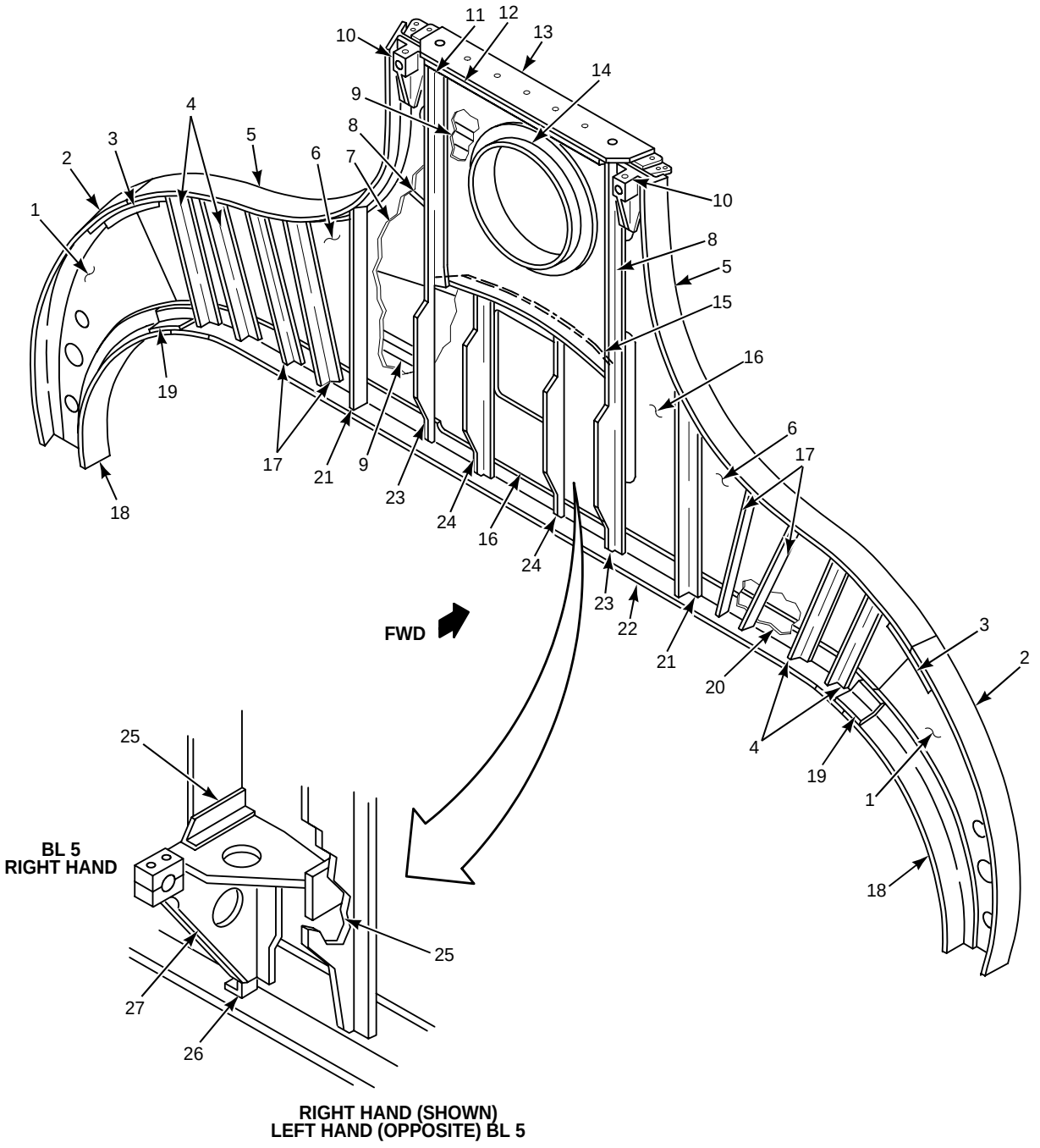


Figure 10. Former, Sta 594

STA 482 BELLCRANK SUPPORT FITTING FORMER REPAIR – Refer to Figure 4, Sheet 2 thru Sheet 4 – continued

Table 10. Former, Sta 594

INDEX NO.	NOMENCLATURE	ORIGINAL MATERIAL	REPAIR MATERIAL	WORK PACKAGE
1	Web	0.050 7075-T6 Clad	0.050 7075-T6 Clad	0086 00
2	Cap	VS90307 7075-T6	0.125 4130	0088 00
3	Angle	VS90307 7075-T6	0.125 4130	0088 00
4	Stiffener	AND10136-1401 7075-T6	Note D	0088 00
5	Cap	VS90311 7075	0.125 4130	0088 00
6	Web	0.063 7075-T6 Bare	0.063 7075-T6 Clad	0086 00
7	Channel	0.071 7075-T6 Bare	0.080 7075-T6 Clad	0088 00
8	Stiffener	0.080 7075-T6 Bare	0.090 7075-T6 Clad	0088 00
9	Stiffener	AND10133 0601 7075-T6	0.070 4130	0088 00
10	Fitting	2014-T6	Note B	--
11	Stiffener	0.080 2024-T3	0.080 2024-T3	0088 00
12	Cap	ALCOA 33495 7075-T6511	0.040 4130	0088 00
13	Cap Stiffener	0.040 7075-T6 Bare 0.080 2024-T42 Bare	0.050 7075-T6 Clad 0.090 2024-T42 Clad	0088 00 NOTE E
14	Doubler Seal Assy	0.063 2024-T3 BAC1521-204	0.063 2024-T3 Clad Note D	0086 00 NOTE E
15	Stiffener Doubler	0.090 7075-0 0.063 2024-T3	0.090 7075-0 0.071 2024-T3	0086 00 0088 00
16	Web	0.040 7075-T6 Clad	0.050 7075-T6	0086 00
17	Stiffener	ALCOA 15820 7075-T6	0.080 4130	0088 00
18	Cap	AND10136-2006 7075-T6	0.125 4130	0088 00
19	Angle	AND10134-1205 7075-T6	0.100 4130	0088 00
20	Strap	0.063 Cres 17-7 PH	0.063 Cres 17-7 PH	0088 00
21	Stiffener	AND10134 1006 7075-T6	0.100 4130	0088 00
22	Cap	VS90312 7075-T6	0.125 4130	0088 00
23	Channel Channel	0.090 Cres MIL-S-25043, 17-7 PH Cond A 0.050 CRES 17-7 PH	0.090 Cres MIL-S-25043 17-7 PH Cond A 0.050 Cres 17-7 PH	0087 00 NOTE E
24	Channel	0.090 Cres MIL-S-25043, 17-7 PH Cond A	0.090 Cres MIL-S-25043, 17-7 PH Cond A	0087 00

STA 482 BELLCRANK SUPPORT FITTING FORMER REPAIR – Refer to Figure 4, Sheet 2 thru Sheet 4 – continued

Table 10. Former, Sta 594 - continued

25	Tee	ALCOA 43774 7075-T6511	ALCOA 43774 7075 T6511	0088 00
26	Tee	ALCOA 52361 7075-T6511	ALCOA 52361 7075-T6511	0088 00
27	Support		Note C	--

NOTES

A. All dimensions are in inches.
B. Replace with a new fitting, 114S3848-33 LH, -35 RH.
C. Replace with a new support, 145S3805-8 LH, -9 RH.
D. For damage other than minor, replace with section of original material.
E. This part is used on aircraft serial numbers 92-0367 and 92-0368.

END OF WORK PACKAGE

DEPOT MAINTENANCE WORK REQUIREMENT
CH-47D HELICOPTER
AFT SECTION BEAM REPAIRS

INITIAL SETUP

Test Equipment:
As Required

Tools and Special Tools:
T-182
114G1411-1

Material/Parts:
Primer, Epoxy (Item 140, WP 0157 00)

Personnel Required:
As Required

References:
TM 1-1500-204-23 Series
TM 55-1520-240-23 Series
WP 0081 00
WP 0086 00
WP 0087 00
WP 0088 00
WP 0157 00

Equipment Conditions:
As Required

Special Environmental Condition:
As Required

SCOPE

This work package covers repair procedures for the following: Refer to Figure 1.

1. Aft Crown Beams
2. Aft Drive Shaft Support Beam
3. Aft Fuselage Structure and Web
4. Combining Transmission Support
5. Combining Transmission Drip Pan

SCOPE - continued

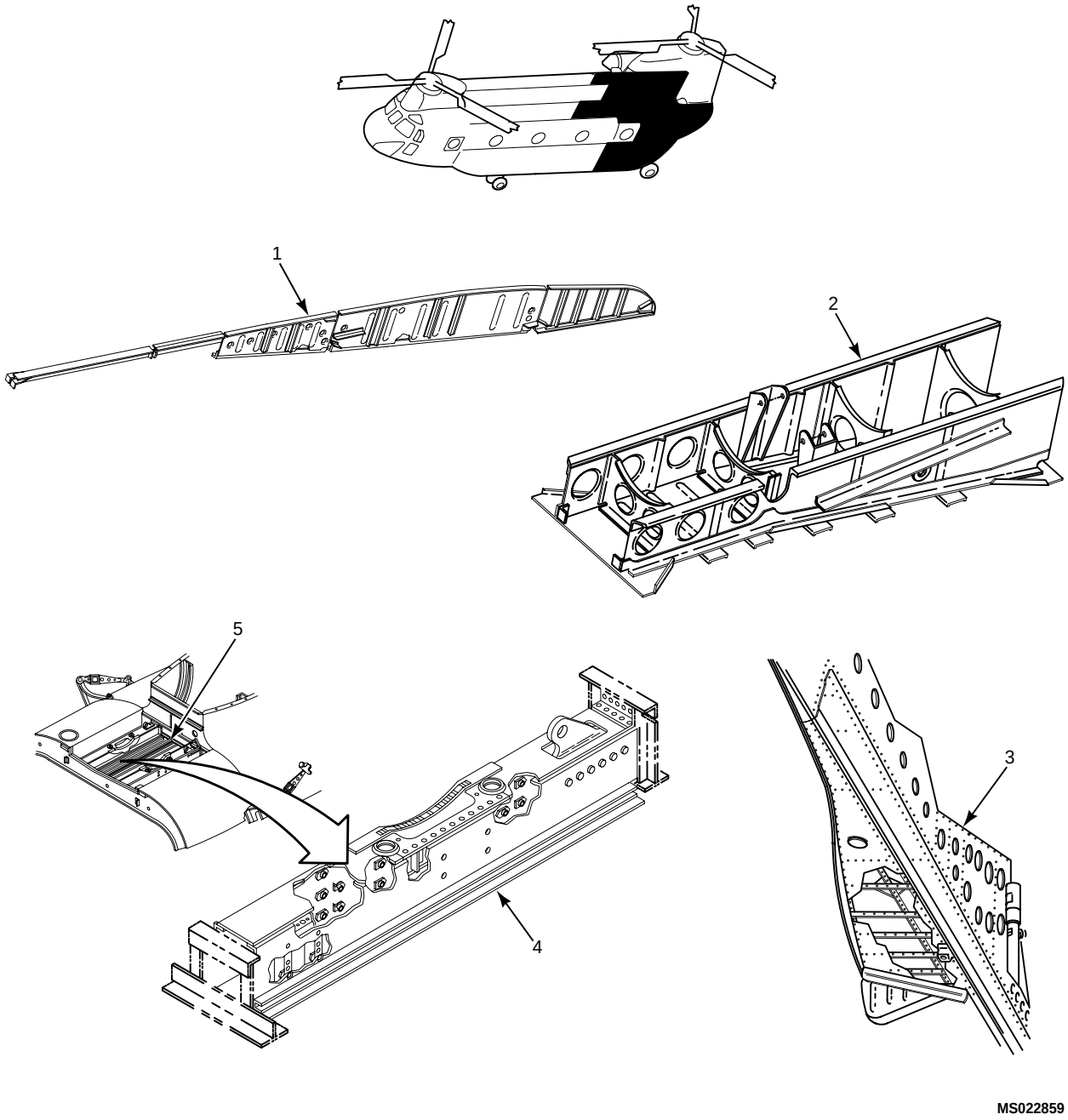


Figure 1. Aft Section Beams

REPAIR

NOTE

Refer to Table 1 for index number reference.

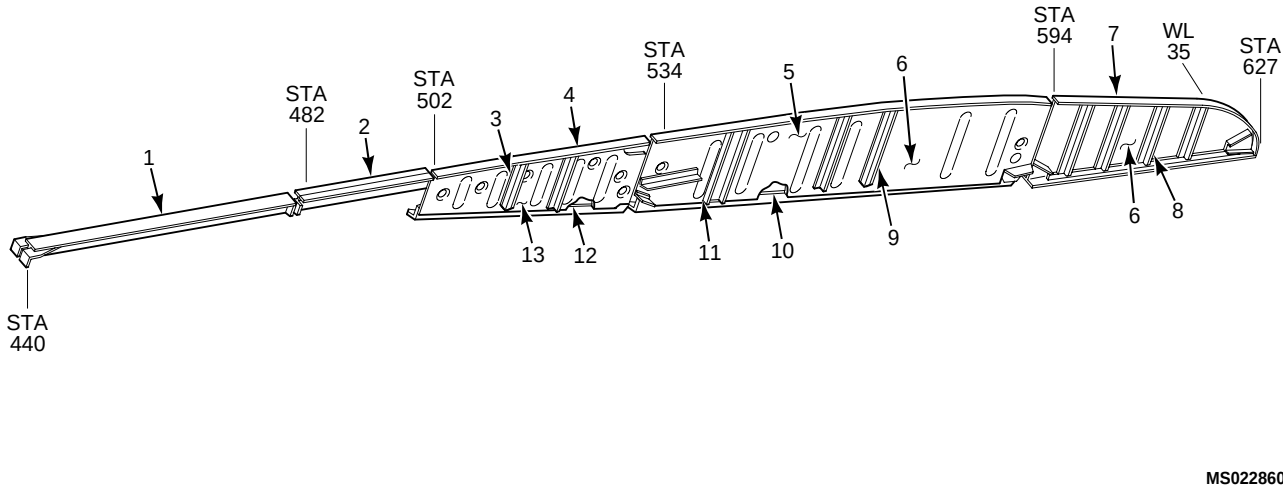


Figure 2. Aft Crown Beam Sta 440 to Sta 627

Table 1. Aft Crown Beam Sta 440 to Sta 627

INDEX NO.	NOMENCLATURE	ORIGINAL MATERIAL	REPAIR MATERIAL	WORK PACKAGE
1	Stringer	AND10136-1406 7075-T6	0.100 4130	0088 00
2	Angle	0.050 7075-T6 Bare	0.063 7075-T6 Clad	0087 00
3	Angle	0.032 2024-T4 Clad	0.040 2024-T3 Clad	0087 00
4	Cap	0.050 7075-T6 Bare	0.063 70750T6 Clad	0087 00
5	Cap	0.050 7075-T6 Bare	0.063 7075-T6 Clad	0087 00
6	Web	0.020 2024-T4 Clad	0.025 2024-T3 Clad	0086 00
7	Cap	0.040 7075-T6 Bare	0.050 7075-T6 Clad	0087 00
8	Stiffener	VS70504-2 7075-T6	0.032 7075-T6 Clad	0088 00
9	Angle	0.040 2024-T4 Clad	0.050 2024-T3 Clad	0087 00
10	Cap	0.032 7075-T6 Bare	0.040 7075-T6 Clad	0087 00
11	Angle	Note C	Note D	0088 00
12	Cap	0.032 7075-T6 Bare	0.040 7075-T6 Clad	0087 00
13	Web	0.020 2024-T4 Clad	0.025 2024-T3 Clad	0086 00

NOTES

A. All dimensions are in inches.

B. The LH beam is shown. Repair materials are the same for the RH beam.

C. Stiffener and clip are made from 0.040-inch 2024-T3 CLAD.

D. Install angle and clip with hex drive fasteners where angle attaches to inboard cap member (2 places) and where clip attaches to angle at outboard end (2 places).

REPAIR - continued

NOTE

Refer to Table 2 for index number reference.

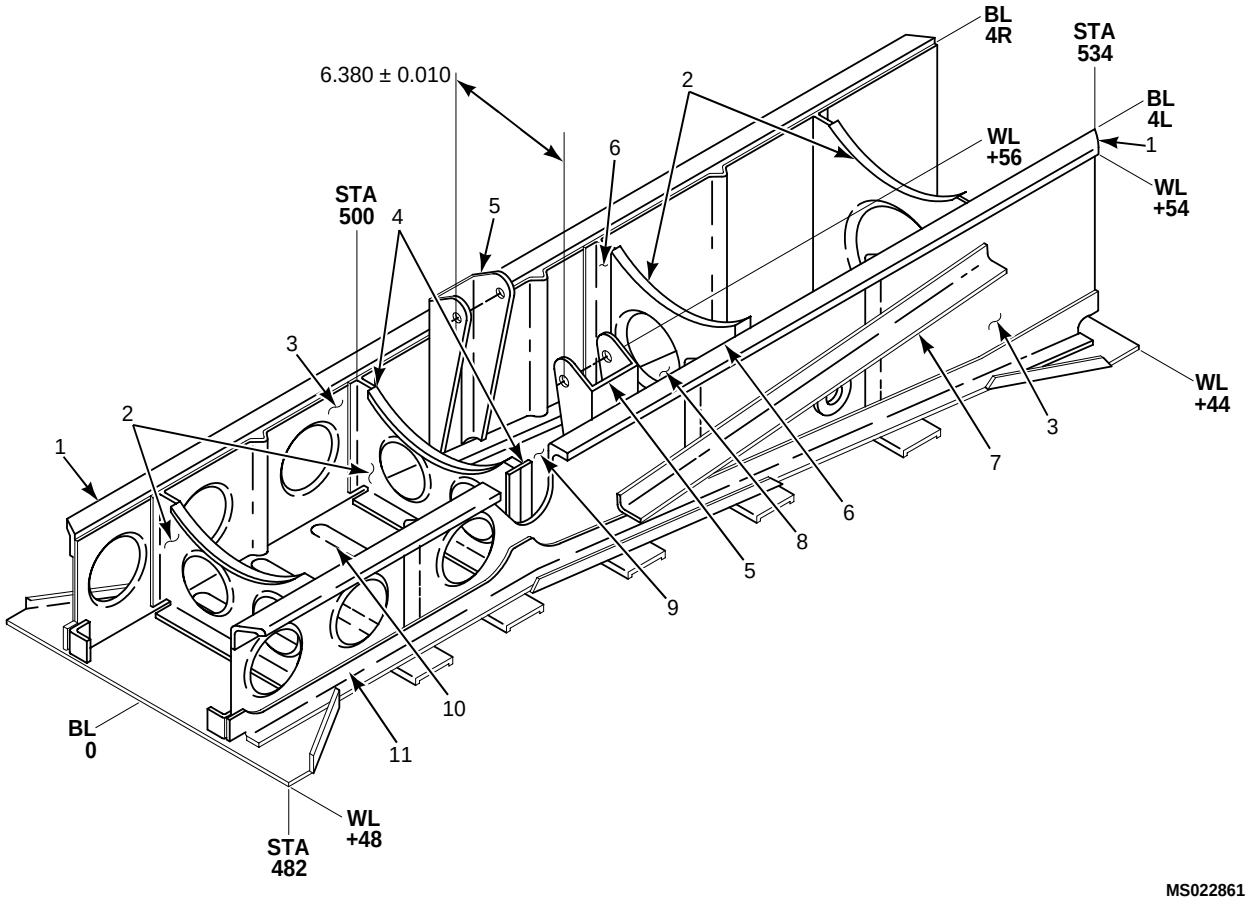


Figure 3. Aft Drive Shaft Support Beam (Sheet 1 of 2)

Table 2. Aft Drive Shaft Support Beam

INDEX NO.	NOMENCLATURE	ORIGINAL MATERIAL	REPAIR MATERIAL	WORK PACKAGE
1	Cap	AND10135-1004 7075-T6	0.090 4130	0088 00
2	Gusset	0.025 2024-T4 Clad	0.032 2024-T4 Clad	0087 00
3	Web	0.025 2024-T4 Clad	0.032 2024-T4 Clad	0086 00
4	Angle	ALCOA 13637 7075-T6	Note B	--
5	Bracket	0.090 2024-T4 Clad	Note C	--
6	Angle	ALCOA 13637 7075-T6	Note B	--
7	Angle	ALCOA 52735 7075-T6	Note E	--
8	Web	0.025 2024-T4 Clad	0.032 2024-T4 Clad	0086 00

REPAIR – continued

Table 2. Aft Drive Shaft Support Beam - continued

INDEX NO.	NOMENCLATURE	ORIGINAL MATERIAL	REPAIR MATERIAL	WORK PACKAGE
9	Door	0.040 AZ31B-H24 Mag	Note D	--
10	Web	0.025 2024-T4 Clad	0.032 2024-T4 Clad	0086 00
11	Cap	AND10134-1401 7075-T6	0.100 4130	0088 00

NOTES

A. All dimensions are in inches.

B. Replace with new angle fabricated from AND10133-1201 extrusion. Refer to Figure 3, Sheet 2 of 2.

C. Replace with new bracket, 114S3365-37 LH or -38 RH.

D. Replace with new door, 114S3365-5.

E. Replace or manufacture from original material.

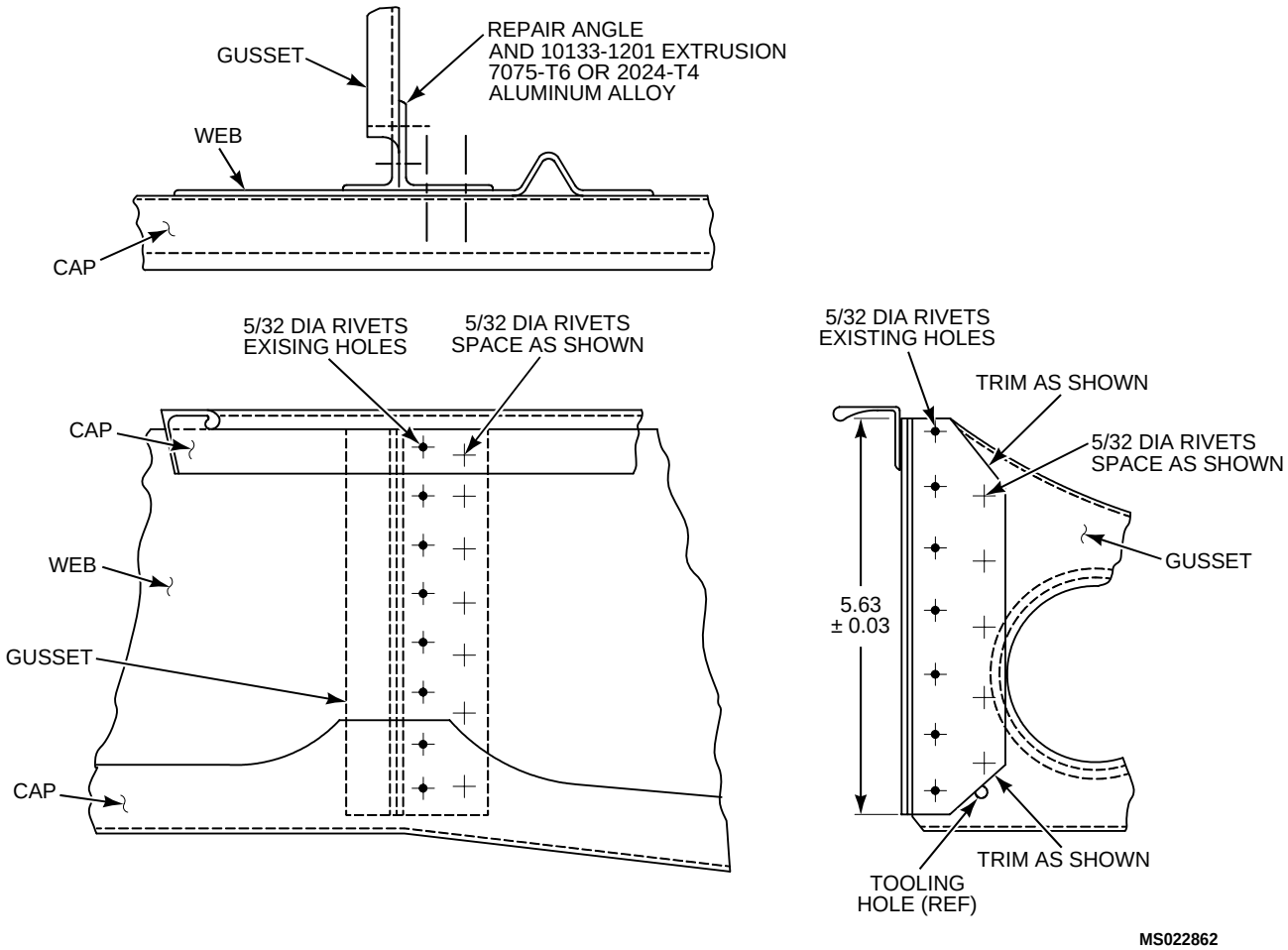


Figure 3. Aft Drive Shaft Support Beam (Sheet 2 of 2)

REPAIR OF CRACKS IN THE VERTICAL WEB OF THE AFT DRIVE SHAFT SUPPORT BEAM, STA 500
Refer to Figure 3, Sheet 2 of 2

1. Remove existing angle adjacent to damaged area left or right, as applicable. This angle is made of 0.050-inch thick 7075-T6 aluminum alloy extrusion. The angle is attached to the web and gusset with a single row of MS20470AD4 rivets through each leg.

2. Fabricate a new angle from an aluminum extrusion 0.063-inch thick AND10133-1201 7075-T6 or 2024T4. Cut extrusion to 5.65-inches long; trim corners of leg that will be attached to gusset.

WARNING

EPOXY PRIMER

3. Prime new extrusion with two coats of epoxy primer (Item 140, WP 0157 00).

4. Install new angle using 5/32-inch diameter rivets, use existing rivet holes where possible.

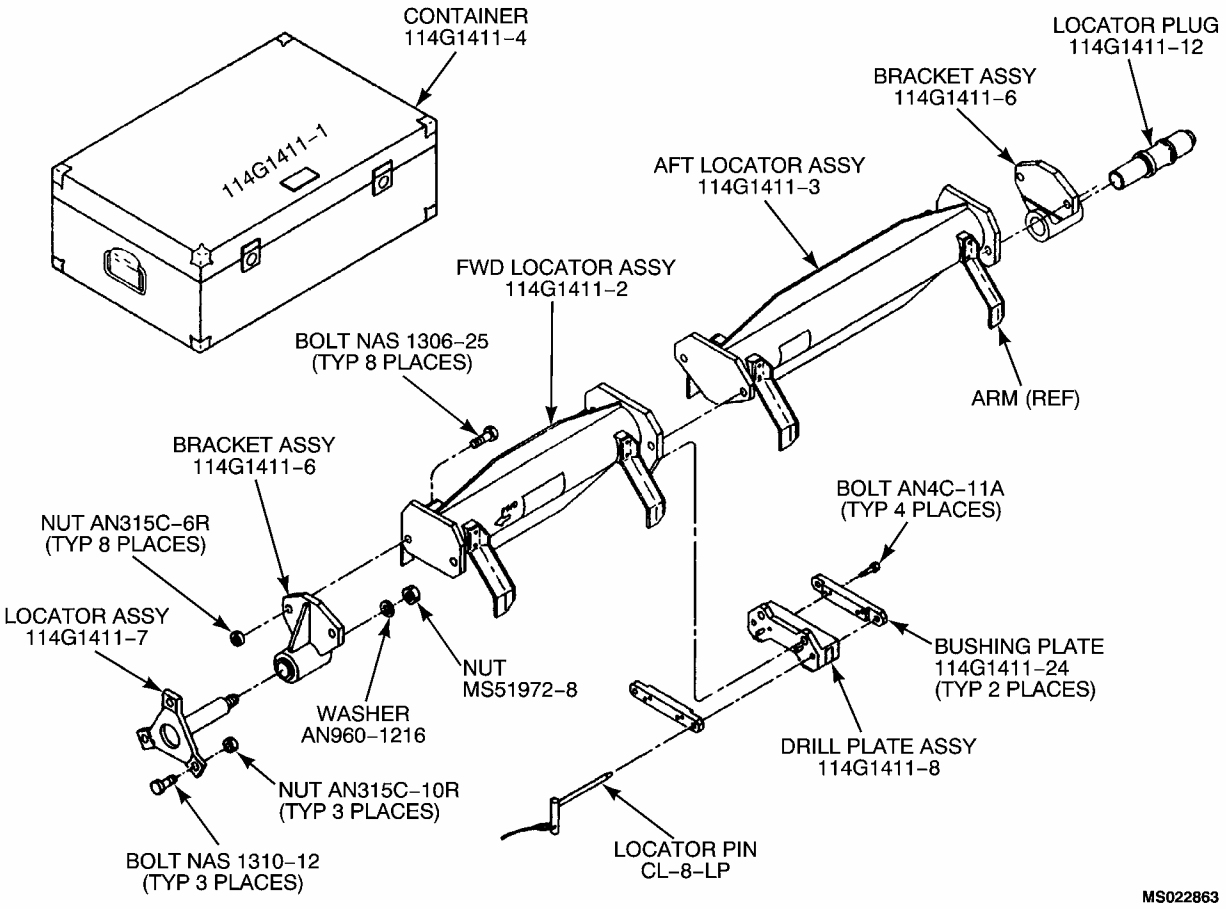


Figure 4. Aft Drive Shaft Support Bracket Locating Fixture, 114G1411-1 (Sheet 1 of 2)

REPAIR - continued

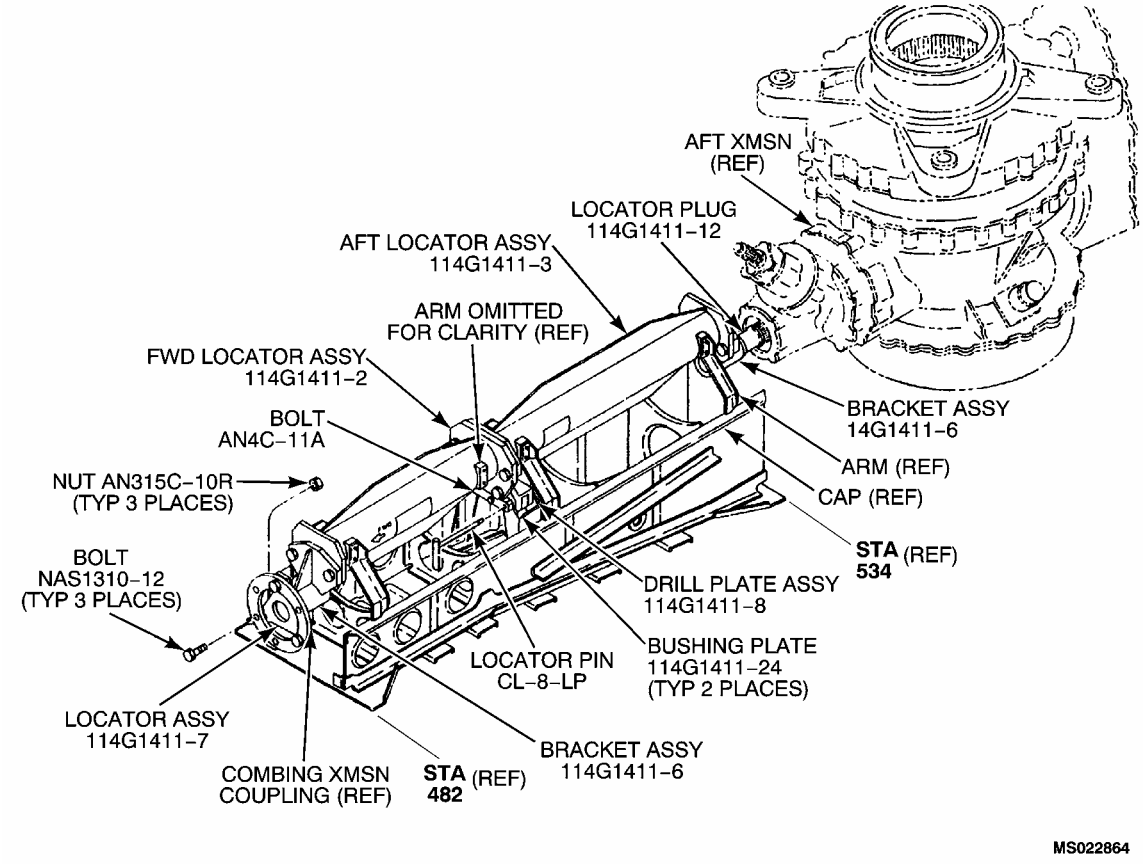


Figure 4. Aft Drive Shaft Support Locating Fixture, 114G1411-1 (Sheet 2 of 2)

INSTALLATION OF AFT DRIVE SHAFT SUPPORT BRACKET LOCATING FIXTURE, 114G1411-1

CAUTION

Fixture, PN 114G1411-1, was issued for use on the CH-47C helicopter. Fixture must be modified by Corpus Christi Army Depot, per Drawing # 90SDSCC-D-0087, so that it is compatible with the CH-47D. Contact Contracting Officer for guidance.

The fixture may be used to locate and drill mounting holes in aft drive shaft support brackets. Operations may be performed on two brackets at the same time. Specific procedures for application of the locating fixture will vary with each repair.

Install locating fixture as follows:

1. Gain access to aft drive shaft cover and support beam. Remove driveshafts if installed.

2. Place forward locator assembly, 114G1411-2, on cabin floor. Position it beneath support beam.

INSTALLATION OF AFT DRIVE SHAFT SUPPORT BRACKET LOCATING FIXTURE, 114G1411-1 - continued

CAUTION

Improper hardware will reduce accuracy of locating fixture and may cause excessive misalignment of helicopter drive system.

3. Attach bracket assembly, 114G1411-6, to forward locator assembly. Use two bolts, NAS 1306-25, and two nuts, AN315C-6R.

4. Slide locator assembly, 114G1411-7, into bracket assembly, 114G1411-6. Retain locator using a washer AN960-1216 and a new nut MS51972-8.

5. Install two bushing plates, 114G1411-24, on the drill plate assembly, 114G1411-8. Use two bolts, AN4C-11A for each bushing plate.

6. Place forward locator assembly, 114G1411-2, and attached parts on aft drive shaft support beam. Position locator assembly as far forward as possible. Temporarily rest locator assembly arm on support beam caps.

7. Place aft locator assembly, 114G1411-3, on cabin floor.

8. Attach bracket assembly, 114G1411-6, to aft locator assembly. Use two bolts, NAS 1306-25, and two nuts, AN315C-6R.

9. Slide locator plug, 114G1411-12, into bracket assembly, 114G1411-6.

10. Place aft locator assembly, 114G1411-3, and attached parts on aft drive shaft support beam. Temporarily rest locator assembly arms on support beam caps.

11. Attach forward locator assembly to aft locator assembly. Use two bolts, NAS 1306-25, and two nuts, AN315C-6R.

12. Attach locator assembly, 114G1411-7, to combining transmission coupling. Use three bolts, NAS 1310-12, and three nuts, AN315C-10R.

13. Slide locator plug, 114G1411-12, into aft transmission splines.

14. Install locator pin, CL-8-LP, through an undamaged bracket, if applicable.

15. Check to make sure proper fasteners have been installed and tightened.

USE OF AFT DRIVE SHAFT SUPPORT BRACKET LOCATING FIXTURE, 114G1411-1

CAUTION

Improper torque on transmission attachment hardware may result in excessive misalignment of helicopter drive system.

NOTE

The aft drive shaft support bracket locating fixture, 114G1411-1, will not locate the bracket on station line. Station location must be obtained from existing bracket.

1. Make sure combining and aft transmissions are properly installed. Refer to TM 55-1520-240-23.
2. Check installation of combining transmission coupling. Refer to TM 55-1520-240-23.
3. Make sure locating fixture is securely assembled and installed.
4. Drill a 0.3125-inch plus 0.0070 or minus 0.0010-inch diameter hole through bracket or brackets.
5. Carefully disassemble and remove locating fixture. Removal is reverse of installation except as follows:
   a. It is not necessary to remove the following parts from forward locator assembly, 114G1411-2.
      (1) Bushing plates, 114G1411-24.
      (2) Drill plate assembly, 114G1411-8.
      (3) Bracket assembly, 114G1411-6.
      (4) Locator assembly, 114G1411-7.
   b. It is not necessary to remove the following parts from aft locator assembly.
      (1) Bracket assembly, 114G1411-6.
      (2) Locator plug, 114G1411-12.
   c. Carefully clean components of locating fixture prior to placing them in container, 114G1410-4. Foreign matter remaining on matting surfaces of fixture may cause interference and misalignment on reassembly.

WARNING

EPOXY PRIMER

6. Deburr holes drilled in bracket and apply epoxy primer (Item 140, WP 0157 00).

USE OF AFT DRIVE SHAFT SUPPORT BRACKET LOCATING FIXTURE, 114G1411-1 - continued

NOTE

Refer to Table 3 for index number reference.

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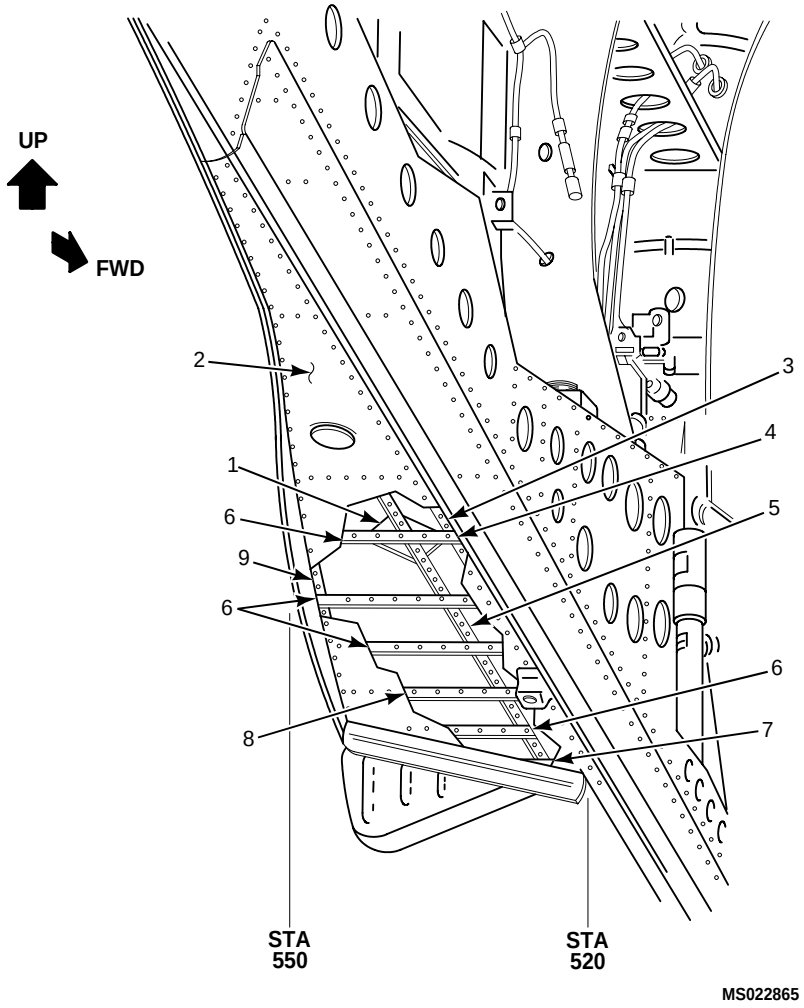


Figure 5. Aft Fuselage Structure and Web, Sta 534 to Sta 555 (Sheet 1 of 2)

Table 3. Aft Fuselage Structure and Web, Sta 534 to Sta 555

INDEX NO.	NOMENCLATURE	ORIGINAL MATERIAL	REPAIR MATERIAL	WORK PACKAGE
1	Doubler	0.050 7075-T6 Bare	0.050 7075-T6 Clad	Note B
2	Web	0.025 7075-T6 Bare	0.032 7075-T6 Clad	0086 00
3	Cap Angle	ALCOA 71369 0.072 7075-T6	0.080 4130	0088 00
4	Clip	0.050 7075-T6 Clad	0.050 7075-T6 Clad	Note B
5	Cap Angle	VS90116 7075-T6	0.125 4130	0088 00
6	Stiffener	0.040 7075-T6 Bare	0.050 7075-T6 Clad	0088 00

USE OF AFT DRIVE SHAFT SUPPORT BRACKET LOCATING FIXTURE, 114G1411-1 - continued

Table 3. Aft Fuselage Structure and Web, Sta 534 to Sta 555 – continued

INDEX NO.	NOMENCLATURE	ORIGINAL MATERIAL	REPAIR MATERIAL	WORK PACKAGE
7	Clip	0.050 2024-T4 Clad	0.050 2024-T4 Clad	Note B
8	Clip	0.063 7075-T6 Bare	0.063 7075-T6 Clad	Note B
9	Cap, Outboard	0.063 7075-T6 Bare	0.071 7075-T6 Clad	0088 00

NOTES

A. All dimensions are in inches.

B. Replace or manufacture from original material.

NOTE

Refer to Table 4 for index number reference.

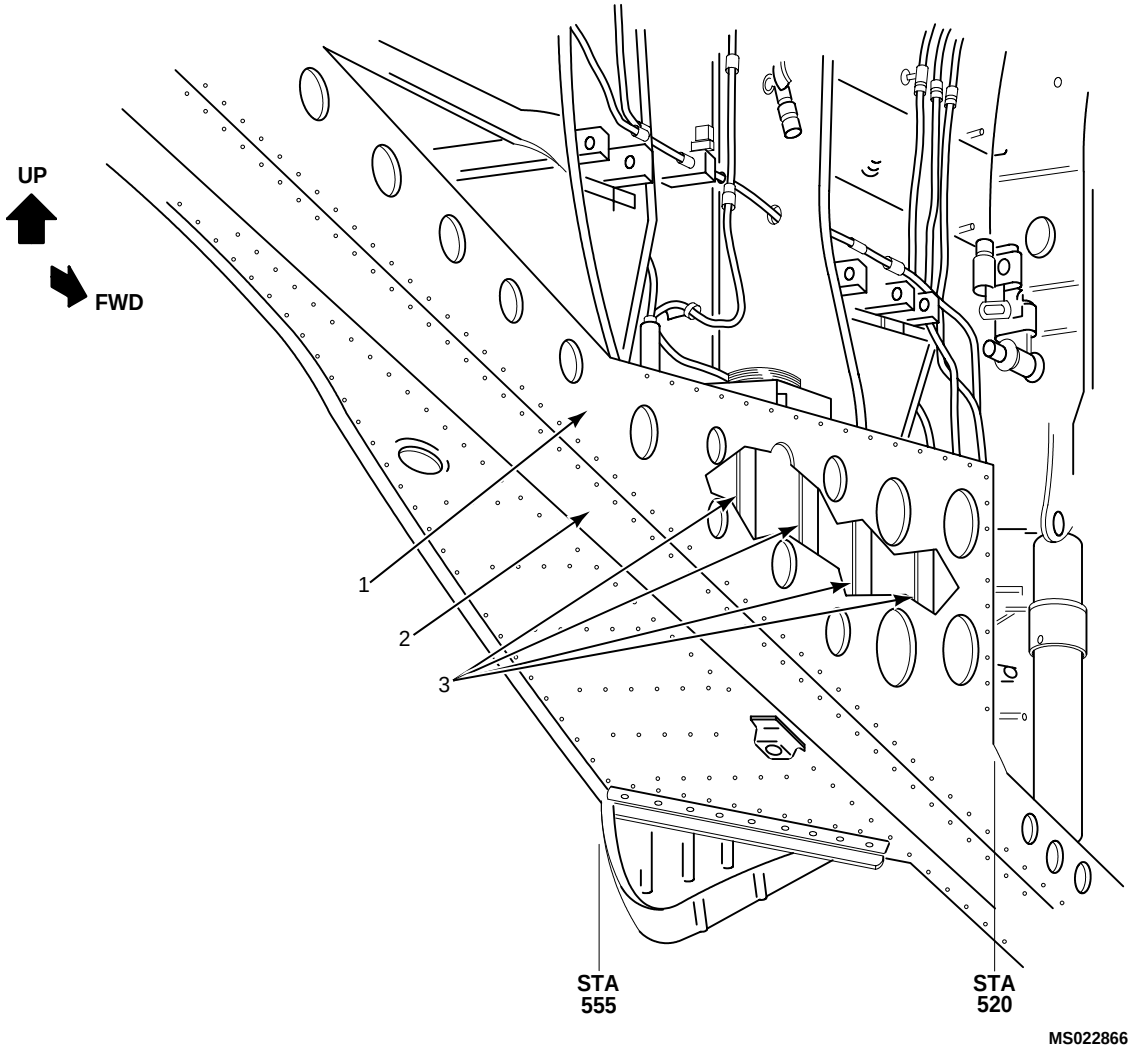


Figure 5. Aft Fuselage Structure and Web Sta, 534 to Sta 555 (Sheet 2 of 2)

USE OF AFT DRIVE SHAFT SUPPORT BRACKET LOCATING FIXTURE, 114G1411-1 - continued

Table 4. Aft Fuselage Structure and Web, Sta 534 to Sta 555

INDEX NO.	NOMENCLATURE	ORIGINAL MATERIAL	REPAIR MATERIAL	WORK PACKAGE
1	Web	0.032 2024-T4 Clad	0.040 2024-T4 Clad	0086 00
2	Hanger	0.025 2024-T4 Clad	0.025 2024-T4 Clad	Note B
3	Stiffener	ALCOA 22477 7075-T6	0.050 4130	0088 00

NOTES

A. All dimensions are in inches.

B. Replace or manufacture from original material.

NOTE

Refer to Table 5 for index number reference.

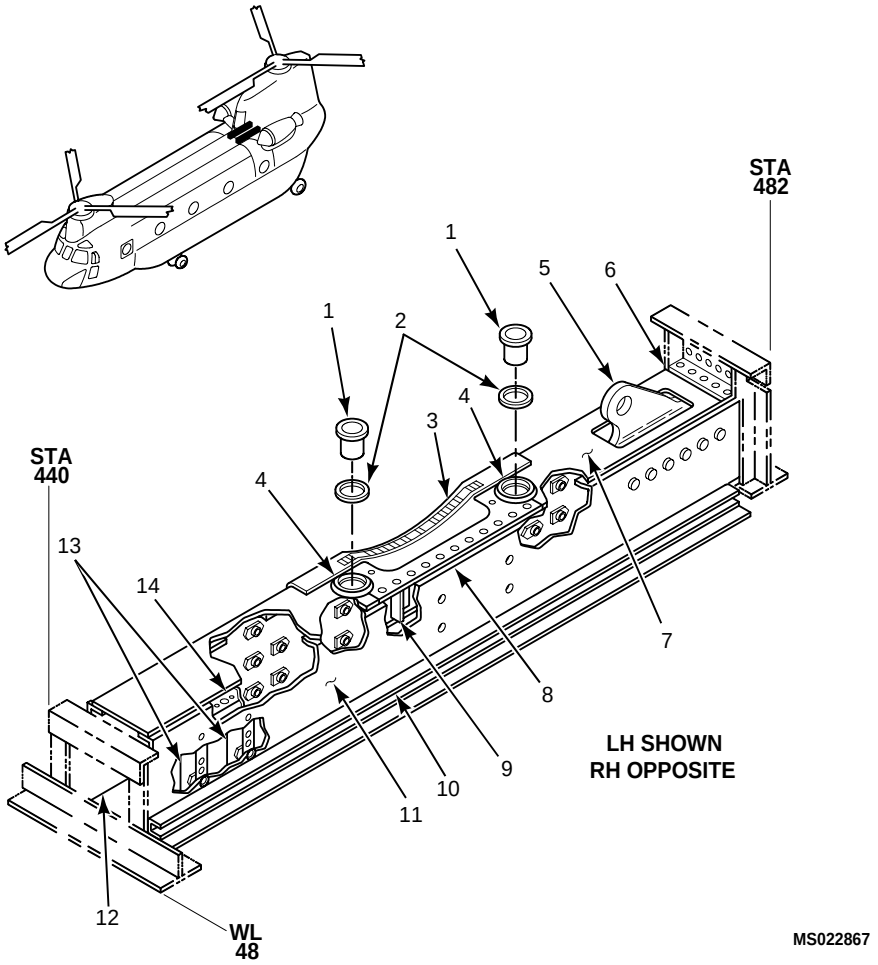


Figure 6. Combining Transmission Support

USE OF AFT DRIVE SHAFT SUPPORT BRACKET LOCATING FIXTURE, 114G1411-1 - continued

Table 5. Combining Transmission Support

INDEX NO.	NOMENCLATURE	ORIGINAL MATERIAL	REPAIR MATERIAL	WORK PACKAGE
1	Bushing	4130 Stlrd Bar	Note E	--
2	Shim	Note G	--	--
3	Cap	Note H	--	--
4	Support	Extrusion 2D14-T6	Note D	--
5	Attachment	VS90520 7075-T6	Note C	--
6	Angle	ALCOA 22526 7075-T6	Note B	--
7	Web	0.032 2024-T4 Clad	0.032 2024-T4 Clad	0086 00
8	Pan	Note I	--	--
9	Angle	AND10134-0701 7075-T6	--	--
10	Channel	0.025 2024-T4 Clad	0.032 2024-T3 Clad	0087 00
11	Zee Angle	VS90603 7075-T6 Clad	Note F	--
12	Zee Angle	VS90603 7075-T6 Clad	Note F	--
13	Angle	ALCOA 9802 7075-T6 Clad	Note B	--
14	Angle		Note B	--

NOTES

A. All dimensions are in inches.

B. Do not repair. Replace or manufacture from original material.

C. Damage other than minor, replace with new hoist attachment, 114S3814-1 LH or 114S3814- 2 RH.

D. Damage other than minor, replace with new support, 234S3821-1 LH or 234S3821-2 RH. Use tool (T-182, TM 55-1520-240-23). At least one fitting must be in place for a reference point. Otherwise, a method of referencing the exact location must be devised.

E. Replace with new bushings, 114S3403-28.

F. Damage other than minor, replace with 114S3353-71 LH or 114S3353-64 RH.

G. Replace with new shim.

H. Damage other than minor, replace with 114S3705-3 LH or 114S3705-4 RH.

I. Damage other than minor, replace with 114S3704-3.

USE OF AFT DRIVE SHAFT SUPPORT BRACKET LOCATING FIXTURE, 114G1411-1 - continued

NOTE

Refer to Table 6 for index number reference.

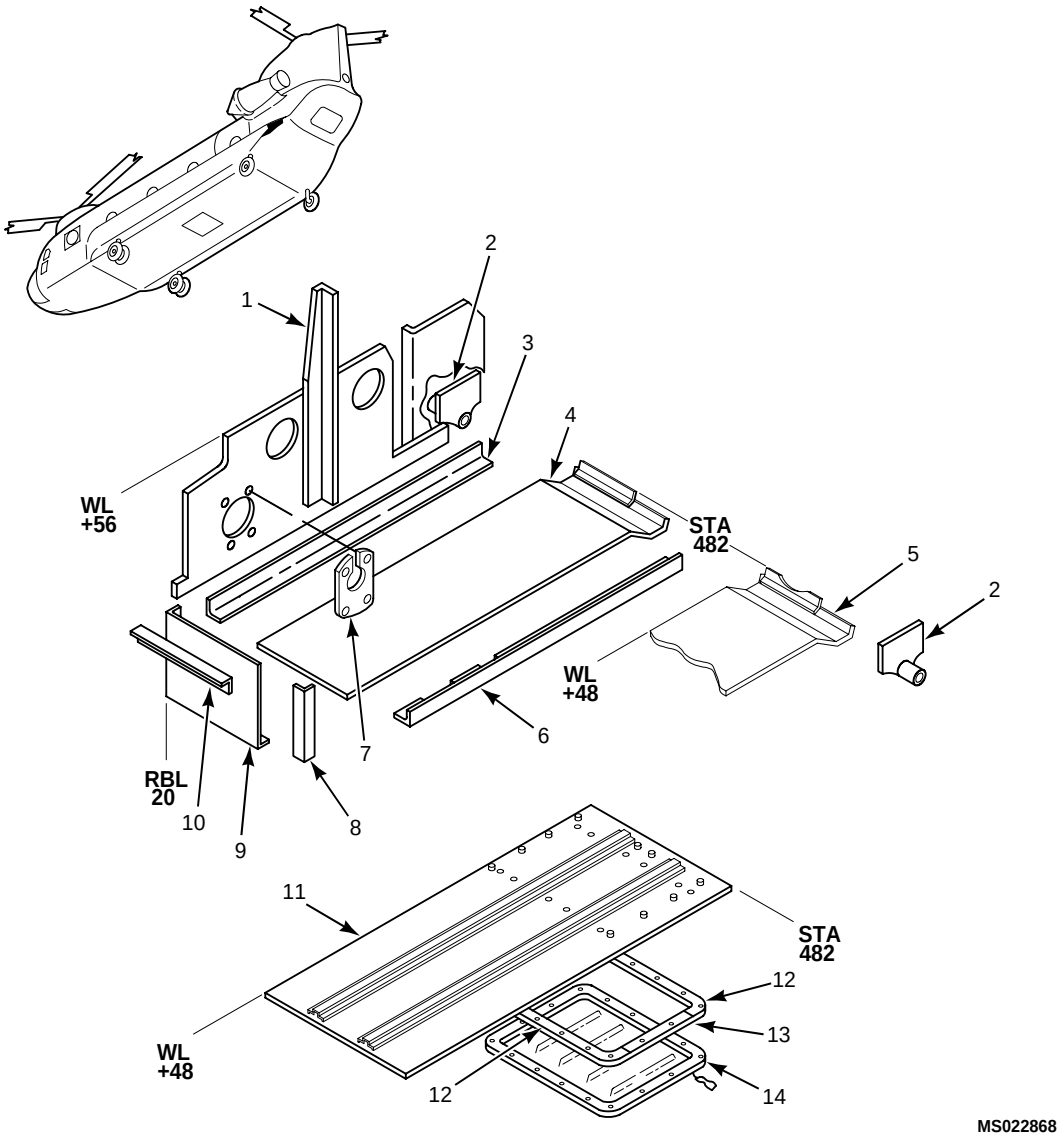


Figure 7. Combining Transmission Drip Pan

Table 6. Combining Transmission Drip Pan

INDEX NO.	NOMENCLATURE	ORIGINAL MATERIAL	REPAIR MATERIAL	WORK PACKAGE
1	Angle	0.040 2024-T4 Clad	0.050 2024-T3 Clad	0087 00
2	Tube	Note B	--	--
3	Angle	0.025 2024-T4 Clad	0.032 2024-T3 Clad	0087 00

USE OF AFT DRIVE SHAFT SUPPORT BRACKET LOCATING FIXTURE, 114G1411-1 - continued

Table 6. Combining Transmission Drip Pan - continued

4	Drip Pan RH	Glass Cloth No.181	Glass Cloth No.181	0081 00
5	Drip Pan LH	Glass Cloth No.181	Glass Cloth No.181	0081 00
6	Angle	0.025 2024-T4 Clad	0.032 2024-T3 Clad	0087 00
7	Adapter	Note C	--	--
8	Stiffener	0.040 2024-T4 Clad	0.050 2024-T3 Clad	0087 00
9	Support	0.040 2024-T4 Clad	0.050 2024-T3 Clad	0087 00
10	Angle	0.040 2024-T4 Clad	0.050 2024-T3 Clad	0087 00
11	Web Assy	0.032 2024-T3 Clad	0.040 2024-T3 Clad	0086 00
12	Spacer	0.250 Phonelic MIL-P-15035 Type FBG	Note D	--
13	Spacer	0.250 Phonelic MIL-P-05035 Type FBG	Note D	--
14	Drip Pan Assy	Glass Cloth No.181	Glass Cloth No.181	0081 00

NOTES

A. All dimensions are in inches.
B. Damage other than minor, replace with 145S3618-38.
C. Damage other than minor, replace with 145S3304-10.
D. Damage other than minor, replace with 145S3644-4 or 145S3644-6.

END OF WORK PACKAGE

DEPOT MAINTENANCE WORK REQUIREMENT

CH-47D HELICOPTER

ENGINE MOUNT REPAIRS

INITIAL SETUP

Test Equipment:
As Required

Tools and Special Tools:
Locating Fixture, 114G1242-1
Engine Mount Repair Kit, 114D5009-1 or 145G0333-1

Material/Parts:
Primer, Epoxy (Item 140, WP 0157 00)
Cloth, Cleaning (Item 73, WP 0157 00
Dry Ice – locally procured
Methanol (Item 118.1, WP 0157 00)
Acetone (Item 20, WP 0157 00)
Loctite 609 (local purchase authorized)
Loctite Primer, T7471 (local purchase authorized)

Personnel Required:
As Required

References:
TM 55-1520-240-23 Series
TM 1-1500-204-23 Series
Boeing Aerospace Service Note 145-022, Rev 1

Equipment Conditions:
As Required

Special Environmental Condition:
As Required

SCOPE

This work package describes inspection criteria, repair procedures, and replacement of the forward and aft engine mount fittings. Procedures for replacement of mount fittings include aircraft preparation and use of locating fixture, 114G1242-1. Contained herein, are revised damage limits developed by Boeing (critical dimensional limitations) for the engine mount lugs (Boeing Aerospace Service Note 145-022, Rev 1).

SCOPE - continued

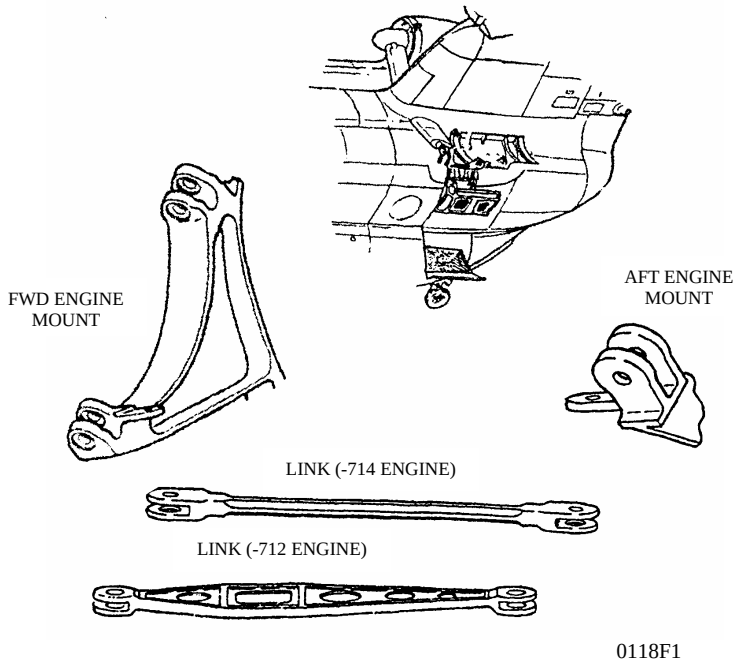


Figure 1. Engine Mount Components

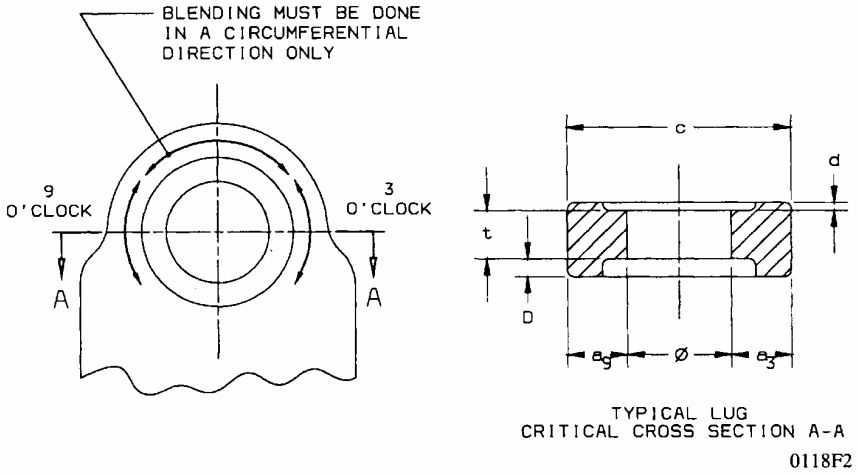
NEGLIGIBLE DAMAGE

Negligible damage can be permitted to exist as is, or be repaired by a simple procedure such as blending. Nicks, gouges and scratches on the engine mounts and drag strut attachments, with the exception of the lugs, are negligible if the depth after blending does not exceed 10 percent of the material thickness or 0.040-inch, whichever is less. The area must be large enough to blend smoothly with adjacent undamaged areas. Blending must be done in a circumferential direction only. Refer to Figure 2. Detectable damage should be repaired as soon as practical. Touch-up refinishing of damaged paint should be accomplished as soon as possible to prevent corrosion.

REPAIRABLE DAMAGE

Repairable damage is classified as damage to the lug areas within the limits specified and correctable by blending, spotfacing, oversizing, and bushing/bearing replacement. Lug damage criteria are depicted in Figures 6 thru 12. Damage that exceeds the limits may still be repairable, but must be approved by AMRDEC, AED, MED Engineering. Refer to WP 0003 00 for instructions on submission of a Maintenance Engineering Call (MEC).

ENGINE MOUNT LUG CRITICAL DIMENSION DEFINITIONS

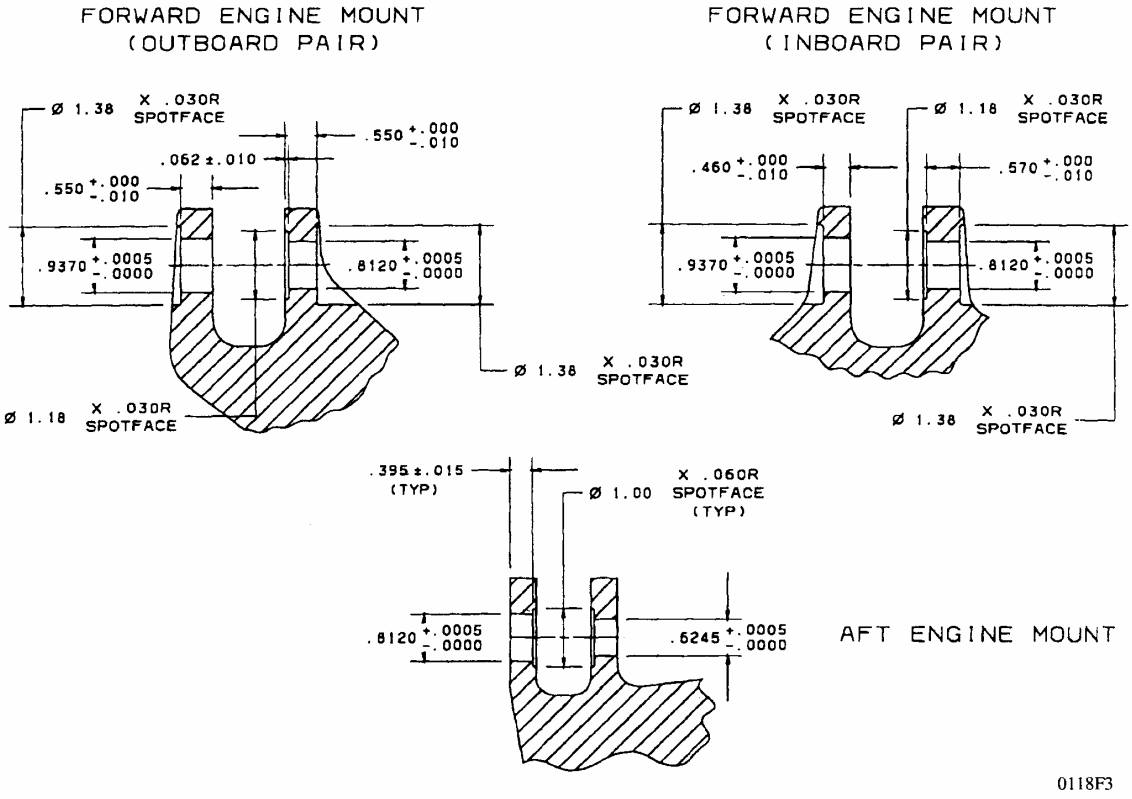


NOTES

A. The most critical dimensions to be maintained for an acceptable lug are the lug thru-bore thickness or bore length “t” and the bore diameter “Ø”. In addition, damage close to the critical cross section (3 to 9 o’clock plane) is more serious. While local blend repairs of damage have some effect on lug strength, this blending is generally not the limiting factor for determining lug serviceability. Most damage, repairable by blending, occurs in the thicker sections of the lugs between the outer edge of the spotface and the outer edge of the lug. Generally, more severe (deeper) local damage is tolerable around the extreme outer edges of the lug.
B. Dimension “D” refers to the deeper spotface (counterbore). Dimension “d” refers to the shallower spotface on the forward engine mount lugs.
C. No damage is permitted in spotfaces or on non-spotfaced lug faces adjacent to the bore. Re-spotfacing is required to eliminate any spotface damage. Do not reduce thickness below “t min”. Blend repairs are not permitted to the spotface. Damage to non-spotfaced lug faces of the engine mount lugs should be removed by shallow spotfacing of that face just enough to remove the damage. Blend repairs are permitted in the area outside these spotfaced areas. Do not reduce thickness below “t min”.
D. No damage to the thru-bore or the edges of the thru-bore is permitted. Rework by oversizing while not exceeding “Ø max” and/or re-spotfacing while maintaining “t min” is required.
E. Some engine mount lugs have rework, which exceed the limits specified here. The affected aircraft may or may not have the repairs documented in their logbooks. Generally, the limits specified here should be applied to evaluations of new damage rather than be used to evaluate previously repaired lugs. Generally, spotfaced depths will in most cases vary from lug to lug, but thru-bore thickness “t min” from spotface to spotface or from spotface to clevis face will be maintained.
F. It is critical that all blending to the lugs be in a circumferential direction only. Refer to Figure 2.
G. All spotfacing and bore oversizing must be accomplished with properly designed tooling with spotfacing and lapping piloting off of both lugs, and reaming piloting off of the opposite lug in order to maintain concentricity and perpendicularity requirements.

Figure 2. Engine Mount Lug Critical Dimension Definitions

ENGINE MOUNT LUG NOMINAL DIMENSIONS

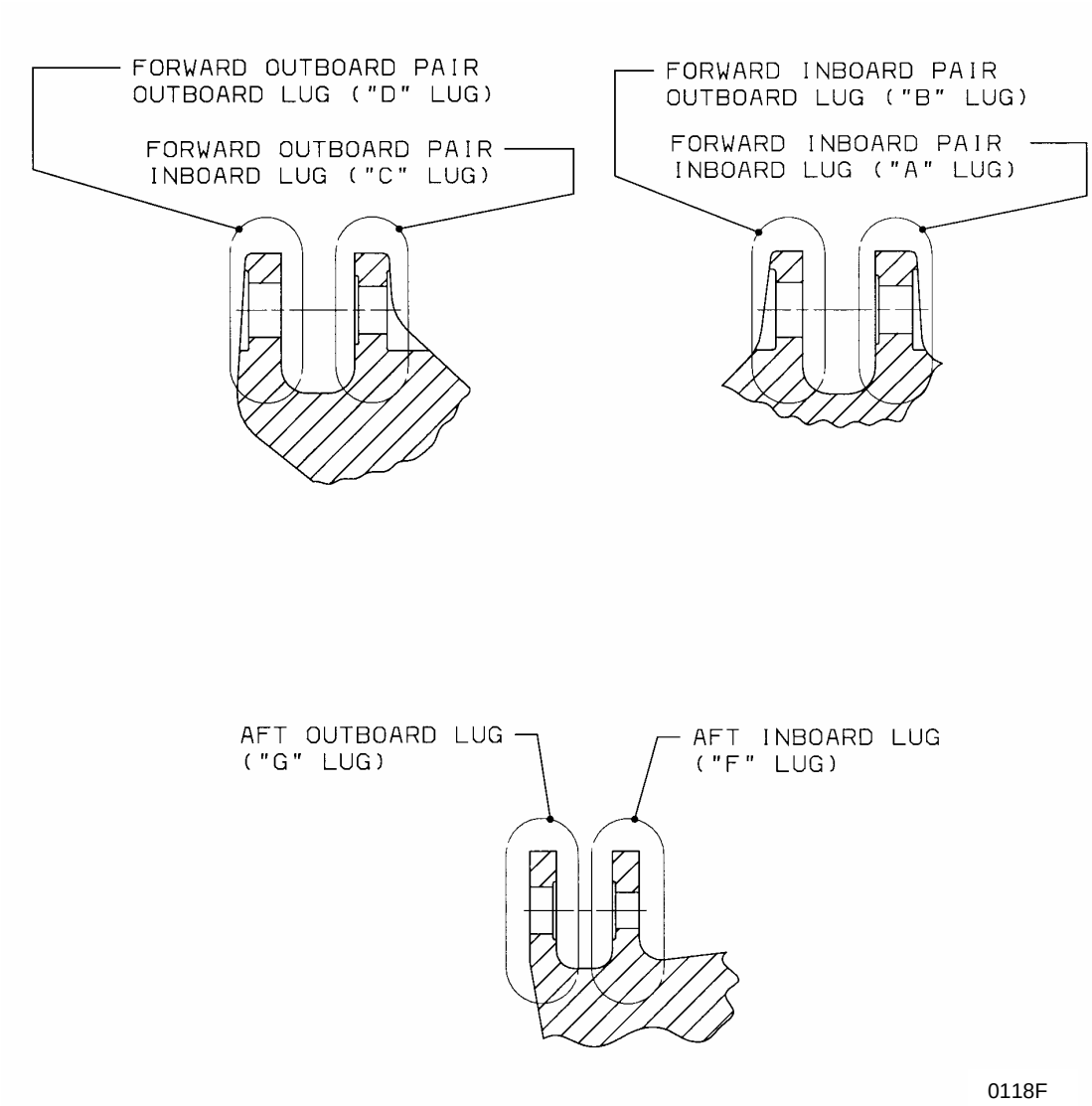


NOTES

A. All dimensions are in inches.
B. Section views through lugs looking forward.
C. Left side mounts shown; right side opposite.
D. Ø 1.18-inch spotfaces should be opened up to Ø 1.38-inch when installing some larger oversize bushings. Refer to Figures 6 and 7.
E. 80-µ inch RHR surface finish minimum for all bores.
F. Some mounts have “A” and “C” lugs with 0.9370-inch bores and 1.38-inch outboard spotfaces.

Figure 3. Engine Mount Lug Nominal Dimensions

LOCATIONS OF THE FORWARD AND AFT ENGINE MOUNT LUGS

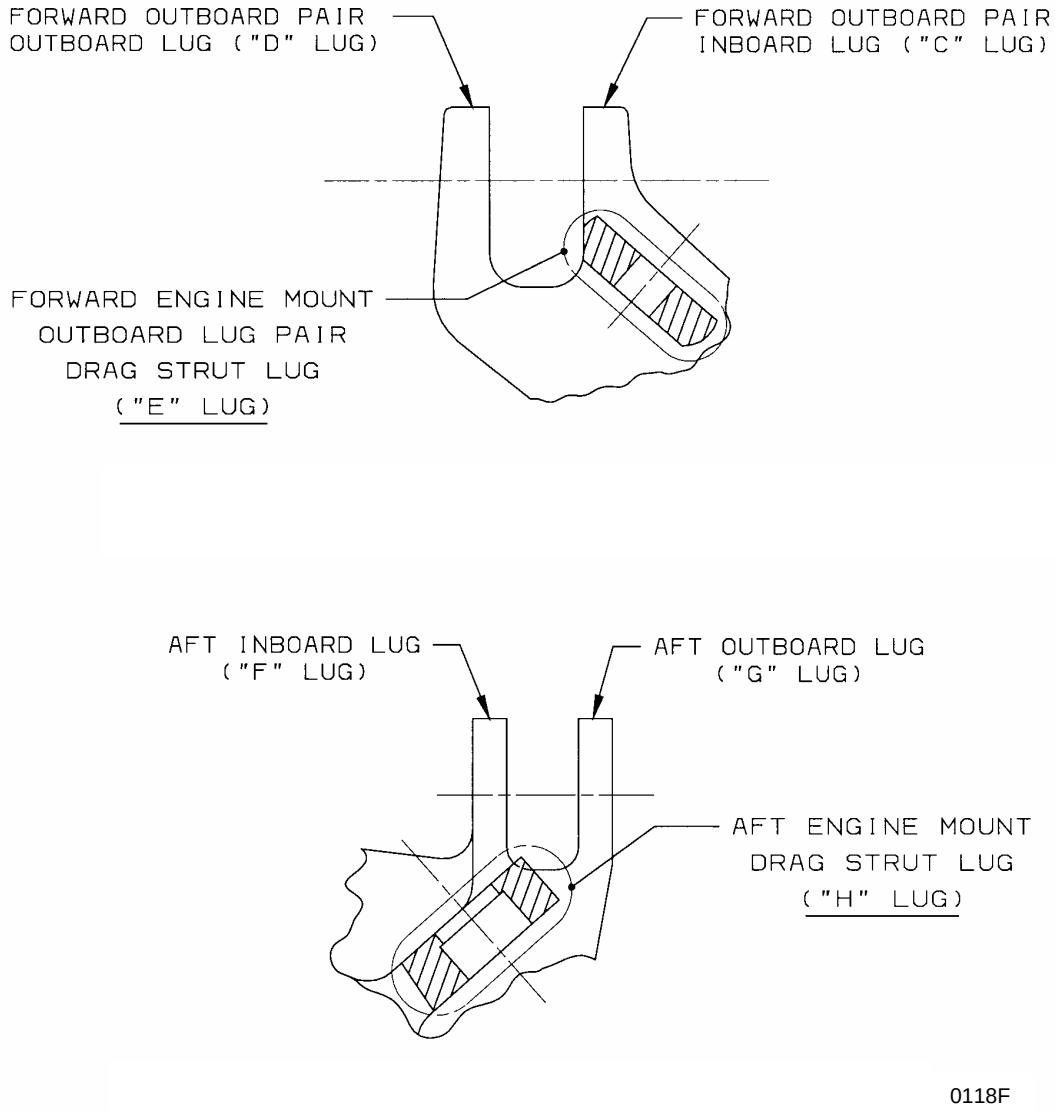


NOTES

A. Forward drag strut lug (“E” Lug) and aft drag strut lug (“H” Lug) not shown.
B. Left side mounts shown; right side opposite.

Figure 4. Engine Mount Lugs Location Definitions

LOCATION OF FORWARD AND AFT DRAG STRUT LUGS



NOTE

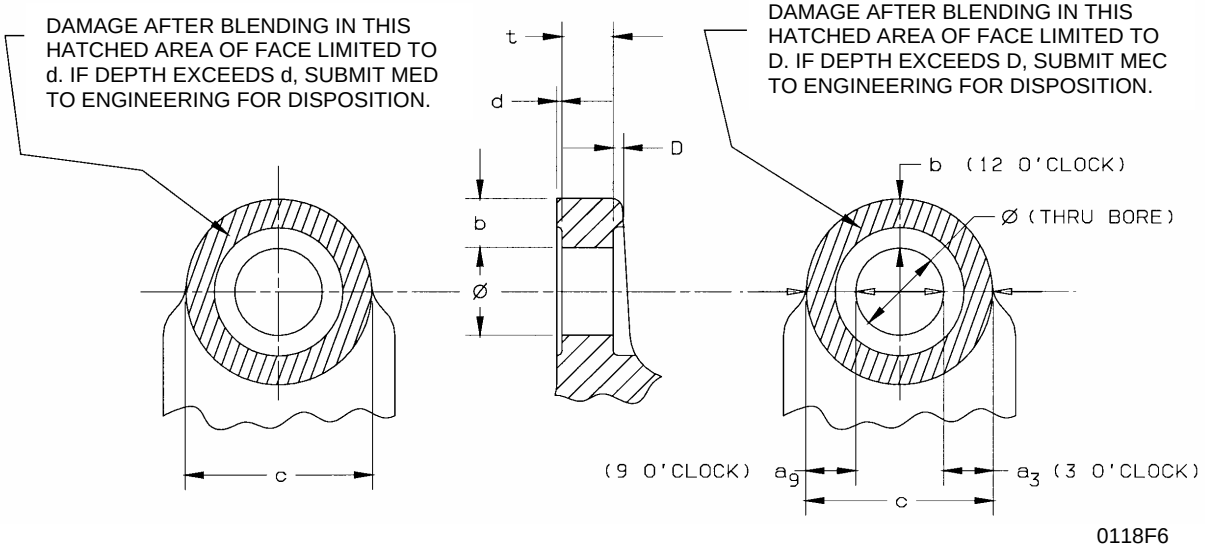
A. Left side Mounts shown; Right side opposite.

Figure 5. Drag Strut Lugs Location Definitions

FORWARD ENGINE MOUNT LUG WEAR LIMITS:

FORWARD ENGINE MOUNT, INBOARD LUG PAIR, INBOARD LUG "A" CRITICAL DIMENSIONS

BORE Ø ±0.0005	a_{min}	b_{min}	
0.8125	0.494	0.454	
0.8281	0.486	0.446	
0.8438	0.478	0.438	
0.8594	0.471	0.431	
0.8750	0.463	0.423	
0.8906	0.455	0.415	
0.9062	0.447	0.407	
0.9219	0.439	0.399	
0.9375	0.432	0.392	t_{min}=0.545
0.9531	0.424	0.383	
0.9688	0.416	0.376	c_{min}=1.92
0.9844	0.408	0.368	



CAUTION

Lug "A" outboard spotface must be opened up from 1.18-inch diameter to 1.38-inch diameter when using oversize bushings for bores 0.9375 and greater.

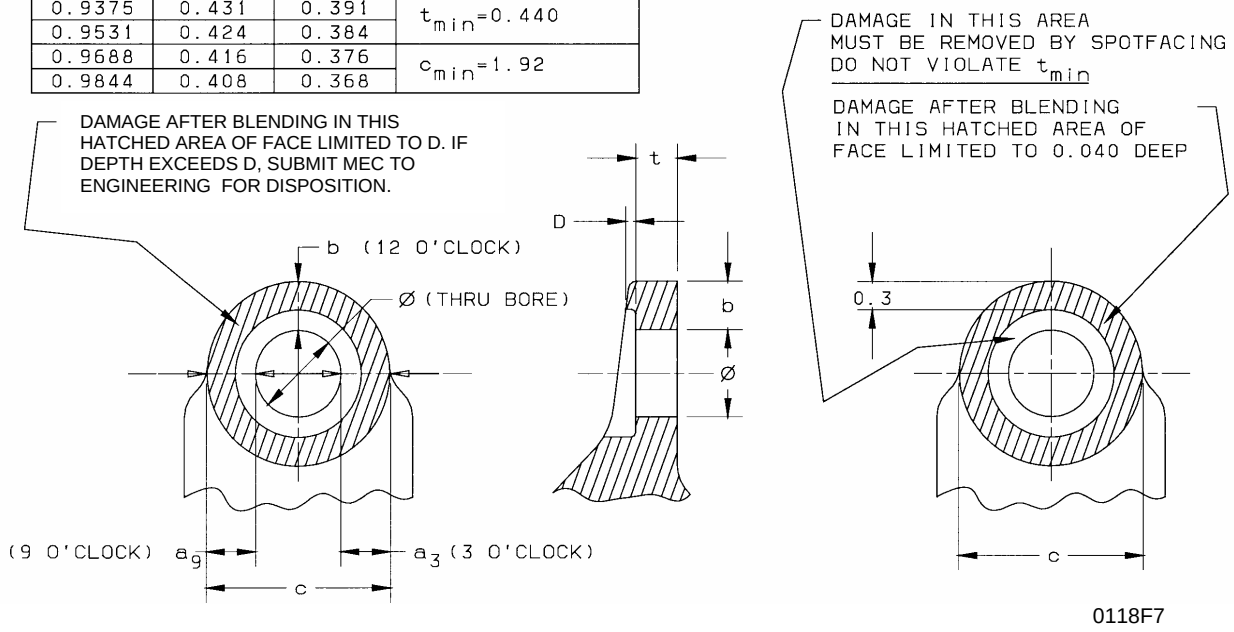
NOTES

A. All dimensions in inches.
B. Damage of 0.040 or less on lug outer edge between a and b shall be blended smoothly.
C. Depth D and d are measured spotface depth.
D. a_3, a_9, b, c, t, and Ø are all measured values.
E. a_3, a_9, b, c, and t shall not be less than their specified minimum values (a_{min}, b_{min}, c_{min}, and t_{min}).
F. Ø shall not be greater than $Ø_{max}$ = 0.9844.
G. Refer to Table 1 for bushing replacements.

Figure 6. Forward Engine Mount, Inboard Lug Pair, Inboard Lug "A" Critical Dimensions

FORWARD ENGINE MOUNT, INBOARD LUG PAIR, OUTBOARD LUG "B" CRITICAL DIMENSIONS

BORE Ø ±0.0005	a_{min}	b_{min}	
0.9375	0.431	0.391	t_{min}=0.440
0.9531	0.424	0.384	
0.9688	0.416	0.376	c_{min}=1.92
0.9844	0.408	0.368	



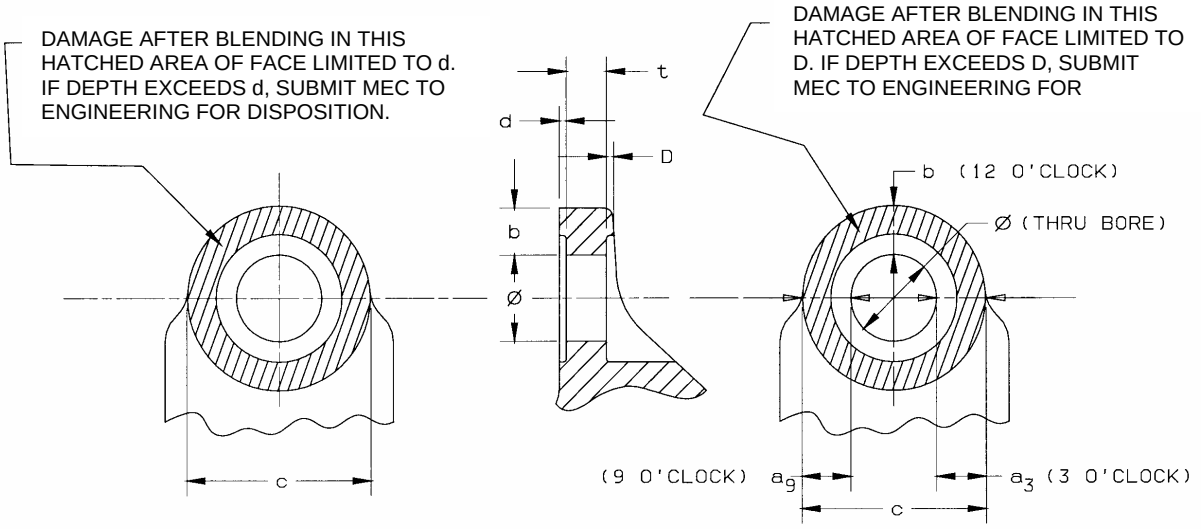
NOTES

A. All dimensions in inches.
B. Damage of 0.040 or less on lug outer edge between a and b shall be blended smoothly.
C. Depth D is measured spotface dept
D. a_3, a_9, b, c, t, and Ø are all measured values.
E. a_3, a_9, b, c, and t shall not be less than their specified minimum values (a_{min}, b_{min}, c_{min}, and t_{min}).
F. Ø shall not be greater than $Ø_{max}$ = 0.9844.
G. Refer to Table 1 for bushing replacements.

Figure 7. Forward Engine Mount, Inboard Lug Pair, Outboard Lug "B" Critical Dimensions

FORWARD ENGINE MOUNT, OUTBOARD LUG PAIR, INBOARD LUG "C" CRITICAL DIMENSIONS

BORE Ø ±0.0005	a_{min}	b_{min}	
0.8125	0.494	0.454	
0.8281	0.486	0.446	
0.8438	0.478	0.438	
0.8594	0.471	0.431	
0.8750	0.463	0.423	
0.8906	0.455	0.415	
0.9062	0.447	0.407	
0.9219	0.439	0.399	
0.9375	0.432	0.392	t_{min}=0.465
0.9531	0.424	0.383	
0.9688	0.416	0.376	c_{min}=1.92
0.9844	0.408	0.368	



0118F8

CAUTION

Lug "C" inner spotface must be opened up from 1.18-inch diameter to 1.38-inch diameter when using oversize bushings with bores 0.9375 and greater.

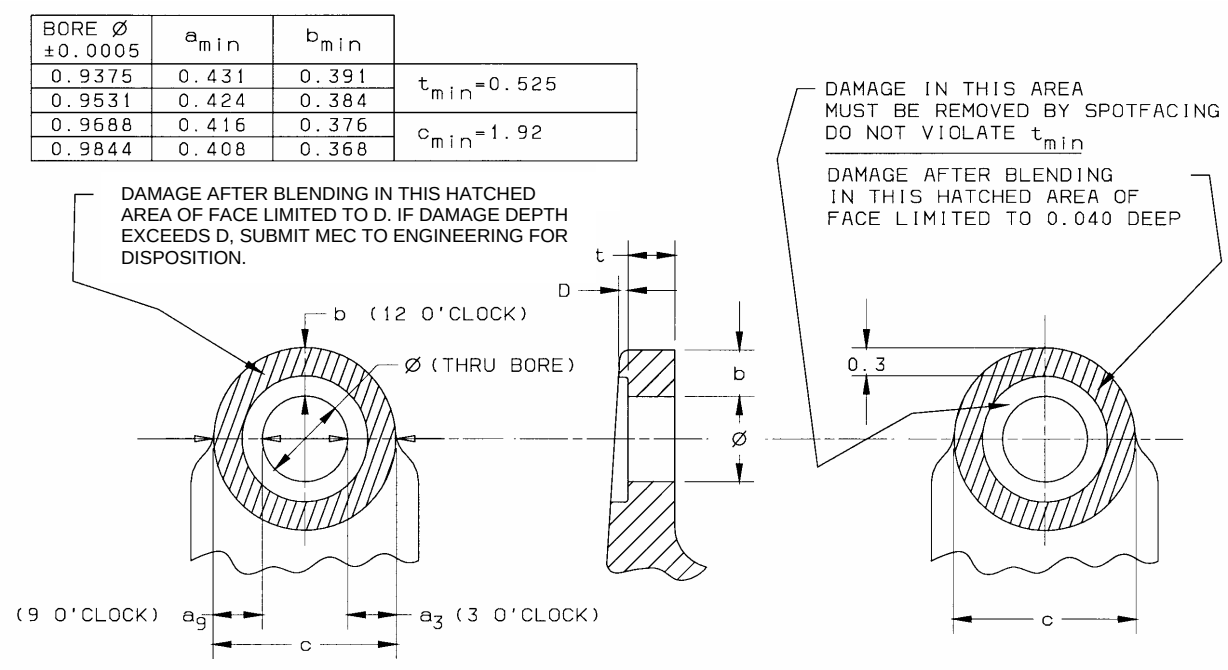
NOTES

A. All dimensions in inches.
B. Damage of 0.040 or less on lug outer edge between a and b shall be blended smoothly.
C. Depth D and d are measured spotface depth.
D. a_3, a_9, b, c, t, and Ø are all measured values.
E. a_3, a_9, b, c, and t shall not be less than their specified minimum values (a_{min}, b_{min}, c_{min}, and t_{min}).
F. Ø shall not be greater than $Ø_{max}$ = 0.9844.
G. Refer to Table 1 for bushing replacements.

Figure 8. Forward Engine Mount, Outboard Lug Pair, Inboard Lug "C" Critical Dimensions

FORWARD ENGINE MOUNT, OUTBOARD LUG PAIR, OUTBOARD LUG "D" CRITICAL DIMENSIONS

BORE Ø ±0.0005	a_{min}	b_{min}	
0.9375	0.431	0.391	t_{min}=0.525
0.9531	0.424	0.384	
0.9688	0.416	0.376	c_{min}=1.92
0.9844	0.408	0.368	



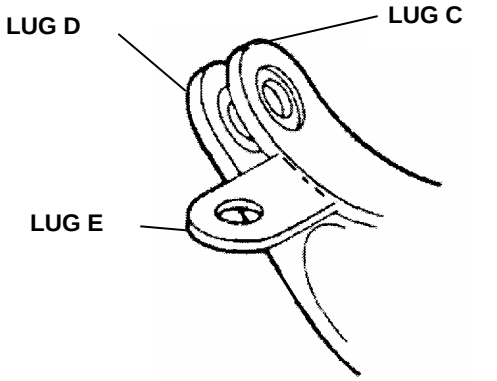
0118F9

NOTES

A. All dimensions in inches.
B. Damage of 0.040 or less on lug outer edge between a and b shall be blended smoothly.
C. Depth D is measured spotface depth.
D. a_3, a_9, b, c, t, and Ø are all measured values.
E. a_3, a_9, b, c, and t shall not be less than their specified minimum values (a_{min}, b_{min}, c_{min}, and t_{min}).
F. Ø shall not be greater than $Ø_{max}$ = 0.9844.
G. Refer to Table 1 for bushing replacements.

Figure 9. Forward Engine Mount, Outboard Lug Pair, Outboard Lug "D" Critical Dimensions

FORWARD ENGINE MOUNT DRAG STRUT LUG “E”



0118F10

NOTES

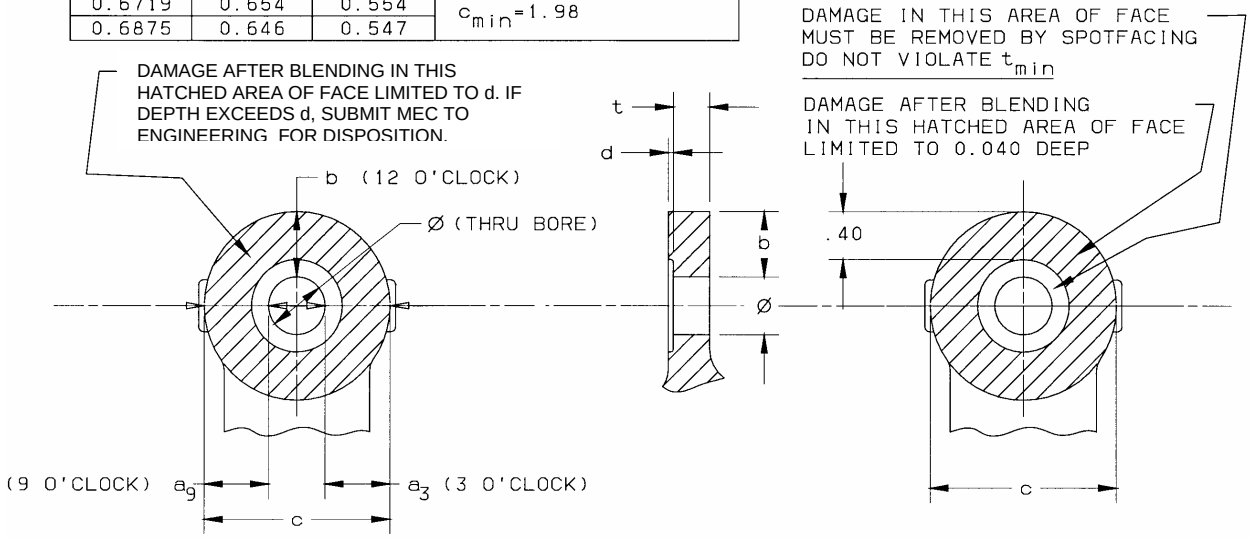
A. Refer to Table 1 for bushing replacement.

Figure 10. Forward Engine Mount Drag Strut Lug “E”

AFT ENGINE MOUNTS LUG WEAR LIMITS:

AFT ENGINE MOUNT INBOARD LUG “F” CRITICAL DIMENSIONS

BORE Ø ±0.0005	a_{min}	b_{min}	
0.6250	0.678	0.578	
0.6406	0.670	0.570	t_{min}=0.380 (714 ENGINES)
0.6562	0.662	0.562	t_{min}=0.354 (712 ENGINES)
0.6719	0.654	0.554	c_{min}=1.98
0.6875	0.646	0.547	



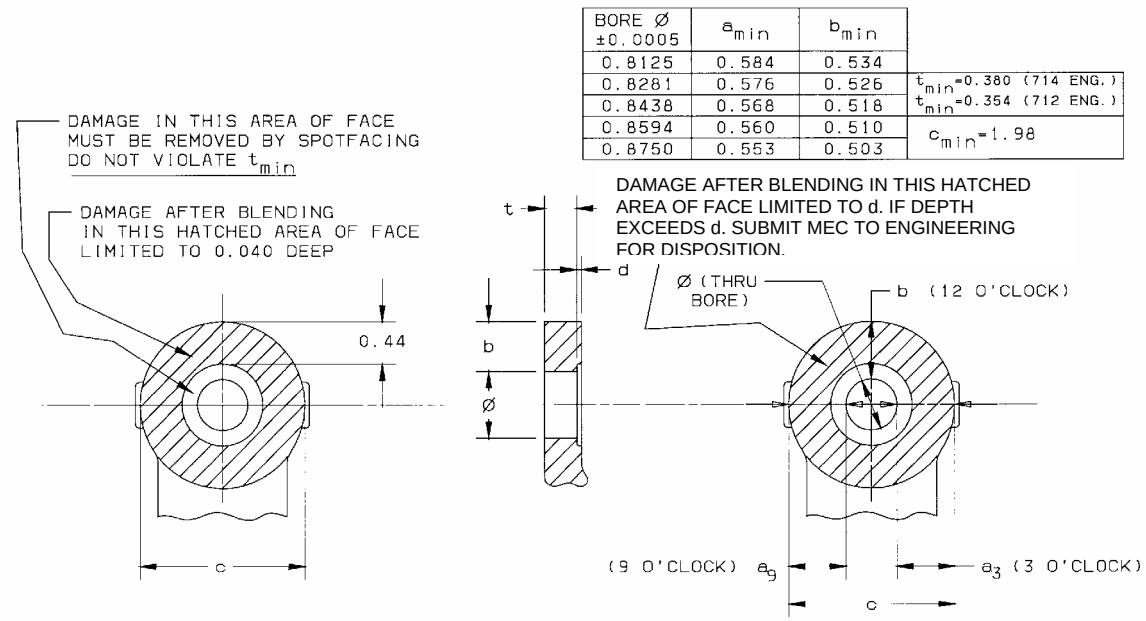
0118F11

NOTES

A. All dimension are in inches.
B. Damage of 0.040 or less on lug outer edge between a and b shall be blended smoothly.
B. Depth d is measured spotface depth.
C. a_3, a_9 , b, c, t, and Ø are all measured values.
D. a_3, a_9, b, c, and t shall not be less than their specified minimum values (a_{min}, b_{min}, c_{min}, and t_{min}).
E. Ø shall not be greater than $Ø_{max}$ = 0.6875.
G. Refer to Table 1 for bushing replacement.

Figure 11. Aft Engine Mount Inboard Lug “F” Critical Dimensions

AFT ENGINE MOUNT OUTBOARD LUG "G" CRITICAL DIMENSIONS



BORE Ø ±0.0005	a_{min}	b_{min}	
0.8125	0.584	0.534	
0.8281	0.576	0.526	t_{min}=0.380 (714 ENG.)
0.8438	0.568	0.518	t_{min}=0.354 (712 ENG.)
0.8594	0.560	0.510	c_{min}=1.98
0.8750	0.553	0.503	

0118F12

NOTES

A. All dimensions are in inches.
B. Damage of 0.040 or less on lug outer edge between a and b shall be blended smoothly.
C. Depth d is measured spotface depth.
D. a_3, a_9, b, c, t, and Ø are all measured values.
E. a_3, a_9, b, c, and t shall not be less than their specified minimum values (a_{min}, b_{min}, c_{min}, and t_{min}).
F. Ø shall not be greater than $Ø_{max}$ = 0.8750.
G. Refer to Table 1 for bushing replacement.

Figure 12. Aft Engine Mount Outboard Lug "G" Critical Dimensions

GENERAL INFORMATION - APPLIES TO ALL LUG REPAIR AND REWORK

1. When bore oversizing (reaming) is necessary, start with the first size reamer larger than the measured bore diameter of the damaged lug. The reamers are sized 1/64-inch increments. Ream with the next larger size until all damaged to the bore is removed or (Ø max) is reached. Remove only as much material from the bore as is necessary to produce a clean hole.

NOTE

The "H" lug requires counterbore operation before first oversize (reaming) operation.

2. All bores must be line-reamed. Do not use adjustable reamers. Lubricate reamer pilot with multipurpose grease.
3. All spotfacing/back-spotfacing must be done without power tools, to minimize over machining of lug. Back-spotfacing requires the arbor to be turned counterclockwise. Lapping operations may be done with power tools using an appropriate lapping compound.
4. Repair (reaming, spotfacing, lapping, burnishing, blending of damage) to forward and aft engine mount fittings or drag struts should be followed by solvent cleaning and fluorescent penetrant or eddy-current inspection for cracks.
5. Following repair and inspection, alodine any bare aluminum. Following bushing installation, mask bushing and finish with two coats of epoxy primer (Item 140, WP 0157 00).

INSTALLATION OF REPAIR BUSHINGS IN ENGINE MOUNTS/DRAG STRUT

1. Remove damaged bushings.
2. Ream damaged lugs, inline with opposing lug, sufficiently to produce a perfect hole, but not larger than maximum of lug tolerance.
3. Re-spotface damaged lug, if necessary, sufficiently to produce a perfect spotface not to exceed lug tolerance. Refer to measurement of specific lug being spotfaced.

WARNING

EPOXY PRIMER

4. Bushing bores should be coated with un-thinned epoxy primer (Item 140, WP0157 00). Primer should be applied to bore just prior to bushing installation.
5. Installation of interference-fit bushings shall be “shrink fit” using appropriate alignment tooling as follows:

WARNING

DRY ICE

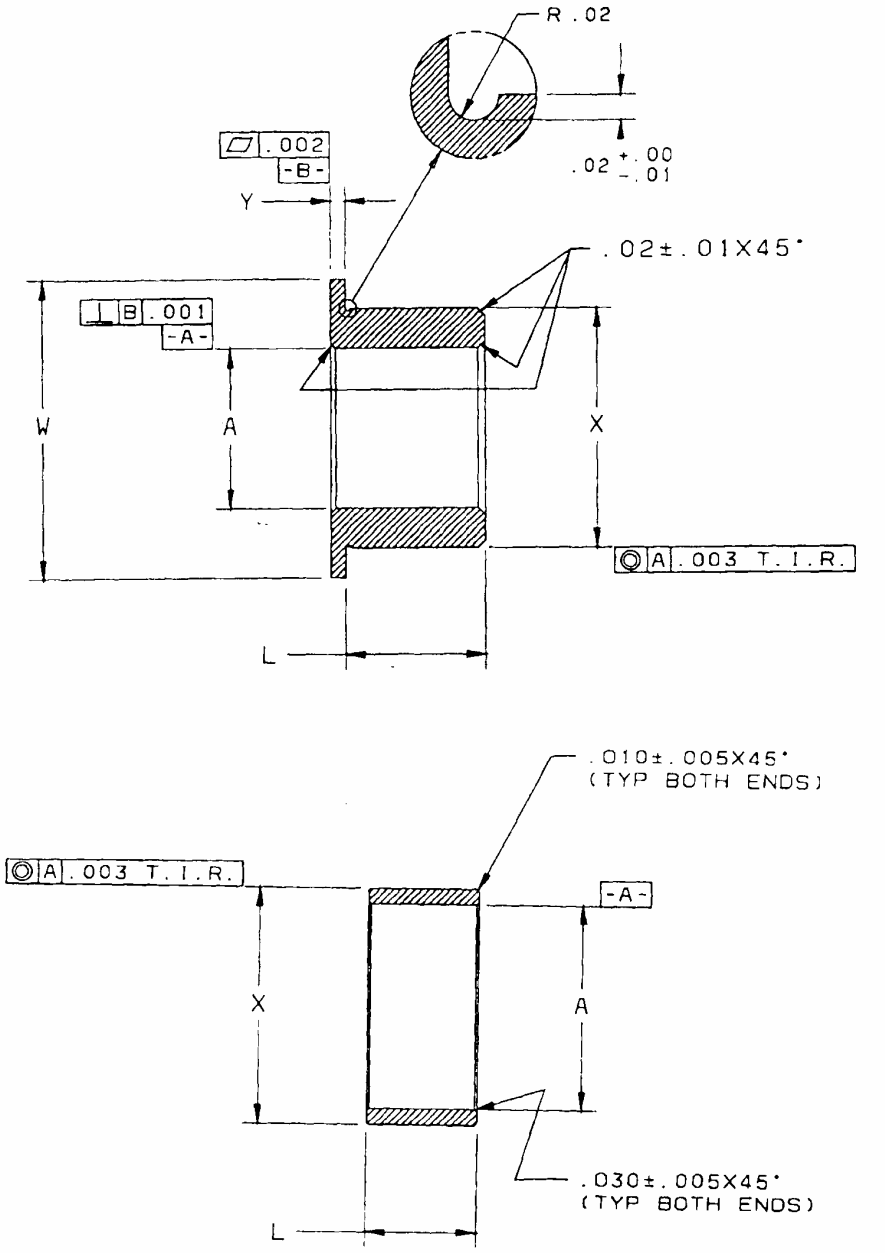
METHANOL

CAUTION

Observe all necessary safety precautions when handling dry ice and methanol (Item 8.1, WP 0157 00). Be especially aware of the hazard to personnel below your work area.

   a. Cold soak bushing and alignment tooling in a bath of dry ice and methanol (Item 118.1, WP 0157 00). Soaking the tooling helps retain temperature during installation. Use an insulated container that can be located close to the component being repaired. Close proximity provides for the necessary rapid bushing installation. Cold soak is complete after liquid stops boiling (usually less than 10 minutes).
   b. Apply a coating of epoxy primer (Item 140, WP 0157 00) to bore.
   c. When installing “A”, “C”, or “F” lug bushing, place bushing between the lug pair. Install the mandrel pilot in the opposite lug and engage the bushing installation.
   d. While the primer is still wet, remove bushing and tooling from cooling medium. Wipe off any frost with a clean cloth (Item 73, WP 0157 00), and immediately (less the 5 seconds) install bushing. The mandrel may be driven with a soft-faced hammer if required.
6. Check all shrink fit bushings after installation to ensure that they meet minimum ID requirements. If ID is smaller than specified after installation, bushing bores should be honed to within limits.
7. Refer to Table 1 for replacement bushing sizing.

ENGINE MOUNT/DRAG STRUT BUSHING DETAILS



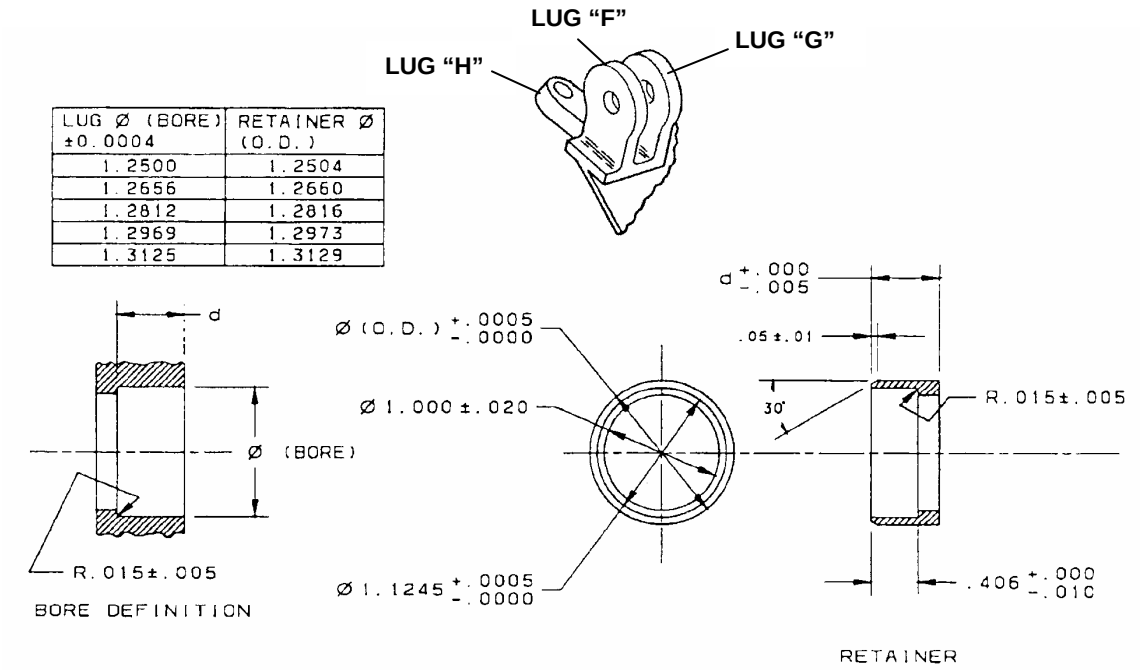
0118F13

NOTES

A. All dimensions are in inches.
B. Maximum machined surface finish 63-µ-inch RHR. Break all sharp edges.
C. Y and L dimensions are measured from lug bore.
D. Refer to Table1 for bushing sizing.

Figure 13. Engine Mount/Drag Strut Bushing Details

AFT ENGINE MOUNT DRAG STRUT LUG “H”



0118F14

NOTES

A. All dimensions are in inches.
B. Break all sharp edges.
C. Maximum machined surface finish 63-µ inch RHR.
D. Depth “d” is measured bore depth.
E. If using cad plated 4130 steel, dimensions shown are after plating.
F. Refer to Table 1 for alternate materials.
G. Replaces retainer 114S3706-1 or 114S3706-3.

Figure 14. Lug “H” Aft Engine Mount Drag Strut Bearing Retainer and Bore Definition

REPLACEMENT OF AFT ENGINE MOUNT DRAG STRUT BEARING - LUG "H"

The following is the procedure for spherical bearing replacement in the "H" lug. The roller-staking requirement remains. However, if this is impractical, bearing retention with LOCTITE 609 (local purchase authorized) is allowed.

WARNING

ACETONE

1. Remove and discard the bearing retainer and bearings. Deburr and thoroughly clean the bore with acetone (Item 20, WP 0157 00).
2. Measure the diameter of the bearing bore in the lug. If the bore diameter is 1.127-inch or less, install a new bearing and retainer. If the hole diameter is greater the 1.127-inch, install an oversize retainer. Apply a light coat of epoxy primer (Item 140, WP 0157 00) to the outer diameter of the bearing race, the bearing retainer, and the bore in the lug. Allow primer to dry.

WARNING

LOCTITE 609

CAUTION

Do not allow retaining compound (LOCTITE 609) to penetrate the moving parts of the bearing.

3. Using an appropriate roller-staking tool, stake the bearing retainer. If, for any reason, staking is impractical, the bearing may be retained by use of LOCTITE 609 (local purchase authorized).
4. Apply a light coat of primer/activator, LOCTITE-Primer T7471 (local purchase authorized), to the outer diameter of the bearing race, the bearing retainer, and the bore in the lug. Allow the primer to dry.

NOTE

If the lug bore diameter exceeds 1.126-inch, the bearing and bearing retainer may fit loosely, in which case, shrink-fit installation will not be necessary. Bearing and retainer, however, must be secured in position until retaining compound has cured.

WARNING

DRY ICE

METHANOL

5. Cold soak the bearing, bearing retainer, and installation mandrel in a dry ice and methanol (Item 8.1, WP 0157 00) bath (shrink-fit bearing installation).
6. While wearing chemical protective gloves, coat the lug bore with retaining compound (LOCTITE 609). Remove the installation mandrel, bearing retainer from the dry ice and methanol bath and immediately complete the installation into the bore of the lug.

REPAIR OF THE AFT ENGINE DRAG STRUT, LUG "H", WITH OVERSIZE BUSHINGS

When the fitting bore diameter exceeds maximum allowable, repair the aft engine mount drag strut attachment lug "H" by installing an oversize bushing. Repair the lug as follows:

CAUTION

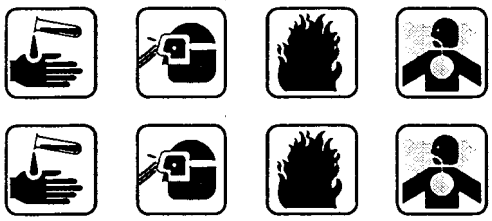
Do not increase the depth of the hole when counterboring or reaming the lug.

1. If the lug bore diameter is greater than 1.127-inch, counterbore the lug to an appropriate oversize diameter according to the table in Figure 14.
2. Fabricate a (salvage) bushing as shown in Figure 14 from the following materials: Steel, 431 CRES bar, condition HT115, MIL-S-18732, or Steel 4130 bar, condition F, MIL-S-6528, 125kps, cadmium plated per QQ-P-416, type II, class 3. Apply a light coat of epoxy primer (Item 140m, WP 0157 00) to the outer diameter of the bearing race, inside of bushing, and lug bore. Allow the primer to dry.
3. Using an appropriate roller-staking tool, stake the bearing retainer. If, for any reason, staking is impractical, the bearing may be retained by using LOCTITE 609 (local purchase authorized) as follows:

   a. Apply a light coat of primer/activator (LOCTITE Primer T7471-local purchase authorized) to the outer diameter of the bearing race, the bearing retainer, both inner and outer diameters of the salvage bushing, and the bore in the lug. Allow the primer to dry.

   b. While wearing chemical protective gloves, apply a light coat of retaining/sealing compound to the outside diameter of the bearing race, and inside of bushing. Press the bearing into the bushing.

WARNING



DRY ICE

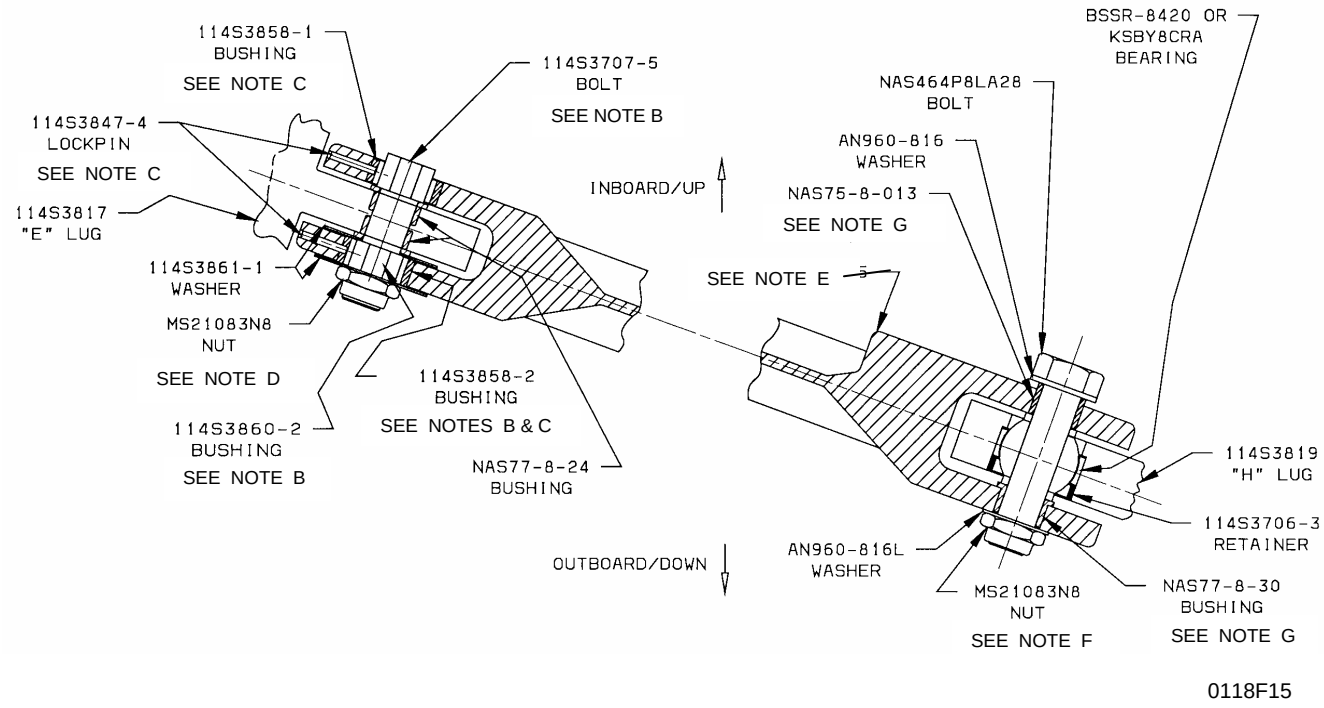
METHANOL

   c. Cold soak the bushing (and captive bearing) and installation mandrel in a dry ice and methanol bath (shrink-fit bearing installation).
   d. While wearing chemical protective gloves, apply a light coat of retaining/sealing compound to the outside surface of the bushing and the lug bore.
   e. Remove the installation mandrel with bushing (and captive bearing) from the dry ice and methanol bath, and immediately complete the installation into the oversize bore of the lug.

ENGINE SUPPORT STRUCTURE-DRAG STRUT ASSEMBLY AND INSTALLATION

DRAG STRUT ASSEMBLY

The drag strut hardware could be installed improperly allowing the drag strut installation to lock-up. The engine should be able to be deflected laterally by pushing the tailcone sideways. This indicates that the drag strut is not locked up. Ensure that during drag link installation the forward bolt, 114S3707-5, and bushing, 114S3860-2, are installed such that the flats of the bolt head and bushing are parallel to the slot in the drag link bushings. This installation will prevent the drag strut from locking up.



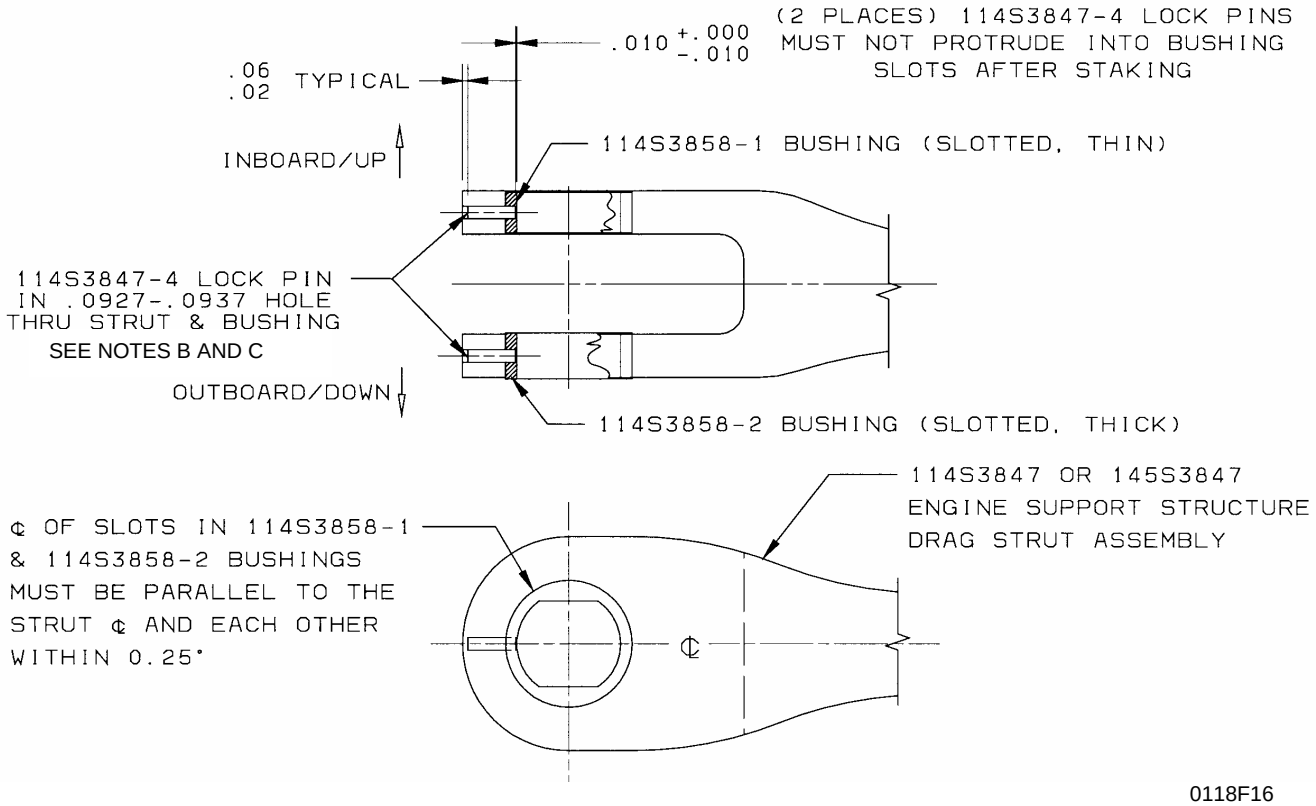
NOTES

A. Drag Strut for T55-L-712 engines shown; hardware is same for T55-GA-714A engines.
B. Ensure that flats of bolt are parallel with straight edges of bushing slot. Refer to Figure 16. Ensure that flats of bushing are parallel with straight edges of bushing slot.
C. Refer to Figure 16 for details of bushing and lockpin installation.
D. Torque nut to 125 to 135 inch-lbs.
E. This raised lug is always inboard, left and right sides of aircraft. Raised lug P/N, Mill Heat No, Heat Treat Lot No, and bosses, face inboard. Concave side is inboard on T55-GA-714A installation.
F. Torque nut to 315 to 450 inch-lbs.
G. Refer to Table 1 for repair bushing sizing.

Figure 15. Drag Strut Hardware Installation

INSTALLATION OF THE SLOTTED BUSHINGS

Some maintenance manuals are unclear on the proper orientation and installation of the 114S3858-1 and 114S3858-2 slotted bushings. Specifically, the manuals indicate that during replacement a “flat bottomed” hole is bored into the bushings to within 0.010-inch of the inner wall of the bushing. This is not the case; the hole is drilled through the wall of the bushing. During lock-pin installation, the end of the lock-pin must not be allowed to protrude past the inner wall of the bushing. Figure 16 provides the necessary clarification.



NOTES

A. All dimensions are in inches.
B. Lock pin, 114S3847-4, must be cut to fit prior to installation.
C. Each clevis end of the drag strut, adjacent to the lock pin bore, must be point staked (2 places) to retain, 114S3847-4, lock pins.
D. Refer to Table 1 for bushing replacement.

Figure 16. Drag Strut Slotted Bushing Installation

DRAG STRUT BUSHING STAKING TOOL

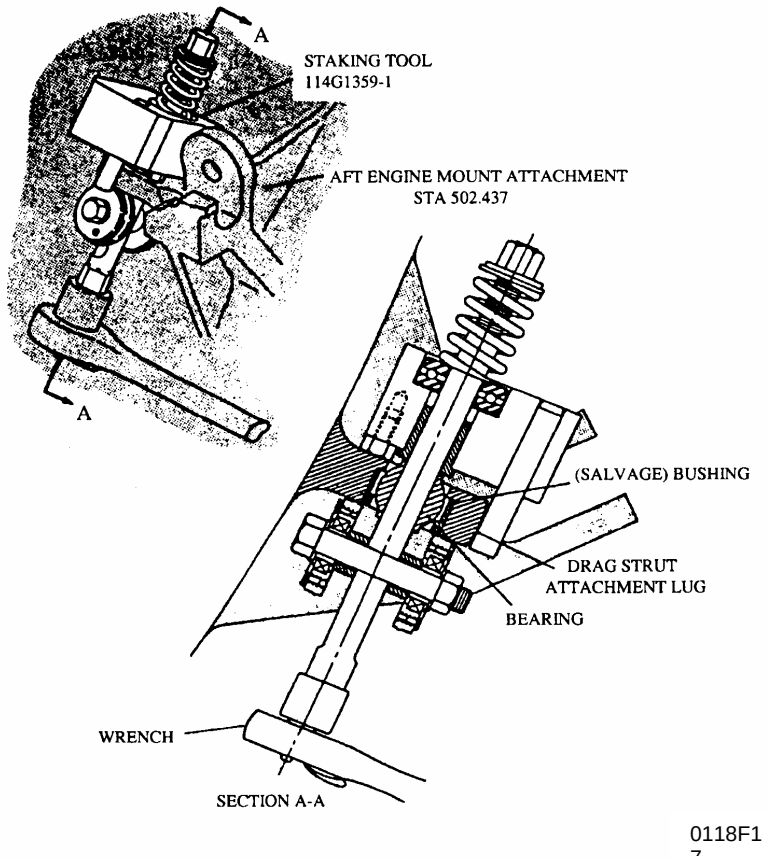


Figure 17. Drag Strut Bushing Staking Tool

REPLACEMENT OF ENGINE MOUNT(S)

Engine mount(s) must be replaced when damage is not repairable by burnishing and/or re-bushing. Subsequent paragraphs contain procedures for the replacement of the engine mount(s) and the installation and use of the locating fixture assembly, 114G1242-1. Refer to Figure 18. If the aircraft requires engine mount change and is classified as crash damage or suspect twisted airframe, alignment of airframe must be checked IAW WP 0148 00 before replacing mount(s).

PREPARATION OF AIRCRAFT FOR ENGINE MOUNT REPLACEMENT

Prepare the aircraft for engine mount replacement as follows. Refer to TM 55-1520-240-23 for component removal and installation procedures.

1. Remove the following: (1) all rotor blades, (2) pylon, (3) both engines, (4) combining transmission, (5) combining transmission support fitting bushings.
2. Level the aircraft.
3. Deplete the nitrogen charge from both aft landing gear.
4. Disconnect the aft landing gear at the upper attachment bolt. Support the wheels and ensure the proximity switches are not damaged when the landing gear swings down.

NOTE

Aircraft preparation for engine mount replacement in the field may in some cases be modified to expedite repair. Modified procedures are dependent on aircraft condition and require Engineering approval. Refer to WP 0003 for instructions on submission of a Maintenance Engineering Call (MEC) to initiate a request for modified aircraft preparation procedures.

INSTALLING LOCATING FIXTURE ASSEMBLY FOR ENGINE MOUNT REPLACEMENT

To accurately locate mount attach points and to maintain their alignment during repairs, it is essential that the locating fixture be properly fitted and supported. Locating fixture assembly, 114G1242-1, components needed to replace engine mounts are as follows: (1) Head assembly, 114G1242-3, (2) Wing assembly, 114G1242-4, LH and 114G1242 –5, RH, (3) Arm assembly, 114G1224-173, LH and RH. Refer to Figure 18.

1. Check all fixture and aircraft mating surfaces for foreign objects. Surfaces must be clean.
2. Check the head attach point bushings. The bushings must be properly seated and clean.
3. Hoist head into position on combining transmission mount. Temporarily secure head in position with two bolts, 114G1242-84, washers AN960-814, and nuts AN315-8R.
4. Hoist wing assembly into position by positioning attachment wall of the wing assembly against the wall of the head. Temporarily secure the wing assembly in position with two T-pins CL-16-TP to align the wing assembly and head. Repeat procedure for other wing assembly.
5. Fit sling to built-up assembly.
6. Remove hardware securing the head to the combining transmission mount.
7. Carefully hoist the locating fixture assembly just enough to enable pinning each of the six engine mount points.

CAUTION

Do not measure from the spotface. Measure from the top of the fitting.

8. When all six engine mount points are pinned, measure the gap between the combining transmission support pads on the locating fixture assembly and the top of the combining transmission mount.
9. Fit shims, as required, between head and combining transmission supports (this permits even alignment between locating fixture assembly and all six engine mount attach points). All 6 pins must fit and be easily removed and installed.

INSTALLING LOCATING FIXTURE ASSEMBLY FOR ENGINE MOUNT REPLACEMENT - continued

CAUTION

Pins may fit snugly providing there is no deflection of the locating fixture wing when removing and fitting the pins. If the locating fixture wing moves when fitting and removing pins, the shimming is incorrect and inaccurate alignment will occur.

10. Add or remove shims as necessary to ensure that the engine mount pins fit freely and there is no binding.
11. Secure head to structure using four bolts 114G1242-84, washers AN960-814, and nuts AN315-8R.
12. Position arm assembly, 114G1242-173, beneath each wing assembly. The double flanged ends of brace should contact a bracket on lower surface of each wing. The single flanged ends should contact the aft landing gear strut attachment fittings at FS 485, WL minus 5.
13. Adjust arm assemblies as necessary to allow attachment bolts to fit freely. Measure and record arm length.
14. Secure upper ends of arm assemblies. Use bolt 114G1242-148, washer AN960C1216, and nut MS 20365-1216.
15. Secure lower ends of arm assemblies. Use bolt 114G1242-148, washer AN960C1016, and nut MS20365-1018.
16. Ensure all six engine mount pins can still be moved by hand. Tighten and mark the arm on the side(s) being repaired.

REPLACEMENT OF FORWARD ENGINE MOUNT

Replace forward engine mount as follows:

1. Install the locating fixture as described above.
2. Temporarily remove wing and arm assemblies to remove affected engine mount.
3. Remove and retain engine cover latch, bushings, spherical bearings, adapter clamps, and associated parts from damaged forward engine mount.
4. Remove damaged forward engine mount assembly from former at FS 482.
5. Position replacement forward engine mount assembly in aft fuselage structure.
6. Reinstall the wing and arm assemblies.
7. Align the mount and determine how the pilot holes in the replacement mount line up with the existing holes in the fuselage (some adjustment may be necessary). Tighten the mount in the frame by fitting appropriate size temporary fasteners bolts through the pilot holes in the mount and into the fuselage.
8. Once the mount is properly fitted (all the holes aligned), ensuring that the mount pins can still be rotated by hand.
9. Remove temporary fastener bolts one at a time and drill the pilot hole to the correct size (same as fuselage fastener holes). Temporarily replace with same size diameter bolt as will be used in final installation. Continue this process until all holes have been drilled.
10. Disconnect and remove arm and wing assemblies.
11. Remove all temporary fastener bolts.
12. Deburr the drill holes in the mount.

CAUTION

Failure to deburr holes may cause cracks to develop in the engine mount.

13. Permanently install the replacement mount using identical, substitution, or oversize attaching hardware, as required. Fit hardware wet using epoxy primer (Item 140, WP 0157 00).
14. Reinstall wing and arm assemblies.
15. Drill, ream, and spotface lugs of forward engine mount. Use the drill and ream set, 114G5009-1,in conjunction with the location fixture, 114G1242-1. The drill and ream set is part of the locating fixture. The drill and ream sequence is illustrated on drawing 114G5009, which is included in the drill and ream set. Refer to Figure 3 for final tolerances and Table 1 for bushing requirements.
16. Spotface (1.18 inch diameter) outboard surface of inboard lug of each lug pair of forward engine mount assembly. Use drill and ream set 114G5009-1. Refer to Figure 3 for final tolerances. Spot face (1.38 inch diameter) inboard surface of inboard lug of inboard lug pair of forward engine mount to dimensions shown in Figure 3.

REPLACEMENT OF FORWARD ENGINE MOUNT - continued

17. Position drag strut attachment on drag strut attachment lug of forward engine mount. Mark bolt hole center on forward engine mount assembly as taken from existing bolt hole in drag strut attachment. Drill and ream forward engine mount assembly to dimensions shown in Figure 3.
18. Remove locating fixture from aft fuselage structure.
19. Reconnect associated structure and skin panels, clean and treat the repaired area, seal engine mount and structure, and refinish the repaired area.
20. Install bushings in forward engine mount.
21. Install aircraft components.
22. Reconnect the aft landing gear at the upper attachment bolt. Support the wheels and ensure the proximity switches are not damaged.
23. Service the landing gear strut.

REPLACEMENT OF AFT ENGINE MOUNT

Replace aft engine mount as follows:

1. Install the locating fixture as previously described.
2. Temporarily remove wing and arm assemblies to remove affected engine mount.
3. Remove and retain the bushings from the damaged mount.
4. Remove damaged aft engine mount from the former at FS 502.
5. Position replacement aft engine mount in aft fuselage structure.
6. Reinstall the wing and arm assemblies.
7. Align the mount and determine how the pilot holes in the replacement mount line up with the existing holes in the fuselage (some adjustment may be necessary). Tighten the mount in the frame by fitting appropriate size temporary fastener bolts through the pilot holes in the mount and into the fuselage.
8. Once the mount is properly fitted (all the holes aligned), ensure that the mount pin can still be rotated by hand.
9. Remove temporary fastener bolts one at a time and drill the pilot hole to the correct size (same as fuselage fastener holes). Temporarily replace with same size diameter bolt as will be used in final installation. Continue this process until all holes have been drilled.
10. Disconnect and remove the wing and arm assemblies.
11. Remove all temporary fastener bolts.
12. Deburr the drill holes in the mount.

CAUTION

Failure to deburr holes may cause new cracks in the engine mount.

13. Reinstall wing and arm assemblies.
14. Permanently install the replacement mount using identical, substitution, or oversize attaching hardware, as required. Fit hardware wet using epoxy primer (Item 140, WP 0157 00).
15. Drill, ream, and spotface lugs of aft engine mount. Use the drill and ream set, 114G5009-1, in conjunction with the location fixture, 114G1242-1. The drill and ream set is part of the locating fixture. The drill and ream sequence is illustrated on drawing 114G5009, which is included in the drill and ream set. Refer to Figure 3 for final tolerances and Table 1 for bushing requirements.
16. Remove locating fixture assembly from aft fuselage structure.
17. Reconnect associated structure and skin panels, clean and treat the repaired area, seal engine mount and structure, and refinish the repaired area.
18. Install bushings in aft engine mount.
19. Install aircraft components.
20. Reconnect the aft landing gear at the upper attachment bolt. Support the wheels and ensure the proximity switches are not damaged.
21. Service the landing gear strut.

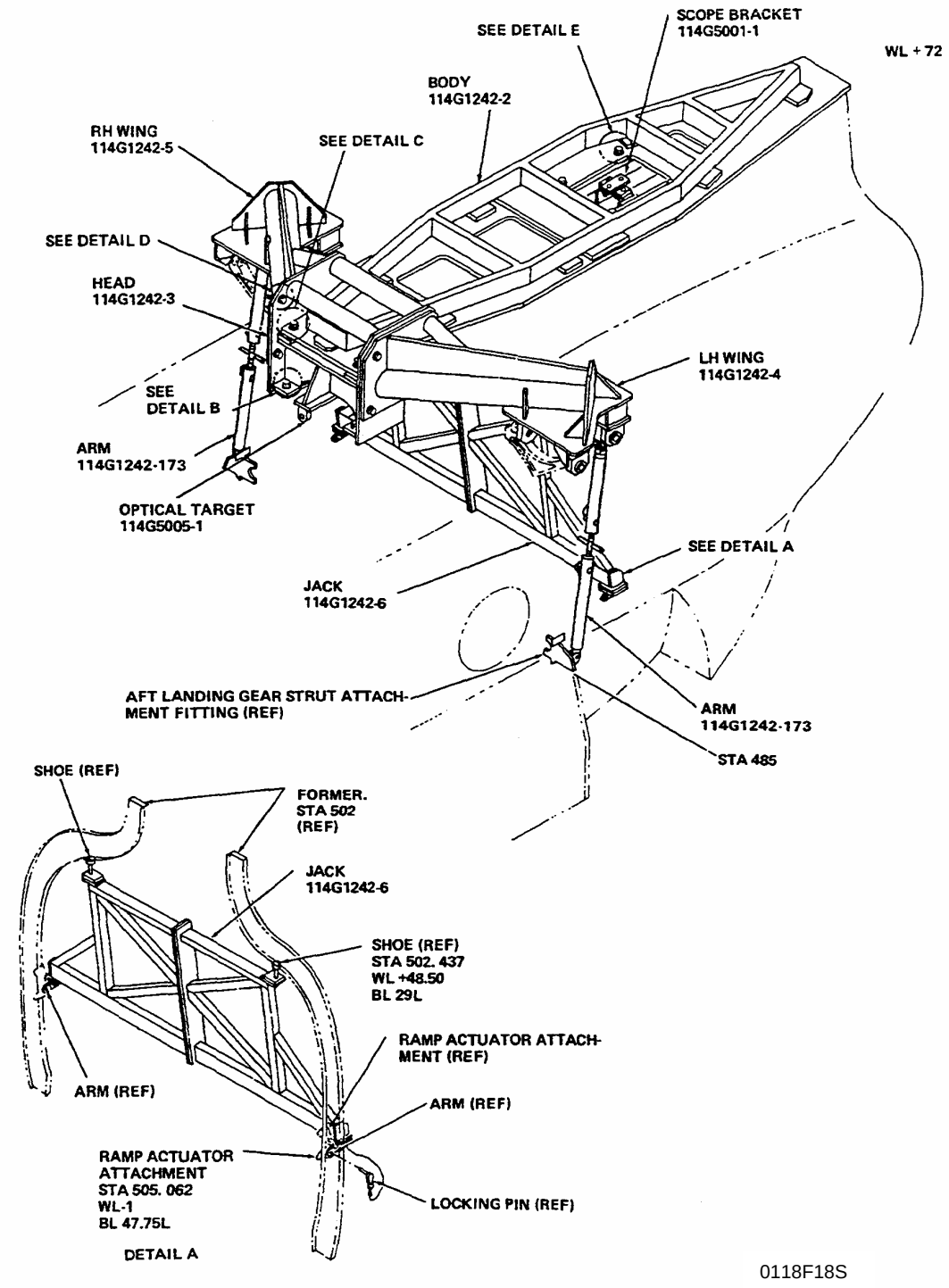


Figure 18. Locating Fixture, 114G1242-1 (Sheet 1 of 3)

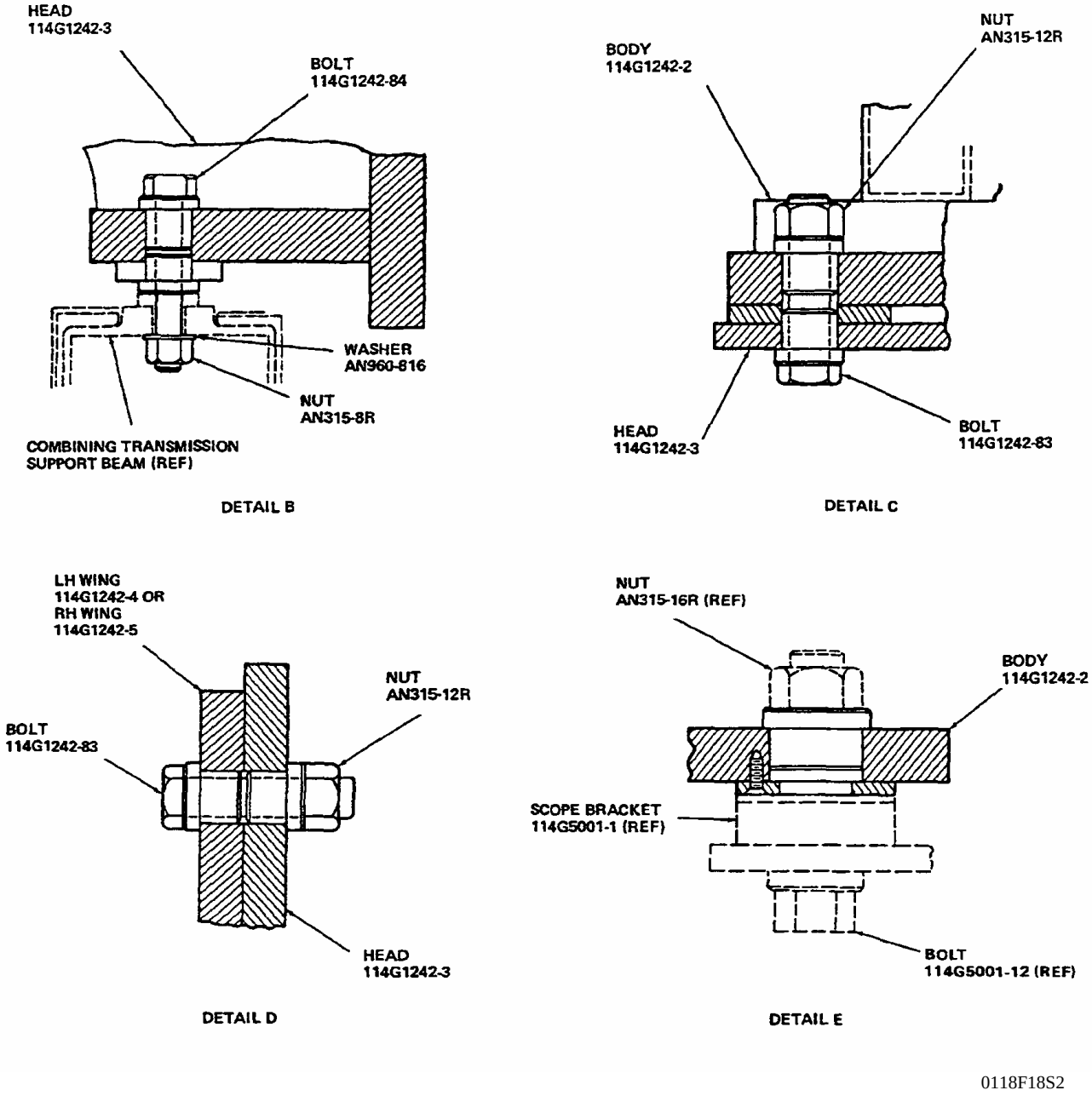
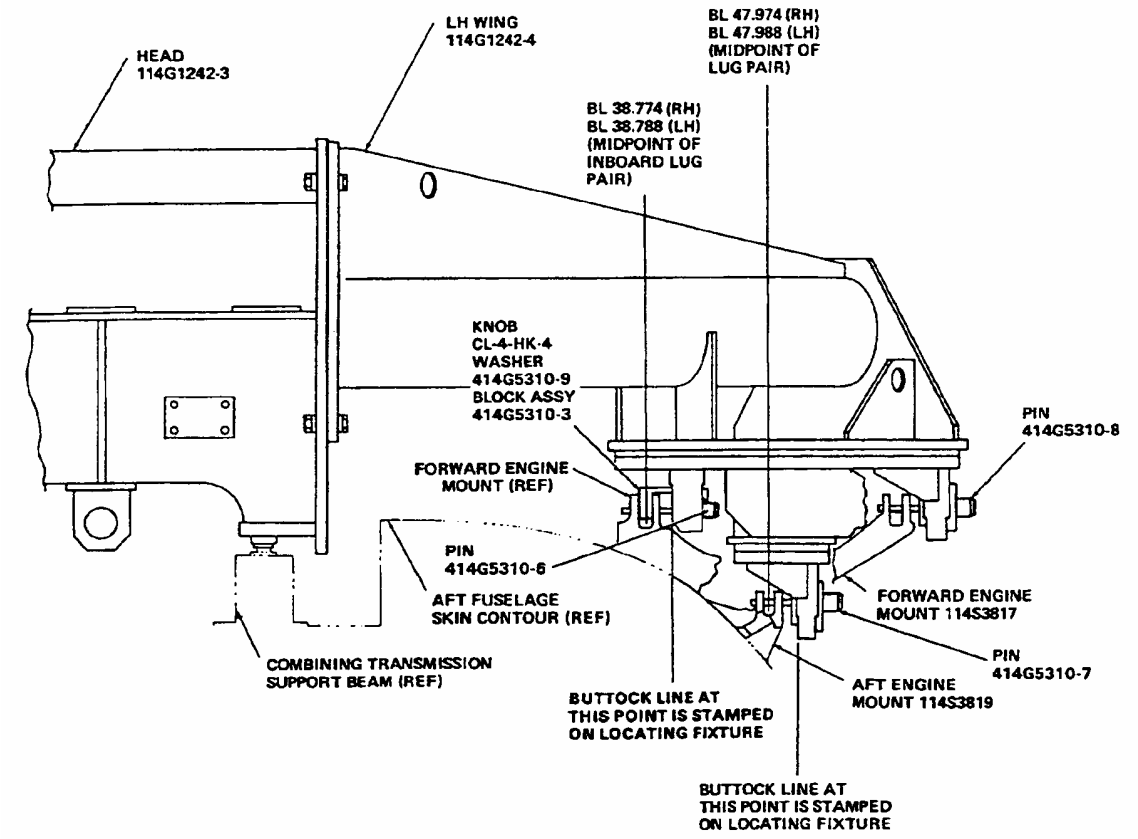


Figure 18. Location Fixture, 114G1242-1 (Sheet 2 of 3)



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NOTE

A. LH side view looking aft; RH side opposite.
B. LH arm assembly 114G1242-173 not shown.

Figure 18. Locating Fixture, 114G1242-1 (Sheet 3 of 3)

Table 1. Repair Bushings for Reworked Lug Bore Diameters – Engine Mounts/Drag Strut

Mount/Lug Bushing Location	Lug Thickness-Measured Lug Thickness (t min)	Lug Bore Dia-Measured Min-Max tol +/- .0005	Bush O/D (X)	Bush I/D (A)	Bush Flg Dia. (W)	Bush Flg Thick (Y)	Bush Length (L)
Fwd-Inbd Pair Inbd Lug "A"	Nominal 0.570 Min. 0.545						
Note F	0.570-0.545 Notes P & Q	0.8125	Note C	0.6250+.0015, -.0000	1.000	Note O	Note D
Note F	0.570-0.545 Notes P & Q	0.8281	Note C	0.6250+.0015, -.0000	1.000	Note O	Note D
Note F	0.570-0.545 Notes P & Q	0.8438	Note C	0.6250+.0015, -.0000	1.031	Note O	Note D
Note F	0.570-0.545 Notes P & Q	0.8594	Note C	0.6250+.0015, -.0000	1.047	Note O	Note D
Note F	0.570-0.545 Notes P & Q	0.8750	Note C	0.6250+.0015, -.0000	1.063	Note O	Note D
Note F	0.570-0.545 Notes P & Q	0.8906	Note C	0.6250+.0015, -.0000	1.078	Note O	Note D
Note F	0.570-0.545 Notes P & Q	0.9062	Note C	0.6250+.0015, -.0000	1.094	Note O	Note D
Note F	0.570-0.545 Notes P & Q	0.9219	Note C	0.6250+.0015, -.0000	1.100	Note O	Note D
Note F	0.570-0.545 Notes P & Q	0.9375	Note C	0.6250+.0015, -.0000	1.125	Note O	Note D
Note F	0.570-0.545 Notes P	0.9531	Note C	0.6250+.0015, -.0000	1.140	Note O	Note D
Note F	0.570-0.545 Notes P	0.9688	Note C	0.6250+.0015, -.0000	1.156	Note O	Note D
Note F	0.570-0.545 Notes P	0.9844	Note C	0.6250+.0015, -.0000	1.172	Note O	Note D
Fwd-Inbd Pair Outbd Lug "B"	Nominal 0.460 Min 0.440						
Note G	0.460-0.440 Note P	0.9375	Note C	0.8144+.0005, -.0000			Note E
Note G	0.460-0.440 Note P	0.9531	Note C	0.8144+.0005, -.0000			Note E
Note G	0.460-0.440 Note P	0.9688	Note C	0.8144+.0005, -.0000			Note E
Note G	0.460-0.440 Note P	0.9844	Note C	0.8144+.0005, -.0000			Note E
Fwd - Outbd Pair Inbd Lug "C"	Nominal 0.488 Min 0.465						
Note H	0.488-0.465 Notes P & Q	0.8125	Note C	0.6250+.0015, -.0000	1.000	Note O	Note D
Note H	0.488-0.465 Notes P & Q	0.8281	Note C	0.6250+.0015, -.0000	1.000	Note O	Note D
Note H	0.488-0.465 Notes P & Q	0.8438	Note C	0.6250+.0015, -.0000	1.031	Note O	Note D
Note H	0.488-0.465 Notes P & Q	0.8594	Note C	0.6250+.0015, -.0000	1.047	Note O	Note D
Note H	0.488-0.465 Notes P & Q	0.8750	Note C	0.6250+.0015, -.0000	1.063	Note O	Note D
Note H	0.488-0.465 Notes P & Q	0.8906	Note C	0.6250+.0015, -.0000	1.078	Note O	Note D
Note H	0.488-0.465 Notes P & Q	0.9062	Note C	0.6250+.0015, -.0000	1.094	Note O	Note D
Note H	0.488-0.465 Notes P & Q	0.9219	Note C	0.6250+.0015, -.0000	1.110	Note O	Note D
Note H	0.488-0.465 Notes P & Q	0.9375	Note C	0.6250+.0015, -.0000	1.125	Note O	Note D
Note H	0.488-0.465 Notes P & Q	0.9531	Note C	0.6250+.0015, -.0000	1.140	Note O	Note D
Note H	0.488-0.465 Notes P & Q	0.9688	Note C	0.6250+.0015, -.0000	1.156	Note O	Note D
Note H	0.488-0.465 Notes P & Q	0.9844	Note C	0.6250+.0015, -.0000	1.172	Note O	Note D

Table 1. Repair Bushings for Reworked Lug Bore Diameters – Engine Mounts/Drag Strut - continued

Fwd - Outbd Pair Outbd Lug "D"	Nominal 0.550 Min 0.525						
Note I	0.550-0.525 Note P	0.9375	Note C	0.8144+.0005, -.0000			Note E
Note I	0.550-0.525 Note P	0.9531	Note C	0.8144+.0005, -.0000			Note E
Note I	0.550-0.525 Note P	0.9688	Note C	0.8144+.0005, -.0000			Note E
Note I	0.550-0.525 Note P	0.9844	Note C	0.8144+.0005, -.0000			Note E
Fwd Drag Strut Lug "E"	Nominal 0.540 Min. 0.490						
Note J	0.540-0.490	0.6250	Note C	0.5000+.0015, -.0000	0.750	0.062	0.240 +/-.005
Note J	0.540-0.490	0.6406	Note C	0.5000+.0015, -.0000	0.750	0.062	0.240 +/-.005
Note J	0.540-0.490	0.6562	Note C	0.5000+.0015, -.0000	0.782	0.062	0.240 +/-.005
Note J	0.540-0.490	0.6719	Note C	0.5000+.0015, -.0000	0.800	0.062	0.240 +/-.005
Note J	0.540-0.490	0.6875	Note C	0.5000+.0015, -.0000	0.813	0.062	0.240 +/-.005
Aft - Inbd Lug "F"	Nominal 0.395 Min 0.354						
Note K	0.395-0.354 Note R	0.6250	Note C	0.5000+.0015, -.0000	0.750	Note O	Note D
Note K	0.395-0.354 Note R	0.6406	Note C	0.5000+.0015, -.0000	0.750	Note O	Note D
Note K	0.395-0.354 Note R	0.6562	Note C	0.5000+.0015, -.0000	0.782	Note O	Note D
Note K	0.395-0.354 Note R	0.6719	Note C	0.5000+.0015, -.0000	0.800	Note O	Note D
Note K	0.395-0.354 Note R	0.6875	Note C	0.5000+.0015, -.0000	0.813	Note O	Note D
Aft - Outbd Lug "G"	Nominal 0.395 Min 0.354						
Note L	0.395-0.354 Note R	0.8125	Note C	0.6275+.0005, -.0000			Note E
Note L	0.395-0.354 Note R	0.8281	Note C	0.6275+.0005, -.0000			Note E
Note L	0.395-0.354 Note R	0.8438	Note C	0.6275+.0005, -.0000			Note E
Note L	0.395-0.354 Note R	0.8594	Note C	0.6275+.0005, -.0000			Note E
Note L	0.395-0.354 Note R	0.8750	Note C	0.6275+.0005, -.0000			Note E
Drag Strut (Note B)							
Drag Strut-Aft Inbd Bushing	Nominal 0.320						
Note M		0.6272	Note M	0.5000+.0015, -.0000			0.4062
Note M		0.6562	Note M	0.5000+.0015, -.0000			0.4062

Table 1. Repair Bushings for Reworked Lug Bore Diameters – Engine Mounts/Drag Strut – continued

Drag Strut-Aft Outbd Bushing	Nominal 0.320						
Note N		0.6272	Note N	0.5000+.0015, -.0000	0.750	0.062	0.300
Note N		0.6562	Note N	0.5000+.0015, -.0000	0.782	0.062	0.300

NOTES

A. All dimensions in inches
B. The Engine Mount Repair Kit, 145G0333-1, does not include tools for drag strut bushing repair.
C. Bushing OD to be determined to ensure 0.0010 to 0.0020-inch interference shrink fit in appropriate hole
D. Bushing length 'L' (under flange head) to be determined by measuring lug thickness 't' minus 0.002 to 0.007-inch
E. Bushing length to be determined by measuring lug thickness 't' minus 0.002 to 0.007-inch
F. Replaces 114S3703-5 or -30
G. Replaces 114S3703-21
H. Replaces NAS 77-10-46 or 114S3703-31
I. Replaces 114S3703-20
J. Replaces NAS 77-8-24
K. Replaces NAS 77-10-19 or 114S3703-11
L. Replaces 114S3859-1 or -3
M. Replaces NAS 75-8-013 (OD to be determined to ensure 0.0002 to 0.0015-inch slip-fit in appropriate hole)
N. Replaces NAS 77-8-30 (OD to be determined to ensure 0.0002 to 0.0015-inch slip-fit in appropriate hole)
O. Equals measured depth of counterbore plus 0.000/minus 0.005-inch (0.062-inch min thickness - lug "A"; 0.032-inch min thickness -lug "F")
P. Thickness achieved by spotface (1.38-inch diameter x 0.03-inch radius.). Remove minimum material to eliminate damage.
   "A" lug - inbd side, bore size. 0.8125-0.9844-inch
   "A" lug - outbd side, bore size 0.9375-0.9844-inch
   "B" lug - inbd/outbd sides, bore size 0.9375-0.9844-inch
   "C" lug - inbd side, bore size 0.8125-0.9844-inch
   "C" lug - outbd side, bore size 0.9375-0.9844-inch
   "D" lug - inbd/outbd sides, bore size 0.9375-0.9844-inch
Q. Thickness achieved by spotface (1.19-inch diameter x 0.03-inch radius). Remove minimum material to eliminate damage. "A" lug - outbd side, bore size 0.8125-0.9219-inch
R. Thickness achieved by spotface (1.00-inch diameter x 0.06-inch radius). Remove minimum material to eliminate damage.
   "F" lug - outbd side, bore size 0.6250-0.6875-inch
   "G" lug - inbd side, bore size 0.8125-0.8750-inch

Note

Lug thickness minimum 0.380-inch for -714 Engine; 0.354-inch for -712 Engine

S. Bushing materials: Steel 431 Cres Bar, Cond HT115, MIL-S-18732; Steel 17-4 Cres Bar, AMS5643 HT to 150-170 KSI (H1050); or Steel 4130 Bar, Cond F, MIL-S-6758, 125 KSI, cad plated per QQ-P-416 type II, class 3

END OF WORK PACKAGE

DEPOT MAINTENANCE WORK REQUIREMENT
CH-47D HELICOPTER
AFT SECTION TUB ASSEMBLY REPAIRS

INITIAL SETUP

Test Equipment:
As Required

Tools and Special Tools:
As Required

Material/Parts:
Paint, Non-Skid (Item 125, WP 0157 00)

Personnel Required:
As Required

References:
TM 1-1500-204-23 Series
TM 55-1520-240-23 Series
WP 0081 00
WP 0083 00
WP 0086 00
WP 0087 00
WP 0088 00
WP 0093 00
WP 0157 00

Equipment Conditions:
As Required

Special Environmental Condition:
As Required

SCOPE

This work package describes repair procedures for the aft section tub assembly. Refer to Figure 1.

1. Bottom Former
2. Ramp Hinge Tunnel
3. Aft Landing Gear Drag Beam

SCOPE - continued

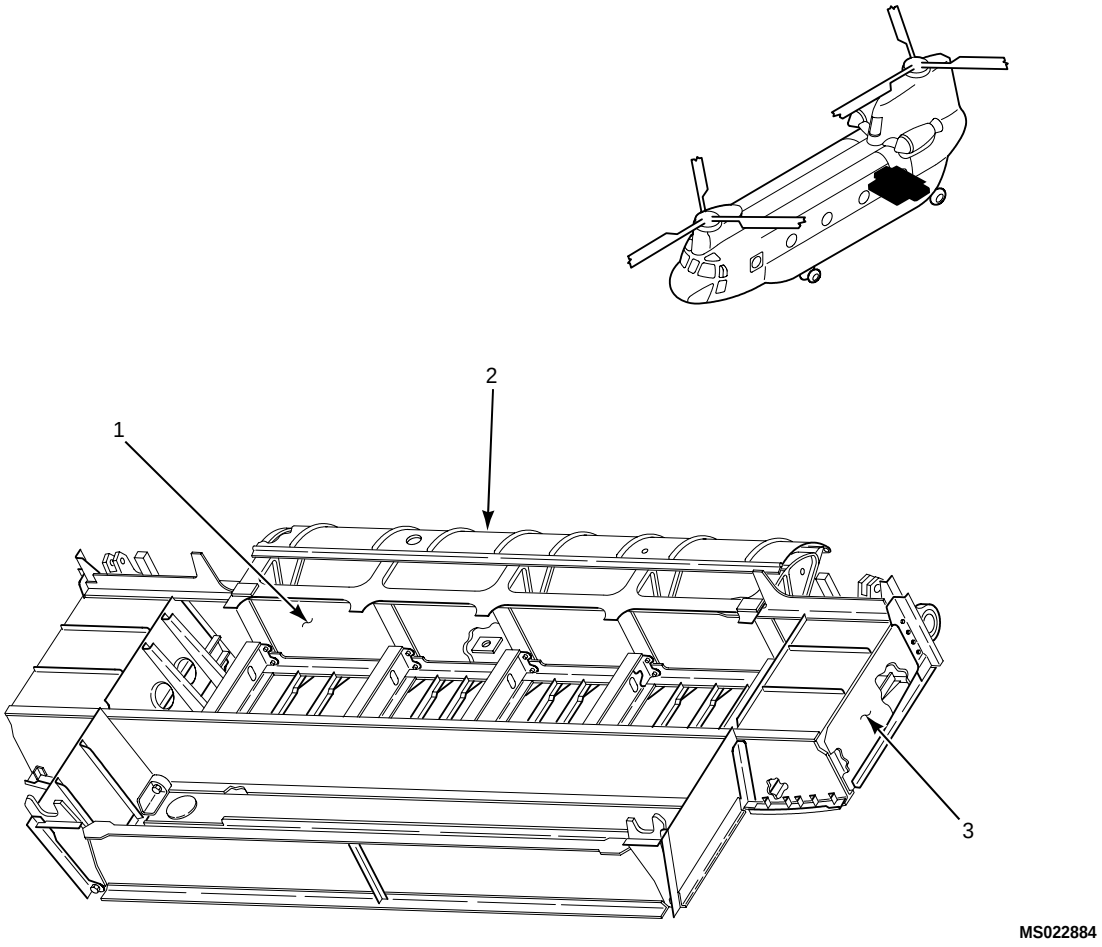


Figure 1. Aft Section Tub

REPAIR

NOTE

Refer to Table 1 for index number reference.

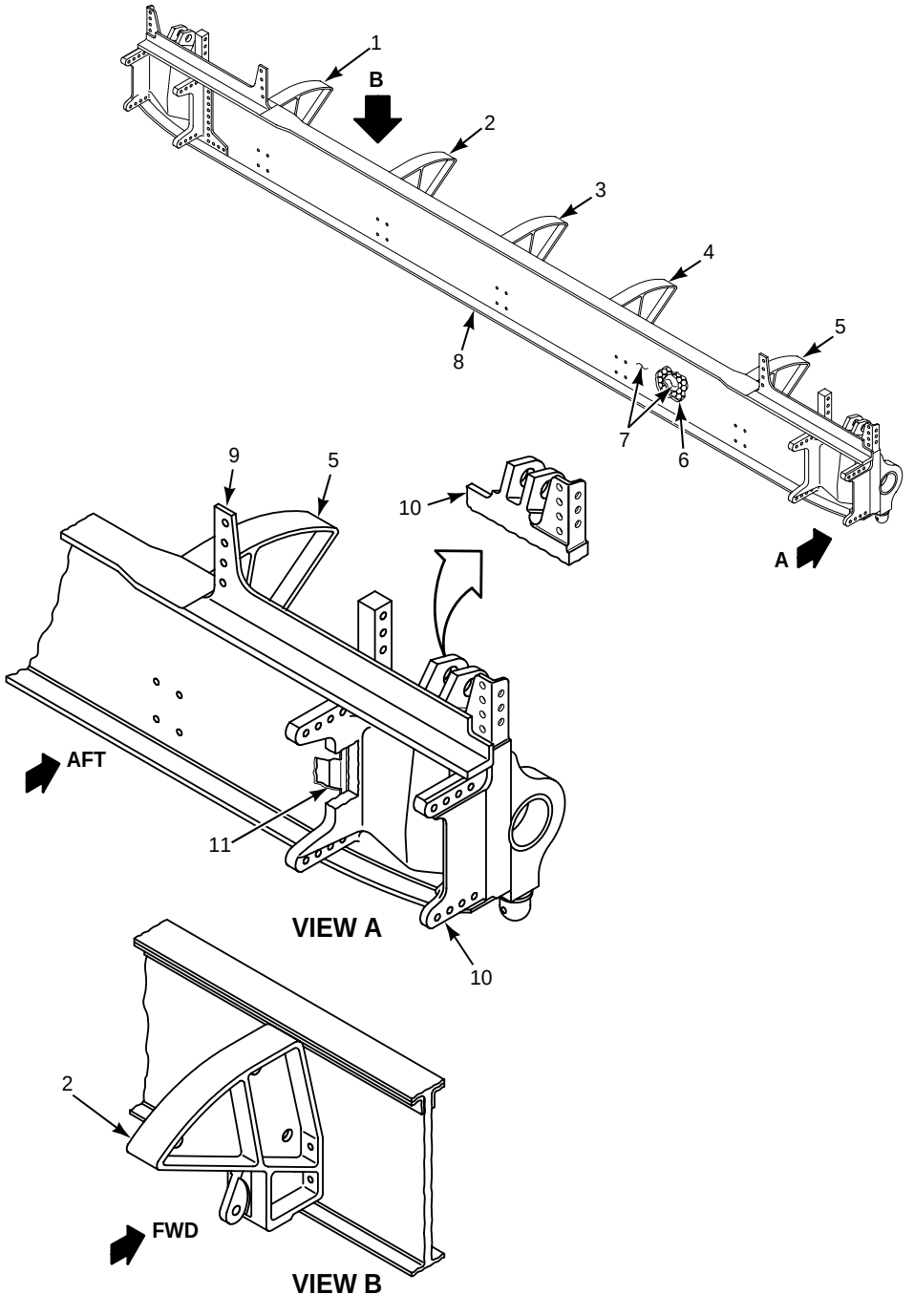


Figure 2. Bottom Former, Sta 482

REPAIR - continued

Table 1. Bottom Former, Sta 482

INDEX NO	NOMENCLATURE	ORIGINAL MATERIAL	REPAIR MATERIAL	WORK PACKAGE
1	Hinge Assy	AL Aly 7075-T73	Note D	--
2	Hinge Assy	AL Aly 7075-T73	Note E	--
3	Hinge Assy	AL Aly 7075-T73	Note F	--
4	Hinge Assembly	AL ALY 7075-T73	Note E	--
5	Hinge Assembly	AL ALY 7075-T73	Note D	--
6	Core	3.0-3/8-20-N-3003	Note B	0083 00
7	Skin	0.036 7075-T6	Note B	0083 00
8	Cap	VS90310 7075-T6	VS90310 7075 T6	0088 00
9	Cap	VS90523 7075-T6	VS90523 7075-T6	0088 00
10	Trunnion Assembly	2014-T6	Note C	--
11	Block	0.400 7075-T6 Bare	Note B	--

NOTES

A. All dimensions are in inches.

B. Component is a bonded assembly. Repair using original material.

C. If damage is other than minor, replace trunnion assembly with 114S3849-1 LH or 114S3849-2 RH.

D. If damage is other than minor, replace hinge assembly with 114S3812-41 LH or 114S3812-42 RH.

E. If damage is other than minor, replace hinge assembly with 114S3812-22.

F. If damage is other than minor, replace hinge with 114S3812-13.

REPAIR - continued

NOTE

Refer to Table 2 for index number reference.

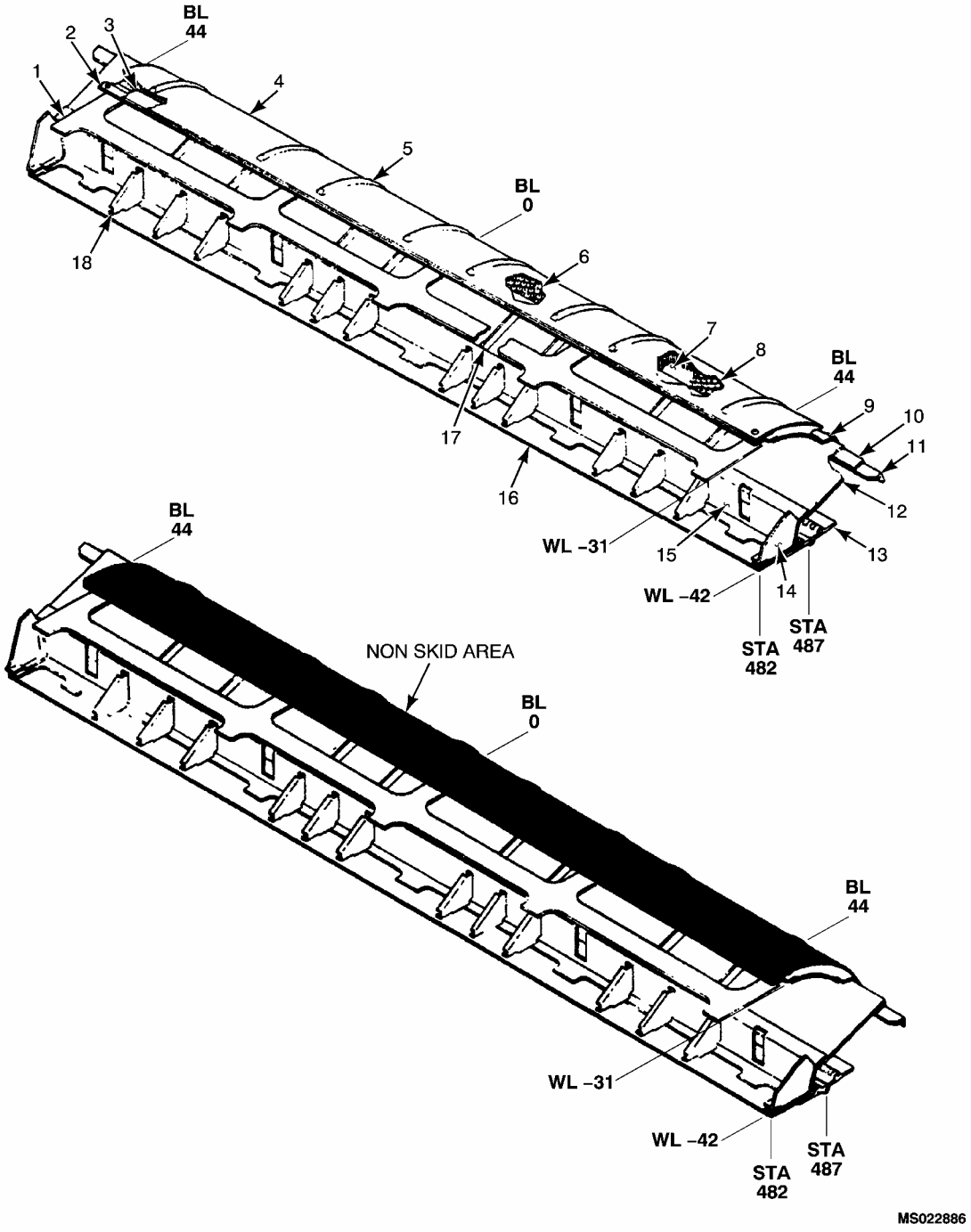


Figure 3. Ramp Hinge Tunnel

REPAIR - continued

Table 2. Ramp Hinge Tunnel

INDEX NO.	NOMENCLATURE	ORIGINAL MATERIAL	REPAIR MATERIAL	WORK PACKAGE
1	Finger Plate	0.040 AZ31B-H24 Mag Aly	0.050 4130	0086 00
2	Edge Member	0.063 7075-T6 Bare	Note E	0083 00
3	Doubler	0.020 7075-T6 Bare	Note E	0083 00
4	Skin	0.016 Cres 301 HD	Note E	0083 00
5	Skid Rail	ALCOA 1263 2024-T4	Note E	--
6	Core	0.952 3.3-¼-15N 3003	Note E	0083 00
7	Skin	0.016 7075-T6 Bare	Note E	0083 00
8	Core	0.952 4.3-¼-20N 3003	Note E	0083 00
9	Edge Member	0.040 7075-T6 Bare	Note E	0083 00
10	Cap	ALCOA 61971 7075-T6	0.050 4130	0088 00
11	Splice Angle	Harvey 11301-3 7075-T6	0.125 4130	0088 00
12	Web	0.020 7075-T6 Clad	0.025 7075-T6 Clad	0086 00
13	Hinge Assembly	MS20001-PH9	Note C	0093 00
14	Cap	4 Ply Laminated Glass Cloth	Note D	0081 00
15	Web	0.032 7075-T6 Clad	0.040 7075-T6 Clad	0086 00
16	Skin	0.032 7075-T6 Clad	0.040 7075-T6 Clad	0086 00
17	Stiffener	ALCOA 28546 7075-T6	0.036 4130	0088 00
18	Bracket	0.025 7075-T6 Bare	0.032 7075-T6 Clad	0087 00

NOTES

A. All dimensions are in inches.

B. Apply non-skid paint (Item 125, WP0157 00) if repairs are made within the shaded area or if existing coating is worn.

C. Repair by insertion using same material as original hinge half. Make from MS20001-PH9 or MS20001-PX 9. Make hinge pin from MS20253-P2.

D. If damage is other than minor, replace with 114S3551-25.

E. Part is sandwich honeycomb construction. Repair using same material as original.

REPAIR - continued

NOTE

Refer to Table 3 for index number reference.

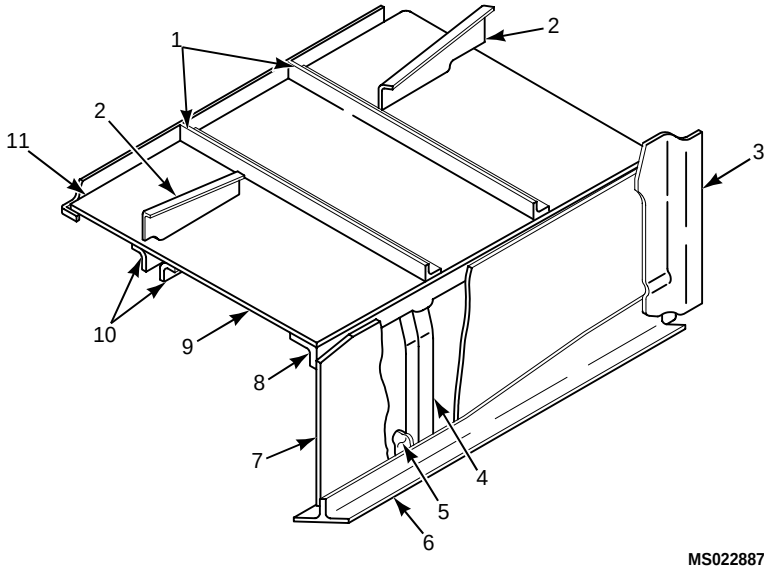


Figure 4. Aft Landing Gear Drag Beam

Table 3. Aft Landing Gear Drag Beam

INDEX NO.	NOMENCLATURE	ORIGINAL MATERIAL	REPAIR MATERIAL	WORK PACKAGE
1	Stiffener	AND10133-0603 7075-T6	0.125 4130	0088 00
2	Bracket	0.063 2024-T3 Clad	0.071 7075-T6 Clad	0087 00
3	Zee	0.050 7075-T6 Bare	0.063 7075-T6 Clad	0086 00
4	Stiffener	AND10133-0602 7075-T6	0.100 4130	0088 00
5	Stiffener	VS90533 7075-T6	NOTE B	0088 00
6	Cap	VS90533 7075-T6	NOTE B	0088 00
7	Web	0.040 7075-T6 Bare	0.050 7075-T6 Clad	0086 00
8	Cap	BAC1514-157 7075-T6	NOTE B	0088 00
9	Web	0.063 7075-T6 Bare	0.071 7075-T6 Clad	0086 00
10	Cap	ALCOA 29222 7075-T6	0.200 4130	0088 00
11	Cap	VS90305 7075-T6	0.063 4130	0088 00

NOTES

A. All dimensions are in inches.

B. Repair or replace using same material as original.

END OF WORK PACKAGE

DEPOT MAINTENANCE WORK REQUIREMENT
CH-47D HELICOPTER
TAIL CONE ASSEMBLY REPAIRS

INITIAL SETUP

Test Equipment:
As Required

Tools and Special Tools:
As Required

Material/Parts:
As Required

Personnel Required:
As Required

References:
TM 1-1500-204-23 Series
TM 55-1520-240-23 Series
WP 0081 00
WP 0086 00
WP 0087 00

Equipment Conditions:
As Required

Special Environmental Condition:
As Required

SCOPE

This work package describes repair procedures for the tail cone assembly skin, webs, formers, longerons, decks, and plenum. Refer to Figure 1.

1. Plenum Assembly
2. Deck, sta 594 to sta 625
3. Deck, WL plus 72

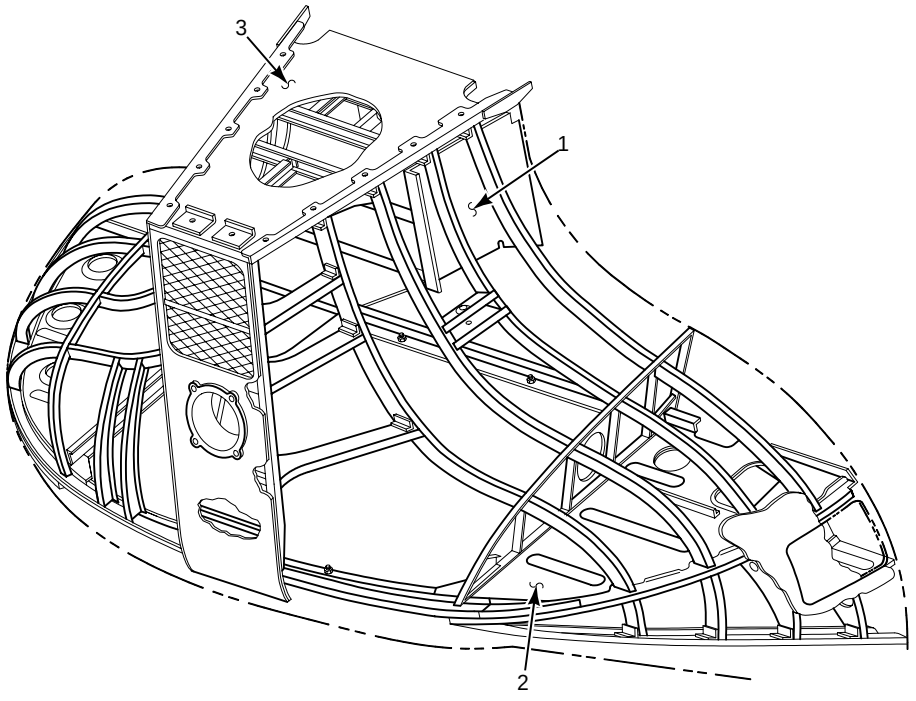


Figure 1. Tail Cone Assembly

REPAIR

NOTE

Refer to Table 1 for index number reference.

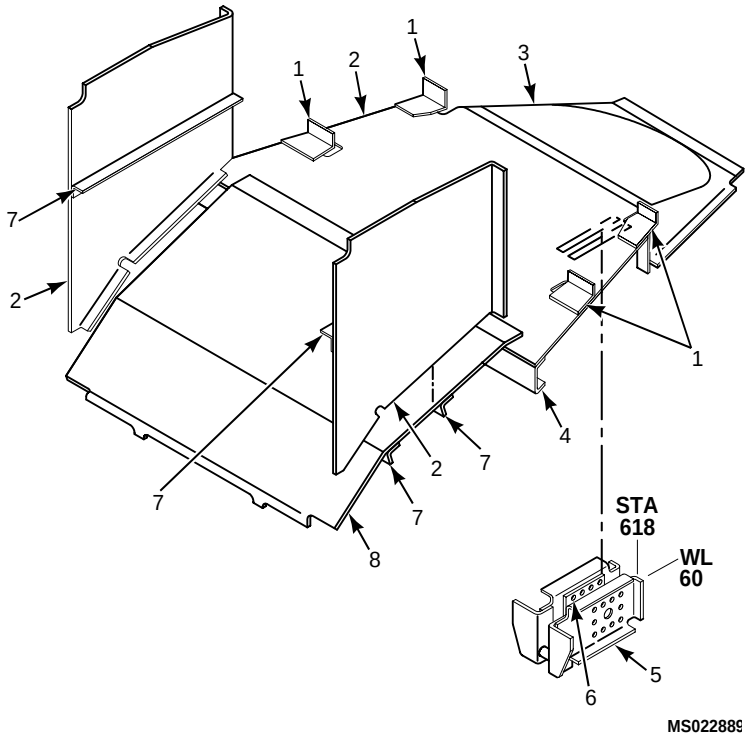


Figure 2. Plenum Assembly

Table 1. Plenum Assembly

INDEX NO.	NOMENCLATURE	ORIGINAL MATERIAL	REPAIR MATERIAL	WORK PACKAGE
1	Clip	0.016 2024-T3 Clad	Note B	--
2	Web	0.012 2024-T3 Clad	0.016 2024-T3 Clad	0086 00
3	Shield	0.012 2024-T3 Clad	0.016 2024-T3 Clad	0086 00
4	Channel	0.050 7075-T6 Clad	0.050 7075-T6 Clad	0087 00
5	Support	0.032 301 Cres MIL-S-5059	Note B	0087 00
6	Plate	0.090 301 Cres MIL-S-5059	Note B	0086 00
7	Stiffener	BAC1490-25	7075-T6 Clad	0087 00
8	Web	0.016 2024-T3 Clad	0.020 2024-T3 Clad	0086 00

NOTES

A. All dimensions are in inches.

B. Fabricate from original material.

REPAIR - continued

NOTE

Refer to Table 2 for index number reference.

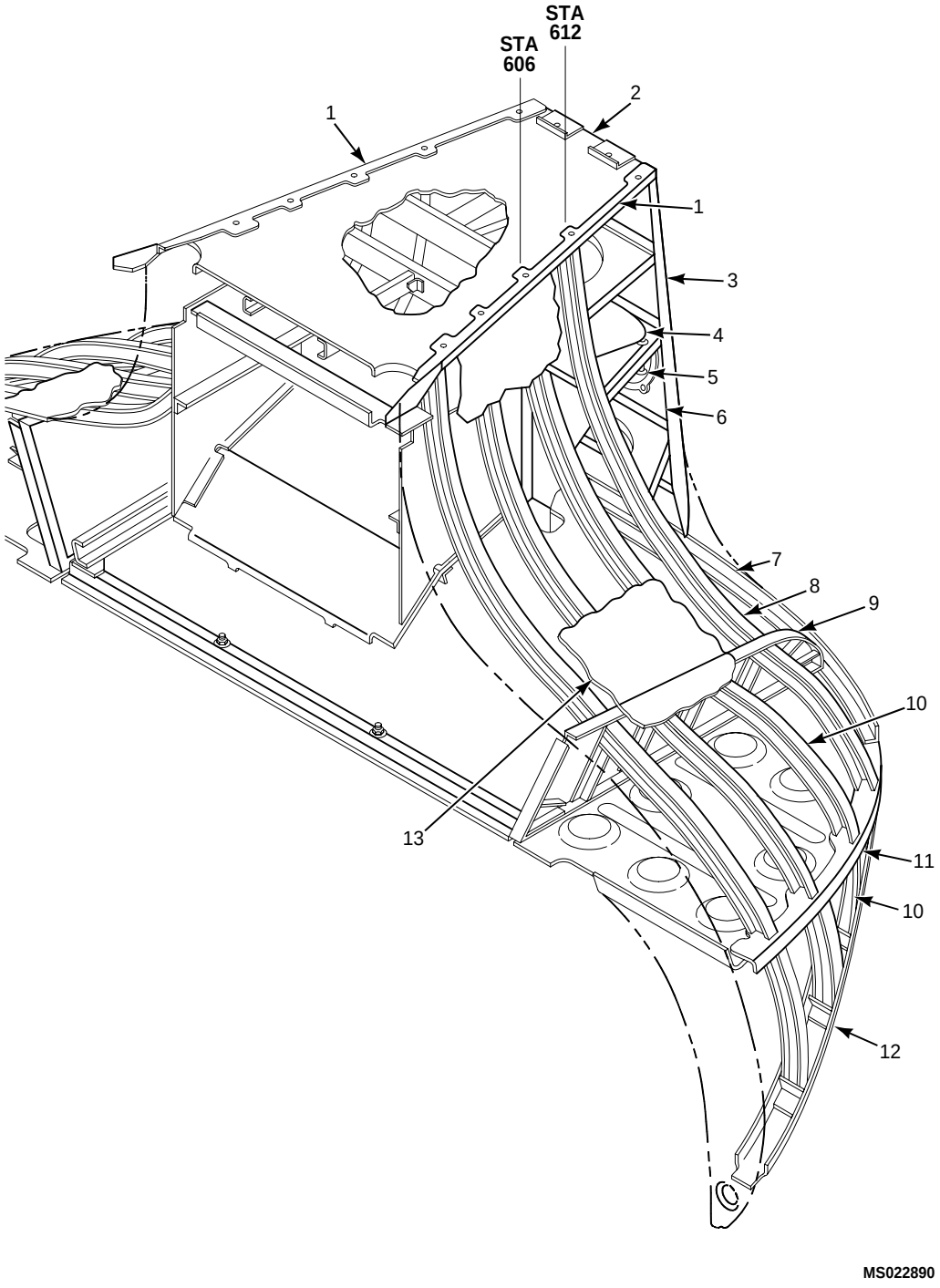


Figure 3. Tail Cone Assembly (Sheet 1 of 4)

REPAIR - continued

NOTE

Refer to Table 2 for index number reference.

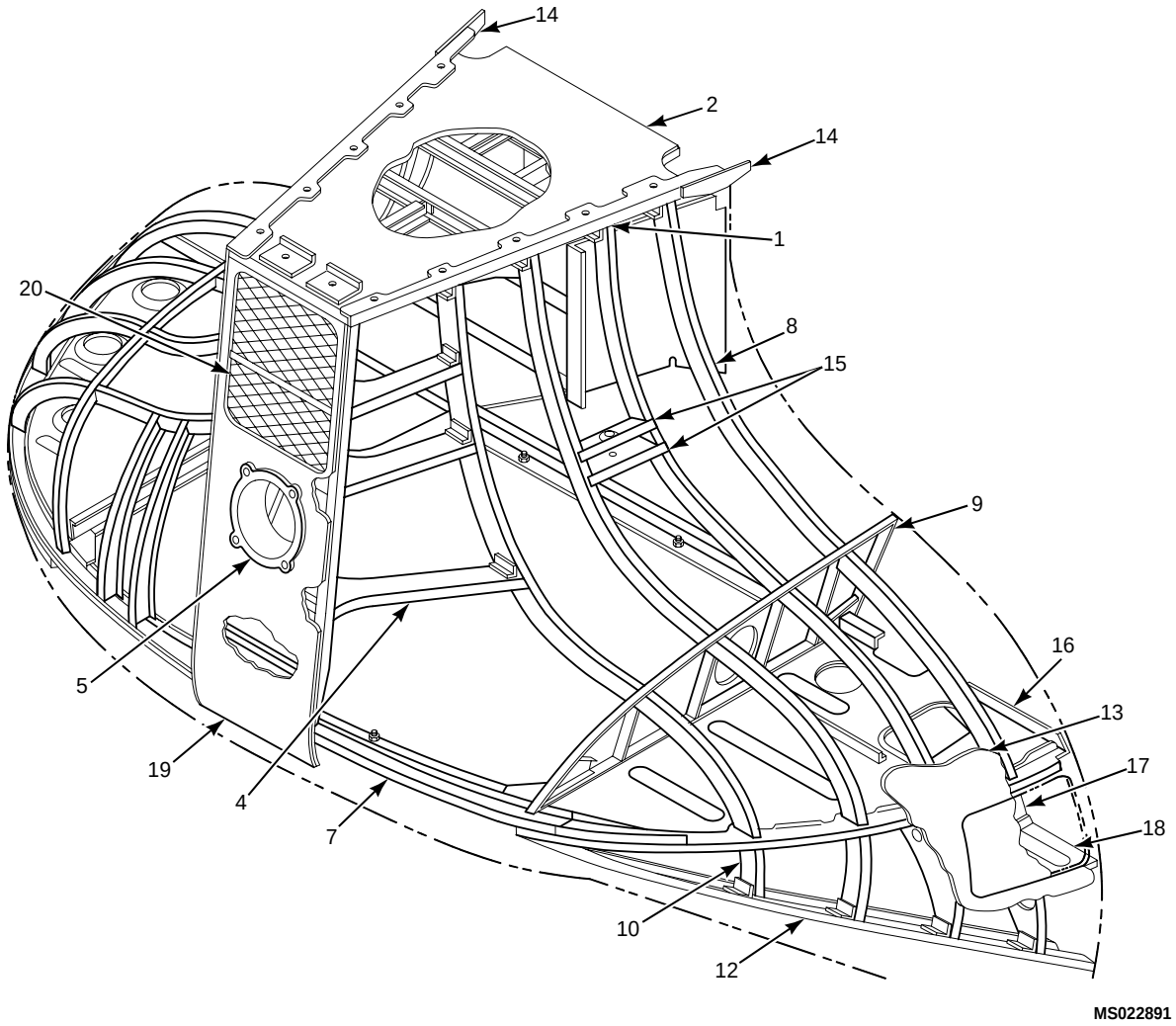


Figure 3. Tail Cone Assembly (Sheet 2 of 4)

REPAIR - continued

NOTE

Refer to Table 2 for index number reference.

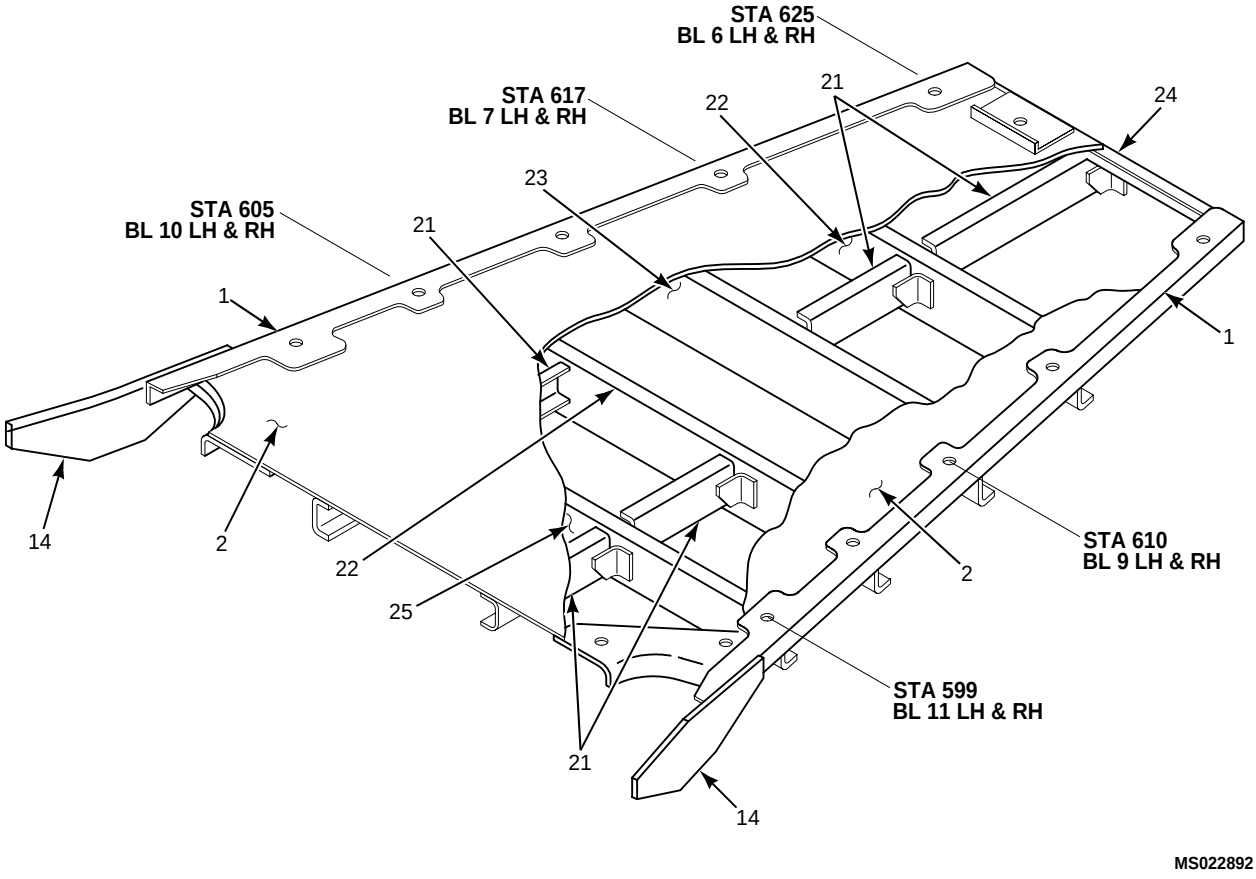


Figure 3. Tail Cone Assembly (Sheet 3 of 4)

REPAIR – continued

NOTE

Refer to Table 2 for index number reference.

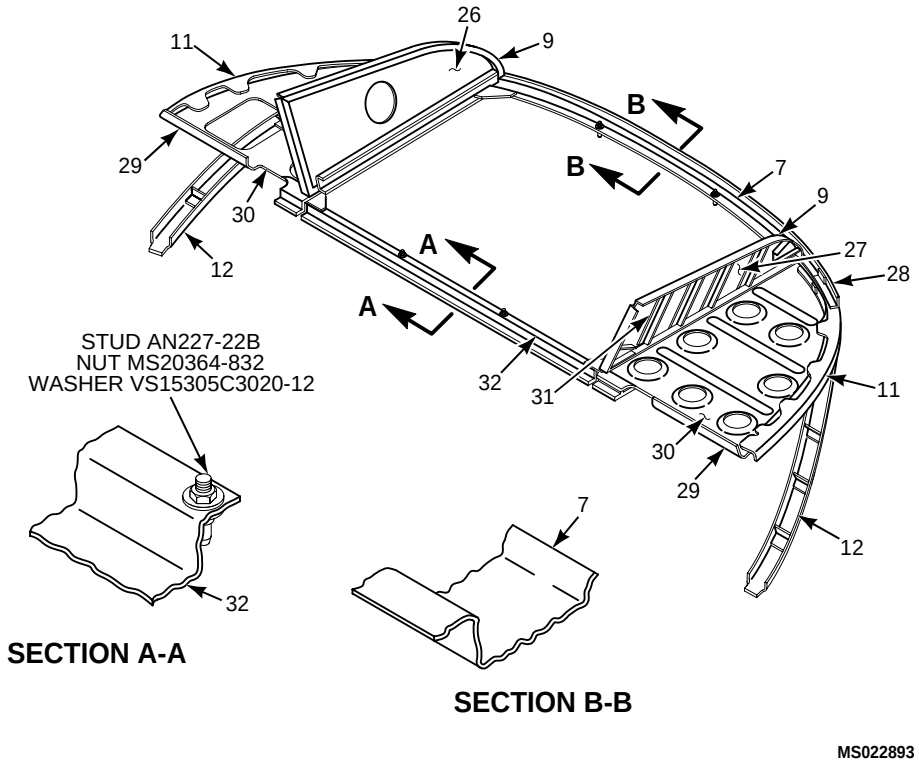


Figure 3. Tail Cone Assembly (Sheet 4 of 4)

Table 2. Tail Cone Assembly

INDEX NO.	NOMENCLATURE	ORIGINAL MATERIAL	REPAIR MATERIAL	WORK PACKAGE
1	Cap	0.050 7075-T6 Clad	0.050 7075-T6 Clad	0088 00
2	Web	0.020 7075-T6 Bare	0.025 7075-T6 Clad	0086 00
3	Angle	0.050 2024-T6 Clad	0.050 7075-T6 Clad	0087 00
4	Former	0.025 2024-T3 Clad	0.032 2024-T3 Clad	0087 00
5	Ejector Assy	Note B	--	--
6	Doubler	0.025 2024-T3 Clad	0.032 2024-T3 Clad	0086 00
7	Channel	0.032 7075-T6 Bare	0.040 7075-T6 Clad	0087 00
8	Former	0.032 7075-T6 Bare	0.040 7075-T6 Clad	0087 00
9	Cap	0.040 7075-T6 Bare	0.050 7075-T6 Clad	0087 00
10	Channel	0.025 2024-T3 Clad	0.032 2024-T3 Clad	0087 00
11	Zee	0.032 7076-T6 Bare	0.040 7076-T6 Clad	0087 00
12	Longeron	0.032 2024-T4 Clad	0.040 2024-T3 Clad	0087 00
13	Skin	0.025 2024-T4 Clad	0.032 2024-T3 Clad	0086 00

REPAIR – continued

Table 2. Tail Cone Assembly - continued

INDEX NO.	NOMENCLATURE	ORIGINAL MATERIAL	REPAIR MATERIAL	WORK PACKAGE
14	Gusset	0.063 7075-T6 Bare	0.071 7075-T6 Bare	0088 00
15	Channel	0.025 2024-T3 Clad	0.032 2024-T3 Clad	0087 00
16	Angle	0.040 7075-T6 Bare	0.050 7075-T6 Clad	0087 00
17	Liner	3 Ply No. 181 Glass Cloth	Note D	0081 00
18	Liner	0.032 7075-T6 Bare	0.040 7075-T6 Clad	0087 00
19	Web	0.025 2024-T3 Clad	0.032 2024-T3 Clad	0086 00
20	Screen	0.040 2024-T3 Bare	Note C	--
21	Channel	0.025 2024-T3 Clad	0.032 2024-T3 Clad	0087 00
22	Channel	0.032 7075-T6 Bare	0.040 7075-T6 Clad	0087 00
23	Channel	0.050 7075-T6 Bare	0.050 7075-T6 Clad	0087 00
24	Angle	0.040 7075-T6 Clad	0.050 7075-T6 Clad	0087 00
25	Channel	0.025 7075-T6 Bare	0.032 7075-T6 Clad	0087 00
26	Web	0.020 2024-T4 Clad	0.025 2024-T4 Clad	0086 00
27	Web	0.020 2024-T4 Clad	0.025 2024-T4 Clad	0086 00
28	Angle	0.032 7075-T6 Bare	0.040 7075-T6 Clad	0087 00
29	Angle	0.032 7075-T6 Bare	0.040 7075-T6 Clad	0087 00
30	Web	0.025 2024-T3 Clad	0.032 2024-T3 Clad	0086 00
31	Stiffener	VS70504-2 7075-T6	0.032 7075-T6 Clad	0087 00
32	Zee	0.032 7076-T6 Bare	0.040 7076-T6 Clad	0087 00

NOTES

A. All dimensions are in inches.
B. If damage is other than minor, replace with 114P0134-1.
C. When repair is impracticable, replace with 145S3504-2.
D. Repair using original material.

END OF WORK PACKAGE

DEPOT MAINTENANCE WORK REQUIREMENT
CH-47D HELICOPTER
CARGO DOOR COAMING REPAIRS

INITIAL SETUP

Test Equipment:
As Required

Tools and Special Tools:
As Required

Material/Parts:
As Required

Personnel Required:
As Required

References:
TM 1-1500-204-23 Series
TM 55-1520-240-23 Series
WP 0081 00
WP 0087 00

Equipment Conditions:
As Required

Special Environmental Condition:
As Required

SCOPE

This work package describes repair procedures for the cargo door coaming.

NOTE

Refer to Table 1 for index number reference.

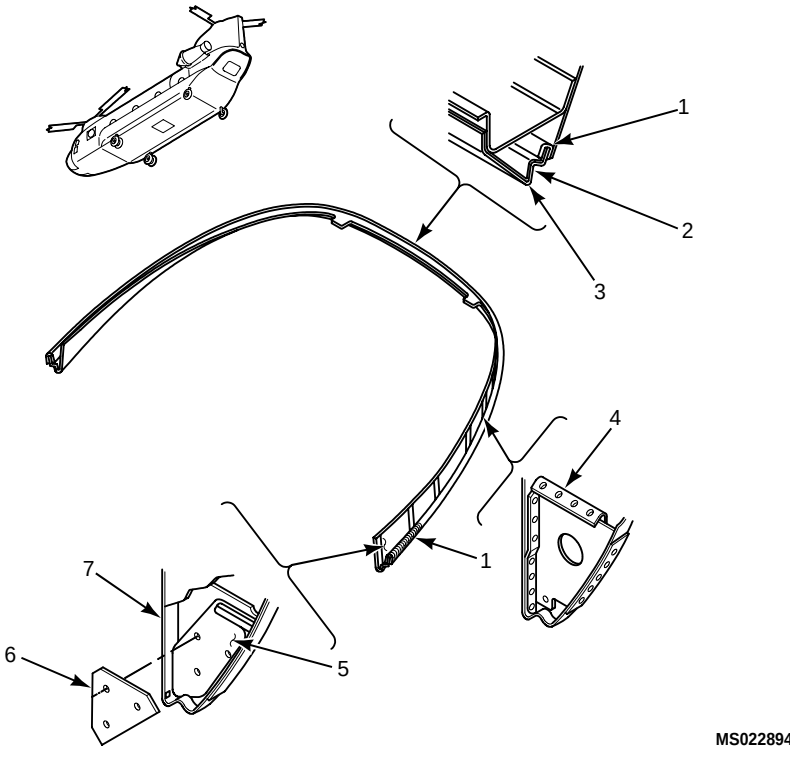


Figure 1. Cargo Door Coaming

REPAIR

Table 1. Cargo Door Coaming

INDEX NO.	NOMENCLATURE	ORIGINAL MATERIAL	REPAIR MATERIAL	WORK PACKAGE
1	Strip Bonder	Glass Cloth No.181	Glass Cloth No.181	0081 00
2	Coaming Splice	Glass Cloth No.181	Glass Cloth No.181	0081 00
3	Coaming	Glass Cloth No.181	Glass Cloth No.181	0081 00
4	Clip	0.032 2024-T4 Clad	0.040 2024-T3 Clad	0087 00
5	Seal	Note B	--	--
6	Seal Clamp	0.032 2024-T4 Clad	Note C	--
7	Former	0.032 2024-T4 Clad	0.040 2024-T3 Clad	0087 00

NOTES

A. All dimensions are in inches.

B. Replace with new seal, 114SS659-1 LH or 114SS659-2 RH.

C. Replace if damage is other than minor. Manufacture from original material.

END OF WORK PACKAGE

DEPOT MAINTENANCE WORK REQUIREMENT
CH-47D HELICOPTER
AFT TRANSMISSION DRIP PAN REPAIRS

INITIAL SETUP

Test Equipment:
As Required

Tools and Special Tools:
As Required

Material/Parts:
Cloth, Glass (Item 78, WP 0157 00)
Fiber Insulation (Item 102.1, WP 0157 00)

Personnel Required:
As Required

References:
TM 1-1500-204-23 Series
TM 55-1520-240-23 Series
WP 0081 00
WP 0086 00
WP 0087 00
WP 0093 00
WP 0095 00
WP 0157 00

Equipment Conditions:
As Required

Special Environmental Condition:
As Required

SCOPE

This work package describes repair procedures for the aft transmission drip pan assembly to include the supports, hinges, drain, and covers. Refer to Figure 1.

REPAIR

NOTE

Refer to Table 1 for index number reference.

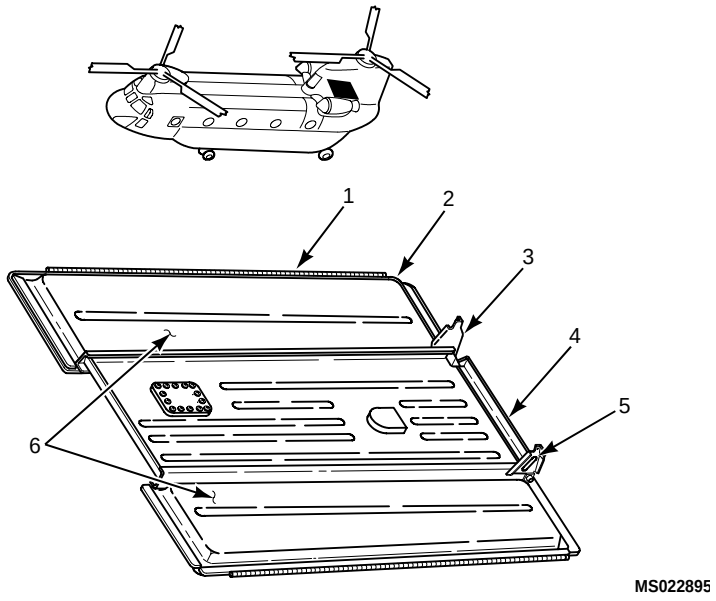


Figure 1. Aft Transmission Drip Pan (Sheet 1 of 2)

REPAIR – continued

NOTE

Refer to Table 1 for index number reference.

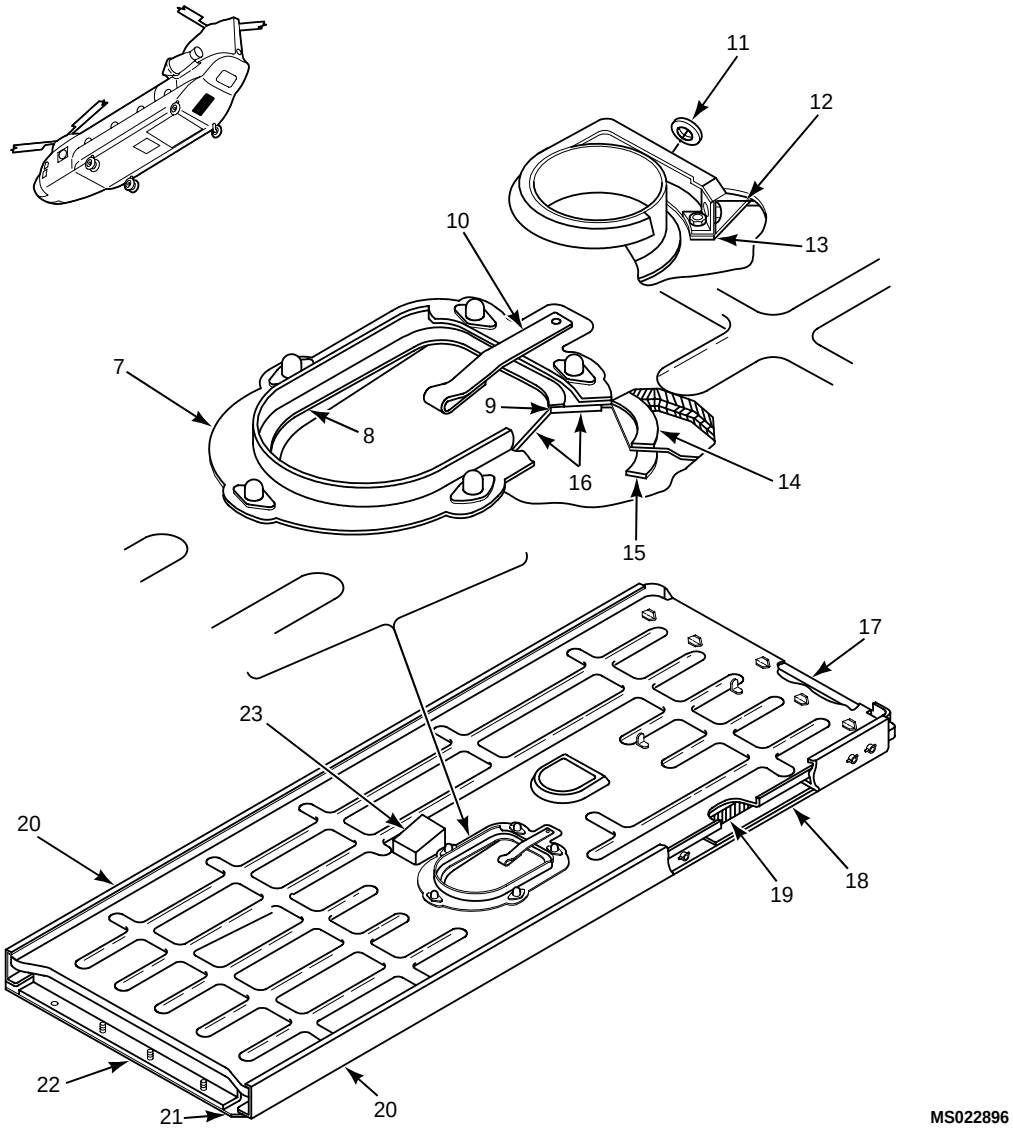


Figure 1. Aft Transmission Drip Pan (Sheet 2 of 2)

REPAIR – continued

Table 1. Aft Transmission Drip Pan

INDEX NO.	NOMENCLATURE	ORIGINAL MATERIAL	REPAIR MATERIAL	WORK PACKAGE
1	Hinge Half	MS20001	MS20001	0093 00
2	Zee	0.063 7075-T6 Bare	0.063 7075-T6 Clad	0087 00
3	Support LH	0.040 2024-T4 Clad	0.050 2024-T3 Clad	0087 00
4	Drain	Note B	--	0086 00
5	Support RH	0.040 2024-T4 Clad	0.050 2024-T3 Clad	0087 00
6	Cover	Note B	--	0081 00
7	Doubler	0.025 2024-T3 Clad	0.025 2024-T3 Clad	0086 00
8	Retainer	0.025 2024-T3 Clad	0.032 2024-T3 Clad	0087 00
9	Seal	Note D	--	0095 00
10	Strap	Note C	--	--
11	Grommet	MS35489-6	Note E	--
12	Support	0.025 2024-T3 Clad	0.032 2024-T3 Clad	0087 00
13	Angle	0.025 2024-T3 Clad	0.025 2024-T3 Clad	0087 00
14	Support	Note B	--	0081 00
15	Retainer	0.025 2024-T3 Clad	0.032 2024-T3 Clad	0086 00
16	Cover	Note B	--	0081 00
17	Tape, Velcro	Velcro Tape 80 Hook Color No 320 .75 X 19.8	Note G	--
18	Cover	Note B	--	0081 00
19	Blanket Assembly	Fiber Insulation MIL-B-5924 Type 1	Note F	--
20	Beam	0.040 2024-T4 Clad	0.050 2024-T3 Clad	0087 00
21	Cover	Note B	--	0081 00
22	Zee	0.063 7075-T6 Bare	0.063 7075-T6 Clad	0087 00
23	Bumper	1.5 Thick X 2.0 X 2.0	Note C	--

NOTES

A. All dimensions are in inches.
B. Laminated impregnated glass cloth (Item 78, WP 0157 00)
C. Replace damaged strap with 145S3620-11.
D. Replace damaged seal with 0.063-inch MIL-R-6855 rubber.
E. Replace damaged grommet with MS3589-6.
F. Replace damaged batting with insulation fiber (Item 102.1, WP 0157 00).
G. Replace damaged velcro tape with same as original.

END OF WORK PACKAGE

DEPOT MAINTENANCE WORK REQUIREMENT
CH-47D HELICOPTER
APU DRIP PAN REPAIRS

INITIAL SETUP

Test Equipment:
As Required

Tools and Special Tools:
As Required

Material/Parts:
As Required

Personnel Required:
As Required

References:
TM 1-1500-204-23 Series
TM 55-1520-240-23 Series
WP 0081 00
WP 0087 00

Equipment Conditions:
As Required

Special Environmental Condition:
As Required

SCOPE

This work package describes repair procedures for the APU drip pan to include the hinge, drip tray, tees, arms, and drain. Refer to Figure 1.

REPAIR

NOTE

Refer to Table 1 for index number reference.

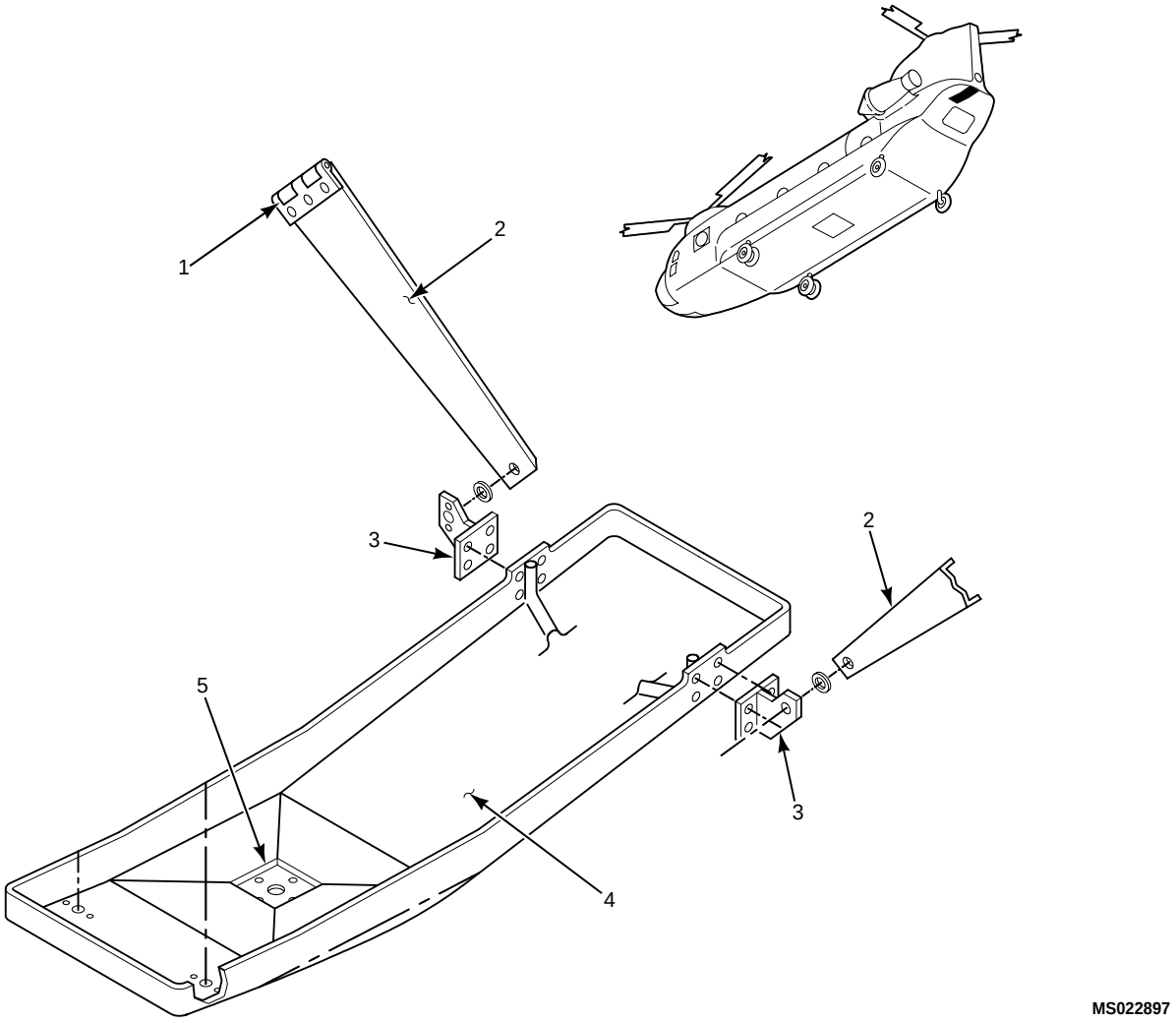


Figure 1. APU Drip Pan

REPAIR - continued

Table 1. APU Drip Pan

INDEX NO.	NOMENCLATURE	ORIGINAL MATERIAL	REPAIR MATERIAL	WORK PACKAGE
1	Hinge Half	MS20001P5	Note D	--
2	Arm	0.020 2024-T3 Clad	0.025 2024-T3 Clad	0087 00
3	Tee	Note C	--	--
4	Drip Tray	Glass Cloth No. 181	Glass Cloth No. 181	0081 00
5	Drain Assembly	Note B	--	--

NOTES

A. All dimensions are in inches.
B. If damage is other than minor, replace with 145S3617-9.
C. If damage is other than minor, replace with 145S3617-5 LH or 145S3617-4 RH.
D. Replace with new hinge half.

END OF WORK PACKAGE

DEPOT MAINTENANCE WORK REQUIREMENT
CH-47D HELICOPTER
CARGO RAMP EXTERIOR REPAIRS

INITIAL SETUP

Test Equipment:
As Required

Tools and Special Tools:
As Required

Material/Parts:
As Required

Personnel Required:
As Required

References:
TM 1-1500-204-23 Series
TM 55-1520-240-23 Series
WP 0083 00
WP 0084 00
WP 0086 00
WP 0087 00
WP 0088 00
WP 0095 00

Equipment Conditions:
As Required

Special Environmental Condition:
As Required

SCOPE

This work package describes repair procedures for the cargo ramp exterior to include skin, strakes, hinge, bonded assembly, composite panels, webs, caps, and stringers. Refer to Figure 1.

REPAIR

NOTE

Refer to Table 1 for index number reference.

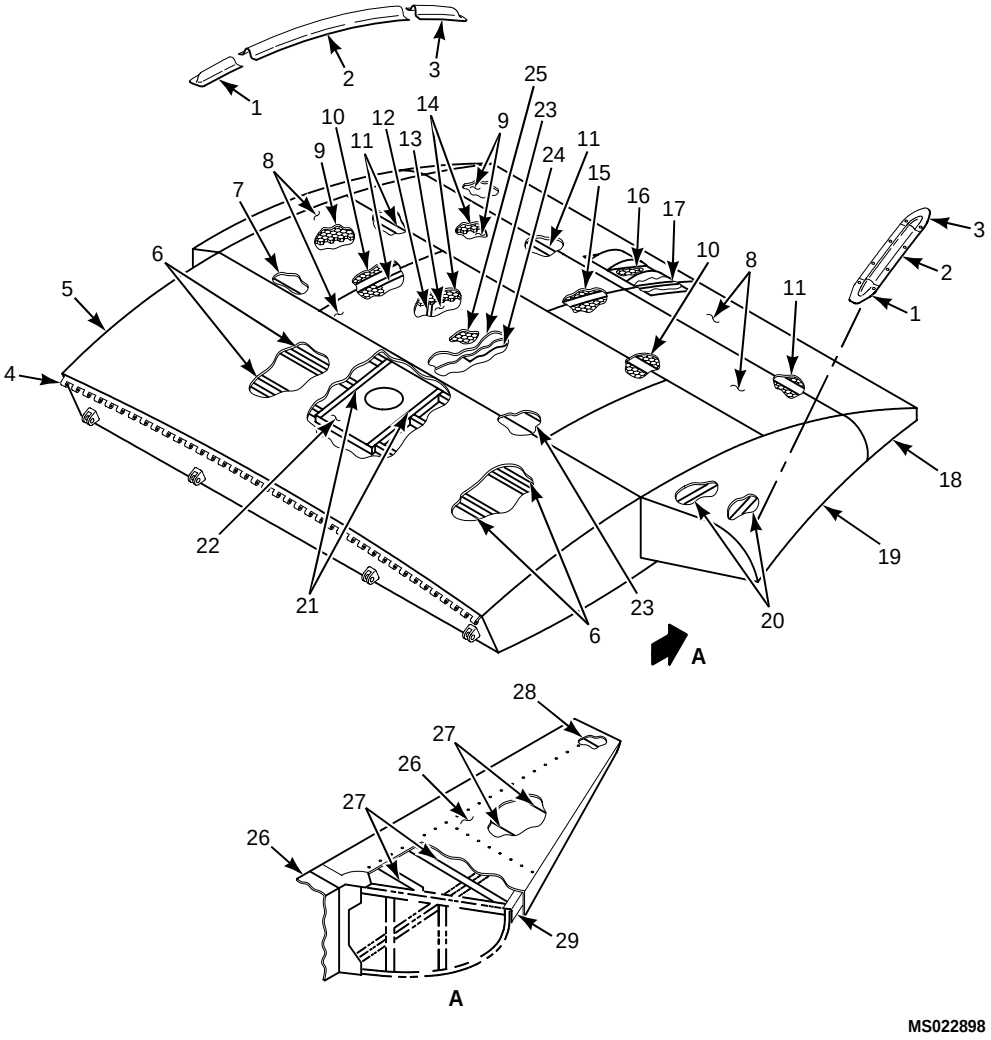


Figure 1. Cargo Ramp Exterior

Table 1. Cargo Ramp Exterior

INDEX NO.	NOMENCLATURE	ORIGINAL MATERIAL	REPAIR MATERIAL	WORK PACKAGE
1	Nose Strake	0.050 2024-T3 Clad	0.063 2024-T3 Clad	0087 00
2	Center Strake	0.050 2024-T3 Clad	0.063 2024-T3 Clad	0087 00
3	Tail Strake	0.050 2024-T3 Clad	0.063 2024-T3 Clad	0087 00
4	Hinge	VS20106-1	Note C	0095 00
5	Skin	0.032 7075-T6 Clad	0.040 7075-T6 Clad	0086 00
6	Stiffener	0.032 7075-T6 Clad	0.040 2024-T3 Clad	0087 00

REPAIR - continued

Table 1. Cargo Ramp Exterior

INDEX NO.	NOMENCLATURE	ORIGINAL MATERIAL	REPAIR MATERIAL	WORK PACKAGE
7	Member	Scotch Ply	Note B	0083 00
8	Outer Skin	0.020 7075-T6 Clad	0.032 7075-T6 Clad	Note B
	Outer Skin	S-Glass Pre Peg Tape, Type I-I, Class A	Note D	0084 00
9	Inner Skin	0.016 7075-T6 Clad	0.020 7075-T6 Clad	Note B
	Inner Skin	E-Glass Pre Preg Fiber Class II, Grade, Type 1581 or 7781	Note D	0084 00
10	Splice Plate	0.020 7075-T6 Clad	Note B	0083 00
11	Splice Plate	0.016 7075-T6 Clad	0.020 7075-T6 Clad	0083 00
12	Core	0.97 5.1-1/4-25N-3003	Note B	0083 00
13	Inner Skin	0.012 7075-T6 Clad	0.016 7075-T6 Clad	0083 00
14	Core	0.97 3.3-1/4-30N-3003	Note B	0083 00
	Core	0.97 X 33.3 3/16 R X 101.0	Note D	0084 00
15	Splice Plate	0.020 7075-T6 Clad	Note B	0083 00
16	Core	0.97 6.0-1/4-30N-3003	Note B	0083 00
	Core	0.97 X30.7 3/16 R X 101.0	Note D	0084 00
17	Splice Plate	0.016 7075-T6 Clad	Note B	0083 00
18	Skin	0.025 2024-T3 Clad	0.032 2024-T3 Clad	0086 00
19	Skin	0.032 2024-T4 Clad	0.040 2024-T4 Clad	0086 00
20	Stringer	0.032 7075-T6 Clad	0.040 7075-T6 Clad	0087 00
21	Channel	0.032 7075-T6 Clad	0.032 7075-T6 Clad	0087 00
22	Doubler	0.032 7075-T6 Clad	0.032 7075-T6 Clad	0086 00
23	Doubler	0.016 7075-T6 Clad	Note B	0083 00
24	Doubler Edge	0.012 7075-T6 Clad	Note B	0083 00
25	Core	0.97 6.0-1/4-30N-30C3	0.020 7075-T6 Clad	0083 00
26	Web	0.025 7075-T6 Clad	0.032 7075-T6 Clad Note E	0086 00
27	Stiffener	0.040 7075-T6 Clad	0.050 7075-T6 Clad	0088 00
28	Stiffener	0.032 7075-T6 Clad	0.040 7075-T6 Clad	0088 00
29	Cap	0.040 7075-T6 Clad	0.050 7075-T6 Clad	0087 00

NOTES

A. All dimensions are in inches.

B. Component part of bonded assembly. Repair using same type material as original.

C. Replace with same material as original.

D. Nomex panel, ramp bottom skin, ramp sta 37 to sta 98.

E. Remove the riveted access covers, LH and RH sides. Install nut plate, NSN 5310-00-777-5792 at holes. Manufacture new covers and install with screws, NSN 5305-00-180-0009.

END OF WORK PACKAGE

DEPOT MAINTENANCE WORK REQUIREMENT
CH-47D HELICOPTER
CARGO RAMP INTERIOR REPAIRS

INITIAL SETUP

Test Equipment:
As Required

Tools and Special Tools:
As Required

Material/Parts:
Sealing Compound (Item 162, WP 0157 00)

Personnel Required:
As Required

References:
TM 1-1500-204-23 Series
TM 55-1520-240-23 Series
WP 0083 00
WP 0086 00
WP 0087 00
WP 0088 00
WP 0093 00
WP 0157 00

Equipment Conditions:
As Required

Special Environmental Condition:
As Required

SCOPE

This work package describes repair procedures for the cargo ramp interior to include former assemblies, beam assemblies, gate assembly, and fitting bushing replacement. Refer to Figure 1.

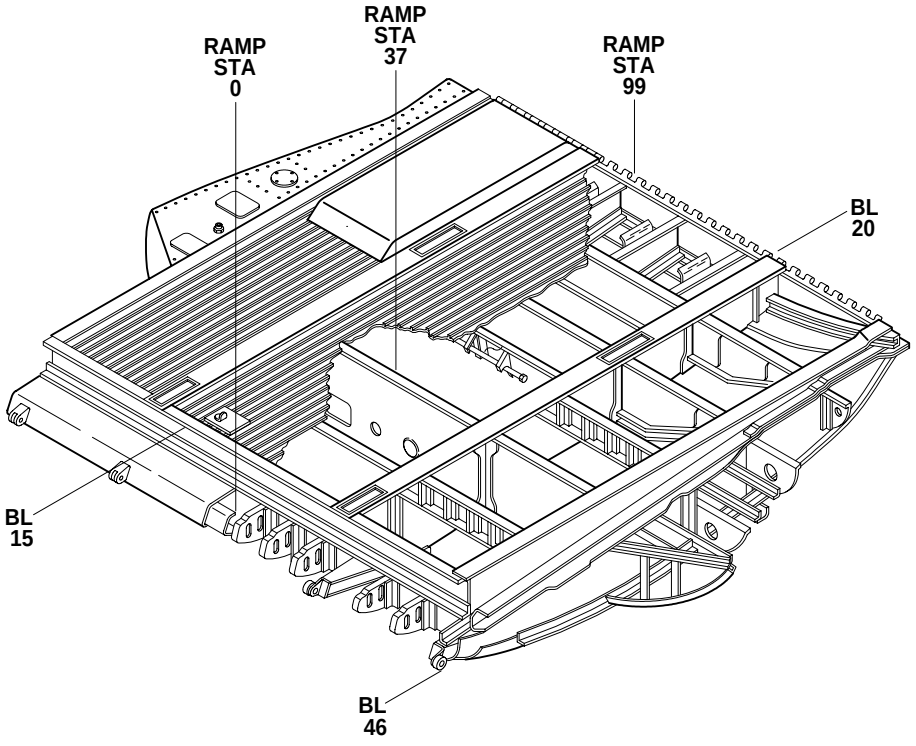


Figure 1. Cargo Ramp Interior

REPAIR

NOTE

Refer to Table 1 through 4 for index number reference.

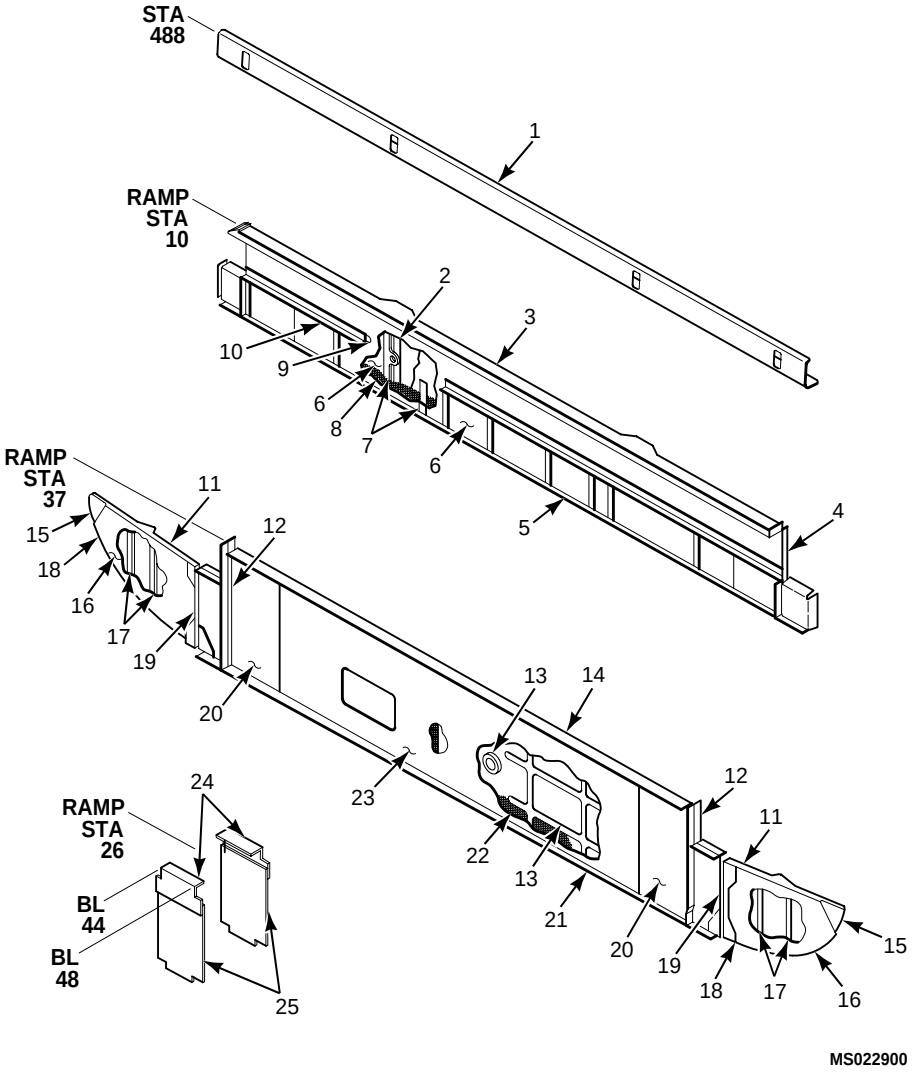


Figure 2. Formers, Sta 488, Ramp Sta's 10, 37, 26, and Canted Former, Ramp Sta 37

Table 1. Former, Sta 488

INDEX NO.	NOMENCLATURE	ORIGINAL MATERIAL	REPAIR MATERIAL	WORK PACKAGE
1	Former	0.050 7075-T6 Clad	0.050 7075-T6 Clad	0087 00

NOTES

A. All dimensions are in inches.

B. Former, sta 488 to ramp sta 37, shall have the seams sealed with sealing compound (Item 162, WP 0157 00).

REPAIR- continued

Table 2. Former, Ramp Sta 10

INDEX NO.	NOMENCLATURE	ORIGINAL MATERIAL	REPAIR MATERIAL	WORK PACKAGE
2	Stiffener	Reynolds 5761 7075-T6	0.071 4130	0088 00
3	Cap	VS90543 7075-T6	Note B	0083 00
4	Stiffener	AND101133-0701 7075-T6	0.071 4130	0088 00
5	Cap	VS92542 7075-T6	Note B	0088 00
6	Skin	0.012 7075-T6 Clad	Note B	0083 00
7	Filler	0.250 7075-T6 Clad	Note B	0083 00
8	Core	0.255.2.30-¼-10N-3003	Note B	0083 00
9	Stiffener	0.012 7075-T6 Clad	Note B	0088 00
10	Stiffener	0.025 7075-T6 Bare	0.032 7075-T6 Clad	0088 00

NOTES

A. All dimensions are in inches.

B. Component is made of sandwich honeycomb construction. Repair using original material.

C. Formers, sta 488 to ramp sta 37, shall have the seams sealed with sealing compound (Item 162, WP 0157 00).

Table 3. Former, Ramp Sta 37

INDEX NO.	NOMENCLATURE	ORIGINAL MATERIAL	REPAIR MATERIAL	WORK PACKAGE
11	Cap	BAC1503-100037 7075-T6	0.063 4130	0088 00
12	Stiffener	0.032 7075-T6 Bare	0.032 7075-T6 Clad	0088 00
13	Filler	0.250 7075-T6 Bare	Note B	0086 00
14	Cap	VS90303 7075-T6	Note B	0088 00
15	Gusset	0.025 7075-T6 Clad	0.025 7075-T6 Clad	0086 00
16	Web	0.020 7075-T6 Clad	0.020 7075-T6 Clad	0086 00
17	Stiffener	0.040 7075-T6 Bare	0.050 7075-T6 Clad	0088 00
18	Cap	0.063 7075-T6 Clad	0.063 7075-T6 Clad	0087 00
19	Attachment	BAC1505-100515 7075-T6	Note B	0088 00
20	Doubler	0.016 7075-T6 Bare	Note B	0086 00
21	Cap	VS90317 7075-T6	Note B	0088 00
22	Core	0.255.2.3-¼-10N-3003	Note B	0083 00
23	Skin	0.012 7075-T6 Clad	Note B	0083 00

NOTES

A. All dimensions are in inches.

B. Component is made of sandwich honeycomb construction. Repair using original material.

REPAIR - continued

WARNING

SEALING COMPOUND

C. Formers, sta 488 to ramp sta 37, shall have the seams sealed with sealing compound (Item 162, WP 0157 00).

Table 4. Former, Ramp Actuator Support, Ramp Sta 26

INDEX NO.	NOMENCLATURE	ORIGINAL MATERIAL	REPAIR MATERIAL	WORK PACKAGE
24	Angle	0.032 7075-T6 Clad	0.040 7075-T6 Clad	0088 00
25	Former	0.032 7075-T6 Clad	0.040 7075-T6 Clad	0088 00

NOTES

A. All dimensions are in inches.

B. Component is made of sandwich honeycomb construction. Repair using original material.

C. Formers, sta 488 to ramp sta 37, shall have the seams sealed with sealing compound (Item 162, WP 0157 00).

REPAIR - continued

NOTE

Refer to Table 5 through 10 for index number reference.

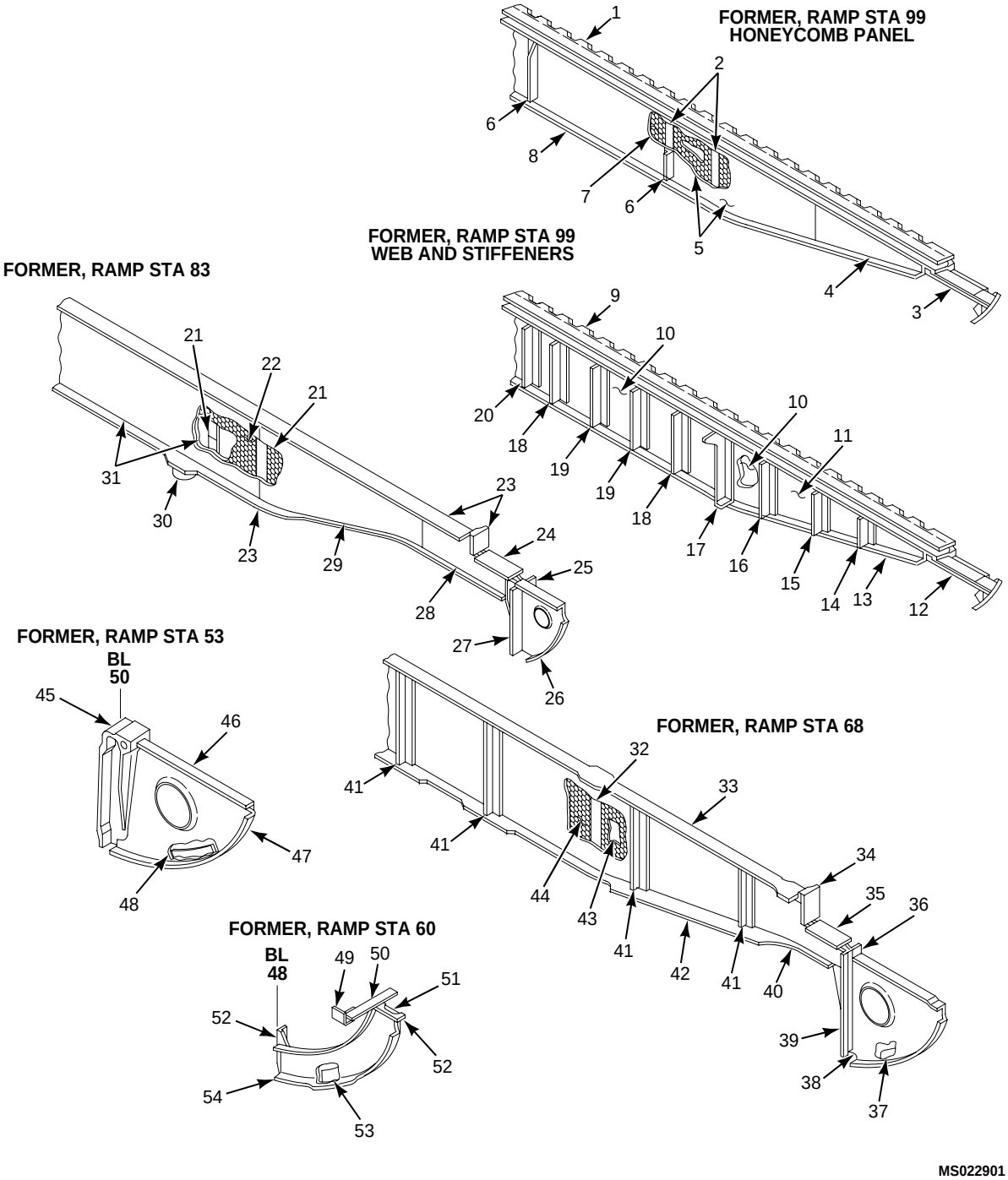


Figure 3. Former, Ramp Sta's 53, 60, 68, 83, and 98

REPAIR - continued

Table 5. Former, Ramp Sta 98 (Honeycomb Panel)

INDEX NO.	NOMENCLATURE	ORIGINAL MATERIAL	REPAIR MATERIAL	WORK PACKAGE
1	Hinge	VS90560 7075-T6	Note B	0093 00
2	Filler	0.250 2024-T4 Bare	Note B	0083 00
3	Clip	0.050 2024-T4 Clad	0.063 2024-T3 Clad	0083 00
4	Doubler	0.016 7075-T6 Clad	Note B	0083 00
5	Web	0.012 7075-T6 Clad	Note B	0083 00
6	Clip	Harvey 15078 7075-T6	0.063 4130	0083 00
7	Cap	VS90302 7075-T6	Note B	0083 00
8	Core	0.255 3.0-3/8-20N-3003	Note B	0083 00

NOTES

A. All dimensions are in inches.

B. Bonded assembly, repair using original material.

Table 6. Former, Ramp Sta 98 (Web and Stiffeners)

INDEX NO.	NOMENCLATURE	ORIGINAL MATERIAL	REPAIR MATERIAL	WORK PACKAGE
9	Hinge	VS90560 X 100 7075-T6	NOTE B	0093 00
10	Web	0.050 7075-T6 Clad	0.063 7075-T6 Clad	0086 00
11	Doubler	0.063 7075-T6 Clad	0.072 7075-T6 Clad	0086 00
12	Filler	0.040 7075-T6 Clad	0.040 7075-T6 Clad	0086 00
13	Cap	AND10136-1504 X 87.0 7075-T73	0.120 301 CRS 1/4H	0088 00
14	Tee	AND10136-2001 X 3.4 7075-T73	0.080 301 Crs	0088 00
15	Tee	AND10136-1504 X 4.3 7075-T73	0.080 301 Crs	0088 00
16	Tee	AND10136-2001 X 5.5 7075-T73	0.080 301 Crs	0088 00
17	Tee	AND10136-2007 X 6.5 7075-T73	0.100 301 Crs	0088 00
18	Tee	AND10136-2001 X 6.2 7075-T73	0.080 301 Crs	0088 00
19	Tee	AND10136-2001 X 6.4 7075-T73	0.080 301 Crs	0088 00
20	Tee	AND10136-2001 X 6.4 7075-T73	0.080 301 Crs	0088 00

NOTES

A. All dimensions are in inches.

B. Replace with original material.

REPAIR - continued

Table 7. Former, Ramp Sta 83

INDEX NO.	NOMENCLATURE	ORIGINAL MATERIAL	REPAIR MATERIAL	WORK PACKAGE
21	Filler	0.250 2024-T4	Note B	0083 00
22	Core	0.255 3.0-3/8-20N-3003	Note B	0083 00
23	Cap	VS90302 7075-T6	Note B	0083 00
24	Cap	VS90317 7075-T6	Note B	0083 00
25	Cap	ALCOA 22509 7075-T6	0.050 4130	0088 00
26	Web	0.025 2024-T4 Clad	0.050 2024-T3 Clad	0087 00
27	Clip	ALCOA 61971 7075-T6	0.063 4130	0088 00
28	Doubler	0.032 7075-T6 Clad	0.032 2024-T3 Clad	0086 00
29	Web	0.016 7075-T6 Clad	Note B	0083 00
30	Support	--	Note C	0083 00
31	Web	0.012 7075-T6 Clad	Note B	0083 00

NOTES

A. All dimensions are in inches.
B. Bonded assembly, repair using original material.
C. Damage other than minor, replace with 114S6821-1.

Table 8. Former, Ramp Sta 68

INDEX NO.	NOMENCLATURE	ORIGINAL MATERIAL	REPAIR MATERIAL	WORK PACKAGE
32	Filler	0.250 7075-T6 Bare	Note B	0083 00
33	Cap	VS90302 7075-T6	Note B	0083 00
34	Cap	VS90317 7075-T6	Note B	0083 00
35	Cap	ALCOA 61971 7075-T6	0.063 4130	0088 00
36	Cap	0.050 2024-T4 Clad	0.050 2024-T3 Clad	0087 00
37	Angle	0.020 2024-T4 Clad	0.032 2024-T3 Clad	0086 00
38	Web	0.040 2024-T4 Clad	0.050 2024-T3 Clad	0087 00
39	Clip	ALCOA 22477 7075-T6	0.063 4130	0088 00
40	Doubler	VS90302 7075-T6	Note B	0083 00
41	Stiffener	BAC1503-1402 7075-T6	Note B	0083 00
42	Cap	BAC1505-100511 7075-T6	Note B	0083 00
43	Web	0.012 7075-T6 Clad	Note B	0083 00
44	Core	0.255 2.3-¼-10N-3003	Note B	0083 00

NOTES

A. All dimensions are in inches.
B. Bonded assembly, repair using original material.

REPAIR - continued

Table 9. Former, Ramp Sta 53

INDEX NO.	NOMENCLATURE	ORIGINAL MATERIAL	REPAIR MATERIAL	WORK PACKAGE
45	Support	2024-T6	Note B	--
46	Angle	0.050 7075-T6 Clad	0.063 7075-T6 Clad	0088 00
47	Web	0.032 7075-T6 Clad	0.040 7075-T6 Clad	0086 00
48	Angle	0.050 7075-T6 Clad	0.050 7075-T6 Clad	0088 00

NOTES

A. All dimensions are in inches.

B. Damage other than minor, replace with 114S6804-1 LH or -2 RH.

Table 10. Former, Ramp Sta 60

INDEX NO.	NOMENCLATURE	ORIGINAL MATERIAL	REPAIR MATERIAL	WORK PACKAGE
49	Clip	0.040 2024-T3 Clad	0.050 7075-T6 Clad	0087 00
50	Angle	ALCOA 28546 7075-T6	0.050 4130	0088 00
51	Filler	0.040 2024-T4 Clad	Note B	0086 00
52	Clip	0.050 2024-T3 Clad	0.063 2024-T3 Clad	0087 00
53	Angle	0.050 2024-T42	0.050 2024-T4 Clad	0087 00
54	Former	0.040 2024-T42	0.050 2024-T3 Clad	0087 00

NOTES

A. All dimensions are in inches.

B. Replace with original material.

REPAIR - continued

NOTE

Refer to Table 11 through 13 for index number reference.

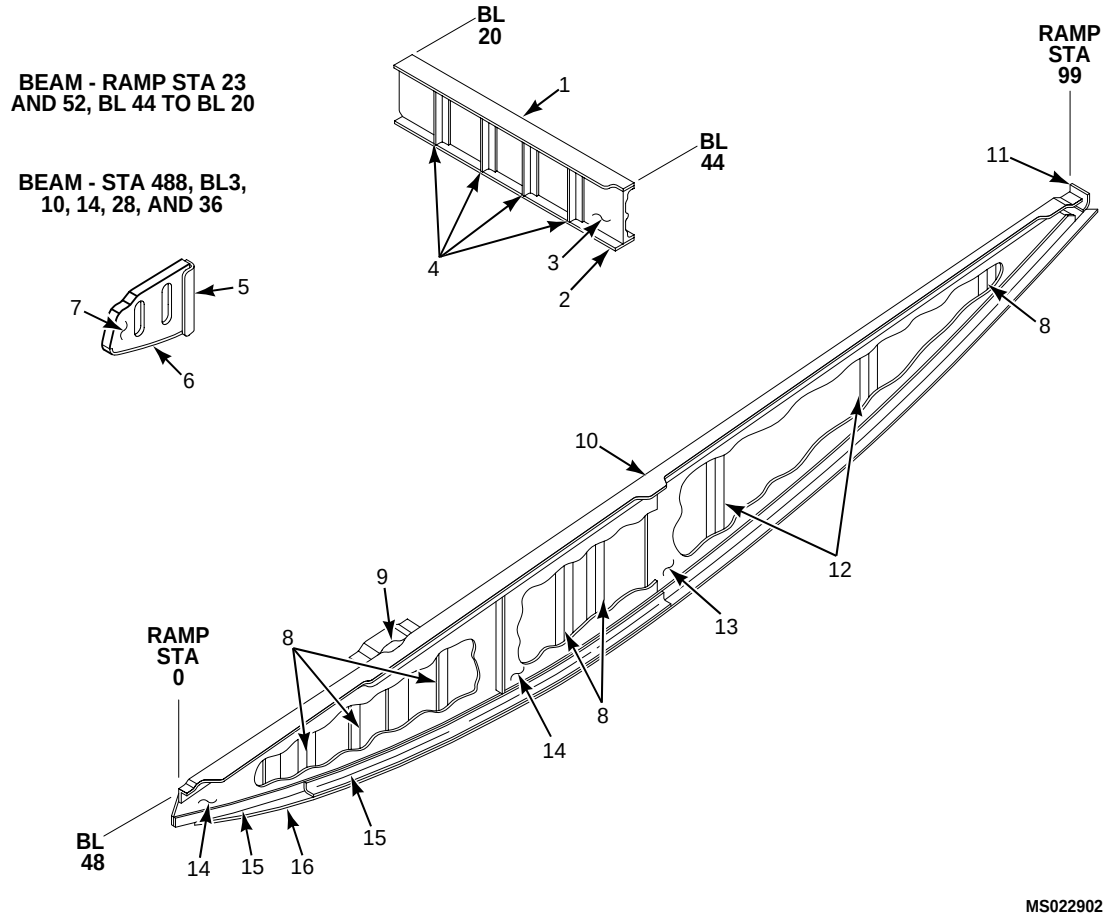


Figure 4. Beam, Ramp Sta's 23 and 52, BL 20 to 44; Beam, Sta 448, BL's 3, 10, 14, 28 and 36; Beam, Ramp Sta's 0 to 98, BL 48

Table 11. Beam, Ramp Sta's 23 and 52, BL 20 to 44

INDEX NO.	NOMENCLATURE	ORIGINAL MATERIAL	REPAIR MATERIAL	WORK PACKAGE
1	Stiffener	ALCOA 22008 7075-T6	0.040 4130	0088 00
2	Angle	ALCOA 12883 7075-T6	0.063 4130	0088 00
3	Web	0.032 7075-T6 Bare	0.040 7075-T6 Clad	0086 00
4	Stiffener	ALCOA 12883 7075-T6	0.063 4130	0088 00

NOTE

All dimensions are in inches.

REPAIR - continued

Table 12. Beam, Sta 488, BL's 3, 10, 642, 14, 28, and 36

INDEX NO.	NOMENCLATURE	ORIGINAL MATERIAL	REPAIR MATERIAL	WORK PACKAGE
5	Clip	0.025 7075-T6 Bare	0.025 7075-T6 Clad	0087 00
6	Cap	0.032 7075-T6 Clad	0.032 7075-T6 Clad	0088 00
7	Web	0.020 7075-T6 Bare	0.020 7075-T6 Clad	0086 00

NOTE

All dimensions are in inches.

Table 13. Beam, Ramp Sta's 0 to 98, BL 48

INDEX NO	NOMENCLATURE	ORIGINAL MATERIAL	REPAIR MATERIAL	WORK PACKAGE
8	Stiffener	ALCOA 67580 7075-T6	0.063 4130	0088 00
9	Fitting	Note B	--	NOTE C
10	Cap	ALCOA 55794 7075-T6	0.100 4130	0088 00
11	Cap	ALCOA 55794 7075-T6	0.100 4130	0087 00
12	Stiffener	ALCOA 22477 7075-T6	0.050 4130	0088 00
13	Web	0.025 7075-T6 Bare	0.030 7075-T6 Clad	0086 00
14	Web	0.040 7075-T6 Bare	0.050 7075-T6 Clad	0086 00
15	Angle	0.070 7075-T6 Clad	0.080 7075-T6 Clad	0088 00
16	Cap	0.063 7075-T6 Clad	0.071 7072-T6 Clad	0088 00

NOTES

A. All dimensions are in inches.

B. Damage other than minor, replace with fitting, 114S6802-1 LH, or –2 RH.

C. Refer to Figure 7 for repair of fitting bushing.

REPAIR - continued

NOTE

Refer to Tables 14 through 16 for index number reference.

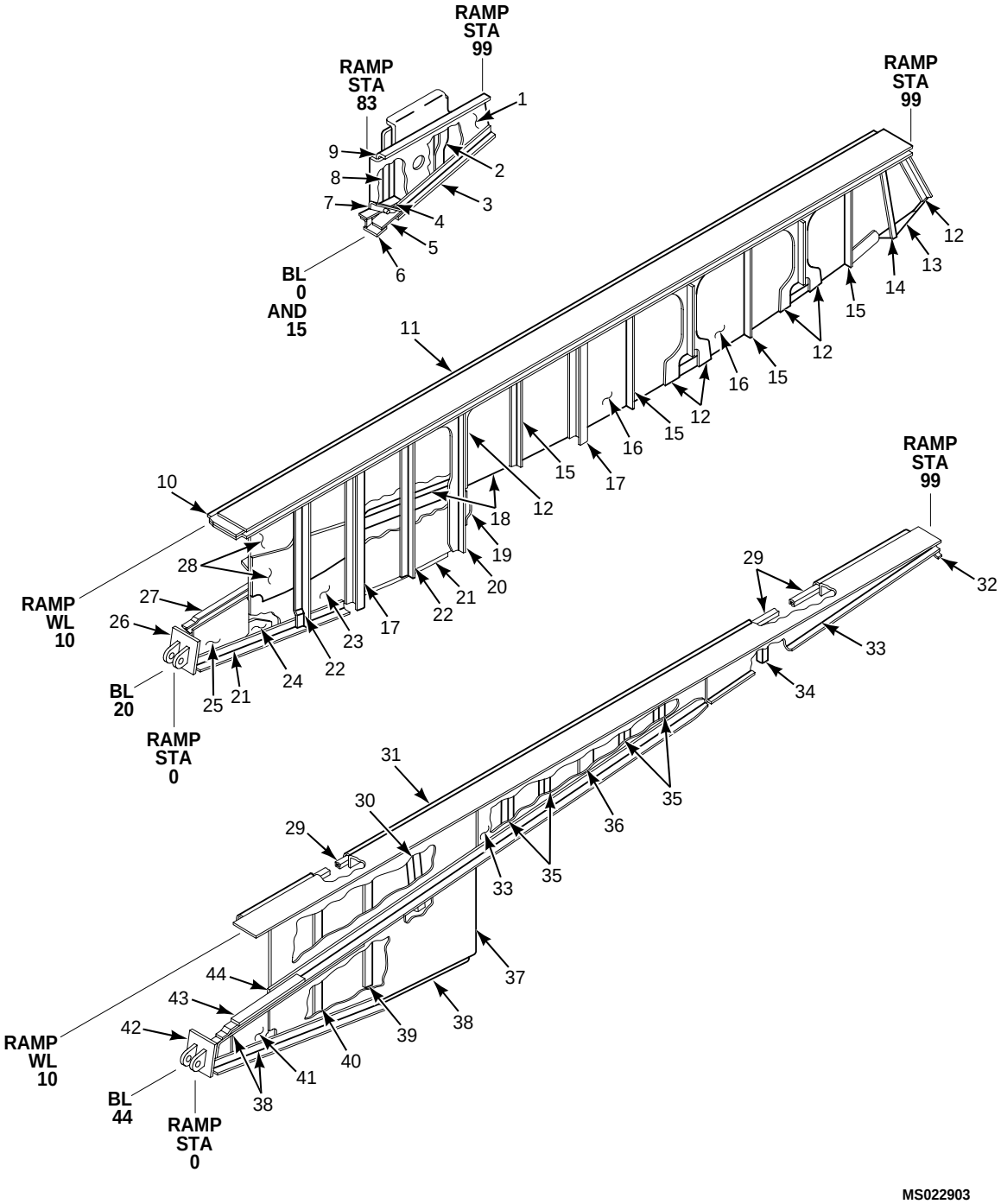


Figure 5. Beam, Ramp Sta's 83 to 98, BL's 0 and 15; Beam, Ramp Sta's 0 to 98, BL's 20 and 44

REPAIR - continued

Table 14. Beam, Ramp Sta's 83 to 98, BL's 0 and 15

INDEX NO	NOMENCLATURE	ORIGINAL MATERIAL	REPAIR MATERIAL	WORK PACKAGE
1	Web	0.050 7075-T6	0.063 7075-T6 Clad	0086 00
2	Stiffener	AND10136-1401 7075-T73	0.071 4130	0088 00
3	Doubler	0.040 7075-T6	0.050 7075-T6 Clad	0886 00
4	Pad	0.188 Nylon Sheet	Note B	--
5	Cap	0.063 7075-T6 Clad	0.071 7075-T6 Clad	0088 00
6	Cap	Reynolds 8665 7075-T6	0.090 4130	0088 00
7	Support	VS90328 7075-T6	Note B	--
8	Stiffener	ALCOA 12883 7075-T6	0.071 4130	0088 00
9	Cap	ALCOA 12883 7075-T6	0.063 4130	0088 00

NOTES

A. All dimensions are in inches.

B. Replace damaged section with material same as original.

Table 15. Beam, Ramp Sta's 0 to 98, BL 20

INDEX NO.	NOMENCLATURE	ORIGINAL MATERIAL	REPAIR MATERIAL	WORK PACKAGE
10	Angle	0.050 2024-T3 Clad	0.063 2024-T3 Clad	0088 00
11	Cap		Note E	0088 00
12	Stiffener	0.032 7075-T6	0.036 7075-T6 Clad	0087 00
13	Track	--	Note D	--
14	Stiffener	AND10138-1004 7075-T6	0.071 4130	0088 00
15	Stiffener	ALCOA 30934 7075-T6	0.050 4130	0088 00
16	Web	0.020 7075-T6	0.025 7075-T6 Clad	0086 00
17	Stiffener	ALCOA 59256 7075-T6	0.053 4130	0088 00
18	Cap	VS90560 X 0.100 7075-T6	Note B	0088 00
19	Bumper	--	Note C	--
20	Stiffener	ALCOA 30934 7075-T6	0.071 4130	0088 00
21	Cap	AND10134-1202 7075-T6	0.100 4130	0088 00
22	Stiffener	ALCOA 15820 7075.T6	0.080 4130	0088 00
23	Web	0.032 7075-T6	0.040 7075-T6 Clad	0086 00
24	Gusset	0.032 7075-T6	0.040 4130	0086 00
25	Web	0.063 7075-T6	0.071 7075-T6 Clad	0086 00
26	Hinge	114S6806-1 AND 2	Note B	0093 00

REPAIR - continued

Table 15. Beam, Ramp Sta's 0 to 98, BL 20 – continued

INDEX NO.	NOMENCLATURE	ORIGINAL MATERIAL	REPAIR MATERIAL	WORK PACKAGE
27	Cap	AND10133-1203 7075-T6	0.125 4130	0088 00
28	Doubler	0.020 7075-T6	0.025 7075-T6 Clad	0086 00

NOTES

A. All dimensions are in inches.
B. Replace damaged section with material same as original.
C. Replace with bumper, 114SS661-1.
D. Replace with track, 114S6811-3 LH or 114S6811-1 RH.
E. Replace with cap, 114S6151-113 LH or 114S6151-114 RH.

Table 16. Beam, Ramp Sta's 0 to 98, BL 44

INDEX NO	NOMENCLATURE	ORIGINAL MATERIAL	REPAIR MATERIAL	WORK PACKAGE
29	Gang Channel	RM52LHTG51-02-J32	Note B	--
30	Stiffener	ALCOA 67580 7075T6	0.063 4130	0088 00
31	Cap	VS90531 MAG ZK60-AT5	Note B	0088 00
32	Bracket	0.040 7075-T6 Clad	0.050 7075-T6 Clad	0087 00
33	Web	0.025 7075-T6 Bare	0.032 7075-T6 Clad	0086 00
34	Stiffener	ALCOA 2247 7075-T6	0.050 4130	0088 00
35	Stiffener	VS70504-4 7075-T6	0.040 4130	0088 00
36	Stiffener	AND10136-1501 7075-T6	0.071 4130	0088 00
37	Web	0.032 7075-T6 Bare	0.040 7075-T6 Clad Note C	0086 00
38	Cap	Harvey 16199 7075-T6	0.150 4130	0088 00
39	Stiffener	ALCOA 67580 7075-T6	0.100 4130	0088 00
40	Stiffener	ALCOA 67580 7075-T6	0.063 4130	0088 00
41	Web	0.063 7075-T6 Bare	0.071 7075-T6 Clad	0088 00
42	Hinge	6806-1-2	Note B	0093 00

REPAIR - continued

Table 16. Beam, Ramp Sta's 0 to 98, BL 44 - continued

INDEX NO	NOMENCLATURE	ORIGINAL MATERIAL	REPAIR MATERIAL	WORK PACKAGE
43	Strap	0.063 7075-T6 Clad	0.071 7075-T6 Clad Note D	0086 00
44	Cap	ALCOA 59409 7075-T6	0.063 4130	0088 00

NOTES

A. All dimensions are in inches.

B. Replace damaged sections with material same as original.

C. For access to the LH and RH actuator nut plate, cut a 4-inch diameter hole at ramp sta 26. Install 8 nut plates, P/N MS21060-L3 around each hole on web. Cut a 51/4-inch diameter cover plate of 0.040-inch 7075-T6 aluminum alloy.

D. Replace hex headed JO-Bolts at ramp sta 10, ramp WL 2, BL 44 left and right with flush head JO-Bolts, P/N PLT110-6-4, NSN 5320-00-637-6115, to prevent damage to skid rail, ramp hinge tunnel, cap strap, cap angle, and cap.

NOTE

Refer to Table 17 for index number reference.

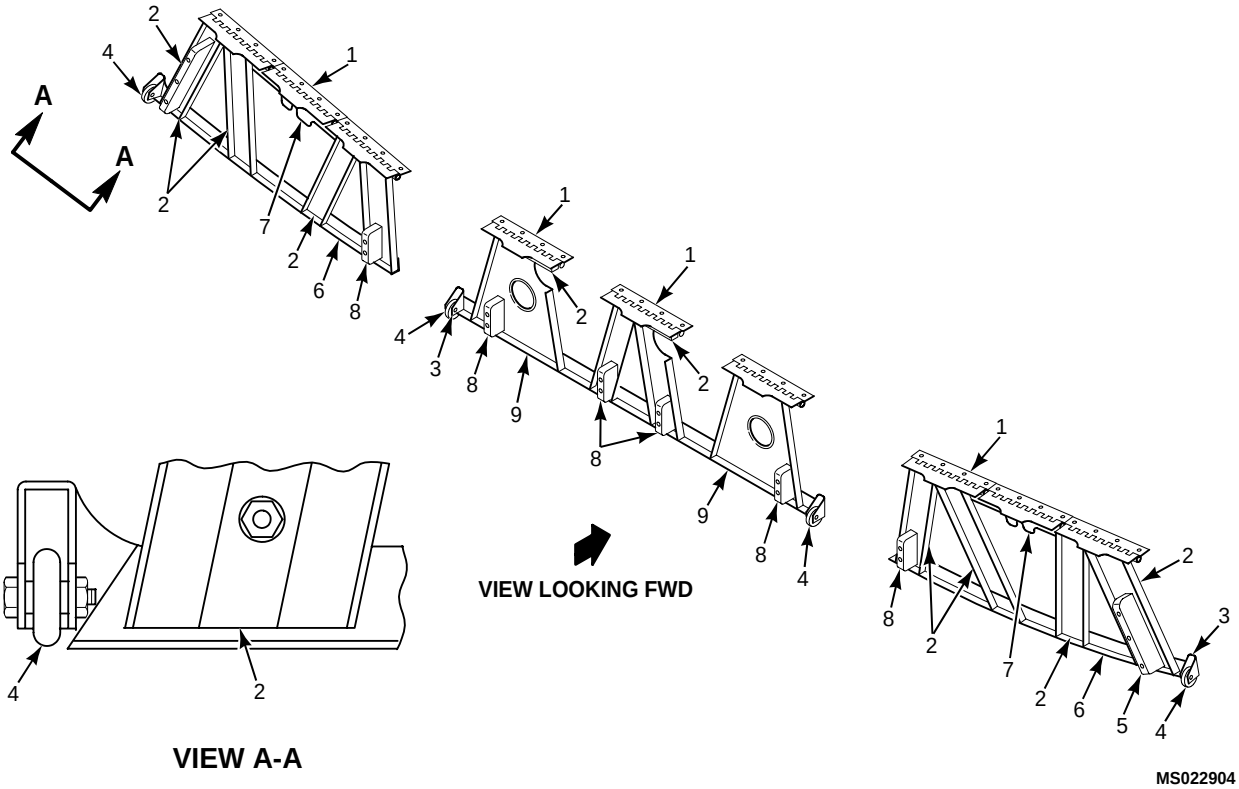


Figure 6. Gate Assembly, Cargo Loading Ramp

REPAIR - continued

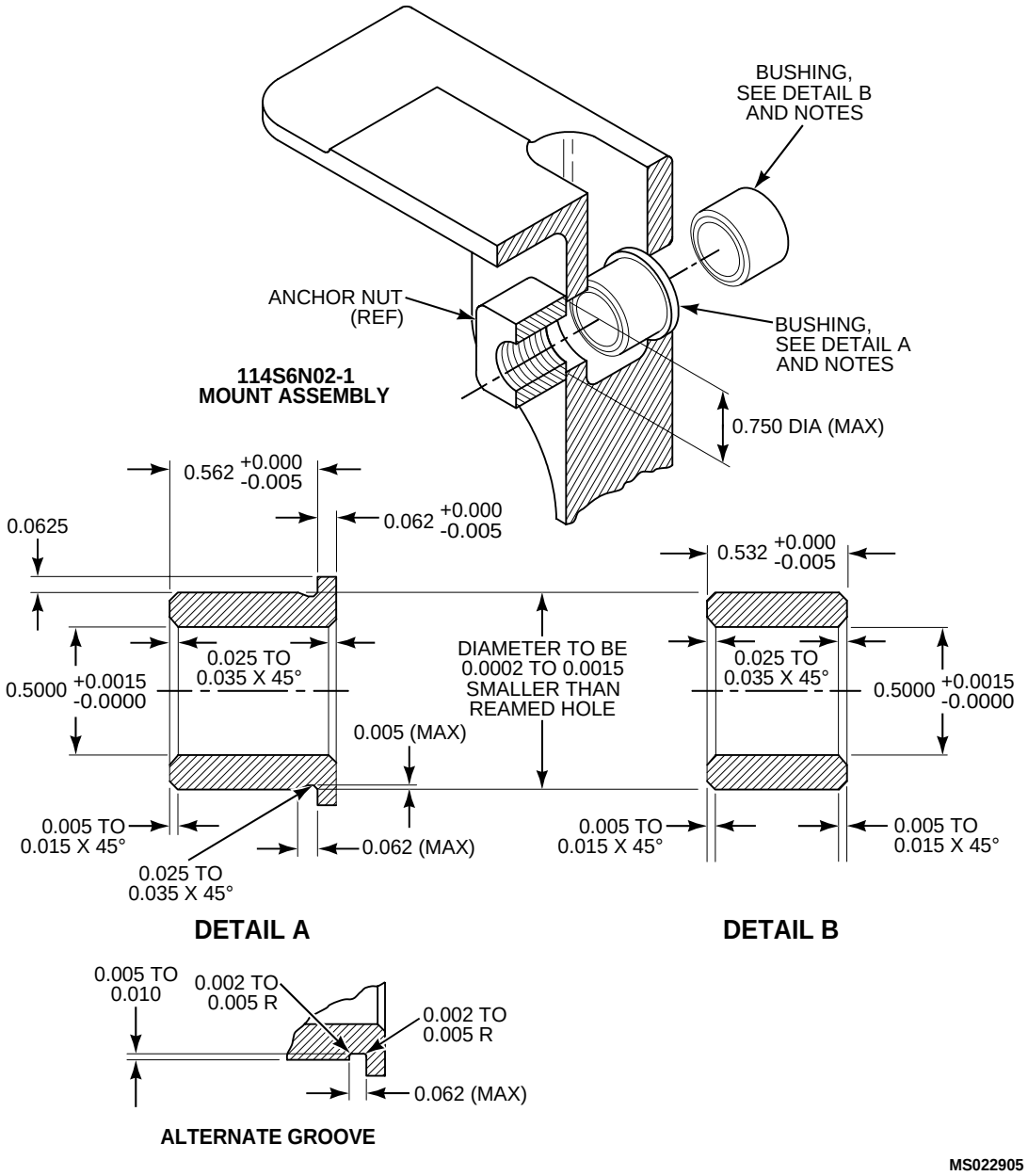
Table 17. Gate Assembly, Cargo Loading Ramp

INDEX NO	NOMENCLATURE	ORIGINAL MATERIAL	REPAIR MATERIAL	WORK PACKAGE
1	Hinge	BAC1514-1643 7075-T6	Note B	0093 00
2	Channel	0.040 7075-T6 Clad	0.050 7075-T6 Clad	087 00
3	Bracket	--	Note F	--
4	Roller	Nylon, 1.0-Inch Dia	Note E	--
5	Bumper	Silicone Rubber Laminar	Note C	0087 00
6	Cap	ALCOA 56914 7075-T6	0150 4130	0088 00
7	Hinge	BAC1514-1643 7075-T6	Note B	0093 00
8	Bumper	Silicone Rubber Laminar	Note D	--
9	Channel	0.063 7075-T6 Clad	0.071 7075-T6 Clad	0087 00

NOTES

A. All dimensions are in inches.
B. If repair is impractical, replace with material same as original.
C. Replace with bumper, 114S6709-1.
D. Replace with bumper, 14S6709-2.
E. Replace with roller, 114S6706-1.
F. Replace with bracket, 114S6109-29.

REPAIR - continued



NOTES

A. All dimensions are in inches.
B. ID and OD of bushings to be concentric within 0.003-inch TIR.
C. Heat treat bushings to 125,000 to 145,000 psi.
D. 1.25-µ inch RHR maximum machine surface finish.
E. Cadmium plate IAW QQ-P-416, Type II, Class 3.
F. All dimensions to be after plating.

Figure 7. Cargo Ramp Actuator Support Fitting

END OF WORK PACKAGE

DEPOT MAINTENANCE WORK REQUIREMENT
CH-47D HELICOPTER
CARGO RAMP FLOORING AND AUXILIARY LOADING RAMPS REPAIRS

INITIAL SETUP

Test Equipment:
As Required

Tools and Special Tools:
As Required

Material/Parts:
As Required

Personnel Required:
As Required

References:
TM 1-1500-204-23 Series
TM 55-1520-240-23 Series
WP 0086 00
WP 0087 00
WP 0088 00
WP 0093 00
WP 0114 00

Equipment Conditions:
As Required

Special Environmental Condition:
As Required

SCOPE

This work package describes repair procedures for the cargo ramp flooring, auxiliary loading ramps, and loading ramp supports. Refer to WP 0114 00 for floor panel inspection criteria and repair procedures. The Depot/Contractor may find magnesium floor panels installed in some aircraft. If found, advise the Contracting Officer and request permission to upgrade the ramp flooring to aluminum alloy panels in the interest of corrosion prevention.

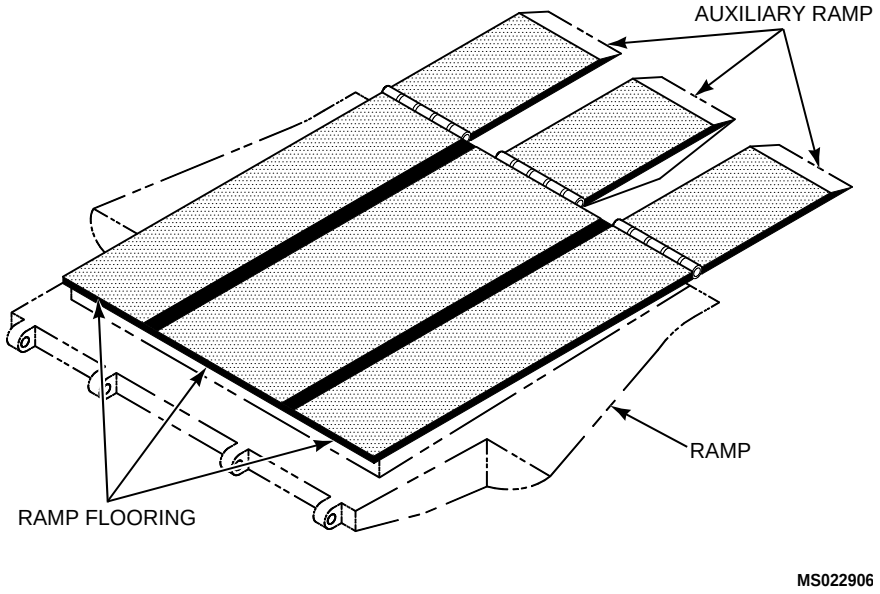


Figure 1. Cargo Ramp Flooring and Auxiliary Loading Ramps

REPAIR

NOTE

Refer to Table 1 for index number reference.

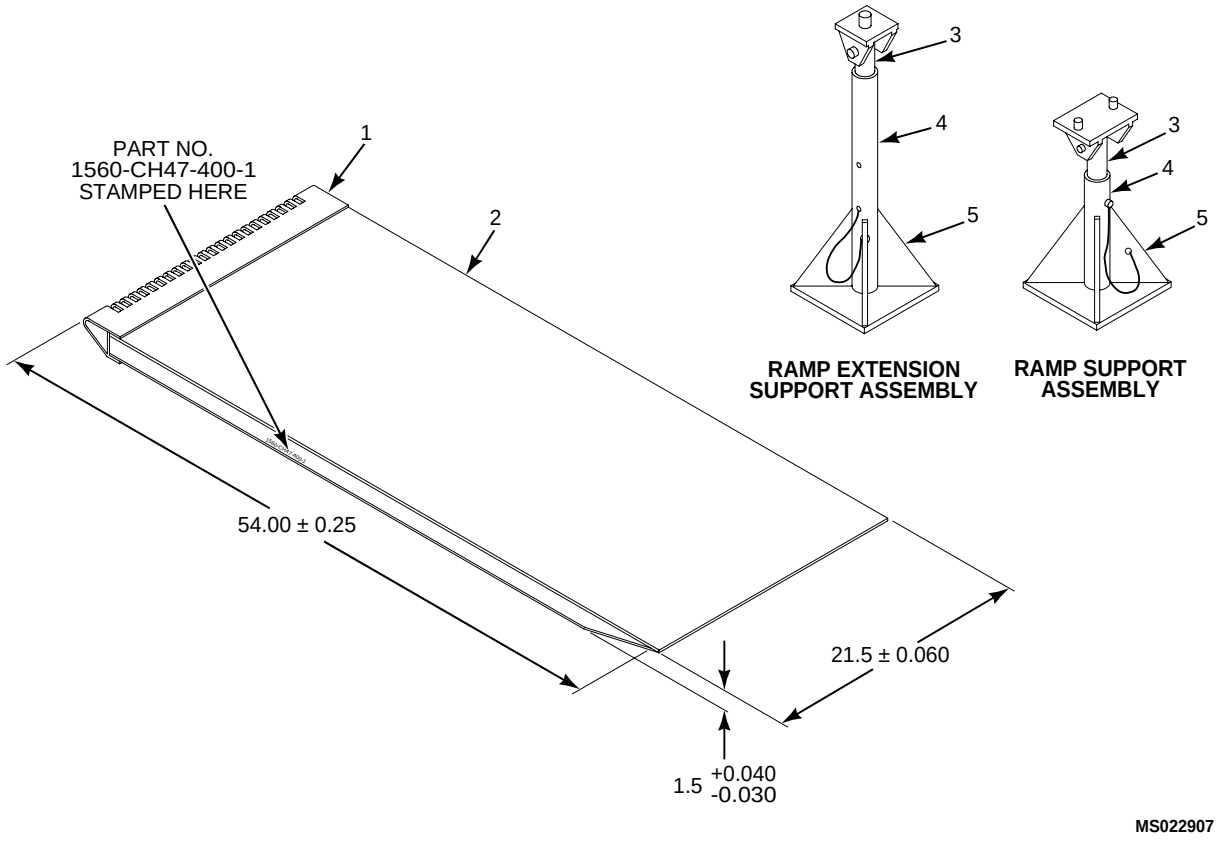


Figure 2. Auxiliary Ramp and Supports

Table 1. Auxiliary Ramp and Supports

INDEX NO.	NOMENCLATURE	ORIGINAL MATERIAL	REPAIR MATERIAL	WORK PACKAGE
1	Hinge Assembly	Dow 10566 6061-T6	Note B	0093 00
2	Structural Member	Dow XM18 6061-T6	Note C	0086 00
3	Inner Tube	0.375 6061-T6511	Note D	--
4	Outer Tube	0.250 6061-T6	Note D	--
5	Foot	0.250 6061-T6	Note D	0087 00

NOTES

A. All dimensions are in inches.

B. Repair by insertion or replace with original material.

C. Repair not practical. Replace with original part.

D. Repair not practical. Fabricate new part or replace with new original material.

REPAIR - continued

NOTE

Refer to Table 2 for index number reference.

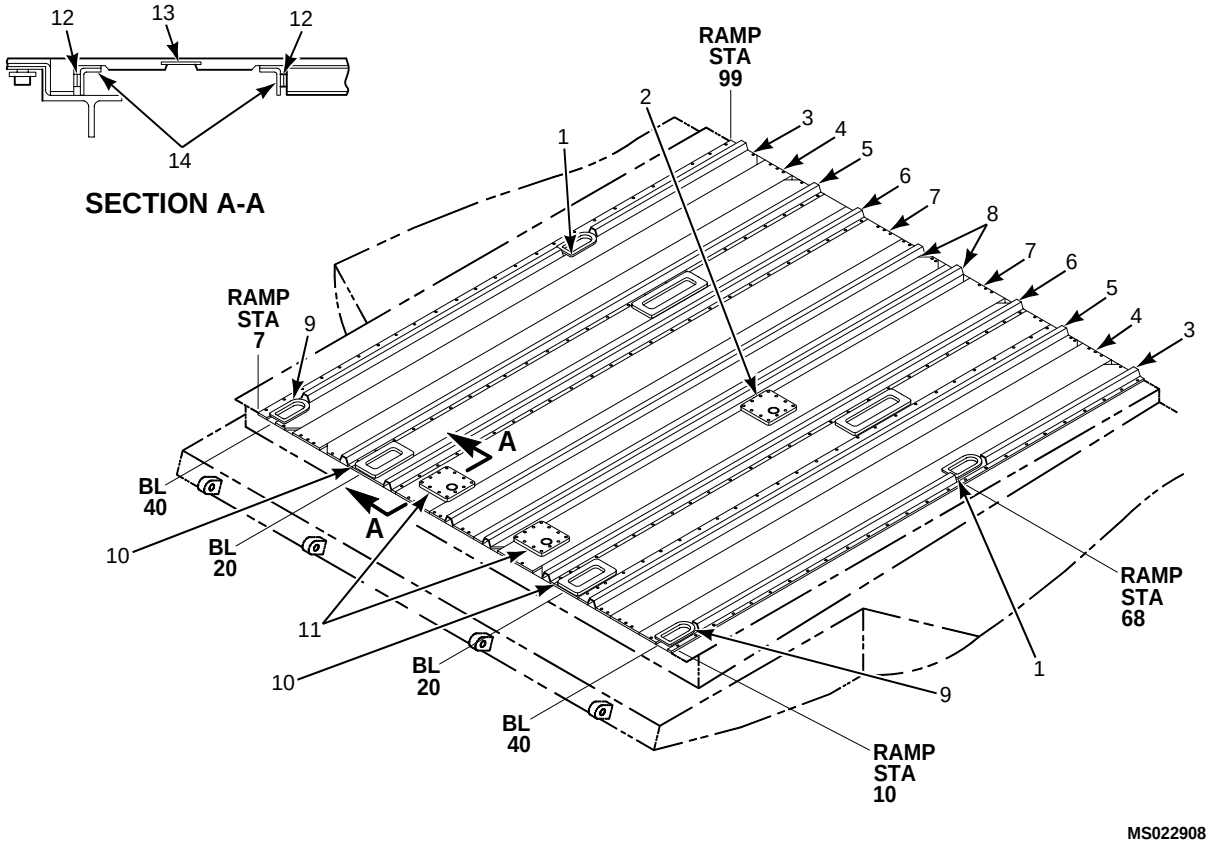


Figure 3. Cargo Ramp Flooring - Magnesium Floorboards (Sheet 1 of 2)

Table 2. Cargo Ramp Flooring - Magnesium Floorboards

INDEX NO.	NOMENCLATURE	ORIGINAL MATERIAL	REPAIR MATERIAL	WORK PACKAGE
1	Receptacle	7075-T6 Bare	Note E	--
2	Panel	0.160 7075-T6	Note B	0087 00
3	Panel	Note F	Note B	0087 00
4	Panel	Note G	Note B	0087 00
5	Panel	Note F	Note B	0087 00
6	Panel	Note F	Note B	0087 00
7	Panel	Note H	Note B	0087 00
8	Panel	Note F	Note B	0087 00
9	Receptacle	7075-T6 Bare	Note D	--
10	Beam	Reference Only		--
11	Panel	0.160 7075-T6	Note B	0087 00

REPAIR - continued

Table 2. Cargo Ramp Flooring - Magnesium Floorboards - continued

12	Angle	ALCOA 14202 7075-T6	Note B	0087 00
13	Plug	SS-48166RK2215	Note C	--
14	Angle	ALCOA 14202 7075-T6	Note B	0087 00

NOTES

A. All dimensions are in inches.
B. Repair material same as original.
C. Replace with plug, SS-48166RK2215.
D. Replace with receptacle, 114S2893-6.
E. Replace with receptacle, 114S2893-13.
F. VS90558 MAG ZK 60A-T5
G. VS90557 MAG ZK 60A-T5
H. VS90559 MAG ZK 60A-T5

NOTE

Refer to Table 3 for index number reference.

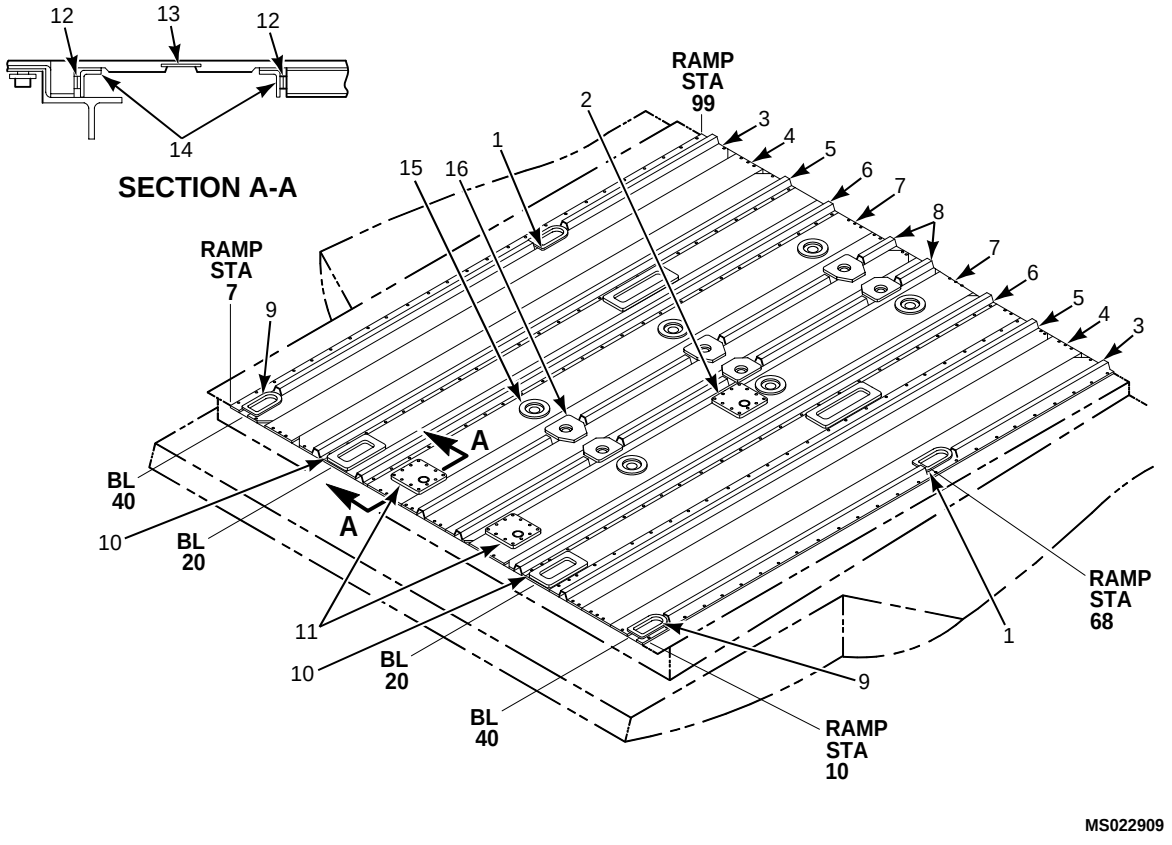


Figure 3. Cargo Ramp Flooring - Aluminum Floorboards (Sheet 2 of 2)

REPAIR - continued

Table 3. Cargo Ramp Flooring - Aluminum Floorboards

INDEX NO.	NOMENCLATURE	ORIGINAL MATERIAL	REPAIR MATERIAL	WORK PACKAGE
1	Receptacle	7075-T6 Bare	Note E	--
2	Panel	0.160 7075-T6	Note B	0087 00
3	Panel	Note F	Note B	0087 00
4	Panel	Note F	Note B	0087 00
5	Panel	Note F	Note B	0087 00
6	Panel	Note F	Note B	0087 00
7	Panel	Note F	Note B	0087 00
8	Panel	Note F	Note B	0087 00
9	Receptacle	7075-T6 Bare	Note D	--
10	Beam	Reference Only	--	--
11	Panel	0.160 7075-T6	Note B	0087 00
12	Angle	ALCOA 14202 7075-T6	Note B	0087 00
13	Plug	SS-48166RK2215	Note C	--
14	Angle	ALCOA 14202 7075-T6	Note B	0087 00
15	Adapter	Alloy Steel	Note G	--
16	Adapter	Alloy Steel	Note H	--

NOTES

A. All dimensions are in inches.
B. Repair material same as original.
C. Replace with plug, SS-48166RK2215.
D. Replace with receptacle, 114S2893-6.
E. Replace with receptacle, 114S2893-13.
F. BAC 1510, al alloy extrusion, 7070-T73511
G. Replace with adapter assembly, FDC 4145.
H. Replace with adapter, 145SK262-3.

END OF WORK PACKAGE

DEPOT MAINTENANCE WORK REQUIREMENT
CH-47D HELICOPTER
CARGO RAMP DOOR BONDED ASSEMBLY REPAIRS

INITIAL SETUP

Test Equipment:
As Required

Tools and Special Tools:
As Required

Material/Parts:
As Required

Personnel Required:
As Required

References:
TM 1-1500-204-23 Series
TM 55-1520-240-23 Series
WP 0083 00
WP 0086 00
WP 0087 00
WP 0088 00
WP 0095 00

Equipment Conditions:
As Required

Special Environmental Condition:
As Required

SCOPE

This work package describes repair procedures for the cargo ramp door bonded assembly, to include bonded panel, rubber seals, and emergency release. Refer to Figure 1.

REPAIR

NOTE

Refer to Table 1 for index number reference.

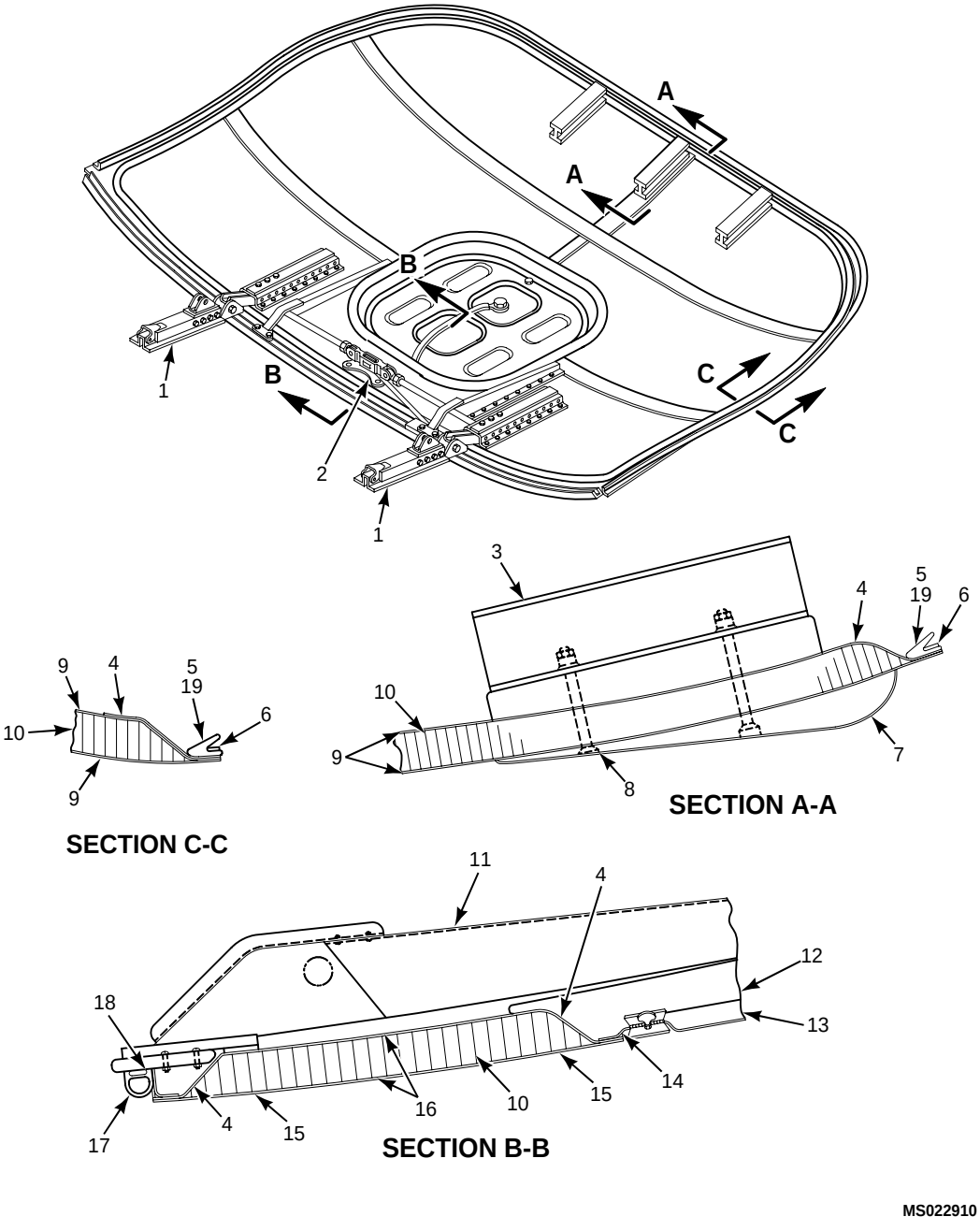


Figure 1. Cargo Ramp Door Bonded Assembly

REPAIR - continued

Table 1. Cargo Ramp Door Bonded Assembly

INDEX NO.	NOMENCLATURE	ORIGINAL MATERIAL	REPAIR MATERIAL	WORK PACKAGE
1	Support Assembly	--	Note E	--
2	Emer Release	--	Note E	--
3	Spacer	VS90585 6061-T6	Note F	--
4	Edger Member Pad	Scotch Ply	Note B	0083 00
5	Seal	BAC 1530-43 Silicone Rubber	Note F	0095 00
6	Seal Strip	0.025 7075-T6 Clad	0.032 7075-T6 Clad	0086 00
7	Assembly	--	Note E	--
8	Core	0.968 2.3-1/4-10N-3003	Notes B and C	0083 00
9	Skin	0.020 2024-T4 Clad	Note B	0083 00
10	Core	0.968 6.0-1/4-30N-3003	Note B	0083 00
11	Zee	0.032 2024-T3 Clad	0.040 2024-T3 Clad	0088 00
12	Frame, Panel	0.025 2024-T4 Clad	0.032 2024-T3 Clad	0087 00
13	Panel	0.020 6061-T6 Bare	0.025 6061-T6 Clad	0087 00
14	Coaming	0.040 2024-T4 Clad	0.050 2024-T4 Clad	0087 00
15	Doubler	0.012 7075-T6 Clad	Note B	0083 00
16	Skin	0.016 7075-T6 BARE	Note B	0083 00
17	Seal	Silicone Rubber 7030	Note D	0095 00
18	Former	AND 10139-0505 7075-T6	0.071 4130	0088 00
19	Seal Splice	Hollow Extruded Rubber	Note D	0095 00

NOTES

A. All dimensions are in inches.

B. Component is a bonded assembly. Repair using same material as original.

C. Used in pad assembly area only.

D. This material is the preferred replacement for Item 5. Seal is hollow extruded rubber, and may be repaired by splicing with sponge rubber, and/or replacing damaged sections. The seal may also be replaced using a piece of the VS80549 seal splice material. If seals are extensively damaged, replace the entire seal.

E. Replace with new part.

F. If damage is other than minor, replace with new part, 114S6601-49 LH and 114S6601-50 RH.

END OF WORK PACKAGE

DEPOT MAINTENANCE WORK REQUIREMENT
CH-47D HELICOPTER
AFT PYLON EXTERIOR REPAIRS

INITIAL SETUP

Test Equipment:
As Required

Tools and Special Tools:
As Required

Material/Parts:
Adhesive (Item 24, WP 0157 00)
Cloth, Glass (Item 78, WP 0157 00)
Screen (Item 153, WP 0157 00)
Scrim Cloth (Item 155, WP 0157 00)

Personnel Required:
As Required

References:
TM 1-1500-204-23 Series
TM 55-1520-240-23 Series
WP 0081 00
WP 0083 00
WP 0084 00
WP 0086 00
WP 0087 00
WP 0088 00
WP 0093 00
WP 0094 00
WP 0095 00
WP 0097 00
WP 0157 00

Equipment Conditions:
As Required

Special Environmental Condition:
As Required

SCOPE

This work package describes repair procedures for the following aft pylon exterior components. Refer to Figure 1.

1. Work Platform
2. Trailing Edge Fairing
3. Aft Crown Fairing
4. Mid Crown Fairing
5. Forward Crown Fairing
6. Leading Edge Hinged Fairing
7. Aft Weather Protective Cover (Rain Shield) Refer to WP 0097 00 for Forward Weather Protective Cover repair procedures.

REPAIR

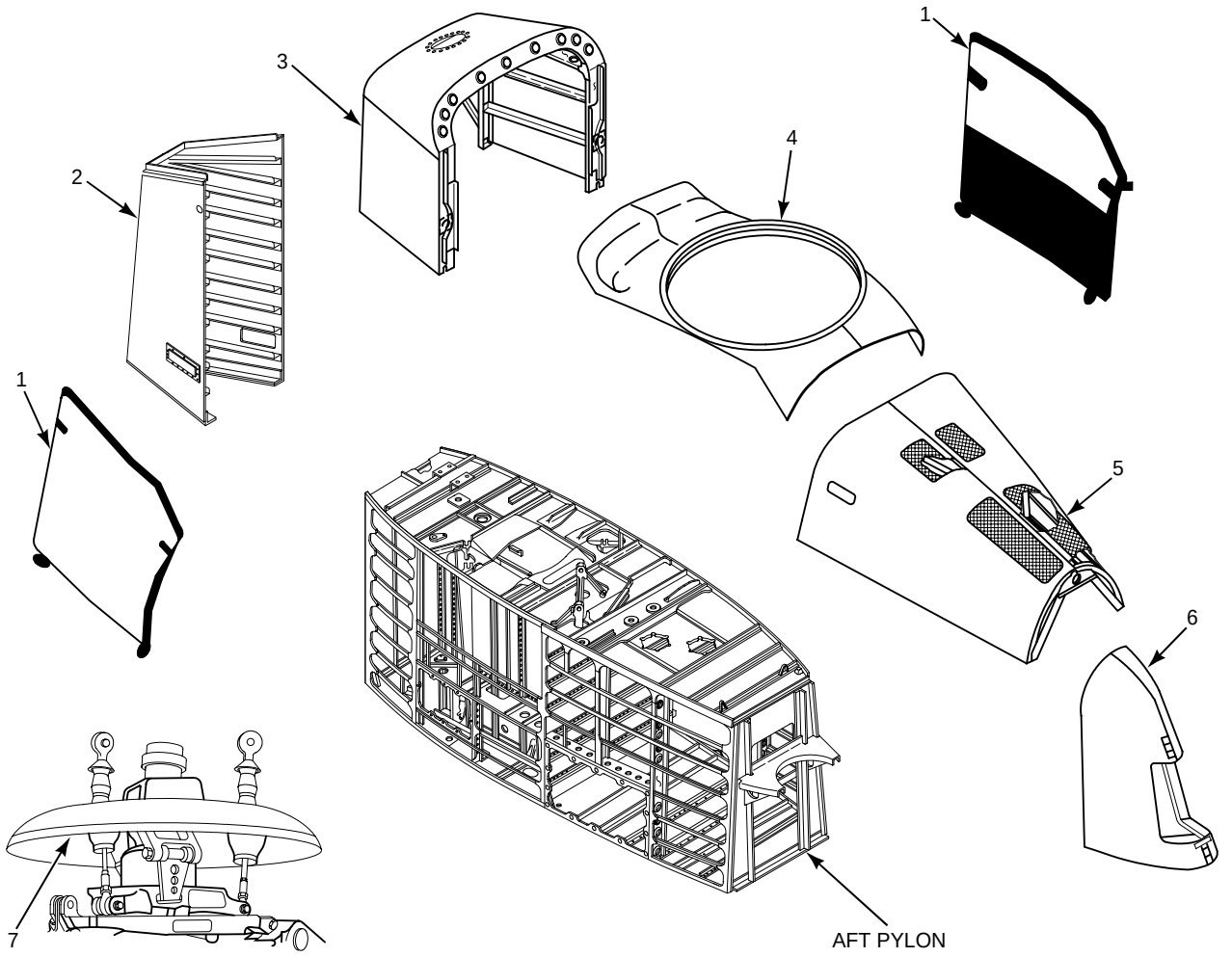


Figure 1. Aft Pylon Exterior Components

REPAIR - continued

NOTE

Refer to Table 1 for index number reference.

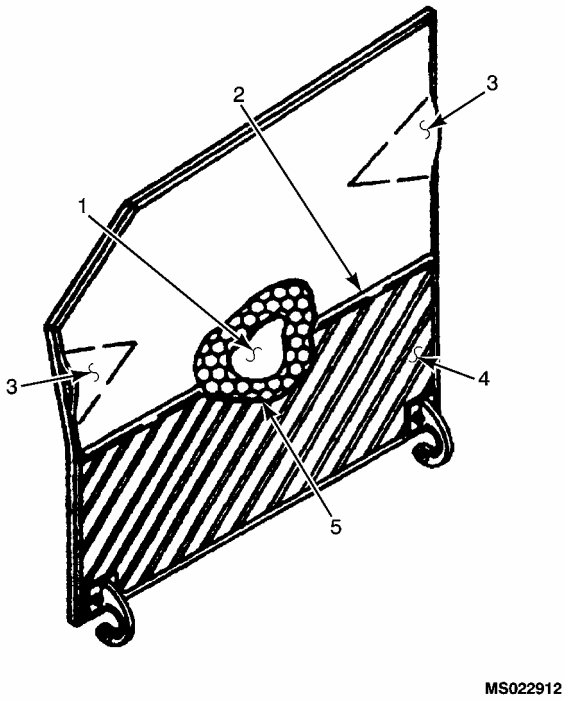


Figure 2. Aft Pylon Work Platform

Table 1. Aft Pylon Work Platform

INDEX NO.	NOMENCLATURE	ORIGINAL MATERIAL	REPAIR MATERIAL	WORK PACKAGE
1	Skin	0.016 2024-T4 Clad	Notes B and D	0083 00
2	Angle	0.032 7075-T6 Bare	0.040 4130	0087 00
3	Cover	4 Ply, No. 181 Glass Cloth	Note C	0081 00
4	Thread Sheet	0.025 2024-T4 Clad	Notes B and D	0083 00
5	Core	0.590,2.3-1/4-10N3003	Notes B and D	0083 00

NOTES

A. All dimensions are in inches.

B. Sandwich honeycomb construction; repair with original material.

C. Repair with original material.

D. These repairs are for composite construction. Refer to Work Package 0084 00 for composite construction repair procedures.

REPAIR - continued

NOTE

Refer to Table 2 for index number reference.

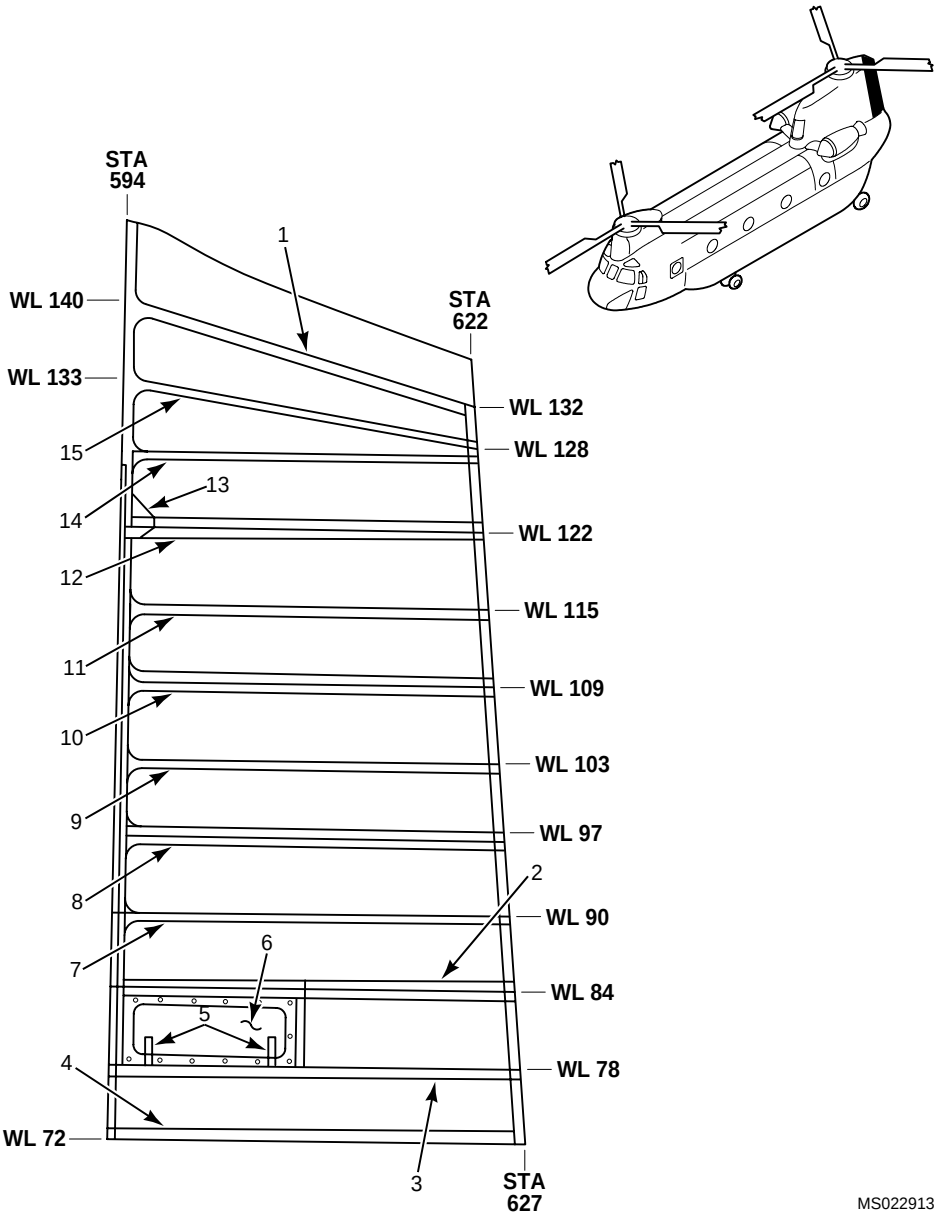


Figure 3. Aft Pylon Trailing Edge (Sheet 1 of 2)

REPAIR - continued

Table 2. Aft Pylon Trailing Edge

INDEX NO.	NOMENCLATURE	ORIGINAL MATERIAL	REPAIR MATERIAL	WORK PACKAGE
1	Zee	0.025 2024-T4 Clad	0.032 2024-T3 Clad	0087 00
2	Zee	0.032 2024-T4 Clad	0.040 2024-T3 Clad	0087 00
3	Zee	0.025 2024-T4 Clad	0.032 2024-T3 Clad	0087 00
4	Angle	0.032 2024-T4 Clad	0.040 2024-T4 Clad	0087 00
5	Strap	0.070 Webbing MIL-W-5625	Note B	--
6	Door	0.032 2024-T4 Clad	Note C	--
7	Zee	0.025 2024-T4 Clad	0.032 2024-T3 Clad	0087 00
8	Zee	0.025 2024-T4 Clad	0.032 2024-T3 Clad	0087 00
9	Zee	0.025 2024-T4 Clad	0.032 2024-T3 Clad	0087 00
10	Zee	0.032 2024-T4 Clad	0.040 2024-T4 Clad	0087 00
11	Zee	0.025 2024-T4 Clad	0.032 2024-T3 Clad	0087 00
12	Zee	0.032 2024-T4 Clad	0.040 2024-T4 Clad	0087 00
13	Doubler	0.032 2024-T4 Clad	0.040 2024-T4 Clad	0086 00
14	Zee	0.025 2024-T4 Clad	0.032 2024-T3 Clad	0087 00
15	Zee	0.025 2024-T4 Clad	0.032 2024-T3 Clad	0087 00

NOTES

A. All dimensions are in inches.
B. Damage other than minor, replace with strap, 114S4603-19.
C. Damage other than minor, replace using original material.
D. Left side shown, right side same as left.

REPAIR - continued

NOTE

Refer to Table 3 for index number reference.

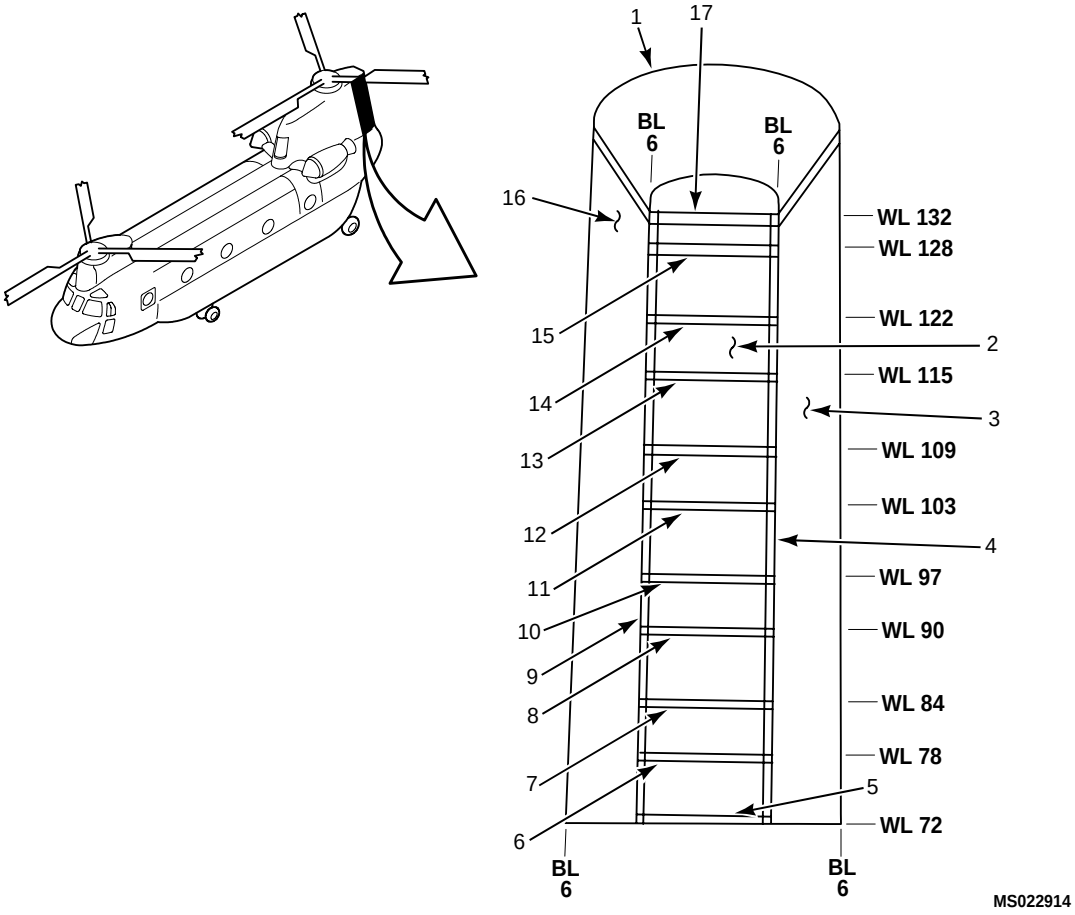


Figure 3. Aft Pylon Trailing Edge (Sheet 2 of 2)

Table 3. Aft Pylon Trailing Edge

INDEX NO.	NOMENCLATURE	ORIGINAL MATERIAL	REPAIR MATERIAL	WORK PACKAGE
1	Skin	Laminated Cloth 181-77 MIL-C-9084	Note B	0081 00
2	Skin	0.025 2024-T4 Clad	0.032 2024-T3 Clad	0086 00
3	Skin	0.025 2024-T4 Clad	0.032 2024-T3 Clad	0086 00
4	Angle	0.032 2024 T4 Clad	0.040 2024-T3 Clad	0087 00
5	Angle	0.040 2024-T4 Clad	0.050 2024-T3 Clad	0087 00
6	Angle	0.032 2024-T4 Clad	0.040 2024-T3 Clad	0087 00
7	Angle	0.040 2024-T4 Clad	0.050 2024-T3 Clad	0087 00

REPAIR - continued

Table 3. Aft Pylon Trailing Edge - continued

INDEX NO.	NOMENCLATURE	ORIGINAL MATERIAL	REPAIR MATERIAL	WORK PACKAGE
8	Angle	0.032 2024-T4 Clad	0.040 2024-T3 Clad	0087 00
9	Angle	0.032 2024-T4 Clad	0.040 2024-T3 Clad	0087 00
10	Angle	0.040 2024-T4 Clad	0.050 2024-T3 Clad	0087 00
11	Angle	0.032 2024-T4 Clad	0.040 2024-T3 Clad	0087 00
12	Angle	0.040 2024-T4 Clad	0.050 2024-T3 Clad	0087 00
13	Angle	0.032 2024-T4 Clad	0.040 2024-T3 Clad	0087 00
14	Angle	0.040 2024-T4 Clad	0.050 2024-T3 Clad	0087 00
15	Channel	0.032 2024-T4 Clad	0.040 2024-T3 Clad	0087 00
16	Skin	0.025 2024-T4 Clad	0.032 2024-T3 Clad	0086 00
17	Angle	0.032 2024-T4 Clad	0.040 2024-T3 Clad	0087 00

NOTES

A. All dimensions are in inches.

B. Laminated impregnated cloth (Item 78, WP 0157 00).

Refer to Table 4 for index number reference.

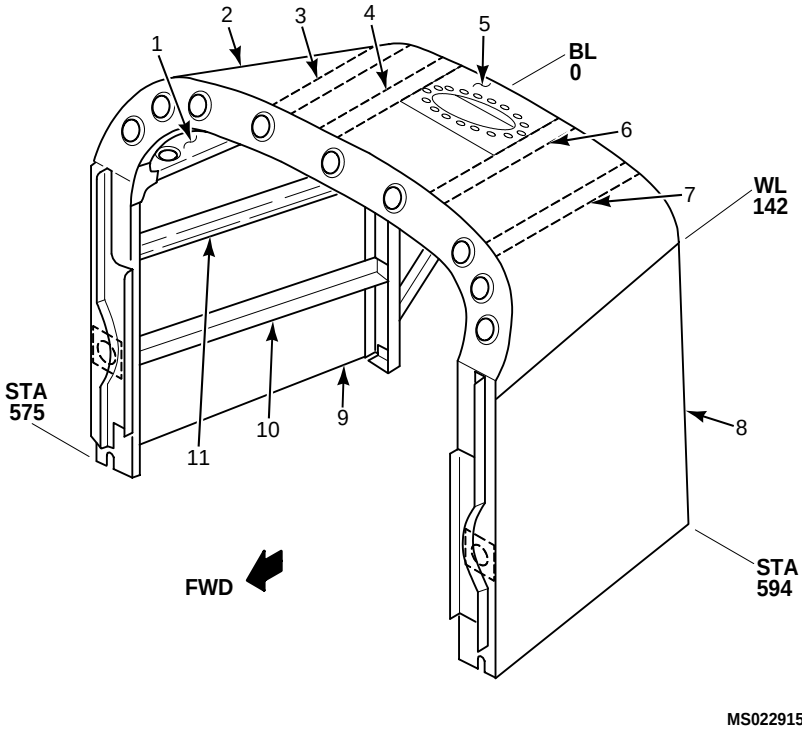


Figure 4. Aft Pylon Aft Crown Fairing (Sheet 1 of 2)

REPAIR - continued

Table 4. Aft Pylon Aft Crown Fairing

INDEX NO.	NOMENCLATURE	ORIGINAL MATERIAL	REPAIR MATERIAL	WORK PACKAGE
1	Former	0.040 2024-T4 Clad	0.050 2024-T3 Clad	0087 00
	Former Note C	0.050 2024-T42 Clad	0.063 2024-T3 Clad	0087 00
2	Skin	0.020 2024-T4 Clad	0.025 2024-T3 Clad	0086 00
3	Stiffener	BAC1517 1522 7075-T6	0.050 2024-T3 Clad	0087 00
4	Stiffener	BAC1517 1522 7075-T6	0.050 2024-T3 Clad	0087 00
5	Doubler	0.025 7075-T6 Clad	0.025 7075-T6 Clad	0086 00
6	Stiffener	BAC1517 1522 7075-T6	0.050 2024-T3 Clad	0087 00
7	Stiffener	BAC1517 1522 7075-T6	0.050 2024-T3 Clad	0087 00
8	Skin	0.020 2024-T4 Clad	0.025 2024-T3 Clad	0086 00
9	Skin	0.020 2024-T4 Clad	0.025 2024-T3 Clad	0086 00
10	Stiffener	BAC1517 1522 7075-T6	0.050 2024-T3 Clad	0087 00
11	Stiffener	BAC1517 1522 7075-T6	0.050 2024-T3 Clad	0087 00

NOTES

A. All dimensions are in inches.

B. Left side shown, right side same as left.

C. This part is used on aircraft serial numbers 92-0367 and 92-0368.

REPAIR - continued

NOTE

Refer to Table 5 for index number reference for Sta 575.
Refer to Table 6 for index number reference for Sta 594

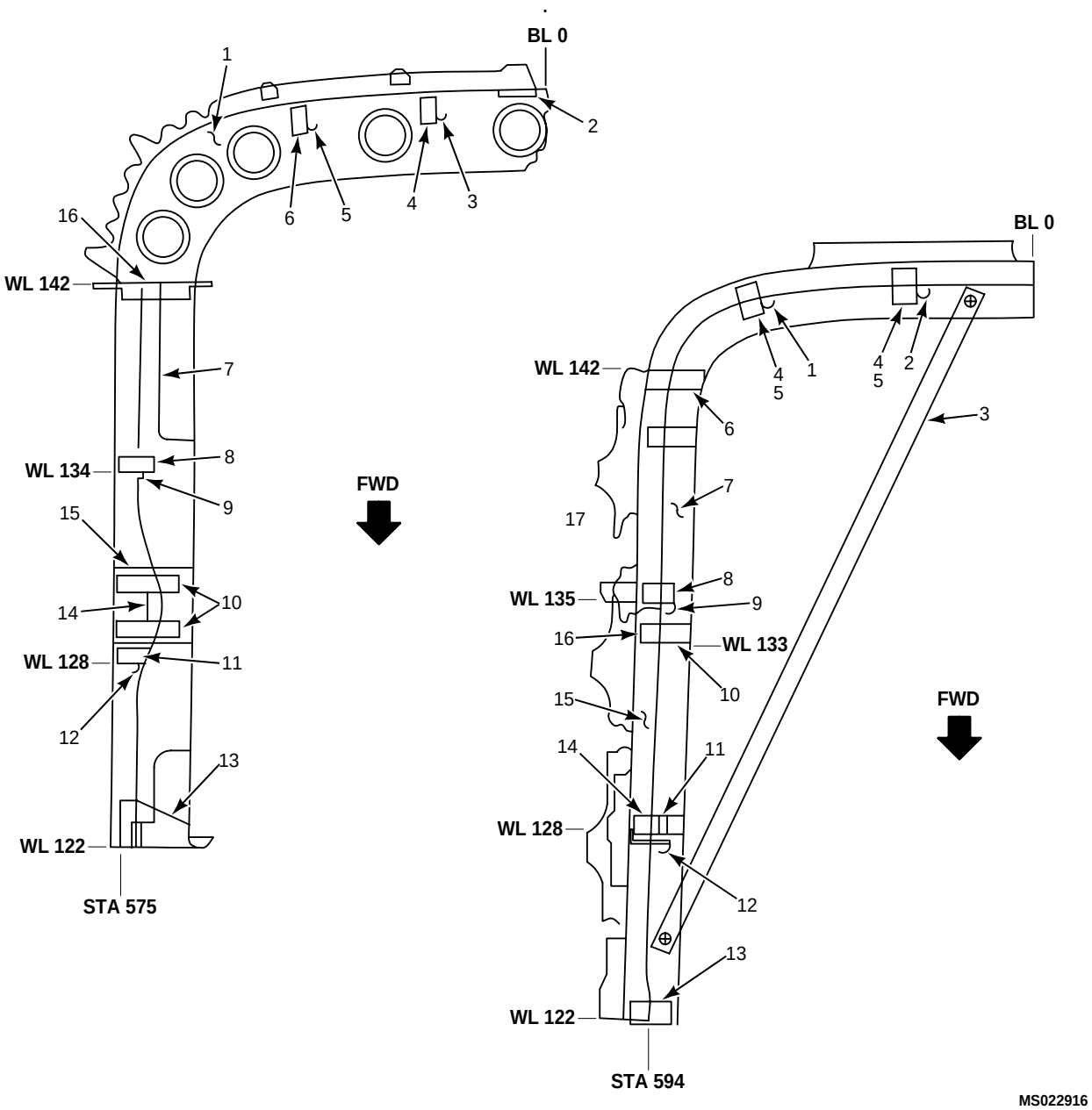


Figure 4. Aft Pylon Aft Crown Fairing Frames (Sheet 2 of 2)

REPAIR - continued

Table 5. Aft Pylon Aft Crown Fairing, Frame Sta 575

INDEX NO.	NOMENCLATURE	ORIGINAL MATERIAL	REPAIR MATERIAL	WORK PACKAGE
1	Former	0.040 2024-T4 Clad	0.050 2024-T3 Clad	0087 00
	Former Note B	0.050 2024-T42 Clad	0.063 2024-T3 Clad	008700
2	Gang Channel	NAS689-DT-3	Note C	--
3	Stiffener	BAC1517-1522 7075-T6	0.050 2024-T3 Clad	0087 00
4	Clip	0.040 2024-T3 Clad	Note C	--
5	Stiffener	BAC1517-1522 7075-T6	0.050 2024-T3 Clad	0087 00
6	Clip	0.040 2024-T3 Clad	Note C	--
7	Stiffener	0.025 6061-T6 Clad	0.025 6061-T6 Clad	--
8	Clip	0.040 2024-T3 Clad	Note C	--
9	Stiffener	BAC1517-1522 7075-T6	0.050 2024-T3 Clad	0087 00
10	Tension Fitting	ALCOA 30201 7075-T6	Note D	--
11	Clip	0.040 2024-T3 Clad	Note C	--
12	Stiffener	BAC1517-1522 7075-T6	0.050 2024-T3 Clad	0087 00
13	Clip	0.040 2024-T3 Clad	Note C	--
14	Shield	Laminated Cloth MIL-P-8013 Type 1	Note D	0081 00
15	Plate	0.250 301 1/4H Cres	Note C	--
16	Gusset	0.032 2024-T3 Clad	Note C	--

NOTES

A. All dimensions are in inches.
B. This part is used on aircraft serial numbers 92-0367 and 92-0368.
C. Repair not practicable, replace with original material.
D. Repair using original material.
E. Left side shown, right side same as left.

REPAIR - continued

Table 6. Aft Pylon Aft Crown Fairing, Frame, Sta 594

INDEX NO.	NOMENCLATURE	ORIGINAL MATERIAL	REPAIR MATERIAL	WORK PACKAGE
1	Stiffener	BAC1517-1522 7075-T6	0.050 2024-T3 Clad	0087 00
2	Stiffener	BAC1517-1522 7075-T6	0.050 2024-T3 Clad	0087 00
3	Stiffener	ALCOA 10885 2024-T4	Note D	0087 22
4	Clip	0.040 2024-T3	Note C	--
5	Clip	0.040 2024-T3	Note C	--
6	Clip	0.025 2024-T4	Note C	--
7	Former	0.032 2024-T4 Clad	0.040 2024-T3 Clad	0087 00
	Former Note B	0.050 2024-T42 Clad	0.063 2024-T3 Clad	0087 00
8	Clip	0.040 2024-T3 Clad	Note C	--
9	Stiffener	BAC1517-1522 7075-T6	0.050 2024-T3 Clad	0087 00
10	Shim	0.032 2024-T4 Clad	Note C	--
11	Clip	0.040 2024-T4 Clad	Note C	--
12	Stiffener	BAC1517-1522 7075-T6	0.050 2024-T3 Clad	0087 00
13	Clip	0.040 2024-T4	Note C	--
14	Clip	0.032 2024-T4 Clad	Note C	--
15	Angle	0.032 2024-T4 Clad	0.040 2024-T3 Clad	0087 00
16	Clip	0.032 2024-T4 Clad	Note C	--
17	Clip	0.032 2024-T4	Note C	--

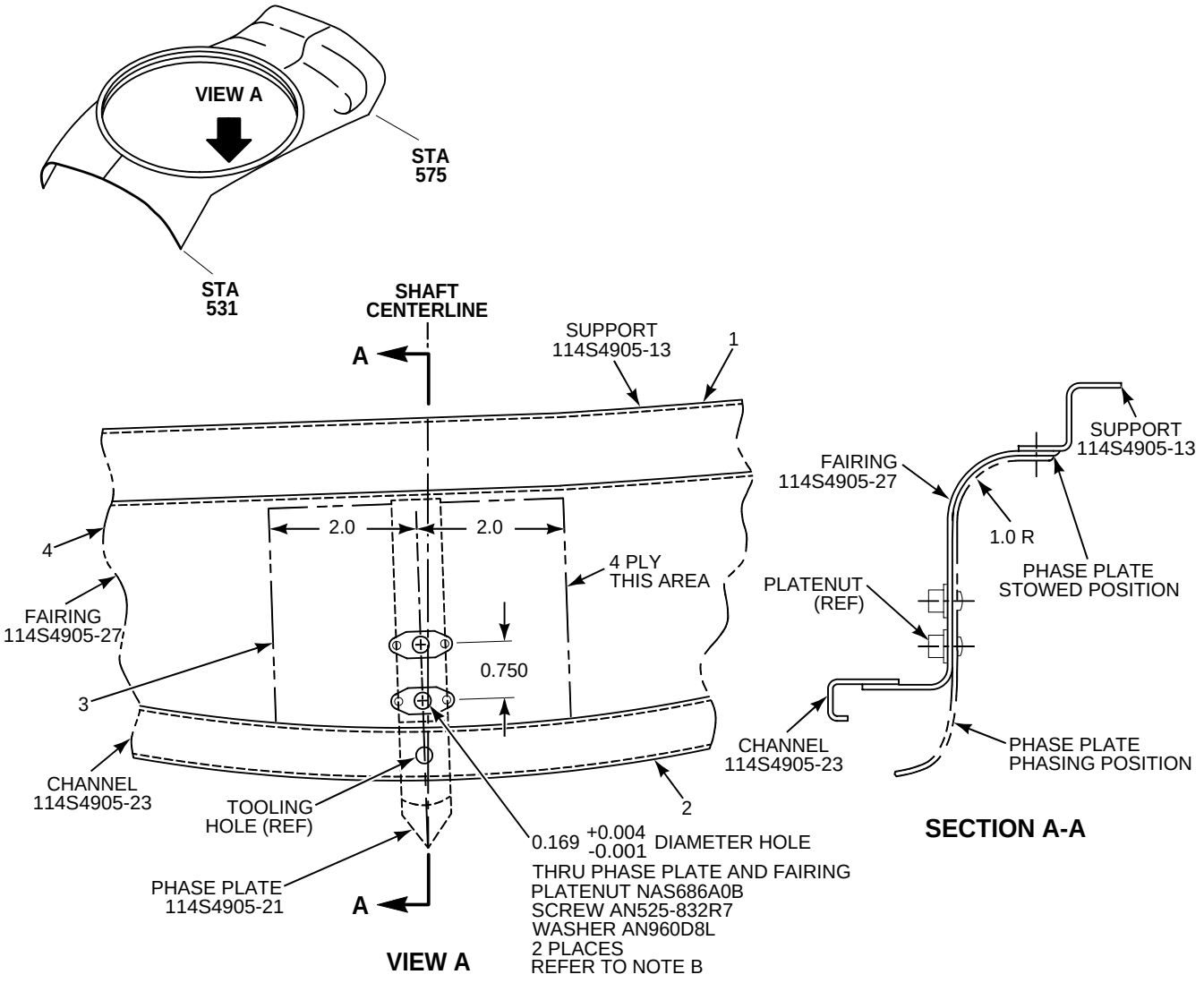
NOTES

A. All dimensions are in inches.
B. This part is used on aircraft serial numbers 92-0367 and 92-0368.
C. Repair not practicable, replace with original material.
D. Repair using original material.
E. Left side shown, right side same as left.

REPAIR - continued

NOTE

Refer to Table 7 for index number reference.



NOTE

All dimensions are in inches.

Figure 5. Aft Pylon Mid Crown Fairing (Sheet 1 of 3)

REPAIR - continued

NOTE

Refer to Table 7 for index number reference.

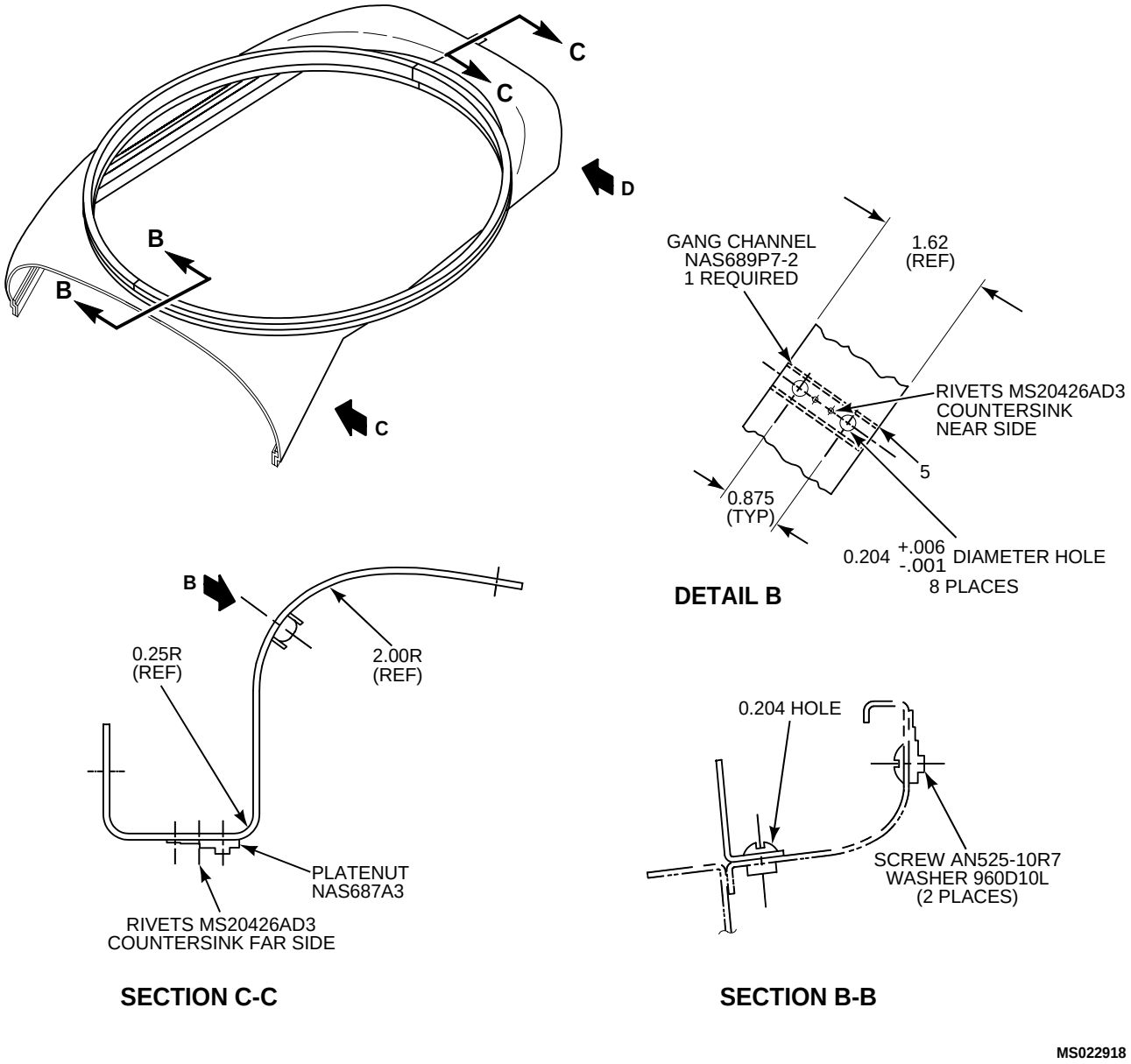


Figure 5. Aft Pylon Mid Crown Fairing (Sheet 2 of 3)

REPAIR - continued

NOTE

Refer to Table 7 for index number reference.

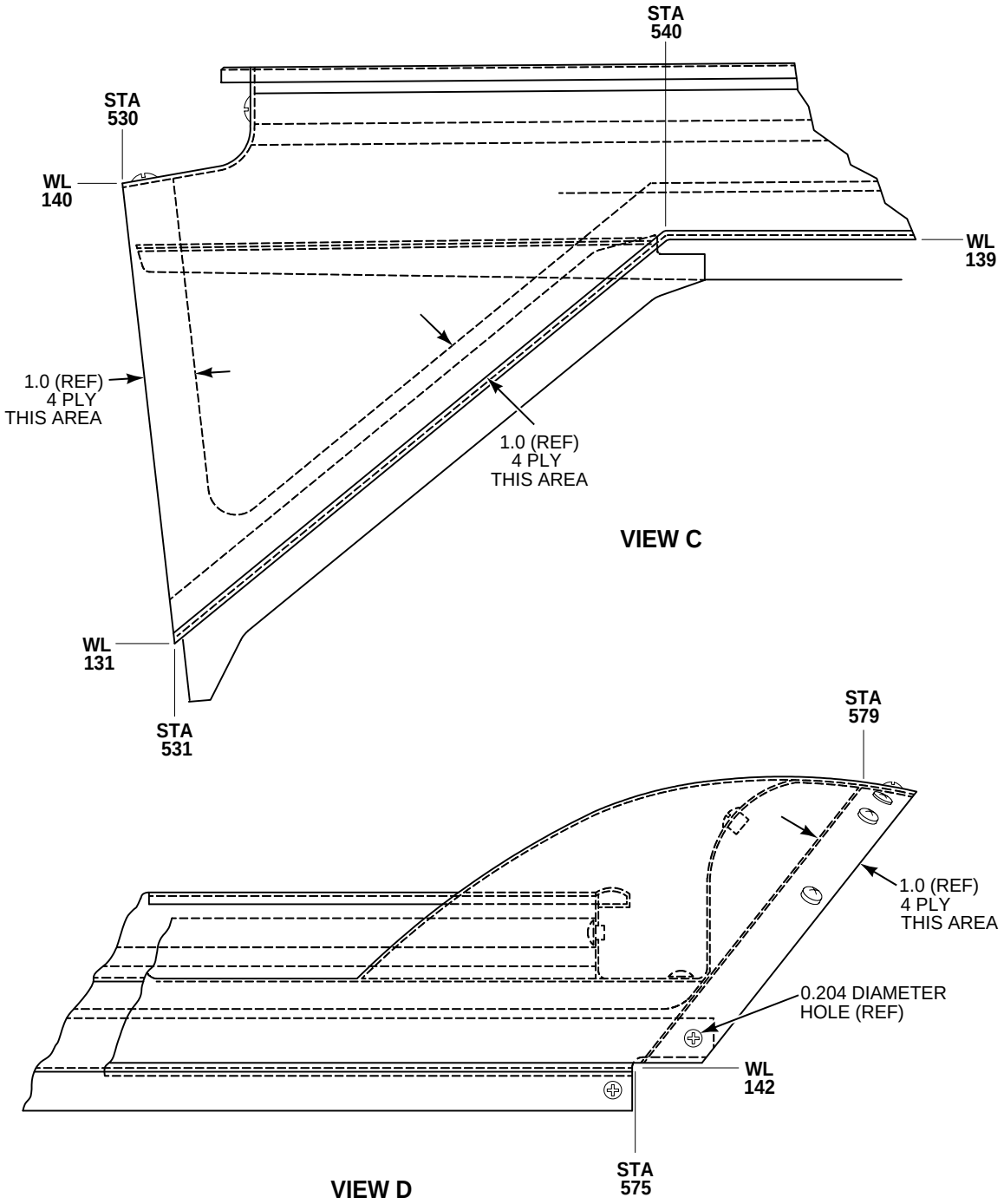


Figure 5. Aft Pylon Mid Crown Fairing (Sheet 3 of 3)

REPAIR - continued

Table 7. Aft Pylon Mid Crown Fairing

INDEX NO.	NOMENCLATURE	ORIGINAL MATERIAL	REPAIR MATERIAL	WORK PACKAGE
1	Support	0.040 2024-T4 Clad	0.050 2024-T3 Clad	0087 00
2	Channel	0.032 2024-T4 Clad	0.040 2024-T3 Clad	0087 00
3	Splice Plate	0.025 2024-T4 Clad	0.025 2024-T4 Clad	0087 00
4	Fairing	2 Ply, No. 181 Glass Cloth	Note B	0081 00
5	Gang Channel	NAS 689P7-2	NAS 689P7-2	--

NOTES

A. All dimensions are in inches.

B. Repair using original material.

NOTE

Refer to Table 8 for index number reference.

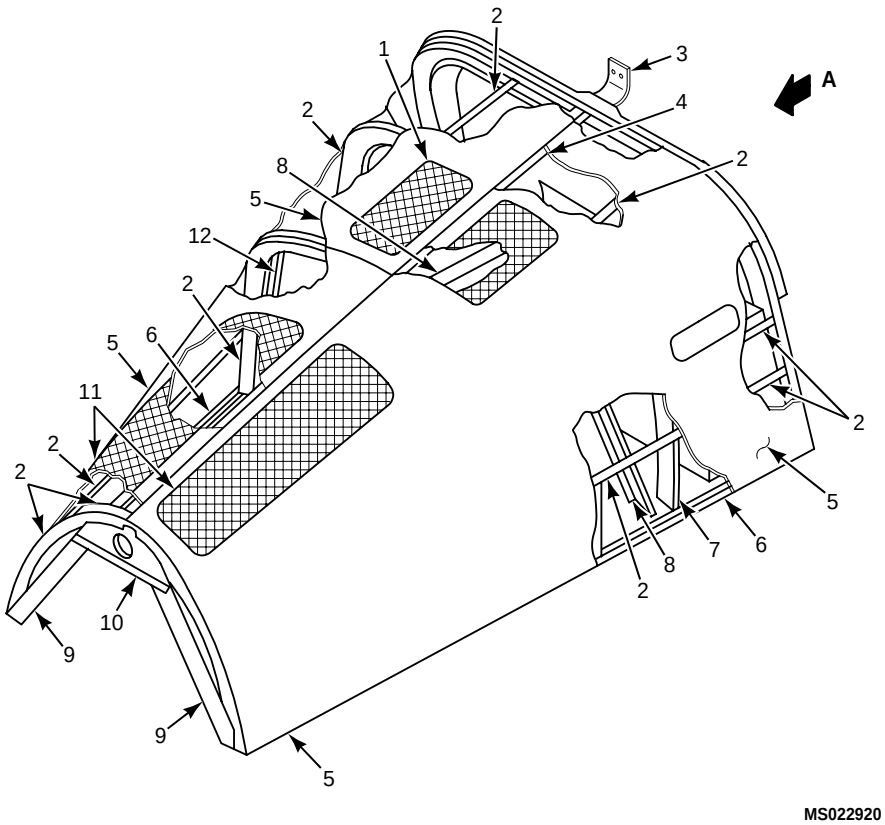


Figure 6. Aft Pylon Forward Crown Fairing (Sheet 1 of 2)

REPAIR - continued

Table 8. Aft Pylon Forward Crown Fairing

INDEX NO.	NOMENCLATURE	ORIGINAL MATERIAL	REPAIR MATERIAL	WORK PACKAGE
1	Screen	0.040 2024-T3 Clad	Note B	--
2	Stiffener	VS70503-1	0.032 4130	0088 00
3	Splice	0.025 2024-T4 Clad	0.025 2024-T4	0088 00
4	Hinge	MS20001PH4	Note C	0093 00
5	Skin	0.020 2024-T4 Clad	0.025 2024-T3 Clad	0086 00
6	Doubler	0.020 2024-T4 Clad	0.025 2024-T3 Clad	0086 00
7	Former	0.025 2024-T42 Clad	0.025 301 Cres Anl	0087 00
	Former	0.020 2024-T4 Clad	0.025 2024-T3 Clad	0087 00
8	Channel	0.063 2024-T3 Clad	0.063 2024-T3 Clad	0087 00
9	Channel	0.050 2024-T3 Clad	0.050 2024-T3 Clad	0087 00
10	Gusset	0.040 2024-T4 Clad	0.050 2024-T3 Clad	0087 00
11	Screen	0.040 2024-T4 Clad	Note B	--
12	Strut	0.035 RD Smls Tube 6061-T6	0.058 RD Smls TUBE 6061-T6	0094 00

NOTES

A. All dimensions are in inches.

B. Use screen (Item 153, WP 0157 00) for replacement. No repairs permitted.

C. Use repair material same as original.

REPAIR - continued

NOTE

Refer to Table 9 for index number reference.

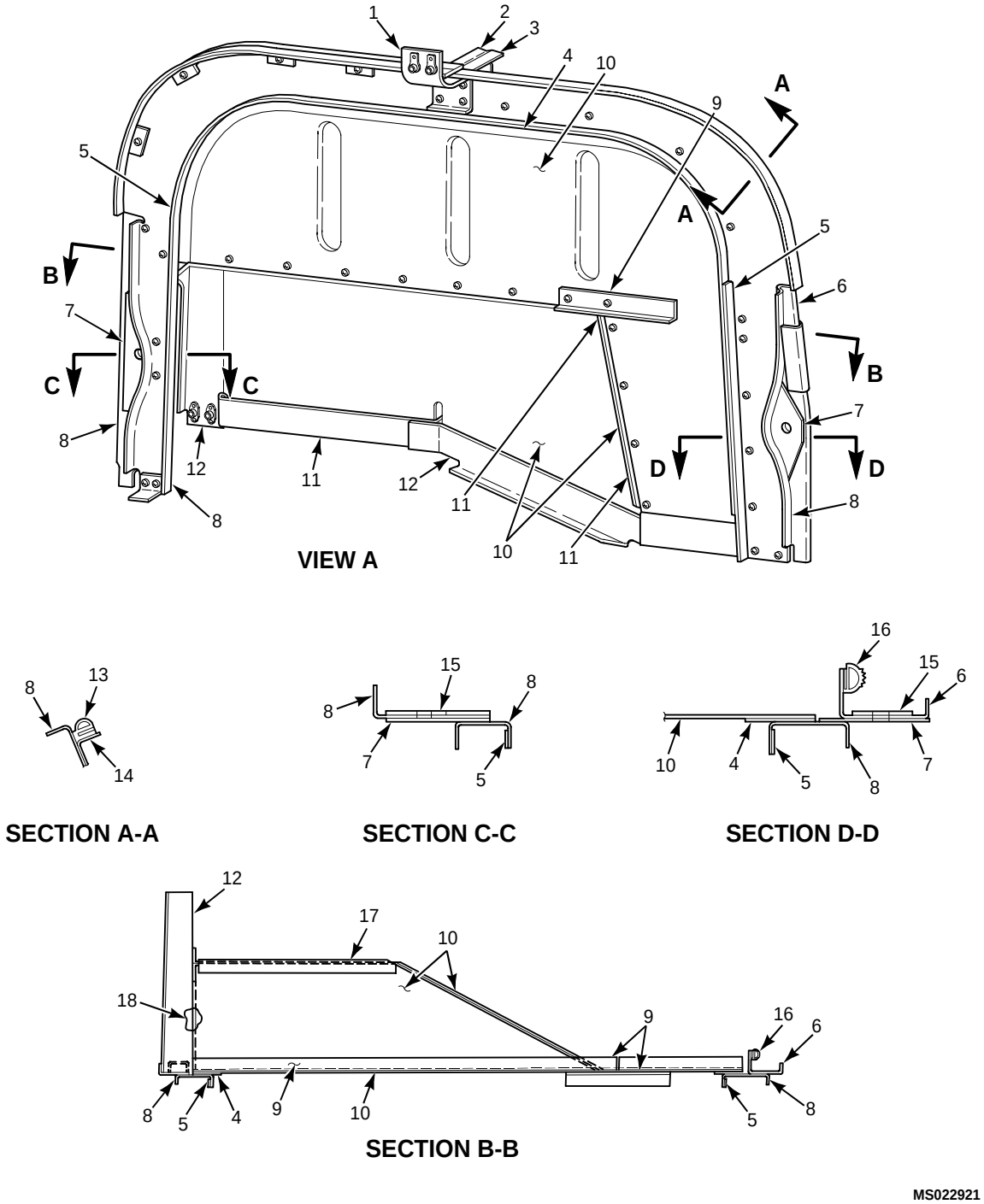


Figure 6. Aft Pylon Forward Crown Fairing Repair (Sheet 2 of 2)

REPAIR - continued

Table 9. Aft Pylon Forward Crown Fairing

INDEX NO.	NOMENCLATURE	ORIGINAL MATERIAL	REPAIR MATERIAL	WORK PACKAGE
1	Splice	0.025 2024-T4 Clad	0.025 2024-T4	0088 00
2	Beam	0.032 2024-T42 Clad or	0.032 301 Cres Anl	0087 00
		0.025 2024-T4 Clad	0.032 2024-T3 Clad	0087 00
3	Beam	0.025 2024-T42 Clad or	0.025 301 Cres Anl	0087 00
		0.025 2024-T4 Clad	0.032 2024-T3 Clad	0087 00
4	Doubler	0.040 2024-T3 Clad	0.040 2024-T3 Clad	0086 00
5	Strap	0.032 2024-T4 Clad	0.040 2024-T3 Clad	0086 00
6	Former	0.040 2024-T3 Clad	0.050 2024-T3 Clad	0087 00
7	Doubler	0.020 301 Cres Anl	0.020 301 Cres Anl	0086 00
8	Former	0.040 2024-T42 Clad or	0.040 301 Cres Anl	0087 00
		0.025 2024-T3 Clad	0.032 2024-T3 Clad	0087 00
9	Angle	0.050 2024-T3 Clad	0.063 2024-T3	0087 00
10	Web	0.040 2024-T3 Clad	0.050 2024-T3 Clad	0086 00
11	Angle	0.040 2024-T3 Clad	0.040 2024-T3 Clad	0087 00
12	Zee	0.040 2024-T3 Clad	0.050 2024-T3 Clad	0087 00
13	Seal	VS80518	Note B	0095 00
14	Retainer	0.025 6061-T6 Clad	0.032 4130	0087 00
15	Plate	0.125 301 Cres Anl	0.125 301 Cres Anl	0086 00
16	Seal	VS80540-1	Note B	0095 00
17	Angle	BAC 1503-1420-7075-T6	0.040 4130	0088 00
18	Seal	0.050 Syn Rubber	Note B	0095 00

NOTES

A. All dimensions are in inches.

B. Use repair material same as original.

REPAIR - continued

NOTE

Refer to Table 10 for index number reference.

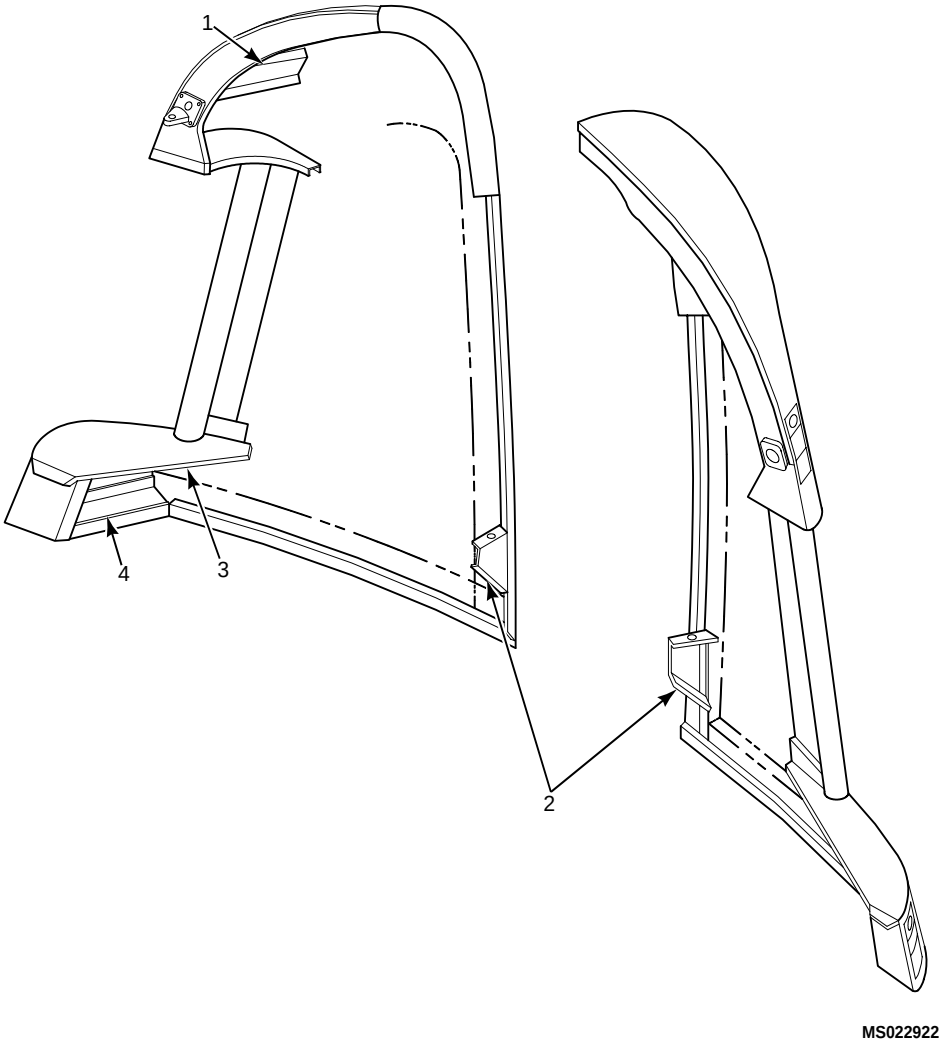


Figure 7. Aft Pylon Leading Edge Hinged Fairing

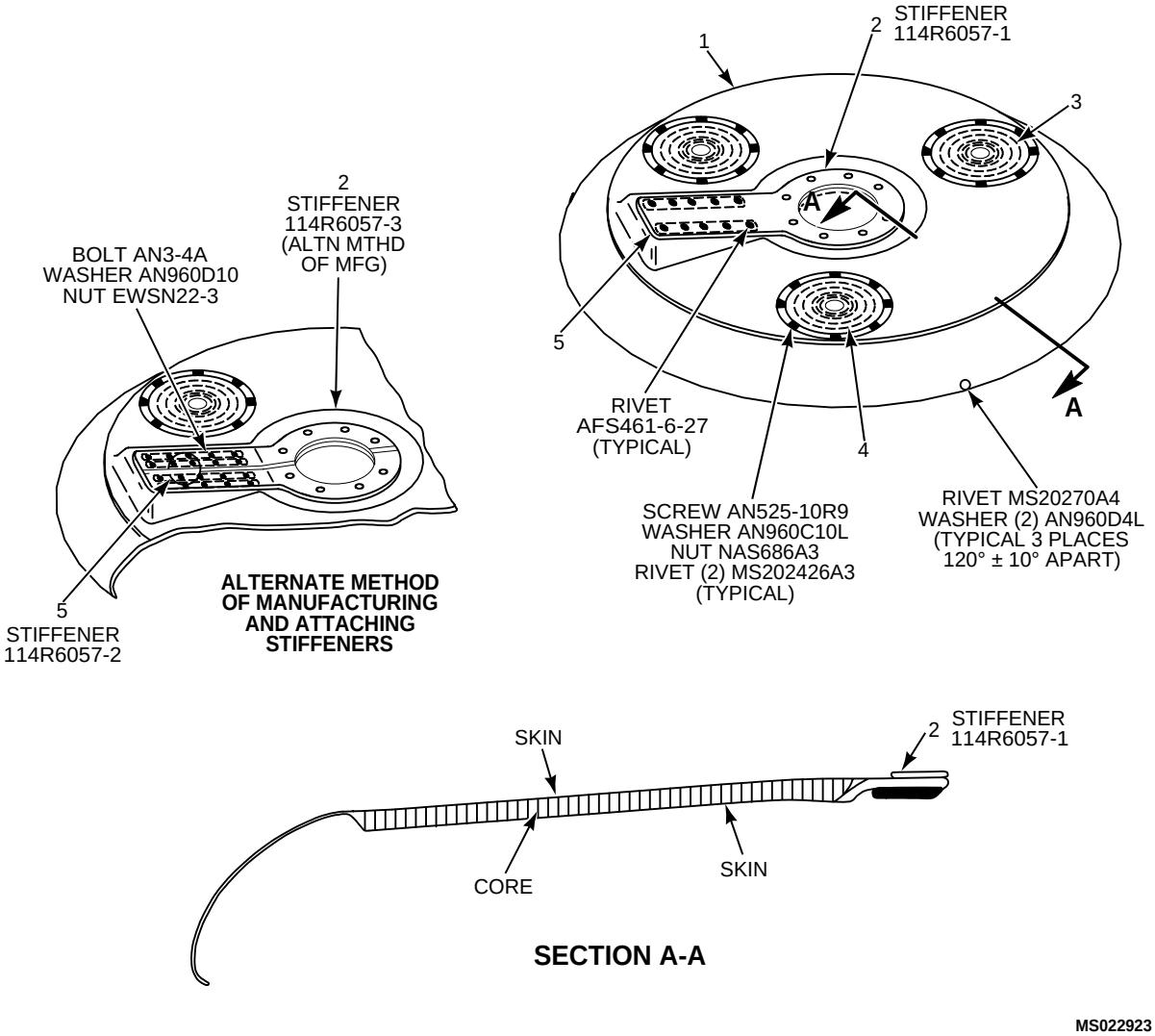
Table 10. Aft Pylon Leading Edge Hinged Fairing

INDEX NO.	NOMENCLATURE	ORIGINAL MATERIAL	REPAIR MATERIAL	WORK PACKAGE
1	Zee	0.070 7075-T6 Clad	0.080 7075-T6 Clad	0088 00
2	Support	0.040 2024-T3 Clad	0.050 2024-T3 Clad	0087 00
3	Zee	0.040 2024-T3 Clad	0.050 2024-T3 Clad	0088 00
4	Angle	0.080 7075-T6 Clad	0.080 7075-T6 Clad	0087 00

REPAIR - continued

NOTE

Refer to Table 11 for index number reference.



NOTE

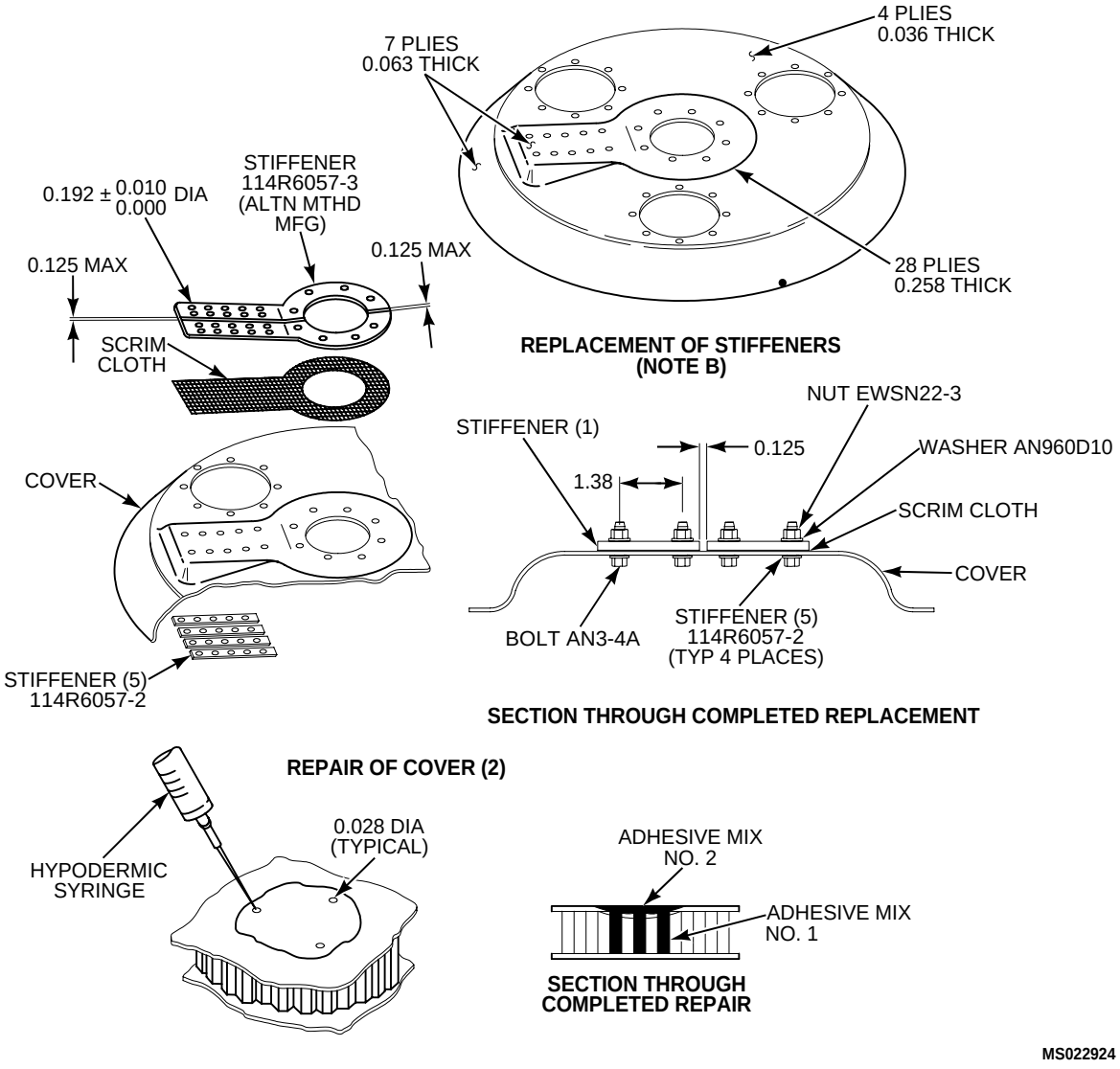
All dimensions are in inches.

Figure 8. Aft Weather Protective Cover (Sheet 1 of 3)

REPAIR - continued

NOTE

Refer to Table 11 for index number reference.



NOTES

A. All dimensions are in inches.

B. Remove attaching hardware. Use heat 200 degrees F to 250 degrees F (93 degrees C to 121 degrees C) to remove damaged stiffener. Bond stiffeners, 114R6057-3, to cover using scrim cloth (Item 155, WP 0157 00) and adhesive (Item 24, WP 0157 00). Install attaching hardware after adhesive has cured.

C. Torque nuts from 18 to 20 inch-lbs above friction torque.

Figure 8. Aft Weather Protective Cover (Sheet 2 of 3)

REPAIR - continued

Table 11. Aft Weather Protective Cover

INDEX NO.	NOMENCLATURE	ORIGINAL MATERIAL	REPAIR MATERIAL	WORK PACKAGE
1	Cover	Note C	Note C	0083 00
2	Stiffener	0.090 2024-T3 Clad	Note B	--
3	Boot Assy	--	Note D	--
4	Ring	0.063 6061-T6 Clad	Note E	--
5	Stiffener	0.032 6061-T4	Note B	--

NOTES

A. All dimensions are in inches.

B. No cracks allowed. Fabricate replacement part from 0.190-inch thick corrosion resistant steel; Condition A, Annealed, MIL-S-25043. If corrosion resistant steel is not available, use original material as alternate.

C. The core of the cover is 0.50-inch thick expanded perforated honeycomb MIL-L-7438, 3-31/4- ISN (50-52). Replace damaged sections with section corresponding to the original. The skin over core and remainder of cover are laminates of impregnated glass cloth, (Item 78, WP 0157 00).

D. If repair not feasible, replace with boot assembly, 114R6055-1.

E. Replace with new ring.

NOTE

Refer to Table 12 for index number reference.

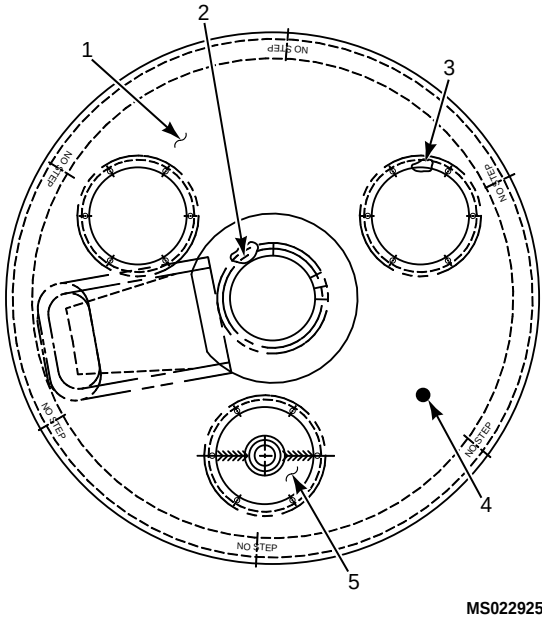


Figure 8. AFT Weather Protective Cover (Sheet 3 of 3)

REPAIR - continued

Table 12. Aft Weather Protective Cover

INDEX NO.	NOMENCLATURE	ORIGINAL MATERIAL	REPAIR MATERIAL	WORK PACKAGE
1	Cover	Pre-Preg Glass Fabric Type 1581 or 7781	Note B	0083 00
2	Collar	Nema Grade G-10 Laminate	Note C	0083 00
3	Ring Assy	BMA8-79 Glass Fiber Pre-Preg Type 1581 or 7781	Note D	0081 00
4	Core	STOCK 0.75 BMS8-124, CI Type I Grade 4	0.75 BMS8-124, CI Type I Grade 4	0083 00
5	Boot Assy	Note E	--	--

NOTES

A. All dimensions are in inches.

B. Top and bottom skin are made of four plies of fiberglass type 1581 or 7781.

C. The collar is made of two plies of Nema Grade G-10 laminated fiber cloth top and bottom.

D. Replace with new ring assembly, 414R6001-5.

E. If repair not feasible, replace with boot assembly, 114R6055-17.

END OF WORK PACKAGE

DEPOT MAINTENANCE WORK REQUIREMENT
CH-47D HELICOPTER
AFT PYLON INTERIOR REPAIRS

INITIAL SETUP

Test Equipment:
As Required

Tools and Special Tools:
Locating Fixture, 114G1242-1

Material/Parts:
As Required

Personnel Required:
As Required

References:
TM 1-1500-204-23 Series
TM 55-1520-240-23 Series
WP 0074 00
WP 0086 00
WP 0087 00
WP 0088 00

Equipment Conditions:
As Required

Special Environmental Condition:
As Required

SCOPE

This work package describes repair procedures for the aft pylon interior components to include formers, beams, decks, and support structures. Refer to Figure 1.

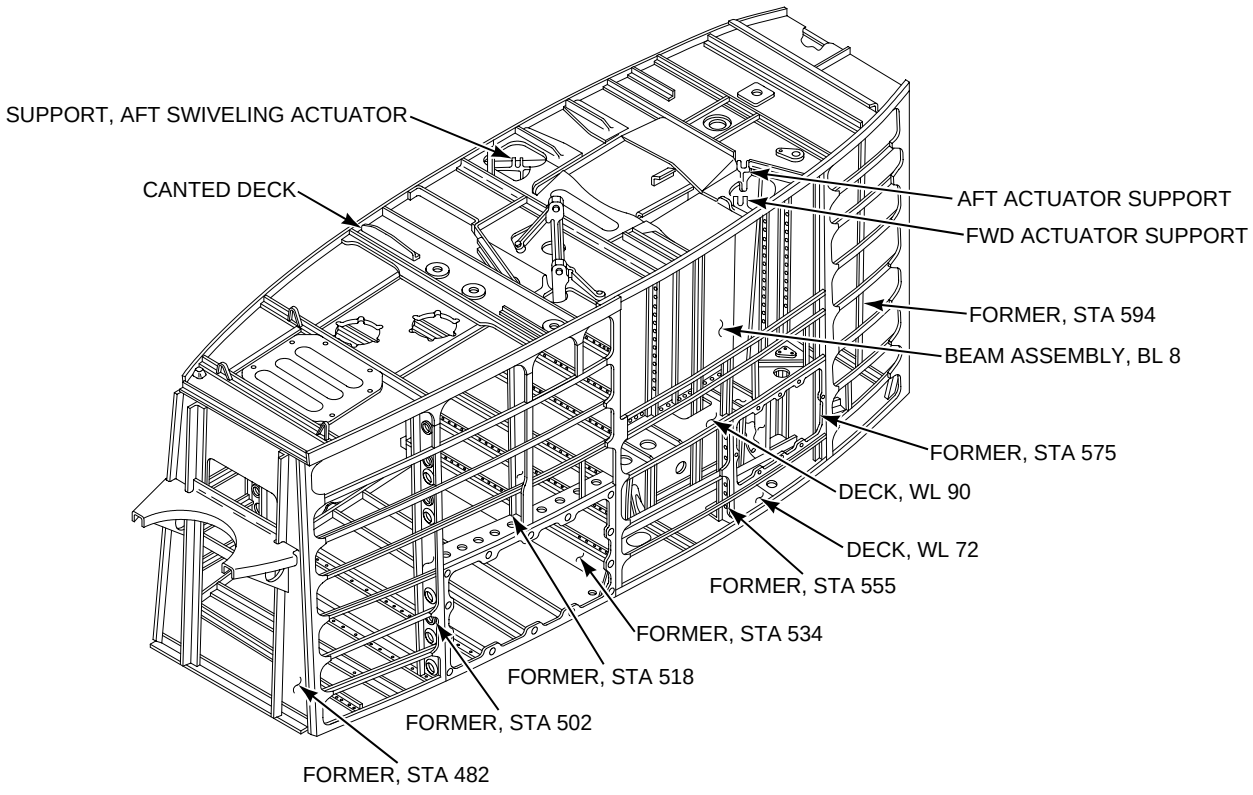


Figure 1. Aft Pylon Interior Components

REPAIR

NOTE

Refer to Table 1 for index number reference.

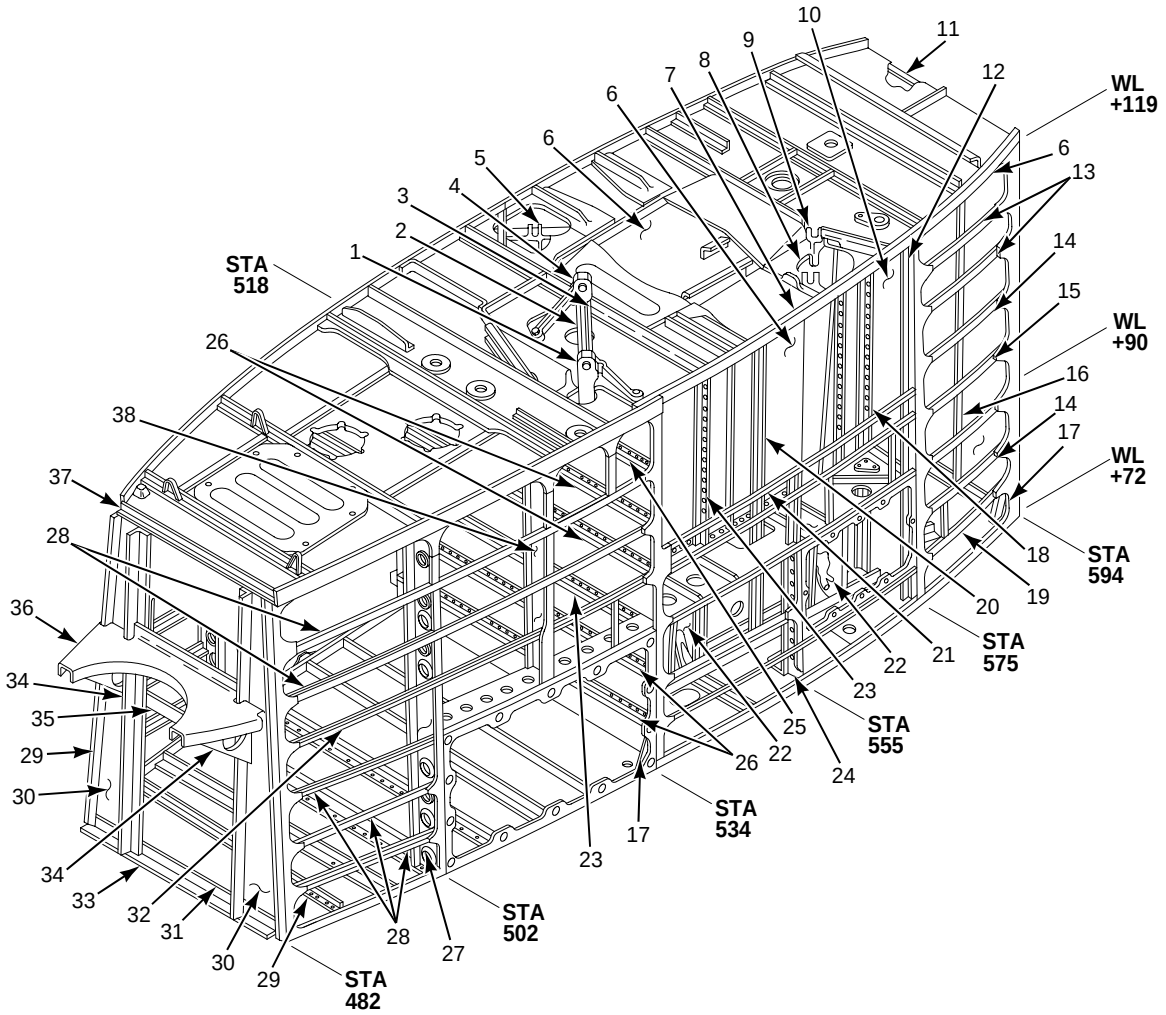


Figure 2. Aft Pylon Assembly

REPAIR – continued

Table 1. Aft Pylon Assembly

INDEX NO.	NOMENCLATURE	ORIGINAL MATERIAL	REPAIR MATERIAL	WORK PACKAGE
1	Beam	BAC 1505 100524 2024-T4	Note B	--
2	Channel	0.071 2024-T4 Clad	Note I	--
3	Channel	0.071 2024-T4 Clad	Note J	--
4	Beam	BAC 1501-100524 2024-T4	Note C	--
5	Attachment	--	Note D	--
6	Web	0.063 7075-T6 Bare	0.071 7075-T6 Clad	0086 00
7	Web	VS90525 7075-T6	--	0086 00
8	Attachment	--	Note E	--
9	Attachment	--	Note F	--
10	Web	0.040 7075-T6 Clad	0.050 7075-T6 Clad	0086 00
11	Cap	BAC 1514-539 7075-T6	--	0088 00
12	Angle	0.050 7075-T6 Clad	0.063 7075-T6 Clad	0087 00
13	Stringer	ALCOA 83264 7075-T6	--	0088 00
14	Tee	Harvey 15152 7075-T6	--	0088 00
15	Stringer	0.063 7075-T6 Bare	0.071 7075-T6 Clad	0087 00
16	Angle	0.090 7075-T6 Bare	0.100 7075-T6 Clad	0087 00
17	Attachment	--	Note G	--
18	Tee	Reynolds 26598 7075-T6	--	0088 00
19	Stringer	0.063 7075-T6 Bare	0.071 7075-T6 Clad	0087 00
20	Channel	0.063 301 1/2H Cres	0.063 301 1/2H CRES	0087 00
21	Stringer	Harvey 15079 7075-T6	0.063 4130	0088 00
22	Attachment	--	Note H	--
23	Channel	0.040 7075-T6 Bare	0.050 7075-T6 Clad	0087 00
24	Former	0.025 7075-T6 Bare	0.032 7075-T6 Clad	0087 00
25	Angle	AND10133 2024-T4	AND10133 2024-T4 Clad	0087 00
26	Stiffener	ALCOA 59675 7075-T6	0.050 4130	0088 00
27	Former	0.050 2024-T3 Bare	0.063 2024-T3 Clad	0087 00
28	Stringer	VS70503-1 7075-T6	0.032 4130	0087 00
29	Hinge Half	MS20001H6	--	0093 00
30	Web	0.025 7075-T6 Bare	0.032 7075-T6 Clad	0086 00
31	Angle	AND10134-1201 7075-T6	0.063 4130	0088 00
32	Stringer	VS70503-3 7075-T6	0.050 4130	0087 00
33	Angle	ALCOA 61971 7075-T6	0.063 4130	0088 00
34	Support	0.040 2024-T4 Clad	0.040 2024-T4 Clad	0087 00
35	Tee	ALCOA 49225 7075-T6	0.063 4130	0088 00

REPAIR - continued

Table 1. Aft Pylon Assembly - continued

INDEX NO.	NOMENCLATURE	ORIGINAL MATERIAL	REPAIR MATERIAL	WORK PACKAGE
36	Partition	0.032 2024-T4 Clad	0.032 2024-T4 Clad	0087 00
37	Channel	0.063 2024-T3 Clad	0.063 2024-T3 Clad	0087 00
38	Web	0.020 7075-T6 Bare	0.025 7075-T6 Clad	0086 00

NOTES

A. All dimensions are in inches.
B. Damage more than negligible, replace with beam 114S4119-56.
C. Damage more than negligible, replace with beam 114S4119-57.
D. Damage more than negligible, replace with attachment 114S4836-1.
E. Damage more than negligible, replace with attachment 114S4835-1.
F. Damage more than negligible, replace with attachment 114S4811-5.
G. Damage more than negligible, replace with attachment 114S4801-1.
H. Damage more than negligible, replace with attachment 114S4805-4.
   Use locating fixture 114G1247-1. Replace attachments separately to prevent mislocation.
I. Damage more than negligible, replace with channel 114S4119-45.
J. Damage more than negligible, replace with channel 114S4119-46.

REPAIR - continued

NOTE

Refer to Table 1 for index number reference.

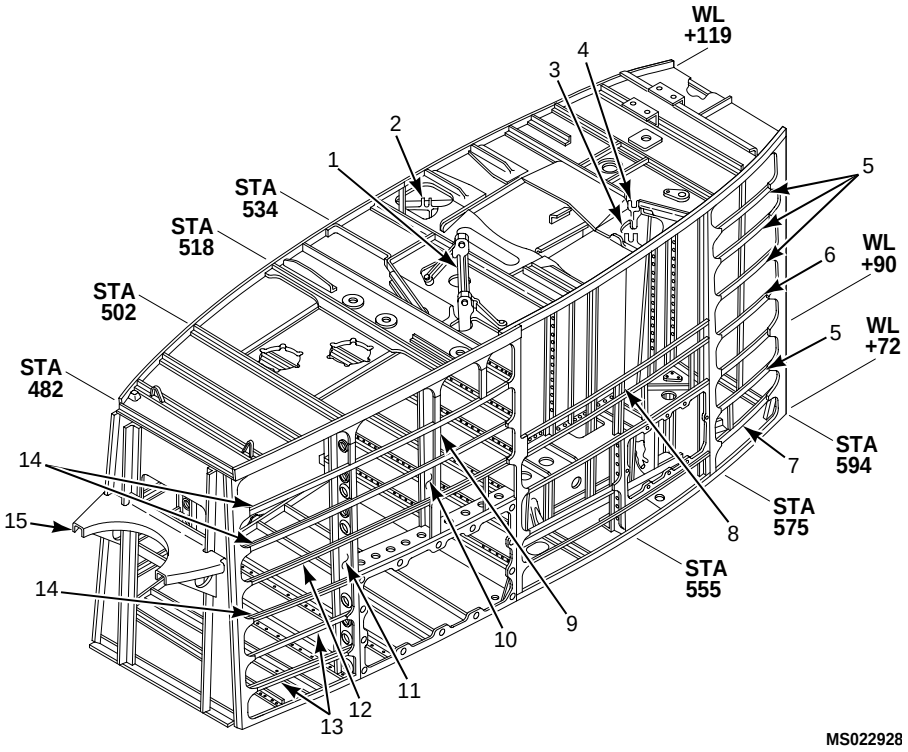


Figure 3. Aft Pylon Assembly – Aircraft Serial Numbers 92-0367 and 92-0368

Table 2. Aft Pylon Assembly – Aircraft Serial Numbers 92-0367 and 92-0368

INDEX NO.	NOMENCALTURE	ORIGINAL MATERIAL	REPAIR MATERIAL	WORK PACKAGE
1	Beam	BAC1501-100524 2024-T4	Note B	--
2	Support	--	Note C	--
3	Support	--	Note D	--
4	Support	--	Note E	--
5	Stringer	ALCOA 83264 7075-T6	Note F	0087 00
6	Stringer	0.063 7075-T6 Bare	0.075 7075-T6 Clad	0087 00
7	Stringer	BAC 1517-1523 7075-T6 Bare	Note F	0087 00
8	Stringer	Harvey 15078 7075-T6	0.063 4130	0087 00
9	Web	0.020 7075-T6 Bare	0.025 7075-T6 Clad	0086 00
10	Stiffener	ALCOA 83264 7075-T6	Note F	0087 00
11	Former	0.050 2024-T3 Bare	0.063 2024-T3 Clad	0087 00
12	Stringer	VS70503-1 7075-T6	0.032 4130	0087 00

REPAIR - continued

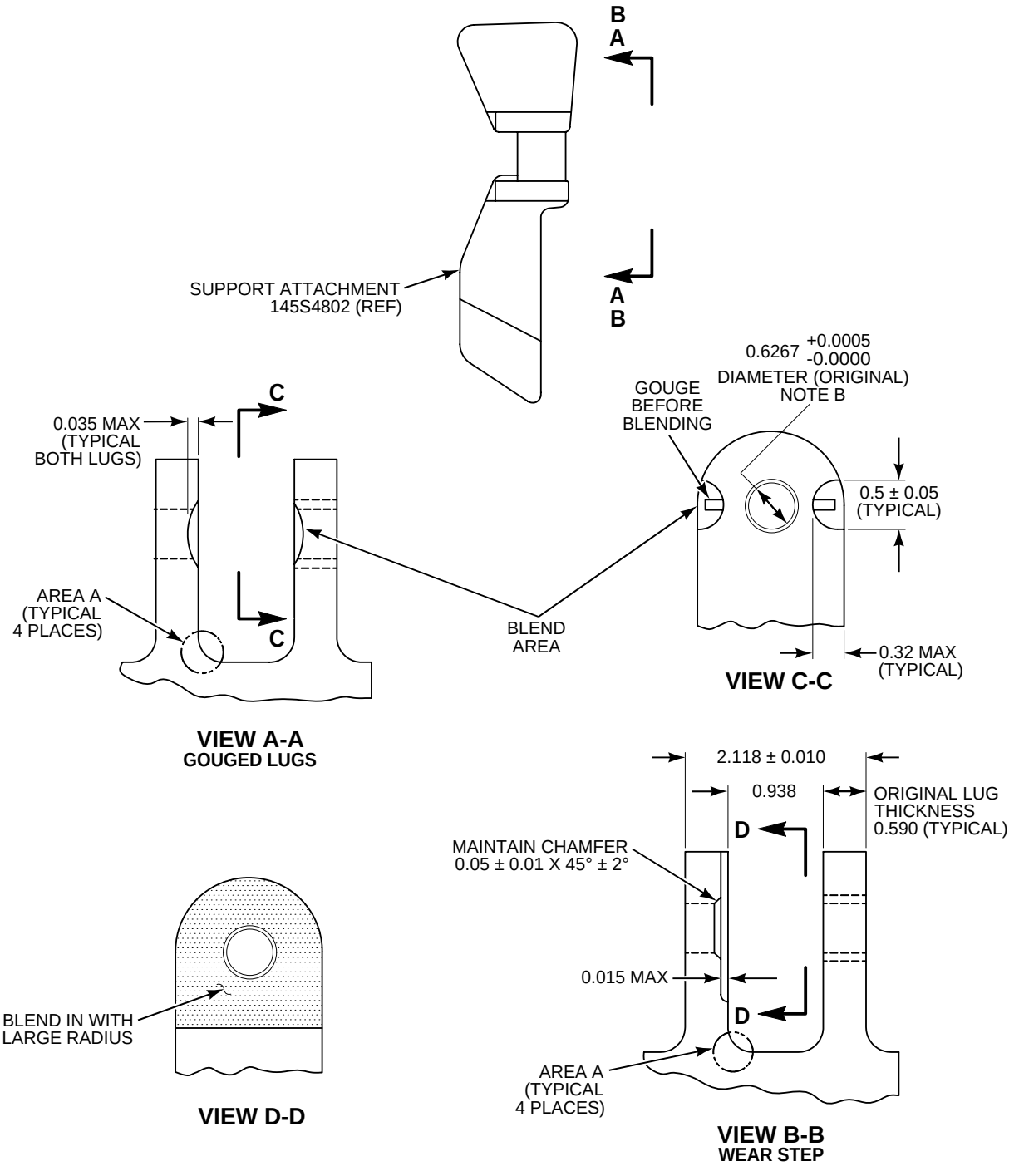
Table 2. Aft Pylon Assembly – Aircraft Serial Numbers 92-0367 and 92-0368 - continued

INDEX NO.	NOMENCALTURE	ORIGINAL MATERIAL	REPAIR MATERIAL	WORK PACKAGE
13	Stringer	VS70503-3 7075-T6	0.050 4130	0087 00
14	Stringer	BAC1517-1521 7075-T6	Note F	0087 00
15	Partition	0.032 2024-T42 Clad	0.040 2024-T42	0086 00

NOTES

A. All dimensions are in inches.
B. Damage more than negligible, replace with beam 114S4119-66.
C. Damage more than negligible, replace with support 114S4106-1.
D. Damage more than negligible, replace with support 114S4109-29.
E. Damage more than negligible, replace with support 114S4111-13.
F. Damage more than negligible, repair or replace with original material.

REPAIR - continued



NOTES

A. All dimensions are in inches.

B. Bolt hole may be 0.005-inch oversize or 0.005-inch out of round (max).

Figure 4. Aft Pylon Swiveling Actuator Support

REPAIR - continued

NOTE

Refer to Table 3 for index number reference.

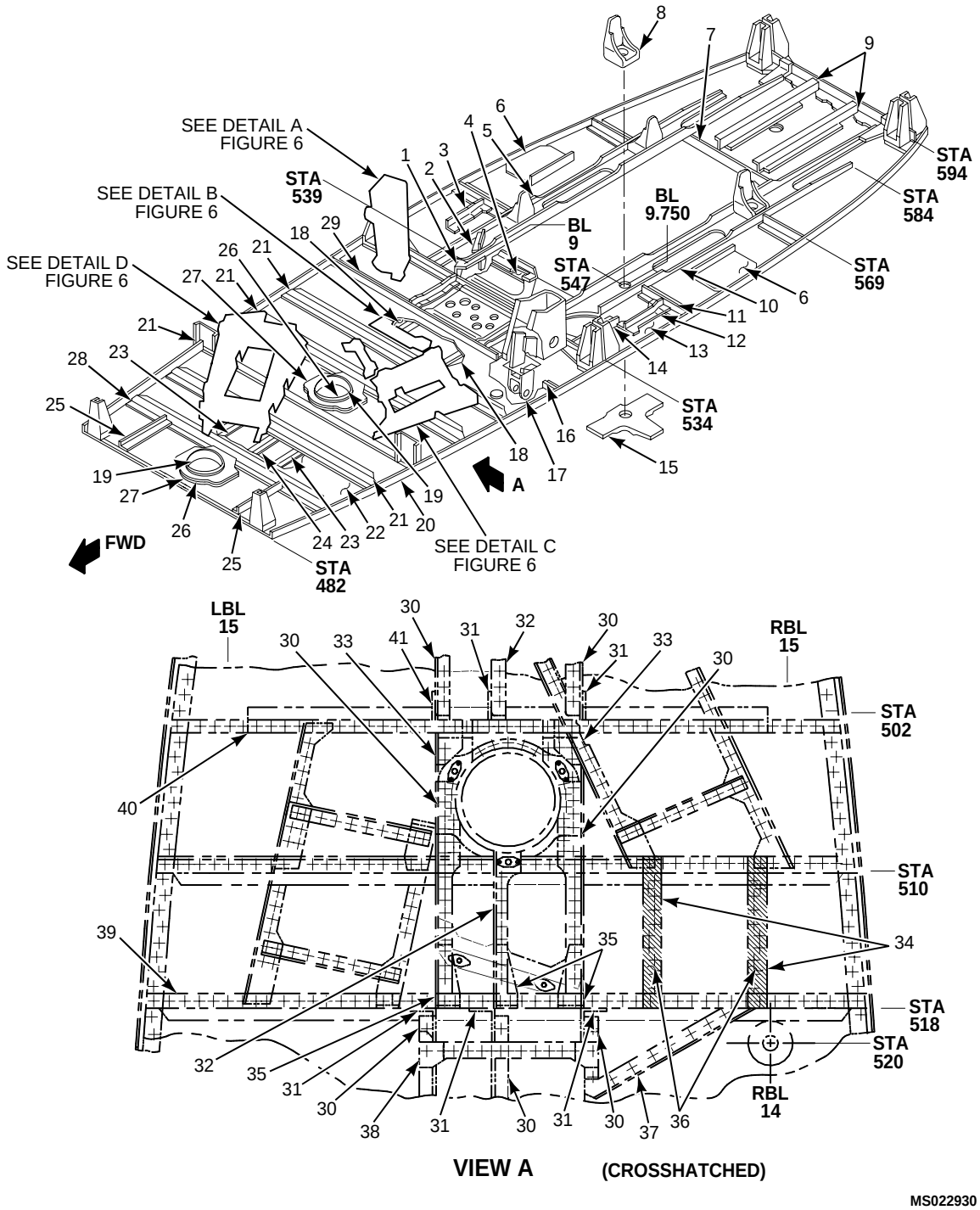


Figure 5. Aft Pylon Deck, WL 72

REPAIR - continued

Table 3. Aft Pylon Deck, WL 72

INDEX NO.	NOMENCLATURE	ORIGINAL MATERIAL	REPAIR MATERIAL	WORK PACKAGE
1	Support Assy	114S4823	Note F	--
2	Angle	ALCOA 62564 7075-T6	0.080 4130	0088 00
3	Angle	ALCOA 16869 7075-T6	Note B	--
4	Stiffener	AND10134-1205 7075-T6	0.125 4130	0088 00
5	Channel	NAS345-134 7075-T6	0.160 4130	0088 00
6	Doubler	0.032 7075-T6 Bare	0.040 7075-T6 Clad	0086 00
7	Stiffener	AND10133-1002 7075-T6	0.125 4130	0088 00
8	Support	AZ80 AF Mag Al Forg	Note B	--
9	Zee	AND10138 1004 7075-T6	0.071 4130	0088 00
10	Channel	NAS345-134 7075-T6	0.160 4130	0088 00
11	Tee	AND10136-2002 7075-T6	0.100 4130	0088 00
12	Tee	ALCOA 62409 7075-T6	0.100 4130	0088 00
13	Web	0.063 7075-T6 Bare	0.063 7075-T6 Clad	0086 00
14	Angle	ALCOA 27778 7075-T6	0.100 4130	0088 00
15	Plate	0.375 4340 Steel	Note B	--
16	Doubler	0.040 7075-T6 Bare	Note B	--
17	Support Assy	114S4824	Note F	Note G
18	Angle	0.050 70750-T6 Bare	0.063 7075-T6 Clad	0088 00
19	Domed Cover	0.040 6061-T6	0.040 6061-T6	0087 00
20	Cap	ALCOA 13816 7075-T6	0.125 4130	0088 00
21	Zee	0.050 7075-T6 Bare	0.063 7075-T6 Clad	0087 00
22	Web	0.032 7075-T6 Bare	0.040 7075-T6 Clad	0087 00
23	Angle	0.050 7075-T6 Bare	0.063 7075-T6 Clad	0087 00
24	Angle	0.032 7075-T6 Bare	0.040 7075-T6 Clad	0087 00
25	Angle	VS70504-3 7075-T6 Bare	0.025 7075-T6 Clad	0087 00
26	Seal	0.032 Silicon Rubber Sheet	Note B	0095 00
27	Retainer	0.025 2024-T4 Clad	Note D	0086 00
28	Zee	0.050 2024-T4 Clad	0.063 2024-T3 Clad	0087 00
29	Angle	ALCOA 5401 7075-T6	0.050 4130	0088 00
30	Angle	0.050 7075-T6	0.063 7075-T6 Clad	Note G
31	Clip	AND10133-1401 7075-T6511	Note F	Note G
32	Angle	0.050 7075-T6	0.063 7075-T6 Clad	Note G
33	Clip	0.050 7075-T6	Note B	Note G
34	Angle	0.050 2024-T3 Clad	0.063 2024-T3 Clad	Note G
35	Angle	0.050 2024-T3 Clad	Note G	
36	Filler	0.050 2024- Clad	Note B	Note G
37	Angle	0.050 2024-T3 Clad	0.063 2024-T3 Clad	Note G
38	Zee	0.050 2024-T3 Clad	0.063 2024-T3 Clad	Note G

REPAIR - continued

Table 3. Aft Pylon Deck, WL 72 - continued

INDEX NO.	NOMENCLATURE	ORIGINAL MATERIAL	REPAIR MATERIAL	WORK PACKAGE
39	Channel	0.050 2024-T3 Clad	0.063 2024-T3 Clad	Note G
40	Zee	0.050 2024-T3 Clad	0.063 2024-T3 Clad	Note G
41	Clip	AND10133-1401 7075-T6511	Note B	Note G

NOTES

A. All dimensions are in inches.
B. Replace with material, same as original.
C. Replace with retainer, 114S4113-129.
D. Replace with retainer, 114S4113-127.
E. Repair as shown in Figure 7 or replace with assembly, 114S4823-1.
F. Repair as shown in Figure 7or replace with assembly, 114S4824-1.
G. Effective only for 81-23381 thru 81-23389, 82-23762 thru 82-23780, 83-24102 thru 83-24125, and 84-24152 thru 84-24157.

REPAIR - continued

NOTE

Refer to Table 4 for index number reference.

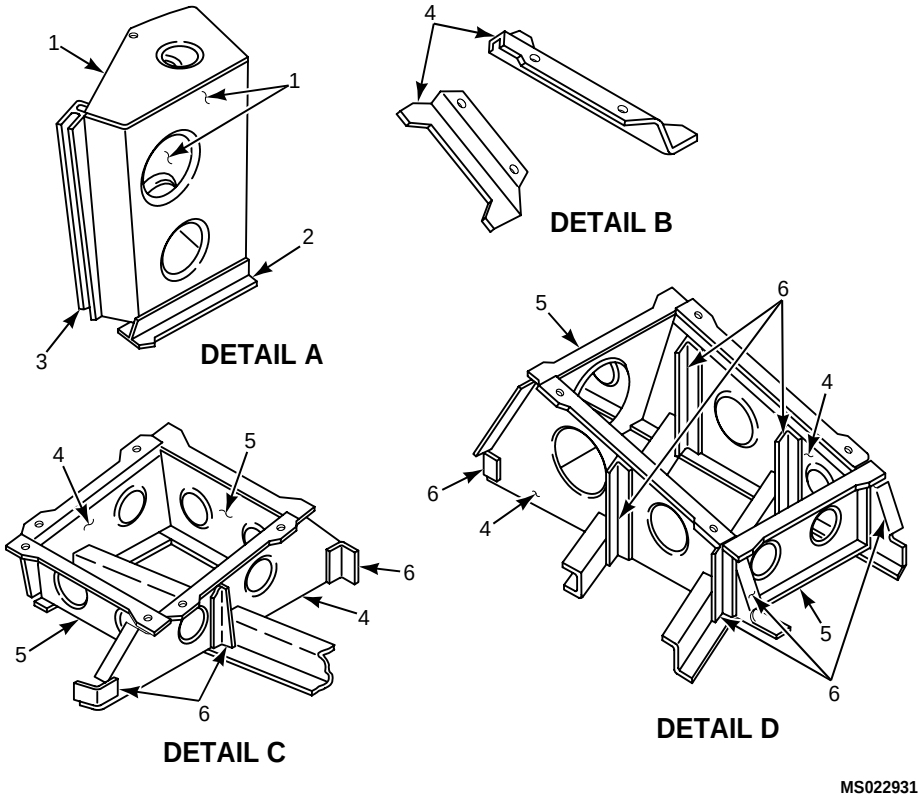


Figure 6. Aft Pylon Hydraulic Equipment Support Structure

Table 4. Aft Pylon Hydraulic Equipment Support Structure

INDEX NO.	NOMENCLATURE	ORIGINAL MATERIAL	REPAIR MATERIAL	WORK PACKAGE
1	Web	0.032 2024-T3 Clad	0.050 2024-T3 Clad	Note C 0086 00
2	Tee	ALCOA 49225 7075-T6	Note B	--
3	Web End	0.032 2024-T3 Clad	0.050 2024-T3 Clad	Note C 0086 00
4	Zee	0.050 2024-T3 Clad	0.063 2024-T3 Clad	0087 00
5	Zee	0.050 2024-T3 Clad	0.063 2024-T3 Clad	0087 00
6	Clips	0.063 2024-T3 Clad	0.071 2024-T3 Clad	Note C

NOTES

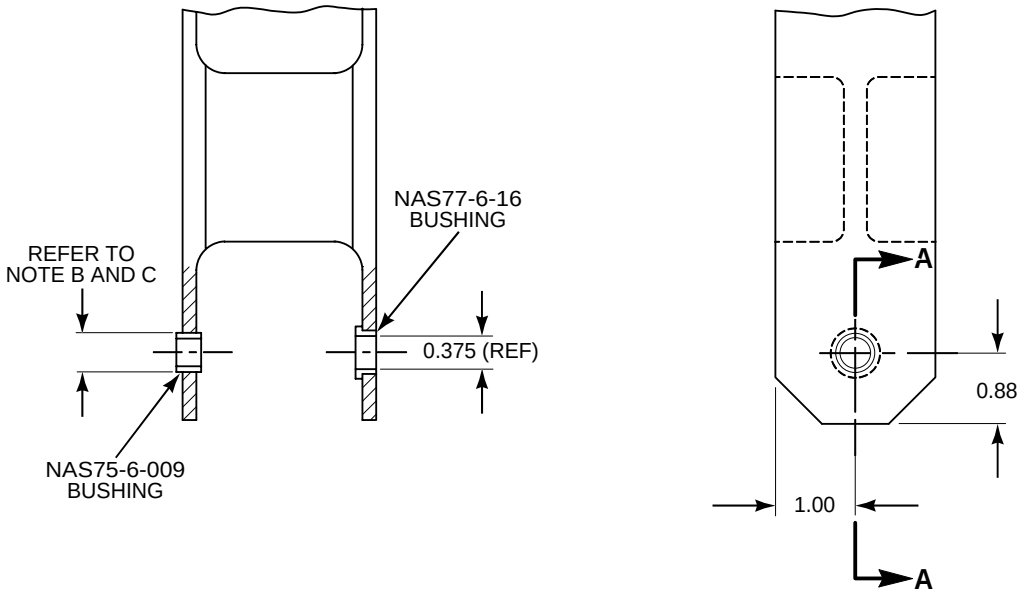
A. All dimensions are in inches.

B. Replace with original material.

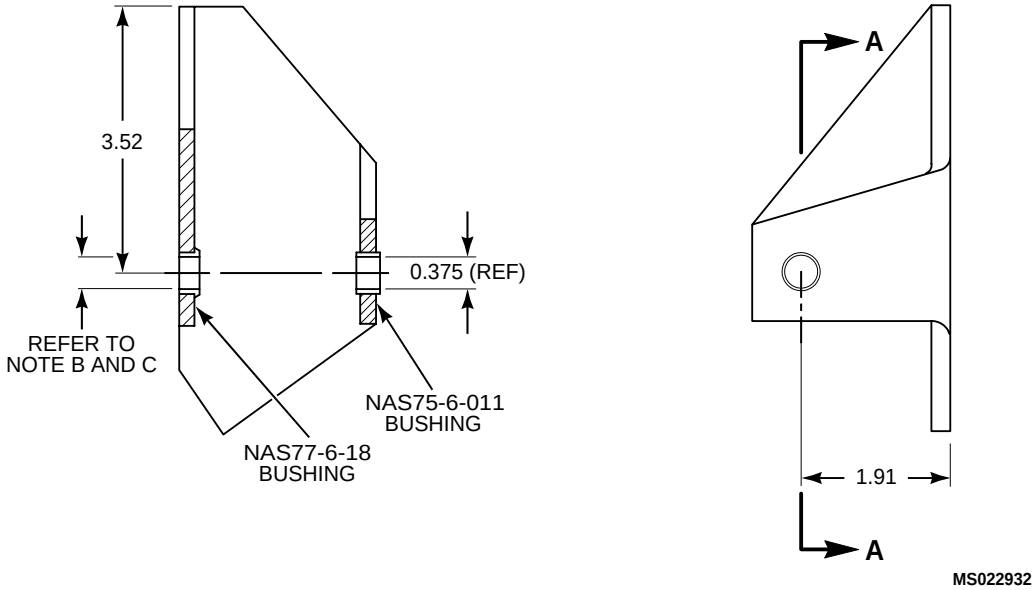
C. Replace rivets with 5/32-inch hex bolts.

REPAIR - continued

SUPPORT ASSEMBLY 114S4524-1



SUPPORT ASSEMBLY 114S4823-1



NOTES

A. All dimensions are in inches.

B. If bushing mounting holes are worn or elongated, line ream both sides.

C. 80- µ inches (RMS) max surface finish.

Figure 7. Aft Pylon Support Assemblies

REPAIR - continued

NOTE

Refer to Table 5 for index number reference.

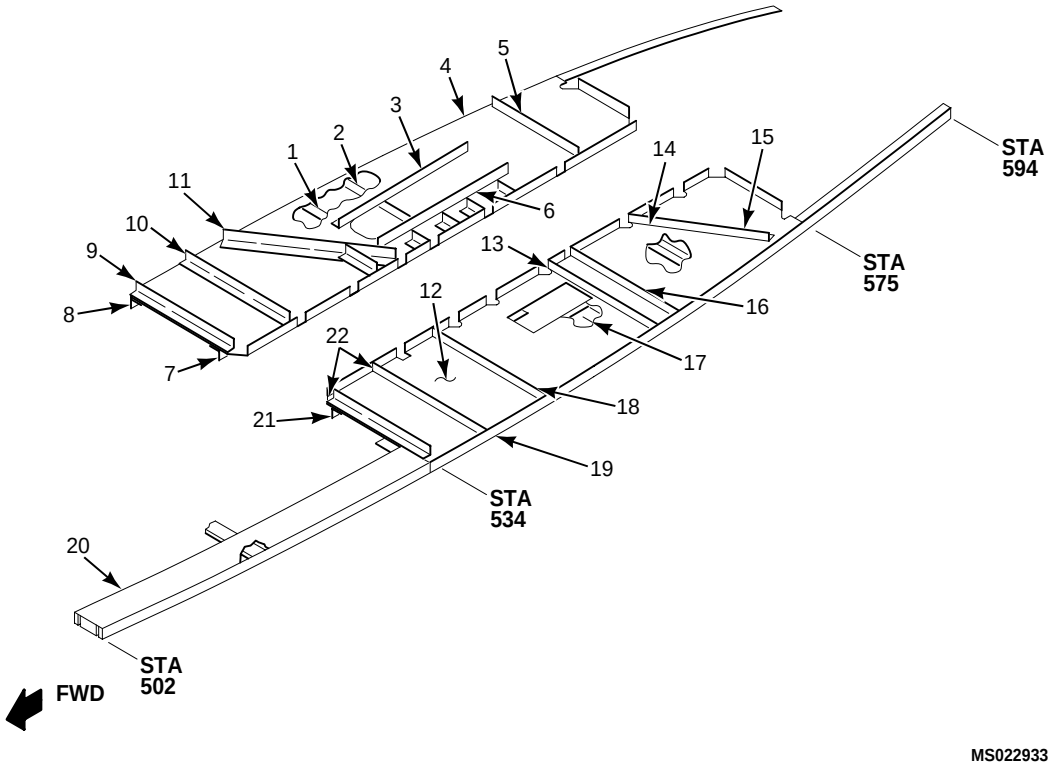


Figure 8. Aft Pylon Deck, WL 90

Table 5. Aft Pylon Deck, WL 90

INDEX NO.	NOMENCLATURE	ORIGINAL MATERIAL	REPAIR MATERIAL	WORK PACKAGE
1	Angle	0.032 7075-T6 Bare	0.040 7075-T6 Clad	0087 00
2	Angle	0.032 7075-T6 Bare	0.040 7075-T6 Clad	0087 00
3	Angle	Harvey 15078 7075-T6	0.063 4130	0088 00
4	Web	0.025 7075-T6 Bare	0.032 7075-T6 Clad	0086 00
5	Angle	0.032 7075-T6 Bare	0.040 7075-T6 Clad	0087 00
6	Angle	Harvey 15078 7075-T6	0.063 4130	0088 00
7	Angle	ALCOA 22477 7075-T6	0.050 4130	0088 00
8	Angle	ALCOA 22477 7075-T6	0.050 4130	0088 00
9	Angle	0.032 7075-T6 Bare	0.040 7075-T6 Clad	0087 00
10	Angle	0.032 7075-T6 Bare	0.040 7075-T6 Clad	0087 00
11	Angle	ALCOA 22477 7075-T6	0.050 4130	0088 00
12	Web	0.025 7075-T6 Bare	0.032 7075-T6 Clad	0086 00
13	Angle	ALCOA 22477 7075-T6	0.050 4130	0088 00

REPAIR - continued

Table 5. Aft Pylon Deck, WL 90 - continued

INDEX NO.	NOMENCLATURE	ORIGINAL MATERIAL	REPAIR MATERIAL	WORK PACKAGE
14	Channel	0.032 7075-T6 Bare	0.040 7075-T6 Clad	0087 00
15	Angle	AND10133-0701 7075-T6	0.040 7075-T6 Clad	0088 00
16	Angle	Reynolds 5761 7075-T6	0.070 4130	0088 00
17	Angle	ALCOA 22477 7075-T6	0.050 4130	0088 00
18	Angle	Harvey 15078 7075-T6	0.063 7075-T6 Clad	0088 00
19	Angle	ALCOA 22477 7075-T6	0.050 4130	0088 00
20	Channel	0.040 7075-T6 Bare	0.040 7075-T6 Clad	0087 00
21	Angle	ALCOA 22477 7075-T6	0.050 4130	0088 00
22	Angle	0.032 7075-T6 Bare	0.040 7075-T6 Clad	0087 00

NOTE

All dimensions are in inches.

NOTE

Refer to Table 6 for index number reference.

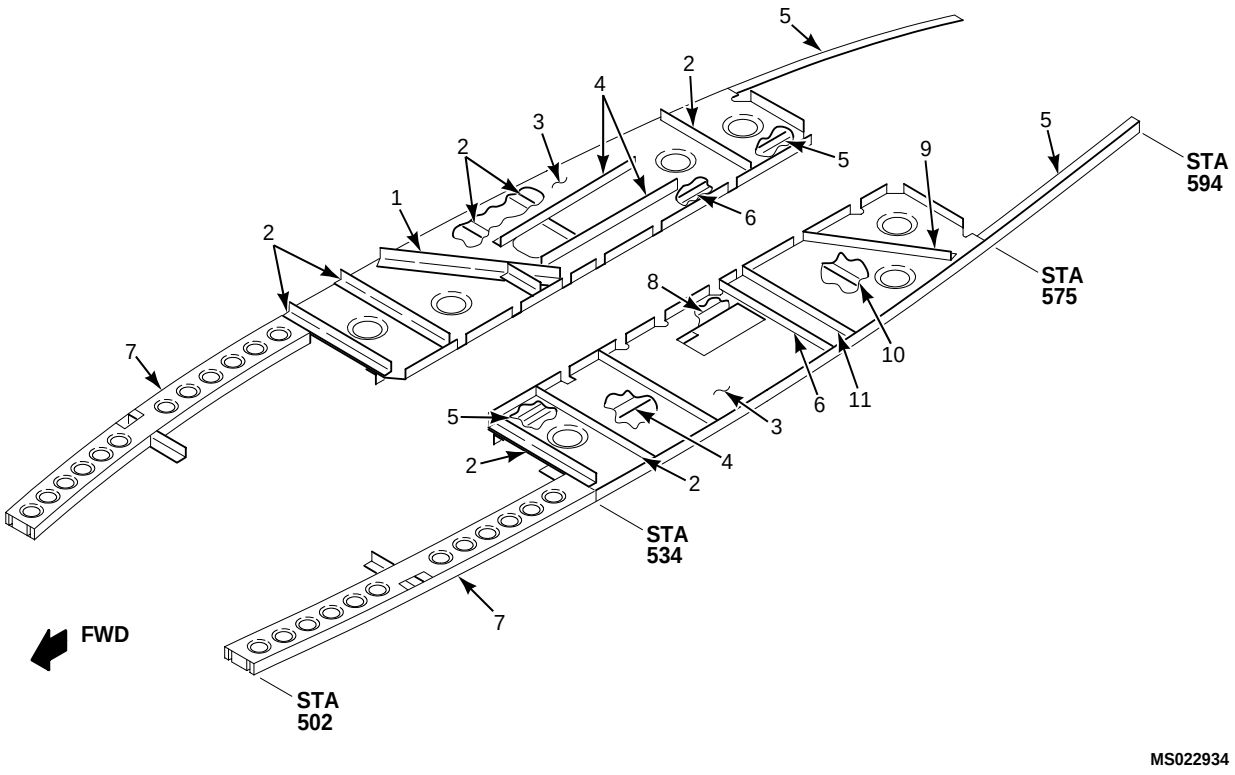


Figure 9. Aft Pylon Deck, WL 90 - Aircraft Serial Numbers 92-0367 and 92-0368 Repair

REPAIR – continued

Table 6. Aft Pylon Deck, WL 90 - Serial Numbers 92-0367 and 92-0368

INDEX NO.	NOMENCATURE	ORIGINAL MATERIAL	REPAIR MATERIAL	WORK PACKAGE
1	Angle	0.032 301CRES 1/2 HD	0.040 301 Cres 1/2 Hd	0087 00
2	Angle	VS70504-4	Note B	0087 00
3	Web	0.025 7075-T6 Bare	0.032 7075-T6 Clad	0086 00
4	Angle	Harvey 15078 7075-T6	0.063 7075-T6 Clad	0088 00
5	Angle	BAC1530-1420 7075-T6511	0.050 7075-T6 Clad	0088 00
6	Angle	ALCOA 22477 7075-T6	0.050 7075-T6 Clad	0088 00
7	Channel	0.040 7075-T6	0.040 7075-T6 Clad	0087 00
8	Angle	BAC1503-1420 7075-T6	Note B	0088 00
9	Angle	AND10133-0701 7075-T6	0.040 7075-T6 Clad	0088 00
10	Channel	0.032 7075-T6 Bare	0.040 7075-T6 Clad	0087 00
11	Angle	Reynolds 5761 7075-T6	0.070 4130	0088 00

NOTES

A. All dimensions are in inches.

B. Replace with same material as original.

NOTE

Refer to Table 7 for index number reference.

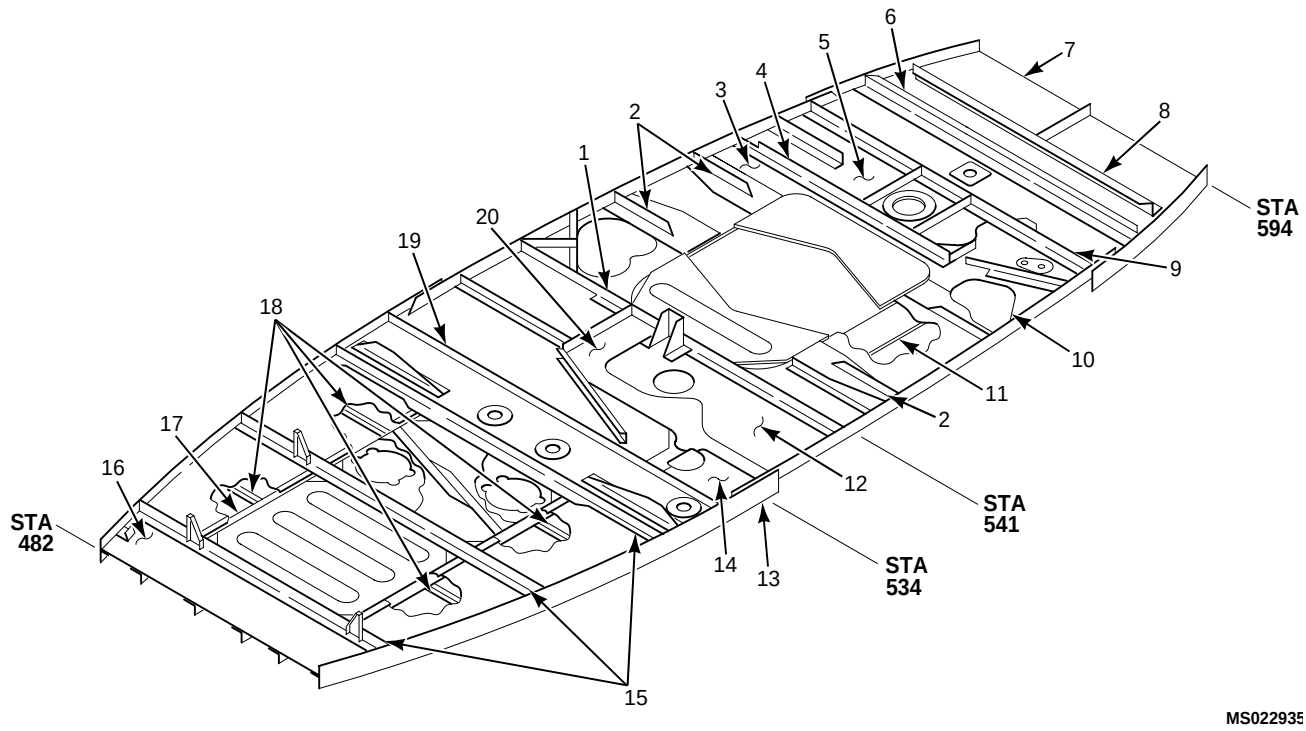


Figure 10. Aft Pylon Deck, WL 119 (Canted)

REPAIR - continued

Table 7. Aft Pylon Deck, WL 119 (Canted)

INDEX NO.	NOMENCLATURE	ORIGINAL MATERIAL	REPAIR MATERIAL	WORK PACKAGE
1	Tee	AND10136-2006 7075-T6	Note C	0088 00
2	Tee	ALCOA 33158 7075-T6	Note C	0088 00
3	Web	0.050 301 Cres 1/4 Hd	0.063 301 Cres 1/4 Hd	0086 00
4	Tee	AND10136-1406 7075-T6	0.100 4130	0088 00
5	Web	0.040 2024-T4 Clad	0.050 2024-T3 Clad	0086 00
6	Zee	0.063 7075-T6 Bare	0.071 7075-T6 Clad	0088 00
7	Web	0.032 2024-T3 Clad	0.040 2024-T3 Clad	0086 00
8	Zee	0.032 7075-T6 Bare	0.040 7075-T6 Clad	0088 00
9	Angle	ALCOA 12883 7075-T6	0.063 4130	0088 00
10	Angle	Reynolds 8158 7075-T6	0.125 4130	0088 00
11	Angle	0.125 301 Cres 1/4 Hd	0.125 301 Cres 1/4 Hd	0088 00
12	Web	0.032 301 Cres 1/2 Hd	0.040 301 Cres 1/2 Hd	0086 00
13	Cap	VS90525 7075-T6	0.125 4130	0088 00
14	Doubler	0.063 2024-T4 Clad	0.071 2024-T3 Clad	0086 00
15	Tee	Reynolds 19810	Note C	0088 00
16	Web	0.025 7075-T6 Bare	0.032 7075-T6 Clad	0086 00
17	Angle	ALCOA 45827 7075-T6	0.080 4130	0088 00
18	Angle	VS70504-3	0.032 4130	0088 00
19	Tee	ALCOA 52057 7075-T6	0.063 4130	0088 00
20	Doubler	0.063 2024-T4 Bare	0.071 2024-T3 Clad	0086 00

NOTES

A. All dimensions are in inches.

B. Station shown represents the centerline of overlap of the webs.

C. Repair or replace with original material.

REPAIR - continued

NOTE

Refer to Table 8 for index number reference.

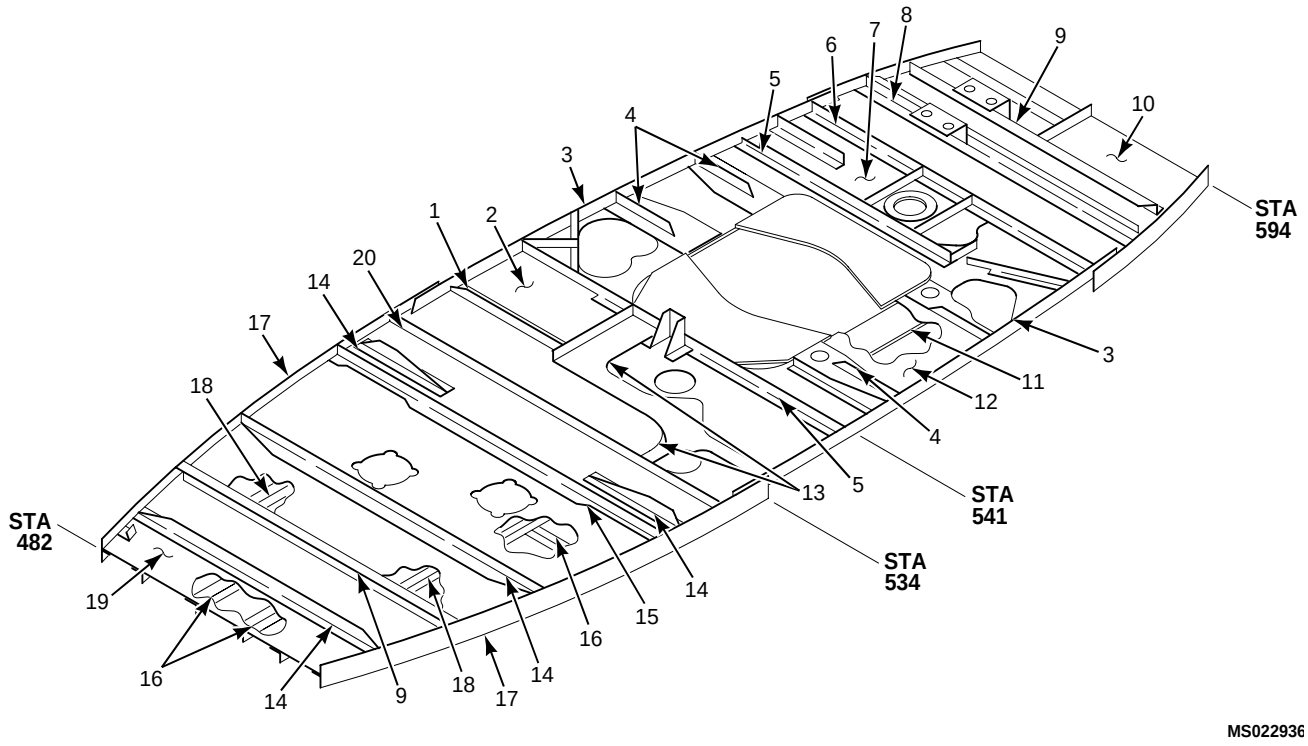


Figure 11. Aft Pylon Deck, WL 119 (Canted) – Aircraft Serial Numbers 92-0367 and 92-0368

Table 8. Aft Pylon Deck, WL 119 (Canted) – Aircraft Serial Numbers 92-3067 and 92-0368

INDEX NO.	NOMENCLATURE	ORIGINAL MATERIAL	REPAIR MATERIAL	WORK PACKAGE
1	Tee	ALCOA 52057 7075-T6	0.063 4130	0088 00
2	Web	0.032 301 Cres ½ Hd	0.040 301 Cres ½ Hd	0086 00
3	Cap	ALCOA 66428 7075-T6	Note B	0088 00
4	Tee	ALCOA 33186 7075-T6	Note B	0088 00
5	Tee	AND10136-1406 7075-T6	0.100 4130	0088 00
6	Angle	ALCOA 12883 7075-T6	0.063 4130	0088 00
7	Web	0.040 2024-T3 Clad	0.050 2024-T3 Clad	0086 00
8	Zee	0.063 7075-T6 Bare	0.071 7075-T6 Clad	0088 00
9	Zee	0.032 7075-T6 Bare	0.040 7075-T6 Clad	0088 00
10	Web	0.032 2024-T3 Clad	0.040 2024-T3 Clad	0086 00
11	Angle	0.125 301 Cres ½ Hd	0.125 301 Cres ½ Hd	0088 00
12	Web	0.050 301 Cres ½ Hd	0.063 301 ½ Hd	0086 00

REPAIR - continued

Table 8. Aft Pylon Deck, WL 119 (Canted) – Aircraft Serial Numbers 92-3067 and 92-0368 - continued

INDEX NO.	NOMENCLATURE	ORIGINAL MATERIAL	REPAIR MATERIAL	WORK PACKAGE
13	Doubler	0.063 2024-T4	0.071 2024-T3 Clad	0086 00
14	Tee	ALCOA 33495 2024-T4	Note B	0088 00
15	Tee	Reynolds 19810 7075-T6	Note B	0088 00
16	Angle	VS70504-3 7075-T6	0.032 4130	0088 00
17	Cap	VS90525 7075-T6	0.125 4130	0088 00
18	Angle	ALCOA 54827 7075-T6	Note B	0088 00
19	Web	0.025 7075-T6 Bare	0.032 7075-T6 Clad	0086 00
20	Angle	AND10134-1402 7075-T6	Note B	0088 00

NOTES

A. All dimensions are in inches.

B. Repair or replace with same material as original.

NOTE

Refer to Table 9 for index number reference.

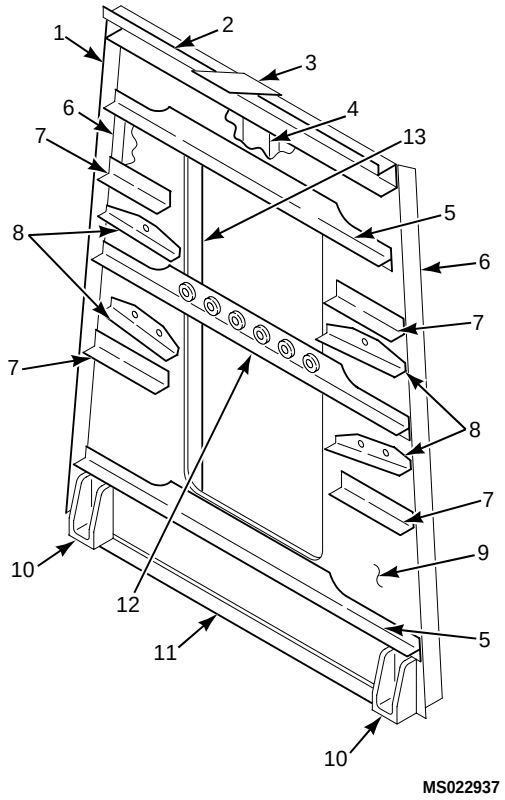


Figure 12. Aft Pylon Full Former, Sta 482

REPAIR - continued

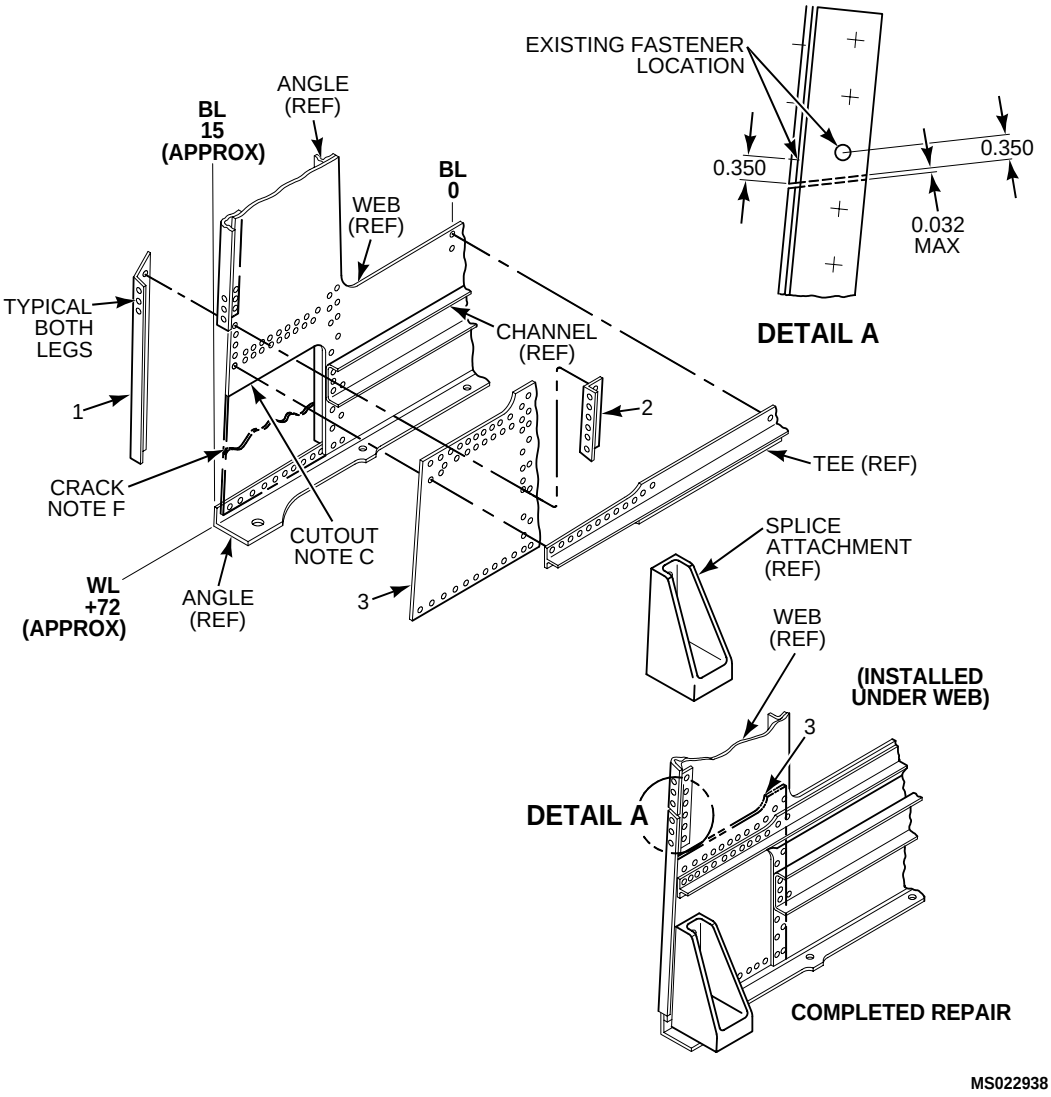
Table 9. Aft Pylon Full Former, Sta 482

INDEX NO.	NOMENCLATURE	ORIGINAL MATERIAL	REPAIR MATERIAL	WORK PACKAGE
1	Hinge Half	MS20001H6	Note E	0093 00
2	Channel	0.063 2024-T3 Clad	0.071 2024-T3 Clad	0087 00
3	Plate (Hoist Point)	--	Note D	--
4	Channel	0.032 7075-T6 Bare	0.040 7075-T6 Clad	Note C
5	Tee	ALCOA 49225 7075-T6	0.063 7075-T6 Bare	0088 00
6	Cap	ALCOA 24761 7075-T6511	0.050 4130	0088 00
7	Angle	VS70504-4	0.040 7075-T6 Clad	Note C
8	Support	0.040 2024-T3 Clad	0.050 2024-T3 Clad	Note C
9	Web	0.025 7075-T6 Bare	0.032 7075-t6 clad	Note F
10	Attachment	AL Aly 2014-T6 Forging	Note B	--
11	Angle	ALCOA 61971 7075-T6	0.063 7075-T6 Clad	0088 00
12	Tee	ALCOA 49225 2024-T4	0.071 7075-T6 Clad	0088 00
13	Stiffener	AND10134-1201 7075-T6511	0.071 7075-T6 Bare	0088 00

NOTES

A. All dimensions are in inches.
B. Damage other than minor replace with attachment, 114S4801-1.
C. If repair is impractical, replace with original material.
D. Damage other than minor replace with hoist point, 114S4101-31.
E. Repair or replace with original material, MS20001H6.
F. Refer to Figure 13, Sheet 1 and Sheet 2, for web repair procedures.

REPAIR - continued



REPAIR PARTS

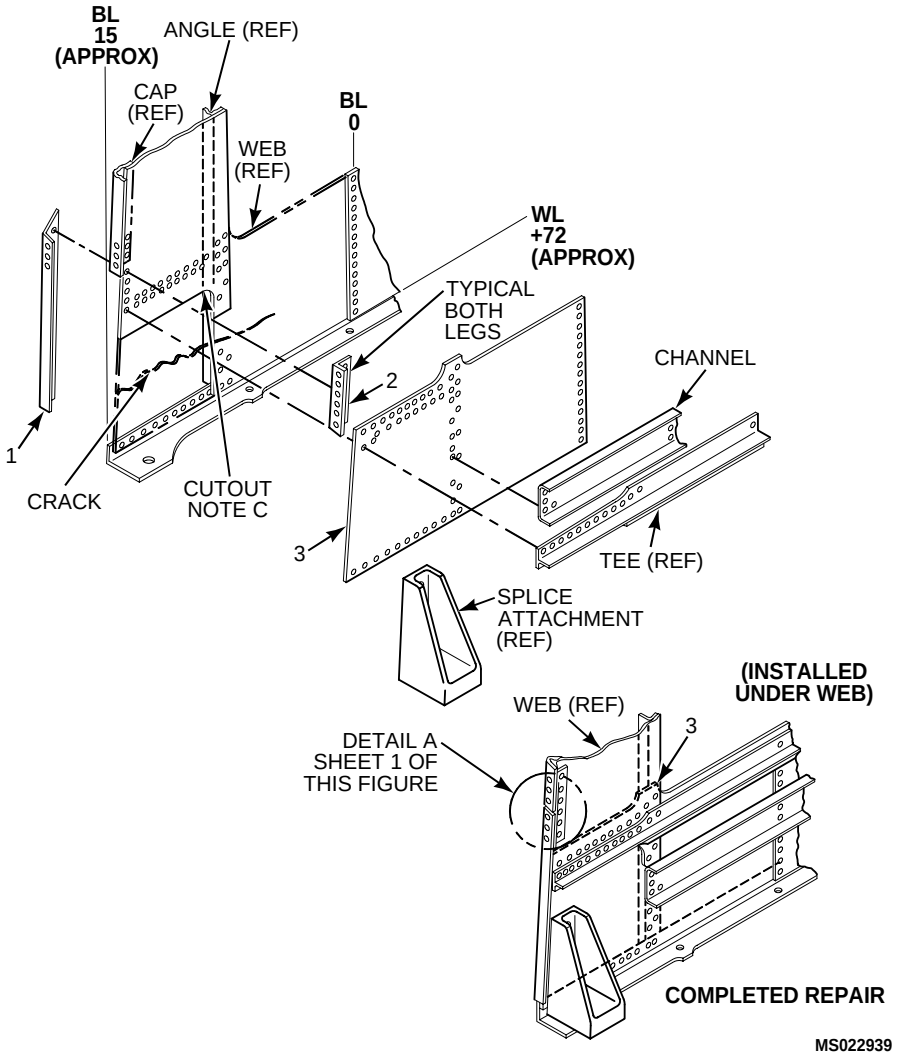
1. Cap replacement, ALCOA 24761 7075-T6.
2. Splice with 0.050-inch, 301 Cres, ½ hard.
3. Web reinforcement 0.040-inch 2024-T4 clad.

NOTES

A. All dimensions are in inches.
B. Insulate dissimilar metals. Refer to WP 0078 00.
C. Determine radius of cutout from radius of the tee prior to removal of tee.
D. Use same fasteners as original configuration.
E. Repair is applicable to either side of BL 0.
F. Refer to Sheet 2 of this figure for repair of crack extending beyond that shown.

Figure 13. Aft Pylon Former, Sta 482 - Web Crack Repair (Sheet 1 of 2)

REPAIR - continued



REPAIR PARTS

1. Cap replacement, Alcoa 24761 7075-T6.
2. Splice 0.050-inch 301 ½ hd cres.
3. Web replacement 0.040-inch 2024-T4 clad.

NOTES

A. All dimensions are in inches.
B. Insulate dissimilar metals. Refer to WP 0078 00.
C. Determine radius of cutout from radius of tee prior to removal of tee.
D. Use same fasteners as original configuration.
E. Repair is applicable to either side of BL 0.
F. Crack occurring on each side of the former or extending beyond BL 0 on each side can be repaired by spanning the entire area with a single web replacement, 0.040-inch 2024-T4 clad.

Figure 13. Aft Pylon Former, Sta 482 - Web Crack Repair (Sheet 2 of 2)

REPAIR - continued

NOTE

Refer to Table 10 for index number reference.

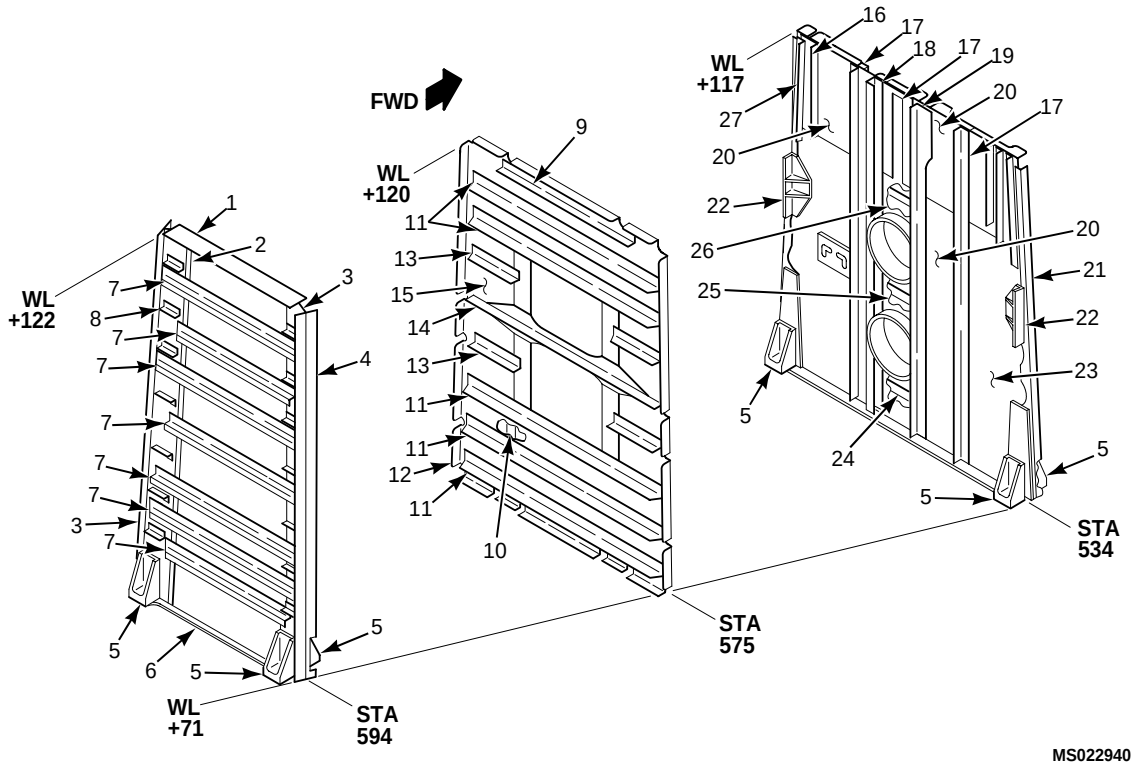


Figure 14. Aft Pylon Full Formers, Sta's 534, 575, and 594

Table 10. Aft Pylon Full Formers, Sta's 534, 575, and 594

INDEX NO.	NOMENCLATURE	ORIGINAL MATERIAL	REPAIR MATERIAL	WORK PACKAGE
1	Cap	BAC1514-539 7075-T6	0.100 4130	0088 00
2	Web	0.032 7075-T6 Bare	0.040 7075-T6 Clad	0086 00
3	Cap	HARVEY 17413 7075-T6	0.080 4130	0087 00
4	Plate	0.125 7075-T6 Bare	0.125 7075-T6 Clad	0088 00
5	Attachment	2014-T6 Forging	Note B	0088 00
6	Tee	ALCOA 66517 7075-T6	0.063 4130	0088 00
7	Zee	AND10138-1004 7075-T6	0.063 4130	0087 00
8	Angle	0.090 7075-T6 Bare	0.090 7075-T6 Clad	0088 00
9	Channel	0.040 7075-T6 Bare	0.050 7075-T6 Clad	0087 00
10	Tee	Reynolds 26598 7075-T6	0.125 7075-T6 Clad	0088 00
11	Angle	ALCOA 27076	0.063 4130	0088 00
12	Angle	0.063 7075-T6 Clad	0.071 7075-T6 Clad	0087 00

REPAIR - continued

Table 10. Aft Pylon Full Formers, Sta's 534, 575, and 594 - continued

INDEX NO.	NOMENCLATURE	ORIGINAL MATERIAL	REPAIR MATERIAL	WORK PACKAGE
13	Angle	ALCOA 67580 7075-T6	0.063 4130	0088 00
14	Tee	ALCOA 66517 7075-T6	0.063 4130	0088 00
15	Web	0.040 7075-T6 Clad	0.050 2024-T3 Clad	0086 00
16	Angle	0.040 2024-T4 Clad	0.050 2024-T3 Clad	0087 00
17	Cap	ALCOA 15820 7075-T6	0.080 4130	0088 00
18	Extrusion	BAC1520-1320	Note C	0088 00
19	Angle	0.040 7075-T6 Bare	0.050 7075-T6 Clad	0087 00
20	Web	0.050 2024-T4 Clad	0.050 2024-T3 Clad	0086 00
21	Cap	HARVEY 17413 7075-T6	0.090 4130	0088 00
22	Support	ZK60-T5 Forging	Note D	0087 00
23	Web	0.071 2024-T4 Clad	0.071 2024-T3 Clad	0086 00
24	Stiffener	AND10134 2024-T4	AND10134 2024-T4	0088 00
25	Stiffener	AND10136 2024-T4	AND10136 2024-T4	0088 00
26	Strap	0.100 2024-T3	0.100 2024-T3	0087 00
27	Angle	VS70504-2 7075-T6	0.040 7075-T6	0088 00

NOTES

A. All dimensions are in inches.

B. Damage other than minor, replace with attachment, 114S4801-1.

C. If repair is impractical, replace with original material.

D. Damage other than minor, replace with support, 114S4802-5 LH or 114S4802-7 RH.

REPAIR - continued

NOTE

Refer to Table 11 for index number reference.

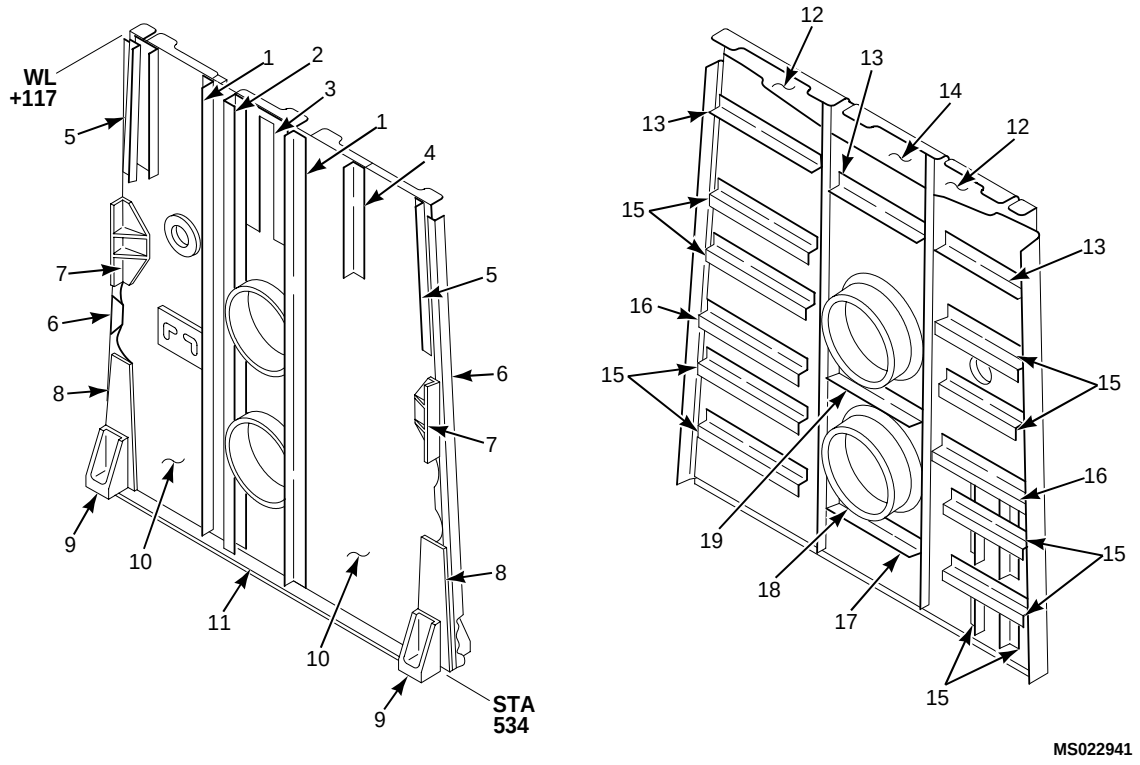


Figure 15. Aft Pylon Full Former, Sta 534 - Aircraft Serial Numbers 92-0367 and 92-0368

Table 11. Aft Pylon Full Former, Sta 534 - Aircraft Serial Numbers 92-0367 and 92-0368

INDEX NO.	NOMENCLATURE	ORIGINAL MATERIAL	REPAIR MATERIAL	WORK PACKAGE
1	Cap	ALCOA 15820 7075-T6	0.050 4130	0088 00
2	Extrusion	BAC1520-1320	2024-T4 Extr Note C	0088 00
3	Stiffener	ALCOA 22477 7075-T6	0.050 7075-T6 Clad	0088 00
4	Angle	ALCOA 71369 7075-T6	0.080 7075-T6 Clad	0088 00
5	Angle	VS705042 7075-T6	0.040 7075-T6 Clad	0088 00
6	Cap	Harvey 17413 7075-T6	0.090 7075-T6 Clad	0088 00
7	Support	ZK60-T5 Forging	Note D	--
8	Doubler	0.063 7075-T6 Bare	0.071 7075-T6 Clad	0086 00
9	Attachment	2014-T6 Forging	Note B	--
10	Web	0.10 7075-T6 Bare	0.10 7075-T6 Clad	0086 00
11	Cap	ALCOA 66517 7075-T6	0.071 7075-T6 Clad	0088 00
12	Angle	0.040 2024-T3 Clad	0.040 2024-T3 Clad	0087 00
13	Angle	AND10133-1203 2024-T4	0.125 7075-T6 Clad	0088 00

REPAIR - continued

Table 11. Aft Pylon Full Former, Sta 534 - Aircraft Serial Numbers 92-0367 and 92-0368 - continued

INDEX NO.	NOMENCLATURE	ORIGINAL MATERIAL	REPAIR MATERIAL	WORK PACKAGE
14	Angle	0.040 2024-T4 Clad	0.040 2024-T3 Clad	0087 00
15	Zee	ALCOA 59675 7075-T6	0.050 7075-T6 Clad	0088 00
16	Channel	0.040 7075-T6 Bare	0.050 7075-T6 Clad	0087 00
17	Angle	AND10134-1004 2024-T4	AND10134-2024-T4	0088 00
18	Ring Fitting	--	Note C	--
19	Stiffener	AND10136-2003 2024-T4	AND10136-2003 2024-T4	0088 00

NOTES

A. All dimensions are in inches.
B. Damage other than minor, replace with attachment, 114S4801-1.
C. Damage other than minor, replace with ring fitting, 145S4811.
D. Damage other than minor, replace with supports, 114S4802-1 LH or 114S4802-2 RH.

NOTE

Refer to Table 12 for index number reference.

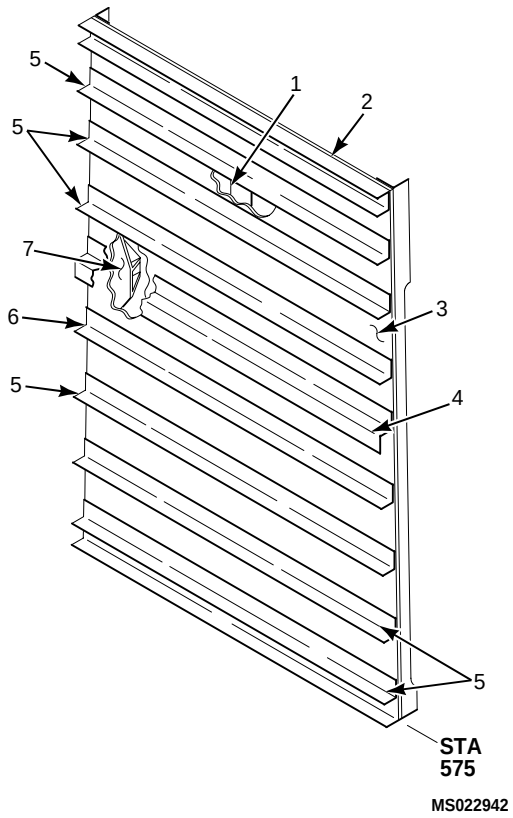


Figure 16. Aft Pylon Full Former, Sta 575 - Aircraft Serial Numbers 92-0367 and 92-0368

REPAIR - continued

Table 12. Aft Pylon Full Former, Sta 575 - Aircraft Serial Numbers 92-0367 and 92-0368

INDEX NO.	NOMENCLATURE	ORIGINAL MATERIAL	REPAIR MATERIAL	WORK PACKAGE
1	Tee	ALCOA55794 7075-T6	0.090 7075-T6 Clad	0088 00
2	Channel	0.040 7075-T6	0.050 7075-T6 Clad	0087 00
3	Web	0.032 2024-T3 Clad	0.040 7075-T6 Clad	0086 00
4	Zee	ALCOA 59675 7075-T6	0.050 7075-T6 Clad	0088 00
5	Angle	BAC1503-1420 7075-T6	0.050 7075-T6 Clad	0088 00
6	Angle	ALCOA 28546 7075-T6	0.050 7075-T6 Clad	0088 00
7	Support	ZK60-T5 Forging	Note B	--

NOTES

A. All dimensions are in inches.

B. Damage other than minor, replace with supports, 114S4802-1 LH or 114S4802-2 RH.

NOTE

Refer to Table 13 for index number reference.

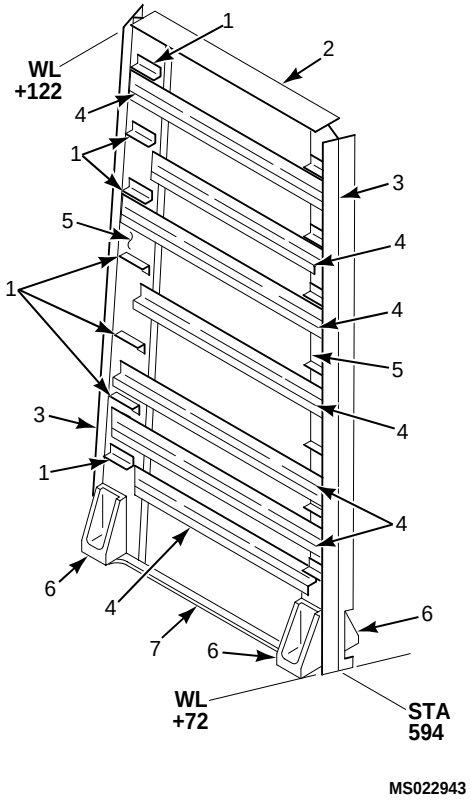


Figure 17. Aft Pylon Full Former, Sta 594 - Aircraft Serial Numbers 92-0367 and 92-0368

REPAIR - continued

Table 13. Aft Pylon Full Former, Sta 594 - Aircraft Serial Numbers 92-0367 and 92-0368

INDEX NO.	NOMENCLATURE	ORIGINAL MATERIAL	REPAIR MATERIAL	WORK PACKAGE
1	Clip	0.040 2024-T3 Clad	Note B	--
2	Cap	BAC1514-539 7075-T6	0.125 7075-T6 Clad	0088 00
3	Cap	BAC1506-1985 7075-T6	0.125 7075-T6 Clad	0088 00
4	Zee	AND10138-1004 7075-T6	0.063 4130	0088 00
5	Angle	0.090 7075-T6 Bare	1.00 7075-T6 Clad	0088 00
6	Attachment	2014-T6 Forging	Note C	--

NOTES

A. All dimensions are in inches.
B. Repair is impractical, replace clip.
C. Damage other than minor, replace with attachments, 114S4801-1.

NOTE

Refer to Table 14 for index number reference.

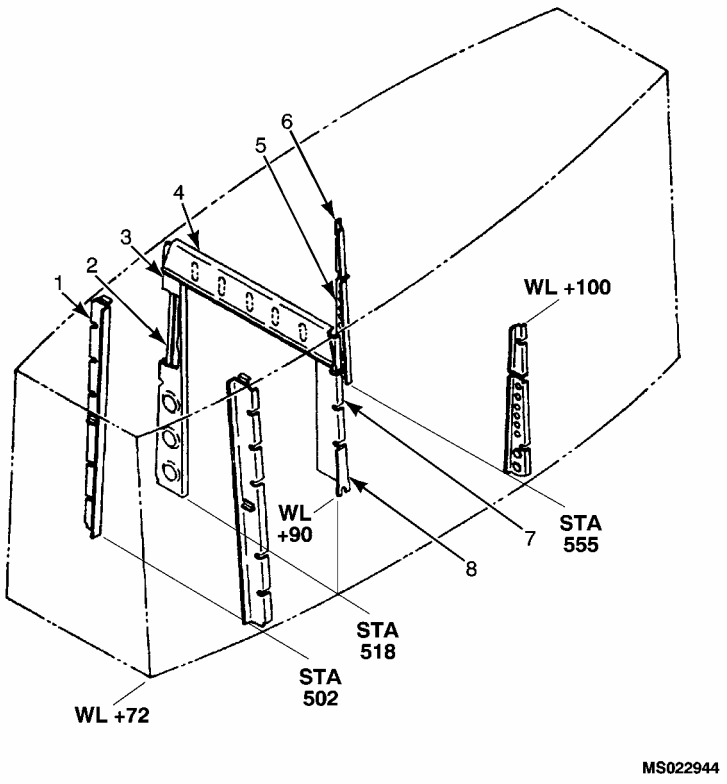


Figure 18. Aft Pylon Partial Formers, Sta's 502, 518, and 555

REPAIR - continued

Table 14. Aft Pylon Partial Formers, Sta's 502, 518, and 555.3

INDEX NO.	NOMENCLATURE	ORIGINAL MATERIAL	REPAIR MATERIAL	WORK PACKAGE
1	Former	0.050 7075-T6 Bare	0.050 7075-T6 Clad	0087 00
2	Stiffener	ALCOA 83264 7075-T6	Note B	0088 00
3	Web	0.020 7075-T6 Bare	0.025 7075-T6 Clad	0087 00
4	Web	0.025 7075-T6 Bare	0.032 7075-T6 Clad	0087 00
5	Former	0.025 7075-T6 Bare	0.032 7075-T6 Clad	0087 00
6	Former	0.025 7075-T6 Bare	0.032 7075-T6 Clad	0087 00
7	Web	0.025 7075-T6 Bare	0.032 7075-T6 Clad	0087 00
8	Clip	ALCOA 55794	Note C	--

NOTES

A. All dimensions are in inches.
B. Replace with original material.
C. Replace with clip, 114S4103-7.

NOTE

Refer to Table 15 for index number reference.

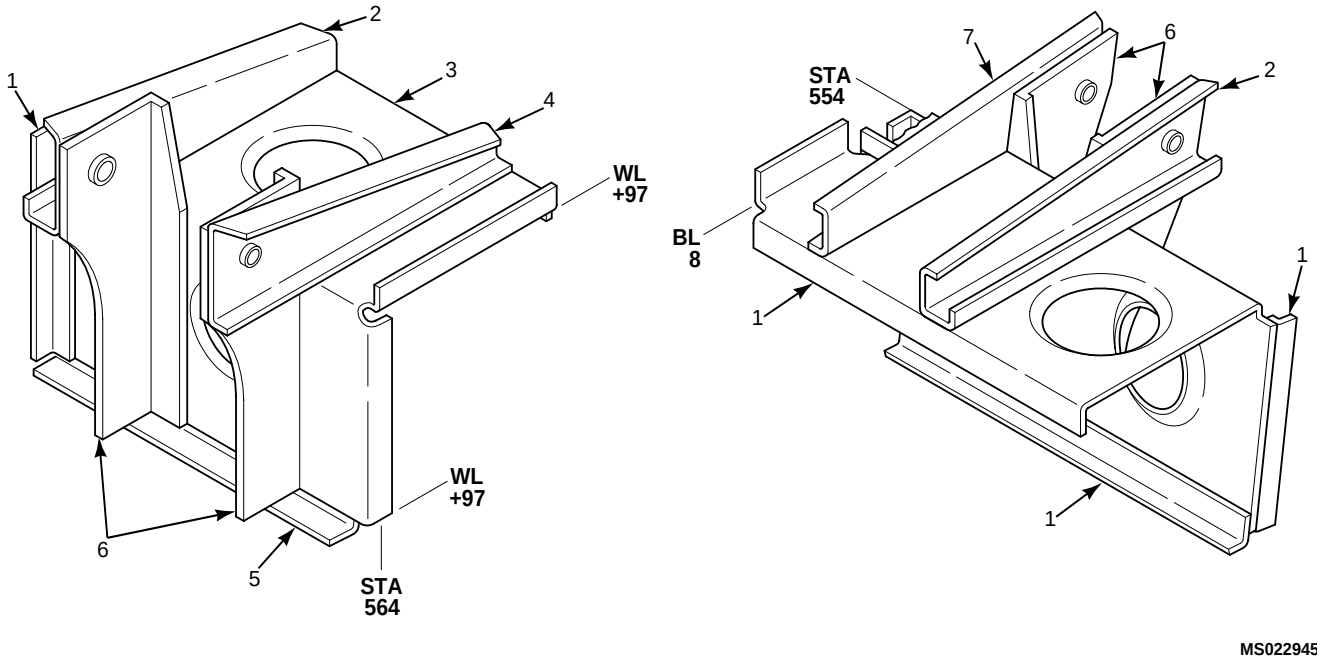


Figure 19. Aft Pylon Bellcrank Support, LH and RH (Sheet 1 of 2)

REPAIR - continued

Table 15. Aft Pylon Bellcrank Support, LH and RH

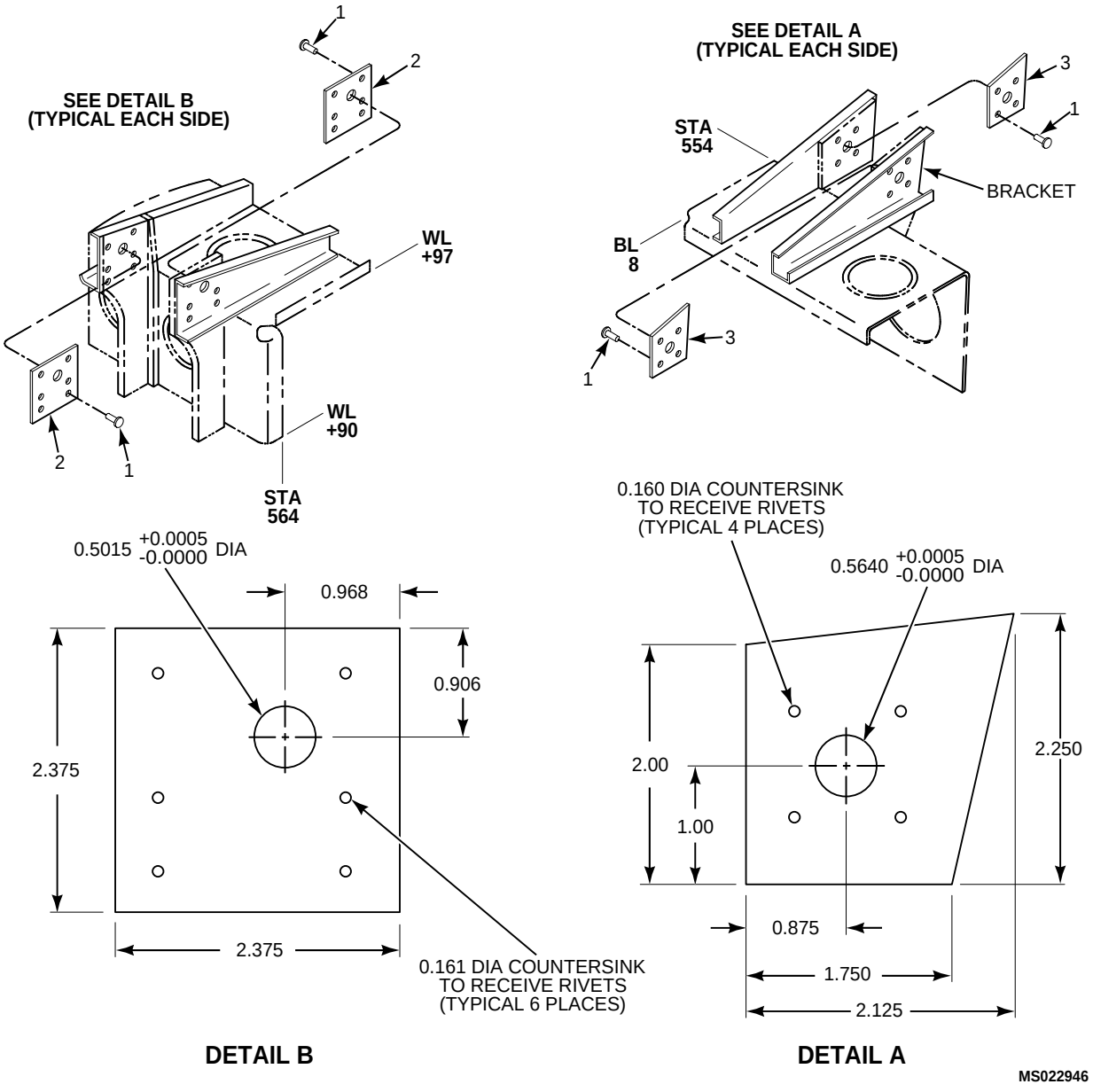
INDEX NO.	NOMENCLATURE	ORIGINAL MATERIAL	REPAIR MATERIAL	WORK PACKAGE
1	Angle	0.040 7075-T6 Bare	0.050 7075-T6 Clad	0087 00
2	Channel	0.050 7075-T6 Bare	0.050 7075-T6 Clad	0087 00
3	Support	0.040 7075-T6 Bare	0.050 7075-T6 Clad	0087 00
4	Channel	0.040 7075-T6 Bare	0.050 7075-T6 Clad	0087 00
5	Angle	ALCOA 22507 7075-T6	0.050 4130	0088 00
6	Angle	Reynolds 268077075-T6	0.125 4130	0088 00
	Angle Note B	BAC1503-1420-7075-T6	0.050 4130	0088 00
7	ChanneL	0.032 301 Cres 1/2 Hd	0.040 301 Cres 1/2 Hd	0087 00

NOTES

A. All dimensions are in inches.

B. This part is used on aircraft serial numbers 92-0367 and 92-0368.

REPAIR - continued



Repair Parts

1. Rivet MS20426A, length as required.
2. Doubler 0.020-inch 301 CRES ¼ to ½ hard
3. Doubler 0.020-inch 301 CRES ¼ to ½ hard

NOTE

All dimensions are in inches.

Figure 19. Aft Pylon Bellcrank Support, LH and RH (Sheet 2 of 2)

REPAIR - continued

NOTE

Refer to Table 16 for index number reference.

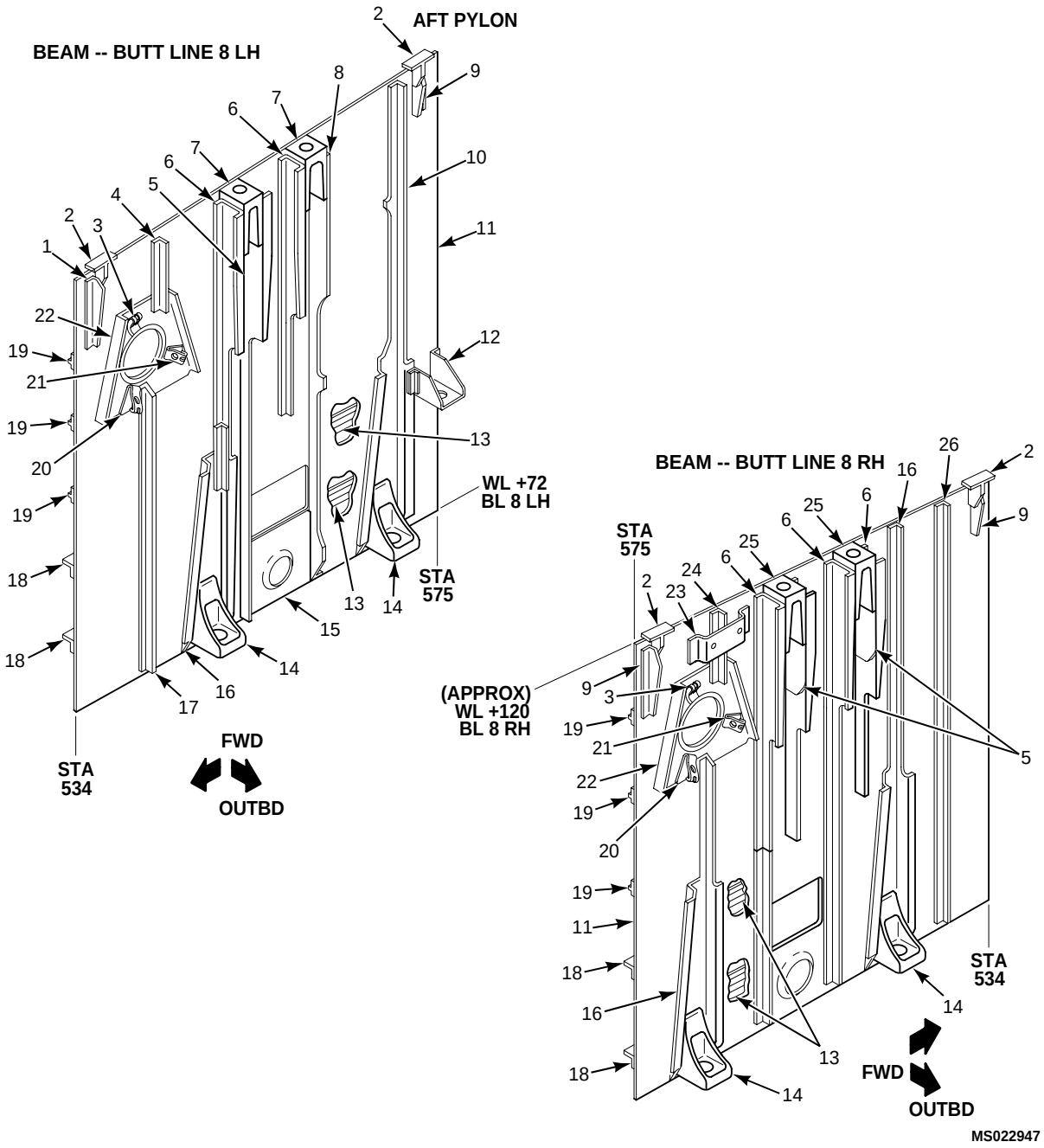


Figure 20. Aft Pylon Beams, BL 8 L and R

REPAIR - continued

Table 16. Aft Pylon Beams, BL 8 L and R

INDEX NO.	NOMENCLATURE	ORIGINAL MATERIAL	REPAIR MATERIAL	WORK PACKAGE
1	Angle	0.032 7075-T6 Bare	0.040 7075-T6 Clad	NOTE G
2	TEE	ALCOA 37289 7075-T6	0.071 4130	NOTE G
3	Bracket	114SK180-4	Note F	--
4	Angle	0.050 2024-T4 Clad	0.050 4130	NOTE G
5	Strap	0.032 301 Cres 1/2H	0.040 4130	0088 00
6	Channel	0.063 301 Cres 1/2H	0.050 7075-T6 Clad	0088 00
7	Support	2014-T6 Forging	Note B	--
8	Angle	0.063 301 Cres 1/2H	0.071 4130	0088 00
9	Angle	0.040 7075-T6 Bare	0.050 7075-T6 Clad	NOTE G
10	Hat	0.063 2024-T4 Clad	0.063 2024-T3 Clad	0087 00
11	Web	0.063 2024-T3 Clad	0.063 2024-T3 Clad	0086 00
12	Bracket	0.050 2024-T4 Clad	0.050 2024-T3 Clad	0087 00
13	Stiffener	0.025 301 Cres 1/2H	0.032 301 Cres 1/2H	0087 00
14	Attachment	2014-T6 Forging	Note C	--
15	Web	0.063 7075-T6 Bare	0.063 7075-T6 Clad	0086 00
16	Hat	0.063 2024-T4 Clad	0.063 2024-T3 Clad	0087 00
17	Stiffener	ALCOA 22477 7075-T6	0.050 4130	0088 00
18	Angle	ALCOA 67580 7075-T6	0.063 4130	0088 00
19	Stiffener	0.032 2024-T4 Clad	0.040 2024-T3 Clad	0087 00
20	Bracket	114SK180-3	Note F	--
21	Bracket	114SK180-2	Note F	--
22	Doubler	0.050 7075-T6 Bare	0.050 7075-T6 Clad	0087 00
23	Support	0.050 2024-T3 Clad	0.050 2024-T3 Clad	0087 00
24	Angle	0.050 2024-T4 Bare	0.050 2024-T3 Clad	Note G
25	Support	2014 Forging	Note D	--
26	Stiffener	ALCOA 22477 7075-T6	0.050 4130	0088 00

NOTES

A. All dimensions are in inches.

B. For damage other than minor, replace with support 114S4832-3 fwd and 114S4832-4 aft.

C. For damage other than minor, replace with attachment, 114S4805-4. Use locating fixture, 114G1247-1. Replace attachments one at a time to prevent mislocation.

D. For damage other than minor, replace with support, 114S4832-3.

E. Deleted

F. For damage other than minor, replace with bracket, 114S4118-220. Cut and drill bracket as required for installation.

G. Replace with manufactured part. Manufacture using original material or material listed for repair.

END OF WORK PACKAGE

DEPOT MAINTENANCE WORK REQUIREMENT

CH-47D HELICOPTER

LANDING GEAR REPAIRS

INITIAL SETUP

Test Equipment:
As Required

Tools and Special Tools:
As Required

Material/Parts:
As Required

Personnel Required:
As Required

References:
DMWR 55-1620-224
DMWR 55-1620-225
TM 1-1500-204-23 Series
TM 55-1520-240-23 Series
WP 0039 00

Equipment Conditions:
As Required

Special Environmental Condition:
As Required

1. Refer to WP 0039 00 for inspection accept/reject criteria.
2. Refer to references above for repair or overhaul.

END OF WORK PACKAGE

DEPOT MAINTENANCE WORK REQUIREMENT

CH-47D HELICOPTER

POWERPLANT REPAIRS

INITIAL SETUP

Test Equipment:
As Required

Tools and Special Tools:
As Required

Material/Parts:
As Required

Personnel Required:
As Required

References:
DMWR 55-2840-254
DMWR 55-2995-107
DMWR 55-2995-108
TM 55-2840-254-23 Series
TM 55-2840-265-23 Series
WP 0040 00

Equipment Conditions:
As Required

Special Environmental Condition:
As Required

1. Refer to WP 0040 00 for inspection accept/reject criteria.
2. Refer to references above for repair or overhaul.

END OF WORK PACKAGE

DEPOT MAINTENANCE WORK REQUIREMENT

CH-47D HELICOPTER

ROTARY-WING BLADES/FORWARD AND AFT ROTOR-WING HEADS REPAIRS

INITIAL SETUP

Test Equipment:
As Required

Tools and Special Tools:
As Required

Material/Parts:
As Required

Personnel Required:
As Required

References:
DMWR 55-1615-296
DMWR 55-1615-297
TM 55-1520-240-23 Series
WP 0041 00
WP 0042 00

Equipment Conditions:
As Required

Special Environmental Condition:
As Required

1. Refer to WP 0041 00 Rotary-Wing Blades for inspection accept/reject criteria.
   Refer to WP 0042 00 Forward and Aft Rotor-Wing Heads for inspection accept/reject criteria.

2. Refer to references above for repair or overhaul.

END OF WORK PACKAGE

DEPOT MAINTENANCE WORK REQUIREMENT

CH-47D HELICOPTER

DRIVE SYSTEM REPAIRS

INITIAL SETUP

Test Equipment:
As Required

Tools and Special Tools:
As Required

Material/Parts:
As Required

Personnel Required:
As Required

References:
DMWR 55-1615-321
DMWR 55-1615-322
DMWR 55-1615-323
DMWR 55-1615-324
DMWR 55-1615-325
TM 55-1520-240-23 Series
WP 0043 00

Equipment Conditions:
As Required

Special Environmental Condition:
As Required

1. Refer to WP 0043 00 for inspection accept/reject criteria.
2. Refer to references above for repair or overhaul.

END OF WORK PACKAGE

DEPOT MAINTENANCE WORK REQUIREMENT
CH-47D HELICOPTER
HYDRAULIC SYSTEM REPAIRS

INITIAL SETUP

Test Equipment:
As Required

Tools and Special Tools:
As Required

Material/Parts:
As Required

Personnel Required:
As Required

References:
DMWR 55-1650-154
DMWR 55-1650-302
DMWR 55-1650-396
DMWR 55-1650-398
DMWR 55-1650-412
DMWR 55-1650-414
DMWR 55-4140-220
TM 55-1520-240-23 Series
WP 0044 00 through WP 0048 00

Equipment Conditions:
As Required

Special Environmental Condition:
As Required

WARNING

Preservative hydraulic fluids, MIL-H-46170 and MIL-PRF-6083 will not be used for preservation of army aircraft hydraulic components. Instead, substitute MIL-PER-83282 and MIL-H-5606 hydraulic fluids, respectively, for preservation of these components.

1. Refer to WP 0044 00 for Flight Control Hydraulic System inspection accept/reject criteria.
   Refer to WP 0045 00 for Utility Hydraulic System inspection accept/reject criteria.
   Refer to WP 0046 00 for Cargo Ramp and Door Hydraulic System inspection accept/reject criteria.
   Refer to WP 0047 00 for Cargo Hook Hydraulic Release System inspection accept/reject criteria.
   Refer to WP 0048 00 for Wheel Brake Hydraulic System inspection accept/reject criteria.

2. Refer to references above for repair or overhaul.

END OF WORK PACKAGE

DEPOT MAINTENANCE WORK REQUIREMENT

CH-47D HELICOPTER

INSTRUMENTS

INITIAL SETUP

Test Equipment:
As Required

Tools and Special Tools:
As Required

Material/Parts:
As Required

Personnel Required:
As Required

References:
DMWR 55-6610-349
DMWR 55-6620-361
DMWR 55 6695-215
TM 1-1500-204-23 Series
TM 55-1520-240-23 Series
WP 0049 00

Equipment Conditions:
As Required

Special Environmental Condition:
As Required

1. Refer to WP 0049 00 for inspection accept/reject criteria.
2. Refer to references above for repair or overhaul.

END OF WORK PACKAGE

DEPOT MAINTENANCE WORK REQUIREMENT

CH-47D HELICOPTER

ELECTRICAL SYSTEMS

INITIAL SETUP

Test Equipment:
As Required

Tools and Special Tools:
As Required

Material/Parts:
As Required

Personnel Required:
As Required

References:
DMWR 55-1680-288
DMWR 55-6130-290
TM 55-1500-323-24 Series
TM 55-1520-240-23 Series
WP 0050 00

Equipment Conditions:
As Required

Special Environmental Condition:
As Required

1. Refer to WP 0050 00 for inspection accept/reject criteria.
2. Refer to references above for repair or overhaul.

END OF WORK PACKAGE

DEPOT MAINTENANCE WORK REQUIREMENT

CH-47D HELICOPTER

FUEL SYSTEM

INITIAL SETUP

Test Equipment:
As Required

Tools and Special Tools:
As Required

Material/Parts:
As Required

Personnel Required:
As Required

References:
DMWR 1-4810-229
DMWR 55-1680-360
DMWR 55-2910-200
DMWR 55-2915-168
DMWR 55-2915-296
DMWR 55-6620-326
DMWR 55-6680-333
TM 1-1500-204-23 Series
TM 55-1520-240-23 Series
WP 0051 00

Equipment Conditions:
As Required

Special Environmental Condition:
As Required

1. Refer to WP 0051 00 for inspection accept/reject criteria.
2. Refer to references above for repair or overhaul.
3. Fuel valve repair: Fuel valves P/N 114PS408-5, 114PS408-6, 114PS141-1, -2, and -4, which leak but are otherwise not damaged, may be repaired by replacing o-ring NSN 5330-00-256-1084.

END OF WORK PACKAGE

DEPOT MAINTENANCE WORK REQUIREMENT

CH-47D HELICOPTER

FLIGHT CONTROL SYSTEMS

INITIAL SETUP

Test Equipment:
As Required

Tools and Special Tools:
As Required

Material/Parts:
As Required

Personnel Required:
As Required

References:
D145-006:10.0200
D145-006:10.0300
D145-006:10.0400
DMWR 55-1615-316
DMWR 55-1680-289
DMWR 55-1680-341
DMWR 55-1680-350
DMWR 55-1680-351
TM 1-1500-204-23 Series
TM 55-1520-240-23 Series
WP 0052 00 through WP 0058 00

Equipment Conditions:
As Required

Special Environmental Condition:
As Required

1. Refer to WP 0052 00 for Cockpit Flight Controls inspection accept/reject criteria.
   Refer to WP 0053 00 for Closet Flight Controls inspection accept/reject criteria.
   Refer to WP 0054 00 for Mixing Flight Controls inspection accept/reject criteria.
   Refer to WP 0055 00 for Forward Upper Flight Controls inspection accept/reject criteria.
   Refer to WP 0056 00 for Tunnel Flight Controls inspection accept/reject criteria.
   Refer to WP 0057 00 for Aft Fuselage and Aft Upper Flight Controls inspection accept/reject criteria.
   Refer to WP 0058 00 Advanced Flight Control System for inspection accept/reject criteria.

2. Refer to references above for repair or overhaul.

NOTE

Depot/Contractor is authorized to use Boeing Vertol, Flight Control Rigging Procedure - Complete Aircraft, No. D145-0006:10.0200 as supplemental technical data to Army TM 55-1520-240-23 to process CH-47D aircraft. The objective of this procedure is to ensure that the flight controls are correctly rigged to provide the control motions required for aircraft operation.

Depot/Contractor is authorized to use Boeing Vertol, Flight Control System - Motion Check Complete Aircraft, No. D154-006:10.3000 as supplemental technical data to Army TM 55-1520-240-23 to Process CH-47D aircraft. The object of this procedure is to insure that the flight control cockpit travels and resulting upper boost actuator travels conform to the design parameters. This then ensures that the flight controls have been correctly rigged.

NOTE

Depot/Contractor is authorized to use Boeing Vertol, Flight Control Feel Forces - System Check Complete Aircraft, No. D145-006:10.0400 as supplemental technical data to Army TM 55-1520-240-23 to process CH-47D aircraft. The object of this procedure is to insure that the flight control cockpit forces conform to the designed parameters.

END OF WORK PACKAGE

DEPOT MAINTENANCE WORK REQUIREMENT

CH-47D HELICOPTER

UTILITY SYSTEMS

INITIAL SETUP

Test Equipment:
As Required

Tools and Special Tools:
As Required

Material/Parts:
As Required

Personnel Required:
As Required

References:
DMWR 55-1680-246
TM 1-1500-204-23 Series
TM 55-1500-323-24
TM 55-1520-240-23 Series
WP 0059 00 through WP 0061 00

Equipment Conditions:
As Required

Special Environmental Condition:
As Required

1. Refer to WP 0059 00 for Windshield System inspection accept/reject criteria.
   Refer to WP 0060 00 for Fire Detection System inspection accept/reject criteria.
   Refer to WP 0061 00 for Fire Extinguishing System inspection accept/reject criteria.

2. Refer to references above for repair or overhaul.

END OF WORK PACKAGE

DEPOT MAINTENANCE WORK REQUIREMENT
CH-47D HELICOPTER
ENVIRONMENTAL CONTROLS

INITIAL SETUP

Test Equipment:
As Required

Tools and Special Tools:
As Required

Material/Parts:
As Required

Personnel Required:
As Required

References:
DMWR 1-1660-206
TM 1-1500-204-23 Series
TM 55-1520-240-23 Series
WP 0062 00

Equipment Conditions:
As Required

Special Environmental Condition:
As Required

1. Refer to WP 0062 00 for inspection accept/reject criteria.
2. Refer to references above for repair or overhaul.

END OF WORK PACKAGE

DEPOT MAINTENANCE WORK REQUIREMENT

CH-47D HELICOPTER

CARGO HANDLING/RESCUE WINCH SYSTEM

INITIAL SETUP

Test Equipment:
As Required

Tools and Special Tools:
As Required

Material/Parts:
As Required

Personnel Required:
As Required

References:
TM 1-1500-204-23 Series
TM 55-1520-240-23 Series
WP 0063 00

Equipment Conditions:
As Required

Special Environmental Condition:
As Required

1. Refer to WP 0063 00 for inspection accept/reject criteria.
2. Refer to references above for repair or overhaul.

END OF WORK PACKAGE

DEPOT MAINTENANCE WORK REQUIREMENT

CH-47D HELICOPTER

AUXILIARY POWER UNIT (APU)

INITIAL SETUP

Test Equipment:
As Required

Tools and Special Tools:
As Required

Material/Parts:
As Required

Personnel Required:
As Required

References:
DMWR 55-1650-398
DMWR 55-2835-205
DMWR 55-6115-496
TM 1-1500-204-23 Series
TM 55-1520-240-23 Series
TM 55-2835-205-23 Series
WP 0064 00

Equipment Conditions:
As Required

Special Environmental Condition:
As Required

1. Refer to WP 0064 00 for inspection accept/reject criteria.
2. Refer to references above for repair or overhaul.

END OF WORK PACKAGE

DEPOT MAINTENANCE WORK REQUIREMENT

CH-47D HELICOPTER

EXTERNAL CARGO HOOK SYSTEM

INITIAL SETUP

Test Equipment:
As Required

Tools and Special Tools:
As Required

Material/Parts:
As Required

Personnel Required:
As Required

References:
TM 1-1500-204-23 Series
TM 55-1520-240-23 Series
WP 0065 00

Equipment Conditions:
As Required

Special Environmental Condition:
As Required

1. Refer to WP 0065 00 for inspection accept/reject criteria.
2. Refer to references above for repair or overhaul.

END OF WORK PACKAGE

DEPOT MAINTENANCE WORK REQUIREMENT

CH-47D HELICOPTER

EMERGENCY EQUIPMENT

INITIAL SETUP

Test Equipment:
As Required

Tools and Special Tools:
As Required

Material/Parts:
As Required

Personnel Required:
As Required

References:
TM 1-1500-204-23 Series
TM 55-1520-240-23 Series
WP 0066 00

Equipment Conditions:
As Required

Special Environmental Condition:
As Required

1. Refer to WP 0066 00 for inspection accept/reject criteria.
2. Refer to references above for repair or overhaul.

END OF WORK PACKAGE

DEPOT MAINTENANCE WORK REQUIREMENT

CH-47D HELICOPTER

AVIONICS

INITIAL SETUP

Test Equipment:
As Required

Tools and Special Tools:
As Required

Material/Parts:
As Required

Personnel Required:
As Required

References:
TM 1-1500-204-23 Series
TM 11-1520-240-23
TM 55-1520-240-23 Series
WP 0067 00 through WP 0071 00

Equipment Conditions:
As Required

Special Environmental Condition:
As Required

1. Refer to WP 0067 00 for Intercommunication System inspection accept/reject criteria.
   Refer to WP 0068 00 for Communications System inspection accept/reject criteria.
   Refer to WP 0069 00 for Navigation Systems inspection accept/reject criteria.
   Refer to WP 0070 00 for Aircraft Survivability Systems inspection accept/reject criteria.
   Refer to WP 0071 00 for Aircraft Antennas inspection accept/reject criteria.

2. Refer to references above for repair or overhaul.

END OF WORK PACKAGE

DEPOT MAINTENANCE WORK REQUIREMENT

CH-47D HELICOPTER

CLEANING

INITIAL SETUP

Test Equipment:
As Required

Tools and Special Tools:
As Required

Material/Parts:
As Required

Personnel Required:
As Required

References:
TM 1-1500-204-23 Series
TM 1-1500-344-23
TM 55-1520-240-23 Series
WP 0075 00
WP 0077 00
WP 0157 00
WP 0161 00

Equipment Conditions:
As Required

Special Environmental Condition:
As Required

Cleaning and washing of the aircraft shall be in accordance with (IAW) TM 1-1500-204-23 and TM 55-1520-240-23. Instructions for removal of the battery, relief tubes, powerplants, and other items or material are provided in TM 55-1520-240-23. Lubrication procedures after washing or steam cleaning are provided in TM 55-1520-240-23.

NOTE

In accordance with TM 1-1500-344-23, the preferred cleaning solution is listed in Appendix A, Table A.1 as MIL-C-85570, Type II. For stubborn or exceptionally oily areas, MIL-PRF-680, Type II or III is an approved substitution. Mineral Spirits, ASTM D235, Type II, Class C, is an authorized substitute for MIL-PRF-680, Type II and Type IIA. For aircraft surface cleaning, AMCOM has approved products which comply with MIL-PRF-87937C, Type II and MIL-PRF-85570C Type II specifications. Any deviations from established procedures or substitution of cleaning materials must be approved by AMCOM/Contracting Officer.

All materials used in cleaning and corrosion prevention of the basic airframe, components, and parts are listed in WP 0075 00, WP 0077 00, WP 0157 00, TM 1-1500-204-23, TM 1-1500-344-23, and TM 55-1520-240-23. Cautions are provided in all referenced documents to avoid damage of components and to prevent the entrance of water or other solvents into electrical components, ducts, or like openings. Warnings and cautions are provided whenever chemicals or cleaning compounds are used or combined which may result in a dangerous or hazardous mixture.

After washing, corrosion prevention measures shall be IAW WP 0077 00, WP 0161 00 and TM 1-1500-204-23.

END OF WORK PACKAGE

DEPOT MAINTENANCE WORK REQUIREMENT
CH-47D HELICOPTER
NONDESTRUCTIVE INSPECTION (NDI)

INITIAL SETUP

Test Equipment:
As Required

Tools and Special Tools:
As required by specific NDI process

Material/Parts:
As required by specific NDI process(s)
Acetone, Technical (Item 20, WP 0157 00)
Alcohol, Isopropyl (Item 42, WP 0157 00)
Cleaning, Compound Solvent (Item 47.1, WP 0157 00)
Cleaning Solvent, General Purpose (Item 72, WP 0157 00)
Cleaning Compound Solvent (Item 99.1, WP 0157 00)
Cleaning Compound Solvent (Item 136.1, WP 0157 00)
Paper, Wrapping (Item 129, WP 0157 00)

Personnel Required:
As Required

References:
TM 1-1500-335-23
TM 1-1520-253-23
TM 55-1520-240-23 Series
WP 0075 00
WP 0077 00
WP 0157 00
WP 0161 00

Equipment Conditions:
As Required

Special Environmental Condition:
As required by specific NDI process

SCOPE

Methods used in nondestructive inspection (NDI) are those that may be applied to inspect a structure or component to determine its ability to perform its intended function without damaging or causing any change in the characteristics of the structure or component. During manufacture, aircraft components are given in-process and final inspections. The most commonly used methods are magnetic particle and liquid penetrant because these two methods are bulk processes that provide 100 percent inspection coverage and they are highly effective. It is unusual, but possible, for NDI personnel to locate defects that are inherent, associated with the production of the material, or related to the manufacturing operations. It follows that nearly all maintenance nondestructive inspection requirements are to locate defects that have developed during service (i.e., corrosion and corrosion induced cracking, fatigue cracks, and defects resulting from mechanical damage, improper maintenance, or inappropriate use). It is important that NDI personnel shall be able to distinguish between inherent or in-service defects. A general knowledge of typical sites for in-service defect occurrence and specific knowledge of the mode and location of previous cracking problems for a particular part is relevant. This knowledge will assure that the crack prone areas are identified for inspection and time will not be wasted inspecting areas not subject to in-service cracking.

TM 1-1520-253-23, Nondestructive Inspection Procedures for CH/MH 47 Helicopter Series, defines the specific NDI areas of the helicopter and summarizes the steps necessary to perform satisfactory inspections. It includes the preparation of the helicopter, the inspection area for NDI, safety rules to be observed, highlights of each inspection method, and specific safety precautions for each of these methods. TM 1-1500-335-23 (T.O. 33B-1-1, NAVAIR 01-1A-16), Nondestructive Inspection Methods, is the authority for all NDI procedures within the DOD and will be the only document used for performing nondestructive inspections.

NOTE

Whenever the text of TM 1-1500-335-23 refers to Air Force technical orders for supportive information, refer to the comparable Army documents.

SCOPE - continued

Factors governing the selection of an inspection method are: (1) accessibility, (2) portability of equipment, (3) type of suspected damage, (4) material composition of part to be inspected, (5) surface condition, and (6) degree of sensitivity required for the inspection. In many cases, the method selected will depend primarily on accessibility and practicality. For example, a threaded item that may qualify for eddy current inspection may instead require the substitution of an ultrasonic inspection due to accessibility constraints. However, the ultrasonic inspection must be capable of providing equivalent sensitivity. Also, the type of inspection desired may adversely affect adjacent parts. Inspection methods as specified in TM 1-1520-253-23 were selected in order to provide maximum detection sensitivity while requiring a minimum of removal or disassembly, and at the same time, protect adjacent areas from damage. Radiographic inspection is used only to examine areas partly or totally hidden, or where the suspected damage is internal to the part. Where one method of inspection (primary) reveals an indication of a crack, another method (backup) should be used to verify if a crack is actually present. Quite often backup procedures are limited to disassembly and a good visual inspection. Certain cases may arise when another NDI method could be used to prevent needless or complicated disassembly. For example, a crack in a spar cap may not appear clearly on radiographic film due to cloudiness caused by sealant or substructure clutter. A backup eddy current or ultrasonic method could be used for verification and if no indications were observed, disassembly would not be necessary. Whenever a backup method is used, it shall be specified in every case where the initial damage indication may not be positive proof that a reject condition exists.

NONDESTRUCTIVE INSPECTION REQUIREMENTS

TM 1-1520-253-23 lists critical aircraft items and the associated NDI method(s). The airframe and landing gear group along with the engine group are covered in this DMWR. Refer to the referenced TM for other areas when required.

Mandatory NDI is required for the following items. The Contracting Officer may modify this list or designate other mandatory NDI items.

1. Aft Pylon Equipment Support Structure
2. Combining Transmission Support Fittings and Longitudinal Beams
3. Aft Landing Gear Structure
4. Forward Landing Gear Support Structure
5. Forward Transmission Support Structures
6. Connecting Link
7. Forward Engine Mount Structure
8. Engine Mount Caps
9. Aft Engine Mount Link
10. Aft Engine Mount Adapter
11. Engine Mount Adapter

NONDESTRUCTIVE INSPECTION REQUIREMENTS - continued

Airframe and Landing Gear Group inspection items are shown in Table 1. Refer to Figure 1 for Index Numbers and Figure 2 thru Figure 6 for mandatory inspection items.

Table 1. Airframe and Landing Gear Group Inspection Index

Index Number	Nomenclature	Inspection Method
1	Honeycomb Cores and Panels	Bond Testing
2	Airframe Structures	Eddy Current
3	Center Cargo Hook	Magnetic Particle
4	Composite Pylon Hinged Fairings	Bond Testing
*5	Aft Pylon Equipment Support Structure	Eddy Current
*6	Combining Transmission Support Fittings and Longitudinal Beams	Eddy Current
7	Cargo Ramp	Bond Testing
8	Lower Drag Link Assembly Hardware	Magnetic Particle
9	Lower Drag Link	Eddy Current
10	Landing Gear Wheel	Eddy Current
11	Landing Gear Axle	Magnetic Particle
*12	Aft Landing Gear Structure	Eddy Current
13	Rescue Hatch Lower Door Gearbox Housing and Cover	Eddy Current
14	Rescue Hatch Lower Door Gearbox Assembly	Magnetic Particle
15	Pods	Radiographic
16	Pods	Bond Testing
17	Forward Landing Gear Strut Piston Tube	Magnetic Particle
18	Forward Landing Gear Torque Arm	Eddy Current
*19	Forward Landing Gear Support Structure	Eddy Current
20	Cabin Equipment Support Structure	Eddy Current
21	Dynamic Absorber Support Structure	Eddy Current
*22	Forward Transmission Support Structures	Eddy Current

NOTE

* Indicates mandatory NDI item

NONDESTRUCTIVE INSPECTION REQUIREMENTS - continued

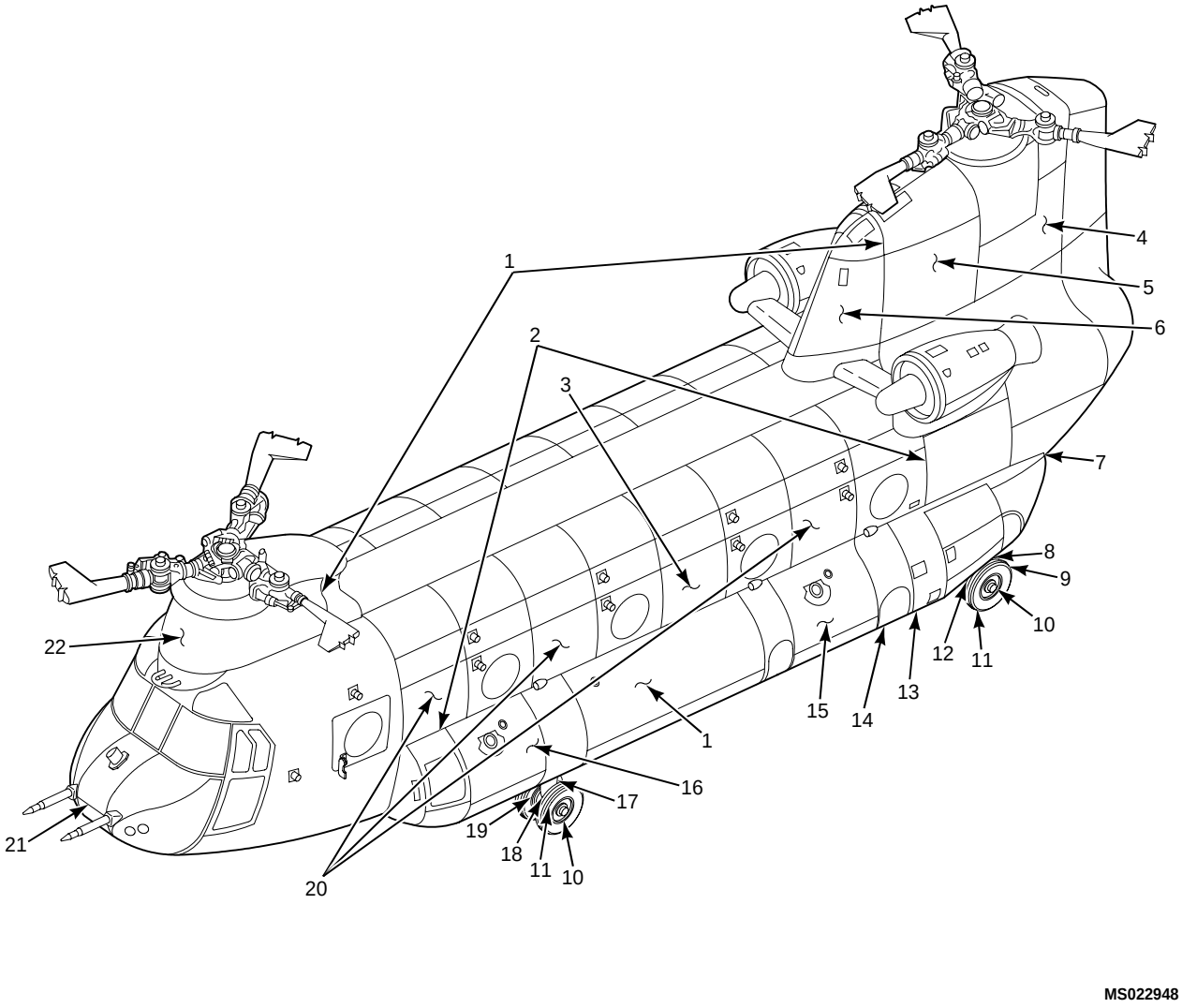


Figure 1. Airframe and Landing Gear Group NDI Areas

NONDESTRUCTIVE INSPECTION REQUIREMENTS - continued

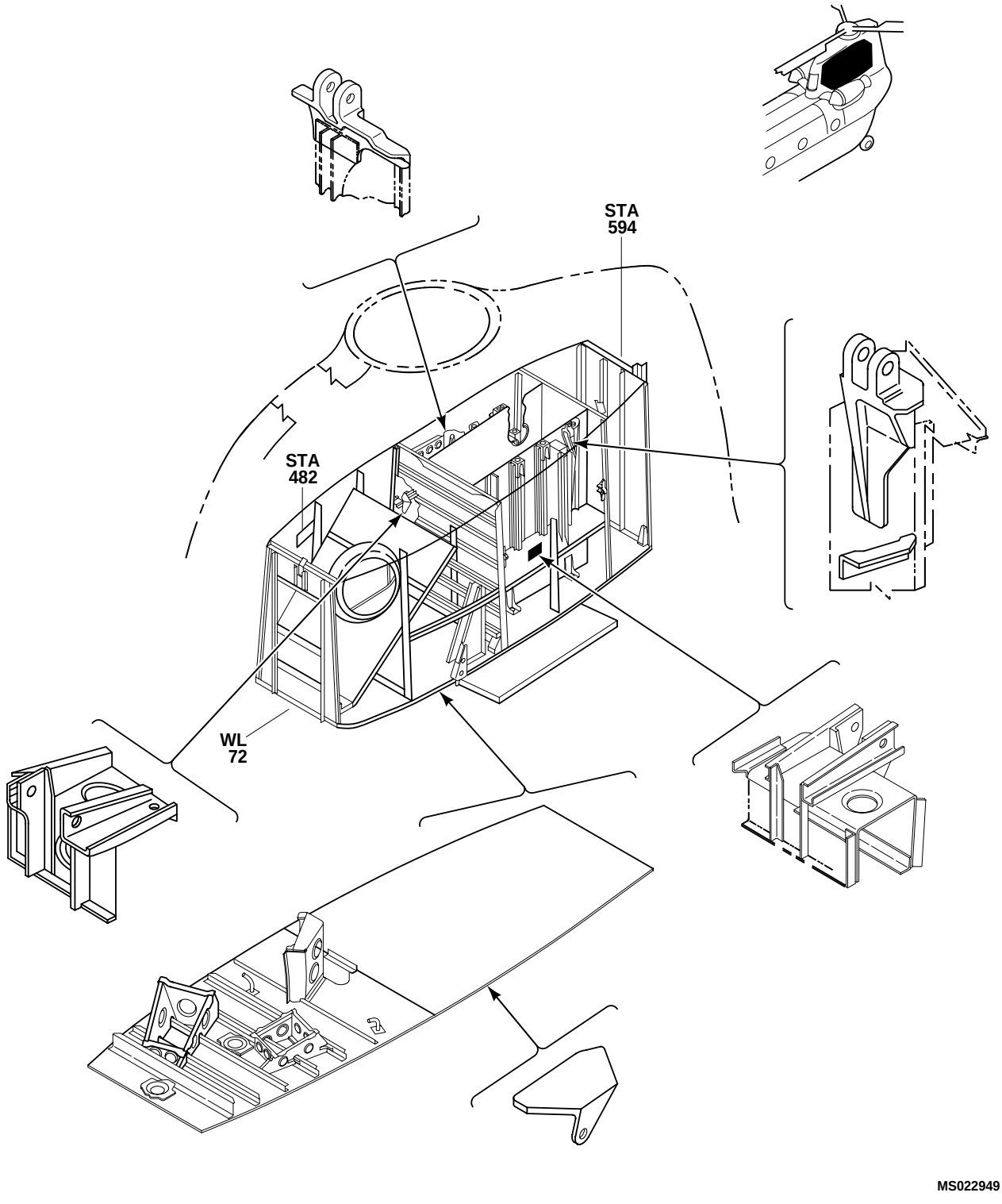


Figure 2. Aft Pylon Equipment Support Structure

NONDESTRUCTIVE INSPECTION REQUIREMENTS - continued

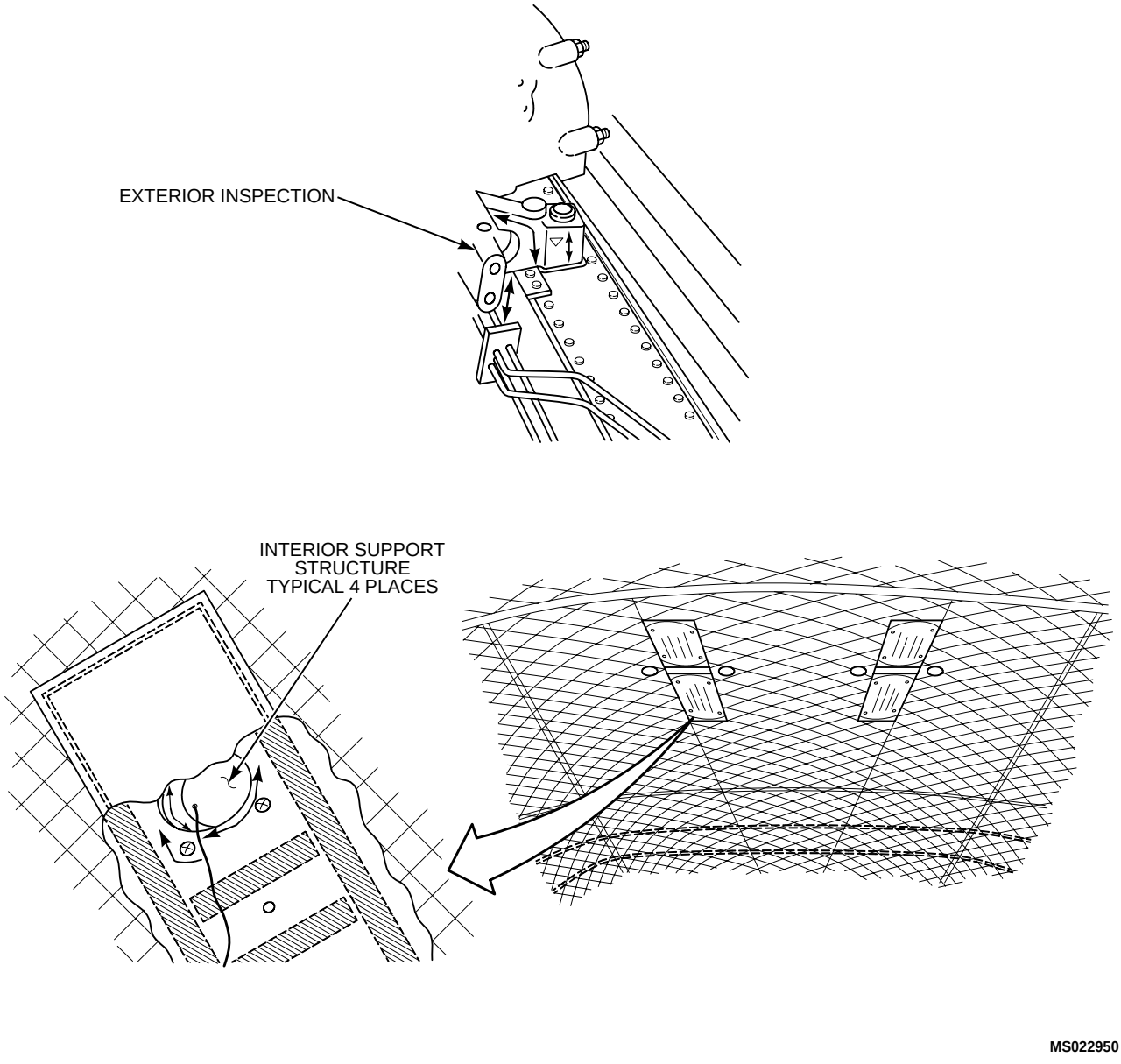


Figure 3. Combining Transmission Support Fittings and Longitudinal Beams

NONDESTRUCTIVE INSPECTION REQUIREMENTS - continued

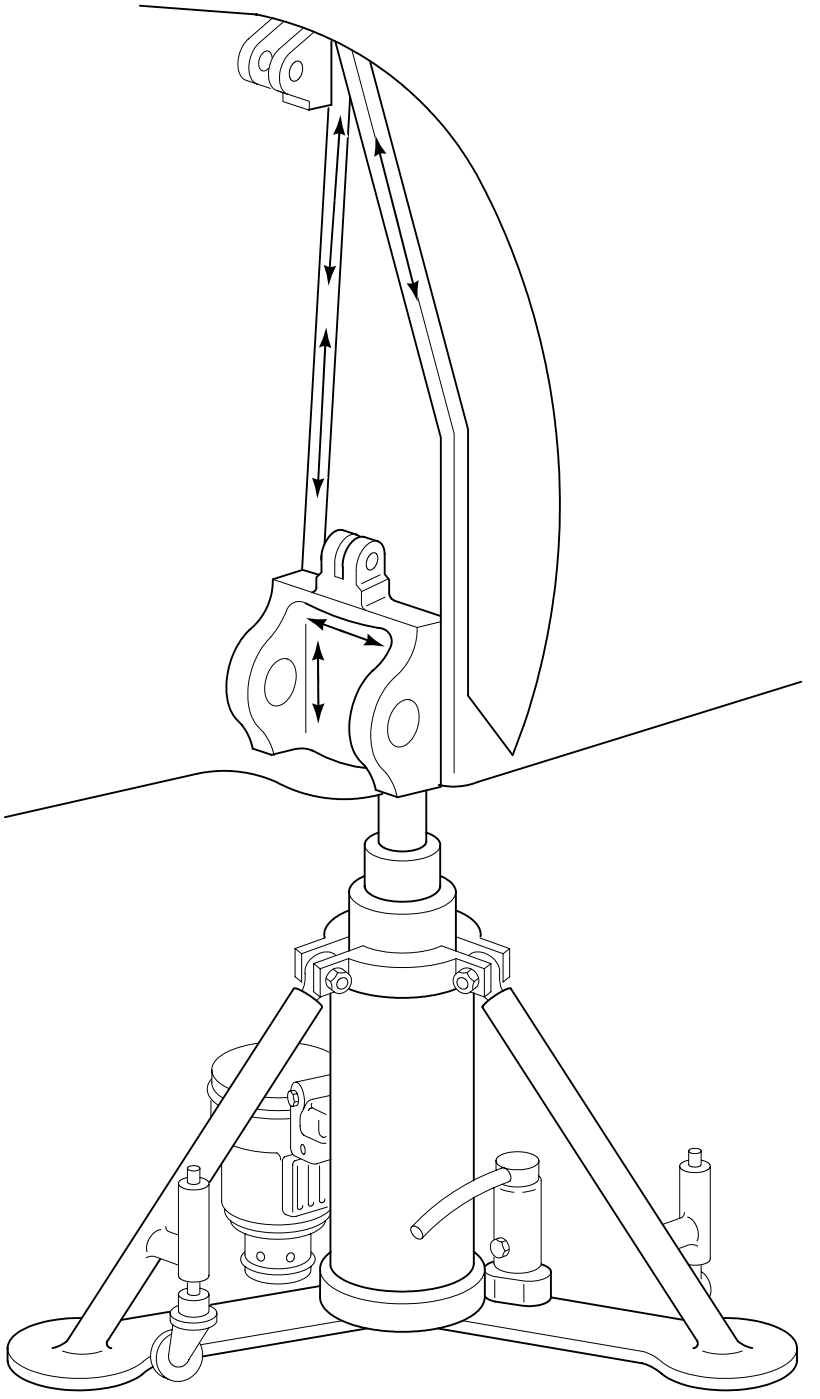


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Figure 4. Aft Landing Gear Structure

NONDESTRUCTIVE INSPECTION REQUIREMENTS - continued

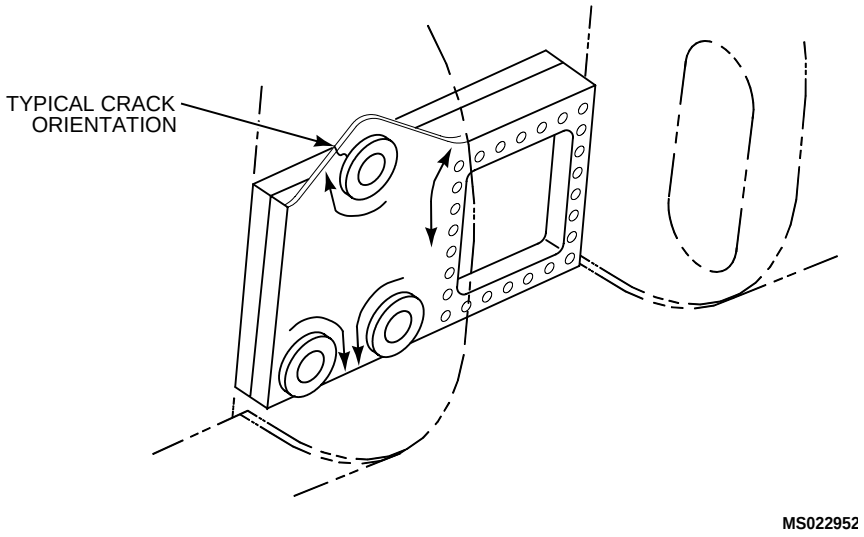


Figure 5. Forward Landing Gear Support Structure

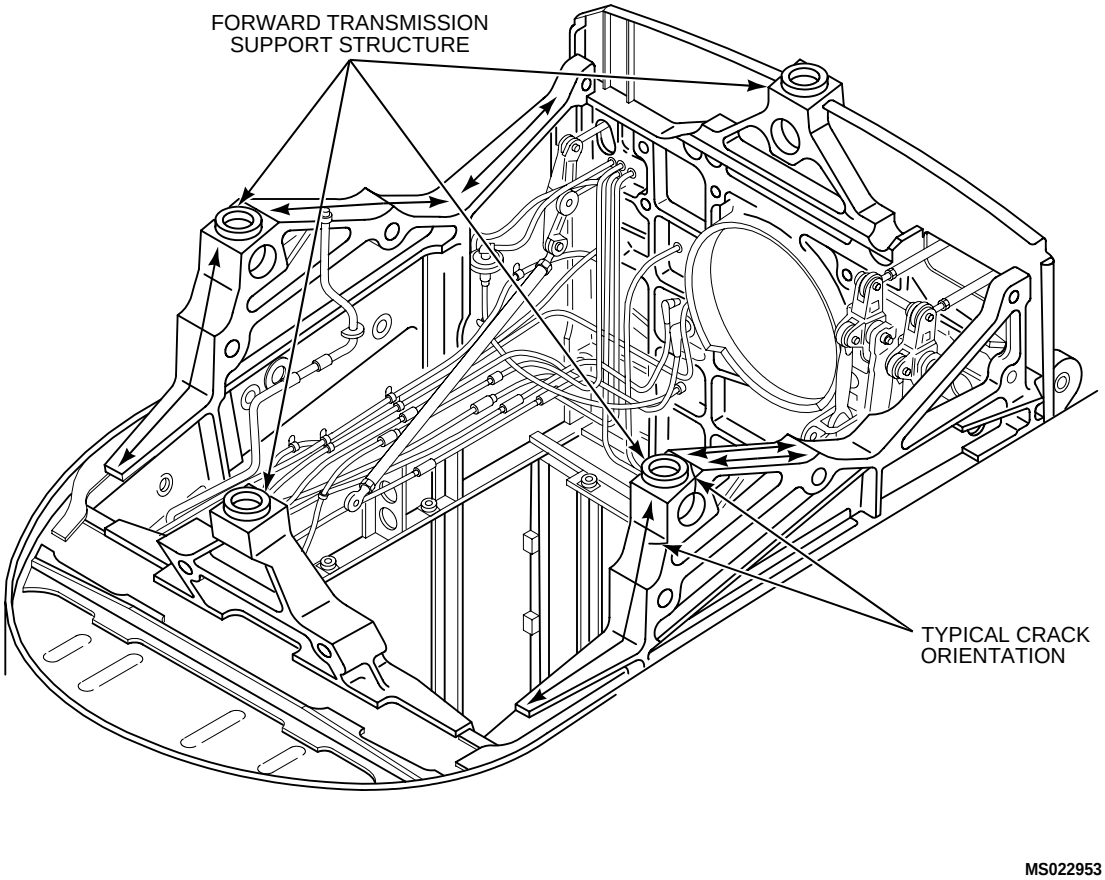


Figure 6. Forward Transmission Support Structures

NONDESTRUCTIVE INSPECTION REQUIREMENTS - continued

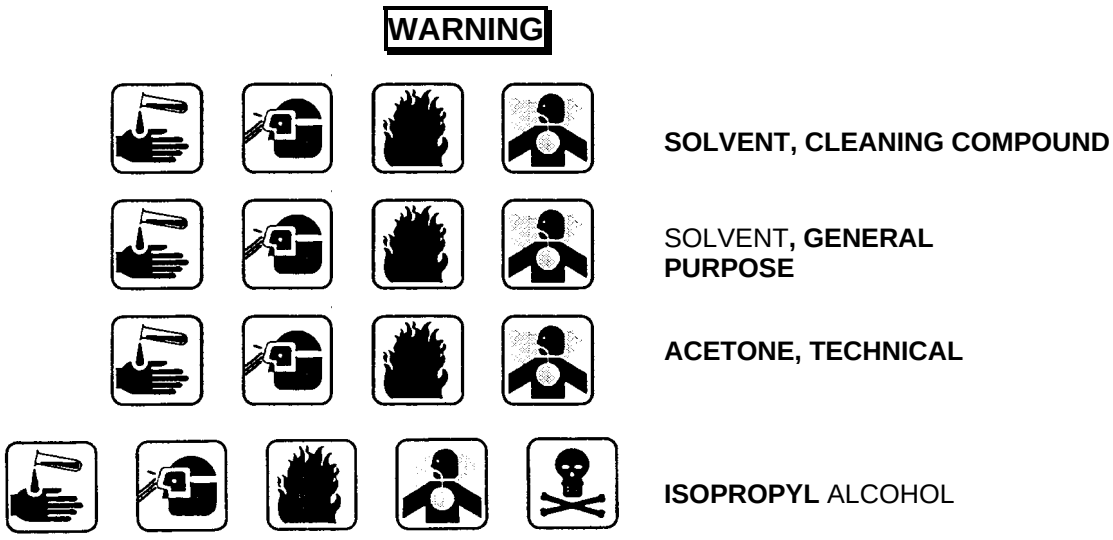
The Engine Group inspection items are shown in Table 2. Refer to Figure 7 for Index Numbers and Figure 8 thru Figure 13 for mandatory inspection items.

Table 2. Engine Group Inspection Index

Index Number	Nomenclature	Inspection Method
*1	Connecting Link	Eddy Current
*2	Forward Engine Mount Structure	Eddy Current
*3	Engine Mount Caps	Eddy Current
*4	Aft Engine Mount Link	Magnetic Particle
*5	Aft Engine Mount Adapter	Eddy Current
6	Exhaust Cone and Stiffener	Fluorescent Penetrant
7	Fireshield Section	Fluorescent Penetrant
8	Fuel Drain Valve	Fluorescent Penetrant
9	Combustion Chamber Housing	Fluorescent Penetrant
10	Engine Oil Pump, Fuel Control, and Accessory Gearbox Flanges	Eddy Current
*11	Engine Mount Adapter	Eddy Current

NOTE

* Indicates mandatory NDI item



Four fluorescent penetrant procedures are described in TM 1-1520-253-23. All four procedures shall be conducted using fluorescent penetrant, AMS 2644 (Item 129.1, WP 0157 00). Parts requiring fluorescent penetrant inspection shall be cleaned prior to inspection with Cleaning Compound, Solvent (vapor degreasing only) (Item 47.1, WP 0157 00), Cleaning Solvent, General Purpose, DS-108 (Item 72, WP 0157 00), Cleaning Compound, Solvent (Item 99.1, WP 0157 00), Cleaning Compound, Solvent (Item 136.1, WP 0157 00). Item 72, item 99.1, item 136.1 must be followed by Acetone, Technical (Item 20, WP 0157 00) or Alcohol, Isopropyl, Technical (Item 42, WP 0157 00) rinse or wipe; drying until there is no visible solvent residue left on the parts.

NONDESTRUCTIVE INSPECTION REQUIREMENTS - continued

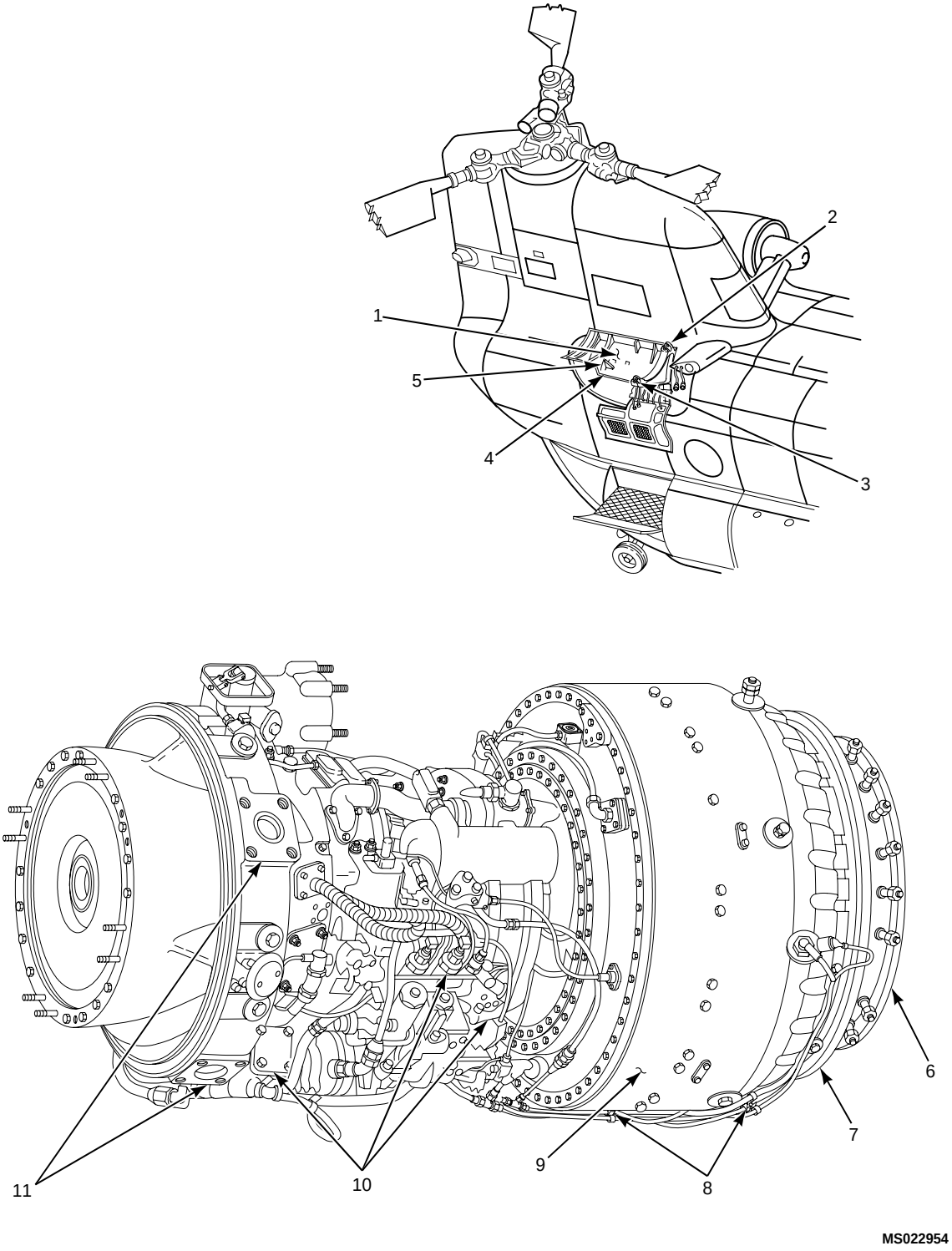


Figure 7. Engine Group NDI Areas

NONDESTRUCTIVE INSPECTION REQUIREMENTS - continued

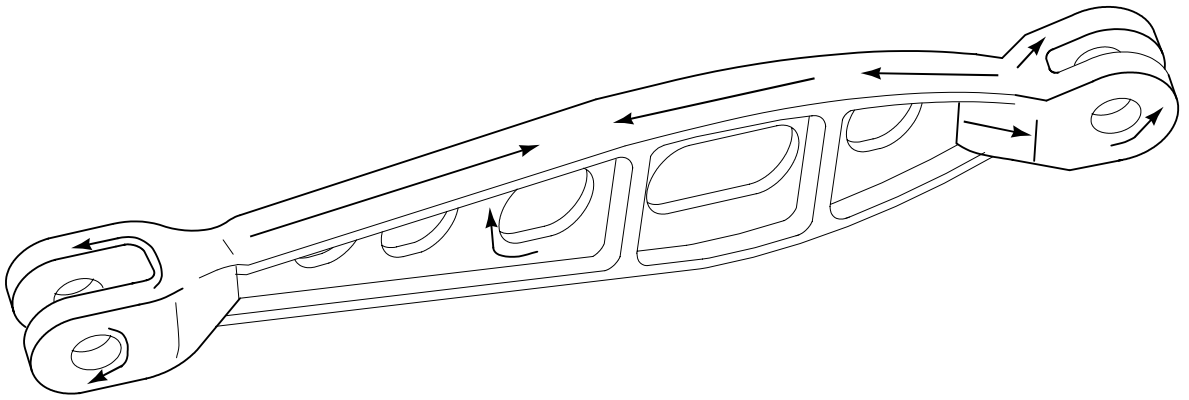


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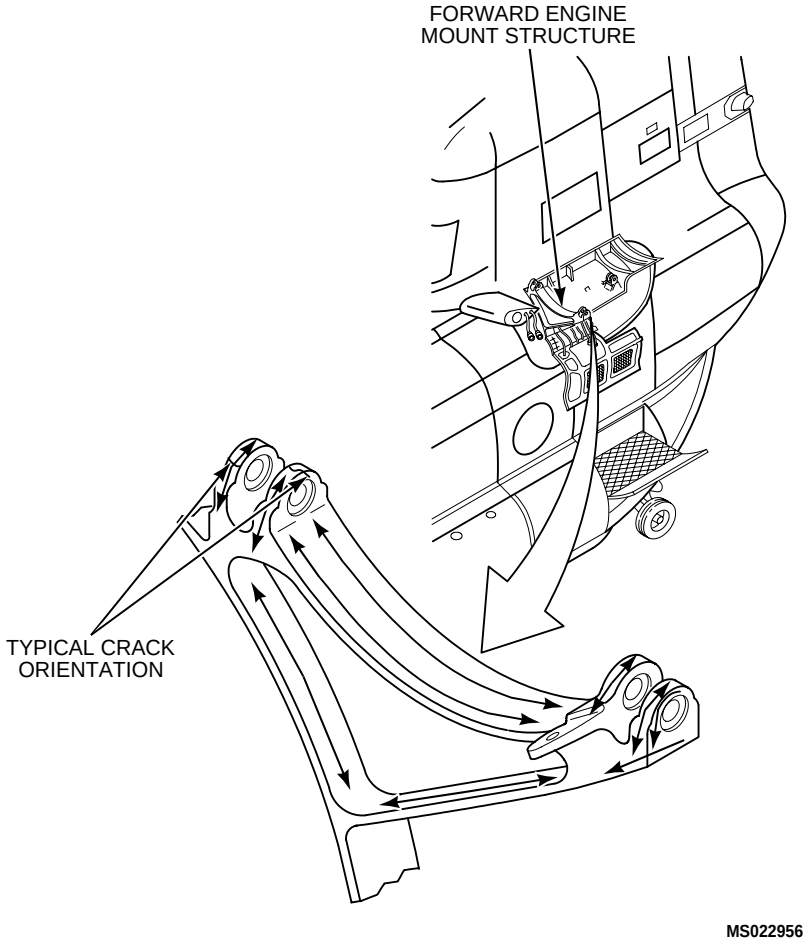
Figure 8. Connecting Link



MS022956

Figure 9. Forward Engine Mount Structure

NONDESTRUCTIVE INSPECTION REQUIREMENTS - continued

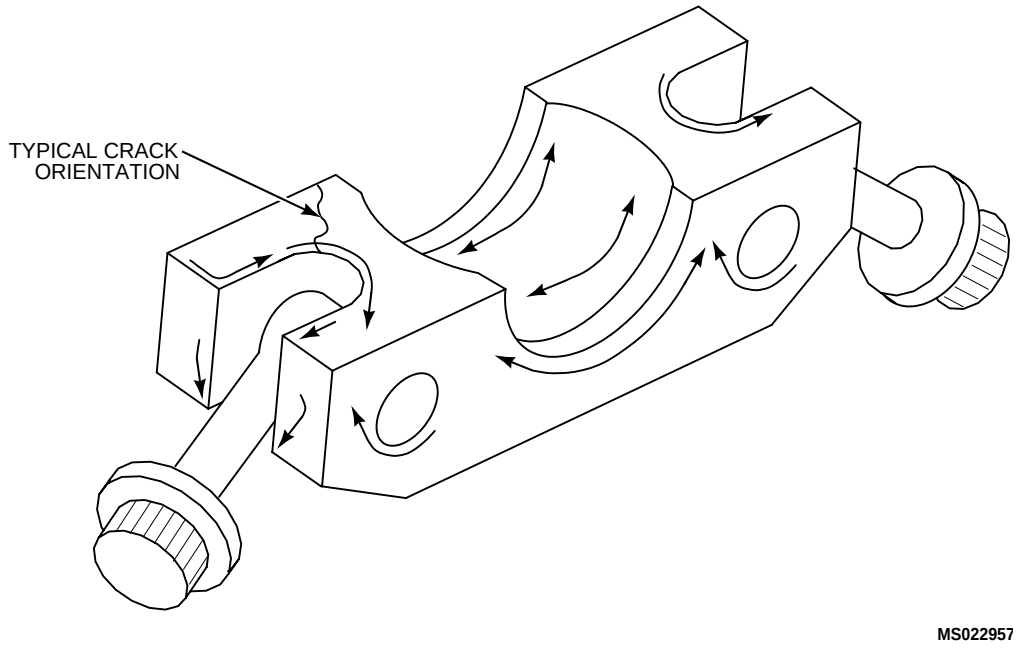


Figure 10. Engine Mount Caps

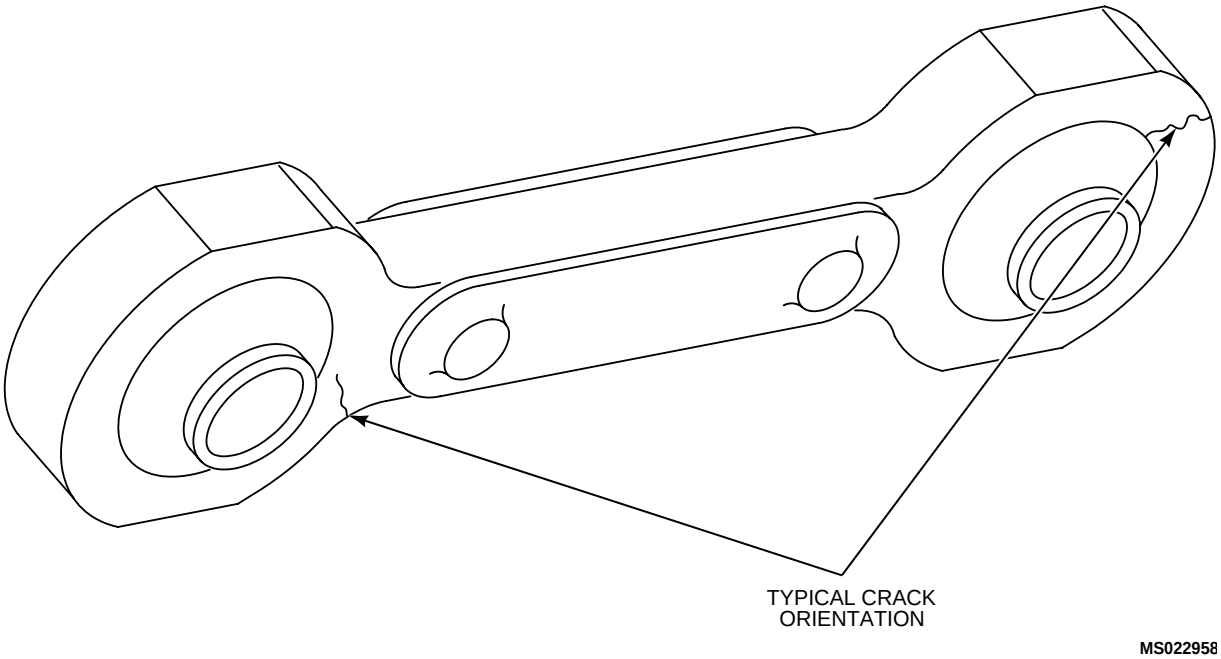


Figure 11. Aft Engine Mount Link

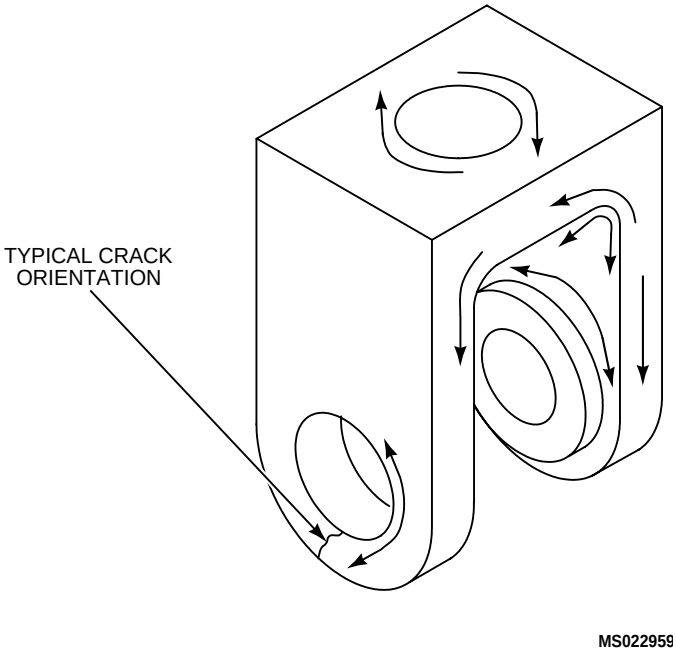


Figure 12. Aft Engine Mount Adapter

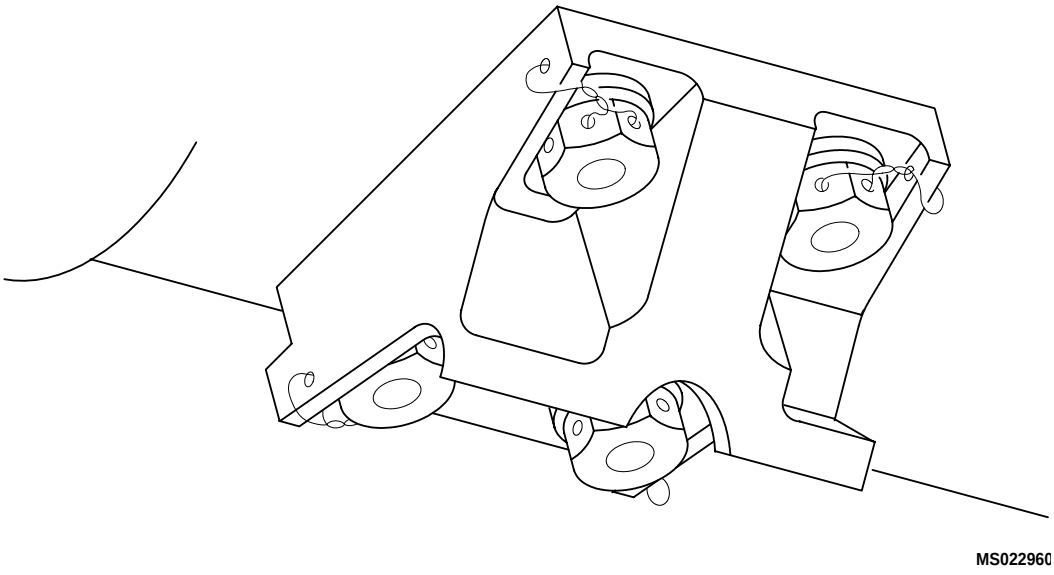


Figure 13. Engine Mount Adapter

END OF WORK PACKAGE

DEPOT MAINTENANCE WORK REQUIREMENT
CH-47D HELICOPTER
ALIGNMENT

INITIAL SETUP

Test Equipment:
As Required

Tools and Special Tools:
Alignment Fixture, PN 114G1168-2
Aircraft Jacks
Chalked Line
Dial Indicator, 5210-00-203-9354 – 2 ea
Dial Indicator Holder, PN TD1007-301 – 2 ea
Dividers or Compass
Feeler Gage
Hand Held Mirror
Level
Linear Graph Paper
Plumb Bob
Straightedge – local manufacture
Tape Measure

Material/Parts:
Tape, Masking, (Item 175, WP 0157 00)

Personnel Required:
As Required

References:
TM 1-1500-204-23 Series
TM 1-1500-344-23
MWO 1-1520-240-50-60
WP 0157 00

Equipment Conditions:
As Required

Special Environmental Condition:
As Required

SCOPE

After extensive structural repairs, a hard landing, or when misalignment is suspected, the body group, main rotor group, and alighting gear group should be given an alignment check. These checks should be accomplished in calm air (indoors if practical) on a hard, smooth, and level surface. Do not perform checks in direct sunlight as this can cause expansion of structure and result in erroneous measurements. Do not disturb or move the helicopter after it is jacked and leveled.

Crash-damaged aircraft undergoing extensive airframe repair may require placement in the CH-47 airframe fixture. The airframe fixture is made up of four components as listed below. These fixtures correspond to the four major portions of the aircraft secondary structure. Refer to Figure 1. After repair and assembly of the four airframe groups, it would be advisable to perform an alignment check as described in this work package.

Aft Pylon Fixture – Drawing Number LJ114S0400-1
Cockpit Section Fixture – Drawing Number MIT144S0100-1
Aft Fuselage Fixture – Drawing Number 2MIT114S0300-1
Center Cabin Fixture – Drawing Number MIT114S0200-1

SCOPE - continued

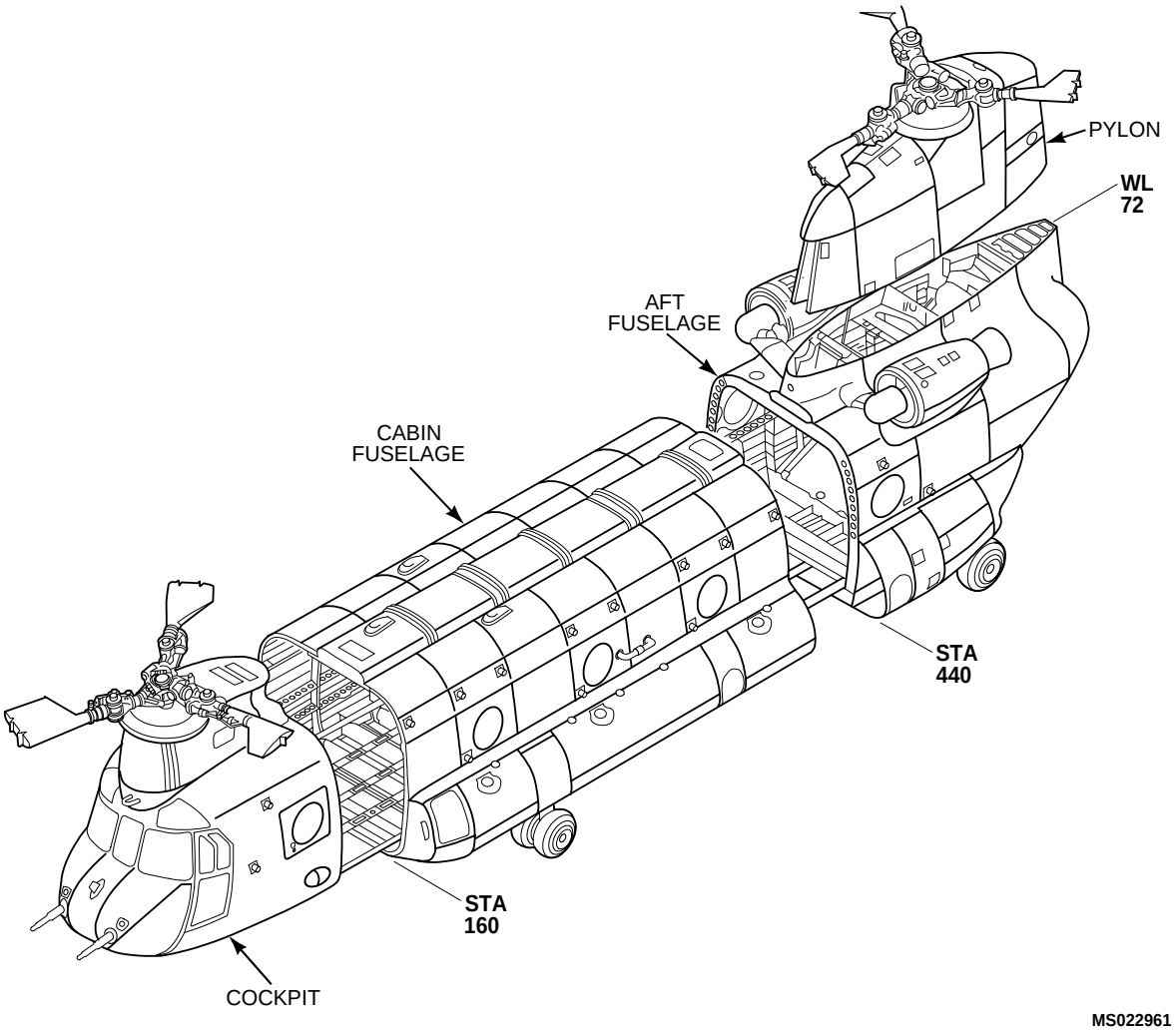


Figure 1. Airframe Secondary Structure

BODY GROUP ALIGNMENT CHECK

Check alignment of body group as follows:

1. Raise helicopter by jacking. Refer to TM 55-1520-240-23 for jacking procedures.
2. Place a level, aligned approximately with longitudinal centerline of the helicopter, on top of cabin floor. Adjust jacks until a level reading is obtained.

NOTE

Make sure level is laying squarely on a flat portion of cabin floor and is not tilted or cocked.

3. Rotate level 90 degrees to helicopter centerline (parallel to stations) and adjust jacks until a level reading is obtained.

BODY GROUP ALIGNMENT CHECK – continued

4. Repeat steps 2 and 3 until a level reading in each position can be maintained without further adjustment of jacks. The helicopter should now be level longitudinally and laterally.

5. Fabricate straightedge. Refer to Figure 3.

6. Place straightedge laterally on beams, immediately below cabin windows, between sta 400 and sta 440 on each side. The lower surface of straightedge, when placed in this position, is WL 0.

7. Suspend a plumb bob from center of straightedge so that plumb bob clears cabin floor. Allow plumb bob to become motionless.

8. Place a piece of masking tape on cabin floor directly below plumb bob.

9. Allow plumb bob to drop. Mark resultant impression on masking tape. Use a lead pencil.

10. Place straightedge laterally on beams, immediately below cabin windows, between sta 160 and sta 180 on each side.

11. Repeat steps 7, 8, and 9 above.

12. Stretch a chalked line longitudinally to intersect marked points on cabin floor. Snap line to establish a centerline on cabin floor.

NOTE

If required, the straightedge can be placed at intermediate positions throughout cabin section to establish more than one centerline reference point.

13. Check body group for alignment. Use a tape measure and compare distances between various related structures and established reference lines in accordance with the following criteria.

    a. Use cabin floor as WL minus 30 and chalk line (centerline) as BL 0.

    b. All vertical measurements are in reference to WL 0. Those measurements above are positive and those below are negative.

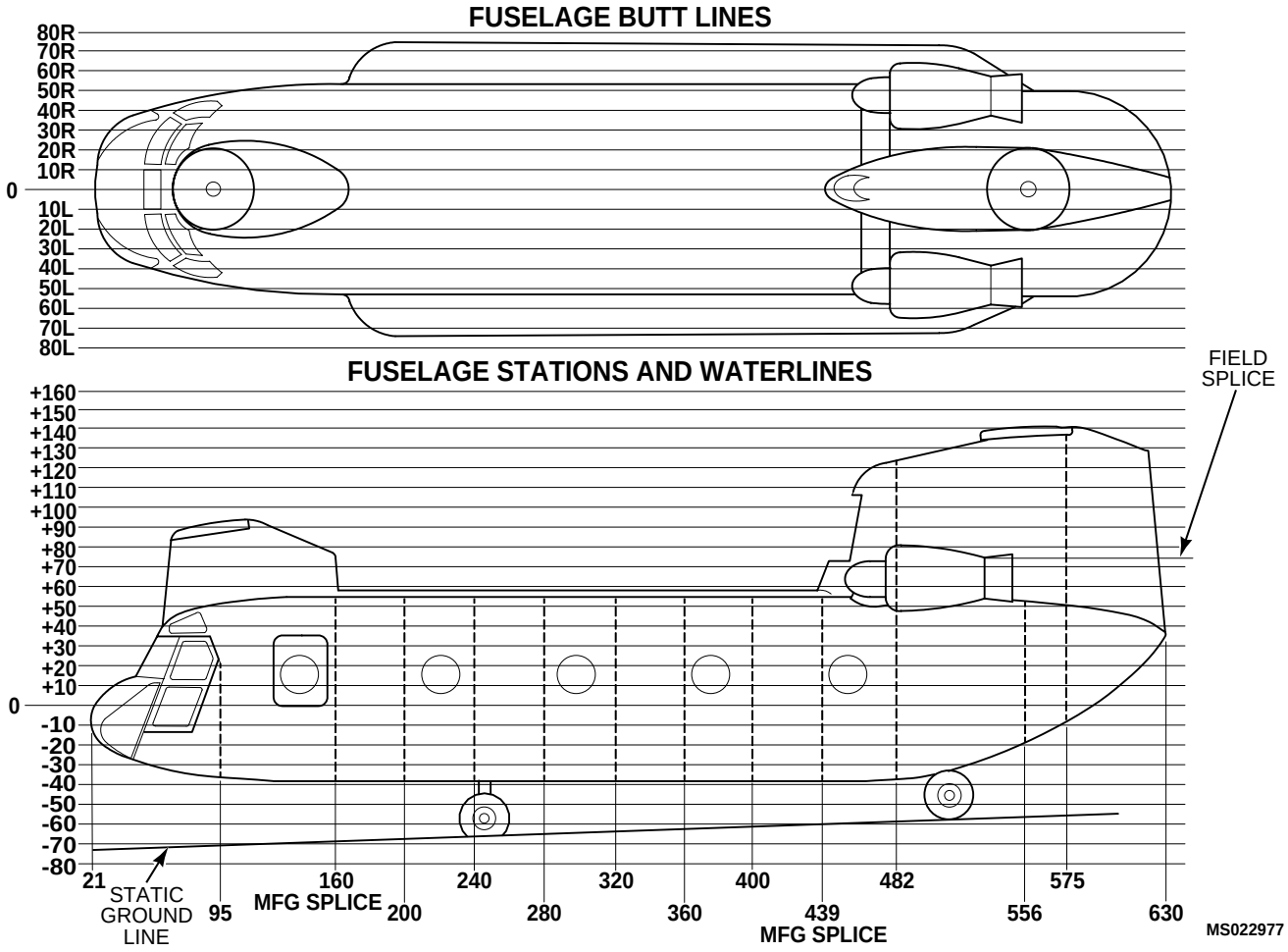
    c. Add or subtract 30 inches, as applicable, when using cabin floor as a reference point.

    d. Butt lines are measured to the right or left of chalk line.

    e. Stations are marked below WL 0 on the aft side of each frame in the cabin section for reference.

    f. Refer to Figure 2 for fuselage station, butt line, and water line locations.

BODY GROUP ALIGNMENT CHECK – continued

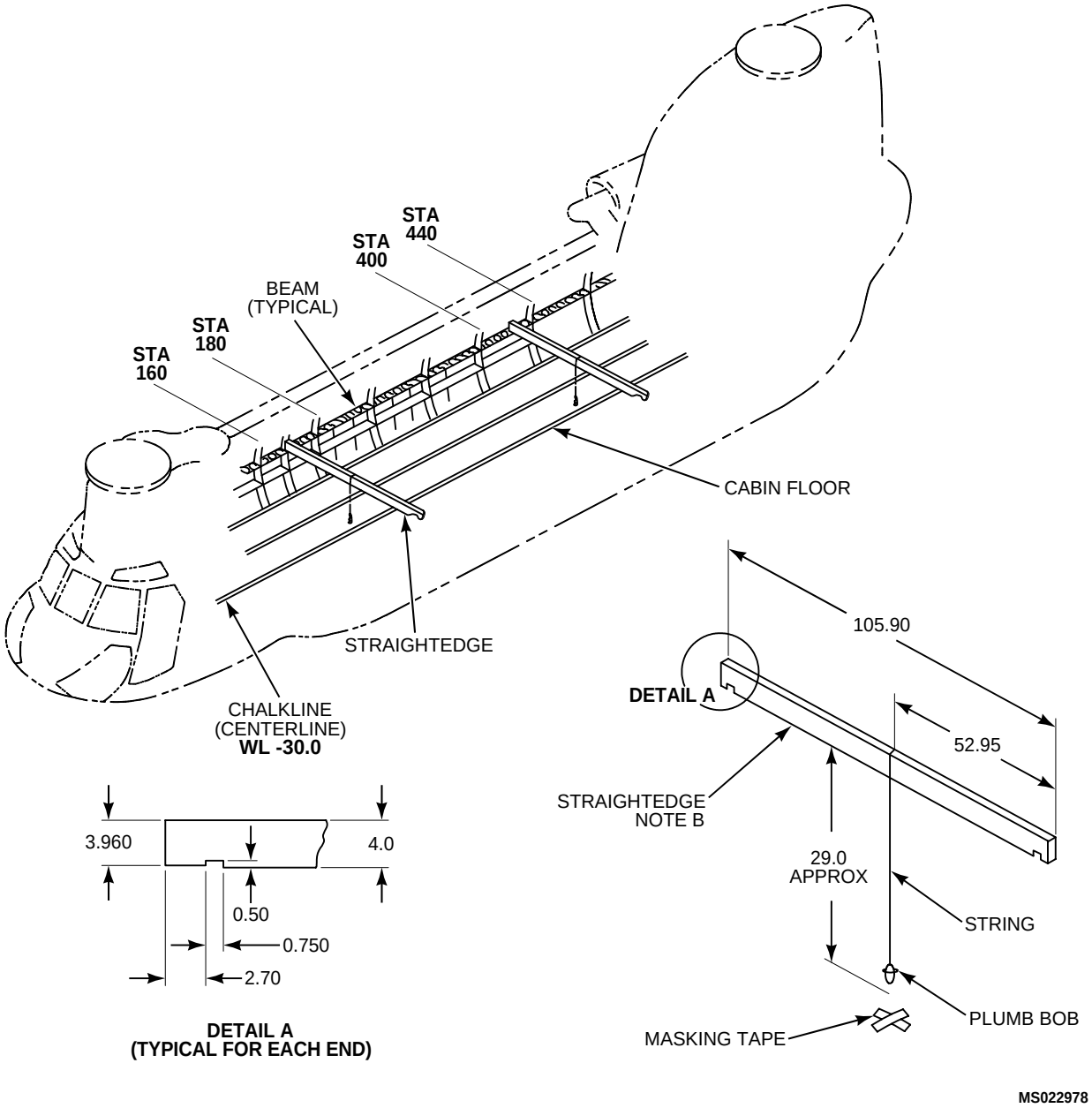


NOTE

All dimensions are in inches.

Figure 2. Body Group Alignment – Fuselage Stations, Waterlines, and Butt Lines

BODY GROUP ALIGNMENT CHECK – continued



NOTES

A. All dimensions are in inches.

B. Make straightedge from a material that will resist wear and not warp, bow, or otherwise deflect. Thickness of straightedge is optional.

Figure 3. Body Group Alignment – Straightedge Plans

MAIN ROTOR GROUP ALIGNMENT CHECK

Subsequent paragraphs describe method of checking alignment of drive components of main rotor group, using drive system alignment checking fixture 114G1168-2. Refer to Figure 4. The checking fixture consists of one optical tooling telescope assembly, one optical square, one scope bracket assembly, four optical target assemblies, one target mount assembly, five target bracket assemblies, two alignment shaft (dummy shaft) assemblies (not used for this alignment procedure), one installation hoist assembly, and a storage cart. The checking fixture determines acceptability of alignment points for forward, aft, and combining transmissions, forward and aft synchronizing drive shaft assemblies, aft rotary-wing drive shaft assembly, and engine drive shaft assemblies. Only the engine drive shaft assemblies require a mechanical alignment check. All other checks are accomplished using optical tooling methods.

The following conditions must be maintained to ensure accurate results:

1. The manufacturing splices at sta 160 and sta 439, and the field splice at WL plus 72 must be completed, before the “Body Group Alignment Check” can be accomplished.

2. All drive group attachment point mounting bushings must be properly installed. Make sure drive group attachment point bushings are not damaged.

3. During optical alignment checking procedure, the forward, aft, and combining transmissions, all drive shafts, and all drive shaft couplings must be removed.

4. During engine to combining transmission alignment checks, complete structural installation of engines, engine transmissions, and combining transmission is required. The engine nose covers and engine drive shaft fairings should not be installed.

5. The helicopter shall be placed on jacks. Refer to TM 55-1520-240-23. Leveling of helicopter is not required for main rotor group alignment check.

6. Personnel performing optical and mechanical alignment checks must be qualified in use and operation of the alignment equipment.

7. Two operators may perform the entire drive system alignment check after drive system alignment checking fixture has been properly installed and checked. One operator is required to adjust and read the telescope. The other operator is required to install and adjust the optical target assembly, and assist in the mechanical alignment procedure. Personnel other than operators should keep clear of helicopter while alignment checks are being made.

8. Movements of operators on helicopter structure and other sources of vibration should be kept to a minimum during alignment checks.

9. Lighting equipment or other heat sources must not be placed near optical tooling components or optical lines of sight. Local heat sources cause heat waves in the optical lines of sight, which may result in optical distortion and erroneous readings.

MAIN ROTOR GROUP ALIGNMENT CHECK

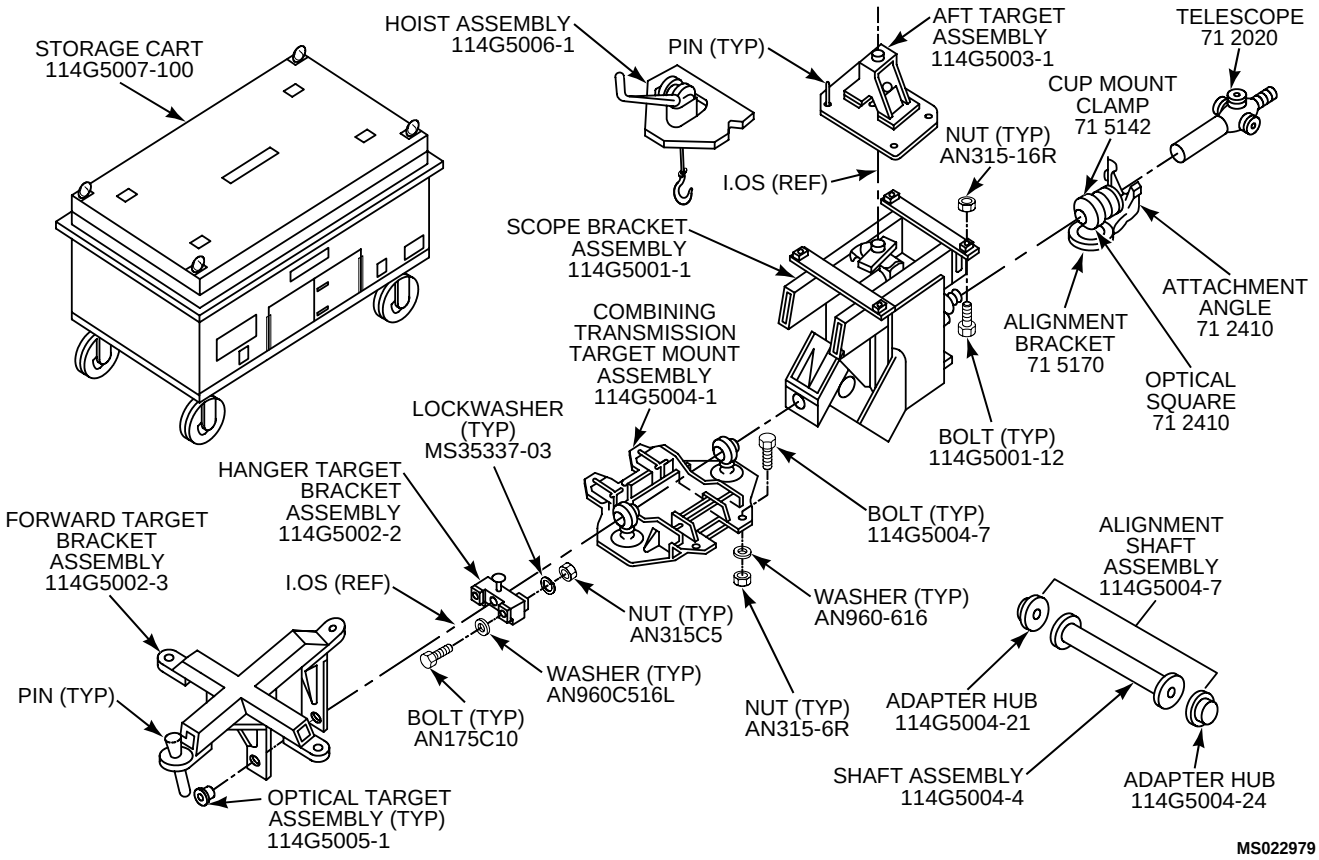


Figure 4. Fixture – Main Rotor Group Alignment Check

INSTALLATION OF DRIVE SYSTEM ALIGNMENT CHECKING FIXTURE

Install checking fixture 114G1168-2, Figure 5, as follows:

1. Check all drive component attachment point areas for foreign objects before attempting to install checking fixture. All mating surfaces must be clean. Check all mounting points to be sure bushings are installed.

2. Install hoist assembly, 114G5006-1, on aft pylon canted deck. Dowels on hoist baseplate fit into attachment point bushings for aft rotary-wing drive shaft lift bearing housing.

3. Place scope bracket assembly, 114G5001-1, on a protective pad on floor of cargo loading ramp, directly beneath hoist assembly. If cargo loading ramp is not installed, place storage chart, containing stowed scope bracket assembly, directly beneath hoist.

4. Attach hoist sling to eye bolts on scope bracket assembly. Raise assembly into position.

INSTALLATION OF DRIVE SYSTEM ALIGNMENT CHECKING FIXTURE - continued

NOTE

Any shims that are used to fill gaps under the alignment tools must be permanently affixed to the structure after the alignment procedure is completed. Refer to “Adding Permanent Shims to Structure” in this WP.

5. Insert bolts, 114G5001-2, into bushings on scope bracket assembly and through aft transmission attachment point bushings. Install nuts, AN315-16R, on bolts. Hand tighten nuts. Check for proper seating of assembly by attempting to slide a feeler gage between bushings. Install shims, as required, if any gap is greater than 0.005-inch. Record thickness and location of all shims. Torque nuts to 50 pound-feet.

6. Remove hoist assembly and install aft target bracket assembly, 114G5003-1. Pins on aft target bracket assembly fit into attachment point bushings for aft rotary-wing drive shaft lift bearing housing. Check for gaps at each bushing. Install shims, as required, if any gap is greater than 0.005-inch. Record thickness and location of all shims.

7. Carefully position forward transmission target bracket assembly, 114G5002-3, on forward transmission attachment point bushings. Check for gaps by attempting to rock target bracket assembly. Install shims at this time, as required, to eliminate rocking if any gap is less than 0.020-inch. If any gap is greater than 0.020-inch, install shims during optical alignment checking procedure. Refer to “Optical Alignment Checking Procedure”. Record thickness and location of all shims and size and location of any retaining gaps. Lock bracket assembly in place by gently pressing retaining pins, 114G5002-29, into forward transmission attachment point bushings.

8. Install hanger target bracket assembly, 114G5002-2, in synchronizing drive shaft support brackets (shaft hanger) at sta 163. Secure hanger target bracket assembly with two bolts, AN175C40, two washers, AN960C-5161, two lock washers, MS35337-83, and two nuts, AN315C5. This installation will be replaced during optical alignment procedure at all drive shaft support brackets.

9. Place combining transmission target mount assembly, 114G5004-1, on combining transmission attachment point bushings. Secure target mount assembly with four bolts, 114G5004-7, four washers AN960-616, and four nuts, AN315-6R. Follow shimming procedures outlined above for forward transmission target bracket assembly.

10. Carefully install telescope, 71-2020, and optical square, 71-5142, in alignment bracket, 71-5170. Retain optical square with cup mount clamp, 71-5142, and angle attachment, 71-2420. Secure cover on upper aperture door.

INSTALLATION OF DRIVE SYSTEM ALIGNMENT CHECKING FIXTURE - continued

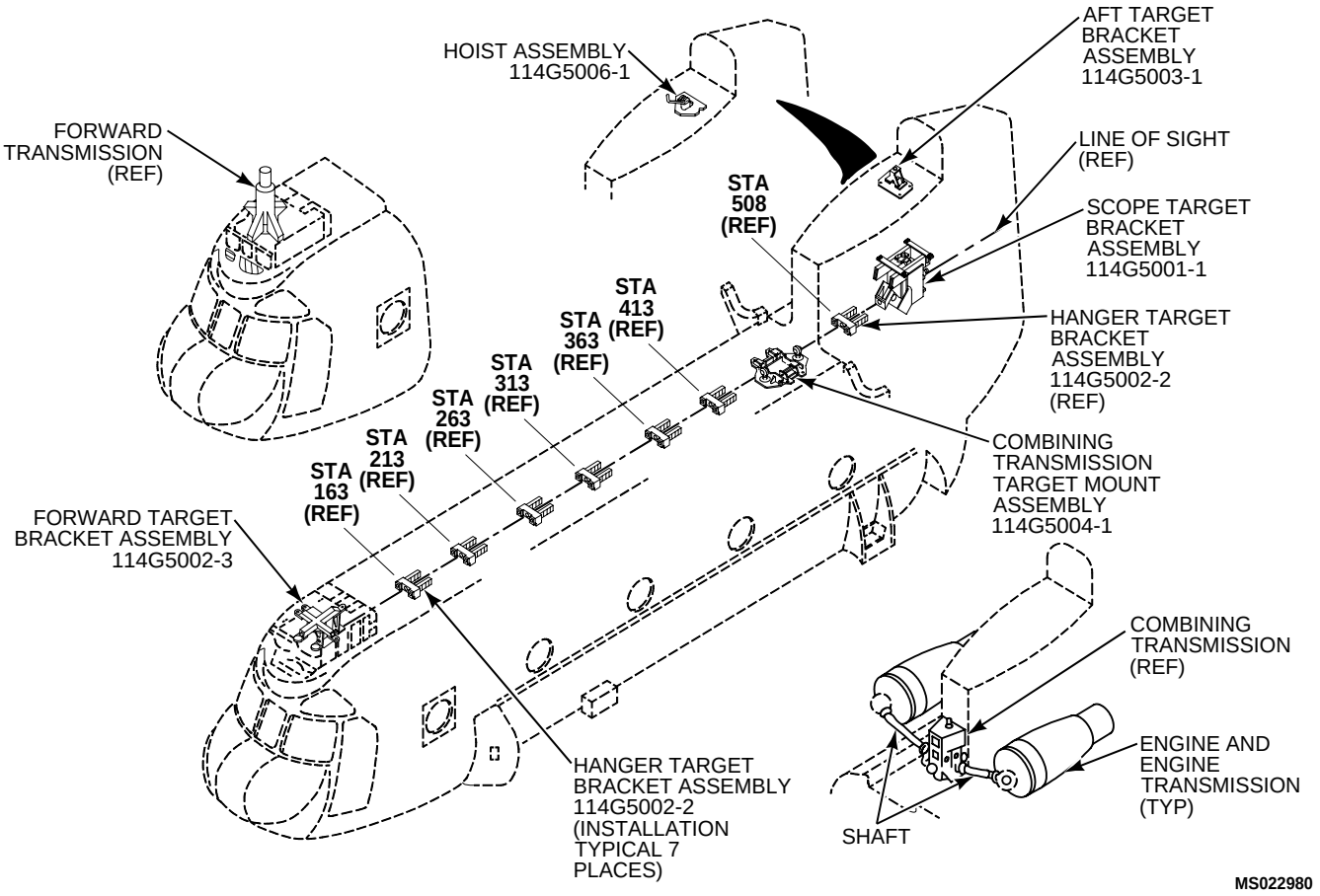


Figure 5. Fixture Installation – Main Rotor Group Alignment Check

ALIGNMENT TOLERANCES

Alignment tolerances for adjacent drive components are as follows:

1. A maximum angular misalignment of 15 minutes (1/4 degree) is permitted at: (a) all synchronizing drive shaft couplings, (b) the spline connection between aft transmission and aft rotary-wing drive shaft.

2. A maximum angular misalignment of 3.5 minutes is permitted between the lift bearing housing and the aft rotary-wing drive shaft.

3. The coupling angles between the engine drive shafts, engine transmissions, and combining transmission will vary when the drive system is in operation, but must not exceed 30 minutes (1/2 degree). No misalignment is intentionally built into the drive system except at the engine drive shafts.

4. Conversion of basic angular tolerances to more usable data is given in subsequent paragraphs.

OPTICAL ALIGNMENT CHECKING PROCEDURE

This procedure establishes a theoretical centerline, or line of sight (LOS), and determines vertical and horizontal displacement of specific coupling points, or target points, from the LOS. Refer to Figure 6. The displacement measurements are recorded on a data sheet, converted to radial displacement measurements using a radial displacement graph, and compared to a list of given values, as depicted in Figure 7. If the radial displacement for a particular location exceeds given values, the final alignment acceptability can be determined using graphical methods. Specific methods of establishing a LOS and determining target displacements are as follow:

1. Prepare an optical data sheet, Figure 7.

2. Insert an optical target assembly, 114G5005-1, in the forward position of forward target bracket assembly at sta 93.

3. Set telescope micrometer adjustments at 0. Focus telescope, and align telescope crosshairs on optical target assembly. Use only tangent screws on alignment bracket. Lock telescope in place and recheck for a 0 reading. This will establish a basic LOS. Do not disturb telescope, or remove optical target assembly, after LOS is established.

4. Install another optical target assembly, 114G5005-1, in the rear position of forward target bracket assembly, at sta 107.37. Refocus telescope, and find displacement of target from LOS. Use micrometer adjustments to shift optical flats within telescope, until crosshairs are centered on target. Read micrometer scales. Record vertical and horizontal displacement readings on optical data sheet.

NOTE

If any gaps greater than 0.020-inch exist between forward target bracket assembly and forward transmission attachment point bushings, shim as required at those points which will give smallest target reading for sta 107, and repeat steps 2, 3, and 4.

5. Remove optical target assembly from rear position of forward target bracket assembly, and reinstall it in hanger target bracket assembly at sta 163. Refocus telescope. Use micrometer adjustments to find displacement of target from LOS. Record readings on optical data sheet.

6. Remove target and hanger target bracket assembly and install them at sta 213. Find new displacement from LOS. Record readings on optical data sheet. Progressively install target and hanger target bracket assembly on each synchronizing drive shaft support. Determine displacement of target from LOS. Record readings on optical data sheet.

NOTE

Refocus telescope on target in forward position of forward target bracket assembly, sta 93, as required, to confirm validity of LOS.

7. Install an optical target assembly in spherical adapters of combining transmission target mount assembly at sta 451 and 477. Determine displacement of target from LOS. Record readings on optical data sheet.

8. Install an optical target assembly in forward target position of scope bracket assembly at sta 536. Determine displacement of target from LOS. Record readings on optical data sheet.

9. Prepare a radial displacement graph on linear graph paper. Plot location of each target. Use target readings from optical data sheet to construct plot, Figure 8. Identify each target location with its target or position number. Use a compass or dividers to find radial displacement of each target from LOS (intersection of axes). An alternate method of determining the radial displacement would be to compute the square root of the vertical reading (V) squared plus the horizontal reading (H) squared, i.e. $(V^2 + H^2)^{\frac{1}{2}}$. Record radial displacement of each target on optical data sheet. Compare these values with values in column marked maximum displacement without additional check. Any coupling whose radial displacement exceeds given

OPTICAL ALIGNMENT CHECKING PROCEDURE - continued

values must be further investigated to determine its acceptability. Refer to “Evaluation of Synchronizing Drive Shaft Alignment Data”.

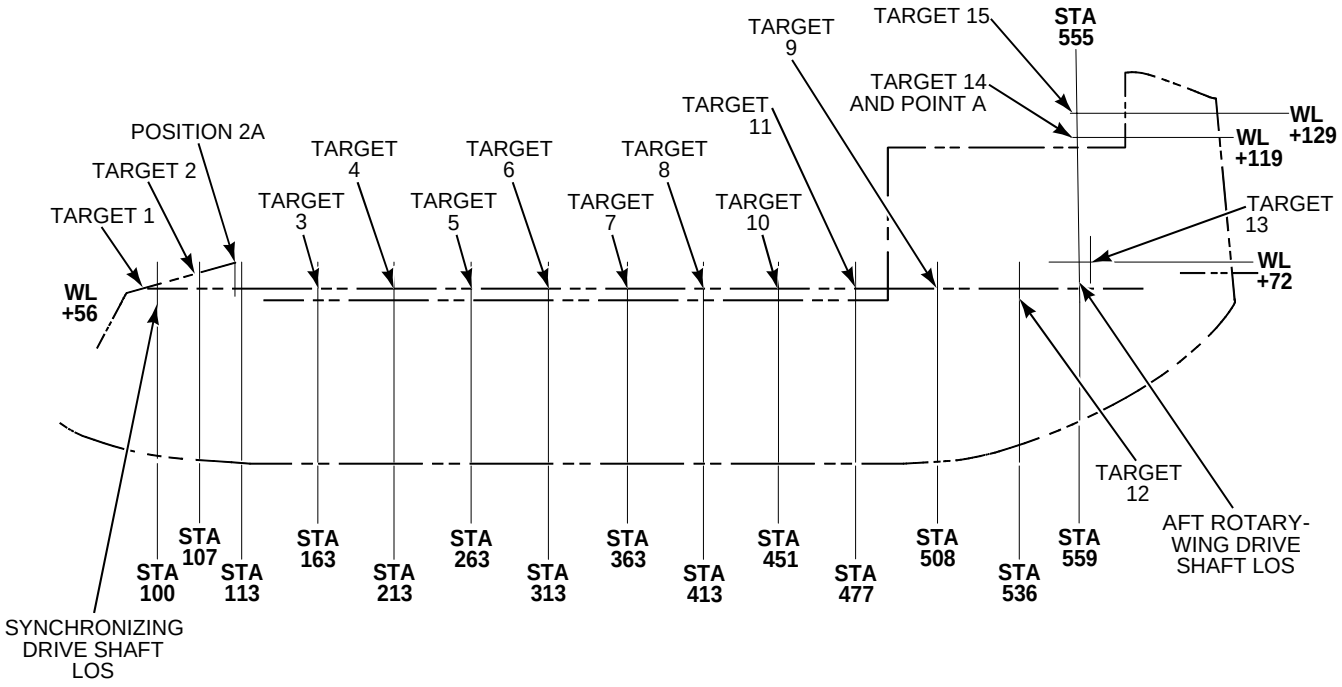
10. Remove cover from upper aperture of optical square. Close forward aperture door. Install an optical target assembly in upper position of scope bracket assembly.

11. Set telescope micrometer adjustments to 0. Align telescope crosshairs on target. Use only tangent screws. The target must be zeroed within 0.001-inch. Lock telescope and recheck target reading. This establishes a LOS for aft rotary-wing drive shaft alignment check. Do not disturb telescope after LOS is established.

12. Install a target assembly in lower position of aft target bracket assembly. Find displacement of target from LOS. Use micrometer adjustments. Record readings on optical data sheet.

13. Transfer target assembly to upper position of aft bracket assembly. Find displacement of target from LOS. Record readings on optical data sheet.

14. Use graphical computations, based on recorded target readings, to determine acceptability of aft rotary-wing shaft alignment. Refer to Evaluation of Aft Rotary-Wing Drive Shaft Alignment Data.



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NOTES

A. All dimensions are in inches.

B. Optical target station locations represent approximate centerlines of installed optical target assembly, 114G5005-1.

C. Displacement values from alignment position 2A (sta 113) must be calculated from displacement readings for Target 2. Refer to Optical Data Sheet – Main Rotor Group Alignment Check, Figure 7.

Figure 6. Optical Check Points – Main Rotor Group Alignment Check

OPTICAL ALIGNMENT CHECKING PROCEDURE - continued

MAIN ROTOR GROUP ALIGNMENT CHECK
DATA SHEET - OPTICAL ALIGNMENT

AIRCRAFT SERIAL NO. _____ DATE: _____ NAME(S) _____

TARGET OR POSITION NUMBER	STATION LOCATION	VERTICAL READING INDICATE "HIGH" OR "LOW"	HORIZONTAL READING INDICATE "LEFT" OR "RIGHT"	RADIAL DISPLACEMENT FROM LOS	MAX DISPLACEMENT WITHOUT ADDITIONAL CHECK	ACTUAL DISTANCE POINT E TO COUPLING	MAXIMUM DISTANCE POINT E TO COUPLING
1	93	0	0	0	---		---
2	107				0.037		---
2A	113				0.048		0.218
3	163				0.055		0.218
4	213				0.055		0.218
5	263				0.055		0.218
6	313				0.055		0.218
7	363				0.055		0.218
8	413				0.055		0.168
9	508				0.030		0.121
10	451				0.028		0.111
11	477				0.028		0.135
12	536				0.030		0.103
13	559	0	0	0	0		---
14	555						
15	555						

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NOTES

A. All dimensions are in inches.

B. Target or position numbers correspond to those shown on Figure 6.

C. Station locations represent approximate centerline of optical target assembly.

D. Compute vertical and horizontal readings from position 2A (sta 113) by multiplying the vertical and horizontal readings for Target 2 (sta 107) as follows:

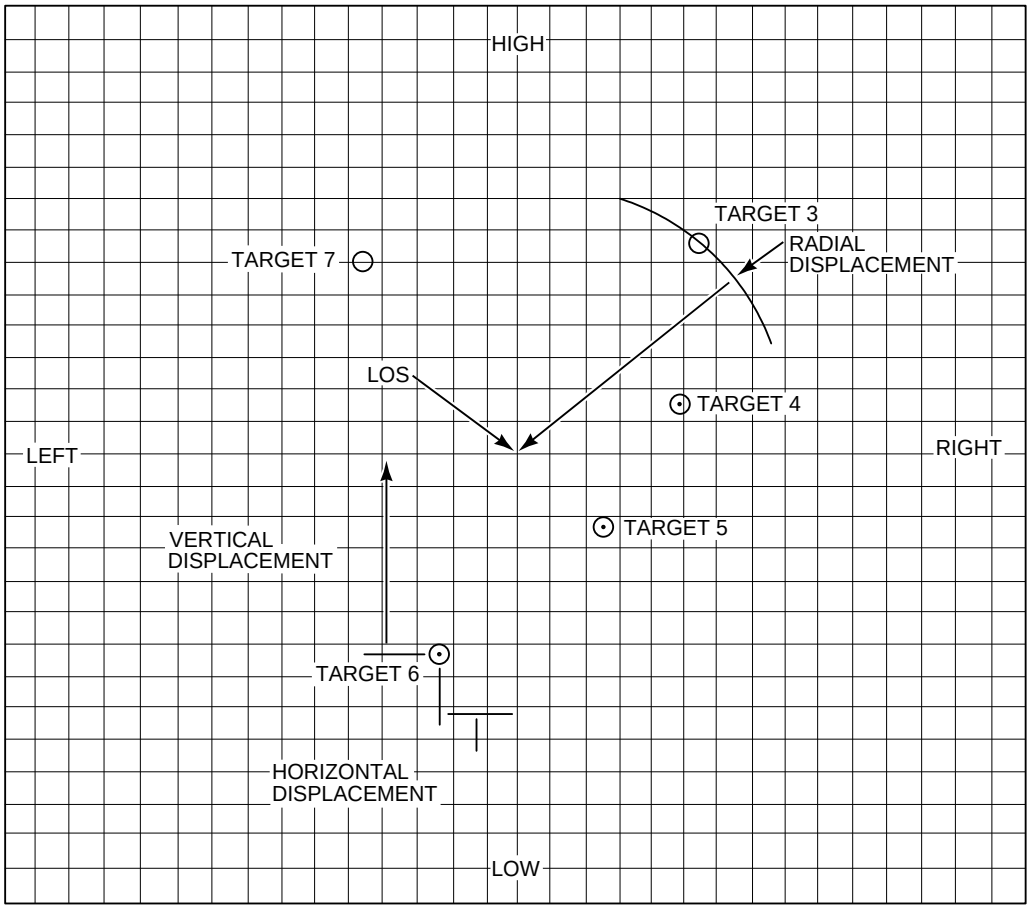
Target 2 vertical x 1.30 = Target 2A vertical
Target 2 horizontal x 1.30 = Target 2A horizontal

E. Vertical readings for Targets 14 and 15 should be marked “forward” or “aft”.

Figure 7. Optical Data Sheet – Main Rotor Group Alignment Check

OPTICAL ALIGNMENT CHECKING PROCEDURE - continued

RADIAL DISPLACEMENT OF SYNCHRONIZING DRIVE SHAFT TARGETS



NOTES

A. Prepare graph to the largest practical scale and use the best available materials to ensure accuracy.

B. Prepare several graphs if targets are grouped in one area.

Figure 8. Radial Displacement Graph – Main Rotor Group Alignment Check

ENGINE TO COMBINING TRANSMISSION ALIGNMENT

Aircraft with 145D3504 one piece cross shafts and aft adjustable engine support mounts installed do not require engine to combining transmission alignment as described below unless extensive repairs are made in the vicinity of the engine installation or proper alignment is suspect. The link is adjusted to set engine cross shaft alignment at the time of incorporation of MWO 1-1520-240-50-60. The adjustment fixtures are unique and are not interchangeable. This preserves the proper link length measurement for each engine should the link need to be replaced or adjusted. During engine installation, insure that the correct adjustable link is installed. Each adjustable link center body is vibroetched with helicopter tail number, link's length in inches to three decimal places, and engine number. Link length can be checked using the engine aft link adjustment fixture on each side of the aircraft. Link data should also be checked with aircraft records. During overhaul it is recommended that

ENGINE TO COMBINING TRANSMISSION ALIGNMENT - continued

the alignment be verified using dial indicator procedures below. If alignment cannot be verified, or is found to be outside of limits, a complete alignment must be performed.

Summary

This complete alignment procedure is for aircraft with 145D3504 one piece cross shafts and aft adjustable engine support mounts installed. The mounts are first adjusted to nominal to bring shaft alignment into desired range. Alignment is then checked, using the dial indicator method, at both the engine and combining transmission coupling ends; one side of the aircraft at a time. If the alignment is unsatisfactory the link will be adjusted up or down, using Figure 10, Sheet 2 of 2 as a guide to the correct amount of link center body turns. The dial indicator will be closely observed during the adjustment to ensure proper alignment limits are achieved. Refer to Figure 10, Sheet 1 of 2. When the desired alignment is accomplished, tighten, torque, and lockwire the link jam nuts.

Support Link Adjustment Procedures

NOTE

Micrometer 436R17 is the preferred measuring tool for setting nominal length of the links. However, vernier caliper GGG-C-111 is an acceptable alternate.

1. Adjust links to the following nominal lengths. Measurement is made between the flats on each rod end.

Left Engine (No. 1)	6.360-inches, plus or minus 0.010-inch
Right Engine (No. 2)	6.430-inches, plus or minus 0.010-inch

2. Begin adjustment by loosening the two jam nuts on the support. Turn them to the right until they bottom out against the rod ends. With the link installed and the “UP” arrow pointing up, adjust the link by turning the center body to the left to lengthen or to the right to shorten.

CAUTION

If a 0.063-inch drill (No. 50) enters the turn buckle cavity when inserted in the inspection hole, the maximum allowable link length will have been exceeded. Do not adjust past this point.

3. When the correct length is achieved, tighten jam nuts by turning them toward the left, insuring the center body does not turn, and that the keys on the lock washers are aligned with the slots in the center body.

Cross Shaft Alignment

NOTE

Starett dial indicator, PN 196B1, NSN 5210-00-203-9354, is the preferred measuring device. This indicator must be modified for one piece cross shaft alignment. Refer to Figure 1, MWO 1-1520-240-50-60 for indicator modification instructions and procedures for manufacture of dial indicator holder, TD 1007-301. Use screw NAS 603-8 or equivalent for retention screw.

Perform the following cross shaft alignment to one side of the aircraft at a time, starting with the right hand side (No.2 engine).

1. Install the dial indicator holder under the plate pack coupling nut of the bolt attached to the engine transmission steel adapter. Refer to Figure 9, Sheet 1 and Sheet 2.

ENGINE TO COMBINING TRANSMISSION ALIGNMENT - continued

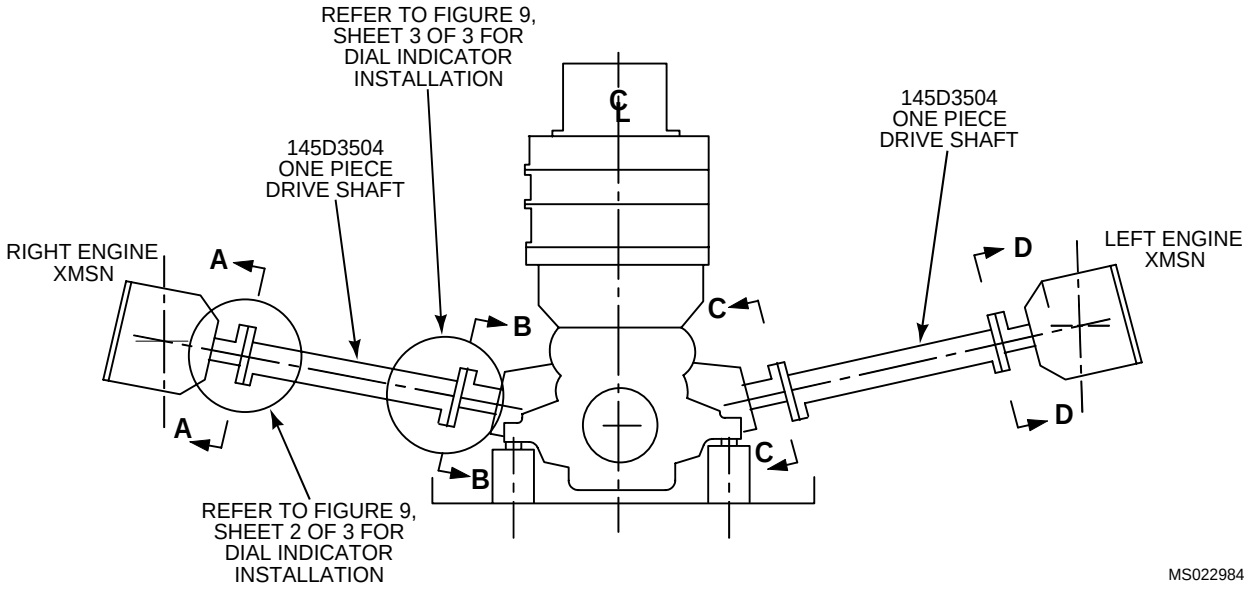


Figure 9. Engine to Combining Transmission Alignment (Sheet 1 of 3)

ENGINE TO COMBINING TRANSMISSION ALIGNMENT - continued

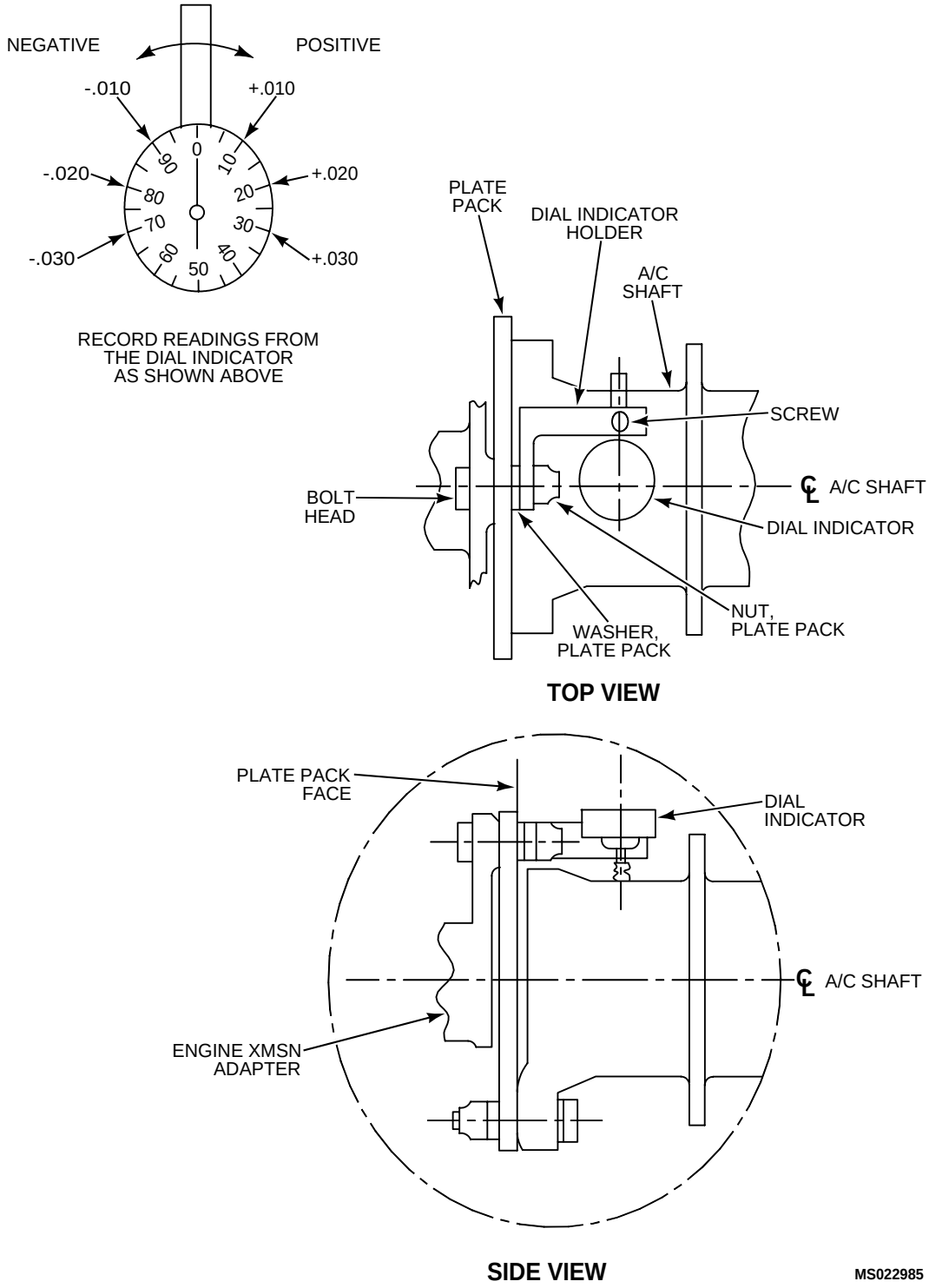


Figure 9. Engine to Combining Transmission Alignment (Sheet 2 of 3)

ENGINE TO COMBINING TRANSMISSION ALIGNMENT – continued

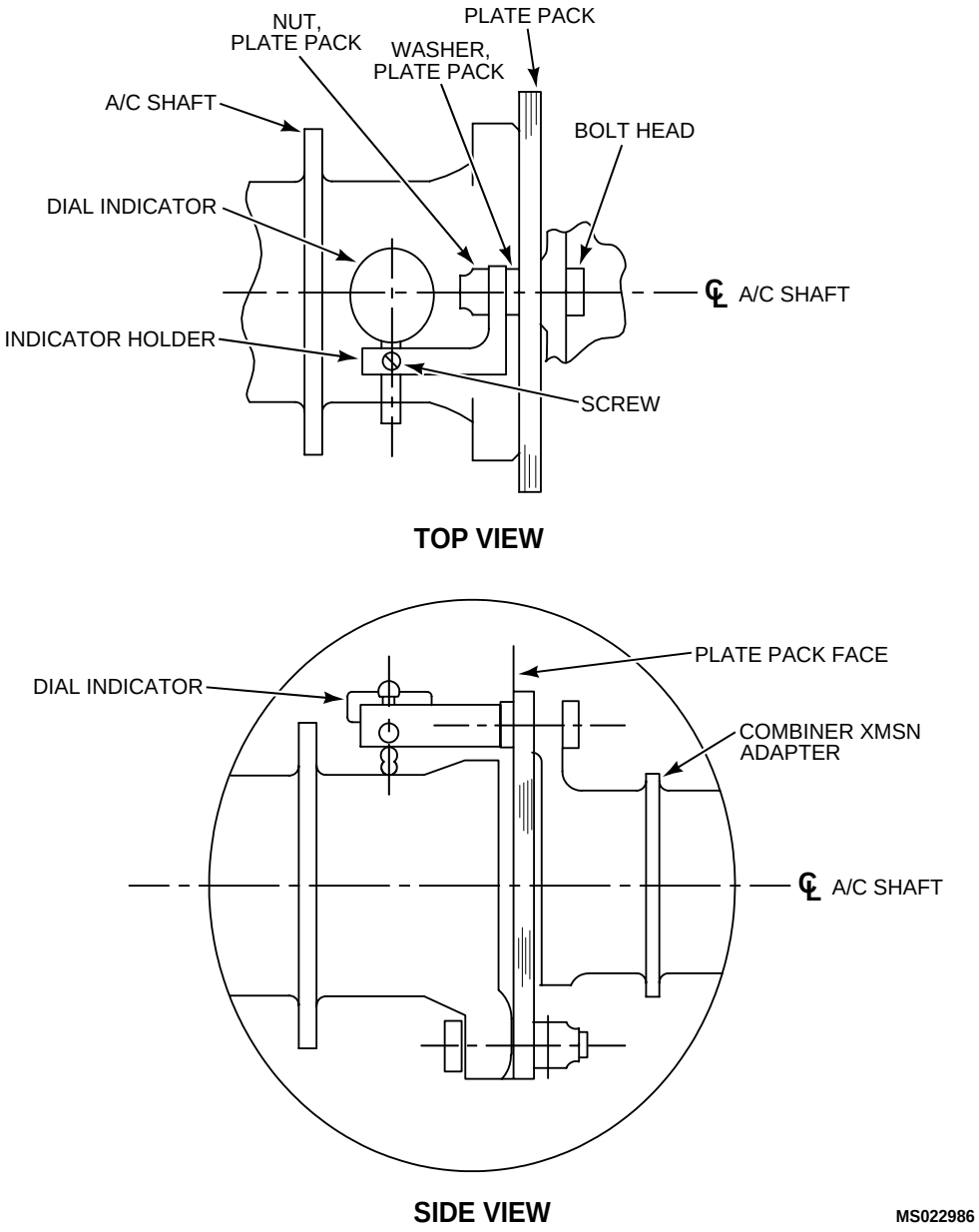


Figure 9. Engine to Combining Transmission Alignment (Sheet 3 of 3)

WARNING

The adapter, plate pack, and three bolts form part of a balanced assembly and only one bolt and nut may be loosened at one time. If more than one bolt is loosened at a time, the adapter assembly must be replaced.

2. Install the dial indicator in the holder as shown in Figure 9, Sheet 2, and tighten the screw in the holder. Check the holder from the side and top to see that the dial indicator is not angled. The indicator plunger should be parallel to the plate pack face and pointing at the theoretical center of the shaft. Check the

ENGINE TO COMBINING TRANSMISSION ALIGNMENT – continued

remaining indicator travel by lifting the dial indicator plunger with your fingernail. It should read 0.070 to 0.120-inch (0.100-inch is one complete revolution of the dial indicator hand).

3. Slowly rotate the cross shaft observing whether the dial indicator clears the surrounding hoses and clamps. It is important that the dial indicator or holder not contact surrounding components as erroneous readings may result. Push interfering hoses and hose clamps out of the way to assure clearance.

4. Rotate cross shaft until the dial indicator is positioned at the 12 o'clock (top) position. Set zero on the dial indicator with the shaft in this position.

5. Rotate shaft ¼ revolution to the 3 o'clock position and read the indicator using the convention shown in Figure 9, Sheet 2. Record the shaft position and dial indicator reading on a copy of data sheet depicted by Figure 10, Sheet 1.

NOTE

The engine transmission adapter clock positions are identified by looking outboard. A hand held mirror may be required to view the dial indicator at some shaft positions.

6. Perform step 5 above at 6, 9 and 12 o'clock shaft rotation positions. Record readings. The 12 o'clock reading should repeat zero setting within 0.001-inch. If it is not zero, repeat steps 4, 5,and 6.

7. Without removing the engine transmission dial indicator setup, install another dial indicator holder under the plate pack coupling nut of the bolt attached to the combiner transmission steel adapter. Refer to Figure 9, Sheet 1 and Sheet 3.

WARNING

The adapter, plate pack, and three bolts form part of a balanced assembly and only one bolt and nut may be loosed at one time. If more than one bolt is loosened at a time, the adapter assembly must be replaced.

8. Install another dial indicator in this holder and tighten the screw in the holder. Refer to Figure 9, Sheet 3. Check the holder, dial indicator position, and plunger travel per step 2.

9. Take readings at the combiner end of the shaft per step 3 thru step 6.

NOTE

The combiner transmission adapter clock positions are identified by looking inboard. An inspection mirror is required to view dial indicator at certain shaft positions.

10. Check readings against the minimum and maximum values allowed in Figure 10, Sheet 2. If readings are satisfactory proceed to step 11. If any measurements deviate outside the values allowed in Figure 10, Sheet 2, correct them by adjusting the length of the support. Refer to support link adjustment procedures above. Refer to Figure 10, Sheet 3, as a guide to the proper amount of center body turns needed to achieve a desired link length that will correct the misalignment on both the engine and combiner shaft ends. Recheck cross shaft alignment per steps 4, 5 and 6 and repeat procedures until measurements are within allowable limits. If the range of link lengths is not sufficient to bring cross shaft alignment into tolerance, contact AMCOM Engineering.

11. Remove support mount from the aircraft. Measure link from end to end between the jam nut flats to three decimal places and record dimensions on the helicopter DA Form 2408-15. Vibroetch link centerbody, and torque, torque stripe, and lockwire jam nuts. Refer to TM 55-1520-240-23.

ENGINE TO COMBINING TRANSMISSION ALIGNMENT – continued

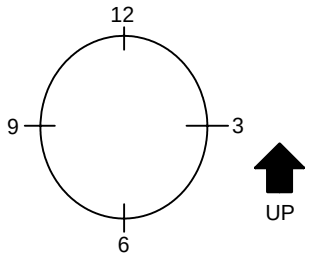
12. The adjustment link should now be used to relocate one of the P-51001 fittings. Refer to MWO 1-1520-240-50-60. In the future, if a replacement link is required, these fittings will be used to determine it correct length for proper cross shaft alignment.

13. Reinstall adjustable link on aircraft and recheck cross shaft alignment per steps 4, 5, and 6 to insure the length of the link has not changed.

14. Remove, one at a time, the dial indicators and holders and install the plate pack nuts, both sides of the aircraft. Refer to MWO 1-1520-240-50-60.

ENGINE TO COMBINING TRANSMISSION ALIGNMENT – continued

LOCATION	CLOCK POSITION	PERMISSIBLE READINGS (Inches)		RECORD READING (GIVE + OR -)
A-A RIGHT HAND ENGINE		MINIMUM	MAXIMUM	
	12	SET INDICATOR TO ZERO		
	3 (REF)	-.006	+.008	
	6	-.004	+.010	
	9 (REF)	-.006	+.008	
B-B RIGHT HAND COMBINER	12	SET INDICATOR TO ZERO		
	3 (REF)	+.005	-.010	
	6	-.002	-.010	
	9 (REF)	+.005	-.010	
C-C LEFT HAND COMBINER	12	SET INDICATOR TO ZERO		
	3 (REF)	-.005	+.010	
	6	+.001	+.010	
	9 (REF)	-.005	+.010	
D-D LEFT HAND ENGINE	12	SET INDICATOR TO ZERO		
	3 (REF)	-.008	+.006	
	6	-.013	+.007	
	9 (REF)	-.008	+.006	



CLOCK POSITIONS
TYPICAL ADAPTER

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NOTES

A. All dimensions are in inches.

B. The 3 and 9 o'clock values beyond limits are not cause for rejection but must be reported to AMCOM Engineering.

Figure 10. Engine to Combining Transmission Alignment – Dial Indicator Readings (Sheet 1 of 2)

ENGINE TO COMBINING TRANSMISSION ALIGNMENT – continued

LINK ADJUSTMENT (Shorten/Lengthen)	REVOLUTIONS OF CENTER BODY (Turns)	CHANGE IN LENGTH OF LINK (Inches)	APPROXIMATE CHANGE IN DIAL INDICATOR READING (Inches)	
SHORTEN	2 Turns	-.22	+.019	-.019
	1-1/2 Turns	-.17	+.014	-.014
	1 Turn	-.11	+.009	-.009
	¾ Turn	-.08	+.007	-.007
	½ Turn	-.06	+.005	-.005
	¼ Turn	-.03	+.002	-.002
LENGTHEN	¼ Turn	+.03	-.002	+.002
	½ Turn	+.06	-.005	+.005
	¾ Turn	+.08	-.007	+.007
	1 Turn	+.11	-.009	+.009
	1-1/2 Turns	+.17	-.014	+.014
	2 Turns	+.22	-.019	+.019

NOTE

All dimensions are in inches.

Figure 10. Engine to Combining Transmission Alignment – Link Adjustment (Sheet 2 of 2)

EVALUATION OF SYNCHRONIZING DRIVE SHAFT ALIGNMENT DATA

Procedures for determining acceptability of alignment of synchronizing drive shaft couplings and related couplings, which have target displacements in excess of the values in the column marked maximum displacement without additional check, are as follow (Refer to Figure 7):

1. Prepare an evaluation chart for each coupling in question. Carefully plot target location using vertical and horizontal displacement readings from mechanical data sheet. Identify target point with its target number. Prepare evaluation chart on linear graph paper. Refer to Figure 11.

2. Plot on the same evaluation chart the location of coupling just forward (having next smaller target number) of the one being evaluated. Identify this point with its target number.

3. Connect the two target points with a straight line. Extend line beyond target point having largest target number.

ENGINE TO COMBINING TRANSMISSION ALIGNMENT – continued

4. Using a compass or dividers, transfer distance between two target points to horizontal scale (projected distance between target points) of synchronizing drive shaft proportion chart. Refer to Figure 12. Plot projected distance on horizontal scale.

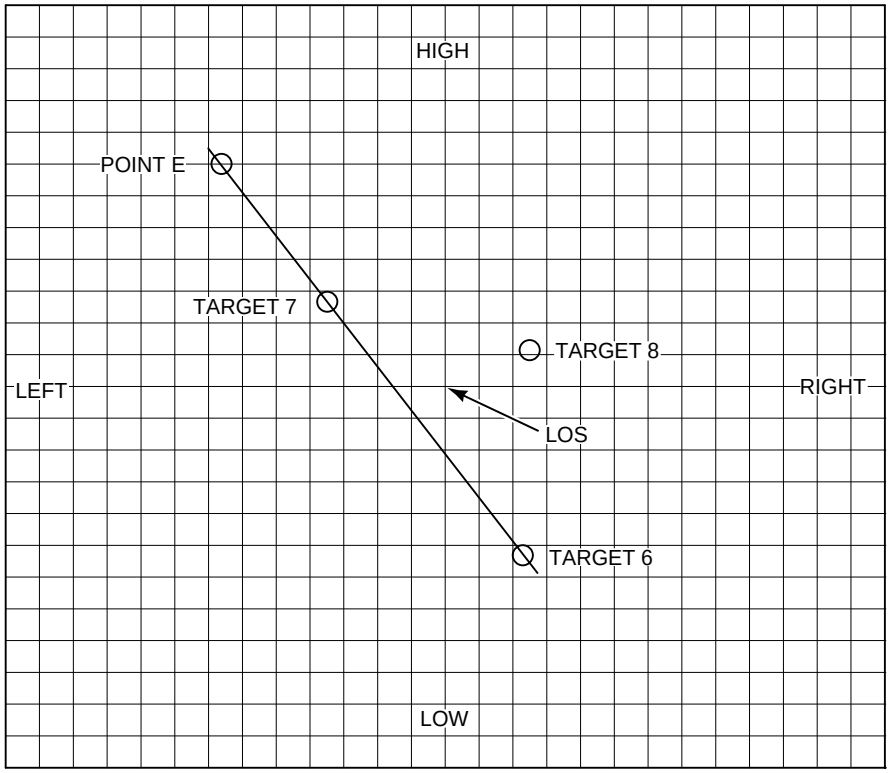
5. Find vertical distance on proportion chart (extension length) from point plotted in step 4 to diagonal line having same target number as target location in question.

6. Make extension of line connecting targets (step 3) equal in length to vertical distance (step 5) found on synchronizing drive shaft proportional chart. Identify end of lines as point E.

7. Plot on a graph the location of coupling just aft (having next larger target number) of one being investigated. Identify this point with its coupling number.

8. Measure straight-line distance between point E and coupling point plotted in step 7. Record this distance on data sheet, Figure 7, in column actual distance, point E to coupling.

9. Compare distance with value found on data sheet in column maximum distance, point E to coupling. If actual distance exceeds maximum distance, structure must be reworked.



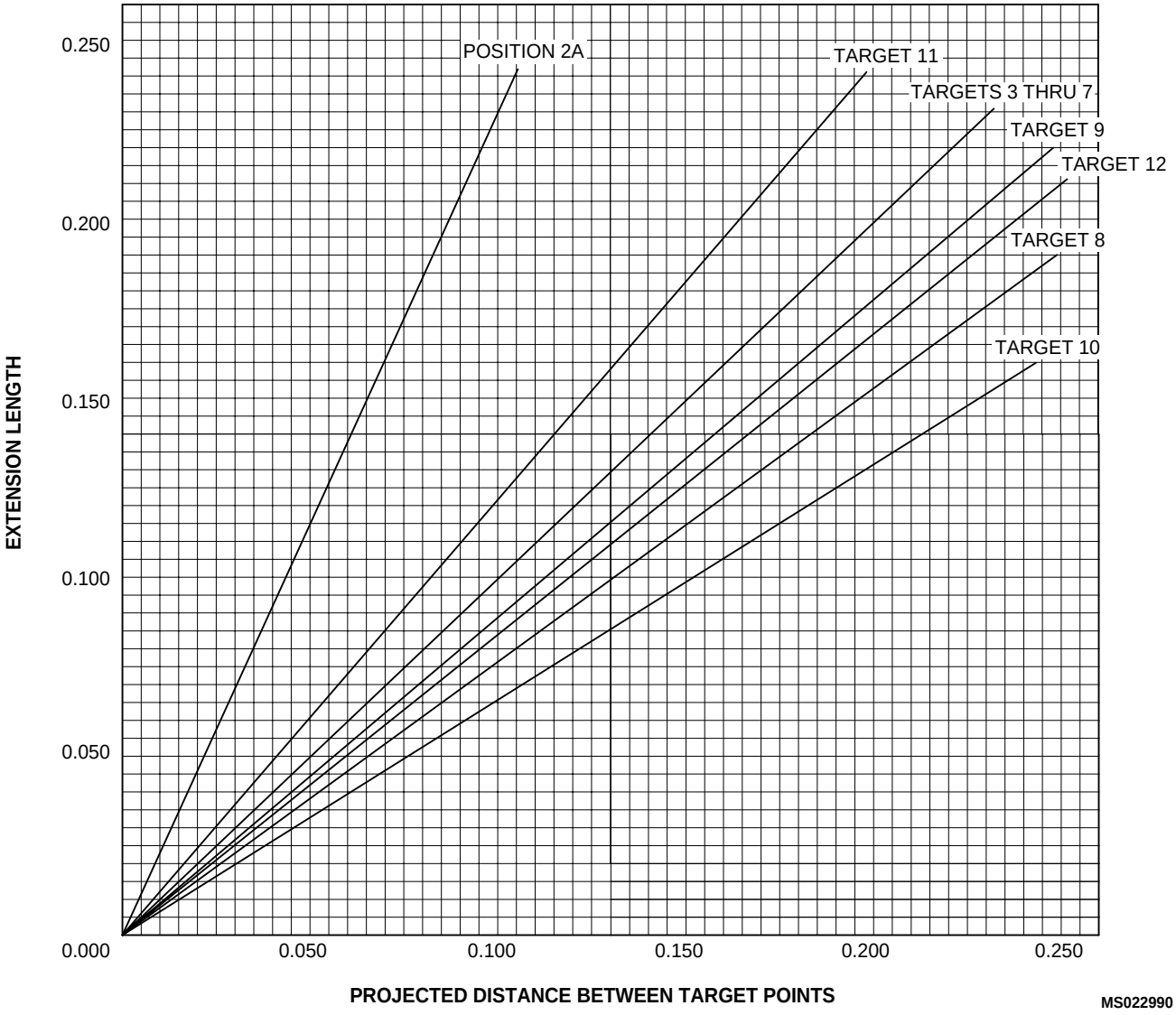
NOTES

A. Prepare chart to the largest practical scale, using the best available materials, to ensure accuracy.

B. This chart illustrates an evaluation of Target Position 7. The distance from point E to Target Point 8 is the “Actual Distance Point E to Coupling” to be entered on the data sheet.

Figure 11. Evaluation Chart – Synchronizing Drive Shaft Alignment Check

ENGINE TO COMBINING TRANSMISSION ALIGNMENT – continued



NOTE

All dimensions are in inches.

Figure 12. Proportion Chart – Synchronizing Drive Shaft Alignment Check

EVALUATION OF AFT ROTARY-WING DRIVE SHAFT ALIGNMENT DATA

Procedures for determining acceptability of alignment of aft rotary-wing drive shaft attach points are as follow:

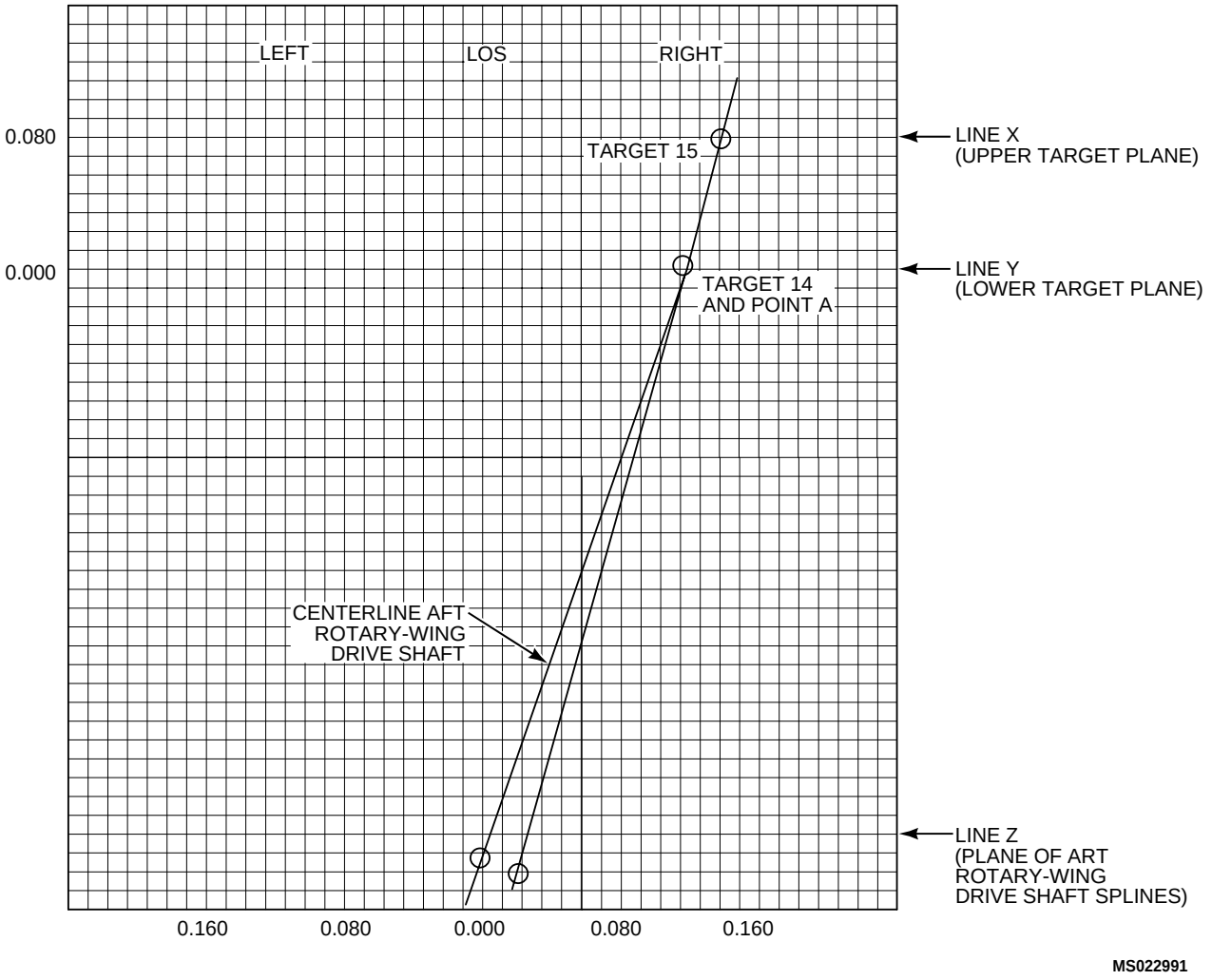
NOTE

The maximum permissible angle (15 minutes) at spline connection between aft transmission and aft rotary-wing drive shaft converts to a 0.206-inch radial displacement from theoretical centerline at lower target (lift bearing) position of aircraft target bracket assembly. The 3.5 minutes squareness tolerance, between lift bearing housing and aft rotary wing drive shaft, converts to a 0.045-inch radial displacement from the theoretical centerline at spline position.

1. Prepare three large evaluation charts on linear graph paper. Refer to Figures 13, 14, and 15.
2. Plot left or right reading for Target 15 (upper target position of aft target bracket assembly) on Line X of Evaluation Chart I, Figure 13.
3. Plot left or right reading for Target 14 and Point A (lower target position of aft target bracket assembly) on Line Y of Evaluation Chart I, Figure 13.
4. Connect points plotted in steps 2 and 3 with a straight line. Extend line through Line Z.
5. Identify intersection of line drawn in step 4 and Line X as Target 15.
6. Identify intersection of line drawn in step 4 and Line Y as Target 14 and Point A.
7. Identify intersection of line drawn in step 4 and Line Z as Point Tx.
8. Construct a dotted line, which passes through both Point A, and intersection of Line Z and LOS line. Identify line as Centerline Aft Rotary-Wing Drive Shaft.
9. Plot forward or aft reading for Target 15 (upper target position of aft target bracket assembly) on Line X of Evaluation Chart II, Figure 14.
10. Plot forward or aft reading for Target 14 and Point A (lower target position of aft target bracket assembly) on Line Y of Evaluation Chart II, Figure 14.
11. Connect points plotted in steps 9 and 10 with a straight line. Extend line through Line Z.
12. Identify intersection of line drawn in step 11 and Line X, as Target 15.
13. Identify intersection of line drawn in step 11 and Line Y, as Target 14 and Point A.
14. Identify intersection of line drawn in step 11 and Line Z, as Point Ty.
15. Construct a dotted line, which passes through both Point A, and intersection of line Z and LOS line. Identify line as Centerline Aft Rotary-Wing Drive Shaft.
16. Plot location of Target 15 (upper target position of target bracket assembly) on Evaluation Chart III, Figure 15. Use target readings from Optical Data Sheet.
17. Plot location of Target 14 and Point A (lower target position of aft target bracket assembly) on Evaluation Chart III. Use target readings from Optical Data Sheet.
18. Plot location of a Point T on Evaluation Chart III, Figure 15. Use the values Tx and Ty from Evaluation Charts I (Figure 13) and II (Figure 14) respectively.
19. Point A must lie within the 0.206 inch radius circle on Evaluation Chart III, Figure 15. If Point A does not lie within the 0.206 inch radius circle, the lift bearing assembly attach points must be relocated.

EVALUATION OF AFT ROTARY-WING DRIVE SHAFT ALIGNMENT DATA - continued

20. Point T must lie within the 0.045 inch radius circle on Evaluation Chart III, Figure 15. If Point T does not lie within 0.045 inch radius circle, the flange thickness of attach point bushings for lift bearing housing must be altered.

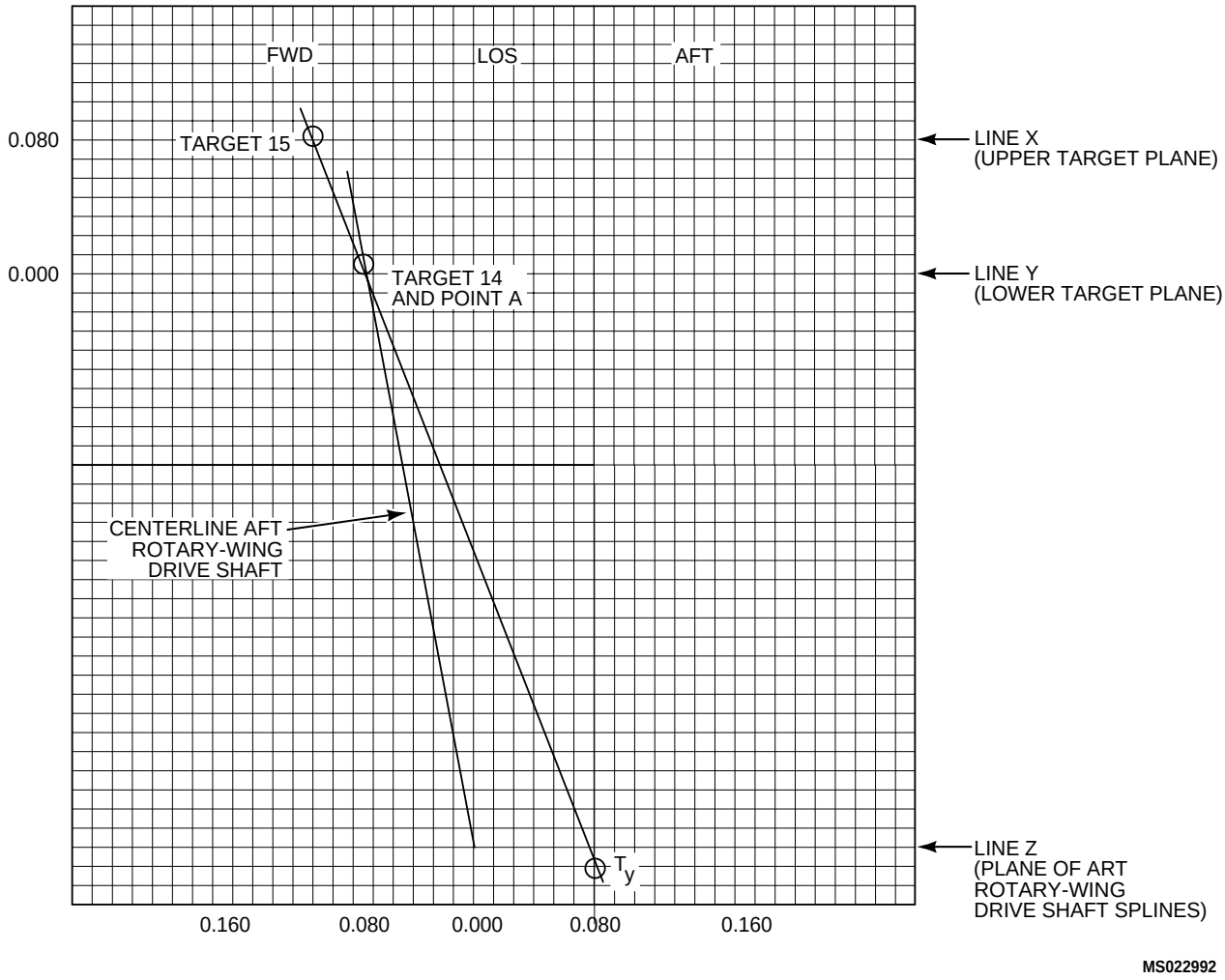


NOTE

All dimensions are in inches.

Figure 13. Evaluation Chart I – Aft Rotary Wing Drive Shaft Alignment Check

EVALUATION OF AFT ROTARY-WING DRIVE SHAFT ALIGNMENT DATA – continued

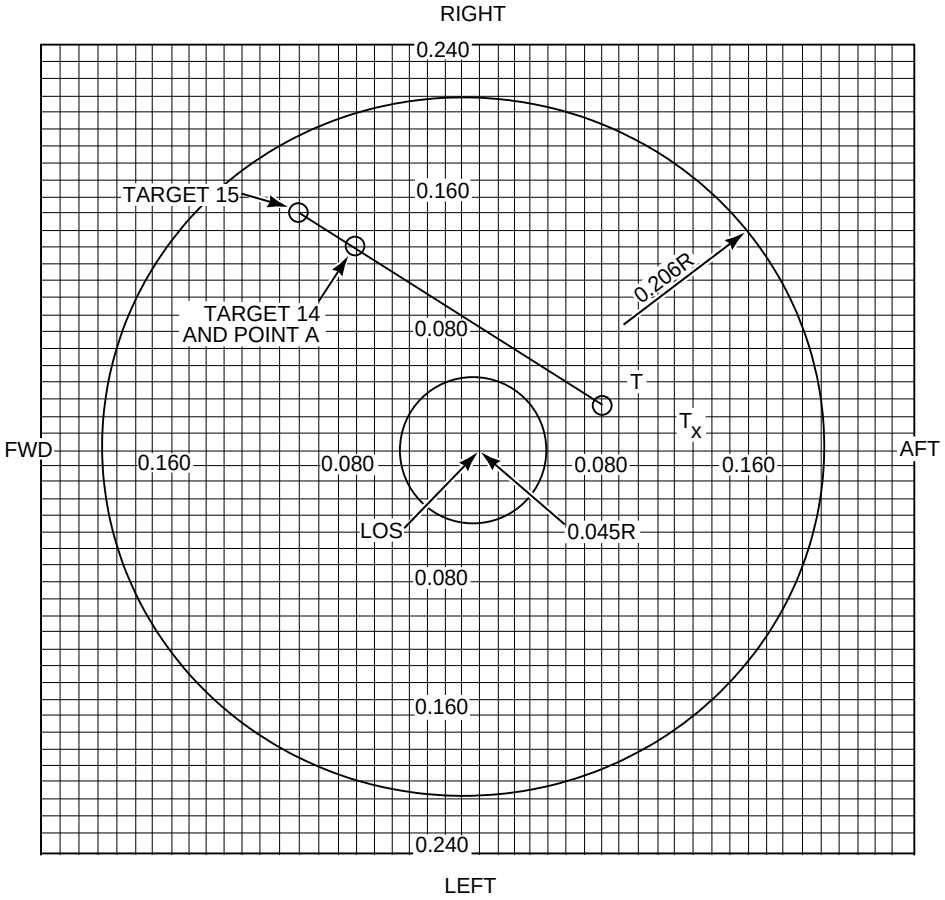


NOTE

All dimensions are in inches.

Figure 14. Evaluation Chart II – Aft Rotary Wing Drive Shaft Alignment Check

EVALUATION OF AFT ROTARY-WING DRIVE SHAFT ALIGNMENT DATA – continued



NOTE

All dimensions are in inches.

Figure 15. Evaluation Chart III – Aft Rotary Wing Drive Shaft Alignment Check

ALIGHTING GEAR GROUP ALIGNMENT CHECK

Check alignment of alighting gear group as follows (Refer to Figure 16 and Table 1):.

1. Open rescue hatch.
2. Raise helicopter by jacking (Refer to TM 55-1520-240-23).
3. Remove forward and aft landing gear.
4. Level helicopter longitudinally and laterally.
5. Suspend a plumb bob so that it just clears floor (ground) from any one of landing gear attachment points. Allow plumb bob to become motionless.
6. Place a piece of masking tape on floor directly below plumb bob.

ALIGHTING GEAR GROUP ALIGNMENT CHECK - continued

7. Allow plumb bob to drop. Mark resultant impression on masking tape. Use a lead pencil.

8. Repeat steps 5, 6, and 7, at each landing gear attachment point.

9. Place straightedge laterally (Refer to Figure 3) on beams, each side, between sta's 320 and 340. The straightedge shall lay directly over rescue hatch opening.

10. Suspend a plumb bob from center of straightedge, through rescue hatch opening. The plumb bob should just clear floor. Allow plumb bob to become motionless.

11. Place a piece of masking tape on floor directly below plumb bob.

12. Allow plumb bob to drop. Mark resultant impression on masking tape. Use a lead pencil.

13. Extend centerline of cabin floor to end of ramp floor and suspend a plumb bob from this point. Allow plumb bob to become motionless. If ramp is not installed, extend centerline of cabin floor to end of cabin floor and suspend a plumb bob from this point.

14. Repeat steps 11 and 12.

15. Stretch a chalked line on floor beneath helicopter from a point forward of helicopter to a point aft of helicopter. Make sure chalked line intersects points established in steps 10 through 14. Snap chalked line. This will establish a line of symmetry.

16. Measure and record distances each side of line of symmetry, to points established in steps 5 thru 8. Compare recorded measurements with attachment point locations shown in Figure 16 and Table 1 to determine acceptability.

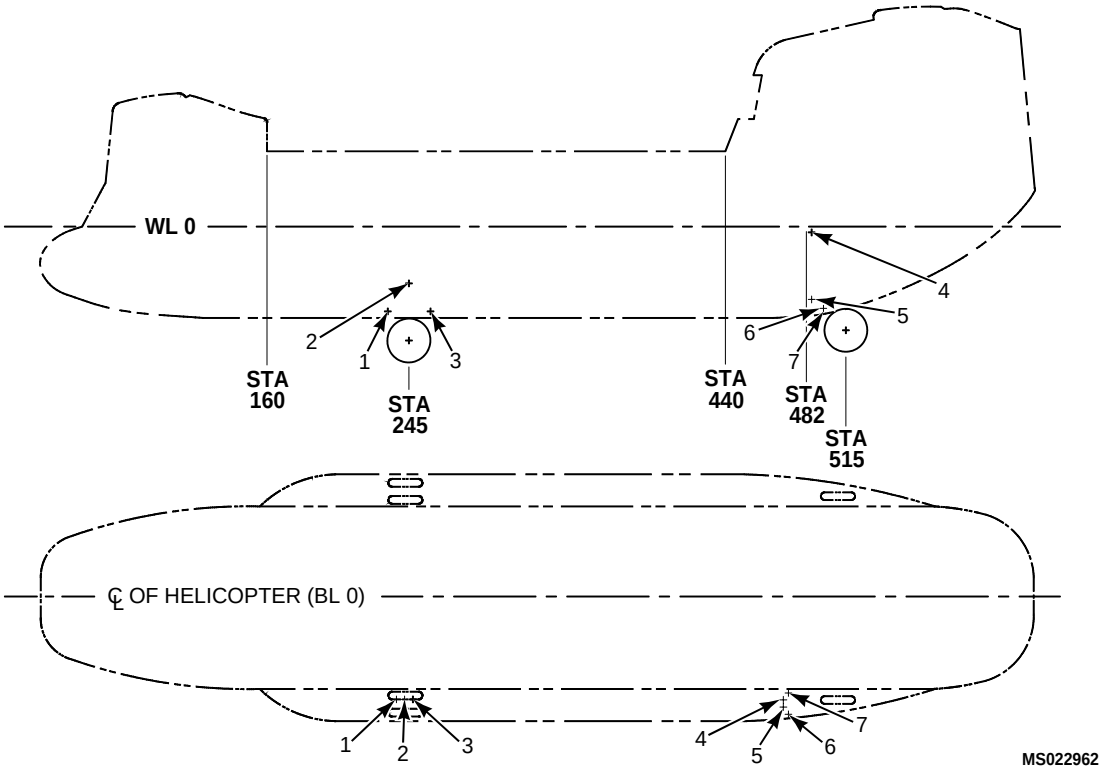


Figure 16. Alighting Gear Group Alignment

ALIGHTING GEAR GROUP ALIGNMENT CHECK - continued

Table 1. Alighting Gear Attachment Point Locations

Index No.	Attachment Point	Station	WL	BL
1	Forward Bolt	241.45	minus 40.14	60.375
2	Upper Bolt	245	minus 28.24	60.375
3	Aft Bolt	248.5	minus 40.14	60.375
4	Shock Strut Trunnion	485	minus 3	57.5
5	Drag Link Trunnion	484	minus 28.875	63
6	Drag Link Housing of Bearing	484.75	minus 36.5	66.75
7	Drag Link Housing of Bearing	484.75	minus 36.5	57.5

NOTES

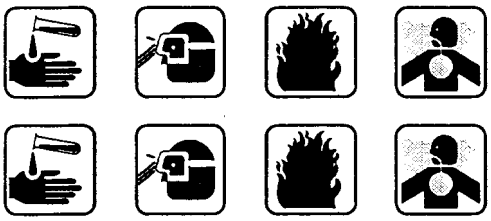
A. All dimensions are in inches.
B. All attachment point dimensions are symmetrical about centerline of helicopter.

ADDING PERMANENT SHIMS TO STRUCTURE

Forward, Aft and Combiner Transmissions

Any shims over 0.010-inch thick that were used to fill gaps under the alignment tools must be permanently affixed to the structure aft the alignment procedure is completed. Refer to Figures 17, 18, 19 and 20 for shim dimensions and method of affixing shims to structure.

WARNING



ADHESIVE

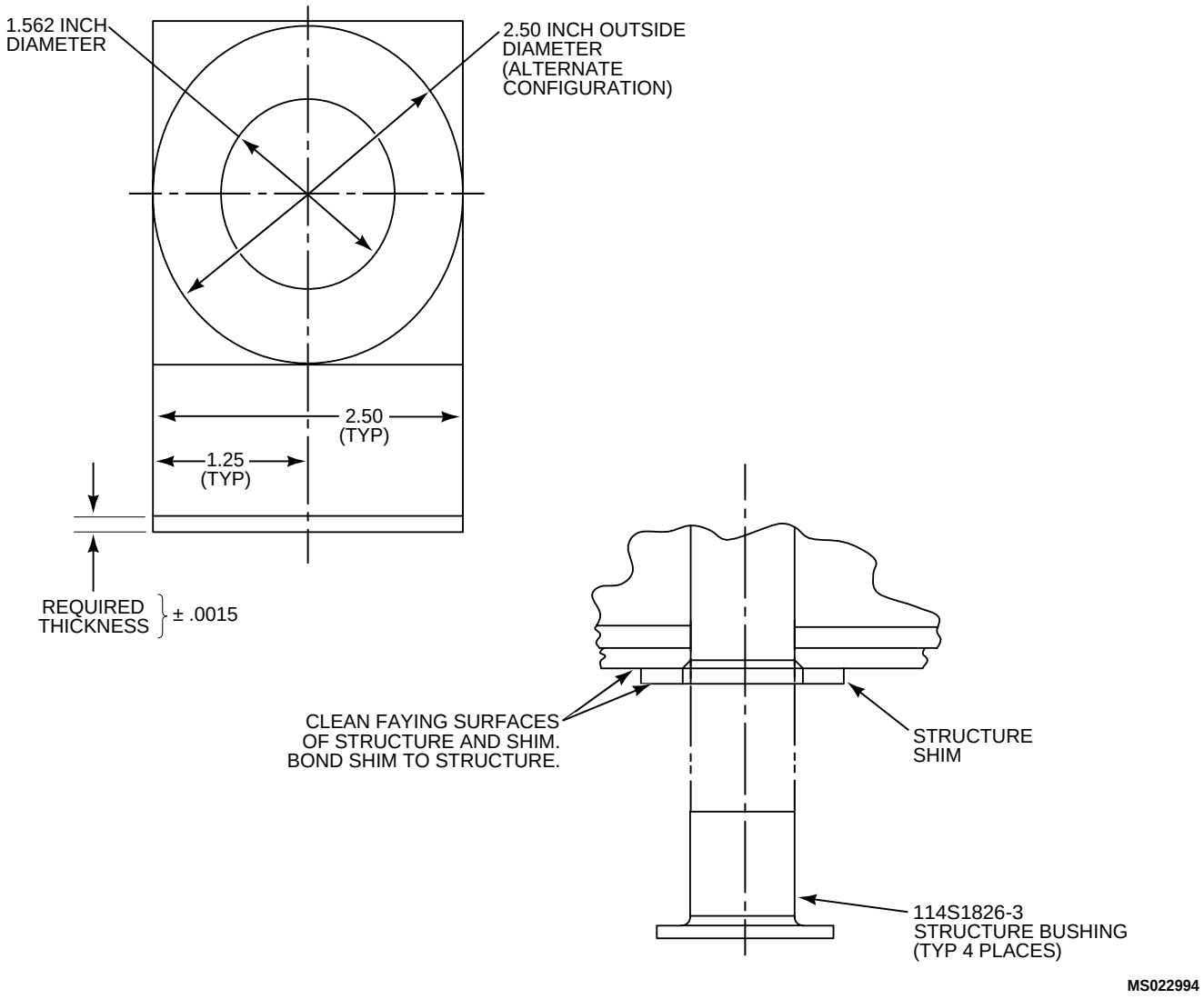
ACETONE

NOTE

The maximum thickness of shim for the forward and aft transmission is 0.050-inch thick. A minimum bolt protrusion beyond the locknut of 0.08-inch must be maintained.

The combining transmission already uses a shim at each mounting location. Any additional shim thickness must be added to the production shim thickness producing a new thicker shim. Only one shim is permitted at any one location. The minimum bolt protrusion of 0.08-inch must be maintained.

ADDING PERMANENT SHIMS TO STRUCTURE - continued

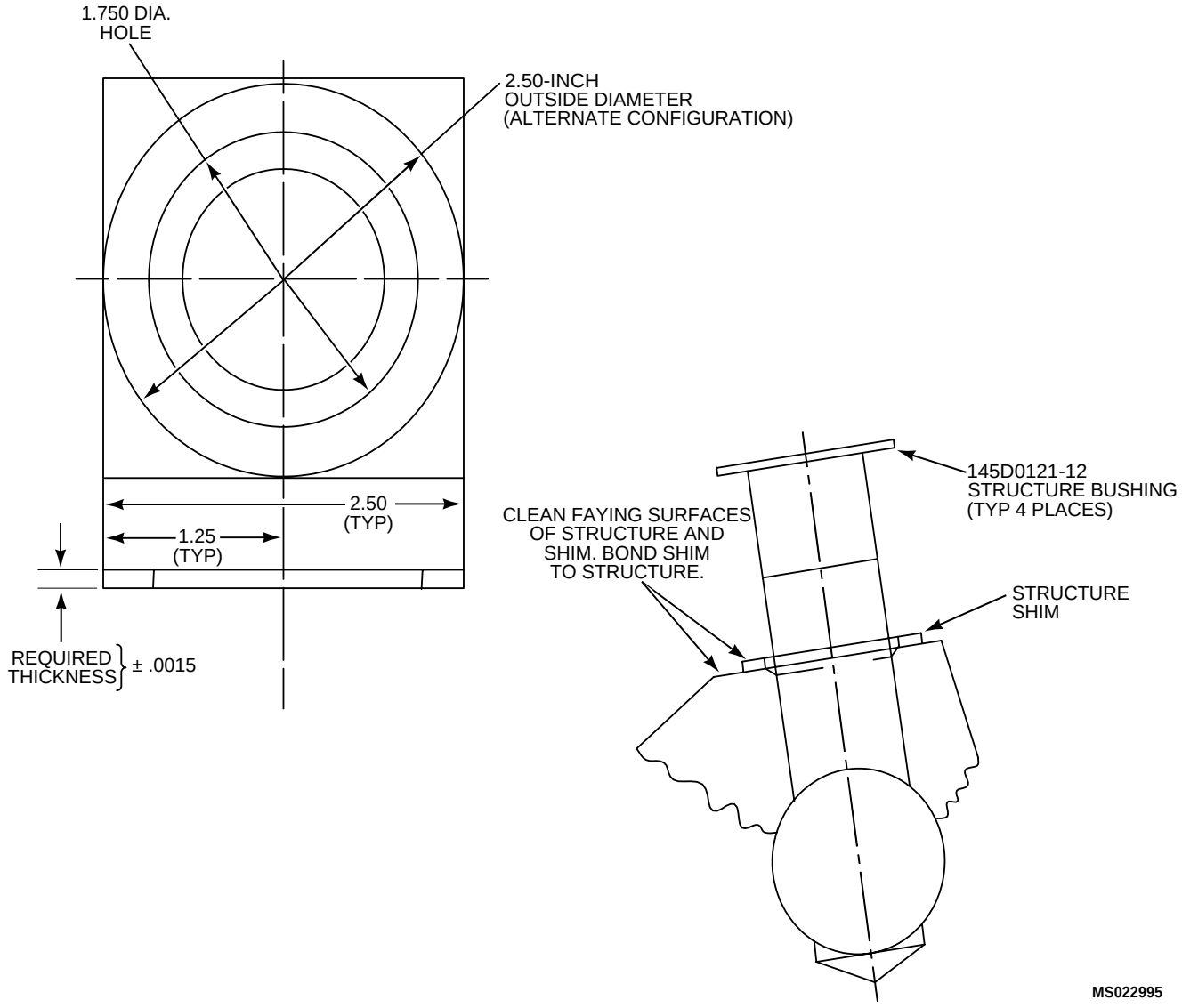


NOTES

A. All dimensions are in inches.
B. All diameters concentric within 0.010-inch diameter.
C. Machine finish to 125 µ-inch RHR.
D. Break edges 0.001 to 0.003-inch radius or chamfer.
E. Tolerance: decimals xx plus or minus 0.02-inch; decimals xxx plus or minus 0.010-inch.
F. Material: Type 301 CRES, condition ¼ or ½ hard sheet or 300 series bar.
G. Passivate per AMS-QQ-P-35.
H. Clean faying surfaces of structure and shim with abrasive pad (Item 4, WP 0157 00), and acetone (Item 20, WP 0157 00).
I. Bond shim to structure with thin coat of adhesive (Item 27, WP 0157 00) before installing structure bushing. Refer to WP 0074 00.

Figure 17. Aft Transmission Structure Shim Detail

ADDING PERMANENT SHIMS TO STRUCTURE - continued

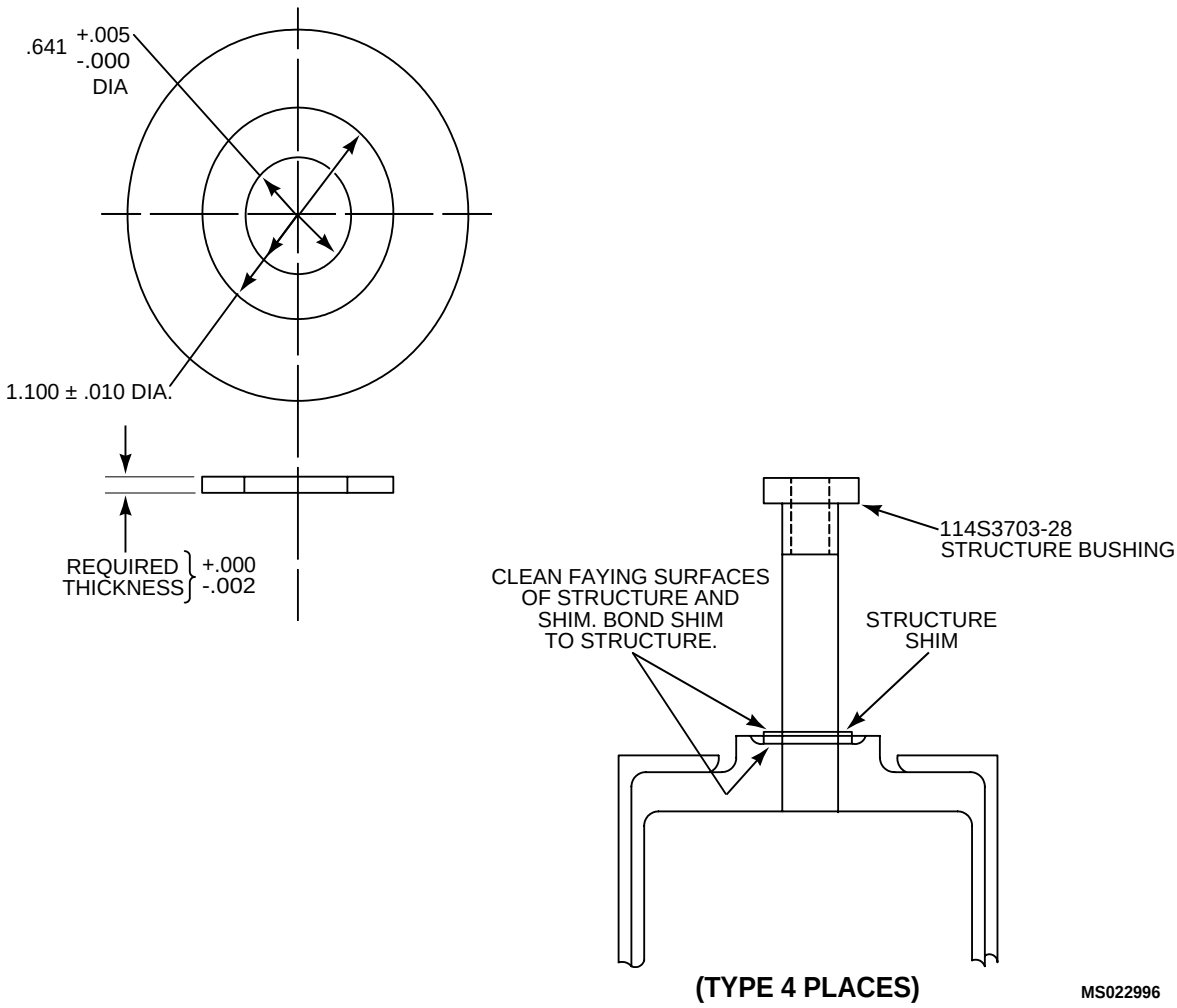


NOTES

A. All dimensions are in inches.
B. All diameters concentric within 0.010-inch diameter.
C. Machine finish to 125 µ-inch RHR.
D. Break edges 0.001 to 0.003-inch radius or chamfer.
E. Tolerance: decimals xx plus or minus 0.02-inch; decimals xxx plus or minus 0.010-inch.
F. Material: Type 301 CRES, condition ¼ or ½ hard sheet or 300 series bar.
G. Passivate per AMS-QQ-P-35.
H. Clean faying surfaces of structure and shim with abrasive pad (Item 4, WP 0157 00), and acetone (Item 20, WP 0157 00).
I. Bond shim to structure with thin coat of adhesive (Item 27, WP 0157 00). Refer to WP 0074 00.

Figure 18. Forward Transmission Structure Shim Detail

ADDING PERMANENT SHIMS TO STRUCTURE - continued



NOTES

A. All dimensions are in inches.
B. All diameters concentric within 0.010-inch diameter.
C. Machine finish to 125 µ-inch RHR.
D. Break edges 0.001 to 0.003-inch radius or chamfer.
E. Tolerance: decimals xx plus or minus 0.02-inch; decimals xxx plus or minus 0.010-inch.
F. Material: Type 301 CRES, condition ¼ or ½ hard sheet or 300 series bar.
G. Passivate per AMS-QQ-P-35.
H. Clean faying surfaces of structure and shim with abrasive pad (Item 4, WP 0157 00), and acetone (Item 20, WP 0157 00).
I. Bond shim to structure with thin coat of adhesive (Item 27, WP 0157 00). Refer to WP 0074 00.

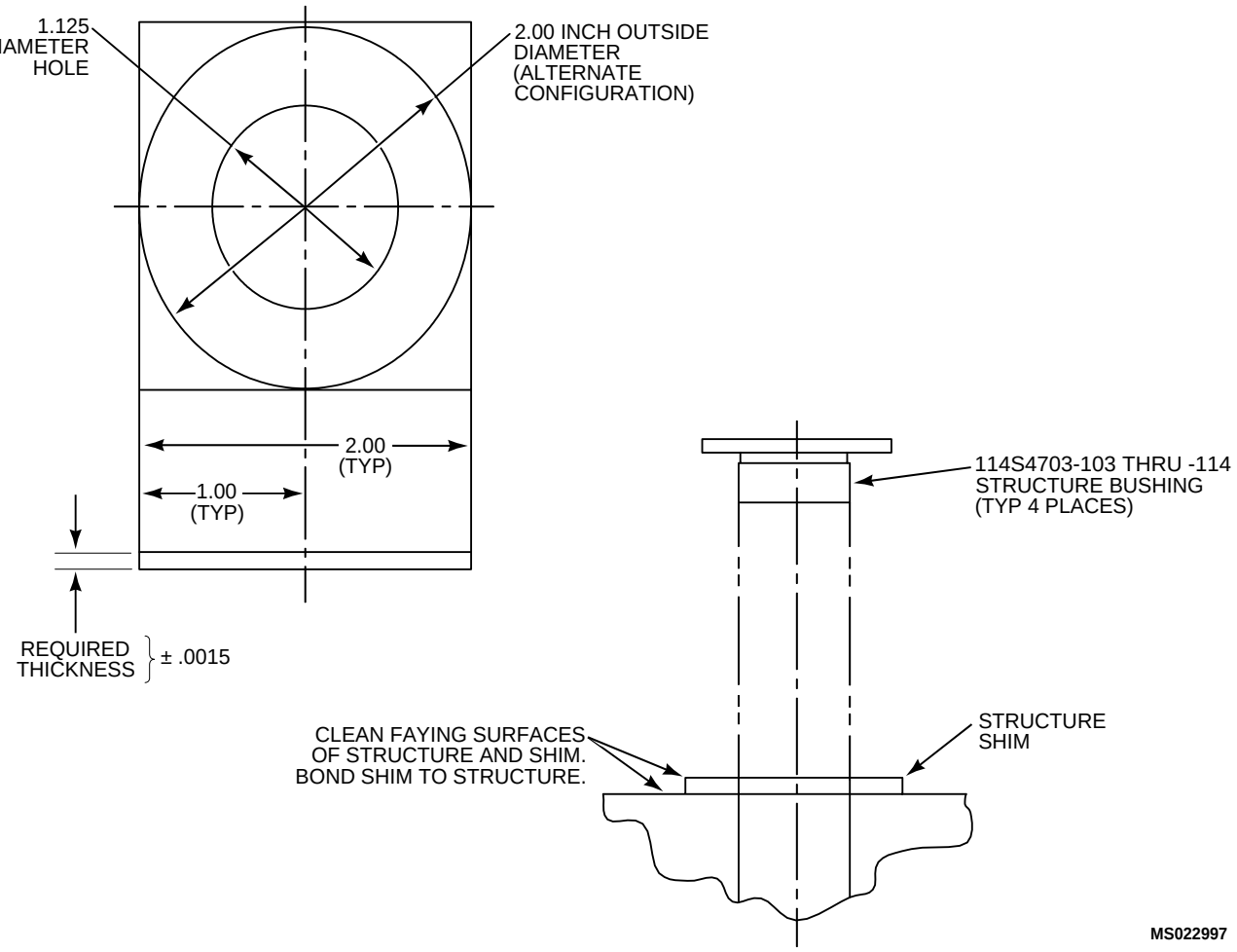
Figure 19. Combining Transmission Structure Shim Detail

ADDING PERMANENT SHIMS TO STRUCTURE - continued

Aft Shaft

The aft shaft is aligned with a selection of bushings with varying flange thicknesses. These bushings should be used to compensate for gaps under the aligning tool, where possible. If this is not possible, then the shim shown in Figure 20 may be used under a bushing flange to compensate for a gap under the alignment tool.

ADDING PERMANENT SHIMS TO STRUCTURE - continued



NOTES

A. All dimensions are in inches.
B. All diameters concentric within 0.010-inch diameter.
C. Machine finish to 125 µ-inch RHR.
D. Break edges 0.001 to 0.003-inch radius or chamfer.
E. Tolerance: decimals xx plus or minus 0.02-inch; decimals xxx plus or minus 0.010-inch.
F. Material: Type 301 CRES, condition ¼ or ½ hard sheet or 300 series bar.
G. Passivate per AMS-QQ-P-35.
H. Clean faying surfaces of structure and shim with abrasive pad (Item 4, WP 0157 00), and acetone (Item 20, WP 0157 00).
I. Bond shim to structure with thin coat of adhesive (Item 27, WP 0157 00). Refer to WP 0074 00.

Figure 20. Aft Rotor Shaft Structure Shim Detail

END OF WORK PACKAGE

DEPOT MAINTENANCE WORK REQUIREMENT

CH-47D HELICOPTER

STRIPPING AND REAPPLICATION OF COATINGS IN THE CABIN BILGE, STA 95 TO STA 485

INITIAL SETUP

Test Equipment:
As Required

Tools and Special Tools:
Vacuum, Explosion Proof
Low Pressure Sprayer
Propeller Type Air Driven Mixer
Brush or Roller, Paint

Material/Parts:
Abrasive, Paper (Item 3, WP 0157 00)
Abrasive Pad (Item 4, WP 0157 00)
Abrasive, Paper (Item 10 thru 15, WP 0157 00)
Abrasive, Paper (Item 16, WP 0157 00)
Alcohol, Isopropyl (Item 42, WP 0157 00)
Ammonium Hydroxide (Item 43, WP 0157 00)
Cheesecloth (Item 60 WP 0157 00)
Cleaning Compound (Item 67, WP 0157 00)
Cleaning Compound (Item 69, WP 0157 00)
Cleaning Compound Solvent (Item 70, WP 0157 00)
Cloth, Cleaning (Item 73, WP 0157 00)
Corrosion Resistant Coating (Item 96, WP 0157 00)
Plastic Sheet (Item 132, WP 0157 00)
Plastic Media (Item 133, WP 0157 00)
Polyurethane Coating (Item 135, WP 0157 00)
Polyurethane Topcoat (Item 136, WP 0157 00)
Primer Coating (Item 138, WP 0157 00)
Primer Coating (Item 139, WP 0157 00)
Primer, Epoxy (Item 142, WP 0157 00)
Rag, Tack (Item 148, WP 0157 00)
Tape, Masking (Item 175, WP 0157 00)
Distilled De-ionized Water (Item 194.1, WP 0157 00)

Personnel Required:
As Required

References:
Boeing Process Document Number D210-13470-1
TM 1-1500-204-23 Series
TM 1-1500-344-23
TM 55-1500-345-23
TM 55-1520-240-23 Series
WP 0076 00
WP 0157 00
WP 0161 00

Equipment Conditions:
As Required

Special Environmental Condition:
As Required

SCOPE

This work package covers stripping and reapplication of coatings in the cabin bilge (i.e., underfloor), sta 95 to sta 485. This procedure was developed by Boeing as Process Document Number D210-13470-1, “Repainting of the CH-47 Underfloor”.

Area to be reworked is all underfloor area of the aircraft. This rework includes all structure from sta 95 to sta 485, including floor formers, belly skins, forward and aft landing gear drag beams (i.e. torque boxes), other beams, longerons, stiffeners, and stringers. This work package does not cover treatment of the ramp, cockpit bilge, or floor panels. Figure 1 shows an overview of the work sequence.

SCOPE - continued

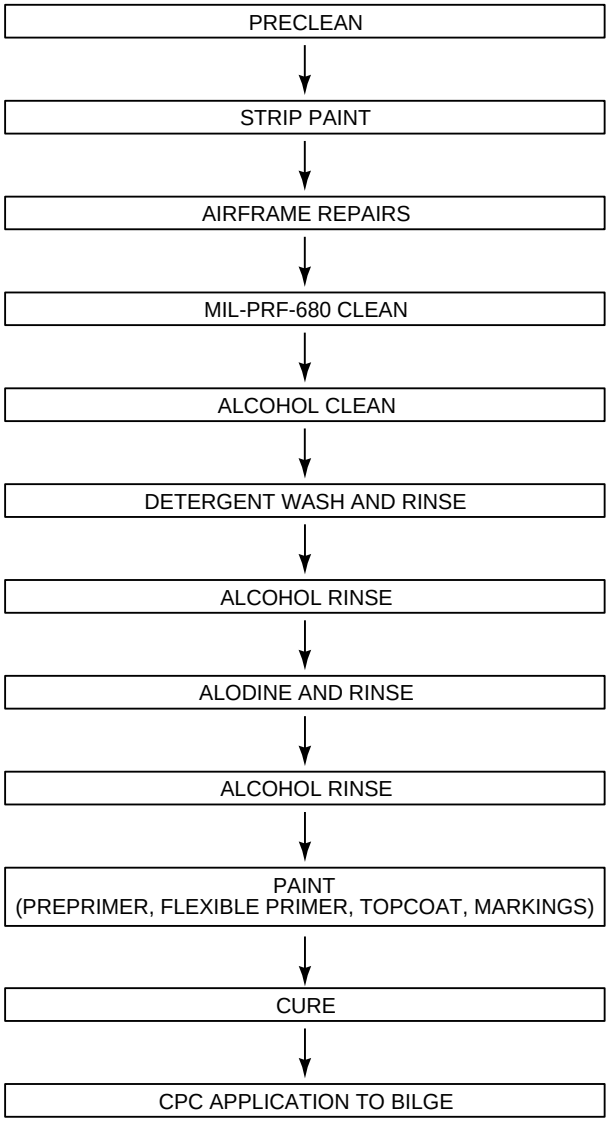


Figure 1. Overview of Bilge Paint Rework

CAUTION

If cleaning or rinsing is performed by spray, only low pressure spray equipment shall be used.

REWORK PROCEDURES

All operations shall be performed in the following sequence. No operations shall be omitted or combined.

1. Bilge Preparation – Mask-off as necessary to protect adjacent structure from rework operations.

REWORK PROCEDURES - continued

2. Remove Solid Debris – Wipe, sweep, and/or vacuum-out paint chips and other solid residue.

3. Dry Wipe – Remove any liquids with an explosion-proof vacuum cleaner (preferred) or with clean, dry rags.

WARNING

ISOPROPYL ALCOHOL

CLEANING COMPOUND

4. Preclean – Clean using one or more of the following: cleaning compound (Item 69, WP 0157 00), isopropyl alcohol (Item 42, WP 0157 00), and/or detergent per MIL-PRF-680, alcohol, or detergent procedures below. At the completion of this operation, no visible contamination shall remain.

WARNING

EYE INJURY

NOTE

Stains in the paint need not be completely removed.

5. Strip Paint – Remove coatings using plastic media (Item 133, WP 0157 00), and abrasive paper (Item 10 thru Item 15, WP 0157 00). Plastic media strip shall be IAW WP 0076 00.

CAUTION

The paint stripping operation shall not distort metal parts or remove cladding.

6. For plastic media blast process parameters, refer to WP 0076 00.

7. After Stripping – Vacuum the entire bilge and surrounding area to remove all plastic media, paint particles, and dust. Pay special attention to interior corners, seams, joints, and holes.

8. Visual Inspection – Visually inspect the stripped bilge to verify coating removal. Re-strip as required.

NOTE

Traces of tightly adhering epoxy primer are acceptable.

9. Repairs – Perform structural repair or rework as required.

REWORK PROCEDURES - continued

CAUTION

The aircraft must remain indoors and dry because the bilge area has no corrosion protection at this stage.

10. Remove Solid Debris – Wipe, sweep, and/or vacuum-out the entire bilge.

WARNING

CLEANING COMPOUND

11. MIL-PRF-680 Clean – Thoroughly clean the bilge with cleaning compound (Item 69, WP 0157 00) degreasing solvent. Apply the solvent manually with clean rags, or by low pressure spray. Make certain that seams, joints, crevices, and around fasteners are cleaned especially well. Remove excess cleaning compound with an explosion-proof vacuum cleaner (preferred) or clean, dry rags.

WARNING

ISOPROPYL ALCOHOL

12. Alcohol Clean – Thoroughly clean the bilge with isopropyl alcohol (Item 42, WP 0157 00). Apply the alcohol manually with clean rags or by low pressure spray. Make certain that seams, joints, crevices, and around fasteners are cleaned especially well. Remove excess alcohol with an explosion-proof vacuum cleaner (preferred) or with clean, dry rags.

WARNING

CLEANING COMPOUND

13. Detergent Clean – Thoroughly clean the bilge with cleaning compound (Item 67, WP 0157 00). Mix the cleaner solution one part cleaner to four parts distilled de-ionized water (Item 194.1, WP 0157 00). Apply cleaner manually with clean rags, sponges, mobs or scrub brushes. Make certain that seams, joints, crevices, and around fasteners are cleaned especially well.

REWORK PROCEDURES - continued

CAUTION

Do not allow the cleaner to dry on the rework surface.

14. Water Rinse – Rinse the cleaner manually with moist, clean rags, mobs, or sponges, or by low pressure spray. Use distilled de-ionized water (Item 194.1, WP 0157 00) to remove all the cleaner. This will require at least three separate manual wipes, or thoroughly flood cleaned surfaces with low-pressure spray. Make certain that seams, joints, crevices, and around fasteners are rinsed especially well.

WARNING

ISOPROPYL ALCOHOL

15. Alcohol Rinse – Rinse with isopropyl alcohol (Item 42, WP 0157 00). Apply the alcohol manually with clean rags or by low pressure spray. Make certain that seams, joints, crevices, and around fasteners are rinsed especially well. Remove excess alcohol with an explosion-proof vacuum cleaner (preferred) or with clean, dry rags.

WARNING

ISOPROPYL ALCOHOL

16. Inspect – Evaluate bilge cleanliness by looking for solids (e.g., plastic media, drill chips, dust), and by wiping randomly chosen spots with a clean, white rag moistened with isopropyl alcohol (Item 42, WP 0157 00) to detect contamination (e.g., hydraulic fluid, oil, grease). Discoloration on the rag, except a medium gray color is evidence of contamination. If no solids or contamination are found, proceed with “Conversion Coat”. If solids are found, re-clean per “Alcohol Rinse” procedures, then re-inspect per this procedure. If contamination is found, reclean beginning with “MIL-PRF-680 Clean” procedures and repeat the entire process. Then re-inspect per this paragraph.

REWORK PROCEDURES - continued

WARNING

CORROSION RESISTANT COATING

EYE INJURY

17. Conversion Coat – Application of Corrosion Resistant Coating, (Item 96, WP 0157 00) to the bilge area increases corrosion resistance, acts as a paint base, and provides an electrically conductive finish. Apply conversion coating and rinse as follows:

    a. Alodine 600 Makeup – Add 3 ounces of Alodine 600 powder to water for each gallon of final solution. Stir well until the powder is dissolved. Then add up to 2 percent by volume of Ammonium Hydroxide (Item 43, WP 0157 00) as required to adjust the pH to between 1.5 and 2.0. Disregard any small amount of settled-out insoluble material. Allow mixed solution to stand 1 hour before use.

    b. Swab – apply Alodine 600 with clean wipers, cheesecloth gauze, new laundered rags, cellulose sponge, cotton mob, or spray the chemical conversion treatment solution onto the bilge components. Keep the surfaces wet, until a perceptible color develops. Color should develop in 2 to 3 minutes. If a powdery coating develops, lightly sand the area with abrasive paper (Item's 3, or 16, WP 0157 00) or abrasive pad (Item 4, WP 0157 00) or equivalent, rinse and reapply the chemical conversion treatment solution. If color does not develop or if the chemical conversion coating beads up, lightly sand the area, rinse and reapply the chemical conversion coating.

    c. Rinse thoroughly by flushing or if there is a possibility of entrapping water, rinse by gently swabbing with clean wipers, or sponge soaked with water. Use care to prevent damage of the freshly coated film, which is easily damaged.

    d. Air dry at room temperature to 130 degrees F, maximum.

WARNING

ISOPROPYL ALCOHOL

18. Alcohol Rinse – Rinse with isopropyl alcohol (Item 42, WP 0157 00). Apply the alcohol by low pressure spray only. Make certain that seams, joints, crevices, and around fasteners are rinsed especially well. Remove excess alcohol with an explosion-proof vacuum cleaner (preferred) or with clean, dry rags.

19. Tack Rag – Use tack rag (Item 148, WP 0157 00) to remove loose dust and lint.

REWORK PROCEDURES - continued

20. Apply Coatings - General

a. Mixing

(1) Coatings components supplied by different manufacturers shall not be mixed.

(2) Coatings containing foreign matter lumps, or skins, or showing any signs of gelation shall not be used.

(3) Allow components to come to room temperature before mixing.

(4) For two-part coatings, mix full kits (preferred) or mix base and catalyst in the ration specified by the manufacturer.

(5) After mixing and thinning, strain through a 150 mesh paint strainer or several layers of clean cheesecloth or gauze.

b. Application

(1) Coatings shall be applied in the following sequence; epoxy preprimer first, then flexible primer, topcoat, and markings.

(2) Epoxy preprimer, flexible primer, and topcoat shall be applied to all bilge surfaces. Coatings shall be applied by spray. In difficult to reach areas, brush or roller may also be used. Spray application techniques shall conform to MIL-F-18264.

(3) Coatings that have exceeded the pot life shall be discarded. The limitation on film thickness is not mandatory for surfaces on which such limits are impractical to maintain; for example, highly contoured areas. However film thickness should be controlled in these areas to prevent excessive deposition of paint.

c. Workmanship – Coatings shall be smooth, continuous, adherent films free of such surface imperfections as runs, sags, blisters, orange peel, blushing, dry overspray streaks, craters, blotches, brush marks, fish eyes, seediness, or pinholes.

WARNING

CLEANING COMPOUND, SOLVENT

EPOXY PRIMER

d. Epoxy Preprimer – Mix, thin, and apply epoxy primer (Item 142, WP 0157 00) as follows:

(1) Mix and Thin

(a) Stir base thoroughly just prior to mixing. Ensure that all solids have been dislodged from the bottom of the container.

(b) Agitate catalyst, then add slowly to base with constant stirring. Once base and catalyst are completely mixed, add an equal volume of cleaning compound, solvent (thinner) (Item 70, WP 0157 00) with constant stirring. The thinner must be added in small increments initially. A propeller-type air-driven mixer is preferred. Mix ration by volume = 3:1:4 (base: catalyst: thinner)

(2) Induction Period – epoxy primer has no induction period, i.e., it can be used immediately after mixing and straining.

(3) Pot Life – 4 hours at room temperature.

(4) Application – Apply 0.2 to 0.6 mils dry film thickness. Dry to overcoat = 2 to 24 hours at room temperature.

REWORK PROCEDURES - continued

WARNING

PRIMER COATING

e. Flexible Primer – Mix and apply primer coating (Item 138 or 139, WP 0157 00) as follows:

(1) Mix

(a) Agitate individual components thoroughly just prior to mixing. Ensure that all solids have been dislodged from the bottom of the containers.

(b) Mix ration of primer coating (Item 138, WP 0157 00) by volume is 1:1 (base: catalyst).

(c) Primer coating (Item 139, WP 0157 00) is a single component material, i.e., has no catalyst.

(d) Do not thin these coatings.

(2) Induction Period – Allow primer coating (Item 138, WP 0157 00) to stand 30 minutes before using. Primer coating (Item 139, WP 0157 00) has no induction period, i.e., it can be used immediately after agitating and straining.

(3) Pot Life – The pot life of primer coating (Item 138, WP 0157 00) is 4 hours at room temperature. The pot life of primer coating (Item 139, WP 0157 00) is 8 hours at room temperature in a closed container (e.g., pressure pot or cup gun).

(4) Application – Apply 1.5 to 2.3 mils dry film thickness. Primer coating (Item 139 WP 0157 00) contains a high percentage of solvent so more than one coat will be required to achieve the required film thickness. Dry time between coats is 15 minutes to 24 hours. Dry to topcoat for primer coating (Item 138, WP 0157 00) is 4 to 24 hours at room temperature. Dry to topcoat for primer coating (Item 139, WP 157 00) is 1 to 24 hours at room temperature.

WARNING

POLYURETHANE TOPCOAT

f. Topcoat – Mix and apply the polyurethane topcoat (Item 135 or 136, WP 0157 00) as follows:

(1) Mix

(a) Agitate individual components thoroughly just prior to mixing. Ensure that all solids have been dislodged from the bottom of the containers.

(b) Mix ration by volume is 1:1 (base: catalyst)

(c) Do not thin this coating.

(2) Induction Period – Allow to stand 15 minutes before using.

(3) Pot Life – 4 hours at room temperature

(4) Application – Apply 1.8 to 2.7 mil dry film thickness. Dry time between coats is 15 minutes to 24 hours. Dry to overcoat is 8 to 48 hours at room temperature.

REWORK PROCEDURES - continued

g. Markings – Apply stencil markings per applicable TMs and engineering drawings.

h. Cure to Handle – Prior to beginning reassembly operations, allow the coating system to cure 8 hours minimum at room temperature.

i. Full Cure – Prior to adhesion testing and prior to flight, cure the coating system for 7 days minimum at room temperature.

21. Adhesion – The painted bilge shall pass wet tape adhesion tests. Test coupons or witness panels shall not be tested in place of the bilge itself.

WARNING

ISOPROPYL ALCOHOL

22. Adhesion Test Procedure

a. Cure the painted bilge per procedures as per paragraphs 20h and 20i of this work package.

b. Select a minimum of six test locations throughout the bilge; at least three on floor former web faces and at least three on belly skins. Test locations should be a minimum of four inches by four inches and at least one inch from any edge, corner seam, lap, or fastener.

c. Solvent clean test areas using isopropyl alcohol (Item 42, WP 0157 00) and cloth, cleaning, (Item 73, WP 0157 00) as follows:

(1) Dispense isopropyl alcohol onto cleaning cloth and rub the test surface. Immediately wipe dry with a dry cleaning cloth. Do not allow alcohol to evaporate to dryness.

(2) Frequently exchange soiled cloth for a clean one.

(3) Repeat cleaning steps until the cloth shows no soil.

d. Apply four by four inch pieces of clean cheesecloth (Item 60, WP 0157 00) saturated with distilled de-ionized water (Item 194.1, WP 0157 00) to the areas to be tested. Cover the wet patches with clean polyethylene film (Item 132, WP 0157 00) and seal the edges with tape (Item 175, WP 0157 00).

e. Allow the wet patches to remain on the test surface for 24 to 26 hours at room temperature. Re-saturate the cheesecloth with distilled de-ionized water (Item 194.1, WP 0157 00) as necessary during the exposure period.

f. At the end of the specified time, remove the cloth and wipe the surface dry with clean cheesecloth.

g. Immediately perform the tape adhesion test as follows:

(1) Apply masking tape, (Item 175, WP 0157 00), one inch wide by approximately two inches long to test area. Masking tape must have rubber or acrylic adhesive with a minimum peel strength of 60 ounces per inch of width.

(2) Press the tape down firmly to the test area using the roll of tape itself.

(3) Remove the tape in one abrupt motion, pulling perpendicular to the panel.

(4) Examine the tested area and the tape for any removed coating.

REWORK PROCEDURES - continued

(5) The coating passes the test if no blistering of the paint is observed, and no paint is removed by the tape.

(6) The coating fails the test if blistering of the paint is observed, and/or paint is removed by the tape.

23. Inspection Requirements

Quality Assurance is responsible to see that all requirements of this Work Package are met. The most important requirements are listed below:

a. Stripped Paint – Paint stripping shall be verified as per paragraph 8.

b. Final Cleaning – Cleanliness shall be verified per paragraph 16.

c. Conversion Coating – The conversion coating shall be inspected, especially for powdery coating, per paragraph 17.

d. Workmanship – Refer to paragraph 20c.

e. Thickness – Paint thickness shall be verified per paragraphs 20d(4), 20e(4), and 20f(4).

f. Adhesion – The painted bilge shall pass wet tape adhesion tests. Test coupons or witness panels shall not be tested in place of the bilge itself. Refer to paragraph 22 for test procedures.

WARNING

CORROSION PREVENTIVE COMPOUND

24. Corrosion Preventive Compound (CPC) Application

CPC will be applied to the bilge area IAW WP 0161 00. This process may be deferred until later in the overhaul process, i.e., after aircraft painting.

END OF WORK PACKAGE

DEPOT MAINTENANCE WORK REQUIREMENT
CH-47D HELICOPTER
FINAL ACCEPTANCE AND TEST FLIGHT/ISSUE TO OWNING UNIT

INITIAL SETUP

Test Equipment:
As Required

Tools and Special Tools:
As Required

Material/Parts:
As Required

Personnel Required:
As Required

References:
DA PAM 738-751
TM 1-1500-328-23
TM 1-1520-240-MTF
TM 11-1520-240-23
TM 55-1500-342-23
TM 55-1520-240-23 Series
TM 1-1500-204-23 Series
TM 1-1500-344-23
WP 0152 00

Equipment Conditions:
As Required

Special Environmental Condition:
As Required

SCOPE

This work package outlines the procedures for aircraft final test flight and acceptance by the owning unit. The procedures may be changed or modified by the Contracting Officer to meet operational circumstances or conditions.

PREPARATION FOR ACCEPTANCE TEST FLIGHT

After completion of the required maintenance and repair, and prior to conducting final acceptance flight test, check, service, and/or perform the following items:

1. Depreserve helicopter per TM 55-1520-240-23.
2. Check and service hydraulic systems per TM 55-1520-240-23.
3. Check and service engine oil systems per TM 55-1520-240-23.
4. Check and service auxiliary power unit system per TM 55-1520-240-23.
5. Check and service all transmissions systems per TM 55-1520-240-23.
6. Install serviceable battery per TM 55-1520-240-23.
7. Install serviceable fire extinguishers per TM 55-1520-240-23.
8. Install serviceable first aid kits per TM 55-1520-240-23.
9. Install all avionics equipment per TM 11-1520-240-23.
10. Perform aircraft inventory per TM 55-1520-240-23.
11. Perform weight and balance check per TM 55-1520-240-23 and TM 55-1500-342-23.

PREPARATION FOR ACCEPTANCE TEST FLIGHT - continued

12. Check and service fuel system per TM 55-1520-240-23.

13. Perform maintenance test flight per TM 1-1520-240-MTF.

ISSUE OF AIRCRAFT TO OWNING UNIT

1. Transferring activity shall ensure the aircraft is prepared for the receiving unit IAW applicable publications. Transferring activity and receiving unit personnel shall jointly accomplish an aircraft inventory and logbook inspection. Transferring activity shall comply with DA PAM 738-751 for applicable forms and records. When applicable, transferring activity will request an AMCOM waiver for re-torque requirements that may come due during the receiving unit's ferry flight to home station.

2. Transferring activity and receiving unit personnel may jointly perform a Maintenance Operational Check (MOC) and Acceptance Maintenance Test Flight (MTF) IAW TM 1-1520-240-MTF and other applicable publications. Transferring activity shall correct all legitimate deficiencies noted during the MOC/MTF.

3. Until the receiving unit accepts the aircraft (signed DD Form 1348-1A), the transferring activity shall maintain the aircraft in a flyable status for up to fourteen calendar days. Thereafter, the aircraft shall be funded for and placed in flyable storage IAW WP 0152 00 and other applicable publications.

END OF WORK PACKAGE

DEPOT MAINTENANCE WORK REQUIREMENT
CH-47D HELICOPTER
OVERHAUL AND RETIREMENT SCHEDULE

INITIAL SETUP

Test Equipment:
As Required

Tools and Special Tools:
As Required

Material/Parts:
As Required

Personnel Required:
As Required

References:
TM 1-1500-328-23
TM 55-1520-240-23 Series

Equipment Conditions:
As Required

Special Environmental Condition:
As Required

SCOPE

This work package pertains to component overhaul and retirement schedules for the CH-47D. However, these schedules are dynamic and are constantly changing. The Depot/Contractor will insure that they are in receipt of the latest overhaul/retirement schedule information. Refer to TM 55-1520-240-23.

END OF WORK PACKAGE

DEPOT MAINTENANCE WORK REQUIREMENT
CH-47D HELICOPTER
STORAGE OF AIRCRAFT

INITIAL SETUP

Test Equipment:
As Required

Tools and Special Tools:
As Required

Material/Parts:
As specified in referenced TM's

Personnel Required:
As Required

References:
TM 1-1500-204-23 Series
TM 55-1520-240-23 Series

Equipment Conditions:
As Required

Special Environmental Condition:
As Required

SCOPE

This work package covers the different categories of aircraft storage and directs the Depot/Contractor to develop a storage plan for aircraft undergoing maintenance.

The Depot/Contractor shall be responsible for initiating action to place aircraft in storage. The type of storage shall be selected based on the length of time the aircraft will be inactive. When the decision is made to place an aircraft in storage, the aircraft will be prepared IAW TM 55-1520-240-23. Authorization to deviate from published procedures will be obtained, in writing, from AMCOM. All aircraft placed in storage shall be carefully inspected at regular intervals of 60 days or less, depending on local conditions. Stored aircraft shall be corrosion-treated if this precaution is found necessary when conducting inspection for corrosion. Particular attention shall be given to those areas where moisture deposits will not evaporate rapidly. Normally, corrosion will not be as prevalent on painted surfaces as on unpainted surfaces.

COMPONENTS INVOLVED IN AN ACCIDENT

Any component removed for reason of accident shall not be preserved, but shall be shipped in the same condition it was in after the accident.

CATEGORIES OF STORAGE

1. Flyable Storage

   Flyable storage is the prescribed procedure to maintain a stored aircraft in operable condition. Next to daily use, this category of storage keeps the aircraft in the best possible condition. All scheduled preventative maintenance will be performed on aircraft in flyable storage, and periodic operation of the aircraft and all systems is required. There is no time limit on flyable storage. Refer to TM 55-1520-240-23.

2. Short Term Storage

   Short term storage is used to store an aircraft for a period not to exceed 45 days. Aircraft in short term storage require extensive preservation, but minimal periodic attention. Refer to TM 55-1520-240-23.

3. Intermediate Storage

   Intermediate storage is used to store aircraft for a period of 46 to 180 days. Aircraft in intermediate storage require very extensive preservation, but minimal periodic attention. Refer to TM 55-1520-240-23.

CATEGORIES OF STORAGE - continued

4. Long Term Storage

   Procedures for long-term storage are not available for the storage of Army aircraft. If storage beyond 180 days is required, the aircraft will be de-preserved, returned to flyable status, operated, and re-preserved IAW TM 1-1500-204-23 and TM 55-1520-240-23.

5. Storage of Aircraft Undergoing Maintenance

   There is no time limit for storage of aircraft undergoing maintenance. This category will include general requirements for storage of aircraft undergoing any maintenance action that causes the aircraft to be inactive for more than fourteen days. Due to the wide range of maintenance actions that may create this situation, some storage procedures will not be required and a degree of latitude is given to the Depot/Contractor on the storage measures needed for the particular situation. The fourteen-day limit is a guideline and variances are allowed. The Depot/Contractor will develop a written storage plan for execution of this DMWR based on estimated time of completion of the work, availability of storage facilities, and existing environmental conditions. Forward the plan to AMCOM/Contracting Officer for approval.

END OF WORK PACKAGE

DEPOT MAINTENANCE WORK REQUIREMENT
CH-47D HELICOPTER
FACILITIES REQUIREMENTS

INITIAL SETUP

Test Equipment:
As Required

Tools and Special Tools:
As Required

Material/Parts:
As specified in referenced TM's

Personnel Required:
As Required

References:
TM 55-1520-240-23 Series
WP 0150 00
WP 0157 00
WP 0158 00

Equipment Conditions:
As Required

Special Environmental Condition:
As Required

SCOPE

This work package outlines the general facility requirements for execution of this DMWR.

OVERHAUL FACILITIES

Overhaul facilities shall be equipped to perform all operations prescribed in this DMWR. The following describes facilities needed for overhaul of the helicopter. Table 1 is a listing of the typical shops required to perform these operations. Included are the space requirement factors necessary for planning for each aircraft processed under this DMWR. These factors multiplied by the total number of aircraft scheduled in the facility at any one time will give total facility floor space requirements. Included also in Table 1 are the general utility requirements for typical shop areas. Under no circumstances should Table 1 be considered a mandatory listing of shop layout. Specific qualification of a contractor will be done by means of a facility survey, completed before beginning any contractual work. Facility surveys will be performed under the direction of the Contracting Officer.

UTILITIES REQUIRED

Compressed air shall be available at 125–psig minimum. Distribution systems should have large headers connected into several receivers located in areas of heaviest usage. All equipment requiring compressed air should have lubrication requirements verified. Steam shall be medium pressure. Controls for environmental purposes should be as follows:

1. General purpose areas - electrical
2. Sensitive central area - electronic/pneumatic
3. Hazardous areas - pneumatic

Special high-efficiency particle arrestors should be utilized for "clean room" environment. Electrical systems should meet requirements of the national electrical code governing area where work is to be done.

INSPECTION/REPAIR SHOP AREAS FOR DETAILED CLOSE TOLERANCE PARTS

A totally enclosed inspection shop space with forced air ventilation is recommended. Filters able to arrest particles sized in excess of 50 to 100 microns shall be used. Fans able to maintain a slight positive pressure within the enclosed area shall be used. Walls and ceilings should be smooth, and with chip resistant surfaces. The flooring space should be sealed cement or tile to provide a dust free and easily maintained surface. The floor space should be adequate to maintain quality and production. All lighting shall be flush or of the type that will neither retain nor discharge foreign particles. Magnification shall be provided to accomplish those tasks that cannot be done without visual assistance. No grinding, filing, or sanding other than final hard polishing of bits and pieces, such as forgings, shall be allowed in the inspection area. Clean conditions to include clothing and hand tools are mandatory.

PSA, INSPECTION, AND REPAIR SHOP AREA

A totally enclosed area, isolated from corrosion generating materials or environment, is recommended. The floor shall be sealed cement or tile to provide an easily maintained surface. In addition, the floor shall be of sufficient strength to support the major assembly tools. The major assembly tools also should be free of vibration. The general areas shall be void of material or equipment not directly connected with the overhaul.

PAINT SHOP AREA

A totally enclosed area, isolated from corrosion generating materials or environment, is recommended. The flooring shall be sealed cement or tile to provide an easily maintained surface. Paint shops at all rework facilities should have adequate ventilation systems, to protect the health of the workers and to prevent deposition of overspray on newly painted or about-to-be-painted surfaces. The air flow should be from ceiling to floor. Exhaust air should pass through a suitable filter or scrubber to minimize air pollution outside the shop area. The paint shop should not be used for other operations, such as paint stripping, cleaning, and blasting.

CLEANING, STRIPPING, AND PLATING SHOP AREAS

NOTE

All stripping operations shall be performed in a shaded area. Never perform stripping operations in direct sunlight.

Area should be suitable for performing all of the requirements of the DMWR. In addition, corrosion removal will be performed in this area.

PACKAGING, UNPACKING, AND STORAGE AREA

This area should be totally enclosed, and it should be insured that there are no environmental conditions detrimental to the components.

AIRFIELD REQUIREMENTS

Suitable airfield facilities shall be provided including airspace available to perform maintenance flight testing, as specified in WP 0150 00. Tie-down and ground run-up areas must also be provided.

SPECIAL TOOLS AND EQUIPMENT

TM 55-1520-240-23 and WP 0158 00 provide a listing of special tools and equipment by nomenclature, part number, and Commercial and Governmental Entity Code (CAGE).

INSPECTION AND TEST EQUIPMENT

All special inspection or test equipment is identified in TM 55-1520-240-23 and this DMWR.

EXPENDABLE AND DURABLE ITEMS LIST

WP 0157 00 contains a listing of expendable and durable items requirements for use in this DMWR. Use of approved equivalent materials is authorized in lieu of items listed in WP 0157 00. Expendables are those products that may be consumed in use or that lose their identity in an assembly.

NOTE

Expendable material requirements of publications referenced in this DMWR are not included in WP 0157 00. Consult the applicable referenced publication for any additional expendable requirements.

Table 1. Typical Utility and Space Requirements

AREA	AREA REQUIRED PER AIRCRAFT (SQ-FT)	LIGHT INTENSITY (FOOT CANDLES)	PROCESS STEAM	COMP AIR	WATER	EXHAUST VENTI-LATION	ENVIRON-MENTAL CONTROL	INDUS-TRIAL DRAIN
Quick Change Assembly	35	100		X				
Small Parts Repair	25	100		X				
Component Paint Shop	60	100		X	X	X	X	X
Assembly	210	100		X				
Electrical and Instruments	15	125		X			X	
Aircraft Paint Shop	210	125		X	X	X	X	
Flight and Ground Check	380	70		X				
Component Overhaul and Maintenance	160	125		X			X	
Structures	320	125		X				
Avionics	60	125		X			X	
PSA and Disassembly	55	100		X				
Rotor Wing Blade	45	100		X	X			
Rubber, Glass and Plastics	75	100	X	X	X	X	X	X
Plating Shop	15	100	X	X	X	X		X

END OF WORK PACKAGE

DEPOT MAINTENANCE WORK REQUIREMENT
CH-47D HELICOPTER
DEPOT MOBILIZATION REQUIREMENTS

SCOPE

This work package, when developed, is intended to streamline and accelerate the overhaul process during mobilization of the depot.

EXPLANATION OF MOBILIZATION REQUIREMENTS

In the event of mobilization, all depot maintenance overhaul or repair procedures requirements except those necessary to return the end item, assembly, subassembly, or component to a serviceable condition are to be exempt or revised. These changes include a list of instructions for modifying preshop analysis and/or overhaul procedures. The pertinent procedures to be modified are referred to by page and work page number, followed by the action to be taken and will be provided by the procuring activity maintenance engineering group.

Table 1. Mobilization Requirements

WORK PACKAGE NO	ACTION
	When modified procedures are developed, they will be incorporated into this work package.

Under a state of mobilization, the procuring activity may elect to:

1. Require all items to be overhauled, maximizing the longevity of such items by requiring full turnaround time during depot maintenance. This action would “zero” the “time since overhaul” of the item.

2. Require a quick turnaround on all items during depot maintenance by electing to minor repair items. Minor repair is defined as follows:

   Maintenance performed to address the cause for depot return of an item and to restore the item to serviceable condition. This is done through correction of specific failure or unserviceable conditions. An item’s inherent weakness is addressed by carrying out convenience maintenance, inspections, repairs, and other preventive maintenance that are determined to be cost effective. Minor repair changes the status of an item from a unserviceable item to a serviceable item retaining reliability and safety design level requirements, but it does not, in general, increase the item’s potential longevity. The determination to minor repair or overhaul is made after the item is inducted into the depot and undergoes a pre-shop analysis (PSA). For items with “time between overhauls” (TBOs), the only alternative to minor repair is overhaul. Minor repair does not “zero” the “time since new” or “time since overhaul” of the item.

END OF WORK PACKAGE

DEPOT MAINTENANCE WORK REQUIREMENT
CH-47D HELICOPTER
QUALITY ASSURANCE REQUIREMENTS

SCOPE

This work package describes the quality assurance requirements to be instituted during overhaul of the CH-47D Helicopter IAW this DMWR.

STATEMENT OF RESPONSIBILITY

The Depot/Contractor is responsible for complying with the quality assurance requirements contained in this work package and IAW ISO 9001 2000 standards or equivalent. The commodity manager reserves the right to perform inspections or make changes that ensure the depot work being performed meets the quality standards of the DMWR and preserves the inherent reliability of the item.

DEFINITIONS

For quality assurance definitions and terms refer to ISO 8402. For definitions specific to Flight Safety Parts (FSP) Critical Characteristics, Maintenance and Overhaul, QE STD 2, refer to AMCOM Regulation 702-7, Appendix D. All additional quality provisions shall be as specified by the applicable Procurement Request Order Number (PRON) or contract.

A list of inspection definitions is shown in Table 1. Accept and reject criteria for these defects and unique repair methods are found in applicable areas of this DMWR, TM 55-1520-240-23, and TM 1-1500-204-23.

Table 1. Inspection Definitions

TERM	DEFINITION	PROBABLE CAUSE
Abrasion	Roughened surface, varying from light to severe	Foreign material present between moving parts
Bend	Any change in the intended configuration	Application of severe or excessive force
Break	Separation of part	Severe force, pressure, or overload
Burn	Loss of material	Excessive heat
Burnishing	The smoothing of a metal surface by mechanical action, but without loss of material. Generally found on plain bearing surfaces	Excessive friction
Burr	A rough edge or sharp projection	Impact from foreign object, or poor machining
Chipping	Breaking away of small particles	Heavy impact of foreign object
Corrosion	Surface chemical action that results in surface discoloration, a layer of oxide, rust, and removal of surface metal	Improper corrosion preventive procedures and excessive moisture
Crack	A break in material	Severe stress from overloading or shock; possible extension of a scratch
Dent	A small smoothly rounded depression	A sharp blow or excessive pressure
Distortion	A change from original shape	Application of severe heat or irregular forces
Erosion	Wearing away of material	Hot gases, corrosive liquids, or grit

DEFINITIONS - continued

Table 1. Inspection Definitions - continued

TERM	DEFINITION	PROBABLE CAUSE
Fatigue failure	Sharp indentations, cracks, tool marks, and inclusions that result in progressive yielding of one or more local areas	Cyclic stress. As stress is repeated, cracks develop, then spread, usually from surface (or near surface) of the particular section. Finally, so little sound material remains that normal stress on part exceeds strength of the remaining material.
Flaking	Loose particles of material or surface covering	Imperfect bond or severe load
Fracture	See break	
Gouging	Removal of surface material. Typified by rough and deep depressions	Protruding objects, misalignment
Heat oxidizing	Characterized by a discoloring film. Color varies from yellow to brown and blue to purple	High temperature operation
Indenting	Cavities with smooth bottoms and sides. Occurs on rolling contact surfaces of bearing components	Loose or foreign particles rolling between rotating elements of a bearing
Nick	A sharp-bottomed depression that may have rough outer edges	Dropping, banging
Off-square or misalignment of anti-friction bearing	Indicated by retainer deterioration, retainer bore erosion, and gouged retainer rolling element pockets of the inner and outer race. Two distinct rolling element paths may be seen on the race where off-square conditions exist	Caused by rolling element speed variation, which jams rolling elements into separator pockets
Pitting	Small indentation in a surface	Chemical pitting: Oxidation of surface or electrolytic action Mechanical pitting: Chipping of loaded surfaces caused by improper clearances and overloading, and by pressure of foreign material
Scoring	Deep scratch following path of part travel	Result of localized lubrication break down between sliding surfaces
Scratch	A very shallow furrow or irregularity, usually longer than wide	Movement of a sharp object across the surface
Seizure	Fusion or binding of two adjacent surfaces preventing continued movement	Improper lubrication or wear
Stripped thread	Thread of a nut, stud, bolt, or screw damaged by tearing away part of thread	Improper installation, thread pitch or size
Tear	Parting of parent material	Excess tension, caused by an external force
Wear	Slow removal of parent material. Frequently wear is not visible to the naked eye	Result of abrasive substances contacting rolling surfaces, and acting as a lapping compound
Yielded	Deformation of the thread pitch on a stud or bolt	Excessive tension or torsion, caused by an external force

SPECIAL REQUIREMENTS FOR INSPECTION TOOLS AND EQUIPMENT

The overhaul facility is responsible for acquisition, maintenance, calibration, and disposition of all inspection and test equipment.

All instrumentation and test equipment used in compliance with this DMWR shall be calibrated and controlled IAW ANSI/NCSI Z540.1 or ISO 10012-1.

CERTIFICATION REQUIREMENTS

The Depot/Contractor activity shall be responsible for certifying that personnel skills, equipment, and material meet the requirements of the work to be accomplished to include QE-STD 2 certification requirements of AMCOM Reg 702-7. The activity shall also provide objective evidence certifying that specifications for special procedures such as welding, radiography, plating, nondestructive inspection, test cell operation, etc. have been complied with. Personnel performing nondestructive inspection shall be certified IAW AIA/NSA 410 series. Personnel performing welding procedures shall be certified IAW SAE AMS-STD-1595 series.

IN-PROGRESS INSPECTIONS

Inspecting and testing shall be prescribed by clear, complete, and current instructions (i.e. shop travelers, evaluation check sheets, assembly and inspection records, etc.), making reference to critical characteristics IAW AMCOM Reg 702-7 where applicable. These instructions shall assure inspection and test of materials, work processes, critical characteristics, and complete articles/assemblies are IAW this DMWR. Accept/reject criteria shall also be included. CCAD Regulation 700-11 is recommended as a guide for establishing responsibilities and procedures for development, review, approval, and control of process documents.

The activity performing this DMWR shall maintain records of all inspections and tests. These records shall indicate nature and number of inspections made, the number and types of deficiencies found, the quantities of items accepted or rejected and the nature of corrective action taken. Records pertinent to “Flight Safety Parts” shall be marked as such, and comply with AMCOM Reg 702-7.

Activities shall take prompt action to correct any conditions that have or could result in submission of supplies and services that do not conform to the item specifications. Refer to WP 0001 00.

The Depot’s/Contractor’s inspection system shall provide for procedures that will assure that applicable drawings, specifications, and instructions required by this DMWR, as well as authorized changes thereto, are used for fabrication, maintenance, inspection, and testing.

The activity shall maintain a positive identification system to indicate the status of all supplies used in compliance with this DMWR, whether manufactured, processed, or provided by subcontractors. Identification may be accomplished by means of tags, stamps, routing cards, or other control devices that will clearly show inspection and serviceability status. Serviceable and unserviceable material will be stored in segregated areas.

The Depot/Contractor shall perform oil analysis on all oil-wetted components that have been designated for participation in the Army Oil Analysis Program (AOAP). Specifically, oil samples shall be taken and analyzed during the induction process and immediately prior to issue of the helicopter to the field unit. Oil samples will be taken IAW AR 750-43, TB 43-0106, and TM 55-1520-240-23 from the following components/systems:

1. No. 1 and No. 2 Turbine Engines
2. No. 1 and No. 2 Engine Gearboxes
3. All Transmissions
4. No. 1 and No. 2 Hydraulic Systems
5. Utility Hydraulic System

IN-PROGRESS INSPECTIONS - continued

In Progress Inspections shall be performed prior to any final assembly or installation. Methods and procedures employed for inspection of material and coverage of work operations shall assure, to the maximum extent possible, that the product does conform to established DMWR standards.

ACCEPTANCE INSPECTIONS

Items overhauled IAW this DMWR will be accepted based on the following criteria:

1. Conformance to quality of material requirements.
2. Conformance to all in-progress quality assurance inspections.
3. Conformance to all final assembly testing requirements.
4. Conformance to the preservation, packaging, and marking requirements.

Upon completion of processing, each helicopter shall be examined to insure that all quality characteristics, individually and collectively, conform fully to established quality requirements. Included is the inspection of all applicable processing records, inspection records, and all other documents to insure that all work performed has been inspected or certified during the in-progress phase and that characteristics relating to work performed are determined to be in conformance with requirements.

All aircraft inventory items shall be checked for serviceable condition and appropriate entries shall be made on DA Form 2408-17, Aircraft Inventory Record. Preparation and use of this form shall be IAW DA PAM 738-751.

Upon completion of depot maintenance, the helicopter will be weighed IAW TM 55-1500-342-23 and appropriate entries will be made on DD Form 365 series forms.

An initial pre-flight inspection will be required immediately prior to first test flight. This inspection will verify that all components and systems are functioning properly. Pre-flight inspections will be performed only by personnel who have been qualified and authorized to perform this function IAW approved procedures, instructions, and U.S. Army directives, as provided by local AMRDEC Engineering or PRON/Contract requirements.

Prior to first test flight, the helicopter hydraulic systems will be purified IAW WP 0162 00. A functional test flight will consist of a thorough inspection and air-worthiness check of the helicopter before flight, during flight, and upon completion of test flight. Each helicopter completing depot maintenance shall be subjected to a test flight by a qualified test pilot IAW TM 1-1520-240-MTF. Any deficiencies or shortcomings found during test flight will be recorded on a Functional Test Flight Record Sheet. Upon completion of the test flight(s), transfer discrepancies to DA Form 2408-13-1. Correct all discrepancies and process DA Form 2408-13-1 IAW DA PAM 738-751.

TM 1-1500-328-23 establishes standards of serviceability for transfer of an aircraft after completion of depot maintenance. As a minimum, the following shall be accomplished:

1. All phase and periodic inspections shall be accomplished and documented. Upon receipt of helicopter for induction into depot maintenance, and again prior to issue of the aircraft to a field unit, an inventory of equipment listed on DA Form 2408-17 shall be accomplished.
2. All applicable helicopter forms and records shall be completed IAW DA PAM 738-751, prior to completion of depot maintenance.
3. All items listed on the Overhaul and Retirement schedule, TM 55-1520-240-23, as applicable shall be replaced if criteria contained in Section 8, of TM 1-1500-328-23 are not met, unless otherwise specified by the local AMRDEC Engineering or Contracting Officer.

END OF WORK PACKAGE

CHAPTER 4

SUPPORTING INFORMATION

DEPOT MAINTENANCE WORK REQUIREMENTS
CH-47D HELICOPTER
REFERENCES

SCOPE

This work package contains a list of official publications referenced in this DMWR. They are applicable to depot maintenance activities on the CH-47D airframe. They are organized in alphabetical order by Publication Number and include Regulations, DA Pamphlets, Standards, Depot Maintenance Work Requirements, Technical Bulletins, Technical Manuals and Miscellaneous Publications.

DEPOT MAINTENANCE WORK REQUIREMENTS

DMWR 1-1660-206	Depot Maintenance Work Requirement for Ignition Unit Assembly
DMWR 1-4810-229	Depot Maintenance Work Requirement for Gate Shut-Off Valve
DMWR 1-6115-511	Depot Maintenance Work Requirement for AC Generator Assembly
DMWR 55-1560-275	Depot Maintenance Work Requirement for Self Tuning Dynamic Absorber
DMWR 55-1615-296	Depot Maintenance Work Requirement for Forward and Aft Rotary Wing Head Assemblies
DMWR 55-1615-297	Depot Maintenance Work Requirement for Forward and Aft Controllable Swashplate Assemblies
DMWR 55-1615-316	Depot Maintenance Work Requirement for Instrumented Link Assembly
DMWR 55-1615-321	Depot Maintenance Work Requirement for Forward Transmission Assembly
DMWR 55-1615-322	Depot Maintenance Work Requirement for Drive Shafting
DMWR 55-1615-323	Depot Maintenance Work Requirement for Engine Transmission Assembly
DMWR 55-1615-324	Depot Maintenance Work Requirement for Aft Transmission Assembly
DMWR 55-1615-325	Depot Maintenance Work Requirement for Combining Transmission Assembly
DMWR 55-1620-208	Depot Maintenance Work Requirement for Forward Landing Gear Shock Strut Assembly
DMWR 55-1620-224	Depot Maintenance Work Requirement for Power Steering Assembly
DMWR 55-1620-225	Depot Maintenance Work Requirement for Aft Landing Gear Shock Strut Assembly
DMWR 55-1650-154	Depot Maintenance Work Requirement for Pump/motor Assembly
DMWR 55-1650-166	Depot Maintenance Work Requirement for Blade Lag Shock Absorber
DMWR 55-1650-302	Depot Maintenance work Requirement for Ramp Actuating Cylinder Assembly
DMWR 55-1650-395	Depot Maintenance Work Requirement for Pivoting Dual Actuator Cylinder
DMWR 55-1650-396	Depot Maintenance Work Requirement for Reservoir/cooler Subassembly, Hydraulic, Flight Control, CH-47D
DMWR 55-1650-397	Depot Maintenance Work Requirement for Integrated Lower Control Actuators
DMWR 55-1680-133	Depot Maintenance Work Requirement for Rescue and Cargo Winch
DMWR 55-1680-225	Depot Maintenance Work Requirement for Heater Fuel Control Assembly
DMWR 55-1680-246	Depot Maintenance Work Requirement for Extinguisher, Fire, Aircraft

DEPOT MAINTENANCE WORK REQUIREMENTS - continued

DMWR 55-1680-288	Depot Maintenance Work Requirement for Generator Control Panel
DMWR 55-1680-289	Depot Maintenance Work Requirement for Electromechanical Linear Actuator
DMWR 55-1680-341	Depot Maintenance Work Requirement for Magnetic Brake Assembly
DMWR 55-1680-350	Depot Maintenance Work Requirement for Cockpit Control Drive Actuators
DMWR 55-1680-351	Depot Maintenance Work Requirement for Actuator, Electromechanical Linear
DMWR 55-2835-205	Depot Maintenance Work Requirement for Gas Turbine Engine Auxiliary Power Unit (APU)
DMWR 55-2840-254-1	Depot Maintenance Work Requirement for Engine, Aircraft Gas Turbine
DMWR 55-1650-398	Depot Maintenance Work Requirement for Hydraulic Starter/Pump
DMWR 55-1650-399	Depot Maintenance Work Requirement for Power Transfer Unit, Hydraulic Motor/Pump
DMWR 55-1650-400	Depot Maintenance Work Requirement for Swiveling Dual Actuator Cylinder
DMWR 55-1650-412	Depot Maintenance Work Requirement for Hydraulic Accumulator Assembly
DMWR 55-1650-414	Depot Maintenance Work Requirement for Variable Displacement Hydraulic Pump
DMWR 55-2910-200	Depot Maintenance Work Requirement for Fuel Transfer Pump Model RG1510G P/N 114P4010-1
DMWR 55-2915-168	Depot Maintenance Work Requirement for Motor Operated Gate Valve
DMWR 55-2915-296	Depot Maintenance Work Requirement for Centrifugal Fuel Booster Pump
DMWR 55-2995-107	Depot Maintenance Work Requirement for Hydraulic Starter Assembly
DMWR 55-2995-108	Depot Maintenance Work Requirement for Hydraulic Starter Assembly
DMWR 55-4140-216	Depot Maintenance Work Requirement for Mixed Flow Fan
DMWR 55-4140-220	Depot Maintenance Work Requirement for Vaneaxial Fan Assembly (Utility Hydraulic System
DMWR 55-4140-221	Depot Maintenance Work Requirement for Vaneaxial Fan Assembly (Flight Boost)
DMWR 55-4320-278	Depot Maintenance Work Requirement for Variable Displacement Axial Piston Pump Assembly
DMWR 55-6110-227	Depot Maintenance Work Requirement for Generator Control Unit
DMWR 55-6115-496	Depot Maintenance Work Requirement for AC Generator PN 31161-001
DMWR 55-6115-507	Depot Maintenance Work Requirement for Generator
DMWR 55-6130-290	Depot Maintenance Work Requirement for Power Supply P/N 28VS200Y-9
DMWR 55-6610-349	Depot Maintenance Work Requirement for Counter Drum Pointer Altimeter TYPE AAU-31/A
DMWR 55-6620-326	Depot Maintenance Work Requirement for Rate Of Flow Transmitter
DMWR 55-6620-361	Depot Maintenance Work Requirement for Dual Fuel Flow Indicator
DMWR 55-6680-333	Depot Maintenance Work Requirement for Pump Control Unit
DMWR 55-6695-215	Depot Maintenance Work Requirement for Fuel Quantity Indicator

DEPOT MAINTENANCE WORK REQUIREMENTS - continued

DMWR 55-6610-349	Depot Maintenance Work Requirement for Counter Drum Pointer Altimeter TYPE AAU-31/A
DMWR 55-6620-326	Depot Maintenance Work Requirement for Rate Of Flow Transmitter

FIELD MANUALS

FM 3-04.500	Army Aviation Maintenance

MILITARY SPECIFICATIONS AND STANDARDS

MIL-C-5541E	Chemical Conversion Coating on Aluminum and Aluminum Alloys
MIL-C-46168D(3)	Coating, Alaphatic Polyurethane, Chemical Agent Resistant
MIL-F-18264D(2) Notice 1	Finishes: Organic, Weapons System, application and Control of
MIL-I-8500D Notice 2	Interchangeability and Replaceability of Component Parts for Aerospace Vehicles
MIL-PRF-23377H	Primer Coatings: Epoxy, High-Solids
MIL-PRF-85582D	Primer Coatings: Epoxy, Waterborne
MIL-STD-129P(2)	Military Marking for Shipment and Storage
MIL-STD-130L	Identification Marking of U.S. Military Property
MIL-STD-871A Notice 3	Electro Chemical Stripping of Inorganic Finishes
MIL-STD-2073-1D(1)	Standard Practice for Military Packaging

PAMPHLETS

DA PAM 25-30	Consolidated Index of Army Publications and Blank Forms
DA PAM 385-40	Army Accident Investigation and Reporting
DA PAM 738-750	Functional Users Manual for The Army Maintenance Management System (TAMMS)
DA PAM 738-751	Functional Users Manual for The Army Maintenance Management System – Aviation (TAMMS-A)

REGULATIONS

AMCOM REG 702-7	Flight Safety Parts / New Source Testing Program Management
AR 11-27	Army Energy Program
AR 95-1	Flight Regulations
AR 385-95	Army Aviation Accident Prevention
AR 700-138	Army Logistics Readiness and Sustainability
AR 700-139	Army Warranty Program
AR 725-50	Requisition, Receipt and Issue System

REGULATIONS - continued

AR 750-1	Army Material Maintenance Policy
AR 750-43	Army Test, Measurement, and Diagnostic Equipment Program

TECHNICAL BULLETINS

TB 1-1500-341-01	Aircraft Components Requiring Maintenance Management and Historical Data Reports
TB 43-0002-3	Maintenance Expenditure Limits for Army Aircraft
TB 43-0106	Aeronautical Equipment Army Oil Analysis Program (AOAP)
TB 43-0123	Aviation Electronics Configuration Directory
TB 55-8100-200-24	Maintenance of Specialized Reusable Containers for Aircraft Equipment
TB ORD-1030	Army Vehicles, Installation and Use of Overhaul and Overhaul/MWO Data Plates

TECHNICAL MANUALS

TM 1-1500-204-23 Series	Aviation Unit Maintenance (AVUM) and Aviation Intermediate Maintenance (AVIM) Manual For General Aircraft Maintenance
TM 1-1500-250-23	Aviation Unit and Aviation Intermediate Maintenance for General Tie-down and Mooring on All Series Army Models, AH-64, UH-60, CH-47, UH-1, AH-1, OH-58 Helicopters
TM 1-1500-328-23	Aeronautical Equipment Maintenance Management Policies and Procedures
TM 1-1500-344-23	Aircraft Weapons System Cleaning and Corrosion Control
TM 1-1500-335-23	Nondestructive Inspection Methods
TM 1-1500-343-23	Organizational/Unit and Intermediate Maintenance for Avionic Cleaning and Corrosion Prevention /Control
TM 1-1520-240-10	Operators Manual for Army CH-47D Helicopter
TM 1-1520-240-MTF	Maintenance Test Flight Manual for Army Model CH-47D Helicopter
TM 1-1520-253-23	Aviation Unit Maintenance (AVUM) and Aviation Intermediate Maintenance (AVIM) Manual Nondestructive Inspection Procedures for CH/MH-47 Helicopter Series
TM 1-2840-265-23	Aviation Unit and Aviation Intermediate Maintenance Manual for Engine, Gas Turbine Model T55-GA-714A
TM 1-2840-265-23P	Aviation Unit and Aviation Intermediate Maintenance Repair Parts and Special Tools List (Including Depot Maintenance Repair Parts and Special Tools) for Engine, Gas Turbine Model T55-GA-714A
TM 11-1520-240-23	Aviation Unit and Aviation Intermediate Maintenance Manual for Army Model CH-47D Helicopter Avionics Configuration
TM 11-1520-240-23P	Aviation Unit and Intermediate Maintenance Repair Parts and Special Tools List for CH-47D Electronic Equipment Configuration
TM 55-1500-322-24	Maintenance of Aeronautical Antifriction Bearings for Organizational, Intermediate, and Depot Maintenance Levels
TM 55-1500-323-24	Installation Practices for Aircraft Electric and Electronic Wiring
TM 55-1500-342-23	Army Aviation Maintenance Engineering Manual for Weight and Balance

TECHNICAL MANUALS - continued

TM 55-1500-345-23	Painting and Marking of Army Aircraft
TM 55-1520-240-23 Series	Aviation Unit and Aviation Intermediate Maintenance Manual, CH-47D Helicopter
TM 55-1520-240-23P Series	Aviation Unit and Intermediate Maintenance Repair Parts and Special Tools List for Helicopter, Cargo Transport CH-47D
TM 55-1520-240-PM	Phased Maintenance Checklist CH-47D Helicopter
TM 55-1520-240-PMD	Preventive Maintenance Daily Inspection Checklist CH-47D Helicopter
TM 55-1520-240-T-1 thru T-3	Aviation Unit and Aviation Intermediate Troubleshooting Manual for CH-47D Helicopter
TM 55-1730-229-12	Operator and Organizational Maintenance Manual, Power Unit, Aviation, Multi-Output GTED Electrical, Hydraulic, Pneumatic (AGPU)
TM 55-2620-200-24	Inspection, Maintenance Instructions, Storage, and Disposition of Aircraft Tires and Inner Tubes
TM 55-2835-205-23	Aviation Unit and Intermediate Maintenance for Gas Turbine Engine (Auxiliary Power Unit - APU) MODEL T-62T-2B
TM 55-1520-205-23P	Aviation Unit and Intermediate Maintenance Repair Parts and Special Tools List (Including Depot Maintenance Repair Parts and Special Tools) for Gas Turbine Engine (Auxiliary Power Unit - APU), MODEL T-62T-2B
TM 55-2840-254-23 Series	Aviation Unit and Aviation Intermediate Maintenance Manual for Engine, Gas Turbine, Model T55-L712 Series

MISCELLANEOUS PUBLICATIONS

A-A-50271	Plate Identification
ANSI/NCSL Z540.1	Calibration System Requirements
ASTM-B244	Coatings, Anodic on Aluminum and of Other Nonconductive Coatings on Nonmagnetic Basis Metals with Eddy-Current Instruments, Measurement of Thickness
ASTM-B499	Metals, Magnetic Basis, Measurement of Coating Thicknesses by the Magnetic Method: Nonmagnetic Coatings
ASTM-D6193	Standard Practice for Stitches and Seams
ASTM-E1417	Inspection, Fluorescent Pentrant
ASTM-E1444	Particle Examination, Magnetic
ASTM-E1742	Radiographic Examination
ASTM-E1794	Foam Cored Sandwich Panels (200 Deg F Elevated Humidity Service), Type II Panels, Adhesive for Bonding
AWS D17.1	Specification for Fusion Welding for Aerospace Applications
CTA 8-100	Army Medical Department Expendable/Durable Items
CTA 50-970	Expendable Items (Except; Medical, Class V, Repair Parts, and Heraldic Items)
D145-0006:10.0200	Boeing Vertol, Control Rigging Procedure Complete Aircraft
D145-0006:10.0300	Boeing Vertol Flight Control System – Motion Check Complete Aircraft

MISCELLANEOUS PUBLICATIONS - continued

D145-0006:10.0400	Boeing Vertol, Flight Control Feel Forces – System Check Complete Aircraft
ISO 10012-1	Quality Assurance Requirements for Measuring Equipment - Part 1: Metrological Confirmation System for Measuring Equipment
ISO 9000	Quality Management Systems – Fundamentals and Vocabulary
ISO 9001	Quality Management Systems - Requirements
NAS 410	NAS Certification & Qualification of Nondestructive Test Personnel
NFPA 13, Vol. 1	Standard for Installation of Sprinkler Systems
OSHA 1910.159	Automatic Sprinkler Systems
PLM-TM-97059	Pall Purifier Operation and Maintenance Manual
SAE-AMS 2300	Premium Aircraft-Quality Steel Cleanliness, Magnetic Particle Inspection Procedure
SAE-AMS 2644	Inspection Materials, Penetrant
SAE-AMS 3041	Magnetic Particles, Nonfluorescent Wet Method, Oil Vehicle, Ready to Use
SAE-AMS 3043	Magnetic Particles, Nonfluorescent Wet Method, Oil Vehicle Aerosol Packaged
SAE-AMS-M3171	Magnesium Alloy, Processes for Pre-treatment and Prevention of Corrosion On
SAE-AMS-S-13165	Shot Peening of Metal Parts
SAE-AMS-W-6858	Welding, Resistance: Spot and Seam
Service Note 145-022 Rev.1	Boeing Aerospace Service Note – Engine Mount and Drag Strut Inspection/Repair Clarification, Model: CH47D/HH-47D/MH-47DMH-47E/414-100/HC Mk2hc Mk3
T.O. 1-1-3	Inspection and Repair of Aircraft Integral Tanks and Fuel Cells
29CFR1910.9	Occupational Health and Safety Standards, Personal Protective Equipment

DEPOT MAINTENANCE WORK REQUIREMENT
CH-47D HELICOPTER
EXPENDABLE AND DURABLE ITEMS LIST

SCOPE

This work package lists expandable and durable items that you will need to operate and maintain the CH-47D Helicopter. This list is for information only and is not authority to requisition the listed items. These items are authorized to you by CTA 50-970, Expendable/Durable Items (Except Medical, Class V Repair Parts, and Heraldic Items), or CTA 8-100, Army Medical Department Expendable/Durable Items.

Explanation of Columns in the Expendable Supplies and Durable Items List

Column (1) – Item Number. This number is assigned to the entry in the list and is referenced in the narrative instructions to identify the item, e.g., Applicator (Item 44, WP 0157 00).

Column (2) – Level. This column includes the lowest of maintenance that requires the listed item (C=Operator/Crew).

Column (3) – National Stock Number. This is the NSN assigned to the item, which you can use to requisition it.

Column (4) – Item Name, Description, Commercial and Government Entity Code (CAGE), and Part Number (P/N). This column provides the other information you need to identify the item.

Column (5) – Unit of Measure (U/M). This code shows the physical measurement or count of an item, such as gallon, dozen, gross, etc

Table 1. Expendable and Durable Items List

(1) ITEM NUMBER	(2) LEVEL	(3) NATIONAL STOCK NUMBER	(4) ITEM NAME, DESCRIPTION, GAGE, PART NUMBER	(5) U/M
1	C	-	Abrasive, cloth, type I, class I, grit 80, 100, 150, 220, 240 280, 320, 400, (81348), A-A-1048	RO
2	C	5350-00-967-5093	Abrasive, mat, fine grade, (58536) A-A-58054	RO
3	C	5350-01-097-0745	Abrasive, Paper, Aluminum Oxide, 600 grit	PG
4	C	7910-00-753-5242	Pad Scouring, Scotch Brite type A, Minnesota Mining and Materials Mfg. Co. (or equiv)	PG
5	C	-	Abrasive, paper, silicone carbide, waterproof 0000, 000, 180, 220, 240, 320, 360, 400 and 420 grit, A-A-1047	PG
6	C	5350-00-619-9168	Abrasive, paper, silicone carbide, waterproof 60 grit, (58536), A-A-1047	PG
7	C	5350-00-619-9167	Abrasive, paper, silicone carbide, waterproof 80 grit, (58536), A-A-1047	PG
8	C	5350-00-721-8115	Abrasive, paper, silicone carbide, waterproof 120 grit, (58536), A-A-1047	PG
9	C	5350-00-721-8117	Abrasive, paper, silicone carbide, waterproof 180 grit, (58536), A-A-1047	PG

Table 1. Expendable and Durable Items List - continued

10	C	5350-00-224-7207	Abrasive, paper, silicone carbide, waterproof 240 grit, (58536), A-A-1047	PG
11	C	5350-00-224-7205	Abrasive, paper, silicone carbide, waterproof 280 grit, (58536), A-A-1047	PG
12	C	5350-00-224-7203	Abrasive, paper, silicone carbide, waterproof 320 grit, (58536), A-A-1047	PG
13	C	5350-00-224-7202	Abrasive, paper, silicone carbide, waterproof 360 grit, (58536), A-A-1047	PG
14	C	5350-00-224-7201	Abrasive, paper, silicone carbide, waterproof 400 grit, (58536), A-A-1047	PG
15	C	5350-00-224-7216	Abrasive, paper, silicone carbide, waterproof 500 grit, (58536), A-A-1047	PG
16	C	5350-00-224-7215	Abrasive, paper, silicone carbide, waterproof 600 grit, (58536), A-A-1047	PG
17			Not used	
18	C	5350-01-326-9262	Abrasive, Grain, (80244), MIL-P-85891 (AS), type 5, grade A	DR
19	C	-	Accelerator, 611 for 610 filler Resin, Palmer Products Co. Inc (or equiv)	CN
20	C	6810-01-003-0262	Acetone, Technical, (81348) ASTM D329 **(NOTE 3)**	GL
21	C	8040-00-028-7098	Activator, Scotchcal A-2 Minnesota Mining and Materials Mfg. Co. (equiv)	CN
22	C	8040-00-273-8716	Adhesive, Bonding, MMM-A-121	CN
23	C	8040-00-142-9947	Adhesive, Velcro No. 40 (or equiv)	
24	C	8040-01-035-2845	Adhesive, EC2216, parts A and B, type 38, MMM-A-132	KT
25	C	8040-01-016-4726	Adhesive, Polyurethane, EC-3549 B/A (2 parts), Minnesota Mining and Materials Mfg. Co. (or equiv)	KT
26	C	8040-00-018-7581	Adhesive, Pliogrip No. 3, Goodyear Tire and Rubber Co. (or equiv)	GL
27	C	8040-01-163-3481	Adhesive EA 9309 NA, Dexter Corp**. (Note 5)**	KT
28	C	8040-00-932-1945	Adhesive, EC-2216, Parts A and B, Minnesota Mining and Material Mfg. Co. (or equiv)	GL
29	C	8040-00-200-4390	Adhesive, EPON VI, MMM-A-134	KT
30	C	8040-00-531-8030	Adhesive, EPON VIII, MMM-A-134	KT
31	C	8040-00-148-9849	Adhesive, Epocast 50-A, M & T Chemicals, Inc. (or equiv)	KT
32	C	8030-00-086-1506	Adhesive, EPON 828, Shell Chemical Co. (or equiv)	KT
33	C	8040-01-105-9100	Adhesive, ProSeal 719B-1/2, 719B-2, and 719B-4, Hexcel Co. (or equiv)	KT
34	C	8040-00-126-7798	Adhesive, ProSeal 501, Hexcel Co. (or equiv)	KT
35	C	8040-00-142-9721	Adhesive, PR1710, Products Research Corp. (or equiv)	KT
36	C	8030-01-058-9968	Adhesive, PR9021-B2 and PR9021-B4, Products Research Co. (or equiv)	KT
37	C	8040-00-877-9872	Adhesive, RTV102, General Electric Corp. (or equiv), General Electric Corp. (or equiv) MIL-A-46106	KT
38	C	-	Adhesive, Tereco No. 68, Technical Research Co. (or equiv)	KT
39	C	8040-00-828-4936	Adhesive, Uralane 5716, Parts A and B, Furane Plastics (or equiv)	KT

Table 1. Expendable and Durable Items List - continued

40			Not used	
41	C	6810-00-823-8003	Alcohol, Denatured, O-E-760	CN
42	C	6810-00-855-6160	Alcohol, Isopropyl, Technical, TT-I-735, (81348)	GL
42.1	C		Aluminum sheet, 2024-T3	
43	C	6810-00-584-3793	Ammonium Hydroxide, Technical, O-A-451	PT
44	C	6515-01-464-0432	Applicator, Cotton-tipped, GG-A-616	PG
45	C	-	Bake coating, EV 6174, Bee Chemical Co. (or equiv)	
46	C	8135-00-282-0565	Barrier material, water vapor proof, class I, MIL-B-131	RO
47	C	-	Beads, glass, vacu-blast, MIL-G-9954	LB
47.1	C	6850-01-450-6162	Cleaning Compound, Solvent, (OWU71)	CO
48	C	7920-00-514-2417	Brush, acid swabbing, A-A-289 (58536)	GR
49	C	7920-00-054-7768	Brush, fiber, MIL-B-23958	EA
50	C	7920-00-051-4384	Brush non-metallic, type 3, size 5-3/8 diameter, round arms, MIL-B-23958	EA
51	C	8530-01-293-1387	Brush, tooth, A-A-123, (58536)	DZ
52	C	7510-00-550-8446	Brush, typewriter, style1, H-B-00681	EA
53	C	5350-00-165-7145	Buffing compound, Learock No. 888, Lee Mfg. Co. (or equiv)	EA
54	C	8040-00-526-1910	Catalyst, PS-18, Component B, MIL-A-8576	KT
55	C	8135-00-582-5170	Cellophane, sheet, commercial grade, L-C-110	PG
56	C	8040-00-281-1972	Cement, EC 1128, Minnesota Mining and Mfg. Co. (or equiv)	KT
57	C	-	Cement M6249, US Rubber Co. (or equiv)	KT
58	C	8030-00-714-3013	Cement, Pro Seal 590M, Hexcel Corp. (or equiv)	CN
59	C	8040-00-526-1910	Cement, resin, PS-18, component A, MIL-A-8576	KT
60	C	8305-00-267-3015	Cheesecloth, type 2, class B, CCC-C-440	YD
61			Not used	
62	C	-	Chromic Acid Pickle Solution, type VI, MIL-M-3171	CN
63	C	9920-00-292-9946	Cleaner, pipe, 840507	BX
64	C	6850-01-181-0273	Cleaning compound, aircraft surface, alkaline water base, MIL-C-87936	GL
65	C	6850-00-935-0985	Cleaning compound, windshield, Indosil 21, Indosil Co. (or equiv)	GL
66	C	6850-01-224-0098	Cleaning compound, aircraft surface, MIL-C-43616	GL
67	C	6850-01-235-0872	Cleaning Compound, Aircraft ,MIL-PRF-85570D, type II (QPL)	CN
68	C	6850-01-339-5227	Cleaning Compound, Aircraft, MIL-PRF-87937, type II	CN
69	C	6850-01-474-2319	Cleaning Compound, Solvent, (81349), type II, MIL-PRF-680	GL
70	C	6850-01-399-0676	Cleaning Compound, Solvent (OXSOL 100)	CN
71	C	6850-01-458-8081	Cleaning Compound, Solvent, Desoclean, (85570) **(NOTE 1)**	GL
72	C	7930-01-367-0996	Cleaning Solvent, General Purpose, DS-108, (30256) **(NOTE 2)**	CO
73	C	8305-00-753-2967	Cloth, cleaning, CCC-C-46D	RO
74	C	-	Cloth, cleaning and polishing,	PG
75	C	7920-00-044-9281	Cloth, cleaning, low-lint (type II), A-A-59323, (58536)	BX
76	C	8305-00-191-3977	Cloth, cotton, airplane, MIL-C-5646	YD

Table 1. Expendable and Durable Items List - continued

77	C	8305-00-913-5817	Cloth, flannel, cotton (or equiv), A-A-50129, (58536)	BO
78	C	8305-00-530-0109	Cloth, glass, No. 181, MIL-C-9084	YD
79	C	8305-00-503-6961	Cloth, glass, 181-150, MIL-C-9084	YD
80	C	-	Cloth, glass, 181-77, MIL-C-9084,	YD
81	C	8010-01-314-4497	Coating, epoxy, color No. 16081, MIL-C-22750	KT
82	C	8030-00-082-2425	Compound, Coating, MIL-PRF-8514	KT
83	C	-	Core material, aluminum, 3.0-3/8-20N5052, MIL-C-7438	EA
84	C	5680-01-283-0092	Core material, aluminum, 3.4-1/4-15N5052, MIL-C-7438	EA
85	C	5680-00-149-1371	Core material, aluminum, 4.3-1/4-20N5052, MIL-C-7438	EA
86	C	5680-00-926-4637	Core material, aluminum, 4.3-3/8-50N5052, MIL-C-7438	EA
87	C	8030-01-347-0981	Corrosion-preventive compound, type II, MIL-C-85054	QT
88	C	8010-01-314-4497	Coating, epoxy, color No. 16081, MIL-PRF-22750	KT
89	C	8030-00-938-1947	Corrosion-preventive compound Film, type II, Class 2, MIL-C-81309	CN
90	C	8030-00-546-8637	Corrosion-preventive compound, type III, Class 2, MIL-C-81309	CN
91	C	6850-01-492-2932	Corrosion-preventive Compound, Cor Ban 35	BX
92			Not used	
93			Not used	
94	C	8030-00-062-5866	Corrosion-preventive Compound (grade 4), (81349), MIL-C-16173	GL
95	C	8030-00-057-2354	Corrosion-resistant, Alodine 1200 powder	JR
96	C	8030-01-018-2838	Corrosion-resistant Coating, Chemical, Alodine 600	LB
97	C	6850-01-107-2551	Compound, corrosion removing, MIL-C-10578	CO
98	C	-	Cup, Polyethylene	
99	C	6810-00-995-4804	Curing Agent DTA, O-D-1271	PT
99.1	C	6850-01-375-5553	Cleaning Compound, Solvent (8S927)	CN
100	C	8010-01-053-2650	Epoxy Topcoat, gray,	KT
101	C	7510-00-257-4995	Eraser, block, type I, A-A-132	DZ
102	C	-	Eraser, typewriter (type II, style D), A-A-132	BX
102.1	C	5640-00-267-8891	Sound Controlling, Batting	RO
103	C	8030-00-149-0137	Filler, Corfil 615, Bloomingdale Rubber Co.	GL
104	C	-	Foam, Type II, Grade 6 (Last-A-Foam), FR10106	RO
105	C	-	Foil aluminum, adhesive-backed (type I), MIL-P-19834	EA
106	C	-	Gloves, Chemical and Oil Protective, MIL-G-87066	PR
107	C	8415-00-926-1674	Gloves, wire handling, A-A-50054, (58536)	PR
108	C	-	Gloves, anti contact, MIL-G-10902	PR
109	C	8415-00-266-8675	Gloves, type 3, MIL-DTL-32066, (81349)	PR
110	C	9150-00-269-8255	Grease, Aircraft, (81343) AMS-G-4343, (81343)	CN
111	C	8040-00-148-9849	Hardener, Epocast 9816 (p/o Epocast 1835)	KT
112	C	-	Hardener, Epoxide 206, Union Carbide Corp.	KT
113	C	7510-01-300-2125	Tape, Pressure Sensitive	RO
114	C	9150-00-149-7431	Hydraulic fluid, fire-resistant, MIL-PRF-83282	QT

Table 1. Expendable and Durable Items List - continued

115	C	9150-00-252-6383	Hydraulic fluid, petroleum base, MIL-H-5606	QT
116	C	8010-00-721-9882	Lacquer, acid-resistant, A-A-1452, (58536)	PT
117	C	8010-00-490-7651	Lacquer, clear, MIL-L-19537	GL
118	C	8010-00-830-1822	Lacquer, lusterless black, color No. 37038, MIL-L-81352, (81349)	GL
118.1	C	6810-00-687-8056	Methanol, ACS	GL
119	C	7920-00-224-8726	Mop, Wet (83421)	EA
120	C	7920-01-448-2270	Mop, Wet	EA
121	C	7920-00-947-1866	Mop, Dish, Cotton	EA
122	C	6810-00-265-0664	Naphtha, aliphatic, (81348) TT-N-95 **(NOTE 3)**	CN
123	C	6810-00-223-9066	Naphtha, aromatic, TT-N-97	DR
124	C	6810-01-063-4534	N-Hexane (Reagent Grade), P/N N-3-S	PG
125	C	8010-00-866-6810	Paint, non-skid, Epolux 100E6AS (or equiv)	EA
126	C	8010-00-515-2258	Paint remover, TT-R-248	CN
127	C	8010-00-926-4727	Paint remover, 30	GL
128	C	8010-00-082-2421	Coating Compound, fluorescent (81349) MIL-P-21600	GL
129	C	8135-00-160-7759	Paper, wrapping, untreated, Kraft, UU-P-393	RO
129.1	C	6850-00-703-7406	Penetrant Inspection Kit, AMS 2644	KT
130	C	6850-01-394-3035	Cleaning Compound Solvent, P/N PF-5060, (28112)	DR
131	C	8030-00-292-9634	Plastic coating compound	BX
132	C	9330-01-027-6142	Plastic Sheet, (00473)	RO
133	C	-	Plastic Media, MIL-P-85891, Type II or Type V	DR
134	C	9330-01-229-1910	Polycarbonate sheet, Lexan General Co. (or equiv), or L-P-393 Merlon, Mobay Chemical Co. (or equiv) 0.044 and 0.050 inch thick	CN
135	C	8010-01-293-0789	Polyurethane Coating, MIL-PRF-85285C, Color Chip #17925 (White)	KT
136	C	-	Polyurethane Topcoat, MIL-PRF-85285C, Deft Inc.	KT
136.1	C	6850-01-412-0026	Cleaning Compound, Solvent (OWU71) Product No. 99W009, Color Chip #17925 (White)	CN
137	C	8010-00-664-0018	Primer Coating, Vinyl-Zinc Chromate, MIL-P-15930	GL
138	C	8010-01-357-7868	Primer Coating (Flexible Primer, TT-P-2760A, Type I, Class C) P/N 09Y002	KT
139	C	8010-01-213-7898	Primer Coating (Flexible Primer, TT-P-2760A, Type I, Class C) P/N 823X439	GL
140	C	8010-00-082-2450	Primer, epoxy, MIL-PRF-23377	KT
141	C	8010-01-218-0856	Primer, epoxy, (33461), P/N 44GN007,	KT
142	C	8010-01-218-7354	Primer, epoxy, (33461), P/N 44GN007	KT
143	C	-	Primer, PR1711, Products Research Corp. (or equiv)	EA
144	C	-	Primer, SS4004 for RTV 102 adhesive, General Electric Corp. (or equiv)	KT
145	C	8030-00-015-6104	Primer, wash, MIL-C-8514	KT
146	C	8040-00-270-8148	Promoter, PS-18, component C, MIL-A-8576 Adhesive	KT
147	C	5350-00-161-9033	Pumice, SS-P-821	LB

Table 1. Expendable and Durable Items List - continued

148	C	8020-00-149-1721	Rag, Tack, (53472), P/N TR5	EA
149	C	6850-00-139-5297	Rain repellant and/or parting agent, Vydax-550, Du Pont E.I. De Nemours (or equiv), IL-W-006882	BT
150	C	8030-00-086-1506	Resin compound, 611 Palmer Products Co., Inc., (or equiv)	PT
151	C	8040-00-200-3793	Resin, paraplex (P-43) (or equiv), MIL-R-7575	GL
151.1	C	8030-01-284-3943	Resin, epoxy, low-pressure laminating, MIL-R-9300	GL
152	C	5350-00-223-5581	Rouge, No. 0000	LB
153	C	9535-00-416-8553	Screen 0.040-inch perforated grill, diamond pattern 0.5-inch wide x 0.75-inch long, Diamond Mfg. Co. (or equiv)	SH
154	C	-	Screen 0.063-inch, woven wire mesh 0.187-inch openings, double crimp, type I, class I, RR-W-440	FT
155	C	1560-01-502-6775	Scrim cloth, nylon, EP-15, Travis Mills Corp. (or equiv)	YD
156	C	8030-00-174-2599	Sealant, type 2, class B-1/2, AMS-S-8802	KT
157	C	8030-00-723-5345	Sealant, Pro Seal 700, Hexcel Corp. (or equiv)	KT
158	C	-	Sealant, Pro Seal 719A-2, Hexcel Corp. (or equiv	KT
159	C	8030-01-387-1127	Sealant, Pro Seal 896, Hexcel Corp. (or equiv), AMS-S-8802	KT
160	C	-	Sealant, MMM-08874	KT
161	C	8030-00-083-6523	Sealant, PR9021 A-1, A-2, and A-4	KT
162	C	8030-01-476-2255	Sealing compound, classes A and C, AMS-S-8802	KT
163	C	8030-01-361-1814	Sealing compound, (types I, II, and III) MIL-PRF-81733, (81349)	CA
164	C	8030-00-965-2437	Sealing compound, MIL-S-11030	RO
165	C	8520-00-531-6484	Soap, toilet, P-S-6240	HD
166	C	7920-01-068-1246	Sponge, Cellulose	PG
167	C	-	Steel plate, CRES, type 301 or 304, 1/4 hard or annealed, MIL-S-5059	SH
168	C	9515-00-596-1727	Steel, sheet, CRES, 0.040-inch thick, type 301, AMS-S-5578	SH
169	C	9515-00-640-4146	Steel, sheet, 4130, 0.032-inch thick, MIL-S-18729	SH
170	C	5350-00-240-2920	Wool, Metallic	LB
171	C	5970-01-062-3651	Tape, Insulation Electrical	RO
172	C	6640-01-399-1149	Tape, Blast, (0F6E2), P/N BT-100	PG
173	C	7510-00-846-8674	Tape, Pressure Sensitive Adhesive	RO
174	C	5640-00-103-2254	Tape, Duct	RO
175	C	7510-00-266-6707	Tape, Pressure-Sensitive Adhesive, A-A-883(3” wide)	RO
176	C	7510-01-031-3129	Tape, Pressure-Sensitive Adhesive, (1 inch wide)	RO
177	C	7510-00-720-7516	Tape, Pressure-Sensitive Adhesive	RO
178	C	7510-01-416-8859	Tape, Pressure-Sensitive Adhesive, A-A-113	RO
179	C	7510-01-300-2125	Tape, Pressure Sensitive Adhesive, (04963), P/N YR-500	RO
180	C	-	Tape, Scotchcal 455, anti-chafing, Minnesota Mining and Mfg. (or equiv)	TU
181	C	8315-01-035-7308	Fastener Tape, Pile	RO
182	C	9330-00-993-1606	Plastic Sheet	SH
183	C	8010-00-181-8080	Thinner, Paint Products, MIL-T-81772 **(NOTE 4)**	GL

Table 1. Expendable and Durable Items List - continued

184	C	8010-01-200-2637	Thinner, Paint (5A188) Solvent Blend MIL-T-81772 Type 2 Rev, **(NOTE 4)**	GL
185	C	-	Thread, nylon, type 1K, size 1B, class II gray, V-T-295	TU
186	C	-	Thread, cotton, 4 ply, size 10-3	TU
187	C	6685-01-344-0752	Indicator, Temperature, Model 110-2, 140-190 deg F	EA
188	C	6685-01-323-0671	Recorder, Temperature, Model 110-3, 180-230 deg F	EA
188.1	C	6685-01-356-5901	Indicator, Temperature, Model 110-4, 220-270 deg F	EA
188.2	C	6685-01-062-5499	Recorder, Temperature, Model 110-5, 260-310 deg F	EA
188.3	C	6685-01-291-7818	Recorder, Temperature, PN 110-1, 100-150 deg F	EA
189	C	6810-00-281-2002	Toluene, technical, TT-T-548 **(NOTE 4)**	GL
190	C	6515-00-753-4533	Tongue depressor (wood spatula), LLL-S-007.29	BX
191	C	5610-00-641-0429	Walkway material, type I (smooth) black, color No. 37038 MIL-W-5044	GL
192	C	5610-00-641-0428	Walkway material, type I (smooth) gray, color No.36231	GL
193	C	8010-01-397-3807	Coating Compound, Non-slip, Color Gray	KT
194	C	5610-00-641-0426	Coating Compound, Non-slip, gray, color No.36231 MIL-W-5044	GL
194.1	C	6810-00-356-4936	Water Distilled-De-ionized	BT
195	C	-	Wheel, abrasive, no-woven nylon (class 2, type II), W-81319	EA
196	C	5335-01-306-9677	Wire Fabric, 120 mesh, Metex Corp.	EA
197	C	6810-00-584-4070	Xylene, TT-X-916 **(NOTE 4)**	CN

NOTES

1. Desoclean 45, also known as P/N 02X413, NSN 6850-01-458-8081, is authorized as a drop in replacement for MEK in all aviation Technical Manuals and DMWRs. It has an allowable HAP with a vapor pressure of less than 45 mm Hg at 70 degrees F. If the DMWR or TM states to use MEK, then Desoclean 45 may be substituted for use. If the DMWR or TM states a chemical other than MEK, then Desoclean 45 is not authorized.
2. DS-108, NSN 7930-01-367-0994, is authorized as an MEK substitute for only the following applications: 1) cleaning prior to painting, 2) cleaning prior to applying sealants, and 3) cleaning prior to Fluorescent Penetrant Inspection. DS-108 does not contain HAPs and has a vapor pressure less than 7 mm Hg at 70 degrees F.
3. Acetone or Aliphatic Naphtha is authorized as an MEK substitute for cleaning prior to applying sealants, only. Acetone is to be used only for wipe cleaning of composite components because of possible debonding. Acetone is not to be used in cleaning polycarbonate/stretched acrylic transparencies because of possible interactions. Acetone and Aliphatic Naphtha do not contain HAPs.
4. Thinner, MIL-T-81772, is authorized as an MEK substitute for cleaning prior to painting. MIL-T-81772 is a blend of MEK, MIBK, Acetates, Toluene, and Xylene. The thinner must have vapor pressure less than 45 mm Hg at 70 degrees F to the NESHAP requirements.
5. Adhesive, Item 27, is preferred for rotor blade repairs. Item 27 does not require the use of scrim cloth to prevent squeeze out. Item 27 contains beads that prevent it from being squeezed below the thickness of the beads.

END OF WORK PACKAGE

DEPOT MAINTENANCE WORK REQUIREMENT
CH-47D HELICOPTER
TOOL IDENTIFICATION LIST

SCOPE

This work package lists, or provides references, for all tools required to perform work IAW this DMWR.

TOOL LISTING

A complete listing of all special tools and test equipment authorized for use during performance of maintenance on the CH-47D helicopter/accessories are listed in TM 55-1520-240-23, with the exception of the following:

Table 1. Tool Identification List

ITEM NO.	NOMENCLATURE	PART NUMBER	CAGE
1	DRIVE SYSTEM ALIGNMENT CHECKING FIXTURE (WP 0148 00)	114G1168-2	77272
2	ENGINE MOUNTS LOCATING FIXTURE ASSEMBLY (WP 0118 00)	114G1242-1	77282
3	CORROSION PREVENTION COMPOUND (CPC) APPLICATION EQUIPMENT (WP 0161 00)	2205RK	87267
4	HYDRAULIC FLUID PURIFICATION APPERATUS (WP 0162 00)	PEO1078-12HW83	18350

END OF WORK PACKAGE

DEPOT MAINTENANCE WORK REQUIREMENT
CH-47D HELICOPTER
MANDATORY REPLACEMENT PARTS

SCOPE

This work package defines conditions where it will be mandatory to replace aircraft parts.

MANDATORY PARTS REPLACEMENT

Replacement of parts during the overhaul process is based on Pre-Shop Analysis findings, using serviceability criteria defined by this DMWR and referenced technical manuals. Under certain conditions, the Procuring Agency/Contracting Officer will specifically require replacement of certain parts or components based on past experience and projected end item usage. Mandatory parts replacement will fall into the following categories:

1. Part or component is unserviceable based on Pre-Shop Analysis findings.
2. Part or component is outside of Overhaul and Retirement Schedule – Refer to WP 0151 00.
3. Part or component does not meet aircraft transfer criteria – Refer to WP 0003 00.
4. Procuring Agency/Contracting Officer directs that part or component be replaced.

END OF WORK PACKAGE

DEPOT MAINTENANCE WORK REQUIREMENT

CH-47D HELICOPTER

CRITICAL SAFETY ITEMS AND FLIGHT SAFETY CRITICAL AIRCRAFT PARTS

SCOPE

This DMWR incorporates the U.S. Army Aviation and Missile Command (AMCOM) Flight Safety Parts (FSP) Program. The purpose of the program is to provide enhanced life cycle management and control of parts critical to the safe operation of the aircraft. Specifics of the program are in AMCOM Reg 702-7. Appendix D of the Reg describes the minimum level of activity that is required by the Maintenance and Overhaul Facility for FSP's, wherein the Facility affects or involves the Critical Characteristics (CC's) associated with the FSP. The program requirements are intended to establish and maintain the integrity of the CC's throughout the maintenance and overhaul process.

DEFINITIONS

Flight Safety Part, (Aircraft and Components)
Any part, assembly, or installation containing a CC whose failure, malfunction, or absence, could cause loss of, or serious damage to the aircraft, and/or serious injury or death to the occupants.

Flight Safety Part, (Engine)
Any part, assembly, or installation containing a CC whose failure, malfunction, or absence could cause an uncommanded engine shut down, and/or an uncontained engine failure resulting in loss of, or serious damage to the aircraft, and/or serious injury or death to the occupants.

Critical Characteristic
Any feature throughout the life cycle of a FSP, such as dimension, finish, material, assembly, manufacturing or inspection process, installation, operation, field maintenance, or depot overhaul requirement which if nonconforming, missing or degraded could cause the failure or malfunction of the FSP.

Approved Source
A manufacturer or vendor who has satisfied, prior to contract award, all AMCOM source approval requirements as set forth in the Competition Advocate's Shopping List (CASL) to include, if applicable, engineering testing requirements (fatigue, endurance, and/or interchangeability).

Contractor
Any company or Government owned and operated depot performing maintenance and overhaul for AMCOM.

FLIGHT SAFETY PARTS POLICY

To maintain the integrity and quality of FSP, components, sub-assemblies, and assemblies undergoing maintenance and overhaul, contractors providing such services are required to adhere to the requirements of AMCOM Reg 702-7, in its entirety. If a contractor has difficulty in maintaining process control, as evident through such things as internal management audits, customer audits, the receipt of quality deficiency reports for parts previously supplied to AMCOM et.al., this will require immediate corrective action for the current contract and could affect the award of future contracts.

FLIGHT SAFETY PARTS LISTING

See Table 1 for current "Installation Critical" FSP's listing for the CH-47D Helicopter. For complete listing of all FSP's, refer to the AMCOM maintained CSI/NST Database.

REQUIREMENTS

All requirements of AMCOM Reg 702-7, Appendix D, paragraphs 6.1 – 6.7, shall be complied with by a contractor receiving a contract for maintenance and overhaul of FSP's. If a process or processes that involve a CC is subcontracted, this requirement must be imposed, in it entirety, on the subcontractor performing the work. If, during maintenance and overhaul, replacement parts are required that are not identified on the repair parts lists, the contractor will contact the Contracting Officer for instructions on how to procure these parts.

PLANNING

Plan Content

Each maintenance and overhaul process affecting a FSP CC as identified in the DMWR or other AMCOM authorized maintenance and overhaul procedure must be controlled by detailed procedures outlining each step or parameter of the process along with any required materials, tooling, equipment, or operator certification. All procedures must be clearly defined and the values of characteristics recorded as applicable. Plans shall clearly define sequence of operation, machine type, and accept/reject limits for the specific process or operation. Critical process not easily verified shall clearly define process operating parameters with tolerances. Plans shall clearly identify all CC's.

Frozen Planning Requirements

The Depot/contractor is responsible for developing maintenance and overhaul planning. Review and control of these plans will be the responsibility of the Contractor Control Board (CCB) consisting of qualified personnel equipped with adequate resources to assure development of complete, reliable, and traceable documentation. Parts maintained and overhauled utilizing these plans shall meet all contractual requirements. Plans developed for the maintenance and overhaul of FSP shall be frozen at the time the Product Verification Audit (PVA) is approved by the Government, or when a PVA is not required, prior to induction of the first maintenance and overhaul asset. Once frozen, plans shall remain frozen throughout the existing contract and all subsequent contracts for maintenance and overhaul of the item unless changes to the planning are made IAW this standard. In addition, all plans shall be made available to the Government at any time upon request. For future contracts, verification of the currency of this planning will also be required at the time of bid submission if specified in the solicitation.

Changes to Frozen Planning

Frozen maintenance and overhaul planning pertaining to a CC shall not be changed without prior CCB recommendation, justification to AMCOM, and receipt of approval by the Contracting Officer. Changes occurring as the result of an AMCOM approved Engineering Change Proposal (ECP), or AMCOM Engineering Directive (AED) requires CCB approval only. All changes to frozen planning affecting CCs will be submitted to AMCOM for approval. When the item, CC, or process is accomplished by a subcontractor, the planning shall be reviewed and approved by the contractor, and be subject to the same restrictions as above. Changes to frozen planning not effecting CCs require only CCB approval.

AUDITS

Contractors are to perform self-audits of their frozen planning when that planning applies to CCs produced or verified in house. At a minimum, audits will be performed at the start of each maintenance and overhaul contract, annually, and when process changes occur. It is incumbent upon the contractor to assure that subcontractors accomplish self-audits, and maintain records verifying their vendors are in full compliance with the audit requirement. All audit findings will be recorded and corrective action will be documented.

CRITICAL CHARACTERISTICS

Inspection of Critical Characteristics

All CCs which can be nondestructively inspected shall be subjected to 100 percent inspection by the contractor or subcontractor. However, assemblies containing CCs need only be disassembled to the extent required by the statement of work to return the assemblies to a serviceable condition. In these cases, inspection of CCs is not necessary. CCs which require destructive testing are to be tested on a lot or batch basis, with no skip lots

Inspection of Critical Characteristics - continued

allowed. All compeleted work instructions shall identify the FSP part number, serial or lot number, and characteristic inspected. CCs shall be identified on the work instruction in such a manner as to draw attention to them. Work instructions shall reflect the exact readings or dimensions, date of inspection, identity of inspector, and any required inspection certification. These requirements are in addition to other contractual requirements.

Nonconforming Critical Characteristics
Nonconformances of CCs shall not be dispositioned “use as is” or “repair” through contractor actions. Rework to DMWR or other AMCOM approved procedures are acceptable. Waivers or deviations may be requested as specified in the contract. Request for waivers/deviations of CCs shall be classified as critical and will be forwarded to AMCOM for approval/disapproval.

Contradictory Critical Characteristics
Contradictions between the DMWR or other AMCOM approved procedures shall be brought to the attention of the Contracting Officer immediately and any work pertaining to the CC in question shall be stopped until a written resolution to the contradiction is issued to the contractor by the Contracting Officer.

Delivered Non-conformances
Contractors shall notify the Contracting Officer immediately of any discovered nonconformances that may exist in previously delivered FSP. Notification is required whether the characteristic in question has been classified as a CC or not. Notification shall include a description of the suspected nonconformance, contract number, part number, and affected serial numbers, or lot number, when applicable.

RECORDS

Traceability of Records
All records relating to FSP shall be traceable to the date and place of maintenance and overhaul. Records shall provide the degree of traceability required to enable subsequent verification of all aspects of material, manufacture, special process, personnel certification, variability control charts (if applicable), assembly, and inspection of CCs. Special processes include, but are not limited to, heat treat, shotpeening, and nondestructive inspection.

Purchasing Records
All purchase orders for subcontracted products or processes that contain CCs must clearly identify the CC, reference AMCOM Reg 702-7 for compliance. All documents and referenced data for FSP shall be available for review by the Government to determine compliance.

Retention of Records
The contractor shall retain copies of all records generated pursuant to this standard and make these records available to the Government upon request. Records shall be retained for a period of five years after the contractor ceases the maintenance and overhaul process of the part for which this standard applies. At the end of this period or in the event of relocation or shutdown, all records shall be offered to the Contracting Officer prior to disposal.

CERTIFICATION OF PERSONNEL

Contractor personnel performing work or having inspection responsibilities pertaining to CCs, shall be certified to the appropriate professional level as outlined in the applicable national standards, best commercial practices, or as contractually required. A system for tracking personnel certification shall be an element in the contractor internal audit program to assure all certifications are maintained in a current status.

MEASUREMENT AND TEST EQUIPMENT

Calibration
Calibration of inspection equipment shall be IAW contractual requirements. All aspects of the supplier's calibration confirmation system shall be subject to Government verification at unscheduled intervals. The supplier's measurement and test equipment and shall be made available for use by the Government, as needed. All measuring equipment that is used to measure CCs shall be monitored for effectiveness and reproducibility. A recommended method is provided in ISO 10012-1.

Tolerance
Measurement and test equipment used to inspect FSPs must be discriminate to within 10 percent of the total tolerance for the feature being inspected except for tolerances less than 0.001-inch. Measurement and test equipment must be discriminate to 20 percent of the total tolerance for the feature being inspected when tolerance is less than 0.001-inch.

GOVERNMENT FURNISHED MATERIAL

When material is furnished by the Government, the contractor's procedures shall include, as a minimum, the following:

1. Examination upon receipt to detect damage in transit.
2. Inspection for completeness and proper type.
3. Periodic inspection and precautions to assure adequate storage conditions are maintained, and to guard against damage from handling and deterioration during storage.
4. Functional testing, either prior to or after installation, or both, as required by contract to determine satisfactory operation.
5. Identification and protection from improper use or disposition.
6. Verification of quality.
7. Damaged/nonconforming Government Furnished Material shall be identified as such and is to be segregated in a secure area pending Government disposition instructions.

Table 1. Flight Safety "Installation" Critical Aircraft Parts – CH-47D

PART NUMBER / CAGEC	DASH NUMBER (S)	NOMENCLATURE	CRITICAL CHARACTERISTIC
114C1013 (77272)	-1, -3 thru –7	Link Assembly, Connecting	1. Proper installation of bolt, nut, washers, and cotter pins 2. Proper installation of rivet 3. Proper installation of rod end jam nuts 4. Torque

Table 1. Flight Safety "Installation" Critical Aircraft Parts – CH-47D - continued

PART NUMBER / CAGEC	DASH NUMBER (S)	NOMENCLATURE	CRITICAL CHARACTERISTIC
114C1014 (77272)	-1, -2, -3, -16, -21, -22	Link Assembly, Connecting	1. Current installation of link assembly 2. Installation critical 3. Jam nuts installed and torque 4. Proper installation of bolt, nut, washers, and cotter pins 5. Proper installation of rivet 6. Proper installation of rod end, solid section attachments, link assembly and rod end jam nuts 7. Torque
114C1016 (77272)	-1, -2	Link Assembly	1. Installation of jam nuts 2. Proper installation of bolt, nut, washers, and cotter pins 3. Rivet secure 4. Torque
114C1110 (77272)	-1, -2	Support, Assembly	Installation critical
114C1111 (77272)	-1	Support Assembly	Installation critical
114C1112 (77272)	-6, -7	Support Assembly, Brake	Installation critical
114C1113 (77272)	-4	Support Assembly	Installation critical
114C1114 (77272)	-1	Support Assembly	Installation critical
114C1120 (77272)	-1	Shaft, Pedal Post Support	1. Proper installation of bolt, nut, washers, and cotter pins 2. Shafts and mating components at same location 3. Torque
114C1122 (77272)	-1, -2	Post Assembly, LH and RH	1. Installation critical 2. Proper installation of impedance bolt, plate guide, pin and lever return spring, eye bolt, and pedal pivot shafts 3. Proper installation of locking pin and mating drive arm
114C1145 (77272)	-1	Shaft	1. Proper installation of AN320-6 nut 2. Proper installation of spacers, washers, and bushings

Table 1. Flight Safety "Installation" Critical Aircraft Parts – CH-47D - continued

PART NUMBER / CAGEC	DASH NUMBER (S)	NOMENCLATURE	CRITICAL CHARACTERISTIC
114C1182 (77272)	-1	Link Assembly, Thrust Control	1. Proper installation of bearings and spacer 2. Proper installation of bolt, nut, washers, and cotter pins 3. Proper orientation of link assembly 4. Torque
114C1217 (77272)	-1	Shaft Assembly, Support	1. Proper installation of bolt, nut, washers, and cotter pins 2. Proper installation of MS17826-4 nut 3. Proper installation of spacers, washers, and bushings 4. Torque
114C3010 (77272)	-25, -26, -27, -29, -31, -32, -33, -34, -35, -36, -37, -38	Connecting Link, Rigid	1. Installation critical 2. Proper application of Albi fire retardant coatings 3. Proper installation of rivet, roll pin, rod end insert, rod end jam nuts, bushings, bolt, nut washers, bonding jumper clamp and cotter pins 4. Torque
114C3043 (77272)	-6	Yoke Assembly	1. Proper installation of flange and slip bushings, bearings and spacer, bolt, nut, washers, countersink washers, and cotter pins 2. Torque
114C3314 (77272)	-1	Shaft	1. Assembly contains FSP 2. Proper installation of spacers, washers, bushings, bolt, nut, cotter pins, and MS21025-20 nut 3. Torque
114C3316 (77272)	-20	Bellcrank Assembly	1. Bellcrank hub bearings are serviceable and properly installed 2. Proper installation of all bushings 3. Proper installation of bolt, nut, washers, and cotter pins 4. Torque
114C3318 (77272)	-20	Bellcrank Assembly	1. Bellcrank hub bearings are serviceable and properly installed 2. Proper installation of all bushings 3. Proper installation of bolt, nut, washers, and cotter pins 4. Torque

Table 1. Flight Safety "Installation" Critical Aircraft Parts – CH-47D - continued

PART NUMBER / CAGEC	DASH NUMBER (S)	NOMENCLATURE	CRITICAL CHARACTERISTIC
114C3319 (77272)	-20	Bellcrank Assembly	1. Bellcrank hub bearings are serviceable and properly installed 2. Proper installation of all bushings 3. Proper installation of bolt, nut, washers, and cotter pins 4. Torque
114C3320 (77272)	-22	Bellcrank Assembly	1. Bellcrank hub bearings are serviceable and properly installed 2. Proper installation of all bushings 3. Proper installation of bolt, nut, washers, and cotter pins 4. Torque
114C3324 (77272)	-6	Bellcrank Assembly	1. Bellcrank hub bearings are serviceable and properly installed 2. Proper installation of all bushings 3. Proper installation of bolt, nut, washers, and cotter pins 4. Torque
114C3325 (77272)	-22	Bellcrank Assembly	1. Bellcrank hub bearings are serviceable and properly installed 2. Proper installation of all bushings 3. Proper installation of bolt, nut, washers, and cotter pins 4. Torque
114C3327 (77272)	-24	Connecting Link Assembly	1. Bearings are properly staked 2. Proper installation of bolt, nut, washers, and cotter pins 3. Torque
114C3328 (77272)	-20	Link Assembly	1. Bearings are properly staked 2. Proper installation of bolt, nut, washers, and cotter pins 3. Torque
114C3410 (77272)	-1	Beam Assembly, Walking	1. Proper installation of bearings, locating pads, slip bushings, bolts, nuts, washers, and cotter pins 2. Torque
114C3411 (77272)	-6	Idler Assembly	1. Ensure hub bearings are serviceable and properly installed 2. Insure proper clearance on top side of all idler assemblies 3. Proper installation of flanged bushings, bolt, nut, washers, and cotter pins 4. Torque

Table 1. Flight Safety "Installation" Critical Aircraft Parts – CH-47D - continued

PART NUMBER / CAGEC	DASH NUMBER (S)	NOMENCLATURE	CRITICAL CHARACTERISTIC
114CS110 (77272)	-2, -4, -6	Damper, Viscous	1. Correct damper and damper arm assembly properly installed 2. Proper installation of all mounting hardware
114D3053 (77272)	-1	Bolt, Internally Relieved	Installation critical
114H6800 (77272)	-5, -9, -11	Shock Absorber, Blade Lag	1. Assembly contains FSP 2. Installation critical 3. Proper installation of bushings and positive retention bolts
114R1702 (77272)	-37, -38	Blade Assembly, Rotary Wing	1. Proper installation of blade with specified blade sling, and vertical pin with pin reaction adapter set 2. Proper installation of upper and lower vertical pins and vertical pin nuts
114R2096 (77272)	-2	Bushing, Sleeve	Proper installation of bushings and positive retention bolts
114R2172 (77272)	-1	Pin, Vertical Hinge	1. Evidence of inspection accomplishment must be maintained on file (magnetic particle inspection, eddy current and fluorescent penetrant inspection) 2. No MRB action permitted below minimum Rockwell Hardness 3. Proper installation of blade with specified blade sling; vertical pin with pin reaction adapter set 4. Proper installation of upper and lower vertical pins and vertical pin nuts
114R3116	-38, -45, -46	Bearing, Sleeve	Proper installation of shoulder bushing, sliding bushing, and impedance bolt
114R3433 (77272)	-1, -5, -7, -9	Drive Arm Assembly, Lower	1. Assembly contains FSP's 2. Proper installation of bushings, bearings, sliding bushing, impedance bolt, and or positive retention bolt
114R3434 (77272)	-1, -5, -7, -9	Drive Arm Assembly, Upper	1. Assembly contains FSP's 2. Proper installation of shoulder bushing, sliding bushing, and impedance bolt
114R3610 (77272)	-1	Turnbuckle	Installation critical
114R3611 (77272)	-1, -2, -3, -4	Link Assembly, Forward	1. Assembly contains FSP's 2. Proper installation of upper and lower pitch link rod ends, bushings, serrated bushings, and positive retention bolts

Table 1. Flight Safety "Installation" Critical Aircraft Parts – CH-47D - continued

PART NUMBER / CAGEC	DASH NUMBER (S)	NOMENCLATURE	CRITICAL CHARACTERISTIC
114R3650 (77272)	-6, -7, -9, -11, -13, -15, -16	Bolt Assembly	1. Assembly contains FSP's 2. No MRB action permitted below minimum Rockwell Hardness 3. Proper installation of upper and lower pitch link rod ends, bushings, serrated bushings, and positive retention bolts
114RS352 (77272)	-2	Bolt, Self-Retaining	1. No MRB action permitted below minimum Rockwell Hardness 2. Proper installation of upper and lower pitch link rod ends, bushings, serrated bushings, and positive retention bolts
114S3881 (77272)	-1	Support Assembly, Beam	Installation critical
114S3882 (77272)	-1	Support Assembly, Beam	Installation critical
114S3883 (77272)	-5	Support Assembly	Installation critical
145C1014 (77272)	-9	Link Assembly, Connecting	1. Proper installation of bolt, nut, washers, and cotter pins 2. Proper installation of rivet 3. Proper installation of rod end, solid section attachments, link assembly, and rod end jam nuts 4. Torque
145C1290 (77272)	-1	Detent Assembly	Installation critical
145C1306 (77272)	-1	Control Assembly, Cyclic	1. Proper installation of bolt, nut, washers, and cotter pins 2. Proper installation of elbow assembly, cyclic grip assembly, rubber grommet, and connector 3. Torque
145C1330 (77272)	-1	Bellcrank Assembly	1. Bearings serviceable and properly installed 2. Bushings properly installed 3. Proper installation of bellcrank 4. Proper installation of bolt, nut, washers, and cotter pins 5. Torque
145C1331 (77272)	-1	Bellcrank Assembly	1. Bearings serviceable and properly installed 2. Bushings properly installed 3. Proper installation of bellcrank 4. Proper installation of bolt, nut, washers, and cotter pins 5. Torque

Table 1. Flight Safety "Installation" Critical Aircraft Parts – CH-47D - continued

PART NUMBER / CAGEC	DASH NUMBER (S)	NOMENCLATURE	CRITICAL CHARACTERISTIC
145C1332 (77272)	-1	Bellcrank Assembly	1. Bearings serviceable and properly installed 2. Bushings properly installed 3. Proper installation of bellcrank 4. Proper installation of bolt, nut, washers, and cotter pins 5. Torque
145C1333 (77272)	-1	Bellcrank Assembly	1. Bearings serviceable and properly installed 2. Bushings properly installed 3. Proper installation of bellcrank 4. Proper installation of bolt, nut, washers, and cotter pins 5. Torque
145C1375 (77272)	-1	Control Installation, Thrust	1. Bushings properly installed 2. Proper installation of ball slide assembly, thrust grip assembly, grip wire bundle, clamping arrangement, and connector 3. Proper installation of grip wire bundle 4. Proper installation of pivot hardware, thrust lever attaching hardware, and sealant over cotter pin sharp edges 5. Torque
145C1409 (77272)	-1	Idler Assembly, Yaw	1. Bearings serviceable and properly installed 2. Bushings properly installed 3. Proper installation of bolt, nut, washers, and cotter pins 4. Torque
145C1410 (77272)	-1	Idler Assembly, Pitch	1. Bearings serviceable and properly installed 2. Bushings properly installed 3. Proper installation of bolt, nut, washers, and cotter pins 4. Torque
145C1411 (77272)	-1	Idler Assembly, Roll	1. Bearings serviceable and properly installed 2. Bushings properly installed 3. Proper installation of bolt, nut, washers, and cotter pins 4. Torque
145C1413 (77272)	-1, -3	Support Assembly	Installation critical

Table 1. Flight Safety "Installation" Critical Aircraft Parts – CH-47D - continued

PART NUMBER / CAGEC	DASH NUMBER (S)	NOMENCLATURE	CRITICAL CHARACTERISTIC
145C1414 (77272)	-1	Support Assembly, Control	1. Bushings properly installed 2. Proper installation of bolt, nut, washers, and cotter pins 3. Torque
145C1415 (77272)	-1, -2	Connecting Link, Rigid	1. Bearing properly staked 2. Proper installation of bolt, nut, washers, and cotter pins 3. Proper installation of flanged and straight slip bearings 4. Proper installation of rivet 5. Proper installation of rod end jam nuts 6. Torque
145C1420 (77272)	-1, -2	Connecting Link Assembly	1. Bearing properly staked 2. Proper installation of bolt, nut, washers, and cotter pins 3. Proper installation of flanged and straight slip bushings 4. Torque
145C1450 (77272)	-1	Spring Assembly, Roll	1. Bearing properly staked 2. Proper installation of bolt, nut, washers, and cotter pins 3. Proper installation of lockwire 4. Proper installation of roll spring 5. Proper installation of threaded end cap 6. Torque
145C1456 (77272)	-1	Spring Assembly, Yaw	1. Bearing properly staked 2. Proper installation of bolt, nut, washers, and cotter pins 3. Proper installation of lock wire 4. Proper installation of yaw spring 5. Proper installation of threaded end cap 6. Torque
145C1457 (77272)	-1	Bellcrank	1. Bearings serviceable and properly installed 2. Proper installation of bolt, nut, washers, and cotter pins 3. Proper installation of bushings 4. Torque
145C1458 (77272)	-3	Idler Assembly, Pitch	Installation critical

Table 1. Flight Safety "Installation" Critical Aircraft Parts – CH-47D - continued

PART NUMBER / CAGEC	DASH NUMBER (S)	NOMENCLATURE	CRITICAL CHARACTERISTIC
145C1459 (77272)	-1	Idler Assembly	1. Idler hub bearings are serviceable and properly installed 2. Proper installation of bolt, nut, washers, and cotter pins 3. Proper installation of bushings 4. Torque
145C1463 (77272)	-1	Link Assembly	1. Bellcrank hub bearings are serviceable and properly installed 2. Proper installation of bolt, nut, washers, and sleeve assembly 3. Proper installation of lower bearing and sleeve assembly 4. Torque
145C1471 (77272)	-1	Spring Assembly, Pitch	1. Bearing properly staked 2. Proper installation of bolt, nut, washers, and cotter pins 3. Proper installation of lock wire 4. Proper installation of pitch spring and threaded end cap 5. Torque
145C2010 (77272)	-10, -11, -12, -13, -14, -15, -16, -17	Connecting Link, Rigid	1. Installation critical 2. Proper application of Albi Fire Retardant Coatings 3. Proper installation of rod end jam nuts, rivet, roll pin, associated hardware, bolt, nut, washers, and cotter pins 4. Torque
145C2013 (77272)	-3, -4	Connecting Link, Rigid	1. Proper installation and orientation of rod end jam nuts, rivet, roll pin, associated hardware, bolt, nut, washers, and cotter pins 2. Torque
145C2510 (77272)	-1, -4	Bellcrank Assembly	Installation critical
145C2511 (77272)	-1	Bellcrank Assembly	1. Proper installation of bushings, bearings, bellcrank assembly orientation, bolt, nut, washers, and cotter pins 2. Torque
145C2512 (77272)	-1	Bellcrank	1. Proper installation of bushings, bearings, bellcrank assembly orientation, bolt, nut, washers, and cotter pins 2. Torque

Table 1. Flight Safety "Installation" Critical Aircraft Parts – CH-47D - continued

PART NUMBER / CAGEC	DASH NUMBER (S)	NOMENCLATURE	CRITICAL CHARACTERISTIC
145C2513 (77272)	-3	Bellcrank Assembly, Aft	Installation critical
145C2514 (77272)	-1		1. Proper installation of bushings, bearings, bellcrank assembly orientation, bolt, nut, washers, and cotter pins 2. Torque
145C2515 (77272)	-1	Bellcrank Assembly	1. Proper installation of bushings, bearings, bellcrank assembly orientation, bolt, nut, washers, and cotter pins 2. Torque
145C2516 (77272)	-9, -12	Bellcrank Assembly	Installation critical
145C3050 (77272)	-3	Bellcrank, Aft Longitudinal	1. Assembly contains FSP's 2. Hub bearings and spacer are properly installed and serviceable 3. Proper installation of bolt, nut, washers, and cotter pins 4. Proper installation of flange and slip bushings 5. Torque
145C3051 (77272)	-1	Yoke Assembly	1. Bake after chromium plating 2. No MRB action permitted below minimum Rockwell Hardness 3. Proper installation of washer, cotter pin, and NAS 75-20-206 bushing 4. Shot peen set up approval required 5. Torque
145C3110 (77272)	-1	Shaft, Shouldered	1. Bellcrank hub bearings are serviceable and properly installed 2. Proper installation of all bushings 3. Proper installation of bolt, nut, washers, and cotter pins 4. Torque
145C3111 (77272)	-1	Bellcrank Assembly	1. Bellcrank hub bearings are serviceable and properly installed 2. Proper installation of all bushings 3. Proper installation of bolt, nut, washers, and cotter pins 4. Torque

Table 1. Flight Safety "Installation" Critical Aircraft Parts – CH-47D - continued

c	DASH NUMBER (S)	NOMENCLATURE	CRITICAL CHARACTERISTIC
145C3112 (77272)	-1	Bellcrank Assembly	1. Bellcrank hub bearings are serviceable and properly installed 2. Proper installation of all bushings 3. Proper installation of bolt, nut, washers, and cotter pins 4. Torque
145C3122 (77272)	-4	Bellcrank Assembly	Installation critical
145C3171 (77272)	-1	Bellcrank Assembly	1. Bearings are properly staked 2. Proper installation of bolt, nut, washers, and cotter pins 3. Torque
145C3172 (77272)	-3	Connecting Link, Rigid	1. Bellcrank hub bearings are serviceable and properly installed 2. Proper installation of all bushings 3. Proper installation of bolt, nut, washers, and cotter pins 4. Torque
145C3221 (77272)	-3	Bellcrank Assembly	1. Bellcrank hub bearings are serviceable and properly installed 2. Proper installation of all bushings 3. Proper installation of bolt, nut, washers, and cotter pins 4. Torque
145C3230 (77272)	-1	Bellcrank Assembly	1. Bellcrank hub bearings are serviceable and properly installed 2. Proper installation of all bushings, and input/output arms 3. Proper installation of bolt, nut, washers, and cotter pins 4. Torque
145C3231 (77272)	-1	Bellcrank Assembly	1. Bellcrank hub bearings are serviceable and properly installed 2. Proper installation of bolt, bushings, nut, washers, and cotter pins 3. Torque
145C3265 (77272)	-1	Support Assembly, Pylon	1. Proper installation of bolt, nut, washers, and cotter pins 2. Proper installation of rod end jam nuts, and rivet 3. Torque
145C3266 (77272)	-1	Support Assembly, Forward Pylon	Proper installation of bushings, dowel pins, bolt, nut, washers, and cotter pin

Table 1. Flight Safety "Installation" Critical Aircraft Parts – CH-47D - continued

PART NUMBER / CAGEC	DASH NUMBER (S)	NOMENCLATURE	CRITICAL CHARACTERISTIC
145C3313 (77272)	-1	Shaft, Shouldered	Proper installation of spacers, washers, bushings, and 145C3333-1 nut
145C3317 (77272)	-1	Bellcrank Assembly	1. Bellcrank hub bearings are serviceable and properly installed 2. Proper installation of all bushings 3. Proper installation of bolt, nut, washers, and cotter pins 4. Torque
145C3360 (77272)	-3	Connecting Link, Rigid	Installation critical
145C3361 (77272)	-1	Connecting Link, Rigid	Installation critical
145C3510 (77272)	-1	Bellcrank, Assembly	1. Proper installation of bushings, bearings, bellcrank orientation, bolt, nut, washers, and cotter pins 2. Torque
145C3516 (77272)	-1	Bellcrank Assembly	1. Proper installation of bushings, bearings, bellcrank orientation, bolt, nut, washers, and cotter pins 2. Torque
145C6100 (77272)	-1, -3	Actuator, Electro, Mechanical	1. Proper installation of actuator 2. Proper installation of actuator mounting supports 3. Proper installation of bolt, nut, washers, and cotter pins 4. Proper installation of safety wire 5. Torque
145CS101 (77272)	-3, -4	Brake, Magnetic	1. Proper installation of bolt, nut, washers, and cotter pins 2. Proper positioning of magnetic brake output arm 3. Torque
145CS114 (77272)	-1, -2	Actuator, Electro, Mechanical	1. Assembly contains FSP's 2. Proper installation of countersunk washers 3. Proper installation of locking tab washer, wire bundle, bolt, nut, washers, and cotter pins 4. Proper installation of safety wire 5. Proper routing of wire bundles 6. Torque

Table 1. Flight Safety "Installation" Critical Aircraft Parts – CH-47D - continued

PART NUMBER / CAGEC	DASH NUMBER (S)	NOMENCLATURE	CRITICAL CHARACTERISTIC
145CS131 (77272)	-2	Transducer, Linear	1. Proper installation of bolt, nut, washers, and cotter pins 2. Proper installation of safety wire 3. Rod end bearing assembly properly safetied 4. Torque
145CS340 (77272)	-1, -3, -5, -7, -9, -11, -13, -15, -17	Connecting Link, Rigid	1. Proper installation of rod end jam nuts, rivet secured, bushing, bonding jumper clamp, bolt, nut, washers, and cotter pins 2. Torque
145CS360 (77272)	-1, -2, -3, -4, -5	Connecting Link, Rigid	1. Installation critical 2. Proper installation of bolt, nut, washers, and cotter pins 3. Proper installation of rod end jam nuts and rivet 4. Torque
145D3306 (77272)	-5	Support Assembly, Rotary Drive Shaft	Installation critical
145D5300 (77272)	-3, -5, -9, -11, -12, -13, -15, -16, -17, -20	Combining Transmission Assembly	1. Assembly contains FSP's 2. Installation critical
145DS022 (77272)	-2, -4	Bolt, Internally Relieved	1. Proper installation of transmission 2. Proper torque of nuts 3. Torque of bolts
145DS027 (77272)	-4, -5, -6	Pressure Switch, Lubricating	Installation critical
145PS700 (77272)	-1	Aft Link Assembly, Engine	Installation critical
145R2003 (77272)	-1 thru –10	Head, Rotary Wing	1. Assembly contains FSP's 2. Installation critical 3. Proper installation of lifting device, hub nut tang washer, retaining ring, and bushings 4. Torque
145R2004 (77272)	-1 thru –9, -11, -13, -15, -17 thru –20	Head, Rotary Wing	1. Assembly contains FSP's 2. Installation critical 3. Proper installation of lifting device, hub nut tang washer, retaining ring, and bushings 4. Torque
145R3116 (77272)	-4, -5	Bushing, Sleeve	Installation critical
145R3120 (77272)	-1, -2	Bolt, Self-Locking	Proper installation of bushings and positive retention bolts

Table 1. Flight Safety "Installation" Critical Aircraft Parts – CH-47D - continued

PART NUMBER / CAGEC	DASH NUMBER (S)	NOMENCLATURE	CRITICAL CHARACTERISTIC
145R3438 (77272)	-1, -5	Collar Assembly, Drive	1. Assembly contains FSP's 2. Proper installation of bearings, bushings, sliding bushing, positive retention bolt, or impedance bolt
145R3551 (77272)	-1, -2, -5, -6, -11, -12	Swashplate, Controllable	1. Assembly contains FSP's 2. Proper installation of bushings, impedance bolts, and or positive retention bolts
145R3650 (77272)	-1, -3, -4, -5, -6	Bolt Assembly	1. Assembly contains FSP's 2. Installation critical 3. No MRB action permitted below minimum Rockwell Hardness 4. Proper installation of bushings, impedance bolts, and or positive retention bolts
145RS353 (77272)	-1, -2	Bolt Assembly	1. No MRB action permitted below minimum Rockwell hardness 2. Proper installation of bushings, bearings, sliding bushing, impedance bolts, and or positive retention bolts
145S1109 (77272)	-3	Shaft	Installation critical
145S1645 (77272)	-1	Right Tie Rod	Installation critical
145S1646 (77272)	-1	Panel, Structural, Al	Installation critical
145S1830 (77272)	-1	Shaft Support Assembly	Installation critical
145S1831 (77272)	-3	Stop Fitting	Installation critical
145S1871 (77272)	-1	Support Fitting	Installation critical
145S1872 (77272)	-1	Upper Support Fitting	Installation critical
145S1875 (77272)	-1	Support	Installation critical
145S1877 (77272)	-1	Support, Intermediate Gearbox	Installation critical
145S1880 (77272)	-1	Lower Support Fitting	Installation critical
145S1892 (77272)	-1	Support Fitting	Installation critical

Table 1. Flight Safety "Installation" Critical Aircraft Parts – CH-47D - continued

PART NUMBER / CAGEC	DASH NUMBER (S)	NOMENCLATURE	CRITICAL CHARACTERISTIC
145S3882 (77272)	-1, -3	Support Assembly	Installation critical
234D6205 (77272)	-1	Nut, Self-Locking	Installation critical
234R2088 (77272)	-1, -2	Pitch Shaft Assembly	1. Assembly contains FSP's 2. Ensure rollers are in cages of pitch bearings 3. Proper installation of bearings, tie bar pins, retention hardware, and same pitch housing reinstalled
414C1123 (77272)	-1, -2	Arm Assembly, Pedal	1. Proper installation of plate and associated hardware 2. Proper installation of spring tab, bolt head orientation, and cotter pins 3. Torque
414C1130 (77272)	-1	Lever, Remote	1. Bearings serviceable and properly installed 2. Bushings properly installed 3. Proper installation of bolt, nut, washers, and cotter pins 4. Torque
414C1131 (77272)	-1	Bellcrank Assembly	1. Barrel nut and retainer properly installed 2. Bushings properly installed 3. Proper installation of bolt, nut, washers, and cotter pins 4. Torque
414C1141 (77272)	-1, -2	Bellcrank Assembly	1. Barrel nut and retainer properly installed 2. Bushings properly installed 3. Proper installation of bolt, nut, washers, and cotter pins 4. Torque
414C1150 (77272)	-1	Lever Assembly	1. Bushings properly installed 2. Proper installation of bolt, nut, washers, and cotter pins 3. Torque
414C1160 (77272)	-1, -2	Bellcrank Assembly	1. Bearings serviceable and properly installed 2. Bushings properly installed 3. Proper installation of bolt, nut, washers, and cotter pins 4. Shaft, spacers, plugs, and bushings properly installed 5. Torque

Table 1. Flight Safety "Installation" Critical Aircraft Parts – CH-47D - continued

PART NUMBER / CAGEC	DASH NUMBER (S)	NOMENCLATURE	CRITICAL CHARACTERISTIC
414C1161 (77272)	-1	Bellcrank Assembly	1. Bearings serviceable and properly installed 2. Bushings properly installed 3. Proper installation of bolt, nut, washers, and cotter pins 4. Torque
414C1163 (77272)	-1	Bellcrank Assembly	Installation critical
414C1165 (77272)	-1, -2	Bellcrank Assembly	1. Bearings serviceable and properly installed 2. Bushings properly installed 3. Proper installation of bolt, nut, washers, and cotter pins 4. Torque 5. Installation critical
414C1168 (77272)	-1, -2	Bellcrank Assembly	1. Assure free rotation 2. Bearings serviceable and properly installed 3. Bushings properly installed 4. Hub bearings serviceable and properly installed 5. Proper installation of bolt, nut, washers, and cotter pins 6. Torque
414C2520 (77272)	-3, -4	Connecting Link, Rigid	1. Proper installation of rod end jam nuts, rivet secured, bolt, nut, washers, and cotter pins 2. Torque
414C3056 (77272)	-3, -4	Link Assembly, Swashplate	1. Assembly contains FSP's 2. Installation of lockwire and cotter pins 3. Proper installation of locking tab washer 4. Proper routing and installation of wire bundle 5. Torque
414C3409 (77272)	-1	Arm, Control	Proper installation of bearings, locating pads, bolts, nuts, washers, and cotter pins
AN173 (88044)	-7, -7A	Bolt, Close Tolerance	Installation critical
AN174 (88044)	12, H23A, H24A	Bolt, Close Tolerance	Installation critical
AN176 (88044)	H7A, H11A	Bolt, Close Tolerance	Installation critical
BACB30FD (81205)	4H5, 5H5	Bolt, Shear	Installation critical

Table 1. Flight Safety "Installation" Critical Aircraft Parts – CH-47D - continued

PART NUMBER / CAGEC	DASH NUMBER (S)	NOMENCLATURE	CRITICAL CHARACTERISTIC
BACB30ST10 (16258)	-38, -40	Bolt, Self-Retaining	Installation critical
BACB30ST12 (56878)	-39	Bolt, Self-Retaining	Installation critical
BACB30ST8 (56878)	-31, -32, -35	Bolt, Self-Retaining	Installation critical
BACN10TR8 (81205)	--	Nut, Self-Locking	Installation critical
MS27576-3 (80205)	-8, -11, -12, -16	Bolt, Close Tolerance	Installation critical
MS27576-4 (80205)	-8, -11, -12, -13, -15, -16, -17, -18, -19, -20, -21, -22, -24, -25, -27, -31, -32, -34, -35, -39, -43, -44	Bolt, Close Tolerance	Installation critical
MS27576-5 (80205)	-17, -20, -21, -22, -23, -24, -25, -26, -33, -35, -46, -47, -75, -81, -106	Bolt, Close Tolerance	Installation critical
MS27576-6 (80205)	-23, -25, -34, -43, -44, -46, -49, -75, -82	Bolt, Close Tolerance	Installation critical
MS27576-7 (80205)	-50, -51, -113	Bolt, Close Tolerance	Installation critical
MS27576-8 (80205)	-41, -46, -52, -65, -72	Bolt, Close Tolerance	Installation critical
MS27576-6 (80205)	-23, -25, -34, -43, -44, -46, -49, -75, -82	Bolt, Close Tolerance	Installation critical
MS27576-7 (80205)	-50, -51, -113	Bolt, Close Tolerance	Installation critical
MS27576-8 (80205)	-41, -46, -52, -65, -72	Bolt, Close Tolerance	Installation critical
MS27576-9 (80205)	-21, -25	Bolt, Close Tolerance	Installation critical
NAS634 (80205)	-60	Bolt, Shear	Installation critical

Table 1. Flight Safety "Installation" Critical Aircraft Parts – CH-47D - continued

PART NUMBER / CAGEC	DASH NUMBER (S)	NOMENCLATURE	CRITICAL CHARACTERISTIC
NAS75-8 (80205)	-102	Bushing, Sleeve	Installation critical
NAS75-20	-123, -206	Bushing, Sleeve	Installation critical

END OF WORK PACKAGE

DEPOT MAINTENANCE WORK REQUIREMENT

CH-47D HELICOPTER

CORROSION PREVENTION COMPOUND (CPC) APPLICATION ON CH-47 AIRCRAFT

INITIAL SETUP

Test Equipment:
As Required

Tools and Special Tools:
Corrosion Prevention Compound Application Equipment – Refer to Manufacturer's Recommendations

Material/Parts:
Tape, Masking (Item 175, WP 0157 00)
Corrosion Prevention Compound (CPC) (Item 91, WP 0157 00)

Personnel Required:
As Required

References:
TM 1-1500-204-23 Series
TM 1-1500-344-23
TM 55-1520-240-23 Series
WP 0149 00
WP 0157 00

Equipment Conditions:
As Required

Special Environmental Condition:
As Required

SCOPE

WARNING

CORROSION PREVENTION COMPOUND

This work package describes application of Corrosion Preventive Compound (CPC), (Item 91, WP 0157 00), to the CH-47D Helicopter. CPC will be applied during the overhaul process to the following areas:

1. Below Floor Area, sta 45 to sta 485 – Refer to Figure 1, Sheet 1 and Sheet 2.
2. Forward and Aft Wheel Well Areas – Refer to Figure 2.
3. Forward Landing Gear Support Beams, sta 240 to sta 260 – Refer to Figure 3.
4. Pod Panel Box, sta 460 to sta 482, WL 0 to WL minus 40 – Refer to Figure 4.
5. Left and Right Forward Electrical Compartments – Refer to Figure 5.
6. Ramp Under Floor Area (All Internal Structure) – Refer to Figure 6, Sheet 1 and Sheet 2.

GENERAL APPLICATION PROCEDURES

The specified CPC (Cor-Ban 35) is a long lasting, high solids, low volatiles, high penetration, water displacing compound for use on high profile aircraft substrates. The product can be applied using conventional airless or air-operated spray equipment. The coating should be applied at 1.0 to 1.5 mil wet film thickness to a clean, dry surface. Tack free drying time is one hour. Total drying time is 18 hours. It dries to a salmon pink color. Material is removable with any aliphatic cleaning solvent.

GENERAL APPLICATION PROCEDURES - continued

For hard to reach areas, or for touch-up operations, the CPC is supplied in aerosol cans with various applicators as detailed below. The extension tubes are provided with aluminum sleeves for shaping and directing the spray.

ITEM	PART NO.	DESCRIPTION
Cor-Ban 35 Aerosol	004675	Aerosol can
Format 18 F	006224	Aerosol extension tube, 18-inch long, fan spray
Format 48 F	008460	Aerosol extension tube, 48-inch long, fan spray
Format 18 180	006226	Aerosol extension tube, 18-inch long, 180 degree spray
Format 18 360	006227	Aerosol extension tube, 18-inch long, 360 degree spray

MANUFACTURER INFORMATION

Zip-Chem Products
400 Jarvis Drive
Morgan Hill, CA 95037
800-648-2661

NOTE

Mask lubricated joints, bearings, electrical connectors, and wiring prior to application of any CPC. Use masking tape (Item 175, WP 0157 00).

CPC APPLICATION LOCATIONS

Apply CPC to the following locations:

1. Below Floor Area, sta 45 to sta 485

1. Below Floor Area, sta 45 to sta 485 - continued

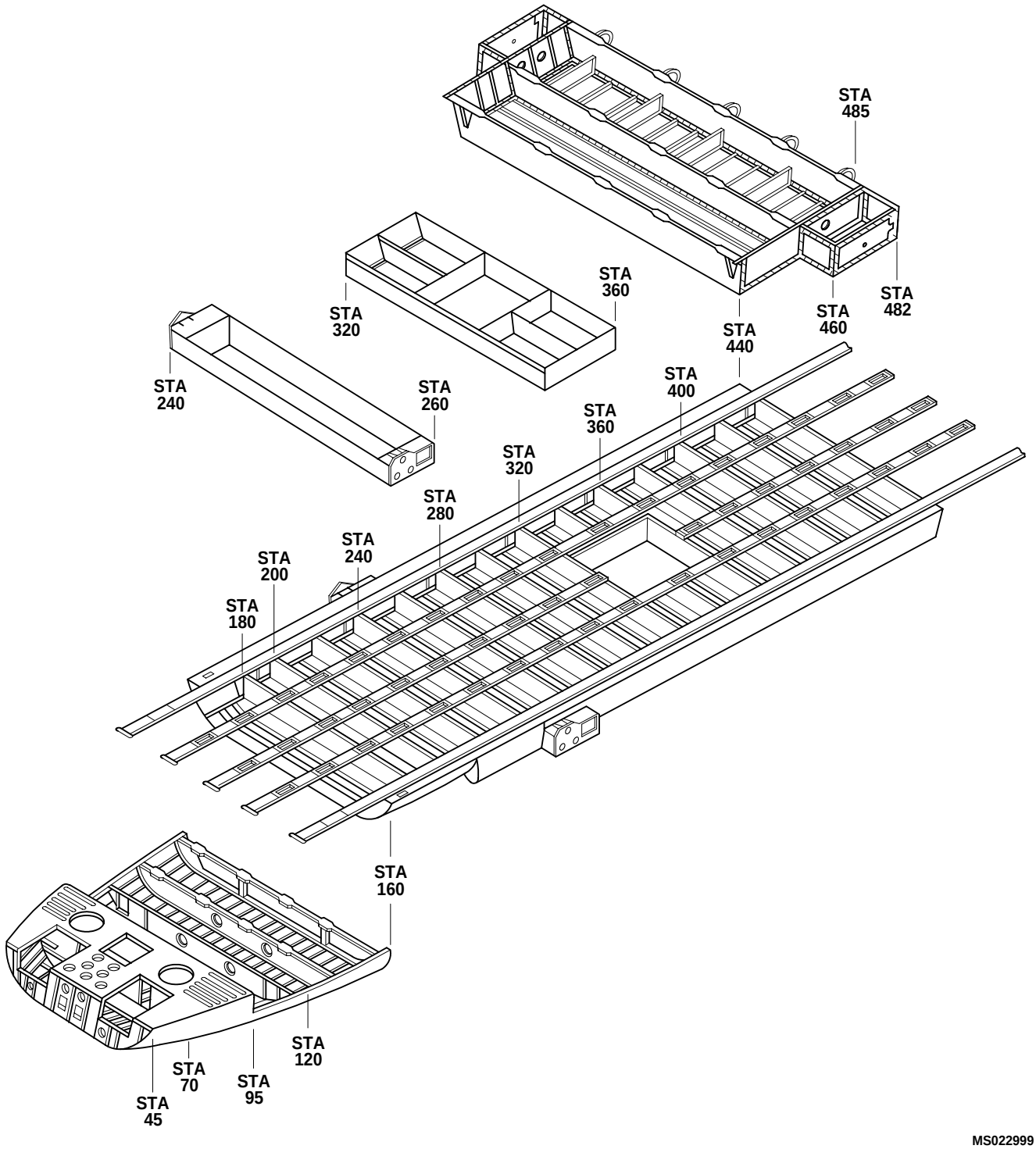


Figure 1. CPC Application – Below Floor Area (Sheet 1 of 2)

1. Below Floor Area, sta 45 to sta 485 - continued

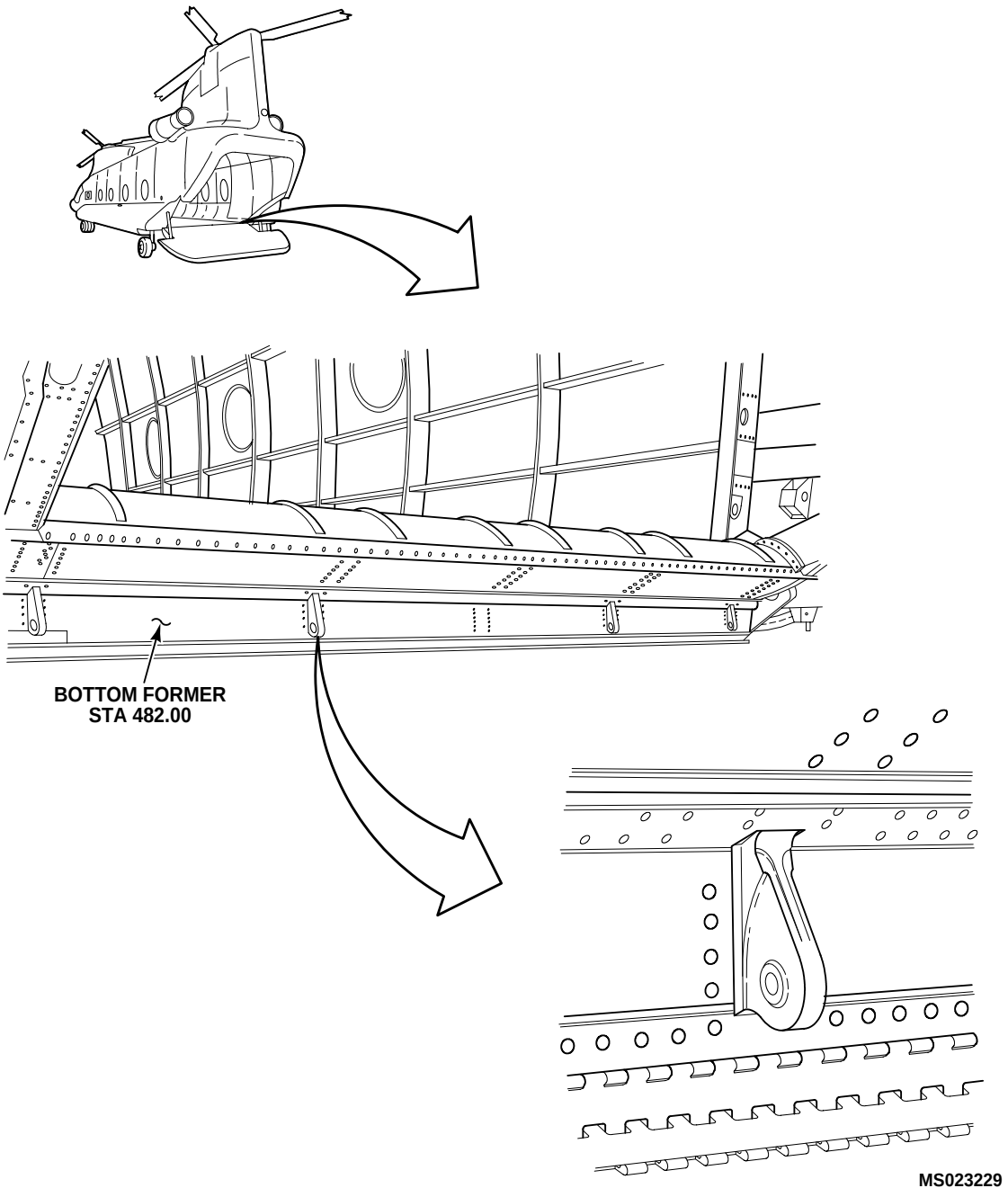


Figure 1. CPC Application – Below Floor Area (Sheet 2 of 2)

NOTE

WP 0149 00 specifies procedures for stripping and reapplication of coatings in the cabin bilge, sta 95 to sta 485. CPC should be applied to this area immediately following completion of WP 0149 00 procedures to preclude additional cleaning before application. Also, apply CPC to bottom former, sta 482, and hinges.

2. Forward and Aft Wheel Well Areas

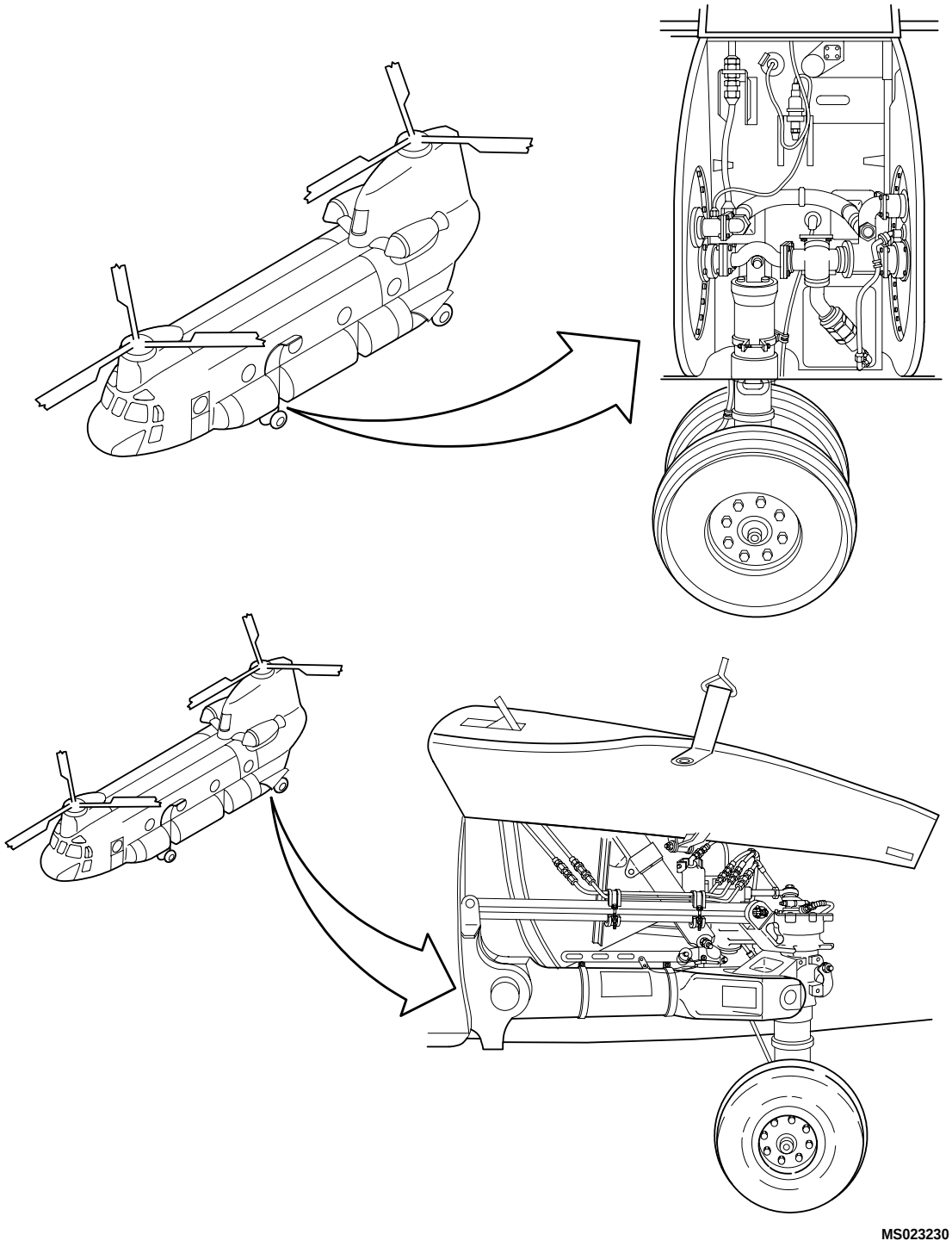


Figure 2. CPC Application – Forward and Aft Wheel Well Areas

3. Forward Landing Gear Support Beams, sta 240 to sta 260

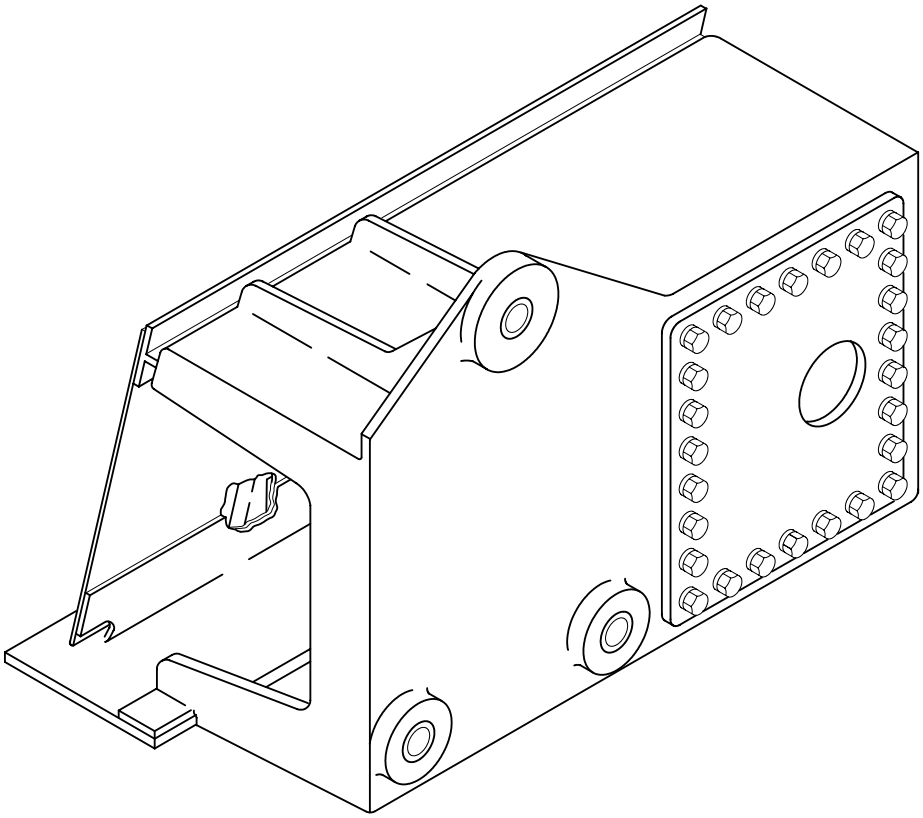


Figure 3. CPC Application – Forward Landing Gear Support Beams

4. Pod Panel Box, sta 460 to sta 482, WL 0 to WL minus 40

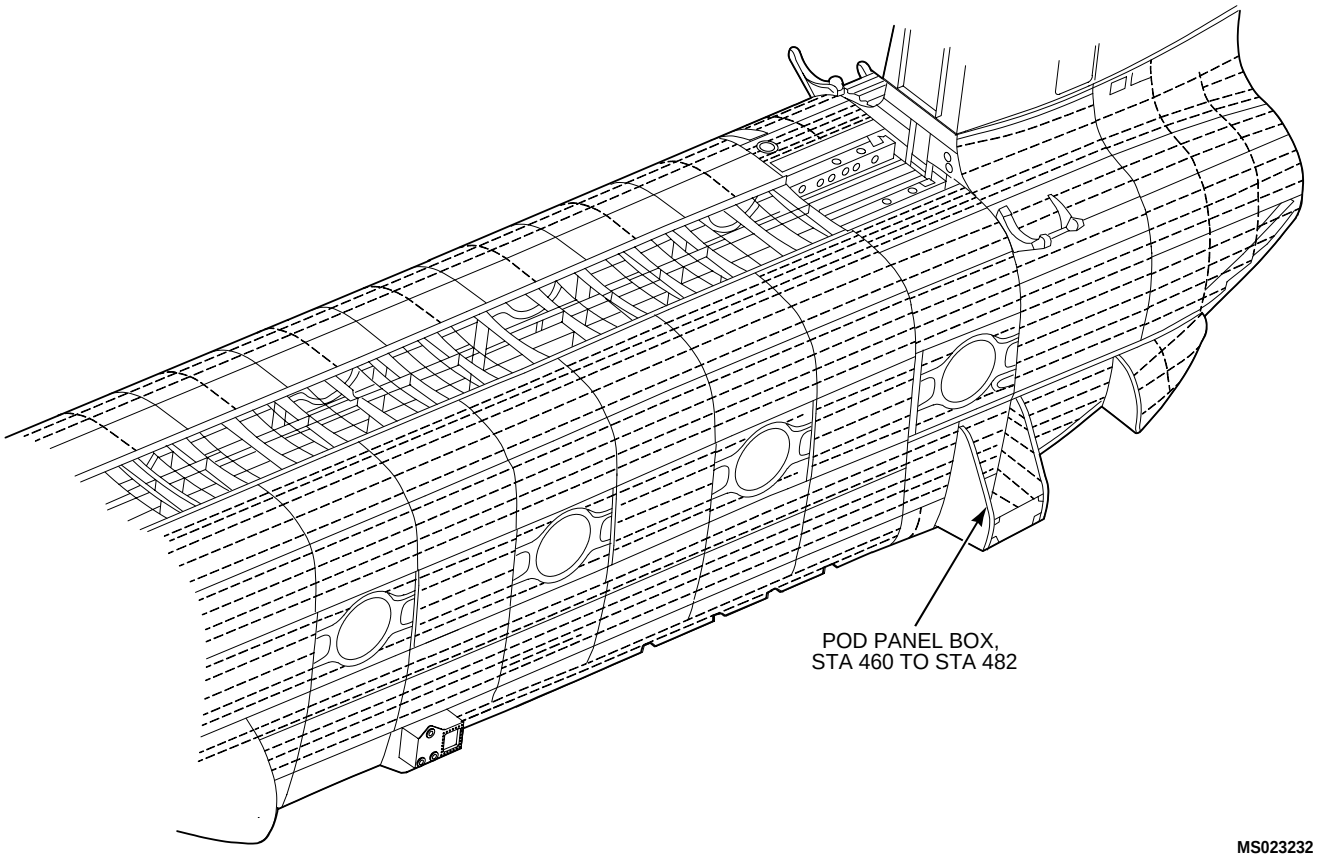


Figure 4. CPC Application – Pod Panel Box, sta 460 to sta 482, WL 0 to WL minus 40

5. Left and Right Forward Electrical Compartments

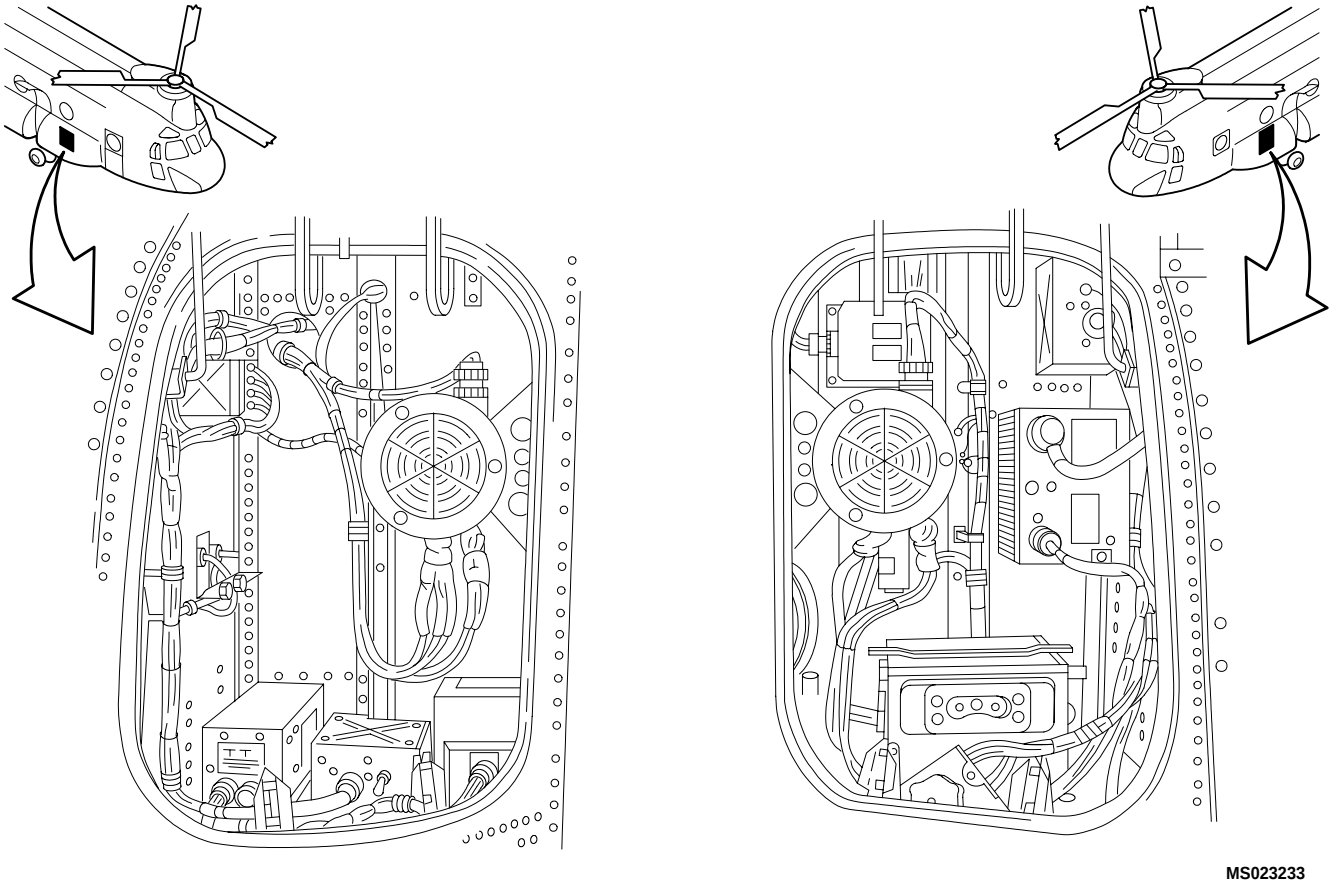


Figure 5. CPC Application – Left and Right Forward Electrical Compartments

6. Ramp Under Floor Area

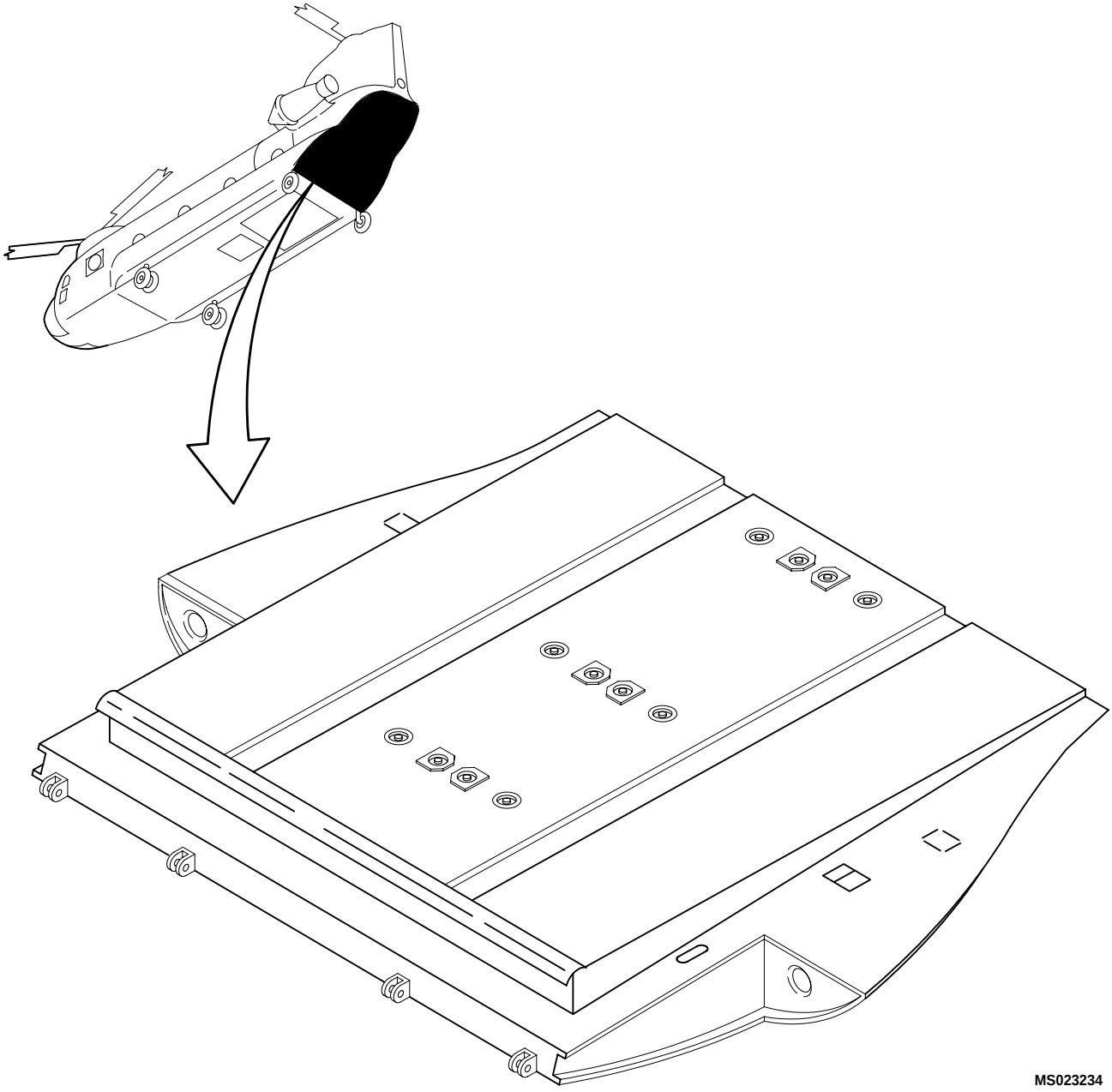


Figure 6. CPC Application – Ramp Under Floor Area (Sheet 1 of 2)

6. Ramp Under Floor Area - continued

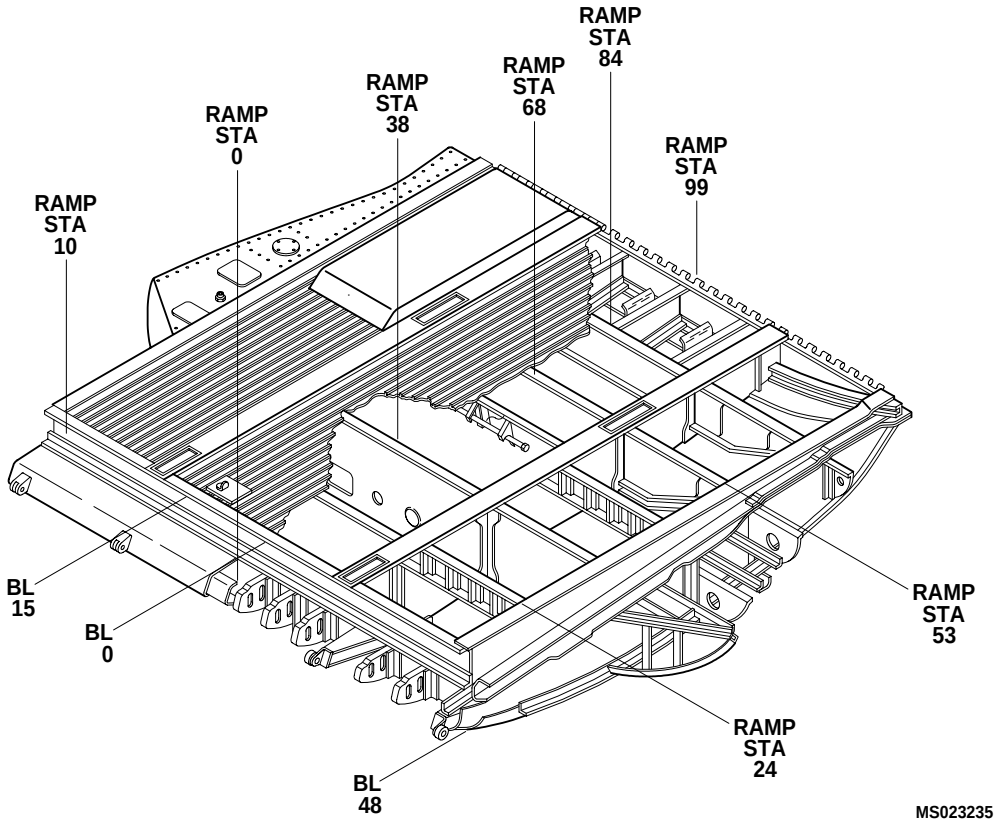


Figure 6. CPC Application – Ramp Under Floor Area (Sheet 2 of 2)

END OF WORK PACKAGE

DEPOT MAINTENANCE WORK REQUIREMENT
CH-47D HELICOPTER
HYDRAULIC FLUID PURIFICATION PROCEDURES

INITIAL SETUP

Test Equipment:
As Required

Tools and Special Tools:
Hydraulic Fluid Purification Apparatus,
PN PEO 1078-12HW83
AGPU

Material/Parts:
Hydraulic Fluid (Item 114, WP 0157 00)

Personnel Required:
As Required

References:
TM 55-1520-240-23 Series
TM 55-1730-229-12
PLM-TM-97059, Pall Purifier Operation and Maintenance Manual

Equipment Conditions:
As Required

Special Environmental Condition:
As Required

SCOPE

This work package describes the hydraulic fluid purification procedures for the CH-47D Helicopter.

PURPOSE

The purpose of purifying the hydraulic fluid is to increase aircraft reliability by removing air; causative agents of corrosion, and particulate contamination from the fluid and thus decreasing wear on the components. The purification process will extend the useful life of the hydraulic fluid, decrease fluid change requirements, and reduce waste disposal expense.

The spinning disk purifier used in this procedure is manufactured by Pall Aeropower Corporation. It has been specially developed to ensure that the working properties of the fluid being purified do not degrade. It does not utilize desiccants, high vacuum, or added heat, all of which are detrimental processes that cause other potential fluid problems.

This procedure will be performed after aircraft MOC and before functional test flight or more frequent as directed by the Contracting Officer. Hydraulic oil samples will be taken after purification process is complete, and after the functional test flight(s) are complete.

HYDRAULIC FLUID PURIFICATION PROCESSES

To purify aircraft hydraulic fluid, perform the following processes in sequence listed below:

1. Drain AGPU into clean recycle container.
2. Purify fluid in clean recycle container.
3. Fill AGPU from clean recycle container.
4. Flush aircraft utility hydraulic system.
5. Fill AGPU from clean recycle container.
6. Flush No. 1 Flight Boost system.

HYDRAULIC FLUID PURIFICATION PROCESSES - continued

7. Fill AGPU from clean recycle container.
8. Flush No. 2 Flight Boost system.
9. Transfer fluid to clean recycle container.
10. Purify clean recycle container.
11. Fill AGPU from clean recycle container.

WARNING

It is critical that the purifier is connected to the AGPU return port. If connected to the pressure port the purifier could explode, causing personal injury and damage to purifier and/or AGPU.

CAUTION

When operating the purifier indoors, vapors may need to be vented away from the purifier. Connect a suitable outlet line (3/4-inch ID minimum) to the coalescing filter outlet and vent the line outside. Do not block or cap vent line while purifier is operating.

Prior to connecting AGPU to aircraft, the aircraft log book shall be inspected to ensure applying hydraulic power and electrical power to aircraft will not damage any components i.e. pitch change links disconnected at upper end, upper boost actuators disconnected, or wires disconnected etc.

When operating AGPU, ensure rotor blades are not over the exhaust of AGPU.

NOTE

Operators shall read and become familiar with the commercial pall purifier operations manual and be a qualified operator of the AGPU prior to using the equipment. This procedure requires 90-day currency to keep operators knowledgeable on procedures.

Recycle container adapter kit desiccant breather and AGPU vent breather should be blue in color. Desiccant should be replaced when it turns pink, white or brown.

SETTING UP THE PALL PURIFIER

WARNING

HYDRAULIC FLUID

Refer to PLM-TM-97059 for set-up procedures.

The Pall Purifier is used to reduce the particulate matter, air, chlorine and water content in the hydraulic systems. It is imperative that the following precautions are observed:

WARNING

Upon receipt and prior to each use, make sure the purifier is serviced with the same fluid as the aircraft. If in doubt, drain purifier (see instructions to drain purifier).

Outlet pressure should never exceed 70 psig or serious injury to personnel and equipment may occur. Inlet pressure should be no less than minus10 inches HG (minus ten inches mercury) vacuum and no more than 20 psig.

CAUTION

Vacuum chamber pressure should read between 22 inches and 26 inches HG vacuum.

Hydraulic oil temperature should never exceed 145 degrees F (63 degrees C).

Due to the high current demand of the purifier, any source that cannot provide at least 20 amps service may cause the unit to burn up internal electrical relays. Electrical extension cords are not recommended. If power is not readily available, a portable generator rated at 3 KW or larger is recommend.

The Pall Purifier should only be connected to a power source providing 115 volts, 60 cycles, capable of carrying at least a 20-amp load.

STARTING THE PALL PURIFIER

1. Open the inlet and outlet valves.
2. Close bypass ball valve.
3. Recheck hose connections between the purifier and the contaminated reservoir for tightness.
4. Depress the "START" button and check the following indicators:
   a. Discharge pressure gage should not exceed 70 psig.
   b. Inlet pressure gage should read between minus 10 inches HG vacuum and 20 psig.
   c. Inlet hydraulic fluid temperature gage should not exceed 145 degrees F (63 degrees C).
   d. Check discharge filter replacement light. If lit, depress "STOP" button.
   e. After one to three minutes of successful operation, check the chamber vacuum gage. It should read between 22 inches and 26 inches HG vacuum.

STARTING THE PALL PURIFIER - continued

5. If any problems are encountered with unit operation, refer to PLM-TM-97059.

DRAIN AGPU INTO CLEAN RECYCLE CONTAINER – (Refer to Figure 1)

WARNING

AGPU must be shut down when connected to the purifier. Failure to do so may damage purifier.

WARNING

HYDRAULIC FLUID

1. Operate the AGPU in high-pressure bypass until the fluid temperature reaches 140 degrees F (60 degrees C).
2. Shut down AGPU.
3. Attach hose from PURIFIER INLET port to AGPU DRAIN port.
4. Attach hose from PURIFIER OUTLET port to CLEAN RECYCLE CONTAINER INLET port.
5. On the AGPU:
   a. Open reservoir vent.
   b. Open reservoir drain valve.
   c. Open return bleed valve.
   d. Open system drain valve.
   e. Ensure that the RESERVOIR select lever is in AGPU position.
6. On the purifier:
   a. Open inlet valve.
   b. Open outlet valve.
   c. Close bypass ball valve.

DRAIN AGPU INTO CLEAN RECYCLE CONTAINER – (Refer to Figure 1) - **continued**

7. Start purifier:
   a. Start purifier (See detailed start procedures above).
   b. Monitor purifier limitations.
8. Operate purifier until AGPU reservoir is empty and fluid level in purifier begins to drop.
9. When purifier fluid level begins to drop:

a. Shut purifier off.
b. Close reservoir vent on AGPU.
c. Close return bleed valve on AGPU.
d. Close reservoir drain valve on AGPU.
e. Close system drain valve on AGPU.
f. Close purifier inlet valve.
g. Close purifier outlet valve.
h. Disconnect hose from AGPU.

10. If clean recycle container is not at least 3/4 full after draining AGPU, then:
    a. Remove breather adapter from clean recycle container 2-inch bung.
    b. Fill clean recycle container to 3/4 full using new fluid.
    c. Replace breather adapter to clean recycle container 2-inch bung.

DRAIN AGPU INTO CLEAN RECYCLE CONTAINER – (Refer to Figure 1) - **continued**

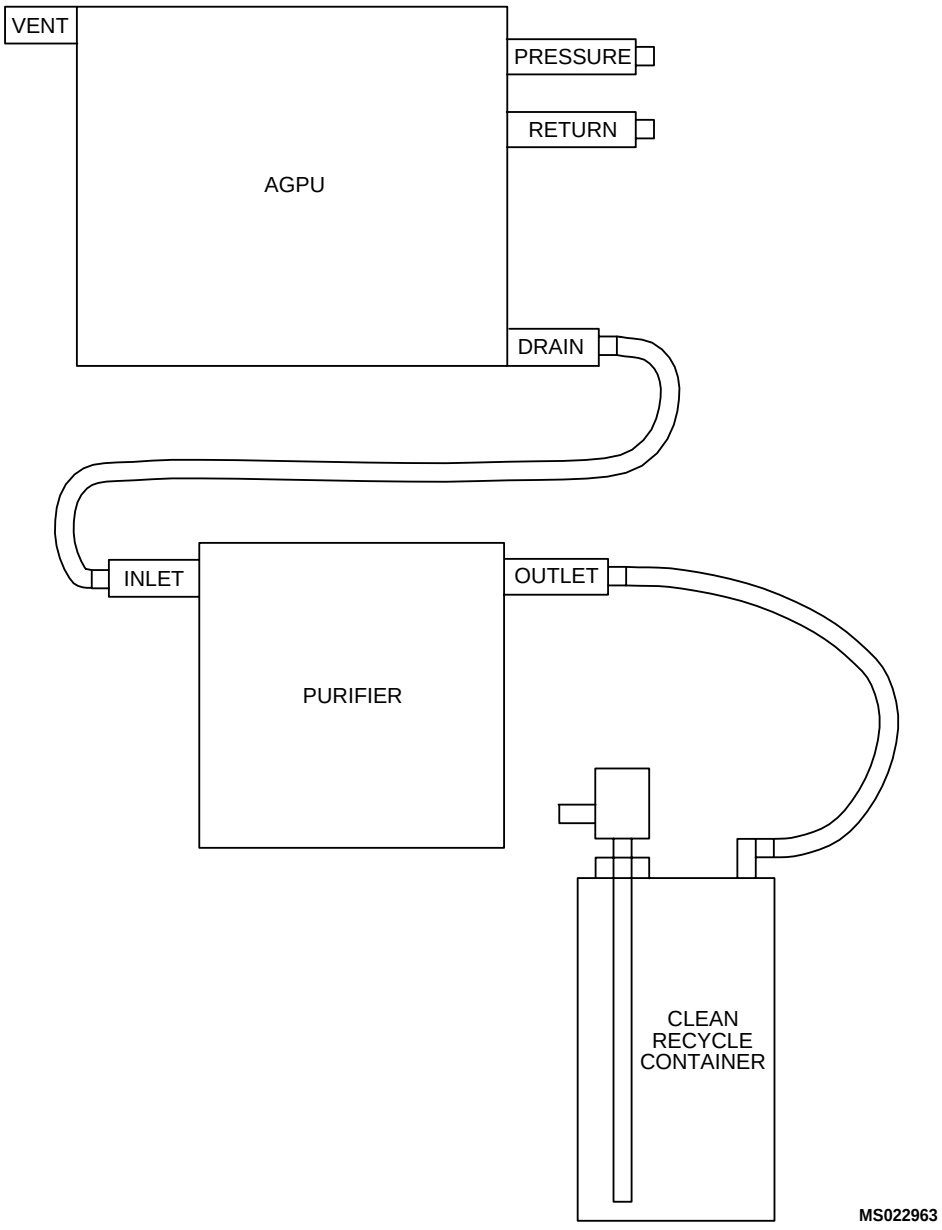


Figure 1. Drain AGPU into Clean Recycle Container

PURIFY FLUID IN CLEAN RECYCLE CONTAINER – (Refer to Figure 2)

1. Attach hose from PURIFIER INLET port to CLEAN RECYCLE CONTAINER OUTLET port.
2. Attach hose from PURIFIER OUTLET port to CLEAN RECYCLE CONTAINER INLET port.
3. On purifier:
   a. Open inlet valve.
   b. Open outlet valve.
   c. Close bypass ball valve.

PURIFY FLUID IN CLEAN RECYCLE CONTAINER – (Refer to Figure 2)

4. Start purifier:
   a. Start purifier.
   b. Monitor purifier limitations.
5. Operate purifier a minimum of 2 hours regardless of parts per million (PPM) water sensor readings.
6. After 2 hours of operation and desired PPM readings are obtained:
   a. Shut purifier off.
   b. Close purifier inlet valve.
   c. Close purifier outlet valve.
   d. Disconnect hose from clean recycle container inlet.

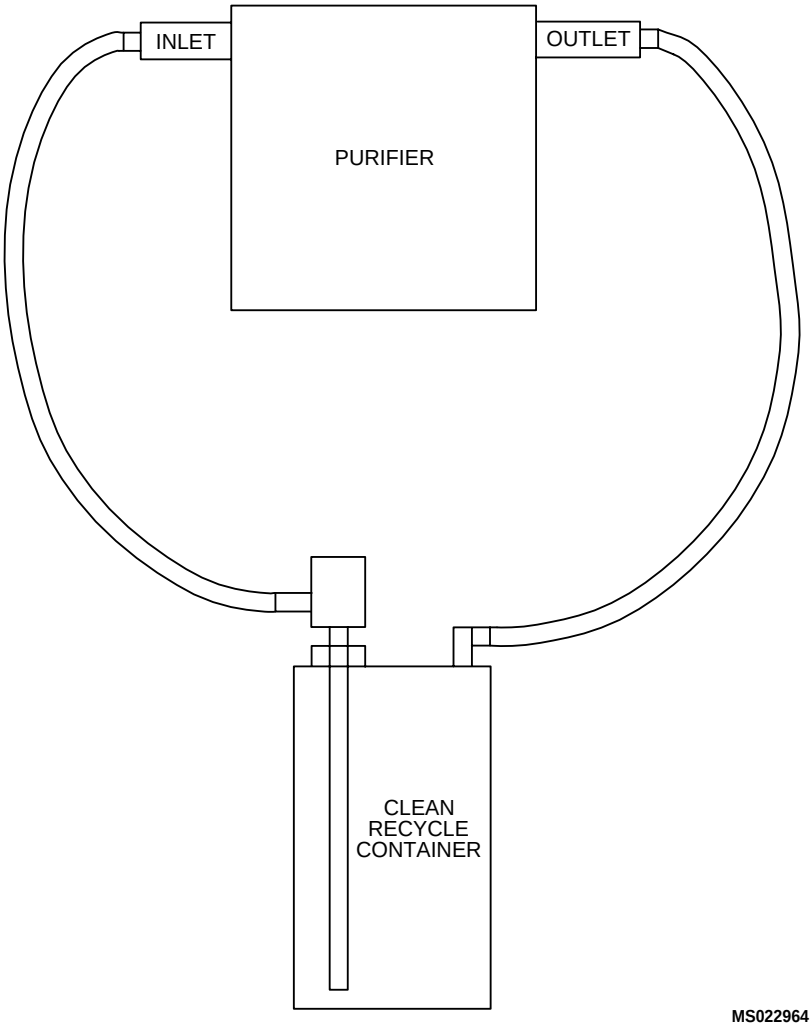


Figure 2. Purify Clean Recycle Container

FILL AGPU WITH FLUID FROM CLEAN RECYCLE CONTAINER – (Refer to Figure 3)

WARNING

AGPU must be shut down when connected to the purifier. Failure to do so may damage purifier.

1. Shut down AGPU.
2. Attach hose from PURIFIER INLET port to CLEAN RECYCLE CONTAINER OUTLET port.
3. Attach hose from PURIFIER OUTLET port to AGPU RETURN port.
4. On the AGPU:
   a. Open reservoir vent.
   b. Close reservoir drain valve.
   c. Open return bleed valve.
   d. Close system drain valve.
   e. Ensure that the RESERVOIR select lever is in AGPU position.
5. On the purifier:
   a. Open inlet valve.
   b. Open outlet valve.
   c. Close bypass ball valve.
6. Use purifier to refill AGPU reservoir to at least ¾ full:
   a. Start purifier.
   b. Monitor purifier limitations.
7. After AGPU reservoir has been filled:
   a. Shut purifier off.
   b. Close reservoir vent on AGPU.
   c. Close return bleed valve on AGPU.
   d. Close purifier inlet valve.
   e. Close purifier outlet valve.
   f. Disconnect hoses from purifier and clean recycle container.
   g. Put caps on hoses and store properly.

FILL AGPU WITH FLUID FROM CLEAN RECYCLE CONTAINER – (Refer to Figure 3) **- continued**

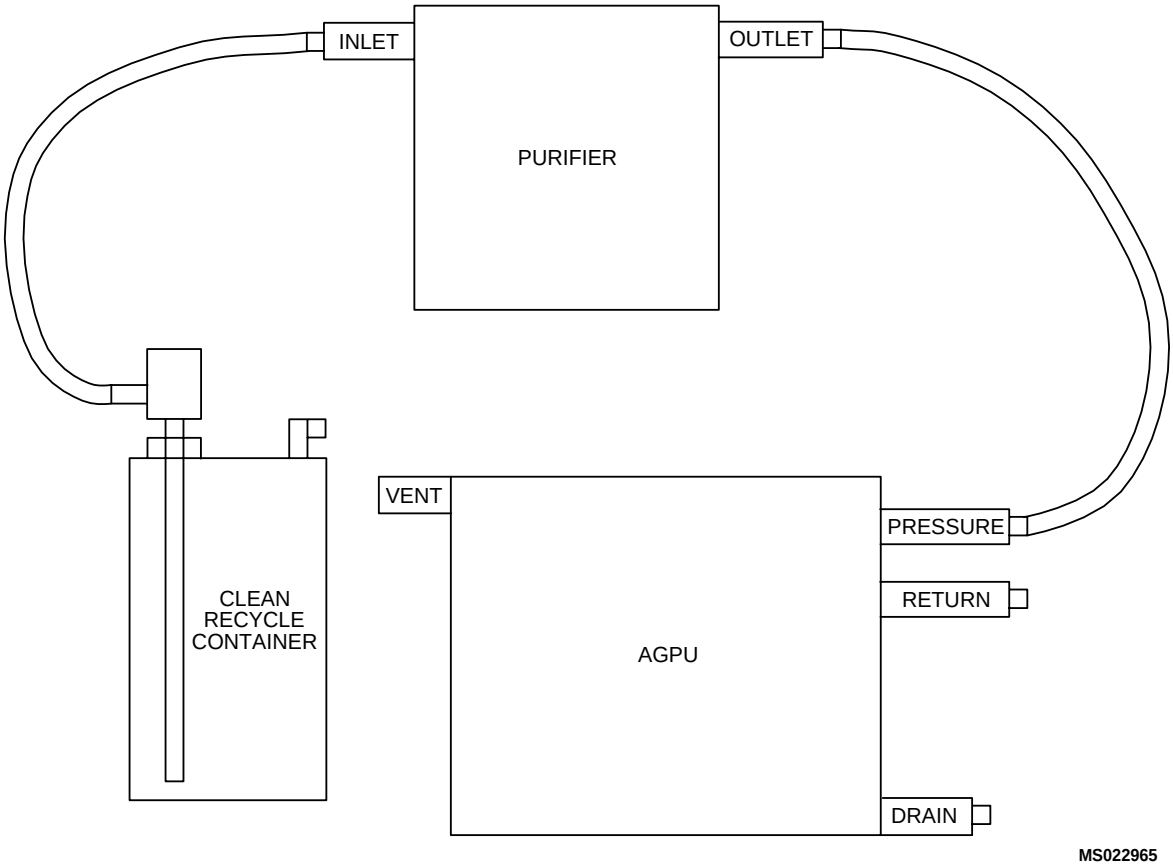


Figure 3. Fill AGPU From Clean Recycle Container

FLUSH AIRCRAFT FLIGHT BOOST AND UTILITY SYSTEMS – (Refer to Figure 4)

WARNING

HYDRAULIC FLUID

1. Ensure the AGPU reservoir is full. If not, fill AGPU from clean recycle container.
2. Attach hose from AGPU PRESSURE port to aircraft primary or utility GSE PRESSURE connector.
3. Attach hose from aircraft primary or utility GSE RETURN connector to DIRTY RECYCLE CONTAINER INLET port.
4. Plug in aircraft battery. AC power source from AGPU to aircraft should be set to 20 KW setting.

FLUSH AIRCRAFT FLIGHT BOOST AND UTILITY SYSTEMS – (Refer to Figure 4) **- continued**

NOTE

Personnel are required to use the aircraft intercom communication system to maintain voice communications between the person operating the flight controls and the AGPU operator.

5. Apply external power to the aircraft and establish voice communication via intercom communication system.
6. Recheck the AGPU reservoir fill level gage on the hydraulic control panel to ensure the reservoir is full. Add fluid if necessary.
7. Start AGPU.
8. Turn on AC power to aircraft (20 KW setting).
9. Ensure the RESERVOIR select lever on the AGPU is in AGPU position.
10. Set hydraulic power switch to on.
11. Decrease pressure on AGPU to 1000 psi.
12. Set the AGPU hydraulic output switch to on.
13. Increase pressure on AGPU to 3000 psi.

CAUTION

Do not let the reservoir go empty. Extensive damage to the AGPU hydraulic pump will occur**.**

NOTE

AGPU fluid level will decrease to between 1/2 and 1/3 full on the reservoir level gage. Do not allow the reservoir level to decrease below 1/3 full (5-7 gallons flushed).

14. If flushing Flight Boost systems, cycle flight controls (collective, cyclic, and pedals) five times each; then cycle flight controls three times each. If flushing the Utility system, run No.1 and No.2 PTUs for 10 seconds, extend winch 10 feet and retract, and then operate center cargo hook, ramp and tongue two times each.
15. Flush is complete.
16. Switch AGPU hydraulic output to off.
17. Disconnect hose from aircraft primary or utility GSE return connector.
18. Decrease hydraulic pressure on AGPU to 1000 psi.
19. Fill aircraft reservoir.
    a. Monitor quantity indicator on aircraft maintenance panel.
    b. For Utility system, open utility depressurize valve on aircraft and hold in on the APU start module in aircraft. For Flight Boost system go on to next step.
    c. Switch AGPU hydraulic output to on.
    d. Increase pressure on AGPU to 3000 psi.

FLUSH AIRCRAFT FLIGHT BOOST AND UTILITY SYSTEMS – (Refer to Figure 4) **- continued**

20. When aircraft reservoir is full, switch AGPU hydraulic output to off.
21. Decrease hydraulic pressure on AGPU to 500 psi.
22. Switch hydraulic power to off.
23. Shut down AGPU.
24. Disconnect hoses from AGPU, aircraft, and dirty recycle container.
25. Put caps on hoses and store properly.

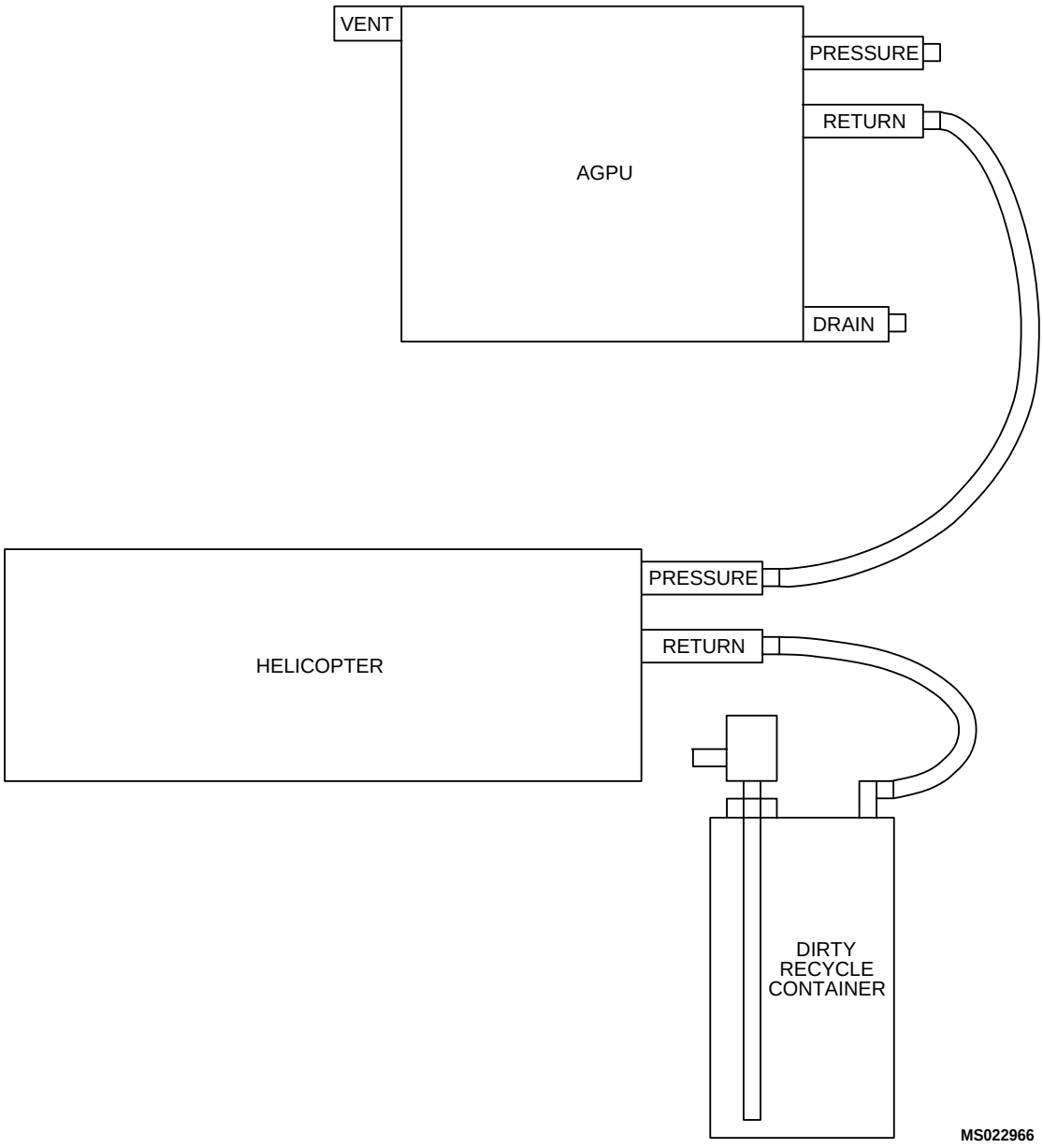


Figure 4. Flush Aircraft Flight Boost and Utility Systems

TRANSFER FLUID TO CLEAN RECYCLE CONTAINER – (Refer to Figure 5)

1. Attach hose from PURIFIER INLET port to DIRTY RECYCLE CONTAINER OUTLET port.
2. Attach hose from PURIFIER OUTLET port to CLEAN RECYCLE CONTAINER INLET port.
3. On the purifier:
   a. Open inlet valve.
   b. Open outlet valve.
   c. Close bypass ball valve.
4. Start purifier:
   a. Start purifier.
   b. Monitor purifier limitations.
5. Operate purifier until fluid level in purifier begins to drop or until clean recycle container is full.
6. When fluid level in purifier begins to drop or clean recycle container is full:
   a. Shut purifier off.
   b. Close purifier inlet valve.
   c. Close purifier outlet valve.
   d. Disconnect hoses from purifier and clean recycle container.
   e. Put caps on hoses and store properly.

TRANSFER FLUID TO CLEAN RECYCLE CONTAINER – (Refer to Figure 5) **- continued**

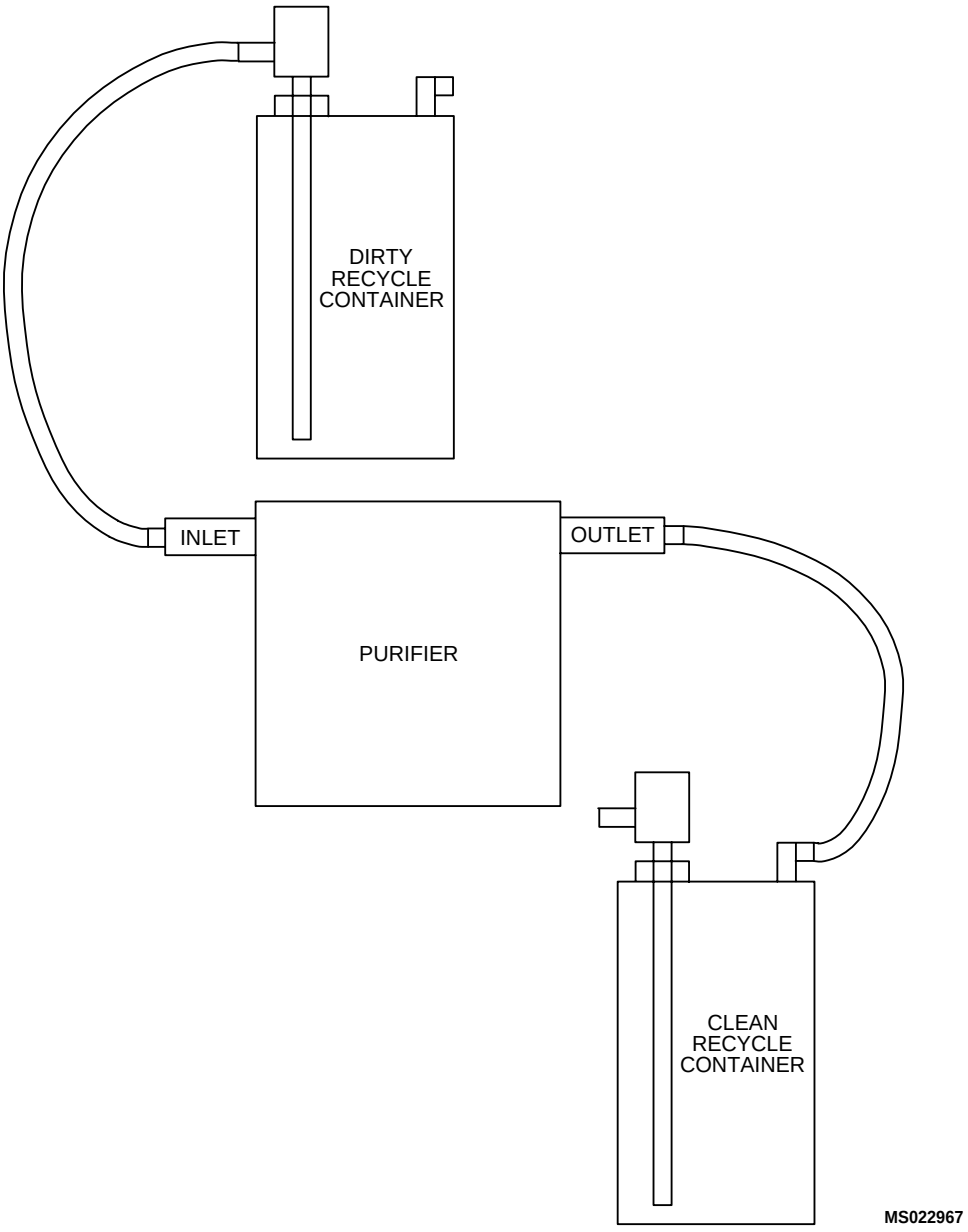


Figure 5. Transfer Fluid to Clean Recycle Container

DRAIN PURIFIER – (Refer to Figure 6)

1. Close inlet valve on purifier.
2. Open outlet valve on purifier.
3. Connect hose to PURIFIER OUTLET port and put other end of hose in bucket.

DRAIN PURIFIER – (Refer to Figure 6) **- continued**

4. Start purifier:
   a. Start purifier.
   b. Monitor purifier limitations.
   c. Ensure flow from purifier output into bucket.
5. Operate purifier until it automatically shuts down.
6. When purifier shuts down:
   a. Turn purifier switch off.
   b. Close purifier outlet valve.
   c. Disconnect hose from purifier.
   d. Put caps on hoses and store properly.

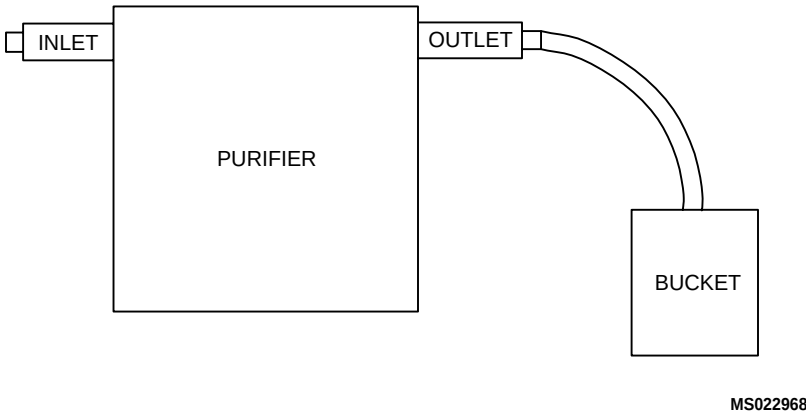


Figure 6. Drain Purifier

FILL PURIFIER FROM CLEAN RECYCLE CONTAINER – (Refer to Figure 7)

1. Disconnect hose from PURIFIER OUTLET.
2. Open inlet, outlet, and bypass ball valves on purifier.
3. Attach hose from PURIFIER INLET port to CLEAN RECYCLE CONTAINER OUTLET port.
4. Start purifier:
   a. Start purifier.
   b. Monitor purifier limitations.

FILL PURIFIER FROM CLEAN RECYCLE CONTAINER – (Refer to Figure 7) **- continued**

5. When desired fluid level in purifier is achieved:
   a. Shut purifier off.
   b. Close purifier inlet valve.
   c. Close purifier outlet valve.
   d. Close purifier bypass ball valve.
   e. Disconnect hose from purifier and clean recycle container.
   f. Put caps on hoses and store properly.

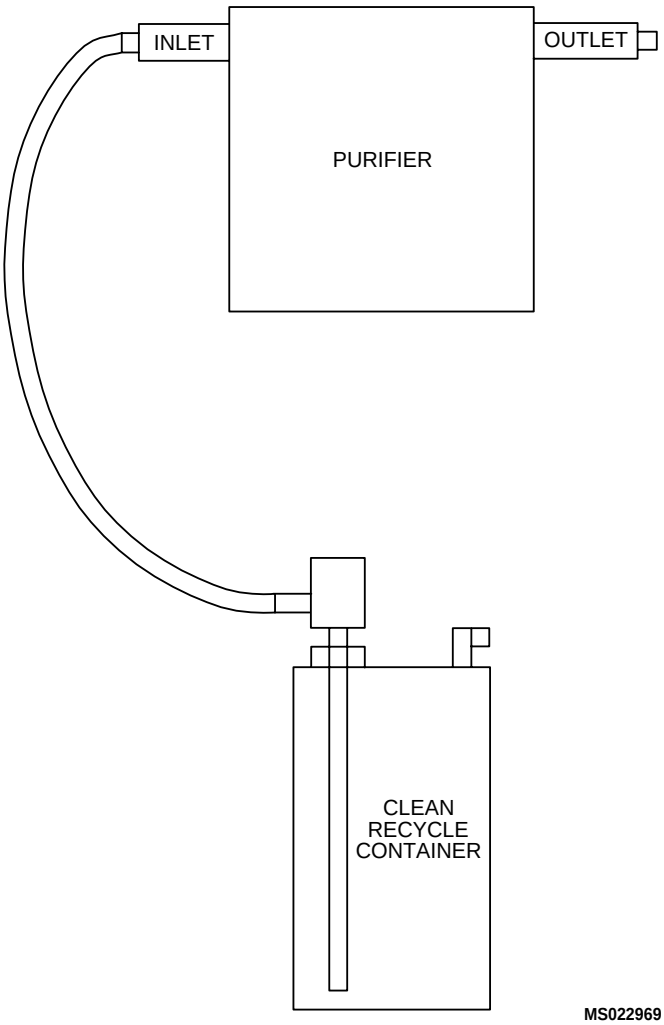


Figure 7. Fill Purifier from Clean Recycle Container

PARTS LISTS

The purification apparatus for the CH-47 must be assembled from parts obtained through the DoD supply system and purchased from commercial vendors. The complete apparatus consists of the following:

a. PEO1078-12HW83 Purifier (1ea)

b. DB1004-1 Drum Breather Kit (2 ea)

c. ST3003 Stainless Steel Drums (SS30) (2 ea)

d. B600 Desiccant Breather (2 ea)

e. Hoses to purify aircraft

f. Hose to purify AGPU

g. Purifier Connections

h. Sampler assembly

A breakout of the above follows.

Table 1. Parts List for Purifier and Purifier Connections

NOMENCLATURE	NSN	PART NUMBER	QUANTITY
Purifier Purchase from: Pall Aeropower Corp 5775 Rio Vistis Dr Clearwater, FL 33760-3114 (727) 539-8448	None	PEO1078-12HW83	1 ea
Fitting	4730-00-187-0848	AN816-16-12	1 ea
Fitting	4730-00-194-1116	AN816-16	3 ea
T-Fitting	4730-01-347-7341	871-FS-16	2 ea
Tubing Metallic	4710-00-279-0197	AMS5567	1 ft
Nut Tube Coupling	4730-00-314-6546	AN818-16	6 ea
Reducer	4730-01-167-7048	2215-12-16S	2 ea
Quick Disconnect	4730-01-224-2966	81015-1	1 ea
Plug Dust	5340-01-224-2948	81015-2	1 ea
Quick Disconnect	4730-01-225-0465	81014-1	1 ea
Cap Dust	5340-01-225-0459	81014-2	1 ea
Ball Valve	4820-00-148-8584	70-105-01	1 ea
Hose	4720-00-595-1088	MIL-H-8794	1 ft
Adapter Straight Tube to Hose	4730-00-842-1139	MS24587-16	1 ea
Elbow Tube to Hose	4730-00-203-7304	MS27224-16	1 ea

Table 2. Parts List for Hoses to Purify Aircraft

NOMENCLATURE	NSN	PART NUMBER	QUANTITY
Hose	4720-00-447-0027	AE373-12	20 ft
Fitting	4730-00-472-2611	94-4721-12	4 ea
Quick Disconnect	4730-01-224-2966	81015-1	2 ea
Plug Dust	5340-01-224-2948	81015-2	2 ea
Quick Disconnect	4730-01-225-0465	81014-1	2 ea
Cap Dust	5340-01-225-0459	81014-2	2 ea

Table 3. Parts List for Additional Hose to Purify AGPU

NOMENCLATURE	NSN	PART NUMBER	QUANTITY
Hose	4720-00-447-0027	AE373-12	10 ft
Fitting	4730-00-472-2611	94-4721-12	2 ea
Quick Disconnect	4730-01-224-2966	81015-1	1 ea
Plug Dust	5340-01-224-2948	81015-2	1 ea
Plug Protective	5340-00-826-5986	PD120	1 ea

Table 4. Parts List for Sampler Assembly

NOMENCLATURE	NSN	PART NUMBER	QUANTITY
Quick Disconnect	4730-01-224-2966	81015-1	1 ea
Plug Dust	5340-01-224-2948	81015-2	1 ea
Quick Disconnect	4730-01-225-0465	81014-1	1 ea
Cap Dust	5340-01-225-0459	81014-2	1 ea
T-Fitting	4730-00-277-5151	AN938-12	1 ea
Drain Valve	2915-00-097-0325	775C-62NW	1 ea
Reducer	4730-00-203-7458	AS5172-0608L	1 ea

Table 5. Parts List for Clean and Dirty Recycle Containers

NOMENCLATURE	NSN	PART NUMBER	QUANTITY
Drum Breather Kit	None	DB1004-1	2 ea
Stainless Steel Drum	None	ST3003	2 ea
Desiccant Breather	None	B6000	2 ea
Purchase from: Y2K Fluid Power, Inc. 3020 Centerville Road St. Paul, MN 55117 (651) 415-1864			

END OF WORK PACKAGE

DEPOT MAINTENANCE WORK REQUIREMENT

CH-47D HELICOPTER

OILS AND LUBRICANTS REFERENCE

For oils and lubricants used to maintain the CH-47D Helicopter, refer to TM 55-1520-240-23 and WP 0157 00.

END OF WORK PACKAGE

DEPOT MAINTENANCE WORK REQUIREMENT
CH-47D HELICOPTER
CH-47D TAIL NUMBER CROSS REFERENCE

SCOPE

This work package provides a ready reference concerning the aircraft manufacture date, initial serial number, remanufacture date, airframe hours at remanufacture, and "D" model serial number.

BRIEF HISTORY OF THE CHINOOK

Evolution of the CH-47 is as follows:

June 1959 – Initial development contract awarded to the Vertol Company
April 1961 – Initial Chinook rollout
September 1961 – First Flight
August 1962 – U.S. Army accepts first production CH-47
1962 – First of eventually 750 Chinooks destined for Vietnam War
1970 – International Chinook sales augment reduced Army production
1982 – CH-47D deliveries begin – continued thru the mid-1990's
May 1990 – MH-47E first flight
1992 – Approximately 200 U.S. Army and Allied Chinooks participate in Persian Gulf War
August 1999 – CH-47SD first flight
June 2001 – CH-47F first flight

TAIL NUMBER CROSS REFERENCE INFORMATION

Table 1. CH-47 Tail Number Cross Reference

CH-47D TAIL NUMBER	PREVIOUS MODEL	PREVIOUS TAIL NUMBER	DATE MANUFACTURED	AIR FRAME HOURS AT MOD TO "D"	NOTES
81-23381	CH-47A	66-19025	12/12/66	2648	
81-23382	CH-47A	66-19052	2/8/67	3483	
81-23383	CH-47A	66-19017	12/2/66	2708	
81-23384	CH-47A	66-19057	2/15/67	3309	
81-23385	CH-47A	66-19073	3/22/67	3101	
81-23386	CH-47A	66-19088	4/21/67	2811	
81-23387	CH-47A	64-13134	6/17/65	4238	
81-23388	CH-47A	64-13132	5/21/65	6819	
81-23389	CH-47A	64-13133	6/3/65	4526	
82-23762	CH-47A	66-00122	10/24/66	3203	
82-23763	CH-47A	66-19049	2/1/67	3248	
82-23764	CH-47A	65-08011	4/26/66	3822	Attrited – 1/7/90
82-23765	CH-47A	66-00119	10/20/66	2654	
82-23766	CH-47A	66-19058	2/21/67	3151	
82-23767	CH-47A	66-19043	1/20/67	3331	
82-23768	CH-47A	66-00106	9/25/66	3243	
82-23769	CH-47A	65-08005	4/6/66	3992	
82-23770	CH-47A	66-00108	9/30/66	2910	
82-23771	CH-47A	66-19074	3/22/67	3078	

Table 1. CH-47 Tail Number Cross Reference - continued

CH-47D TAIL NUMBER	PREVIOUS MODEL	PREVIOUS TAIL NUMBER	DATE MANUFACTURED	AIR FRAME HOURS AT MOD TO "D"	NOTES
82-23772	CH-47A	66-00116	10/12/66	5167	
82-23773	CH-47C	68-16002	7/18/69	2187	
82-23774	CH-47A	64-13144	7/24/65	3861	
82-23775	CH-47A	66-19031	12/22/66	4816	
82-23776	CH-47A	66-00115	10/12/66	3460	
82-23777	CH-47A	66-19072	3/15/67	2742	
82-23778	CH-47C	69-17104	1/31/70	2192	
82-23779	CH-47C	68-16009	9/23/69	2687	
82-23780	CH-47C	67-18531	6/18/68	2134	
83-24102	CH-47B	66-19137	8/11/67	3169	
83-24103	CH-47C	69-17126	12/28/70	2963	
83-24104	CH-47A	64-13115	2/16/65	2407	
83-24105	CH-47B	67-18483	1/30/68	3089	
83-24106	CH-47C	69-17102	11/7/69	1932	
83-24107	CH-47A	63-07992	2/23/65	4093	
83-24108	CH-47B	67-18464	11/29/67	3782	
83-24109	CH-47C	70-15034	12/17/71	1548	
83-24110	CH-47A	64-13111	1/22/65	3519	Attrited-7/16/90
83-24111	CH-47A	63-07923	11/27/64	3280	
83-24112	CH-47B	67-18460	11/6/67	2564	
83-24113	CH-47C	68-15813	8/30/68	3207	
83-24114	CH-47A	64-13112	1/27/65	3163	
83-24115	CH-47B	67-18456	11/6/67	3444	
83-24116	CH-47C	68-15996	6/2/69	2315	
83-24117	CH-47A	64-13118	4/16/65	3213	
83-24118	CH-47C	70-15010	4/15/71	1872	
83-24119	CH-47C	68-16014	7/18/69	2142	
83-24120	CH-47A	64-13122	3/10/65	3248	
83-24121	CH-47C	67-18541	7/16/68	3307	
83-24122	CH-47C	68-16001	6/30/69	1521	
83-24123	CH-47A	64-13127	4/16/65	2980	
83-24124	CH-47C	69-17109	4/27/70	2301	
83-24125	CH-47A	64-13108	12/23/64	3202	
84-24152	CH-47C	68-15991	5/19/69	2109	
84-24153	CH-47A	64-13120	3/12/65	3894	
84-24154	CH-47A	64-13140	7/16/65	3598	
84-24155	CH-47C	70-15017	6/21/71	1709	
84-24156	CH-47A	64-13113	1/27/65	3465	
84-24157	CH-47A	65-07978	1/4/66	2276	
84-24158	CH-47C	70-15014	5/25/71	1485	
84-24159	CH-47A	64-13125	4/20/65	3508	
84-24160	CH-47A	66-19020	12/2/66	3578	
84-24161	CH-47C	70-15016	6/17/71	1446	

Table 1. CH-47 Tail Number Cross Reference - continued

CH-47D TAIL NUMBER	PREVIOUS MODEL	PREVIOUS TAIL NUMBER	DATE MANUFACTURED	AIR FRAME HOURS AT MOD TO "D"	NOTES
84-24162	CH-47A	64-13129	5/10/65	4188	
84-24163	CH-47A	64-13150	8/25/65	3669	
84-24164	CH-47C	68-15830	10/29/68	3786	
84-24165	CH-47A	64-13126	4/21/65	3553	
84-24167	CH-47C	67-18537	7/1/68	5475	
84-24168	CH-47A	64-13123	3/24/65	2611	
84-24169	CH-47A	65-07990	3/1/66	4022	
84-24170	CH-47C	70-15001	1/28/71	1975	
84-24171	CH-47A	64-13117	2/18/65	3585	
84-24172	CH-47A	66-19055	2/22/67	3765	
84-24173	CH-47C	68-15840	12/16/68	3791	
84-24174	CH-47A	64-13121	3/10/65	2833	
84-24175	CH-47C	69-17113	6/15/70	2433	
84-24176	CH-47A	66-19008	11/10/66	4490	
84-24177	CH-47C	71-20947	4/17/72	1588	Attrited-4/3/91
84-24178	CH-47A	64-13119	3/2/65	3927	
84-24179	CH-47C	70-15006	3/17/71	1887	
84-24180	CH-47A	64-13130	5/6/65	3433	
84-24181	CH-47C	67-18550	8/15/68	3224	
84-24182	CH-47A	62-02135	3/13/64	3949	
84-24183	CH-47C	70-15019	7/14/71	1868	
84-24184	CH-47A	62-02137	4/24/64	3989	
84-24185	CH-47C	70-15013	5/14/71	1875	
84-24186	CH-47A	63-07918	10/14/74	3713	
84-24187	CH-47C	68-16020	10/10/69	2231	
85-24322	CH-47A	65-07983	2/1/66	3449	
85-24323	CH-47A	65-07981	1/24/66	3248	
85-24324	CH-47A	66-19021	12/10/66	3585	
85-24325	CH-47C	70-15025	9/24/71	1916	Attrited 9/4/86
85-24326	CH-47A	65-07982	1/24/66	3534	
85-24327	CH-47A	66-19026	12/19/66	4295	
85-24328	CH-47C	69-17111	5/28/70	1953	
85-24329	CH-47A	66-19036	1/5/67	3357	
85-24330	CH-47A	66-19051	2/8/67	3977	
85-24331	CH-47C	68-16010	9/29/69	2840	
85-24332	CH-47A	66-00123	10/22/66	3241	
85-24333	CH-47A	65-08017	5/16/66	3089	
85-24334	CH-47C	69-17112	5/28/70	2386	
85-24335	CH-47A	65-08014	5/12/66	3862	
85-24336	CH-47A	66-00124	10/26/66	3461	
85-24337	CH-47C	67-18509	4/19/68	3029	
85-24338	CH-47A	65-07979	1/10/66	3795	
85-24339	CH-47A	65-08019	5/23/66	3358	

Table 1. CH-47 Tail Number Cross Reference - continued

CH-47D TAIL NUMBER	PREVIOUS MODEL	PREVIOUS TAIL NUMBER	DATE MANUFACTURED	AIR FRAME HOURS AT MOD TO "D"	NOTES
85-24340	CH-47C	69-17121	10/28/70	2562	
85-24341	CH-47A	66-00077	7/11/66	3768	
85-24342	CH-47A	66-19071	3/16/67	3258	
85-24343	CH-47C	68-15850	12/13/68	3179	
85-24344	CH-47A	66-00107	9/30/66	3145	
85-24345	CH-47A	66-00090	8/18/66	3047	
85-24346	CH-47C	67-18504	4/8/68	3170	
85-24347	CH-47A	66-00089	8/11/66	3158	
85-24348	CH-47A	66-00101	9/9/66	3453	
85-24349	CH-47C	68-15839	1/13/69	3314	
85-24350	CH-47A	66-19060	2/21/67	3256	
85-24351	CH-47A	65-07971	12/14/65	3860	
85-24352	CH-47C	68-15843	1/27/69	3264	
85-24353	CH-47A	65-08018	5/18/66	3563	
85-24354	CH-47A	66-19009	11/14/66	3048	
85-24355	CH-47C	68-15861	4/28/69	3026	
85-24356	CH-47A	66-19000	10/28/66	3695	
85-24357	CH-47A	66-00093	8/18/66	3804	
85-24358	CH-47C	70-15011	4/23/71	4388	
85-24359	CH-47A	66-19066	3/8/67	3656	
85-24360	CH-47A	66-19018	11/29/66	2832	
85-24361	CH-47C	68-16021	10/15/69	2423	
85-24362	CH-47A	66-19024	12/9/66	3326	
85-24363	CH-47A	66-19077	4/3/67	3513	
85-24364	CH-47C	68-16013	7/16/69	1626	
85-24365	CH-47A	65-08002	3/29/66	4037	
85-24366	CH-47A	65-07977	1/7/66	4383	
85-24367	CH-47A	65-08010	4/19/66	3693	
85-24368	CH-47A	66-19044	1/23/67	3731	
85-24369	CH-47A	66-19054	2/8/67	3771	
86-01635	CH-47A	64-13137	6/28/65	3329	
86-01636	CH-47A	65-08023	5/27/66	3522	
86-01637	CH-47B	67-18438	9/14/67	6862	
86-01638	CH-47A	64-13159	10/9/65	3444	
86-01639	CH-47A	65-07984	2/4/66	4134	
86-01640	CH-47B	67-18439	9/11/67	7069	
86-01641	CH-47A	64-13164	11/9/65	3507	
86-01642	CH-47A	66-19048	1/26/67	4138	
86-01643	CH-47B	66-19121	7/6/67	4250	Attrited – 2/25/88
86-01644	CH-47A	65-08004	3/31/66	4116	
86-01645	CH-47A	65-08020	5/18/66	4416	
86-01646	CH-47B	66-19115	6/22/67	8358	
86-01647	CH-47A	66-00074	6/29/66	4813	

Table 1. CH-47 Tail Number Cross Reference - continued

CH-47D TAIL NUMBER	PREVIOUS MODEL	PREVIOUS TAIL NUMBER	DATE MANUFACTURED	AIR FRAME HOURS AT MOD TO "D"	NOTES
86-01648	CH-47A	65-08013	5/2/66	4518	
86-01649	CH-47B	67-18472	12/18/67	6334	
86-01650	CH-47A	66-00103	9/15/66	2938	
86-01651	CH-47A	65-08015	5/10/66	3341	
86-01652	CH-47B	67-18451	10/19/67	6876	
86-01653	CH-47A	65-07993	3/1/66	3301	
86-01654	CH-47A	66-19028	12/16/66	3375	
86-01655	CH-47B	66-19114	6/20/67	7380	
86-01656	CH-47A	65-07980	1/26/66	3709	
86-01657	CH-47A	65-08009	4/15/66	3562	
86-01658	CH-47B	66-19125	7/18/67	7285	
86-01659	CH-47A	66-00102	9/12/66	3726	
86-01660	CH-47A	65-07995	3/15/66	3728	
86-01661	CH-47B	66-19140	8/16/67	4564	
86-01662	CH-47A	64-13142	7/19/65	4624	
86-01663	CH-47A	64-13155	11/17/65	3975	
86-01664	CH-47B	66-19133	7/26/67	3772	
86-01665	CH-47A	66-00114	10/11/66	3744	
86-01666	CH-47C	67-18522	5/21/68	3886	
86-01667	CH-47A	65-07967	11/24/65	3962	
86-01668	CH-47A	66-00075	7/7/66	4056	
86-01669	CH-47B	67-18444	9/27/67	3672	
86-01670	CH-47A	66-19087	4/27/67	4319	
86-01671	CH-47A	66-19096	5/4/67	3880	
86-01672	CH-47B	67-18448	10/7/67	3570	
86-01673	CH-47A	66-19097	5/12/67	3398	
86-01674	CH-47A	66-00104	9/23/66	3264	
86-01675	CH-47B	66-19107	6/9/67	4194	
86-01676	CH-47A	64-13135	6/23/65	3588	
86-01677	CH-47A	66-19030	12/19/66	4089	
86-01678	CH-47C	68-15855	1/13/69	3330	
86-01679	CH-47A	65-07991	2/21/66	4932	
86-01680	CH-47A	65-08003	3/29/66	4257	
86-01681	CH-47A	65-08012	4/27/66	2001	Attrited – 4/24/95
86-01682	CH-47C	70-15022	8/23/71	2857	
87-00069	CH-47A	66-00097	8/31/66	4545	
87-00070	CH-47A	61-02424	7/30/63	2048	
87-00071	CH-47B	67-18471	12/17/67	4787	
87-00072	CH-47A	64-13165	11/12/65	3800	
87-00073	CH-47B	67-18446	10/4/67	3855	
87-00074	CH-47A	61-02422	6/29/63	4529	
87-00075	CH-47B	66-19102	5/24/67	1940	
87-00076	CH-47A	62-02117	9/25/63	4646	

Table 1. CH-47 Tail Number Cross Reference - continued

CH-47D TAIL NUMBER	PREVIOUS MODEL	PREVIOUS TAIL NUMBER	DATE MANUFACTURED	AIR FRAME HOURS AT MOD TO "D"	NOTES
87-00077	CH-47B	66-19132	7/24/67	3310	
87-00078	CH-47B	67-18436	9/6/67	3174	
87-00079	CH-47B	66-19120	6/27/67	5322	
87-00080	CH-47A	62-02118	9/13/63	4754	
87-00081	CH-47B	67-18477	1/12/68	3740	
87-00082	CH-47A	63-07919	10/29/64	4388	
87-00083	CH-47B	67-18466	12/12/67	3962	
87-00084	CH-47A	62-02132	2/14/64	4484	
87-00085	CH-47B	67-18453	10/25/67	4305	
87-00086	CH-47A	62-02133	2/14/64	4330	
87-00087	CH-47B	66-19111	6/19/67	5239	
87-00088	CH-47A	62-02136	4/22/64	4114	
87-00089	CH-47B	67-18484	2/9/68	4594	
87-00090	CH-47A	63-07902	4/30/64	3071	
87-00091	CH-47B	66-19134	7/27/67	2940	
87-00092	CH-47A	63-07903	5/18/64	4182	
87-00093	CH-47B	66-19135	7/28/67	3180	
87-00094	CH-47A	63-07904	5/25/64	4500	
87-00095	CH-47B	67-18434	9/8/67	5880	
87-00096	CH-47A	63-07906	6/22/64	4701	
87-00097	CH-47B	67-18437	9/15/67	3919	
87-00098	CH-47A	63-07907	6/26/64	2943	
87-00099	CH-47B	67-18474	1/8/68	2490	
87-00100	CH-47A	63-07909	7/24/64	3582	
87-00101	CH-47B	66-19119	6/27/67	5330	
87-00102	CH-47A	63-07911	7/29/64	3942	
87-00103	CH-47B	66-19112	6/20/67	6430	
87-00104	CH-47A	63-07914	8/31/64	4496	
87-00105	CH-47B	66-19127	7/18/67	4531	
87-00106	CH-47A	63-07917	10/1/64	3740	
87-00107	CH-47B	67-18432	8/23/67	5104	
87-00108	CH-47A	62-02129	1/22/64	4285	
87-00109	CH-47B	66-19098	5/10/67	4772	
87-00110	CH-47B	67-18463	11/26/67	4443	
87-00111	CH-47B	66-19124	7/7/67	5863	
87-00112	CH-47A	63-07920	10/29/64	2251	
87-00113	CH-47B	67-18443	9/26/67	4315	
87-00114	CH-47B	67-18452	10/23/67	4599	
87-00115	CH-47B	67-18459	11/13/67	3759	
87-00116	CH-47A	63-07921	11/16/64	2387	
88-00062	CH-47B	66-19136	8/7/67	3854	
88-00063	CH-47B	66-19141	8/17/67	3519	
88-00064	CH-47B	67-18447	10/11/67	4243	

Table 1. CH-47 Tail Number Cross Reference - continued

CH-47D TAIL NUMBER	PREVIOUS MODEL	PREVIOUS TAIL NUMBER	DATE MANUFACTURED	AIR FRAME HOURS AT MOD TO "D"	NOTES
88-00065	CH-47B	67-18491	2/26/68	4365	
88-00066	CH-47B	66-19105	5/25/67	3846	
88-00067	CH-47B	67-18450	10/16/67	4841	
88-00068	CH-47B	67-18486	2/10/68	3534	
88-00069	CH-47B	67-18476	1/9/68	4566	
88-00070	CH-47B	66-19129	7/21/67	4005	
88-00071	CH-47B	67-18441	9/21/67	3626	
88-00072	CH-47B	66-19131	7/24/67	3800	
88-00073	CH-47B	66-19122	7/5/67	4051	
88-00074	CH-47B	67-18489	2/20/68	3755	
88-00075	CH-47B	66-19130	7/22/67	3265	
88-00076	CH-47B	67-18492	2/27/68	2868	
88-00077	CH-47B	67-18482	1/24/68	4486	
88-00078	CH-47B	67-18478	1/16/68	4145	
88-00079	CH-47B	67-18440	9/15/67	4039	
88-00080	CH-47B	66-19108	6/13/67	3636	
88-00081	CH-47B	66-19099	5/19/67	4803	
88-00082	CH-47B	67-18454	10/31/67	4563	
88-00083	CH-47B	66-19109	6/12/67	2438	
88-00085	CH-47B	66-19116	6/23/67	4087	
88-00086	CH-47B	67-18488	2/19/68	3740	
88-00087	CH-47B	67-18473	12/19/67	3035	
88-00088	CH-47B	66-19123	7/14/67	5248	
88-00089	CH-47B	66-19100	5/19/67	3518	
88-00090	CH-47B	67-18465	12/9/67	4004	
88-00091	CH-47B	67-18467	12/14/67	4158	
88-00092	CH-47B	66-19104	5/29/67	3823	Attrited – 4/12/89
88-00093	CH-47C	68-15868	5/14/69	3064	
88-00094	CH-47C	68-15851	12/16/68	3544	
88-00095	CH-47C	68-15847	12/5/68	3986	
88-00096	CH-47C	68-16016	8/29/69	1502	
88-00097	CH-47C	71-20952	9/29/72	2383	
88-00098	CH-47C	69-17116	7/31/70	6466	
88-00099	CH-47C	68-15865	4/30/69	3396	
88-00100	CH-47C	68-15867	5/13/69	3316	
88-00101	CH-47C	68-15846	11/25/68	4233	
88-00102	CH-47C	68-15997	6/12/69	3127	
88-00103	CH-47C	68-16006	9/2/69	2873	
88-00104	CH-47C	68-15827	10/22/68	4298	
88-00105	CH-47C	68-15995	5/26/69	3692	
88-00106	CH-47C	68-15831	10/29/68	4018	
88-00107	CH-47C	79-23398	2/8/80	1564	
88-00108	CH-47C	69-17114	6/30/70	3235	

Table 1. CH-47 Tail Number Cross Reference - continued

CH-47D TAIL NUMBER	PREVIOUS MODEL	PREVIOUS TAIL NUMBER	DATE MANUFACTURED	AIR FRAME HOURS AT MOD TO "D"	NOTES
88-00109	CH-47C	69-17123	11/21/70	2602	
89-00130	CH-47C	68-16017	12/15/69	3563	
89-00131	CH-47C	69-17106	2/25/70	2966	
89-00132	CH-47C	70-15008	3/26/71	3159	
89-00133	CH-47C	71-20945	2/17/72	2755	
89-00134	CH-47C	67-18505	4/9/68	4206	
89-00135	CH-47C	68-15820	9/27/68	3489	
89-00136	CH-47C	76-22675	2/24/77	4010	
89-00137	CH-47C	67-18517	5/15/68	3572	
89-00138	CH-47C	67-18533	6/28/68	3969	
89-00139	CH-47C	68-15849	12/16/68	3810	
89-00140	CH-47C	68-15990	5/15/69	3493	
89-00141	CH-47C	68-15834	11/20/68	4759	
89-00142	CH-47C	67-18516	5/9/68	4054	
89-00143	CH-47C	68-15829	10/28/68	3846	
89-00144	CH-47C	68-16008	9/11/69	3655	
89-00145	CH-47C	70-15012	5/10/71	2487	
89-00146	CH-47C	70-15031	11/16/71	2466	
89-00147	CH-47C	68-15836	11/25/68	4290	
89-00148	CH-47C	68-15863	4/30/69	3273	
89-00149	CH-47C	70-15002	1/31/71	2815	
89-00150	CH-47C	70-15005	2/26/71	3160	
89-00151	CH-47C	76-22678	5/10/77	1972	
89-00152	CH-47C	76-22684	1/11/78	1787	
89-00153	CH-47C	68-15862	4/30/69	4078	
89-00154	CH-47C	68-15822	10/4/68	4566	
89-00155	CH-47C	68-16011	7/1/69	3583	
89-00156	CH-47C	68-15860	4/23/69	3824	
89-00157	CH-47C	68-15852	12/18/68	4214	
89-00158	CH-47C	74-22279	11/21/75	2541	
89-00159	CH-47C	67-18526	6/4/68	4443	
89-00160	CH-47C	67-18500	3/29/68	4545	
89-00161	CH-47C	67-18532	6/18/68	4420	
89-00162	CH-47C	68-15815	9/23/68	5059	
89-00163	CH-47C	70-15023	8/30/71	3225	
89-00164	CH-47C	67-18549	8/9/68	4701	
89-00165	CH-47C	74-22278	9/30/75	2875	Attrited – 11/1/91
89-00166	CH-47C	67-18546	8/9/68	4342	
89-00167	CH-47C	67-18520	5/17/68	4438	
89-00168	CH-47C	70-15027	10/12/71	2436	
89-00169	CH-47C	68-16012	7/10/69	3218	
89-00170	CH-47C	67-18503	3/29/68	3480	
89-00171	CH-47C	68-15821	9/28/68	4170	

Table 1. CH-47 Tail Number Cross Reference - continued

CH-47D TAIL NUMBER	PREVIOUS MODEL	PREVIOUS TAIL NUMBER	DATE MANUFACTURED	AIR FRAME HOURS AT MOD TO "D"	NOTES
89-00172	CH-47C	68-15825	10/18/68	4651	Attrited 10/10/92
89-00173	CH-47C	67-18528	6/7/68	4395	
89-00174	CH-47C	67-18551	8/19/68	3338	
89-00175	CH-47C	68-15848	12/10/68	4888	
89-00176	CH-47B	66-19138	8/11/67	1596	
89-00177	CH-47C	68-15819	9/23/68	4665	
90-00180	CH-47C	74-22286	4/30/76	2167	
90-00181	CH-47C	74-22271	1/30/75	2717	
90-00182	CH-47C	74-22272	5/19/75	2839	
90-00183	CH-47C	68-15816	9/24/68	4387	
90-00184	CH-47C	68-15828	10/24/68	2714	
90-00185	CH-47C	70-15009	4/21/71	3091	
90-00186	CH-47C	67-18515	5/8/68	4951	
90-00187	CH-47C	70-15018	7/15/71	3147	
90-00188	CH-47C	71-20995	7/31/74	3043	
90-00189	CH-47C	67-18510	4/29/68	4443	
90-00190	CH-47C	68-15812	8/28/68	4081	
90-00191	CH-47C	74-22273	5/30/75	2734	
90-00192	CH-47C	74-22274	6/20/75	2997	
90-00193	CH-47C	68-15859	4/28/69	2891	
90-00194	CH-47C	74-22294	12/17/76	2306	
90-00195	CH-47C	68-15864	4/30/69	3438	
90-00196	CH-47C	69-17107	3/26/70	2913	
90-00197	CH-47C	69-17117	8/20/70	3062	
90-00198	CH-47C	76-22682	9/23/77	3278	
90-00199	CH-47C	76-22676	3/11/77	2109	
90-00200	CH-47C	70-15028	10/14/71	2882	
90-00201	CH-47C	67-18530	6/17/68	3274	Attrited 7/21/94
90-00202	CH-47C	74-22293	11/29/76	2101	
90-00203	CH-47C	68-16004	9/5/69	5573	
90-00204	CH-47C	74-22287	6/30/76	4244	
90-00205	CH-47C	69-17125	12/28/70	3232	
90-00206	CH-47C	76-22683	11/2/77	2217	
90-00207	CH-47C	70-15000	1/28/71	3266	
90-00208	CH-47C	69-17122	10/28/70	2400	
90-00209	CH-47C	68-15818	9/23/68	4080	
90-00210	CH-47C	68-15853	12/20/68	4248	
90-00211	CH-47C	70-15021	8/16/71	3003	
90-00212	CH-47C	68-15856	1/15/69	4279	
90-00213	CH-47C	79-23395	12/18/79	1699	
90-00214	CH-47C	68-15992	5/19/69	1498	
90-00215	CH-47C	68-15842	1/17/69	4275	
90-00216	CH-47C	69-16015	8/27/69	3591	

Table 1. CH-47 Tail Number Cross Reference - continued

CH-47D TAIL NUMBER	PREVIOUS MODEL	PREVIOUS TAIL NUMBER	DATE MANUFACTURED	AIR FRAME HOURS AT MOD TO "D"	NOTES
90-00217	CH-47C	68-15998	6/11/69	1917	
90-00218	CH-47C	70-15004	2/26/71	2437	
90-00219	CH-47C	68-15857	1/27/69	3839	
90-00220	CH-47C	68-15858	4/30/69	3377	Attrited 9/23/94
90-00221	CH-47C	68-16007	9/16/69	2689	
90-00222	CH-47C	67-18521	5/20/68	3994	
90-00223	CH-47C	69-17115	7/28/70	2006	
90-00224	CH-47C	68-15817	9/23/68	4324	
90-00225	CH-47C	71-20949	7/14/72	2892	
90-00226	CH-47C	79-23397	6/30/80	1591	
91-00230	CH-47C	71-20953	10/31/72	2467	
91-00231	CH-47C	74-22280	12/19/75	1873	
91-00232	CH-47C	70-15033	12/16/71	2799	
91-00233	CH-47C	68-16019	9/11/69	1536	
91-00234	CH-47C	68-15814	9/11/68	3206	
91-00235	CH-47C	67-18525	5/31/68	4091	
91-00236	CH-47C	68-15833	11/8/68	4465	
91-00237	CH-47C	71-20948	6/29/72	2934	
91-00238	CH-47C	76-22673	12/17/76	1842	
91-00239	CH-47C	76-22674	1/21/77	1869	
91-00240	CH-47C	67-18494	3/30/68	3274	
91-00241	CH-47C	74-22282	2/13/76	1966	
91-00242	CH-47C	79-23399	4/29/80	1851	
91-00243	CH-47C	79-23401	5/30/80	1406	
91-00244	CH-47C	79-23400	5/28/80	1528	
91-00245	CH-47C	76-22680	7/27/77	2023	
91-00246	CH-47C	69-17110	4/30/70	3350	
91-00247	CH-47C	67-18495	3/29/68	5958	
91-00248	CH-47C	67-18547	7/28/68	4763	
91-00249	CH-47C	68-16018	9/9/69	4015	
91-00250	CH-47C	68-15811	8/20/68	4495	
91-00251	CH-47C	68-15844	11/20/68	4530	
91-00252	CH-47C	70-15026	9/28/71	2784	
91-00253	CH-47C	70-15024	9/17/71	2500	
91-00254	CH-47C	70-15032	11/30/71	3130	
91-00255	CH-47C	74-22284	3/23/76	2525	
91-00256	CH-47C	69-17101	12/9/69	3752	
91-00257	CH-47C	74-22291	10/27/76	2581	
91-00258	CH-47C	70-15020	7/23/71	2692	
91-00259	CH-47C	69-17103	1/14/70	1299	
91-00260	CH-47A	61-02416	4/29/63	4173	
91-00261	CH-47A	61-02409	1/9/63	2463	
91-00262	CH-47C	70-15003	2/19/71	2550	

Table 1. CH-47 Tail Number Cross Reference - continued

CH-47D TAIL NUMBER	PREVIOUS MODEL	PREVIOUS TAIL NUMBER	DATE MANUFACTURED	AIR FRAME HOURS AT MOD TO "D"	NOTES
91-00263	CH-47A	62-02114	8/23/63	3810	
91-00264	CH-47A	61-02420	6/27/63	3775	
91-00265	CH-47A	61-02410	2/13/63	4100	
91-00266	CH-47A	61-02415	4/30/63	2092	
91-00267	CH-47A	61-02417	5/31/63	3900	
91-00268	CH-47A	61-02419	5/31/63	4350	
91-00269	CH-47A	61-02421	6/29/63	3071	
91-00270	CH-47A	61-02423	6/30/63	2764	
91-00271	CH-47C	67-18540	7/11/68	3472	
92-00280	CH-47A	62-02115	8/28/63	3506	
92-00281	CH-47C	85-24736	8/9/85	794	
92-00282	CH-47A	62-02116	8/31/63	2031	
92-00283	CH-47C	85-24740	8/13/65	606	
92-00284	CH-47C	67-18548	8/5/68	4844	
92-00285	CH-47C	85-24741	8/9/85	577	
92-00286	CH-47A	62-02130	1/28/64	2316	
92-00287	CH-47A	62-02131	1/29/64	2683	
92-00288	CH-47C	85-24739	8/15/8	566	
92-00289	CH-47A	63-07905	5/27/64	2337	
92-00290	CH-47A	63-07908	6/29/64	1944	
92-00291	CH-47C	85-24735	8/9/85	955	
92-00292	CH-47A	63-07916	9/28/64	3306	
92-00293	CH-47A	62-02127	12/31/63	1432	
92-00294	CH-47C	85-24742	8/13/85	798	
92-00295	CH-47A	63-07912	8/25/64	3453	
92-00296	CH-47A	62-02128	1/4/64	2116	
92-00297	CH-47C	85-24744	8/15/85	808	
92-00298	CH-47A	63-07915	9/8/64	2924	
92-00299	CH-47A	61-02413	3/28/63	384	
92-00300	CH-47C	85-24737	8/9/85	892	
92-00301	CH-47A	61-02412	2/15/63	1330	
92-00302	CH-47A	62-02123	11/19/63	3488	
92-00303	CH-47C	67-18538	7/25/68	2252	
92-00304	CH-47A	65-08008	4/13/66	3504	
92-00305	CH-47A	63-07900	4/23/64	2048	
92-00306	CH-47C	85-24738	8/13/85	543	
92-00307	CH-47A	62-02119	9/8/64	171	
92-00308	CH-47A	62-02124	11/27/63	2147	
92-00309	CH-47A	60-03449	2/20/63	275	
92-0367	N/A	N/A	2/28/94	N/A	New Aircraft
92-0368	N/A	N/A	3/15/94	N/A	New Aircraft
93-00928	CH-47C	A15-0005	Unk	2134	
93-00929	CH-47C	A15-0005	Unk	2637	

Table 1. CH-47 Tail Number Cross Reference - continued

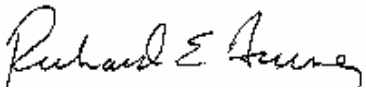
CH-47D TAIL NUMBER	PREVIOUS MODEL	PREVIOUS TAIL NUMBER	DATE MANUFACTURED	AIR FRAME HOURS AT MOD TO "D"	NOTES
93-00930	CH-47C	A15-0005	Unk	3002	
93-00931	CH-47C	A15-0005	Unk	2914	
93-00932	CH-47C	A15-0005	Unk	3583	
93-00933	CH-47C	A15-0005	Unk	2074	
93-00934	CH-47C	A15-0005	Unk	2384	

END OF WORK PACKAGE

FOR THE COMMANDER:

ROBERT W. ENGLISH, III
Colonel, OD
Chief of Staff

OFFICIAL:



RICHARD E. TURNER
Deputy Director
Integrated Materiel Management Center

REQUEST FOR DEPOT ENGINEERING SUPPORT

CONTRACT NO	PRIORITY OF REQUEST	DATE OF REQUEST
	☐ URGENT ☐ ROUTINE	

TO:

THRU:

COPIES:

FROM:

POINT-OF-CONTACT:

PUBLICATION NO.	CHANGE NO.	PUBLICATION DATE

PUBLICATION TITLE

AREA OF PUBLICATION WHERE PROBLEM EXISTS

BE EXACT PIN-POINT WHERE IT IS

PAGE NO	PARA-GRAPH	FIGURE NO	TABLE NO

IN THIS SPACE TELL WHAT IS WRONG AND WHAT SHOULD BE DONE ABOUT IT:

(Use Continuation Sheet If Necessary)

TITLE	SIGNATURE	DATE

RECOMMENDED SOLUTIONS OR DISPOSITION:

(Use Continuation Sheet If Necessary)

TITLE	SIGNATURE	DATE

These are the instructions for sending an electronic 2028

The following format must be used if submitting an electronic 2028. The subject line must be exactly the same and all fields must be included; however only the following fields are mandatory: 1, 3, 4, 5, 6, 7, 8, 9, 10, 13, 15, 16, 17, and 27.

From: "Whomever" <whomever@wherever.army.mil>
To: 2028@redstone.army.mil

Subject: DA Form 2028

1. ***From:*** Joe Smith
2. *Unit:* home
3. ***Address:*** 4300 Park
4. ***City:*** Hometown
5. ***St:*** MO
6. ***Zip:*** 77777
7. ***Date Sent:*** 19−OCT−93
8. ***Pub no:*** 55−2840−229−23
9. ***Pub Title:*** TM
10. ***Publication Date:*** 04−JUL−85
11. *Change Number:* 7
12. *Submitter Rank:* MSG
13. ***Submitter FName:*** Joe
14. *Submitter MName:* T
15. ***Submitter LName:*** Smith
16. ***Submitter Phone:*** 123−123−1234
17. ***Problem:*** **1**
18. *Page:* 2
19. *Paragraph:* 3
20. *Line:* 4
21. *NSN:* 5
22. *Reference:* 6
23. *Figure:* 7
24. *Table:* 8
25. *Item:* 9
26. *Total:* 123
27. ***Text:***

This is the text for the problem below line 27.

RECOMMENDED CHANGES TO PUBLICATIONS AND BLANK FORMS For use of this form, see AR 25–30; the proponent agency is ODISC4.	Use Part II (*reverse)* for Repair Parts and Special Tool Lists (RPSTL) and Supply Catalogs/ Supply Manuals (SC/SM)	DATE 8/30/02
TO: (*Forward to proponent of publication or form)(Include ZIP Code)* Commander, U.S. Army Aviation and Missile Command ATTN: AMSAM–MMC–MA–NP Redstone Arsenal, 35898	FROM: (*Activity and location)(Include ZIP Code)* MSG, Jane Q. Doe 1234 Any Street Nowhere Town, AL 34565	

PART 1 – ALL PUBLICATIONS (EXCEPT RPSTL AND SC/SM) AND BLANK FORMS

PUBLICATION/FORM NUMBER	DATE	TITLE
TM 9–1005–433–24	16 Sep 2002	Organizational, Direct Support, And General Support Maintenance Manual for Machine Gun, .50 Caliber M3P and M3P Machine Gun Electrical Test Set Used On Avenger Air Defense Weapon System

ITEM NO.	PAGE NO.	PARA–GRAPH	LINE NO. *	FIGURE NO.	TABLE NO.	RECOMMENDED CHANGES AND REASON
1	WP0005 PG 3		2			Test or Corrective Action column should identify a different WP number.

EXAMPLE

** Reference to line numbers within the paragraph or subparagraph.*

TYPED NAME, GRADE OR TITLE	TELEPHONE EXCHANGE/ AUTOVON, PLUS EXTENSION	SIGNATURE
MSG, Jane Q. Doe, SFC	788–1234	

TO: (*Forward direct to addressee listed in publication)*	**FROM:** (*Activity and location) (Include ZIP Code)*	**DATE**
Commander, U.S. Army Aviation and Missile Command ATTN: AMSAM–MMC–MA–NP Redstone Arsenal, 35898	MSG, Jane Q. Doe 1234 Any Street Nowhere Town, AL 34565	8/30/02

PART II – REPAIR PARTS AND SPECIAL TOOL LISTS AND SUPPLY CATALOGS/SUPPLY MANUALS

PUBLICATION NUMBER	DATE	TITLE

PAGE NO.	COLM NO.	LINE NO.	NATIONAL STOCK NUMBER	REFERENCE NO.	FIGURE NO.	ITEM NO.	TOTAL NO. OF MAJOR ITEMS SUPPORTED	RECOMMENDED ACTION

PART III – REMARKS (*Any general remarks or recommendations, or suggestions for improvement of publications and blank forms. Additional blank sheets may be used if more space is needed.)*

EXAMPLE

TYPED NAME, GRADE OR TITLE	TELEPHONE EXCHANGE/AUTOVON, PLUS EXTENSION	SIGNATURE
MSG, Jane Q. Doe, SFC	788–1234	

RECOMMENDED CHANGES TO PUBLICATIONS AND BLANK FORMS For use of this form, see AR 25–30; the proponent agency is ODISC4.	Use Part II (*reverse)* for Repair Parts and Special Tool Lists (RPSTL) and Supply Catalogs/ Supply Manuals (SC/SM)	DATE
TO: (*Forward to proponent of publication or form)(Include ZIP Code)* Commander, U.S. Army Aviation and Missile Command ATTN: AMSAM-MMC-MA-NP Redstone Arsenal, AL 35898	FROM: (*Activity and location)(Include ZIP Code)*	

PART 1 – ALL PUBLICATIONS (EXCEPT RPSTL AND SC/SM) AND BLANK FORMS

PUBLICATION/FORM NUMBER	DATE	TITLE

ITEM NO.	PAGE NO.	PARA–GRAPH	LINE NO. *	FIGURE NO.	TABLE NO.	RECOMMENDED CHANGES AND REASON

** Reference to line numbers within the paragraph or subparagraph.*

TYPED NAME, GRADE OR TITLE	TELEPHONE EXCHANGE/ AUTOVON, PLUS EXTENSION	SIGNATURE

TO: (*Forward direct to addressee listed in publication)* Commander, U.S. Army Aviation and Missile Command ATTN: AMSAM-MMC-MA-NP Redstone Arsenal, AL 35898	**FROM:** (*Activity and location) (Include ZIP Code)*	**DATE**

PART II – REPAIR PARTS AND SPECIAL TOOL LISTS AND SUPPLY CATALOGS/SUPPLY MANUALS

PUBLICATION NUMBER	DATE	TITLE

PAGE NO.	COLM NO.	LINE NO.	NATIONAL STOCK NUMBER	REFERENCE NO.	FIGURE NO.	ITEM NO.	TOTAL NO. OF MAJOR ITEMS SUPPORTED	RECOMMENDED ACTION

PART III – REMARKS (*Any general remarks or recommendations, or suggestions for improvement of publications and blank forms. Additional blank sheets may be used if more space is needed.)*

TYPED NAME, GRADE OR TITLE	TELEPHONE EXCHANGE/AUTOVON, PLUS EXTENSION	SIGNATURE

The Metric System and Equivalents

Linear Measure

1 centimeter = 10 millimeters = .39 inch
1 decimeter = 10 centimeters = 3.94 inches
1 meter = 10 decimeters = 39.37 inches
1 dekameter = 10 meters = 32.8 feet
1 hectometer = 10 dekameters = 328.08 feet
1 kilometer = 10 hectometers = 3,280.8 feet

Weights

1 centigram = 10 milligrams = .15 grain
1 decigram = 10 centigrams = 1.54 grains
1 gram = 10 decigrams = .035 ounce
1 dekagram = 10 grams = .35 ounce
1 hectogram = 10 dekagrams = 3.52 ounces
1 kilogram = 10 hectograms = 2.2 pounds
1 quintal = 100 kilograms = 220.46 pounds
1 metric ton = 10 quintals = 1.1 short tons

Liquid Measure

1 centiliter = 10 milliliters = .34 fl. ounce
1 deciliter = 10 centiliters = 3.38 fl. ounces
1 liter = 10 deciliters = 33.81 fl. ounces
1 dekaliter = 10 liters = 2.64 gallons
1 hectoliter = 10 dekaliters = 26.42 gallons
1 kiloliter = 10 hectoliters = 264.18 gallons

Square Measure

1 sq. centimeter = 100 sq. millimeters = .155 sq. inch
1 sq. decimeter = 100 sq. centimeters = 15.5 sq. inches
1 sq. meter (centare) = 100 sq. decimeters = 10.76 sq. feet
1 sq. dekameter (are) = 100 sq. meters = 1,076.4 sq. feet
1 sq. hectometer (hectare) = 100 sq. dekameters = 2.47 acres
1 sq. kilometer = 100 sq. hectometers = .386 sq. mile

Cubic Measure

1 cu. centimeter = 1000 cu. millimeters = .06 cu. inch
1 cu. decimeter = 1000 cu. centimeters = 61.02 cu. inches
1 cu. meter = 1000 cu. decimeters = 35.31 feet

Approximate Conversion Factors

To change	*To*	*Multiply by*	*To change*	*To*	*Multiply by*
inches	centimeters	2.540	ounce–inches	newton–meters	.007062
feet	meters	.305	centimeters	inches	.394
yards	meters	.914	meters	feet	3.280
miles	kilometers	1.609	meters	yards	1.094
square inches	square centimeters	6.451	kilometers	miles	.621
square feet	square meters	.093	square centimeters	square inches	.155
square yards	square meters	.836	square meters	square feet	10.764
square miles	square kilometers	2.590	square meters	square yards	1.196
acres	square hectometers	.405	square kilometers	square miles	.386
cubic feet	cubic meters	.028	square hectometers	acres	2.471
cubic yards	cubic meters	.765	cubic meters	cubic feet	35.315
fluid ounces	milliliters	29.573	cubic meters	cubic yards	1.308
pints	liters	.473	milliliters	fluid ounces	.034
quarts	liters	.946	liters	pints	2.113
gallons	liters	3.785	liters	quarts	1.057
ounces	grams	28.349	liters	gallons	.264
pounds	kilograms	.454	grams	ounces	.035
short tons	metric tons	.907	kilograms	pounds	2.205
pound–feet	newton–meters	1.356	metric tons	short tons	1.102
pound–inches	newton–meters	.11296			

Temperature (Exact)

°F	Fahrenheit temperature	5/9 (after subtracting 32)	Celsius temperature	°C