TM 55-2835-209-23

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TECHNICAL MANUAL

AVIATION UNIT AND AVIATION INTERMEDIATE MAINTENANCE

ENGINE ASSEMBLY, GAS TURBINE (GTCP36-150) {BH}) PN 3800480-1 NSN 2835-01-337-3670 (GTCP36-150{BH})

HEADQUARTERS DEPARTMENT OF THE ARMY

28 JANUARY 1992

CHANGE

NO. 2

HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON, D.C., 29 April 1994

Aviation Unit and Aviation Intermediate Maintenance

ENGINE ASSEMBLY
GAS TURBINE (GTCP36-150 (BH))
PN 3800480-1 NSN 2835-01-337-3670
(GTCP36-150 (BH))

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Remove pages	Insert pages
i and ii	i and ii
7-25 through 7-30	7-25 through 7-30

2. Retain this sheet in front of manual for reference purposes.

By Order of the Secretary of the Army:

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General, United States Army
Chief of Staff

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MILTON H. HAMILTON
Administrative Assistant to the Secretary of the Army
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CHANGE

NO. 1

HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON, D.C., 15 September 1993

Aviation Unit and Aviation Intermediate Maintenance

ENGINE ASSEMBLY,
GAS TURBINE (GTCP36–150 {BH})
PN 3800480–1 NSN 2835–01–337–3670
(GTCP36–150 {BH})

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Remove pages	Insert pages
i through iv	i through iv
1–1 and 1–2	1–1 and 1–2
1–13 through 1–22	1–13 through 1–23/(1–24 blank)
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B–9 and B–10	B–9 and B–10
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– – – – –	D–3/(D–4 blank)
Glossary 1 through Glossary 4	Glossary 1 through Glossary 4
Index–1 through Index–6	Index–1 through Index–6

2. Retain this sheet in front of manual for reference purposes.

By Order of the Secretary of the Army:

GORDON R. SULLIVAN
General, United States Army
Chief of Staff

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Administrative Assistant to the
Secretary of the Army
05500

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WARNING

PRECAUTIONARY DATA

Personnel performing instructions involving operating procedures and practices, which are included or implied in this technical manual, shall observe the followi instructions. Disregard of these warnings and precautionary information may cause serious injury, death, or destruction of material.

GENERAL WARNING

Observe all cautions and warnings on containers when using consumables. When applicable, wear necessary protective gear during handling and use. If a consumable is flammable or explosive, MAKE CERTAIN consumable and its vapors are kept away from heat, spark and flame.

COMPRESSED AIR

Do not direct compressed air near or directly against skin. Do not use air under high pressure, or from a source not having a moisture trap, when drying parts. Do not roll bearings with compressed air.

TOXIC POISONS

Contains additives which are poisonous and are readily absorbed through the skin. Avoid prolonged contact with the skin.

TEST EQUIPMENT OPERATION

Test equipment shall be operated by authorized personnel only.

NOISE

Operation and maintenance personnel shall wear ear protection devices when working near or around an operating test stand.

WARNING

An operating procedure, practice, etc, which if not correctly followed, could result in personnel injury or loss of life.

CAUTION

An operating procedure, practice, etc, which if not correctly observed, could result in damage to or destruction of equipment.

NOTE

An operating procedure, condition, etc, which is essential to highlight.

TECHNICAL MANUAL

NO 55-2835-209-23

TM 55-2835-209-23
HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON, D.C., 28 January 1992

Aviation Unit and Aviation Intermediate Maintenance

ENGINE ASSEMBLY,
GAS TURBINE (GTCP36-150 {BH})
PN 3800480-1 NSN 2835-01-337-3670
(GTCP36-150 {BH))

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 the procedures, please let us know. Mail your letter or DA Form 2028 (Recommended Changes to Publications and Blank Forms), or DA Form 2028-2 located in the back of this manual directly to: Commander, US Army Aviation and Troop Command, ATTN: AMSAT-I-MP, 4300 Goodfellow Blvd., St. Louis, MO 63120-1798. A reply will be furnished directly to you.

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How to Use This Manual

1. Description of Manual. This manual has several chapters and appendices. Each chapter is divided into sections. Each section in Chapter 1 is divided into paragraphs. The paragraphs have specific information you will need to know. Chapter 2 on is divided into tasks. The tasks tell you what you need and how to do any job. The appendices have general information you will need to know. They list references, maintenance allocation chart, expendable supplies and materials, wiring diagrams and manufactured items.

a. Initial Setup. Initial setup is the first part of every task in the manual. It lists what tools, materials and parts you will need before you can do the task. The following headings are used when they apply.

(1) Task Title. The task title after the paragraph number describes the job to be done in the task.

(2) Tools. Tools, tool kits or shop sets needed to do the task are listed here. If tools from your repairman's kit are needed, the kit is listed. Tools you need that are not in the kit or set, are listed by name, type and size. Special tools and test support equipment are listed by a T-number. Find these items in Appendix D.

Example: Welded Assembly

(3) Materials. Expendable items and support materials are listed under this heading. These are things like rags, antiseize compound, non-electrical wire, etc. They are listed by a D-number.

Example: Rags (0108)

Find these items in Appendix C.

(4) Parts. All mandatory replacement parts are listed. These are things like gaskets, packings, cotter pins, lockwashers, etc. They are liste by the Repair Parts and Special Tools List (RPSTL) name.

(5) Personnel Required. The people needed to do the task are listed under this heading. They are identified by their MOS. When more than one of any MOS is needed, the number needed is shown in parentheses. The text will tell you when a helper is needed.

(6) References. Related tasks and TM's you will need to do the task are listed under this heading. The task steps tell you when these tasks and TM's are needed.

(7) Equipment Condition. All the things to be done before you start the task are listed under this heading. To help, the number of the task tells you how to do them is given when applicable.

NOTE

If a task is other than an off helicopter task, it will be brought to your attention under "Equipment Condition". Example: "APU on Aircraft".

(8) General Safety Instructions. Safety precautions and warnings that must be observed when you are doing the job are described under this heading.

b. Procedures. Step-by-step procedures tell you how to do the task. They are arranged in logical sequence to help you get the task done efficiently.

2. How to Prepare For a Task. Read the initial setup carefully before starting. It tells you what you will need and what you have to know to start the task. DO NOT START A TASK UNTIL:

You know what is needed

You have the things you need

You understand what to do

a. If a tool has a T-code after it, go to Appendix B. Read down the far left-hand column to your T-code. This is the tool you need for your task.

b. If an expendable material has an D-number after it, go to the Expendable Supplies and Materials List in Appendix D. Read down the Item Number column to your D-number. This is the expendable you need for your task.

c. If parts are listed, they can be drawn from tech supply. Before you start the task, check and make sure you can get the needed parts; National Stock Numbers (NSN) and part numbers are listed in TM 55-2835-209-23P.

d. Check for personnel required.

e. If preliminary procedures are listed under "Equipment Conditions:, BE SURE THE LISTED TASKS ARE DONE"; then do this task.

3. How to Do The Task. Before starting, read the entire task. Familiarize yourself with the entire procedure before you begin the task. As you read, remember the following:

a. PAY ATTENTION TO WARNINGS, CAUTIONS AND NOTES.

b. When values are underlined or followed by the word INSPECT, an inspector must OK the completed step.

c. Key procedural steps are underlined for ease of task completion for those familiar with the manual.

d. A GLOSSARY is provided. It lists the special words and unusual terms used in this manual and gives their meaning. Check it out. It may help you understand the instructions.

e. The following are considered standard maintenance practices. Instructions about these practices will not normally be included in task steps. Task steps will tell you when standard maintenance practices do not apply.

(1) Lines will be tagged before they are disconnected. Tubes and parts will be capped or plugged when they are disconnected.

(2) Used packings, retainers, gaskets, cotter pins, lockwashers, etc are discarded. New parts shall be installed.

(3) Packings are coated before installation in accordance with the following:

Lubricating Oil, MIL-L-23699 (E38)

(4) Tubes and related parts will be tied out of the way with twine, not lockwire.

(5) In disassembly tasks, components are removed and wires disconnected.

(6) Disassembly procedures reflect disassembly needed to support total authorized repair. You may not need to disassemble a part as far as described in the task. Follow the steps to disassemble as far as needed to repair/replace worn or damaged parts.

(7) Before a components or the disassembled parts of a components are inspected, they are cleaned as required.

(8) Components and mating surface area will be inspected for serviceable condition before installation.

(9) Guidelines will be used when any item is hoisted overhead.

(10) When a nut is tightened or loosened on a bolt, the bolt head will be held with a wrench.

(11) A special torque will be cited when the words TORQUE TO are used. A standard torque is required when the word INSTALL is used.

(12) When torquing hardware, observe compliance with drag torque as required. To determine drag torque, thread nut onto screw or bolt until at least two threads protrude. The nut shall not contact the mating part. The torque necessary to begin turning the nut is the drag torque.

(13) Appendix F provides standard torque limits for general type screws, nuts, bolts, fittings and coupling nuts. These standard torque values apply only when special torque values are not specified in procedures. Included in the torque tables are the applicable torque wrenches.

(14) If additional setup tools are required such as crowfoot wrenches, they will be listed in the task INITIAL SETUP.

(15) When cotter pin is required, cotter pin holes will be aligned within allowable torque range.

(16) Following installation, paint will be touched up as required.

(17) Following maintenance, inspect for foreign objects.

f. General maintenance procedures (e.g. "replace studs and inserts") are not included in the maintenance instructions. A reference is made to General Aircraft Maintenance Manual (TM 55-1500-204-25/1) for these procedures.

4. Appendices.

a. Appendix A - References. This appendix lists all referenced publications needed to perform the maintenance procedures in this manual.

b. Appendix B - Maintenance Allocation Chart (MAC). This appendix consists of four sections as follows:

Section I - Introduction. This section is a summary of what is in the MAC.

Section II - This section is the MAC. The MAC assigns maintenance functions in accordance with the Three levels of Maintenance concept for Army Aviation. The MAC has six columns, containing the following information:

Columns 1 and 2 - Functional Groups. These columns identify maintenance significant components, assemblies, subassemblies and modules.

Column 3 - Maintenance Function. This column lists the maintenance functions to be performed on the items listed in column 2.

Column 4 - Maintenance Categories. The maintenance categories (levels) AVUM, AVIM and DEPOT are listed with individual columns. These columns identify the maintenance level at which each maintenance function is to be performed. Numbers in parenthesis identify the corresponding numbered remarks in Section IV.

Column 5 - Tools and Equipment. This column lists the reference code identifying the tools or test equipment required, as listed in Section III.

Column 6 - Remarks. Remarks identified by an alphabetical code, where applicable and listed in Section IV and identified in column 6.

Section III - Tool and Test Equipment Requirements. This section consists of five columns, containing the following information:

Tool or Test Equipment Reference Code. This column lists the reference code listed in column 5 - Tools and Equipment in the MAC.

Maintenance Category. This column lists the maintenance category (level) authorized to use the tool or test equipment.

Nomenclature. This column lists the nomenclature of the tools and test equipment.

National/Nato Stock Number. This column lists the stock number applicable to each tools or test equipment.

Tool Number. The tool number is listed to aid in identifying the tool or test equipment.

Section IV - Remarks. This section has two columns, containing the following information.

Reference Code. This column contains alphabetical codes or numbers in parentheses corresponding to the codes appearing in the applicable columns in the MAC.

Remarks/Notes. This column contains the actual notes as referenced by the reference codes to the MAC.

c. Appendix C - Repair Parts and Special Tools List. This appendix contains a reference to TM 55 2835-209-23P.

d. Appendix D - Expendable Supplies and Materials List. This appendix consists of two sections as follows:

Section I - Introduction. This section is a summary of what is in the Expendable Supplies and Materials List.

Section II - This section is the Expendable Supplies and Materials List and has four columns, containing the following information:

Column 1 - Item Number. This is the D-number assigned to the expendable item. It is referred to in the detail procedures.

Example: "With lockwire (D141)."

Column 2 - National Stock Number. This is the National Stock Number (NSN) assigned to item. Use it to request or requisition the item.

Column 3 - Description This column lists the name and if required, a description to identify the item. The last line for each item shows the part number followed by the Federal Supply Code for Manufacturer (FSCM) in parentheses, if there is no NSN in column 2.

Column 4 - U/M. This column lists the measure used in performing the maintenance function, expressed as a two-character alphabetical abbreviation (e. g., ea, in., pr).

e. Appendix E - Manufactured Items List. This appendix lists and illustrates any parts you may have to locally manufacture to do a task.

f. Appendix F - Torque Limits. This appendix provides standard torque limits for general type screws, nuts, bolts, fitting and coupling nuts.

5. Glossary. Definitions of abbreviations and unusual terms you find in the manual are listed here to help you.

6. Index. This appears at the end of the manual. It lists all subjects in the manual by alphabetical order and the entries are in everyday language of the user. This index contains many possible ways of locating the subject, i.e., pressure fluid filter; fuel inlet filter; filter, fuel; filter, pressure fluid. This is necessary since the official nomenclature is not always readily recognized by the user.

CHAPTER 1

INTRODUCTION AND ENGINE-GENERAL

Section I GENERAL INFORMATION

1-1 SCOPE

Type of Manual: Aviation Unit and Intermediate Maintenance

Model Number and Equipment Name: GTCP36-150[BH] Pneumatic Power Gas Turbine Engine Assembly

The GTCP36-150[BH] auxiliary power unit (APU) is designed to provide pneumatic and shaft power. Pneumatic power is for main engine start. Shaft power drives an electrical generator mounted on the gearbox assembly of the APU.

1-2 MAINTENANCE FORMS, RECORDS AND REPORTS

Department of the Army forms, records and reporting procedures used for equipment maintenance will be those prescribed by DA PAM 738-751. The Army Maintenance Management System (TAMMS).

1-3 DESTRUCTION OF ARMY MATERIAL TO PREVENT ENEMY USE

NOTE

Decision to destroy an APU shall be made by appropriate authority.

Destroy APU to prevent use by enemy when evacuation to safety is not possible. Refer to TM 750-244-1-5.

1-4 QUALITY ASSURANCE/QUALITY CONTROL (QA/QC)

Refer to FM 1-511.

1-5 REPORTING EQUIPMENT IMPROVEMENT RECOMMENDATIONS (EIR)

If your gas turbine engine (APU) needs improvement, let us know. Send us an EIR. You, the user, are the only one who can tell us what you don's like about your equipment. Let us know why you do not like the design. Put it on a SF-368, Quality Deficiency Report (QDR). Mail it to us at:

Commander
USAATCOM
ATTN: AMSAT-I-MEA
4300 Goodfellow Blvd
St. Louis, MO 63120

We will send you a reply.

1-6 OFFICIAL NOMENCLATURE NAMES AND DESIGNATIONS

This listing includes nomenclature cross-references used in this manual.

Common Name	Official Nomenclature
APU	Auxiliary Power Unit
APU Wiring Harness Assembly	Gas Turbine Engine Branched Wiring Harness Assembly
Atomizer Shroud	Fuel Atomizer Shroud

Common Name	Official Nomenclature
Carrier Assembly	Turbine Engine Planet Reduction Gear Carrier Assembly
Combustion Chamber	Annular Combustion Chamber
Combustor Case	Gas Turbine Engine Combustor Case
Compressor Housing	Gas Turbine Engine Compressor Housing
Flange	Combustor Case Flange
Fuel Control Assembly	Body Assembly Fuel Control
Fuel Control Wiring Harness	Gas Turbine Engine Branched Wiring Harness Assembly
fuel Solenoid Valve	Normally Closed Solenoid Valve
Gearbox Assembly	Accessory Drive Gearbox Assembly
Gearshaft Assembly	Hydraulic Starter Gearshaft Assembly
Helical	Compression Helical Spring
Hourmeter Assembly	Time and Events Totalizing Meter Assembly
Igniter Plug Assembly	Low Voltage, Air Gap Igniter Plug Assembly
Igniter Plug Lead	Electrical Igniter Plug Lead
Ignition Unit	Low Voltage Ignition Unit
Lockwire	Non-Electrical Wire
Lug	Anti-Rotation Lug
Maintenance Stand	Assembly Fixture
Power Section Assembly	Gas Turbine Engine Power Section Assembly
Primary Fuel Nozzle Assembly	Fuel Nozzle Assembly
Relief Valve	Relief Valve Body
Seal	Rubber
Seal	Stationary Seal
Seal Assembly	Labyrinth Seal Assembly
Secondary Fuel Nozzle Assembly	Fuel Nozzle Assembly
Spur Gearshaft	Splined Gearshaft Spur
Stud	Hex Shouldered Stud
Thermocouple	Immersion Thermocouple
Tie Shaft	Turbine Rotor Tie Shaft
Torque Motor	Fuel Control Torque Motor
Tube Assembly	Gas Turbine Compressor Metal Tube Assembly
Turbine Rotor	Gas Turbine Engine Turbine Rotor
Washer	Round Washer

1-7 WARRANTY INFORMATION

The GTCP36-150[BH] is warranted by Garrett Auxiliary Power for 1000 operating hours or 3000 starts whichever occurs first. Warranty starts on the date found on DA Form 2410 or DA Form 2408-16 in the logbook. Report all defects in material or workmanship to your supervisor who will take appropriate action.

Section II EQUIPMENT DESCRIPTION AND DATA

1-8 EQUIPMENT CHARACTERISTICS, CAPABILITIES AND FEATURES

CHARACTERISTICS

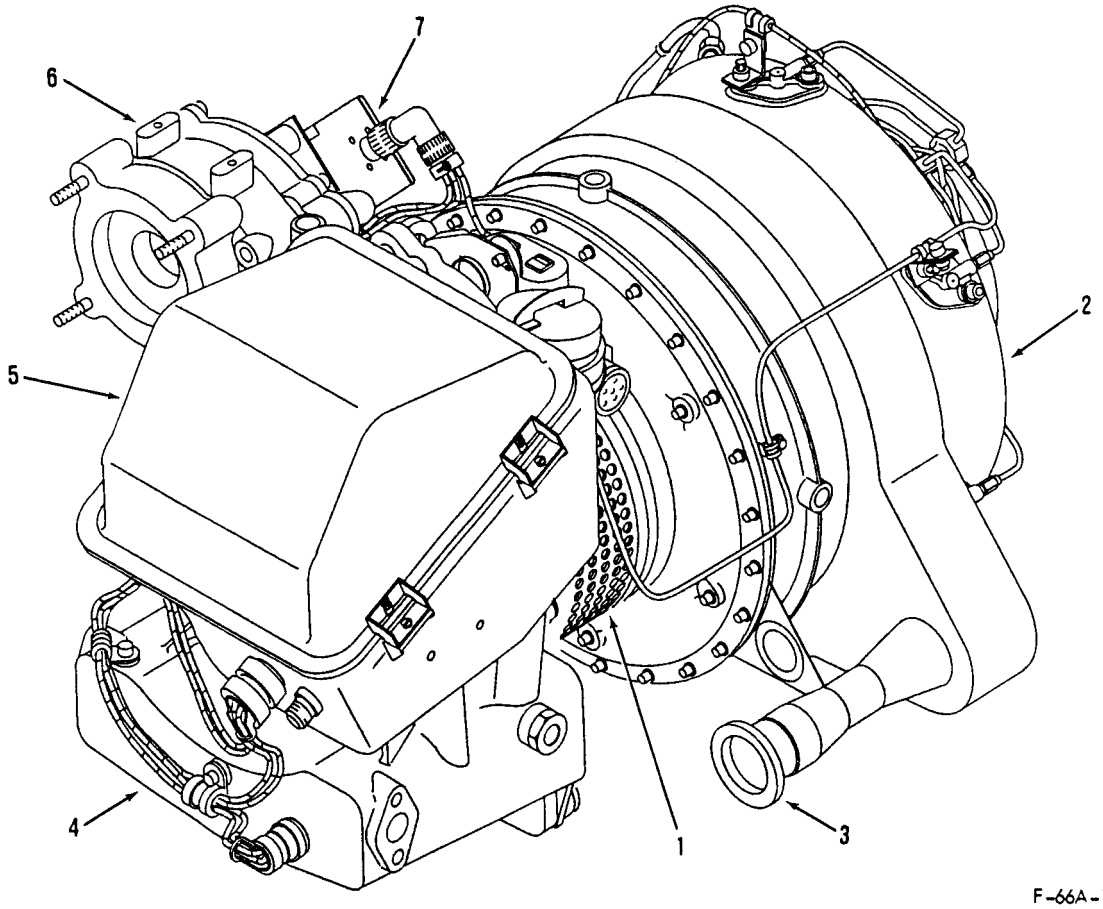
- Supplies shaft power for driving an electrical generator.
- Supplies air for engine starting.
- Gas turbine engine.

CAPABILITIES AND FEATURES

- Operational rotor speed at 100% is 58,759 rpm.
- Axial pad output shaft speed is 12,000 rpm for generator.
- Axial pad output shaft speed is 8,190 rpm for starter.

1-9 LOCATION AND DESCRIPTION OF MAJOR COMPONENTS

1. TURBINE ASSEMBLY: Air enters air inlet. Air is compressed by compressor rotor and supplied to combustor assembly. Diffuser directs exhaust gas to turbine wheel to generate rotational power.
2. COMBUSTION CHAMBER: Area where fuel and compressed air are burned to drive turbine wheel in turbine assembly.
3. BLEED AIR MANIFOLD: Connects bleed air from combustor case to system.
4. OIL SUMP: Part of gearbox assembly.
5. FUEL CONTROL SYSTEM: Supplies and controls fuel flow to combustion chamber.
6. GEARBOX ASSEMBLY: Driven by turbine assembly. Reduces turbine speed to accessory drive pad (generator) and transmits drive to the accessory drive assembly.
7. IGNITION UNIT: Provides high voltage to igniter plug assembly.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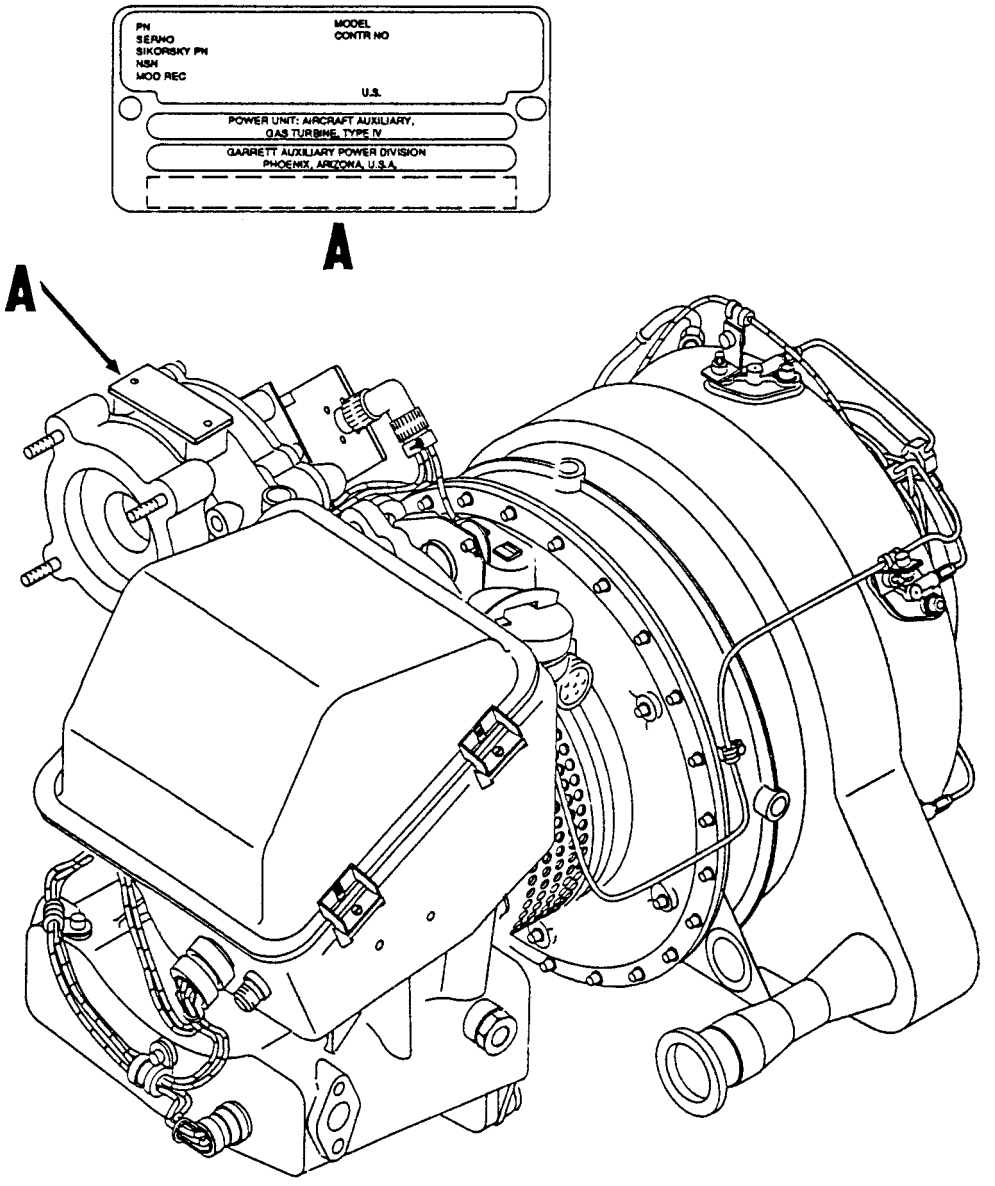
F-66A-118

1-10 IDENTIFICATION PLATE



E-66A-220

1-11 EQUIPMENT DATA

Weight (Wet)	96.3 1b (43.7 Kg)
Length	30.49 in. (77.4 cm)
Height	16.9 in. (42.9 cm)
Width	17.45 in. (44.3 cm)
Lubricating Oils	MIL-L-23699 at or above -25°F (31.66°C) MIL-L-7808 below -25°F (31.66°C)
Power Output	90.0 hp with 0 ppm bleed flow 60.0 hp with 59 ppm bleed flow 40.0 hp with 58 ppm bleed flow 20.0 hp with 57 ppm bleed flow 0 hp with 56 ppm bleed flow
Exhaust Gas Temperature (EGT)	Max. 1265°F (684.9°C) steady-state load Max. 1287°F (697.2°C) steady-state operation

Fuel Specifications

FUEL	Minimum F	Maximum F
MIL-T-5624		
Grade JP-4	-65 (-53.88°C)	+130 (+54.44°C)
Grade JP-5	-40 (-40.00°C)	+130 (+54.44°C)
MIL-T-83133		
Grade JP-8	-40 (-40.00°C)	+130 (+54.44°C)
Automotive Gasoline		
IAM ASTM D439	-65 (-53.88°C)	+130 (+54.44°C)
Diesel Fuels		
IAW VV-F800		
DF-A	-40 (-40.00°C)	+130 (+54.44°C)
DF-1	-25 (-31.66°C)	+130 (+54.44°C)
DF-2	+25 (-3.89°c)	+130 (+54.44°C)

Or at a temperature corresponding to a maximum kinematic viscosity of 0.12 cm squared/see (12 centistokes)

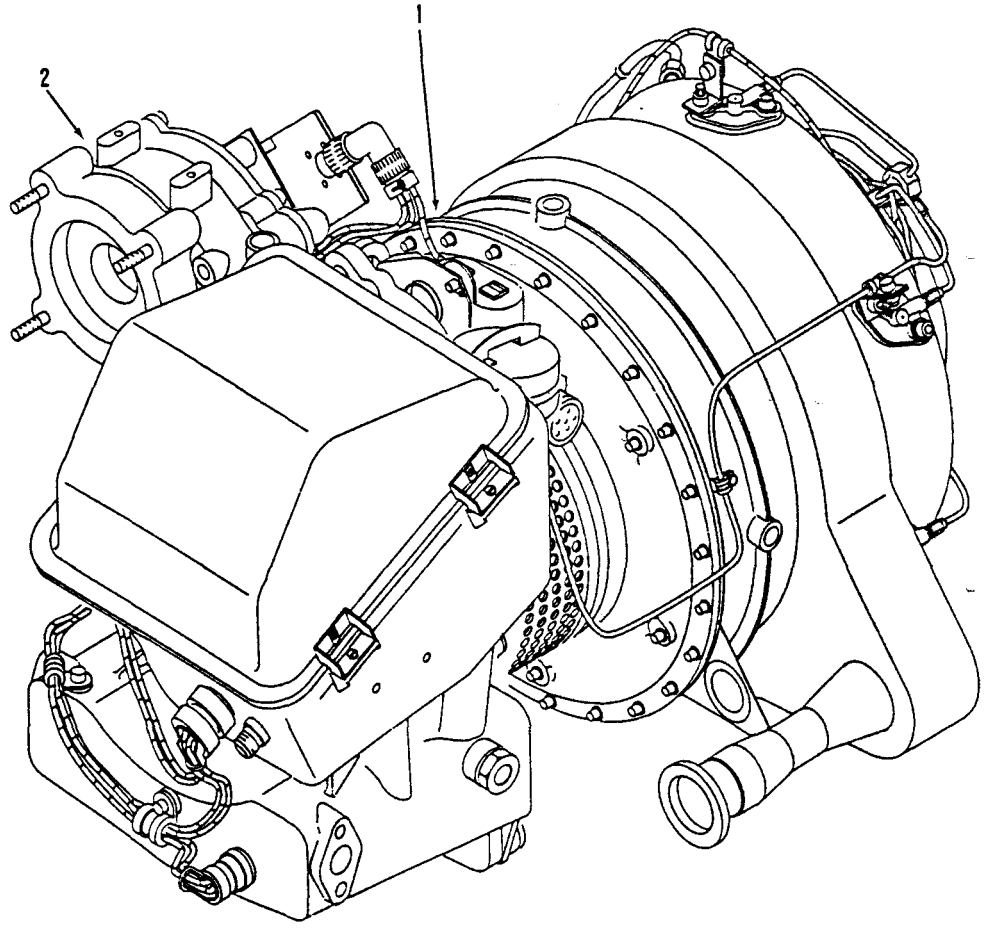
1-12 SAFETY, CARE AND HANDLING

Observe all general precaution and safety regulations when handling APU.

Section III PRINCIPLES OF OPERATION

1-13 GENERAL POWERPLANT ASSEMBLY

a. The APU consists of three major sections; the power section assembly (1), gearbox assembly (2) and the controls and accessories.



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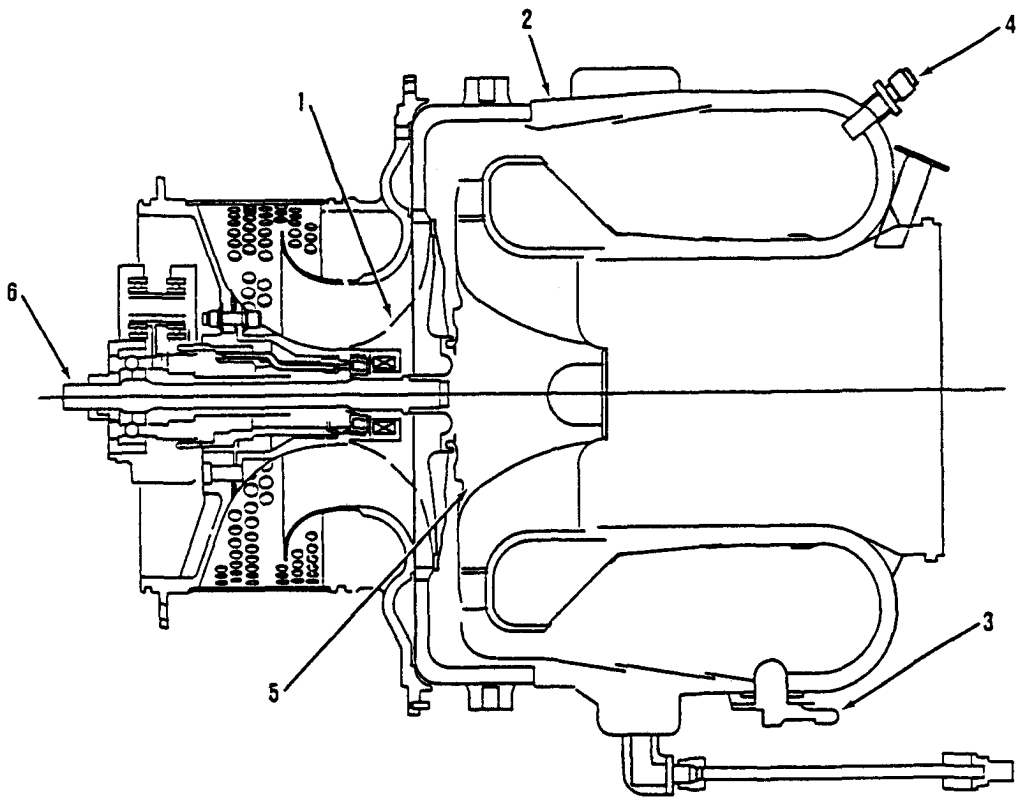
1-14 POWER SECTION ASSEMBLY

a. The power section assembly is comprised of the integrated compressor, combustion and turbine section. The integrated compressor utilized a centrifugal impeller and diffuser to provide the compressed air for combustion and bleed air purposes. Compressed air is contained by the compressor assembly housing (1) and is directed into the combustion chamber (2) and to the bleed ai r outlet port when bleed air flow is utilized. Fuel is introduced into the combusti on chamber by six fuel nozzles (3) and combined with compressed air, thus is ignited by the igniter plug assembly (4) creating the hot gas flow that drives the turbine.

b. The turbine section (5) utilizes a turbine nozzle to increase the hot gas flow velocity and direct it against the blades of the turbine wheel. The hot gases transmit energy into the turbine wheel and are discharged rearward through the turbine wheel which in turn, drives the compressor and gearbox assembly shaft (6).



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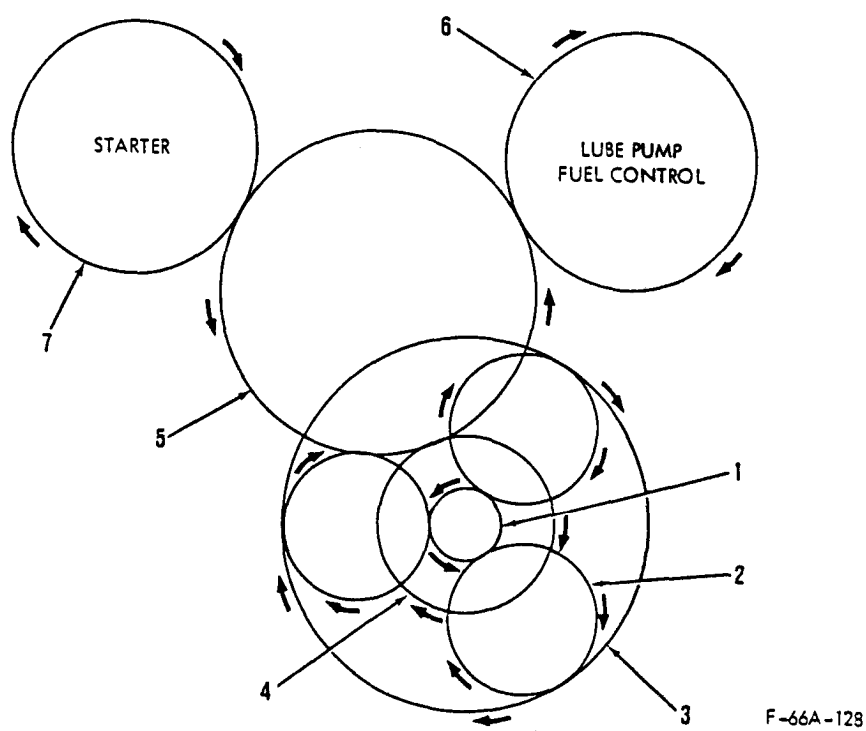
1-15 GEARBOX ASSEMBLY

a. The gearbox assembly houses the reduction geartrain that reduces the output rotational speed of the power section assembly to the speeds necessary for operation of accessories and customer furnished equipment. Output pads are provided for mounting a generator and starter. The shaft speeds are 12,000 rpm for the generator and 8190 rpm for the starter at 100 percent APU operating speed. The input pinion (1) of the turbine assembly, splined to the rotor shaft drives three planetary gears (2) that are mounted in a carrier (3).

b. The planetary gears (3) drives the internal gear (4). The internal gear (4) is mounted on a splined output shaft.

c. The internal gear (4) drives the idler gear (5). The idler gear (5) in turn drives the lube pump/fuel control gear (6) and starter gear (7).



1-16 CONTROLS AND ACCESSORIES

a. The controls and accessories section includes those elements required for proper APU operation: electronic sequence unit (ESU), fuel system, lubrication system and ignition system. The APU is equipped with a fully-automatic control system that properly sequences control of fuel and ignition during starting and operation. All APU speed control, switching and protection functions are controlled by the ESU which is mounted separately from the APU. APU speed is regulated by a signal from the. ESU to the fuel control torque motor assembly which provides delivery of the correct amount of fuel regardless of ambient conditions and load requirements. Overspeed protection is provided by an electronic overspeed switch that is automatically actuated if required.

b. The fuel system contains components which function automatically to provide proper starting and acceleration to maintain constant APU speed under all operating conditions. Components of the fuel system are: fuel filter assembly, fuel control assembly, fuel solenoid valve, fuel manifold assembly, fuel check valve and three primary and three secondary fuel nozzle assemblies.

c. The lubrication system provides lubrication for all gears, shafts and bearings within the APU. The lubrication system consists of an oil pump, oil filter element, low oil pressure switch, oil temperature bulb, magnetic drain plug, fill to spill plug and oil fill cap with dipstick. The system oil pump maintains operating oil pressure.

d. The electrical system provides automatic actuation in proper sequence of the circuits which control APU starting, ignition, acceleration, fuel flow and monitoring. Components of the electrical system include ignition unit, igniter plug lead, igniter plug assembly, motional pickup transducer, hourmeter assembly, thermocouple, APU and fuel control wiring harness assemblies.

Section IV REPAIR PARTS; SPECIAL TOOLS; TEST, MEASUREMENT AND DIAGNOSTIC EQUIPMENT (TMDE); AND SUPPORT EQUIPMENT

1-17 COMMON TOOLS AND EQUIPMENT

For authorized common tools and equipment, refer to the Modified Table of Organization and Equipment (MTOE) applicable to your unit.

1-18 TOOL AND TEST EQUIPMENT

Refer to Appendix B, Maintenance Allocation Chart; for tool and test equipment. Tools to be fabricated are listed and shown in the illustrated list of manufactured items (Appendix E).

1-19 REPAIR PARTS

Repair parts are listed and illustrated in the Repair Parts and Special Tools List (RPSTL) TM 55-2835-209-23P covering Aviation Unit and Intermediate Maintenance (including Depot Maintenance Repair Parts) RPSTL for this equipment.

Section V SERVICE UPON RECEIPT

1-20 REMOVE APU FROM SHIPPING CONTAINER

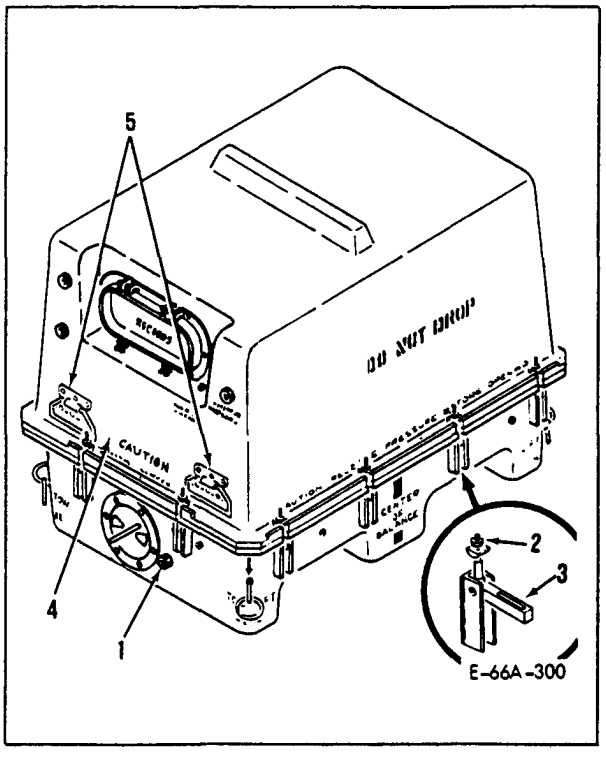
INITIAL SETUP

Tools:
Engine Repairman's Tool Kit (T47)
Hoist
Lifting Sling (T63)

Personnel Required:
68B Aircraft Powerplant Repairer
Assistant

1. Release pressure in container by depressing the relief valve (1) prior to opening.

2. Loosen nuts (2), lift and remove fasteners (3). Remove top half of container (4) using handles (5).



1-20 REMOVE APU FROM SHIPPING CONTAINER (CONT)

3. Inspect lifting lug (6) for security or cracks. No cracks allowed.

4. Attach lifting sling (7) (T63).

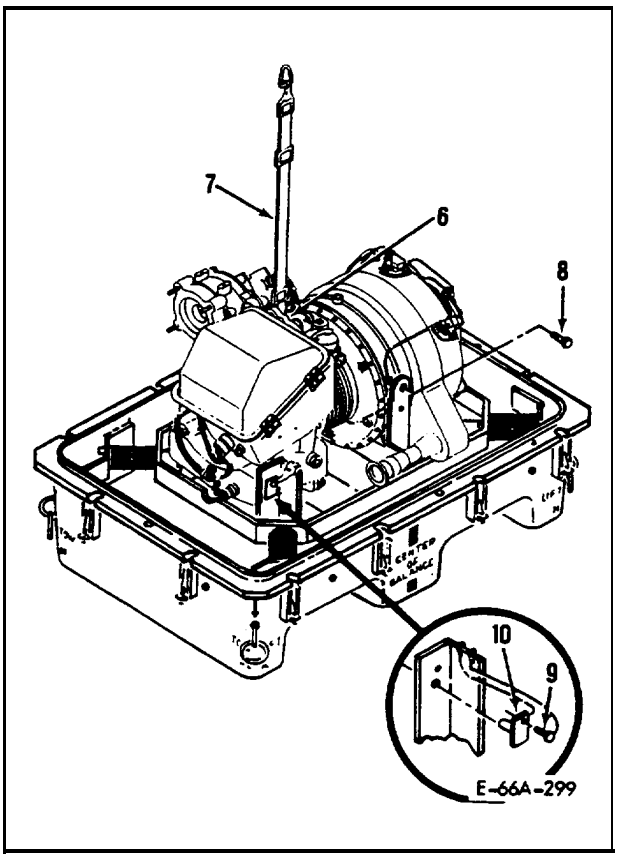
5. Remove bolts (8, 9) and trunnion (10).

6. With helper guiding APU lift APU out of container.

7. Inspect front mounting lug pads on APU for cracks. No cracks allowed.

8. Install front and rear mounting lugs from replaced APU or. stock. Torque front mounting lugs to 104 to 116 inch-pounds. Rear mounting lug will be hand tight.

FOLLOW-ON MAINTENANCE: None.



1-21 INSTALL APU ON MAINTENANCE STAND

INITIAL SETUP

Tools:
Aircraft Inspection Tool Kit (T49)
Engine Repairman's Tool Kit (T47)
Lifting Sling (T63)
Maintenance Stand (T1)

Personnel Required:
68B Aircraft Powerglant Inspector
68B Aircraft Powerplant Repairer
Assistant

General Safety Instructions:

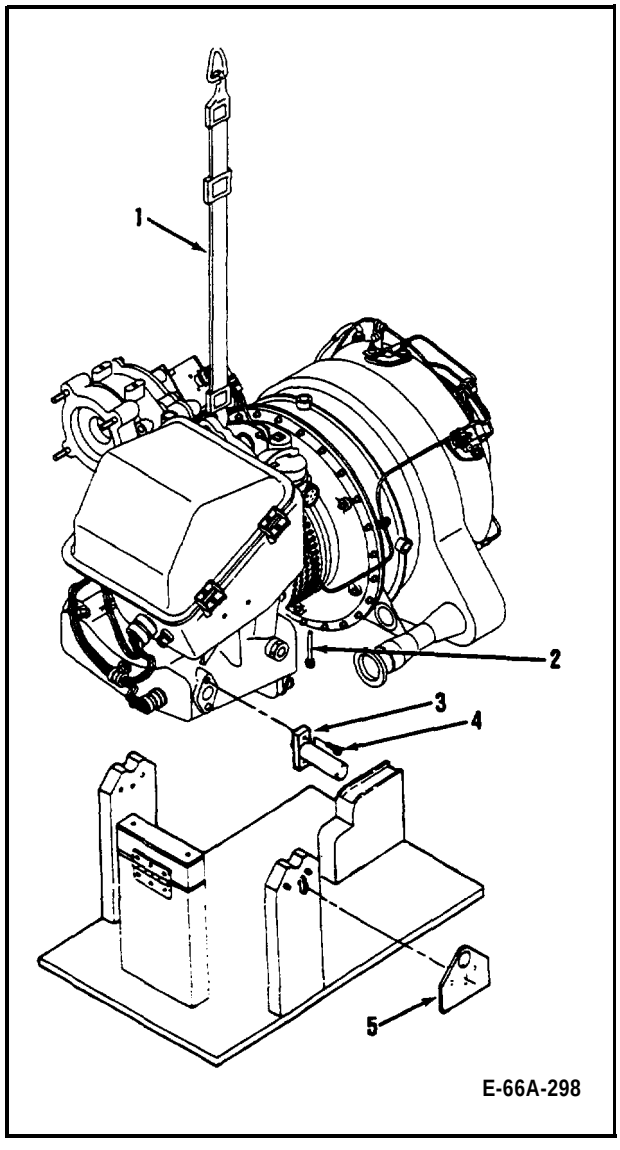
WARNING

Do not stand under APU while it is being moved on a hoist. To prevent injury to personnel and damage to equipment during handling of APU, periodically check lifting sling. If there are any signs of abuse or excessive wear, notify local safety representative.

1-21 INSTALL APU ON MAINTENANCE STAND (CONT)

1. Inspect lifting lug for security or cracks. No cracks are allowed.
2. Attach lifting sling (1) (T63) to APU.
3. Man A, hoist APU. Man B guides engine.
4. Install bolt (2) to aft mount.
5. Install welded assemblies (3) on left and right forward mounts, securing with bolts (4).
6. Place APU in maintenance stand. Align bolt (2) with rear block and welded assemblies (3) rest on forward blocks.
7. Secure welded assemblies (3) by plate (5).
8. Remove lifting sling (1) (T63) from APU.

FOLLOW-ON MAINTENANCE: None.



1-22 VISUAL INSPECTION OF APU

INITIAL SETUP

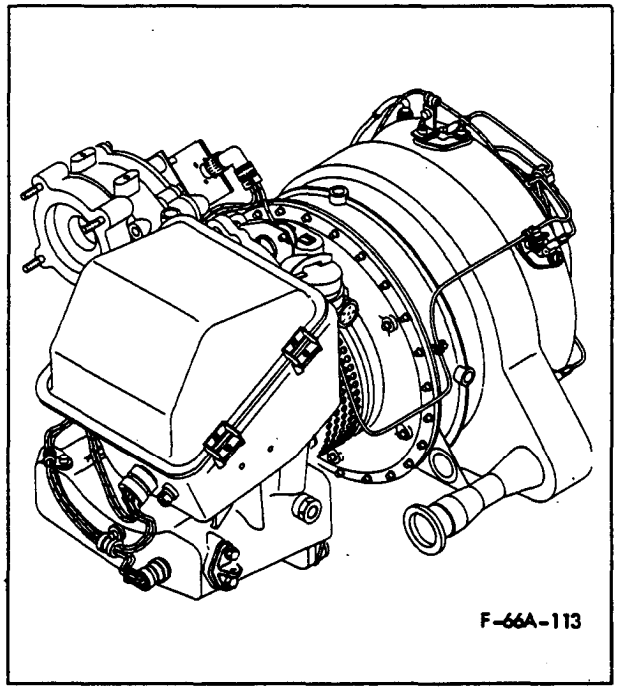
Tools:
Engine Repairman's Tool Kit (T47)

References:
Task 6-1

Personnel Required:
68B Aircraft Powerplant Repairer

NOTE

During visual inspection some areas may have limited lighting. It may be necessary to use a flashlight and hand mirror to aid in accomplishing inspection.



1. Inspect auxiliary power unit (APU) for missing hardware. No missing hardware allowed.
2. Inspect studs and inserts for thread damage. No damage allowed.
3. Inspect tube assemblies for leakage, chaffing, dents or nicks. No leakage, chaffing, dents or nicks allowed.
4. Inspect APU wiring harness assembly for damage and loose or broken clamps. No damage, loose or broken clamps allowed.
5. Inspect APU wiring harness assembly connectors for security or damage. No damage allowed.

1-22 VISUAL INSPECTION OF APU (CONT)

6. Inspect oil fill cap (1) for cracks. No cracks allowed.

7. Inspect oil fill neck (2) for cracks. No cracks allowed.

CAUTION

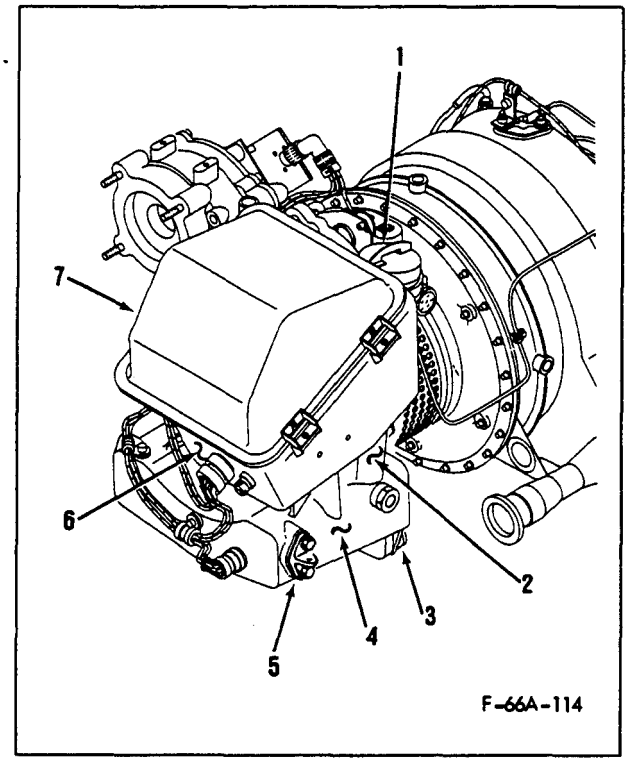
The presence of debris on chip collector may be an indication of abnormal wear or part failure. System should be inspected in accordance with applicable procedures.

8. Inspect magnetic drain plug (3) for debris. No debris allowed. Collect APU oil sample (Task 6-1).

9. Inspect gearbox assembly (4) for cracks. No cracks allowed.

10. Inspect forward engine mounts (5) for cracks. No cracks allowed.

11. Inspect fuel control lower cover (6) and fuel control upper cover (7) for security and cracks. No cracks allowed.



1-22 VISUAL INSPECTION OF APU (CONT)

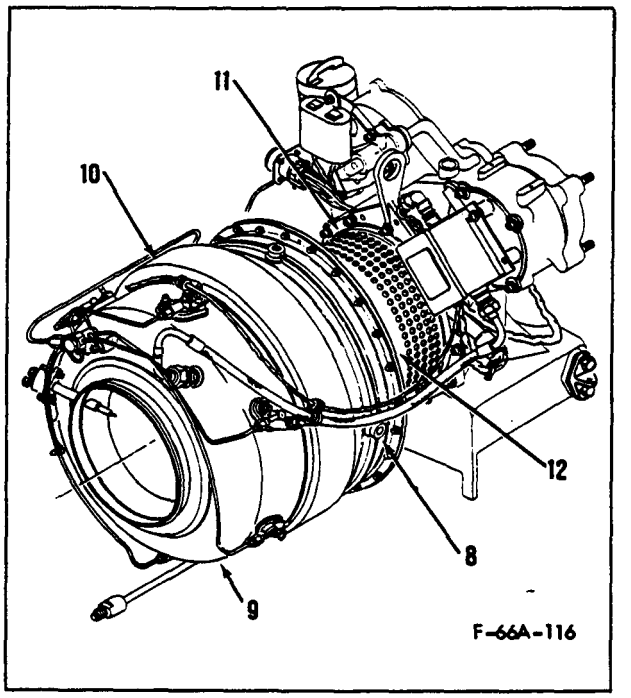
12. Inspect aft engine mounts (8) for cracks. No cracks allowed.

13. Inspect inside turbine combustor case (9) for oil leakage. No oil leakage allowed.

14. Inspect turbine housing (10) for cracks. No cracks allowed.

15. Inspect compressor inlet and cylinder (11) for security or puncture holes. No puncture holes allowed.

16. Inspect compressor housing (12) for cracks. No cracks allowed.



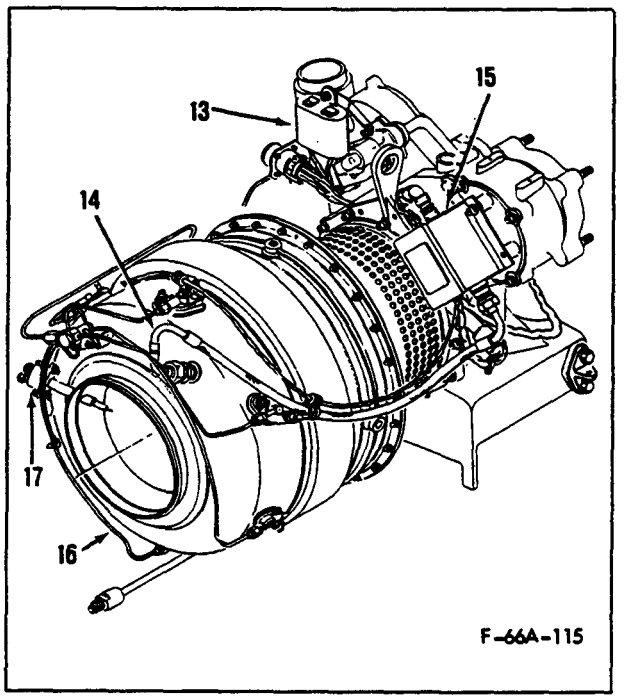
17. Inspect hourmeter assembly (13) for cracked glass. No cracks allowed.

18. Inspect igniter plug lead (14) for frayed cover or pinched areas. No frayed cover or pinched areas allowed.

19. Inspect Ignition unit (15) for security, cracks, discoloration or bulging. No cracks, discoloration or bulging allowed.

20. Inspect fuel manifold assembly (16) for chaffing or evidence of leaks. No chaffing or leaks allowed.

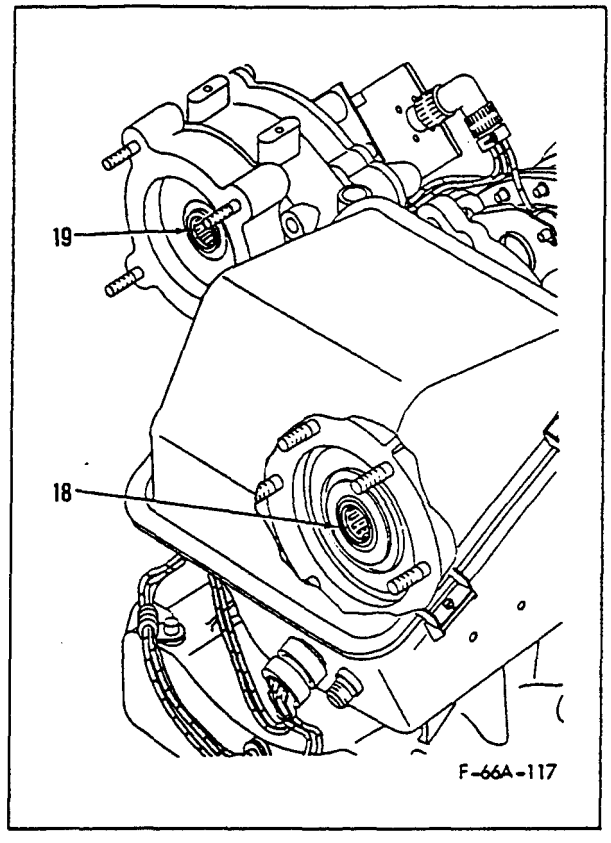
21. Inspect immersion thermocouple (17) and wiring for security and damage. No damage allowed.



1-22 VISUAL INSPECTION OF APU (CONT)

22. Inspect generator gear spline (18) and starter gear spline (19) for crack on or between splines. No cracks allowed.

FOLLOW-ON MAINTENANCE: None.



Section VI PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS)

1-23 GENERAL DESCRIPTION

This section contains requirements for special inspections and standards of serviceability applicable to the APU and PMCS. The tasks listed in the PMCS table shall be performed at the intervals specified. A description of the PMCS table is given in paragraph 1-27.

1-24 DROPPED ENGINE INSPECTION

Technical Inspector shall perform overall inspection of APU if it was dropped. Check for any broken, bent or kinked tube assemblies, cracked air inlet, dented combustor case, damaged APU harness assembly/connectors, damaged fuel manifold assembly and other damage. Refer to DA PAM 738-751 for applicable forms, records and worksheets.

1-25 FOREIGN OBJECT DAMAGE (FOD) INSPECTION

Inspect APU components during detailed applicable tasks.

1-26 HOT END INSPECTION

Inspect hot end components (combustor case, liner, etc) in accordance with the detailed inspection tasks of Chapter 1.

1-26.1 DESCRIPTION OF PMCS TABLE

a. Step number column. This column shall be used as a source of item numbers for the TM Number Column on DA Form 2404, Equipment Inspection and Maintenance Worksheet, in recording results of PMCS.

b. Interval column. This column defines the interval, in hours of APU operation, that all tasks shall be performed. The helicopter log shall be used to determine hours of APU operation.

c. Item to be inspected column. This column describes the item to be inspected (or serviced).

d. Task column. This column assigns responsibility for performing each task to either AVUM or AVIM. An "X" indicates that a description of the task is provided in the REMARKS column. A task number indicates a description of the task is given in that procedure.

e. Remarks column. This column provided supplementary information relating to the interval of performing certain tasks. In addition, when an "X" is indicated in the TASK column, a description of the task is given in the REMARKS column.

1-26.2 PREVENTIVE MAINTENANCE CHECKS AND SERVICES

Following are the preventive maintenance checks and services used for scheduled maintenance of the APU.

Preventive Maintenance Checks and Services

Item No.	Interval				Item To Be Inspected	Task		Remarks
	250 Hrs	250 Hrs/ 12 Mos	500 Hrs	1000 Hrs		AVUM	AVIM	
1				X	Hot Section Inspection		3-14	Inspect hot section.
2				X	Fuel Filter Element	4-11		Remove and replace fuel filter element.
3	X				Orifice Fitting	4-17		Inspect orifice fitting.
4			X		Fuel Nozzle Assembly		4-19.1	Inspect fuel nozzle assembly.
5	X				Igniter Plug Assembly	5-11		Inspect igniter plug assembly.
6		X			Magnetic Drain Plug Assembly	6-2		Inspect magnetic drain plug assembly for debris.
7		X			Lubricating Oil	6-2		Drain and refill.
8		X			Oil Filter Element	6-12		Remove and replace oil filter element.

Section VII TROUBLESHOOTING

1-27 TROUBLESHOOTING GENERAL

Troubleshooting (Fault Isolation) is performed with the APU installed in the aircraft. Refer to TM 55-1520-237-T.

Section VIII PREPARATION FOR STORAGE OR SHIPMENT

1-28 PREPARATION FOR STORAGE OR SHIPMENT (AVIM)

This task covers: a. Preservation b. Remove APU from Maintenance Stand c. Install APU in Shipping Container

INITIAL SETUP

Tools:
Aircraft Inspection Tool Kit (T49)
Container, 4 Quart Capacity
Electrical Tool Kit (T46)
Engine Repairman's Tool Kit (T47)
Exhaust Cover
External DC Power Supply (T76)
Eye Protection
Torque Wrench 30-150 inch-pounds

Personnel Required:
68B Aircraft Powerplant Inspector
68B Engine Powerplant Repairer
68F Aircraft Electrician

Materials/Parts:
Barrier Material (D3)
Low Pressure Compressed Air
Lubricating Oil (D17)
Nitrogen Pressurizing System
Pressure Sensitive Tape (D38)

References:
Tasks 2-1, 2-2, 4-1, 4-9, 4-18, 6-2

Equiment Conditions:
APU in Maintenance Stand

General Safety Instructions:

WARNING

Engine fuel is toxic and flammable. To prevent personnel injury, avoid contact with eyes and repeated or prolonged contact with skin.

Compressed air is dangerous when directed toward yourself or another person. The airstream or material blown by the airstream can cause injury, particularly to the eyes and face. Use goggles to protect eyes and face. Do not exceed 30 PSI. Do not direct airstream toward yourself or another person.

PRESERVATION

1. Remove fuel control upper cover (Task 4-1).
2. Disconnect fuel manifold assembly from fuel nozzle assemblies (Task 4-18).
3. Connect suitable drain tubes to fuel manifold assembly disconnected in step 2. Place open end of drain tube in suitable container.
4. Disconnect electrical connector from fuel solenoid valve. Apply 28 vdc to fuel solenoid valve to open valve.

WARNING

Engine fuel is toxic. To prevent personnel injury, avoid contact with eyes and repeated or prolonged contact with skin.

Compressed air is dangerous when directed toward yourself or another person. The airstream or material blown by the airstream can cause injury, particularly to the eyes and face. Use goggles to protect eyes and face. Do not exceed 30 PSI. Do not direct airstream toward yourself or another person.

5. Apply 30 PSIG of filtered air to fuel control assembly inlet port (union in fuel control lower cover) until fuel system is purged of fuel.

6. Connect gravity feed lubricating oil (D17) supply to fuel control assembly inlet port.

7. Rotate compressor and turbine rotor (clockwise from rear of APU) by hand until oil flows freely (no air) from drain line.

8. Remove 28 vdc from fuel solenoid valve.

9. Disconnect gravity feed lubricating oil supply from fuel control assembly inlet port.

10. Connect fuel solenoid valve electrical connector.

11. Connect fuel manifold assembly to fuel nozzle assemblies (Task 4-18).

12. Be sure fuel control lower cover is free of debris. Install fuel control upper cover (Task 4-9).

12.1. Drain APU oil (Task 6-2).

13. Place a red tag on APU stating:

APU FUEL SYSTEM PRESERVED WITH LUBRICATING OIL, MIL-L-6081; FLUSHING REQUIRED BEFORE STARTING, APU OIL HAS BEEN DRAINED.

14. For short term storage, install cover and seal APU inlet with barrier material (D3). Secure barrier material with pressure sensitive tape (D38).

REMOVAL

Remove APU from maintenance stand (Task 2-1).

INSTALL

Install APU in shipping container (Task 2-2).

FOLLOW-ON MAINTENANCE: None.

CHAPTER 2

MAINTENANCE STANDS AND CONTAINERS

Section I REMOVE APU FROM MAINTENANCE STAND AND INSTALL ON ADAPTER ASSEMBLY

2-1 REMOVE APU FROM MAINTENANCE STAND AND INSTALL ON ADAPTER ASSEMBLY

This task covers: a. Removal b. Installation

INITIAL SETUP

Tools:
Adapter Assembly (T2)
Aircraft Inspection Tool Kit (T49)
Engine Repairman's Tool Kit (T47)
Lifting Sling (T63)

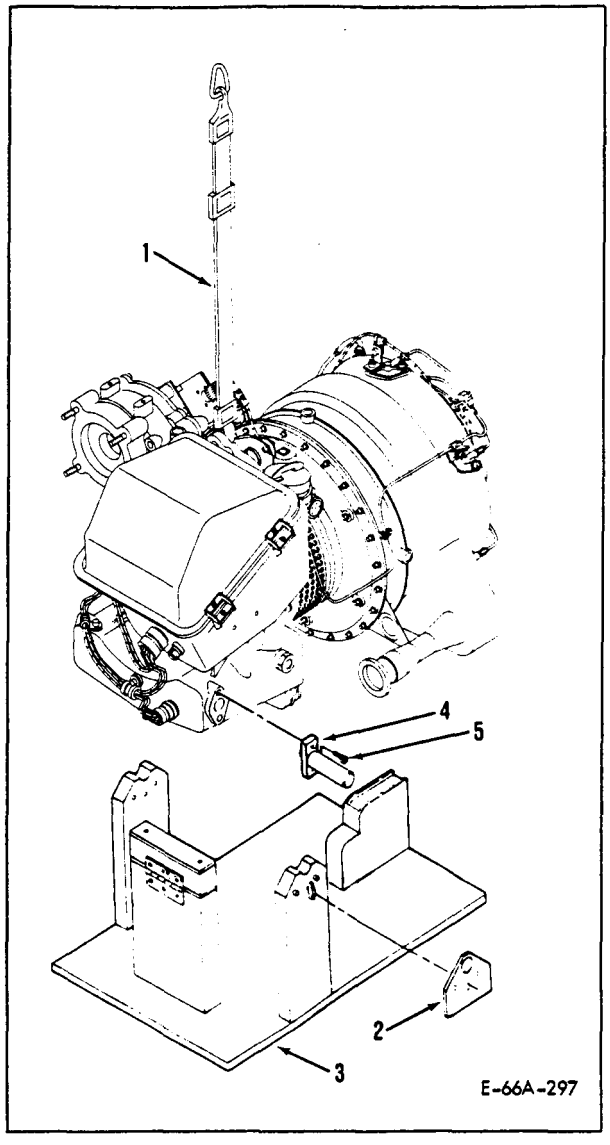
Personnel Required:
68B Aircraft Powerplant Inspector
68B Aircraft Powerplant Repairer
Assistant

Equipment Conditions:
APU on Maintenance Stand (1)

2-1 REMOVE APU FROM MAINTENANCE STAND AND INSTALL ON ADAPTER ASSEMBLY (CONT)

REMOVAL

1. Attach lifting sling (1) (T63) to APU.
2. Remove plate (2) from forward resting block (3).
3. Man A hoists APU. Man B guides APU.
4. Remove bolts (5) and remove left and right welded assemblies (4).

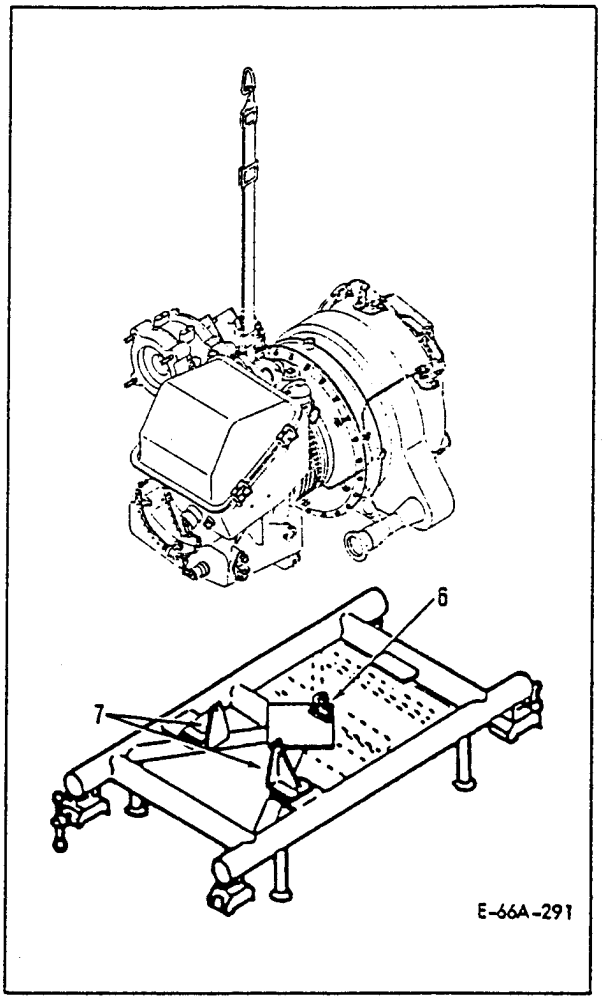


2-1 REMOVE APU FROM MAINTENANCE STAND AND INSTALL ON ADAPTER ASSEMBLY (CONT)

INSTALLATION

1. Man A lowers APU. Man B guides APU aligning forward and aft mounting lugs.
2. Push APU forward until aft lug (6) engaged.
3. Install bolts in APU mounts (7) in transport stand, then tighten.
4. Remove lifting sling (T63) from APU and hoist from lifting fixture.

FOLLOW-ON MAINTENANCE: None.



Section II INSTALL APU IN SHIPPING CONTAINER

2-2 INSTALL APU IN SHIPPING CONTAINER

INITIAL SETUP

Tools:
Aircraft Inspection Tool Kit (T49)
Engine Repairman's Tool Kit (T47)
Lifting Sling (T63)
Nitrogen Pressurizing System
Shipping Container

Personnel Required:
68B Aircraft Powerplant Inspector
68B Aircraft Powerplant Repairer
Assistant

Materials/Parts:
Desiccant (D11)
Humidity Indicator (D14)
Nitrogen (D22)
Soap (D34)

References:
TB 55-8100-200-24

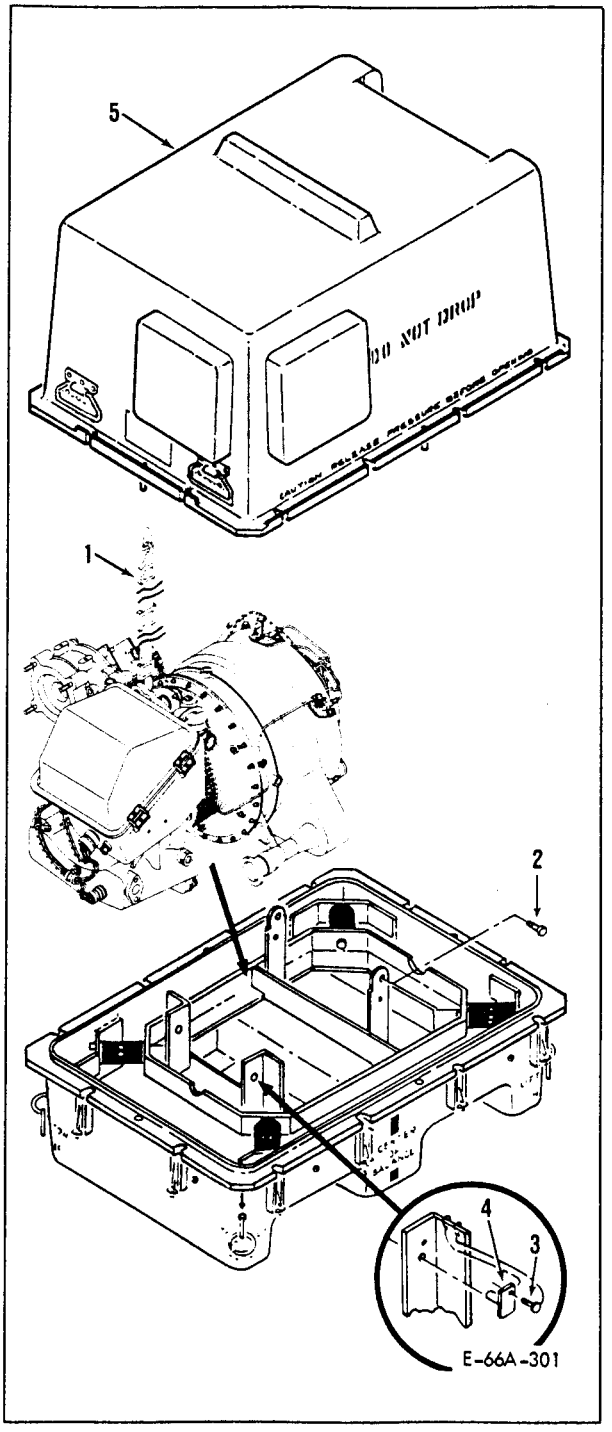
General Safety Instructions:

WARNING

Do not stand under engine while it is being moved on a hoist. To prevent injury to personnel and damage to equipment during handling of APU, periodically check lifting sling. If there are any signs of abuse or excessive wear, notify local safety representatives.

2-2 INSTALL APU IN SHIPPING CONTAINER (CONT)

1. Attach lifting sling (1) (T63) to APU.
2. Man A hoists APU. Man B guides APU in container.
3. Align mount frame holes for bolts (2, 3) and trunnions (4).
4. Install APU with bolts (2, 3) and trunnions (4).
5. Torque 1/4 inch bolts to 104 to 116 inch-pounds and 5/16 bolts to 131 to 145 inch-pounds.
6. Remove lifting sling (1) (T63) from APU.
7. Install container cover (5).



2-2 INSTALL APU IN SHIPPING CONTAINER (CONT)

8. Remove desiccant cover (8).

9. Remove old desiccant and install 24 units of fresh desiccant (D11)

10. Replace desiccant cover (8).

11. Install new humidity indicator (9) (D14).

12. Connect nitrogen pressurizing system to fill valve (6).

13. Purge container with nitrogen (D22) at 1 ±0.5 PSIG for 2 minutes.

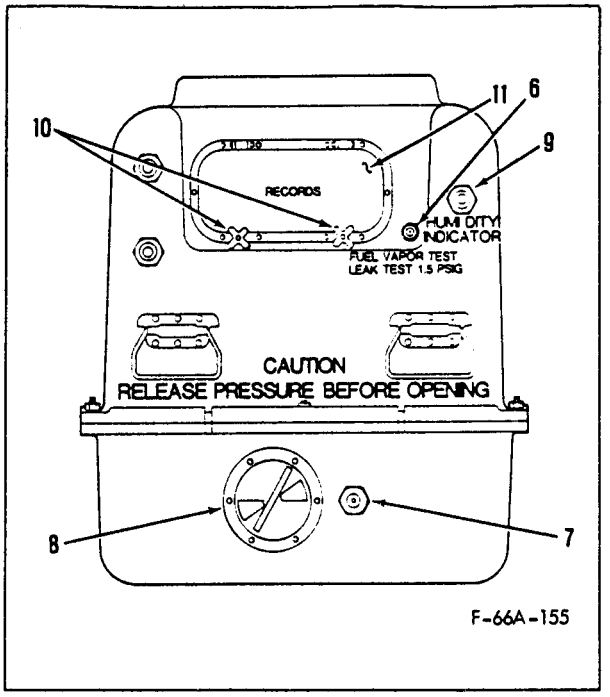
14. Pressurize container with nitrogen pressurization system to 1 ±0.5 PSIG.

15. Brush solution of soap (D34) over all seams and closures and observe leaks indicated by air bubbles. If there is a leak, refer to TB 55-8100-200-24.

16. Disconnect nitrogen pressurizating system.

17. Press relief valve (7) to depressurize container.

18. Loosen knobs (10) and open records cover (11). Place APU history records in container. Close cover and secure by tightening knobs (10).



FOLLOW-ON MAINTENANCE: None.

CHAPTER 3

COMBUSTION SECTION MAINTENANCE

Section I REMOVE COMBUSTOR CASE

3-1 REMOVE COMBUSTOR CASE (AVIM).

INITIAL SETUP

Tools:
Aircraft Inspection Tool Kit (T49)
Combustor Puller (T64)
Engine Repairman's Tool Kit (T47)

Personnel Required:
68B Aircraft Powerplant Repairer

Materials/Parts:
Machinery Towel (D20)
Marking Pencil (D24)
Pressure Sensitive Tape (D39)
Protective Caps and Plugs

Equipment Conditions:
APU on Maintenance Stand (T1)

General Safety Instructions.

WARNING

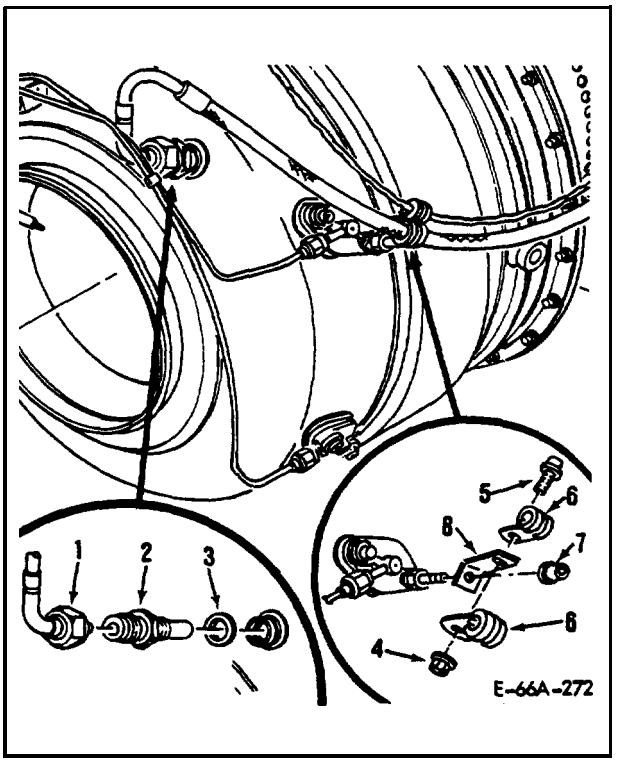
Engine fuel is toxic and flammable. To prevent personnel injury, avoid contact with eyes and repeated or prolonged contact with skin.

3-1 REMOVE COMBUSTOR CASE (AVIM) (CONT)

CAUTION

Exercise care when disconnecting igniter plug lead to prevent damage to igniter plug lead tips.

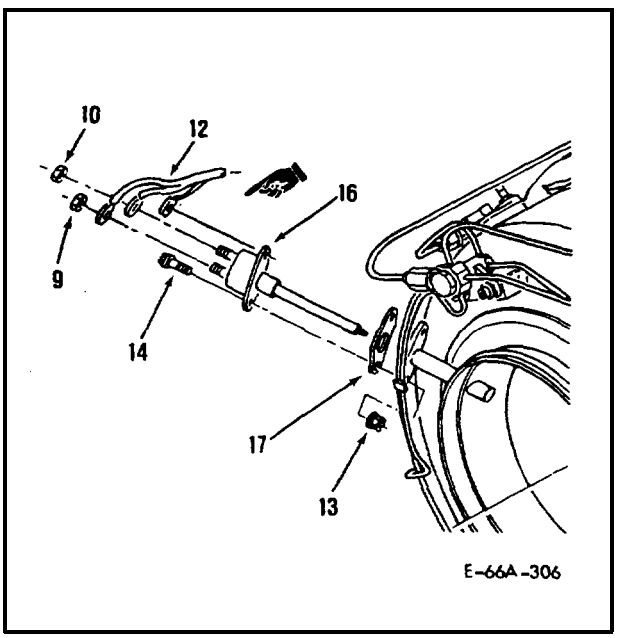
To prevent clogging or contamination, all exposed openings in fuel, oil, air lines and electrical connectors will be capped or plugged immediately. Be sure caps and plugs are clean.



1. Disconnect igniter plug lead (1) from igniter plug assembly (2).
2. Remove igniter plug assembly (2) and washer (3) from combustor case.
3. Remove nut (4), bolt (5) and clamps (6).
4. Remove nut (7) and bracket (8).

NOTE

To aid in assembly, leads should be marked prior to removal.



5. Remove nuts (9, 10). nut (11, deleted) from immersion thermocouple (16). Remove leads (12) from stud marked (AL) and stud marked (CR). Install nuts (9, 10) back on immersion thermocouple.
6. Remove nuts (13), bolts (14), stud (15, deleted) and ground wire.
7. Remove immersion thermocouple (16).
8. Remove gasket (17) from immersion thermocouple and discard.

3-1 REMOVE COMBUSTOR CASE (AVIM) (CONT)

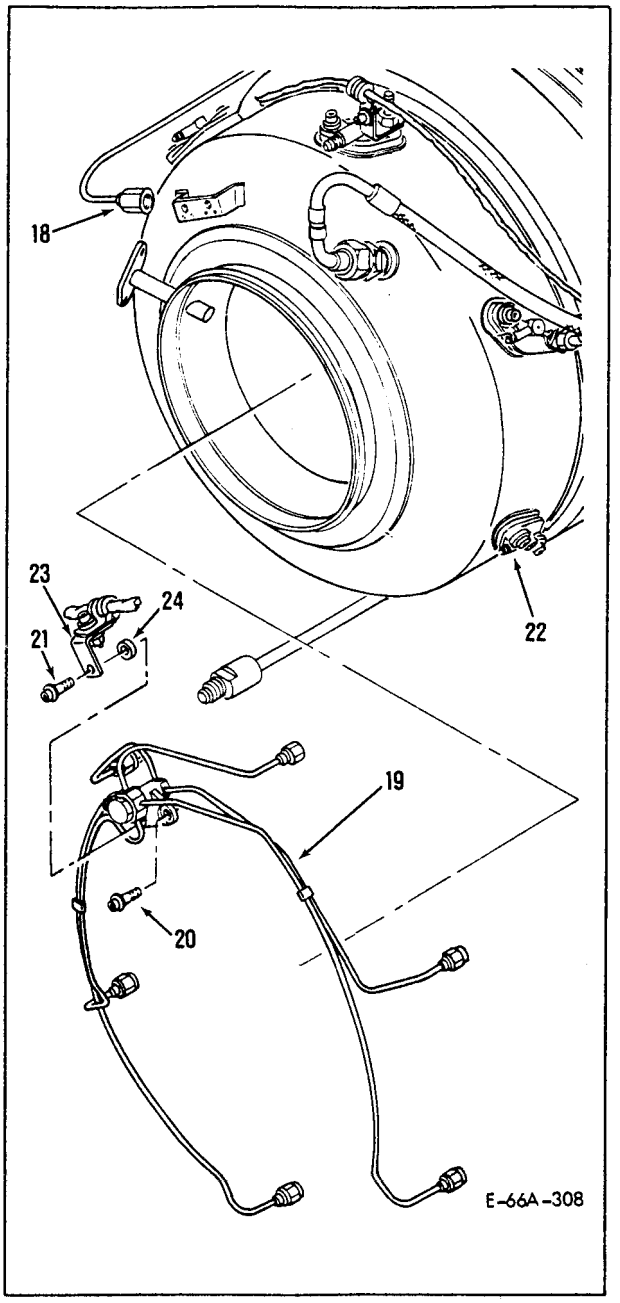
9. Place machinery towel (D20) under combustor case before disconnecting fuel manifold assembly (19).

10. Disconnect fuel solenoid valve to fuel manifold assembly tube (18) from fuel manifold assembly (19) valve housing.

11. Disconnect fuel manifold assembly (19) from fuel nozzle assemblies (22).

12. Remove bolts (20, 21), bracket (23) and spacer (24). Discard bolts.

13. Remove fuel manifold assembly (19).



3-1 REMOVE COMBUSTOR CASE (AVIM) (CONT)

14. Remove nut (25) and bracket (26) from 12 o'clock position.

15. Remove bolts (27), stud (28) and washers (29) from primary fuel nozzle assemblies (30). Discard bolts, stud and washers.

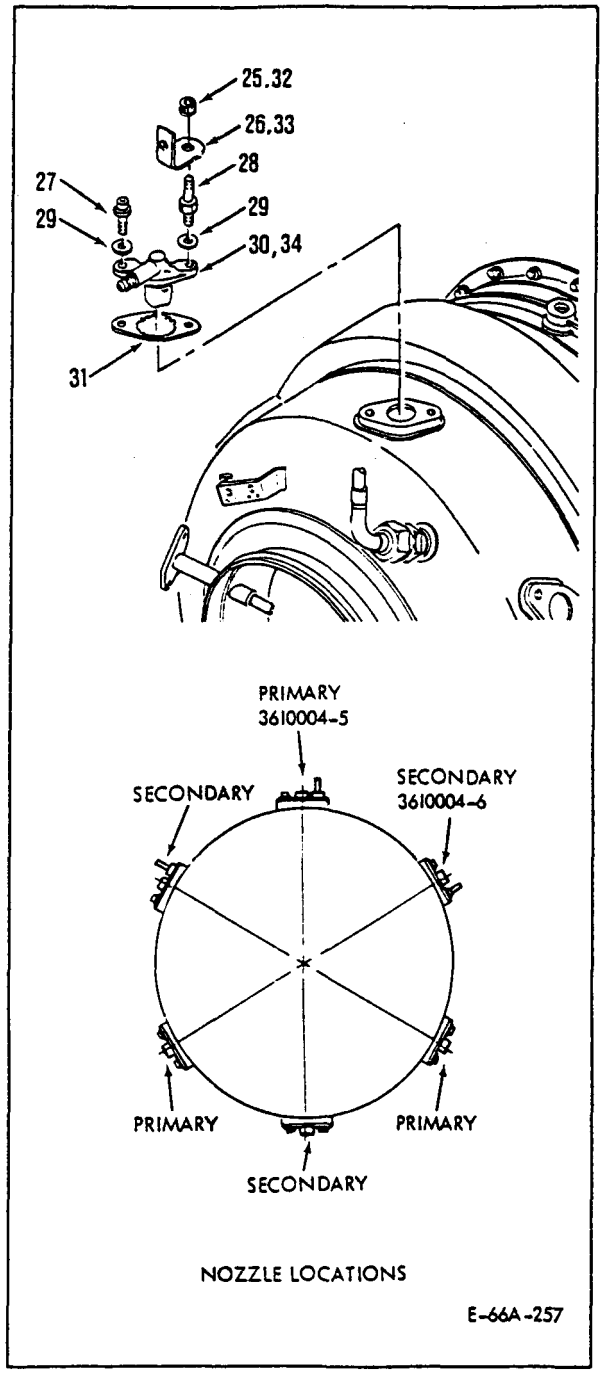
16. Remove Primary fuel nozzle assemblies (30).

17. Remove and discard nozzle seal plates (31).

18. Remove nuts (32) and brackets (33) from 10 and 2 o'clock positions.

19. Remove bolts (27), studs (28) and washers (29) from secondary fuel nozzle assemblies (34). Discard bolts, studs and washers. Remove secondary fuel nozzle assemblies.

20. Remove and discard remaining nozzle seal plates (31).

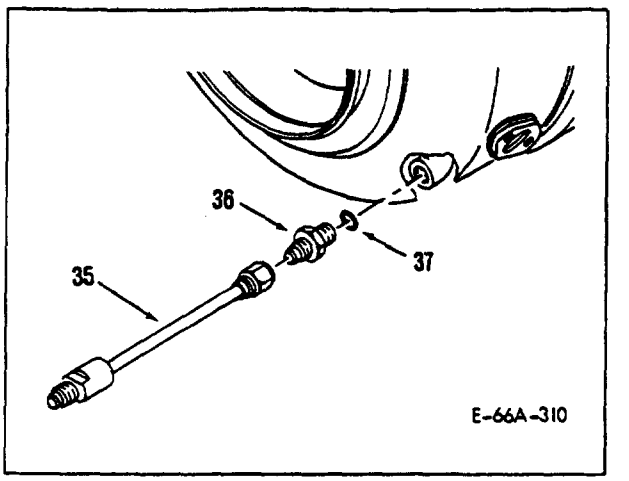


3-1 REMOVE COMBUSTOR CASE (AVIM) (CONT)

21. Remove fuel drain tube assembly (35).

22. Remove orifice fitting (36).

23. Remove and discard packing (37) from orifice fitting (36).



3-1 REMOVE COMBUSTOR CASE (AVIM) (CONT)

24. Cover combustor case fuel nozzle assemblies, igniter plug assembly and thermocouple mount holes using pressure sensitive tape (D39).

25. Match mark combustor case (41) to power section assembly (40) using marking pencil (D24).

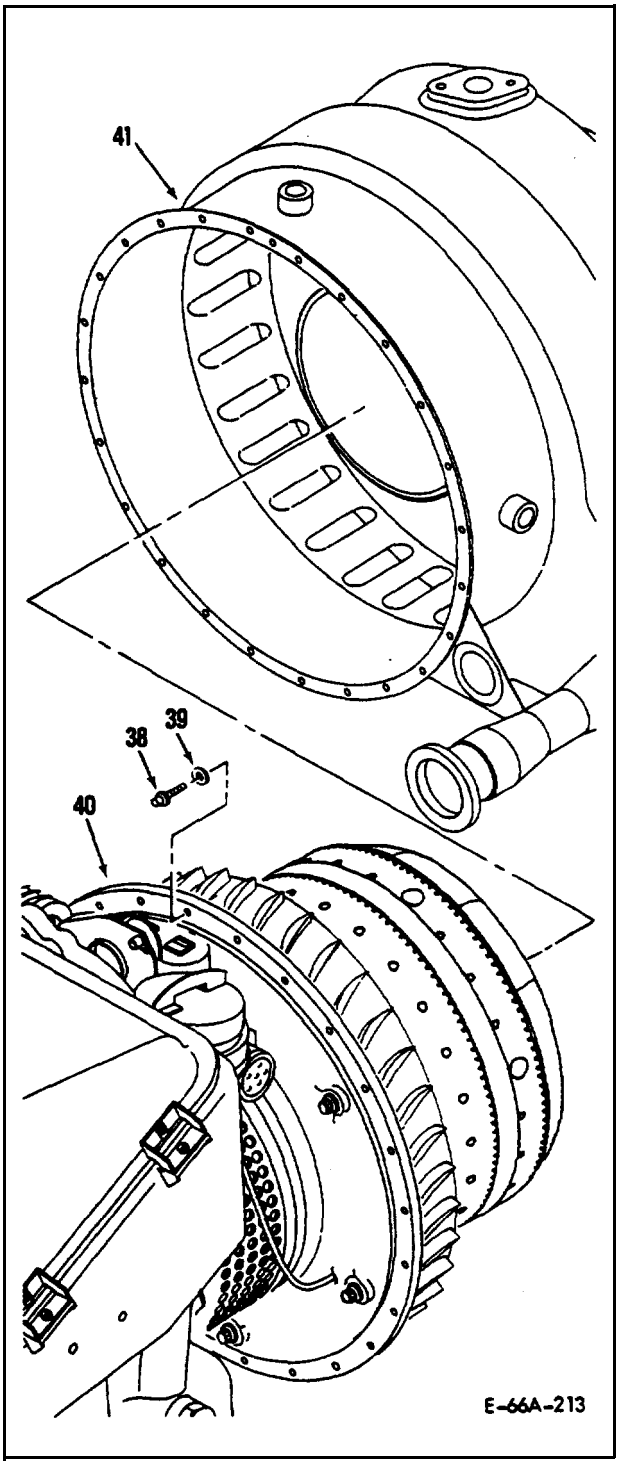
26. Position APU with exhaust up.

27. Remove bolts (38) and washers (39) and discard.

28. Remove combustor case (41) from power section assembly (40) using combustor puller (T64).

29. Clean combustor case (41) using processes 1, 2 and 3, Chapter 8.

FOLLOW-ON MAINTENANCE: None.



Section II REMOVE COMBUSTION CHAMBER

3-2 REMOVE COMBUSTION CHAMBER (AVIM)

INITIAL SETUP

Personnel Required:
68B Aircraft Powerplant Repairer

References:
Task 3-1

Materials/Parts:
Marking Pencil (D24)

Equipment Conditions:
APU on Maintenance Stand (T1)

3-2 REMOVE COMBUSTION CHAMBER (AVIM) (CONT)

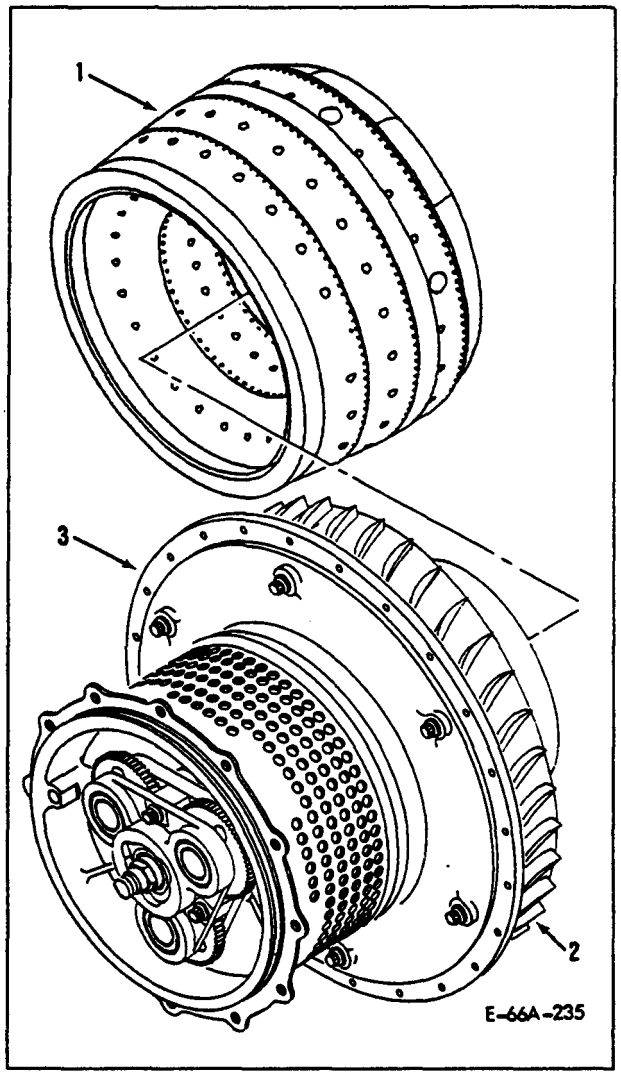
1. Remove combustor case (Task 3-1).

2. Match mark surfaces on combustion chamber (1) and airflow deflector (2) using marking pencil (D24).

3. Remove combustion chamber (1) from power section assembly (3).

4. Clean combustion chamber (1) using processes 1, 2 and 3, Chapter 8.

FOLLOW-ON MAINTENANCE: None.



Section III INSPECT COMBUSTION CHAMBER

3-3 INSPECTION OF COMBUSTION CHAMBER (AVIM)

INITIAL SETUP

Tools:
Aircraft Inspection Tool Kit (T49)
Dial Indicator
Gage Block Set
Surface Plate
Vernier Caliper

Personnel Required:
68B Aircraft Powerplant Repairer

References:
MIL-STD-6866
Task 3-4

Equipment Condition:
Combustion Chamber Removed from APU

3-3 INSPECTION OF COMBUSTION CHAMBER (AVIM) (CONT)

NOTE

Visually inspect combustion chamber as follows:

1. Inspect for deformation (1), metal thinning, hot spots or burn through (3) on combustion chamber. No damage allowed.

2. Inspect shell for cracks (2) at igniter plug grommet, retainer welds or retainer (4). No cracks allowed. If cracks are suspected, fluorescent penetrant inspect per MIL-STD-6866.

NOTE

Dimensionally inspect combustion chamber as follows:

3. Deformation (1).

   a. Measure using dial indicator, surface plate and gage block set.

   b. Deformation (1) not to exceed 0.125 inches.

4. Cracks (2).

   a. Measure using vernier caliper.

   b. Not longer than 0.250 inch. Not less than 0.250 inch apart.

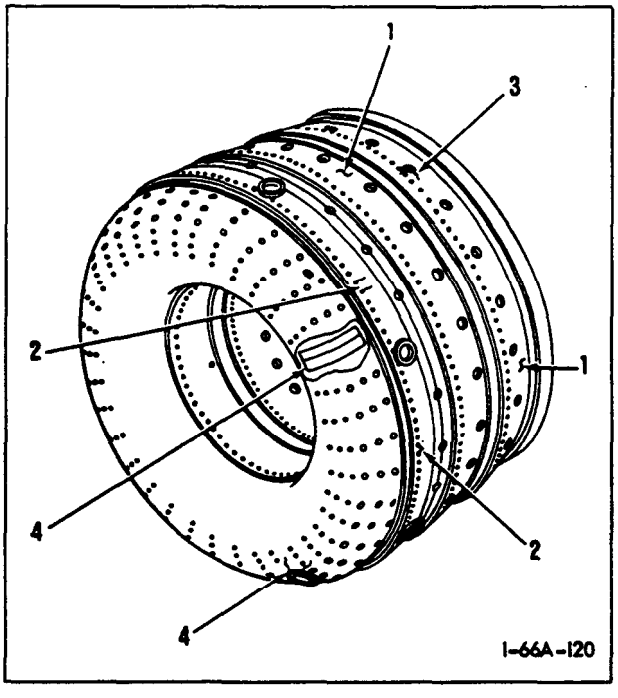
5. Hot spots, metal thinning or burn through (3).

   a. Measure using dial indicator, surface plate and gage block assembly.

   b. Damage depth greater than 0.016 inch not allowed.

6. Repair combustion chamber (Task 3-4).

FOLLOW-ON MAINTENANCE: None.



3-4 REPAIR - COMBUSTION CHAMBER (AVIM)

INITIAL SETUP

Tools:
Abrasive Wheel
Arc Welder
Drill Bit 3/32 inch
Engine Repairman's Tool Kit (T47)
File
Hose Assembly
Insulated Mittens
Pneumatic Drill
Pneumatic Grinder
Rubber Gloves
Shears
Welders Helmet

Personnel Required:
44E Welder/Machinist
68B Aircraft Powerplant Repairer

Materials/Parts:
Abrasive Paper (D26)
Filler Rod
0.020 Stock (D36)
1,1,1-Trichloroethane (D41)

References:
TM 55-1500-204-25/1

Equipment Conditions:
Combustion Chamber Removed From APU

General Safety Instructions:

WARNING

Welding operations produce heat, highly toxic fumes, injurious radiation, metal slag and airborne particles. Protection equipment consisting of welding goggles with proper tinted lenses, apron or jacket and welder's boots required. Good general ventilation is normally adequate.

1,1,1-Trichloroethane is toxic to skin, eyes and respiratory tract. Skin and eye protection are required. Avoid repeated or prolonged contact. Work in a well-ventilated area.

Powered tool operations create airborne particles. Eye protection is required. Remove jewelry prior to use. Adequate ventilation or respirator is required.

Heated components can pose a serious burn potential. Wear insulated mittens when handling heated components.

3-4 REPAIR - COMBUSTION CHAMBER (AVIM) (CONT)

NOTE

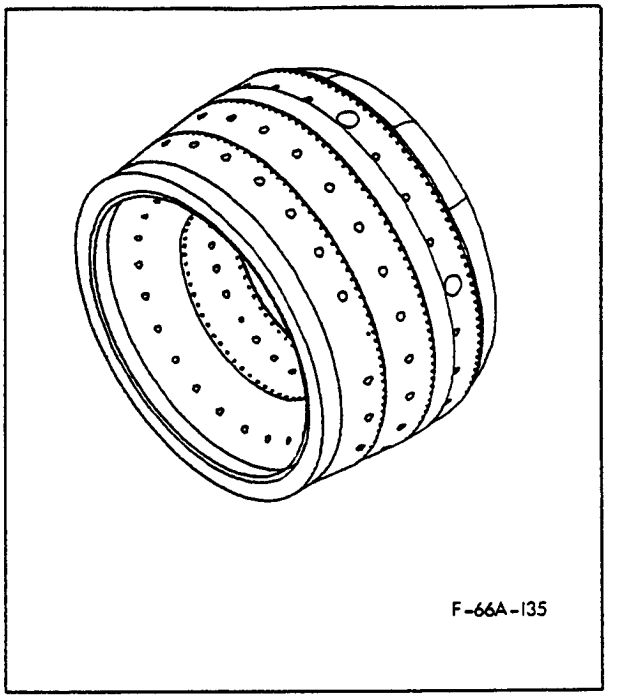
Repair deformation, metal thinning or hot spots as follows.

1. Position combustion chamber on work surface.
2. Remove sufficient amount of material to eliminate all traces of damage.
3. Fabricate flush patch with 0.020 stock (D36).
4. Using abrasive paper (D26), lightly sand mating surfaces.
5. Thoroughly clean the area, using 1,1,1-trichloroethane (D41).
6. Install patch and fusion arc weld.
7. Drill cooling holes to match existing hole pattern.
8. With file hand finish weld to blend with combustion chamber.

NOTE

Repair cracks in combustion chamber, igniter grommet retainer welds or retainer as follows.

9. Stop drill crack ends to prevent further progression of cracks.
10. Fusion arc weld crack with gas backup.



FOLLOW-ON MAINTENANCE: None.

Section V REPLACE IGNITER PLUG FERRULE

3-5 REPLACE IGNITER PLUG FERRULE (AVIM)

This task covers: a. Removal b. Installation

INITIAL SETUP

Tools:
Abrasive Wheel
Arc Welder
Engine Repairman's Tool Kit (T47)
Feeler Gage
File
Hose Assembly
Insulated Mittens
Pneumatic Grinder
Rubber Gloves
Safety Glasses
Welders Apron
Welders Helmet

Personnel Required:
44E Welder/Machinist
68B Aircraft Powerplant Repairer

Materials/Parts:
Abrasive Paper (D26)
Cotton Applicator (D10)
Filler Rod
Machinery Towel (D20)
Penetrant Inspection Kit (D27)
1,1,1-Trichloroethane (D41)

References:
TM 55-1500-204-25/1

Equipment Conditions:
Combustion Chamber Removed From APU

General Safety Instructions:

WARNING

Welding operations produce heat, highly toxic fumes, injurious radiation, metal slag and airborne particles. Protection equipment consisting of welding goggles with proper tinted lenses, apron or jacket and welder's boots required. Good general ventilation is normally adequate.

1,1,1-Trichloroethane is toxic to skin, eyes and respiratory tract. Skin and eye protection are required. Avoid repeated or prolonged contact. Work in a well-ventilated area.

Powered tool operations create airborne particles. Eye protection is required. Remove jewelry prior to use. Adequate ventilation or respirator is required.

Heated components can pose a serious burn potential. Wear insulated mittens when handling heated components.

3-5 REPLACE IGNITER PLUG FERRULE (AVIM) (CONT)

REMOVAL

NOTE

The retainers (1) securing the ferrule (2) to the combustion chamber are not angled the same. Retainer shall be selected to match the contour of the combustor case dome.

Only one retainer requires removal.

1. Grind away retainer (1) weld and remove retainer.

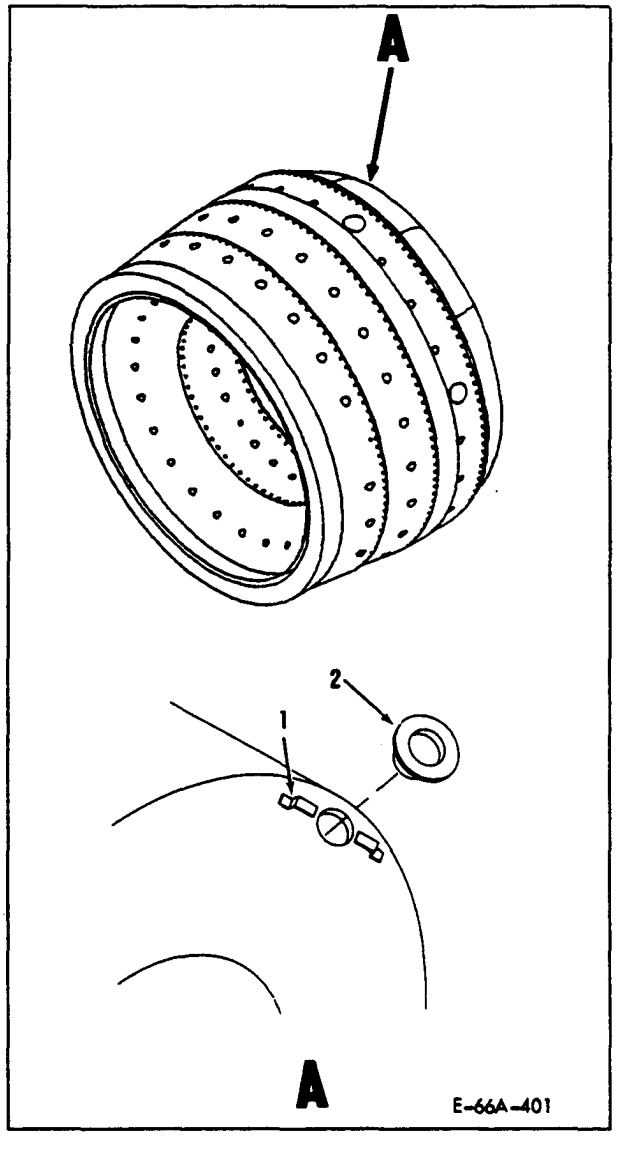
NOTE

Remaining ferrule may require expanding floating clearance between ferrul e and retainer to make ferrul e removal easier.

2. Remove ferrule (2).

INSTALLATION

1. Using abrasive paper (D26), lightly sand combustion chamber to prepare for welding.
2. Thoroughly clean the area, using 1,1,1-trichloroethane (D41).
3. Install ferrule (2) in combustion chamber.
4. Align new retainer (1) 180 degrees opposite remaining retainer.
5. Fusion arc weld retainer (1) to combustion chamber.
6. File weld to blend with combustion chamber.
7. Adjust floating clearance between two retainers (1) and ferrule (2) to 0.001 to 0.025 inch.
8. Visually inspect to insure retainer (1) is secure and ferrule (2) is free to float.
9. Penetrant test for cracks in welded area. Apply post-emulsifiable penetrant solution, component of penetrant inspection kit (D27) to area with cotton applicator (D10). Leave on for 5 minutes. Keep wet.
10. Wipe off excess penetrant with 1,1,1-trichloroethane (D41) and machinery towel (D20). Inspect for proper fusion.



Section VI INSTALL COMBUSTION CHAMBER

3-6 INSTALL COMBUSTION CHAMBER (AVIM)

INITIAL SETUP

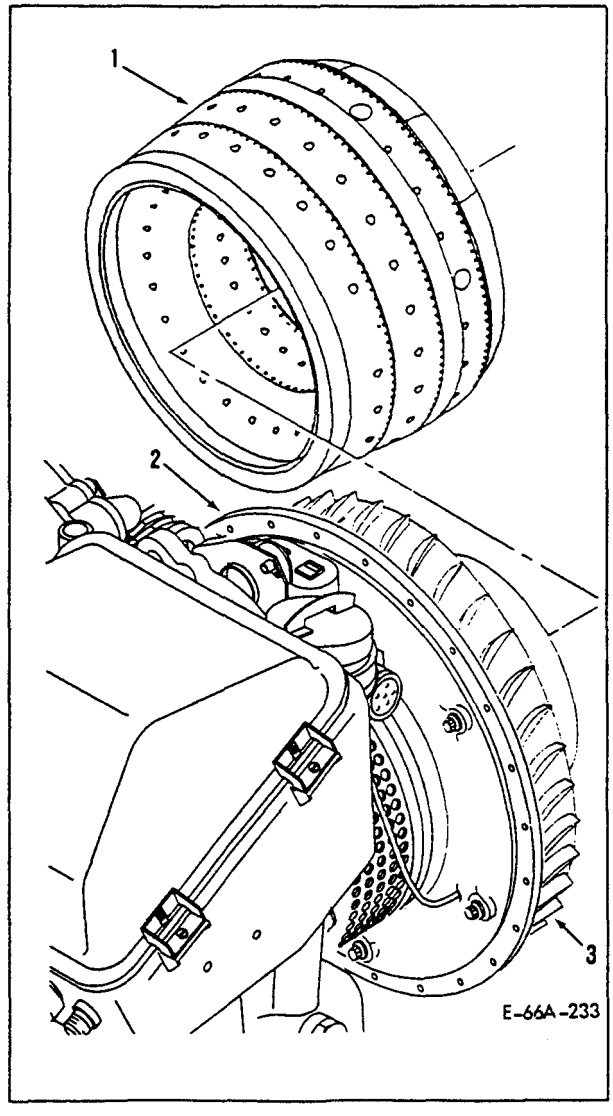
Personnel Required:
68B Aircraft Powerpl ant Inspector
68B Aircraft Powerpl ant Repairer

Equipment Conditions:
APU on Maintenance Stand (T1)

References:
Task 3-11

Install combustion chamber (1) on power section assembly (2) aligning match marks made during removal, on combustion chamber (1) and airflow deflector (3).

FOLLOW-ON MAINTENANCE: Install combustor case (Task 3-11).



Section VII INSPECT COMBUSTOR CASE

3-7 INSPECTION OF COMBUSTOR CASE (AVIM)

INITIAL SETUP

Tools:
Aircraft Inspection Tool Kit (T49)
Dial Indicator
Gage Block Set
Surface Plate
Vernier Caliper

Personnel Required:
68B Aircraft Powerplant Repairer

References:
MIL-STD-6866
Tasks 3-8, 3-9, 3-10, 3-11, 3-12

Equipment Conditions:
Combustor Case Removed From APU

3-7 INSPECTION OF COMBUSTOR CASE (AVIM) (CONT)

NOTE

Visually inspect combustor case as follows.

1. Inspect exhaust and load valve flange for distortion, wear or cracks. No damage allowed.

2. Inspect for cracks. If cracks are suspected, fluorescent penetrant inspect per MIL-STD-6866. No cracks allowed. Repair cracks (Task 3-8).

3. Inspect for distortion. No distortion allowed.

4. Inspect for loose or damaged nut plates. No damage allowed. Repair nut plates (Tasks 3-9, 3-10).

5. Inspect for loose rivets. No loose rivets allowed. Repair rivets (Task 3-12).

5.1. Inspect for loose or damaged inserts. No damage allowed: Repair inserts (Task 3-11).

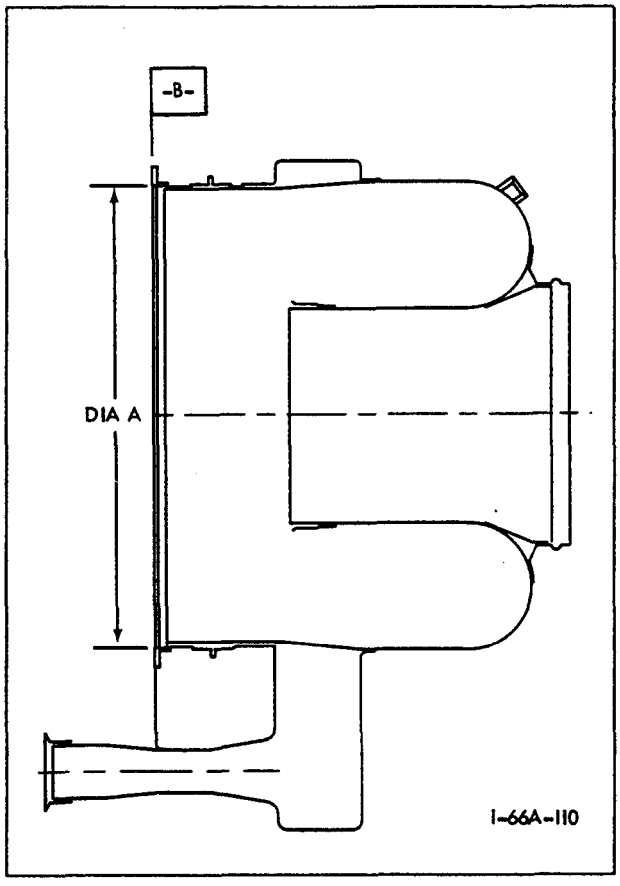
NOTE

Dimensionally inspect combustor case as follows.

6. Using vernier caliper, measure inner flange diameter A. Diameter A shall be 11.645 to 11.659 inches. Replace combustor case if diameter is not within limits.

7. Using dial indicator, surface plate and gage block set, measure surface A for flatness. Distortion not to exceed 0.005 inch. Replace combustor case if surface A is not within limits.

FOLLOW-ON MAINTENANCE: None.



Section VIII REPAIR - WELD COMBUSTOR CASE CRACKS

3-8 REPAIR - WELD COMBUSTOR CASE CRACKS (AVIM)

INITIAL SETUP

Tools:
Arc Welder
Drill Bit 3/32 inch
Engine Repairman's Tool Kit (T47)
File
Hose Assembly
Pneumatic Drill
Welder's Apron
Welder's Helmet

Personnel Required:
44E Welder/Machinist
68B Aircraft Powerplant Repairer

Materials/Parts:
Filler Rod

References:
TM 55-1500-204-25/1

Equipment Conditions:
Combustor Case Removed From APU

General Safety Instructions:

WARNING

Welding operations produce heat, highly toxic fumes, injurious radiation, metal slag and airborne particles. Protection equipment consisting of welding goggles with proper tinted lenses, apron or jacket and welder's boots required. Good general ventilation is normally adequate.

Power tool operations create airborne particles. Eye protection is required. Remove jewelry prior to use. Adequate ventilation or respirator is required.

Heated components can pose a serious burn potential. Wear insulated mittens when handling heated components.

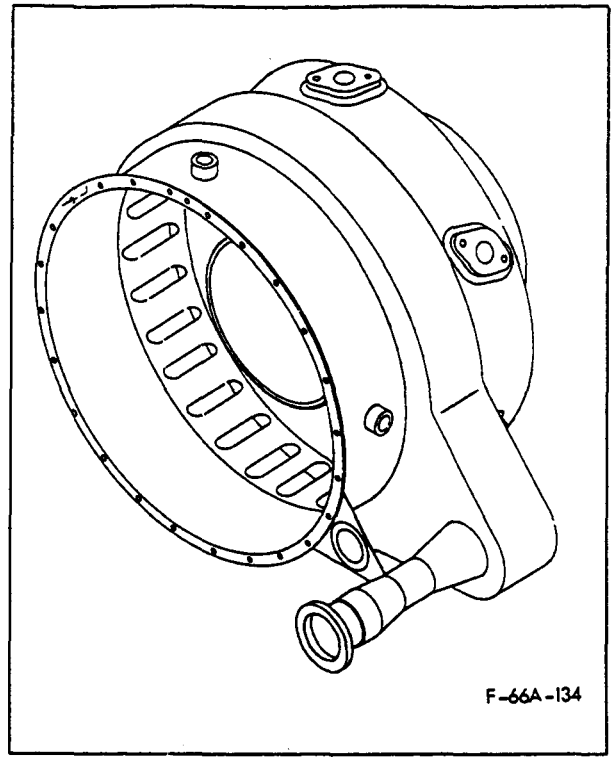
3-8 REPAIR - WELD COMBUSTOR CASE CRACKS (AVIM) (CONT)

1. Stop drill crack ends to prevent further progression of cracks.

2. Fusion arc weld crack with gas back-up.

3. File weld to blend with parent metal.

FOLLOW-ON MAINTENANCE: None.



Section IX REPLACE COMBUSTOR CASE NUT PLATES

3-9 REPLACE COMBUSTOR CASE NUT PLATES (AVIM)

This task covers: a. Removal b. Installation

INITIAL SETUP

Tools:
Aircraft Inspection Tool Kit (T49)
Engine Repairman's Tool Kit (T47)

Personnel Required:
68B Aircraft Powerplant Inspector
68B Aircraft Powerplant Repairer

Materials/Parts:
Acid Brush (D5)
Blind Rivet
Epoxy Primer (D30)
Machinery Towel (D20)
Nut Plate
1,1,1-Trichloroethane (D41)

References:
Task 3-9
TM 55-1500-204-25/1

Equipment Conditions:
Combustor Case Removed From APU

General Safety Instructions:

WARNING

Compressed air is dangerous when directed toward yourself or another person. The airstream or material blown by the airstream can cause injury, particularly to the eyes and face. Use goggles to protect eyes and face. Do not exceed 30 PSI. Do not direct airstream toward yourself or another person.

Epoxy primer is flammable and toxic to eyes, skin and respiratory tract. To prevent personnel injury, skin and eye protection is required. Avoid prolonged or repeated contact. Good general ventilation is normally adequate.

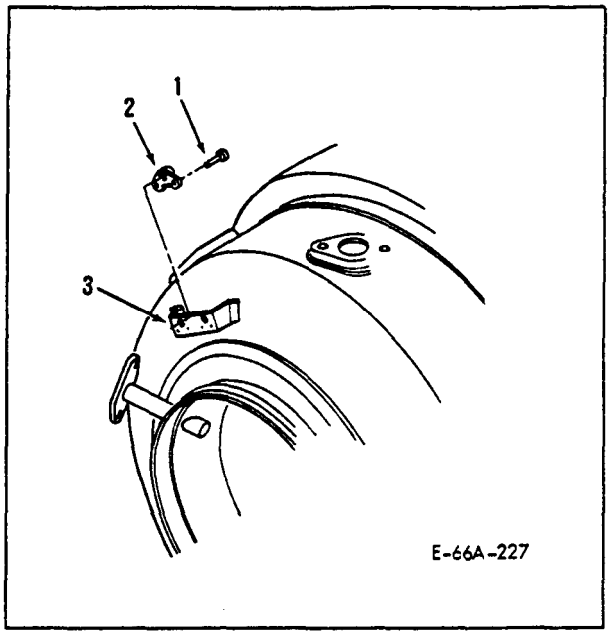
Power tool operations create airborne particles. Eye protection is required. Remove jewelry prior to use. Adequate ventilation or respirator is required.

1,1,1-Trichloroethane is toxic to skin, eyes and respiratory tract. Skin and eye protection are required. Avoid repeated or prolonged contact. Work in a well-ventilated area.

3-9 REPLACE COMBUSTOR CASE NUT PLATES (AVIM) (CONT)

REMOVAL

1. Position combustor case on work surface to gain access to nut plates.
2. Remove rivets (1) (Task 3-9) from nut plate (2). Discard nut plate.



INSTALLATION

1. Clean mating surfaces using 1,1,1-trichloroethane (D41) and machinery towel (D20).
2. Using acid brush (D5), apply a wet coat of epoxy primer (D30) to grip area of rivet and bore area. Air dry a minimum of 3 minutes.
3. Position nut plate (2) on bracket (3) and secure in place using rivets.
4. Cover rivet ends with epoxy primer (D30).

FOLLOW-ON MAINTENANCE: None.

Section X REPLACE NUT PLATE

3-10 REPIACE NUT PLATE (AVIM)

This task covers: a. Removal b. Installation

INITIAL SETUP

Tools:
Aircraft Inspection Tool Kit (T49)
Drill Bit 3/32 inch
Engine Repairman's Tool Kit (T47)

Personnel Required:
68B Aircraft Powerplant Inspector
68B Aircraft Powerplant Repairer
68G Airframe Repairman

Materials/Parts:
Nut Plate

References:
TM 55-1500-204-25/1

Equipment Conditions:
Combustor Case Removed

General Safety Instructions:

WARNING

Compressed air is dangerous when directed toward yourself or another person. The airstream or material blown by the airstream can cause injury, particularly to the eyes and face. Use goggles to protect eyes and face. Do not exceed 30 PSI. Do not direct airstream toward yourself or another person.

Power tool operations create airborne particles. Eye protection is required. Remove jewelry prior to use. Adequate ventilation or respirator is required.

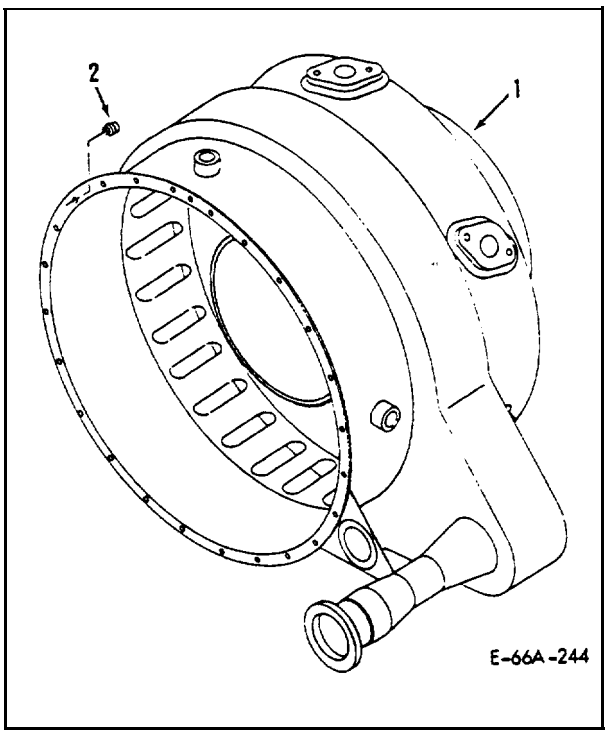
3-10 REPLACE NUT PLATE (AVIM) (CONT)

REMOVAL

NOTE

Prior to assembly, all components will be visually inspected for damage.

1. Position combustor case (1) on work surface with exhaust end down.
2. Drill flared portion of nut plate. Remove nut plate (2) from flange.



INSTALLATION

1. Insert nut plate (2) in flange.
2. Flare shank of nut plate (2).
3. Visually inspect flared shank for cracks.

FOLLOW-ON MAINTENANCE: None.

Section XI REPLACE INSERT

3-11 REPLACE INSERT (AVIM)

This task covers: a. Removal b. Installation

INITIAL SETUP

Tools:
Aircraft Inspection Tool Kit (T49)
Engine Repairman's Tool Kit (T47)

Personnel Required:
44E Machinist
68B Aircraft Powerplant Inspector
68B Aircraft Powerplant Repairer

Materials/Parts:
Cotton Applicator (D10)
Epoxy Primer (D30)
Insert
1,1,1-Trichloroethane (D41)

References:
TM 55-1500-204-25/1

Equipment Conditions:
Combustor Case Removed From APU

General Safety Instructions:

WARNING

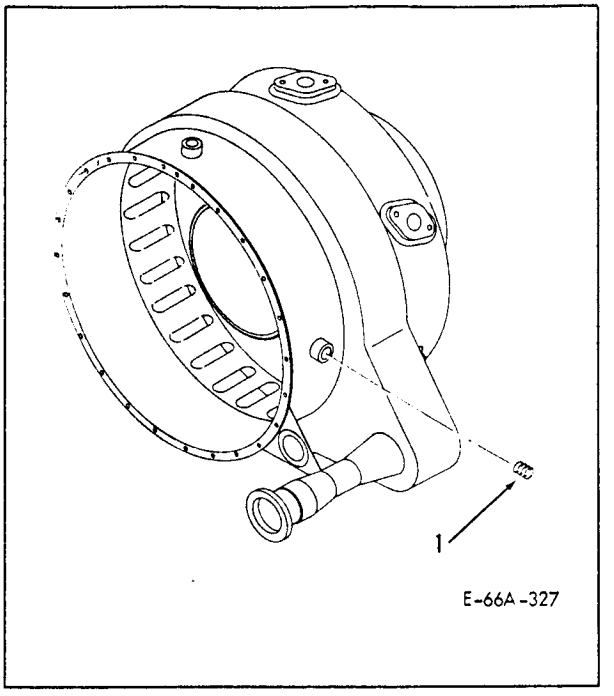
Heated components can pose a serious burn potential. Wear insulated mittens when handling heated components.

Epoxy primer is flammable and toxic to eyes, skin and respiratory tract. To prevent personnel injury, skin and eye protection is required. Avoid prolonged or repeated contact. Work in a well-ventilated area.

1,1,1-Trichloroethane is toxic to skin, eyes and respiratory tract. Skin and eye protection are required. Avoid repeated or prolonged contact. Work in a well-ventilated area.

Compressed air is dangerous when directed toward yourself or another person. The airstream or material blown by the airstream can cause injury, particularly to the eyes and face. Use goggles to protect eyes and face. Do not exceed 30 PSI. Do not direct airstream toward yourself or another person.

3-11 REPLACE INSERT (AVIM) (CONT)



REMOVAL

1. Remove insert (1).
2. Thoroughly clean insert boss with 1,1,1-trichloroethane (D41) and cotton applicator (D10).

INSTALLATION

NOTE

Prior to assembly, all components will be visually inspected for damage.

Epoxy primer can be cured in 4 to 6 hours at room temperature in lieu of oven drying.

1. Apply a thin coat of epoxy primer (D30) to threads of boss.
2. Install insert (1) one-quarter to one turn below surface.
3. Remove insert tang.
4. Seal boss surface first thread with thin coat of epoxy primer (D30).
5. Place combustor case in oven and cure for 1 hour at 180 to 275°F (82 to 135°C).
6. Remove combustor case from oven and allow to cool to room temperature.

FOLLOW-ON MAINTENANCE: None.

Section XII REPLACE COMBUSTOR CASE RIVETS

3-12 REPLACE COMBUSTOR CASE RIVETS (AVIM)

This task covers: a. Removal b. Installation

INITIAL SETUP

Tools:
Aircraft Inspection Tool Kit (T49)
Engine Repairman's Tool Kit (T47)

Personnel Required:
68B Aircraft Powerplant Inspector
68B Aircraft Powerplant Repairer
68G Airframe Repairman

Materials/Parts:
Acid Brush (D5)
Blind Rivet
Epoxy Primer (D30)
1,1,1-Trichloroethane (D41)

Equipment Conditions:
Combustor Case Removed From APU

General Safety Instructions:

WARNING

Compressed air is dangerous when directed toward yourself or another person. The airstream or material blown by the airstream can cause injury, particularly to the eyes and face. Use goggles to protect eyes and face. Do not exceed 30 PSI. Do not direct airstream toward yourself or another person.

Epoxy primer is flammable and toxic to eyes, skin and respiratory tract. To prevent personnel injury, skin and eye protection is required. Avoid prolonged or repeated contact. Good general ventilation is normally adequate.

Power tool operations create airborne particles. Eye protection is required. Remove jewelry prior to use. Adequate ventilation or respirator is required.

1,1,1-Trichloroethane is toxic to skin, eyes and respiratory tract. Skin and eye protection are required. Avoid repeated or prolonged contact. Work in a well-ventilated area.

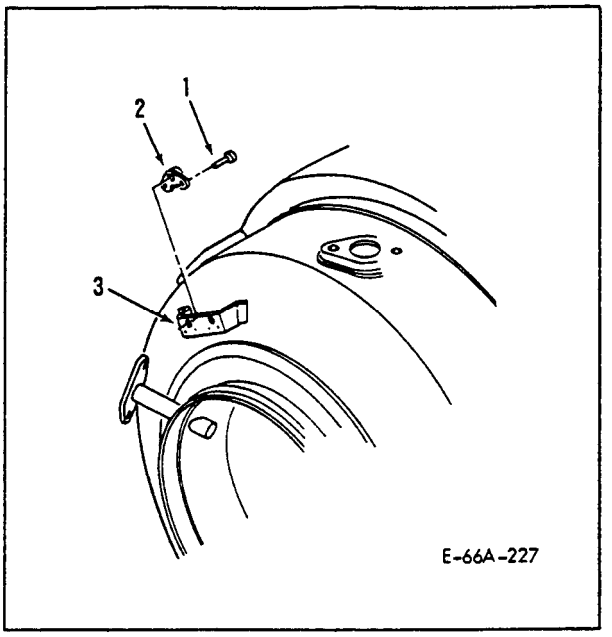
3-12 REPLACE COMBUSTOR CASE RIVETS (AVIM) (CONT)

REMOVAL

CAUTION

Exercise care when drilling out old rivet not to damage basic items.

Drill or machine off head of installed rivet (1). Use a center punch and hammer to punch out remainder of rivet.



INSTALLATION

1. Clean mating surfaces using 1,1,1-trichloroethane (D41).
2. Using acid brush (D5), apply a wet coat of epoxy Primer (D30) to grip area of rivet and bore area. Air dry a minimum of 3 minutes.
3. Position nut plate (2) on bracket (3) and secure in place using rivets.
4. Cover each end of rivets with epoxy primer (D30).

FOLLOW-ON MAINTENANCE: None.

3-13 INSTALL COMBUSTOR CASE (AVIM)

INITIAL SETUP

Tools:
Aircraft Inspection Tool Kit (T49)
Engine Repairman's Tool Kit (T47)
Torque Wrench 30-150 inch-pounds

Personnel Required:
68B Aircraft Powerplant Inspector
68B Aircraft Powerplant Repairer

Materials/Parts:
Adhesive (DO)
Antiseize Compound (D7)
Bolt
Gasket
Lockwire (D43, D44)
Lubricating Oil (D16)
Nozzle Seal Plate
Packing
Stud
Washer
1,1,1-Trichloroethane (D41)

Equipment Conditions:
APU Gearbox Assembly and Power Section Assembly on Maintenance Stand (T1)

General Safety Instructions:

WARNING

Engine fuel is toxic and flammable. To prevent personnel injury, avoid contact with eyes and repeated or prolonged contact with skin.

Lubricating oils, DOD-L-85734, MIL-L-23699 and MIL-L-7808, contain material hazardous to health. They produce paralysis if swallowed or from prolonged skin contact. They may burn if exposed to heat or flames. Wash hands thoroughly after handling. Use only with proper ventilation.

1,1,1-Trichloroethane is toxic to skin, eyes and respiratory tract. Skin and eye protection are required. Avoid repeated or prolonged contact. Work in a well-ventilated area.

3-13 INSTALL COMBUSTOR CASE (AVIM) (CONT)

NOTE

As tubes and connectors are installed and connected, protective caps and plugs shall be removed.

Prior to assembly, components will be visually inspected for damage.

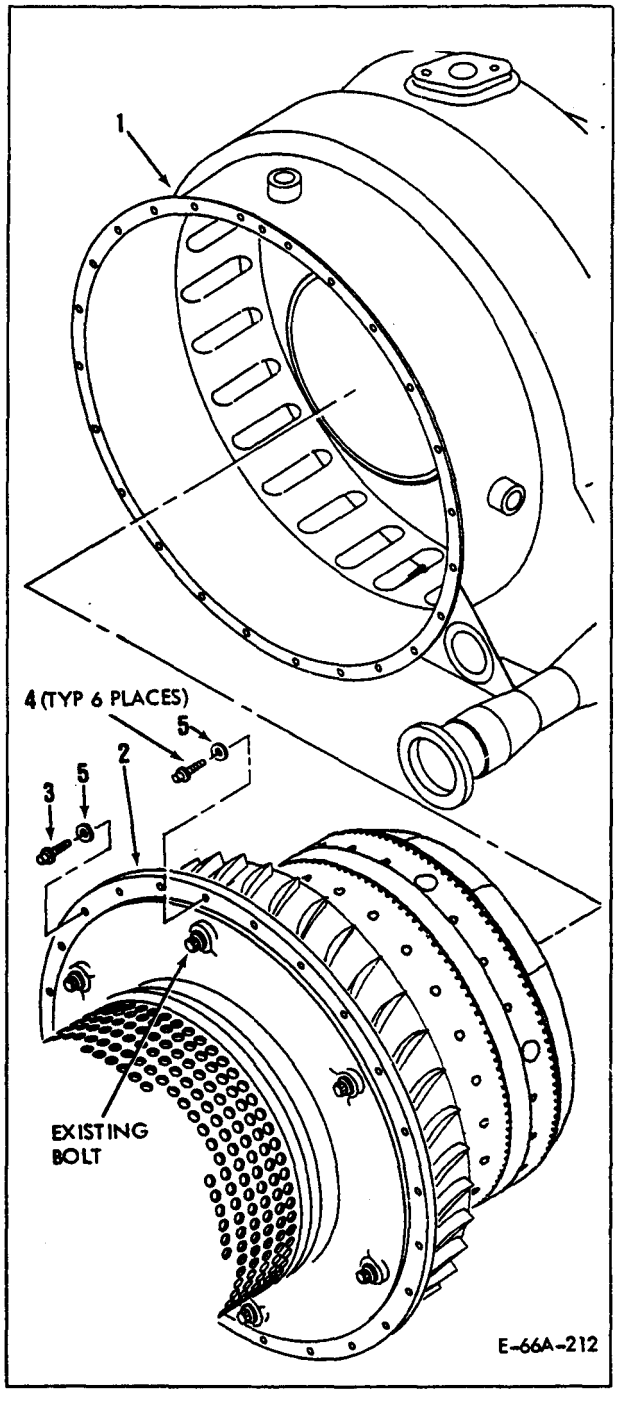
1. Position APU on maintenance stand with power section assembly up.

2. Apply adhesive (D0) on combustor case (1) flange. Install combustor case (1) on power section assembly (2). Align holes and match marks.

3. Apply antiseize compound (D7) to bolts (3) and bolts (4).

4. Install washers (5) and bolts (4) in line with existi ng bolts.

5. Install washers (5) and bolts (3).



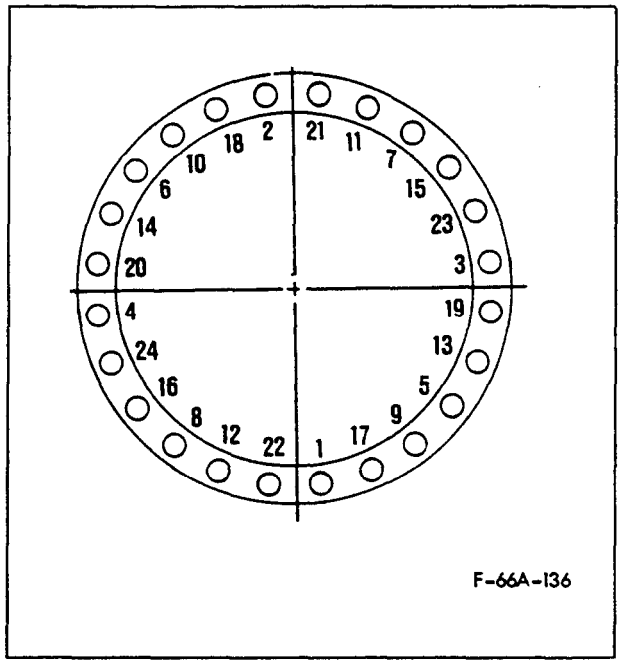
3-13 INSTALL COMBUSTOR CASE (AVIM) (CONT)

6. Torque bolts (3, 4) to 47 to 53 inch-pounds according to illustrated torquing pattern.

6.1. Allow adhesive (DO) to dry for 10 minutes. Torque bolts (3, 4) to 47 to 53 inch-pounds according to illustrated torquing pattern.

7. Lockwire bolts with lockwire (D44).

8. Remove pressure sensitive tape and residue with 1,1,1-trichloroethane (D41).



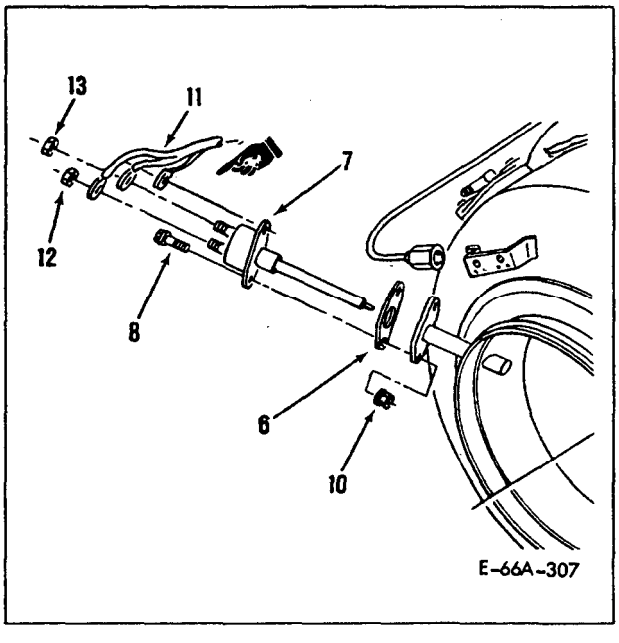
9. Install gasket (6) on immersion thermocouple (7).

10. Position immersion thermocouple (7) so (CR) is facing forward and install immersion thermocouple in combustor case.

11. Apply antiseize compound (D7) to threads of bolts (8).

12. Install ground wire on upper side of immersion thermocouple and secure thermocouple using bolts (8), stud (9, deleted) and nuts (10). Torque bolts to 38 to 42 inch-pounds.

13. Remove nuts (12, 13) from immersion thermocouple connections and install marked leads (11) and nuts (12, 13), nut (14, deleted) on studs. Torque nuts to 38 to 42 inch-pounds.



3-13 INSTALL COMBUSTOR CASE (AVIM) (CONT)

CAUTION

To prevent damage to nozzle alignment pin, care should be taken to align shroud pin hole to nozzle pin.

14. Install nozzle seal plates (15) over atomizer shroud.

15. Apply antiseize compound (D7) on bolts (18) and studs (19).

16. Install primary fuel nozzles assemblies (16) at 4 and 8 o'clock positions. Secure with washers (17) and bolts (18).

17. Install last primary fuel nozzle assembly (16) at 12 o'clock. Secure with washers (17), bolt (18) and studs (19).

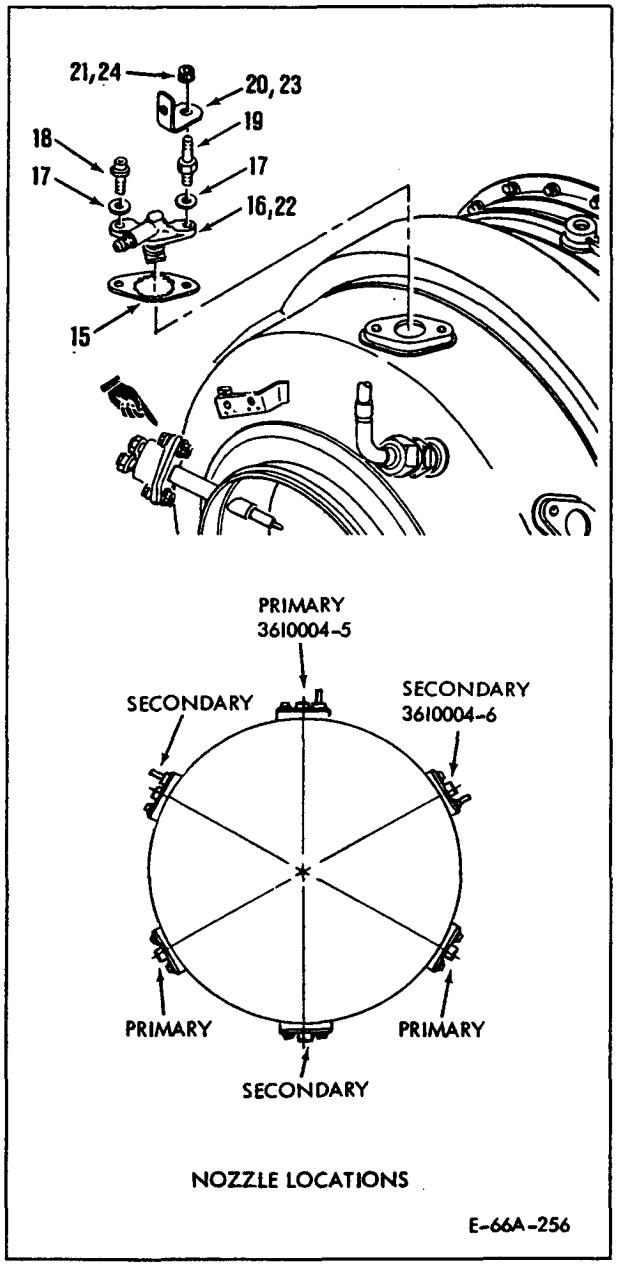
18. Install bracket (20) at 12 o'clock position and secure with nut (21). Torque nut to 33 to 37 inch-pounds.

19. Install secondary fuel nozzle assembly (22) at 6 o'clock position. Secure with washers (17) and bolts (18).

20. Install secondary fuel nozzle assemblies (22) at 2 and 10 o'clock positions. Secure with washers (17), bolts (18) and stud (19).

21. Torque all bolts (18) and studs (19) to 47 to 53 inch-pounds. Lockwire bolts with lockwire (D44).

22. Install brackets (23) at 2 and 10 o'clock positions and secure with nuts (24). Torque nuts to 33 to 37 inch-pounds.

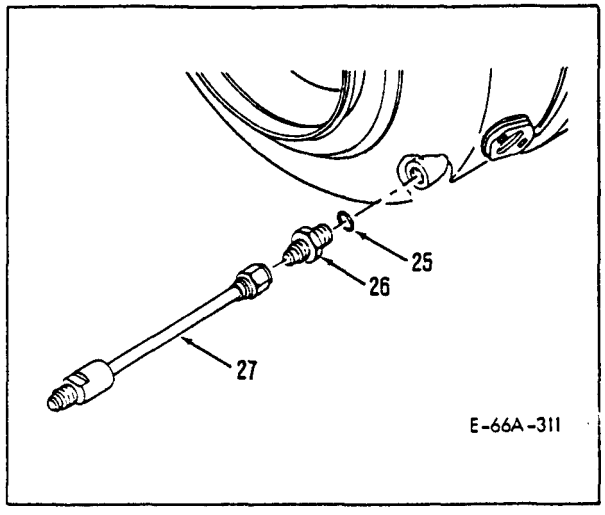


3-13 INSTALL COMBUSTOR CASE (AVIM) (CONT)

23. Lubricate packing (25) with lubricating oil (D16). Install packing on orifice fitting (26) end to be installed in combustor case.

24. Apply antiseize compound (D7) to threads of orifice fitting and install orifice fitting (26) in combustor case drain boss. Torque orifice fitting to 114 to 126 inch-pounds.

25. Install fuel drain tube assembly (27) with angle down on orifice fitting (26). Torque fuel drain tube assembly to 104 to 116 inch-pounds.



3-13 INSTALL COMBUSTOR CASE (AVIM) (CONT)

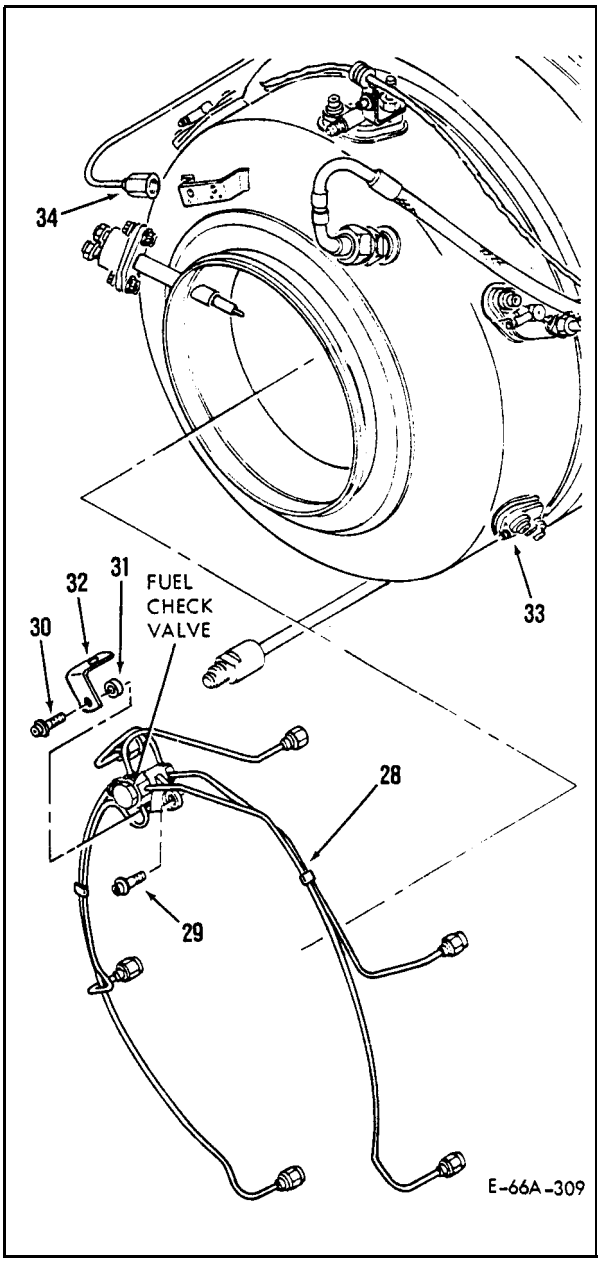
26. Apply antiseize compound (D7) to threads of bolts (29, 30).

27. Place fuel manifold assembly (28) on combustor case.

28. Be sure bolt with predrilled hole is positioned on right side of fuel manifold assembly valve housing, then secure fuel manifold assembly valve housing with bolts (29, 30), spacer (31) and bracket (32). Torque bolts to 38 to 42 inch-pounds. Lockwire mount bolt (30) with lockwire (D43).

29. Connect fuel manifold assembly (28) to fuel nozzle assemblies (33). Torque fuel manifold assembly to 33 to 37 inch-pounds.

30. Connect fuel solenoid valve to fuel manifold assembly tube (34) to fuel manifold assembly. Torque to 66 to 74 inch-pounds.



3-13 INSTALL COMBUSTOR CASE (AVIM) (CONT)

31. Install washer (35) on igniter plug assembly (36).

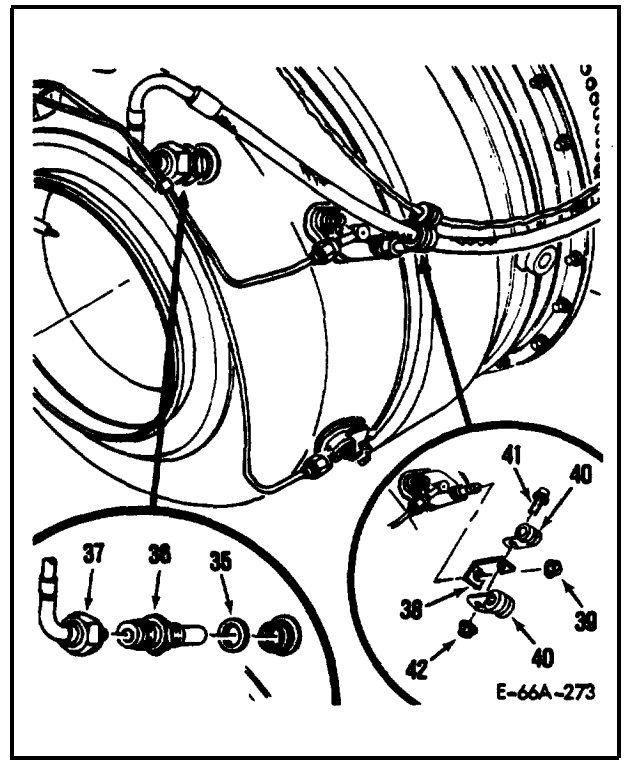
32. Apply antiseize compound (D7) to threads of igniter plug assembly (36) end that is installed in combustor case.

33. Install igniter plug assembly (36). Torque igniter plug assembly to 95 to 105 inch-pounds.

34. Connect igniter plug lead (37) to igniter plug assembly (36). Torque igniter plug lead to 33 to 37 inch-pounds. Lockwire igniter plug lead using lockwire (D44).

35. Install bracket (38) and nut (39). Torque nut to 38 to 42 inch-pounds.

36. Install clamps (40) on bracket (38). Secure with bolt (41) and nut (42). Torque bolt to 38 to 42 inch-pounds.



FOLLOW-ON MAINTENANCE: None.

Section XIV HOT SECTION INSPECTION (1000 HOUR)

3-14 HOT SECTION INSPECTION (1000 HOUR) (AVIM)

This task covers: a. Removal b. Installation

INITIAL SETUP

Tools:
Engine Repairman's Tool Kit (T47)

Personnel Required:
68B Aircraft Powerplant Repairer

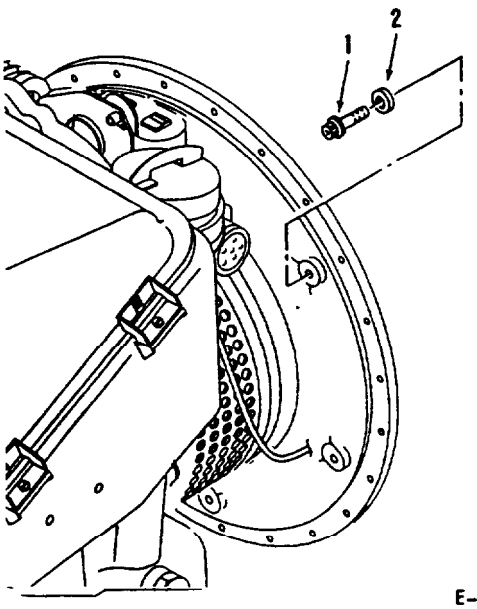
Materials/Parts:
Antiseize Compound (D7)
Marking Pencil (D24)

References:
Tasks 3-2, 3-6, 4-11, 6-2, 6-12, 6-19

Equipment Conditions:
APU on Maintenance Stand (T1)

REMOVAL

1. Drain APU oil (Task 6-2).
2. Replace fuel filter assembly (Task 4-11).
3. Replace oil filter element (Task 6-12).
4. Remove combustion chamber (Task 3-2).
5. Match mark airflow deflector, turbine nozzle and compressor airflow deflector to compressor housing using marking pencil (D24).
6. Remove bolts (1) and washers (2). Discard bolts.



3-14 HOT SECTION INSPECTION (1000 HOUR) (AVIM) (CONT)

7. Remove airflow deflector (3) and turbine nozzle (4).

CAUTION

Improper shimming can cause damage to turbine nozzle and turbine rotor. Shims shall be maintained with APU.

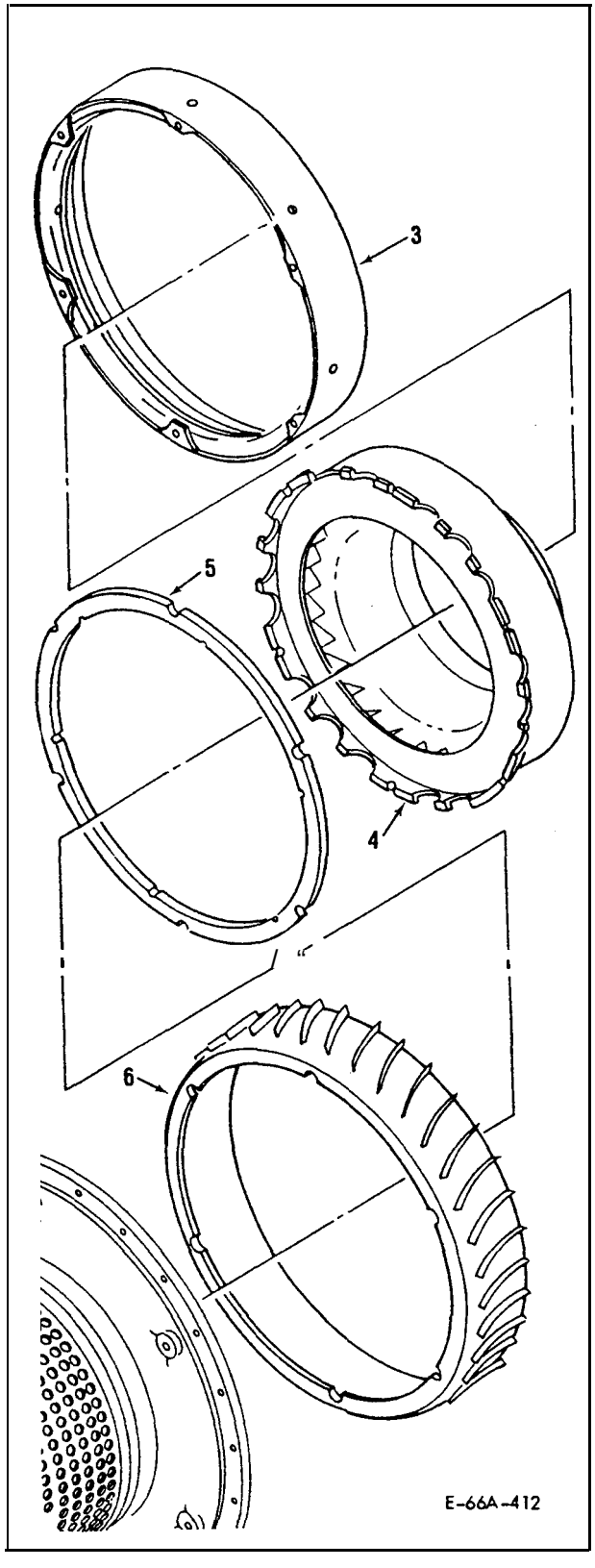
8. Remove shims (5). Record and verify thickness and quantitv of shims to aid in reassembly.

9. Remove compressor airflow deflector (6).

10. Clean airflow deflector (3) using processes 1, 2 and 3, Chapter 8.

11. Clean turbine nozzle (4) using processes 1, 2, 3 and 5, Chapter 8.

12. Clean compressor airflow deflector (6) using processes 1, 2 and 4, Chapter 8.



3-14 HOT SECTION INSPECTION (1000 HOUR) (AVIM) (CONT)

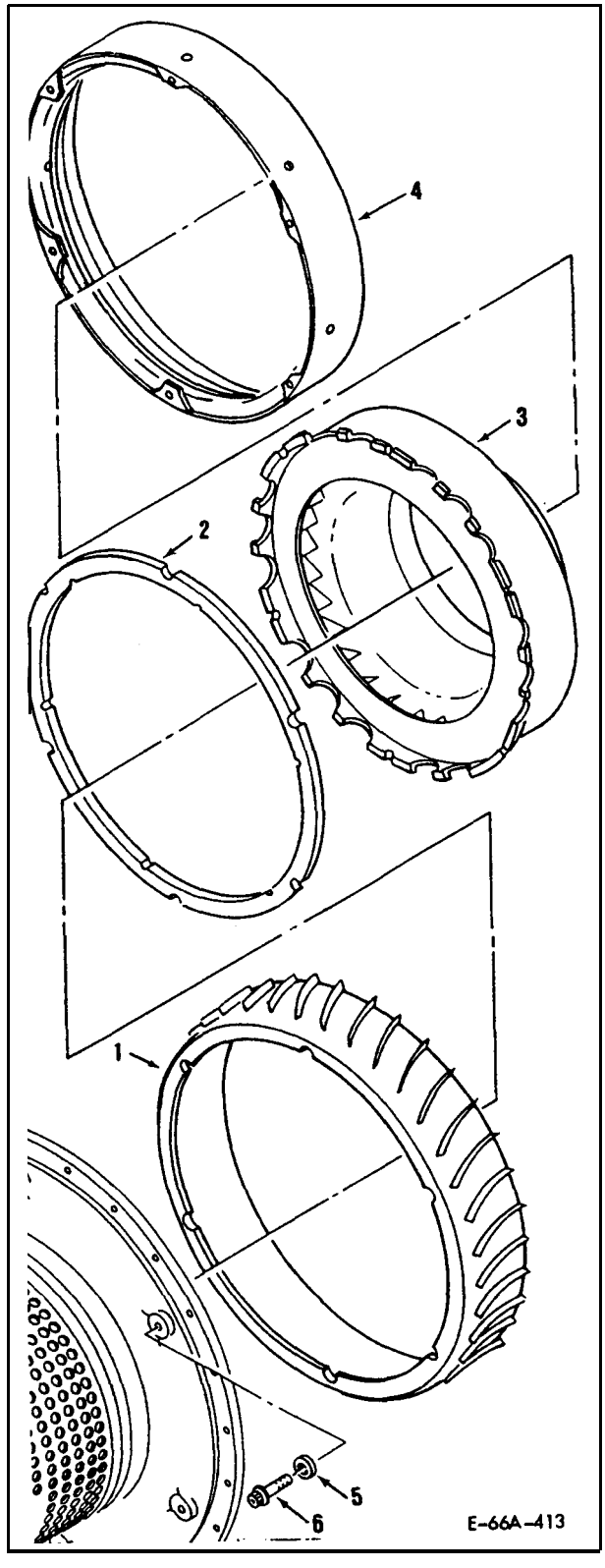
INSTALLATION

NOTE

Prior to assembly, components will be visually inspected for obvious damage.

1. Install compressor airflow deflector (1). Ensure alignment marks on compressor airflow deflector and compressor housing are together.
2. Install same thickness and quantity of shims (2) recorded in REMOVAL, step 8.
3. Install turbine nozzle (3). Ensure alignment marks on turbine nozzle and compressor housing are together.
4. Install airflow deflector (4). Ensure alignment marks on airflow deflector and compressor housing are together.
5. Apply antiseize compound (D7) to threads of bolts (6).
6. Install washers (5) on bolts (6). Install bolts. Torque bolts in an alternating pattern (180 degrees apart) 48 to 52 inch-pounds.
7. Install combustion chamber (Task 3-6).
8. Service lubrication system (Task 6-19).

FOLLOW-ON MAINTENANCE: None.



Section XV INSPECT HOT SECTION COMPONENTS

3-15 INSPECT HOT SECTION COMPONENTS (AVIM)

INITIAL SETUP

Tools:
Aircraft Inspection Tool Kit (T49)
Depth Gauge

Personnel Required:
68B Aircraft Powerplant Repairer

References:
MIL-STD-6866
Tasks 3-3, 3-7, 3-16, 3-17

Equipment Conditions:
Combustor Case, Combustion Chamber, Airflow Deflector, Turbine Nozzle and Compressor Airflow Deflector Removed From APU

3-15 INSPECT HOT SECTION COMPONENTS (AVIM) (CONT)

1. Inspect combustion chamber (Task 3-3).

2. Inspect combustor case (Task 3-7). 4-11).

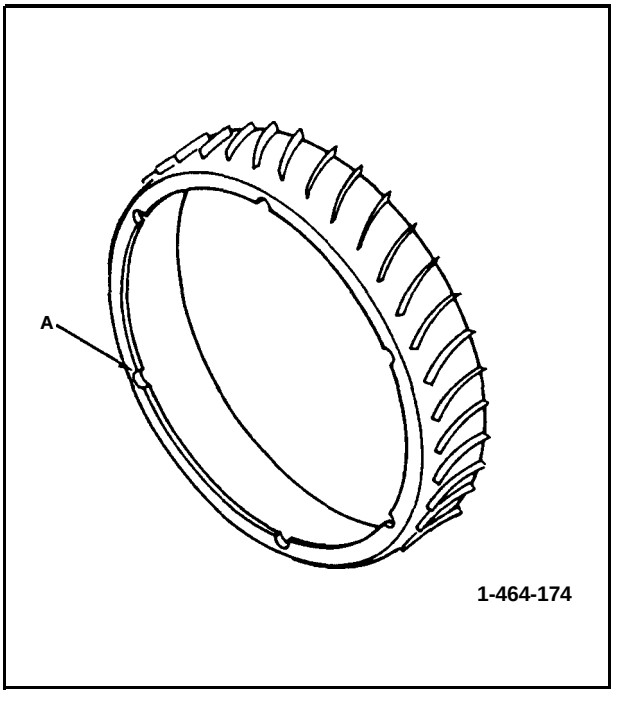
NOTE

Inspect compressor airflow deflector as follows.

3. Visually inspect surfaces for nicks, dents or cracks. No damage allowed. If cracks are suspected, fluorescent penetrant per MIL-STD-6866.

4. Visually inspect anti-rotation notches (reference A) for wear. No wear allowed.

5. Visually inspect for deformation. No deformation allowed.

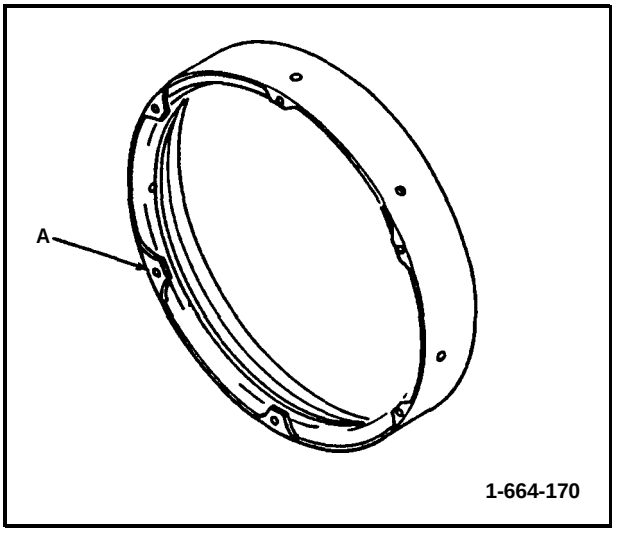


NOTE

Inspect airflow deflector as follows.

6. Visually inspect surfaces for deformation or cracks. No deformation or cracks allowed. If cracks are suspected, fluorescent penetrant per MIL-STD-6866.

7. Visually inspect anti-rotation notches (reference A) for wear. No wear allowed.



3-15 INSPECT HOT SECTION COMPONENTS (AVIM) (CONT)

NOTE

Inspect turbine nozzle as follows.

8. Visually inspect for axial cracks in shroud below vane inner diameter (reference A). No cracks allowed. If cracks are suspected, fluorescent penetrant per MIL-STD-6866.

9. Visually inspect for cracks in platform outer diameter (reference B). No cracks allowed.

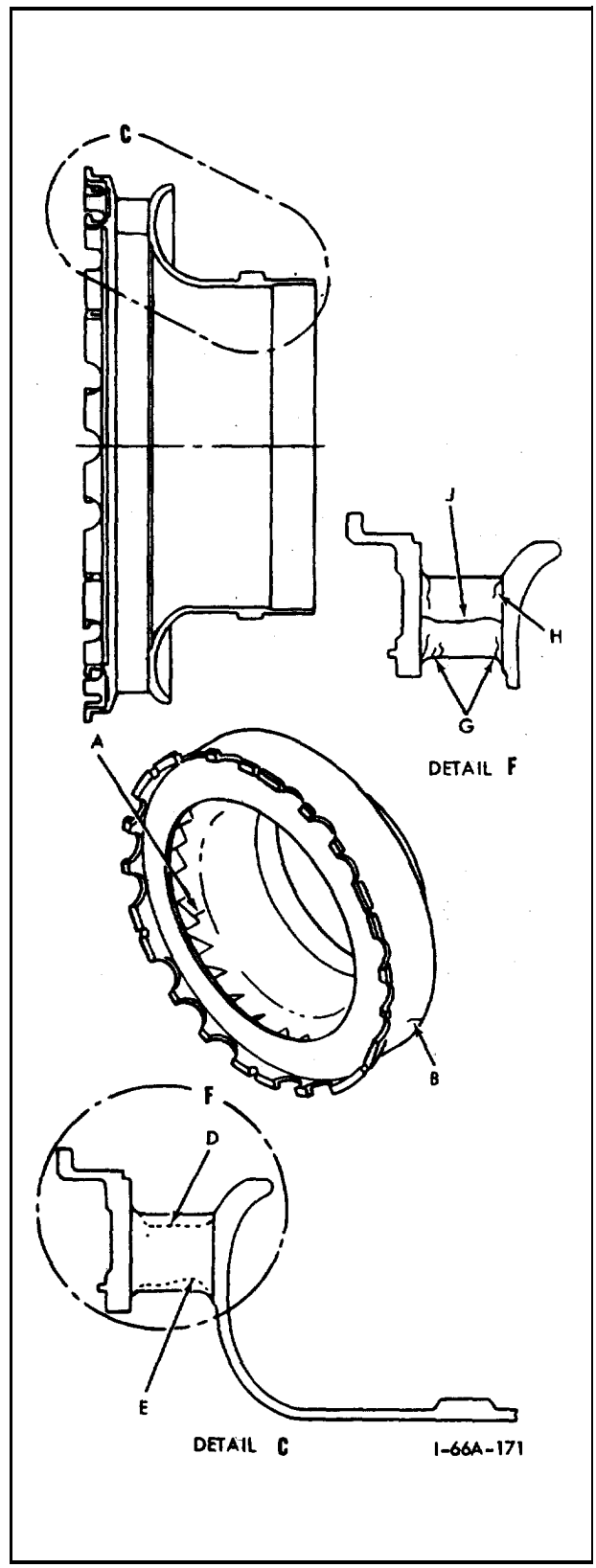
10. Inspect leading edge of vanes (reference D) for erosion. Damage shall not exceed 0.125 inch deep. Repair erosion (Task 3-16).

11. Inspect trailing edge of vanes (reference E) for erosion or feathering damage. Damage shall not exceed 0.130 inch deep. Repair erosion or feathering (Task 3-16).

12. Inspect trailing edge of vanes (reference G) for cracks. Cracks maximum of 0.500 inch in length on six adjacent vanes or ten non-adjacent vanes are acceptable. No other cracks allowed.

13. Inspect leading edge of vanes (reference H) for cracks. No cracks allowed.

14. Inspect vanes (reference J) for axial cracks. Cracks in more than 11 vanes, cracks less than 0.350 inch from trailing edge of vanes, cracks that are open so as to disrupt gas stream or axial cracks connected in any vane so as to cause material loss are not acceptable.



3-15 INSPECT HOT SECTION COMPONENTS (AVIM) (CONT)

15. Inspect ring inner diameter (reference K) for cracks. Cracks exceeding 0.050 inch in length or found in more than three places are not acceptable.

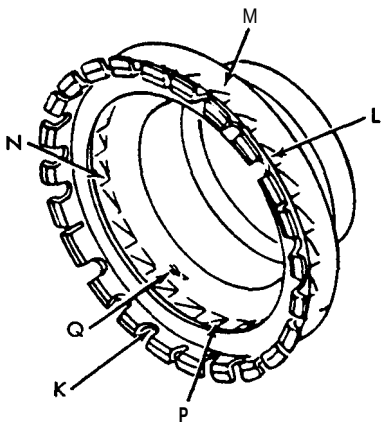
16. Inspect ring outer diameter (reference L) for cracks. Cracks exceeding 0.050 inch in length or found in more than three places are not acceptable.

17. Inspect vane platform outer diameter (reference M) for erosion. Erosion exceeding 0.050 inch in depth or more than 3.00 inches in length (circumferential) are not acceptable.

18. Inspect vane platform (reference N) for cracks. Cracks that go beyond vane edges are not acceptable.

19. Inspect vane platform (reference P) for erosion. Erosion protruding inside of vane inner diameter is not acceptable.

20. Inspect shroud contour (reference Q) for scoring. Scoring more than 0.030 inch in depth is not acceptable. Repair scoring (Task 3-17).



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3-15 INSPECT HOT SECTION COMPONENTS (AVIM) (CONT)

NOTE

Inspect turbine rotor as follows.

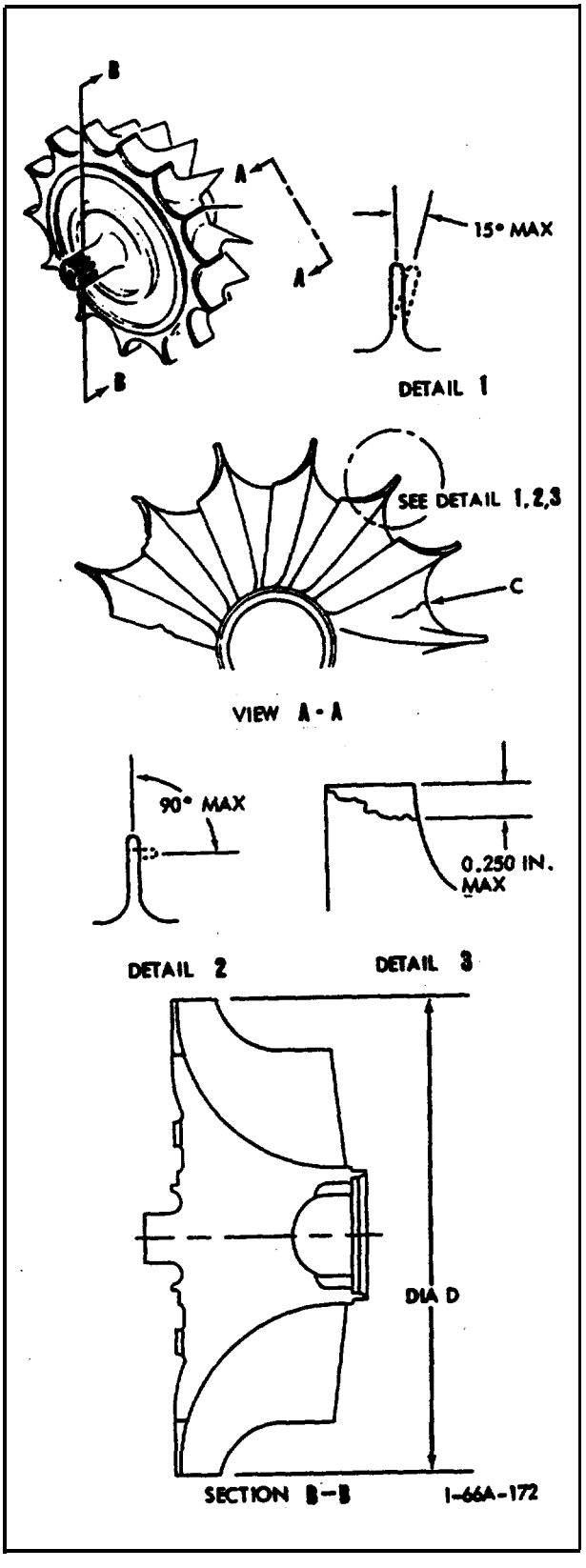
21. Visually inspect turbine rotor blade ends and hub area (reference C) for cracks. No cracks allowed.

22. Inspect turbine blades for foreign object damage. Bends greater than 15 degrees are not acceptable (detail 1).

23. Inspect turbine rotor blades for erosion. Erosion bends greater than 90 degrees are not acceptable (detail 2).

24. Inspect for turbine rotor blade tip breakage. Breakage shall not be greater than 0.250 inch maximum depth each blade (detail 3).

25. Inspect turbine rotor outer diameter for wear or erosion. Diameter D shall not be less than 6.943 inches.



3-15 INSPECT HOT SECTION COMPONENTS (AVIM) (CONT)

NOTE

Inspect compressor diffuser as follows.

26. Visually inspect for cracks. No cracks allowed.

27. Inspect vane trailing edges for dents or nicks. No nicks or dents allowed.

28. Visually inspect for loose or damaged pins. No loose or damaged pins allowed.

NOTE

Inspect labyrinth seal as follows.

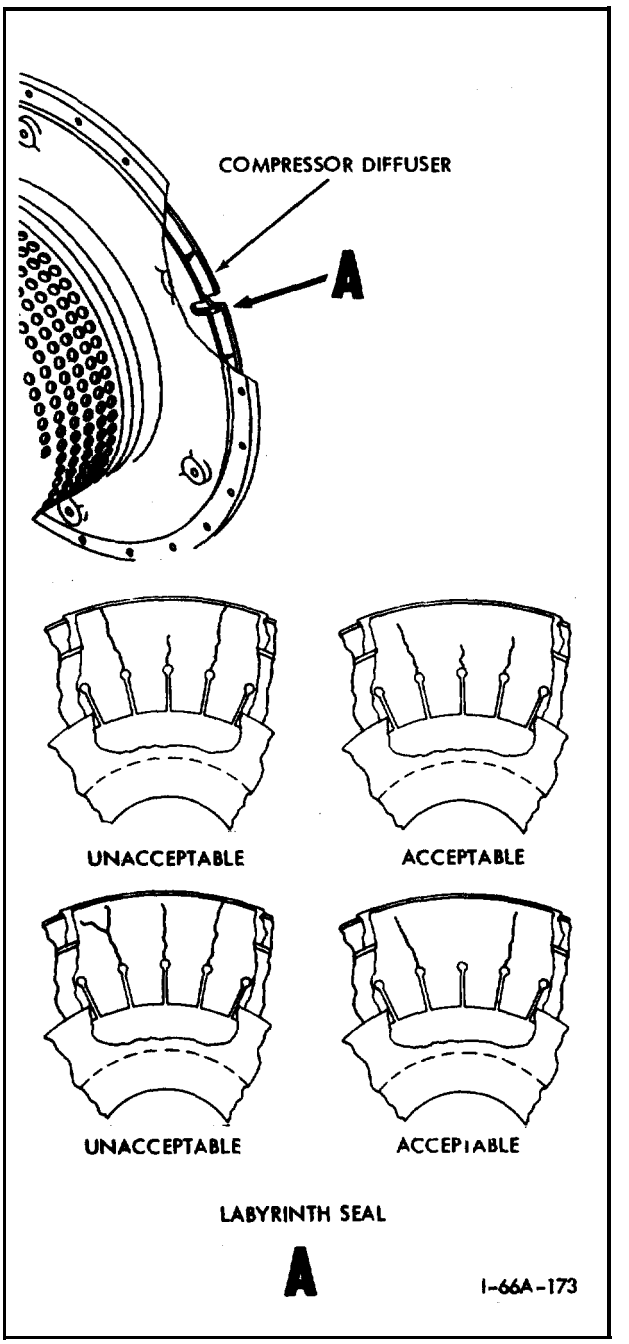
29. Visually inspect labyrinth seal for cracks (view A).

    a. Axial cracks that have branched are not allowed.

    b. Six cracks maximum are permitted from the cooling vents to the outer seal edge.

    c. Cooling vents with cracks which extend to the outer edge must be separated by at least one cooling vent without cracks.

FOLLOW-ON MAINTENANCE: None.



3-16 REPAIR - HAND FINISH TURBINE NOZZLE VANES (AVIM)

INITIAL SETUP

Tools:
1 Round File
1 Safety Glasses

Personnel Required:
1 68B Aircraft Powerplant Repairer

Materials/Parts:
Crocus Cloth (D10A)

Equipment Conditions:
Turbine Nozzle Removed From APU

NOTE

Material loss due to damage or finishing shall not exceed 0.125 inch on leading edge or 0.130 inch on trailing edge of vanes.

When cracks or feathering requires removal of material from 0.060 to 0.130 inch deep on trailing edge of vanes, all vanes shall be cut back an identical amount.

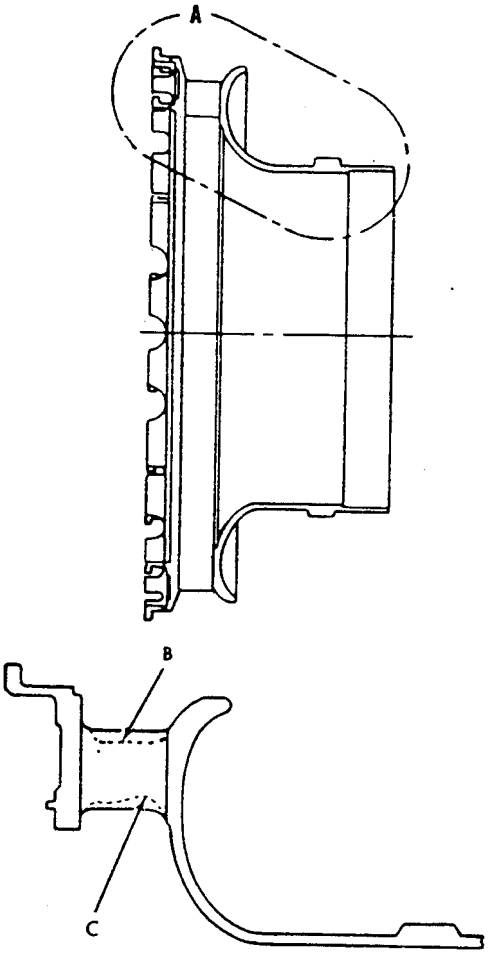
Cracks or feathering not more than 0.060 inch on trailing edge of vanes, blend the damaged area to conform to adjacent material.

Cracks or feathering not more than 0.125 inch on leading edge of vanes, blend to contour.

1. Using round file, hand finish turbine nozzle leading edge (reference B or trailing edge (reference C) vanes.

2. Smooth out minor surface burrs, pitting or scratches with crocus cloth (D10A).

FOLLOW-ON MAINTENANCE: None.



DETAIL A

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3-17 REPAIR - HAND FINISH TURBINE NOZZLE SHROUD (AVIM)

INITIAL SETUP

Tools:
Safety Glasses

Personnel Required:
68B Aircraft Powerplant Repairer

Materials/Parts:
Crocus Cloth (D10A)
Machinery Towel (D21)
1, 1,1-Trichloroethane (D41)

Equipment Conditions:
Turbine Nozzle Removed From APU

WARNING

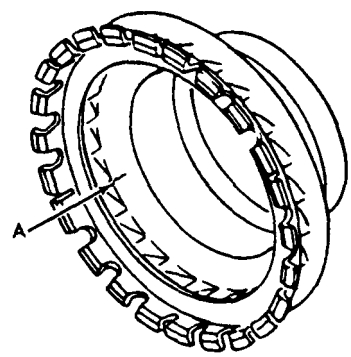
1,1,1-Trichloroethane is toxic to skin, eyes and respiratory tract. Skin and eye protection are required. Avoid repeated or prolonged contact. Work in a well-ventilated area.

NOTE

Repair turbine nozzle shroud as follows.

Radial shroud rub less than 0.030 inch deep or shroud scoring up to 0.030 inch deep can be repaired by hand finishing.

1. Using crocus cloth (D10A). hand finish to blend out rub or scoring on shroud (reference A). Ensure repaired area contour is maintained. ,
2. Clean dust from area using machinery towel (D21) and 1,1,1-trichloroethane (D41).



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FOLLOW-ON MAINTENANCE: None.

CHAPTER 4

FUEL SYSTEM MAINTENANCE

Section I REMOVE FUEL CONTROL UPPER COVER

4-1 REMOVE FUEL CONTROL UPPER COVER

INITIAL SETUP

Tools:
Engine Repairman' s Tool Kit (T47)

Equipment Conditions:
APU on Aircraft

Personnel Required:
68B Aircraft Powerplant Repairer

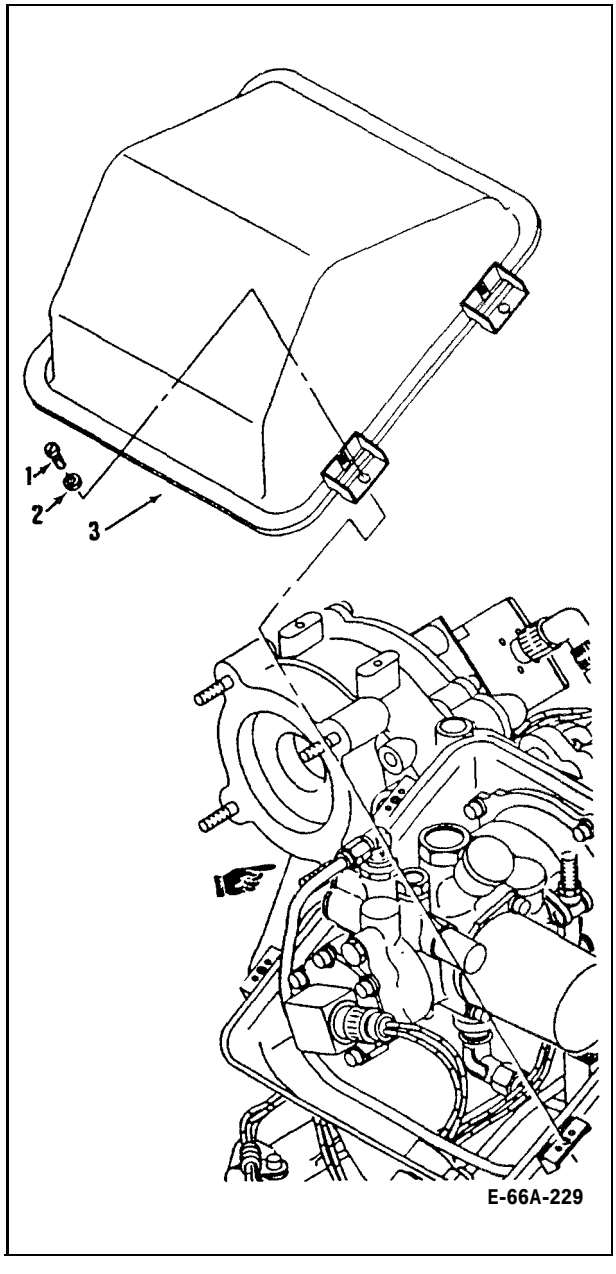
4-1 REMOVE FUEL CONTROL UPPER COVER (CONT)

1. Remove bolts (1) and washers (2) securing fuel control upper cover (3) to fuel control lower cover.

2. Remove fuel control upper cover (3).

3. Clean fuel control upper cover (3) using process 1, Chapter 8.

FOLLOW-ON MAINTENANCE: None.



4-2 REPAIR - WELD FUEL CONTROL UPPER COVER CRACKS (AVIM)

INITIAL SETUP

Tools:
Air Blow Gun
Air Hose
Arc Welder
Drill Bit 3/32 inch
Engine Repairman's Tool Kit (T47)
Insulated Mittens
Plastic Apron
Pneumatic Drill
Rubber Gloves
Safety Glasses
Vapor Degreaser
Welder's Apron
Welder's Helmet

Personnel Required:
44E Welder/Machinist
68B Aircraft Powerplant Repairer

Materials/Parts:
Cotton Applicator (D10)
Filler Rod
Machinery Towel (D20)
Methyl-Ethyl-Ketone (D21)
Penetrant Inspection Kit (D27)
1,1,1-Trichloroethane (D41)

References:
Tasks 4-3, 8-2
TM 55-1500-204-25/1

Equipment Conditions:
Fuel Control Upper Cover Removed From APU

General Safety Instructions:

WARNING

1,1,1-Trichloroethane is toxic to skin, eyes and respiratory tract. Skin and eye protection are required. Avoid repeated or prolonged contact. Work in a well-ventilated area.

Compressed air is dangerous when directed toward yourself or another person. The airstream or material blown by the airstream can cause injury particularly to the eyes and face. Use goggles to protect eyes and face. Do not exceed 30 PSI. Do not direct airstream toward yourself or another person.

Penetrant process solutions are toxic to skin, eyes and respiratory tract. Skin and eye protection required. Avoid repeated or prolonged contact. Good general ventilation is normally adequate.

Power tool operations create airborne particles. Eye protection is required. Remove jewelry prior to use. Adequate ventilation or respirator is required.

Methyl-ethyl-ketone (MEK) is flammable and toxic to eyes, skin and respiratory tract. Avoid all contact. Skin and eye protection and vapor control are required.

4-2 REPAIR - WELD FUEL CONTROL UPPER COVER CRACKS (AVIM) (CONT)

Welding operations produce heat, highly toxic fumes, injurious radiation, metal slag and airborne particles: Protection equipment consisting of welder's goggles with properly tinted lenses, apron or jacket and welder's boots are required. Good general ventilation is normally adequate.

Heated components can pose a serious burn potential. Wear insulated mittens when handling heated components.

4-2 REPAIR - WELD FUEL CONTROL UPPER COVER CRACKS (AVIM) (CONT)

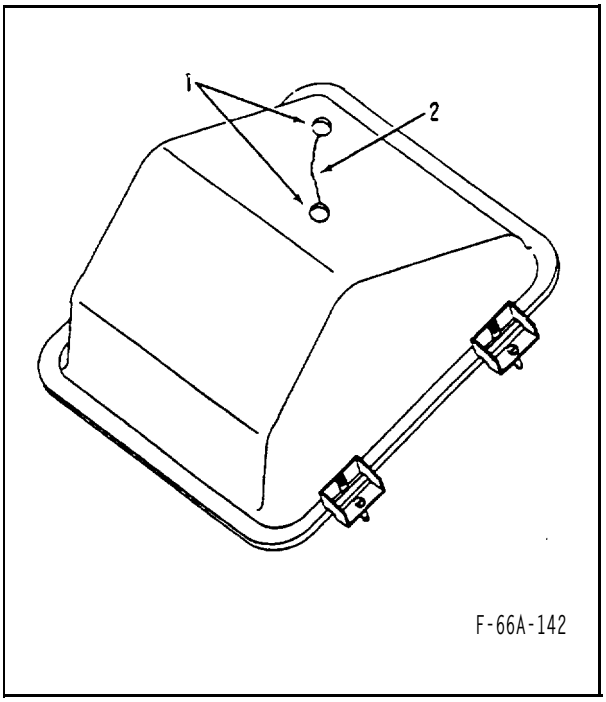
1. Vapor degrease fuel control upper cover (Task 8-2).
2. Dry part thoroughly with clean, filtered compressed air.
3. Penetrant test for extent of fatigue crack. Apply post-emulsifiable penetrant solution, component of penetrant solution (D27) to affected area with cotton applicator (D10). Allow penetrant to remain for 30 minutes. Keep area wet.
4. Wipe off penetrant with 1,1,1-trichloroethane (D41) and machinery towel (D20).
5. Stop drill crack ends (1) to prevent further progression of crack (2).
6. Clean area to be welded with methyl-ethyl-ketone (D21) and machinery towel (D20).
7. Dry part thoroughly with clean, filtered compressed air.
8. Weld crack with filler rod.
9. Clean welded area with 1,1,1-trichloroethane (D41) and machinery towel (D20).
10. Dry part thoroughly with clean, filtered compressed air.
11. Penetrant test for cracks in welded area. Apply post-emulsifiable penetrant solution, component of penetrant inspection kit (D27) to area with cotton applicator (D10). Leave on for 5 minutes. Keep wet.
12. Wipe off excess penetrant with 1,1,1-trichloroethane (D41) and machinery towel (D20). Inspect for proper fusion.

NOTE

If re-welding is required, do not allow weld width to exceed 2.5 times the thickness of the parent metal.

13. Anodize touch up welded area (Task 4-3).

FOLLOW-ON MAINTENANCE: None.



Section III TOUCH UP ANODIZE FUEL CONTROL UPPER COVER

4-3 TOUCH UP ANODIZE FUEL CONTROL UPPER COVER (AVIM)

INITIAL SETUP

Tools:
Air Blow Gun
Air Hose
Rubber Gloves
Safety Glasses

Personnel Required:
68B Aircraft Powerplant Repairer

Materials/Parts:
Cotton Applicator (D10)
Iridite (D15)
1,1,1-Trichloroethane (D41)

Equipment Conditions:
Fuel Control Cover Remove From APU (Task 4-1)

General Safety Instructions:

WARNING

1,1,1-Trichloroethane is toxic to skin, eyes and respiratory tract. Skin and eye protection are required. Avoid repeated or prolonged contact. Work in a well-ventilated area.

Compressed air is dangerous when directed toward yourself or another person. The airstream or material blown by the airstream can cause injury, particularly to the eyes and face. Use goggles to protect eves and face. Do not exceed 30 PSI. Do not direct airstream toward yourself or another person.

Iridite solution is toxic to skin, eyes and respiratory tract. Skin and eye protection are required. Avoid repeated or prolonged contact. Work in a well-ventilated area.

4-3 TOUCH UP ANODIZE FUEL CONTROL UPPER COVER (AVIM) (CONT)

NOTE

This task is for damaged area less than 5 percent of surface area or shorter than 1/2 inch in length.

1. Clean area with 1,1,1-trichloroethane (D41) and cotton applicator (D10).
2. Dry part thoroughly with clean, filtered compressed air.

CAUTION

Cotton applicator, saturated with iridite solution, constitutes a fire hazard if allowed to dry. Immediately after use, rinse thoroughly with tap water.

3. Apply iridite solution (D15) to area with cotton applicator (D10), keep area wet 1 minute.
4. Rinse treated area with tap water 80 to 110°F (26.67 to 43.33°C).
5. Dry part thoroughly with clean, filtered compressed air.

FOLLOW-ON MAINTENANCE: None.

Section IV REPLACE FUEL CONTROL LOWER COVER SEAL

4-4 REPLACE FUEL CONTROL LOWER COVER SEAL

This task covers: a. Removal b. Installation

INITIAL SETUP

Tools:
Aircraft Inspection Tool Kit (T49)
Engine Repairman's Tool Kit (T47)

Personnel Required:
68B Aircraft Powerplant Inspector
68B Aircraft Powerplant Repairer

Materials/Parts:
Acid Swabbing Brush D5)
Machinery Towel (D20)
Pressure Sensitive Tape (D38)
Primer 1200 (D28)
RTV 732 (D31)
Seal
1, 1,1-Trichloroethane (D41)

References:
Tasks 4-1, 4-10

Equipment Conditions:
APU on Aircraft

General Safety Instructions:

WARNING

Primer is flammable and toxic to eyes, skin and respiratory tract. To prevent personnel injury, skin and eye protection is required. Avoid prolonged or repeated contact. Work in a well-ventilated area.

RTV is toxic. To prevent personnel injury, avoid contact with eyes and prolonged or repeated contact with skin.

1,1,1-Trichloroethane is toxic to skin, eyes and respiratory tract. Skin and eye protection are required. Avoid repeated or prolonged contact. Work in a well-ventilated area.

4-4 REPLACE FUEL CONTROL LOWER COVER SEAL (CONT)

REMOVAL

1. Remove fuel control upper cover (Task 4-1).
2. Remove seal (1) from fuel control lower cover.

INSTALLATION

1. Be sure fuel control lower cover surface is free of any pieces of seal or RTV.
2. Wipe surface to be bonded with 1, 1, 1-trichloroethane (D41) and machinery towel (D20). Wipe dry.

CAUTION

Keep primers closed as much as possible to prevent premature drying.

NOTE

Thinning is not necessary. Use primers as received.

3. Apply thin coat of primer (D28) to fuel control lower cover bond surface. Allow to air dry for 30 minutes to 1 hour.

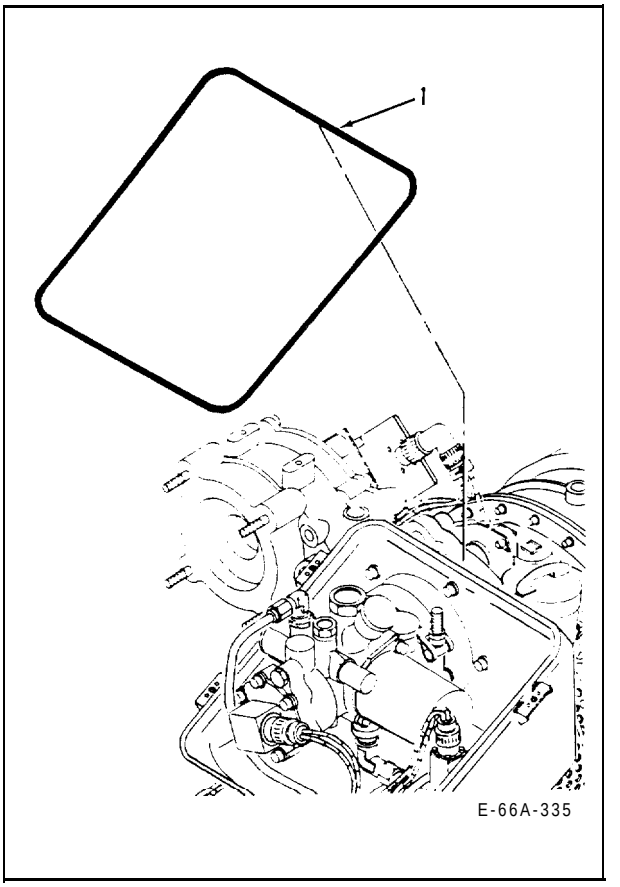
CAUTION

Applied RTV should not sit more than 2 to 3 minutes prior to assembly. A surface skin will develop that will interfere with prior bonding.

NOTE

Do not apply RTV to more area than can be done in the 2 to 3 minute interval.

Prior to assembly, all components will be visually inspected for damage.



4-4 REPLACE FUEL CONTROL LOWER COVER SEAL (CONT)

4. Apply a uniform layer of RTV (D31) approximately 0.010 inch thick to binding surfaces of fuel control lower cover and seal with acid swabbing brush (D5).

5. Install seal (1) on fuel control lower cover.

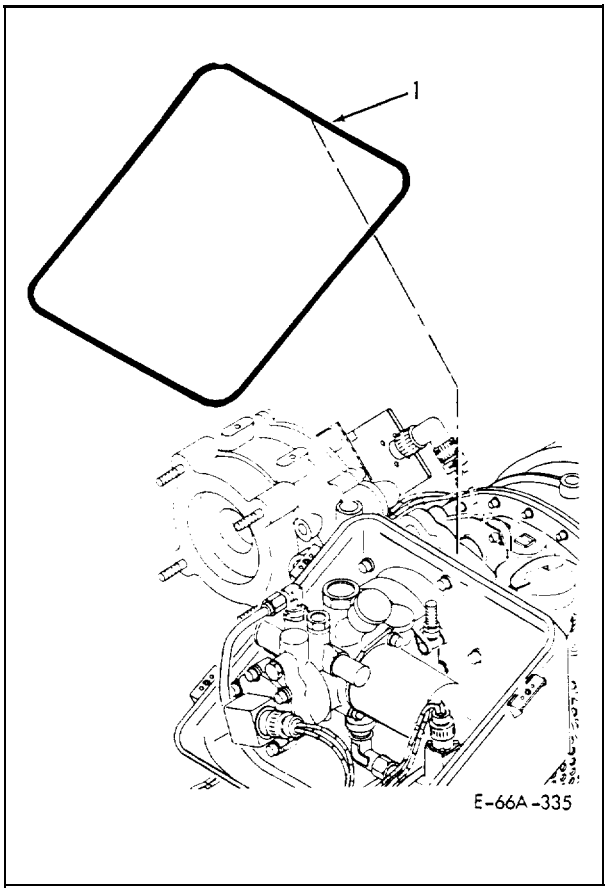
6. Apply a small amount of finger pressure to obtain smoothing and contact.

7. With pressure sensitive tape (D38), tape seal to fuel control lower cover to maintain alignment during cure cycle.

8. Cure at room temperature for 72 hours.

9. Remove pressure sensitive tape and trim excess RTV.

10. Install fuel control upper cover (Task 4-10).



FOLLOW-ON MAINTENANCE: None.

4-5 REMOVE FUEL CONTROL LOWER COVER

INITIAL SETUP

Tools:
Crows Foot Wrench 1 1/8 inch
Crows Foot Wrench 11/16 inch
Engine Repairman's Tool Kit (T47)

Personnel Required:
68B Aircraft Powerplant Repairer

Materials/Parts:
Protective Caps and Plugs

Equipment Conditions:
APU on Aircraft

General Safety Instructions:

WARNING

Engine fuel is toxic and flammable. To prevent personnel injury, avoid contact with eyes and repeated or prolonged contact with skin.

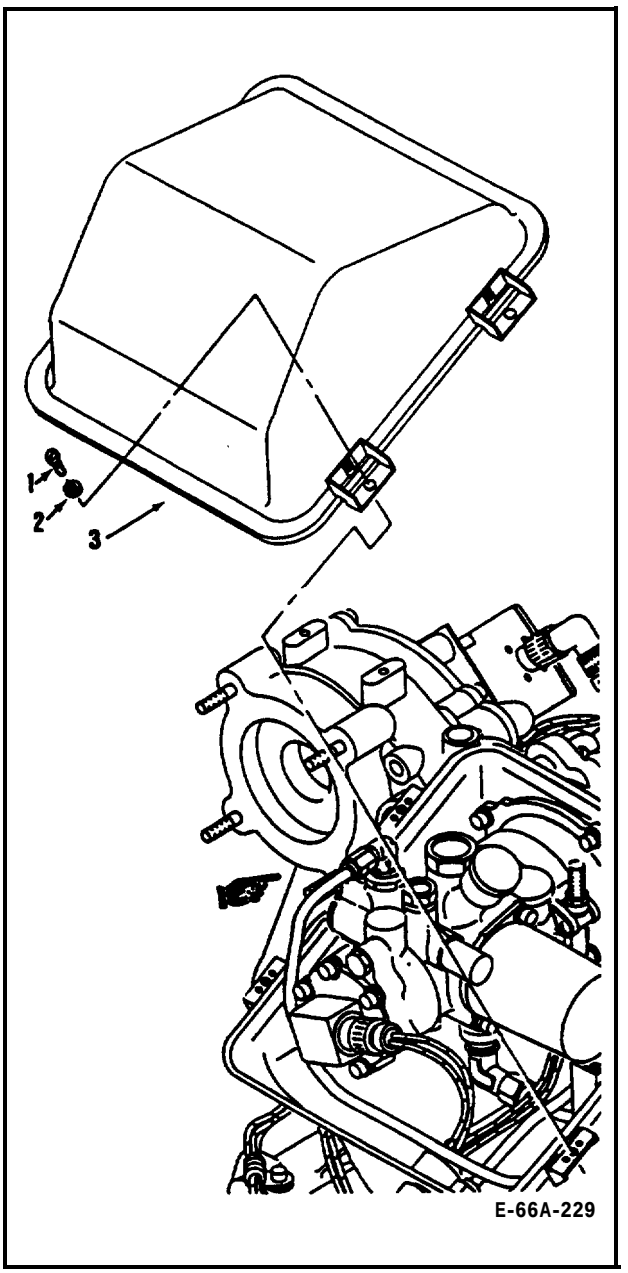
4-5 REMOVE FUEL CONTROL LOWER COVER (CONT)

CAUTION

To prevent clogging or contamination, all exposed openings in fuel, oil, air lines and electrical connectors will be capped immediately. Be sure caps and plugs are clean.

1. Remove bolts (1) and washers (2) securing fuel control upper cover (3) to fuel control lower cover.

2. Remove fuel control upper cover (3).



4-5 REMOVE FUEL CONTROL LOWER COVER (CONT)

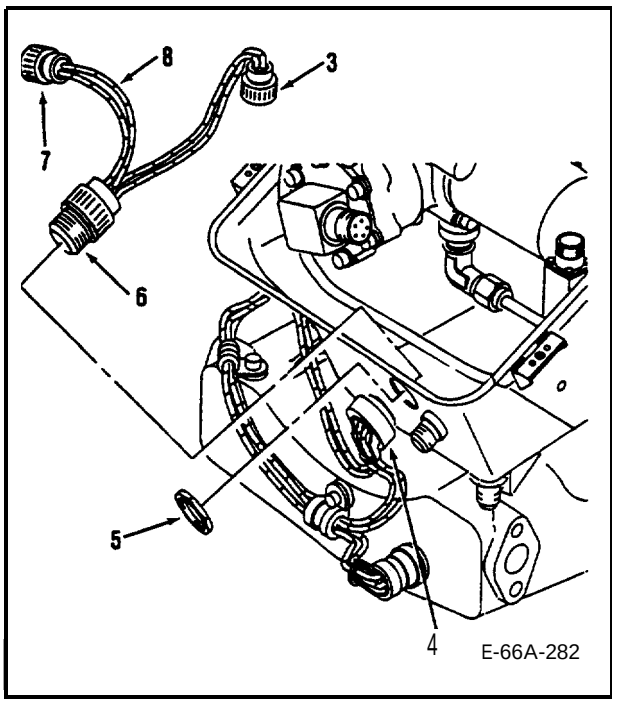
3. Disconnect electrical connector (3) (P4) from fuel solenoid valve.

4. Disconnect electrical connector (4) (J3).

5. Remove jam nut (5) and electrical receptacle (6) (P289). Be sure packing stays on electrical receptacle. Install jam nut back on receptacle.

6. Disconnect fuel control assembly electrical connector (7) (P9).

7. Remove fuel control wiring harness assembly (8) from inside of fuel control lower cover.



4-5 REMOVE FUEL CONTROL LOWER COVER (CONT)

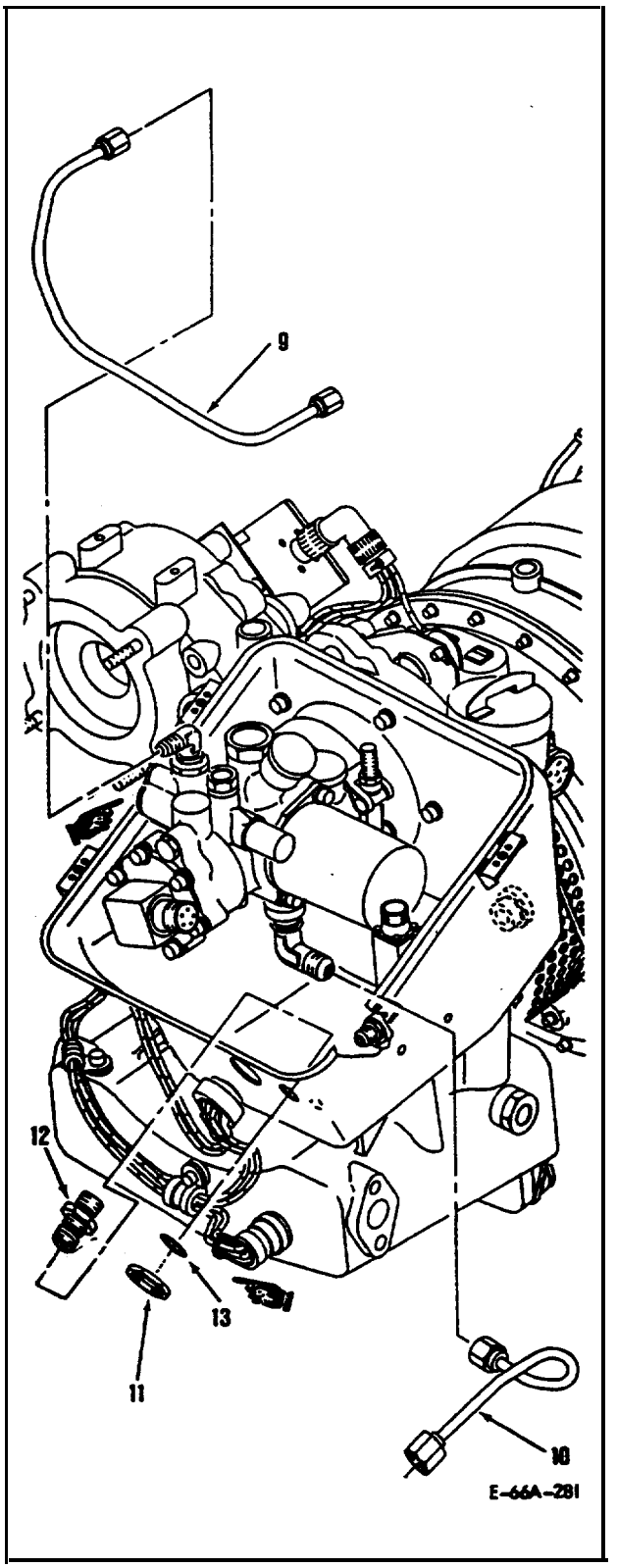
8. Disconnect and remove fuel control assembly to fuel solenoid valve tube (9).

9. Clean fuel control assembly to fuel solenoid valve tube (9) using process 1, Chapter 8.

10. Disconnect and remove fuel inlet tube assembly (10) from fuel control assembly and fuel control lower cover union (12).

11. Clean fuel inlet tube assembly (10) using process 1, Chapter 8.

12. Remove jam nut (11) from fuel control lower cover union (12). Remove and discard packing (13). Remove union.



4-5 REMOVE FUEL CONTROL LOWER COVER (CONT)

13. Loosen coupling (14) from fuel control assembly (15).

14. Pull forward on fuel control assembly (15) to disengage splined shaft and coupler, then remove fuel control assembly.

15. Remove and discard packing (16).

16. Disconnect fuel manifold assembly to fuel solenoid valve tube (17) from fuel solenoid valve.

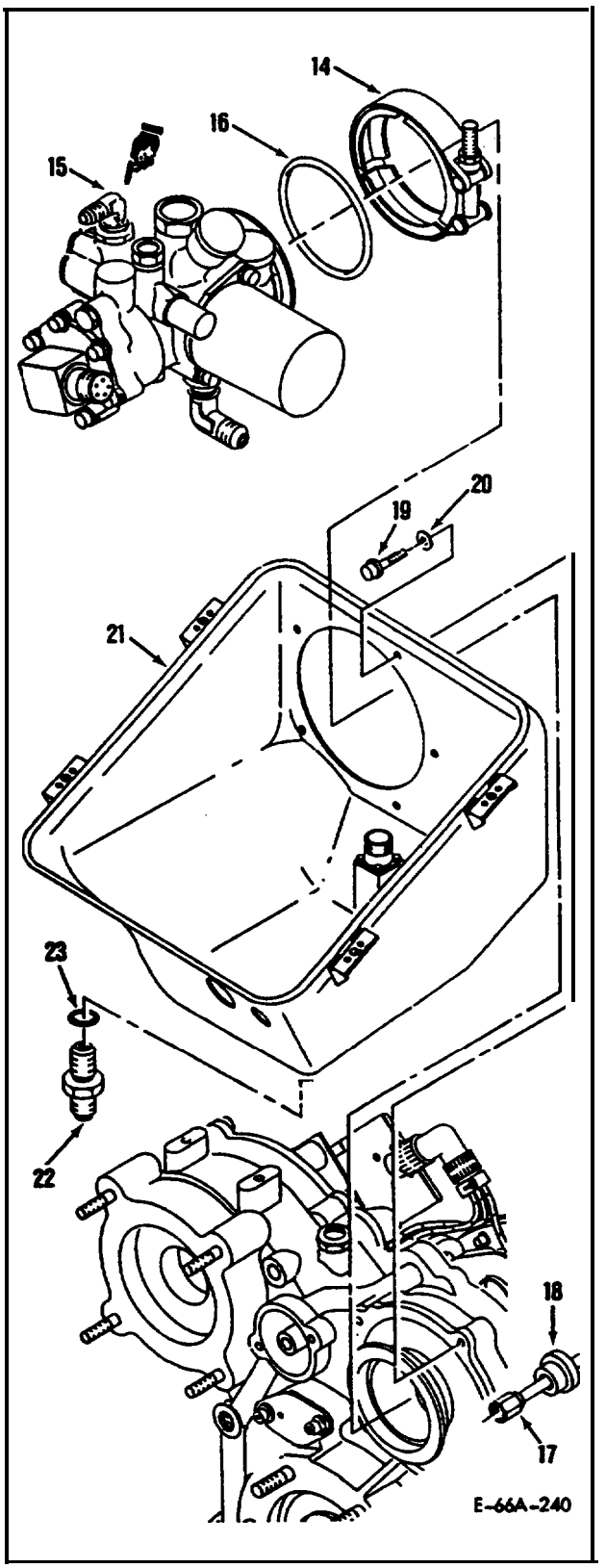
17. Clean fuel manifold assembly to fuel solenoid valve tube (17) using process 1, Chapter 8.

18. Remove grommet (18) from fuel control lower cover (21).

19. Remove bolts (19) and washers (20). Discard bolts and washers.

20. Remove fuel control lower cover (21).

21. Remove adapter (22) and packing (23) from bottom of fuel control lower cover. Discard packing.

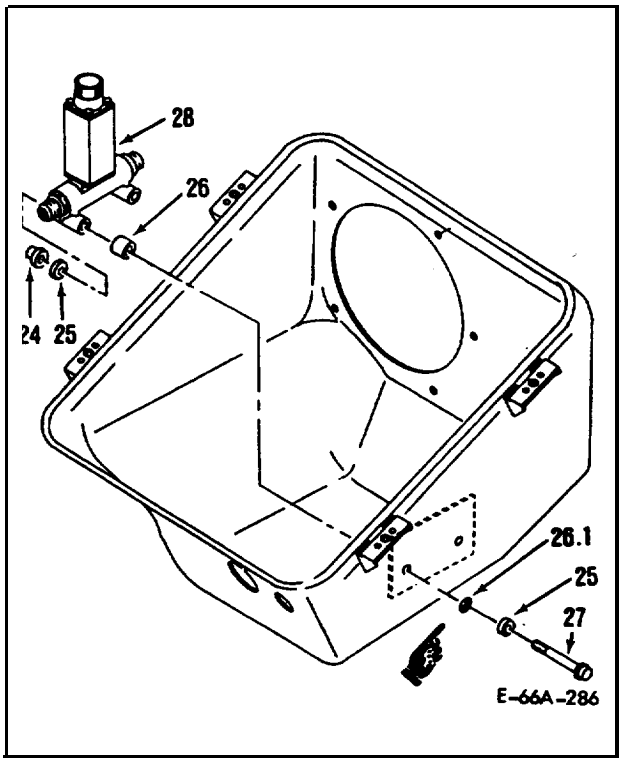


4-5 REMOVE FUEL CONTROL LOWER COVER (CONT)

22. Remove nuts (24), washers (25), spacers (26), packings with retainer (26.1) and bolts (27). Remove fuel solenoid valve (28).

23. Clean fuel control lower cover using process 1, Chapter 8.

FOLLOW-ON MAINTENANCE: None.



4-6 REPAIR - WELD FUEL CONTROL LOWER COVER CRACKS (AVIM)

INITIAL SETUP

Tools:
Air Blow Gun
Air Hose
Arc Welder
Drill 3/32 inch
Engine Repairman's Tool Kit (T47)
Insulated Mittens
Plastic Apron
Pneumatic Drill
Rubber Gloves
Safety Glasses
Vapor Degreaser
Welder's Apron
Welder's Helmet

Personnel Required:
44E Welder/Machinist
68B Aircraft Powerplant Repairer

Materials/Parts:
Cotton Applicator (D10)
Filler Rod
Machinery Towel (D20)
Methyl-Ethyl-Ketone (D21)
Penetrant Inspection Kit (D27)
1,1,1-Trichloroethane (D41)

References:
Tasks 4-8, 8-2
TM 55-1500-204-25/1

Equipment Conditions:
Fuel Control Lower Cover Removed From APU

General Safety Instructions:

WARNING

1,1,1-Trichloroethane is toxic to skin, eyes and respiratory tract. Skin and eye protection are required. Avoid repeated or prolonged contact. Work in a well-ventilated area.

Compressed air is dangerous when directed toward yourself or another person. The airstream or material blown by the airstream can cause injury, particularly to the eyes and face. Use goggles to protect eyes and face. Do not exceed 30 PSI. Do not direct airstream toward yourself or another person.

Penetrant process solutions are toxic to skin, eyes and respiratory tract. Skin and eye protection required. Avoid repeated or prolonged contact. Good general ventilation is normally adequate.

Power tool operations create airborne particles. Eye protection is required. Remove jewelry prior to use. Adequate ventilation or respirator is required.

Methyl-ethyl-ketone (MEK) is flammable and toxic to eyes, skin and respiratory tract. Avoid all contact. Skin and eye protection and vapor control are required.

4-6 REPAIR - WELD FUEL CONTROL LOWER COVER CRACKS (AVIM) (CONT)

Welding operations produce heat, highly toxic fumes, injurious radiation, metal slag and airborne particles, protection equipment consisting of welder's goggles with properly tinted lenses, apron or jacket and welder's boots are required. Good general ventilation is normally adequate.

Heated components can pose a serious burn potential. Wear insulated mittens when handling heated components.

4-6 REPAIR -WELD FUEL CONTROL LOWER COVER CRACKS (AVIM) (CONT)

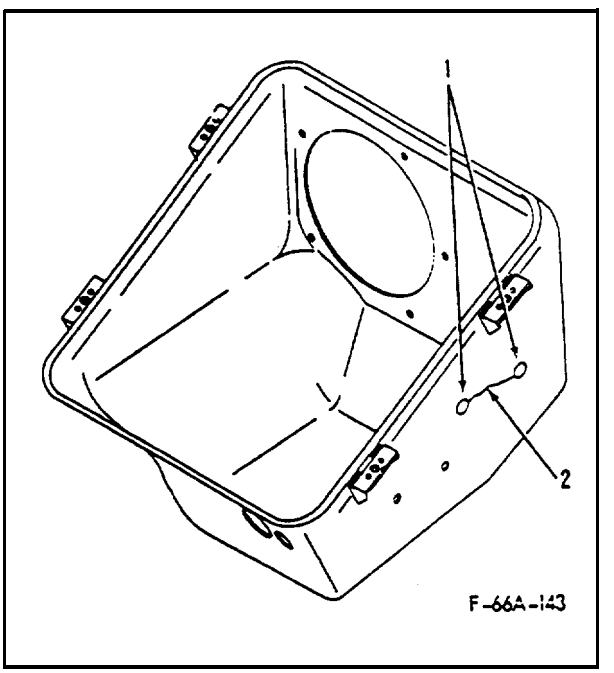
1. Vapor degrease (Task 8-2) fuel control lower cover using 1,1,1-trichloroethane (D41).
2. Dry part thoroughly with clean, filtered compressed air.
3. Penetrant test for extent of fatigue crack. Liberally apply post-emulsifiable penetrant solution, component of penetrant inspection kit (D27) to area with cotton applicator (D10). Leave on for 30 minutes. Keep solution wet.
4. Wipe off excess penetrant using 1,1,1-trichloroethane (D41) and machinery towel (D20).
5. Stop drill crack ends (1) to prevent further progression of crack (2).
6. Clean area to be welded with methyl-ethyl-ketone (D21) and machinery towel (D20).
7. Dry part thoroughly with clean, filtered compressed air.
8. Weld crack using filler rod.
9. Clean welded area using 1,1,1-trichloroethane (D41) and machinery towel (D20).
10. Dry part thoroughly with clean, filtered compressed air.
11. Penetrant test for cracks in welded area. Liberally apply post-emulsifiable penetrant solution, component of penetrant inspection kit (D27) to welded area with cotton applicator. Leave on for 5 minutes. Keep area wet.
12. Wipe off excess penetrant with 1,1,1-trichloroethane (D41) and machinery towel (D20).

NOTE

If re-welding is required, do not allow weld width to exceed 2.5 times the thickness of the parent metal.

13. Anodize touch up of welded area (Task 4-8).

FOLLOW-ON MAINTENANCE: None.



Section VII **REPLACE FUEL CONTROL LOWER COVER NUT PLATES**

4-7 REPLACE FUEL CONTROL LOWER COVER NUT PLATES (AVIM)

This task covers: a. Removal b. Installation

INITIAL SETUP

Tools:
Aircraft Inspection Tool Kit (T49)
Engine Repairman's Tool Kit (T47)

Personnel Required:
68B Aircraft Powerplant Inspector
68B Aircraft Powerplant Repairer
68G Airframe Repairman

Materials/Parts:
Acid Swabbing Brush (D5)
Epoxy Primer (D30)
Machinery Towel (D20)
Rivet
1,1,1-Trichloroethane (D41)

References:
TM 55-1500-204-25/1

Equipment Conditions:
Fuel Control Lower Cover Removed From APU

General Safety Instructions:

WARNING

1,1,1-Trichloroethane is toxic to skin, eyes and respiratory tract. Skin and eye protection are required. Avoid repeated or prolonged contact. Work in a well-ventilated area.

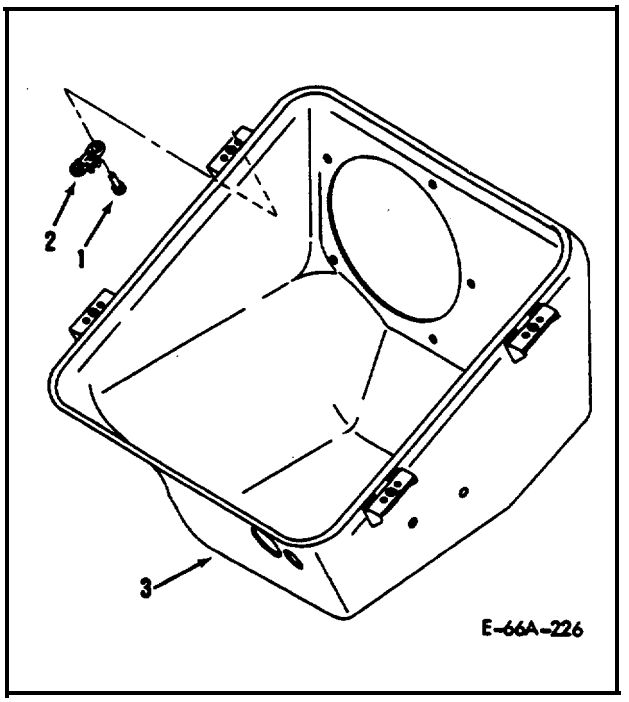
Epoxy primer is flammable and toxic to eyes, skin and respiratory tract. To prevent personnel injury, skin and eye protection are required. Avoid prolonged or repeated contact. Good general ventilation is normally adequate.

Power tool operations create airborne particles. Eye protection is required. Remove jewelry prior to use. Adequate ventilation or respirator is required.

4-7 REPLACE FUEL CONTROL LOWER COVER NUT PLATES (AVIM) (CONT)

REMOVAL

Remove rivets (1) from nut plate (2) on fuel control lower cover (3) with pneumatic drill and pin punch.



INSTALLATION

NOTE

Prior to assembly, all components will be visually inspected for damage.

1. Clean all surfaces to be assembled, using 1,1,1-trichloroethane (D41) acid brush (D5) and machinery towel (D20).
2. Apply a wet coat of epoxy primer (D30) to grip area of rivets and holes on replacement nut plate. Air dry for 3 minutes.
3. Align rivet holes in nut plate (2) and fuel control lower cover (3) and install rivets (1).
4. Coat head and tail of rivets (1) with wet coat of epoxy primer (D30).

FOLLOW-ON MAINTENANCE: None.

4-8 TOUCH UP ANODIZE FUEL CONTROL LOWER COVER (AVIM)

INITIAL SETUP

Tools:
Air Blow Gun
Air Hose Assembly
Rubber Gloves
Safety Glasses

Personnel Required:
68B Aircraft Powerplant Repairer

Materials/Parts:
Cotton Applicator (D10)
Iridite (D15)
1,1,1-Trichloroethane (D41)

References:
TM 55-1500-204-25/1

Equipment Conditions:
Fuel Control Lower Cover Removed From APU

General Safety Instructions:

WARNING

1,1,1-Trichloroethane is toxic to skin, eyes and respiratory tract. Skin and eye protection are required. Avoid repeated or prolonged contact. Work in a well-ventilated area.

Compressed air is dangerous when directed toward yourself or another person. The airstream or material blown by the airstream can cause injury, particularly to the eyes and face. Use goggles to protect eyes and face. Do not exceed 30 PSI. Do not direct airstream toward yourself or another person.

Iridite solution is toxic to skin, eyes and respiratory tract. Skin and eye protection are required. Avoid repeated or prolonged contact. Work in a well-ventilated area.

4-8 TOUCH UP ANODIZE FUEL CONTROL LOWER COVER (AVIM) (CONT)

NOTE

This task is for damaged area less than 5 percent of surface area or shorter than 1/2 inch in length.

1. Clean damaged area with 1,1,1-trichloroethane (D41) and cotton applicator (D10).

2. Dry part thoroughly with clean, filtered compressed air.

CAUTION

Cotton applicator, saturated with iridite solution, constitutes a fire hazard if allowed to dry. Immediately after use, rinse thoroughly in tap water.

3. Apply iridite solution (D15) to damaged area with cotton applicator (D10). Keep surface wet 1 minute.

4. Rinse treated area with tap water 80 to 110°F (26.6 to 43.3°C).

5. Ory part thoroughly with clean, filtered compressed air.

FOLLOW-ON MAINTENANCE: None.

Section IX INSTALL FUEL CONTROL LOWER COVER

4-9 INSTALL FUEL CONTROL LOWER COVER

INITIAL SETUP

Tools:
Aircraft Inspection Tool Kit (T49)
Crows Foot Wrench 1 1/8 inch
Crows Foot Wrench 11/16 inch
Engine Repairman' sTool Kit (T47)
Torque Wrench 30-150 inch-pounds

Personnel Required:
68B Aircraft Powerplant Inspector
68B Aircraft Powerplant Repairer

Materials/Parts:
Antiseize Compound (D8)
Lockwire (D43)
Lubricating Oil (D16)
Packing
RTV 732 (D31)

References:
Task 4-10

Equipment Conditions:
APU on Aircraft

General Safety Instructions:

WARNING

Engine fuel is toxic and flammable. To prevent personnel injury, avoid contact with eyes and repeated or prolonged contact with skin.

Lubricating oils, DOD-L-85734, MIL-L-23699 and MIL-L-7808, contain material hazardous to health. They produce paralysis if swallowed or from prolonged skin contact. They may burn if exposed to heat or flames. Wash hands thoroughly after handling. Use only with proper ventilation.

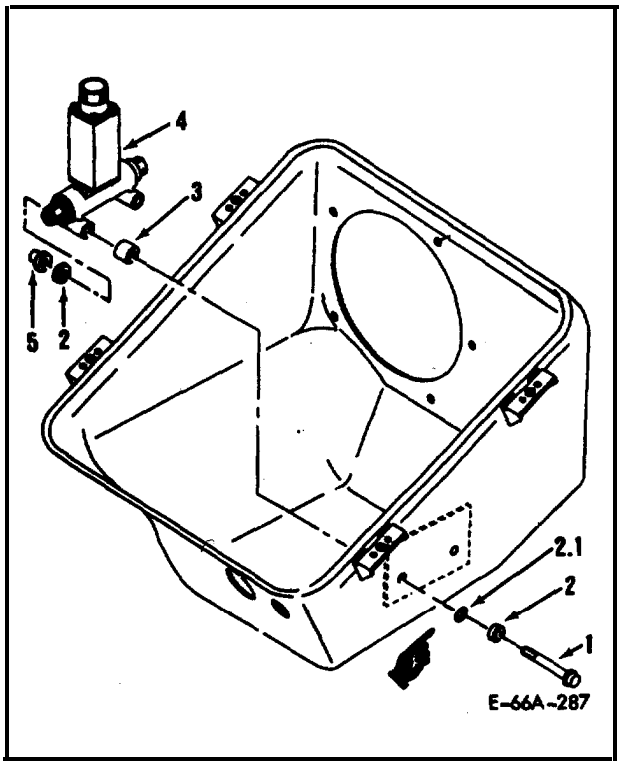
4-9 INSTALL FUEL CONTROL LOWER COVER (CONT)

NOTE

As all tubes and connectors are installed/connected, all protective caps/plugs shall be removed.

Prior to assembly, all components will be visually inspected for damage.

1. Position fuel solenoid valve (4) inline with tubing on left side of fuel control assembly. Be sure flow arrow on fuel solenoid valve is pointing aft. Secure with bolts (1), washers (2), packings with retainer (2.1), spacers (3) and nuts (5). Torque bolts to 24 to 32 inch-pounds.



4-9 INSTALL FUEL CONTROL LOWER COVER (CONT)

2. Apply antiseize compound (D8) to bolts (10) threads.

3. Apply a uniform layer of RTV (D31) on grommet (7). Install fuel manifold assembly to fuel solenoid valve tube (6) and-grommet (7) in fuel control lower cover (8).

4. Apply a uniform layer of RTV (D31) on fuel control lower cover gearbox assembly mounting surface. Install fuel control lower cover (8) on gearbox assembly and align bolt holes. Secure with bolts (10) and washers (9). Torque bolts to 38 to 42 inch-pounds.

5. Install fuel manifold assembly to fuel solenoid valve tube (6) on fuel solenoid valve. Torque tube to 70 to 80 inch-pounds.

6. Lubricate packing (11) with lubricating oil (O16) and install on fuel control assembly (12) mount flange.

CAUTION

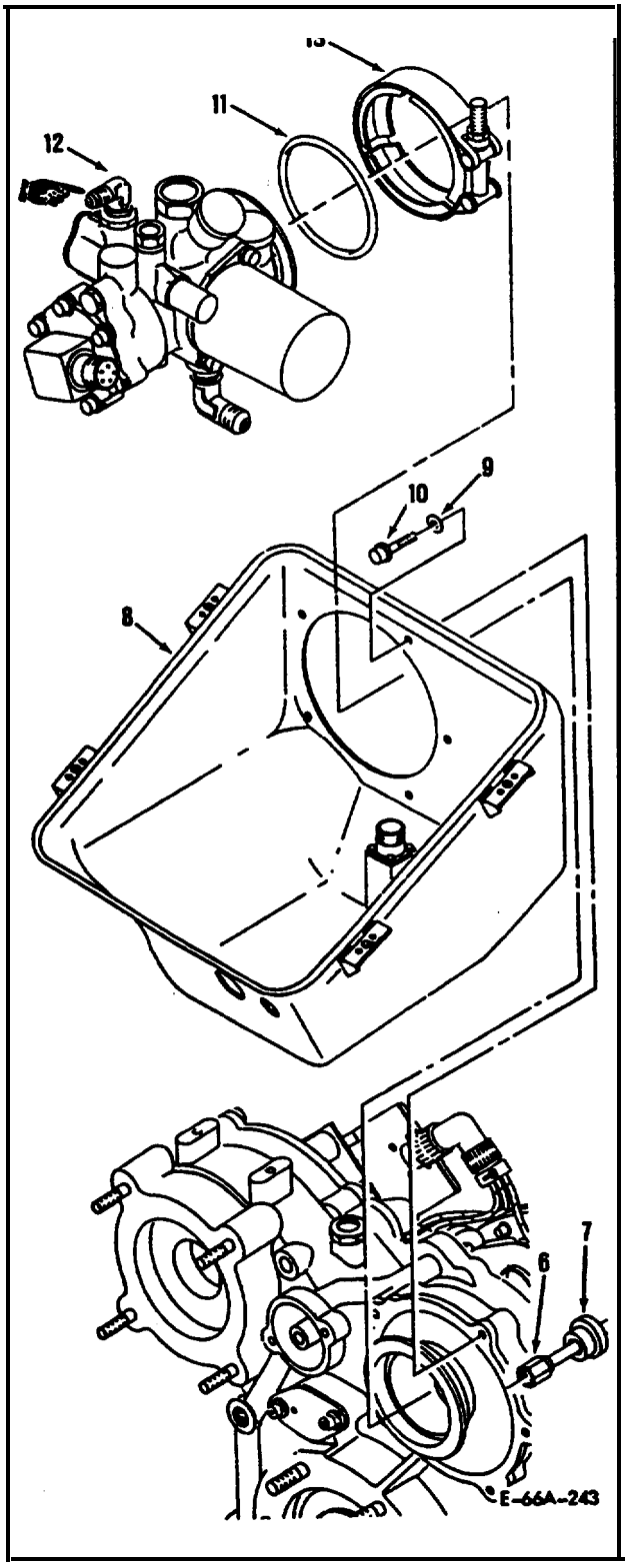
Use care when installing fuel control onto adapter. Be sure fuel control shaft and coupler splines are aligned. Failure to do so could result in damage to fuel control and/or shaft coupling.

7. Install fuel control assembly (12) and push aft to align and engage fuel control assembly splines with coupler.

8. Install coupling (13). Align fuel control assembly with fuel filter assembly at 9 o'clock position. Torque coupling to 33 to 37 inch-pounds.

9. Tap coupling (13) outer diameter with rubber-mallet. Torque coupling clamp to 47 to 53 inch-pounds.

10. Repeat tap and torque until torque remains at 47 to 53 inch-pounds.



4-9 INSTALL FUEL CONTROL LOWER COVER (CONT)

11. Lubricate packing (14) with lubricating oil (D16). Install packing on adapter (15).

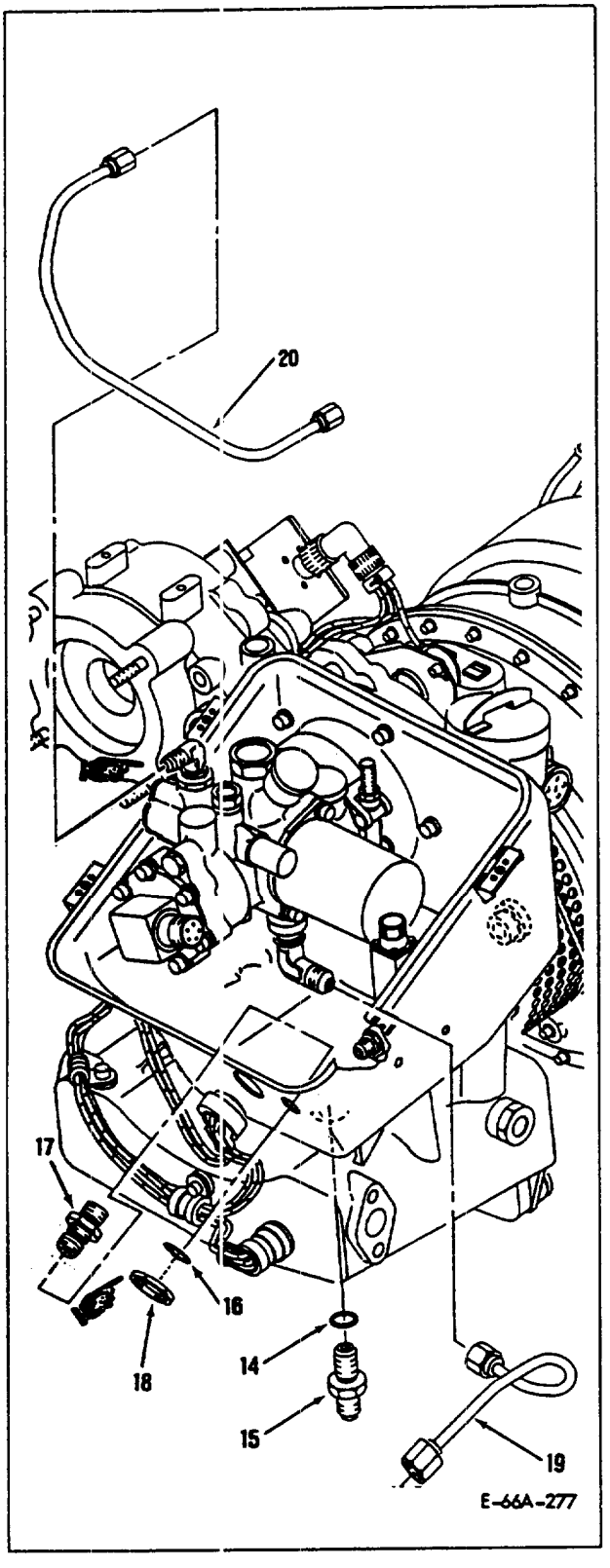
12. Install adapter (15) in fuel control lower cover. Torque drain adapter to 37 to 43 inch-pounds.

13. Lubricate packing (16) with lubricating oil (D16).

14. Install union (17) in fuel control lower cover. Install packing (16) and jam nut (18) on union. Torque jam nut to 37 to 43 inch-pounds.

15. Install fuel inlet tube assembly (19). Torque to 190 to 220 inch-pounds.

16. Install fuel solenoid valve to fuel control assembly tube (20). Torque tube to 100 to 120 inch-pounds.



17. Place fuel control wiring harness assembly (21) inside lower cover. Ensure packing is still in place.

18. Remove jam nut (23) from connector (22).

19. While aligning pin with pin hole, push connector (22) through fuel control lower cover.

20. Install jam nut (23). Torque to 37 to 43 inch-pounds.

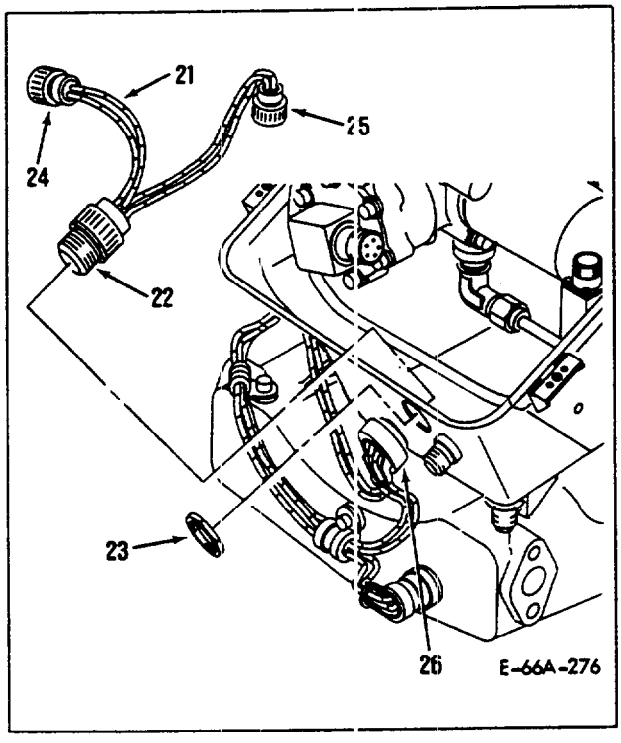
21. Connect fuel control wiring harness assembly connector (24) (P9) to fuel control assembly. Lockwire connector with lockwire (D43).

22. Connect fuel control wiring harness assembly connector (25) (P4) to fuel solenoid valve. Lockwire connector with lockwire (D43).

23. Connect electrical connector (26). Lockwire electrical connector with lockwire (D43).

24. Perform leak check.

25. Install fuel control upper cover (Task 4-10).



FOLLOW-ON MAINTENANCE: MOC required.

Section X INSTALL FUEL CONTROL UPPER COVER

4-10 INSTALL FUEL CONTROL UPPER COVER

INITIAL SETUP

Tools:
Aircraft Inspection Tool Kit (T49)
Engine Repairman's Tool Kit (T47)

Personnel Required:
68B Aircraft Powerplant Inspector
68B Aircraft Powerplant Repairer

Equipment Conditions:
APU on Maintenance Stand (T1)

4-10 INSTALL FUEL CONTROL UPPER COVER ER (CC

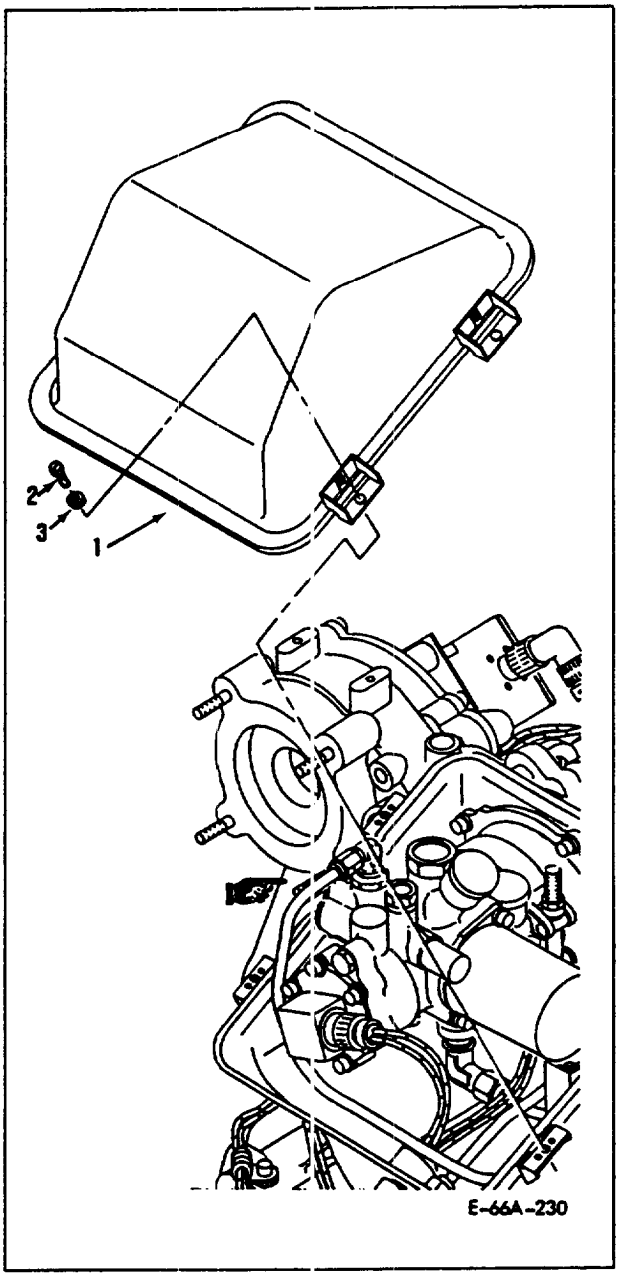
NOTE

Prior to assembly, all components will be visually inspected for damage.

1. Inspect fuel control lower cover seal.

2. Install fuel control upper cover (1) on fuel control lower cover and secure with bolts (2) and washers (3). Torque bolts to 37 to 43 inch-pounds.

FOLLOW-ON MAINTENANCE: None.



Section XI REPLACE FUEL FILTER ASSEMBLY

4-11 REPLACE FUEL FILTER ASSEMBLY

This task covers: a. Removal b. Installation

INITIAL SETUP

Tools:
Aircraft Inspection Tool Kit (T49)
Engine Repairman's Tool Kit (T47)
Tool Set #2 (T50)
Torque Wrench 30-150 inch-pounds

Personnel Required:
68B Aircraft Powerplant Inspector
68B Aircraft Powerplant Repairer

Materials/Parts:
Filter Assembly
Lubricant (D19)
Machinery Towel (D20)
Packing
Plastic Bag (D2)

References:
Tasks 4-1, 4-10

Equipment Conditions:
APU on Aircraft

General Safety Instructions:

WARNING

Engine fuel is toxic and flammable. To prevent personnel injury, avoid contact with eyes and repeated or prolonged contact with skin.

4-11 REPLACE FUEL FILTER ASSEMBLY (CONT)

REMOVAL

1. Remove fuel control upper cover (Task 4-1).

WARNING

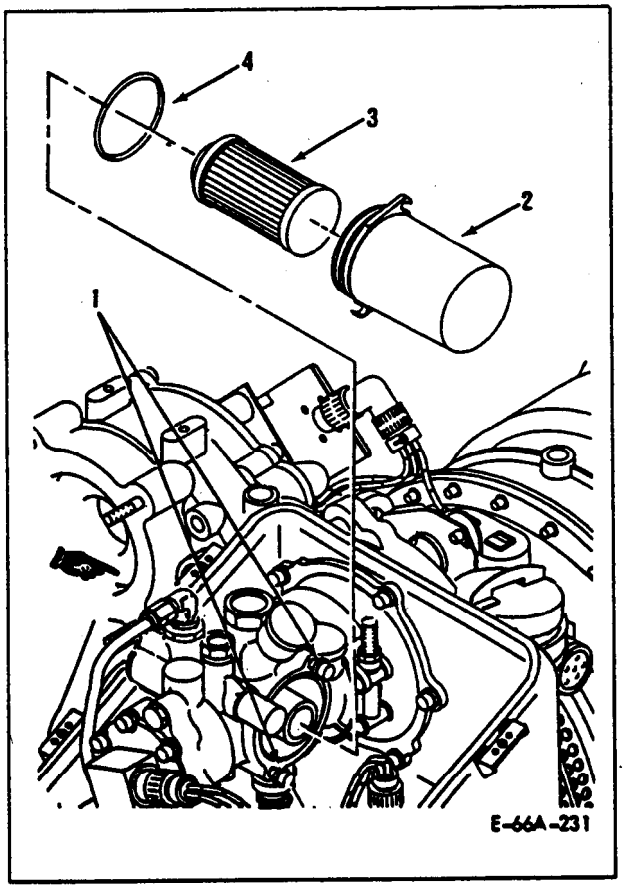
The fuel control assembly filter cover will contain fuel after removal. To prevent fire hazards, be sure no sparks or open flame within 50 feet.

2. Place machinery towel (D20) in fuel control assembly lower cover under fuel filter assembly. Loosen bolts (1) (do not remove).

3. Rotate fuel filter cover (2) counterclockwise approximately one-eighth turn and pull fuel filter cover back as far as possible.

4. Using thumb and fore finger, pull fuel filter assembly (3) out of fuel control assembly. Remove fuel filter cover (2), fuel filter assembly (13) and packing (4).

5. Remove and discard packing (4) and fuel filter assembly (3). Put filter (3) in plastic bag (D2).



4-11 REPLACE FUEL FILTER ASSEMBLY (CONT)

INSTALLATION

NOTE

Prior to assembly, all components will be visually inspected for damage.

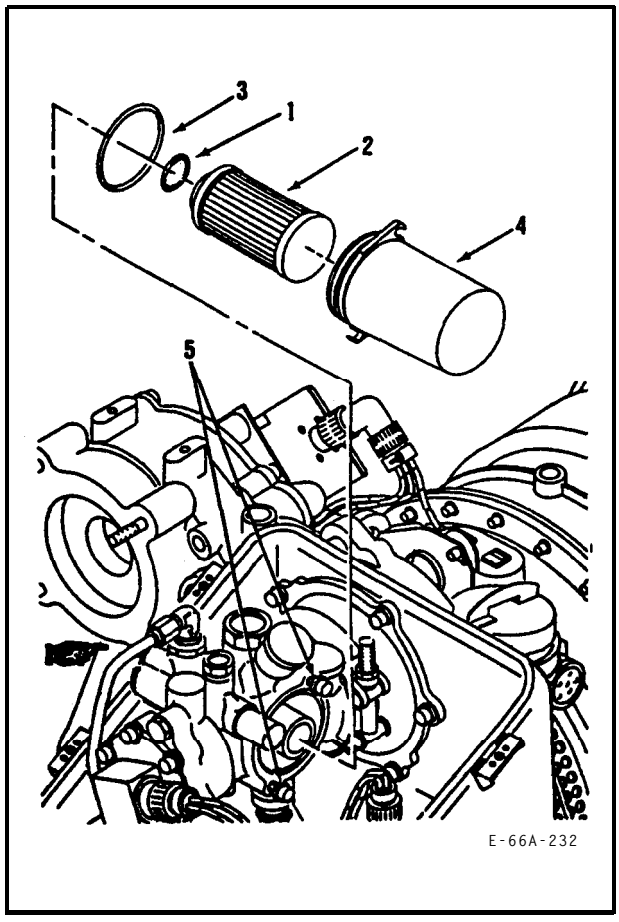
1. Lubricate packing (1) inside fuel filter element (2) and packing (3) with lubricant (D19). Install packing (3) on fuel filter cover (4).
2. Install fuel filter element (2) in fuel filter cover (4) with packing end out.
3. Install fuel filter cover (4) over bolts (5). Turn fuel filter cover clockwise approximately one-eighth turn.

CAUTION

To prevent breaking fuel filter cover ears, be sure fuel filter cover is fully seated prior to tightening bolts.

4. Secure fuel filter cover (4) to fuel control assembly with bolts (5). Torque bolts to 37 to 43 inch-pounds.
5. Remove machinery towel (22) and wipe up any excess fuel.
6. Perform leak check.
7. Install fuel control upper cover (Task 4-10).

FOLLOW-ON MAINTENANCE: MOC required.



4-12 REMOVE FUEL CONTROL ASSEMBLY

INITIAL SETUP

Tools:
Engine Repairman's Tool Kit (T47)

Personnel Required:
68B Aircraft Powerplant Repairer

Materials/Parts:
Machinery Towel (D20)
Protective Caps and Plugs

References:
Task 4-1

Equipment Conditions:
APU on Aircraft

General Safety Instructions:

WARNING

Engine fuel is toxic and flammable. To prevent personnel injury, avoid contact with eyes and repeated or prolonged contact with skin.

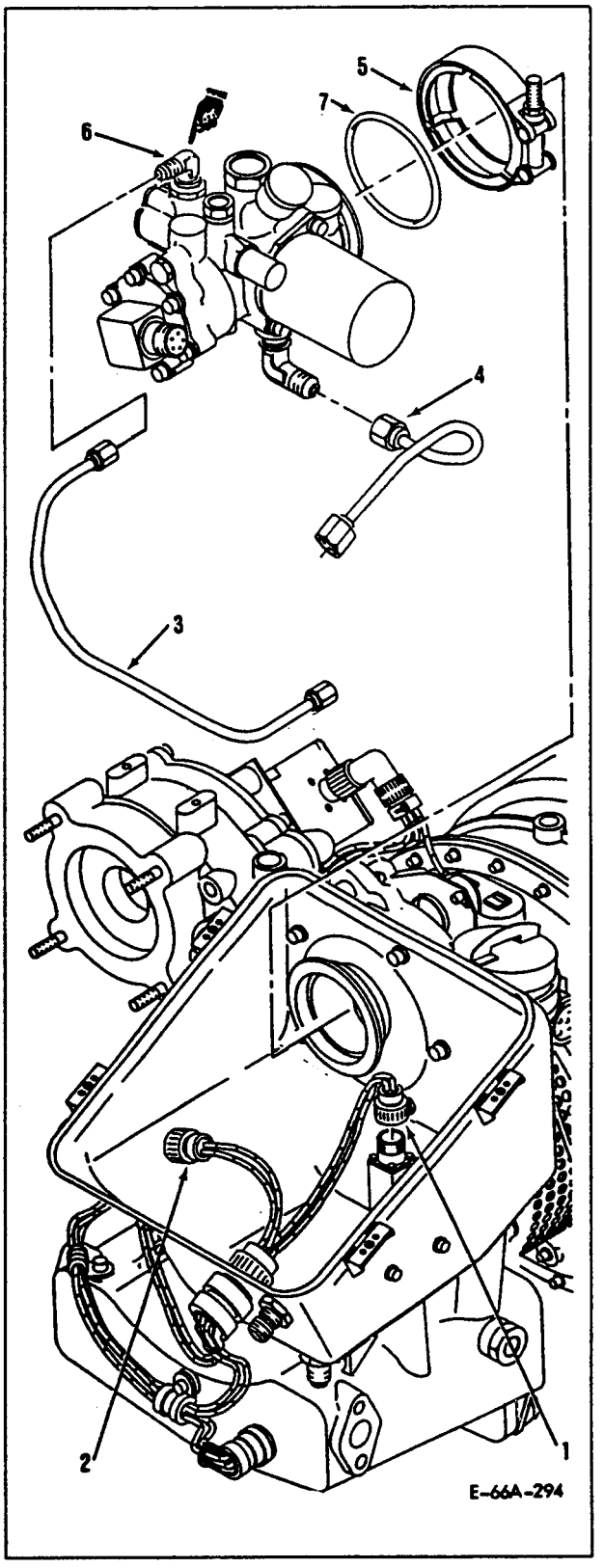
4-12 REMOVE FUEL CONTROL ASSEMBLY (CONT)

CAUTION

To prevent clogging or contamination, all exposed openings in fuel, oil, air lines and electrical connectors will be capped immediately. Be sure caps and plugs are clean.

1. Remove fuel control assembly upper cover (Task 4-1).
2. Put machinery towel (D20) under fuel control assembly prior to disconnecting tubes.
3. Disconnect fuel solenoid valve electrical connector (1).
4. Disconnect fuel control assembly electrical connector (2).
5. Disconnect and remove fuel control assembly to fuel solenoid valve tube (3).
6. Disconnect and remove fuel inlet tube assembly (4) from fuel control assembly and fuel control lower cover union.
7. Loosen coupling (5).
8. Pull forward on fuel control assembly (6) to disengage splined shaft and coupler, then remove fuel control assembly.
9. Remove and discard packing (7).
10. Clean fuel control assembly using process 1, Chapter 8.

FOLLOW-ON MAINTENANCE: None.



Section XIII TOUCH UP FUEL CONTROL ASSEMBLY ANODIZE

4-13 TOUCH UP FUEL CONTROL ASSEMBLY ANODIZE (AVIM)

INITIAL SETUP

Tools:
Air Gun
Air Hose Assembly
Rubber Gloves
Safety Glasses

Personnel Required:
68B Aircraft Powerplant Repairer

Materials/Parts:
Cotton Applicator (D10)
Iridite (D15)
1,1,1-Trichloroethane (D41)

Equipment Conditions:
Fuel Control Assembly Removed From APU

General Safety Instructions:

WARNING

1,1,1-Trichloroethane is toxic to skin, eyes and respiratory tract. Skin and eye protection are required. Avoid repeated or prolonged contact. Work in a well-ventilated area.

Compressed air is dangerous when directed toward yourself or another person. The airstream or material blown by the airstream can cause injury, particularly to the eyes and face. Use goggles to protect eyes and face. Do not exceed 30 PSI. Do not direct airstream toward yourself or another person.

Iridite solution is toxic to skin, eyes and respiratory tract. Skin and eye protection are required. Avoid repeated or prolonged contact. Work in a well-ventilated area.

4-13 TOUCH UP FUEL CONTROL ASSEMBLY ANODIZE (AVIM) (CONT)

NOTE

This task is for damaged area less than 5 percent of surface area or shorter than 1/2 inch in length.

1. Clean damaged area with 1,1,1-trichloroethane (D41) and cotton applicator (D10).

2. Dry thoroughly with clean, filtered compressed air.

CAUTION

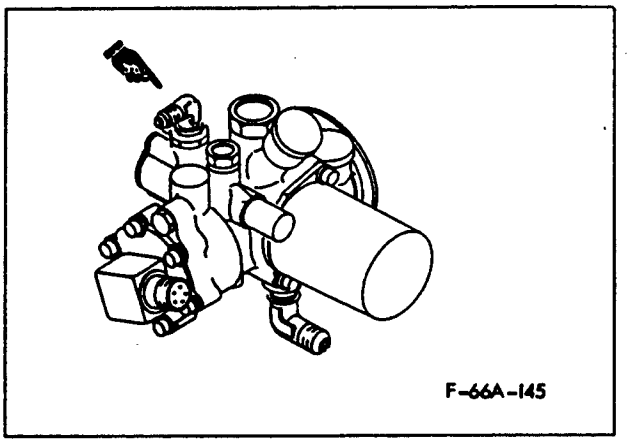
Cotton applicator, saturated with iridite solution, constitutes a fire hazard if allowed to dry. Immediately after use, rinse thoroughly in tap water.

3. Apply iridite solution (D15) to damaged area with a cotton applicator (D10), keep surface wet 1 minute.

4. Rinse treated area with tap water 80 to 110°F (27 to 43°C).

5. Dry part thoroughly with clean, filtered compressed air.

FOLLOW-ON MAINTENANCE: None.



Section XIV INSTALL FUEL CONTROL ASSEMBLY

4-14 INSTALL FUEL CONTROL ASSEMBLY

INITIAL SETUP

Tools:
Aircraft Inspection Tool Kit (T49)
Engine Repairman's Tool Kit (T47)
Torque Wrench 30-150 inch-pounds
Torque Wrench 150-750 inch-pounds

Personnel Required:
68B Aircraft Powerplant Inspector
68B Aircraft Powerplant Repairer

Materials/Parts:
Lockwire (D43)
Lubricating Oil (D16)
Packing

References:
Task 4-10

Equipment Conditions:
APU on Aircraft

General Safety Instructions:

WARNING

Engine fuel is toxic and flammable. To prevent personnel injury, avoid contact with eyes and repeated or prolonged contact with skin.

Lubricating oils, DOD-L-85734, MIL-L-23699 and MIL-L-7808, contain materials hazardous to health. They produce paralysis if swallowed or from prolonged skin contact. They may burn if exposed to heat or flames. Wash hands thoroughly after handling. Use only with proper ventilation.

4-14 INSTALL FUEL CONTROL ASSEMBLY (CONT)

NOTE

As all tubes and connectors are installed/connected, all protective caps/plugs shall be removed.

1. Lubricate packing (1) with lubricating oil (D16) and install on fuel control assembly (2) mount flange.

CAUTION

Use care when installing fuel control assembly. Be sure fuel control assembly shaft and coupler splines are aligned. Failure to do so could result in damage to fuel control assembly or shaft coupling.

2. Install fuel control assembly (2) and push aft to align and engage fuel control splines with coupler. Install coupling (3).

3. Align fuel control assembly with fuel filter assembly at 9 o'clock position.

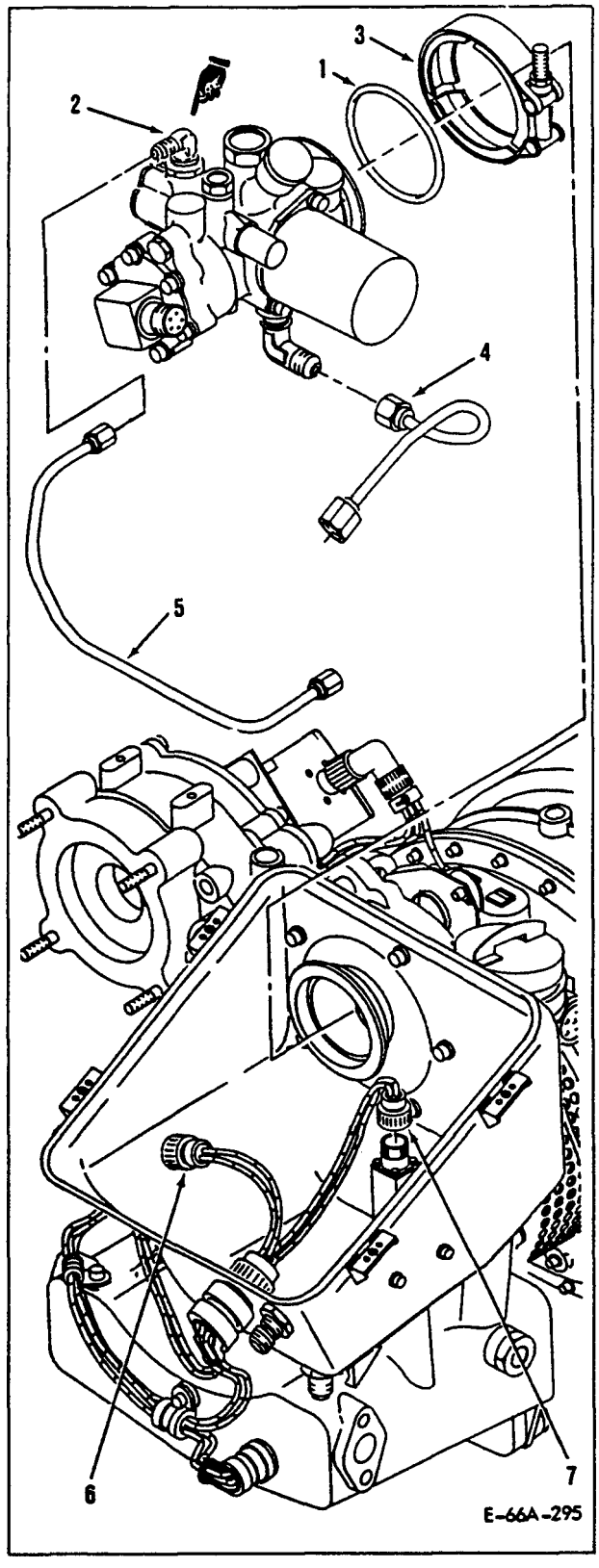
4. Torque coupling (3) nut to 33 to 37 inch-pounds.

5. Tap coupling outer diameter with rubber mallet. Torque to 47 to 53 inch-pounds.

6. Repeat tap and torque until torque remains at 47 to 53 inch-pounds.

7. Install fuel inlet tube assembly (4). Torque to 190 to 220 inch-pounds.

8. Install fuel solenoid valve to fuel control assembly tube (5). Torque to 100 to 120 inch-pounds.



4-14 INSTALL FUEL CONTROL ASSEMBLY (CONT)

9. Connect fuel control wiring harness assembly connector (6) to fuel control assembly. Lockwire connector with lockwire (D43).

10. Connect fuel control wiring harness assembly connector (7) to fuel solenoid valve. Lockwire connector with lockwire (D43).

11. Perform leak check.

12. Install fuel control upper cover (Task 4-10).

FOLLOW-ON MAINTENANCE: MOC required.

Section XV REPLACE FUEL SOLENOID VALVE

4-15 REPLACE FUEL SOLENOID VALVE

This task covers: a. Removal b. Installation

INITIAL SETUP

Tools:
Aircraft Inspection Tool Kit (T49)
Engine Repairman's Tool Kit (T47)
Torque Wrench 30-150 inch-pounds

Personnel Required:
68B Aircraft Powerplant Inspector
68B Aircraft Powerplant Repairer

Materials/Parts:
Lockwire (D43)
Lubricant (D19)
Machinery Towel (D20)
Packing
Protective Caps and Plugs

References:
Tasks 4-1, 4-10

Equipment Condition:
APU on Aircraft

General Safety Instructions:

WARNING

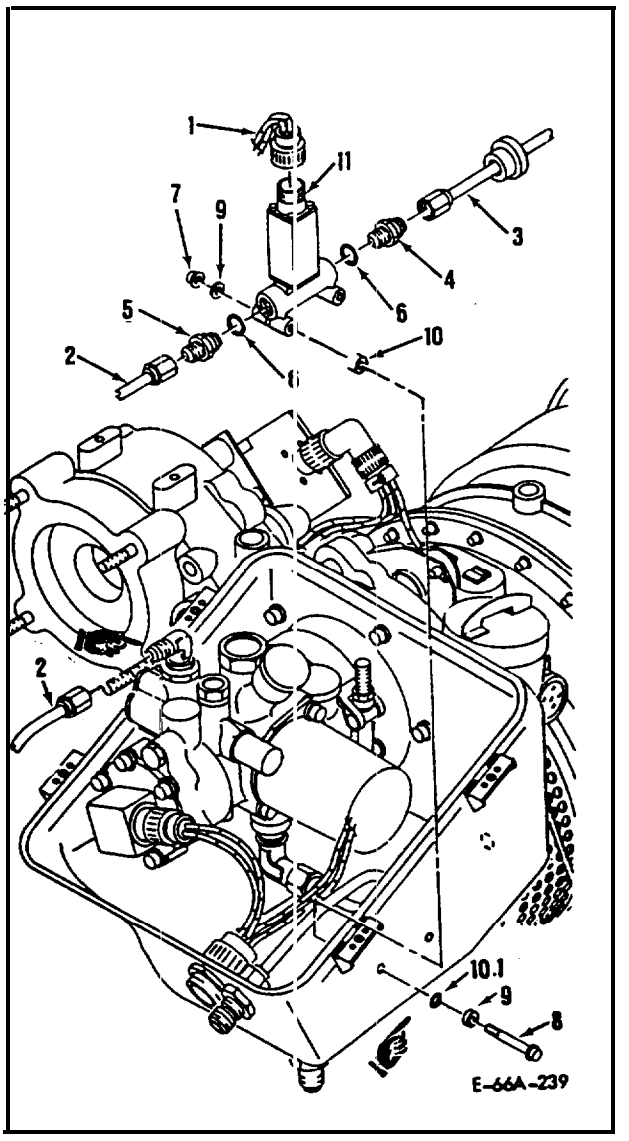
Engine fuel is toxic and flammable. To prevent personnel injury, avoid contact with eyes and repeated or prolonged contact with skin.

REMOVAL

CAUTION

To prevent clogging or contamination, all exposed openings in fuel, oil, air lines and electrical connectors will be capped immediately. Be sure caps and plugs are clean.

1. Remove fuel control upper cover (Task 4-1).
2. Disconnect electrical connector (1) from solenoid valve (11).
3. Place machinery towel (D20) under solenoid valve (11).
4. Disconnect fuel control assembly to fuel solenoid valve tube (2).
5. Disconnect fuel solenoid valve to fuel manifold assembly tube (3) from fuel solenoid valve (11).
6. Remove reducer (4) and union (5) from solenoid valve (11). Remove packings (6) from reducer and union and discard.
7. Remove nuts (7), bolts (8), washers (9), spacers (10) and packings with retainer (10.1) securing solenoid valve (11) to fuel control lower cover. Remove solenoid valve (11).
8. Clean solenoid valve using process 7, Chapter 8.



4-15 REPLACE FUEL SOLENOID VALVE (CONT)

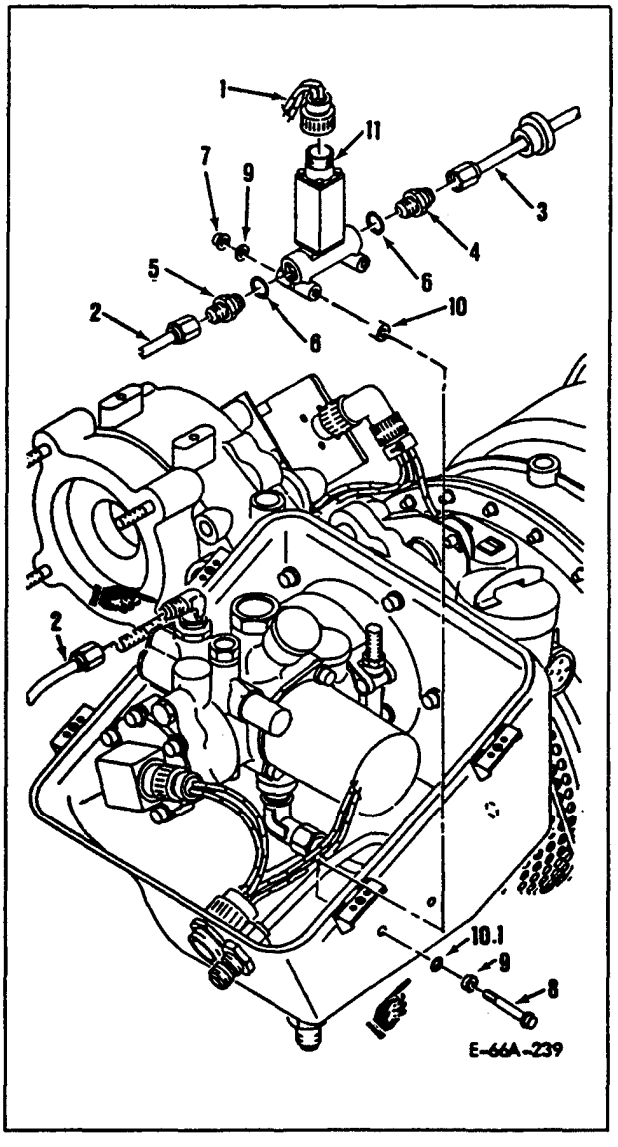
INSTALLATION

NOTE

As all tubes and connectors are installed/connected, all protective caps/plugs shall be removed.

1. Lubricate packings (6) with lubricant (D19) and install new packings (6) on reducer (4) and union (5).
2. Install reducer (4) and union (5). Torque to 60 to 65 inch-pounds.
3. Position fuel solenoid valve (11) in-line with tube (2) on fuel solenoid valve inlet side. Be sure flow arrow on fuel solenoid valve is pointing aft.
4. Connect tubes (2, 3) to reducer (4) and union (5).
5. Secure fuel solenoid valve (11) with washers (9), bolts (8), nuts (7), spacers (10) and packings with retainer (10.1). Torque nuts to 28 to 32 inch-pounds.
6. Torque tube (2) to 100 to 120 inch-pounds. Torque tube (3) to 70 to 80 inch-pounds.
7. Install electrical connector (1). Lockwire electrical connector using lockwire (D43).
8. Perform leak check.
9. Install fuel control upper cover (Task 4-10).

FOLLOW-ON MAINTENANCE: MOC required.



Section XVI REPLACE FUEL DRAIN TUBE ASSEMBLY

4-16 REPLACE FUEL DRAIN TUBE ASSEMBLY

This task covers: a. Removal b. Installation

INITIAL SETUP

Tools:
Aircraft Inspection Tool Kit (T49)
Engine Repairman's Tool Kit (T47)
Torque Wrench 30-150 inch-pounds

Personnel Required:
68B Aircraft Powerplant Inspector
68B Aircraft Powerplant Repairer

Materials/Parts:
Antiseize Compound (D7)
Machinery Towel (D20)
Protective Caps and Plugs

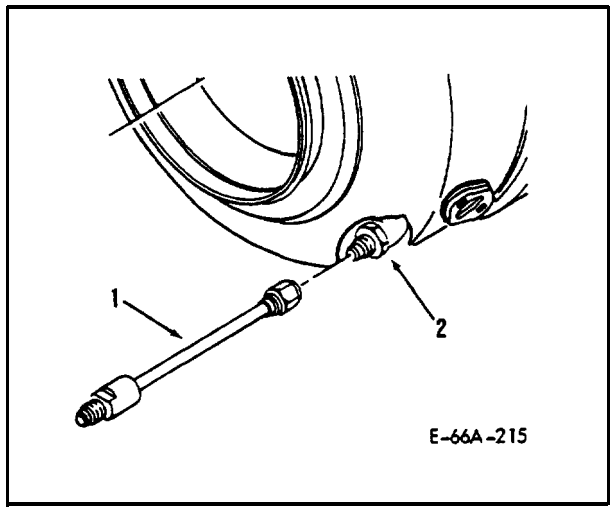
Equipment Conditions:
APU on Maintenance Stand (T1)

General Safety Instructions:

WARNING

Engine fuel is toxic and flammable. To prevent personnel injury, avoid contact with eyes and repeated or prolonged contact with skin.

4-16 REPLACE FUEL DRAIN TUBE ASSEMBLY (CONT)



REMOVAL

CAUTION

To prevent clogging or contamination, all exposed openings in fuel, oil, air lines and electrical connectors will be capped immediately. Be sure caps and plugs are clean.

1. Place machinery towel (D20) under fuel drain tube assembly (1) to catch residual fuel.
2. Remove fuel drain tube assembly (1).
3. Clean fuel drain tube assembly (1) using process 1, Chapter 8.

INSTALLATION

NOTE

Prior to assembly, all components will be visually inspected for damage.

As all tubes and connectors are installed/connected, all protective caps/plugs shall be removed.

1. Lubricate orifice fitting with anti-seize compound (D7).
2. Install fuel drain tube assembly (1) with angle down. Torque to 104 to 116 inch-pounds.

FOLLOW-ON MAINTENANCE: None.

4-17 REPLACE ORIFICE FITTING

This task covers: a. Removal b. Installation

INITIAL SETUP

Tools:
Aircraft Inspection Tool Kit (T49)
Engine Repairman's Tool Kit (T47)
Torque Wrench 30-150 inch-pounds

Personnel Required:
68B Aircraft Powerplant Inspector
68B Aircraft Powerplant Repairer

Materials/Parts:
Antiseize Compound (D7)
Lubricant (D19)
Machinery Towel (D20)
Packing
Protective Caps and Plugs

Equipment Conditions:
APU on Maintenance Stand (T1)

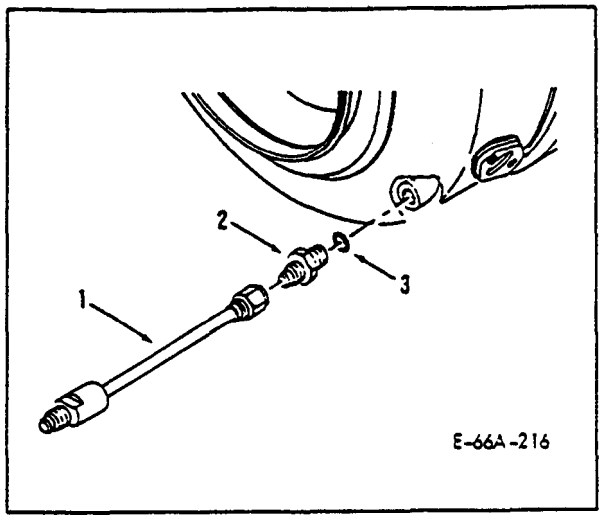
General Safety Instructions:

WARNING

Engine fuel is toxic and flammable. To prevent personnel injury, avoid contact with eyes and repeated or prolonged contact with skin.

4-17 REPLACE ORIFICE FITTING (CONT)

REMOVAL



CAUTION

To prevent clogging or contamination, all exposed openings in fuel, oil, air lines and electrical connectors will be capped immediately. Be sure caps and plugs are clean.

1. Place machinery towel (D20) under fuel drain tube assembly (1) to catch residual fuel.
2. Remove fuel drain tube assembly (1).
3. Remove orifice fitting (2).
4. Remove packing (3) from orifice fitting (2). Discard packing.
5. Remove machinery towel (D20).
6. Clean orifice fitting (2) using process 1, Chapter 8.

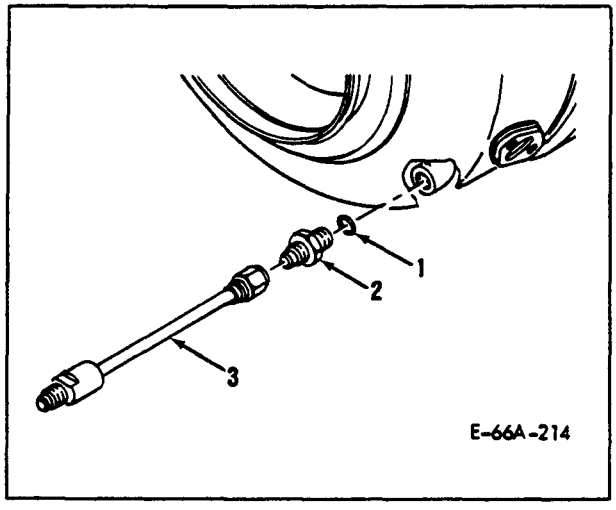
4-17 REPLACE ORIFICE FITTING (CONT)

INSTALLATION

NOTE

Prior to assembly, all components will be visually inspected for damage.

As all tubes and connectors are installed/connected, all protective caps/plugs shall be removed.



1. Lubricate packing (1) with lubricant (D19). Install packing on orifice fitting (2) end to be installed in combustor case.

2. Apply antiseize compound (D7) to threads of orifice fitting (2).

3. Install orifice fitting (2) in combustor case drain boss. Torque orifice fitting (2) to 114 to 126 inch-pounds.

4. Install fuel drain tube assembly (3) with angle down. Torque to 104 to 116 inch-pounds.

FOLLOW-ON MAINTENANCE: None.

Section XVIII REPLACE FUEL MANIFOLD ASSEMBLY

4-18 REPLACE FUEL MANIFOLD ASSEMBLY (AVIM)

This task covers: a. Removal b. Installation

INITIAL SETUP

Tools:
Aircraft Inspection Tool Kit (T49)
Engine Repairman's Tool Kit (T47)
Torque Wrench 30-150 inch-pounds

Personnel Required:
68B Aircraft Powerplant Inspector
68B Aircraft Powerplant Repairer

Equipment Conditions:
APU and Maintenance Stand (T1)

Materials/Parts:
Antiseize Compound (D7)
Bolts
Lockwire (D43)
Machinery Towel (D20)
Protective Caps and Plugs

General Safety Instructions:

WARNING

Engine fuel is toxic and flammable. To prevent personnel injury, avoid contact with eyes and repeated or prolonged contact with skin.

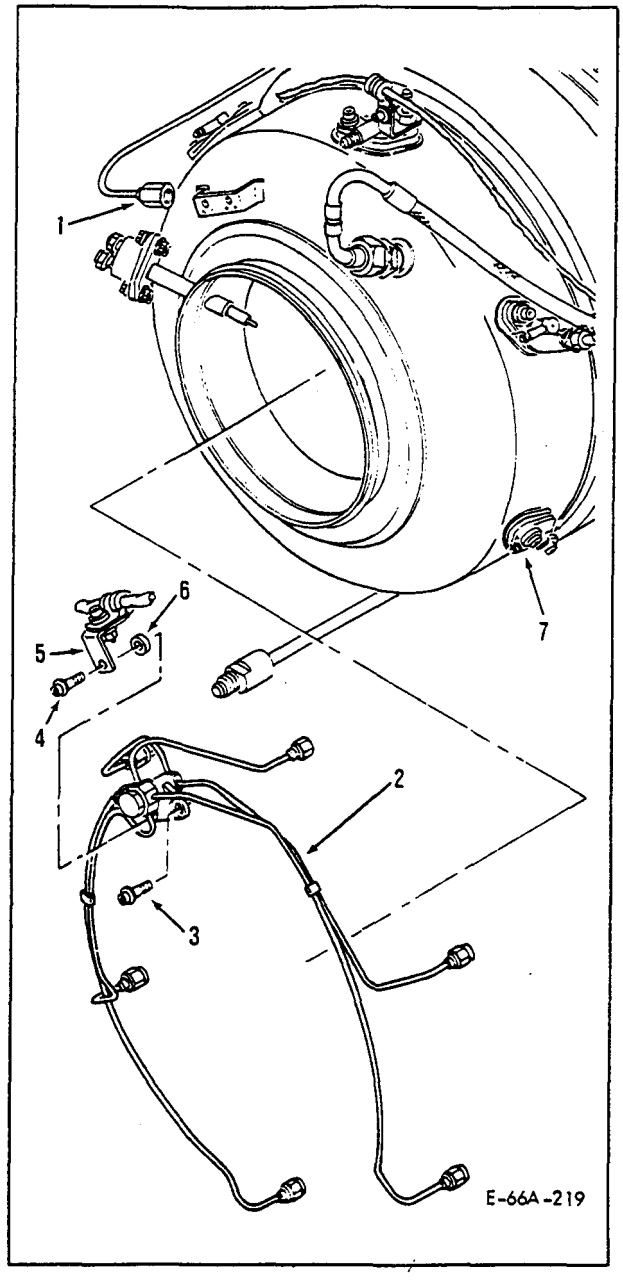
4-18 REPLACE FUEL MANIFOLD ASSEMBLY (AVIM) (CONT)

REMOVAL

CAUTION

To prevent clogging or contamination, all exposed openings in fuel, oil, air lines and electrical connectors will be capped immediately. Be sure caps and plugs are clean.

1. Place machinery towel (D20) under combustion case before disconnecting fuel manifold assembly (2).
2. Disconnect fuel solenoid valve to fuel manifold assembly tube (1) from fuel manifold assembly (2) valve housing.
3. Disconnect fuel manifold assembly (2) from fuel nozzle assemblies (7).
4. Remove bolts (3, 4), bracket (5) and spacer (6). Discard bolts.
5. Remove fuel manifold assembly (2).
6. Clean manifold assembly (2) using process 1, Chapter 8.



4-18 REPLACE FUEL MANIFOLD ASSEMBLY (AVIM) (CONT)

INSTALLATION

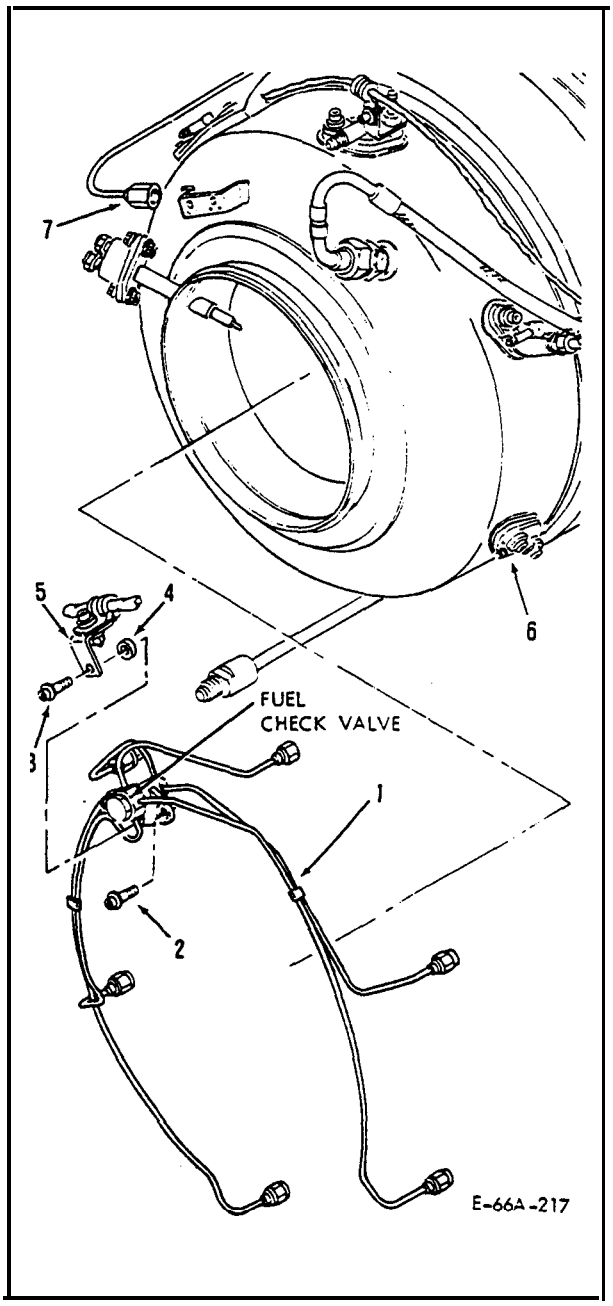
NOTE

As tubes and connectors are installed and connected, protective caps and plugs shall be removed.

Prior to assembly, components will be visually inspected for obvious damage.

1. Apply antiseize compound (D7) to threads of bolts (2, 3).
2. Place fuel manifold assembly (1) on combustor case.
3. Be sure bolt with predrilled hole is positioned on right side of fuel manifold assembly valve housing, then secure fuel manifold assembly valve housing with bolts (2, 3), spacer (4) and bracket (5). Torque bolts to 38 to 42 inch-pounds. Lockwire bolt (2) to fuel check valve with lockwire (D43).
4. Connect fuel manifold assembly (1) to fuel nozzle assemblies (6). Torque fuel manifold assembly (1) to 33 to 37 inch-pounds.
5. Connect fuel solenoid to fuel manifold assembly tube (7) to fuel manifold assembly. Torque to 66 to 74 inch-pounds.
6. Remove machinery towel (D20).

FOLLOW-ON MAINTENANCE: None.



4-19 REMOVE PRIMARY AND SECONDARY FUEL NOZZLE ASSEMBLIES (AVIM)

INITIAL SETUP

Tools:
Engine Repairman's Tool Kit (T47)

Personnel Required:
68B Aircraft Powerplant Repairer

Materials/Parts:
Plastic Bag (D2)
Pressure Sensitive Tape (D39)
Protective Caps and Plugs

Equipment Conditions:
APU on Maintenance Stand (T1)

General Safety Instructions:

WARNING

Engine fuel is toxic and flammable. To prevent personnel injury, avoid contact with eyes and repeated or prolonged contact with skin.

4-19 REMOVE PRIMARY AND SECONDARY FUEL NOZZLE ASSEMBLIES (AVIM) (CONT)

CAUTION

Make certain fuel manifold nozzles are not damaged during removal.

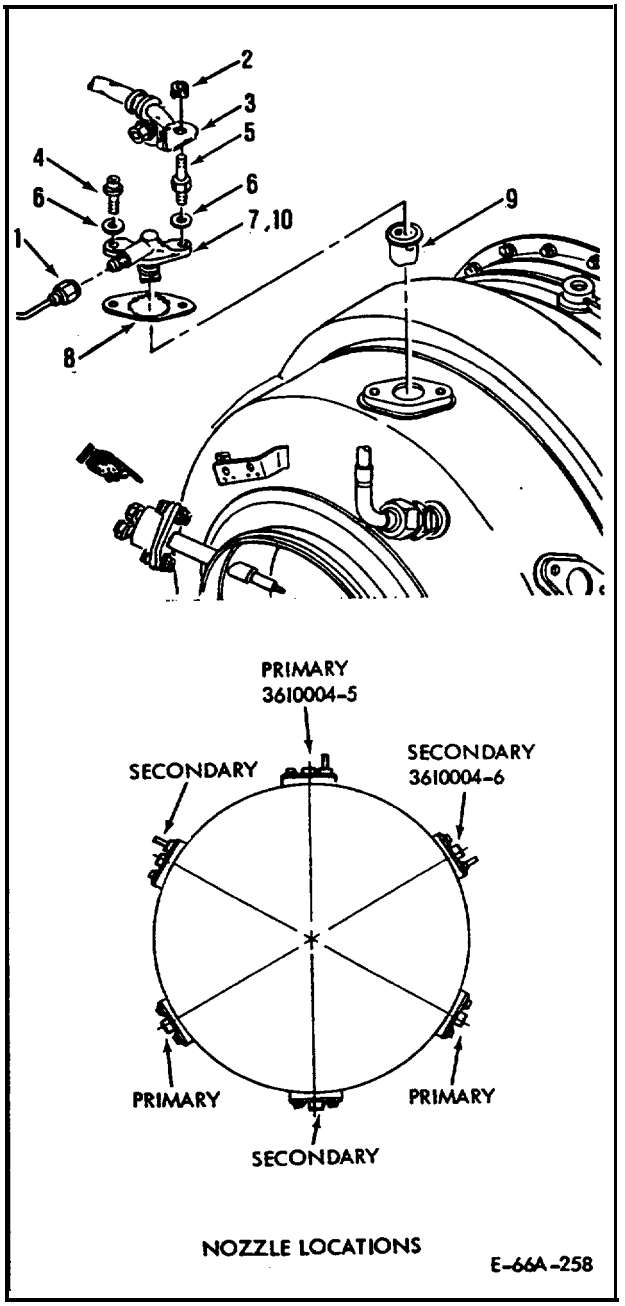
To prevent clogging or contamination, all exposed openings in fuel, oil, air lines and electrical connectors will be capped immediately. Be sure caps and plugs are clean.

1. Disconnect fuel manifold assembly (1) from primary fuel nozzle assemblies (7).
2. Remove nut (2) and bracket (3) from 12 o'clock position.
3. Remove bolts (4), stud (5) and washers (6). Discard bolts, stud and washers. Remove pimary fuel nozzle assemblies (7) and place in plastic bag (D2).
4. Remove and discard nozzle seal plates (8).
5. Disconnect fuel manifold assembly (1) from secondary fuel nozzle assemblies (10).
6. Remove nuts (2) and brackets (3) from 2 and 10 o'clock positions.
7. Remove bolts (4), studs (5) and washers (6). Discard bolts, studs and washers. Remove secondary fuel nozzle assemblies (10) and place in plastic bag (D2).
8. Remove and discard remaining nozzle seal plates (8).
9. With suitable tool, remove fuel atomizer shrouds (9) from primary fuel nozzle assemblies (7) and secondary fuel nozzle assemblies (10).

9.1. Cover primary and secondary fuel nozzle assembly mount holes using pressure sensitive tape (D39).

10. Clean primary and secondary nozzle assemblies and atomizers by processes 1, 2 and 3, Chapter 8.

FOLLOW-ON MAINTENANCE: None.



4-19.1 INSPECT PRIMARY AND SECONDARY FUEL NOZZLE ASSEMBLIES (AVIM)

INITIAL SETUP

Tools:
Aircraft Inspection Tool Kit (T49)

Personnel Required:
68B Aircraft Powerplant Repairer

Equipment Conditions:
Fuel Nozzle Assemblies Removed From APU

General Safety Instructions:

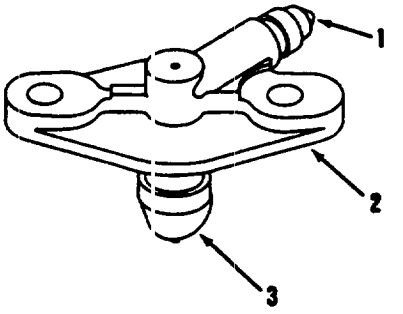
WARNING

Compressed air is dangerous when directed toward yourself or another person. The airstream or material blown by the airstream can cause injury, particularly to the eyes and face. Use goggles to protect eyes and face. Do not exceed 30 PSI. Do not direct airstream toward yourself or another person.

NOTE

Visually inspect fuel nozzle assemblies as follows.

1. Inspect fuel inlet fitting (1) for stripped or peened threads. No stripped or peened threads, allowed.
2. Inject filtered air through fuel inlet fitting (1) of primary and secondary fuel nozzle assemblies to check for obstructions. No obstructions allowed.
3. Inspect mounting flange (2) for burrs or nicks. No burrs or nicks allowed.
4. Inspect primary and secondary fuel nozzle assemblies passage (3) for blockage or carbon deposits. No blockage or carbon deposits allowed.



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FOLLOW-ON MAINTENANCE: None.

Section XX INSTALL PRIMARY AND SECONDARY FUEL NOZZLE ASSEMBLIES

4-20 INSTALL PRIMARY AND SECONDARY FUEL NOZZLE ASSEMBLIES (AVIM)

INITIAL SETUP

Tools:
Aircraft Inspection Tool Kit (T49)
Engine Repairman's Tool Kit (T47)
Torque Wrench 30-150 inch-pounds

Personnel Required:
68B Aircraft Powerplant Inspector
68B Aircraft Powerplant Repairer

Materials/Parts:
Antiseize Compound (D7)
Bolt
Lockwire (D44)
Nozzle Seal Plates
Nut
Stud
Washer
1,1,1-Trichloroethane (D41)

Equipment Conditions:
APU on Maintenance Stand (T1)

General Safety Instructions:

WARNING

Engine fuel is toxic and flammable. To prevent personnel injury, avoid contact with eyes and repeated or prolonged contact with skin.

1,1,1-Trichloroethane is toxic to skin, eyes and respiratory tract. Skin and eye protection are required. Avoid repeated or prolonged contact. Work in a well-ventilated area.

4-20 INSTALL PRIMARY AND SECONDARY FUEL NOZZLE ASSEMBLIES (AVIM) (CONT)

CAUTION

To prevent damage to nozzle alignment pin, care should be taken to align shroud pin hole to nozzle pin.

NOTE

As all tubes and connectors are installed/connected, all protective caps/plugs shall be removed.

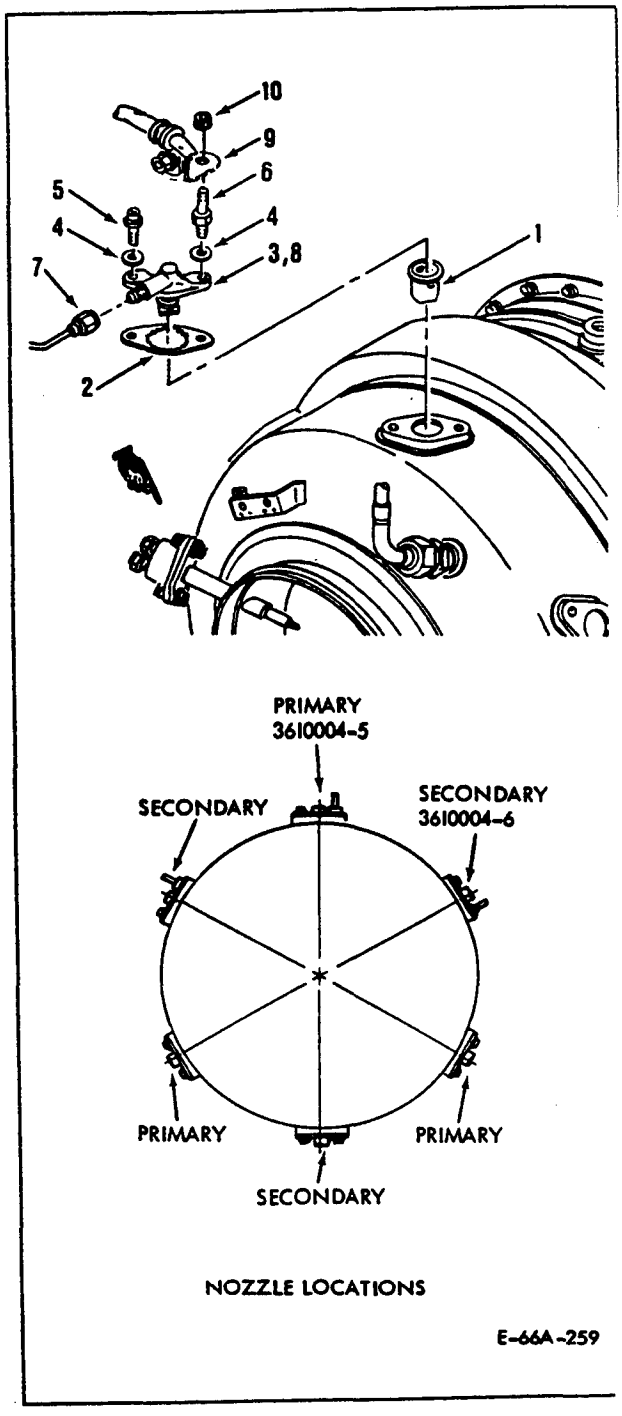
Prior to assembly, components will be visually inspected for obvious damage.

1. Remove pressure sensitive tape from primary and secondary fuel nozzle assembly mount holes.
2. Clean tape residue from combustor case using 1,1,1-trichloroethane (D41).
3. Install atomizer shrouds (1) into combustor case.
4. Press primary fuel nozzle assemblies (3) in atomizer shrouds (1).
5. Install nozzle seal plates (2) on primary fuel nozzle assemblies (3).
6. Apply antiseize compound (D7) on bolts (5) and studs (6).

NOTE

Alternate tightening sequence until primary and secondary fuel nozzle assemblies mate with combustor case.

7. Install primary fuel nozzle assemblies (3) at 4 and 8 o'clock positions. Secure with washers (4) and bolts (5).
8. Install last primary fuel nozzle assembly (5) at 12 o'clock position. Secure with washers (4), bolt (5) and stud (6).
9. Press secondary fuel nozzle assemblies (8) in atomizer shrouds (1).



NOZZLE LOCATIONS

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4-20 INSTALL PRIMARY AND SECONDARY FUEL NOZZLE ASSEMBLIES (AVIM) (CONT)

10. Install nozzle seal plates (2) on secondary fuel nozzle assemblies (8).
11. Install secondary fuel nozzle assembly (8) at 6 o'clock position. Secure with washers (4) and bolts (5).
12. Install secondary fuel nozzle assemblies (8) at 2 and 10 o'clock positions. Secure with washers (4), bolts (5) and studs (6).
13. Torque all bolts and studs to 47 to 53 inch-pounds.
14. Lockwire bolts (5) and studs (6) with lockire (D44).
15. Install brackets (9) at 2, 10 and 12 o'clock positions and secure with nuts (10). Torque nuts to 33 to 37 inch-pounds.
16. Connect fuel manifold assembly (7) to all primary and secondary fuel nozzles.
17. Torque fuel manifold assembly (7) to 33 to 37 inch-pounds.

FOLLOW-ON MAINTENANCE: None.

Section XXI REPLACE FUEL CHECK VALVE

4-21 REPLACE FUEL CHECK VALVE

This task covers: a. Removal b. Installation

INITIAL SETUP

Tools:
Aircraft Inspection Tool Kit (T49)
Engine Repairman's Tool Kit (T47)
Torque Wrench 30-150 inch-pounds

Personnel Required:
68B Aircraft Powerplant Inspector
68B Aircraft Powerplant Repairer

Materials/Parts:
Lockwire (D43)
Lubricant (D19)
Packing
Plastic Bag (D2)

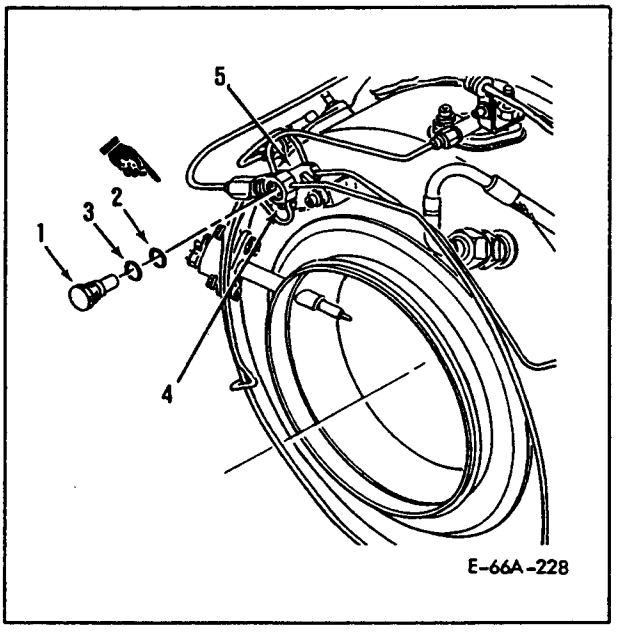
Equipment Conditions:
APU on Aircraft

General Safety Instructions:

WARNING

Engine fuel is toxic and flammable. To prevent personnel injury, avoid contact with eyes and repeated or prolonged contact with skin.

4-21 REPLACE FUEL CHECK VALVE (CONT)



REMOVAL

1. Loosen fastener studs securi ng rear panel to firewall.
2. Remove fuel check valve (1) from fuel manifold assembly (5) housing.
3. Remove and discard packings (2, 3).
4. Put fuel check valve (1) in plastic bag (D2).

INSTALLATION

NOTE

Prior to assembly, all components will be visually inspected for damage.

1. Lubricate packings (2, 3) with lubricant (D19). Install packings on fuel check valve (1). Be sure packings are not cut or twi sted after installation.
2. Install fuel check valve (1) in fuel manifold assembly (5) housing. Torque fuel check valve to 43 to 47 inch-pounds.
3. Lockwire fuel check valve (1) to bolt (4) with lockwire (D43).
4. Secure fastener studs securing rear panel to firewall.

FOLLOW-ON MAINTENANCE: MOC required.

CHAPTER 5

ELECTRICAL SYSTEM MAINTENANCE

Section I REMOVE APU WIRING HARNESS ASSEMBLY

5-1 REMOVE APU WIRING HARNESS ASSEMBLY

INITIAL SETUP

Tools:
Engine Repairman's Tool Kit (T47)
Open End Wrench 5/32 inch

Personnel Required:
68B Aircraft Powerplant Repairer

Materials/Parts:
Protective Caps and Plugs

Equipment Conditions:
APU on UH-60 Aircraft Only

5-1 REMOVE APU WIRING HARNESS ASSEMBLY (CONT)

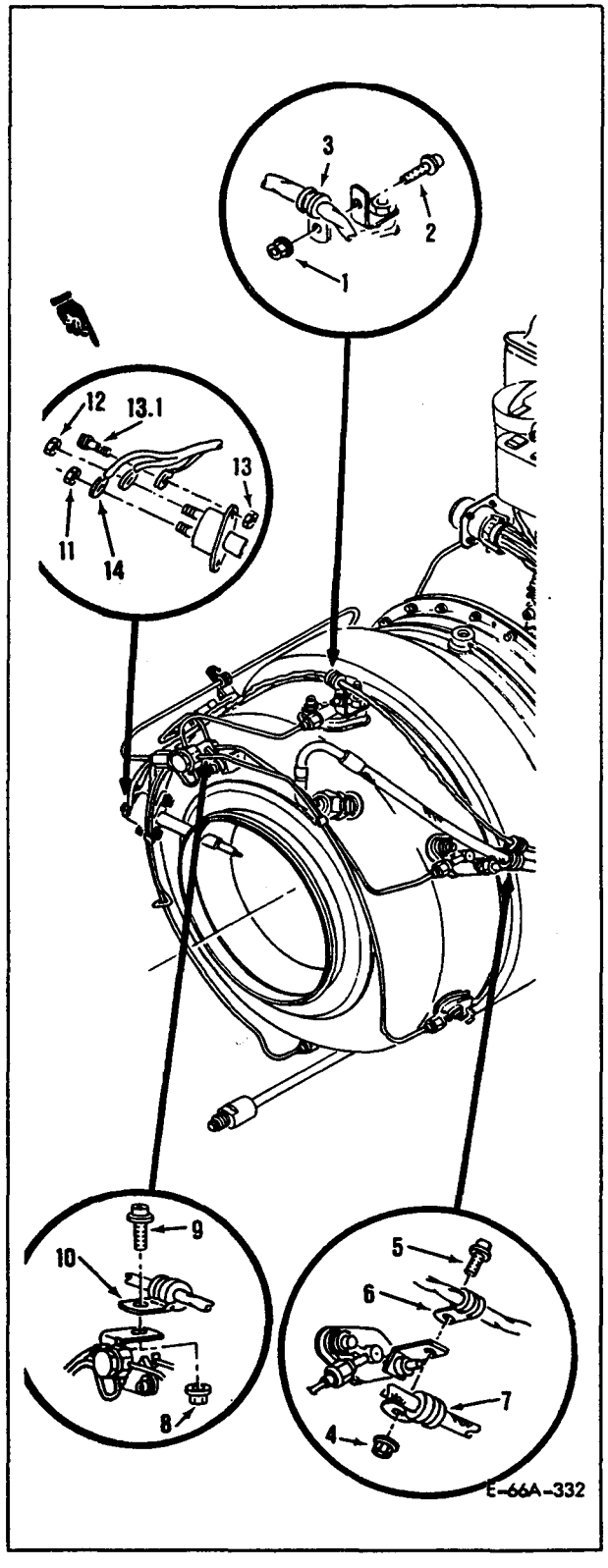
CAUTION

To prevent clogging or contamination, all exposed openings in fuel, oil, air lines and electrical connectors will be capped immediately. Be sure caps and plugs are clean.

NOTE

To aid in assembly, all leads should be marked prior to removal.

1. Remove nut (1), bolt (2) and clamp (3).
2. Remove nut (4), bolt (5) and clamps (6, 7).
3. Remove nut (8), bolt (9) and clamp (10).
4. Remove nuts (11, 12, 13), bolt (13.1) and ground wire from immersion thermocouple. Remove leads (14) from stud marked (AL) and stud marked (CR). Install nuts (11, 12) back on immersion thermocouple.



5-1 REMOVE APU WIRING HARNESS ASSEMBLY (CONT)

5. Remove nuts (15), screws (16) and washers (17).

6. Remove electrical connector J289 (18) from meter bracket.

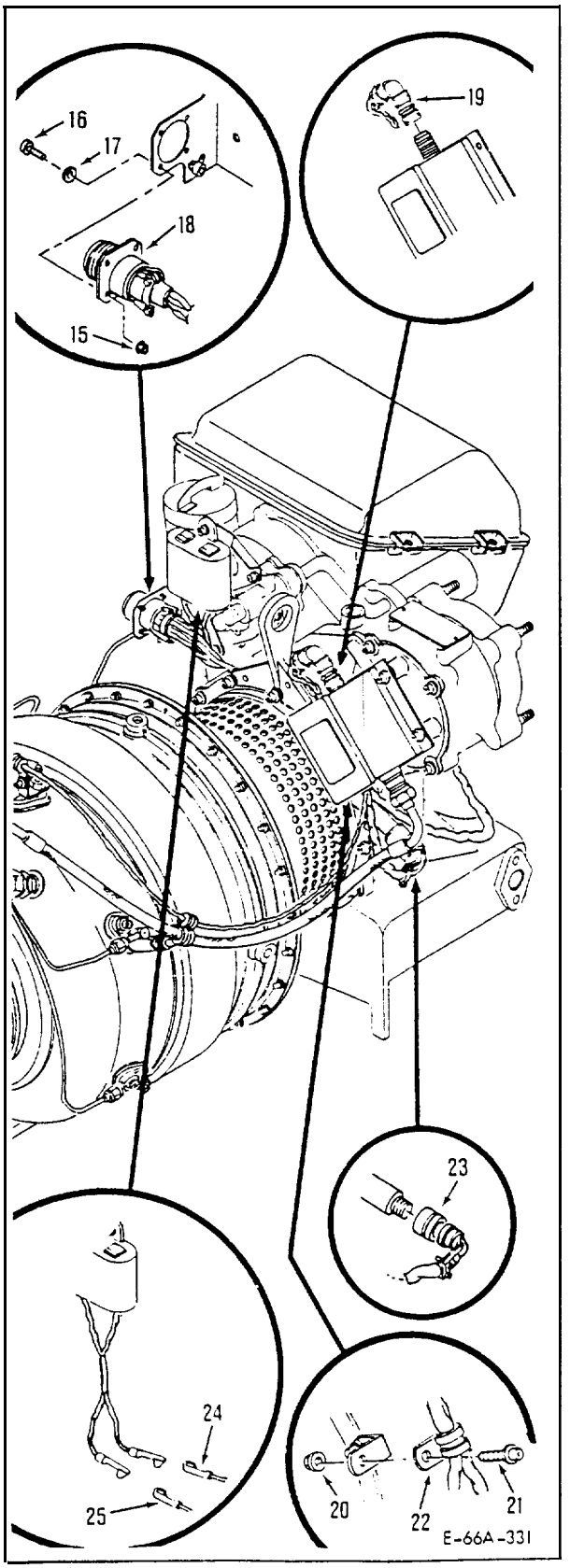
7. Disconnect electrical connector P7 (19) from ignition unit.

8. Remove nut (20), bolt (21) and clamp (22).

9. Disconnect electrical connector P6 (23) from motional pickup transducer.

10. Cut and remove tiewraps and slide sleeving up APU wiring harness assembly to expose electrical connectors (24, 25).

11. Disconnect connectors (24, 25) from hourmeter assembly.



5-1 REMOVE APU WIRING HARNESS ASSEMBLY (CONT)

12. Disconnect electrical connector P8 (26) from low oil pressure switch.

13. Disconnect electrical connector P3 (27) from fuel control wiring harness assembly.

14. Disconnect electrical connector P5 (28) from oil temperature bulb.

15. Remove bolt (29) and clamp (30).

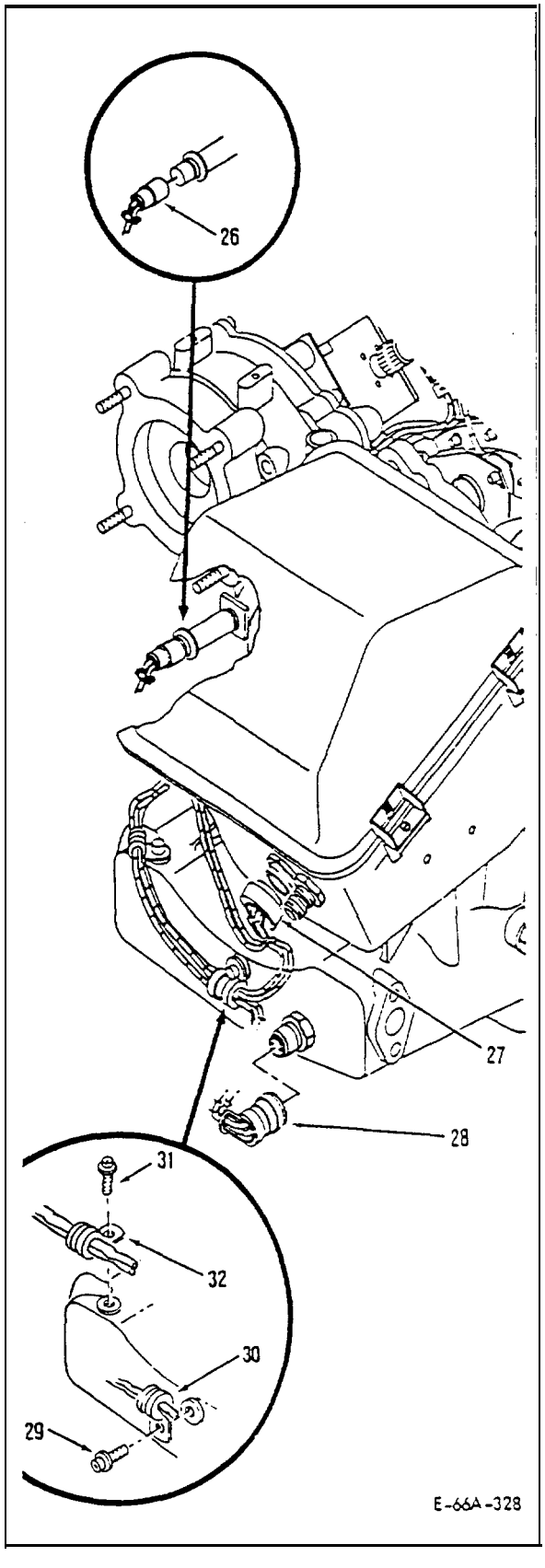
16. Remove bolt (31) and clamp (32).

17. To allow APU wiring harness assembly to be pulled through front panel assembly, remove top bolt and loosen bottom bolt securing inboard half of firewall sleeve.

18. Remove APU wiring harness assembly from APU.

19. Clean APU wiring harness assembly using process 7, Chapter 8.

FOLLOW-ON MAINTENANCE: None.



Section II REPLACE IMMERSION THERMOCOUPLE

5-2 REPLACE IMMERSION THERMOCOUPLE

This task covers: a. Removal b. Installation

INITIAL SETUP

Tools:
Aircraft Inspection Tool Kit (T49)
Engine Repairman's Tool Kit (T47)

Personnel Required:
68B Aircraft Powerplant Inspector
68B Aircraft Powerplant Repairer

Materials/Parts:
Antiseize Compound (D7)
Bolts
Gasket
Nuts

Equipment Conditions:
APU on Aircraft

REMOVAL

1. Loosen fastener studs securing rear panel to firewall.

NOTE

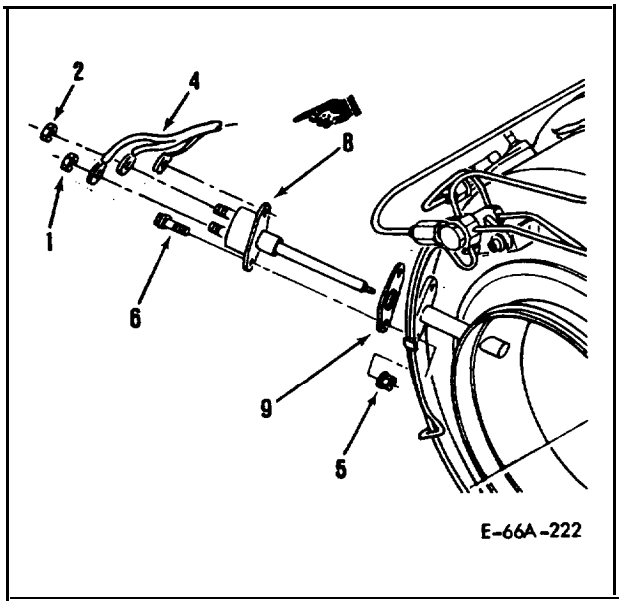
To aid in assembly, leads should be marked prior to removal.

2. Remove nuts (1, 2), nut (3, deleted) from immersion thermocouple and remove leads (4) from stud marked (AL) and stud marked (CR). Install nuts (1, 2) back on immersion thermocouple.

3. Remove nuts (5), bolts (6), stud (7, deleted) and ground wire. Remove immersion thermocouple (8).

4. Remove gasket (9) from immersion thermocouple and discard.

5. Clean thermocouple (8) using process 7, Chapter 8.



5-2 REPLACE IMMERSION THERMOCOUPLE (CONT)

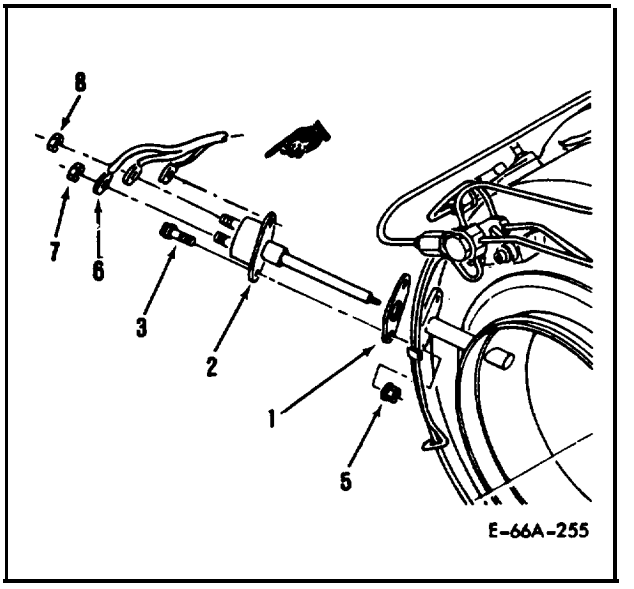
INSTALLATION

NOTE

Prior to assembly, components will be visually inspected for damage.

1. Install gasket (1) on immersion thermocouple (2).
2. Install immersion thermocouple (2) with (CR) facing forward and install in combustor case.
3. Apply antiseize compound (D7) to threads of bolt (3).
4. Install ground wire on upper side of immersion thermocouple and secure immersion thermocouple using bolts (3), stud (4, deleted) and nuts (5). Torque bolts to 38 to 42 inch-pounds.
5. Remove nuts (7, 8) from immersion thermocouple connections and install marked leads (6).
6. Install nuts (7, 8), nut (9, deleted) on studs. Torque nuts to 38 to 42 inch- pounds.
7. Secure fastener studs securing rear panel to firewall.

FOLLOW-ON MAINTENANCE: None.



Section III REPLACE MOTIONAL PICKUP TRANSDUCER

5-3 REPLACE MOTIONAL PICKUP TRANSDUCER

This task covers: a. Removal b. Installation

INITIAL SETUP

Tools:
Aircraft Inspection Tool Kit (T49)
Depth Micrometer 0-6 in.
Engine Repairman's Tool Kit (T47)
Micrometer 0-1 inch
Monopole Shim Checking Gage (T62)
Torque Wrench 30-150 inch-pounds

Personnel Required:
68B Aircraft Powerplant Inspector
68B Aircraft Powerplant Repairer

Materials/Parts:
Antiseize Compound (D8)
Bolt
Lockwire (D43)
Lubricating Oil (D16)
Packing
Protective Caps and Plugs
Shim
Washer

Equipment Conditions:
APU on Aircraft

General Safety Instructions:

WARNING

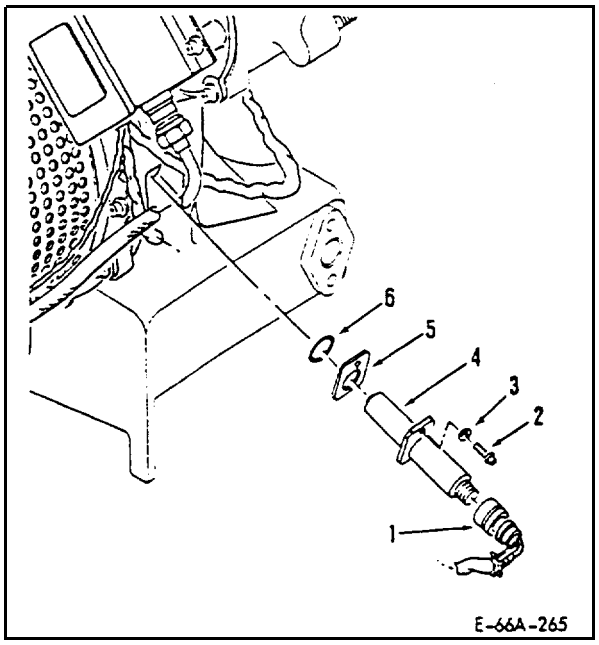
Lubricating oils, DOD-L-85734, MIL-L-23699 and MIL-L-7808, contain materials hazardous to health. They produce paralysis if swallowed or from prolonged skin contact. They may burn if exposed to heat or flames. Wash hands thoroughly after handling. Use only with proper ventilation.

REMOVAL

CAUTION

To prevent clogging or contamination, all exposed openings in fuel, oil, air lines and electrical connectors will be capped immediately. Be sure caps and plugs are clean.

1. Disconnect electrical connector (1).
2. Remove bolt (2) and washer (3).
3. Remove motional pickup transducer (4) from gearbox assembly. Remove shim (5) and packing (6). Discard packing and shim.



5-3 REPLACE MOTIONAL PICKUP TRANSDUCER (CONT)

4. Clean motional pickup transducer (4) using process 7, Chapter 8.

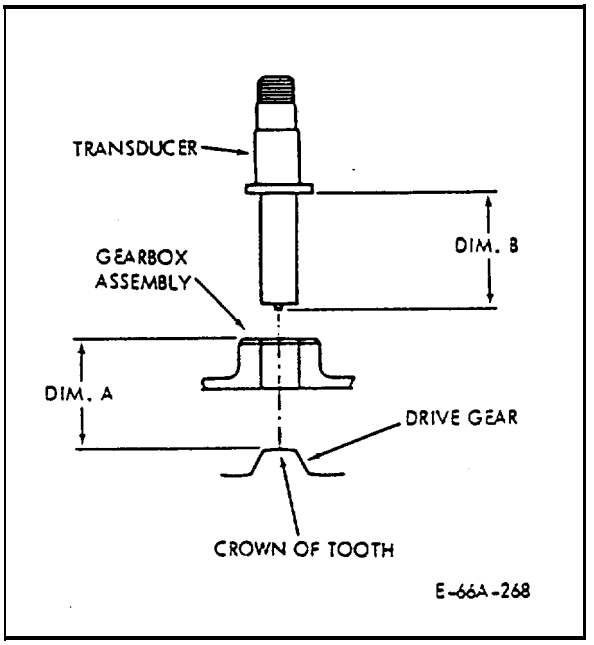
5. Primary method for obtaining motional pickup transducer tip clearance.

   a. Using micrometer, measure from gearbox assembly surface to crown of gear tooth of accessory drive gear. Record as dimension A.

   b. Using micrometer, measure transducer from tip of face to mount. Record as dimension B.

   c. Calculate required shim (1) by using this formula:

      B - A + 0.009 inch = Required shim ±0.002



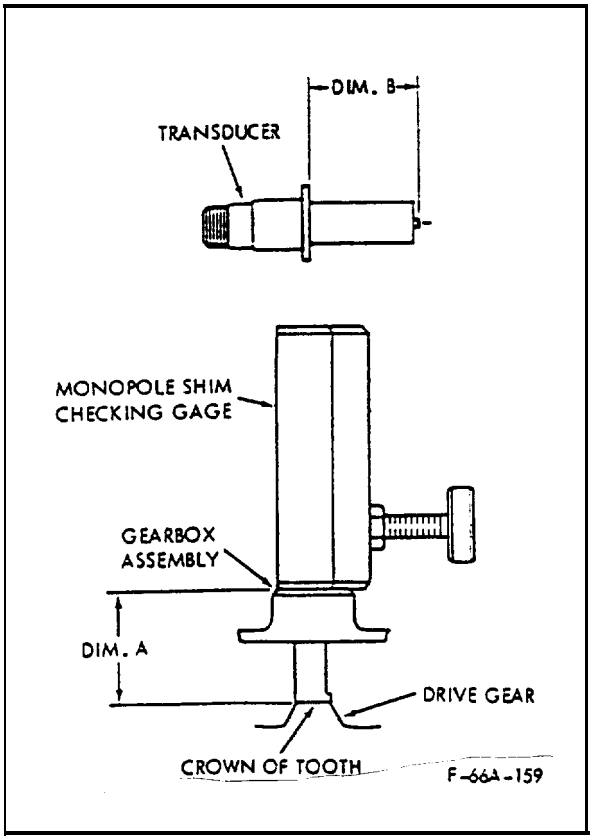
6. Alternate method for obtaining motional pickup transducer tip clearance.

   a. Using monopole shim checking gage (T62), measure from gearbox assembly surface to crown of gear tooth of accessory drive gear. Record as dimension A.

   b. Using micrometer measure from tip of face to mount. Record as dimension B.

   c. Calculate required shims by using this formula:

      B - A + 0.009 inch = Required shim ±0.002



5-3 REPLACE MOTIONAL PICKUP TRANSDUCER (CONT)

NOTE

Each lamination is 0.002 inch thick.

7. Peel lamination pieces from shim (1) to achieve requi red thickness of step 4.c or 5.c.

INSTALLATION

NOTE

As tubes and connectors are installed and connected, protective caps and plugs shall be removed.

Prior to assembly, all components will be visually inspected for damage.

1. Install shim (1) on motional pickup transducer (3). Lubricate packing (2) with lubricating oil (D16). Install on motional pickup transducer.

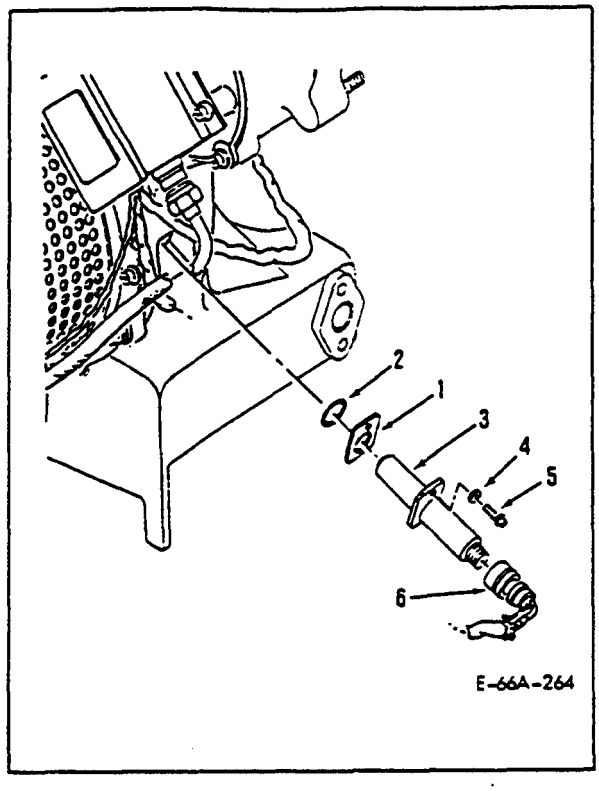
2. Apply antiseize compound (D8) to bolt (5).

3. Install motional pickup transducer (3) in gearbox assembly.

4. Secure transducer (3) with washer (4) and bolt (5). Torque bolt to 33 to 37 inch-pounds.

5. Connect electrical connector (6) and lockwire with lockwire (D43).

FOLLOW-ON MAINTENANCE: None.



Section IV REPLACE HOURMETER ASSEMBLY

5-4 REPLACE HOURMETER ASSEMBLY

This task covers: a. Removal b. Installation

INITIAL SETUP

Tools:
Aircraft Inspection Tool Kit (T49)
Engine Repairman's Tool Kit (T47)
Torque Wrench 30-150 inch-pounds

Personnel Required:
68B Aircraft Powerplant Inspector
68B Aircraft Powerplant Repairer

Materials/Parts:
Coating (D6A)
Sleeving (D33)
Textile Braid (D39A)

Equipment Conditions:
APU on Aircraft

General Safety Instructions:

WARNING

Humiseal coating is toxic. To prevent personnel injury, avoid contact with eyes and repeated or prolonged contact with skin.

5-4 REPLACE HOURMETER ASSEMBLY (CONT)

REMOVAL

NOTE

To aid in assembly, leads should be marked prior to removal.

1. Cut and remove textile braids (D39A) and slide sleeving up APU wiring harness assembly to expose electrical connectors (1, 2).
2. Disconnect electrical connectors (1, 2) from hourmeter assembly (5).
3. Remove bolts (3) and washers (4) securing hourmeter assembly (5) to meter bracket. Remove hourmeter assembly.
4. Clean hourmeter assembly (5) using process 7, Chapter 8.

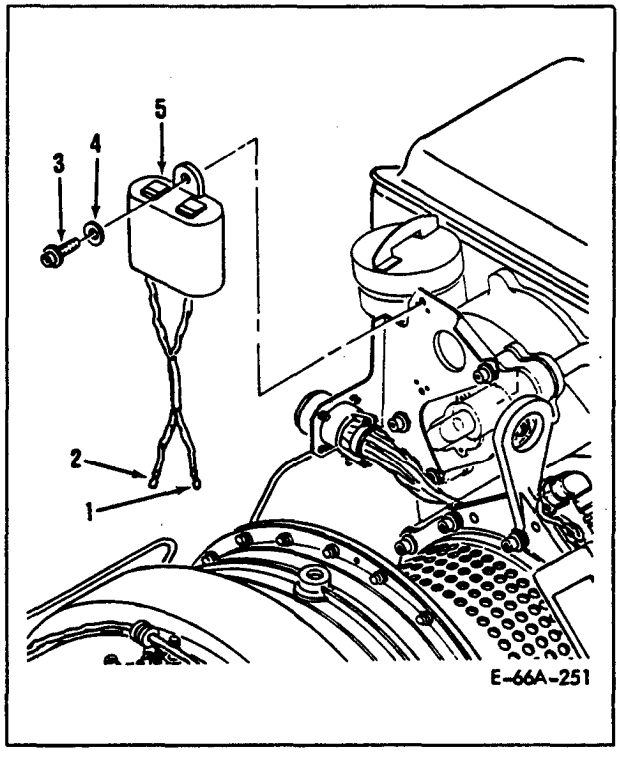
INSTALLATION

NOTE

Prior to assembly, all components will be visually inspected for damage.

1. Position hourmeter assembly (5) on meter bracket with counters in 12 o'clock position. Secure with washers (4) and bolts (3). Torque bolts to 38 to 42 inch-pounds.
2. Connect electrical connectors (1, 2) to hourmeter assembly as marked.
3. Slide sleeving (D33) down and center over each electrical connector (1, 2).
4. Deleted.
5. Install textile braid (D39A) two places on each sleeve covering connectors (1, 2).
6. Each textile braid (D39A) must be 0.20 to 0.30 inch from ends of sleeve. Tie in a square knot.
7. Apply coating (D6A) to knot and ends of textile braid (D39A).

FOLLOW-ON MAINTENANCE: MOC required to check event counter.



Section V REMOVE METER BRACKET

5-5 REMOVE METER BRACKET

INITIAL SETUP

Tools:
Engine Repairman's Tool Kit (T47)
Open End Wrench 5/32 inch

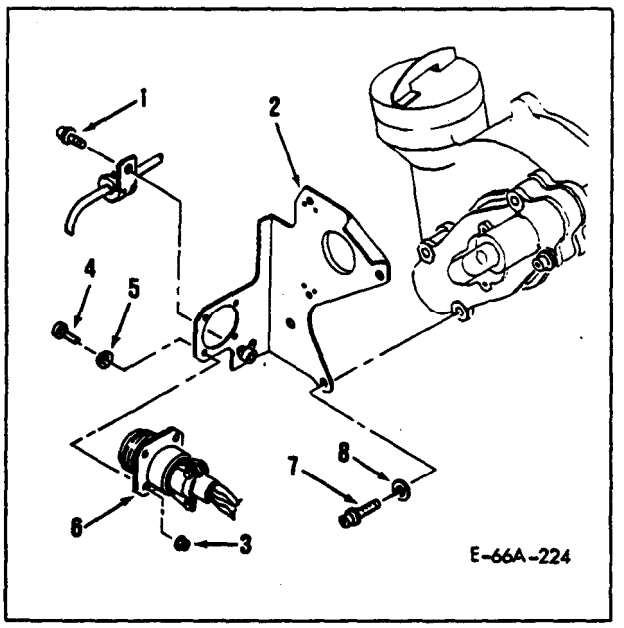
Personnel Required:
68B Aircraft Powerplant Repairer

References:
Task 5-4

Equipment Conditions:
APU on Aircraft

1. Remove hourmeter assembly (Task 5-4).
2. Remove bolt (1) from fuel solenoid valve to fuel manifold assembly tube clamp.
3. Remove nuts (3), screws (4) and washers (5) securing electrical connector (6) to meter bracket (2).
4. Remove bolts (7) and washers (8).
5. Remove meter bracket (2) from gearbox assembly.
6. Clean meter bracket (2) using processes 1, 2, 4, Chapter 8.

FOLLOW-ON MAINTENANCE: None.



Section VI REPLACE METER BRACKET NUT PLATES

5-6 REPLACE METER BRACKET NUT PLATES (AVIM)

This task covers: a. Removal b. Installation

INITIAL SETUP

Tools:
Aircraft Inspection Tool Kit (T49)
Engine Repairman's Tool Kit (T47)

Personnel Required:
68B Aircraft Powerplant Inspector
68B Aircraft Powerplant Repairer
68G Airframe Repairman

Materials/Parts:
Acid Brush (D5).
Epoxy Primer (D30)
Machinery Towel (D20)
Nut Plate
Rivet
1,1,1-Trichloroethane (D41)

References:
TM 55-1500-204-25/1

Equipment Conditions:
Meter Bracket Removed From APU

General Safety Instructions:

WARNING

Compressed air is dangerous when directed toward yourself or another person. The airstream or material blown by the airstream can cause injury, particularly to the eyes and face. Use goggles to protect eyes and face. Do not exceed 30 PSI. Do not direct airstream toward yourself or another person.

Power tool operations create airborne particles. Eye protection is required. Remove jewelry prior to use. Adequate ventilation or respirator is required.

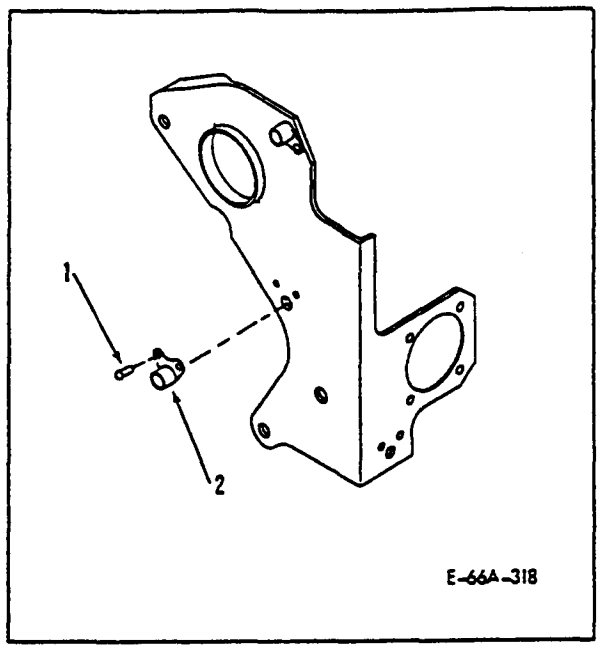
Epoxy primer is flammable and toxic to eyes, skin and respiratory tract. To prevent personnel injury, skin and eye protection is required. Avoid prolonged or repeated contact. Good general ventilation is normally adequate.

5-6 REPLACE METER BRACKET NUT PLATES (AVIM) (CONT)

REMOVAL

1. Drill out rivets (1) retaining nut plate (2).

2. Punch out ri vet stems. Discard rivet stems and nut plate.



INSTALLATION

NOTE

Prior to assembly. all components will be visually inspected for damage.

1. Clean all surfaces of parts to be assembled with 1,1,1-trichloroethane (D41) and machinery towel (D20).

2. Using acid brush (D5), apply a wet coat of epoxy primer (D30) to meter bracket and rivet (1). Allow to dry for 3 minutes.

3. Insert rivet (1) through meter bracket and nut plate, install rivet to retain nut plate.

4. Coat both ends of rivet (1) with epoxy primer (D30). Allow to dry.

FOLLOW-ON MAINTENANCE: None.

5-7 REPAIR - WELD METER BRACKET CRACKS (AVIM)

INITIAL SETUP

Tools:
Air Hose Assembly
Arc Welder
Drill Bit 3/32 inch
Engine Repairman's Tool Kit (T47)
File
Insulated Mittens
Pneumatic Drill
Safety Glasses
Welder's Apron
Welder's Helmet

Personnel Required:
44E Welder/Machinist
68B Aircraft Powerplant Repair

Materials/Parts:
Filler Rod

References:
TM 55-1500-204-25/1

Equipment Conditions:
Meter Bracket Removed

General Safety Instructions:

WARNING

Welding operations produce heat, highly toxic fumes, injurious radiation, metal slag and airborne particles. Protection equipment consisting of welding goggles with proper tinted lenses, apron or jacket and welder's boots required. Good general ventilation is normally adequate.

Heated components can pose a serious burn potential. Wear insulated mittens when handling components.

Power tool operations create airborne particles, eye protection is required. Remove jewelry prior to use. Adequate ventilation or respirator is required.

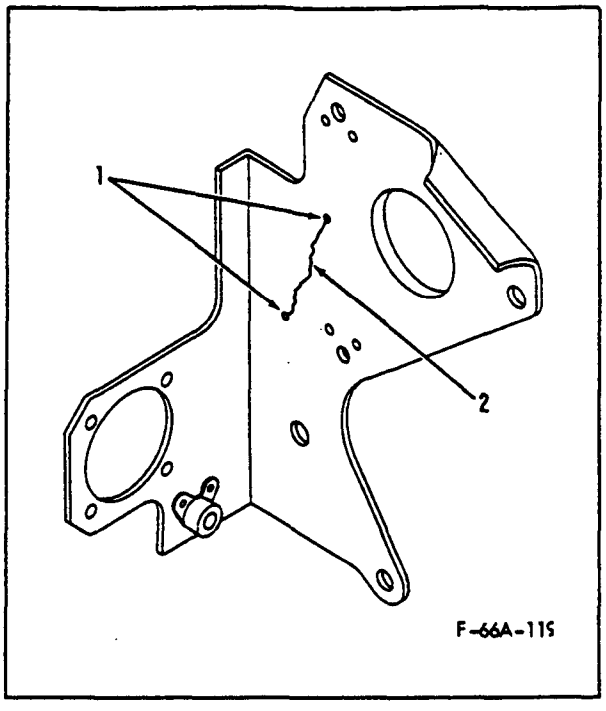
5-7 REPAIR - WELD METER BRACKET CRACKS (AVIM) (CONT)

1. Stop drill crack ends (1) to prevent further progression of cracks.

2. Fusion arc weld crack (2) using filler rod with gas back up.

3. Using file, hand finish weld to blend with meter bracket parent metal.

FOLLOW-ON MAINTENANCE: None.



Section VIII INSTALL METER BRACKET

5-8 INSTALL METER BRACKET

INITIAL SETUP

Tools:
Aircraft Inspection Tool Kit (T49)
Engine Repairman's Tool Kit (T47)
Torque Wrench 30-150 inch-pounds

Personnel Required:
68B Aircraft Powerplant Inspector
68B Aircraft Powerplant Repairer

Materials/Parts:
Antiseize Compound (D8)
Bolt
Nut
Screw
Washer

References:
Task 5-4

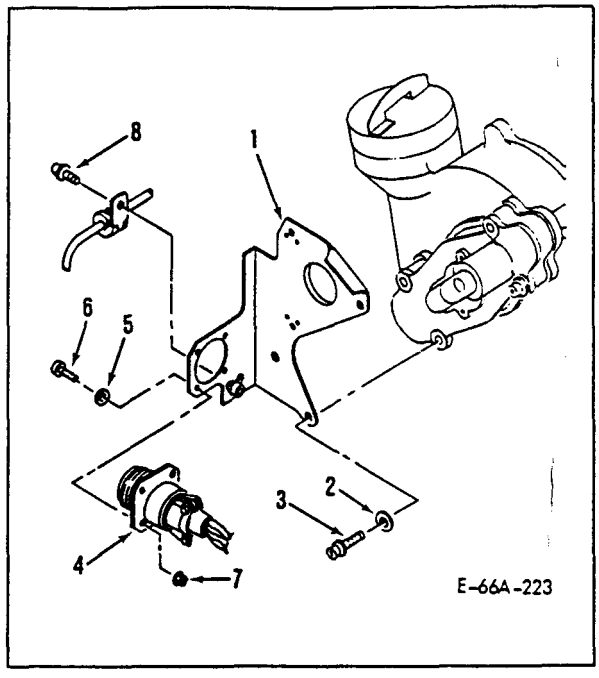
Equipment Conditions:
APU on Aircraft

5-8 INSTALL METER BRACKET (CONT)

NOTE

Prior to assembly, components will be visually inspected for damage.

1. Apply antiseize compound (D8) to bracket mount bolts (3).
2. Position meter bracket (1) and secure in place with washers (2) and bolts (3).
3. Torque bolts (3) to 38 to 42 inch-pounds.
4. Secure fuel solenoid valve to fuel manifold assembly tube clamp to meter bracket with bolt (8). Torque bolt to 38 to 42 inch-pounds.
5. Install electrical connector (4) from inbound side. Secure using washers (5), screws (6) and nuts (7).
6. Torque nut (7) to 6 to 8 inch-pounds.
7. Install hourmeter (Task 5-4).



FOLLOW-ON MAINTENANCE: None.

Section IX REMOVE IGNITION UNIT

5-9 REMOVE IGNITION UNIT

INITIAL SETUP

Tools:
Engine Repairman's Tool Kit (T47)

Personnel Required:
68B Aircraft Powerplant Repairer

Equipment Conditions:
APU on Aircraft

General Safety Instructions:

WARNING

Voltage used can cause arcing which may result in severe burns. Use extreme care when working with ignition system. Failure to observe all precautions may result in serious injury or death.

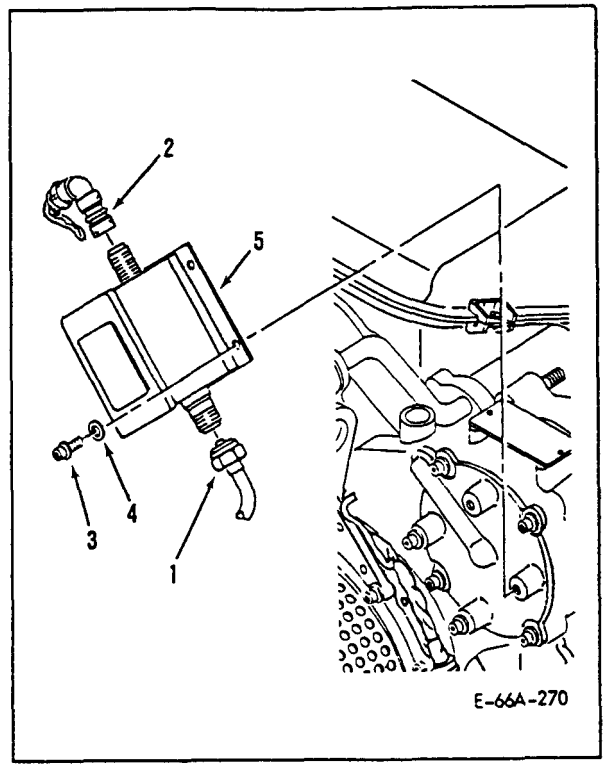
5-9 REMOVE IGNITION UNIT (CONT)

CAUTION

To prevent clogging or contamination, all exposed openings in fuel, oil, air lines and electrical connectors will be capped immediately. Be sure caps and plugs are clean.

NOTE

The ignition unit is equipped with an open circuit safety resistor which will allow bleed off of stored electrical charge when input power is removed.



1. Disconnect APU wiring harness connector (2) from upper end ignition unit (5).

2. Disconnect igniter plug lead (1) from lower end ignition unit (5).

3. Loosen two lower mount bolts (3). Remove upper two mount bolts (3) and washers (4). Remove ignition unit (5).

4. Clean ignition unit (5) using process 7, Chapter 8.

FOLLOW-ON MAINTENANCE: None.

Section X REPLACE IGNITER PLUG LEAD

5-10 REPLACE IGNITER PLUG LEAD

This task covers: a. Removal b. Installation

INITIAL SETUP

Tools:
Aircraft Inspection Tool Kit (T49)
Engine Repairman's Tool Kit (T47)
Torque Wrench 30-150 inch-pounds

Personnel Required:
68B Aircraft Powerplant Inspector
68B Aircraft Powerplant Repairer

Materials/Parts:
Clamp
Lockwire (D43)

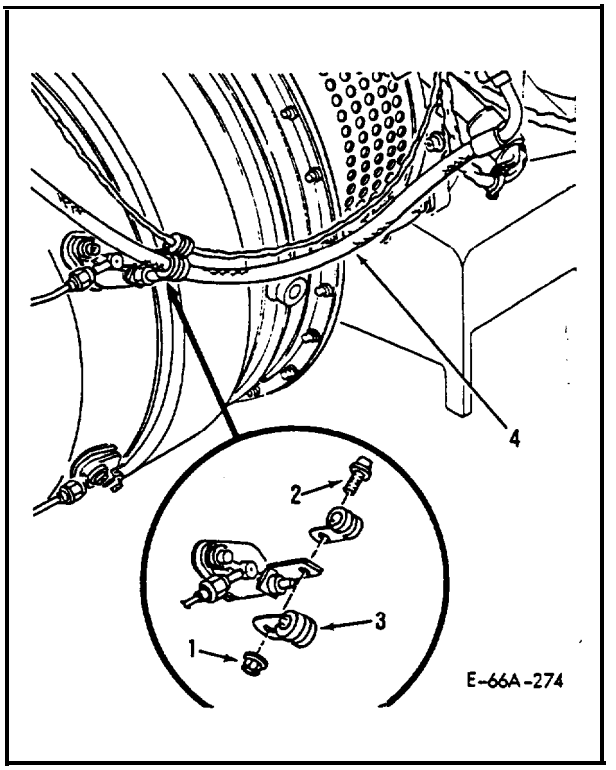
Equipment Conditions:
APU on Aircraft

General Safety Instructions:

WARNING

Voltages used can cause arcing which may result in severe burns. Use extreme care when working with ignition system. Failure to observe all precautions may result in serious injury or death.

5-10 REPLACE IGNITER PLUG LEAD (CONT)



REMOVAL

1. Remove nut (1), bolt (2) and clamp (3) from igniter plug lead (4).
2. Disconnect igniter plug lead (4) from igniter plug assembly and ignition unit.
3. To allow igniter plug lead (4) to be pulled through front panel assembly, remove top bolt and loosen bottom bolt securing inboard half of firewall sleeve.
4. Remove igniter plug lead (4).
5. Clean igniter plug lead using process 7, Chapter 8.

INSTALLATION

NOTE

Prior to assembly, all components will be visually inspected for damage.

1. Connect igniter plug lead (4) to igniter plug assembly and ignition unit. Torque to 33 to 37 inch-pounds.
2. Install top bolt and tighten bottom bolt securing inboard half of firewall sleeve.
3. Install clamp (3) on igniter plug lead (4). Position wiring harness clamp and secure both clamps to bracket using bolt (2) and nut (1). Torque nut to 55 to 75 inch-pounds.
4. Lockwire igniter plus lead (1) with lockwire (D43).

FOLLOW-ON MAINTENANCE: None.

Section XI REPLACE IGNITER PLUG ASSEMBLY

5-11 REPLACE IGNITER PLUG ASSEMBLY

This task covers: a. Removal b. Installation

INITIAL SETUP

Tools:
Aircraft Inspection Tool Kit (T49)
Engine Repairman's Tool Kit (T47)
Torque Wrench 30-150 inch-pounds

Personnel Required:
68B Aircraft Powerplant Inspector
68B Aircraft Powerplant Repairer

Materials/Parts:
Antiseize Compound (D7)
Lockwire (D44)

Equipment Conditions:
APU on Aircraft

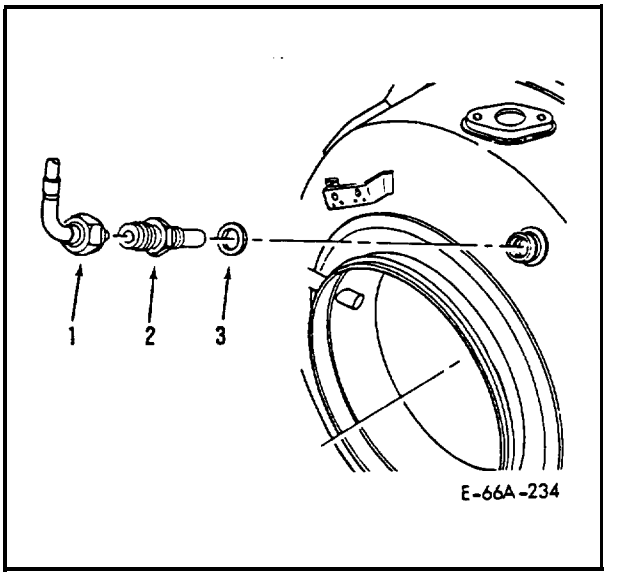
General Safety Instructions:

WARNING

Voltages used can cause arcing which may result in severe burns. Use extreme care when working with ignition system. Failure to observe all precautions may result in serious injury or death.

REMOVAL

1. Disconnect igniter plug lead (1) from igniter plug assembly (2).
2. Remove igniter plug assembly (2) and washer (3).



INSTALLATION

NOTE

Prior to assembly, all components will be visually inspected for damage.

1. Apply antiseize compound (D7) to igniter plug assembly threads and install washer (3) on igniter plug assembly (2). Install igniter plug assembly (2). Torque igniter plug assembly to 95 to 105 inch-pounds.
2. Connect igniter plug lead (1). Torque to 33 to 37 inch-pounds, Lockwire lead with lockwire (D44).

FOLLOW-ON MAINTENANCE: None.

Section XII INSTALL IGNITION UNIT

5-12 INSTALL IGNITION UNIT

INITIAL SETUP

Tools:
Aircraft Inspection Tool Kit (T49)
Engine Repairman"s Tool Kit (T47)
Torque Wrench 30-150 inch-pounds

Personnel Required:
68B Aircraft Powerplant Inspector
68B Aircraft Powerplant Repairer

Materials/Parts:
Lockwire (D43)

EquiRment Conditions:
APU on Aircraft

General Safety Instructions:

WARNING

Voltages used can cause arcing which may result in severe burns. Use extreme care when working with ignition system. Failure to observe all precautions may result in serious injury or death.

NOTE

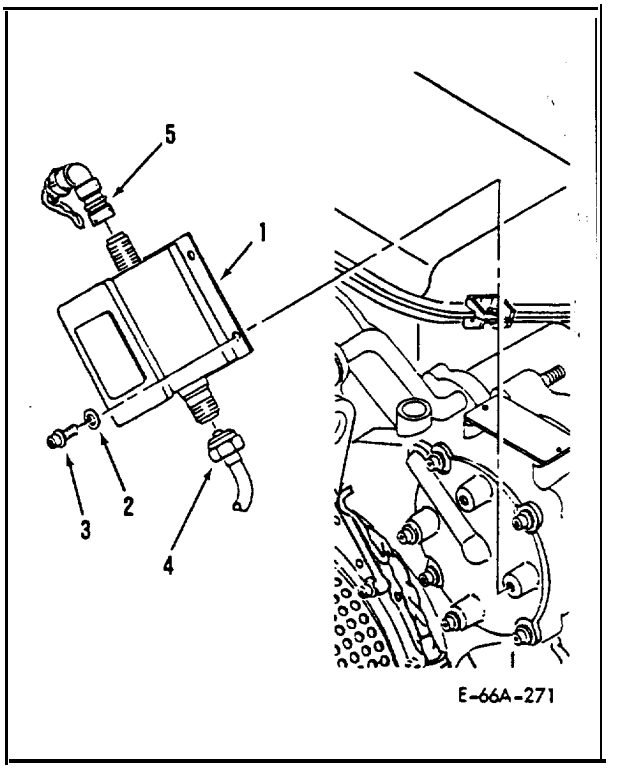
The ignition unit is equipped with a open circuit safety resistor which will allow bleed off of stored electrical charge when input power is removed.

Prior to assembly, all components will be visually inspectad for damage.

1. Position ignition unit (1) on lower two mount bolts. Install upper two mount bolts (3) and washers (2). Torque bolts to 38 to 42 inch-pounds.

2. Install igniter plug lead (4) to lower end of ignition unit (1). Torque to 33 to 37 inch-pounds. Lockwire igniter plug lead with lockwire (D43).

3. Connect APU wiring harness electrical connector (5) to upper end of ignition unit. Lockwire connector with lockwire (D43).



FOLLOW-ON MAINTENANCE: None.

Section XIII INSTALL APU WIRING HARNESS ASSEMBLY

5-13 INSTALL APU WIRING HARNESS ASSEMBLY

INITIAL SETUP

Tools:
Aircraft Inspection Tool Kit (T49)
Engine Repairman's Tool Box (T47)

Personnel Required:
68B Aircraft Powerplant Inspector
68B Aircraft Powerplant Repairer

Materials/Parts:
Bolt
Clamp
Coating (D6A)
Lockwire (D44)
Nut
Screw
Sleeving (D33)
Textile Braid (D39A)
Washer

Equipment Conditions:
APU on Aircraft

General Safety Instructions:

WARNING

Humiseal coating is toxic. To prevent personnel injury, avoid contact with eyes and repeated or prolonged contact with skin.

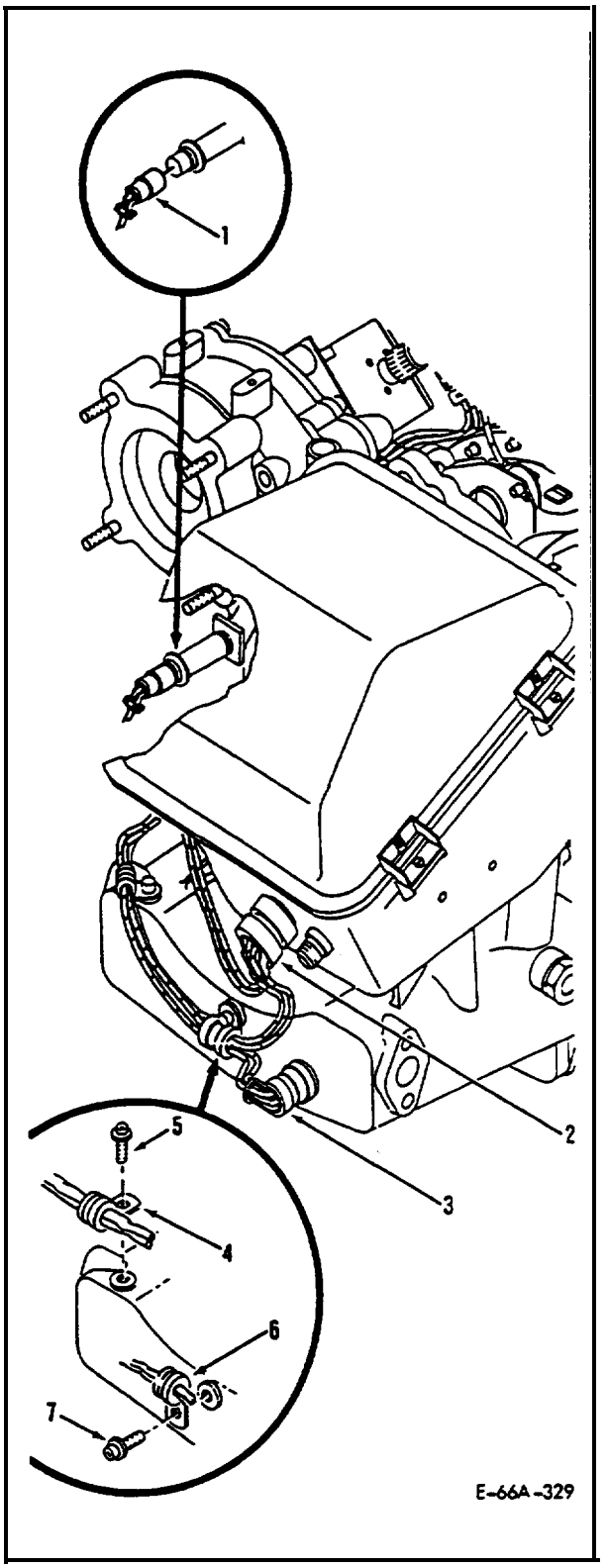
5-13 INSTALL APU WIRING HARNESS ASSEMBLY (CONT)

NOTE

Remove protective caps from APU wiring harness assembly prior to attaching connectors.

Prior to assembly, all components will be visually inspected for damage.

1. Position APU wiring harness assembly on APU.
2. Install top bolt and tighten bottom bolt securing inboard half of firewall sleeves.
3. Connect electrical connector (1) (P8) to low oil pressure switch receptacle. Lockwire electrical connector with lockwire (D44).
4. Connect electrical connector (2) (P3) to fuel control wiring harness receptacle. Lockwire electrical connector with lockwire (D44).
5. Connect electrical connector (3) (P5) oil temperature bulb receptacle. Lockwire electrical connector with lockwire (D44).
6. Install clamp (4) and bolt (5). Torque bolt to 33 to 37 inch-pounds.
7. Install clamp (6) and bolt (7). Torque bolt to 33 to 37 inch-pounds.



5-13 INSTALL APU WIRING HARNESS ASSEMBLY (CONT)

8. Connect electrical connectors (8, 9) to hourmeter assembly.

9. Slide sleeving (D33) down and center over electrical connectors (8, 9).

9.1. Install textile braid (D39A) two places on each sleeve covering connectors (8, 9).

9.2. Each textile braid (D39A) must be 0.20 to 0.30 inch from ends of sleeve. Tie in a square knot.

9.3. Apply coating (D6A) to knot and ends of textile braid (D39A).

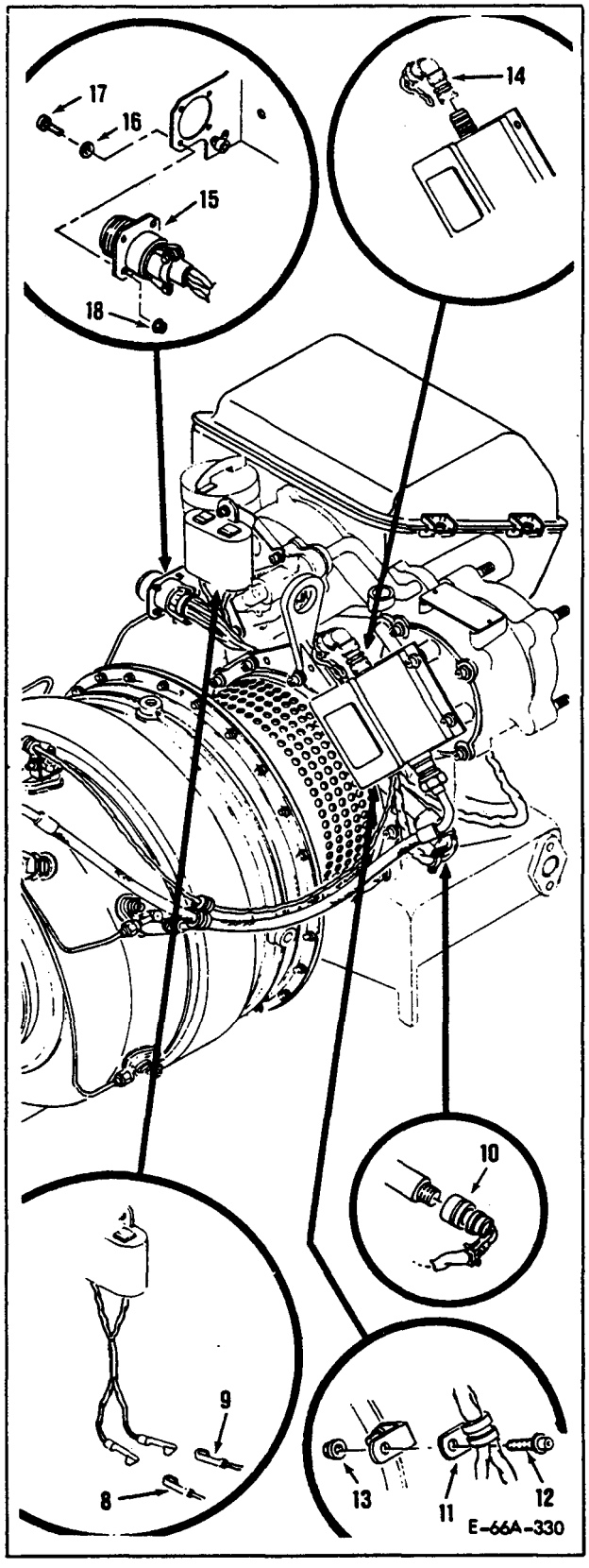
10. Connect electrical connector (10) (P6) to motional pickup transducer. Lockwire electrical connector with lockwire (D44).

11. Install clamp (11) and secure with bolt (12) and nut (13). Torque bolt to 25 to 29 inch-pounds.

12. Connect electrical connector (14) (P7) to ignition unit receptacle. Lockwire electrical connector with lockwire (D44).

13. Install electrical connector (15) (J289) on meter bracket.

14. Secure electrical connector (15) to meter bracket with washers (16), screws (17) and nuts (18). Torque screws to 6 to 8 inch-pounds.



5-13 INSTALL APU WIRING HARNESS ASSEMBLY (CONT)

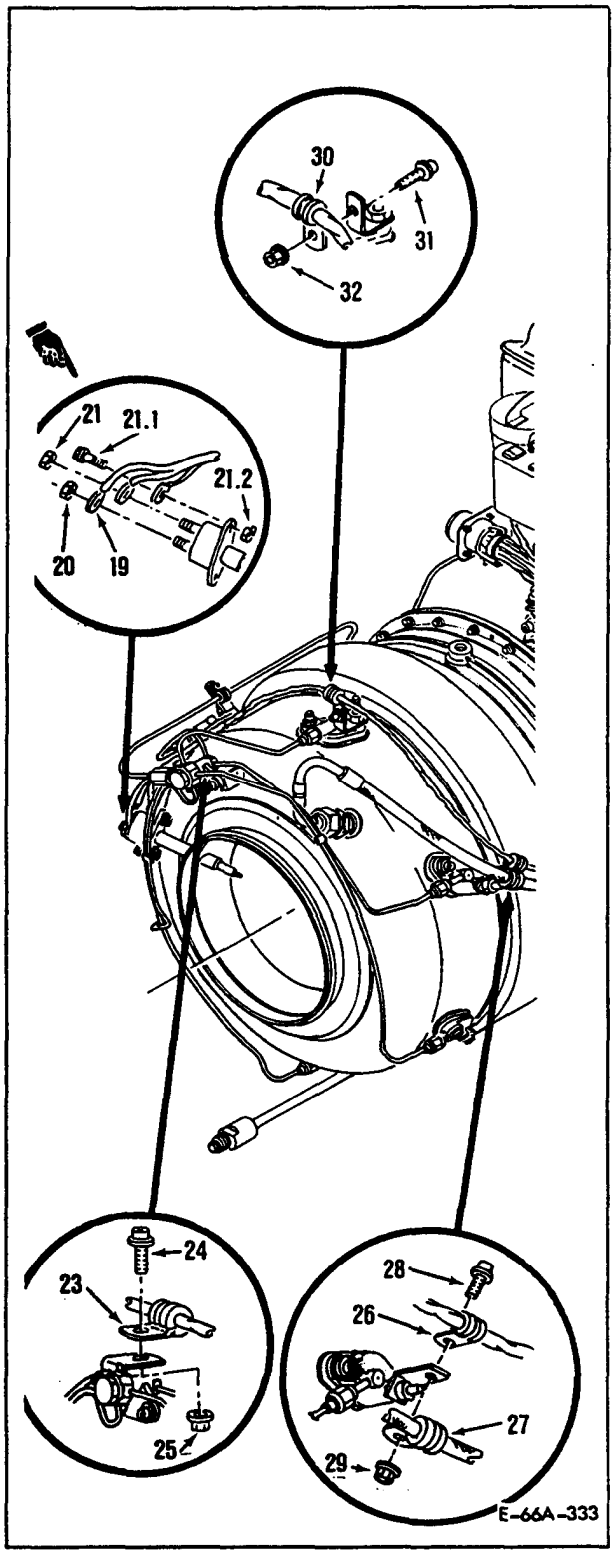
15. Remove nuts (20, 21), nut (22, deleted) from immersion thermocouple connections and install marked leads (19). Install nuts (20, 21) on studs. Torque nuts to 38 to 42 inch-pounds. Install ground wire on upper side of immersion thermocouple and secure using bolt (21.1) and nut (21.2). Torque bolt to 38 to 42 inch-pounds.

16. Install clamp (23) to bracket on fuel manifold assembly. Secure with bolt (24) and nut (25). Torque to 25 to 29 inch-pounds.

17. Install clamps (26, 27) to bracket on secondary fuel nozzle assembly. Secure with bolt (28) and nut (29). Torque to 25 to 29 inch-pounds.

18. Install clamp (30) to bracket on top primary fuel nozzle assembly. Secure with bolt (31) and nut (32). Torque to 25 to 29 inch-pounds.

FOLLOW-ON MAINTENANCE: None.



Section XIV REMOVE FUEL CONTROL WIRING HARNESS ASSEMBLY

5-14 REMOVE FUEL CONTROL WIRING HARNESS ASSEMBLY

INITIAL SETUP

Tools:
Crows Foot Wrench 1 1/8 inch
Engine Repairman's Tool Kit (T47)

Personnel Required:
68B Aircraft Powerplant Repairer

Materials/Parts:
Protective Caps and Plugs

References:
Task 4-1

Equipment Conditions:
APU on Aircraft

1. Remove fuel control upper cover (Task 4-1).

CAUTION

To prevent clogging or contamination, all exposed openings in fuel, oil, air lines and electrical connectors will be capped immediately. Be sure caps and plugs are clean.

2. Disconnect electrical connector (1) (P9) from fuel control assembly.

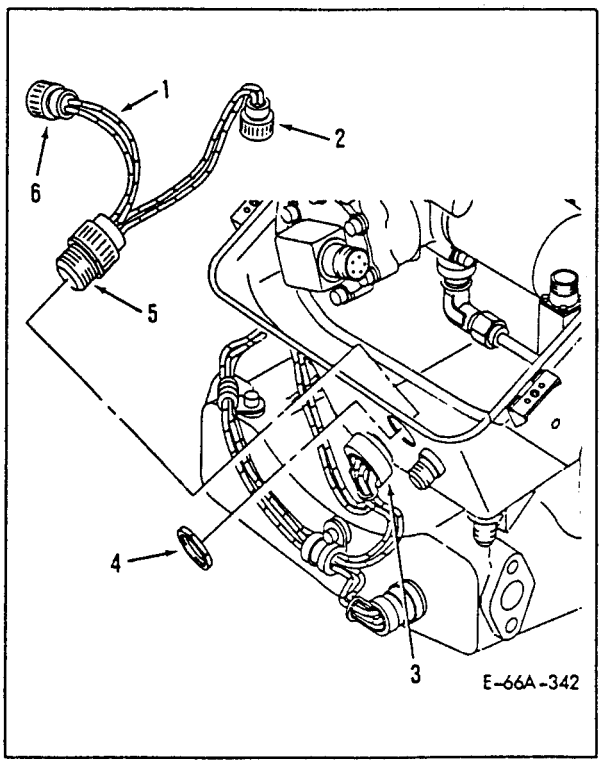
3. Disconnect electrical connector (2) (P4) from fuel solenoid valve.

4. Disconnect electrical connector (3) (J3) from electrical connector (5) (P289).

5. Remove jam nut (4). Be sure packing stays on electrical receptacle (5). Install jam nut on fuel control wiring harness assembly.

6. Remove fuel control wiring harness assembly (6).

7. Clean fuel control wiring harness assembly (6) using process 7, Chapter 8.



FOLLOW-ON MAINTENANCE: None.

Section XV INSTALL FUEL CONTROL WIRING HARNESS ASSEMBLY

5-15 INSTALL FUEL CONTROL WIRING HARNESS ASSEMBLY

INITIAL SETUP

Tools:
Aircraft Inspection Tool Kit (T49)
Crows Foot Wrench 1 1/8 inch
Engine Repairman's Tool Kit (T47)
Torque Wrench 30-150 inch-pounds

Personnel Required:
68B Aircraft Powerplant Inspector
68B Aircraft Powerplant Repairer

Materials/Parts:
Lockwire (D43)

References:
Task 4-10

Equipment Conditions:
APU on Aircraft

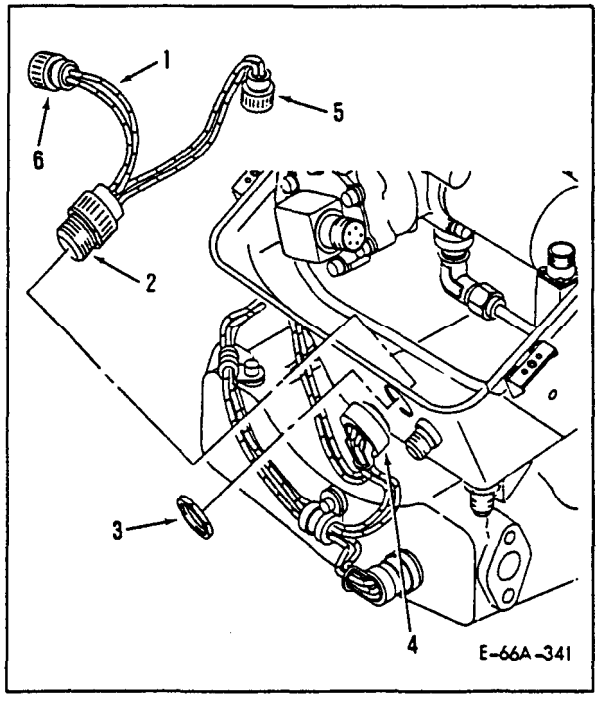
NOTE

Remove protective caps from fuel control wiring harness assembly prior to attaching connectors.

Prior to assembly, all components will be visually inspected for damage.

1. Place fuel control wiring harness assembly (1) inside fuel control lower cover.
2. Be sure packing stays on electrical receptacle (2). Remove jam nut (3). While aligning pin with pin hole, push receptacle (2) (P289) through fuel control lower cover.
3. Install jam nut (3). Torque to 37 to 43 inch-pounds.
4. Connect electrical connector (4) (J3) to electrical receptacle (2).
5. Connect electrical connector (5) (P4) to fuel solenoid valve.
6. Connect electrical connector (6) (P9) to fuel control assembly.
7. Lockwire electrical connectors (4, 5, 6) with lockwire (D43).
8. Install fuel control upper cover (Task 4-10).

FOLLOW-ON MAINTENANCE: None.



CHAPTER 6

LUBRICATION SYSTEM MAINTENANCE

Section I COLLECT APU OIL SAMPLE

6-1 COLLECT APU OIL SAMPLE

This task covers: a. Removal b. Installation

INITIAL SETUP

Personnel Required:
68B Aircraft Powerplant Inspector
68B Aircraft Powerplant Repairer

Materials/Parts:
Machinery Towel (D20)
Oil-Sample Kit (D23)

References:
Task 6-19

Equipment Conditions:
APU on Aircraft

General Safety Instructions:

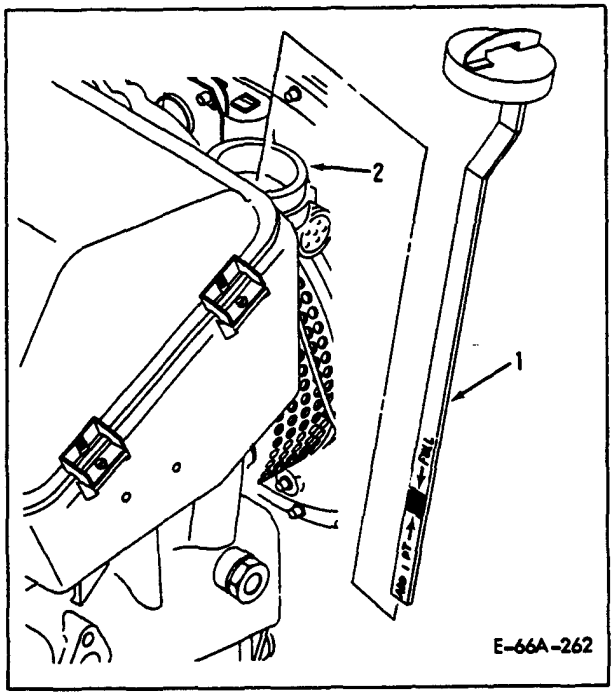
WARNING

Lubricating oils, DOD-L-85734, MIL-L-23699 and MIL-L-7808, contain materials hazardous to health. They produce paralysis if swallowed or from prolonged skin contact. They may burn if exposed to heat or flames. Wash hands thoroughly after handling. Use only with proper ventilation.

6-1 COLLECT APU OIL SAMPLE (CONT)

REMOVAL

1. Rotate oil fill cap counterclockwise until dislodged from oil fill neck. Remove oil fill cap.
2. Place finger/thumb over end of tube (D23) and put open end inside oil fill neck (2).
3. Remove finger/thumb to allow oil to enter tube. Place finger/thumb back over tube and remove tube.
4. Fill bottle with oil from tube.



INSTALLATION

1. Install oil fill cap (1) and rotate clockwise until snug.
2. Wipe up any residual oil with machinery towel (D20).
3. Remove oil fill cap (1).
4. Visually inspect oil sump level with dipstick.
5. Service APU (Task 6-19).

FOLLOW-ON MAINTENANCE: None.

6-2 DRAIN APU OIL

INITIAL SETUP

Tools:
Drain Adapter
Engine Repairman's Tool Kit (T47)
Suitable Container

Personnel Required:
68B Aircraft Powerplant Repairer

Materials/Parts:
Machinery Towel (D20)

References:
Task 6-19

Equipment Conditions:
APU on Aircraft

General Safety Instructions:

WARNING

Lubricating oils, DOD-L-85734, MIL-L-23699 and MIL-L-7808, contain materials hazardous to health. They produce paralysis if swallowed or from prolonged skin contact. They may burn if exposed to heat or flames. Wash hands thoroughly after handling. Use only with proper ventilation.

1. Remove inner portion of magnetic drain plug (1) from gearbox assembly by pushing in and turning counterclockwise.

1.1. Inspect magnetic drain plug (1) for debris.

CAUTION

The presence of debris on magnetic drain plug may be an indication of abnormal wear or part failure. System should be inspected.

2. Install drain adapter into magnetic drain plug base and drain oil into suitable bladder type container.

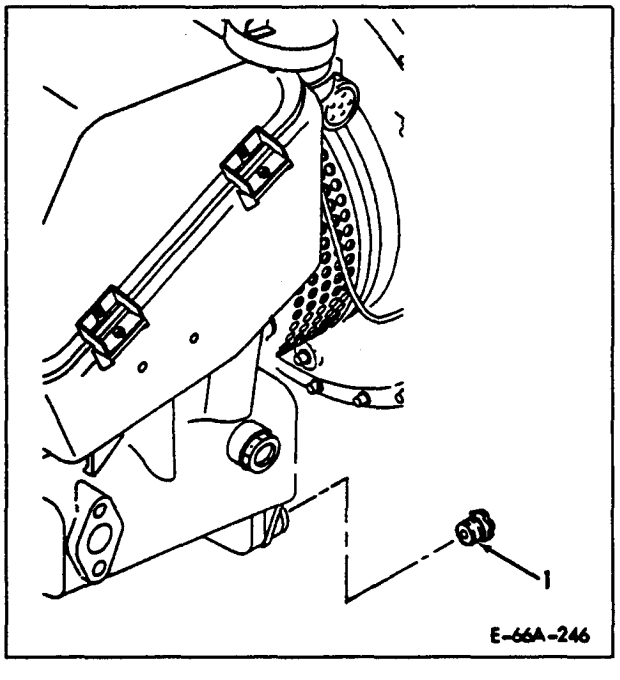
3. Remove drain adapter.

4. Install inner portion of magnetic drain plug (1) by pushing in and turning clockwise.

5. Using machinery towel (D20), wipe up any residual oil.

6. Service APU (Task 6-19).

FOLLOW-ON MAINTENANCE: None.



Section III REMOVE LUBE PUMP COVER AND ROTOR HOUSING

6-3 REMOVE LUBE PUMP COVER AND ROTOR HOUSING (AVIM)

INITIAL SETUP

Tools:
Engine Repairman's Tool Kit (T47)

Personnel Required:
68B Aircraft Powerplant Repairer

References:
Tasks 6-5, 6-6

Equipment Conditions:
APU on Maintenance Stand (T1)

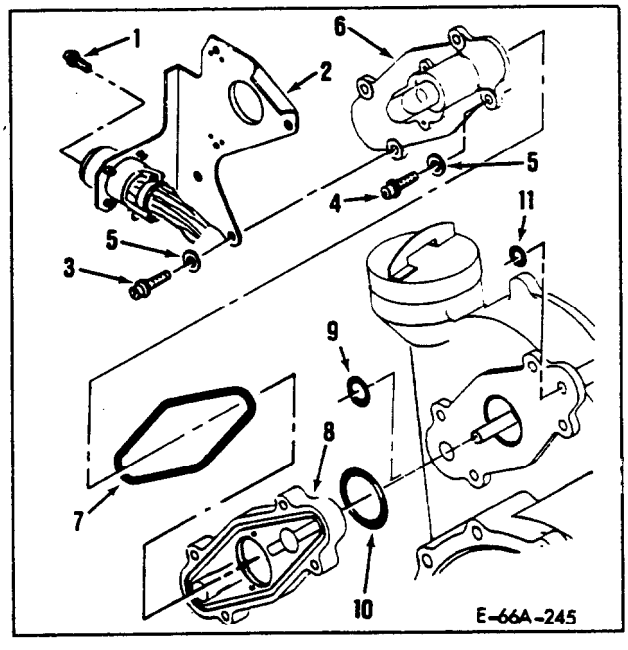
General Safety Instructions:

WARNING

Lubricating oils, DOD-L-85734, MIL-L-23699 and MIL-L-7808, contain materials hazardous to health. They produce paralysis if swallowed or from prolonged skin contact. They may burn if exposed to heat or flames. Wash hands thoroughly after handling. Use only with proper ventilation.

1. Remove bolt (1) from fuel solenoid valve to fuel manifold assembly tube clamp on meter bracket (2).
2. Remove bolts (3, 4) and washers (5) from lube pump cover (6) and meter bracket (2).
3. Remove hourmeter assembly from hourmeter bracket (2).
4. Remove remaining bolt (3) and washer (5).
5. Move meter bracket (2) to gain access to lube pump cover (6).
6. Remove bolts (4) and washer (5).
7. Remove lube pump cover (6).
8. Remove and discard lube pump cover packing (7).
9. Clean pump cover (6) using processes 1, 2 and 3, Chapter 8.
10. Remove matched rotor set (Task 6-5).
11. Remove relief valve (Task 6-6).
12. Remove rotor housing (8) and packings (9, 10, 11).
13. Clean rotor housing (8) using processes 1, 2 and 3, Chapter 8.

FOLLOW-ON MAINTENANCE: None.



Section IV DIMENSIONALLY INSPECT MATCHED ROTOR SET

6-4.1 DIMENSIONALLY INSPECT MATCHED ROTOR SET (AVIM)

INITIAL SETUP

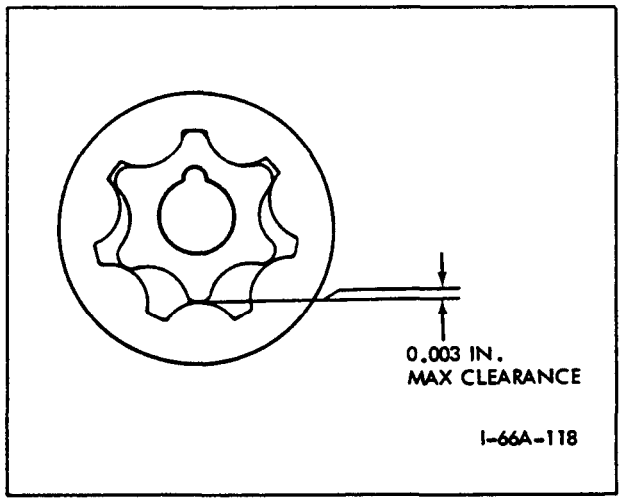
Tools:
Thickness gage

Equipment Conditions:
Lube Pump Cover Removed

Personnel Required:
68B Aircraft Powerplant Inspector
68B Aircraft Powerplant Repairer

1. Measure clearance between inner and outer rotor.
2. Clearance exceeding 0.003 inches is not allowed.
3. Replace matched rotor set if clearance exceeds speci fied dimension.

FOLLOW-ON MAINTENANCE None.



Section IV.I DIMENSIONALLY INSPECT ROTOR HOUSING

6-4.1 DIMENSIONALLY INSPECT ROTOR HOUSING (AVIM)

INITIAL SETUP

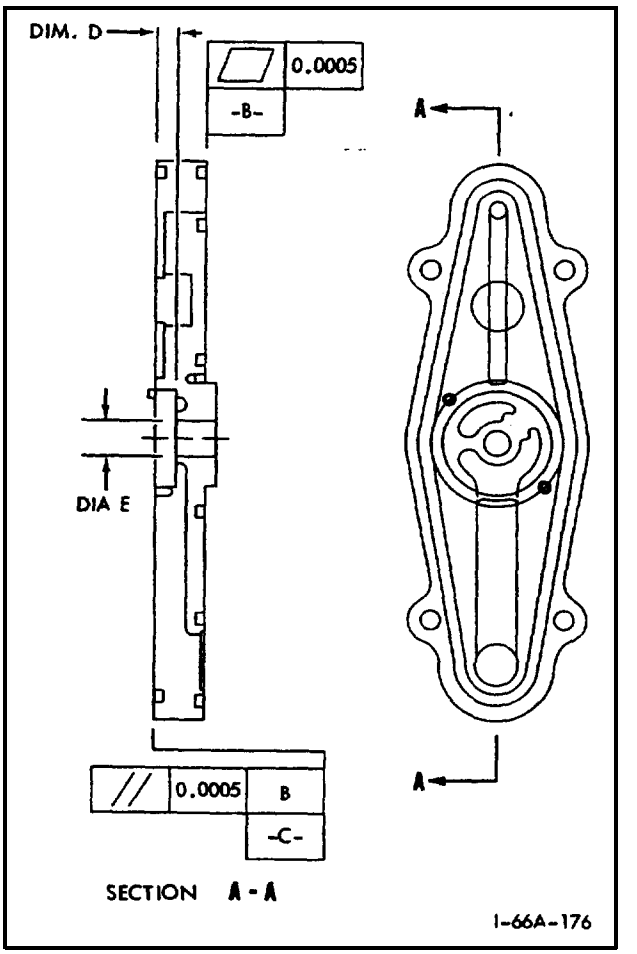
Tools:
Dial Indicator
Gage Block Set
Venier Caliper

Equipment Conditions:
Rotor Housing Removed

Personnel Required:
68B Aircraft Powerplant Inspector
68B Aircraft Powerplant Repairer

1. Measure surface B for flatness. Surface B must be flat within 0.0005 inch total indicator reading.
2. Measure surface C parallelism. Surface C must be parallel to surface B within 0.0005 inch.
3. Measure dimension D. Dimension D shall be 0.23065 to 0.23135 inch.
4. Measure diameter E. Diameter E shall be 0.3240 to 0.3290 inch.
5. Replace rotor housing if dimensional requirements are not met.

FOLLOW-ON MAINTENANCE: None.



Section V REPLACE MATCHED ROTOR SET

6-5 REPLACE MATCHED ROTOR SET (AVIM)

This task covers: a. Removal b. Installation

INITIAL SETUP

Tools:
Aircraft Inspection Tool Kit (T49)
Engine Repairman's Tool Kit (T47)

Personnel Required:
68B Aircraft Powerplant Inspector
68B Aircraft Powerplant Repairer

References:
Tasks 6-3, 6-7

Equipment Conditions:
APU on Maintenance Stand (T1)

REMOVAL

1. Remove lube pump cover (Task 6-3).
2. Remove outer rotor (1) of matched rotor set.

CAUTION

Do not allow drive pin (3) to fall out when removing inner rotor (2).

3. Remove inner rotor (2) of matched rotor set.
4. Remove drive pin (3).
5. Remove lube pump rotor housing (Task 6-3).

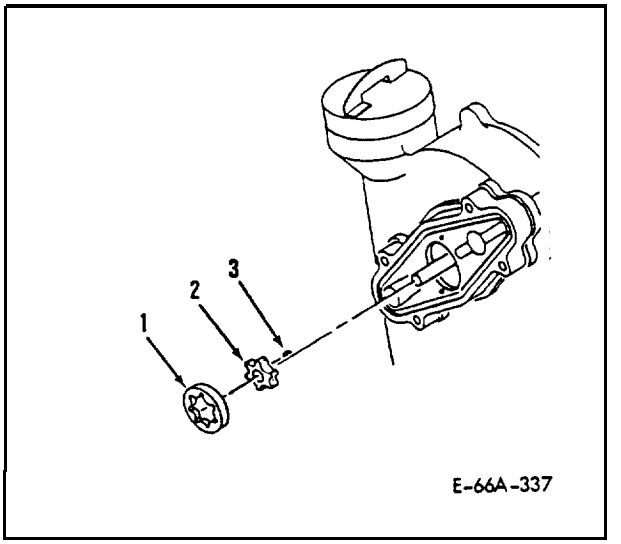
INSTALLATION

NOTE

Prior to assembly, all components will be visually inspected for damage.

1. Install lube pump rotor housing (Task 6-10).
2. Position keyway at 12 o'clock position.
3. Install drive pin (3).
4. Install inner rotor (2) on gearshaft while aligning keyway with drive pin (3).
5. Install outer rotor (1) of matched rotor set.
6. Install lube pump cover (Task 6-7).

FOLLOW-ON MAINTENANCE: None.



Section VI REPLACE RELIEF VALVE

6-6 REPLACE RELIEF VALVE (AVIM)

This task covers: a. Removal b. Installation

INITIAL SETUP

Tools:
Aircraft Inspection Tool Kit (T49)
Engine Repairman' s Tool Kit (T47)

Personnel Required:
68B Aircraft Powerplant Inspector
68B Aircraft Powerplant Repairer

Materials/Parts:
Lubricating Oil (D16)
Packing
Relief Valve

References:
Tasks 6-3, 6-10

Equipment Conditions:
APU on Aircraft

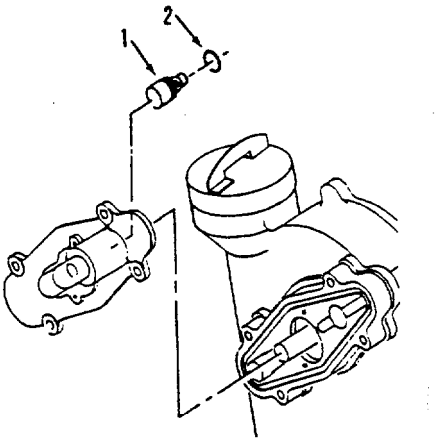
General Safety Instructions:

WARNING

Lubricating oils, DOD-L-85734, MIL-L-23699 and MIL-L-7808, contain materials hazardous to health. They produce paralysis if swallowed or from prolonged skin contact. They may burn if exposed to heat or flames. Wash hands thoroughly after handling. Use only with proper ventilation.

REMOVAL

1. Remove lube pump cover (Task 6-3).
2. Remove relief valve (1). Remove and discard packing (2).
3. Remove lube pump rotor housing (Task 6-3).



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6-6 REPLACE RELIEF VALVE (AVIM) (CONT)

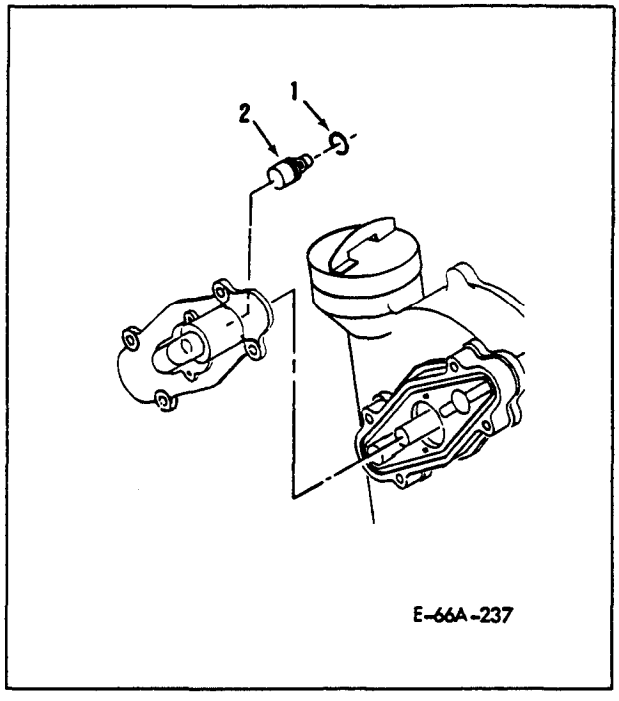
INSTALLATION

NOTE

Prior to assembly, all components will be visually inspected for damage.

1. Install lube pump rotor housing (Task 6-10).
2. Lubricate packing (1) with lubricating oil (D16) and install on relief valve (2).
3. Install relief valve (2).
4. Install lube pump cover (Task 6-10).

FOLLOW-ON MAINTENANCE: None.



Section VII TOUCH UP LUBE PUMP COVER ANODIZE

6-7 TOUCH UP LUBE PUMP COVER ANODIZE (AVIM)

INITIAL SETUP

Tools:
Air Gun
Air Hose Assembly
Rubber Gloves
Safety Glasses

Personnel Required:
68B Aircraft Powerplant Repairer

Materials/Parts:
Cotton Applicator (D10)
Iridite (D15)
1,1,1-Trichloroethane (D41)

Equipment Conditions:
Lube Pump Cover Removed From APU

General Safety Instructions:

WARNING

1,1,1-Trichloroethane is toxic to skin, eyes and respiratory tract. Skin and eye protection are required. Avoid repeated or prolonged contact. Work in a well-ventilated area.

Compressed air is dangerous when directed toward yourself or another person. The airstream or material blown by the airstream can cause injury, particularly to the eyes and face. Use goggles to protect eyes and face. Do not exceed 30 PSI. Do not direct airstream toward yourself or another person.

Iridite solution is toxic to skin, eyes and respiratory tract. Skin, and eye protection are required. Avoid repeated or prolonged contact. Work in a well-ventilated area.

6-7 TOUCH UP LUBE PUMP COVER ANODIZE (AVIM) (CONT)

NOTE

This task is for damaged area less than 5 percent of surface area or shorter than 1/2 inch in length.

1. Clean damaged area with 1,1,1-trichloroethane (D41) and cotton applicator (D10).

2. Dry thoroughly with clean, filtered compressed air.

CAUTION

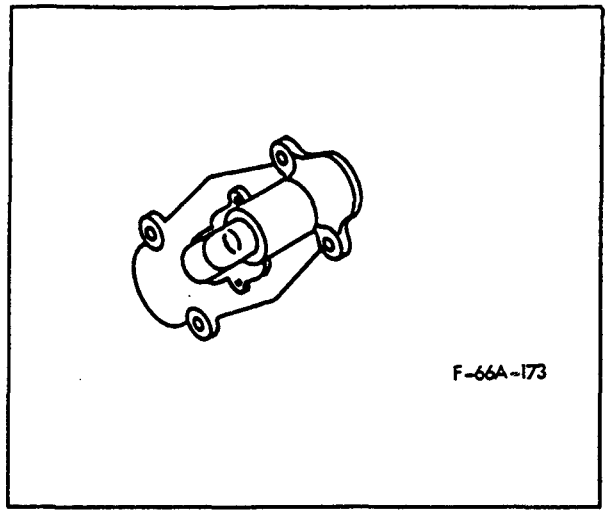
Cotton applicator, saturated with iridite solution, constitutes a fire hazard if allowed to dry. Immediately after use, rinse thoroughly in tap water.

3. Apply iridite solution (D15) to damaged area with a cotton applicator (D10), keep surface wet 1 minute.

4. Rinse treated area with tap water 80 to 110°F (27 to 43°C).

5. Dry part thoroughly with clean, filtered compressed air.

FOLLOW-ON MAINTENANCE: None.



Section VIII REPLACE PIN

6-8 REPLACE PIN (AVIM)

INITIAL SETUP

Tools:
Aircraft Inspection Tool Kit (T49)
Engine Repairman's Tool Kit (T47)
Micrometer 0-1 Inch
Rubber Gloves
Safety Glasses

Personnel Required:
68B Aircraft Powerplant Inspector
68B Aircraft Powerplant Repairer

Materials/Parts:
Cotton Applicator (D10)
Epoxy Primer (D29)
Machinery Towel (D20)
Pin
1,1,1-Trichloroethane (D41)

References:
TM 55-1500-204-25/1

Equipment Conditions:
APU on Maintenance Stand

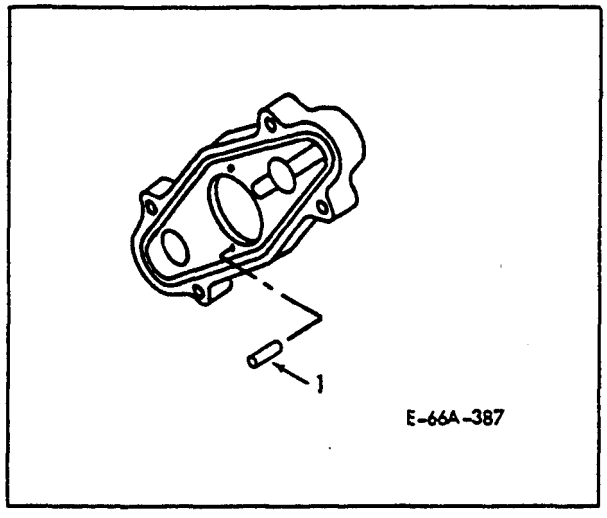
General Safety Instructions:

WARNING

1,1,1-Trichloroethane is toxic to skin, eyes and respiratory tract. Skin and eye protection are required. Avoid repeated or prolonged contact. Work in a well-ventilated area.

Epoxy primer is flammable and toxic to eyes, skin and respiratory tract. To prevent personnel injury, skin and eye protection is required. Avoid prolonged or repeated contact. Work in a well-ventilated area.

6-8 REPLACE PIN (AVIM) (CONT)



REMOVAL

Remove pin (1) from rotor housing.

INSTALLATION

NOTE

Prior to assembly, all components will be visually inspected for damage.

1. Clean hole and pin (1)with 1,1,1-trichloroethane (D41) and machinery towel (D20).
2. Apply a thin coat of epoxy primer (D29) to hole and pin (1) using a cotton applicator (D10).
3. Install pin (1) to a depth that will leave 0.06 to 0.08 inch exposed. Do not include the counterbore of the hole in the pin measurement. Measure pin with micrometer.
4. Clean excess epoxy primer (D29) from pin (1) and rotor housing.

FOLLOW-ON MAINTENANCE: None.

Section IX TOUCH UP ROTOR HOUSING ANODIZE

6-9 TOUCH UP ROTOR HOUSING ANOOIZE (AVIM)

INITIAL SETUP

Tools:
Air Gun
Air Hose Assembly
Rubber Gloves
Safety Glasses

Personnel Required:
68B Aircraft Powerplant Repairer

Materials/Parts:
Cotton Applicator (D10)
Iridite (D15)
1, 1, 1 - Trichloroethane (D41)

Equipment Conditions:
Rotor Housing Removed From APU

General Safety Instructions:

WARNING

1, 1, 1 - Trichloroethane is toxic to skin, eyes and respiratory tract. Skin and eye protection are required. Avoid repeated or prolonged contact. Work in a well-ventilated area.

Compressed air is dangerous when directed toward yourself or another person. The airstream or material blown by the airstream can cause injury, particularly to the eyes and face. Use goggles to protect eyes and face. Do not exceed 30 PSI. Do not direct airstream toward yourself or another person.

Iridite solution is toxic to skin, eyes arid respiratory tract. Skin and eye protection are required. Avoid repeated or prolonged contact. Work in a well-ventilated area.

6-9 TOUCH UP ROTOR HOUSING ANODIZE (AVIM) (CONT)

NOTE

This task is for damaged area less than 5 percent of surface area or shorter than 1/2 inch in length.

1. Clean damaged area with 1,1,1-trichloroethane (D41) and cotton applicator (D10).

2. Dry thoroughly with clean, filtered compressed air.

CAUTION

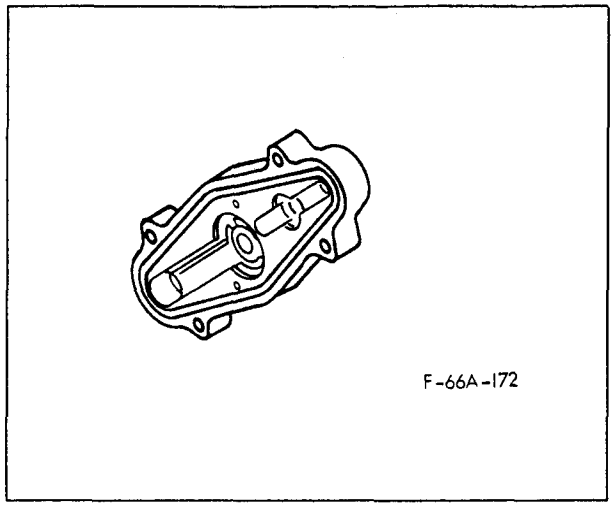
Cotton applicator, saturated with iridite solution, constitutes a fire hazard if allowed to dry. Immediately after use, rinse thoroughly in tap water.

3. Apply iridite solution (D15) to damaged area with a cotton applicator (D10), keep surface wet 1 minute.

4. Rinse treated area with tap water 80 to 110°F (27 to 43°C).

5. Dry part thoroughly with clean, filtered compressed air.

FOLLOW-ON MAINTENANCE: None.



Section X INSTALL LUBE PUMP COVER AND ROTOR HOUSING

6-10 INSTALL LUBE PUMP COVER AND ROTOR HOUSING (AVIM)

INITIAL SETUP

Tools:
Aircraft Inspection Tool Kit (T49)
Engine Repairman's Tool Kit (T47)
Torque Wrench 30-150 Inch-Pounds

Personnel Required:
68B Aircraft Powerplant Inspector
68B Aircraft Powerplant Repairer

Materials/Parts:
Antiseize Compound (D8)
Bolt
Lubricating Oil (D16)
Packing
Washer

References:
Tasks 5-8, 6-5, 6-6

Equipment Conditions:
APU on Maintenance Stand (T1)

General Safety Instructions:

WARNING

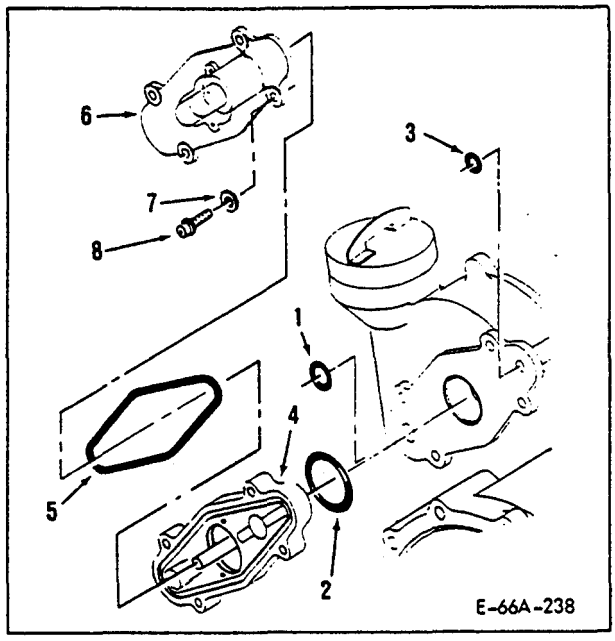
Lubricating oils, DOD-L-85734, MIL-L-23699 and MIL-L-7808, contain materials hazardous to health. They produce paralysis if swallowed or from prolonged skin contact. They may burn if exposed to heat or flames. Wash hands thoroughly after handling. Use only with proper ventilation.

6-10 INSTALL LUBE PUMP COVER and ROTOR HOUSING (AVIM) (CONT)

NOTE

Prior to assembly, all components will be visually inspected for damage.

1. Lubricate packings (1, 2, 3) with lubricating oil (D16). Install on rotor housing (4).
2. Install rotor housing (4) on gearbox assembly.
3. Install relief valve (Task 6-6).
4. Install matched rotor set (Task 6-5).
5. Lubricate. packing (5) with lubricating oil (D16). Install on rotor housing.
6. Apply antiseize compound (D8) to short bolt (8) threads. Position and secure lube pump cover (6) with washer (7) and bolt (8).
7. Install meter bracket (Task 5-8).
8. Torque bolt (8) to 38 to 42 inch-pounds.



FOLLOW-ON MAINTENANCE: None.

Section XI REPLACE OIL TEMPERATURE BULB

6-11 REPLACE OIL TEMPERATURE BULB

This task covers: a. Removal b. Installation

INITIAL SETUP

Tools:
Aircraft Inspection Tool Kit (T49)
Engine Repairman's Tool Kit (T47)
Torque Wrench 30-150 Inch-Pounds

Personnel Required:
68B Aircraft Powerplant Inspector
68B Aircraft Powerplant Repairer

Materials/Parts:
Lockwire (D43)
Lockwire (D44)
Lubricating Oil (D16)
Packing

References:
Tasks 6-2, 6-19

Equipment Conditions:
APU on Aircraft
Drain Oil

General Safety Instructions:

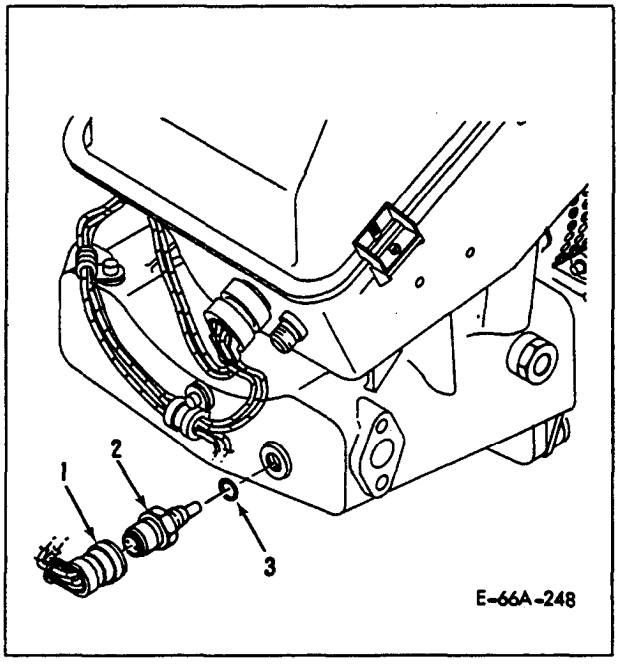
WARNING

Lubricating oils, DOD-L-85734, MIL-L-23699 and MIL-L-7808, contain material hazardous to health. They produce paralysis if swallowed or from prolonged skin contact. They may burn if exposed to heat or flames. Wash hands thoroughly after handling. Use only with proper ventilation.

6-11 REPLACE OIL TEMPERATURE BULB (CONT)

REMOVAL

1. Drain oil from APU (Task 6-2).
2. Remove electrical connector (1) from oil temperature bulb (2). Remove oil temperature bulb (2).
3. Remove packing (3) and discard.
4. Clean oil temperature bulb (2) using process 7, Chapter 8.



INSTALLATION

NOTE

Prior to assembly, all components will be inspected for damage.

1. Lubricate packing (3) with lubricating oil (D16). Install packing on oil temperature bulb (2).
2. Install oil temperature bulb (2). Torque to 57 to 63 inch-pounds. Lockwire with lockwire (D44).
3. Connect electrical connector (1) to oil temperature bulb (2). Lockwire with lockwire (D43).
4. Service lubrication system (Task 6-19).

FOLLOW-ON MAINTENANCE: None.

Section XII REPLACE OIL FILTER ELEMENT

6-12 REPLACE OIL FILTER ELEMENT

This task covers: a. Removal b. Installation

INITIAL SETUP

Tools:
Aircraft Inspection Tool Kit (T49)
Engine Repairman's Tool Kit (T47)

Personnel Required:
68B Aircraft Powerplant Inspector
68B Aircraft Powerplant Repairer

Materials/Parts:
Lubricating Oil (D16)
Machinery Towel (D20)
Oil Filter Element
Packing

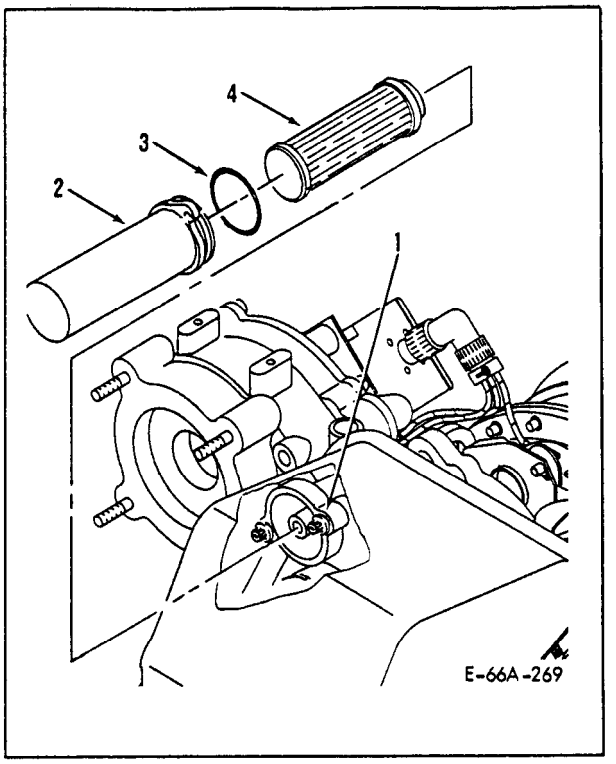
Equipment Conditions:
APU on Aircraft

General Safety Instructions:

WARNING

Lubricating oils, DOD-L-85734, MIL-L-23699 and MIL-L-7808, contain material hazardous to health. They produce paralysis if swallowed or from prolonged skin contact. They may burn if exposed to heat or flames. Wash hands thoroughly after handling. Use only with proper ventilation.

6-12 REPLACE OIL FILTER ELEMENT (CONT)



REMOVAL

1. Loosen but do not remove bolts (1) from oil filter cover (2). Rotate oil filter cover counterclockwise and remove.
2. Remove and discard packing (3).
3. Clean oil filter cover (2) using processes 1, 2 and 4, Chapter 8.
4. Remove. inspect and discard oil filter element (4).

INSTALLATION

NOTE

Prior to assembly, all components will be visually inspected for damage.

1. Lubricate packing (3) with lubricating oil (D16). Install Packing (3) on oil filter cover (2).
2. Install oil filter element (4).
3. Install oil filter cover (2) and rotate clockwise to engage mount bolts (1). Torque bolts to 38 to 42 inch-pounds.
4. Wipe up any residual oil using machinery towel (D20).

FOLLOW-ON MAINTENANCE: None.

Section XIII REPLACE LOW OIL PRESSURE SWITCH

6-13 REPLACE LOW OIL PRESSURE SWITCH

This task covers: a. Removal b. Installation

INITIAL SETUP

Tools:
Aircraft Inspection Tool Kit (T49)
Engine Repairman's Tool Kit (T47)
Torque Wrench 30-150 inch-pounds

Personnel Required:
68B Aircraft Powerplant Inspector
68B Aircraft Powerplant Repairer

Materials/Parts:
Lockwire (D43)
Lubricating Oil (D16)
Packing
Protective Caps and Plugs

Equipment Conditions:
APU on Aircraft

General Safety Instructions:

WARNING

Lubricating oils, DOD-L-85734, MIL-L-23699 and MIL-L-7808, contain material hazardous to health. They produce paralysis if swallowed or from prolonged skin contact. They may burn if exposed to heat or flames. Wash hands thoroughly after handling. Use only with proper ventilation.

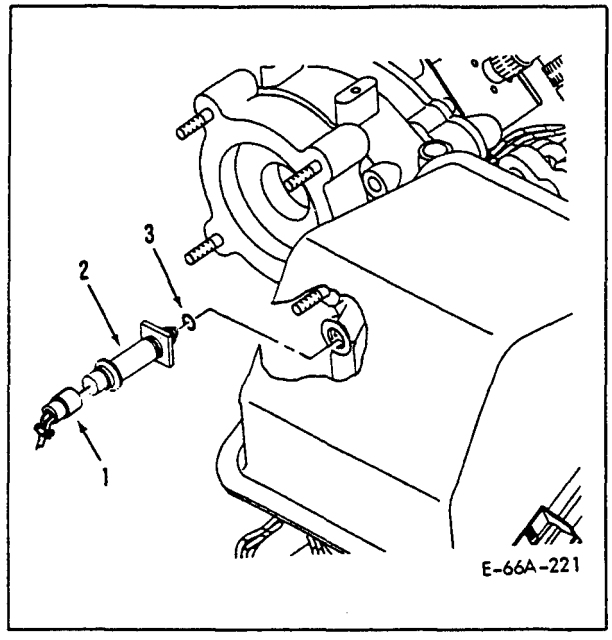
6-13 REPLACE LOW OIL PRESSURE SWITCH (CONT)

REMOVAL

CAUTION

To prevent clogging or contamination, all exposed openings in fuel, oil, air lines and electrical connectors will be capped immediately. Be sure caps and plugs are clean.

1. Disconnect electrical connector (1).
2. Remove low oil pressure switch (2). Remove and discard packing (3).
3. Clean low oil pressure switch (2) using process 7, Chapter 8.



INSTALLATION

NOTE

As tubes and connectors are installed and connected, protective caps and plugs shall be removed.

Prior to assembly, components will be visually inspected for damage.

1. Lubricate packing (3) with lubricating oil (D16) and install on low oil pressure switch (2).
2. Install low oil pressure switch (2). Torque to 61 to 68 inch-pounds.
3. Connect electrical connector (1) to low oil pressure switch (2). Lockwire connector with lockwire (D43).
4. Lockwire low oil pressure switch (2) with lockwire (D43).

FOLLOW-ON MAINTENANCE: None.

Section XIV TOUCH UP OIL FILTER ELEMENT COVER ANODIZE

6-14 TOUCH UP OIL FILTER ELEMENT COVER ANODIZE (AVIM)

INITIAL SETUP

Tools:
Air Gun
Air Hose Assembly
Rubber Gloves
Safety Glasses

Personnel Required:
68B Aircraft Powerplant Repairer

Materials/Parts:
Cotton Applicator (D10)
Iridite (D15)
1,1,1-Trichloroethane (D41)

Equipment Conditions:
APU on Aircraft
Oil Filter Cover Removed

General Safety Instructions:

WARNING

1,1,1-Trichloroethane is toxic to skin, eyes and respiratory tract. Skin and eye protection are required. Avoid repeated or prolonged contact. Work in a well-ventilated area.

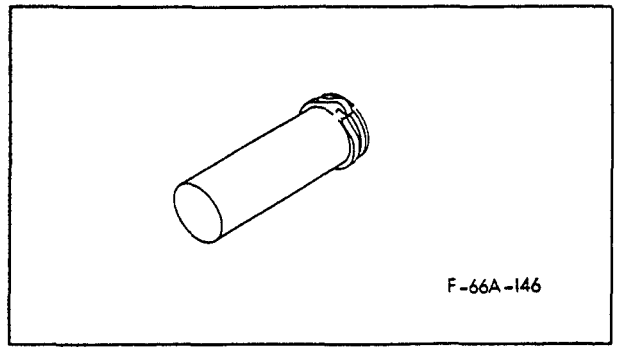
Iridite solution is toxic to skin, eyes and respiratory tract. Skin and eye protection are required. Avoid repeated or prolonged contact. Work in a well-ventilated area.

Compressed air is dangerous when directed toward yourself or another person. The airstream or material blown by the airstream can cause injury, particularly to the eyes and face. Use goggles to protect eyes and face. Do not exceed 30 PSI. Do not direct airstream toward yourself or another person.

6-14 TOUCH UP OIL FILTER ELEMENT COVER ANODIZE (AVIM) (CONT)

NOTE

This task is for damaged area less than 5 percent of surface area or shorter than 1/2 inch in length.



1. Clean damaged area with 1,1,1-trichloroethane (D41) and cotton applicator (D10).
2. Dry thoroughly with clean, filtered compressed air.

CAUTION

Cotton applicator, saturated with iridite solution, constitutes a fire hazard if allowed to dry. Immediately after use, rinse thoroughly in tap water.

3. Apply iridite solution (D15) to damaged area with a cotton applicator, keep surface wet 1 minute.
4. Rinse treated area with tap water 80 to 110°F (27 to 43°C).
5. Dry part thoroughly with clean, filtered compressed air.

FOLLOW-ON MAINTENANCE: None.

Section XV REMOVE AND INSTALL OIL FILL CAP

6-15 REMOVE AND INSTALL OIL FILL CAP

This task covers: a. Removal b. Installation

INITIAL SETUP

Personnel Required:
68B Aircraft Powerplant Inspector
68B Aircraft Powerplant Repairer

Equipment Conditions:
APU on Aircraft

General Safety Instructions:

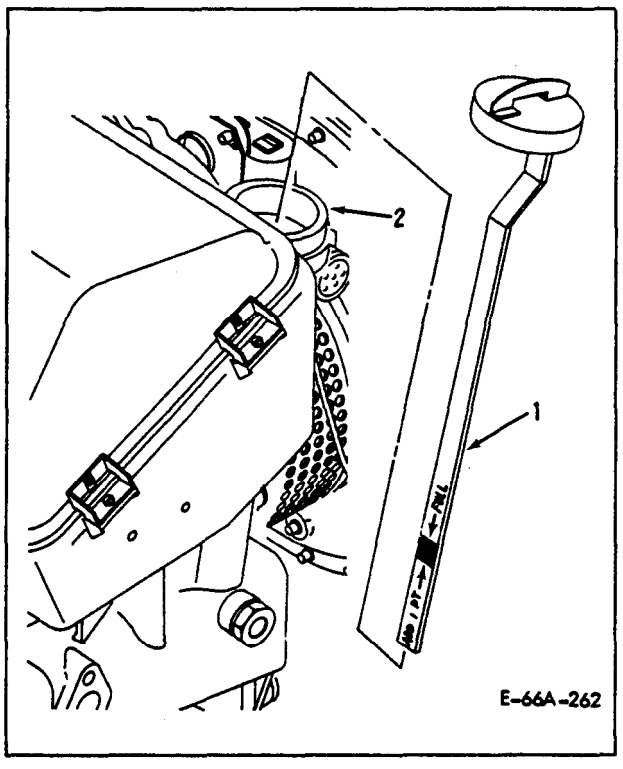
WARNING

Lubricating oils, DOD-L-85734, MIL-L-23699 and MIL-L-7808, contain material hazardous to health. They produce paralysis if swallowed or from prolonged skin contact. They may burn if exposed to heat or flames. Wash hands thoroughly after handling. Use only with proper ventilation.

6-15 REMOVE AND INSTALL OIL FILL CAP (CONT)

REMOVAL

1. Rotate oil fill cap (1) counterclockwise until dislodged from oil fill neck (2).
2. Remove oil fill cap (1), with dipstick from oil fill neck (2).
3. Clean oil fill cap (1) using processes 1, 2 and 3, Chapter 8.



INSTALLATION

NOTE

Prior to assembly, components will be visually inspected for damage.

1. Install oil fill cap (1) with dipstick in oil fill neck (2).
2. Align notches, then rotate oil fill cap clockwise until snug.

FOLLOW-ON MAINTENANCE: Subsequently, check oil level using the oil fill cap dipstick.

Section XVI REPLACE OIL FILL CAP GASKET

6-16 REPLACE OIL FILL CAP GASKET

This task covers: a. Removal b. Installation

INITIAL SETUP

Tools:
Aircraft Inspection Tool Kit (T49)
Engine Repairman's Tool Kit (T47)

Personnel Required:
68B Aircraft Powerplant Inspector
68B Aircraft Powerplant Repairer

Materials/Parts:
Gasket
Lubricating Oil (D16)
Machinery Towel (D20)

Equipment Conditions:
APU on Aircraft

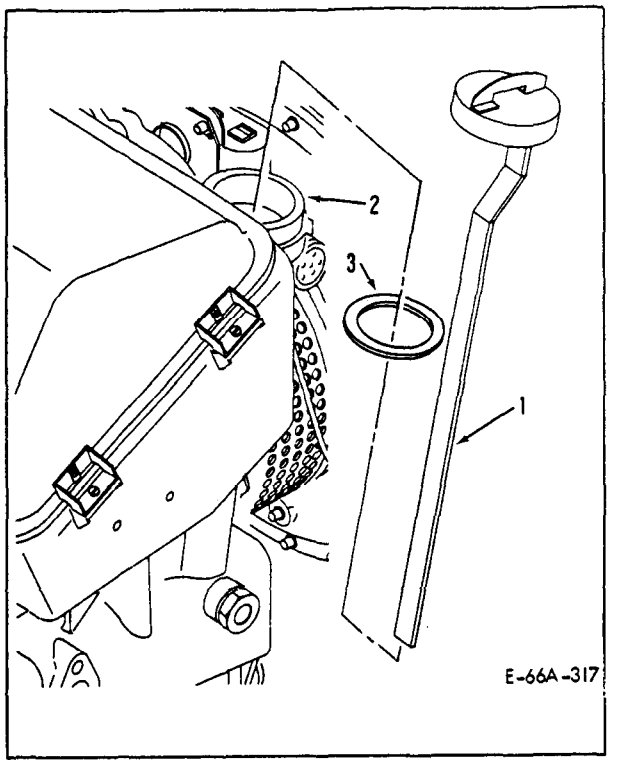
General Safety Instructions:

Lubricating oils, DOD-L-85734, MIL-L-23699 and MIL-L-7808, contain material hazardous to health. They produce paralysis if swallowed or from prolonged skin contact. They may burn if exposed to heat or flames. Wash hands thoroughly after handling. Use only with proper ventilation.

6-16 REPLACE OIL FILL CAP GASKET (CONT)

REMOVAL

1. Rotate oil fill cap (1) counterclockwise until dislodged from oil fill neck (2). Remove oil fill cap with dipstick. Cover oil fill neck opening with machinery towel (D20).
2. Remove and discard gasket (3).



INSTALLATION

NOTE

Prior to assembly, components will be visually inspected for damage.

1. Lubricate gasket (3) with lubricating oil (D16).
2. Install gasket (3) on oil fill cap (1).
3. Remove machinery towel (D20). Install oil fill cap (1) with dipstick. Align notches, then rotate clockwise until snug.

FOLLOW-ON MAINTENANCE: None.

Section XVII REPLACE MAGNETIC DRAIN PLUG ASSEMBLY

6-17 REPLACE MAGNETIC DRAIN PLUG ASSEMBLY

This task covers: a. Removal b. Installation

INITIAL SETUP

Tools:
Aircraft Inspection Tool Kit (T49)
Drain Adapter
Engine Repairman's Tool Kit (T47)
Torque Wrench 30-150 inch-pounds

Personnel Required:
68B Aircraft Powerplant Inspector
68B Aircraft Powerplant Repairer

Materials/Parts:
Lockwire (D44)
Lubricating Oil (D16)
Packing

References:
Tasks 6-2, 6-19

Equipment Conditions:
APU on Aircraft

General Safety Instructions:

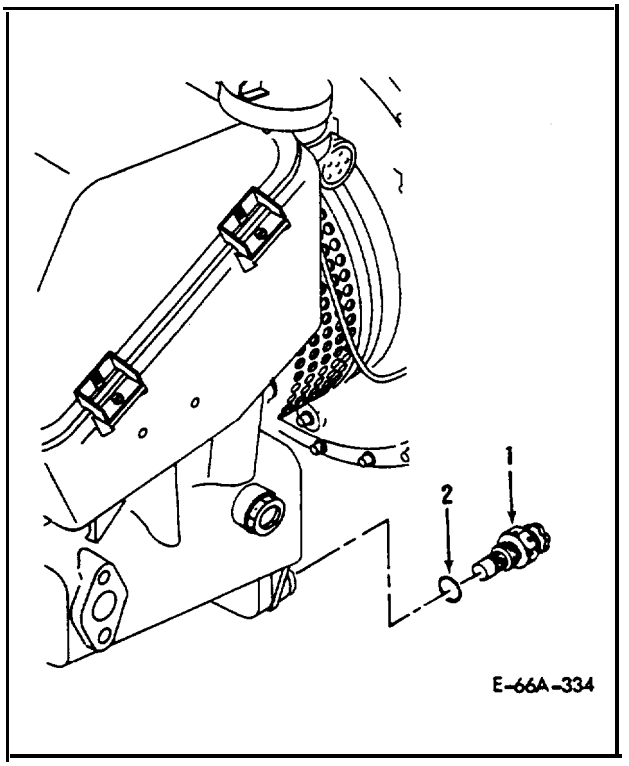
WARNING

Lubricating oils, DOD-L-85734, MIL-L-23699 and MIL-L-7808, contain material hazardous to health. They produce paralysis if swallowed or from prolonged skin contact. They may burn if exposed to heat or flames. Wash hands thoroughly after handling. Use only with proper ventilation.

6-17 REPLACE MAGNETIC DRAIN PLUG ASSEMBLY (CONT)

REMOVAL

1. Drain APU oil (Task 6-2).
2. Remove magnetic drain plug (1).
3. Remove and discard packing (2).



INSTALLATION

NOTE

Prior to assembly, all components will be visually inspected for damage.

1. Lubricate packing (2) with lubricating oil (D16).
2. Install packing (2) on magnetic drain plug (1).
3. Install magnetic drain plug (1).
4. Torque magnetic drain plug (1) to 80 to 90 inch-pounds.
5. Lockwire magnetic drain plug with lockwire (D44).

6. Service APU oil (Task 6-19).

FOLLOW-ON MAINTENANCE: None.

Section XVIII REPLACE OIL PRESSURE PLUG PACKING

6-18 REPLACE OIL PRESSURE PLUG PACKING

This task covers: a. Removal b. Installation

INITIAL SETUP

Tools:
Engine Repairman's Tool Kit (T47)

Personnel Required:
68B Aircraft Powerplant Inspector
68B Aircraft Powerplant Repairer

Materials/Parts:
Antiseize Compound (D8)
Lockwire (D43)
Lubricating Oil (D16)
Packing

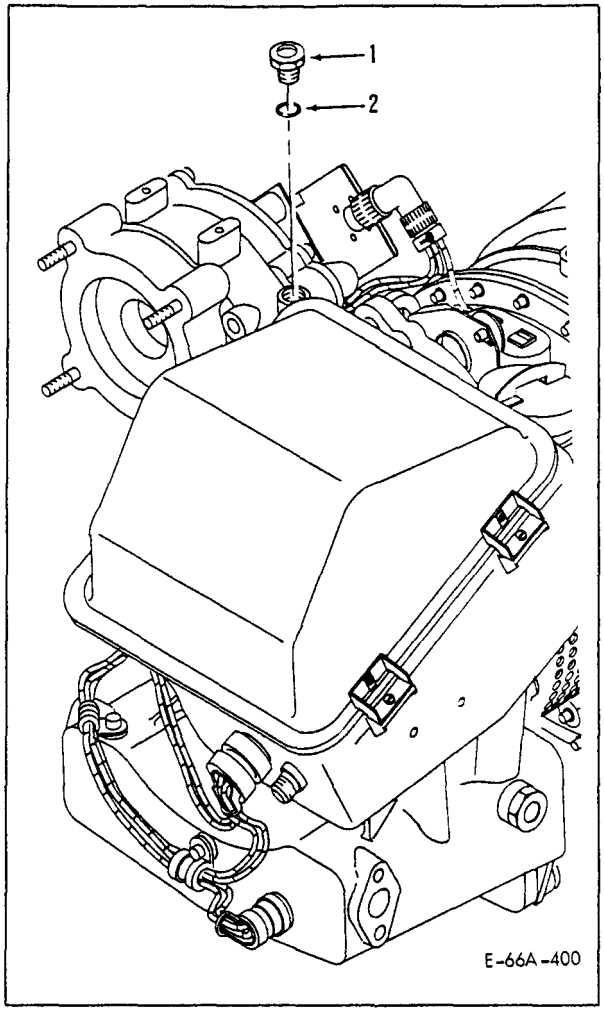
Equipment Conditions:
APU on Aircraft

General Safety Instructions:

WARNING

Lubricating oils, DOD-L-85734, MIL-L-23699 and MIL-L-7808, contain material hazardous to health. They produce paralysis if swallowed or from prolonged skin contact. They may burn if exposed to heat or flames. Wash hands thoroughly after handling. Use only with proper ventilation.

6-18 REPLACE OIL PRESSURE PLUG PACKING (CONT)



REMOVAL

1. Remove oil pressure plug (1).
2. Remove and discard packing (2).

INSTALLATION

NOTE

Prior to assembly, components will be visually inspected for damage.

1. Lubricate packing (2) with lubricating oil (D16).
2. Install packing (2) on oil pressure plug (1).
3. Apply antiseize compound (D8) to threads of oil pressure plug (1).
4. Install oil pressure plug (1) in top of gearbox. Torque oil pressure plug to 63 to 68 inch-pounds.
5. Lockwire oil pressure plug (1) with lockwire (D43).

FOLLOW-ON MAINTENANCE: None.

Section XIX SERVICE LUBRICATION SYSTEM

6-19 SERVICE LUBRICATION SYSTEM

INITIAL SETUP

Tools:
Engine Repairman's Tool Kit (T47)
Torque Wrench 30-150 inch-pounds

Personnel Required:
68B Aircraft Powerplant Repairer

Materials/Parts:
Lockwire (D43)
Lubricating Oil (D16)
Machinery Towel (D20)

Equipment Conditions:
APU on Aircraft

General Safety Instructions:

WARNING

Lubricating oils, DOD-L-85734, MIL-L-23699 and MIL-L-7808, contain material hazardous to health. They produce paralysis if swallowed or from prolonged skin contact. They may burn if exposed to heat or flames. Wash hands thoroughly after handling. Use only with proper ventilation.

6-19 SERVICE LUBRICATION SYSTEM (CONT)

1. Rotate oil fill cap (1) counterclockwise until dislodged from oil fill neck. Remove oil fill cap and wipe clean.

1.1. Install oil fill cap (1) and rotate clockwise until snug.

1.2. Remove oil fill cap and check oil level on dipstick.

CAUTION

Do not exceed full line on oil fill cap dipstick to avoid potential overheat damage to APU.

NOTE

The gearbox assembly has a fill to spill feature. This ensures complete filling of the gearbox assembly and prevents overfilling.

2. Remove fill to spill plug (2) and packing (3).

3. Fill gearbox assembly. through filler neck, with lubricating oil (D16) until lubricating oil comes out of fill to spill plug opening.

3.1. Check oil fill cap (1) dipstick to verify normal oil level is obtained.

NOTE

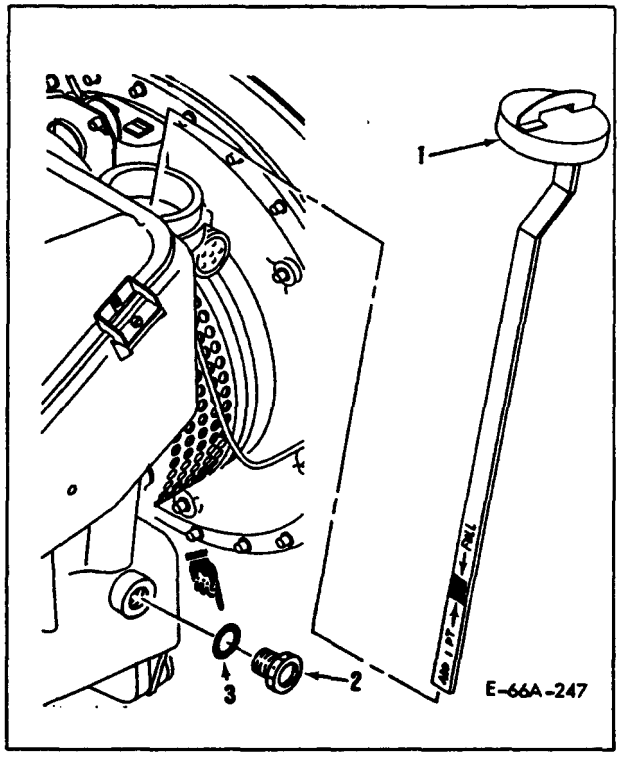
Prior to assembly, components will be visually inspected for damage.

4. Lubricate packing with lubricating oil (D16) and install on fill to spill plug. Install fill to spill plug (2). Torque to 80 to 90 inch-pounds. Lockwire fill to spill plug with lockwire (D43).

5. Install oil fill cap (1) and rotate clockwise until snug.

6. Wipe up any residual oil using machinery towel (D20).

FOLLOW-ON MAINTENANCE: None.



CHAPTER 7

GEARBOX ASSEMBLY MAINTENANCE

Section I REMOVE POWER SECTION ASSEMBLY

7-1 REMOVE POWER SECTION ASSEMBLY (AVIM)

INITIAL SETUP

Tools:
Engine Repairman's Tool Kit (T47)

Personnel Required:
68B Aircraft Powerplant Repairer
Assistant

Materials/Parts:
Protective Caps and Plugs

Equipment Conditions:
APU on Maintenance Stand (T1)

General Safety Instructions:

WARNING

Engine fuel is toxic and flammable. To prevent personnel injury, avoid contact with eyes and repeated or prolonged contact with skin.

Lubricating oils, DOD-L-85734, MIL-L-23699 and MIL-L-7808, contain material hazardous to health. They produce paralysis if swallowed or from prolonged skin contact. They may burn if exposed to heat or flames. Wash hands thoroughly after handling. Use only with proper ventilation.

7-1 REMOVE POWER SECTION ASSEMBLY (AVIM) (CONT)

CAUTION

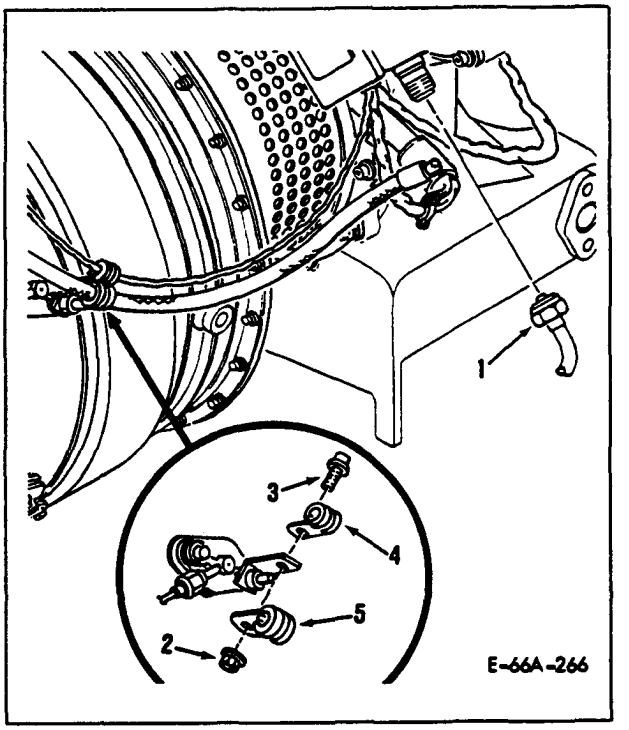
To prevent clogging or contamination, all exposed openings in fuel, oil, air lines and electrical connectors will be capped immediately. Be sure caps and plugs are clean.

NOTE

The ignition unit is equipped with an open circuit safety resistor which will allow bleed off of stored electrical charge when input power is removed.

1. Disconnect igniter plug lead (1) from ignition unit.

2. Remove nut (2), bolt (3) and clamps (4, 5) from combustion case.



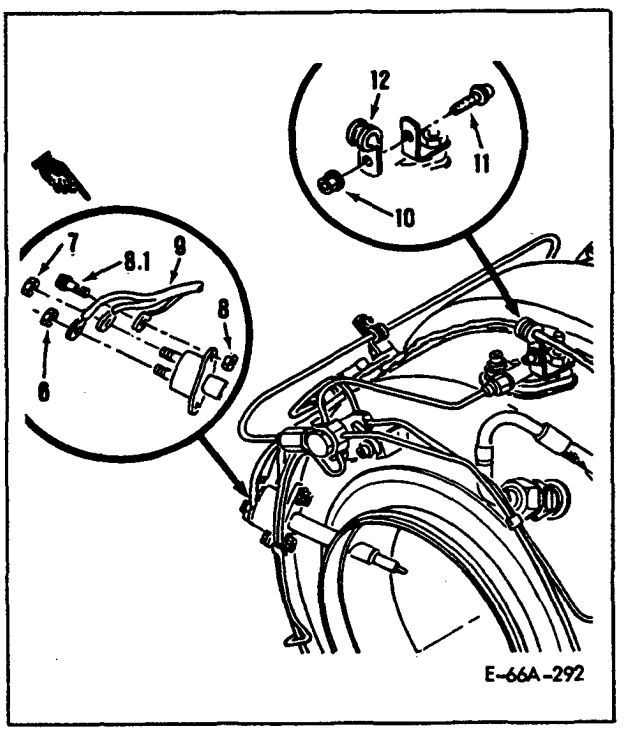
NOTE

To aid in assembly, leads should be marked prior to removal.

3. Remove nuts (6, 7, 8), bolt (8.1) and ground wire from immersion thermocouple. Remove immersion thermocouple leads (9) from stud marked, (AL), stud marked (CR) and ground wire.

4. Install nuts (6, 7) back on immersion thermocouple.

5. Remove nut (10), bolt (11) and clamp (12).

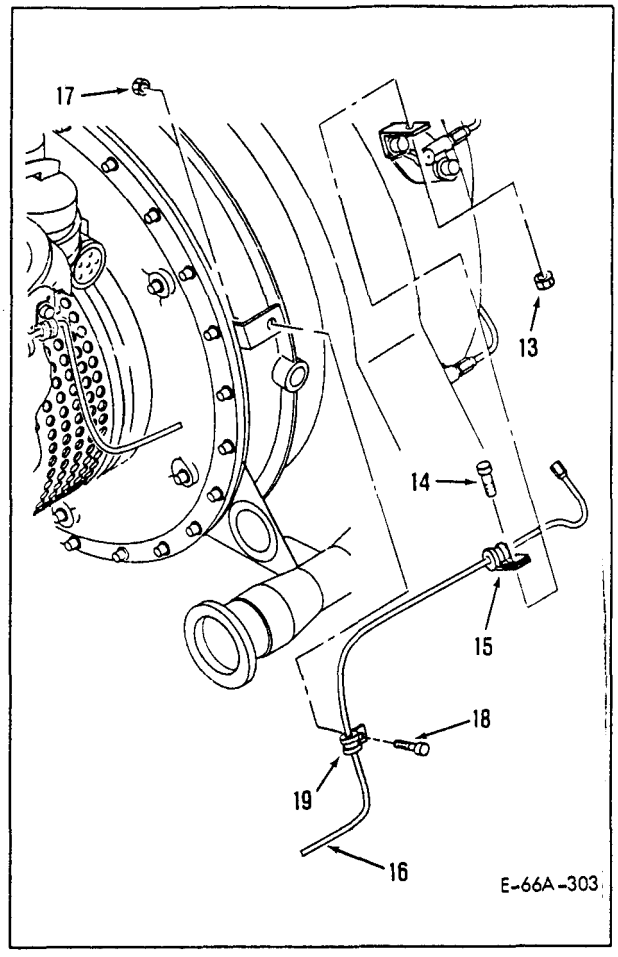


7-1 REMOVE POWER SECTION ASSEMBLY (AVIM) (CONT)

6. Remove nut (13), bolt (14) and clamp (15) from fuel solenoid valve to fuel manifold assembly tube (16).

7. Remove nut (17), bolt (18) and cl amp (19) from fuel solenoid valve to fuel manifold assembly tube (16)

8. Disconnect fuel solenoid valve to fuel manifold assembly tube (16) from fuel manifold assembly.



7-1 REMOVE POWER SECTION ASSEMBLY (AVIM) (CONT)

9. Remove bolts (20) and washers (21) from lifting bracket (22). Remove lifting bracket and clamp bracket.

10. Clean lifting bracket (22) using process 1, Chapter 8.

11. Position gearbox assembly (26) in maintenance stand with aft end up.

NOTE

Removing remaining bolts from compressor housing will also remove one wiring clamp.

12. Remove remaining bolts (23) and washers (24).

NOTE

Two persons are required for the following task.

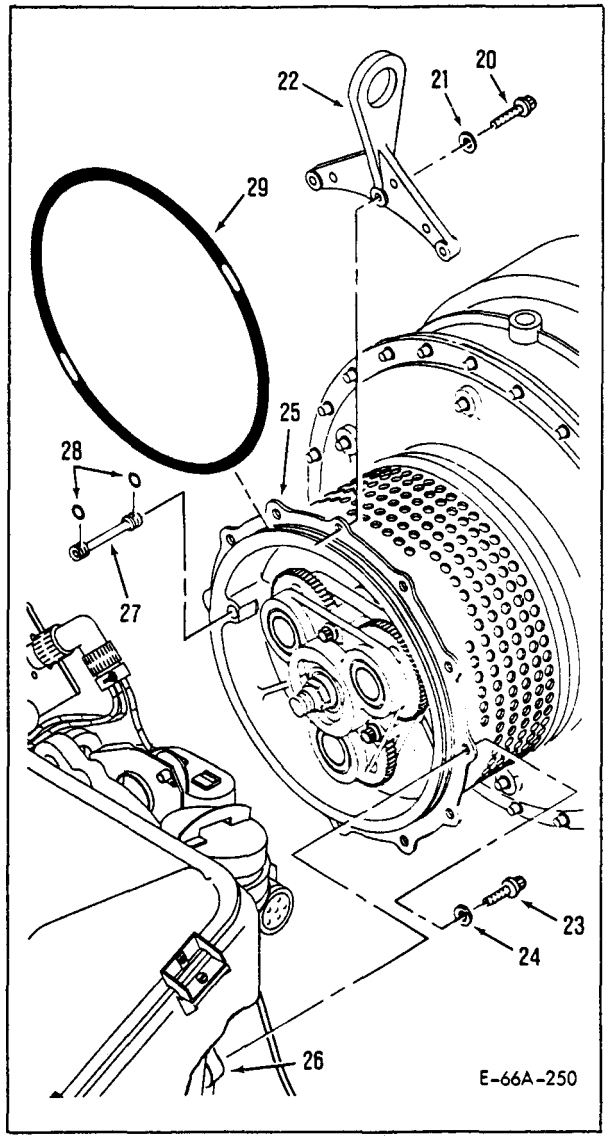
13. Lift power section assembly (25) from gearbox assembly (26) and place on workbench.

14. Remove transfer tube (27). Remove and discard packings (28).

15. Clean transfer tube (27) using process 1, Chapter 8.

16. Remove and discard packing (29).

FOLLOW-ON MAINTENANCE: None.



7-2 REPLACE INSERT (AVIM)

This task covers: a. Removal b. Installation

INITIAL SETUP

Tools:
Aircraft Inspection Tool Kit (T49)
Engine Repairman's Tool Kit (T47)

Personnel Required:
44E Machinist
68B Aircraft Powerplant Inspector
68B Aircraft Powerplant Repairer

Materials/Parts:
Cotton Applicator (D10)
Dry Cleaning Solvent (D35)
Epoxy Primer (D30)
Insert
Machinery Towel (D20)
1,1,1-Trichloroethane (D41)

References:
TM 55-1500-204-25/1

Equipment Conditions:
Gearbox Housing Removed From Power Section

General Safety Instructions:

WARNING

Compressed air is dangerous when directed toward yourself or another person. The airstream or material blown by the airstream can cause injury, particularly to the eyes and face. Use goggles to protect eyes and face. Do not exceed 30 PSI. Do not direct airstream toward yourself or another person.

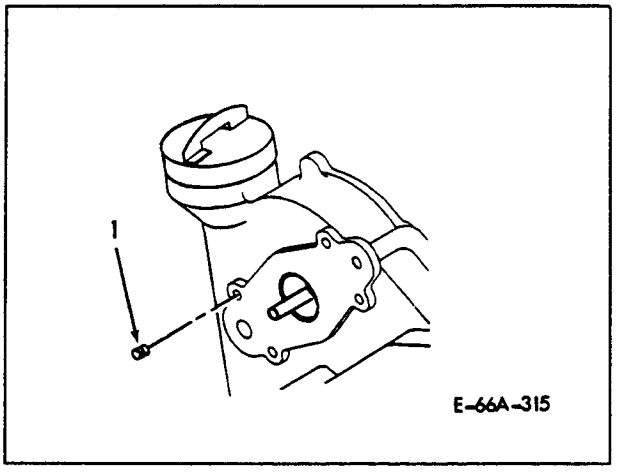
Epoxy primer is flammable and toxic to eyes, skin and respiratory tract. To prevent personnel injury, skin and eye protection is required. Avoid prolonged or repeated contact. Work in a well-ventilated area.

1,1,1-Trichloroethane is toxic to skin, eyes and respiratory tract. Skin and eye protection are required. Avoid repeated or prolonged contact. Work in a well-ventilated area.

Powered tool operations create airborne particles. Eye protection is required. Remove jewelry prior to use. Adequate ventilation or respirator is required.

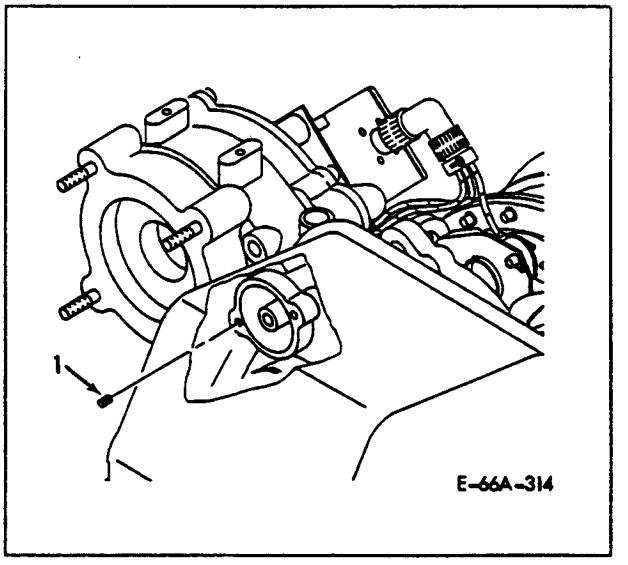
7-2 REPLACE INSERT (AVIM) (CONT)

REMOVAL



1. Position gearbox housing on work surface.
2. Drill insert (1) 0.107 inch from housing surface to allow extraction.
3. Remove insert (1) using drive tool as extractor.

INSTALLATION



NOTE

Prior to assembly, all components will be visually inspected for damage.

1. Clean insert (1) and area with 1,1,1-trichloroethane (D41) and machinery towel (D20).
2. Apply epoxy primer (D30) with cotton applicator (D10) to insert (1) threads. Allow to cure 1 to 5 minutes.
3. Install insert 0.015 to 0.025 inch below boss surface.
4. Swage locking feature of insert.
5. Remove excess primer with machinery towel (D20) and dry cleaning solvent (D35).
6. Air dry for 72 hours at 62 to 92°F (17 to 33°C).

FOLLOW-ON MAINTENANCE: None.

Section III REPLACE INSERT

7-3 REPLACE INSERT (AVIM)

This task covers: a. Removal b. Installation

INITIAL SETUP

Tools:
Aircraft Inspection Tool Kit (T49)
(3800480-1) Drill Bit 21/64 inch
(3800480-2) Drill Bit 7/32 inch
Engine Repairman's Tool Kit (T47)

Personnel Required:
68B Aircraft Powerplant Inspector
68B Aircraft Powerplant Repairer

Materials/Parts:
Acid Brush (D5)
Cotton Applicator (D10)
Dry Cleaning Solvent (D35)
Epoxy Primer (D30)
Insert
Lock Ring
Machinery Towel (D20)
1,1,1-Trichloroethane (D41)

References:
TM 55-1500-204-25/1

Equipment Conditions:
Gearbox Housing Removed From Power Section

General Safety Instructions:

WARNING

1,1,1-Trichloroethane is toxic to skin, eyes and respiratory tract. Skin and eye protection are required. Avoid repeated or prolonged contact. Work in a well-ventilated area.

Compressed air is dangerous when directed toward yourself or another person. The airstream or material blown by the airstream can cause injury, particularly to the eyes and face. Use goggles to protect eyes and face. Do not exceed 30 PSI. Do not direct airstream toward yourself or another person.

Powered tool operations create airborne particles. Eye protection is required. Remove jewelry prior to use. Adequate ventilation or respirator is required.

Epoxy primer is flammable and toxic to eyes, skin and respiratory tract. To prevent personnel injury, skin and eye protection is required. Avoid prolonged or repeated contact. Work in a well-ventilated area.

7-3 REPLACE INSERT (AVIM) (CONT)

REMOVAL

1. Place gearbox housing on work surface.
2. Drill insert (1) to allow extraction.
3. (3800480-1) Remove threaded portion of insert (1), removal torque will jack out lock ring (2).

   (3800480-2) Collapse and remove insert (1).

INSTALLATION

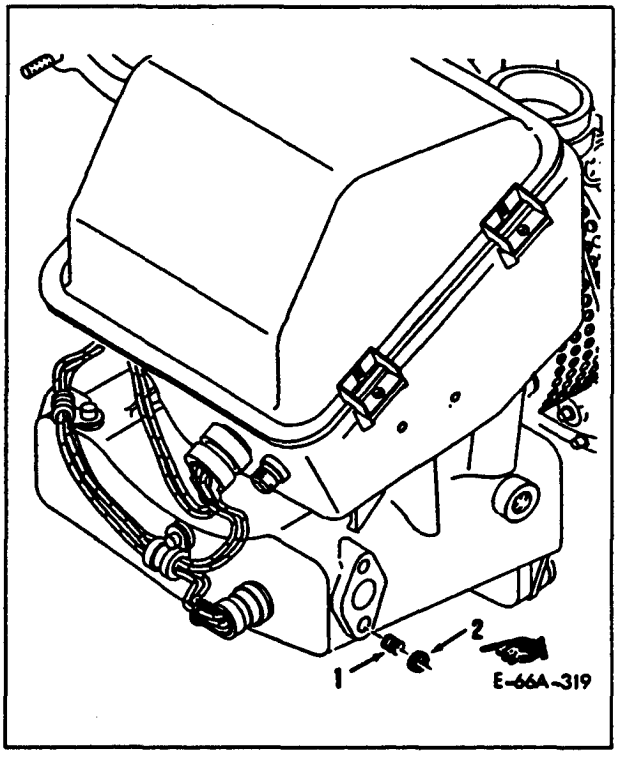
NOTE

Prior to assembly, all components will be visually inspected for damage.

1. Clean and degrease the surfaces to be mated with 1,1,1-trichloroethane (D41) and machinery towel (D20).
2. Using acid brush (D5), apply epoxy primer (D30) to insert (1). Allow to dry 1 to 5 minutes.
3. Deleted.
4. (3800480-1) Install insert (1) in gearbox housing to a depth of 0.010 to 0.020 inch below surface.

   (3800480-2) Install insert (1) one turn below surface. Remove insert (1) tang.
5. (3800480-1) Install lock ring (2) to a depth of 0.005 to 0.010 inch below the surface.
6. Remove excess epoxy primer (D30) with machinery towel (D20) and dry cleaning solvent (D35).
7. Air dry for 72 hours at 62 to 92°F (17 to 33°C).

FOLLOW-ON MAINTENANCE: None.



Section IV REPLACE INSERT

7-4 REPLACE INSERT (AVIM)

This task covers: a. Removal b. Installation

INITIAL SETUP

Tools:
Aircraft Inspection Tool Kit (T49)
Engine Repairman's Tool Kit (T47)

Personnel Required:
68B Aircraft Powerplant Inspector
68B Aircraft PowerPlant Repairer

Materials/Parts:
Cotton Applicator (D10)
Dry Cleaning Solvent (D35)
Epoxy Primer (D30)
Machinery Towel (D20)
Theaded Insert
1,1,1-Trichloroethane (D41)

References:
TM 1-1500-204-23

Equipment Conditions:
Gearbox Housing Removed From Power Section

General Safety Instructions:

WARNING

Dry cleaning solvent is toxic to skin, eyes and respiratory tract. Skin, eye and respiratory protection required. Avoid repeated or prolonged contact.

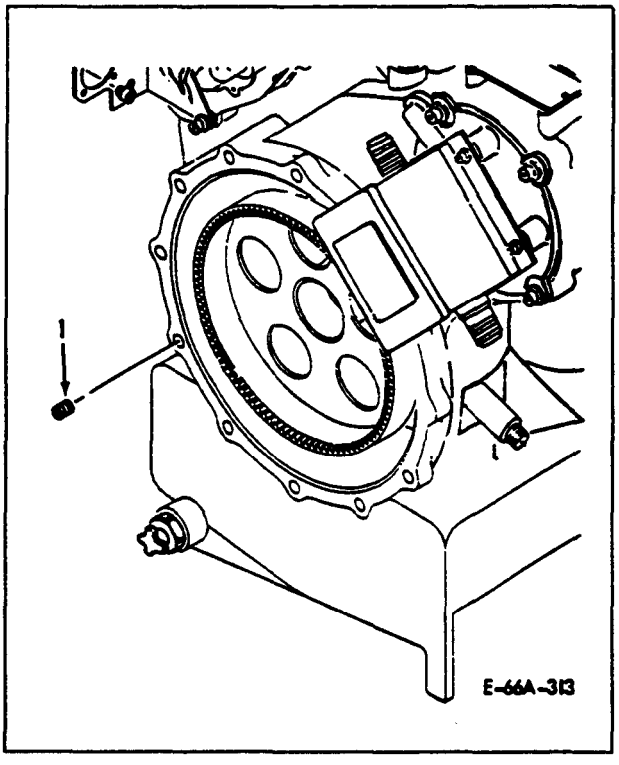
1,1,1-Trichloroethane is toxic to skin, eyes and respiratory tract. Skin and eye protection are required. Avoid repeated or prolonged contact. Work in a well-ventilated area.

Epoxy primer is flammable and toxic to eyes, skin and respiratory tract. To prevent personnel injury, skin and eye protection is required. Avoid prolonged or repeated contact. Work in a well-ventilated area.

7-4 REPLACE INSERT (AVIM) (CONT)

REMOVAL

1. Place gearbox housi ng on work surface.
2. Remove loose or damaged insert (1) with needle nose pliers or equivalent.



INSTALLATION

NOTE

Prior to assembly, all components will be visually inspected for damage.

1. Clean insert and area with 1,1,1-trichloroethane (D41) and cotton applicator (D10).
2. Apply epoxy primer (D30) to both surfaces and allow to cure for 1 to 5 minutes.
3. Install insert (1) one turn below surface of countersink.
4. Remove insert (1) tang with hammer and punch.
5. Remove excess epoxy primer (D30) with machinery towel (D20) and dry cleaning solvent (D35).
6. Air dry for 72 hours at 62 to 92°F (17 to 33°C).

FOLLOW-ON MAINTENANCE: None.

Section V REPLACE INSERT

7-5 REPlACE INSERT (AVIM)

This task covers: a. Removal b. Installation

INITIAL SETUP

Tools:
Aircraft Inspection Tool Kit (T49)
Engine Repairman's Tool Kit (T47)

Personnel Required:
68B Aircraft Powerplant Inspector
68B Aircraft Powerplant Repairer

Materials/Parts:
Cotton Applicator (D10)
Dry Cleaning Solvent (D35)
Epoxy Primer (D30)
Machinery Towel (D20)
Threaded Insert
1,1,1-Trichloroethane (D41)

References:
TM 55-1500-204-25/1

Equipment Conditions:
Gearbox Housing Removed From Power Section

General Safety Instructions:

WARNING

Dry cleaning solvent is toxic to skin, eyes and respiratory tract. Skin, eye and respiratory protection required. Avoid repeated or prolonged contact.

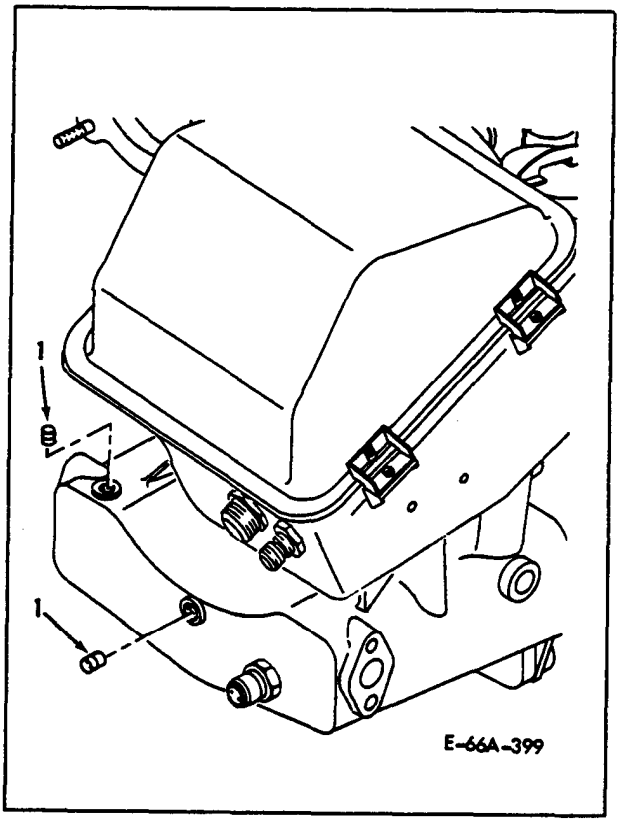
1,1,1-Trichloroethane is toxic to skin, eyes and respiratory tract. Skin and eye protection are required. Avoid repeated or prolonged contact. Work in a well-ventilated area.

Compressed air is dangerous when directed toward yourself or another person. The airstream or material blown by the airstream can cause injury, particularly to the eyes and face. Use goggles to protect eyes and face. Do not exceed 30 PSI. Do not direct airstream toward yourself or another person.

Powered tool operations create airborne particles. Eye protection is required. Remove jewelry prior to use. Adequate ventilation or respirator is required.

Epoxy primer is flammable and toxic to eyes, skin and respiratory tract. To prevent personnel injury, skin and eye protection is required. Avoid prolonged or repeated contact. Work in a well-ventilated area.

7-5 REPLACE INSERT (AVIM) (CONT)



REMOVAL

1. Place gearbox housing on work surface.
2. Drill insert (1) to allow extraction.
3. Collapse and remove insert (1).

INSTALLATION

NOTE

Prior to assembly, all components will be visually inspected for damage.

1. Clean insert and area with 1,1,1-trichloroethane (D41) and machinery towel (D20).
2. Apply epoxy primer (D30) with cotton applicator (D10). Allow to cure 1 to 5 minutes.
3. Install insert one turn below surface of the countersink.
4. Remove insert (1) tang.
5. Remove excess epoxy primer (D30) with machinery towel (D20) and dry cleaning solvent (D35).
6. Air dry for 72 hours at 62 to 92°F (17 to 33°C).

FOLLOW-ON MAINTENANCE: None.

Section V.I REPLACE INSERT

7-5.1 REPLACE INSERT (AVIM)

This task covers: a. Removal b. Installation

INITIAL SETUP

Tools:
Aircraft Inspection Tool Kit (T49)
Engine Repairman's Tool Kit (T47)

Personnel Required:
44E Machinist
68B Aircraft Powerplant Inspector
68B Aircraft Powerplant Repairer

Materials/Parts:
Cotton Applicator (D10)
Dry Cleaning Solvent (D35)
Epoxy Primer (D30)
Insert
Machinery Towel (D20)
1,1,1-Trichloroethane (D41)

References:
TM 55-1500-204-25/1

Equipment Conditions:
Gearbox Housing Removed From Power Section

General Safety Instructions:

WARNING

Dry cleaning solvent is toxic to skin, eyes and respiratory tract. Skin, eye and respiratory protection required. Avoid repeated or prolonged contact.

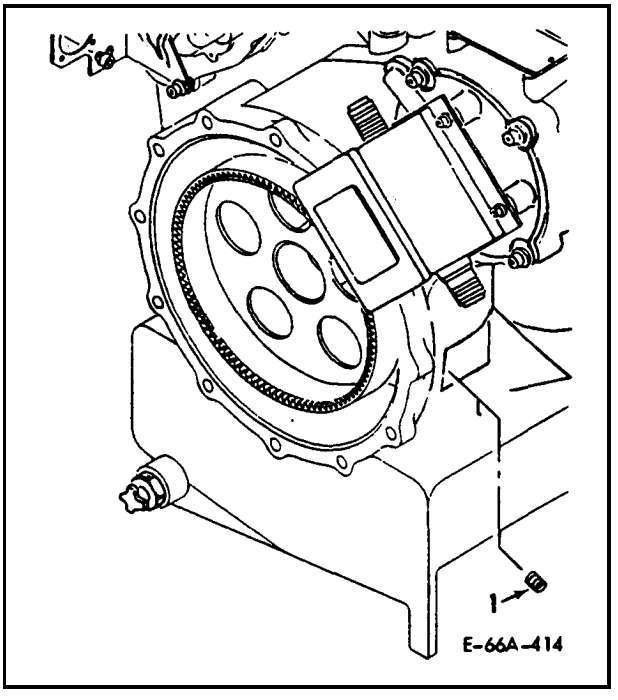
Compressed air is dangerous when directed toward yourself or another person. The airstream or material blown by the airstream can cause injury, particularly to the eyes and face. Use goggles to protect eyes and face. Do not exceed 30 PSI. Do not direct airstream toward yourself or another person.

Epoxy primer is flammable and toxic to eyes, skin and respiratory tract. To prevent personnel injury, skin and eye protection is required. Avoid prolonged or repeated contact. Work in a well-ventilated area.

1,1,1-Trichloroethane is toxic to skin, eyes and respiratory tract. Skin and eye protection are required. Avoid repeated or prolonged contact. Work in a well-ventilated area.

Powered tool operations create airborne particles. Eye protection is required. Remove jewelry prior to use. Adequate ventilation or respirator is required.

7-5.1 REPLACE INSERT (AVIM) (CONT)



REMOVAL

1. Position gearbox housing on work surface.
2. Drill insert (1) to allow extraction.
3. Punch the lock keys inward and break off.
4. Remove threaded portion of insert (1).

INSTALLATION

NOTE

Prior to assembly, all components will be visually inspected for damage.

1. Clean insert (1) and area with 1,1,1-trichloroethane (D41) and machinery towel (D20).
2. Apply epoxy primer (D30) with cotton applicator (D10) to insert (1) threads. Allow to cure 1 to 5 minutes.
3. Screw in insert until lock keys contact the countersink.
4. Drive the keys to lock insert.
5. Remove excess epoxy primer (D30) with machinery towel (D20) and dry cleaning solvent (D35).
6. Air dry for 72 hours at 62 to 92°F (17 to 33°C).

FOLLOW-ON MAINTENANCE: None.

Section VI REPLACE STUD

7-6 REPLACE STUD (AVIM)

This task covers: a. Removal b. Installation

INITIAL SETUP

Tools:
Aircraft Inspection Tool Kit (T49)
Engine Repairman's Tool Kit (T47)

Personnel Required:
68B Aircraft Powerplant Inspector
68B Aircraft Powerplant Repairer

Materials/Parts:
Acid Brush (D5)
Dry Cleaning Solvent (D35)
Epoxy Primer (D30)
Machinery Towel (D20)
Stud
1,1,1-Trichloroethane (D41)

References:
TM 55-1500-204-25/1

Equipment Conditions:
Gearbox Housing Removed From Power Section

General Safety Instructions:

WARNING

Powered tool operations create airborne particles. Eye protection is required. Remove jewelry prior to use. Adequate ventilation or respirator is required.

1,1,1-Trichloroethane is toxic to skin, eyes and respiratory tract. Skin and eye protection are required. Avoid repeated or prolonged contact. Work in a well-ventilated area.

Epoxy primer is flammable and toxic to eyes, skin and respiratory tract. To prevent personnel injury, skin and eye protection is required. Avoid prolonged or repeated contact. Work in a well-ventilated area.

7-6 REPLACE STUD (AVIM) (CONT)

REMOVAL

NOTE

Stud should be cut as close to housing surface as possible.

1. Cut and center punch stud (1).
2. Position and secure gearbox housing on workbench.
3. Drill stud to diameter 0.344 inch and depth of 0.188 inch.
4. Deflect lock keys inward and break off.
5. Remove stud with screw extractor.

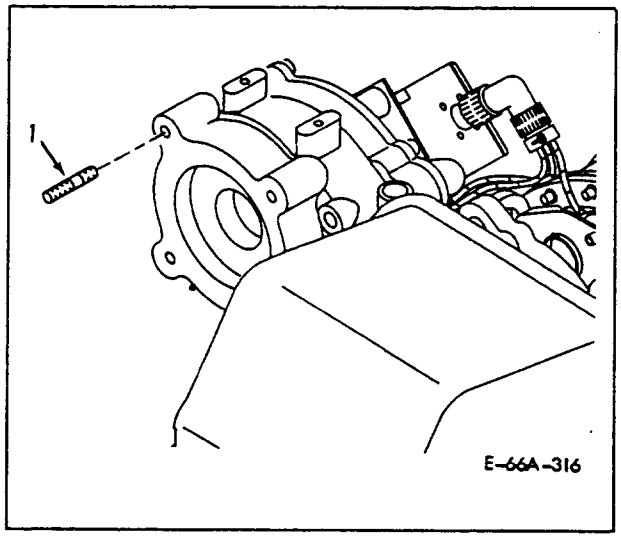
INSTALLATION

NOTE

Prior to assembly, all components will be visually inspected for damage.

1. Clean and completely degrease all contact surfaces with 1,1,1-trichloroethane (D41) and machinery towel (D20).
2. Using acid brush (D5), apply epoxy primer (D30) to stud (1) end threads. Allow to dry 1 to 5 minutes.
3. Deleted.
4. Insert stud (1) slowly to allow air to escape with lock key installation tool. Screw in until keys contact countersink.
5. Drive lock keys.
6. Remove excess epoxy primer (D30) with machinery towel (D20) and dry cleaning solvent (D35).
7. Air dry for 72 hours at 62 to 92°F (17 to 33°C).

FOLLOW-ON MAINTENANCE: None.



Section VII REPLACE STUD

7-7 REPLACE STUD (AVIM)

This task covers: a. Removal b. Installation

INITIAL SETUP

Tools:
Aircraft Inspection Tool Kit (T49)
Drill Bit 3/32 inch
Engine Repairman's Tool Kit (T47)

Personnel Required:
68B Aircraft Powerplant Inspector
68B Aircraft Powerplant Repairer

Materials/Parts:
Acid Brush (D5)
Dry Cleaning Solvent (D35)
Epoxy Primer (D30)
Lock Ring
Machinery Towel (D20)
Stud
1,1,1-Trichloroethane (D41)

References:
TM 55-1500-204-25/1

Equipment Conditions:
Gearbox Assembly Removed From Power Section

General Safety Instructions:

WARNING

1,1,1-Trichloroethane is toxic to skin, eyes and respiratory tract. Skin and eye protection are required. Avoid repeated or prolonged contact. Work in a well-ventilated area.

Powered tool operations create airborne particles. Eye protection is required. Remove jewelry prior to use. Adequate ventilation or respirator is required.

Epoxy primer is flammable and toxic to eyes, skin and respiratory tract. To prevent personnel injury, skin and eye protection is required. Avoid prolonged or repeated contact. Work in a well-ventilated area.

7-7 REPLACE STUD (AVIM) (CONT)

REMOVAL

1. Place gearbox assembl y on workbench.

NOTE

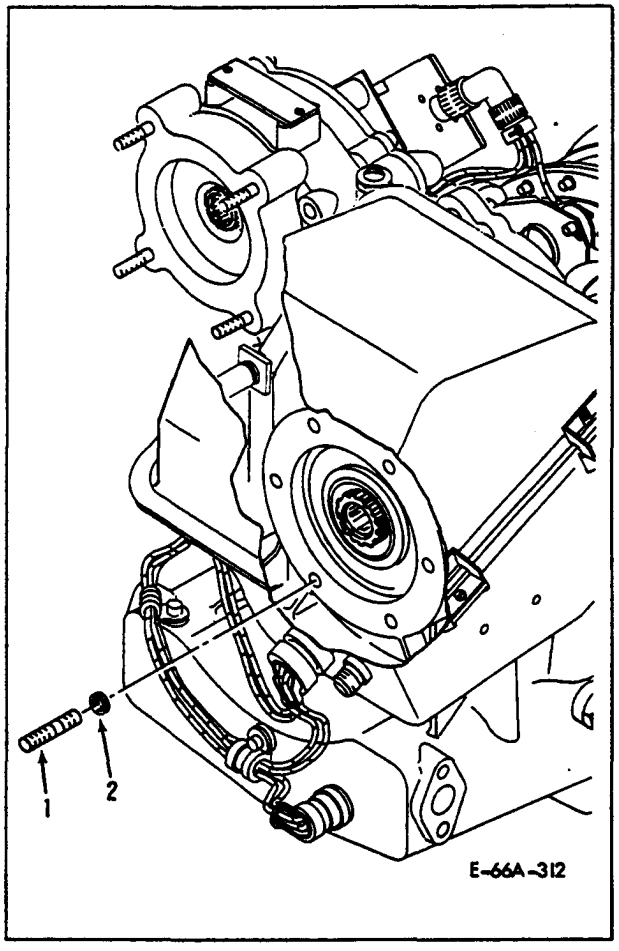
Best results will be obtained by not milling completely through lock ring.

2. Carefully align drill axes of stud (1) and mill through lock ring.

3. Apply removal torque to stud (1). As-stud thread flanks, bear against lower surface of lock ring (2), continued torque will cause lock ring (2) to be jacked out.

NOTE

If lock ring has been milled completely through and fails to lift out with stud, the portion remaining may be collapsed with a punch and removed.



INSTALLATION

NOTE

Prior to assembly, all components will be visually inspected for damage.

1. Clean and degrease all contact surfaces with 1,1,1-trichloroethane (D41) and machinery towel (D20).

2. Using acid brush (D5), apply epoxy primer (D30) to stud threads. Allow to dry 1 to 5 minutes.

3. Deleted.

7-7 REPLACE STUD (AVIM) (CONT)

4. Insert stud (1) slowly with stud installer to allow air to escape. Install until top serrated flange is 0.010 to 0.020 inch below surface of gearbox assembly.

CAUTION

Location of flange is important so that lock ring drive tool will not make contact. Any impact or pressure may cause damage to threads on gearbox assembly.

5. Install lock ring (2) with lock ring drive tool to a depth of 0.005 to 0.010 inch below surface of gearbox assembly.

6. Remove excess epoxy primer (D30) with machinery towel (D20) and dry cleaning solvent (D35).

7. Air dry for 72 hours at 62 to 92°F (17 to 33°C) .

FOLLOW-ON MAINTENANCE: None.

Section VIII REPAIR DAMAGED GEARBOX STUD THREADS

7-8 REPAIR DAMAGED GEARBOX STUD THREADS (AVIM)

INITIAL SETUP

Tools:
Engine Repairman's Tool Kit (T47)

Personnel Required:
68B Aircraft Powerplant Repairer

Equipment Conditions:
APU on Maintenance Stand (T1)

General Safety Instructions:

WARNING

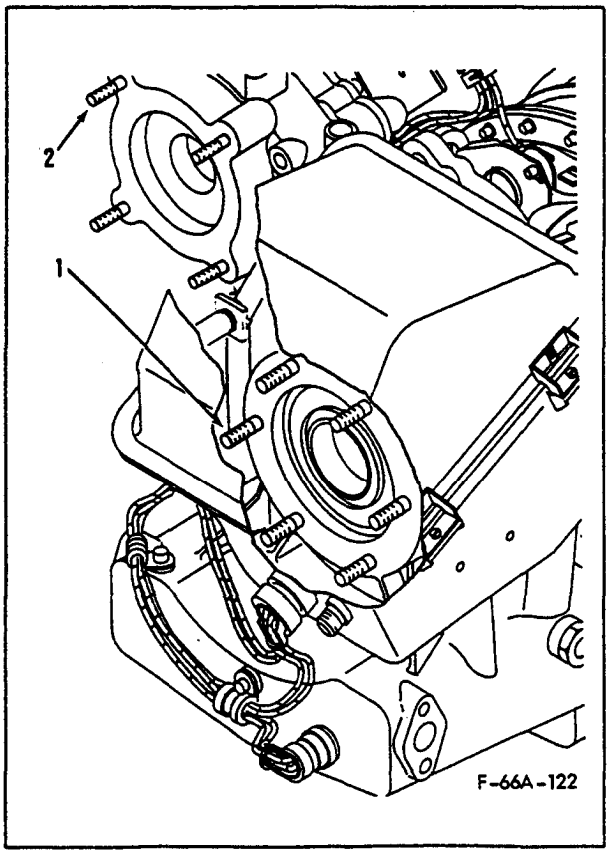
Compressed air is dangerous when directed toward yourself or another person. The airstream or material blown by the airstream can cause injury, particularly to the eyes and face. Use goggles to protect eyes and face. Do not exceed 30 PSI. Do not direct airstream toward yourself or another person.

CAUTION

Clean up of external and internal threads can contaminate oil, fuel and pneumatic systems. Use necessary precaution to prevent contamination to systems that are exposed to metal debris.

1. File damaged stud threads (1, 2) as necessary for clean up. Using thread restorer files.
2. Blow metal debris from threads.
3. Visually inspect threads to be sure all metal debris is removed.
4. Check threads repaired by mating with nut for ease of assembly.

FOLLOW-ON MAINTENANCE: None.



Section IX TOUCH UP GEARBOX ASSEMBLY HOUSING ANODIZE

7-9 TOUCH UP GEARBOX ASSEMBLY HOUSING ANODIZE (AVIM)

INITIAL SETUP

Personnel Required:
688 Aircraft Powerplant Repairer

Materials/Parts:
Cotton Applicator (D10)
Iridite (D15)
1,1,1-Trichloroethane (D41)

References:
TM 55-1500-204-25/1

Equipment Conditions:
Gearbox Assembly Removed

General Safety Instructions:

WARNING

1,1,1-Trichloroethane is toxic to skin, eyes and respiratory tract. Skin and eye protection are required. Avoid repeated or prolonged contact. Work in a well-ventilated area.

Compressed air is dangerous when directed toward yourself or another person. The airstream or material blown by the airstream can cause injury, particularly to the eyes and face. Use goggles to protect eyes and face. Do not exceed 30 PSI. Do not direct airstream toward yourself or another person.

Iridite solution is toxic to skin, eyes and respiratory tract. Skin and eye protection are required. Avoid repeated or prolonged contact. Work in a well-ventilated area.

7-9 TOUCH UP GEARBOX ASSEMBLY HOUSING ANODIZE (AVIM) (CONT)

1. Position gearbox housing on work surface.

NOTE

This task is for damaged area less than 5 percent of surface area or shorter than 1/2 inch in length.

2. Clean damaged area with 1,1,1-trichloroethane (D41) and cotton applicator (D10).

3. Dry part thoroughly with clean, filtered compressed air.

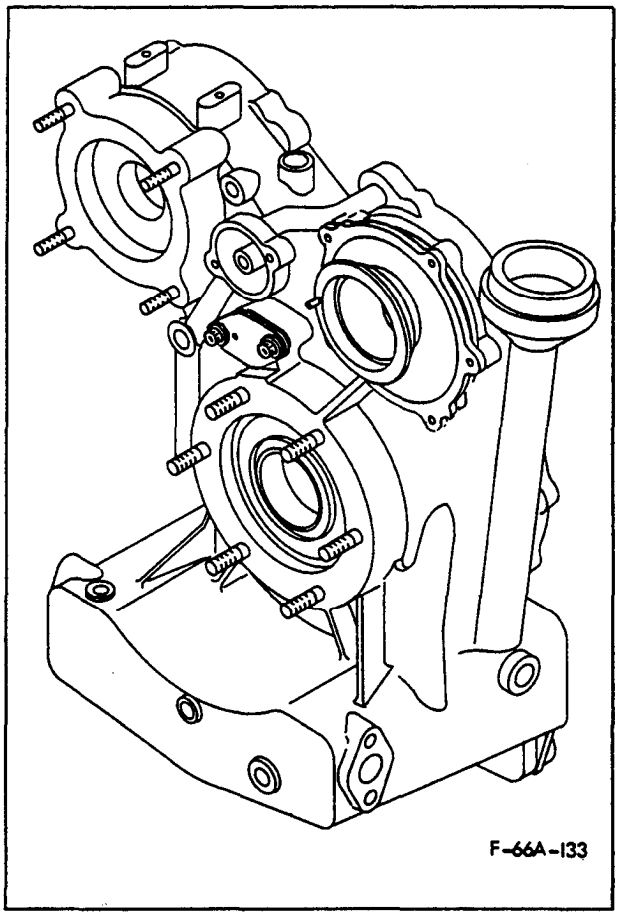
CAUTION

Cotton applicator, saturated with iridite solution, constitutes a fire hazard if allowed to dry. Immediately after use, rinse thoroughly in tap water.

4. Apply iridite solution (D15) to damaged area with cotton applicator (D10). Keep surface wet 1 minute.

5. Rinse treated area with tap water 80 to 110°F (26.6 to 43.3°C).

6. Dry part thoroughly with clean, filtered compressed air.



FOLLOW-ON MAINTENANCE: None.

Section X INSTALL POWER SECTION ASSEMBLY

7-10 INSTALL POWER SECTION ASSEMBLY (AVIM)

INITIAL SETUP

Tools:
Aircraft Inspection Tool Kit (T49)
Engine Repairman's Tool Kit (T47)
Torque Wrench 30-150 inch-pounds

Personnel Required:
68B Aircraft Powerplant Inspector
68B Aircraft Powerplant Repairer
Assistant

Materials/Parts:
Antiseize Compound (D8)
Bolt
Lockwire (D43)
Lubricating Oil (D16)
Nut
Packing
Stud
Washer

Equipment Conditions:
APU Gearbox on Maintenance Stand (T1)

General Safety Instructions:

WARNING

Engine fuel is toxic and flammable. To prevent personnel injury, avoid contact with eyes and repeated or prolonged contact with skin.

Lubricating oils, DOD-L-85734, MIL-L-23699 and MIL-L-7808, contain material hazardous to health. They produce paralysis if swallowed or from prolonged skin contact. They may burn if exposed to heat or flames. Wash hands thoroughly after handling. Use only with proper ventilation.

7-10 INSTALL POWER SECTION ASSEMBLY (AVIM) (CONT)

NOTE

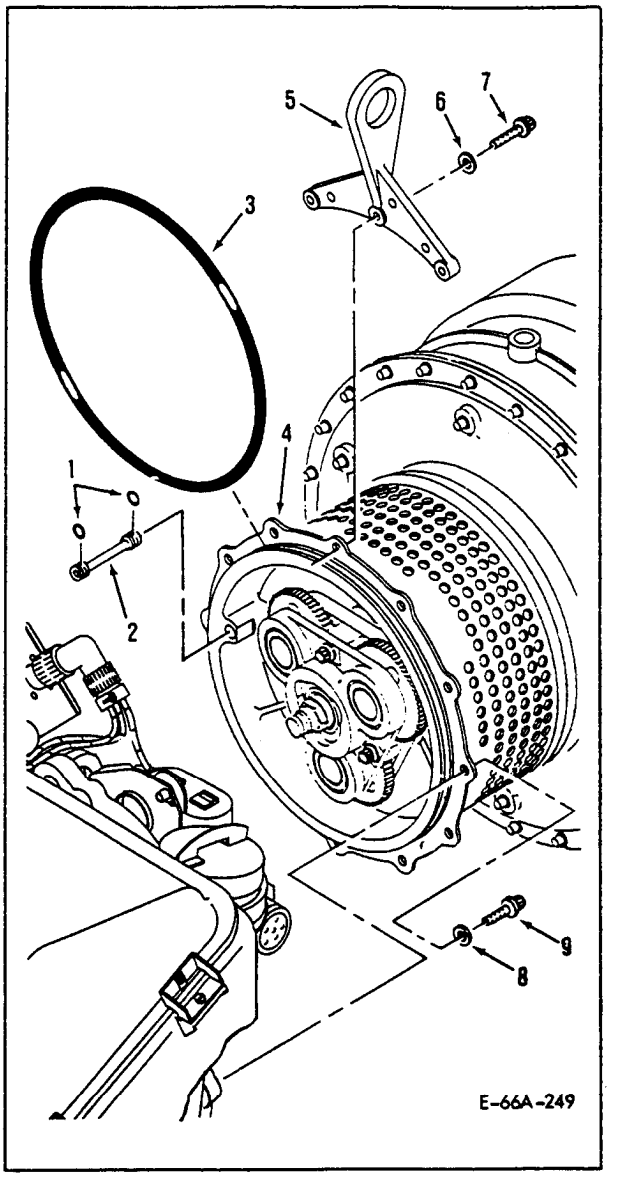
Prior to assembly, all components will be visually inspected for damage.

1. Place gearbox assembly on maintenance stand with aft end up.
2. Lubricate transfer tube packings (1) with lubricating oil (D16) and install on transfer tube (2).
3. Install transfer tube (2) in power section assembly (4).
4. Lubricate packing (3) with lubricating oil (D16). Install packing on power section assembly (4).

NOTE

Two persons are required for following task.

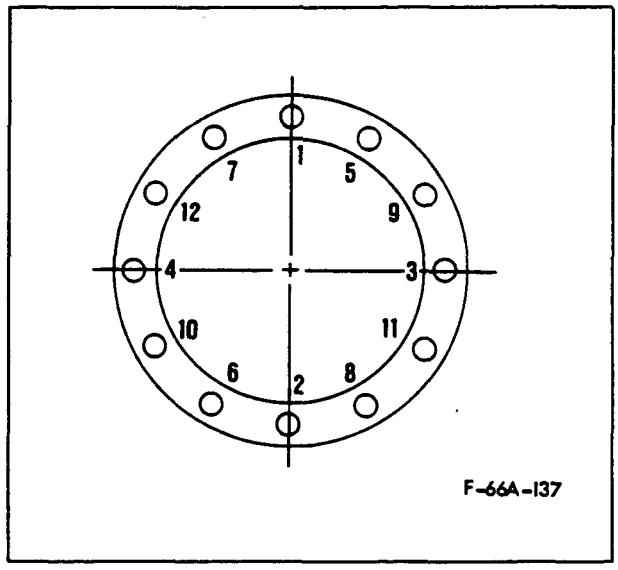
5. Lift power section assembly (4) in place being careful to engage transfer tube (2) and carrier assembly.
6. Apply antiseize compound (D8) to bolts (7). Position lifting bracket (5) and install bolts (7) and washers (6).
7. Apply antiseize compound (D8) to bolts (9). Install washer (8) and bolt (9) through remaining wiring harness clamp bracket. Install washers (8) and bolts (9).



7-10 INSTALL POWER SECTION ASSEMBLY (AVIM) (CONT)

8. Torque bolts (7, 9) to 47 to 53 inch-pounds per torque pattern.

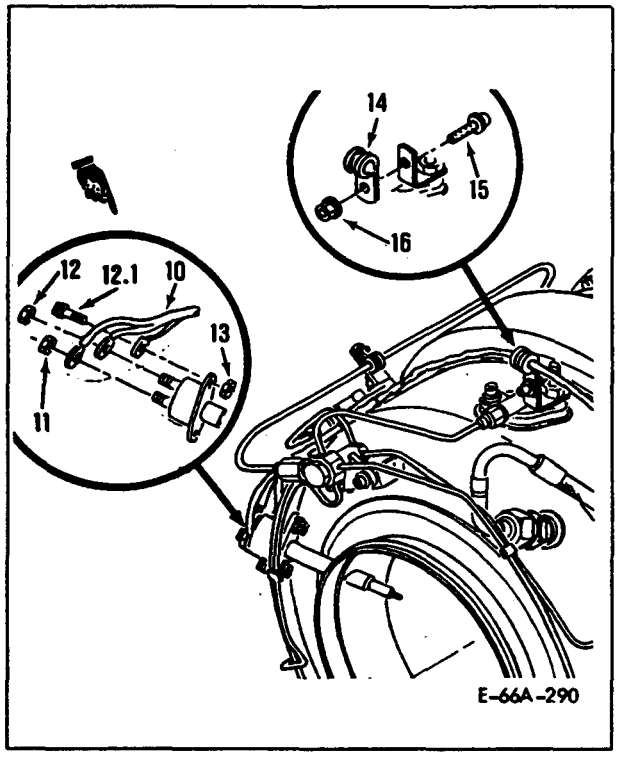
9. Reposition APU in maintenance stand to horizorital position.



10. Remove nuts (11, 12) from immersion thermocouple connections.

11. Install marked leads (10). Install nuts (11, 12) on studs. Torque nuts to 38 to 42 inch-pounds. Install ground wire on upper side of immersion thermocouple and secure using bolt (12.1) and nut (13). Torque bolt to 38 to 42 inch-pounds.

12. Install clamp (14) on immersion thermocouple lead. Secure to bracket with bolt (15) and nut (16). Torque bolt to 38 to 42 inch-pounds.

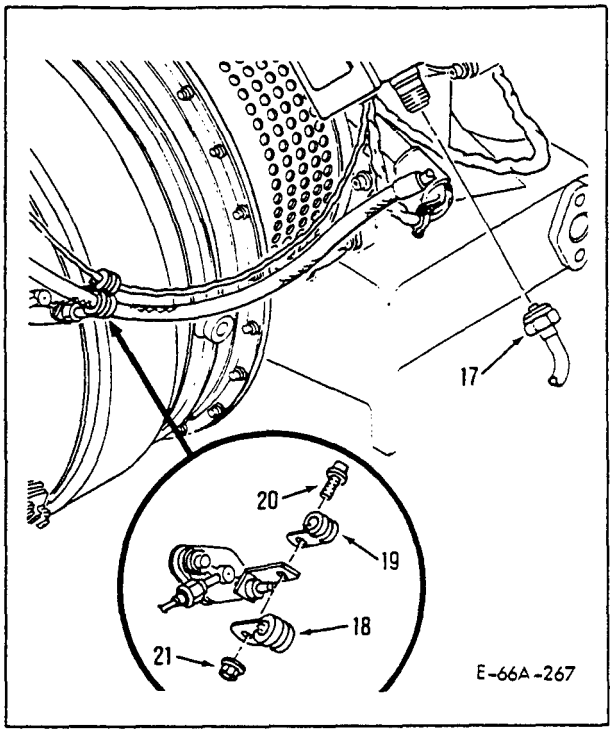


7-10 INSTALL POWER SECTION ASSEMBLY (AVIM) (CONT)

13. Connect igniter Plug lead (17) to ignition unit. Torque to 33 to 37 inch-pounds. Lockwire with lockwire (D43).

14. Install clamp (18) on igniter plug lead and clamp (19) on immersion thermocouple lead. Secure to clamp bracket with bolt (20) and nut (21).

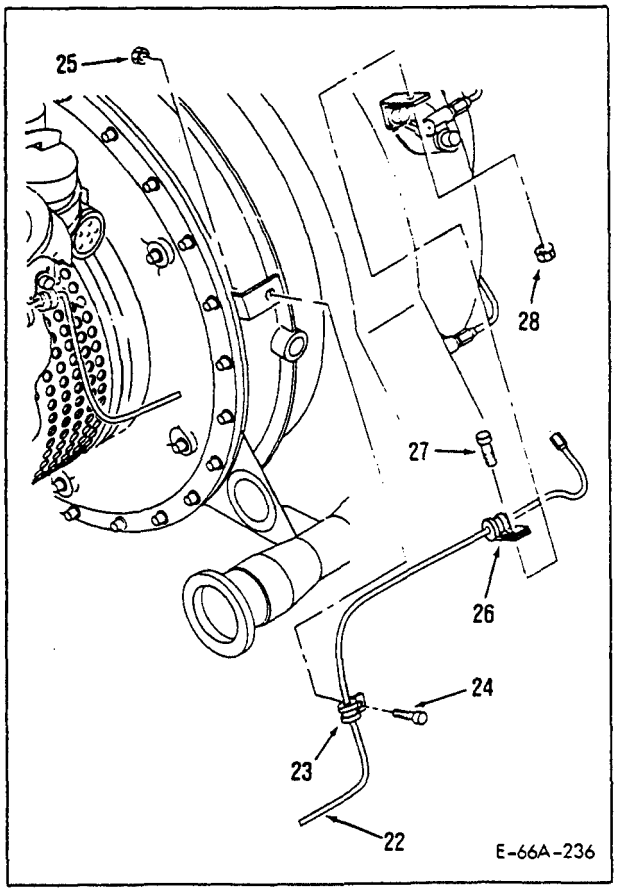
15. Torque bolt (20) to 38 to 42 inch-pounds.



16. Connect fuel solenoid valve to fuel manifold assembly tube (22) to fuel manifold assembly. Torque to 70 to 80 inch-pounds.

17. Install clamp (23) and secure to bracket with bolt (24) and nut (25). Torque bolt to 38 to 42 inch-pounds.

18. Install clamp (26) and secure with bolt (37) and nut (28). Torque nut to 38 to 42 inch-pounds.



Section XI REPLACE LIFTING LUG

7-11 REPLACE LIFTING LUG

This task covers: a. Removal b. Installation

INITIAL SETUP

Tools:
Aircraft Inspection Tool Kit (T49)
Engine Repairman's Tool Kit (T47)
Torque Wrench 30-150 inch-pounds

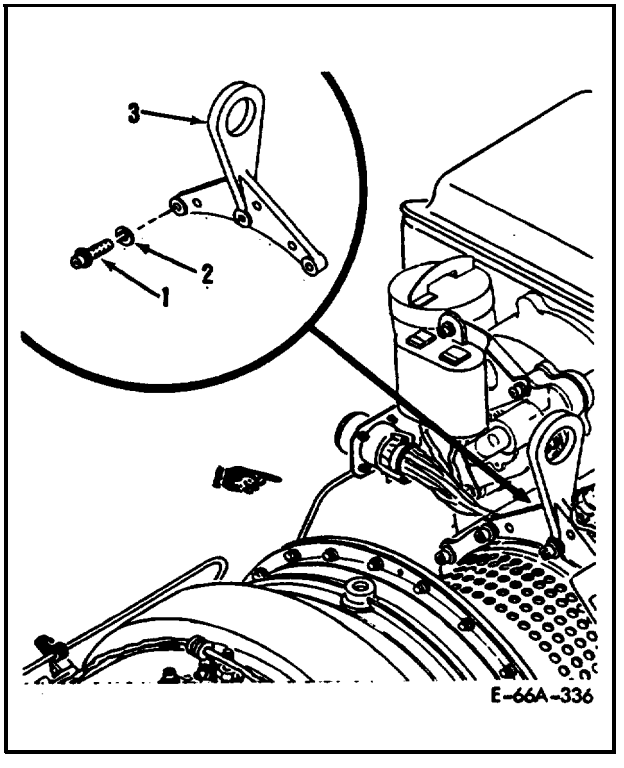
Personnel Required:
68B Aircraft Powerplant Inspector
68B Aircraft Powerplant Repairer

Materials/Parts:
Antiseize Compound (D8)

Equipment Conditions:
APU on Aircraft

REMOVAL

1. Remove bolts (1) and washers (2) from lifting lug (3).
2. Remove lifting lug (3).
3. Clean lifting lug (3) using process 1, Chapter 8.



INSTALLATION

NOTE

Prior to assembly, inspect lifting lug for damage.

1. Apply antiseize compound (D8) to threads of bolts (1).
2. Align lifting lug (3).
3. Install bolts (1), washers (2) and lifting lug (3).
4. Torque bolts (1) to 47 to 53 inch-pounds.

FOLLOW-ON MAINTENANCE: None.

Section XII INSPECTION OF SPLINE ADAPTER

7-12 INSPECTION OF SPLINE ADAPTER

INITIAL SETUP

Tools:
Engine Repairman's Tool Kit (T47)

References:
Task 7-13

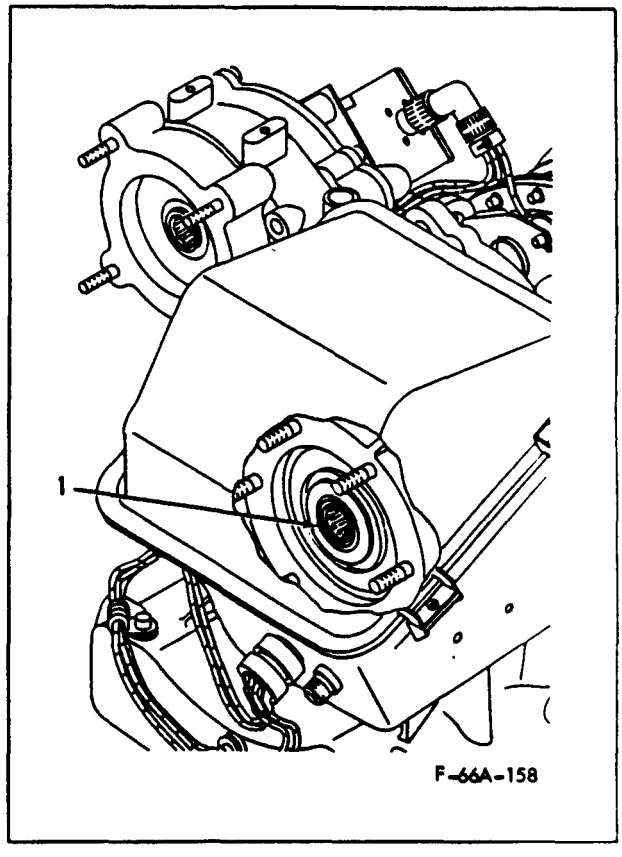
Personnel Required:
68B Aircraft Powerplant Repairer

Equipment Conditions:
APU on Aircraft

1. Inspect spline adapter splines (1) for chipped or broken teeth. If damaged, replace (Task 7-13).

2. Inpsect spline adapter for cracks. If damaged, replace (Task 7-13).

FOLLOW-ON MAINTENANCE: None.



Section XIII REPLACE SPLINE ADAPTER

7-13 REPLACE SPLINE ADAPTER (AVIM)

This task covers: a. Removal b. Installation

INITIAL SETUP

Tools:
Adapter Kit (T6)
Engine Repairman's Tool Kit (T47)

Personnel Required:
68B Aircraft Powerplant Inspector
68B Aircraft Powerplant Repairer

Materials/Parts:
Nut (MS21043-3)
Nut (MS21044N6)

Equipment Conditions:
APU on Maintenance Stand (T1)

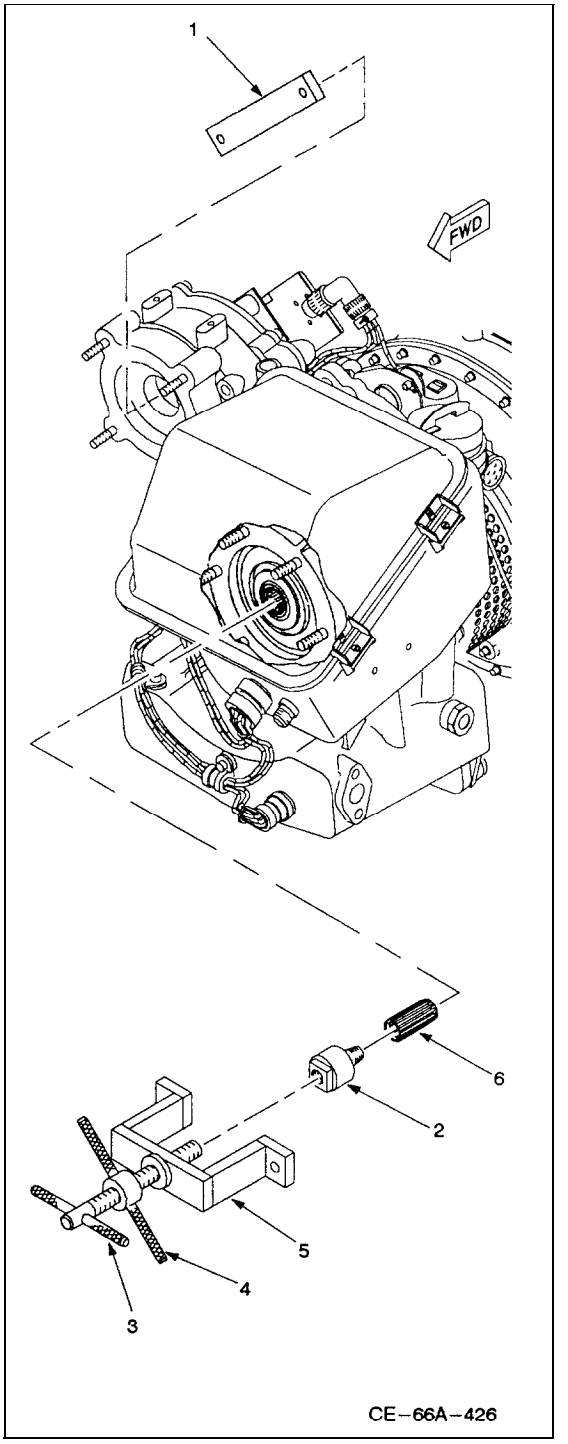
7–1 3 REPLACE SPLINE ADAPTER (AVIM) (CONT)

REMOVAL

CAUTION

The spline adapter is a press–fit and is difficult to remove and replace. Do not apply excessive force when attempting to remove or replace spline adapter, or ring gear separation may occur.

1. Install adapter assembly (1), portion of adapter kit (T6) into spline adapter of starter gearshaft assembly to stop rotation of gearbox gears while generator spline adapter is being removed and installed. Secure adapter assembly (1) to studs using MS21043–3 or equivalent nuts.
2. Assemble threaded adapter (2), jack screw (3), jack nut (4) and support bridge (5), then install onto studs of generator mounting pad securing with MS21044N6 or equivalent nuts.
3. Screw threaded adapter (2) into spline adapter (6).
4. Turn jack nut (4) to remove spline adapter (6) from splines of generator gearshaft.
5. Remove nuts securing support bridge (5) to gearbox mounting pad. Remove jack screw (3), jack nut (4), support bridge (5) and threaded adapter (2) from gearbox assembly.
6. Remove nuts securing adapter assembly (1) to starter mounting pad. Remove adapter assembly (1) from gearbox assembly.
7. Inspect splines of generator output shaft for damage. No damage allowed.



7-13 REPLACE SPLINE ADAPTER (AVIM) (CONT)

INSTALLATION

CAUTION

The spline adapter is a press-fit and is difficult to remove and replace. Do not apply excessive force when attempting to remove or replace spline adapter, or ring gear separation may occur.

Ensure that the correct spline adapter (P/N 3860797-1) (1.6 inch maximum length) is used. A spline adapter that is too long may cause an oil leak if pressed too far into generator output shaft.

1. Install adapter assembly (1), portion of adapter kit (T6) into spline adapter of starter gearshaft assembly to stop rotation of gearbox gears while generator spline adapter is being removed and installed. Secure adapter assembly (1) to studs using MS21043-3 or equivalent nuts.

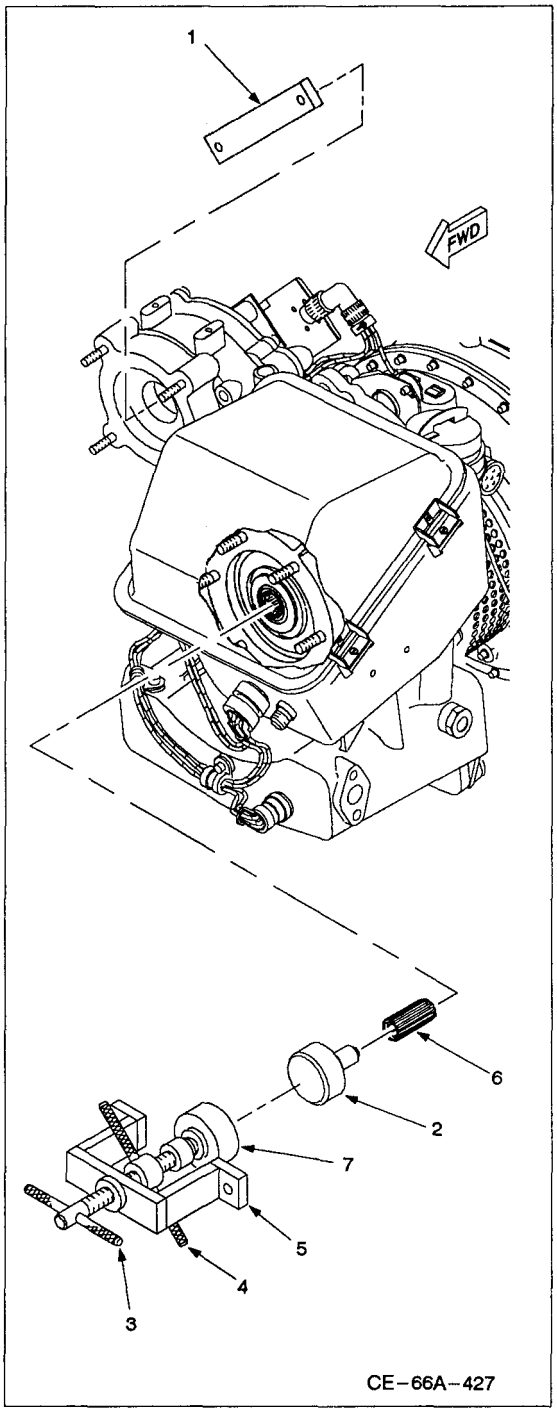
2. Position spline adapter (2) (tapered end first) in generator output shaft splines.

3. Assemble jack screw (3), jack nut (4), support bridge (5), guide (6) and swivel (7), then install onto studs of generator mounting pad securing with MS21044N6 or equivalent nuts.

NOTE

If generator mounting plate has been removed, it may be necessary to push the spline adapter in approximately 11/4 inch, back off jack screw (3) and then retighten the nuts securing the adapter kit to the gearbox.

4. Turn jack screw (3) down until guide (6) makes contact with spline adapter (2) and engages splines of generator output shaft.



7-13 REPLACE SPLINE ADAPTER (AVIM) (CONT)

5. Check spline adapter to ensure proper alignment of splines with splines of generator output shaft.
6. Slowly turn jack screw (3) down until swivel (7) stops against generator output shaft. This will position the spline adapter (2) nearly flush with the surface of generator output shaft.
7. Remove nuts securing support bridge (5) to gearbox mounting pad. Remove jack screw (3), jack nut (4), support bridge (5), guide (6) and swivel (7) from gearbox assembly.
8. Remove nuts securing adapter assembly (1) to starter mounting pad. Remove adapter assembly (1) from gearbox assembly.

FOLLOW-ON MAINTENANCE: None

7-14 REPLACE SEAL ASSEMBLY (AVIM) (CONT)

CAUTION

Take care when installing threaded adapter (7) over output shaft threads or damage may occur.

5. Assemble threaded adapter (7), jack screw (8), jack nut (9) and support bridge (10), then install onto studs of generator mounting pad securing with MS21044N6 or equivalent nuts.

6. Screw threaded adapter (7) into seal assembly (6).

NOTE

When removing seal assembly (6) from gearbox assembly it is possible that air/oil rotating seal (11) may follow the seal assembly (6) from the gearbox.

7. Turn jack screw (8) to remove seal assembly (6) from bore of the gearbox assembly.

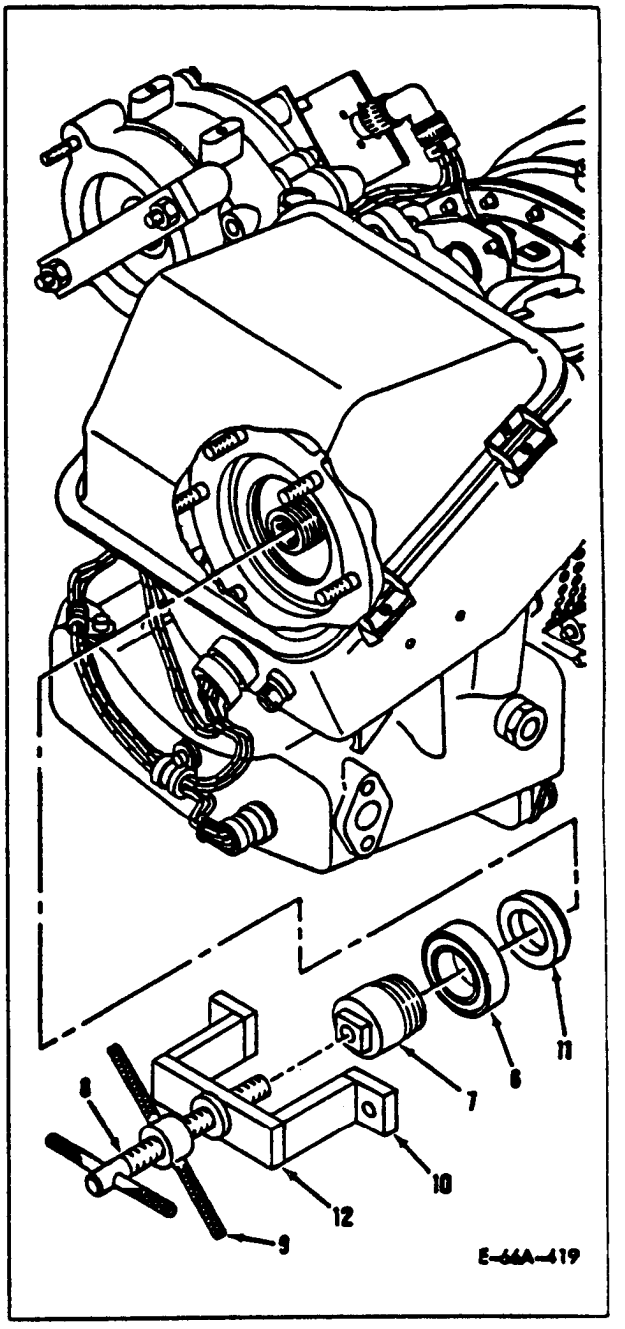
8. Inspect air/oil rotating seal (11) for damage. No damage allowed.

CAUTION

Ensure air/oil rotating seal (11) is installed flat against bearing on all sides or damage to air/oil rotating seal may occur.

9. Install air/oil rotating seal (11) onto output gearshaft with sealing surface away from bearing (chamfer side towards bearing).

10. Remove adapter kit (T6) (12) from gearbox assembly.



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7-14 REPLACE SEAL ASSEMBLY (AVIM) (CONT)

INSTALLATION

1. Clean seal bore of gearbox housing using machinery towel (D20) and dry cleaning solvent (D35).

CAUTION

Avoid handling seal assembly (1) by its carbon sealing surface or damage may occur to the seal assembly.

2. Apply a thin coat of lubricating oil (D16) to seal assembly (1) and gearbox housing bore.

3. Position seal assembly (1) in gearbox housing seal bore.

4. Assemble jack screw (2), jack nut (3), support bridge (4), guide (5) and swivel (6), then install onto studs of generator mounting pad securing with MS21044N6 or equivalent nuts.

5. Turn jack screw (2) down until guide (5) makes contact with seal assembly (1) and engages splined adapter of output shaft.

NOTE

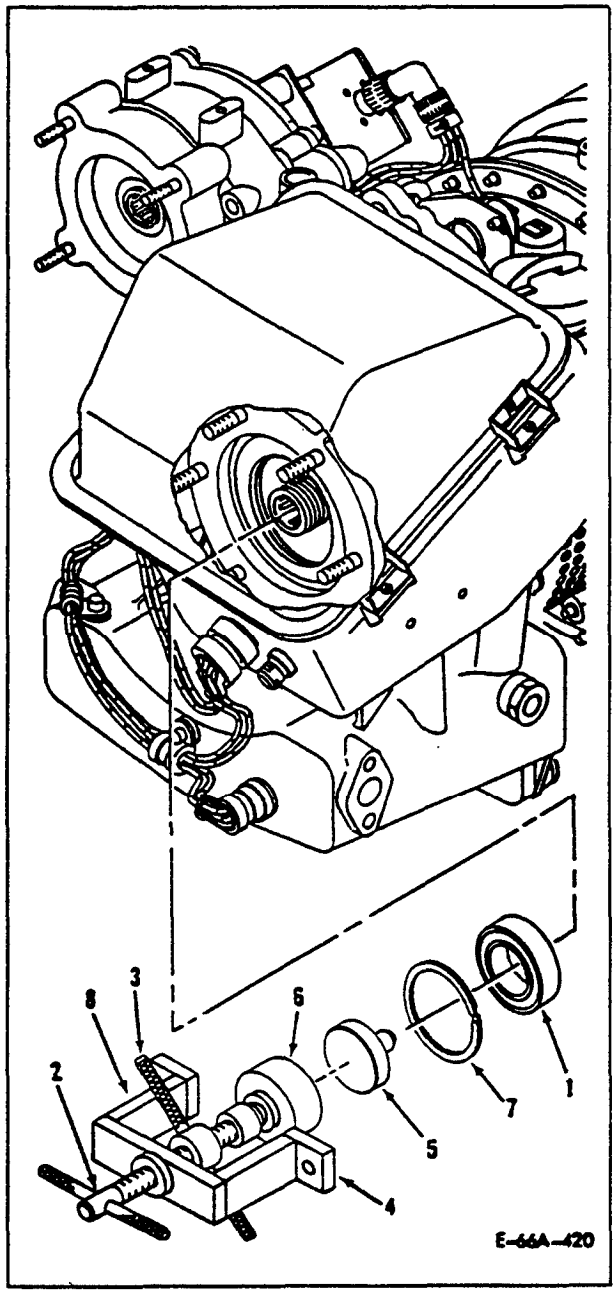
Seal assembly (1) installation is different depending on gearbox assembly dash number. Determine which gearbox assembly is being worked by the APU data plate.

6. (3805029-1) Press seal assembly (1) into gearbox assembly only deep enough to allow installation of retaining ring (7).

7. (3805029-2) Press seal assembly (1) into gearbox assembly until it bottoms out in seal bore.

8. Remove adapter kit (T6) (8) from gearbox assembly.

9. Secure seal assembly (1) to gearbox assembly using retaining ring (7).



7-14 REPLACE SEAL ASSEMBLY (AVIM) (CONT)

10. Install adapter assembly (9), portion of adapter kit (T6) into spline adapter of starter gearshaft assembly to stop rotation of gearbox gears while round nut (10) is being installed. Secure adapter assembly (9) to studs using MS21043-3 or equivalent nuts.

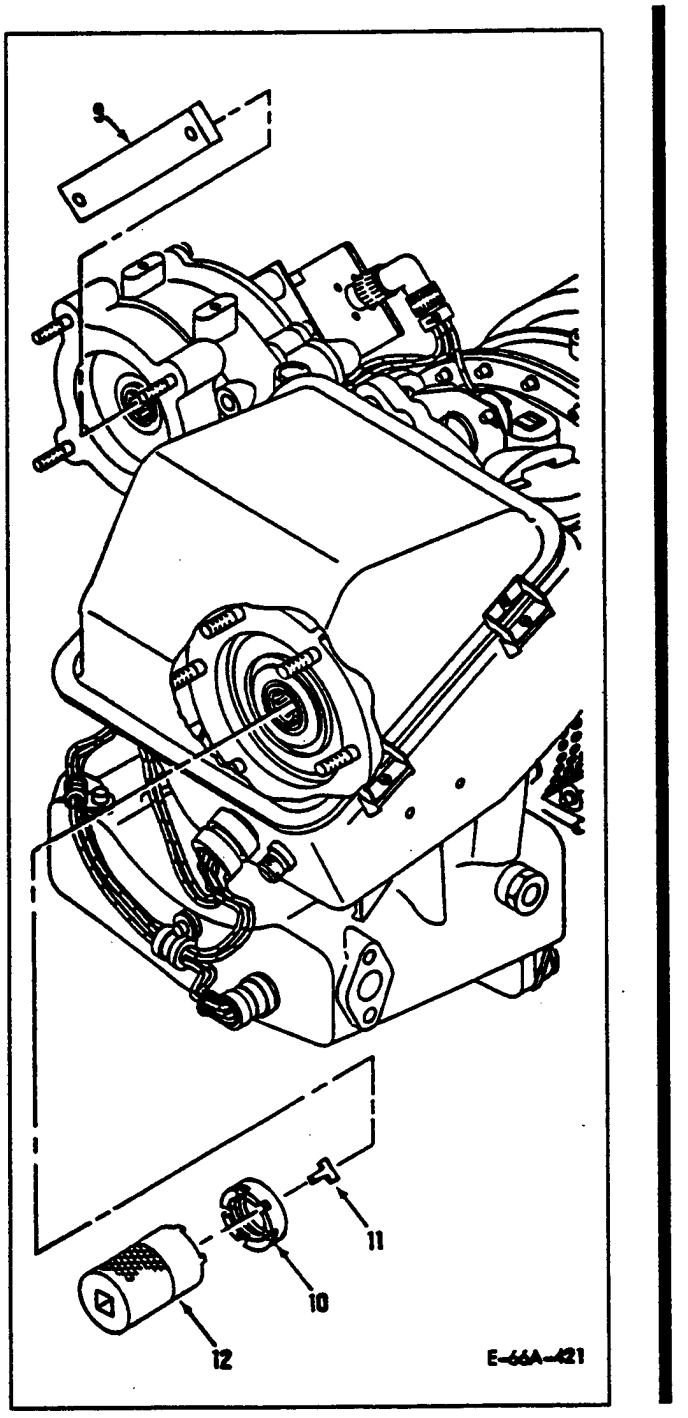
11. Install new nut locking key (11) onto slot of output shaft previously marked on disassembly and then install round nut (10) onto output shaft.

12. Using nut torque adapter (12), torque round nut (10) to 100 to 200 inch-pounds.

13. Bend nut locking key (11) into tang of round nut (10). Cut and remove any portion of nut locking key (11) protruding from round nut (10) diameter.

14. Remove adapter assembly (9) from starter gearshaft assembly.

FOLLOW-ON MAINTENANCE: None.



CHAPTER 8

CLEANING ENGINE COMPONENTS

Section I CLEANING PROCESS #1 (SOLVENT)

8-1 CLEANING PROCESS #1 (SOLVENT) (AVIM)

INITIAL SETUP

Tools:
Air Gun
Apron
Gloves, Rubber
Hose Assembly
Respirator
Safety Glasses
Scrub Brush
Suitable Container

Personnel Required:
68B Aircraft Powerplant Repairer

Materials/Parts:
Dry Cleaning Solvent (D35)

Equipment Conditions:
Off APU Maintenance

General Safety Instructions:

WARNING

Dry cleaning solvent is toxic to skin, eyes and respiratory tract. Skin, eye and respiratory protection required. Avoid repeated or prolonged contact.

Compressed air is dangerous when directed toward yourself or another person. The airstream or material blown by the airstream can cause injury, particularly to the eyes and face. Use goggles to protect eyes and face. Do not exceed 30 PSI. Do not direct airstream toward yourself or another person.

1. Fill cleaning tank with dry cleaning solvent (D35).
2. Dip, soak and agitate parts to be cleaned until oil and grease have been removed. Remove remaining deposits using scrub brush.
3. Remove and allow to dry for 10 minutes.
4. Remove any residue dry cleaning solvent by drying part thoroughly with clean, filtered compressed air.

FOLLOW-ON MAINTENANCE: None.

8-2 CLEANING PROCESS #2 (VAPOR DEGREASE) (AVIM)

INITIAL SETUP

Tools:
Air Gun
Apron
Gloves, Rubber
Hose Assembly
Insulated Mittens
Respirator
Safety Glasses

Personnel Required:
68B Aircraft Powerplant Repairer

Materials/Parts:
1,1,1-Trichloroethane (D41)

Equipment Conditions:
Off APU Maintenance

General Safety Instructions:

WARNING

Compressed air is dangerous when directed toward yourself or another person. The airstream or material blown by the airstream can cause injury, particularly to the eyes and face. Do not exceed 30 PSI. Do not direct airstream toward yourself or another person.

1,1,1-Trichloroethane is toxic to skin, eyes and respiratory tract. Skin and eye protection are required. Avoid repeated or prolonged contact. Work in a well-ventilated area.

1. Fill degreaser to proper level with 1,1,1-trichloroethane (D41).

2. Adjust thermostat on degreaser to 165 to 170°F (74 to 77°C).

3. Place parts in rack so that all surfaces will have direct contact with vapor.

NOTE

Allow parts to remain in vapor until all condensation ceases.

4. Position parts on free board area. Using degreaser wand, spray remaining residue from parts.

WARNING

Heated components can pose a serious burn potential. Wear insulated mittens when handling heated components.

NOTE

Allow condensation to evaporate before removing parts from degreaser.

5. Remove parts from degreaser.

6. Remove any residue 1,1,1-trichloroethane by drying parts thoroughly with clean, filtered compressed air.

FOLLOW-ON MAINTENANCE: None.

Section III CLEANING PROCESS #3 (CARBON/RUST)

8-3 CLEANING PROCESS #3 (CARBON/RUST) (AVIM)

INITIAL SETUP

Tools:
Air Gun
Apron
Cleaning Tank
Gloves, Rubber
Hose Assembly
Respirator
Safety Glasses
Scrub Brush

Personnel Required:
68B Aircraft Powerplant Repairer

Materials/Parts:
Rust Stripper (D37)

Equipment Conditions:
Off APU Maintenance

General Safety Instructions:

WARNING

Exercise extreme caution when preparing rust stripper solution. This solution is toxic to skin, eyes and respiratory tract, especially when heated. Use adequate caution. Suitable eye and skin protection is required. Mixing may produce temperatures exceeding the boiling point of solution as a means to prevent localized overheating.

CAUTION

Do not clean non-steel parts in rust stripper. Extreme damage can occur if non-steel parts are exposed.

NOTE

Be sure components have been cleaned by process No. 1 prior to this task.

1. Fill cleaning tank to two-thirds of operating level with tap water.
2. Add rust stripper compound (D37). Agitate until completely dissolved.
3. Fill tank to operating level with tap water.
4. Adjust thermostat to maintain 160 to 200°F (71 to 93°C).

NOTE

It is not necessary to remove heat discoloration.

5. Place parts in cleaning basket and immerse parts for 10 to 20 minutes.
6. Remove parts, rinse and scrub surface with stiff plastic fiber brush.
7. Rinse thoroughly in clean tap water at 80 to 110°F (27 to 43°C).
8. Dry parts thoroughly with clean, filtered compressed air.

FOLLOW-ON MAINTENANCE: None.

Section IV CLEANING PROCESS #4 (SOAP/WATER)

8-4 CLEANING PROCESS #4 (SOAP/WATER) (AVIM)

INITIAL SETUP

Tools:
Air Gun
Apron
Cleaning Tank
Gloves, Rubber
Hose Assembly
Insulated Mittens
Oven
Safety Glasses
Scrub Brush

Personnel Required:
68B Aircraft Powerplant Repairer

Materials/Parts:
Alkaline Cleaner (D1)

Equipment Conditions:
APU on Aircraft

General Safety Instructions:

WARNING

Compressed air is dangerous when directed toward yourself or another person. The airstream or material blown by the airstream can cause injury, particularly to the eyes and face. Do not exceed 30 PSI. Do not direct airstream toward yourself or another person.

Heated components can pose a serious burn potential. Wear insulated mittens when handling heated components.

Alkaline cleaner is toxic to eyes, skin and respiratory tract. Eye and skin protection are required. Avoid repeated or prolonged contact.

1. Fill cleaning tank with tap water at room temperature.
2. Dissolve 4 to 6 ounces of alkaline cleaner (D1) to each gallon of water.
3. Adjust thermostat on cleaning tank to maintain 130 to 180°F (54 to 82°C).
4. Immerse parts for 3 to 5 minutes. Scrub surface with plastic fiber brush.
5. Remove parts and rinse in running tap water.
6. Dry parts thoroughly with clean, filtered compressed air.
7. Dry parts in oven at 160 to 250°F (71 to 121°C) for 1 hour.
8. Remove parts from oven.

FOLLOW-ON MAINTENANCE: None.

Section V CLEANING PROCESS #5 (GLASS BEAD)

8-5 CLEANING PROCESS #5 (GLASS BEAD) (AVIM)

INITIAL SETUP

Tools:
Blasting Cabinet
Insulated Mittens
Oven

Personnel Required:
68B Aircraft Powerplant Repairer

Materials/Parts:
Glass beads (D4)
Pressure Sensitive Tape (D38)

Equipment Conditions:
APU on Aircraft

General Safety Instructions:

WARNING

Heated components can pose a serious burn potential. Wear insulated mittens when handling heated components.

CAUTION

Do not glass bead peen parts until non-destructive testing has been performed. Maximum pressure of 20 PSIG shall be used on titanium couplings. Maximum pressure of 40 PSIG shall be used on all other coupling materials.

CAUTION

Regulate air pressure to keep erosion of base metal to a minimum. Keep nozzle in motion to prevent blast from dwelling on one spot.

NOTE

All parts should be cleaned using process No. 1 prior to glass bead peening.

1. Mask any surface that could be damaged by peening. Using pressure sensitive tape (D38).
2. Place parts in blast cabinet so they can be handled and not damaged by contact with cabinet or other parts.
3. Direct stream at a slight angle across surface. Repeat until surface is clean.
4. Remove parts. Rinse in clean tap water until all residue is removed.
5. Dry parts in oven at 205 to 233°F (96 to 112°C) for 1 hour.
6. Remove from oven.

FOLLOW-ON MAINTENANCE: None.

Section VI CLEANING PROCESS #6 (ABRASIVE BLAST)

8-6 CLEANING PROCESS #6 (ABRASIVE BLAST) (AVIM)

INITIAL SETUP

Tools:
Blasting Cabinet
Insulated Mittens
Oven

Personnel Required:
68B Aircraft Powerplant Repairer

Materials/Parts:
Pressure Sensitive Tape (D38)
Sandblasting Sand (D32)

Equipment Conditions:
APU on Aircraft

General Safety Instructions:

WARNING

Heated components can cause a serious burn potential. Wear insulated mittens when handling heated components.

CAUTION

Regulate air pressure to keep erosion of base metal to a minimum. Keep nozzle in motion to prevent blast from dwelling on one spot.

NOTE

All parts should be cleaned using process No. 1 prior to abrasive blasting.

Do not abrasive blast part until non-destructive testing has been performed.

1. Mask any surface that could be damaged by abrasive blasting. Using pressure sensitive tape (D38).
2. Place parts in cabinet sc they can be handled and not damaged by contact with cabinet or other parts.

NOTE

Adjust air pressure at 15 to 50 PSIG for abrasive blasting operation.

3. Using sandblasting sand (D32), direct sweeping stream at a slight angle across surface. Repeat until surface is clean.
4. Remove parts. Rinse in clean tap water until residue is removed.
5. Dry parts in oven at 205 to 233°F (96 to 112°C) for 1 hour.

FOLLOW-ON MAINTENANCE: None.

8-7 CLEANING PROCESS #7 (ELECTRICAL COMPONENTS)

INITIAL SETUP

Tools:
Air Gun
Gloves, Rubber
Hose Assembly
Safety Glasses
Scrub Brush

Personnel Required:
68B Aircraft Powerplant Repairers

Materials/Parts:
Dry Cleaning Solvent (D35)
Lint-Free Wipe (D42)

Equipment Conditions:
Off APU Maintenance

General Safety Instructions:

WARNING

Compressed air is dangerous when directed toward yourself or another person. The airstream of material blown by the airstream can cause injury, particularly to the eyes and face. Use goggles to protect eyes and face. Do not exceed 30 PSI. Do not direct airstream toward yourself or another person.

Dry cleaning solvent is toxic to skin, eyes and respiratory tract. Skin, eye and respiratory tract protection required. Avoid repeated or prolonged contact.

1. Wipe external surfaces of electrical harness with lint-free wipe (D42) dipped in dry cleaning solvent (D35).
2. Clean electrical connector pins/ sockets with a fiber brush dipped in dry cleaning solvent (D35).
3. Dry connectors thoroughly with clean, filtered compressed air. Be sure they are dry and free of foreign matter.

FOLLOW-ON MAINTENANCE: None.

APPENDIX A

REFERENCES

A-1. DA Technical Bulletins

TB 55-8100-200-24	Maintenance of Specialized Reusable Containers for Aircraft Equipment

A-2. DA Technical Manuals

DA PAM 738-751	Functional Users Manual for the Army Maintenance Management System Aviation (TAMMS-A)
TM 1-1500-204-23	General Aircraft Maintenance Manual
TM 55-1520-237-T	Aviation Unit and Intermediate Maintenance Aircraft Fault Isolation Procedures Manual (UH-60A Helicopter)
TM 55-2835-209-23P	Aviation Unit and Intermediate Maintenance Repair Parts and Special Tools List for Gas Turbine Engine (Auxiliary Power Unit - APU) Model GYCP36-150[BH]
TM 750-244-1-5	Procedures for Destruction of Equipment to Prevent Enemy Use

A-3. DA Field Manuals

CTA 50-970	Expendable Items (Except Medical, Class V, Repair Parts and Heraldic Items)
FM 1-511	Maintenance, Quality Control and Technical Inspection Guide for Army Aircraft

A-4 Specifecations and Standards

A-A-1206	Crocus Cloth
A-A-1586	Tape, Pressure Sensitive
A-A-1668	Bag, Plastic
A-A-531	Machinery Towel
B-B-411	Nitrogen, Technical
DOD-L-85734	Lubricating Oil, Helicopter Transmission System, Synthetic Base
H-B-643	Brushes, Acid Swabbing
MIL-A-46106	RTV 732
MIL-A-46146	Adhesive

A-4. Specifications and Standards (CONT)

MIL-B-121	Barrier Material, Greaseproofed, Waterproofed, Flexible
MIL-D-3464	Desiccants, Activated, Bagged, Packaging Use and Static Dehumidification
MIL-I-25135	Penetrant Inspection Kit
MIL-L-10578	Stripper, Rust
MIL-L-11726	Sand, Sandblasting
MIL-L-23699	Lubricating Oil, Aircraft Turbine Engines, Synthetic Base
MIL-L-6081	Lubricating Oil, Jet Engine
MIL-L-7808	Lubricating Oil, Aircraft Turbine Engines, Synthetic Base
MIL-STD-6866	Inspection, Liquid Penetrant
MS20995	Wire, Lock
P-D-680	Dry Cleaning Solvent
P-S-624	Soap, Toilet, Liquid and Paste
PPP-T-60	Tape, Pressure Sensitive

APPENDIX B

MAINTENANCE ALLOCATION CHART

Section I INTRODUCTION

B-1 MAINTENANCE ALLOCATION CHART

a. This Maintenance Allocation Chart (MAC) assigns maintenance functions in accordance with the Three Levels of Maintenance concept for Army aviation. These maintenance levels (categories) - Aviation Unit Maintenance (AVUM), Aviation Intermediate Maintenance (AVIM) and Depot Maintenance - are depicted on the MAC as:

AVUM, which corresponds to an O Code in the Repair Parts and Special Tools List (RPSTL)

AVIM, which corresponds to an F Code in the Repair Parts and Special Tools List (RPSTL)

DEPOT, which corresponds to a D Code in the Repair Parts and Special Tools List (RPSTL)

b. The maintenance to be performed below depot and in the field is described as follows:

(1) Aviation Unit Maintenance (AVUM) activities will be staffed and equipped to perform high frequency "On-Aircraft" maintenance tasks required to retain or return aircraft systems to a serviceable condition. The maintenance capability of the AVUM will be governed by the Maintenance Allocation Chart (MAC) and limited by the amount and complexity of ground support equipment (GSE), facilities required, authorized manning strength and critical skills available. The range and quantity of authorized spare modules/components will be consistent with the mobility requirements dictated by the air mobility concept. (Assignments of maintenance tasks to divisional company size aviation units will consider the overall maintenance capability of the division, the requirement to conserve personnel and equipment resources and air mobility requirements.)

(a) Company Size Aviation Units: Perform those tasks which consist primarily of preventive maintenance and maintenance repair and replacement functions associated with sustaining a high level of aircraft operational readiness. Perform maintenance inspections and servicing to include preflight, daily, intermediate, periodic (or phased) and special inspections as authorized by the MAC or higher headquarters. Identify the cause of equipment/system malfunctions using applicable technical manual troubleshooting instructions, built-in test equipment (BITE), installed aircraft instruments, or test, measurement and diagnostic equipment (TMDE). Replace worn or damaged modules/ components that do not require complex adjustments or system alignment and which can be removed/installed with available skills, tools and ground support equipment. Perform operational and continuity checks and make minor repairs to the electrical system. Inspect, service and make operational, capacity and pressure checks to hydraulic systems. Perform servicing functional adjustments and minor repair/replacement. to-the flight control, propulsion, power train and fuel systems. Accomplish air frame repair that does not require extensive

disassembly, jigging or alignment. The manufacture of air frame parts will be limited to those items which can be fabricated with tools and equipment found in current air mobile tools and shop sets. Evacuate unserviceable modules/components and end items beyond the repair capability of AVUM to the supporting AVIM.

(b) Less than Company Size Aviation Units: Aviation elements organic to brigade, group, battalion headquarters and detachment size units are normally small and have less than ten aircraft assigned. Maintenance tasks performed by these units will be those which can be accomplished by the aircraft crew chief or assigned aircraft repairmen and will normally be limited to preventive maintenance, inspections, servicing, spot painting, stop drilling, application of nonstress patches, minor adjustments, module/component fault diagnosis and replacement of selected modules/components. Repair functions will normally be accomplished by the supporting AVIM unit.

(2) Aviation Intermediate Maintenance (AVIM) provides mobile, responsible "One-Stop" maintenance support. (Maintenance functions which are not conducive to sustaining air mobility will be assigned to depot maintenance), AVIM may perform all maintenance functions authorized to be done at AVUM. Repair of equipment for return to user will emphasize support or operational readiness requirements. Authorized maintenance includes replacement and repair of modules/components and end items which can be accomplished efficiently with available skills, tools and equipment. AVIM establishes the Direct Exchange (DX) program for AVUM units by repairing selected items for return to stock when such repairs cannot be accomplished at the AVUM level. The AVIM level inspects, troubleshoots, performs diagnostic tests, repairs, adjusts, calibrates and aligns aircraft systems modules/components. AVIM units will have capability to determine the serviceability of specified modules/components removed prior to the expiration of the Time Between Overhaul (TBO) or finite life. Component disassembly and repair will support the DX program and will normally be limited to tasks requiring cleaning and the replacement of seals, fittings and items of common hardware. Air frame repair and fabrication of parts will be limited to those maintenance tasks which can be performed with available tools and test equipment. Unserviceable repairable modules/components and end items which are beyond the capability of AVIM to repair will be evacuated to Depot Maintenance. AVIM will perform aircraft weight and balance inspections and other special inspections which exceed AVUM capability. Provides quick response maintenance support, including aircraft recovery and air evacuation, on-the-job training and technical assistance through the use of mobil maintenance contact teams. Maintains authorized operational readiness float aircraft. Provides collection and classification services for serviceable/ unserviceable material. Operates a cannibalization activity in accordance with AR 750-50. (The aircraft maintenance company within the maintenance battalion of a division will perform AVIM functions consistent with air mobility requirements and conservation of personnel and equipment resources. Additional intermediate maintenance support will be provided by the supporting nondivisional AVIM unit.)

B-2 USE OF THE MAINTENANCE ALLOCATION CHART (SECTION II)

NOTE

Nomenclature used throughout the MAC are approved item names. Those terms/nomenclatures expressed in parenthesis are generic in nature and are not to be considered as official terminology.

a. The Maintenance Allocation Chart assign maintenance functions based on past experience and the following consideration:

(1) Skills available.

(2) Work item required.

(3) Tools and test equipment required and/or available.

b. The assigned levels of maintenance authorized to perform a maintenance function are indicated.

c. A maintenance function assigned to a maintenance category will automatically be authorized to be performed at any higher maintenance category.

d. A maintenance function that cannot be performed at the assigned category of maintenance for any reason may be evacuated to the next higher maintenance category. Higher maintenance categories will perform the maintenance functions of lower maintenance categories when required or directed by the commander that has the authority to direct such tasking.

e. The assignment of maintenance function will not be construed as authorization to carry the related repair parts or spares in stock. Information to requisition or otherwise secure the necessary repair parts will be as specified in the associated Repair Parts and Special Tools List (RPSTL).

f. Normally there will be no deviation from the assigned level of maintenance. In cases of operational necessity, maintenance functions assigned to a maintenance level may, on a one-time basis and at the request of the lower maintenance level, be specifically authorized by the maintenance officer of the level of maintenance to which the function is assigned. The special tools, equipment, etc required by the lower level of maintenance to perform this function will be furnished by the maintenance level to which the function is assigned. This transfer of a maintenance function to a lower maintenance level does not relieve the higher maintenance level of the responsibility for the function. The higher level of maintenance will provide technical supervision and inspection of the function being performed at the lower level.

g. Changes to the Maintenance Allocation Chart will be based on continuing evaluation and analysis by responsible technical personnel and on reports received form field activities.

B-3 MAINTENANCE FUNCTIONS

Maintenance functions will be limited to and defined as follows:

a. Inspect. To determine the serviceability of an item by comparing its physical, mechanical and/or electrical characteristics with established standards through examination (e.g., by sight, sound or feel).

b. Test. To verify serviceability by measuring the mechanical, pneumatic, hydraulic or electrical characteristics of an item and comparing those characteristics with prescribed standards.

c. Service. Operations required periodically to keep an item in proper operating condition, i.e., to clean (includes decontaminate, when required), to preserve, to drain, to paint or to replenish fuel, lubricants, chemical fluids or gases.

d. Adjust. To maintain or regulate, within prescribed limits, by bringing into proper or exact positions or by setting the operating characteristics to specified parameters.

e. Align. To adjust specified variable elements of an item to bring about optimum or desired performance.

f. Calibrate. To determine and cause corrections to be made or to be adjusted on instruments or test, measuring and diagnostic equipments used in precision measurement. Consists of comparisons of two instruments, one of which is a certified standard of known accuracy, to detect and adjust any discrepancy in the accuracy of the instrument being compared.

g. Remove/Install. To remove and install the same items when required to perform service or other maintenance functions. Install may be the act of emplacing, seating or fixing into position a spare, repair part or module (component or assembly) in a manner to allow the proper functioning of an equipment or system.

h. Replace. To remove an unserviceable item and install a serviceable counterpart in its place. "Replace" is authorized by the MAC and is shown as the third position code of the SMR code.

i. Repair. The application of maintenance services[1], including fault location/troubleshooting[2], removal installation, disassembly/assembly[3] procedures and maintenance actions[4], to identify troubles and restore serviceability to an item by correcting specific damage, fault, malfunction or failure in a part, subassembly, module (component or assembly), end item or system.

j. Overhaul. That maintenance effort (service/action) prescribed to restore an item to a completely serviceable/operational conditions as required by maintenance standards in appropriate technical publications (i.e., DMWR). Overhaul is normally the highest degree of maintenance performed by the Army. Overhaul does not normally return an item to like-new condition.

k. Rebuild. Consists of those services/actions necessary for the restoration of unserviceable equipment to a like-new condition in accordance with original manufacturing standards. Rebuild is the highest degree of material maintenance applied to Army equipment. The rebuild operation includes the act of returning to zero those age measurements (hours/miles, etc.) considered in classifying Army equipment/components.

1 Services - inspect, test, service, adjust, align, calibrate and/or replace.

2 Fault locate/troubleshoot - The process of investigating and detecting the cause of equipment malfunction; the act of isolating a fault within a system or unit under test (UUT).

3 Disassembly/assembly - encompasses the step-by-step taking apart (or breakdown) of a spare/functional group coded item to the level of its least componency identified as maintenance significant (i.e., assigned an SMR code) for the category of maintenance under consideration.

4 Actions - welding, grinding, riveting, straightening, facing, remachining and/or resurfacing.

B-4 FUNCTIONAL GROUPS (Columns 1 and 2)

The functional groupings shown in the sample below identify maintenance significant components, assemblies, subassemblies and modules with the next higher assembly.

B-5 MAINTENANCE FUNCTION (Column 3)

Column 3 lists the functions to be performed on the items listed in column 2.

B-6 MAINTENANCE CATEGORIES AND WORK TIMES (Column 4)

The maintenance categories (levels) AVUM, AVIM and DEPOT are listed on the Maintenance Allocation Chart with individual columns that include the work times for maintenance functions at each maintenance level. Work time presentations such as "0.1" indicate the average time it requires to maintenance level to perform a specified maintenance function. If a work time has not been established, the columnar presentation shall indicate "X". Maintenance levels higher than the level of

maintenance indicated are authorized to perform the indicated function. Numbers in parentheses identify the correspondingly numbered remarks in Section IV.

GROUP NUMBER	DESCRIPTION	GROUP NUMBER	DESCRIPTION
04	Engine System	0405	Accessory Gearbox Housing assembly, bearing housing and seal disk.
0401	Engine General Servicing, handling, inspection requirements, lubrication charts, overhaul and retirement schedules. External lines and hoses. (As applicable.)	0406	Fuel System Fuel control, body assembly, torque motor, valve assembly, fuel nozzle, external lines and hoses.
0402	Compressor Section Inlet housing, support assembly, compressor rotor, oil disk, compressor housing. Deswirl deflector, diffuser assembly.	0407	Electrical System Electronic sequence unit, exciter, igniter lead, electrical cables, history recorder.
0403	Combustion Section Combustor case, combustion chamber airflow deflector.	0408	Oil System Filter housing, pump cover, external lines and hoses.
0404	Power Turbine Section Turbine rotor, turbine tie shaft, turbine nozzle.		

B-7 TOOLS AND TEST EQUIPMENT (Column 5 and Section III)

Common tool sets (not individual tools), special tools, test and support equipment required to perform maintenance functions are listed in Section III with a reference number to permit cross-referencing to column 5 in the MAC. In addition, the maintenance category authorized to use the device is listed along with the item National Stock number (NSN) and, if applicable, the tool number to aid in identifying the tool/device.

B-8 REMARKS (Column 6 and Section IV)

Remarks and other notes, if applicable (identified by a number in parenthesis in the applicable column), are listed in Section IV to provide a ready reference to the definition of the remark/note.

Section II MAINTENANCE ALLOCATION CHART

NOMENCLATURE OF END ITEMS

GTCP36-150[BH] Pneumatic Power Gas Turbine Engine Assembly

(1) GROUP NUMBER	(2) COMPONENT/ ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE CATEGORY			(5) TOOLS AND EQUIPMENT	(6) REMARK
			AVUM	AVIM	DEPOT		
0400	Engine System	INSPECT	X			49	
0401	Engine General	INSPECT	X			49	
		TEST			X	52, 56, 57, 58, 60, 61 72	
		SERVICE	X			49, 50	(1)
		REPLACE	X			49, 50, 63	
		REPAIR		X		1, 46, 47, 49, 63	
		OVERHAUL			X	1, 13, 15, 20, 26, 30, 33, 39, 40, 45, 46, 47, 48, 49, 52, 56, 57, 58, 59, 60, 61, 63, 72	
0401 01	Fuel Control Upper Cover	INSPECT	X			49	
		REMOVE/ INSTALL	X			49, 50	
		REPLACE	X			49, 50	
		REPAIR		X		47, 48, 49	(2, 11)
0401 02	Fuel Control Lower Cover	INSPECT	X			49	
		REMOVE/ INSTALL	X			49, 50	
		REPlACE	X			49, 50	
		REPAIR	X	X		47, 48, 49	(12) (2, 5, 11)

Maintenance Allocation Chart (CONT)

NOMENCLATURE OF END ITEMS

GTCP36-150[BH] Pneumatic Power Gas Turbine Engine Assembly

(1) GROUP NUMBER	(2) COMPONENT/ ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE CATEGORY AVUM	AVIM	DEPOT	(5) Tools AND EQUIPMENT	(6) REMARK
0401 03	External Lines and Fittings	INSPECT	x			49	(4)
		REMOVE/ INSTALL	x			49, 50	
		REPLACE	x			49, 50	
0401 04	Hourmeter Assembly	INSPECT	x			49	
		REMOVE/ INSTALL	x			49, 50	
		REPLACE	x			49, 50	
0401 05	Lifting Lug	INSPECT	x			49	(4)
		REMOVE/ INSTALL	x			49, 50	
		REPLACE	x			49, 50	
0401 06	FWD Mount Lug	INSPECT	x			49, 50	
		REPLACE	x				
0401 07	Aft Mount Lug	INSPECT	x			49, 50	
		REPLACE	x				
0402	Compressor Section	INSPECT			x	49	
0402 01	Compressor Rotor	INSPECT			x	49	
		TEST			x	13, 26	
		REMOVE/ INSTALL			x	47, 49, 15, 20, 23, 24, 30, 25, 33, 51	
		REPLACE			x	47, 49, 15, 20, 25, 23, 24, 30, 33, 51	
		REPAIR			x	1, 13 15, 16, 19, 20, 23, 24, 25, 26, 30, 33,	(8)

Maintenance Allocation Chart (CONT)

NOMENCLATURE OF END ITEMS

GTCP36-150[BH] Pneumatic Power Gas Turbine Engine Assembly

(1) GROUP NUMBER	(2) COMPONENT/ ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE CATEGORY AVUM	AVIM	DEPOT	(5) TOOLS AND EQUIPMENT	(6) REMARK
						49, 51, 63	
0402 02	Spur Gearshaft	INSPECT			x	49	
		TEST			x	1, 4, 5, 26, 63	
		REMOVE/ INSTALL			x	1, 3, 10, 11, 12, 15, 16, 20, 24, 25, 30, 33, 47, 49, 63	
		REPLACE			x	1, 2, 3, 10, 11, 12, 15, 16, 20, 24, 25, 30, 33, 47, 49	
		REPAIR			x	1, 10, 11, 15, 16, 20, 24, 25, 30, 33, 47, 49, 63	(8)
0402 03	Seal Rotor	INSPECT			x	49	
		REMOVE/ INSTALL			x	1, 47, 49, 63	
		REPLACE			x	1, 47, 49, 63	
0402 04	Compressor Housing	INSPECT			x	49	
		REMOVE/ INSTALL			x	1, 47, 49, 63	
		REPLACE			x	1, 47, 49, 63	
		REPAIR			x	1, 47, 49, 63	(3)

Maintenance Allocation Chart (CONT)

NOMENCLATURE OF END ITEMS

GTCP36-150[BH] Pneumatic Power Gas Turbine Engine Assembly

(1) GROUP NUMBER	(2) COMPONENT/ ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE CATEGORY AVUM	AVIM	DEPOT	(5) Tools AND EQUIPMENT	(6) REMARK
0402 05	Compressor Air-flow Deflector	INSPECT		x	49		
		REMOVE/ INSTALL		x	1, 47, 49, 63		
		REPLACE		x	1, 47, 49, 63		
		REPAIR			x	1, 47, 49, 63	(7)
0402 06	Diffuser Assembly	INSPECT			x	49	
		REMOVE/ INSTALL			x	1, 47, 49, 63	
		REPLACE			x	1, 47, 49, 63	
		REPAIR			x	1, 47, 49, 63	(7)
0402 07	Support Assembly	INSPECT			x	49	
		REMOVE/ INSTALL			x	1, 47, 49, 63	
		REPLACE			x	1, 47, 49, 63	
		REPAIR			x	1, 47, 49, 63	(7)
0402 08	Pilot Ring	INSPECT			x	49	
		REMOVE/ INSTALL			x	1, 47, 49, 63	
		REPLACE			x	1, 47, 49, 63	
		REPAIR			x	1, 47, 49, 63	(8)
0402 09	Inlet Housing Assembly	INSPECT			x	49	
		REMOVE/ INSTALL			x	1, 47, 49, 63	
		REPLACE			x	1, 15, 47, 49, 63	
		REPAIR			x	1, 47, 49, 63	(3)

Maintenance Allocation Chart (CONT)

NOMENCLATURE OF END ITEMS

GTCP36-150[BH] Pneumatic Power Gas Turbine Engine Assembly

(1) GROUP NUMBER	(2) COMPONENT/ ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE CATEGORY AVUM	AVIM	DEPOT	(5) Tools AND EQUIPMENT	(6) REMARK
0402	Airflow	INSPECT			x	49	
10	Deflector	REMOVE/ INSTALL			x	1, 47, 49, 63	
		REPLACE			x	1, 47, 49, 63	
		REPAIR			x	1, 47, 49, 63	(3)
0402	Carrier	INSPECT			x	49	
11	Assembly	REMOVE/ INSTALL			x	1, 3, 47, 63	
		REPLACE			x	1, 3, 47, 63	(3)
		REPAIR			x	1, 3, 47, 63	(7)
0403	Combustion Section	INSPECT		x		49	
		REMOVE/ INSTALL		x		1, 47, 49, 63	
0403	Combustor Case	INSPECT		x		49	
01		REMOVE/ INSTALL		x		1, 47, 49, 63	
		REPLACE		x		1, 47, 49, 63	
		REPAIR		x		1, 47, 49, 63	(2, 3, 5)
0403	Combustor	INSPECT		x		49	
02	Chamber	REMOVE/ INSTALL		x		1, 47, 49, 63	
		REPLACE		x		1, 47, 49, 63	
		REPAIR		x		1, 47, 49, 63	(2,3, 13)
0404	Power Turbine	INSPECT			x	49	

Maintenance Allocation Chart (CONT)

NOMENCLATURE OF END ITEMS

GTCP36-150[BH] Pneumatic Power Gas Turbine Engine Assembly

(1) GROUP NUMBER	(2) COMPONENT/ ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE CATEGORY AVUM	AVIM	DEPOT	(5) Tools AND EQUIPMENT	(6) REMARK
0404 01	Turbine Rotor	INSPECT		x		49	
		TEST			x	7, 8, 26	
		REMOVE/ INSTALL			x	1, 15, 20, 47, 49, 63	
		REPLACE			x	1, 20, 47, 49, 63	
		REPAIR		x	x	1, 47, 49, 63	(2, 9)
0404 02	Tie Shaft	INSPECT			x	49	
		REMOVE/ INSTALL			x	1, 20, 47, 49, 63	
		REPLACE			x	1, 20, 47, 49, 63	
		REPAIR			x	1, 47, 49, 63	(8)
0404 03	Turbine Nozzle	INSPECT			x	49	
		REMOVE/ INSTALL			x	1, 47, 49, 63	
		REPLACE			x	1, 47, 49, 63	
		REPAIR			x	1, 47, 49, 63	(9)
0405	Gearbox Assembly	INSPECT	x			49	
		REMOVE/ INSTALL		x		1, 63	
		REPAIR		x	x	1, 28, 29, 30, 31, 33, 34, 37, 38, 47, 49, 63	(3, 11)

Maintenance Allocation Chart (CONT)

NOMENCLATURE OF END ITEMS

GTCP36-150[BH] Pneumatic Power Gas Turbine Engine Assembly

(1) GROUP NUMBER	(2) COMPONENT/ ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE CATEGORY AVUM	AVIM	DEPOT	(5) Tools AND EQUIPMENT	(6) REMARK
0405 01	Matched Housing Assembly Set	INSPECT			x	49	
		REMOVE/ INSTALL			x	1, 30, 33, 47, 49, 63	
		REPLACE			x	1, 30, 33, 47, 49, 63	
		REPAIR			x	1, 30, 33, 47, 49, 63	(3, 6, 7, 11)
0405 0101	Fuel Control Adapter	INSPECT		x		49	
		REMOVE/ INSTALL			x	30, 33, 47, 49	
		REPLACE			x	30, 33, 47, 49	
		REPAIR			x	30, 33, 47, 49	(6, 7, 11)
0405 02	Seal	INSPECT			x	49	
		REMOVE/ INSTALL			x	30, 33 47, 49	
		REPLACE			x	30, 33 47, 49	
0405 03	Bearing Carrier Assembly	INSPECT			x	49	
		REMOVE/ INSTALL			x	30, 33, 47, 49	
		REPLACE			x	30, 33, 47, 49	
		REPAIR			x	30, 33, 47, 49	(3, 7)
0405 04	Starter Gear-shaft Assembly	INSPECT			x	49	
		REMOVE/ INSTALL			x	30, 33 47, 49	
		REPLACE			x	30, 33, 47, 49	
		REPAIR			x	30, 33, 47, 49	(14)

Maintenance Allocation Chart (CONT)

NOMENCLATURE OF END ITEMS

GTCP36-150[BH] Pneumatic Power Gas Turbine Engine Assembly

(1) GROUP NUMBER	(2) COMPONENT/ ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE CATEGORY AVUM	AVIM	DEPOT	(5) Tools AND EQUIPMENT	(6) REMARK
0405 05	Meter Bracket Assembly	INSPECT	x			49	
		REMOVE/ INSTALL	x			49, 50	
		REPLACE	x			49, 50	
		REPAIR		x		47, 48, 49	(2, 5)
0405 06	Lube Pump Cover	INSPECT		x		49	
		REMOVE/ INSTALL		x		47, 49	
		REPLACE		x		47, 49	
		REPAIR			x	47, 49	(11)(6)
0405 07	Generator Splined Adapter	INSPECT	x			49	
		REMOVE/ INSTALL	x			50, 67, 68	
		REPLACE	x			50, 67, 68	
0405 08	Relief Valve	REMOVE/ INSTALL		x			
		REPLACE		x			
0405 09	Generator Gearshaft	INSPECT		x		49	
		REMOVE/ INSTALL			x	47, 49	
		REPLACE			x	47, 49	
		REPAIR			x	47, 49	(15)
0405 10	Rotor Housing	INSPECT		x		49	
		REMOVE/ INSTALL		x		47, 49	
		REPLACE		x		47, 49	
		REPAIR		x	x	47, 49	(7, 11) (6)
0406	Fuel System	INSPECT	x			49	
0406 01	Fuel Solenoid Valve	INSPECT	x			49	
		REMOVE/ INSTALL	x			49, 50	
		REPLACE	x			49, 50	

Maintenance Allocation Chart (CONT)

NOMENCLATURE OF END ITEMS

GTCP36-150[BH] Pneumatic Power Gas Turbine Engine Assembly

(1) GROUP NUMBER	(2) COMPONENT/ ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE CATEGORY			(5) Tools AND EQUIPMENT	(6) REMARK
			AVUM	AVIM	DEPOT		
0406	Primary Fuel	INSPECT		x		49	
02	Nozzle Assembly	TEST			x	39, 47, 49, 54, 73, 75	
		SERVICE		x		47, 49, 53	
		REMOVE/ INSTALL		x		49, 50	
		REPLACE		x		49, 50	
		REPAIR			x	47, 49	
0406	Secondary Fuel	INSPECT		x		49	
03	Nozzle Assembly	TEST			x	39, 47, 49, 54, 73, 75	
		SERVICE		x		47, 49, 53, 55	
		REMOVE/ INSTALL		x		49, 50	
		REPLACE		x		49, 50	
		REPAIR			x	47, 49	
0406	Fuel Control	INSPECT		x		49	
04	Assembly	TEST			x	41, 49, 74	
		CALIBRATE			x	41, 47, 49	
		SERVICE	x			49, 50	
		REMOVE/ INSTALL	x			49, 50	
		REPLACE	x			49, 50	
		REPAIR		x		47, 49	(11)
		OVERHAUL			x	42, 43, 47, 49	
0406	Body Assembly	INSPECT			x	49	
0401		REPLACE			x	47, 49	
		REPAIR			x	47, 49	(3, 6, 11)
0406	Torque Motor	INSPECT			x	49	
0402		REPLACE			x	47, 49	

Maintenance Allocation Chart (CONT)

NOMENCLATURE OF END ITEMS

GTCP36-150[BH] Pneumatic Power Gas Turbine Engine Assembly

(1) GROUP NUMBER	(2) COMPONENT/ ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE CATEGORY AVUM	AVIM	DEPOT	(5) TOOLS AND EQUIPMENT	(6) REMARK
0406	Fuel Filter	INSPECT	X			49	
0403	Cover	REMOVE/ INSTALL	X			49, 50	
		REPLACE	X			49, 50	
		REPAIR		X	X	47, 49	(6, 11)
0406	Fuel Manifold	INSPECT		X		49	
05	Assembly	REMOVE/ INSTALL		X		49, 50	
		REPLACE		X		49, 50	
0406	Fuel Check Valve	INSPECT	X			49	
06		REMOVE/ INSTALL	X			49, 50	
		REPLACE	X			49, 50	
0406	Fuel Filter	REMOVE/ INSTALL	X			49, 50	
07	Assembly	REPLACE	X			49, 50	
0406	Fuel Atomizer	REMOVE/ INSTALL		X		49, 50	
08	Shroud	REPLACE		X		49, 50	
0406	Fuel Drain Tube	REMOVE/ INSTALL	X			49, 50	
09	Assembly	REPLACE	X			49, 50	
0406	Orifice Fitting	REMOVE/ INSTALL	X			49, 50	
10		REPLACE	X			49, 50	
0407	Electrical System	INSPECT	X			49	
0407	Ignition Unit	INSPECT	X			49	
01		TEST				46	
		REMOVE/ INSTALL	X			49, 50	
		REPLACE	X			40, 50	
		REPAIR			X	47, 49	

Maintenance Allocation Chart (CONT)

NOMENCLATURE OF END ITEMS

GTCP36-150[BH] Pneumatic Power Gas Turbine Engine Assembly

(1) GROUP NUMBER	(2) COMPONENT/ ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE CATEGORY			(5) Tools AND EQUIPMENT	(6) REMARK
			AVUM	AVIM	DEPOT		
0407	APU Wiring	INSPECT	x			49	
02	Harness Assembly	REMOVE/ INSTALL	x			46, 49, 50	
		REPLACE	x			46, 49, 50	
0407	Fuel Control	INSPECT	x			49	
03	Wiring Harness Assembly	REMOVE/ INSTALL	x			46, 50	
		REPLACE	x			46, 50	
0407	Igniter Plug	INSPECT	x			49	
05	Lead	REMOVE/ INSTALL	x			49, 50	
		REPLACE	x			49, 50	
0407	Igniter Plug	INSPECT	x			49	
06	Assembly	REMOVE/ INSTALL	x			49, 50	
		REPLACE	x			49, 50	
	Immersion Thermocouple	REMOVE/ INSTALL	x			49, 50	
		REPLACE	x			49, 50	
	Motional Pickup Transducer	INSPECT	x			49	
		REPLACE	x			1, 2, 47, 49	
0408	Oil System	INSPECT	x			49	
0408	Oil Filter Cover	INSPECT	x			49	
01		REMOVE/ INSTALL	x			49, 50	
		REPLACE	x			49, 50	
		REPAIR		x	x	47, 49	(11)(6)
0408	Oil Fill Cap	INSPECT	x			49	
02		REMOVE/ INSTALL	x			49, 50	
		REPLACE	x			49, 50	
		REPAIR	x			47, 49	(3)

Maintenance Allocation Chart (CONT)

NOMENCLATURE OF END ITEMS

GTCP36-150[BH] Pneumatic Power Gas Turbine Engine Assembly

(1) GROUP NUMBER	(2) COMPONENT/ ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE CATEGORY AVUM	AVIM	DEPOT	(5) Tools AND EQUIPMENT	(6) REMARK
0408 03	Low Oil Pressure Switch	REMOVE/ INSTALL	x			47, 49	
		REPLACE	x			49, 50	
0408 04	Oil Temperature Bulb	REMOVE/ INSTALL	x			49, 50	(4)
		REPLACE	x			49, 50	
0408 05	Oil Filter Element	REMOVE/ INSTALL	x			49, 50	(4)
		REPLACE	x			49, 50	
0408 06	Magnetic Drain Plug	INSPECT	x			49	
		REPLACE	x			49, 50	
0408 07	Fill to Spill Plug	INSPECT	x			49	
		REPLACE	x			49, 50	

Section III TOOL AND TEST EQUIPMENT REQUIREMENTS

GTCP36-150[BH] Pneumatic Power Gas Turbine Engine Assembly

TOOL OR TEST EQUIPMENT REFERENCE CODE	MAINTENANCE CATEGORY	NOMENCLATURE	NATIONAL/NATO STOCK NUMBER	TOOL NUMBER
1	AVUM	Maintenance Stand	2835-00-620-9846	ST70396
2	AVUM	Adapter Assembly	4920-01-114-8526	70700-20423-041
3	Depot	Adapter, Step Plate		291396-96
4	Depot	Bearing, Half, Balance Support, Rotating Assembly	3120-01-005-1358	291750-11
5	Depot	Bearing, Half, Balance Support, Rotating Assembly	4920-01-020-8629	291750-23
6	Depot	Bearing, Half, Balance Support, Rotating Assembly		291750-28
7	Depot	Bearing, Half, Balance Support, Rotating Assembly		291750-29
8	Depot	Driver, Removal, Seal	4920-01-003-9877	291966-1
9	Depot	Driver, Installation, Seal	4920-01-003-9878	291968-1
10	Depot	Plate, Removal, Bearing	5120-01-008-0872	291969-1
11	Depot	Support and Driver, Removal, Spur Gearshaft		291974-1
12	Depot	Driver, Installation, Bearing	4920-01-003-6194	291975-1
13	Depot	Balance Set, Compressor Rotor	4920-01-003-9879	291980-1

Tool and Test Equipment Requirements (CONT)

GTCP36-150[BH] Pneumatic Power Gas Turbine Engine Assembly

TOOL OR TEST EQUIPMENT REFERENCE CODE	MAINTENANCE CATEGORY	NOMENCLATURE	NATIONAL/NATO STOCK NUMBER	TOOL NUMBER
14	Depot	Driver, Installation, Planetary Gearshaft	4920-01-003-9831	291983-1
15	Depot	Fixture Assembly, Shaft Stretch, Hydraulic, LP Turbine	4920-01-003-9032	291990-1
16	Depot	Gage Assembly, Shim Clearance	4920-01-020-0356	293162-1
17	Depot	Driver, Installation, Bearing	5120-01-016-6695	293163-1
18	Depot	Gage, Cylindrical, Shim Clearance	5120-01-016-6689	293164-1
19	Depot	Gage, Shim Clearance, Dial		298206-1
20	Depot	Adapter, Torque Turbine and Shaft		298851-1
21	Depot	Fixture, Planet Shaft Assembly		298870-1
22	Depot	Fixture, Planet Shaft Removal		298871-1
23	Depot	Driver, Removal, Compressor Shaft	4920-01-003-9876	291965-1
24	Depot	Support Assembly, Removal, Turbine		298844-1
25	Depot	Fixture, Seal Leak Test		298880-1
26	Depot	Balance Machine	6635-00-140-0175	50B-2-TC
27	Depot	Driver, Installation, Seal	5120-00-079-3395	285450-1-1

Tool and Test Equipment Requirements (CONT)

GTCP36-150[BH] Pneumatic Power Gas Turbine Engine Assembly

TOOL OR TEST EQUIPMENT REFERENCE CODE	MAINTENANCE CATEGORY	NOMENCLATURE	NATIONAL/NATO STOCK NUMBER	TOOL NUMBER
28	Depot	Adapter Assembly, Split-Plate, Removal, Bearing		291397-58
29	Depot	Adapter Assembly, Split-Plate, Removal, Bearing		291397-59
30	Depot	Stand, Maintenance, Gearbox Assembly	4920-283-2344	291400-1
31	Depot	Guide, Installation, Lip Seal		291963-3
32	Depot	Pusher, Seal Installation and Removal		291964-5
33	Depot	Adapter, Maintenance Stand		291978-2
34	Depot	Driver, Installation Bearing		298249-1
35	Depot	Driver, Bearing		298628-1
36	Depot	Adapter Assembly, Torque, Tanged		298876-1
37	Depot	Adapter, Step-Plate		298878-1
38	Depot	Driver Set, Bearing Installation and Removal		298879-1
39	Depot	Test Stand, Fuel Accessories	4920-00-824-1470	281600-6-1
40	Depot	Adapter, Test Stand	4920-01-132-0659	296501-1

Tool and Test Equipment Requirements (CONT)

GTCP36-150[BH] Pneumatic Power Gas Turbine Engine Assembly

TOOL OR TEST EQUIPMENT REFERENCE CODE	MAINTENANCE CATEGORY	NOMENCLATURE	NATIONAL/NATO STOCK NUMBER	TOOL NUMBER
41	Depot	Adapter, Test, Cover and Plug, Fuel Control		298850-1
42	Depot	Puller, Gearshaft, Fuel Control		298852-1
43	Depot	Puller, Sleeve, Fuel Control		298853-1
44	Depot	Plug, Filter Element	4920-127-3230	296530-1
45	Depot	Fixture Assembly, Flow Test		298846-1
46	AVUM	Tool Kit, Electrical	5180-00-323-4915	SC518099CLA06
47	AVUM	Tool Kit, Engine Repairman's	5180-00-323-4944	SC518099CLA07
48	AVIM	Shopset, AVIM, Welding	4920-00-163-5093	SC492099CLA88 WEAM
49	AVUM	Aircraft Inspection Tool Kit	5180-00-323-5114	SC518099CLA09
50	AVUM	Tool Set, AVUM, Set No. 2	4920-00-569-0476	SC492099CLA92
51	Depot	Adapter Assembly, Install, Compressor Rotor		298845-1
52	Depot	Probe, Exhaust Gas Temperature	6625-01-866-6110	1406AS950
53	Depot	Crimper, Parallel, Fuel Nozzle	5220-01-030-1233	287129-1-1
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Tool and Test Equipment Requirements (CONT)

GTCP36-150[BH] Pneumatic Power Gas Turbine Engine Assembly

TOOL OR TEST EQUIPMENT REFERENCE CODE	MAINTENANCE CATEGORY	NOMENCLATURE	NATIONAL/NATO STOCK NUMBER	TOOL NUMBER
55	AVUM	Pin (2 req'd)	4920-00-940-9286	ST7010G-39
56	Depot	Air Inlet Probe	4920-01-242-3706	162287-100
57	Depot	Adapter, Vibration Pickup	4920-01-245-8101	162290-100
58	Depot	Cart, Handling	4920-01-170-8120	1132AS115-1
59	Depot	Frame, Engine Support	4920-01-245-8102	164498-100
60	Depot	Transducer, APU Vibration	6680-00-097-6735	2272
61	Depot	Mount, Vibration Pickup	5306-01-003-2773	265846-5
62	AVIM	Gage, Checking, Shim, Monopole	4920-01-140-3982	294817-1
63	AVUM	Sling, Lifting	1730-146-8248	70700-77403-041
64	AVIM	Puller, Combustor	5120-00-435-0132	ST91125
65				
66	Depot	Adapter, Force Gage		298280-1
67	AVUM	Withdrawal Tool, Spline Adapter	5120-01-165-5544	1106769-4
68	AVUM	Install, Tool, Spline Adapter	5120-01-156-0969	1106841-1
69	Depot	Adapter Assembly, Split-Plate, RE		291397-60
70	Depot	Adapter, Puller	5120-01-255-5119	291967-8

Tool and Test Equipment Requirements (CONT)

GTCP36-150[BH] Pneumatic Power Gas Turbine Engine Assembly

TOOL OR TEST EQUIPMENT REFERENCE CODE	MAINTENANCE CATEGORY	NOMENCLATURE	NATIONAL/NATO STOCK NUMBER	TOOL NUMBER
71	Depot	Driver, Installation, Bearing	4920-01-003-9027	291972-1
72	Depot	Thermocouple, Immersion	6685-01-005-2808	293018-1
73	Depot	Adapter, Fuel Nozzle		298145-1
74	Depot	Controller, Torque Motor	4920-01-127-3175	296506-1
75	Depot	Tester Assembly, Fuel Nozzle	4920-00-847-8240	284021-1-1
76	AVUM	Power Supply, External DC		---

Section IV REMARKS

GTCP36-150[BH] Pneumatic Power Gas Turbine Engine Assembly

REFERENCE CODE	REMARKS/NOTES
(1)	Water/Solvent
(2)	Weld Repair
(3)	Replace inserts, helicoils, studs, seals, packing and gaskets
(4)	Inspect for chafing, security of installation, dents, kinks and cracks
(5)	Replace nut plates
(6)	Anodize
(7)	Replace pin
(8)	Chrome Plate
(9)	Handfinish minor nicks
(10)	Metal Spray Diameter
(11)	Touch Up Anodize
(12)	Replace seal
(13)	Replace ferrule
(14)	Replace splined adapter and plug
(15)	Replace plug

APPENDIX C

REPAIR PARTS AND SPECIAL TOOLS LIST

Refer to TM 55-2835-209-23P for Repair Parts and Special Tools List.

APPENDIX D

EXPENDABLE/DURABLE SUPPLIES AND MATERIALS LIST

Section I INTRODUCTION

D-1 SCOPE

This appendix lists expendable supplies and materials you will need to operate and maintain the APU. These items are authorized to you by CTA 50-970. Expendable Items (except Medical, Class V, Repair Parts and Heraldic Items).

D-2 EXPLANATION OF COLUMNS

a. Column I - Item D Number. This number is assigned to the entry in the listing and is referenced in the maintenance tasks to identify the material (e.g., "Use machinery towel (D20)").

b. Column 2 - National Stock Number. this is the National Stock Number assigned to the item; use it to request or requisition the item.

c. Column 3 - Description. Indicates the item name and, if required, a description to identify the item. The last line for each item indicates the part number followed by the Federal Supply Code for Manufacturer (FSCM) in parenthesis, if there is no NSN in column 2.

d. Column 4 - Unit of Measure (U/M). Indicates the measure used in performing the actual maintenance function. This measure is expressed by a two-character alphabetical abbreviation (e.g., ea, in., pr). If the unit of measure differs from the unit of issue, requisition the lowest unit of issue that will satisfy your requirements.

Section II EXPENDABLE/DURABLE SUPPLIES AND MATERIALS LIST

(1) ITEM NUMBER	(2) NATIONAL STOCK NUMBER	(3) DESCRIPTION	(4) U/M
o	8040-00-117-8510	Adhesive, MIL-A-46146, Type III	oz
1	6850-01-005-1891	Alkaline Cleaner (909)	lb
2	8105-00-159-4998	Bag, Plastic 12 X 12, A-A-1668	ea
3	8135-00-753-4661	Barrier Material, Greaseproof, Waterproof, Flexible, MIL-B-121, Type I, Class 2, Grade A	yd
4	FED/MIL SPEC, SIZE	Bead, Glass	
5	7906-00-514-2417	Brush, Acid Swabbing, H-B-643H	ea
6	Deleted		
6A	5970-00-990-4924	Coating, Humiseal, 1B15	
7	8030-00-087-8630	Compound, Antiseize, C5A	pt
8	9150-00-664-0050	Compound, Antiseize, Liqui-Moly NV	pt
9	Deleted		
10	6515-01-234-6838	Cotton Applicator, 362	ea
10A	5350-00-221-0872	Crocus, Cloth, A-A-1206	
11	6850-00-999-1094	Desiccant, Activated, Bagged, MIL-D-3464, Type 1	ea
12	Deleted		
13	Deleted		
14	6685-00-167-9235	Indicator, Humidity, TA357-2435-RFI	ea
15	8030-00-953-7757	Iridite, 14-2	pt
16	9150-00-180-6266	Lubricating Oil, MIL-L-23699	8 oz
17	9150-00-273-8810	Lubricating Oil, MIL-L-6081	qt
18	Deleted		
19	FED/MIL SPEC	Lubricant, Santovac, 5PT	
20	7920-00-205-3570	Machinery Towel, A-A-531	lb
21	6810-00-281-2785	Methyl-Ethyl-Ketone, SC13555 or Equivalent	qt
22	6830-00-327-2929	Nitrogen, Technical, BB-N-411, Type 1, Class 1	lb
23	6695-01-045-9820	Oil Sample Kit, MMEPD379	
24	7510-00-465-0994	Pencil, Marking	ea
25	Deleted		
26	600 (Grit)	Paper, Abrasive, A-A-1047	
27	6850-00-145-0255	Penetrant Inspection Kit, MIL-I-25135	
28	8040-00-845-4304	Primer 1200, 588-017-9001	ea
29	FED/MIL SPEC	Primer, Epoxy, P-415A-66	pt
30	8030-00-322-3453	Primer, Epoxy, Locquic T	oz
31	8040-00-851-0211	RTV 732, MIL-A-46106	
32		Sand, Sandblasting	
33	5970-01-307-5102	Sleeving, S9046-3-9	ft
34	8520-00-228-0598	Soap, Toilet P-S-624, Type 1	gal.
35	6850-00-274-5421	Solvent, Dry Cleaning, P-D-680, Type II	5 gal.
36	FED/MIL SPEC	Stock 0.020, Inconel 617	
37	6850-00-270-5551	Stripper, Rust, MIL-L-10578	gal.
38	7510-00-074-4946	Tape, Pressure Sensitive, PPP-T-60	yd

(1) ITEM NUMBER	(2) NATIONAL STOCK NUMBER	(3) DESCRIPTION	(4) U/M
39	7510-00-079-7905	Tape, Pressure Sensitive, PPP-T-60	yd
39A	FED/MIL SPEC	Textile Braid, S8999-10	
40	Deleted		
41	6810-00-292-9625	Trichloroethane 1,1,1-, 801032	ea
42	7920-00-965-1709	Wipe, Lint-Free, A-A-1447	
43	9525-00-618-0257	Lockwire, 0.020, MS20995NC020	rl
44	9525-00-335-6072	Lockwire, 0.032, MS20995NC032	rl

APPENDIX E

MANUFACTURED ITEMS LIST

Not Applicable

APPENDIX F

TORQUE LIMITS

TORQUE VALUES FOR BOLTS, SCREWS AND NUTS

Thread Size	Torque Value
3-48	5-7 inch-pounds
6-32	11-13 inch-pounds
8-32	13-16 inch-pounds
10-31	24-27 inch-pounds
1/4-28	55-70 inch-pounds
9/16-18	480-600 inch-pounds

MINIMUM DRAG TORQUE FOR SELF-LOCKING NUTS

Thread Size	Torque Value
10-32	2.0 inch-pounds
1/4-28	3.5 inch-pounds
3/8-24	9.5 inch-pounds

TORQUE VALUES FOR PLUGS, UNIONS, ELBOWS AND NIPPLES

Size	Thread Size	Torque Value
4	7/16-20	135-150 inch-pounds
6	9/16-18	180-200 inch-pounds

TORQUE VALUES FOR FLARED TUBE COUPLING NUTS

Tube Size	Torque Value
4	135-150 inch-pounds
6	270-300 inch-pounds

TORQUE VALUES FOR FLARELESS TUBE COUPLING NUTS

Tube Size	Torque Value
2	75-85 inch-pounds
4	135-145 inch-pounds

Torque Wrench, 0-30 inch-pounds
NSN 5120-00-117-4832 Torque Wrench, 30-150 inch-pounds
NSN 5120-00-542-4489 Torque Wrench, 150-750 inch-pounds
NSN 5120-00-821-3441

GLOSSARY

Section I ABBREVIATIONS

APU ..... Auxiliary Power Unit

bg ..... Bag

DA ..... Department of the Army

ea ..... Each

EGT ..... Exhaust Gas Temperature

ESU ..... Electronic Sequence Unit

FM ..... Field Manual

FOD ..... Foreign Object Damage

gal. ..... Gallon

GTCP ..... Gas Turbine Compressor and Shaft Powered

in. ..... Inch

l ..... Liter

lb ..... Pound

MAC ..... Maintenance Allocation Chart

max. ..... Maximum

min ..... Minimum

MOC ..... Maintenance Operational Check

oz ..... Ounce

PCD ..... Compressor Discharge Pressure

psig ..... Pounds per square inch gage

pt ..... Pint

QDR ..... Quality Deficiency Report

qt ..... Quart

rl ..... Roll

rpm ..... Revolutions per Minute

TB ..... Technical Bulletin

TM ..... Technical Manual

U/M ..... Unit of Measure

yd ..... Yard

GLOSSARY

Section II DEFINITIONS

TERM	DEFINITION
B	
Bend	Distortion in a part.
Binding	To confine and restrict the liberty of a free moving part, material or component. May cause serious damage if a chafing force is being imposed.
Break	Separation of a part.
Burnishing	Smoothing minor damage using a hand tool.
Burr	A rough or sharp edge on a hole or corner, usually caused by machining, sometimes by wearing.
C	
Chipping	Breaking away of metallic particles.
Contamination (Foreign Material)	Any foreign substance such as metal chips, lint, rust and water that would be harmful to the functioning of a part of system.
Corrosion (Direct Surface Attack)	A type of corrosion that results from direct reaction between a metal surface and the atmosphere. Rust on iron is a common example.
Corrosion (Galvanic)	Accelerated corrosion as a result of electrical contact between dissimilar metals.
Corrosion (Intergranular)	A corrosion type which attacks along the grain boundaries of a metal.
Corrosion (Pitting)	Formation of small cavities on a metallic surface caused by chemical or physical nonhomogeneities.
Corrosion (Stress Cracking)	A type of corrosion which causes cracking and part failure due to a combination of corrosion and sustained tensile stress.
Crack	Parting of parent metal.

TERM	DEFINITION
D	
Dent	A completely smooth surface depression caused by pressure or impact from a smooth ball-like foreign object. The parent material is displaced, but usually none is separated.
Distortion	Twisting or bending out of a normal, natural or original shape, usually caused from being exposed to excessive pressure or temperature either when restrained or unrestrained.
E	
Erosion	Wearing away of metal.
F	
Ferrules	Metal band or socket.
Foreign Material	See Contamination.
Foreign Object	Any object such as a tool, piece of equipment or APU part (nut, bolt, lockwire) that could in any way damage the APU.
Fraying	Wearing or rubbing of areas, generally used in reference to damage open wire-braid covering (of teflon hose) or on thermocouple harness.
G	
Gouge	A wide rough scratch or group of scratches, usually, with one or more sharply impressed corners and frequently accompanied by deformation or removal of parent metal.
K	
Kinks	Short, tight twists or curls caused by a doubling or winding of a hose or line upon itself. Likely to cause difficulties in the operation.
L	
Loose	Abnormal movement of a part.
N	
Nick	A surface impression with sharp corners or bottom, usually caused by pressure or impact from a sharp-edged foreign body. The parent material is displaced but usually none is separated.

TERM	DEFINITION
P	
Parent Metal	The basic metal of a part, sometimes referred to as base metal; the term is used particularly in connection with welding, where the parent metal is that being welded rather than that used in welding rod.
Puncture	A hole that is pierced in a material.
R	
Repair	To restore a defective part, component, subassembly or assembly to a serviceable condition.
Rub	When one component contacts another and is moved in relationship to it causing material to be removed from it.
S	
Scoring	Multiple scratches, usually parallel and resulting from the same cause.
Scratch	A long, narrow sharp-cornered impression caused by the movement of a sharp object across the surface of parent material.
Serviceable	Equipment or parts that are in a condition which allows them to be returned to operational status on an aircraft.
T	
Testing	Testing of equipment to determine that the unit functions properly within specified limits.
Tolerance	The range of variation allowed in maintaining a specified dimension in making part.
Torque	To tighten a nut, bolt or fitting, using a torque wrench, to a specified torque value expressed as inch-pounds or as foot-pounds.
W	
Wear	Relatively slow removal of parent material from any cause, frequently not visible to the naked eye.

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PFC JOHN DOE
COA, 3d ENGINEER BN
FT. LEONARDWOOD, MO 63108

DATE SENT

PUBLICATION NUMBER	PUBLICATION DATE	PUBLICATION TITLE
TM 55-2835-209-23	28 Jan 1992	ENGINE ASSEMBLY GAS TURBINE

BE EXACT . . . PIN-POINT WHERE IT IS

PAGE NO	PARA-GRAPH	FIGURE NO	TABLE NO
6	2-1 a		
81		4-3	
125	line 20		

IN THIS SPACE TELL WHAT IS WRONG AND WHAT SHOULD BE DONE ABOUT IT:

In line 6 of paragraph 2-1a the manual states the engine has 6 Cylenders. The engine on my set only has 4 Cylenders. Clenge the manual to show 4 Cylenders.

Callout 16 on figure 4-3 is pointing at a bolt. In key to figure 4-3, item 16 is called a shim - Please correct one or the other.

I ordered a gasket, item 19 on figure B-16 by NSN 2910-00-762-3001. I got a gasket but it doesn't fit. Supply says I got what I ordered, so the NSN is wrong. Please give me a good NSN

PRINTED NAME, GRADE OR TITLE, AND TELEPHONE NUMBER
JOHN DOE, PFC (268) 317-7111

SIGN HERE: John Doe
JOHN DOE

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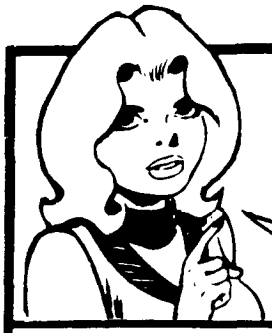

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The Metric System and Equivalents

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 metrical = 10 quintals = 1.1 short tons

Liquid Measure

1 centiliter = 10 milliters = .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 cu. 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	1.365	metric tons	short tons	1.102
pound-inches	newton-meters	.11375			

Temperature (Exact)

°F	Fahrenheit temperature	5/9 (after subtracting 32)	Celsius temperature	°C