### **TECHNICAL MANUAL**

AVIATION UNIT AND AVIATION INTERMEDIATE MAINTENANCE MANUAL

ENGINE, GAS TURBINE MODEL T55-L-714 NSN 2840-01-353-7635

DISTRIBUTION STATEMENT A: Approved for public release; distribution is unlimited.

HEADQUARTERS DEPARTMENT OF THE ARMY WASHINGTON, D.C., 31 January 2003

## TECHNICAL MANUAL

## Aviation Unit and Aviation Intermediate Maintenance Manual

## ENGINE, GAS TURBINE, MODEL T55–L–714 (NSN 2840–01–353–7635)

## **OZONE DEPLETING CHEMICAL INFORMATION**

This document has been reviewed for the presence of class I ozone depleting chemicals. As of the basic, dated 1 December 1994, all references to Class I ozone depleting chemicals have been removed from this document by substitution with chemicals by the Engineering, Environment, and Logistics Oversight Office that do not cause atmospheric ozone depletion.

DISTRIBUTION STATEMENT A: Approved for public release; distribution is unlimited

TM 1-2840-252-23-3, 1 December 1994, is changed as follows:

- 1. Remove and insert pages as indicated below. New or changed text material is indicated by a vertical bar in the margin. An illustration change is indicated by a miniature pointing hand.
  - Remove pages Insert pages \_ \_ A and B i and ii i and ii A-1 and A-2 A-1 and A-2 C-3 and C-4 C-3 and C-4 C-7 and C-8(blank) C-7 and C-8(blank) G-123 and G-124 G-123 and G-124 Index-3 and Index-4 Index-3 and Index-4

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

### By Order of the Secretary of the Army:

Official:

Joel B. Hub

JOEL B. HUDSON Administrative Assistant to the Secretary of the Army 0233002

ERIC K. SHINSEKI General, United States Army Chief of Staff

DISTRIBUTION:

To be distributed in accordance with Initial Distribution Number (IDN) 313466, requirements for TM 1–2840–252–23–3.

CHANGE

NO. 1

## LIST OF EFFECTIVE PAGES

Insert latest changed pages; dispose of superseded pages in accordance with regulations.

NOTE: On a changed page, the portion of the text affected by the latest change is indicated by a vertical line, or other change symbol, in the outer margin of the page. Changes to illustrations are indicated by miniature pointing hands. Changes to wiring diagrams are indicated by shaded areas.

Dates of issue for original and changed pages are:

Original	1 Dec 1994	Change 1	31 Jan 2003
Page No.	*Change No.	Page No.	*Change No.
No. A and B Blank i ii through iv 6–183 through 6– 6–266 blank 7–1 through 7–57 7–58 blank 7–59 through 7–1 7–162 blank 8–1 through 8–5 8–6 blank 8–26 blank 8–27 through 8–25 8–62 blank 8–63 through 8–2 8–266 blank 8–267 through 9–2	$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	No. 9–3 through 9– A–1 A–2 through C– C–3 C–4 through C– C–7 C–8 blank D–1 through D– D–4 blank Ei through E–28 E–26 blank F–1 through F– F–4 blank G–i through G– G–123 G–124 through Index 3 and Ind Index 5 through	12       0        1      0        1      0        0      0        0      0        0      0        0      0        0      0        0      0        0      0        0      0        0      0        0      0        0      0        0      0        0      0        0      0        0      0        0      0

\*Zero in this column indicates an original page.

NO. 1-2840-252-23

#### HEADQUARTERS DEPARTMENT OF THE ARMY WASHINGTON D.C., 1 December 1994

## **TECHNICAL MANUAL**

Aviation Unit and Aviation Intermediate Maintenance Manual

## ENGINE, GAS TURBINE

MODEL T55-L-714 (NSN 2840-01-353-7635)

## REPORTING ERRORS AND RECOMMENDING IMPROVEMENTS

You can help improve this manual. If you find any mistakes, or if you know of a way to improve these procedures, please let us know. Mail your letter or DA Form 2028 (Recommended Changes to Publications and Blank Forms), or DA Form 2028-2 located in the back of this manual directly to: Commander, US Army Aviation and Missile Command, ATTN: AMSAM-MMC-MA–NP, Redstone Arsenal, AL 35898–5000. A reply will be furninshed to you. You may also provide DA Form 2028 information to AMCOM via e–mail, fax, or the World Wide Web. Our fax number is: DSN788–6546. Our e–mail address is: <u>2028@redstone.army.mil</u>. Instructions for sending an electronic 2028 may be found at the back of this manual immediately preceding the hard copy 2028. For the World Wide Web use: <u>https://amcom2028.redstone.army.mil</u>.

## **OZONE DEPLETING CHEMICAL INFORMATION**

This document has been reviewed for the presence of class I ozone depleting chemicals. As of the basic, dated 1 December 1994, all references to Class I ozone depleting chemicals have been removed from this document by substitution with chemicals by the Engineering, Environment, and Logistics Oversight Office that do not cause atmospheric ozone depletion.

#### DISTRIBUTION STATEMENT A: Approved for public release; distribution is unlimited NOTE

This manual is printed in three volumes as follows:

TM 1–2840–252–23–1, consisting of Table of Contents, Chapter 1, Chapter 2, pages 2–1 through 2–322 TM 1–2840–252–23–2, consisting of Table of Contents, Chapter 2, pages 2–323 through 2–425/(2–426 blank), Chapter 3, Chapter 4, Chapter 5, Chapter 6, pages 6–1 through 6–182.

TM 1–2848–252–23–3, consisting of Table of Contents, Chapter 6, pages 6–183 through 6–265/(6–266 blank), Chapter 7, Chapter 8, and Chapter 9, Appendix A through Appendix G, and an Alphabetical Index. The Appendices and Index are applicable to Volumes 1 through 3.

## TABLE OF CONTENTS

PAGE

	HOW TO USE THIS MANUAL VII
CHAPTER I.	INTRODUCTION 1–1
	Chapter Overview 1–1
Section I	General Information 1-1
Section II	Equipment Description and Data 1–3
Section III	Principles of Operation 1–13
Section IV	Repair Parts; Special Tools; Test, Measurement, and Diagnostic
	Equipment (TMDE); and Support Equipment 1–47
Section V	Service Upon Receipt 1–49
Section VI	Hoisting
Section VII	Troubleshooting
Section VIII	Servicing
Section IX	Preventive Maintenance Checks and Services 1-317
Section X	Maintenance Procedures
Section XI	Preparation for Storage and Shipment 1–509
Section XII	Standard Torque Limits 1–567
Section XIII	Standard Practices and Procedures

## **TABLE OF CONTENTS (Continued)**

CHAPTER 2	COMPRESSOR SECTION-MAINTENANCE INSTRUCTIONS	2-1
	Chapter Overview	2-1
Section I	Interstage Air-Bleed Actuator	2-5
Section II	Compressor bleed Band	2-37
Section III	Anti-İcing Air Gallery Cover	2-47
Section IV	Compressor Housing	2-63
Section V	Stator Vane Assemblies	2-181
Section VI	Compressor Rotor Blades	2-235
Section VII	Air Diffuser Assembly	2-321
Section VIII	Output Shaft Seal and Housing Assembly	2-325
Section IX	Inlet Housing Cover Assembly	2-345
Section X	Air Inlet Housing Assembly	2-355
Section XI	T1 Temperature Sensor	2-359
Section XII	Air lines	2-367
CHAPTER 3	COMBUSTION SECTION-MAINTENANCE INSTRUCTIONS	3-1
	Chapter Overview	3-3
Section I	Fuel Drain Valve	3-3
Section II	Combustion Section and Power Turbine	3-9
Section III	Combustion Section	3-117
Section IV	Combustion Chamber Vane Assembly	3-135
Section V	Combustion Chamber Liner	3-145
Section VI	Combustion Chamber Housing	3-171
CHAPTER 4	TURBINESECTION-MAINTENANCE INSTRUCTIONS	4-1
	Chapter Overview	4-5
Section I	Thermocouple Jumper Lead	4-5
Section II	Left- and Right-Hand Bus Bar Assemblies	4-25
Section III	Fireshield Assembly	4-55
Section IV	Fireshield Section	4-65
Section V	Thermocouple Harness Assemblies	4-81
Section VI	Third Turbine Nozzle and Support	4-107
Section VII	Fourth Stage Power Turbine Rotor	4-131
Section VIII	No . 4 and 5 Bearing Package	4-165
Section IX	Fourth Stage Power Turbine Nozzle	4-103
Section X	Third Stage Power Turbine Rotor	4-247
Section XI	Second Turbine Disc Assembly	4-279
		4-209
Section XII Section XIII	Second Turbine Nozzle, Spacer, Case, and Bumper First Turbine Disc Assembly	4-313
Section XIV	First Turbine Rotor Case	4-301
Section XV	Field Replacement First and Second Turbine Disc Assembly	4-369 4-407
Section XV Section XVI		4-407 4-415
Section AVI	Tailpipe Assembly	4-415

## **TABLE OF CONTENTS (Continued)**

CHAPTER 5	ACCESSORY GEAR SECTION-MAINTENANCE INSTRUCTIONS	5-1
	Chapter Overview	5-1
Section I	Accessory Gearbox Assembly	5-3
Section II	PT Speed Pickup	5-41
Section III	PT Speed Pickup Drive Assembly	5-49
Section IV	Starter Drive Assembly	5-57
Section V	Overspeed Drive and Outlet Cover Assembly	5-75
CHAPTER 6	FUEL SYSTEM-MAINTENANCE INSTRUCTIONS	6-1
	Chapter Overview	6-1
Section I	Hydromechanical Assembly (HMA)	6-5
Section II	Hydromechanical Assembly (HMA) - Preparation for Storage or	
	Shipment	6-27
Section III	Fuel Boost Pump Assembly	6-35
Section IV	Fuel Boost Pump Assembly - Preparation for Storage or Shipment	6-47
Section V	Left- and Right-Hand Fuel Manifold Assemblies	6-49
Section VI	Primer Tube Assembly	6-89
Section VII	Start Fuel Nozzles	6-97
Section VIII	Main Fuel Filter and Bracket	6-103
Section IX	In-Line Fuel Filter Assembly	6-121
Section X	Pressurizing Valve	6-135
Section XI	Flow Divider and Bracket	6-143
Section XII	Fuel Check Valve	6-153
Section XIII	Overspeed Solenoid Valve	6-159
Section XIV	Starting Fuel Solenoid Valve	6-167
Section XV	Fuel Lines	6-177
CHAPTER 7	ELECTRICAL AND IGNITION SYSTEMS-MAINTENANCE	
	INSTRUCTIONS	7-1
	Chapter Overview	7-1
Section I	Ignition Coil and Cable Assembly	7-3
Section II	Spark Igniters	7-59
Section III	Ignition Exciter	7-71
Section IV	Primary Electrical Harness Assembly	7-81
Section V	Reversionary Electrical Harness Assembly	7-109
Section VI	Accessory Electrical Harness Assembly	7-137

## **TABLE OF CONTENTS (Continued)**

CHAPTER 8	LUBRICATION SYSTEM-MAINTENANCE INSTRUCTIONS		
Section I	Chapter Overview Main Oil Pump, Speed Pickup Drive Assembly, Scavenge Oil S	Screen,	
Section II	and Related Parts Gas Producer Speed Pickup		
Section III	Oil Cooler Assembly		
Section IV	Flow Programming Valve		
Section V	Oil Temperature Transmitter		
Section VI	Oil Filler Assembly and Oil Filler Strain		
Section VII	Oil Filter Cover Assembly and Oil Filter Element		
Section VIII	Dual Chip Detector		
Section IX	Oil Lines		
Section X	Starter Gearbox Filter		
Section XI	No. 2 Bearing Pressure Oil Connector		
Section XII	No . 2 Bearing Pressure Oil Strainer		
Section XIII	No . 4 and 5 Bearing Filter		
Section XIV	Oil Drain Cock		
Section XV	Chip Detector		
Section XVI	Oil Level Detector		
Section XVII	Oil Level Float Assembly		
CHAPTER 9	TORQUEMETER SYSTEM-MAINTENANCE INSTRUCTIONS		
	Chapter Overview		
Section I	Torquemeter Sensor		
APPENDIX A	REFERENCES	A-1	
APPENDIX B	MAINTENANCE ALLOCATION CHART	B-1	
APPENDIX C	EXPENDABLE SUPPLIES AND MATERIALS LIST	C-1	
APPENDIX D	WIRING DIAGRAMS	D-1	
APPENDIX E	ILLUSTRATED LIST OF MANUFACTURED ITEMS	E-1	
APPENDIX F	ABBREVIATIONS	F-1	
APPENDIX G	DECU FAULT ISOLATION	G-1	
GLOSSARY		GLOSSARY-1	
SUBJECT IND	EX	INDEX-1	

#### 6-64 REMOVE HOSE ASSEMBLY (HMA TO OIL COOLER)

#### **INITIAL SETUP**

#### Applicable Configurations:

#### All Tools:

Powerplant Mechanic's Tool Kit, NSN 5180-00-323-4944 Container, 1 Quart

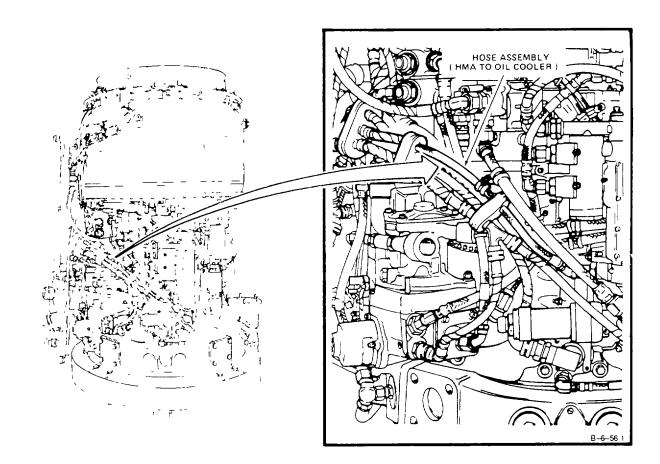
#### Materials:

Wiping Rag (E64) *Personnel Required:* Aircraft Powerplant Repairer

#### General Safety Instructions:

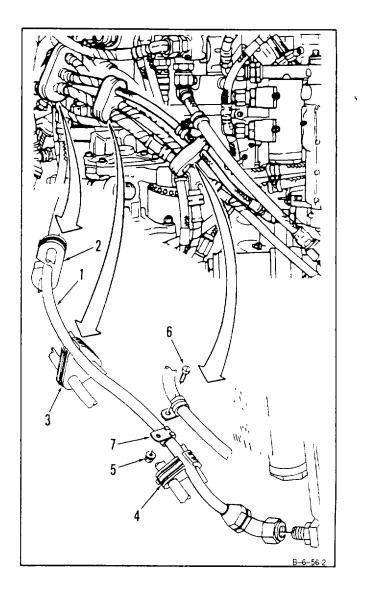
#### WARNING

Turbine fuels are very flammable. They may cause drying and irritation of skin or eyes. Handle only in well-ventilated areas away from heat and open flame. Drain and store in approved metal safety containers. Avoid prolonged or repeated contact with skin and do not take internally. Wash contacted area of skin thoroughly after handling. If irritation of skin results, get medical attention. Get medical attention for eyes.



## 6-64 REMOVE HOSE ASSEMBLY (HMA TO OIL COOLER) (Continued)

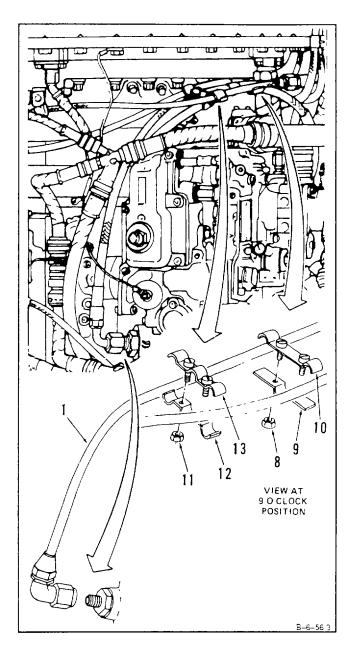
- 1. Cut and remove tiedown straps and lift hose assembly (1) out of cushions (2, 3, and 4).
- 2. Remove nut (5), bolt (6), and clamp (7).



## 6-64 REMOVE HOSE ASSEMBLY (HMA TO OIL COOLER) (Continued)

6-64

- 3. Remove two nuts (8) and clamps (9 and 10) and two nuts (11) and clamps (12 and 13).
- 4. Disconnect and remove hose assembly (1).



FOLLOW-ON MAINTENANCE: None

**END OF TASK** 

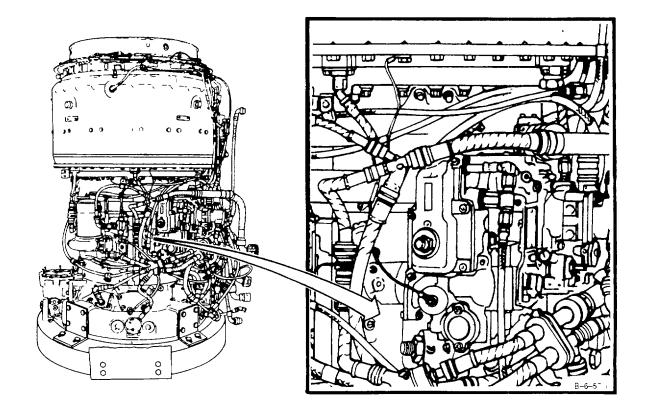
## 6-65 INSTALL HOSE ASSEMBLY HMA TO OIL COOLER)

### **INITIAL SETUP**

## Applicable Configurations:

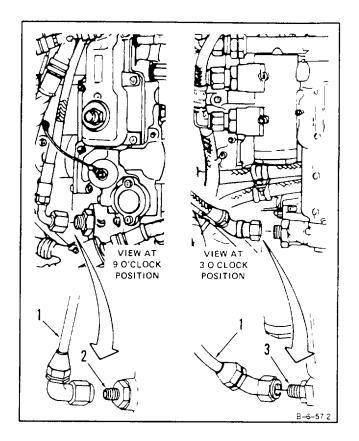
All Tools:

Powerplant Mechanic's Tool Kit, NSN 5180-00-323-4944 Technical Inspection Tool Kit, NSN 5180-00-323-5114 *Materials:* Tiedown Strap (3) *Personnel Required:* Aircraft Powerplant Repairer Aircraft Powerplant Inspector



## 6-65 INSTALL HOSE ASSEMBLY (HMA TO OIL COOLER) (Continued)

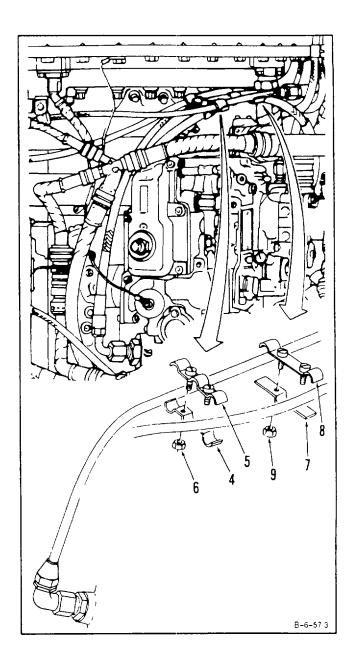
1. Install hose assembly (1) on reducers (2 and 3).



## 6-65 INSTALL HOSE ASSEMBLY (HMA TO OIL COOLER) (Continued)

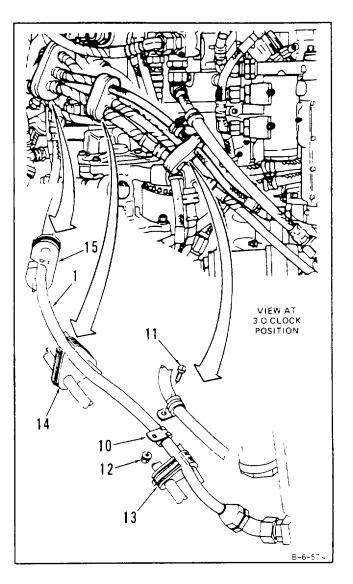
6-65

2. Install clamps (4 and 5) and two nuts (6), and clamps (7 and 8) and two nuts (9).



## 6-65 INSTALL HOSE ASSEMBLY (HMA TO OIL COOLER) (Continued)

- 3. Install clamp (10), bolt (11), and nut (12).
- 4. Install hose assembly (1) into cushions (13, 14, and 15) and secure with tiedown straps.



### INSPECT

FOLLOW-ON MAINTENANCE: None

END OF TASK

## 6-66 REMOVE HOSE ASSEMBLY (IN-LINE FUEL FILTER TO OVERSPEED SOLENOID VALVE)

#### **INITIAL SETUP**

### Applicable Configurations:

All

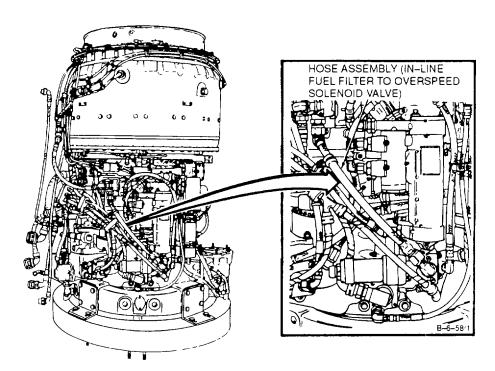
*Tools:* Powerplant Mechanic's Tool Kit, NSN 5180-00-323-4944 Container, 1 Quart *Materials:* Wiping Rag (E64) *Personnel Required:* 

Aircraft Powerplant Repairer

General Safety Instructions:

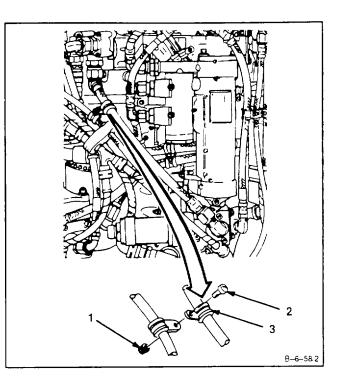
#### WARNING

Turbine fuels are very flammable. They may cause drying and irritation of skin or eyes. Handle only in well-ventilated areas away from heat and open flame. Drain and store in approved metal safety containers. Avoid prolonged or repeated contact with skin and do not take internally. Wash contacted area of skin thoroughly after handling. If irritation of skin results, get medical attention. Get medical attention for eyes.

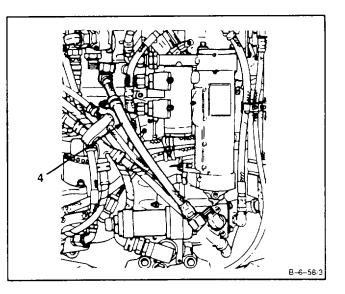


# 6-66 REMOVE HOSE ASSEMBLY (IN-LINE FUEL FILTER TO OVERSPEED SOLENOID VALVE) (Continued)

1. Remove nut (1), screw (2), and clamp (3).



2. Disconnect and remove hose assembly (4).



FOLLOW-ON MAINTENANCE: None

END OF TASK

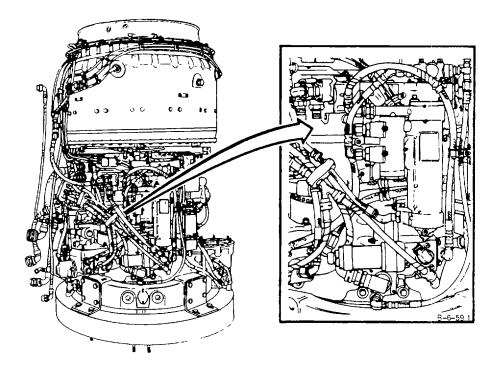
# 6-67 INSTALL HOSE ASSEMBLY (IN-LINE FUEL FILTER TO OVERSPEED SOLENOID VALVE)

## **INITIAL SETUP**

## Applicable Configurations:

All

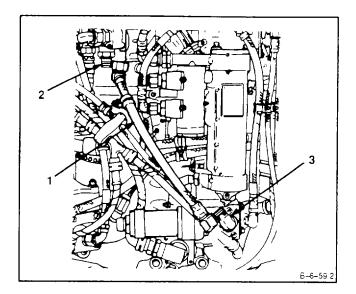
*Tools:* Powerplant Mechanic's Tool Kit, NSN 5180-00-323-4944 Technical Inspection Tool Kit, NSN 5180-00-323-5114 *Materials:* None *Personnel Required:* Aircraft Powerplant Repairer Aircraft Powerplant Inspector



6-67

## 6-67 INSTALL HOSE ASSEMBLY (IN-LINE FUEL FILTER TO OVERSPEED SOLENOID VALVE) (Continued)

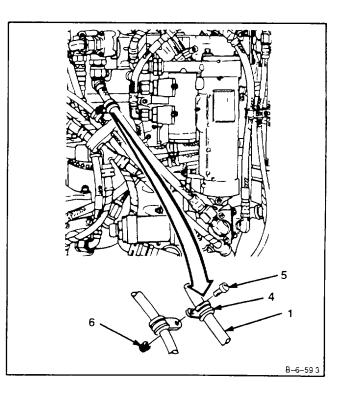
1. Install hose assembly (1) on reducers (2 and 3).



2. **Install clamp (4)** on hose assembly (1), and install screw (5) and nut (6).

## INSPECT

FOLLOW-ON MAINTENANCE: None



#### 6-68 REMOVE HOSE ASSEMBLY (OVERSPEED SOLENOID VALVE TO PRESSURIZING VALVE)

### **INITIAL SETUP**

#### Applicable Configurations: All Tools: Powerplant Mechanic's Tool Kit, NSN 5180-00-323-4944 Container, 1 Quart Materials:

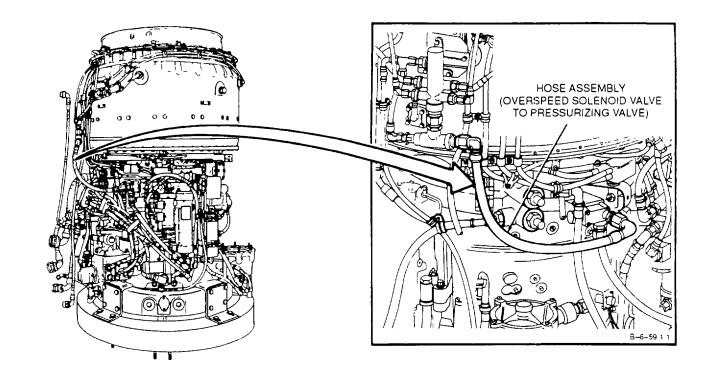
Wiping Rag (E64) Personnel Required:

Aircraft Powerplant Repairer

#### General Safety Instructions:

#### WARNING

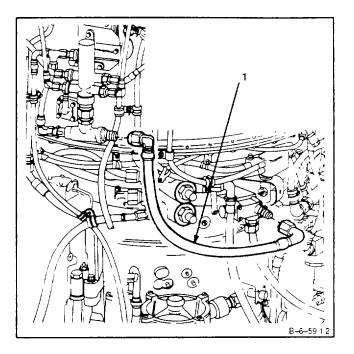
Turbine fuels are very flammable. They may cause drying and irritation of skin or eyes. Handle only in well-ventilated areas away from heat and open flame. Drain and store in approved metal safety containers. Avoid prolonged or repeated contact with skin and do not take Internally. Wash contacted area of skin thoroughly after handling. If irritation of skin results, get medical attention. Get medical attention for eyes.



6-68

## 6-68 REMOVE HOSE ASSEMBLY (OVERSPEED SOLENOID VALVE TO PRESSURIZING VALVE) (Continued)

## 1 Disconnect and remove hose assembly (1).



FOLLOW-ON MAINTENANCE: None

### 6-69 INSTALL HOSE ASSEMBLY (OVERSPEED SOLENOID VALVE TO PRESSURIZING VALVE)

### **INITIAL SETUP**

## Applicable Configurations:

#### Tools

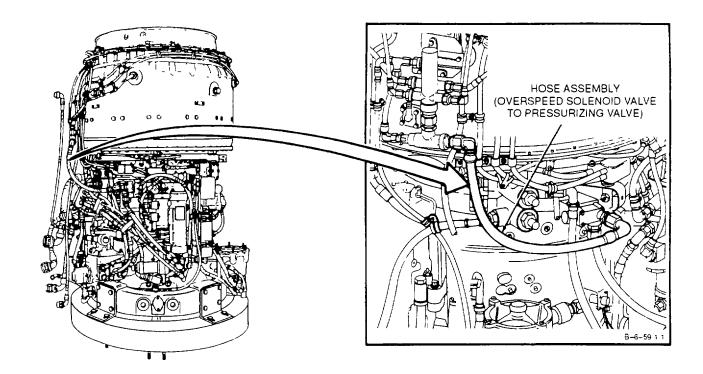
Powerplant Mechanic's Tool Kit NSN 5180-00-323-4944 Technical Inspection Tool Kit, NSN 5180-00-323-5114

## Materials:

None

## Personnel Required:

Aircraft Powerplant Repairer Aircraft Powerplant Inspector

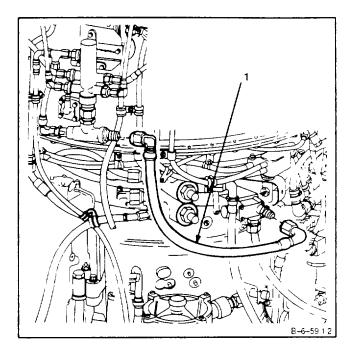


6-69

## 6-69 INSTALL HOSE ASSEMBLY (OVERSPEED SOLENOID VALVE TO PRESSURIZING VALVE)

6-69

1. Install hose assembly (1) on flow divider (2) and reducer (3).



## INSPECT

FOLLOW-ON MAINTENANCE: None

END OF TASK

# 6-70 REMOVE HOSE ASSEMBLY (PRESSURIZING VALVE TO FUEL FLOW DIVIDER RETURN TEE)

#### **INITIAL SETUP**

### Applicable Configurations: All Tools: Powerplant Mechanic's Tool Kit, NSN 5180-00-323-4944 Container, 1 Quart Materials:

Wiping Rag (E64)

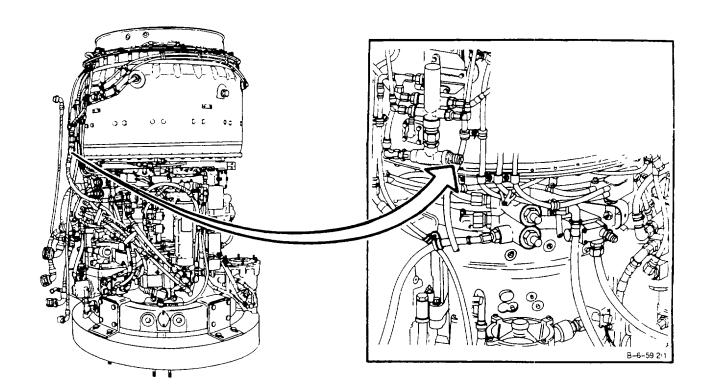
## Personnel Required:

Aircraft Powerplant Repairer

**General Safety Instructions:** 

#### WARNING

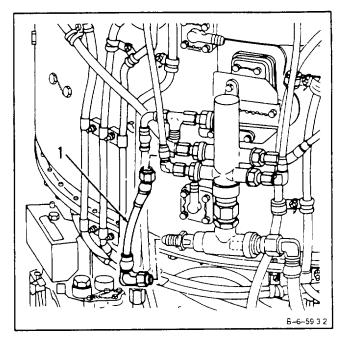
Turbine fuels are very flammable. They may cause drying and irritation of skin or eyes. Handle only in well-ventilated areas away from heat and open flame. Drain and store in approved metal safety containers. Avoid prolonged or repeated contact with skin and do not take internally. Wash contacted area of skin thoroughly after handling. If irritation of skin results, get medical attention. Get medical attention for eyes.



6-70

# 6-70 REMOVE HOSE ASSEMBLY (PRESSURIZING VALVE TO FUEL FLOW DIVIDER RETURN TEE) (Continued)

1. Disconnect and **remove hose assembly (1).** 



FOLLOW-ON MAINTENANCE: None

# 6-71 INSTALL HOSE ASSEMBLY (PRESSURIZING VALVE TO FUEL FLOW DIVIDER RETURN TEE)

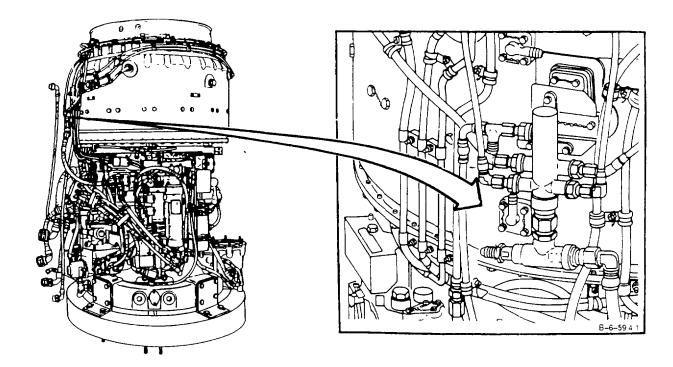
## **INITIAL SETUP**

## Applicable Configurations:

\_\_\_\_AII

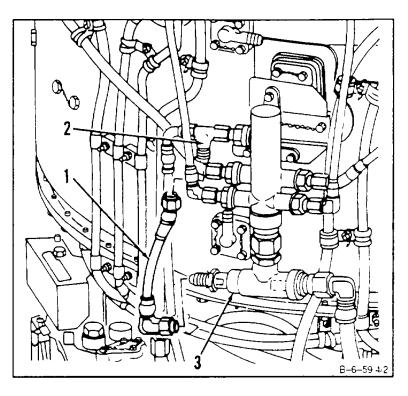
*Tools*: Powerplant Mechanic's Tool Kit, NSN 5180-00-323-4944 Technical Inspection Tool Kit, NSN 5180-00-323-5114

Materials: None Personnel Required: Aircraft Powerplant Repairer Aircraft Powerplant Inspector



# 6-71 INSTALL HOSE ASSEMBLY (PRESSURIZING VALVE TO FUEL FLOW DIVIDER RETURN TEE) (Continued)

1. Install hose assembly (1) on tee (2) and reducer (3).



INSPECT

FOLLOW-ON MAINTENANCE: None

END OF TASK

## 6-72 REMOVE HOSE ASSEMBLY (FUEL BOOST PUMP TO MAIN FUEL FILTER)

#### **INITIAL SETUP**

## Applicable Configurations:

#### Tools:

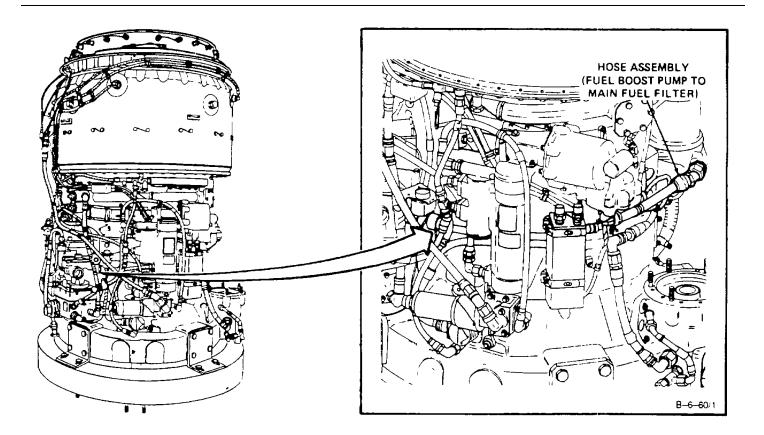
Powerplant Mechanic's Tool Kit, NSN 5180-00-323-4944 Open-End Wrench, <u>1-Inch</u> Container, <u>1 Quart</u> *Materials:* Wiping Rag (E64) *Personnel Required:* 

Aircraft Powerplant Repairer

General Safety Instructions:

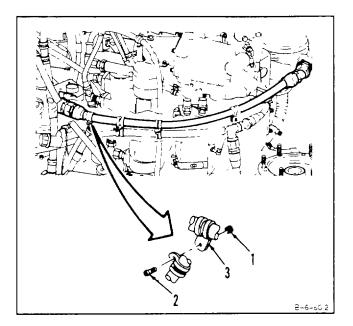
#### WARNING

Turbine fuels are very flammable. They may cause drying and irritation of skin or eyes. Handle only in well-ventilated areas away from heat and open flame. Drain and store in approved metal safety containers. Avoid prolonged or repeated contact with skin and do not take internally. Wash contacted area of skin thoroughly after handling. If irritation of skin results, get medical attention. Get medical attention for eyes.

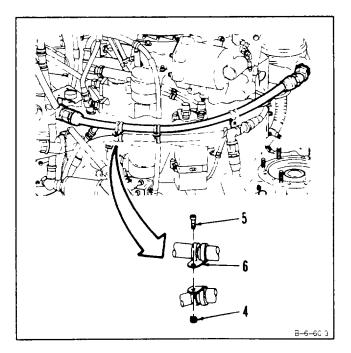


# 6-72 REMOVE HOSE ASSEMBLY (FUEL BOOST PUMP TO MAIN FUEL FILTER) (Continued)

1 **Remove** nut (1), screw (2), and clamp (3).

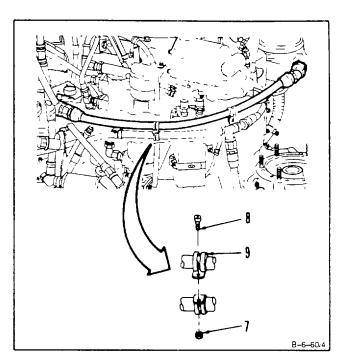


2. **Remove** nut (4), screw (5), and clamp (6).

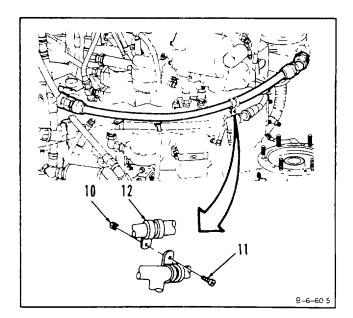


# 6-72 REMOVE HOSE ASSEMBLY (FUEL BOOST PUMP TO MAIN FUEL FILTER) (Continued)

3. Remove nut (7), screw (8), and clamp (9).

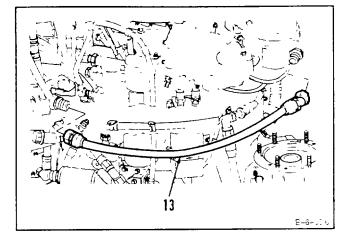


4. Remove nut (10), screw (11), and clamp (12).



## 6-72 REMOVE HOSE ASSEMBLY (FUEL BOOST PUMP TO MAIN FUEL FILTER) (Continued)

5. Disconnect and **remove hose assembly (13)** using 1-inch open-end wrench.



FOLLOW-ON MAINTENANCE: None

# 6-73 INSTALL HOSE ASSEMBLY (FUEL BOOST PUMP TO MAIN FUEL FILTER)

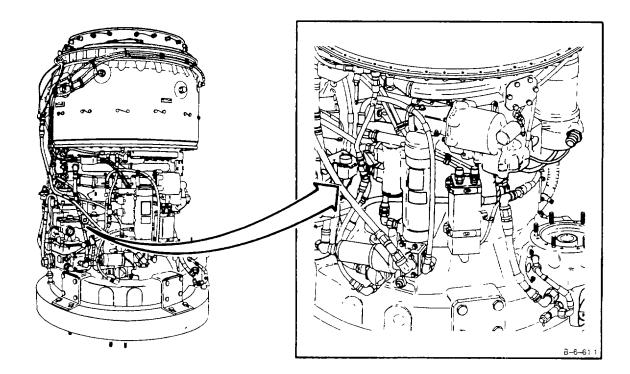
#### **INITIAL SETUP**

#### Applicable Configurations:

All **Tools:** Powerplant Mechanic's Tool Kit, NSN 5180-00-323-4944 Technical Inspection Tool Kit, NSN 5180-00-323-5114 Crowfoot Attachment, <u>1-Inch</u> Torque Wrench, <u>700-1600 Inch-Pounds</u>

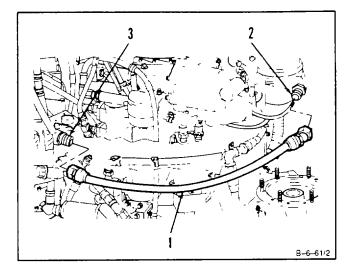
#### Materials: None

**Personnel Required**: Aircraft Powerplant Repairer Aircraft Powerplant Inspector

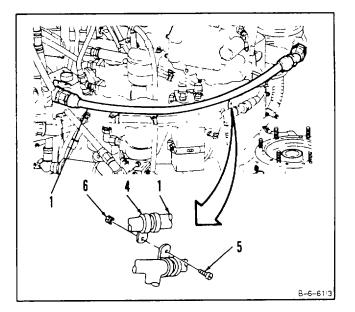


## 6-73 INSTALL HOSE ASSEMBLY (FUEL BOOST PUMP TO MAIN FUEL FILTER) (Continued)

1. **Install hose assembly (1)** on nipples (2 and 3), using <u>1-inch</u> crowfoot attachment.

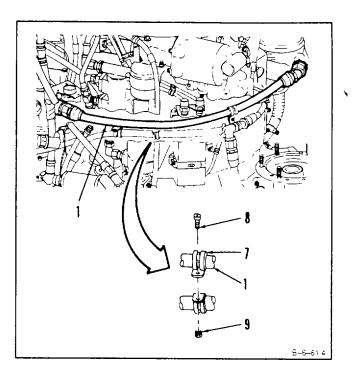


2. **Install clamp (4)** on hose assembly (1), and install screw (5) and nut (6).

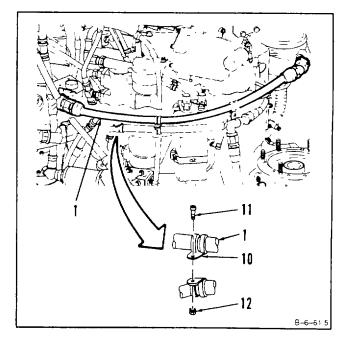


## 6-73 INSTALL HOSE ASSEMBLY (FUEL BOOST PUMP TO MAIN FUEL FILTER) (Continued)

3. **Install clamp (7)** on hose assembly (1), and install screw (8) and nut (9).



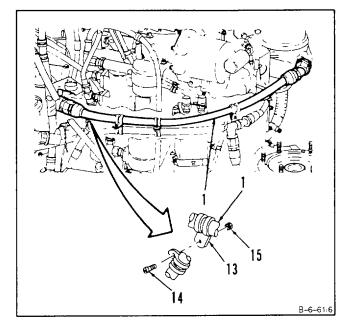
4. **Install clamp (10)** on hose assembly (1), and install screw (11) and nut (12).



## 6-73 INSTALL HOSE ASSEMBLY (FUEL BOOST PUMP TO MAIN FUEL

6-73

5. **Install clamp (13)** on hose assembly (1), and install screw (14) and nut (15).



### INSPECT

FOLLOW-ON MAINTENANCE: None

END OF TASK

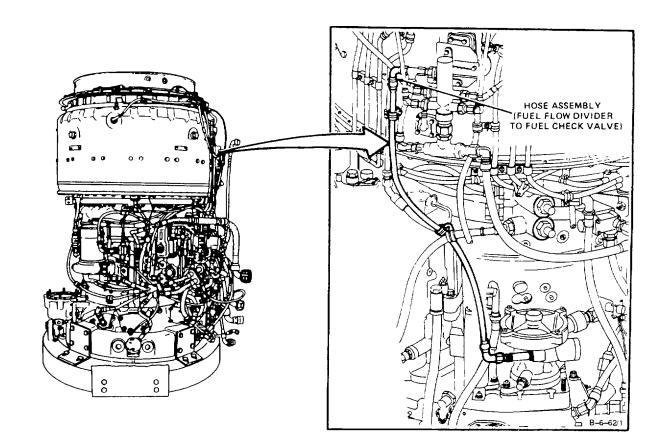
## 6-74 REMOVE HOSE ASSEMBLY (FUEL FLOW DIVIDER TO FUEL CHECK VALVE)

### **INITIAL SETUP**

Applicable Configurations: All Tools: Powerplant Mechanic's Tool Kit, NSN 5180-00-323-4944 Container, 1 Quart Materials: Wiping Rag (E64) Personnel Required: Aircraft Powerplant Repairer General Safety Instructions:

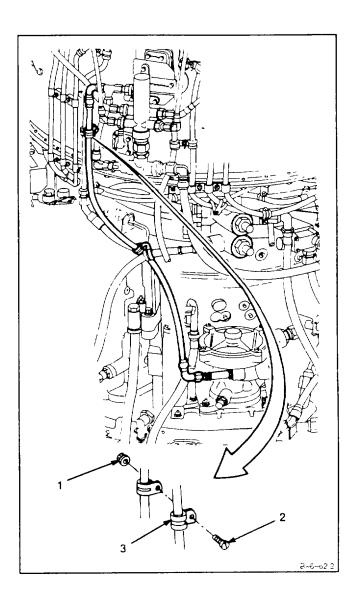
#### WARNING

Turbine fuels are very flammable. They may cause drying and irritation of skin or eyes. Handle only in well-ventilated areas away from heat and open flame. Drain and store in approved metal safety containers. Avoid prolonged or repeated contact with skin and do not take internally. Wash contacted area of skin thoroughly after handling. If irritation of skin results, get medical attention. Get medical attention for eyes.



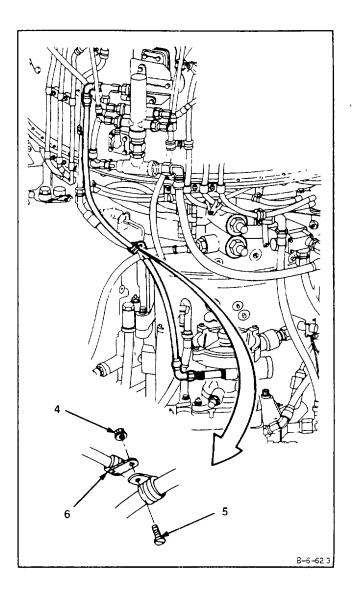
## 6-74 REMOVE HOSE ASSEMBLY (FUEL FLOW DIVIDER TO FUEL CHECK

1. **Remove** nut (1), screw (2), and clamp (3).



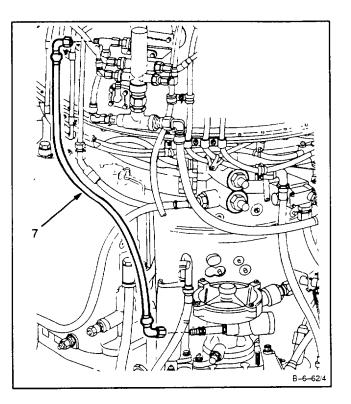
# 6-74 REMOVE HOSE ASSEMBLY (FUEL FLOW DIVIDER TO FUEL CHECK VALVE) (Continued)

2 Remove nut (4), screw (5), and clamp (6).



# 6-74 REMOVE HOSE ASSEMBLY (FUEL FLOW DIVIDER TO FUEL CHECK VALVE (Continued)

3. Disconnect and remove hose assembly (7).



## 6-75 INSTALL HOSE ASSEMBLY (FUEL FLOW DIVIDER TO FUEL CHECK VALVE)

### **INITIAL SETUP**

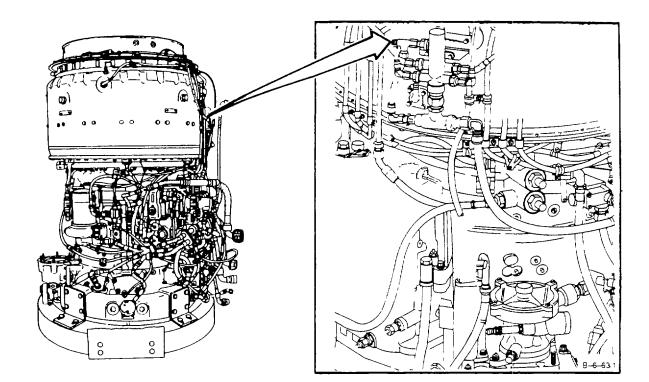
## Applicable Configurations:

### Tools:

Powerplant Mechanic's Tool Kit, NSN 5180-00-323-4944 Technical Inspection Tool Kit, NSN 5180-00-323-5114

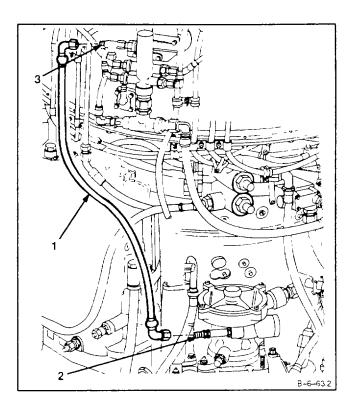
*Materials*: None

Personnel Required: Aircraft Powerplant Repairer Aircraft Powerplant Inspector



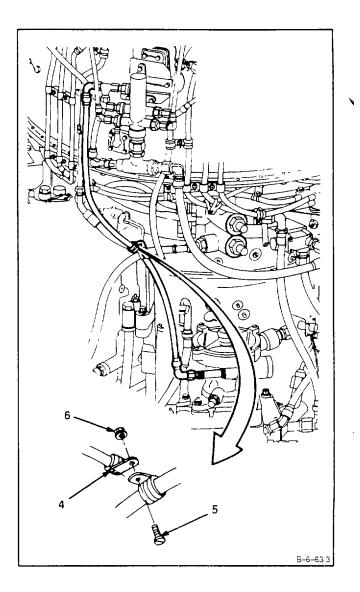
# 6-75 INSTALL HOSE ASSEMBLY (FUEL FLOW DIVIDER TO FUEL CHECK VALVE) (CONTINUED)

1. **Install hose assembly (1)** on check valve (2) and tee (3).



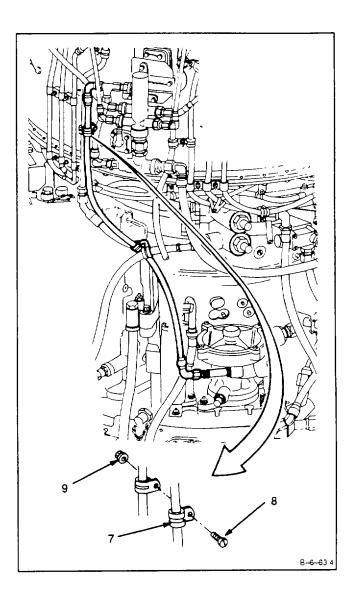
# 6-75 INSTALL HOSE ASSEMBLY (FUEL FLOW DIVIDER TO FUEL CHECK VALVE) (Continued)

2. Install clamp (4), screw (5), and nut (6).



# 6-75 INSTALL HOSE ASSEMBLY (FUEL FLOW DIVIDER TO FUEL CHECK VALVE) (Continued)

3. Install clamp (7), screw (8), and nut (9).



#### INSPECT

## 6-76 REMOVE HOSE ASSEMBLY (FUEL FLOW DIVIDER LEFT SIDE PRIMARY TO MANIFOLD ASSEMBLY)

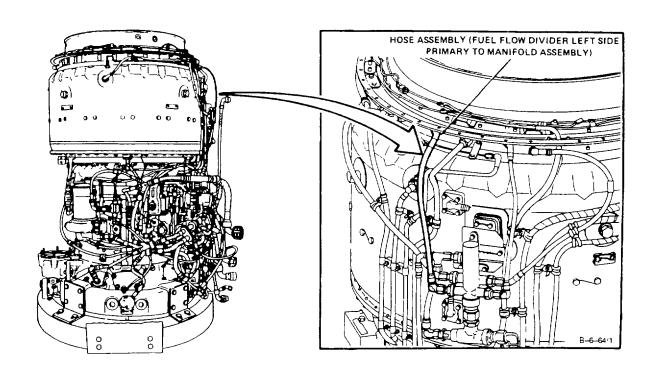
### **INITIAL SETUP**

### Applicable Configurations: All Tools: Powerplant Mechanic's Tool Kit, NSN 5180-00-323-4944 Container, 1 Quart Materials: Wiping Rag (E64) Personnel Required: Aircraft Powerplant Repairer

### **General Safety Instructions:**

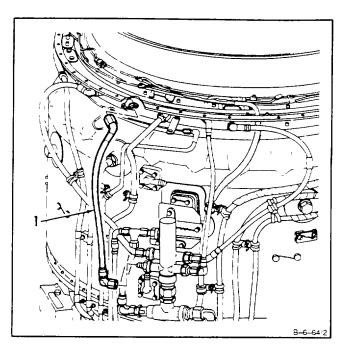
### WARNING

Turbine fuels are very flammable. They may cause drying and irritation of skin or eyes. Handle only in well-ventilated areas away from heat and open flame. Drain and store in approved metal safety containers. Avoid prolonged or repeated contact with skin, and do not tale internally. Wash contacted areas of skin thoroughly after handling. If irritation of skin results, get medical attention. Get medical attention for eyes.



# 6-76 REMOVE HOSE ASSEMBLY (FUEL FLOW DIVIDER LEFT SIDE PRIMARY TO MANIFOLD ASSEMBLY) (Continued)

1. Disconnect and remove hose assembly (1).



FOLLOW-ON MAINTENANCE: None

END OF TASK

# 6-77 INSTALL HOSE ASSEMBLY (FUEL FLOW DIVIDER LEFT SIDE PRIMARY TO MANIFOLD ASSEMBLY)

### **INITIAL SETUP**

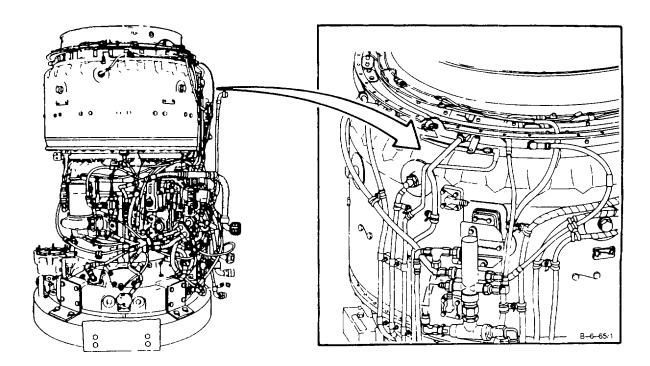
## Applicable Configurations

All

*Tools:* Powerplant Mechanic's Tool Kit, NSN 5180-00-323-4944 Technical Inspection Tool Kit, NSN 5180-00-323-5114 *Materials*: None

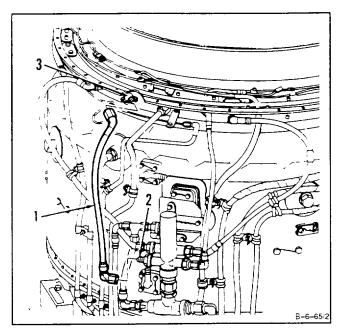
## Personnel Required

Aircraft Powerplant Repairer Aircraft Powerplant Inspector



## 6-77 INSTALL HOSE ASSEMBLY (FUEL FLOW DIVIDER LEFT SIDE PRIMARY TO MANIFOLD ASSEMBLY) (Continued)

1. **Install hose assembly (1)** on nipple (2) and elbow (3).



### INSPECT

FOLLOW-ON MAINTENANCE: None

**END OF TASK** 

## 6-78 REMOVE HOSE ASSEMBLY (FUEL FLOW DIVIDER RIGHT SIDE PRIMARY TO MANIFOLD ASSENBLY)

### **INITIAL SETUP**

### Applicable Configurations:

\_\_\_\_All

*Tools:* Powerplant Mechanic's Tool Kit, NSN 5180-00-323-4944 Container, 1 Quart *Materials:* Wiping Rag (E64)

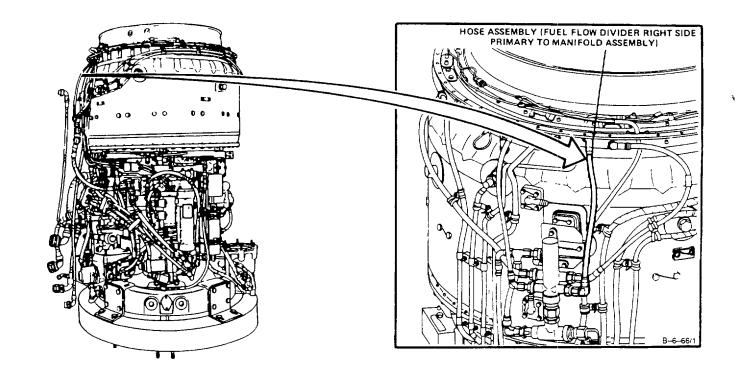
## Personnel Required:

Aircraft Powerplant Repairer

### General Safety Instructions:

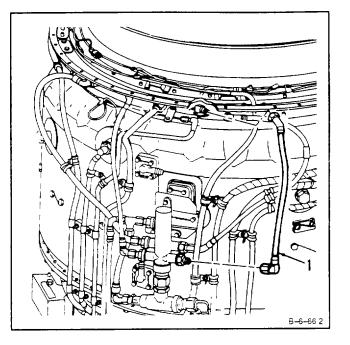
#### WARNING

Turbine fuels are very flammable. They may cause drying and irritation of skin or eyes. Handle only in well-ventilated areas away from heat and open flame. Drain and store in approved metal safety containers. Avoid prolonged or repeated contact with skin and do not take internally. Wash contacted area of skin thoroughly after handling. If irritation of skin results, get medical attention for eyes.



# 6-78 REMOVE HOSE ASSEMBLY (FUEL FLOW DIVIDER RIGHT SIDE PRIMARY TO MANIFOLD ASSEMBLY) (Continued)

1. Disconnect and remove hose assembly (1).



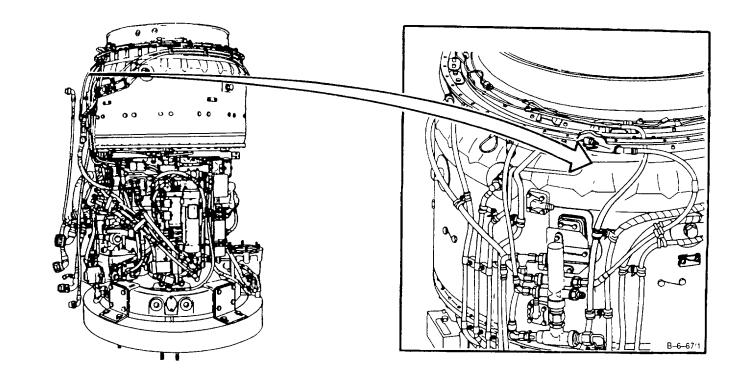
FOLLOW-ON MAINTENANCE: None

END OF TASK

# 6-79 INSTALL HOSE ASSEMBLY (FUEL FLOW DIVIDER RIGHT SIDE PRIMARY TO MANIFOLD ASSEMBLY)

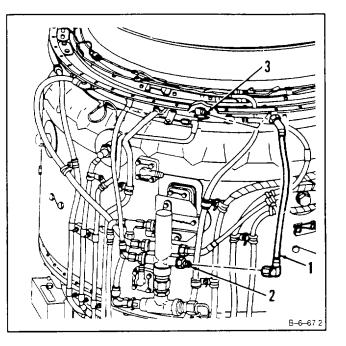
## INITIAL SETUP

Applicable Configurations: All Tools: Powerplant Mechanic's Tool Kit, NSN 5180-00-323-4944 Technical Inspection Tool Kit, NSN 5180-00-323-5114 *Materials*: None *Personnel Required*: Aircraft Powerplant Repairer Aircraft Powerplant Inspector



### 6-79 INSTALL HOSE ASSEMBLY (FUEL FLOW DIVIDER RIGHT SIDE PRIMARY TO MANIFOLD ASSEMBLY) (Continued)

1. Install hose assembly (1) on nipple (2) and elbow (3).



### INSPECT

## 6-80 REMOVE HOSE ASSEMBLY (FUEL FLOW DIVIDER LEFT SIDE SECONDARY TO MANIFOLD ASSEMBLY)

### **INITIAL SETUP**

### Applicable Configurations:

#### All Tools:

Powerplant Mechanic's Tool Kit, NSN 5180-00-323-4944 Container, 1 Quart *Materials:* Wiping Rag (E64)

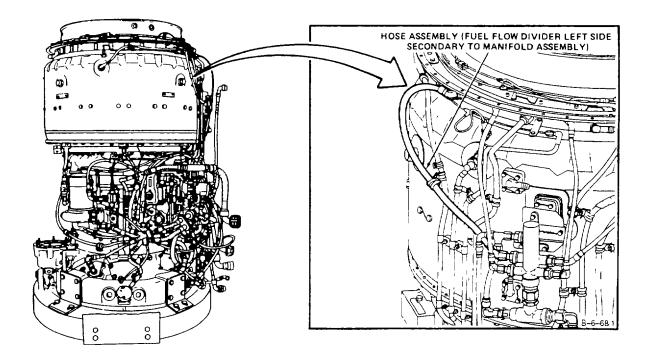
## Personnel Required:

Aircraft Powerplant Repairer

### General Safety Instructions:

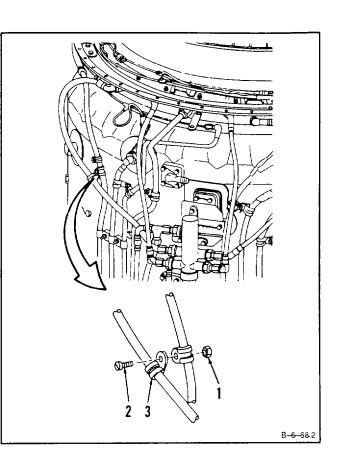
### WARNING

Turbine fuels are very flammable. They may cause drying and Irritation of skin or eyes. Handle only in well-ventilated areas away from heat and open flame. Drain and store in approved metal safety containers. Avoid prolonged or repeated contact with skin and do not take internally. Wash contacted area of skin thoroughly after handling. If irritation of skin results, get medical for eyes

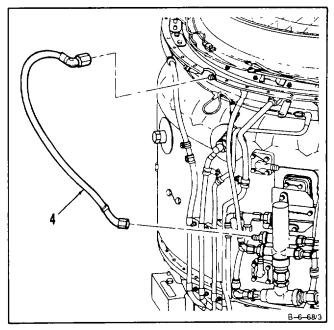


# 6-80 REMOVE HOSE ASSEMBLY (FUEL FLOW DIVIDER LEFT SIDE SECONDARY TO MANIFOLD ASSEMBLY) (Continued)

1. Remove nut (1), screw (2) and clamp (3).



2. Disconnect and remove hose assembly (4).



## 6-81 INSTALL HOSE ASSEMBLY (FUEL FLOW DIVIDER LEFT SIDE SECONDARY TO MANIFOLD ASSEMBLY)

### **INITIAL SETUP**

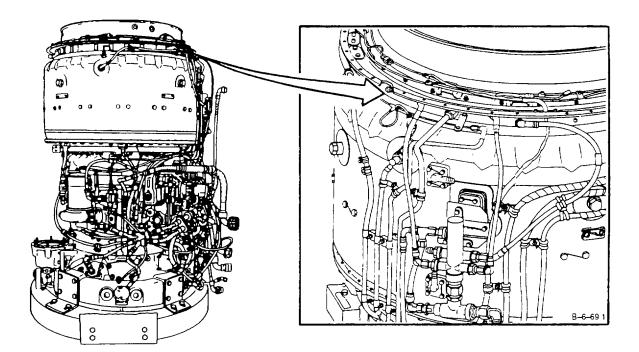
## Applicable Configurations

### Tools:

Powerplant Mechanic's Tool Kit, NSN 5180-00-323-4944 Technical Inspection Tool Kit, NSN 5180-00-323-5114

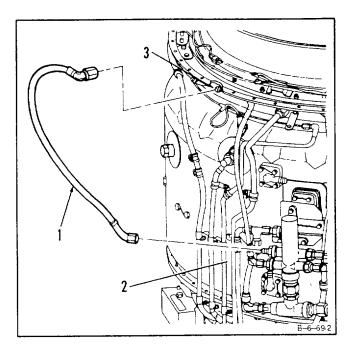
*Materials:* None

Personnel Required: Aircraft Powerplant Repairer Aircraft Powerplant Inspector

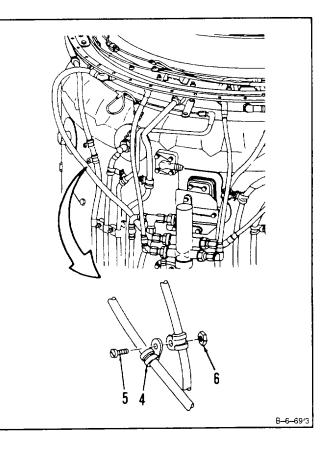


# 6-81 INSTALL HOSE ASSEMBLY (FUEL FLOW DIVIDER LEFT SIDE SECONDARY TO MANIFOLD ASSEMBLY) (Continued)

1. **Install hose assembly (1)** on reducer (2) and elbow (3).



2. Install clamp (4), screw (5), and nut (6).



### INSPECT

### FOLLOW-ON MAINTENANCE: None

END OF TASK

## 6-82 REMOVE HOSE ASSEMBLY (FUEL FLOW DIVIDER RIGHT SIDE SECONDARY TO MANIFOLD ASSEMBLY)

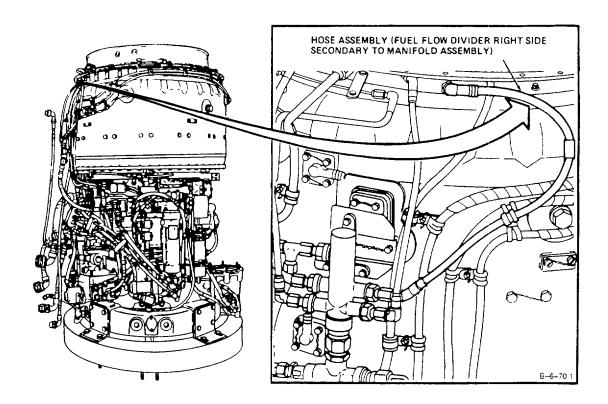
### **INITIAL SETUP**

### Applicable Configurations: All Tools: Powerplant Mechanic's Tool Kit, NSN 5180-00-323-4944 Container, 1 Quart Materials: Wiping Rag (E64) Personnel Required: Aircraft Powerplant Repairer

### General Safety Instructions:

#### WARNING

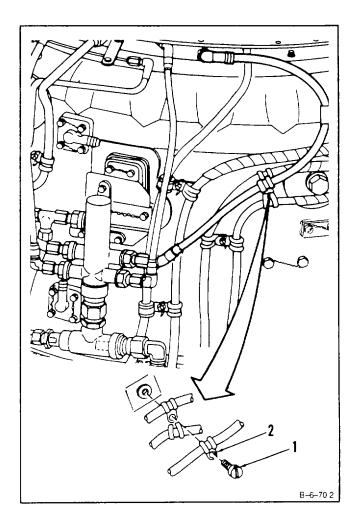
Turbine fuels are very flammable. They may cause drying and irritation of skin or eyes. Handle only in well-ventilated areas away from heat and open flame. Drain and store in approved metal safety containers. Avoid prolonged or repeated contact with skin and do not take internally. Wash contacted area of irritation of skin results, get medical attention. Get medical attention for eyes.



### GO TO NEXT PAGE

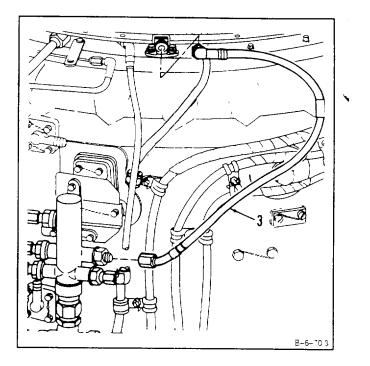
# 6-82 REMOVE HOSE ASSEMBLY (FUEL FLOW DIVIDER RIGHT SIDE SECONDARY TO MANIFOLD ASSEMBLY) (Continued)

1. **Remove** lockwire, screw (1), and clamp (2).



# 6-82 REMOVE HOSE ASSEMBLY (FUEL FLOW DIVIDER RIGHT SIDE SECONDARY TO MANIFOLD ASSEMBLY) (Continued)

2. Disconnect and remove hose assembly (3).



# 6-83 INSTALL HOSE ASSEMBLY (FUEL FLOW DIVIDER RIGHT SIDE SECONDARY TO MANIFOLD ASSEMBLY)

### **INITIAL SETUP**

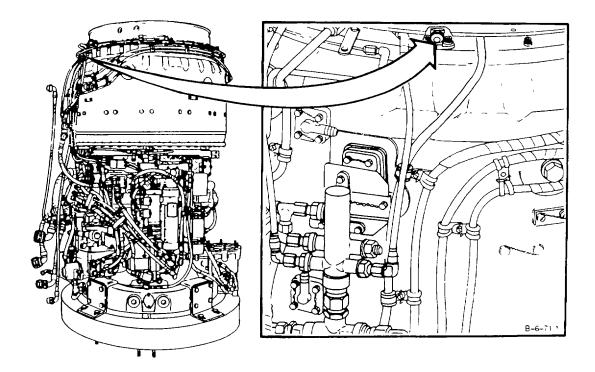
## Applicable Configurations

\_ All

*Tools:* Powerplant Mechanic's Tool Kit, NSN 5180-00-323-4944 Technical Inspection Tool Kit, NSN 5180-00-323-5114

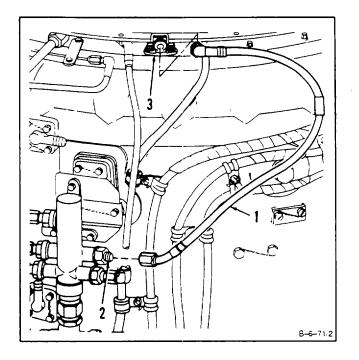
Materials:

Lockwire (E33) **Personnel Required:** Aircraft Powerplant Repairer Aircraft Powerplant Inspector



# 6-83 INSTALL HOSE ASSEMBLY (FUEL FLOW DIVIDER RIGHT SIDE SECONDARY TO MANIFOLD ASSEMBLY (Continued)

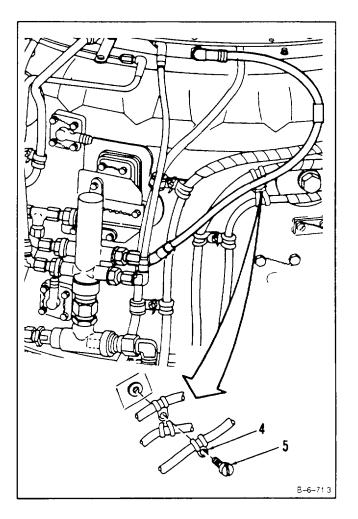
1. Install hose assembly (1) on reducer (2) and elbow (3).



# 6-83 INSTALL HOSE ASSEMBLY (FUEL FLOW DIVIDER RIGHT SIDE SECONDARY TO MANIFOLD ASSEMBLY) (Continued)

6-83

2. Install clamp (4) and screw (5). Lockwire screw (5). Use lockwire (E33).



### INSPECT

FOLLOW-ON MAINTENANCE: None

END OF TASK

### 6-84 REMOVE HOSE ASSEMBLY (MAIN FUEL FILTER TO HMA

### **INITIAL SETUP**

### Applicable Configurations:

#### All Tools:

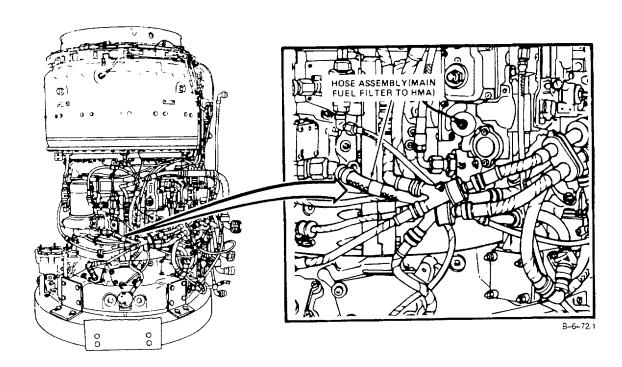
Powerplant Mechanic's Tool Kit, NSN 5180-00-323-4944 Open-End Wrench, 1-Inch Container, 1 Quart *Materials:* Wiping Rag (E64) *Personnel Required:* 

Aircraft Powerplant Repairer

### General Safety Instructions:

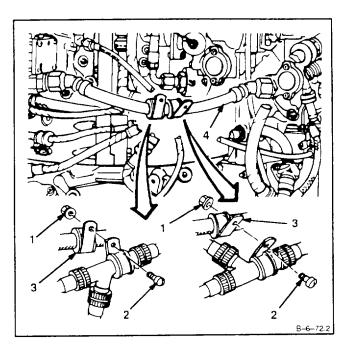
#### WARNING

Turbine fuels are very flammable. They may cause drying and irritation of skin or eyes. Handle only in well-ventilated areas away from heat and open flame. Drain and store in approved metal safety containers. Avoid prolonged or repeated contact with skin and do not take internally. Wash contacted area of skin thoroughly after handling. If irritation of skin results, get medical attention. Get medical attention for eyes.



### 6-84 REMOVE HOSE ASSEMBLY (MAIN FUEL FILTER TO HMA) (Continued)

1. **Remove** nuts (1), screws (2), and **clamps (3)** from hose assembly (4).

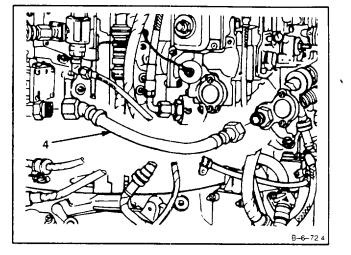


2. **Remove** nut (5), screw (6), and **clamp (7)** from hose assembly (4).

### 6-84 REMOVE HOSE ASSEMBLY (MAIN FUEL FILTER TO HMA) (Continued)

6-84

3. Disconnect and remove hose assembly (4) using 1-inch open-end wrench.



### TM 1-2840-252-23-3

### 6-85 INSTALL HOSE ASSEMBLY (MAIN FUEL FILTER TO HMA)

#### **INITIAL SETUP**

## Applicable Configurations:

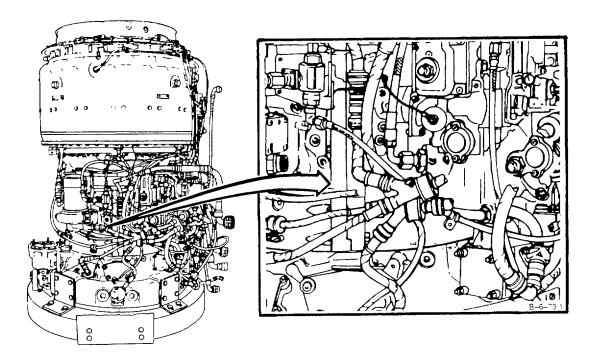
Tools:

Powerplant Mechanic's Tool Kit NSN 5180-00-323-4944 Technical Inspection Tool Kit NSN 5180-00-323-5114

#### Torque Wrench <u>700-1600 Inch-Pounds</u> Crowfoot Attachment, <u>1-inch</u> *Materials* None

### Personnel Required:

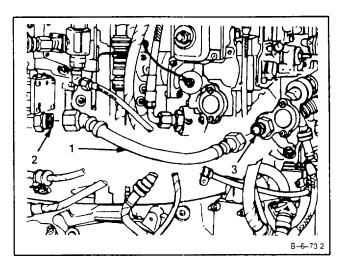
Aircraft Powerplant Repairer Aircraft Powerplant Inspector



GO TO NEXT PAGE

### 6-85 INSTALL HOSE ASSEMBLY (MAIN FUEL FILTER TO HMA) (Continued)

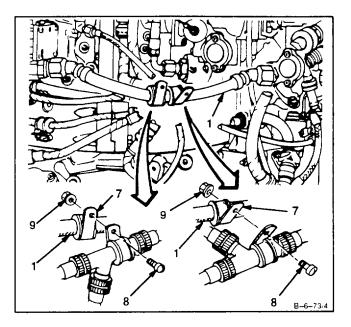
1. **Install hose assembly (1)** on unions (2 and 3) using 1-inch crowfoot attachment.



2. **Install clamp (4)** on hose assembly (1), and install screw (5) and nut (6).

### 6-85 INSTALL HOSE ASSEMBLY (MAIN FUEL FILTER TO HMA) (Continued)

3. Install clamps (7) onto hose assembly (1), and install screws (8) and nuts (9).



## INSPECT

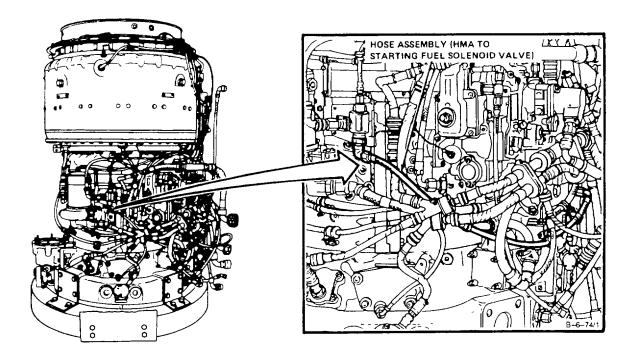
## 6-86 REMOVE HOSE ASSEMBLY (HMA TO STARTING FUEL SOLENOID VALVE)

### **INITIAL SETUP**

Applicable Configurations: All Tools: Powerplant Mechanic's Tool Kit, NSN 5180-00-323-4944 Container, 1 Quart Materials: Wiping Rag (E64) Personnel Required: Aircraft Powerplant Repairer General Safety Instructions:

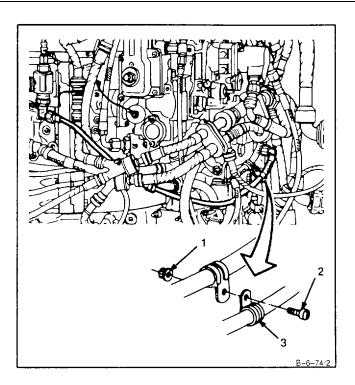
### WARNING

Turbine fuels are very flammable. They may cause drying and irritation of skin or eyes. Handle only in well-ventilated areas away from heat and open flame. Drain and store in approved metal safety containers. Avoid prolonged or repeated contact with skin and do not take internally. Wash contacted area of skin thoroughly after handling. If irritation of skin results, get medical attention. Get medical attention for eyes.

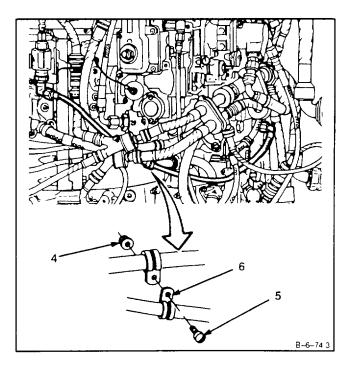


# 6-86 REMOVE HOSE ASSEMBLY (HMA TO S3ARTING FUEL SOLENOID VALVE) (Continued)

1. Remove nut (1), screw (2), and clamp (3).

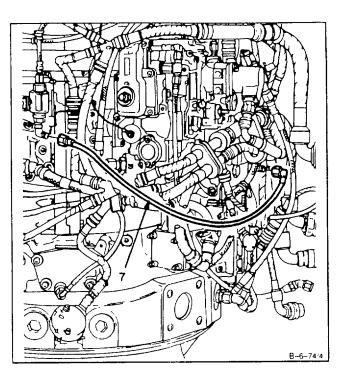


2. Remove nut (4), screw (5), and clamp (6).



# 6-86 REMOVE HOSE ASSEMBLY (HMA TO STARTING FUEL SOLENOID VALVE) (Continued)

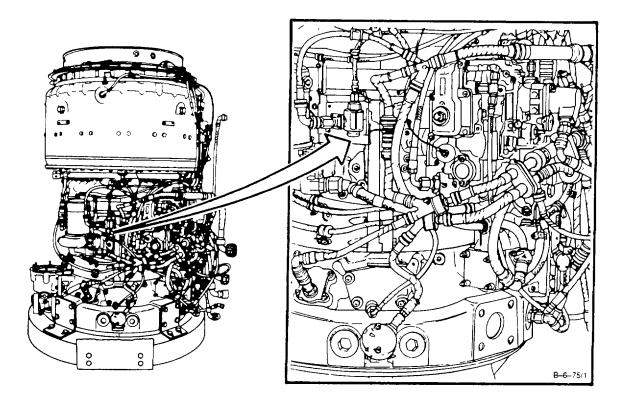
3. Disconnect and remove hose assembly (7).



## 6-87 INSTALL HOSE ASSEMBLY (HMA TO STARTING FUEL SOLENOID VALVE)

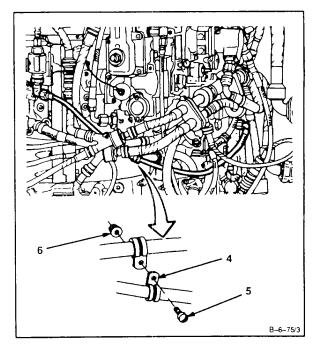
## INITIAL SETUP

Applicable Configurations: All Tools: Powerplant Mechanic's Tool Kit, NSN 5180-00-323-4944 Technical Inspection Tool Kit, NSN 5180-00-323-5114 *Materials:* None *Personnel Required:* Aircraft Powerplant Repairer Aircraft Powerplant Inspector



# 6-87 INSTALL HOSE ASSEMBLY (HMA TO STARTING FUEL SOLENOID VALVE) (Continued)

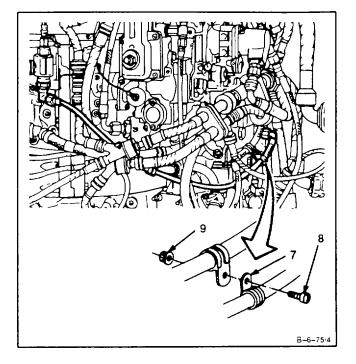
- 1. Install hose assembly (1) on elbow (2) and nipple (3).



2. Install clamp (4), screw (5), and nut (6).

# 6-87 INSTALL HOSE ASSEMBLY (HMA TO STARTING FUEL SOLENOID VALVE) (Continued)

3. Install clamp (7), screw (8), and nut (9).



### INSPECT

#### 6-88 **REMOVE HOSE ASSEMBLY (STARTING FUEL SOLENOID VALVE TO** TUBE ASSEMBLY)

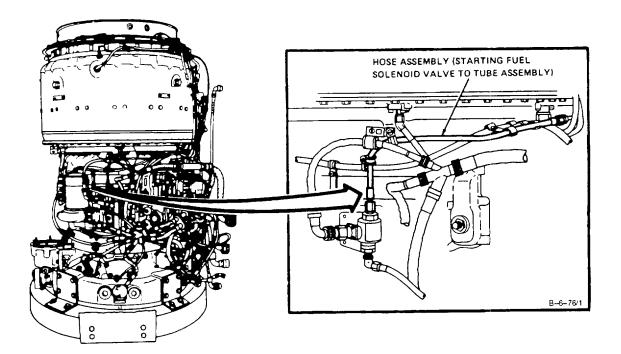
#### **INITIAL SETUP**

### Applicable Configurations: All Tools: Powerplant Mechanic's Tool Kit, NSN 5180-00-323-4944 Container, 1 Quart Materials: Wiping Rag (E64) Personnel Required:

#### General Safety Instructions:

#### WARNING

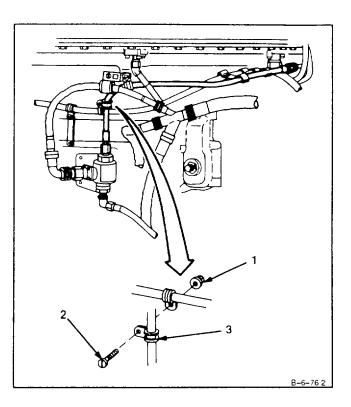
Turbine fuels are very flammable. They may cause drying and irritation of skin or eyes. Handle only in well-ventilated areas away from heat and open flame. Drain and store in approved metal safety containers. Avoid prolonged or repeated contact with skin and do not take internally. Wash contacted area of skin thoroughly after handling. If irritation of skin results. Get medical attention for eyes



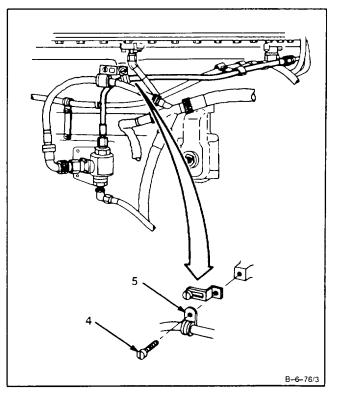
Aircraft Powerplant Repairer

# 6-88 REMOVE HOSE ASSEMBLY (STARTING FUEL SOLENOID VALVE TO TUBE ASSEMBLY) (Continued)

1. Remove nut (1), screw (2), and clamp (3).

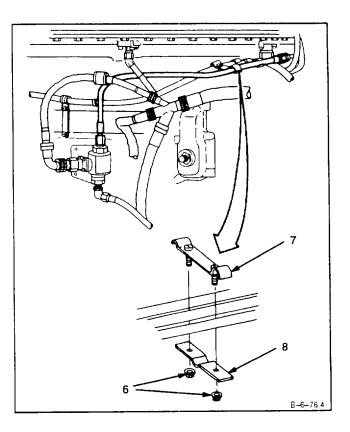


2. Remove lockwire, screw (4) and clamp (5).

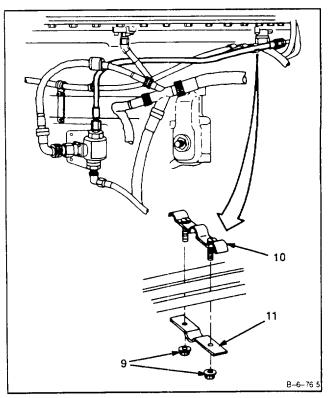


# 6-88 REMOVE HOSE ASSEMBLY (STARTING FUEL SOLENOID VALVE TO TUBE ASSEMBLY) (Continued)

3. Remove two nuts (6) and clamps (7 and 8).



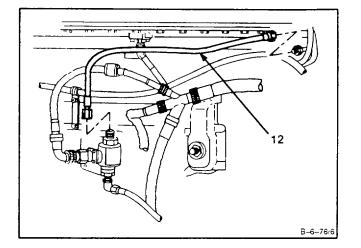
4. Remove two nuts (9) and clamps (10 and 11).



# 6-88 REMOVE HOSE ASSEMBLY (STARTING FUEL SOLENOID VALVE TO TUBE ASSEMBLY) (Continued)

6-88

5. Disconnect and remove hose assembly (12).

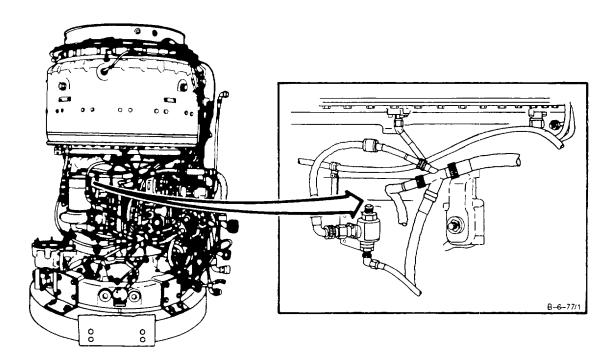


FOLLOW-ON MAINTENANCE: None

## 6-89 INSTALL HOSE ASSEMBLY (STARTING FUEL SOLENOID VALVE TO TUBE ASSEMBLY)

### INITIAL SETUP

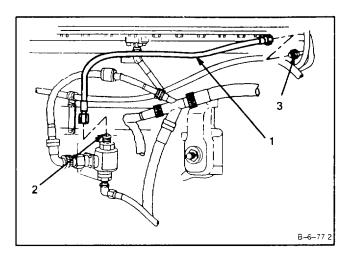
Applicable Configurations: All Tools: Powerplant Mechanic's Tool Kit, NSN 5180-00-323-4944 Technical Inspection Tool Kit, NSN 5180-00-323-5114 *Materials:* Lockwire (E33) **Personnel Required:** Aircraft Powerplant Repairer Aircraft Powerplant Inspector



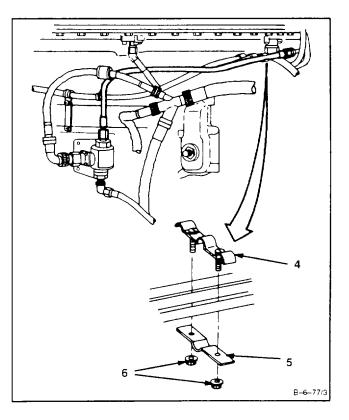
6-89

## 6-89 INSTALL HOSE ASSEMBLY (STARTING FUEL SOLENOID VALVE TO TUBE ASSEMBLY) (Continued)

**1. Install hose assembly (1)** on starting fuel solenoid valve (2) and tube assembly (3).

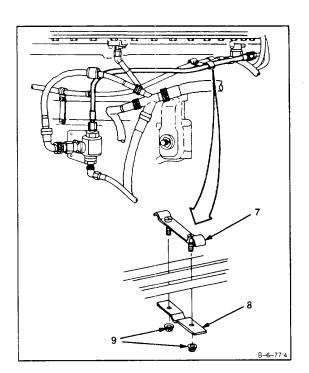


2. Install clamps (4 and 5) and two nuts (6).

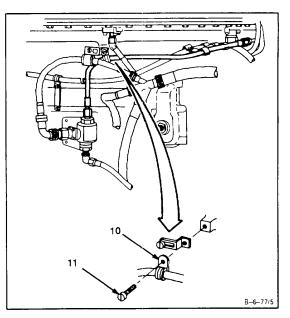


## 6-89 INSTALL HOSE ASSEMBLY (STARTING FUEL SOLENOID VALVE TO TUBE ASSEMBLY) (Continued)

3. Install clamps (7 and 8) and two nuts (9).



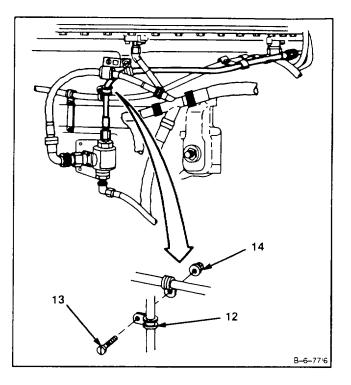
**4. Install clamp (10)** and screw (11). Lockwire screw (11). Use lockwire (E33).



# 6-89 INSTALL HOSE ASSEMBLY (STARTING FUEL SOLENOID VALVE TO TUBE ASSEMBLY) (Continued)

6-89

5. Install clamp (12), screw (13), and nut (14).



#### INSPECT

FOLLOW-ON MAINTENANCE: None

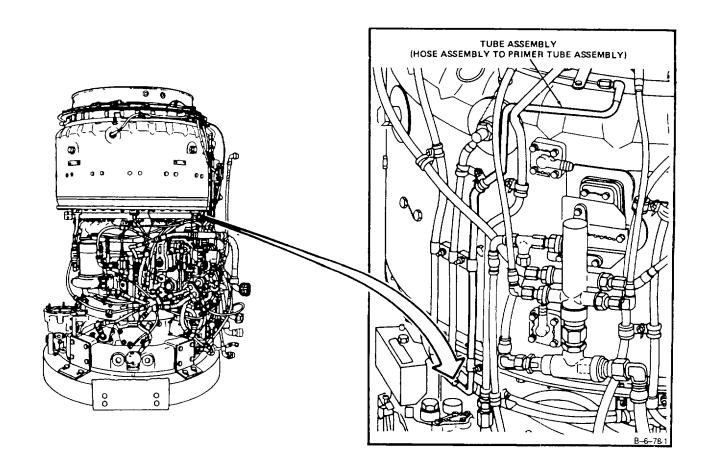
## 6-90 REMOVE TUBE ASSEMBLY (HOSE ASSEMBLY TO PRIMER TUBE ASSEMBLY)

#### **INITIAL SETUP**

Applicable Configurations: All Tools: Powerplant Mechanic's Tool Kit, NSN 5180-00-323-4944 Container, 1 Quart Materials: Wiping Rag (E64) Personnel Required: Aircraft Powerplant Repairer General Safety Instructions:

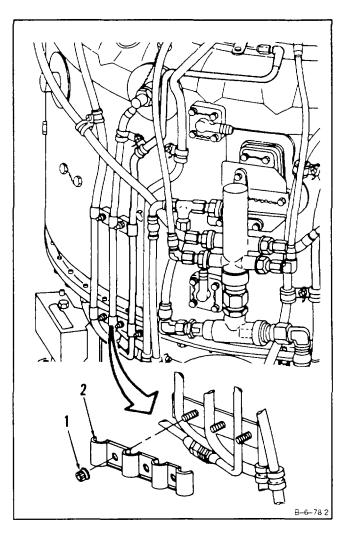
#### WARNING

Turbine fuels are very flammable. They may cause drying and irritation of skin or eyes. Handle only in well-ventilated areas away from heat and open flame. Drain and store in approved metal safety containers. Avoid prolonged or repeated contact with skin and do not take internally. Wash contacted area of skin thoroughly after handling. If irritation of skin results, get medical attention. Get medical attention for eyes.



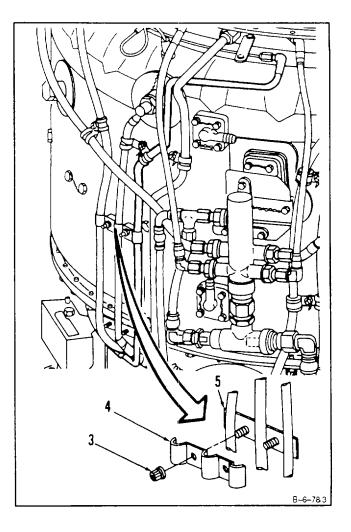
## 6-90 REMOVE TUBE ASSEMBLY (HOSE ASSEMBLY TO PRIMER TUBE ASSEMBLY) (Continued)

1. Remove three nuts (1) and clamp (2).



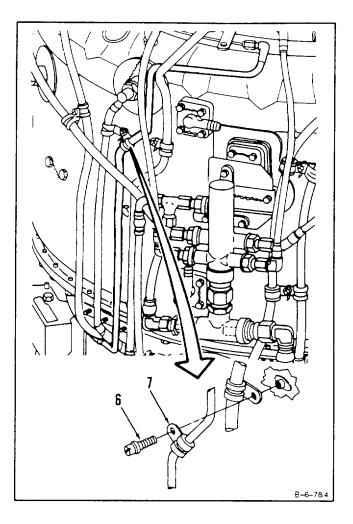
# 6-90 REMOVE TUBE ASSEMBLY (HOSE ASSEMBLY TO PRIMER TUBE ASSEMBLY) (Continued)

2. Remove two nuts (3) and clamps (4 and 5).



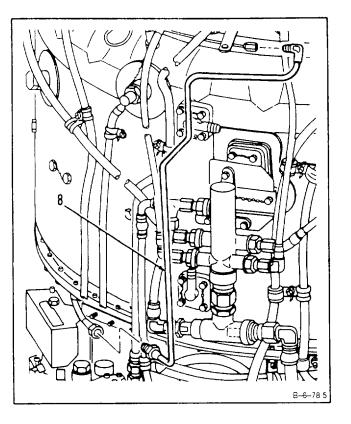
## 6-90 REMOVE TUBE ASSEMBLY (HOSE ASSEMBLY TO PRIMER TUBE ASSEMBLY) (Continued)

3. Remove lockwire, screw (6) and clamp (7).



## 6-90 REMOVE TUBE ASSEMBLY (HOSE ASSEMBLY TO PRIMER TUBE ASSEMBLY) (Continued)

4. Disconnect and remove tube assembly (8).



FOLLOW-ON MAINTENANCE: None

## 6-91 INSTALL TUBE ASSEMBLY (HOSE ASSEMBLY TO PRIMER TUBE ASSEMBLY)

#### **INITIAL SETUP**

## Applicable Configurations:

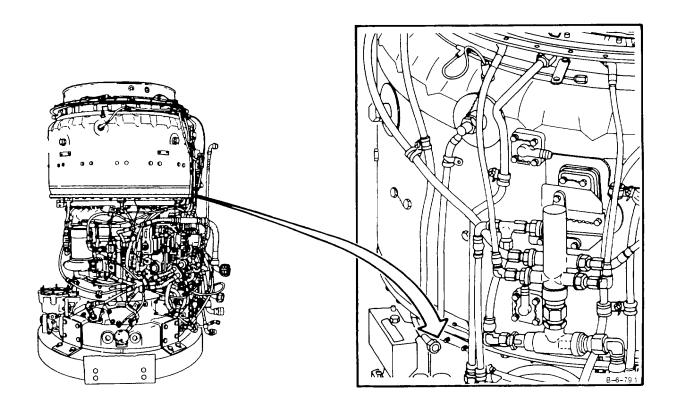
All Tools:

> Powerplant Mechanic's Tool Kit, NSN 5180-00-323-4944

Technical Inspection Tool Kit, NSN 5180-00-323-5114

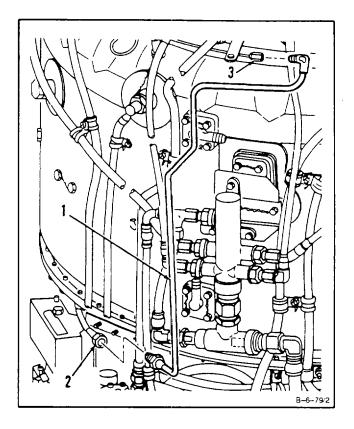
#### Materials: Lockwire (E33) Personnel Required:

Aircraft Powerplant Repairer Aircraft Powerplant Inspector



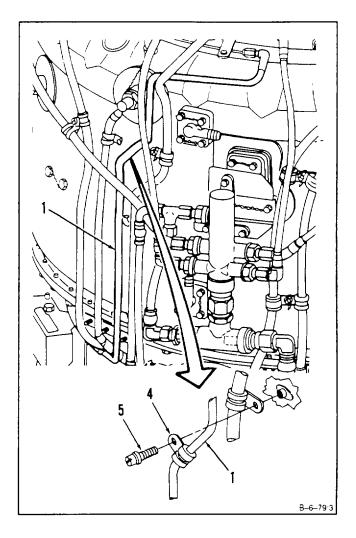
#### 6-91 INSTALL TUBE ASSEMBLY (HOSE ASSEMBLY TO PRIMER TUBE ASSEMBLY) (Continued)

1. Install tube assembly (1) on hose assembly (2) and primer tube assembly (3).



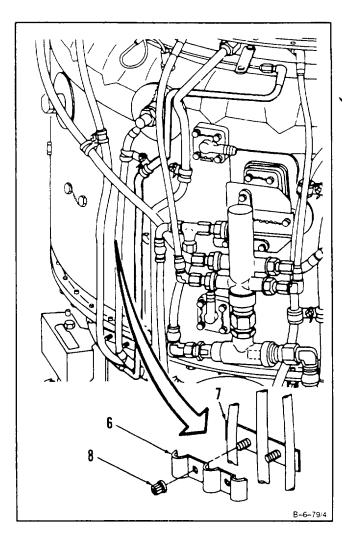
#### 6-91 INSTALL TUBE ASSEMBLY (HOSE ASSEMBLY TO PRIMER TUBE ASSEMBLY) (Continued)

2. **Install clamp (4)** on tube assembly (1) and install screw (5). Lockwire screw (5). Use lockwire (E33).



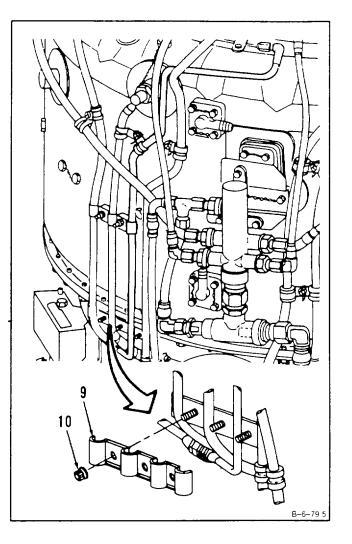
## 6-91 INSTALL TUBE ASSEMBLY (HOSE ASSEMBLY TO PRIMER TUBE ASSEMBLY) (Continued)

3. Install two clamps (6 and 7) and two nuts (8).



## 6-91 INSTALL TUBE ASSEMBLY (HOSE ASSEMBLY TO PRIMER TUBE ASSEMBLY) (Continued)

4. Install clamp (9) and three nuts (10).



## INSPECT

FOLLOW-ON MAINTENANCE:

None

## END OF TASK

## **CHAPTER 7**

## **ELECTRICAL AND IGNITION SYSTEMS -**MAINTENANCE INSTRUCTIONS

CHAPTER OVERVIEW				
This chapter co into the following		enance procedures for the electrical and ignition s d tasks:	ystems. It is divided	
SECTION	TASK <u>NO.</u>	TITLE	PAGE	
I	IGNITION COIL AND CABLE ASSEMBLY			
	7-1 7-2 7-3 7-4 7-5	Remove Ignition Coil and Cable Assembly Clean Ignition Coil and Cable Assembly Inspect Ignition Coil and Cable Assembly Repair Ignition Coil and Cable Assembly Install Ignition Coil and Cable Assembly	7-3 7-26 7-28 7-31 7-36	
Ш	SPARK IGNITERS			
	7-6 7-7 7-8 7-9 7-10	Remove Spark Igniters Clean Spark Igniters Inspect Spark Igniters Repair Spark Igniters Install Spark Igniters	7-59 7-62 7-63 7-64 7-65	
III	IGNITION EXCITER			
	7-11 7-12 7-13 7-14 7-15	Remove Ignition Exciter Clean Ignition Exciter Inspect Ignition Exciter Repair Ignition Exciter Install Ignition Exciter	7-71 7-75 7-76 7-77 7-78	
IV	PRIMARY ELECTRICAL HARNESS ASSEMBLY			
	7-16 7-17 7-18 7-19 7-20 7-21	Remove Primary Electrical Harness Assembly Clean Primary Electrical Harness Assembly Inspect Primary Electrical Harness Assembly Repair Primary Electrical Harness Assembly Test Primary Electrical Harness Assembly Install Primary Electrical Harness Assembly <b>7-1</b>	7-81 7-85 7-87 7-89 7-90 7-105	

TASK <u>NO.</u>	TITLE	PAGE
REVERSIONARY ELECTRICAL HARNESS ASSEMBLY		
7-22 7-23 7-24 7-25 7-26 7-27	Clean Reversionary Electrical Harness Ass Inspect Reversionary Electrical Harness As Repair Reversionary Electrical Harness Ass Test Reversionary Electrical Harness Asse	embly 7-115 sembly 7-116 sembly 7-118 mbly 7-119
7-28 7-29 7-30 7-31	Remove Accessory Electrical Harness Asse Clean Accessory Electrical Harness Assem Inspect Accessory Electrical Harness Assen Repair Accessory Electrical Harness Assen	bly 7-143 mbly 7-144 nbly 7-146
	NO. REVERSION 7-22 7-23 7-24 7-25 7-26 7-27 ACCESSOF 7-28 7-29 7-30	NO.TITLEREVERSIONARY ELECTRICAL HARNESS ASSEMBLY7-22Remove Reversionary Electrical Harness Assem7-23Clean Reversionary Electrical Harness Assem7-24Inspect Reversionary Electrical Harness Assem7-25Repair Reversionary Electrical Harness Assem7-26Test Reversionary Electrical Harness Assem7-27Install Reversionary Electrical Harness Assem7-28Remove Accessory Electrical Harness Assem7-29Clean Accessory Electrical Harness Assem7-30Inspect Accessory Electrical Harness Assem7-31Repair Accessory Electrical Harness Assem

Install Accessory Electrical Harness Assembly 7-147 7-33

#### **SECTION I**

#### **IGNITION COIL AND CABLE ASSEMBLY**

#### 7-1 REMOVE IGNITION COIL AND CABLE ASSEMBLY

#### **INITIAL SETUP**

#### Applicable Configurations:

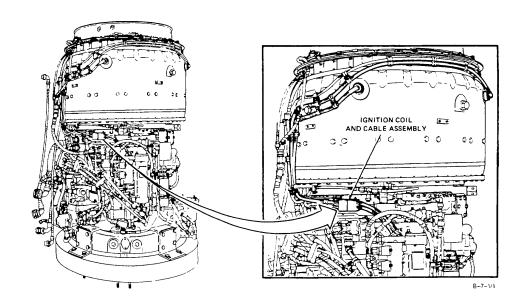
All **Tools:** Powerplant Mechanic's Tool Kit, NSN 5180-00-323-4944 **Materials:** None

#### Personnel Required: Aircraft Powerplant Repairer

**General Safety Instructions:** 

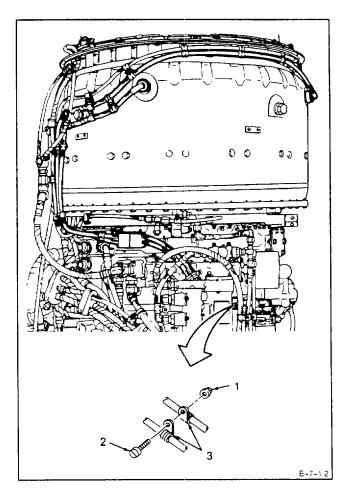
WARNING

The ignition exciter stores very high and possibly fatal voltage. Use extreme care when working around ignition exciter. Serious Injury could result if exciter Is accidentally grounded. Do not probe Inside of output receptacles with fingers or metal object. Discharge exciter only with Insulated screwdriver. In case of shock or Injury, get medical attention.



## 7-1 REMOVE IGNITION COIL AND CABLE ASSEMBLY (Continued)

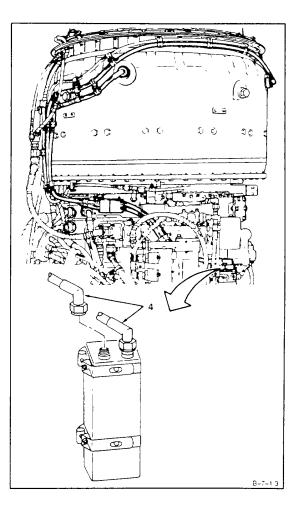
1. Remove nut (1), screw (2), and two clamps (3).



#### WARNING

The Ignition exciter stores very high and possibly fatal voltage. Use extreme care when working around ignition exciter. Serious Injury could result if exciter is accidentally grounded. Do not probe inside of output receptacles with fingers or metal object. Discharge exciter only with Insulated screwdriver. In case of shock or injury, get medical attention.

2. Remove lockwire and **disconnect two coil and cable assembly leads (4).** Place leads to one side.



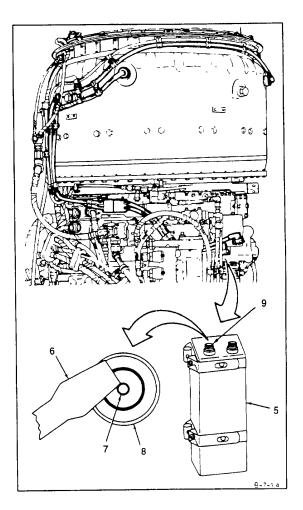
#### WARNING

When discharging ignition exciter, re- move one lead at a time and discharge receptacle that lead was removed from. Failure to do so may result in serious shock when you are removing second lead. In case of serious shock, get medical attention.

#### NOTE

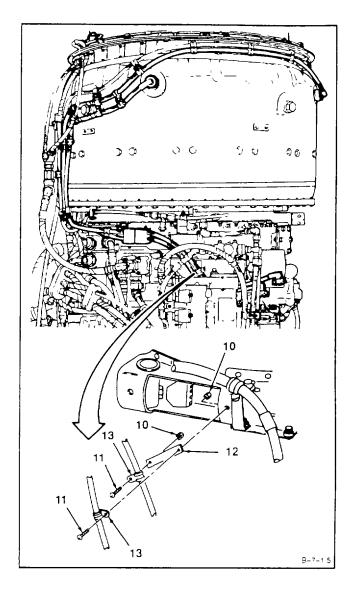
Step 3 applies to both output receptacles.

3. **Discharge ignition exciter (5)** by placing tip of insulated screwdriver (6) against pin (7) and edge (8) of receptacle (9).



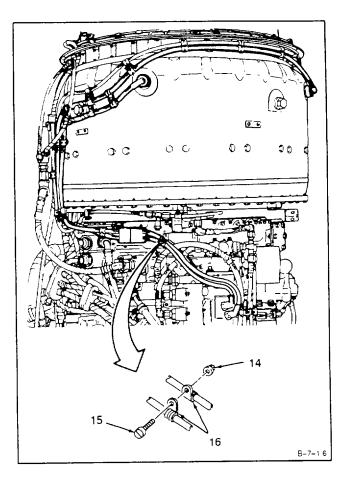
## 7-1 REMOVE IGNITION COIL AND CABLE ASSEMBLY (Continued)

4. Remove two nuts (10), screws (11), bracket (12), and two clamps (13).



### 7-1 REMOVE IGNITION COIL AND CABLE ASSEMBLY (Continued)

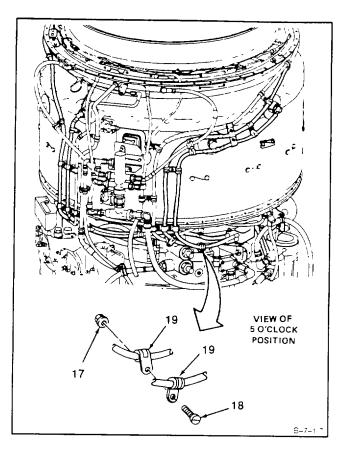
5. Remove nut (14), screw (15), and two clamps (16).



## 7-1 REMOVE IGNITION COIL AND CABLE ASSEMBLY (Continued)

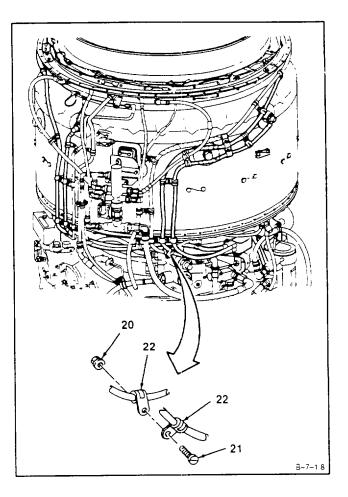
7-1

6. Remove nut (17), screw (18), and two clamps (19).



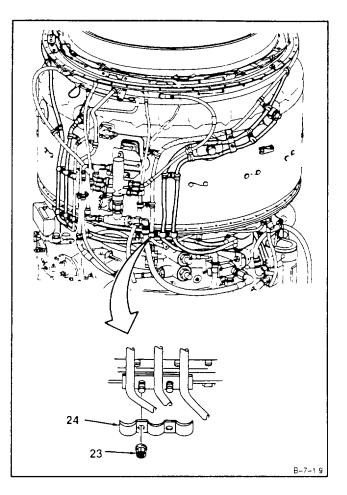
### 7-1 REMOVE IGNITION COIL AND CABLE ASSEMBLY (Continued)

## 7. Remove nut-(20), screw (21), and two clamps (22).



## 7-1 REMOVE IGNITION COIL AND CABLE ASSEMBLY (Continued)

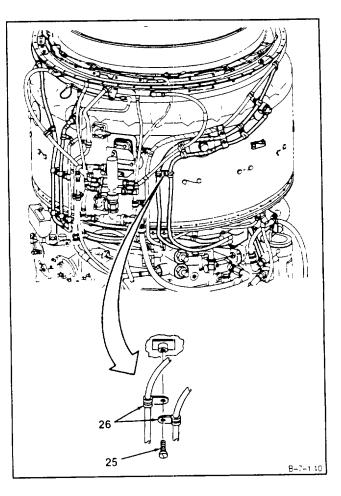
8. Remove two nuts (23) and retaining strap (24).



## 7-1 REMOVE IGNITION COIL AND CABLE ASSEMBLY (Continued)

<u>2040 202 20</u> 7-1

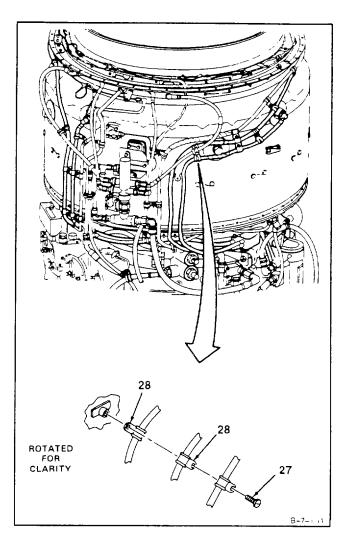
9. Remove lockwire, screw (25), and two clamps (26).



## 7-1 REMOVE IGNITION COIL AND CABLE ASSEMBLY (Continued)

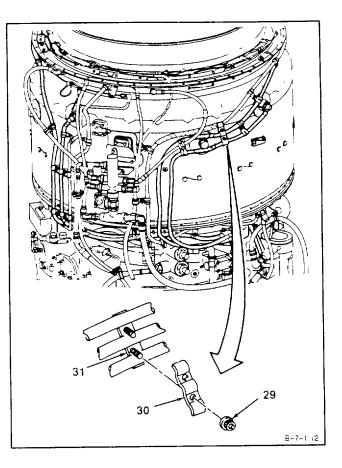
7-1

10. Remove lockwire, screw (27), and two clamps (28).



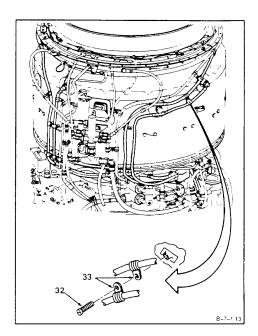
## 7-1 REMOVE IGNITION COIL AND CABLE ASSEMBLY (Continued)

11. Remove two nuts (29) and clamps (30 and 31).



### 7-1 REMOVE IGNITION COIL AND CABLE ASSEMBLY (Continued)

12. Remove lockwire, screw (32), and two clamps (33).

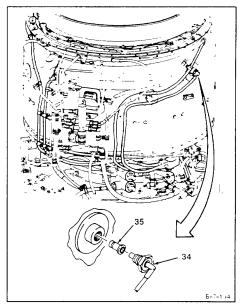


13. Remove lockwire. Disconnect and remove ignition lead (34).

NOTE

Spark igniter may remain in combustion chamber housing or on ignition lead.

14. Remove spark igniter (35).

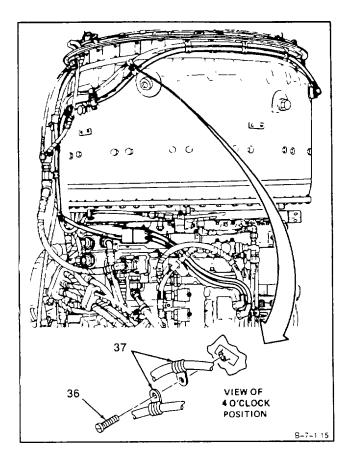


GO TO NEXT PAGE

7-15

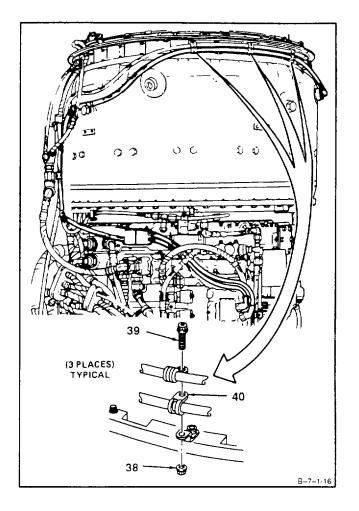
## 7-1 REMOVE IGNITION COIL AND CABLE ASSEMBLY (Continued)

15. Remove lockwire, screw (36), and two clamps (37).



## 7-1 REMOVE IGNITION COIL AND CABLE ASSEMBLY (Continued)

16. Remove three nuts (38), bolts (39), and clamps (40).



#### 7-1 REMOVE IGNITION COIL AND CABLE ASSEMBLY (Continued)

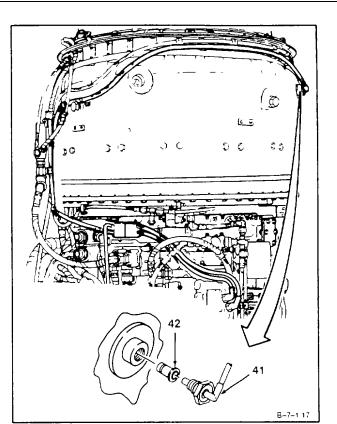
17. Remove lockwire. **Disconnect and remove ignition** lead (41).

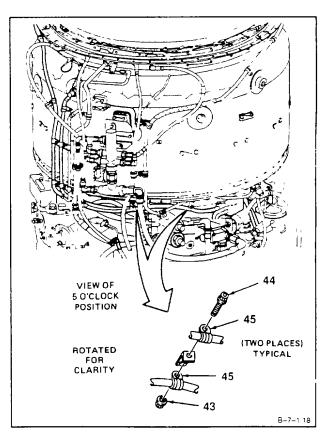
NOTE

Spark igniter may remain in combustion chamber housing or on ignition lead.

18. Remove spark igniter (42).

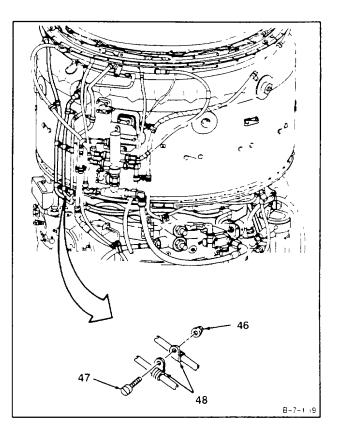
19. Remove two nuts (43), bolts (44), and four clamps (45).

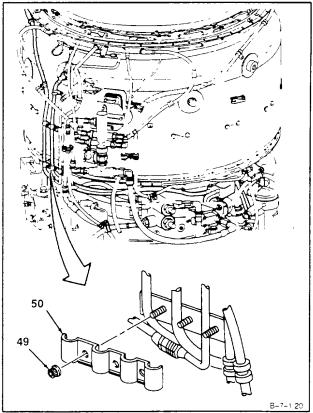




## 7-1 REMOVE IGNITION COIL AND CABLE ASSEMBLY (Continued)

20. Remove nut (46), screw (47), and two clamps (48).

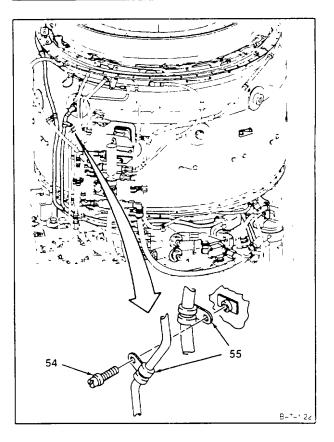




21. Remove three nuts (49) and clamp (50).

## 7-1 REMOVE IGNITION COIL AND CABLE ASSEMBLY (Continued)

- 22. Remove two nuts (51) and clamps (52 and 53).



23. Remove lockwire, screw (54), and two clamps (55).

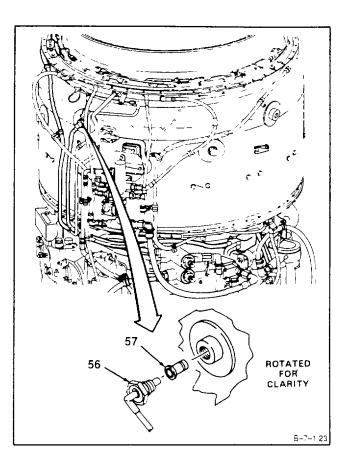
## 7-1 REMOVE IGNITION COIL AND CABLE ASSEMBLY (Continued)

## 24. Remove lockwire. **Disconnect and remove ignition lead (56).**

#### NOTE

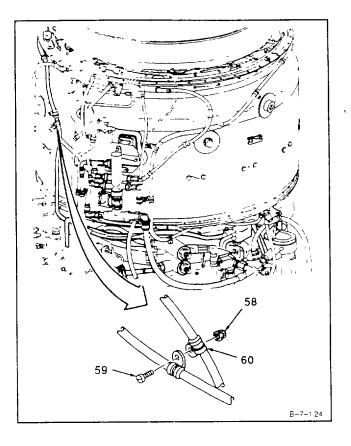
Spark igniter may remain in combustion chamber housing or on ignition lead.

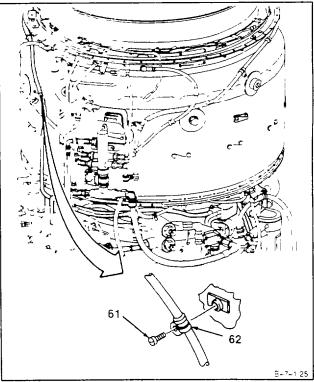
## 25. Remove spark igniter (57).



## 7-1 REMOVE IGNITION COIL AND CABLE ASSEMBLY (Continued)

26. Remove nut (58), screw (59), and two clamps (60).

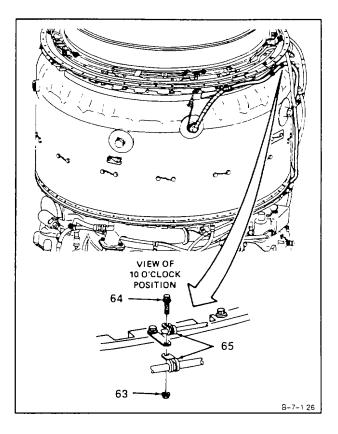


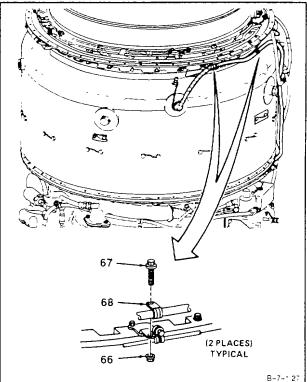


27. Remove lockwire, screw (61), and clamp (62).

## 7-1 REMOVE IGNITION COIL AND CABLE ASSEMBLY (Continued)

28. Remove nut (63), bolt (64), and clamps (65).





29. Remove two nuts (66), bolts (67), and clamps (68).

## 7-1 REMOVE IGNITION COIL AND CABLE ASSEMBL Y (Continued)

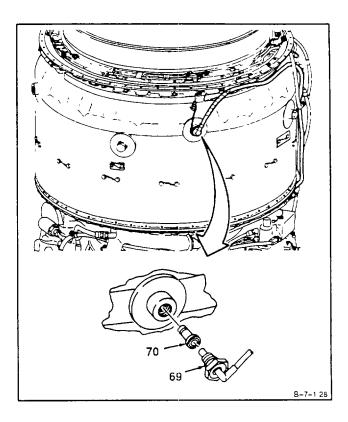
7-1

30. Remove lockwire. Disconnect and remove ignition lead (69).

## NOTE

Spark igniter may remain in combustion chamber housing or on igniter lead.

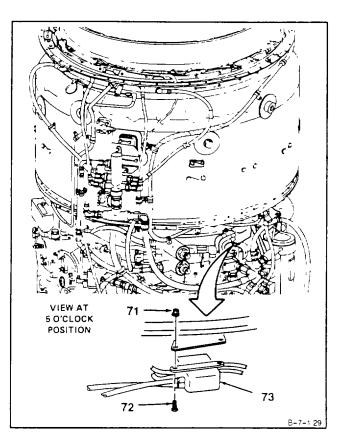
## 31. Remove spark igniter (70).



## 7-1 REMOVE IGNITION COIL AND CABLE ASSEMBLY (Continued)

32. Remove two nuts (71) and bolts (72).

## 33. Remove ignition coil and cable assembly (73).



FOLLOW-ON MAINTENANCE:

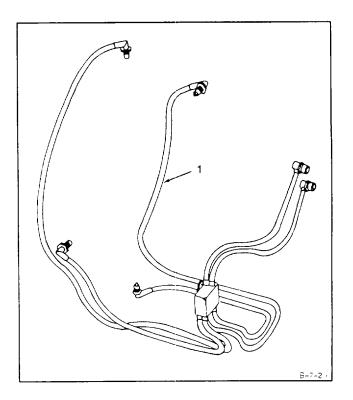
None

END OF TASK

## 7-2 CLEAN IGNITION COIL AND CABLE ASSEMBLY

INITIAL SETUP <i>Applicable Configurations</i> : All	<i>Equipment Condition:</i> Off Engine Task		
Tools:	General Safety Instructions:		
Powerplant Mechanic's Tool Kit, NSN 5180-00-323-4944 Goggles Dry, Compressed Air Source <i>Materials:</i> Dry Cleaning Solvent (El9) Gloves (E24) Lint-Free Cloth (E30) <i>Personnel Required:</i> Aircraft Powerplant Repairer	WARNING Dry cleaning solvent (E19) is flammable and toxic. It can irritate skin and caus burns. Use only in well-ventilated area away from heat and open flame. In cas of contact, immediately flush skin or eye with water for at least <u>15 minutes</u> . Ge medical attention for eyes.		

1. Wear gloves (E24). Clean ignition coil and cable assembly (1) with lint-free cloth (E30) and brush dampened in dry cleaning solvent (E19).

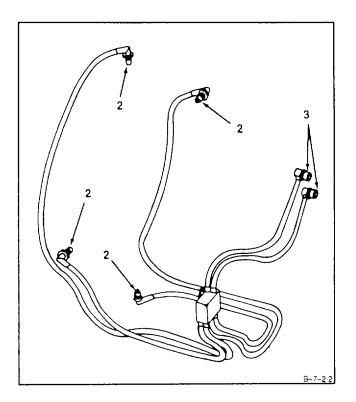


		T IVI 1-2840-252-23-3
7-2	CLEAN IGNITION COIL AND CABLE ASSEMBLY (Continued)	7-2

#### WARNING

When using compressed air for cleaning, use approved protective equipment for eyes and face. Do not use more than <u>30 psig</u> air pressure. Do not direct air toward yourself or another person. Failure to comply could result in injury to eyes or skin. In case of Injury, get medical attention.

2. Wear goggles. Blow dry four spark plug connectors (2) and two exciter connectors (3) thoroughly using clean, dry, compressed air.



FOLLOW-ON MAINTENANCE:

Inspect Ignition Coil and Cable Assembly (Task 7-3).

#### 7-3 INSPECT IGNITION COIL AND CABLE ASSEMBLY

#### INITIAL SETUP

#### Applicable Configurations:

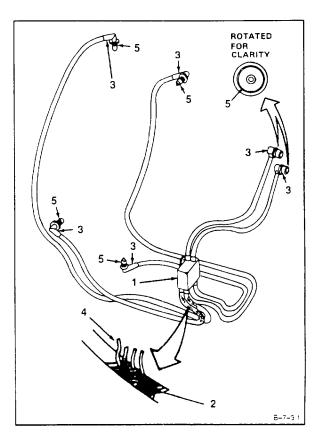
All Tools:

> Powerplant Mechanic's Tool Kit NSN 5180-00-323-4944 Multimeter

#### *Materials:* None

Personnel Required: Aircraft Powerplant Repairer Equipment Condition: Off Engine Task

- 1. Inspect ignition coil and cable assembly (1) as follows:
  - a. There shall be no burned insulation (2).
  - b. Check connectors (3) attached to sheathing. There shall be no loose connectors (3).
  - c. Frayed or worn outer steel braid is acceptable up to <u>3/4</u> of the cable circumference; <u>1/4</u> of the cable circumference shall remain intact to provide continuity for ground. Repair frayed or broken wires (4) on sheathing (Ref. Task 7-4). Replace coil and cable assembly if damage is exceeded.
  - d. The outer steel braid shall not be frayed or worn over more than <u>3/4</u> of the cable circumference. Remaining continuity for ground shall be over at least <u>1/4</u> of the braid.
  - e. There shall be no cracked or broken insulators (5).



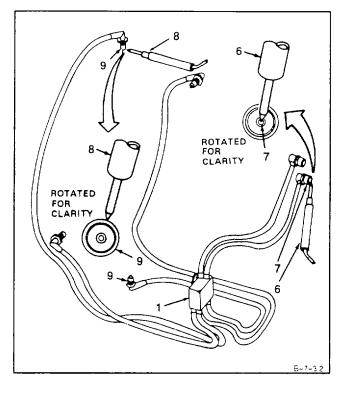
#### TM 1-2840-252-23-3

7-3

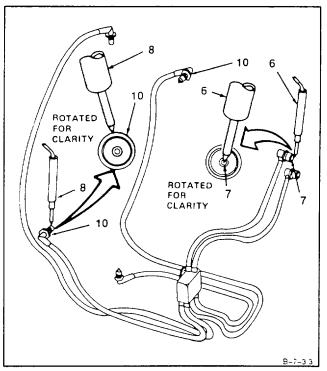
#### 7-3 INSPECT IGNITION COIL AND CABLE ASSEMBLY (Continued)

# 2. Measure insulation resistance on ignition coil and cable assembly (1) as follows:

- a. Set multimeter range switch to R x 1000. Touch red probe (6) to electrical connector conductor (7).
- b. Touch black probe (8) to electrical connector outer housing (9).
- c. Meter shall indicate 1000 ohms minimum.



- d. Touch red probe (6) to electrical connector conductor (7).
- e. Touch black probe (8) to electrical connector outer housing (10).
- f. Meter shall indicate 1000 ohms minimum.



GO TO NEXT PAGE

7-29

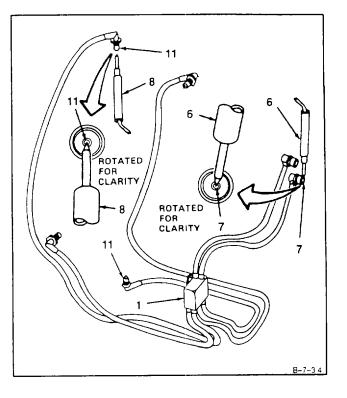
#### TM 1-2840-252-23-3

7-3

#### 7-3 INSPECT IGNITION COIL AND CABLE ASSEMBLY (Continued)

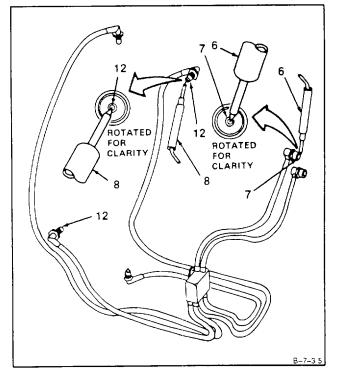
3. Measure continuity on ignition coil and cable assembly (1) as follows:

- a. Set multimeter range switch to R x 1. Touch red probe (6) to electrical connector conductor (7).
- b. Touch black probe (8) to electrical connector conductors (11).
- c. Meter shall indicate 1 ohm maximum.



- d. Touch red probe (6) to electrical connector conductor (7).
- e. Touch black probe (8) to electrical connector center conductors (12).
- f. Meter shall indicate 1 ohm maximum.

FOLLOW-ON MAINTENANCE: None



END OF TASK

#### 7-4 REPAIR IGNITION COIL AND CABLE ASSEMBLY

#### INITIAL SETUP

Applicable Configurations:

Tools:

Powerplant Mechanic's Tool Kit, NSN 5180-00-323-4944 Technical Inspection Tool Kit, NSN 5180-00-323-5114 Retaining Ring Pliers

#### Materials:

Lockwire (E32) Spiral Chafing Sleeve (E55)

#### Parts:

Retaining Ring Insulator Retaining Ring Sleeve Packing Washer **Personnel Required:** Aircraft Powerplant Repairer Aircraft Powerplant Inspector

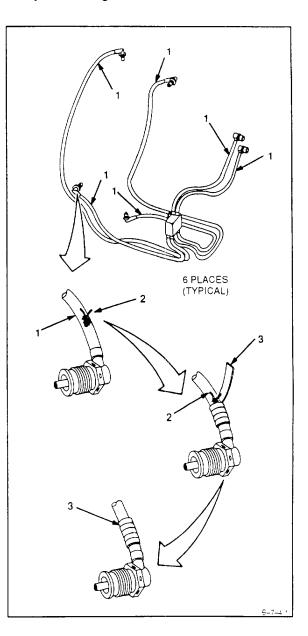
#### **References:**

TM 1-2840-252-23P Equipment Condition : Off Engine Task

#### 7-4 REPAIR IGNITION COIL AND CABLE ASSEMBLY (Continued)

#### 1. Repair fraying (broken) individual cable leads (1) as follows:

a. Wrap individual broken wires (2) in cable lead (1) with spiral chafing sleeve (E55) (3). Be sure that spiral chafing sleeve (3) extends beyond damaged area.

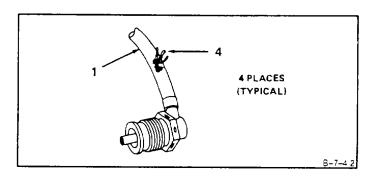


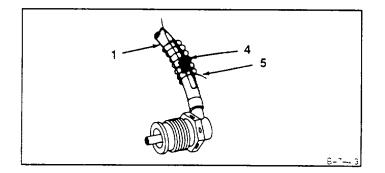
INSPECT

#### NOTE

This cable assembly consists of a transformer and shielded cabling which has six leads. Two leads are connected to the ignition exciter which carry high voltages to the transformer to be distributed equally to four individual cable leads. Two repairs total shall be allowed to the two shorter individual cable leads and three repairs total shall be allowed to the two longer individual cable leads.

- b. If three or more wires (4) of individual cable leads are broken, flatten broken wires (4) without damaging insulation of individual cable lead (1) at damaged area. The outer steel braid shall have a minimum of 1/4 of its circumference intact to provide continuity of grounding purposes. Damaged area shall be 3 inches minimum from either the transformer or spark igniter end of each cable lead (1). Damaged areas on each cable lead (1) shall be a minimum of 6 inches apart.
- c. Use lockwire (E32) (5) to wind clockwise around damaged cable lead (1). Lockwire (5) should cover damaged area by 3/8 inch. Do not pass wrapping limits of 1-1/4 inch length.



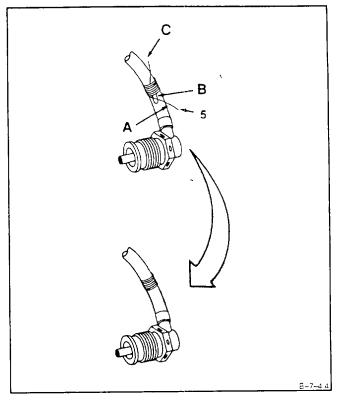


#### 7-4 REPAIR IGNITION COIL AND CABLE ASSEMBLY (Continued)

#### NOTE

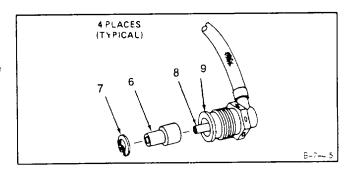
In following step, use care when pulling end C. Pull only far enough to firmly anchor end A beneath several wraps of the lockwire.

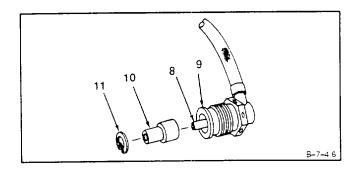
d. Finish wrap by inserting lockwire (5) end A through loop B. Hold A tight while pulling C to close loop. Release A and carefully pull C until end A is anchored beneath wrapping. Cut excess wire ends.



#### INSPECT

- 2. Replace cracked insulator (6) as follows:
  - a. Remove retaining ring (7).
  - b. Remove insulator (6) from wire (8) and out of sleeve (9).
  - c. Insert new insulator (10) in sleeve (9) and over wire (8).
  - d. Install new retaining ring (11).



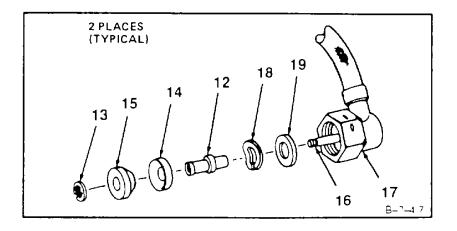


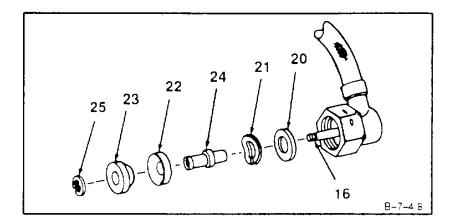
GO TO NEXT PAGE

7-4

#### 7-4 REPAIR IGNITION COIL AND CABLE ASSEMBLY (Continued)

- 3. Replace cracked sleeve (12) as follows:
  - a. Remove retaining ring (13).
  - b. Remove sleeve (12) with packing (14) and washer (15) from wire (16) and out of sleeve (17).
  - c. Remove washer (18) and washer (19) from wire (16) and out of sleeve (17).
  - d. Insert new washer (20) and new washer (21) over wire (16).
  - e. Insert new washer (22) and new packing (23) on new sleeve (24). Insert over wire (16).
  - f. Install new retaining ring (25).





#### INSPECT

FOLLOW-ON MAINTENANCE: None

#### END OF TASK

#### 7-5 INSTALL IGNITION COIL AND CABLE ASSEMBLY

#### INITIAL SETUP

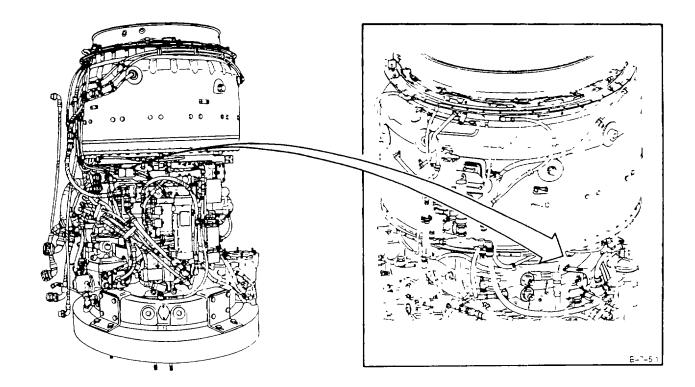
Applicable Configurations:

#### Tools:

Powerplant Mechanic's Tool Kit, NSN 5180-00-323-4944 Technical Inspection Tool Kit, NSN 5180-00-323-5114 Torque Wrench, 30-150 hch-Pounds Crowfoot Attachment, 7/8 inch *Materials:* Anti-Seize Compound (E6) Lockwire (E33)

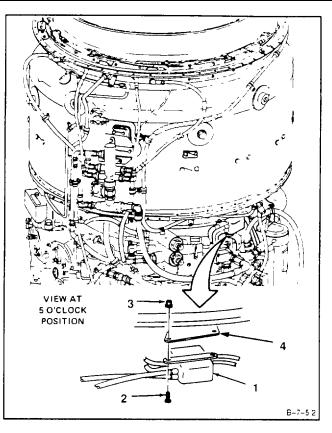
#### Personnel Required:

Aircraft Powerplant Repairer Aircraft Powerplant Inspector

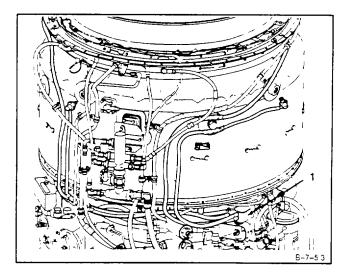


## 7-5 INSTALL IGNITION COIL AND CABL E ASSEMBLY (Continued)

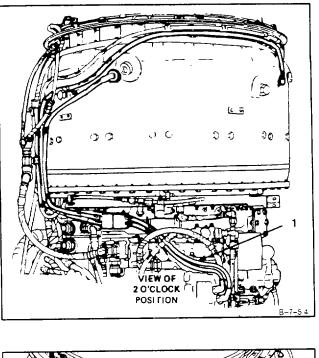
1. **Install Ignition coil and cable assembly** (1), two bolts (2), and nuts (3) on bracket (4).

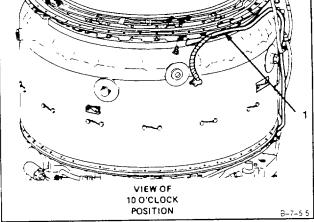


2. Route ignition coil and cable assembly (1) as shown.



## 2. (Continued)





#### 7-5 INSTALL IGNITION COIL AND CABLE ASSEMBLY (Continued)

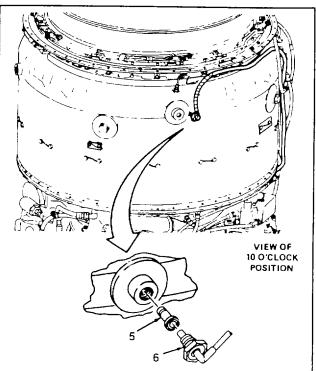
3. Install spark Igniter (5) on ignition lead (6).

> CAUTION To prevent shorting of ignition lead, do not allow anti-seize compound to touch electrical contacts and insulators.

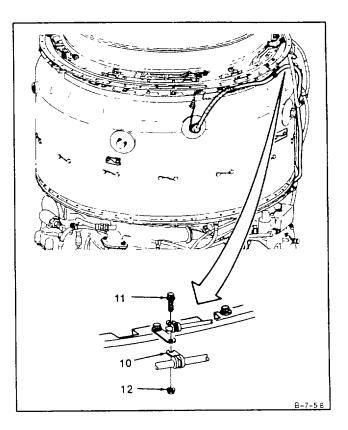
Coat threads of ignition lead (6) with anti-seize 4. compound (E6).

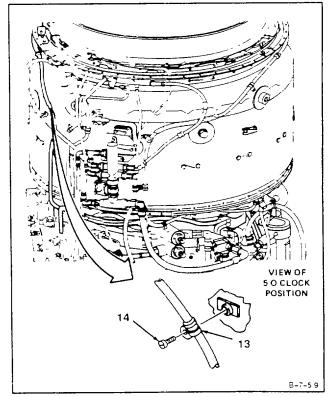
- 5. Install ignition lead (6). Torque to 135 inchpounds. Use crowfoot attachment. Lockwire ignition lead (6). Use lockwire (E33).
- VIEW OF 10 O'CLOCK POSITION E-7-56
- 8 (2 PLACES) TYPICAL q B-7-5

Install two clamps (7), bolts (8), and nuts (9). 6.



7. Install clamp (10), bolt (11), and nut (12).

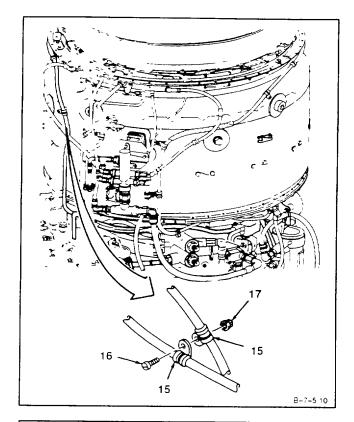


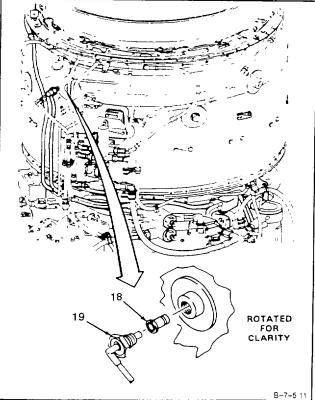


8. **Install clamp (13)** and screw (14). Lockwire screw (14). Use lockwire (E33).

## 7-5 INSTALL IGNITION COIL AND CABLE ASSEMBLY (Continued)

9. Install two clamps (15), screw (16), and nut (17).





10. Install spark igniter (18) on ignition lead (19).

#### CAUTION

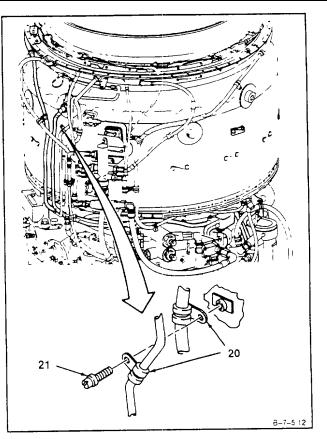
To prevent shorting of ignition lead, do not allow anti-seize compound to touch electrical contacts and insulators.

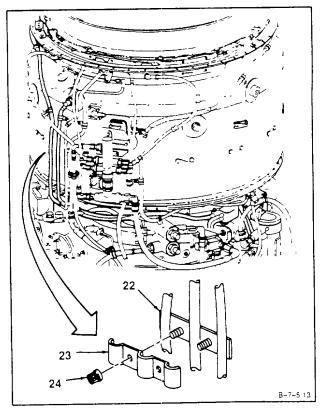
11. Coat threads of ignition lead (19) with anti-seize compound (E6).

12. **Install ignition lead (19). Torque to** <u>135 inch-</u> <u>pounds</u>. Use crowfoot attachment. Lockwire ignition lead (19). Use lockwire (E33).

### 7-5 INSTALL IGNITION COIL AND CABLE ASSEMBLY (Continued)

13. **Install two clamps (20)** and screw (21). Lockwire screw (21). Use lockwire (E33).





14. Install clamps (22 and 23) and two nuts (24).

15. Install clamp (25) and three nuts (26).

29

B-7-5-15

27

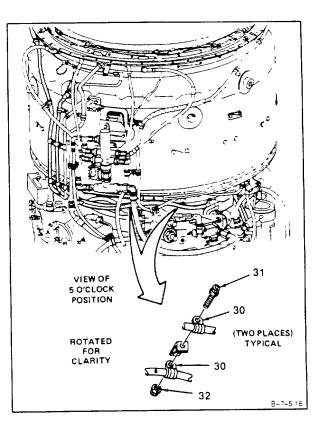
16. Install two clamps (27), screw (28), and nut (29).

GO TO NEXT PAGE

28

#### 7-5 INSTALL IGNITION C OIL AND CABLE ASSEMBLY (Continued)

17. Install four clamps (30), two bolts (31), and nuts (32).



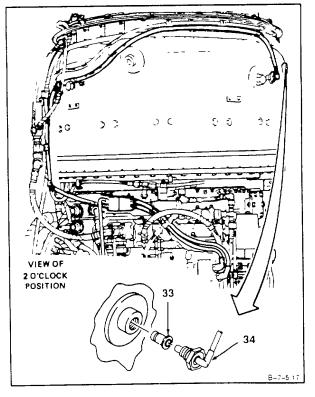
18. Install spark igniter (33) on ignition lead (34).

#### CAUTION

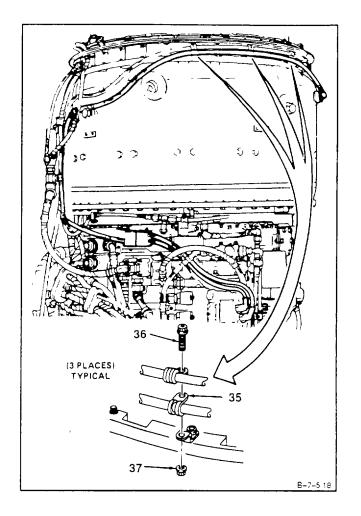
To prevent shorting of ignition lead, do not allow anti-seize compound to touch electrical contacts and insulators.

19. Coat threads of ignition lead (34) with anti-seize compound (E6).

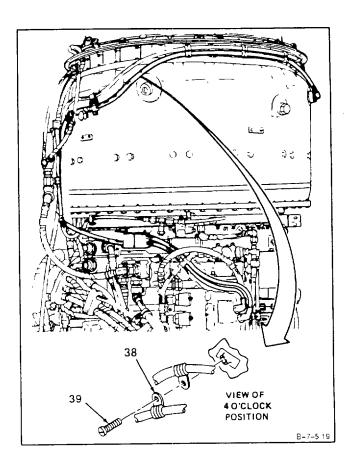
20. Install ignition lead (34). Torque to <u>135 inch-</u> <u>pounds</u>. Use crowfoot attachment. Lockwire ignition lead (34). Use lockwire (E33).



21. Install three clamps (35), bolts (36), and nuts (37).



22. Install clamp (38) and screw (39). Lockwire screw (39). Use lockwire (E33).



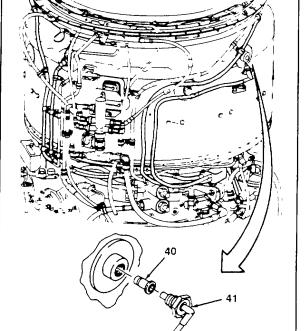
### 7-5 INSTALL IGNITION COIL AND CABLE ASSEMBLY (Continued)

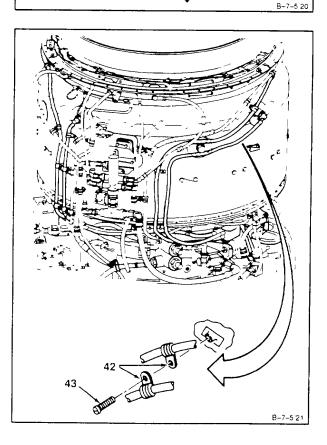
23. Install spark Igniter (40) on ignition lead (41).

CAUTION To prevent shorting of ignition lead, do not allow anti-seize compound to touch electrical contacts and insulators.

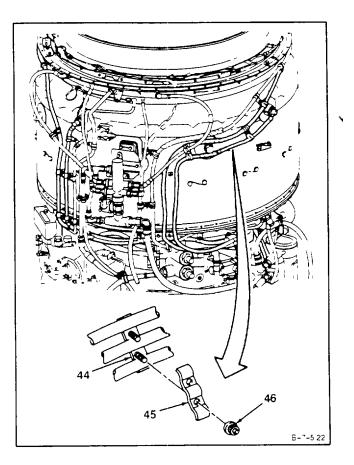
- 24. Coat threads of ignition lead (41) with anti-seize compound (E6).
- 25. Install ignition lead (41). Torque to <u>135 inch-</u> <u>pounds</u>. Use crowfoot attachment. Lockwire ignition lead (41). Use lockwire (E33).

26. **Install two clamps (42)** and screw (43). Lockwire screw (43). Use lockwire (E33).

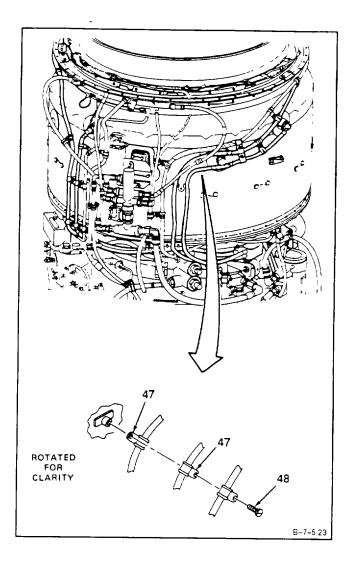




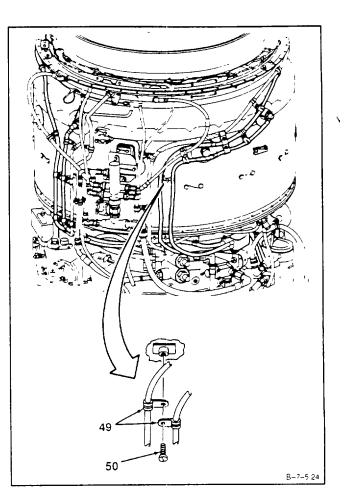
27. Install clamps (44 and 45) and two nuts (46).



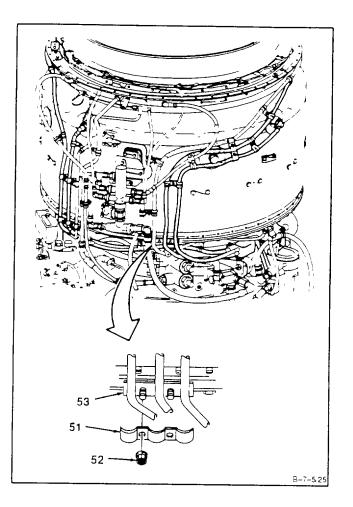
28. Install two clamps (47) and screw (48). Lockwire screw (48). Use lockwire (E33).



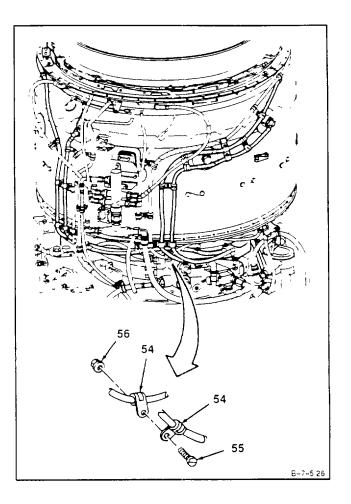
29. Install two clamps (49) and screw (50). Lockwire screw (50). Use lockwire (E33).



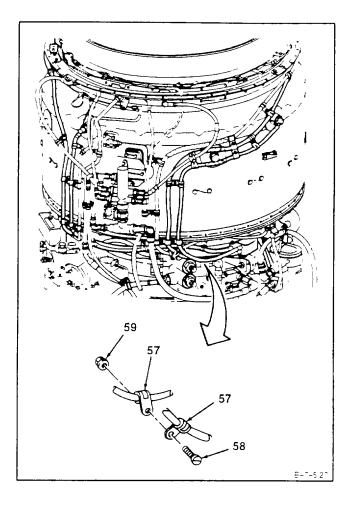
30. Install retaining strap (51) and two nuts (52) to bracket (53).



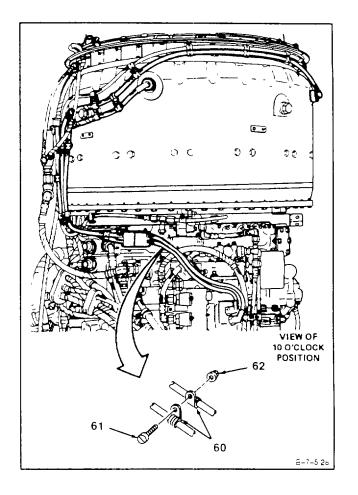
31. Install two clamps (54), screw (55), and nut (56).



32. Install two clamps (57), screw (58), and nut (59).

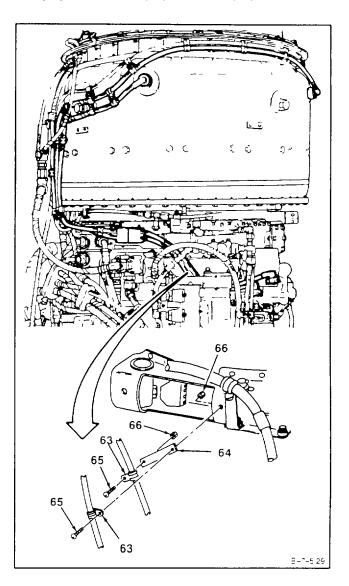


33. Install two clamps (60), screw (61), and nut (62).



## 7-5 INSTALL IGNITION COIL AND CABLE ASSEMBLY (Continued)

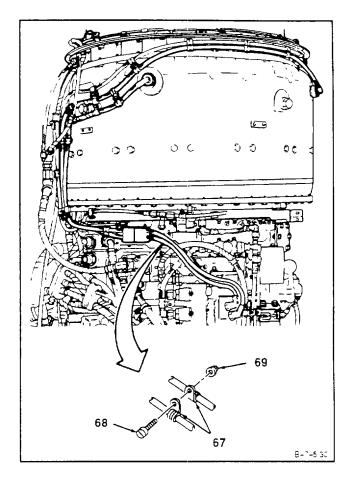
34. Install two clamps (63), bracket (64), two screws (65), and nuts (66).



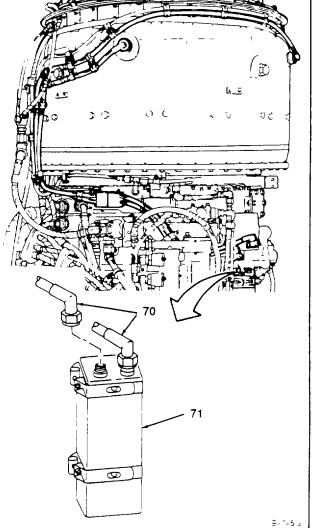
7-55

### 7-5 INSTALL IGNITION COIL AND CABLE ASSEMBLY (Continued)

35. Install two clamps (67), screw (68), and nut (69).



36. Connect two coil and cable assembly leads (70) to ignition exciter (71). Lockwire leads (70). Use lockwire (E33).



### INSPECT

FOLLOW-ON MAINTENANCE: None

END OF TASK

7-57/(7-58 blank)

7-6

#### 7-6 REMOVE SPARK IGNITERS

### **INITIAL SETUP**

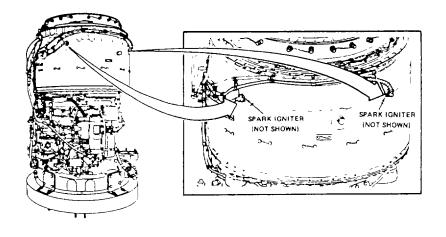
Applicable Configurations: All Tools: Powerplant Mechanic's Tool Kit, NSN 5180-00-323-4944 Materials: None Personnel Required:

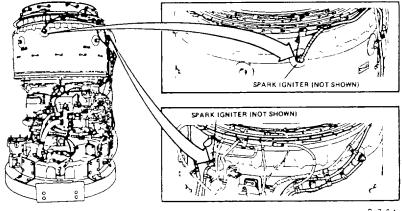
Aircraft Powerplant Repairer

### General Safety Instructions:

The ignition exciter stores very high and possibly fatal voltage. Use extreme care when working around ignition exciter. Serious injury could result if exciter is accidentally grounded. Do not probe inside of output receptacles with fingers or metal object. Discharge exciter only with insulated screwdriver. In case of shock or injury, get medical attention.

WARNING





8-7-61

7-6

### 7-6 REMOVE SPARK IGNITERS (Continued)

#### <u>WARNING</u>

When discharging ignition leads, remove one lead at a time and discharge to combustor housing. Failure to do so may result in serious shock when you are removing other leads. In case of serious shock, get medical attention.

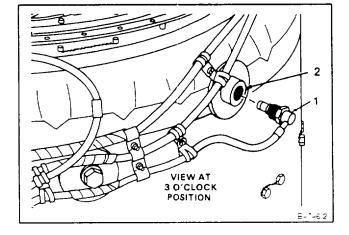
### NOTE

The procedure for removal of four spark igniters located at the 3-, 6-, 9-, and 12-o'clock positions is the same. Only the 3-o'clock position is shown.

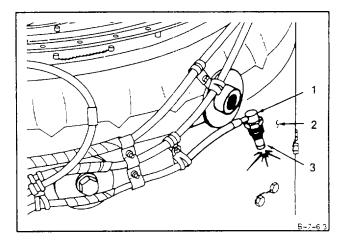
1. **Remove** lockwire and **ignition lead (1)** from combustor housing (2).

### NOTE

If spark igniter stays with ignition lead, do steps 2 and 3. If spark igniter stays in combustor housing do steps 4 and 5.

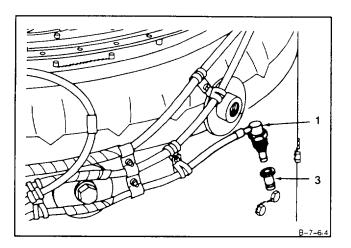


2. **Discharge ignition lead (1) and spark igniter (3)** by touching to combustor housing (2).

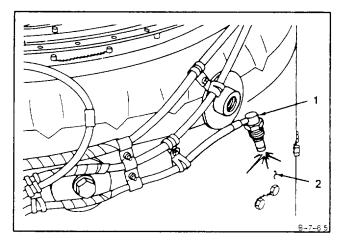


### 7-6 REMOVE SPARK IGNITERS

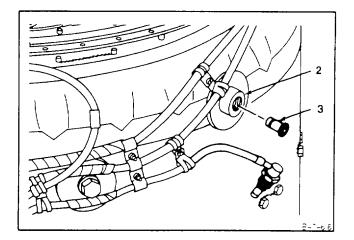
3. Remove spark igniter (3) from ignition lead (1).



4. **Discharge ignition lead (1)** by touching to combustor housing (2).



5. Remove spark igniter (3) from combustor housing (2).



FOLLOW-ON MAINTENANCE: None

### END OF TASK

### 7-7 CLEAN SPARK IGNITERS

### **INITIAL SETUP**

### Applicable Configurations:

#### All Tools:

Powerplant Mechanic's Tool Kit, NSN 5180-00-323-4944 *Materials:* 

Dry Cleaning Solvent (E19) Gloves (E24) Lint-Free Cloth (E30) **Personnel Required**:

# Aircraft Powerplant Repairer

### **Equipment Condition:**

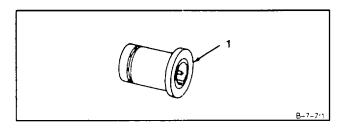
Off Engine Task Spark Igniters Removed (Task 7-6) General Safety Instructions: <u>WARNING</u> Dry cleaning solvent (E19) is flammat

Dry cleaning solvent (E19) is flammable and toxic. It can Irritate skin and cause burns. Use only in well-ventilated area, away from heat and open flame. In case of contact, immediately flush skin or eyes with water for at least <u>15 minutes</u>. Get medical attention for eyes.

- 1. Wear gloves (E24). Clean four spark igniters (1), using dry cleaning solvent (EI9) and brush.
- 2. Remove any remaining solvent using clean, dry, lint-free cloth (26).

### FOLLOW-ON MAINTENANCE:

Inspect Spark Igniters (Task 7-8).



### **INITIAL SETUP**

### Applicable Configurations:

All Tools:

Technical Inspection Tool Kit, NSN 5180-00-323-5114

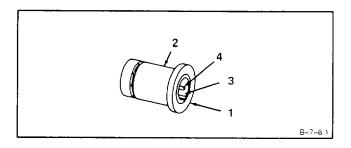
### Materials: None Personnel Required: Aircraft Powerplant Inspector Equipment Condition: Off Engine Task

### 1. Inspect four spark igniters (1).

- a. There shall be no cracks or gouges in shank (2). Chafing allowed to 0.010 inch depth.
- b. There shall be no chips or cracks in ceramic surface (3).
- c. Pin (4) shall not be bent or broken.

### FOLLOW-ON MAINTENANCE:

None



### **INITIAL SETUP**

#### Applicable Configurations:

All **Tools:** Powerplant Mechanic's Tool Kit, NSN 5180-00-323-4944 Technical Inspection Tool Kit, NSN 5180-00-323-5114 Goggles Dry, Compressed Air Source

### NOTE

This repair is allowed provided it does not cause pin to break or crack.

- 1. Straighten bent pin (1) of spark igniter (2). Using long-nose pliers, gently move pin (1) until straight.
- Remove corrosion from pin (1) of spark igniter (2). Polish pin, using in and out motion over entire length of pin until corrosion is removed. Use crocus cloth (E16).

#### WARNING

When using compressed air for cleaning, use approved protective equipment for eyes and face. Do not use more than <u>30 psig</u> air pressure. Do not direct air toward yourself or another person. Failure to comply could result in injury to eyes or skin. In case of injury, get medical attention.

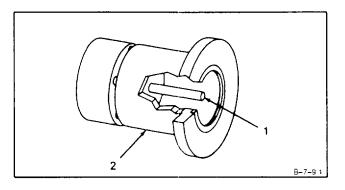
3. Wear goggles. Remove loosened particles from pin (1), using clean, dry, compressed air.

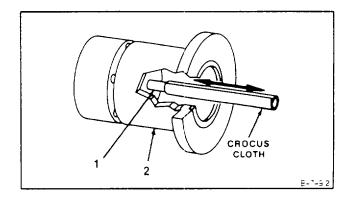
### INSPECT

FOLLOW-ON MAINTENANCE: Clean Spark Igniters (Task 7-7).

### **END OF TASK**

Materials: Crocus Cloth (E16) Personnel Required: Aircraft Powerplant Repairer Aircraft Powerplant Inspector Equipment Condition: Off Engine Task



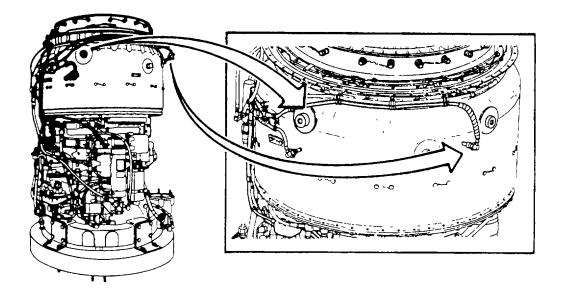


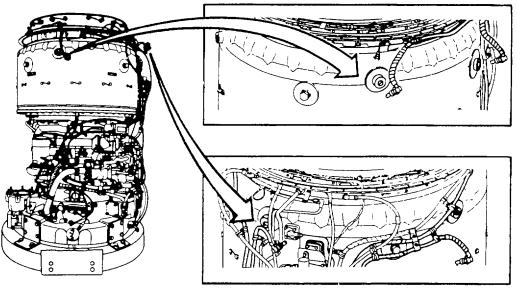
### 7-10 INSTALL SPARK IGNITERS INITIAL SETUP

### Applicable Configurations:

All Tools:

Powerplant Mechanic's Tool Kit, NSN 5180-00-323-4944 Technical Inspection Tool Kit, NSN 5180-00-323-5114 Torque Wrench, 30-150 Inch-Pounds Crowfoot Attachment, 7/8 Inch *Materials:* Anti-Seize Compound (E6) Lockwire (E33) *Personnel Required*: Aircraft Powerplant Repairer Aircraft Powerplant Inspector





B-7-10 1

### 7-10 INSTALL SPARK IGNITERS (Continued)

### NOTE

The procedure for installing four spark igniters at 3-, 6-, 9-, and 12-o'clock positions is the same except for lockwiring. Only the 3-o'clock position is shown for installation.

### NOTE

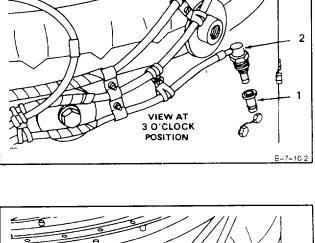
Install gently by hand until fully engaged.

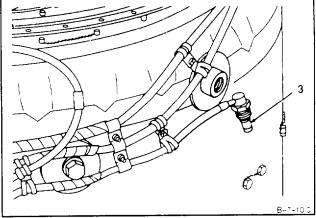
1. Install spark igniter (1) on ignition lead (2).

### CAUTION

To prevent shorting of ignition lead, do not allow anti-seize compound to touch electrical contacts and insulators.

2. Apply a light coat of anti-seize compound (E6) to ignition lead threads (3).

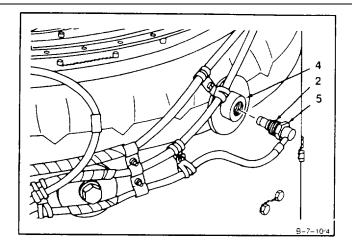




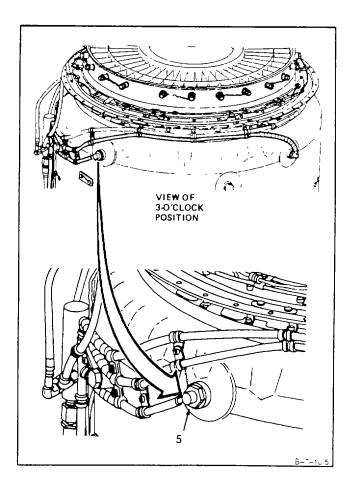
7-10

### 7-10 INSTALL\_SPARK IGNITERS (Continued)

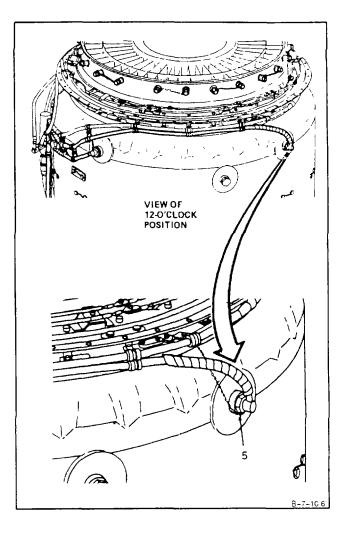
3. **Install ignition lead (2)** in combustor housing (4). Torque ignition lead connector (5) to <u>135 inch-pounds</u>. Use crowfoot attachment.



4. Lockwire connector (5) at 3-o'clock position. Use lockwire (E33).

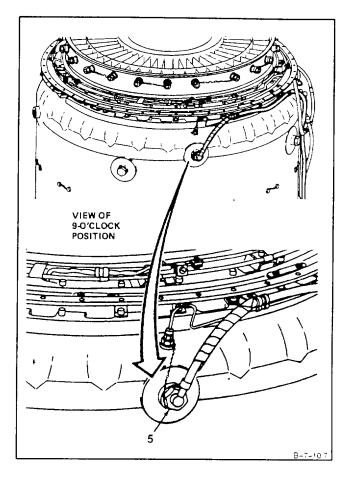


5. Lockwire connector (5) at 12-o'clock position. Use lockwire (E33).



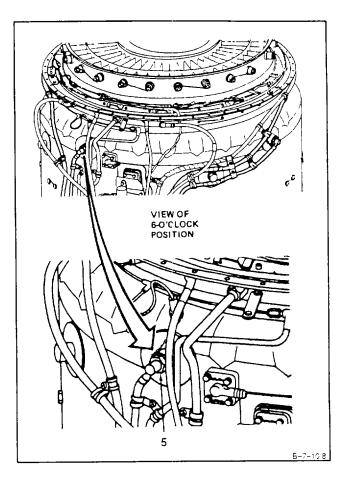
### 7-10 INSTALL SPARK IGNITERS (Continued)

6. Lockwire connector (5) at 9-o'clock position. Use lockwire (E33).



### 7-10 INSTALL SPARK IGNITERS (Continued)

7. Lockwire connector (5) at 6-o'clock position. Use lockwire (E33).



### INSPECT

FOLLOW-ON MAINTENANCE: None

END OF TASK

### 7-11 REMOVE IGNITION EXCITER

### **INITIAL SETUP**

#### Applicable Configurations:

All

Tools:

Powerplant Mechanic's Tool Kit, NSN 5180-00-323-4944

### Materials:

#### None

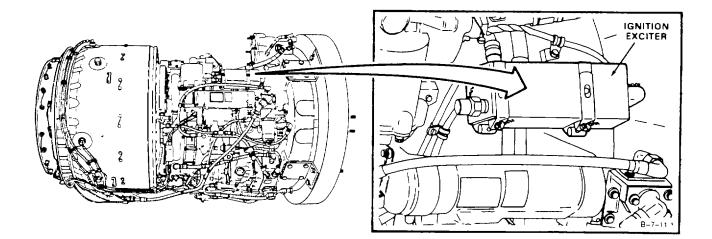
### Personnel Required:

Aircraft Powerplant Repairer

#### **General Safety Instructions:**

### WARNING

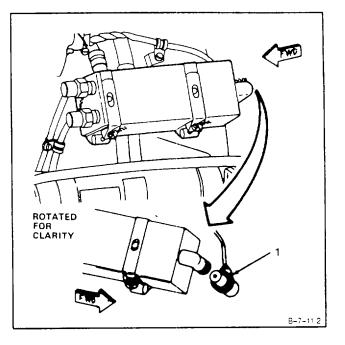
The ignition exciter stores very high and possibly fatal voltage. Use extreme care when working around ignition exciter. Serious injury could result if exciter is accidentally grounded. Do not probe inside of output receptacles with fingers or metal object. Discharge exciter only with insulated screwdriver. In case of shock or injury, get medical attention.



7-11

### 7-11 REMOVE IGNITION EXCITER (Continued)

1. Remove lockwire and disconnect electrical connector (1).

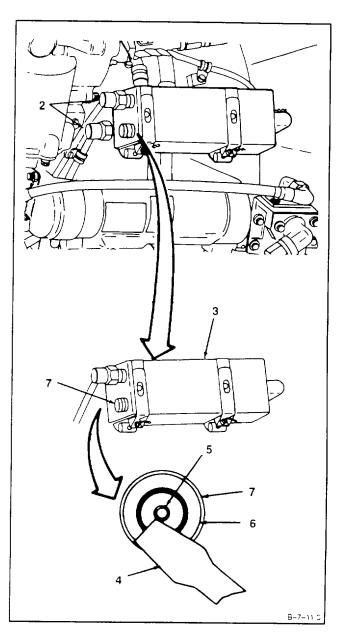


### WARNING

When discharging ignition exciter, remove one lead at a time and discharge receptacle that lead was removed from. Failure to do so may result in serious shock when you are removing second lead. In case of serious shock, get medical attention.

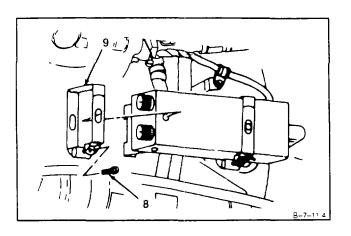
**NOTE** Step 2 applies to both output receptacles.

- 2. Remove lockwire and disconnect coil and cable assembly leads (2).
- 3. **Discharge ignition exciter (3)** by placing tip of insulated screwdriver (4) against pin (5) and edge (6) of receptacle (7).

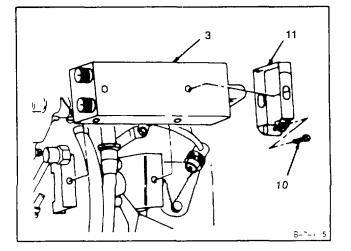


### 7-11 REMOVE IGNITION EXCITER (Continued)

4. Remove lockwire, screw (8), and clamp (9).



5. **Remove** lockwire, screw (10), clamp (11), and **ignition** exciter (3).



FOLLOW-ON MAINTENANCE: None

7-12

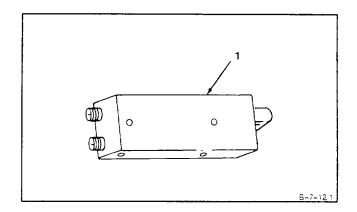
### 7-12 CLEAN IGNITION EXCITER

INITIAL SETUP Applicable Configurations: All Tools: None Materials: Dry Cleaning Solvent (E19) Gloves (E24) Lint-Free Cloth (E30) Personnel Required: Aircraft Powerplant Repairer Equipment Condition: Off Engine Task Ignition Exciter Removed (Task 7-11)

### WARNING

Dry cleaning solvent (E19) is flammable and toxic. It can Irritate skin and cause burns. Use only in well-ventilated area, away from heat and open flame. In case of contact, immediately flush skin or eyes with water for at least <u>15 minutes.</u> Get medical attention for eyes.

1. Wear gloves (E24). Clean ignition exciter (1) with clean lint-free cloth (E30) dampened in dry-cleaning solvent (E19).



FOLLOW-ON MAINTENANCE: Inspect Ignition Exciter (Task 7-13).

### 7-13 INSPECT IGNITION EXCITER

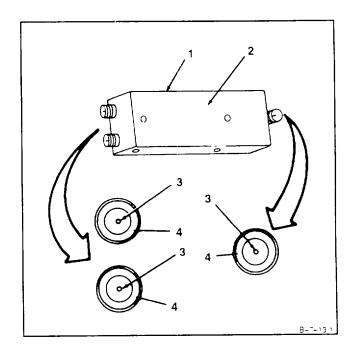
INITIAL SETUP Applicable Configurations: All Tools: Technical Inspection Tool Kit, NSN 5180-00-323-5114 *Materials:* None *Personnel Required:* Aircraft Powerplant Inspector

### 1. Inspect ignition exciter (1).

- a. There shall be no cracks or dents in housing (2).
- b. There shall be no bent or broken pins (3).
- c. There shall be no cracks in insulators (4).
- d. There shall be no corrosion.

### FOLLOW-ON MAINTENANCE:

None



### 7-14 REPAIR IGNITION EXCITER

### INITIAL SETUP

### Applicable Configurations:

All

#### Tools:

Powerplant Mechanic's Tool Kit, NSN 5180-00-323-4944 Technical Inspection Tool Kit, NSN 5180-00-323-5114 Goggles Dry, Compressed Air Source

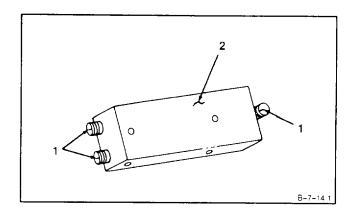
### NOTE

This repair is allowed provided it does not cause pins to break or crack.

1. **Straighten bent pins (1)** of ignition exciter (2). Using long-nose pliers, gently move pins (1) until they are straight.

Materials:

Crocus Cloth (E16) **Personnel Required**: Aircraft Powerplant Repairer Aircraft Powerplant Inspector **Equipment Condition:** Off Engine Task



 Remove corrosion from pins (1) of ignition exciter (2). Polish pins, using in and out motion over entire length of pin until corrosion is removed. Use crocus cloth (E16).

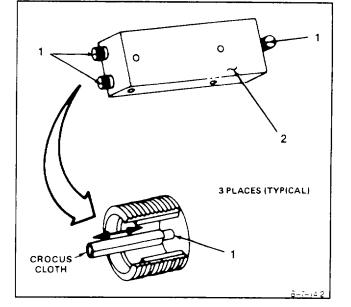
### WARNING

When using compressed air for cleaning, use approved protective equipment for eyes and face. Do not use more than <u>30 psig</u> air pressure. Do not direct air toward yourself or another person. Failure to comply could result in injury to eyes or skin. In case of injury, get medical attention.

3. Wear goggles. **Remove loosened particles from pins (1)** using clean, dry, compressed air.

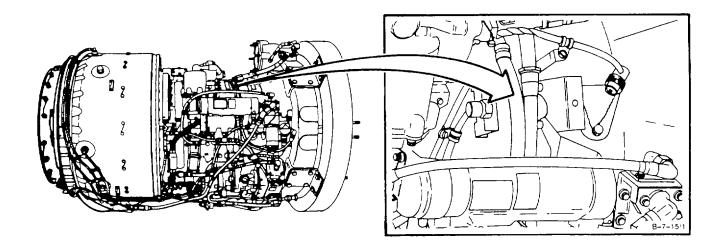
#### INSPECT

FOLLOW-ON MAINTENANCE: None



### 7-15 INSTALL IGNITION EXCITER

INITIAL SETUP Applicable Configurations: All Tools: Powerplant Mechanic's Tool Kit, NSN 5180-00-323-4944 Technical Inspection Tool Kit, NSN 5180-00-323-5114 *Materials:* Lockwire (E33) *Personnel Required*: Aircraft Powerplant Repairer Aircraft Powerplant Inspector



GO TO NEXT PAGE

6

Œ

7

6

Ш

2

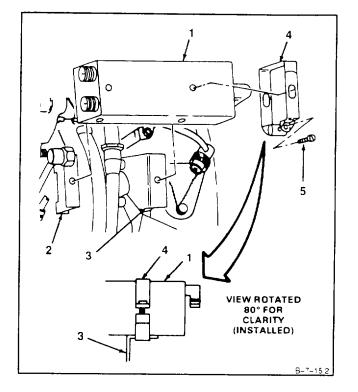
2

### 7-15 INSTALL IGNITION EXCITER (Continued)

1. Install ignition exciter (1) on brackets (2 and 3).

a. Loosely install clamp (4) and screw (5) on ignition exciter (1) and bracket (3).

b. Loosely install clamp (6) and screw (7) on ignition exciter (1) and bracket (2).



θ

Q

VIEW ROTATED BO° FOR CLARITY (INSTALLED)

B-7-15/3

1

#### 7-15 **INSTALL IGNITION EXCITER (Continued)**

- c. Align slots (8) in clamps (4 and 6) with locating lugs (9) on ignition exciter (1). Tighten screws (5 and 7) and lockwire. Use lockwire (E33).
- B-7-15 5

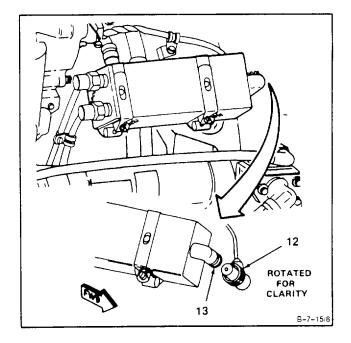
3. Connect electrical connector (12) to input receptacle (13). Lockwire electrical connector (12). Use lockwire (E33).

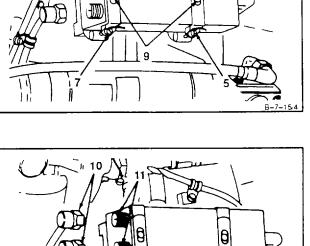
2. Connect two coil and cable assembly leads (10) to ignition exciter output receptacles (11). Lockwire leads.

### INSPECT

FOLLOW-ON MAINTENANCE: None

Use lockwire (E33).





7-16

### SECTION IV PRIMARY ELECTRICAL HARNESS ASSEMBLY REMOVE PRIMARY ELECTRICAL HARNESS ASSEMBLY

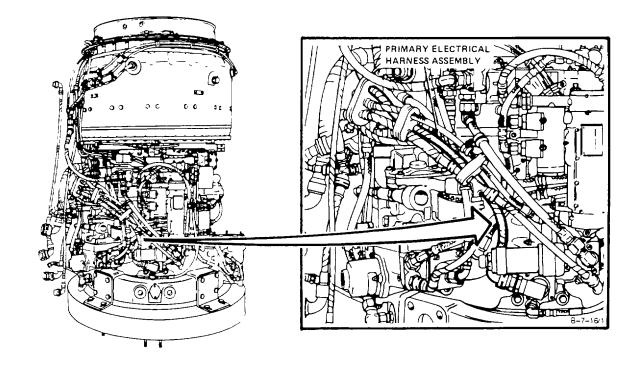
### **INITIAL SETUP**

7-16

Applicable Configurations: All Tools: Powerplant Mechanic's Tool Kit NSN 5180-00-323-4944

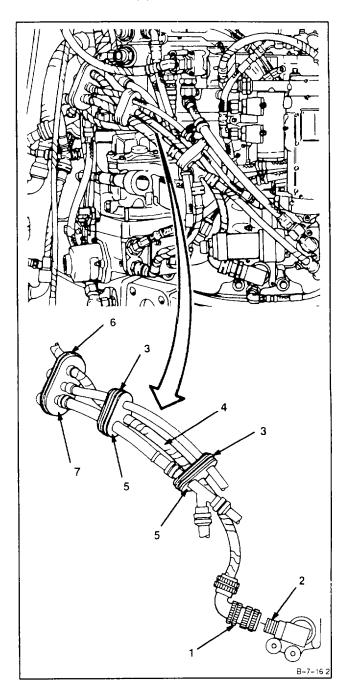
### Materials:

None Personnel Required: Aircraft Powerplant Repairer



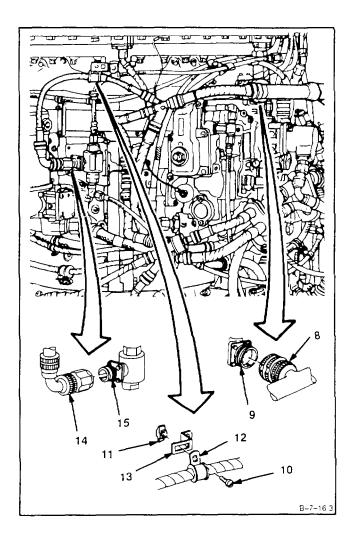
### 7-16 REMOVE PRIMARY ELECTRICAL HARNESS ASSEMBLY (Continued)

- 1. **Disconnect electrical connector (1)** from torque sensor (2).
- 2. Cut two straps (3) and **remove harness (4)** from two cushions (5).
- 3. Cut strap (6) and **remove harness** from cushion (7).



### 7-16 REMOVE PRIMARY ELECTRICAL HARNESS ASSEMBLY (Continued)

- 4. **Disconnect electrical connector (8)** from hydromechanical assembly (9).
- 5. Remove screw (10), nut (11), and clamp (12) from bracket (13).
- 6. Disconnect electrical connector (14) from starting fuel solenoid valve (15).

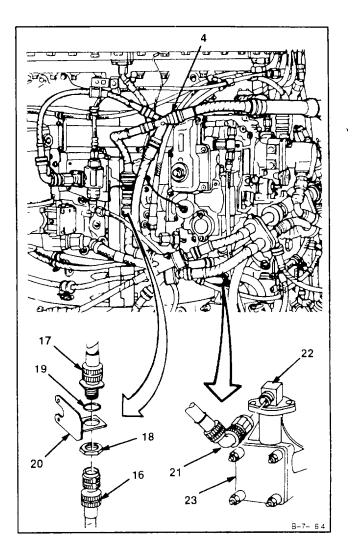


### 7-16 REMOVE PRIMARY ELECTRICAL HARNESS ASSEMBLY (Continued)

7. Disconnect electrical connector (16) from electrical connector (17).

8. Cut lockwire, **remove** nut (18), packing (19), and connector (17) from bracket (20).

9. **Disconnect electrical connector (21)** from speed pickup (22) on accessory gearbox assembly (23). Remove primary electrical harness assembly (4).



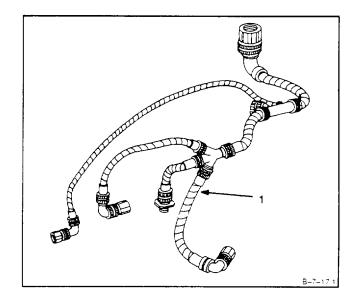
FOLLOW-ON MAINTENANCE: None

END OF TASK

#### 7-17 CLEAN PRIMARY ELECTRICAL HARNESS ASSEMBLY

INITIAL SETUP	Equipment Condition:
Applicable Configurations:	Off Engine Task
All	Primary Electrical Harness Assembly Removed (Task 7-16)
Tools:	General Safety Instructions:
Powerplant Mechanic's Tool Kit,	•
NSN 5180-00-323-4944	WARNING
Goggles	
Dry, Compressed Air Source	Denatured alcohol (E17) is flammable and toxic. It
Materials:	can irritate skin and cause burns. Use only in well-
Gloves (E24)	ventilated area, away from heat and open flame.
Lint-Free Cloth (E30)	In case of contact, immediately flush skin or eyes
Denatured Alcohol (É17)	with water for at least <u>15 minutes</u> . Get medical
Personnel Required:	attention for eyes.
Aircraft Powerplant Repairer	-

1. Wear gloves (E24). **Clean primary electrical harness assembly (1).** Use lint-free cloth (E30) dampened with denatured alcohol (E17). Wipe dry using clean, dry, lint-free cloth (E30).



### 7-17 CLEAN PRIMARY ELECTRICAL HARNESS ASSEMBLY (Continued)

2. Clean six electrical connectors (2). Use denatured alcohol (E17) and brush.

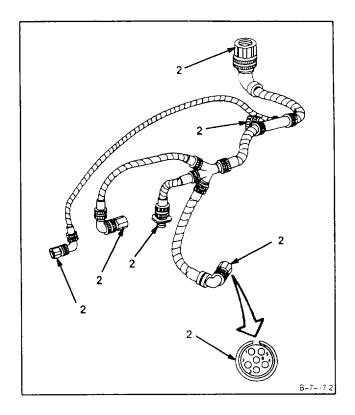
### WARNING

When using compressed air for cleaning, use approved protective equipment for eyes and face. Do not use more than <u>30 psig</u> air pressure. Do not direct air toward yourself or another person. Failure to comply could result in injury to eyes or skin. In case of injury, get medical attention.

3. Wear goggles. Blow dry electrical connectors (2). Use clean, dry, compressed air.

### FOLLOW-ON MAINTENANCE:

Inspect Primary Electrical Harness Assembly (Task 7-18).



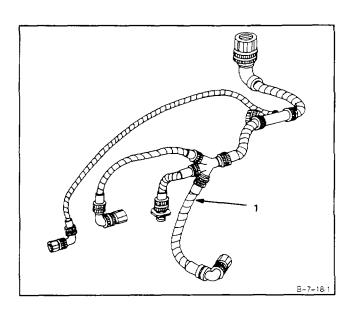
END OF TASK

### 7-18 INSPECT PRIMARY ELECTRICAL HARNESS ASSEMBLY

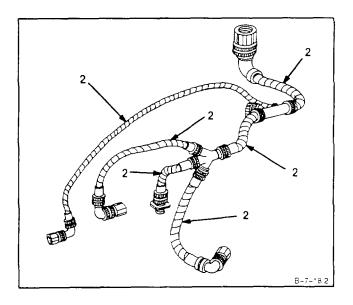
INITIAL SETUP Applicable Configurations: All Tools: Technical Inspection Tool Kit, NSN 5180-00-323-5114

1. Inspect primary electrical harness assembly (1). There shall be no frayed or burned insulation. There shall be no loose connections or broken wires.

Materials: None Personnel Required: Aircraft Powerplant Inspector Equipment Condition: Off Engine Task

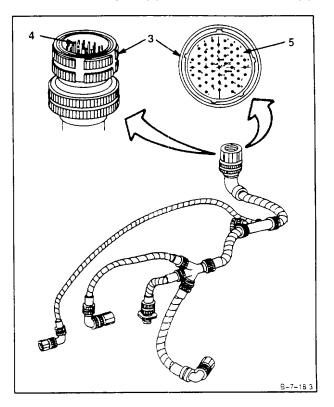


2. **Inspect sleeving (2).** There shall be no frayed or broken sleeving.

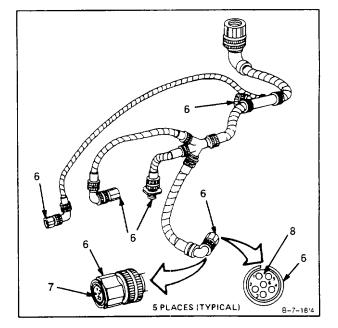


### 7-18 INSPECT PRIMARY ELECTRICAL HARNESS ASSEMBLY (Continued)

3. Inspect electrical connector (3). There shall be no corrosion, broken or bent pins (4), or cracked insulation (5).



4. **Inspect five electrical connectors (6)**. There shall be no corrosion, broken or bent sleeves (7) or cracked insulation (8).



FOLLOW-ON MAINTENANCE: None

END OF TASK

### 7-19 REPAIR PRIMARY ELECTRICAL HARNESS ASSEMBLY

### INITIAL SETUP Applicable Configurations: All Tools: Powerplant Mechanic's Tool Kit, NSN 5180-00-323-4944 Technical Inspection Tool Kit NSN 5180-00-323-5114 Hand File Set

Materials: Crocus Cloth (El 6) Personnel Required: Aircraft Powerplant Repairer Aircraft Powerplant Inspector Equipment Condition: Off Engine Task

### NOTE

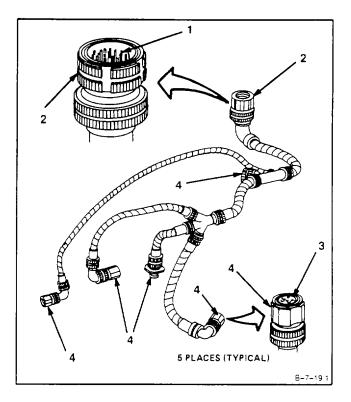
This repair is allowed provided it does not cause pin to break or crack.

- 1. Straighten bent pin (1) of electrical connector (2). Use long nose pliers to gently move pin (1) until it is straight.
- 2. Remove corrosion from pin (1) of electrical connector (2). Use crocus cloth (E16).
- 3. Remove corrosion from sleeve (3) of electrical connectors (4). Use round hand file.

### INSPECT

# FOLLOW-ON MAINTENANCE:

None



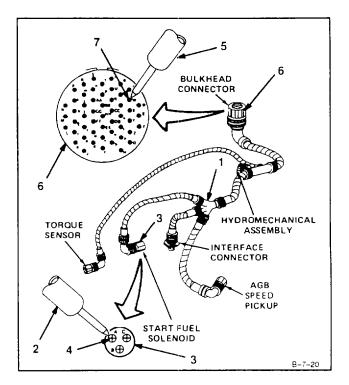
**END OF TASK** 

### 7-20 TEST PRIMARY ELECTRICAL HARNESS ASSEMBLY

INITIAL SETUP Applicable Configurations: All *Tools:* Powerplant Mechanic's Tool Kit, NSN 5180-00-323-4944 Multimeter

Materials: None Personnel Required: Aircraft Powerplant Repairer

- 1. Using multimeter, measure continuity and insulation resistance of electrical harness assembly (1) as follows:
  - a. Set multimeter range switch to R x 1.
  - b. Touch red probe (2) to electrical connector (3), sleeve A (4).
  - c. Touch black probe (5) to electrical connector (6), pin W (7).
  - d. Meter shall indicate zero ohms.
  - e. Set multimeter range switch to R x 1000.
  - f. Touch black probe (5) to all other pins on electrical connector (6).
  - g. Meter shall indicate 1000 ohms minimum.



7-20

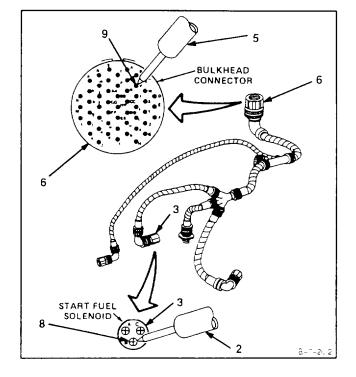
### 7-20 TEST PRIMARY ELECTRICAL HARNESS ASSEMBLY (Continued)

h. Set multimeter range switch to R x 1.

i. Touch red probe (2) to electrical connector (3), sleeve B (8).

j. Touch black probe (5) to electrical connector (6), pin V (9).

k. Meter shall indicate zero ohms.



I. Set multimeter range switch to R x 1.

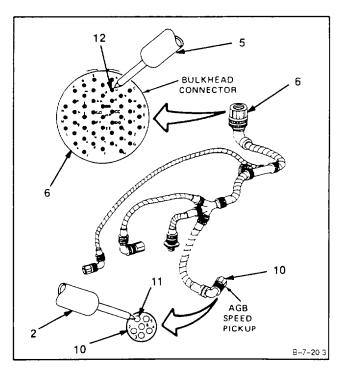
m. Touch red probe (2) to electrical connector (10), sleeve 1 (11).

n. Touch black probe (5) to electrical connector (6), pin U (12).

- o. Meter shall indicate zero ohms.
- p. Set multimeter range switch to R x 1000.

q. Touch black probe (5) to all other pins on electrical connector (6).

r. Meter shall indicate 1000 ohms minimum.



### 7-20 TEST PRIMARY ELECTRICAL HARNESS ASSEMBLY (Continued)

s. Set multimeter range switch to R x 1.

t. Touch red probe (2) to electrical connector (10), sleeve 2 (13).

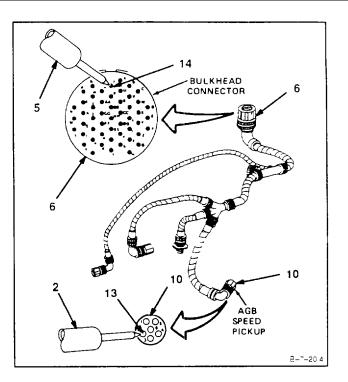
u. Touch black probe (5) to electrical connector (6), pin T (14).

v. Meter shall indicate zero ohms.

w. Set multimeter range switch to R x 1000.

x. Touch black probe (5) to all other pins on electrical connector (6).

y. Meter shall indicate 1000 ohms minimum.



z. Set multimeter range switch to R x 1.

aa. Touch red probe (2) to electrical connector (10), sleeve 3 (15).

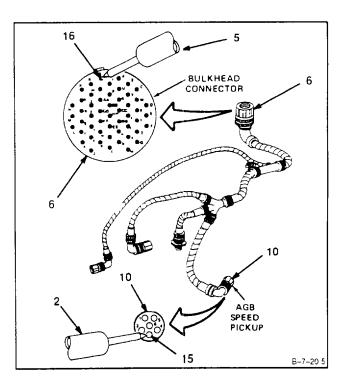
ab. Touch black probe (5) to electrical connector (6), pin S (16).

ac. Meter shall indicate zero ohms.

ad. Set multimeter range switch to R x 1000.

ae. Touch black probe (5) to all other pins on electrical connector (6).

af. Meter shall indicate 1000 ohms minimum.



### TM 1-2840-252-23-3

7-20

### 7-20 TEST PRIMARY ELECTRICAL HARNESS ASSEMBLY (Continued)

ag. Set multimeter range switch to R x 1.

ah. Touch red probe (2) to electrical connector (10), sleeve 4 (17).

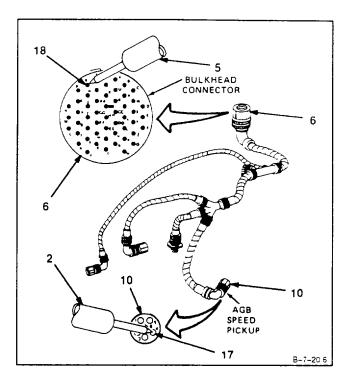
ai. Touch black probe (5) to electrical connector (6), pin R (18).

aj. Meter shall indicate **zero ohms.** 

ak. Set multimeter range switch to R x 1000.

al. Touch black probe (5) to all other pins on electrical connector (6).

am. Meter shall indicate 1000 ohms minimum.



an. Set multimeter range switch to R x 1.

ao. Touch red probe (2) to electrical connector (19), sleeve A (20).

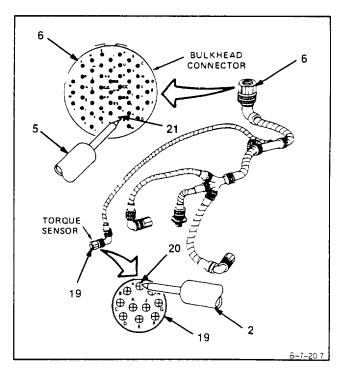
ap. Touch black probe (5) to electrical connector (6), pin  $\underline{b}$  (21).

aq. Meter shall indicate zero ohms.

ar. Set multimeter range switch to R x 1000.

as. Touch black probe (5) to all other pins on electrical connector (6).

at. Meter shall indicate 1000 ohms minimum.



### 7-20 TEST PRIMARY ELECTRICAL HARNESS ASSEMBLY (Continued)

au. Touch red probe (2) to electrical connector (19), sleeve B (22).

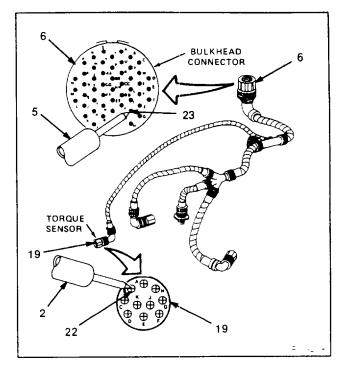
av. Touch black probe (5) to electrical connector (6), pin <u>a (</u>23).

aw. Meter shall indicate zero ohms.

ax. Set multimeter range switch to R x 1000.

ay. Touch black probe (5) to all other pins on electrical connector (6).

az. Meter shall indicate 1000 ohms minimum.



ba. Set multimeter range switch to R x 1.

bb. Touch red probe (2) to electrical connector (19), sleeve C (24).

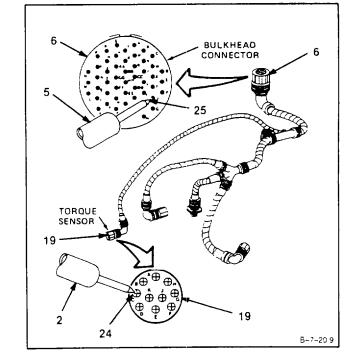
bc. Touch black probe (5) to electrical connector (6), pin z (25).

bd. Meter shall indicate zero ohms.

be. Set multimeter range switch to R x 1000.

bf. Touch black probe (5) to all other pins on electrical connector (6).

bg. Meter shall indicate 1000 ohms minimum.



### 7-20 TEST PRIMARY ELECTRICAL HARNESS A SSEMBLY (Continued)

bh. Touch red probe (2) to electrical connector (19), sleeve D (26).

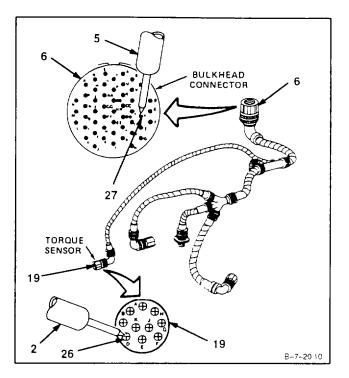
bi. Touch black probe (5) to electrical connector (6), pin y (27).

bj. Meter shall indicate **zero ohms**.

bk. Set multimeter range switch to R x 1000.

bl. Touch black probe (5) to all other pins on electrical connector (6).

bm. Meter shall indicate 1000 ohms minimum.



bn. Set multimeter range switch to R x 1.

bo. Touch red probe (2) to electrical connector (19), sleeve E (28).

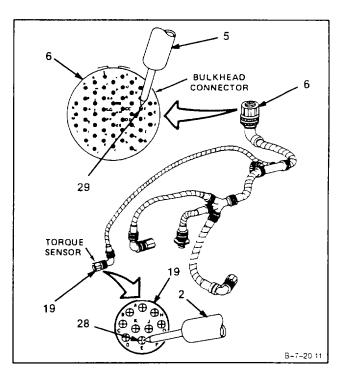
bp. Touch black probe (5) to electrical connector (6), pin x (29).

bq. Meter shall indicate zero ohms.

br. Set multimeter range switch to R x 1000.

bs. Touch black probe (5) to all other pins on electrical connector (6).

bt. Meter shall indicate 1000 ohms minimum.



### 7-20 TEST PRIMARY ELECTRICAL HARNESS ASSEMBLY (Continued)

bu. Set multimeter range switch to R x 1.

bv. Touch red probe (2) to electrical connector (3U), sleeve S (31).

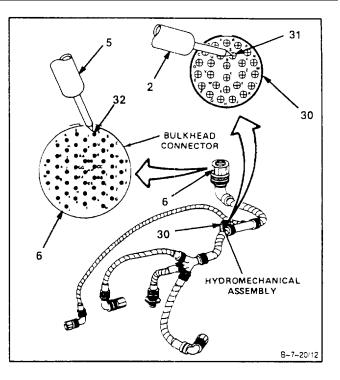
bw. Touch black probe (5) to electrical connector (6), pin A (32).

bx. Meter shall indicate zero ohms.

by. Set multimeter range switch to R x 1000.

bz. Touch black probe (5) to all other pins on electrical connector (6).

ca. Meter shall indicate 1000 ohms minimum.



cb. Set multimeter range switch to R x 1.

cc. Touch red probe (2) to electrical connector (30), sleeve R (33).

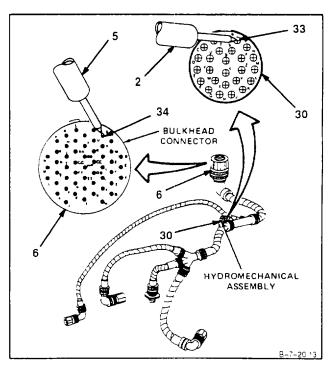
cd. Touch black probe (5) to electrical connector (6), pin B (34).

ce. Meter shall indicate zero ohms.

cf. Set multimeter range switch to R :x 1000.

cg. Touch black probe (5) to all other pins on electrical connector (6).

ch. Meter shall indicate 1000 ohms minimum.



### 7-20 TEST PRIMARY ELECTRICAL HARNESS ASSEMBLY (Continued)

ci. Set multimeter range switch to R x 1.

cj. Touch red probe (2) to electrical connector (30), sleeve F (35).

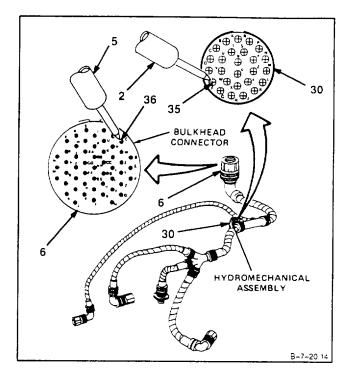
ck. Touch black probe (5) to electrical connector (6), pin C (36).

cl. Meter shall indicate zero ohms.

cm. Set multimeter range switch to R x 1000.

cn. Touch black probe (5) to all other pins on electrical connector (6).

co. Meter shall indicate 1000 ohms minimum.



cp. Set multimeter range switch to R x 1.

cq. Touch red probe (2) to electrical connector (30), sleeve E (37).

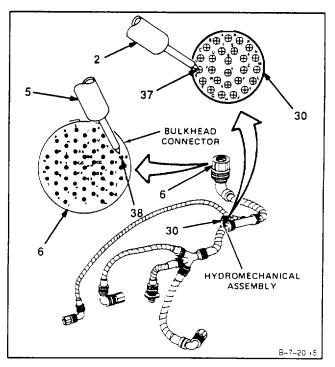
cr. Touch black probe (5) to electrical connector (6), pin D (38).

cs. Meter shall indicate zero ohms.

ct. Set multimeter range switch to R x 1000.

cu. Touch black probe (5) to all other pins on electrical connector (6).

cv. Meter shall indicate 1000 ohms minimum.

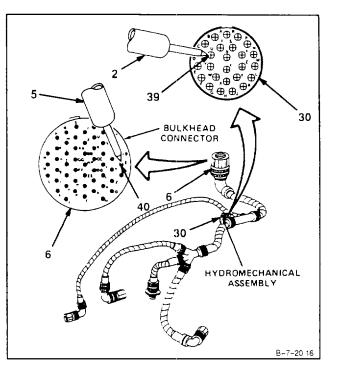


### 7-20 TEST PRIMARY ELECTRICAL HARNESS ASSEMBLY (Continued)

cw. Set multimeter range switch to R x 1.

cx. Touch red probe (2) to electrical connector (30), sleeve U (39).

- cy. Touch black probe (5) to electrical connector (6), pin E (40).
  - cz. Meter shall indicate zero ohms.
  - da. Set multimeter range switch to R x 1000.
  - db. Touch black probe (5) to all other pins on electrical connector (6).



dc. Meter shall indicate 1000 ohms minimum.

dd. Set multimeter range switch to R x 1.

de. Touch red probe (2) to electrical connector (30), sleeve V (41).

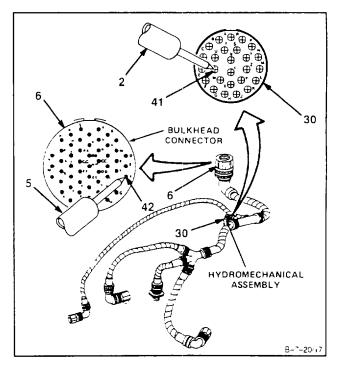
df. Touch black probe (5) to electrical connector (6), pin F (42).

dg. Meter shall indicate **zero ohms**.

dh. Set multimeter range switch to R x 1000.

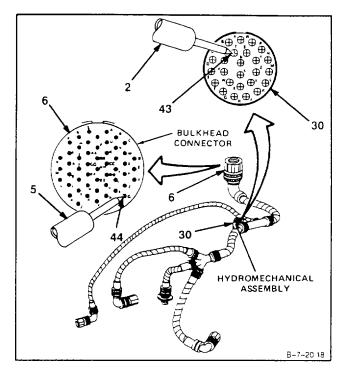
di. Touch black probe (5) to all other pins on electrical connector (6).

dj. Meter shall indicate 1000 ohms minimum.

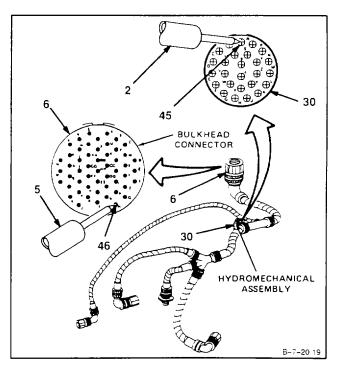


### 7-20 TEST PRIMARY ELECTRICAL HARNESS ASSEMBLY (Continued)

- dk. Set multimeter range switch to R x 1.
- dl. Touch red probe (2) to electrical connector (30), sleeve T (43).
- dm. Touch black probe (5) to electrical connector (6), pin G (44).
- dn. Meter shall indicate zero ohms.
- do. Set multimeter range switch to R x 1000.
- dp. Touch black probe (5) to all other pins on electrical connector (6).
- dq. Meter shall indicate 1000 ohms minimum.



- dr. Set multimeter range switch to R x 1.
- ds. Touch red probe (2) to electrical connector (30), sleeve A (45).
- dt. Touch black probe (5) to electrical connector (6), pin H (46).
- du. Meter shall indicate zero ohms.
- dv. Set multimeter range switch to R x 1000.
- dw. Touch black probe (5) to all other pins on electrical connector (6).
- dx. Meter shall indicate 1000 ohms minimum.

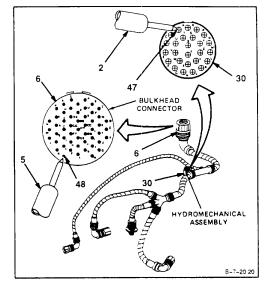


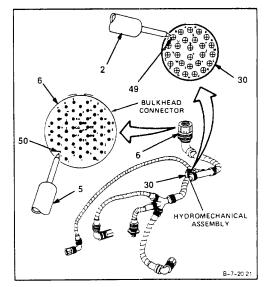
### TM 1-2840-252-23-3

7-20

### 7-20 TEST PRIMARY ELECTRICAL HARNESS ASSEMBLY (Continued)

- dy. Set multimeter range switch to R x 1.
- dz. Touch red probe (2) to electrical connector (30), sleeve B (47).
- ea. Touch black probe (5) to electrical connector (6), pin J (48).
- eb. Meter shall indicate zero ohms.
- ec. Set multimeter range switch to R x 1000.
- ed. Touch black probe (5) to all other pins on electrical connector (6).
- ee. Meter shall indicate 1000 ohms minimum.

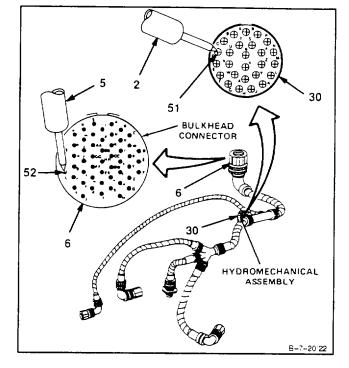




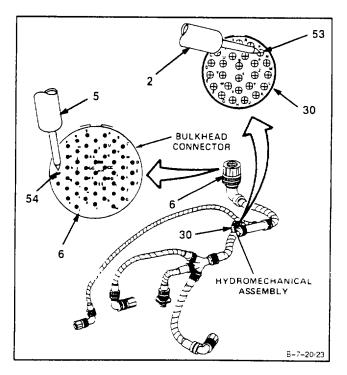
- ef. Set multimeter range switch to R x 1.
- eg. Touch red probe (2) to electrical connector (30), sleeve C (49).
- eh. Touch black probe (5) to electrical connector (6), pin K (50).
- ei. Meter shall indicate zero ohms.
- ej. Set multimeter range switch to R x 1000.
- ek. Touch black probe (5) to all other pins on electrical connector (6).
- el. Meter shall indicate 1000 ohms minimum.

### 7-20 TEST PRIMARY ELECTRICAL HARNESS ASSEMBLY (Continued)

- em. Set multimeter range switch to R x 1.
- en. Touch red probe (2) to electrical connector (30), sleeve D (51).
- eo. Touch black probe (5) to electrical connector (6), pin L (52).
- ep. Meter shall indicate zero ohms.
- eq. Set multimeter range switch to R x 1000.
- er. Touch black probe (5) to all other pins on electrical connector (6).
- es. Meter shall indicate 1000 ohms minimum.

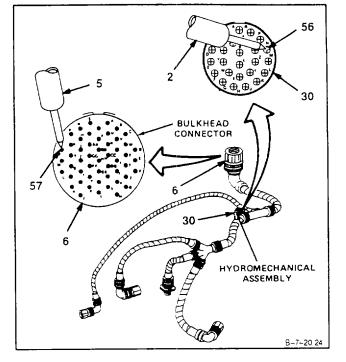


- et. Set multimeter range switch to R x 1.
- eu. Touch red probe (2) to electrical connector (30), sleeve P (53).
- ev. Touch black probe (5) to electrical connector (6), pin M (54).
- ew. Meter shall indicate zero ohms.
- ex. Set multimeter range switch to R x 1000.
- ey. Touch black probe (5) to all other pins on electrical connector (6).
- ez. Meter shall indicate 1000 ohms minimum.

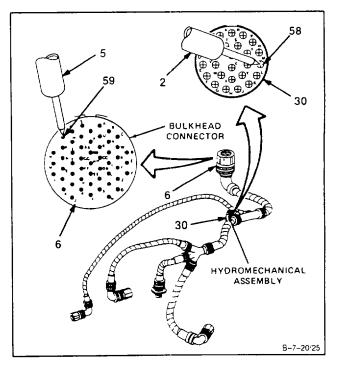


### 7-20 TEST PRIMARY ELECTRICAL HARNESS ASSEMBLY (Continued)

- fa. Set multimeter range switch to R x 1.
- fb. Touch red probe (2) to electrical connector (30), sleeve N (56).
- fc. Touch black probe (5) to electrical connector (6), pin N (57).
- fd. Meter shall indicate zero ohms.
- fe. Set multimeter range switch to R x 1000.
- ff. Touch black probe (5) to all other pins on electrical connector (6).
- fg. Meter shall indicate 1000 ohms minimum.



- fh. Set multimeter range switch to R x 1.
- fi. Touch red probe (2) to electrical connector (30), sleeve M (58).
- fj. Touch black probe (5) to electrical connector (6), pin P (59).
- fk. Meter shall indicate zero ohms.
- fl. Set multimeter range switch to R x 1000.
- fm. Touch black probe (5) to all other pins on electrical connector (6).
- fn. Meter shall indicate 1000 ohms minimum.



fo. Set multimeter range switch to R x 1.

fr. Meter shall indicate zero ohms.

fs. Set multimeter range switch to R x 1000.

fu. Meter shall indicate 1000 ohms minimum.

fp. Touch red probe (2) to electrical connector (30),

fq. Touch black probe (5) to electrical connector (60),

ft. Touch black probe (5) to all other pins on electrical

**TEST PRIMARY ELECTRICAL HARNESS ASSEMBLY (Continued)** 

7-20

sleeve Z (61).

connector (60).

pin A (62).



fw. Touch red probe (2) to electrical connector (30), sleeve Y (63).

fx. Touch black probe (5) to electrical connector (60), pin B (64).

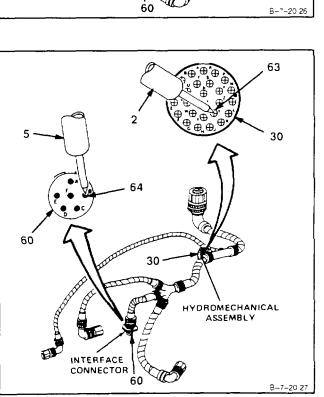
fy. Meter shall indicate zero ohms.

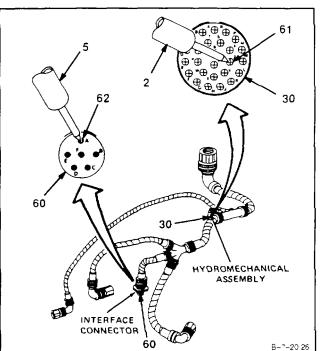
fz. Set multimeter range switch to R x 1000.

ga. Touch black probe (5) to all other pins on electrical connector (60).

gb. Meter shall indicate 1000 ohms minimum.





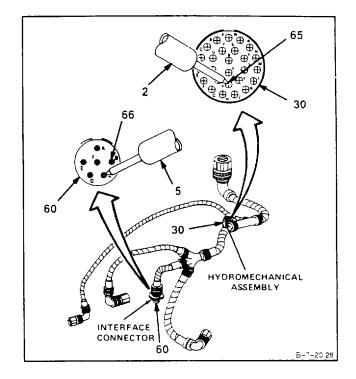


# 7-20 TEST PRIMARY ELECTRICAL HARNESS ASSEMBLY (Continued)

- gc. Set multimeter range switch to R x 1.
- gd. Touch red probe (2) to electrical connector (30), sleeve X (65).
- ge. Touch black probe (5) to electrical connector (60), pin C (66).
- gf. Meter shall indicate zero ohms.
- gg. Set multimeter range switch to R x 1000.
- gh. Touch black probe (5) to all other pins on electrical connector (60).
- gi. Meter shall indicate <u>1000 ohms</u> minimum.

FOLLOW-ON MAINTENANCE:

None



**END OF TASK** 

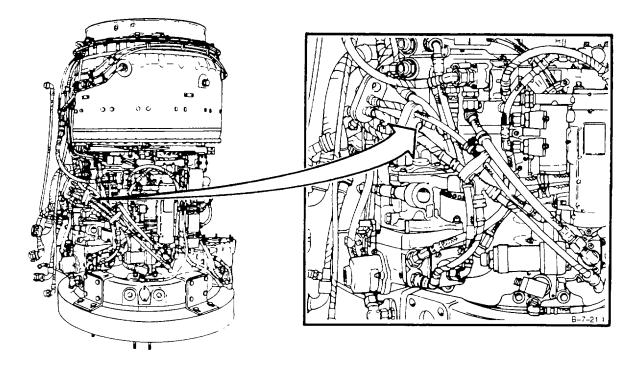
### <u>TM 1-2840-252-23</u>-3 7-21

### 7-21 INSTALL PRIMARY ELECTRICAL HARNESS ASSEMBLY

### INITIAL SETUP Applicable Configurations: All Tools: Powerplant Mechanic's Tool Kit, NSN 5180-00-323-4944 Technical Inspection Tool Kit, NSN 5180-00-323-5114 Materials:

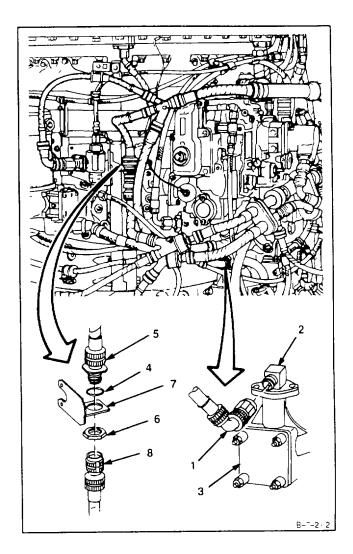
Lockwire (E33)

Parts: Strap Personnel Required: Aircraft Powerplant Repairer Aircraft Powerplant Inspector References: TM 1-2840-252-23P



# 7-21 INSTALL PRIMARY ELECTRICAL HARNESS ASSEMBLY (Continued)

- 1. Install electrical connector (1), to speed pickup (2) on accessory gearbox assembly (3).
- 2. Install packing (4), connector (5), and nut (6) to bracket (7). Lockwire nut (6). Use lockwire (E33).
- 3. Install electrical connector (8) to electrical connector (5).



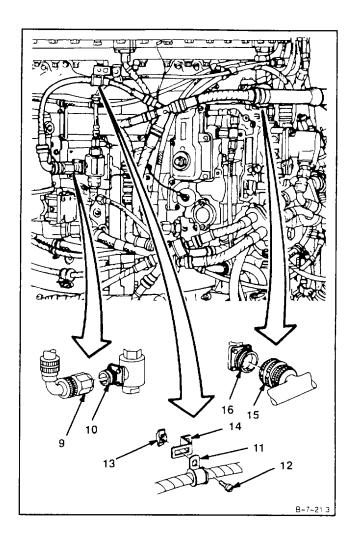
# 7-21 INSTALL PRIMARY ELECTRICAL HARNESS ASSEMBLY (Continued)

4. Install electrical connector (9) to starting fuel solenoid valve (10).

### NOTE

Make sure that nut (13) is securely fastened to bracket with long section of nut perpendicular to slot.

- 5. Install clamp (11), screw (12), and nut (13) to bracket (14).
- 6. Install electrical connector (15) to hydromechanical assembly (16).

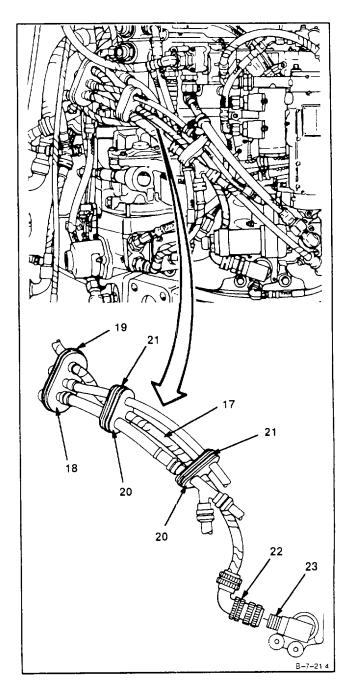


# 7-21 INSTALL PRIMARY ELECTRICAL HARNESS ASSEMBLY (Continued)

- 7. Install harness (17) to cushion (18) and install strap (19) to cushion (18).
- 8. Install harness (17) to two cushions (20) and install straps (21) to cushions (20).
- 9. Install electrical connector (22) to torque sensor (23).

# INSPECT

FOLLOW-ON MAINTENANCE: None



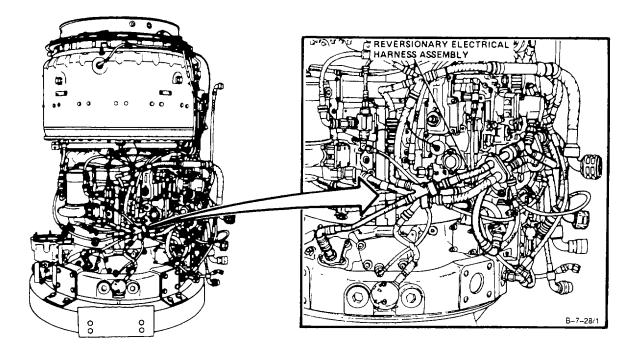
END OF TASK

### **SECTION V**

# REVERSIONARY ELECTRICAL HARNESS ASSEMBLY

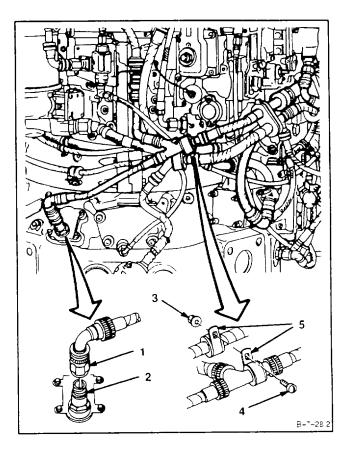
# 7-22 REMOVE REVERSIONARY ELECTRICAL HARNESS ASSEMBLY

INITIAL SETUP Applicable Configurations: All Tools: Powerplant Mechanic's Tool Kit, NSN 5180-00-323-4944 Materials: None Personnel Required: Aircraft Powerplant Repairer



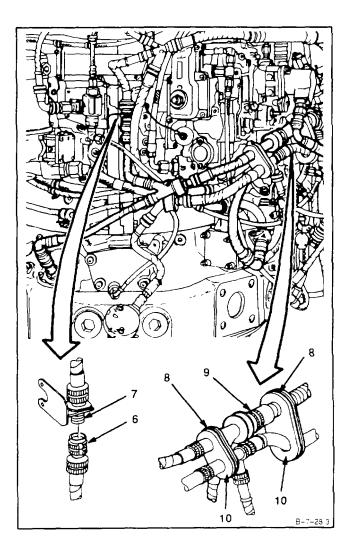
# 7-22 REMOVE REVERSIONARY ELECTRICAL HARNESS ASSEMBLY (Continued)

- 1. Disconnect electrical connector (1) from T1 sensor (2).
- 2. Remove nut (3), screw (4), and clamps (5).



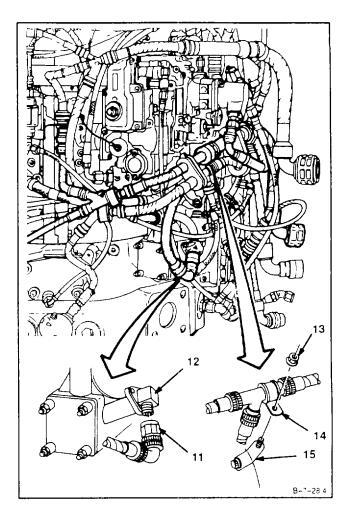
# 7-22 REMOVE REVERSIONARY ELECTRICAL HARNESS ASSEMBLY (Continued)

- 3. Disconnect electrical connector (6) from primary electrical connector (7).
- 4. Cut two straps (8) and remove harness (9) from two cushions (10).



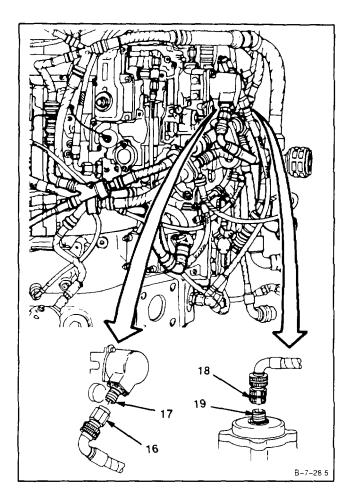
# 7-22 REMOVE REVERSIONARY ELECTRICAL HARNESS ASSEMBLY (Continued)

- 5. **Disconnect electrical connector** (11)from PT speed pickup (12).
- 6. Remove nut (13) and clamp (14) from bracket (15).



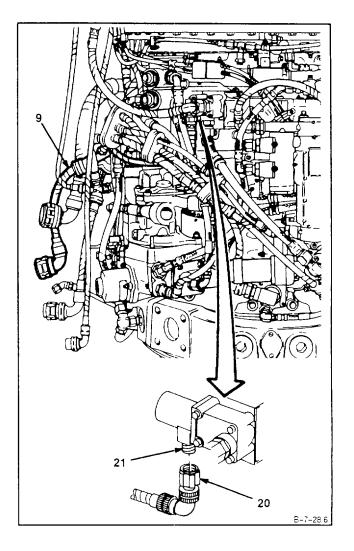
# 7-22 REMOVE REVERSIONARY ELECTRICAL HARNESS ASSEMBLY (Continued)

- 7. Disconnect electrical connector (16) from stepper motor (17).
- 8. Disconnect electrical connector (18) from alternator (19), located on rear of HMA.



9. Disconnect electrical connector (20) from solenoid valve (21). Remove reversionary electrical harness assembly (9).

FOLLOW-ON MAINTENANCE: None



END OF TASK

### 7-23 CLEAN REVERSIONARY ELECTRICAL HAIRNESS ASSEMBLY

7-23

### INITIAL SETUP Applicable Configurations:

### Tools:

Powerplant Mechanic's Tool Kit, NSN 5180-00-323-4944 Goggles Dry, Compressed Air Source *Materials:* Gloves (E24) Lint-Free Cloth (E30) Denatured Alcohol (E17) *Personnel Required:* Aircraft Powerplant Repairer

1. Wear gloves (E24). **Clean reversionary electrical harness assembly (1)**. Use lint-free cloth dampened with Denatured alcohol (E17). Wipe dry using clean, dry, lint-free cloth (E30).

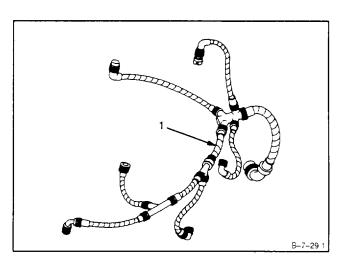
### Equipment Condition:

Off Engine Task Reversionary Electrical Harness Assembly Removed (Task 7-22)

General Safety Instructions:

# WARNING

Denatured alcohol (E17) is flammable and toxic. It can irritate skin and cause burns. Use only in well-ventilated area, away from heat and open flame. In case of contact, immediately flush skin or eyes with water for at least 15 minutes. Get medical attention for eyes.



2. Clean seven electrical connectors (2). Use denatured alcohol (El 7) and brush.

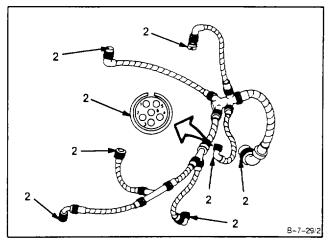
### WARNING

When using compressed air for cleaning, use approved protective equipment for eyes and face. Do not use more than 30 psig air pressure. Do not direct air toward yourself or another person. Failure to comply could result in injury to eyes or skin. In case of injury, get medical attention.

3. Wear goggles. **Blow dry electrical connectors (2).** Use clean, dry, compressed air.

### FOLLOW-ON MAINTENANCE:

Inspect Reversionary Electrical Harness Assembly (Task 7-24).



# 7-24 INSPECT REVERSIONARY ELECTRICAL HARNESS ASSEMBLY

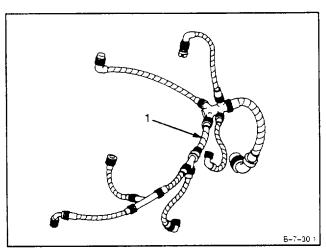
INITIAL SETUP

Applicable Configurations: All Tools:

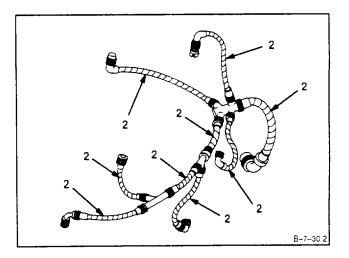
> Technical Inspection Tool Kit, NSN 5180-00-323-5114

1. **Inspect reversionary electrical harness assembly** (1). There shall be no frayed or burned insulation. There shall be no loose connections or broken wires.

Materials: None Personnel Required: Aircraft Powerplant Inspector Equipment Condition: Off Engine Task

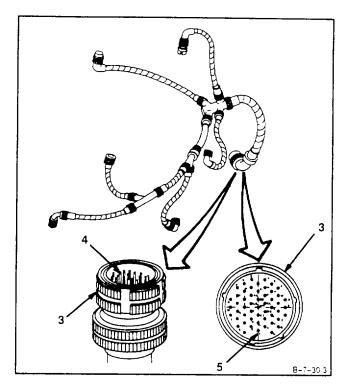


2. **Inspect sleeving (2).** There shall be no frayed or broken sleeving.

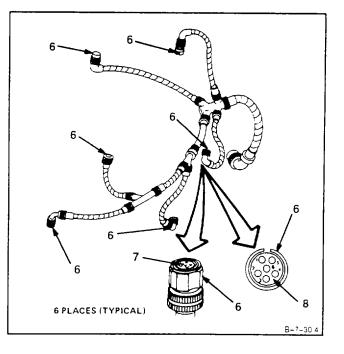


### 7-24 INSPECT REVERSIONARY ELECTRICAL HARNESS ASSEMBLY (Continued)

3. **Inspect electrical connector (3).** There shall be no corrosion, broken or bent pins (4), or cracked insulation (5).



4. **Inspect six electrical connectors (6).** There shall be no corrosion, broken or bent sleeves (7) or cracked insulation (8).



FOLLOW-ON MAINTENANCE: None

# END OF TASK

### 7-25 REPAIR REVERSIONARY ELECTRICAL HARNESS ASSEMBLY

7-25

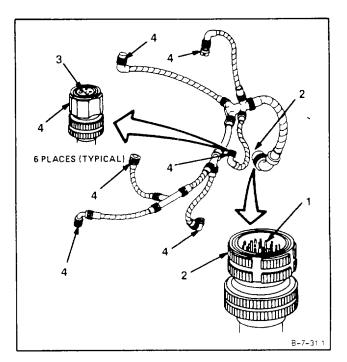
INITIAL SETUP Applicable Configurations: All Tools: Powerplant Mechanic's Tool Kit, NSN 5180-00-323-4944 Technical Inspection Tool Kit NSN 5180-00-323-5114 Hand File Set Materials:

Crocus Cloth (El 6) **Personnel Required**: Aircraft Powerplant Repairer Aircraft Powerplant Inspector **Equipment Condition:** Off Engine Task

# NOTE

This repair is allowed provided it does not cause pin to break or crack.

- 1. Straighten bent pin (1) of electrical connector (2). Use long nose pliers to gently move pin (1) until it is straight.
- 2. Remove corrosion from pin (1) of electrical connector (2). Use crocus cloth (E16).
- 3. Remove corrosion from sleeve (3) of electrical connectors (4). Use round hand file.



### INSPECT

FOLLOW-ON MAINTENANCE: None

END OF TASK

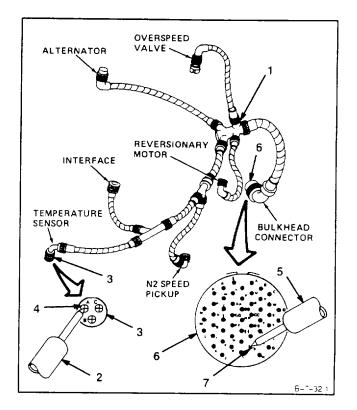
# 7-26 TEST REVERSIONARY ELECTRICAL HARNESS ASSEMBLY

# INITIAL SETUP

Applicable Configurations: All Tools: Powerplant Mechanic's Tool Kit, NSN 5180-00-323-4944 Multimeter Materials: None Personnel Required: Aircraft Powerplant Repairer

1. Using multimeter, measure continuity and insulation resistance of electrical harness assembly (1) as follows:

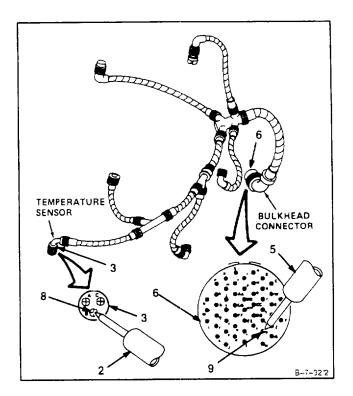
- a. Set multimeter range switch to R x 1.
- b. Touch red probe (2) to electrical connector (3), sleeve A (4).
- c. Touch black probe (5) to electrical connector (6), pinb (7).
- d. Meter shall indicate zero ohms.
- e. Set multimeter range switch to R x 1000.
- f. Touch black probe (5) to all other pins on electrical connector (6).
- g. Meter shall indicate 1000 ohms minimum.



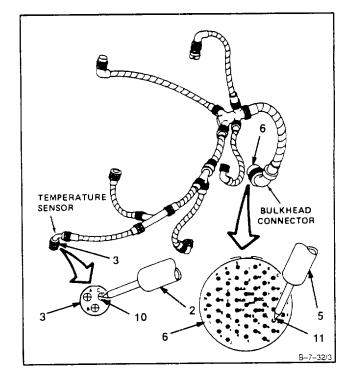
# 7-26 TEST REVERSIONARY ELECTRICAL HARNESS ASSEMBLY (Continued)

7-26

- h. Set multimeter range switch to R x 1.
- i. Touch red probe (2) to electrical connector (3), sleeve B (8).
- j. Touch black probe (5) to electrical connector(6), pin a (9).
- k. Meter shall indicate zero ohms.
- I. Set multimeter range switch to R x 1000.
- m. Touch black probe (5) to all other pins on electrical connector (6).
- n. Meter shall indicate 1000 ohms minimum.

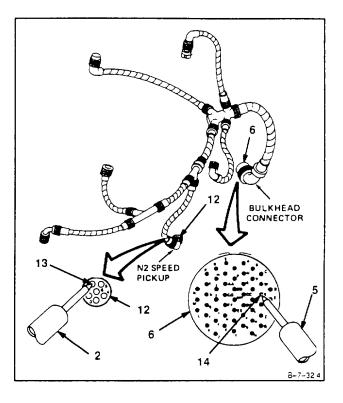


- o. Set multimeter range switch to R x 1.
- p. Touch red probe (2) to electrical connector (3), sleeve C (10).
- q. Touch black probe (5) to electrical connector(6), pin 2 (11).
- r. Meter shall indicate zero ohms.
- s. Set multimeter range switch to R x 1000.
- t. Touch black probe (5) to all other pins on electrical connector (6).
- u. Meter shall indicate 1000 ohms minimum.

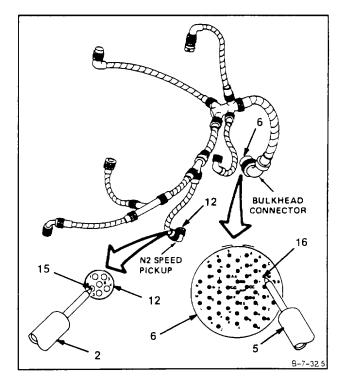


### 7-26 TEST REVERSIONARY ELECTRICAL HARNESS ASSEMBLY (Continued)

- v. Set multimeter range switch to R x 1.
- w. Touch red probe (2) to electrical connector (12), sleeve 1 (13).
- x. Touch black probe (5) to electrical connector (6), pin X (14).
- y. Meter shall indicate zero ohms.
- z. Set multimeter range switch to R x 1000.
- aa. Touch black probe (5) to all other pins on electrical connector (6).
- ab. Meter shall indicate 1000 ohms minimum.

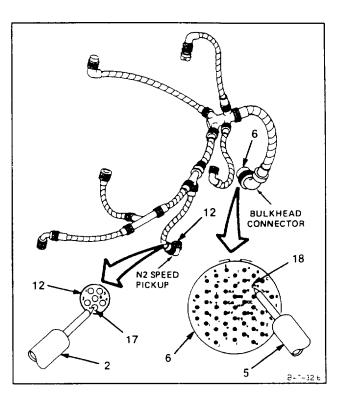


- ac. Set multimeter range switch to R x 1.
- ad. Touch red probe (2) to electrical connector (12), sleeve 2 (15).
- ae. Touch black probe (5) to electrical connector (6), pin W (16).
- af. Meter shall indicate zero ohms.
- ag. Set multimeter range switch to R x 1000.
- ah. Touch black probe (5) to all other pins on electrical connector (6).
- ai. Meter shall indicate 1000 ohms minimum.

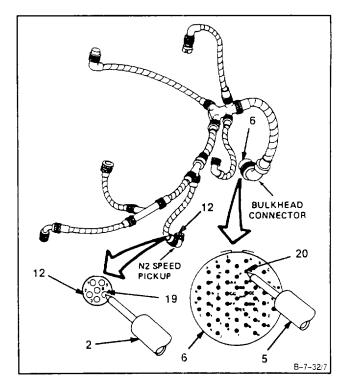


### 7-26 TEST REVERSIONARY ELECTRICAL HARNESS ASSEMBLY (Continued)

- aj. Set multimeter range switch to R x 1.
- ak. Touch red probe (2) to electrical connector (12), sleeve 3 (17).
- al. Touch black probe (5) to electrical connector (6), pin V (18).
- am. Meter shall indicate zero ohms.
- an. Set multimeter range switch to R x 1000.
- ao. Touch black probe (5) to all other pins on electrical connector (6).
- ap. Meter shall indicate 1000 ohms minimum.

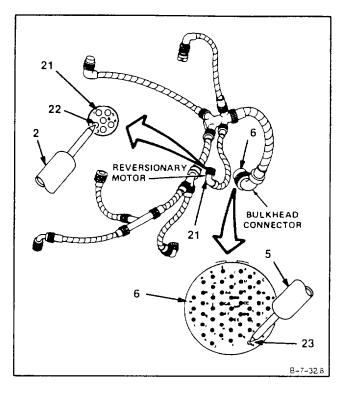


- aq. Set multimeter range switch to R x 1.
- ar. Touch red probe (2) to electrical connector (12), sleeve 4 (19).
- as. Touch black probe (5) to electrical connector (6), pin V (20).
- at. Meter shall indicate zero ohms.
- au. Set multimeter range switch to R x 1000.
- av. Touch black probe (5) to all other pins on electrical connector (6).
- aw. Meter shall indicate 1000 ohms minimum.

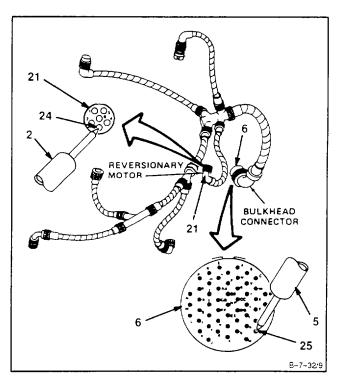


# 7-26 TEST REVERSIONARY ELECTRICAL HARNESS ASSEMBLY (Continued)

- ax. Set multimeter range switch to R x 1.
- ay. Touch red probe (2) to electrical connector (21), sleeve 2 (22).
- az. Touch black probe (5) to electrical connector (6), pin H (23).
- ba. Meter shall indicate zero ohms.
- bb. Set multimeter range switch to R x 1000.
- bc. Touch black probe (5) to all other pins on electrical connector (6).
- bd. Meter shall indicate 1000 ohms minimum.

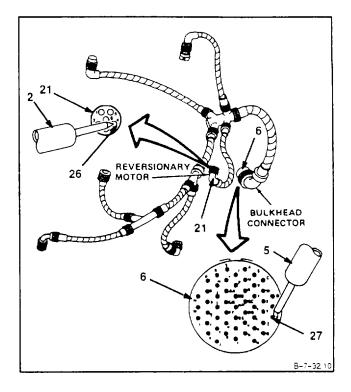


- be. Set multimeter range switch to R x 1.
- bf. Touch red probe (2) to electrical connector (21), sleeve 3 (24).
- bg. Touch black probe (5) to electrical connector (6), pin G (25).
- bh. Meter shall indicate zero ohms.
- bi. Set multimeter range switch to R x 1000.
- bj. Touch black probe (5) to all other pins on electrical connector (6).
- bk. Meter shall indicate 1000 ohms minimum.

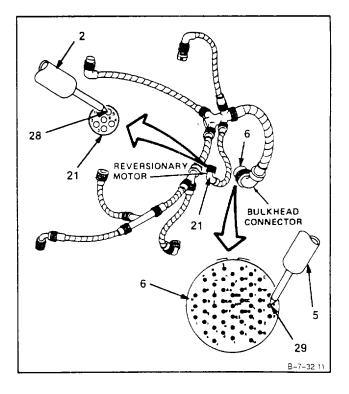


### 7-26 TEST REVERSIONARY ELECTRICAL HARNESS ASSEMBLY (Continued)

- bl. Set multimeter range switch to R x 1.
- bm. Touch red probe (2) to electrical connector (21), sleeve 4 (26).
- bn. Touch black probe (5) to electrical connector (6), pin F (27).
- bo. Meter shall indicate zero ohms.
- bp. Set multimeter range switch to R x 1000.
- bq. Touch black probe (5) to all other pins on electrical connector (6).
- br. Meter shall indicate 1000 ohms minimum.



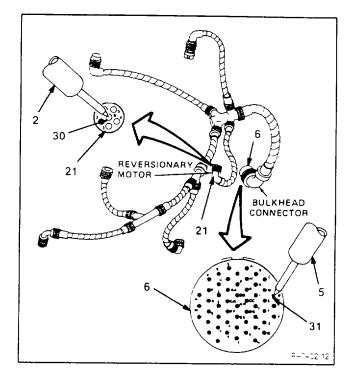
- bs. Set multimeter range switch to R x 1.
- bt. Touch red probe (2) to electrical connector (21), sleeve 5 (28).
- bu. Touch black probe (5) to electrical connector (6), pin E (29).
- bv. Meter shall indicate zero ohms.
- bw. Set multimeter range switch to R x 1000.
- bx. Touch black probe (5) to all other pins on electrical connector (6).
- by. Meter shall indicate 1000 ohms minimum.



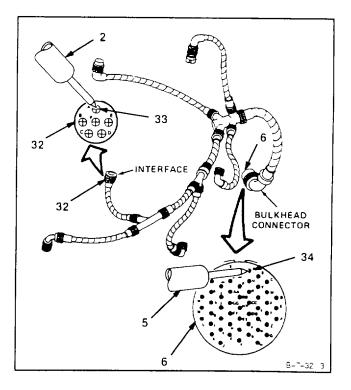
# 7-26 TEST REVERSIONARY ELECTRICAL HARNESS ASSEMBLY (Continued)

7-26

- bz. Set multimeter range switch to R x 1.
- ca. Touch red probe (2) to electrical connector (21), sleeve 6 (30).
- cb. Touch black probe (5) to electrical connector (6), pin D (31).
- cc. Meter shall indicate zero ohms.
- cd. Set multimeter range switch to R x 1000.
- ce. Touch black probe (5) to all other pins on electrical connector (6).
- cf. Meter shall indicate 1000 ohms minimum.



- cg. Set multimeter range switch to R x 1.
- ch. Touch red probe (2) to electrical connector (32), sleeve A (33).
- ci. Touch black probe (5) to electrical connector (6), pin A (34).
- cj. Meter shall indicate zero ohms.
- ck. Set multimeter range switch to R x 1000.
- cl. Touch black probe (5) to all other pins on electrical connector (6).
- cm. Meter shall indicate 1000 ohms minimum.

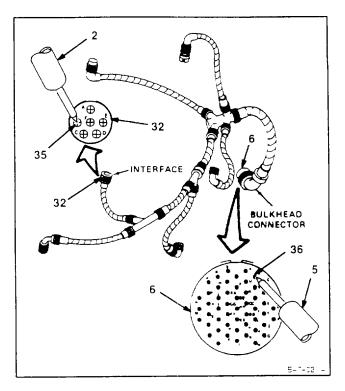


# 7-26 TEST REVERSIONARY ELECTRICAL HARNESS ASSEMBLY (Continued)

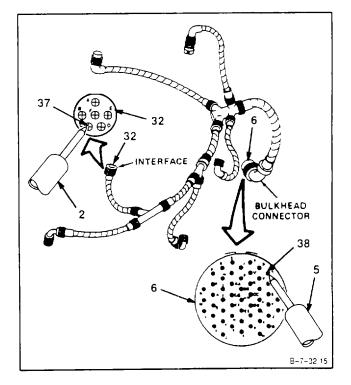
laoay

7-26

- cn. Set multimeter range switch to R x 1.
- co. Touch red probe (2) to electrical connector (32), sleeve B (35).
- cp. Touch black probe (5) to electrical connector (6), pin B (36).
- cq. Meter shall indicate zero ohms.
- cr. Set multimeter range switch to R x 1000.
- cs. Touch black probe (5) to all other pins on electrical connector (6).
- ct. Meter shall indicate 1000 ohms minimum.

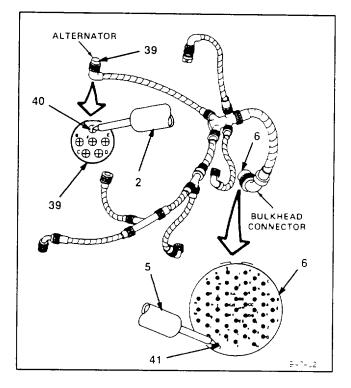


- cu. Set multimeter range switch to R x 1.
- cv. Touch red probe (2) to electrical connector (32), sleeve C (37).
- cw. Touch black probe (5) to electrical connector (6), pin C (38).
- cx. Meter shall indicate zero ohms.
- cy. Set multimeter range switch to R x 1000.
- cz. Touch black probe (5) to all other pins on electrical connector (6).
- da. Meter shall indicate 1000 ohms minimum.

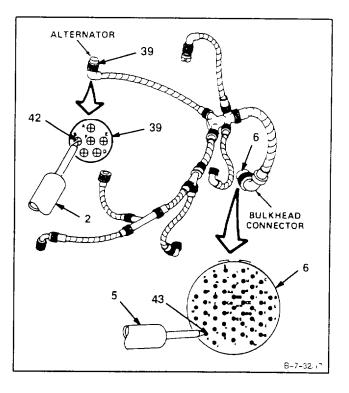


### 7-26 TEST REVERSIONARY ELECTRICAL HARNESS ASSEMBLY (Continue d)

- db. Set multimeter range switch to R x 1.
- dc. Touch red probe (2) to electrical connector (39), sleeve A (40).
- dd. Touch black probe (5) to electrical connector (6), pin J (41).
- de. Meter shall indicate zero ohms.
- df. Set multimeter range switch to R x 1000.
- dg. Touch black probe (5) to all other pins on electrical connector (6).
- dh. Meter shall indicate 1000 ohms minimum.

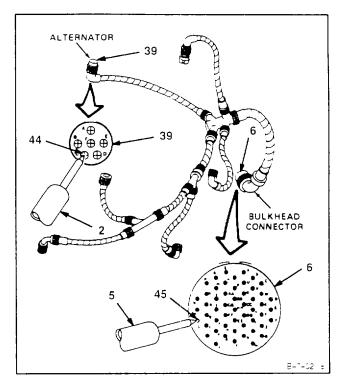


- di. Set multimeter range switch to R x 1.
- dj. Touch red probe (2) to electrical connector (39), sleeve B (42).
- dk. Touch black probe (5) to electrical connector (6), pin K (43).
- dl. Meter shall indicate zero ohms.
- dm. Set multimeter range switch to R x 1000.
- dn. Touch black probe (5) to all other pins on electrical connector (6).
- do. Meter shall indicate 1000 ohms minimum.

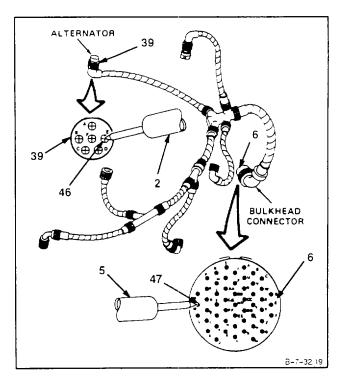


# 7-26 TEST REVERSIONARY ELECTRICAL HARNESS ASSEMBLY (Continued)

- dp. Set multimeter range switch to R x 1.
- dq. Touch red probe (2) to electrical connector (39), sleeve C (44).
- dr. Touch black probe (5) to electrical connector (6), pin L (45).
- ds. Meter shall indicate zero ohms.
- dt. Set multimeter range switch to R x 1000.
- du. Touch black probe (5) to all other pins on electrical connector (6).
- dv. Meter shall indicate 1000 ohms minimum.

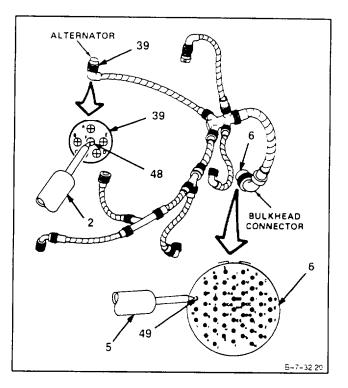


- dw. Set multimeter range switch to R x 1.
- dx. Touch red probe (2) to electrical connector (39), sleeve E (46).
- dy. Touch black probe (5) to electrical connector (6), pin M (47).
- dz. Meter shall indicate zero ohms.
- ea. Set multimeter range switch to R x 1000.
- eb. Touch black probe (5) to all other pins on electrical connector (6).
- ec. Meter shall indicate 1000 ohms minimum.

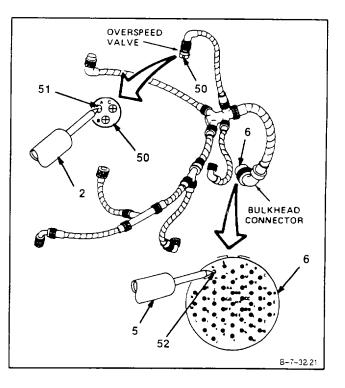


# 7-26 TEST REVERSIONARY ELECTRICAL HARNESS ASSEMBLY (Continued)

- ed. Set multimeter range switch to R x 1.
- ee. Touch red probe (2) to electrical connector (39), sleeve F (48).
- ef. Touch black probe (5) to electrical connector (6), pin N (49).
- eg. Meter shall indicate zero ohms.
- eh. Set multimeter range switch to R x 1000.
- ei. Touch black probe (5) to all other pins on electrical connector (6).
- ej. Meter shall indicate 1000 ohms minimum.

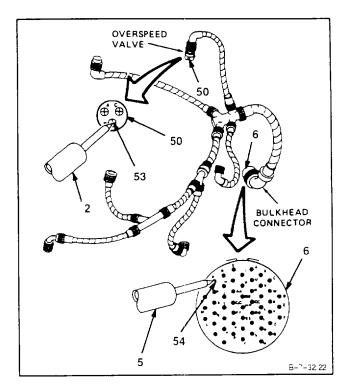


- ek. Set multimeter range switch to R x 1.
- el. Touch red probe (2) to electrical connector (50), sleeve A (51).
- em. Touch black probe (5) to electrical connector (6), pin R (52).
- en. Meter shall indicate zero ohms.
- eo. Set multimeter range switch to R x 1000.
- ep. Touch black probe (5) to all other pins on electrical connector (6).
- eq. Meter shall indicate 1000 ohms minimum.



# 7-26 TEST REVERSIONARY ELECTRICAL HARNESS ASSEMBLY (Continued)

- er. Set multimeter range switch to R x 1.
- es. Touch red probe (2) to electrical connector (50), sleeve B (53).
- et. Touch black probe (5) to electrical connector (6), pin P (54).
- eu. Meter shall indicate zero ohms.
- ev. Set multimeter range switch to R x 1000.
- ew. Touch black probe (5) to all other pins on electrical connector (6).
- ex. Meter shall indicate 1000 ohms minimum.



### FOLLOW-ON MAINTENANCE:

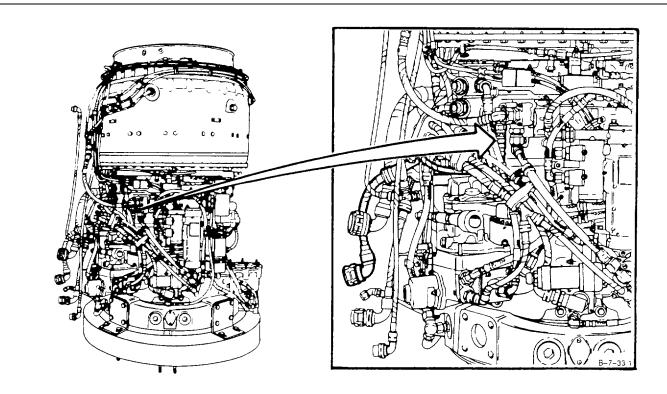
None

# 7-27 INSTALL REVERSIONARY ELECTRICAL HARNESS ASSEMBLY

### **INITIAL SETUP**

Applicable Configurations: All Tools: Powerplant Mechanic's Tool Kit, NSN 5180-00-323-4944 Technical Inspection Tool Kit, NSN 5180-00-323-5114 Parts:

Strap **Personnel Required**: Aircraft Powerplant Repairer Aircraft Powerplant Inspector **References:** TM 1-2840-252-23P



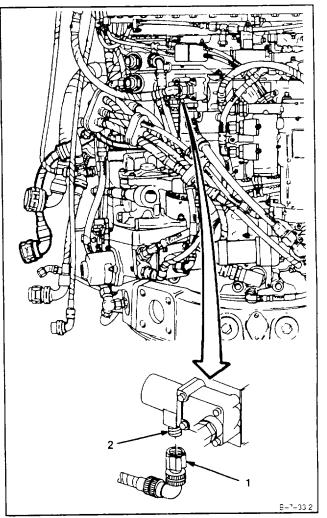
# 7-27 INSTALL REVERSIONARY ELECTRICAL HARNESS ASSEMBLY (Continued)

7-27

# NOTE

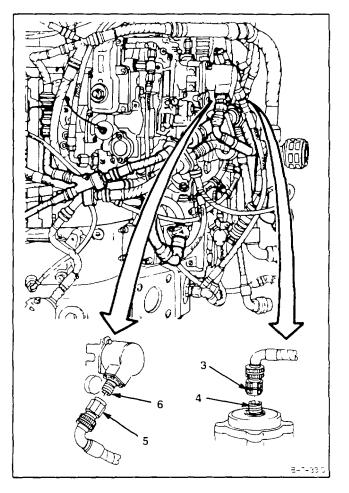
In following step, it may be necessary to remove lockwire from electrical connector and reorient connector for proper installation. Be sure to lockwire electrical connector if lockwire was removed.

1. Install electrical connector (1) to solenoid valve (2).



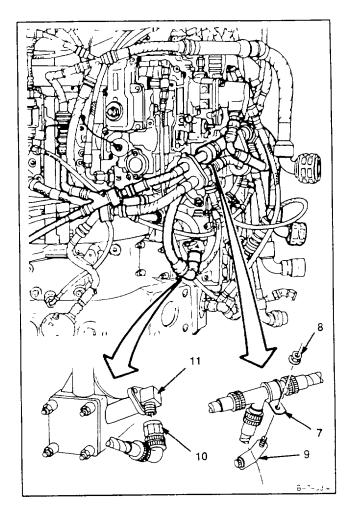
# 7-27 INSTALL REVERSIONARY ELECTRICAL HARNESS ASSEMBLY (Continued)

- 2. Install electrical connector (3) to alternator (4).
- 3. Install electrical connector (5) to stepper motor (6).



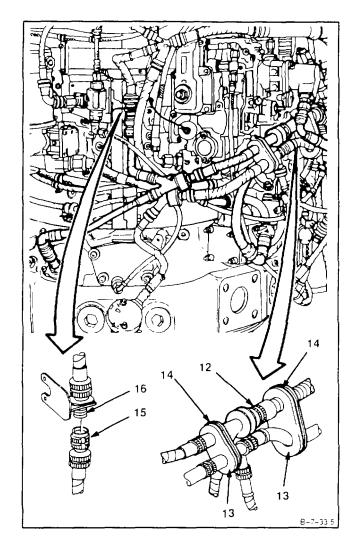
# 7-27 INSTALL REVERSIONARY ELECTRICAL HARNESS ASSEMBLY (Continued)

- 4. Install clamp (7) and nut (8) to bracket (9).
- 5. Install electrical connector (10) to PT speed pickup (11).



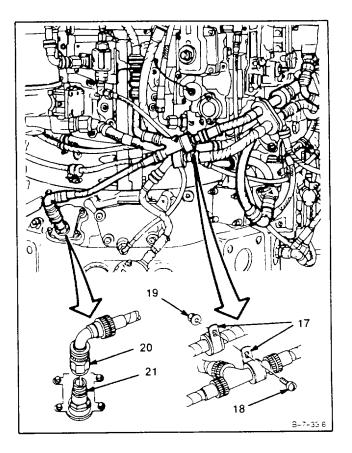
# 7-27 INSTALL REVERSIONARY ELECTRICAL HARNESS ASSEMBLY (Continued)

- 6. Install harness (12) to two cushions (13) and install straps (14) to cushions (13).
- 7. Install electrical connector (15) to primary electrical connector (16).



# 7-27 INSTALL REVERSIONARY ELECTRICAL HARNESS ASSEMBLY (Continued)

- 8. Install clamps (17), screw (18), and nut (19).
- 9. Install electrical connector (20) to T1 sensor (21).



# INSPECT

FOLLOW-ON MAINTENANCE: None

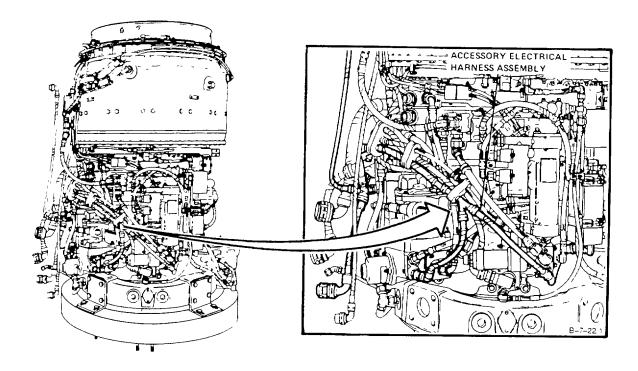
### SECTION VI ACCESSORY ELECTRICAL HARNESS ASSEMBLY

### 7-28 REMOVE ACCESSORY ELECTRICAL HARNESS ASSEMBLY

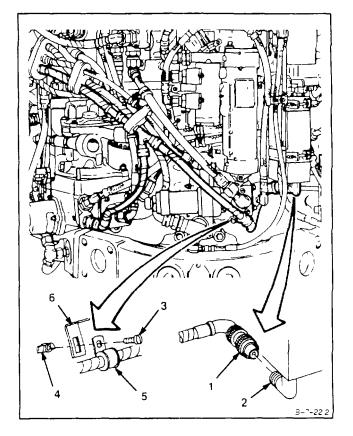
7-28

INITIAL SETUP Applicable Configurations: All Tools:

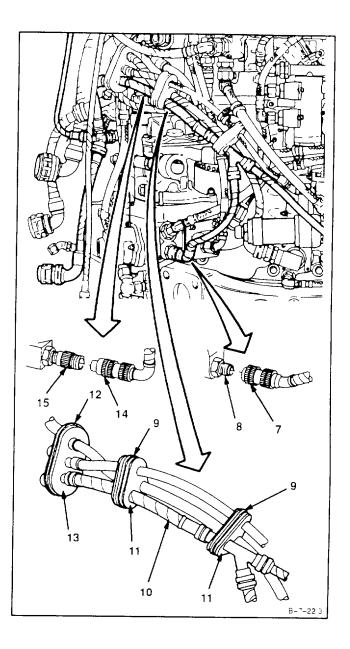
Powerplant Mechanic's Tool Kit, NSN 5180-00-323-4944 Materials: None Personnel Required: Aircraft Powerplant Repairer



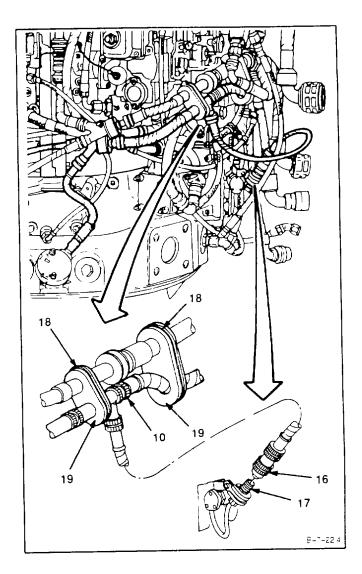
- 1. **Disconnect electrical connector (1)** from ignition exciter (2).
- 2. Remove screw (3), nut (4), and clamp (5) from bracket (6).



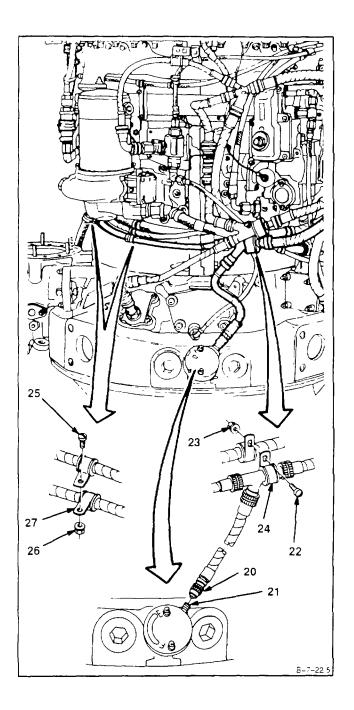
- 3. Disconnect electrical connector (7) from oil temperature bulb (8).
- 4. Cut two straps (9) and remove harness (10) from two cushions (11).
- 5. Cut strap (12) and remove harness (10) from cushion (13).
- 6. Disconnect electrical connector (14) from pick- up assembly (15).



- 7. Disconnect electrical connector (16) from accessory gearbox chip detector (17).
- 8. Cut two straps (18) and remove harness (10) from two cushions (19).

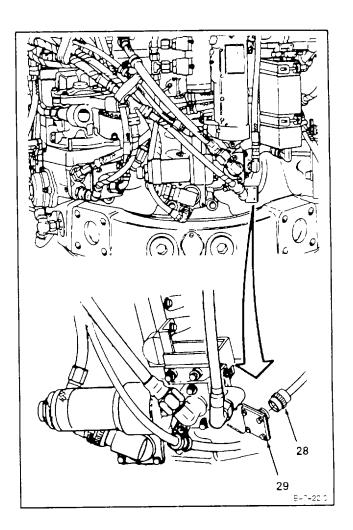


- 9. Disconnect electrical connector (20) from oil level indicator (21).
- 10. Remove screw (22), nut (23), and clamp (24).
- 11. Remove two screws (25), two nuts (26), and two clamps (27).



# 7-28 REMOVE ACCESSORY ELECTRICAL HARNESS ASSEMBLY (Continued)

12. Disconnect electrical connector (28) from dummy connector (29).



FOLLOW-ON MAINTENANCE: None

END OF TASK

# 7-29 CLEAN ACCESSORY ELECTRICAL HARNESS ASSEMBLY

### INITIAL SETUP

Applicable Configurations: All Tools:

Powerplant Mechanic's Tool Kit, NSN 5180-00-323-4944

### Goggles

Dry, Compressed Air Source **Materials:** Gloves (E24) burns. Lint-Free Cloth (E30) Denatured Alcohol (E17) **Personnel Required:** Aircraft Powerplant Repairer

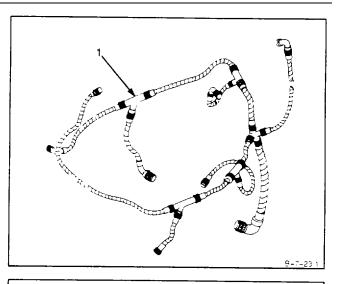
1. Wear gloves (E24). **Clean accessory electrical harness assembly (1).** Use lint-free cloth (E30) dampened with denatured alcohol (EI 7). Wipe dry using clean, dry, lint-free cloth (E30).

### **Equipment Condition:**

Off Engine Task Accessory Electrical Harness Assembly Removed (Task 7-28) General Safety Instructions:

# WARNING

Denatured alcohol (E17) is flammable and toxic. It can irritate skin and cause burns. Use only in well-ventilated area, away from heat and open flame. In case of contact, immediately flush skin or eyes with water for at least <u>15 minutes</u>. Get medical attention for eyes.



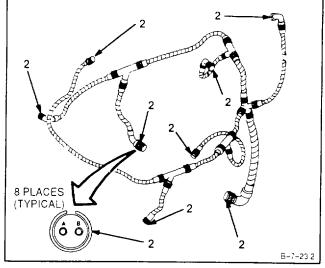
2. Clean eight electrical connectors (2). Use denatured alcohol (El 7) and brush.

### WARNING

When using compressed air for clean- ing, use approved protective equipment for eyes and face. Do not use more than <u>30 psig</u> air pressure. Do not direct air toward yourself or another person. Failure to comply could result in injury to eyes or skin. In case of injury, get medical attention.

3. Wear goggles. Blow dry electrical connector (2). Use clean, dry, compressed air.

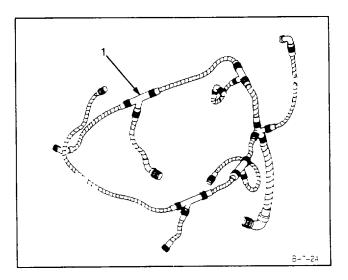
FOLLOW-ON MAINTENANCE: Inspect Accessory Electrical Harness Assembly (Task 7-30).



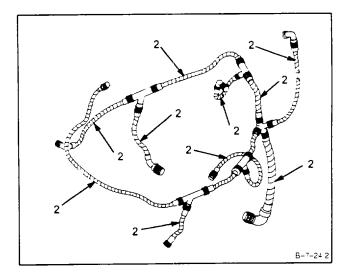
### INITIAL SETUP Applicable Configurations: All Tools: Technical Inspection Tool Kit, NSN 5180-00-323-5114

1. Inspect accessory electrical harness assembly (1). There shall be no frayed or burned insulation. There shall be no loose connections or broken wires.

Materials: None Personnel Required: Aircraft Powerplant Inspector Equipment Condition: Off Engine Task



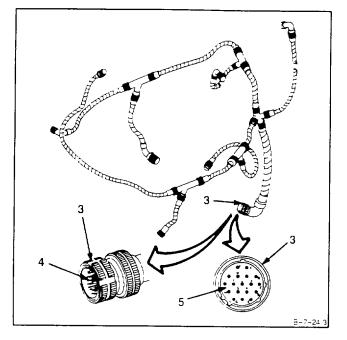
2. **Inspect sleeving (2).** There shall be no frayed or broken sleeving.



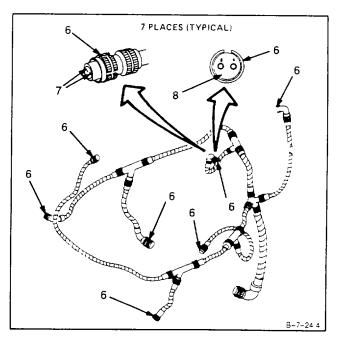
GO TO NEXT PAGE

# 7-30 INSPECT ACCESSORY ELECTRICAL HARNESS ASSEMBLY (Continued)

3. **Inspect electrical connector (3).** There shall be no corrosion, broken or bent pins (4), or cracked insulation (5).



4. **Inspect seven electrical connectors (6).** There shall be no corrosion, broken or bent sleeves (7) or cracked insulation (8).



FOLLOW-ON MAINTENANCE: None

END OF TASK

### 7-31 REPAIR ACCESSORY ELECTRICAL HARNESS ASSEMBLY

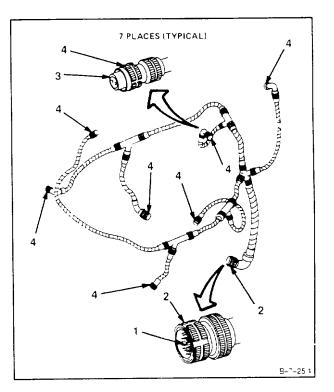
INITIAL SETUP Applicable Configurations All Tools: Powerplant Mechanic's Tool Kit, NSN 5180-00-323-4944 Technical Inspection Tool Kit, NSN 5180-00-323-5114 Hand File Set Materials:

Crocus Cloth (E16) **Personnel Required:** Aircraft Powerplant Repairer Aircraft Powerplant Inspector **Equipment Condition:** Off Engine Task

### NOTE

This repair is allowed provided it does not cause pin to break or crack.

- 1. Straighten bent pin (1) of electrical connector (2). Use long nose pliers to gently move pin (1) until it is straight.
- 2. Remove corrosion from pin (1) of electrical connector (2). Use crocus cloth (E16).
- 3. Remove corrosion from sleeve (3) of electrical connectors (4). Use round hand file.



#### INSPECT

FOLLOW-ON MAINTENANCE: None

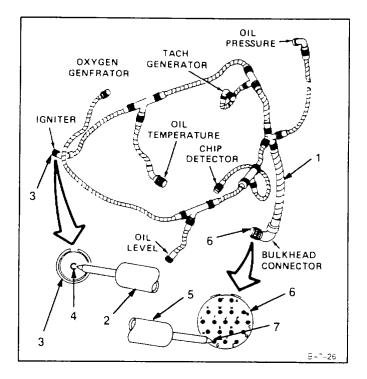
END OF TASK



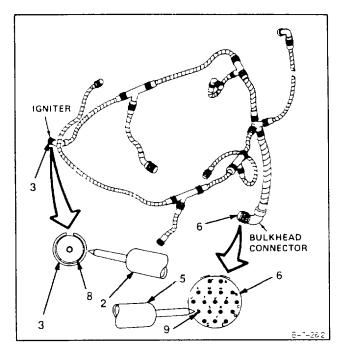
7-32

INITIAL SETUP Applicable Configurations: All Tools: Powerplant Mechanic's Tool Kit, NSN 5180-00-323-4944 Multimeter Materials: None Personnel Required: Aircraft Powerplant Repairer

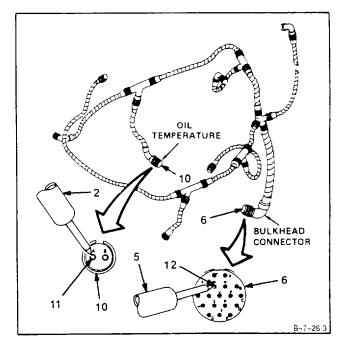
- 1. Using multimeter, measure continuity and insulation resistance of cable harness assembly (1) as follows:
  - a. Set multimeter range switch to R x 1.
  - b. Touch red probe (2) to electrical connector (3), center sleeve (4).
  - c. Touch black probe (5) to electrical connector (6), pin G (7).
  - d. Meter shall indicate zero ohms.
  - e. Set multimeter range switch to R x 1000.
  - f. Touch black probe (5) to all other pins on electrical connector (6).
  - g. Meter shall indicate 1000 ohms minimum.



- h. Set multimeter range switch to R x 1.
- i. Touch red probe (2) to electrical connector (3), shell (8).
- j. Touch black probe (5) to electrical connector (6), pin H (9).
- k. Meter shall indicate zero ohms.



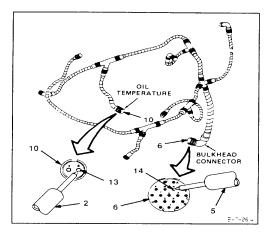
- I. Set multimeter range switch to R x 1.
- m. Touch red probe (2) to electrical connector (10), sleeve A (11).
- n. Touch black probe (5) to electrical connector (6), pin M (12).
- o. Meter shall indicate zero ohms.
- p. Set multimeter range switch to R x 1000.
- q. Touch black probe (5) to all other pins on electrical connector (6).
- r. Meter shall indicate <u>1000 ohms</u> minimum.

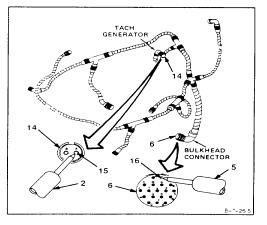


#### GO TO NEXT PAGE

### 7-32 TEST ACCESSORY ELECTRICAL HARNESS ASSEMBLY

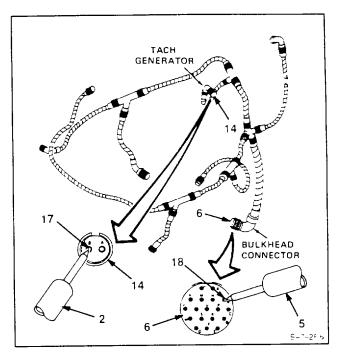
- s. Set multimeter range switch to R x 1.
- t. Touch red probe (2) to electrical connector (10), sleeve B (13).
- u. Touch black probe (5) to electrical connector (6), pin N (14).
- v. Meter shall indicate zero ohms.
- w. Set multimeter range switch to R x 1000.
- x. Touch black probe (5) to all other pins on electrical connector (6).
- y. Meter shall indicate <u>1000 ohms</u> minimum.
- z. Set multimeter range switch to R x 1.
- aa. Touch red probe (2) to electrical connector (14), sleeve A (15).
- ab. Touch black probe (5) to electrical connector (6), pin A (16).
- ac. Meter shall indicate zero ohms.
- ad. Set multimeter range switch to R x 1000.
- ae. Touch black probe (5) to all other pins on electrical connector (6).
- af. Meter shall indicate 1000 ohms minimum.



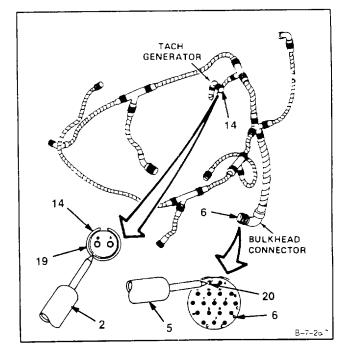


### 7-32 TEST ACCESSORY ELECTRICAL HARNESS ASSEMBLY

- ag. Set multimeter range switch to R x 1.
- ah. Touch red probe (2) to electrical connector (14), sleeve B (17).
- ai. Touch black probe (5) to electrical connector (6), pin B (18).
- aj. Meter shall indicate zero ohms.
- ak. Set multimeter range switch to R x 1000.
- al. Touch black probe (5) to all other pins on electrical connector (6).



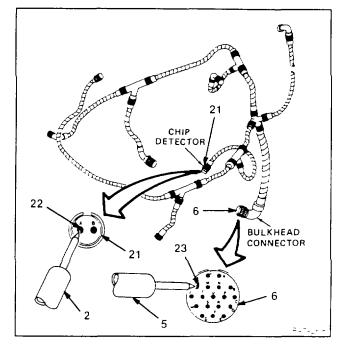
- am. Meter shall indicate <u>1000 ohms</u> minimum.
- an. Set multimeter range switch to R x 1.
- ao. Touch red probe (2) to electrical connector (14), shell (19).
- ap. Touch black probe (5) to electrical connector (6), pin L (20).
- aq. Meter shall indicate zero ohms.
- ar. Set multimeter range switch to R x 1000.
- as. Touch black probe (5) to all other pins on electrical connector (6).
- at. Meter shall indicate <u>1000 ohms</u> minimum.



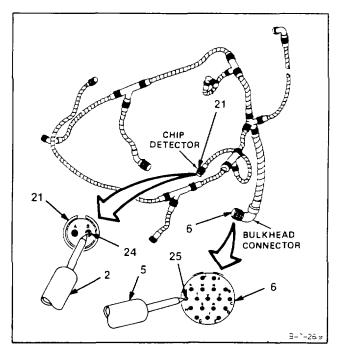
### GO TO NEXT PAGE

### 7-32 TEST ACCESSORY ELECTRICAL HARNESS ASSEMBLY

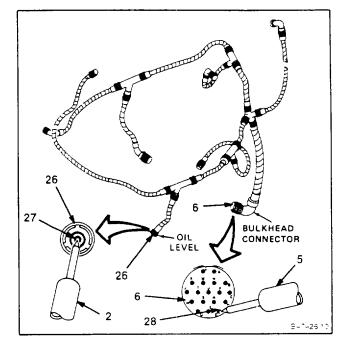
- au. Set multimeter range switch to R x 1.
- av. Touch red probe (2) to electrical connector (21), pin A (22).
- aw. Touch black probe (5) to electrical connector (6), pin K (23).
- ax. Meter shall indicate zero ohms.
- ay. Set multimeter range switch to R x 1000.
- az. Touch black probe (5) to all other pins on electrical connector (6).
- ba. Meter shall indicate 1000 ohms minimum.



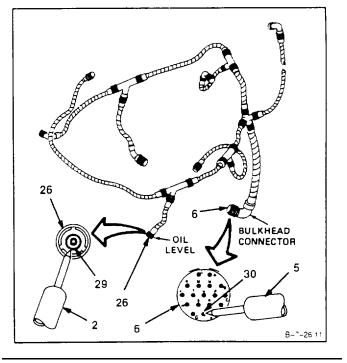
- bb. Set multimeter range switch to R x 1.
- bc. Touch red probe (2) to electrical connector (21), pin B (24).
- bd. Touch black probe (5) to electrical connector (6), pin J (25).
- be. Meter shall indicate zero ohms.
- bf. Set multimeter range switch to R x 1000.
- bg. Touch black probe (5) to all other pins on electrical connector (6).
- bh. Meter shall indicate 1000 ohms minimum.



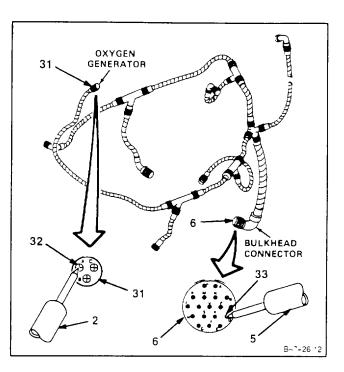
- bi. Set multimeter range switch to R x 1.
- bj. Touch red probe (2) to electrical connector (26), center sleeve (27).
- bk. Touch black probe (5) to electrical connector (6), pin E (28).
- bl. Meter shall indicate zero ohms.
- bm. Set multimeter range switch to R x 1000.
- bn. Touch black probe (5) to all other pins on electrical connector (6).
- bo. Meter shall indicate 1000 ohms minimum.

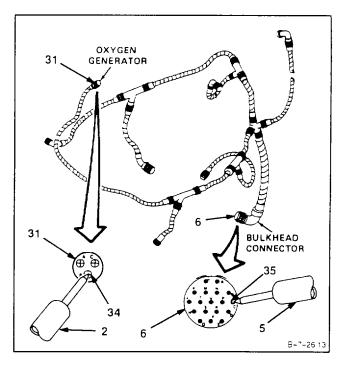


- bp. Set multimeter range switch to R x 1.
- bq. Touch red probe (2) to electrical connector (26), shell (29).
- br. Touch black probe (5) to electrical connector (6), pin F (30).
- bs. Meter shall indicate zero ohms.

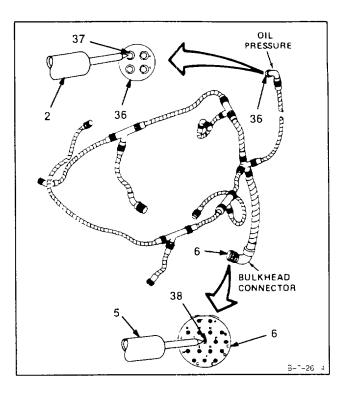


- bt. Set multimeter range switch to R x 1.
- bu. Touch red probe (2) to electrical connector (31), sleeve A (32).
- bv. Touch black probe (5) to electrical connector (6), pin D (33).
- bw. Meter shall indicate zero ohms.
- bx. Set multimeter range switch to R x 1000.
- by. Touch black probe (5) to all other pins on electrical connector (6)
- bz. Meter shall indicate <u>1000 ohms</u> minimum.
- ca. Set multimeter range switch to R x 1.
- cb. Touch red probe (2) to electrical connector (31), sleeve B (34).
- cc. Touch black probe (5) to electrical connector (6), pin C (35).
- cd. Meter shall indicate zero ohms.
- ce. Set multimeter range switch to R x 1000.
- cf. Touch black probe (5) to all other pins on electrical connector (6).
- cg. Meter shall indicate <u>1000 ohms</u> minimum.

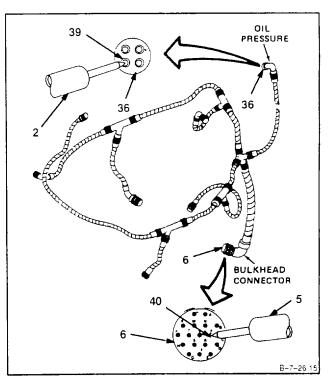




- ch. Set multimeter range switch to R x 1.
- ci. Touch red probe (2) to electrical connector (36), sleeve A (37).
- cj. Touch black probe (5) to electrical connector (6), pin U (38).
- ck. Meter shall indicate zero ohms.
- cl. Set multimeter range switch to R x 1000.
- cm. Touch black probe (5) to all other pins on electrical connector (6).
- cn. Meter shall indicate <u>1000 ohms</u> minimum.



- co. Set multimeter range switch to R x 1.
- cp. Touch red probe (2) to electrical connector (36), sleeve B (39).
- cq. Touch black probe (5) to electrical connector (6), pin P (40).
- cr. Meter shall indicate zero ohms.
- cs. Set multimeter range switch to R x 1000.
- ct. Touch black probe (5) to all other pins on electrical connector (6).
- cu. Meter shall indicate <u>1000 ohms</u> minimum.



7-32

# 7-32 TEST ACCESSORY ELECTRICAL HARNESS ASSEMBLY (Continued)

cv. Set multimeter range switch to R x 1.

cw. Touch red probe (2) to electrical connector (36), sleeve C (41).

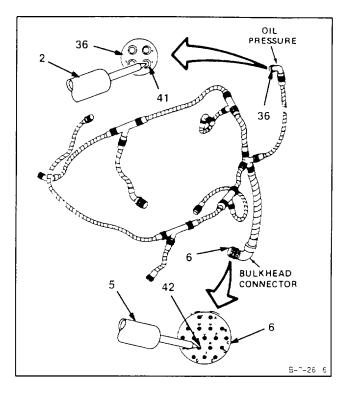
cx. Touch black probe (5) to electrical connector (6), pin S (42).

cy. Meter shall indicate zero ohms.

cz. Set multimeter range switch to R x 1000.

da. Touch black probe (5) to all other pins on electrical connector (6).

db. Meter shall indicate 1000 ohms minimum.



dc. Set multimeter range switch to R x 1.

dd. Touch red probe (2) to electrical connector (36), sleeve D (43).

de. Touch black probe (5) to electrical connector (6), pin R (44).

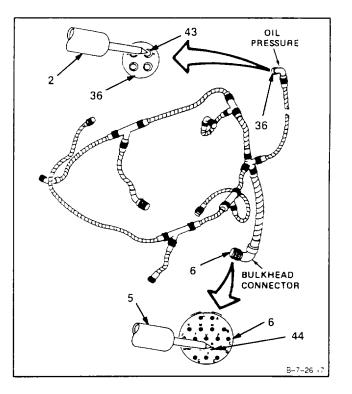
df. Meter shall indicate zero ohms.

dg. Set multimeter range switch to R x 1000.

dh. Touch black probe (5) to all other pins on electrical connector (6).

di. Meter shall indicate 1000 ohms minimum.

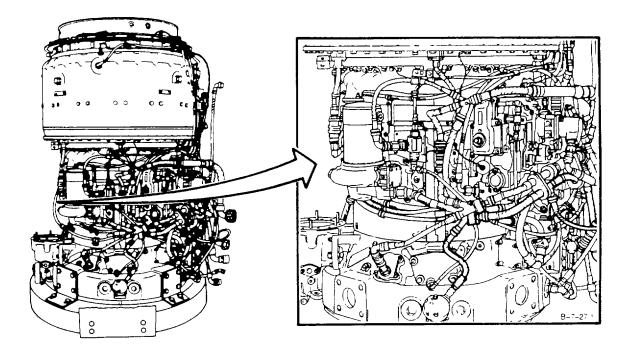
FOLLOW-ON MAINTENANCE: None



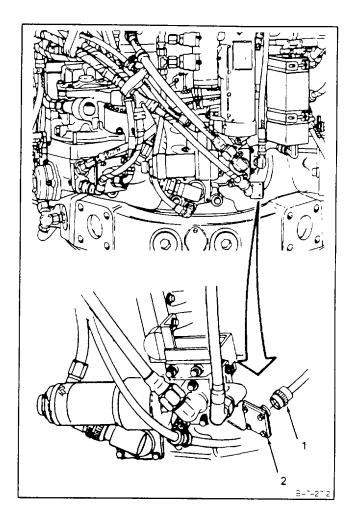
7-33

INITIAL SETUP *Applicable Configurations* All *Tools:* Powerplant Mechanic's Tool Kit,

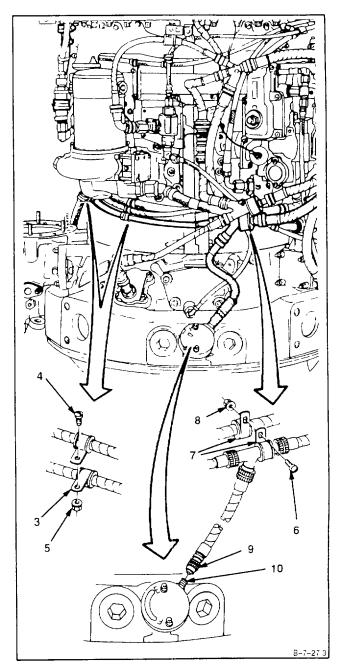
Technical Inspection Tool Kit, NSN 5180-00-323-4944 Technical Inspection Tool Kit, NSN 51 80-00-323-5114 Parts: Strap Personnel Required: Aircraft Powerplant Repairer Aircraft Powerplant Inspector References: TM 1-2840-252-23P



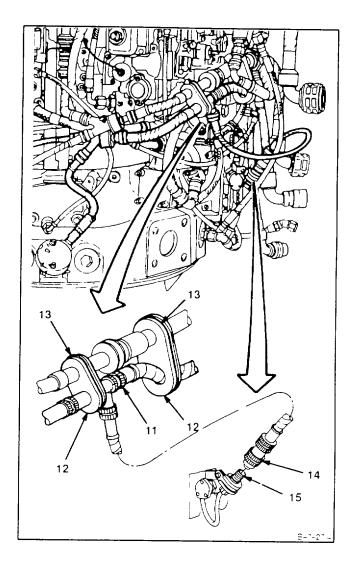
1. Connect electrical connector (1) to dummy connector (2).



- 2. Install two clamps (3), two screws (4), and two nuts (5).
- 3. Install screw (6), clamps (7), and nut (8).
- 4. Install electrical connector (9) to oil level indicator (10).



- 5. **Install harness assembly (11)** to two cushions (12) and two straps (13).
- 6. Install electrical connector (14) to accessory gearbox chip detector (15).

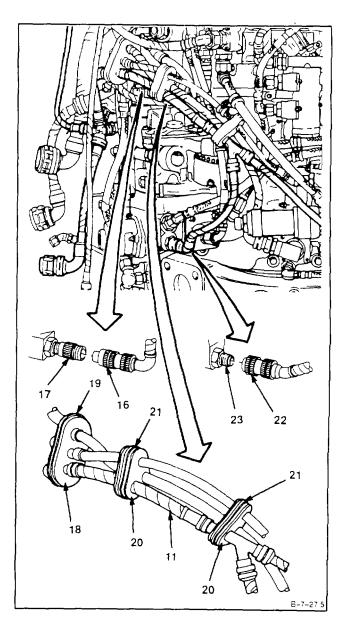


# 7-33 INSTALL ACCESSORY ELECTRICAL HARNESS ASSEMBLY (C ontinued)

### NOTE

In following step, it may be necessary to remove lockwire from electrical connector and reorient connector for proper installation. Be sure to lockwire electrical connector if lockwire was removed.

- 7. Install electrical connector (16) to pickup assembly (17).
- 8. Install harness assembly (11) to cushion (18) and strap (19).
- 9. Install harness assembly (11) to two cushions (20) and straps (21).
- 10. Install electrical connector (22) to oil temperature bulb (23).

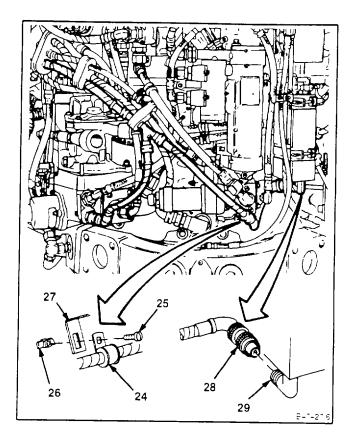


# 7-33 INSTALL ACCESSORY ELECTRICAL HARNESS ASSEMBLY (Continued)

NOTE

Make sure that nut (26) is securely fastened to bracket with long section of nut perpendicular to slot.

- 11. Install clamp (24), screw (25), and nut (26) to bracket (27).
- 12. Install electrical connector (28) to ignition igniter (29).



# INSPECT

FOLLOW-ON MAINTENANCE: None

### **CHAPTER 8**

# LUBRICATION SYSTEM - MAINTENANCE INSTRUCTIONS

# CHAPTER OVERVIEW

This chapter contains maintenance procedures for the lubrication system. It is divided into the following sections and tasks:

SECTION	TASK <u>NO.</u>	TITLE	<u>PAGE</u>	
I		N OIL PUMP, SPEED PICKUP DRIVE ASSEMBLY, SCAVENGE OIL SCREEN. RELATED PARTS		
	8-1	Remove Main Oil Pump, Speed Pickup Drive Assembly, Scavenge Oil Screen, and Related Parts	8-7	
	8-2	Disassemble Main Oil Pump. Speed Pickup Drive Assembly, Scavenge Oil Screen, and Related Parts	8-13	
	8-3	Clean Main Oil Pump, Speed Pickup Drive Assembly, Scavenge Oil Screen, and Related Parts	8-14	
	8-4	Inspect Main Oil Pump, Speed Pickup Drive Assembly. Scavenge Oil Screen, and Related Parts	8-16	
	8-5	Assemble Main Oil Pump. Speed Pickup Drive Assembly, Scaveng	le	
	8-6	Oil Screen, and Related Parts Install Main Oil Pump, Speed Pickup Drive Assembly. Scavenge	8-18	
		Oil Screen, and Related Parts	8-19	
II	GAS PR 8-7 8-8 8-9 8-10 8-11	RODUCER SPEED PICKUP Remove Gas Producer Speed Pickup Clean Gas Producer Speed Pickup Inspect Gas Producer Speed Pickup Repair Gas Producer Speed Pickup Install Gas Producer Speed Pickup	8-27 8-29 8-30 8-31 8-32	
III	OIL CO 8-12 8-13 8-14 8-15 8-16 8-17 8-18	OLER ASSEMBLY Remove Oil Cooler Assembly Disassemble Oil Cooler Assembly Clean Oil Cooler Assembly Inspect Oil Cooler Assembly Repair Oil Cooler Assembly Assemble Oil Cooler Assembly Install Oil Cooler Assembly	8-35 8-40 8-42 8-43 8-44 8-45 8-47	
IV	FLOW F 8-19 8-20 8-21 8-22	PROGRAMMING VALVE Remove Flow Programming Valve Clean Flow Programming Valve Inspect Flow Programming Valve Install Flow Programming Valve	8-53 8-56 8-57 8-58	

SECTION	TASK NO. <u>TITLE</u>	PAGE
V	OIL TEMPERATURE TRANSMITTER 8-23 Remove Oil Temperature Transmitter 8-24 Clean Oil Temperature Transmitter 8-25 Inspect Oil Temperature Transmitter 8-26 Install Oil Temperature Transmitter	8-63 8-65 8-66 8-67
VI	<ul> <li>OIL FILLER ASSEMBLY AND OIL FILLER STRAINER</li> <li>8-27 Remove Oil Filler Assembly and Oil Filler Strainer</li> <li>8-28 Disassemble Oil Filler Assembly and Oil Filler Strainer</li> <li>8-29 Clean Oil Filler Assembly and Oil Filler Strainer</li> <li>8-30 Inspect Oil Filler Assembly and Oil Filler Strainer</li> <li>8-31 Repair Oil Filler Assembly and Oil Filler Strainer</li> <li>8-32 Assemble Oil Filler Assembly and Oil Filler Strainer</li> <li>8-33 Install Oil Filler Assembly and Oil Filler Strainer</li> </ul>	8-69 8-71 8-73 8-75 8-77 8-78 8-80
VII	<ul> <li>OIL FILTER COVER ASSEMBLY AND OIL FILTER ELEMENT</li> <li>8-34 Remove Oil Filter Cover Assembly and Oil Filter Element</li> <li>8-35 Clean Oil Filter Cover Assembly and Oil Filter Element</li> <li>8-36 Inspect Oil Filter Cover Assembly and Oil Filter Element</li> <li>8-37 Repair Oil Filter Cover Assembly and Oil Filter Element</li> <li>8-38 Install Oil Filter Cover Assembly and Oil Filter Element</li> </ul>	8-83 8-85 8-86 8-87 8-88
VIII	DUAL CHIP DETECTOR8-39Remove Dual Chip Detector8-40Disassemble Dual Chip Detector8-41Clean Dual Chip Detector8-42Inspect Dual Chip Detector8-43Repair Dual Chip Detector8-44Assemble Dual Chip Detector8-45Test Dual Chip Detector8-46Install Dual Chip Detector	8-91 8-94 8-96 8-97 8-99 8-100 8-101 8-102
IX	<ul> <li>OIL LINES</li> <li>8-47 Remove Hose Assembly (Flow Programming Valve Tee to Inlet Housing)</li> <li>8-48 Install Hose Assembly (Flow Programming Valve Tee to Inlet Housing)</li> <li>8-49 Remove Hose Assembly (Flow Programming Valve to Inflight Filling Port Tee)</li> </ul>	8-107 8-109 8-111

SECTION	TASK <u>NO.</u>	TITLE	<u>PAGE</u>
IX OIL LI		G (CONTINUED)	
	8-50	Install Hose Assembly (Flow Programming Valve to Inflight Filling Port Tee)	8-113
	8-51	Remove Hose Assembly (Accessory Gearbox Assembly to Oil Cooler)	8-115
	8-52	Install Hose Assembly (Accessory Gearbox Assembly to Oil Cooler)	8-117
	8-53	Remove Hose Assembly (Oil Cooler to Flow Programming Valve)	8-119
	8-54	Install Hose Assembly (Oil Cooler to Flow Programming Valve)	8-121
	8-55	Remove Hose Assembly (Flow Programming Valve Tee to No. 2	
	8-56	Bearing Pressure Connector) Install Hose Assembly (Flow Programming Valve Tee to No. 2	8-123
		Bearing Pressure Connector)	8-125
	8-57	Remove Hose Assembly (Dual Chip Detector to Accessory Gearbox Assembly)	8-127
	8-58	Install Hose Assembly (Dual Chip Detector to Accessory Gearbox Assembly)	8-132
	8-59	Remove Hose Assembly (Dual Chip Detector to Accessory Gearbox Collector)	8-136
	8-60	Install Hose Assembly (Dual Chip Detector to Accessory Gearbox Collector)	8-138
	8-61	Remove Hose Assembly (Dual Chip Detector to Air Diffuser Assembly)	8-140
	8-62	Install Hose Assembly (Dual Chip Detector to Air Diffuser Assembly)	8-142
	8-63	Remove Hose Assembly (Main Oil Pump to Dual Chip Detector)	8-144
	8-64	Install Hose Assembly (Main Oil Pump to Dual Chip Detector)	8-146
	8-65	Remove Tube Assembly (Inlet Housing to Main Oil Pump)	8-148
	8-66 8-67	Install Tube Assembly (Inlet Housing to Main Oil Pump) Remove Tube Assembly (Main Oil Pump to Inlet Housing	8-151
	8-68	Oil Scavenge Tee) Install Tube Assembly (Main Oil Pump to Inlet Housing	8-159
	8-69	Oil Scavenge Tee) Remove Tube Assembly (No. 4 and 5 Bearing Scavenge Tube	8-161
		Assembly to Main Oil Pump Flange)	8-163
	8-70	Install Tube Assembly (No. 4 and 5 Bearing Scavenge Tube Assembly to Main Oil Pump Flange)	8-165
	8-71	Remove Tube Assembly (No. 4 and 5 Bearing Scavenge Connector to Tube Assembly)	8-167
	8-72	Install Tube Assembly (No. 4 and 5 Bearing Scavenge Connector to Tube Assembly)	8-171

<u>SECTION</u>	TASK <u>NO.</u>	TITLE	PAGE
IX	COIL LINES (CONTINUED)		
	8-73 8-74	Remove Tube Assembly (No. 2 Bearing Pressure Connector to Tee and Snubber) Install Tube Assembly (No. 2 Bearing Pressure Connector	8-175
	8-75	to Tee and Snubber) Remove Hose Assembly (Pressure Connector to No. 4 and 5	8-177
	8-76	Bearing Filter) Install Hose Assembly (Pressure Connector to No. 4 and 5	8-179
	8-77	Bearing Filter) Remove Hose Assembly (Inlet Housing to Oil Scavenge Tee)	8-190 8-201
	8-78	Install Hose Assembly (Inlet Housing to Oil Scavenge Tee)	8-201
	8-79	Remove Hose Assembly (Inlet Housing to Oil Drain Cock)	8-205
	8-80	Install Hose Assembly (Inlet Housing to Oil Drain Cock)	8-208
	8-81	Remove Hose Assembly (Starter Drive to Oil Filler)	8-211
	8-82	Install Hose Assembly (Starter Drive to Oil Filler)	8-213
	8-83	Remove Hose Assembly (Starter Drive to Tube and Hose	
		Assembly)	8-215
	8-84	Install Hose Assembly (Starter Drive to Tube and Hose	
		Assembly)	8-217
	8-85	Remove Tube and Hose Assembly (Accessory Gearbox	
	0.00	Collector to Tube Assembly)	8-219
	8-86	Install Tube and Hose Assembly (Accessory Gearbox	0.005
	0 07	Collector to Tube Assembly)	8-225
	8-87	Remove Tube Assembly (Tube and Hose Assembly to Accessory Gearbox Assembly)	8-231
	8-88	Install Tube Assembly (Tube and Hose Assembly to	0-231
	0-00	Accessory Gearbox Assembly)	8-234
		Accessory Gearbox Assembly)	0-234
Х	STARTER	GEARBOX FILTER	
	8-89	Remove Starter Gearbox Filter	8-237
	8-90	Clean Starter Gearbox Filter	8-239
	8-91	Inspect Starter Gearbox Filter	8-240
	8-92	Install Starter Gearbox Filter	8-241
XI	NO. 2 BEA	ARING PRESSURE OIL CONNECTOR	
	8-93	Remove No. 2 Bearing Pressure Oil Connector	8-243
	8-94	Clean No. 2 Bearing Pressure Oil Connector	8-245
	8-95	Inspect No. 2 Bearing Pressure Oil Connector	8-246
	8-96	Install No. 2 Bearing Pressure Oil Connector	8-247
ХШ			
XII			0.040
	8-97	Remove No. 2 Bearing Pressure Oil Strainer	8-249
	8-98	Clean No. 2 Bearing Pressure Oil Strainer	8-249
	8-99	Inspect No. 2 Bearing Pressure Oil Strainer	8-250
	8-100	Install No. 2 Bearing Pressure Oil Strainer	8-253

<u>SECTION</u>	TASK <u>NO.</u>	TITLE	PAGE
XIII	NO. 4 ANE	5 BEARING FILTER	
	8-103	Remove No. 4 and 5 Bearing Filter Clean No. 4 and 5 Bearing Filter Inspect No. 4 and 5 Bearing Filter Install No. 4 and 5 Bearing Filter	8-255 8-259 8-260 8-261
XIV	OIL DRAIN	ICOCK	
	8-106 8-107	Remove Oil Drain Cock Clean Oil Drain Cock Inspect Oil Drain Cock Install Oil Drain Cock	8-267 8-269 8-270 8-271
XV	CHIP DET	ECTOR	
	8-110 8-111 8-112	Remove Chip Detector Clean Chip Detector Inspect Chip Detector Test Chip Detector Install Chip Detector	8-273 8-276 8-277 8-279 8-280
XVI	OIL LEVEL	- INDICATOR	
	8-115 8-116 8-117 8-118 8-119	Remove Oil Level indicator Disassemble Oil Level Indicator Clean Oil Level Indicator Inspect Oil Level Indicator Repair Oil Level Indicator Assemble Oil Level Indicator Install Oil Level Indicator Adjust Oil Level Indicator	8-283 8-286 8-289 8-290 8-292 8-293 8-298 8-303
XVII	8-122 8-123 8-124 8-125 8-126	- FLOAT ASSEMBLY Remove Oil Level Float Assembly (AVIM) Disassemble Oil Level Float Assembly (AVIM) Clean Oil Level Float Assembly (AVIM) Inspect Oil Level Float Assembly (AVIM) Repair Oil Level Float Assembly (AVIM) Assemble Oil Level Float Assembly (AVIM) Install Oil Level Float Assembly (AVIM)	8-309 8-312 8-313 8-314 8-315 8-316 8-318

### **SECTION I**

# MAIN OIL PUMP, SPEED PICKUP DRIVE ASSEMBLY, SCAVENGE OIL SCREEN, AND RELATED PARTS

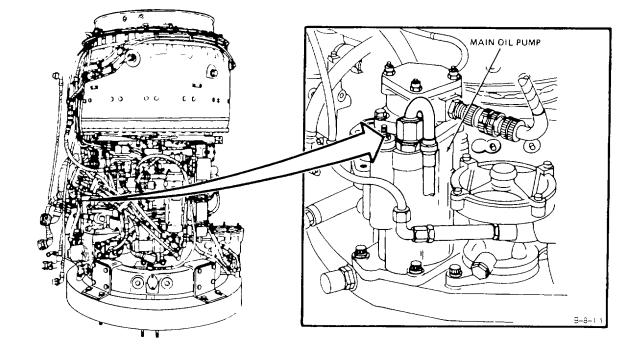
## 8-1 REMOVE MAIN OIL PUMP, SPEED PICKUP DRIVE ASSEMBLY, SCAVFNGE OIL SCREEN, AND RELATED PARTS

## **INITIAL SETUP**

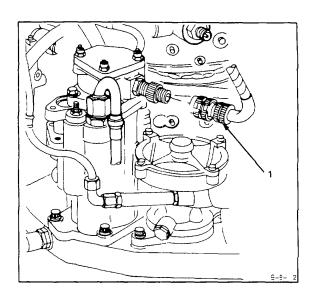
Applicable Configurations:
All
Tools:
Powerplant Mechanic's Tool Kit,
NSN 5180-00-323-4944
Container, 1 Quart
Crowfoot Attachment, 7/8 inch
Materials:
Lockwire (E33)
Wiping Rag (É64)
Personnel Required:
Aircraft Powerplant Repairer
Equipment Condition:
Tube Assembly Removed (Inlet Housing to
Main Oil Pump) (Task 8-65)

## General Safety Instructions: WARNING

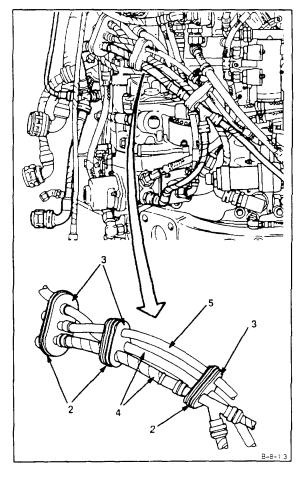
Lubricating oils cause paralysis if swallowed. Prolonged contact with them may irritate the skin. Handle only in well-ventilated areas away from heat and flame. Drain and store in approved metal safety containers. Avoid prolonged or repeated contact with skin and do not take internally. Wash contacted area of skin thoroughly after handling. If irritation of skin results, get medical attention. Get medical attention for eyes.



1. Disconnect electrical connector (1).



2. Cut three straps (2) and remove three cushions (3). **Reposition two harness assemblies (4), and one fuel hose assembly (5).** 

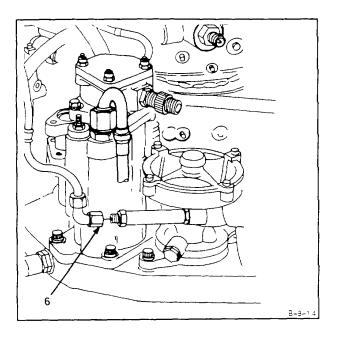


## 8-1 REMOVE MAIN OIL PUMP, SPEED PICKUP DRIVE ASSEMBLY, SCAVENGE OIL SCREEN, AND RELATED PARTS

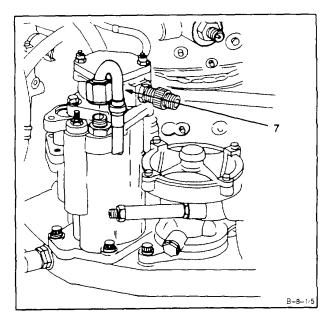
# WARNING

Turbine fuels are very flammable. They may cause drying and irritation of skin or eyes. Handle only in well-ventilated areas away from heat and open flame. Drain and store In approved metal safety containers. Avoid prolonged or repeated contact with skin and do not take internally. Wash contacted area of skin thoroughly after handling. If irritation of skin results, get medical attention. Get medical attention for eyes.

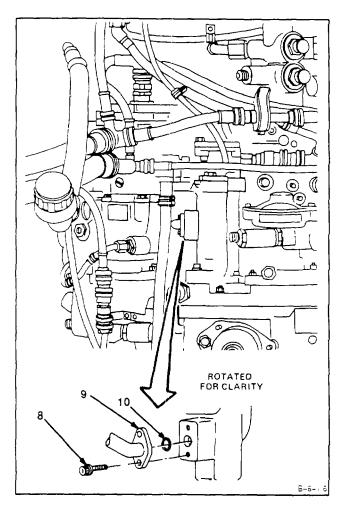
3. Disconnect fuel hose assembly (6).



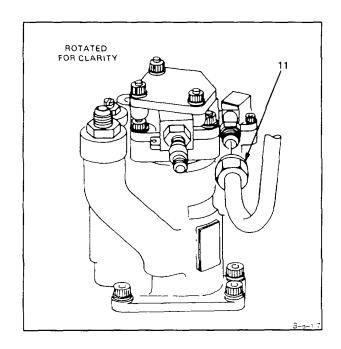
4. Disconnect tube assembly (7).



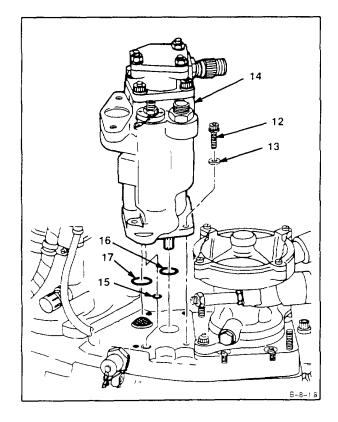
5. Remove lockwire, two bolts (8), end of tube assembly (9), and packing (10).



6. **Disconnect tube assembly (11).** Use <u>7/8 inch</u> crowfoot attachment.



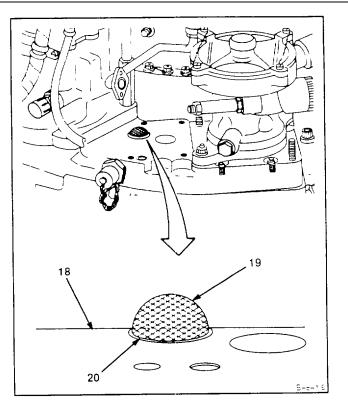
7. **Remove** lockwire, four bolts (12), washers (13), <u>main</u> <u>oil pump (14)</u>, and packings (15, 16, and 17).



8-1

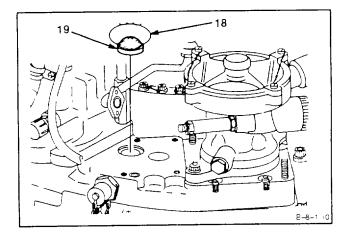
# 8-1 REMOVE MAIN OIL PUMP, S PEED PICKUP DRIVE ASSEMBLY, SCAVENGE OIL SCREEN, AND RELATED PARTS (Continued)

8. Insert<u>9 inch</u> length of lockwire (E33) (18) through center of screen (19) near base (20) and form loop by twisting ends.



9. Using lockwire (18), **remove screen (19).** Remove lockwire (18).

FOLLOW-ON MAINTENANCE: None



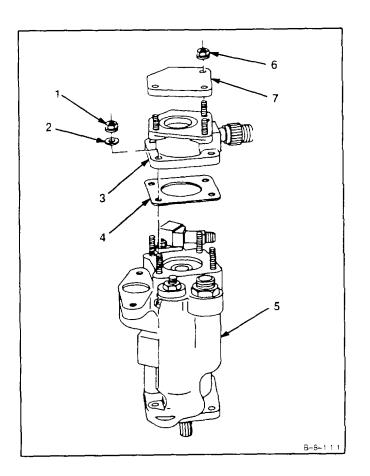
8-2 DISASSEMBLE MAIN OIL PUMP, SPEED PICKUP DRIVE ASSEMBLY, SCAVENGE OIL SCREEN, AND RELATED PARTS		
INITIAL	SETUP	Personnel Required:
Applica	able Configurations:	Aircraft Powerplant Repairer
All	-	Equipment Condition:
Tools:		Off Engine Task
Po	werplant Mechanic's Tool Kit,	Engine Oil System Drained (Task 1-69)
NSN 5180-00-323-4944		Remove Main Oil Pump Speed Pickup Drive As-
Crowfoot Attachment, 5/16 - inch		sembly. Scavenge Oil Screen and Related Parts
Materials:		(Task 8-1)
Noi	ne	

1. Remove four nuts (1), washers (2), **speed pick-up drive assembly** (3), and gasket (4) from main oil pump (5).

2. Remove three nuts (6) and cover (7) from speed pickup drive assembly (3).

## FOLLOW-ON MAINTENANCE:

None

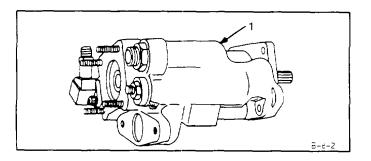


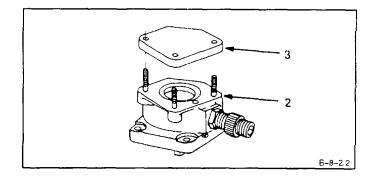
END OF TASK

8.3	CLEAN MAIN OIL PUMP, SPEED PICKU SCAVENGE OIL SCREEN, AND RELAT		3.3
Applic Al Tools: Po NS Go Dr Materic Gl Lit	- SETUP Fable Configurations: I Dwerplant Mechanic's Tool Kit, SN 5180-00-323-4944 oggles ry, Compressed Air Source	Main Oil Pump, Speed Pickup Drive Assembly. Scavenge Oil Screen, and Related Parts Removed (Task 8-1) Main Oil Pump, Speed Pickup Drive Assembly, Scavenge Oil Screen, and Related Parts Disas- sembled (Task 8-2) General Safety Instructions: WARNING Dry cleaning solvent (E19) is flammable and toxic. It can irritate skin and cause burns. Use only in well-ventilated area, away from heat and open flame. In case of contact, immediately flush skin or	
Equipr	rcraft Powerplant Repairer <b>nent Condition:</b> ff Engine Task	eyes with water for at least 15 minutes. Get medical attention for eyes.	

1. Wear gloves (E24). Clean oil pump (1) using dry cleaning solvent (E19) and brush.

- 2. Clean exterior of pickup drive assembly (2), and cover (3). Use dry cleaning solvent (E19) and brush.
- 3. Remove any remaining solvent using clean, dry, lint-free cloth (E30).





4. Clean scavenge oil screen (4). Use dry cleaning solvent (E19) and brush.

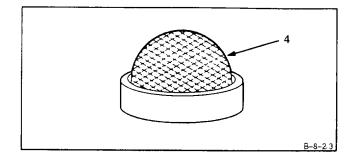
# WARNING

When using compressed air for cleaning, use approved protective equipment or eyes and face. Do not use more than 30 psig air pressure. Do not direct air toward yourself or another person. Failure to comply could result in injury to eyes or skin. In case of injury, get medical attention.

5. Wear goggles. Blow dry screen (4) using clean, dry, compressed air.

FOLLOW-ON MAINTENANCE:

Inspect Main Oil Pump, Speed Pickup Drive Assembly, Scavenge Oil Screen, and Related Parts (Task 8-4).



**END OF TASK** 

## 8-4 INSPECT MAIN OIL PUMP, SPEED PICKUP DRIVE ASSEMBLY, SCAVENGE OIL SCREEN, AND RELATED PARTS

INITIAL SETUP Applicable Configurations: All Tools: Technical Inspection Tool Kit, NSN 5180-00-323-5114 Materials: None Personnel Required: Aircraft Powerplant inspector References: Task 1-111 Equipment Condition: Off engine Task

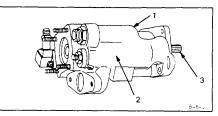
1. Inspect main oil pump (1). There shall be no cracks in housing (2) or, nicks or cracks in splines of gearshaft (3).

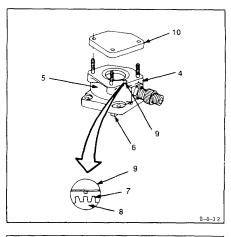
2. Inspect gearshaft (3). There shall be no improper wear pattern. Inspect gearshaft (3) for wear (Ref. Task 1-109).

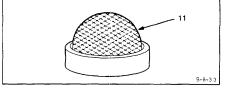
3. **Inspect speed pickup drive assembly (4).** There shall be no cracks in housing (5), or nicks or cracks in splines of driveshaft (6).

4. Inspect driveshaft (6). There shall be no improper wear pattern. Inspect driveshaft (6) for wear (Ref. Task 1-109).

- 5. **Inspect** for missing teeth (7) on **wheel** (8) in air gap adjustment hole (9).
- 6. Inspect cover (10). There shall be no cracks.
- 7. Inspect scavenge oil screen (11). There shall be no tears in screen.







FOLLOW-ON MAINTENANCE: None END OF TASK

## 8-5 ASSEMBLE MAIN OIL PUMP, SPEED PICKUP DRIVE ASSEMBLY, SCAVENGE OIL PUMP, AND RELATED PARTS

# INITIAL SETUP

# Applicable Configurations:

# Tools:

Powerplant Mechanic's Tool Kit, NSN 5180-00-323-4944 Technical Inspection Tool Kit, NSN 5180-00-323-5114 Crowfoot Attachment, 5/16 - inch Materials:

None

Gasket Personnel Required: Aircraft Powerplant Repairer Aircraft Powerplant Inspector References: TM 1-2840-252-23P Equipment Condition: Off Engine Task Disassemble Main Oil Pump, Speed Pickup Drive Assembly, Scavenge Oil Screen and Related Parts (Task 8-2)

1. Install gasket (1), speed pickup drive assembly (2), four washers (3), and nuts (4) on serviceable main oil pump (5).

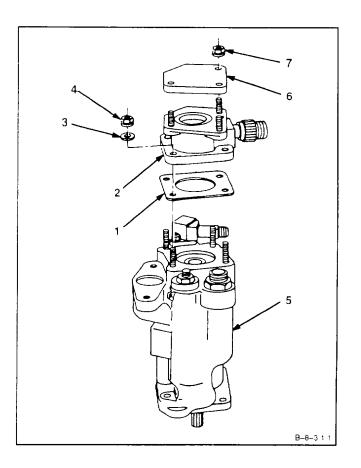
Parts:

2. Install cover (6), three nuts (7), on speed pickup drive assembly (2).

## INSPECT

# FOLLOW-ON MAINTENANCE:

None



#### **INITIAL SETUP**

# Applicable Configurations:

## Tools:

Powerplant Mechanic's Tool Kit, NSN 5180-00-323-4944 Technical Inspection Tool Kit, NSN 5180-00-323-5114 Torque Wrench, 30-150 Inch-Pounds Crowfoot Attachment, 5/16 inch Crowfoot Attachment, 7/8 inch

# Materials:

Lockwire (E33)

### Parts:

Packings Gasket Straps

## Personnel Required:

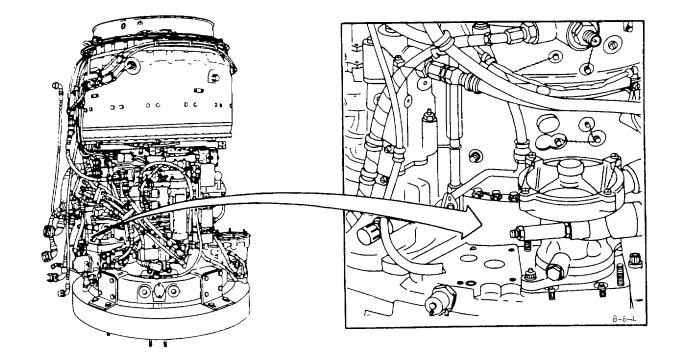
Aircraft Powerplant Repairer Aircraft Powerplant Inspector

## **References:**

TM 1-2840-252-23P General Safety Instructions:

### WARNING

Lubricating oils cause paralysis if swallowed. Prolonged contact with them may irritate the skin. Handle only in well-ventilated areas away from heat and flame. Drain and store in approved metal safety containers. Avoid prolonged or repeated contact with skin and do not take internally. Wash contacted area of skin thoroughly after handling. If irritation of skin results, get medical attention. Get medical attention for eyes.



#### NOTE

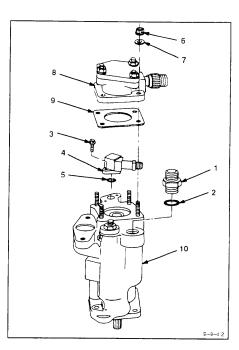
If main oil pump is a replacement, do steps 1 thru 6. If same oil pump that was removed is to be installed, omit steps 1 thru 6.

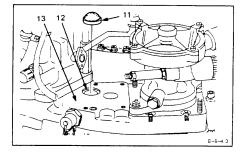
- 1. Remove nipple (1), and packing (2).
- 2. Remove two bolts (3), flange assembly (4), and packing (5).
- 3. Remove nuts (6), washers (7), speed pickup drive assembly (8), and gasket (9).

4. Install gasket (9), speed pickup drive assembly (8), four washers (7), and nuts (6) on serviceable main oil pump (10).

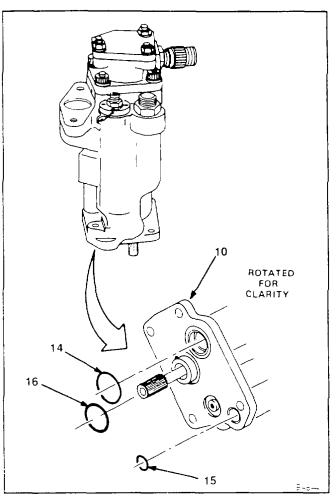
5. Install packing (5), flange assembly (4), and two bolts (3) on serviceable main oil pump (10) and lockwire. Use lockwire (E33).

- 6. Install packing (2) and nipple (1) on serviceable main oil pump (10).
- 7. Install scavenge oil screen (11) in hole (12) in accessory gearbox assembly (13).





8. Install three packings (14, 15, and 16) on main oil pump (10).

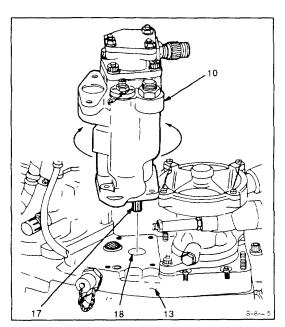


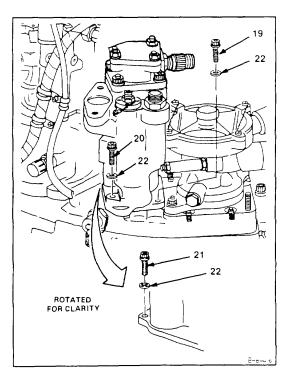
9. Position main oil pump (10) over accessory gearbox assembly (13).

10. If required, rotate main oil pump (10) slightly left or right to align splines (17) with coupling in hole (18).

11. Install main oil pump (10) on accessory gearbox assembly (13).

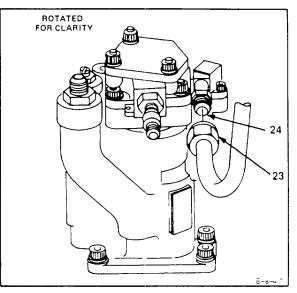
12. Install bolt (19), bolt (20), two self-locking bolts (21), and four washers (22). Torque bolts (19, 20, and 21) to 70 to 75 inch-pounds. Lockwire bolts (19 and 20). Use lockwire (E33).

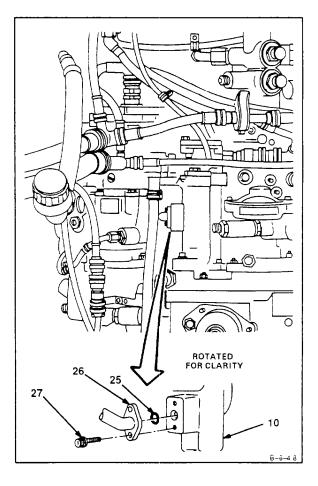




13. Connect tube assembly (23) to flange assembly (24). Use 7/8 inch crowfoot attachment.

14. Install packing (25), end of tube assembly (26), and two bolts (27) on main oil pump (10). Lockwire bolts (27). Use lockwire (E33).



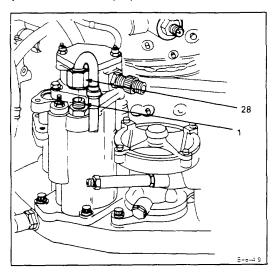


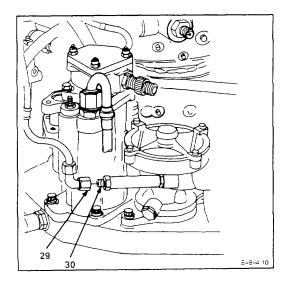
15. Connect tube assembly (28) to nipple (1).

# WARNING

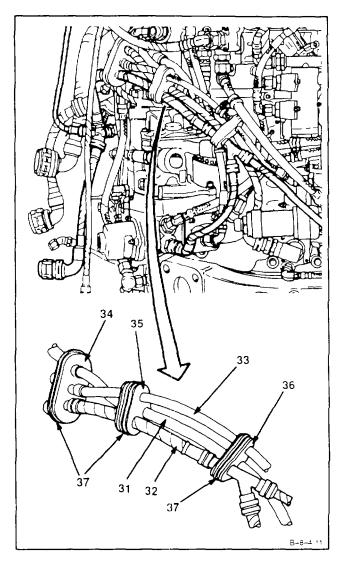
Turbine fuels are very flammable. They may cause drying and Irritation of skin or eyes. Handle only In well-ventilated areas away from heat and open flame. Drain and store in approved metal safety containers. Avoid prolonged or repeated contact with skin and do not take internally. Wash contacted area of skin thoroughly after handling. If irritation of skin results, get medical attention. Get medical attention for eyes.

16. Connect fuel hose assembly (29) to check valve (30).





17. Install two harness assemblies (31 and 32) and fuel hose assembly (33) into three cushions(34, 35, and 36). Install strap (37) on each cushion (34, 35, and 36).

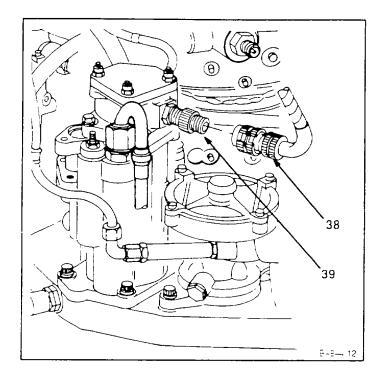


18. Connect electrical connector (38) to GP speed pickup (39).

## INSPECT

# FOLLOW-ON MAINTENANCE:

Install Tube Assembly (Inlet Housing to Main Oil Pump) (Task 8-66).



END OF TASK

8-25/(8-26 blank)

8-7

## **SECTION II**

## **GAS PRODUCER SPEED PICKUP**

## 8-7 REMOVE GAS PRODUCER SPEED PICKUP

## INITIAL SETUP

Applicable Configurations:

#### All Tools:

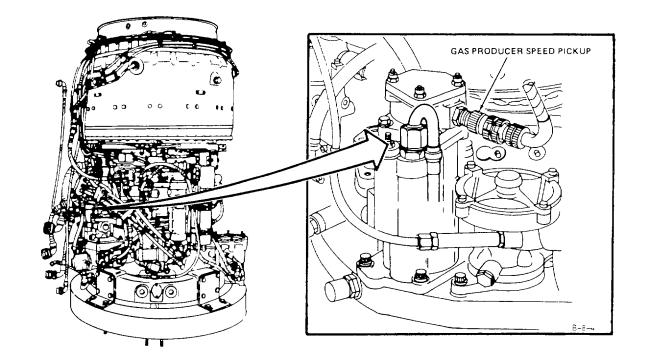
Powerplant Mechanic's Tool Kit, NSN 5180-00-323-4944 *Materials:* Wiping Rag (E64)

Personnel Required:

Aircraft Powerplant Repairer

# General Safety Instructions: WARNING

Lubricating oils cause paralysis if swallowed. Prolonged contact with them may irritate the skin. Handle only in well-ventilated areas away from heat and flame. Drain and store in approved metal safety containers. Avoid prolonged or repeated contact with skin and do not take internally. Wash contacted area of skin thoroughly after handling. If irritation of skin results, get medical attention. Get medical attention for eyes.



GO TO NEXT PAGE

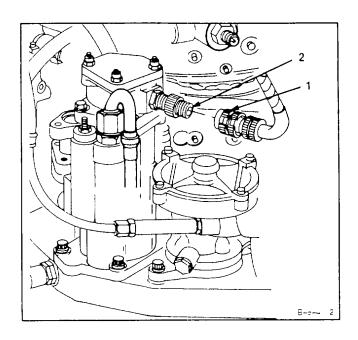
8-27

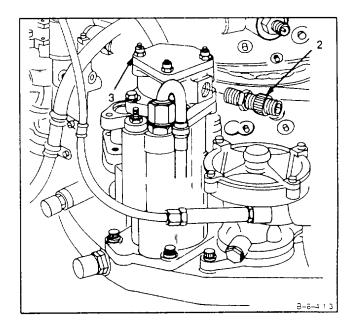
# 8-7 REMOVE GAS PRODUCER SPEED PICKUP (Continued

1. Disconnect electrical connector (1) from gas producer speed pickup (2).

2. **Remove** lockwire and **gas producer speed pickup (2)** from housing (3). FOLLOW-ON MAINTENANCE:

None





END OF TASK

TM 1-2840-252-23-3 8-8

## 8-8 CLEAN GAS PRODUCER SPEED PICKUP

INITIAL SETUP Applicable Configurations: All Tools: Powerplant Mechanic's Tool Kit, NSN 5180-00-323-4944 Goggles Dry, Compressed Air Source Materials: Dry Cleaning Solvent (E19) Gloves (E24) Lint-Free Cloth (E30) Personnel Required: Aircraft Powerplant Repairer	Equipment Condition: Off Engine Task Remove Gas Producer Speed Pickup (Task 8-7) General Safety Instructions: WARNING Dry cleaning solvent (E19) is flammable and toxic. It can irritate skin and cause burns. Use only in well-ventilated area, away from heat and open flame. In case of contact, immediately flush skin or eyes with water for at least 15 minutes. Get medical attention for eyes.
--	---

1. Clean gas producer speed pickup (1) as follows:

a. Wear gloves (E24) and clean gas producer speed pickup (1). Use lint-free cloth (E30) dampened with dry cleaning solvent (E19).

b. Use dry, lint-free cloth (E30) to remove solvent.

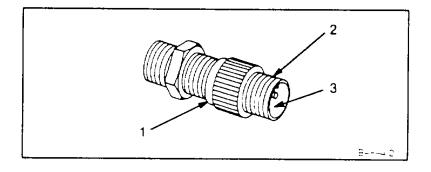
## WARNING

When using compressed air for cleaning, use approved protective equipment for eyes and face. Do not use more than 30 psig air pressure. Do not direct air toward yourself or another person. Failure to comply could result in injury to eyes or skin. In case of injury, get medical attention.

c. Wear goggles. Blow dry electrical connector (2) and inside surfaces (3). Use clean, dry, compressed air.

## FOLLOW-ON MAINTENANCE:

Inspect Gas Producer Speed Pickup (Task 8-9).



**END OF TASK** 

## 8-9 INSPECT GAS PRODUCER SPEED PICKUP

INITIAL SETUP Applicable Configurations: All Tools: Technical Inspection Tool Kit, NSN 5180-00-323-5114 Multimeter

Materials: None Personnel Required: Aircraft Powerplant Inspector Equipment Condition: Off Engine Task

1. Inspect gas producer speed pickup (1) as follows:

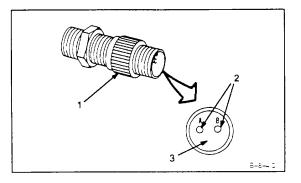
a. Inspect body of gas producer speed pickup (1). There shall be no cracks, distortion or damaged threads.

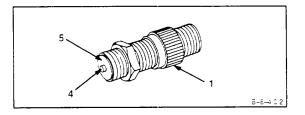
b. Inspect two electrical pins (2). There shall be no broken, corroded or bent pins (2) or damaged insulation (3).

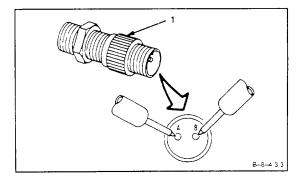
c. Inspect tip (4) of gas producer speed pickup (1). There shall be no broken or worn tips (4) or cracks in insulation (5).

d. Inspect coil resistance of gas producer speed pickup (1). Use multimeter with function switch set to ohms and range set to R x 10. Place one lead to pin A and the other lead to pin B. The multimeter should not read less than 98 ohms and not greater than 132 ohms resistance.

FOLLOW-ON MAINTENANCE: None







## 8-10 REPAIR GAS PRODUCER SPEED PICKUP

INITIAL SETUP Applicable Configurations:

# 

## Tools:

Powerplant Mechanic's Tool Kit, NSN 5180-00-323-4944 Technical Inspection Tool Kit, NSN 5180-00-323-5114 Goggles Dry, Compressed Air Source Materials:

Crocus Cloth (E16) **Personnel Required:** Aircraft Powerplant Repairer Aircraft Powerplant Inspector **Equipment Condition:** Off Engine Task

## NOTE

This repair is allowed provided it does not cause pins to break or crack.

1. Straighten bent pins (1) of electrical connector (2). Using long-nose pliers, gently move pins (1) until they are straight.

2. Remove corrosion from pins (1) of electrical connector (2). Polish pins using in and out motion over entire length of pin until corrosion is removed. Use crocus cloth (E16).

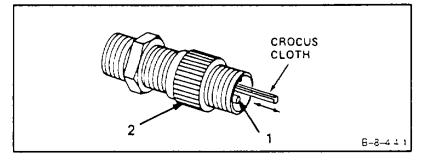
## WARNING

When using compressed air for cleaning, use approved protective equipment for eyes and face. Do not use more than 30 psig air pressure. Do not direct air toward yourself or another person. Failure to comply could result in injury to eyes or skin. In case of injury, get medical attention.

3. Wear goggles. Remove loosened particles from electrical connector (2), using clean, dry, compressed air.

INSPECT

FOLLOW-ON MAINTENANCE: None

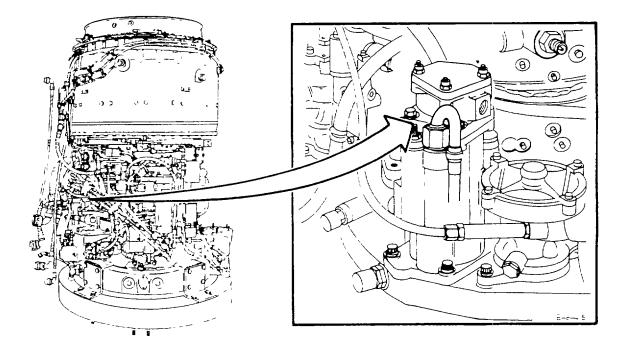


8-11

## 8-11 INSTALL GAS PRODUCER SPEED PICKUP

INITIAL SETUP Applicable Configurations: All Tools: Powerplant Mechanic's Tool Kit, NSN 5180-00-323-4944 Technical Inspection Tool Kit, NSN 5180-00-323-5114 Feeler Gage, 1/4 Wide. 0.010 Inch

Materials: Lockwire (E33) Personnel Required: Aircraft Powerplant Repairer Aircraft Powerplant Inspector References: TM 1-2840-252-23P



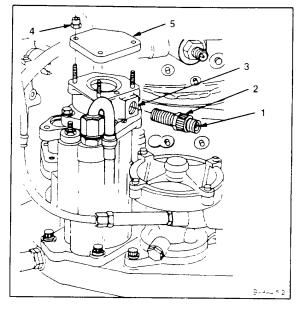
# 8-11 INSTALL GAS PRODUCER SPEED PICKUP (Continued)

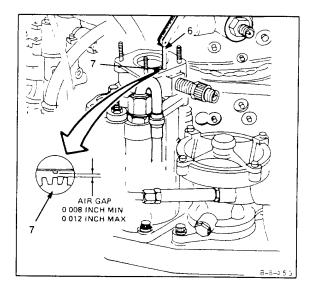
- 1. Install gas producer speed pickup (1) as follows:
  - a. Screw on locknut (2) on gas producer speed pickup (1) until locknut stops.
  - b. Engage threads of gas producer speed pickup (1) and housing (3).
  - c. Establish proper air gap as follows:
    - (1) Remove three nuts (4) and cover (5) from housing (3).

#### NOTE

In following step (2), gear tooth must be aligned under center of speed pickup.

(2) Insert 1/4 inch wide. 0.010 inch feeler gage (6) into housing adjustment hole (7).





# 8-11 INSTALL GAS PRODUCER SPEED PICKUP (Continued)

8-11

(3) Screw in gas producer speed pickup (1) until light drag is felt against feeler gage (6) when moved in and out of housing adjustment hole (7).

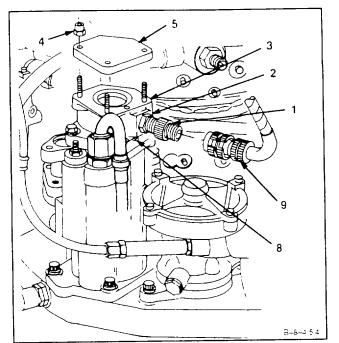
(4) Hold gas producer speed pickup (1) stationary and screw down locknut (2) against housing (3) and snug tighten locknut.

(5) Check for light drag on feeler gage (6). If gap is incorrect, loosen locknut (2) and repeat steps (2) thru (5).

- (6) Lockwire locknut (2) to housing lockwire hole (8). Use lockwire (E33).
- (7) Install cover (5) and three nuts (4).
- d. Connect electrical connector (9) to gas producer speed pickup (1).

## INSPECT

FOLLOW-ON MAINTENANCE: None



### **OIL COOLER ASSEMBLY**

#### 8-12 REMOVE OIL COOLER ASSEMBLY

8-12

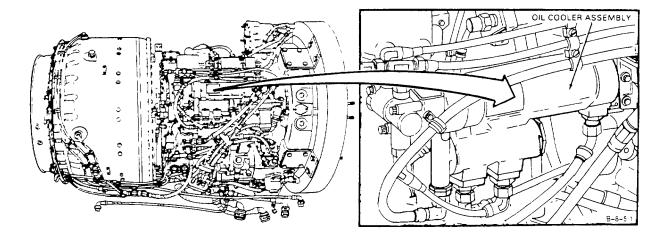
INITIAL SETUP Applicable Configurations: All Tools: Powerplant Mechanic's Tool Kit, NSN 5180-00-323-4944 Container, 2 Quart Materials: Wiping Rag (E64) Personnel Required: Aircraft Powerplant Repairer General Safety Instructions:

#### WARNING

Lubricating oils cause paralysis if swallowed. Prolonged contact with them may irritate the skin. Handle only in well-ventilated areas away from heat and flame. Drain and store in approved metal safety containers. Avoid prolonged or repeated contact with skin and do not take internally. Wash contacted area of skin thoroughly after handling. If irritation of skin results, get medical attention. Get medical attention for eyes.

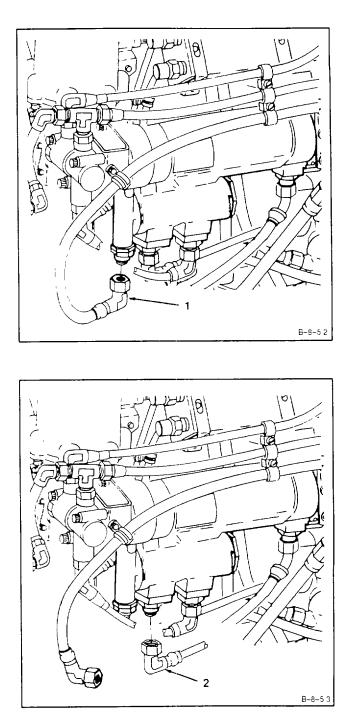
#### WARNING

Turbine fuels are very flammable. They may cause drying and irritation of skin or eyes. Handle only in well-ventilated areas away from heat and open flame. Drain and store in approved metal safety containers. Avoid prolonged or repeated contact with skin and do not take internally. Wash contacted area of skin thoroughly after handling. If irritation of skin results, get medical attention. Get medical attention for eyes.



# 8-12 REMOVE OIL COOLER ASSEMBLY (Continued)

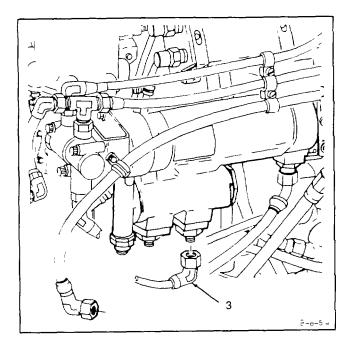
1. Disconnect hose assembly (1).

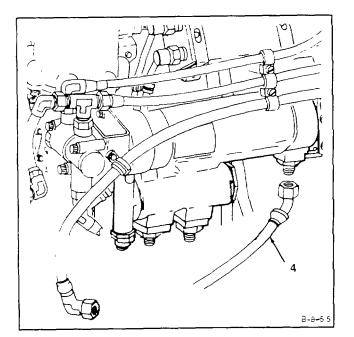


2. Disconnect hose assembly (2).

# 8-12 REMOVE OIL COOLER ASSEMBLY (Continued)

3. Disconnect hose assembly (3).

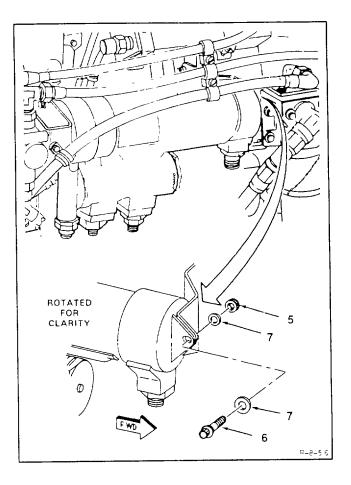


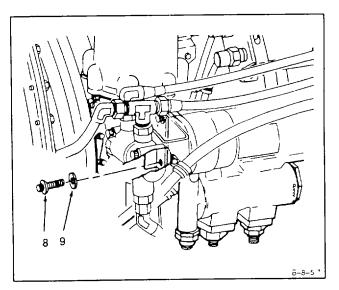


4. Disconnect hose assembly (4).

# 8-12 REMOVE OIL COOLER ASSEMBLY (Continued)

5. Remove nut (5), bolt (6), and two washers (7).





6. Remove lockwire, bolt (8), and washer (9).

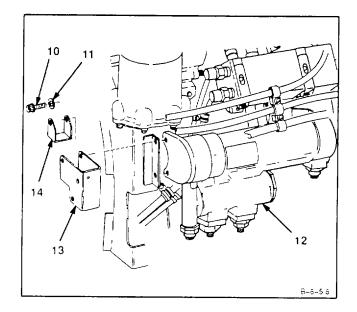
8-12

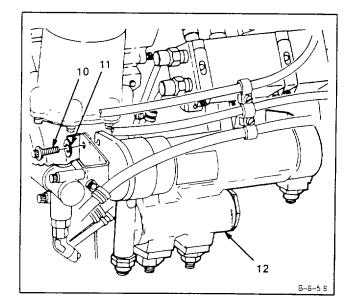
# 8-12 REMOVE OIL COOLER ASSEMBLY (Continued)

NOTE

If flow programming valve has already been removed, do step 7. If flow programming valve has not been removed, omit step 7.

7. Remove lockwire, bolt (10), washer (11), oil cooler assembly (12), bracket (13), and bracket (14).





8. Remove lockwire, bolt (10), washer (11) and oil cooler assembly (12).

END OF TASK

FOLLOW-ON MAINTENANCE: None

**INITIAL SETUP** Applicable Configurations: All Tools: Powerplant Mechanic's Tool Kit, NSN 5180-00-323-4944 Deep-Style Socket, 1-Inch Machinist's Vise Jaw Caps Materials: Wiping Rag (E64) Personnel Required: Aircraft Powerplant Repairer **Equipment Condition:** Off Engine Task Oil Cooler Assembly Removed (Task 8-12) **General Safety Instructions:** 

#### WARNING

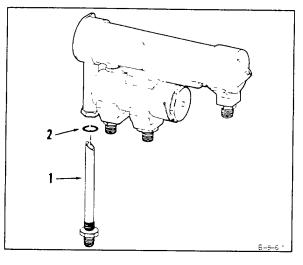
Lubricating oils cause paralysis if swallowed. Prolonged contact with them may irritate the skin. Handle only in well-ventilated areas away from heat and flame. Drain and store in approved metal safety containers. Avoid prolonged or repeated contact with skin and do not take internally. Wash contacted area of skin thoroughly after handling. If irritation of skin results, get medical attention. Get medical attention for eyes.

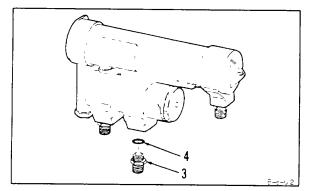
#### WARNING |

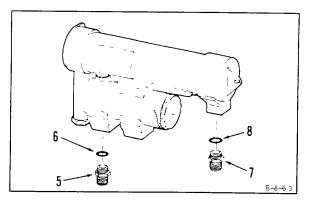
Turbine fuels are very flammable. They may cause drying and irritation of skin or eyes. Handle only in well-ventilated areas away from heat and open flame. Drain and store in approved metal safety containers. Avoid prolonged or repeated contact with skin and do not take internally. Wash contacted area of skin thoroughly after handling. If irritation of skin results, get medical attention. Get medical attention for eyes.

# 8-13 DISASSEMBLE OIL COOLER ASSEMBLY (Continued)

- 1. Remove tube assembly (1) and packing (2). Use vise with jaw caps.
- 2. Using 1-inch deep-style socket, remove reducer (3) and packing (4).







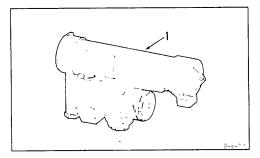
- 3. Using 1-inch deep-style socket, remove reducer (5) and packing (6).
- 4. Remove nipple (7) and packing (8).
- FOLLOW-ON MAINTENANCE: None

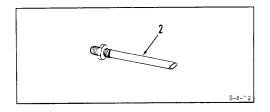
**INITIAL SETUP** Applicable Configurations: All Tools: Powerplant Mechanic's Tool Kit, NSN 5180-00-323-4944 Materials: Dry Cleaning Solvent (E19) Gloves (E24) Personnel Required: Aircraft Powerplant Repairer **Equipment Condition:** Off Engine Task Oil Cooler Assembly Removed (Task 8-12) Oil Cooler Assembly Disassembled (Task 8-13) **General Safety Instructions:** 

### WARNING

Dry cleaning solvent (E19) is flammable and toxic. It can irritate skin and cause burns. Use only in well-ventilated area, away from heat and open flame. In case of contact, immediately flush skin or eyes with water for at least 15 minutes. Get medical attention for eyes.

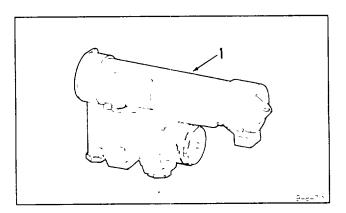
- 1. Wear gloves (E24). Flush internal passages of oil cooler (1) with dry cleaning solvent ((E19).
- 2. Clean external surfaces of oil cooler (1). Use dry cleaning solvent (E19) and brush.
- 3. Allow to drain and air-dry.
- 4. Clean tube assembly (2). Use dry cleaning solvent (E19).

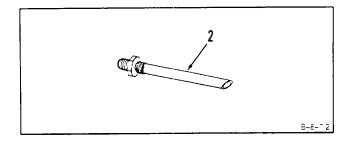




FOLLOW-ON MAINTENANCE: Inspect Oil Cooler Assembly (Task 8-15).

INITIAL SETUP
Applicable Configurations:
All
Tools:
Technical Inspection Tool Kit,
NSN 5180-00-323-5114
Materials:
None
Personnel Required:
Aircraft Powerplant Inspector
Equipment Condition:
Off Engine Task



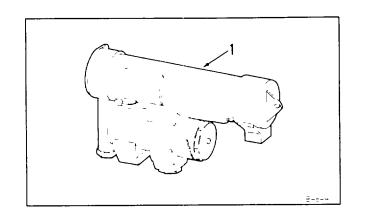


- 1. Inspect oil cooler (1). There shall be no cracks.
- 2. Inspect tube assembly (2). There shall be no cracks, dents or bends.

FOLLOW-ON MAINTENANCE: None

INITIAL SETUP	
Applicable Configurations:	
All	
Tools:	
Technical Inspection Tool Kit,	
NSN 5180-00-323-5114	
Materials:	
Acid Swabbing Brush	
Engine Gray Enamel (E26)	
Personnel Required:	
Aircraft Powerplant Repairer	
Aircraft Powerplant Inspector	
References:	
Task 1-110	
Equipment Condition:	
Off Engine Task	
-	

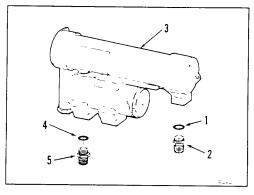
1. Repair damaged paint on oil cooler assembly (1) (Ref. Task 1-110). Use engine gray enamel (E26).

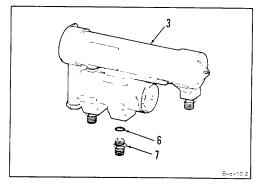


# INSPECT

FOLLOW-ON MAINTENANCE: None **INITIAL SETUP** Applicable Configurations: All Tools: Powerplant Mechanic's Tool Kit. NSN 5180-00-323-4944 Technical Inspection Tool Kit, NSN 5180-00-323-5114 Deep Style Socket, 1-Inch Machinist's Vise Jaw Caps Materials: None Parts: Packings Personnel Required: Aircraft Powerplant Repairer Aircraft Powerplant Inspector **References:** TM 1-2840-252-23P **Equipment Condition:** Off Engine Task

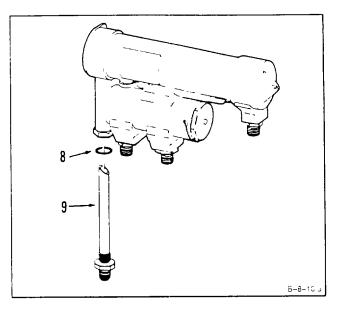
- 1. Install packing (1) and nipple (2) in oil cooler (3). Use vise and jaw caps.
- 2. Install packing (4) and reducer (5) in oil cooler (3). Use 1-inch deep-style socket.
- 3. Install packing (6) and reducer (7) in oil cooler (3). Use 1-inch deep-style socket.





# 8-17 ASSEMBLE OIL COOLER ASSEMBLY (Continued)

4. Install packing (8) and tube assembly (9) in oil cooler (3).



# INSPECT

FOLLOW-ON MAINTENANCE: None

# INITIAL SETUP

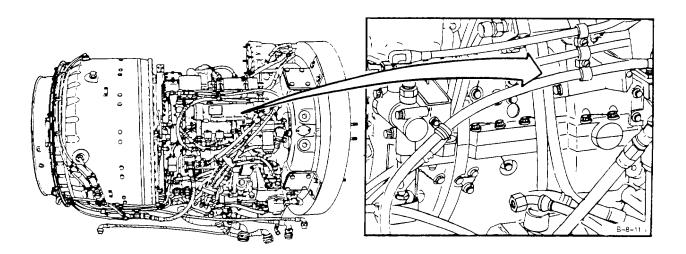
Applicable Configurations:

All Tools:

Powerplant Mechanic's Tool Kit NSN 5180-00-323-4944 Technical Inspection Tool Kit. NSN 5180-00-323-5114

## Materials:

Lockwire (E33) **Personnel Required:** Aircraft Powerplant Repairer Aircraft Powerplant Inspector



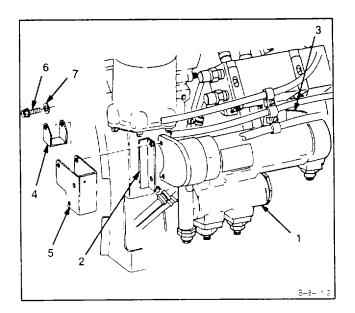
# 8-18 INSTALL OIL COOLER ASSEMBLY (Continued)

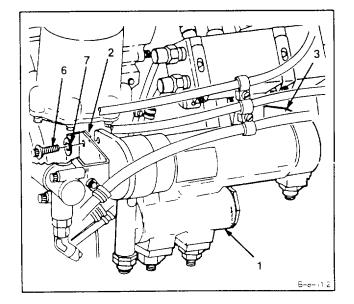
NOTE

If flow programming valve is not installed, do step 1.. If flow programming valve is installed, omit step 1..

1. Install oil cooler assembly (1) on interstage airbleed actuator (2) and bracket (3). Position bracket (4), and bracket (5) on air bleed actuator (2). Loosely install bolt (6) and washer (7).

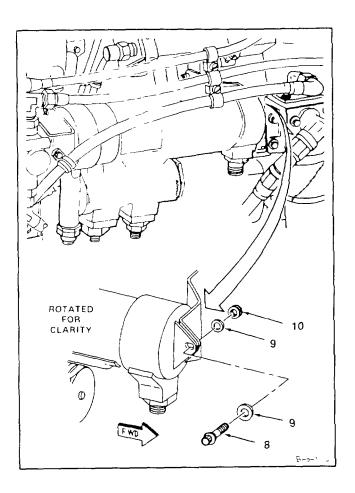
2. Install oil cooler assembly (1) on interstage-airbleed actuator (2) and bracket (3). Loosely install bolt (6) and washer (7).

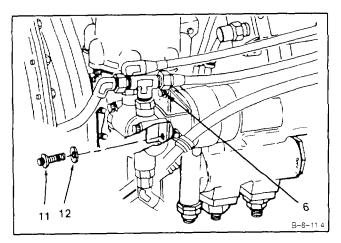




# 8-18 INSTALL OIL COOLER AS SEMBLY (Continued)

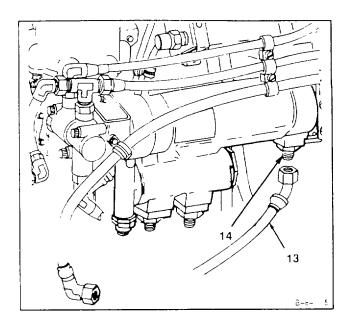
- 3. Install bolt (8), two washers (9), and nut (10).
- 4. Install bolt (11), washer (12), and tighten bolt (6). Lockwire bolts (6) and (11). Use lockwire (E33).

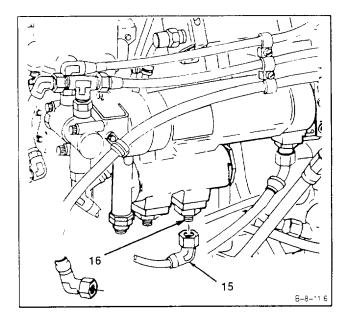




# 8-18 INSTALL OIL COOLER ASSEMBLY (Continued)

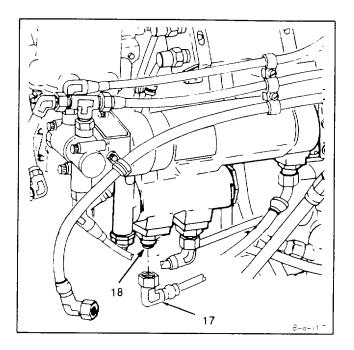
- 5. Connect hose assembly (13) to nipple (14).
- 6. Connect hose assembly (15) to reducer (16).

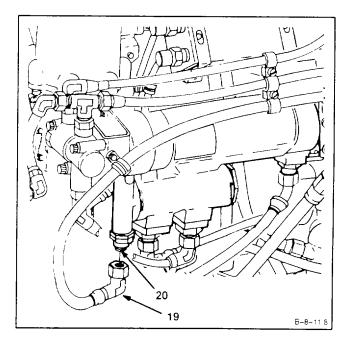




# 8-18 INSTALL OIL COOLER ASSEMBLY (Continued)

- 7. Connect hose assembly (17) to reducer (18).
- 8. Connect hose assembly (19) to tube assembly (20).





# INSPECT

FOLLOW-ON MAINTENANCE: None

8-19

#### **SECTION IV**

#### FLOW PROGRAMMING VALVE

#### 8-19 REMOVE FLOW PROGRAMMING VALVE

### **INITIAL SETUP**

# Applicable Configurations:

#### All

Tools:

Powerplant Mechanic's-Tool Kit, NSN 5180-00-323-4944

#### Materials:

Wiping Rag (E64)

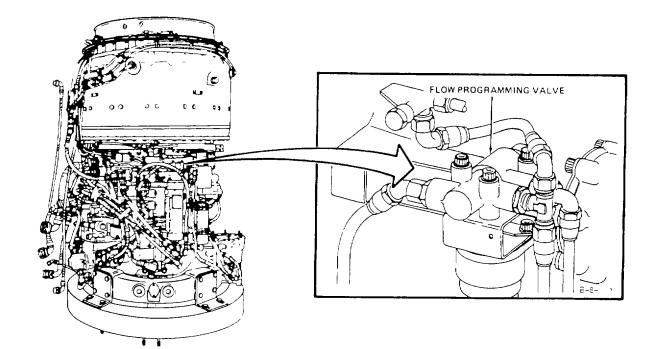
# Personnel Required:

Aircraft Powerplant Repairer

### General Safety Instructions:

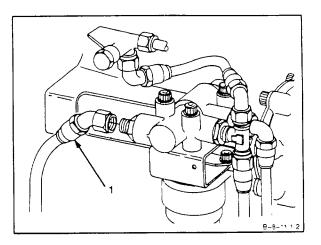
### WARNING

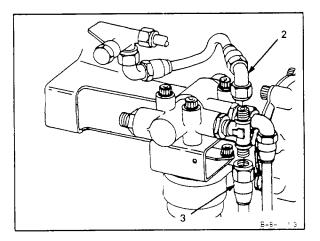
Lubricating oils cause paralysis if swallowed. Prolonged contact with them may irritate the skin. Handle only in well-ventilated areas away from heat and flame. Drain and store in approved metal safety containers. Avoid prolonged or repeated contact with skin and do not take internally. Wash contacted areas of skin thoroughly after handling. If irritation of skin results, get medical attention. Get medical attention for eyes.

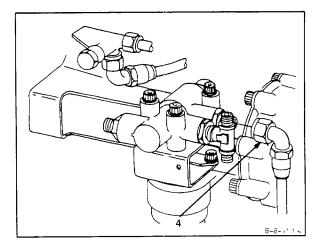


# 8-19 REMOVE FLOW PROGRAMMING (Continued)

- 1. Disconnect hose assembly (1).
- 2. Disconnect hose assemblies (2) and (3).
- 3. Disconnect hose assembly (4).







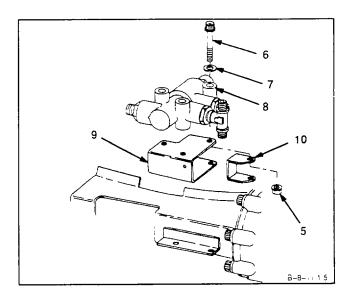
# 8-19 REMOVE FLOW PROGRAMMING VALVE (Continued)

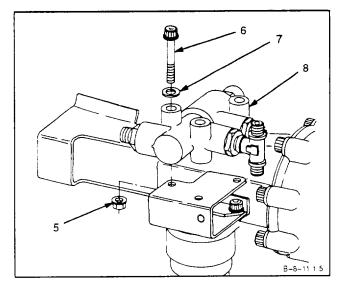
8-19

### NOTE

If oil cooler assembly has already been removed, do step 4.. If oil cooler assembly has not been removed, omit step 4..

- 4. **Remove** three nuts (5), three bolts (6), three washers (7),**flow programming valve (8).** bracket (9), and bracket (10).
- 5. Remove three nuts (5), three bolts (6), three washers (7), and flow programming valve (8).





FOLLOW-ON MAINTENANCE: None

#### 8-20 **CLEAN FLOW PROGRAMMING VALVE**

8-20

	Aircraft Powerplant Repairer
INITIAL SETUP	Equipment Condition:
Applicable Configurations:	Off Engine Task
All	Flow Programming Valve Removed (Ta
Tools:	19)
Powerplant Mechanic's Tool Kit, NSN 5180-00-323-4944	General Safety Instructions:
Goggles	WARNING
Dry, Compressed Air Source	Dry cleaning solvent (E19) is flammable and
Materials:	It can irritate skin and cause burns. Use o
Dry Cleaning Solvent (E19)	well-ventilated area, away from heat and
Gloves (E24)	flame. In case of contact, immediately flus
Lint-Free Cloth (E30)	or eyes with water for at least 15 minutes
Personnel Required:	medical attention for eyes.

1. Wear gloves (E24). Clean flow programming valve (1). Use dry cleaning solvent (E19) and brush.

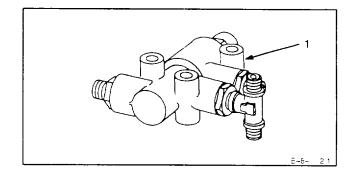
#### WARNING

When using compressed air for cleaning, use approved protective equipment for eyes and face. Do not use more than 30 psig air pressure. Do not direct air toward yourself or another person. Failure to comply could result in injury to eyes or skin. In case of injury, get medical attention.

2. Wear goggles. Blow dry flow programming valve (1), using clean, dry, compressed air.

#### FOLLOW-ON MAINTENANCE:

Inspect Flow Programming Valve (Task 8-21).



**END OF TASK** 

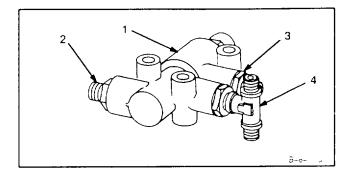
Fask 8-

d toxic. only in d open ish skin <u>es</u>. Get

INITIAL SETUP
Applicable Configurations:
All
Tools:
Powerplant Mechanic's Tool Kit,
NSN 5180-00-323-4944
Materials:
None
Personnel Required:
Aircraft Powerplant Repairer
Equipment Condition:
Off Engine Task

# 1. Inspect flow programming valve (1).

- a. There shall be no nicks, scratches, or gouges on sealing surface.b. There shall be no damaged threads on unions (2 and 3), and tee (4).
- c. Unions (2 and 3) shall not be loose. If unions are loose, tighten unions.



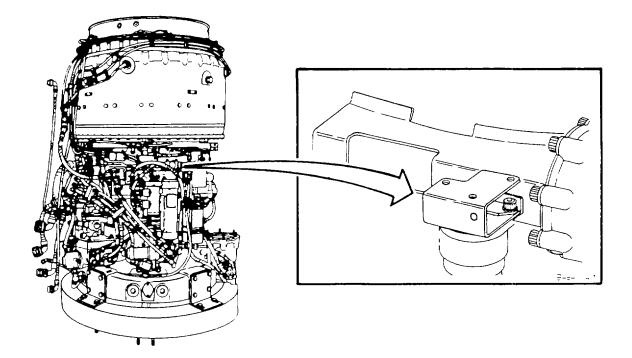
FOLLOW-ON MAINTENANCE: None

### 8-22 INSTALL FLOW PROGRAMMING VALVE

### INITIAL SETUP Applicable Configurations: All Tools: Powerplant Mechanic's Tool Kit, NSN 5180-00-323-4944 Technical Inspection Tool Kit, NSN 5180-00-323-5114

# Materials:

Lockwire (E33) Personnel Required: Aircraft Powerplant Repairer Aircraft Powerplant Inspector References: TM 1-2840-252-23P



#### GO TO NEXT PAGE

8-58

### 8-22 INSTALL FLOW PROGRAMMING VALVE (Continued)

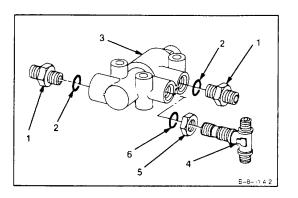
#### NOTE

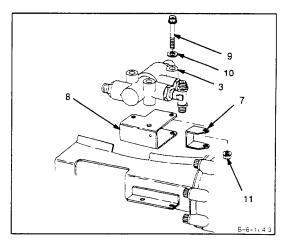
If flow programming valve is a replacement, do steps 1. thru 5.. If same flow programming valve that was removed is to be installed, omit steps 1. thru 5..

- 1. Remove two unions (1) and packings (2) from removed flow programming valve (3).
- 2. Remove tee (4), nut (5), and packing (6) from removed flow programming valve (3).
- 3. Install nut (5) on tee (4). Install packing (6) on tee (4). Position nut to. make sure packing is in groove between two sets of theads on tee.
- 4. Install tee (4) on serviceable flow programming valve (3).
- 5. Install two packings (2) and unions (1) on serviceable flow programming valve (3).

**NOTE** If oil cooler assembly is not installed, do step 6.. If oil cooler assembly is installed, omit step 6..

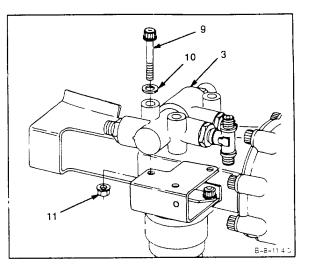
6. Install flow programming valve (3), bracket (7), bracket (8), three bolts (9), three washers (10), and three nuts (11).

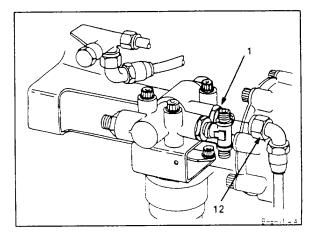


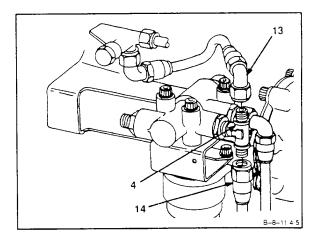


# 8-22 INSTALL FLOW PROGRAMMING VALVE (Continued)

- 7. Install flow programming valve (3), three bolts (9), three washers (10), and three nuts (11).
- 8. Connect hose assembly (12) to union (1).
- 9. Connect hose assemblies (13) and (14) to tee (4).

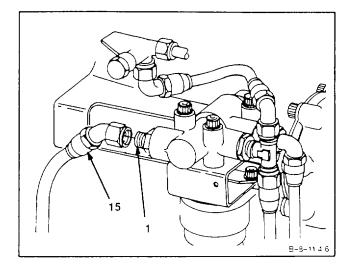






# 8-22 INSTALL FLOW PROGRAMMING VALVE (Continued)

10. Connect hose assembly (15) to union (1).



## INSPECT

FOLLOW-ON MAINTENANCE: None

### **SECTION V**

#### **OIL TEMPERATURE TRANSMITTER**

### 8-23 REMOVE OIL TEMPERATURE TRANSMITTER

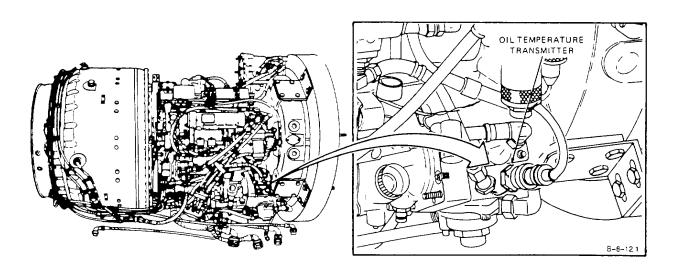
8-23

INITIAL SETUP Applicable Configurations: All Tools: Powerplant Mechanic's Tool Kit, NSN 5180-00-323-4944 Materials: None Personnel Required: Aircraft Powerplant Repairer

### General Safety Instructions:

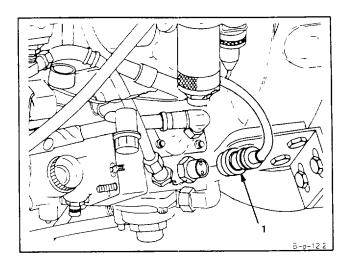
#### WARNING

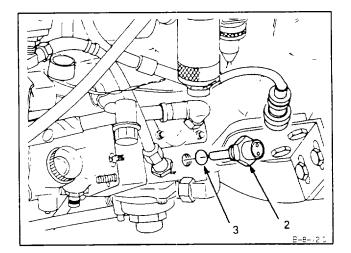
Lubricating oils cause paralysis if swallowed. Prolonged contact with them may irritate the skin. Handle only in well-ventilated areas away from heat and flame. Drain and store in approved metal safety containers. Avoid prolonged or repeated contact with skin and do not take Internally. Wash contacted area of skin thoroughly after handling. If irritation of skin results, get medical attention. Get medical attention for eyes.



# 8-23 REMOVE OIL TEMPERATURE TRANSMITTER (Continued)

- 1. Remove electrical connector (1).
- 2. Remove lockwire, oil temperature transmitter (2), and gasket (3).





FOLLOW-ON MAINTENANCE: None

#### 8-24 **CLEAN OIL TEMPERATURE TRANSMITTER**

#### **INITIAL SETUP**

#### Applicable Configurations:

All

Tools:

Powerplant Mechanic's Tool Kit, NSN 5180-00-323-4944

#### Materials:

Dry Cleaning Solvent (E19) Gloves (E24) Lint-Free Cloth (E30) Personnel Required:

# Aircraft Powerplant Repairer

### Equipment Condition:

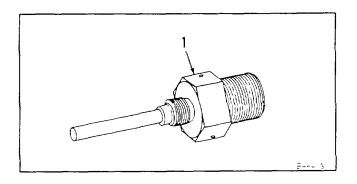
Off Engine Task

Oil Temperature Transmitter Removed (Task 8-23)

General Safety Instructions:

### WARNING|

Dry cleaning solvent (E19) is flammable and toxic. It can irritate skin and cause burns. Use only in well-ventilated area, away from heat and open flame. In case of contact, immediately flush skin or eyes with water for at least 15 minutes: Get medical attention for eyes.



- 1. Wear gloves (E24). Clean oil temperature transmitter (1). Use dry cleaning solvent (EI 9) and brush.
- 2. Wipe dry using clean, dry, lint-free cloth (E30).

# FOLLOW-ON MAINTENANCE:

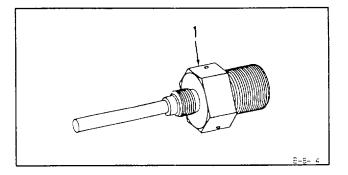
Inspect Oil Temperature Transmitter (Task 8-25).

# 8-25 INSPECT OIL TEMPERATURE TRANSMITTER

INITIAL SETUP Applicable Configurations: All Tools: Technical Inspection Tool Kit, NSN 5180-00-323-5114 Materials: None Personnel Required: Aircraft Powerplant Inspector Equipment Condition: Off Engine Task

### 1. Inspect oil temperature transmitter (1). as follows:

- a. Their shall be no cracks.
- b. There shall be no damaged threads.



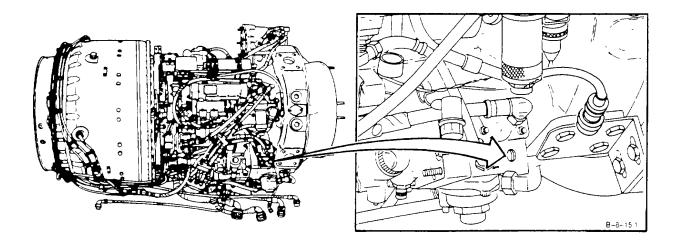
FOLLOW-ON MAINTENANCE: None

## 8-26 INSTALL OIL TEMPERATURE TRANSMITTER

8-26

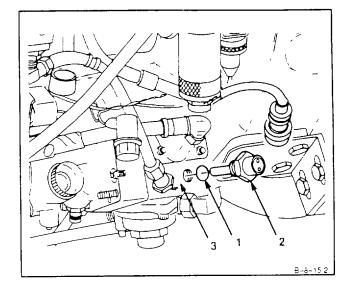
INITIAL SETUP Applicable Configurations: All Tools: Powerplant Mechanic's Tool Kit, NSN 5180-00-323-4944 Technical Inspection Tool Kit, NSN 5180-00-323-5114 Materials:

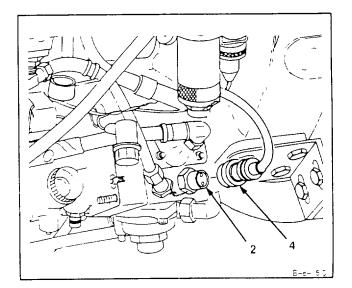
Lockwire (E33) **Personnel Required:** Aircraft Powerplant Repairer Aircraft Powerplant Inspector **References:** TM 1-2840-252-23P



# 8-26 INSTALL OIL TEMPERATURE TRANSMITTER

- 1. **Install** gasket (1) and **oil temperature transmitter (2)** in accessory gearbox assembly (3). Lockwire oil temperature transmitter (2). Use lockwire (E33).
- 2. Install electrical connector (4) on oil temperature transmitter (2).





### INSPECT

FOLLOW-ON MAINTENANCE: None

#### **SECTION VI**

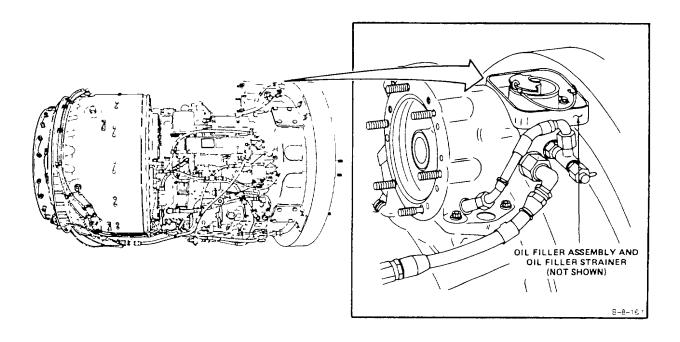
# OIL FILLER ASSEMBLY AND OIL FILLER STRAINER

### 8-27 REMOVE OIL FILLER ASSEMBLY AND OIL FILLER STRAINER

8-27

INITIAL SETUP *Applicable Configurations:* All *Tools:* Powerplant Mechanic's Tool Kit, NSN 5180-00-323-4944 Materials: Wiping Rag (E64) Personnel Required: Aircraft Powerplant

Repairer



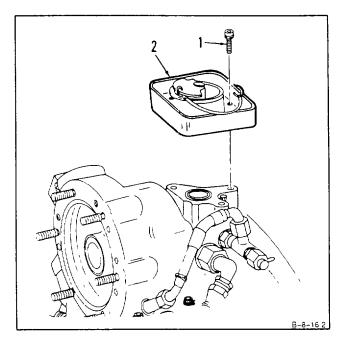
8-27

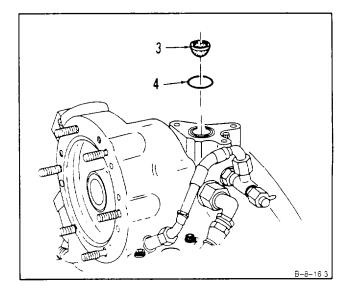
# 8-27 REMOVE OIL FILLER ASSEMBLY AND OIL FILLER STRAINER (Continued)

1. **Remove** lockwire, three bolts (1) and **oil filler assembly (2).** 

CAUTION If tools must be used to remove strainer care must be exercised to prevent damage to mating surfaces.

2. Remove oil filler strainer (3) and packing (4).





FOLLOW-ON MAINTENANCE: None

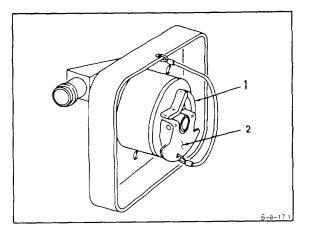
## 8-28 DISASSEMBLE OIL FILLER ASSEMBLY AND OIL FILLER STRAINER

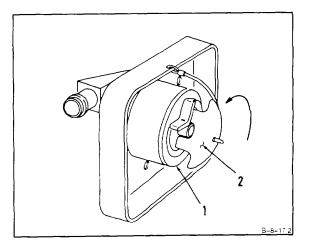
8-28

### INITIAL SETUP Applicable Configurations: Personal All Airc Tools: Equipm Powerplant Mechanic's Tool Kit, Off NSN 5180-00-323-4944 Oil F Materials: Rem None

### Personnel Required: Aircraft Powerplant Repairer Equipment Condition: Off Engine Task Oil Filler Assembly and Oil Filler Strainer Removed (Task8-27)

- 1. Remove cap assembly (1) as follows:
  - a. Lift handle (2).
  - b. Turn handle (2) counterclockwise and remove cap assembly (1).

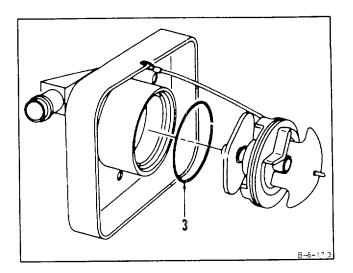




8-28

# 8-28 DISASSEMBLE OIL FILLER ASSEMBLY AND OIL FILLER STRAINER (Continued)

# c. Remove packing (3).

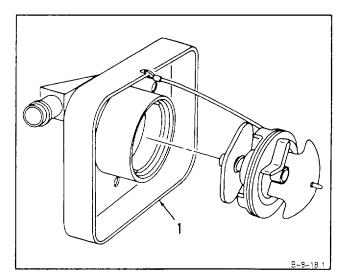


### FOLLOW-ON MAINTENANCE: None

nued) 8-2
Instructions:
WARNING
/e [

# 1. Clean oil filter assembly (1) as follows:

- a. Wear gloves (E24). Immerse filler assembly (1) in dry cleaning solvent (E19) and agitate. Use brush on inner surface.
- b. Wear goggles. Blow dry any remaining solvent. Use clean, dry, compressed air.



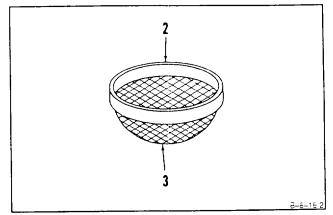
# 8-29 CLEAN OIL FILLER ASSEMBLY AND OIL FILLER STRAINER (Continued)

### 2. Clean oil filler strainer (2) as follows:

- a. Immerse in dry cleaning solvent (E19) and agitate. Use brush on screen (3).
- b. Blow dry screen (3). Use clean, dry, compressed air.

### FOLLOW-ON MAINTENANCE:

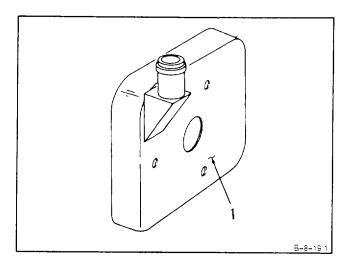
Inspect Oil Filler Assembly and Oil Filler Strainer (Task 8-30).

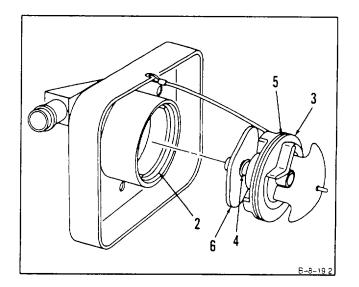


8-30 INSPECT OIL FILLER ASSEMBLY AN	ID OIL FILLER STRAINER 8-30
INITIAL SETUP	Materials:
Applicable Configurations:	None
All	Personnel Required:
Tools:	Aircraft Powerplant Inspector
Technical Inspection Tool Kit,	Equipment Condition:
NSN 5180-00-323-5114	Off Engine Task

### 1. Inspect pan mounting surface (1). There shall be no cracks.

**2.** Inspect packing sealing surface (2). There shall be no nicks, dents and scratches greater than 0.015 inch. Inspect cap assembly (3). Spring (4) shall not be broken. There shall be no nicks, dents or scratches deeper than 0.015 inch in packing groove (5). Locking tabs (6) shall not be bent or distorted.

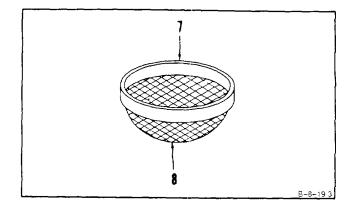




# 8-30 INSPECT OIL FILLER ASSEMBLY AND OIL FILLER STRAINER (Continued)

8-30

3. Inspect oil filler strainer (7). There shall be no broken wires (8).



FOLLOW-ON MAINTENANCE: None

8-31

# 8-31 REPAIR OIL FILLER ASSEMBLY AND OIL FILLER STRAINER

INITIAL SETUP Applicable Configurations:

All

Tools:

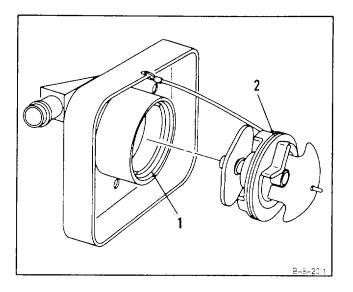
Technical Inspection Tool Kit, NSN 5180-00-323-5114 Materials: Crocus Cloth (E16) Personnel Required: Aircraft Powerplant Repairer Aircraft Powerplant Inspector Equipment Condition: Off Engine Task

1. Repair nicks, dents and scratches in packing sealing surface (1) or in packing groove (2) as follows:

NOTE

Repair is allowed only if depth after repair is not more than 0.015 inch.

- a. Blend-repair using file.
- b. Polish repaired area. Use crocus cloth (E16).

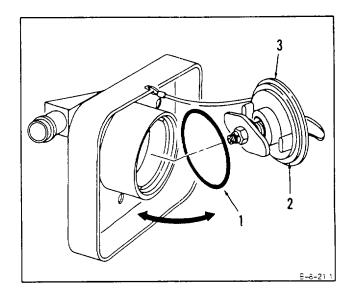


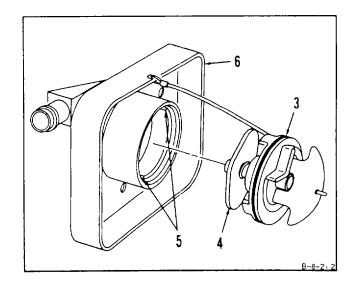
## INSPECT

FOLLOW-ON MAINTENANCE: None

8-32 ASSEMBLE OIL FILLER ASSEMBLY	AND OIL FILLER STRAINER	8-32
INITIAL SETUP	Personnel Required:	
Applicable Configurations:	Aircraft Powerplant Repairer	
All	Aircraft Powerplant Inspector	
Tools:	Parts:	
Technical Inspection Tool Kit,	Packing	
NSN 5180-00-323-5114	References:	
Materials:	TM 1-2840-252-23P	
None	Equipment Condition:	
	Off Engine Task	

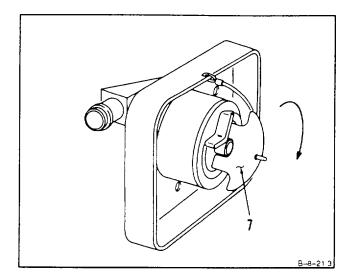
- 1. Install packing (1) in groove (2) of cap assembly (3).
- 2. Align ends of lug (4) with slots (5) and install cap assembly (3) in pan (6).





### 8-32 ASSEMBLE OIL FILLER ASSEMBLY AND OIL FILLER STRAINER (Continued)

3. Turn handle (7) 1/8-turn clockwise and press down.



#### INSPECT

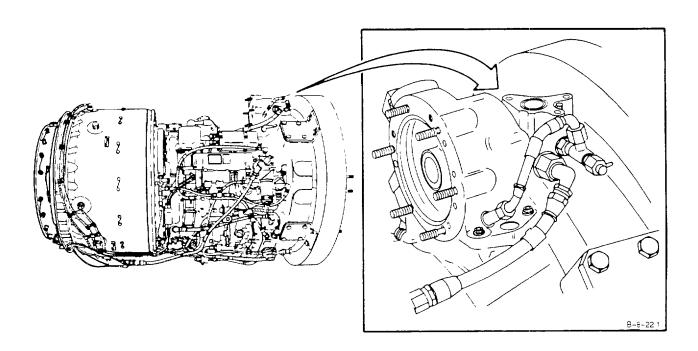
FOLLOW-ON MAINTENANCE: None

#### 8-33 INSTALL OIL FILLER ASSEMBLY AND OIL FILLER STRAINER

#### INITIAL SETUP

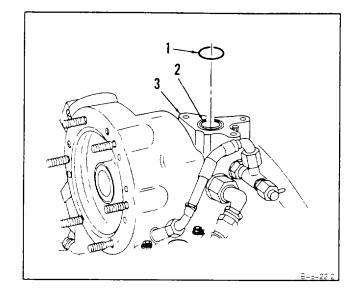
Applicable Configurations: All Tools: Powerplant Mechanic's Tool Kit, NSN 5180-00-323-4944

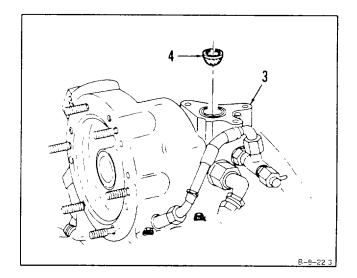
Technical Inspection Tool Kit, NSN 5180-00-323-5114 Materials: Lockwire (E33) Parts: Packing Personnel Required: Aircraft Powerplant Repairer Aircraft Powerplant Inspector References: TM 1-2840-252-23P



## 8-33 INSTALL OIL FILLER ASSEMBLY AND OIL FILLER STRAINER (Continued)

- 1. Install packing (1) in groove (2) in housing (3).
- 2. Install oil filler strainer (4) in housing (3).





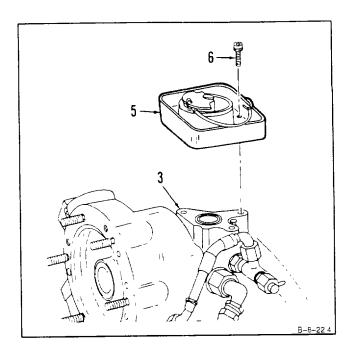
## 8-33 INSTALL OIL FILLER ASSEMBLY AND OIL FILLER STRAINER (CONTINUED)

3. Install oil filler assembly (5) and three bolts (6) on housing (3). Lockwire bolts (6). Use lockwire (E33)

### INSPECT

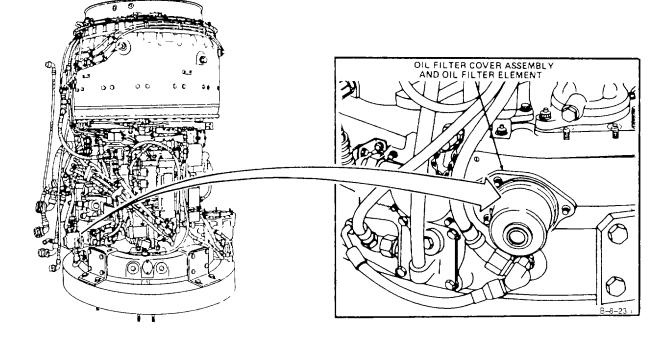
FOLLOW-ON MAINTENANCE:

None



SECTION VII OIL FILTER COVER ASSEMBLY AND OIL FILTER ELEMENT

8-34 REMOVE OIL FILTER COVER ASSEMBLY	Y AND OIL FILTER ELEMENT	8-34
INITIAL SETUP	General Safety Instructions:	
Applicable Configurations:	WARNING	
Tools:	Lubricating oils cause paralysis if swal-	
	lowed. Prolonged contact with them	
Powerplant Mechanic's Tool Kit,	may irritate the skin. Handle only in	
NSN 5180-00-323-4944	well-ventilated areas away from heat	
Container, 1-Quart	and flame. Drain and store in approved	
Materials:	metal safety containers. Avoid pro-	
Wiping Rag (E64)	longed or repeated contact with skin	
Personnel Required:	and do not take internally. Wash con-	
Aircraft Powerplant Repairer	tacted area of skin thoroughly after han-	
References:	dling. If irritation of skin results, get	
Task 1-80	medical attention. Get medical attention	
Equipment Condition:	for eyes.	
Engine Oil System Drained (Task 1-69)		

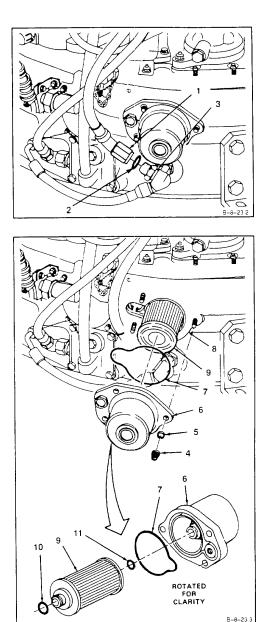


#### 8-34 REMOVE OIL FILTER COVER ASSEMBLY AND OIL FILTER ELEMENT (Continued)

- 1. Disconnect hose assembly (1) and remove gasket (2) from tee (3).
- 2. Remove three nuts (4) and three washers (5). Remove lockwire and oil filtercover assembly (6).
- 3. Remove packing (7) from accessory gearbox assembly (8).
- 4. Remove oil filter element (9) from oil filter cover assembly (6) and remove packings (10 and 11).
- 5. **Inspect oil filter element (9).** There shall be no contamination. If contamination is found, inspect contaminated oil system (Ref. Task 1-80).

FOLLOW-ON MAINTENANCE:

None



8-35 CLEAN OIL FILTER COVER ASSET[VBLY AND OIL FILTER ELEMENT	
INITIAL SETUP	Equipment Condition:
Applicable Configurations:	Off Engine Task
All	Engine Oil System Drained (Task 1-69)
Tools:	Oil Filter Cover Assembly and Oil Filter
Powerplant Mechanic's Tool Kit,	Element Removed (Task 8-34)
NSN 5180-00-323-4944	General Safety Instructions:
Goggles	WARNING
Dry, Compressed Air Source	Dry cleaning solvent (E19) is flammable and
Materials:	toxic. It can irritate skin and cause burns.
Dry Cleaning Solvent (E19)	Use only in well-ventilated area, away from
Gloves (E24)	heat and open flame. In case of contact,
Lint-Free Cloth (E30)	immediately flush skin or eyes with water for
Personnel Required:	at least 15 minutes. Get medical attention
Aircraft Powerplant Repairer	for eyes.

#### 1. Clean oil filter cover assembly (1) as follows:

a. Wear gloves (E24). Immerse and agitate oil filter cover assembly (1) in dry cleaning solvent (E19). Use brush on outside surfaces.

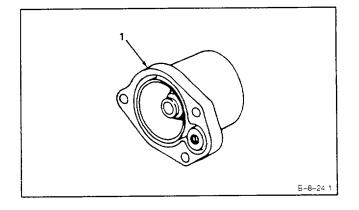
b. Wipe outside surfaces dry with clean, dry, lint-free cloth (E30).

When using compressed air for cleaning, use approved protective equipment for eyes and face. Do not use more than 30 psig air pressure. Do not direct air toward yourself or another person. Failure to comply could result in injury to eyes or skin. In case of injury, get medical attention.

c. Wear goggles. Blow dry internal and external surfaces using clean, dry, compressed air.

#### FOLLOW-ON MAINTENANCE:

Inspect Oil Filter Cover Assembly and Oil Filter Element (Task 8-36).



## 8-36 INSPECT OIL FILTER COVER ASSEMBLY AND OIL FILTER ELEMENT

INITIAL SETUP Applicable Configurations: All

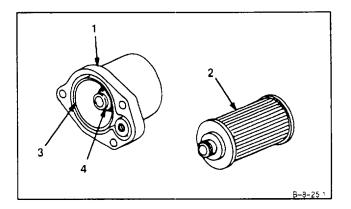
Tools:

s: Technical Inspection Tool Kit, NSN 5180-00-323-5114 Materials: None Personnel Required: Aircraft Powerplant Inspector Equipment Condition: Off Engine Task

#### 1. Inspect oil filter cover assembly (1) as follows:

- a. There shall be no cracks.
- b. There shall be no nicks, dents or scratches deeper than 0.015 inch.
- c. There shall be no nicks, dents or scratches deeper than 0.010 inch on packing grooves (3 and 4).
- 2. Inspect oil filter element (2) as follows:
- a. There shall be no damage.
- b. There shall be no contamination. If contamination is found, inspect contaminated oil system (Ref. Task 1-80).

#### FOLLOW-ON MAINTENANCE: None



#### 8-37 REPAIR OIL FILTER COVER ASSEMBLY AND OIL FILTER ELEMENT

#### INITIAL SETUP

#### Applicable Configurations:

All

#### Tools:

Technical Inspection Tool Kit, NSN 5180-00-323-5114

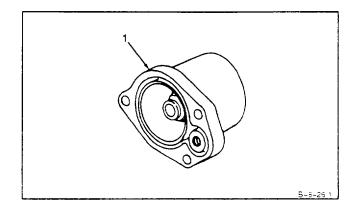
#### Materials:

Carborundum Stone (Ell) Crocus Cloth (E16) Personnel Required: Aircraft Powerplant Repairer Aircraft Powerplant Inspector Equipment Condition: Off Engine Task

- 1. Repair nicks, dents, and scratches on oil filter cover assembly (1) up to <u>0.015 inch</u> deep. Blend repair. Use carborundum stone (Ell).
- 2. Final polish using crocus cloth (E16).

#### INSPECT

FOLLOW-ON MAINTENANCE: None



## 8-38 INSTALL OIL FILTER COVER ASSEMBLY AND OIL FILTER ELEMENT INITIAL SETUP Parts:

## Applicable Configurations:

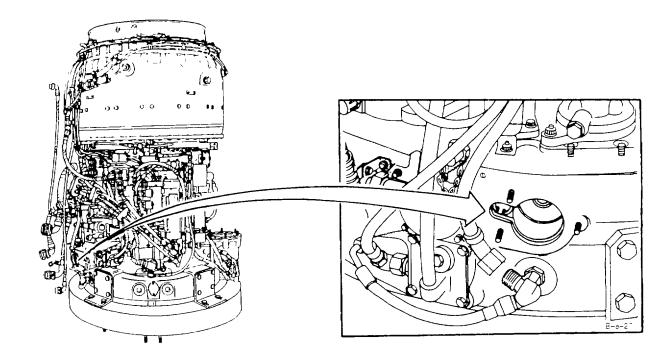
## All

## Tools:

Powerplant Mechanic's Tool Kit, NSN 5180-00-323-4944 Technical Inspection Tool Kit, NSN 5180-00-323-5114 Torque Wrench, 30-150 Inch-Pounds Materials:

Lockwire (E33)

#### Parts: Gasket Oil Filter Element Packings Personnel Required: Aircraft Powerplant Repairer Aircraft Powerplant Inspector References: TM 1-2840-252-23P

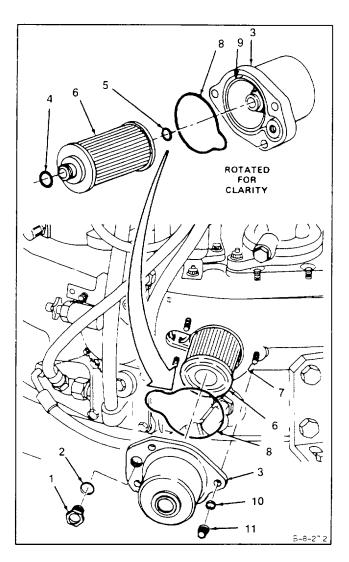


## 8-38 INSTALL OIL FILTER COVER ASSEMBLY AND OIL FILTER ELEMENT (Continued)

#### NOTE

If oil filter cover assembly is a replacement, do steps 1 and 2. If same oil filter cover assembly that was removed is to be installed, omit steps 1 and 2.

- 1. Remove plug (1) and packing (2) from removed oil filter cover assembly (3).
- 2. Install plug (1) and packing (2) on serviceable oil filter cover assembly (3).
- 3. Install packings (4 and 5) on oil filter element(6).
- 4. Install oil filter element (6) into accessory gearbox assembly (7).
- 5. Install packing (8) into oil filter cover assembly packing groove (9).
- 6. Install oil filter cover assembly (3), on accessory gearbox assembly (7). Install three washers (10) and three nuts (11).



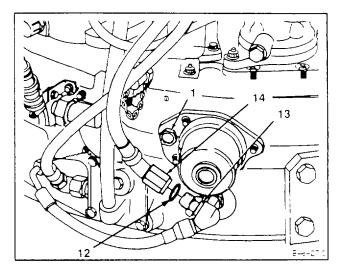
## 8-38 INSTALL OIL FILTER COVER ASSEMBLY AND OIL FILTER ELEMENT

- 7. Check if plug (1) is tight, and re-lockwire if required. Use lockwire (E33).
- 8. Install gasket (12) on tee (13) and connect hose assembly (14) to tee (13).

#### INSPECT

FOLLOW-ON MAINTENANCE:

Service Engine Oil System (Task 1-68).



#### SECTION VIII DUAL CHIP DETECTOR

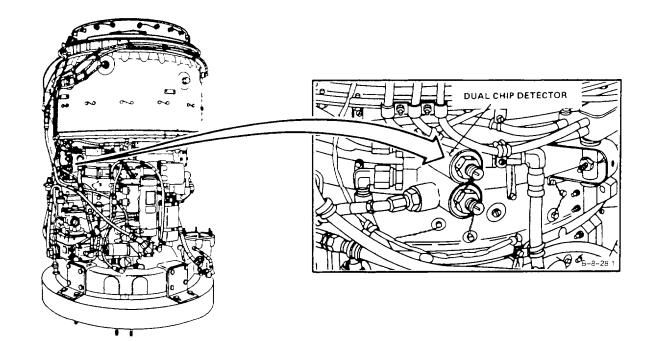
#### 8-39 REMOVE DUAL CHIP DETECTOR

#### INITIAL SETUP Applicable Configurations: All Tools: Powerplant Mechanic's Tool Kit, NSN 5180-00-323-4944 Container, 1-Quart Materials: Wiping Rag (E64) Personnel Required: Aircraft Powerplant Repairer

#### General Safety Instructions:

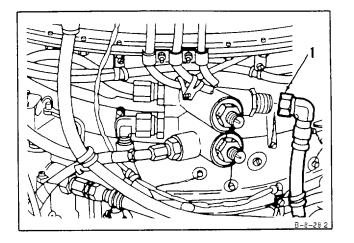
WARNING

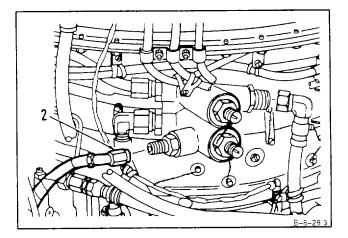
Lubricating oils cause paralysis if swallowed. Prolonged contact with them may irritate the skin. Handle only in well-ventilated areas away from heat and flame. Drain and store in approved metal safety containers. Avoid prolonged or repeated contact with skin and do not take internally. Wash contacted area of skin thoroughly after handling. If irritation of skin results, get medical attention. Get medical attention for eyes.

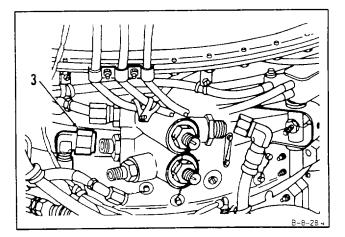


## 8-39. REMOVE DUAL CHIP DETECTOR (Continued)

- 1. Disconnect hose assembly (1).
- 2. Disconnect hose assembly (2).
- 3. Disconnect hose assembly (3).





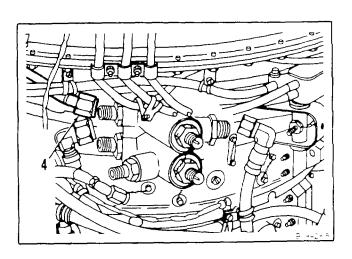


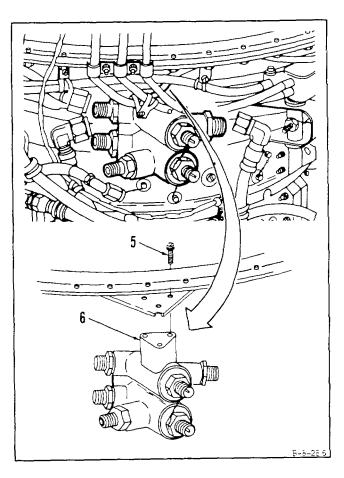
## 8-39 REMOVE DUAL CHIP DETECTOR (Continued)

- 4. Disconnect hose assembly (4).
- 5. Remove lockwire, three bolts (5), and dual chip detector (6).

## FOLLOW-ON MAINTENANCE:

None





#### 3-40 DISASSEMBLE DUAL CHIP DETECTOR

#### **INITIAL SETUP Applicable Configurations:** All Tools: Powerplant Mechanic's Tool Kit, NSN 5180-00-323-4944 Vise Jaw Caps Materials: Wiping Rag (E64) **Personnel Required:** Aircraft-Powerplant Repairer **Equipment Condition:** Off Engine Task Dual Chip Detector Removed (Task 8-39) **References:** Task 1-80

#### General Safety Instructions:

#### WARNING

Lubricating oils cause paralysis if swallowed. Prolonged contact with them may irritate the skin. Handle only in wellventilated areas away from heat and flame. Drain and store in approved metal safety containers. Avoid prolonged or repeated contact with skin and do not take internally. Wash contacted area of skin thoroughly after handling. If irritation of skin results, get medical attention. Get medical attention for eyes.

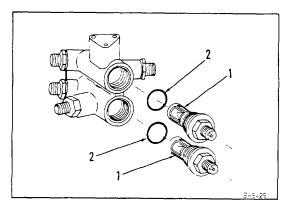
1. Remove lockwire, two magnetic chip detectors (1) and packings (2). Use vise with jaw caps.

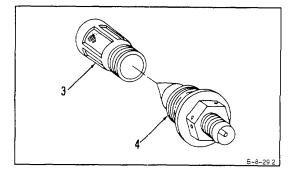
## CAUTION

When removing filter from connector, be careful not to push in or deform screen of filter. Pushed in or deformed screen are cause for rejection.

**NOTE** The following step applies to both magnetic chip detectors.

2. Unscrew and remove filter (3) from connector (4).





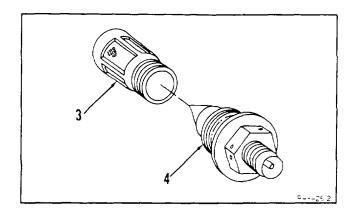
GO TO NEXT PAGE

## 8-40 DISASSEMBLE DUAL CHIP DETECTOR (Continued)

3. Inspect chip detector filter (3). There shall be no visible chips on screen. If numerous chips are found on the screen, it is an indication of component distress. Inspect the oil system for contamination (Ref. Task 1-80).

4. Inspect chip detector connector (4). There shall be no visible chips on the magnetic probe. If chips are found on the probe, it is an indication of component distress. Inspect the oil system for contamination (Ref. Task 1-80).

FOLLOW-ON MAINTENANCE: None



8-41 CLEAN DUAL CHIP DETECTOR	8-41
INITIAL SETUP	Equipment Condition:
Applicable Configurations:	Off Engine Task
All	Dual Chip Detector Removed (Task 8-39)
Tools:	Dual Chip Detector Disassembled (Task 8-40)
Powerplant Mechanic's Tool Kit,	General Safety Instructions:
NSN 5180-00-323-4944	WARNING
Goggles	Dry cleaning solvent (E19) is flammable and
Dry, Compressed Air Source	toxic. It can irritate skin and cause burns.
Materials:	Use only in well-ventilated area, away from
Dry Cleaning Solvent (E19)	heat and open flame. In case of contact,
Gloves (E24)	immediately flush skin or eyes with water for
Lint-Free Cloth (E30)	at least 15 minutes. Get medical attention
Personnel Required:	
Aircraft Powerplant Repairer	for eyes.

1. Wear gloves (E24). Clean housing (1) and two filters (2). Use dry cleaning solvent (E19) and brush.

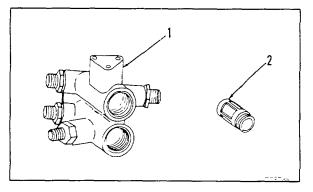
## WARNING

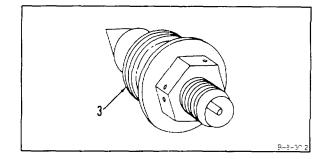
When using compressed air for cleaning, use approved protective equipment for eyes and face. Do not use more than 30 psig air pressure. Do not direct air toward yourself or another person. Failure to comply could result in injury to eyes or skin. In case of injury, get medical attention.

- 2. Wear goggles. Blow dry housing (1) and filters (2), using clean, dry, compressed air.
- 3. Clean two connectors (3) with lint-free cloth (E30) dampened in dry cleaning solvent (E19)

#### FOLLOW-ON MAINTENANCE:

Inspect Dual Chip Detector (Task 8-42).





### 8-42 INSPECT DUAL CHIP DETECTOR

INITIAL SETUP Applicable Configurations: All Tools: Technical Inspection Tool Kit, NSN 5180-00-323-5114 Materials: None

Personnel Required: Aircraft Powerplant Inspector References: Task 1-80 Equipment Condition: Off Engine Task

1. Inspect housing (1). There shall be no cracks.

NOTE

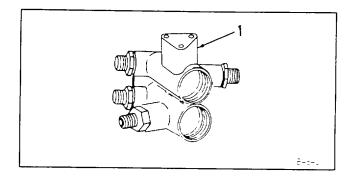
Following steps apply to both filters.

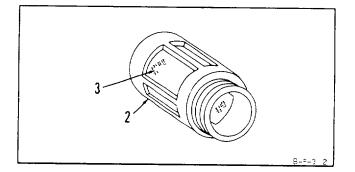
2. Inspect filter (2).

- a. There shall be no tears, punctures, or broken wires in screen (3).
- b. Screen (3) shall not be pushed in or broken away from filter (2).
- c. There shall be no contamination.

#### NOTE

If there is contamination, further inspection of oil system must be done to determine cause. Inspect contaminated oil system (Ref. Task 1-80).





### 8-42 INSPECT DUAL CHIP DETECTOR (Continued)

#### NOTE

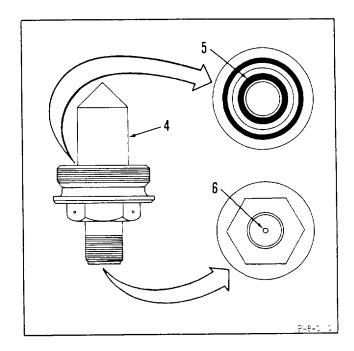
Following steps apply to both connectors.

#### 3. Inspect connector (4).

- a. There shall be no cracks in phenolic insert (5).
- b. Pin (6) shall not be broken or bent.
- c. There shall be no corrosion on pin (6).

#### FOLLOW-ON MAINTENANCE:

None



#### 8-43 REPAIR DUAL CHIP DETECTOR

INITIAL SETUP Applicable Configurations: All Tools: Powerplant Mechanic's Tool Kit, NSN 5180-00-323-4944 Technical Inspection Tool Kit, NSN 5180-00-323-5114 Goggles

Dry, Compressed Air Source

Materials: Crocus Cloth (E16) Personnel Required: Aircraft Powerplant Repairer Aircraft Powerplant Inspector Equipment Condition: Off Engine Task

#### NOTE

This repair is allowed, provided it does not cause pin to break or crack.

1. Straighten bent pin (1) of connector (2). Use long-nose pliers to gently move pin (1) until it is straight.

2. Remove corrosion from pin (1) of connector (2). Polish pin, using in and out motion over entire length of pin until corrosion is removed. Use crocus cloth (E16).

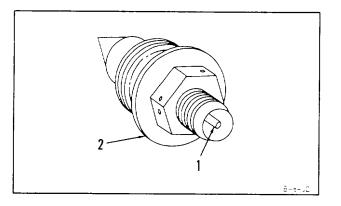
#### WARNING

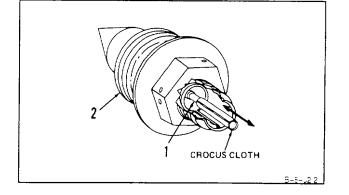
When using compressed air for cleaning, use approved protective equipment for eyes and face. Do not use more than 30 psig air pressure. Do not direct air toward yourself or another person. Failure to comply could result in injury to eyes or skin. In case of injury, get medical attention.

3. Wear goggles. Remove loosened particles, using clean, dry, compressed air.

#### INSPECT

FOLLOW-ON MAINTENANCE: None





## 8-44 ASSEMBLE DUAL CHIP DETECTOR

INITIAL SETUP Applicable Configurations: All Tools: Powerplant Mechanic's Tool Kit, NSN 5180-00-323-4944 Technical Inspection Tool Kit, NSN 5180-00-323-5114 Vise Jaw Caps

Lockwire (E33)

Parts: Packings Personnel Required: Aircraft Powerplant Repairer Aircraft Powerplant Inspector References: TM 1-2840-252-23P Equipment Condition: Off Engine Task

NOTE

The following step applies to both magnetic chip detectors.



When installing filter on connector, be careful not to push in or deform screen or filter. Pushed in or deformed screen may cause false chip indications.

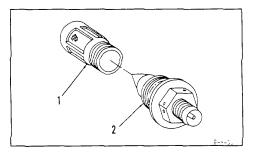
1. Install filter (1) on connector (2).

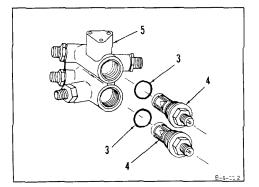
2. Install two packings (3) and magnetic chip detectors (4) in housing (5). Lockwire chip detector (4). Use lockwire (E33). Use vise with jaw caps.

#### INSPECT

Materials:

FOLLOW-ON MAINTENANCE: Test Dual Chip Detector (Task 8-45).





8-45 TEST DUAL CHIP DETECTOR	8-45
INITIAL SETUP	Materials:
Applicable Configurations:	None
All	Personnel Reguired:
Tools:	Aircraft Powerplant Repairer
Multimeter	Equipment Condition:
	Off Engine Task

1. Measure insulation resistance of magnetic chip detectors (1) as follows: Use multimeter.

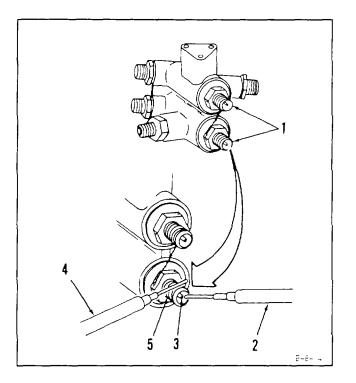
**NOTE** The following steps apply to both magnetic chip detectors.

a. Set multimeter range switch to R x 1000.

b. Touch red probe (2) to pin (3).

- c. Touch black probe (4) to threads (5).
- d. Meter shall indicate 10 000 ohms, minimum.

FOLLOW-ON MAINTENANCE: None



### 8-46 INSTALL DUAL CHIP DETECTOR

INITIAL SETUP

# Applicable Configurations:

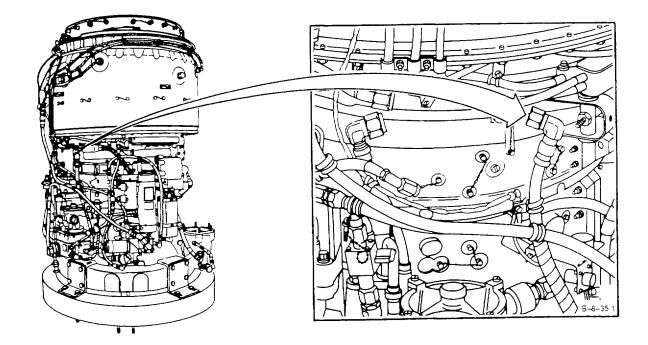
## Tools:

Powerplant Mechanic's Tool Kit, NSN 5180-00-323-4944 Technical Inspection Tool Kit, NSN 5180-00-323-5114

#### Materials:

Lockwire (E33)

Parts: Packing Personnel Required: Aircraft Powerplant Repairer Aircraft Powerplant Inspector References: TM 1-2840-252-23P

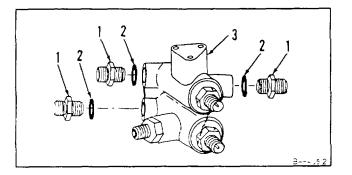


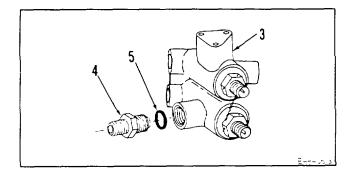
### 8-46 INSTALL DUAL CHIP DETECTOR (Continued)

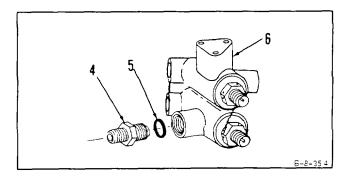
#### NOTE

If dual chip detector is a replacement, do steps 1 through 4. If same dual chip detector that was removed is to be installed, skip steps 1 through 4.

- 1. Remove three unions (1) and packings (2) from removed dual chip detector (3).
- 2. Remove reducer (4) and packing (5) from removed dual chip detector (3).
- 3. Install packing (5) and reducer (4) in serviceable dual chip detector (6).

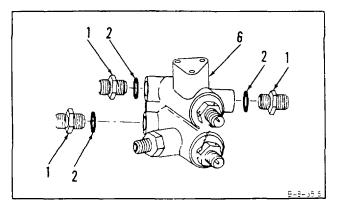


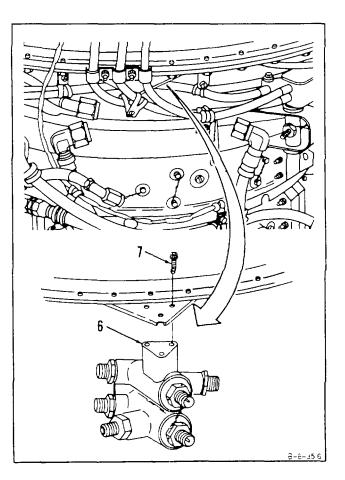




## 8-46 INSTALL DUALCHIP DETECTOR (Continued)

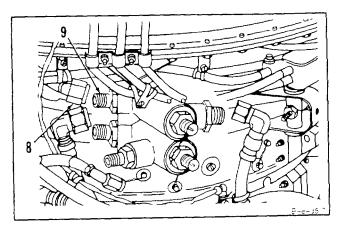
- 4. Install three packings (2) and unions (1) in serviceable dual chip detector (6).
- 5. Install dual chip detector (6) and three bolts (7). Lockwire bolts (7). Use lockwire (E33).

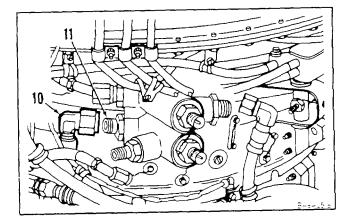


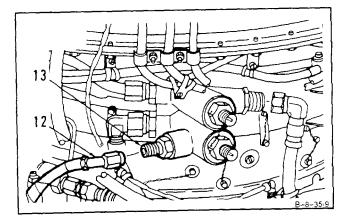


## 8-46 INSTALL DUAL CHIP DETECTOR (Continued)

- 6. Connect hose assembly (8) to union (9).
- 7. Connect hose assembly (10) to union (11).
- 8. Connect hose assembly (12) to reducer (13).







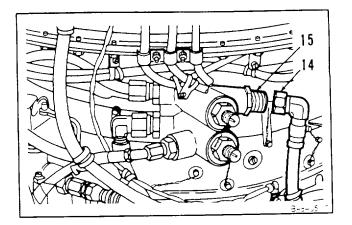
## 8-46 INSTALL DUAL CHIP DETECTOR (Continued)

9. Connect hose assembly (14) to union (15).

#### INSPECT

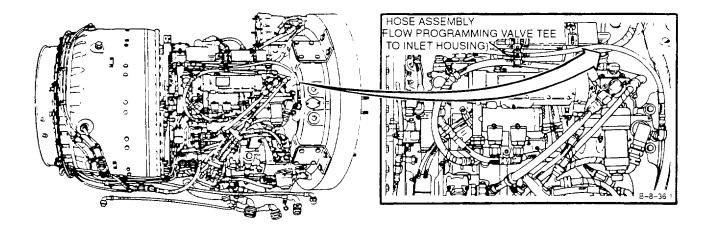
FOLLOW-ON MAINTENANCE:

None



### SECTION IX OIL LINES

8-47 REMOVE HOSE ASSEMBLY INLET HOUSING)	(FLOW PROGRAMMING VALVE TEE TO	8-47
INITIAL SETUP	General Safety Instructions:	
Applicable Configurations:	WARNING	
Tools:	Lubricating oils cause paralysis if swal-	
Powerplant Mechanic's Tool Kit.	lowed. Prolonged contact with them	
NSN 5180-00-323-4944	may irritate the skin. Handle only in	
Container, 1 Quart	well-ventilated areas away from heat	
Materials:	and flame. Drain and store in approved	
Wiping Rag (E64)	metal safety containers. Avoid pro-	
Personnel Required:	longed or repeated contact with skin	
	and do not take internally. Wash con-	
	tacted area of skin thoroughly after han-	
	dling. If irritation of skin results, get	
	medical attention. Get medical attention	
	for eyes.	

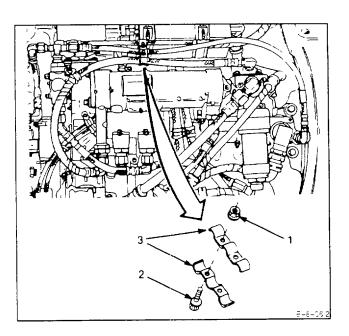


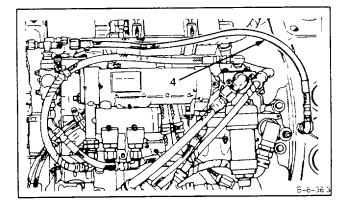
### 8-47 REMOVE HOSE ASSEMBLY (FLOW PROGRAMMING VALVE TEE TO INLET HOUSING) (Continued)

- 1. Remove two nuts (1), two bolts (2), and two brackets (3).
- 2. Disconnect and remove hose assembly (4).

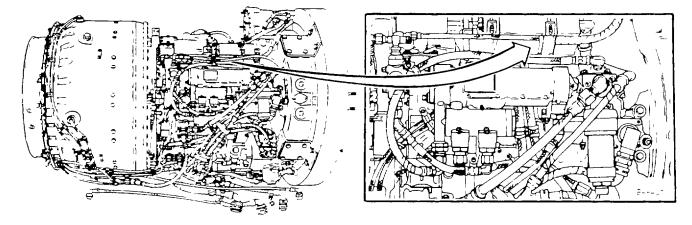
#### FOLLOW-ON MAINTENANCE:

None





#### **INSTALL HOSE ASSEMBLY (FLOW PROGRAMMING VALVE TEE TO** 8-48 **INLET HOUSING)** INITIAL SETUP Technical Inspection Tool Kit. **Applicable Configurations:** NSN 5180-00-323-5114 All Materials: Tools: None Powerplant Mechanic's Tool Kit, **Personnel Required:** NSN 5180-00-323-4944 Aircraft Powerplant Repairer Aircraft Powerplant Inspector

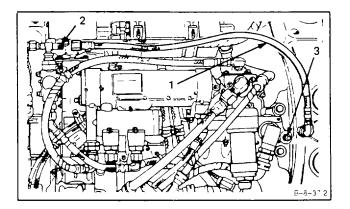


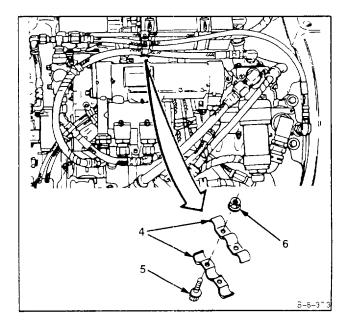
## 8-48 INSTALL HOSE ASSEMBLY (FLOW PROGRAMMING VALVE TEE TO INLET HOUSING) (Continued)

- 1. Install hose assembly (1) on tee (2) and union (3).
- 2. Install two brackets (4), two bolts (5), and two nuts (6).

#### INSPECT

FOLLOW-ON MAINTENANCE: None





## 8-49 REMOVE HOSE ASSEMBLY (FLOW PROGRAMMING VALVE TO INFLIGHT FILLING P ORT TEE)

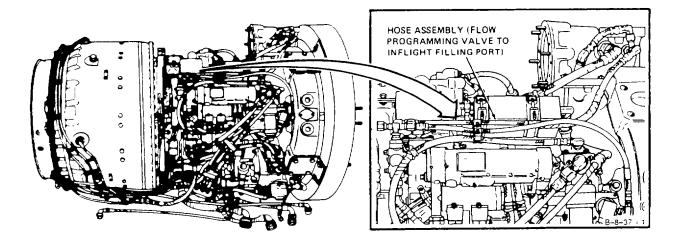
#### INITIAL SETUP Applicable Configurations: All

#### Tools:

Powerplant Mechanics Tool Kit NSN 5180-00-323-4944 Container, 1 Quart **Materials:** Wiping Rag (E64) **Personnel Required:** Aircraft Powerplant Repairer

#### General Safety Instructions: WARNING

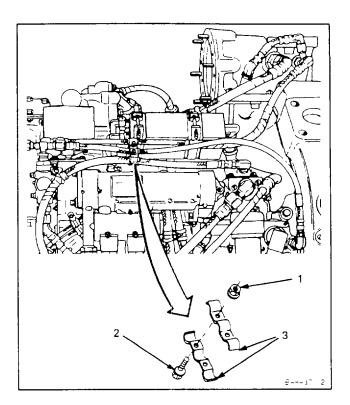
Lubricating oils cause paralysis if swallowed. Prolonged contact with them may irritate the skin. Handle only in well-ventilated areas away from heat and flame. Drain and store in approved metal safety containers. Avoid prolonged or repeated contact with skin and do not take internally. Wash contacted area of skin thoroughly after handling. If irritation of skin results, get medical attention. Get medical attention for eyes.

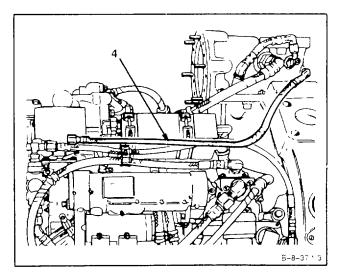


- 3. Remove two nuts (1), two bolts (2), and bracket assembly (3).
- 4. Disconnect and remove hose assembly (4).

#### FOLLOW-ON MAINTENANCE:

None



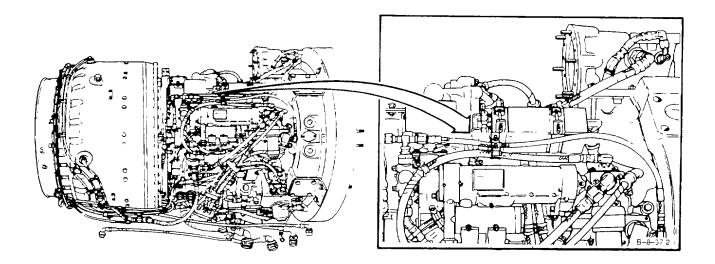


## 8-50 INSTALL HOSE ASSEMBLY (FLOW PROGRAMMING VALVE TO INFLIGHT FILLING PORT TEE)

### INITIAL SETUP

Applicable Configurations: All Tools: Powerplant Mechanic's Tool Kit NSN 5180-00-323-4944 Technical Inspection Tool Kit, NSN 5180-00-323-5114 Materials: None Personnel Required:

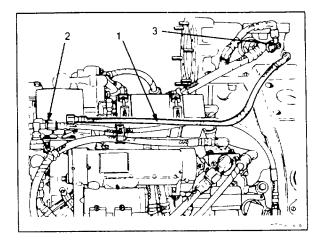
Aircraft Powerplant Repairer Aircraft Powerplant Inspector



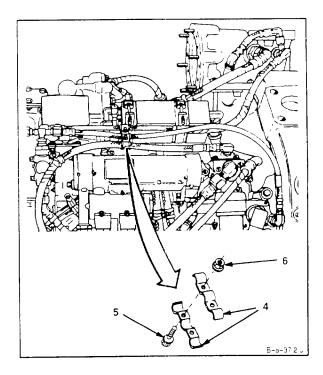
**GO TO NEXT PAGE** 

## 8-50 INSTALL HOSE ASSEMBLY (FLOW PROGRAMMING VALVE TO INFLIGHT FILLING PORT TEE) (Continued)

1. Install hose assembly (1) on tee (2), and union (3).



2. Install bracket assembly (4), two bolts (5), and two nuts (6).



#### INSPECT

FOLLOW-ON MAINTENANCE: None

#### END OF TASK

#### 8-51 REMOVE HOSE ASSEMBLY (ACCESSORY GEARBOX ASSEMBLY TO OIL COOLER)

### INITIAL SETUP

#### Applicable Configurations:

#### All Tools:

Powerplant Mechanic's Tool Kit, NSN 5180-00-323-4944 Container, 1 Quart

#### Materials:

Wiping Rag (E64)

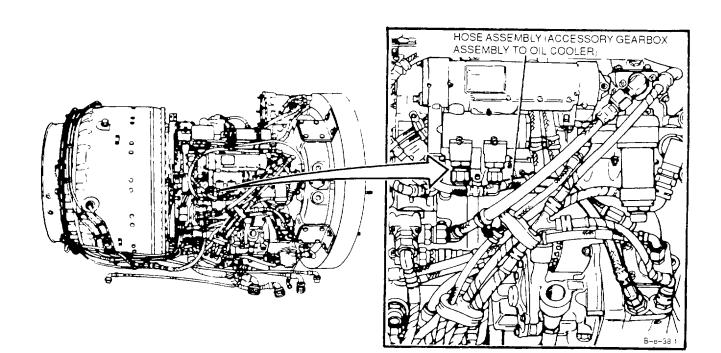
#### **Personnel Required:**

Aircraft Powerplant Repairer

# General Safety Instructions:

#### WARNING

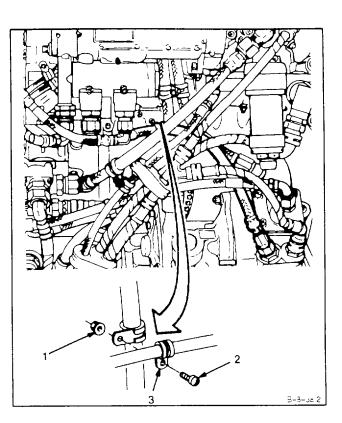
Lubricating oils cause paralysis if swallowed. Prolonged contact with them may irritate the skin. Handle only in well-ventilated areas away from heat and flame. Drain and store in approved metal safety containers. Avoid prolonged or repeated contact with skin and do not take internally. Wash contacted area of skin thoroughly after handling. If irritation of skin results, get medical attention. Get medical attention for eyes.

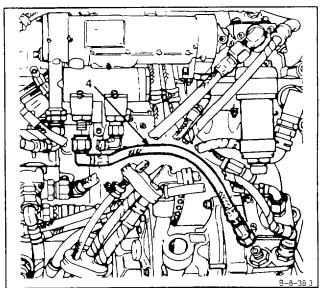


### 8-51 REMOVE HOSE ASSEMBLY (ACCESSORY GEARBOX ASSEMBLY TO OIL COOLER) (Continued)

1. Remove nut (1), screw (2), and clamp (3).

2. Disconnect and remove hose assembly (4).





FOLLOW-ON MAINTENANCE: None

END OF TASK

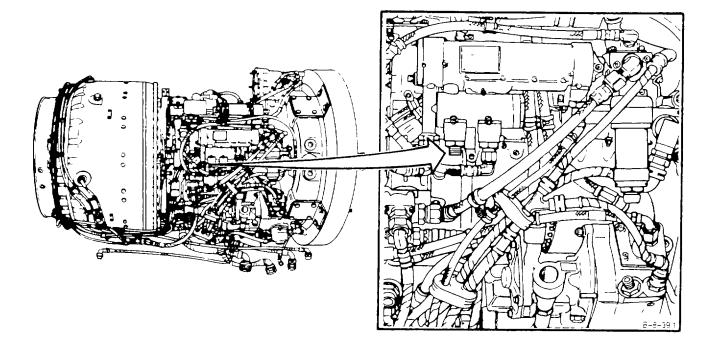
#### 8-52 INSTALL HOSE ASSEMBLY (ACCESSORY GEARBOX ASSEMBLY TO OIL COOLER)

INITIAL SETUP

### **Applicable Configurations:**

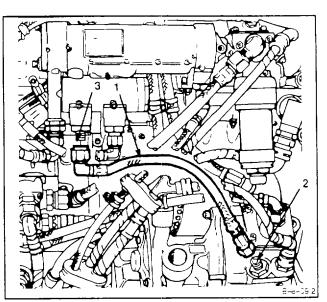
#### All Tools:

Powerplant Mechanic's Tool Kit, NSN 5180-00-323-4944 Technical Inspection Tool Kit. NSN 5180-00-323-5114 Materials: None Personnel Required: Aircraft Powerplant Repairer Aircraft Powerplant Inspector

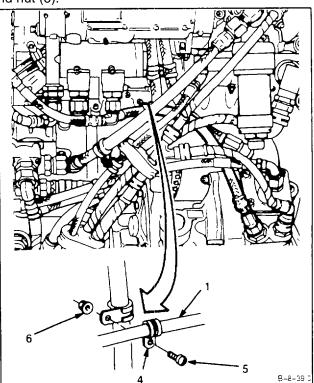


# 8-52 INSTALL HOSE ASSEMBLY (ACCESSORY GEARBOX ASEMBLY TO OIL COOLER) (Continued)

1. Install hose assembly (1) on union (2) and reducer (3).



2. Install clamp (4) on hose assembly (1), and install screw (5) and nut (6).



#### INSPECT

FOLLOW-ON MAINTENANCE: None

#### END OF TASK

# 8-53 REMOVE HOSE ASSEMBLY (OIL COOLER TO FLOW PROGRAMMING VALVE)

#### INITIAL SETUP

#### **Applicable Configurations:**

All

#### Tools:

Powerplant Mechanic's Tool Kit NSN 5180-00-323-4944 Container, 1 Quart

#### Materials:

Wiping Rag (E64)

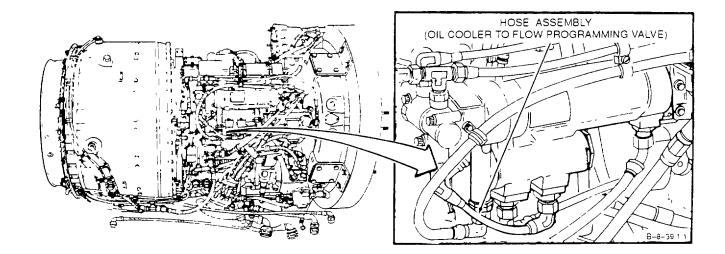
### **Personnel Required:**

Aircraft Powerplant Repairer

### General Safety Instructions:

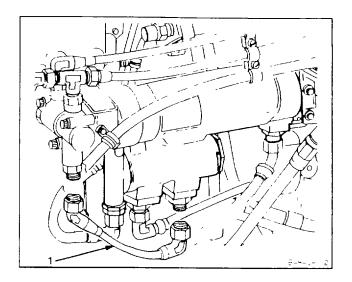
#### WARNING

Lubricating oils cause paralysis if swallowed. Prolonged contact with them may irritate the skin. Handle only in well-ventilated areas away from heat and flame. Drain and store in approved metal safety containers. Avoid prolonged or repeated contact with skin and do not take internally. Wash contacted area of skin thoroughly after handling. If irritation of skin results, get medical attention. Get medical attention for eyes.



# 8-53 REMOVE HOSE ASSEMBLY (OIL COOLER TO FLOW PROGRAMMING VALVE) (Continued)

1. Disconnect and remove hose assembly (1).

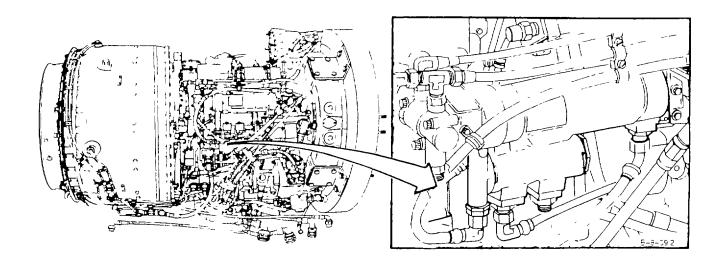


FOLLOW-ON MAINTENANCE: None

# 8-54 INSTALL HOSE ASSEMBLY (OIL COOLER TO FLOW PROGRAMMING VALVE) INITIAL SETUP Technical Inspection Tool Kit, Applicable Configurations: NSN 5180-00-323-5114

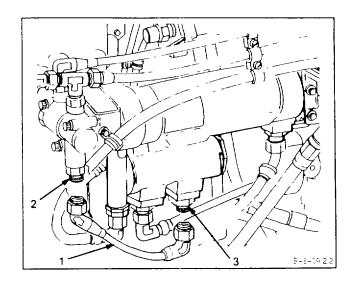
#### All Tools:

Powerplant Mechanic's Tool Kit, NSN 5180-00-323-4944 Technical Inspection Tool Kit, NSN 5180-00-323-5114 Materials: None Personnel Required: Aircraft Powerplant Repairer Aircraft Powerplant Inspector



# 8-54 INSTALL HOSE ASSEMBLY (OIL COOLER TO FLOW PROGRAMMIN VALVE) (Continued)

1. Install hose assembly (1) on union (2) and reducer (3).



#### INSPECT

FOLLOW-ON MAINTENANCE: None



#### **REMOVE HOSE ASSEMBLY (FLOW PROGRAMMING VALVE TEE TO** 8-55 **NO. 2 BEARING PRESSURE CONNECTOR)**

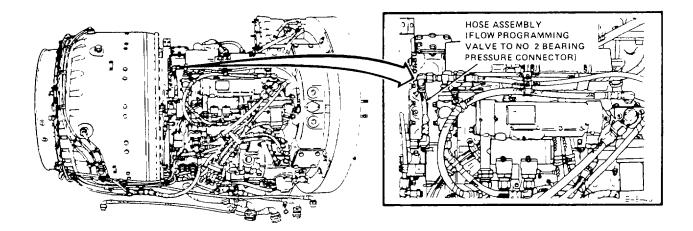
#### **INITIAL SETUP**

**Applicable Configurations:** All Tools: Powerplant Mechanic's Tool Kit, NSN 5180-00-323-4944 Container, 1 Quart Materials:

Wiping Rag (E64) **Personnel Required:** Aircraft Powerplant Repairer

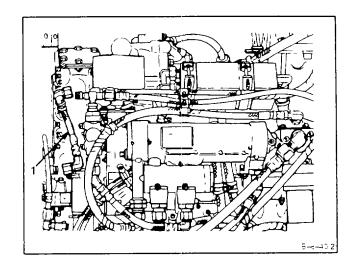
#### General Safety Instructions: WARNING

Lubricating oils cause paralysis if swallowed. Prolonged contact with them may irritate the skin. Handle only in well-ventilated areas away from heat and flame. Drain and store in approved metal safety containers. Avoid prolonged or repeated contact with skin and do not take internally. Wash contacted area of skin thoroughly after handling. If irritation of skin results, get medical attention. Get medical attention for eyes.



#### 8-55 REMOVE HOSE ASSEMBLY (FLOW PROGRAMMING VALVE TEE TO NO. 2 BEARING PRESSURE CONNECTOR (Continued)

1. Disconnect and remove hose assembly (1).



FOLLOW-ON MAINTENANCE: None

20 8-9

8-56

8-56 INSTALL HOSE ASSEMBLY (FLOW F NO. 2 BEARING PRESSURE CONNE	
INITIAL SETUP	Technical Inspection Tool Kit,
Applicable Configurations:	NSN 5180-00-323-5114
All	Materials:
Tools:	None
Powerplant Mechanic's Tool Kit,	Personnel Required:
NSN 5180-00-323-4944	Aircraft Powerplant Repairer
	Aircraft Powerplant Inspector

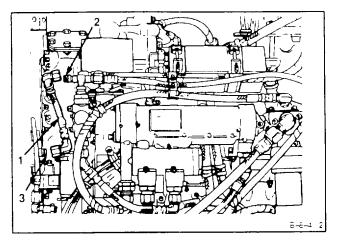
E

110

F

### 8-56 INSTALL HOSE ASSEMBLY (FLOW PROGRAMMING VALVE TEE TO NO. 2 BEARING PRESSURE CONNECTOR) (Continued)

1. Install hose assembly (1) on tee (2) and No. 2 bearing pressure connector (3).



#### INSPECT

FOLLOW-ON MAINTENANCE: None

#### 8-57 REMOVE HOSE ASSEMBLY (DUAL CHIP DETECTOR TO ACCESSORY GEARBOX ASSEMBLY)

# INITIAL SETUP Applicable Configurations:

Tools:

Powerplant Mechanic's Tool Kit, NSN 5180-00-323-4944

#### Container, 1 Quart

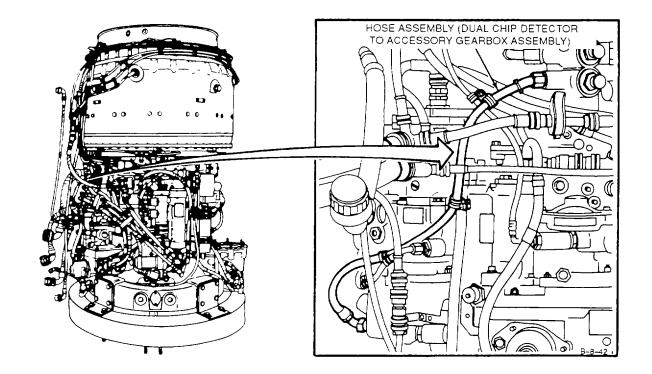
Materials:

Wiping Rag (E64) Personnel Required:

Aircraft Powerplant Repairer

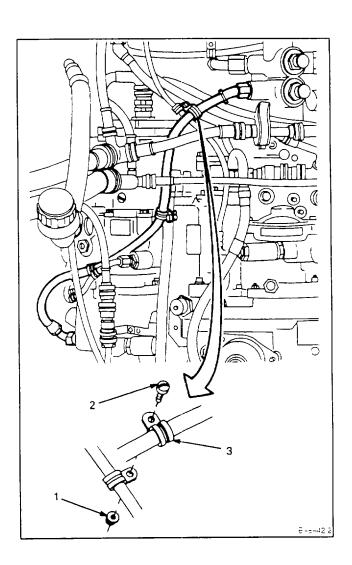
General Safety Instructions: WARNING

> Lubricating oils cause paralysis if swallowed. Prolonged contact with them may irritate the skin. Handle only in well-ventilated areas away from heat and flame. Drain and store in approved metal safety containers. Avoid prolonged or repeated contact with skin and do not take internally. Wash contacted area of skin thoroughly after handling. If irritation of skin results, get medical attention. Get medical attention for eyes.



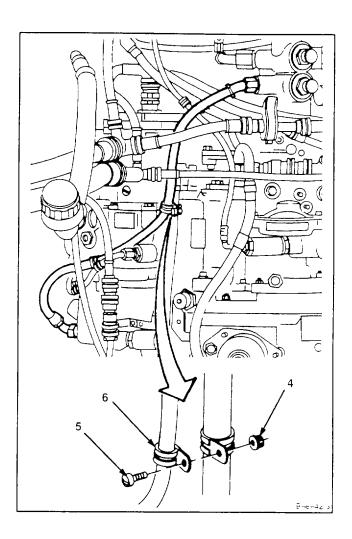
# 8-57 REMOVE HOSE ASSEMBLY (DUAL CHIP DETECTOR TO ACCESSORY GEARBOX ASSEMBLY) (Continued)

1. Remove nut (1), screw (2), and clamp (3).



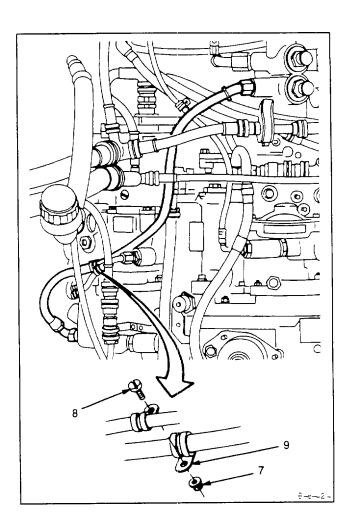
# 8-57 REMOVE HOSE ASSEMBLY (DUAL CHIP DETECTOR TO ACCESSORY GEARBOX ASSEMBLY) (Continued)

2. Remove nut (4). screw (5), and clamp (6).



# 8-57 REMOVE HOSE ASSEMBLY (DUAL CHIP DETECTOR TO ACCESSORY GEARBOX ASSEMBLY) (Continued)

3. Remove nut (7), screw (8), and clamp (9).

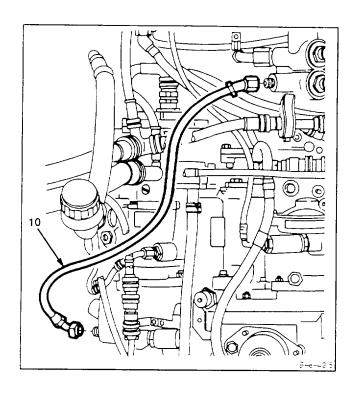


# 8-57 REMOVE HOSE ASSEMBLY (DUAL CHIP DETECTOR TO ACCESSORY GEARBOX ASSEMBLY) (Continued)

4. Disconnect and remove hose assembly (10).

#### FOLLOW-ON MAINTENANCE:

None



### 8-58 INSTALL HOSE ASSEMBLY (DUAL CHIP DETECTOR TO ACCESSORY GEARBOX ASSEMBLY)

#### INITIAL SETUP

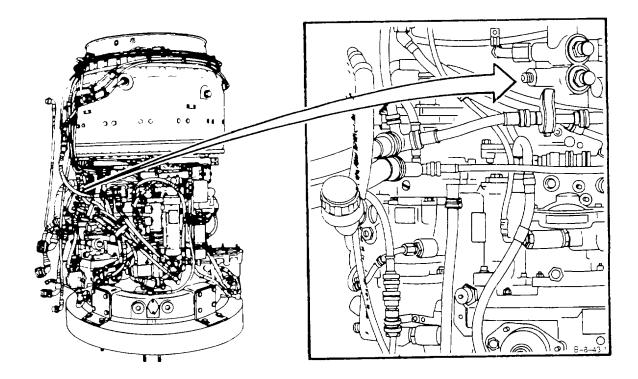
#### **Applicable Configurations:**

All Tools:

Powerplant Mechanic's Tool Kit, NSN 5180-00-323-4944 Technical Inspection Tool Kit, NSN 5180-00-323-5114

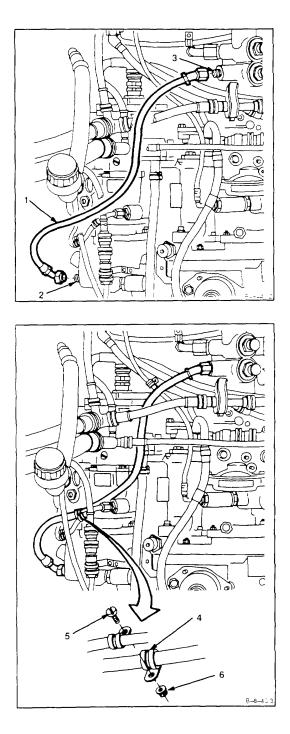
#### Materials: None

**Personnel Required:** Aircraft Powerplant Repairer Aircraft Powerplant Inspector



# 8-58 INSTALL HOSE ASSEMBLY (DUAL CHIP DETECTOR TO ACCESSORY GEARBOX ASSEMBLY) (Continued)

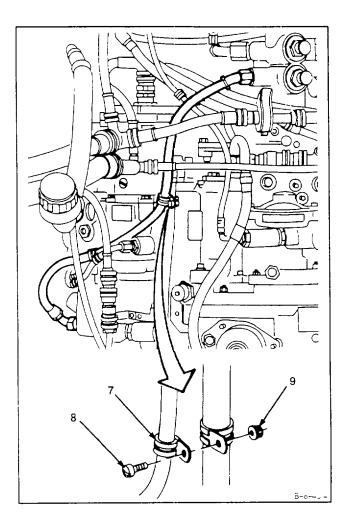
- 1. Install hose assembly (1) on reducer (2) and adapter (3).
- 2. Install clamp (4), screw (5), and nut (6).



GO TO NEXT PAGE

### 8-58 INSTALL HOSE ASSEMBLY (DUAL CHIP DETECTOR TO ACCESSORY GEARBOX ASSEMBLY) (Continued)

3. Install clamp (7), screw (8), and nut (9).

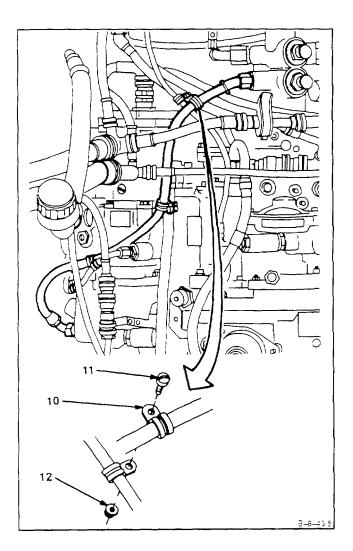


#### 8-58 INSTALL HOSE ASSEMBLY (DUAL CHIP DETECTOR TO ACCESSORY GEARBOX ASSEMBLY) (Continued)

4. Install clamp (10), screw (11), and nut (12).

#### INSPECT

FOLLOW-ON MAINTENANCE: None



#### 8-59 REMOVE HOSE ASSEMBLY (DUAL CHIP DETECTOR TO ACCESSORY GEARBOX COLLECTOR)

#### **INITIAL SETUP**

# Applicable Configurations:

#### Tools:

Powerplant Mechanic's Tool Kit, NSN 5180-00-323-4944 Container, 1 Quart

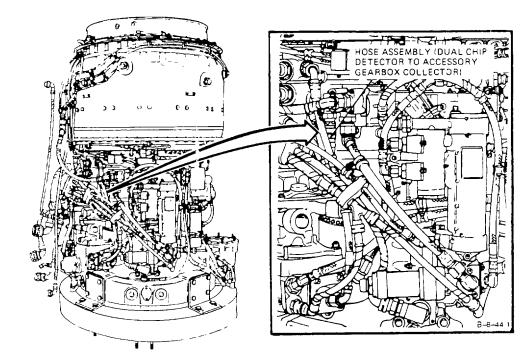
#### Materials:

Wiping Rag (E64)

#### **Personnel Required:**

#### General Safety Instructions: WARNING

Prolonged contact with lubricating oil may irritate the skin. Use in ventilated areas and minimize breathing vapor, mist or fumes. Do not store near heat, sparks or flame. Avoid prolonged contact with skin. Wash contacted areas with soap and water. If irritation of skin results, get medical attention. In case of eye contact, flush with water and get medical attention. Do not take internally. If ingested, get medical attention. Do not induce vomiting.

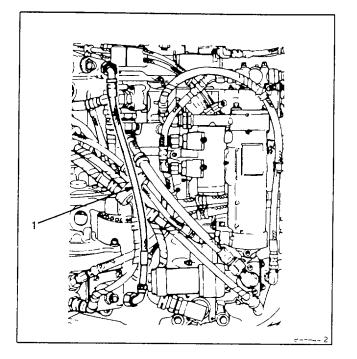


#### 8-59 REMOVE HOSE ASSEMBLY (DUAL CHIP DETECTOR TO ACCESSORY GEARBOX COLLECTOR) (Continued)

1. Disconnect and remove hose assembly (1).

#### FOLLOW-ON MAINTENANCE:

None

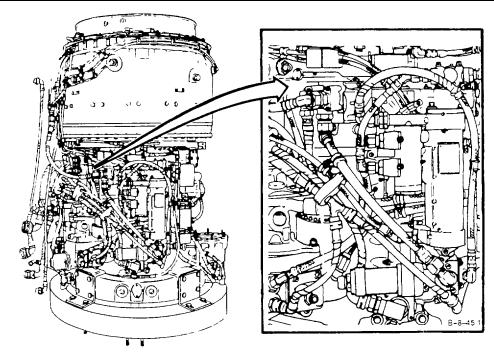


#### INSTALL HOSE ASSEMBLY (DUAL CHIP DETECTOR TO ACCESSORY 8-60 **GEARBOX COLLECTOR)** INITIAL SETUP Technical Inspection Tool Kit, Applicable Configurations: NSN 5180-00-323-5114 All Materials: Tools:

Powerplant Mechanic's Tool Kit, NSN 5180-00-323-4944

None

**Personnel Required:** Aircraft Powerplant Repairer Aircraft Powerplant Inspector

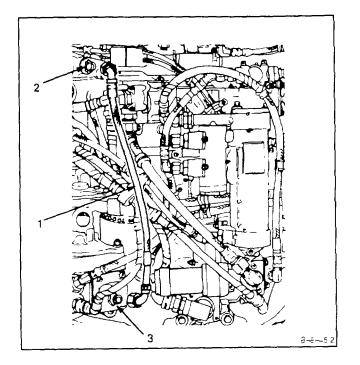


#### 8-60 INSTALL HOSE ASSEMBLY (DUAL CHIP DETE CTOR TO ACCESSORY GEARBOX COLLECTOR) (Continued)

1. Install hose assembly (1) on union (2) and nipple (3).

#### FOLLOW-ON MAINTENANCE:

None



B-8-46-1

8-61 REMOVE HOSE ASSEMBLY (DUAL CHIP DETECTOR TO AIR DIFFUSER ASSEMBLY)		8-61
INITIAL SETUP Applicable Configurations: All Tools: Powerplant Mechanic's Tool Kit,	Materials: Wiping Rag (E64) Personnel Required: Aircraft Powerplant Repairer	
NSN 5180-00-323-4944 Container 1 Quart		
	HOSE ASSEMBLY (DUĂL CHIP DE FECTOR TO AIR DIFFUSER ASSEMBLY)	

ଶ୍ୱା

1 1

# 8-61 REMOVE HOSE ASSEMBLY (DUAL CHIP DETECTOR TO AIR DIFFUSER ASSEMBLY) (Continued)

8-61

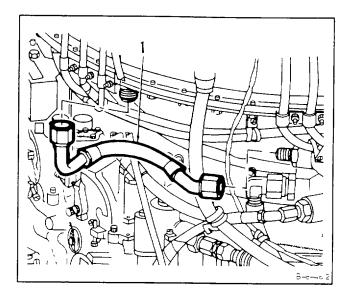
### WARNING

Lubricating oils cause paralysis if swallowed. Prolonged contact with them may irritate the skin. Handle only in well-ventilated areas away from heat and flame. Drain and store in approved metal safety containers. Avoid prolonged or repeated contact with skin and do not take internally. Wash contacted area of skin thoroughly after handling. If irritation of skin results, get medical attention. Get medical attention for eyes.

1. Disconnect and remove hose assembly (1).

FOLLOW-ON MAINTENANCE:

None



# 8-62 INSTALL HOSE ASSEMBLY (DUAL C HIP DETECTOR TO AIR DIFFUSER ASSEMBLY)

#### INITIAL SETUP

Applicable Configurations:

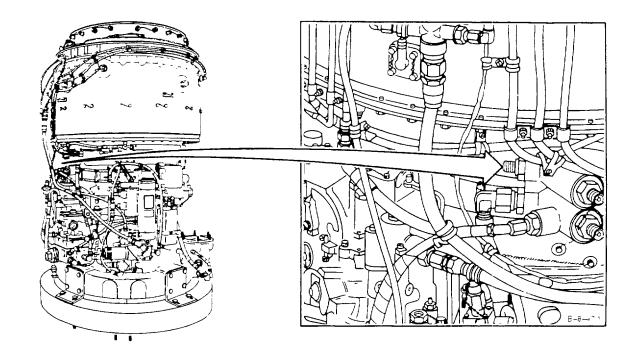
#### All Tools:

Powerplant Mechanic's Tool Kit,

NSN 5180-00-323-4944

Technical Inspection Tool Kit, NSN 5180-00-323-5114 Materials: None Personnel Required:

Aircraft Powerplant Repairer Aircraft Powerplant Inspector

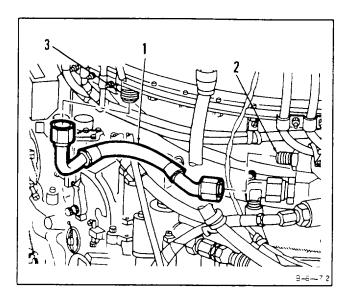


# 8-62 INSTALL HOSE ASSEMBLY (DUAL CHIP DETEC TOR TO AIR DIFFUSER ASSEMBLY) (Continued)

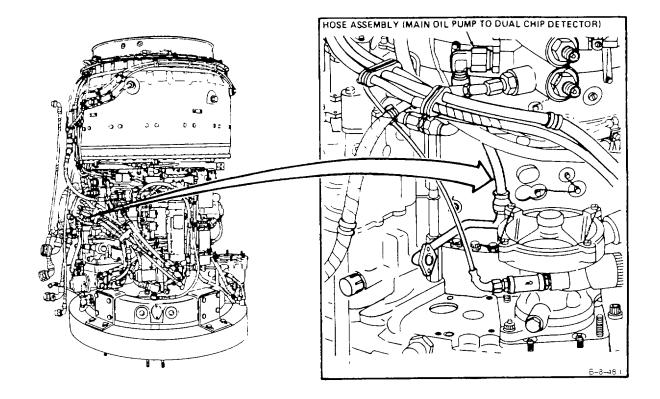
1. Install hose assembly (1) to unions (2 and 3).

#### INSPECT

FOLLOW-ON MAINTENANCE: None



3-63 REMOVE HOSE ASSEMBLY (MAIN OIL PUMP TO DUAL CHIP DETECTOR	
INITIAL SETUP	Personnel Required:
Applicable Configurations:	Aircraft Powerplant Repairer
All	Equipment Condition:
Tools:	Main Oil Pump, Speed Pickup Assembly, Scav-
Powerplant Mechanic's Tool Kit,	enge Oil Screen, and Related Parts Removed
NSN 5180-00-323-4944	(Task 8-1)
Materials:	Tube Assembly Removed (Inlet Housing to Main
Wiping Rag (E64)	Oil Pump) (Task 8-65)



# 8-63 REMOVE HOSE ASSEMBLY (MAIN OIL PUMP TO DUAL CHIP DETECTOR (Continued)

8-63

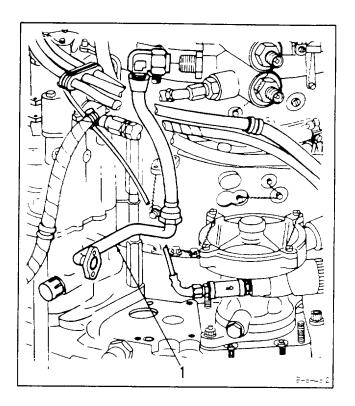
#### WARNING

Lubricating oils cause paralysis if swallowed. Prolonged contact with them may irritate the skin. Handle only in well-ventilated areas away from heat and flame. Drain and store in approved metal safety containers. Avoid prolonged or repeated contact with skin and do not take internally. Wash contacted area of skin thoroughly after handling. If irritation of skin results, get medical attention. Get medical attention for eyes.

1. Disconnect and remove hose assembly (1).

#### FOLLOW-ON MAINTENANCE:

None

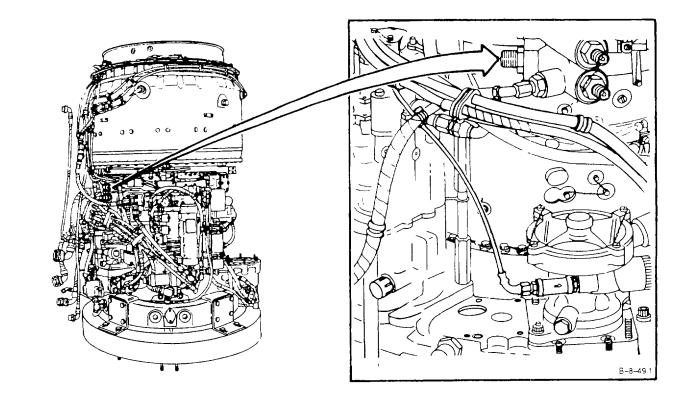


#### INSTALL HOSE ASSEMBLY (MAIN OIL PUMP TO DUAL CHIP 8-64 8-64 **DETECTOR**) INITIAL SETUP Technical Inspection Tool Kit, NSN 5180-00-323-5114 **Applicable Configurations:** All Materials: Tools:

Powerplant Mechanic's Tool Kit, NSN 5180-00-323-4944

None **Personnel Required:** 

Aircraft Powerplant Repairer Aircraft Powerplant Inspector



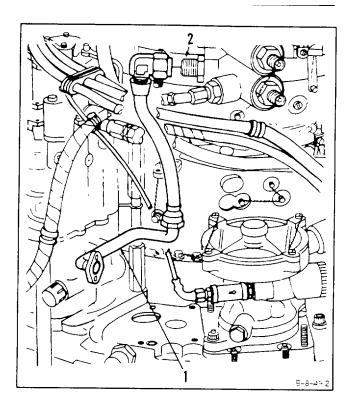
# 8-64 INSTALL HOSE ASSEMBLY (MAIN OIL PUMP TO DUAL CHIP DETECTOR) (Continued)

1. Install hose assembly (1) on union (2).

#### INSPECT

FOLLOW-ON MAINTENANCE:

Install Main Oil Pump, Speed Pickup Assembly, Scavenge Oil Screen, and Related Parts (Task 8-6). Install Tube Assembly (Inlet Housing to Main Oil Pump) (Task 8-66).



END OF TASK

### 8-65 REMOVE TUBE ASSEMBLY (INLET HOUSING TO MAIN OIL PUMP)

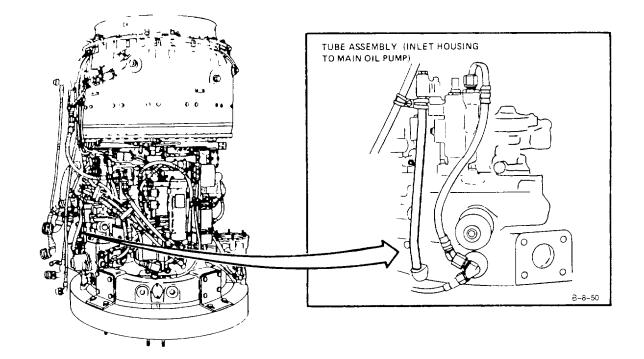
#### INITIAL SETUP Applicable Configurations: All Tools:

Powerplant Mechanic's Tool Kit, NSN 5180-00-323-4944 Container, 1 Quart Materials: Wiping Rag (E64) Personnel Required: Aircraft Powerplant Repairer Equipment Condition:

Engine Oil System Drained (Task 1-69)

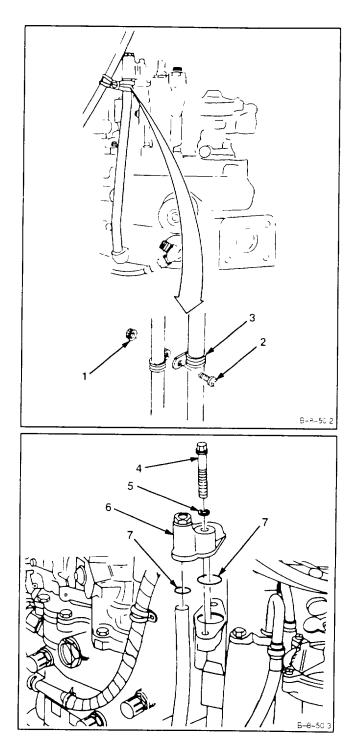
# General Safety Instructions:

Lubricating oils cause paralysis if swallowed. Prolonged contact with them may irritate the skin. Handle only in well-ventilated areas away from heat and flame. Drain and store in approved metal safety containers. Avoid prolonged or repeated contact with skin and do not take internally. Wash contacted area of skin thoroughly after handling. If irritation of skin results, get medical attention. Get medical attention for eyes.



#### 8-65 REMOVE TUBE ASSEMBLY (INLET HOUSING TO MAIN OIL PUMP) (Continued)

- 1. Remove nut (1), screw (2), and clamp (3).
- 2. Remove lockwire, two bolts (4), two washers (5), connector (6), and two packings (7).

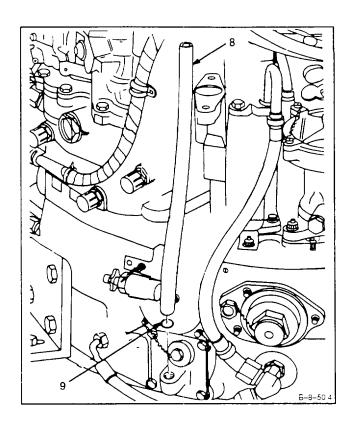


#### 8-65 REMOVE TUBE ASSEMBLY (INLET HOUSING TO MAIN OIL PUMP) (Continued)

3. Remove tube assembly (8) and packing (9).

### FOLLOW-ON MAINTENANCE:

None



#### INITIAL SETUP

#### Applicable Configurations:

# All

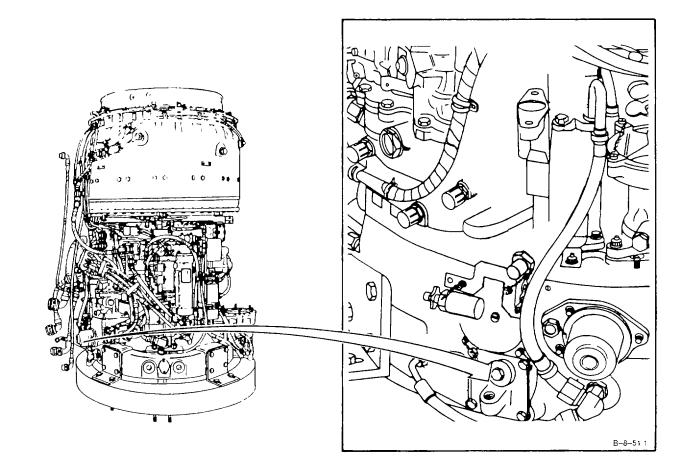
## Tools:

Powerplant Mechanic's Tool Kit, NSN 5180-00-323-4944 Technical Inspection Tool Kit, NSN 5180-00-323-5114

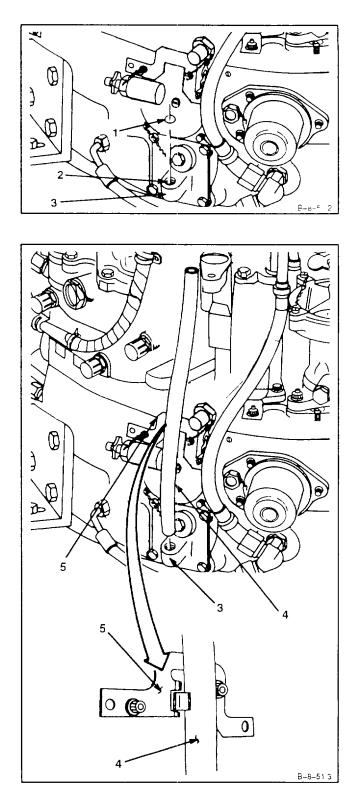
#### Materials:

Lockwire (E33)

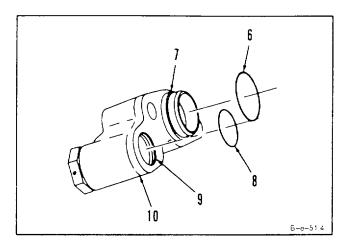
#### Parts: Packings Personnel Required: Aircraft Powerplant Repairer Aircraft Powerplant Inspector References: TM 1-1520-252-10 Task 8-65

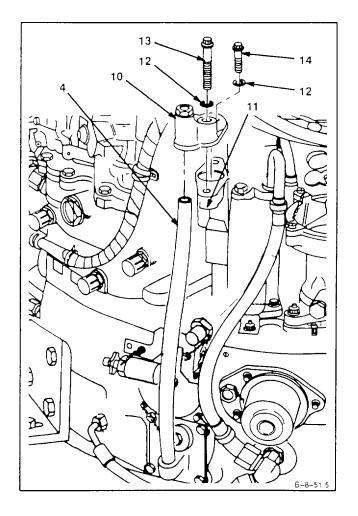


- 1. Install packing (1) in groove (2) in cover assembly (3).
- 2. Install tube assembly (4) in cover assembly (3) and bracket (5).



- 3. Install packing (6) in groove (7) and packing (8) in groove (9) of connector (10).
- 4. Install connector (10) on tube assembly (4), and oil pump (11). Install two washers (12), bolt (13), and bolt (14).





8-66

5. Check for proper installation of tube assembly (4) as follows:

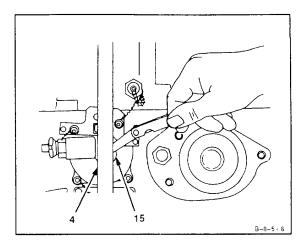
a. Check clearance between tube assembly (4) and washer (15). Clearance shall be 0.002 inch minimum.

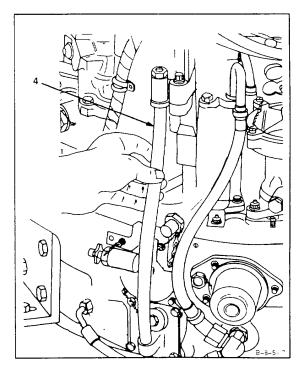
b. Check tube assembly (4) for freedom of movement in all directions. Tube assembly (4) shall be free to move forward and aft a total of 3/32 inch minimum. Tube assembly (4) shall be free to move sideways a total of 0.002 inch minimum. Tube Assembly (4) shall be free to move radially a total of 0.004 inch minimum.

#### INSPECT

#### NOTE

If clearance is not obtained or if tube assembly is not free to move, go to step 6. If proper clearance is obtained and tube assembly is free to move, go to step 9.



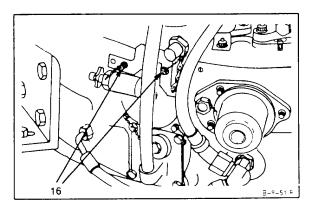


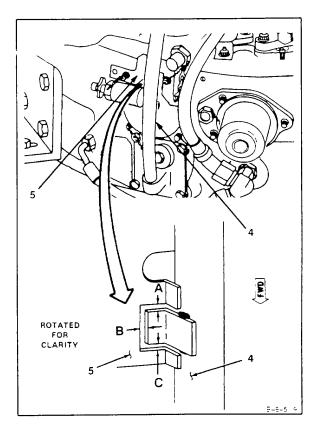
6. Remove lockwire and loosen bolts (16).



In following step 7, make sure bracket is positioned properly. This will ensure that tube assembly does not hit housing at either end when engine is hot. This could cause tube assembly to bend and result in oil leakage.

7. Reposition bracket (5) to obtain equal clearance at points A, B, and C between bracket (5) and tube assembly (4).





8-66

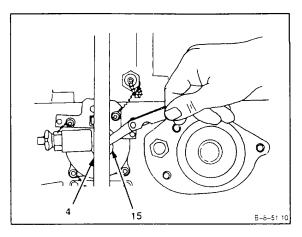
#### 8. Check for proper installation of tube assembly (4) as follows:

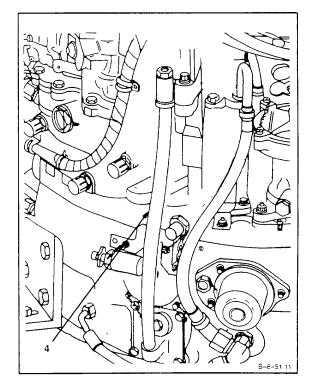
a. Check clearance between tube assembly (4) and washer (15). Clearance shall be 0.002 inch minimum.

b. Check tube assembly (4) for freedom of movement in all directions. Tube assembly (4) shall be free to move forward and aft a total of 3/32 inch minimum. Tube assembly (4) shall be free to move sideways a total of 0.002 inch minimum. Tube assembly (4) shall be free to move radially a total of 0.004 inch minimum.

#### NOTE

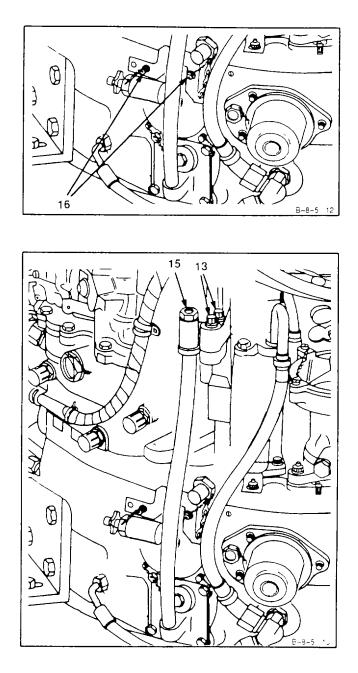
If proper clearance and freedom of movement is still not obtained, remove tube assembly (Ref. Task 8-65) and install serviceable tube assembly (Steps 1 thru 8).





9. Install two bolts (16) and lockwire. Use lockwire (E33).

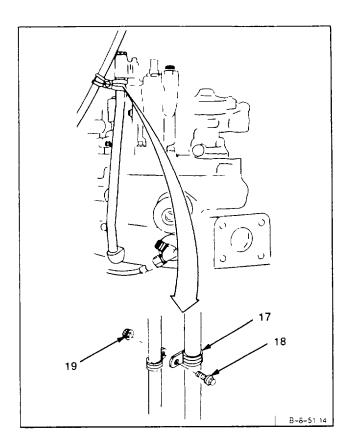
10. Lockwire bolts (13) and plug (15). Use lockwire (E33).

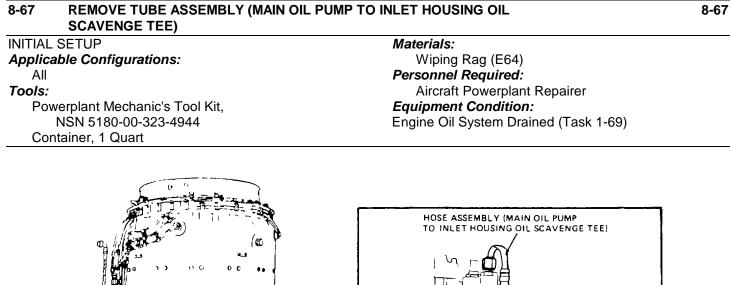


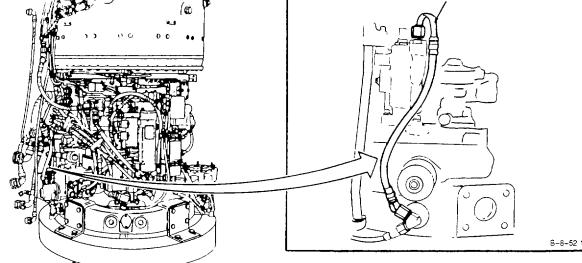
11. Install clamp (17), screw (18), and nut (19).

#### INSPECT

FOLLOW-ON MAINTENANCE: Service Engine Oil System (Task1-68)







# 8-67 REMOVE TUBE ASSEMBLY (MAIN OIL PUMP TO INLET HOUSING OIL SCAVENGE TEE) (Continued)

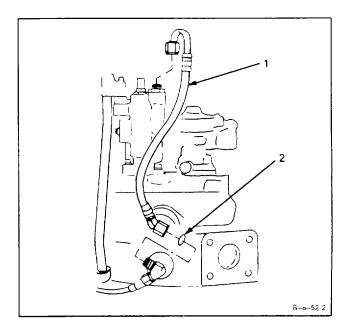
## WARNING

Lubricating oils cause paralysis if swallowed. Prolonged contact with them may irritate the skin. Handle only in well-ventilated areas away from heat and flame. Drain and store in approved metal safety containers. Avoid prolonged or repeated contact with skin and do not take internally. Wash contacted area of skin thoroughly after handling. If irritation of skin results, get medical attention. Get medical attention for eyes.

1. Disconnect and remove tube assembly (1) and gasket (2).

FOLLOW-ON MAINTENANCE:

None



# 8-68 INSTALL TUBE ASSEMBLY (MAIN OIL PUMP TO INLET HOUSING OIL SCAVENGE TEE)

### INITIAL SETUP

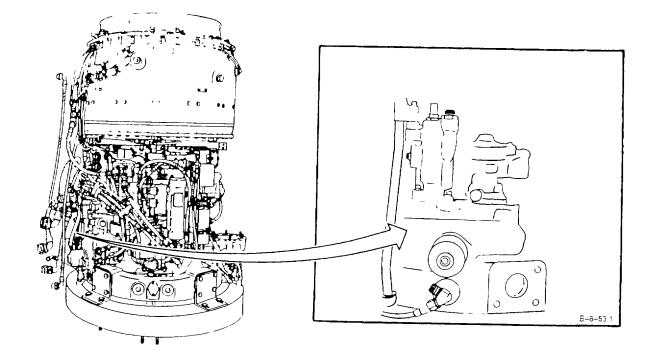
# Applicable Configurations:

## Tools:

Powerplant Mechanic's Tool Kit, NSN 5180-00-323-4944 Technical Inspection Tool Kit, NSN 5180-00-323-5114

#### Materials: None

Parts: Gasket Personnel Required: Aircraft Powerplant Repairer Aircraft Powerplant Inspector References: TM 1-2840-252-23P



8-68

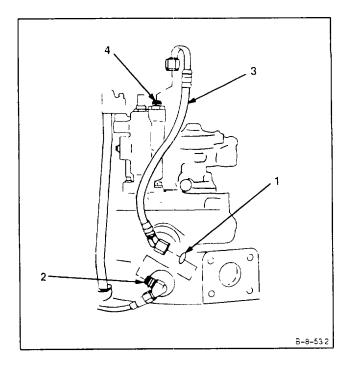
# 8-68 INSTALL TUBE ASSEMBLY (MAIN OIL PUMP TO INLET HOUSING OIL SCAVENGE TEE) (Continued)

1. Install gasket (1) on tee (2) and install tube assembly (3) on nipple (4) and tee (2).

#### INSPECT

FOLLOW-ON MAINTENANCE:

Service Engine Oil System (Task1-68)



#### 8-69 REMOVE TUBE ASSEMBLY (NO. 4 AND 5 BEARING SCAVENGE TUBE ASSEMBLY TO MAIN OIL PUMP FLANGE)

#### INITIAL SETUP

# Applicable Configurations:

## Tools:

Powerplant Mechanic's Tool Kit, NSN 5180-00-323-4944

## Container, 1 Quart

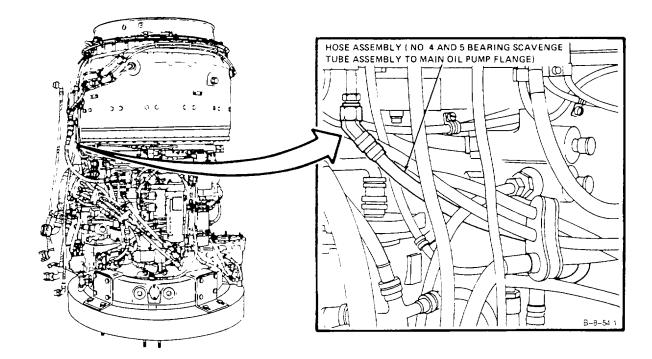
Materials: Wiping Rag (E64)

#### Personnel Required:

Aircraft Powerplant Repairer

#### General Safety Instructions: WARNING

Lubricating oils cause paralysis if swallowed. Prolonged contact with them may irritate the skin. Handle only in well-ventilated areas away from heat and flame. Drain and store in approved metal safety containers. Avoid prolonged or repeated contact with skin and do not take internally. Wash contacted area of skin thoroughly after handling. If irritation of skin results, get medical attention. Get medical attention for eyes.

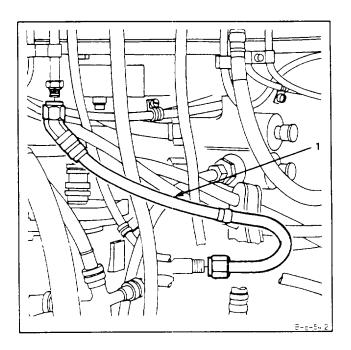


## 8-69 REMOVE TUBE ASSEMBLY (NO. 4 AND 5 BEARING SCAVENGE TUBE ASSEMBLY TO MAIN OIL PUMP FLANGE) (Continued)

1. Disconnect and remove hose assembly (1).

#### FOLLOW-ON MAINTENANCE:

None



## 8-70 INSTALL TUBE ASSEMBLY (NO. 4 AND 5 BEARING SCAVENGE TUBE ASSEMBLY TO MAIN OIL PUMP FLANGE)

## INITIAL SETUP

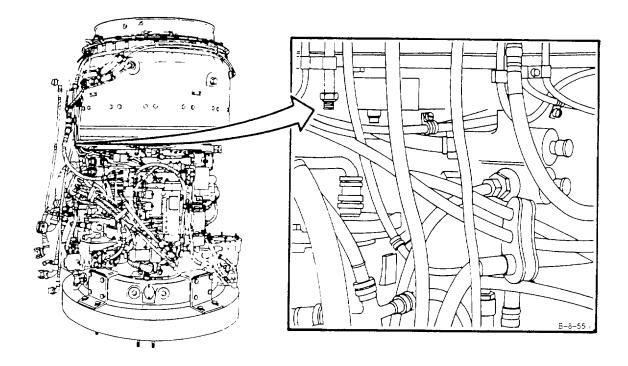
# Applicable Configurations:

Tools:

Powerplant Mechanic's Tool Kit, NSN 5180-00-323-4944 Technical Inspection Tool Kit, NSN 5180-00-323-5114

## Personnel Required:

Aircraft Powerplant Repairer Aircraft Powerplant Inspector

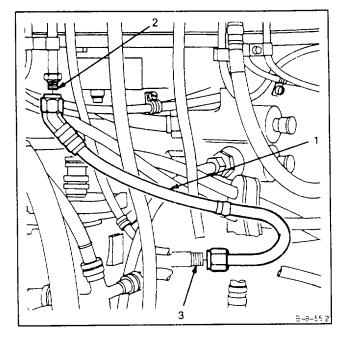


### 8-70 INSTALL TUBE ASSEMBLY (NO. 4 AND 5 BEARING SCAVENGE TUBE ASSEMBLY TO MAIN OIL PUMP FLANGE) (Continued)

1. Install hose assembly (1) on tube assembly (2) and flange (3).

#### INSPECT

FOLLOW-ON MAINTENANCE: None



# 8-71 REMOVE TUBE ASSEMBLY (NO. 4 AND 5 BEARING SCAVENGE CONNECTOR TO TUBE ASSEMBLY)

### INITIAL SETUP

# Applicable Configurations:

Tools:

Powerplant Mechanic's Tool Kit, NSN 5180-00-323-4944 Container, 1 Quart Open-End Wrench (T24)

#### Materials:

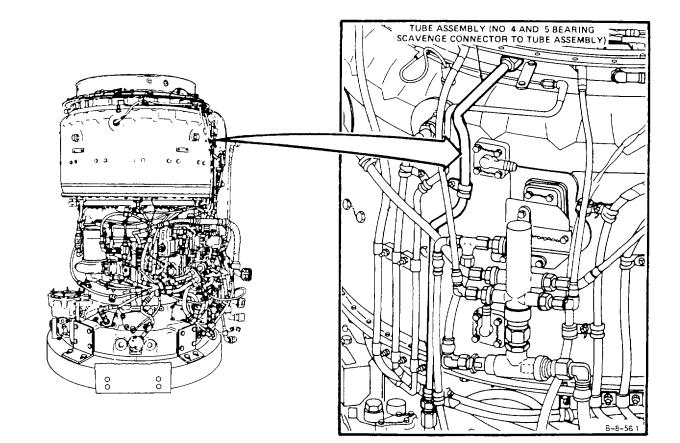
Wiping Rag (E64)

## Personnel Required:

Aircraft Powerplant Repairer

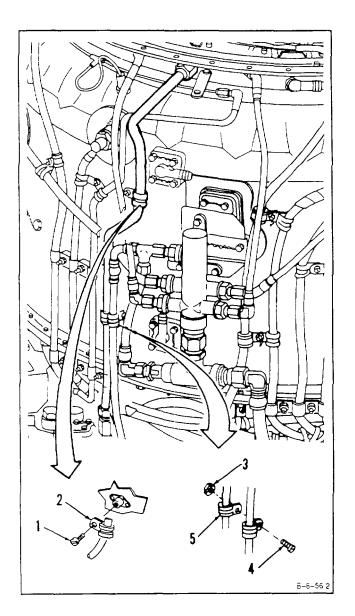
#### General Safety Instructions: WARNING

Prolonged contact with lubricating oil may irritate the skin. Use in ventilated areas and minimize breathing vapor, mist or fumes. Do not store near heat, sparks or flame. Avoid prolonged contact with skin. Wash contacted areas with soap and water. If irritation of skin results, get medical attention. In case of eye contact, flush with water and get medical attention. Do not take internally. If ingested, get medical attention. Do not induce vomiting



### 8-71 REMOVE TUBE ASSEMBLY (NO. 4 AND 5 BEARING SCAVENGE CONNECTOR TO TUBE ASSEMBLY) (Continued)

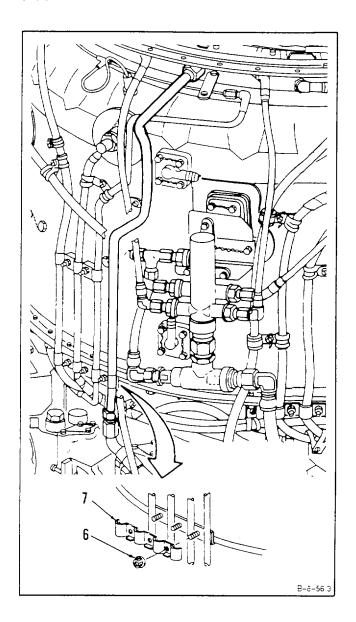
- 1. Remove lockwire, screw (1), and clamp (2).
- 2. Remove nut (3), screw (4), and clamp (5).



8-71

### 8-71 REMOVE TUBE ASSEMBLY (NO. 4 AND 5 BEARING SCAVENGE CONNECTOR TO TUBE ASSEMBLY) (Continued)

3. Remove three nuts (6) and strap (7).



8-71

#### 8-71 REMOVE TUBE ASSEMBLY (NO. 4 AND 5 BEARING SCAVENGE CONNECTOR TO TUBE ASSEMBLY) (Continued)

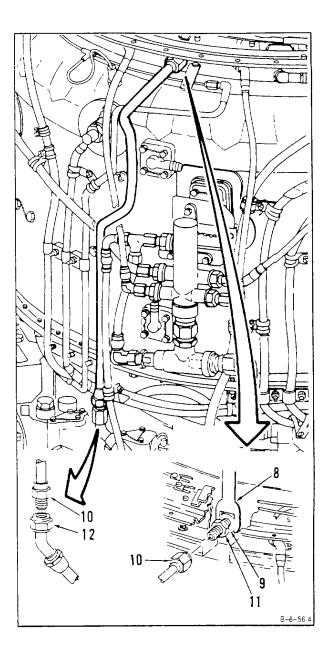


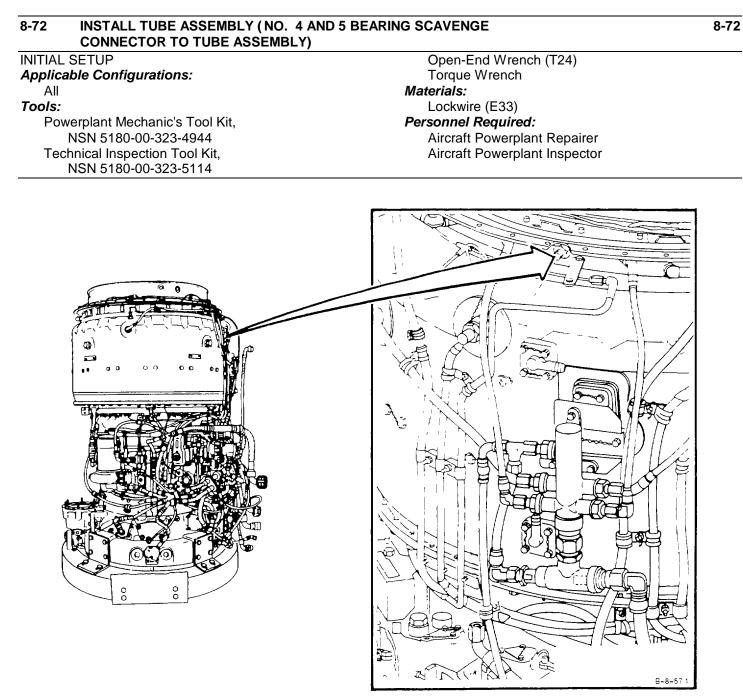
In following step, hold No. 4 and 5 bearing scavenge adapter using open-end wrench (T24). Failure to use wrench may result in damage and mislocation of oil transfer tube resulting in oil leaks.

- 4. Place open-end wrench (T24) (8) on No. 4 and 5 bearing scavenge adapter (9).
- 5. Disconnect tube assembly (10) from reducer (11).
- 6. Disconnect tube assembly (10) from tube assembly (12) and remove tube assembly (10).

## FOLLOW-ON MAINTENANCE:

None





#### 8-72 INSTALL TUBE ASSEMBLY (NO. 4 AND 5 BEARING SCAVENGE CONNECTOR TO TUBE ASSEMBLY)

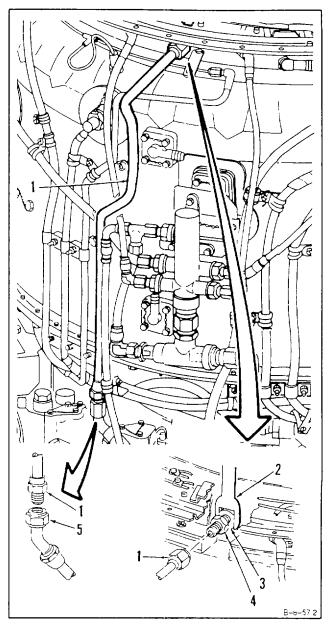
8-72



In following step, hold No. 4 and 5 bearing and scavenge adapter using open-end wrench (T24). Failure to use wrench may result in damage and mislocation of oil transfer tube resulting in oil leaks.

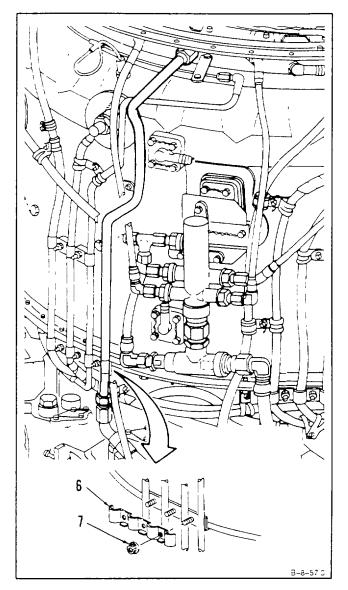
#### 1. Install tube assembly (1) as follows:

- a. Place open-end wrench (T24) (2) on No. 4 and 5 bearing scavenge adapter (3).
- b. Connect tube assembly (1) to reducer (4).
- c. Connect tube assembly (1) to tube assembly (5).



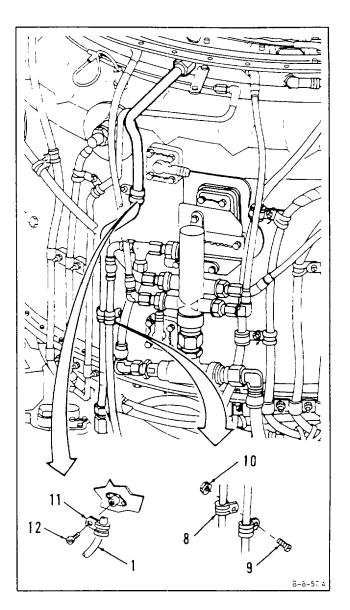
## 8-72 INSTALL TUBE ASSEMBLY (NO. 4 AND 5 BEARING SCAVENGE CONNECTOR TO TUBE ASSEMBLY) (Continued)

2. Install strap (6) and three nuts (7).



#### 8-72 INSTALL TUBE ASSEMBLY (NO. 4 AND 5 BEARING SCAVENGE CONNECTOR TO TUBE ASSEMBLY) (Continued)

- 3. Install clamp (8), screw (9), and nut (10).
- 4. Install clamp (11) on tube assembly (1) and install screw (12). Lockwire screw. Use lockwire (E33).



#### INSPECT

FOLLOW-ON MAINTENANCE: None

END OF TASK

# 8-73 REMOVE TUBE ASSEMBLY (NO. 2 BEARING PRESSURE CONNECTOR TO TEE AND SNUBBER)

#### **INITIAL SETUP**

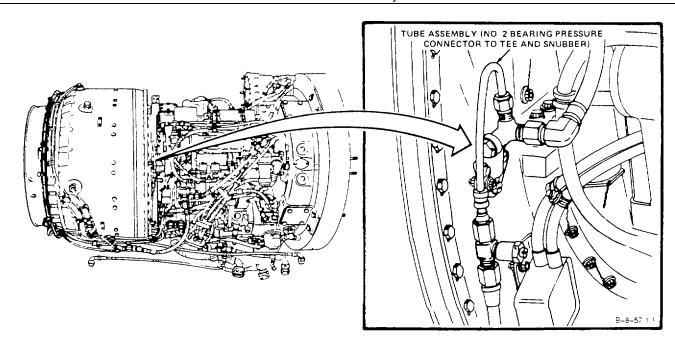
#### Applicable Configurations:

All **Tools:** Powerplant Mechanic's Tool kit, NSN 5180-00-323-4944 **Materials:** Wiping Rag (E64) **Personnel Required:** Aircraft Powerplant Repairer

#### General Safety Instructions:

#### WARNING

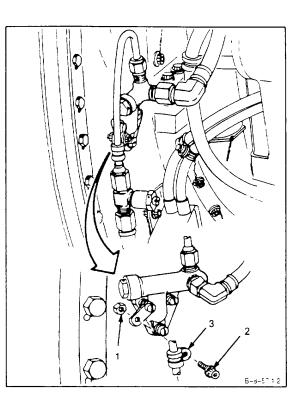
Lubricating oils cause paralysis if swallowed. Prolonged contact with them may irritate the skin. Handle only in well-ventilated areas away from heat and flame. Drain and store in approved metal safety containers. Avoid prolonged or repeated contact with skin and do not take internally. Wash contacted areas of skin thoroughly after handling. If irritation of skin results, get medical attention. Get medical attention for eyes.



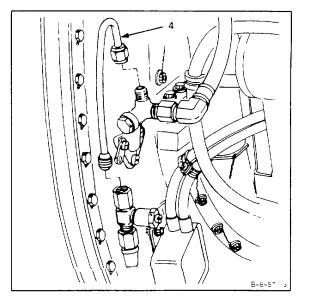
# 1. Remove nut (1), bolt (2), and clamp (3).

CONNECTOR TO TEE AND SNUBBER) (Continued)

**REMOVE TUBE ASSEMBLY (NO. 2 BEARING PRESSURE** 



2. Disconnect and remove tube assembly (4).



FOLLOW-ON MAINTENANCE: None

END OF TASK

#### **INITIAL SETUP**

#### Applicable Configurations:

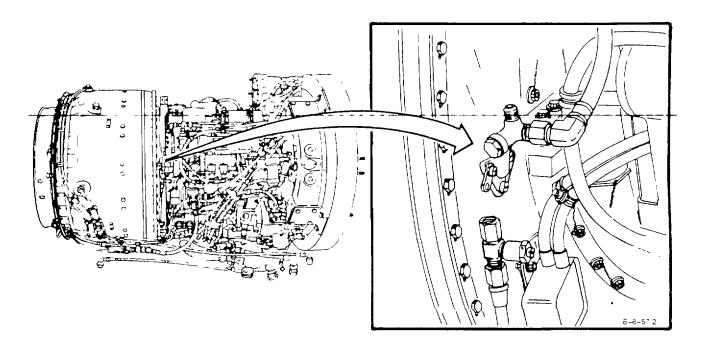
All

### Tools:

Powerplant Mechanic's Tool Kit, NSN 5180-00-323-4944 Technical Inspection Tool Kit, NSN 5180-00-323-5114

*Materials:* None

Personnel Required: Aircraft Powerplant Repairer Aircraft Powerplant Inspector



8-74

## INSTALL TUBE ASSEMBLY (NO. 2 BEARING PRESSURE CONNECTOR TO TEE AND SNUBBER) (Continued) 8-74

1. Install tube assembly (1) on tee and snubber (2) and No. 2 bearing pressure oil connector (3).

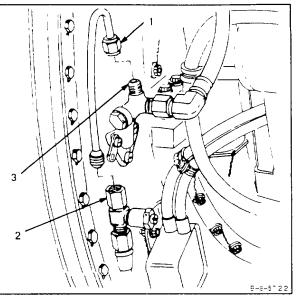
- D 3 2 8-8-5122
  - 6 B-8-5723

2. Install clamp (4), bolt (5), and nut (6), onto bracket (7).

#### INSPECT

#### FOLLOW-ON MAINTENANCE: None

END OF TASK





#### **INITIAL SETUP**

Applicable Configurations:

#### Tools:

Powerplant Mechanic's Tool Kit, NSN 5180-00-323-4944 Container, 1 Quart Open-End Wrench (T24)

#### Materials:

Wiping Rag (E64)

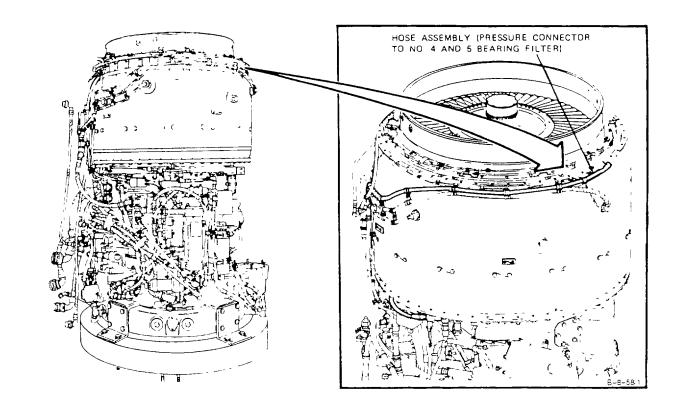
#### **Personnel Required:**

Aircraft Powerplant Repairer

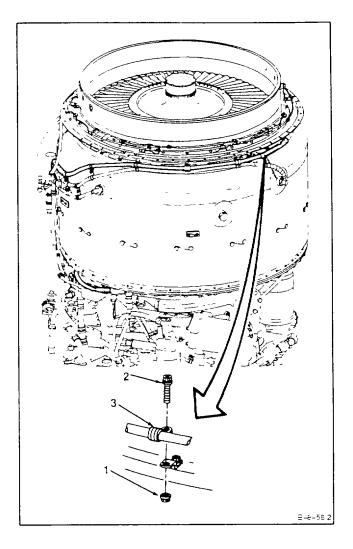
#### General Safety Instructions:

#### WARNING

Lubricating oils cause paralysis if swallowed. Prolonged contact with them may irritate the skin. Handle only in well-ventilated areas away from heat and flame. Drain and store in approved metal safety containers. Avoid prolonged or repeated contact with skin and do not take internally. Wash contacted area of skin thoroughly after handling. If irritation of skin results, get medical attention. Get medical



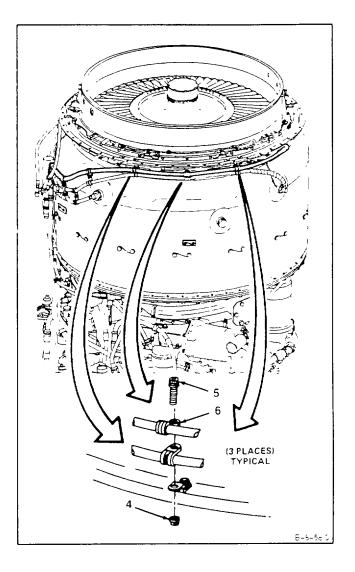
1. Remove nut (1), bolt (2), and clamp (3).



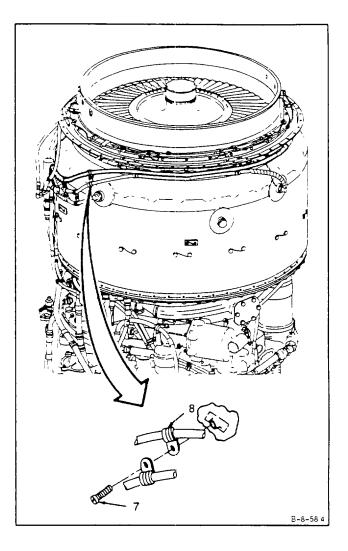
GO TO NEXT PAGE

8-180

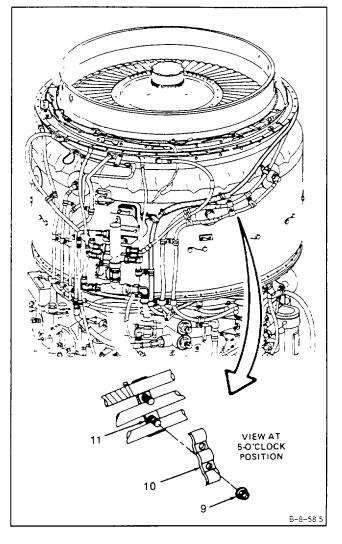
2. Remove three nuts (4), bolts (5), and clamps (6).



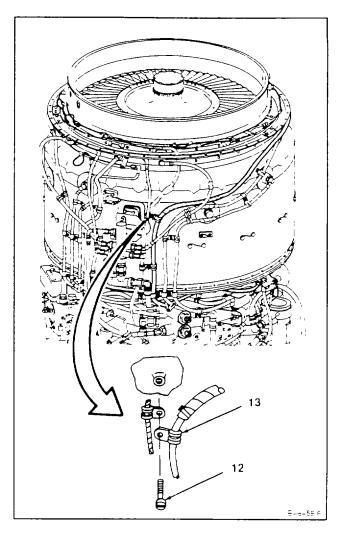
3. Remove lockwire, screw (7), and clamp (8).



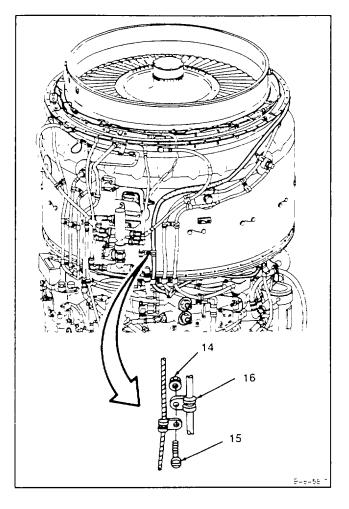
4. Remove two nuts (9) and clamps (10 and 11).



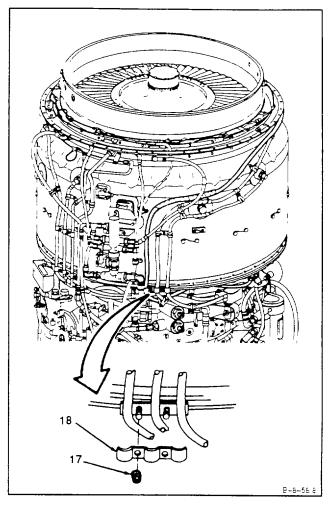
5. Remove lockwire, screw (12), and clamp (13).



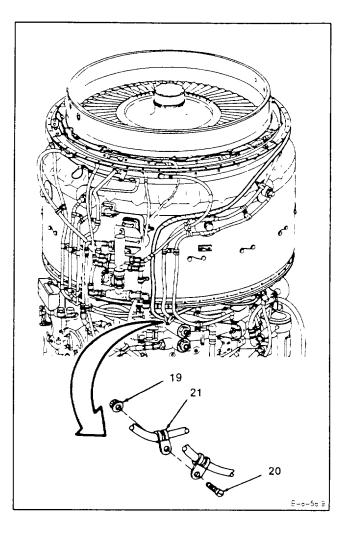
6. Remove nut (14), screw (15), and clamp (16).



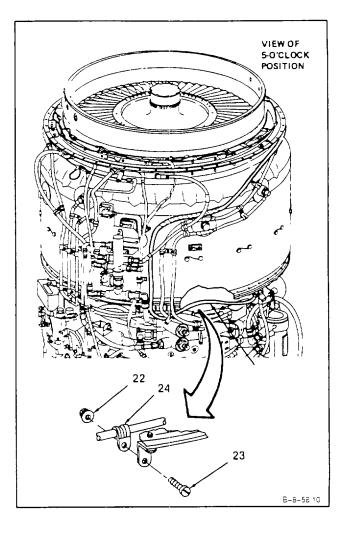
7. Remove two nuts (17) and clamp (18).



8. Remove nut (19), screw (20), and clamp (21).



9. Remove nut (22). screw (23), and clamp (24).

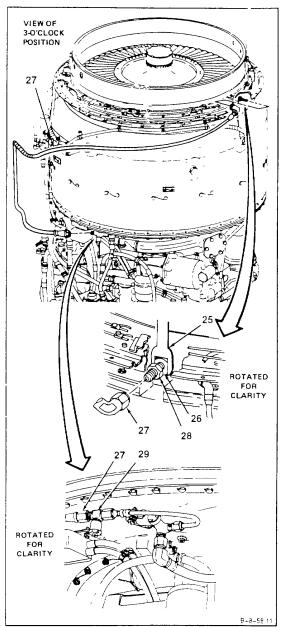


## 8-75 REMOVE HOSE ASSEMBLY (PRESSURE CONNECTOR TO NO. 4 AND 5 BEARING FILTER) (Continued)

### CAUTION

In following step, hold No. 4 and 5 bearing lube adapter using open-end wrench (T24). Failure to use wrench may result in damage and mislocation of oil transfer tube resulting in oil leaks.

- 10. Place open-end wrench (T24) (25) on No. 4 and 5 bearing lube adapter (26).
- 11. Disconnect hose assembly (27) from reducer (28).
- 12. Disconnect hose assembly (27) from oil tee and snubber (29) and remove hose assembly (27).



FOLLOW-ON MAINTENANCE: None

#### **INITIAL SETUP**

#### Applicable Configurations:

All

## Tools:

Powerplant Mechanic's Tool Kit, NSN 5180-00-323-4944 Technical Inspection Tool Kit, NSN 5180-00-323-5114 Open-End Wrench (T24)

#### Materials:

Lockwire (E33)

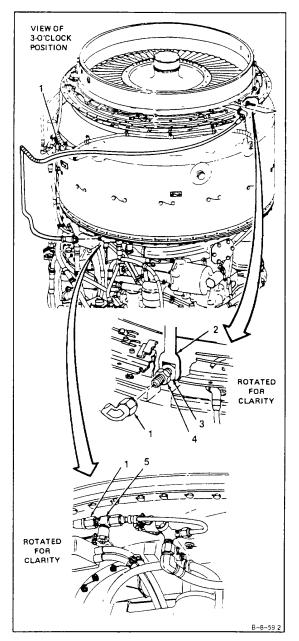
#### Personnel Required: Aircraft Powerplant Repairer Aircraft Powerplant Inspector

## 8-76 INSTALL HOSE ASSEMBLY (PRESSURE CONNECTOR TO NO. 4 AND 5 BEARING FILTER)

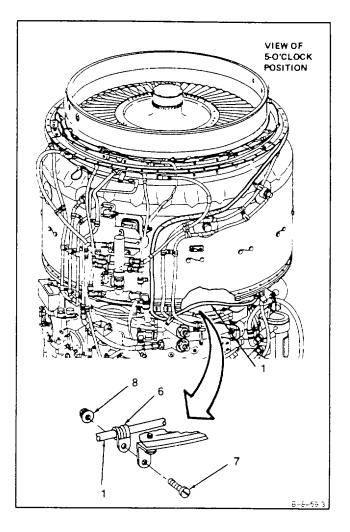
## **CAUTION**

In following step, hold No. 4 and 5 bearing lube adapter, using open-end wrench (T24). Failure to use wrench may result in damage and mislocation of oil transfer tube resulting in oil leaks.

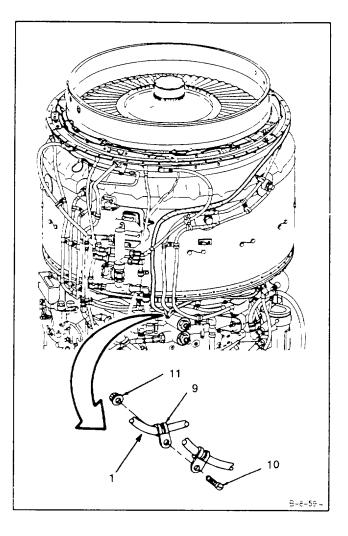
- 1. Install hose assembly (1) as follows:
  - a. Place open-end wrench (T24) (2) on No. 4 and 5 bearing lube adapter (3).
  - b. Connect hose assembly (1) to reducer (4).
  - c. Connect hose assembly (1) to tee and snubber (5).



2. Install clamp (6) on hose assembly (1), and install screw (7) and nut (8).

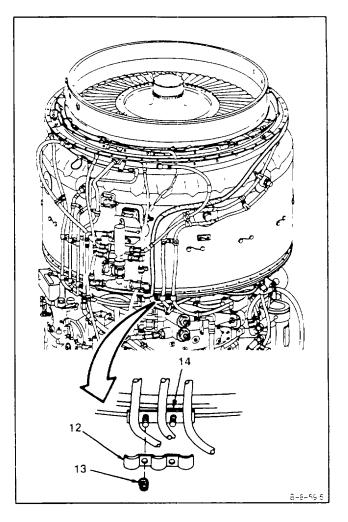


3. Install clamp (9) on hose assembly (1), and install screw (10) and nut (11).



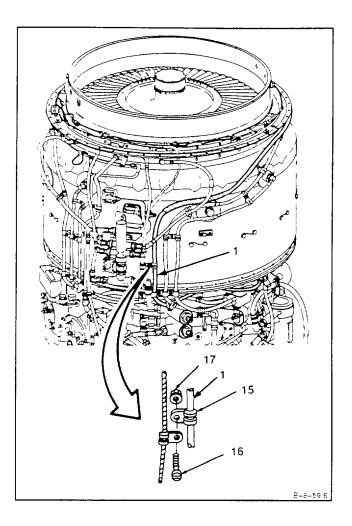
8-76

4. Install clamp (12) and two nuts (13) on bracket (14).

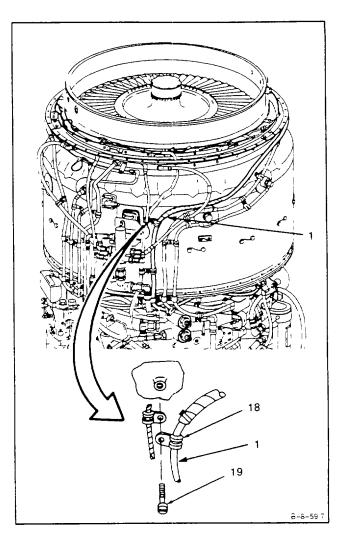


8-76

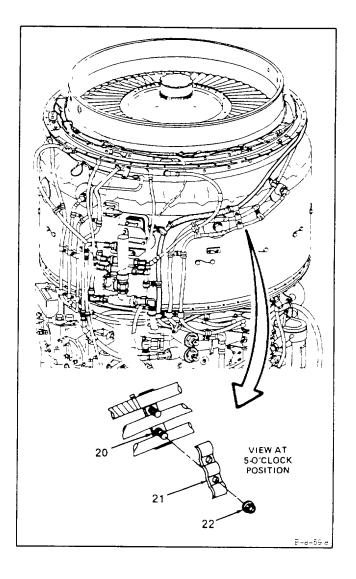
5. Install clamp (15) on hose assembly (1), and install screw (16) and nut (17).



6. Install clamp (18) on hose assembly (1), and install screw (19). Lockwire screw. Use lockwire (E33).

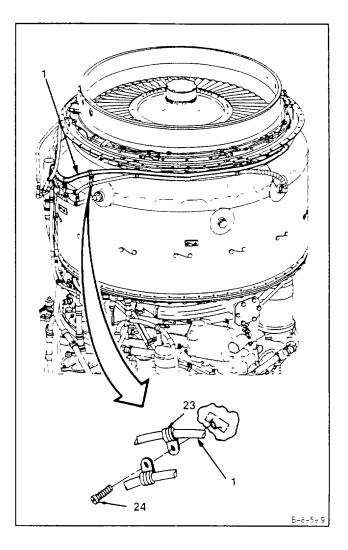


7. Install clamps (20 and 21) and two nuts (22).

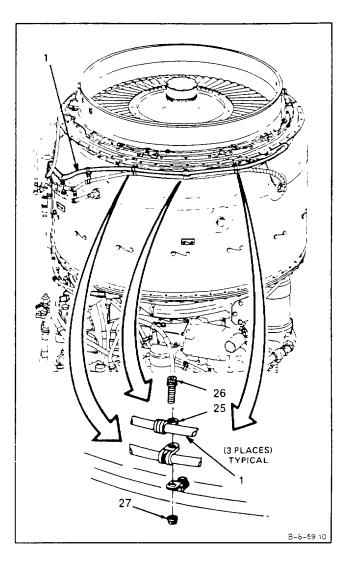


8-76

8. Install clamp (23) on hose assembly (1) and install screw (24). Lockwire screw. Use lockwire (E33).

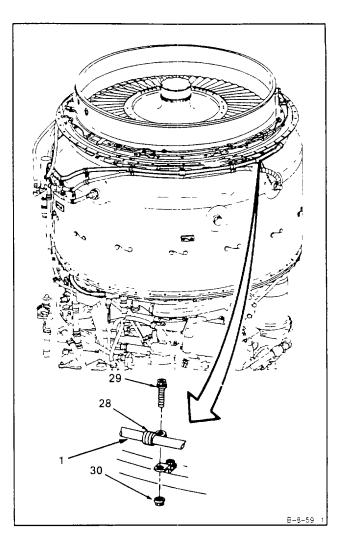


9. Install three clamps (25) on hose assembly (1), and install three bolts (26) and nuts (27).



8-76

10. Install clamp (28) on hose assembly (1), and install bolt (29) and nut (30).



#### INSPECT

FOLLOW-ON MAINTENANCE: None

## 8-77 REMOVE HOSE ASSEMBLY (INLET HOUSING TO OIL SCAVENGE TEE)

#### **INITIAL SETUP**

#### Applicable Configurations:

All

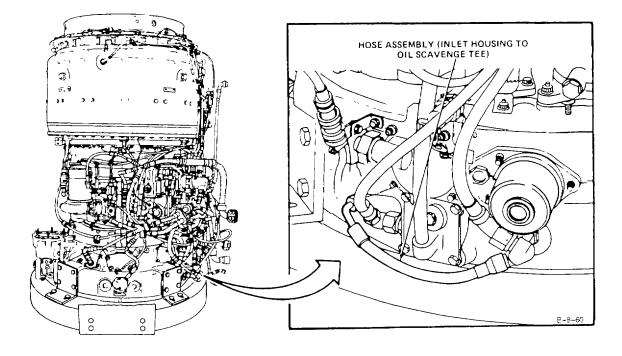
### Tools:

Powerplant Mechanic's Tool Kit, NSN 5180-00-323-4944 Container, 1 Quart Materials:

Wiping Rag (E64)

### Personnel Required:

Aircraft Powerplant Repairer

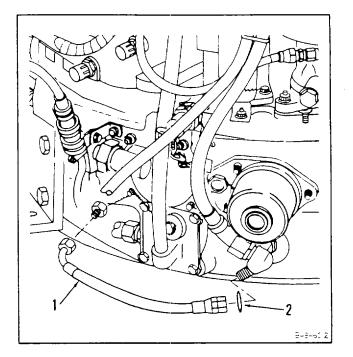


## 8-77 REMOVE HOSE ASSEMBLY (INLET HOUSING TO OIL SCAVENGE TEE)(Continued)

#### WARNING

Lubricating oils cause paralysis if swallowed. Prolonged contact with them may irritate the skin. Handle only in well-ventilated areas away from heat and flame. Drain and store in approved metal safety containers. Avoid prolonged or repeated contact with skin and do not take internally. Wash contacted area of skin thoroughly after handling. If irritation of skin results, get medical attention. Get medical attention for eyes.

1. Disconnect and remove hose assembly (1) and gasket (2).



FOLLOW-ON MAINTENANCE: None

## 8-78 INSTALL HOSE ASSEMBLY (INLET HOUSING TO OIL SCAVENGE TEE)

#### **INITIAL SETUP**

#### Applicable Configurations:

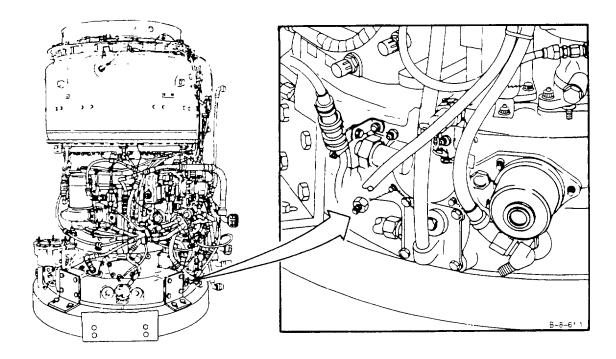
All

### Tools:

Powerplant Mechanic's Tool Kit, NSN 5180-00-323-4944 Technical Inspection Tool Kit, NSN 5180-00-323-5114 Materials: None

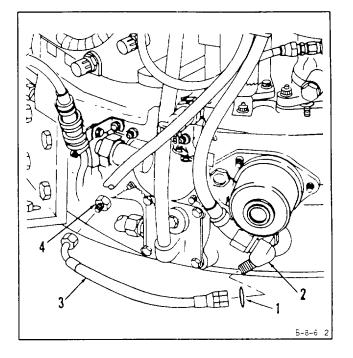
Parts: Gasket

Personnel Required: Aircraft Powerplant Repairer Aircraft Powerplant Inspector



## 8-78 INSTALL HOSE ASSEMBLY (INLET HOUSING TO OIL SCAVENGE TEE) (Continued)

1. Install washer (1) on oil scavenge tee (2) and install hose assembly (3) on oil scavenge tee (2) and fluid passage bolt (4).



### INSPECT

FOLLOW-ON MAINTENANCE: None

### 8-79 REMOVE HOSE ASSEMBLY (INLET HOUSING TO OIL DRAIN COCK)

#### **INITIAL SETUP**

## Applicable Configurations:

All

### Tools:

Powerplant Mechanic's Tool Kit, NSN 5180-00-323-4944 Container, 1 Quart

#### Materials:

Wiping Rag (E64)

#### Personnel Required:

Aircraft Powerplant Repairer

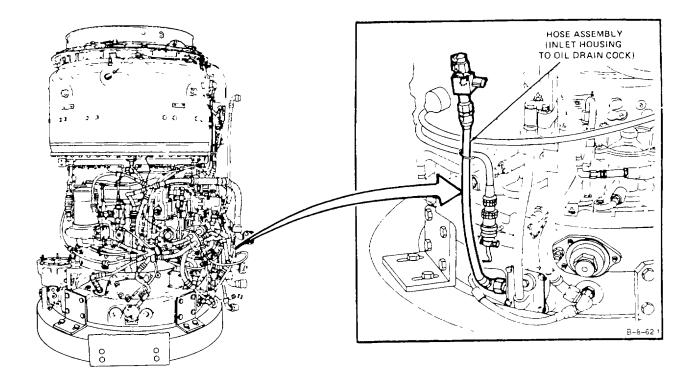
#### **Equipment Condition:**

Engine Oil System Drained (Task 1-69)

#### General Safety Instructions:

#### WARNING

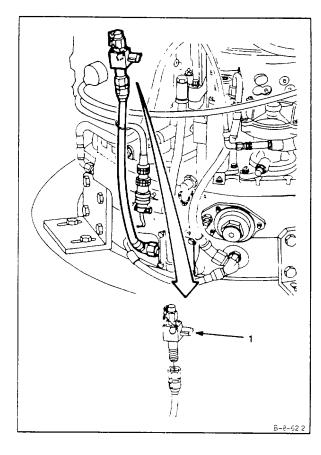
Lubricating oils cause paralysis if swallowed Prolonged contact with them may irritate the skin. Handle only in well-ventilated areas away from heat and flame. Drain and store in approved metal safety containers. Avoid prolonged or repeated contact with skin and do not take internally. Wash contacted area of skin thoroughly after handling. If irritation of skin results, get medical attention. Get medical attention for eyes.

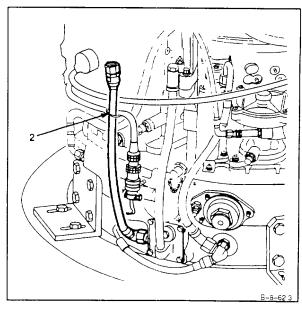


8-79

## 8-79 REMOVE HOSE ASSEMBLY (INLET HOUSING TO OIL DRAIN COCK) (Continued)

1. Remove oil drain cock (1).



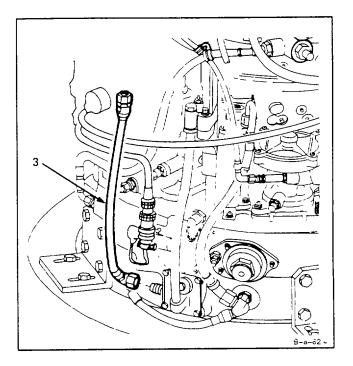


## GO TO NEXT PAGE

2. Remove cable tie (2).

## 8-79 REMOVE HOSE ASSEMBLY (INLET HOUSING TO OIL DRAIN COCK) (Continued)

3. Disconnect and remove hose assembly (3).



FOLLOW-ON MAINTENANCE: None

## 8-80 INSTALL HOSE ASSEMBLY (INLET HOUSING TO OIL DRAIN COCK)

#### **INITIAL SETUP**

#### Applicable Configurations:

All

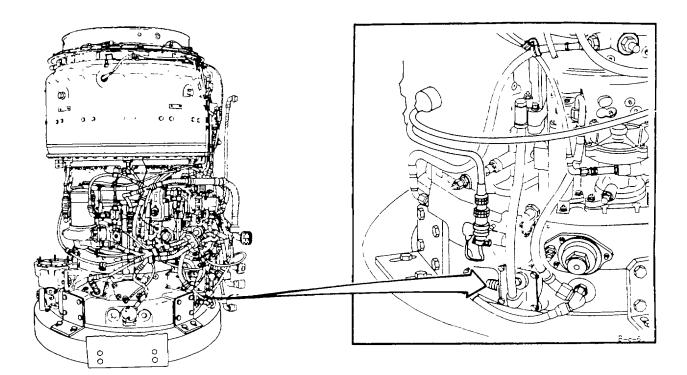
## Tools:

Powerplant Mechanic's Tool Kit, NSN 5180-00-323-4944 Technical Inspection Tool Kit, NSN 5180-00-323-5114

#### Materials: None

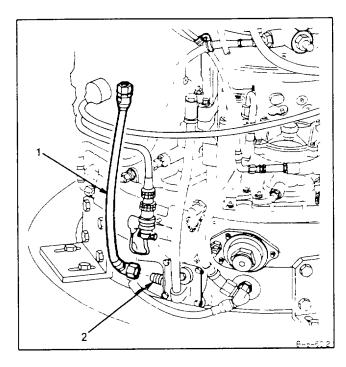
Parts: Cable Tie

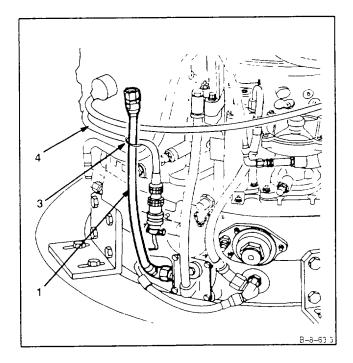
Personnel Required: Aircraft Powerplant Repairer Aircraft Powerplant Inspector



## 8-80 INSTALL HOSE ASSEMBLY (INLET HOUSING TO OIL DRAIN COCK) (Continued)

1. Install hose assembly (1) on nipple (2).

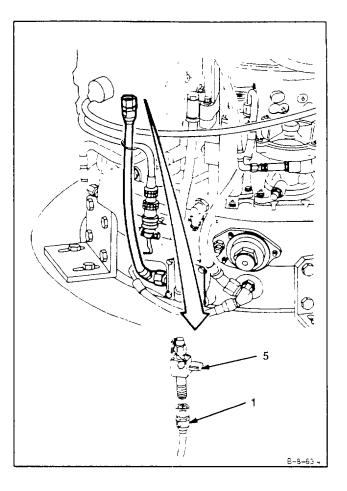




2. Install cable tie (3) on hose assembly (1) and hose assembly (4).

## 8-80 INSTALL HOSE ASSEMBLY (INLET HOUSING TO OIL DRAIN COCK) (Continued)

3. Install oil drain cock (5) on hose assembly (1).



## INSPECT

FOLLOW-ON MAINTENANCE: None

## 8-81 REMOVE HOSE ASSEMBLY (STARTER DRIVE TO OIL FILLER)

#### INITIAL SETUP

#### Applicable Configurations:

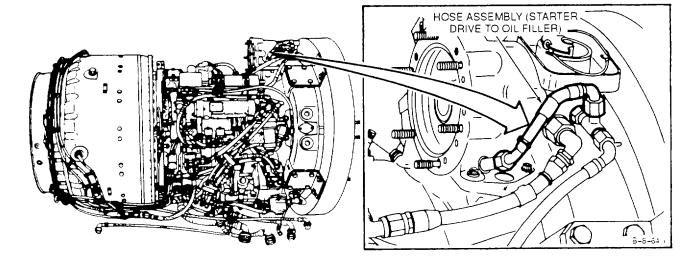
All

## Tools:

Powerplant Mechanic's Tool Kit, NSN 5180-00-323-4944 Container, 1 Quart *Materials:* Wiping Rag (E64)

## Personnel Required:

Aircraft Powerplant Repairer



GO TO NEXT PAGE

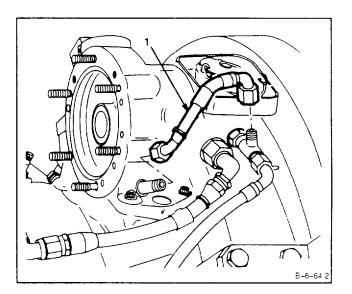
### 8-81

#### 8-81 REMOVE HOSE ASSEMBLY (STARTER DRIVE TO OIL FILLER) (Continued)

#### WARNING

Lubricating oils cause paralysis if swallowed. Prolonged contact with them may irritate the skin. Handle only in well-ventilated areas away from heat and flame. Drain and store in approved metal safety containers. Avoid prolonged or repeated contact with skin and do not take internally. Wash contacted area of skin thoroughly after handling. If irritation of skin results, get medical attention. Get medical attention for eyes.

1. Disconnect and remove hose assembly (1).



FOLLOW-ON MAINTENANCE: None

## 8-82 INSTALL HOSE ASSEMBLY (STARTER DRIVE TO OIL FILLER)

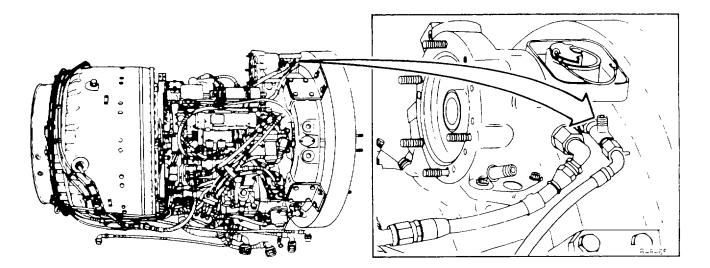
## INITIAL SETUP

Applicable Configurations: All Tools: Powerplant Mechanic's Tool Kit, NSN 5180-00-323-4944 Technical Inspection Tool Kit. NSN 5180-00-323-5114

#### Materials: None

Personnel Required:

Aircraft Powerplant Repairer Aircraft Powerplant Inspector



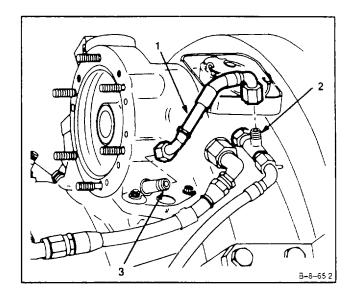
## 8-82 INSTALL HOSE ASSEMBLY (STARTER DRIVE TO OIL FILLER) (Continued)

1. Install hose assembly (1) on tee (2) and fitting (3).

### INSPECT

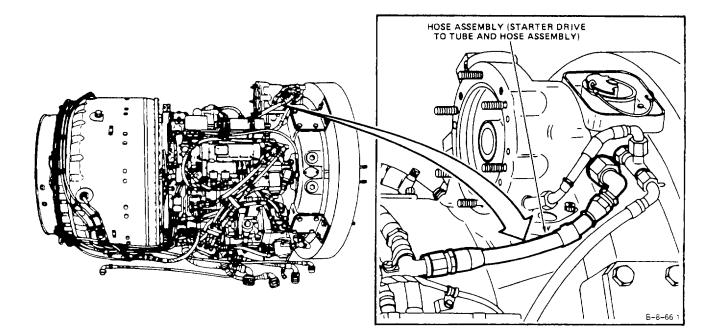
FOLLOW-ON MAINTENANCE:

None



## 8-83 REMOVE HOSE ASSEMBLY (STARTER DRIVE TO TUBE AND HOSE ASSEMBLY)

INITIAL SETUP Applicable Configurations: All Tools: Open-End Wrench, 1-Inch Container, 1 Quart Materials: Wiping Rag (E64) Personnel Required: Aircraft Powerplant Repairer

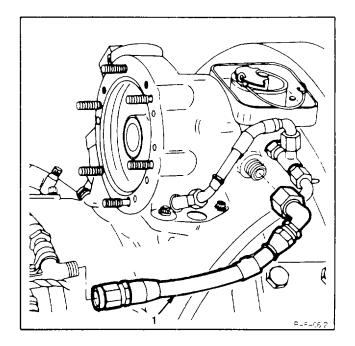


#### WARNING

Lubricating oils cause paralysis if swallowed. Prolonged contact with them may irritate the skin. Handle only in well-ventilated areas away from heat and flame. Drain and store in approved metal safety containers. Avoid prolonged or repeated contact with skin and do not take internally. Wash contacted area of skin thoroughly after handling. If irritation of skin results, get medical attention. Get medical attention for eyes.

1. Disconnect and **remove hose assembly (1)**, using <u>1-inch</u>, open-end wrench.

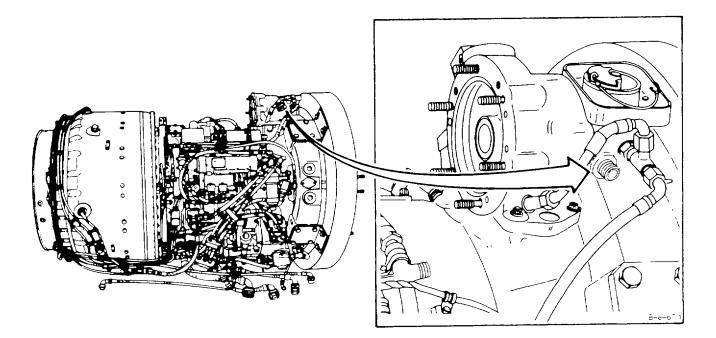
FOLLOW-ON MAINTENANCE: None



## 8-84 INSTALL HOSE ASSEMBLY (STARTER DRIVE TO TUBE AND HOSE ASSEMBLY)

INITIAL SETUP Applicable Configurations: All Tools: Technical Inspection Tool Kit,

NSN 5180-00-323-5114 Open-End Wrench, 1-Inch Crowfoot Attachment, 1-inch Materials: None Personnel Required: Aircraft Powerplant Repairer Aircraft Powerplant Inspector

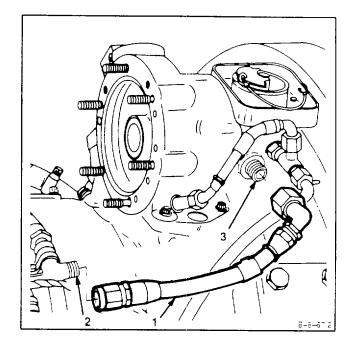


## 8-84 INSTALL HOSE ASSEMBLY (STARTER DRIVE TO TUBE AND HOSE ASSEMBLY) (Continued) 8-84

1. Install hose assembly (1) on tube and hose assembly (2) and reducer (3) Use <u>1-inch</u> crowfoot attachment.

### INSPECT

FOLLOW-ON MAINTENANCE: None



#### 8-85 REMOVE TUBE AND HOSE ASSEMBLY (ACCESSORY GEARBOX COLLECTOR TO TUBE ASSEMBLY)

#### INITIAL SETUP

Applicable Configurations:

#### All All

Tools: Powerplant Mechanic's Tool Kit, NSN 5180-00-323-4944

Open-End Wrench, 1-inch *Materials:* 

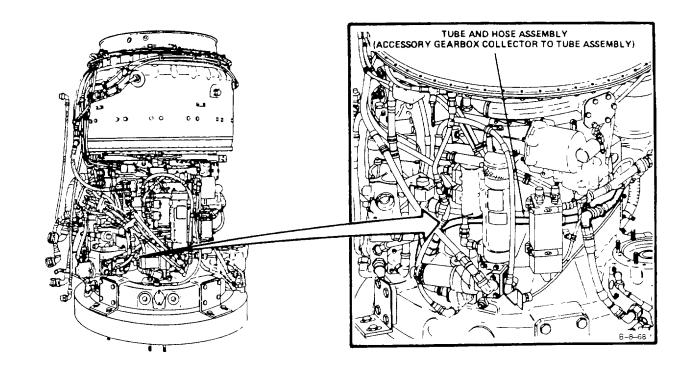
Wiping Rag (E64) *Personnel Required:* 

Aircraft Powerplant Repairer

General Safety Instructions: WARNING

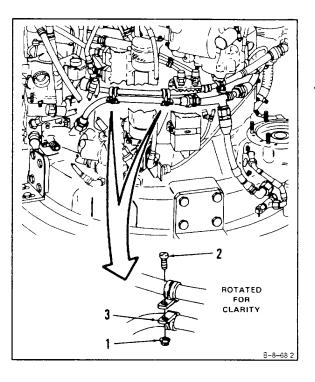
Lubricating oils cause paralysis if swallowed. Prolonged contact with them may irritate the skin. Handle only in may irritate the skin. Handle only in well-ventilated areas away from heat and flame. Drain and store in approved metal safety containers. Avoid prolonged or repeated contact with skin and do not take internally.

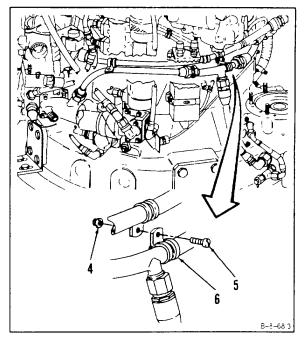
Wash contacted area of skin thoroughly after handling. If irritation of skin results, get medical attention. Get medical attention for eyes.



## 8-85 REMOVE TUBE AND HOSE ASSEMBLY (ACCESSORY GEARBOX COLLECTOR TO TUBE 8-85 ASSEMBLY) (Continued)

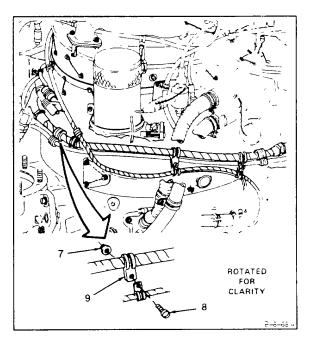
- 1. Remove nuts (1), screws (2), and clamps (3).
- 2. Remove nut (4), screw (5), and clamp (6).

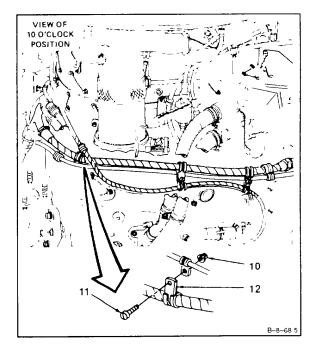




## 8-85 REMOVE TUBE AND HOSE ASSEMBLY (ACCESSORY GEARBOX COLLECTOR TO TUBE 8-85 ASSEMBLY) (Continued)

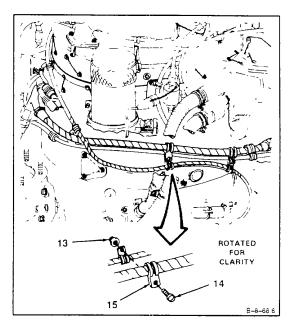
- 3. Remove nut (7), screw (8) and clamp (9).
- 4. Remove nut (10), screw (11), and clamp (12).

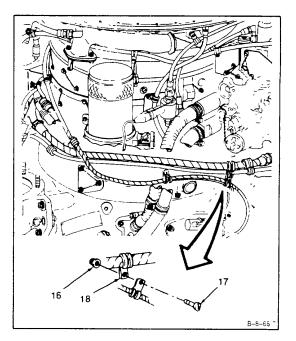




## 8-85 REMOVE TUBE AND HOSE ASSEMBLY (ACCESSORY GEARBOX COLLECTOR TO TUBE 8-85 ASSEMBLY) (Continued)

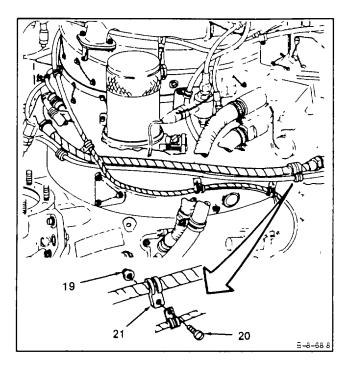
- 5. **Remove** nut (13), screw (14), and **clamp (15**).
- 6. Remove nut (16), screw (17), and clamp (18).

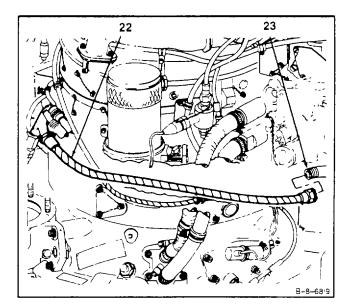




# 8-85 REMOVE TUBE AND HOSE ASSEMBLY (ACCESSORY GEARBOX COLLECTOR TO TUBE 8-85 ASSEMBLY) (Continued)

- 7. Remove nut (19), screw (20), and clamp (21).
- 8. Disconnect tube and hose assembly (22) from tube assembly (23), Use <u>1-inch</u> open-end wrench.



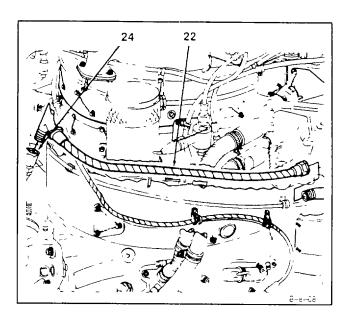


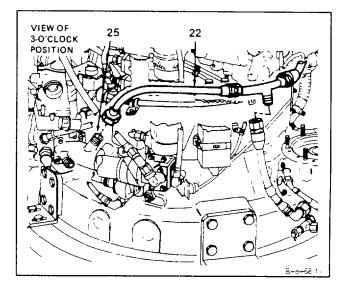
## 8-85 REMOVE TUBE AND HOSE ASSEMBLY (ACCESSORY GEARBOX COLLECT OR TO TUBE 8-85 ASSEMBLY) (Continued)

- 9. Disconnect hose assembly (24) from tube and hose assembly (22).
- 10. Disconnect tube and hose assembly (22) from nipple (25) Remove tube and hose assembly (22).

## FOLLOW-ON MAINTENANCE:

None

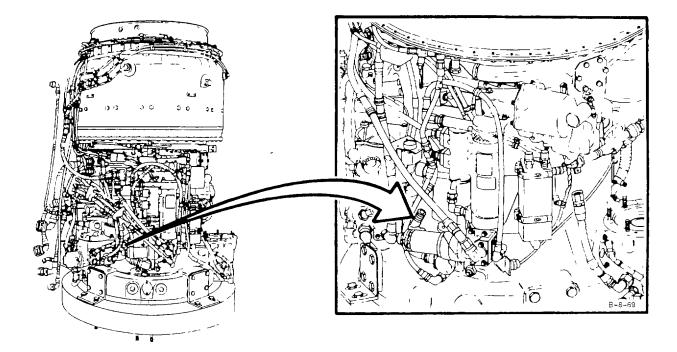




# 8-86 INSTALL TUBE AND HOSE ASSEMBLY (ACCESSORY GEARBOX COLLECTOR TO TUBE ASSEMBLY)

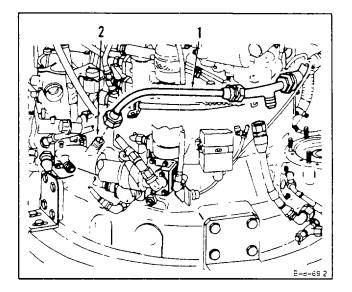
INITIAL SETUP *Applicable Configurations:* All *Tools:* 

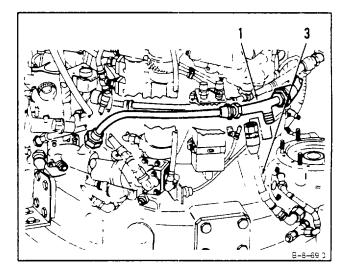
Powerplant Mechanic's Tool Kit, NSN 5180-00-323-4944 Technical Inspection Tool Kit, NSN 5180-00-323-5114 Crowfoot Attachment, 1-Inch Materials: None Personnel Required: Aircraft Powerplant Repairer Aircraft Powerplant Inspector



# 8-86 INSTALL TUBE AND HOSE ASSEMBLY (ACCESSORY GEARBOX COLLECTOR TO TUBE ASSEMBLY) (Contin ued)

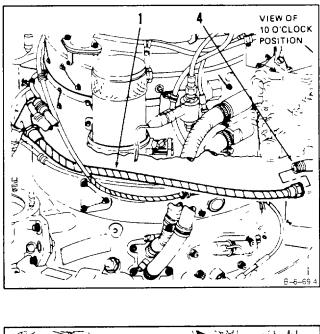
- 1. Connect tube and hose assembly (1) to nipple (2).
- 2. Connect hose assembly (3) to tube and hose assembly (1).

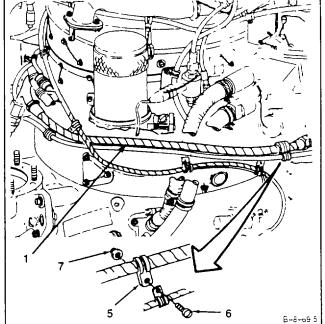




# 8-86 INSTALL TUBE AND HOSE ASSEMBLY (ACCESSORY GEARBOX COLLECTOR TO TUBE ASSEMBLY) (Continued)

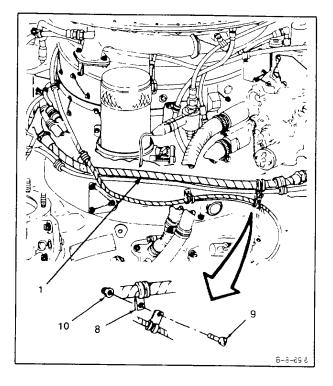
- 3. Connect tube and hose assembly (1) to tube assembly (4). Use <u>1-inch</u> crowfoot attachment.
- 4. Install clamp (5) on tube and hose assembly (1), and install screw (6) and nut (7).

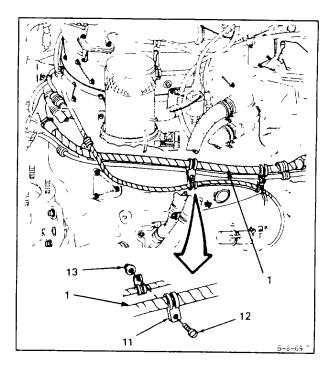




# 8-86 INSTALL TUBE AND HOSE ASSEMBLY (ACCESSORY GEARBOX COLLECTOR TO TUBE ASSEMBLY) (Continued)

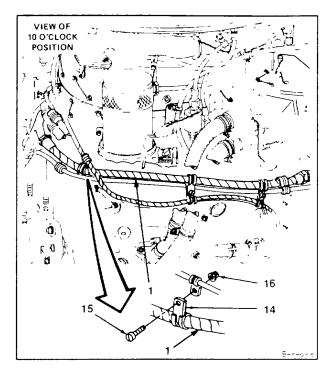
- 5. Install clamp (8) on tube and hose assembly (1) and install screw (9) and nut (10).
- 6. Install clamp (11) on tube and hose assembly (1) and install screw (12) and nut (13).

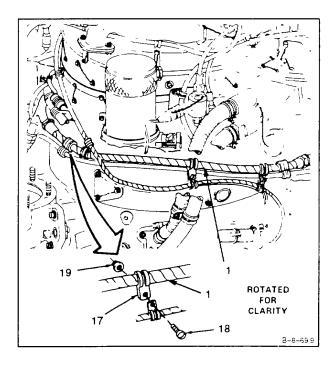




# 8-86 INSTALL TUBE AND HOSE ASSEMBLY (ACCESSORY GEARBOX COLLECTOR TO TUBE ASSEMBLY) (Continued)

- 7. Install clamp (14) on tube and hose assembly (1) .and install screw (15) and nut (16).
- 8. Install clamp (17) on tube and hose assembly (1) and install screw (18) and nut (19).



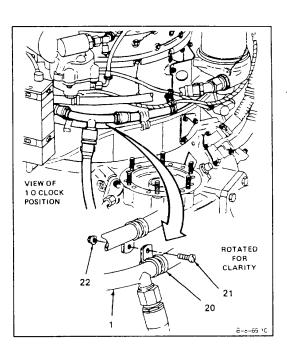


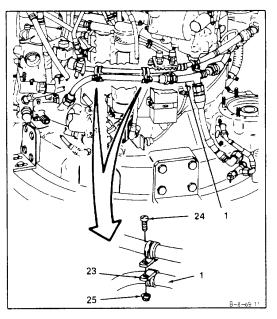
# 8-86 INSTALL TUBE AND HOSE ASSEMBLY (ACCESSORY GEARBOX COLLECTOR TO TUBE ASSEMBLY) (Continued)

- 9. Install clamp (20) on tube and hose assembly (1) and install screw (21) and nut (22).
- 10. Install clamps (23) on tube and hose assembly (1) and install screws (24) and nuts (25).

## INSPECT

FOLLOW-ON MAINTENANCE: None





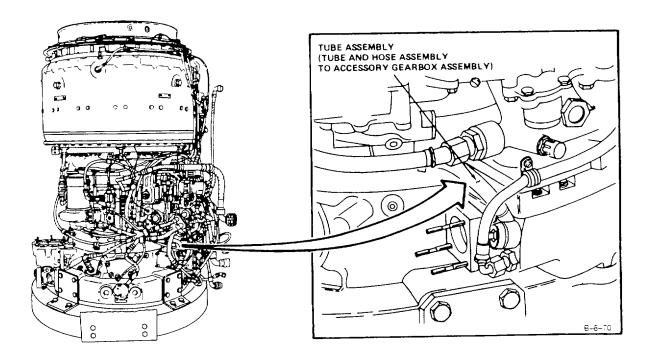
#### 8-87 REMOVE TUBE ASSEMBLY (TUBE AND HOSE ASSEMBLY TO ACCESSORY GEARBOX ASSEMBLY)

#### **INITIAL SETUP**

### Applicable Configurations: All Tools: Powerplant Mechanic's Tools: Kit, NSN 5180-00-323-4944 Container, 1 Quart Open-End Wrench, 1-Inch Socket Head Screw Key, 1/2-Inch Materials: Wiping Rag (E64) Personnel Required: Aircraft Powerplant Repairer References: PT Speed Pickup Drive Assembly Removed Task (5-13)

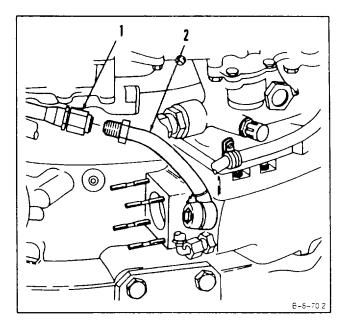
#### General Safety Instructions: WARNING

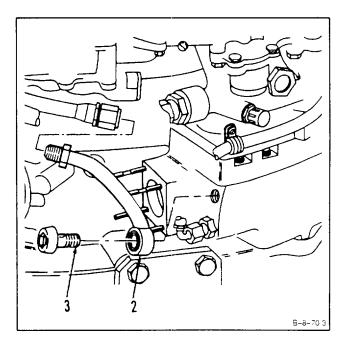
Lubricating oils cause paralysis if swallowed. Prolonged contact with them may irritate the skin. Handle only in well-ventilated areas away from heat and flame. Drain and store in approved metal safety containers. Avoid prolonged or repeated contact with skin and do not take internally. Wash contacted area of skin thoroughly after handling. If irritation of skin results, get medical attention. Get medical attention for eyes.



# 8-87 REMOVE TUBE ASSEMBLY (TUBE AND HOSE ASSEMBLY TO ACCESSORY GEARBOX ASSEMBLY) (Continued)

- 1. Disconnect tube and hose assembly (1) from tube assembly (2). Using a <u>1-inch</u> open-end wrench.
- 2. Remove lockwire and bolt (3). Using a <u>1/2-inch</u> socket head screw key. Remove tube assembly (2).

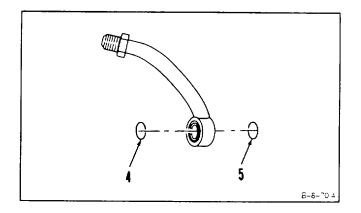




# 8-87 REMOVE TUBE ASSEMBLY (TUBE AND HOSE ASSEMBLY TO ACCESSORY GEARBOX 8-87 ASSEMBLY) (Continued)

3. Remove packings (4 and 5).

FOLLOW-ON MAINTENANCE: None

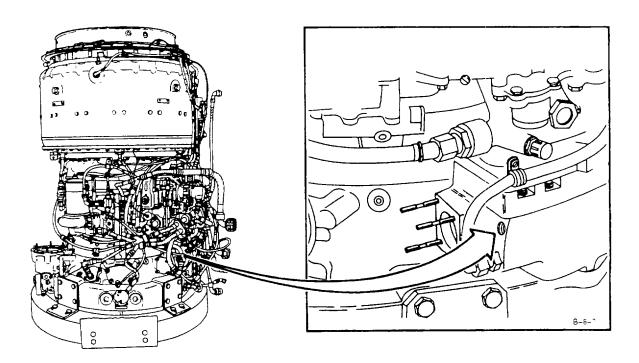


## 8-88 INSTALL TUBE ASSEMBLY (TUBE AND HOSE ASSEMBLY TO ACCESSORY GEARBOX ASSEMBLY)

### **INITIAL SETUP**

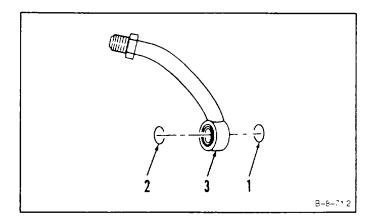
Applicable Configurations: All Tools: Powerplant Mechanic's Tool Kit, NSN 5180-00-323-4944 Technical Inspection Tool Kit, NSN 5180-00-323-5114 Open-End Wrench, 1-Inch Socket Head Screw Key. 1/2-Inch Crowfoot Attachment

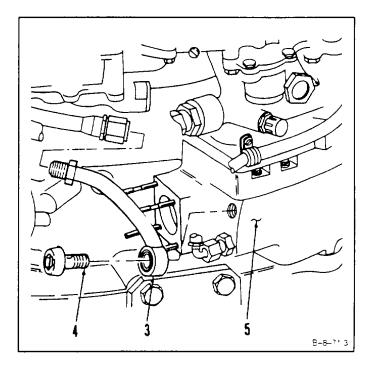
Materials: Lockwire (E33) Personnel Required: Aircraft Powerplant Repairer Aircraft Powerplant Inspector References: TM 1-2840-252-23P



# 8-88 INSTALL TUBE ASSEMBLY (TUBE AND HOSE ASSEMBLY TO ACCESSORY GEARBOX ASSEMBLY) (Continued)

- 1. Install packings (1 and 2) into tube assembly (3).
- 2. Install tube assembly (3) and bolt (4) on accessory gearbox assembly (5) Use 1/2-inch socket head screw key Lockwire bolt (4). Use lockwire (E33).





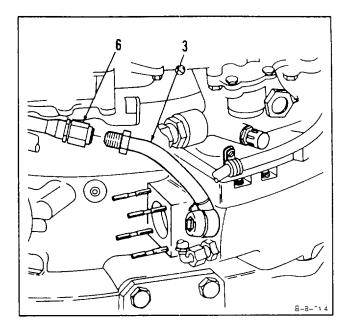
# 8-88 INSTALL TUBE ASSEMBLY (TUBE AND HOSE ASSEMBLY TO ACCESSORY GEARBOX ASSEMBLY) (Continued)

3. Connect tube and hose assembly (6) to tube assembly (3). Use <u>1-inch</u> crowfoot attachment.

## INSPECT

FOLLOW-ON MAINTENANCE:

None

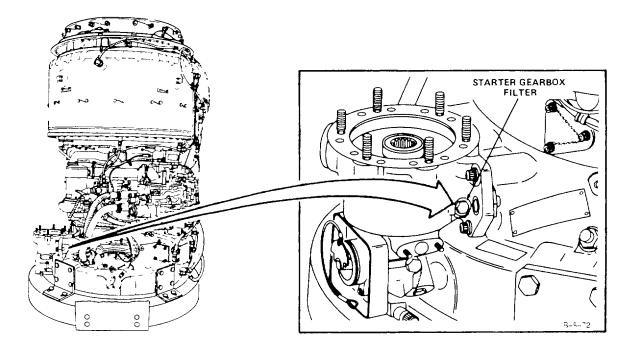


#### **SECTION X**

#### STARTER GEARBOX FILTER

## 8-89 REMOVE STARTER GEARBOX FILTER

INITIAL SETUP Applicable Configurations: All Tools: Powerplant Mechanic's Tool Kit, NSN 5180-00-323-4944 Materials: Wiping Rag (E64) Personnel Required: Aircraft Powerplant Repairer



GO TO NEXT PAGE

8-89

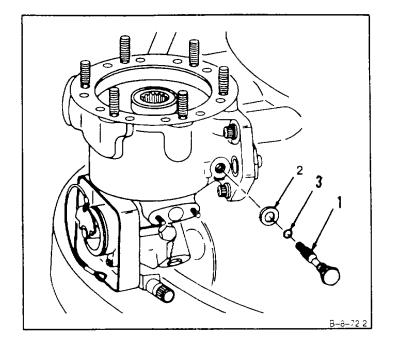
#### <u>WARNING</u>

Lubricating oils cause paralysis if swallowed. Prolonged contact with them may irritate the skin. Handle only in well-ventilated areas away from heat and flame. Drain and store in approved metal safety containers. Avoid prolonged or repeated contact with skin and do not take internally. Wash contacted area of skin thoroughly after handling. If irritation of skin results, get medical attention. Get medical attention for eyes.

1. Remove lockwire, starter gearbox filter (1), washer (2), and packing (3).

## FOLLOW-ON MAINTENANCE:

None



#### 8-90 CLEAN STARTER GEARBOX FILTER

INITIAL SETUP	Equipment Condition
Applicable Configurations:	Off Engine Task
All	Starter Gearbox Filter Removed (Task 8-89)
Tools:	General Safety Instructions
Powerplant Mechanic's Tool Kit,	WARNING
NSN 5180-00-323-4944	Dry cleaning solvent (E19) is flammable and toxic. It
Goggles	can irritate skin and cause burns. Use only in well-
Dry, Compressed Air Source	ventilated area, away from heat and open flame. In
Materials:	case of contact, immediately flush skin or eyes with
Dry Cleaning Solvent (E19)	water for at least 15 minutes. Get medical attention
Gloves (E24)	for eyes.
Lint-Free Cloth (E30)	
Personnel Required:	
Aircraft Powerplant Repairer	

#### 1. Clean starter gearbox filter (1) as follows:

- a. Wear gloves (E24). Immerse filter in dry cleaning solvent (E19) and agitate. Use brush on external surfaces (2).
- b. Use lint-free cloth (E30) to remove solvent.

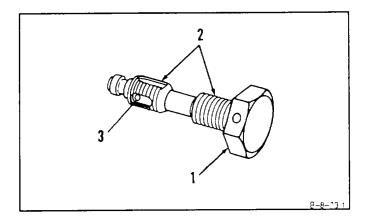
#### WARNING

When using compressed air for cleaning, use approved protective equipment for eyes and face. Do not use more than <u>30 psig</u> air pressure. Do not direct air toward yourself or another person. Failure to comply could result in injury to eyes or skin. In case of injury, get medical attention.

c. Wear goggles. Blow dry internal passage (3). Use clean, dry, compressed air.

#### FOLLOW-ON MAINTENANCE:

Inspect starter gearbox filter (Task 8-91).



#### 8-91 INSPECT STARTER GEARBOX FILTER

#### INITIAL SETUP Applicable Configurations: All Tools: Technical Inspection Tool Kit,

NSN 5180-00-323-5114

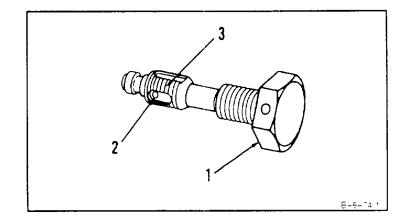
# 1. Inspect starter gearbox filter (1).

- a. There shall be no cracks.
- b. There shall be no clogged holes (2).
- c. There shall be no clogged threads (3).

#### FOLLOW-ON MAINTENANCE:

None

Materials: None Personnel Required: Aircraft Powerplant Inspector Equipment Condition: Off Engine Task



#### 8-92 INSTALL STARTER GEARBOX FILTER

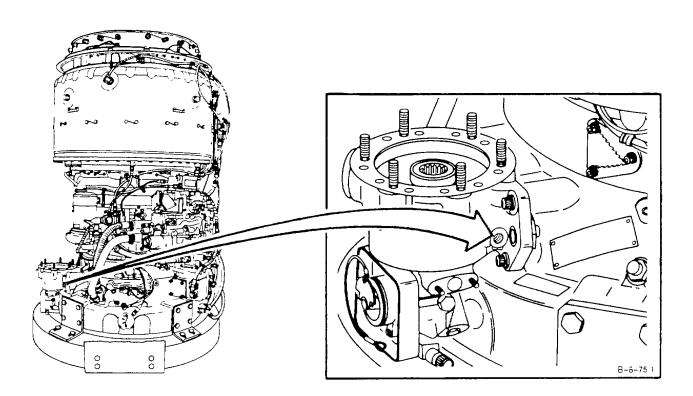
## INITIAL SETUP *Applicable Configurations:* All *Tools:*

Powerplant Mechanic's Tool Kit, NSN 5180-00-323-4944 Technical Inspection Tool Kit, NSN 5180-00-323-5114 *Materials:* 

Lockwire (E33)

# Parts:

Parks: Packing Washer Personnel Required: Aircraft Powerplant Repairer Aircraft Powerplant Inspector References: TM 1-2840-252-23P

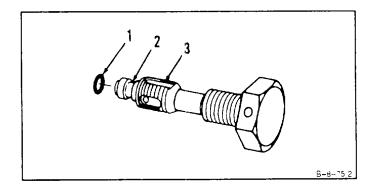


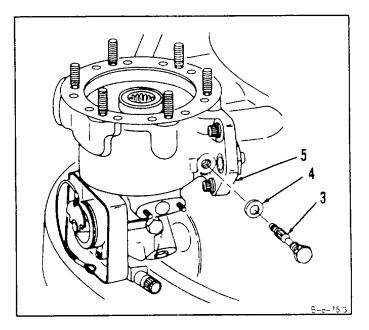
#### 8-92 INSTALL STARTER GEARBOX FILTER (Continued)

- 1. Install packing (1) in groove (2) on starter gearbox filter (3).
- 2. Install washer (4) and starter gearbox filter (3) in housing (5). Tighten starter gearbox filter (1) to <u>22-inch-pounds</u>. Lockwire starter gearbox filter (3). Use lockwire (E33).

#### INSPECT

FOLLOW-ON MAINTENANCE: None





#### **SECTION XI**

### **NO. 2 BEARING PRESSURE OIL CONNECTOR**

## 8-93 REMOVE NO. 2 BEARING PRESSURE OIL CONNECTOR

INITIAL SETUP Applicable Configurations: All Tools:

> Powerplant Mechanic's Tool Kit, NSN 5180-00-323-4944

#### Materials:

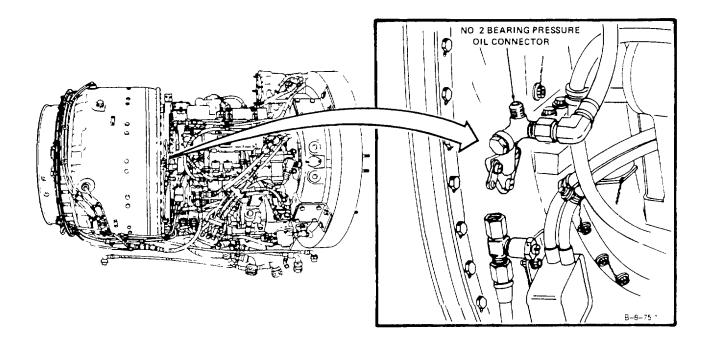
None Personnel Required: Aircraft Powerplant Repairer

#### **Equipment Condition:**

Tube Assembly (No. 2 Bearing Pressure Connector to Tee and Snubber) Removed (Task 8-73)

#### General Safety Instructions: WARNING

Lubricating oils cause paralysis if swallowed. Prolonged contact with them may irritate the skin. Handle only in well-ventilated areas away from heat and flame. Drain and store in approved metal safety containers. Avoid prolonged or repeated contact with skin and do not take internally. Wash contacted areas of skin thoroughly after handling. If irritation of skin results, get medical attention. Get medical attention for eyes.



#### GO TO NEXT PAGE

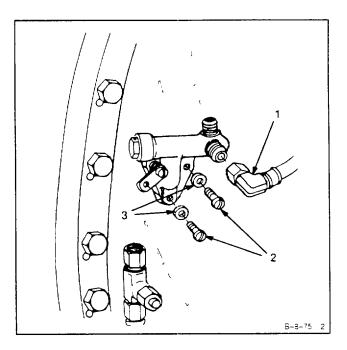
8-93

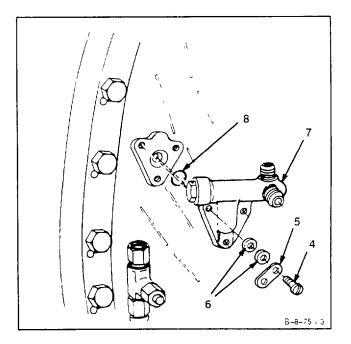
# 8-93 REMOVE NO. 2 BEARING PRESSURE OIL CONNECTOR (Continued)

- 1. Disconnect hose assembly (1).
- 2. Remove lockwire, two screws (2) and two washers (3).
- 3. Remove screw (4), bracket (5), two washers (6), No. 2 bearing pressure connector (7), and packing (8).

FOLLOW-ON MAINTENANCE:

None





#### 8-94 CLEAN NO. 2 BEARING PRESSURE OIL CONNECTOR

INITIAL SETUP Applicable Configurations:	<i>Equipment Condition:</i> Off Engine Task
All Tools:	No. 2 Bearing Pressure Oil Connector Removed (Task 8-93)
Powerplant Mechanic's Tool Kit, NSN 5180-00-323-4944	General Safety Instructions:
Dry, Compressed Air Source	WARNING
Goggles	Dry cleaning solvent ( $\overline{E19}$ ) is flammable and toxic. It
<i>Materials:</i> Dry Cleaning Solvent (El9) Gloves (E24) <i>Personnel Required:</i>	can irritate skin and cause burns. Use only in well- ventilated area, away from heat and open flame. In case of contact, immediately flush skin or eyes with
Aircraft Powerplant Repairer	water for at least <u>15 minutes</u> . Get medical attention for eyes.

1. Wear gloves (E24). Clean No. 2 bearing pressure oil connector (1), using brush and dry cleaning solvent (E19).

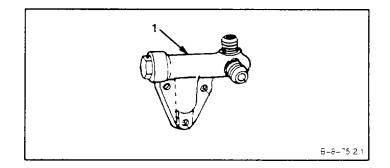
#### WARNING

When using compressed air for cleaning, use approved protective equipment for eyes and face. Do not use more than <u>30 psig</u> air pressure. Do not direct air toward yourself or another person. Failure to comply could result in injury to eyes or skin. In case of injury, get medical attention.

2. Wear goggles. Blow dry No. 2 bearing pressure oil connector (1), using clean, dry, compressed air.

#### FOLLOW-ON MAINTENANCE:

Inspect No. 2 Bearing Pressure Oil Connector (Task 8-95).



#### 8-95 INSPECT NO. 2 BEARING PRESSURE OIL CONNECTOR

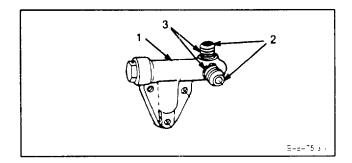
INITIAL SETUP Applicable Configurations: All Tools: Powerplant Mechanic's Tool Kit, NSN 5180-00-323-4944

Materials: None Personnel Required: Aircraft Powerplant Repairer Equipment Condition: Off Engine Task

### 1. Inspect No. 2 bearing pressure oil connector (1) as follows:

- a. There shall be no nicks, scratches, and gouges on sealing surfaces (2).
- b. There shall be no damaged threads (3).

FOLLOW-ON MAINTENANCE: None



# 8-96 INSTALL NO. 2 BEARING PRESSURE OIL CONNECTOR

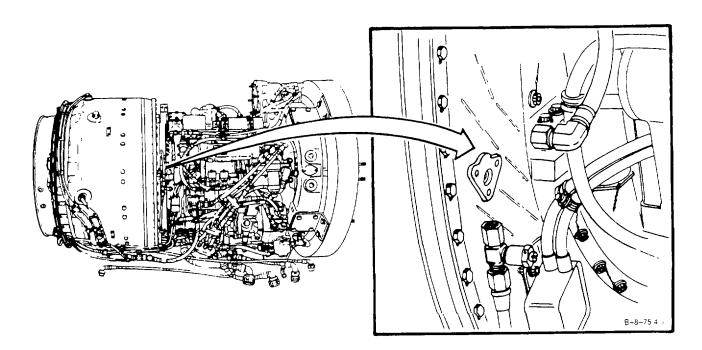
#### INITIAL SETUP Applicable Configurations: All Tools: Powerplant Mechanic's Tool Kit,

NSN 5180-00-323-4944 Technical Inspection Tool Kit, NSN 5180-00-323-5114

Materials: None

## Parts:

Packing Personnel Required: Aircraft Powerplant Repairer Aircraft Powerplant Inspector References: TM 1-2840-252-23P



GO TO NEXT PAGE

8-247

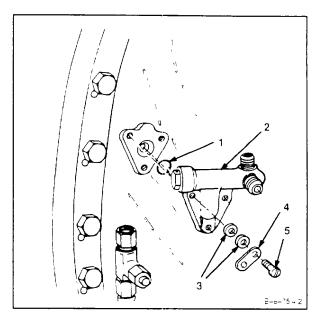
## 8-96 INSTALL NO. 2 BEARING PRESSURE OIL CONNECTOR (Continued)

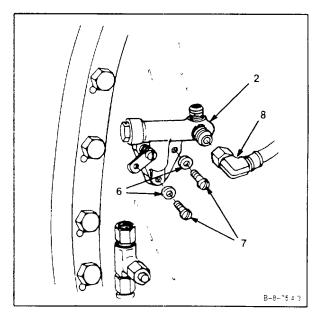
- 1. Install packing (1), No. 2 bearing pressure connector (2), two washers (3), bracket (4), and screw (5).
- 2. Install two washers (6) and two screws (7).
- 3. Connect hose assembly (8) to No. 2 bearing pressure oil connector (2).

#### INSPECT

FOLLOW-ON MAINTENANCE:

Install Tube Assembly (No. 2 Bearing Pressure Connector to Tee and Snubber) (Task 8-74).





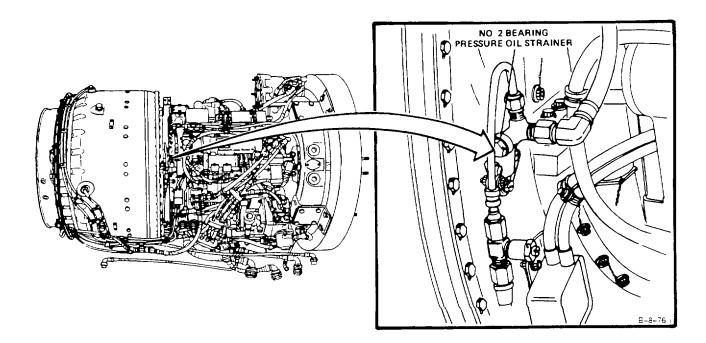
#### **SECTION XII**

#### **NO. 2 BEARING PRESSURE OIL STRAINER**

## 8-97 REMOVE NO. 2 BEARING PRESSURE OIL STRAINER

INITIAL SETUP Applicable Configurations: All Tools: Powerplant Mechanic's Tool Kit, NSN 5180-00-323-4944 Materials: None Personnel Required: Aircraft Powerplant Repairer General Safety Instructions: WARNING

Lubricating oils cause paralysis if swallowed. Prolonged contact with them may irritate the skin. Handle only in well-ventilated areas away from heat and flame. Drain and store in approved metal safety containers. Avoid prolonged or repeated contact with skin and do not take internally. Wash contacted area of skin thoroughly after handling. If irritation of skin results, get medical attention. Get medical attentionforeyes.



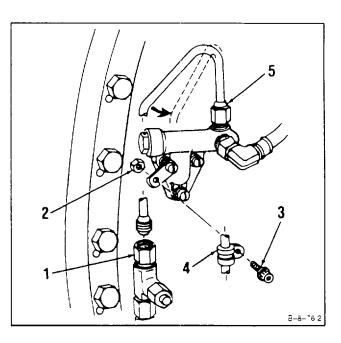
## 8-97 REMOVE NO. 2 BEARING PRESSURE OIL STRAINER (Continued)

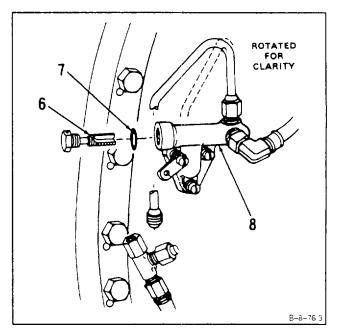
TM 1-2840-252-23-3 8-97

- 1. Disconnect oil tee and snubber (1).
- 2. Remove nut (2), bolt (3) and clamp (4).
- 3. Loosen tube assembly (5) and swing tube assembly to side.
- 4. Remove lockwire, No. 2 bearing pressure oil strainer (6) and packing (7) from No. 2 bearing pressure oil connector (8).

#### FOLLOW-ON MAINTENANCE:

None





#### 8-98 CLEAN NO. 2 BEARING PRESSURE OIL STRAINER

Applicable Configurations:	Equipment Condition:
All	Off Engine Task
Tools:	No. 2 Bearing Pressure Oil Strainer Removed
Powerplant Mechanic's Tool Kit,	(Task 8-97)
NSN 5180-00-323-4944	General Safety Instructions:
Dry, Compressed Air Source	WARNING
Goggles	Dry cleaning solvent (E19) is flammable and toxic. It
Materials:	can irritate skin and cause burns. Use only in well-
Dry Cleaning Solvent (E19)	ventilated area, away from heat and open flame. In
Gloves (E24)	case of contact, immediately flush skin or eyes with
Personnel Required:	water for at least 15 minutes. Get medical attention for
Aircraft Powerplant Repairer	eyes.

1. Wear gloves (E24). Clean strainer (1), using brush and dry cleaning solvent (E19).

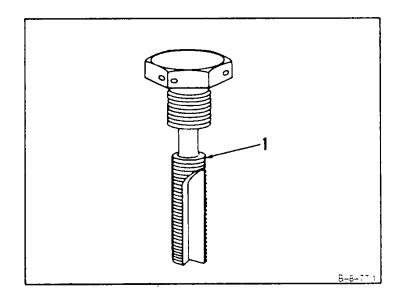
## WARNING

When using compressed air for cleaning, use approved protective equipment for eyes and face. Do not use more than <u>30 psig</u> air pressure. Do not direct air toward yourself or another person. Failure to comply could result in injury to eyes or skin. In case of Injury, get medical attention.

2. Wear goggles. Blow dry strainer (1), using clean, dry, compressed air.

#### FOLLOW-ON MAINTENANCE:

Inspect No. 2 Bearing Pressure Oil Strainer (Task 8-99).



## 8-99 INSPECT NO. 2 BEARING PRESSURE OIL STRAINER (Continued)

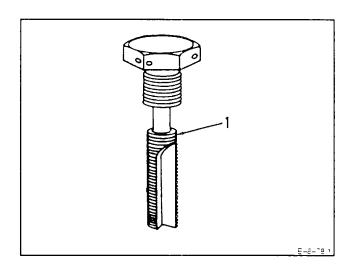
INITIAL SETUP Applicable Configurations: All Tools: Technical Inspection Tool Kit, NSN 5180-00-323-5114

Materials: None Personnel Required: Aircraft Powerplant Inspector Equipment Condition: Off Engine Task

### 1. Inspect No. 2 bearing pressure oil strainer (1). There shall be no cracks.

## FOLLOW-ON MAINTENANCE:

one



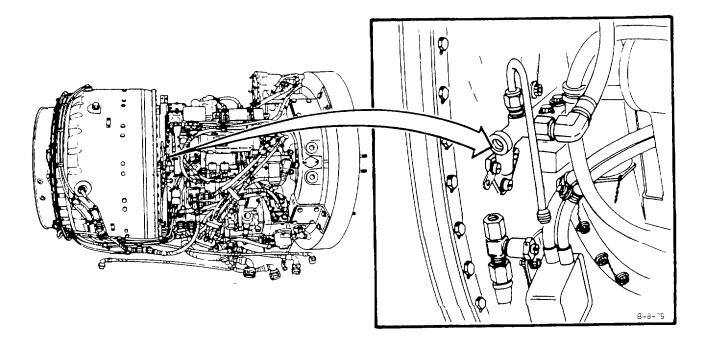
## 8-100 INSTALL NO. 2 BEARING PRESSURE OIL STRAINER

#### **INITIAL SETUP**

Applicable Configurations: All Tools: Powerplant Mechanic's Tool Kit, NSN 5180-00-323-4944 Technical Inspection Tool Kit, NSN 5180-00-323-5114 Materials: Lockwire (E33)

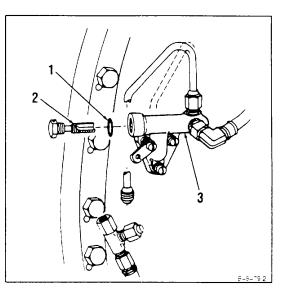
#### Parts:

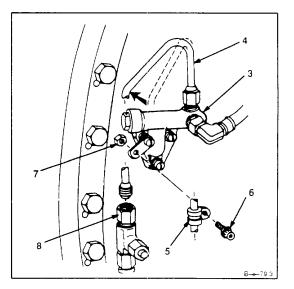
Packing Personnel Required: Aircraft Powerplant Repairer Aircraft Powerplant Inspector References: TM 1-2840-252-23P



# 8-100 INSTALL NO. 2 BEARING PRESSURE OIL STRAINER (Continued)

- 1. Install packing (1) and No. 2 bearing pressure oil strainer (2) in No. 2 bearing pressure oil connector (3). Lockwire strainer (2). Use lockwire (E33).
- 2. Swing tube assembly (4) to clamp position and install clamp (5), bolt (6), and nut (7).
- 3. Connect tube assembly (4) to No. 2 bearing pressure oil connector (3) and oil tee and snubber (8).





#### INSPECT

FOLLOW-ON MAINTENANCE: None

#### 8-101 REMOVE NO. 4 AND 5 BEARING FILTER

8-101

#### **INITIAL SETUP**

Applicable Configurations:

#### All Tools:

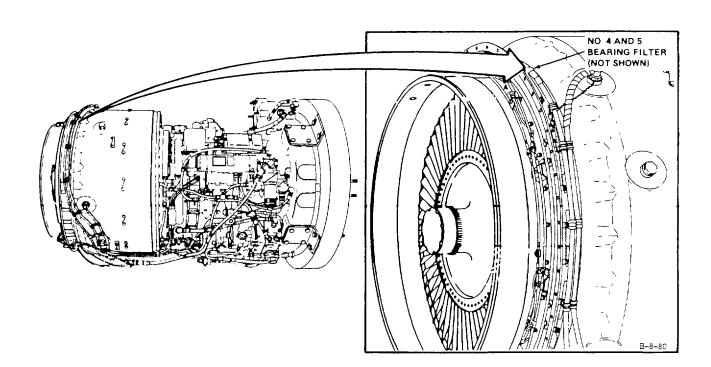
Powerplant Mechanic's Tool Kit, NSN 5180-00-323-4944 Open-End Wrench (T24) Container, 1-Quart Goggles Slave Screw, Part Number NAS1352-01-6, NSN 5305-00-224-1168

#### Materials:

Wiping Rag (E64) **Personnel Required:** Aircraft Powerplant Repairer General Safety Instructions:

#### WARNING

Lubricating oils cause paralysis if swallowed Prolonged contact with them may irritate the skin. Handle only in well-ventilated areas away from heat and flame. Drain and store in approved metal safety containers. Avoid prolonged or repeated contact with skin and do not take internally. Wash contacted area of skin thoroughly after handling. If irritation of skin results, get medical attention. Get medical attention for eyes.



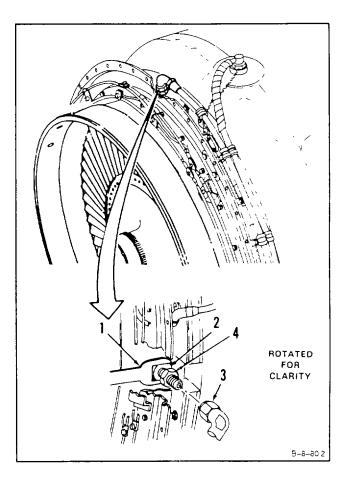
#### GO TO NEXT PAGE

8-255

## **CAUTION**

In following step, hold No. 4 and 5 bearing lube adapter using open-end wrench (T24). Failure to use wrench may result in damage and mislocation of oil transfer tube resulting in oil leaks.

- 1. Place open-end wrench (T24) (1) on No. 4 and 5 bearing lube adapter (2).
- 2. **Disconnect hose assembly (3)** from reducer (4).



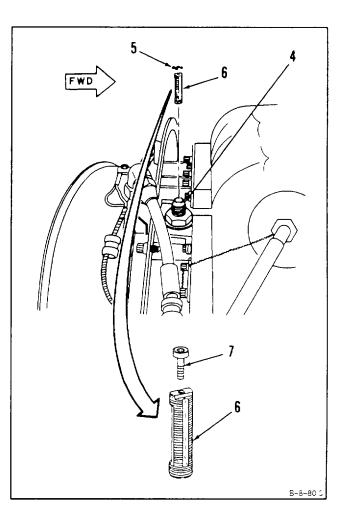
### WARNING

In following step, wear goggles when removing spring. Spring may fly apart when removed. Failure to comply may cause serious eye injury. If eye Injury occurs, get medical attention.

- 3. Remove spring (5).
- 4. **Remove filter (6)** from reducer (4). Use slave screw (7).

### NOTE

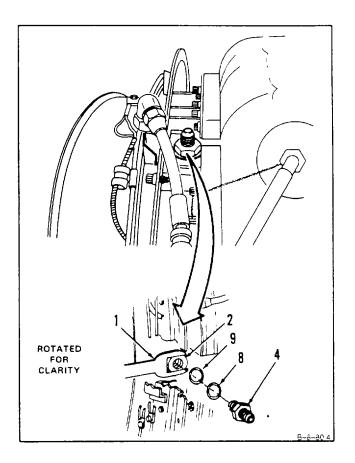
If it is not possible to remove filter from reducer, do steps 5 thru 7.

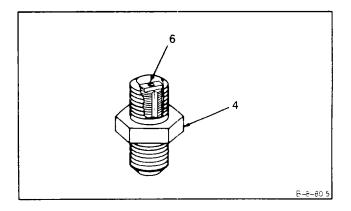


## 8-101 REMOVE NO. 4 AND 5 BEARING FILTER (Continued)

- 5. Place open-end wrench (T24) (1) on No. 4 and 5 bearing lube adapter (2).
- 6. **Remove reducer (4)**, washer (8), and shim (9) from adapter (2).
- 7. Discard reducer (4) and filter (6).

FOLLOW-ON MAINTENANCE: None





#### 8-102 CLEAN NO. 4 AND 5 BEARING FILTER

INITIAL SETUP	Equipment Condition:
Applicable Configurations:	Off Engine Task
All	No. 4 and 5 Bearing Filter Removed (Task 8-101)
Tools:	General Safety Instructions:
Powerplant Mechanic's Tool Kit,	
NSN 5180-00-323-4944	<u>WARNING</u>
Goggles	Dry cleaning solvent (E19) is flammable and toxic.
Dry, Compressed Air Source	It can irritate skin and cause burns. Use only in
Materials	well-ventilated area, away from heat and open
Dry Cleaning Solvent (E19)	flame. In case of contact, immediately flush skin
Gloves (E24)	or eyes with water for at least <u>15 minutes.</u> Get
Lint-Free Cloth (E30)	medical attention for eyes.
Personnel Required:	·
Aircraft Powerplant Repairer	

- 1. Wear gloves (E24). Clean No. 4 and 5 bearing filter (1). Use brush and dry cleaning solvent (E19).
- 2. Clean spring (2). Immerse in dry cleaning solvent (E19) and agitate.

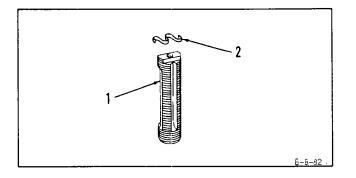
#### WARNING

When using compressed air for cleaning, use approved protective equipment for eyes and face. Do not use more than <u>30 psig</u> air pressure. Do not direct air toward yourself or another person. Failure to comply could result in injury to eyes or skin. In case of injury, get medical attention.

- 3. Wear goggles. Blow dry No. 4 and 5 bearing filter (1). Use clean, dry, compressed air.
- 4. Blow dry spring (2). Use clean, dry, compressed air).

#### FOLLOW-ON MAINTENANCE:

Inspect No. 4 and 5 Bearing Filter (Task 8-103).



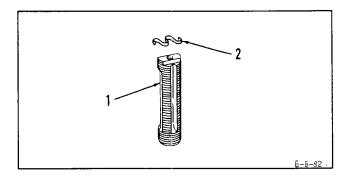
## 8-103 INSPECT NO. 4 AND 5 BEARING FILTER

INITIAL SETUP	Materials:
Applicable Configurations:	None
All	Personnel
Tools:	Aircraft
Technical Inspection Tool Kit,	Equipment
NSN 5180-00-323-5114	Öff Eng

None Personnel Required: Aircraft Powerplant Inspector Equipment Condition: Off Engine Task

- 1. Inspect No. 4 and 5 bearing filter (1). There shall be no nicks, tears, or broken segments.
- 2. Inspect spring (2). Spring shall not be broken.

FOLLOW-ON MAINTENANCE: None



### 8-104 INSTALL NO. 4 AND 5 BEARING FILTER

### INITIAL SETUP

Applicable Configurations:

## All

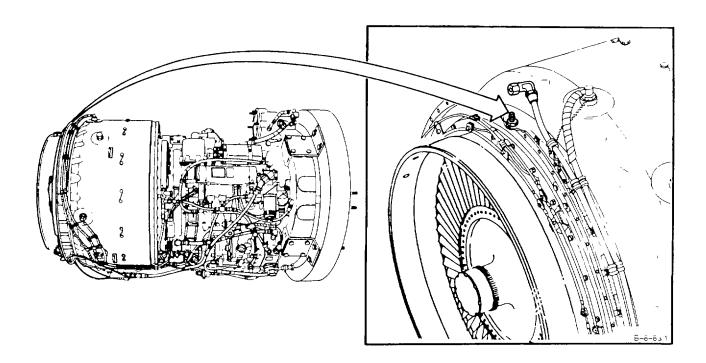
#### Tools:

Powerplant Mechanic's Tool Kit, NSN 5180-00-323-4944 Technical Inspection Tool Kit, NSN 5180-00-323-5114 Open-End Wrench (T24) Torque Wrench, 30-150 Inch-Pounds Outside Micrometer Caliper Set Goggles *Materials:* 

Lockwire (E33)

#### Personnel Required:

Aircraft Powerplant Repairer Aircraft Powerplant Inspector



8-261

#### NOTE

If reducer was removed in Task 8-101, per- form steps 1 thru 3. If reducer was not re- moved, omit steps 1 thru 3.

1. Determine shims needed under reducer (1) as follows:

#### **CAUTION**

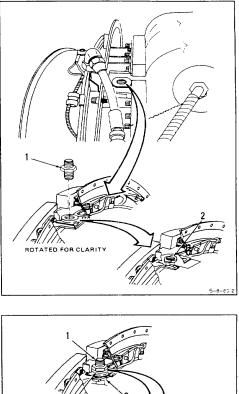
Do not tighten reducer in following step. Tightening of reducer may dam- age Internal oil tube.

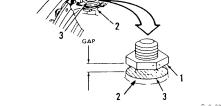
a. Thread reducer (1) in adapter (2) until it is seated.

#### CAUTION

In following step, fireshield must be seated against adapter to obtain correct measurement. Failure to do so will result in incorrect gap.

b. Seat fireshield section (3) against adapter (2) and measure gap between fireshield section and reducer (1).



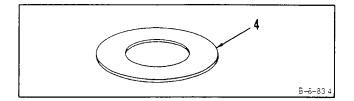


## 8-104 INSTALL NO. 4 AND 5 BEARING FILTER (Continued)

c. Find gap measured in shim selection table. Read across table to find shim thickness needed

IF GAP         SHIM THICKNESS           MEASURES         REQUIRED           INCH         INCH           0.060         NONE           0.061         NONE           0.062         0.003 to 0.005           0.063         0.003 to 0.005           0.064         0.006 to 0.010           0.066         0.006 to 0.010           0.066         0.006 to 0.010           0.067         0.006 to 0.010           0.068         0.008 to 0.012           0.069         0.008 to 0.012           0.070         0.008 to 0.012           0.071         0.009 to 0.015           0.072         0.011 to 0.017           0.073         0.011 to 0.017           0.074         0.011 to 0.017           0.075         0.012 to 0.020           0.076         0.014 to 0.022           0.077         0.016 to 0.024           0.082         0.019 to 0.029           0.083         0.019 to 0.029           0.084         0.019 to 0.029           0.085         0.022 to 0.034           0.086         0.022 to 0.034           0.086         0.022 to 0.034           0.088         0.022 to 0.034      <		
INCH         INCH           0.060         NONE           0.061         NONE           0.062         0.003 to 0.005           0.063         0.003 to 0.005           0.064         0.003 to 0.005           0.065         0.006 to 0.010           0.066         0.006 to 0.010           0.068         0.008 to 0.012           0.069         0.008 to 0.012           0.070         0.008 to 0.012           0.071         0.009 to 0.015           0.072         0.011 to 0.017           0.073         0.011 to 0.017           0.074         0.011 to 0.022           0.075         0.012 to 0.020           0.076         0.014 to 0.022           0.077         0.016 to 0.024           0.080         0.016 to 0.024           0.081         0.016 to 0.024           0.082         0.019 to 0.029           0.083         0.019 to 0.029           0.084         0.019 to 0.029           0.085         0.022 to 0.034           0.086         0.022 to 0.034           0.086         0.022 to 0.034           0.086         0.022 to 0.034           0.087         0.022 to 0.034		•••••••••••••••
0.060         NONE           0.061         NONE           0.062         0.003 to 0.005           0.063         0.003 to 0.005           0.064         0.003 to 0.005           0.065         0.006 to 0.010           0.066         0.006 to 0.010           0.067         0.006 to 0.010           0.068         0.008 to 0.012           0.070         0.008 to 0.012           0.071         0.009 to 0.015           0.072         0.011 to 0.017           0.073         0.011 to 0.017           0.074         0.011 to 0.017           0.075         0.012 to 0.020           0.076         0.014 to 0.022           0.077         0.014 to 0.022           0.078         0.016 to 0.024           0.080         0.016 to 0.024           0.081         0.019 to 0.029           0.083         0.019 to 0.029           0.084         0.019 to 0.029           0.085         0.022 to 0.034           0.086         0.022 to 0.034           0.086         0.022 to 0.034           0.086         0.022 to 0.034           0.086         0.022 to 0.034           0.087         0.022 to 0.034		
0.061         NONE           0.062         0.003 to 0.005           0.063         0.003 to 0.005           0.064         0.003 to 0.005           0.065         0.006 to 0.010           0.066         0.006 to 0.010           0.067         0.006 to 0.012           0.069         0.008 to 0.012           0.070         0.008 to 0.012           0.071         0.009 to 0.015           0.072         0.011 to 0.017           0.073         0.011 to 0.017           0.075         0.012 to 0.020           0.076         0.014 to 0.022           0.077         0.014 to 0.022           0.078         0.016 to 0.024           0.080         0.016 to 0.024           0.081         0.019 to 0.029           0.083         0.019 to 0.029           0.084         0.019 to 0.029           0.085         0.022 to 0.034           0.086         0.022 to 0.034           0.086         0.022 to 0.034           0.088         0.022 to 0.034           0.088         0.022 to 0.034		
0.062         0.003 to 0.005           0.063         0.003 to 0.005           0.064         0.003 to 0.005           0.065         0.006 to 0.010           0.066         0.006 to 0.010           0.067         0.006 to 0.012           0.069         0.008 to 0.012           0.070         0.008 to 0.012           0.071         0.009 to 0.015           0.072         0.011 to 0.017           0.073         0.011 to 0.017           0.074         0.011 to 0.017           0.075         0.012 to 0.020           0.076         0.014 to 0.022           0.077         0.014 to 0.024           0.079         0.016 to 0.024           0.080         0.016 to 0.024           0.081         0.019 to 0.029           0.083         0.019 to 0.029           0.084         0.019 to 0.029           0.085         0.022 to 0.034           0.086         0.022 to 0.034           0.086         0.022 to 0.034           0.088         0.022 to 0.034	0.060	
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$		
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	0.062	0.003 to 0.005
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	0.063	0.003 to 0.005
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	0.064	
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	0.065	0.006 to 0.010
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	0.066	0.006 to 0.010
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	0.067	0.006 to 0.010
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	0.068	0.008 to 0.012
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	<u>0.069</u>	0.008 to 0.012
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	<u>0.070</u>	0.008 to 0.012
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	<u>0.071</u>	0.009 to 0.015
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	<u>0.072</u>	0.011 to 0.017
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	<u>0.073</u>	0.011 to 0.017
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	<u>0.074</u>	0.011 to 0.017
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	<u>0.075</u>	0.012 to 0.020
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	<u>0.076</u>	0.014 to 0.022
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	<u>0.077</u>	0.014 to 0.022
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	<u>0.078</u>	0.016 to 0.024
0.081         0.016 to 0.024           0.082         0.019 to 0.029           0.083         0.019 to 0.029           0.084         0.019 to 0.029           0.085         0.022 to 0.034           0.086         0.022 to 0.034           0.087         0.022 to 0.034           0.088         0.022 to 0.034           0.089         0.024 to 0.036	<u>0.079</u>	0.016 to 0.024
0.082         0.019 to 0.029           0.083         0.019 to 0.029           0.084         0.019 to 0.029           0.085         0.022 to 0.034           0.086         0.022 to 0.034           0.087         0.022 to 0.034           0.088         0.022 to 0.034           0.089         0.024 to 0.036	<u>0.080</u>	0.016 to 0.024
0.083         0.019 to 0:029           0.084         0.019 to 0.029           0.085         0.022 to 0.034           0.086         0.022 to 0.034           0.087         0.022 to 0.034           0.088         0.022 to 0.034           0.089         0.024 to 0.036	<u>0.081</u>	0.016 to 0.024
0.084         0.019 to 0.029           0.085         0.022 to 0.034           0.086         0.022 to 0.034           0.087         0.022 to 0.034           0.088         0.022 to 0.034           0.089         0.024 to 0.036	0.082	0.019 to 0.029
0.085         0.022 to 0.034           0.086         0.022 to 0.034           0.087         0.022 to 0.034           0.088         0.022 to 0.034           0.089         0.024 to 0.036	<u>0.083</u>	0.019 to 0:029
0.086         0.022 to 0.034           0.087         0.022 to 0.034           0.088         0.022 to 0.034           0.089         0.024 to 0.036	<u>0.084</u>	0.019 to 0.029
0.087         0.022 to 0.034           0.088         0.022 to 0.034           0.089         0.024 to 0.036	<u>0.085</u>	0.022 to 0.034
0.088         0.022 to 0.034           0.089         0.024 to 0.036	<u>0.086</u>	0.022 to 0.034
0.089 0.024 to 0.036	<u>0.087</u>	0.022 to 0.034
	0.088	0.022 to 0.034
0.090 0.024 to 0.036	0.089	0.024 to 0.036
	0.090	0.024 to 0.036

d. Measure thickness of shims (4). Check against shim selection table. Use outside micrometer caliper.



#### **CAUTION**

Concave side of washer must face fire- shield section. Failure to comply will place wrong tension on internal oil tube.

#### CAUTION

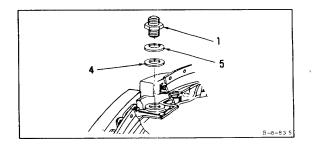
Do not tighten reducer in following step. Tightening of reducer may damage internal oil tube.

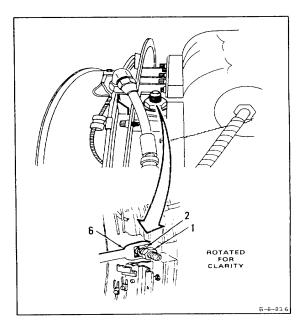
2. Remove reducer (1). Loosely install shims (4), washer (5), concave side down, and reducer (1).

#### CAUTION

Adapter must be held firmly when tightening reducer. Failure to comply will cause damage to internal tube assembly.

3. Hold adapter (2) with open-end wrench (T24) (6). **Torque reducer (1) to <u>115 inch-pounds</u>** and lockwire. Use lockwire (E33).





#### WARNING

In following step, wear goggles when installing spring. Spring may fly apart when installing. Failure to comply may cause serious eye injury. If eye injury occurs, get medical attention.

#### CAUTION

In following step, be sure that filter is installed in reducer with small diameter hole facing up. Failure to comply will cause less oil flow to bearings and result in bearing failure.

4. Wear goggles. Install No. 4 and 5 bearing filter (7) and spring (8) in reducer (1).

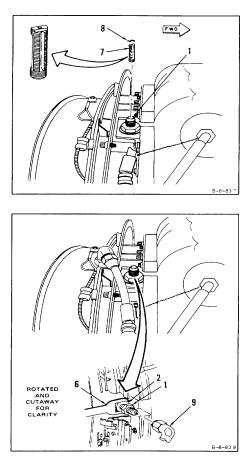
#### CAUTION

In following step, hold No. 4 and 5 bearing lube adapter using open-end wrench (T24). Failure to use wrench may result in damage and mislocation of oil transfer tube resulting in oil leaks.

- 5. Place open-end wrench (T24) (6) on adapter (2).
- 6. Install hose assembly (9) on reducer (1).

#### INSPECT

FOLLOW-ON MAINTENANCE: None



#### **SECTION XIV**

#### **OIL DRAIN COCK**

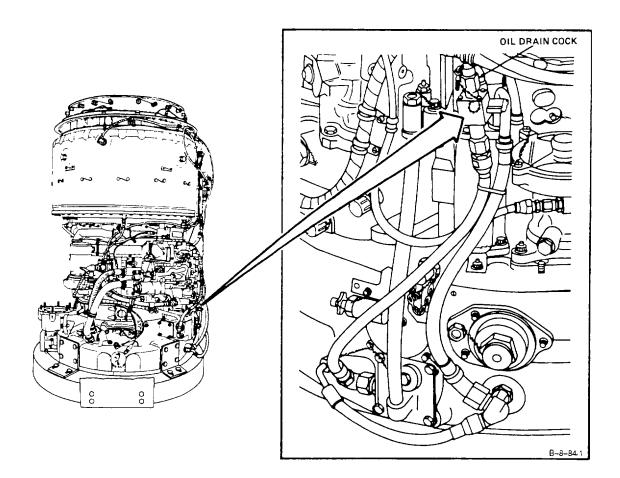
#### 8-105 REMOVE OIL DRAIN COCK

## INITIAL SETUP

Applicable Configurations: All Tools: Powerplant Mechanic's Tool Kit, NSN 5180-00-323-4944 Container, 1-Quart Materials: Wiping Rag (E64) Personnel Required: Aircraft Powerplant Repairer Equipment Condition: Engine Oil System Drained (Task 1-69) **General Safety Instructions:** 

#### WARNING

Lubricating oils cause paralysis if swallowed. Prolonged contact with them may irritate the skin. Handle only in well-ventilated areas away from heat and flame. Drain and store in approved metal safety containers. Avoid prolonged or repeated contact with skin and do not take internally. Wash contacted area of skin thoroughly after handling. If irritation of skin results, get medical attention. Get medical attention for eyes.



GO TO NEXT PAGE

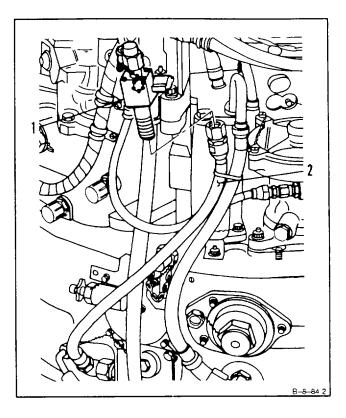
8-267

## 8-105 REMOVE OIL DRAIN COCK (Continued)

1. Remove oil drain cock (1) from hose assembly (2).

## FOLLOW-ON MAINTENANCE:

None



#### 8-106 CLEAN OIL DRAIN COCK

INITIAL SETUP Applicable Configurations: All Tools: Goggles Dry, Compressed Air Source Materials: Dry Cleaning Solvent (E19) Gloves (E24) Lint-Free Cloth (E30) Personnel Required: Aircraft Powerplant Repairer Equipment Condition:

Off Engine Task Oil Drain Cock Removed (Task 8-105) General Safety Instructions:

#### WARNING

Dry cleaning solvent (E19) is flammable and toxic. It can irritate skin and cause burns. Use only in well-ventilated area, away from heat and open flame. In case of contact, immediately flush skin or eyes with water for at least <u>15 minutes</u>. Get medical attention for eyes.

1. Remove cap (1).

#### NOTE

#### Make sure valve is in open position in following step 2.

- 2. Clean oil drain cock (2) as follows:
  - a. Wear gloves (E24). Immerse in dry cleaning solvent (E19) and agitate. Use brush on external surfaces.
  - b. Use lint-free cloth (E30) to remove solvent.

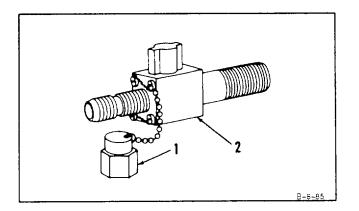
#### WARNING

When using compressed air for cleaning, use approved protective equipment for eyes and face. Do not use more than <u>30 psig</u> air pressure. Do not direct air toward yourself or another person. Failure to comply could result in injury to eyes or skin. In case of injury, get medical attention.

c. Wear goggles and blow dry internal passage. Use clean, dry, compressed air.

## FOLLOW-ON MAINTENANCE:

Inspect Oil Drain Cock (Task 8-107).

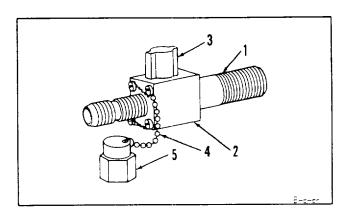


#### 8-107 INSPECT OIL DRAIN COCK INITIAL SETUP Applicable Configurations: All Tools: Technical Inspection Tool Kit, NSN 5180-00-323-5114

Materials: None Personnel Required: Aircraft Powerplant Inspector

- 1. Inspect oil drain cock (1) as follows:
  - a. Inspect housing (2). There shall be no cracks.
  - b. Turn valve (3). There shall be no binding.
  - c. Inspect chain (4). There shall be broken links.
- 2. Install cap (5).
- FOLLOW-ON MAINTENANCE:

None

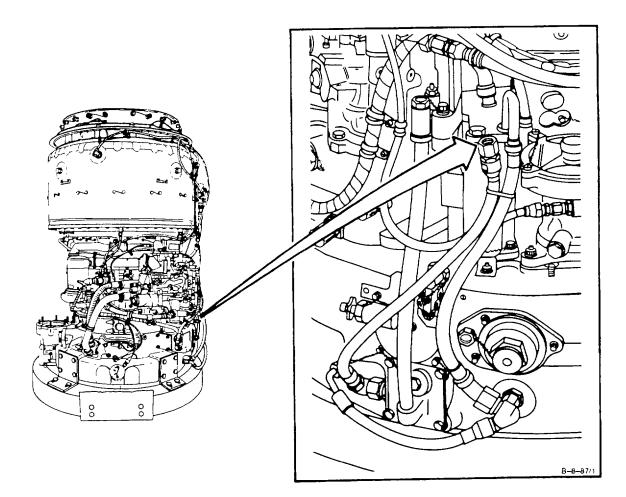


#### INITIAL SETUP Applicable Configurations: All Tools: Powerplant Mechanic's Tool Kit, NSN 5180-00-323-4944 Technical Inspection Tool Kit, NSN 5180-00-323-5114 Materials:-Wiping Rag (E64) Personnel Required: Aircraft Powerplant Repairer Aircraft Powerplant Inspector

General Safety Instructions:

#### WARNING

Lubricating oils cause paralysis if swallowed. Prolonged contact with them may irritate the skin. Handle only in well-ventilated areas away from heat and flame. Drain and store in approved metal safety containers. Avoid pro longed or repeated contact with skin and do not take internally. Wash contacted area of skin thoroughly after handling. If irritation of skin results, get medical attention. Get medical attention for eyes.

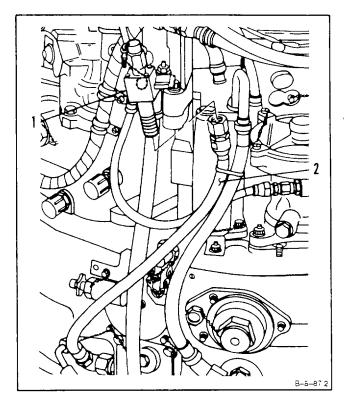


## 8-108 INSTALL OIL DRAIN COCK (Continued)

1. Install oil drain cock (1) on hose assembly (2).

### INSPECT

FOLLOW-ON MAINTENANCE: Service Engine Oil System (Task 1-68).



### SECTION XV CHIP DETECTOR

#### 8-109 REMOVE CHIP DETECTOR

## INITIAL SETUP

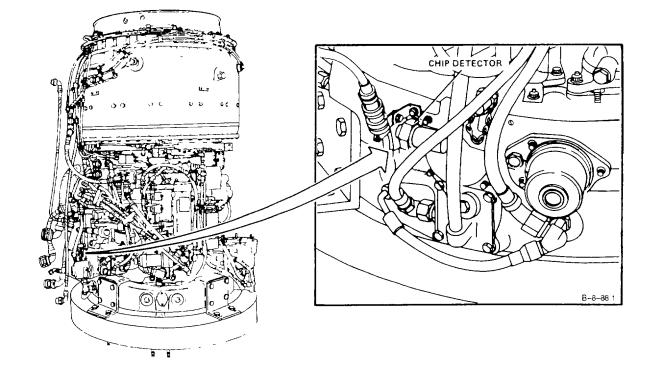
Applicable Configurations: All Tools: Powerplant Mechanics' Tool Kit, NSN 5180-00-323-4944 Materials: Wiping Rag (E64) Personnel Required: Aircraft Powerplant Repairer

#### **Equipment Condition:**

Engine Oil System Drained (Task 1-69)

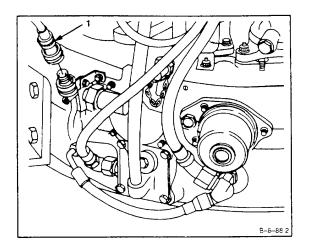
#### General Safety Instructions: WARNING

Lubricating oils cause paralysis if swallowed. Prolonged contact with them may irritate the skin. Handle only in well-ventilated areas away from heat and flame. Drain and store in approved metal safety containers. Avoid prolonged or repeated contact with skin and do not take internally. Wash contacted area of skin thoroughly after handling. If irritation of skin results, get medical attention. Get medical attention for eyes.

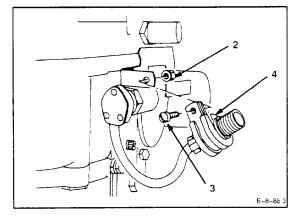


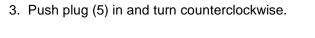
## 8-109 REMOVE CHIP DETECTOR (Continued)

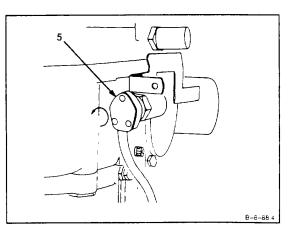
1. Disconnect electrical connector (1).



2. Remove nut (2), screw (3), and clamp (4).



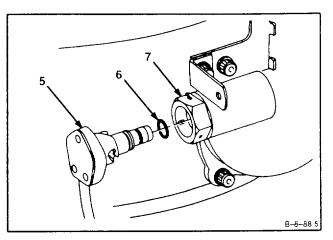




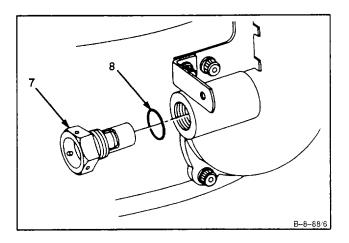
## 8-109 REMOVE CHIP DETECTOR (Continued)

4. Remove plug (5) and packing (6) from housing (7).

5. Inspect plug (5). There shall be no contamination, or chips. If contamination or chips are found, Inspect Contaminated Oil System (Ref. Task 1-80).



6. Remove lockwire, housing (7) and packing (8).

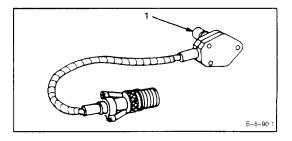


FOLLOW-ON MAINTENANCE: None

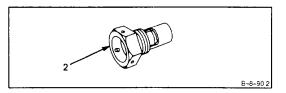
	TM 1-2840-252-23-3	
8-110 CLEAN CHIP DETECTOR	8-110	
INITIAL SETUP	General Safety Instructions:	
Applicable Configurations:	WARNING	
All	Dry cleaning solvent (E19) is flammable	
Tools:	and toxic. It can irritate skin and cause	
Powerplant Mechanic's Tool Kit,	burns. Use only in well-ventilated area,	
NSN 5180-00-323-4944	away from heat and open flame. In case	
Goggles Dry, Compressed Air Source	of contact, immediately flush skin or	
Materials:	eyes with water for at least 15 minutes.	
Dry Cleaning Solvent (E19)	Get medical attention for eyes.	
Gloves (E24)	WARNING	
Lint-Free Cloth (E30)	When using compressed air for clean-	
Personnel Required:	ing, use approved protective equipment	
Aircraft Powerplant Repairer	for eyes and face. Do not use more than	
Equipment Condition:	30 psig air pressure. Do not direct air	
Off Engine Task	toward yourself or another person. Fail-	
Engine Oil System Drained (Task 1-69)	ure to comply could result in injury to	
Chip Detector Removed (Task 8-109)	eys or skin. In case of injury, get medi-	
	cal attention.	

#### 1. Clean plug (1) as follows:

- a. Wear gloves (E24). Clean plug (1) with dry cleaning solvent (E19) and agitate. Use brush on external surfaces.
- b. Use lint-free cloth (E30) to remove solvent.
- c. Wear goggles. Blow dry plug. Use clean, dry, compressed air.



- 2. Clean housing (2) as follows:
  - a. Immerse in dry cleaning solvent (E19) and agitate. Use brush on external surfaces.
  - b. Use lint-free cloth (E30) to remove solvent.
  - c. Wear goggles. Blow dry internal passage. Use clean, dry, compressed air.



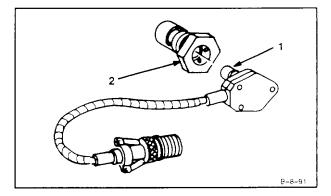
FOLLOW-ON MAINTENANCE: Inspect Chip Detector (Task 8-111).

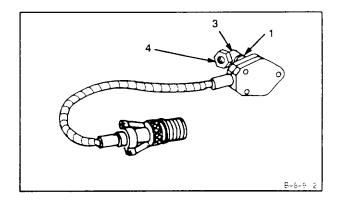
8-111 INSPECT CHIP DETECTOR	8-111
INITIAL SETUP	Materials:
Applicable Configurations:	None
All	Personnel Required:
Tools:	Aircraft Powerplant Inspector
Technical Inspection Tool Kit,	Equipment Condition:
NSN 5180-00-323-5114	Off Engine Task
Steel Nut, 1/4-28	-

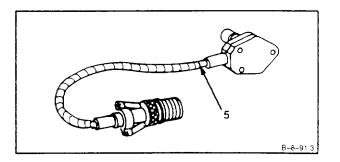
1. Inspect plug (1) and housing (2). There shall be no cracks.

2. Check strength of magnet (3) on plug (1) by placing<u>1/4</u>-28 steel nut (4) against it. Magnet (3) shall be strong enough to support weight of steel nut (4).

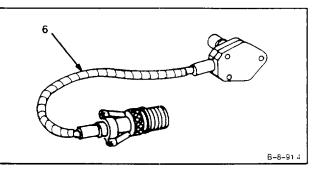
3. Inspect cable assembly (5). There shall be no frayed or burned installation. There shall be no loose connections or broken wires.



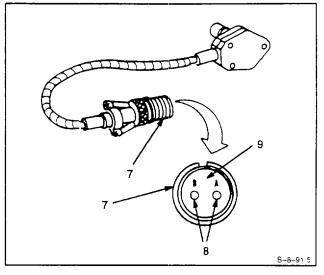




4. Inspect sleeving (6). There shall be no frayed or broken sleeving.



5. Inspect electrical connector (7). There shall be no corrosion, broken or bent sleeves (8) or cracked insulation (9).



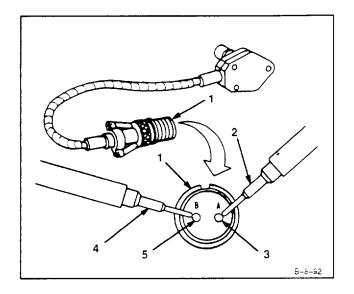
FOLLOW-ON MAINTENANCE: None

### 8-112 TEST CHIP DETECTOR INITIAL SETUP Applicable Configurations: All Tools: Multimeter

Materials: None Personnel Required: Aircraft Powerplant Repairer Equipment Condition: Off Engine Task

1. Measure insulation resistance of chip detector (1) as follows: Use multimeter.

- a. Set multimeter range switch to R X 1000.
- b. Touch red probe (2) to pin A (3).
- c. touch black probe (4) to pin B (5).
- d. Meter shall indicate 10.000 ohms minimum.

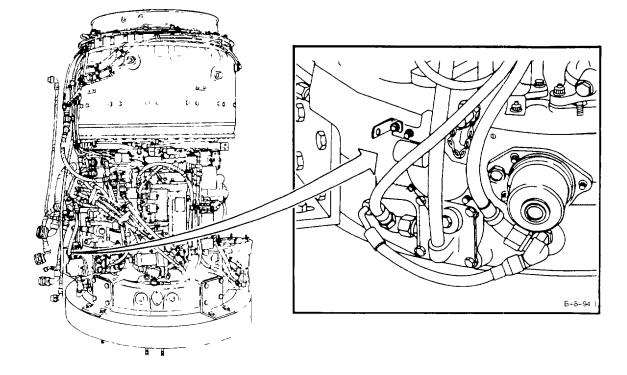


FOLLOW-ON MAINTENANCE: None

#### 8-113 INSTALL CHIP DETECTOR

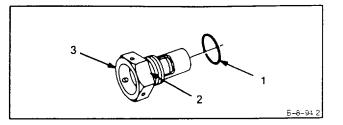
#### INITIAL SETUP Applicable Configurations: All Tools: Powerplant Mechanic's Tool Kit, NSN 5180-00-323-4944 Technical Inspection Tool Kit, NSN 5180-00-323-5114 Crowfoot Attachment, 7/8-Inch Torque Wrench, 30-150 Inch-Pounds

#### Materials: Lockwire (E33) Packings Personnel Required: Aircraft Powerplant Repairer Aircraft Powerplant Inspector References: TM 1-2840-252-23P

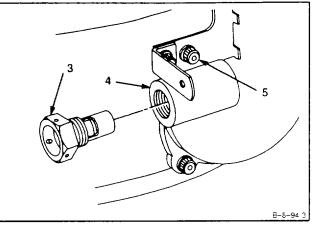


#### 8-113 INSTALL CHIP DETECTOR (Continued)

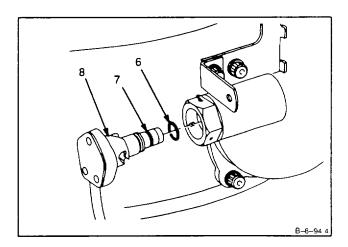
1. Install packing (1) in groove (2) on chip detector housing (3).



2. Install chip detector (3) in housing (4). Torque to 95 inch-pounds. Use crowfoot attachment.



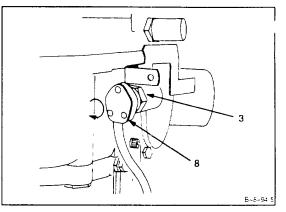
3. Lockwire chip detector (3) to bolt (5). Use lock-wire (E33).



4. Install packing (6) in groove (7) on plug (8).

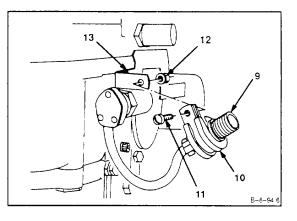
## 8-113 INSTALL CHIP DETECTOR (Continued)

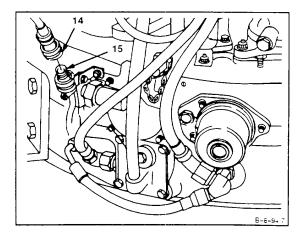
5. Install plug (8) in chip detector housing (3). Lock plug (8) by pushing in and turning clockwise.



- 6. Insert electrical connector (9) into clamp (10).
- 7. Install clamp (10), screw (11), and nut (12) to bracket (13).







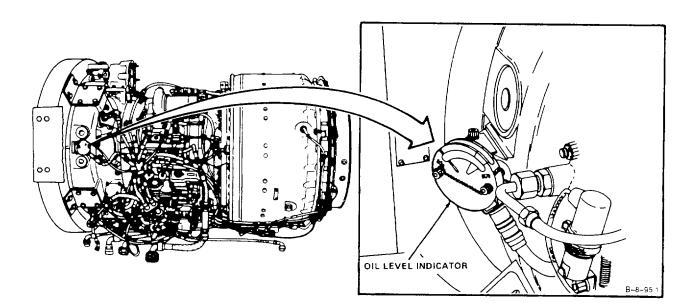
FOLLOW-ON MAINTENANCE: None

#### SECTION XVI OIL LEVEL INDICATOR

#### 8-114 REMOVE OIL LEVEL INDICATOR

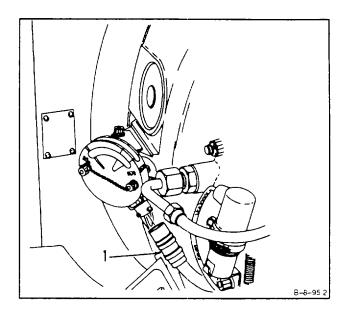
## INITIAL SETUP

Applicable Configurations: All Tools: Powerplant Mechanic's Tool Kit, NSN 5180-00-323-4944 Materials: Twine (E52) Wiping Rag (E64) Personnel Required: Aircraft Powerplant Repairer Equipment Condition: Engine Oil System Drained (Task 1-69)

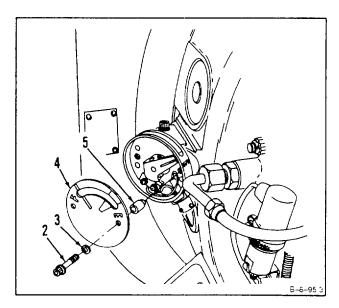


## 8-114 REMOVE OIL LEVEL INDICATOR (Continued)

1. Disconnect electrical connector (1).



2. Remove lockwire, two bolts (2), two washers (3), cover (4), and two spacers (5).

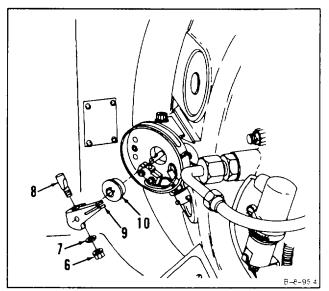


## 8-114 REMOVE OIL LEVEL INDICATOR (Continued)

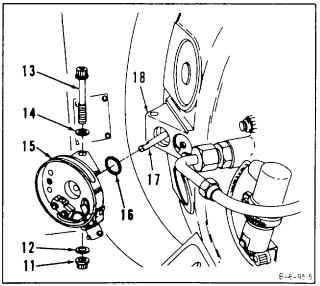
In following steps 3 and 4, do not let shaft of float slip back into housing. Failure to comply will result in engine damage.

CAUTION

3. Remove nut (6), washer (7), bolt (8), pointer (9), and washer (10).



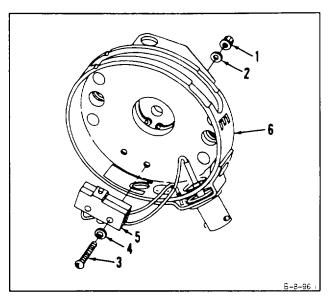
- 4. Remove nut (11), washer (12), bolt (13), washer (14), housing assembly (15), and packing (16).
- 5. Secure shaft (17) with twine (E52) to keep it from slipping back into inlet housing (18).



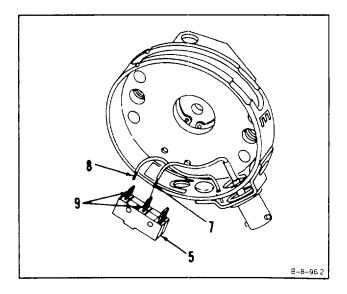
FOLLOW-ON MAINTENANCE: None

8-115 DISASSEMBLE OIL LEVEL INDICATOR	8-115
INITIAL SETUP	Materials:
Applicable Configurations:	None
All	Personnel Required:
Tools:	Aircraft Powerplant Repairer
Powerplant Mechanic's Tool Kit,	Aircraft Electrician
NSN 5180-00-323-4944	Equipment Condition:
Soldering Iron, 15/32-Pound	Off Engine Task
Twist Drill, 15/64-Inch	Oil Level Indicator Removed (Task 8-114)
Retaining Ring Pliers	

1. Remove two nuts (1), two washers (2), two screws (3), two washers (4), and pull switch (5) clear of housing (6).

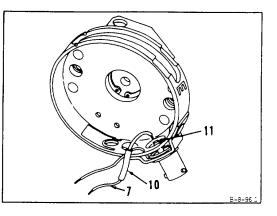


2. Unsolder two wires (7 and 8) from two switch terminals (9) and remove switch (5).

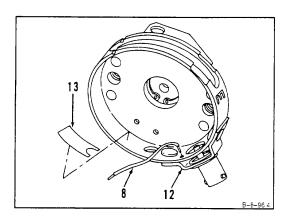


## 8-115 DISASSEMBLE OIL LEVEL INDICATOR (Continued)

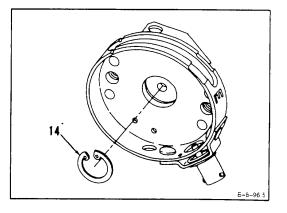
3. Slide insulation sleeving (10) back along wire (7). Unsolder and remove wire (7) from electrical connector pin (11).



- 4. Unsolder and remove wire (8) from bracket (12).
- 5. Remove tape (13).

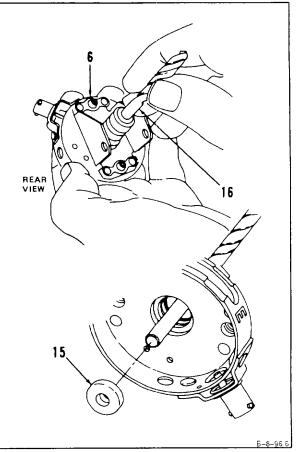


6. Remove retaining ring (14). Use retaining ring pliers.

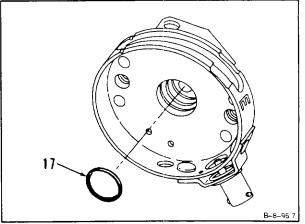


#### DISASSEMBLE OIL LEVEL INDICATOR (Continued) 8-115

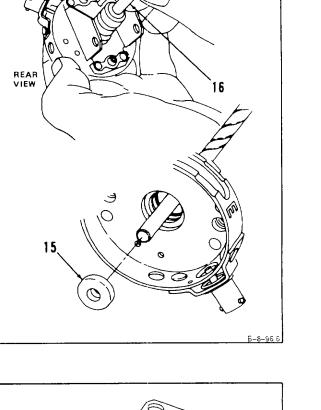
7. Remove seal (15). Push out from rear of housing (6). Use shaft of twist drill (16) as pusher.



8. Remove packing (17).



FOLLOW-ON MAINTENANCE: None

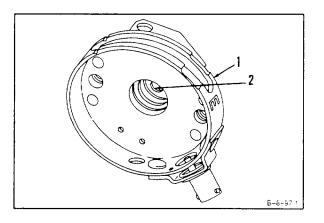


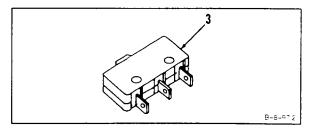
	TM 1-2840-252-23-	
8-116 CLEAN OIL LEVEL INDICATOR	8-116	
INITIAL SETUP Applicable Configurations: All Tools: Powerplant Mechanic's Tool Kit, NSN 5180-00-323-4944 Goggles Dry, Compressed Air Source Materials: Dry Cleaning Solvent (E19) Gloves (E24) Lint-Free Cloth (E30)	8-116 General Safety Instructions: WARNING Dry cleaning solvent (E19) is flammable and toxic. It can irritate skin and cause burns. Use only in well- ventilated area, away from heat and open flame. In case of contact, immediately flush skin or eyes with water for at least 15 minutes. Get medical attention for eyes. WARNING When using compressed air for cleaning, use approved protective equipment for eyes and face.	
Personnel Required: Aircraft Powerplant Repairer Equipment Condition: Off Engine Task Oil Level Indicator Removed (Task 8-114) Oil Level Indicator Disassembled (Task 8-115)	Do not use more than 30 psig air pressure. Do not direct air toward yourself or another person. Failure to comply could result in injury to eyes or skin. In case of injury, get medical attention.	

- 1. Wear gloves (E24) and clean housing (1). Use dry cleaning solvent (E19) and brush.
- 2. Wipe dry using lint-free cloth (E30).
- 3. Wear goggles. Blow dry internal passage (2). Use clean. dry compressed air.
- 4. Clean switch (3) using lint-free cloth (E30) dampened in dry cleaning solvent (E19).
- 5. Blow dry switch (3) using clean, dry, compressed air.

## FOLLOW-ON MAINTENANCE:

Inspect Oil Level Indicator (Task 8-117).

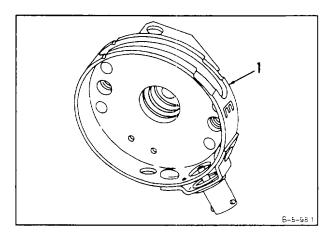




8-117 INSPECT OIL LEVEL INDICATOR INITIAL SETUP Applicable Configurations: All Tools: Technical Inspection Tool Kit, NSN 5180-00-323-5114

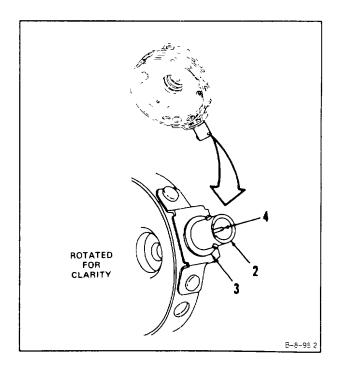
Materials: None Personnel Required: Aircraft Powerplant Inspector Equipment Condition: Off Engine Task

1. Inspect housing (1). There shall be no cracks.



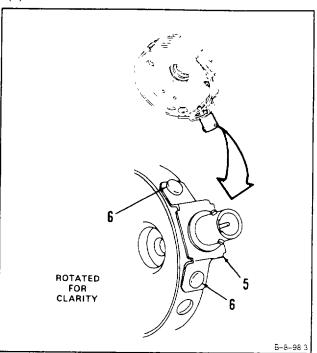
#### 2. Inspect electrical connector (2).

- a. There shall be no cracks, corrosion, or looseness at joint (3).
- b. Pin (4) shall not be bent, broken, or corroded.

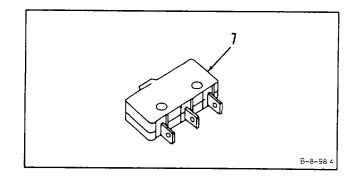


### 8-117 INSPECT OIL LEVEL INDICATOR (Continued)

3. Inspect bracket (5). There shall be no cracks or loose rivets (6).



4. Inspect switch (7). There shall be no cracks.



FOLLOW-ON MAINTENANCE: None

#### 8-118 REPAIR OIL LEVEL INDICATOR

## INITIAL SETUP

# Applicable Configurations:

Tools: Powerplant Mechanic's Tool Kit, NSN 5180-00-323-4944

Technical Inspection Tool Kit, NSN 5180-00-323-5114 Soldering Iron, 15/32-Pound Stainless Steel Wire Brush

## 8-118

Materials: Black Baking Enamel (E9) Crocus Cloth (E16) Solder (E54) Personnel Required: Aircraft Powerplant Repairer Aircraft Electrician Aircraft Powerplant Inspector Equipment Condition: Off Engine Tank

1. Repair loose electrical connector (1) as follows:

a. Remove all surface contamination near joint (2). Use stainless steel wire brush.

b. Solder joint (2). Use solder (E54) and soldering iron.

2. Repair electrical connector pin (3) as follows:

## NOTE

This repair is allowed provided it does not cause pin to break or crack.

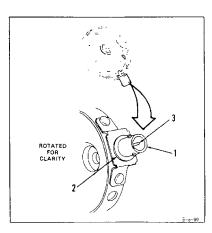
a. Straighten bent pin (3). Use long nose pliers to gently move pin (3) until it is straight.

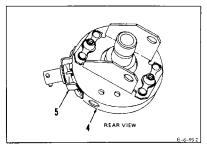
b. Remove corrosion from pin (3). Polish pin (3), using in and out motion over entire length of pin until corrosion is removed. Use crocus cloth (EI 6).

3. Repair damaged paint on outside of housing (4) and bracket (5). Use black baking enamel (E9).

## INSPECT

FOLLOW-ON MAINTENANCE: None





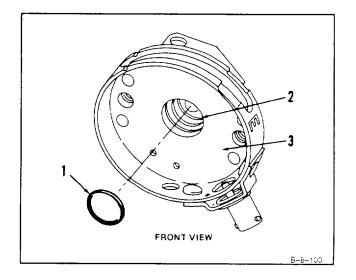
**END OF TASK** 

8-292

8-119 A	ASSEMBLE OIL LEVEL INDICATOR	
INITIAL SE	TUP	Solde
Applicable	Configurations:	Wire
All		Parts:
Tools:		Packi
Power	rplant Mechanic's Tool Kit,	Seal
Ν	ISN 5180-00-323-4944	Personnel
Techn	ical Inspection Tool Kit,	Aircra
Ν	ISN 5180-00-323-5114	Aircra
Twist	Drill, 15/64-Inch	Aircra
Retair	ning Ring Pliers	Reference
Solde	ring Iron, 15/32-Pound	TM 1-
Materials:		Equipmen
Insula	tion Sleeving (E28)	Off Er
Press	ure Sensitive Teflon Tape (E46)	

Solder (E54) Wire (E65) Parts: Packing Seal Personnel Required: Aircraft Powerplant Repairer Aircraft Electrician Aircraft Powerplant Inspector References: TM 1-2840-252-23P Equipment Condition: Off Engine Task

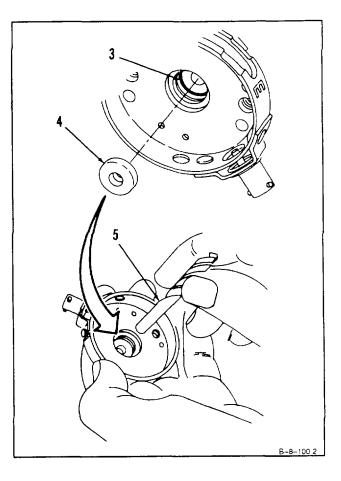
1. Install packing (1) in groove (2) in housing (3).

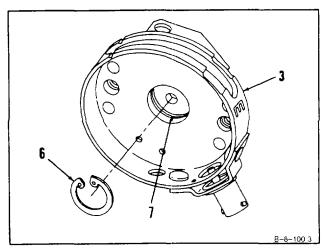


## 8-119 ASSEMBLE OIL LEVEL INDICATOR (Continued)

8-119

- 2. Install seal (4) in housing (3). Use shaft of twist drill (5) to push seal (4) into housing until fully seated.
- 3. Install retaining ring (6) in groove (7) in housing (3). Use retaining ring pliers.





#### 8-119 ASSEMBLE OIL LEVEL INDICATOR (Continued)

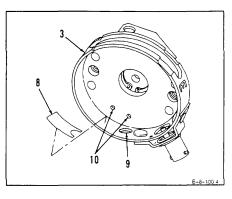
8-119

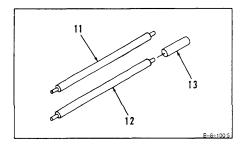
# CAUTION

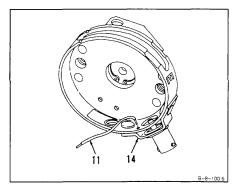
In following step 4, do not cover drain hole with tape. Failure to comply could cause accumulation of oil. This could cause faulty oil level Indication.

4. Install teflon tape (8) inside housing (3). Use Pressure sensitive teflon tape (E46). Do not cover drain hole (9). Center teflon tape between switch mounting holes (10).

- 5. Install two wires (11 and 12) as follows:
  - a. Cut wires (11 and 12) to 1-1/2-inch length. Use wire ((E65).
  - b. Strip both ends of wires (11 and 12) to 1/4-inch length.
  - c. Tin both ends of wires (11 and 12). Use solder (E54) and soldering iron.
  - d. Cut 1/2-inch piece of insulation sleeving (E28). Slide sleeving (13) over wire (12).
  - e. Solder wire (11) to bracket (14). Use solder (E54) and soldering iron.



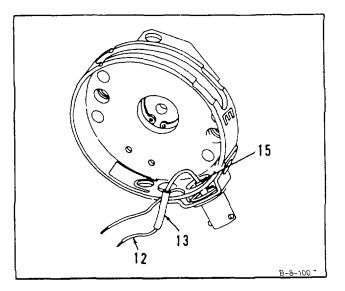


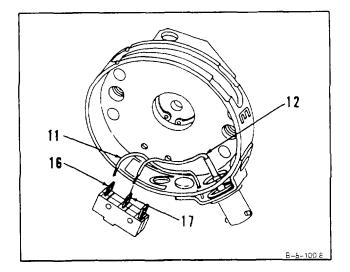


### 8-119 ASSEMBLE OIL LEVEL INDICATOR (Continued)

f. Solder wire (12) to electrical connector pin (15). Use solder (E54) and soldering iron. Slide insulation sleeving (13) over pin (15).

- g. Solder wire (11) to switch terminal (16). Use solder (E54) and soldering iron.
- h. Solder wire (12) to switch terminal (17). Use solder (E54) and soldering iron.





8-119

### 8-119 ASSEMBLE OIL LEVEL INDICATOR (Continued)

8-119

CAUTION

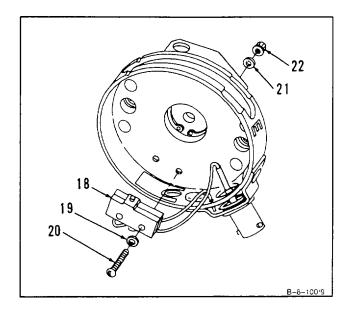
### In following step 6, do not strain or kink wires. Defective wiring could cause faulty oil level indication.

6. Install switch (18), two washers (19), two screws (20), two washers (21), and two nuts (22).

#### INSPECT

FOLLOW-ON MAINTENANCE:

None



### 8-120 INSTALL OIL LEVEL INDICATOR

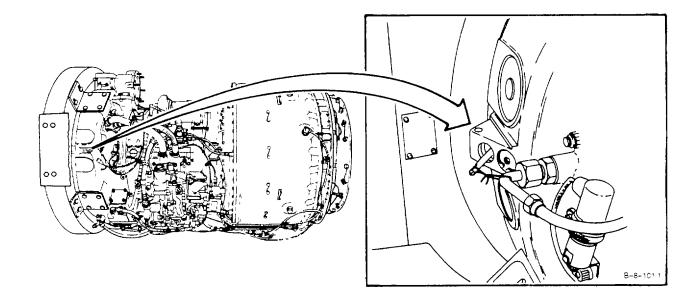
INITIAL SETUP Applicable Configurations:

## All

Tools: Powerplant Mechanic's Tool Kit, NSN 5180-00-323-4944 Technical Inspection Tool Kit, NSN 5180-00-323-5114 Torque Wrench, 0-30 Inch-Pounds Materials:

Lockwire (E33)

#### Parts: Packing Personnel Required: Aircraft Powerplant Repairer Aircraft Powerplant Inspector References: TM 1-2840-252-23P Task 8-121



### 8-120

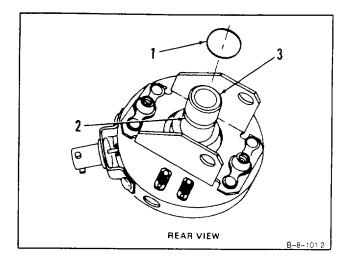
### 8-120 INSTALL OIL LEVEL INDICATOR (Continued)

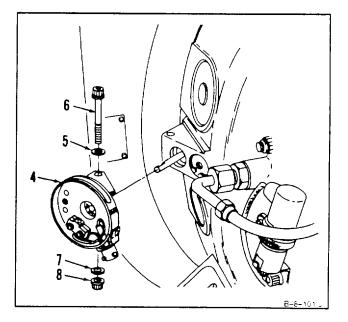
1. Install packing (1) in groove (2) in shaft (3).

### NOTE

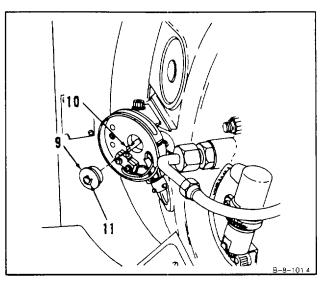
In following steps 2 thru 5, do not let shaft of float slip back into inlet housing.

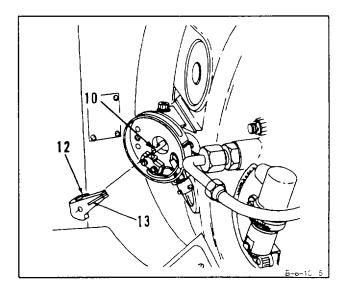
2. Remove twine. Install assembly (4), washer (5), bolt (6), washer (7), and nut (8).





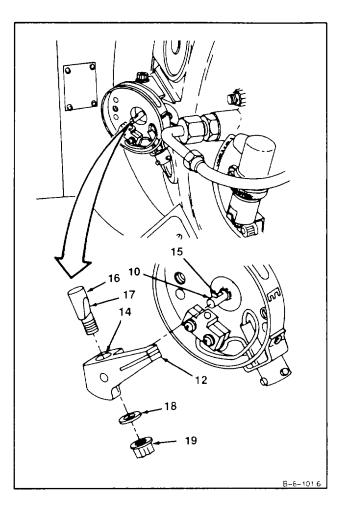
- 3. Install washer (9) on shaft (10) with smaller diameter (11) facing out.
- 4. Install pointer (12) on shaft (10) with white stripe (13) facing out.





### 8-120 INSTALL OIL LEVEL INDICATOR (Continued)

- 5. Position pointer (12) on shaft (10), so hole (14) is aligned with notch (15).
- 6. Install bolt (16) with flat (17) against notch (15). Install washer (18) and nut (19).



### 8-120 INSTALL OIL LEVEL INDICATOR (Continued)

7. Adjust oil level indicator (Ref. Task 8-121, steps 3 thru 7).

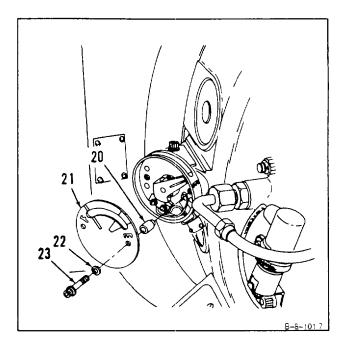
8. Install two spacers (20), cover (21), two washers (22), and bolts (23). Torque two bolts (23) to 15 inch-pounds. Lockwire bolts (23). Use lockwire (E33).

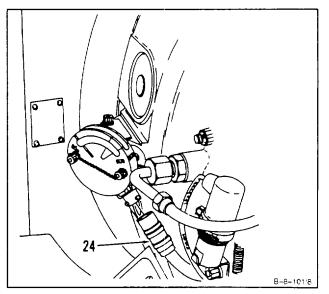
9. Connect electrical connector (24).

#### INSPECT

FOLLOW-ON MAINTENANCE:

Service Engine Oil System (Task1-68).



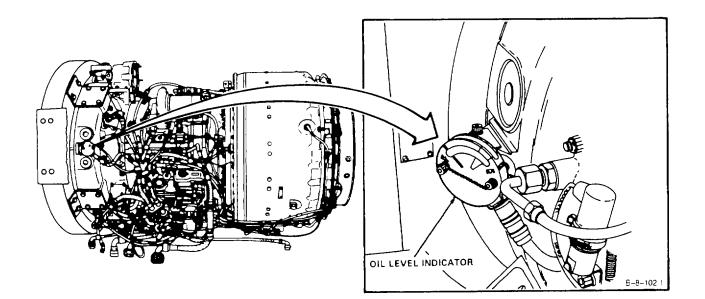


8-121

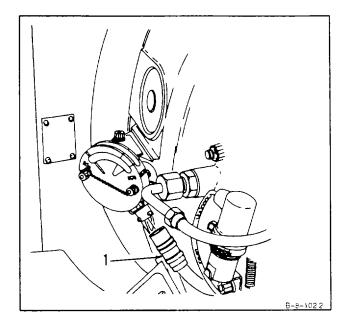
#### 8-121 ADJUST OIL LEVEL INDICATOR INITIAL SETUP Applicable Configurations: All Tools: Powerplant Mechanic's Tool Kit, NSN 5180-00-323-4944 Technical Inspection Tool Kit, NSN 5180-00-323-5114 Oil Level Test Light (T9)

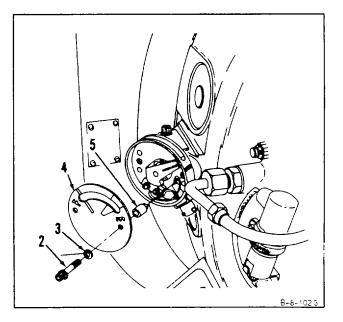
Torque Wrench, 0-30 Inch-Pounds

#### Materials: Lockwire (E33) Personnel Required: Aircraft Powerplant Repairer Aircraft Powerplant Inspector Equipment Condition: Engine Oil System Drained (Task 1-69)



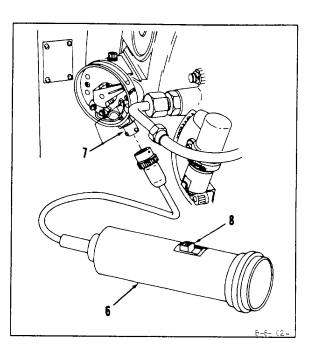
- 1. Disconnect electrical connector (1).
- 2. Remove lockwire, two bolts (2), two washers (3), cover (4), and two spacers (5).

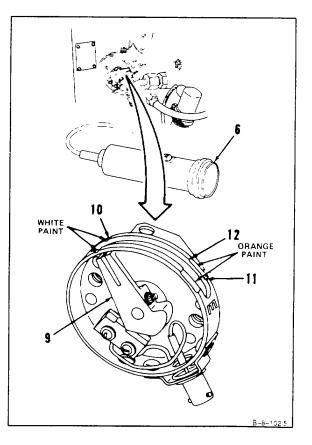




3. Connect oil level test light (T9) (6) to electrical connector (7) and turn switch (8) on.

4. Move pointer (9) from full position (10) toward empty position (11). Test light (T9) (6) shall come on at low oil level warning position (12).





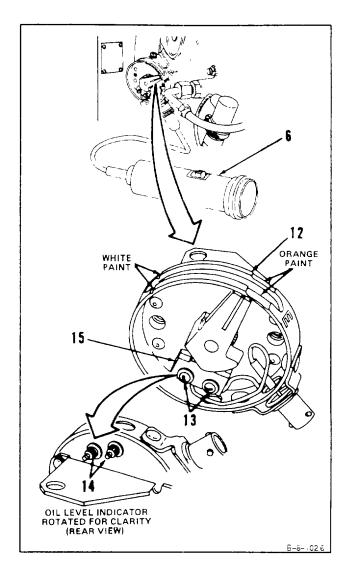
8-121

#### NOTE

If test light indicates adjustment is needed, do steps 5 and 6. If test light indicates adjustment is not needed, omit steps 5 and 6.

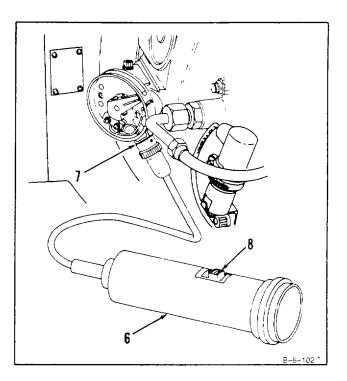
5. Loosen two screws (13) and two nuts (14). Move switch (15) until test light (T9) (6) comes on at low oil level warning position (12).

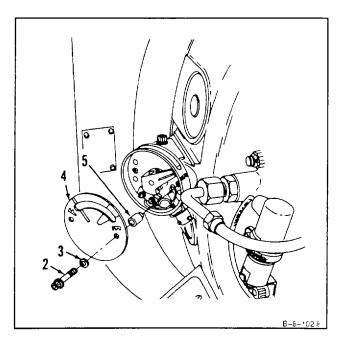
6. Tighten two nuts (14) and two screws (13).



7. Turn switch (8) off and disconnect test light (T9) (6) from electrical connector (7).

8. Install two spacers (5), cover (4), two washers (3), and two bolts (2). Torque two bolts (2) to 15 inch-pounds. Lockwire two bolts (2). Use lockwire (E33).



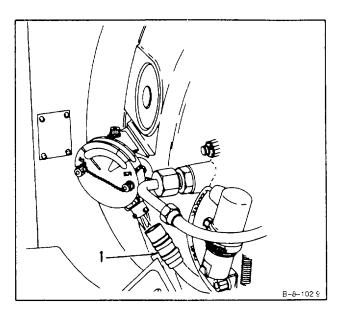


9. Connect electrical connector (1).

### INSPECT

#### FOLLOW-ON MAINTENANCE:

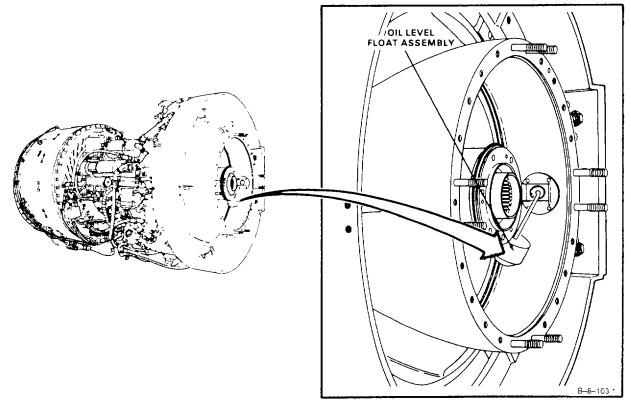
Service Engine Oil System (Task 1-68).



8-121

#### SECTION XVII OIL LEVEL FLOAT ASSEMBLY

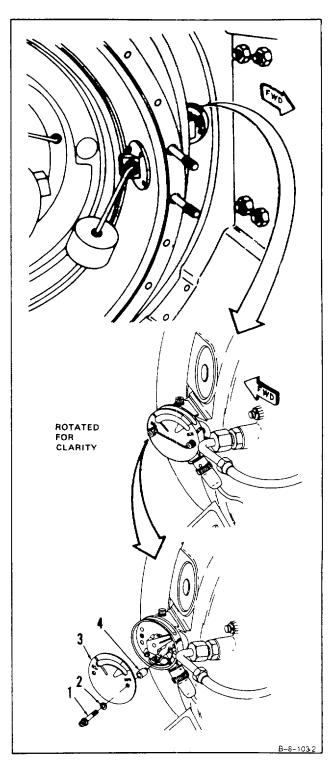
#### REMOVE OIL LEVEL FLOAT ASSEMBLY (AVIM) 8-122 8-122 **INITIAL SETUP** Personnel Required: **Applicable Configurations:** Aircraft Powerplant Repairer **Equipment Condition:** All Tools: Engine Oil System Drained (Task 1-69) Output Shaft Seal and Housing Assembly Re-Powerplant Mechanic's Tool Kit, NSN 5180-00-323-4944 moved (Task 2-39) Inlet Housing Cover Assembly Removed (Task Materials: 2-44) Wiping Rag (E64)



### 8-122 REMOVE OIL LEVEL FLOAT ASSEMBLY (AVIM) (Continued)

8-122

1. Remove lockwire, two bolts (1), two washers (2), cover (3), and two spacers (4).



8-122

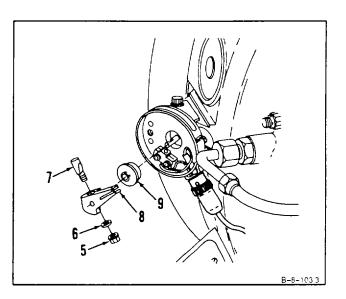
### 8-122 REMOVE OIL LEVEL FLOAT ASSEMBLY (AVIM) (Continued)

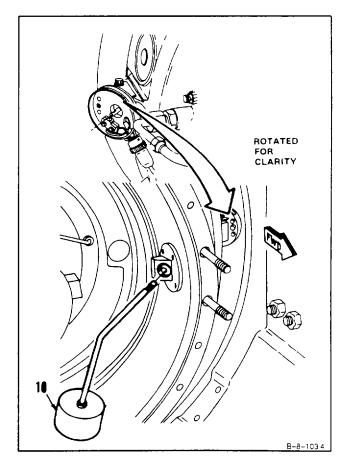
2. Remove nut (5), washer (6), bolt (7), pointer (8), and washer (9).

3. Remove oil level float assembly (10).

### FOLLOW-ON MAINTENANCE:

None



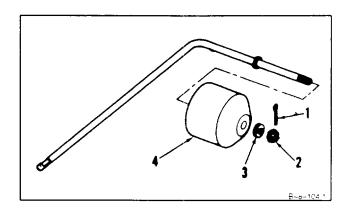


8-123 DISASSEMBLE OIL LEVEL FLOAT AS	SEMBLY (AVIM) 8-123
INITIAL SETUP	Personnel Required:
Applicable Configurations:	Aircraft Powerplant Repairer
All	Equipment Condition:
Tools:	Off Engine Task
Powerplant Mechanic's Tool Kit,	Engine Oil System Drained (Task 1-69)
NSN 5180-00-323-4944	Output Shaft Seal and Housing Assembly Re-
Materials:	moved (Task 2-39)
None	Inlet Housing Cover Assembly Removed (Task
	2-44)
	Oil Level Float Assembly Removed (Task 8-122)

1. Remove cotter pin (1), nut (2), washer (3), and float (4).

## FOLLOW-ON MAINTENANCE:

None



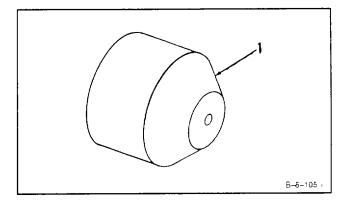
8-124 CLEAN OIL LEVEL FLOAT ASSEMBLY (AVIM)	8-124
INITIAL SETUP Applicable Configurations: All Tools: Powerplant Mechanic's Tool Kit, NSN 5180-00-323-4944 Materials: Dry Cleaning Solvent (E19) Gloves (E24) Lint-Free Cloth (E64) Personnel Required: Aircraft Powerplant Repairer Equipment Condition: Off Engine Task Engine Oil System Drained (Task 1-69) Output Shaft Seal and Housing Assembly Re- moved (Task 2-39)	Inlet Housing Cover Assembly Removed (Task 2-44) Oil Level Float Assembly Removed (Task 8-122) Oil Level Float Assembly Disassembled (Task 8-123) General Safety Instructions: WARNING Dry cleaning solvent (E19) is flammable and toxic. It can Irritate skin and cause burns. Use only in well- ventilated area, away from heat and open flame. In case of contact, immediately flush skin or eyes with water for at least 15 minutes. Get medical attention for eyes.

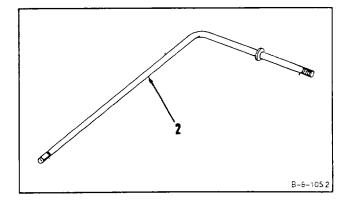
1. Wear gloves (E24) and clean float (1). Use dry cleaning solvent (E19) and brush.

- 2. Wipe dry using lint-free cloth (E64).
- 3. Clean shaft (2). Use dry cleaning solvent (E19) and brush.
- 4. Wipe dry using lint-free cloth (E64).

### FOLLOW-ON MAINTENANCE:

Inspect Oil Level Float Assembly (Task 8-125).





8-125

8-125 **INSPECT OIL LEVEL FLOAT ASSEMBLY (AVIM) INITIAL SETUP Applicable Configurations:** All Tools: Technical Inspection Tool Kit, NSN 5180-00-323-5114 **Outside Micrometer Caliper Set** 

Materials: None **Personnel Required:** Aircraft Powerplant Inspector **Equipment Condition:** Off Engine Task

1. Inspect float (1). There shall be no cracks.

2. Inspect hole (2) in float (1). Hole diameter shall be 0.240 inch maximum.

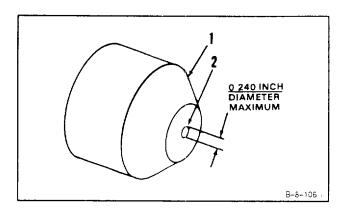
3. Inspect shaft (3). There shall be no cracks.

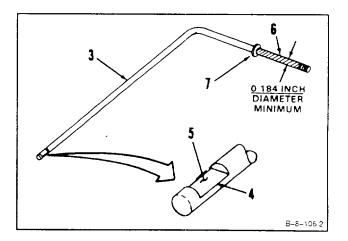
4. Inspect notch (4). There shall be no nicks, burrs, or scratches deeper than 0.020 inch on flat surface (5).

5. Inspect float mounting area (6). Use outside micrometer caliper. Shaft diameter shall be 0.184 inch minimum.

6. Inspect washer (7). Washer (7) shall not be cracked, loose, or missing.

FOLLOW-ON MAINTENANCE: None





#### 8-126 REPAIR OIL LEVEL FLOAT ASSEMBLY (AVIM)

INITIAL SETUP

Applicable Configurations:

#### Tools:

Technical Inspection Tool Kit, NSN 5180-00-323-5114

#### Personnel Required: Aircraft Powerplant Repairer Aircraft Powerplant Inspector Equipment Condition: Off Engine Task

## Materials:

Carborundum Stone (Ell) Crocus Cloth (E16)

1. Repair nicks, burrs, and scratches on flat surface (1) of float shaft notch (2) as follows:

#### NOTE

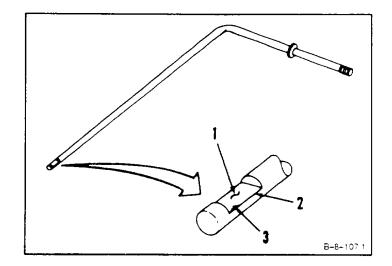
Repair is allowed only if depth of defect after repair is not more than 0.020 inch.

- a. Blend all raised edges (3). Use carborundum stone (Ell).
- b. Polish to smooth finish. Use crocus cloth (E16).

### INSPECT

# FOLLOW-ON MAINTENANCE:

None



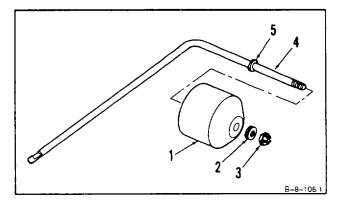
8-126

8-127 ASSEMBLE OIL LEVEL FLOAT ASSEM	/IBLY (AVIM) 8-127
INITIAL SETUP	Parts:
Applicable Configurations:	Cotter Pin
All	Personnel Required:
Tools:	Aircraft Powerplant Repairer
Powerplant Mechanic's Tool Kit,	Aircraft Powerplant Inspector
NSN 5180-00-323-4944	References:
Technical Inspection Tool Kit,	TM 1-2840-252-23P
NSN 5180-00-323-5114	Equipment Condition:
Materials:	Off Engine Task
None	5



When Installing float, tighten nut only enough to seat float against washer. If nut Is overtightened, damage to float will occur.

- 1. Install float (1), washer (2), and nut (3) on shaft (4).
- 2. Hand-tighten nut (3) until float (1) is seated against washer (5).



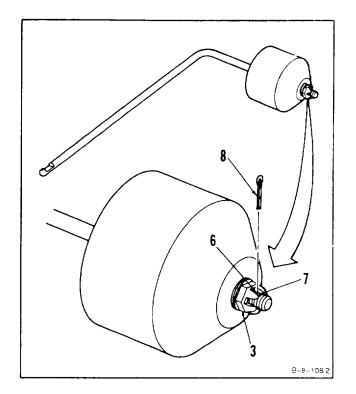
GO TO NEXT PAGE

### 8-127 ASSEMBLE OIL LEVEL FLOAT ASSEMBLY (AVIM) (Continued)

- 3. Back off nut (3), a maximum of one slot, until slot (6) in nut (3) aligns with shaft hole (7).
- 4. Install cotter pin (8).

### INSPECT

FOLLOW-ON MAINTENANCE: None



**END OF TASK** 

### 8-128 INSTALL OIL LEVEL FLOAT ASSEMBLY (AVIM)

#### INITIAL SETUP

#### Applicable Configurations:

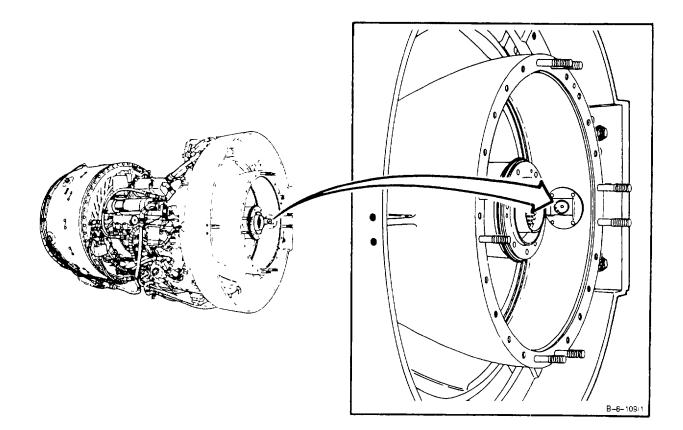
All

#### Tools:

Powerplant Mechanic's Tool Kit, NSN 5180-00-323-4944 Technical Inspection Tool Kit, NSN 5180-00-323-5114 Torque Wrench, 0-30 Inch-Pounds

#### Materials:

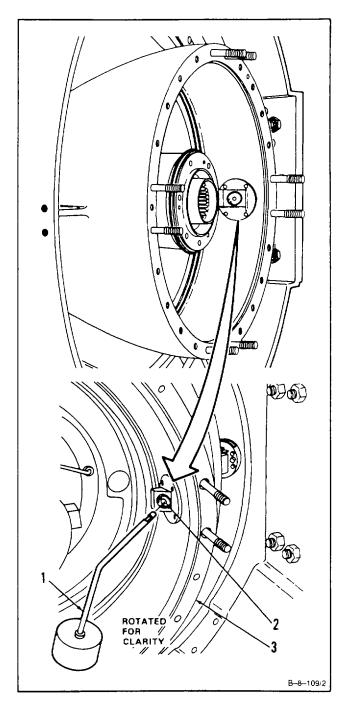
Lockwire (E33) **Personnel Required:** Aircraft Powerplant Repairer Aircraft Powerplant Inspector **References:** Task 8-121



GO TO NEXT PAGE

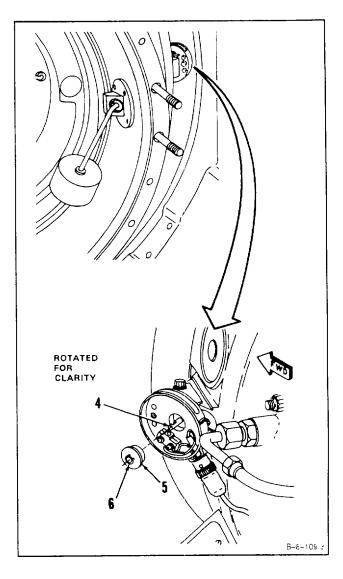
8-128

1. Install oil level float assembly (1) in hole (2) in inlet housing (3).

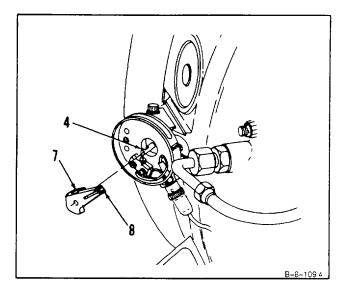


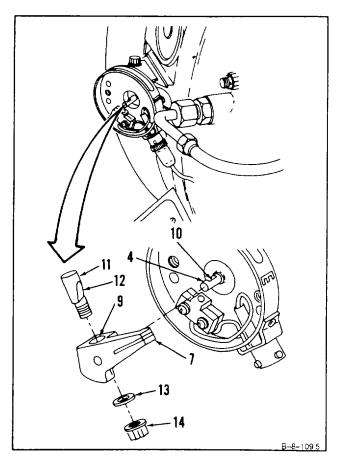
8-128

2. Hold shaft (4) in place. Install washer (5) on shaft (4) with smaller diameter (6) facing out.



- 3. Install pointer (7) on shaft (4) with white stripe (8) facing out.
- 4. Position pointer (7) on shaft (4) with hole (9) aligned with notch (10).
- 5. Install bolt (11) with flat (12) against notch (10). Install washer (13) and nut (14).





GO TO NEXT PAGE

8-128

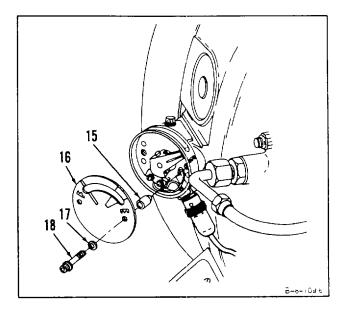
6. Adjust oil level indicator (Ref. Task 8-121, steps 3 thru 7).

7. Install two spacers (15), cover (16), two washers (17), and two bolts (18). Torque bolts (18) to 15 inch-pounds. Lockwire bolts (18). Use lockwire (E33).

#### INSPECT

FOLLOW-ON MAINTENANCE:

Install Inlet Housing Cover Assembly (Task 2-48). Install Output Shaft Seal and Housing Assembly (Task 2-43). Service Engine Oil System (Task 1-68).



**END OF TASK** 

### CHAPTER 9 TORQUEMETER SYSTEM - MAINTENANCE SYSTEM

### CHAPTER OVERVIEW

This chapter contains maintenance procedures for the torquemeter system. It is divided into the following sections and tasks:

<u>SECTION</u>	TASK <u>NO.</u>	TITLE	PAGE
I	TORQ	UEMETER SENSOR	
	9-1	Remove Torquemeter Sensor	9-3
	9-2	Clean Torquemeter Sensor	9-6
	9-3	Inspect Torquemeter Sensor	9-7
	9-4	Repair Torquemeter Sensor	9-8
	9-5	Install Torquemeter Sensor	9-9

9-1

#### SECTION I TORQUEMETER SENSOR

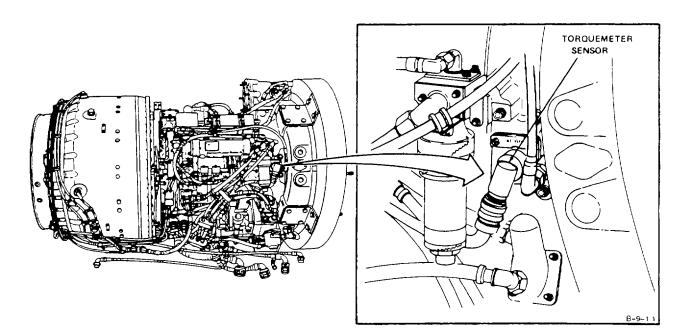
#### 9-1 REMOVE TORQUEMETER SENSOR

INITIAL SETUP Applicable Configurations: All Tools: Powerplant Mechanic's Tool Kit, NSN 5180-00-323-4944 Materials:

Wiping Rag (E64) Personnel Required: Aircraft Powerplant Repairer

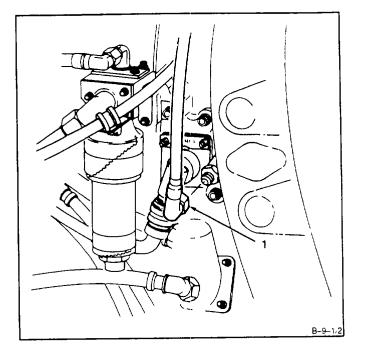
# General Safety Instructions:

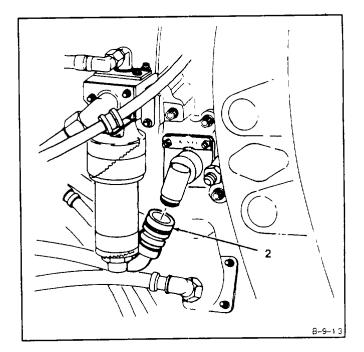
Lubricating oils cause paralysis if swallowed. Prolonged contact with them may irritate the skin. Handle only in well-ventilated areas away from heat and flame. Drain and store in approved metal safety containers. Avoid prolonged or repeated contact with skin and do not take internally. Wash contacted area of skin thoroughly after handling. If irritation of skin results, get medical attention. Get medical attention for eyes.



### 9-1 REMOVE TORQUEMETER SENSOR (Continued)

- 1. Disconnect hose assembly (1).
- 2. Disconnect electrical connector (2).





GO TO NEXT PAGE

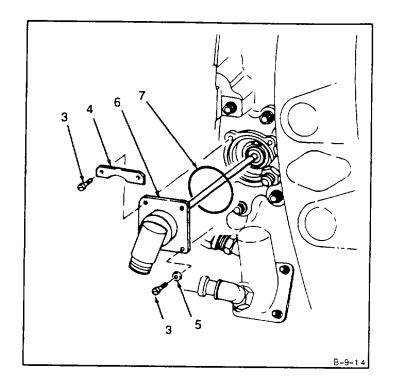
### 9-1 REMOVE TORQUEMETER SENSOR (Continued)

9-1

3. Remove lockwire, four screws (3), data plate (4), two washers (5), torquemeter sensor (6), and packing (7).

### FOLLOW-ON MAINTENANCE:

None



END OF TASK

9-2 CLEAN TORQUEMETER SENSOR	9-2
INITIAL SETUP Applicable Configurations: All Tools: Powerplant Mechanic's Tool Kit, NSN 5180-00-323-4944 Goggles Compressed Air Source Materials: Dry Cleaning Solvent (E19) Gloves (E24) Lint-Free Cloth (E30) Personnel Required: Aircraft Powerplant Repairer	Equipment Condition: Off Engine Task Torquemeter Sensor Removed (Task 9-1) General Safety Instructions: WARNING Dry cleaning solvent (E19) is flammable and toxic. It can irritate skin and cause burns. Use only in well- ventilated area, away from heat and open flame. In case of contact, immediately flush skin or eyes with water for at least <u>15 minutes.</u> Get medical attention for eyes.

1. Clean torquemeter sensor (1) as follows:

a. Wear gloves (E24) and clean torquemeter sensor (1). Use lint-free cloth (E30) dampened with dry cleaning solvent (E19).

b. Use dry, lint-free cloth (E30) to remove solvent.

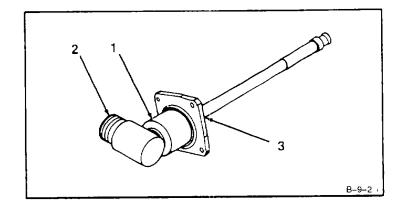
WARNING

When using compressed air for cleaning, use approved protective equipment for eyes and face. Do not use more than <u>30 psig</u> air pressure. Do not direct air toward yourself or another person. Failure to comply could result in injury to eyes or skin. In case of injury, get medical attention.

c. Wear goggles. Blow dry electrical connector (2) and inside surfaces (3). Use clean, dry compressed air.

### FOLLOW-ON MAINTENANCE:

Inspect Torquemeter Sensor (Task 9-3).



9-3

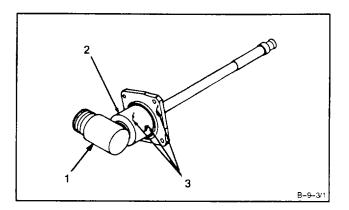
9-3 INSPECT TORQUEMETER SENSOR	
INITIAL SETUP	Materials:
Applicable Configurations:	None
All	Personnel Required:
Tools:	Aircraft Powerplant Inspector
Technical Inspection Tool Kit,	Equipment Condition:
NSN 5180-00-323-5114	Off Engine Task

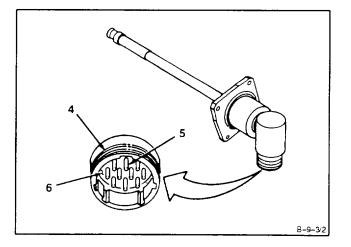
1. Inspect torquemeter sensor (1) as follows:

- a. Inspect body (2). There shall be no cracks, distortion, or dents (3).
- b. Inspect electrical connector (4). There shall be no broken, corroded or bent pins (5), or damaged insulation (6).

### FOLLOW-ON MAINTENANCE:

None





#### 9-4 REPAIR TORQUEMETER SENSOR

INITIAL SETUP Applicable Configurations:

#### All Ta ala:

Tools: Powerplant Mechanic's Tool Kit, NSN 5180-00-323-4944 Technical Inspection Tool Kit, NSN 5180-00-323-5114 Goggles Dry, Compressed Air Source Materials: Crocus Cloth (E16) Personnel Required: Aircraft Powerplant Repairer Aircraft Powerplant Inspector Equipment Condition: Off Engine Task

### NOTE

This repair is allowed provided it does not cause pins to break or crack.

1. Straighten bent pins (1) of electrical connector (2). Using long-nose pliers, gently move pins (1) until they are straight.

2. Remove corrosion from pin (1) of electrical connector (2). Polish pins using in and out motion over entire length of pin until corrosion is removed. Use crocus cloth (E16).

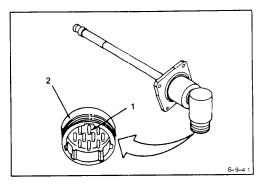
### WARNING

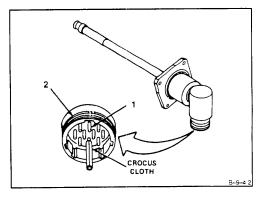
When using compressed air for cleaning, use approved protective equipment for eyes and face. Do not use more than 30 psig air pressure. Do not direct air toward yourself or another person. Failure to comply could result in injury to eyes or skin. In case of injury, get medical attention.

3. Wear goggles. Remove loosened particles from connector (2), using clean, dry, compressed air.

#### INSPECT

FOLLOW-ON MAINTENANCE: None





9-4

9-5

### 9-5 INSTALL TORQUEMETER SENSOR

INITIAL SETUP Applicable Configurations:

### All

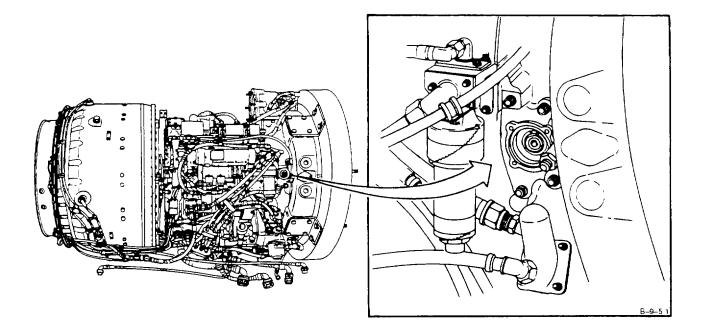
#### Tools:

Powerplant Mechanic's Tool Kit, NSN 5180-00-323-4944 Technical Inspection Tool Kit, NSN 5180-00-323-5114

#### Materials:

Lockwire (E33)	
Anti-Seize Compound (E6)	

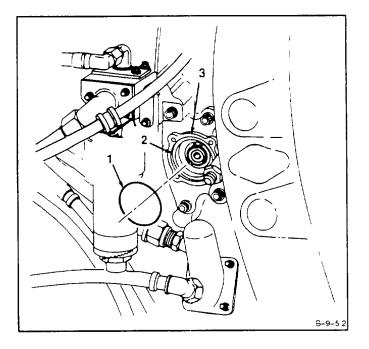
Parts: Packing Personnel Required: Aircraft Powerplant Repairer (2) Aircraft Powerplant Inspector References: TM 1-2840-252-23P

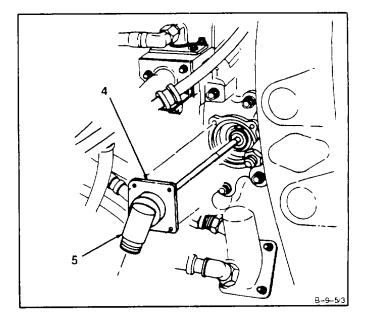


GO TO NEXT PAGE

### 9-5 INSTALL TORQUEMETER SENSOR (Continued)

- 1. Install packing (1) in groove (2) of flange (3).
- 2. Position torquemeter sensor (4) with electrical connector (5) at 7-o'clock location.





## 9-5 INSTALL TORQUEMETER SENSOR (Continued)

CAUTION

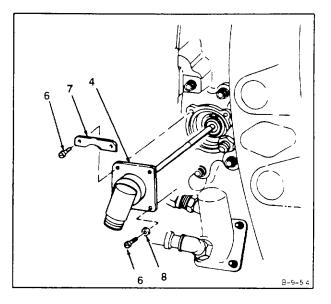
Torquemeter sensor Is spring-loaded into housing and must be installed squarely and evenly. Failure to do so could result in damage to sensor.

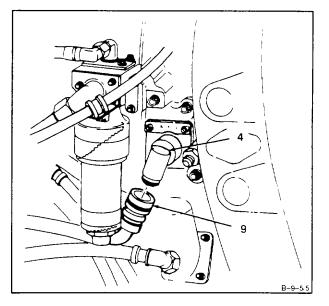
NOTE

Do not lockwire over data plate.

3. Install torquemeter sensor (4), four screws (6), data plate (7), and two washers (8). Stagger-tighten and lockwire screws (6). Use lockwire (E33).

4. Connect electrical connector (9) to torquemeter sensor (4).





9-11

9-5

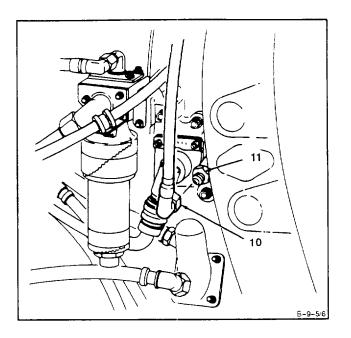
## 9-5 INSTALL TORQUEMETER SENSOR (Continued)

5. Connect hose assembly (10) to adapter nipple (11).

## INSPECT

FOLLOW-ON MAINTENANCE:

None



# **APPENDIX A**

# **REFERENCES**

PUBLICATION		1
NUMBER	TITLE	1
AR 750–50	Army Material Maintenance Concepts and Policies.	1
TM 1 1520–252–MTF	Maintenance Test Flight Manual Army Model MH47E Helicopter	
TM 1–1520–252–T	Aviation Unit and Aviation Intermediate Troubleshooting Manual Army MH47E Helicopter.	
TM 1–1520–252–10	Operator's Manual Army MH47E Helicopter Aircraft.	1
TM 1–1520–252–23	Aviatioin Unit and Aviation Intermediate Maintenance Manual Army MH47E Helicopter.	
TM 1–2840–252–23	Aviation Unit and Aviation Intermediate Maintenance Repair Parts and Special Tools List.	
CTA 50–970	Expendable Items (Except Medical, Class V, Repair Parts, and Heraldic Items).	
TB 43–0106	Spectrographic Oil Analysis.	1
TB 43–0142	Lifting Devices, Inspection, Testing and Maintenance.	1
TB 1–1500–341–01	Aircraft Components Requiring Maintenance Management and Historical Data.	
TB 55-8100-200-25	Maintenance of Specialized Reusable Containers for Aircraft Equipment.	1
TB 55–9150–200–25	Engine and Transmission Oils, Fuels, and additives for Army Aircraft.	1
DA PAM 738-751	The Army Maintenance Management System (TAMMS).	1
TM 1–1500–335–23	Non Destructive Inspection Methods	
TM 1–1500–204–23	General Aircraft Maintenance Manual	
TM 55-1500-328-25	Aeronautical Equipment Maintenance Management Policies and Proce- dures.	

## APPENDIX A (Continued) REFERENCES

PUBLICATION NUMBER	TITLE
TM 55-4920-328-13	Modular Engine Test Systems Maintenance Manual.
FM 1-511	Maintenance Quality Control and Technical Inspection Guide for Army Aircraft.
TM 750-244-1-5	Army Aircraft. Procedures for the Destruction of Aircraft and Associated Equipment to Prevent Enemy Use.

#### 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 high 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 alinement 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 airframe repair that does not require extensive disassembly, jigging, or alignment. The manufacture of airframe repair will be limited to those items which can be fabricated with tools and equipment found in current air mobile tool 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 repairman 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, responsive "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 system 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. Module/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. Airframe 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 mobile 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 750-1. (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

Nomenclatures used throughout the MAC are approved item names. Those terms/nomenclatures expressed in parentheses are generic in nature and are not to be considered as official terminology.

a. The Maintenance Allocation Chart assigns maintenance functions based on past experience and the following consideration:

- (1) Skills available.
- (2) Work time 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 a 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 from 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 position, 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 equipment 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 item 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 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<sup>1</sup>, including fault location/troubleshooting<sup>2</sup>, removal/installation, and disassembly/assembly<sup>3</sup> procedures, and maintenance actions<sup>4</sup> 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 condition 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.

<sup>1.</sup> Services - inspect, test, service, adjust, align, calibrate, and/or replace.

<sup>2.</sup> Fault locate/troubleshoot - The process of investigating and detecting the cause of equipment malfunctioning; the act of isolating a fault within a system or unit under test (UUT).

<sup>3.</sup> Disassemble/assemble - 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.

<sup>4.</sup> 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.

GROUP NUMBER	DESCRIPTION	GROUP NUMBER	DESCRIPTION
04	POWERPLANT	0406	FUEL SYSTEM
0401 0402 0403	ENGINE GENERAL Servicing, handling, inspection requirements, lubrication charts, overhaul and retirement schedules, External lines & hoses. (As applica- ble) COMPRESSOR SECTION (COLD SECTION MODULE) Rotor, blades, vanes, impeller, Sta- tors, inlet guide vanes, main frame, particle separator, bleed valve, bearings, seals, external lines & hoses. COMBUSTION SECTION (HOT SECTION MODULE)	0407	Hydromechanical assembly, fuel boost pump, governors, fuel filter assembly, sequence valve, fuel manifold, fuel nozzle, external lines and hoses. ELECTRICAL SYSTEM Electrical control units, exciters, thermocouples, ignition harness, electrical cables, history record, torque overspeed sensor, NP sen- sor, alternate stator, and blowers. OIL SYSTEM Tanks, oil filter, oil cooler, lube and scavenge pumps, oil filter bypass sensor, external lines and hoses.
0404	Liners, nozzles, stators, rotor, seals, couplings, blades. POWER-TURBINE (POWER TURBINE MODULE) Nozzles, rotors, blades, exit guide vanes, exhaust frame, drive shaft, bearings, seals, external lines and hoses. ACCESSORY GEAR SECTION Input/and output gears, seals, chip detector, housings, drive shaft, bearings, and seals.	0409	DRIVE SYSTEM Reduction gear assembly, output shaft, seal, and bearing. MISCELLANEOUS EQUIPMENT (As applicable)

## 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 a maintenance level to perform a specified maintenance function. If a work time has not been established, the columnar presentation shall indicate "-.Maintenance levels higher than the level of maintenance indicated are authorized to perform the indicated function.

#### 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 alphabetically 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 (identified by an alphabetic code in column 6) and other notes (identified by a number in parentheses in the applicable column) are listed in Section IV to provide a ready reference to the definition of the remark/note.

\_\_\_\_\_

		SECTION					
		NANCE ALLOO	CATION	CHARI			
NOMENC	LATURE OF END ITEMS						
I		T55-L-71	4	(.)		( <b>-</b> )	
(1)	(2)	(3)		(4)		(5) TOOLS	(6)
GROUP NUMBER	COMPONENT/ASSEMBLY	MAINTENANCE FUNCTION	MAINTEN AVUM	ANCE CA AVIM	TEGORY DEPOT	AND EQUIPMENT	REMARKS
		NOTE				l	
	The maintenance functions company size units. These used Set SC4920-49-CL-A92 and Refer to paragraph B-1.	units are author	ized (AV	UM #2)	Tool	I	
0400	POWERPLANT AND RELATED						
0401	SYSTEMS ENGINE, COMPLETE AS- SEMBLY	INSPECT				51,52	
	-	TEST					A
	(METS) TRAILER	ADJUST SERVICE REPLACE REPAIR	  			51,52 51,52 47,51,52 51,52 44,45,46	B H, I C C,D,E,F
0402 040201	COMPRESSOR SECTION INTERSTAGE AIR-BLEED AC- TUATOR	OVERHAUL INSPECT				51,52,53	
		ADJUST REPLACE REPAIR OVERHAUL	  			51,52 51,52 51,52	A,H,I C D,E,G
040202	COMPRESSOR BLEED BAND	INSPECT REPLACE	 			51,52,53 51,52	A

## **SECTION II**

	MAINTE	ENANCE ALLOO	CATION	CHART			
NOMENC	LATURE OF END ITEMS						
1		T55-L-71	14			r	
(1)	(2)	(3)		(4)		(5) TOOLS	(6)
GROUP NUMBER	COMPONENT/ASSEMBLY	MAINTENANCE FUNCTION	MAINTEN AVUM	ANCE CA AVIM	TEGORY DEPOT	and Equipment	REMARKS
040203	ANTI-ICING, AIR GALLERY	INSPECT				51,52,53	
		REPLACE REPAIR				51,52 51,52	C C,D,E,G
040204	COMPRESSOR HOUSING	INSPECT REPLACE				51,52,53 37,43,45, 52	
		REPAIR				52 51,52	C,D,E,G
040205	STATOR VANE ASSEMBLIES	INSPECT REPLACE	 			51,52,53 29,32,36, 43,51,52	
		REPAIR				51,52	C,D,E,G
040206	COMPRESSOR ROTOR BLADES	INSPECT				51,52,53	
		REPLACE				10,48,50, 52	
		REPAIR				52	
040207	OUTPUT SHAFT SEAL AND HOUSING ASSEMBLY	INSPECT				51,52,53	
		REPLACE				2,27,51,52	C,K
		REPAIR				26,51	М
040208	INLET HOUSING COVER AS- SEMBLY	INSPECT				51,52,53	
	OLMDL1	REPLACE				24,51,52	
040209	AIR INLET HOUSING ASSEMBLY	REPAIR INSPECT REPLACE		 		51,52 51,52,53	
040210	T1 TEMPERATURE SENSOR	REPAIR INSPECT REPLACE	  			51 51,52,53 51,52	D,E,F,G
		REPAIR				51,52	

	MAINTI	ENANCE ALLO	CATION	CHART			
NOMENC	LATURE OF END ITEMS						
		T55-L-71	14				
(1)	(2) COMPONENT/ASSEMBLY	(3)		(4)		(5) TOOLS	(6)
GROUP NUMBER		MAINTENANCE FUNCTION	MAINTEN AVUM	ANCE CA	TEGORY DEPOT	AND	REMARKS
040211	AIR LINES	INSPECT REPLACE				51,52,53 51,52	
0403 040301	COMBUSTION SECTION FUEL DRAIN VALVE	INSPECT REPLACE OVER-				51,52,53 51,52	
040302	COMBUSTION CHAMBER VANE ASSEMBLY	HAUL INSPECT				45,51,52, 53	
040303	COMBUSTION CHAMBER LINER	REPLACE REPAIR INSPECT	-,-	 		45,52 45,52 45,51,52, 53	D.E,F,G
040304	COMBUSTION CHAMBER HOUSING	REPLACE REPAIR INSPECT		 		45,52 45,52 51,52,53	D,E,F,G
		REPLACE REPAIR		 		18,44,45 44,45,46	D,E,F,G
0404 040401	TURBINE SECTION THERMOCOUPLE JUMPER LEAD	INSPECT				51,52,53	
040402		TEST REPLACE INSPECT	  			51,54 51,52 51,52,53	с
040403		TEST REPLACE INSPECT REPLACE	- 27 - 27 - 27 - 27			51,53 51,52 51,52,53 51,52	C C

	MAINT	ENANCE ALLO	CATION	CHART			
NOMENC	LATURE OF END ITEMS						
		T55-L-71	14				
(1)	(2)	(3)		(4)		(5) TOOLS	(6)
GROUP NUMBER	COMPONENT/ASSEMBLY	MAINTENANCE FUNCTION	MAINTEN AVUM	ANCE CA AVIM	DEPOT		REMARKS
		INSPECT REPLACE				51,52,53 51,52	с
040405	THERMOCOUPLE HARNESS ASSEMBLIES	INSPECT TEST				45,51,53 45,52	
040406	THERMOCOUPLE HARNESS ASSEMBLIES	REPLACE INSPECT				45 45,51,52, 53	
040407	FOURTH STAGE POWER TUR- BINE ROTOR	REPLACE REPAIR INSPECT		 		20,45,52 44,45,46 45,51,52, 53	D,E,F,G
		REPLACE				3,5,11,16, 20,25,28, 34,42,52, 53	
040408	NO. 4 AND 5 BEARING PACK- AGE	REPAIR INSPECT				45,49,51, 52,56	к
		REPLACE				5,15,17, 25,28,34, 36,45,46, 49,51,52, 54,56	ĸ
040409	FOURTH STAGE POWER TUR- BINE NOZZLE	INSPECT				45,51,52, 53	
		REPLACE OVER- HAUL					
040410	THIRD STAGE POWER TUR- BINE ROTOR	INSPECT				45,51,52, 53	
		REPLACE				11,45,51, 52,53	
		REPAIR					

	LATURE OF END ITEMS	ENANCE ALLO					
	LAIURE OF END ITEMO	T55-L-7 <sup>,</sup>	14				
(1)	(2)	(3)		(4)		(5)	(6)
GROUP NUMBER	COMPONENT/ASSEMBLY	MAINTENANCE FUNCTION	MAINTEN AVUM	IANCE CA AVIM	TEGORY DEPOT	TOOLS AND EQUIPMENT	REMARK
040411	SECOND TURBINE DISC AS- SEMBLY	INSPECT				51,52,53	
	GEMBET	REPLACE				3,5,11,12, 21,34,41 52,53	
040412		REPAIR INSPECT		 		52,53 44,52 51,52,53	D,E
	BLY	REPLACE				3,5,11,12, 21,34,38,	
040413		REPAIR INSPECT		 		52,53 44,52 51,52,53	D,E
	SPACER, CASE, AND BUMPER	REPLACE				3,5,11,12, 21,34,41	
040414	TAILPIPE ASSEMBLY	REPAIR INSPECT REPLACE				52,53 44,52 51,52,53 51,52	D,E,F,
0.405		REPAIR				51,52	C,G
0405 040501	ACCESSORY GEAR SECTION ACCESSORY GEARBOX AS- SEMBLY	INSPECT				51,52,53	
		REPLACE	-,-			2,3,14,19, 23,24,34, 51,52	
		REPAIR				15,52 44,45	D,E C,D,E,
040502	PT SPEED PICKUP	INSPECT REPLACE REPAIR				51,52,53 51,52 52,53.	J,K E
		REPAIR				52,53.	

	MAINTI	ENANCE ALLO	CATION	CHART			
NOMENC	LATURE OF END ITEMS						
		T55-L-71	14			Г	
(1)	(2)	(3)		(4)		(5) TOOLS	(6)
GROUP NUMBER	COMPONENT/ASSEMBLY	MAINTENANCE FUNCTION	MAINTEN AVUM	ANCE CA AVIM	TEGORY DEPOT	AND EQUIPMENT	REMARKS
040503	PT SPEED PICKUP DRIVE AS- SEMBLY	INSPECT				51,52,53	
040504	ACCESSORY GEAR ASSEMBLY	REPLACE REPAIR INSPECT REPLACE	-,- -,-	-,- -,-		51,52 53 51,52,53 2,3,19,23,	D
040505	STARTER DRIVE ASSEMBLY	INSPECT REPLACE REPAIR	-,- -,- -,-			34,35,36 51,52,53 51,52 3,24,30, 51,52	C D,E,G,J, M
040506	OVERSPEED DRIVE AND OUT- LET COVER ASSEMBLY	INSPECT				51,52,53	
		REPLACE REPAIR	 			51,52 51,52,53	
0406 040601	FUEL SYSTEM HYDROMECHANICAL ASSEM- BLY	INSPECT				51,52,53	
		REPLACE OVERHAUL	 			51,52	
040602	FUEL BOOST PUMP ASSEMBLY	INSPECT REPLACE REPAIR OVERHAUL	  			51,52,53 51,52 51,52	D,E,G,M
040603	LEFT- AND RIGHT-HAND FUEL MANIFOLD ASSEMBLIES	INSPECT				51,52,53	
		REPLACE REPAIR	 			51,52,55 45	С К
040604	PRIMER TUBE ASSEMBLY	OVERHAUL INSPECT				51,52,53	

		ENANCE ALLO	SATION	CHARI		
OMENC	LATURE OF END ITEMS	T55-L-71	14			
(1)	(2)	(3)	14	(4)	(5)	(6)
GROUP	COMPONENT/ASSEMBLY	MAINTENANCE FUNCTION	<u>MAINTEN</u> AVUM	AVIM DEPOT	TOOLS	REMARK
		TONOTION				
		REPLACE			51,52	С
040605	START FUEL NOZZLES	INSPECT REPLACE			51,52,53 51,52	с
040606	MAIN FUEL FILTER AND BRACKET	INSPECT			51,52,53	
		REPLACE			51,52	С
040607	IN-LINE FUEL FILTER ASSEM- BLY	INSPECT			51,52,53	
040608	PRESSURIZING VALVE	REPLACE INSPECT			51,52 51,52,53	C,D,E,
040000	PRESSURIZING VALVE	REPLACE			51,52,55	С
040609	FLOW DIVIDER AND BRACKET	INSPECT			51,52,53	
		REPLACE			51,52	С
040610	FUEL CHECK VALVE	INSPECT			51,52,53	
		REPLACE			51,52	С
040611	OVERSPEED SOLENOID VALVE	INSPECT			51,52,53	
040612	STARTING FUEL SOLENOID VALVE	REPLACE INSPECT	-,-		51,52 51,52,53	C,D
		REPLACE			51,52	С
040613 0407	FUEL LINES ELECTRICAL AND IGNITION	INSPECT	-,-		51,52	
040701	SYSTEMS IGNITION COIL AND CABLE AS- SEMBLY	INSPECT			51,52,53	A
		REPLACE			51,52	С
040702	SPARK IGNITERS	INSPECT			51,52,53	A
		REPLACE			51,52	С
040703	PRIMARY ELECTRICAL HAR- NESS ASSEMBLY	INSPECT			51,52,53	

	MAINT	ENANCE ALLO	CATION	CHART			
NOMENC	LATURE OF END ITEMS						
		T55-L-71	14				
(1)	(2)	(3)		(4)		(5) TOOLS	(6)
GROUP NUMBER	COMPONENT/ASSEMBLY	MAINTENANCE FUNCTION	MAINTEN AVUM	ANCE CA AVIM	TEGORY DEPOT	AND EQUIPMENT	REMARKS
040704	REVERSIONARY ELECTRICAL HARNESS ASSEMBLY	REPLACE INSPECT	 			51,52 51,52,53	с
040705	ACCESSORY ELECTRICAL HARNESS ASSEMBLY	REPLACE INSPECT				51,52 51,52,53	С
		REPLACE				51,52	С
0408 040801	LUBRICATION SYSTEM MAIN OIL PUMP, SPEED PICK- UP DRIVE ASSEMBLY, SCAV- ENGE OIL SREEN, AND RE- LATED PARTS	INSPECT				51,52,53	
		ADJUST REPLACE REPAIR OVERHAUL			-,-	51,52 51,52 51,52	C D,G,J,M
040802	GAS PRODUCER SPEED PICK- UP	INSPECT				51,52,53	
040803	-	REPLACE INSPECT REPLACE REPAIR OVERHAUL	-,- -,- -,- -,-			51,52 51,52,53 51,52 51,52	C D,E
040804	FLOW PROGRAMMING VALVE	INSPECT ADJUST	-,- -,-			51,52,53	
040805	OIL TEMPERATURE TRANS- MITTER	REPLACE INSPECT				51,52 51,52,53	

	MAINTE	ENANCE ALLO	CATION	CHART		
NOMENC	LATURE OF END ITEMS					
		T55-L-71	14			
(1)	(2)	(3)		(4)	(5) TOOLS	(6)
GROUP NUMBER	COMPONENT/ASSEMBLY	MAINTENANCE FUNCTION	MAINTEN AVUM	AVIM DEP		REMARKS
040806	OIL FILLER ASSEMBLY AND OIL FILLER STRAINER	REPLACE INSPECT	 		51,52 51,52,53	с
040807	OIL FILLER COVER ASSEMBLY AND OIL FILLER ELEMENT	SERVICE REPLACE INSPECT	  		51,52 51,52 51,52,53	
040808	DUAL CHIP DETECTOR	SERVICE REPLACE INSPECT SERVICE	  		51,52 51,52 51,52,53 51,52	C C C
040809	OIL LINES	REPLACE INSPECT	 		51,52 51,52,53	C
040810	STARTER GEARBOX FILTER	REPLACE INSPECT SERVICE REPLACE			51,52 51,52,53 51,52 51,52 51,52	C C C
040811	NO. 2 BEARING PRESSURE OIL CONNECTOR	INSPECT			51,52,53	
040812		REPLACE INSPECT			51,52 51,52,53	
040813	NO. 4 AND 5 BEARING FILTER	SERVICE REPLACE INSPECT	-~ -~ -~		51,52 51,52 51,52,53, 56	
040814	OIL DRAIN COCK	SERVICE REPLACE INSPECT	  		51,52,56 51,52,56 51,52,53	C C

	MAIN	TENANCE ALLO	CATION	CHART			
NOMENC	LATURE OF END ITEMS						
1		T55-L-7	14				
(1)	(2)	(3)		(4)		(5) TOOLS	(6)
GROUP NUMBER	COMPONENT/ASSEMBLY	MAINTENANCE FUNCTION	MAINTEN AVUM	AVIM	TEGORY DEPOT	AND EQUIPMENT	REMARKS
	CHIP DETECTOR OIL LEVEL INDICATOR	REPLACE INSPECT SERVICE REPLACE INSPECT				51,52 51,52,53 51,52 51,52 33,51,52,	C C
040817	OIL LEVEL FLOAT	ADJUST SERVICE REPLACE INSPECT	- 547 - 547 - 547			53 33,51,52 33,51,52 33,51,52 45,51,52, 53	C C
0409	DRIVE SYSTEM	REPLACE REPAIR		 		45,51,52 44,45,46	
040901	TORQUEMETER SENSOR	INSPECT				45,51,52, 53	
		REPLACE				45,51,52	L

Tool and Test Equipment Requirements. T55-L-714 Turbine Engine				
EQUIPMENT REF CODE	MAINTENANCE CATEGORY	NOMENCLATURE	NATIONAL/NATO STOCK NUMBER	TOOL NUMBER
1	AVIM	Alignment Din	5120 00 808 0074	1 TOT 12029
1	AVIM	Alignment Pin	5120-00-898-0974 5120-00-898-0697	LTCT13038
2 3	AVIM	Alignment Pin Bar, Locating	5120-00-671-2129	LTCT387-01 LTCT153
3	AVIM	Clinching Tool	5120-00-481-3117	LTCT13411-
	AVIM	Control Unit	6110-00-631-7196	
5				LTCT14547-
6	AVIM	Coupling Half, Clamp	5340-00-156-1191	LTCT9917
7	AVIM	Cover, Aircraft Group	1730-00-134-0979	LTCT6271
8	AVIM	Cover, Aircraft Group	1730-00-133-9550	LTCT3936
9	AVUM	Cover, Protective Engine	4920-00-916-2448	LTCT1278
10	AVUM	Drift Assembly	4920-00-891-4653	LTCT1643
11	AVIM	EHRT Computer		LTCT29014-
12	AVIM	Fixture, Assembling (Bore	4920-00-134-0162	LTCT6354
		Heater)		
13	AVIM	Fixture, Holding Gear	4920-00-012-9091	LTCT1184
14	AVUM	Fixture, Holding Gear	4920-00-872-7858	LTCT1260
15	AVIM	Fixture, Holding Tube	4920-01-137-3557	LTCT7202-0
16	AVIM	Fixture, Holding	4920-01-115-6995	LTCT14616-
17	AVIM	Fixture, Pressure Check	4920-00-866-0849	LTCT13442
18	AVIM	Fixture, Power Turbine	4920-00-834-2182	LTCT14360-
19	AVIM	Fixture, Torque	4920-00-834-2178	LTCT13771
20	AVIM	Fixture, Torque	4920-00-372-4596	LTCT13857-
21	AVIM	Fixture, Torque	4920-00-866-0863	LTCT13344
22	AVIM	Gage, Backlash	5220-00-015-6982	LTCT1229
23	AVUM	Handling Tool	5120-00-959-7636	LTCT1431-0

## SECTION III OOL AND TEST EQUIPMENT REQUIREMENTS

TOOL AND TEST EQUIPMENT REQUIREMENTS				
Tool and Test Equipment Requirements. T55-L-714 Turbine Engine				
MAINTENANCE CATEGORY	NOMENCLATURE	NATIONAL/NATO STOCK NUMBER	TOOL NUMBER	
0.7/1.16/	Handling Tool	5120 00 050 7622	LTCT1428-01	
	<b>v</b>		LTCT13873-01	
			LTCT1228	
			LTCT1220	
			LTCT1230	
		5120-00-370-3939	LTCT13674-01	
		5180 00 125 4106	LTCT7660-01	
			LTCT6629-03	
		4920-00-134-0163		
		4000 00 040 0040	LTCT7612-01	
	<b>0</b>		LTCT1259	
			PD2501-SD	
	, <b>6</b>		LTCT1252	
			LTCT1009-01	
			LTCT1218	
			LTCT1379-01.	
			LTCT1 3877-0	
		5120-00-109-4674	LTCT6173	
			LTCT7923-01	
AVIM	Puller, Wheel, Hydraulic	5130-01-115-6996	LTCT14672-07	
AVUM	Punch, Drive Pin	5120-00-951-8622	LTCT1960	
AVIM	Shop Set, Machine	4920-00-405-9279	SC492099CLA91 MMAM	
AVIM	Shop Set, Turbine Engine	4920-00-224-3684	SC492099CLA91 ENTAM	
AVIM	Shop Set, Welding	4920-00-163-5093	SC492099CLH91 WEAM	
AVUM	Sling, Aircraft Maintenance	1730-01-007-6990	LTCT14700-40	
	Too           MAINTENANCE CATEGORY           AVUM           AVIM           AVIM           AVUM           AVIM           AVUM           AVIM           AVIM	URE OF END ITEMS Tool and Test Equipment Requirements. TS         MAINTENANCE CATEGORY       NOMENCLATURE         AVUM       Handling Tool         AVUM       Handling Tool         AVUM       Installation Tool         AVUM       Kit, Application (RTV)         AVUM       Kit, Blade Installation         AVUM       Kit, Masking (RTV)         AVUM       Kit, Masking (RTV)         AVUM       Light, Test, Oil Level         AVIM       Plate, Wrenching Pin         AVIM       Puller, Mechanical         AVIM       Puller, Mechanical         AVIM       Puller, Mechanical         AVIM       Puller, Mechanical         AVIM       Puller, GP Spacer         AVIM       Puller, Wheel, Hydraulic         AVUM       Puller, Wheel, Hydraulic         AVIM       Puller, Wheel, Hydraulic         AVIM       Shop Set, Turbine Engine         AVIM       Shop Set, Welding	URE OF END ITEMS Tool and Test Equipment Requirements. T55-L-714 Turbine EngineMAINTENANCE CATEGORYNOMENCLATURENATIONAL/NATO STOCK NUMBERAVUMHandling Tool5120-00-959-7633AVIMHeater, Induction4920-00-372-4595AVUMInstallation Tool4920-00-475-2552AVUMInstallation Tool4920-00-370-3939AVIMInstalling Tool, Bearing5120-00-370-3939AVIMKit, Application (RTV)5180-00-125-4106AVIMKit, Blade Installation5180-00-125-4106AVIMKit, Maintenance (Skimming)4920-00-940-2910AVUMKit, Masking (RTV)5120-00-332-2543AVIMMultiplier Torque5120-00-322-2543AVIMPuller, Test, Oil Level4920-00-509-8060AVIMPuller, Mechanical5120-00-32-2543AVIMPuller, Mechanical5120-00-32-2543AVIMPuller, Mechanical5120-00-32-2543AVIMPuller, Mechanical5120-00-10-4235AVIMPuller, Mechanical5120-00-10-4235AVIMPuller, Mechanical5120-00-370-3934AVIMPuller, Mechanical5130-01-115-6996AVIMPuller, Wheel, Hydraulic5130-01-115-6996AVIMPuller, Wheel, Hydraulic5130-01-115-6996AVIMPuller, Wheel, Hydraulic5130-00-405-9279AVIMShop Set, Machine4920-00-224-3684AVIMShop Set, Welding4920-00-163-5093	

	TOOL AND TEST EQUIPMENT REQUIREMENTS				
NOMENCLATURE OF END ITEMS					
TOOL OR TEST	Tool and Test Equipment Requirements. T55-L-714 Turbine Engine				
EQUIPMENT REF CODE	MAINTENANCE CATEGORY	NOMENCLATURE	NATIONAL/NATO STOCK NUMBER	TOOL NUMBER	
40		Quantati Distington	4000 00 440 0000		
48 49	AVIM AVIM	Support, Dial Indicator	4920-00-110-9986 4920-00-444-2362	LTCT6098	
49 50	AVIM	Tester, Seal Leakage Tool, Installing	4920-00-444-2362	LTCT13606-01 LTCT1644	
50	AVUM	Tool Kit, AVUM #2	4920-00-567-0476	SC492099LA92	
51	AVUM	Tool Kit, Engine RMS	5180-00-323-4944	SC492099LA92 SC518099CLA07	
52	AVUM	Tool Kit, Technical Inspect	5180-00-323-5114	3C310099CLA07	
53	AVUM	Tool Set, Seal Removal	4920-00-866-0858	LTCT13868	
55	AVIM	Torque Adapter, Wrench	5120-00-792-8191	LTCT13000	
56	AVIM	Wrench, Open End	5120-00-834-2141	LTCT1409	
			5120 00-004-2141		

## **SECTION IV**

#### REMARKS

REFERENCE CODE	REMARKS/NOTES	
A	Functional Test at AVUM - Engine in Airframe	
В	Functional Test at AVIM - Engine in METS/FEDS	
С	Repairs at AVUM includes minor repair of the engine and minor repair/replacement of components and accessories	
D	Blend Repair	
E	Corrosion Control, Pitting	
F	Magnetic-Particle Inspection	
G	Nicks, Dents, Burrs, Cracks & Distortion	
н	Adjust, Engine in Airframe	
I	Bleed Band, Ground Idle, Maximum Power, Engine in Airframe	
J	O-Rings, Drive Shaft Seal, Solenoid Valve	
к	Seals and O-Rings	
L	Torque Sensor, Output Shaft, and Signal Conditioner Unit are individually replaceable, but the Output Shaft calibration must be set into the Signal Conditioner Unit (Refer to TM 1-1520-252-23).	
М	Repair is limited to Blend Repair and Seal/O-Ring Replacement	

### APPENDIX C EXPENDABLE SUPPLIES AND MATERIAL LIST

### **SECTION I. INTRODUCTION**

## C-1 SCOPE

This appendix lists expendable supplies and materials you will need to operate and maintain the engine. These items are authorized to you by CTA 50-970, Expendable Items (Except Medical, Class V, Repair Parts, and Heraldic Items).

#### C-2 EXPLANATION OF COLUMNS

a. Column 1 - Item number. This number is assigned to the entry in the listing and is referenced in the narrative instructions to identify the material, e.g., "Use dry cleaning solvent (E19)."

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 Federal item name and, if required, a description to identify the item. The last line for each item indicates the part number followed by the Commercial and Government Entity Code (CAGEC) in parenthesis, if applicable.

## SECTION II. EXPENDABLE SUPPLIES AND MATERIAL LIST

(1)	(2) NATIONAL	(3)
ITEM NUMBER	STOCK NUMBER	DESCRIPTION
-		
E1	6810-00-184-4796	Acetone, Technical (O-A-51)
E2	7920-00-514-2417	Acid Swabbing Brush
E3	5350-00-224-7201	Aluminum Oxide Abrasive Paper
E4	5350-00-161-9715	(180 to 320 Grit) Aluminum Oxide Cloth
□ □ □ □	5350-00-161-9715	Carborundum Co.
		Niagara Falls, NY
E5		Anti-Detonating Injection Fluid Mix-
20		ture
		Lyndhurst Chemical Corp.
		(or equivalent)
E6	8030-00-105-0270	Anti-Seize Compound
		Nickel Ease, Nickel Special
		Fel-Pro Inc.
		Division of Felt Product
		Manufacturing Co.
		Skokie, IL
E7	8335-00-224-8885	Barrier Material
E8	8135-00-282-0565	MIL-B-121, Grade A Barrier Material
EO	8135-00-282-0305	MIL-B-130
E9	8030-00-664-6146	Black Baking Enamel
		(AMS3120)
E10	5340-00-292-0886	Bonding Seal
E11		Carborundum Stone
		Carborundum Co.
		Niagara Falls, NY
E12	6850-00-181-7594	Cleaning Solution
		B&B 3100
		B&B Chemical Co.
E40		Miami, FL
E13		Clear Synthetic Sealant Reliance 456
		Reliance Varnish Co.
		Irvington, NJ
E14	8030-00-231-2354	Corrosion Preventive Compound
		MIL-C-11796, Class 3

# EXPENDABLE SUPPLIES AND MATERIALS LIST (Continued)

(1)	(2)	(3)
Item Number	National Stock Number	Description
E15	8030-00-838-7789	Corrosion Preventative Compound, WD40 WD40 Co. San Diego, CA
		OR
		LPS Research Laboratories Inc. Los Angeles, CA
E16	5350-00-221-0872	Crocus Cloth (P–C–458)
E17	6810-00-281-2785	Denatured Alcohol, (Ethanol) (O–E–760) MIL–STD–1201
E18	6850-00-264-6562	Desicant Bag MIL–D–3464, Type III W.R. Grace & Co. Davison Chemical Div. Baltimore, MD 21203
E19	6850-00-285-8011	Dry Cleaning Solvent (P-D-680) Type II
E20		Emery Cloth (No. 500) Carborundum Co. Niagara Falls, NY
E21	DELETED	Refer to Item # E73
E22	3030-00-213-3079	Gear Marking Compound, Non–Lead Compound G2 Stutz Co. Chicago, IL
		OR
		No. 89 Organic Products Co. P.O. Box 428 1963 E. Irving Blvd., Irving TX 75060

# EXPENDABLE SUPPLIES AND MATERIALS LIST (Continued)

(1)	(2)	(3)
	NATIONAL	
ITEM	STOCK	
NUMBER	NUMBER	DESCRIPTION
E23	8415–00–227–1220	Gloves, Small MIL–G–10902
	8415-00-227-1221	Gloves, Medium MIL–G–10902
	8415-00-227-1222	Gloves, Large MIL-G-10902
E 24	8415-00-266-8677	Gloves
		ZZ-G-381
E25	6810–00–264–6548	Glycerol (O–G–491)
E26	8010–00–584–3078	Gray Enmel (TT–E–489)
E27	9150-00-269-8255	Grease, MIL-G-4343
		Dow Corning Corp.
		Midland, MI
E28	5970-00-929-8595	Insulation Sleeving for No. 18 wire
		MIL-I-23053/12
		Flexite HT105C
E29	8010-00-007-8164	Iron Blue Pigment (TT–P–385)
E30	7920–00–205–3453	Lint-Free Cloth (CCC-C-46A)
E31	8520-00-141-2519	Liquid Soap (P–S–624)
E32	9505–00–221–2650	Lockwire, MS20995C20
E33	9505–00–847–1663	Lockwire, MS20995C32
E34	9150-00-141-4481	Lubricant
		Plastilube Moly No. 3
		Waren Refining and Chemical Co.,
		Cleveland, OH
E35	9150-00-273-2388	Lubricating Oil MIL-L-6081,
		Grade 1010
E36	9150-00-782-2627	Lubricating Oil MIL-L-7808
E37	9150-00-180-6266	Lubrication Oil MIL-L-23699
E38	7510-00-465-0994	Marking Pencil, Yellow
		Colorbrite No. 2127, 4127, or 2101
		Eberhard Faber Inc.
		Crestwood Industrial Park,
		Wilkes–Barre, PA 18707
E39	7510–00–266–6712	Masking Tape (UU–T–106)

# EXPENDABLE SUPPLIES AND MATERIAL LIST (Continued)

(1)	(2)	(3)	
	NATIONAL		
ITEM	STOCK		
NUMBER	NUMBER	DESCRIPTION	
E23	8415-00-227-1220	Gloves, Small MIL-G-10902	
	8415-00-227-1221	Gloves, Medium MIL-G-10902	
	8415-00-227-1222	Gloves, Large MIL-G-10902	
E24	8415-00-266-8677	Gloves	
		ZZ-G-381	
E25	6810-00-264-6548	Glycerol (O-G-491)	
E26	8010-00-584-3078	Gray Enamel (TT-E-489)	
E27	9150-00-269-8255	Grease, MIL-G-4343	
		Dow Corning Corp.	
		Midland, MI	
E28	5970-00-929-8595	Insulation Sleeving for No. 18 Wire-	
		MIL-1-23053/12	
		Flexite HT1 05C	
E29	8010-00-007-8164	Iron Blue Pigment (TT-P-385)	
E30	7920-00-205-3453	Lint-Free Cloth (CCC-C-46A)	
E31	8520-00-141-2519	Liquid Soap (P-S-624)	
E32	9505-00-221-2650	Lockwire, MS20995C20	
E33	9505-00-847-1663	Lockwire, MS20995C32	
E34	9150-00-141-4481	Lubricant,	
		Plastilube Moly No. 3	
		Warren Refining and Chemical Co.,	
		Cleveland, OH	
E35	9150-00-273-2388	Lubricating Oil MIL-L-6081,	
<b>F</b> 00		Grade 1010	
E36	9150-00-782-2627	Lubricating Oil MIL-L-7808	
E37	9150-00-180-6266	Lubricating Oil MIL-L-23699	
E38	7510-00-465-0994	Marking Pencil, Yellow	
		Colorbrite No. 2127,4127, or 2101	
		Eberhard Faber Inc.	
		Crestwood Industrial Park,	
<b>F</b> 00	7540 00 000 0740	Wilkes-Barre, PA 18707	
E39	7510-00-266-6712	Masking Tape (U U-T-1 06)	
L	ų.		

# EXPENDABLE SUPPLIES AND MATERIAL LIST (Continued)

(1)	(2)	(3)
ITEM	NATIONAL STOCK	
NUMBER	NUMBER	DESCRIPTION
E40	6810-00-275-6010	Methanol (0-M-232)
E40	8030-01-064-4951	Mold Release Compound
		Freekote No.1, P/N RAMN0225
		Hysol Div., Subsidiary of
		The Dexter Corporation
		170 Spanish River Blvd. West Boca Raton, FL 33431
		OR
		Dexter Adhesives and Structural
		Materials Division
		One Dexter Dr., Seabrook, NH 03874
		CAGE#22401
E42	6810-00-237-2918	Nitric Acid (O-N-350)
E43	9150-00-261-7899	Penetrating Oil (VV-P-216)
E44	9150-00-250-0926	Petrolatum (VV-P-236)
E45 E46	1730-00-181-4202 5970-00-833-1702	Plastic Cover (PSK 3355) Pressure Sensitive Teflon Tape,
240	3370 00 033 1702	<u>3/8-inch</u> wide by <u>0.006 inch</u> thick
		with temperature range of <u>-65 to</u>
		<u>350°F</u>
		Connecticut Hard Rubber Co. New Haven, Connecticut 06509
E47	8040-00-902-3871	RTV Silicone Rubber Adhesive
		Sealant
		RTV106
		General Electric Co., Silicone Products Div.,
		Waterford, NY 12188
E48	8030-00-744-1293	Rust Inhibitor and Preservative
F 40		MIL-C-23411
E49		Safety Cable AS3510-0206L
E50	5350-00-214-7203	Sandpaper (P-P-101)
E51	8945-01-066-8210	Shortening Compound
		(A-A-20100)

# EXPENDABLE SUPPLIES AND MATERIAL LIST (Continued)

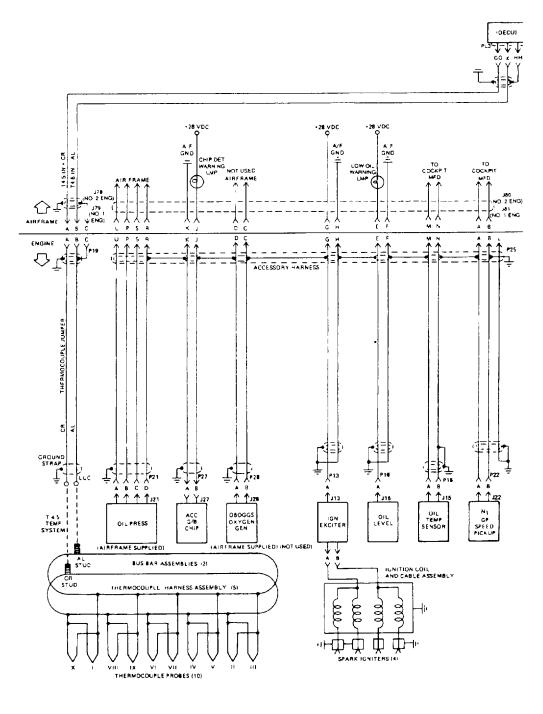
(1)	(2)	(3)
(1)	NATIONAL	(3)
ITEM	STOCK	
NUMBER	NUMBER	DESCRIPTION
550		
E52		Sisal Twine 2 ply hard fiber, light
		manila color, 265 pound tensile strength (minimum)
E53	6810-00-143-2000	Sodium Dichromate (O-S-595)
E54	3439-00-224-3567	Solder, 60/40 Tin Lead
201	0100 00 22 1 0001	(QQ-S-571 D)
E55	2835-01-120-2884	Spiral Chafing Sleeve
		94835-1
		Titeflex Co. Inc.
		Springfield, MA
E56	9330-00-688-7856	Spiral Chafing Sleeve
		94835-2 Titalian Canada
		Titeflex Co. Inc. Springfield, MA
E57	9330-00-688-7857	Spiral Chafing Sleeve
	5556 66 666 7657	94835-3
		Titeflex Co. Inc.
		Springfield, MA
E58	8135-00-066-0043	Tag (UU-T-81)
E59	7510-00-079-7906	Tape (PPP-T-60) Type IV
E60	4470-01-011-3748	Tape, Acetate Fiber, 3 inch
		(PPP-T-60B, Class 2, Scratch 27),
		Minnesota Mining & Manufacturing,
E61	6505-01-050-8714	St. Paul MN Tar
	0303-01-030-8714	Ashland Petroleum Co.
		Division of Ashland Oil Inc.
		Ashland, KY 41101
E62		Vexar Nylon Webbing
		E.I. Dupont de Nemours
_		Wilmington, DE
E63	8010-00-515-1596	White Enamel
EC4	7000 00 005 1711	(TT-E-489)
E64	7920-00-205-1711	Wiping Rag 50 Pound Bale
		(A-A-531)
L		

# EXPENDABLE SUPPLIES AND MATERIALS LIST (Continued)

(1)	(2)	(3)
Item Number	National Stock Number	Description
E65		Wire, <u>22 Gauge</u> Standard No. 8522–1 Type 4 (71002) Birnback Co. Inc. Freeport, NY 11520
E66	3439–00–166–9584	Wire, Welding AMS5786
E67	3439–00–882–7350	Wire Welding AMS5794
E68	8010-00-155-2208	Zinc Chromate Primer MIL–P–8585, or MIL–P–6899 Type II
E69	6850-01-372-6303	MIL–C–85704 Type II, 5 Gal
E70	6850–01–372–8304	MIL–C–85704 Type II, 55 Gal
E71	6850–01–370–5245	MIL–C–85704 Type IIA, 5 Gal
E72	6850–01–370–5244	MIL–C–85704 Type IIA, 55 Gal
E73		Penetrant Inspection Material AMS2644 Level 3 or Higher
E74	6850–01–450–6162	N–Propyl Bromide Type IIA, 55 Gal
E75	7930–01–367–0995	DS-108
E76	6850–01–375–5553	Electron Dielectric Solvent
E77	6850-01-412-0026	Positron Dielectric Solvent
E78	6810–00–855–6160	Isopropyl Alcohol TT–l–735

#### **APPENDIX D**

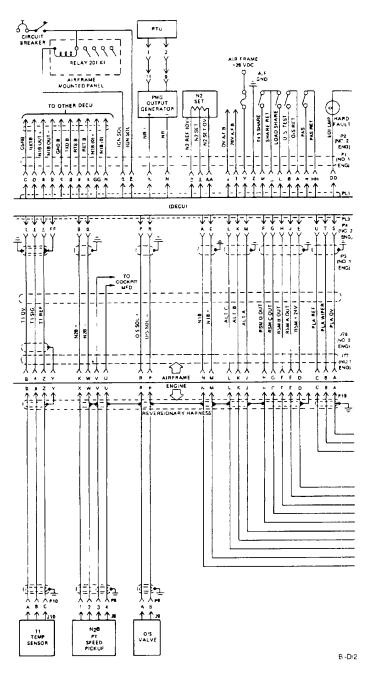
## WIRING DIAGRAM

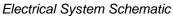


B-D 1

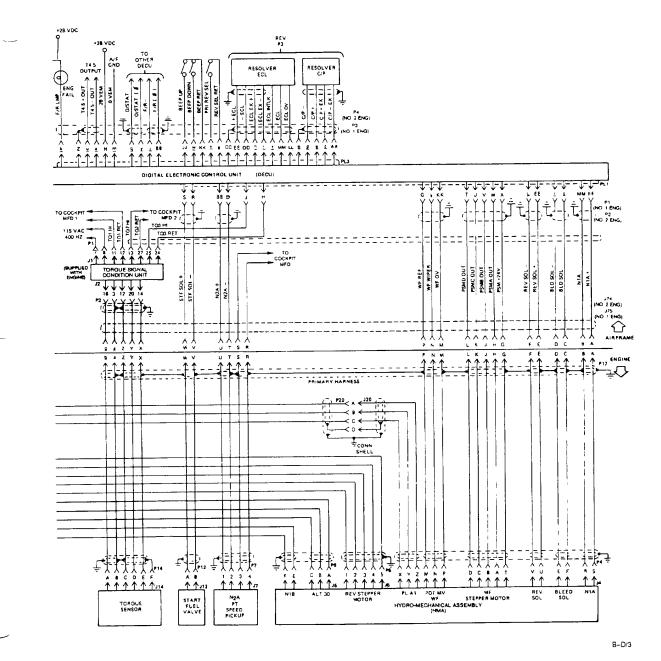
Electrical System Schematic







WIRING DIAGRAM



Electrical System Schematic

## APPENDIX E

## ILLUSTRATED LIST OF MANUFACTURED ITEMS

#### APPENDIX E

# TABLE OF CONTENTS

Nomenclature	Reference Task No.	Page No.
Bent Wire Gage (0.053 inch) (AVIM)	4-62	E-1
Bent Wire Gage (0.100 inch) (AVIM)	4-67	E-2
Bent Wire Gage (0.104 inch) (AVIM)	4-36	E-3
Bent Wire Gage (0.115 inch) (AVIM)	4-36	E-4
Bent Wire Gage (0.225 inch) (AVIM)	4-57	E-5
Bent Wire Gage (0.228 inch) (AVIM)	4-36	E-6
Bent Wire Gage (0.290 inch) (AVIM)	4-36	E-7
Chain With Hooks	1-26,1-103,	E-8
	1-104	
Drain Hose	1-28,1-102	E-9
Drain Hose	1-102	E-10
Hose Assembly	1-102	E-11
Hose Assembly	6-6	E-12
Hose Assembly	6-6	E-13
Oil Seal Installation Tool	5-21	E-14
Oil Seal Removal Tool	5-21	E-15
Phenolic Drift (AVIM)	3-9	E-16
Pressure Gage Tube Assembly	1-101	E-17
Sleeve	2-42	E-18
Sleeve Bushing	5-21	E-19
Stirring Rod	1-110	E-20
Swirler Installation Tool (AVIM)	3-18	E-21
Thickness Gage (AVIM)	1-87, 4-58,	E-22
	4-62	
Third Turbine Rotor Support Block (AVIM)	4-37	E-23
Wood Block (AVIM)	3-15	E-24
Wrench	5-24	E-25

# APPENDIX E

# ILLUSTRATED LIST OF MANUFACTURED ITEMS

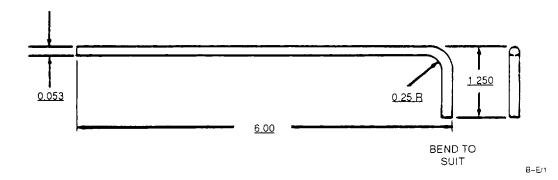
Nomenclature	Reference Task No.	Material Required
Bent Wire Gage (0.053 Inch)	4-62	AMS5645 QQ-S-763 (CRES321)
(AVIM)		or AMS5754 (Hastelloy X)

## **Fabrication Instructions:**

Fabricate bent wire gage out of specified material as follows:

- 1. Form in accordance with sketch shown below.
- 2. Break all sharp edges.

**NOTE:** All dimensions are in inches.

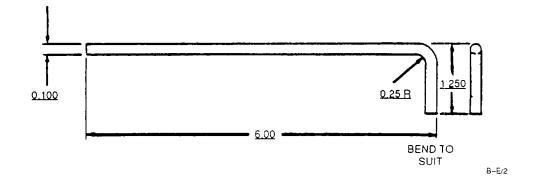


Nomenclature	Reference Task No.	Material Required
Bent Wire Gage (0.100 Inch)	4-67	AMS5645 QQ-S-763 (CRES321) or
(AVIM)		AMS5754 (Hastelloy X)

## **Fabrication Instructions:**

Fabricate bent wire gage out of specified material as follows:

- 1. Form in accordance with sketch shown below.
- 2. Break all sharp edges.
- **NOTE:** All dimensions are in inches.

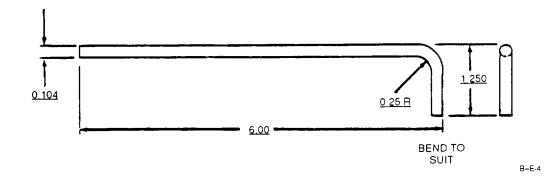


Nomenclature	Reference Task No.	Material Required
Bent Wire Gage (0.104 Inch)	4-36	AMS5645 QQ-S-763 (CRES321) or
(AVIM)		AMS5754 (Hastelloy X)

## **Fabrication Instructions:**

Fabricate bent wire gage out of specified material as follows:

- 1. Form in accordance with sketch shown below.
- 2. Break all sharp edges.
- **NOTE:** All dimensions are in inches.



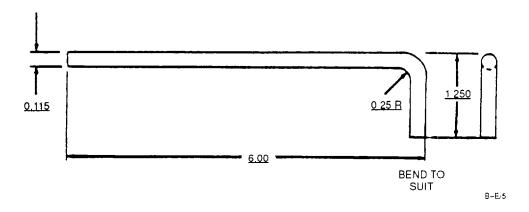
Nomenclature	Reference Task No.	Material Required
Bent Wire Gage (0.115 Inch)	4-36	AMS5645 QQ-S-763 (CRES321) or
(AVIM)		AMS5754 (Hastelloy X)

## **Fabrication Instructions:**

Fabricate bent wire gage out of specified material as follows:

- 1. Form in accordance with sketch shown below.
- 2. Break all sharp edges.

**NOTE:** All dimensions are in inches.

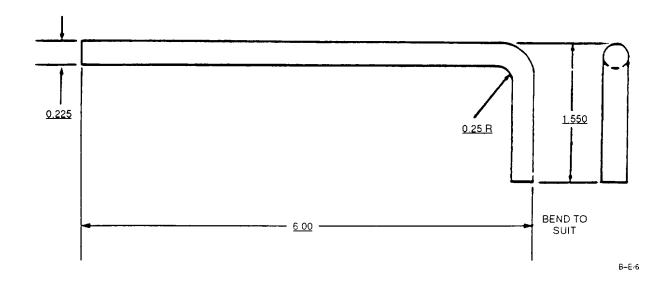


Nomenclature	Reference Task No.	Material Required
Bent Wire Gage ( <u>0.225 Inch</u> ) (AVIM )	4-57	AMS5645 QQ-S-763 (CRES321) or AMS5754 (Hastelloy X)

#### **Fabrication Instructions:**

Fabricate bent wire gage out of specified material as follows:

- 1. Form in accordance with sketch shown below.
- 2. Break all sharp edges.
- **NOTE:** All dimensions are in inches.



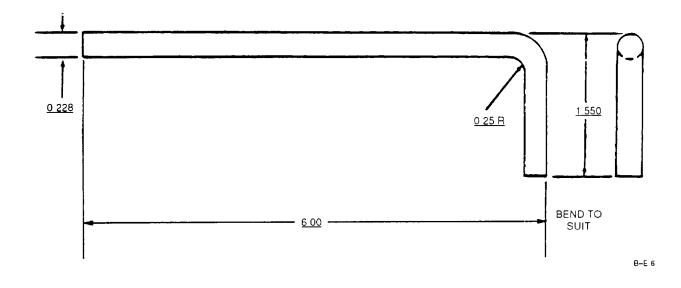
Nomenclature	Reference Task No.	Material Required
Bent Wire Gage (0.228 Inch) (AVIM)	4-36	AMS5645 QQ-S-763 (CRES321) or AMS5754 (Hastelloy X)

#### **Fabrication Instructions:**

Fabricate bent wire gage out of specified material as follows:

- 1. Form in accordance with sketch shown below.
- 2. Break all sharp edges.

NOTE: All dimensions are in inches.

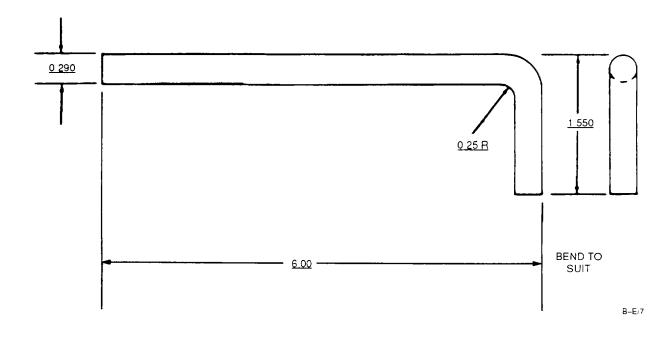


Nomenclature	Reference Task No.	Material Required
Bent Wire Gage (0.290 Inch) (AVIM)	4-36	AMS5645 QQ-S-763 (CRES321) or AMS5754 (Hastelloy X)

#### **Fabrication Instructions:**

Fabricate bent wire gage out of specified material as follows:

- 1. Form in accordance with sketch shown below.
- 2. Break all sharp edges.
- NOTE: All dimensions are in inches.



Nomenclature	Reference Task No.	Material Required
Chain with Hooks	1-26,1-103,1-104	<ul> <li>(1) Slip hooks (2 ea.), (2) pins (2 ea.), (3) <u>3/8 inch</u> welded link steel alloy chain (2ea.), (4) couplings (2), (5) crosby 1/2 oblong link (1). (See sketch).</li> </ul>

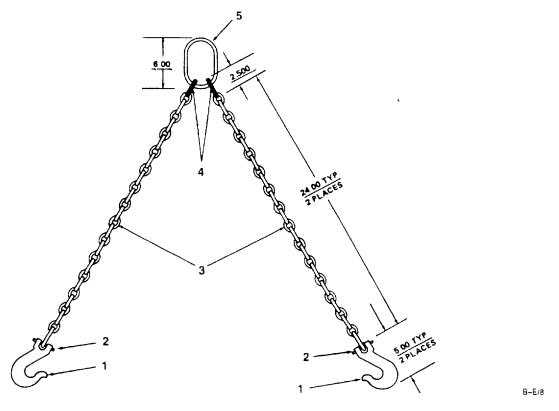
#### **Fabrication Instructions:**

**NOTE**: The chain and hooks must have a certified 1 ton load limit capacity. Therefore it is suggested that only certified vendors be used to procure this item. The specifications require a 1 ton steel heavy duty chain hoist.

Suggested certified vendors are: (1)

Paul's Wire, Rope & Sling Inc., 4 Indian Neck Ave., Branford, CT 06405.
 McMaster-Carr Supply, P.O. Box 4355, Chicago, Ill., 60680.

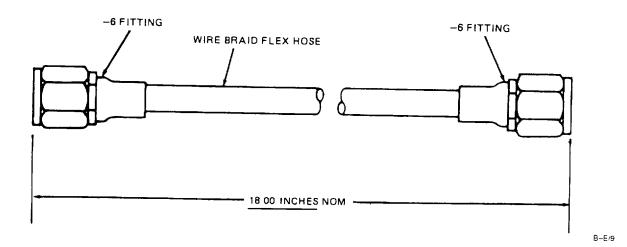
NOTE: All dimensions are in inches.



Nomenclature	Reference Task No.	Material Required
Drain Hose	1-28.1-102	Scrap flexible hose with -6 fittings

## **Fabrication Instructions:**

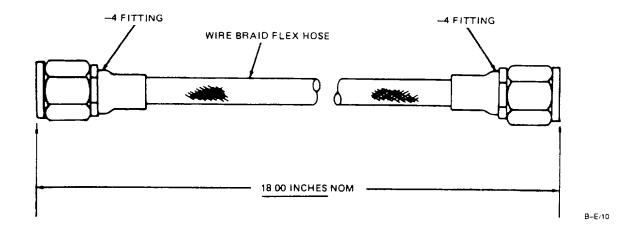
**NOTE:** Use suitable scrap hose (see sketch). If no such hose is available use any scrap hose providing priming task can be accomplished successfully.



Nomenclature	Reference Task No.	Material Required
Drain Haaa	1 102	Scrop flowible base with 4 fittings
Drain Hose	1-102	Scrap flexible hose with -4 fittings

#### **Fabrication Instructions:**

**NOTE:** Use suitable scrap hose (see sketch). If no such hose is available, use any scrap hose providing draining task can be successfully accomplished.

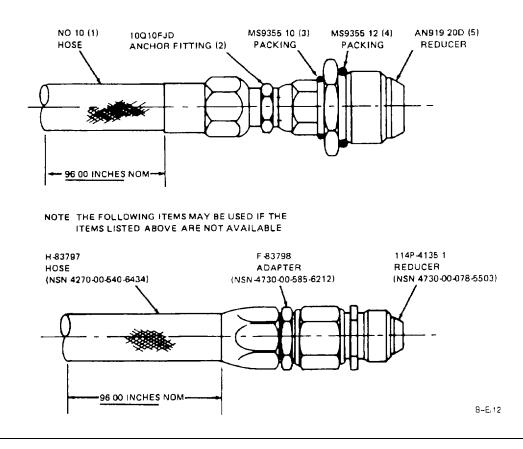


Nomenclature	Reference Task No.	Material Required
Hose Assembly	1-102	( <u>8 Feet</u> ) No. 10 Hose, (1) MS9355-10 Packing (1) MS9355-12 Packing, (1) AN919-20D Reducer (1) 1OQ10FJD Anchor Fitting

#### **Fabrication Instructions:**

Assemble hose assembly from material required and sketch shown below as follows:

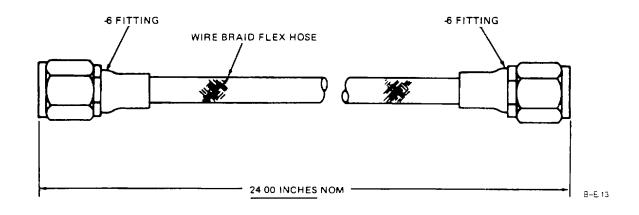
- 1. Install 1OQ1 OFJD Anchor fitting (2) on No. 10 hose (1).
- 2. Coat MS9355-10 Packing (3) and MS9355-12 Packing (4) with silicone grease MIL-G-4343.
- 3. Install Packing (3) and Packing (4) on AN919-20D Reducer (5).
- 4. Connect reducer (5) to anchor fitting (2).



Nomenclature	Reference Task No.	Material Required
Hose Assembly	6-6	Scrap flexible hose with -6 fittings

#### **Fabrication Instructions:**

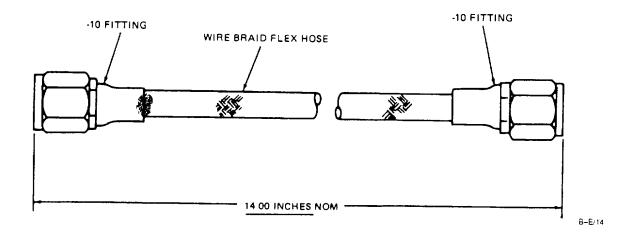
**NOTE**: Use suitable scrap hose (see sketch). If no such hose is available use any scrap hose providing preservation task can be successfully accomplished.



Nomenclature	Reference Task No.	Material Required
Hose Assembly	6-6	Scrap flexible hose with -10 fittings

#### **Fabrication Instructions:**

**NOTE:** Use suitable scrap hose (see sketch). If no such hose is available use any scrap hose providing preservation task can be successfully accomplished.

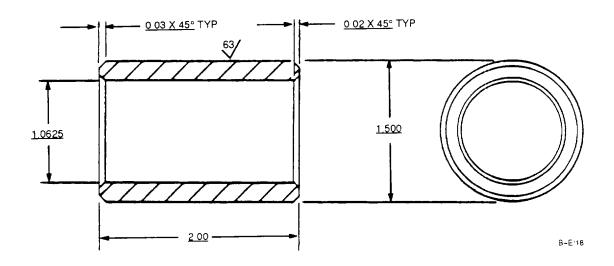


Nomenclature	Reference Task No.	Material Required
Oil Seal Installation Tool	5-21	Aluminum QQ-A-200/8T6

#### **Fabrication Instructions:**

Fabricate oil seal installation tool out of aluminum stock as follows:

- 1. Machine in accordance with sketch shown below.
- 2. Surface treat with anodize MIL-A-8625 Type II.
- **NOTE**: All dimensions are inches.

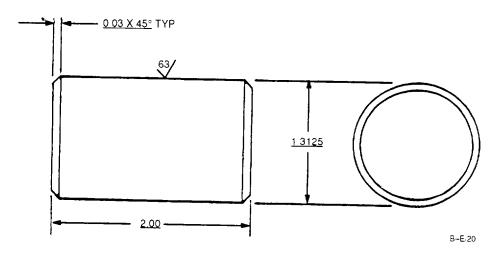


Nomenclature	Reference Task No.	Material Required
Oil Seal Removal Tool	5-21	Aluminum QQ-A-225/8T6

#### Fabrication Instructions:

Fabricate oil seal removal tool out of aluminum stock as follows:

- 1. Machine in accordance with sketch shown below.
- 2. Surface treat with anodize per MIL-A-8625 Type I.
- **NOTE:** All dimensions are in inches.



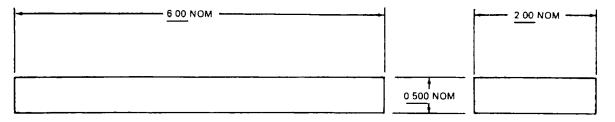
Nomenclature	Reference Task No.	Material Required
Phenolic Drift (AVIM)	3-9	AMS3903 - Cloth Organic Fiber - Epoxy Resin Impregnated

## **Fabrication Instructions:**

Fabricate phenolic drift out of specified material as follows:

- 1. Machine in accordance with sketch shown below.
- **NOTE:** All dimensions are in inches.

## Sketch or Diagram:



B-E 21

#### TM 1-2840-252-23-3

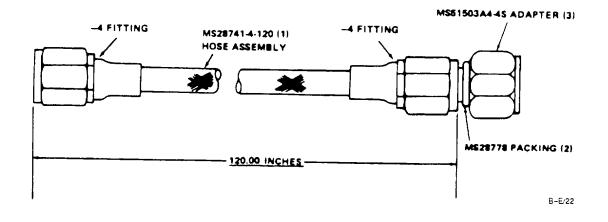
## ILLUSTRATED LIST OF MANUFACTURED ITEMS (Continued)

Nomenclature	Reference Task No.	Material Required
Pressure Gage Tube Assembly	1-101	<ul><li>(2) MS28741-4-120 Hose Assembly</li><li>(2) MS28778 Packing</li><li>(2) MS51503A4-4S Adapter</li></ul>

## Fabrication Instructions:

Assemble two pressure gage tube assemblies from material required and sketch shown below as follows:

- 1. Coat MS28778 packing (2) with silicone grease MIL-G-4343.
- 2. Install packing (2) on MS51503A4-4S adapter (3).
- 3. Connect adapter (3) to MS287414-120 hose assembly (1).



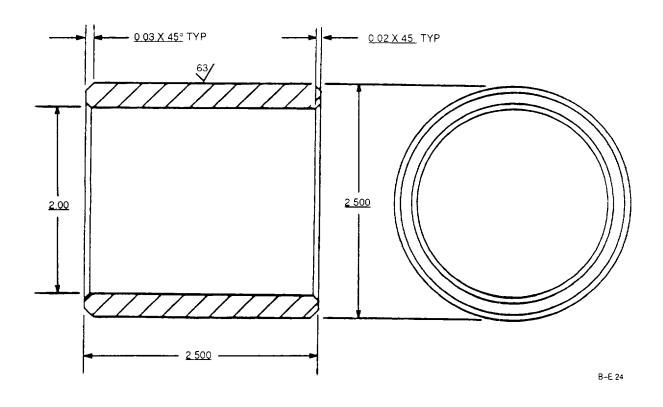
Nomenclature	Reference Task No.	Material Required
Sleeve	2.42	
Sleeve	2-42	Aluminum QQ-A-200/8T6

#### **Fabrication Instructions:**

Fabricate sleeve bushing out of aluminum stock as follows:

- 1. Machine in accordance with sketch shown below.
- 2. Surface treat with anodize MIL-A-8625 Type II.

**NOTE**: All dimensions are in inches.



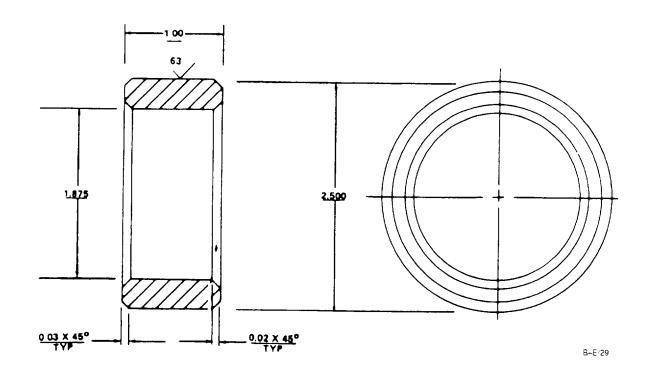
Nomenclature	Reference Task No.	Material Required
Sleeve Bushing	5-21	Aluminum QQ-A-200/8T6

#### **Fabrication Instructions:**

Fabricate sleeve bushing out of aluminum stock as follows:

- 1. Machine in accordance with sketch shown below.
- 2. Surface treat with anodize per MIL-A-8625 Type II.

NOTE: All dimensions are in inches.



B-E 30

## ILLUSTRATED LIST OF MANUFACTURED ITEMS (Continued)

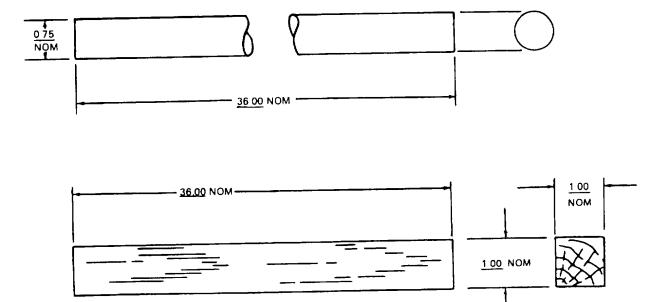
Nomenclature	Reference Task No.	Material Required
Stirring Rod	1-110	Hardwood Stock

#### **Fabrication Instructions:**

Fabricate stirring rod from hardwood stock as follows:

- 1. Machine wood in accordance with sketch shown below.
- 2. Remove all rough edges with fine grain sandpaper.

NOTE: All dimensions are in inches.



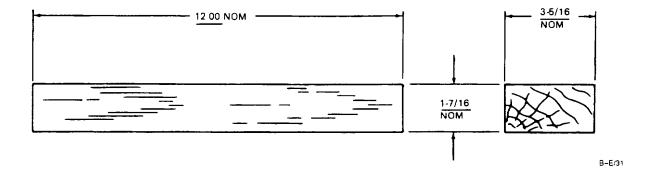
Nomenclature	Reference Task No.	Material Required
Swirler Installation Too (AVIM)	3-18	Hardwood Stock

#### **Fabrication Instructions:**

Fabricate swirler installation tool out of hardwood stock as follows:

- 1. Saw wood in accordance with sketch shown below.
- 2. Remove all rough edges with fine grain sandpaper.

NOTE: All dimensions are in inches.



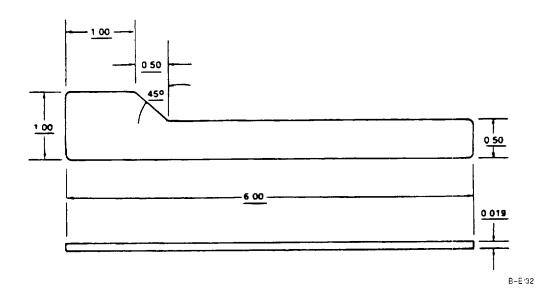
Nomenclature	Reference Task No.	Material Required
Thickness Gage (AVIM)	1-87, 4-58, 4-62	AMS5519 (CRES301) Steel

## Fabrication Instructions:

Fabricate feeler gage out of steel as follows:

- 1. Fabricate in accordance with sketch shown below.
- 2. Break all sharp edges.

**NOTE:** All dimensions are in inches.

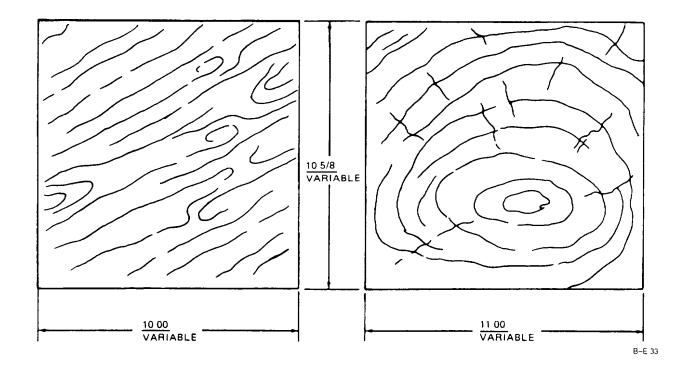


Nomenclature	Reference Task No.	Material Required
Third Turbine Rotor Support Block (AVIM)	4-37	Hardwood Stock

#### **Fabrication Instructions:**

Fabricate third turbine rotor support block out of hardwood stock as follows:

- 1. Saw wood in accordance with sketch shown below.
- 2. Remove all rough edges with fine grain sandpaper.
- **NOTE:** Size of required block may vary with distance from floor to turbine shaft. All dimensions are in inches.



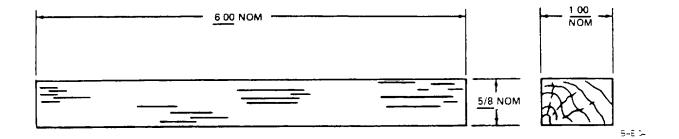
Nomenclature	Reference Task No.	Material Required
Wood Block (AVIM)	3-15	Hardwood Stock

#### **Fabrication Instructions:**

Fabricate wood block out of hardwood stock as follows:

- 1. Saw wood in accordance with sketch shown below.
- 2. Remove all rough edges with fine grain sandpaper.

NOTE: All dimensions are in inches.

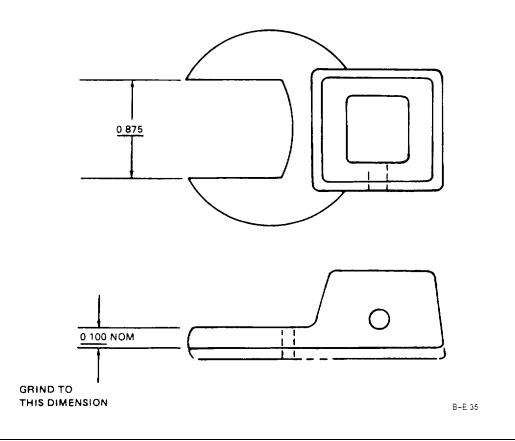


Nomenclature	Reference Task No.	Material Required
Wrench	5-24	Crowfoot Wrench NSN 5120-00-541-4071

#### **Fabrication Instructions:**

Fabricate crowfoot wrench out of specified material as follows:

- 1. Machine in accordance with sketch shown below.
- 2. Break all sharp edges.
- NOTE: All dimensions are in inches.



## APPENDIX F

## ABBREVIATIONS

## NOTE

# See Appendix G, Paragraph G-12, for additional abbreviations pertinent to FADEC.

A A/F
BITE Built-in Test Equipment
C
DECU
E ECLEngine Control Level EHRTEngine History Recording Termina EIREquipment Improvement Recommendations EMEmergency EOIEngine Out Indicator
F       Degrees Fahrenhei         °F       Degrees Fahrenhei         FADEC       Full Authority Digital Electronic Control         FEDS       Flexible Engine Diagnostic System         FI       Flight Idle         FOD       Foreign Object Damage         FSCM       Federal Supply Code for Manufacturers         FWD       Forward
GIGround Idle GNDBGround-Channel E GPGas Produce GSEGround Support Equipmen GTGas Turbine

## APPENDIX F

# ABBREVIATIONS (Continued)

<b>Н</b> Нg	Mercury
ну	
HMU	
Hz	,
L	
LCCS	Life Cycle Contractor Support
L/H	Left Hand
M	
MAC	
Max	
METS	
MFD MFP	
Mir F	
MOS	
MTOE	d Table of Organization and Equipment
Ν	
N <sub>1</sub>	Compressor Rotor RPM
N <sub>2</sub>	
NATO	
No	
NSN	National Stock Number
<b>n</b>	
<b>P</b> P <sub>3</sub>	Air Brassurs (Air Diffusor)
P3 PAS	
PHR	
P <sub>m</sub>	
PMG	
PSI	
PSIG	Pounds per Square Inch Gage
PT	
PTIT	Power Turbine Inlet Temperature
Q	
QA	
QC	Quality Control

## APPENDIX F ABBREVIATIONS (Continued)

R	
R/H	Right Hand
RETB	
REV	
RPM	
RPSTL	Repair Parts and Special Tool List
RTSB	Request to Send-Channel B
RTU	
RTV	Room Temperature Vulcanizing
RXTB	Receive Data-Channel B
S	
SCU	Signal Conditioning Unit
SHP	
SMR	
STF	
т	
Τ <sub>1</sub>	Inlet Air Temperature
тво	
	Time Between Overhaul
TBO TM	Time Between Överhaul
TBO TM TMDE	Time Between Överhaul 
TBO TM	Time Between Överhaul Technical Manual Test Measurement and Diagnostic Equipment Torque
TBO TM TMDE TQ	Time Between Överhaul Technical Manual Test Measurement and Diagnostic Equipment Torque
TBO TM TMDE TQ	Time Between Överhaul Technical Manual Test Measurement and Diagnostic Equipment Torque
TBO TM TMDE TQ TXDB U	Time Between Överhaul Technical Manual Technical Manual Test Measurement and Diagnostic Equipment Torque Transmit Data-Channel B
TBO TM TMDE TQ TXDB	Time Between Överhaul Technical Manual Technical Manual Test Measurement and Diagnostic Equipment Torque Transmit Data-Channel B
TBO TM TMDE TQ TXDB U	Time Between Överhaul Technical Manual Technical Manual Test Measurement and Diagnostic Equipment Torque Transmit Data-Channel B
TBO TM TMDE TQ TXDB U UUT V	Time Between Överhaul Technical Manual Test Measurement and Diagnostic Equipment Torque Transmit Data-Channel B
TBOTM. TM. TMDE TQ. TQ. TXDB UUT UUT V Vac	Time Between Överhaul Technical Manual Technical Manual Test Measurement and Diagnostic Equipment Torque Transmit Data-Channel B Unit Under Test
TBO TM TMDE TQ TXDB U UUT V	Time Between Överhaul Technical Manual Technical Manual Test Measurement and Diagnostic Equipment Torque Transmit Data-Channel B Unit Under Test
TBOTM. TM. TMDE TQ. TQ. TXDB UUT UUT V Vac	Time Between Överhaul Technical Manual Technical Manual Test Measurement and Diagnostic Equipment Torque Transmit Data-Channel B Unit Under Test
TBOTMTM	Time Between Överhaul Technical Manual Test Measurement and Diagnostic Equipment Torque Transmit Data-Channel B Unit Under Test Volts Alternating Current Volts Direct Current

TM 1-2840-252-23-3

**APPENDIX G** 

FAULT ISOLATION MANUAL

## **APPENDIX G**

## TABLE OF CONTENTS

Subject		Page
Introductio	n	G-1
G-1	General	G-1
G-2	Description	G-1
G-3	Test Equipment	G-2
G-4	Resistance and Insulation Tests	G-2
G-5	High Fuel Consumption	G-2
G-6	Fault Isolation	G-3
G-7	Display of Fault Codes	G-4
G-8	Power Supply Interrupt	G-7
G-9	Operational Problems Without Codes	G-8
G-10	Using the Fault Isolation Diagrams	G-8
G-11	Diagrams	G-9
G-12	Abbreviations	G-10
G-13	Fault Trees	G-11
G-14	Diagrams	G-11
G-15	Fault Code F1, N1A Sensor Expanded Instructions	G-14
G-16	Fault Code F2, N1B Sensor Expanded Instructions	G-17
G-17	Fault Code F3, N1A/N1B Difference Expanded Instructions	G-20
G-18	Fault Code F4, MV Potentiometer Expanded Instructions	G-23
G-19	Fault Code F5 Wf/Stepcount Difference Expanded Instructions	G-27
G-20	Fault Code F6, PLA Potentiometer Expanded Instructions	G-30
G-21	Fault Code F7, Bleed Valve Solenoid Expanded Instructions	G-34
G-22	Fault Code F8, Primary/Reversionary Solenoid Expanded Instruction	G-37
G-23	Fault Code F9, Alternator Expanded Instructions	G-40
G-24	Fault Code FA, Start Fuel Solenoid Expanded Instructions	G-43

#### TABLE OF CONTENTS (CONTINUED)

Subject		Page
G-25	Fault Code FB, Reversionary Step Count Expanded Instructions	G-46
G-26	Fault Code A1, Q Sensor Expanded Instructions	G-49
G-27	Fault Code A2, N2 Set Potentiometer Expanded Instructions	G-52
G-28	Fault Code A3, Collective Pitch Angle LVDT Expanded Instructions	G-56
G-29	Fault Code A4, NR Sensor Expanded Instructions	G-59
G-30	Fault Code A5, ECL Resolver Expanded Instructions	G-62
G-31 G-32	Fault Code A6, Airframe Emergency 28V DC Expanded Instructions Fault Code A7 (Or No Display), Airframe +28V DC Supply Expanded Instructions	G-65 G-67
G-33	Fault Codes D0, D3, D6, DA, DB, DD Internal DECU Faults Expanded Instructions	G-69
G-34	Fault Codes D4, D5, D7, D8, D9, DC, DF Internal DECU Faults Expanded Instructions	G-69
G-35	Fault Code D1, P3 Transducer Expanded Instructions	G-71
G-36	Fault Code D2, P1 Transducer Expanded Instructions	G-72
G-37	Fault Code De, 400 Hz Resolver Reference Expanded Instructions	G-75
G-38	Fault Code EI, T4.5 Sensor Expanded Instructions	G-79
G-39	Fault Code E2, T1 Sensor Expanded Instructions	G-83
G-40	Fault Code E3, N2A Sensor Expanded Instructions	G-87
G-41	Fault Code E4, N2B Sensor Expanded Instructions	G-90
G-42	Fault Code E5, N2A/N2B Sensor Expanded Instructions	G-93
G-43	Fault Codes C1-C3, C5-C8, Communication Line Faults Expanded Instructions	G-95
G-44	Fault Codes C4, Communication Line Fault Q (0) Signal Expanded Instructions	G-97
G-45	Fault Code C9, N1 B (0) Sensor Signals From Other DECU Expanded Instructions	G-99
G-46	Fault Code CF, Loss Of Load Share Signals Expanded Instructions	G-101
G-47	Fault Code B2, N1 B Sensor Expanded Instructions	G-104
G-48	Fault Code B3, N2B Sensor Expanded Instructions	G-107
G-49	Fault Code B4, T4.5 Sensor Expanded Instructions	G-110
G-50	Fault Code B5, Collective Pitch Angle LVDT Expanded Instructions	G-113
G-51	Fault Code B6, ECL Resolver Expanded Instructions G-iii	G-116

# TABLE OF CONTENTS (CONTINUED)

Subject	TABLE OF CONTENTS (CONTINUED)	Page
G-52	Fault Code B7, PLA Potentiometer Expanded Instructions	G-120
G-53	Fault Codes B9, BA, BB, Internal DECU Faults Expanded Instructions	G-121
G-54	Fault Code BC, 400 Hz Resolver Reference Expanded Instructions	G-122
G-55	Fault Codes 10-1 F, Internal DECU Faults Expanded Instructions	G-123
G-56	Unable To Switch To Reversionary Mode Expanded Instructions	G-126
G-57	Unable To Switch To Primary Mode Expanded Instructions	G-129
G-58	System Toggles Between Primary And Reversionary Mode Expanded Instructions	G-132
G-59	Q Load Share Selected, Os Not Matched Expanded Instructions	G-135
G-60	T4.5 Load Share Selected, T4.5s Not Matched Expanded Instructions	G-139
G-61	Ignition Relay Does Not Function Expanded Instructions	G-142
G-62	Bleed Band Does Not Function Properly Expanded Instructions	G-144
G-63	Engine Out Indicator (EOI) Does Not Illuminate During Normal Shutdown Expanded Instructions	G-146
G-64	No Observed Engine Speed Reduction During Overspeed Test Expanded Instructions	G-149
G-65	No Beeper Switch Response In Reversion Expanded Instructions	G-152
G-66	Unable To Perform Power Assurance Test (Results Not Indicated On Hex Display) Expanded Instructions	G-154
G-67	Moving ECL To Stop Causes Increase In Engine Power Expanded Instructions	G-157
G-68	Moving ECL To Flight Causes Decrease In Engine Power Expanded Instructions	G-161
G-69	Engine Out Indicator (EOI) Is Always Illuminated Expanded Instructions	G-164
G-70	F/R Lamp Does Not Illuminate When Reversion Is Selected Expanded Instructions	G-166
G-71	F/R Lamp Is Illuminated When Primary Is Selected Expanded Instructions	G-168
G-72	Fault Codes Not Defined In Table 1 Expanded Instructions	G-170
G-73	Insulation/Voltage Check Expanded Instructions	G-172

#### DECU TROUBLESHOOTING

#### **SECTION I. INTRODUCTION**

#### **G-1 GENERAL**

- a. This Appendix provides fault isolation instructions for the Model EMC-32T Full Authority Digital Electronic Control (FADEC) supplied by Chandler Evans, Control Systems Division, Coltec Industries, Inc., Charter Oak Blvd., Box 330651, West Hartford, CT 06133-0651.
- b. In subsequent revisions to this manual, changes or additions to the text, tables or illustrations will be indicated by a vertical line in the left margin of affected material.

#### **G-2 DESCRIPTION**

- a. The EMC-32T Full Authority Digital Electronic Control (FADEC) includes all control functions required for proper and complete control of the Textron Lycoming T55 turboshaft engine. The EMC-32T version operates the T55-L-714 engine on the MH47E helicopter.
- b. Fuel Control System. The control system consists of a digital electronic control unit (DECU) and a hydromechanical assembly (HMA) manufactured by Chandler Evans, and Lycoming-supplied sensors and electrical harnesses. The system requires signal inputs from airframe components and utilizes airframe harnesses for inter- connection between HMA, DECU, engine, and airframe components (see figure 201). The system provides two operating modes: primary and reversionary. The primary mode is the normal mode of operation. In the event of a primary failure. the system automatically switches to the reversionary backup mode. Reversionary mode can also be selected by the pilot.
- c. Hydromechanical Assembly (HMA). The HMA consists of two units: The hydromechanical metering unit (HMU) and the fuel pumping unit (FPU). The HMU includes all fuel metering components to support both primary and reversionary fuel metering, a self-contained alternator for powering the electronics, both primary and reversionary compressor bleed air control, and redundant core speed sensing. The FPU includes a jet-induced boost into a main stage gear section. When operating in primary mode, the HMU receives actuation signals from the DECU that operate the primary stepper motor. The stepper motor controls the position of the fuel metering valve. A potentiometer connected to the rotary portion of the metering valve provides closed-loop feedback to the DECU. When operating in reversionary mode, the primary stepper motor is deenergized, and fuel flow is deter- mined by the hydromechanical Wf/P3 reversionary control. The scheduled Wf/P3 is multiplied by P3 to give altitude-sensitive control of metered fuel flow. A mechanical P3 transducer, mechanical Wf/P3 times P3 multiplier, Wf/P3 servomechanism and reversionary stepper motor comprise this function. The output of the mechanical multiplier drives the fuel metering valve to the required flow.
- d. Digital Electronic Control Unit (DECU). The DECU includes a microcomputer-based primary control section and an independent reversionary section, controlled through an independent microcomputer for backup. In primary mode, the DECU provides engine load matching through either shaft torque or engine temperature as selected by the pilot. The DECU sends signals to the HMU to control fuel flow based on the required engine load match. The DECU's primary section also provides automatic start logic, surge detection and recovery, torque sharing and management, control of the bleed valve actuator, and self-diagnostic capabilities. In the event of a serious failure within the primary section, the system automatically switches to the redundant electronic reversionary control. Engine load anticipation is provided using rotor thrust lever position, with trimming provided by beep up and beep down switches. The DECU's reversionary section operates with the hydromechanical Wf/P3 manual system by controlling the reversionary stepper motor and changeover solenoid.

#### G-3 TEST EQUIPMENT

- a. Some fault isolation procedures require the use of a volt-ohmmeter to indicate resistance across the wire harnesses or across component connector pins. To avoid unstringing harnesses, use test cables with size 20 pins to mate with the harness plugs and sockets.
- b. The voltmeter used for measuring voltages shall have an accuracy of <u>0.1 percent</u> full scale or better on the <u>200V</u> range.
- c. The ohmmeter used for measuring all resistances except ground strap resistance shall have an accuracy of <u>0.05 percent</u> full scale or better on the <u>2000</u> range and <u>0.5 percent</u> full scale or better on all other ranges. The ohmmeter used for measuring ground strap resistance during the insulation/voltage check shall be capable of measuring <u>50mΩ</u> with an accuracy of  $\pm 5m\Omega$ , using a four wire configuration. The meter should always be set to the lowest possible range for the specified limits. If the autoscale function is used, an automatic switch from one range to another can appear to be a discontinuity in the component being measured. If this occurs, turn off the autoscale function and manually set the meter to the appropriate range.

#### CAUTION

DO NOT USE A METER THAT WILL SUPPLY MORE THAN <u>5mA</u> WHEN MEASURING PLA OR METERING VALVE POTENTIOMETER RESIS- TANCES (FAULT CODES B7, F4 AND F6) AS THIS CAN DAMAGE THE POTENTIOMETER.

#### G-4 RESISTANCE AND INSULATION TESTS

a. Components which fail the resistance and insulation test specified herein are suspected to be faulty. Consult the manufacturer's procedure for diagnosis and troubleshooting of these components before replacing. Note that conductive solvents may cause temporary resistance and insulation shorts or failure. If wetting is a possible cause of the problem, allow the affected component to dry out, then recheck the resistance.

#### **G-5 HIGH FUEL CONSUMPTION**

a. The engine HMA cannot cause high fuel consumption. Fuel consumption depends upon turbine engine condition, fuel characteristics or operating conditions. No troubleshooting of the HMA system is required.

#### **G-6 FAULT ISOLATION**

- a. Effective fault isolation is the determination of the actual problem by an intelligent analysis of the symptoms of the fault, followed by a systematic series of checks to isolate the fault and to correct the cause. Fault isolation is not complete until the symptom(s) has been proven to be cured. Replacement of the fuel control hydromechanical assembly (HMA) or the electronic control unit (DECU) for fault isolation purposes should be at- tempted as a last resort. If the symptoms are not corrected by this method, reinstall the original HMA or DECU on the engine. If the new components completely correct the fault, make certain to include complete symptom data together with accumulated operating time on maintenance forms returned with the component. If such data is not supplied, the item must be returned to overhaul, regardless of condition.
- b. For faults related to signals supplied from components external to FADEC, it is recommended that these external components be functionally tested per manufacturer specified procedures. Fault isolation procedures for the FADEC system may not detect all problems occurring in external signal sources.

#### WARNING

THE EMC-32T FADEC FAULT DETECTION SYSTEM IS A LIMITED DIAGNOSTIC TOOL. IT MONITORS CRITICAL INPUT AND OUTPUT SIG- NALS OF THE FADEC SYSTEM AND INTERNAL FUNCTIONS OF THE DECU. THE FAULT LOGIC DOES NOT MONITOR ALL COMPONENTS OR FUNCTIONS OF THE T55-L-714 HMA SYSTEM SINCE MANY TYPES OF FAILURES ARE NOT ELECTRONICALLY (BIT) DETECTABLE. THE FAULT LOGIC MONITORS ONLY THOSE COMPONENTS AND FUNCTIONS AS SPECIFIED IN THE CECO SYSTEM SPECIFICATION 109597.

THEREFORE, THE ABSENCE OF FAULT CODES DOES NOT GUARANTEE HMA SYSTEM INTEGRITY. ANY HMA SYSTEM PROBLEM OR ANOMALY SHOULD BE FULLY INVESTIGATED BY MAINTENANCE PER- SONNEL FOR CAUSE AND RESOLUTION PRIOR TO DETERMINING READINESS FOR FLIGHT. READINESS FOR FLIGHT SHOULD NOT BE DETERMINED SOLELY ON THE ABSENCE OF FAULT CODES.

#### CAUTION

DIRECTION IN THIS MANUAL TO REPLACE HMA OR DECU COM- PONENTS IS IN SOME CASES BASED ON DEFAULT, THAT IS, IT IS CONCLUDED TO BE TO BE THE ONLY REMAINING POSSIBILITY OF PROBLEM CAUSE WITHIN THE SYSTEM AFTER ALL OTHER CAUSES HAVE BEEN ELIMINATED.

IF THE SYSTEM PROBLEM IS NOT ALLEVIATED BY REPLACEMENT OF THE DECU OR HMA, IT IS LIKELY THAT THESE COMPONENTS WERE NOT DISCREPANT. IN SUCH CASE IT SHOULD BE VERIFIED THAT ALL PRECEDING FAULT ISOLATION STEPS WERE CONDUCTED CORRECTLY. IT SHOULD ALSO BE INVESTIGATED WHETHER THE PROBLEM HAS CAUSES EXTERNAL TO THE HMA SYSTEM OR CAUSES DUE TO INCORRECT OPERATING PROCEDURE.

#### CAUTION

DIRECTION TO REPLACE AIRFRAME OR ENGINE COMPONENTS WHICH ARE NOT MANUFACTURED BY CECO IS BASED ON THE LIM-

ITED INFORMATION WHICH CAN BE DETERMINED WITH SIMPLE VOLT-OHMMETER CHECKS. THE INTENT IS TO ISOLATE A SUS- PECTED PROBLEM AREA RATHER THAN MAKE A FINAL DETERMINA- TION TO REJECT THESE COMPONENTS. APPLICABLE CHECKOUT PROCEDURES FOR THESE COMPONENTS SPECIFIED BY THE AIR- FRAME OR ENGINE MANUFACTURER SHOULD BE APPLIED TO DE- TERMINE THE INTEGRITY OF THESE COMPONENTS.

#### CAUTION

ELECTRICAL PARAMETERS GIVEN IN THIS MANUAL REFLECT CHARACTERISTICS OF ACTUAL AIRCRAFT COMPONENTS. WHEN USING THIS MANUAL IN A TEST CELL INSTALLATION, IT SHOULD BE NOTED THAT SIGNAL INPUTS FOR AIRCRAFT COMPONENTS MAY BE PRO- VIDED BY REPRESENTATIVE TEST CELL EQUIPMENT. IN SOME INSTANCES, THE ELECTRICAL CHARACTERISTICS OF THE TEST CELL EQUIPMENT MAY NOT BE THE SAME AS THOSE OF THE ACTU- AL AIRCRAFT COMPONENTS. THIS CAN RESULT IN FAULTS BEING LOGGED BY THE DECU AND CAN POSSIBLY DAMAGE THE DECU. IF DIFFERENCES ARE FOUND, THE TEST CELL EQUIPMENT SHOULD BE REPLACED BEFORE FADEC TESTING CONTINUES.

#### NOTE

Before replacing any component, be sure that a contaminated or corroded connector is not the cause of the fault. Clean connectors with contact cleaner and blow-dry using compressed nitrogen (preferred) or filtered dry air.

### **G-7 DISPLAY OF FAULT CODES**

- a. Code Display. All faults are classified into two main categories of criticality. Hard faults are failures which could cause unacceptable engine and/or aircraft performance if operation were to continue in the normal primary mode of control. Soft faults are failures which do not impact normal control of the engine or aircraft. Fault information is logged in an electrically erasable nonvolatile memory (EEPROM), and is available through a two-digit hexadecimal display on the DECU. See figure 201 for location of the display. The most significant digit is used to identify the source of the faulty component, as defined below:
  - F -- Fluid Controller (HMU/Pump)
    A -- Airframe-Supplied Sensor
    D, 1, or B -- DECU
    E-- Engine-Supplied Sensor
    C -- Communication Between DECUs

The least significant digit is used to identify the specific fault. The codes are listed in Table 1 in numeric/ alpha order with their descriptions and fault isolation procedure numbers.

# TABLE 1. FAULT CODE INDEX

Fault Code	Fault Description	Procedure
000e10	Microprocessor Hard Fault	Figure No. 141
	Microprocessor Hard Fault	
11	Non-volatile RAM Checksum Hard Fault	141
12	Non-volatile RAM Engine History Data Soft Fault	141
13	Non-volatile RAM Fault Data Soft Fault	141
14	Non-volatile RAM Accumulated Fault Data Soft Fault	141
15	Non-volatile RAM Write Test Soft Fault	141
16	Non-volatile RAM Storage Incomplete	141
17	Non-volatile RAM History Data Inconsistent	141
18	Minor Cycle Not Completed Hard or Soft Fault	141
1B	EMS Cycle Not Completed Soft Fault	141
1C	A/D Conversion Not Completed Hard or Soft Fault	141
1E	RAM Failure Hard Fault	141
1F	Opcode Error Hard Fault	141
AI	Q Sensor Soft Fault	112
A2	N2 Set Potentiometer Soft Fault	113
A3	Primary and Reversionary C/P Angle LVDT Soft Fault	114
A4	NR Sensor Soft Fault	115
A4 A5	Primary and Reversionary ECL Resolver Soft Fault	116
AS A6	Airframe Emergency + <u>28V DC</u> Supply Soft Fault	117
A7	Airframe + <u>28V</u> DC Supply Soft Fault	118
B2	Primary or Reversionary N1 B Sensor Soft Fault	133
B3	Primary or Reversionary N2B Sensor Soft Fault	134
B4	Primary or Reversionary T4.5 Sensor Soft Fault	135
B5	Primary or Reversionary C/P Angle LVDT Soft Fault	136
B6	Primary or Reversionary ECL Resolver Soft Fault	137
B7	Primary or Reversionary PLA Potentiometer Soft Fault	138
B9	Primary or Reversionary CJC Soft Fault	139
BA	Reversionary + <u>28V</u> Soft Fault	139
BB	Reversionary T4.5 Calibration Soft Fault	139
BC	Primary or Reversionary <u>400Hz</u> Resolver Reference Soft Fault	140
C1	Communication Line Soft Fault on T4.5 (0) Signal	129
C2	Communication Line Hard or Soft Fault on P1 (O) Signal	129
C3	Communication Line Hard or Soft Fault on T1 (0) Signal	129
C4	Communication Line Soft Fault on Q (0) Signal	130
C5	Communication Line Soft Fault on N2 SET (0) Signal	129
C6	Communication Line Soft Fault on C/P (0) Signal	129
C7	Communication Line Soft Fault on NR (0) Signal	129
C8	Communication Link Soft Fault	129
C8 C9	Communication Link Soft Fault on N1B (0) Signal	129
CF	Loss of Load Share Signals Hard Fault	132
DO	Overspeed Drive Soft Fault	119
D1	P3 Transducer Soft Fault	121
D2	P1 Transducer Soft Fault	122
D3	28V "OR" Diodes Soft Fault	119

		1
Fault	Fault Description	Procedure
Code		Figure No.
D4	+10V Reference Hard Fault	120
D5	+/-15V Hard Fault	120
D6	+ <u>12V</u> Reversionary or +/- <u>12V</u> Overspeed Soft Fault	119
D7	+5V Hard Fault	120
D8	Primary and Reversionary CJC Soft Fault	120
D9	+ $24V$ Regulator Soft Fault	120
DA	+5V Reversionary Soft Fault	119
DB	Reversionary System Soft Fault or Idle Check Soft Fault	119
DC	T4.5 Calibration Soft Fault	120
DD	Overspeed Check Soft Fault	119
DE	Primary and Reversionary <u>400Hz</u> Resolver Reference Soft Fault	123
DF	Watchdog Timer Test Hard Fault	120
El	Primary and Reversionary T4.5 Sensor Soft Fault	124
E2	T1 Sensor Soft Fault	125
E3	N2A Sensor Soft Fault	126
E4	Primary and Reversionary N2B Sensor Hard Fault	127
E5	N2A/N2B Difference Soft Fault	128
F1	N1A Sensor Soft Fault	101
F2	Primary or Reversionary N1 B Sensor Hard Fault	102
F3	N1A/NIB Difference Soft Fault	103
F4	MV Potentiometer Hard or Soft Fault	104
F5	Wf/Stepcount Difference Hard Fault	105
F6	Primary and Reversionary PLA Potentiometer Soft Fault	106
F7	Bleed Valve Solenoid Hard Fault	107
F8	Primary/Reversionary Solenoid Hard Fault	108
F9	Alternator Voltage Soft Fault	109
FA	Start Fuel Solenoid Soft Fault	110
FB	Reversionary Step Count Soft Fault	111
None	Unable to Switch to Reversionary Mode	142
None	Unable to Switch to Primary Mode	143
None	System Toggles Between Primary and Reversionary Mode	144
None	Q Load Share Selected, Qs Not Matched	145
None	T4.5 Load Share Selected, T4.5 Not Matched	146
None	Ignition Relay Does Not Function	147
None	Bleed Band Does Not Function Properly	148
None	Engine Out Indicator (EOI) Does Not Illuminate During Normal Shutdown	149
None	No Observed Engine Speed Reduction During Overspeed Test	150
None	No Beeper Switch Response in Reversion	151
None	Unable to Perform Power Assurance Test (Results Not Indicated on Hex Display)	152
None	Moving ECL Lever to Stop Causes Increase in Engine Power	153
None	Moving ECL Lever to Flight Causes Engine Shutdown	154
None	Engine Out Indicator (EOI) Is Always Illuminated	155
None	F/R Lamp Does Not Illuminate When Reversion Is Selected	156
None	F/R Lamp Is Illuminated When Primary Is Selected	157
	NOTE	
	If fault code displayed is not listed in Table 1, follow procedures in Figure 158.	
-		•

# TABLE 1. FAULT CODE INDEX (CONT)

- b. To View Current Faults and Faults From Last Engine Run. Faults displayed in shutoff cannot be cleared until the engine is run above 48 percent N1.
  - (1) Turn on power to DECU.
  - (2) Set engine condition lever (ECL) to stop position.
  - (3) The display will indicate current fault codes and fault codes from the last engine run in sequence. After all applicable fault codes have been displayed, the sequence will repeat. If there are no applicable fault codes, an "<u>88</u>" will be displayed. Record all codes displayed.

#### NOTE

If an ECL fault occurs, the DECU holds the second to last good ECL value until DECU power is removed. If the ECL fault is still present when DECU power is reapplied, the ECL value defaults to GROUND. Therefore, if the second to last good ECL value is FLIGHT, the hex display will not display any faults until DECU power is cycled. If the second to last good ECL value is GROUND, the hex display will display both current faults and faults from the last engine run until DECU power is cycled. In either case, when DECU power is reapplied, the ECL value will default to GROUND, and only current faults. can be displayed until the ECL fault has been cleared.

### **G-8 POWER SUPPLY INTERRUPT**

- a. The DECU is designed to operate normally with three separate power buses. The primary control lane is powered by either the engine HMA alternator <u>Q8V</u> ALT) at engine speeds greater than idle, or the <u>28V</u> airframe DC bus (<u>28V</u> AF) whichever is higher. The reversionary control lane is powered by either<u>28V</u> AF or the <u>28V</u> emergency bus (<u>28V</u> EM),whichever is higher. During pilot generator switching actions, which normally take place at flight idle conditions before and then subsequent to a flight, simultaneous aircraft bus interrupts on the <u>28V</u> AF and <u>28V</u> EM can occur, causing the reversion control lane to be depowered. The primary control lane continues operating normally since it is receiving its power from<u>28V</u> ALT.
- b. The primary lane monitors specific reversionary lane signals. When both power supplies to reversionary are interrupted, these signals are temporarily seen as out of range by the primary lane. If the interrupts are of sufficient duration (>50ms), the primary lane will latch the faults. The faults remain latched in primary until primary lane power is removed, even if a reversionary reset has cleared the reversionary lane of all faults. The end result is one or more nuisance faults that are due to the power interruption, not to an actual FADEC problem. The possible faults are listed below. The actual combination of faults will depend on both the operating conditions at the time of the interrupt and the duration of the interrupt. FADEC faults caused by power interrupts are expected to be an occasional random occurrence, not a regular occurrence.

FAULT CODE	<u>FAULT</u>
A1	Q
A6	<u>28V</u> EM
A7	<u>28V</u> EM
B2	N1B
B3	N2B
B5	C/P LVDT
B6	ECL
B7	PLA
BC	RESOLVER REFERENCE
DO	OVERSPEED DRIVE
D3	OR DIODES
D6	+ <u>12V</u> REVERSIONARY
DA	+ <u>5V</u> REVERSIONARY
DB	REVERSIONARY SYSTEM
DD	OVERSPEED CHECK
E5	N2A/N2B DIFFERENCE
F3	N1A/N1B DIFFERENCE

c. If any of the above faults occur, the engine must be shut down and power to the DECU cycled to clear the faults. After power is cycled. the appropriate action must be taken to confirm the fault (run engine with ECL at GROUND, run engine with ECL at FLIGHT, etc.) If the faults clear (hex display of <u>'88</u>" with ECL in ground), the faults are to be considered due to power interrupts, and not indicative of a FADEC system fault. If the faults do not clear, then the appropriate fault isolation action should be taken.

### **G-9 OPERATIONAL PROBLEMS WITHOUT CODES**

There are some operational problems that may be noted that do not result in fault codes on the diagnostic display, such as, engine torques not matched, no response to cockpit switch, etc. Refer to fault isolation procedure figures 142 through 157 for these problems.

#### G-10 USING THE FAULT ISOLATION DIAGRAMS

a. Display current fault codes using the procedure defined in paragraph G-7. Record all fault codes. If a system fault has been observed that does not result in a fault code, record the symptom(s).

#### NOTE

Under specific conditions, it is possible for an undefined fault code not listed in Table 1 to appear on the hex display. In this event, the procedure given in figure 158 shall be followed.

b. If only one fault is noted, locate the fault by fault code or description in Table 1. Go to the figure listed for that fault and follow the procedure.

- c. If multiple fault codes and/or symptoms are noted, use the following guidelines to determine the order of troubleshooting. Faults listed in step c.(1) should be investigated first, then faults listed in step c.(2), etc. Faults listed within the same item may generally be investigated in any order with respect to each other; exceptions are given at the beginning of the affected fault code procedures.
  - (1) All fault codes beginning with '1'.
  - (2) B9, BA, BB, and BC.
  - (3) All fault codes beginning with "D" except D1, D2, DE, and DF.
  - (4) D1, D2, and DE.
  - (5) All remaining fault codes beginning with "B".
  - (6) All fault codes beginning with "A".
  - (7) All fault codes beginning with "E".
  - (8) All fault codes beginning with "C" except CF.
  - (9) All fault codes beginning with "F".
  - (10) CF.
  - (11) DF.
  - (12) Any symptoms noted that do not cause a fault code.
- d. Once the first fault to be investigated has been determined, locate the fault in table 1. Go to the figure listed for that fault and follow the procedure. Once the fault has been cleared, check to see if any other faults still exist. If there are still faults, use the guidelines above to determine which fault to troubleshoot next. Continue investigating faults one at a time until all faults are cleared.
- e. If the engine exhibits erratic behavior but no fault codes are displayed, perform the insulation/voltage check per figure 159 to determine if a bad ground connection is causing the problem.

### G-11 DIAGRAMS

- a. Fuel Control System Harness Connections. See figure 201.
- b. Electrical Connector Pin Locations. See figure 202.
- c. HMU Schematic Diagram. See figure 203.
- d. Interface wiring diagram (Ref. APPENDIX D).

# **G-12 ABBREVIATIONS**

A/D	Analog-to-digital	N2A	N2 signals from
AL	Alumel	N2B	dual magnetic pickup
BLD	Bleed	N2SET	Power turbine set speed
C/P	Collective pitch angle (same as RTL)	O/S	Overspeed
CDP	Compressor discharge pressure	O/STAT	Overspeed status
CJC	Cold junction compensation for	Paf	Metering head regulator bypass return
	temperature signal		pressure
CR	Chromel	Pbc	Mechanical speed sensor pressure out-put
DC	Direct current	Pf	Pump discharge pressure
DECU	Digital Electronic Control Unit	Pfm	Pump discharge pressure metered
EEPROM	Electrically erasable programmable read-	PLA	Power lever angle
	only memory		_
ECL	Engine control lever	Pm	Bleed system pressure
ECLEX	ECL excitation	Pme	Metering valve discharge pressure
EGT	Exhaust gas temperature	Pn	Fuel pressure to engine
EMS	Engine monitoring system	Pot.	potentiometer
EX	Excitation	PSM	Primary stepper motor
E01	Engine out indicator #1	Pw	Windmill bypass valve pressure
E02'	Engine out indicator #2	P1	Atmospheric air pressure
FADEC	Full Authority Digital Electronic Control	P3	Compressor discharge pressure
F/R	Failure/reversionary selected	Q	Torque
FPU	Fuel Pump Unit	RAM	Random access memory
GND	Ground	REF	Reference
HMA	Hydromechanical Assembly	RET	Return
HMU	Hydromechanical Unit	RSM	Reversion stepper motor
IGN	Ignition	RTL	Rotor thrust lever (same as collective
			pitch)
LRU	Line Replaceable Unit	REV	Reversionary control mode
LVDT	Linear variable displacement transformer	SEL	Select
MAG	Magnetic	SIG	Signal
MV	Metering valve	SOL	Solenoid
NR	Sensed rotor speed	T1	Ambient temperature
NVM	Non-volatile memory	T4.5	Power turbine inlet temperature
N1	Sensed core speed	VDC	Volts direct current
N1A	N1 from magnetic speed pickup	VEM	Emergency voltage
N1B	N1 from alternator	Wf	Fuel flow
N2	Sensed power turbine speed	Ω	Ohms
TBD	To be determined		

### FAULT ISOLATION TREES

### G-13 FAULT TREES

a. The maintenance procedures required to isolate the fault codes displayed on the DECU to line replaceable units (LRUs) are depicted in the following fault tree diagrams. Fault trees are listed according to fault codes. The procedures are biased against removing the HMU until other more accessible possibilities have been eliminated.

b. In the fault trees, "DECU #1" is used to indicate the FADEC under investigation, be it the right-hand or left-hand engine. "DECU #2" is used to indicate the FADEC on the opposite-side engine.

c. Each of the fault trees is accompanied by a facing page that contains expanded instructions for some of the steps. The expanded instructions contain more detail for certain steps, reference to helpful diagrams (which are at the end of this manual), and resistance limits.

d. The term "manufacturer" as stated in this manual refer to either Textron Lycoming or Boeing Helicopters. dependent on whether the context refers to an airframe component or an engine component.

#### G-14 DIAGRAMS

The following diagrams appear in this manual.

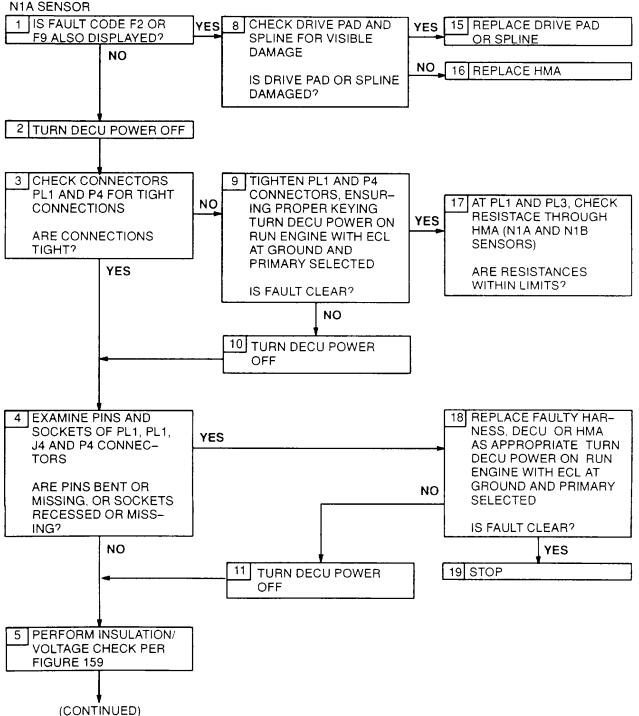
a. Figure 201, Fuel Control System Harness Connections. This diagram shows the physical location of each harness connector and component connector. It can be used to locate the connectors as called out in the charts.

b. Figure 202, Electrical Connector Pin Locations. This diagram can be used to identify the physical location of each connector pin of the component (DECU or HMA) connectors. Note that the socket locations for the harness connectors are the same except that they are reversed to form a mirror image.

c. Electrical System Schematic (Ref. APPENDIX D). This diagram can be used to trace the termination of each terminal on each connector. For instance, find the N1 A SPEED PICKUP at lower right corner of the diagram on page D-3. The diagram shows that it is in the HMU at J4 connector terminals R and S. Follow up to top to trace through harness P1 7/J75 connector to harness PL1 connector to DECU PL1 connector terminals MM and FF.

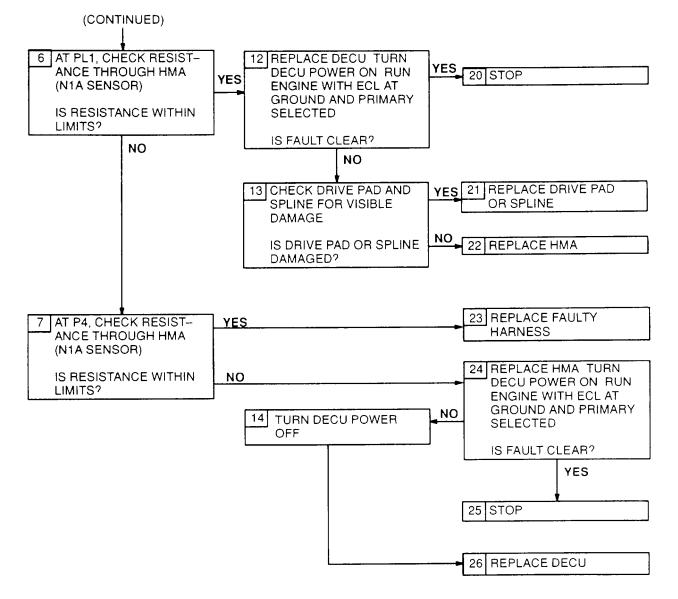
d. Figure 203, HMA Schematic Diagram. This diagram gives an operational overview of the HMU.

# FAULT CODE F1



Fault Code F1, N1A Sensor Figure 101 (Sheet 1 of 2)

#### FAULT CODE F1 N1A SENSOR



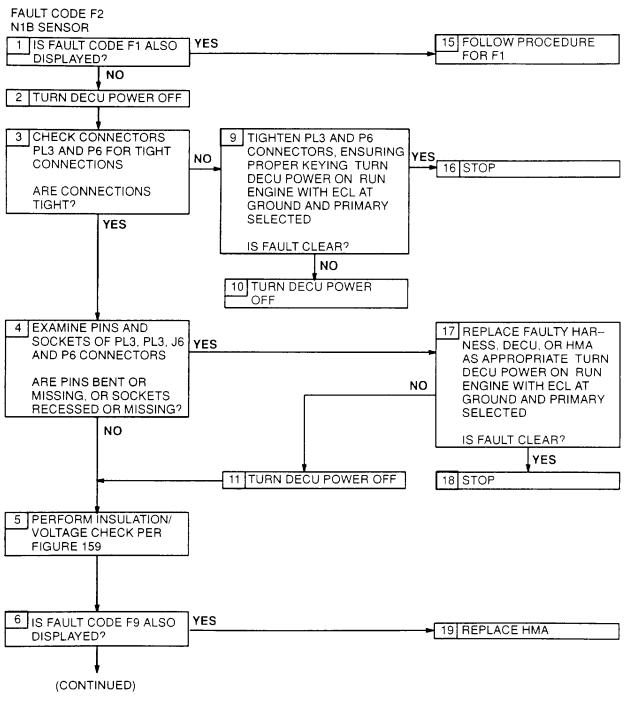
Fault Code F1, N1A Sensor Figure 101 (Sheet 2 of 2)

## G-15 FAULT CODE F1, N1A SENSOR EXPANDED INSTRUCTIONS

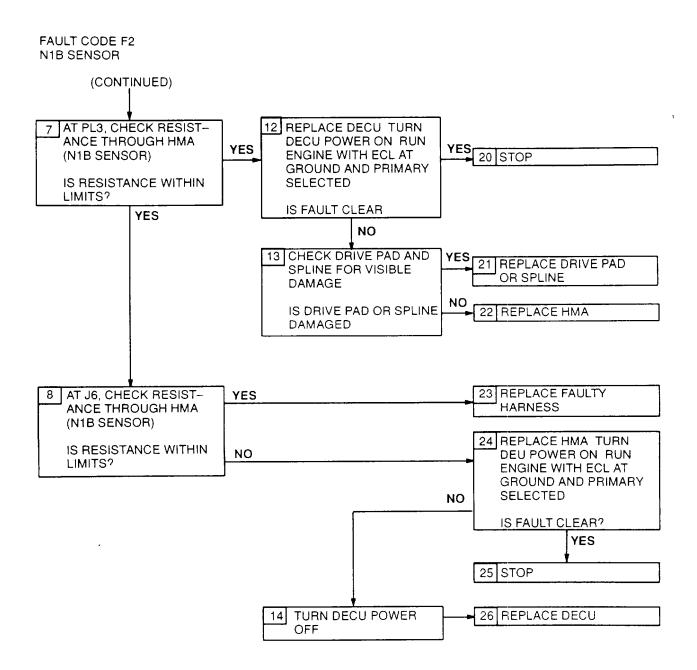
Refer to numbered steps in figure 101.

- Step 3. Check harness connector PL1 (figure 201) at DECU, and P4 at HMA for tight connections.
- Step 4. Disconnect connectors PL1 and P4 to check pins and sockets.
- Step 6. With PL1 disconnected, check resistance of HMA (N1A sensor) at harness PL1 connector sockets MM and FF (figure 202). Limit is 200-550Q.
- Step 7. With P4 disconnected, check resistance of HMA (N1A sensor) at HMA J4 connector pins R and S. Limit is 200-550Q.
- Step 8. Refer to manufacturer's procedure for checking drive pad and spline.
- Step 9. Before tightening harness connectors PL1 and P4, be sure that keyways in harness connectors are aligned with keyways in component connectors.
- Step 13. Refer to manufacturer's procedure for checking drive pad and spline.
- Step 15. Refer to manufacturer's procedure for checking drive pad and spline.
- Step 18. Refer to manufacturer's procedure for diagnosing and replacing harness.
- Step 21. Refer to manufacturer's procedure for checking drive pad and spline
- Step 23. Refer to manufacturer's procedure for diagnosing and replacing harness.

		Connector	Resistance ( $\Omega$ )	
Component	No.	Contacts	Limits	Nominal*
HMA - N1A Sensor	PL1	MM & FF	<u>200-550</u>	<u>390</u>
*At <u>25°C</u>	J4	R & S	<u>200-550</u>	<u>390</u>



Fault Code F2, N1B Sensor Figure 102 (Sheet 1 of 2)



Fault Code F2, N1B Sensor Figure 102 (Sheet 2 of 2)

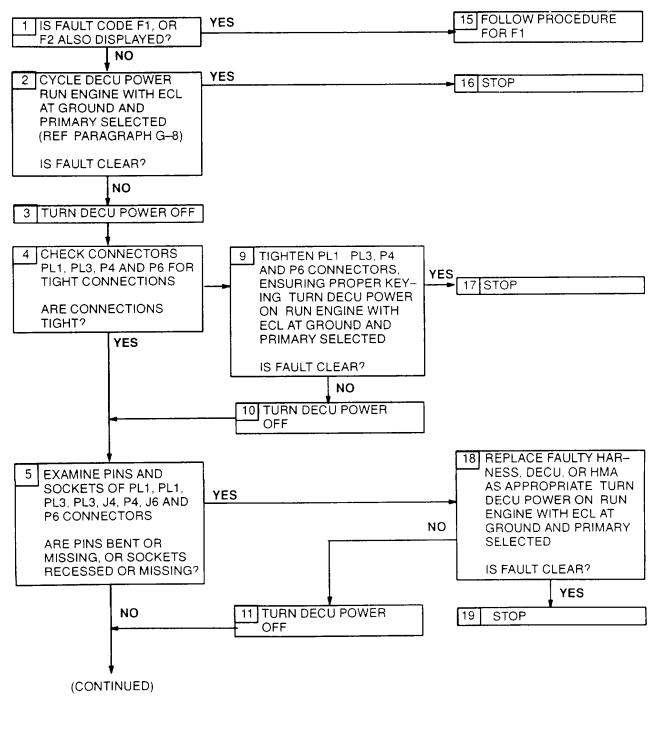
## G-16 FAULT CODE F2, NIB SENSOR EXPANDED INSTRUCTIONS

Refer to numbered steps in figure 102.

- Step 3. Check harness connector PL3 (figure 201) at DECU, and P6 at HMA for tight connections.
- Step 4. Disconnect connectors PL3 and P6 to check pins and sockets.
- Step 7. With PL3 disconnected, check resistance of N1 B sensor at harness PL3 connector sockets A and c (figure 202). Limit is 0.3-3.55.
- Step 8 With P6 disconnected, check resistance of HMA (N1B sensor) at HMA J6 connector pins E and F. Limit is 0.3-3.0Q.
- Step 9. Before tightening harness connectors PL3 and P6, be sure that keyways in harness connectors are aligned with keyways in component connectors.
- Step 13. Refer to manufacturer's procedure for checking drive pad and spline.
- Step 17. Refer to manufacturer's procedure for diagnosing and replacing harness.
- Step 21. Refer to manufacturer's procedure for replacing drive pad or spline.
- Step 23. Refer to manufacturer's procedure for diagnosing and replacing harness.

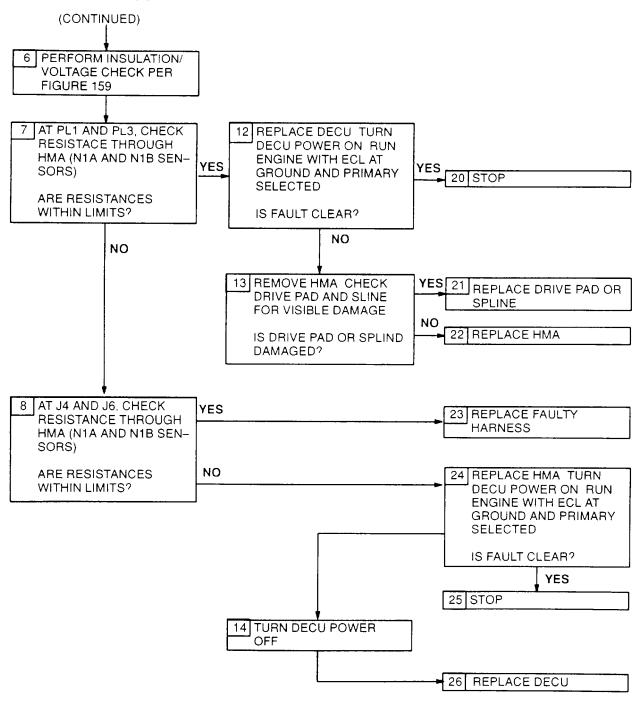
		Connector	Resista	ance (Ω)
Component	No.	Contacts	Limits	Nominal
HMA - NIB Sensor	PL3	A & <u>c</u>	<u>0.3 - 3.5</u>	<u>0.7</u>
*At <u>25°C</u>	J6	E& F	<u>0.3 - 3.0</u>	<u>0.7</u>

FAULT CODE F3 N1A/N1B DIFFERENCE



Fault Code F3, N1/N1B Difference Figure 103 (Sheet 1 of 2)

#### FAULT CODE F3 N1A/N1B DIFFERENCE



Fault Code F3, N1/N1B Difference Figure 103 (Sheet 2 of 2)

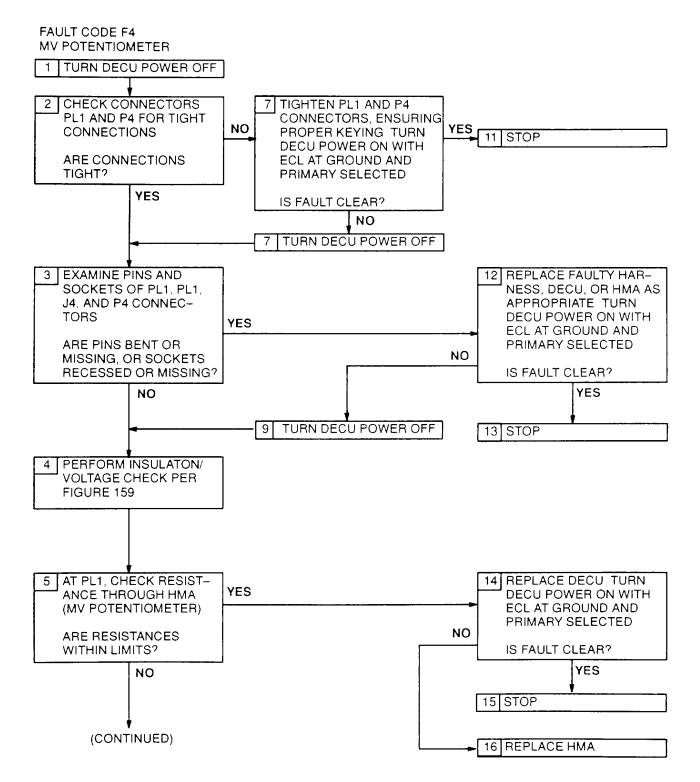
G-19

### G-17 FAULT CODE F3, NIA/NIB DIFFERENCE EXPANDED INSTRUCTIONS

Refer to numbered steps in figure 103.

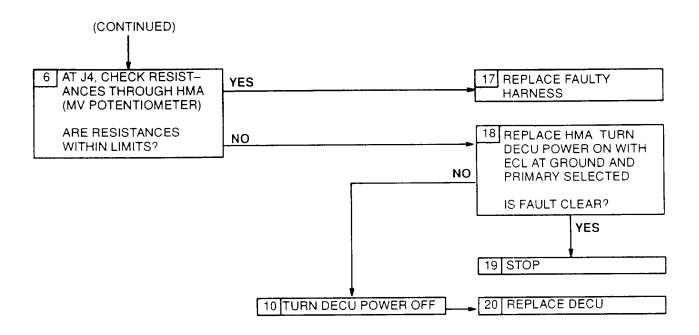
- Step 4. Check harness connectors PL1 and PL3 (figure 201) at DECU, and P4 and P6 at HMA for tight connections.
- Step 5. Disconnect connectors PL1, PL3, P4 and P6 to check pins and sockets.
- Step 7. With PL1 disconnected, check resistance of HMA (N1A sensor) at harness PL1 connector sockets MM and FF (figure 202). Limit is 200-550Q. With PL3 disconnected, check resistance of HMA (N1 B sensor) at harness PL3 connector sockets A and c. Limit is 0.3-3.5o2.
- Step 8. With P4 disconnected, check resistance of HMA (N1A sensor) at HMA J4 connector pins R and
   S. Limit is 200-550Q. With P6 disconnected, check resistance of HMA (N1 B sensor) at HMA
   T. J6 connector pins E and F. Limit is 0.3-3.3Q.
- Step 9. Before tightening harness connectors PL1, PL3, P4 and P6, be sure that keyways in harness connectors are aligned with keyways in component connectors.
- Step 13. Refer to manufacturer's procedure for checking drive pad and spline.
- Step 18. Refer to manufacturer's procedure for diagnosis and replacing harness.
- Step 21. Refer to manufacturer's procedure for replacing drive pad or spline.
- Step 23. Refer to manufacturer's procedure for diagnosing and replacing harness.

		Connector	Resistan	çe (Ω)
Component	No.	Contacts	Limits	Nominal *
HMA - N1A Sensor	PL1	MM &FF	<u> 200 - 550</u>	<u>390</u>
	J4	R & S	<u> 200 - 550</u>	<u>390</u>
HMA - N1A Sensor	J4	A- <u>c</u>	<u>0.3 - 3.5</u>	<u>0.7</u>
*At <u>25°C</u>	J6	E & F	<u>0.3 - 3.0</u>	<u>0.7</u>



Fault Code F4, MV Potentiometer Figure 104 (Sheet 1 of 2)

#### FAULT CODE F4 MV POTENTIOMETER



Fault Code F4, MV Potentiometer Figure 104 (Sheet 2 of 2)

### G-18 FAULT CODE F4, MV POTENTIOMETER EXPANDED INSTRUCTIONS

Refer to numbered steps in figure 104.

- Step 2. Check harness connector PL1 (figure 201) at DECU, and P4 at HMA for tight connections.
- Step 3. Disconnect connectors PL1 and P4 to check pins and sockets.
- Step 5. <u>CAUTION</u>: DO NOT USE AN OHMMETER THAT CAN APPLY MORE THAN <u>5 mA</u> WHEN MEASURING RESISTANCES, TO AVOID DAMAGING THE FUEL METERING VALVE POTENTIOMETER.

With PL1 disconnected, check resistance of HMA (fuel metering valve potentiometer) at harness

PL1 connector sockets Q and y .(results are "a") and y and KK (results are "b"). Limit for "a" and "b" is  $300 - 5800\Omega$ . Check resistance at sockets g and KK (results are "c"). Limit for "c" is  $4250 - 5750\Omega$ . Use the following equation to check wiper resistance:

$$a + b - c \div 2 = d$$

Limit for "d" is  $\leq$  300-. Use the following equation to check if the high or low limit of the metering

valve potentiometer has been exceeded:

 $b - d \div c = e$ 

Limit for "e" is 0.0710 - 0.9573.

Step 6. <u>CAUTION</u>: DO NOT USE AN OHMMETER THAT CAN APPLY MORE THAN <u>5 mA</u> WHEN MEASURING RESISTANCES, TO AVOID DAMAGING THE FUEL METERING VALVE POTENTIOMETER.

With P4 disconnected, check resistance of HMA (fuel metering valve potentiometer) at HMA J4 connector pins M and N (results are "f") and N and P (results are "g"). Limit for """ and "g" is <u>300 - 58000</u>. Check resistance at pins M and P (results are "h"). Limit for "h" is <u>4250 - 57500</u>. Use the following equation to check wiper resistance.

 $f + g - h \div 2 = i$ 

Limit for "i" is  $\leq 30052$ . Use the following equation to check if the high or low limit of the metering valve potentiometer has been exceeded:

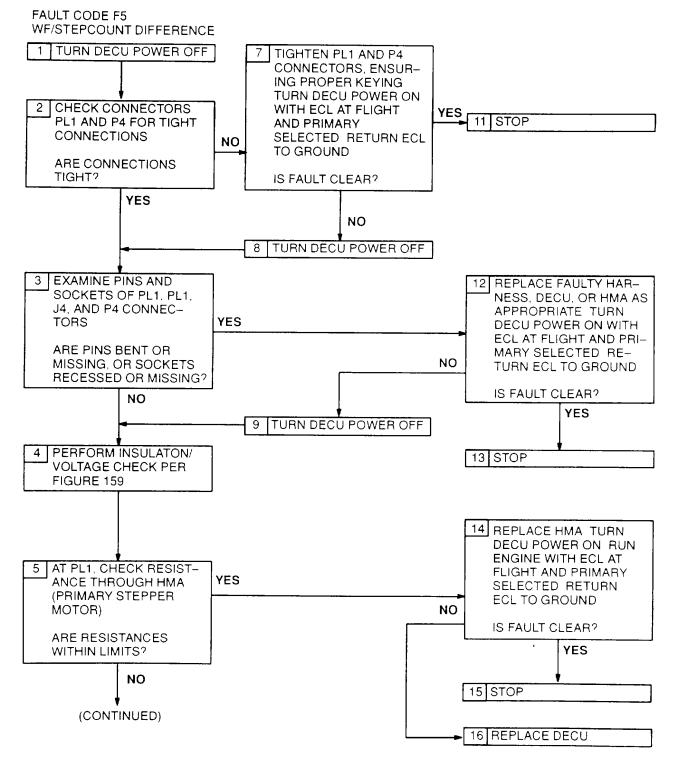
g - i÷ h = j

Limit for "j" is <u>0.0710 - 0.9573</u>.

- Step 7. Before tightening harness connectors PL1 and P4, be sure that keyways in harness connectors are aligned with keyways in component connectors.
- Step 12. Refer to manufacturer's procedure for diagnosing and replacing harness.
- Step 17. Refer to manufacturer's procedure for diagnosing and replacing harness.

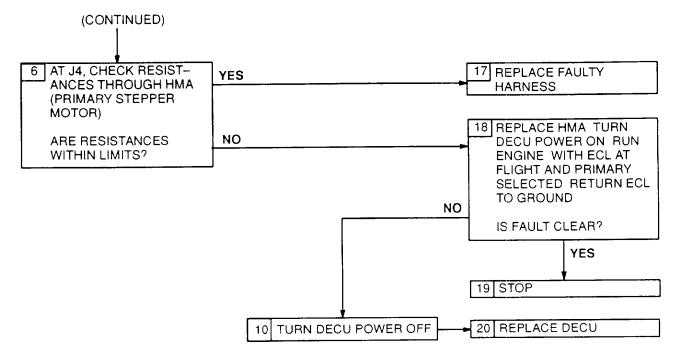
# G-18 FAULT CODE F4, MV POTENTIOMETER EXPANDED INSTRUCTIONS (CONTINUED)

		Connector		Resistan	
Component	No.	Contacts	6	Limits	Nominal*
HMA - Fuel Metering Valve Potentiometer	PL1	g & y	(a)	<u> 300 - 5800</u>	*
		y & K	(b)	300 - 5800	**
		g and KK	(c)	<u>4250 - 5750</u>	<u>5000</u>
		a + b - c ÷ 2	(d)	≤ <u>300</u>	<u>195</u>
		b - d ÷ c	(e)	<u>0.0710-0.9573</u>	**
	J4	M & N N & P.	(f) (g)	<u>300- 5800</u> 300 - 5800	
		M & P	(h)	<u>4250-5750</u>	<u>5000</u>
		f + g- h ÷ 2	(I)	<u>≤300</u>	<u>195</u>
* At <u>25°C</u>		g - i ÷ h	(j)	<u>0.0710-0.9573</u>	**
** Dependent on MMV Position					



Fault Code F5, Wf/Stepcount Difference Figure 105 (Sheet 1 of 2)

### FAULT CODE F5 WF/STEPCOUNT DIFFERENCE



Fault Code F5, Wf/Stepcount Difference Figure 105 (Sheet 2 of 2)

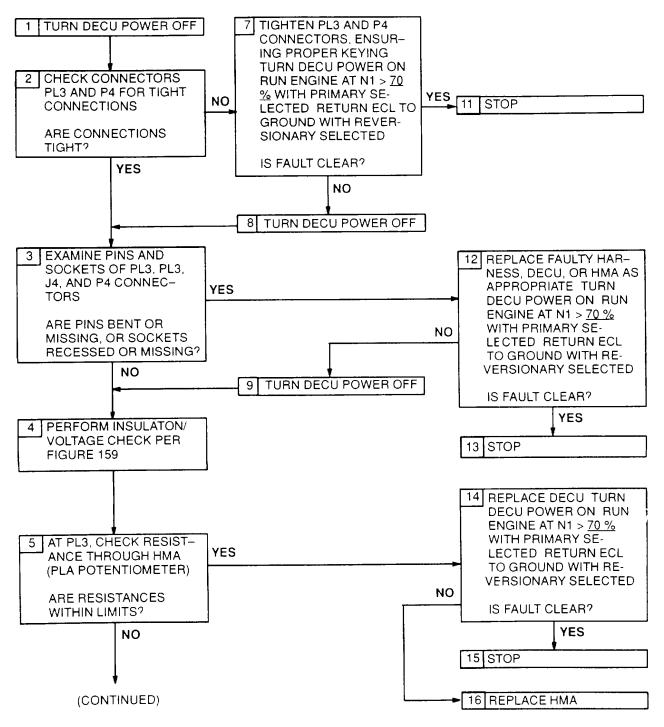
### G-19 FAULT CODE F5 Wf/STEPCOUNT DIFFERENCE EXPANDED INSTRUCTIONS

Refer to numbered steps in figure 105.

- Step 2. Check harness connector PL1 (figure 201) at DECU, and P4 at HMA for tight connections.
- Step 3. Disconnect connectors PL1 and P4 to check pins and sockets.
- Step 5. With PL1 disconnected, check resistance of HMA (primary stepper motor) at harness PL1 connector sockets T and X (figure 202), U and X, V and X, and W and X. In each case limit is 45-111Q.
- Step 6. With P4 disconnected, check resistance of (primary stepper motor) at HMA J4 connector. pins D and T, C and T, B and T, and A and T. In each case, limit is <u>45-111Q</u>.
- Step 7. Before tightening harness connectors PL1 and P4, be sure that keyways in harness connectors are aligned with keyways in component connectors.
- Step 12. Refer to manufacturer's procedure for diagnosing and replacing harness.
- Step 17. Refer to manufacturer's procedure for diagnosing and replacing harness.

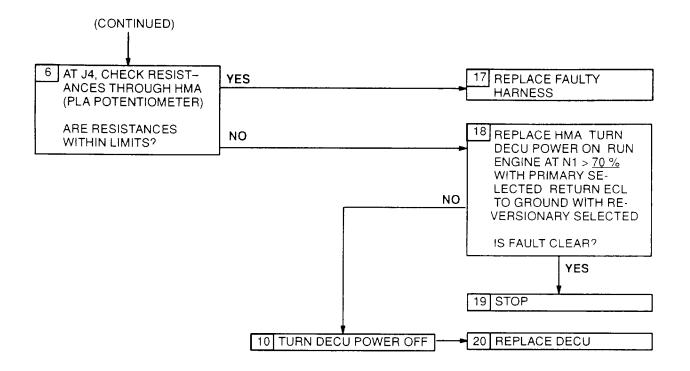
		Connector	Resista	ance (Ω)
Component	No.	Contacts	Limits	Nominal*
HMA - Primary Stepper Motor	PL1	T & X	<u>45 - 111</u>	73
		U & X	45 - 111	73
		V & X	<u> 45 - 111</u>	<u>73</u>
		W & X	<u>45 - 111</u>	<u>73</u>
	J4	D&T	<u>45 - 111</u>	<u>73</u>
		С&Т	<u>45 - 111</u>	<u>73</u>
		В&Т	<u>45 - 111</u>	<u>73</u>
* At <u>25°C</u>		A&T	<u>45 - 111</u>	<u>73</u>

#### FAULT CODE F6 PLA POTENTIOMETER



Fault Code F6, PLA Potentiometer Figure 106 (Sheet 1 of 2)

### FAULT CODE F6 PLA POTENTIOMETER



Fault Code F6, PLA Potentiometer Figure 106 (Sheet 2 of 2)

### G-20 FAULT CODE F6, PLA POTENTIOMETER EXPANDED INSTRUCTIONS

Refer to numbered steps in figure 106.

- Step 2. Check harness connector PL3 (figure 201) at DECU, and P4 at HMA for tight connections.
- Step 3. Disconnect connectors PL3 and P4 to checkpins and sockets.
- Step 5. <u>CAUTION</u>: DO NOT USE AN OHMMETER THAT CAN APPLY MORE THAN 5 mA WHEN MEASURING RESISTANCES, TO AVOID DAMAGING THE PLA POTENTIOMETER.

With PL3 disconnected, check resistance of HMA (PLA potentiometer) at harness PL3 connector sockets U and T (results are "a") and T and S (results are "b"). Limit for "a" and "b"

is

<u>510 - 5750</u>. Check resistance at sockets U and S (results are "c"). Limit for "c" is <u>4250 - 5750</u>. Use the following equation to check wiper resistance:

 $a + b - c \div 2 = d$ 

Limit for "d" is  $\leq 300\Omega$ . Use the following equation to check if the high or low limit of the PLA potentiometer has been exceeded:

 $b - d \div c = e$ 

Limit for "e" is <u>0.120 - 0.950</u>.

Step 6. <u>CAUTION</u>: DO NOT USE AN OHMMETER THAT CAN APPLY MORE THAN 5 mA WHEN MEASURING RESISTANCES, TO AVOID DAMAGING THE PLA POTENTIOMETER.

With P4 disconnected, check resistance of HMA (PLA potentiometer) at HMA J4 connector pins X and Y (results are "f") and Y and Z (results are "g"). Limit for "f" and "g" is  $510 - 5750\Omega$ . Check resistance at pins X and Z (results are "h"). Limit for "h" is  $4250 - 5750\Omega$ . Use the following equation to check wiper resistance.

$$f + g - h \div 2 = i$$

Limit for "i" is  $\leq 300\Omega$ . Use the following equation to check if the high or low limit of the metering

valve potentiometer has been exceeded:

 $g - i \div h = j$ 

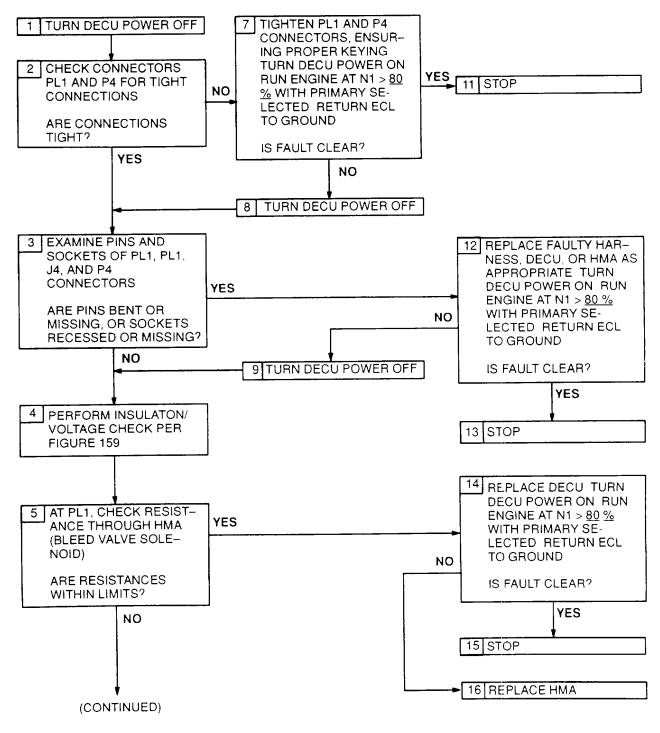
Limit for "j" is 0.120 - 0.950.

- Step 7. Before tightening harness connectors PL3 and P4, be sure that keyways in harness connectors are aligned with keyways in component connectors.
- Step 12. Refer to manufacturer's procedure for diagnosing and replacing harness.
- Step 17. Refer to manufacturer's procedure for diagnosing and replacing harness.

# G-20 FAULT CODE F6, PLV POTENTIOMETER EXPANDED INSTRUCTIONS (CONTINUED)

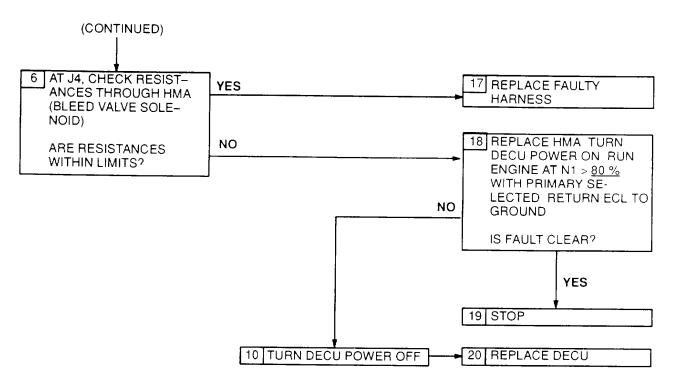
Component	No.	Connector Contacts		Resistan Limits	ce (Ω) Nominal *
	110.	Contacto		Ennito	
HMA - PLA Potentiometer	PL3	U & T	(a)	<u>510 - 5750</u>	**
		T&S	(b)	<u>510 - 5750</u>	**
		U&S	(C)	4250 - 5750	<u>5000</u>
		a + b- c -2	(d)	<-300	195
		b - d + c	(e)	<u>0.120 - 0.950</u>	**
	J4	X & Y	(f)	<u>510 - 5750</u>	**
		Y & Z.	(g)	<u>510 - 5750</u>	**
		X & Z	(h)	4250-5750	<u>5000</u>
		f + g - h ÷ 2	(i)	<u>&lt;300</u>	<u>195</u>
		g - i ÷ h	(j)	<u>0.120 - 0.950</u>	**
* At <u>25°C</u>					
** Dependent on PLA Position					

FAULT CODE F7 BLEED VALVE SOLENOID



Fault Code F7, Bleed Valve Solenoid Figure 107 (Sheet 1 of 2)

## FAULT CODE F7 BLEED VALVE SOLENOID



Fault Code F7, Bleed Valve Solenoid Figure 107 (Sheet 2 of 2)

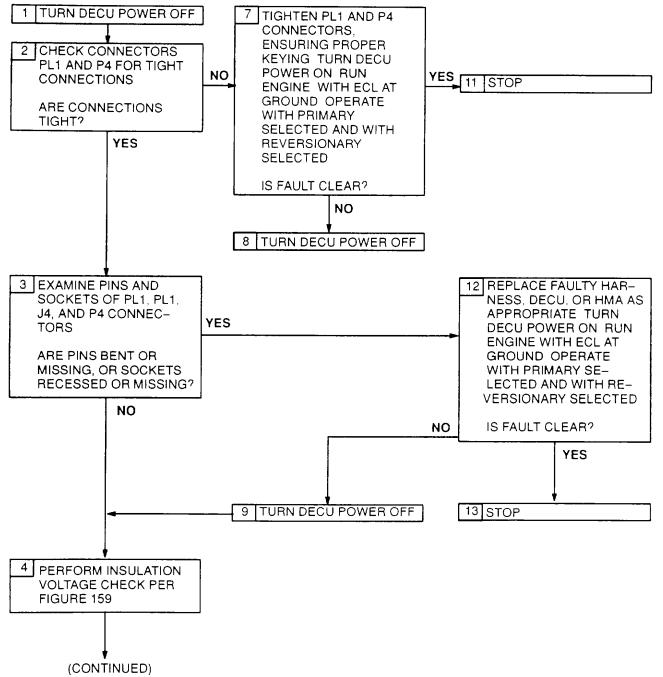
### G-21 FAULT CODE F7, BLEED VALVE SOLENOID EXPANDED INSTRUCTIONS

Refer to numbered steps in figure 107.

- Step 2. Check harness connector PL1 (igure 201) at DECU, and P4 at HMA for tight connections.
- Step 3. Disconnect connectors PL1 and P4 to check pins and sockets.
- Step 5. With PL1 disconnected, check resistance of HMA (bleed valve solenoid) at harness PL1 connector sockets r and s (figure 202). Limit is <u>27 62Ω</u>.
- Step 6. With P4 disconnected, check resistance of HMA (bleed valve solenoid) at HMA J4 connector pins E and F. Limit is <u>27- 62Ω</u>.
- Step 7. Before tightening harness connectors PL1 and P4, be sure that keyways in harness connectors are aligned with keyways in component connectors.
- Step 12. Refer to manufacturer's procedure for diagnosing and replacing harness.
- Step 14 Refer to manufacturer's procedure for diagnosing and replacing harness.

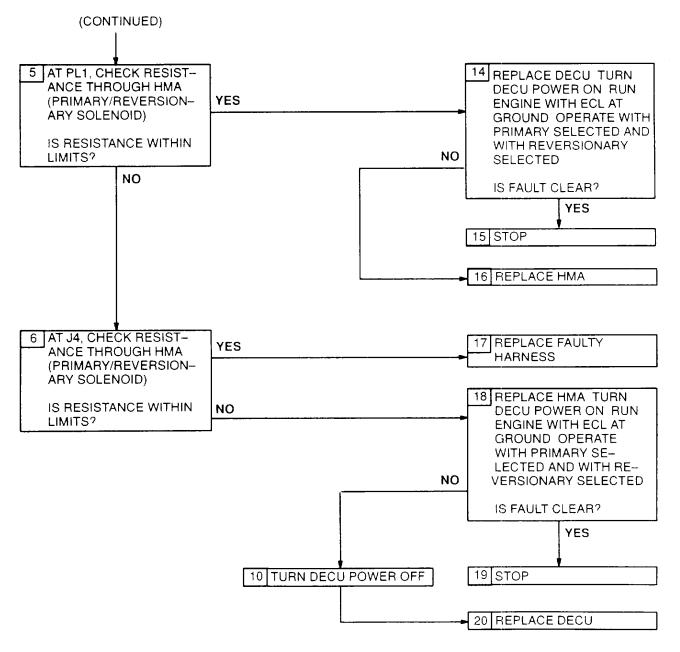
		Connector	Resista	nce (Ω)
Component	No.	Contacts	Limits	Nominal *
HMA - Bleed Valve Solenoid	PL1	<u>r</u> & <u>s</u>	<u> 27 - 62</u>	<u>42</u>
*At <u>25°C</u>	J4	E & F	<u> 27 - 62</u>	<u>42</u>

FAULT CODE F8 PRIMARY/REVERSIONARY SOLENOID



Fault Code F8, Primary/Reversionary Solenoid Figure 108 (Sheet 1 of 2)

### FAULT CODE F8 PRIMARY/REVERSIONARY SOLENOID



Fault Code F8, Primary/Reversionary Solenoid Figure 108 (Sheet 2 of 2)

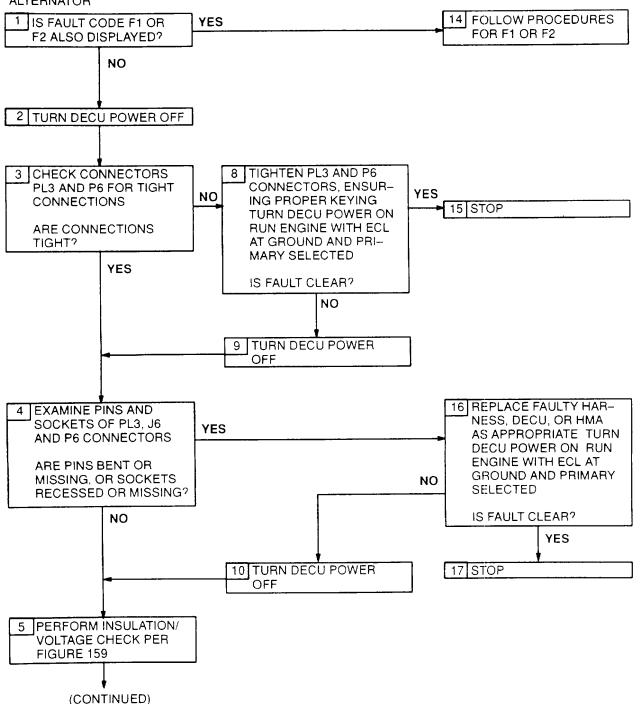
### G-22 FAULT CODE F8, PRIMARY/REVERSIONARY SOLENOID EXPANDED INSTRUCTIONS

Refer to numbered steps in figure 108.

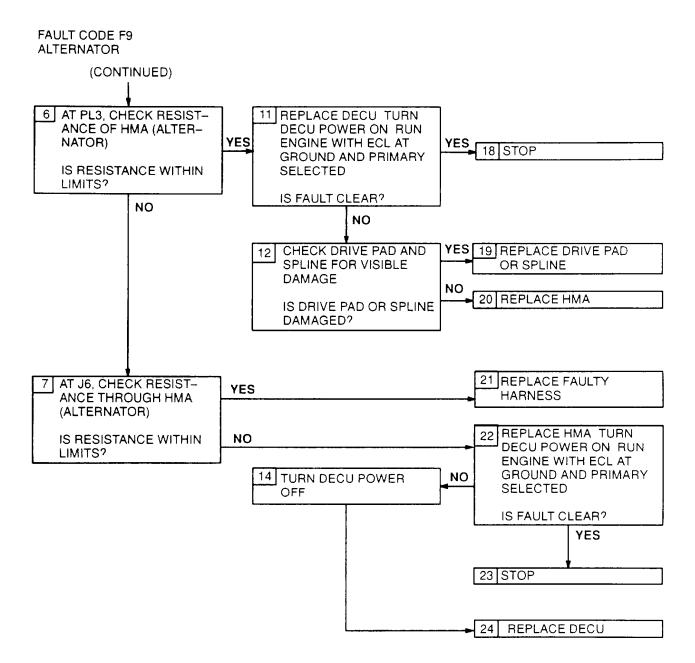
- Step 2. Check harness connector PL1 (figure 201) at DECU, and P4 and HMA for tight connections.
- Step 3. Disconnect connectors PL1 and P4 to check pins and sockets.
- Step 5. With PL1 disconnected, check resistance of HMA (primary/reversionary solenoid) at harness PL1 connector sockets I and EE (figure 202). Limit is 27 62Q.
- Step 6. With P4 disconnected, check resistance of HMA (primary/reversionary solenoid) at HMA J4 connector pins V and U. Limit is 27 62Q.
- Step 7. Before tightening harness connectors PL1 and P4, be sure that keyways in harness conectors are aligned with keyways in component connectors.
- Step 12. Refer to manufacturer's procedure for diagnosing and replacing harness.
- Step 17. Refer to manufacturer's procedure for diagnosing and replacing harness.

	Connector		Resista	nce (Ω)
Component	No.	Contacts	Limits	Nominal *
HMA - Primary/Reversionary Solenoid	PL1	<u>g</u> & EE	<u>27 - 62</u>	<u>42</u>
*At <u>25°C</u>	J4	U & V	<u> 27 - 62</u>	<u>42</u>

#### FAULT CODE F9 ALTERNATOR



Fault Code F9, Alternator Figure 109 (Sheet 1 of 2) G-38



Fault Code F9, Alternator Figure 109 (Sheet 2 of 2)

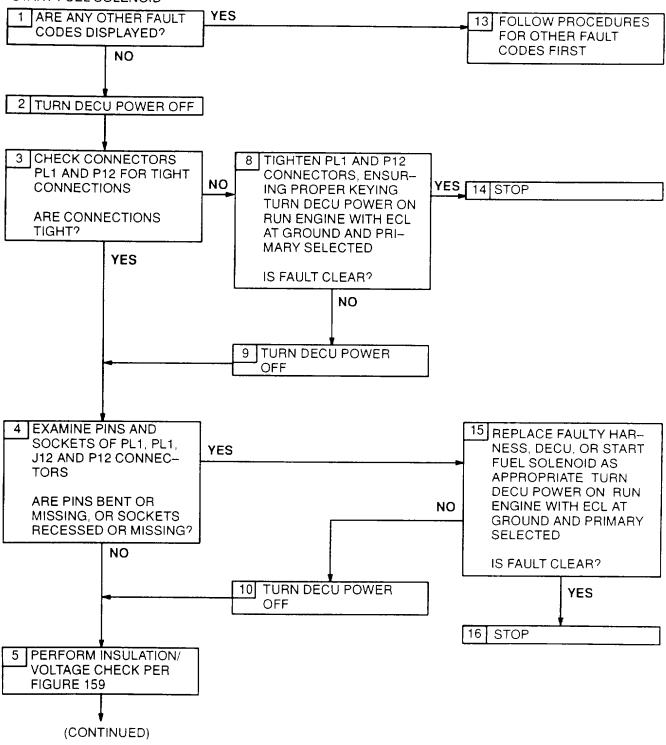
# G-23 FAULT CODE F9, ALTERNATOR EXPANDED INSTRUCTIONS

Refer to numbered steps in figure 109.

- Step 3. Check harness connector PL3 (figure 201) at DECU, and P6 at HMA for tight connections.
- Step 4. Disconnect connectors PL3 and P6 to check pins and sockets.
- Step 6. With PL3 disconnected, check resistance of HMA (alternator) at harness PL3 connector sockets K and L (figure 202), and sockets M and L. In each case, limit is <u>0.5 10.5Ω</u>.
- Step 7. With P6 disconnected, check resistance of HMA (alternator) at HMA J6 connector pins B and C. and pins A and C. In each case, limit is  $0.5 10.5\Omega$ .
- Step 8. Before tightening harness connectors PL3 and P6, be sure that keyways in harness connectors are aligned with keyways in component connectors.
- Step 12. Refer to manufacturer's procedure for checking drive pad and spline.
- Step 16. Refer to manufacturer's procedure for diagnosing and replacing harness.
- Step 19. Refer to manufacturer's procedure for replacing drive pad or spline.
- Step 21. Refer to manufacturer's procedure for diagnosing and replacing harness.

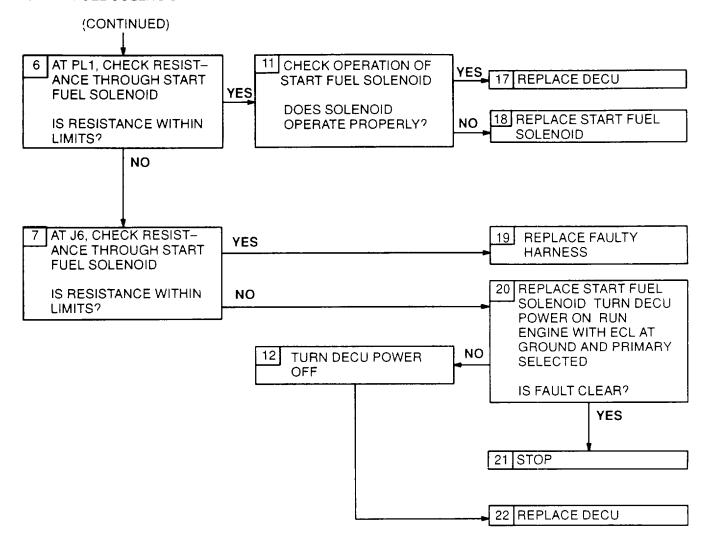
		Connector Resistance (Ω)		
Component	No.	Contacts	Limits	Nominal *
HMA - Alternator	PL3	K & L	<u>0.5 - 10.5</u>	<u>3.0</u>
		M & L	<u>0.5 - 10.5</u>	<u>3.0</u>
	J6	B & C	<u>0.5 - 10.5</u>	<u>3.0</u>
*At <u>25°C</u>		A&C	<u>0.5 - 10.5</u>	<u>3.0</u>

#### FAULT CODE FA START FUEL SOLENOID



Fault Code FA, Start Fuel Solenoid Valve Figure 110 (Sheet 1 of 2)

# FAULT CODE FA



Fault Code FA, Start Fuel Solenoid Valve Figure 110 (Sheet 2 of 2)

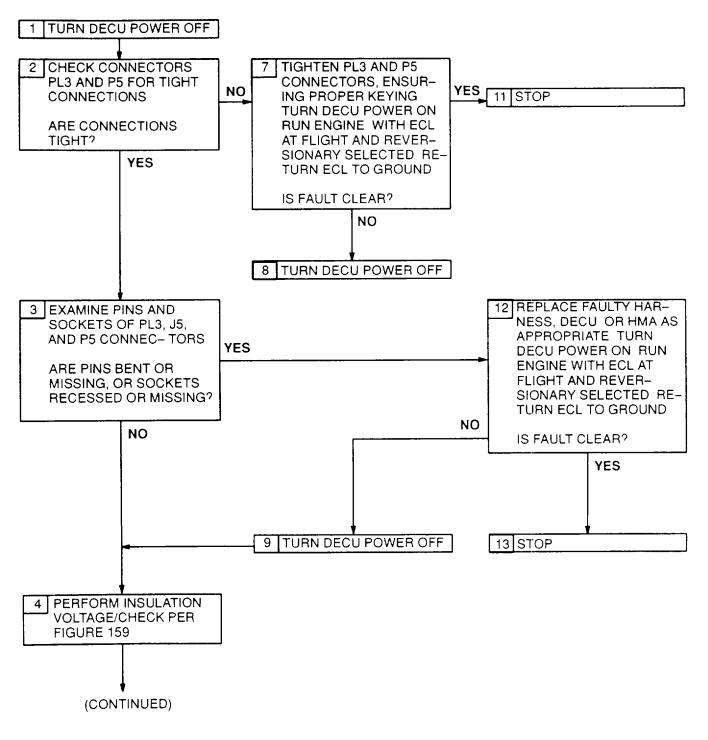
# G-24 FAULT CODE FA, START FUE L SOLENOID EXPANDED INSTRUCTIONS

Refer to numbered steps in figure 110.

- Step 3. Check harness connector PL1 (figure 201) at DECU, and P12 at start fuel valve assembly for tight connections.
- Step 4. Disconnect connectors PL1 and P12 to check pins and sockets.
- Step 6. With PL1 disconnected, check resistance of start fuel solenoid at harness PL1 connector sockets S and R (figure 202). Limit is 10.0 40.5Q.
- Step 7. With P12 disconnected, check resistance of start fuel solenoid at start fuel valve assembly J12 connector pins A and B. Limit is 10.0 40.0Q.
- Step 8. Before tightening harness connectors PL1 and P12., be sure that keyways in harness connectors are aligned with keyways in component connectors.
- Step 11. Refer to manufacturer's procedure for checking operation of start fuel solenoid.
- Step 15. Refer to manufacturer's procedure for diagnosing and replacing harness or start fuel solenoid.
- Step 18 Refer to manufacturer's procedure for diagnosing and replacing start fuel solenoid.
- Step 19 Refer to manufacturer's procedure for diagnosing and replacing harness.
- Step 20 Refer to manufacturer's procedure for diagnosing and replacing start fuel solenoid.

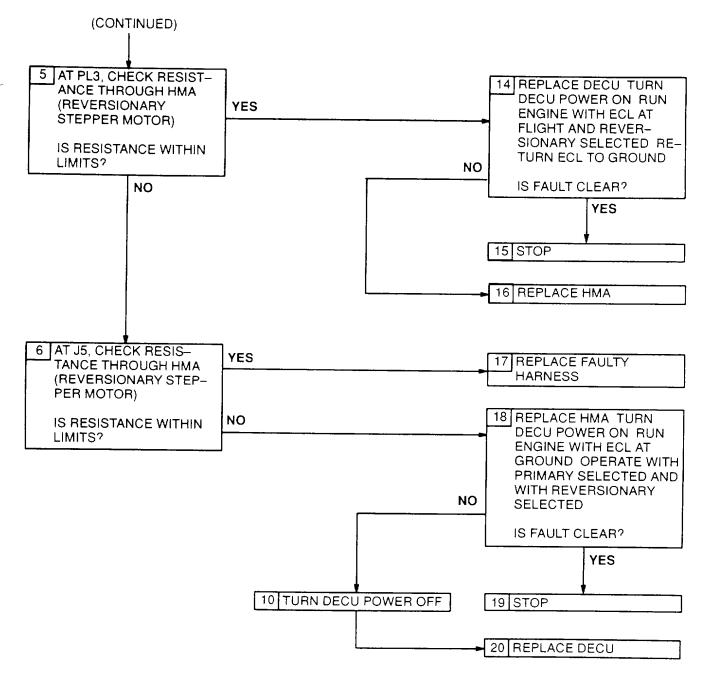
	Connector		Resistance (Ω)	
Component	No.	Contacts	Limits	Nominal*
Start Fuel Solenoid	PL1	S & R	<u>10.0 - 40.5</u>	<u>21.5</u>
*At <u>25°C</u>	J12	A & B	<u> 10.0 - 40.0</u>	<u>21.5</u>

#### FAULT CODE FB REVERSIONARY STEP COUNT



Fault Code FB, Reversionary Step Count Figure 111 (Sheet 1 of 2)

# FAULT CODE FB REVERSIONARY STEP COUNT



Fault Code FB, Reversionary Step Count Figure 111 (Sheet 2 of 2)

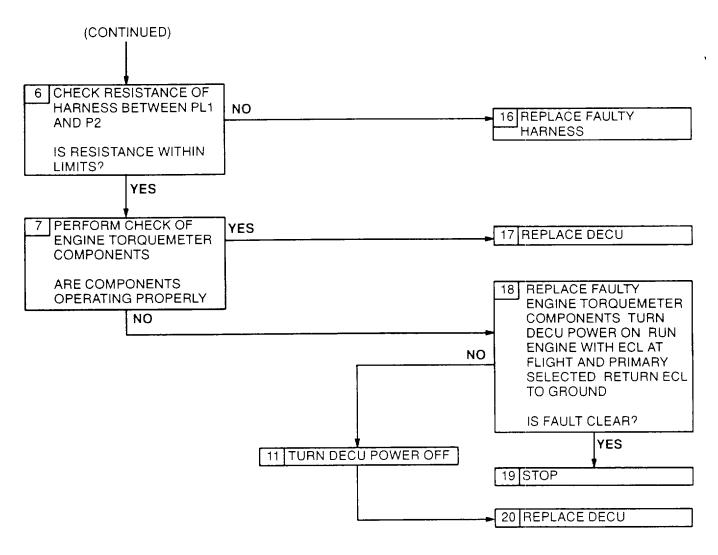
# G-25 FAULT CODE FB, REVERSIONARY STEP COUNT EXPANDED INSTRUCTIONS

Refer to numbered steps in figure 111.

- Step 2. Check harness connector PL3 (figure 201) at DECU, and P5 at HMA for tight connections.
- Step 3. Disconnect connectors PL3 and P5 to check pins and sockets.
- Step 5. With PL3 disconnected, check resistance of HMA (reversionary stepper motor) at harness PL3 connector sockets F and E (figure 202), G and E, H and E, and J and E. In each case, limit is 11.0 24.5Q.
- Step 6. With P5 disconnected, check resistance of HMA (reversionary stepper motor) at HMA J5. connector pins 2 and 6, 3 and 6, 4 and 6, and 5 and 6. In each case, limit is 11.0 24.0Q.
- Step 7. Before tightening harness connectors PL3 and P5, be sure that keyways in harness connects are aligned with keyways in component connectors.
- Step 12. Refer to manufacturer's procedure for diagnosing and replacing harness.
- Step 17 Refer to manufacturer's procedure for diagnosing and replacing harness.

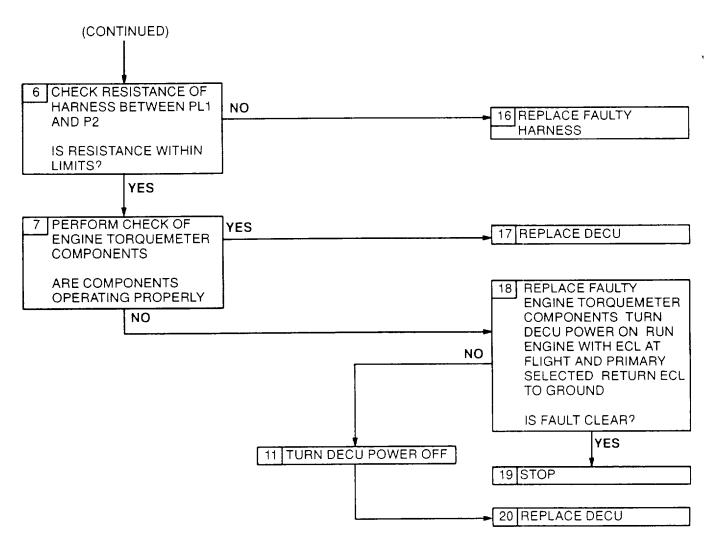
	Connector		Resistance (Ω)	
Component	No.	Contacts	Limits	Nominal*
HMA - Primary Stepper Motor	PL3	F&E	<u>11.0 - 24.5</u>	<u>17.0</u>
		G&E	<u>11.0 - 24.5</u>	<u>17.0</u>
		H & E	<u>11.0 - 24.5</u>	<u>17.0</u>
		J&E	<u>11.0 - 24.5</u>	<u>17.0</u>
	J5	2&6	<u>11.0 - 24.0</u>	<u>17.0</u>
		3&6	<u>11.0 - 24.0</u>	<u>17.0</u>
		4 & 6	<u>11.0 - 24.0</u>	<u>17.0</u>
*At <u>25°C</u>		5&6	<u>11.0 - 24.0</u>	<u>17.0</u>

#### FAULT CODE A1 Q SENSOR



Fault Code Al, Q Sensor Figure 112 (Sheet 1 of 2)

#### FAULT CODE A1 Q SENSOR



Fault Code Al, Q Sensor Figure 112 (Sheet 2 of 2)

G-48

# G-26 FAULT CODE AI, Q SENSOR EXPANDED INSTRUCTIONS

Refer to numbered steps in figure 112.

- Step 3. Check harness connector PL1 (figure 201) at DECU, and P2 at signal conditioner for tight connections.
- Step 4. Disconnect connectors PL1 and P2 to check pins and sockets.
- Step 6. With PL1 and P2 disconnected, short P2 connector sockets D and K together. Check resistance at harness PL1 connector sockets H and J (figure 202). Limit is < 1Q.
- Step 7. Refer to manufacturer's procedure for checking operation of engine torquemeter components.
- Step 8. Before tightening harness connectors PL1 and P2, be sure that keyways in harness connectors are aligned with keyways in component connectors.
- Step 14. Refer t- manufacturer's procedure for diagnosing and replacing harness or signal conditioner.
- Step 16. Refer to manufacturer's procedure for diagnosing and replacing harness.
- Step 18 Refer to manufacturer's procedure for diagnosing and replacing engine torquemeter components.

	Connector		Resistance (Ω)		
Component	No.	Contacts	Limits	Nominal*	
Q Sensor Harness	PL1	H & J (with P2 D & K shorted)	<u>&lt;1</u>	<u>&lt;1</u>	
*At <u>25°C</u>					

#### FAULT CODE A2 N2 SET POTENTIOMETER

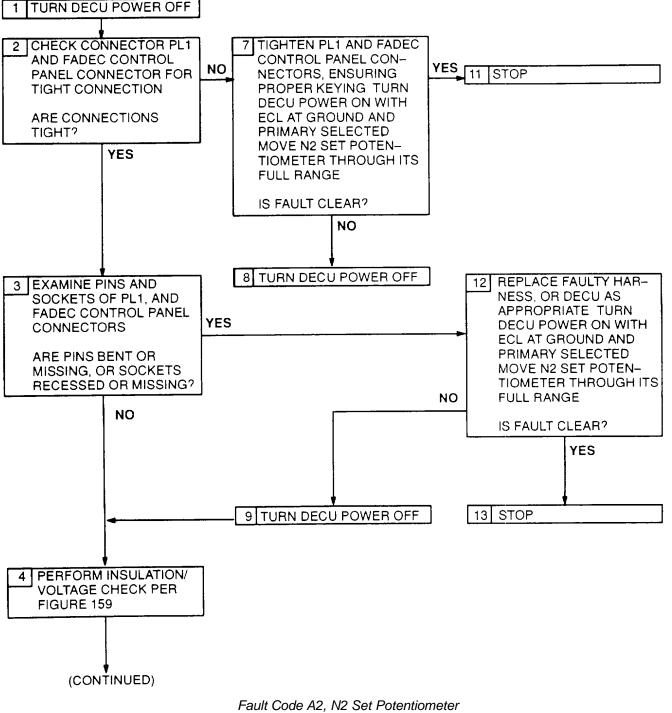
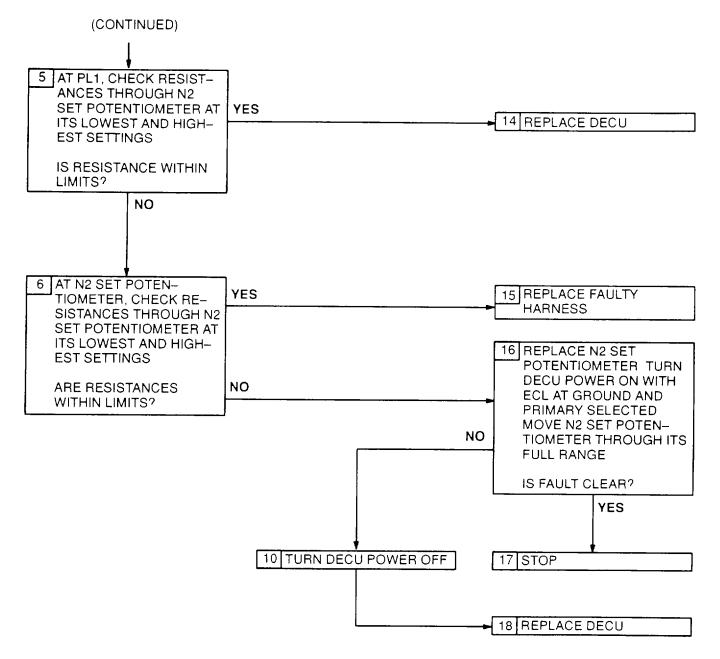


Figure 113 (Sheet 1 of 2)

#### FAULT CODE A2 N2 SET POTENTIOMETER



Fault Code A2, N2 Set Potentiometer Figure 113 (Sheet 2 of 2)

#### G-27 FAULT CODE A2, N2 SET POTENTIOMETER EXPANDED INSTRUCTIONS

Refer to numbered steps in figure 113.

- Step 2. Check harness connector PL1 (figure 201) at DECU and FADEC control panel connector for tight connections.
- Step 3. Disconnect connector PL1 and FADEC control panel connector to check pins and sockets.
- Step 5. Set the N2 set potentiometer to its lowest setting. With PL1 disconnected, check resistance of N2 set potentiometer at harness PL1 connector sockets h and z. Limit is<u>3600 4200Ω</u>. Check resistance at sockets z and AA (results are "a"). :Limit is <u>800 1400Ω</u> Check resistance at sockets h and AA (results are "b"). Limit is <u>4500 5500Ω</u>. Use the following equation to check if the low limit of the N2 set potentiometer has been exceeded:

$$a \div b = c$$

Limit on "c" is > 0.10.

Set the N2 set potentiometer to its highest setting. Check resistance at sockets h and z. Limit is 800 1400 $\Omega$ . Check resistance at sockets z and AA (results are "d"). Limit is 3600 4200 $\Omega$ . Check resistance at sockets h and AA (results are "e"). Limit is 4500 5500 $\Omega$ . Use the following equation to check if the high limit of the N2 set potentiometer has been exceeded:

$$d \div e = f$$

Limit on "f" is < <u>0.90</u>.

Step 6. Set the N2 set potentiometer to its lowest setting. With FADEC control panel connector disconnected, check resistance at panel connector pins A and B. Limit is <u>3600 420Ω</u>. Check resistance at pins B and C (results are g). Limit is <u>800 1400Ω</u>. Check resistance at pins A and C (results are "h"). Limit is <u>4500 5500Ω</u>. Use the following equation to check if the low limit of the N2 set potentiometer has been exceeded:

$$g \div h = i$$

Limit on "i" is > 0.10.

Set the N2 set potentiometer to its highest setting. Check resistance at panel connector pins A and B. Check resistance at pins B and C (results are "j"). Limit is <u>3600 42000</u>. Check resistance at pins A and C (results are "k"). Limit is <u>4500 55000</u>. Use the following equation to check if the low limit of the potentiometer has been exceeded.

Limit on "I" is < <u>0.90.</u>

Step 7. Before tightening harness connector PL1 and FADEC control panel connector, be sure that keyway in harness connectors is aligned with keyways in component connectors.

# G-27 FAULT CODE A2, N2 SET POTENTIOMETER EXPANDED INSTRUCTIONS(CONTINUED)

- Step 12 Refer to manufacturer's procedure for diagnosing and replacing harness.
- Step 15 Refer to manufacturer's procedure for diagnosing and replacing harness.
- Step 16 Refer to manufacturer's procedure for diagnosingand replacing potentiometer.

	Connector		Resista	Resistance (Ω)		
Component	No.	Contacts	Limits	Nominal*		
N2 Set Potentiometer	PL1	<u>h</u> & <u>z</u> (a)	<u> 3600 - 4200</u>	4000		
Lowest Setting		<u>z</u> &AA (b)	<u>800 - 1400</u>	<u>1000</u>		
		<u>h</u> &AA (c)	<u>4500 - 5500</u>	<u>5000</u>		
		a÷b (c)	<u>&gt;0.10</u>	<u>0.20</u>		
N2 Set Potentiometer Highest Setting	PL1	<u>h</u> & z	<u>800 - 1400</u>	<u>1000</u>		
		<u>z</u> &AA (d)	<u> 3600 - 4200</u>	<u>4000</u>		
		<u>h</u> &AA (e)	<u>4500 - 5500</u>	<u>5000</u>		
		d÷e (f)	<u>&lt;0.90</u>	<u>0.80</u>		
N2 Set Potentiometer Lowest Setting	FADEC Control Panel	A & B	<u> 3600 - 4200</u>	<u>4000</u>		
		B & C (g)	<u>800 - 1400</u>	<u>1000</u>		
		A & C (h)	<u>4500 - 5500</u>	<u>5000</u>		
		g÷h (i)	<u>&lt;0.10</u>	<u>0.20</u>		
N2 Set Potentiometer Highest Setting	FADEC Control Panel	A & B	<u>800 - 1400</u>	<u>1000</u>		
		B&C (j)	<u> 3600 - 4200</u>	<u>4000</u>		
		A & C (k)	<u>4500 - 5500</u>	<u>5000</u>		
		j÷k (l)	<u>&lt;0.90</u>	<u>0.80</u>		
*At <u>25°C</u>						

# FAULT CODE A3 COLLECTIVE PITCH ANGLE LVDT

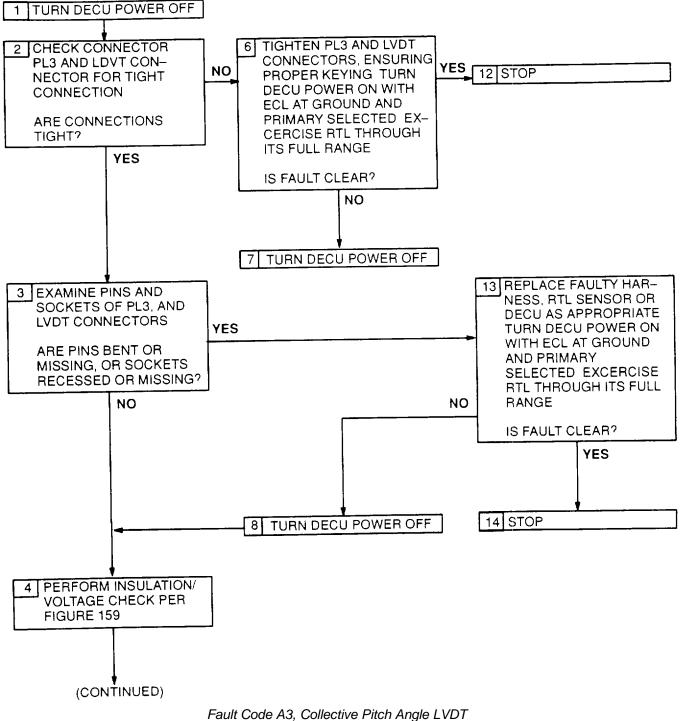
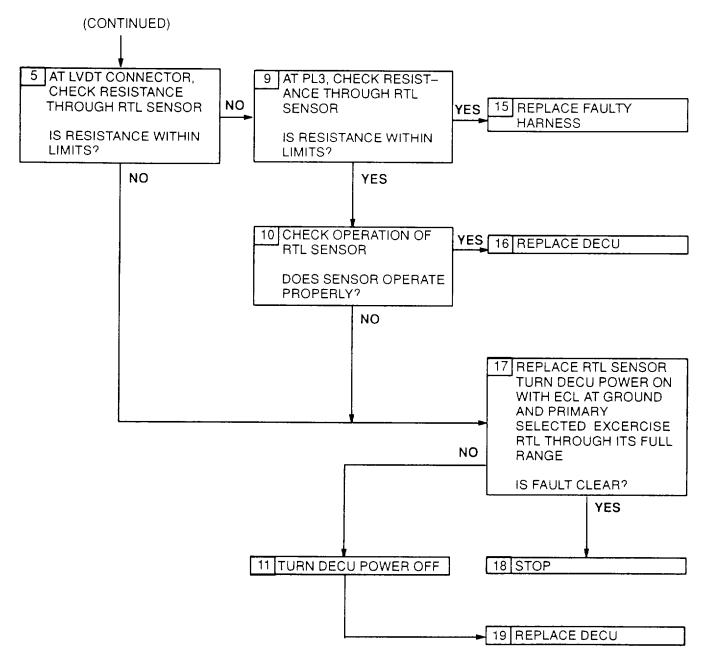


Figure 114 (Sheet 1 of 2)

FAULT CODE A3 COLLECTIVE PITCH ANGLE LVDT



Fault Code A3, Collective Pitch Angle LVDT Figure 114 (Sheet 2 of 2)

# G-28 FAULT CODE A3, COLLECTIVE PITCH ANGLE LVDT EXPANDED INSTRUCTIONS

Refer to numbered steps in figure 114.

- Step 2. Check harness connector PL3 (figure 201) at DECU and LVDT for tight connections.
- Step 3. Disconnect connector PL3 and LVDT to check pins and sockets.
- Step 5. With LVT connector disconnected, check esistance of RTL sensor at sensor connector pins 1 and 2. Limit is  $110 \ 140\Omega$ . Check resistance at pins 3 and 4. Limit is  $210 \ 260\Omega$ . Check resistance at pins 3 and 5, and pins 4 and 5. Limit is  $< 230\Omega$ .
- Step 6. Before tightening harness connector PL3 and LVDT connector, be sure that keyway in harness connectors is aligned with keyways in component connectors.
- Step 9. With PL3 disconnected, check resistance of RTL sensor at harness PL3 connector socketsg\_and p\_(figure 202). Limit is 210 260Ω. Check resistance at socketsz and AA. Limit is 110 140Ω
- Step 10. Refer to manufacturer's procedure for checking operation of RTL sensor.
- Step 13. Refer to manufacturer's procedure for diagnosing and replacing harness or RTL sensor.
- Step 15. Refer to manufacturer's procedure for diagnosing and replacing harness.
- Step 17. Refer to manufacturer's procedure for diagnosing and replacing RTL sensor.

		Connector		ince (Ω)
Component	No.	Contacts	Limits	Nominal*
RTL Sensor C/P Signal	LVDT	3 & 4	<u>210 - 26-</u>	<u>225</u>
_		3 & 5	<u>&lt;230</u>	-
		4 & 5	<u>&lt;230</u>	-
C/P Excitation	PL3	q & p	<u>210 - 260</u>	-
*At <u>25°C</u>		z & AA	<u>110 - 140</u>	<u>120</u>

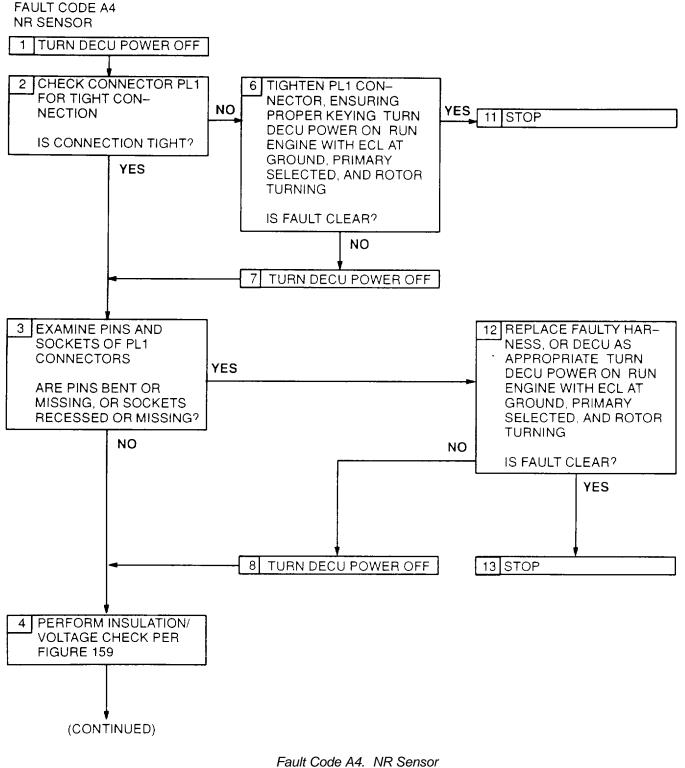
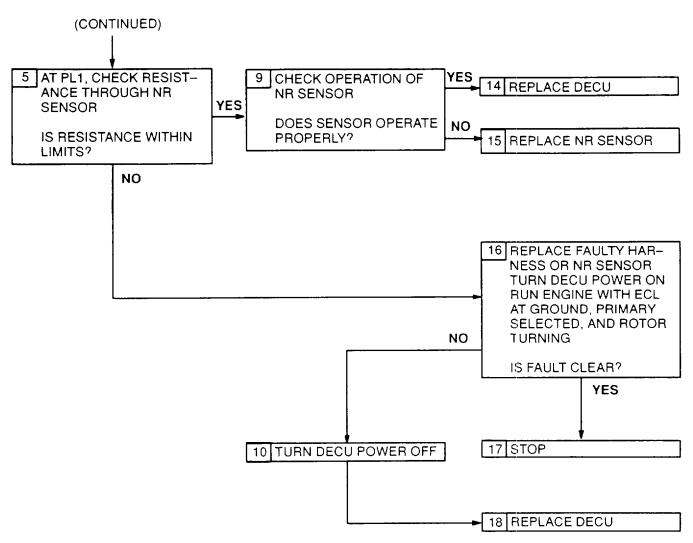


Figure 115 (Sheet 1 of 2)

#### FAULT CODE A4 NR SENSOR



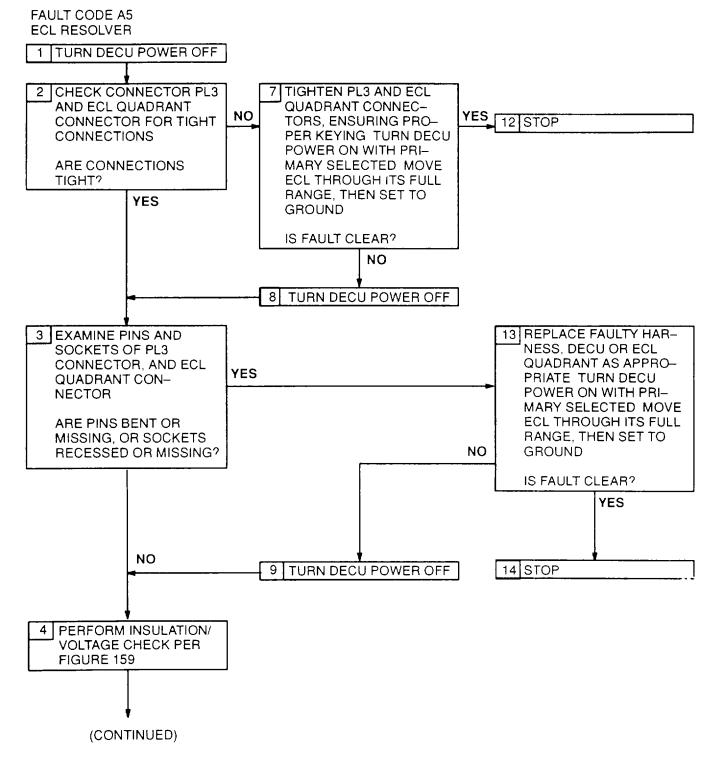
Fault Code A4, NR Sensor Figure 115 (Sheet 2 of 2)

# G-29 FAULT CODE A4, NR SENSOR EXPANDED INSTRUCTIONS

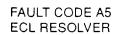
Refer to numbered steps in figure 115.

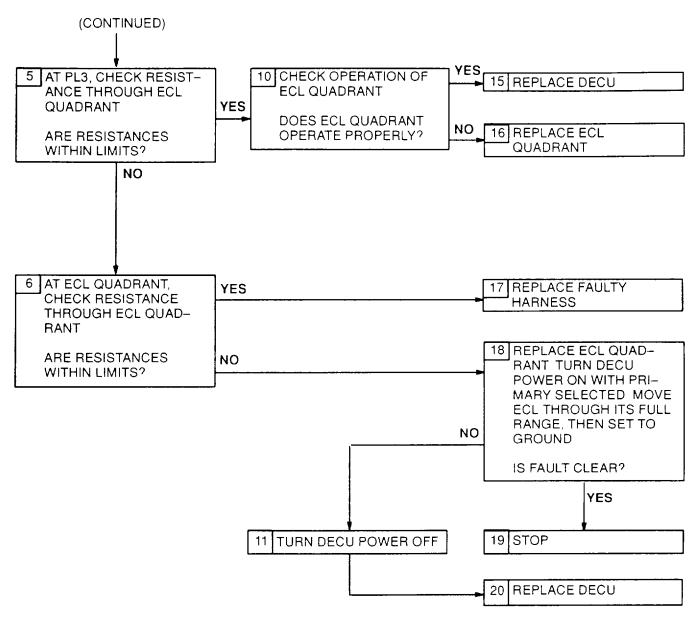
- Step 2. Check harness connector PL1 (figure 201) at DECU for tight connections.
- Step 3. Disconnect connector PL1 to check pins and sockets.
- Step 5. With PL1 disconnected, check resistance of NR sensor at harness PL1 connector sockets k and N (figure 202). Limit is  $110 130\Omega$ .
- Step 6. Before tightening harness connector PL1, be sure that keyway in harness connectors is aligned withkeyway in DECU connector.
- Step 9. Refer to manufacturer's procedure for checking operation of NR sensor.
- Step 12. Refer to manufacturer's procedure for diagnosing and replacing harness.
- Step 15. Refer to manufacturer's procedure for diagnosing and replacing NR sensor.
- Step 16. Refer to manufacturer's procedure for diagnosing and replacing harness or NR sensor.

	Connector		Resistance ( $\Omega$ )	
Component	No.	Contacts	Limits	Nominal*
NR Sensor *At <u>25°C</u>	PL1	<u>k</u> & N	<u>110 - 130</u>	<u>120</u>



Fault Code A5, ECL Resolver Figure 116 (Sheet 1 of 2)





Fault Code A5, ECL Resolver Figure 116 (Sheet 2 of 2)

# G-30 FAULT CODE A5, ECL RESOLVER EXPANDED INSTRUCTIONS

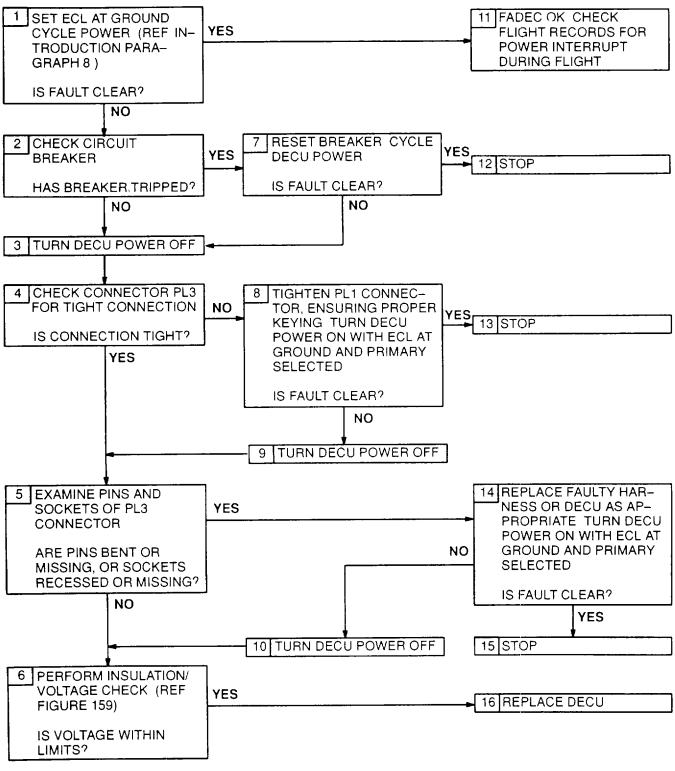
Refer to numbered steps in figure 116.

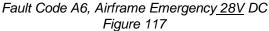
- Step 2. Check harness connector PL3 (figure 201) at DECU, and connector at ECL quadrant for tight connections.
- Step 3. Disconnect PL3 and ECL quadrant connectors to check pins and sockets.
- Step 5. Set ECL to STOP. With PL3 disconnected, check resistance of ECL quadrant (excitation) at harness PL3 connector sockets h and i (figure 202). Limit is <u>35 42Ω</u>. Check resistance of ECL quadrant (signal) at sockets EE and DD. Limit is <u>90 102Ω</u>. Monitor resistance of ECL quadrant (interlock discrete) at sockets f and LL while moving ECL from STOP to GROUND to FLIGHT. Limits are defined in table below. Monitor resistance of ECL quadrant (gain discrete) at sockets MM and LL while moving ECL from STOP to GROUND to FLIGHT. Limits are as defined in table below. (Note: Gain discrete resistance is not checked at GROUND because switch can be open or closed at that point.)
- Step 6. Set ECL to STOP. With ECL quadrant connector disconnected, check resistance of ECL quadrant (excitation) at quadrant pins 1 and 2. Limit is <u>35 40Ω</u>. Check resistance of ECL quadrant (signal) at quadrant pins 3 and 4. Limit is <u>90 100Ω</u>. Monitor resistance of ECL quadrant (interlock discrete) at pins 11 and 12 while moving ECL from STOP to GROUND to FLIGHT. Limits are as defined in table below. Monitor resistance of ECL quadrant (gain discrete) at pins 5 and 11 while moving ECL from STOP to GROUND to FLIGHT. Limits are as defined in table below. Monitor resistance of ECL quadrant (gain discrete) at pins 5 and 11 while moving ECL from STOP to GROUND to FLIGHT. Limits are as defined in table below. (Note: Gain discrete resistance is not checked at GROUND because switch can be open or closed at that point.
- Step 7. Before tightening harness connector PL3 and connector at ECL resolver, be sure that keyways in harness connectors are aligned with keyways in component connectors.
- Step 10 Refer to manufacturer's procedure for checking operation of ECL quadrant.
- Step 13. Refer to manufacturer's procedure for diagnosing and replacing harness or ECL quadrant.
- Step 16. Refer to manufacturer's procedure replacing ECL quadrant.
- Step 17. Refer to manufacturer's procedure for diagnosing and replacing harness
- Step 18. Refer to manufacturer's procedure for diagnosing and replacing ECL quadrant.

# G-30 FAULT CODE A5, ECL RESOLVER EXPANDED INSTRUCTIONS(CONTINUED)

	Connector		Resistance (Ω)	
Component	No.	Contacts	Limits	Nominal*
ECL Quadrant - Excitation	PL3	<u>h</u> &i	<u> 35 - 42</u>	-
	ECL Quadrant	1 & 2	<u> 35 - 40</u>	-
ECL Quadrant - Signal	PL3	EE & DD	<u>90 - 102</u>	-
	ECL Quadrant	3 & 4	<u>90 - 100</u>	-
ECL Quadrant - Interlock Discrete:				
ECL at STOP	PL3	<u>f &amp; LL</u>	<u>&gt;150K</u>	~
ECL between STOP and GROUND		<u>f &amp; LL</u>	<u>&lt;50</u>	<u>1</u>
ECL at GROUND		<u>f &amp; LL</u>	<u>&gt;150K</u>	∞
ECL between GROUND and FLIGHT		<u>f &amp; LL</u>	<u>&lt;50</u>	<u>1</u>
ECL at FLIGHT		<u>f &amp; LL</u>	<u>&gt;140K</u>	∞
ECL Quadrant - Interlock Discrete:				
ECL at STOP	ECL Quadrant	12 & 11	<u>&gt;150K</u>	~
ECL between STOP and GROUND		12 & 11	<u>&lt;50</u>	<u>1</u>
ECL at GROUND		12 & 11	<u>&gt;150K</u>	~
ECL between GROUND and FLIGHT		12 & 11	<u>&lt;50</u>	<u>1</u>
ECL at FLIGHT		12 & 11	<u>&gt;150K</u>	~
ECL Quadrant - Gain Discrete				
ECL at STOP	PL3	MM & LL	<u>&lt;50</u>	<u>1</u>
ECL between STOP and GROUND		MM & LL	<50	<u>1</u> <u>1</u>
ECL between GROUND and FLIGHT		MM & LL	<u>&gt;150K</u>	<u>∞</u>
ECL at Flight		MM & LL	<u>&gt;150K</u>	<u>∞</u>
ECL Quadrant - Gain Discrete				
ECL at STOP	ECL Quadrant	5 & 11	<u>&lt;50</u>	<u>1</u>
ECL between STOP and GROUND		5 & 11	<u>&lt;50</u>	<u>1</u>
ECL between GROUND AND FLIGHT		5 & 11	<u>&gt;150K</u>	<u>∞</u>
ECL at FLIGTH		5 & 11	<u>&gt;150k</u>	~
*At <u>25°C</u>				

#### FAULT CODE A6 AIRFRAME EMERGENCY <u>28V DC</u>

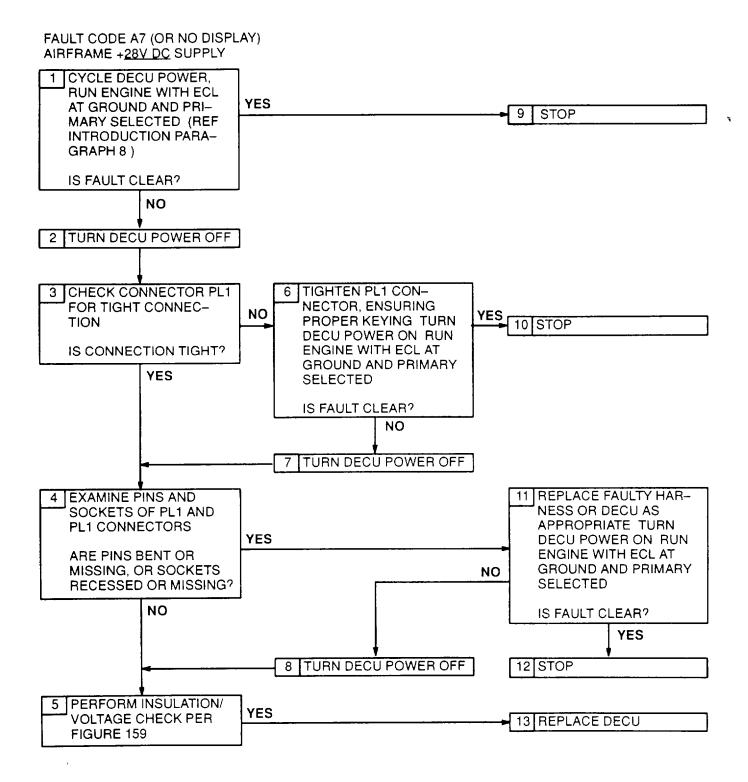




# G-31 FAULT CODE A6, AIRFRAME EMERGENCY 28V DC EXPANDED INSTRUCTIONS

Refer to numbered steps in figure 117.

- Step 4. Check harness connector PL3 (figure 201) at DECU for tight connections.
- Step 5. Disconnect connector PL3 to check pins and sockets.
- Step 8. Before tightening harness connector PL3, be sure that keyway in harness connector is aligned with keyway in DECU connector.
- Step 14. Refer to manufacturer's procedure for diagnosing and replacing harness.



NOTE FAULT A7 CAN ONLY BE ILLUMINATED WHEN THE ENGINE IS RUNNING. SINCE THE DECU WILL BE UNPOWERED (PRIMARY) AT SHUTDOWN IF THE AIRFRAME +28V IS NOT PRESENT

> Fault Code A7 (or No Display), Airframe <u>+28V</u> DC Supply Figure 118

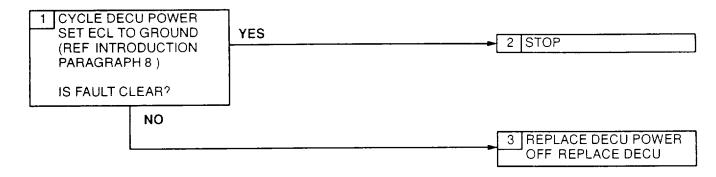
# G-32 FAULT CODE A7 (OR NO DISPLAY), AIRFRAME +28V DC SUPPLY EXPANDED INSTRUCTIONS

Refer to numbered steps in figure 118.

- Step 3. Check harness connector PL1 (figure 201) at DECU for tight connections.
- Step 4. Disconnect connector PL1 to check pins and sockets.
- Step 6. Before tightening harness connector PL1, be sure that keyway in harness connector is aligned with keyway in DECU connector.
- Step 11. Refer to manufacturer's procedure for diagnosing and replacing harness.

# FAULT CODES D0 OVERSPEED DRIVE

- D3 28V "OR" DIODES
- D6 +<u>12V</u> REVERSIONARY OR  $\pm$  <u>12</u>V OVERSPEED
- DA +5V REVERSIONARY
- DB REVERSIONARY SYSTEM
- DD OVERSPEED CHECK



# Fault Codes D0, D3, D6, DA, DB, DD Internal DECU Faults Figure 119

FAULT CODES

- D4 +<u>10V DC</u> D5 +<u>15V</u> SUPPLY
- D7 +5V SUPPLY

D8 COLD JUNCTION COMPENSATION

- D9 +<u>24V</u>REGULATOR
- DC T4.5 CALIBRATION
- DF WATCHDOG TIMER TEST

1 TURN DECU POWER OFF. REPLACE DECU.

NOTE: FAULT CODE DF CAN OCCUR AS A RESULT OF A PRE-EXISTING HARD FAULT WHEN THE WATCHDOG TIMER TEST IS PERFORMED AT POWER-UP. IF DF OCCURS IH CONJUCTION WITH ANOTHER HARD FAULT, FOLLOW THE PROCEDURE FOR THE OTHER FAULT CODE FIRST.

Faults Codes D4, D5, D7, D8, D9, DC, DF Internal DECU Faults Figure 120

# G-33 FAULT CODES DO, D3, D6, DA, DB, DD INTERNAL DECU FAULTS EXPANDED IN STRUCTIONS

Refer to numbered steps in figure 119.

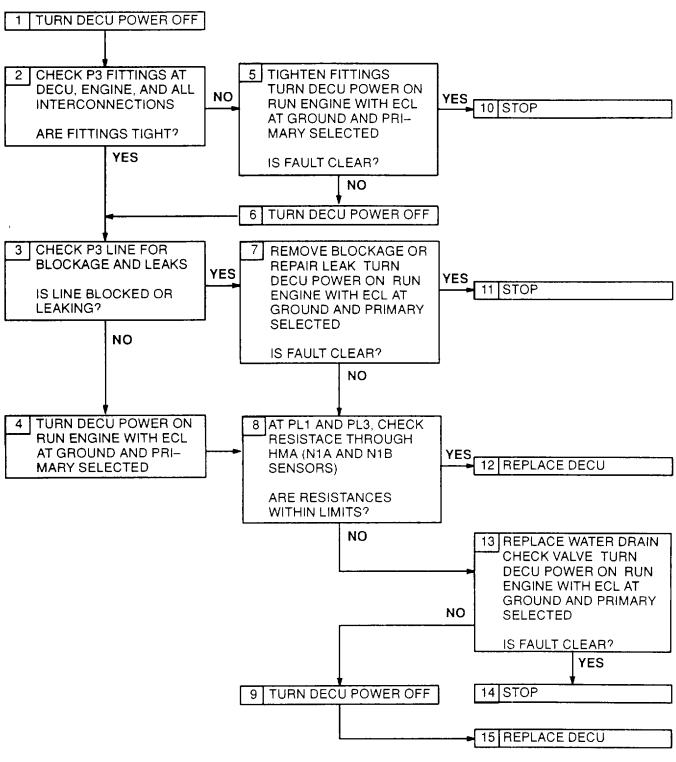
- Step 1. Cycle DECU power to determine if fault is a DECU problem or was caused by an interrupt to both reversionary power supplies.
- Step 3. An internal DECU fault exists. No further troubleshooting is possible.

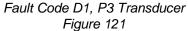
# G-34 FAULT CODES D4, D5, D7, D8, D9, DC, DF INTERNAL DECU FAULTS EXPANDED INSTRUCTIONS

Refer to numbered steps in figure 120.

These codes indicate internal DECU problems. No further troubleshooting is possible.

#### FAULT CODE D1 P3 TRANSDUCER





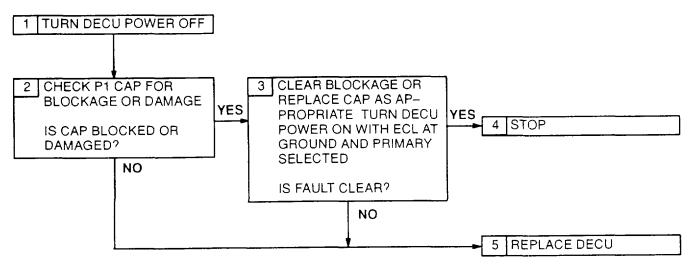
### G-35 FAULT CODE D1, P3 TRANSDUCER EXPANDED INSTRUCTIONS

Refer to numbered steps in figure 121.

- Step 3. Refer to manufacturer's procedure to check line for blockage and leaks.
- Step 5. Tighten fittings to torque as specified by the manufacturer.
- Step 7. Refer to manufacturer's procedure for repairing/replacing P3 line.
- Step 8. Refer to manufacturer's procedure for checking the water drain check valve.
- Step 13. Refer to manufacturer's procedure for replacing the water drain check valve.

G-71

#### FAULT CODE D2 P1 TRANSDUCER



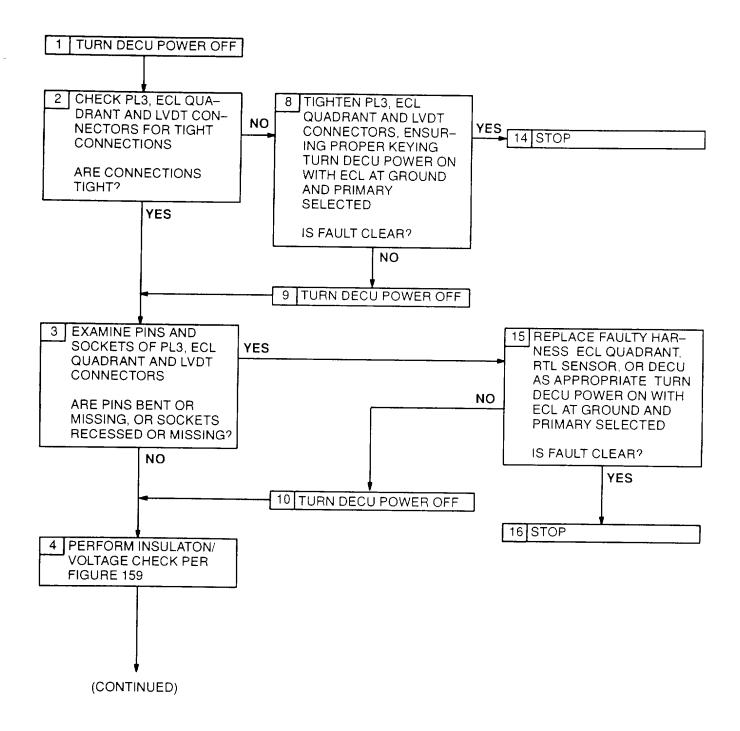
Fault Code D2, P1 Transducer Figure 122

# G-36 FAULT CODE D2, P1 TRANSDUCER EXPANDED INSTRUCTIONS

Refer to numbered steps in figure 122.

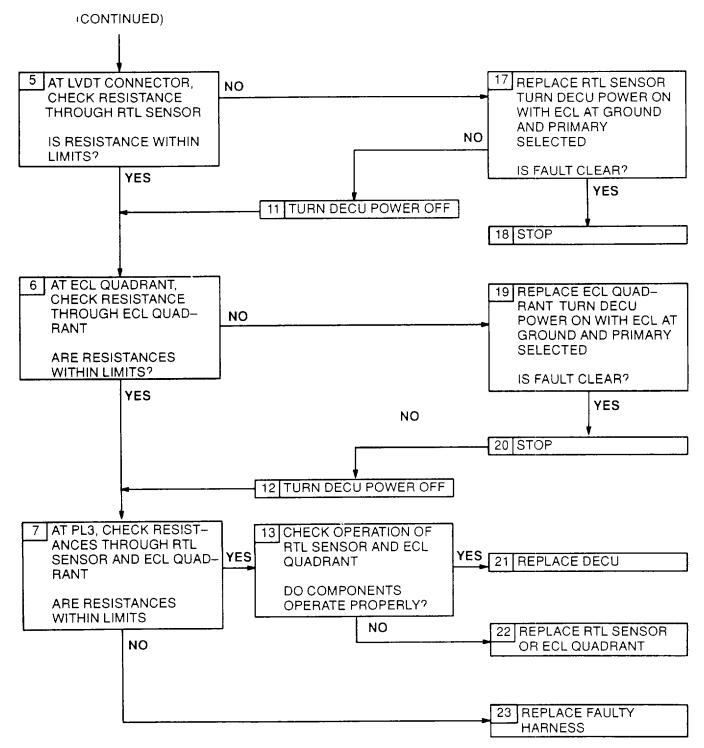
- Step 2. Check P1 cap for blockage or damage.
- Step 3. Tighten cap to torque.

#### FAULT CODE DE 400 HZ RESOLVER REFERENCE



Fault Code DE, <u>400 Hz</u> Resolver Reference Figure 123 (Sheet 1 of 2)

# FAULT CODE DE 400 HZ RESOLVER REFERENCE



Fault Code DE, <u>400 Hz</u> Resolver Reference Figure 123 (Sheet 2 of 2)

#### G-37 FAULT CODE DE, 400 HZ RESOLVER REFERENCE EXPANDED INSTRUCTIONS

Refer to numbered steps in figure 123.

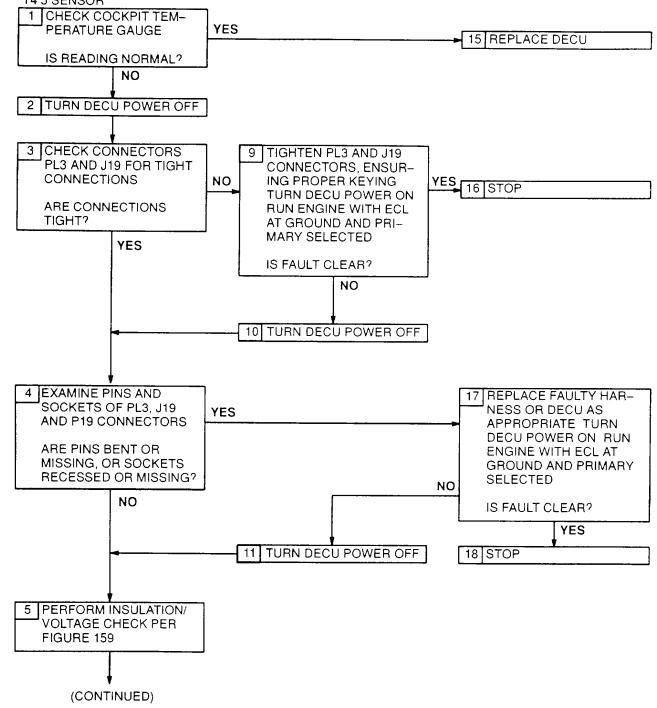
- Step 2. Check harness connector PL3 (figure 201) at DECU, ECL quadrant connector and LVDT connector for tight connections.
- Step 3. Disconnect PL3, ECL quadrant and LVDT connectors to check pins and sockets.
- Step 5. With LVDT connector disconnected, check resistance of RTL sensor at sensor connector pins 1 and 2. Limit is  $110 140\Omega$ . Check resistance at pins 3 and 4. Limit is  $210 260\Omega$ . Check resistance at pins 3 and 5, and pins 4 and 5. Limit is  $< 230\Omega$ .
- Step 6. With ECL quadrant connector disconnected, check resistance of ECL quadrant at quadrant pins 1 and 2. Limit is  $35 40\Omega$ . Check resistance at pins 3 and 4. Limit is  $90 1 OO\Omega$ .
- Step 7. With PL3 disconnected, check resistance of ECL quadrant at harness PL3 connector sockets and i (figure 202). Limit is <u>35 42Ω</u>. Check resistance at sockets EE and DD. Limit is <u>90 1 00Ω</u>. Check resistance of RTL sensor at sockets g and p. Limit is <u>210 260Ω</u>. Check resistance of sockets z and AA. Limit is <u>110 140Ω</u>.
- Step 8. Before tightening PL3, ECL quadrant and LVDT connectors, be sure that keyways in harness connectors are aligned with keyways in component connectors.
- Step 13. Refer to manufacturer's procedure for checking operation of ECL quadrant and RTL sensor.
- Step 15 Refer to manufacturer's procedure for diagnosing and replacing harness, ECL quadrant or RTL sensor.
- Step 17. Refer to manufacturer's procedure for diagnosing and replacing RTL sensor.
- Step 19. Refer to manufacturer's procedure for diagnosing andreplacing ECL quadrant.
- Step 23. Refer to manufacturer's procedure for diagnosing and replacing harness.

# G-37 FAULT CODE DE, 400 HZ RESOLVER REFERENCE EXPANDED INSTRUCTIONS (CONTINUED)

	Conn	ector	Resistance (Ω)			
Component	No.	Contacts	Limits	Nominal*		
ECL Quadrant	PL3	<u>h</u> & <u>i</u>	<u> 35 - 42</u>	-		
		EE & DD	<u>90- 102</u>	-		
	ECL Quadrant	1 & 2	<u> 35 - 40</u>	-		
		3 &4	<u>90 - 100</u>	-		
RTL Sensor	PL3	<u>z</u> & AA	<u>110 - 140</u>	-		
		<u>q&amp;p</u>	<u>210 -260</u>	-		
	LVDT	1 & 2	<u>110 - 140</u>	-		
		3&4	<u>210 - 260</u>	-		
		3&5	< 230	-		
		4 & 5	< <u>230</u>	-		
*At <u>25°C</u>				-		

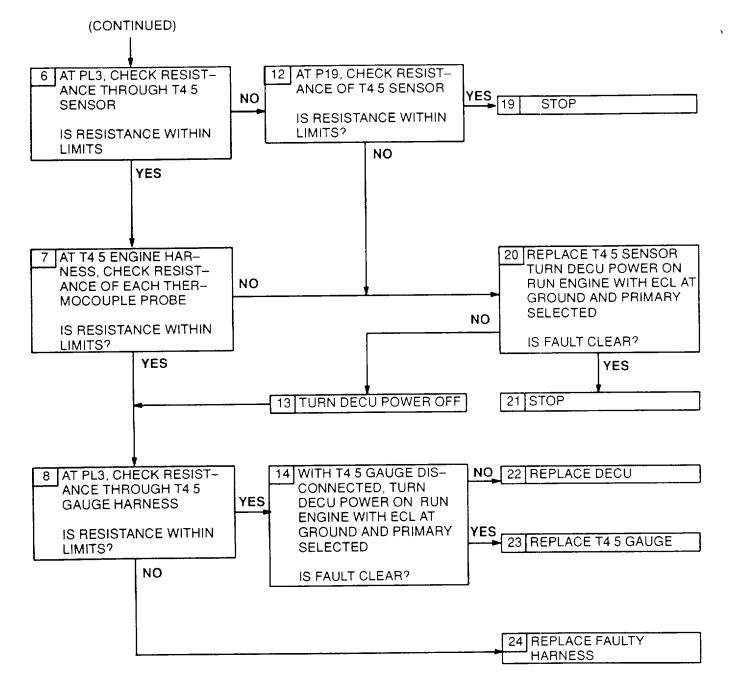
# FAULT CODE E1





Fault Code E1, T4.5 Sensor Figure 124 (Sheet 1 of 2)

#### FAULT CODE E1 T4 5 SENSOR



Fault Code E1, T4.5 Sensor Figure 124 (Sheet 2 of 2)

#### G-38 FAULT CODE E1, T4.5 SENSOR EXPANDED INSTRUCTIONS

Refer to numbered steps in figure 124.

- Step 3. Check harness connector PL3 (figure 201) at DECU, and J19 at T4.5 harness for tight connections.
- Step 4. Disconnect connectors PL3 and J19 to check pins and sockets.
- Step 6. With PL3 disconnected, check resistance of T4.5 sensor at harness PL3 connector socket<u>s</u> and GG (figure 202). Limit is <u>3.5 20Ω</u>.
- Step 7. To measure resistance of T4.5 thermocouple probe, disconnect one leg of probe from the bus bar. Measure resistance. Reverse polarity and measure resistance again. Average the two readings to obtain final results. (Note: An analog ohmmeter is recommended for measuring probe resistance.)
- Step 8. With PL3 and T4.5 gauge disconnected, check resistance of T4.5 harness at harness PL3 connector sockets <u>u</u> and a (figure 202). Limit is  $\geq 1 M\Omega$ .
- Step 9. Before tightening harness connectors PL3 and P19, be sure that keyways in harness connectors are aligned with keyways in component connectors.
- Step 12. With J19 disconnected, check resistance of T4.5 sensor at sensor P19 connector sockets A and B (figure 202). Limit is <u>3.5 5.5Ω</u>.
- Step 17. Refer to airframe manufacturer's procedure for diagnosing and replacing harness.
- Step 19. Refer to manufacturer's procedure for diagnosing and replacing harness.
- Step 20. Refer to manufacturer's procedure for diagnosing and replacing T4.5 sensor.
- Step 23. Refer to manufacturer's procedure for diagnosing and replacing harness or T4.5 gauge.
- Step 24. Refer to manufacturer's procedure for diagnosingand replacing harness.

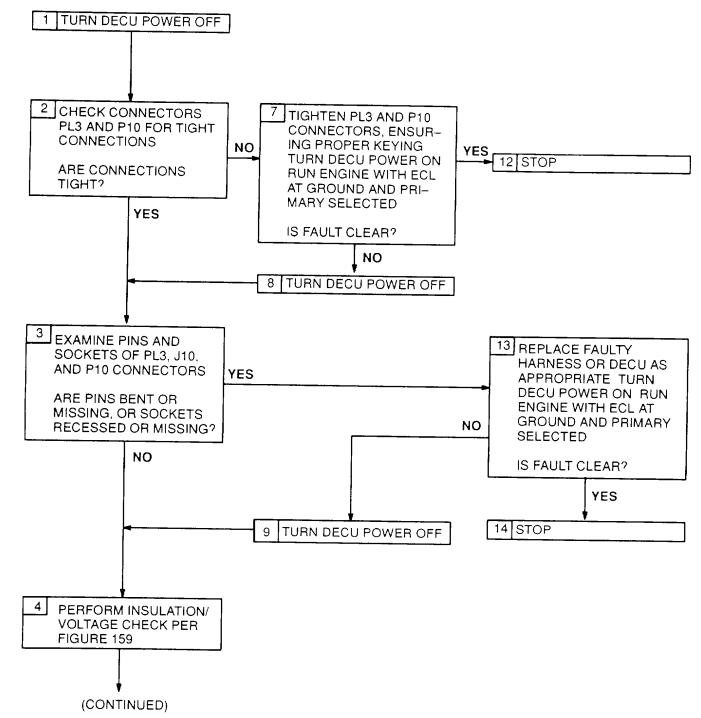
# G-38 FAULT CODE E1, T4.5 SENSOR EXPANDED INSTRUCTIONS (CONTINUED)

# **RESISTANCE-CHECK SUMMARY**

		Connector	Resistance (Ω)		
Component	No.	Contacts	Limits	Nominal*	
T4.5 Gauge Harness	PL3	<u>u</u> & <u>a</u>	> <u>1 M</u>	> <u>1 M</u>	
T4.5 Sensor	PL3	<u>v</u> & GG	3.5 - 20.0	10.0	
	P19	A & B	3.5 - 5.5	4.0	
T4.5 Thermocouple Probe	-	-	≥4.0	-	
*At 25°C					

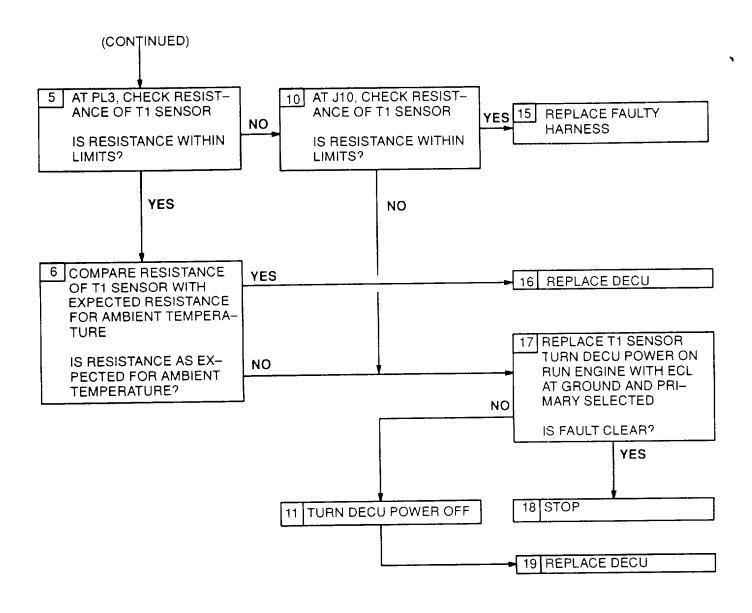
G-80

#### FAULT CODE E2 T1 SENSOR



Fault Code E2, T1 Sensor Figure 125 (Sheet 1 of 2)

## FAULT CODE E2 T1 SENSOR



Fault Code E2, T1 Sensor Figure 125 (Sheet 2 of 2)

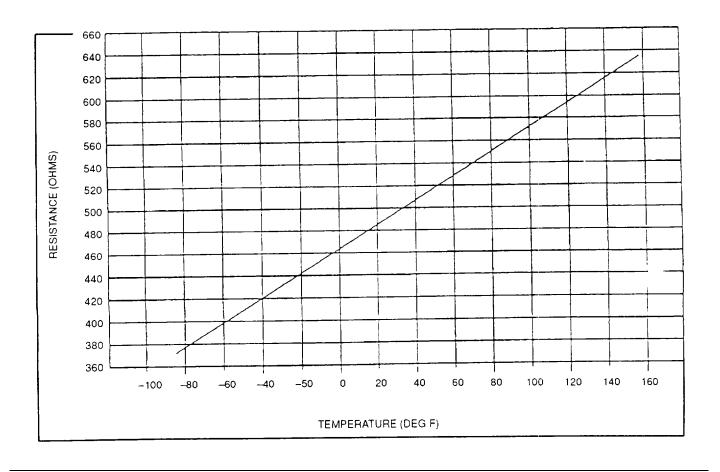
#### G-39 FAULT CODE E2, T1 SENSOR EXPANDED INSTRUCTIONS

Refer to numbered steps in figure 125.

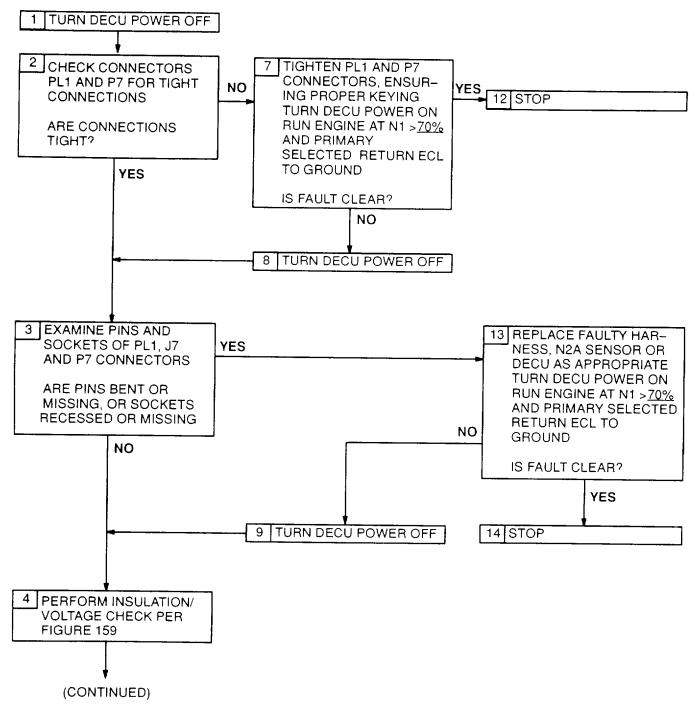
- Step 2. Check harness connector PL3 (figure 201) at DECU, and P10 at T1 sensor for tight connections.
- Step 3. Disconnect connectors PL3 and P10 to check pins and sockets.
- Step 5. With PL3 disconnected, check resistance of T1 sensor at harness PL3 connector sockets and t (figure 202), and s and t. Limit in each case is <u>356 637Ω</u>.
- Step 6 Refer to the T12 Temp vs. Resistance graph to determine the expected resistance for the ambient temperature.
- Step 7. Before tightening harness connectors PL3 and P10, be sure that keyways in harness connectors are aligned with keyways in component connectors.
- Step 10. With P10 disconnected, check resistance of T1 sensor at T1 sensor J10 connector pins C and A (figure 202), and B and A. Limit in each case is <u>356 637Ω</u>.
- Step 14. Refer to manufacturer's procedure for diagnosing and replacing harness.
- Step 15. Refer to manufacturer's procedure for diagnosing and replacing harness.
- Step 17. Refer to manufacturer's procedure for diagnosing and replacing T1 sensor.

		Connector	Resistance ( $\Omega$ )			
Component	No.	Contacts	Limits	Nominal*		
T1 Sensor	PL3	<u>r &amp; t</u>	<u> 356 - 637</u>	<u>549</u>		
		<u>s</u> & <u>t</u>	<u> 356 - 637</u>	<u>549</u>		
	J10	C & A	<u>356 - 637</u>	<u>549</u>		
		B & A	<u>356 - 637</u>	<u>549</u>		
*At <u>25°C</u>						

# G-39 FAULT CODE E2, T1 SENSOR EXPANDED INSTRUCTIONS (CONTINUED)

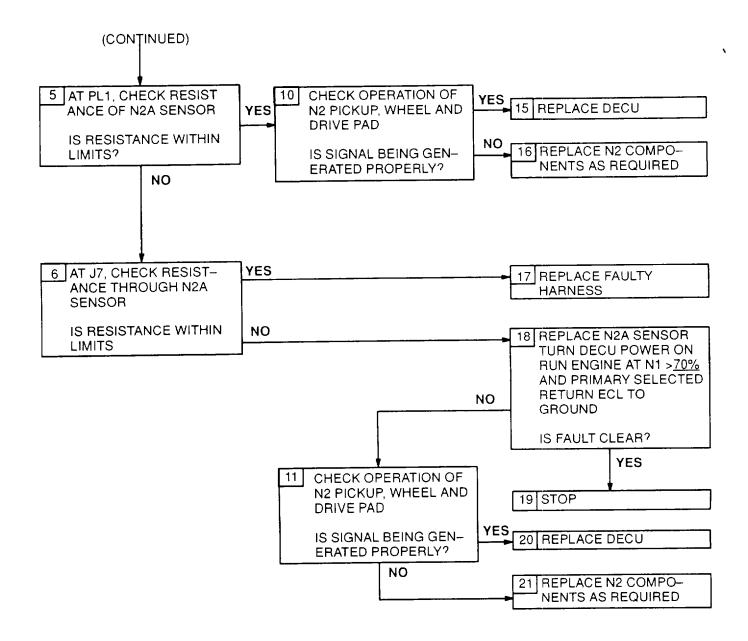


#### FAULT CODE E3 N2A SENSOR



Fault Code E3, N2A Sensor Figure 126 (Sheet 1 of 2)

# FAULT CODE E3 N2A SENSOR



Fault Code E3, N2A Sensor Figure 126 (Sheet 2 of 2)

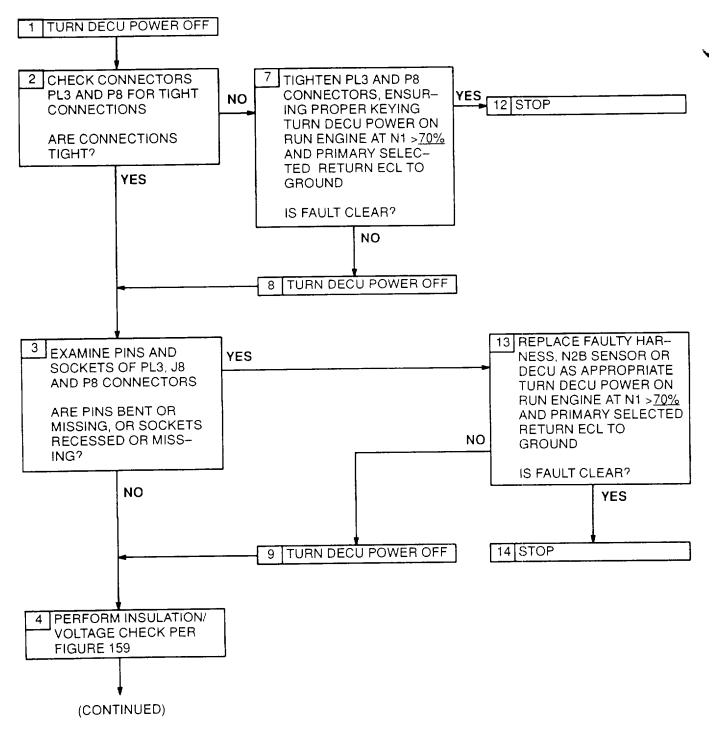
#### G-40 FAULT CODE E3, N2A SENSOR EXPANDED INSTRUCTIONS

Refer to numbered steps in figure 126.

- Step 2. Check harness connector PL1 (figure 201) at DECU, and P7 at N2A sensor for tight connections.
- Step 3. Disconnect connectors PL1 and P7 to check pins and sockets.
- Step 5. With PL1 disconnected, check resistance of N2A sensor at harness PL1 connector sockets BB an<u>dn</u> (figure 202). Limit is <u>10.0 45.5Ω</u>.
- Step 6. With P7 disconnected, check resistance of N2A sensor at N2A sensor J7 connector pins 1 and 2 (figure 202). Limit is  $10.0 45.5\Omega$
- Step 7. Before tightening harness connectors PL1 and P7, be sure that keyways in harness connectors are aligned with keyways in component connectors.
- Step 10 Refer to manufacturer's procedure for checking operation of N2 pickup, wheel and drive pad.
- Step 11 Refer to manufacturer's procedure for checking operation of N2 pickup, wheel and drive pad.
- Step 13. Refer to manufacturer's procedure for diagnosing and replacing harness or N2A sensor.
- Step 16. Refer to manufacturer's procedure for diagnosing and replacing N2 components.
- Step 17. Refer to manufacturer's procedure for diagnosing and replacing harness.
- Step 18. Refer to manufacturer's procedure for diagnosing and replacing N2A sensor.
- Step 21. Refer to manufacturer's procedure for diagnosing and replacing N2 components.

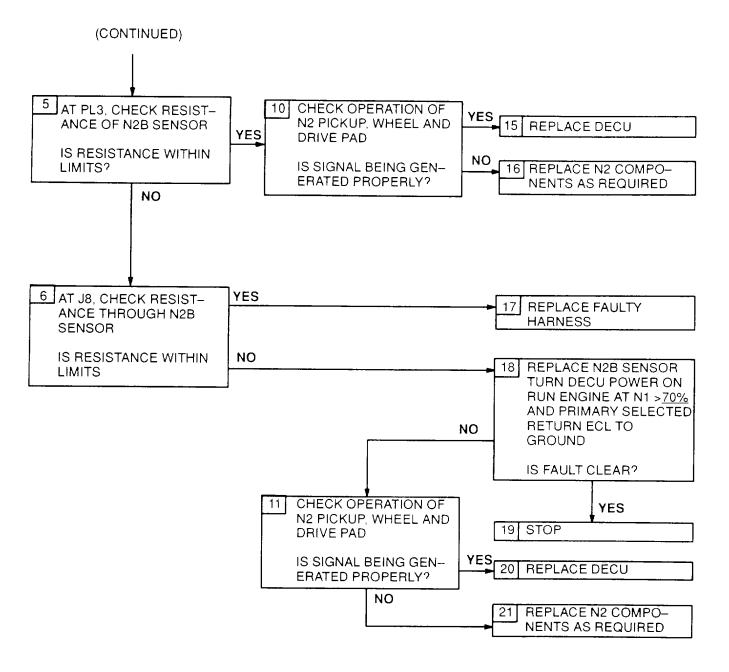
		Connector	Resistance (Ω)			
Component	No.	Contacts	Limits Nominal*			
N2A Sensor	PL1	BB & <u>m</u>	<u> 10.0 - 45.5</u>	<u>25.5</u>		
	J7	1 & 2	<u> 10.0 - 45.5</u>	<u>25.5</u>		
At <u>25°C</u>						

## FAULT CODE E4 N2B SENSOR



Fault Code E4, N2B Sensor Figure 127 (Sheet 1 of 2)

# FAULT CODE E4 N2B SENSOR



Fault Code E4, N2B Sensor Figure 127 (Sheet 2 of 2)

G-89

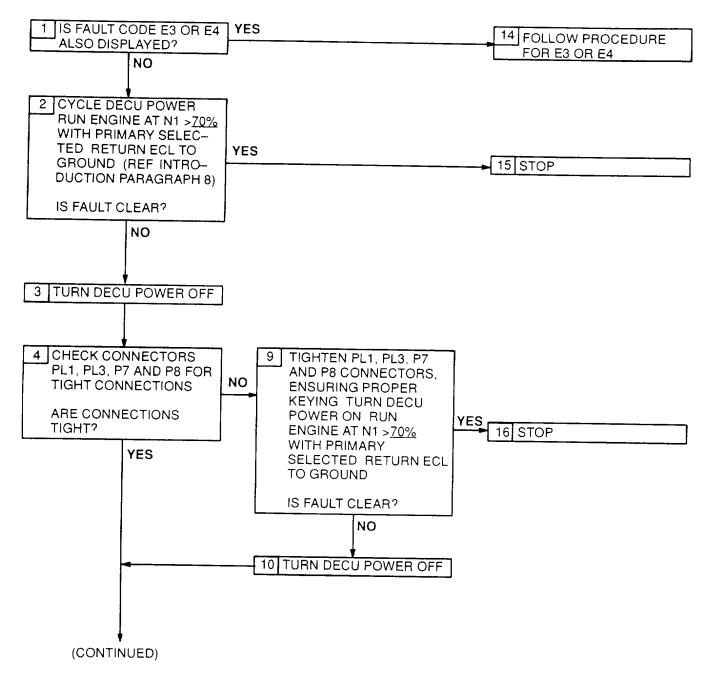
#### G-41 FAULT CODE E4, N2B SENSOR EXPANDED INSTRUCTIONS

Refer to numbered steps in figure 127.

- Step 2. Check harness connector PL3 (figure 201) at DECU, and P8 at N2B sensor for tight connections.
- Step 3. Disconnect connectors PL3 and P8 to check pins and sockets.
- Step 5. With PL3 disconnected, check resistance of N2B sensor at harness PL3 connector sockets B and d (figure 202). Limit is <u>10.0 45.5Ω</u>.
- Step 6. With P8 disconnected, check resistance of N2B sensor at sensor J8 connector pins 1 and 2 (figure 202). Limit is  $10.0 45.5\Omega$ .
- Step 7. Before tightening harness connectors PL3 and P8, be sure that keyways in harness connectors are aligned with keyways in component connectors.
- Step 10 Refer to manufacturer's procedure for checking operation of N2 pickup, wheel and drive pad.
- Step 11 Refer to manufacturer's procedure for checking operation of N2 pickup, wheel and drive pad.
- Step 13. Refer to manufacturer's procedure for diagnosing and replacing harness or N2B sensor.
- Step 16. Refer to manufacturer's procedure for diagnosing and replacing N2 components.
- Step 17. Refer to manufacturer's procedure for diagnosing and replacing harness.
- Step 18. Refer to manufacturer's procedure for diagnosing and replacing N2B sensor.
- Step 21. Refer to manufacturer's procedure for diagnosing and replacing N2 components.

		Connector	Resistance (Ω)		
Component	No.	Contacts	Limits	Nominal*	
N2B Sensor	PL3	В& <u>d</u>	<u> 10.0 - 45.5</u>	<u>25.5</u>	
	J8 1 & 2		<u> 10.0 - 45.5</u>	<u>25.5</u>	
At <u>25°C</u>					

# FAULT CODE E5, N2A/N2B DIFFERENCE

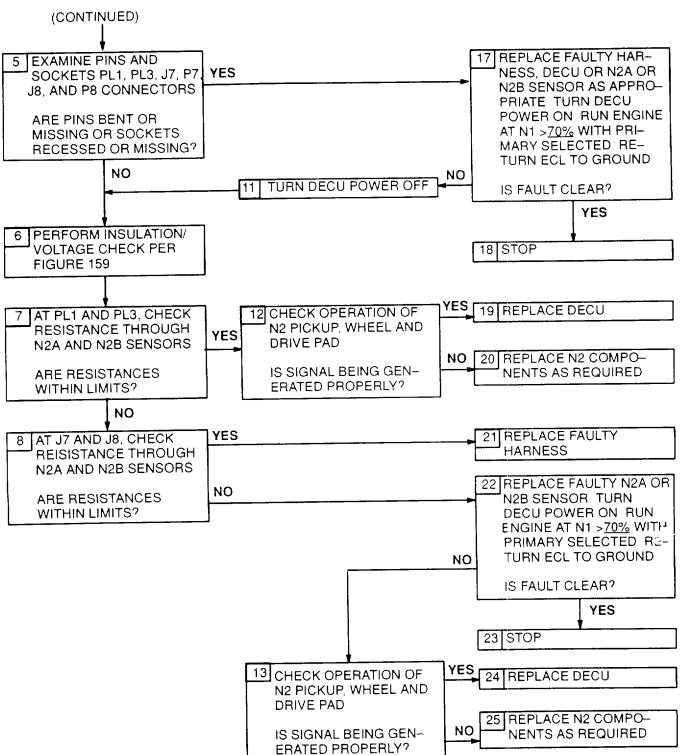


Fault Code E5, N2A/N2B Sensor Figure 128 (Sheet 1 of 2)

G-91

۲

#### FAULT CODE E5, N2A/N2B DIFFERENCE



Fault Code E5, N2A/N2B Sensor Figure 128 (Sheet 2 of 2)

#### G-42 FAULT CODE E5, N2A/N2B SENSOR EXPANDED INSTRUCTIONS

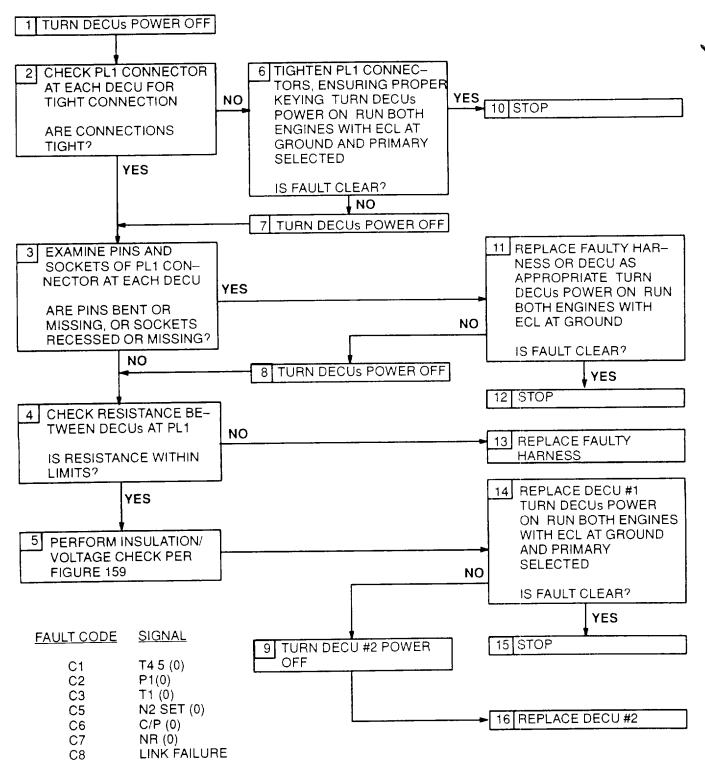
Refer to numbered steps in figure 128.

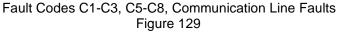
- Step 4. Check harness connector PL1 and PL3 (figure 201) atDECU, P7 at N2A sensor and P8 at N2B sensor for tight connections.
- Step 5. Disconnect connectors PL1, PL3, P7 and P8 to check pins and sockets.
- Step 7. With PL3 disconnected, check resistance of N2A sensor at harness PL1 connector sockets BB and m 202). With PL3 disconnected, check resistance of N2B sensor at harness PL3 connector sockets B and m. In each case, limit is <u>10.0 - 45.5Ω</u>.
- Step 8. With P7 disconnected, check resistance of N2A sensor at sensor J7 connector pins 1 and 2. With P8 disconnected, check resistance of N2B sensor at sensor J8 connector pins 1 and 2. In each case limit is  $10.0 45.5\Omega$ .
- Step 9. Before tightening harness connectors PL1, PL3, P7 and P8, be sure that keyways in harness connectors are aligned with keyways in component connectors.
- Step 10. Refer to manufacturer's procedure for checking operation of N2 pickup, wheel and drive pad.
- Step 13. Refer to manufacturer's procedure for checking operation of N2 pickup, wheel and drive pad.
- Step 17. Refer to manufacturer's procedure for diagnosing and replacing harness or N2A and N2B sensor.
- Step 20. Refer to manufacturer's procedure for diagnosing and replacing N2 components.
- Step 21. Refer to manufacturer's procedure for diagnosing and replacing harness.
- Step 22. Refer to manufacturer's procedure for diagnosing and replacing N2A or N2B sensor.
- Step 25. Refer to manufacturer's procedure for diagnosing and replacing N2 components.

		Connector	Resistance (Ω)			
Component	No.	. Contacts Limits		Nominal*		
N2A Sensor	PL1	В & <u>m</u>	<u> 10.0 - 45.5</u>	<u>25.5</u>		
	J7	1 & 2	<u>10.0 - 45.5</u>	<u>25.5</u>		
N2B Sensor	PL3	В& <u>d</u>	<u>10.0 - 45.5</u>	<u>25.5</u>		
	J8	1 & 2	<u>10.0 - 45.5</u>	<u>25.5</u>		
At <u>25°C</u>						

۲

## FAULT CODES C1–C3, C5–C8 COMMUNICATION LINE FAULTS





## G-43 FAULT CODES C1-C3, C5-C8, COMMUNICATION LINE FAULTS EXPANDED INSTRUCTIONS

Refer to numbered steps in figure 129.

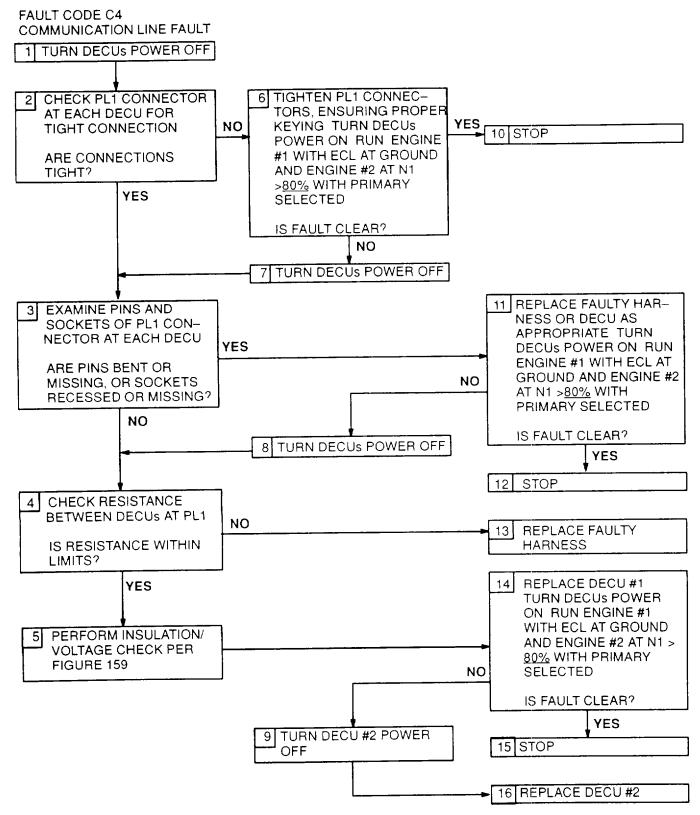
- Step 2. Check harness connectorPL1 (figure 201) at each DECU for tight connection.
- Step 3. Disconnect connector PL1 at each DECU to check pins and sockets.
- Step 4. With PL1 disconnected at both DECUs, check the resistance of the harness between the two DECUs at the following pins:

<u>DECU #1</u>	<u>DECU #2</u>
С	<u>e</u>
D	<u>d</u>
<u>C</u>	<u>x</u>
<u>d</u>	D
<u>e</u>	С
<u>X</u>	<u>C</u>

Limit in each case is  $< \underline{1\Omega}$ .

- Step 6. Before tightening harness connector PL1 at each DECU, be sure that keyway in harness connector is aligned with keyway in component connector.
- Step 11. Refer to manufacturer's procedure for diagnosing and replacing harness.
- Step 13 Refer to manufacturer's procedure for diagnosing and replacing harness.

	Connector				
	DEC	CU #1	DECU #2		
Component	No.	Contact	No.	Contact	Resistance Limits (Ω)
Harness	PL1	С	PL1	<u>e</u>	< <u>1</u>
	PL1	D	PL1	<u>d</u>	< <u>1</u>
	PL1	<u>C</u>	PL1	<u>X</u>	< <u>1</u>
	PL1	<u>d</u>	PL1	D	< <u>1</u>
	PL1	<u>e</u>	PL	С	< <u>1</u>
	PL1	<u>X</u>	PL1	<u>C</u>	< <u>1</u>



Fault Code C4, Communication Line Fault Figure 130

# G-44 FAULT CODES C4, COMMUNICATION LINE FAULT Q (O) SIGNAL EXPANDED INSTRUCTIONS

Refer to numbered steps in figure 130.

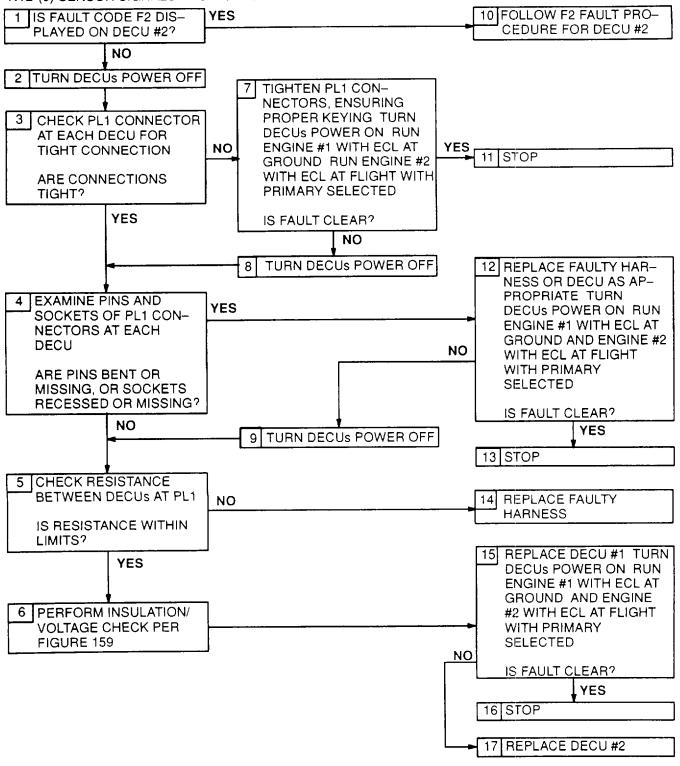
- Step 2. Check harness connector PL1 (figure 201) at each DECU for tight connection.
- Step 3. Disconnect connector PL1 at each DECU to check pins and sockets.
- Step 4. With PL1 disconnected at both DECUs, check the resistance between the two DECUs at the following harness PL1 sockets:

DECU #1	<u>DECU #2</u>
С	<u>e</u>
D	<u>d</u>
<u>c</u>	X
<u>d</u>	D
<u>e</u>	С
<u>×</u>	<u>C</u>
Limit in each case is < 1.	_

- Step 6. Before tightening harness connector PL1 at each DECU, be sure that keyway in harness connector is aligned with keyway in component connector.
- Step 11. Refer to manufacturer's procedure for diagnosing and replacing harness.
- Step 13 Refer to manufacturer's procedure for diagnosing and replacing harness.

		Conn	ector		
	DEC	:U #1	DEC	:U #2	
Component	No.	Contact	No.	Contact	Resistance Limits ( $\Omega$ )
Harness	PL1	С	PL1	<u>e</u>	< <u>1</u>
	PL1	D	PL1	<u>d</u>	< <u>1</u>
	PL1	<u>C</u>	PL1	<u>x</u>	< <u>1</u>
	PL1	<u>d</u>	PL1	D	< <u>1</u>
	PL1	e	PL	С	< <u>1</u>
	PL1	X	PL1	<u>C</u>	< <u>1</u>

FAULT CODE C9, N1B (0) SENSOR SIGNALS FROM OTHER DECU



Fault Code C9, N1B (0) Sensor Signals From Other DECU Figure 131

## G-45 FAULT CODE C9, N1B (O) SENSOR SIGNALS FROM OTHER DECU EXPANDED INSTRUCTIONS

Refer to numbered steps in figure 131.

- Step 3. Check harness connector PL1 (figure 201) at each DECU for tight connection.
- Step 4, Disconnect connector PL1 at each DECU to check pins and sockets.
- Step 5. With PL1 disconnected at both DECUs, check the resistance between the two DECUs at the following harness PL1 sockets:

DECU #1	<u>DECU #2</u>
<u>a</u>	GG
<u>b</u>	NN
GG	<u>a</u>
NN	<u>b</u>
Limit in each case < $1\Omega$	

- Step 7. Before tightening harness connector PL1 at each DECU, be sure that keyway in harness connector is aligned with keyway in component connector.
- Step 12. Refer to manufacturer's procedure for diagnosing and replacing harness.'
- Step 14. Refer to manufacturer's procedure for diagnosing and replacing harness.

#### **RESISTANCE-CHECK SUMMARY**

	Connector					
	DECU #1 DECU #2		CU #2			
Component	No.	Contact	No.	Contact	Resistance Limits ( $\Omega$ )	
Harness	PL1	<u>a</u>	PL1	GG	< <u>1</u>	
	PL1	b	PL1	NN	< <u>1</u>	
	PL1	GG	PL1	<u>a</u>	< <u>1</u>	
	PL1	NN	PL1	<u>b</u>	< <u>1</u>	

G-99

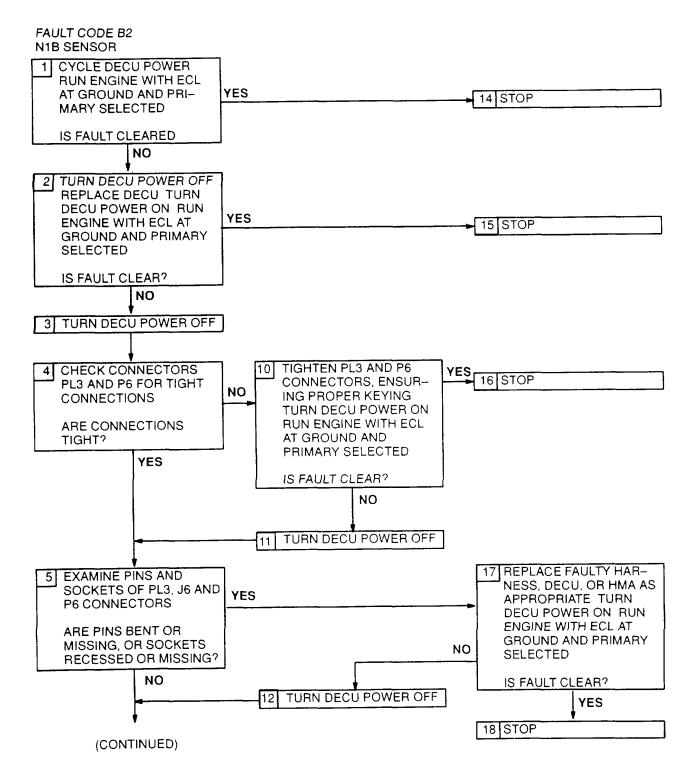
#### FAULT CODE CF LOSS OF LOAD SHARE SIGNALS

1 NOTE OTHER FAULT CODES ON DECU #1 AND DECU #2. FOLLOW FAULT ISOLATION PROCEDURES FOR THESE FAULT CODES

> Fault Code CF, Loss of Load Share Signals Figure 132

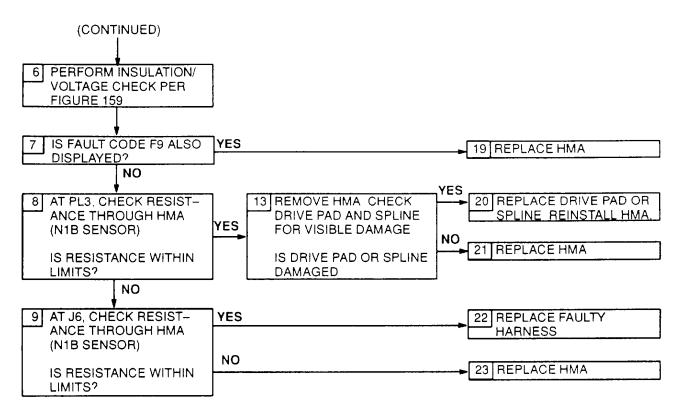
Refer to numbered steps in figure 132.

Step 1. In combination with a CF fault code there must exist both an engine torque signal and an N1 speed signal fault code on either or both DECUs. Fault isolation procedures should continue normally using the directions specified for these fault codes.



Fault Code B2, N1B Sensor Figure 133 (Sheet 1 of 2)

# FAULT CODE B2 N1B SENSOR



Fault Code B2, N1B Sensor Figure 133 (Sheet 2 of 2)

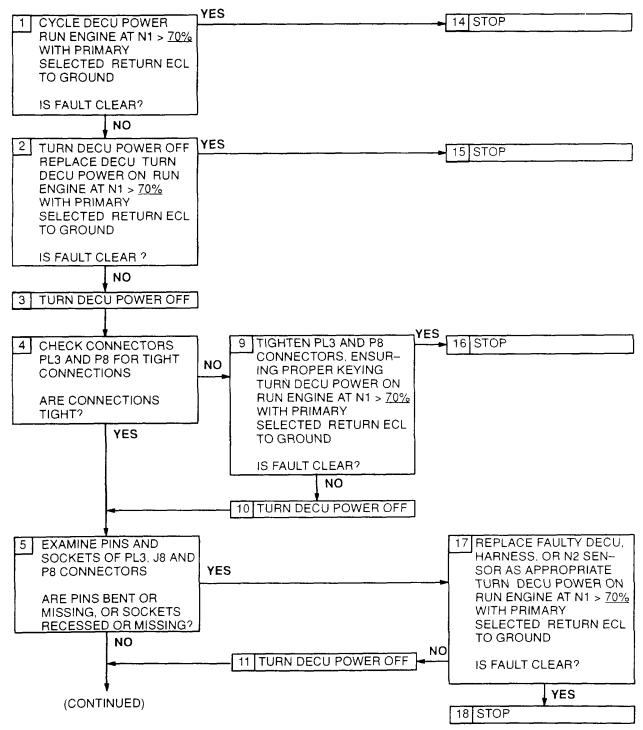
# G-47 FAULT CODE B2, N1B SENSOR EXPANDED INSTRUCTIONS

Refer to numbered steps in figure 133.

- Step 4. Check harness connector PL3 (figure 201) at DECU, and R6 at HMA.. for tight connections.
- Step 5. Disconnect connectors PL3 and P6 to check pins and sockets.
- Step 8. With PL3 disconnected, check resistance of HMA (N1B sensor) at harness PL3 connector sockets A and <u>c</u> (figure 202). Limit is  $0.3 3.5\Omega$
- Step 9. With P6 disconnected, check resistance of HMA (N1 B sensor) at HMA J6 connector pins E and F. Limit is <u>0.3 3.0Ω.</u>
- Step 10. Before tightening harness connectors PL3 and P6, be sure that keyways in harness connectors are aligned with keyways in component connectors.
- Step 13. Refer to manufacturer's procedure for checking drive pad and spline.
- Step 17. Refer to manufacturer's procedure for diagnosing and replacing harness.
- Step 20. Refer to manufacturer's procedure for replacing drive pad or spline.
- Step 22. Refer to manufacturer's procedure for diagnosing and replacing harness.

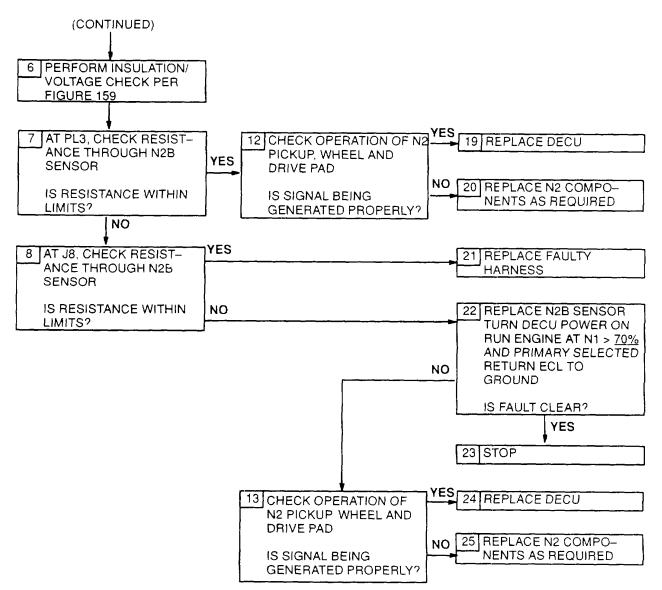
Component	Connector		Resistance (Ω)	
	No	Contacts	Limits	Nominal *
HMA – N1B Sensor	PL3	A & <u>c</u>	<u>0335</u>	0.7
	J6	E&F	03-30	<u>07</u>
*At <u>25°C</u>				

# FAULT CODE B3 N2B SENSOR



Fault Code B3, N2B Sensor Figure 134 (Sheet 1 of 2)

# FAULT CODE B3 N2B SENSOR



Fault Code B3, N2B Sensor Figure 134 (Sheet 2 of 2)

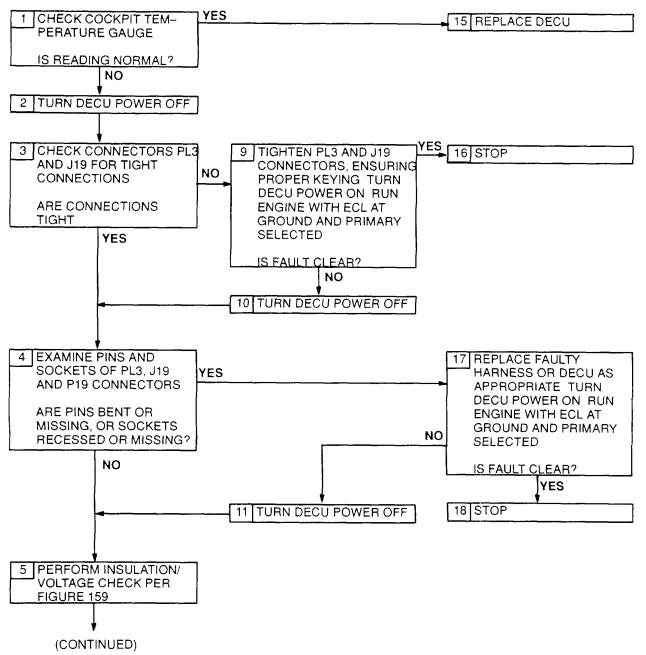
# G-48 FAULT CODE B3, N2B SENSOR EXPANDED INSTRUCTIONS

Refer to numbered steps in figure 134.

- Step 4. Check harness connector PL3 (figure 201) at DECU, and P8 at N2B sensor for tight connections.
- Step 5. Disconnect connectors PL3 and P8 to check pins and sockets.
- Step 7.With PL3 disconnected, check resistance of N2B sensor at harness PL3 connector sockets B andd.(figure 202). Limit is 10.0 45.5Ω..
- Step 8. With P8 disconnected, check resistance of N2B sensor at sensor J8 connector pins 1 and 2. Limit is  $10.0 45.0\Omega$ .
- Step 9. Before tightening harness connectors PL3 and P8, be sure that keyways in harness connectors are aligned with keyways in component connectors.
- Step 12 Refer to manufacturer's procedure for checking operation of N2 pickup, wheel and drive pad.
- Step 13 Refer to manufacturer's procedure for checking operation of N2 pickup, wheel and drive pad.
- Step 17. Refer to manufacturer's procedure for diagnosing and replacing harness or N2B sensor.
- Step 20. Refer to manufacturer's procedure for replacing N2 components.
- Step 21. Refer to manufacturer's procedure for diagrosing and replacing harness.
- Step 22. Refer to manufacturer's procedure for diagnosing and replacing N2B sensor.
- Step 25. Refer to manufacturer's procedure for replacing N2 components.

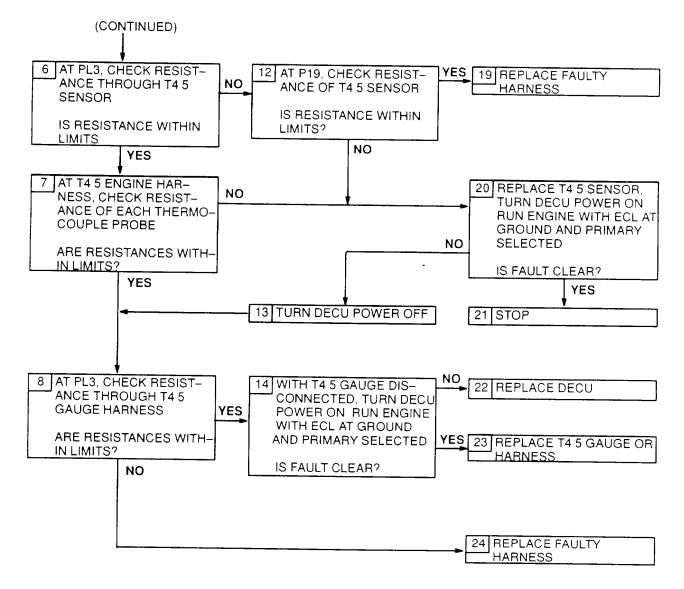
Component	Connector		Resistance (Ω)	
	No	Contacts	Limits	Nominal *
N2B Sensor	PL3	В & <u>d</u>	<u> 10 0 – 45 5</u>	<u>25 5</u>
	J8	1 & 2	<u>10 0 - 45 0</u>	<u>25 5</u>
*At <u>25°C</u>				_

#### FAULT CODE B4 T4 5 SENSOR



Fault Code B4, T4.5 Sensor Figure 135 (Sheet 1 of 2)

# FAULT CODE B4 T4.5 SENSOR



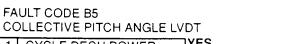
Fault Code B4, T4.5 Sensor Figure 135 (Sheet 2 of 2)

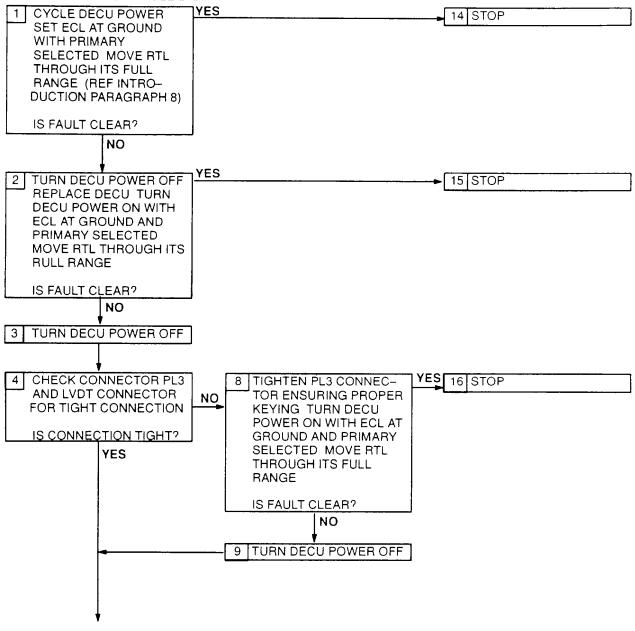
# G-49 FAULT CODE B4, T4.5 SENSOR EXPANDED INSTRUCTIONS

Refer to numbered steps in figure 135.

- Step 3. Check harness connector PL3 (figure 201) at DECU, and J19 at T4.5 harness for tight connections.
- Step 4. Disconnect connectors PL3 and J19 to check pins and sockets.
- Step 6. With PL3 disconnected, check resistance of T4.5 sensor at harness PL3 connector sockets v and GG (figure 202).Limit is <u>3.5 20.0Ω</u>.
- Step 7. To measure resistance of T4.5 thermocouple probe, disconnect one leg of probe from the bus bar. Measure resistance. Reverse polarity and measure resistance again. Average the two readings to obtain final results. (Note: An analog ohmmeter is recommended for measuring probe resistance.)
- Step 8. With PL3 and T4.5 gauge disconnected, check resistance of T4.5 haness at harness connector sockets  $\underline{u}$  and  $\underline{a}$  (figure 202). Limit is >  $1M\Omega$ .
- Step 9. Before tightening harness connectors PL3 and P19, be sure that keyways in harness connectors aligned with keyways in component connectors.
- Step 12. With J19 .disconnected, check resistance of T4.5 sensor at sensor P19 connector sockets A and B (figure 202). Limit is <u>3.5 5.5Q.</u>
- Step 17. Refer to manufacturer's procedure for diagnosing and replacing harness.
- Step 19. Refer to manufacturer's procedure for diagnosing and replacing harness.
- Step 20. Refer to manufacturer's procedure for diagnosing and replacing T4.5 sensor.
- Step 23. Refer to manufacturer's procedure for diagnosing and replacing harness or T4.5 gauge.
- Step 24. Refer to manufacturer's procedure for diagnosing and replacing harness.

Component	Connector		Resistance $(\Omega)$	
	No	Contacts	Limits	Nominal *
T4 5 Gauge Harness	PL3	<u>u</u> & a	> <u>1MΩ</u>	> <u>1MΩ</u>
T4 5 Sensor	PL3	⊻ & GG	35-200	<u>10 0</u>
	P19	A & B	<u>35-55</u>	40
T4,5 Thermocouple Probe	-		< <u>4 0</u>	-
*At <u>25°C</u>				



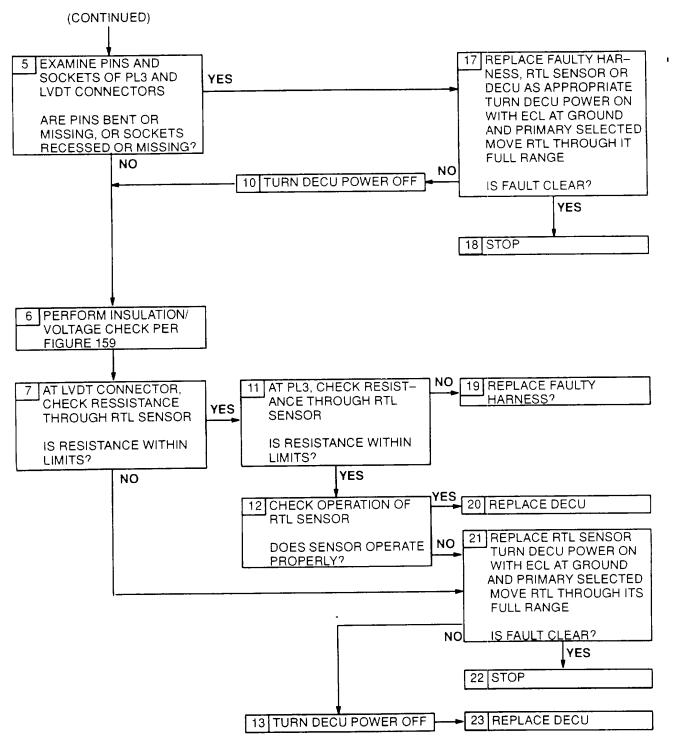


(CONTINUED)

Fault Code B5, Collective Pitch Angle LVDT Figure 136 (Sheet 1 of 2)

ŧ

#### FAULT CODE B5 COLLECTIVE PITCH ANGLE LVDT



Fault Code B5, Collective Pitch Angle LVDT Figure 136 (Sheet 2 of 2)

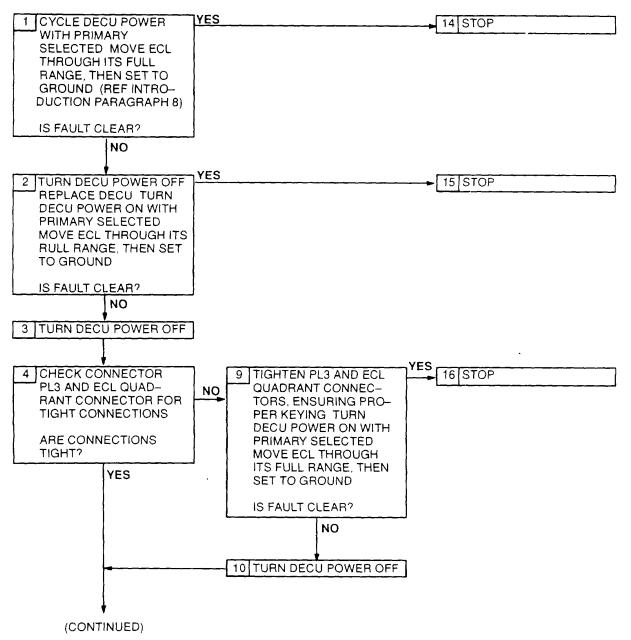
#### G-50 FAULT CODE B5, COLLECTIVE PITCH ANGLE LVDT EXPANDED INSTRUCTIONS

Refer to numbered steps in figure 136.

- Step 4. Check harness connector PL3 (figure 201) at DECU and LVDT connector for tight connections.
- Step 5. Disconnect connector PL3 and LVDT connector to check pins and sockets.
- Step 7. With LVDT connector disconnected, check resistance of RTL sensor at sensor connector pins 1 and 2. Limit is  $\underline{110 140\Omega}$ . Check resistance at pins 3 and 4. Limit is  $\underline{210 260\Omega}$ . Check resistance at pins 3 and 5, and pins 4 and 5. Limit is  $\underline{230\Omega}$ .
- Step 8. Before tightening harness connector PL3 and LVDT connector, be sure that keyway in harness connectors are aligned with keyways incomponent connectors.
- Step 11. With PL3 disconnected, check resistance of RTL sensor at harness PL3 connector sockets q and p (figure 202). Limit is <u>220 260Ω</u>. Check resistance at sockets z and AA. Limit is <u>110 140Ω</u>.
- Step 12. Refer to manufacturer's procedure for checking RTL sensor operation.
- Step 17. Refer to manufacturer's procedure for diagnosing and replacing harness or RTL sensor.
- Step 19. Refer to manufacturer's procedure for diagnosing and replacing harness.
- Step 21. Refer to manufacturer's procedure for replacing RTL sensor.

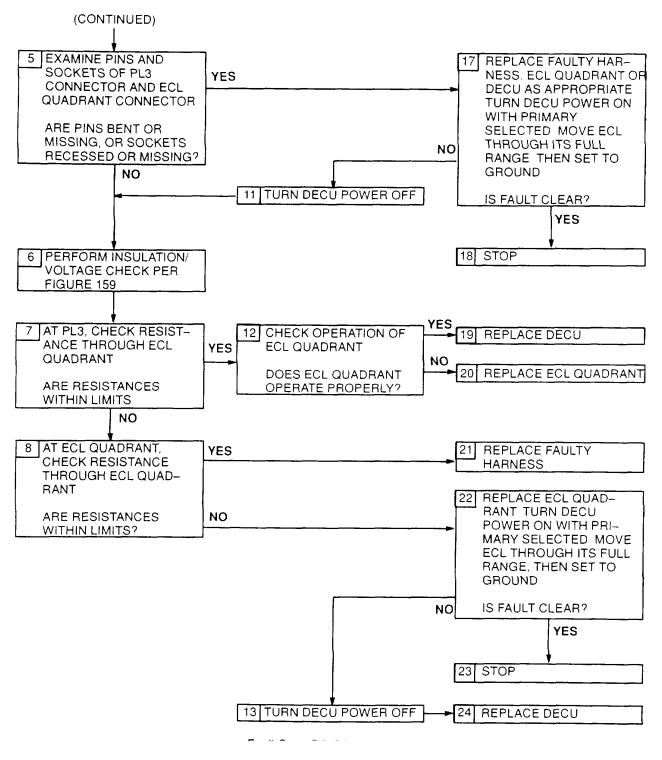
	Connector		Resistance (Ω)	
Component	No	Contacts	Limits	Nominal *
RTL Sensor (C/P Signal)	LVDT	3 & 4	<u> 210 - 260</u>	<u>225</u>
		3 & 5	< 230	_
		4 & 5	< <u>230</u>	
RTL Sensor (C/P Excitation)	PL3	<u>q &amp; p</u>	<u>210 - 260</u>	<u>225</u>
	1	<u>z</u> & AA	<u>110 – 140</u>	<u>120</u>
⁺At <u>25°C</u>				

#### FAULT CODE B6 ECL RESOLVER



Fault Code B6, ECL Resolver Figure 137 (Sheet 1 of 2)

#### FAULT CODE B6 ECL RESOLVER



Fault Code B6. ECL Resolver Figure 137 (Sheet 2 of 2)

#### G-51 FAULT CODE B6, ECL RESOLVER EXPANDED INSTRUCTIONS

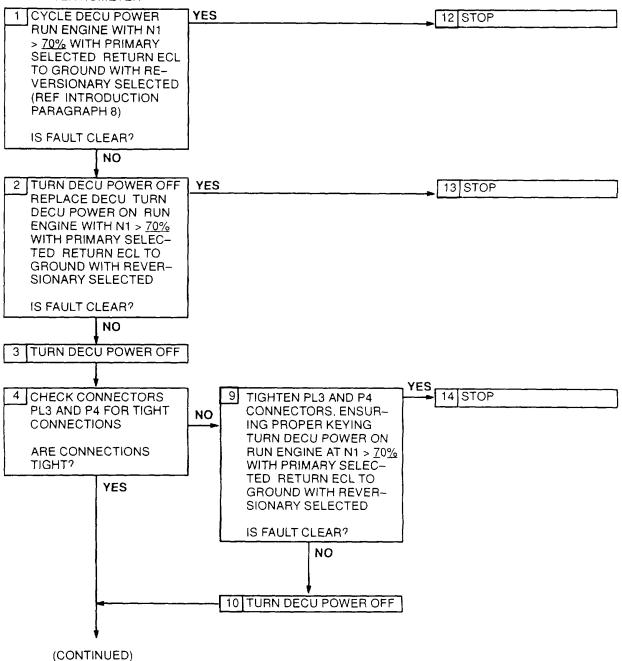
Refer to numbered steps in figure 137.

- Step 4. Check harness connector PL3 (figure 201) at DECU, and connector at ECL quadrant for tight connections.
- Step 5. Disconnect PL3 and ECL quadrant connectors to check pins and sockets.
- Step 7. Set ECL to STOP. With PL3 disconnected, check resistance of ECL quadrant (excitation) at harness PL3 connector sockets h and i (igure 202). Limit is <u>35 42Ω</u>. Check resistance of ECL quadrant (signal) at sockets EE and DD. Limit<u>is 90-102Ω</u>. Monitor resistance of ECL quadrant (interlock discrete) at sockets f and LL while moving ECL from STOP to GROUND to FLIGHT. Limits are defined in table below. Monitor resistance of ECL quadrant (gain discrete) at sockets MM and LL while moving ECL from STOP to GROUND to FLIGHT. Limits are as defined in table below. (Note: Gain discrete resistance is not checked at GROUND because switch can be open or closed at that point.)
- Step 8. Set ECL to STOP. With ECL quadrant connector disconnected, check resistance of ECL quadrant (excitation) at quadrant pins 1 and 2. Limit is <u>35-40Ω</u>. Check resistance of ECL quadrant (signal) at quadrant pins 3 and 4. Limit is <u>90 -1 00Ω</u>. Monitor resistance of ECL quadrant (interlock discrete) at pins 11 and 12 while moving ECL from STOP to GROUND to FLIGHT. Limits are as defined in table below. Monitor resistance of ECL quadrant (gain discrete) at pins 5 and 11 while moving ECL from STOP to GROUND to FLIGHT. Limits are as defined in table below. Monitor resistance of ECL quadrant (signal) at creater resistance is not checked at GROUND because switch can be open or closed at that point.)
- Step 9. Before tightening harness connector PL3 and connector at ECL resolver, be sure that keyways in harness connectors are aligned with keyways in component connectors.
- Step 12. Refer to manufacturer's procedure for checking operation of ECL quadrant.
- Step 17. Refer to manufacturer's procedure for diagnosing and replacing harness or ECL quadrant.
- Step 20. Refer to manufacturer's procedure replacing ECL quadrant.
- Step 21. Refer to manufacturer's procedure for diagnosing and replacing harness.
- Step 22. Refer to manufacturer's procedure for diagnosing and replacing ECL quadrant.

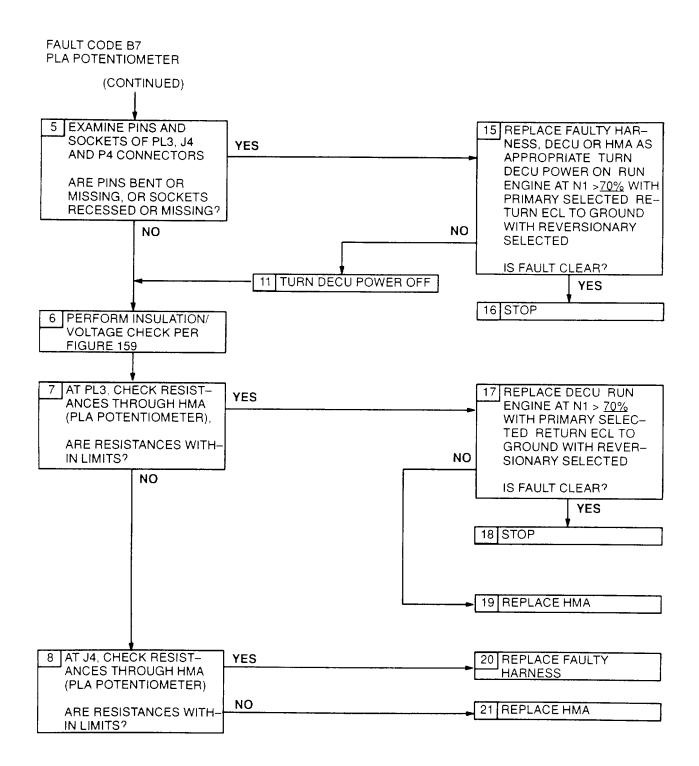
## G-51 FAULT CODE B6, ECL RESOLVER EXPANDED INSTRUCTIONS(CONTINUED)

	Connector		Resistar	nce $(\Omega)$
Component	No	Contacts	Limits	Nominal *
ECL Quadrant – Excitation	PL3	<u>h</u> &ı	<u> 35 – 42</u>	-
	ECL Quadrant	1 & 2	<u> 35 – 40</u>	
ECL Quadrant – Signal	PL3	EE & DD	<u>90 - 102</u>	
	ECL Quadrant	3 & 4	<u>90 – 100</u>	
ECL Quadrant – Interlock Discrete				
ECL at STOP	PL3	<u>f</u> & <u>LL</u>	> <u>150K</u>	$\sim$
ECL between STOP and GROUND		<u>f</u> & <u>LL</u>	< <u>50</u>	<u>1</u>
ECL at GROUND		<u>1</u> & <u>LL</u>	> <u>150K</u>	$\infty$
ECL between GROUND and FLIGHT		<u>f</u> & <u>LL</u>	< <u>50</u>	<u>1</u>
ECL at FLIGHT		<u>f &amp; LL</u>	> <u>150K</u>	∞
ECL Quadrant – Interlock Discrete				
ECL at STOP	ECL Quadrant	12 & 11	> <u>150K</u>	$\infty$
ECL between STOP and GROUND		12 & 11	< <u>50</u>	1
ECL at GROUND		12 & 11	> <u>150K</u>	$\infty$
ECL between GROUND and FLIGHT		12 & 11	< <u>50</u>	1
ECL at FLIGHT		12 & 11	> <u>150K</u>	$\infty$
ECL Quadrant – Gain Discrete				
ECL at STOP	PL3	MM & LL	< <u>50</u>	1
ECL between STOP and GROUND		MM & LL	< <u>50</u>	1
ECL between GROUND and FLIGHT		MM & LL	> <u>150K</u>	$\infty$
ECL at FLIGHT		MM & LL	> <u>150K</u>	$\infty$
ECL Quadrant – Gain Discrete				
ECL at STOP	ECL Quadrant	5 & 11	< <u>50</u>	1
ECL between STOP and GROUND		5 & 11	< <u>50</u>	1
ECL between GROUND and FLIGHT		5&11	> <u>150K</u>	$\infty$
ECL at FLIGHT		5 & 11	> <u>150K</u>	~
*At <u>25°C</u>				

#### FAULT CODE B7 PLA POTENTIOMETER



Fault Code B7, PLA Potentiometer Figure 138 (Sheet 1 of 2)



Fault Code B7, PLA Potentiometer Figure 138 (Sheet 2 of 2)

#### G-52 FAULT CODE B7, PLA POTENTIOMETER EXPANDED INSTRUCTIONS

Refer to numbered steps in figure 138.

- Step 4. Check harness connector PL3 (figure 201) at DECU, and P4 at HMA for tight connections.
- Step 5. Disconnect connectors PL3 and P4 to check pins and sockets.
- Step 7. CAUTION: DO NOT USE AN OHMMETER THAT CAN APPLY MORE THAN 5 mA WHEN MEASURING RESISTANCES, TO AVOID DAMAGING THE PLA POTENTIOMETER

With PL3 disconnected, check resistance of HMA (PLA potentiometer) at harness PL3 connector sockets U and T (results are "a") and T and S (results are "b"). Limitfor "a" and "b" is  $510-5750\Omega$ . Check resistance at sockets U and S (results are "c"). Limit for "c" is  $4250-5750\Omega$ . Use the following equation to check wiper resistance:

$$a + b - c \div 2 = d$$

Limit for "d" is  $\leq 300\Omega$ . Use the following equation to check if the high or low limit of the PLA potentiometer has been exceeded:

 $b - d \div c = e$ 

Limit for "e" is 0.120 - 0.950.

Step 8. CAUTION: DO NOT USE AN OHMMETER THAT CAN APPLY MORE THAN <u>5</u> mA WHEN MEASURING RESISTANCES, TO AVOID DAMAGING THE PLA POTENTIOMETER.

With P4 disconnected, check resistance of HMA (PLA potentiometer) at HMA J4 connector pins X and Y (results are "f") and Y and Z (results are "g"). Limit for "f" and "g" is <u>510 - 57500</u>. Check resistance at pins X and Z (results are "h"). Limit for "h" is <u>4250 - 57500</u>. Use the following equation to check wiper resistance.

$$f + g - h + 2 = i$$

Limit for "i" is  $\leq 300\Omega$ . Use the following equation to check if the high or low limit of the PLA potentiometer has been exceeded:

g - i ÷ h = j

Limit for "j" is <u>0.120 - 0.950</u>.

- Step 9. Before tightening harness connectors PL3 and P4, be sure that keyways in harness connectors are aligned with keyways in component connectors.
- Step 15. Refer to manufacturer's procedure for diagnosing and replacing harness.
- Step 20. Refer to manufacturer's procedure for diagnosing and replacing harness.

#### G-52 FAULT CODE B7, PLA POTENTIOMETER EXPANDED INSTRUCTIONS(CONTINUED)

[	Connector			Resista	nce (Ω)
Component	No	Contacts		Limits	Nominal *
HMA – PLA Potentiometer	PL3	U&T	(a)	<u>510 - 5750</u>	**
		T&S	(b)	<u>510 – 5750</u>	**
		U&S	(c)	<u>4250 - 5750</u>	<u>5000</u>
		a + b - c - 2	(d)	$\leq$ 300	<u>195</u>
		b - d - c	(e)	<u>0 120 – 0 950</u>	**
	J4	X & Y	(†)	<u>510 – 5750</u>	**
		Y & Z	(g)	<u>510 - 5750</u>	**
		X & Z	(h)	4250-5750	<u>5000</u>
		f+g-h-2	(1)	$\leq$ 300	<u>195</u>
		g – 1 – h	(1)	0 120 - 0 950	**
* At <u>25°C</u> ** Dependent on PLA Position					

RESISTANCE-CHECK SUMMARY

FAULT CODES B9 COLD JUNCTION COMPENSATION

BA REVERSIONARY +28V

BB REVERSIONARY T4 5 CALIBRATION

1 TURN DECU POWER OFF REPLACE DECU

#### Fault Codes B9, BA, BB, Internal DECU Faults Figure 139

#### G-53 FAULT CODES B9, BA, BB, INTERNAL DECU FAULTS EXPANDED INSTRUCTIONS

Refer to numbered steps in figure 139.

These codes indicate internal DECU problems. No further troubleshooting is possible.

#### FAULT CODE BC 400 Hz RESOLVER REFERENCE

1 CYCLE DECU POWER WITH ECL AT GROUND	YES 2 STOP
(REF INTRODUCTION PARAGRAPH 8)	NO
IS FAULT CLEAR?	- 3 REPLACE DECU

### Fault Code BC, <u>400 Hz</u> Resolver Reference Figure 140

### G-54 FAULT CODE BC, 400 Hz RESOLVER REFERENCE EXPANDED INSTRUCTIONS

Refer to numbered steps in figure 140.

- Step 1. Cycle DECU power to determine if fault is due to a DECU problem or was caused by an interrupt to both reversionary power supplies.
- Step 3. An internal DECU fault exists. No further troubleshooting is possible.
- FAULT CODES 10 MICROPROCESSOR
  - 11 NVM CHECKSUM
    - 12 NVM ENGINE HISTORY
    - 13 NVM FAULT DATA
    - 14 NVM ACCUMULATED FAULT DATA
    - 15 NVM WRITE TEST
    - 16 NVM STORAGE INCOMPLETE
  - 17 NVM HISTORY DATA INCONSISTENT
  - 18 MINOR CYCLE NOT COMPLETED
  - 1B EMS CYCLE NOT COMPLETED
  - 1C A/D CONVERSION NOT COMPLETED
  - 1E RAM FAILURE
  - 1F Op CODE ERROR

1 REPLACE DECU

Fault Codes 10-1 F, Internal DECU Faults Figure 141

#### G-55 FAULT CODES 10-1F, INTERNAL DECU FAULTS EXPANDED INSTRUCTIONS

With power to DECU and before starting engine, if code "10" or "10 and 1F" are displayed, refer to figure 141A.

For all other faults or combinations, refer to numbered steps in figure 141.

These codes indicate internal DECU problems. No further troubleshooting is possible.

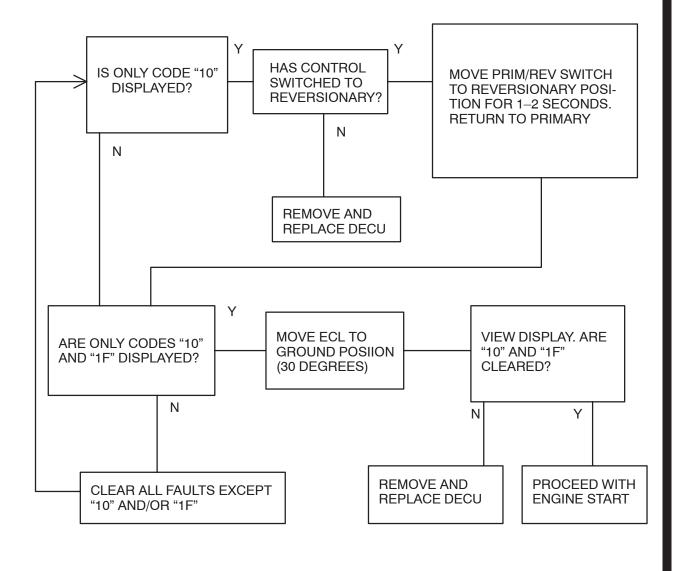
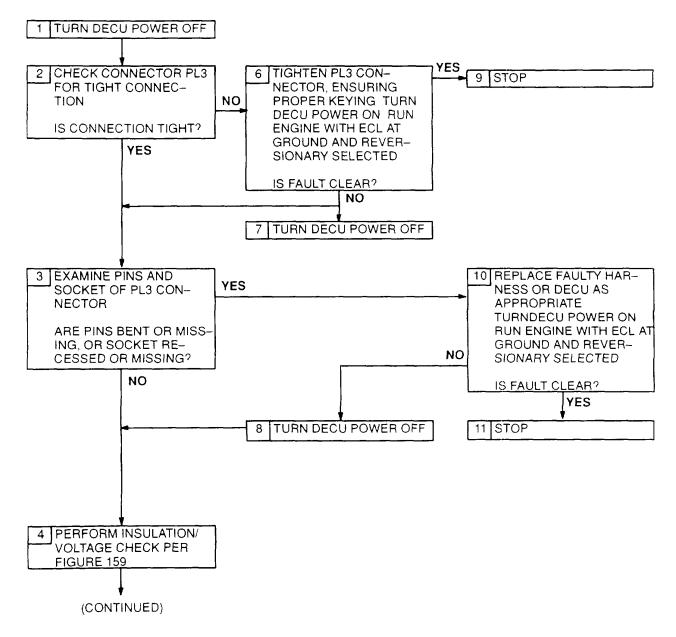


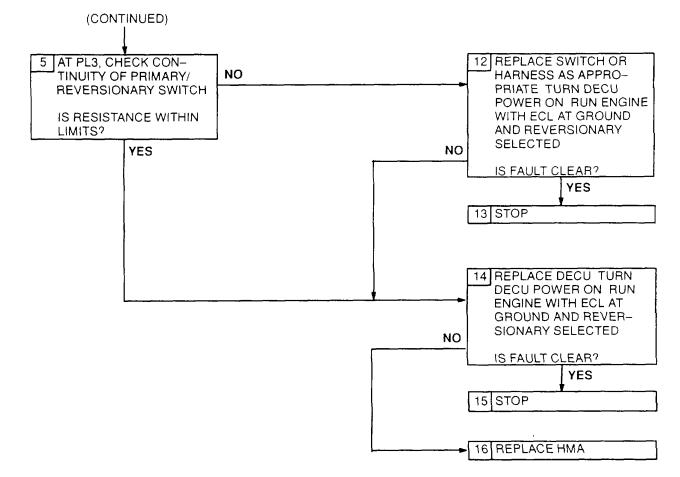
Figure 141a. Procedure to Clear Fault code "10" and/or "1F" Before Engine Start

#### FAULT CODE - NONE UNABLE TO SWITCH TO REVERSIONARY MODE



#### Unable to Switch to Reversionary Mode (Sheet 1 of 2) Figure 142

#### FAULT CODE - NONE UNABLE TO SWITCH TO REVERSIONARY MODE



Unable to Switch to Reversionary Mode (Sheet 2 of 2) Figure 142

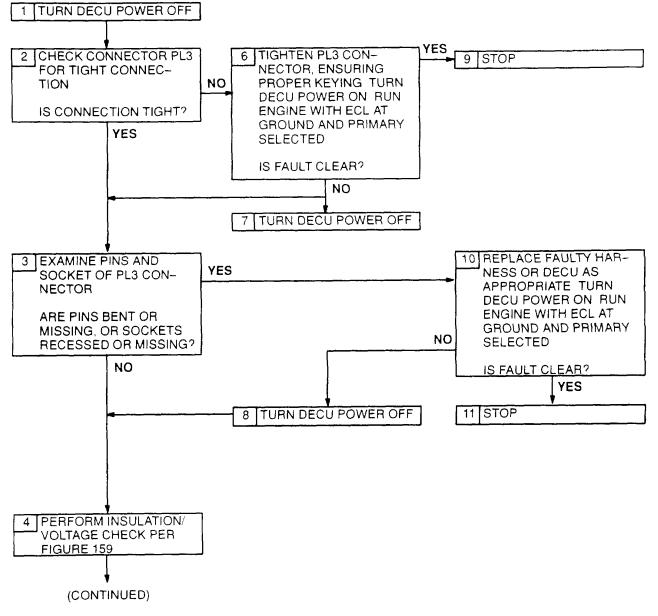
#### G-56 UNABLE TO SWITCH TO REVERSIONARY MODE EXPANDED INSTRUCTIONS

Refer to numbered steps in figure 142.

- Step 2. Check harness connector PL3 (figure 201) at DECU for tight connection.
- Step 3. Disconnect connectors PL3 to check pins and sockets.
- Step 5. With PL3 disconnected and primary mode selected, check resistance of primary/reversionary switch at harness PL3 connector sockets x and e (figure 202). Limit is >150K $\Omega$ . With reversionary mode selected, check resistance again. Limit is  $<50\Omega$ .
- Step 6. Before tightening harness connectors PL3, be sure that keyway in harness connector is aligned with keyway in component connector.
- Step 10. Refer to manufacturer's procedure for diagnosing and replacing harness.
- Step 12. Refer to manufacturer's procedure for diagnosing and replacing switch or harness.

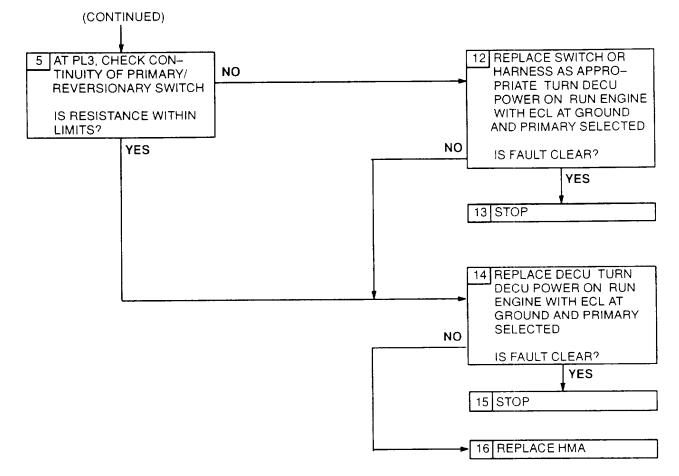
	Connector		Resistance $(\Omega)$	
Component	No	Contacts	Limits	Nominal *
Cockpit Primary/Reversionary Switch				
Primary	PL3	<u>x &amp; e</u>	> <u>150K</u>	~
Reversionary	PL3	Χ&ę	< 50	1
*At <u>25°C</u>				

#### FAULT CODE - NONE UNABLE TO SWITCH TO PRIMARY MODE



#### Unable to Switch to Primary Mode (Sheet 1 of 2) Figure 143

#### FAULT CODE - NONE UNABLE TO SWITCH TO PRIMARY MODE



Unable to Switch to Primary Mode (Sheet 2 of 2) Figure 143

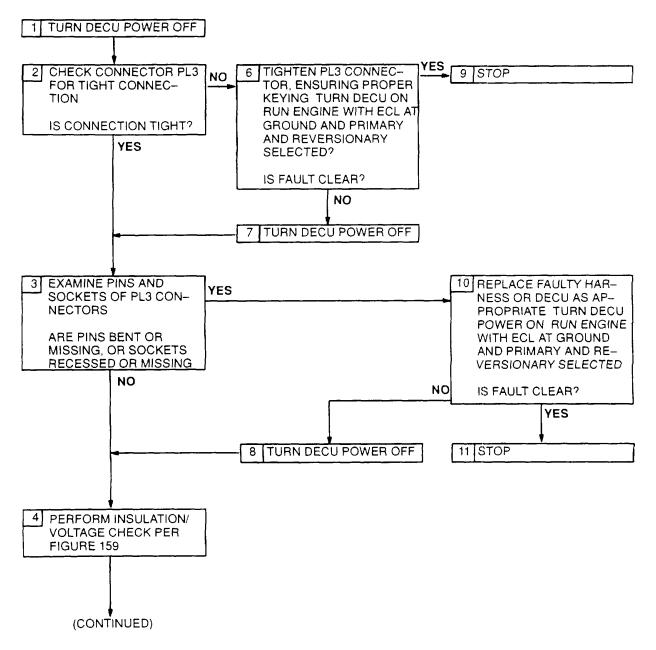
#### G-57 UNABLE TO SWITCH TO PRIMARY MODE EXPAND ED INSTRUCTIONS

Refer to numbered steps in figure 143.

- Step 2.. Check harness connector PL3 (figure 201) at DECU for tight connection.
- Step 3. Disconnect connector PL3 to check pins and sockets.
- Step 5. With PL3 disconnected and primary mode selected, check resistance of primary/reversionary switch at harness PL3 connector sockets x and e (figure 202). Limit is >150KW. With reversionary mode selected, check resistance again. Limit is <50W.
- Step 6. Before tightening harness connector PL3, be sure that keyway in harness connector is aligned with keyway in component connector.
- Step 10. Refer to manufacturer's procedure for diagnosing and replacing harness.
- Step 12. Refer to manufacturer's procedure for diagnosing and replacing switch or harness.

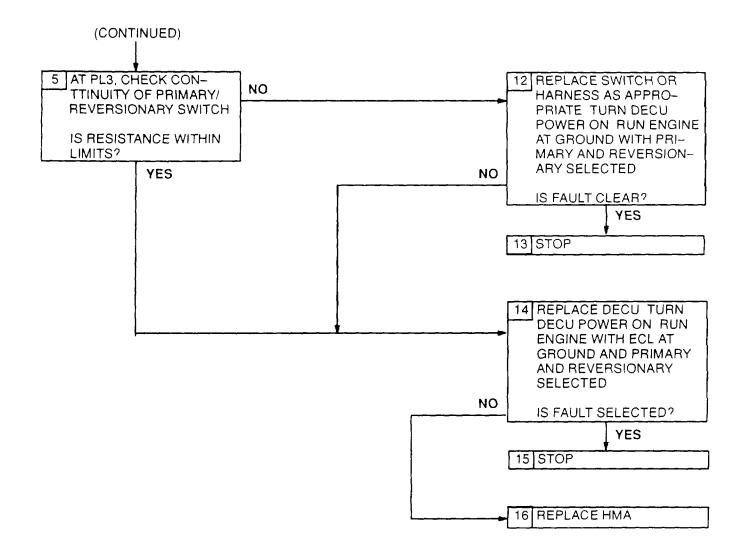
	Connector		Resistance (Ω)	
Component	No	Contacts	Limits	Nominal *
Cockpit Primary/Reversionary Switch				
Primary	PL3	<u>x &amp; e</u>	> <u>150K</u>	~~
Reversionary	PL3	<u>x &amp; e</u>	< 50	1
*At <u>25°C</u>				

#### FAULT CODE – NONE SYSTEM TOGGLES BETWEEN PRIMARY AND REVERSIONARY MODE



System Toggles Between Primary and Reversionary Mode Figure 144 (Sheet 1 of 2)

#### FAULT CODE - NONE SYSTEM TOGGLE BETWEEN PRIMARY AND REVERSIONARY MODE



System Toggles Between Primary and Reversionary Mode Figure 144 (Sheet 2 of 2)

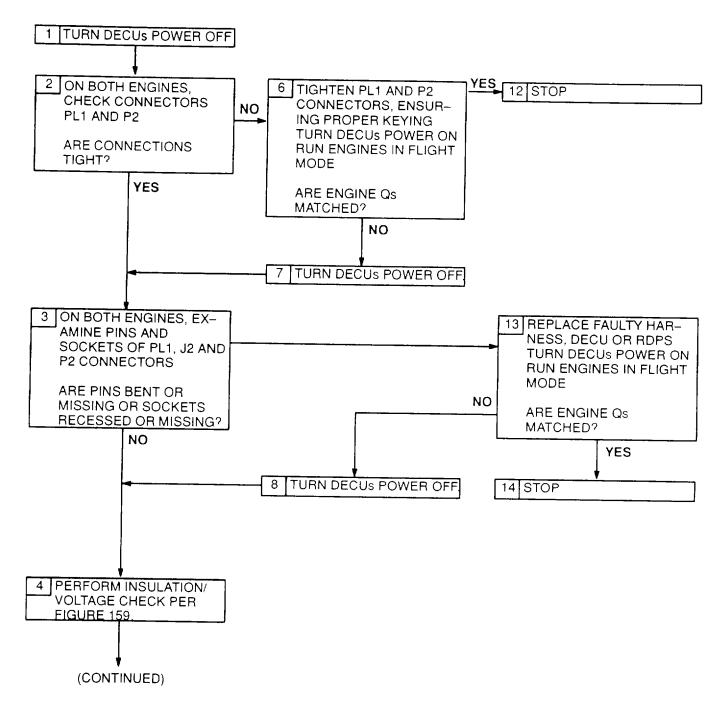
#### G-58 SYSTEM TOGGLES BETWEEN PRIMARY AND REVERSIONARY MODE EXPANDED INSTRUCTIONS

Refer to numbered steps in figure 144.

- Step 2. Check harness connector PL3 (figure 201) at DECU for tight connection.
- Step 3. Disconnect connector PL3 to check pins and sockets.
- Step 5. With PL3 disconnected and primary mode selected, check resistance of primary/reversionary switch at harness PL3 connector sockets x and e (figure 202). Limit is  $\frac{150K_{\Omega}}{2}$ . With reversionary mode selected, check resistance again. Limit is  $\frac{50\Omega}{2}$ .
- Step 6. Before tightening harness connector PL3, be sure that keyway in harness connector is aligned with keyway in component connector.
- Step 10. Refer to manufacturer's procedure for diagnosing and replacing harness.
- Step 12. Refer to manufacturer's procedure for diagnosing and replacing switch or harness.

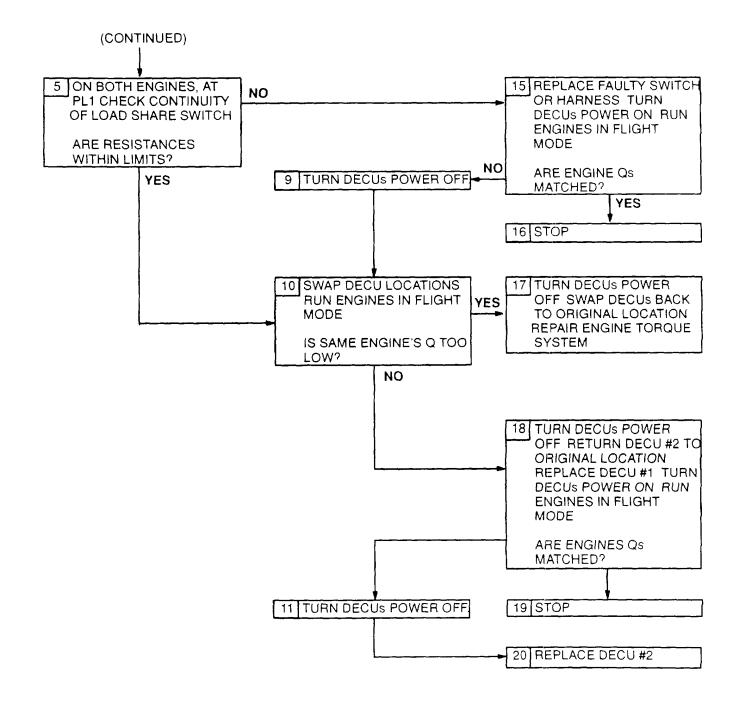
	Connector		Resistance ( <sub>Ω</sub> )	
Component	No.	Contacts	Limits	Nominal*
Cockpit Primary/Reversionary Switch Primary	PL3	<u>x</u> & <u>e</u>	>150K	×
Reversionary	PL3	<u>x</u> & <u>e</u>	< <u>50</u>	1
*At <u>25°C</u>				

#### FAULT CODE - NONE Q LOAD SHARE SELECTED, QS NOT MATCHED



Q Load Share Selected, Qs Not Matched Figure 145 (Sheet 1 of 2)

#### FAULT CODE - NONE Q LOAD SHARE SELECTED, QS NOT MATCHED



Q Load Share Selected, Qs Not Matched Figure 145 (Sheet 2 of 2)

#### G-59 Q LOAD SHARE SELECTED, Qs NOT MATCHED EXPANDED INSTRUCTIONS

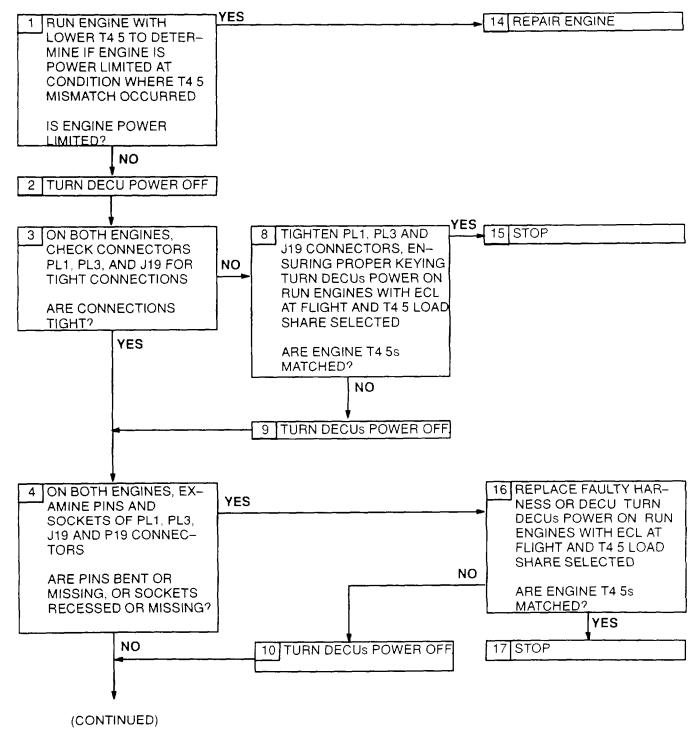
Refer to numbered steps in figure 145.

- Step 2. Check harness connector PL1 (figure 201) at each DECU and P2 at each signal conditioner for tight connection.
- Step 3. At each DECU and signal conditioner, disconnect connectors PL1 and P2 to check pins and sockets.
- Step 5. At each DECU, with PL1 disconnected and load share switch in Q position, check resistance of load share switch at harness PL1 connector sockets L and j. (figure 202). Limit is <50. Check resistance at sockets M and i. Limit is ><u>150K</u><sub>Ω</sub>. With load share switch in T4.5 position, check resistance at sockets L and j. Limit is ><u>150K</u><sub>Ω</sub>. Check resistance at sockets M and j. Limit is <<u>50</u><sub>Ω</sub>. With load share switch in N1 position, check resistance at sockets L and i. and M and j. In each case, limit is <<u>50</u><sub>Ω</sub>.
- Step 6. Before tightening harness connectors PL1 and P2, be sure that keyway in haness connector is aligned with keyway in component connector.
- Step 10. Swap DECU locations on engines, such that DECU #1 is on engine #2, and DECU #2 is on engine #1. Compare Q mismatch to determine if the engine with lower Q is the same engine that had lower Q before the swap.
- Step 13. Refer to manufacturer's procedure for diagnosing and replacing harness and signal conditioner.
- Step 15. Refer to manufacturer's procedure for diagnosing and replacing harness or switch.
- Step 17. Swap DECU locations on engines, such that DECU #1 is on engine #1, and DECU #2 is on engine #2. Refer to manufacturer's procedure for diagnosing and replacing signal conditioner.
- Step 18. Return DECU #2 to engine #2. Install replacement DECU on engine #1.

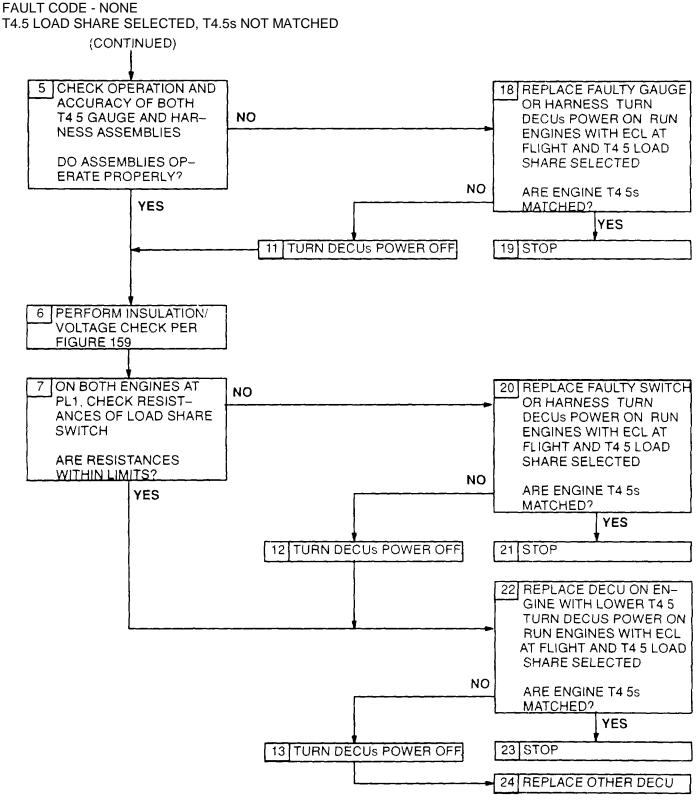
# G-59 Q LOAD SHARE SELECTED, Qs NOT MATCHED EXPANDED INSTRUCTIONS(CONTINUED)

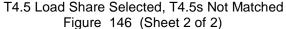
	C	Connector	Resistance (Ω)		
Component	No.	Contacts	Limits	Nominal	
Load Share Switch	PL1	L &	< <u>50</u>	<u>1</u>	
Q Position		M &j	> <u>150K</u>	∞	
Load Share Switch -	PL1	L & j	> <u>150K</u>	œ	
T4.5 Position		M & j	< <u>50</u>	<u>1</u>	
Load Share Switch	PL1	L & j	> <u>150K</u>	œ	
N1 Position *At <u>25°C</u>		M &j	> <u>150K</u>	œ	

FAULT CODE - NONE T4.5 LOAD SHARE SELECTED, T4.5s NOT MATCHED



T4.5 Load Share Selected. T4.5s Not Matched Figure 146 (Sheet 1 of 2)





G-138

## G-60 T4.5 LOAD SHARE SELECTED, T4.5s NOT MATCHED EXPANDED INSTRUCTIONS

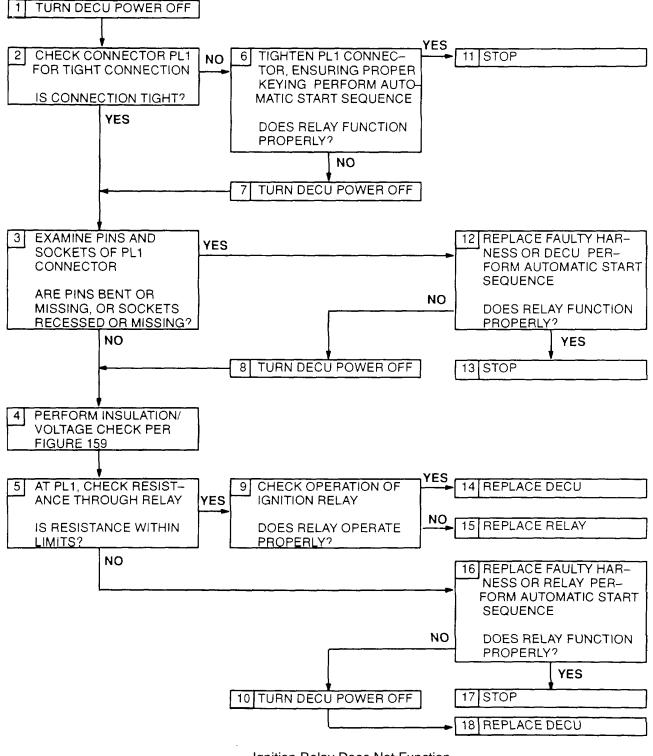
Refer to numbered steps in figure 146.

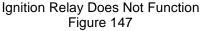
- Step 1. Refer to manufacturer's procedure to check for power limiting.
- Step 3. Check harness connectors PL1 and PL3 (figure 201) at each DECU, and J19 at each T4.5 harness for tight connections.
- Step 4. At each DECU and T4.5 harness, disconnect connectors PL1, PL3 and J19 to check pins and sockets.
- Step 5. Refer to manufacturer's procedure for checking operation and accuracy of T4.5 gauge and harness assemblies.
- Step 7. At each DECU, with PL1 disconnected and load share switch in Q position, check resistance of load share switch at harness PL1 connector sockets L and j. (figure 202). Limit is <u>50Ω</u>. Check resistance at sockets M and j. Limit is <u>150KΩ</u>. With load share switch in T4.5 position, check resistance at sockets L and j. Limit is <u>150KΩ</u>. Check resistance at sockets M and j. Limit is <u>150KΩ</u>. Check resistance at sockets M and j. Limit is <u>150KΩ</u>. With load share switch in T4.5 position, check resistance at sockets L and j. Limit is <u>150KΩ</u>. With load share switch in T4.5 position, check resistance at sockets L and j. Limit is <u>150KΩ</u>. With load share switch in N1 position, check resistance at sockets L and i., and M and j. In each case, limit is <u>150KΩ</u>.
- Step 8. Before tightening harness connectors PL1, PL3 and J19, be sure that keyway in harness connectors are aligned with keyways in component connectors.
- Step 14. Refer to manufacturer's procedure for diagnosing and repairing engine.
- Step 16. Refer to manufacturer's procedure for diagnosing and replacing harness.
- Step 20. Refer to manufacturer's procedure for diagnosing and replacing switch or harness.
- Step 22 Refer to manufacturer's procedure for diagnosing and replacing harness or T4.5 gauge.

# G-60 T4.5 LOAD SHARE SELECTED, T4.5S NOT MATCHED EXPANDED INSTRUCTIONS (CONTINUED)

	(	Connector	Resis	tance (Ω)
Component	No.	Contacts	Limits	Nominal *
Load Share Switch Q Position	PL1	L & j M & j	< <u>50</u> > <u>150K</u>	<u>1</u> ∞
Load Share Switch	PL1	L & j	> <u>150K</u>	×
T4.5 Position		M & j	< <u>50</u>	<u>1</u>
Load Share Switch	PL1	L & j	> <u>150K</u>	×
N1 Position *At 25°C		M & j	> <u>150K</u>	∞

## FAULT CODE - NONE IGNATION REPLAY DOES NOT FUNCTIN





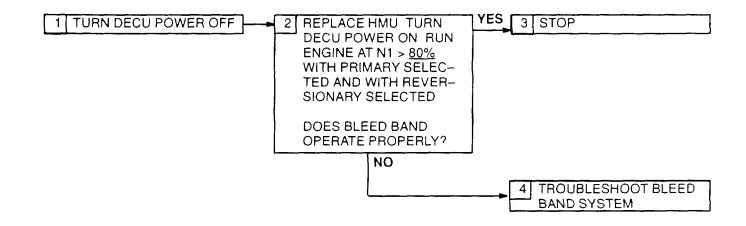
## G-61 IGNITION RELAY DOES NOT FUNCTION EXPANDED INSTRUCTIONS

Refer to numbered steps in figure 147.

- Step 2. Check harness connector PL1 (figure 201) at DECU for tight connections.
- Step 3. Disconnect harness connector PL1 to check pins and sockets.
- Step 5. With PL1 disconnected, check resistance of ignition relay at harness PL1 connector sockets  $\underline{n}$  and  $\underline{p}$  (figure 202). Limit is 190 430 $\underline{n}$ .
- Step 6. Before tightening harness connector PL1, be sure that keyway in harness connector is aligned with keyway in component connector.
- Step 9. Refer to manufacturer's procedure for checking operation of ignition relay.
- Step 12. Refer to manufacturer's procedure for diagnosing and replacing harness.
- Step 15. Refer to manufacturer's procedure for replacing ignition relay.
- Step 16. Refer to manufacturer's procedure for diagnosing and replacing harness or relay.

	Connector		Resistance (5)	
Component	No.	Contacts	Limits	Nominal
Ignition Relay	PL1	<u>n</u> & p	<u> 190 - 430</u>	<u>310</u>
*At <u>25°C</u>				

#### FAULT CODE - NONE BLEED BAND DOES NOT FUNCTION PROPERLY



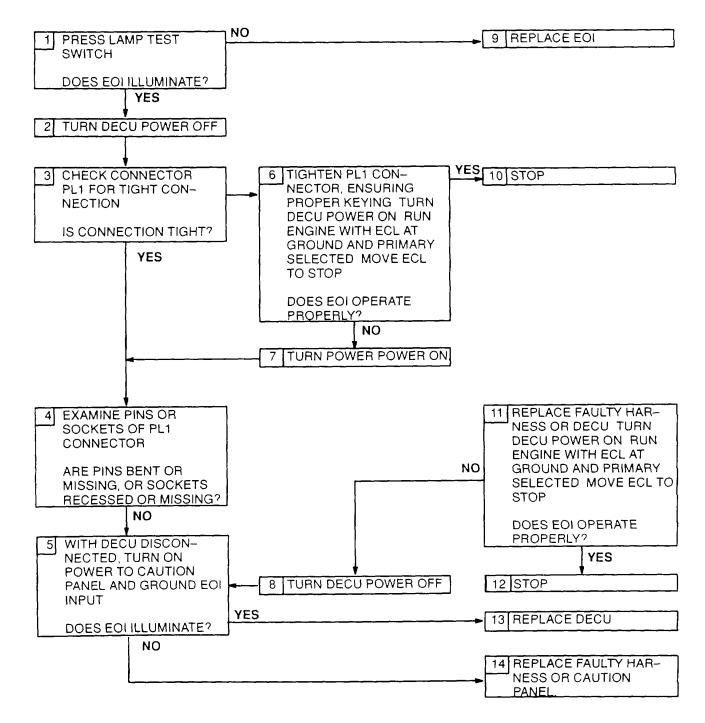
Bleed Band Does Not Function Properly Figure 148

# G-62 BLEED BAND DOES NOT FUNCTION PROPERLY EXPANDED INSTRUCTIONS

Refer to numbered steps in figure 148.

Step 4. Refer to manufacturer's procedure for diagnosing engine bleed band.

## FAULT CODE - NONE ENGINE OUT INDICATOR (EOI) DOES NOT ILLUMINATE DURING NORMAL SHUTDOWN



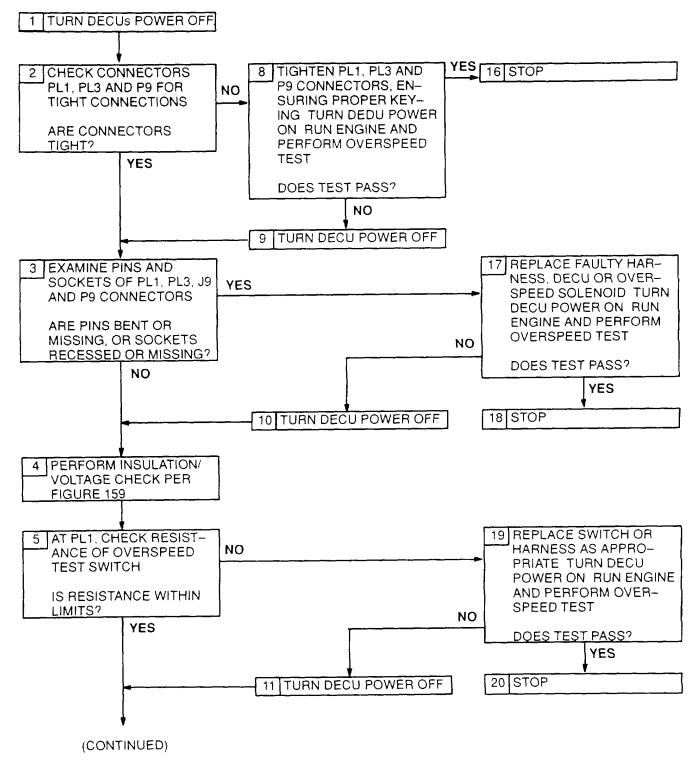
#### Engine Out Indicator (EOI) Does Not Illuminate During Normal Shutdown Figure 149

# G-63 ENGINE OUT INDICATOR (EOI) DOES NOT ILLUMINATE DURING NORMAL SHUTDOWN EXPANDED INSTRUCTIONS.

Refer to numbered steps in figure 149.

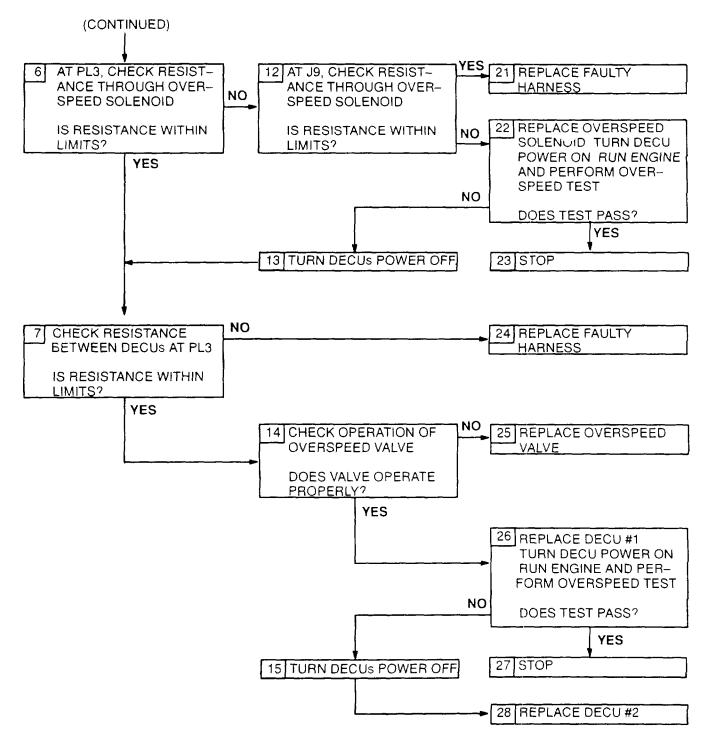
- Step 3. Check harness connector PL1 (figure201) at each DECU for tight connections.
- Step 4. Disconnector connector PL1 to check pins and sockets.
- Step 5. With PL1 and PL3 disconnected, turn on power to caution panel. Short harness PL1 connector socket DD (figure 202) to airframe ground. EOI should illuminate when DD is grounded.
- Step 6. Before tightening harness connector PL1, be sure that keyway in harness connector is aligned with keyway in component connector.
- Step 9. Refer to manufacturer's procedure for diagnosing and replacing of EOI.
- Step 11. Refer to manufacturer's procedure for diagnosing and replacing harness.
- Step 14 Refer to manufacturer's procedure for diagnosing and replacing harness or caution panel.

## FAULT CODE - NONE NO OBSERVED ENGINE SPEED REDUCTION DURING OVERSPEED TEST



No Observed Engine Speed Reduction During Overspeed Test (Sheet 1 of 2) Figure 150

## FAULT CODE - NONE NO OBSERVED ENGINE SPEED REDUCTION DURING OVERSPEED TEST



No Observed Engine Speed Reduction During Overspeed Test (Sheet 2 of 2) Figure 150

#### G-64 NO OBSERVED ENGINE SPEED REDUCTION DURING OVERSPEED TEST EXPANDED INSTRUCTIONS.

- Step 2. Check harness connectors PL1 AND PL3 (figure 201) at DECU, and P9 at overspeed solenoid for tight connection.
- Step 3. Disconnect connectors PL1, PL3 and P9 to check pins and sockets.
- Step 5. With PL1 disconnected and overspeed test not selected, check resistance of overspeed switch at harness PL1 connector sockets A and B (figure 202). Limit is  $\preceq 50K_{\Omega}$ . With overspeed test selected. check resistance again. Limit is  $\lt 50\Omega$ .
- Step 6. With PL3 disconnected, check resistance of overspeed solenoid at harness PL3 connector sockets P and R (figure 202). Limit is  $15.0 55.0\Omega$ .
- Step 7. With PL3 disconnected at both DECUs, check the resistance between the DECUs at the following harness PL3 sockets:

DECU #1	DECU #2
g	<u>Y</u>
Y	q

Limit in each case is  $<1\Omega$ .

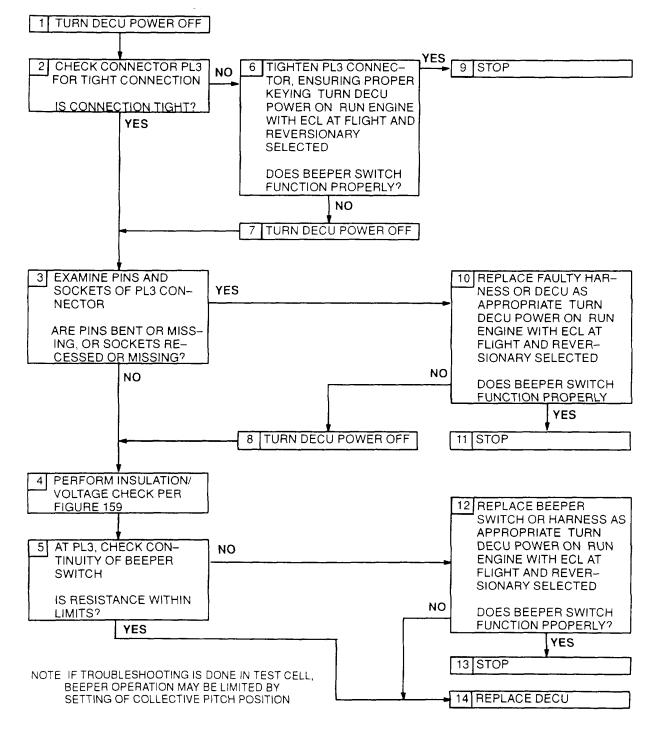
- Step 8. Before tightening harness connectors PL1, PL3 and P9, be sure that keyways in harness connectors are aligned with keyways in component connectors.
- Step 12. With P9 disconnected, check resistance of overspeed solenoid at solenoid J9 connector pins A and B. Limit is 15.0 55.0.
- Step 14. Refer to manufacturer's procedure for checking overspeed valve operation.
- Step 17. Refer to manufacturer's procedure for diagnosing and replacing harness or overspeed solenoid.
- Step 19. Refer to manufacturer's procedure for diagnosing and replacing harness or switch.
- Step 21. Refer to manufacturer's procedure for diagnosing and replacing harness.
- Step 22. Refer to manufacturer's procedure for diagnosing and replacing overspeed solenoid.
- Step 24. Refer to manufacturer's procedure for diagnosing and replacing harness.
- Step 25. Refer to manufacturer's procedure for diagnosing and replacing overspeed valve.

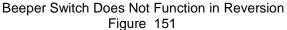
# G-64 NO OBSERVED ENGINE SPEED REDUCTION DURING OVERSPEED TEST EXPANDED INSTRUCTIONS.(CONTINUED)

RESISTANCE-0	CHECK SUMMARY

		Conne			
	DEC	CU #1	DECU #2		
Component	No.	Contacts	No.	Contacts	Resistance Limits (Ω)
Overspeed Test Switch					
Test Not Selected	PL1	A & B			> <u>150K</u>
Test Selected		A & B			< <u>50</u>
Overspeed Solenoid	PL3	P&R			<u> 15.0 - 55.5</u>
	J9	A & B			<u> 15.0 - 55.0</u>
Harness	PL3	g	PL3	<u>Y</u>	< <u>1</u>
	PL3	У	PL3	g	< <u>1</u>

#### FAULT CODE - NONE NO BEEPER SWITCH RESPONSE IN REVERSION





## G-65 NO BEEPER SWITCH RESPONSE IN REVERSION EXPANDED INSTRUCTIONS

Refer to numbered steps in figure 151.

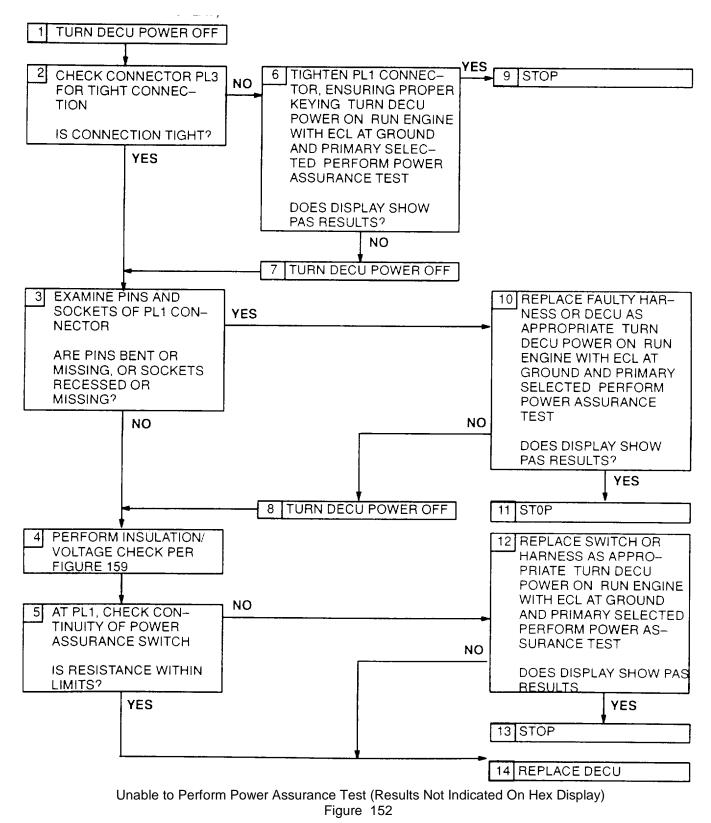
- Step 2. Check harness connector PL3 (figure 201) at each DECU for tight connection.
- Step 3. Disconnect connector PL3 to check pins and sokets.
- Step 5. With PL3 disconnected and beeper switch in increase position, check resistance of beeper switch at harness PL3 connector sockets JJ and KK (figure 202). Limit is <50. Check resistance at sockets w and KK. Limit is >150KΩ. With beeper switch in decrease position, check resistance at sockets JJ and KK. Limit is >150KΩ. Check resistance at sockets w and KK. Limit is <150KΩ. Check resistance at sockets JJ and KK, and W and KK. In each case limit is >150KQ.
- Step 6. Before tightening harness connector PL3, be sure that keyway in harness connector is aligned with keyway in component connector.
- Step 10. Refer to manufacturer's procedure for diagnosing and replacing harness.
- Step 12. Refer to manufacturer's procedure for diagnosing and replacing harness or switch.

#### **RESISTANCE-CHECK SUMMARY**

	Connector		Resis	tance (Q)
Component	No.	Contacts	Limits	Nominal *
Beeper Switch Increase Position	PL3	JJ & KK <u>w</u> & KK	< <u>50</u> > <u>150K</u>	<u>1</u> ∞
Beeper Switch	PL3	JJ & KK	> <u>150K</u>	$\infty$
Decrease Position		<u>w</u> & KK	< <u>50</u>	<u>1</u>
Beeper Switch	PL3	JJ & KK	> <u>150K</u>	$\infty$
Neutral Position *At 25°C		<u>w</u> & KK	> <u>150K</u>	

#### FAULT CODE - NONE

UNABLE TO PERFORM POWER ASSURANCE TEST (RESULTS NOT INDICATED ON HEX DISPLAY)



#### G-66 UNABLE TO PERFORM POWER ASSURANCE TEST (RESULTS NOT INDICATED ON HEX DISPLAY) EXPANDED INSTRUCTIONS

Refer to numbered steps in figure 152.

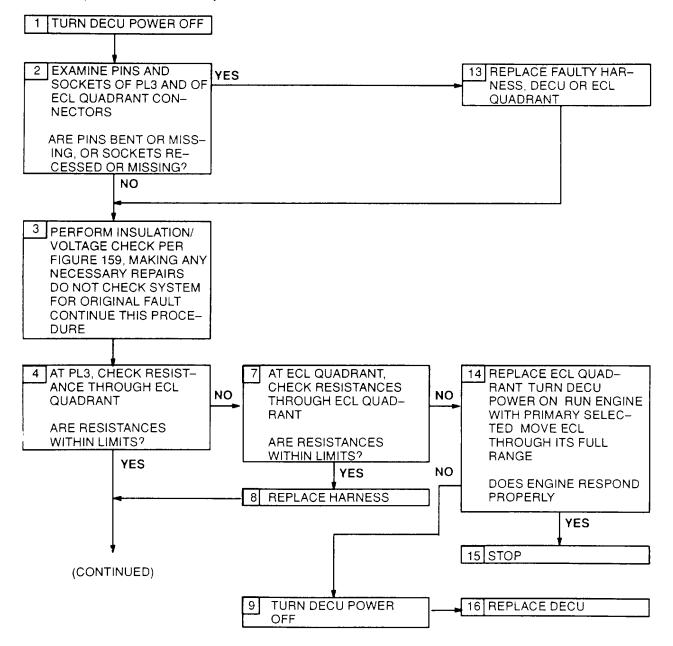
- Step 2. Check harness connector PL1 (figure 201) at DECU for tight connection.
- Step 3. Disconnect connector PL1 to check pins and sockets.
- Step 5. With PL1 disconnected, and power assurance switch in PAS not selected position, check resistance of power assurance switch at harness PL1 connector sockets HH and<u>w</u> (figure 202). Limit is  $>150K\Omega$ . With switch in PAS selected position, check resistance again. Limit is  $< 50\Omega$ .
- Step 6. Before tightening harness connector PL1, be sure that keyway in harness connector is aligned with keyway in component connector.
- Step 10. Refer to manufacturer's procedure for diagnosing and replacing harness.
- Step 12. Refer to manufacturer's procedure for diagnosing and replacing harness or switch.

#### **RESISTANCE-CHECK SUMMARY**

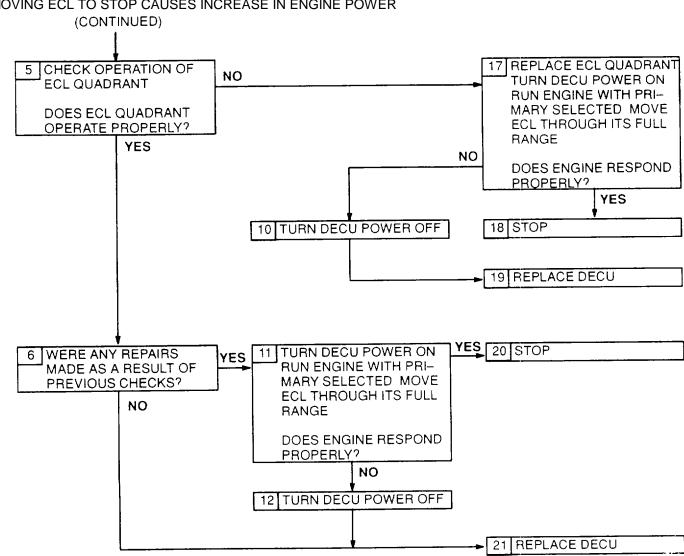
	Connector		Resistance	(Q)
Component	No.	Contacts	Limits	Nominal *
Power Assurance Switch Test Not Selected	PL1	HH & <u>w</u>	<u>&gt; 150K</u>	8
Test Selected *At <u>25°C</u>	PL1	HH & <u>w</u>	< <u>50</u>	<u>1</u>

## FAULT CODE - NONE MOVING ECL TO STOP CAUSES INCREASE IN ENGINE POWER

NOTE The engine shall not be run following any repairs until all electrical checks have been completed The pilot may experience loss of control on an unexpected event if a problem with the ECL system still exists



Moving ECL to Stop Causes Increase in Engine Power (Sheet 1 of 2) Figure 153



FAULT CODE - NONE MOVING ECL TO STOP CAUSES INCREASE IN ENGINE POWER

Moving ECL to Stop Causes Increase in Engine Power (Sheet 2 of 2) Figure 153

#### G-67 MOVING ECL TO STOP CAUSES INCREASE IN ENGINE POWER EXPANDED INSTRUCTIONS

Refer to numbered steps in figure 153.

- Step 2. Disconnect PL3 and ECL quadrant connectors to check pins and sockets.
- Step 3. Follow instructions as required in figure 159, except do not check system for original fault after any repairs are made. After all checks from figure 159 are completed, go to step 4 of this procedure.
- Step 4. Set ECL to STOP. With PL3 disconnected, check resistance of ECL quadrant (excitation) at harness PL3 connector sockets h and j (figure 202). Limit is  $35 42\Omega$ . Check resistance of ECL quadrant (signal) at sockets EE and DD. Limit is  $90 102 \Omega$ . Monitor resistance of ECL quadrant (interlock discrete) at sockets f and LL while moving ECL from STOP to GROUND to FLIGHT. Limits are defined in table below. Monitor resistance of ECL quadrant (gain discrete) at sockets MM and LL while moving ECL from STOP to GROUND to FLIGHT. Limits are as defined in table below. **(NOTE:** Gain discrete resistance is not checked at GROUND because switch can be open or closed at that point.)
- Step 5. Refer to manufacturer's procedure for checking operation of ECL quadrant.
- Step 7. Set ECL to STOP. With ECL quadrant connector disconnected, check resistance of ECL quadrant (excitation) at quadrant pins 1 and 2. Limit is <u>35 40Ω</u>. Check resistance of ECL quadrant (signal) at quadrant pins 3 and 4. Limit is <u>90 100Ω</u>. Monitor resistance of ECL quadrant (interlock discrete) at pins 11 and 12 while moving ECL from STOP to GROUND to FLIGHT. Limits are as defined in table below. Monitor resistance of ECL quadrant (gain discrete) at pins 5 and 11 while moving ECL from STOP to GROUND to FLIGHT. Limits are as defined in table below. Monitor resistance of ECL quadrant (gain discrete) at pins 5 and 11 while moving ECL from STOP to GROUND to FLIGHT. Limits are as defined in table below. (NOTE: Gain discrete resistance is not checked at GROUND because switch can be open or closed at that point.)
- Step 8. Refer to manufacturer's procedure for diagnosing and replacing harness.
- Step 13. Refer to manufacturer's procedure for diagnosing and replacing harness or ECL quadrant.
- Step 14. Refer to manufacturer's procedure replacing ECL quadrant.
- Step 17. Refer to manufacturer's procedure for diagnosing and replacing ECL quadrant.

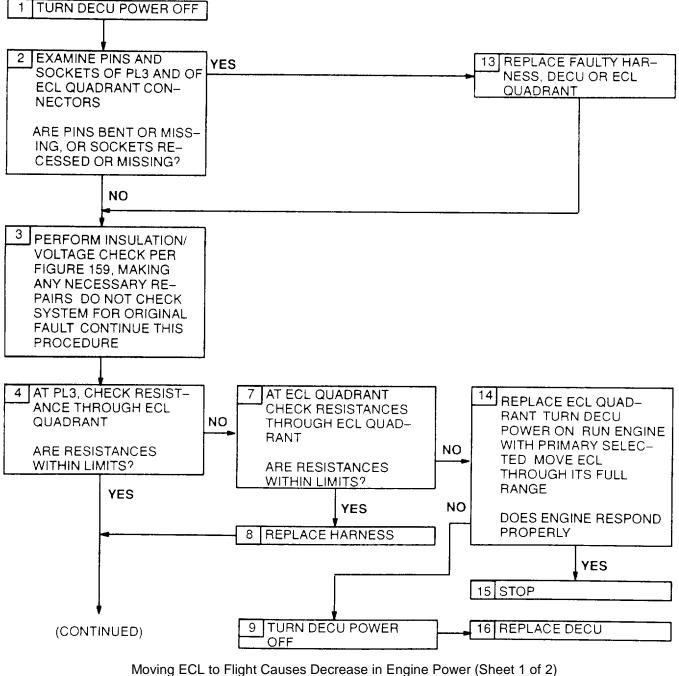
## G-67 MOVING ECL TO STOP CAUSES INCREASE IN ENGINE POWER EXPANDED INSTRUCTIONS(CONTINUED)

#### **RESISTANCE-CHECK SUMMARY**

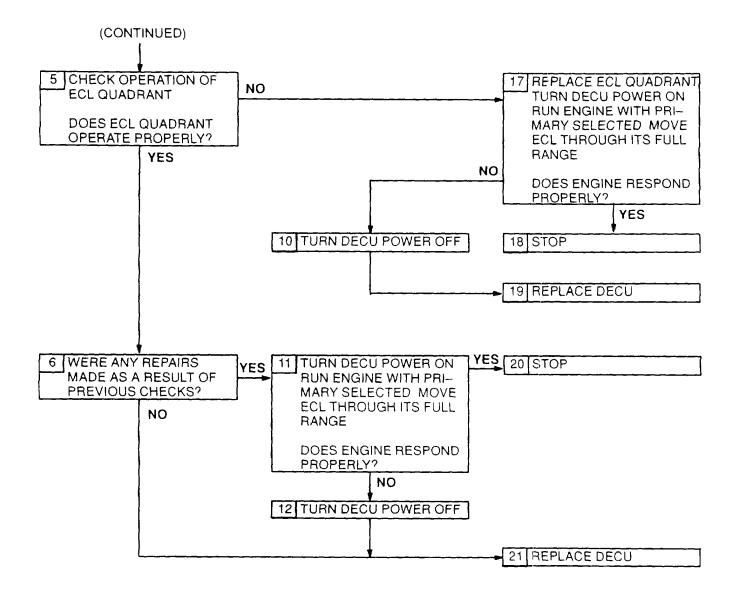
	Connec	tor	Resi	stance (Ω)
Component	No.	Contacts	Limits	Nominal
ECL Quadrant - Excitation	PL3 ECL Quadrant	<u>h</u> &i 1 & 2	<u>35 - 42</u> 35 - 40	
ECL Quadrant- Signal	PL3	EE & DD	90 - 102	
FOL Our day of the set of Discosts	ECL Quadrant	3 & 4	<u>90 - 100</u>	
ECL Quadrant - Interlock Discrete:				
ECL at STOP	PL3	<u>f</u> & <u>LL</u>	> <u>150K</u>	$\infty$
ECL between STOP and GROUND		<u>f</u> & <u>LL</u>	< <u>50</u>	<u>1</u>
ECL at GROUND		<u>f</u> & <u>LL</u>	> <u>150K</u>	$\infty$
ECL between GROUND and FLIGHT		<u>f</u> & <u>LL</u>	< 50	<u>1</u>
ECL at FLIGHT		<u>f</u> & <u>LL</u>	> <u>150K</u>	$\infty$
ECL Quadrant - Interlock Discrete:				
ECL at STOP	ECL Quadrant	12 & 11	> <u>150K</u>	$\infty$
ECL between STOP and GROUND		12 & 11	< 50	
ECL at GROUND		12 & 11	> <u>150K</u>	$\infty$
ECL between GROUND and FLIGHT		12 & ii	< <u>50</u>	<u>1</u>
ECL at FLIGHT		12 & 11	> <u>150K</u>	$\infty$
ECL Quadrant - Gain Discrete				
ECL at STOP ECL between STOP and GROUND ECL between GROUND and FLIGHT	PL3	MM & LL MM & LL MM &'LL	< <u>50</u> < <u>50</u> > <u>150K</u>	1 1 ∞
ECL at FLIGHT		MM & LL	> <u>150K</u>	8
ECL Quadrant - Gain Discrete				
ECL at STOP	ECL Quadrant	5 & 11	< <u>50</u>	<u>1</u>
ECL between STOP and GROUND		5 & 11	< <u>50</u>	<u>1</u>
ECL between GROUND and FLIGHT		5 & 11	> <u>150K</u>	$\infty$
ECL at FLIGHT		5 & 11	> <u>150K</u>	~
*At <u>25°C</u>				

## FAULT CODE - NONE MOVING ECL TO FLIGHT CAUSES DECREASE IN ENGINE POWER

NOTE The engine shall not be run following any repairs until all electrical checks have been completed The pilot may experience loss of control on an unexpected event if a problem with the ECL system still exists



## FAULT CODE - NONE MOVING ECL TO FLIGHT CAUSES DECREASE IN ENGINE POWER



Moving ECL to Flight Causes Decrease in Engine Power (Sheet 2 of 2) Figure 154

#### G-68 MOVING ECL TO FLIGHT CAUSES DECREASE IN ENGINE POWER EXPANDED INSTRUCTIONS

Refer to numbered steps in figure 154.

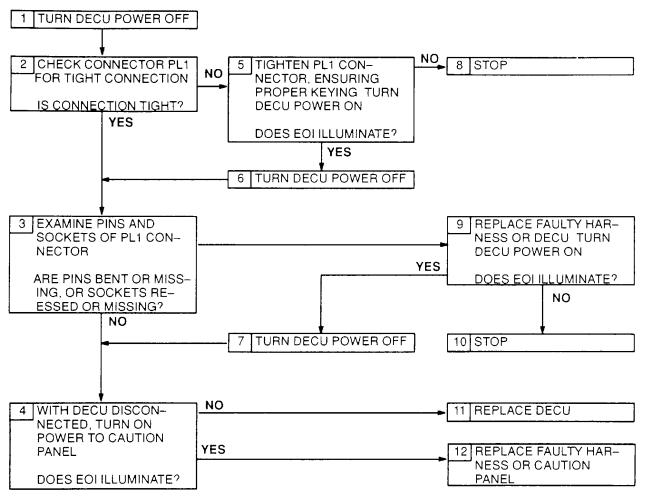
- Step 2. Disconnect PL3 and ECL quadrant connectors to check pins and sockets.
- Step 3. Follow instructions as required in figure 159, except do not check system for original fault after any repairs are made. After all checks from figure 159 are completed, go to step 4 of this procedure.
- Step 4. Set ECL to STOP. With PL3 disconnected, check resistance of ECL quadrant (excitation) at harness PL3 connector sockets <u>h</u> and <u>i</u> (figure 202). Limit is 35 42Ω Check resistance of ECL quadrant (signal) at sockets EE and DD. Limit is 90 102Ω Monitor resistance of ECL quadrant (interlock discrete) at sockets f and LL while moving ECL from STOP to GROUND to FLIGHT. Limits are defined in table below. Monitor resistance of ECL quadrant (gain discrete) at sockets MM and LL while moving ECL from STOP to GROUND to FLIGHT. Limits are as defined in table below. (Note: Gain discrete resistance is not checked at GROUND because switch can be open or closed at that point.)
- Step 5. Refer to manufacturer's procedure for checking operation of ECL quadrant.
- Step 7. Set ECL to STOP. With ECL quadrant connector disconnected, check resistance of ECL quadrant (excitation) at quadrant pins 1 and 2. Limit is <u>35-40Ω</u>. Check resistance of ECL quadrant (signal) at quadrant pins 3 and 4. Limit is <u>90-100Ω</u>. Monitor resistance of ECL quadrant (interlock discrete) at pins 11 and 12 while moving ECL from STOP to GROUND to FLIGHT. Limits are as defined in table below. Monitor resistance of ECL quadrant (gain discrete) at pins 5 and 11 while moving ECL from STOP to GROUND to FLIGHT. Limits are as defined in table below. (Note: Gain discrete resistance is not checked at GROUND because switch can be open or closed at that point.)
- Step 8. Refer to manufacturer's procedure for diagnosing and replacing harness.
- Step 13. Refer to manufacturer's procedure for diagnosing and replacing harness or ECL quadrant.
- Step 14. Refer to manufacturer's procedure replacing ECL quadrant.
- Step 17. Refer to manufacturer's procedure for diagnosing and replacing ECL quadrant.

# G-68 MOVING ECL TO FLIGHT CAUSES DECREASE IN ENGINE POWER EXPANDED INSTRUCTIONS(CONTINUED)

	Connector		Resistar	nce (Ω)
Component	No	Contacts	Limits	Nominal *
ECL Quadrant – Excitation	PL3	<u>h</u> &1	<u> 35 42</u>	-
	ECL Quadrant	1 & 2	<u> 35 - 40</u>	· _
ECL Quadrant – Signal	PL3	EE & DD	<u>90 - 102</u>	_
	ECL Quadrant	3 & 4	<u>90 - 100</u>	_
ECL Quadrant – Interlock Discrete				1
ECL at STOP	PL3	<u>f</u> & <u>LL</u>	> <u>150K</u>	$\sim$
ECL between STOP and GROUND		<u>f</u> & <u>LL</u>	< <u>50</u>	<u>1</u>
ECL at GROUND		<u>f</u> & <u>LL</u>	> <u>150K</u>	$\infty$
ECL between GROUND and FLIGHT		<u>f</u> & <u>LL</u>	< <u>50</u>	1
ECL at FLIGHT		<u>f &amp; LL</u>	> <u>150K</u>	~
ECL Quadrant – Interlock Discrete				
ECL at STOP	ECL Quadrant	12 & 11	> <u>150K</u>	∞
ECL between STOP and GROUND		12 & 11	< <u>50</u>	1
ECL at GROUND		12 & 11	> <u>150K</u>	$\infty$
ECL between GROUND and FLIGHT		12 & 11	< 50	1
ECL at FLIGHT		12 & 11	> <u>150K</u>	~
ECL Quadrant - Gain Discrete				
ECL at STOP	PL3	MM & LL	< <u>50</u>	1
ECL between STOP and GROUND		MM & LL	< <u>50</u>	1
ECL between GROUND and FLIGHT		MM & LL	> <u>150K</u>	œ
ECL at FLIGHT		MM & LL	> <u>150K</u>	~
ECL Quadrant - Gain Discrete				
ECL at STOP	ECL Quadrant	5 & 11	< <u>50</u>	1
ECL between STOP and GROUND		5 & 11	< <u>50</u>	1
ECL between GROUND and FLIGHT		5 & 11	> <u>150K</u>	$\sim$
ECL at FLIGHT		5 & 11	> <u>150K</u>	~~~
*At <u>25°C</u>				

#### RESISTANCE-CHECK SUMMARY

#### FAULT CODE – NONE ENGINE OUT INDICATOR (EOI) IS ALWAYS ILLUMINATED



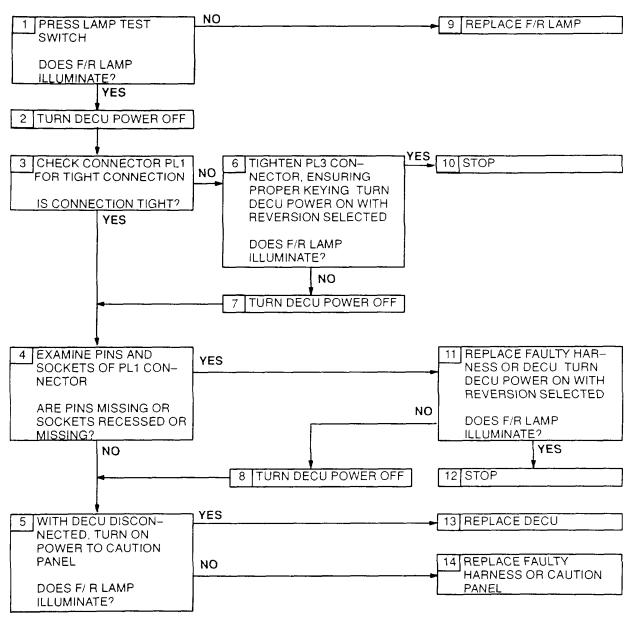
Engine Out Indicator (EOI) Is Always Illuminated Figure 155

#### G-69 ENGINE OUT INDICATOR (EOI) IS ALWAYS ILLUMINATED EXPANDED INSTRUCTIONS

Refer to numbered steps in figure 155.

- Step 2. Check harness connector PL1 (figure 201) at DECU for tight connection.
- Step 3. Disconnect connector PL1 to check pins and sockets.
- Step 4. With PL1 and PL3 disconnected, turn on power to caution panel.
- Step 5. Before tightening harness connector PL1, be sure that keyway in harness connector is aligned with keyway in component connector.
- Step 9. Refer to manufacturer's procedure for diagnosing and replacing harness.
- Step 12. Refer to manufacturer's procedure for diagnosing and replacing harness or caution panel.

#### FAULT CODE – NONE F/R LAMP DOES NOT ILLUMINATE WHEN REVERSION IS SELECTED



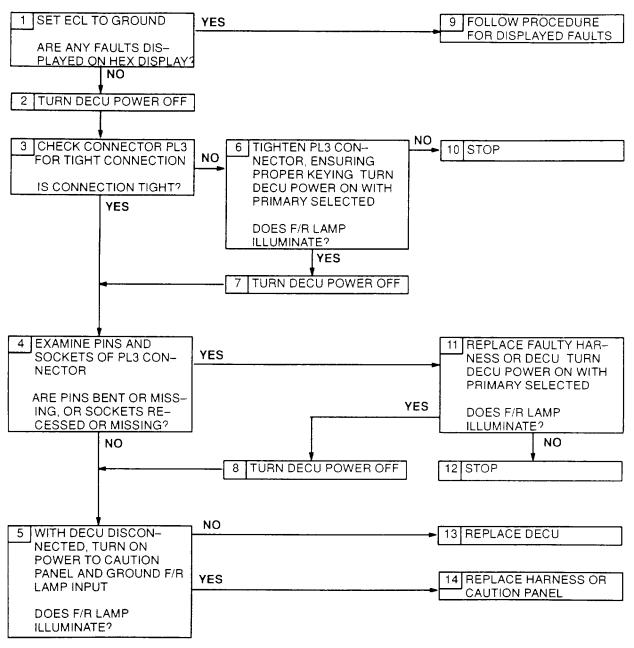
F/R Lamp Does Not Illuminate When Reversion Is Selected Figure 156

## G-70 F/R LAMP DOES NOT ILLUMINATE WHEN REVERSION IS SELECTED EXPANDED

Refer to numbered steps in figure 156.

- Step 3. Check harness connector PL3 (figure 201) at DECU for tight connection.
- Step 4. Disconnect connector PL3 to check pins and sockets.
- Step 5. With PL1 and PL3 disconnected, turn on power to caution panel.
- Step 6. Before tightening harness connector PL3, be sure that keyway in harness connector is aligned with keyway in DECU connector.
- Step 9. Refer to manufacturer's procedure for diagnosing and replacing F/R lamp.
- Step 11. Refer to manufacturer's procedure for diagnosing and replacing harness.
- Step 14. Refer to manufacturer's procedure for diagnosing and replacing harness or caution panel.

#### FAULT CODE – NONE F/R LAMP IS ILLUMINATED WHEN PRIMARY IS SELECTED



F/R Lamp is Illuminated When Primary Is Selected Figure 157

#### G-71 F/R LAMP IS ILLUMINATED WHEN PRIMARY IS SELECTED EXPANDED INSTRUCTIONS

Refer to numbered steps in figure 157.

Step 3. Check harness connector PL3 (figure 201) at DECU for tight connection.

- Step 4. Disconnect connector PL3 to check pins and sockets.
- Step 5. With PL1 and PL3 disconnected, turn on power to caution panel. Short harness PL3 connector socket <u>k</u> to airframe ground. F/R lamp should not illuminate when k is grounded.

Step 6. Before tightening harness connector PL3, be sure that keyway in harness connector is aligned with keyway in component connector.

Step 11. Refer to manufacturer's procedure for diagnosing and replacing harness.

Step 14. Refer to manufacturer's procedure for diagnosing and replacing harness or caution panel.

#### FAULT CODE - UNDEFINED FAULT CODES NOT DEFINED IN TABLE 1

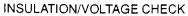
1 CYCLE DECU POWER.	YES	- 2 STOP
SET ECL TO GROUND		
WITH PRIMARY SELECTED		
GELEGIED	NO	3 TURN DECU POWER OFF
		REPLACE DECU.
IS FAULT CLEAR?		

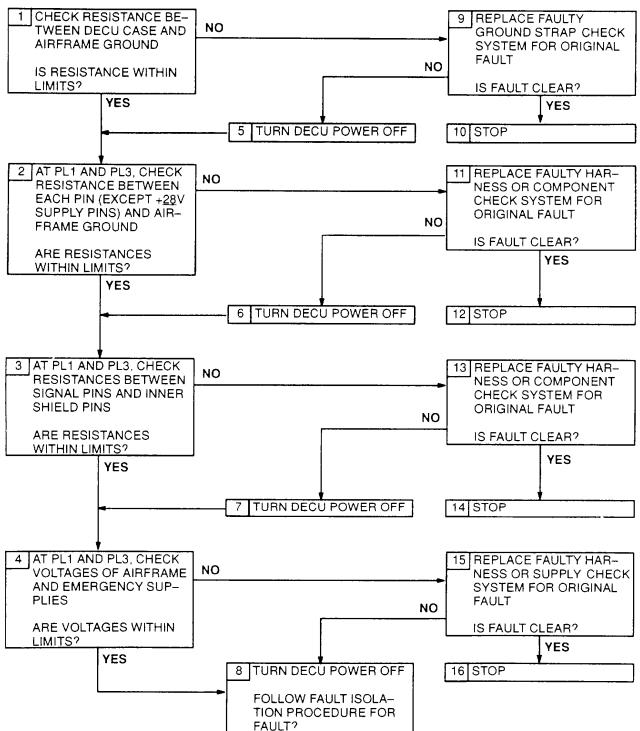
Fault Codes Not Defined in Table 1 Figure 158

## G-72 FAULT CODES NOT DEFINED IN TABLE 1 EXPANDED INSTRUCTIONS

Refer to figure 158.

- Step 1. Cycle DECU power to verify fault code.
- Step 3. An internal DECU fault exists. No further troubleshooting is necessary.





Insulation/Voltage Check Figure 159

#### G-73 INSULATION/VOLTAGE CHECK EXPANDED INSTRUCTIONS

Refer to numbered steps in figure 159.

- Step 1. Check the resistance between the DECU case at the ground strap and airframe ground using a 4wire configuration. Limit is  $< 50\Omega$ .
- Step 2.. With PL1 and PL3 (figure 201) disconnected, check the resistance between each harness PL1 and PL3 connector socket (except PL1 -Y, PL1-t and PL3-N) and airframe ground. For PL1 sockets Z and  $\underline{u}$  (figure 202), and PL3 sockets R and m, limit is < 2 $\Omega$ . For PL3 sockets v and GG, limit is > 1000 $\Omega$ . For all others, limit is > 1M $\Omega$ .
- Step 3. With PL1 and PL3 disconnected, check the resistance between the pin pairs listed in the table below at harness PL1 and PL3 connector sockets. Limit in each case is  $>1 M\Omega$
- Step 4. With PL1 and PL3 disconnected. turn on airframe supply and emergency supply. Check voltage of the airframe supply at harness PL1 connector sockets Y and Z, and t and<u>u</u>. Limit is <u>16-30V</u>. Check voltage of the emergency supply at harness PL3 connector sockets N and<u>m</u>. Limit is 16-30V.
- Step 9. Refer to manufacturer's procedure for diagnosing and replacing ground strap. See instructions for fault check defined by original procedure being followed.
- Step 11. Refer to manufacturer's procedure for diagnosing and replacing harness or component. See instructions for fault check defined by original procedure being followed.
- Step 13. Refer to manufacturer's procedure for diagnosing and replacing harness or component. See instructions for fault check defined by original procedure being followed.
- Step 15. Refer to manufacturer's procedure for diagnosing and replacing harness or component. See instructions for fault check defined by original procedure being followed.

Connection	Measurement Locations	Resistance Limits (mΩ)
Ground Strap	DECU case and airframe ground	< <u>50</u>

**RESISTANCE-CHECK SUMMARY - STEP 1** 

## G-52 INSULATION/VOLTAGE CHECK EXPANDED INSTRUCTIONS(CONTINUED)

		Connector		
Signal	No	Contact to Airframe Ground	Limits $(\Omega)$	
DV A/F	PL1	Z	< <u>2</u>	
		<u>u</u>	< <u>2</u>	
OV EM	PL3	m	< <u>2</u>	
O/S - OUT	PL3	R	< <u>2</u>	
T4 5 Sensor	PL3	<u> </u>	> <u>1000</u>	
		GĠ	> <u>1000</u>	
All others	PL1, PL3	All others*	> <u>1M</u>	

#### RESISTANCE-CHECK SUMMARY - STEP 2

#### RESISTANCE-CHECK SUMMARY - STEP 3

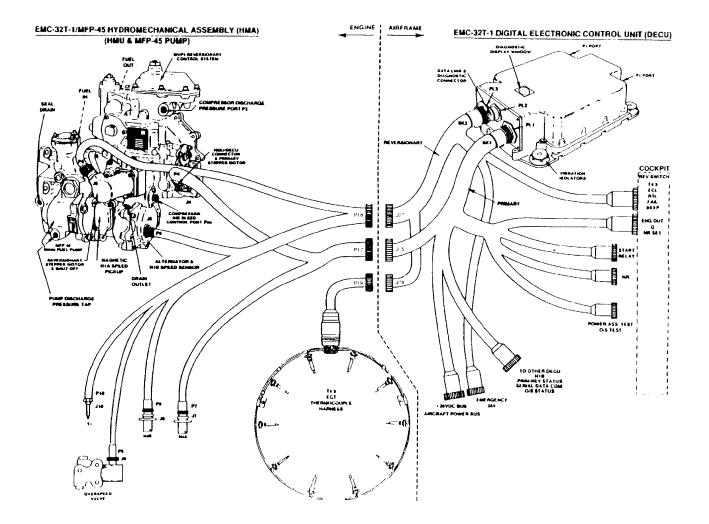
		Connector	Resistance
Component	No	Contacts	Limits $(\Omega)$
T4 5 Gauge	PL3	Z & <u>a</u>	> <u>1M</u>
		Ζ&υ	> <u>1M</u>
RTL Sensor	PL3	<u>n</u> &p	> <u>1M</u>
		<u>п &amp; д</u>	> <u>1M</u>
		<u>n &amp; z</u>	> <u>1M</u>
		<u>n</u> & AA	> <u>1M</u>
ECL Quadrant	PL3	CC & <u>h</u>	> <u>1M</u>
		CC & 1	> <u>1M</u>
		CC & DD	> <u>1M</u>
		CC & EE	> <u>1M</u>
T1 Sensor	PL3	FF & <u>r</u>	> <u>1M</u>
		FF & <u>s</u>	> <u>1M</u>
		FF & <u>t</u>	> <u>1M</u>
T4 5 Harness	PL3	HH & ⊻	> <u>1M</u>
		HH & GG	> <u>1M</u>

## G-52 INSULATION/VOLTAGE CHECK EXPANDED INSTRUCTIONS(CONTINUED)

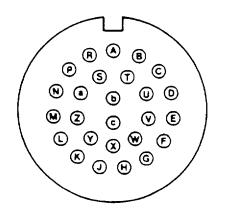
	Connector		Voltage (V)	
Component	No.	Contacts	Limits	Nominal *
Airframe Power Supply	PL1	Y & Z	<u> 16 - 30</u>	<u>28</u>
		<u>t</u> & <u>u</u>	<u> 16 - 30</u>	<u>28</u>
Airframe Emergency Supply *At <u>25°C</u>	PL3	N & <u>m</u>	<u> 16 - 30</u>	<u>28</u>

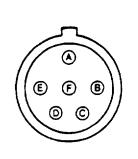
## VOLTAGE-CHECK SUMMARY - STEP 3

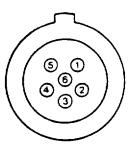
#### TM 1-2840-252-23-3



Fuel Control System Harness Connections Figure 201



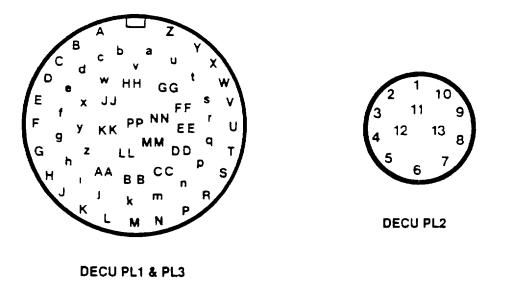




HMU J4

HMU J6

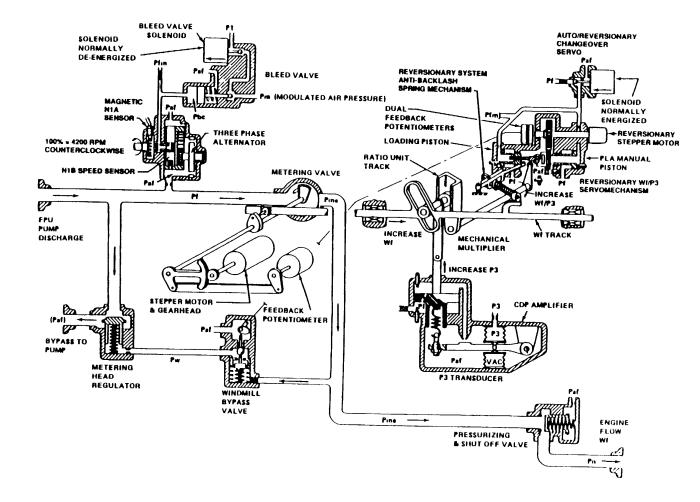
HMU J5



NOTE These are pin locations for connectors on the HMU and DECU. Note that the socket locations for the harness connectors are the same except that they are reversed to form a mirror image.

Electrical Connector Pin Locations Figure 202 G-176

#### TM 1-2840-252-23-3



HMU Schematic Diagram Figure 203

## GLOSSARY

## **Definition**

A Abrasion ...... A roughened surface.

## В

Binding
tarial an assume and Maximum and starting a series of the shaft
terial, or component. May cause serious damage if achaf-
ing force is being imposed.
Break Separation of a part.
Buckling A large-scale deformation of the original contour of a part,
usually due to pressure or impact from a foreign object,
structural stresses, excessive localized heating, highpres-
sure differentials, or to any combination of these.
Burn
er temperatures than the material can withstand structural-
•
ly. Change in color and appearance often indicates this
condition.
Burr A rough or sharp edge on a hole or corner, usually caused
by matching, sometimes by wearing.

## **C**arborundum

0	
Carborundum	. The trade name for a manufactured aluminum oxide abra- sive similar to natural emery. It is used for grinding wheels and for abrasive papers.
Chafing	. A worn or rubbed area caused by friction: refers to the wear produced by parts such as fuel, air, and oil lines rubbing against other parts.
Chipping	. Breaking away of metallic particles.
Chordal	. Progressing in a straight line from one edge to another on a curved surface. Typically, on an airfoil, a direction or mea- surement from leading to trailing edge.
	. A hollow surface curved like the inside of a bowl. . Any foreign substance such as metal chips, lint, rust, and water that would be harmful to the functioning of a part or system.
	. Tending to move toward one point or another. . A surface shaped like the outside of a sphere or a ball. . A mass of small pits which cumulatively create a large cav- ity (usually shallow) in the surface of the parent metal.

## Glossary-1

## Definition

C (Continued)	
Corrosion Pitting	. Irregular surface depressions having ragged edges due to metal removed caused by corrosive substance adhering to exposed surfaces.
Corrugated	. The forming and shaping of sheet metal into wrinkles or folds or into alternating ridges and grooves.
Crack <b>D</b>	. Parting of parent metal.
Dent	A completely smooth surface depression caused bypres- sure or impact from a smooth ball-like foreign object. The parent material is displaced, but usually none is separated.
Desiccant	
Diagnostic Equipment	. Test equipment used to determine what the defective part is.
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 orunre- strained.

## F

Fatigue	The progressive weakening of a material under repeated cycles of stress.
Foreign Material Foreign Object	. See Contamination. . Any object such as a tool, piece of equipment, engine part (nut, bolt,.lockwire) that could in any way damage the en- gine.
Fraying	-
Fretting	Discoloration or damage caused by rubbing, chafing, or wearing away of original surface material resulting from movement of contacting surfaces. Can cause grooving in severe cases.
G	

Gouge	A wide rough scratch or group of scratches, usually, with
	one or more sharply impressed corners, and frequently ac-
	companied by deformation or removal of parent metal.

Glossary-2

C (Continued)	Definition
<b>G (Continued)</b> Grooving	Wearing away of material, caused by movement of contact- ing surfaces, in such a manner as to cause a long, thin, sharp depression in the surface. Can cause steps in severe cases
<b>H</b> Heat Discoloration	Characterized by a discoloring film. Color varies from light straw, tan, or light brown changing to red purple, purple or blue. Caused by high temperature operation.
l Insulation	A material or device used to prevent passage of heatelec- tricity, or sound from one medium to another.
<b>K</b> 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.
NNick	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.
Overshooting	<ul> <li>To restore an item to a completely serviceable condition as prescribed by serviceability standards developed and published by the Government.</li> <li>When the expected N1 or N2 speed is exceededmomentarily and then drops below the expected level.</li> <li>When the expected N1 or N2 speed is exceeded.</li> <li>A chemical action in which a metallic element is united with oxygen causing deterioration of the metal or material.</li> </ul>

## Glossary-3

### **Definition**

	Demmion
Р	
Parent Metal	. The basic metal of a part, sometimes referred to as a base metal; the term is used particularly in connection with weld- ing, where the parent metal is that being welded rather than that used in welding rod.
Peening	
Phenolic	. A thermosetting resin or plastic made especially for molding and insulating, coatings and adhesives.
Pitting	. Very shallow depressions in a surface, usually caused by
	chemical reaction (rusting chemical corrosion).
Popping	. Sharp abrupt noise normally caused by erratic bleed band
	operation.
Protrusion	. Projection sticking out from the rest of the surrounding ma-
	terial or surface.
Puncture	. A hole that is pierced in a material.
R	
Renair	. To restore a defective part, component, subassembly or
	assembly to a serviceable condition.
Rollover	. A curl usually on the leading edge of a blade, resulting from
	deformation by the peening action of foreign objects.
Bub	. When one component contacts another and is moved in
	relationship to it causing material to be removed from it.
Rust	. Oxidation of iron. A red, crusty product which forms on iron
	or steel when it unites with oxygen.
	or stoer when it drifted with oxygen.
S	
-	Multiple coretables, you ally perallel and resulting from the
	. 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 condition which allows them
	to be returned to operational status on an aircraft.
Step	. Wearing away of material, caused by movement of contact-
	ing surfaces, in such a manner as to cause sharp edged
	ridges or depressions. Usually a severe form of grooving.
Subassembly	. A self-contained unit of an assembly that can be removed,
	replaced, and repaired separately; turbine nozzles and
	combustion liner are typical subassemblies.

## **Definition**

т	
Tear	A forcible, somewhat crude pulling or wrenching away of
Testing	material so that ragged or irregular edges result. Testing of equipment to determine that the unit functions properly within specified limits.
Tight-Lipped	Type of crack in which edges have separated enough to allow visibility of inner edges. Usually, in vanes, core will be visible.
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.
U	
Undershooting	. When the expected N1 or N2 speed is not reached and then creeps up to the expected level.
	When the expected N1 or N2 speed is not reached.
Upset	A part of a rod (as a head on a bolt) that is upset.
V	

<b>V</b> Void	A continuous lack of braze material through a braze joint
14/	cross-section caused by improper repair.
<b>W</b> Wear	Relatively slow removal of parent material from any cause,
	frequently not visible to the naked eye.

Glossary-5/(Glossary-6)

#### INDEX

Para Subject Tas		Para/ Subject Task	Page
Α		Adjust Oil Pump 1-101	1-499
Abbreviations	F-1	Air-Bleed Actuator, Interstage - See Interstage Air-Bleed Actuator	
AbbreviationsG-1	2 G-10	Air Diffuser Assembly Repair2-38	2-321
Abnormal Engine Coastdown Noise or			
Time (Less than 23 Seconds)1-6	6 1-293	Air Gallery Cover, Anti-Icing - See Anti-Icing Air Gallery Cover	
Accessory Electrical Harness Assembly			
Clean7-2		Air Inlet Housing Assembly	
Inspect7-3		Clean2-49	2-355
Install7-3		Inspect 2-50	2-356
Remove7-2		Repair2-51	2-357
Repair7-3	1 7-146		
Test7-3	2 7-147	Air Lines - See Hose Assembly	
Accessory Gear Section1-1	7 1-25	Alloys, Touch Up Magnesium and Magnesium - See Touch Up Magnesium and Magnesium	
Accessory Gearbox Assembly		Alloys	
Assemble	5-23	Alloys	
Clean	5-25	Anti-Icing Air Gallery Cover	
	-	Clean 2-15	2-47
Disassemble5-2	5-12	Inspect 2-17	2-52
Inspect5-4	5-20	Install2-19	2-56
Install5-7	5-28	Remove 2-16	2-50
Remove5-1	5-3	Repair2-18	2-54
Repair5-5	5-22		
		Army Material to Prevent Enemy	
Activate Engine After Storage1-2	8 1-94	Use, Destruction of Army Material to Prevent Enemy Use	
Actuator, Interstage Air-Bleed - See			
Interstage Air-Bleed Actuator		Assemble	
-		Accessory Gearbox Assembly 5-6	5-23
Adjust		Combustion Section	3-134
Interstage Air-Bleed Actuator2-9	2-26	(AVIM) Combustion Section 3-10	3-123
Oil Level Indicator		(AVIM) Combustion Section and	-
•		Power Turbine	3-62
Adjust		Dual Chip Detector 8-44	8-100
Interstage Air-Bleed Actuator2-9	2-26	In-Line Fuel Filter Assembly 6-39	6-128
Oil Level Indicator		Interstage Air-Bleed Actuator 2-6	2-16

Subject	Para/ Task	Page	Subject	Para/ Task	Page
Main Fuel Filter and Bracket Main Oil Pump, Speed Pickup D Assembly, Scavenge Oil Screen and Related Parts Oil Cooler Assembly Oil Filler Assembly and Oil Filler Strainer Oil Level Float Assembly Oil Level Indicator Overspeed Drive and Outlet Cov Assembly Tailpipe Assembly Third Turbine Nozzle and Suppo Assurance/Quality Control (QA/QC) Quality - See Quality Assurance	rive , 8-5 8-17 8-32 8-127 8-119 /er 5-28 4-75 ort .4-31 ),	6-115 8-17 8-45 8-78 8-316 8-293 5-84 4-426 4-123	<ul> <li>Bearing Oil Tubes (AVIM), No 4 a 5 - See No 4 and 5 Bearing O Tubes (AVIM)</li> <li>Bearing Package (AVIM), Check Seal Leakage (No 2) - See Check for Seal Leakage (No 2) - See Check for Seal Leakage (No 2) Bearing Package) (AVIM)</li> <li>Bearing Package Seals (AVIM), I 4 and 5 - See No 4 and 5 Bearing Package Seals (AVIM)</li> <li>Bearing Pressure Oil Strainer, No - See No. 2 Bearing Pressure</li> </ul>	iil for 2 No. 1) 5. 2	
Quality Control (QA/QC) <b>B</b>			Strainer Bearing Pressure Oil Strainer, Service No.2 - See Service No.	o 2	
Backlash Check - Overspeed Drive and Outlet Cover Assembly Band Closure Check, Bleed - See Bleed Band Closure Check		5-90	Bearing Pressure Oil Strainer Blades, Compressor Rotor - See Compressor Rotor Blades		
Band, Compressor Bleed - See Compressor Bleed Band			Bleed Band, Compressor - See Compressor Bleed Band		
Bar Assemblies, Left- and Right-Hand Bus - See Left- and. Right-Hand Bus Bar Assemblies Bearing (AVIM), Check for Seal Leakage (No. 4 and 5) - See			Bleed Band Does Not Function F Expanded Instructions Boost Pump Assembly, Fuel - Se Fuel Boost Pump Assembly	G-62	G-144
Check for Seal Leakage (No. 4 and 5 Bearing) (AVIM) Bearing Filter, No. 4 and 5 - See No 4 and 5 Bearing Filter	D		Bracket, Main Fuel Filter and - Se Main Fuel Filter and Bracket	ee	
Bearing Oil Filter, Service No. 4 and 5 - See Service No. 4 and 5 Bearing Oil Filter	d		Bus Bar Assemblies, Left- and Right-Hand - See Left- and Right-Hand Bus Bar Assembli	ies	

	Para/			Para/	
Subject	Task	Page	Subject	Task	Page
С			Characteristics, Capabilities, and		
Cable Assembly, Ignition Coil and -	_		Features, Equipment – see		
See Ignition Coil and Cable			Equipment characteristics,		
Assembly			Capabilities, and Features		
Capabilities, and Features,			Chart, Maintenance Allocation – S	ee	
Equipment Caharacteristics – Se	ee		Maintenance Allocation Chart		
Equipment characteristics,					
Capabilities and Features			Check, Bleed Band Closure – See	)	
			Bleed Band Closure Check		
Care, and Handling, Safety – See				4 75	4 000
Safety, Care, and Handling			Check Engine Coastdown Time	. 1–75	1–323
Case (AVIM), Second Turbine			Check Flight Idle – See		
Nozzle, Spacer, and Bumper –			Flight Idle Check		
See Second Turbine Nozzle,					
Spacer, Case and Bumper (AVIN	/1)		Check for Seal Leakage (No. 2 Be	-	
	/		Package) (AVIM)	. 1–81	1–348.3
Chafing, Denting, Scratching,			Chook for Sool Lookago (No. 4 op	d 5	
Goging, or Wear, Determine			Check for Seal Leakage (No. 4 an Bearing) (AVIM)		1–356
Depth of Damage from – See				. 1 02	1 000
Determine Depth of Damage fro	m		Check for Static Oil Leakage	. 1–83	1–367
Chafing, Denting, Scratching,			5		
Gouging, or Wear			Check Overspeed Drive and Outle	•t	
			Cover Assembly, Backlash		
Chafing Sleeve on Hoses, Install					
Spiral – See Install Spiral Chafin	g		Check Valve (Air Diffuser to Interst	tage	
Sleeve on Hoses			Air–Bleed Actuator)	0.74	0 410
			Clean Install		2–412 2–413
Chamber Housing (AVIM),			Remove		2–413 2–410
Combustion – See Combustion	Chamber			2 70	2 410
Housing (AVIM)			Check Valve (Water Wash Tee to I	nterstage	
			Air–Bleed Actuator PM Inlet)	0	
Chamber Liner (AVIM), Combustio	n		Clean	. 2–80	2–423
– See Combustion Chamber Lin			Install	. 2–81	2–424
	( )		Remove	. 2–79	2–421
Change from MIL-L-7808 to			Check Valve (Water Wash Tee to I	nterstage	
MIL-L-23699 Lubricating Oil	. 1–70	1–313	Air–Bleed Actuator P3 Inlet)	0	
			Clean	. 2–77	2–418
Change from MIL–L–23699 to			Install	. 2–78	2–419
MIL-I-7807 Lubricating Oil	. 1–71	1–315	Remove	. 2–76	2–416

Para/ Subject Task	Page	Para/ Subject Task	Page
Chip Detector		Inlet Housing Cover Assembly 2–45	2–348
Clean 8–110	8–276	In–Line Fuel Filter Assembly 6–37	6–126
Contamination 1–80.1	1–348	Interstage Air–Bleed Actuator 2–3	2–13
Inspect 8–111	8–277	Left– and Right–Hand Bus Bar	
Install 8–113	8–280	Assemblies 4–8	4–32
Remove 8-109	8–273	Left– and Right–Hand Fuel Manifold	
Test 8–112	8–279	Assemblies6–16 Main Fuel Filter and Bracket6–30	6–60 6–109
Clean		Main Oil pump, Speed Pickup	
Accessory Electrical harness		Drive Assembly, Scavenge Oil	
Assembly 7–29	7–143	Screen and Related Parts 8–3	8–14
Accessory Gearbox Assembly 5-3	5–17	No. 2 Bearing Pressure Oil	
Air Inlet Housing Assembly 2–49	2–355	Connector 8–94	8–245
Anti–Icing Gallery Cover 2–15	2–47	No. 2 Bearing Pressure Oil	
Chip Detector	8–276	Strainer	8–249
Combustion Chamber Housing . 3–1	3–171	No. 4 and 5 Bearing Filter 8–102	8–259
Combustion Chamber Liner 3–16	3–145	No. 4 and 4 Bearing Oil Tubes	
Combustion Chamber Vane		(AVIM)	4–229
Assembly 3–13	3–135	No. 4 and 5 Bearing Package	
Compressor Bleed Band 2–11	2–40	(AVIM)	4–177
Compressor Housing 2–22	2–120	Oil Cooler Assmebly	8–42
Compressor Rotor Blades 2–34	2–254	Oil Drain Cock8–106	8–269
Dual Chip Detector	8–96	Oil Filler Assembly and Oil Filler	
Fireshield Assembly 4–13	4–58	Strainer	8–73
Fireshield Section 4–17	4–70	Oil Filter Cover Assembly and	
First Turbine Disc Assembly 4–64	4–369	Oil Filter Element	8–85
Flow Divider and Bracket 6–46	6–146	Oil Level Float Assembly	8–313
Flow Programming Valve 8–20	8–56	Oil Level Indicator	8–289
Fourth Stage Power Turbine		Oil Temperature Transmitter 8–24	8–65
Nozzle	4–249	Output Shaft Seal and Housing	0.000
Fourth Stage Power Turbine		Assembly2–40 Overspeed Drive and Outlet Cover	2–328
Rotor	4–138	Assembly	5–80
Fuel Boost Pump Assembly 6–9	6–37	Overspeed Solenoid Valve 6–53	5–80 6–161
Fuel Check Valve 6–50	6–155	Pressurizing Valve 6–42	6–101 6–137
Fuel Drain Valve	3–5	Primary Electrical Harness	0-107
Gas Producer Speed Pickup 8–8	8–29	Assembly	7–85
Hydromechanical Assembly		Primer Tube Assembly	6-92
(HMA) 6–2	6–12	PT Speed Pickup	5–43
Ignition Coil and Cable Assembly 7–2	7–26	PT Speed Pickup Drive Assembly 5–14	5–51
Ignition Exciter	7–75	Reversionary Electrical Harness	
		Assembly	7–115

Subject	Para/ Task	Page
Second Turbine Disc Assembly Second Turbine Nozzle, Spacer,	4-55	4-298
Case, and Bumper Spark Igniters Start Fuel Nozzles Starter Drive Assembly Starter Gearbox Filter Starting Fuel Solenoid Valve Stator Vane Assemblies Tailpipe Assembly	7-7 6-25 5-19 8-90 6-58 2-28	4-320 7-62 6-99 5-61 8-239 6-170 2-189 4-422
Thermocouple Harness Assemblies Thermocouple Jumper Lead Third Stage Power Turbine Rotor.	4-21 4-2	4-85 4-8 4-279
Third Turbine Nozzle and Suppor T1 Temperature Sensor Torquemeter Sensor	2-53	4-113 2-361 9-6
Clean, Inspect and Repair Splines and Gears	1-109	1-574
Combustion Chamber Housing Clean Inspect Repair	3-20	3-171 3-173 3-175
Combustion Chamber Liner Clean Inspect Repair	3-17	3-145 3-146 3-158
Combustion Chamber Vane Assemb Clean Inspect Repair	3-13 3-14	3-135 3-136 3-143
Combustion Section	1-15	1-21
Combustion Section Assemble	3-12	3-134

Subject	Para/ Task	Page
Assemble (AVIM) Disassemble Disassemble (AVIM)	3-11	3-123 3-133 3-117
Combustion Section and Power Tu Assemble (AVIM) Disassemble (AVIM) Install (AVIM) Remove (AVIM) Common Tools and Equipment	3-7 3-6 3-8 3-5	3-62 3-30 3-96 3-9 1-47
Components, Location and Description of Major - See Location and Description of Maj Components	pr	
Compressor Bleed Band Clean Inspect Install Remove	2-12 2-14	2-40 2-41 2-43 2-37
Repair	2-13	2-42
Compressor Bleed Band Operatior Abnormal- Primary Mode		1-217
Compressor Bleed Band Opera Abnormal - Reversionary Mode		1-221
Compressor Housing Clean Inspect Install (Upper) Install (Lower) Remove (Upper) Remove (Lower) Repair	2-23 2-25 2-26 2-20 2-21	2-120 2-121 2-124 2-154 2-63 2-94 2-122
Compressor Rotor Blades Clean Inspect		2-254 2-256

Subject	Para/ Task	Page	
Install Remove Repair	2-33	2-291 2-235 2-286	Cool C Cove A
Compressor Section	1-14	1-16	
Compressor Surges		1-214	Cove H C
Compressor, Wash - See Wash Compressor			U
Container, Inspect Pressurized Shipping and Storage - See	and		Data D
Inspect Pressurized Shipping Storage Container	) and		Data S
Container, Install Engine Into Shipping and Storage - See			D
Install Engine Into Shipping a Storage Container	and		Dent W D
Container, Mark Shipping and Storage - See Mark Shipping Storage Container	l and		D C G
Container, Prepare and Inspect Storage and Shipping - See Prepare and Inspect Storage Shipping Container			Dept D W D D W
Container, Remove Engine from Shipping and Storage - See			
Remove Engine from Shippir and Storage Container Data	ig		See
Contaminated Fuel System, Ins See Inspect Contaminated F System			Desc Lo D
Contaminated Oil System, Inspe See Inspect Contaminated C System			Desi N N D
Control (QA/QC), Quality Assura Quality - See Quality Assura Quality Control (QA/QC)			Dest E

Subject	Para/ Task	Page
Cooler Assembly, Oil - See Oil Cooler Assembly Cover, Anti-Icing Air Gallery - See Anti-Icing Air Gallery Cover		
Cover Assembly (AVIM), Inlet Housing - See Inlet Housing Cover Assembly (AVIM)		
D		
Data, Equipment - See Equipment Data		
Data, Equipment Description and - See Equipment Description and Data		
Denting, Scratching, Gouging, or Wear, Determine Depth of Damage from Chafing - See Determine Depth of Damage from Chafing, Denting; Scratching, Gouging, or Wear	m	
Depth of Damage from Chafing, Denting, Scratching, Gouging, or Wear, Determine - See Determin Depth of Damage from Chafing, Denting, Scratching, Gouging, or Wear	ne	
See Equipment Description and		
Description of Major Components, Location and - See Location and Description of Major Component		

- Designations, Official Nomenclature, Names and - See Official Nomenclatures, Names, and Designations
- Destruction of Army Materiel to Prevent Enemy Use ......1-3 1-2

Subject Determine Depth of Damage from Chafing, Denting, Scratching,	Para/ Task	Page
Gouging, or wear	1-111	1-587
Diagrams	G-11	G-9
Diagrams	G-14	G-11
Diffuser Assembly (AVIM), Air - See Air Diffuser Assembly (AVIM)		
Directional References	1-10	1-10
Disassemble		
Accessory Gearbox Assembly (AVIM) Combustion Section (AVIM) Combustion Section and		5-12 3-117
Power Turbine	3-6	3-30
Combustion Section Dual Chip Detector In-Line Fuel Filter Assembly Interstage Air-Bleed Actuator Main Fuel Filter and Bracket Main Oil Pump, Speed Pickup Drive Assembly, Scavenge Oil Screen, and Related Parts	8-40 6-36 2-2 6-29	3-133 8-94 6-124 2-11 6-106 8-13
Oil Cooler Assembly Oil Filler Assembly and Oil Filler		8-13 8-40
Strainer Oil Level Float Assembly Oil Level Indicator Overspeed Drive and Outlet Cover Assembly Tailpipe Assembly Third Turbine Nozzle and Support	8-123 8-115 5-24 4-71	8-71 8-312 8-286 5-77 4-419 4-111

Disc Assembly (AVIM), First Turbine - See First Turbine Disc Assembly (AVIM)

Disc Assembly (AVIM), Second Turbine - See Second Turbine Disc Assembly (AVIM)

	Para/	
Subject Disc Assembly (AVIM), First and Second Turbine Disc Assembly, Place in Service Field Replace- ment - See Place in Service Field Replacement First and Second Turbine Disc Assembly	Task	Page
Display of Fault Codes	G-7	G-4
Divider and Bracket, Flow - See Flow Divider and Bracket		
Drain Cock, Oil - See Oil Drain Cock		
Drain Engine Oil System	1-69	1-303
Drive Assembly, Starter- See Starter Drive Assembly		
Dropped Engine, Inspect - See Inspect Dropped Engine		
Dual Chip Detector Assemble Clean Disassemble Inspect Install Remove Repair Test	8-41 8-40 8-42 8-46 8-39 8-43	8-100 8-96 8-94 8-97 8-102 8-91 8-99 8-101
Dual Chip Detector, Service - See Service Dual Chip Detector E		
Electrical and Ignition System	1-19	1-36
Element, Oil Filter Cover Assembly and Oil Filter - See Oil Filter Cover Assembly and Oil Filter Element		

Element, Service Oil Filter Cover Assembly and Oil Filter - See

Subject	Para/ Task	Page	Subject	Para/ Task	Page
Service Oil Filter Cover Assembly and Oil Filter Element			F		
Enemy Use, Destruction of Army Material to Prevent - See			Fault Code Al, Q Sensor Expanded Instructions	. G-26	G-49
Destruction of Army Material to Prevent Enemy Use			Fault Code A2, N2 Set Potentiometer Expanded Instructions	. G-27	G-52
Engine	1-13	1-13	Fault Code A3, Collective Pitch Ang LVDT Expanded Instructions		G-56
Engine Does Not Start - Ignition Not Firing	1-36	1-129	Fault Code A4, NR Sensor Expanded Instructions	G-29	G-59
Engine Out Indicator (E0I) Does Not Illuminate During Normal Shutdown Expanded Instructions	G-63	G-146	Fault Code A5, ECL Resolver Expanded Instructions	. G-30	G-62
Engine Out Indicator (EOI) Is Always Illuminated Expanded Instructions	G-69	G-164	Fault Code A6, Airframe Emergency <u>28V DC</u> Expanded Instructions	. G-31	G-65
Equipment Characteristics, Capabilities, and Features	1-8	1-3	Fault Code A7 (Or No Display), Airfram <u>+28V D</u> C Supply Expanded Instructions		G-67
Equipment, Common Tools and - See Common Tools and Equipment			Fault Code BC, <u>400 Hz</u> Resolver Reference Expanded Instructions	. G-54	G-122
Equipment Data	1-11	1-11	Fault Code B2, N1B Sensor Expanded Instructions	. G-47	G-104
Erratic or Oscillating N1 Speed While Engine is Governing on N1 - Primary Mode	1-49	1-224	Fault Code B3, N2B Sensor Expanded Instructions	. G-48	G-107
Erratic or Oscillating N1 Speed While Engine is Governing on N1 - Reversionary Mode	1-50	1-240	Fault Code B4, T4.5 Sensor Expanded Instructions	. G-49	G-110
Erratic or Oscillating N2, PTIT, Torque, or N1 While Governing on N2			Fault Code B5, Collective Pitch Angle LVDT Expanded Instructions	. G-50	G-113
-		. 200	Fault Code B6, ECL Resolver Expande Instructions		G-116
Excessive Chips Found on Oil Filter Element and/or Chip Detectors	1-61	1-281	Fault Code 7, PLA Potentiometer Expanded Instructions	G-52	G-120
Exciter Ignition - See Ignition Exciter			Fault Code CF, Loss Of Load Share		
Expendable Supplies And Material List		C-1	Signals Expanded Instructions	. G-46	G-101

Task Page

Para/

# **INDEX (Continued)**

Subject

Subject	Para/ Task	Page
Fault Code C9, N1 B (0) Sensor Signals From Other DECU Expanded Instructions	G-45	G-99
Fault Code De, 400 Hz Resolver Reference Expanded Instructions	G-37	G-75
Fault Code D1, P3 Transducer Expanded Instructions	G-35	G-71
Fault Code D2, P1 Transducer Expanded Instructions	G-36	G-72
Fault Code E1, T4.5 Sensor Expanded Instructions	G-38	G-79
Fault Code E2, T1 Sensor Expanded Instructions	G-39	G-83
Fault Code E3, N2A Sensor Expanded Instructions	G-40	G-87
Fault Code E4, N2B Sensor Expanded Instructions	G-41	G-90
Fault Code E5, N2A/N2B Sensor Expanded Instructions	G-42	G-93
Fault Code FB, Reversionary Step Count Expanded Instructions	G-25	G-46
Fault Code FA, Start Fuel Solenoid Expanded Instructions	G-24	G-43
Fault Code F1, N1A Sensor Expanded Instructions		G-14
Fault Code F2, N1 B Sensor Expanded Instructions	G-16	G-17
Fault Code F3, N1A/N1B Difference Expanded Instructions	G-17	G-20
Fault Code F4, MV Potentiometer Expanded Instructions	G-18	G-23

Fault Code F5 Wf/Stepcount Difference Expanded Instructions G-19	G-27
Fault Code F6, PLA Potentiometer Expanded Instructions G-20	G-30
Fault Code F7, Bleed Valve Solenoid Expanded Instructions G-21	G-34
Fault Code F8, Primary/Reversionary Solenoid Expanded Instructions G-22	G-37
Fault Code F9, Alternator Expanded InstructionsG-23	G-40
Fault Codes B9, BA, BB, Internal DECU Faults Expanded Instructions G-53	G-121
Fault Codes C1-C3, C5-C8, Communication Line Faults Expanded InstructionsG-43	G-95
Fault Codes C4, Communication Line Fault Q (0) Signal Expanded InstructionsG-44	G-97
Fault Codes DO, D3, D6, DA, DB, DD Internal DECU Faults Expanded InstructionsG-33	G-69
Fault Codes D4, D5, D7, D8, D9, DC, DF Internal DECU Faults Expanded InstructionsG-34	G-69
Fault Codes Not Defined In Table 1 Expanded Instructions G-72	G-170
Fault Code 10-1F, Internal DECU Faults Expanded Instructions G-55	G-123
Fault IsolationG-6	G-3
Fault Trees G-13	G-11
Features, Equipment Characteristics, Capabilities, and - See Equipment Characteristics, Capabilities, and Features	

Subject	Para/ Task	Page	Subject	Para/ Task	Page
Field Replacement First and Second Turbin Disc Assembly Place in Service Field Replacement Fir and Second Turbine Disc Assembly (AVIM)	st	4-407	Filter, Service No. 4 and 5 Bearing Oil Filter - See Service No. 4 and 5 Bearing Oil Filter Fireshield Assembly		
<ul> <li>Filler Assembly and Oil Filler Strainer, Oil - See Oil Filler Assembly and Oil Filler Strainer</li> <li>Filler Strainer, Oil Filler Assembly and Oil - See Oil Filler Assembly and Oil</li> </ul>			Clean Inspect Install Remove	4-14 4-15	4-58 4-59 4-60 4-55
Filler Strainer			Fireshield Section		
Filler Strainer, Service Oil - See Service Oil Filler Strainer Filter and Bracket, Main Fuel - See Main Fuel Filter and Bracket			Clean Inspect Install Remove	4-18 4-19	4-70 4-71 4-72 4-65
Filter Assembly, In-Line Fuel - See In-Line Fuel Filter Assembly Filer Cover Assembly and Oil Filter Element, Oil - See Oil Filter Cover Assembly and Oil Filter Element			First and Second Turbine Disc Assembly (AVIM), Place in Service Field Replacement - See Place in Service Field Replacement Fist and Second Turbine Disc Assembly (AVIM)	1	
<ul> <li>Filter Cover Assembly and Oil Filter Element, Service Oil - See Service Oil Filter Cover Assembly and Oil Filter Element</li> <li>Filter Element, Oil Filter Cover Assembly and Oil - See Oil Filter Cover Assembly and Oil Filter</li> </ul>			First Turbine Disc Assembly Clean Inspect Install Remove Repair	4-65 4-67 4-63	4-369 4-370 4-373 4-361 4-372
Element Filter Element, Service Oil Filter Cover Assembly and Oil - See Service Oil Filter Cover Assembly and Oil Filter Element			First Turbine Rotor Case Repair		4-389 1-257
Filter, No. 4 and 5 Bearing - See No. 4 and 5 Bearing Filter			Float Assembly (AVIM), Oil Level - See Oil Level Float Assembly (AVIM)		

Subject	Para/ Task	Page	Subject
Flow Divider and Bracket			Install
Clean	6-46	6-146	Remove
Inspect			Repair
Install			
Remove			Fuel Boost Pump Assemb
		0.10	for Storage or Shipment
Flow Programming Valve			Package
lien i regianning varie			Preserve
Clean	8-20	8-56	
Inspect			Fuel Check Valve
Install			Clean
Remove			Install
	0 10	0.00	Remove
Foreign Object Ingestion, Inspect			Remove
Engine after - See Inspect Engine			Fuel Drain Valve
after Foreign Object Ingestion			
alter i breigh object ingestion			Clean
Forms, Records and Reports, Maintenance	<b>`</b>		Inspect
- See Maintenance	5		Install
Forms, Records and Reports			Remove
Forms, Records and Reports			Remove
Fourth Stage Power Turbine Nozzle			Fuel Filter and Bracket, Main
Clean	4-47	4-249	Main Fuel Filter and Brack
Inspect	4-48	4-250	Fuel Filter Assembly, In-Line-
Install	4-50	4-259	In-Line Fuel Filter Assemb
Repair	4-49	4-257	
			Fuel Lines - See Hose Assem
Fourth Stage Power Turbine Rotor			and Tube Assembly
Clean	4-34	4-138	Fuel Manifold Assemblies - Se
Inspect	4-35	4-139	Left- and Right-Hand Fue
Install	4-36	4-143	Manifold Assemblies
Remove	4-33	4-131	Fuel Nozzles, Start - See Star
			Nozzles
F/R Lamp Does Not Illuminate When			
Reversion Is Selected Expanded			Fuel Solenoid Valve, Starting
Instructions	G-70	G-166	Starting Fuel Solenoid Va
			-
F/R Lamp Is Illuminated When Primary Is			Fuel System
Selected Expanded Instructions	G-71	G-168	
			Fuel System, Inspect Contam
Fuel Boost Pump Assembly			See Inspect Contaminate
	6-0	6-37	System
Clean	0-3	0.01	Functional Groups (Columns

Subject	Para/ Task	Page
Install Remove Repair	6-8	6-42 6-35 6-39
Fuel Boost Pump Assembly - Prepa for Storage or Shipment Package Preserve	. 6-14	6-48 6-47
uel Check Valve Clean Install Remove	. 6-51	6-155 6-156 6-153
uel Drain Valve		
Clean Inspect Install Remove	3-3 3-4	3-5 3-6 3-7 3-3
uel Filter and Bracket, Main - See Main Fuel Filter and Bracket uel Filter Assembly, In-Line-See In-Line Fuel Filter Assembly		
Tuel Lines - See Hose Assembly and Tube Assembly Tuel Manifold Assemblies - See Left- and Right-Hand Fuel Manifold Assemblies Tuel Nozzles, Start - See Start Fuel Nozzles		
uel Solenoid Valve, Starting - See Starting Fuel Solenoid Valve		
uel System	. 1-18	1-32
uel System, Inspect Contaminated - See Inspect Contaminated Fuel System		
unctional Groups (Columns 1 And 2)	B-4	B-5

Subject	Para/ Task	Page	Subject	Para/ Task	Page
G			н		
G-Loads, Inspect Engine Subjected to Excessive - See Inspect			Handling, Safety, Care and - See Safety, Care, and Handling		
Engine Subjected to Excessive G-Loads			Harness Assembly, Accessory Electrical - See Accessory Electrical Harness Assembly		
Gallery Cover, Anti-icing Air - See Anti-Icing Air Gallery Cover			Harness Assembly, Primary Electrical - See Primary Electrical Harness Assembly		
Gas Producer Speed Pickup Clean	8-8	8-29	Harness Assembly, Reversionary Electrical - See Reversionary Electrical Harness Assembly		
Inspect Install	8-11	8-32	Harness Assemblies (AVIM), Thermocouple - See		
Remove Repair			Thermocouple Harness Assemblies (AVIM)		
			High Fuel Consumption	G-5	G-2
Gears, Clean, Inspect and Repair Splines and - See Clean, Inspect and Repair Splines and Gears			High Oil Consumption (More Than 2 Quarts Per Hour)	1-63	1-285
			High Oil Temperature Indication	1-58	1-277
Gearbox Assembly, Accessory - See Accessory Gearbox Assembly			High Oil Temperature Indication - Visual Check	1-57	1-276
General Information	1-1	1-1	High or Erratic PTIT	1-62	1-282
			Hoisting		1-111
Glossary	Glossa	ıry-1	Hose Assembly (Accessory Gearbox Assembly to Oil Cooler)	0.50	0.447
Ground Idle Speed is Incorrect -			Install Remove		8-117 8-115
Primary Mode	1-42	1-164	Hose Assembly (Air Diffuser Assembly HMA)	to	
Ground Idle Speed is Incorrect - Reversionary Mode	1-43	1-177	Install Remove		2-390 2-388

Subject	Para/ Task	Page	Para/ Subject Task	Page
Hose Assembly (Check Valve to Inter- stage Air-Bleed Actuator P3 Inlet			Install 6-73	6-206
Install Remove			Remove6-72	6-202
Hose Assembly (Compressor Housing to Inlet Housing)			Hose Assembly (Fuel Flow Divider to Fuel	
Install		2-383	Check Valve)	
Remove			Install	6-214
Hose Assembly (Dual Chip Detector to Accessory Gearbox Assembly)		2 07 1	Remove	6-210
Install	8-58	8-132		
Remove	8-57	8-127		
Hose Assembly (Dual Chip Detector to Accessory Gearbox Collector)			Hose Assembly (Fuel Flow Divider Left Side Primary to Manifold Assembly)	
Install	8-60	8-138	Install	6-220
Remove				0-220
Remove	0-00	0-100	Remove	6-218
Hose Assembly (Dual Chip Detector to Air Diffuser Assembly	0.00	0.440		0-210
Install Remove			Hose Assembly (Fuel Flow Divider Left Side Secondary to Manifold Assembly)	
Hose Assembly (Flow Programming Valve to Inflight Filling Port Tee)			Install	6-228
Install Remove			Remove	6-226
Hose Assembly (Flow Programming Valve Tee to Inlet Housing)			Hose Assembly (Fuel Flow Divider Right Side Primary to Manifold Assembly)	
3,			Install6-79	6-224
Remove	8-47	8-107		
Install	8-48	8-109	Remove6-78	6-222
Hose Assembly (Flow Programming Valve Tee to No. 2 Bearing Pressure Connector)				
Instal			Hose Assembly (Fuel Flow Divider Right Side Secondary to Manifold Assembly)	
Remove	ช-วว	0-123	Install 6-83	6-233
Hose Assembly (Fuel Boost Pump to Main Fuel Filter)			Remove6-82	6-230

Para/

Subject	Para/ Task	Page
Hose Assembly (HMA to Aircraft Bulk- head) Remove	2-71	2-404
Install		
Hose Assembly (HMA to Oil Cooler) Install Remove		6-186 6-183
Hose Assembly (HMA to Starting Fuel Solenoid Valve) Install	6-87	6-245
Remove		
Hose Assembly (Hose Assembly to Primer	0-00	0-242
Tube Assembly (Tose Assembly to Philler Tube Assembly) Install	6-91	6-261
Remove	6-90	6-256
Hose Assembly (In-Line Fuel Filter to Overspeed Solenoid Valve)		
Install	6-67	6-192
Remove	6-66	6-190
Hose Assembly (Interstage Air-Bleed Actuator to HMA Install	2-58	2-370
Remove	2-57	2-367
Hose Assembly (Inlet Housing to Oil Scavenge Tee)		
Install Remove		
Hose Assembly (Inlet Housing to Oil Drain Cock) Install Remove		
Hose Assembly (Main Fuel Filter to HMA) Install Remove		

!	Subject	Task	Page
	Hose Assembly (Main Oil Pump to Dual Chip Detector)		
1 7	Install Remove		8-146 8-144
6	Hose Assembly (Oil Cooler to Flow Programming Valve)	0.54	0 4 0 4
5	Install Remove		8-121 8-119
5	Hose Assembly (Oil Cooler to In-Line Fu		6 1 9 0
2	Install	. 0-03	6-180
	Remove	. 6-62	6-177
	Hose Assembly (Overspeed Solenoid Valve to Pressurizing Valve)		
6	Install	. 6-69	6-196
	Remove	. 6-68	6-194
0	Hose Assembly (Pressure Connector to No. 4 and 5 Bearing Filter)		
<u>-</u>	Install	. 8-76	8-190
,	Remove Hose Assembly (Pressurizing Valve to Fuel Flow Divider Return Tee)	. 8-75	8-179
) 7	Install	-	6-200 6-198
	Hose Assembly (Starter Drive to Oil Fille	er)	
3	Install Remove		8-213 8-211
	Hose Assembly (Starter Drive to Tube a Hose Assembly)		
3	Install Remove		8-217 8-215
,	Hose Assembly (Starting Fuel Solenoid Valve to Tube Assembly)		
) 5	Install Remove		6-252 6-248

Subject	Para/ Task	Page	Para/ Subject Task	Page
Hose Assembly (Water Wash Tee Check Valve to Interstage Air- Bleed Actuator PM Inlet) Install Remove	2-70		Hydromechanical Assembly (HMA) - Preparation for Storage or Shipment Package	6-32 6-27
Hose Assembly (Water Wash Tee Check Valve to Interstage Air- Bleed Actuator P3 Inlet) Install	2-68		Identification, Engine - See Engine Identification Igniters, Spark - See Spark Igniters	
Hoses, Install Spiral Chafing Sleeve on - See Install Spiral Chafing Sleeve on Hoses			Ignition Coil and Cable Assembly Clean	7-26 7-28 7-36 7-3 7-31
Hot End (AVIM), Inspect Engine - See Inspect Engine Hot End (AVIM)			Ignition Exciter	
Housing (AVIM), Combustion Chamber - See Combustion Chamber Housing (AVIM)			Clean	7-75 7-76 7-78
Housing, Compressor- See Compressor Housing			Remove7-11 Repair7-14	7-71 7-77
Housing Cover Assembly (AVIM), Inlet - See Inlet Housing Cover Assembly (AVIM)			Ignition Relay Does Not Function Expanded Instructions G-61	G-142
Hot Hung or Torching Starts - Primary Mode	1-40	1-148	Ignition System, Electrical and - See Electrical and Ignition System	
Hot Hung or Torching Start - Reversionary Mode			Illustrated List of Manufactured Items Improvement Recommendations (EIR), Reporting Equipment - See Reporting Equipment	E-i
Hydromechanical Assembly (HMA) Clean Inspect Install Remove Repair	6-3 6-5 6-1	6-13 6-17 6-5	Improvement Recommendations (EIR) Index, Symptom - See Symptom Index Indicator, Oil Level - See Oil Level Indicator	

Subject	Para/ Task	Page	Para Subject Tasl		age
Information, General - See General			Dual Chip Detector 8-42		-97
Information			Fireshield Assembly 4-14		-59
			Fireshield Section4-18	3 4-	-71
Ingestion, Inspect Engine After Foreign Object - See Inspect			First Turbing Diss Assembly 464		-370
Engine After Foreign Object			First Turbine Disc Assembly		-370 -147
Ingestion			Flow Programming Valve		-57
ingeotion			Fourth Stage Power Turbine		01
Inlet Housing Assembly (AVIM), Air -			Nozzle	3 4-	-250
See Air Inlet Housing Assembly					
(AVIM)			Fourth Stage Power Turbine		
			Rotor 4-35		-139
Inlet Housing Cover Assembly	0.45	0.040	Fuel Boost Pump Assembly		-38
Clean			Fuel Drain Valve		
Inspect Install			Gas Producer Speed Pickup	9 8-	-30
IIIStali	2-40	2-351	(HMA)	а 6.	-13
Remove	2-44	2-345	Ignition Coil and Cable Assembly		-28
Repair				, ,	20
· · · · · ·			Ignition Exciter7-13	3 7-	-76
			Inlet Housing Cover Assembly	6 2-	-349
In-Line Fuel Filter Assembly					
Assemble	6-39	6-128	In-Line Fuel Filter Assembly 6-38		-127
			Interstage Air-Bleed Actuator2-4	2-	-14
Clean	6-37	6-126	Laft and Dight Lland Due Dag		
Disassemble	6 26	6 1 2 4	Left- and Right-Hand Bus Bar Assemblies	<u>م</u>	-33
Inspect			Main Fuel Filter and Bracket		-33
Install			Main Oil Pump, Speed Pickup Drive	0-	110
Remove			Assembly, Scavenge Oil Screen,		
			and Related Parts8-4	l 8-	-16
Inspect			No. 2 Bearing Pressure Oil		
Accessory Electrical Harness			Connector8-9	5 8-	-246
Assembly	7-30	7-144	No. 2 Bearing Pressure Oil		
Accessory Gearbox Assembly			Strainer		-250
Air Inlet Housing Assembly			No. 4 and 5 Bearing Filter		-260
Anti-Icing Air Gallery Cover			Oil Cooler Assembly 8-15 Left- and Right-Hand Fuel Mani-	0 8-	-43
	0-111	0-211	fold Assemblies	7 6-	-61
Combustion Chamber Housing	3-20	3-173		Ŭ	01
			Oil Drain Cock8-107	7 8-	-270
Combustion Chamber Liner	3-17	3-146			
			Oil Filler Assembly and Oil Filler		
Combustion Chamber Vane			Strainer8-30	) 8-	-75
Assembly	3-14	3-136			
	~	40 0 44	Oil Filter Cover Assembly and Oil		00
Compressor Bleed Band			Filter Element		-86 -317
Compressor Housing Compressor Rotor Blades			Oil Level Indicator		-314 -290
	Z	00 2-200		0-	200

Subject	Para/ Task	Page
Oil Temperature Transmitter Output Shaft Seal and Housing	8-25	8-66
Assembly Overspeed Drive and Outlet Cover	2-41	2-329
Assembly Overspeed Solenoid Valve		5-81
Pressurizing Valve Primary Electrical Harness As-		6-162 6-138
sembly	7-18	7-87
Primer Tube Assembly	6-22	6-93
PT Speed Pickup		5-44
PT Speed Pickup Drive Assembly	5-15	5-52
Reversionary Electrical Harness	7.04	7 4 4 0
Assembly	7-24	7-116
Second Turbine Disc Assembly Second Turbine Nozzle, Spacer,	4-56	4-299
Case, and Bumper	4-60	4-322
Second Turbine Nozzle, Spacer, Case, and Bumper	7-8	7-63
Start Fuel Nozzles Starter Drive Assembly		6-100 5-62
Starter Gearbox Filter		8-240
Starting Fuel Solenoid Valve	6-59	6-171
Stator Vane Assemblies Tailpipe Assembly		2-190 4-423
Thermocouple Harness Assemblies		4-423 4-86
Thermocouple Jumper Lead	4-3	4-9
Third Stage Power Turbine Rotor	4-52	4-280
Third Turbine Nozzle and Support		4-114
T1 Temperature Sensor Torquemeter Sensor		2-362 9-7
Inspect and Repair Splines and Gears, Clean - See Clean, Inspect and Repair Splines and Gears		
Inspect Contaminated Fuel System	1-79	1-333
Inspect Contaminated Oil System	1-80	1-340

Subject	Para/ Task	Page
Inspect Dropped Engine	1-77	1-327
Inspect Engine After Check Runs Inspect Engine After Compressor		1-376
Stall (Surge)	1-84	1-374
Inspect Engine After Foreign Object Ingestion	1-86	1-377
Inspect Engine After N1 Overspeed (AVIM)	1-73	1-319
Inspect Engine After N2 Overspeed (AVIM)	1-74	1-321
Inspect Engine After Power Turbine Overtorque (AVIM)	1-78	1-331
Inspect Engine Hot End (AVIM)	1-87	1-381
Inspect Engine Subjected to Exces- sive G-Loads	1-76	1-325
Inspect Pressurized Shipping and Storage Container Install	1-25	1-50
Accessory Electrical Harness Assembly	7 22	7-156
Accessory Gearbox Assembly		5-28
Anti-Icing Air Gallery Cover		2-56
Chip Detector		8-280
Power Turbine	3-8	3-96
Compressor Bleed Band		2-43
(Upper) Compressor Housing	2-25	2-124
(Lower) Compressor Housing		2-154
Compressor Rotor Blades		2-291
Dual Chip Detector		8-102
Fireshield Assembly		4-60
Fireshield Section		4-72
First Turbine Disc Assembly		4-373
Flow Divider and Bracket	6-48	6-148

Subject	Para/ Task	Page	Para Subject Task	
Flow Programming Valve	8-22	8-58	Overspeed Drive and Outlet Cover	
Fourth Stage Power Turbine			Assembly 5-29	5-87
Nozzle	4-50	4-259	Overspeed Solenoid Valve 6-56	6-164
Fourth Stage Power Turbine			Pressurizing Valve 6-44	6-139
Rotor			Primary Electrical Harness As-	
Fuel Boost Pump Assembly			sembly7-21	7-105
Fuel Check Valve			Primer Tube Assembly	6-94
Fuel Drain Valve			PT Speed Pickup	5-46
Gas Producer Speed Pickup	8-11	8-32	PT Speed Pickup Drive Assembly 5-17	5-54
Hydromechanical Assembly	C F	6 17	Reversionary Electrical Harness	7 4 9 4
(HMA) Ignition Coil and Cable Assembly			Assembly7-27 Second Turbine Disc Assembly4-57	7-131 4-301
Ignition Exciter			Second Turbine Disc Assembly 4-57 Second Turbine Nozzle, Spacer	4-301
		1-10	Second Turbine Nozzie, Spacer	
Inlet Housing Cover Assembly	2-48	2-351	Case, and Bumper 4-62	4-354
	2 40	2 001	Second Turbine Nozzle, Spacer	+ 00+
In-Line Fuel Filter Assembly	6-40	6-130	Case, and Bumper	7-65
Interstage Air-Bleed Actuator			Start Fuel Nozzles	6-101
Left- and Right-Hand Bus Bar	-	-	Starter Drive Assembly 5-22	5-70
Assemblies	4-11	4-41	Starter Gearbox Filter 8-92	8-241
Left- and Right-Hand Fuel Manifold			Starting Fuel Solenoid Valve 6-61	6-173
Assemblies	6-19	6-68		
Main Fuel Filter and Bracket	6-34	6-118	(First Stage) Stator Vane	
			Assemblies2-31	2-194
Main Oil Pump, Speed Pickup Drive			(Second thru Seventh Stage) Stator	0.045
Assembly, Scavenge Oil Screen,	0.0	0.40	Vane Assemblies	2-215
and Related Parts			Tailpipe Assembly 4-76	4-430
No. 2 Bearing Pressure Oil Connector	0-90	0-247	Thermocouple Harness Assemblies	4-95
No. 2 Bearing Pressure Oil				4-33
Strainer	8-100	8-253		
No. 4 and 5 Bearing Filter			Third Turbine Nozzle and Support 4-32	4-125
rter i and e Bearing i mer inner		0 201	T1 Temperature Sensor	2-364
Oil Cooler Assembly	8-18	8-47		
,			Torquemeter Sensor9-5	9-9
Oil Drain Cock	8-108	8-271	•	
Oil Filler Assembly and Oil Filler			Install Engine Into Shipping and	
Strainer	8-33	8-80	Storage Container 1-104	1-537
Oil Filter Cover Assembly and Oil				
Filter Element			Install Engine Maintenance Sling 1-31	1-112
Oil Level Float Assembly				
Oil Level Indicator	8-120	8-298	Install Engine on Maintenance	
	0.00	0.07	Stand1-29	1-103
Oil Temperature Transmitter	8-26	8-67	la stall Osiani Obstina Obstina	
Output Shaft Seal and Housing	0.40	0 000	Install Spiral Chafing Sleeve on	1 500
Assembly	2-43	2-338	Hoses 1-112	1-592

Subject	Para/ Task	Page	Subject	Para/ Task	Page
Insulation/Voltage Check Expanded			Remove	4-7	4-25
Instructions	G-73	G-172	Test	4-10	4-34
Interstage Air-Bleed Actuator Adjust Assemble			Left- and Right-Hand Fuel Manifold Assemblies Clean		6-60
Clean	-	-	Inspect		6-61
Disassemble			Install		6-68
Inspect Install			Remove Repair		6-49 6-63
Remove				0-10	0-03
Repair Test J Jumper Lead, Thermocouple, See	2-5	2-15	Level Float Assembly (AVIM), Oil - See Oil Level Float Assembly (AVIM) Level Indicator, Oil - See Oil Level Indicator		
Thermocouple Jumper Lead			Limits, Standard Torque - See		
Lead, Thermocouple Jumper- See			Standard Torque Limits Standard Torque Limits Liner (AVIM), Combustion Chamber - See Combustion Chamber Liner		
Thermocouple Jumper Lead			(AVIM)		
Leakage, Check for Static Oil - See Check for Static Oil Leakage			Location and Description of Major Components	1-9	1-5
Leakage (No. 2 Bearing Package) (AVIM), Check for Seal - See Check for Seal Leakage (No. 2 Bearing Package) (AVIM)			Lubricating Oil, Change from MIL-L-7808 to MIL-L-23699 - See Change from MIL-L-7808 to MIL-L-23699 Lubricating Oil		
Leakage (No. 4 and 5 Bearing) (AVIM), Check for Seal - See Check for Seal			Lubricating Oil, Change from MIL-L-23699 to MIL-L-7808 - See Change from MIL-L-23699 to MIL-L-7808 Lubricating Oil		
Leakage (No. 4 and 5 Bearing) (AVIM) Left- and Right-Hand Bus Bar Assemblies			Lubrication System <b>M</b>	1-20	1-40
Left- and Right-Hand Bus Bar Assemblies Clean Inspect Install	4-8 4-9	4-33	Magnesium Alloys, Touch Up Magnesium and - See Touch Up Magnesium and Magnesium Alloys		

Subject	Para/ Task	Page		Para/ Task	Page
Magnesium and Magnesium Alloys, Touch Up - See Touch Up Magnesium and Magnesium Alloys			Maintenance Practices, Standard - See Standard Maintenance Practices		
Main Fuel Filter and Bracket			Maintenance Procedures		1-487
Assemble Clean Disassemble Inspect Install Remove Repair	6-30 6-29 6-31 6-34 6-28	6-109 6-106 6-110 6-118 6-103	Maintenance Sling, Install Engine - See Install Engine Maintenance Sling Maintenance Sling, Remove Engine - See Remove Engine Maintenance Sling Maintenance Stand, Install Engine on - See Install Engine on		
Main Oil Pump, Speed Pickup Drive Assembly, Scavenge Oil Screen, and Related Parts			Maintenance Stand Maintenance Stand, Remove Engine from - See Remove Engine from Maintenance Stand		
Assemble Clean Disassemble Inspect Install	8-3 8-2 8-4	8-14 8-13 8-16	Major Components, Location and Description of - See Location and Description of Major Components Manifold Assemblies - See Left- and Right-Hand Fuel Manifold Assemblies		
Remove	8-1	8-7	Manufactured Items, Illustrated List		
Maintenance Allocation Chart		B-1	of - See Illustrated List of Manufactured Items		
Maintenance Categories And Work Times (Column 4)	B-6	B-6	Mark Shipping and Storage Container	. 1-105	1-558
Maintenance Checks and Services, Preventive - See Preventive Maintenance Checks and			Materials List, Expendable Supplies and - See Expendable Supplies and Materials List		
Services			Minor Servicing	. 1-88	1-431
Maintenance Forms, Records, and Reports			Months, Represerve Engine in Storage Over Six - See Represerve Engine in Storage Over Six Months		
Maintenance Function (Column 3)	B-5	B-6	Moving ECL To Flight Causes Decrease	e In	
Maintenance Functions	B-3	B-3	Engine Power Expanded Instructions	G-68	G-161

	Para/ Task	Page	Para/ Subject Task	Page
Moving ECL To Stop Causes Increase In Engine Power Expanded	0.07	0.457	Clean No. 4 and 5 Bearing Oil Tubes (AVIM)	4-229
InstructionsN	. G-67	G-157	Clean No. 4 and 5 Bearing Package (AVIM)	4-177
Names, and Designations, Official Nomenclature - See Official			Tubes (AVIM 4-44 Inspect No. 4 and 5 Bearing Package	4-230
Nomenclature, Names and Designations			(AVIM)4-39 Install No. 4 and 5 Bearing Oil	4-178
No Beeper Switch Response In Reversion Expanded Instructions	G-65	G-152	Tubes (AVIM)4-45 Install No. 4 and 5 Bearing Package Seals (AVIM)4-40	4-231 4-179
No Lightoff or Lean Hung Start -			Pressure Test No. 4 and 5 Bearing Oil Tubes and Bearing Package	1 170
Reversionary Mode	. 1-39	1-146	(AVIM) 4-41 Remove	4-218 4-247
No Lightoff or Lean Hung Start - Visual Check	1-37	1-132	Remove No. 4 and 5 Bearing Oil Tubes (AVIM)4-42 Remove No. 4 and 5 Bearing Package	4-226
No Observed Engine Speed Reduction During Overspeed Test Expanded			Seals (AVIM)4-37	4-165
Instructions No. 2 Bearing Pressure Oil Connector Clean			N2 Overspeed With No Load Loss 1-64 N2 Overspeed System Test Failure 1-65 Nomenclature, Names and	1-286 1-289
Inspect			Designations, Official - See Official Nomenclature, Names,	
Install Remove			and Designations	
No. 2 Bearing Pressure Oil Strainer			Nozzle and Support (AVIM), Third Turbine - See Third Turbine Nozzle and Support (AVIM)	
Clean Inspect Install	8-99	8-250	Nozzle (AVIM), First Turbine - See First Turbine Nozzle (AVIM)	
Remove			Nozzle (AVIM), Fourth Stage Power Turbine - See Fourth Stage	
No. 4 and 5 Bearing Filter Clean Inspect			Power Turbine Nozzle (AVIM) Nozzle, Spacer, and Case (AVIM), Second Turbine - See Second	
Install	8-104	8-261	Turbine Nozzle, Spacer, Case and Bumper (AVIM)	
Remove No. 4 and 5 Bearing Package	8-101	8-255	Nozzles, Start Fuel - See Start Fuel Nozzles	

Para Subject Tas		Page	Para/ Subject Task	Page
	n	i age		i age
0			Repair 8-37	8-87
			Oil Filter, Service No. 4 and 5	
Object Ingestion, Inspect Engine after Foreign - See Inspect			Bearing - See Service No. 4 and 5 Bearing Oil Filter	
Engine after Foreign Object Ingestion			Oil Leakage, Check for Static - See	
Official Nomenclature, Names and			Check for Static Oil Leakage	
Designations	-6	1-2	Oil Level Float Assembly	
			Assemble	8-316
Oil Cooler Assembly Assemble	17	0 15	Clean	8-313
Clean8-			Inspect	8-312 8-314
Disassemble8-			Inspect	8-314 8-318
Inspect			Remove	8-309
Install8-			Repair	8-315
Remove	-	-		0 010
Repair 8-*			Oil Level Indicator	
	10	0	Adjust	8-303
Oil Drain Cock			Assemble 8-119	8-293
			Clean	8-289
Clean 8-10	06	8-269	Disassemble	8-286
Inspect			Inspect 8-117	8-290
Install 8-10	08	8-271		
			Install 8-120	8-298
Remove	05	8-267	Remove 8-114	8-283
			Repair 8-118	8-292
Oil Filler Assembly and Oil Filler Strainer	~~	0.70		
Assemble			Oil Lines - See Hose Assembly and	
Clean			Tube Assembly	
Disassemble8-2			Oil Pressure Fluctuation (Total Needle	4 074
Inspect			Oscillation of More Than 10 PSI) 1-56	1-274
Install			Oil Pressure Fluctuation (Total Needle	
Remove			Oscillation of More Than 10 PSI) -	4 070
Repair8-3	31	8-77	Visual Check	1-273
Oil Filter Cover Assembly and Oil			Oil Pressure Indicating Low or High 1-54	1-270
Filter Element				
	~ ~	0.05	Oil Pressure Indicating Low or High -	4 000
Clean8-3			Visual Check 1-53	1-268
Inspect8-3	36	8-86		
			Oil Pump and Scavenge Oil Screen,	
Install8-3			Main - See Main Oil Pump and	
Remove8-3	34	8-83	Scavenge Oil Screen	

Subject	Para/ Task	Page	Subject	Para/ Task	Page
Oil Screen, Main Oil Pump and Scavenge - See Main Oil Pump and Scavenge Oil Screen			Overspeed (AVIM), Inspect Engine after N2 - See Inspect Engine after N2 Overspeed (AVIM)		
Oil Screen, Service Scavenge - See Service Scavenge Oil Screen Oil Strainer, No. 2 Bearing Pressure			Overspeed Drive and Outlet Cover Ass Assemble Backlash Clean	5-28 5-30 5-25	5-84 5-90 5-80
- See No. 2 Bearing Pressure Oil Strainer			Disassemble		5-77 5-81
Oil Strainer, Service No. 2 Bearing			Install		5-87
Pressure - See Service No. 2			Remove		5-75
Bearing Pressure Oil Strainer			Repair		5-83
Bearing Fressure Oil Strainer				5-27	5-05
Oil System, Drain Engine - See			Overspeed Solenoid Valve		
Drain Engine Oil System			Clean	6-53	6-161
			Inspect		6-162
Oil Temperature Transmitter			Install		6-164
Clean	0.01	9 65	Remove		6-159
Inspect					6-163
Install			Repair	0-55	0-103
			Overtorque (A)/IM) Increat Engine		
Remove	0-23	0-03	Overtorque (AVIM), Inspect Engine		
			after Power Turbine - See Inspect		
			Engine after Power Turbine		
Oil Tubes (AVIM), No. 4 and 5			Overtorque (AVIM)		
Bearing - See No. 4 and 5			<b>P</b>		
Bearing Oil Tubes (AVIM)			Р		
On and the set Decklerers With set On the	0.0	0.0	Destaux		
Operational Problems Without Codes Output Shaft Seal and Housing Assembly	G-9	G-8	Package Fuel Boost Pump Assembly Hydromechanical Assembly	6-14	6-48
Clean	2 10	2 220	(HMA)	67	6-32
				0-7	0-32
Inspect Install			Parts, Repair - See Repair Parts		
			Diago in Comico Field Donlocoment		
Remove			Place in Service Field Replacement First and Second Turbine Disc		
Repair	2-42	2-330	Assembly (AVIM)		
Overhaul and Retirement Schedule	1-98	1-485	Post Shutdown Rumble or Relight	1-67	1-295
Overspeed (AVIM), Inspect Engine after N1 - See Inspect Engine			Power Limited - Primary Mode	1-44	1-190
after N1 Overspeed (AVIM)			Power Limited - Reversionary Mode	1-45	1-202

Subject	Para/ Task	Page	Para/ Subject Task	
Power Supply Interrupt	G-8	G-7	Pressure Oil Strainer, No. 2 Bearing - See No. 2 Bearing Pressure Oil Strainer	
<ul> <li>Power Turbine (AVIM), Combustion Section and - See Combustion Section and Power Turbine (AVIM)</li> <li>Power Turbine Nozzle (AVIM), Fourth stage - See Fourth stage Dever Turbine Nozzle (AVIM)</li> </ul>			Pressure Oil Strainer, Service No. 2 Bearing - See Service No. 2 Bearing Pressure Oil Strainer Pressure Test Interstage Air-Bleed	1 406
Power Turbine Nozzle (AVIM) Power Turbine Overtorque (AVIM), Inspect Engine after - See Inspect Engine after Power Turbine Overtorque (AVIM)			Actuator 1-100 Pressurized Shipping and Storage Container, Inspect - See Inspect Pressurized Shipping and Storage Container	1-496
Power Turbine Rotor (AVIM), Fourth Stage - See Fourth Stage Power Turbine Rotor (AVIM)			Pressurizing Valve Clean	
Power Turbine Rotor (AVIM), Third Stage - See Third Stage Power Turbine Rotor (AVIM)			Remove	6-135
Practices and Procedures, Standard - See Standard Practices and Procedures			Material to - See Destruction of Army Material to Prevent Enemy Use Preventive Maintenance Checks and Services	
Practices, Standard Maintenance - See Standard Maintenance Practices			Primary Electrical Harness Assembly Clean	7-85
Preparation for Storage and Ship- ment	1-4	1-2	Inspect	7-87 7-105 7-81
Prepare and Inspect Shipping and Storage Container	1-103	1-530	Repair7-19 Test	7-89 7-90
Preserve Fuel Boost Pump Assembly Hydromechanical Assembly (HMA)			Primer Tube Assembly Clean	6-92 6-93 6-94
Preserve and Prepare Engine for Ship- ment or Storage	1-102	1-510	Remove6-20 Principles of Operation	6-89 1-13

Para Subject Tasl		Page	Para/ Subject Task	Page
		lago		i ugo
DT Speed Diskup			Assessory Flootrigal Harpage	
PT Speed Pickup Clean5	0	5 12	Accessory Electrical Harness Assembly7-28	7-137
Inspect			Accessory Gearbox Assembly	5-3
•				2-50
Install			Anti-Icing Air Gallery Cover	2-50 8-273
Remove			Chip Detector	0-213
Repair 5-1		5-45	(AVIM) Combustion Section and Power Turbine	2.0
DT Speed Dickup Drive Accomply				3-9
PT Speed Pickup Drive Assembly	14	5 <b>5</b> 1	Compressor Bleed Band	2-37
Clean			(Upper) Compressor Housing	2-63
Inspect5-1	15	5-52	(Lower) Compressor Housing2-21	2-94
	. –	E E 4	Compressor Rotor Blades	2-235
Install			Dual Chip Detector	8-91
Remove			Fireshield Assembly 4-12	4-55
Repair5-1	16	5-53	Einschlicht Osseties (140	4.05
D			Fireshield Section	4-65
Pump and Scavenge Oil Screen,			First Turbine Disc Assembly 4-63	4-361
Main Oil - See Main Oil Pump			Flow Divider and Bracket	6-143
and Scavenge Oil Screen			Flow Programming Valve	8-53
			Fourth Stage Power Turbine	
Pump Assembly, Fuel Boost - See Fuel Boost Pump Assembly			Rotor 4-33	4-131
			Fuel Boost Pump Assembly6-8	6-35
Q			Fuel Check Valve 6-49	6-153
			Fuel Drain Valve	3-3
Q Load Share Selected, Qs Not Matched			Gas Producer Speed Pickup8-7	8-27
Expanded Instructions G-5	59	G-135		
			Hydromechanical Assembly	
			(HMA)6-1	6-5
Quality Assurance/Quality Control				
(QA/QC)1	-5	1-2	Ignition Coil and Cable Assembly7-1	7-3
R			Ignition Exciter7-11	7-71
			Inlet Housing Cover Assembly 2-44	2-345
			In-Line Fuel Filter Assembly 6-35	6-121
Records and Reports, Maintenance				
Forms - See Maintenance Forms,			Interstage Air-Bleed Actuator	2-5
Records and Reports			Left- and Right-Hand Bus Bar	
			Assemblies4-7	4-25
References		A-1	Left- and Right-Hand Fuel Manifold	
			Assemblies6-15	6-49
References, Directional - See			Main Fuel Filter and Bracket 6-28	6-103
Directional References				
			Main Oil Pump, Speed Pickup Drive	
			Assembly, Scavenge Oil Screen,	
Remarks (Column 6 And Section iv)B-	-8	B-6	and Related Parts 8-1	8-7
· · ·			No. 2 Bearing Pressure Oil	
Remove			Connector	8-243

Subject	Para/ Task	Page
No. 2 Bearing Pressure Oil		
Strainer	8-97	8-249
No. 4 and 5 Bearing Filter	. 8-101	8-255
Oil Cooler Assembly	8-12	8-35
Oil Drain Cock	8-105	8-267
Oil Filler Assembly and Oil Filler		
Strainer	8-27	8-69
Oil Filter Cover Assembly and Oil		
Filter Element		8-83
Oil Level Float Assembly	. 8-122	8-309
Oil Level Indicator	8-114	8-283
Oil Temperature Transmitter	8-23	8-63
Output Shaft Seal and Housing		
Assembly	2-39	2-325
Overspeed Drive and Outlet Cover		
Assembly		5-75
Overspeed Solenoid Valve		6-159
Pressurizing Valve		6-135
Primary Electrical Harness Assembly	7-16	7-81
Primer Tube Assembly	6-20	6-89
PT Speed Pickup		5-41
PT Speed Pickup Drive Assembly		5-49
Reversionary Electrical Harness		
Assembly		7-109
Second Turbine Disc Assembly	4-54	4-289
Second Turbine Nozzle, Spacer,		
Case, and Bumper Second Turbine Nozzle, Spacer,	4-58	4-313
Case, and Bumper	76	7-59
Start Fuel Nozzles		7-39 6-97
Starter Drive Assembly		5-57
Starter Gearbox Filter		
	8-89	8-237
Starting Fuel Solenoid Valve	6 57	6 167
		6-167
(Lower) Stator Vane Assemblies		2-181
Tailpipe Assembly	4-70	4-415
Thermocouple Harness Assemblies	4-20	4-81
Thermocouple Jumper Lead	4-1	4-5

Subject	Para/ Task	Page
Third Turbine Nozzle and Support T1 Temperature Sensor Torquemeter Sensor	. 2-52	4-107 2-359 9-3
Remove Engine from Maintenance Stand	. 1-30	1-108
Remove Engine from Shipping and Storage Container	. 1-26	1-65
Remove Engine Maintenance Sling	. 1-32	1-117
Remove Tailpipe Kit, DECU Kit, and Signal Conditioning Unit from Shipping Container	. 1-27	1-88
Repair         Accessory Electrical Harness         Assembly         Accessory Gearbox Assembly         Air Diffuser Assembly         Air Inlet Housing Assembly         Anti-Icing Air Gallery Cover         Combustion Chamber Housing         Combustion Chamber Housing         Combustion Chamber Vane         Assembly         Compressor Bleed Band         Compressor Rotor Blades         Dual Chip Detector         First Turbine Disc Assembly         First Turbine Rotor Case         Fourth Stage Power Turbine         Nozzle         Fuel Boost Pump Assembly         Hydromechanical Assembly         Hydromechanical Assembly         Ignition Coil and Cable Assembly         Ignition Exciter         Inlet Housing Cover Assembly	5-5 .2-38 .2-51 .2-18 .3-21 .3-18 .3-15 .2-13 .2-24 .2-36 .8-43 .4-66 .4-68 .4-68 .4-68 .4-68 .4-68 .4-69 .6-11 .8-10 6-4 7-4 .7-14	7-146 5-22 2-321 2-357 2-54 3-175 3-158 3-143 2-42 2-122 2-286 8-99 4-372 4-389 4-372 4-389 4-257 6-39 8-31 6-15 7-31 7-77 2-350

Subject	Para/ Task	Page
Interstage Air-Bleed Actuator	2-5	2-15
fold Assemblies	6-18	6-63
Main Fuel Filter and Bracket		
Oil Cooler Assembly Oil Filler Assembly and Oil Filler	8-16	8-44
Strainer	8-31	8-77
Oil Filter Cover Assembly and Oil	0.07	0.07
Filter Element		
Oil Level Float Assembly		8-315
Oil Level Indicator	8-118	8-292
Output Shaft Seal and Housing	0.40	0 000
Assembly	2-42	2-330
Overspeed Drive and Outlet Cover		
Assembly		5-83
Overspeed Solenoid Valve Primary Electrical Harness As-	6-55	6-163
sembly	7-19	7-89
PT Speed Pickup	5-11	5-45
PT Speed Pickup Drive Assembly		5-53
	3-10	5-55
Reversionary Electrical Harness		
Assembly	7-25	7-118
Second Turbine Nozzle, Spacer,		
Case, and Bumper		4-337
Starter Drive Assembly		5-63
Starting Fuel Solenoid Valve	6-60	6-172
Stator Vane Assemblies		2-192
Tailpipe Assembly	4-74	4-425
Thermocouple Harness		
	4-23	4-88
Thermocouple Jumper Lead		
		7 1 1
Third Stage Power Turbine Rotor	4-53	4-284
Third Turbine Nozzle and Support		
T1 Temperature Sensor		
Torquemeter Sensor		9-8
Socond Turking Nozzla Spacer		3-0
Second Turbine Nozzle, Spacer,	7.0	7.04
Case, and Bumper		7-64
Repair Parts	1-24	1-24

Subject	Para/ Task	Page
Reporting Equipment Improvement Recommendations (EIR)	1-7	1-3
Represerve Engine in Storage Over Six Months	1-106	1-563
Resistance and Insulation Tests	G-4	G-2
Retirement Schedule, Overhaul and - See Overhaul and Retirement Schedule		
Reversionary Electrical Harness Assem Clean Inspect Install Remove Repair Test	7-23 7-24 7-27 7-22 7-25	7-115 7-116 7-131 7-109 7-118 7-119
Right- and Left-Hand Bus Bar Assemblies - See Left- and Right-Hand Bus Bar Assemblies Rotor (AVIM), Fourth Stage Power Turbine - See Fourth Stage Power Turbine Rotor (AVIM)		
Rotor (AVIM). Third Stage Power Turbine - See Third Stage Power Turbine Rotor (AVIM)		
Rotor Blades, Compressor - See Compressor Rotor Blades		
Rotor Case (AVIM), First Turbine - See First Turbine Rotor Case (AVIM) <b>S</b>		
Safety, Care, and Handling	1-12	1-11
Scope Schedule, Overhaul and Retirement - See Overhaul and Retirement Schedule	1-1	1-1

Subject	Para/ Task	Page	Subject	Para/ Task	Page
Scratching, Gouging, or Wear, Determine Depth of Damage from Chafing, Denting, - See			Service Interstage Air-Bleed Actuator Strainer	. 1-97	1-479
Determine Depth of Damage from Chafing, Denting, Scratching,			Service In-Line Fuel Filter	. 1-96	1-475
Gouging, or Wear			Service Main Fuel Filter	. 1-95	1-472
Seal Leakage (No. 2 Bearing Package) (AVIM), Check for- See Check for Seal Leakage (No.			Service No. 2 Bearing Pressure Oil Strainer	. 1-91	1-439
2 Bearing Package) (AVIM)			Service No. 4 and 5 Bearing Oil Filter	. 1-92	1-443
Seal Leakage (No. 4 and 5 Bearing) (AVIM), Check for - See Check for Seal Leakage (No. 4 and 5			Service Oil Filler Strainer	. 1-90	1-435
Bearing) (AVIM)			Service Oil Filter Cover Assembly and Oil Filter Element	. 1-93	1-454
Seals (AVIM), No. 4 and 5 Bearing Package - See No. 4 and 5 Bearing Package Seals (AVIM)			Service Scavenge Oil Screen	. 1-94	1-459
Second Turbine Disc Assembly			Service Starter Gearbox Filter	. 1-89	1-432
Clean Inspect Install Remove	4-56 4-57 4-54	4-299 4-301	Service Upon Receipt Services, Preventive Maintenance Checks and - See Preventive Maintenance Checks and Services		1-49
Second Turbine Nozzle, Spacer, Case, and Bumper			Servicing		1-297
Clean Inspect Install Remove	4-60 4-62	4-322 4-354	Shaft Seal and Housing Assembly, Output- See Output Shaft Seal and Housing Assembly		
Repair	4-61	4-337	Shipment, Fuel Boost Pump Assembly, Preparation for Storage or - See Fuel Boost Pump		
Section, Accessory Gear- See Accessory Gear Section			Assembly Preparation for Storage or Shipment		
Section, Combustion - See Combustion Section			Shipment, HMA, Preparation for Storage or - See HMA Preparation for Storage or		
Section, Compressor- See Compressor Section			Shipment		
Service Engine Oil System	1-68	1-298	Shipment or Storage, Preserve and Prepare Engine for- See		

Preserve and Prepare Engine for Shipment or StorageSpark Igniters CleanShipment, Preparation for Storage and - See Preparation for Storage and Shipment7-77-62InspectInspect7-87-63Inspect Pressurized - See Inspect Pressurized Shipping and Storage ContainerSpecial Inspections7-77-64Shipping and Storage Container, Inspect Pressurized Shipping and Storage ContainerSpecial Inspections1-721-317Shipping and Storage Container, Install Engine into - See Install Engine into Shipping and Storage ContainerSpecial Tools, TMDE, and Support Equipment1-47Shipping and Storage ContainerSpiral Chafing Sleeve on Hoses, Install - See Install Spiral Chafing Sleeve on HoseSpiral Chafing Sleeve on Hose1-47	Subject	Para/ Task	Page	Subject	Para/ Task	Page
Shipment, Preparation for Storage and - See Preparation for Storage and ShipmentInspect7-87-63Shipping and Storage Container, Inspect Pressurized - See Inspect Pressurized Shipping and Storage ContainerSpecial Inspections7-67-59Shipping and Storage Container, Install Engine into - See Install 						
and - See Preparation for Storage and ShipmentInstall	1 0					
and ShipmentRemove7-67-59RepairRepair7-97-64Shipping and Storage Container, Inspect Pressurized Shipping and Storage ContainerSpecial Inspections1-721-317Shipping and Storage Container, Install Engine into - See Install Engine into Shipping and StorageSpecial Tools, TMDE, and Support Equipment1-231-47Shipping and Storage Container, Install Engine into - See Install Engine into Shipping and StorageSpiral Chafing Sleeve on Hoses, Install - See Install Spiral ChafingSpiral Chafing						
Repair7-97-64Shipping and Storage Container, Inspect Pressurized - See InspectSpecial Inspections1-721-317Pressurized Shipping and Storage ContainerSpecial Tools, TMDE, and Support Equipment1-231-47Shipping and Storage Container, Install Engine into - See Install Engine into Shipping and StorageSpiral Chafing Sleeve on Hoses, Install - See Install Spiral Chafing						
Shipping and Storage Container, Inspect Pressurized - See Inspect       Special Inspections	and Shipment					
Inspect Pressurized - See Inspect Pressurized Shipping and Storage ContainerSpecial Inspections1-721-317Shipping and Storage Container, Install Engine into - See Install 	Shipping and Storage Container.			Repair	7-9	7-64
Shipping and Storage Container,       Install Engine into - See Install       Equipment	Inspect Pressurized - See Inspect			Special Inspections	1-72	1-317
Shipping and Storage Container,       Install Engine into - See Install       Spiral Chafing Sleeve on Hoses,         Engine into Shipping and Storage       Install - See Install Spiral Chafing	Container				. 1-23	1-47
Install Engine into - See InstallSpiral Chafing Sleeve on Hoses,Engine into Shipping and StorageInstall - See Install Spiral Chafing	Shipping and Storage Container.			- 4		
	Install Engine into - See Install Engine into Shipping and Storage			Install - See Install Spiral Chafing		
Shipping and Storage Container,Splines and Gears, Clean, InspectMark - See Mark Shipping andand Repair - See Clean, InspectStorage Containerand Repair Splines and Gears	Mark - See Mark Shipping and			and Repair - See Clean, Inspect		
Shipping and Storage Container,Stall (Surge), Inspect Engine afterPrepare and Inspect - SeeCompressor- See Inspect EnginePrepare and Inspect Shipping andafter Compressor Stall (Surge)Storage ContainerStorage Container	Prepare and Inspect - See Prepare and Inspect Shipping and			Compressor- See Inspect Engine		
Stand, Install Engine on	5			Stand, Install Engine on		
Shipping and Storage Container,       Maintenance - See Install Engine         Remove Engine from - See       on Maintenance Stand	Remove Engine from - See			•		
Remove Engine from Shipping and Storage Container Stand, Remove Engine from Maintenance - See Remove						
Six Months, Represerve Engine in Engine from Maintenance Stand	Six Months, Represerve Engine in			Engine from Maintenance Stand		
Storage Over - See Represerve         Engine in Storage Over Six         Standard Maintenance Practices 1-108         Maatha	Engine in Storage Over Six			Standard Maintenance Practices	1-108	1-571
Months Standard Practices and Procedures	Months			Standard Practices and Procedures		1-571
Sleeve on Hoses, Install Spiral	Sleeve on Hoses, Install Spiral					-
Chafing - See Install Spiral Standard Torque Limits	Chafing - See Install Spiral			Standard Torque Limits		1-567
Standard Torque Values 1-107 1-567	-			Standard Torque Values	1-107	1-567
Solenoid Valve, Overspeed - See	Solenoid Valve, Overspeed - See			·		
Overspeed Solenoid Valve Start Fuel Nozzles				Start Fuel Nozzles		
Clean				Clean	6-25	6-99
Spacer, and Case (AVIM), Second Inspect 6-26 6-100						
Turbine Nozzle - See Second   Install						
Turbine Nozzle, Spacer, andRemoveRemoveBumper Case (AVIM)6-246-97				Remove	6-24	6-97

	ara/ ask	Page	Subject	Para/ Task	Page
Starter Drive Assembly Clean5 Inspect	5-20	5-62	Remove (Lower) Repair Storage, Activate Engine after- See		2-18 2-192
Install	5-18	5-57	Activate Engine after Storage Storage and Shipment, Preparation for - See Preparation for Storage and Shipment		
Starter Drive Does Not Turn Engine or Engine Cranking Speed is Too Slow 1 Starter Gearbox Filter	1-35	1-126	Storage Container, Inspect Pressurized Shipping and - See Inspect Pressurized Shipping and Storage Container		
Clean	8-91 8-92	8-240 8-241	Storage Container, Install Engine into Shipping and - See Install Engine into Shipping and Storage Container		
Starting Fuel Solenoid Valve Clean	6-59 6-61 6-57	6-171 6-173 6-167	Storage Container, Mark Shipping and - See Mark Shipping and Storage Container Storage Container, Prepare and Inspect Shipping and - See Prepare and Inspect Shipping and Storage Container		
Static Oil Leakage at Combustion Chamber Drain Valve or Bleed Band Caused by Internal Oil Seepage - Visual Check1	1-59	1-279	Storage Container, Remove Engine From Shipping and - See Remove Engine from Shipping and Storage Container		
Static Oil Leakage at Combustion Chamber Drain Valve or Bleed Band Caused by Internal Oil Seepage1	1-60	1-280	Storage or Shipment, Fuel Boost Pump Assembly, Preparation for - See Fuel Boost Pump Assembly Preparation for Storage or Shipment		
Static Oil Leakage, Check for - See Check for Static Oil Leakage			Storage or Shipment, Hydromechanical Assembly, Preparation for - See Hydromechanical Assembly		
Stator Vane Assemblies Clean	2-29 2-31	2-190 2-194	Preparation for Storage or Shipment Storage Over Six Months, Engine in - See Engine in Storage Over Six Months		

Subject	Para/ Task	Page	Subject	Para/ Task	Page
Storage, Preserve and Prepare Engine for Shipment or Storage - See Preserve and Prepare Engine for Shipment or Storage			System, Inspect Contaminated Oil - See Inspect Contaminated Oil System		
Strainer, No. 2 Bearing Pressure Oil - See No. 2 Bearing Pressure Oil Strainer			System, Lubrication - See Lubrication System System, Service Engine Oil - See		
Strainer, Oil Filler Assembly and Oil Filler - See Oil Filler Assembly and Oil Filler Strainer			Service Engine Oil System System, Torquemeter - See Torquemeter System T		
<ul> <li>Strainer, Service No. 2 Bearing Pressure Oil - See Service No. 2 Bearing Pressure Oil Strainer</li> <li>Strainer, Service Oil Filler- See Service Oil Filler Strainer</li> <li>(Support (AVIM), Third Turbine Nozzle and - See Third Turbine Nozzle and Support (AVIM)</li> </ul>			Tailpipe Assembly Assemble Clean Disassemble Inspect Install Remove Repair	4-72 4-71 4-73 4-76 4-70	4-426 4-422 4-419 4-423 4-430 4-415 4-425
Support Equipment, Special Tools, TMDE, and - See Special Tools, TMDE, and Support Equipment			Test Accessory Electrical Harness As- sembly	7-32	7-147
Surge), Inspect Engine after Compressor Stall - See Inspect Engine after Compressor Stall			Chip Detector Dual Chip Detector	8-112	8-279 8-101
(Surge)			Interstage Air-Bleed Actuator Left- and Right-Hand Bus Bar		2-18
Symptom Index	1-33	1-121	Assemblies Primary Electrical Harness		4-34
System, Drain Engine Oil - See Drain Engine Oil System			Assembly Reversionary Electrical Harness		7-90
System, Electrical and Ignition - See			Assembly Thermocouple Harness Assemblies	5	7-119
Electrical and Ignition System			(AVIM) Thermocouple Jumper Lead		4-91 4-13
System, Fuel - See Fuel System System, Inspect Contaminated Fuel			Temperature Transmitter, Oil - See Oil Temperature Transmitter		
- See Inspect Contaminated Fuel System			Test Equipment	G-3	G-2

Subject	Para/ Task	Page	Subject	Para/ Task	Page
Thermocouple Harness Assemblies			Tools, TMDE and Support, Special -		
			See Special Tools, TMDE, and		
Clean			Support Equipment		
Inspect					
Install			Torque Limits, Standard - See		
Remove			Standard Torque Limits		
Repair					
Test		4-91	Torque Values, Standard - See Standard Torque Values		
Thermocouple Jumper Lead					
Clean	4-2	4-8	T1 Temperature Sensor		
Inspect	4-3	4-9	Clean	2-53	2-361
İnstall	4-6	4-17	Inspect	2-54	2-362
Remove	4-1	4-5	Install	2-56	2-364
Repair	4-4	4-11	Remove	2-52	2-359
Test			Repair		2-363
Third Stage Power Turbine Rotor			Torquemeter Sensor		
Clean	4-51	4-279	Clean	9-2	9-6
Inspect	4-52	4-280	Inspect	9-3	9-7
Repair	4-53	4-284	Install	9-5	9-9
			Remove		9-3
Third Turbine Nozzle and Support			Repair	9-4	9-8
Assemble	4-31	4-123			
Clean	4-28	4-113	Torquemeter System	1-21	1-46
Disassemble	4-27	4-111			
Inspect	4-29	4-114	Touch Up Magnesium and Magnesium		
Install	4-32	4-125	Alloys	1-110	1-583
Remove	-	-			
Repair	4-30	4-122	Transmitter, Oil Temperature - See Oil Temperature Transmitter		
Time, Check Engine Coastdown -			·		
See Check Engine Coastdown			Troubleshooting		1-121
Time			Troubleshooting Procedures	. 1-34	1-123
Tools and Equipment, Common -			-		
See Common Tools and			Tube Assembly(Accessory Gearbox		
Equipment			Collector to Tube Assembly)		
Tools And Test Equipment			Install	8-86	8-225
(Column 5 And Section iii)	B-7	B-6	Remove	8-85	8-219

Subject	Para/ Task	Page	Subject	Para/ Task	Page
Tube Assembly (Air Diffuser Assembly to Check Valve) Install Remove			Turbine Disc Assembly (AVIM), Second - See Second Turbine Disc Assembly (AVIM)		
Tube Assembly (Inlet Housing to Main Oil Pump)			Turbine Nozzle and Support (AVIM) Third - See Third Turbine Nozzle and Support (AVIM)		
Install	8-66	8-151			
Remove	8-65	8-148			
Tube Assembly (Main Oil Pump to Inlet Housing Oil Scavenge Tee)	0.00	0.464	Turbine Nozzle (AVIM), First - See First Turbine Nozzle (AVIM)		
Install			Turking Namela (A)(INA) Founth Otoma		
Remove Tube Assembly (No. 2 Bearing Pressure Connector to Tee and Snubber)	8-07	8-159	Turbine Nozzle (AVIM), Fourth Stage Power - See Fourth Stage Power Turbine Nozzle (AVIM)		
Install	8-74	8-177			
Tube Assembly (No. 4 and 5 Bearing Scavenge Tube Assembly to Main Oil Pump Flange) Install	8-70	8-165	Turbine Nozzle, Spacer, and Case (AVIM), Second - See Second Turbine Nozzle, Spacer, Case, and Bumper (AVIM)		
Remove	8-69	8-163			
Tube Assembly (No. 4 and 5 Bearing Scavenge Connector to Tube Assembl Install Remove	8-72		Turbine Rotor (AVIM), Fourth Stage Power - See Fourth Stage Power Turbine Rotor (AVIM)		
Remove		8-175	Turbine Rotor (AVIM), Third Stage Power - See Third Stage Power Turbine Rotor (AVIM)		
Tube Assembly (Tube and Hose Assembly to Accessory Gearbox Assembly) Install Remove	8-88		Turbine Rotor Case (AVIM), First - See First Turbine Rotor Case (AVIM)		
Tubes (AVIM), No. 4 and 5 Bearing Oil-See No. 4 and 5 Bearing Oil			Turbine Section	. 1-16	1-22
Turbine Disc Assembly (AVIM), First - See First Turbine Disc Assembly (AVIM)			T4.5 Load Share Selected, T4.5s Not Matched Expanded Instructions	G-60	G-139

Subject	Para/ Task	Page	Subject	Para/ Task	Page
U			Valve, starting Fuel Solenoid - See Starting Fuel Solenoid Valve		
Unable To Perform Power Assurance Test (Results Not Indicated On Hex Display Expanded Instructions	· /)	G-154	Vane Assemblies, Stator- See Stator Vane Assemblies		
Unable To Switch To Primary Mode Expanded Instructions	G-57	G-129			
Unable To Switch To Reversionary Mode Expanded Instructions	G-56	G-126	Vane Assembly (AVIM), Combustion Chamber - See Combustion Chamber Vane Assembly		
Use Of The Maintenance Allocation Chart (Section II)	B-2	B-2	w		
Using the Fault Isolation Diagrams	0.40	_			
boing the Fault look for Diagrame	G-10	G-8	Wiring Diagram		D-1
<b>V</b> Values, Standard Torque - See	G-10	G-8	Wear, Determined Depth of Damage from Chafing, Denting, Scratching,		D-1
v	G-10	G-8	Wear, Determined Depth of Damage		D-1

TM 1-2840-252-23-3

## By Order of the Secretary of the Army:

Official: Mitta A. Aunto

MILTON H. HAMILTON Administrative Assistant to the Secretary of the Army 07688

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

### DISTRIBUTION:

To be distributed in accordance with DA Form 12-31-E, block no. 3466, requirements for TM 1-2840-252-23-3.

U.S. GOVERNMENT PRINTING OFFICE: 1995-655-121-20012

# These are the instructions for sending an electronic 2028

The following format must be used if submitting an electronic 2028. The subject line must be exactly the same and all fields must be included; however only the following fields are mandatory: 1, 3, 4, 5, 6, 7, 8, 9, 10, 13, 15, 16, 17, and 27.

From: "Whomever" <whomever@wherever.army.mil> To: 2028@redstone.army.mil

Subject: DA Form 2028

- 1. From: Joe Smith
- 2. Unit: home
- 3. Address: 4300 Park
- 4. *City:* Hometown
- 5. **St:** MO
- 6. **Zip:** 77777
- 7. *Date Sent:* 19–OCT–93
- 8. *Pub no:* 55–2840–229–23
- 9. Pub Title: TM
- 10. Publication Date: 04-JUL-85
- 11. Change Number: 7
- 12. Submitter Rank: MSG
- 13. Submitter FName: Joe
- 14. Submitter MName: T
- 15. Submitter LName: Smith
- 16. Submitter Phone: 123-123-1234
- 17. Problem: 1
- 18. Page: 2
- 19. Paragraph: 3
- 20. Line: 4
- 21. NSN: 5
- 22. Reference: 6
- 23. Figure: 7
- 24. Table: 8
- 25. *Item:* 9
- 26. Total: 123
- 27. **Text:**

This is the text for the problem below line 27.

RI		BLA	NK FORM	PUBLICATIC S nent agency is ODIS				verse) for Repair Parts and Spe- (RPSTL) and Supply Catalogs/ s (SC/SM)	date 8/30/02	
Comm ATTN:	ander, U.S AMSAM-I		tion and Mi IP	or form)(Inclu ssile Comma		de) FROM: (Activity and location)(Include ZIP Code) MSG, Jane Q. Doe 1234 Any Street Nowhere Town, AL 34565				
		PAF	۲۲1 – ALI	PUBLICAT	IONS (EX	CEPT F	RPSTL AND SC	/SM) AND BLANK FORMS		
PUBLICATION/FORM NUMBER TM 9–1005–433–24						DATE 16 \$	Sep 2002	TITLE Organizational, Direct Sup Support Maintenance Manual for Caliber M3P and M3P Machine G Used On Avenger Air Defense W	Machine Gun, .50 un Electrical Test Set	
ITEM NO.	PAGE NO.	PARA- GRAPH	LINE NO. *	FIGURE NO.	TABLE NO.		RECOMMENDED CHANGES AND REASON			
1	WP0005 PG 3		2					tion column should identify a differe	ent WP number.	
	1		* R	eference to li	ne number	rs withir	n the paragraph	or subparagraph.		
		ADE OR TIT		•			XCHANGE/ JS EXTEN-	SIGNATURE		
NSC	, Jane	e Q. Do	e, SF	C	788	788–1234				

Comm ATTN:		S. Army -MMC-f ial, AL 3	35898	mand	FROM: (Activity and location) (Include ZIP Code) MSG, Jane Q. Doe 1234 Any Street Nowhere Town, AL 34565 AL TOOL LISTS AND SUPPLY CATALOGS/SUPPLY MANUA						<sup>date</sup> 8/30/02
PUBLI				SPECI/	AL TOO DATE	L LISTS AN	ID SUP	TITLE	TALOGS/SUPPLY MANUALS		
				1		1		TOTAL			
PAGE NO.	COLM NO.	LINE NO.	NATIONAL STOCK NUMBER		RENCE O.	FIGURE NO.	ITEM NO.	TOTAL I OF MAJ ITEMS SUPPOR	IOR S	RECOMMEN	DED ACTION
PART III - REMARKS (Any general remarks is the set statistics, or suggestions for improvement of publications and blank formational blancing etc. nay be used if more space is needed.)											
	TYPED NAME, GRADE OR TITLE TYPED NAME, GRADE OR TITLE MSG, Jane Q. Doe, SFC TELEPHONE EXCHANGE/AUTOVON, PLUS EXTENSION T88–1234										

RE		BLA	NK FORM	PUBLICATIO		Use Part II (/ cial Tool List Supply Manu	DATE			
Comman ATTN: A	der, U.S. A MSAM-MN	oponent of p Army Aviation AC-MA-NP AL 35898	ublication on and Miss	or form)(Inclu ile Command	de ZIP Coo	e) FROM: (Act	ivity and location)(Include ZIP Code)	1		
		PAI	RT 1 – ALI	L PUBLICAT	IONS (EXC	EPT RPSTL AND	C/SM) AND BLANK FORMS			
PUBLICA	TION/FOF	RM NUMBEI	र			DATE	TITLE			
ITEM NO.	PAGE NO.	PARA– GRAPH	LINE NO. *	FIGURE NO.	TABLE NO.	RECOMMENDED CHANGES AND REASON				
TYPED N	AME, GR	ADE OR TIT		eference to li	TELEPHO	s within the paragraph NE EXCHANGE/ N, PLUS EXTEN-	oh or subparagraph.			
DA FORM	2029 55	P 74			SION		3, WHICH WILL BE USED.	USAPA V3.01		

ATTN:	orward dir hander, U. : AMSAN one Arser	/I-MMC-I nal, AL (	35898		FROM: (Activity and location) (Include ZIP Code)       DATE         AL TOOL LISTS AND SUPPLY CATALOGS/SUPPLY MANUALS						
PUBLIC				SPECIA	DATE	LISTSAN	ID SUP	TITLE	S/SUPPLY MANUA	LS	
	<b></b>	<b></b>	r			<del></del>		TOTAL NO.	r		
PAGE NO.	COLM NO.	LINE NO.	NATIONAL STOCK NUMBER		RENCE IO.	FIGURE NO.	ITEM NO.	OF MAJOR ITEMS SUPPORTED	RECOMME	NDED ACTION	
	PAR	(T III – F								tions and	
TYPED	PART III - REMARKS (Any general remarks or recommendations, or suggestions for improvement of publications and blank forms. Additional blank sheets may be used if more space is needed.)         TYPED NAME, GRADE OR TITLE       TELEPHONE EXCHANGE/AUTOVON, SIGNATURE										
TYPED	NAME, (	3RADE	OR TITLE	TELEP PLUS I	PHONE E EXTENS	EXCHANGE	:/AUTO	VON, SIGNA	TURE		

### 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 decigram = .035 ounce
- 1 decagram = 10 grams = .35 ounce
- 1 hectogram = 10 decagrams = 3.52 ounces
- 1 kilogram = 10 hectograms = 2.2 pounds
- 1 quintal = 100 kilograms = 220.46 pounds 1 metric ton = 10 quintals = 1.1 short tons

#### Liquid Measure

- 1 centiliter = 10 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	То	Multiply by	To change	То	Multiply by
inches	centimeters	2.540	ounce-inches	Newton-meters	.007062
feet	meters	.305	centimeters	inches	.394
yards	meters	.914	meters	feet	3.280
miles	kilometers	1.609	meters	yards	1.094
square inches	square centimeters	6.451	kilometers	miles	.621
square feet	square meters	.093	square centimeters	square inches	.155
square yards	square meters	.836	square meters	square feet	10.764
square miles	square kilometers	2.590	square meters	square yards	1.196
acres	square hectometers	.405	square kilometers	square miles	.386
cubic feet	cubic meters	.028	square hectometers	acres	2.471
cubic yards	cubic meters	.765	cubic meters	cubic feet	35.315
fluid ounces	milliliters	29,573	cubic meters	cubic yards	1.308
pints	liters	.473	milliliters	fluid ounces	.034
quarts	liters	.946	liters	pints	2.113
gallons	liters	3.785	liters	, quarts	1.057
ounces	grams	28.349	liters	gallons	.264
pounds	kilograms	.454	grams	ounces	.035
short tons	metric tons	.907	kilograms	pounds	2.205
pound-feet	Newton-meters	1.356	metric tons	short tons	1.102
, pound-inches	Newton-meters	.11296			

#### **Temperature (Exact)**

°F	Fahrenheit	5/9 (after	Celsius	°C
	temperature	subtracting 32)	temperature	

PIN: 073439-000