

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
1 DECEMBER 1994**

Technical Manual
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, 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 furnished to you. You may also provide DA Form 2028 information to AMCOM via e-mail, fax, or the World Wide Web. Our fax number is: DSN 788-6546 or Commercial 256-842-6546. Our e-mail address is: 2028@redstone.army.mil. Instructions for sending an electronic 2028 may be found at the back of this manual immediately preceding the hard copy 2028. For the World Wide Web use: <https://amcom2028.redstone.army.mil>.

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 1-2840-252-23-3, 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 1.	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	1-111
Section VII	Troubleshooting	1-121
Section VIII	Servicing	1-297
Section IX	Preventive Maintenance Checks and Services	1-317
Section X	Maintenance Procedures	1-487
Section XI	Preparation for Storage and Shipment	1-509
Section XII	Standard Torque Limits	1-567
Section XIII	Standard Practices and Procedures	1-571

TABLE OF CONTENTS (Continued)

	PAGE
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-Icing 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 T1Temperature 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.....	4-247
Section X Third Stage Power Turbine Rotor.....	4-279
Section XI Second Turbine Disc Assembly.....	4-289
Section XII Second Turbine Nozzle, Spacer, Case, and Bumper.....	4-313
Section XIII First Turbine Disc Assembly.....	4-361
Section XIV First Turbine Rotor Case.....	4-389
Section XV Field Replacement First and Second Turbine Disc Assembly.....	4-407
Section XVI Tailpipe Assembly.....	4-415

TABLE OF CONTENTS (Continued)

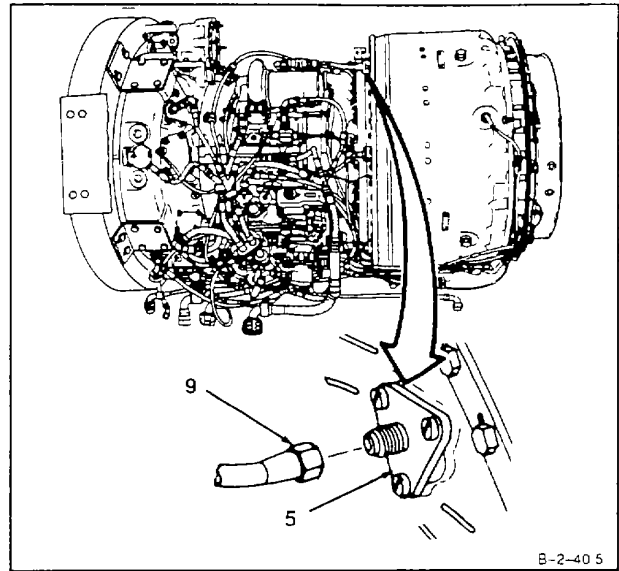
	PAGE
CHAPTER 5	ACCESSORY GEAR SECTION-MAINTENANCE INSTRUCTIONS.....
	5-1
	Chapter Overview
	5-1
Section I	Accessory Gearbox Assembly.....
	5-3
Section II	PT Speed Pickup
	5-41
Section III	PT Speed Pickup Drive Assembly.....
	5-49
Section IV	Starter Drive Assembly
	5-57
Section V	Overspeed Drive and Outlet 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)

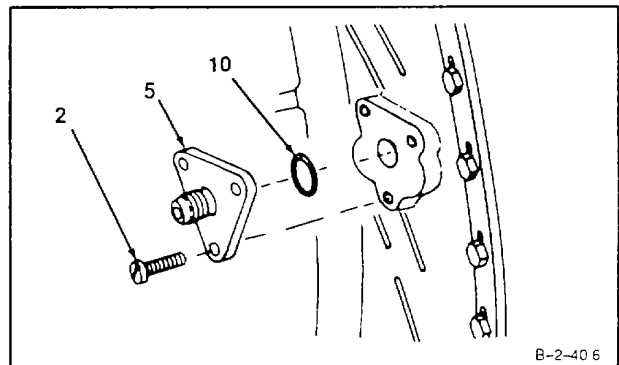
	PAGE
CHAPTER 8 LUBRICATION SYSTEM-MAINTENANCE INSTRUCTIONS.....	8-1
Chapter Overview	8-1
Section I Main Oil Pump, Speed Pickup Drive Assembly, Scavenge Oil Screen, and Related Parts	8-7
Section II Gas Producer Speed Pickup.....	8-27
Section III Oil Cooler Assembly	8-35
Section IV Flow Programming Valve	8-53
Section V Oil Temperature Transmitter	8-63
Section VI Oil Filler Assembly and Oil Filler Strain	8-69
Section VII Oil Filter Cover Assembly and Oil Filter Element	8-83
Section VIII Dual Chip Detector.....	8-91
Section IX Oil Lines.....	8-107
Section X Starter Gearbox Filter	8-237
Section XI No 2 Bearing Pressure Oil Connector.....	8-243
Section XII No 2 Bearing Pressure Oil Strainer	8-249
Section XIII No. 4 and 5 Bearing Filter	8-255
Section XIV Oil Drain Cock.....	8-267
Section XV Chip Detector.....	8-273
Section XVI Oil Level Detector	8-283
Section XVII Oil Level Float Assembly	8-309
CHAPTER 9 TORQUEMETER SYSTEM-MAINTENANCE INSTRUCTIONS.....	9-1
Chapter Overview	9-1
Section I Torquemeter Sensor	9-3
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 INDEX.....	INDEX-1

2-38 REPAIR AIR DIFFUSER ASSEMBLY (Continued)**2-38****3. Repair leaking or cracked connecto(5) as follows**

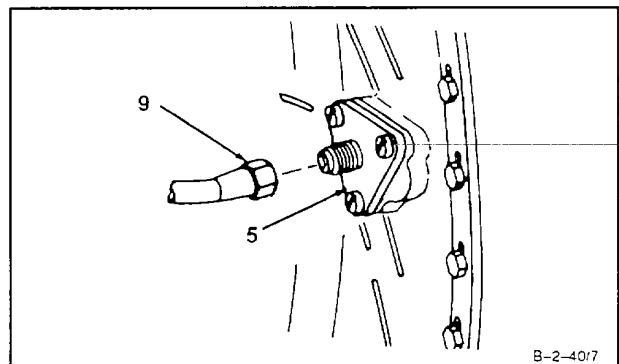
- a. Disconnect hose assembly (9) from connector (5)



- b. Remove lockwire and three screws (2)
- c. Remove connector (5) and gasket (10)
- d. Install gasket (10), serviceable connector (5), and three screws (2)
- e. Lockwire three screws (2) Use lockwire (E33)

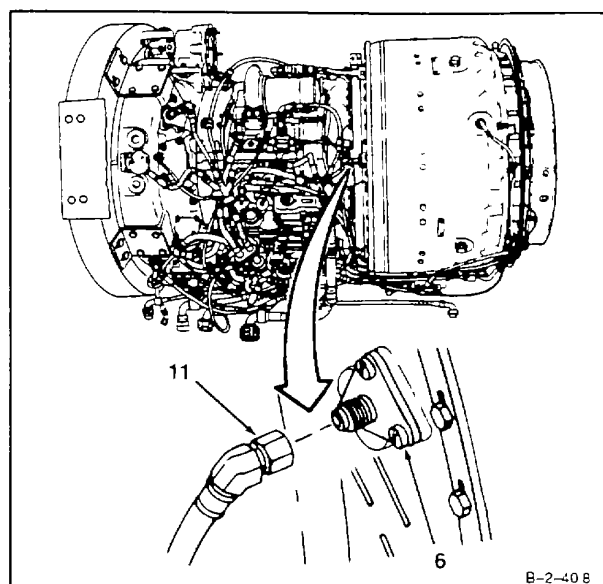


- f. Connect hose assembly (9) to connector (5)

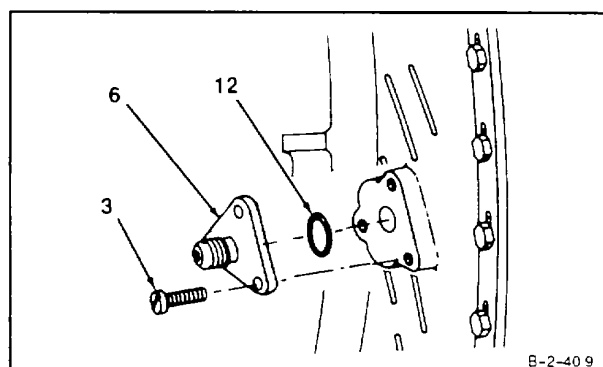
**GO TO NEXT PAGE**

2-38 REPAIR AIR DIFFUSER ASSEMBLY (Continued)**2-38****4. Repair leaking or cracked flange (6) as follows**

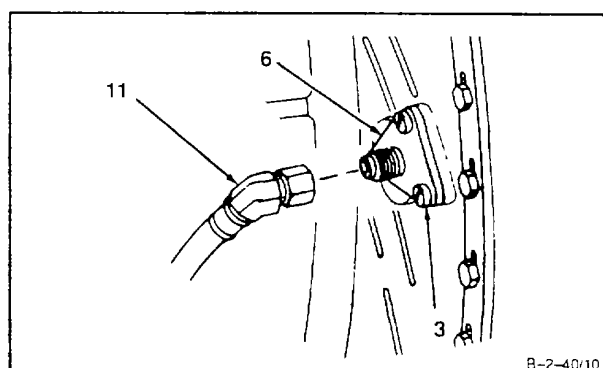
- a. Remove lockwire and disconnect hose assembly (11) from flange (6)



- b. Remove three screws (3)
- c. Remove flange (6) and gasket (12)
- d. Install gasket (12), serviceable flange (6), and three screws (3)



- e. Connect hose assembly (11) to flange (6)
- f. Lockwire three screws (3) Use lockwire (E33)

**INSPECT**

FOLLOW-ON MAINTENANCE
None

END OF TASK

SECTION VIII

OUTPUT SHAFT SEAL AND HOUSING ASSEMBLY

2-39 REMOVE OUTPUT SHAFT SEAL AND HOUSING ASSEMBLY

2-39

INITIAL SETUP

Applicable Configurations:

All

Tools:

Powerplant Mechanic's Tool Kit,
NSN 5180-00-323-4944
Handling Tool (T26) (3)

Materials

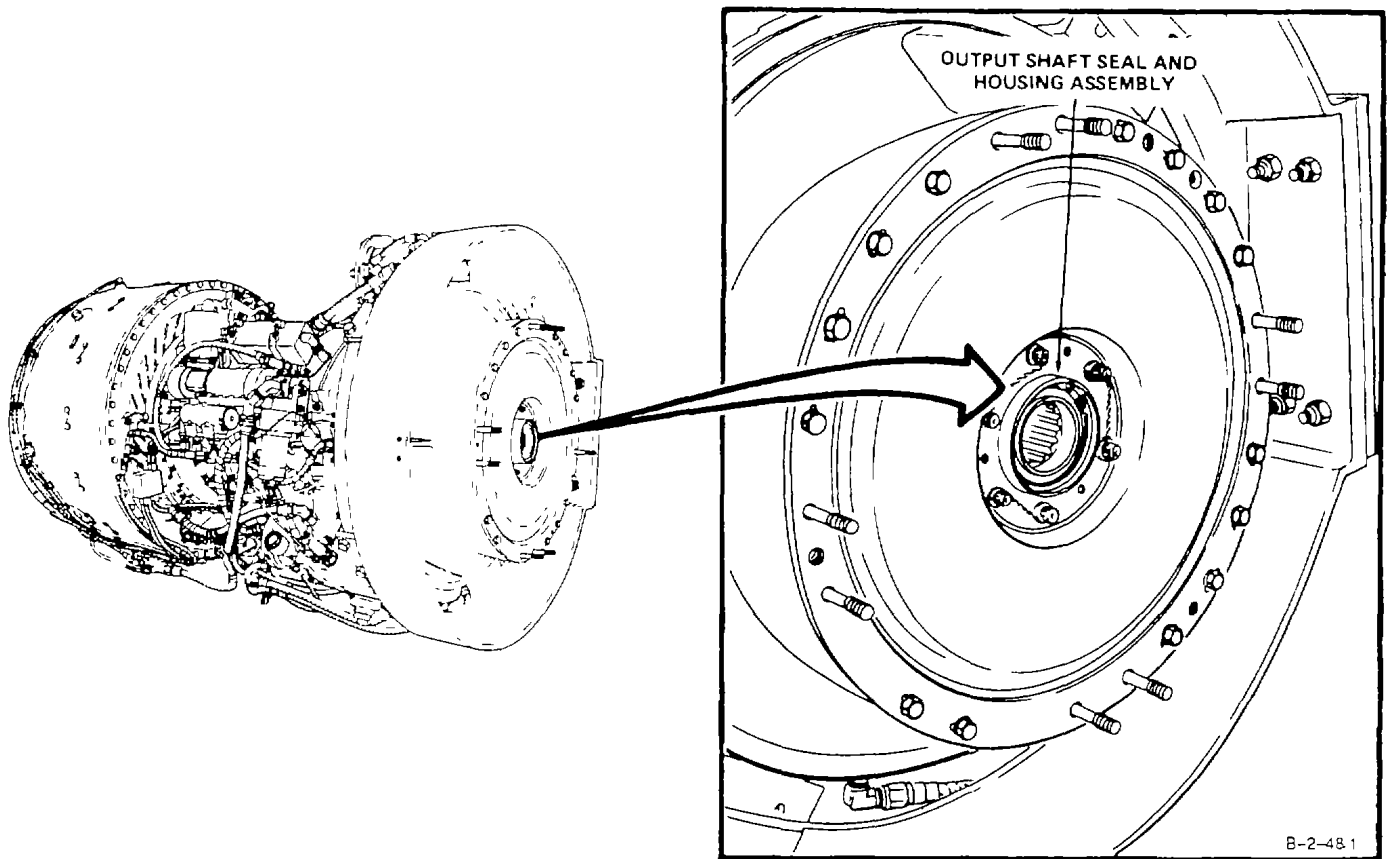
Wiping Rag (E64)

Personnel Required:

Aircraft Powerplant Repairer

References:

Task 2-41



GO TO NEXT PAGE