TECHNICAL BULLETIN

SANDY ENVIRONMENT AND/OR COMBAT OPERATIONS

FOR

T53-L-13B, T53-L-13BA
AND
T53-L-703 ENGINES

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

HEADQUARTERS, DEPARTMENT OF THE ARMY

28 April 1995

NORMAL

TECHNICAL BULLETIN

SANDY ENVIRONMENT AND/OR COMBAT OPERATIONS FOR T53-L-13B, T53-L-13BA AND T53-L-703 ENGINES

Headquarters, Department of the Army, Washington, D. C.
28 April 1995

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

NOTE
This publication is effective until rescinded or superseded.

1. Purpose. This technical bulletin is to be used as guidance while operating Army engines in a sandy environment and/or during combat operations.

2. Priority Classification. This technical bulletin is classified as NORMAL.

Equipment in Use (Including Equipment in Supply or Maintenance Activities Below Depot Level and Equipment in Administrative Storage). Equipment in use will be inspected as soon as practicable.

3. End Items to be Inspected.

Nomenclature	Part Number	NSN
T53-L-13B Engine	1-000-060-22	2840-00-134-4803
T53-L-13BA Engine	1-000-060-10OA	2840-01-093-7451
T53-L-703 Engine	1-000-060-23	2840-01-621-1860

4. Modules (Components, Assemblies, and Subassemblies) to be Inspected. Not applicable.

5. Parts to be Inspected. Refer to Sections I and II.

6. Application.

   a. Level of Maintenance. AVUM/AVIM.

   b. Applied by. AVUM/AVIM.

c. Time Required. Not applicable.

d. Additional Information. These instructions and tables are for sandy environment and/or during combat operations.

Refer to Appendix A for list of tables.

7. Supply Kits, Parts and Disposition.

a. Parts Required to Accomplish Technical Bulletin. Refer to Sections I and II.

NOTE

All records shall be maintained as before. Any inspection/component removal/other maintenance action which is deferred as a result of this technical bulletin shall be performed after the aircraft is removed from the sandy environment and/or combat operations.

b. Parts Disposition. Refer to Sections I and II.

c. Expendable Supplies.

Nomenclature	Part No./MIL Spec	NSN
Aluminum Oxide, (Grade 400) (or equivalent)	A-A-1048 (58536)	5350-00-161-9715
Brazing Alloy Material	MIL-B-15395 (81349)	3439-00-052-1899
Carborundum Stone		
Crocus Cloth	A-A-1206	5350-00-221-0872
Dry-Cleaning Solvent (Type I)	P-D-680 (81348)	6850-00-264-9038
Flux-O-F-499 (Brazing, Silver Alloy)	OF499 (81348)	3439-00-996-1776
Graphite Collodial "Dag" Dispersion	DAG No.154 (70079)	9150-01-101-1061
India Stone	SS-S-736 (81348)	5345-00-144-6894
Layout Dye	MIL-L-83795	6850-00-664-9067
Liquid Soap	P-S-624 (81348)	8520-00141-2519
Lockwire	MS20995C2 (96906)	9505-00-221-2650

Nomenclature	Part No./MIL Spec	NSN
Lockwire	MS9226-03 (96906)	9505-00-878-2958
Lockwire	MS20995C32-12 (96906)	9505-00-293-4208
Marking Pencil (Yellow) Colorbrite No. 2107 (or equivalent,	2107 (73685)	7510-00-465-0994
Transparent Bag	MIL-B-22020 (81349)	8105-00-027-8485

SECTION I. SPECIAL INSTRUCTIONS

NOTE

Some procedures required to accomplish sandy environment and/or combat operations are contained in TM 55-2840-229-23-1 and -2. When referencing procedures in the TM, the paragraph or figure number reference will be followed by (TM). All other paragraph or figure numbers refer to those contained in this technical bulletin.

8. Combustor Turbine Assembly (Hot End) - Special Inspection. An internal inspection of the combustor turbine assembly may be required if performance degradation is noted on the Health Indicator Test (HIT) and if the cause is not found in other areas of the engine, or in the engine instrumentation. If the visual inspection reveals a need for repair or replacement, refer to applicable paragraphs for the particular component. A combustor turbine inspection shall include the following.

a. Power shaft bolt flange depth measurement. (Refer to paragraph 4-40, TM.).

b. A tip clearance check of the second stage gas producer rotor, using a 0.020 inch feeler gage and of the second stage power turbine rotor, using a 0.025 inch diameter wire.

c. Table 1 is a checklist for internal (hot end) inspection.

Table 1. Internal (Hot End) Inspection Checklist.

COMPONENT	INSPECT FOR	REMARKS
Internal components in general	Indications of uneven combustion (e.g., heat damage or uneven carbon buildup).	Visually inspect. (Refer to paragraph 4-7, TM.)
Power shaft rear internal threads	Damage	Visually inspect.
Power shaft mating splines	Wear or fretting.	Visually inspect. (Refer to paragraph 4-3.1 TM.)

Table 1. Internal (Hot End) Inspection Checklist-Continued.

COMPONENT	INSPECT FOR	REMARKS
Second stage gas producer rotor assembly and second stage gas producer cylinder	1. Tip clearance.	1. Minimum clearance is 0.020 inch. (Refer to paragraph 4-12, TM.)
	2. Blade damage.	2. Visually inspect. (Refer to paragraph 4-15, TM.)
	3. Disc damage.	3. Visually inspect. (Refer to paragraph 4-15, TM.)
	4. Cylinder damage.	4. Visually inspect. (Refer to table 14.)
	5. Replace bolts with P/N 1-110-262-01, NSN 5306-01-081-4451.	5. Visually inspect.
Second stage gas producer nozzle assembly	1. Burning, distortion, and cracks.	1. Visually inspect. (Refer to table 14.)
	2. Axial clearance between nozzle and second stage gas producer rotor assembly at blade roots.	2. Minimum clearance is 0.120 inch T53-L-13B engine. Minimum clearance is 0.050 inch T53-L-703 engine. Measure bent wire. (Refer to paragraph 4-14, TM.).
First stage gas producer rotor assembly	1. Blade damage and loss of parent metal and FOD. Loss of metal not acceptable.	1. Visually inspect. (Refer to paragraph 4-18, TM.)
	2. Blade displacement, leading edge tip 0.030 maximum.	2. Perform sand and dust ingestion inspection. (Refer to paragraph 1-51, TM.)
	3. Sealing disc for rubs.	3. No rub damage allowed. (Refer to paragraph 4-18, TM.)
First stage gas producer nozzle assembly	1. Cracks in curl.	1.Visually inspect. (Refer to table 16.)
	2. Uneven liner wear on curl.	2. Visually inspect. (Refer to table 16.)
	3. Cracks in vane brazements and outer shroud.	3. Visually inspect. (Refer to table 16.)
	4. Cracks in cylinder.	4. Visually inspect. (Refer to table 16.)

Table 1. Internal (Hot End) Inspection Checklist - Continued.

COMPONENT	INSPECT FOR	REMARKS
First stage gas producer nozzle assembly (continued)	5. Check for interference fit between curl and combustion chamber liner.	5. Dimples on ID of liner must contact OD of curl. Verify by applying iron-blue pigment, (para 7c) to liner dimples and mating nozzle and liner to simulate hot end installation. If contact is not evident through 360 degrees, carefully bend liner tab(s) inward as required.
	6. Rubs are acceptable on inner shroud.	6. Visually inspect. (Refer to paragraph 3-16, TM.)
	7. Cracks in braze joint associated with rubs are not acceptable.	7. Visually inspect. (Refer to paragraph 3-16, TM.)
No. 2 bearing housing	Corrosion on shroud.	Visually inspect. (Refer to paragraph 2-75, TM.)
Combustion chamber deflector	Cracks.	Visually inspect. (Refer to paragraph 3-16, TM.)
Air diffuser	1. Third row vanes for nicks, dents, burrs, cracks and minor punctures.	1. Visually inspect. (Refer to table 9.)
	2. Third row vane brazements for minor cracks, voids, and crack-like indications.	2. Visually inspect. (Refer to table 9.)
	3. Broken oil lines. evidence of oil.	3. Check lower portion of diffuser for
First and second stage power turbine nozzle assemblies	Burning, cracks, and distortion. Metallization deposits are acceptable.	Visually inspect. (Refer to tables 19 and 18.)
First stage power turbine rotor assembly	1. Blade damage.	Visually inspect. (Refer to table 15.)
	2. Bolts for security.	
Second stage power turbine rotor and bearing housing assembly	1. Tip clearance.	1. Minimum tip clearance 0.025 inch. (Insert wire through rear of exhaust diffuser.)
	2. Blade damage.	2. Visually inspect. (Refer to paragraph 4-53, TM.)

Table 1. Internal (Hot End) Inspection Checklist - Continued.

COMPONENT	INSPECT FOR	REMARKS
Second stage power turbine rotor and bearing housing assembly (continued)	3. Bearing housing, corrosion on baffle.	3. Visually inspect. (Refer to paragraph 4-53, TM.)
Combustion chamber housing	Cracks, hot spots, burned areas, or buckling.	Visually inspect. (Refer to table 11.)
Combustion chamber drain valve	Torque of 35 to 40 pound-inches on attaching bolts.	If bolts are loose, remove valve; replace gasket and check for cleanliness and proper operation. (Refer to paragraph 3-25, TM.) Reinstall.
Combustion chamber liner	1. Cracks or burn damage.	1. Visually inspect (Refer to table 12.)
	2. Liner brackets for damage.	2. Check liner for excessive movement.
	3. Check for interference fit between combustion chamber liner and first stage gas producer nozzle curl.	3. Dimples on ID of liner must contact OD of curl. Verify by applying iron-blue pigment, (para 7c) to liner dimples and mating nozzle and liner to simulate hot end installation. If contact is not evident through 360 degrees, carefully bend liner tab(s) inward as required.
Main fuel nozzles	Chafing and clogging.	Visually inspect. (Refer to paragraph 6-58, TM .)
Starting fuel nozzles	Evidence of clogging and improper operation.	Visually inspect. (Refer to paragraph 6-43, TM.)
Igniter plugs	Cracks in ceramic and evidence of contact with liner.	Visually inspect. (Refer to paragraph 7-46, TM.)
V-band coupling	1. Cracks.	1. Visually inspect. (Refer to paragraph 3-35, TM.)
	2. Proper torque of bolts.	2. Use torque wrench. (Refer to paragraph 4-27, TM.)
Exhaust diffuser	Cracks, burns, and buckling.	Visually inspect. (Refer to table 13.)

Note: Perform vibration test (paragraph 1-93, TM). Perform Jetcal test (paragraph1-75, TM) following engine reassembly.

9. Inlet Housing and Compressor Assembly - Special Inspection.

a. An internal inspection of the compressor assembly may be required if performance degradation is noted on the Health Indicator Test (HIT) and if the cause is not found in other areas of the engine, or in the engine instrumentation. If the visual inspection reveals a need for repair or replacement, refer to applicable paragraphs for the particular component.

b. Table 2 is a checklist for compressor assembly inspection:

Table 2. Internal (Cold Section) Inspection Checklist.

COMPONENT	INSPECT FOR	REMARKS
Inlet Housing	Corrosion.	Visually inspect (refer to table 4).
Guide Vanes	Vane damage and binding.	Visually inspect (refer to para 2-9, TM).
Compressor Housing	Corrosion and cracking.	Visually inspect (refer to table 6).
Stator Vanes	FOD, cracks and distortion.	Visually inspect (refer to table 6).
Blades	FOD and erosion.	Visually inspect (refer to table 8). Record rotor assembly number 1-100-720-___on engine records.
Rotor Hub	Cracks, rubs and damage.	Visually inspect (refer to para 2-36, TM).
Impeller Housing	Rubs, cracks and corrosion.	Visually inspect (refer to table 6).
Impeller	FOD and erosion.	Visually inspect (refer to para 2-41, TM)
Air Diffuser-First Row Vanes	FOD and erosion.	Visually inspect (refer to table 9).
Inlet Guide Vane Acuator Assembly	Binding, distortion or excessive wear.	Visually inspect (refer to para 2-13, TM)
Bleed Band Actuator Assembly	Binding, distortion and scoring.	Visually inspect (refer to para 2-58, TM).

Note: Perform inlet guide vane actuator operational check (table 5) and a bleed band closure check (table 10) following engine reassembly.

10. Inspection Following the Use of Emergency Fuels - Special Inspection. Refer to table 3.

Table 3. Inspection Following the Use of Emergency Fuels.

	LOCATION/ITEM	REMARKS	ACTION
	ENGINE/	**NOTE**	
		Inspection is not required until operational limit has been reached.	
1.	Combustor Turbine Assembly	Refer to paragraphs 4-2 and 4-4 (TM).	**Remove and dissemble.**
2.	Gas Producer Turbine Rotor	Refer to paragraphs 4-28 and 6-4 (TM).	**Remove** gas producer turbine rotors, air deflector and nozzle(s).
		WARNING **When an engine has operated on leaded fuel the internal parts of the combustion chamber will be coated with poisonous lead-oxide deposits in powder form. Use all possible precaution to prevent the powder from entering any cuts or body openings, particularly the mouth and nostrils. Because of possible absorption, the lead-oxide powder must not be allowed to remain on the skin. Always wear gloves and a face mask when disassembling a contaminated engine.**	
3.	Engine	T53-L-13B engine only. This action pertains to all engine parts with the exception of the first and second stage gas producer nozzle assemblies and first and second stage gas producer turbine rotor assemblies.	**Clean** all parts using vapor blasting (liquid honing) method. (Refer to paragraph H-11, TM.)
4.	Engine		**Perform** a thorough inspection of all parts. Refer to applicable paragraphs for instructions on inspection, repair, and replacement of each affected component.

11. Overtemperature Limits (T53-L-703 Engine) - Special Inspection. An overtemperature condition exists under the following specifications.

a. During starts or accelerations when turbine gas temperature TGT exceeds 950°C at any time, or when TGT exceeds 900'C for more than 5 seconds.

CAUTION

If the above temperature is exceeding, a hot end inspection must be performed. Replace engine if temperature exceeds 1000°C.

b. When 30 minute limit is exceeded between 821°C and 9000C.

CAUTION

If the engine cannot be operated without exceeding TGT limits, this is an indication of operation in excess of normal capabilities, engine malfunction, or instrument error.

c. When an engine has been subjected to an overtemperature condition, an internal (hot end) inspection shall be performed (refer to paragraph 8).

SECTION II. INSPECTION PROCEDURES FOR A SANDY ENVIRONMENT AND/OR DURING COMBAT OPERATIONS

12. The following procedures/limits shall be used to minimize engine damage in a sandy environment and/or during combat operations.

a. Inlet Housing Assembly - Inspection. Refer to table 4.

Table 4. Inspection of Inlet Housing Assembly.

LOCATION/ITEM	REMARKS	ACTION
INLET HOUSING ASSEMBLY/	**WARNING** **All repair of damaged threads and corrosion maintenance and repair will be in accordance with Nuclear Regulatory Commission source material license number "STB-1433" issued to ATCOM.** **WARNING** **HANDLING COMPONENTS CONTAINING THORIUM** **The engine components listed in Appendix I (TM) contain Thorium, a radioactive material. Maintenance of these components is limited to their replacement unless other maintenance is specifically authorized and is covered by a valid U. S. Nuclear Regulatory Commission license.** **Dispose of non-reparable Magnesium Thorium parts as radioactive waste in accordance with AR 385-11.** **The following part numbers contain Magnesium Thorium (MG-TH), a radioactive material:** **1-060-100-07 Inlet Housing Assembly** **1-060-220-03 Inlet Housing Assembly** **1-030-390-05 Front Cover Housing Assembly.**	
1. Studs on Inlet Housing Flange		**Inspect** for crossed or damaged threads. One damaged stud allowed for each 900 quadrant.

Table 4. Inspection of Inlet Housing Assembly. - Continued

LOCATION/ITEM	REMARKS	ACTION
INLET HOUSING ASSEMBLY/ Continued		
2. Inlet Housing Assembly	Observe the following repair limitations: Active corrosion without breakthrough or causing external leakage, is acceptable after repair. Proceed as follows:	Inspect for corrosion.
	CAUTION **Use care when brushing with fiber brush so as not to mar finish of nonaffected surrounding parts.**	
3. Repair Area	Observe the following limits: a. Corrosion with pitting but not causing external leakage should be repaired according to paragraph H-13 (TM) instructions but using Preferred Method epoxy sealant application. b. Corrosion creating external leakage is nonrepairable and is cause for return of engine to overhaul. c. All corrosive pitting on the outer mounting flange is acceptable, provided there is no functional interference with the mating part. d. Refinish according to paragraph H-13 (TM). e. Complete refinishing according to paragraph H-13 (TM).	Finish repair according to paragraph H-13 (TM).

b. Inlet Guide Vane Actuator Assembly - Operational Check. Refer to table 5.

NOTE

To perform an operational check, coupling assembly (LTCT13725, detail of switch and coupling kit, LTCT13726) is required.

(1) An operational check of the inlet guide vane actuator assembly must be performed whenever the fuel control is replaced, inlet guide vane actuator assembly is replaced, improper operation of the actuator is suspected, or when basic rigging of VIGV actuator has been performed.

(2) Improperly adjusted variable inlet guide vanes (VIGV) will have an adverse effect on engine operation. If the inlet guide vanes fail to reach the '"full open" position. the engine will exhibit low torque, low exhaust or turbine gas temperature (EGT or TGT) and high N1 speed. Should the inlet guide vanes reach the "full open" position at too low an N1 speed, any rapid N1 speed changes could induce surge. Since the 'full open" position is most critical in regard to engine performance, this has been the traditional adjustment point. Testing has shown that the inlet guide vanes can be adjusted in most cases at the point where they begin to open. While adjustment at this point is not as conclusive as adjustment at the "full open" position, it has the advantage of not requiring a flight test and, therefore, is less time consuming.

NOTE

During sandy environment and/or combat operations, the VIGV “full open position" should be adjusted to the highest allowable N1 speed.

(3) It is suggested that adjustment of the inlet guide vanes be performed at the "begin to open" point. If this adjustment is not sensitive enough, adjustment at the "full open" position should be made.

(4) Adjustment of the VIGV can be performed anywhere within the allowable range and should be done in increments of one percent N1 speed. For example: If an engine exhibits low power, low EGT, and high N1 speed, and the VIGV adjustment point falls at the upper portion of the allowable range, the adjustment point may be lowered (within the range) in one percent increments until the problem is solved.

Table 5. Operational Check of Inlet Guide Vane Actuator.

LOCATION/ITEM	REMARKS	ACTION
ACTUATOR ASSEMBLY/		
1. Inlet Guide Vane Actuator		**Perform** an actuator piston static check to insure freedom of travel within the housing.
	NOTE **Perform static check according to action for item 2.**	
	CAUTION **To preclude damage/distortion to VIGV components, insure that torque on "B" nuts to CYL I and CYL 2 lines at actuator is released.**	
2. Inlet Guide Vane Actuator	**Fuel Controls P/N 84200A7A Only**	**Move to full open position. Aline** blast mark or scribe line on actuator control with scribe line on rigging plate. See detail A in figure 1, sheet I of 2.
2.1. Inlet Guide Vane Actuator	Fuel Controls P/N 100770-A4 Only	a. Move to full open position. A line blast mark on actuator control with scribe line on rigging plate. Refer to figure 1, sheet 1 of 2. b. Move the IGV lever on fuel control to the full open (NULL) position. See Detail B. c. Adjust feedback rod ends to proper length.
	NOTE **Step b is for basic rigging only and a VIGV operational check with coupling switch LTCT1 3725 is required.**	

Table 5. Operational Check of Inlet Guide Vane Actuator - Continued.

LOCATION/ITEM	REMARKS	ACTION
ACTUATOR ASSEMBLY/ Continued		
	CAUTION **Position the assembly to provide adequate clearance with the feedback rod and arm in the following item 3.**	
	NOTE **The pressure switch in following item 3 should be set to indicate between 70 and 80 psi (4. 9 kg/sq cm to 5. 6 kg/sq cm). Refer to item 26, table 5.**	
3. Inlet Guide Vane Actuator	Perform this action to adjust VIGV at "begin to open" point. Use coupling assembly (LTCT13725, detail of switch and coupling kit LTCT13726). Repositioning of CYL 2 line may be required to allow installation of switch and coupling assembly. Refer to figure 1, sheet 2 of 2.	Install switch and coupling assembly between VIGV actuator and CYL 2 line. Tighten "B" nut on CYL 2 line to required torque.

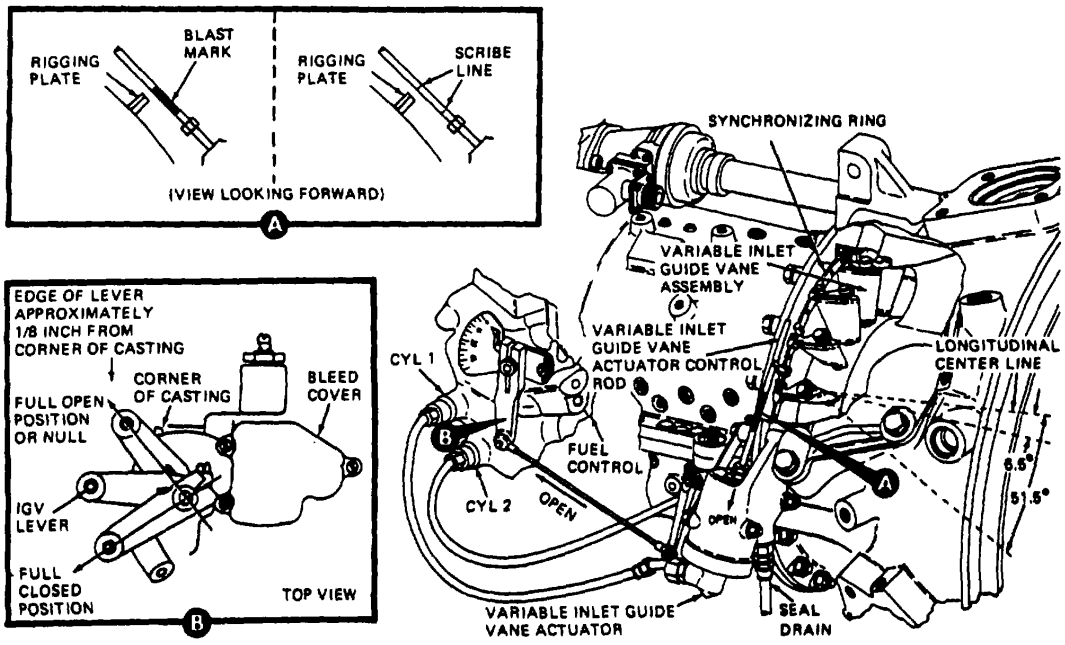


Figure 1. Inlet Guide Vane Actuator Assembly (Sheet 1 of 2)

Table 5. Operational Check of Inlet Guide Vane Actuator- Continued.

LOCATION/ITEM	REMARKS	ACTION
ACTUATOR ASSEMBLY/ Continued		
4. Inlet Guide Vane Actuator	Use switch and coupling assembly (LTCT13725, detail of switch and coupling kit LTCT13726).	Remove cannon plug from transmission low oil pressure warning light switch and connect lead from switch and coupling assembly. Tighten all lines to required torque.
	CAUTION **The engine oil pressure gage or transmission oil pressure gage must be visually monitored because the warning light is disconnected.**	
5. Engine		Start and allow to stabilize at flight idle. Check for fuel leaks.

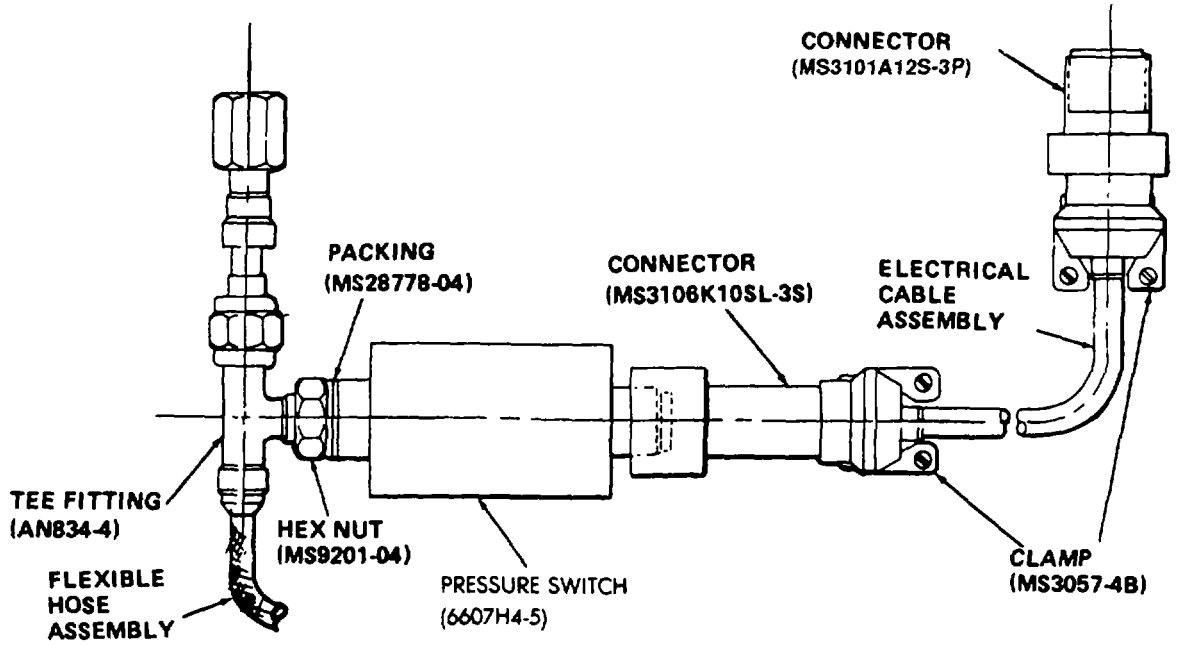


Figure 1. Inlet Guide Vane Actuator Assembly (Sheet 2 of 2)

Table 5. Operational Check of Inlet Guide Vane Actuator - Continued.

LOCATION/ITEM	REMARKS	ACTION
ACTUATOR ASSEMBLY/ Continued		
6. Anti-Icing System, Heater System, and Air-Conditioning System.	Refer to applicable air-frame manual.	Insure these systems are off.
	NOTE **Due to internal differences of switch and coupling assembly LTCT13725, the low oil pressure warning light may come on or go out.**	
7. Engine	Figure 2 illustrates gas producer speed at which inlet guide vane operates versus ambient temperature. Enter graph at the lower band at N1 speed and OAT obtained in this action. (Add 30C in temperature recorded in this action. OAT +3° C equals compensated temperature.) Determine that N1 speed falls within this band.	Increase N1 speed above flight idle. Record N1 speed and outside air temperature (OAT) when low oil pressure warning light actuates. Repeat this check three times to obtail a mean N1 speed.

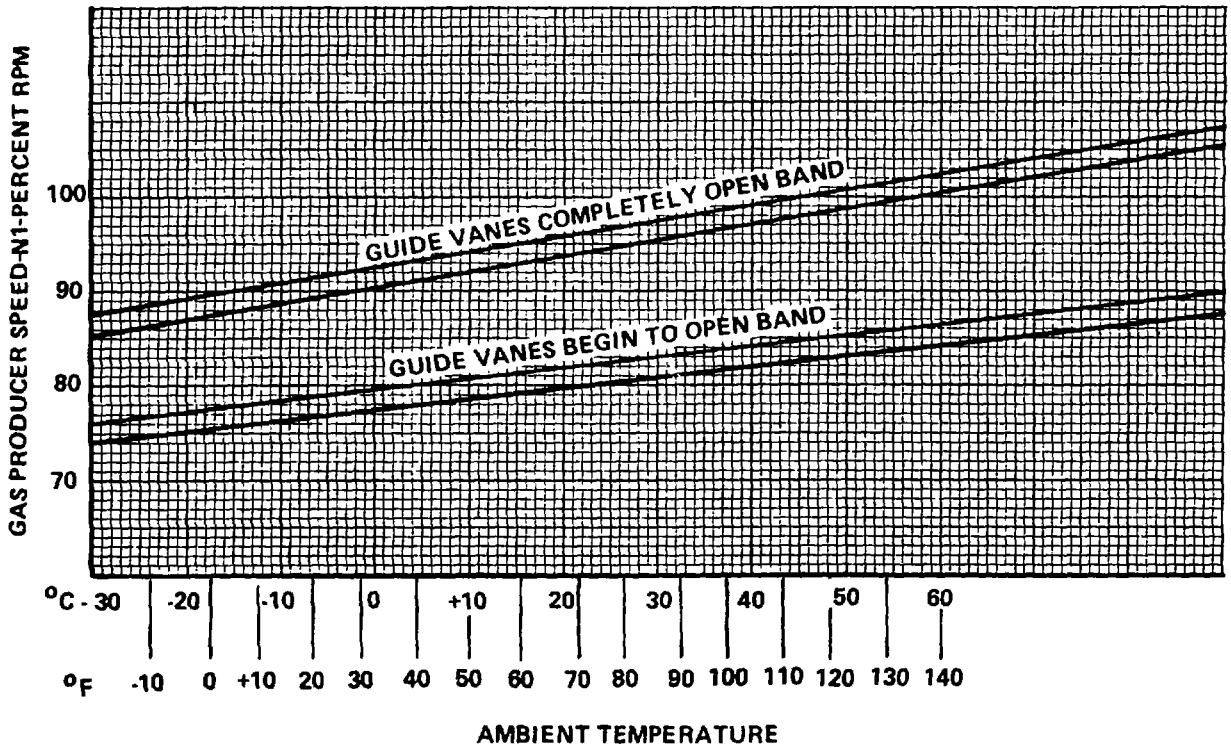


Figure 2. Gas Producer Speed.

Table 5. Operational Check of Inlet Guide Vane Actuator - Continued.

LOCATION/ITEM	REMARKS	ACTION
ACTUATOR ASSEMBLY/ Continued		
8. Inlet Guide Vane	Adjustments should be made in increments of one percent N1 speed. (Refer to fig. 2.)	Adjust if N1 speed does not fall within the allowable band.
	NOTE **Perform inlet guide vane adjustment according to actions for items 8 thru 11.**	
9. Feedback Rod		**Adjust** as follows: a. **Disconnect.** b. **Loosen** rod end jamnut. c. **Adjus**t rod length.
10. Feedback Rod		**Shorten** to **decrease** N1 speed at which guide vanes "begin to open." Lengthen rod to increase "begin to open" N1 speed.
11. Feedback Rod	Five turns will result in approximately a 2 percent N1 change.	**Adjust** both rod ends if necessary to maintain the same amount of thread engagement. Repeat actions for items 4 thru 11.
12. Switch and Coupling Assembly	Use switch and coupling assembly (LTCT13725, detail of switch and coupling kit LTCT13726).	**Remove** at completion of check.
13. CYL 2 line		**Reconnect** to actuator.
14. Inlet Guide Vane Actuator		**Tighten** "B" nut CYL 2 line to required torque.
15. Inlet Guide Vane Actuator		**Reconnect** low oil pressure warning switch cannon plug. **Perform** a leak check prior to releasing aircraft for flight

Table 5. Operational Check of Inlet Guide Vane Actuator - Continued.

LOCATION/ITEM	REMARKS	ACTION
ACTUATOR ASSEMBLY/ Continued		
16. Inlet Guide Vane Actuator	Prior to performing a VIGV check at the "full open" point, insure that the rigging is correct. Use switch and coupling assembly (LTCT13725, detail of switch and coupling kit LTCT13726). Refer to figure 1, sheet 2 of 2.	Adjust at "full open" point Install switch and coupling assembly between the VIGV actuator and the CYL 1 line.
	NOTE	
	Perform procedures outlined in preceding actions for items 9 thru 11.	
	CAUTION	
	When the engine is run do not exceed maximum N1 (101.5 percent) torque (50 psig), or EGT limits.	
17. Inlet Guide Vane Actuator	Refer to paragraph 1-117 (TM).	**Perform** power check and trim adjustment for low oil pressure warning light. **Note** when low oil pressure warning light goes out (guide vanes completely open). Simultaneously **read** N1 speed and outside air temperature (°C). **Repeat** this check three times to **obtain** a VIGV mean "full open" N1 speed.
18. Aircraft		**Land.**
19. Inlet Guide Vane Actuator		**Add** 3° C to temperature recorded in action for item 17 to **compensate** for temperature rise through inlet duct (OAT plus 30C equals compensated temperature).
	NOTE	
	Plot on graph (fig. 2) the N1 speed determined in proceeding item 17 and the compensated OAT. Insure that N1 speed falls within the upper band. If not, adjust according to action items 20 and 21.	

Table 5. Operational Check of Inlet Guide Vane Actuator - Continued.

LOCATION/ITEM	REMARKS	ACTION
ACTUATOR ASSEMBLY/ Continued		
20. Feedback Rod	Five turns of the rod will change the N1 speed approximately two percent.	**Shorten** to **decrease** N1 speed at which inlet guide vanes reach "full open" position.
21. Feedback Rod		**Lengthen** to **increase** N1 speed at which inlet guide vanes reach "full open" position.
22. Inlet Guide Vane Actuator	Perform this action upon completion of adjustments.	**Disconnect** low oil pressure light switch and coupling assembly (LTCT13725, detail of switch and coupling kit, LTCT13726). **Reconnect** cannon plug and **lockwire** (para 7c).
23. Inlet Guide Vane Actuator Line line.		**Remove** assembly from inlet guide vane actuator and CYL 1 **Reconnect** line to actuator. **Tighten** "B" nut CYL 1 line to required torque. **Perform** a leak check prior to releasing aircraft for flight. **Lockwire** connections previously lockwired (para 7c).
24. Feedback Rod	Perform this action if switch and coupling assembly (LTCT13725, detail of switch and coupling kit, LTCT13726) are not available and low power complaints or surge are experienced.	**Perform** trial-and-error method of shortening or lengthening feedback rod with a subsequent test flight to **determine** engine performance is recommended.
25. Inlet Guide Vane Actuator	If a fuel control change is necessary and the switch and coupling assembly (LTCT13725, detail of switch and coupling kit, LTCT13726) or the pressure switch and tee fitting assembly are not available, perform these actions.	a. **Rig** feedback rod to aline VIGV protractor. **Position** indicator with zero on fuel quadrant plate and VIGV full open. b. **Perform** a power check and trim adjustment (para 1-117, TM). If engine exhibits low torque, low EGT, and high N1 speed, shorten feedback rod accordingly.

Table 5. Operational Check of Inlet Guide Vane Actuator - Continued.

LOCATION/ITEM	REMARKS	ACTION
ACTUATOR ASSEMBLY/ Continued		
26. Switch and Coupling Assembly	Switch and coupling assembly (LTCT13725, detail of switch and coupling kit, LTCT13726).	**Perform** periodic functional check to **insure** proper operation. **Use** the following method: a. **Cap** off one end of switch fitting. **Attach** a controllable (pressure) source of filtered air to other end.
	NOTE • **Insure** switch and coupling assembly is functioning properly. • For a sandy environment and/or during combat operations, functional check shall be performed every 90 days or as required.	b. **Connect** a continuity meter to each pin of pressure switch. c. **Apply** filtered air pressure to switch. **Observe** to **insure** continuity between pins. **Pressure** should indicate 70 psi to 80 psi (4.9 kg/sq cm to 5.6 kg/sq cm). d. **Replace** switch if defective.

c. Compressor and Impeller Housing Assembly - Inspection. Refer to Table 6.

Table 6. Inspection of Compressor and Impeller Housing Assembly.

LOCATION/ITEM	REMARKS	ACTION
COMPRESSOR HOUSING/	**NOTE**	
For exploded view, see figure in paragraph 2-22, item 2 (TM).		
	NOTE **In following step, corrosion creating external leakage or a possibility of material fall out is non-repairable. Pitting is acceptable. However, all pitting and corrosion shall be removed and magnesium touched up. Refer to paragraph H-13, steps 2 through 5 (TM).**	
1. Compressor and Impeller Housings	Refer to table 7 for repair.	Visually **inspect** for nicks, burrs, and cracks. (Refer to fig. 3.) **Repair.**
2 Mating Flanges of Compressor and Impeller Housings		**Inspect** for corrosion. **Observe** the following repair limitations: a. Corrosion, including light pitting to a depth of 0.020 inch without breakthrough or causing external leakage, is acceptable after repair. b. Corrosion with pitting greater than 0.020 inch in depth but not causing external leakage or possibility of material fallout should be repaired according to paragraph H-13 (TM). Use Preferred Method epoxy sealant application. c. Corrosion creating external leakage or a possibility of material fallout is non-repairable and is cause for replacement.

Table 6. Inspection of Compressor and Impeller Housing Assembly - Continued.

LOCATION/ITEM	REMARKS	ACTION
COMPRESSOR HOUSING/ Continued		
3. All Threaded Parts	Refer to paragraph H-29 (TM) for replacement of damaged thread inserts.	**Inspect**. **Repair** damaged threads. **Replace** damaged thread inserts. **Replace** parts having irreparable threads.
4. Stator Vane	Refer to table 7 for repair procedures.	**Inspect** leading and trailing edges of each stator vane for nicks, burrs, pits and dents. **Repair.**
5. Stator Vane	Refer to table 7 for repair procedures.	**Check** for bending or distortion. **Repair.**
6. Stator Vane	Cracks are permitted in inner and outer shroud brazement if they do not exceed 1/8 inch in length and affect no more than five vanes per assembly half. Cracks that extend into parent metal are not permitted.	**Inspect** for cracks in inner and outer shroud brazements.

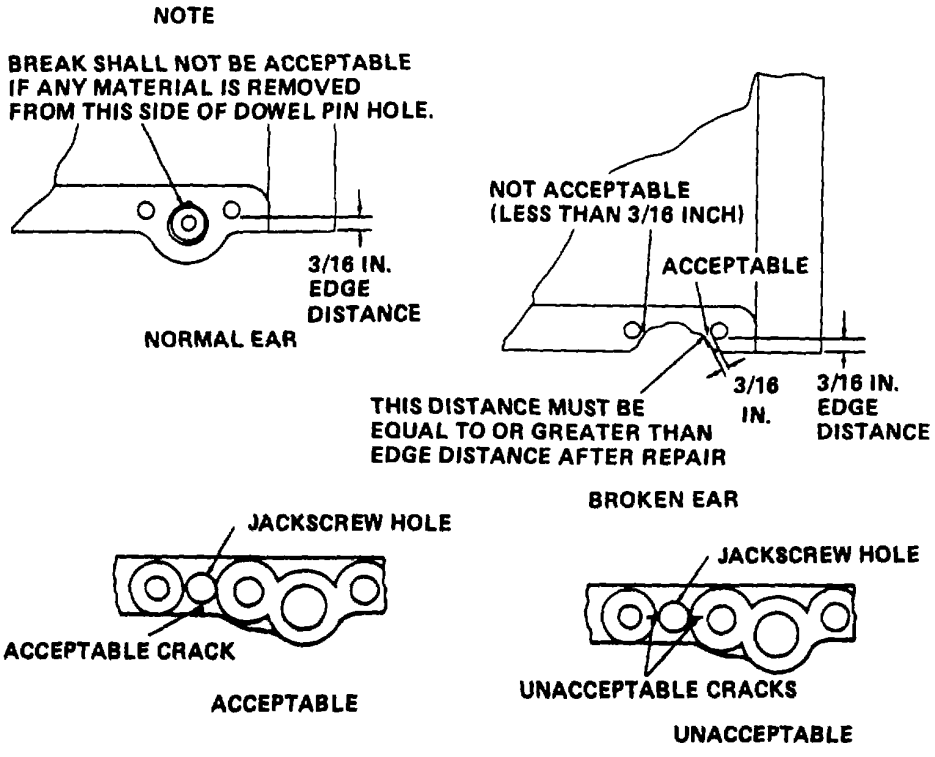


Figure 3. Compressor Housing.

Table 6. Inspection of Compressor and Impeller Housing Assembly - Continued.

LOCATION/ITEM	REMARKS	ACTION
COMPRESSOR HOUSING/ Continued		
7. Magnesium Impeller Housing Assembly	T53-L-13B engine only. Refer to table 7 for repair procedures.	Visually inspect for cracks in housing to air diffuser mounting hole bosses. (Refer to fig. 4.) Two tight-lipped cracks per housing half are acceptable, provided they do not occur on the same hole and are located on the outboard portion of the boss. Repair housing assembly.
	Slight rubs up to 0.010 inch in depth are allowed.	Visually inspect for corrosion. (Refer to table 6.)

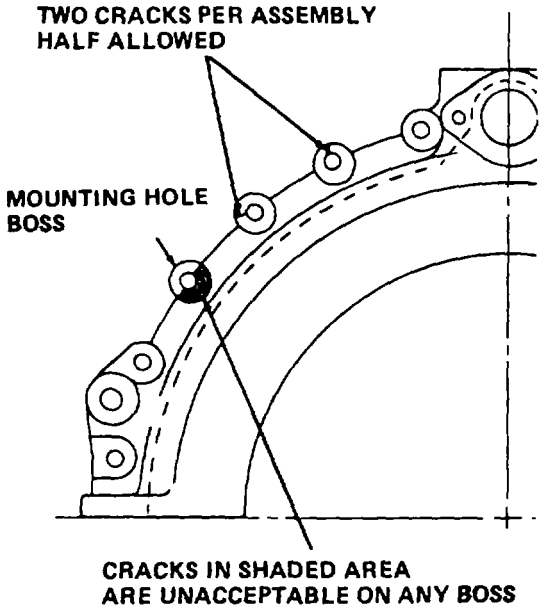


Figure 4. Magnesium Impeller Housing.

Table 6. Inspection of Compressor and Impeller Housing Assembly - Continued.

LOCATION/ITEM	REMARKS	ACTION
COMPRESSOR HOUSING/ Continued		
8. Stainless Steel Impeller Housing Airflow Path	**NOTE** Surface defects (nicks and burrs) on exterior of housing may be blend-repaired. Refer to paragraph H-25 (TM).	**Inspect** for nicks, dents, and rubs**. Observe** limits as follows: a. Small scattered nicks and dents up to 0.010 inch in depth allowed. b. Slight rubs up to 0.005 inch in depth are allowed

d. Compressor and Impeller Housing Assembly - Repair. Refer to Table 7.

Table 7. Repair of Compressor and Impeller Housing Assembly.

INITIAL SETUP
Special Tools
Padded Pliers or Equivalent
Diesinker Type Files

LOCATION/ITEM	REMARKS	ACTION
COMPRESSOR HOUSING/	**NOTE**	
	If either half of axial compressor housing is damaged beyond repair, both halves must be replaced.	
	If damage on only one half of a compressor vane assembly exceeds the maximum permissible limits, only that affected assembly half shall be replaced. Stator vane halves remaining after other halves have been rejected can be matched with another serviceable half.	
	Rematched stator vane assemblies shall meet all assembly requirements. Halves of rematched stators should have the same degree of foreign object damage or erosion wear, within established limits, (an eroded stator half should not be rematched with a noneroded half).	
1. Stator Vanes	**Repair** shall be made with small Swiss type files, India or carborundum stones (para 7c). Abrasive crocus cloth (para 7c) shall be used for final **polishing**. Power tools shall not be used. All repairs shall be **blended** and **finished** smoothly. The finish strokes of all repair work shall be parallel to the longitudinal axis of the vane.	**Observe** REMARKS when performing repairs.
2. Stator Vanes	Dents with smooth contours are acceptable without rework provided that they do not exceed repair limits. Refer to figure 5.	**Observe** repair limits.
3. Airfoil	Performance of this action shall be done provided damage does not exceed 1/4 vane thickness. Refer to figure 5, section AA.	**Blend-repair** nicks, burrs, pits and rough dents.

Table 7. Repair of Compressor and Impeller Housing Assembly - Continued.

LOCATION/ITEM	REMARKS	ACTION
COMPRESSOR HOUSING/ Continued		
4. Leading and Trailing Edge	a. Nicks and dents up to 0.080 inch deep after repair are permitted on the leading and trailing edge. Refer to figure 5. b. Nicks and dents are acceptable without repair, provided that they do not exceed maximum permissible limits. c. Nicks and dents on vanes in inaccessible areas of repair are acceptable without rework, provided that they do not exceed maximum permissible limits.	**Observe** limits given.
5. Stator Vanes	Use padded pliers or equivalent. If straightening causes a crack in the vane the assembly half shall be replaced.	**Straighten** bent vanes.

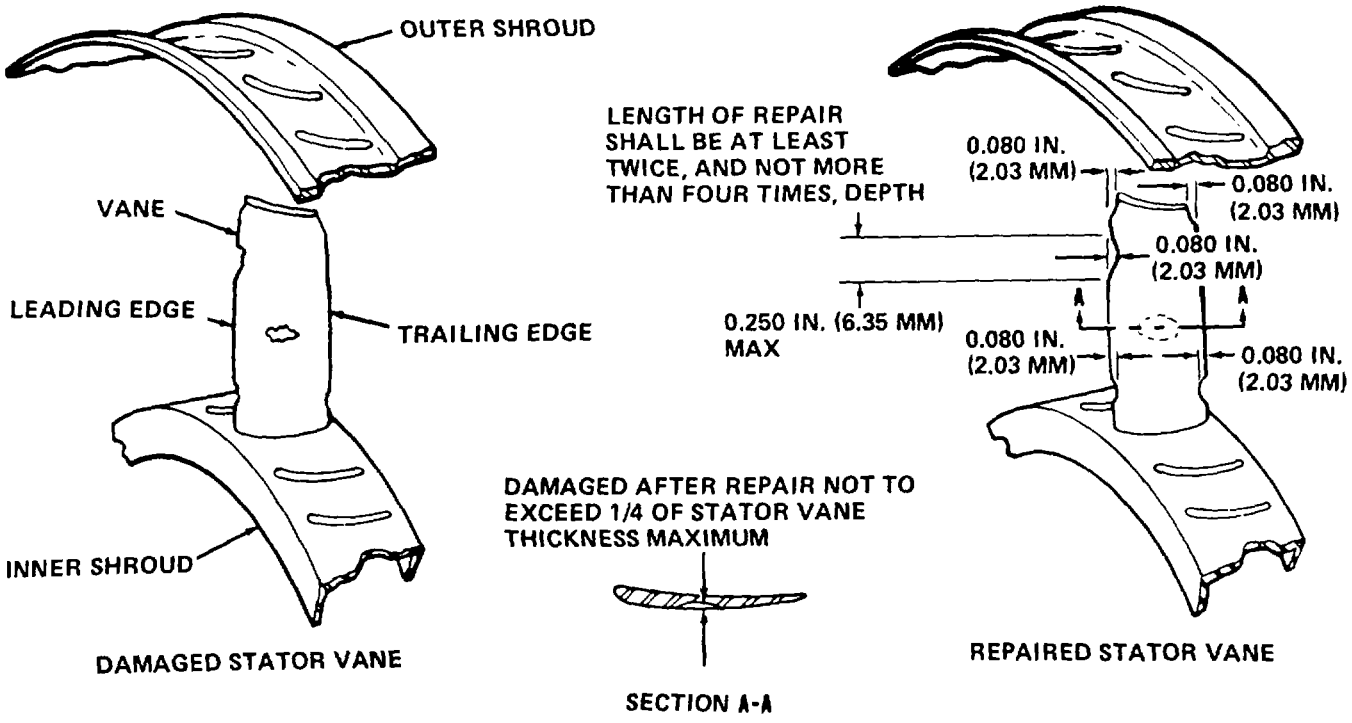


Figure 5. Stator Vanes.

Table 7. Repair of Compressor and Impeller Housing Assembly - Continued.

LOCATION/ITEM	REMARKS	ACTION
COMPRESSOR HOUSING/ Continued		
6. Compressor and Impeller Housings	Refer to paragraph H-13 (TM).	**Remove** nicks and burrs from impeller and compressor housing. **Touch up** reworked areas on magnesium housings only.
7. Compressor and Impeller Housings		**Replace** parts that have irreparable cracks, crossed threads or distortions.
8. Impeller Housing		**Replace** both impeller housing halves if crack limits in the housing to air diffuser mounting hole bosses are exceeded or open cracks are evident.
9. Painted Surfaces		**Refinish** painted surfaces. (Refer to paragraph H-13, TM.) Steel impeller housings do not require refinishing.

e. Compressor Rotor Blades - Inspection. Refer to Table 8.

Table 8. Inspection of Compressor Rotor Blades.

LOCATION/ITEM	REMARKS	ACTION
COMPRESSOR ROTOR ASSEMBLY/	**NOTE** **Mark all damages or defects with a marking pencil (yellow) Colorbright No. 2107 (para 7c).**	
1. Compressor Housing Half	Refer to paragraph 2-22, (TM).	**Remove** from engine to perform the following procedures.
2. First Stage Blades		**Inspect** for evidence of compressor inlet blockage.
3. First and Second Stage Blades	Perform this step if blockage is confirmed by the presence of foreign material such as grass, rags, etc.	**Remove** and **replace**.
	NOTE **If available facilities do not permit the following inspection and graphite treatment, remove defective blades and replace with acceptable blades. Forward used blades to depot for determination of serviceability.**	
4. First Stage Blades	Perform this action if blockage is suspected but not confirmed. Apply graphite coating (para 7c) to acceptable blades.	**Inspect** as follows: a. **Rotate** rotor. **Inspect** visually for bent or distorted blades. **Replace** bent or distorted blades. b. Visually inspect for cracks with blades installed.
	CAUTION **If cracks are found on any first stage blade, scrap all first and second stage blades and replace with new blades.**	

Table 8. Inspection of Compressor Rotor Blades-Continued.

LOCATION/ITEM	REMARKS	ACTION
COMPRESSOR ROTOR ASSEMBLY/ Continued	**NOTE** **Repairs shall be made with small Swiss type files, India or carborundum stones. Abrasive crocus cloth (para 7c) shall be used for final polishing. Power tools shall not be used. All repairs shall be blended and finished smoothly. Lines, scratches, or sharp edges that might cause a concentration of stress are not permitted. Finish strokes of all repair work shall be parallel to the longitudinal axis of the blade. When the blade is repaired on the leading and trailing edges, the edge shall be blended to a smooth radius as part of the repair. Figure 6 (sheet 1 of 3) shows a typical compressor rotor blade damage before and after repair.**	
5. First Stage Blades	Use standard inspection equipment.	**Inspect** for sand and dust erosion as follows: a. **Inspect** leading edge of blades for undercutting, erosion roughness, and slight rolled-over effect. To detect rolled-over effect, run finger-nail along airfoil on convex side until leading edge is contacted. (Refer to fig. 6, sheet 1 of 3). b. **Place** a straight edge (6-inch or 152.4 mm scale or equivalent) slightly above platform radius. Use a 0.0156 inch wire gage as a "Go" or "No-Go" device. **Determine** the degree of undercutting. A maximum of 0.0156 inch is permissible along leading edge area between platform radius and tip. A wavy pattern (more than one undercut area) is unacceptable. **Repair** within limits by **stoning** blades on leading edge only (from blade tip to platform radius). **Remove** sharp projections. Strokes shall be parallel to leading edge.

Table 8. Inspection of Compressor Rotor Blades-Continued.

LOCATION/ITEM	REMARKS	ACTION
COMPRESSOR ROTOR ASSEMBLY/ Continued		c. **Measure** chordal width at midpoint of blades. (Refer to fig. 6, Sheet 2 of 3.) Blades are acceptable if chordal width is 0.962 inch or greater. If limit cannot be met, **replace** defective blades. (**Refer** to paragraph 2-33, TM.) d. Erosion roughness and rollover effect is acceptable, provided that the preceding requirements are met. (Refer to fig. 6, Sheet 3 of 3.) e. Visually **inspect** for nicks, burrs, dents, and other foreign object damage. **Replace** blades that exceed limits.

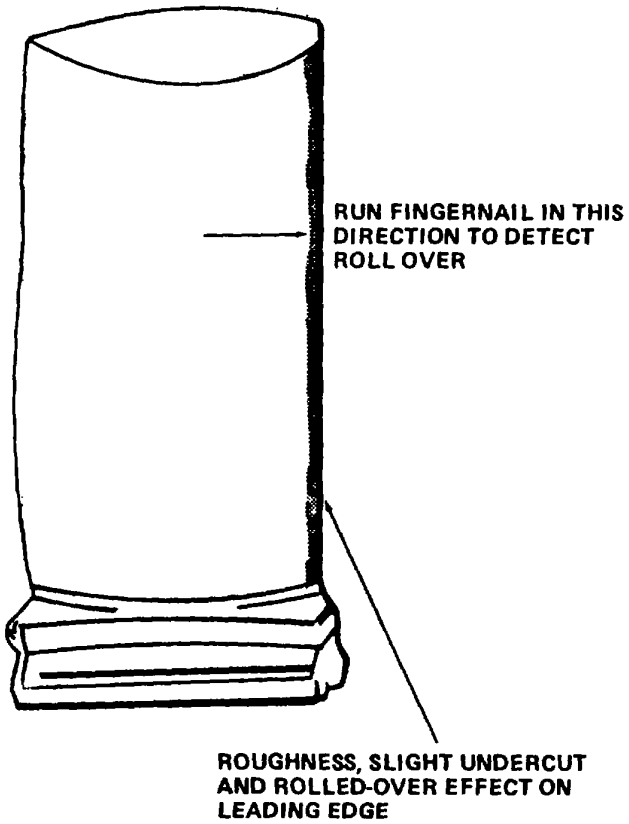


Figure 6. First Stage Blades (Sheet 1 of 3).

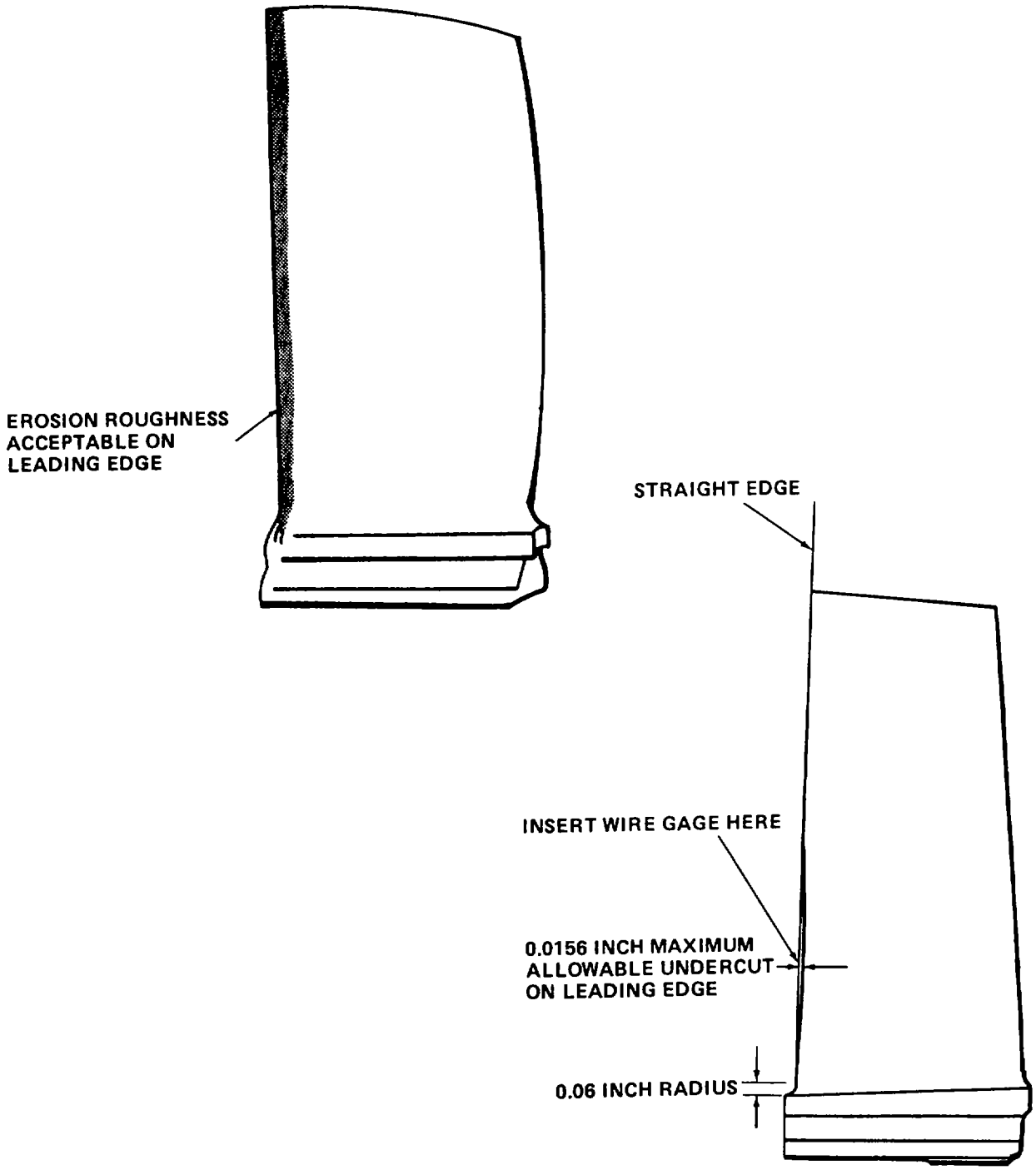


Figure 6. First Stage Blades (Sheet 2 of 3).

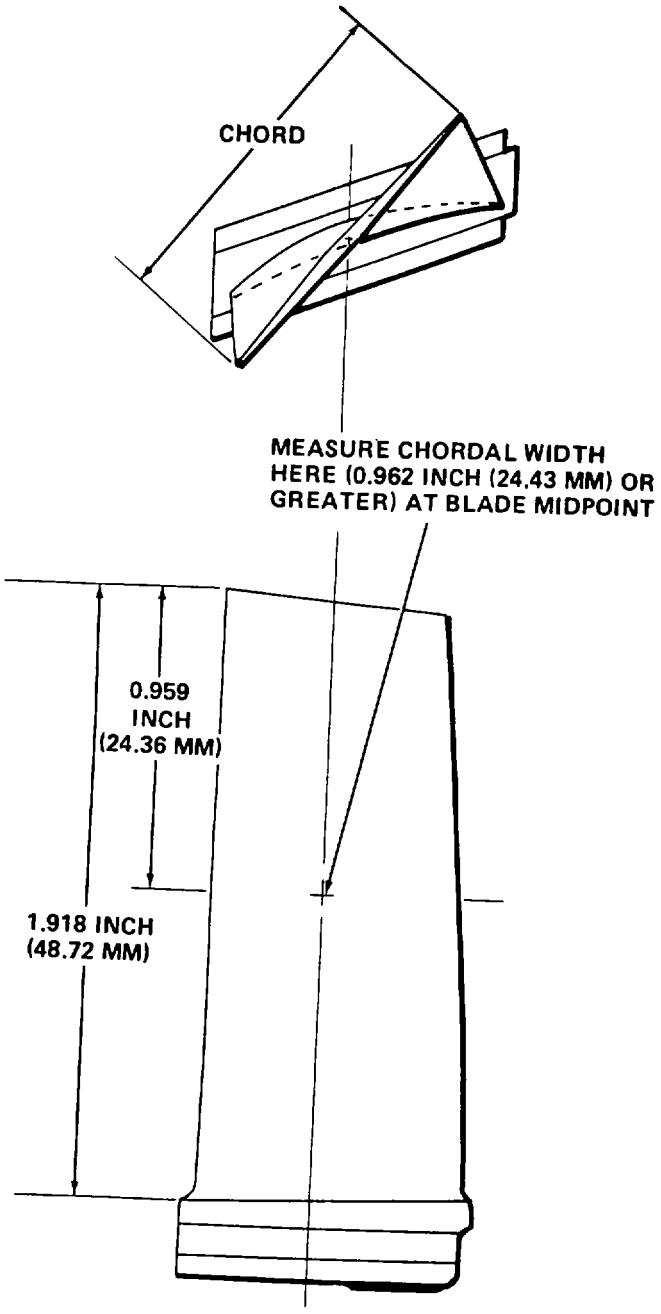


Figure 6. First Stage Blades (Sheet 3 of 3).

Table 8. Inspection of Compressor Rotor Blades-Continued.

LOCATION/ITEM	REMARKS	ACTION
COMPRESSOR ROTOR ASSEMBLY/ Continued		
6. First and Second Stage Blades	Use a strong light source.	Visually **inspect** for pitting. If pitting is suspected, **confirm** using a scribe. No corrosion pitting is acceptable. **Replace** defective blades.
7. Blades		**Inspect** all blades as follows (Refer to fig. 6.1.):
		a. Visually **inspect** each blade for bends or distortion. Replace bent or distorted blades.
	Refer to paragraph 2-38 (TM) for repair procedures.	b. Visually **inspect** leading trailing tip edges and airfoil surfaces of each blade for nicks, burrs, pits, dents or cracks and foreign object damage.
		c. **Inspect** blades for protrusions forward or aft of disc faces. If any blade **protrudes** further than 0.015 inch, **repair**.
	Varnish will appear as dark film consisting of oil, dirt, and deposits that have hardened on blade surfaces. Refer to paragraph 2-38 (TM) for removal of varnish procedures.	d. Visually **inspect** each blade for evidence of varnish buildup. **Remove** varnish.
		e. Visually **inspect** each blade for cracks. **Replace** defective blades if cracked.

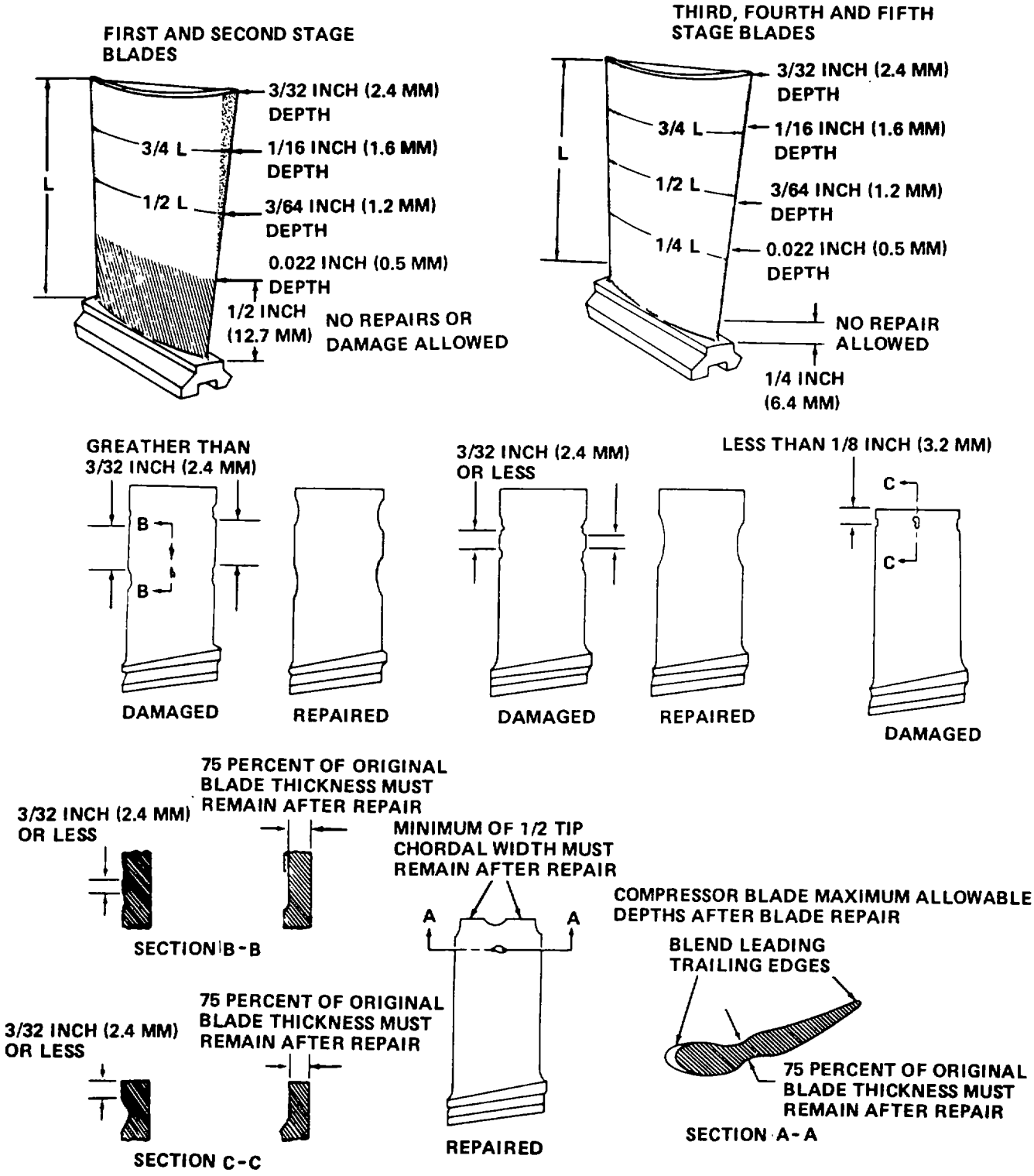


Figure 6.1. Compressor Rotor Blades.

f. Air Diffuser-Inspection. Refer to Table 9.

Table 9. Inspection of Air Diffuser.

LOCATION/ITEM	REMARKS	ACTION
DIFFUSER HOUSING/	All repairs to the diffuser section are AVIM TASK.	
1. Vanes	Minor nicks, dents and burrs are acceptable for repair provided mutilation has not occurred. Blend-repair as outlined in paragraph H-26 (TM).	**Inspect** for minor nicks, dents, or burrs.
2. Vanes	Minor punctures are acceptable provided engine performance has not been affected.	**Inspect** for punctures.
	Maximum allowable erosion depth of leading edge of first row of vanes is 0.025 inch.	**Inspect** for erosion.
3. Vane Brazements	Minor cracks, voids and crack-like indications are acceptable provided all other inspection requirements are met.	**Inspect** for minor cracks, voids and crack-like indications.
	WARNING **Dry cleaning solvent P-D-680, used to clean parts is potentially dangerous to personnel and property. Avoid repeated and prolonged skin contact. Do not use near open flame or excessive heat. Flash point of solvent is 100°F to 138°F (38°C to 59°C).**	
4. Vane Brazements	External cracks are acceptable, provided engine performance is acceptable. Daily inspection is required. If crack extends-**Repair.**	**Repair** as follows: a. **Use** stainless steel wire brush and dry cleaning solvent (para 7c). **Clean** area to be repaired. b. **Inspect** suspected area by fluorescent-penetrant inspection method detailed in paragraph H-20 (TM). c. (AVIM) **Repair** leaking area by torch silver-braze method detailed in paragraph H-27 (TM).

Table 9. Inspection of Air Diffuser-Continued.

LOCATION/ITEM	REMARKS	ACTION
DIFFUSER HOUSING/ Continued	**CAUTION** **After repair, insure that air passages are free to excess braze material. Do not attempt to repair base metal defects by using this method.** **WARNING** **Drycleaning solvent, P-D-680, used to clean parts is potentially dangerous to personnel and property. Avoid repeated and prolonged skin contact. Do not use near open flame or excessive heat. Flash point of solvent is 100°F-138°F (38°C-59°C).**	
5. Air Diffuser		**Blend-repair** surface defects. **Remove** sharp projections on vane where access permits. **Refer** to paragraph H-26 (TM).
6. Air Outlet Assembly	If cracks are suspected on the brazed joint of the air outlet pan assembly boss (P3 fitting), proceed with these actions. (Refer to fig. 6.2.) Use brazing alloy (para 7c) when performing step c. of this action.	a. **Clean** area to be inspected. **Use** stainless steel wire brush and drycleaning solvent (para 7c). b. **Inspect** brazed area for cracks. **Use** fluorescent-penetrant inspection. c. (AVIM) **Repair** cracked braze joint of air outlet pan assembly boss (P3 fitting) by torch silver-braze repair as outlined in paragraph H-27, (TM). Use a fine tipped torch (No. 100).

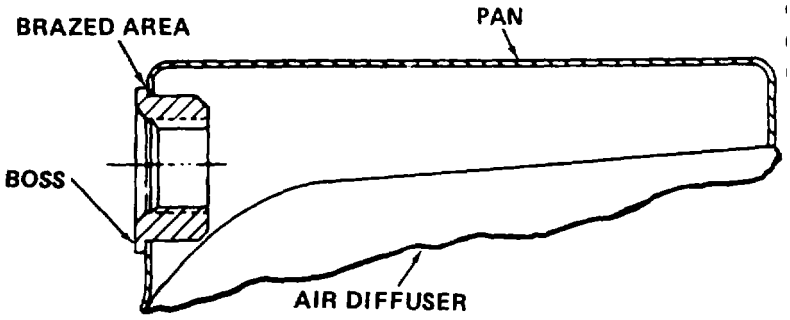


Figure 6.2. Air Outlet Pan Assembly Boss.

Table 9. Inspection of Air Diffuser-Continued.

LOCATION/ITEM	REMARKS	ACTION
DIFFUSER HOUSING/ Continued	**NOTE**	
	After torch braze repairing, insure that the air passages are not clogged with braze material.	
7.	Air Diffuser	One crack up to 1/2 inch in length is acceptable. **Inspect** weldment area between the engine mount assemblies and diffuser housing for cracks.
	WARNING	
	Drycleaning solvent, P-D-680, used to clean parts is potentially dangerous to personnel and property. Avoid repeated and prolonged skin contact. Do not use near open flame or excessive heat. Flash point of solvent is 100 ℉-138 ℉ (38 ℃-59 ℃).	
8. Air Diffuser	External surface corrosion is allowable. Heavy corrosion resulting in metal breakthrough is cause for rejection and engine shall be shipped to Depot.	**Inspect** for corrosion. Wire **brush** to remove surface scale. **Clean** with drycleaning solvent (para 7c). **Touch up** as outlined in paragraph H-17 (TM).

g. Interstage Bleed Band Closure-Closure Check. Refer to Table 10.

Table 10. Closure Check of Interstage Bleed Band Closure.

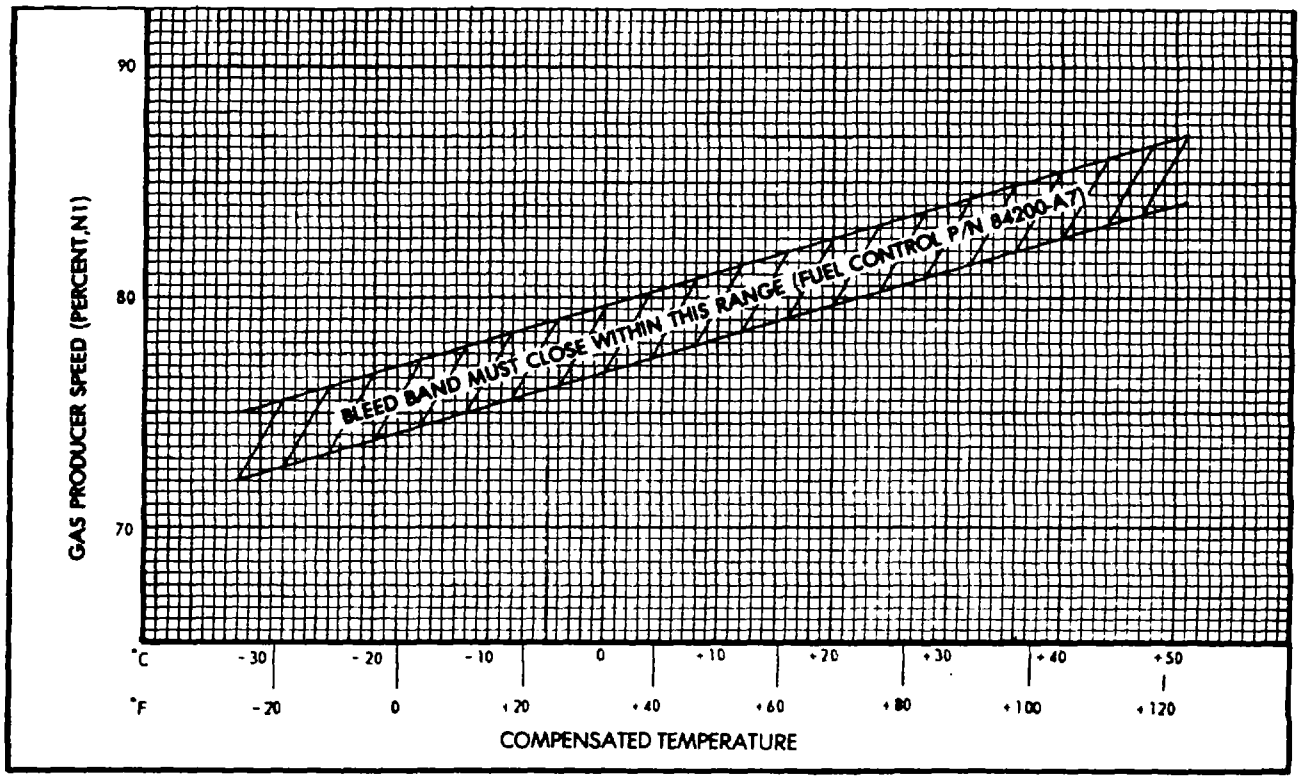
LOCATION/ITEM	REMARKS	ACTION
INTERSTAGE BLEED ACTUATOR ASSEMBLY/	NOTE **A bleed band closure check should be performed for the following conditions.** a. When an interstage bleed actuator has been repaired or replaced. b. When a fuel control has been replaced. c. When airbleed system malfunction is suspected. **WARNING** **Operation of this equipment presents a noise hazard to personnel in the area. The noise level exceeds the allowable limits for unprotected personnel. Wear ear muffs or ear plugs which were fitted by a trained professional.**	
1. Engine		**Start** and **stabilize** for two minutes at Flight Idle. **Insure** that the anti-icing and customer airbleed are off. **Note** outside air temperature (OAT) in degrees centigrade from cockpit indicator, add 3°C and record.
2. Bleed Band		**Open** power lever slowly. **Note** N1 speed at which bleed band closes.

Table 10. Closure Check of Interstage Bleed Band Closure-Continued.

LOCATION/ITEM	REMARKS	ACTION
INTERSTAGE BLEED ACTUATOR ASSEMBLY/		
3. Bleed Band Opening-Closing Limits	**CAUTION** **Insure correct chart is being used.**	Refer to figure 7 for correct limits.
4. Bleed Band Closure Range		Refer to Figure 7 for correct temperature recorded in action for item 1.

NOTE

Figure 7 for items 3 and 4 are valid regardless of airframe inlet configuration (i. e. sand and dust separator and/or foreign object damage screen). Adjustment shall be made in one percent increments. The bleed band closing speed for fuel regulators (84200A7A) may be reduced to the limit of fuel regulators 100770-A Series) only if necessary to relieve bleed band cycling problems.



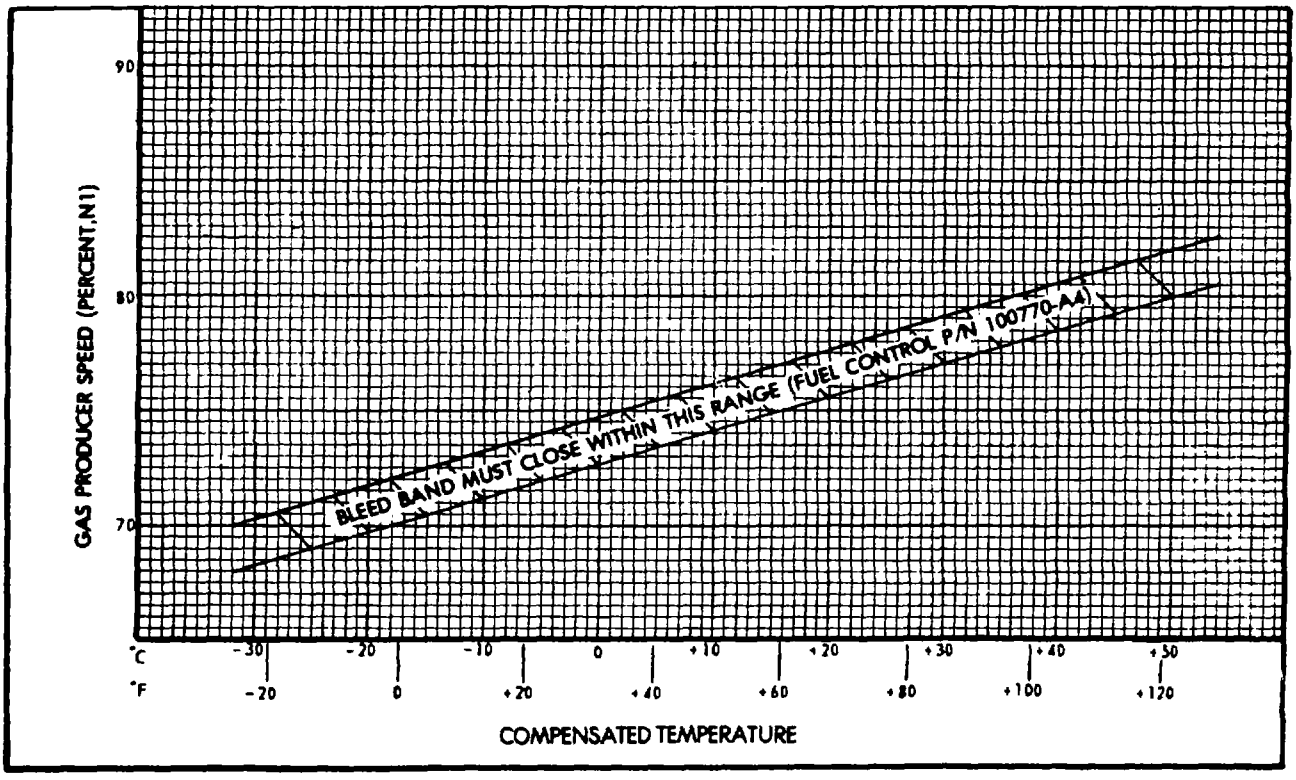


Figure 7. Bleed Band Opening-Closing Limits.

Table 10. Closure Check of Interstage Bleed Band Closure-Continued.

LOCATION/ITEM	REMARKS	ACTION
INTERSTAGE BLEED ACTUATOR ASSEMBLY/ Continued		
5. Bleed Band Closure	If the closure point does not fall within the allowable limits, shut down the engine and adjust the bleed band closure. Adjust closing speed to middle or bottom of speed range.	**Adjust** as follows (refer to fig. 8): a. **Remove** safety wire and seal from locknut. b. **Back out** slotted back screw three-quarters of a revolution from the center of the adjustment screw. c. **Hold** the adjustment screw. d. **Release** the torque on the locknut. e. **Rotate** the adjustment screw as required (one-eight turn equals approximately one percent N1 speed). Turning adjustment screw clockwise will shift the closure point to a higher N1 speed. Turning screw counterclockwise will shift the closure point to a lower N1 speed.
	NOTE **Turning adjustment screw clockwise will shift the bleed band closure point to a higher N1 speed. Turning counterclockwise will shift the bleed band closure point to a lower N1 speed.**	f. **Hold** adjustment screw and **tighten** the locknut as required. (Refer to Appendix G, table G-4, reference number 45 (TM). g. **Tighten** the slotted lock screw as required. (Refer to Appendix G, table G-3, reference number 49 (TM). h. **Start** engine and **run up** to verify correct adjustment. (**Repeat** preceding steps b. through g. if required.) i. **Lockwire** (para 7c) associated components.

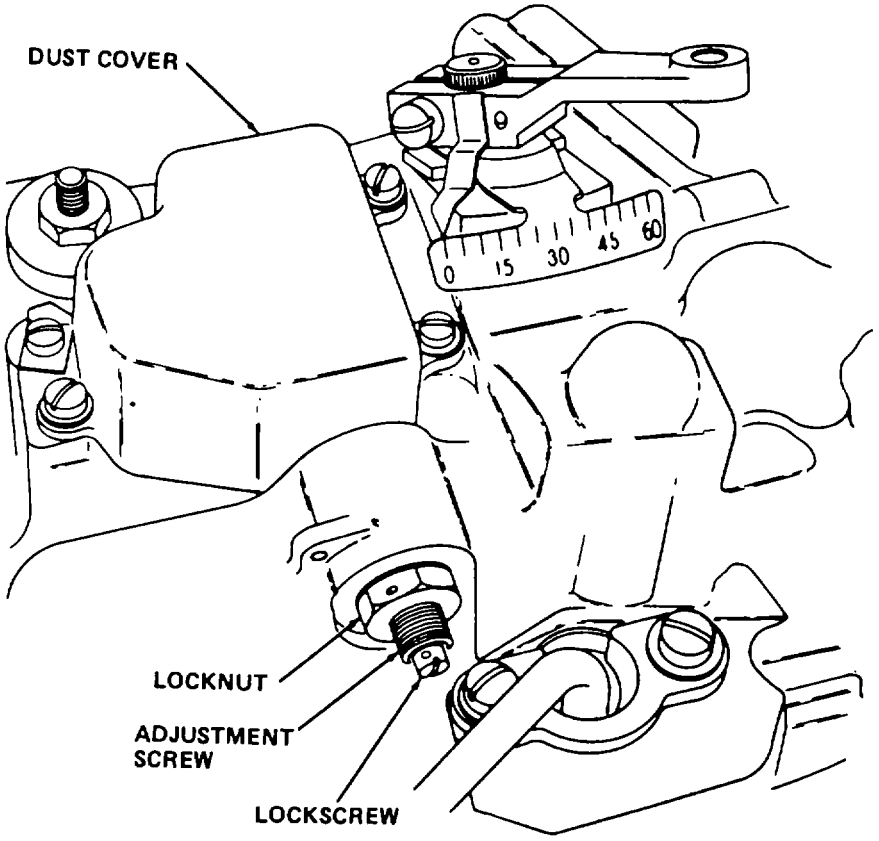


Figure 8. Bleed Band Closure.

Table 10. Closure Check of Interstage Bleed Band Closure-Continued.

LOCATION/ITEM	REMARKS	ACTION
INTERSTAGE BLEED ACTUATOR ASSEMBLY/ Continued		
6. Interstage Airbleed System	If interstage airbleed system does not function properly, check for defects.	Check for following defects: a. Leaks or obstructions in hoses or fittings. b. Clogged strainer element interstage bleed actuator. c. Sticking of piston in airbleed actuator. d. Improper adjustment of bleed band. e. Deposit of dirt and gum that prevents operation of fuel control air-bleed valve on fuel control. f. Ruptured airbleed actuator diaphragm.
7. Interstage Air-Bleed System		**Correct** defects listed in preceding action for item 6: a. **Disconnect** hose between air diffuser and actuator at actuator fitting.
	WARNING **Use approved personnel protective equipment to protect eyes and face when using compressed air. Maximum allowable air pressure for cleaning operations is 30 psi. Do not direct air stream toward yourself or toward another person.**	
		b. **Connect** a source of compressed air to hose. **Blow** air through hose to determine that hose and diffuser housing port are unobstructed.

Table 10. Closure Check or Interstage Bleed Band Closure-Continued.

LOCATION/ITEM	REMARKS	ACTION
INTERSTAGE BLEED ACTUATOR ASSEMBLYI Continued		
		c. If hose and diffuser housing port are clear, **disconnect** airbleed hose between fuel control and actuator and at actuator fitting. Blow air through hose to determine that hose is unobstructed.
		d. **Connect** the source of compressed air to reducer in actuator.
	NOTE	
	When pressure is applied in following action e. , actuator should close. Closing will be indicated by rise of rod assembly.	
	For steps e thru j, refer to figure 9.	e. **Supply** 60 psi (4.22 kg/sq cm) maximum metered air pressure to reducer and block union.
	NOTE	
	When union is uncovered, actuator should open. Opening will be indicated by drop of rod assembly.	
		f. **Uncover** union.
		g. If diffuser housing port is obstructed, **determine** cause and **clean**. **Recheck** actuator for proper operation.
		h. If hoses are obstructed, **replace**. **Check** strainer and **clean** if obstructed. **Recheck** actuator for proper operation.

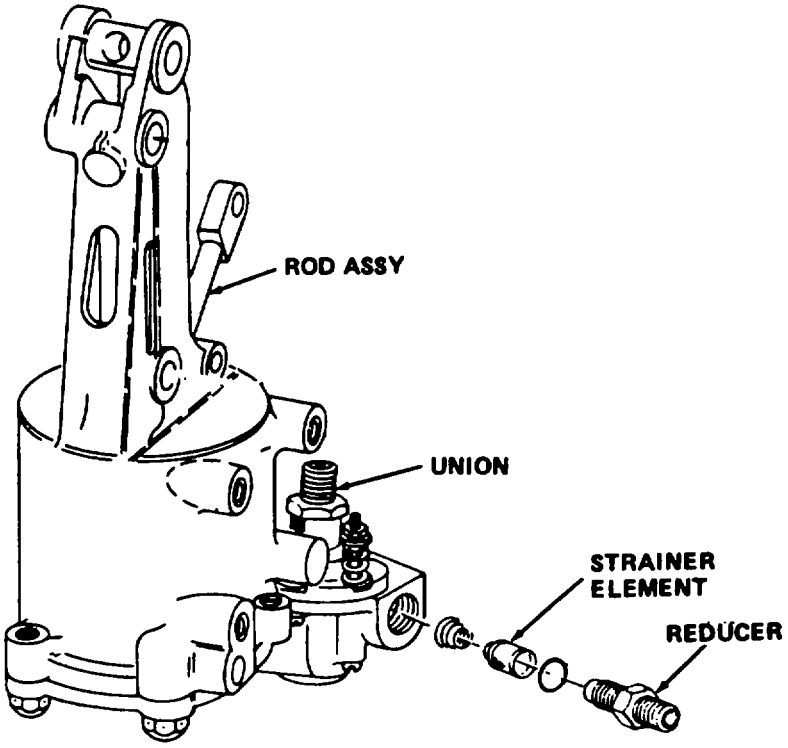


Figure 9. Interstage Airbleed System.

Table 10. Closure Check of Interstage Bleed Band Closure-Continued.

LOCATION/ITEM	REMARKS	ACTION
INTERSTAGE BLEEID ACTUATOR ASSEMBLY/ Continued		
		i. If actuator does not open and close as indicated in preceding action items 4 thru 5, **replace** actuator. **Check** new actuator for proper operation.
		j. If hoses and port are clear and actuator opens and closes as indicated in preceding action items 4 thru 5, **inspect** airbleed valve of fuel control as described in preceding action for item 6.
	WARNING Drycleaning solvent, P-D-680, used to clean parts is potentially dangerous to personnel and property. Avoid repeated and prolonged skin contact. Do not use near open flame or excessive heat. Flash point of solvent is 100°F to 138°: (38°C to 59°C).	
8. Fuel Control Airbleed Valve		**Remove** dust cover and **clean** with drycleaning solvent (para 7c).
9. Airbleed Hose		Connect to fuel control P3 port.
	CAUTION **The leaf spring block and valve button assembly must be rotated manually. Use of tools is not permitted.**	

Table 10. Closure Check of Interstage Bleed Bland Closure-Continued.

LOCATION/ITEM	REMARKS	ACTION
INTERSTAGE BLEED ACTUATOR ASSEMBLY/ Continued		
10. Hose	Refer to figure 10.	**Introduce** in the form of spray, drycleaning solvent (para 7c) through the open end of the hose while simultaneously **rotating** the leaf spring, block and valve button assembly.

WARNING

Drycleaning solvent, P-D-680, used to clean parts is potentially dangerous to personnel and property. Avoid repeated and prolonged skin contact. Do not use near open fame or excessive heat. Flash point of solvent is 100°F to 138°F (38°C to 59°C).

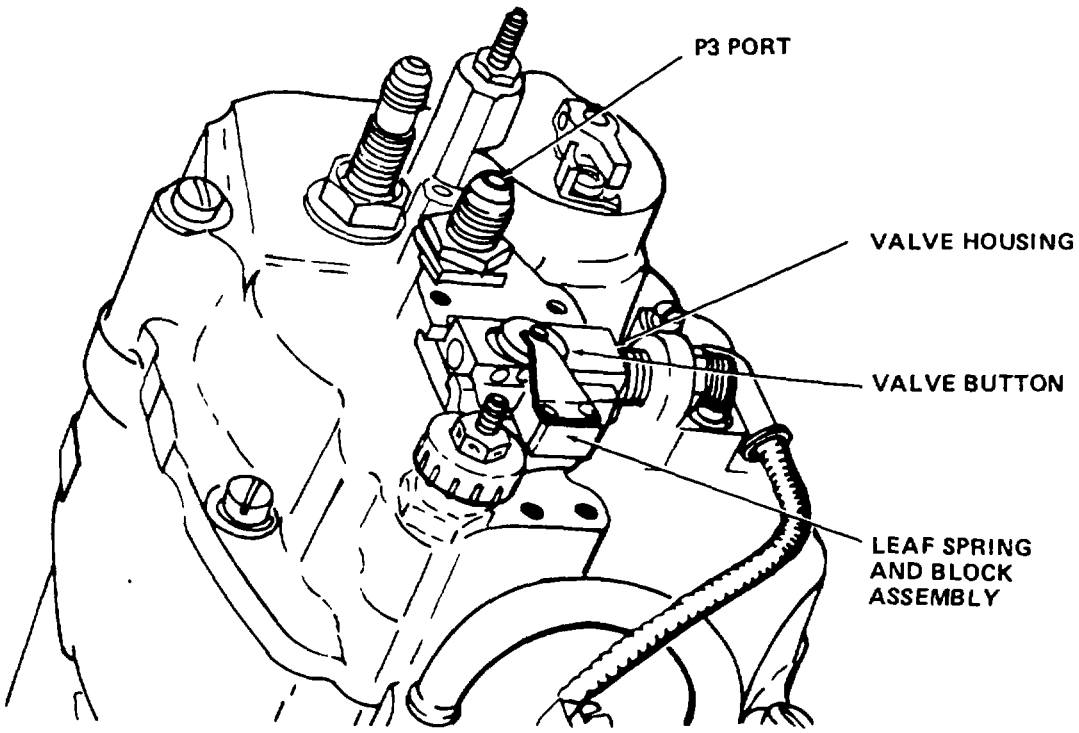


Figure 10. Fuel Control Airbleed Valve.

Table 10. Closure Check of Interstage Bleed Band Closure-Continued.

LOCATION/ITEM	REMARKS	ACTION
INTERSTAGE BLEED ACTUATOR ASSEMBLY/ Continued		
11. Leaf Spring Block, and Valve Button Assembly		**Spray** exterior area with drycleaning solvent (para 7c). **Repeat** action for item 10.
12. Airbleed Hose		**Reconnect** to airbleed actuator.
13. Bleed Band Closure		**Perform** a check. **Refer** to preceding item 7.h. **Reinstall** dust cover over fuel control trigger mechanism.
14. Fuel Control	Perform this action if bleed band still does not function properly.	**Remove**. **Place** on a suitable workbench. Refer to paragraph 6-2, (TM).
	CAUTION **Do not use tools to rotate the leaf spring block, and valve button assembly.**	
15. Leaf Spring and Block Assembly	Perform this action manually. Refer to figure 10.	**Rotate** to center the valve button over orifice in valve housing.

WARNING

Use approved personnel protective equipment to protect eyes and face when using compressed air. Maximum allowable air pressure for cleaning operations is 30 psi. Do not adjust air stream toward yourself or toward another person.

CAUTION

When removing valve button in following action for item 16, insure that the leaf spring does not contact the surface of the valve housing (refer to fig. 10).

Table 10. Closure Check of Interstage Bleed Band Closure-Continued.

LOCATION/ITEM	REMARKS	ACTION
INTERSTAGE BLEED ACTUATOR ASSEMBLY/ Continued		
16. Interstage Bleed Actuator Assembly	Use liquid soap (para 7c). Refer to figure 10.	**Apply** small amount of liquid soap around valve button. Apply shop air to 60 psig to P3 port. **Observe** button for signs of air leakage. **Remove** and **replace** button, P/N 76285, if leakage is evident.
17. Valve Housing	If valve housing is scored it will create an abrasive action to erode the button contact surface and cause excessive leakage. Refer to figure 11.	**Inspect** contact surface for scoring. **Replace** fuel control if valve housing is heavily scored.
18. Fuel Control	Refer to paragraph 6-5, (TM).	**Reinstall.**

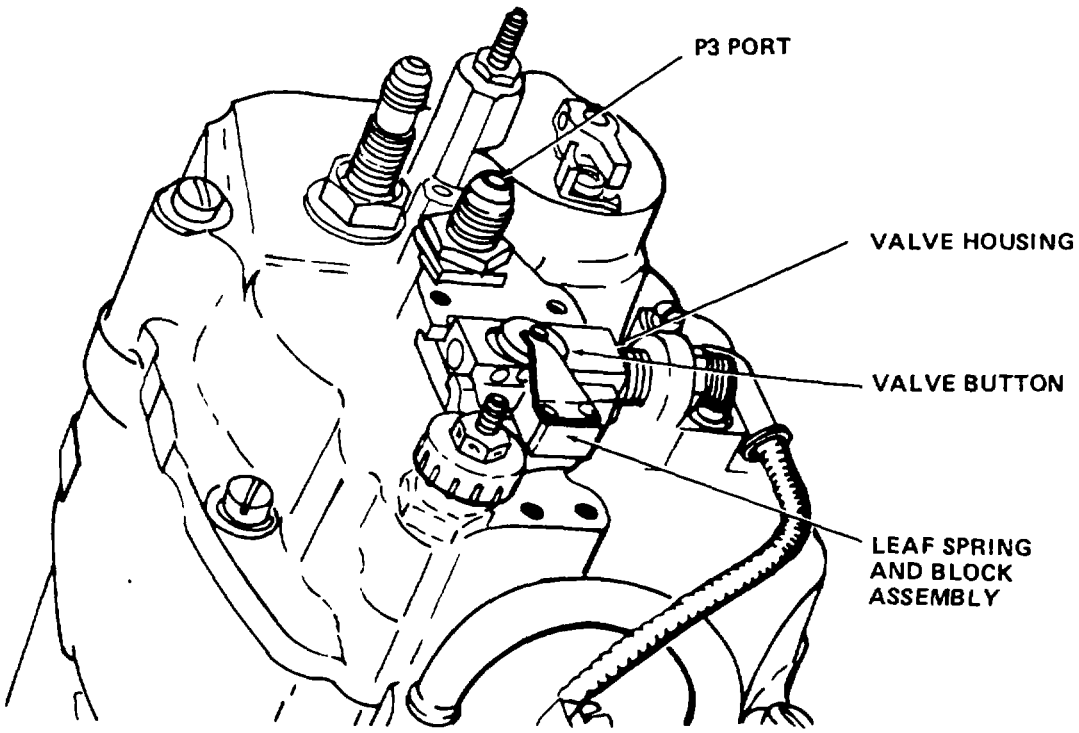


Figure 11. Valve Housing.

h. Combustion Chamber Housing-Inspection. Refer to table I 1.

Table 11. Inspection of Combustion Chamber Housing.

LOCATION/ITEM	REMARKS	ACTION
COMBUSTOR TURBINE ASSEMBLY/		
	NOTE **All combustion chamber housing repairs are AVIM task.**	
1. Combustion Chamber Housing Assembly		**Inspect** combustion chamber housing assembly for nicks, burrs, and scratches. (Refer to fig. 12.) Nicks, burrs, and scratches are acceptable.

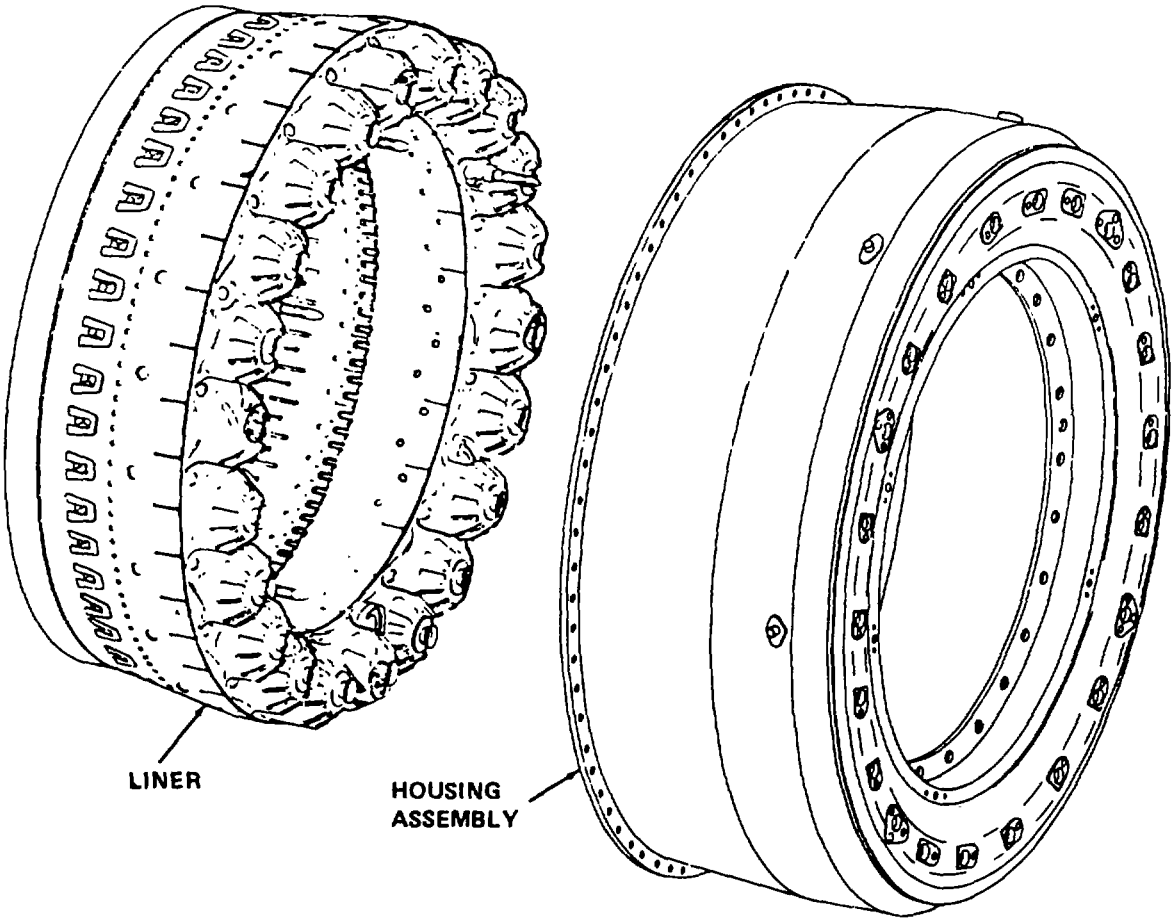


Figure 12. Combustion Chamber Housing.

Table 11. Inspection of Combustion Chamber Housing-Continued.

LOCATION/ITEM	REMARKS	ACTION
COMBUSTOR TURBINE ASSEMBLY/ Continued		
	WARNING **When handling combustion chamber internal parts that have been exposed to fuels containing tetraethyl lead, insure that the byproduct (poisonous lead oxide) is not inhaled or taken into the body through cuts or other external openings. If accidental exposure occurs, drench affected area with large amounts of clean water and obtain immediate medical attention.**	
2. Housing Assembly		**Inspect** for damaged threads. (Refer to fig. 12.) **Repair** damaged threads as outlined in paragraph H-29 (TM). If threads are damaged beyond repair **replace** housing assembly. (AVIM)
3. Housing Assembly		**Inspect** for damaged liner supports. **Replace** missing or damaged liner supports as outlined in paragraph 3-5 (TM). (AVIM)
4. Housing Assembly		Visually **inspect** housing assembly for cracks and distortion. Non-converging cracks are acceptable. Daily inspection is required. If crack continues to lengthen-**Repair**. **Replace** housing if distorted beyond repair. (AVIM)
5. Bolts Securing Combustion Chamber Housing to Diffuser	No corrosion allowed.	**Inspect** bolts for corrosion.

i. Combustion Chamber Liner Assembly-Inspection. Refer to Table 12.

Table 12. Inspection of Combustion Chamber Liner Assembly.

LOCATION/ITEM	REMARKS	ACTION
COMBUSTION CHAMBER LINER ASSEMBLY/		
	See paragraph 3-17 (TM) for detailed figure of combustion chamber assembly.	
1. Combustion Chamber Liner		Visually **inspect** combustion chamber liner for cracks. **Replace** liner if cracks exceed the following limits. Refer to figure 13.
	Any number of 1/4 inch long cracks are allowed at conical section louvers.	
2. Combustion Chamber Liner	Any number of cracks progressing from nozzle holes to louvers in end liner are acceptable provided louver to louver cracks which could result in material fallout are not present. Cracks extending up to or adjacent to air holes are acceptable.	
	Damage limits for inner and outer liners are as follows:	

CAUTION

On T53-L-13B engines, when cracks appear in the inner tab area emanated from the base of adjacent sawcuts, only axial and nonconvergent cracks are allowed. Reject liner if circumferential or convergent cracks are present. Circumferential or convergent cracks may result in material fallout.

NOTE

A total of five cracks up to one inch in length on both inner and outer liners are acceptable provided there is no possibility of material fallout.

Table 12. Inspection of Combustion Chamber Liner Assembly-Continued.

LOCATION/ITEM	REMARKS	ACTION
COMBUSTION CHAMBER LINER ASSEMBLY/ Continued	Cracks between two holes are acceptable without repair except in areas shown in figure 13, sheet 1 of 3 and sheet 2 of 3. Ten nonadjacent cracks per assembly are allowed. On T53-L-13B engines only, cracks up to 1-1/2 inch in length originating at the base of the sawcuts are acceptable on all sawcuts provided cracks that emanate from any two adjacent sawcuts are nonconvergent. Only one crack is allowed per sawcut. Do not stop-drill cracks. Cracks in resistance welds are acceptable without repair in each liner-to-liner or liner-to-flange weldment provided no more than four adjacent welds are affected.	
	CAUTION **Burning, distortion or uneven carbon buildup is an indication of malfunction or clogging of fuel system components. Investigate and replace malfunctioning or clogged components.**	
	NOTE **Areas of metal discoloration are acceptable.**	
3. Liner	Bum-through shall not exceed 3/4 square inch per assembly.	**Replace** liner if burn-through exceeds specified limit or crack progression will cause material fallout.

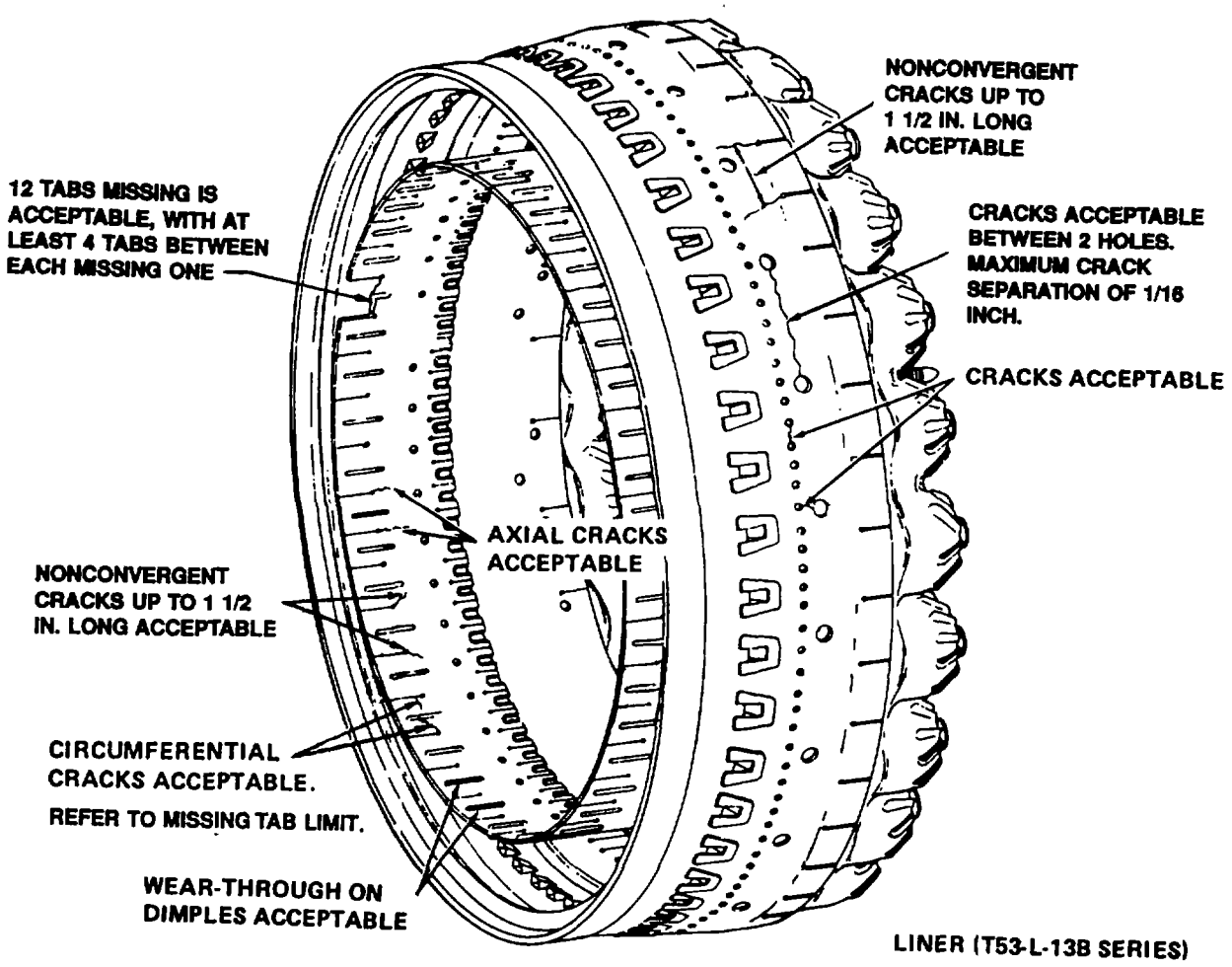


Figure 13. Combustion Chamber Liner (Sheet 1 of 3).

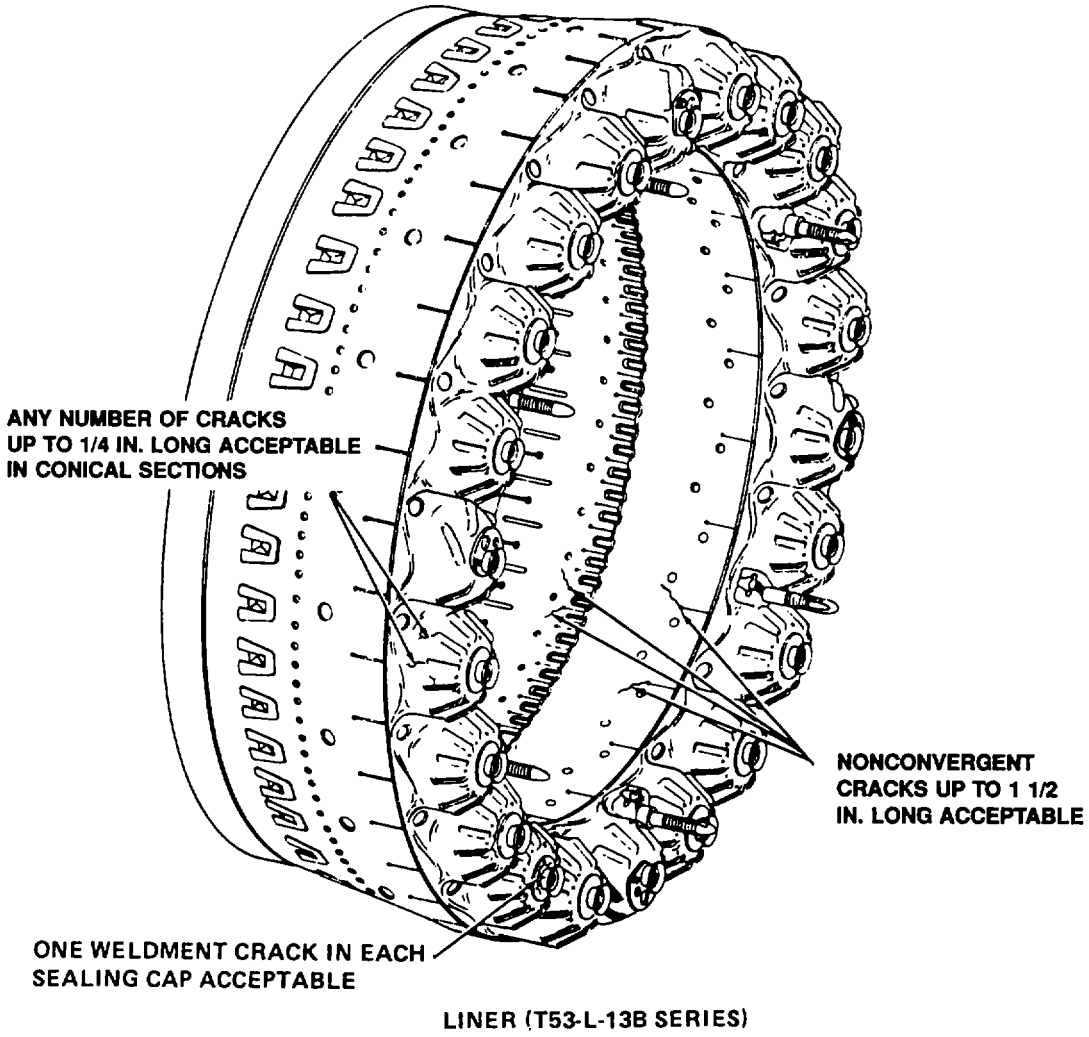


Figure 13. Combustion Chamber Liner (Sheet 2 of 3).

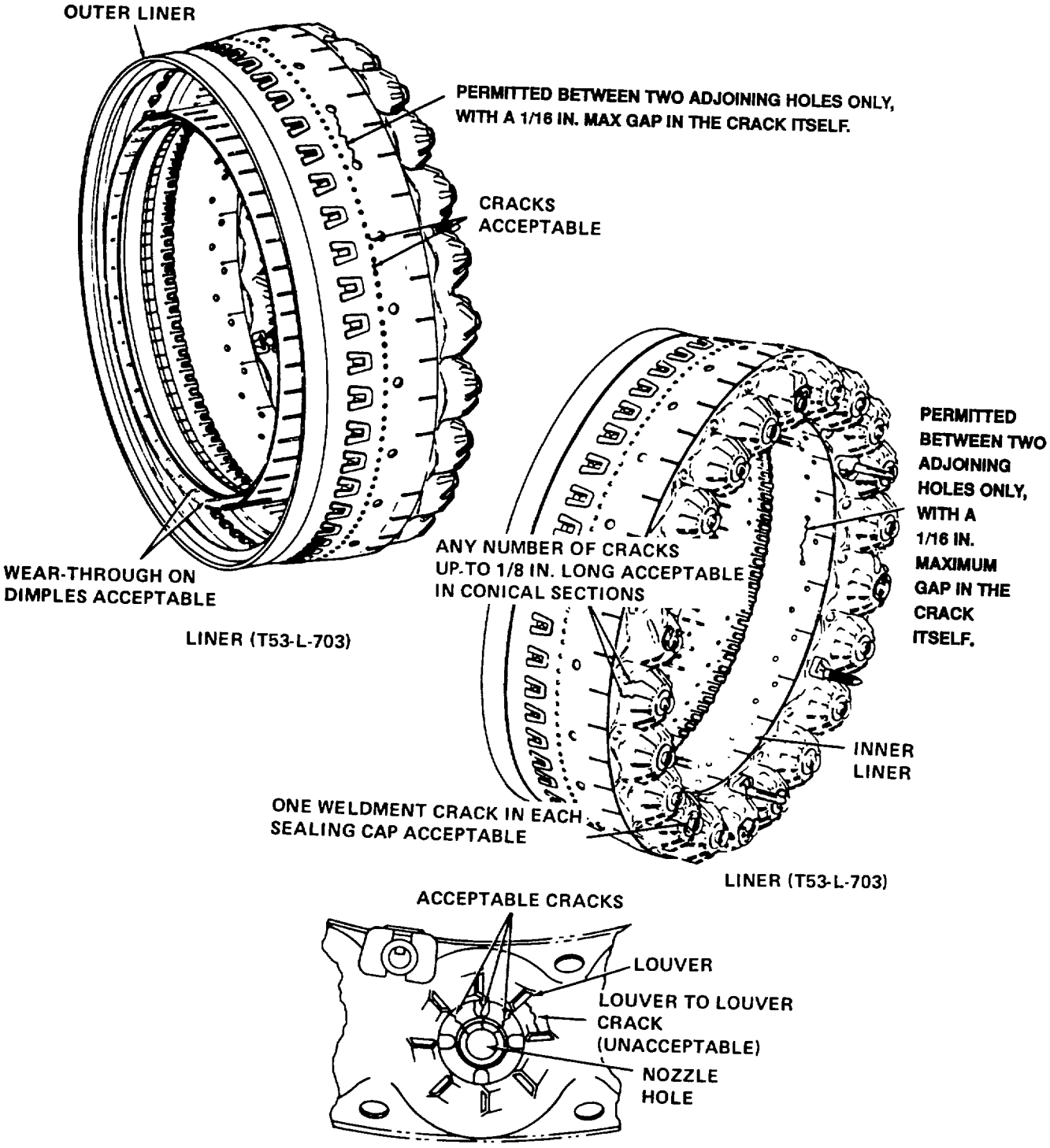


Figure 13. Combustion Chamber Liner (Sheet 3 of 3).

Table 12. Inspection of Combustion Chamber Liner Assembly-Continued.

LOCATION/ITEM	REMARKS	ACTION
COMBUSTION CHAMBER LINER ASSEMBLY/ Continued	**NOTE** **The following CAUTION and item 4 do not apply to T53-L-703 engines.** **CAUTION** **Missing tabs could cause improper sealing between the inner liner and mating N1 nozzle with resultant "downstream" damage.**	
4. Liners	Twelve missing tabs on liners arc acceptable with a minimum of 4 tabs between each missing tab. Moderate warpage or buckling is acceptable, provided no interference of mating parts occurs. On T53-L-13B engines only, buckling and warpage of inner liner walls is acceptable provided no associated cracks arc evident.	**Replace** liner if criteria in Remarks column is not met.
5. Inner Liner Dimples	Wear through on any number of dimples is permitted.	Visually **inspect** for wear.
6. Liner Bracket and Studs		**Inspect** for wears. **Replace** liner bracket or stud if wear exceeds 1/4 of original thickness.
7. Air Gaps and Holes		**Inspect** for clogging. **Reclean** liner assembly if air gaps or holes are clogged.
8. Air Gap	Air gap shall be as shown in figure 14.	**Adjust** air gap as required, using suitable prying tool.
9. Studs		**Inspect** studs for damaged threads. If threads are damaged, **replace** studs as outlined in paragraph 3-9 (TM).
10. Seal Guides	One tab missing from each seal guide is acceptable.	**Inspect** seal guides for wear, missing tabs, and other damage. **Replace** seal guide(s) if worn or damaged or more than one tab is missing. (Refer to paragraph 3-9, TM.)

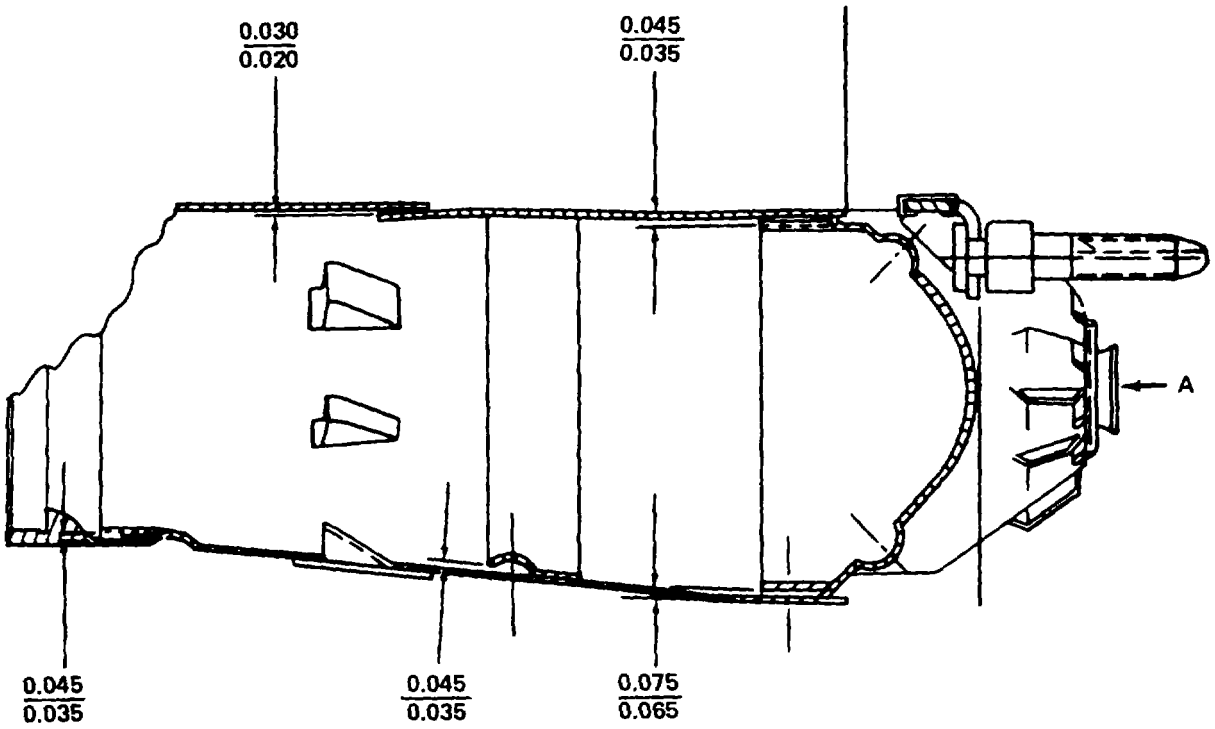


Figure 14. Air Gaps in Combustion Chamber Liner (Sheet 1 of 2).

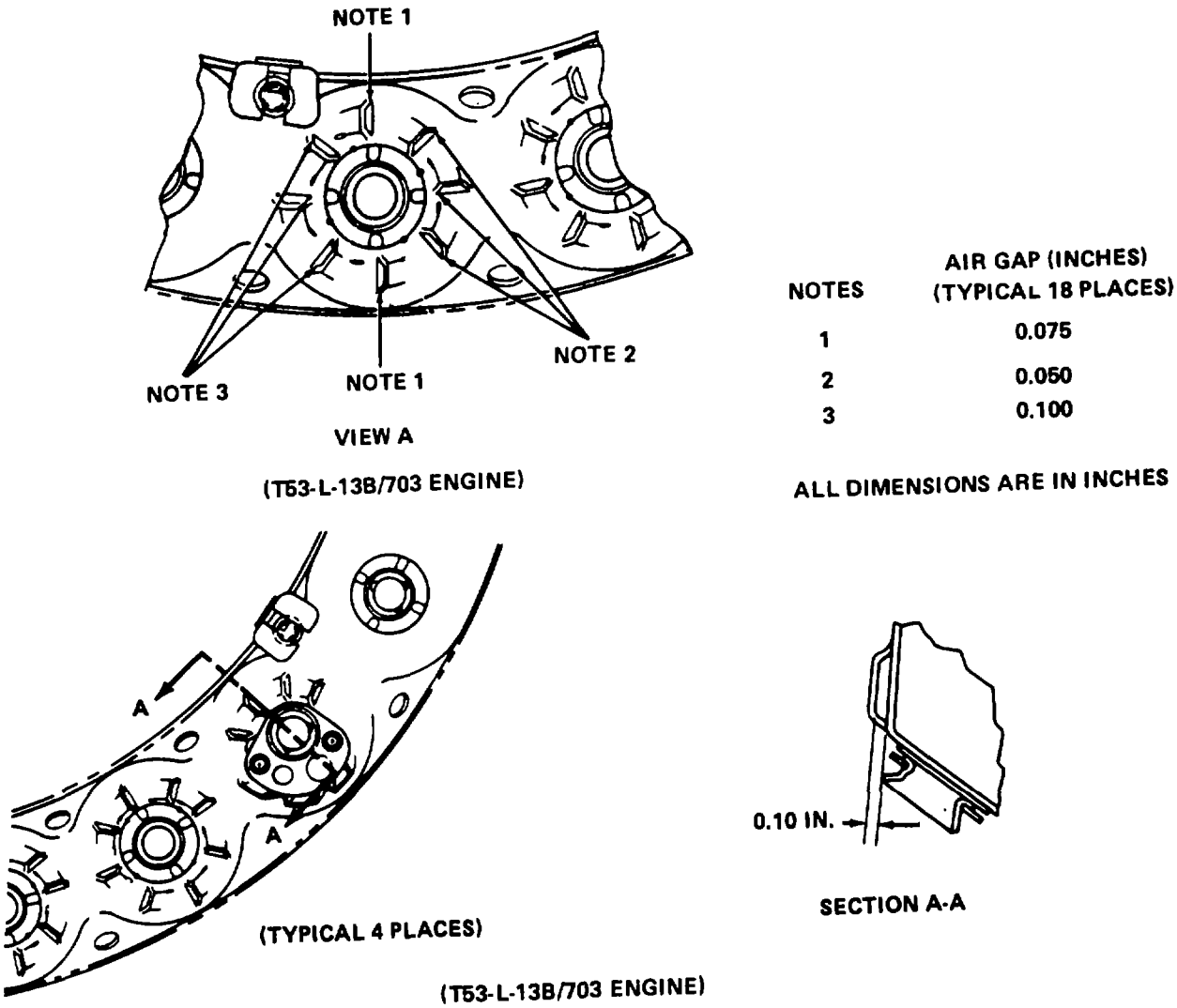
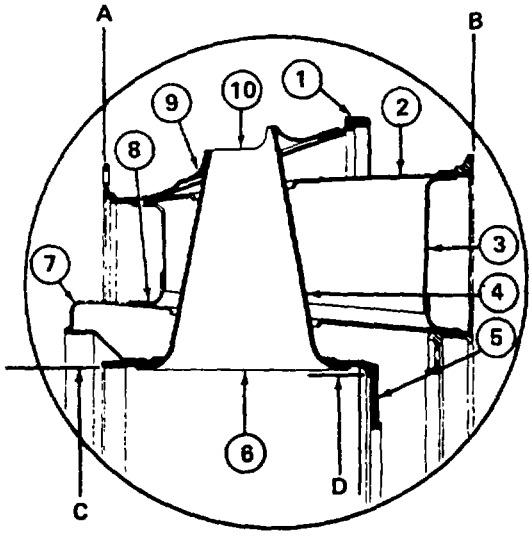


Figure 14. Air Gaps in Combustion Chamber Liner (Sheet 2 of 2).

j. Exhaust Diffuser Assembly - Inspection. Refer to table 13.

Table 13. Inspection of Exhaust Diffuser Assembly.

LOCATION / ITEM	REMARKS	ACTION
SECOND STAGE TURBINE SUPPORT ASSEMBLY/		
1. Outer Struts		**Inspect** outer struts for dents that can deform outer strut and produce a gap greater than 1/8 inch between outer strut and outer strut fairing. Inspect such dents for possible cracks. (Refer to fig. 15.)
2. All Areas	a. Nicks are acceptable without repair in all areas except inner strut and inner strut flange, provided they do not interfere with part performance. b. Minor dents and distortions are acceptable without repair, provided no interference of mating parts occurs. c. Major distortion or damage associated with distortion is a cause for rejection of exhaust diffuser. Forward diffuser to next higher echelon for evaluation.	Visually inspect all areas for nicks, dents, and distortion. (Refer to fig. 16.)



1. Outer Cone
2. Mid Cone
3. Outer Strut
4. Inner Strut
5. Bearing Housing Support
6. Inner Flange
7. Inner Cone
8. Outer Strut Fairing
9. Support Flange
10. Flange Weldments

Figure 15. Outer Struts - Second Stage Turbine Support Assembly.

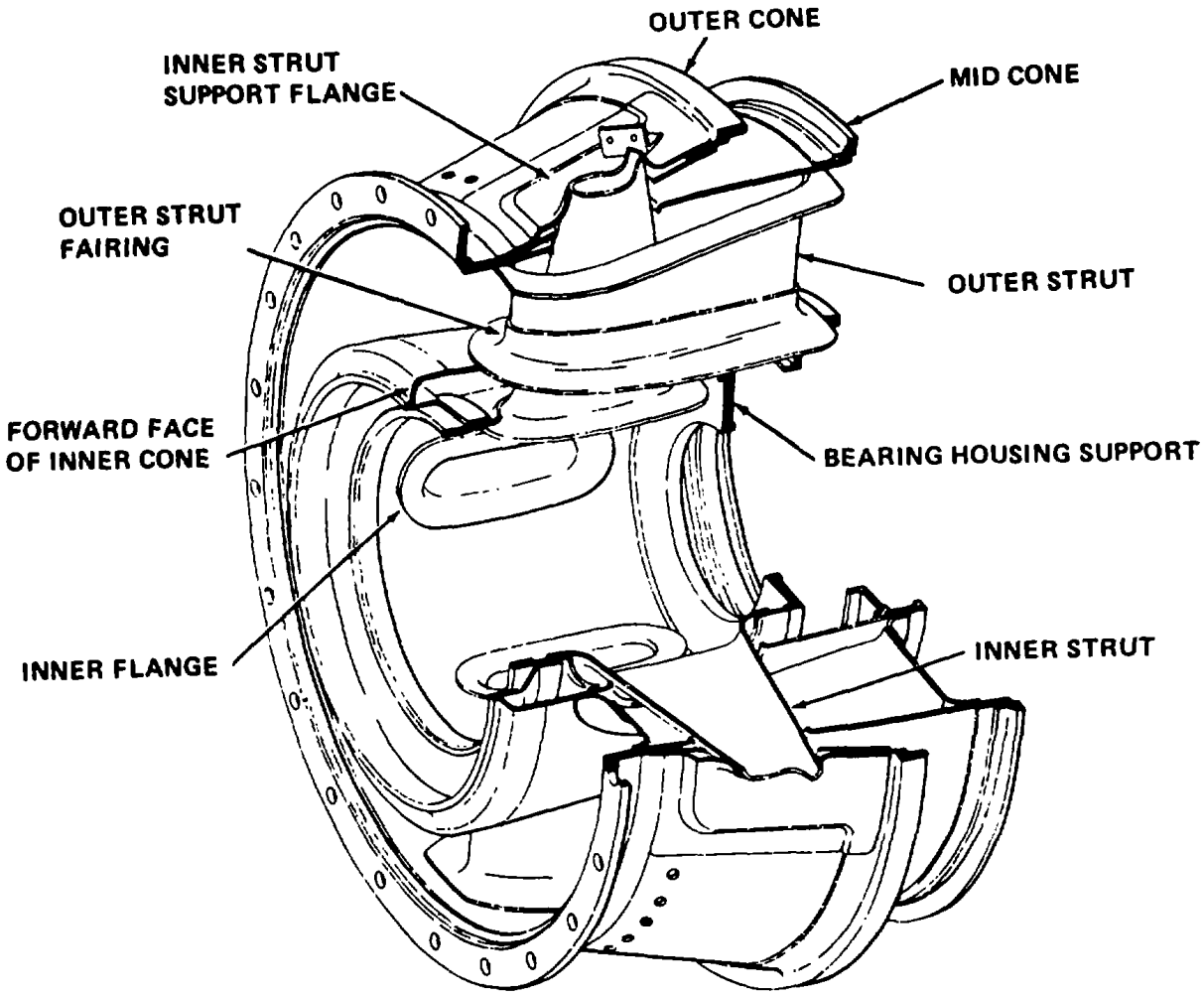


Figure 16. Second Stage Turbine Support Assembly.

Table 13. Inspection of Exhaust Diffuser Assembly - Continued.

LOCATION / ITEM	REMARKS	ACTION
SECOND STAGE TURBINE SUPPORT ASSEMBLY/ Continued		
3. Outer Cone	No cracks allowed.	**Inspect** outer cone for cracks. (Refer to fig. 16.)
4. Mid and Inner Cones	a. Any number of nonconvergent cracks up to ½ inch in length, which do not affect weldment, are acceptable without repair. Circumferential cracks adjacent to mounting flange are not permitted.	**Inspect** mid and inner cones for cracks and burning. (Refer to fig. 16.)
	b. No burn-throughs are permitted.	**Replace** diffuser.
5. Bearing Housing Support	Two tight-lipped, nonconvergent cracks up to ½ inch in length, which do not affect weldments, are acceptable without repair.	**Inspect** bearing housing support for cracks. (Refer to fig. 16.)
6. Outer Strut and Outer Strut Fairing	Observe the following limits:	**Inspect** outer strut and outer strut fairing for nicks, dents, cracks, and burning as follows (refer to fig.16) and repair as outlined in paragraph 3-29 (TM).
	a. All nonconverging cracks on the outer strut fairing are acceptable without repair, provided they do not extend into the spotwelded area at the base of the fairing.	
	b. Two cracks per strut fairing is allowed up to 1-1/2 inch in length without repair. If limits are exceeded, replace exhaust diffuser.	**Repair** nicks and dents which could prevent expansion movement of strut and fairing.
	c. No bum-throughs are permitted.	**Replace** diffuser.
	d. Any number of nonconvergent cracks in the outer strut, not exceeding ¾ inch in length, are acceptable without repair, provided weldments are not affected.	
	e. Replace exhaust diffuser if crack limits are exceeded.	
7. Inner Strut Flange		**Inspect** inner strut flange for cracks. Two cracks, 1/2 inch in length are acceptable without repair on each inner strut outer flange. (Refer to fig. 16.)

Table 13. Inspection of Exhaust Diffuser Assembly - Continued.

LOCATION / ITEM	REMARKS	ACTION
SECOND STAGE TURBINE SUPPORT ASSEMBLY/ Continued		
8. Flange of Inner Strut	No cracks are allowed.	**Inspect** flange of inner strut for cracks. (Refer to fig. 16.)
9. Mounting Flange	Three missing or damaged nuts allowed with minimum separation of four good nuts.	Inspect mounting flange for damaged or missing nuts.
10. Diffuser		Visually check diffuser for distortion and concentricity. If diffuser is flat during assembly without excessive separation, it is acceptable.
	NOTE **Item 11 does not apply to T53-L-703 engines.**	
11. Thermocouple Mounting Studs		**Inspect** thermocouple mounting studs on exhaust diffuser 1-150-240-03 for damage or stripped threads. Replace as outlined in paragraph 3-29 (TM).

k. Second Stage Gas Producer Cylinder and Second Stage Nozzle Assembly - Inspection. Refer to Table 14.

Table 14. Inspection of Second Stage Gas Producer Cylinder and Second Stage Nozzle Assembly.

LOCATION / ITEM	REMARKS	ACTION
SECOND STAGE GAS PRODUCER NOZZLE AND CYLINDER ASSEMBLY/		
1. Second Stage Gas Producer Cylinder	Radial cracks from bolt holes to outer edge of cylinder are acceptable.	**Inspect** for cracks.
2. Second Stage Gas Producer Cylinder Flange	If thickness is less than shown in section A-A, or if removal of material necessary to obtain required tip clearance will decrease wall thickness to less than that shown, replace cylinder. (Refer to fig. 17.) If wall thickness is sufficient for rework, shim cylinder (paragraph 4-19, TM).	**Check** wall thickness at points indicated for rework. (**Refer** to paragraph 4-12, TM.)
3. Felt Metal Seal	T53-L-703 engines only. Rubs in felt metal seals are acceptable, provided penetration to base metal is not evident and some unaffected portion remains for 360 degrees as viewed axially.	**Inspect** felt metal seal of second stage turbine nozzle for rubs.

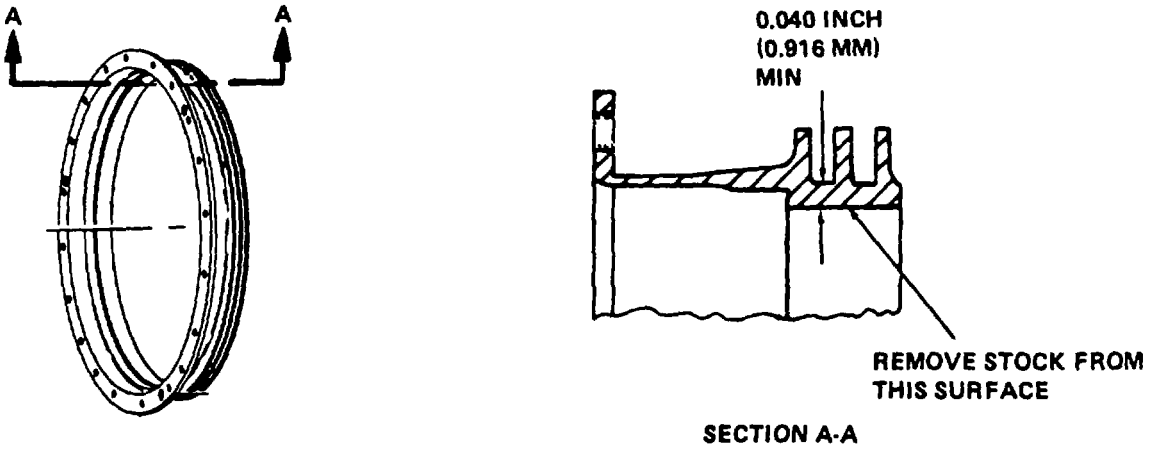


Figure 17. Second Stage Gas Producer Cylinder

Table 14. Inspection of Second Stage Gas Producer Cylinder and Second Stage Nozzle Assembly. Continued

LOCATION / ITEM	REMARKS	ACTION
SECOND STAGE GAS PRODUCER NOZZLE AND CYLINDER ASSEMBLY/ Continued		
4. Second Stage Turbine Nozzle Assembly (1-1 20 0006)	Replace assembly if inspection limits are exceeded. a. Any number of 1/8 inch nonconverging cracks are acceptable on trailing edge of vanes. b. Any number of 1/16 inch cracks are acceptable on leading edge of vanes. Any number of 1/8-inch cracks are acceptable on a maximum of 30 vanes. c. No inspection is required of vane-to-shroud brazements. Cracks are acceptable. d. A maximum of 40 cracks are allowed in any combination emanating from vane leading and trailing edges and extending into parent metal of outer shroud, provided cracks do not exceed 5/16-inch. **NOTE** **When measuring cracks in outer shroud that break out from brazements, measure only parent metal portion of cracks.** e. Vane-to-vane cracks are allowed in two areas of outer shroud, provided 10 vanes minimum separate cracks. f. Four circumferential vane-to-vane cracks are allowed in four areas of outer shroud, provided 10 vanes minimum separate cracks. g. Circumferential converging cracks are acceptable, provided limits for circumferential vane-to-vane cracks outlined in preceding step f. have not reached maximum limit.	Visually **inspect** for cracks. (Refer to fig. 18, sheets 1 of 4 and 2 of 4.)

Table 14. Inspection of Second Stage Gas Producer Cylinder and Second Stage Nozzle Assembly. Continued

LOCATION / ITEM	REMARKS	ACTION
SECOND STAGE GAS PRODUCER NOZZLE AND CYLINDER ASSEMBLY/ Continued		
	h. Cracks in parent metal of outer shroud emanating from vane trailing edge into seal ring area are acceptable on two nonadjacent vanes.	
	i. Six cracks through inner shroud (including around or through vane brazements) and extending a maximum of 1-1/2 inch into forward and aft support, are acceptable on the same vane, provided a minimum of five vanes separate the defects.	
	j. Cracks or severe mutilation are not allowed on nozzle tangs.	
	k. Inspect forward support to inner shroud brazement area for cracks with accompanying separation. Up to 3 inches of cumulative cracking is acceptable provided joint is not widely separated (greater than 1/32 inch) and distortion and/or rubbing is not evident.	
5. Second Stage Turbine Nozzle Assembly (1-120-000-14 or 1-120-050-03)	May exhibit areas of vane leading and trailing edges which have been blend-repaired by the manufacturer. These repairs have no significant affect on engine operation. Inspection limits given in following steps a thru c shall be applied only to the manufacturer's repairs. (Refer to fig. 18, sheet 3 of 4.)	
	a. A maximum of three missing parent material areas are permitted on one vane.	
	b. No more than 10 missing parent material areas on a nozzle assembly are acceptable.	
	c. Depth of missing parent material shall not exceed 1/16 inch on leading edge and 7/32 inch on trailing edge as measured from the unaffected portion.	

Table 14. Inspection of Second Stage Gas Producer Cylinder and Second Stage Nozzle Assembly. Continued

LOCATION / ITEM	REMARKS	ACTION
SECOND STAGE GAS PRODUCER NOZZLE AND CYLINDER ASSEMBLY/ Continued		
	NOTE **In addition, any number of leading edge blends (0.020 inch diameter, maximum), or trailing edge blends (0.030 inch diameter, maximum), are acceptable.**	
6. Second Stage Turbine Nozzle Assembly (1-120-000-14 and 1-120-050-03)	Replace assembly if inspection limits are exceeded. and spalling. (Refer to fig. 18, sheet 4 of 4.)	Visually **inspect** for cracks
	NOTE **Do not measure cracks from any portion of manufacturer's blend-repair. When cracks occur in this area, use vane leading or trailing edge as a reference point.**	
	a. Any number of 1/8 inch cracks are acceptable on trailing edge of vanes.	
	b. Any number of 1/16 inch cracks are acceptable on leading edge of vanes. Any number of 1/8 inch cracks are acceptable on a maximum of 30 vanes.	
	c. Any number of axial cracks originating at vane leading edge and progressing to edge of outer shroud are acceptable. In addition, two cracks are allowed to continue radially up forward face to flange radius.	
	d. Any number of cracks at vane trailing edge/outer shroud areas are acceptable up to 1/8 inch in length.	
	e. Cracks in outer shroud locations other than those noted are not acceptable.	

Table 14. Inspection of Second Stage Gas Producer Cylinder and Second Stage Nozzle Assembly. Continued

LOCATION / ITEM	REMARKS	ACTION
SECOND STAGE GAS PRODUCER NOZZLE AND CYLINDER ASSEMBLY/ Continued		
	f. Any number of cracks up to 1/8 inch at vane trailing edge/inner shroud radius areas are acceptable. No cracking is allowed in other areas of inner shroud.	
	g. A maximum of four radial cracks is acceptable in both forward and aft supports emanating from support to inner shroud junctions, provided length of cracks does not exceed ¾ inch and a minimum of five vanes separates defects.	
	NOTE **Inspect each support individually with respect to crack separation.**	
	h. Cracks or severe mutilation are not allowed on nozzle tangs.	
7. Nozzle Tangs	Bent tangs may be cold straightened. Inspect area for cracks by dye-penetrant method after straightening. Replace nozzle if cracks are evident.	Visually **inspect** for bending.
8. Nozzle Tangs	Blend-repair as outlined in paragraph H-25 (TM).	Visually **Inspect** for nicks, burrs, or rolled-over effect on edges.
9. Vanes	Replace nozzle if inspection limits are exceeded.	Visually **Inspect** for bums.
	NOTE **Do not include manufacturer's blend-repair (refer to fig. 18, sheet 2 of 4) in measurement of burned area.**	
	a. Bums on leading edge 1/16 by 3/8 inch on maximum of 10 vanes are allowed.	
	b. Burns on trailing edge 1/8 by 1/4 inch on a maximum of 10 vanes are allowed.	

Table 14. Inspection of Second Stage Gas Producer Cylinder and Second Stage Nozzle Assembly. Continued

LOCATION / ITEM	REMARKS	ACTION
SECOND STAGE GAS PRODUCER NOZZLE AND CYLINDER ASSEMBLY/ Continued		
		Visually **inspect** for dents, nicks, and burrs.
	Blend-repair as outlined in paragraph H-25 (TM). Blend-repair for second stage gas producer nozzles 1-120-000-14 and 1-120-050-03 shall be limited to removal of sharp surface projections. a. A maximum of three nicks or dents is allowed on vane leading edge, provided that after blend-repair, depth of any defect does not exceed 1/16 inch and length does not exceed 3/32 inch. Separation of defects shall be at least twice the length of the shortest defect after blend-repair. Smooth dents within limits are acceptable without blend-repair. b. A maximum of three nicks or dents is allowed on vane trailing edge, provided that after blend-repair, depth of any defect does not exceed 3/32 inch and length does not exceed 3/16 inch. Separation of defects shall be at least twice the length of the shortest defect after blend-repair. Smooth dents within limits are acceptable without blend-repair. c. Nicks and dents on vane airfoil surfaces are acceptable on all vanes. Blend-repair to remove nicks. d. Burrs are acceptable on vane leading and trailing edges. Blend-repair to remove burrs.	
10. Inner Shroud	Rubs are not allowed.	Visually **inspect** for axial and circumferential rubs.

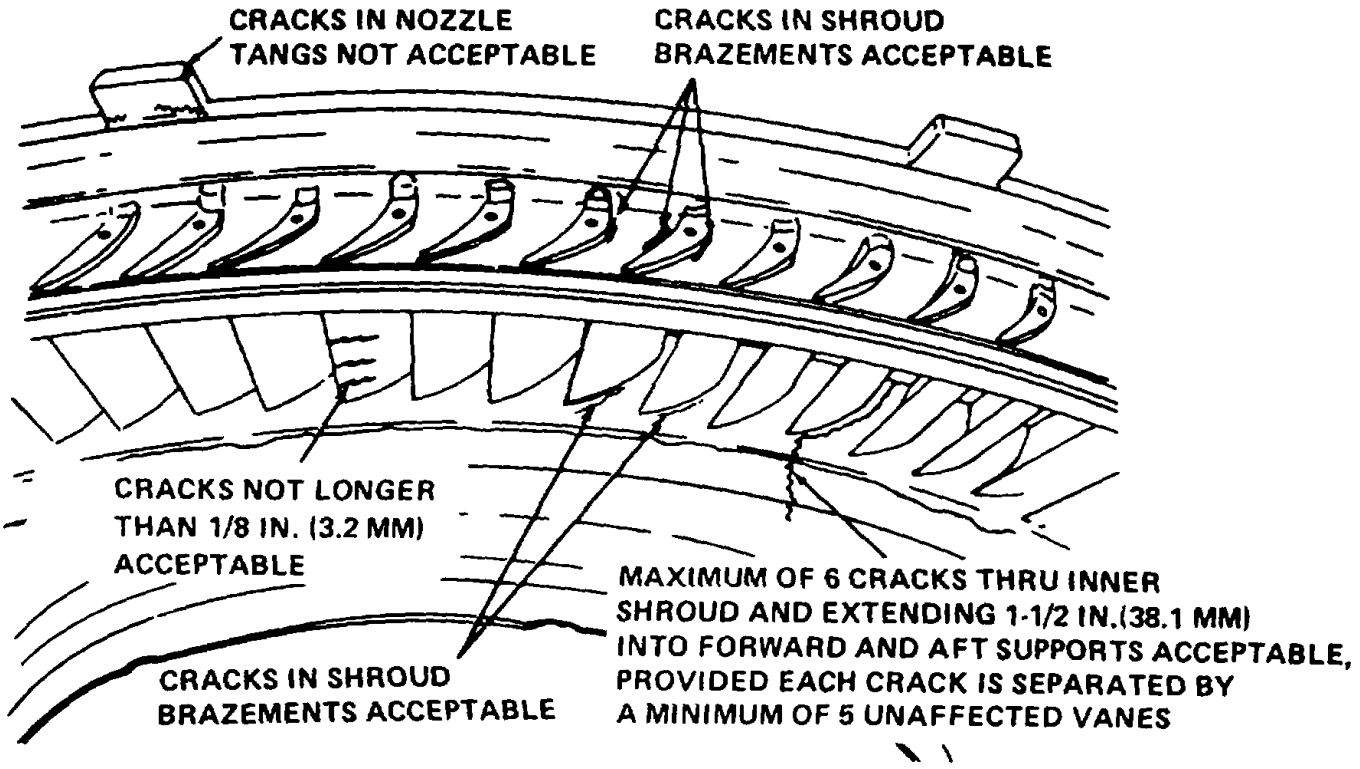


Figure 18. Second Stage Turbine Nozzle Assembly - Cracks (1-120-000-14 and 1-120-050-03) (Sheet 1 of 4).

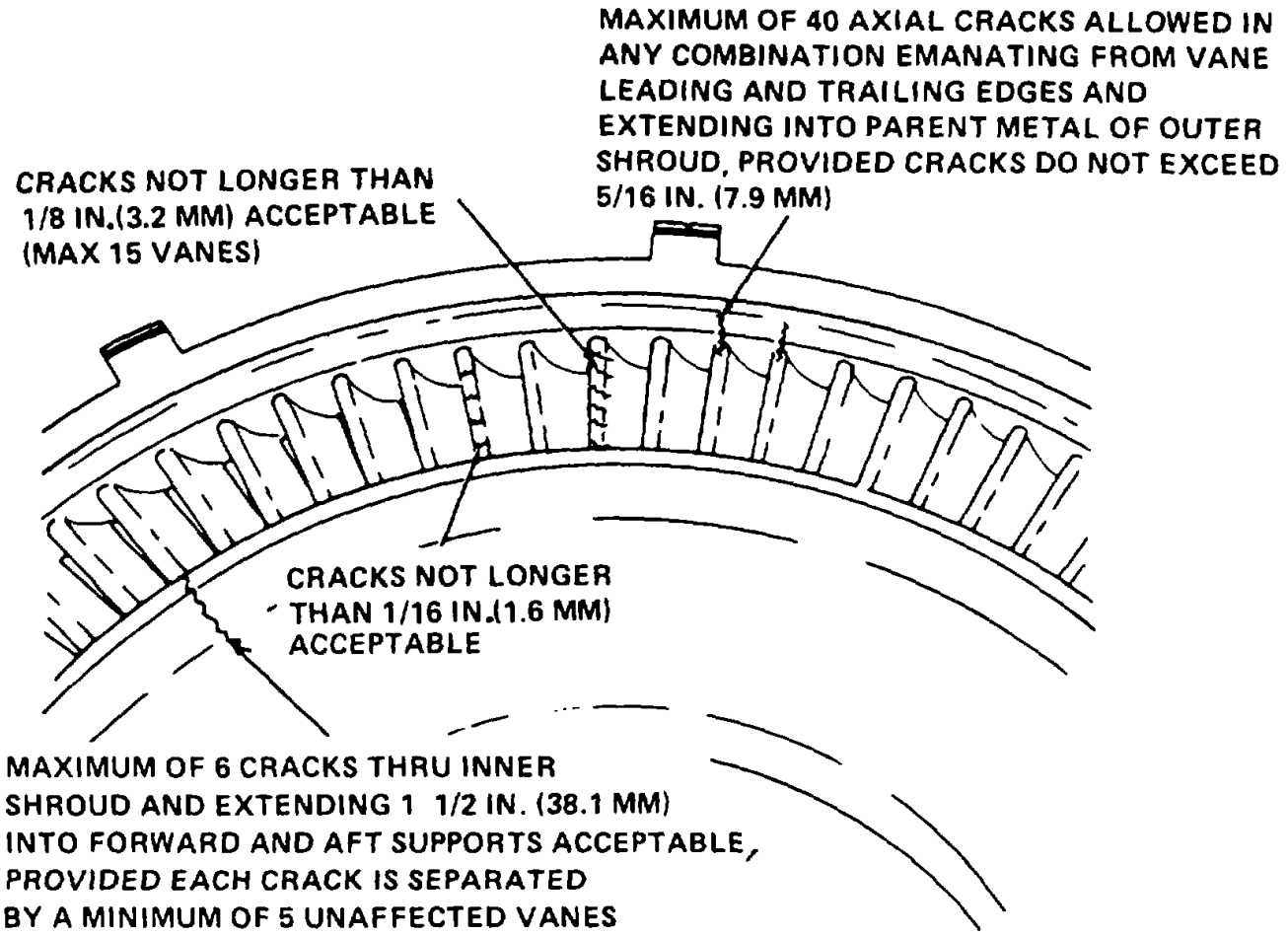


Figure 18. Second Stage Turbine Nozzle Assembly - Cracks (1-120-000-14 and 1-120-050-03) (Sheet 2 of 4)

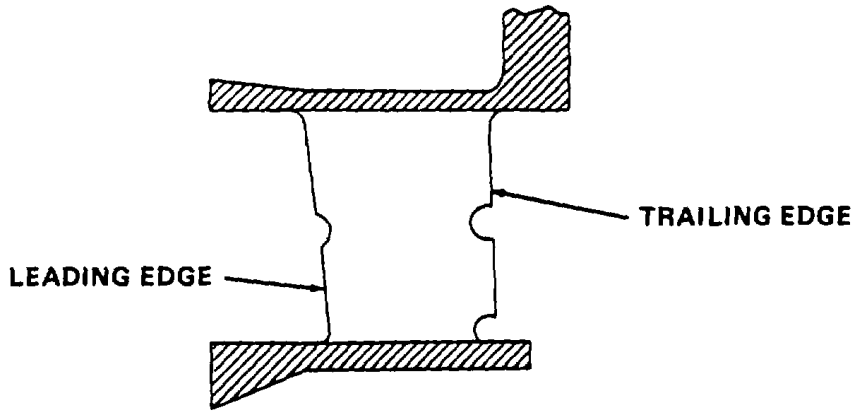


Figure 18. Second Stage Turbine Nozzle Assembly - Cracks (1-120-000-14 and 1-120-050-03) (Sheet 3 of 4).

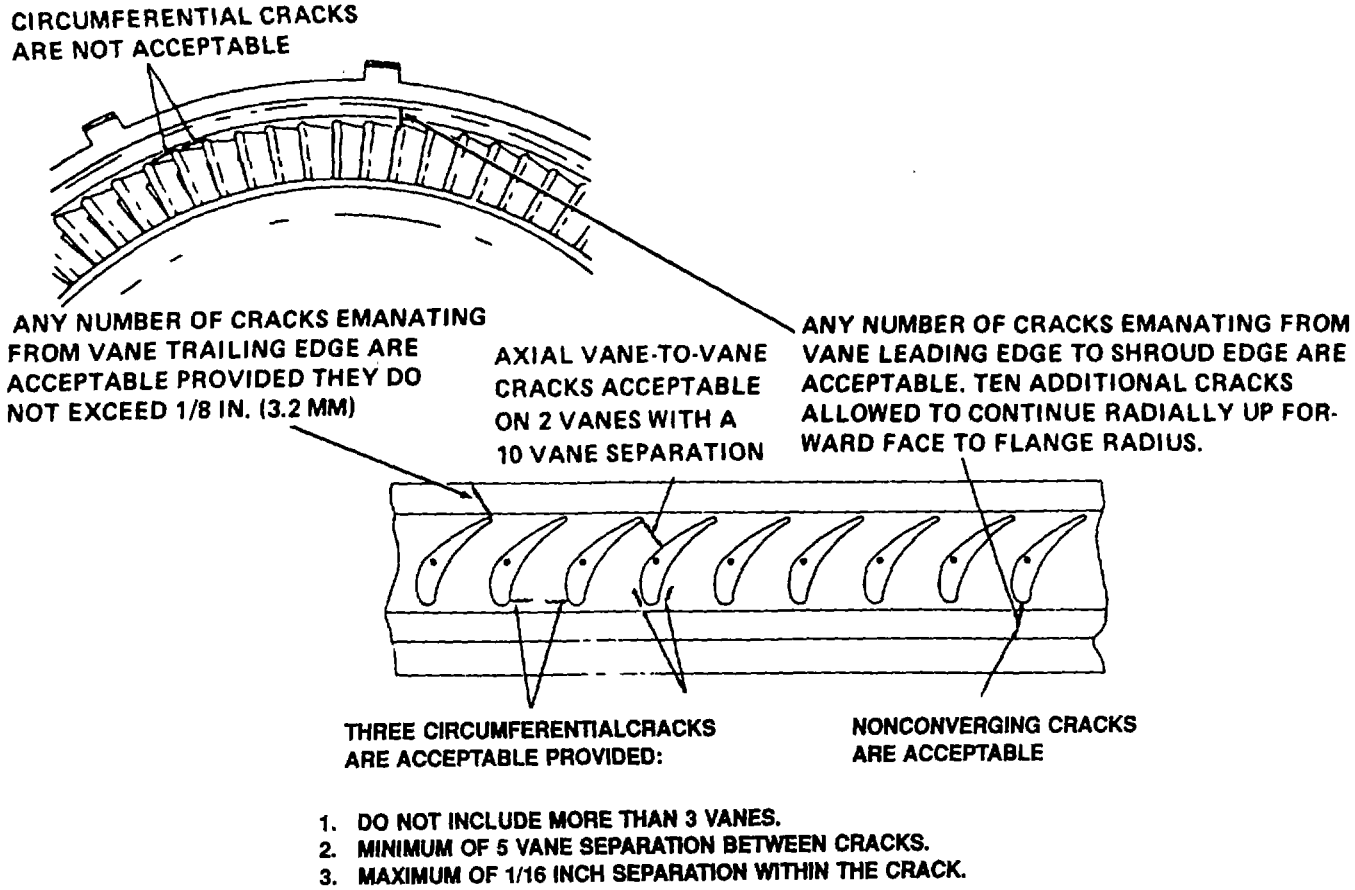


Figure 18. Second Stage Turbine Nozzle Assembly - Cracks (1-120-000-14 and 1-120-050-03) (Sheet 4 of 4).

I. First Stage Power Turbine Rotor, Sealing Flange, and Ring Spacer - Inspection. Refer to table 15.

Table 15. Inspection of First Stage Power Turbine Rotor, Sealing Flange, and Ring Spacer.

LOCATION / ITEM	REMARKS	ACTION
REAR COMPRESSOR SHAFT/		
1. Sealing Flange (1)		**Inspect** for cracks or distortion. Replace flange if cracks or distortion are noted. (Refer to fig. 19.)
2. Sealing Flange (1)	Replace flange if rubbing exceeds inspection limits.	**Inspect** for local rubbing. Rub depth shall not exceed 0.015 inch for a circumferential length of three inches. (Refer to fig. 19.)
3. Power Turbine Spacer (3)	Replace spacer if scoring exceeds inspection limits.	**Inspect** for scoring. Scoring shall not exceed 0.012 inch in depth. (Refer to fig. 19.)

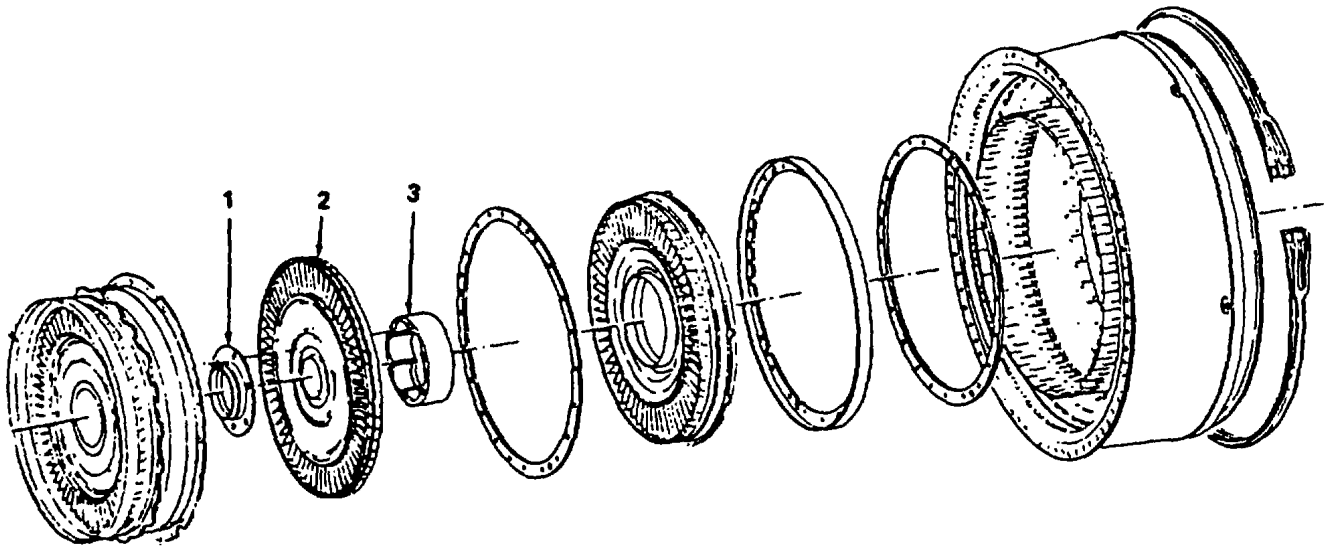


Figure 19. Rear Compressor Shaft.

Table 15. Inspection of First Stage Power Turbine Rotor, Sealing Flange, and Ring Spacer - Continued.

LOCATION / ITEM	REMARKS	ACTION
REAR COMPRESSOR SHAFT/ Continued		
4. First Stage Power Turbine Rotor (2)	Use 7-power magnifying glass.	Visually inspect as follows: Leading and trailing edges of blade for nicks, dents, cracks, and bums. (Refer to fig. 20.)
	The maximum permissible finished repair depth is 0.062 inch from leading edge and 0.045 inch from trailing edge. Allowable depths decrease as distance between damage and point A on leading edge or point B on trailing edge decreases.	
	No foreign object damage defects are allowed within 0.500 inch of blade platform.	
	No cracks are allowed.	

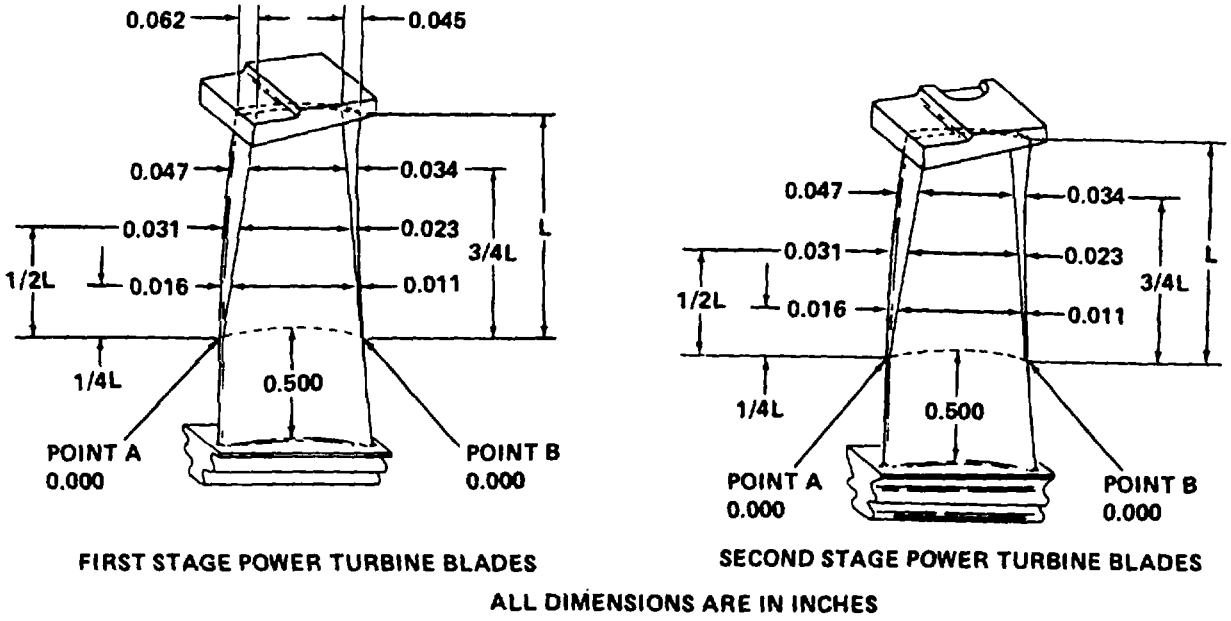


Figure 20. First and Second Stage Power Turbine Blades.

Table 15. Inspection of First Stage Power Turbine Rotor, Sealing Flange, and Ring Spacer - Continued.

LOCATION / ITEM	REMARKS	ACTION
REAR COMPRESSOR SHAFT/ Continued		
5. Blades	No foreign object damage defects are allowed within 0.500 inch of blade platform.	Visually **inspect** for nicks, dents, cracks, and bums. (Refer to fig. 20.)
	No cracks are allowed.	
	Burns that result in loss of material.	Reject the assembly.
	Metallization deposits are acceptable.	
6. Blade Tip	No cracks are allowed.	Visually **inspect** blade tip (shroud end) for cracks and scoring. (Refer to fig. 20.)
	Tip rubs shall not exceed 0.030 inch in depth.	
7. Blade Platform and Root Areas, and Turbine Disc	No cracks are allowed.	Visually **inspect** for cracks.
8. Disc	Rubs 0.006 inch deep by 0.100 inch wide are acceptable provided there is no indication of extreme heat.	Visually **inspect** forward and aft face of disc for rubs.
9. Disc	If one or more blades are recessed more than 0.025 inch, check clearance to third nozzle. If within limits, recessed blades are acceptable. If not, remove rotor for repair. Refer to paragraph 4-54, item 17 (TM).	**Inspect** aft side of disc for blades recessed below disc.

m. First Stage Turbine Nozzle Assembly (T53-L-13B Engine) - Inspection. Refer to table 16.

Table 16. Inspection of First Stage Turbine Nozzle Assembly (T53-L-13B Engine).

LOCATION / ITEM	REMARKS	ACTION
DIFFUSER HOUSING/		
1. First Stage Turbine Nozzle Assembly		**Inspect** for defects. Refer to table 17 for specific defects. **Replace** with nozzle 1-110-520-19 or 1-110-520-21 if inspection limits are exceeded. (Refer to fig. 21, sheet I of 4.).

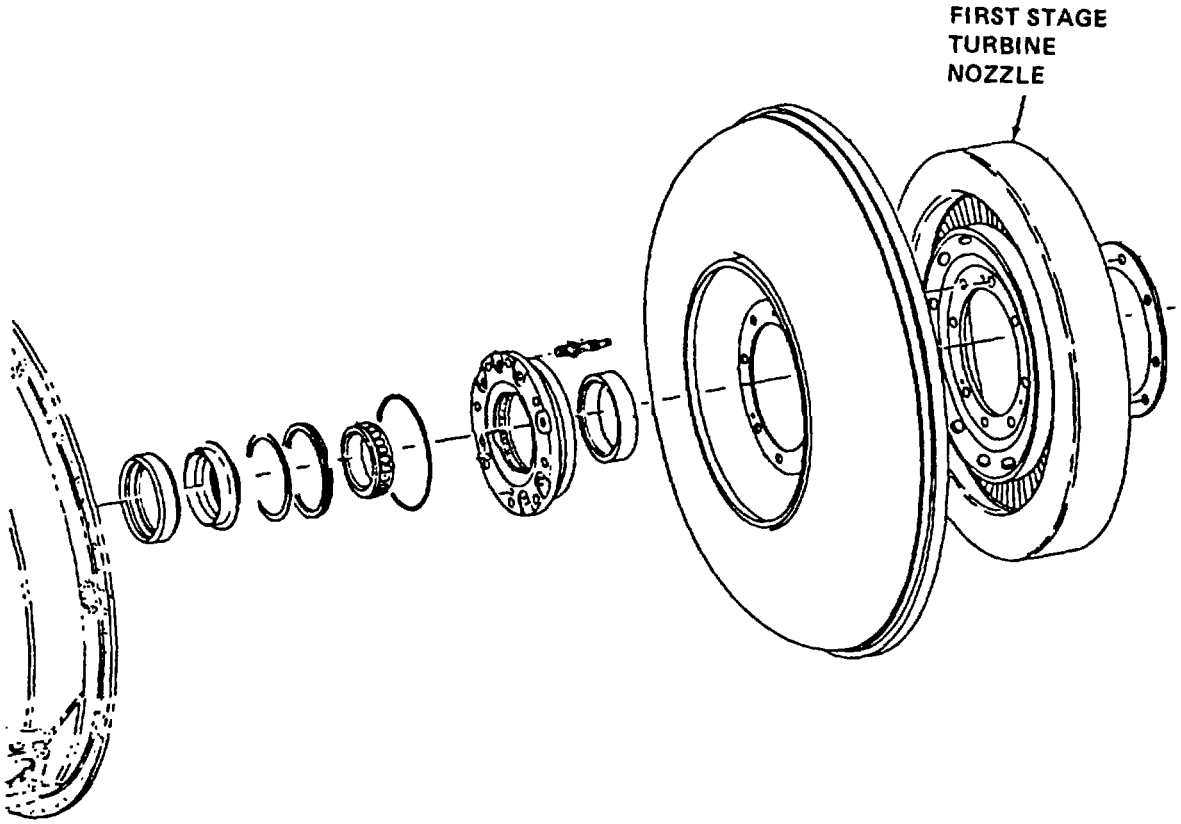


Figure 21. First Stage Turbine Nozzle Assembly (Sheet 1 of 4).

Table 16. Inspection of First Stage Turbine Nozzle Assembly (T53-L-13B Engine) - Continued.

LOCATION / ITEM	REMARKS	ACTION
DIFFUSER HOUSING/ Continued	Inspection locations are illustrated in figure 21 (sheet 2 of 4).	

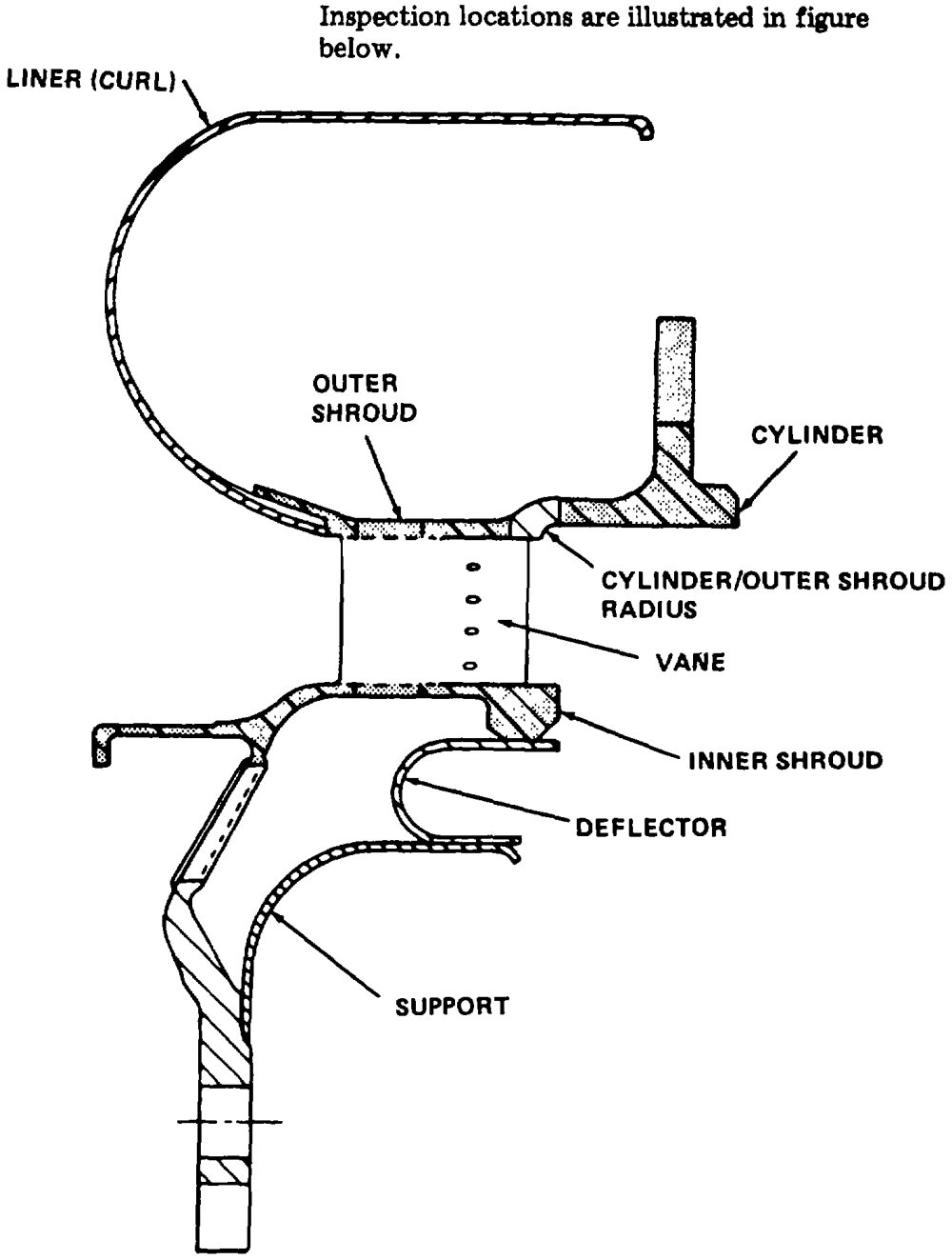


Figure 21. First Stage Turbine Nozzle Assembly (Sheet 2 of 4).

Table 16. Inspection of First Stage Turbine Nozzle Assembly (T53-L-13B Engine) - Continued.

LOCATION / ITEM	REMARKS	ACTION
DIFFUSER HOUSING/ Continued		
2. First Stage Nozzle Assembly	Nozzle 1-110-520-19 may exhibit areas of vane trailing edges which have been blend repaired by manufacturer. (Refer to fig. 21, sheet 3 of 4.) These repairs have no significant affect on engine performance.	Inspection limits given in table 17 shall be applied only to those defects caused by engine operation. **Perform** fluorescent-penetrant inspection (refer to paragraph H-20 TM) to detect cracks in nozzle curl OD.

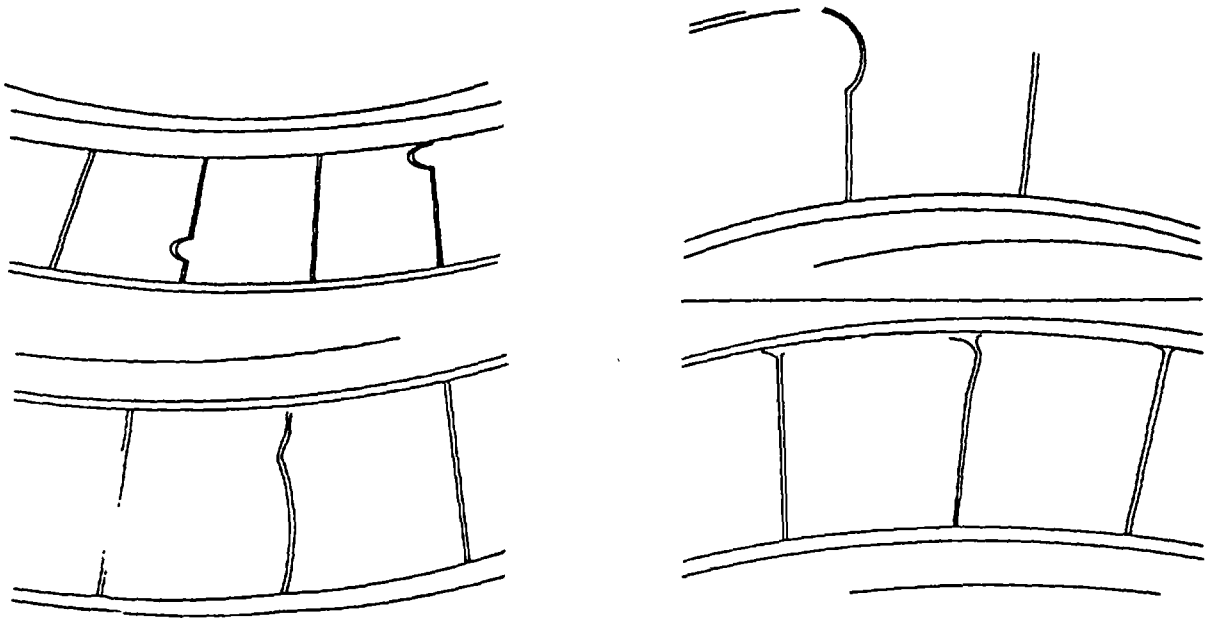


Figure 21. First Stage Turbine Nozzle Assembly (Sheet 3 of 4).

Table 16. Inspection of First Stage Turbine Nozzle Assembly (T53-L-13B Engine) - Continued.

LOCATION / ITEM	REMARKS	ACTION
DIFFUSER HOUSING/ Continued		
	NOTE **If first stage turbine nozzle assembly must be replaced, perform power check and trim adjustment of fuel control after replacement. (Refer to paragraph 1-118, TM.)**	
3. First Stage Turbine Nozzle Cylinder Flange	Refer to paragraph 4-12, (TM).	**Check** wall thickness at points indicated for rework. **Replace** with nozzle 1-110-520-19 or 1-110-520-21 if thickness is less than shown in figure 21, sheet 4 of 4. Removal of material necessary to obtain required tip clearance will **decrease** wall thickness to less than that shown in figure 21, sheet 4 of 4.

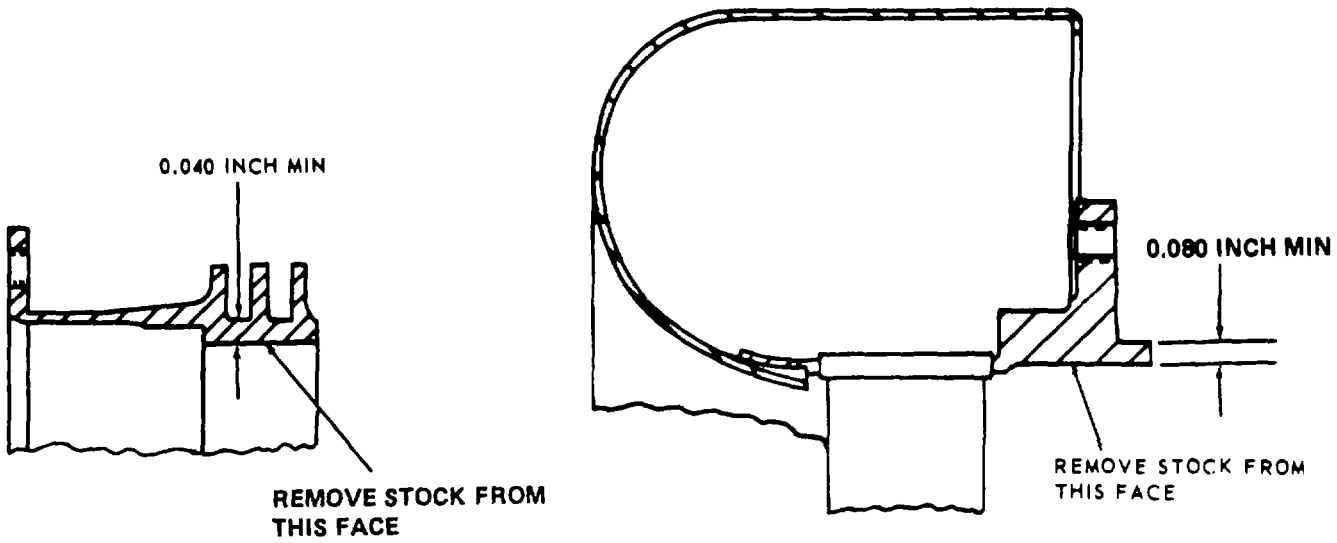


Figure 21. First Stage Turbine Nozzle Assembly (Sheet 4 of 4).

Table 16. Inspection of First Stage Turbine Nozzle Assembly (T53-L-13B Engine) - Continued.

LOCATION / ITEM	REMARKS	ACTION
DIFFUSER HOUSING/ Continued		
4. First Stage Turbine Nozzle Cylinder Flange	Refer to paragraph 4-19 (TM).	**Skim** if wall thickness is sufficient for rework.

NOTE

The first stage turbine nozzle assembly is a high-value item and should be carefully packaged for shipment in a suitable reusable container. Wrap nozzle in transparent bag (para 7c) in accordance with Military Specification MIL-F-22191, Type II. Install in cushioning material of container, close container, secure, and properly tag for shipment.

NOTE

Table 17 lists inspection limits for first stage turbine nozzle assembly.

n. Inspection Limits for First Stage Turbine Nozzle Assembly (T53-L-13B Engine). Refer to Table 17.

Table 17. Inspection Limits for First Stage Turbine Nozzle Assembly (T53-L-13B Engine).

Step No.	Defect	Ref	Inspection Limit 1-110-520-21	Inspection Limit 1-110-520-19
1.	Cracks. (Refer to fig. 21.1, sheet 1 of 2.)	A	**NOTE** **All inspection limits specified for first stage turbine nozzle assembly 1-110-520-19, used on T53-L-13B engines, will also apply to first stage turbine nozzle assembly 1-110-710-06, used on T53-L-703 engines, unless otherwise indicated.**	NOTE Do not measure cracks from any portion of manufacturer's blend-repair. (Refer to fig. 21.1, sheet 2 of 2. Views E, F and G.). When cracks occur in this area, use vane trailing edge as a reference point.
			a. Any number of cracks less than 1/8 inch long are acceptable on each vane.	a. Any number of cracks up to 1/4 inch long are acceptable on each vane.
		A	b. Maximum of two 3/8 inch non-converging tight-lipped cracks are acceptable on each vane.	b. Two nonconverging cracks 1/4 to 1/2 inch long is acceptable on each vane.
				c. Cracks at junction of vane trailing edge and outer shroud are acceptable on all vanes.
		B		d. Cracks progressing to vane cooling holes are acceptable.
		C		e. Cracks radiating toward one another are not acceptable. Minimum distance between converging cracks is 1/8 inch.
2.	Burning. (Refer to fig. 21.1, sheet 1 of 2.)	D		**NOTE** **Do not include manufacturer's blend-repair (refer to fig. 21.1, sheet 2 of 2, Views E, F and G.) in measurement of burned area.**

Vane Trailing Edge

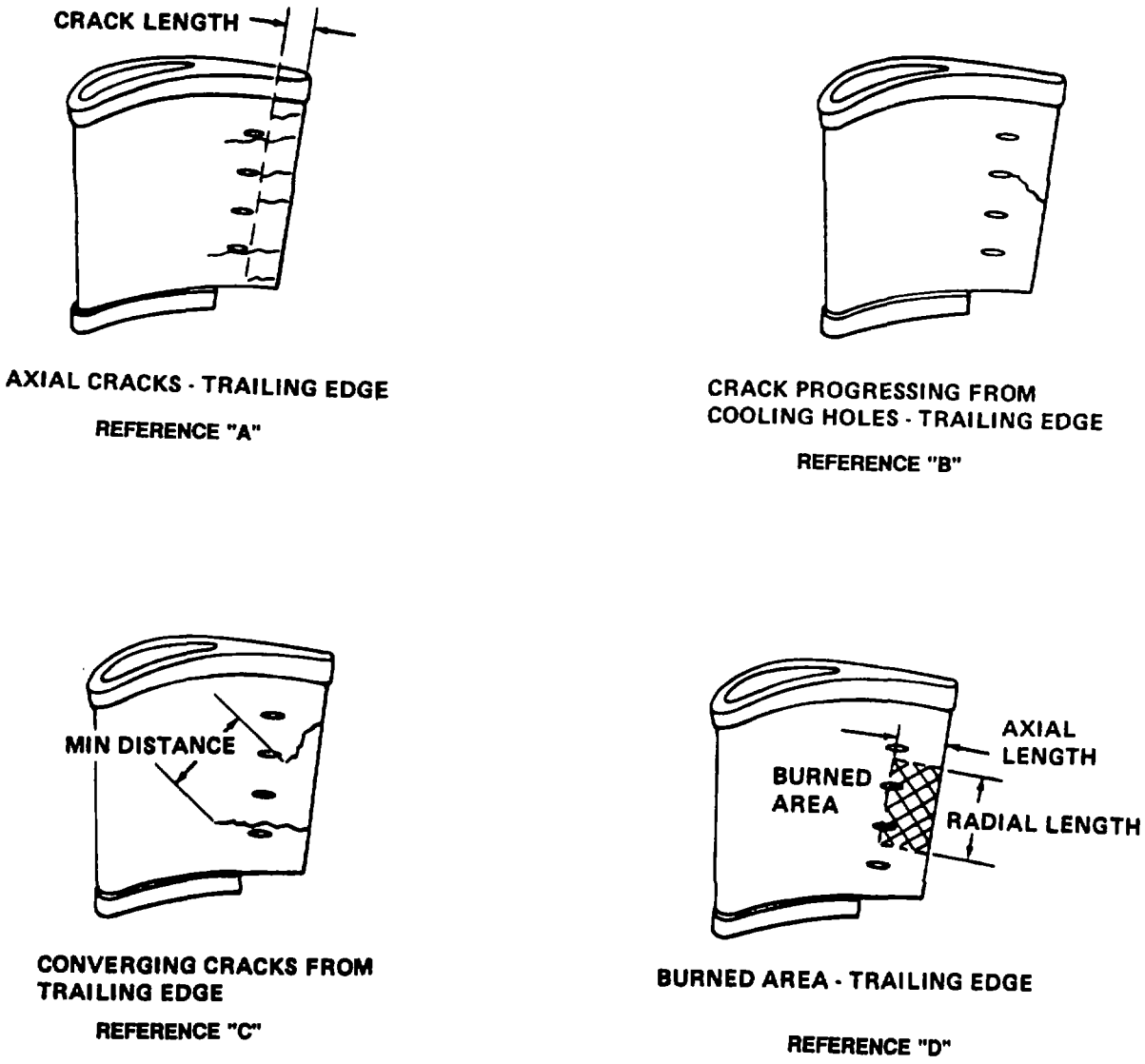


Figure 21.1. Cracks - Vane Trailing Edge (Sheet 1 of 2).

Table 17. Inspection Limits for First Stage Turbine Nozzle Assembly (T3-L-13B Engine) - Continued.

Step No.	Defect	Ref	Inspection Limit 1-110-520-21	Inspection Limit 1-110-520-19
			A burned area up to 3/8 inch radial length by 1/4 inch axial length is ac- ac- ceptable on a maximum of five vanes. vanes. must separa-	A burned area up to 3/8 inch radial length by 1/4 inch axial length is ceptable on a maximum of 10 In two areas of five vanes each, have a minimum of five vane tion between areas.
3.	Material Loss.		Erosion is acceptable through the vane at the lower bleed hole.	**NOTE** **Do not consider manufacturer's blend-repair as loss of material. Loss of material caused by other than burning or foreign object damage is acceptable provided vane distortion is not evident and core penetration has not occurred.**

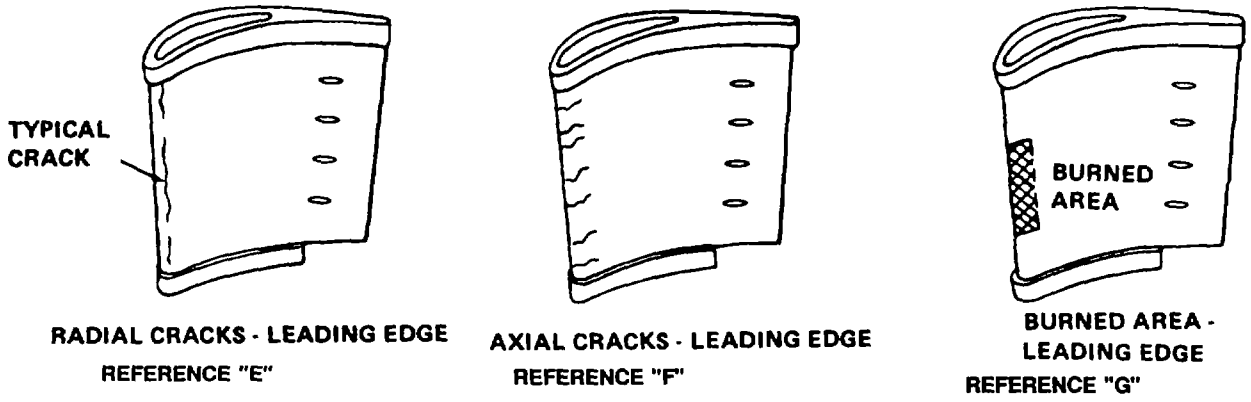


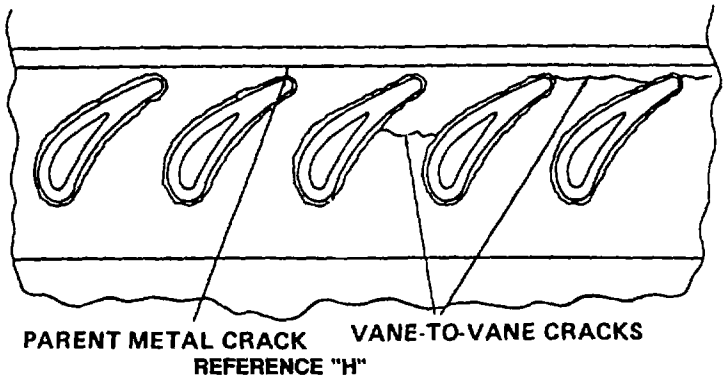
Figure 21.1. Cracks - Vane Trailing Edge (Sheet 2 of 2).

Table 17. Inspection Limits for First Stage Turbine Nozzle Assembly (T3-L-13B Engine) - Continued.

Step No.	Defect	Ref	Inspection Limit 1-110-520-21	Inspection Limit 1-110-520-19
4.	Radial Cracks. (Refer to fig. 21.1, sheet 2 of 2.)	E	Any number and size of cracks is acceptable on each vane provided core is not penetrated.	Any number and size of cracks is acceptable on each vane provided core is not penetrated.
			NOTE **Core is considered to be penetrated when crack is breached and core is visible.**	
5.	Axial Cracks. (Refer to fig. 21.1, sheet 2 of 2.)	F	Any number and size of cracks is acceptable on each vane provided core is not penetrated. any number of 3/8 inch cracks provided core is not penetrated.	Two cracks up to 1/2 inch in length are acceptable on each vane provided core is not penetrated or
6.	Burning. (Refer to fig. 21.1, sheet 2 of 2.)	G	Burning is acceptable provided core is not penetrated.	Burning is acceptable provided core is not penetrated.
			Vane Surface	
7.	Warpage and Distortion.	--	Warpage or distortion of vane surface is not acceptable.	Warpage or distortion of vane surface is not acceptable.
8.	Nicks, Dents, and Burrs.	--	Minor light nicks, dents, and burrs are acceptable. Repair not permitted because of possible damage to vane coating.	Minor light nicks, dents, and burrs are acceptable. Repair not permitted because of possible damage to vane coating.
9.	Spalling.	--	Any amount of spalling is acceptable on all vanes,	Any amount of spalling is acceptable on all vanes.
			Outer Shroud and Cylinder	
10.	Shroud to Vane Brazement Cracks.(Refer to fig. sheet 1 of 2.)	H	Cracks up to 3/4 inch long are acceptable on all vane brazements. Cracks up to 1-1/4 inch long are acceptable on a maximum of 10 vanes. 21.2,	

Table 17. Inspection Limits for First Stage Turbine Nozzle Assembly (T3-L-13B Engine) - Continued.

Step No.	Defect	Ref	Inspection Limit 1-110-520-21	Inspection Limit 1-110-520-19
			Outer Shroud and Cylinder (Continued)	
11.	Parent Metal Cracks. (Refer to fig. 21.2, sheet 1 of 2.)	H	On repaired nozzles (identified by markings PSK 11617-01), any number of cracks not exceeding 1/4 inch in length extending from trailing edge of vanes are acceptable. On all other nozzles, any number of cracks up to 1/8 inch long extending from trailing edge of vanes are acceptable.	
12.	Vane-to-Vane Cracks. (Refer to fig. 21.2, sheet 1 of 2.)	H	On repaired nozzles (identified by markings PSK 11617-01) a maximum of 12 vanes are acceptable provided no more than four vanes are cracked adjacent to each other in any one group with a minimum of five vane separation.	On repaired nozzles (identified by markings PSK 11617-01) a maximum of 12 vanes are acceptable provided no more than four vanes are cracked adjacent to each other in any one group with a minimum of five vane separation.
13.	Cylinder Cracks. (Refer to fig. 21.2, sheet 1 of 2.)	I	Any number of axial cracks up to 1/4 inch long extending forward from aft face of flange are acceptable. Circumferential cracks are not allowed.	
				A maximum of 10 tight-lipped axial cracks progressing from trailing edge of cylinder through the cylinder/outer shroud radius are acceptable, provided they do not extend more than 1/4 inch beyond radius and defects are separated by a minimum of five vanes. Any number of small axial cracks in radius area up to 1/4 inch in length are allowed provided no buckling is evident. Circumferential cracks are not allowed. A maximum of three additional axial cracks at random locations are allowed up to 3/4 inch in length.
		I, J	Cracks in alinement pin holes not al-	Cracks in alinement pin holes not allowed.



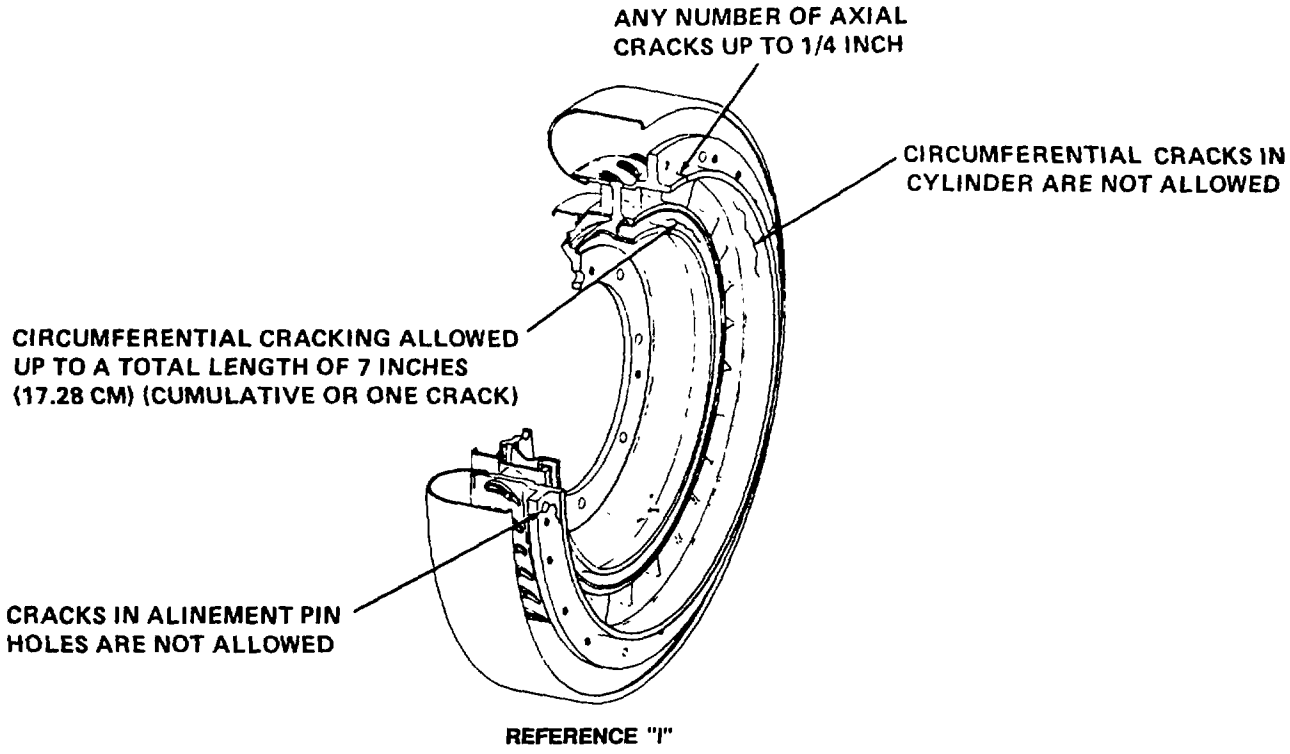


Figure 21.2. Cylinder Cracks (Sheet 1 of 2).

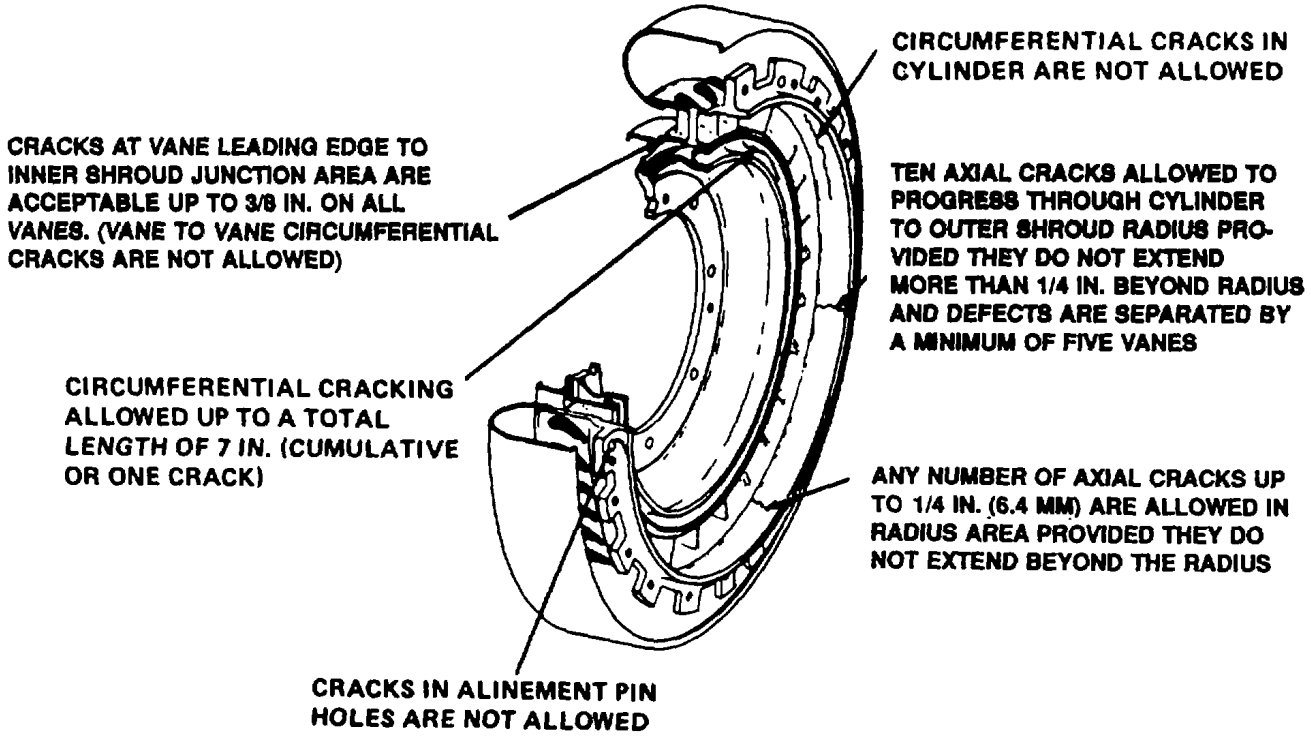


Figure 21.2. Cylinder Cracks (Sheet 2 of 2).

Table 17. Inspection Limits for First Stage Turbine Nozzle Assembly (T3-L-13B Engine) - Continued.

Step No.	Defect	Ref	Inspection Limit 1-110-520-21	Inspection Limit 1-110-520-19
			Inner Shroud and Deflector	
14.	Inner Shroud Cracks.	J		Cracks at vane leading edge to inner shroud junction area are acceptable (Refer to fig. up to 3/8 inch on all vanes. Vane to sheet 2vane and cracking is of 2.)
	21.2, circumferential not allowed.			
15.	Defector Cracks. (Refer to fig. 21.2.)	I, J	Circumferential cracking is acceptable up to a total length of 7 inches (cumulative or one crack).	Circumferential cracking is acceptable up to a total length of 7 inches (cumulative or one crack).
15.1	Inner Shroud Braze Joints.		1 Rubs are acceptable. 2. Circumferential cracks are not allowed. 3. Cracks associated with braze joints is unacceptable.	Visually inspect.
			Support and Curl	
16.	Buckling of Support.	--	Acceptable provided tip clearances are maintained. are maintained.	Acceptable provided tip clearances
17.	Hot Spots, Cracks, and Wear Depres-	K	Local hot spots caused by contact with combustion chamber liner are acceptable as shown. Wear depressions caused by rubbing of combustion chamber liner dimples are acceptable provided no breakthrough or raised impressions are evident on curl ID. Circumferential cracks are not allowed. Repair axial cracks unacceptable wear depressions as outlined in paragraph 4-46 (TM).	Local hot spots caused by contact with combustion chamber liner are acceptable as shown. Wear depressions caused by rubbing of combustion chamber liner dimples are acceptable provided no breakthrough or raised impressions are evident on curl ID. Circumferential cracks are not allowed. Repair axial Cracks as unacceptable wear depressions as outlined in paragraph 4-46 (TM).

NOTE

The following inspections, in steps 18 thru 23 apply to first stage turbine nozzle assembly 1-110-710-06 use on T53-L-703 engines.

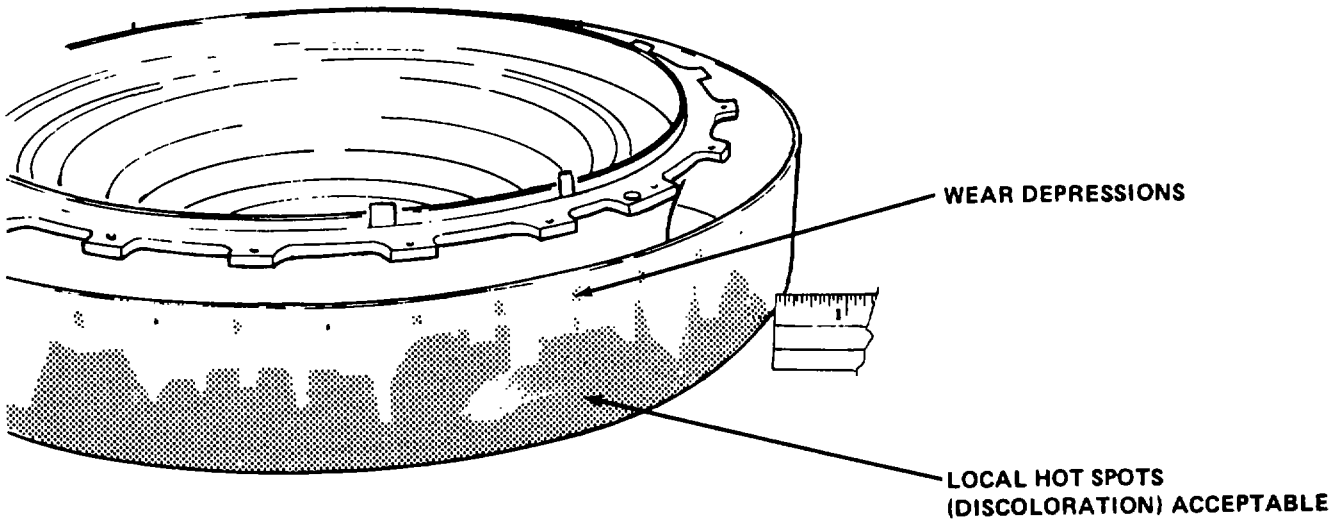


Figure 21.3. Hot Spots and Wear Depressions.

Table 17. Inspection Limits for First Stage Turbine Nozzle Assembly (T53-L-13B Engine) - Continued.

Step No.	Defect	Ref	Inspection Limit 1-110-710-06
			Liner and Curl
18.	Liner for Fretting and Wear at Aft Edge. (Refer to fig. 21.4.)	L	Fretting and wear is acceptable where it mates with the combustion chamber liner, provided no metal breakthrough is evident.
19.	Liner for Missing Tabs. (Refer to fig. 21.4.)	L	Five missing tabs are acceptable with a minimum of four tabs between missing tabs.
20.	Liner Tab Area for Axial and Circumferential Cracks. (Refer to fig. 21.4.)	L	Axial cracks are acceptable in liner tab area. Circumferential cracks are permitted provided the limitation on missing tabs in step 19 is met.

Liner and Curl

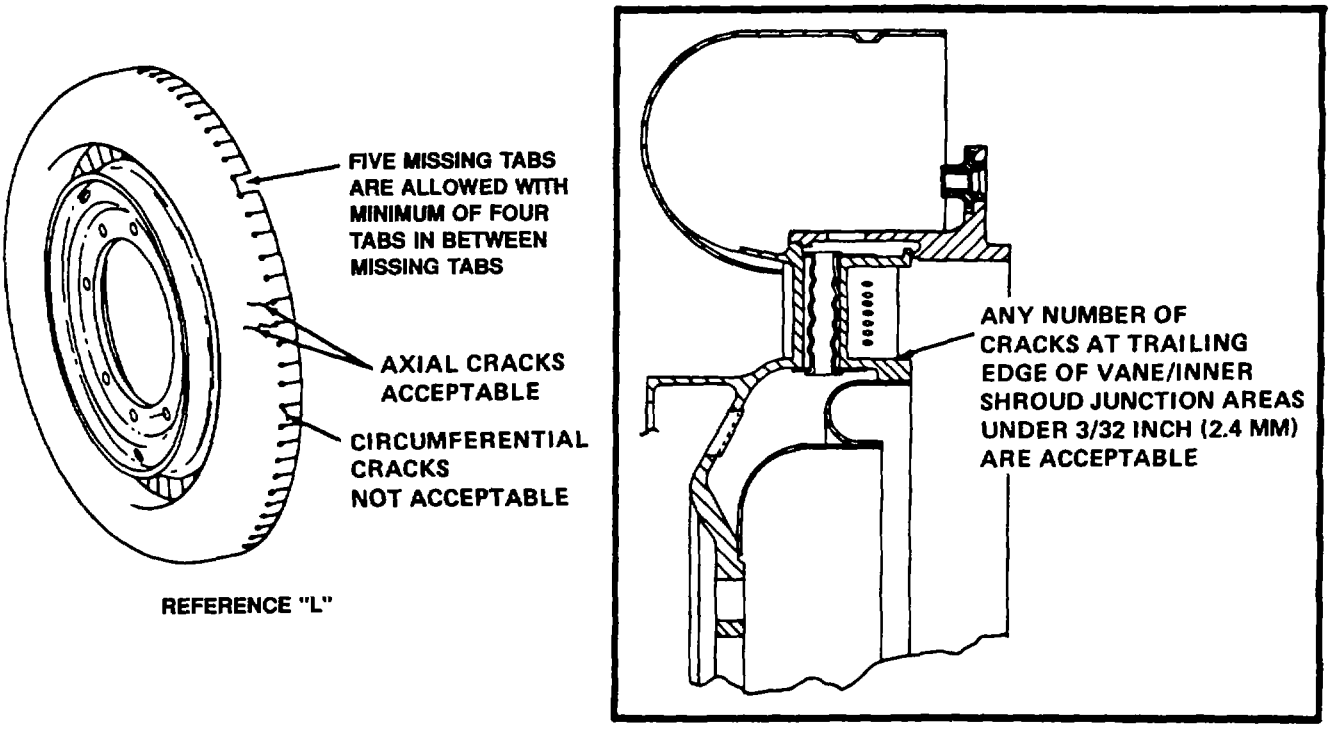


Figure 21.4. Axial/Circumferential Cracks.

Table 17. Inspection Limits for First Stage Turbine Nozzle Assembly (T53-L-13B Engine) - Continued.

Step No.	Defect	Ref	Inspection Limit 1-110-710-06
21	Cracks and Wear Depressions in Curl Forward ID. (Refer to fig. 21.4.)	L	Circumferential cracks are allowed. Axial cracks are acceptable without material fallout.
			Inner Shroud
22.	Cracks at Trailing Edge of Vane/Inner Shroud Junction Areas. (Refer to fig. 21.4.)	L	Any number of cracks under 1/4 inch are acceptable.
23.	Loose or Damaged Second Gas Producer Cylinder Mount Nuts.		Two missing or damaged nuts are allowed with a minimum of 90 degree separation.

o. First Stage Power Turbine Nozzle Assembly - Inspection. Refer to table 18.

Table 18. Inspection of First Stage Power Turbine Nozzle Assembly.

LOCATION/ITEM	REMARKS	ACTION
DIFFUSER HOUSING/		
1. First Stage Power Turbine Nozzle		Visually **inspect** for cracks. **Replace** nozzle if inspection limits are exceeded. (Refer to fig. 22.) a. Any number of 3/16 inch cracks are acceptable on trailing edge of vanes. b. Any number of 1/8 inch cracks are acceptable on leading edge of vanes. c. On T53-L-13B engines, no inspection is required on inner and outer shroud vane brazements. Cracks are allowed. d. Circumferential cracks at inner shroud/seal ring joint up to two inch in length (cumulative) at joint or adjacent to joint are permitted. In addition, defects at joint or adjacent to joint, associated with cracks that travel through the inner shroud and into the seal ring area, are acceptable up to 1.25 inch in length (either side) as measured from radial portion of crack.
2. Vane Trailing Edge	1-190-050-06/07 nozzles only. Small multiple cracks under 1/8 inch are allowed at all junctions.	**Inspect** vane trailing edge to outer shroud junction areas for cracks.
3. Outer Shroud	1-1 90-050-06/07 only.	**Inspect.** Limits are as follows:

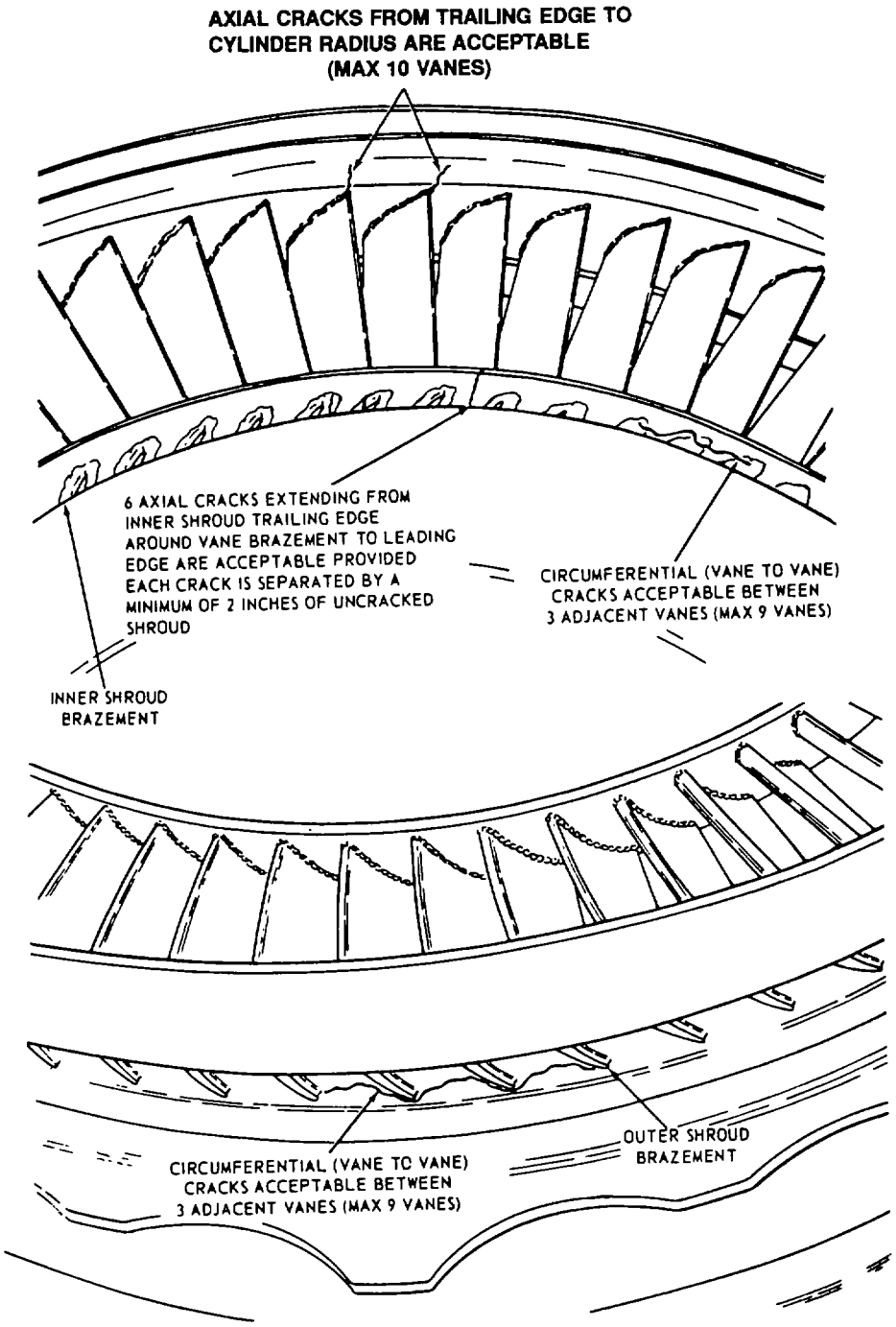


Figure 22. First Stage Power Turbine Nozzle Assembly.

Table 18. Inspection of First Stage Power Turbine Nozzle Assembly - Continued.

LOCATION/ITEM	REMARKS	ACTION
DIFFUSER HOUSING/ Continued		
		a. On outer shroud aft flange area axial/radial cracks up to 1/4 inch are allowed. b. On outer shroud forward flange area radial cracks are al lowed. No cracks allowed in axial cylinder. Circumferential cracks are not allowed in outer shroud other than small cracks mentioned in item 2 above.
4. Inner shroud	1-190-000-09 only.	Maximum of 6 cracks extending into seal ring area are allowed in length, provided no turbine rub occurs. (Refer to fig. 23.)

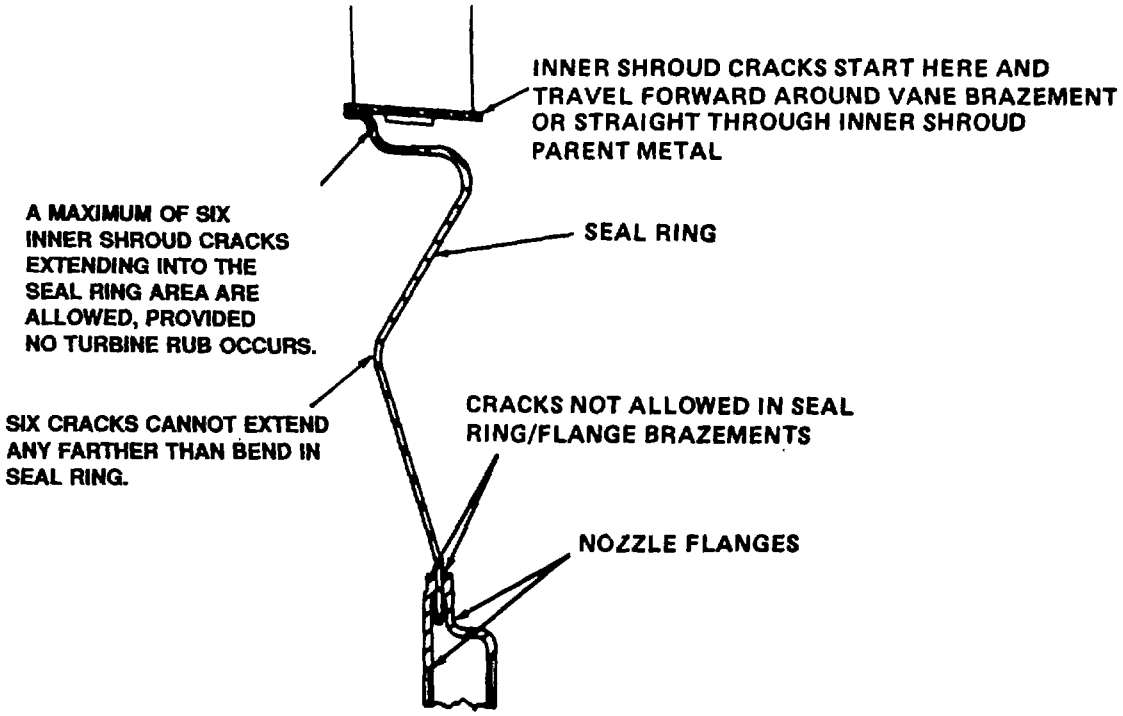


Figure 23. Inner Shroud

Table 18. Inspection of First Stage Power Turbine Nozzle Assembly - Continued.

LOCATION/ITEM	REMARKS	ACTION
DIFFUSER HOUSING/ Continued		
5. Outer Shroud	1-190-000-09 only.	ID and OD cracks may progress axially and then radially. No crack may **progress** into flange or sealing area. Five additional cracks exclusive of those that travel to aft sealing flange are allowed to progress from vane leading edge areas to the forward flange.
	NOTE **Cracks noted in actions for items 6 and 7 are allowed to be either part of or separate from preceding action for item 5 cracking conditions. When inspecting, consider all possible combinations.**	
6. Outer Shroud Leading Edge	1-190-000-09 only. (Refer to fig. 24.)	
7. Outer Shroud Trailing Edge	(Refer to figs. 22 and 24.)	Cracks are allowed.
8. Outer Shroud	1-190-000-09 only. (Refer to fig. 22.)	Circumferential (vane-to-vane) cracks in outer shroud between three adjacent vanes (maximum of nine vanes) are allowed.
9. Second Stage Power Turbine Nozzle	1-190-000-09 only.	Radial cracks at bolt holes are permitted.
10. Seal Brazement	Must have clearance during reassembly.	Cracks are not acceptable.
11. First Stage Power Turbine Nozzle	Axial rubs resulting from contact with turbine rotor are not permitted.	Visually **inspect** for rubs.
	CAUTION **Excessive deep grooves can prevent engine disassembly.**	

Table 18. Inspection of First Stage Power Turbine Nozzle Assembly - Continued.

LOCATION/ITEM	REMARKS	ACTION
DIFFUSER HOUSING/ Continued		
12. Nozzle	Grooves up to 0.020 inch in depth are acceptable for use, provided that sharp edges are blended to form a smooth contour. Refer to figure 24.	Visually **inspect** nozzle sealing area for grooves caused by the sealing rings.
13. Vanes	Blend-repair as outlined in paragraph H-25 (TM).	Visually **inspect** vanes for dents, nicks and burrs as follows (refer to fig. 25):
		a. A maximum of three nicks or dents are allowed on each vane leading edge, provided that after blend-repair, depth of any defect does not exceed 3/32 inch and length does not exceed 1/8 inch. Separation of defects shall be at least twice the length of the shortest defect after blend-repair. Smooth dents within limits are acceptable without blend-repair.
	Smooth dents within limits are acceptable without blend-repair.	b. Nicks or dents are allowed on vane trailing edge, provided the depth of any defect does not exceed 3/32 inch and length does not exceed 1/8 inch. Separation of defects shall be at least twice the length of the shortest defects after blend-repair.
	Blend-repair to remove nicks.	c. Random nicks and dents on vane airfoil surfaces are acceptable on all vanes.
	Blend-repair to remove burrs.	d. Burrs are not acceptable on vane leading and trailing edges.
	Burned vanes are allowed. Do not exceed blend limits.	e. Visually inspect nozzle vanes for burns.
		f. Metallization deposits are acceptable.

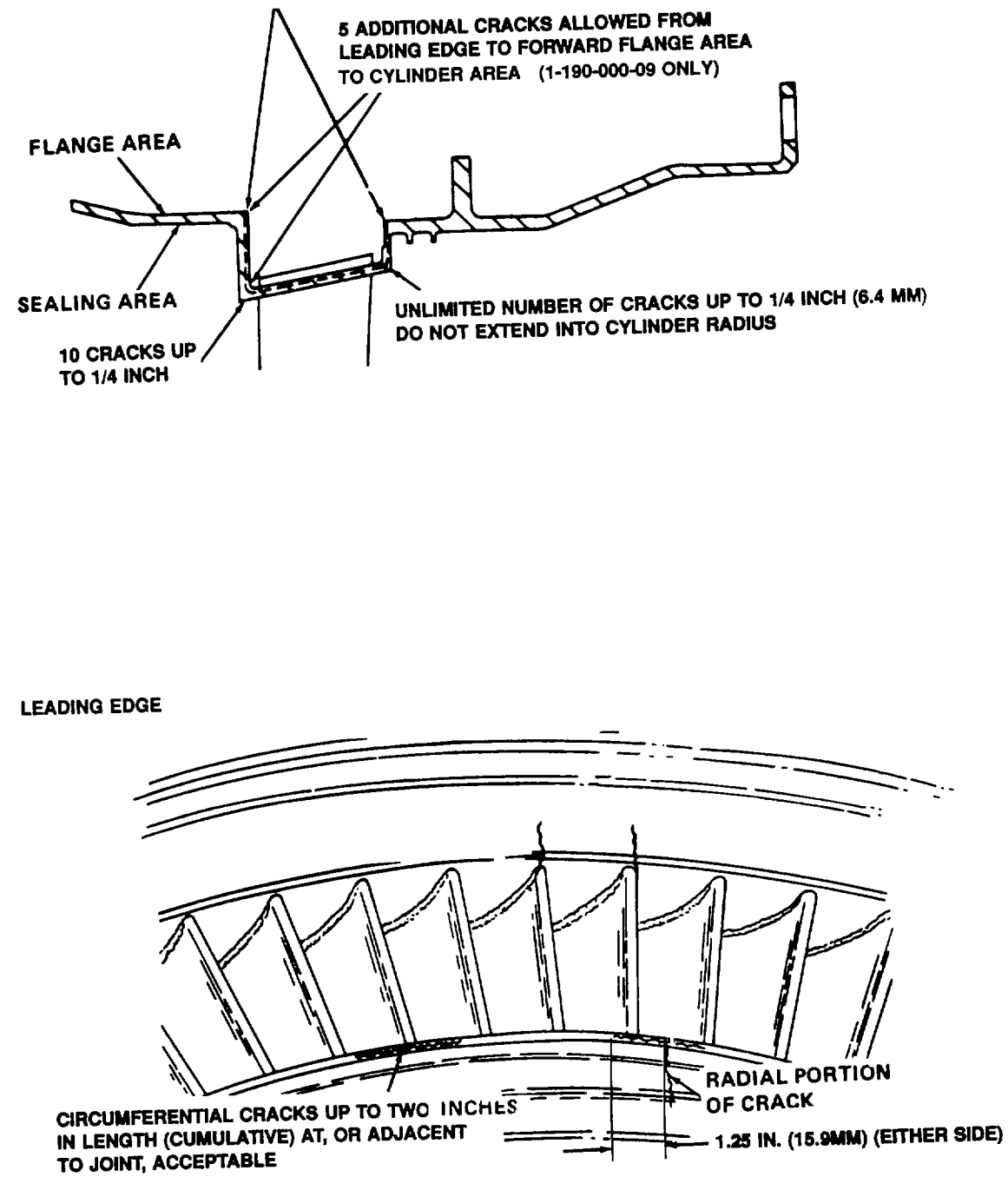


Figure 24. Outer Shroud

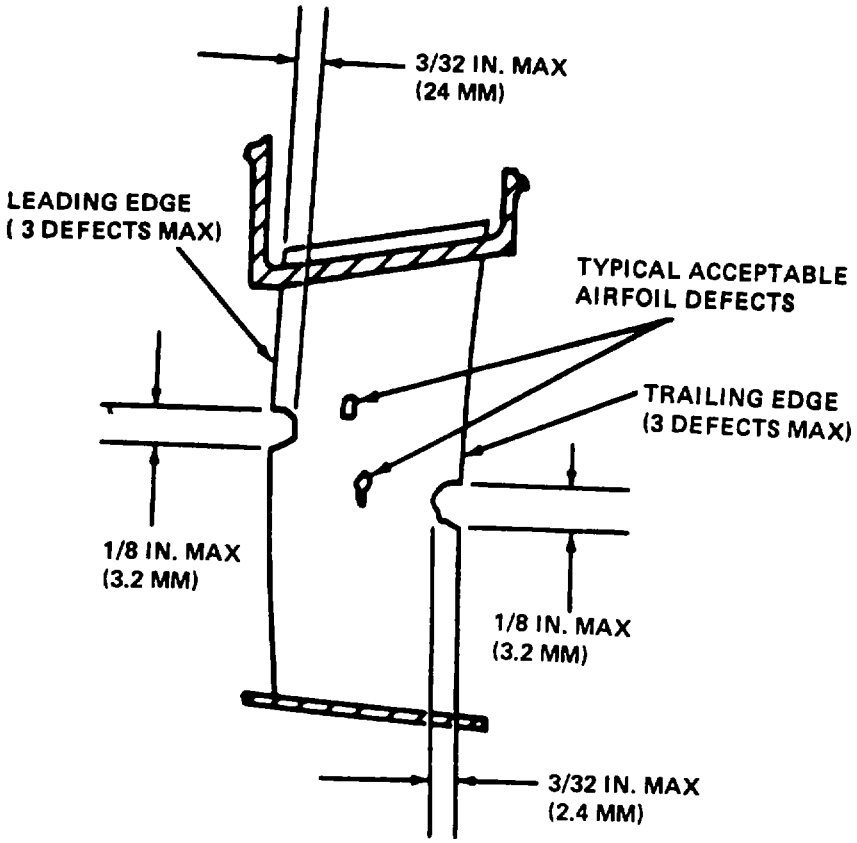


Figure 25. Vanes.

p. Second Stage Turbine Nozzle Assembly - Inspection. Refer to Table 19.

Table 19. Inspection of Second Stage Power Turbine Nozzle Assembly.

LOCATION/ITEM	REMARKS	ACTION
POWER TURBINE NOZZLE AND CYLINDER ASSEMBLY/		
1. Nozzle		Visually inspect for cracks. (Refer to fig. 26.) **Replace** nozzle if any of the following limits are exceeded: a. Any number of 1/4 inch cracks are acceptable on trailing edge of vanes. b. Any number of 3/16 inch cracks are acceptable on leading edge of vanes. c. **No inspection** is required on shroud to vane brazements (including overhang). Cracks are allowed.

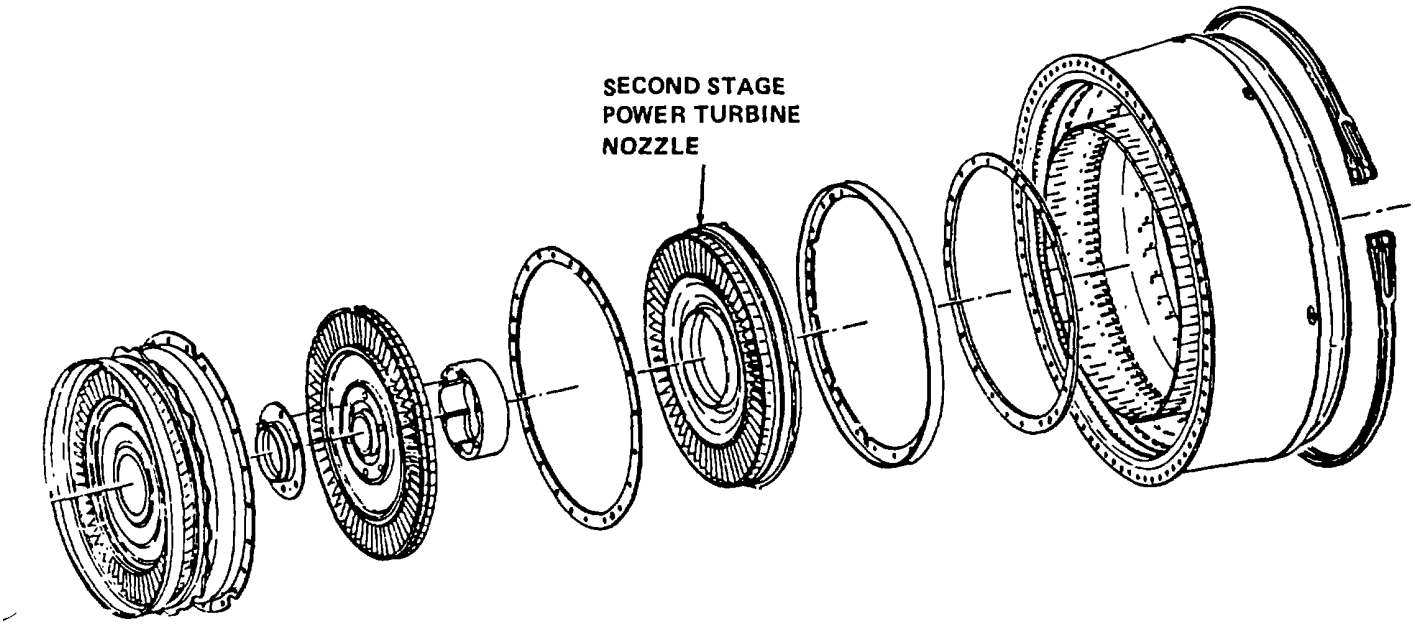


Figure 26. Power Turbine Nozzle and Cylinder Assembly.

Table 19. Inspection of Second Stage Power Turbine Nozzle Assembly - Continued.

LOCATION/ITEM	REMARKS	ACTION
POWER TURBINE NOZZLE AND CYLINDER ASSEMBLY/ Continued		
	CAUTION **When inspecting for circumferential cracks in following step, any evidence of turbine wheel rubbing on support is unacceptable regardless of circumferential crack length.**	
2. Inner Shroud to Support Joint	Cracks are acceptable provided the cumulative crack length does not exceed 1/4 the circumference of the joint.	**Inspect** for circumferential cracks. (Refer to fig. 27.)
3. Inner Shroud to Vanes		Inspect for circumferential cracks. Cracks in the parent metal on inner shroud between four adjacent vanes are permitted (maximum of 12 vanes with a separation of four vanes). (Refer to fig. 27.)
4. Outer Shroud		**Inspect** outer shroud. A total of 20 axial cracks in parent metal are allowed within the limits shown. (Refer to fig. 28.)
	a. A maximum of ten are allowed to be cracked up to 3/4 inch. b. Two cracks are permitted which progresses from the shroud leading edge, travels adjacent to vane and terminates at cylinder radius. c. Any remaining cracks are allowed to be cracked up to 1/2 inch.	

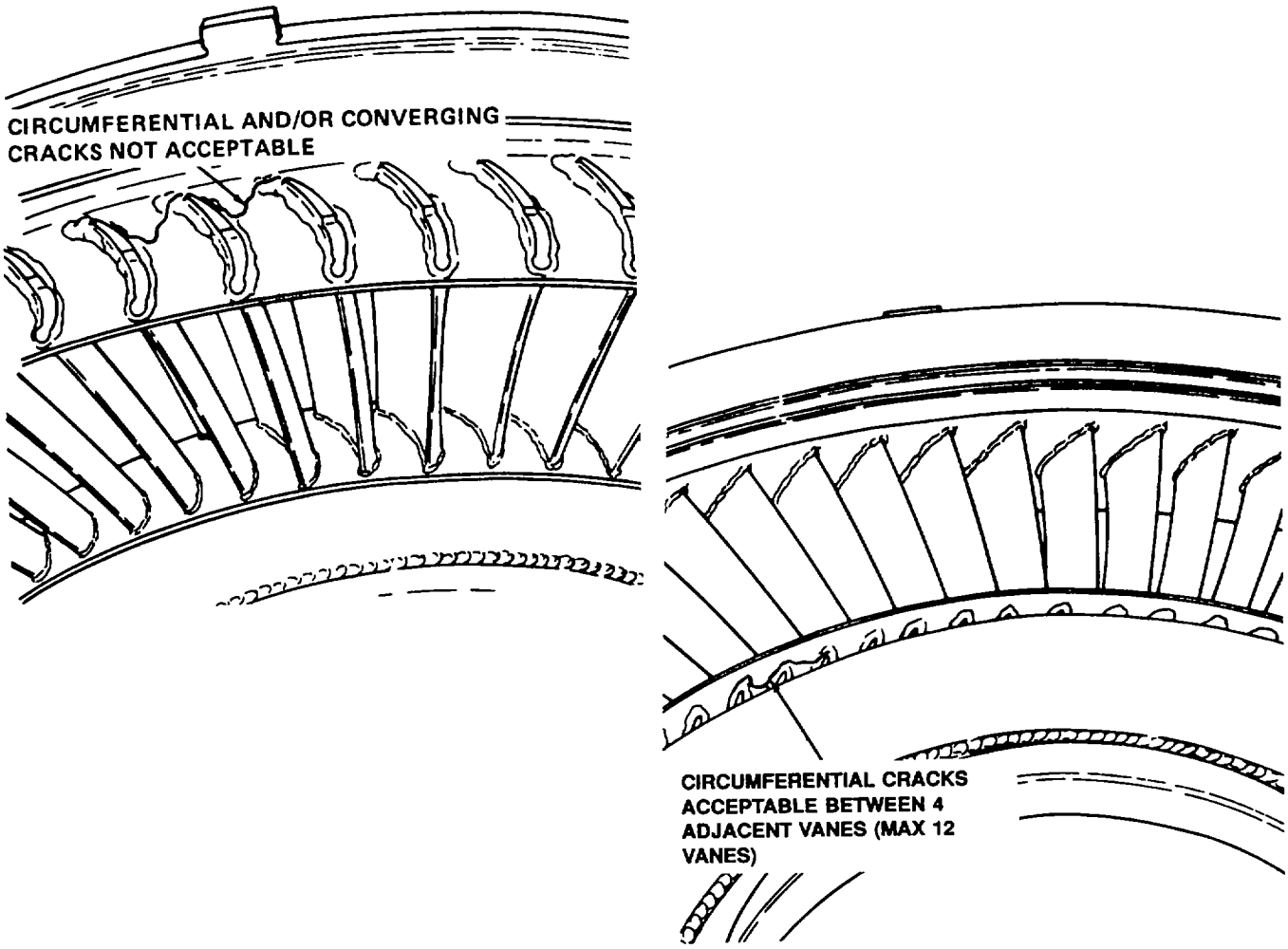


Figure 27. Inner Shroud.

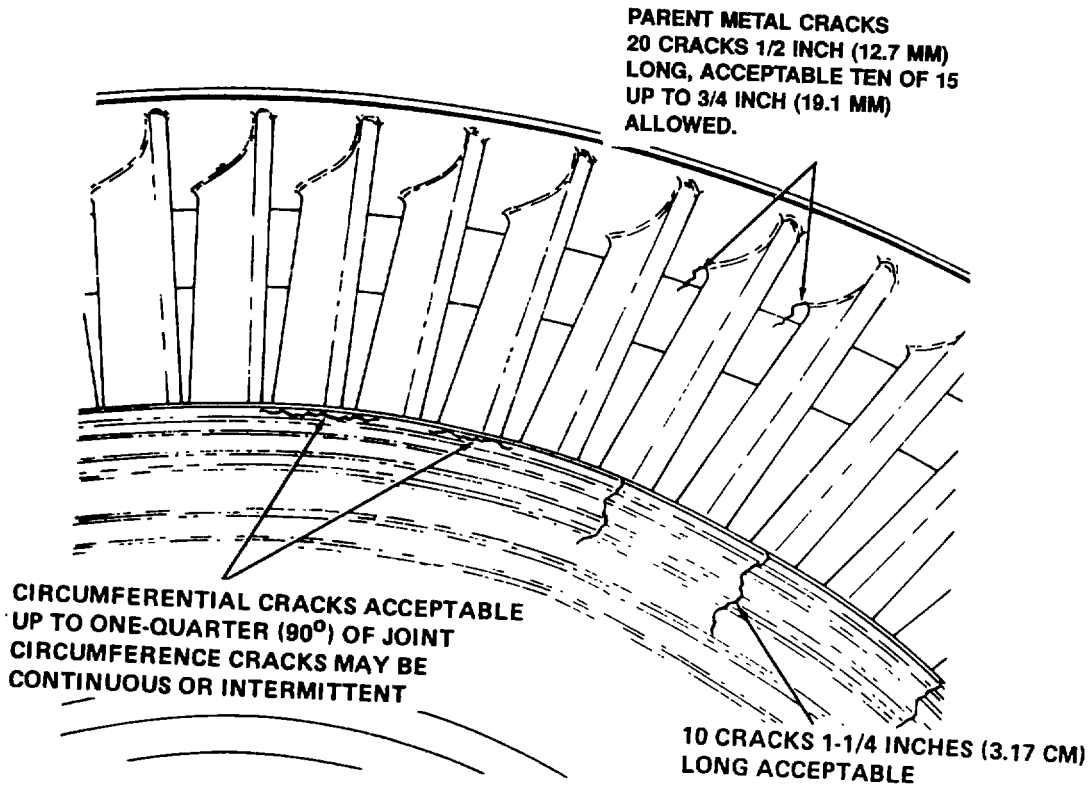


Figure 28. Outer Shroud.

Table 19. Inspection of Second Stage Power Turbine Nozzle Assembly - Continued.

LOCATION/ITEM	REMARKS	ACTION
POWER TURBINE NOZZLE AND CYLINDER ASSEMBLY/ Continued		
5. Outer Shroud	Circumferential and/or converging cracks are allowed when total length of all circumferential cracks does not exceed 1/4 of circumference. (Refer to fig. 27.)	**Inspect** for circumferential and/or converging cracks in outer shroud.
6. Shroud Trailing Edge Around Vane Brazements to Leading Edge	A maximum of 15 cracks are acceptable provided each crack is separated by at least two vanes. Each of these cracks are allowed to extend up to 1-1/4 inch into the support provided no turbine rub is evident.	**Inspect** for cracks. (Refer to fig. 29.)
7. Inner Shroud	Converging cracks in inner shroud not allowed.	**Inspect** for converging cracks.
8. Support/Seal Brazement	Cracks are not acceptable.	**Inspect** for cracks.
9. Second Stage Power Turbine Nozzle	Axial rubs resulting from contact with turbine rotor are permitted provided the minimum axial clearances are met during reassembly.	Visually **inspect** for axial rubs.

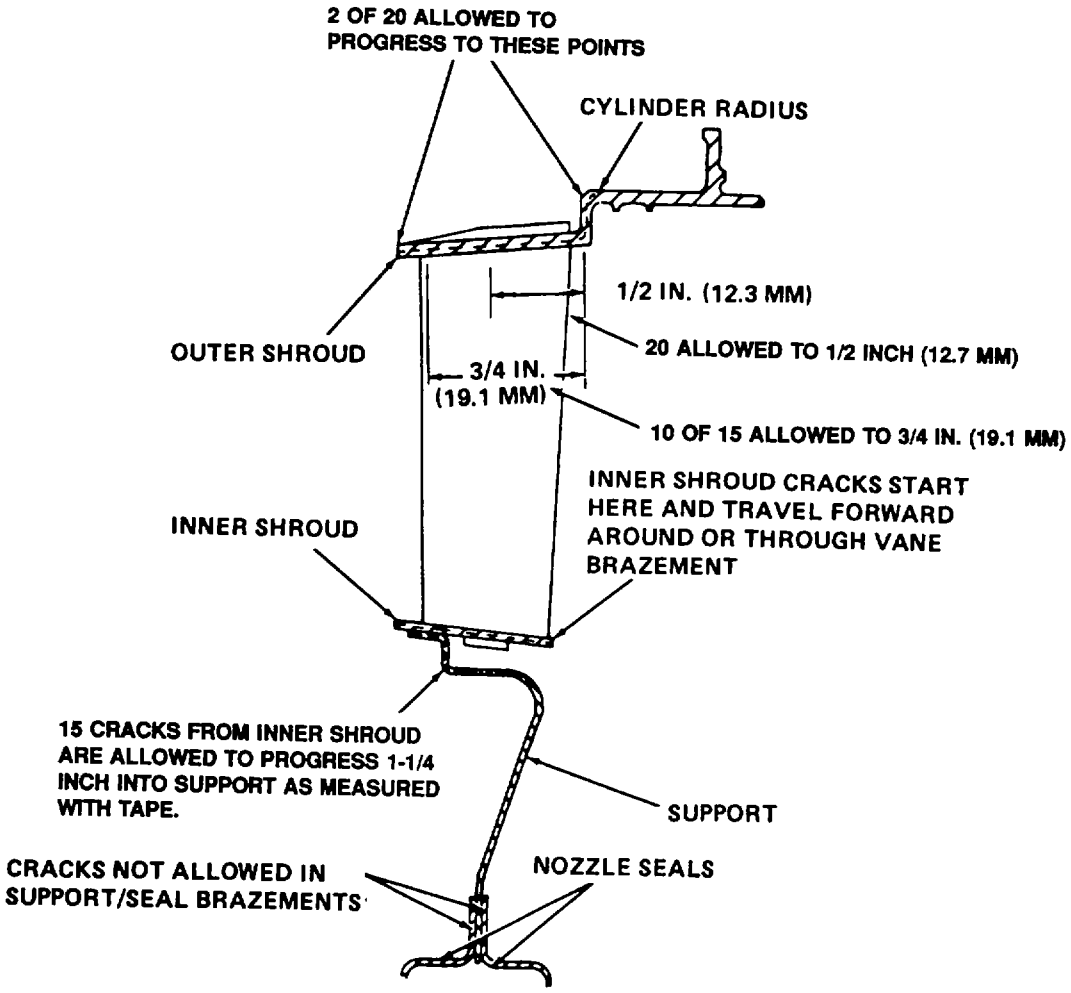


Figure 29. Shroud Trailing Edge.

Table 19. Inspection of Second Stage Power Turbine Nozzle Assembly - Continued.

LOCATION/ITEM	REMARKS	ACTION
POWER TURBINE NOZZLE AND CYLINDER ASSEMBLY/ Continued		
10. Vanes	Blend-repair nicks, dents, and burrs as outlined in paragraph H-25 (TM). a. Nicks or dents are allowed on each vane leading and trailing edge, provided that after blend-repair, depth of any defect not exceed 3/32 inch and length does not exceed 3/16 inch. Separation of defects shall be at least twice the length of the shortest defect after blend-repair. Smooth dents within limits are acceptable without blend-repair. b. Minor nicks and dents on vane airfoil surfaces are acceptable on all vanes. c. Burrs are acceptable on vane leading and trailing edges.	Visually inspect for dents, nicks, and burrs.
11. Nozzle	1. Burns in leading and trailing edges of vanes with loss of metal are not allowed. 2. Metallization deposit are acceptable.	Visually inspect for burns.

13. Special Tools, Jigs, Test Measurement and Diagnostic Equipment (TMDE). Refer to TM 55-2840-229-23-1 and -2.
14. Quality Assurance Requirements. As applicable.
15. Recording and Reporting of Work Accomplished.

a. Record and Report Forms. The following forms are applicable and are to be completed in accordance with DA Pamphlet 738-751, June 1992.

(1) DA Form 2408-13, Aircraft Status Information Record.
(2) DA Form 2408-13-1, Aircraft Inspection and Maintenance Record.
(3) DA From 2408-13-2, Related Maintenance Actions Record.
(4) DA Form 2408-15, Historical Record For Aircraft.
(5) DA Form 2408-15-1, Equipment Modification Record (Engine).
(6) DA Form 2408-16, Aircraft Component Historical Record.
(7) DA Form 2408-18, Equipment Inspection List.
(8) DA Form 2408-19, Aircraft Engine Turbine Wheel Historical Record.
(9) DA Form 2408-19-1, T53/T55 Turbine Engine Analysis Check Record.
(10) DA Form 2408-20, Oil Analysis Log.
(11) DA Form 2410, Component Removal and Repair/Overhaul Record.
(12) DD Form 1577-2, Unserviceable (Reparable) Tag-Materiel.

b. Marking Equipment. Not applicable.

c. Identification. Not applicable.

16. Points of Contact.

For immediate engineering assistance in complying with this Technical Bulletin, contact Mr. Imtiaz (Art) Ather, Directorate for Engineering, AMSAT-R-EPE, DSN 693-0317 or Commercial (314) 263-0317, For immediate assistance for recording and reporting information with this Technical Bulletin, contact AMSAT-I-MDO, DSN 693-1955 or Commercial (314) 263-1955. For immediate DA Form 2410 information, call ATCOM 2410 hot-line, DSN 693-1879 or Commercial (314) 263-1879.

17. Reporting of Errors and Recommending Improvements.

You can help improve this manual. If you find any mistakes or if you know of a way to improve the procedures, please let us know. Mail your letter or DA Form 2028 (Recommended Changes to Publication and Blank Forms) directly to: Commander, U.S. Army Aviation and Troop Command. ATN: AMSAT-I-MP, 4300 Goodfellow Boulevard St Louis, MO 63120-1798. A reply will be furnished to you.

18. Engineering Change Proposal (ECP) Number. Not applicable.

APPENDIX A

LIST OF TABLES

By Order of the Secretary of the Army:

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

Official:

JOEL B. HUDSON
Administrative Assistant to the
Secretary of the Amy
00128

DISTRIBUTION:
To be distributed In accordance with DA Form 12-31-E, block no. 3500, requirements for TB 1-2840-229-20-2.

RECOMMENDED CHANGES TO EQUIPMENT TECHNICAL PUBLICATIONS

THEN...JOT DOWN THE DOPE ABOUT IT ON THIS FORM. CAREFULLY TEAR IT OUT, FOLD IT AND DROP IT IN THE MAIL.

SOMETHING WRONG WITH PUBLICATION

FROM: (PRINT YOUR UNIT'S COMPLETE ADDRESS)

DATE SENT

PUBLICATION NUMBER	PUBLICATION DATE	PUBLICATION TITLE

BE EXACT PIN-POINT WHERE IT IS

PAGE NO.	PARA-GRAPH	FIGURE NO.	TABLE NO.

IN THIS SPACE, TELL WHAT IS WRONG AND WHAT SHOULD BE DONE ABOUT IT.

PRINTED NAME, GRADE OR TITLE AND TELEPHONE NUMBER	SIGN HERE

DA FORM 1 JUL 79 2028-2

PREVIOUS EDITIONS ARE OBSOLETE.

P.S.--IF YOUR OUTFIT WANTS TO KNOW ABOUT YOUR RECOMMENDATION MAKE A CARBON COPY OF THIS AND GIVE IT TO YOUR HEADQUARTERS.

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	*To*	*Multiply by*	*To change*	*To*	*Multiply by*
inches	centimeters	2.540	ounce-inches	Newton-meters	.007062
feet	meters	.305	centimeters	inches	.394
yards	meters	.914	meters	feet	3.280
miles	kilometers	1.609	meters	yards	1.094
square inches	square centimeters	6.451	kilometers	miles	.621
square feet	square meters	.093	square centimeters	square inches	.155
square yards	square meters	.836	square meters	square feet	10.764
square miles	square kilometers	2.590	square meters	square yards	1.196
acres	square hectometers	.405	square kilometers	square miles	.386
cubic feet	cubic meters	.028	square hectometers	acres	2.471
cubic yards	cubic meters	.765	cubic meters	cubic feet	35.315
fluid ounces	milliliters	29,573	cubic meters	cubic yards	1.308
pints	liters	.473	milliliters	fluid ounces	.034
quarts	liters	.946	liters	pints	2.113
gallons	liters	3.785	liters	quarts	1.057
ounces	grams	28.349	liters	gallons	.264
pounds	kilograms	.454	grams	ounces	.035
short tons	metric tons	.907	kilograms	pounds	2.205
pound-feet	Newton-meters	1.356	metric tons	short tons	1.102
pound-inches	Newton-meters	.11296			

Temperature (Exact)

°F	Fahrenheit temperature	5/9 (after subtracting 32)	Celsius temperature	°C

PIN: 073753-000