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MIL-STD-342(AT)
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SUPERSEDING
(See 6.3)

DEPARTMENT OF DEFENSE TEST METHOD STANDARD

FLOW CHECK, LUBRICATING OIL; PROCEDURE FOR



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MIL-STD-342(AT)

DEPARTMENT OF DEFENSE
Washington, DC 20301

Flow Check, Lubricating Oil; Procedure for

1. This Military Standard is approved for within the US Army Tank-Automotive Command, Department of the Army, and is available for use by all Departments and Agencies of the Department of Defense.

2. Beneficial comments (recommendations, additions, deletions) and any pertinent data which may be of use in improving this document should be addressed to: US Army Tank-Automotive Command, ATTN: AMSTA-GDS, Warren, MI 48397-5000, by using the self-addressed Standardization Document Improvement Proposal (DD Form 1426) appearing at the end of this document or by letter,

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FOREWORD

This standard provides the means for checking the oil flow through the AGT 1500 engine.

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1. SCOPE

1.1 Scope. This standard covers a standard procedure for checking the oil flow through parts, subassemblies, and assemblies of the AGT 1500 engine.

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2. REFERENCED DOCUMENTS

2.1 Government document.

2.1.1 Specification. Unless otherwise specified, the following specification of the issue listed in that issue of the Department of Defense Index of Specifications and Standards (DoDISS) specified in the solicitation forms a part of this standard to the extent specified herein.

SPECIFICATION MILITARY

MIL-L-23699 - Lubricating Oil, Aircraft Turbine Engine, Synthetic Base.

(Copies of specifications required by contractors in connection with specific acquisition functions should be obtained from the contracting activity or as directed by the contracting officer.)

2.2 Other publication. The following document forms a part of this standard to the extent specified herein. Unless otherwise specified, the issue of the document which is DOD adopted shall be that listed in the issue of the DODISS specified in the solicitation. The issue of the document which has not been adopted shall be that in effect on the date of the cited DODISS.

AVCO LYCOMING DIVISION

91547-LTCT5398 - Spray Fixture, #1 Bearing Housing.
P6828 - Residual Magnetism Inspection.

(Application for copies should be addressed to the US Army Tank-Automotive Command, ATTN: AMSTA-GDS, Warren, MI 48397-5000.)

2.3 Order of precedence. In the event of a conflict between the text of this standard and the references cited herein, the text of this standard shall take precedence.

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3. DEFINITIONS (Not applicable)

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4. GENERAL REQUIREMENTS

4.1 Equipment.

4.1.1 Flow-checking medium. The flow-checking medium shall be oil conforming to MIL-L-23699.

4.1.2 Flow bench. The flow bench shall be calibrated for and capable of flowing oil up to 5000 pounds per hour (pph) at a fluid temperature of 95 to 100 degrees Fahrenheit (°F). The flow measurement shall be accurate to within plus or minus (\pm) 2 percent (%).

4.1.3 Pressure gage. The pressure gage shall be a suitable aircraft type, calibrated to 100 pounds per square inch gage (psig) and having an accuracy of \pm 1%.

4.1.4 Lines, fittings, and fixtures:

- a. Lines and fittings. Suitable aircraft-type lines and fittings shall be used.
- b. Fixtures. When required, suitable fixturing shall be used for parts, subassemblies, and assemblies being flow checked.

NOTE: No restriction smaller than the inside diameter of the inlet port shall be allowed.

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5. DETAILED REQUIREMENTS

5.1 Preliminary precautions. Before flow checking parts, subassemblies, and assemblies, the following precautions shall be observed:

- a. Check for residual magnetism. Magnetism shall not exceed three (3) gauss.
- b. All oil holes, grooves, and passages shall be clean and free of burrs.
- c. All assembly requirements, such as the installation of o-rings and seals, correct bolt torques, and bearing pinch, shall be met. The locking of bolts, nuts, etc. shall not be mandatory.

5.2 Configuration. Parts, subassemblies, and assemblies requiring a flow check shall be as specified in table I by part number and description.

5.3 Flow rate, pressure, and temperature. Flow rate, pressure, and temperature requirements for parts, subassemblies, and assemblies requiring a flow check shall be as specified in table I. The pressures listed in table I shall be considered as actual part, subassembly, and assembly inlet port pressure requirements.

5.4 Procedure.

5.4.1 Pressure gage location. The pressure gage (see 4.1.3) shall be located within 1 inch of the inlet port of the part, subassembly, or assembly being flow checked or on the fixture being used.

5.4.2 Flow reading. The flow reading shall be obtained under the conditions specified in table I. The part, subassembly, or assembly shall be verified to meet the specified flow requirements.

5.4.3 Flow check test. All parts, subassemblies, and assemblies shall be tested as follows:

- a. Determine the pressure drop across the inlet fixturing (section of line, fitting, or fixture after pressure gage). Increase the inlet pressure by the amount equal to the pressure drop (P).
- b. Record the flow measured with the pressure specified in table I at the part, subassembly, or assembly.
- c. Alternately apply an oil pressure of 100 and zero psig to shock the lubrication system and to dislodge any contaminants in the feed lines. Repeat the shock cycle not less than five times.

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- d. Repeat the flow check as specified in step b. Any change in flow from that recorded in step b initially is a sign of contamination present and is cause for a contamination removal procedure.
- e. The oil flow recorded in step b and repeated in step d shall conform to table I.

5.4.4 Residual magnetism. Check for magnetism in accordance with P6828 to verify conformance with 541, step a.

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6. NOTES

6.1 Intended use. The procedure covered by this standard is intended to be used to insure AGT 1500 engines meet prescribed lubrication flow requirements.

6.2 Subject term (key word) listing.

AGT 1500 engine

Flow check

Lubricating oil

6.3 Supersession data. This standard supersedes AVCO Lycoming Division specification no. E0121G, dated 20 January 1987.

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TABLE I. Flow check requirements.

Part number	Description	Flow rate (pph)	Pressure (psig)	Temp (°F)
12286049 (91547/3-060-001-23)	Housing, Inlet, #1 Bearing <u>1</u> / When the following housing is used: 12286049 (Rev A-T) 1 Jet 0.035-0.037 12286049 (Rev U) <u>8</u> / 1 Jet 0.035-0.037 1 Jet 0.023-0.026	80-100 125-170	75 75	95-100 95-100
12284355 (91547/3-060-001-28)	Housing, Inlet, #1 Bearing <u>1</u> / 1 Jet 0.035-0.037 1 Jet 0.023-0.026	125-170	75	95-100
12284312 (91547/3-060-020-04)	Liner Assembly, #1 Bearing <u>2</u> / 1 Jet 0.023-0.028	35-70	75	95-100
12286059 (91547/3-060-020-02)	Total Flow Check	<u>3</u> /	75	95-100
No Number See Description	#1 Bearing Package <u>4</u> / 12286049 (Rev A-T) and 12284312	115-170	75	95-100
No Number See Description	#1 Bearing Package <u>4</u> / When assembled with 12284312 and either of the following: 12286049 (Rev U) <u>8</u> / or 12284355	145-240	75	95-100
12286227 (91547/3-106-350X01)	#2 Bearing Housing Assembly When assembled with either of the following details: 12286217 (91547/3-100-213-01 Rev A-R 12271143 (91547/3-100-213-03 Rev A-I) 3 Jets 0.020-0.024 3 Supply Ports 0.050	85-130	75	95-100

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TABLE I. Flow check requirements - Continued.

Part number	Description	Flow rate (pph)	Pressure (psig)	Temp ("F)
	12286217 (Rev T) <u>8</u> / 12271143 (Rev J) <u>8</u> / 3 Jets 0.020-0.24 1 Supply Port 0.090 2 Supply Ports 0.050	95-150	75	95-100
12286323 (91547/3-106-350X01)	#3 Bearing Housing Assembly When assembled with any of the following housing details: 12286322 (91547/3-106-082X03 Rev A-V) 12271144 (91547/3-106-082-07 Rev A-G)	75-125	75	95-100
	12286322 (Rev W-AA) 12271144 (Rev H-L) 2 Jets 0.020-0.024 1 Jet 0.029-0.033	120-160	75	95-100
	12286322 (Rev AB) <u>8</u> / 12271144 (Rev M) <u>8</u> / 2 Jets 0.020-0.024 1 Jet 0.029-0.033 Supply Ports 0.090	125-190	75	95-100
No Number See Description	#3 Bearing Package <u>5</u> / Ref 12302392 (91547/3-105-250-27) and 12286302 (91547/3-105-220-22) or 12286323 When assembled with any of the following housing details: 12286322 (91547/3-106-082X03 Rev A-V) 12271144 (91547/3-106-082-07 Rev A-G)	305-410	75	95-100

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TABLE I. Flow check requirements - Continued.

Part Number	Description	Flow rate (pph)	Pressure (psig)	Temp (°F)
	12286322 (Rev W-AA) 12271144 (Rev H-L)	335-440	75	95-100
	12286322 (Rev AB) <u>8</u> / 12271144 (Rev M) <u>8</u> /	340-470	75	95-100
No Number See Description	Intermediate Housing Assembly Forward Module Level Ref 12284347 (91547/3-105-010-25) and 12286302 (91547/3-105-220-22) and 12286143 (91547/3-100-000-05) or 12284347 and 12286323 and 12286227 #2 and #3 Bearing Housing Jets 2 #11 Bearing Jets 0.030-0.033 2 Bevel Gear Jets 0.028-0.030 1 Bevel Gear Jets 0.043-0.046	424-665	75	95-100
12286451 (91547/3-130-370-19)	#4 Bearing Housing Assembly 2 Jets 0.040-0.045 2 Jets 0.028-0.033 1 Jet 0.031-0.036	360-530	75	95-100
12271477 (91547/3-140-060-10)	#5 Bearing Housing Assembly 1 Jet 0.035-0.037 3 Jets 0.022-0.024	155-195	75	95-100
12286576	Spacer Assembly, Outer #6 Bearing 4 Jets 0.031-0.035	290-370	75	95-100
12286463 (91547/3-140-800-07)	Power Turbine Housing <u>6</u> / 2 Jets 0.025-0.030 1 Jet 0.031-0.035	135-220	75	95-100

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TABLE I. Flow check requirements - Continued.

Part number	Description	Flow rate (pph)	Pressure (psig)	Temp (°F)
12284375 (91547/3-140-010-23)	Power Turbine Assembly #5 Bearing Housing and #6 Bearing Spacer Jets Plus I Jet 0.031-0.035	450-570	75	95-100
12286045 (91547/3-020-470-03)	Carrier Assembly, Reduction A steady stream of oil shall project 3 inches from all 14 jets.	1340-1640 Visual	75	95-100
12302485 (91547/3-020-470-14)	Carrier Assembly, Reduction, Total Flow 6 Gear Jets 0.042-0.044 6 #8 Bearing Jets 0.030-0.032 9/ 2 Spline jets 0.034-0.036 A steady stream of oil shall project no less than 3 inches from all 14 jets.	1275-1625	75	95-100
	Split flow, all jets blocked except the 6 gear jets.	710-920	75	95-100
12284399 (91547/3-020-400-28) 12284475 (91547/3-020-400-31)	Gearbox Assembly, Reduction 6 Gear Jets 0.040-0.042 2 Spline Jets 0.034-0.036 6 Bearing Jets 0.030-0.032 2 #7 Bearing Jets 0.034-0.036 1 #10 Bearing Jet 0.029-0.031	1400-1720	75	95-100
12284388 (91547/3-020-400-25) 12284476 (91547/3-020-400-32)	Gearbox Assembly, Reduction 6 Gear Jets 0.040-0.042 2 Spline Jets 0.034-0.036 6 Bearing Jets 0.030-0.032 2 #7 Bearing Jets 0.030-0.032 1 #10 Bearing Jet 0.029-0.031	1335-1705	75	95-100

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TABLE I. Flow check requirements - Continued.

Part number	Description	Flow rate (pph)	Pressure (psig)	Temp (°F)
12284320 (91547/3-080-200-15)	Gearbox, Accessory Drive <u>7</u> /	320-385 215-265	75	95-100

- 1/ #1 bearing liner feed port blocked.
- 2/ 0.100 damper flow hole blocked.
- 3/ 0.100 damper flow and jet open. Minimum total flow is equal to jet flow as specified in not 2/ + 45 PPH minimum (Example: If jet flow 2/ = 50, then minimum total flow is 50 + 45 = 95 PPH.)
- 4/ Housing and liner may be flow checked as an assembly using fixture LTCT5398 or bearing outer race. This does not preclude flowing housing and liner as details.
- 5/ #2 bearing feed port in housing 12302392 (91547/3-105-250-27) blocked.
- 6/ #5 bearing feed port blocked.
- 7/ Flow without jet pump.
- 8/ Unless otherwise specified, flow requirements apply to this and all subsequent revisions.
- 9/ Flow check requirement includes both total and split flow checks.

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