

INCH - POUND

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DEPARTMENT OF DEFENSE
TEST METHOD STANDARD
PROCEDURE FOR LUBRICATING OIL FLOW CHECK



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FOREWORD

1. This standard is approved for use by the U.S. Army Tank Automotive Research, Development and Engineering Center (TARDEC), Research, Development and Engineering Command (RDECOM), and is available for use by all Departments and Agencies of the Department of Defense.
2. This standard provides the means for checking the oil flow through the AGT 1500 engine.
3. Comments, suggestions, or questions on this document should be addressed to U.S. Army RDECOM, Tank Automotive Research, Development and Engineering Center, ATTN: RDTA-SIE-ES-CMDM-SI MS #268, 6501 E. 11 Mile Road, Warren, MI 48397-5000 or sent by email to usarmy.detroit.rdecom.mbx.tardec-standardization@mail.mil. Since contact information can change, you may want to verify the currency of this address information using the ASSIST Online database at <https://assist.dla.mil>.

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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.

2. APPLICABLE DOCUMENTS

2.1 General. The documents listed in this section are specified in sections 3, 4, or 5 of this standard. This section does not include documents cited in other sections of this standard or recommended for additional information or as examples. While every effort has been made to ensure the completeness of this list, document users are cautioned that they must meet all specified requirements of documents cited in sections 3, 4, or 5 of this standard, whether or not they are listed.

2.2 Government documents.

2.2.1 Specifications, standards, and handbooks. The following specifications, standards and handbooks form a part of this document to the extent specified herein. Unless otherwise specified, the issues of these documents are those cited in the solicitation or contract.

DEPARTMENT OF DEFENSE SPECIFICATIONS

MIL-PRF-23699 - Lubricating Oil, Aircraft Turbine Engine, Synthetic Base

(Copies of these documents are available online at <http://quicksearch.dla.mil>.)

2.3 Non-Government publications. The following documents form a part of this document to the extent specified herein. Unless otherwise specified, the issues of these documents are those cited in the solicitation or contract.

HONEYWELL INC.

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

(Copies of these documents are available from U.S. Army RDECOM, Tank Automotive Research, Development and Engineering Center, ATTN: RDTA-SIE-ES-CMDM-SI MS #268, 6501 E. 11 Mile Road, Warren, MI 48397-5000 or can be requested by sending an email to usarmy.detroit.rdecom.mbx.tardec-standardization@mail.mil.)

2.4 Order of precedence. Unless otherwise noted herein or in the contract, in the event of a conflict between the text of this document and the references cited herein, the text of this document takes precedence. Nothing in this document, however, supersedes applicable laws and regulations unless a specific exemption has been obtained.

3.0 DEFINITIONS (Not applicable)

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4.0 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.

4.1.4.1 Lines and fittings. Suitable aircraft-type lines and fittings shall be used.

4.1.4.2 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.

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

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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.
- 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 5.1, step a.

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 Honeywell Inc. specification no. E0121G, dated 20 January 1987.

6.4 Changes from previous issue The margins of this standard are marked with vertical lines to indicate where changes from the previous issue were made. This was done as a convenience only and the Government assumes no liability whatsoever for any inaccuracies in these notations. Bidders and contractors are cautioned to evaluate the requirements of this document based on the entire content irrespective of the marginal notations and relationship to the previous issue.

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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

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TABLE I. Flow check requirements (continued).

Part number	Description	Flow rate (pph)	Pressure (psig)	Temp (°F)
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) 12286322 (Rev W-AA) 12271144 (Rev H-L) 2 Jets 0.020-0.024 1 Jet 0.029-0.033 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	75-125 120-160 125-190	75 75 75	95-100 95-100 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) 12286322 (Rev W-AA) 12271144 (Rev H-L) 12286322 (Rev AB) <u>8</u> / 12271144 (Rev M) <u>8</u> /	305-410 335-440 340-470	75 75 75	95-100 95-100 95-100

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TABLE I. Flow check requirements (continued).

Part number	Description	Flow rate (pph)	Pressure (psig)	Temp (°F)
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 6/ 2 Jets 0.025-0.030 1 Jet 0.031-0.035	135-220	75	95-100
12284375 (91547/3-140-010-23)	Power Turbine Assembly #5 Bearing Housing and #6 Bearing Spacer Jets Plus 1 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	1275-1625	75	95-100
	A steady stream of oil shall project no less than 3 inches from all 14 jets.	710-920	Visual	
	Split flow, all jets blocked except the 6 gear jets.		75	95-100

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TABLE I. Flow check requirements (continued).

Part number	Description	Flow rate (pph)	Pressure (psig)	Temp (°F)
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
12284320 (91547/3-080-200-15)	Gearbox, Accessory Drive 7/	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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