



## Test Monitoring Center

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Sequence IIIG Information Letter 04-3  
Sequence No. 7

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***ASTM consensus has not been obtained on this information letter. An appropriate ASTM ballot will be issued in order to achieve such consensus.***

TO: Sequence III Mailing List

SUBJECT: Powdered Metal Connecting Rod Torque Specifications  
New Front and Rear Main Seals  
New Oil Pan Gasket  
New Exhaust Valve  
Editorial Change to Precision Statements

This Information Letter addresses specific parts and procedures pertaining to quality, consistency, performance, and accountability of test parts as part of the ongoing effort by the panel to ensure continual process improvement of the Sequence IIIG test. This Information Letter references Draft 2D of the Sequence IIIG Test Procedure, available from the ASTM Test Monitoring Center website.

### Powdered Metal Connecting Rod Bolt Torque Specifications

The production version of the Sequence III Series II 3800 engine has switched from Cast to Powdered Metal (PM) Connecting Rods. These new PM connecting rods are now being implemented into Sequence III testing as a result. The new PM rods use a different fastener, requiring a change in the torque requirement for the connecting rod bolts when compared to the previous cast connecting rods. The current cast connecting rods are also still acceptable for use in Sequence III testing. The connecting rod bolts should be torqued to the appropriate specification for the connecting rod type. A new section 9.20.1.1 and a revised Table A2.1 are attached.

### New Front and Rear Main Seals

The production version of the Sequence III Series II 3800 engine has made a change to the front and rear main seals used in the production engine. To eliminate any possible effects on test severity related to this change, the Test Sponsor and Central Parts Distributor have worked together to secure an inventory of the current front and rear main seals for use in Sequence IIIG testing. These “new” seals will be required when the current materials are no longer available. A revised Table A2.1 is attached.

### New Oil Pan Gasket

The production version of the Sequence III Series II 3800 engine has made a change to the oil pan gaskets used in the production engine. To eliminate any possible effects on test severity related to this change, the Test Sponsor and Central Parts Distributor have worked together to secure an inventory of the

current oil pan gaskets for use in Sequence IIIG testing. These “new” gaskets will be required when the current materials are no longer available. A revised Table A2.1 is attached.

New Exhaust Valve

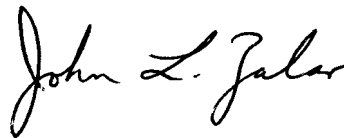
The exhaust valve part number has changed. A running change to the production part, increased seat width, requires a part number change within GM Service Parts Operations (SPO), superceding the old Service Part 24507423 with the new Service Part 12579949. A revised Table A2.1 is attached.

Editorial Change to Precision Statements

ASTM Section D02.B0.B9 has provided wording to further clarify the definitions and applications of Intermediate Precision and Reproducibility Limits to individual test results. Revised sections 15.1.1, 15.1.1.1, 15.1.2, and 15.1.2.1, along with a new Table 1, are attached.



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Attachments

c: [ftp://ftp.astmtmc.cmu.edu/docs/gas/sequenceiii/procedure\\_and\\_ils/IIIG/IL04-3.pdf](ftp://ftp.astmtmc.cmu.edu/docs/gas/sequenceiii/procedure_and_ils/IIIG/IL04-3.pdf)

Distribution: Electronic Mail

10.20.1.1 Tighten the connecting rod bolts according to the specifications listed in the Sequence IIIG Engine Assembly Manual. Determine the torque specifications for the connecting rod bolts by the type of connecting rod: cast or powdered metal.

15.1.1 Intermediate Precision (ip) - is the difference between two results obtained on the same test oil in the same laboratory and would, in the long run, in the normal and correct conduct of the test method, exceed the values shown in Table 12 in only one case in twenty. It should be noted that these repeat tests are not run in the same engines; that each engine is completely rebuilt before each test, and the engine is believed to be an important variable affecting the precision of the test.

Note: Intermediate Precision is the appropriate term for this test method, rather than repeatability, which defines more rigorous within-laboratory conditions.

15.1.1.1 Intermediate Precision Limit (i.p.)—The difference between two test results obtained under intermediate precision conditions that would in the long run, in the normal and correct conduct of the test method, exceed the values in Table 1 in only one case in twenty. When only a single test result is available, the Intermediate Precision Limit can be used to calculate a range (test result ± Intermediate Precision Limit) outside of which a second test would be expected to fall about one time in twenty.

15.1.2 Reproducibility (R)-The difference between two single and independent results obtained on the same oil by different operators working in different laboratories and would, in the long run, in the normal and correct conduct of the test method, exceed the values in Table 1 only one case in twenty.

15.1.2.1 Reproducibility Limit (R)—The difference between two test results obtained under reproducibility conditions that would in the long run, in the normal and correct conduct of the test method, exceed the values in Table 1 in only one case in twenty. When only a single test result is available, the Reproducibility Limit can be used to calculate a range (test result ± Reproducibility Limit) outside of which a second test would be expected to fall about one time in twenty.

**TABLE 1 Reference Oil Test Precision**

Variable	Intermediate precision (i.p.)	Intermediate Precision Standard Deviation (Si.p.)	Reproducibility (R)	Reproducibility Standard Deviation (SR)
PVIS <sup>A</sup>	0.387	1.084	0.388	1.086
WPD	0.636	1.781	0.695	1.946
ACLW <sup>A</sup>	0.217	0.608	0.217	0.608

<sup>A</sup> This parameter is transformed, using the transformation shown below. When comparing two test results on this parameter, first apply the transformation to each test result. Compare the absolute difference between the transformed results with the appropriate (intermediate precision or reproducibility) precision limit.

**Table A2.1 Parts to be Replaced Every Test**

PART DESCRIPTION	PART NUMBER
Arm, Rocker with Pivot Bearing	OHT3F-058-1
BEARING, KIT, ENGINE	OHT3F-042-2
<b>KIT INCLUDES:</b>	
BEARING, CONNECTING ROD, KIT, UPPER AND LOWER, OH-106 ASSY	3F042-01
MAIN BEARING KIT, OH101 ASSY, INCLUDES:	3F042-02
Bearing, Balance Shaft Front (part of 24502388)	SKF6205-2ZNRJEM
BEARING, MAIN, LOWER, #1 AND 3	OH-102
BEARING, MAIN, LOWER, #4	OH-103
BEARING, MAIN, LOWER, FLANGE, #2	OH-104
BEARING, MAIN, UPPER, FLANGE, #2	OH-105
BEARING, CAM BUSHING, POSITIONS 1 & 4	3F028-09

PART DESCRIPTION	PART NUMBER
BEARING, CAM BUSHING, POSITIONS 2 & 3	3F028-10
Bolt, Camshaft Sprocket	24501366
Bolt, Cylinder Head, Long	25527831
Bolt, Cylinder Head, Short	25533811
Bolt, Flywheel	24505092
Bolt, Main Cap	24503056
Bolt, Main Cap, Side	24505576
Bolt, Rear Cover Housing	24503970
Bolt, Rocker Arm, Special Test	3F-058-02
Camshaft, Special Test, including Manganese-phosphate coating	OHT3F-008-8
Cap, Valve Spring Retainer	24502257
Chain, Timing	24504668
Clip, Retainer, Piston Pin	OHT3F-012-1
COOLER, OIL, NICKEL PLATED, BYPASS CLOSED	OHT3F-030-2
Damper, Timing Chain (includes bolt, retaining ring)	24503893
FILTER, PRO TEC	OHT3F-057-3
Gasket kit, Intake Manifold lower	89017399
Gasket, Cylinder Head, left	24503802
Gasket, Cylinder Head, right	24503801
Gasket, Front Cover	24502252
Gasket, Oil Filter Adapter	25534742
Gasket, Oil Pan	OHT3G-093-1
Gasket, Oil Suction Tube	24501259
Gasket, Rear Cover Housing	24507388
Gasket, Rocker Cover	25532619
Gasket, Water Outlet	24502433
Gasket, Water Pump	24501565
Head, Cylinder	24502260
Key, Camshaft Sprocket	24500618
Key, Valve Stem Keeper	1016634
Lifter, Test ACI w/Flat (25338738A)	OHT3F-029-3
PIN, PISTON WRIST, PKG. OF 6	OHT3F-014-1
PISTON, TEST, RUNS 1 & 2, GRADE 12	OHT3F-053-1
PISTON, TEST, RUNS 3 & 4, GRADE 34	OHT3F-054-1
PISTON, TEST, RUNS 5 & 6, GRADE 56	OHT3F-055-1
PLATE, CAMSHAFT THRUST, .1520" THICKNESS	OHT3F-011-2
Plug, Engine Block Core Hole	24500867
Plug, Cylinder Head Core Hole	3835577
Plug, Cylinder Head Cup	9427698
Plug, Engine Block, Oil Gallery	24500867
Plug, Ignition Spark	AC R42LTSM
Plunger, Oil Relief	25530949
PUSHROD, SPECIAL LENGTH, PKG. OF 12	OHT3F-007-1
RETAINER CLIP, PISTON PIN PKG. OF 12	OHT3F-012-1
1 EA. RING, PISTON, RUN 1, ENGINE SET	OHT3F-050-RUN1
1 EA. RING, PISTON, RUN 2, ENGINE SET	OHT3F-050-RUN2
1 EA. RING, PISTON, RUN 3, ENGINE SET	OHT3F-051-RUN3
1 EA. RING, PISTON, RUN 4, ENGINE SET	OHT3F-051-RUN4
1 EA. RING, PISTON, RUN 5, ENGINE SET	OHT3F-052-RUN5
1 EA. RING, PISTON, RUN 6, ENGINE SET	OHT3F-052-RUN6
ROCKER ARM ASSEMBLY (Includes: 3F058-02)	OHT3F-058-1
Rod, Connecting (cast)	24501696
Rod, Connecting (powdered metal)	12574505
Seal, Crankshaft Front Oil (24504098)	OHT3G-092-1

<b>PART DESCRIPTION</b>	<b>PART NUMBER</b>
Seal, Crankshaft Rear Oil (25534760)	OHT3G-091-1
SEAL, EXHAUST VALVE STEM	OHT3F-061-1
SEAL, INTAKE VALVE STEM	OHT3F-060-1
Spring, Oil Relief Valve	1262505
SPRING, VALVE Special Test (COLOR CODE YELLOW)	OHT3F-059-5
Sprocket, Camshaft	24505306
Valve, Exhaust (STD)	12579949
Valve, Intake (STD)	12569550