



## Test Monitoring Center

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1M-PC Information Letter No. 10-1  
Sequence No. 13  
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*ASTM consensus has not yet been obtained on this information letter. An appropriate ASTM ballot will be issued in order to achieve such consensus.*

TO: Single Cylinder Diesel Mailing List

SUBJECT: Note Regarding Oil Pressure Limits for Oils other than 15W-40.

During the March 9, 2010 SCOTE Surveillance Panel Conference Call, the panel agreed to allow tests run on viscosity grade oils other than 15W-40 to deviate from the oil pressure limits given in the test method. Test facilities are to make every effort to maintain these pressures for oils with viscosities other than 15W-40, but when these limits cannot be achieved, these deviations are to be reported in the comments section of the test report. Tables 1, 3, 6, 7, 8 and 10 have been revised to include new footnotes.

The attached changes to Test Method D6618 are effective March 9, 2010.

*Hind Abi-Akar*

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Attachment

c: [ftp://ftp.astmtmc.cmu.edu/docs/diesel/scote/procedure\\_and\\_ils/1mpc/il10-01.pdf](ftp://ftp.astmtmc.cmu.edu/docs/diesel/scote/procedure_and_ils/1mpc/il10-01.pdf)

Distribution: Email

## (Revises Test Method D6618-09, as Amended by Information Letter 09-1)

TABLE 1 1M-PC Operating Conditions <sup>A, B</sup>

Speed, r/min	1800 ± 10
Fuel flow, kg/h (lb/h)	8.13 ± 0.07 (17.92 ± 0.15)
Temperature, water from cylinder head, °C (°F)	87.8 ± 2.8 (190 ± 5)
Flow rate, engine coolant, L/min (gal/min)	57.9 ± 3.8 (15.3 ± 1.0)
Temperature, oil to bearings, °C (°F)	96.1 ± 2.8 (205 ± 5)
Temperature, inlet air to engine, °C (°F)	123.9 ± 2.8 (255 ± 5)
Temperature, exhaust, °C (°F)	573 ± 28 (1063 ± 50)
Pressure, fuel to injection pump, kPa (psi)	137.9 ± 13.8 (20 ± 2)
Pressure, exhaust, kPa (in. Hg Abs.)	106.7 ± 1.7 (31.5 ± 0.05)
Pressure, oil at jet cooling nozzle, kPa (psi) <sup>C</sup>	165.5 ± 13.8 (24 ± 2)
Pressure, oil to bearings maximum, kPa (psi) <sup>C</sup>	220.6 (32)
Pressure, air to engine, kPa (in. Hg Abs.)	179.0 ± 1.0 (53 ± 0.3)
Vacuum, crankcase, kPa (in. H <sub>2</sub> O)	0.25 ± 0.12 (1.0 ± 0.5)
Humidity, air to engine, g/kg of dry air (grains/lb)	17.8 ± 1.7 (125 ± 12)
Flow rate, engine air, approximate m <sup>3</sup> /min (ft <sup>3</sup> /min) at 15.6°C (60°F), 101.3 kPa Abs. (14.7 psi Abs.)	0.2 (94)

<sup>A</sup> Count test time from the moment the conditions in this table are obtained (30 min maximum are allowed for stabilization).

<sup>B</sup> Only speed and fuel flow are controlled. Load is used as a verification of engine build and operation.

<sup>C</sup> Oil pressure operating specifications apply only to 15W-40 oils. Attempt to maintain these limits for all oils. When oils other than 15W-40 oils fall outside these limits, explain these deviations from the limits in the comments section of the test report.

TABLE 3 Operational Specifications, Measurement Resolution, and Reporting Resolution

Parameter	SI Specification				US Customary System (USCS) Specification			
	Units	Spec	Minimum Measurement Regulation	Round Values to the Nearest	Units	Spec	Minimum Measurement Resolution	Round Values to the Nearest
Speed	r/min	1800 ± 10	1	Whole number	r/min	1800 ± 10	1	Whole number
Power	kW	31.3			bhp	42		
BMEP	kPa	951			psig	138		
Fuel rate	kJ/min	6172 ± 53			Btu/min	5850 ± 50		
Fuel flow <sup>A</sup>	kg/h	8.13 ± 0.07	0.01	Hundredth	lb/h	17.92 ± 0.15	0.01	Hundredth
BSFC	kg/kWh	0.260			lb/bhp.h	0.427		
Humidity	g/kg	17.8 ± 1.7	0.1	Tenth	grains/lb	125 ± 12	1	Whole number
Oil weight	g	N/A	1	Whole number	lb	N/A	0.01	Hundredth
<b>Temperatures</b>								
Coolant out	°C	87.8 ± 2.8	0.1	Tenth	°F	190 ± 5	0.1	Tenth
Coolant in	°C	82.8	0.1	Tenth	°F	181	0.1	Tenth
Coolant Δ	°C	5 ± 1.0	0.1	Tenth	°F	9 ± 2	0.1	Tenth
Oil to bearing	°C	96.1 ± 2.8	0.1	Tenth	°F	205 ± 5	0.1	Tenth
Inlet air	°C	123.9 ± 2.8	0.1	Tenth	°F	255 ± 5	0.1	Tenth
Exhaust	°C	573 ± 28	1	Whole number	°F	1063 ± 50	1	Whole number
<b>Pressures</b>								
Oil to bearing <sup>B</sup>	kPa	220.6 Max			psig	32 max		
Oil to jet <sup>B</sup>	kPa	165.5 ± 13.8	0.1	Tenth	psig	24 ± 2	0.1	Tenth
Inlet air (ABS)	kPa	179 ± 1	0.1	Tenth	in. Hg	53.0 ± 0.3	0.1	Tenth
Exhaust (ABS)	kPa	106.7 ± 1.7	0.1	Tenth	in. Hg	31.5 ± 0.5	0.1	Tenth
Fuel at filter housing.	kPa	137.9 ± 13.8	0.1	Tenth	psig	20 ± 2	0.1	Tenth
Crankcase vac	kPa	0.25 ± 0.12	0.01	Hundredth	in. H <sub>2</sub> O	1 ± 0.5	0.1	Tenth
<b>Flows</b>								
Coolant flow	L/min	57.9 ± 3.8	0.1	Tenth	gal/min	15.3 ± 1.0	0.1	Tenth

<sup>A</sup> Fuel flow spec is based on the high heating value of 19.590 Btu/lb at an A.P.I. gravity of 35. Fuel spec is 33 to 35 A.P.I. gravity.

<sup>B</sup> Oil pressure operating specifications apply only to 15W-40 oils. Attempt to maintain these limits for all oils. When oils other than 15W-40 oils fall outside these limits, explain these deviations from the limits in the comments section of the test report.

**TABLE 6 Break-in Conditions**

	Step <sup>A</sup>				
	1	2	3	4	5 <sup>B</sup>
Speed, r/min	1000	1000	1600	1800	1800 ± 10
		7.5	17.1	24.6	31.3
Load, kW (bhp)	Idle	(10)	(23)	(33)	(42)
Fuel rate	1.36	2.27	4.72	6.88	8.13 ± 0.07
kg/h (lb/h)	(3.0)	(5.0)	(10.42)	(15.16)	(17.92 ± 0.15)
Bearing oil temp.				82.0	96.1 ± 2.8
° C (°F)				(180)	(205 ± 5)
Jet pressure <sup>C</sup>	158.6	158.6	158.6	165.5	165.5
kPa (psi), min.	(23)	(23)	(23)	(24)	(24)
Water oil temp.			71.0	71.0	87.8 ± 2.8
° C (°F)			(160)	(160)	(190 ± 5)
Air inlet temp.				76.7	123.9 ± 2.8
° C (°F)				(170)	(255 ± 5)
Air inlet pressure	118.0	118.0	135.0	135.0	179 ± 1
kPa (in. Hg Absolute)	(35.0)	(35.0)	(40.0)	(40.0)	(53 ± 0.3)
Time, minutes	5	5	10	20	20

<sup>A</sup> Follow standard cool down procedure (see Table 8).

<sup>B</sup> Measure blowby over last 15 min of the break-in record.

<sup>C</sup> Oil pressure operating specifications apply only to 15W-40 oils. Attempt to maintain these limits for all oils. When oils other than 15W-40 oils fall outside these limits, explain these deviations from the limits in the comments section of the test report.

**TABLE 7 Warm Up**

	1	2	3
Speed, r/min	1000	1000	1600
		7.5	17.1
Load, kW (bhp)	Idle	(10)	(23)
Fuel rate	1.36	2.27	4.72
kg/h (lb/h)	(3.0)	(5.0)	(10.42)
Jet pressure <sup>A</sup>	158.6	158.6	158.6
kPa (psi), min.	(23)	(23)	(23)
Water out temp.			71.0
° C (°F)			(160)
Air inlet pressure	118.0	118.0	135.0
kPa (in. Hg absolute)	(35.0)	(35.0)	(40.0)
Time, min	5	10	15

<sup>A</sup> Oil pressure operating specifications apply only to 15W-40 oils. Attempt to maintain these limits for all oils. When oils other than 15W-40 oils fall outside these limits, explain these deviations from the limits in the comments section of the test report.

**TABLE 8 Cool Down**

	3	2	1
Speed, r/min	1600	1000	1000
	17.1	7.5	
Load, kW (bhp)	(23)	(10)	Idle
Fuel rate	4.72	2.27	1.36
kg/h (lb/h)	(10.42)	(5.0)	(3.0)
Jet pressure <sup>A</sup>	158.6	158.6	158.6
kPa (psi), min.	(23)	(23)	(23)
Water out temp.	71.0		
° C (°F)	(160)		
Air inlet pressure	135.0	118.0	118.0
kPa (in. Hg Absolute)	(40.0)	(35.0)	(35.0)
Time, min	5	5	5

<sup>A</sup> Oil pressure operating specifications apply only to 15W-40 oils. Attempt to maintain these limits for all oils. When oils other than 15W-40 oils fall outside these limits, explain these deviations from the limits in the comments section of the test report.

**TABLE 10 Allowable Limits for Percent Out and Off**

Controlled Parameter <sup>A</sup>	Allowable % Out	Allowable % Off
Speed	5	20
Fuel flow	10	25
Humidity	10	25
Coolant flow	5	25
Temperatures		
Coolant out	5	20
Oil to bearing	5	20
Intake air	5	20
Pressures		
Oil jet <sup>B</sup>	5	25
Intake air	10	25
Exhaust	10	25
Fuel at filter housing	5	20
Crankcase vacuum	10	20

<sup>A</sup> The parameters in this table shall be used to judge test validity based on operational control. Any parameter for a given test with a percent out or percent off that is *greater than* the specifications listed shall be considered to be operated in an invalid manner.

<sup>B</sup> Oil pressure operating specifications apply only to 15W-40 oils. Attempt to maintain these limits for all oils. When oils other than 15W-40 oils fall outside these limits, explain these deviations from the limits in the comments section of the test report.