



Test Monitoring Center

Carnegie Mellon University
6555 Penn Avenue, Pittsburgh, PA 15206, USA

<http://astmtmc.cmu.edu>
412-365-1000

1P Information Letter No. 10-1
Sequence No. 7
March 25, 2010

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 A2.6 and A12.1 contained in Annexes A2 and A12 have been revised to include Footnotes D and (d), respectively, which describe these situations.

The attached changes to Test Method D6681 are effective March 9, 2010.

Hind Abi-Akar

Hind Abi-Akar
Project Engineer
Caterpillar, Inc.

Frank M. Farber
Administrator
ASTM Test Monitoring Center

Attachment

c: ftp://ftp.astmtmc.cmu.edu/docs/diesel/scote/procedure_and_ils/1p/il10-01.pdf

Distribution: Email

(Revises Test Method D6681-09, as Amended by Information Letter 09-1)

TABLE A2.6 Quality Index Calculation Values and Plotting Axis Scale Definitions

Controlled Parameters	units	Quality Index U and L Values ^A		Over and Under Range Values ^B		Plot Axes Ranges ^C		
		L	U	low	high	min	max	increment
Speed	r/min	1798.530	1801.470	1710	1890	1770	1830	10
Fuel flow	g/min	183.970	186.030	125	245	175	200	5
Humidity	g/kg	16.780	18.820	5	21	5	40	5
Coolant flow	L/min	73.060	76.940	0	82	60	90	5
Coolant out temperature	°C	89.379	90.622	55	125	70	110	5
Oil to Manifold Temperature	°C	128.798	131.202	60	200	120	150	5
Inlet air temperature	°C	59.360	60.640	20	100	50	70	5
Fuel into head temperature	°C	40.885	43.116	0	75	30	60	5
Oil to manifold pressure ^D	kPa	404.384	425.616	0	690	380	450	10
Inlet air pressure	kPa	271.449	272.551	242	302	265	280	5
Exhaust pressure	kPa	264.150	265.850	215	315	250	280	5
Fuel pressure	kPa	271.471	278.529	125	425	230	300	10
Uncontrolled Parameters								
Power	kW					50	60	1
Torque	N·m					230	310	10
Blowby	L/min					5	65	5
Coolant in temperature	°C					75	100	5
Coolant delta temperature	°C					0	10	1
Oil cooler in temperature	°C					120	140	5
Heating oil temperature	°C					120	165	5
Exhaust temperature	°C					450	500	10
Crankcase pressure	kPa					0.0	1.5	0.1
Coolant pressure	kPa					60	95	5

^A The threshold for operational validity is 0.00.

^B Only to be used in the calculation of Quality Index and Average and does not affect how process is graphed.

^C Quality Index Scales are to range from -0.3 to 1.0 with increments of 0.1. The axis for test time is 0 to 360 h in increments of 30 h. X-axis length should be at least 203 mm; Y-axis length should be at least 140 mm.

^D 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 A12.1 Warm-up, Cool-down, and Testing Conditions

Parameter	Units	Tolerance	Test Specifications				
			Step 1 5 min	Step 2 5 min	Step 3 5 min	Step 4 10 min	Step 5 60 min
Speed	r/min	±3	1000	1000	1400	1800	1800
Power	kW		idle	10	26	41	[sim]55
Torque	N-m	(a) ±5		100	176	219	[sim]285
Fuel rate	g/min	(b) ±1		48	95	148	185
Fuel timing	BTC		13	13	13	13	13
Humidity	g/kg	±1.7					17.8
Temperatures °C							
Fuel into head		±3	[sim]31	[sim]32	[sim]33	[sim]36	42
Coolant into jug			[sim]41	[sim]51	[sim]82	[sim]86	86
Coolant from head		±3	42	52	83	90	90
Oil to cooler							[sim]128
Oil manifold		±3					130
External heating oil			165 max	165 max	165 max	165 max	165 max
Intake air manifold		±3			60	60	60
Exhaust manifold			[sim]120	[sim]275	[sim]340	[sim]370	[sim]480
Pressures kPa							
Fuel from head		±20	275	275	275	275	275
Coolant into jug		(c)	[sim]44	[sim]44	[sim]70	[sim]81	[sim]81
Oil manifold (d)		±20	415	415	415	415	415
Intake air barrel (abs)		±1	120	120	157	225	272
Exhaust barrel (abs)		±1		104	146	217	265
Crankcase						[sim].05	[sim].10
Flows							
Coolant	L/min	±2	[sim]34	[sim]34	[sim]55	75	75
Blowby	L/min					[sim]35	[sim]35
Air	kg/h						[sim]315

NOTE 1—(a) Engine controlled to torque specification for Steps 2, 3, 4 and 5 min of Step 5.

(b) Engine controlled to fuel rate specification for last 55 min of Step 5.

(c) Air pressure at coolant tower controlled to 35 kPa.

(d) 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.

NOTE 2—Ramp Up Conditions Between Warm-up Steps:

(a) Torque (N-m/min); at 5 min (beginning at Step 2)— 20 N-m/min.

(b) Speed (r/min); at 10 min (beginning at Step 3)— 100 r/min/min.

(c) Inlet air pressure (kPa); at 10 min (beginning at Step 3)— 12 kPa/min.

(d) Exhaust air pressure (kPa); at 10 min (beginning at Step 3)— 12 kPa/min.

(e) Inlet air temperature (°C); at 10 min (at start of test)— 5 °C/min.