



Test Monitoring Center

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6555 Penn Avenue, Pittsburgh, PA 15206, USA

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

T-13 Information Letter 18-1
Sequence No. 5
June 12, 2018

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

TO: Mack Surveillance Panel Mailing List
SUBJECT: T-13 Humidity Control

During a surveillance panel conference call on June 1st, 2016 the Mack Surveillance Panel voted to implement moisture control in the T-13 procedure going forward. A humidity control task force was formed to update the procedure. This information letter contains the changes to the procedure deemed necessary for moisture control in the T-13 test. Sections 8.6.2.6, 8.6.2.14 and Table 1 have been edited, Sections 8.6.3.15, 9.8.2.29, 9.8.2.30 and 9.11 have been added and Fig 5.19 has been removed.

These changes are effectively immediately.

Greg Shank
Manager
Volvo Group Truck Technology
Powertrain Engineering

Frank M. Farber
Director
ASTM Test Monitoring Center

Attachment
c: http://www.astmtmc.cmu.edu/ftp/docs/diesel/mack/procedure_and_ils/T-13/il18-01.pdf

Distribution: Email

(Revises 8048-17)

Edit the following sections to read as follows:

8.6.2.6 *Inlet Air Temperature*—Locate the inlet air thermocouple in the center of the air stream leading to the turbocharger inlet, with the dimensions shown in Fig. 1 below and pictured in Fig. A5.11.

8.6.2.14 *Dew Point*— Measure the dew point temperature of fresh air into the engine prior to the turbocharger, but after any temperature reducing or moisture adding equipment.

Add the following sections:

8.6.3.15 *Dew Point Pressure* – Measure the absolute dew point pressure of the inlet air at the same location as the dew point temperature.

9.8.2.29 *Inlet Air Dew Point Pressure, kPa*

9.8.2.30 *Inlet Air Moisture Content, g/kg (calculated, see 9.11)*

9.11 *Inlet Air Moisture Content* –Calculate the Partial Pressure of Water using Equation (1). Calculate the Inlet Air Moisture Content using Equation (2) and report on the appropriate form.

$$P_w = 100 * 10^{23.5518 + \frac{-2937.4}{D+273}} * (D + 273)^{-4.9283} \quad (1)$$

$$W = 621.98 * \frac{P_w}{P_a - P_w} \quad (2)$$

D = Dew Point, °C

P_a = Pressure of Air at dew point measurement point, Pa Absolute

P_w = Calculated Partial Pressure of Water, Pa Absolute

W = Calculated Humidity, g/kg

Remove Fig. A5.19, renumber Figs. A5.20-A5.35 to Figs. A5.19-A5.34 and update all references accordingly. Renumber Equation (1) to (3) in section 10.3.1.

Edit Table 1 to include Intake Air Moisture Content

TABLE 1 Test Conditions

Parameters	Limits
Time, h	360
Controlled Parameters ^A	
Speed, r/min	1500
Fuel flow kg/h	68
Coolant Out Temp, °C	110
Oil Gallery Temp, °C	130
Inlet Air Temp, °C	30
Inlet Manifold Temp, °C	78
EGR Gas Out Temp, °C	120
Fuel In Temp, °C	35
Inlet Air Pressure, kPa (abs)	94
Exhaust Back Pressure, kPa (abs)	115.3
Inlet Manifold Pressure, kPa (gauge)	232 ± 5
Intake Air Moisture Content (g/kg)	11.4
Ranged Parameters ^B	
Intake CO ₂	2.01 to 2.11
Engine Coolant Blanket Pressure, kPa (gauge)	99 to 107
EGR Coolant Blanket Pressure, kPa (gauge)	99 to 140
Crankcase Pressure, kPa	-0.3 to 0.3
Uncontrolled Parameters	
Load, N-m	2200
Exhaust CO ₂ , %	Record
Coolant In Temp, °C	Record
Crankcase Pressure, kPa	Record
Pre-Turbine Temp (F), °C	Record
Pre-Turbine Temp (R), °C	Record
Tailpipe Temp, °C	Record
Main Gallery Oil Pressure, kPa	Record
Oil Sump Temp, °C	Record
Oil Jet Temp, °C	Record
Oil Jet Pressure, kPa	Record
Fuel Gallery Temp, °C	Record
Fuel Gallery Pressure, kPa	Record
Intercooler Out Temp, °C	Record
Intercooler Out Pressure, kPa	Record
Compressor Out Temp, °C	Record
Compressor Out Pressure, kPa	Record
Room Temp, °C	Record
EGR Position, %	Record
VGT Position, %	Record
Throttle Position, %	Record
Blowby, L/min	Record
Inlet Air Dew Point, °C	Record