

**Test Method D5967
Mack T-8**

Version
T8 VERSION 20040727 BETA

Method:
CCCCCCCC

Conducted For
CC
CC

T-8A: C	V = Valid	The Reference Oil/Non-Reference Oil was evaluated in accordance with the test procedure.
T-8: C	I = Invalid	The Reference Oil/Non-Reference was not evaluated in accordance with the test procedure
T-8E: C	N = Not Interpretable	The Non-Reference Oil results cannot be interpreted and shall not be used in determining an average test result using multiple test criteria.

Stand: CCCCC	Stand Run No.: CCCC CCCC	Engine No.: CCCCCC	Engine Hours: CCCC CCCC
End Of Test Date: YYYYMMDD YYYYMMDD		End Of Test Time: HH:MM HH:MM	
Oil Code/CMIR: ^A CCCCC CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC			
T-8 Formulation/Stand Code: CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC			
T-8E Formulation/Stand Code: CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC			
Alternate Codes:	CCCCCCCCCCCCCCCC	CCCCCCCCCCCCCCCC	CCCCCCCCCCCCCCCC

^A CMIR or Non-Reference Oil Code

Submitted By: CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC
Testing Laboratory
Signature Image
Signature
 CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC
Typed Name
 CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC
Title

**Test Method D5967 – Mack T-8
Form 1
Test Result Summary**

T-8 Formulation/Stand Code: CCC		Test Length: ^A S1234	
T-8E Formulation/Stand Code: CCC		Non-Reference Oil Test	
Reference Oil Test			
CMIR No.:			
Oil Code:			
TMC Oil No.	Test Lab	Test Stand No.	Engine Block Serial No.
CCCCCC	CC	CCCC	CCCCC
Rebuild Block Hours	Test Stand Run No.	Test Lab	Test Stand No.
CCCC	CCCC	CC	CCCC
Date Test Started: YYYYMMDD	Date Test Completed: YYYYMMDD	Date Test Started: YYYYMMDD	Date Test Completed: YYYYMMDD
YYMMDD	YYMMDD	YYMMDD	YYMMDD
EOT Time: HH:MM	EOT Time: HH:MM	Laboratory Oil Code: CCCCCCCCCCCCCCCCCCCC	Engine Block Serial NO. CCCCC
HH:MM	HH:MM	CCCCCCCCCCCCCCCCCCCC	CCCCC
Laboratory Oil Code:	SAE Viscosity:	Laboratory Oil Code:	SAE Viscosity:
CCCCCCCCCCCCCCCCCCCC	CCCCCC	CCCCCCCCCCCCCCCCCCCC	CCCCCC

Viscosity Slope 100 - 150 h, cSt/h	S1.123	S1.123
Viscosity Increase At 3.8% TGA, cSt	S12.12	S12.12
Severity Adjustment For Viscosity Inc. At 3.8% TGA, cSt		S12.12
Adjusted Viscosity Increase At 3.8% TGA, cSt		S12.12
Relative Viscosity At 4.8%, TGA (50% Loss)^B	S12.12	S12.12
Severity Adjustment For Relative Viscosity		S12.12
Adjusted Relative Viscosity (50% Loss)^B		S12.12
Relative Viscosity At 4.8%, TGA (100% Loss)^B	S12.12	S12.12
Severity Adjustment For Relative Viscosity		S12.12
Adjusted Relative Viscosity (100% Loss)^B		S12.12
TGA Soot % At 250 h	S123.1	S123.1
TGA Soot % At 300 h	S123.1	S123.1
Average Oil Consumption At 250 h (g/kW-h)	S12.123	S12.123
Oil Filter Delta At 250 h, kPa	S123	S123

^A Test length is discussed in sections 1.2, 4.1 A8.3.1 and A9.3.1

^B Relative viscosities are calculated using shear loss determined by D6278

**TEST METHOD D5967
FORM 2
OPERATIONAL SUMMARY ^A**

Laboratory	CC	Start Date	YYYYMMDD	YYYYMMDD
Test Number ^B	CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC			
Oil Code	CCCCC	CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC		
T-8 Formulation/Stand Code:	CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC			
T-8E Formulation/Stand Code:	CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC			

TEST PARAMETER	SPECIFICATION	AVERAGE	STD. DEV.	MINIMUM	MAXIMUM
Engine Speed, r/min	1800 ± 5	S12345	S12345	S12345	S12345
Torque, N-m	1369 – 1398	S1234	S1234	S1234	S1234
Fuel Flow, kg/h	63.28 ± 0.63	S12.12	S12.12	S12.12	S12.12
Humidity, g/kg	Report	S12.1		S12.1	S12.1
Blowby, L/min	Report	S12.1		S12.1	S12.1
TEMPERATURES	SPECIFICATION	AVERAGE	STD. DEV.	MINIMUM	MAXIMUM
Coolant Out, °C	85 ± 3	S1234	S1234	S1234	S1234
Coolant In, °C	Report Only	S1234	S1234	S1234	S1234
Oil, °C	100 - 107	S1234	S1234	S1234	S1234
Fuel In, °C	40 ± 1	S1234	S1234	S1234	S1234
Intake Air, °C	25 ± 3	S1234	S1234	S1234	S1234
Intake Manifold, °C	43 ± 3	S1234	S1234	S1234	S1234
Pre- Turb. (F), °C	602 - 632	S1234	S1234	S1234	S1234
Pre-Turbo (R), °C	602 - 632	S1234	S1234	S1234	S1234
TailPipe, °C	455 - 474	S1234	S1234	S1234	S1234
PRESSURES	SPECIFICATION	AVERAGE	STD.DEV	MINIMUM	MAXIMUM
Oil Gallery, kPa	372 -441	S1234		S1234	S1234
Crankcase, kPa	0.50 ±0.25	S12.12	S12.12	S12.12	S12.12
Exhaust, kPa	3.1 ± 0.4	S12.1	S12.1	S12.1	S12.1
Oil Filter Delta, kPa	138 Max.				S123 S123
Inlet Air Res., kPa	2.5 ± 0.25	S12.12	S12.12	S12.12	S12.12
Intake Manifold, kPa	186 - 199	S123	S123	S123	S123
Compressor Discharge, kPa	Report	S123	S123	S123	S123
Intercooler Delta, kPa	13.6 Maximum	S12.1	S12.1	S12.1	S12.1

^A ALL DATA VALUES SHOWN ARE BASED ON TEST LENGTH REPORTED ON FORM1

^B TEST NUMBER IS: STAND – STAND RUN NO. – ENGINE SERIAL NO. – ENGINE HOURS

**TEST METHOD D5967
FORM 3**

VISCOSITY INCREASE VERSUS TIME

Laboratory CC	Start Date	YYYYMMDD
Test Number ^B CCCCCCCCCCCCCCCCCC	Oil Code CCCCCC	CCCCCCCCCCCCCCCCCC
T-8 Formulation/Stand Code: CCCCCCCCCCCCCCCCCC		
T-8E Formulation/Stand Code CCCCCCCCCCCCCCCCCC		

80																						300
70																						275
60																						250
50																						225
40																						200
30																						175
20																						150
10																						125
0																						100
-10																						75
																						50
																						25
																						0

TEST HOURS

VISCOSITY INCREASE, cst

**TEST METHOD D5967
FORM 4
OIL ANALYSIS SUMMARY**

Laboratory CC	Start Date YYYYMMDD	YYYYMMDD
Test Number ^B CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC		
Oil Code CCCCCC CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC		
T-8 Formulation/Stand Code: CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC		
T-8E Formulation/Stand Code: CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC		

Hours	Soot TGA%		Viscosity (cSt)		Viscosity Increase From Minimum (cSt)	
	S123.1	S123.1	S123.12	S123.12	S12.12	S12.12
S1234	S123.1	S123.1	S123.12	S123.12		
S1234	S123.1	S123.1	S123.12	S123.12	S12.12	S12.12
S1234	S123.1	S123.1	S123.12	S123.12	S12.12	S12.12
S1234	S123.1	S123.1	S123.12	S123.12	S12.12	S12.12
S1234	S123.1	S123.1	S123.12	S123.12	S12.12	S12.12
S1234	S123.1	S123.1	S123.12	S123.12	S12.12	S12.12
S1234	S123.1	S123.1	S123.12	S123.12	S12.12	S12.12
S1234	S123.1	S123.1	S123.12	S123.12	S12.12	S12.12
S1234	S123.1	S123.1	S123.12	S123.12	S12.12	S12.12
S1234	S123.1	S123.1	S123.12	S123.12	S12.12	S12.12
S1234	S123.1	S123.1	S123.12	S123.12	S12.12	S12.12
250 (2nd)	S123.1		S123.12			
250 (Average)	S123.1	S123.1	S123.12	S123.12	S12.12	S12.12
S1234	S123.1	S123.1	S123.12	S123.12	S12.12	S12.12
S1234	S123.1	S123.1	S123.12	S123.12	S12.12	S12.12

Viscosity Increase @ 3.8% TGA Soot Level	S12.12	S12.12
D6278 Un sheared Viscosity (cSt), Vu	S123.12	
D6278 Sheared Viscosity (cSt), Vs	S123.12	
Relative Viscosity @, 4.8% TGA Soot Level (50% Loss) A	S12.12	S12.12
Relative Viscosity @, 4.8% TGA Soot Level (100% Loss) A	S12.12	S12.12

ELEMENT	Parts per million (ppm) at Test Hour			
	S1234	S1234	S1234	S1234
Fe	AAAAAA	AAAAAA	AAAAAA	AAAAAA
Pb	AAAAAA	AAAAAA	AAAAAA	AAAAAA
Cu	AAAAAA	AAAAAA	AAAAAA	AAAAAA
Cr	AAAAAA	AAAAAA	AAAAAA	AAAAAA
Al	AAAAAA	AAAAAA	AAAAAA	AAAAAA
Si	AAAAAA	AAAAAA	AAAAAA	AAAAAA
Na	AAAAAA	AAAAAA	AAAAAA	AAAAAA

Centrifugal Oil Filter mass: grams	Pre-Test	Post-Test	Mass Gain
	S123.1	S123.1	S123.1

^A Relative viscosities are calculated using shear loss determined by D5278.

**TEST METHOD D5967
FORM 5
TEST FUEL ANALYSIS (LAST BATCH)**

Laboratory CC	Start Date YYYYMMDD	YYYYMMDD
Test Number ^B CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC		
Oil Code CCCCCC CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC		
T-8 Formulation/Stand Code: CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC		
T-8E Formulation/Stand Code: CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC		
Supplier: CCCCCCCCCCCCCCCCCC	Batch Identifiers: CCCCCCCCCCCCCC	

Measurement	Specs.	Analysis		Test Method
		NEW	EDT	
Total Sulfur, % wt	0.03 - 0.05	S12.12	S12.12	D 2622
Gravity, °API	32-36	S12.1	S12.1	D 287 or D 4052
Hydrocarbon Composition				
Aromatics % vol	28 - 35	S12.1		D 1319
Olefin	Report	S12.1		D 1319
Saturates	Report	S12.1		D 1319
Cetane Index	Report	S12.1		D 4737
Cetane No.	42 - 48	S12.1		D 613
Copper Strip Corrosion	3 max	AAAA		D 130
Flash Point, °C	54 min	S123		D 93
Cloud Point °C	-12 max	S123		D 2500
Pour Point °C	-18 max	S123		D97
Carbon Residue on 10% Residium, %	0.35 max	S12.12		D 524 (10 % Bottoms)
Water & Sediment, % Vol	0.05 max	S12.12		D 2709
Ash, % wt	0.01 max	S12.123		D482
Viscosity, cSt @ 40 °C	2.0 - 3.2	S12.1		D445
Distillation °C				
IBP	177 - 199	S1234		D 86
10%	210 - 232	S1234		D 86
50%	249 - 277	S1234		D 86
90%	299 - 327	S1234		D 86
EP	327 - 360	S1234		D 86

**TEST METHOD D5967
FORM 7
CHARACTERISTICS OF THE DATA ACQUISITION SYSTEM**

Laboratory CC	Start Date YYYYMMDD
Test Number ^B CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC	
Oil Code CCCCC CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC	
T-8 Formulation/Stand Code: CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC	
T-8E Formulation/Stand Code: CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC	

PARAMETER (1)	SENSING DEVICE (2)	CALIBRATION FREQUENCY (3)	RECORD DEVICE (4)	OBSERVATION FREQUENCY (5)	RECORD FREQUENCY (6)	LOG FREQUENCY (7)	SYSTEM RESPONSE (8)
Temperatures							
OIL@ FILT.	CCCCCCCC	CCCCCCCC	CCC	CCCCCCCC	CCCCCCCC	CCCCCCCC	CCCCCCCC
FUEL IN.	CCCCCCCC	CCCCCCCC	CCC	CCCCCCCC	CCCCCCCC	CCCCCCCC	CCCCCCCC
INTAKE AIR	CCCCCCCC	CCCCCCCC	CCC	CCCCCCCC	CCCCCCCC	CCCCCCCC	CCCCCCCC
INTAKE MAN	CCCCCCCC	CCCCCCCC	CCC	CCCCCCCC	CCCCCCCC	CCCCCCCC	CCCCCCCC
PRE- TURB.	CCCCCCCC	CCCCCCCC	CCC	CCCCCCCC	CCCCCCCC	CCCCCCCC	CCCCCCCC
COOL. OUT	CCCCCCCC	CCCCCCCC	CCC	CCCCCCCC	CCCCCCCC	CCCCCCCC	CCCCCCCC
Other							
FUEL FLOW	CCCCCCCC	CCCCCCCC	CCC	CCCCCCCC	CCCCCCCC	CCCCCCCC	CCCCCCCC
ENGINE RPM	CCCCCCCC	CCCCCCCC	CCC	CCCCCCCC	CCCCCCCC	CCCCCCCC	CCCCCCCC
LOAD	CCCCCCCC	CCCCCCCC	CCC	CCCCCCCC	CCCCCCCC	CCCCCCCC	CCCCCCCC
INLET RESTR	CCCCCCCC	CCCCCCCC	CCC	CCCCCCCC	CCCCCCCC	CCCCCCCC	CCCCCCCC
EXH. PRESS.	CCCCCCCC	CCCCCCCC	CCC	CCCCCCCC	CCCCCCCC	CCCCCCCC	CCCCCCCC
OIL GAL PRES	CCCCCCCC	CCCCCCCC	CCC	CCCCCCCC	CCCCCCCC	CCCCCCCC	CCCCCCCC

LEUEND:

- (1) OPERATING PARAMETER
- (2) THE TYPE OF DEVICE USED TO MEASURE TEMPERATURE, PRESSURE OR FLOW
- (3) FREQUENCY AT WHICH THE MEASUREMENT SYSTEM IS CALIBRATED
- (4) THE TYPE OF DEVICE WHERE DATA IS RECORDED
 LG-HANDLOGSHEET
 DL -AUTOMATIC DATA LOGGER
 SC-STRIPCHARTRECORDER
 C/M -COMPUTER, USING MANUAL DATA ENTRY
 C/D -COMPUTER, USING DIRECT VO ENTRY
- (5) DATA ARE OBSERVED BUT ONLY IF RECORDED OFF SPEC.
- (6) DATA ARE RECORDED BUT ARE NOT RETAINED AT EOT
- (7) DATA ARE LOGGED AS PERMANENT RECORD, NOTE SPECIFY IF:
 SS -SNAPSHOT TAKEN AT SPECIFIED FREQUENCY
 AG/X AVERAGE OF X DATA POINTS AT SPECIFIED FREQUENCY
- (8) TIME FOR THE OUTPUT TO REACH 63.2% OF FINAL VALUE FOR STEP CHANGE AT INPUT

**TEST METHOD D5967
FORM 8
BUILD-UP AND HARDWARE INFORMATION**

Laboratory	CC	Start Date	YYYYMMDD	YYYYMMDD
Test Number ^B	CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC			
Oil Code	CCCCC	CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC		
T-8 Formulation/Stand Code:	CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC			
T-8E Formulation/Stand Code:	CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC			

TIMING

Lite/HPC Offset (deg)	S12.12
Piston Travel to TDC (deg)	S12.12
Timing (deg)	S12.12

PARTS

Part	Part Number	Serial Number
Injection Pump	CCCCCCCCCCCCCCCCCCCC	CCCCCCCCCCCCCCCCCCCC
Turbo Charger	CCCCCCCCCCCCCCCCCCCC	
Cylinder Head (front)	CCCCCCCCCCCCCCCCCCCC	CCCCCCCCCCCCCCCCCCCC
Cylinder Head (rear)	CCCCCCCCCCCCCCCCCCCC	CCCCCCCCCCCCCCCCCCCC
Pistons	CCCCCCCCCCCCCCCCCCCC	
Injection Nozzles	CCCCCCCCCCCCCCCCCCCC	

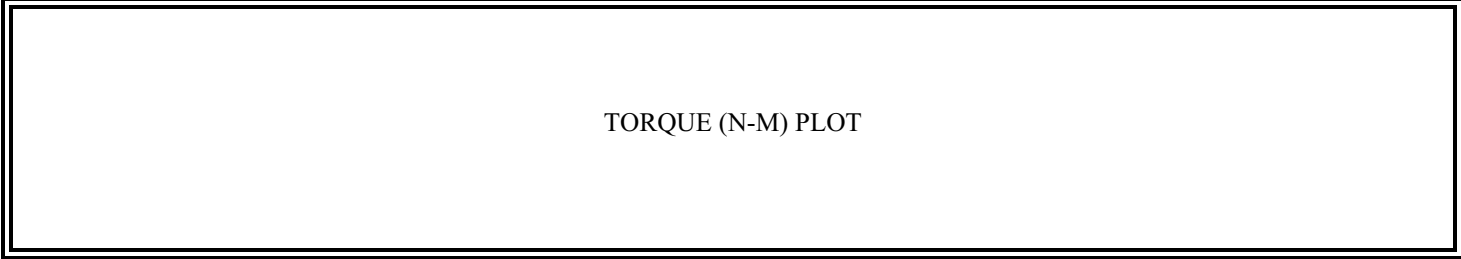
**TEST METHOD D5967
FORM 9
OPERATIONAL DATA**

Laboratory CC	Start Date YYYYMMDD	YYYYMMDD
Test Number ^B CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC		
Oil Code CCCCCC	CC	
T-8 Formulation/Stand Code:	CC	
T-8E Formulation/Stand Code:	CC	

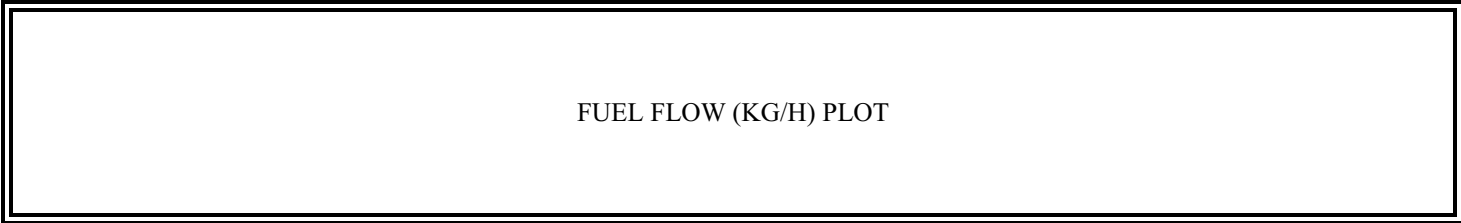
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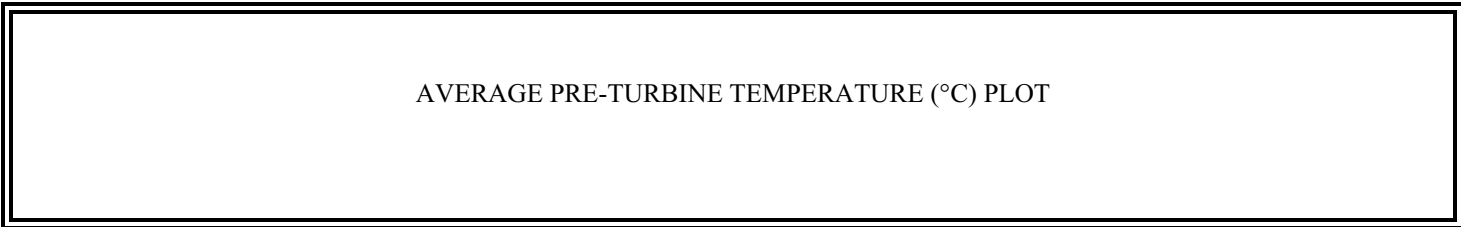
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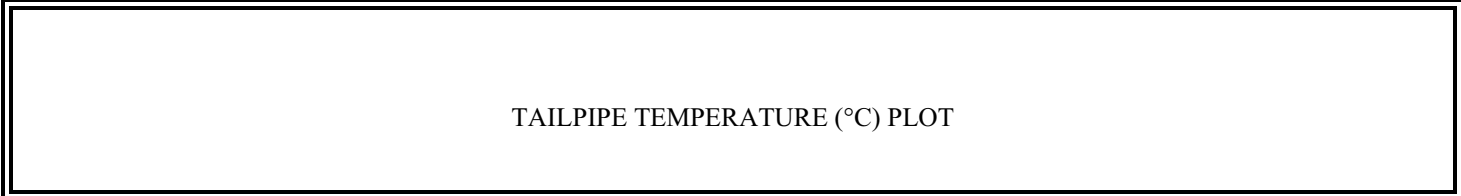
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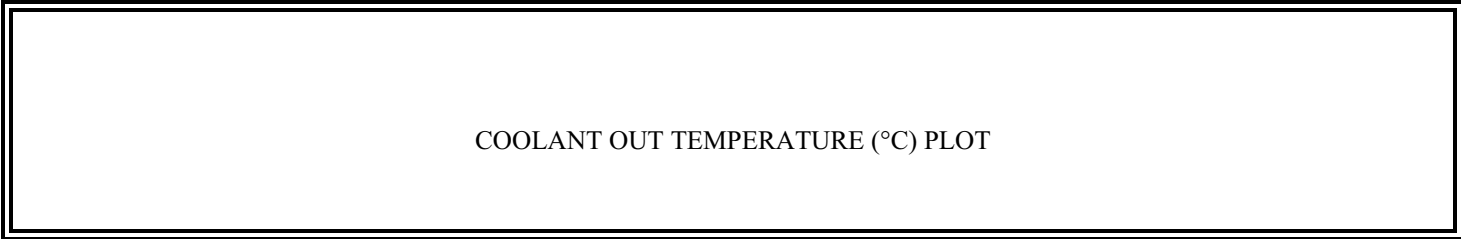
**TEST METHOD D5967
FORM 10
OPERATIONAL DATA**

Laboratory	CC	Start Date	YYYYMMDD	YYYYMMDD
Test Number ^B	CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC			
Oil Code	CCCCCC	CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC		
T-8 Formulation/Stand Code:	CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC			
T-8E Formulation/Stand Code:	CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC			

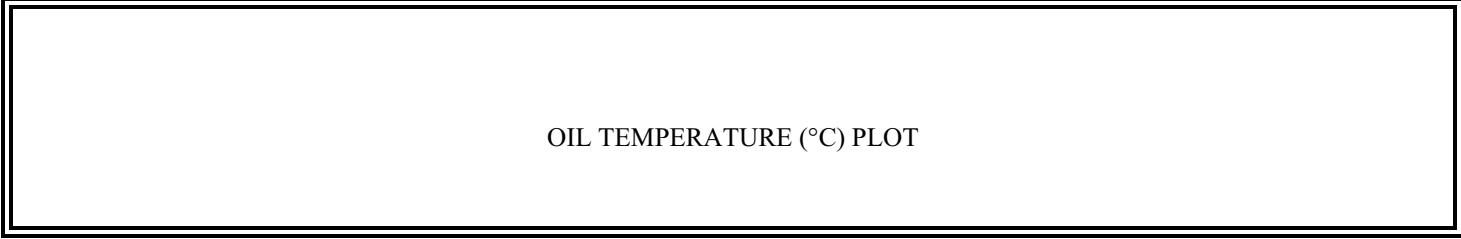
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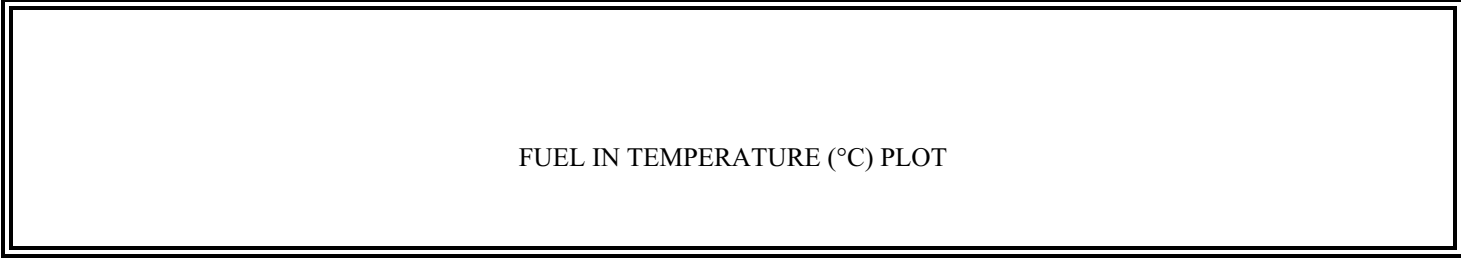
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CC



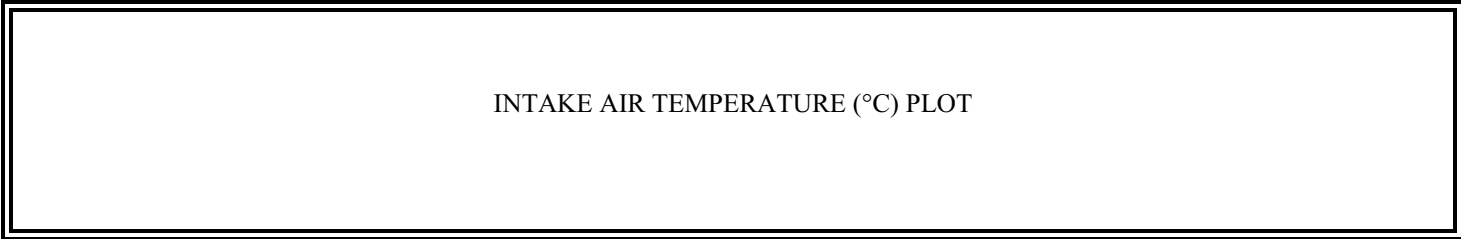
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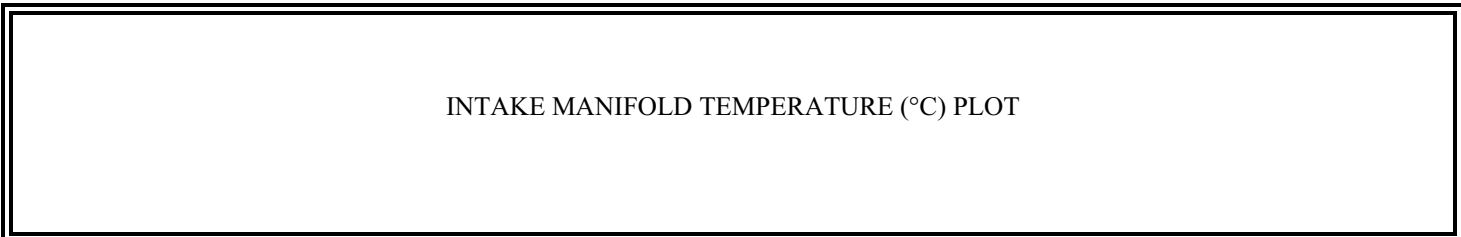
**TEST METHOD D5967
FORM 11
OPERATIONAL DATA**

Laboratory	CC	Start Date	YYYYMMDD	YYYYMMDD
Test Number ^B	CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC			
Oil Code	CCCCC	CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC		
T-8 Formulation/Stand Code:	CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC			
T-8E Formulation/Stand Code:	CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC			

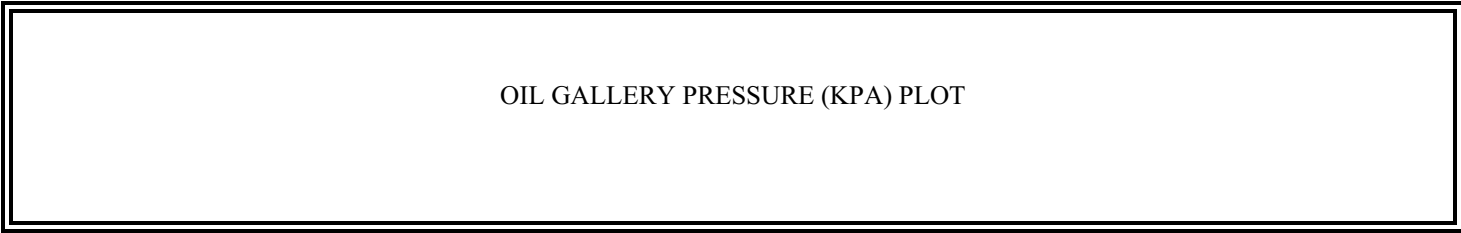
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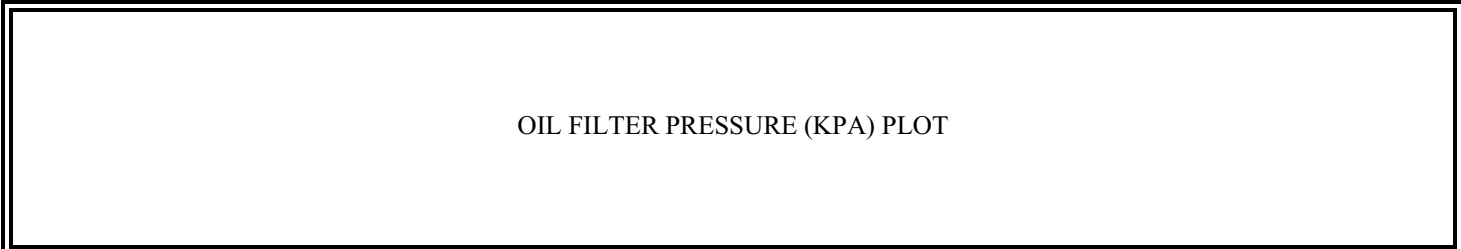
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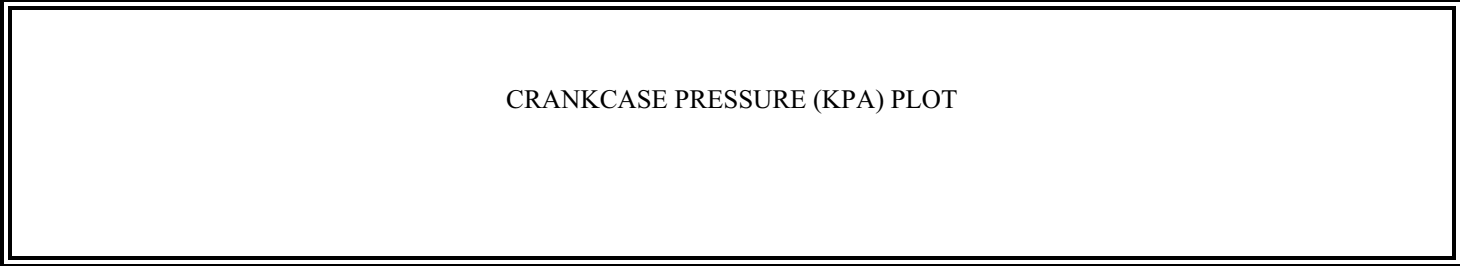
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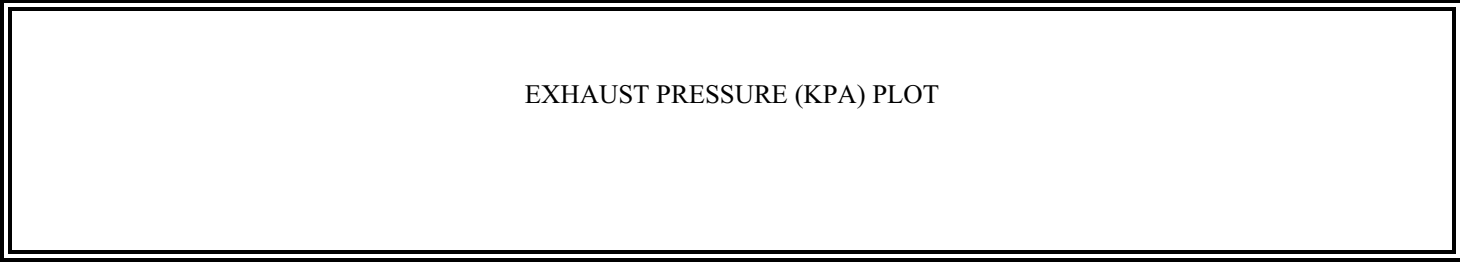
**TEST METHOD D5967
FORM 12
OPERATIONAL DATA**

Laboratory	CC	Start Date	YYYYMMDD	YYYYMMDD
Test Number ^B	CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC			
Oil Code	CCCCC	CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC		
T-8 Formulation/Stand Code:	CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC			
T-8E Formulation/Stand Code:	CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC			

CC



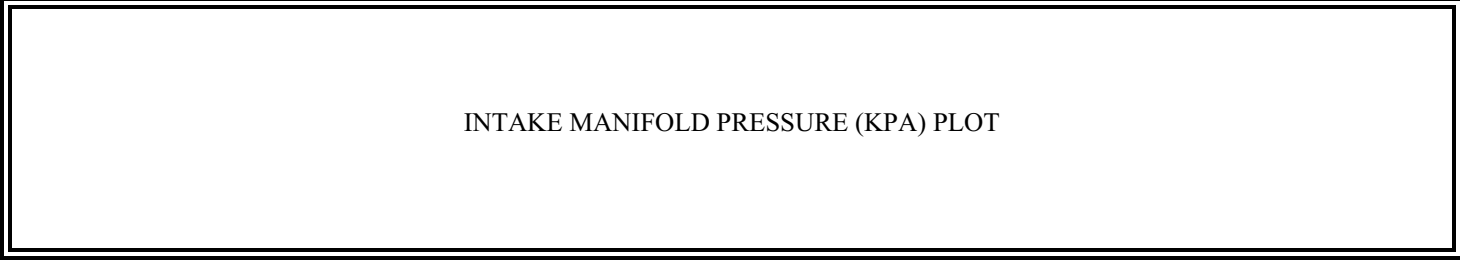
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CC



CC



TEST METHOD D5967
Form 14
American Chemistry Council Code of Practice
Test Laboratory Conformance Statement

Test Laboratory	CC				
Test Sponsor	CC				
T8E Formulation / Stand Code	CC				
Test Number	CC				
Start Date	YYYYMMDD	Start Time	CCCCC	Time Zone	CCC

Declarations

No. 1 All requirements of the ACC Code of Practice for which the test laboratory is responsible were met in the conduct of this test. Yes C No C *

No. 2 The laboratory ran this test for the full duration following all procedural requirements; and all operational validity requirements of the latest version of the applicable test procedure (ASTM or other) including all updates issued by the organization responsible for the test, were met.
 Yes C No C *

If the response to this Declaration is “No”, does the test engineer consider the deviations from operational validity requirements that occurred to be beyond the control of the laboratory?
 Yes C * No C

No. 3 A deviation occurred for one of the test parameters identified by the organization responsible for the test as being a special case. Yes C * No C (*This currently applies only to specific deviations identified in the ASTM Information Letter System*)

Check The Appropriate Conclusion

C	Operational review of this test indicates that the results should be included in the Multiple Test Acceptance Criteria calculations.
C	*Operational review of this test indicates that the results should not be included in the Multiple Test Acceptance Criteria calculations.

Note: *Supporting comments are required for all responses identified with an asterisk.*

Comments
CC
CC
CC
CC

Signature Image _____

YYYYMMDD _____

Signature

Date

CC

CC

Typed Name

Title

TEST METHOD D5967
Form 14A
American Chemistry Council Code of Practice
Test Laboratory Conformance Statement

Test Laboratory	CC				
Test Sponsor	CC				
T8 Formulation / Stand Code	CC				
Test Number	CC				
Start Date	YYYYMMDD	Start Time	CCCCC	Time Zone	CCC

Declarations

No. 1 All requirements of the ACC Code of Practice for which the test laboratory is responsible were met in the conduct of this test. Yes C No C *

No. 2 The laboratory ran this test for the full duration following all procedural requirements; and all operational validity requirements of the latest version of the applicable test procedure (ASTM or other) including all updates issued by the organization responsible for the test, were met.
 Yes C No C *

If the response to this Declaration is “No”, does the test engineer consider the deviations from operational validity requirements that occurred to be beyond the control of the laboratory?
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No. 3 A deviation occurred for one of the test parameters identified by the organization responsible for the test as being a special case. Yes C * No C (*This currently applies only to specific deviations identified in the ASTM Information Letter System*)

Check The Appropriate Conclusion

C	Operational review of this test indicates that the results should be included in the Multiple Test Acceptance Criteria calculations.
C	*Operational review of this test indicates that the results should not be included in the Multiple Test Acceptance Criteria calculations.

Note: *Supporting comments are required for all responses identified with an asterisk.*

Comments	
	CC
	CC
	CC
	CC

Signature Image _____

Signature

CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC

Typed Name

YYYYMMDD

Date

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Title