

**A5. Report Forms
Test Method D5862
(6V92TA)
Version**

Sponsored By:

	V = Valid; The reference oil/non-reference oil was evaluated in accordance with the test procedure.
	I = Invalid; The reference oil/non-reference oil was not evaluated in accordance with the test procedure.
	N = Not interpreted; The non-reference oil results cannot be interpreted and shall not be used in determining an average test result using multiple test criteria.

Test Number			
Test Stand	Stand Run Number	Engine Number	Engine Run Number

Date Completed:	Time Completed:
Oil Code ^A :	
Formulation/Stand Code:	
Additional Comments:	

In my opinion this test _____ been conducted in a valid manner in accordance with Test Method D5862 and the appropriate amendments through the information letter system. The remarks included in this report describe the anomalies associated with this test.

^A CMIR or Non-Reference Oil Code

Submitted By:

_____ Testing Laboratory

_____ Signature

_____ Typed Name

_____ Title

Fig. A5.1 Test Report Cover

**Test Method D5862
(6V92TA)
Form 1
Test Lab Affidavit**

Reference Oil Test					Non-Reference Oil Test				
Test Lab	Test Stand No.	Test Stand Run No.	Engine Block No.	Engine Block Run No.	Test Lab	Test Stand No.	Test Stand Run No.	Engine Block No.	Engine Block Run No.
Lab Oil Code	SAE Viscosity	Test Length	Date Started	EOT Time	Lab Oil Code	SAE Viscosity	Test Length	Date Started	EOT Time
Date Test Completed	CMIR Code No.	TMC Oil No.		Ref. Test Accept. Limits Effective Date	Date Test Comp.	Oil Code No.			
		Fire Ring Distress (Demerits)	2 nd & 3 rd Avg. Face Distress (Demerits)	vg. Liestner Scuffing (% Area)					
Lab Rating					Formulation/Stand Coke				
Referee Rating									
Average									
Acceptance Limits									
Minimum									
Maximum									
Mean									
					Fire Ring Distress (Demerits)	2 nd & 3 rd Avg. Face Distress (Demerits)	Avg. Liner Scuffing (% Area)		
Lab Rating									
Referee Rating									
Average									
Correction Factors									
Final Results									

Fig. A5.2 Test Lab Affidavit

**Test Method D5862
(6V92TA)
Form 2
Calibration Test Result Summary**

Lab	Stand ^A	Stand Run No. ^A
Engine ^A	Engine Run No.	
CMIR	TMC Oil No.	
Fuel Supplier		
Start Date	End Date	Report Date

Parameter	Value
Average Fire Ring Face Distress, Demerits ^B	
Number of Broken Rings	
Average 2nd & 3rd Ring Face Distress, Demerits ^B	
Average Liner Scuffing, % Area ^B	
Maximum Liner Port Plugging, % Area	
Average Liner Port Plugging, % Area	
Maximum Piston Skirt Tin Removed, % Area	
Average Piston Skirt Tin Removed, % Area	
Oil Iron Content at 96 Test Hours, ppm	
Average Oil Consumption, g/h	

^A Test Number is: Stand – Stand Run No. – Engine Run No.

^B Average of Lab & Referee Rating

Fig. A5.3 Calibration Test Result Summary

**Test Method D5862
(6V92TA)
Form 3
Non-Reference Test Result Summary**

Lab	Stand ^A	Stand Run No. ^A
Engine ^A	Engine Run No. ^A	
Formulation/Stand Code:		
Oil Code	Fuel Supplier	
Start Date	End Date	

Parameter	Value
Average Fire Ring Face Distress, Demerits ^B	
Correction Factor Fire Ring Face Distress, Demerits ^B	
Final Result Fire Ring Face Distress, Demerits ^B	
Number of Broken Rings	
Average 2nd & 3rd Ring Face Distress, Demerits ^B	
Correction Factor 2nd & 3rd Ring Face Distress, Demerits ^B	
Final Result 2nd & 3rd Ring Face Distress, Demerits ^B	
Average Liner Scuffing, % Area ^B	
Correction Factor Liner Scuffing, % Area ^B	
Final Result Liner Scuffing, % Area ^B	
Maximum Liner Port Plugging, % Area	
Average Liner Port Plugging, % Area	
Maximum Piston Skirt Tin Removed, % Area	
Average Piston Skirt Tin Removed, % Area	
Oil Iron Content at 96 Test Hours, ppm	
Average Oil Consumption, g/h	

^A Test Number is: Stand – Stand Run No. – Engine Run No.

^B Either Test Lab Rating or Average of Lab & Referee Rating (Referee Rating is Optional)

Fig. A5.4 Non-Reference Test Result Summary

**Test Method D5862
(6V92TA)
Form 4
Torque Mode - Operational Summary**

Laboratory	EOT Date
Test Number	Oil Code
Formulation/Stand Code	
Test Mode: Torque	

Test Parameter	Specification	Average	Std. Dev.	Minimum	Maximum
Engine Speed	r/min	1200 ± 10			
Load	N-m	Report Only			
Power	kW	216 – 238			
Fuel Flow	kg/h	52 ± 1.8			
BSFC	kW-h	Report Only			
Temperature °C					
Coolant Out	°C	84 ± 2.2			
Coolant In	°C	Report Only			
Coolant delta T	°C	6 ± 2.7			
Oil Gallery	°C	102 ± 1.1			
Oil Sump	°C	111 - 119			
Fuel @ Filter	°C	38 ± 2.7			
Air Inlet	°C	35 ± 2.7			
Air Box	°C	Report Only			
Exhaust	°C	Report Only			
Pressures					
Oil Gallery	kPa	207 - 310			
Air In. Res.	kPa	Report Only			
Fuel	kPa	Report Only			
Air Box	kPa	Report Only			
Turbo Outlet	kPa	Report Only			

Fig. A5.5 Torque Mode – Operational Summary

**Test Method D5862
(6V92TA)
Form 5
Power Mode - Operational Summary**

Laboratory	EOT Date
Test Number	Oil Code
Formulation/Stand Code	
Test Mode: Power	

Test Parameter		Specification	Average	Std. Dev.	Minimum	Maximum
Engine Speed	r/min	1200 ± 10				
Load	N-m	Report Only				
Power	kW	216 - 238				
Fuel Flow	kg/h	52 ± 1.8				
BSFC	kW-h	Report Only				
Temperature °C						
Coolant Out	°C	84 ± 2.2				
Coolant In	°C	Report Only				
Coolant delta T	°C	6 ± 2.7				
Oil Gallery	°C	102 ± 1.1				
Oil Sump	°C	111 - 119				
Fuel @ Filter	°C	38 ± 2.7				
Air Inlet	°C	35 ± 2.7				
Air Box	°C	Report Only				
Exhaust	°C	Report Only				
Pressures						
Oil Gallery	kPa	207 - 310				
Air In. Res.	kPa	Report Only				
Fuel	kPa	Report Only				
Air Box	kPa	Report Only				
Turbo Outlet	kPa	Report Only				

Fig. A5.6 Power Mode – Operational Summary

**Test Method D5862
(6V92TA)
Form 6
Test Lab Engine Rating Result**

Laboratory	EOT Date
Test Number	Oil Code
Formulation/Stand Code	

Cylinder Liners							
Scuffing, % Area	1L	2L	3L	1R	2R	3R	Average
Thrust							
Anti-Thrust							
Total							
% Liner Port Plugging							

Piston Rings							
Face Distress Demerits	1L	2L	3L	1R	2R	3R	Average
Fire Ring							
2nd Ring							
3 rd Ring							
Average 2 nd & 3 rd							

Piston Skirt							
% Area Plate Removal	1L	2L	3L	1R	2R	3R	Average
Value							

Fig. A5.7 Test Lab Engine Rating Result

**Test Method D5862
(6V92TA)
Form 7
Referee Lab Engine Rating Result
(Required for reference test; Optional for non-reference test)**

Laboratory	EOT Date	
Test Number:	Oil Code	
Formulation/Stand Code		
Referee Lab	Referee Initials	Referee Rating Date

Cylinder Liners							
Scuffing, % Area	1L	2L	3L	1R	2R	3R	Average
Thrust							
Anti-Thrust							
Total							

Piston Rings							
Face Distress Demerits	1L	2L	3L	1R	2R	3R	Average
Fire Ring							
2 nd Ring							
3 rd Ring							
Average 2 nd & 3 rd							

Fig. A5.8 Test Lab Engine Rating Result

**Test Method D5862
(6V92TA)
Form 8
Parts Measurement Summary**

Laboratory	EOT Date
Test Number	Oil Code
Formulation/Stand Code	

Weight Loss Summary							
Piston Ring	1L	2L	3L	1R	2R	3R	Average
Fire Ring, g							
2nd Ring, g							
3rd Ring, g							
Slipper Bushing, g							

Wear Summary							
Piston Ring Radial Wear Thickness	1L	2L	3L	1R	2R	3R	Average
Fire Ring, mm							
2nd Ring, mm							
3rd Ring, mm							
Injector Rocker Arm Bushings Wear ID, mm							

End Gap Increase							
Piston Ring	1L	2L	3L	1R	2R	3R	Average
Fire Ring, mm							
2nd Ring, mm							
3rd Ring, mm							
Top Ring Upper Groove, mm							
Bottom Ring Upper Groove, mm							
Top Ring Lower Groove, mm							
Bottom Ring Lower Groove, mm							

Fig. A5.9 Parts Measurement Summary

**Test Method D5862
(6V92TA)
Form 9
Oil Analysis Summary**

Laboratory	EOT Date
Test Number	Oil Code
Formulation/Stand Code	

Hours	Viscosity @ 40°C (cSt)	Viscosity @ 100°C (cSt)	TBN D4739	Viscosity HT/HS @ 150°C (cP)	Volatility % @ 371°C
New					
Break-in					
16					
48					
80					
96					

PPM	NEW	Break-in	Hour 16	Hour 32	Hour 48	Hour 64	Hour 80	Hour 96
Fe								
Sn								
Pb								
Cu								
Cr								
Al								
Si								
Ca								
Mg								
Zn								
P								
Mo								
B								
Na								
S								

Fig. A5.10 Oil Analysis Summary

**Test Method D5862
(6V92TA)
Form 10
Pre-Test Parts Measurement**

Laboratory	EOT Date
Test Number	Oil Code
Formulation/Stand Code	

Component Weight							
Piston Rings	1L	2L	3L	1R	2R	3R	Average
Fire Ring, g							
2nd Ring, g							
3rd Ring, g							
Slipper Bushing, g							

Radial Thickness							
Piston Rings	1L	2L	3L	1R	2R	3R	Average
Fire Ring, mm							
2 nd Ring, mm							
3 rd Ring, mm							

End Gap @ 122.936 mm gage								
Piston Rings	1L	2L	3L	1R	2R	3R	Average	Spec
Fire Ring, mm								1.016 ± 0.127 mm
2nd Ring, mm								1.016 ± 0.127 mm
3rd Ring, mm								1.016 ± 0.127 mm
Top Ring Upper Groove, mm								0.406 ± 0.025 mm
Bottom Ring Upper Groove, mm								0.406 ± 0.025 mm
Top Ring Lower Groove, mm								0.584 ± 0.051 mm
Bottom Ring Lower Groove, mm								0.584 ± 0.051 mm

Fig. A5.11 Pre-Test Parts Measurement

**Test Method D5862
(6V92TA)
Form 11
Pre-Test Parts Measurement**

Laboratory	EOT Date
Test Number	Oil Code
Formulation/Stand Code	
Measurement Performed: Pre Test	

Cylinder Liner								
Parameter	1L	2L	3L	1R	2R	3R	Average	Spec
Average Diameter, ^A mm								122.911- 122.974
Surf. Finish, Ra μm								1.1 - 1.7 μm

Piston Skirt								
Parameter	1L	2L	3L	1R	2R	3R	Average	Spec
Average Diameter, mm								122.667 – 122.733

Clearance, Liner to Piston								
Parameter	1L	2L	3L	1R	2R	3R	Average	Spec
Clearance, mm								0.178 - 0.305

Injector Rocker Arm Bushing								
Parameter	1L	2L	3L	1R	2R	3R	Average	Spec
Inside Diameter, mm								

^A Average of the 8 measurements per test procedure

Fig. A5.12 Pre-Test Parts Measurement

**Test Method D5862
(6V92TA)
Form 12
Post-Test Parts Measurement**

Laboratory	EOT Date
Test Number	Oil Code
Formulation/Stand Code	
Measurement Performed: Post Test	

Component Weight							
Piston Rings	1L	2L	3L	1R	2R	3R	Average
Fire Ring, g							
2nd Ring, g							
3rd Ring, g							
Slipper Bushing, g							

Radial Thickness							
Piston Rings	1L	2L	3L	1R	2R	3R	Average
Fire Ring, mm							
2 nd Ring, mm							
3 rd Ring, mm							

End Gap @ 122.936 mm gage								
Piston Rings	1L	2L	3L	1R	2R	3R	Average	Spec
Fire Ring, mm								1.016 ± 0.127 mm
2nd Ring, mm								1.016 ± 0.127 mm
3rd Ring, mm								1.016 ± 0.127 mm
Top Ring Upper Groove, mm								0.406 ± 0.025 mm
Bottom Ring Upper Groove, mm								0.406 ± 0.025 mm
Top Ring Lower Groove, mm								0.584 ± 0.051 mm
Bottom Ring Lower Groove, mm								0.584 ± 0.051 mm

Fig. A5.13 Post-Test Parts Measurement

**Test Method D5862
(6V92TA)
Form 13
Post-Test Parts Measurement**

Laboratory	EOT Date
Test Number	Oil Code
Formulation/Stand Code	
Measurement Performed: Post Test	

Injector Rocker Arm Bushing							
Parameter	1L	2L	3L	1R	2R	3R	Average
Inside Dia., mm							

Fig. A5.14 Post-Test Parts Measurement

**Test Method D5862
(6V92TA)
Form 14
Heat Soak Summary**

Laboratory	EOT Date
Test Number	Oil Code
Formulation/Stand Code	

Number of Soak Occurrences			
Test Hours	Date	Soak Time	Description
			Total Heat Soak Time

Fig. A5.15 Heat Soak Summary

**Test Method D5862
(6V92TA)
Form 17
Test Fuel Analysis**

Laboratory	EOT Date
Test Number	Oil Code
Formulation/Stand Code	

Measurement	Specs.	Analysis	Test Method
API Gravity @ 15.6°C	33 Typical		D 287
Cetane No.	40 Minimum		D 613
Distillation, °C			
IBP	160°C-204°C		D 86
50%	246°C-288°C		D 86
90%	288°C-327°C		D 86
Kinematic Viscosity	1.9 cSt-4.0 cSt		D 445
Total Sulfur, % Weight	0.10%-0.40%		D 2622
Flash Point	54°C Minimum		D 92
Ash, % Weight	0.01% Maximum		D 482
Water & Solids, % Weight	0.05% Maximum		D 2709
Gross Heat of Combustion	45.2 MJ/kg Minimum		D 240

Fig. A5.18 Test Fuel Analysis

**Test Method D5862
(6V92TA)
Form 18
Characteristics Of The Data Acquisition System**

Laboratory	EOT Date
Test Number	Oil Code
Formulation/Stand Code	

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 Gall.							
Oil Sump							
Fuel							
Cool In							
Cool Out							
Air Inlet							
Other							
Fuel Flow							
Engine Speed							
Load							
Inlet Restr.							
Exh Press							
Oil Gal Pres.							

Legend:

- (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 – Handlog Sheet
 - DL – Automatic Data Logger
 - SC – Strip Chart Recorder
 - C/M – Computer, Using Manual Data Entry
 - C/D – Computer, Using Direct I/O Entry
- (5) Data Is Observed But Recorded Only If Off Spec.
- (6) Data Is Recorded But Are Not Retained At EOT
- (7) Data Is 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

Fig. A5.19 Characteristics Of The Data Acquisition System

**Test Method D5862
(6V92TA)
Form 19
Origin Of Critical Engine Parts**

Laboratory	EOT Date
Test Number	Oil Code
Formulation/Stand Code	

Part Name	Part Origin ^A		
Cylinder Liner			
Piston Dome			
Piston Skirt			
Slipper Bushings	#/Position	Left	Right
	1		
	2		
	3		
Oil Control Ring Upper Groove			
Oil Control Ring Lower Groove			
Oil Ring Expander			
Fire Ring			
Compression Rings			

^A Part Origin Value are: Testkit, Production, or Mixed

Fig. A5.20 Origin Of Critical Engine Parts

**Test Method D5862
(6V92TA)
Form 21
American Chemistry Council Code of Practice
Test Laboratory Conformance Statement**

Test Laboratory					
Test Sponsor					
Formulation / Stand Code					
Test Number					
Start Date		Start Time		Time Zone	

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 _____ No _____*

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 _____ No _____*

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 _____* No _____

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 _____* No _____
(This currently applies only to specific deviations identified in the ASTM Information Letter System)

Check The Appropriate Conclusion

	Operational review of this test indicates that the results should be included in the Multiple Test Acceptance Criteria calculations.
	*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

Signature

Date

Typed Name

Title