A1. Report Forms
TEST METHOD D5967

VERSION 20020717

METHOD: METHOD

CONDUCTED FOR:

TSTSPON1

TSTSPON2

T-8A: LABVT8A	V = VALID; THE REFERENCE OIL/NON-REFERENCE OIL WAS EVALUATED IN ACCORDANCE WITH THE TEST PROCEDURE.
T-8: LABVALT8	I = INVALID; THE REFERENCE OIL/NON-REFERENCE WAS NOT EVALUATED IN ACCORDANCE WITH THE TEST PROCEDURE.
T-8E: LABVT8E	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: STAND	STAND RUN NO.: RSTRUN/STRUN	ENGINE NO.: ENGINE	ENGINE HOURS: RENHOURS/ENHOURS
END OF TEST DATE: RDTCOMP/DTCOMP		END OF TEST TIME: EOTTIME/REOTTIME	
OIL CODE/CMIR: [A] CMIR/OILCODE			
T-8 FORMULATION/STAND CODE: FORMT8			
T-8E FORMULATION/STAND CODE: FORMT8E			
ALTCODE1: ALTCODE1	ALTCODE2: ALTCODE2	ALTCODE3: ALTCODE3	

[A] CMIR or Non-Reference Oil Code

SUBMITTED BY:

SUBLAB
_____
Testing Laboratory

SUBSIGIM
_____
Signature

SUBNAME
_____
Typed Name

SUBTITLE
_____
Title

TEST METHOD D5967
FORM 1
TEST RESULT SUMMARY

T-8 FORMULATION/STAND CODE: FORMT8	
T-8E FORMULATION/STAND CODE: FORMT8E	TEST LENGTH:[A] TESTLEN

REFERENCE OIL TEST						NON-REFERENCE OIL TEST				
CMIR CODE NO.: CMIR						OIL CODE NO.: OILCODE				
TMC OIL NO.	TEST LAB	TEST STAND NO.	TEST STAND RUN NO.	ENGINE BLOCK SERIAL NO.	REBUILD BLOCK HOURS	TEST LAB	TEST STAND NO.	TEST STAND RUN NO.	ENGINE BLOCK SERIAL NO.	ENGINE BLOCK HOURS
IND	LAB	STAND	RSTRUN	ENGINE	RENHOURS	LAB	STAND	STRUN	ENGINE	ENHOURS
DATE TEST STARTED: RDTSTRT		DATE TEST COMPLETED: RDTCOMP		EOT TIME: REOTTIME		DATE TEST STARTED: DTSTRT		DATE TEST COMPLETED: DTCOMP		EOT TIME: EOTTIME
Laboratory Oil Code:				RLABCODE		Laboratory Oil Code:				LABOCODE
SAE Viscosity:				RSAEVISC		SAE Viscosity:				SAEVISC

VISCOSITY SLOPE 100 - 150 h, cSt/h	RVSLPFNL	**VISCOSITY SLOPE 100 - 150 h, cSt/h**	VSLPFNL
VISCOSITY INCREASE AT 3.8% TGA, cSt	RVISI38	**VISCOSITY INCREASE AT 3.8% TGA, cSt**	VISI38
		SEVERITY ADJUSTMENT FOR VISCOSITY INC. AT 3.8% TGA, cSt	VIS38_SA
		ADJUSTED VISCOSITY INCREASE AT 3.8% TGA, cSt	VIS38FNL
RELATIVE VISCOSITY AT 4.8%, TGA (50% LOSS) [B]	RRV48FNL	**RELATIVE VISCOSITY AT 4.8%, TGA (50% LOSS)** [B]	RV48
		SEVERITY ADJUSTMENT FOR RELATIVE VISCOSITY	RV48_SA
		ADJUSTED RELATIVE VISCOSITY (50% LOSS) [B]	RV48FNL
RELATIVE VISCOSITY AT 4.8%, TGA (100% LOSS) [B]	RRV2FNL	**RELATIVE VISCOSITY AT 4.8%, TGA (100% LOSS)** [B]	RV2
		SEVERITY ADJUSTMENT FOR RELATIVE VISCOSITY	RV2_SA
		ADJUSTED RELATIVE VISCOSITY (100% LOSS) [B]	RV2FNL
TGA SOOT % AT 250 h	RTGAAVG	**TGA SOOT % AT 250 h**	TGAAVG
TGA SOOT % AT 300 h	RTGAH300	**TGA SOOT % AT 300 h**	TGA_H300
AVERAGE OIL CONSUMPTION AT 250 h (g/kW-h)	ROILCON	**AVERAGE OIL CONSUMPTION AT 250 h (g/kW-h)**	OILCON
OIL FILTER DELTA AT 250 h, kPa	RXOILDP	**OIL FILTER DELTA AT 250 h, kPA**	XOILDP

[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	LAB	Start Date	RDTSTRT/DTSTRT
Test Number [B]	STAND - RSTRUN/STRUN-ENGINE - RENHOURS/ENHOURS	Oil Code	CMIR/OILCODE
T-8 Formulation/Stand Code:	FORMT8		
T-8E Formulation/Stand Code:	FORMT8E		

TEST PARAMETER	SPECIFICATION	AVERAGE	STD. DEV.	MINIMUM	MAXIMUM
Engine Speed, r/min	1800 ± 5	ARPM	SRPM	IRPM	XRPM
Torque, N-m	1369 - 1398	ALOAD	SLOAD	ILOAD	XLOAD
Fuel Flow, kg/h	63.28 ± 0.63	AFFLO	SFFLO	IFFLO	XFFLO
Humidity, g/kg	Report	AHUMID		IHUMID	XHUMID
Blowby, L/min	Report	ABLOBY		IBLOBY	XBLOBY
TEMPERATURES	**SPECIFICATION**	**AVERAGE**	**STD.DEV**	**MINIMUM**	**MAXIMUM**
Coolant Out, °C	85 ± 3	ACOLOUT	SCOLOUT	ICOLOUT	XCOLOUT
Coolant In, °C	Report Only	ACOLIN	SCOLIN	ICOLIN	XCOLIN
Oil, °C	100 - 107	AOILTEM	SOILTEM	IOILTEM	XOILTEM
Fuel In, °C	40 ± 1	AFUELT	SFUELT	IFUELT	XFUELT
Intake Air, °C	25 ± 3	AINAIRT	SINAIRT	IINAIRT	XINAIRT
Intake Manifold, °C	43 ± 3	AINMANT	SINMANT	IINMANT	XINMANT
Pre-Turb. (F), °C	602 - 632	APTURFT	SPTURFT	IPTURFT	XPTURFT
Pre-Turb. (R), °C	602 - 632	APTURRT	SPTURRT	IPTURRT	XPTURRT
TailPipe, °C	455 - 474	ATAILPT	STAILPT	ITAILPT	XTAILPT
PRESSURES	**SPECIFICATION**	**AVERAGE**	**STD.DEV**	**MINIMUM**	**MAXIMUM**
Oil Gallery, kPa	372 - 441	AOILPRS		IOILPRS	XOILPRS
Crankcase, kPa	0.50 ± 0.25	ACCASEP	SCCASEP	ICCASEP	XCCASEP
Exhaust, kPa	3.1 ± 0.4	AEXHSTP	SEXHSTP	IEXHSTP	XEXHSTP
Oil Filter Delta, kPa	138 Max.				RXOILDP/XOILDP
Inlet Air Res., kPa	2.5 ± 0.25	AINAIRR	SINAIRR	IINAIRR	XINAIRR
Intake Manifold, kPa	186 - 199	AINMANP	SINMANP	IINMANP	XINMANP
Compressor Discharge, kPa	Report	ACOMDIS	SCOMDIS	ICOMDIS	XCOMDIS
Intercooler Delta, kPa	13.6 Maximum	AINCLDP	SINCLDP	IINCLDP	XINCLDP

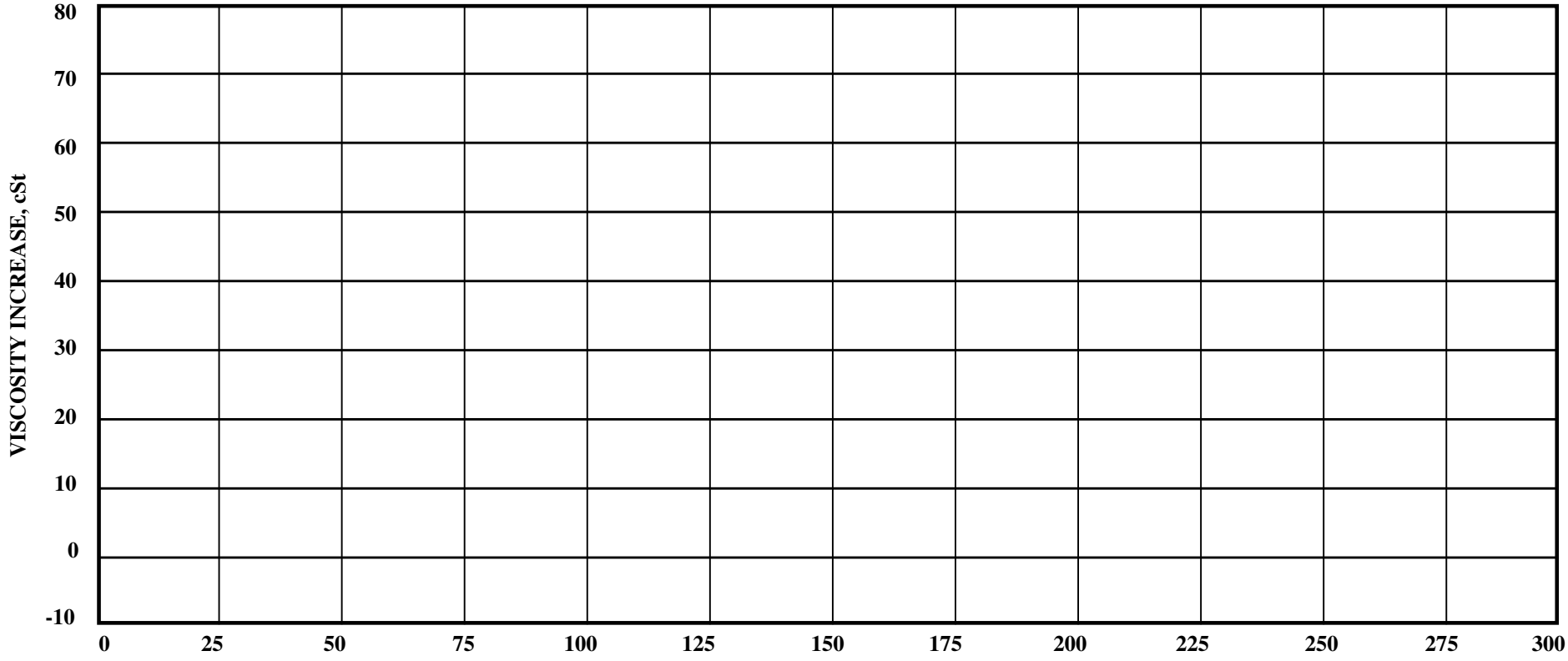
A
ALL DATA VALUES SHOWN ARE BASED ON TEST LENGTH REPORTED ON FORM1

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

TEST METHOD D5967
FORM 3

VISCOSITY INCREASE VERSUS TIME

Laboratory LAB	Start Date RDTSTRT/DTSTRT
Test Number STAND - RSTRUN/STRUN - ENGINE - RENHOURS/ENHOURS	Oil Code CMIR/OILCODE
T-8 Formulation/Stand Code: FORMT8	
T-8E Formulation/Stand Code: FORMT8E	



TEST METHOD D5967
FORM 4
OIL ANALYSIS SUMMARY

Laboratory:	LAB	Start Date:	RDTSTRT/DTSTRT
Test Number:	STAND - RSTRUN/STRUN - ENGINE - RENHOURS/ENHOURS	Oil Code:	CMIR/OILCODE
T-8 Formulation/Stand Code:	FORMT8		
T-8E Formulation/Stand Code:	FORMT8E		

Hours	Soot TGA %	Viscosity (cSt)	Viscosity Increase From Minimum(cSt)
TST_H000	RTGAH000/TGA_H000	RVISH000/VIS_H000	
TST_H025	RTGAH025/TGA_H025	RVISH025/VIS_H025	DVISH025/IVISH025
TST_H050	RTGAH050/TGA_H050	RVISH050/VIS_H050	DVISH050/IVISH050
TST_H075	RTGAH075/TGA_H075	RVISH075/VIS_H075	DVISH075/IVISH075
TST_H100	RTGAH100/TGA_H100	RVISH100/VIS_H100	DVISH100/IVISH100
TST_H125	RTGAH125/TGA_H125	RVISH125/VIS_H125	DVISH125/IVISH125
TST_H150	RTGAH150/TGA_H150	RVISH150/VIS_H150	DVISH150/IVISH150
TST_H175	RTGAH175/TGA_H175	RVISH175/VIS_H175	DVISH175/IVISH175
TST_H200	RTGAH200/TGA_H200	RVISH200/VIS_H200	DVISH200/IVISH200
TST_H225	RTGAH225/TGA_H225	RVISH225/VIS_H225	DVISH225/IVISH225
TST_H250	RTGAH250/TGA_H250	RVISH250/VIS_H250	
250 (2nd)	TGA2502	VIS2502	
250 (Average)	RTGAAVG/TGAAVG	RVISAVG/VISAVG	RVISIAVG/IVISIAVG
TST_H275	RTGAH275/TGA_H275	RVISH275/VIS_H275	DVISH275/IVISH275
TST_H300	RTGAH300/TGA_H300	RVISH300/VIS_H300	DVISH300/IVISH300

Viscosity Increase @ 3.8% TGA Soot Level	RVISI38/VISI38
D6278 Unsheared Viscosity (cSt), Vu	VISVU
D6278 Sheared Viscosity (cSt), Vs	VISVS
Relative Viscosity @ 4.8% TGA Soot Level (50% Loss) [A]	RRV48FNL/RV48
Relative Viscosity @ 4.8% TGA Soot Level (100% Loss) [A]	RRV2FNL/RV2

ELEMENT	Parts per million (ppm) at Test Hour			
	PPMTH000	PPMTH150	PPMTH250	PPMTH300
Fe	FE__H000	FE__H150	FE__H250	FE__H300
Pb	PB__H000	PB__H150	PB__H250	PB__H300
Cu	CU__H000	CU__H150	CU__H250	CU__H300
Cr	CR__H000	CR__H150	CR__H250	CR__H300
Al	AL__H000	AL__H150	AL__H250	AL__H300
Si	SI__H000	SI__H150	SI__H250	SI__H300
Na	NA__H000	NA__H150	NA__H250	NA__H300

Centrifugal Oil Filter mass: grams	**Pre-Test**	**Post-Test**	**Mass Gain**
	PREMASS	POSMASS	MASSG

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

TEST METHOD D5967
FORM 5

TEST FUEL ANALYSIS (LAST BATCH)

Laboratory LAB	Start Date RDTSTRT/DTSTRT
Test Number STAND -RSTRUN/STRUN-ENGINE -RENHOURS/ENHOURS	Oil Code CMIR/OILCODE
T-8 Formulation/Stand Code: FORMT8	
T-8E Formulation/Stand Code: FORMT8E	
Supplier FUELSUP	Batch Identifiers FUELBTID

Measurement	Specs.	Analysis		Test Method
		NEW	EOT	
Total Sulfur, % wt	0.03 - 0.05	FUELSNEW	FUELSEOT	D 2622
Gravity, ˚API	32 - 36	APIGRNEW	APIGREOT	D 287 or D 4052
Hydrocarbon Composition				
Aromatics % vol	28 - 35	FUELAROM		D 1319
Olefin	Report	FUELOLEF		D 1319
Saturates	Report	FUELSATU		D 1319
Cetane Index	Report	CETANEIN		D 4737
Cetane No.	42 - 48	CETANENO		D 613
Copper Strip Corrosion	3 max	FUELCU		D 130
Flash Point, ˚C	54 min	FLASHPT		D 93
Cloud Point, ˚C	-12 max	FUELCLOU		D 2500
Pour Point, ˚C	-18 max	FUELPOUR		D 97
Carbon Residue on 10% Residium, %	0.35 max	FUELCRES		D 524 (10 % Bottoms)
Water & Sediment, % Vol	0.05 max	FUELH2O		D 2709
Ash, % wt	0.01 max	FUELASH		D 482
Viscosity, cSt @ 40˚C	2.0 - 3.2	KINVIS		D 445
Distillation, ˚C				
IBP	177 - 199	FUELIBP		D 86
10%	210 - 232	FUEL10		D 86
50%	249 - 277	FUEL50		D 86
90%	299 - 327	FUEL90		D 86
EP	327 - 360	FUELEP		D 86

TEST METHOD D5967
FORM 6

DOWN TIME AND COMMENTS

Laboratory	LAB	Start Date	RDTSTRT/DTSTRT
Test Number	STAND -RSTRUN/STRUN -ENGINE -RENHOURS/ENHOURS	Oil Code	CMIR/OILCODE
T-8 Formulation/Stand Code:	FORMT8		
T-8E Formulation/Stand Code:	FORMT8E		

Number of Downtime Occurrences		DWNOCR	
Test Hours	Date	Downtime	Reasons
DOWNR001	DDATR001	DTIMR001	DREAR001
		TOTLDOWN	Total Downtime

Other Comments		
Number of Comment Lines	TOTCOM	
OCOMR001		

TEST METHOD D5967
FORM 7

CHARACTERISTICS OF THE DATA ACQUISTION SYSTEM

Laboratory LAB	Start Date RDTSTRT/DTSTRT
Test Number STAND -RSTRUN/STRUN -ENGINE - RENHOURS/ENHOURS	Oil Code CMIR/OILCODE
T-8 Formulation/Stand Code: FORMT8	
T-8E Formulation/Stand Code: FORMT8E	

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.	OTEMSENS	OTEMCALF	OTEMRECD	OTEMOBSF	OTEMRECF	OTEMLOGF	OTEMSYSR
FUEL IN.	FTEMSENS	FTEMCALF	FTEMRECD	FTEMOBSF	FTEMRECF	FTEMLOGF	FTEMSYSR
INTAKE AIR	AITSENS	AITCALF	AITRECD	AITOBSF	AITRECF	AITLOGF	AITSYSR
INTAKE MAN	IMANSENS	IMANCALF	IMANRECD	IMANOBSF	IMANRECF	IMANLOGF	IMANSYSR
PRE-TURB.	PTURSENS	PTURCALF	PTURRECD	PTUROBSF	PTURRECF	PTURLOGF	PTURSYSR
COOL. OUT	COTSENS	COTCALF	COTRECD	COTOBSF	COTRECF	COTLOGF	COTSYSR
Other							
FUEL FLOW	FFLOSENS	FFLOCALF	FFLORECD	FFLOOBSF	FFLORECF	FFLOLOGF	FFLOSYSR
ENGINE RPM	RPMSENS	RPMCALF	RPMRECD				
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 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 LAB	Start Date RDTSTRT/DTSTRT
Test Number STAND -RSTRUN/STRUN-ENGINE -RENHOURS/ENHOURS	Oil Code CMIR/OILCODE
T-8 Formulation/Stand Code: FORMT8	
T-8E Formulation/Stand Code: FORMT8E	

TIMING

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

PARTS

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

TEST METHOD D5967
FORM 9

OPERATIONAL DATA

Laboratory LAB	Start Date RDTSTRT/DTSTRT
Test Number STAND - RSTRUN/STRUN-ENGINE - RENHOURS/ENHOURS	Oil Code CMIR/OILCODE
T-8 Formulation/Stand Code: FORMT8	
T-8E Formulation/Stand Code: FORMT8E	

ENGINE SPEED (R/MIN) PLOT

TORQUE (N-M) PLOT

FUEL FLOW (KG/H) PLOT

AVERAGE PRE-TURBINE TEMPERATURE (°C) PLOT

TAILPIPE TEMPERATURE (°C) PLOT

TEST METHOD D5967
FORM 10

OPERATIONAL DATA

Laboratory LAB	Start Date RDTSTRT/DTSTRT
Test Number STAND - RSTRUN/STRUN-ENGINE - RENHOURS/ENHOURS	Oil Code CMIR/OILCODE
T-8 Formulation/Stand Code: FORMT8	
T-8E Formulation/Stand Code: FORMT8E	

COOLANT IN TEMPERATURE (℃) PLOT

COOLANT OUT TEMPERATURE (℃) PLOT

OIL TEMPERATURE (℃) PLOT

FUEL IN TEMPERATURE (℃) PLOT

TEST METHOD D5967
FORM 11

OPERATIONAL DATA

Laboratory LAB	Start Date RDTSTRT/DTSTRT
Test Number STAND - RSTRUN/STRUN-ENGINE - RENHOURS/ENHOURS	Oil Code CMIR/OILCODE
T-8 Formulation/Stand Code: FORMT8	
T-8E Formulation/Stand Code: FORMT8E	

INTAKE AIR TEMPERATURE (℃) PLOT

INTAKE MANIFOLD TEMPERATURE (℃) PLOT

OIL GALLERY PRESSURE (KPA) PLOT

OIL FILTER PRESSURE (KPA) PLOT

TEST METHOD D5967
FORM 12

OPERATIONAL DATA

Laboratory LAB	Start Date RDTSTRT/DTSTRT
Test Number STAND - RSTRUN/STRUN-ENGINE - RENHOURS/ENHOURS	Oil Code CMIR/OILCODE
T-8 Formulation/Stand Code: FORMT8	
T-8E Formulation/Stand Code: FORMT8E	

CRANKCASE PRESSURE (KPA) PLOT

EXHAUST PRESSURE (KPA) PLOT

INLET AIR RESTRICTION (KPA) PLOT

INTAKE MANIFOLD PRESSURE (KPA) PLOT

TEST METHOD D5967
FORM 13

Rotational Viscosity Analysis Summary

Laboratory LAB	Start Date RDTSTRT/DTSTRT
Test Number STAND - RSTRUN/STRUN-ENGINE - RENHOURS/ENHOURS	Oil Code CMIR/OILCODE
T-8 Formulation/Stand Code: FORMT8	
T-8E Formulation/Stand Code: FORMT8E	

Hours	Viscosity at 100 deg C (mPa-s)		Rate Index	
	Increasing	Decreasing	Increasing	Decreasing
TST_H000				
TST_H025				
TST_H050				
TST_H075				
TST_H100				
TST_H125				
TST_H150				
TST_H175				
TST_H200				
TST_H225				
TST_H250				
TST_H275				
TST_H300				