

**REPORT ON  
SEQUENCE IIIF EVALUATION**

VERSION *IIIF VERSION 20020725 BETA*

CONDUCTED FOR

CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC  
CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC

<i>C</i>	V = VALID
	I = INVALID
	N = RESULTS CANNOT BE INTERPRETED AS REPRESENTATIVE OF OIL PERFORMANCE (NON-REFERENCE OIL) AND SHALL NOT BE USED FOR MULTIPLE TEST ACCEPTANCE

<i>CC</i>	NR = Non-Reference Oil Test
	RO = Reference Oil Test

Test Number					
Test Stand	<i>CCCCC</i>	Stand Test Number	<i>CCCC</i>	Lab Test Number	<i>CCCCC</i>
Oil Code	<i>CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC</i>				
Formulation/Stand Code	<i>CC-CCCCCCCCC-C-C-CCCCC-CC-CC-CCCC</i>				
Alternate Codes	<i>CCCCCCCCCCCCCCCC</i>	<i>CCCCCCCCCCCCCCCC</i>	<i>CCCCCCCCCCCCCCCC</i>	<i>CCCCCCCCCCCCCCCC</i>	<i>CCCCCCCCCCCCCCCC</i>
EOT Date	<i>YYYYMMDD</i>	EOT Time	<i>HH:MM</i>		

In my opinion this test *CCCCC* been conducted in a valid manner in accordance with the latest draft of Sequence IIIF procedure and the appropriate amendments through the information letter system. The remarks included in the report describe the anomalies associated with this test.

SUBMITTED BY: *CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC*

Testing Laboratory

*Signature Image*

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Signature

*CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC*

Typed Name

*CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC*

Title

**SEQUENCE IIIF  
FORM 4  
TEST RESULT SUMMARY**

LAB	CC	OIL CODE	CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC
TEST STAND NO.	CCCCC	TEST NO.	CCCCC - CCCC - CCCCC
LABORATORY OIL CODE	CCCCCCCCCCCCCCCCCCCC		
FORMULATION STAND CODE	CC-CCCCCCCCC-C-C-CCCCC-CC-CC-CCCC		

DATE STARTED	YYYYMMDD	ENGINE NO.	CCCCCCCCCCCCCCCC
TIME STARTED	HH:MM	FUEL BATCH	CCCCCCCCCCCCCCCC
DATE COMPLETED	YYYYMMDD	SAE VISCOSITY	CCCCCCC
TIME COMPLETED	HH:MM	TMC OIL CODE	CCCCCCC
TEST LENGTH	S1234		

Pass/Fail Results						
	Viscosity Increase (%)	Screened Average Cam + Lifter Wear (µm)	Average Weighted Piston Deposits (merits)	Average Piston Skirt Varnish (merits)	Number of Hot-Stuck Rings	Oil Consumption (L) <sup>B</sup>
Original Units	S1234.12	S1234.1	S12.12	S12.12	S12	S12.12
Transformed Results	S12.123456					
Industry Correction Factor	S12.123456	S1.1234	S1.1234	S1.1234		
Corrected Transformed Result	S12.123456					
Severity Adjustment	S12.123456		S1.1234	S1.1234		
Final Transformed Result	S12.123456					
Final Original Unit Result	S1234.1	S1234.1	S12.12	S12.12		

Additional Results			
Oil Consumption Hours, h <sup>B</sup>	S12	Average Oil Ring Plugging, %	S1234
Maximum Cam + Lifter Wear, µm	S12345	Number of Cold-Stuck Rings	S12
Average Cam + Lifter Wear, µm	S1234.1		

Most Recent Stand Reference Oil Test History <sup>C</sup>			
Test Number	CCCCC - CCCC - CCCCC		
Oilcode	CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC		
Date Completed	YYYYMMDD	TMC Oil Code	CCCCCC
Final Viscosity Increase, %	S1234.1	Fuel Batch	CCCCCCCCCCCCCCCC
Final Average Piston Skirt Varnish, merits	S12.12		
Final Average Cam + Lifter Wear, µm	S123.1		
Final Maximum Cam + Lifter Wear, µm	S12345		
Final Average Weighted Piston Deposit, merits	S12.12		

<sup>A</sup> Reference Oil Tests Only

<sup>B</sup> Test Hours at which Oil Consumption was calculated

<sup>C</sup> Non-Reference Oil Tests Only

**SEQUENCE IIIF  
FORM 5  
OPERATIONAL SUMMARY**

LAB	CC	OIL CODE	CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC
TEST STAND NO.	CCCCC	TEST NO.	CCCCC - CCCC - CCCCC
LABORATORY OIL CODE	CCCCCCCCCCCCCCCCCCCC		
FORMULATION STAND CODE	CC-CCCCCCCCC-C-C-CCCCC-CC-CC-CCCC		

	Parameter	Units	QI Threshold	EOT QI	Target	Average	Standard Deviation	Number Of	
								Samples	BQD
Controlled Parameters	Speed	r/min	0.000	S12.123	3600	S12345	S12.123	S12345	S12345
	Load	Nm	0.000	S12.123	200	S12345	S12.123	S12345	S12345
	Oil Filter Block	°C	0.000	S12.123	155.0	S12345	S12.123	S12345	S12345
	Engine Coolant Out	°C	0.000	S12.123	122.0	S123.1	S12.123	S12345	S12345
	Condenser Coolant Out	°C	0.000	S12.123	40.0	S123.1	S12.123	S12345	S12345
	Left Air-to-Fuel Ratio		0.000	S12.123	15.0	S12.1	S12.123	S12345	S12345
	Right Air-to-Fuel Ratio		0.000	S12.123	15.0	S12.1	S12.123	S12345	S12345
	Left Exhaust Back Pressure	kPa	0.000	S12.123	6.0	S1.12	S12.123	S12345	S12345
	Right Exhaust Back Pressure	kPa	0.000	S12.123	6.0	S1.12	S12.123	S12345	S12345
	Intake Air	kPa	0.000	S12.123	0.05	S1.12	S12.123	S12345	S12345
	Engine Coolant Flow	L/min	0.000	S12.123	160.0	S123.1	S12.123	S12345	S12345

	Parameter	Units	Average	Standard Deviation	Number Of	
					Samples	BQD
Non-controlled Parameters	Oil Sump	°C	S123.1	S12.123	S12345	S12345
	Pump Outlet Pressure	kPa	S123.1	S12.123	S12345	S12345
	Gallery Pressure	kPa	S1234	S12.123	S12345	S12345
	Engine Coolant In	°C	S1234	S12.123	S12345	S12345
	Fuel Inlet	°C	S12345	S12.123	S12345	S12345
	Intake Air	°C	S12345	S12.123	S12345	S12345
	Intake Air Dew Point	°C	S123.1	S12.123	S12345	S12345
	Intake Vacuum	kPa	S12345	S12.123	S12345	S12345
	Crankcase	kPa	S1.123	S12.123	S12345	S12345
	Fuel Pressure	kPa	S1234	S12.123	S12345	S12345

OIL CONSUMPTION DATA									
HOURS	Initial Run-in	S12	S12	S12	S12	S12	S12	S12	S12
LEVEL (ml) low	S123	S123	S123	S123	S123	S123	S123	S123	S123

NOx Measurement			
Hours	S12	S12	S12
NOx, ppm	S12345	S12345	S12345

**SEQUENCE III F  
FORM 6  
USED OIL ANALYSIS RESULTS**

LAB	CC	OIL CODE	CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC
TEST STAND NO.	CCCCC	TEST NO.	CCCCC - CCCC - CCCCC
LABORATORY OIL CODE	CCCCCCCCCCCCCCCCCCCC		
FORMULATION STAND CODE	CC-CCCCCCCCC-C-C-CCCCC-CC-CC-CCCC		

<b>VISCOSITY INCREASE DATA (cSt AT 40°C)</b>			
HOURS	VISCOSITY <sup>A</sup>	CHANGE	PERCENT
NEW OIL	S1234.12		
INITIAL <sup>B</sup>	S1234.12		
S12	S1234.12	S1234.12	S1234.12
S12	S1234.12	S1234.12	S1234.12
S12	S1234.12	S1234.12	S1234.12
S12	S1234.12	S1234.12	S1234.12
S12	S1234.12	S1234.12	S1234.12
S12	S1234.12	S1234.12	S1234.12
S12	S1234.12	S1234.12	S1234.12
S12	S1234.12	S1234.12	S1234.12
S1234	S1234.12	S1234.12	S1234.12

<sup>A</sup> 8000 cSt is maximum allowable viscosity

<sup>B</sup> At end of leveling run

<b>Results of ICP Analysis of Used Oil</b>										
Test Hours	Initial	S12	S12	S12	S12	S12	S12	S12	S12	S1234
Iron	S12345	S12345	S12345	S12345	S12345	S12345	S12345	S12345	S12345	S12345
Copper	S12345	S12345	S12345	S12345	S12345	S12345	S12345	S12345	S12345	S12345
Lead	S12345	S12345	S12345	S12345	S12345	S12345	S12345	S12345	S12345	S12345

<b>Cold Crank Simulator Results, D 5293</b>	
Final Temperature, °C	S12
Final Cold-Crank Simulator Viscosity, cP	S12345

<b>Mini-Rotary Viscometer Results, D 4684</b>	
MRV Temperature, °C	S12
MRV Result, cP	S12345
Yield Stress, cP	S123

**SEQUENCE IIIF  
FORM 7  
VALVE LIFTER AND CAMSHAFT WEAR RESULTS**

LAB	CC	OIL CODE	CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC
TEST STAND NO.	CCCCC	TEST NO.	CCCCC - CCCC - CCCCC
LABORATORY OIL CODE	CCCCCCCCCCCCCCCCCCCC		
FORMULATION STAND CODE	CC-CCCCCCCCC-C-C-CCCCC-CC-CC-CCCC		

NUMBER	CAMSHAFT LOBE, $\mu\text{m}$	VALVE LIFTER, $\mu\text{m}$	CAM & LIFTER WEAR, $\mu\text{m}$
1	S1234	S1234	S1234
2	S1234	S1234	S1234
3	S1234	S1234	S1234
4	S1234	S1234	S1234
5	S1234	S1234	S1234
6	S1234	S1234	S1234
7	S1234	S1234	S1234
8	S1234	S1234	S1234
9	S1234	S1234	S1234
10	S1234	S1234	S1234
11	S1234	S1234	S1234
12	S1234	S1234	S1234
MAXIMUM	S1234	S1234	S12345
MINIMUM	S1234	S1234	S12345
AVERAGE	S1234	S1234	S1234.1

Screened Average Cam + Lifter Wear <sup>A</sup>	S1234.1
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<sup>A</sup> Average Cam + Lifter wear based on ten positions, excluding minimum and maximum positions.

**SEQUENCE IIIF**  
**FORM 8**  
**SUMMARY OF OIL RING LAND DEPOSIT RATING**

LAB	CC	OIL CODE	CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC
TEST STAND NO.	CCCCC	TEST NO.	CCCCC - CCCC - CCCCC
LABORATORY OIL CODE	CCCCCCCCCCCCCCCCCCCC		
FORMULATION STAND CODE	CC-CCCCCCCCC-C-C-CCCCC-CC-CC-CCCC		
RATER	CCC	RATING DATE	YYYYMMDD

PISTON	OIL RING LAND DEPOSIT, MERITS	% CHIPPED
1	<i>S12.12</i>	<i>S1234</i>
2	<i>S12.12</i>	<i>S1234</i>
3	<i>S12.12</i>	<i>S1234</i>
4	<i>S12.12</i>	<i>S1234</i>
5	<i>S12.12</i>	<i>S1234</i>
6	<i>S12.12</i>	<i>S1234</i>
Average	<i>S12.12</i>	<i>S1.12</i>

PISTON	% OIL RING PLUGGING	RING STICKING <sup>A</sup>	
		HOT-STUCK RINGS	COLD-STUCK RINGS
1	<i>S1234</i>	<i>CCC</i>	<i>CCC</i>
2	<i>S1234</i>	<i>CCC</i>	<i>CCC</i>
3	<i>S1234</i>	<i>CCC</i>	<i>CCC</i>
4	<i>S1234</i>	<i>CCC</i>	<i>CCC</i>
5	<i>S1234</i>	<i>CCC</i>	<i>CCC</i>
6	<i>S1234</i>	<i>CCC</i>	<i>CCC</i>
Total		<i>S12</i>	<i>S12</i>
Average	<i>S1234</i>		

<sup>A</sup> Possible values T = top compression ring  
B = bottom compression ring  
O = oil ring  
N = none

**SEQUENCE III F  
FORM 9  
SUMMARY OF PISTON DEPOSITS**

LAB	CC	OIL CODE	CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC
TEST STAND NO.	CCCCC	TEST NO.	CCCCC - CCCC - CCCCC
LABORATORY OIL CODE	CCCCCCCCCCCCCCCCCCCC		
FORMULATION STAND CODE	CC-CCCCCCCCC-C-C-CCCCC-CC-CC-CCCC		
RATER	CCC	RATING DATE	YYYYMMDD

**NOTE: CRC Manual 14 used for ALL Ratings**

NOTE: These are unweighted ratings.

	Grooves, merits			Lands, merits		Undercrown, merits
	1	2	3	2	3	
Piston 1	<i>S12.12</i>	<i>S12.12</i>	<i>S12.12</i>	<i>S12.12</i>	<i>S12.12</i>	<i>S12.12</i>
Piston 2	<i>S12.12</i>	<i>S12.12</i>	<i>S12.12</i>	<i>S12.12</i>	<i>S12.12</i>	<i>S12.12</i>
Piston 3	<i>S12.12</i>	<i>S12.12</i>	<i>S12.12</i>	<i>S12.12</i>	<i>S12.12</i>	<i>S12.12</i>
Piston 4	<i>S12.12</i>	<i>S12.12</i>	<i>S12.12</i>	<i>S12.12</i>	<i>S12.12</i>	<i>S12.12</i>
Piston 5	<i>S12.12</i>	<i>S12.12</i>	<i>S12.12</i>	<i>S12.12</i>	<i>S12.12</i>	<i>S12.12</i>
Piston 6	<i>S12.12</i>	<i>S12.12</i>	<i>S12.12</i>	<i>S12.12</i>	<i>S12.12</i>	<i>S12.12</i>
WF	0.05	0.10	0.20	0.15	0.30	0.10

NOTE: These are unweighted ratings.

	Piston Skirt Varnish, merits		
	Thrust	Anti-Thrust	Average
Piston 1	<i>S12.12</i>	<i>S12.12</i>	<i>S1.12</i>
Piston 2	<i>S12.12</i>	<i>S12.12</i>	<i>S1.12</i>
Piston 3	<i>S12.12</i>	<i>S12.12</i>	<i>S1.12</i>
Piston 4	<i>S12.12</i>	<i>S12.12</i>	<i>S1.12</i>
Piston 5	<i>S12.12</i>	<i>S12.12</i>	<i>S1.12</i>
Piston 6	<i>S12.12</i>	<i>S12.12</i>	<i>S1.12</i>
Average	<i>S12.12</i>	<i>S12.12</i>	<i>S12.12</i>
WF			0.10

PSVAV<sub>x</sub> = (PSVT<sub>x</sub> + PSVA<sub>x</sub>)/2 where x = Number of Piston  
 PSVTAV = average of six Thrust Piston Skirt ratings.  
 PSVAAV = average of six Anti-Thrust Piston Skirt ratings.  
 APV = average of all 12 Piston Skirt ratings.

	Total Weighted Deposits, merits
Piston 1	<i>S12.12</i>
Piston 2	<i>S12.12</i>
Piston 3	<i>S12.12</i>
Piston 4	<i>S12.12</i>
Piston 5	<i>S12.12</i>
Piston 6	<i>S12.12</i>

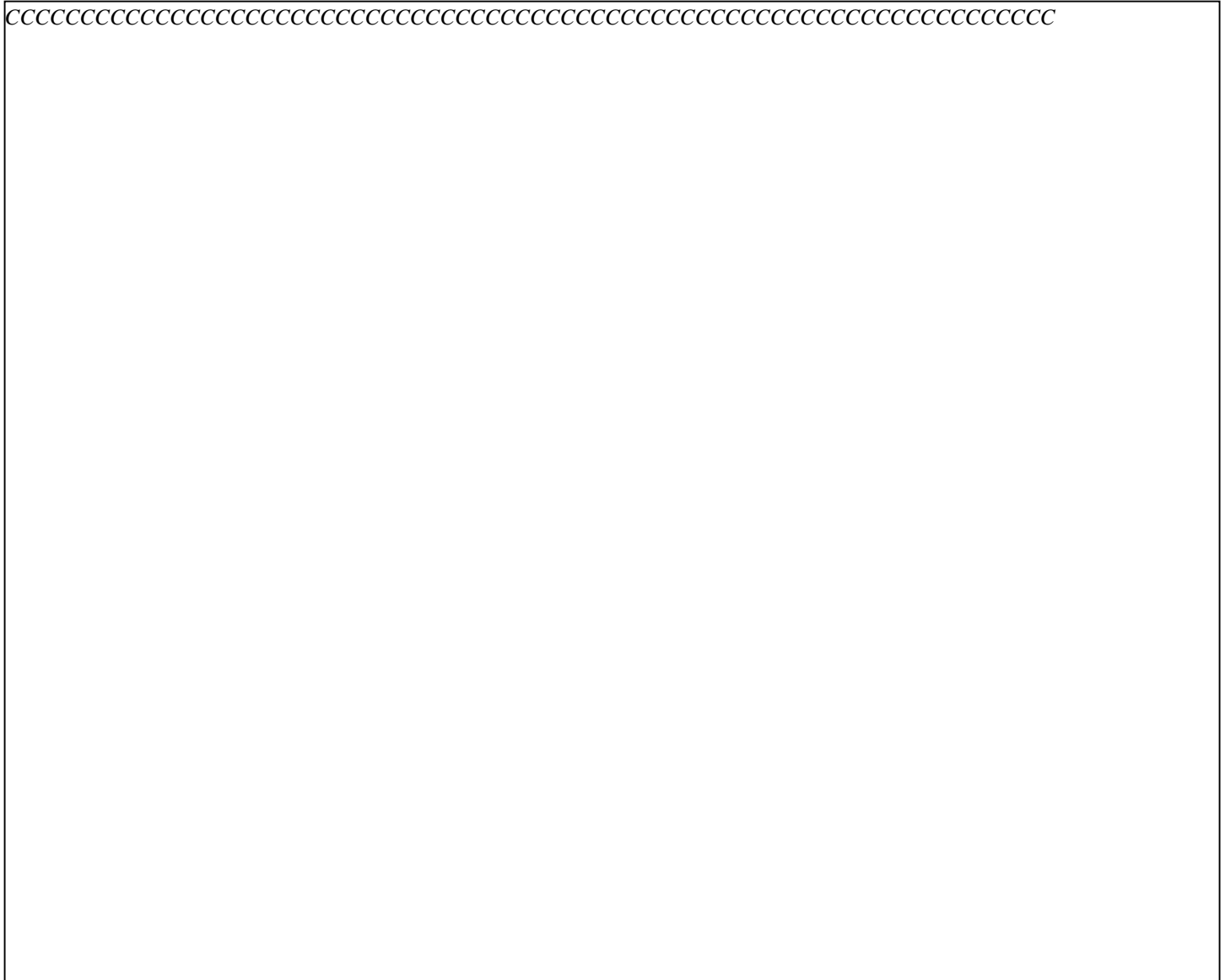
WPD<sub>x</sub>=(WF\*G1P<sub>x</sub>)+(WF\*G2P<sub>x</sub>)+(WF\*G3P<sub>x</sub>)+(WF\*L2P<sub>x</sub>)+(WF\*ORLD<sub>x</sub>)+(WF\*UCP<sub>x</sub>)+(WF\*PSVAV<sub>x</sub>)  
 where: x=Number of Piston  
 WF=Appropriate Weighting Factor (WF) for part, from table.

Average Weighted Piston Deposits, merits	<i>S12.12</i>	WPD=(WPD1+WPD2+WPD3+WPD4+WPD5+WPD6)/6
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**SEQUENCE IIIF  
FORM 10  
BLOWBY VALUES & PLOT**

LAB	CC	OIL CODE	CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC
TEST STAND NO.	CCCCC	TEST NO.	CCCCC - CCCC - CCCCC
LABORATORY OIL CODE	CCCCCCCCCCCCCCCCCCCC		
FORMULATION STAND CODE	CC-CCCCCCCCC-C-C-CCCCC-CC-CC-CCCC		

Blowby Plot



Test Hours	S12	S12	S12	S12	S12	S12	S12	S12	S12	S12
Blowby, L/min.	S12.1	S12.1	S12.1	S12.1	S12.1	S12.1	S12.1	S12.1	S12.1	S12.1
Test Hours	S12	S12	S12	S12	S12	S12	S12			Average
Blowby, L/min.	S12.1	S12.1	S12.1	S12.1	S12.1	S12.1	S12.1			S12.1





**SEQUENCE IIIF  
FORM 12  
HARDWARE INFORMATION**

LAB	CC	OIL CODE	CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC
TEST STAND NO.	CCCCC	TEST NO.	CCCCC - CCCC - CCCCC
LABORATORY OIL CODE	CCCCCCCCCCCCCCCCCCCC		
FORMULATION STAND CODE	CC-CCCCCCCCC-C-C-CCCCC-CC-CC-CCCC		

Build Completion Date	YYYYMMDD	Piston Batch (Code)	CCCCC
Block Serial Number	CCCCCC	Piston Size (Grade)	CC
Crankshaft Serial Number	CCCCC	Piston Ring Batch Code	CCCCC
Camshaft Serial Number	CCCCCC	Oil Filter Batch Code	CCCCC
Cylinder Head Serial Number, Left	CCCCCCCC	Intake Valve Seals Batch Code	CCCCC
Cylinder Head Serial Number, Right	CCCCCCCC	Valve Springs Batch Code	CCCCC
Bearing Kit Serial Number	CCCCCC	Lifter Serial Number	1 CCCCCCCC
Top Ring Gap, mils	S12		2 CCCCCCCC
Bottom Ring Gap, mils	S12		3 CCCCCCCC
			4 CCCCCCCC
			5 CCCCCCCC
			6 CCCCCCCC
			7 CCCCCCCC
			8 CCCCCCCC
			9 CCCCCCCC
			10 CCCCCCCC
			11 CCCCCCCC
			12 CCCCCCCC

