John Deere Coolant Cavitation Test Report Forms

Title / Validity Declaration Page

Version

Conducted For

	V = Valid
	I = Invalid
	N = Results cannot be interpreted as representative of coolant performance (Non-Reference Coolant) and shall not be used in determining an average test result using multiple test acceptance criteria.

	NR = Non-reference Coolant Test
	RO = Reference Coolant Test

Test Number			
Stand:	Stand Run No:	Engine No.:	Engine Run No.:
Date Completed:		End of Test Time:	
Coolant Code:			
Formulation/Stand Code:			
Alternate Codes:			

In my opinion this test been conducted in a valid manner in accordance with the ASTM Test Method D 7583 and the appropriate amendments through the Information Letter system. The remarks included in the report describe the anomalies associated with this test.

SUBMITTED BY

Testing Laboratory

Signature

Typed Name

Title

Form 2

John Deere Coolant Cavitation Test

Table of Contents

Form 3
John Deere Coolant Cavitation Test

Summary of Test Method

The John Deere Engine Coolant Cavitation Test Report Forms is a fired engine-dynamometer test which evaluates the ability of a heavy-duty engine coolant to provide protection against damage resulting from a phenomenon known as cylinder liner cavitation corrosion. This test method is a cyclic test, with a total running duration of 230 hours.

Each test is run for 230 hours, consisting of 54 cycles of 4 hours each. Each cycle consists of 3 stages. The stages of the test cycle are set at the following conditions:

Condition	**Low Idle**	**Peak Torque**	**Full Load**	**Over Speed**	**Fast Idle**
Duration, minutes	1.5	1	4	1	0.5
Engine Speed, r/min	900	1500	2100	2300	2500
Fuel Flow, kg/h	Report	Report	68	68	Report
Engine Torque, N-m	0	1680	1220	1080	0
Manifold Abs Press, kPa	≥ 1	≥ 70	≥ 70	≥ 70	≥ 55
Engine Oil In, ^{o}C	88	88	88	88	88
Engine Coolant Out, ^{o}C	63	70	73	72	70
Engine Coolant In, ^{o}C	56	66	63	61	61
Engine Coolant Pressure, kPa (gauge)	0	0	0	0	0
Fuel In Temperature, ^{o}C	41	40	40	41	41
Oil Gallery Temperature, ^{o}C	82	83	89	91	90
Intake Air Temperature, ^{o}C	20	20	20	20	20

Upon test completion, the engine is disassembled and rated for cylinder liner pitting.

Form 4
John Deere Coolant Cavitation Test
Test Result Summary: Non-Reference & Reference Coolant Tests

Laboratory:	Test Number:
Coolant Code:	
Formulation/Stand Code:	

Date Started:	Time Started:
Date Completed:	Time Completed:
Test Length:	Number of Valid Tests Since Stand Calibration [A]:
Industry TMC Coolant Code:	Laboratory Coolant Code:

[A] Non-Reference tests only, includes current test if valid.

Test Results	
	Liner Cavitation Pit Count
Original Result	
Transformed Result	
Industry Correction Factor[B]	
Corrected Transformed Result	
Severity Adjustment	
Final Transformed Result	
Final Original Unit Result	

[B] Currently no industry correction factors

Last Stand Reference Test Results	
Test Number	
TMC Coolant Code	
Date Completed	
Calibration Expiration Date	
	Liner Cavitation Pit Count
Final Original Unit Result	

Form 5
John Deere Coolant Cavitation Test
Test Result Breakdown

Laboratory:	Test Number:
Coolant Code:	
Formulation/Stand Code:	

Liner Part Number :

Pit Area Count					
Liner Number	**Front**	**Thrust**	**Rear**	**Anti-Thrust**	**Total**
1					
2					
3					
4					
5					
6					
				Total	

Form 6
John Deere Coolant Cavitation Test
Operational Summary

Laboratory:	Test Number:
Coolant Code:	
Formulation/Stand Code:	

	Parameter	Units	Stage	Target	QI	Average	Samples	BQD
Controlled Parameters	Engine Speed	r/min	20 Hr SS	2112				
			Low Idle	900				
			Peak Torque	1500				
			Full Load	2100				
			Over Speed	2300				
			Fast Idle	2500				
	Torque	Nm	20 Hr SS	766				
			Low Idle	0				
			Peak Torque	1680				
			Full Load	1220				
			Over Speed	1080				
			Fast Idle	0				
	Fuel Flow	kg/h	20 Hr SS	42				
			Low Idle	0				
			Peak Torque	40				
			Full Load	68				
			Over Speed	68				
			Fast Idle	45				
	Coolant Out	^{o}C	20 Hr SS	70				
			Low Idle	63				
			Peak Torque	70				
			Full Load	73				
			Over Speed	72				
			Fast Idle	70				
	Intake Manifold Air Temperature	^{o}C	20 Hr SS	100				
			Low Idle	93				
			Peak Torque	100				
			Full Load	100				
			Over Speed	100				
			Fast Idle	100				

Form 7
John Deere Coolant Cavitation Test
Analysis Results

Laboratory:	Test Number:
Coolant Code:	
Formulation/Stand Code:	

Coolant Analysis					
			Test Hours		
Analysis Parameter	**Method**	**Units**			**EOT**
Reserve Alkalinity	D1121	ml			
Freeze Point	D1177	°C			
Dilution	E202	**??**			
pH	D1287				
Boron	D5185	mg/kg			
Calcium					
Copper					
Iron					
Magnesium					
Molybdenum					
Lead					
Silicon					
Chlorine					
NO_2					
NO_3					
PHO_4					
SO_4					

Oil Analysis								
			Test Hours					
Analysis Parameter	**Method**	**Units**						**EOT**
Viscosity@100 °C	D445	m^2/s						
Aluminum	D5185	mg/kg						
Chrome								
Copper								
Iron								
Lead								
Wt. % Soot								

Average Oil Consumption, g/h	

Form 8
John Deere Coolant Cavitation Test

Downtime Occurrences

Laboratory:	Test Number:
Coolant Code:	
Formulation/Stand Code:	

Number of Downtime Occurrences			
Test Hours	Date	Downtime	Reasons
			Total Downtime

Form 8A
John Deere Coolant Cavitation Test

Downtime Occurrences

Laboratory:	Test Number:
Coolant Code:	
Formulation/Stand Code:	

Number of Downtime Occurrences			
Test Hours	Date	Downtime	Reasons
		Total Downtime	

Form 9
John Deere Coolant Cavitation Test

Other Comments

Laboratory:	Test Number:
Coolant Code:	
Formulation/Stand Code:	

Other Comments		
Number of Comment Lines		