

Diesel Engine Coolant Cavitation Test

Title / Validity Declaration Page

Conducted for

EVANS COOLING SYSTEMS, INC.

V	V = Valid; The Reference Coolant / Non-Reference Coolant was Evaluated in Accordance with the Test Procedure.
	I = Invalid; The Reference Coolant / Non-Reference Coolant was not Evaluated in Accordance with the Test Procedure.

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

Stand: 66	Stand Run No.: 31	Engine No.: 0842	Engine Run No.: 10
End of Test Date: 20090412		End of Test Time: 23:05	
Coolant Code: * EVANS WATERLESS HEAVY DUTY COOLANT			
Formulation / Stand Code: ^A			
Altcode1: ^B	Altcode2: ^B	Altcode3: ^B	

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

The results of this report relate only to the items tested.

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* CMIR or Non-Reference Coolant Code

^A ACC Registered Tests only

^B When Provided or Required by Client

Submitted by:

Southwest Research Institute (R)

Testing Laboratory

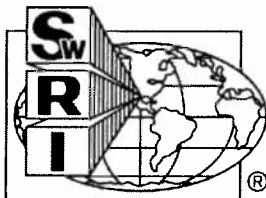
Perry Grosch
Signature

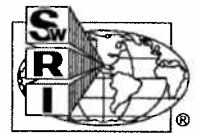
Perry Grosch

Typed Name

Senior Research Technologist

Title

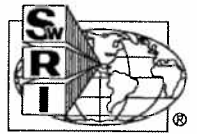




Summary of Key Performance Measurements

John Deere Engine Coolant Cavitation Test	
Formulation / Stand Code:	
Test Number: 66-31-0842-10	
Liner Cavitation Pit Area Total Count:	52

**Diesel Engine Coolant Cavitation Test
Test Results Comparison**



Laboratory: SR	EOT Date: 20090412	EOT Time: 23:05
Test Number: * 66-31-0842-10		
Coolant Code: EVANS WATERLESS HEAVY DUTY COOLANT		
Formulation / Stand Code:		

* Test Number is: Stand - Stand Run No. - Engine No. - Engine Run No.

Test Results	
Date Test Started	20090402
Start Time	14:05
Test Length	250 Hrs
TMC Coolant Code ^A	
Laboratory Coolant Code	
Liner Cavitation Pit Area Total Count	
Original Result	52
Correction Factor	31
Severity Adjustment	
Final Original Unit Result	21

^A Reference Oil Tests Only

Last Stand Reference Results		
Test Number	66-28-0842-7	
Coolant Code	JOHN DEERE COOL GUARD	
Test Length (hr)	250 Hrs	
TMC Coolant Code		
EOT Date	20081019	
EOT Time	7:24	
Calibration Expiration Date		
Liner Cavitation Pit Area Total Count		
Original Result	206	
Correction Factor		
Final Original Unit Result	206	

**Diesel Engine Coolant Cavitation Test
Test Results Summary**



Laboratory: SR	EOT Date: 20090412	EOT Time: 23:05
Test Number: * 66-31-0842-10		
Coolant Code: EVANS WATERLESS HEAVY DUTY COOLANT		
Formulation / Stand Code:		

* Test Number is: Stand - Stand Run No. - Engine No. - Engine Run No.

Liner Part Number
69X5011

Pit Area Count					
Liner Number	Front	Thrust	Rear	Ridge	Total
1	0	4	0	0	4
2	0	9	0	0	9
3	0	8	0	0	8
4	0	10	0	0	10
5	0	17	0	2	19
6	0	2	0	0	2
Total					52

Diesel Engine Coolant Cavitation Test Operational Summary



Laboratory: SR	EOT Date: 20090412	EOT Time: 23:05
Test Number: * 66-31-0842-10		
Coolant Code: EVANS WATERLESS HEAVY DUTY COOLANT		
Formulation / Stand Code:		

* Test Number is: Stand - Stand Run No. - Engine No. - Engine Run No.

Parameter	Specification	Average	Std. Dev.	Minimum	Maximum
Engine Speed, r/min (20 hr SS)	2,100 ± 15	2098.0	0.32	2097.0	2099.0
Torque, Nm (20 hr SS)	~762	781.5	2.18	773.1	802.8
Engine Speed, r/min (Low Idl)	>800	800.1	2.23	795.0	807.0
Torque, Nm (Low Idl)	~0	6.1	0.53	4.8	7.5
Engine Speed, r/min (Peak Trq)	~1,500	1502.4	0.67	1500.0	1504.0
Torque, Nm (Peak Trq)	>1,425	1653.6	17.17	1615.6	1698.9
Engine Speed, r/min (Full Load)	~2,100	2099.3	0.80	2097.0	2101.0
Torque, Nm (Full Load)	>1,200	1216.8	12.49	1193.4	1246.8
Fuel Flow, kg/hr (Full Load)	>61.0	68.1	0.22	67.1	68.7
Engine Speed, r/min (FL O-Spd)	~2,310	2328.9	0.87	2326.0	2330.0
Torque, Nm (FL O-Spd)	>795	859.6	18.91	824.0	899.0
Engine Speed, r/min (Fast Idl)	~2,625	2460.3	2.35	2455.0	2466.0
Torque, Nm (Fast Idl)	~0	13.4	0.65	11.8	14.9
Temperatures					
Coolant Out, C (20 hr SS)	70 ± 5	70.0	0.08	69.7	71.0
Coolant Out, C (Low Idl)	70 ± 5	62.0	0.83	60.0	71.6
Coolant Out, C (Peak Trq)	70 ± 5	75.2	0.96	72.6	77.6
Coolant Out, C (Full Load)	70 ± 5	70.0	0.81	69.3	73.2
Coolant Out, C (FL O-Spd)	70 ± 5	69.2	0.52	68.2	72.1
Coolant Out, C (Fast Idl)	70 ± 5	66.9	0.37	65.9	69.1
Intake Air, C (Low Idl)	29 ± 10	37.3	1.49	32.4	49.4
Intake Air, C (Peak Trq)	29 ± 10	34.2	1.74	29.4	38.0
Intake Air, C (Full Load)	29 ± 10	29.8	1.80	24.8	34.1
Intake Air, C (FL O-Spd)	29 ± 10	29.9	1.79	24.8	34.2
Intake Air, C (Fast Idl)	29 ± 10	31.4	1.68	26.6	35.8
Fuel, C (Low Idl)	~40	42.1	1.35	38.4	45.7
Fuel, C (Peak Trq)	~40	37.7	0.98	35.8	41.5
Fuel, C (Full Load)	~40	40.2	0.38	38.2	41.3
Fuel, C (FL O-Spd)	~40	40.7	0.28	39.8	41.8
Fuel, C (Fast Idl)	~40	41.2	0.35	40.1	42.3

