

General

In-line four stroke diesel engine with direct injection. Rotation direction, anti-clockwise viewed towards flywheel.

Turbocharged

Number of cylinders			6
Displacement, total		litre in ³	7,15 436,0
Firing order			1-5-3-6-2-4
Bore		mm in	108 4,25
Stroke		mm in	130 5,12
Compression ratio			18
Wet weight	Engine only	kg lb	780 1720
	Engine incl. cooling system and air filtration system	kg lb	955 2105
	Engine incl. cooling system, air filtration system, and frame	kg lb	

Performance

			rpm	1500	1800
Prime Power	without fan	kW		167	192
		hp		226	262
	with fan	kW		158	177
		hp		214	241
Standby Power	without fan	kW		183	212
		hp		249	288
	with fan	kW		174	196
		hp		237	267
Torque at:	Prime Power	Nm lbft		1060 782	1020 752
	Standby Power	Nm lbft		1166 860	1122 828
Mean piston speed		m/s ft/sec		6,5 21,4	7,8 25,7
	Effective mean pressure at:	Prime Power	MPa psi	1,9 270	1,8 260
Effective mean pressure at:	Standby Power	MPa psi		2,0 297	2,0 286
Max combustion pressure at:	Prime Power	MPa psi		14,8 2147	15,6 2263
Max combustion pressure at:	Standby Power	MPa psi		15,8 2292	17,3 2509
Total mass moment of inertia, J (mR ²)		kgm ² lbft ²		2,60 61,7	
Friction Power		kW hp		17 23,12	23 31,28
	Derating see Technical Diagrams				

Engine noise emission

Test Standards: ISO 3744-1981 (E) sound power (without fan, cooler, intake and exhaust noise)

Tolerance ± 0.75 dB(A)

		rpm	1500	1800
Measured sound power Lw	No load	dB(A)	101,4	103,3
	Prime Power	dB(A)	103,7	105,2
	Standby Power	dB(A)		
Calculated sound pressure Lp at 1 m	No load	dB(A)	87,5	89,4
	Prime Power	dB(A)	89,8	91,3
	Standby Power	dB(A)		

Unsilenced exhaust noise

Data calculated as sound pressure Lp.

Assumed microphone distance 1 m

	rpm	1500	1800
Prime Power	dB(A)	115,3	118
Standby Power	dB(A)		

Test conditions for load acceptance data

Warm engine.	Generator	Model	Type of AVR
	mecc alte	ECO 38-2SN/4	

Load acceptance performance can vary due to actual alternator inertia, voltage regulator, type of load and local ambient conditions.

Single step load performance at 1500 rpm

Load (%)	Speed diff (%)		Recovery time (s)		Remaining load (%)	Speed diff (%)		Recovery time (s)	
	Prime	Standby	Prime	Standby		Prime	Standby	Prime	Standby
0-20	1,7	2,0	1,4	1,1	20-100	6,8	7,3	2,7	2,6
0-40	3,5	3,7	2,4	2,5	40-100	5,1	5,7	2,5	2,7
0-60	5,1	5,3	2,3	2,1	60-100	4,3	3,8	2,8	3,2
0-80	6,6	10,5	3,2	3,4	80-100	1,7	1,8	2,4	1,1
0-100	9,2	11,1	3,9	3,6					
100-0	7,8	8,5	2,0	2,1					
100-0	7,8	8,5	2,0	2,1					

Single step load performance at 1800 rpm

Load (%)	Speed diff %		Recovery time (s)		Remaining load (%)	Speed diff (%)		Recovery time (s)	
	Prime	Standby	Prime	Standby		Prime	Standby	Prime	Standby
0-20	0,9	0,3	1,2	1,0	20-100	5,4	5,4	3,5	3,3
0-40	2,3	2,4	1,4	1,0	40-100	3,5	4,4	3,7	2,3
0-60	4,4	3,9	1,5	1,5	60-100	3,0	2,7	3,2	2,8
0-80	4,7	5,3	2,8	2,5	80-100	1,4	1,5	1,6	1,5
0-100	5,7	6,8	3,4	3,1					
100-0	5,9	6,0	6,0	3,2					
100-0	5,9	6,0	6,0	3,2					

Cold start performance

			rpm	1500	1800
Time from start to no load speed at ambient temperature:	°C	20	s	6,6	7,6
		5	s	7,0	8,4
		-15*	s	10,5	12,0
		Min start temp*	s	-30,0	-30,0
Time from start to stay within 0.5% of no load speed at ambient temperature:	°C	20	s	6,0	7,0
		5	s	6,2	7,7
		-15*	s	9,6	11,5

* With manifold heater kW engaged, lubrication oil 15W/40 and block heater.

Block heater type	Make	Power kW	Engaged hours	Cooling water temp engine block

Lubrication system

			rpm	1500	1800
Lubricating oil consumption	Prime Power	litre/h		0,05	0,05
		US gal/h		0,013	0,013
	Standby Power	litre/h		0,05	0,05
		US gal/h		0,013	0,013
Oil system capacity including filters			litre	34	
			US gal	8,9	
Oil sump capacity:	max	litre		31	
		US gal		8,1	
	min	litre		25	
		US gal		6,5	
Oil change intervals/specifications:			h	500	
			h		
			h		
Engine angularity limits:	front up		°	10	
	front down		°	10	
	side tilt		°	10	
Oil pressure at rated speed			kPa	300 - 500	
			psi	44 - 73	
Lubrication oil temperature in oil sump:	max		°C	125	
			°F	257	
Oil filter micron size			µ	17	

* See also general section in the sales guide

Fuel system

			rpm	1500	1800
Prime Power Specific fuel consumption at:	25%	g/kWh		242	265
		lb/hph		0,392	0,430
		g/kWh		229	228
		lb/hph		0,371	0,370
	75%	g/kWh		216	216
		lb/hph		0,350	0,350
		g/kWh		205	208
		lb/hph		0,332	0,337
Standby Power Specific fuel consumption at:	25%	g/kWh		244	255
		lb/hph		0,396	0,413
		g/kWh		232	236
		lb/hph		0,376	0,383
	75%	g/kWh		219	214
		lb/hph		0,355	0,347
		g/kWh		200	206
		lb/hph		0,324	0,334

Fuel system	rpm	1500	1800
Fuel to conform to	DIN EN590		
System supply flow at:	litre/h	164,0	197,0
	US gal/h	43,3	52,0
Fuel supply line max restriction (Measured at fuel inlet connection)	kPa	35,0	35,0
	psi	5,1	5,1
Fuel supply line max pressure, engine stopped	kPa	35,0	35,0
	psi	5,1	5,1
System return flow	litre/h	102,6	132,0
	US gal/h	27,1	34,9
Fuel return line max restriction (Measured at fuel return connection)	kPa	50,0	50,0
	psi	7,3	7,3
Maximum allowable inlet fuel temp (Measured at fuel inlet connection)	°C	70	70
	°F	158	158
Prefilter / Water separator micron size	μ	10	
Fuel filter micron size	μ	5	
Governor type/make, standard	EMS 2.2		
Injection pump type/make	PF45 Bosch		

Intake and exhaust system		rpm	1500	1800
Air consumption at: (+25°C and 100kPa)	Prime Power	m ³ /min cfm	10,5 371	12,2 431
	Standby Power	m ³ /min cfm	10,6 374	12,7 449
Max allowable air intake restriction including piping		kPa psi	5 0,7	5 0,7
Air filter restriction clean Volvo Penta filter		kPa psi	3 0,4	3 0,4
Heat rejection to exhaust at:	Prime Power	kW BTU/min	120 6824	132 7507
	Standby Power	kW BTU/min	137 7791	153 8701
Exhaust gas temperature after turbine at:	Prime Power	°C °F	420 788	440 824
	Standby Power	°C °F	450 842	460 860
Max allowable back pressure in exhaust line	Prime Power	kPa psi	7 1,0	7 1,0
	Standby Power	kPa psi	7 1,0	7 1,0
Exhaust gas flow at: (temp and pressure after turbine at the corresponding power setting)	Prime Power	m ³ /min cfm	29,2 1031	34,7 1225
	Standby Power	m ³ /min cfm	30,4 1074	37,8 1335

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TAD752GE

21813918**06****Cooling system****rpm 1500 1800**

Heat rejection radiation from engine at:	Prime Power	kW	17	19
		BTU/min	967	1081
	Standby Power	kW	20	22
		BTU/min	1115	1268
Heat rejection to coolant at:	Prime Power	kW	108	122
		BTU/min	6142	6938
	Standby Power	kW	112	129
		BTU/min	6352	7308
Coolant	Volvo Penta coolant "ready mix" or Volvo Penta coolant mixed with clean fresh water 40 / 60			
Radiator cooling system type	Closed circuit			
Standard radiator core area		m ²	0,65	
		foot ²	7,00	
Fan diameter		mm	870	
		in	34,25	
Fan power consumption		kW	8,8	15,2
		hp	12	21
Fan drive ratio			1,0:1	
Coolant capacity,	engine	litre	10	
		US gal	2,64	
	engine with std radiator and hoses	litre	34	
		US gal	8,98	
Coolant pump	drive/ratio		2,56:1	
Coolant flow with standard system		l/s	4,08	4,92
		US gal/s	1,08	1,30
Minimum coolant flow		l/s	3,3	3,9
		US gal/s	0,86	1,04
Maximum outer circuit restriction, including piping		kPa	3	4
		psi	0,5	0,6
Thermostat	start to open	°C	86	
		°F	187	
	fully open	°C	98	
		°F	208	
Maximum static pressure head (expansion tank height + pressure cap setting)		kPa	110	
		psi	16,0	
Minimum static pressure head (expansion tank height + pressure cap setting)		kPa	90	
		psi	13,1	
Standard pressure cap setting		kPa	100	
		psi	14,5	
Maximum top tank temperature		°C	108	
		°F	226	
Draw down capacity. The difference between min coolant level in the expansion tank and the lowest level where the engine's coolant system still are functioning		litre		
		US gal		

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Charge air cooler system		rpm	1500	1800
Heat rejection to charge air cooler	Prime Power	kW	26	29
		BTU/min	1456	1626
	Standby Power	kW	29	31
		BTU/min	1632	1740
Charge air mass flow	Prime Power	kg/s	0,21	0,24
	Standby Power	kg/s	0,23	0,28
Charge air inlet temp. (Charge air temp after turbo compressor)	Prime Power	°C	161	158
		°F	322	316
	Standby Power	°C	167	169
		°F	333	336
Charge air outlet temp. (Charge air temp after intercooler)	Prime Power	°C	40	40
		°F	104	104
	Standby Power	°C	40	40
		°F	104	104
Maximum pressure drop over charge air cooler incl. piping		kPa	15	
		psi	2,18	
Charge air pressure (After charge air cooler)		kPa	189	
		psi	27,41	
Standard charge air cooler core area		m ²	0,41	
		foot ²	4,41	

Cooling performance

Cooling air flow and external restriction at different radiator air temperatures based on 108°C TTT and 40% coolant. Valid at 1 atm. (radiator and cooling fan, see optional equipment)

Engine speed rpm	Air on temp °C	PRIME POWER		STANDBY POWER	
		Air flow m ³ /s	External restriction Pa	Air flow m ³ /s	External restriction Pa
1500	60	3,5	400	3,8	350
	65	4,1	220	4,3	160
	69			4,9	0
	70	4,9	0		
1800	65	4,5	450	4,8	410
	70	5,5	200	5,6	170
	72			6,1	0
	73	6,1	0		

Note! External restrictions are calculated for values >0 Pa

Engine management system

Functionality	Alternatives	Default setting
Governor mode	Isochronous/droop switchable	Isochronous
Governor droop	1rpm/10Nm - 1rpm/127Nm	1rpm/25Nm
Governor response	N/A	N/A
Dual speed		
Idle speed	550-800 rpm	600 rpm
Fine speed adjustment		
Stop function	Energized to run / stop	Energized to stop
Preheating function	ON/OFF	Option
Lamp test	ON/OFF	ON

Engine sensor and switch settings

Parameter	Unit	Warning level	Alarm level	Engine protection		
		Yellow lamp	Red lamp	Level	Action. Default/Alternative	
Oil temp	°C	125	130	130,0	Shut down.	
Oil pressure	Low idle	kPa	90	80	80	Shut down
	1500 rpm	kPa	200	170	170	Shut down
	1800 rpm	kPa	230	200	200	Shut down
Oil level						
Piston cooling pressure >1000 rpm	kPa					
Coolant temp	°C	109	114	114	Shut down.	
Coolant level		On		Low level	Shut down.	
Fuel feed pressure	Low idle	kPa				
	>1400 rpm					
Water in fuel						
Crank case pressure	kPa					
Air filter pressure droop	kPa					
Altitude, above sea	m	Automatic derating, see section derating				
Charge air temp	°C	75	80	80	shut down	
Charge air pressure	kPa	340	350	350	shut down	
Engine speed	rpm	115% of rated speed				

Engine protection can be disabled. For consequences please see VP International Limited Warranty Policy

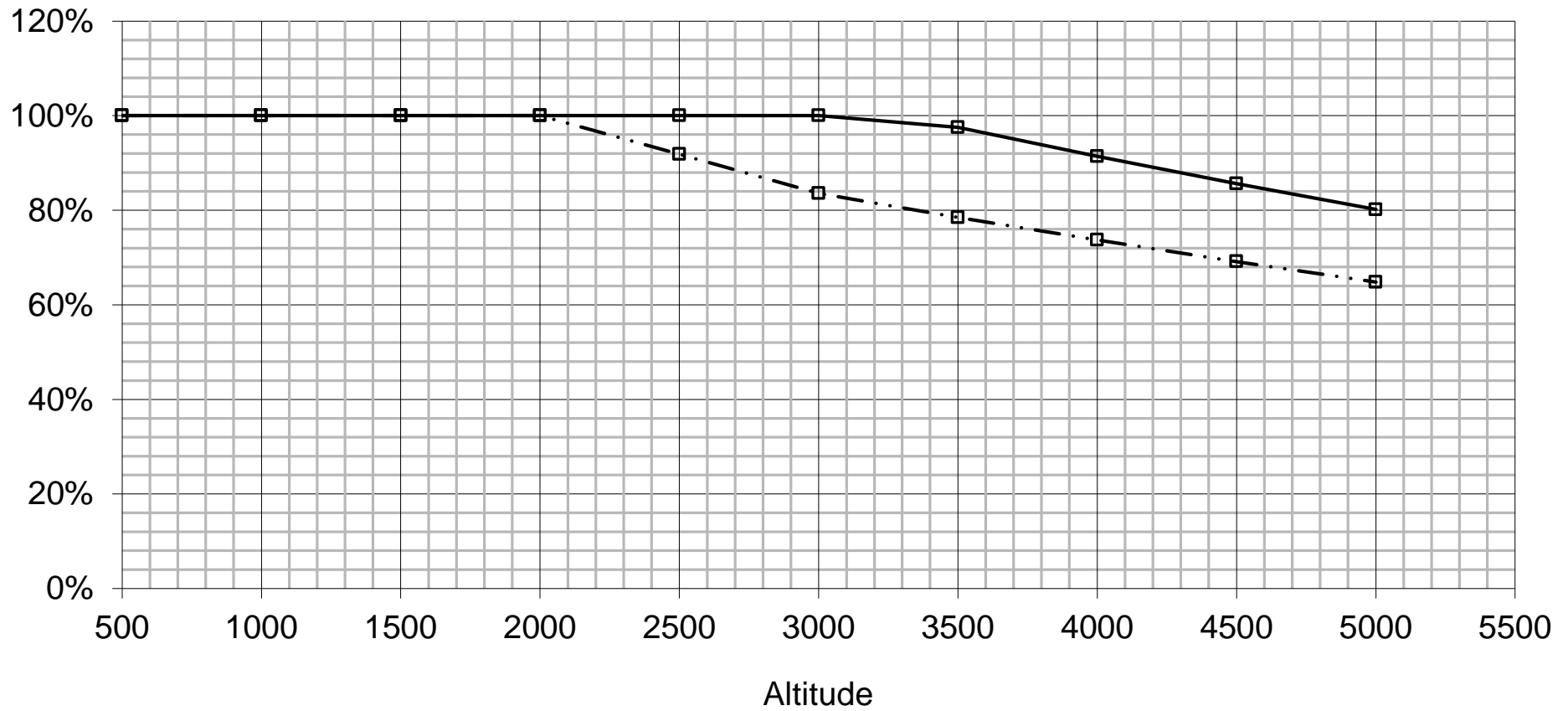
Electrical system

Voltage and type		24V	
Alternator:	make/output	A	Mitsubishi/100
	tacho output	Hz/alt. Rev	
	drive ratio		
Starter motor	make	Mitsubishi	
	type	M008T62471	
	kW	5,0	
Number of teeth on:	flywheel	129	
	starter motor	10	
Max wiring resistance main circuit		mΩ	
Cranking current at +20°C		A	400
Crank engine speed at +20°C		rpm	200
Starter motor battery capacity:	max	Ah/A	135
	min at +5°C	Ah/A	
Inlet manifold heater (at 20 V)		kW	
Power relay for the manifold heater		A	2

Power take off**hp 214 241**

Front end in line with crank shaft max:		Nm	1200
		lbft	885
Front end belt pulley load. Direction of load viewed from flywheel side:	max left	kW	
		hp	
	max down	kW	
		hp	
	max right	kW	
		hp	
Timing gear at compressor PTO max:		Nm	187
		lbft	138
Speed ratio direction of rotation viewed from flywheel side		1,116 ccw	
Timing gear at servo pump PTO max:		Nm	
		lbft	
Speed ratio direction of rotation viewed from flywheel side			
Timing gear at hydraulic pump PTO max:		Nm	
		lbft	
Speed ratio direction of rotation viewed from flywheel side			
Max allowed bending moment in flywheel housing		Nm	≤ ± 3500
		lbft	≤ ± 2581
Max. rear main bearing load		N	5000
		lbf	1124,0

Derating

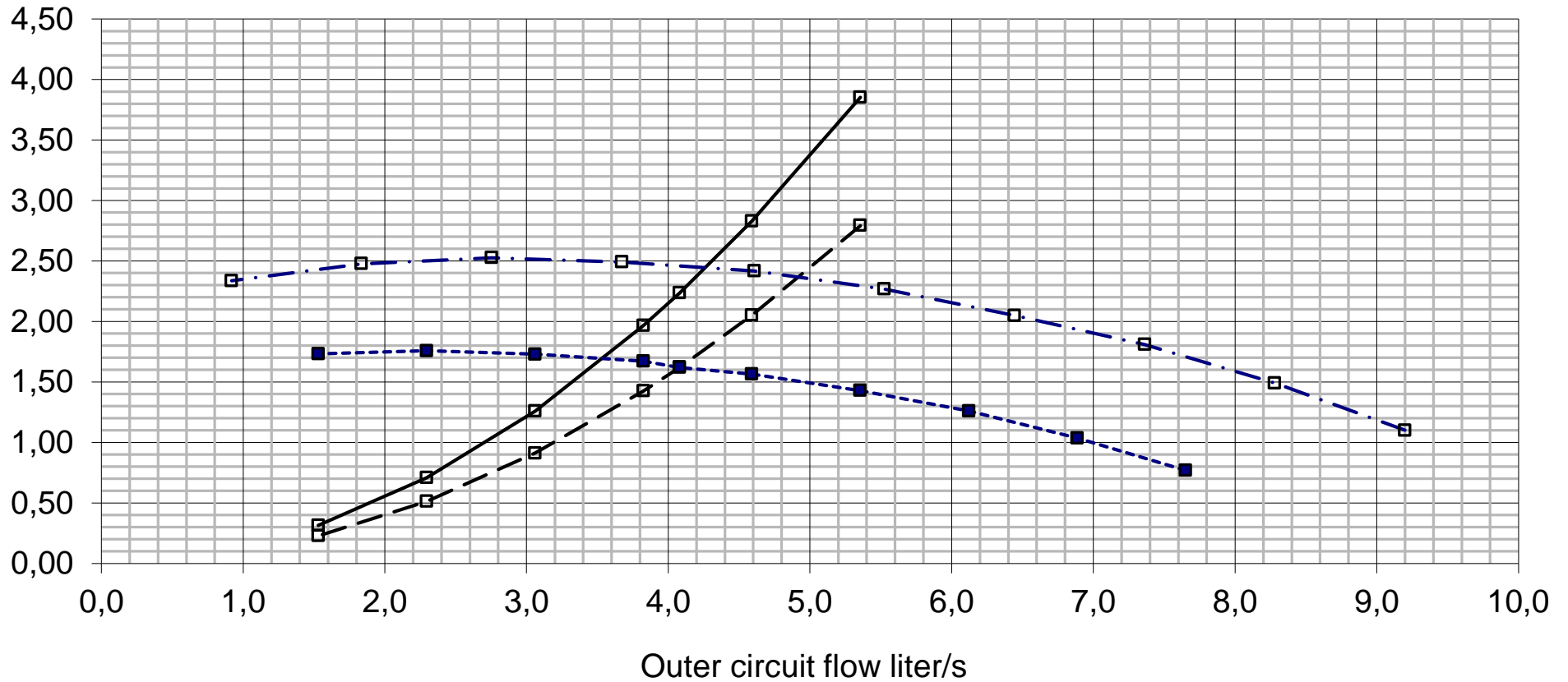


---□--- Prime Power 1500 rpm
—□— Standby Power 1500 rpm

—□— Prime Power 1800 rpm
—□— Standby Power 1800 rpm

Outer circuit
restriction bar

Outer circuit restriction versus coolant flow



—■— Max outer circuit restriction

-■- Std. Cooling system restriction

...■... Engine speed 1500 rpm

-■-· Engine speed 1800 rpm

