

Volvo Penta TAMD40B - Temperature Test

Comparison of healthy engine and problem engine under identical operating conditions

Test sequence: Both engines were started cold at 17.6 °C. From 8 minutes onward, both engines were running in gear at 700 rpm. The problem engine reached approximately 110 °C on the instrument at 30 minutes and triggered the temperature alarm.

1. Test Conditions

Starting temperature	17.6 °C - both engines	Measurement method	IR surface temperature + instrument
0-2 min	0 rpm -> 1000 rpm, neutral	4-6 min	600 rpm, neutral
From 8 min	700 rpm, both engines in gear	Test end	30 min / temperature alarm
After cooling	Coolant clean and clear	Level	Approx. 1 cm lower after the event

2. Measurement Results - Part 1 (0-8 min)

Time	Measurement point	Healthy engine °C	Problem engine °C	RPM	Operating condition
0 min	Thermostat housing	17.6	17.6	0	Stopped
	Water-cooled exhaust manifold	17.6	17.6		
	Engine block	17.6	17.6		
	Heat exchanger housing	17.6	17.6		
2 min	Thermostat housing	27.0	21.0	1000	Neutral
	Water-cooled exhaust manifold	30.4	32.4		
	Engine block	28.2	38.0		
	Heat exchanger housing	21.0	18.0		
4 min	Thermostat housing	35.8	30.8	600	Neutral
	Water-cooled exhaust manifold	33.8	45.8		
	Engine block	30.6	49.0		
	Heat exchanger housing	25.0	19.0		
	Instrument panel	approx. 45	approx. 45		
6 min	Thermostat housing	38.6	38.8	600	Neutral
	Water-cooled exhaust manifold	30.0	50.0		
	Engine block	33.8	53.8		
	Heat exchanger housing	26.6	21.2		
	Instrument panel	approx. 50	approx. 55		
8 min	Thermostat housing	43.4	46.0	700	In gear
	Water-cooled exhaust manifold	37.8	59.6		

Time	Measurement point	Healthy engine °C	Problem engine °C	RPM	Operating condition
	Engine block	37.0	61.0		
	Heat exchanger housing	30.0	24.8		
	Instrument panel	approx. 60	approx. 75		

Measurement Results - Part 2

Continuation: both engines in gear at 700 rpm

Time	Measurement point	Healthy engine °C	Problem engine °C	RPM	Operating condition
10 min	Thermostat housing	40.6	60.0	700	In gear
	Water-cooled exhaust manifold	37.8	69.0		
	Engine block	39.8	66.8		
	Heat exchanger housing	31.0	34.0		
	Instrument panel	approx. 60	approx. 85		
15 min	Thermostat housing	46.0	64.0	700	In gear
	Water-cooled exhaust manifold	39.0	70.0		
	Engine block	40.0	70.0		
	Heat exchanger housing	34.0	44.0		
	Instrument panel	approx. 65	approx. 95		
20 min	Thermostat housing	48.0	70.0	700	In gear
	Water-cooled exhaust manifold	40.0	77.0		
	Engine block	43.0	69.0		
	Heat exchanger housing	34.0	38.0		
	Instrument panel	approx. 70	approx. 98		
30 min	Thermostat housing	41.0	57.0	700	In gear
	Water-cooled exhaust manifold	35.0	64.0		
	Engine block	38.0	60.0		
	Heat exchanger housing	30.0	34.0		
	Instrument panel	approx. 70	approx. 110 / ALARM		

Important at 30 min: The instrument on the problem engine showed approximately 110 °C and the alarm sounded. Coolant splashed/was forced out at the filler opening.

The IR readings are surface temperatures and therefore cannot be compared 1:1 with the coolant temperature at the sensor.