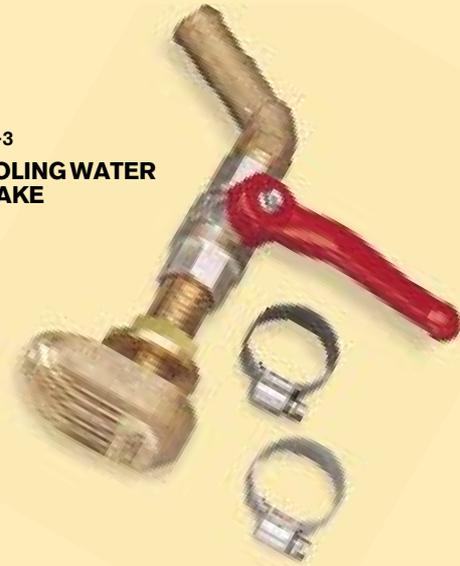


The cooling system is an extremely important part of the engine assembly. A correct working temperature contributes to a longer operational life-span of the engine and improved fuel economy. It is also important from a safety aspect. With a correctly dimensioned and correctly installed cooling system, overheating of the engine, unnecessary stoppages and expensive repairs due to engine failure, can be avoided.

26.1-3
COOLING WATER INTAKE



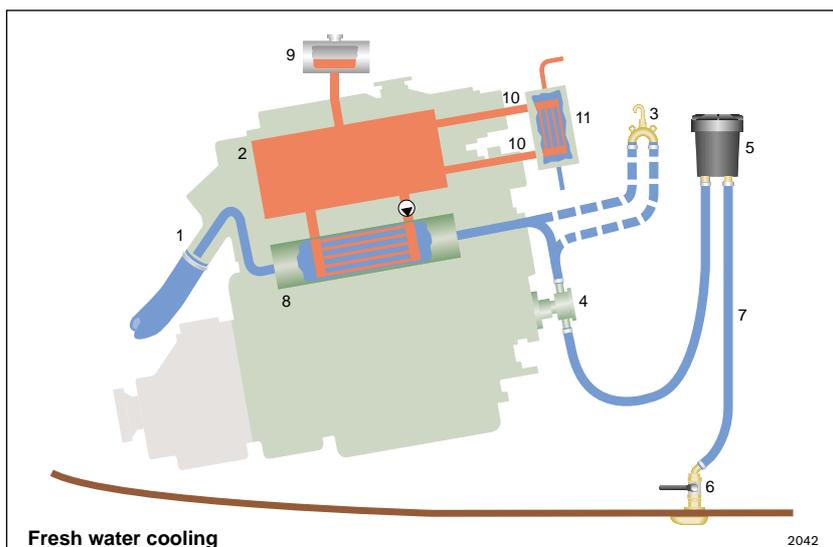
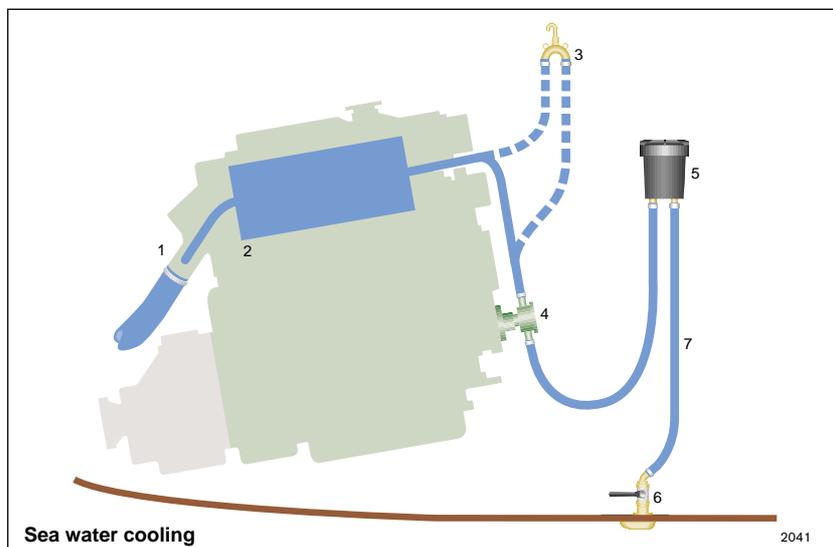
Cooling systems can be of two different types:

– **sea water cooled** (direct cooling), where sea water is directly pumped into the engine's cooling system and subsequently discharged via the exhaust system (wet exhaust systems) or via a separate discharge point for cooling water (for dry exhaust systems).

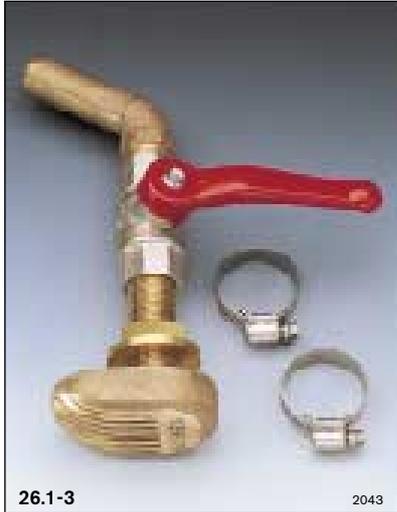
– **fresh water cooled** (indirect cooling) where the engine has its own closed loop cooling system similar to that of a motor car. The temperature of the engine coolant is reduced by being passed through a heat exchanger which is itself cooled by a supply of continuously pumped sea water. The sea water is discharged either via the exhaust, when used with a wet exhaust system, or via a separate outlet, when used with a dry exhaust system. Freshwater cooling has a number of advantages over sea water cooling, these being:

- Better comfort, i.e. availability of domestic hot water and onboard heating. More extensive usage.
- The anti-freeze and anti-corrosion agents contained within the coolant permit all year running. Should it be required to totally decommission the engine, the coolant channels can simply be filled with inhibitors.
- Reduced engine wear as a result of higher running temperatures.
- Extended engine life due to better corrosion protection.

It is a relatively simple operation to fit a fresh water cooling system to a sea water cooled engine.



- | | |
|-----------------------------|----------------------|
| 1. Exhaust bend, wet type | 7. Hose |
| 2. Engine cooling galleries | 8. Heat exchanger |
| 3. Vacuum valve | 9. Expansion tank |
| 4. Sea water pump | 10. Hot water outlet |
| 5. Sea water filter | 11. Hot water heater |
| 6. Cooling water intake | |



26.1-3

26.1-3 COOLING WATER INTAKE

The cooling water intake is a through-hull fitting with strainer-filter, installed through the bottom of the hull. For motor boats the filter should be directed forward. Once under way, the sea water is forced up into the system. However, for sailing boats, the filter should be directed towards the rear of the boat in order to prevent sea water being forced into the system when under sail with the engine shut down. When a motor boat is being towed, the shut-off valve must be closed.

The kit contains: Through-hull fitting with strainer-filter, fittings for pipe connection, shut-off valve, hose clips.

Pos.no.	Part no.	Hose diameter, mm
26.1	861495-0	19
26.2	861496-8	19
26.3	1140129-6	32



26.4

2046



26.5

2047

26.4 SEA WATER FILTER

Part no. 861462-0. The sea water filter should be installed in the cooling system's suction line above the water line. The filter effectively separates any impurities from the sea water and contributes to extending the service life of the engine. The filter element is simple to clean.

Material: Plastic container and filter
Connection: For rubber hose, 19 mm internal diameter
Height: 210 mm incl. hose connectors
Width: 130 mm
Depth: 130 mm
Rec. rubber hose: Part no. 952970-2 (26.13)

26.5 SEA WATER FILTER

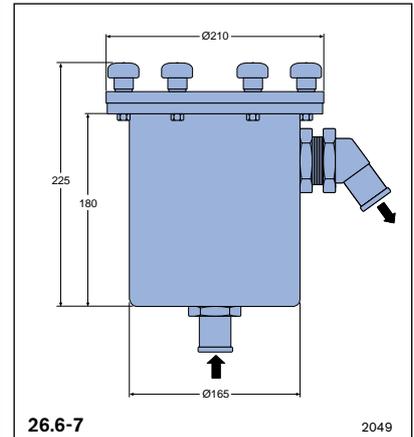
Part no. 858843-6. The sea water filter should be installed in the cooling system's suction line above the water line. The filter effectively separates any impurities from the sea water and contributes to extending the service life of the engine. The filter element is simple to clean.

Material: Plastic container and filter
Connection: For rubber hose, 32 mm internal diameter
Height: 210 mm incl hose connectors
Width: 210 mm
Depth: 220 mm
Rec. rubber hose: Part no. 828461-4 (26.15)



26.6-7

2048



26.6-7

2049

26.6 SEA WATER FILTER, HEAVY DUTY

Part no. 1140034-8. The sea water filter should be installed in the cooling system's suction line above the water line. The filter has a large capacity suitable for use in extremely dirty or muddy waters. The filter element is easily cleaned and is covered with a perspex cover for ease of inspection.

Material: Container and filter element in stainless steel
Volume: 4 litres
Hose connection: Hose int. dia 32 mm
Rec. rubber hose: Part no. 828461-4 (26.15)
The kit contains: Filter, fixture, hose connections.

26.7 SEA WATER FILTER, HEAVY DUTY

Part no. 862199-7. The sea water filter should be installed in the cooling system's suction line above the water line. The filter has a large capacity suitable for use in extremely dirty or muddy waters. The filter element is easily cleaned and is covered with a perspex cover for ease of inspection.

Material: Container and filter element in stainless steel
Volume: 4 litres
Hose connection: Hose int. dia 50 mm
The kit contains: Filter, fixture, hose connections.



26.8-9

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26.11-15

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26.8-9

VACUUM VALVE

For vessels with an engine installation at or below the water line a vacuum valve should be installed. The valve prevents siphonage occurring through the sea water intake, resulting in water ingress to the engine.

Material: Brass

The kit contains: Valve, stainless steel hose clips

Pos.no.	Part no.	Hose diameter, mm
26.8	861497-6	19
26.9	3581214-8	25.4

26.11-15

RUBBER HOSES

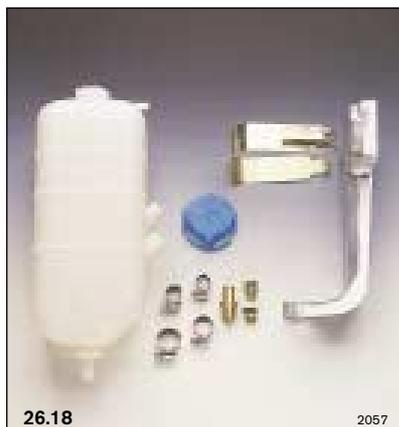
Volvo Penta rubber hoses are specifically designed for use with the engine's cooling system and are designed to withstand both suction and pressure.

Pos.no.	Part no.	Int. dia mm	Rec. stainless steel hose clips
26.11	952968-6	12.7	961665-7
26.12	952969-4	16.0	961665-7
26.13	952970-2	19.0	961666-5
26.14	952972-8	25.4	853548-6
26.15	828461-4	32.0	961669-9



26.16

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26.18

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26.16, 18

EXPANSION TANK

A separate expansion tank for engine coolant can be installed in an easily accessible position and thereby make checking and filling of the system considerably easier. The tank is manufactured of a semi-transparent material to enable the checking of the coolant level.

Material: Plastic

Installation: Max 1.2 metres above the highest point of the engine.

The kit contains: Tank, pressure cap, fittings for installation.

Pos.no.	Part no.
26.16	3581427-6
26.18	3581297-3

26.71-73

CONVERSION KIT FOR LARGER EXPANSION TANK

The conversion kit can be used to obtain an expansion tank of greater volume. The larger tank permits the installation of a coolant level alarm (38.82, 38.85).

Pos.no.	Part no.	Engine
26.71	3581195-9	31
26.72	3581196-7	41
26.73	3581197-5	42

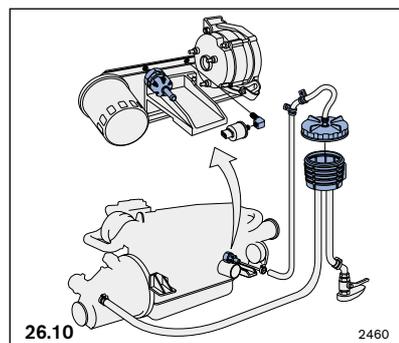
The larger expansion tank will be fitted as standard to the following engines:

31-series, engine no. 2203124985 (26.71) onwards
 41-series, engine no. 2204152514 (26.72) onwards
 42-series, engine no. 2204213232 (26.73) onwards



26.10

2461



26.10

2460

26.10

ANTI-SIPHONING VALVE WITH SEA WATER FILTER

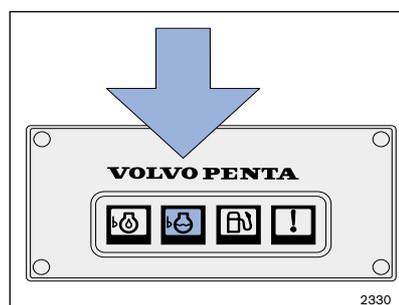
Part no. 3581591-9. Replaces the conventional vacuum valve.

- No more irritating water leaks
- Controlled sea water flow without risk of water penetrating into the engine
- Compact, easy-to-install system with integral sea water filter
- Eliminates complicated maintenance

The kit contains: 1 valve, 1 coupling, 1 sea water filter, 2 holders, installation instructions.

Note! Hose and hose clamps not included in kit.

Recommended hose/clamps from sea water intake: see 26.15. Recommended hose between valve and filter, part no. 943367-3, hose clamp, part no. 961664-0.



2330

Coolant level alarm - see 38.82, 85.



26.19

2059



26.24

2359

26.19-28, 39-40, 75, 77-78, 80-83 FRESHWATER COOLING

The kits are designed for modifying seawater-cooled engines for use with freshwater cooling. Refer also to the system description.

Pos.no.	Part no.	Engine
26.19	855641-7	For older V6/V8-engines, refer to 26.21, 26.22 for V6-engines
26.20	856480-9	740/DP engines
26.21	857437-8	Additional kit for 430/431B and 432/434A. ⁶⁾
26.22	856763-8	Additional kit for 430/431A
26.24	3851540-9	7.4GL, 8.2GL ⁴⁾
26.25	859388-1	2002, 2003 ¹⁾
26.26	829959-6	MD11C ²⁾
26.27	840602-7	MD11D
26.28	840603-5	MD17C, MD17D ³⁾
26.39	3851789-2	5.0FL, Fi, 5.8FL, Fi ⁵⁾
26.77	3857595-7	4.3GL, GS (MD, HU, NC, LK, BY, WT, EF) 4.3Gi (MD, HU, NC, LK, BY, WT) ⁴⁾
26.80	3860567-1	4.3Gi (EF)
26.78	3857596-5	5.0GL, GS, 5.7GL, GS (MD, HU, NC, LK, BY, WT, EF) 5.0Gi, GSi, 5.7Gi, GSi (MD, HU, NC, LK, BY, WT)
26.81	3860568-9	5.0Gi, GSi, 5.7Gi, GSi (EF)
26.40	3851839-5	7.4Gi (HU, NC, LK), 7.4GSi (HU, NC, LK, BY, WT), 8.2GSi (NC, LK, BY, WT) DPX385, DPX415 (NC, LK, BY, WT, EF) ⁴⁾
26.75	3857597-3	7.4Gi (BY, WT)
26.82	3860569-7	7.4Gi, GSi, 8.2GSi (EF)
26.83	3860972-3	8.1Gi, GSi

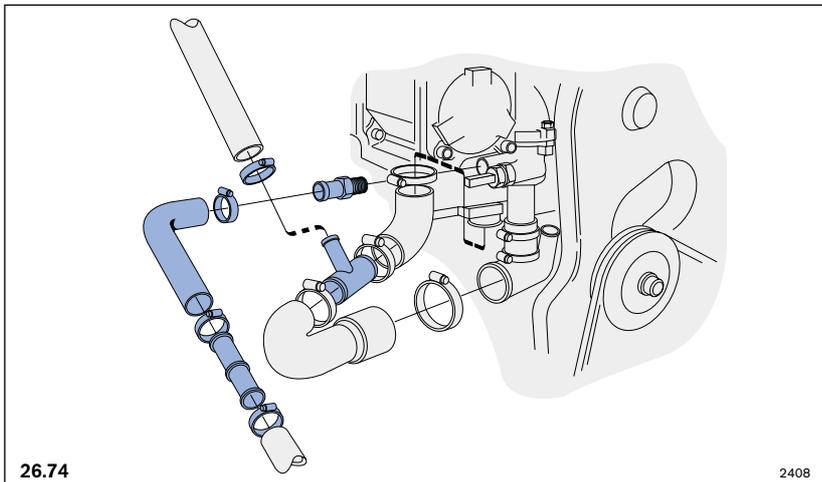
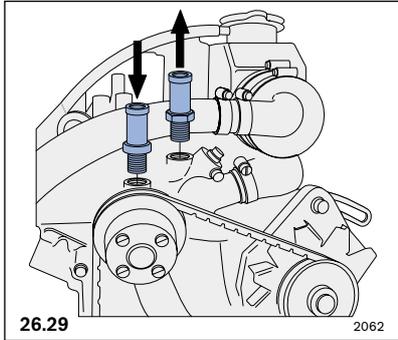
1) It is not possible to install this on 2003 in combination with a PRM Delta reverse gear.
2) A V-belt groove must be turned in the fly-wheel on engines with a serial number before 51376.

3) A belt drive, part no. 966929-2, is required for MD17C.

4) Increases the total length of the engine by approx. 15 mm.

5) Increases the total length by approx. 50 mm.

6) The following parts are also required for 430/431B-engines: one fuel line, part no. 857367-7, one bracket, part no. 857366-9 two screws, part no. 940115-9



26.38 THERMOSTAT

Part no. 855844-7. For fresh water cooled engines only. The thermostat should be installed in the line between the hot water outlet and the calorifier. This provides a more even engine temperature.

For hose 16 mm int. diameter.

A hot water connection is made to the engine cooling system which allows the hot coolant to circulate through a calorifier. The hot coolant heats up the water contained in the calorifier.

Instruments for the monitoring of coolant temperatures – see group 38.

26.29-37, 74, 76, 77 HOT WATER OUTLET

Heated water from the engine's cooling system is directed from the hot water outlet and allowed to circulate through a calorifier. This then provides a domestic hot water supply.

Recommended hose for engine/calorifier:
Hose, int. diameter 16 mm, part no. 952969-4 (26.12)

Recommended stainless steel hose clips:
part no. 961665-7

Recommended hose for domestic supply:
Hose, int. diameter 12.7 mm, part no. 952968-6 (26.11)

Recommended stainless steel hose clips:
part no. 961665-7

Pos.no.	Part no.
26.29	861523-9
26.30	859961-5
26.31	3856266-6
26.32	3855944-9
26.33	3856265-8
26.34	855876-9
26.36	860706-1
26.37	858523-4
26.74	3581632-1
26.76	3581633-9
26.77	3582398-8