C87 ENT M62.10

C87 ENT M65.10

C87 ENT M62.11

C87 ENT M65.11

Technical and Repair Manual

MAY 2012 EDITION

FPT
POWERTRAIN TECHNOLOGIES

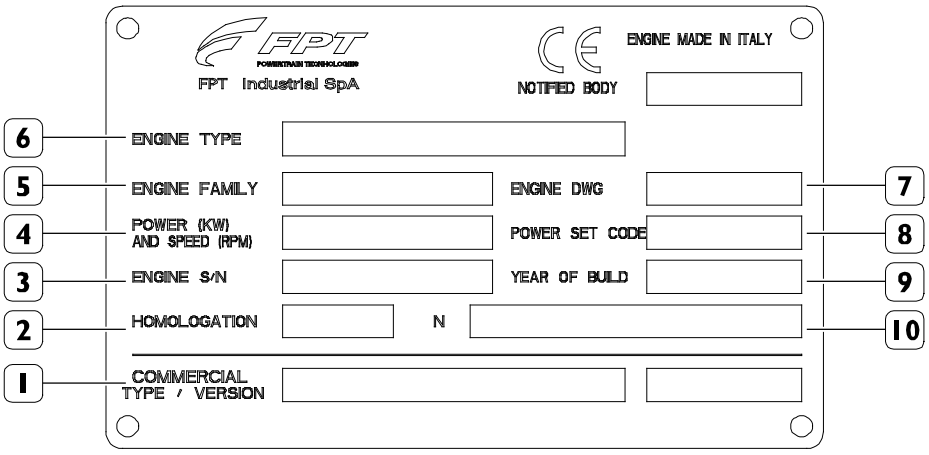
SECTION CONTENTS

SECTION 1

Overview

IDENTIFICATION DATA

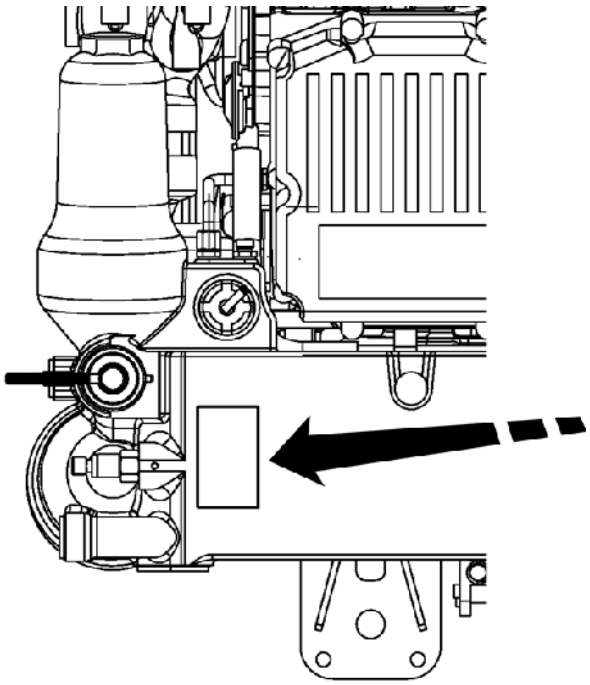
Figure 11



174575

1. Trade name/version - 2. Homologation - 3. Production serial number- 4. Maximum rated power - 5. Family of engines - 6. Trade name - 7. Design number- 8. Programming code - 9. Year of production - 10. Homologation number.

Figure 12



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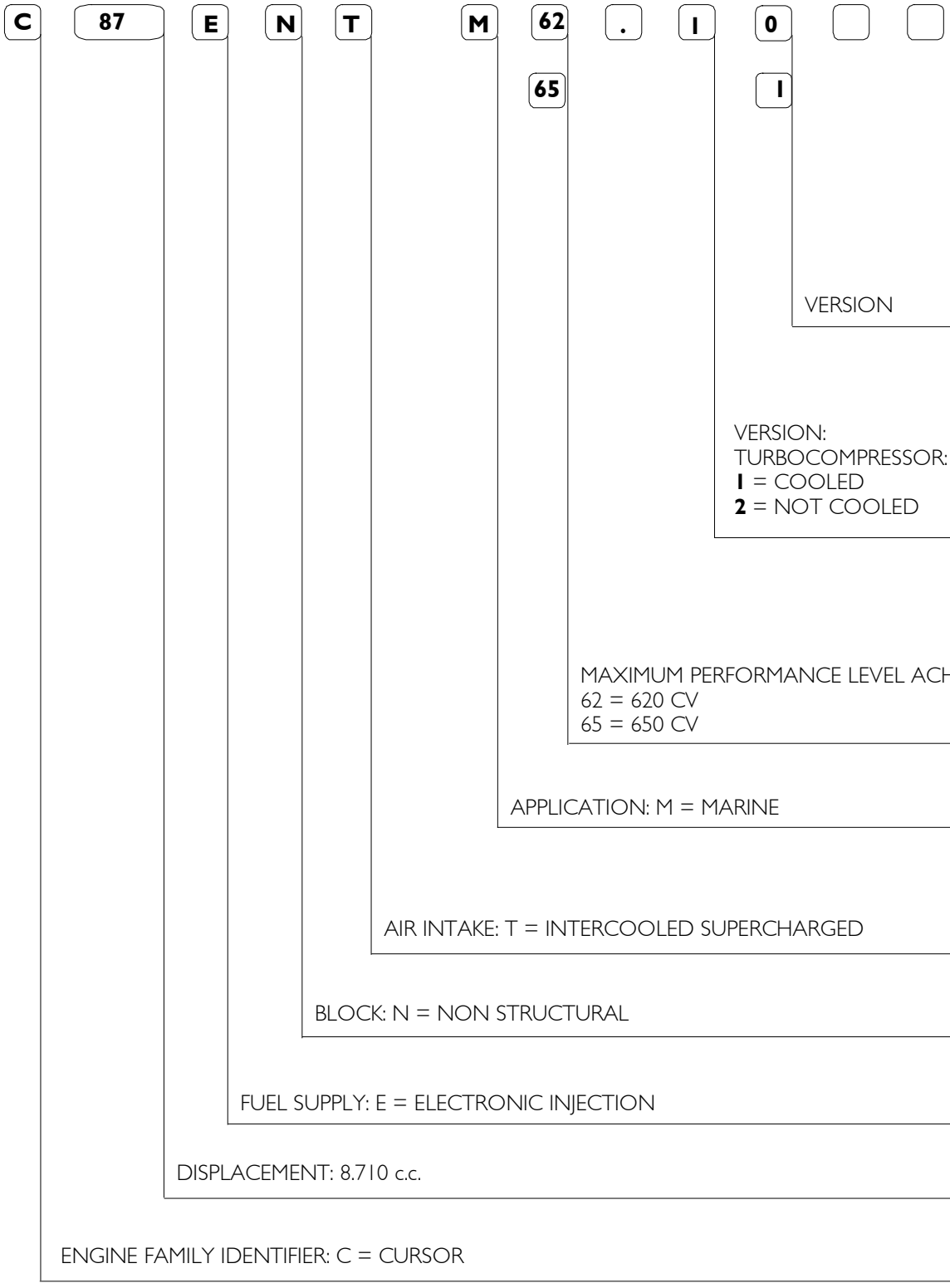
The engine identification data are stenciled on a tag positioned over the engine coolant tank

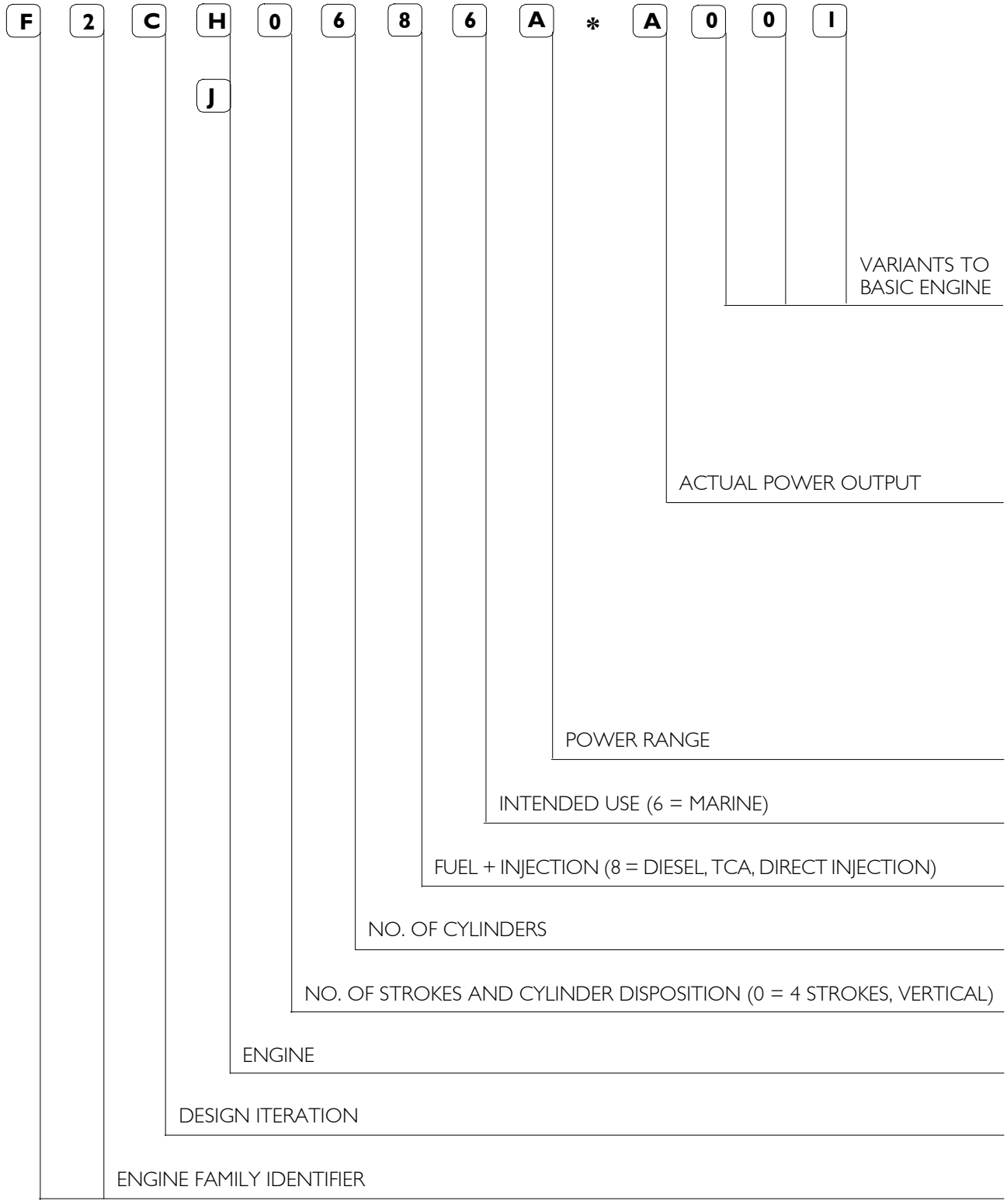
COMMERCIAL CODE

The purpose of the commercial code is to make it easier to understand the characteristics of the product, categorizing the engines according to their family, origins and intended application. The commercial code, therefore, cannot be used for technical purposes and to identify the engine's components, this is the purpose of the "ENGINE S/N".



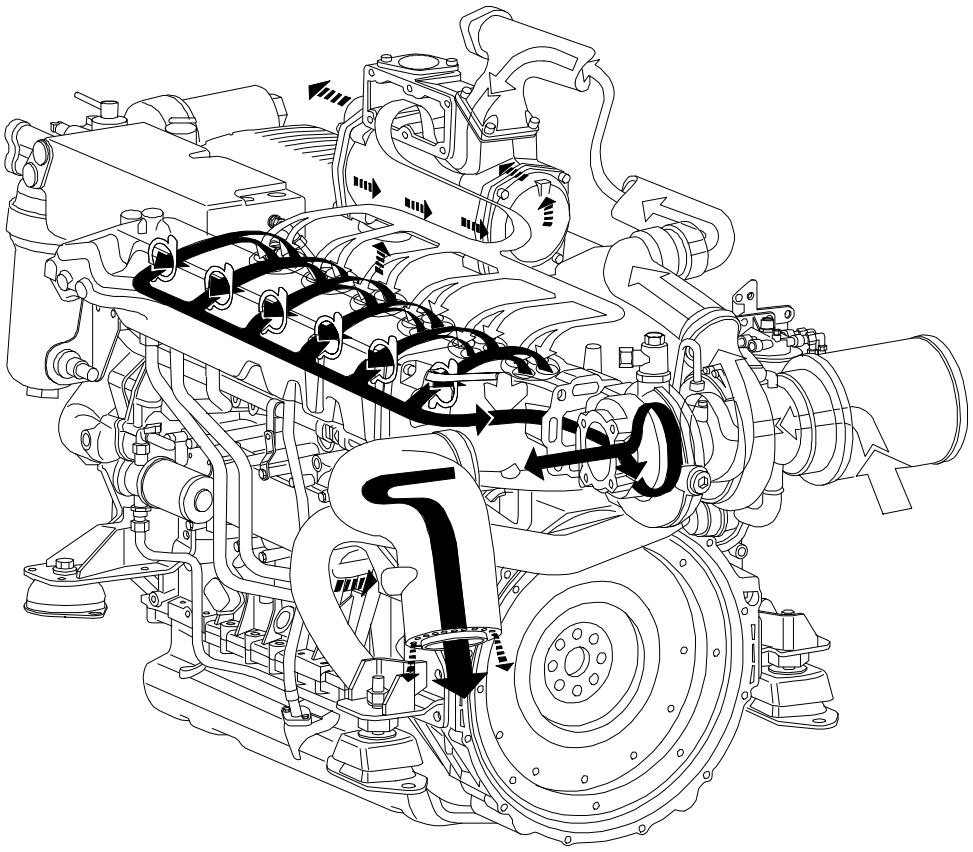
PRODUCT MODEL NUMBER

The model number is assigned by the manufacturer; it is used to identify the main characteristics of the engine, and to characterize its application and power output level. It is stamped on the side of the crank-case.



COMBUSTION AIR INTAKE AND EXHAUST SYSTEM

Figure 13



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Intake Exhaust Sea water

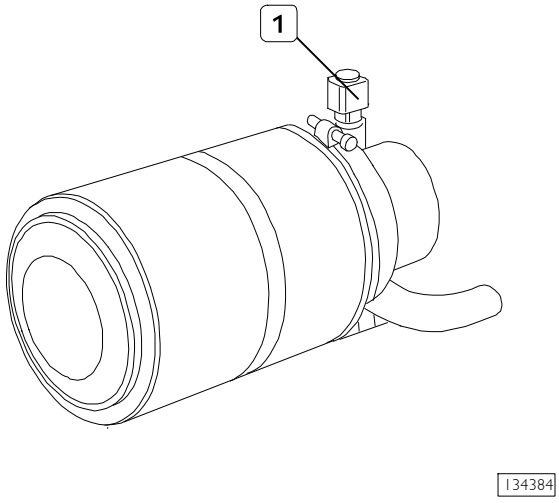
Description and Operation

Air, drawn in and compressed by the turbocompressors, flows through the heat exchanger together with sea water. The latter, by reducing temperature, allows an increase in the engine's volumetric efficiency.
The air density at the inlet of the intake manifold is measured by two sensors, for pressure and temperature, allowing the ECU of the EDC system to calculate fuel dosage relative to the actual quantity of air available for combustion.
Lubricating oil vapors (blow-by) not condensed in the separator, are sent to the engine intake by a gauged hole downstream of the air filters.

Exhaust gas expelled by the engine flows through the cooled exhaust manifold to reach the turbocompressors rotors.
Exhaust manifold and turbocompressor body are cooled by the fresh water loop. Exhaust gases flow into the exhaust terminal and, when provided, they are mixed with the sea water it carries for overboard discharge.

Comburent air filter

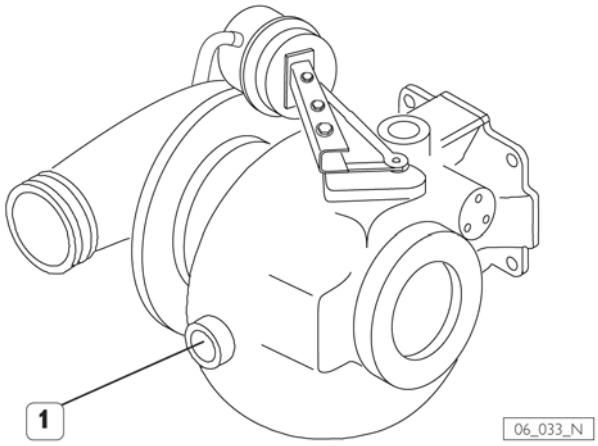
Figure 14



1. Filter clogging sensor.

Turbocompressor

Figure 15

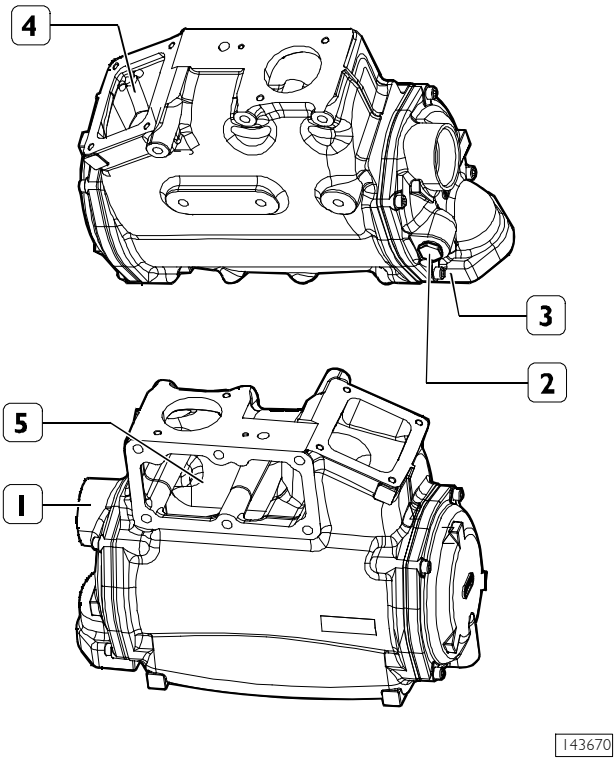


1. Coolant inlet.

The engine is turbosupercharged by a fixed geometry turbine with no waste-gate control.
The turbine is cooled by the coolant circulation from the crankcase.
The compressor-turbine spindle rotates on brass bearings lubricated by pressure lubrication, directly from the oil filter.

Air/sea-water heat exchanger

Figure 16

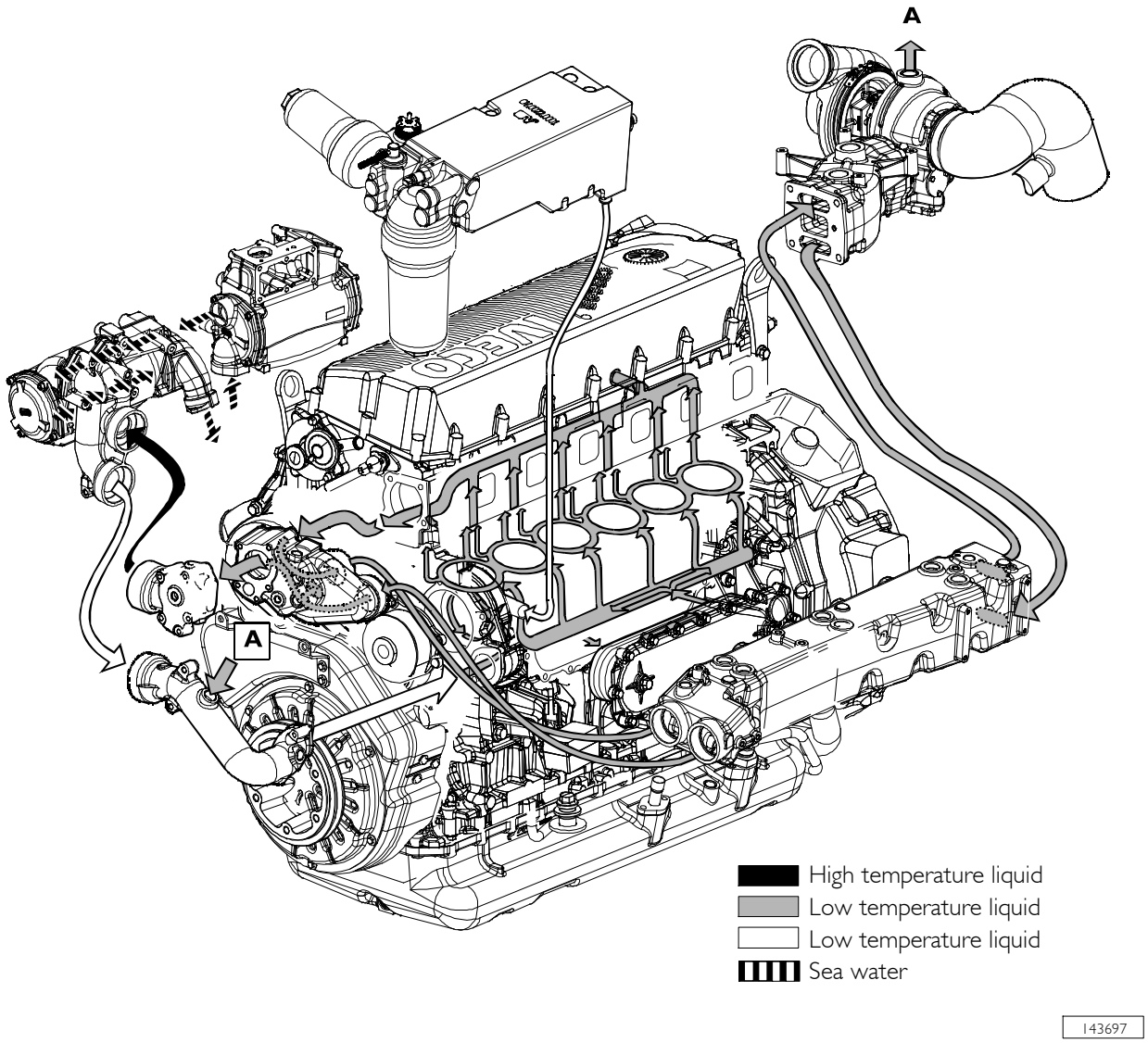


1. Sea-water outlet - 2. Sacrificial anode (Zinc) - 3. Sea-water inlet - 4. comburent air inlet - 5. Comburent air outlet

The flow of water coming from the sea-water pump goes through the tube bundle (3) and, by going through it, absorbs some of the heat of the overheated air of the turbosupercharge, passing through the exchanger coming from the turbocompressor (4).
The outlet water (1) is conveyed towards the fresh water/sea-water heat exchanger, while the turbosupercharged air, cooled down, reaches the induction manifold (5) and from there reaches the cylinders.

COOLING FRESH WATER CLOSED LOOP

Figure 17



Description and operation

The centrifuge pump, rotated by the drive shaft with a poly-V belt, draws in the coolant coming from the fresh water/sea water heat exchanger or from the exhaust manifold cooling loop and sends it into the block, where it comes in contact with the lubricating oil heat exchanger. It then touches the heat exchange areas of the cylinders and subsequently those of the engine head, from which it exits flowing through the junction fitting that contains the temperature sensors for the instrument panel and the injection system. This junction has the purpose of bypassing the coolant from the engine head to the exhaust manifold and from the exhaust manifold to the thermostat - which routes it according to the temperature either to the water/water heat exchanger or to the recirculation pump.

From the bypass fitting the liquid is then injected into the heat exchange chamber of the exhaust manifold - through which it flows going to touch the body of the waste gate, of a portion the exhaust and of the turbo compressor. When it returns into the bypass junction it comes in contact with the wax actuator of the thermostatic valve. This will throttle flows according to temperature.
Part of the liquid will enter the tank and flow through the tube bundle heat exchanger, releasing heat to sea water, while the rest will go directly to the pump, to be recirculated.

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