

► Engine Description

Types of cooling:	1) Single-circuit mixed cooling as indirect cooling with engine mounted plate-type heat exchanger, coolant circulating pump, expansion tank, thermostats and raw water pump. 2) Single-circuit mixed cooling as keel-cooling with coolant circulating pump and integrated thermostats.
Crankcase:	Of gray cast iron with high rigidity.
Crankcase breather:	Closed-circuit system, vacuum controlled.
Cylinder head:	Four-valve cylinder head of gray cast iron.
Valve arrangement / timing:	Overhead valves in cylinder head, two inlet and two exhaust valves per cylinder, actuated via rocker arms and valve bridges. Inlet and exhaust ports of crossflow arrangement.
Piston:	Three-ring light alloy piston with cooling channel and ring carrier for top ring groove.
Piston cooling:	Oil cooled with spray nozzles.
Connecting rod:	Forged steel, chafered small-end eye for increased support of piston.
Crankshaft:	Drop-forged steel crankshaft, two bolted counterweights per crankpin.
Crankshaft and big-end bearings:	Bi-metal bearings / grooved ball bearings.
Camshaft:	Centrally arranged in V-space.
Intake manifolds:	Aluminum, arranged in V-space with integrated coolant return pipes.
Turbocharging:	Two turbochargers, the charge air cooler is mounted at flywheel end. Waste gate as option.
Exhaust manifolds:	Liquid-cooled exhaust manifold.
Torsional vibration damper:	Viscous-fluid damper.
Lubrication system:	Forced-feed circulating pump with mounted oil cooler, switch-over twin filter. Lube oil centrifuge as option.
Injection system:	High-pressure injection by gear driven in-line pump, mechanical or electronic governor, centrally arranged 8-hole injection nozzle.
Fuel system:	Mechanical fuel lift pump, switch-over twin filter with paper elements.
Alternator:	28 V / 55 A, one or two alternators depending on customer's request.
Starting system:	Electric or compressed air starter.
Options:	Hydraulic pumps, marine gears, various PTOs
Classification:	By all established classification societies.