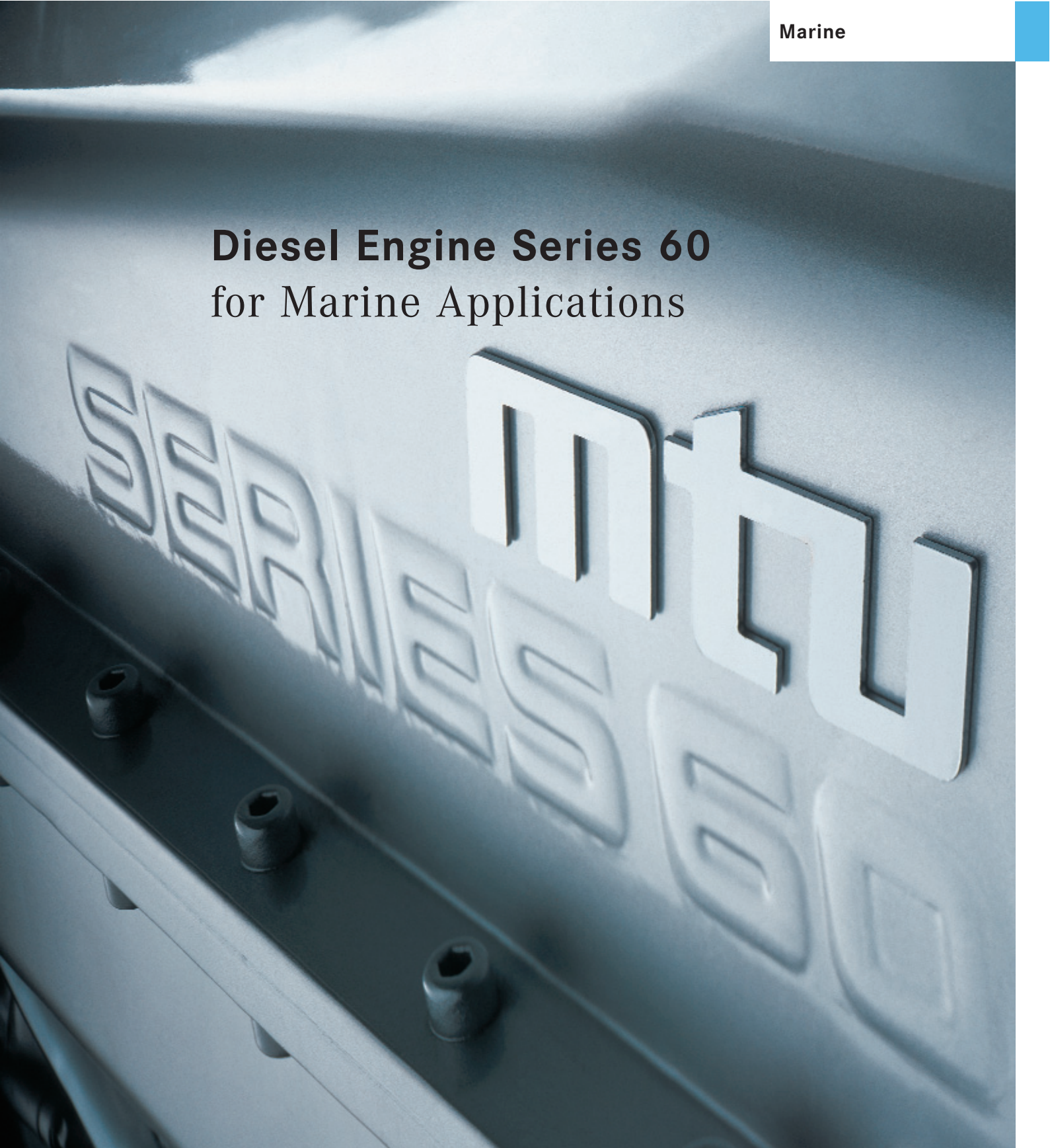


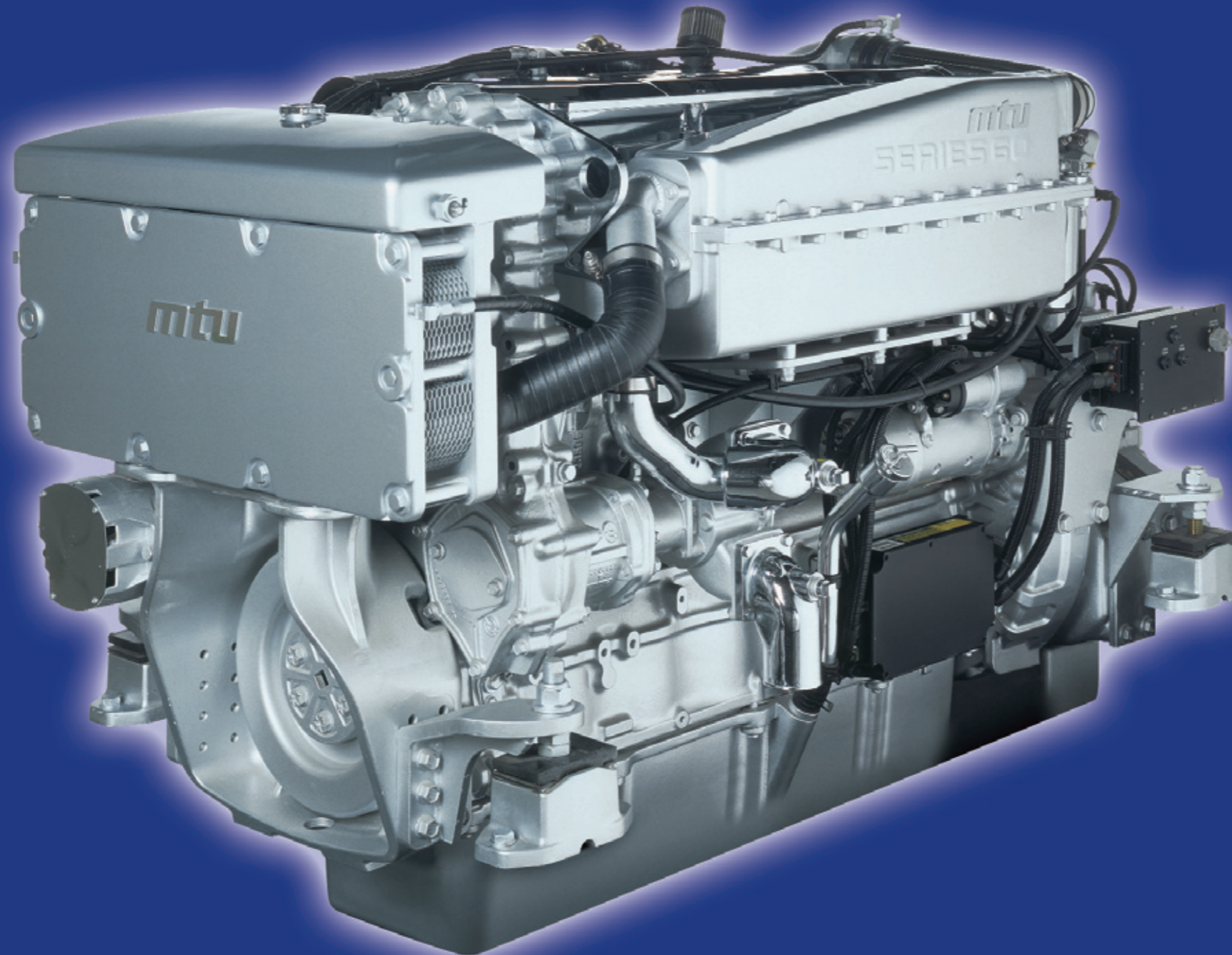
Diesel Engine Series 60 for Marine Applications



The Intelligent Solution.

The MTU Series 60 engines embody the qualities of **reliability and durability** like virtually no others. More than 650,000 units of this model are in operation around the globe.

There are good reasons for that success: **low fuel consumption**, rugged and compact design, ease of maintenance and longevity make the Series 60 one of the **most economical engines** in its class.



Your Benefits:

Economy

- > Low life-cycle costs
- > Long service life
- > Attractive price
- > Ease of maintenance

Engine characteristics

- > High performance
- > Unrestricted low-load operation

Environmental safety

- > Low fuel consumption
- > Low exhaust and noise emissions

Service

- > Round the clock
- > Worldwide

Superior Technology. Module for Module.

Cylinder Block

- > Uncomplicated, robust design
- > Integrally cast webs for greater strength and lower overall weight

Piston Cooling

- > Combination of channeled conrod and jet in cylinder block
- > The oil carries heat away from the back of the piston rings to the high performance oil cooler

Cylinder Liner

- > Patented top cylinder liner cooling for effective heat dissipation and maximum combustion efficiency

Crankshaft

- > Induction hardened for greater longevity
- > Statically and dynamically balanced for vibration-free running even at maximum speed

Camshaft

- > Overhead camshaft enables high injection pressure – which means
 - low emissions
 - low fuel consumption
- > Ease of maintenance

Heat Exchanger

- > Uncomplicated design of titanium heat exchanger with small number of serviced components for low maintenance costs and shorter downtimes
- > Modular design with integral fuel cooler, easily removable (e.g. for cleaning)
- > Highly resistant to extreme ambient conditions (e.g. wide temperature fluctuations)

Turbocharger

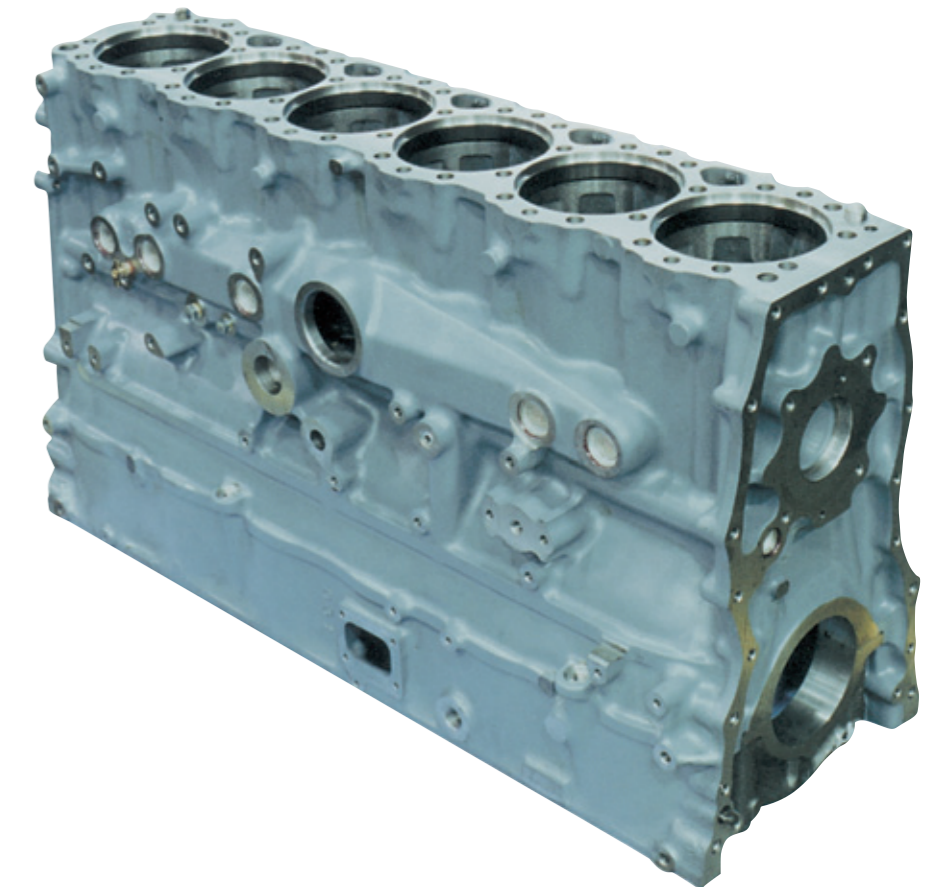
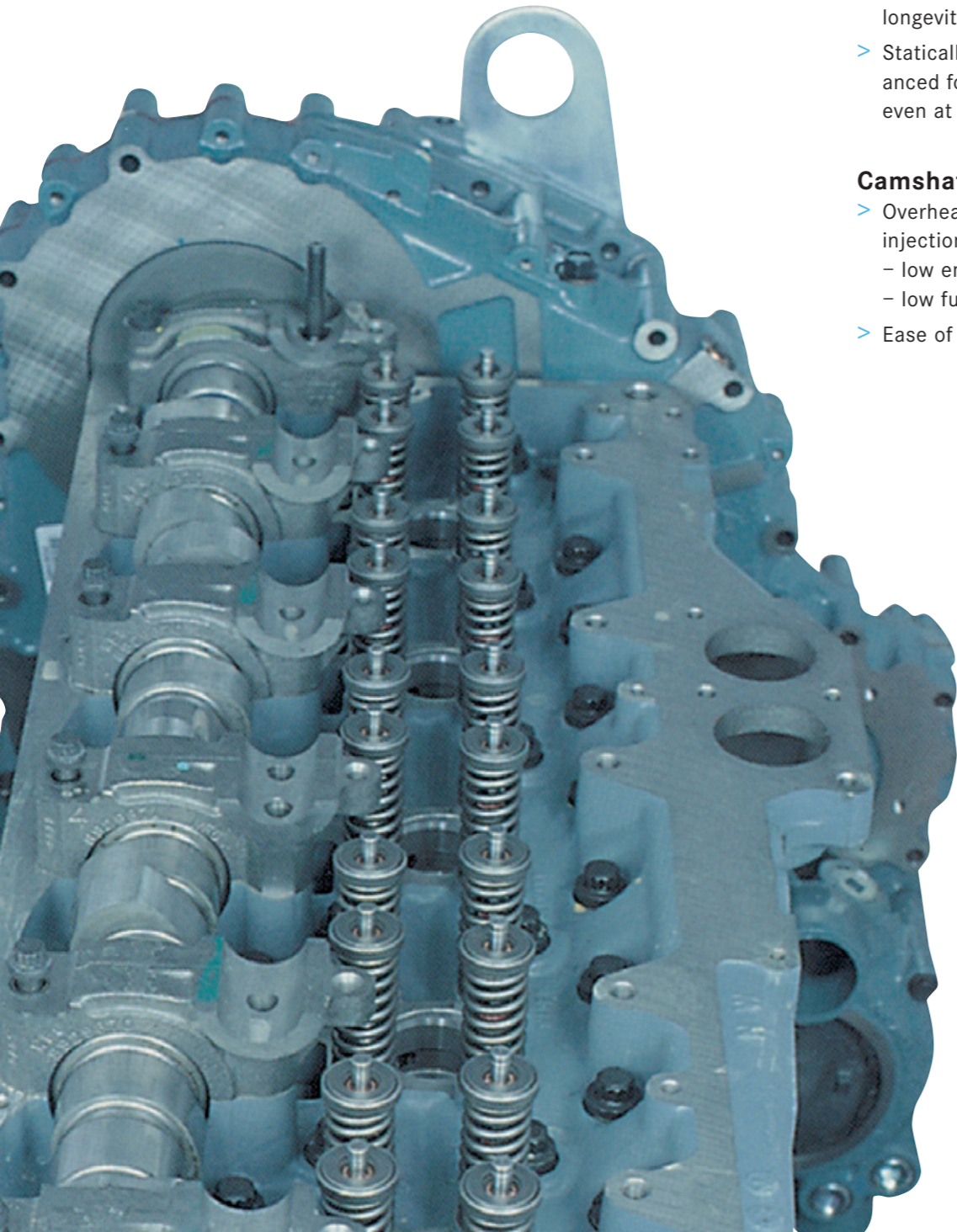
- > Precision tuned for maximum acceleration

Intercooler

- > For greater engine efficiency and lower stresses on the cylinder components

Pistons

- > Forged steel dome
- > Lowered upper piston ring for greater protection against high cylinder temperatures
- > 20% thicker rings for greater strength
- > Rings made of ceramic chrome, the hardest available piston-ring material, for longevity, low friction and high performance



Control, Monitoring and Management.



Electronic Display Module (EDM)

- > Internally pressurized to eliminate leaking
- > Includes display of voltage so boat builder can eliminate individual voltage gage
- > Indicates „Ahead“, „Neutral“, or „Astern“
- > Large characters for easy reading
- > Built-in back lighting
- > Displays historic diagnostic codes
- > Sets marine gear temperature and pressure alarms
- > Displays and resets trip fuel and trip hours
- > Sets alarm loudness
- > Provides two maintenance interval monitors

DDEC Electronic Engine Management

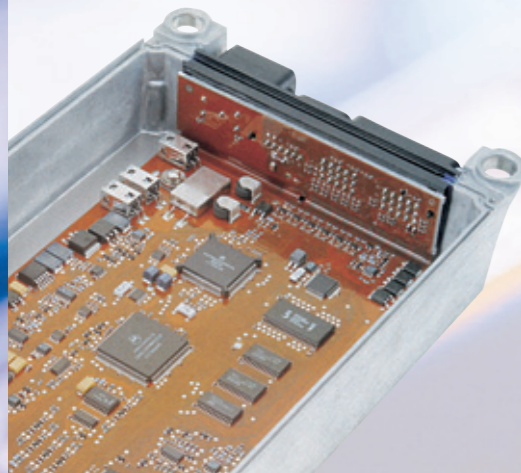
The DDEC (Detroit Diesel Electronic Control) fully electronic engine management system controls the combustion process and achieves high engine performance in combination with low fuel consumption and smoke output.

DDEC functions

- > Display of warning messages and automatic engine protection
- > Self-diagnosis
- > Recording of all events
- > Retraceability of engine operating patterns using data printouts

DDEC monitors

- > Oil pressure and temperature
- > Engine speed
- > Coolant pressure and temperature
- > Fuel pressure and temperature
- > Engine timing
- > Injector response time
- > Battery voltage
- > Turbocharger pressure
- > Air temperature in inlet manifold



Technical Data

Diesel Engine Series 60 Four-Stroke Diesel Engine with Direct Fuel Injection, Turbocharging and Charge Air Cooling

Configuration	6cyl. In-line
Bore / Stroke	mm (in) 133 / 168 (5.24 / 6.61)
Swept volume	l/cyl (cu in) 2.33 (142)
Total displacement	lit (cu in) 14.0 (854)
Fuel specifications	ASTM D 975 (Grades 1-D and 2-D)

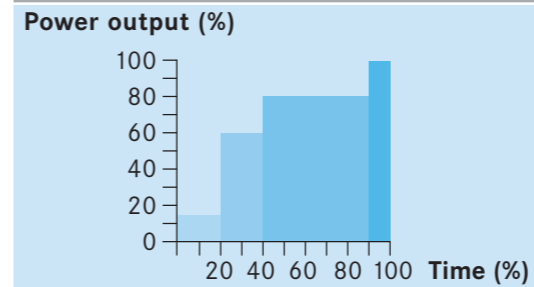
Rating Definition	Marine Main Propulsion Rated Power Output ICFN			Onboard Power Generation Rated Power Output ICXN	
	1A	1B	1DS	3A 50 Hz/60 Hz*	3B 50 Hz/60 Hz*
Exhaust optimization	IMO / EPA 2	IMO / EPA 2	IMO / EPA 2	IMO	IMO
Speed	rpm 1800	2100	2300	1500/1800	1500/1800
Power output	kW 261 - 354	354 - 447	466 - 615	271	322
	bhp 350 - 475	475 - 600	625 - 825	363	432

* Engines 60 Hz also available with EPA Tier 2 certification.

The rated power of diesel engines stated correspond to ISO 3046-1:2002(E) and ISO 15550:2002(E) and as well to SAE J1228. Power definitions at intake air temperature 25°C / Sea water temperature 25°C. Unless otherwise stated, the power produced at the flywheel will be within the tolerance of ±3% - according to ISO 15550:2002(E)- up to 45°C (113°F) combustion air temperature measured at the air cleaner inlet and up to 32°C (89,6°F) sea or raw water temperature measured at the sea water pump suction inlet. Shaft power equal to rated power x 0.97.

Main Propulsion Engines available also as keel cooling version.

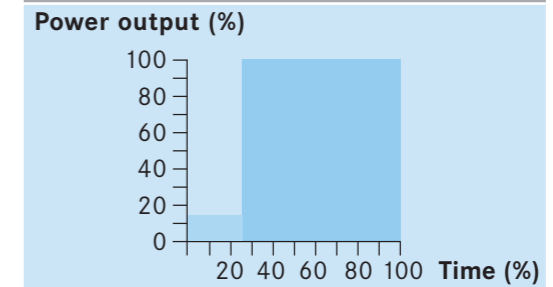
Standard Load Profile 1A



Typical applications e.g.:

- Workboats, ferries, governmental vessels, tugs, barges, large sailing yachts

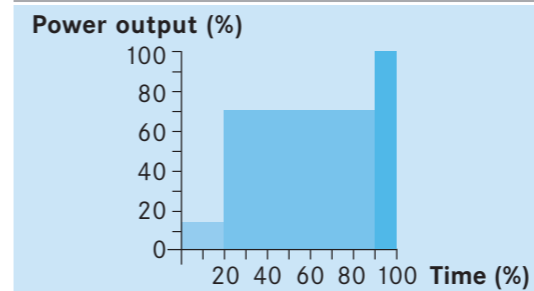
Standard Load Profile 1B



Typical applications e.g.:

- Ferries (monohulls/hydrofoils/catamarans/surface effect ships), yachts

Standard Load Profile 1DS



Typical applications e.g.:

- Fast patrol boats, police craft, firefighting vessels, fast yachts

- 1A Diesel engines for vessels with unrestricted continuous oper.**
- 1B Diesel engines for fast vessels with high load factors**
- 1DS Diesel engines for fast vessels with low load factors**
- 3A Diesel engines for onboard power generation and diesel electric drive - continuous operation**
- 3B Diesel engines for onboard power generation and diesel electric drive - continuous operation with variable load**

ICFN

I = Power to ISO
C = Continuous power output
F = Fuel stop power
N = Available power
Accessories necessary for operation, engine driven

ICXN

I = Power to ISO
C = Continuous power output
X = Overload capability 10%
N = Available power
Accessories necessary for operation, engine driven

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