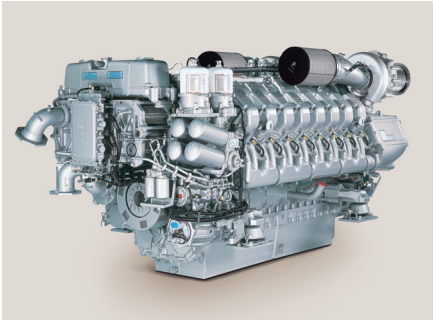


Marine

Diesel Engines 12V/16V 4000 M90

for Vessels with Low Load Factors (1DS)



Dimensions and Masses

4000 M90 -
with gearbox

Dimensions (LxWxH) mm (in)

Mass, dry kg (lbs)

12V/ZF 4650

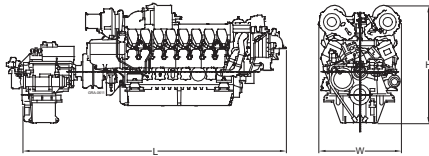
3620x1520x1835 (142.5x59.8x72.2)

8775 kg (19346 lbs)

16V/ZF 7600

4525x1520x1890 (178.1x59.8x74.4)

8920 kg (19665 lbs)



Typical applications: Fast Yachts, Fast Patrol Boats, Police Craft and Fire-Fighting Vessels

Engine Model		12V 4000 M90	16V 4000 M90
Rated power ICFN	kW (bhp)	2040 (2735)	2720 (3650)
Speed	rpm	2100	2100
No. of cylinders		12	16
Bore/stroke	mm (in)	165/190 (6.5/7.5)	165/190 (6.5/7.5)
Displacement, total	l (cu in)	48.7 (2978)	65.0 (3967)
Flywheel housing		SAE 00	SAE 00
Gearbox type		ZF 4650	ZF 7600
		i = 1.5 – 2.5	i = 1.5 – 3.0
Optimization of exhaust emissions ¹⁾		IMO	IMO

¹⁾ IMO - International Maritime Organization (MARPOL)



Power. Passion. Partnership.

Performance and Fuel Consumption ¹⁾		12V 4000 M90			16V 4000 M90		
Speed	rpm	2100	1800	1200	2100	1800	1200
Maximum power	kW	2040	1750	800	2720	2350	1150
	bhp	2735	2347	1073	3650	3151	1542
Power on propeller curve ²⁾	kW	2040	1280	380	2720	1700	460
	bhp	2735	1717	510	3650	2280	617
Fuel consumption on propeller curve ²⁾	g/kWh	209	204	210	209	204	215
	l/h	513.7	430.1	96.1	685.0	405.5	119.2
	gal/h	135.7	113.6	25.4	181.0	107.1	31.5

¹⁾ Tolerance +5% per ISO 3046, Diesel fuel to DIN EN 590 with a min L.H.V. of 42800kJ/kg (18390 BTU/lb) ²⁾ 3.0 exponent

Standard Equipment	
Starting system	Electric starter 24 V, 2 pole
Oil system	Gear driven lube oil pump, lube-oil duplex filter with diverter valve, centrifugal oil filter, lube-oil heat exchanger, handpump for oil extraction
Fuel system	Fuel delivery pump, fuel duplex filter with diverter valve, "Common Rail" fuel injection system with high-pressure pump, pressure accumulator and electronic fuel injection with cylinder cutout system, jacketed HP fuel lines, flame proof hose lines, leak-off fuel tank level monitored, fuel hand pump, fuel pre-filter with water separator
Cooling system	MTU-split-circuit coolant system, coolant-to-raw water plate core heat exchanger, self priming centrifugal raw water pump, gear driven coolant circulation pump, raw-water connection for gearbox cooling
Combustion air system	Engine coolant temperature-controlled intercooler, sequential turbocharging with 2 water-cooled turbochargers, on-engine set of seawater-resistant combustion-air filters
Exhaust system	Triple-walled, liquid-cooled, on-engine exhaust manifolds, exhaust bellows (horizontal discharge)
Mounting system	Resilient mounts
Power Transmission	Torsional and offset compensating couplings
Auxiliary PTO	Charging generator, 120A, 28V, 2 pole
Engine management system	Engine control and monitoring system (MDEC), interface to gearbox control, interface to remote control and monitoring system, local operating panel (LOP)

Optional Equipment	
Starting system	Coolant preheating system
Oil system	Lube oil priming system
Cooling System	Engine version for sealed engine coolant system in conjunction with ship`s side recooling system
Exhaust System	Exhaust outlet elbow (45°, 70°, 90°)
Auxiliary PTO	Bilgepump
Engine management system	In compliance with Classification Society Regulations
Monitoring/Control system	Fuel consumption measurement device (KRAL), monitoring and control system MCS-5, remote control system RCS-5
Gearbox Options	Various reserve reduction gearbox models, elec. actuated, gearbox mounts, PTO for hydraulic pump at driving shaft or at mediate shaft, trolling, trailing pump, propeller shaft flange
Classification	Classification is available; please consult our Sales Center for detailed information.

> The rated power corresponds to ISO 3046-1:2002 (E) and ISO 15550:2002(E)

> Intake air temperature 25°C/Sea water temperature 25°C

> Intake air depression 15 mbar/Exhaust back pressure 30 mbar

> Barometric pressure 1000 mbar

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. Specifications are subject to change without notice. All dimensions are approximate. For complete information refer to installation drawing. For further information consult your MTU dealer.

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