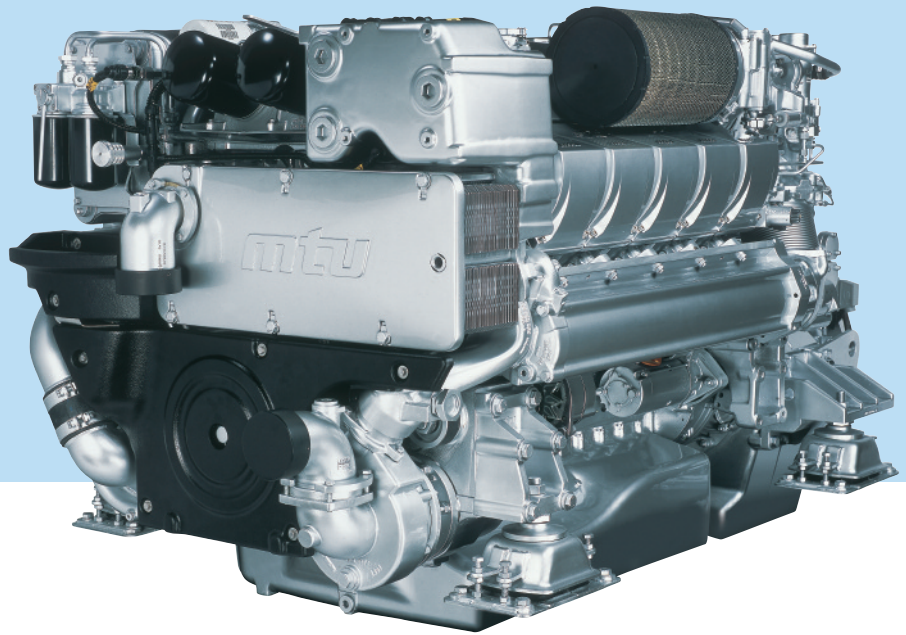


# Diesel Engines 12V/16V 2000 M93

for Fast Vessels

with Low Load Factors (1DS)



## Typical applications:

Fast yachts, fast patrolboats, police craft and fire-fighting vessels

Engine model		12V 2000 M93	16V 2000 M93
Rated power ICFN	kW (bhp)	1340 (1800)	1790 (2400)
Speed	rpm	2450	2450
No. of cylinders		12	16
Bore/stroke	mm (in)	135/156 (5.4/6.1)	135/156 (5.4/6.1)
Displacement, total	l (cu in)	26.8 (1635)	35.7 (2179)
Flywheel housing		SAE 0	SAE 0
Gearbox model		ZF 2060 A	ZF 3060 A
		i = 1.2 – 2.5	i = 1.3 – 3.0

Fuel consumption <sup>1)</sup>		12V 2000 M93				16V 2000 M93			
Speed	1/min	2450	2200	2000	1200	2450	2200	2000	1200
Maximum power	kW	1340	1270	1150	600	1750	1700	1550	790
	bhp	1800	1705	1540	805	2400	2280	2080	1060
Power on propellercurve (n <sup>3</sup> )	kW	1340	970	740	170	1790	1300	980	205
	bhp	1800	1300	990	230	2400	1745	1315	275
Fuel consumption on propellercurve (n <sup>3</sup> )	g/kWh	213	215	225	216	209	214	217	218
	l/h	343.9	251.3	200.6	44.2	450.7	335.2	250.2	53.8
	gal/h	90.8	66.4	53.0	11.7	119.1	88.6	67.7	14.2

<sup>1)</sup> Tolerance +5% per ISO 3046, diesel fuel to DIN EN 590 with a min L.H.V. of 42800kJ/kg (18390 BTU/lb)



## Standard equipment

Starting system	Electric starter 24V
Auxiliary PTO	Charging generator, 80A, 28V, 2 pole
Oil system	Gear driven lube oil pump, lube oil duplex filter with diverter valve, lube oil heat exchanger, handpump for oil extraction
Fuel system	Fuel feed pump, fuel hand pump, fuel pre-filter, fuel main filter with diverter valve, on-engine fuel oil cooler, HP fuel pump, jacketed HP fuel lines, injection nozzles (CR system), flame proof hose lines, leak-off fuel tank level monitored
Cooling system	Coolant-to-raw water plate core heat exchanger, self priming centrifugal raw water pump, gear driven coolant circulation pump
Combustion air system	Sequential turbocharging with 2 water-cooled exhaust-gas turbochargers, on-engine intake air filters
Exhaust system	Triple-walled, liquid-cooled, on-engine exhaust manifolds, single centrally located exhaust outlet, 1 exhaust bellows vertical discharge
Mounting system	Resilient mounts at free end
Engine management system	Engine and gearbox control and monitoring system (ADEC)

## Optional equipment

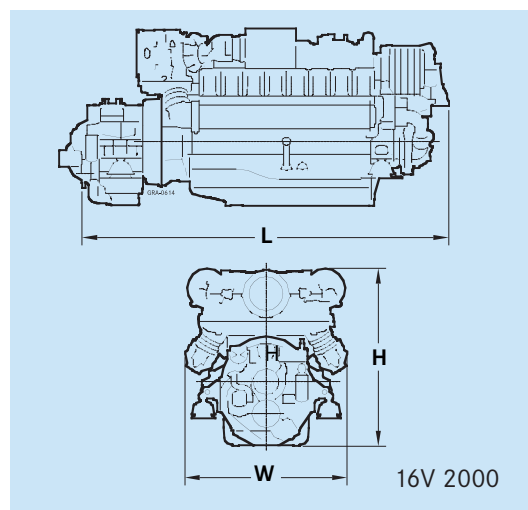
Auxiliary PTO	Charging generator, 140A, 28V, 2 pole, bilgepump, on-engine PTPs
Oil system	Centrifugal oil filter, oil replenishment system
Fuel system	Duplex fuel pre-filter
Cooling system	Coolant preheating system, integr. seawater gearbox piping
Exhaust system	1 exhaust bellows horizontal discharge
Mounting system	Resilient mounts at driving end
Engine management system	In compliance with classification society regulations (EMU + MEU)
Monitoring / Control system	<i>smartline</i> , <i>blue</i> <i>line</i> , <i>blue</i> <i>vision</i>
Power transmission	Torsionally resilient coupling
Gearbox option	Reverse reduction gearbox, el. actuated, gearbox mounts, trolling mode for dead-slow propulsion, free auxiliary PTO, hydraulic pump drives

Power definition according ISO 3046  
 Intake air temperature 25°C / Sea water temperature 25°C  
 Intake air depression 15 mbar / Exhaust back pressure 30 mbar  
 Barometric pressure 1000 mbar  
 Power reduction at 45°C/32°C: none  
 All engines fulfil IMO emission regulation, certificate on request  
 All engines EPA Tier 2 certified

## Dimensions and masses (incl. gearbox)

Engine model		12V2000 M93	16V2000 M93
Length [L]	mm (in)	2580 (101.6)	3105 (122.2)
Width [W]	mm (in)	1295 ( 51.0)	1295 ( 51.0)
Height [H]	mm (in)	1350 ( 53.1)	1390 ( 54.7)
Mass [dry]	kg (lbs)	3520 (7760)	4330 (9546)

Specifications are subject to change without notice.  
 All dimensions are approximate, for complete information refer to installation drawing.  
 For further information consult your MTU or MTU Detroit Diesel distributor/dealer.



## Tognum Group Companies

### Europe / Middle East / Africa / Latin America

MTU Friedrichshafen GmbH  
 88040 Friedrichshafen  
 Germany  
 Phone +49 7541 90 7003  
 Fax +49 7541 90 7081  
 marineregion1@mtu-online.com  
 www.mtu-online.com

### Asia / Australia / Pacific

MTU Asia Pte. Ltd.  
 1, Benoi Place  
 Singapore 629923, Republic of Singapore  
 Phone +65 6861 5922  
 Fax +65 6861 3615  
 marineregion2@mtu-online.com  
 www.mtu-online.com.sg

### USA / Canada / Mexico

MTU Detroit Diesel, Inc.  
 13400 Outer Drive West  
 Detroit, Michigan 48239, USA  
 Phone +1 313 592 7806  
 Fax +1 313 592 5137  
 marineregion3@mtu-online.com  
 www.mtudetroitdiesel.com