



# 12M33C1100-15 Marine propulsion engine



## Basic engine specifications

Rating .....	P1
Rated power-kW .....	809
Rated speed-rpm .....	1500
Overload power-kW .....	/
Overload speed-rpm .....	/
Rated power tolerance-% .....	1~3
Idle speed-rpm .....	650
High idle speed-rpm .....	1650
N° of Cylinders / Valves .....	12/48
Cylinders arrangement .....	V type
Thermodynamic cycle .....	4 stroke
Bore × Stroke-mm(in) .....	150×185 (5.91×7.28)
Compression ratio .....	15:1
Displacement-L(in <sup>3</sup> ) .....	39.2 (2392.1)
Fuel system .....	Mechanical
Injection system .....	Direct injection
Aspiration .....	Turbocharged and aftercooled
Flywheel housing/Flywheel/N° of teeth on flywheel ring gear(standard) .....	SAE 0/18°/194
Flywheel housing/Flywheel/N° of teeth on flywheel ring gear(optional) .....	/
Firing order .....	A1-B2-A5-B4-A3-B1-A6-B5-A2-B3-A4-B6
Rotation(from flywheel end) .....	Counterclockwise
Overall dimensions (L×W×H) -mm(in) .....	2352×1454×1720 (92.6×57.2×67.7)
Dry weight-kg(lb) .....	3900 (8598)
Wet weight-kg(lb) .....	4165.4 (9183)
Max. output power of front end-kW(hp) .....	567 (771.1)
Max. output torque of front end- N.m(ft-lbs) .....	4702 (3470.1)
Inertia of flywheel- kg.m <sup>2</sup> (lb.ft <sup>2</sup> ) .....	7.16 (169.84)
Inertia of crankshaft- kg.m <sup>2</sup> (lb.ft <sup>2</sup> ) .....	4.52 (107.21)
Max. bending moment @ flywheel housing- N.m(ft-lbs) .....	/ ( /)
Location of GC-mm[in] .....	(840,0,280) [(33.1,0,11.0)]
Emission compliance .....	IMO Tier II

## Security parameters

Alarm speed-rpm .....	1725
Shut down speed-rpm .....	1800
Alarm oil pressure-MPa .....	0.2
Shut down oil pressure-MPa .....	0.16
Alarm oil temperature-°C(°F) .....	105(221)
Alarm coolant temperature-°C(°F) .....	95(203)

## Noise

Diesel engine noise(Acoustic power level)- dB(A) .....	119.5
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## Rating definitions

### Continuous power (P1)

The engine can run at full load continuously. The average load factor is 70% to 100%. Annual working time is more than 4000h.

### Heavy duty power (P2)

The engine can run at full load for 8h every 12h. The average load factor is 40% to 80%. Annual working time is 2000h to 4000h.

### Pleasure vessels in commercial operation (P3)

The engine can run at full load for 4h every 12h. The average load factor is 50% to 70%. Annual working time is 500h to 2000h.

### Government vessels (P4)

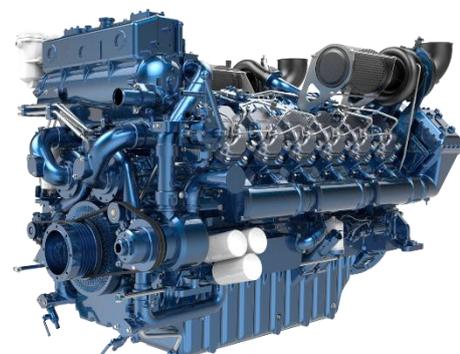
The engine can run at full load for 2h every 8h. The average load factor is 70% to 90%. Annual working time is less than 500h.

### Light duty power (P5)

The engine can run at full load for 0.5h every 5h. The average load factor is 60%. Annual working time is less than 300h.

## General remarks

- The origin of coordinates is at the center of the flywheel housing back end surface. X axis directs from flywheel to front, Z axis directs vertical up, Y axis direction is defined by right-hand rule.
- All ratings are based on operating conditions under ISO 8665, ISO 3046-1.
- Curves represent net engine performance in accordance with ISO 3046/1 with standard accessories such as fuel injection pump, water pump and L.O. pump under the condition of 25°C/77°F ambient temperature, 100kPa[29.612 in Hg] barometric pressure, 30% relative humidity and 25°C/77°F raw water temperature at inlet.
- Reference document: D000032768.





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## Air intake system

Intake air flow-m <sup>3</sup> /min(cfm)	60.00 (2142.95)
Max. allowable intake air restriction(include pipe and air filter)- kPa(in H <sub>2</sub> O)	5 (20.08)
Intake air temperature up to-°C(°F)	55 (131)
Heat rejection to atmosphere-kW(BTU/min)	94.9 (5397.0)

## Cooling system

Coolant capacity of the engine-L(gal)	128 (28.16)
Max. sea water strainer mesh hole diameter- mm(in)	2 (0.08)
Sea water pump power-kW(hp)	9.2 (12.5)
Expansion tank pressure cap- kPa(in H <sub>2</sub> O)	80 (11.6)
Heat dissipating to heat exchanger- kW(BTU/min)	489 (27809.4)
Coolant flow-m <sup>3</sup> /h(gal/h)	/ (l)
Recommended outlet water temperature-°C(°F)	75~90 (167~194)

## Exhaust system

Exhaust flow-m <sup>3</sup> /min(cfm)	166.18 (5935.13)
Max. exhaust back pressure-kPa(in H <sub>2</sub> O)	7.5 (30.1)
Max. exhaust temperature before turbocharger-°C(°F)	700 (1292)
Max. exhaust temperature after turbocharger-°C(°F)	550 (1022)
Max. bending moment of turbocharger flange- N.m(ft-lbs)	10 (7.4)
Exhaust smoke-FSN	≤1.5

## Lubricating system

Max. install angle(fore-aft)	5°
Max. install angle(athwart ship)	15°
Max. operating angle(fore-aft)	7.5°
Max. operating angle(athwart ship)	22.5°
Sump type	Wet
Oil capacity Low/High-L(gal)	117/144 (25.7/31.7)
Oil fuel consumption ratio based on engine fuel consumption data-%	≤0.4
Oil flow- L/min(gal/min)	392 (86.2)

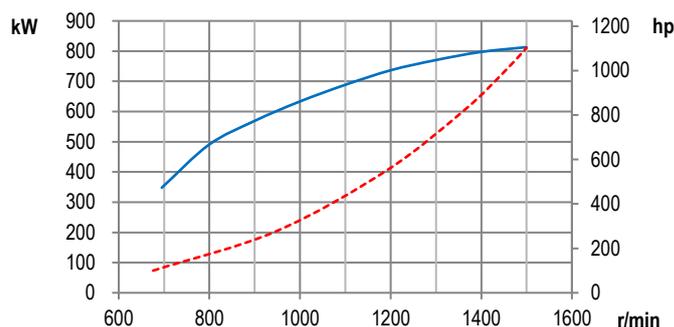
## Fuel system

Fuel flow supply line- L/h(gal/h)	193.57 (42.59)
Fuel flow return line- L/h(gal/h)	/ (l)
Max. Allowable fuel supply restriction -kPa(in H <sub>2</sub> O)	13 (52.2)
Fuel supply restriction on engine-kPa(in H <sub>2</sub> O)	10 (40.2)
Allowable fuel restriction of shipyard supplied components-kPa(in H <sub>2</sub> O)	3 (12.0)
Max. fuel return restriction-kPa(in H <sub>2</sub> O)	15 (60.2)
Max. self-priming height of fuel delivery pump-m(ft)	1 (3.28)
Max. fuel inlet temperature-°C(°F)	44 (111.2)

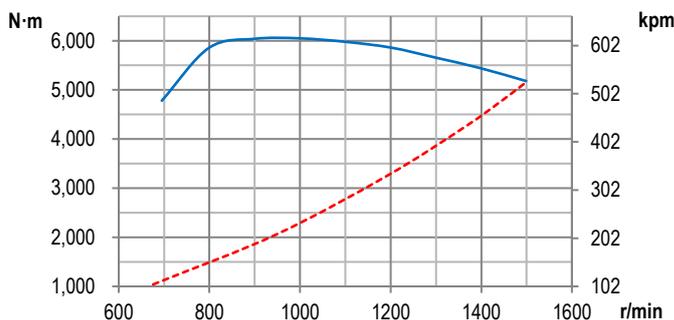
## Electric system

Electrical system voltage(2-pole)-V	24
Starter power-kW(hp)	10 (13.6)
Recommended battery capacity(5°C and above)- A.h	180~220
Recommended battery capacity(-5°C and above) - A.h	/
Alternator working current-A	55

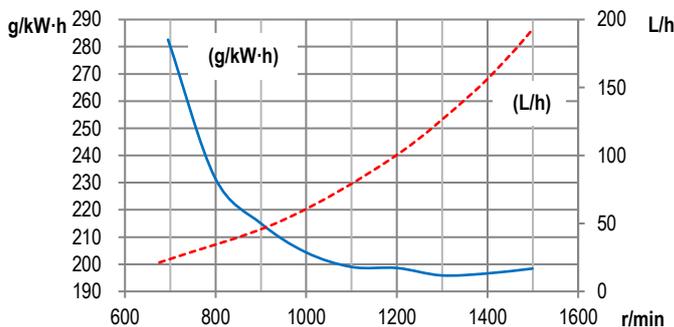
## Power



## Torque



## Fuel consumption



— Full load speed characteristics  
 - - - Propeller characteristics

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Materials and specifications are subject to change without notice.