



## Basic engine specifications

Rating .....	PRP
Rated power-kW .....	60
Rated speed-rpm .....	1800
Overload power-kW .....	66
Rated power tolerance-% .....	±3
Idle speed-rpm .....	750
Steady state speed governing rate (mechanical)-% .....	≤5
Steady state speed governing rate (electrical)-% .....	≤3
N° of Cylinders / Valves .....	4/8
Cylinders arrangement .....	In-line
Thermodynamic cycle .....	4 stroke
Bore × Stroke-mm(in) .....	105×130 (4.1×5.1)
Compression ratio .....	18:1
Displacement-L(in <sup>3</sup> ) .....	4.5 (274.6)
Fuel system .....	Mechanical pump
Injection system .....	Direct injection
Aspiration .....	Turbocharged
Flywheel housing/Flywheel/N° of teeth on flywheel ring gear(standard) .....	SAE 3/11,5°/131
Flywheel housing/Flywheel/N° of teeth on flywheel ring gear(optional) .....	/
Firing order .....	1-3-4-2
Rotation(from flywheel end) .....	Counterclockwise
Overall dimensions (L×W×H) -mm(in) .....	1052×850×1057 (41.4×33.43×41.6)
Dry weight-kg(lb) .....	560±50 (1235±110)
Wet weight-kg(lb) .....	582±50 (1283±110)
Inertia of flywheel- kg·m <sup>2</sup> (lb·ft <sup>2</sup> ) .....	1.117 (26.5)
Inertia of crankshaft- kg·m <sup>2</sup> (lb·ft <sup>2</sup> ) .....	0.27 (6.4)
Max. bending moment @ flywheel housing- N·m(ft·lbs) .....	7000 (5165)
Location of GC-mm[in] .....	(433.2,15.8,121.9) [(17.1,0.6,4.8)]
Emission compliance .....	IMO Tier II

## Security parameters

Alarm speed-rpm .....	2070
Shut down speed-rpm .....	2160
Alarm oil pressure-MPa .....	0.12
Shut down oil pressure-MPa .....	0.08
Alarm oil temperature-°C(°F) .....	105(221)
Alarm coolant temperature-°C(°F) .....	95(203)

## Noise

Diesel engine noise(Acoustic power level)- dB(A) .....	112
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## Rating definitions

### Continuous power (COP)

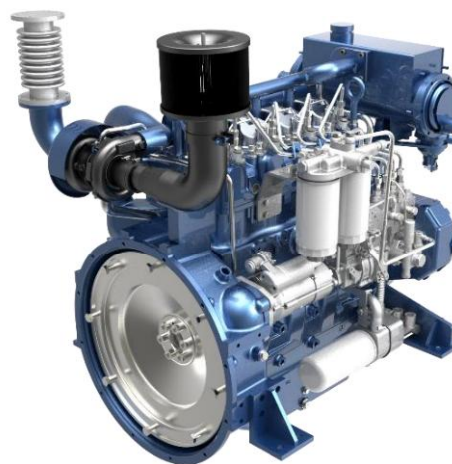
Continuous power is defined as being the maximum power which the generating set is capable of delivering continuously while supplying a constant electrical load when operated for an unlimited number of hours per year. For marine engine, COP has 10% overload power.

### Prime power (PRP)

Prime power is defined as being the maximum power which a generating set is capable of delivering continuously while supplying a variable electrical load when operated for an unlimited number of hours per year under the agreed operating conditions with the maintenance intervals and procedures being carried out as prescribed by the manufacturer. For marine engine, PRP has 10% overload power.

## 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 8528-1, ISO 3046, DIN 6271.
- 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.



This picture is for reference only and does not represent the actual product status.



## Air intake system

Intake air flow-m <sup>3</sup> /min(cfm) .....	5.64 (201.43)
Max. allowable intake air restriction(include pipe and air filter)- kPa(in H <sub>2</sub> O) .....	6 (24.1)
Intake air temperature up to-°C(°F) .....	/ ( / )
Heat rejection to atmosphere-kW(BTU/min) .....	/ ( / )

## Cooling system

Coolant capacity of the engine-L(gal) .....	11.2 (2.46)
Max. sea water strainer mesh hole diameter- mm(in) .....	2 (0.08)
Sea water pump power-kW(ps) .....	2.7 (3.7)
Expansion tank pressure cap- kPa(psi) .....	50 (7.3)
Heat dissipating to heat exchanger- kW(BTU/min) .....	39.1 (2223.5)
Coolant flow-m <sup>3</sup> /h(gal/h) .....	5.7 (1254)
Recommended outlet water temperature-°C(°F) .....	70~95 (158~212)

## Exhaust system

Exhaust flow-m <sup>3</sup> /min(cfm) .....	9.84 (351.53)
Max. exhaust back pressure-kPa(in H <sub>2</sub> O) .....	5 (20.1)
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) .....	27 (20)
Exhaust smoke-FSN .....	≤2

## Lubricating system

Max. install angle(fore-aft) .....	5
Max. install angle(athwart ship) .....	15
Max. operating angle(fore-aft) .....	/
Max. operating angle(athwart ship) .....	/
Sump type .....	Wet
Oil capacity Low/High-L(gal) .....	6.2/10.7 (1.36/2.35)
Oil fuel consumption ratio based on engine fuel consumption data-% .....	≤0.2
Oil flow- L/min(gal/min) .....	46 (10.12)

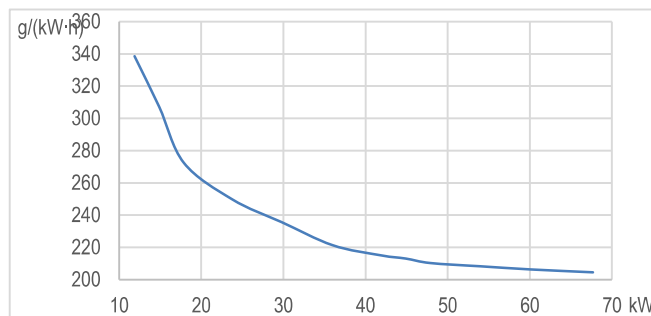
## Fuel system

Fuel flow supply line- L/h(gal/h) .....	14.76 (3.25)
Fuel flow return line- L/h(gal/h) .....	/ ( / )
Max. Allowable fuel supply restriction -kPa(in H <sub>2</sub> O) .....	20 (80.3)
Fuel supply restriction on engine-kPa(in H <sub>2</sub> O) .....	8 (32)
Allowable fuel restriction of shipyard supplied components-kPa(in H <sub>2</sub> O) .....	12 (48)
Max. fuel return restriction-kPa(in H <sub>2</sub> O) .....	20 (80.3)
Max. self-priming height of fuel delivery pump-m(ft) .....	/ ( / )
Max. fuel inlet temperature-°C(°F) .....	50 (122)

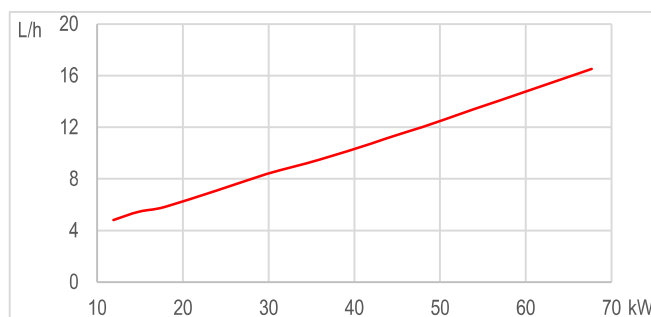
## Electric system

Electrical system voltage(2-pole)-V .....	24
Starter power-kW(Ps) .....	6 (8.2)
Recommended battery capacity(5°C and above)- A·h .....	165*2
Alternator working current-A .....	35

## Specific fuel consumption



## Fuel consumption



— Specific fuel consumption  
 — Fuel consumption

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