



8170ZC1000-5 Marine propulsion engine



Basic engine specifications

Rating	P1
Rated power-kW	735
Rated speed-rpm	1500
Overload power-kW	808
Overload speed-rpm	1548
Rated power tolerance-%	2
Idle speed-rpm	650
High idle speed-rpm	1620
N° of Cylinders / Valves	8/32
Cylinders arrangement	In-line
Thermodynamic cycle	4 stroke
Bore × Stroke-mm(in)	170×200 (6.69×7.87)
Compression ratio	15.1
Displacement-L(in ³)	36.32 (2216.4)
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"/171
Flywheel housing/Flywheel/N° of teeth on flywheel ring gear(optional)	SAE 0/16"/171
Firing order	1-6-2-4-8-3-7-5
Rotation(from flywheel end)	Counterclockwise
Overall dimensions (L×W×H) -mm(in)	2325×1133×1884 (91.5×44.6×74.2)
Dry weight-kg(lb)	3800 (8377)
Wet weight-kg(lb)	3976 (8765)
Max. output power of front end-kW(hp)	735 (999.6)
Max. output torque of front end- N.m(ft-lbs)	/ (/)
Inertia of flywheel- kg.m ² (lb.ft ²)	13 (308.36)
Inertia of crankshaft- kg.m ² (lb.ft ²)	9 (213.48)
Max. bending moment @ flywheel housing- N.m(ft-lbs)	2000 (1476)
Location of GC-mm[in]	(1460,13,290) [(57.5,0.5,11.4)]
Emission compliance	IMO Tier II

Security parameters

Alarm speed-rpm	1725
Shut down speed-rpm	1800
Alarm oil pressure-MPa	0.15
Shut down oil pressure-MPa	0.1
Alarm oil temperature-°C(°F)	90(194)
Alarm coolant temperature-°C(°F)	85(185)

Noise

Diesel engine noise(Acoustic power level)- dB(A)	122.4
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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)

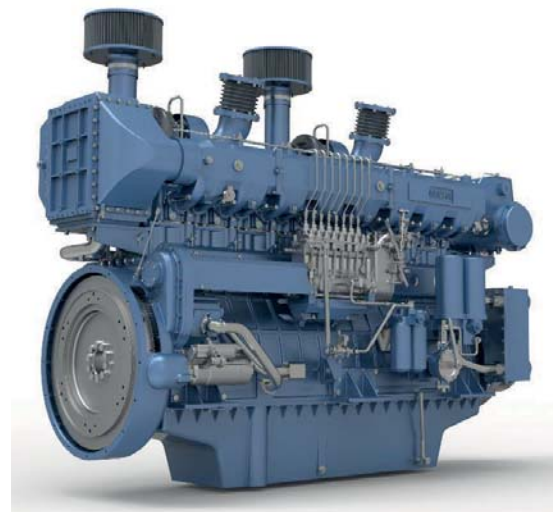
The engine can run at full load for 2h every 8h. The average load factor is 70% to 90%. Annual working time is less than 500h.

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: D000271684.





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Air intake system

Intake air flow-m ³ /min(cfm)	60.53 (2161.82)
Max. allowable intake air restriction(include pipe and air filter)- kPa(in H ₂ O)	6 (24.10)
Intake air temperature up to-°C(°F)	55 (131)
Heat rejection to atmosphere-kW(BTU/min)	/ (/)

Cooling system

Coolant capacity of the engine-L(gal)	101 (22.22)
Max. sea water strainer mesh hole diameter- mm(in)	2 (0.08)
Sea water pump power-kW(hp)	4 (5.4)
Expansion tank pressure cap- kPa(in H ₂ O)	50 (7.3)
Heat dissipating to heat exchanger- kW(BTU/min)	/ (/)
Coolant flow-m ³ /h(gal/h)	/ (/)
Recommended outlet water temperature-°C(°F)	≤80 (≤176)

Exhaust system

Exhaust flow-m ³ /min(cfm)	168.22 (6007.81)
Max. exhaust back pressure-kPa(in H ₂ O)	6 (24.1)
Max. exhaust temperature before turbocharger-°C(°F)	580 (1076)
Max. exhaust temperature after turbocharger-°C(°F)	/ (/)
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)	59/77 (13/16.9)
Oil fuel consumption ratio based on engine fuel consumption data-%	≤0.6
Oil flow- L/min(gal/min)	303.8 (66.8)

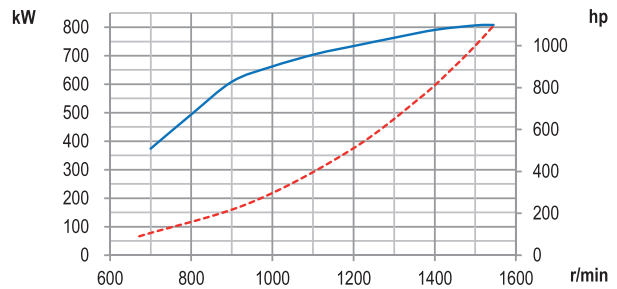
Fuel system

Fuel flow supply line- L/h(gal/h)	215.24 (47.35)
Fuel flow return line- L/h(gal/h)	/ (/)
Max. Allowable fuel supply restriction -kPa(in H ₂ O)	13 (52.2)
Fuel supply restriction on engine-kPa(in H ₂ O)	0 (0)
Allowable fuel restriction of shipyard supplied components-kPa(in H ₂ O)	13 (52.2)
Max. fuel return restriction-kPa(in H ₂ O)	15 (60.2)
Max. self-priming height of fuel delivery pump-m(ft)	/ (/)
Max. fuel inlet temperature-°C(°F)	45 (113)

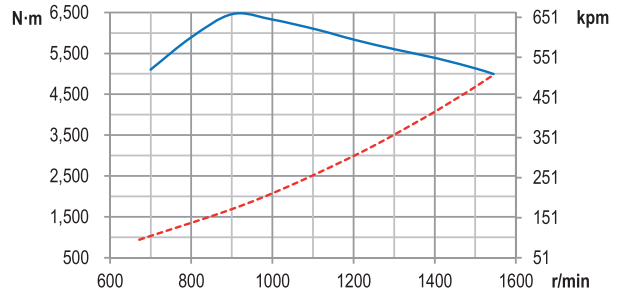
Electric system

Electrical system voltage(2-pole)-V	24
Starter power-kW(hp)	11 (15)
Recommended battery capacity(5°C and above)- A.h	443
Recommended battery capacity(-5°C and above) - A.h	503
Alternator working current-A	80

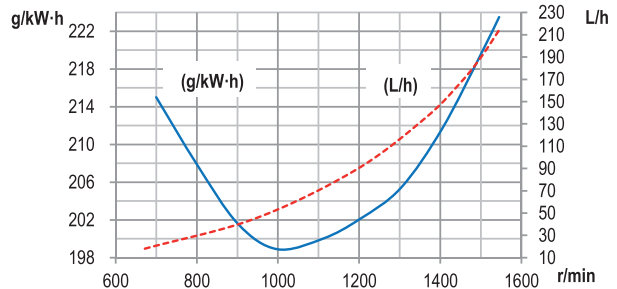
Power



Torque



Fuel consumption



— Full load speed characteristics
 - - - Propeller characteristics

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Materials and specifications are subject to change without notice.