



# WP4.1C68-15 Marine propulsion engine



## Basic engine specifications

Rating .....	P1
Rated power-kW .....	50
Rated speed-rpm .....	1500
Overload power-kW .....	55
Overload speed-rpm .....	1548
Rated power tolerance-% .....	±3
Low idle speed -rpm .....	650
High idle speed-rpm .....	1650
N° of Cylinders / Valves .....	4/8
Cylinders arrangement .....	In-line
Thermodynamic cycle .....	4stroke
Bore × Stroke-mm(in) .....	105×118 (4.13×4.65)
Compression ratio .....	17:1
Displacement-L(in <sup>3</sup> ) .....	4.09 (249.6)
Fuel system .....	Mechanical
Injection system .....	Directinjection
Aspiration .....	Turbocharged
Flywheel housing/Flywheel/N° of teeth on flywheel ring gear(standard) .....	SAE3/11.5°/128
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) .....	1062×625×918 (41.8×24.6×36.1)
Dry weight-kg(lb) .....	400±30 (882)
Wet weight-kg(lb) .....	/ (l)
Max. output power of front end-kW(Ps) .....	/ (l)
Emission compliance .....	IMO TierII
Lifting cylinder height- m(ft) .....	0.8 (2.62)

## Rating definitions

### Continuous Duty (P1)

The engine can run at full load continuously. The average load factor is 70% to 100%. Annual working time is recommended but not limited to 5000h~8000h.

### Heavy Duty (P2)

The engine can run at full load for 8h every 12h. The average load factor is 40% to 80%. Annual working time is recommended but not limited to 5000h.

### Intermittent Duty (P3)

The engine can run at full load for 4h every 12h. The average load factor is 40% to 80%. Annual working time is recommended but not limited to 3000h.

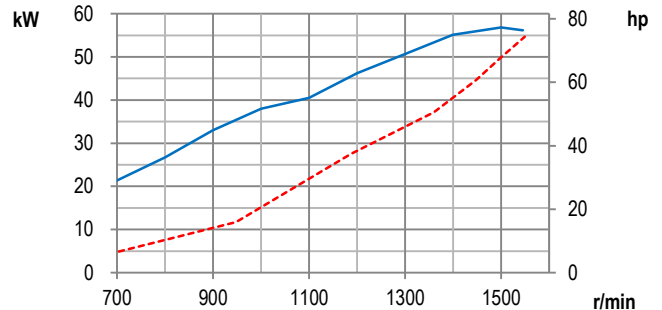
### Light Duty (P4)

The engine can run at full load for 2h every 8h. The average load factor is about 60%. Annual working time is recommended but not limited to 1000h.

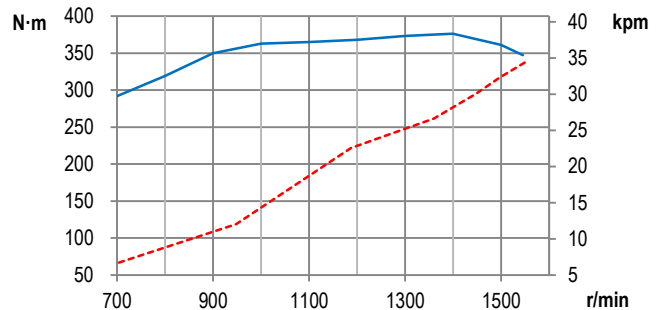
### High Performance Duty (P5)

The engine can run at full load for 0.5h every 5h. The average load factor is about 60%. Annual working time is recommended but not limited to 500h.

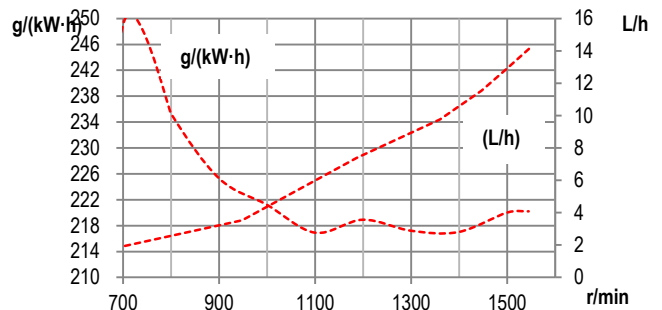
## Power



## Torque



## Fuel consumption



— Full load speed characteristics  
 - - - Propeller characteristics



## Air intake system

Intake air flow-m <sup>3</sup> /min(cfm)	4.0 (141.8)
Max. allowable intake air restriction- kPa(in H <sub>2</sub> O)	3.5 (14.1)
Intake air temperature up to-°C(°F)	/ ( /)
Heat rejection to atmosphere-kW(BTU/min)	6.2(352.6)

## Cooling system

Coolant capacity of the engine-L(gal)	/ ( /)
Max. sea water strainer mesh hole diameter- mm(in)	2 (0.08)
Sea water pump flow-m <sup>3</sup> /h(gal/h)	18 ( /)
Head of sea water pump -m(ft)	17(55.76)
Max. self-priming height of sea water pump- m(ft)	2(6.56)
Expansion tank pressure cap- kPa(in H <sub>2</sub> O)	50(7.3)
Heat dissipating to heat exchanger- kW(BTU/min)	40(2274.8)
Coolant flow-m <sup>3</sup> /h(gal/h)	8.6(1982)
Temperature range of engine outlet -°C(°F)	70~95(158~203)
Temperature range of thermostat-°C(°F)	70~80(158~176)

## Exhaust system

Exhaust flow-m <sup>3</sup> /min(cfm)	11.0 (392.97)
Max. exhaust back pressure-kPa(in H <sub>2</sub> O)	5 (20.10)
Max. exhaust temperature before turbocharger-°C(°F)	/ ( /)
Max. exhaust temperature after turbocharger-°C(°F)	550(1022)
Max. bending moment of turbocharger flange- N·m(ft·lbs)	/ ( /)
Exhaust smoke-FSN	2

## Lubricating system

Max. install angle(fore-aft)	/
Max. install angle(athwart ship)	/
Max. operating angle(fore-aft)	/
Max. operating angle(athwart ship)	/
Sump type	Wet
Oil capacity Low/High-L(gal)	8.8/12.6 (1.94/2.77)
Oil consumption -g/(kW·h)	≤0.6
Oil flow- L/min(gal/min)	/ ( /)
Oil pressure of idle speed- kPa(in H <sub>2</sub> O)	≥120(≥482)
Oil pressure of rated speed- kPa(in H <sub>2</sub> O)	300~550(1205~2209)

## Fuel system

Fuel flow supply line- L/h(gal/h)	/ ( /)
Fuel flow return line- L/h(gal/h)	/ ( /)
Max. Allowable fuel supply restriction -kPa(in H <sub>2</sub> O)	/ ( /)
Fuel supply restriction on engine-kPa(in H <sub>2</sub> O)	/ ( /)
Allowable fuel restriction of shipyard supplied components-kPa(in H <sub>2</sub> O)	/ ( /)
Max. fuel return restriction-kPa(in H <sub>2</sub> O)	/ ( /)
Max. self-priming height of fuel delivery pump-m(ft)	/ ( /)
Max. fuel inlet temperature-°C(°F)	/ ( /)
Max. fuel inlet pressure- kPa(in H <sub>2</sub> O)	/ ( /)

## Starting system

Electrical system voltage(2-pole)-V	12/24
Electric starter power-kW(PS)	3.8/4.5 (5.1/6.0)
Recommended battery capacity- A·h	200
Alternator working current-A	25/18

## Security parameters

Alarm speed-rpm	1725
Shut down speed-rpm	1800
Alarm oil pressure-MPa	0.12
Shut down oil pressure-MPa	0.08
Alarm oil temperature-°C(°F)	115(239)
Alarm coolant temperature-°C(°F)	95(203)

## Noise

Noise(SPL)- dB(A)	111
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## 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.

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Materials and specifications are subject to change without notice.