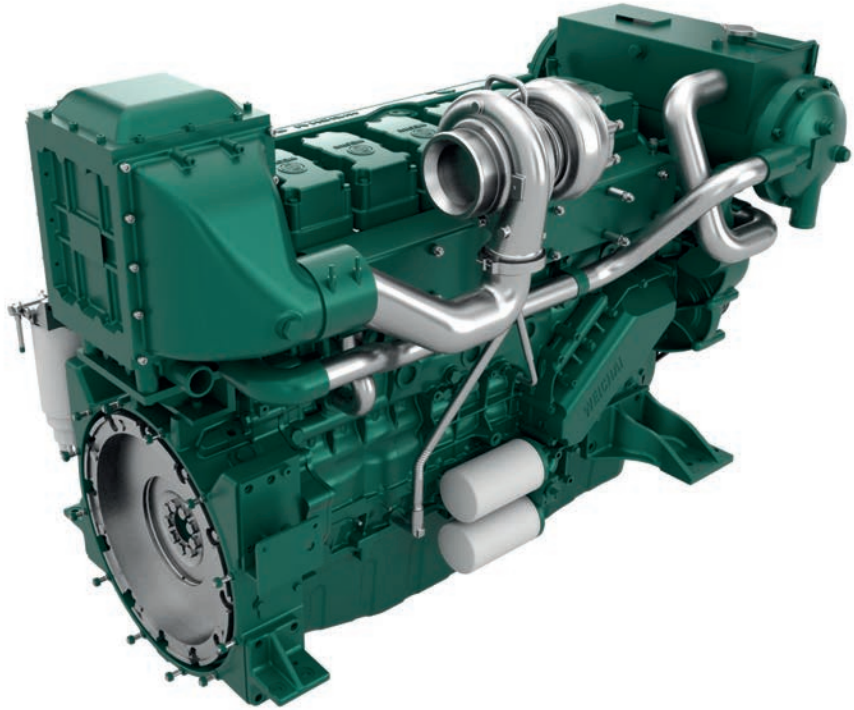


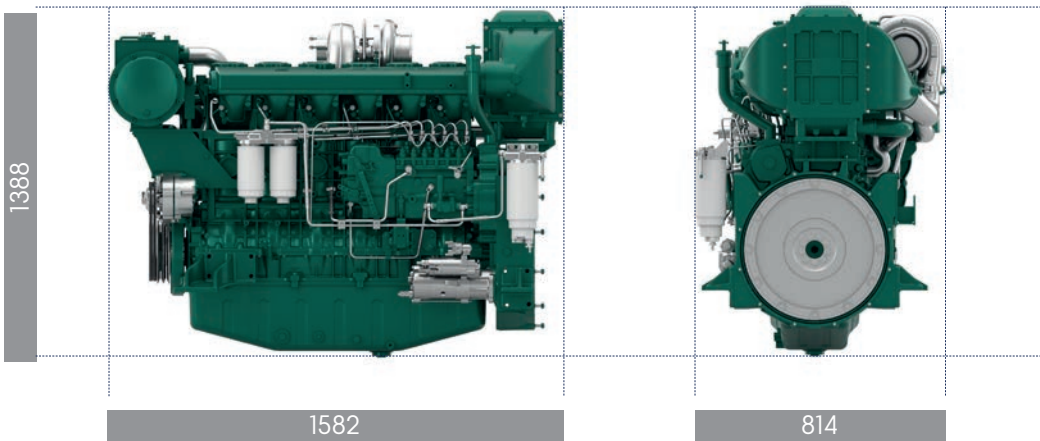
Marine Propulsion Engine



WP13

Technical Data

Engine designation	WP13C400-18	WP13C450-18	WP13C450-21	WP13C500-18	WP13C500-21
Rated power (HP/kW)	400/295	450/330	450/330	500/368	500/368
Speed (rpm)	1800	1800	2100	1800	2100
Power class	P1				
Min. fuel consumption (g/kW.h)	215				
No. of cylinders	in-line 6				
Description	4-cycle, direct-injected, turbocharged diesel engine with air cooler				
Bore/Stroke, mm (in)	127/165(5/6.5)				
Displacement, L (in ³)	12.54(765.2)				
Compression ratio	16:1				
Dry weight, kg (lb)	1200(2645.3)				
Emission compliance	IMO Tier II				
Firing order	1-5-3-6-2-4				
Idle speed (r/min)	650±25				
Flywheel housing/Flywheel	SAE 1 [#] /14 [#]				
Recommended fuel to conform to	ASTM-D975: 1-D / 2-D; DIN51601; NATO CODES F54/F57/F76; GB252 0/-10/-20/-35/-50; BS2869: A1/A2; W-F-800C:DF-F-A,DF-1,DF-2				



Connections

Raw water inlet	Ø 42mm
Raw water outlet	2x Ø 42mm
Fuel inlet	Ø 14mm
Fuel outlet	Ø 14mm
Exhaust	Ø 121mm

Class Definition

Rating	Time at full load	Mean engine load factor	Annual working time	Cruising speed	Typical applications
P1 Continuous Duty	unlimited	80%-100%	5000h to 7000h	unlimited	Trawlers, Freighters, Dredgers, Ferries, Local carriers, Barges
P2 Heavy Duty	8h per 12h	30%-80%	3000h to 5000h	unlimited	Passenger boats, Harbour tug boats, Coasters, Tuna boats, Seiners, Oceanographic research vessels
P3 Intermittent Duty	2h per 12h	70%	1000h to 3000h	90%	Fishing crafts, Pilot boats, Commercial pleasure crafts, Fire fighting boats
P4 High Output Duty	1hr per 12h	60%	<1000h	80%	Patrol boats, Life boats
P5 Light Duty	1hr per 12h	<30%	<500h	80%	Leisure yachts

Power Definition

Standard ISO 3046/1 - 1995 (F)

Reference Conditions

Ambient temperature	25°C / 77°F
Barometric pressure	100 kPa
Relative humidity	30%
Raw water temperature	25°C / 77°F

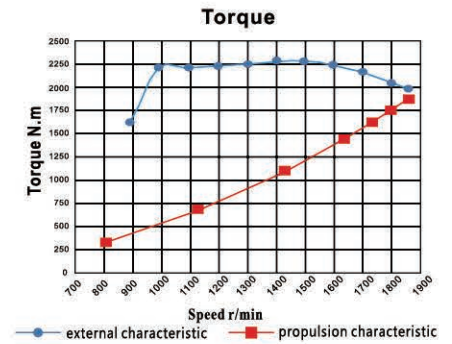
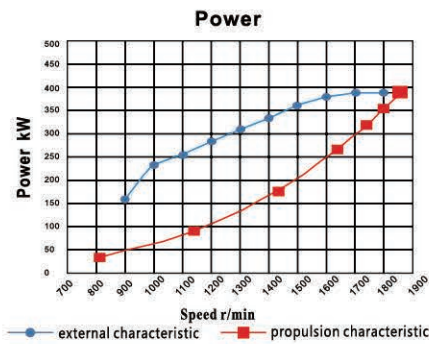
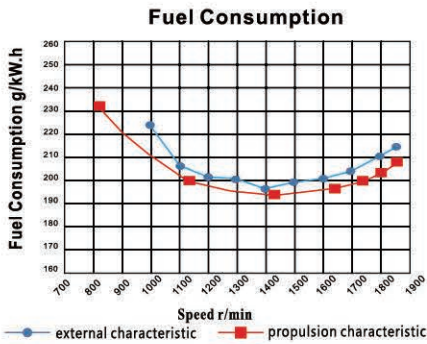
Fuel oil

Relative density	0,840 ± 0,005g/ml
Lower calorific power	42,700 kJ/kg
Consumption tolerance	0 ± 5%
Inlet limit temperature	35°C / 95°F

Our ratings also comply with classification societies maximum temperature definition without power derating.

Ambient temperature	45°C / 113°F
Raw water temperature	32°C / 90°F

Performance Curves (WP13C500-18)



Technical Description

Engine and block

- Cylinder block made of cast iron
- 4 valves per cylinder
- Steel crankshaft
- Cylinder head of integral type
- Dry cylinder liner

Electrical system

- Start motor 24V/7.5kW, double-wire system
- Alternator 28V/35A, double-wire system

Lubrication system

- Integrated oil cooler in cylinder block
- Fitted with a hand oil draining pump
- Duplex oil filter of spin-on type

Fuel system

- Anti-explosion high pressure fuel pipe with fuel leaking alarm
- 2 stop methods, electro magnet stop and electromagnetic valve
- Fuel fine filter can be changed without the engine shutdown

Air inlet and exhaust system

- Turbocharged and inter-cooled air intake system
- Engine coolant cooled turbocharger and exhaust pipe

Cooling system

- Heat exchanger and air cooler with corrosion-resistance tubes and anticorrosion Zinc bar

Instruments/controls (options)

- Local control panel and remote panel equipped
- Connectors of plug-in type

