



WD12C400-21 Marine propulsion engine



Basic engine specifications

Rating	P1
Rated power-kW	294
Rated speed-rpm	2150
Overload power-kW	323
Overload speed-rpm	2219
Rated power tolerance-%	±3
Idle speed-rpm	650
High idle speed-rpm	2365
N° of Cylinders / Valves	6/12
Cylinders arrangement	In-line
Thermodynamic cycle	4 stroke
Bore × Stroke-mm(in)	126×155 (4.96×6.10)
Compression ratio	17:1
Displacement-L(in ³)	11.596 (707.6)
Fuel system	Mechanical
Injection system	Direct injection
Aspiration	Turbocharged and aftercooled
Flywheel housing/Flywheel/N° of teeth on flywheel ring gear(standard)	SAE 1/14"/136
Flywheel housing/Flywheel/N° of teeth on flywheel ring gear(optional)	/
Firing order	1-5-3-6-2-4
Rotation(from flywheel end)	Counterclockwise
Overall dimensions (L×W×H) -mm(in)	1478×808×1344 (58.2×31.8×52.9)
Dry weight-kg(lb)	1110 (2447)
Wet weight-kg(lb)	1208 (2663)
Max. output power of front end-kW(hp)	17.97 (24.4)
Max. output torque of front end- N.m(ft-lbs)	79.82 (58.9)
Inertia of flywheel- kg.m ² (lb.ft ²)	0.94 (22.30)
Inertia of crankshaft- kg.m ² (lb.ft ²)	0.47 (11.15)
Max. bending moment @ flywheel housing- N.m(ft-lbs)	10800 (7970.4)
Location of GC-mm[in]	(708,23,180) [(27.9,0.9,7.1)]
Emission compliance	IMO Tier II

Security parameters

Alarm speed-rpm	2472.5
Shut down speed-rpm	2580
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)	97(206.6)

Noise

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

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: .





WD12C400-21 Marine propulsion engine



Air intake system

Intake air flow-m ³ /min(cfm)	/ (l)
Max. allowable intake air restriction(include pipe and air filter)- kPa(in H ₂ O)	7 (28.11)
Intake air temperature up to-°C(°F)	50±5 (122±41)
Heat rejection to atmosphere-kW(BTU/min)	/ (l)

Cooling system

Coolant capacity of the engine-L(gal)	73 (16.06)
Max. sea water strainer mesh hole diameter- mm(in)	2 (0.08)
Sea water pump power-kW(hp)	2.7 (3.7)
Expansion tank pressure cap- kPa(in H ₂ O)	50 (7.3)
Heat dissipating to heat exchanger- kW(BTU/min)	/ (l)
Coolant flow-m ³ /h(gal/h)	/ (l)
Recommended outlet water temperature-°C(°F)	72-95 (161.6-203)

Exhaust system

Exhaust flow-m ³ /min(cfm)	/ (l)
Max. exhaust back pressure-kPa(in H ₂ O)	7 (28.1)
Max. exhaust temperature before turbocharger-°C(°F)	/ (l)
Max. exhaust temperature after turbocharger-°C(°F)	550 (1022)
Max. bending moment of turbocharger flange- N.m(ft-lbs)	19 (14.0)
Exhaust smoke-FSN	≤1.5

Lubricating system

Max. install angle(fore-aft)	10°
Max. install angle(athwart ship)	15°
Max. operating angle(fore-aft)	30°
Max. operating angle(athwart ship)	30°
Sump type	Wet
Oil capacity Low/High-L(gal)	22.2/27.2 (4.88/5.98)
Oil fuel consumption ratio based on engine fuel consumption data-%	≤0.3
Oil flow- L/min(gal/min)	/ (l)

Fuel system

Fuel flow supply line- L/h(gal/h)	/ (l)
Fuel flow return line- L/h(gal/h)	/ (l)
Max. Allowable fuel supply restriction -kPa(in H ₂ O)	18 (72.3)
Fuel supply restriction on engine-kPa(in H ₂ O)	10 (40.2)
Allowable fuel restriction of shipyard supplied components-kPa(in H ₂ O)	8 (32.1)
Max. fuel return restriction-kPa(in H ₂ O)	22 (88.4)
Max. self-priming height of fuel delivery pump-m(ft)	1 (3.28)
Max. fuel inlet temperature-°C(°F)	50 (122)

Electric system

Electrical system voltage(2-pole)-V	24
Starter power-kW(hp)	7.5 (10.2)
Recommended battery capacity(5°C and above)- A.h	169
Recommended battery capacity(-5°C and above) - A.h	191
Alternator working current-A	35

@2019 Weichai

All rights reserved.

Materials and specifications are subject to change without notice.