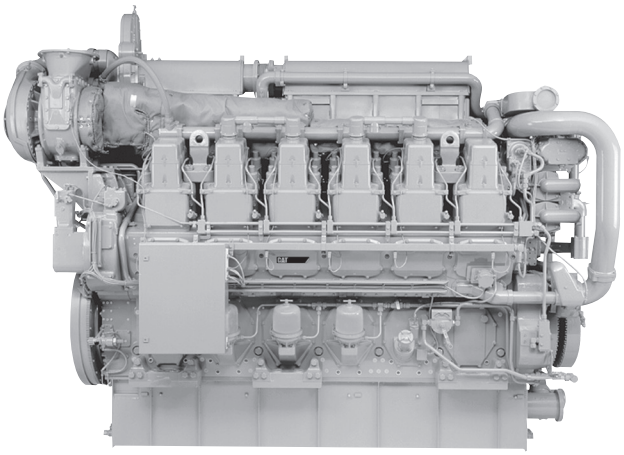
CATERPILLAR®

C280-12 MARINE PROPULSION

5167 mhp
(5096 bhp)
3800 bkW



Shown with
Accessory Equipment

SPECIFICATIONS

V-12, 4-Stroke-Cycle-Diesel

Emissions	IMO II/EPA Tier 2 compliant
Displacement	222 L (13,546 cu. in.)
Low Idle Speed	350 rpm
Rated Speed	900 rpm
Bore	280 mm (11.0 in.)
Stroke	300 mm (11.8 in.)
Compression Ratio	13:1
Aspiration	Turbocharged-Aftercooled
Governor	Electronic
Cooling System	Keel or Heat Exchanger
Weight, Dry	25,980 kg (57,276 lbs)
Refill Capacities	
Cooling System	1400-1575 L (370-416 gal)
Lube Oil System	910 L (240 gal)
Oil Change Interval*	750 hours
Rotation (from flywheel end)	CCW or CW
Serial Number Prefix	TSJ

*A new S•O•S℠ analysis must be done to determine actual oil change intervals.

STANDARD ENGINE EQUIPMENT

Air Intake and Exhaust System
Charge air cooler, air inlet shutoff, high flow turbocharger, dry manifold with soft or hard shielding

Basic Engine Arrangement
Vee engine with one-piece grey iron cylinder block, individual cylinder heads with four intake/exhaust valves, right- or left-hand service side available

Control System
Dual ADEM™ A3 electronic engine control unit (ECU) with electronic unit injector fuel system, rigid wiring harness (10 amp, 24 volt power required to drive ECU)

Cooling System
Single or combined system, engine mounted freshwater and seawater pumps, engine coolant water drains

Fuel System
Engine operates on MDO; fuel injection system consists of engine-driven fuel transfer pump and an electronic unit injector for each cylinder, engine-mounted duplex fuel filters, and flexible connections

Lube Oil System
Top-mounted crankcase breather, three centrifugal oil filters with single shutoff, gear-driven pump, duplex oil filter, crankcase explosion relief, oil filler and dipstick

Monitoring, Alarm, and Safety Control System
Alarms and shutdowns provided as required by marine society for unmanned machinery spaces. Marine Monitoring System II [listed as Programmable Logic Control (PLC) in the Price List] or Engine Control Panel are available; systems include temperature, pressure, and speed sensors; optional: oil mist detector or particle detector available

ECU Functions
Key-switch, desired engine speed, programmable low idle, SAE J1939 data link, Cat® data link, Messenger (displays engine data, diagnostics, etc.), diagnostics, general alarm, programmable parameters (system, application, and tattletales), Cat ET service tool interface, remote shutdown, shutdown notify, load feedback, overspeed shutdown, overspeed verify, engine power correction, droop, dual dynamics

General
Four lifting eyes mounted to cylinder heads, Cat yellow paint, parts books and maintenance manuals, shrink wrap

Optional Supplied Equipment
Torsional coupling, fresh water heat exchanger, fuel cooler, expansion tank, emergency pumps and connections, jacket water heater, flexible connections, and anti-vibration isolators

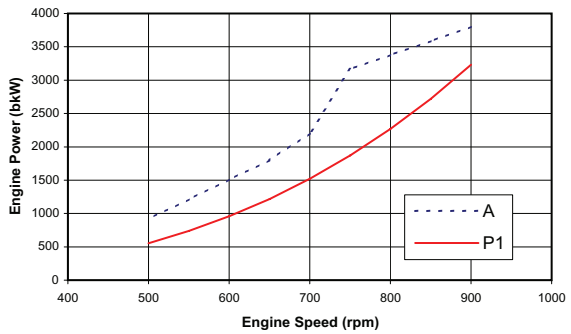
MARINE ENGINE PERFORMANCE

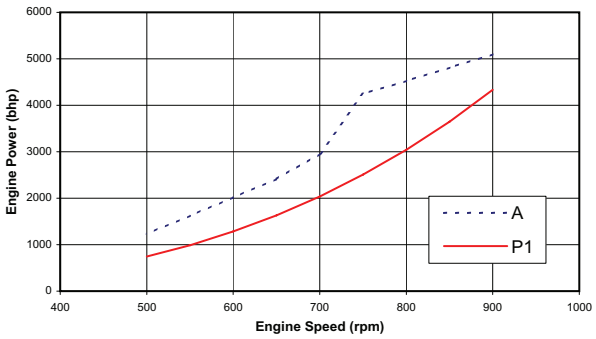
C280-12 DIESEL ENGINE TECHNICAL DATA

CATERPILLAR®

RATED SPEED (RPM):	900	ENGINE RATING:	**Marine MCR**
RATED POWER[1] (bkW):	3800	CERTIFICATION[5]:	IMO II/EPA MARINE TIER II
BMEP @ 100% LOAD (kPa):	2286	TURBOCHARGER PART #:	157-5514
COMPRESSION RATIO:	13:1	COMBUSTION:	DI
AFTERCOOLER WATER (°C):	32	FUEL TYPE:	Distillate
JACKET WATER OUTLET (°C):	90	EXHAUST MANIFOLD:	DRY
IGNITION SYSTEM:	EUI	MEAN PISTON SPEED (m/s):	9
FIRING PRESSURE, MAXIMUM (kPa):	17300		

Engine Performance





ZONE LIMIT DATA

	Engine Speed rpm	Power bkW	Fuel Cons[3] g/ kW-hr	Fuel Rate L/hr	Boost Press kPa Gauge	Air Flow[4] cu m/ Min	Exh Temp to Turbo C	Exh Stack Temp C	Exh Flow cu m/ min
	900	3800	201	910.8	261	344.5	557	382	749.8
Curve A	850	3588	203	868.5	260	327.8	557	385	716.6
	800	3378	203	818.9	239	296.7	577	409	672.7
	750	3166	203	766.4	207	257.5	615	450	620.9
	700	2200	207	542.4	125	172.1	618	472	428.5
	650	1800	211	452.1	88	133.2	638	489	339.9
	600	1506	216	387.0	66	109.1	650	497	281.8
	550	1212	221	318.8	46	88.7	629	480	224.0
	500	920	224	245.9	28	70.1	577	431	165.5

PROPELLER DEMAND DATA

Optimum Load	Engine Speed rpm	Power bkW	Fuel Cons[3] g/ kW-hr	Fuel Rate L/hr	Boost Press kPa Gauge	Air Flow[4] cu m/ Min	Exh Temp to Turbo C	Exh Stack Temp C	Exh Flow cu m/ min
	900	3230	211	810.8	243	330.1	544	377	711.0
(Curve P1)	850	2721	211	685.8	212	279.6	547	392	616.7
	800	2269	209	566.2	152	213.7	554	413	487.0
	750	1869	210	467.8	105	163.6	567	430	382.9
	700	1520	212	384.9	73	128.8	573	438	305.2
	650	1217	216	313.1	50	103.5	557	431	243.0
	600	957	219	249.9	32	84.2	522	403	189.7
	550	737	221	194.4	19	68.9	473	356	144.3
	500	554	224	147.7	11	57.0	413	301	108.6

ZONE LIMIT DATA

	Engine Speed rpm	Power bhp	Fuel Cons[3] lb/ hp-hr	Fuel Rate gal/hr	Boost Press in Hg-Gauge	Air Flow[4] cfm	Exh Temp to Turbo F	Exh Stack Temp F	Exh Flow cfm
	900	5096	0.331	240.5	77	12167	1035	720	26480
Curve A	850	4812	0.334	229.3	77	11577	1035	725	25305
	800	4530	0.335	216.2	71	10479	1071	767	23756
	750	4246	0.334	202.4	61	9095	1139	842	21927
	700	2950	0.341	143.2	37	6076	1145	882	15134
	650	2414	0.347	119.4	26	4702	1180	912	12003
	600	2020	0.355	102.2	20	3854	1202	926	9953
	550	1625	0.363	84.2	14	3131	1165	895	7912
	500	1234	0.369	64.9	8	2476	1070	807	5844

PROPELLER DEMAND DATA

Optimum Load	Engine Speed rpm	Power bhp	Fuel Cons[3] lb/ hp-hr	Fuel Rate gal/hr	Boost Press in Hg-Gauge	Air Flow[4] cfm	Exh Temp to Turbo F	Exh Stack Temp F	Exh Flow cfm
	900	4331	0.347	214.1	72	11657	1012	710	25108
(Curve P1)	850	3649	0.348	181.1	63	9875	1017	738	21778
	800	3042	0.345	149.5	45	7548	1029	775	17198
	750	2507	0.346	123.5	31	5777	1053	806	13524
	700	2038	0.350	101.6	22	4547	1063	820	10779
	650	1632	0.355	82.7	15	3655	1035	807	8581
	600	1283	0.361	66.0	10	2972	971	757	6698
	550	989	0.364	51.3	6	2433	883	673	5097
	500	743	0.368	39.0	3	2012	775	575	3836

Heat Rejection @ 100% Load and 25° C Air

Lube Oil Cooler	kW	(Btu/min)	382	(21745)
Jacket Water	kW	(Btu/min)	770	(43825)
AfterCooler	kW	(Btu/min)	1059	(60266)
Total Heat Rejection to Raw Water	kW	(Btu/min)	2212	(125836)
Exhaust Gas[2]	kW	(Btu/min)	2686	(152833)
Radiation	kW	(Btu/min)	182	(10356)

Notes

1 Ratings are based on ISO 3046/1 and SAEJ1995 Jan 90 standard reference conditions of 100 kPa, 25° C, and 30% relative humidity at the stated aftercooler water temperature.

2 Exhaust Heat rejection is based on fuel LHV and is not normally recoverable in total

3 At 100% load with JW and Oil pumps, without seawater pump, +/- 3%. Performance and fuel consumption are based on 35 API, 16°C fuel having a lower heating value of 42,780 kJ/kg used at 29°C with a density of 838.9 g/liter.

4 Air flows are shown for 25°C air inlet to the turbocharger and 32°C cooling water to the charge air cooler.

5 This engine's exhaust emissions are in compliance with the INTERNATIONAL MARINE ORGANIZATION'S (IMO) standard as described in REGULATION 13 of ANNEX VI of MARPOL 73/78 and ISO 8178 for measuring HC, CO, PM, and NOx.

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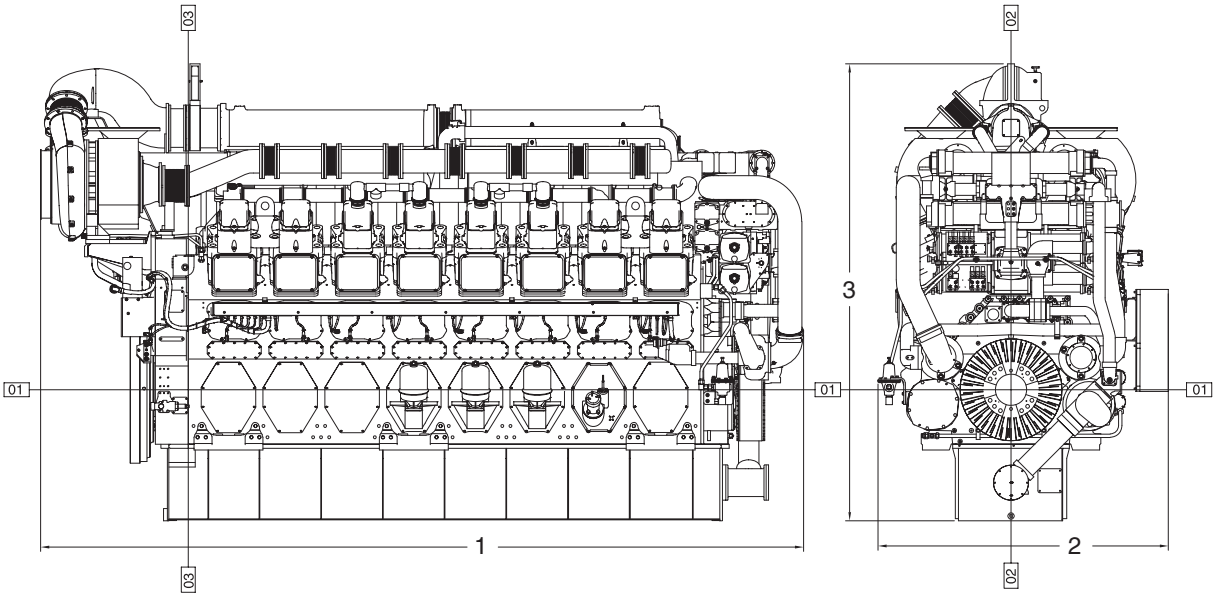
ENGINE DIMENSIONS



Engine Dimensions		
(1) Overall Length	4612 mm	181.6 in.
(2) Overall Width	2022 mm	79.6 in.
(3) Overall Height	3404 mm	134.0 in.

Note: Do not use for installation design. See general dimension drawings for detail.

Engine Weights		
Engine Dry Weight	25,980 kg	57,276 lb
Shipped Loose Items		
Torsional Coupling	420 kg	926 lb
Plate-Type Heat Exchanger	450 kg	990 lb
Instrument/Alarm Panel	200 kg	440 lb
Fluids		
Lube Oil	828 kg	1,825 lb
Jacket Water	800 kg	1,764 lb
Heat Exchanger (FW, SW, LO)	80 kg	176 lb

RATING DEFINITIONS AND CONDITIONS

Maximum Continuous Rating — 8% of the engine operating hours at 100% of rated power, 92% of the engine operating hours at 90% of rated power.

Ratings are based on SAE J1995/ISO3046 standard conditions of 100 kPa (29.61 in. Hg), 25°C (77°F), and 30% relative humidity at the stated charge air cooler water temperature. Ratings also meet classification society maximum temperature requirements of 45°C (113°F) air temperature to the turbocharger and 32°C (90°F) seawater temperature without derate.

Additional ratings may be available for specific customer requirements. Consult your Cat representative for additional information.

Fuel rates are based on 35° API, 16°C (60°F) fuel used at 29°C (85°F) with a density of 838.9 g/liter (7.001 lbs/U.S. gal). Lower Heat Value (LHV) of 42 780 kJ/kg (18,390 Btu/lb). Tolerance is +5%. Includes all engine mounted pumps. BSFC without pumps is 3% less.

Marine Certification — Ratings are marine classification society approved by ABS, BV, CCS, DnV, GL, KR, LRS, NKK, RINA, and RS. These societies have also granted C280 factory line production approval which eliminates requirement for society surveyor witness test.

Performance data is calculated in accordance with tolerances and conditions stated in this specification sheet and is only intended for purposes of comparison with other manufacturers' engines. Actual engine performance may vary according to the particular application of the engine and operating conditions beyond Caterpillar's control.

Power produced at the flywheel will be within standard tolerances up to 49°C (120°F) combustion air temperature measured at the air cleaner inlet, and fuel temperature up to 52°C (125°F) measured at the fuel filter base. Power rated in accordance with NMMA procedure as crankshaft power. Reduce crankshaft power by 3% for propeller shaft power.

TMI Reference No.: DM8407-01

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