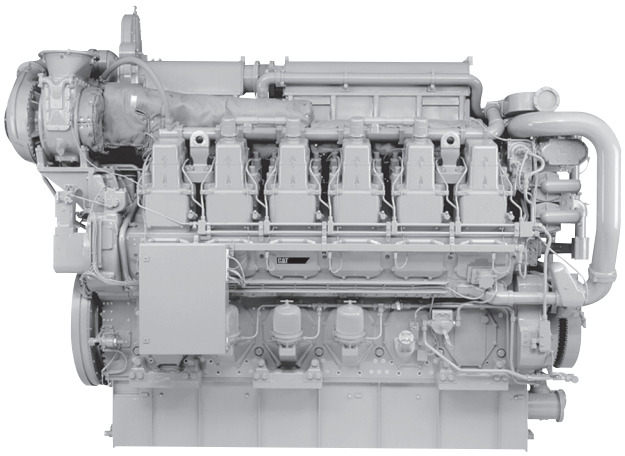
CATERPILLAR®

C280-12 MARINE PROPULSION

5520 mhp
(5444 bhp)
4060 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	1000 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

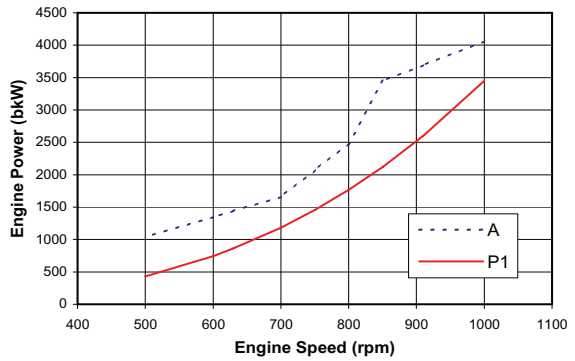
MARINE ENGINE PERFORMANCE

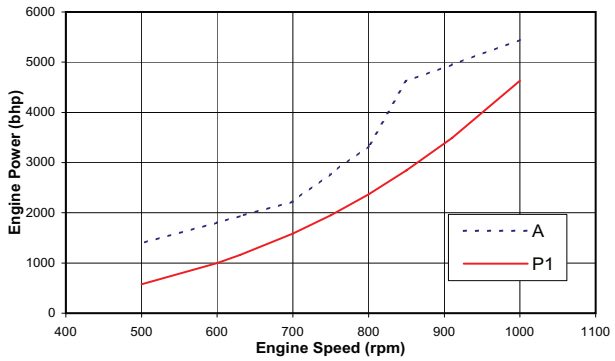
C280-12 DIESEL ENGINE TECHNICAL DATA

CATERPILLAR®

RATED SPEED (RPM):	1000	ENGINE RATING:	**Marine MCR**
RATED POWER[1] (bkW):	4060	CERTIFICATION[5]:	IMO II/EPA MARINE TIER II
BMEP @ 100% LOAD (kPa):	2198	TURBOCHARGER PART #:	189-4427
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):	10
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
	1000	4060	205	992.1	251	378.9	536	375	815.4
Curve A	910	3694	207	911.5	243	335.9	545	390	740.3
	850	3451	201	826.7	208	289.5	550	405	653.5
	800	2480	202	597.2	212	205.1	553	447	492.0
	750	2070	206	508.3	90	169.6	537	463	416.4
	700	1660	210	415.5	65	130.0	521	459	318.0
	630	1444	212	364.9	51	109.7	515	470	272.9
	600	1350	216	347.6	47	100.4	518	475	251.9
	500	1040	225	278.9	36	92.0	503	478	230.5

PROPELLER DEMAND 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
	1000	3452	207	851.8	212	342.6	517	373	733.9
Optimum Load	910	2601	206	638.8	151	253.2	516	398	563.5
	850	2120	208	525.6	103	186.5	512	423	432.1
	800	1767	210	442.4	75	149.4	503	432	351.1
	750	1456	212	368.0	54	120.7	484	426	281.5
	700	1184	219	309.1	43	103.0	462	416	236.6
	630	863	225	231.5	28	81.9	428	388	180.1
	600	746	231	205.3	22	74.3	397	367	158.1
	500	432	235	120.9	12	70.9	323	298	133.0
(Curve P1)									

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
	1000	5444	0.338	261.9	74	13381	997	707	28796
Curve A	910	4954	0.341	240.7	72	11861	1013	734	26145
	850	4627	0.331	218.3	62	10222	1022	761	23079
	800	3326	0.333	157.7	63	7242	1027	837	17374
	750	2776	0.339	134.2	27	5990	999	865	14705
	700	2226	0.346	109.7	19	4589	970	858	11231
	630	1936	0.349	96.3	15	3874	959	878	9637
	600	1810	0.356	91.8	14	3546	964	887	8895
	500	1395	0.370	73.6	11	3248	937	892	8140

PROPELLER DEMAND 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
	1000	4629	0.341	224.9	63	12099	963	703	25919
Optimum Load	910	3488	0.339	168.7	45	8941	961	748	19901
	850	2843	0.342	138.8	31	6586	954	793	15258
	800	2370	0.346	116.8	22	5275	937	810	12399
	750	1953	0.349	97.2	16	4262	903	799	9942
	700	1588	0.361	81.6	13	3636	864	781	8356
	630	1158	0.370	61.1	8	2891	802	730	6361
	600	1000	0.380	54.2	7	2623	747	693	5583
	500	579	0.387	31.9	4	2503	613	568	4697
(Curve P1)									

Heat Rejection @ 100% Load and 25° C Air

Lube Oil Cooler	kW	(Btu/min)	397	(22589)
Jacket Water	kW	(Btu/min)	803	(45691)
AfterCooler	kW	(Btu/min)	1334	(75905)
Total Heat Rejection to Raw Water	kW	(Btu/min)	2534	(144185)
Exhaust Gas[2]	kW	(Btu/min)	3097	(176219)
Radiation	kW	(Btu/min)	198	(11266)

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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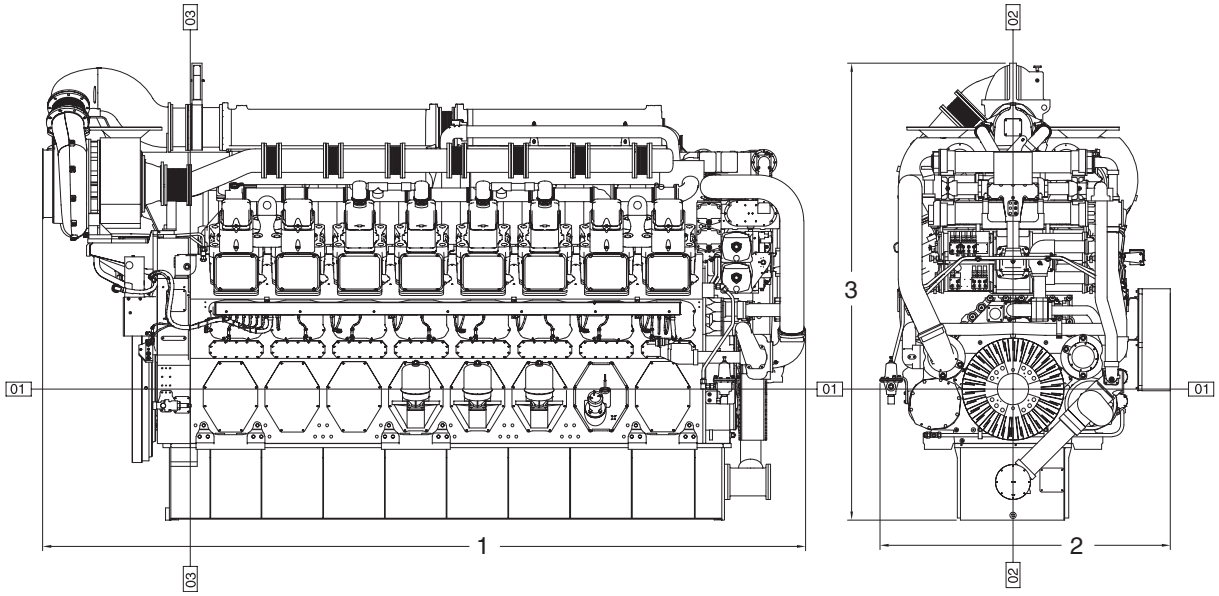
ENGINE DIMENSIONS



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.: DM8408-01

LEHM7106-01 (3-10)