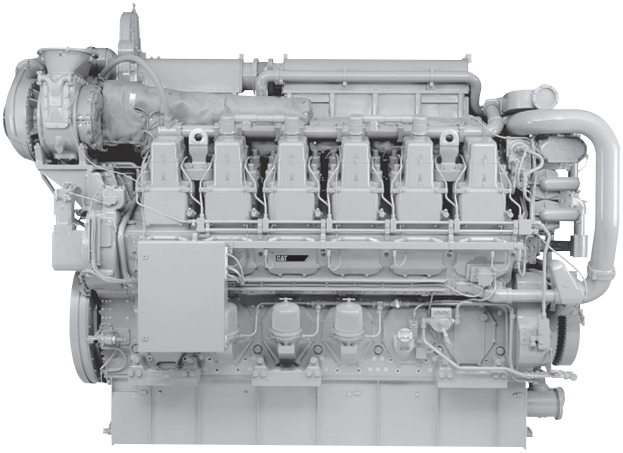
CATERPILLAR®

C280-12 MARINE PROPULSION

5031 mhp
(4962 bhp)
3700 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

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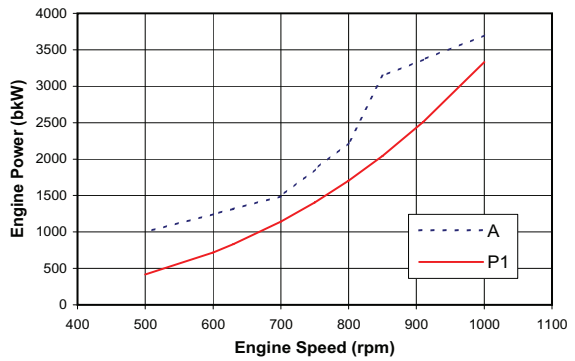
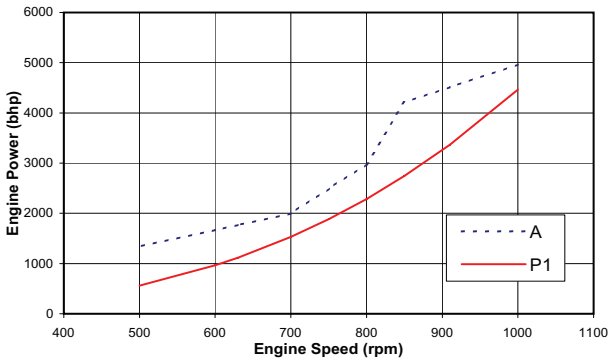
RATED SPEED (RPM):	1000	ENGINE RATING:	**Marine CSR**
RATED POWER[1] (bkW):	3700	CERTIFICATION[5]:	IMO II/EPA MARINE TIER II
BMEP @ 100% LOAD (kPa):	2003	TURBOCHARGER PART #:	189-4427
COMPRESSION RATIO:	13:1	COMBUSTION:	DI
AFTERCOOLER WATER (°C):	32	FUEL TYPE:	Distillate
JACKET WATER OUTLET (°C):	90	EXHAUST MANIFOLD:	DRY
IGNITION SYSTEM:	EUI	MEAN PISTON SPEED (m/s):	10
FIRING PRESSURE, MAXIMUM (kPa):	16200		

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	3700	204	899.7	224	340.9	523	374	732.7
Curve A	910	3366	206	826.6	214	307.2	536	392	678.9
	850	3144	201	753.4	184	259.9	548	445	621.8
	800	2220	208	550.4	106	171.3	533	443	410.1
	750	1856	210	464.6	74	136.7	522	433	323.4
	700	1490	210	373.0	55	111.4	504	447	268.6
	630	1318	217	340.9	47	96.2	507	457	235.7
	600	1246	216	320.8	45	90.3	510	464	223.4
	500	1000	222	264.6	37	92.8	496	463	227.5

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
Optimum Load	1000	3330	209	829.6	210	335.9	510	368	713.8
(Curve P1)	910	2509	210	628.2	145	249.8	508	393	551.8
	850	2045	212	516.8	98	192.4	505	421	443.8
	800	1705	208	422.7	70	160.3	494	428	373.3
	750	1405	212	355.0	51	131.6	472	415	301.1
	700	1142	214	291.4	38	114.8	451	408	259.3
	630	833	218	216.4	25	84.4	412	375	181.5
	600	719	224	192.1	18	77.6	390	360	162.9
	500	416	225	111.6	12	67.5	318	293	125.5

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	4962	0.336	237.6	66	12040	973	705	25876
Curve A	910	4514	0.339	218.3	63	10848	997	738	23977
	850	4217	0.331	198.9	55	9179	1018	833	21957
	800	2977	0.342	145.3	31	6050	991	829	14483
	750	2489	0.346	122.7	22	4828	972	811	11421
	700	1998	0.346	98.5	16	3934	939	837	9485
	630	1767	0.357	90.0	14	3397	945	855	8324
	600	1671	0.356	84.7	13	3189	950	867	7888
	500	1341	0.366	69.9	11	3278	925	865	8034

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
Optimum Load	1000	4466	0.344	219.0	62	11861	950	694	25207
(Curve P1)	910	3365	0.346	165.9	43	8821	946	739	19488
	850	2742	0.349	136.5	29	6795	941	790	15673
	800	2286	0.342	111.6	21	5662	921	802	13185
	750	1884	0.349	93.7	15	4649	882	779	10632
	700	1532	0.352	76.9	11	4053	844	766	9158
	630	1117	0.359	57.1	7	2980	774	707	6409
	600	965	0.369	50.7	5	2742	734	680	5754
	500	558	0.370	29.5	4	2384	604	559	4432

Heat Rejection @ 100% Load and 25° C Air

Lube Oil Cooler	kW	(Btu/min)	377	(21451)
Jacket Water	kW	(Btu/min)	758	(43130)
AfterCooler	kW	(Btu/min)	1188	(67597)
Total Heat Rejection to Raw Water	kW	(Btu/min)	2323	(132179)
Exhaust Gas[2]	kW	(Btu/min)	2768	(157499)
Radiation	kW	(Btu/min)	179	(10185)

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

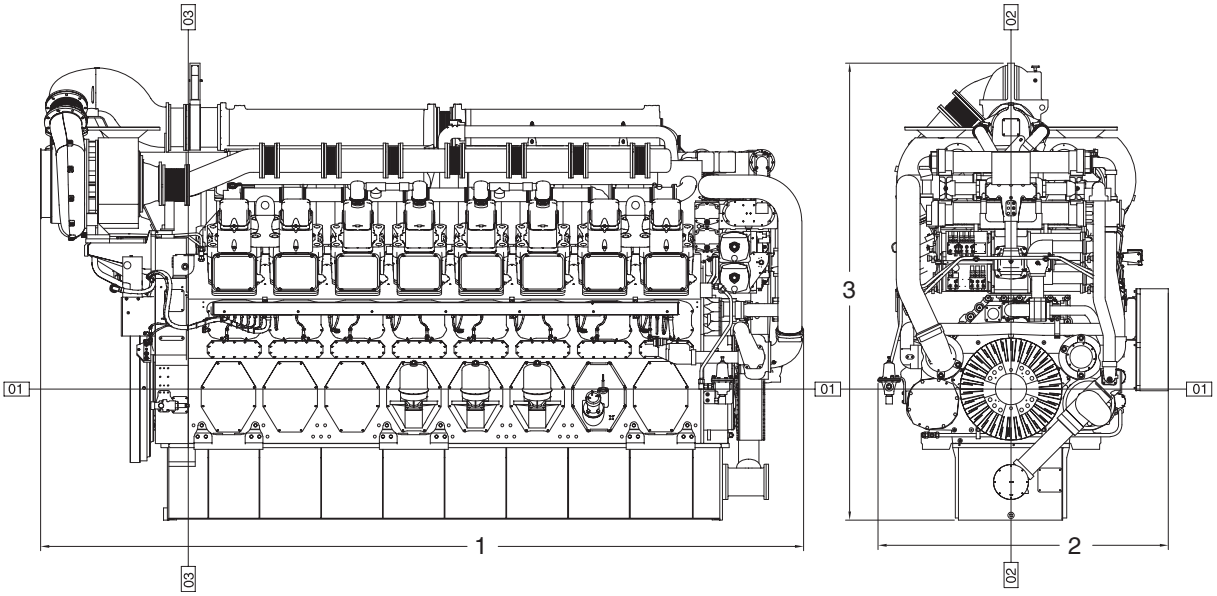
3 At 100% load with JW and oil pumps, without seawater pump, +/- 3%. Performance and fuel consumption are based on 35 API, 16°C fuel having a lower heating value of 42,780 kJ/kg used at 29°C with a density of 838.9 g/liter.

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.

DM8406-01 **3/4/10**

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

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C280-12 MARINE PROPULSION

5031 mhp (4962 bhp) 3700 bkW

RATING DEFINITIONS AND CONDITIONS

Continuous Service Rating — 100% of the engine operating hours at 100% 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.: DM8406-01

LEHM7104-01 (3-10)