

Shown with
Accessory Equipment

SPECIFICATIONS

V-16, 4-Stroke-Cycle-Diesel

Emissions	IMO II/EPA Tier 2 compliant
Displacement	296 L (18,062 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
Cooling System	Electronic Keel or Heat Exchanger
Weight, Dry	28,500 kg (62,832 lbs)
Refill Capacities	
Cooling System	1660-1835 L (439-485 gal)
Lube Oil System	1057 L (279 gal)
Oil Change Interval*	600 hours
Rotation (from flywheel end)	CCW or CW
Serial Number Prefix	NKB

*A new S•O•SSM 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: cylinder pressure relieve valves (for cold weather operation); 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

C280-16

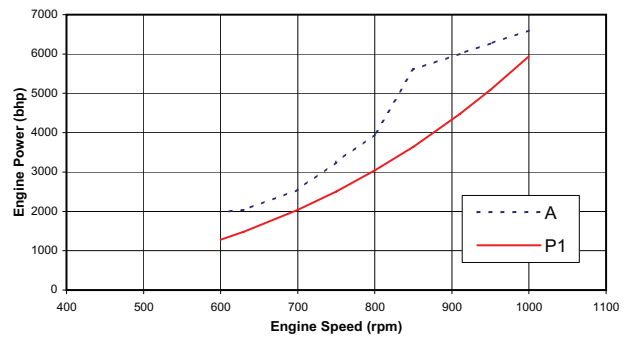
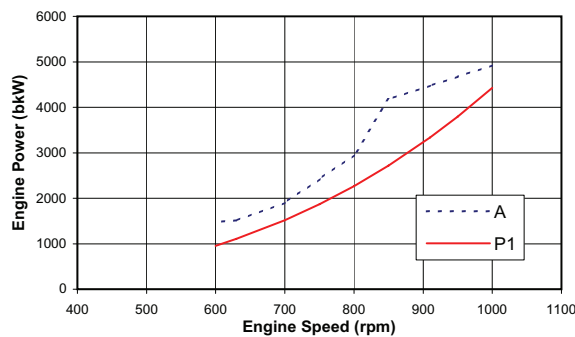
DIESEL ENGINE TECHNICAL DATA



RATED SPEED (RPM): 1000
 RATED POWER¹ (bkW): 4920
 BMEP @ 100% LOAD (kPa): 1998
 COMPRESSION RATIO: 13:1
 AFTERCOOLER WATER (°C): 32
 JACKET WATER INLET (°C): 90
 IGNITION SYSTEM: EUI
 FIRING PRESSURE, MAXIMUM (kPa): 16200

ENGINE RATING: **Marine CSR**
 CERTIFICATION⁵: IMO II/EPA MARINE TIER II
 TURBOCHARGER PART #: 284-8276
 COMBUSTION: DI
 FUEL TYPE: Distillate
 EXHAUST MANIFOLD: DRY
 MEAN PISTON SPEED (m/s): 10

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	4920	208	1222.0	252	526.1	532	371	1122.2
950	4674	208	1159.8	249	506.3	533	365	1069.1
910	4477	208	1109.4	238	477.3	539	374	1021.4
850	4182	208	1034.9	209	418.3	563	408	944.9
800	2947	211	742.4	110	271.9	581	466	668.4
750	2424	215	622.0	74	206.6	608	504	535.9
700	1900	221	501.0	46	156.1	620	525	416.4
630	1520	226	410.1	28	119.7	626	529	321.8
600	1482	228	403.1	26	111.5	648	545	306.2
500	1065	236	299.8	12	77.4	617	509	203.8

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	6598	0.343	322.6	75	18580	989	701	39630
950	6268	0.343	306.2	74	17880	992	689	37754
910	6004	0.342	292.9	70	16855	1002	704	36071
850	5608	0.342	273.2	62	14771	1045	767	33368
800	3952	0.348	196.0	33	9603	1078	871	23604
750	3251	0.354	164.2	22	7297	1127	940	18925
700	2548	0.364	132.3	13	5512	1148	977	14706
630	2038	0.373	108.3	8	4227	1158	984	11364
600	1987	0.376	106.4	8	3936	1199	1013	10814
500	1428	0.389	79.2	4	2732	1142	948	7196

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	4428	210	1108.5	238	508.2	520	365	1070.8
950	3796	212	959.4	197	449.7	523	377	965.0
910	3337	211	839.3	154	372.1	530	402	830.9
850	2719	211	684.0	100	272.9	549	445	649.6
800	2267	215	581.0	68	211.7	567	475	526.7
750	1868	219	487.7	45	167.7	577	492	427.5
700	1519	222	401.9	30	135.4	569	487	343.2
630	1107	225	297.0	15	101.7	519	443	242.5
600	956	229	261.1	11	90.2	489	415	206.8
500	554	236	155.7	3	63.5	371	311	122.7

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	5938	0.346	292.7	71	17946	968	688	37817
950	5091	0.349	253.3	58	15880	974	710	34077
910	4475	0.347	221.6	46	13141	986	756	29344
850	3647	0.347	180.6	30	9638	1021	832	22941
800	3040	0.354	153.4	20	7475	1053	887	18602
750	2505	0.361	128.8	13	5922	1071	918	15097
700	2037	0.366	106.1	9	4781	1056	909	12121
630	1485	0.370	78.4	5	3592	967	829	8566
600	1283	0.377	68.9	3	3187	913	779	7305
500	742	0.389	41.1	1	2241	700	591	4335

Heat Rejection @ 100% Load and 25° C Air

Lube Oil Cooler	kW (Btu/min)	543 (30885)
Jacket Water	kW (Btu/min)	1000 (56886)
AfterCooler	kW (Btu/min)	1467 (83480)
Total Heat Rejection to Raw Water	kW (Btu/min)	3010 (171250)
Exhaust Gas ²	kW (Btu/min)	3932 (223731)
Radiation	kW (Btu/min)	243 (13827)

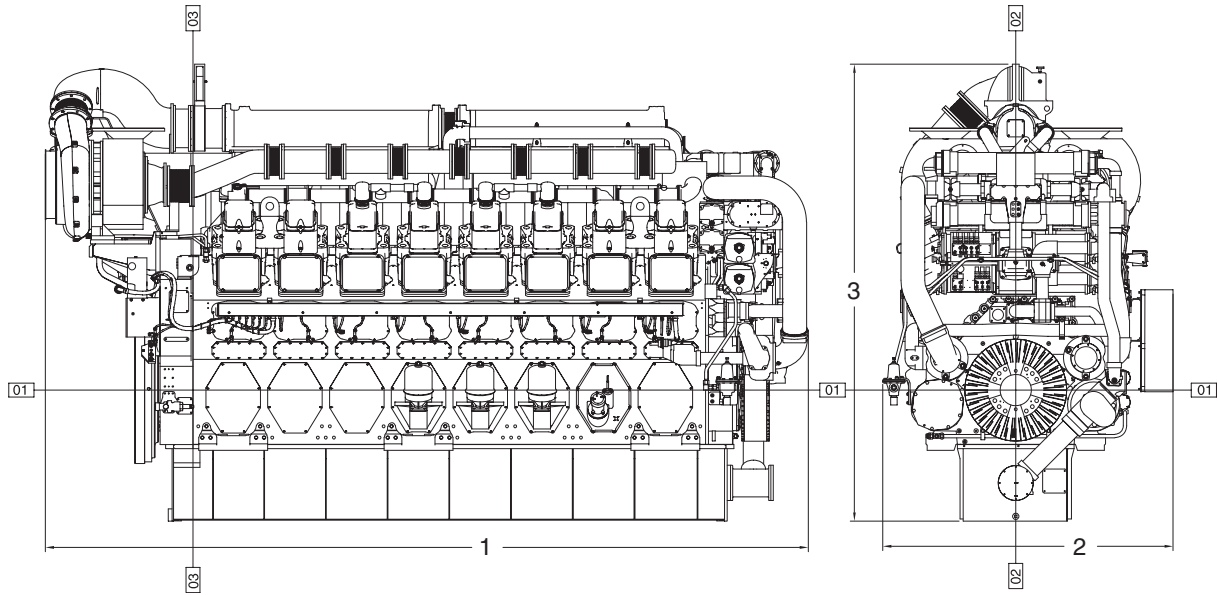
Notes

- 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	5685 mm	223.8 in.
(2) Overall Width	2038 mm	80.2 in.
(3) Overall Height	3406 mm	134.1 in.

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

Engine Weights		
Engine Dry Weight	28,500 kg	62,832 lb
Shipped Loose Items		
Torsional Coupling	480 kg	1,058 lb
Plate-Type Heat Exchanger	475 kg	1,045 lb
Instrument/Alarm Panel	200 kg	440 lb
Fluids		
Lube Oil	961 kg	2,119 lb
Jacket Water	1,060 kg	2,337 lb
Heat Exchanger (FW, SW, LO)	133 kg	293 lb

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.

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