

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	900 rpm
Bore	280 mm (11.0 in.)
Stroke	300 mm (11.8 in.)
Compression Ratio	13:1
Aspiration	Turbocharged-Aftercooled Governor
Cooling System	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

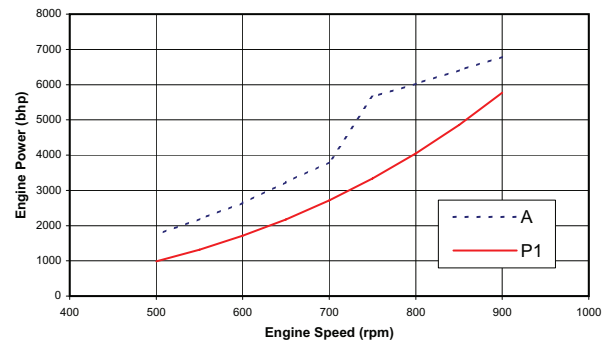
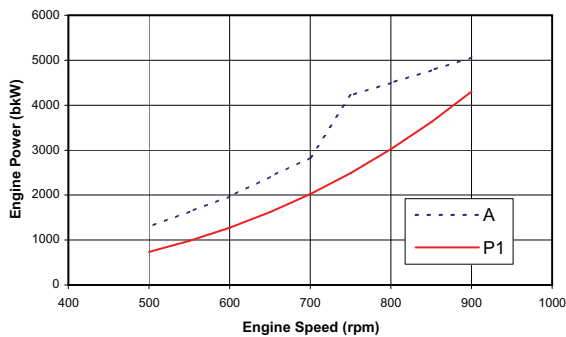
DIESEL ENGINE TECHNICAL DATA



RATED SPEED (RPM): 900
 RATED POWER¹ (bkW): 5060
 BMEP @ 100% LOAD (kPa): 2283
 COMPRESSION RATIO: 13:1
 AFTERCOOLER WATER (°C): 32
 JACKET WATER OUTLET (°C): 90
 IGNITION SYSTEM: EUI
 FIRING PRESSURE, MAXIMUM (kPa): 17300

ENGINE RATING: **Marine MCR**
 CERTIFICATION²: IMO II/EPA MARINE TIER II
 TURBOCHARGER PART #: 284-8280
 COMBUSTION: DI
 FUEL TYPE: Distillate
 EXHAUST MANIFOLD: DRY
 MEAN PISTON SPEED (m/s): 9

Engine Performance



ZONE LIMIT DATA

Engine Speed rpm	Power bkW	Fuel Cons ³ g/l	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	5060	194	1170.2	276	515.9	536	353	1068.3
850	4779	197	1122.2	265	487.3	532	356	1014.4
800	4498	195	1045.5	256	458.5	530	365	967.8
750	4217	193	970.1	230	405.4	524	381	878.0
700	2833	196	661.9	137	284.4	515	428	659.5
650	2408	200	574.0	91	216.3	539	473	536.3
600	1972	206	484.2	60	167.0	560	510	435.6
550	1636	224	436.8	38	138.9	580	539	376.8
500	1300	227	351.7	27	102.5	571	568	289.2

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	6785	0.319	309.0	82	18220	997	667	37728
850	6408	0.324	296.3	79	17208	990	673	35823
800	6032	0.321	276.0	76	16192	986	689	34178
750	5654	0.318	256.1	68	14315	975	718	31008
700	3799	0.323	174.8	41	10044	959	802	23289
650	3229	0.329	151.5	27	7639	1002	884	18938
600	2644	0.339	127.8	18	5898	1040	950	15384
550	2194	0.369	115.3	11	4907	1076	1002	13305
500	1743	0.374	92.8	8	3622	1060	1055	10214

PROPELLER DEMAND DATA

Engine Speed rpm	Power bkW	Fuel Cons ³ g/l	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	4302	205	1051.3	250	481.7	522	342	979.0
850	3624	206	889.9	2215	424.8	505	346	868.0
800	3021	202	727.5	165	349.9	484	340	707.9
750	2490	201	596.5	120	274.4	486	363	576.7
700	2024	204	493.1	81	211.4	494	398	469.5
650	1621	209	403.5	47	162.1	501	412	368.1
600	1275	214	325.2	27	128.8	488	414	293.6
550	982	220	257.5	11	95.7	450	380	207.8
500	738	227	199.6	9	83.2	425	363	175.3

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
900	5769	0.338	277.6	74	17012	972	648	34572
850	4860	0.339	235.0	656	15002	941	655	30654
800	4052	0.333	192.1	49	12356	903	644	24999
750	3339	0.331	157.5	36	9691	907	685	20365
700	2714	0.336	130.2	24	7465	921	748	16581
650	2173	0.344	106.5	14	5723	934	774	13000
600	1709	0.352	85.9	8	4550	910	777	10370
550	1317	0.362	68.0	3	3381	842	716	7338
500	989	0.374	52.7	3	2939	797	685	6192

Heat Rejection @ 100% Load and 25° C Air

Lube Oil Cooler	kW (Btu/min)	509 (28971)
Jacket Water	kW (Btu/min)	1026 (58391)
AfterCooler	kW (Btu/min)	1352 (76941)
Total Heat Rejection to Raw Water	kW (Btu/min)	2888 (164303)
Exhaust Gas ²	kW (Btu/min)	3391 (192948)
Radiation	kW (Btu/min)	233 (13258)

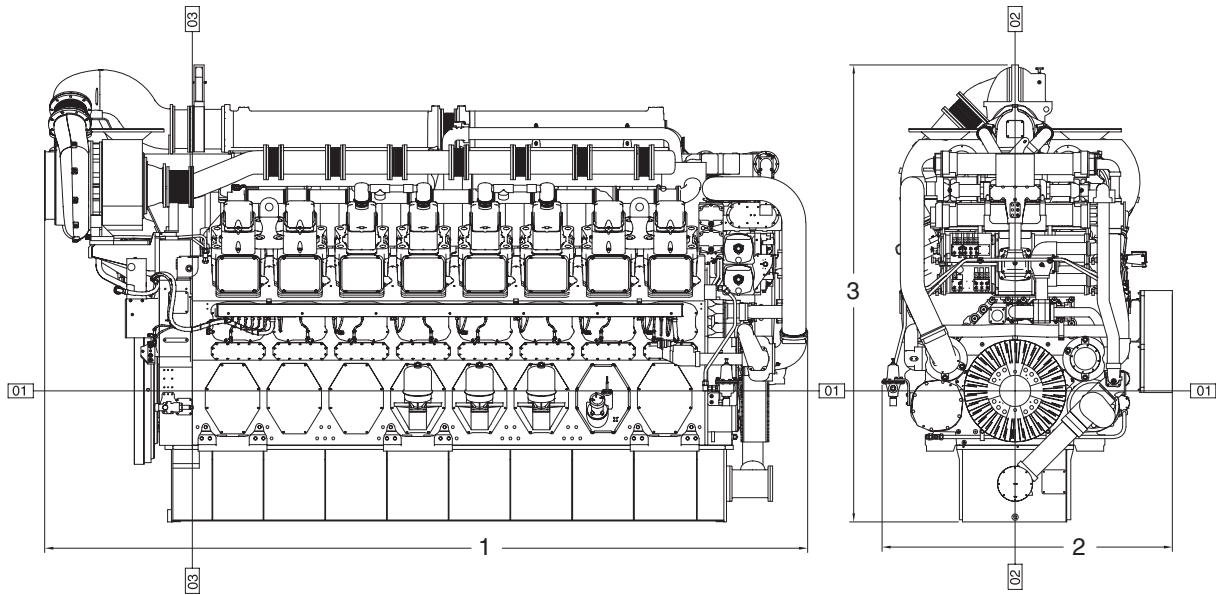
Notes

- 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

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.

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