

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	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

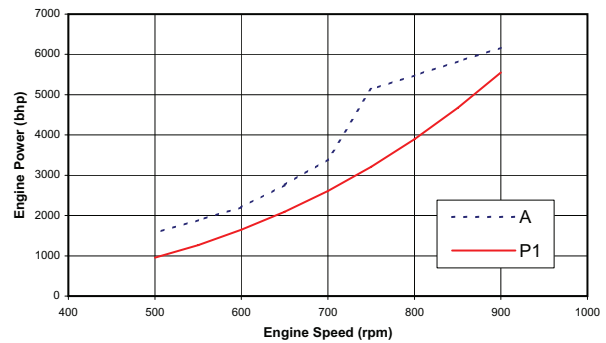
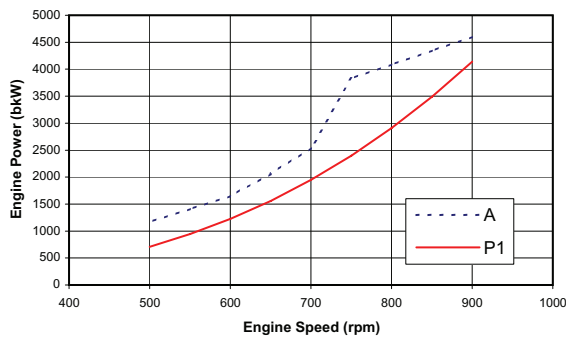
DIESEL ENGINE TECHNICAL DATA



RATED SPEED (RPM): 900
 RATED POWER¹ (bkW): 4600
 BMEP @ 100% LOAD (kPa): 2076
 COMPRESSION RATIO: 13:1
 AFTERCOOLER WATER (°C): 32
 JACKET WATER OUTLET (°C): 90
 IGNITION SYSTEM: EUI
 FIRING PRESSURE, MAXIMUM (kPa): 16200

ENGINE RATING: **Marine CSR**
 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/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	4600	195	1069.3	260	488.3	535	351	1007.0
850	4344	193	999.5	256	467.4	530	357	972.5
800	4089	192	935.8	243	438.6	532	358	913.9
750	3833	192	877.4	203	373.0	524	372	796.6
700	2532	198	597.6	115	257.8	515	395	569.9
650	2058	210	515.2	72	189.7	528	426	440.8
600	1645	222	435.3	47	148.1	538	447	355.4
550	1409	223	374.6	31	132.6	543	454	320.9
500	1174	243	340.0	21	100.2	537	461	246.3

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
900	4140	210	1036.4	245	472.6	520	351	974.6
850	3488	205	852.3	210	410.2	490	347	839.3
800	2908	204	707.1	163	336.8	480	350	692.7
750	2396	202	576.9	112	263.7	480	372	562.1
700	1948	205	476.0	75	204.3	491	395	451.7
650	1560	208	386.7	45	157.8	498	415	359.8
600	1227	214	312.9	27	124.7	480	411	282.9
550	945	215	242.2	12	103.7	400	382	224.8
500	710	214	181.1	8	82.0	385	343	167.0

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	6169	0.321	282.3	77	17246	995	664	35563
850	5826	0.318	263.9	76	16506	986	675	34344
800	5483	0.316	247.1	72	15488	990	676	32276
750	5141	0.316	231.6	60	13173	975	702	28131
700	3395	0.326	157.8	34	9104	959	743	20127
650	2760	0.346	136.0	21	6698	982	799	15567
600	2206	0.366	114.9	14	5230	1000	837	12551
550	1890	0.367	98.9	9	4683	1009	849	11333
500	1574	0.400	89.8	6	3537	999	862	8698

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	5552	0.346	273.6	73	16691	968	664	34419
850	4677	0.338	225.0	62	14486	914	657	29641
800	3899	0.336	186.7	48	11895	896	662	24464
750	3213	0.333	152.3	33	9313	896	702	19850
700	2612	0.338	125.7	22	7215	916	743	15953
650	2091	0.342	102.1	13	5571	928	779	12705
600	1645	0.352	82.6	8	4404	896	772	9990
550	1267	0.354	63.9	4	3661	752	720	7938
500	952	0.352	47.8	2	2897	725	649	5898

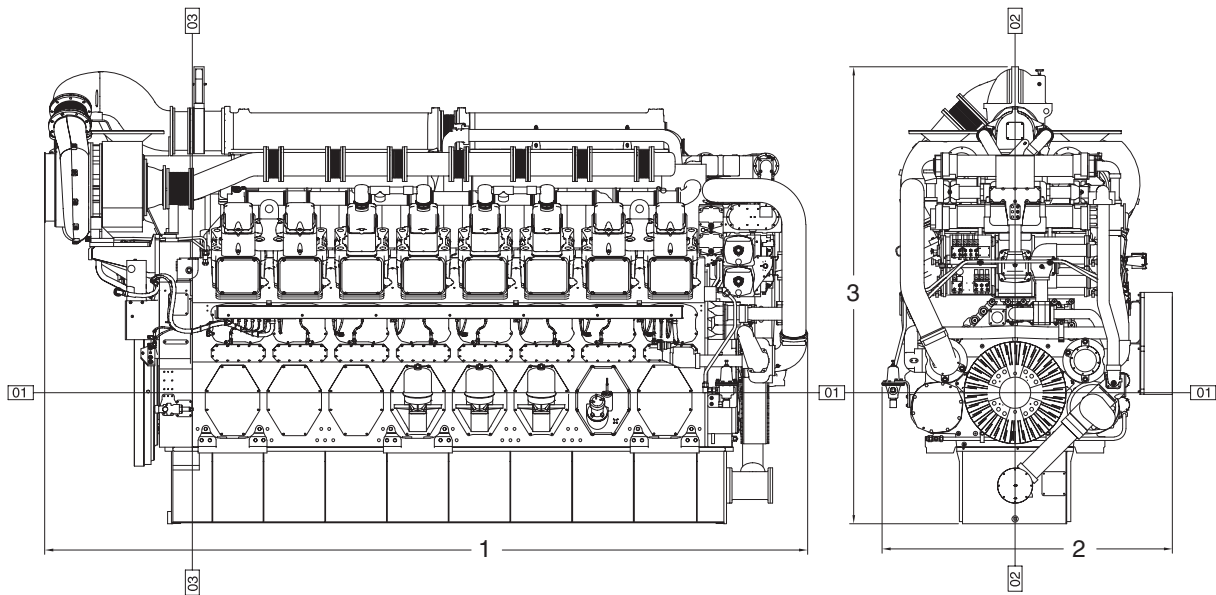
Heat Rejection @ 100% Load and 25° C Air

Lube Oil Cooler	kW (Btu/min)	484 (27541)
Jacket Water	kW (Btu/min)	968 (55079)
AfterCooler	kW (Btu/min)	1085 (61759)
Total Heat Rejection to Raw Water	kW (Btu/min)	2537 (144379)
Exhaust Gas ²	kW (Btu/min)	3178 (180828)
Radiation	kW (Btu/min)	213 (12120)

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.

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.

CAT, CATERPILLAR, their respective logos, ADEM, S•O•S, "Caterpillar Yellow" and the "Power Edge" trade dress, as well as corporate and product identity used herein, are trademarks of Caterpillar and may not be used without permission.