

Shown with  
Accessory Equipment

### SPECIFICATIONS

#### In-Line 8, 4-Stroke-Cycle-Diesel

Emissions	IMO II/EPA Tier 2 compliant
Displacement	148 L (9,031 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	19,000 kg (41,800 lbs)
Refill Capacities	
Cooling System	1030-1205 L (272-318 gal)
Lube Oil System	760 L (201 gal)
Oil Change Interval*	925 hours
Rotation (from flywheel end)	CCW or CW
Serial Number Prefix	PKA

\*A new S•O•S<sup>SM</sup> 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

In-line 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, two 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

# C280-8

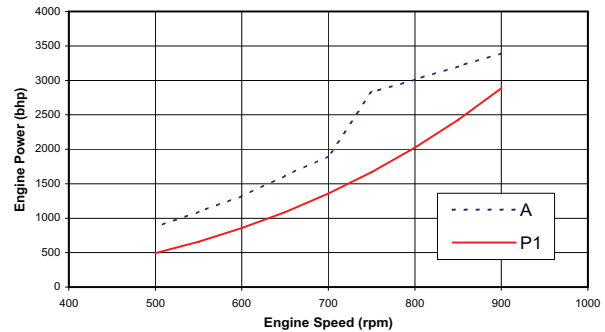
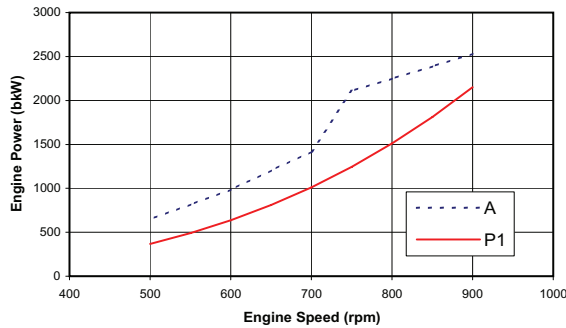
## DIESEL ENGINE TECHNICAL DATA



RATED SPEED (RPM): 900  
 RATED POWER<sup>1</sup> (kW): 2530  
 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**  
 CERTIFICATION<sup>5</sup>: 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 kW	Fuel Cons <sup>3</sup> g/kW-hr	Fuel Rate L/hr	Boost Press kPa Gauge	Air Flow <sup>4</sup> cu m/Min	Exh Temp to Turbo C	Exh Stack Temp C	Exh Flow cu m/min
900	2530	204	616.3	284	263.2	554	370	560.0
850	2389	203	577.3	273	248.6	550	369	528.3
800	2249	202	540.9	262	233.9	546	370	497.7
750	2108	195	489.1	233	206.8	540	374	442.9
700	1417	199	336.7	144	145.1	519	392	319.1
650	1204	198	284.1	99	110.4	541	429	257.0
600	986	203	238.7	66	85.2	564	462	208.4
550	818	214	208.6	43	70.9	584	472	176.0
500	650	218	168.9	29	53.9	572	484	136.2

#### ZONE LIMIT DATA

Engine Speed rpm	Power bhp	Fuel Cons <sup>3</sup> lb/hp-hr	Fuel Rate gal/hr	Boost Press in Hg-Gauge	Air Flow <sup>4</sup> cu ft/min	Exh Temp to Turbo F	Exh Stack Temp F	Exh Flow cu ft/min
900	3393	0.336	162.7	84	9296	1028	697	19778
850	3204	0.334	152.4	81	8779	1022	696	18657
800	3016	0.332	142.8	78	8261	1015	698	17576
750	2827	0.320	129.1	69	7304	1004	705	15642
700	1900	0.328	88.9	43	5124	967	737	11270
650	1614	0.326	75.0	29	3898	1006	804	9077
600	1322	0.334	63.0	20	3009	1047	864	7361
550	1097	0.352	55.1	13	2503	1083	882	6217
500	871	0.359	44.6	9	1903	1062	903	4812

#### PROPELLER DEMAND DATA

Engine Speed rpm	Power kW	Fuel Cons <sup>3</sup> g/kW-hr	Fuel Rate L/hr	Boost Press kPa Gauge	Air Flow <sup>4</sup> cu m/Min	Exh Temp to Turbo C	Exh Stack Temp C	Exh Flow cu m/min
900	2151	211	541.7	258	246.3	531	357	512.7
850	1812	211	455.8	224	217.2	508	350	446.5
800	1511	206	370.6	175	178.9	486	350	367.6
750	1245	204	302.4	127	140.3	486	372	298.8
700	1012	206	248.1	86	108.1	495	400	240.5
650	810	210	202.5	54	82.9	504	419	190.0
600	637	214	162.3	34	65.9	489	415	150.3
550	491	222	129.9	11	48.9	458	388	107.5
500	369	228	100.2	9	42.5	386	338	86.1

#### PROPELLER DEMAND DATA

Engine Speed rpm	Power bhp	Fuel Cons <sup>3</sup> lb/hp-hr	Fuel Rate gal/hr	Boost Press in Hg-Gauge	Air Flow <sup>4</sup> cu ft/min	Exh Temp to Turbo F	Exh Stack Temp F	Exh Flow cu ft/min
900	2884	0.348	143.0	76	8697	988	674	18106
850	2430	0.347	120.3	66	7670	946	662	15767
800	2026	0.339	97.8	52	6317	907	661	12981
750	1669	0.336	79.9	38	4955	908	701	10551
700	1357	0.339	65.5	25	3817	924	751	8494
650	1087	0.345	53.5	16	2926	939	786	6711
600	855	0.352	42.9	10	2326	913	780	5309
550	658	0.366	34.3	3	1728	856	730	3796
500	495	0.375	26.5	3	1503	727	640	3039

### Heat Rejection @ 100% Load and 25° C Air

Lube Oil Cooler	kW ( Btu/min )	255 ( 14483 )
Jacket Water	kW ( Btu/min )	513 ( 29187 )
AfterCooler	kW ( Btu/min )	716 ( 40747 )
Total Heat Rejection to Raw Water	kW ( Btu/min )	1484 ( 84418 )
Exhaust Gas <sup>2</sup>	kW ( Btu/min )	1947 ( 110784 )
Radiation	kW ( Btu/min )	123 ( 6999 )

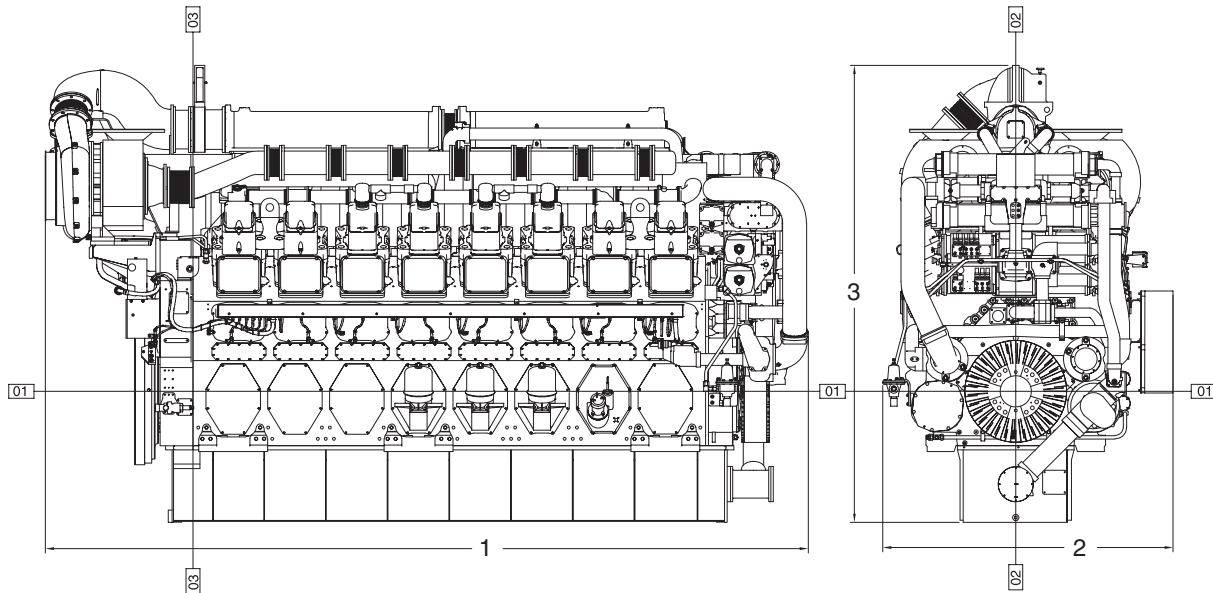
### Notes

- 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	4958 mm	195.2 in.
(2) Overall Width	1804 mm	71.0 in.
(3) Overall Height	2648 mm	104.2 in.

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

Engine Weights		
<b>Engine Dry Weight</b>	19,000 kg	41,800 lb
<b>Shipped Loose Items</b>		
Torsional Coupling	319 kg	702 lb
Plate-Type Heat Exchanger	420 kg	924 lb
Instrument/Alarm Panel	200 kg	440 lb
<b>Fluids</b>		
Lube Oil	691 kg	1,520 lb
Jacket Water	530 kg	1,166 lb
Heat Exchanger (FW, SW, LO)	70 kg	154 lb

## RATING DEFINITIONS AND CONDITIONS

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**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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