

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

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

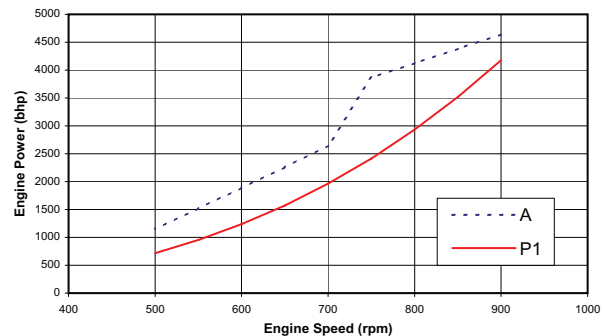
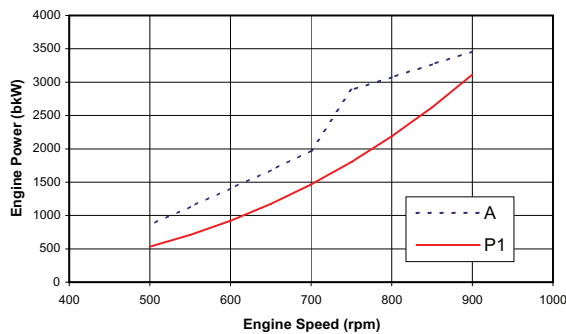
## DIESEL ENGINE TECHNICAL DATA



RATED SPEED (RPM): 900  
 RATED POWER<sup>1</sup> (bkW): 3460  
 BMEP @ 100% LOAD (kPa): 2082  
 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**  
 CERTIFICATION<sup>5</sup>: IMO II/EPA MARINE TIER II  
 TURBOCHARGER PART #: 157-5514  
 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 <sup>3</sup> g/ kW-hr	Fuel Rate L/hr	Boost Press kPa Gauge	Air Flow <sup>4</sup> cu m/ Min	Exh Temp Turbo C	Exh Stack Temp C	Exh Flow cu m/ min
900	3460	206	850.3	245	334.0	551	378	721.5
850	3268	207	805.3	252	319.8	557	388	701.6
800	3076	206	755.9	234	289.2	575	412	657.5
750	2884	205	705.8	201	249.3	605	447	597.5
700	1974	208	490.0	107	156.9	607	463	385.5
650	1682	211	423.8	80	127.1	630	480	320.1
600	1408	216	362.2	59	104.4	634	483	264.7
550	1134	220	298.0	41	85.1	609	463	210.1
500	860	224	229.3	25	67.6	554	411	155.1

#### 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> cfm	Exh Temp Turbo F	Exh Stack Temp F	Exh Flow cfm
900	4640	0.339	224.5	73	11795	1023	712	25482
850	4382	0.340	212.6	75	11294	1035	731	24778
800	4125	0.339	199.6	69	10212	1067	773	23219
750	3867	0.338	186.3	59	8804	1120	836	21099
700	2647	0.343	129.4	32	5541	1125	865	13615
650	2256	0.348	111.9	24	4487	1166	895	11306
600	1888	0.355	95.6	18	3688	1173	901	9347
550	1521	0.363	78.7	12	3005	1128	865	7418
500	1153	0.368	60.5	7	2389	1028	772	5476

#### PROPELLER DEMAND DATA

Engine Speed rpm	Power bkW	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 Turbo C	Exh Stack Temp C	Exh Flow cu m/ min
900	3114	212	787.8	242	326.4	541	376	702.2
850	2623	212	661.8	200	268.9	544	392	593.3
800	2187	210	547.0	143	205.8	551	412	468.3
750	1802	211	452.4	99	158.7	563	427	370.1
700	1465	213	372.3	69	125.7	565	433	296.0
650	1173	216	302.7	47	101.5	547	424	235.9
600	923	219	241.4	30	82.7	511	395	184.1
550	711	221	187.6	18	67.9	462	348	140.3
500	534	224	142.6	10	56.4	402	294	106.0

#### 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> cfm	Exh Temp Turbo F	Exh Stack Temp F	Exh Flow cfm
900	4176	0.349	208.0	72	11527	1005	709	24798
850	3518	0.348	174.7	59	9497	1011	738	20951
800	2933	0.345	144.4	42	7268	1023	773	16538
750	2417	0.347	119.5	29	5603	1045	801	13069
700	1965	0.351	98.3	21	4439	1049	812	10453
650	1573	0.356	79.9	14	3583	1017	796	8331
600	1237	0.361	63.7	9	2922	952	743	6502
550	953	0.365	49.5	5	2400	863	658	4955
500	716	0.369	37.6	3	1991	756	561	3744

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

Lube Oil Cooler	kW ( Btu/min )	364 ( 20692 )
Jacket Water	kW ( Btu/min )	727 ( 41380 )
AfterCooler	kW ( Btu/min )	962 ( 54759 )
Total Heat Rejection to Raw Water	kW ( Btu/min )	2053 ( 116830 )
Exhaust Gas <sup>2</sup>	kW ( Btu/min )	2561 ( 145721 )
Radiation	kW ( Btu/min )	169 ( 9616 )

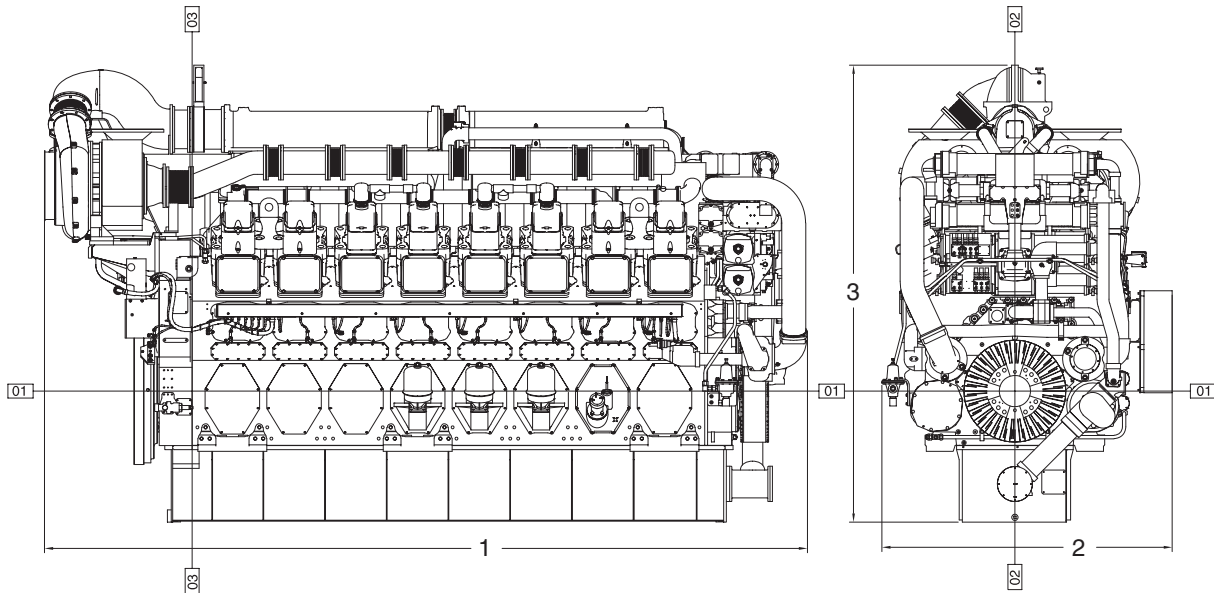
### Notes

- 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		
<b>(1) Overall Length</b>	4612 mm	181.6 in.
<b>(2) Overall Width</b>	2022 mm	79.6 in.
<b>(3) Overall Height</b>	3404 mm	134.0 in.

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

Engine Weights		
<b>Engine Dry Weight</b>	25,980 kg	57,276 lb
<b>Shipped Loose Items</b>		
Torsional Coupling	420 kg	926 lb
Plate-Type Heat Exchanger	450 kg	990 lb
Instrument/Alarm Panel	200 kg	440 lb
<b>Fluids</b>		
Lube Oil	828 kg	1,825 lb
Jacket Water	800 kg	1,764 lb
Heat Exchanger (FW, SW, LO)	80 kg	176 lb

## RATING DEFINITIONS AND CONDITIONS

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**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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