

May not represent actual engine

SPECIFICATIONS

In-Line 6, 4-Stroke-Cycle-Diesel

| | |
|------------------------------|-----------------------------|
| Emissions | IMO II/EPA Tier 2 Compliant |
| Bore | 280 mm (11.0 in.) |
| Stroke | 300 mm (11.8 in.) |
| Displacement | 111 L (6,773 cu. in.) |
| Rotation (from flywheel end) | Counterclockwise |
| Compression Ratio | 13:1 |
| Aspiration | Turbocharged-Aftercooled |
| Governor | Electronic |
| Low Idle Speed | 350 rpm |
| Rated Speed | 900 rpm |
| Oil Change Interval* | 1025 hr |
| Serial Number Prefix | SCB |
| Cooling System | Keel or Heat Exchanger |
| Refill Capacities | |
| Cooling System | 900-1075 L (238-284 gal) |
| Lube Oil System | 697 L (184 gal) |

*A new S•O•SSM analysis must be done to determine actual oil change intervals.

STANDARD ENGINE EQUIPMENT

Air Inlet System

Aftercooler — fresh water, corrosion resistant coated (air side); air inlet shutoff; breather — crankcase, top-mounted; turbocharger — engine oil lubricated

Control System

Single ADEM™ A3 electronic control unit (ECU) with electronic unit injector fuel system, rigid wiring harness (10 amp, 24 volt power required to drive ECUs)

Cooling System

Engine coolant water drains

Exhaust System

Dry, gas tight, exhaust manifold

Fuel System

Distillate fuel (requires viscosity ranging from 1.4 cSt to 20 cSt at 38° C), fuel transfer pump (mounted on left-hand side), duplex fuel filters, electronically controlled unit injectors

Lube Oil System

Centrifugal oil filters with single shutoff, service side engine mounted on cylinder block inspection covers includes installed oil lines and single shutoff valve, filters centrifuge bypass oil from the main lubricating oil pump, can be serviced with the engine running, oil filler and dipstick valve, oil pressure regulating valves, crankcase explosion relief valves

General

Cat® yellow paint; gear-driven pumps: fuel, oil, jacket water, aftercooler/oil cooler water; service literature

Factory-designed systems built at Caterpillar ISO 9001:2000 certified facilities.

MARINE ENGINE PERFORMANCE

C280-6

DIESEL ENGINE TECHNICAL DATA



| | | | |
|--------------------------------|--------------|--|---------------------------|
| Genset | 60 Hz | RATING: | Marine Aux - Prime |
| ENGINE SPEED (rpm): | 900 | CERTIFICATION: | IMO II/EPA MARINE TIER II |
| COMPRESSION RATIO: | 13:1 | TURBOCHARGER PART #: | 157-5514 |
| AFTERCOOLER WATER (°C): | 32 | FUEL TYPE: | Distillate |
| JACKET WATER OUTLET (°C): | 90 | RATED ALTITUDE @ 25°C (m): | 150 |
| IGNITION SYSTEM: | EUI | ASSUMED GENERATOR EFFICIENCY (%): | 96 |
| EXHAUST MANIFOLD: | DRY | ASSUMED GENERATOR POWER FACTOR: | 0.8 |
| FIRING PRESSURE, MAXIMUM (kPa) | 17300 | MEAN PISTON SPEED (m/s): | 9 |

| RATING | | NOTES | LOAD | 110% | 100% | 75% | 50% |
|-------------------|--------------|-------|------|-------|-------|-------|-------|
| ENGINE POWER | | (2) | bkW | 2090 | 1900 | 1425 | 950 |
| GENERATOR POWER | | (2) | ekW | 2002 | 1820 | 1365 | 910 |
| BMEP | | | kPa | 2515 | 2286 | 1715 | 1143 |
| ENGINE EFFICIENCY | (ISO 3046/1) | (1) | % | 42.8% | 42.6% | 40.3% | 38.7% |
| ENGINE EFFICIENCY | (NOMINAL) | (1) | % | 41.6% | 41.3% | 39.1% | 37.5% |

| ENGINE DATA | | | | 110% | 100% | 75% | 50% |
|--|------------------|-----|----------------------|-------|-------|-------|-------|
| FUEL CONSUMPTION | (ISO 3046/1) | (1) | g/bkW-hr | 197.1 | 198.5 | 210.0 | 219.0 |
| FUEL CONSUMPTION | (NOMINAL) | (1) | g/bkW-hr | 200.9 | 202.3 | 214.1 | 223.3 |
| FUEL CONSUMPTION | (90% CONFIDENCE) | (1) | g/bkW-hr | 203.0 | 204.5 | 216.6 | 226.1 |
| AIR FLOW (@ 25°C, 101.3 kPaa) | | | Nm ³ /min | 193.5 | 184.8 | 163.0 | 117.9 |
| AIR MASS FLOW | | | kg/hr | 12950 | 12368 | 10908 | 7888 |
| INLET MANIFOLD PRESSURE | | | kPa (abs) | 383.5 | 363.1 | 323.8 | 233.6 |
| INLET MANIFOLD TEMPERATURE | | | °C | 43.1 | 42.7 | 38.9 | 37.8 |
| EXHAUST STACK TEMPERATURE | | | °C | 394.0 | 382.9 | 374.8 | 372.2 |
| EXHAUST GAS FLOW (@ stack temp, 101.3 kPa) | | | m ³ /min | 423.5 | 395.8 | 341.6 | 246.3 |
| EXHAUST GAS MASS FLOW | | | kg/hr | 13370 | 12752 | 11213 | 8100 |

| EMISSIONS "NOT TO EXCEED DATA" | | | | 110% | 100% | 75% | 50% |
|---|--|--|----------|-------|------|------|------|
| Nox as NO ₂ + THC (molecular weight of 13.018) | | | g/bkW-hr | 13.20 | 9.65 | 8.03 | 8.24 |
| Nox as NO ₂ | | | g/bkW-hr | 12.39 | 8.86 | 7.28 | 7.21 |
| CO | | | g/bkW-hr | 1.03 | 0.84 | 0.75 | 0.89 |
| THC (molecular weight of 13.018) | | | g/bkW-hr | 0.81 | 0.78 | 0.75 | 1.03 |
| Particulates | | | g/bkW-hr | 0.42 | 0.32 | 0.37 | 0.37 |

| EMISSIONS "NOMINAL DATA" | | | | 110% | 100% | 75% | 50% |
|--|--|--|----------|-------|------|------|------|
| NO _x (as NO) + THC (molecular weight of 13.018) | | | g/bkW-hr | 11.40 | 8.31 | 6.91 | 7.17 |
| NO _x (as NO) | | | g/bkW-hr | 10.78 | 7.71 | 6.33 | 6.27 |
| CO | | | g/bkW-hr | 0.79 | 0.64 | 0.58 | 0.78 |
| THC (molecular weight of 13.018) | | | g/bkW-hr | 0.63 | 0.60 | 0.58 | 0.90 |
| Particulates | | | g/bkW-hr | 0.30 | 0.23 | 0.26 | 0.32 |

| ENERGY BALANCE DATA | | | | 110% | 100% | 75% | 50% |
|----------------------------------|-----------|---------|----|------|------|------|------|
| FUEL INPUT ENERGY (LHV) | (NOMINAL) | (1) | KW | 5029 | 4600 | 3644 | 2531 |
| HEAT REJ. TO JACKET WATER | (NOMINAL) | (3) | KW | 412 | 387 | 326 | 257 |
| HEAT REJ. TO ATMOSPHERE | (NOMINAL) | (4) | KW | 101 | 92 | 73 | 51 |
| HEAT REJ. TO OIL COOLER | (NOMINAL) | (5) | KW | 203 | 192 | 166 | 140 |
| HEAT REJ. TO EXH. (LHV to 25°C) | (NOMINAL) | (3) | KW | 1536 | 1418 | 1197 | 885 |
| HEAT REJ. TO EXH. (LHV to 177°C) | (NOMINAL) | (3) | KW | 1076 | 1047 | 920 | 689 |
| HEAT REJ. TO AFTERCOOLER | (NOMINAL) | (6) (7) | KW | 671 | 598 | 450 | 244 |

CONDITIONS AND DEFINITIONS

ENGINE RATING OBTAINED AND PRESENTED IN ACCORDANCE WITH ISO 3046/1 AND SAE J1995 JAN90 STANDARD REFERENCE CONDITIONS OF 25°C, 100 KPA, 30% RELATIVE HUMIDITY AND 150M ALTITUDE AT THE STATED AFTERCOOLER WATER TEMPERATURE CONSULT ALTITUDE CURVES FOR APPLICATIONS ABOVE MAXIMUM RATED ALTITUDE AND/OR TEMPERATURE 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

NOTES

- 1) FUEL CONSUMPTION TOLERANCE. ISO 3046/1 IS 0, + 5% OF FULL LOAD DATA. NOMINAL IS ± 3 % OF FULL LOAD DATA
- 2) ENGINE POWER TOLERANCE IS ± 3 % OF FULL LOAD DATA.
- 3) HEAT REJECTION TO JACKET AND EXHAUST TOLERANCE IS ± 10% OF FULL LOAD DATA. (heat rate based on treated water)
- 4) HEAT REJECTION TO ATMOSPHERE TOLERANCE IS ±50% OF FULL LOAD DATA. (heat rate based on treated water)
- 5) HEAT REJECTION TO LUBE OIL TOLERANCE IS ± 20% OF FULL LOAD DATA. (heat rate based on treated water)
- 6) HEAT REJECTION TO AFTERCOOLER TOLERANCE IS ± 5% OF FULL LOAD DATA. (heat rate based on treated water).
- 7) TOTAL AFTERCOOLER HEAT = AFTERCOOLER HEAT x ACHRF (heat rate based on treated water)
- 8) FUEL CONSUMPTION DATA IS WITHOUT SEA WATER PUMP.

MARINE ENGINE PERFORMANCE

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DIESEL ENGINE TECHNICAL DATA



ALTITUDE DERATION FACTORS

| | | | | | | | | | | | | | | |
|----------------------------|----|------|------|------|------|------|------|------|------|------|------|------|------|------|
| AIR TO TURBO (°C) | 50 | 0.94 | 0.91 | 0.88 | 0.86 | 0.83 | 0.81 | 0.78 | 0.76 | 0.74 | 0.71 | 0.69 | 0.67 | 0.65 |
| | 45 | 0.95 | 0.93 | 0.90 | 0.87 | 0.85 | 0.82 | 0.80 | 0.77 | 0.75 | 0.73 | 0.70 | 0.68 | 0.66 |
| | 40 | 0.97 | 0.94 | 0.91 | 0.89 | 0.86 | 0.83 | 0.81 | 0.78 | 0.76 | 0.74 | 0.71 | 0.69 | 0.67 |
| | 35 | 0.98 | 0.96 | 0.93 | 0.90 | 0.87 | 0.85 | 0.82 | 0.80 | 0.77 | 0.75 | 0.73 | 0.70 | 0.68 |
| | 30 | 1.00 | 0.97 | 0.94 | 0.92 | 0.89 | 0.86 | 0.84 | 0.81 | 0.79 | 0.76 | 0.74 | 0.71 | 0.69 |
| | 25 | 1.00 | 0.99 | 0.96 | 0.93 | 0.90 | 0.88 | 0.85 | 0.82 | 0.80 | 0.77 | 0.75 | 0.73 | 0.70 |
| | 20 | 1.00 | 1.00 | 0.98 | 0.95 | 0.92 | 0.89 | 0.86 | 0.84 | 0.81 | 0.79 | 0.76 | 0.74 | 0.72 |
| | 15 | 1.00 | 1.00 | 0.99 | 0.96 | 0.93 | 0.91 | 0.88 | 0.85 | 0.83 | 0.80 | 0.78 | 0.75 | 0.73 |
| | 10 | 1.00 | 1.00 | 1.00 | 0.98 | 0.95 | 0.92 | 0.89 | 0.87 | 0.84 | 0.82 | 0.79 | 0.77 | 0.74 |
| | | | 0 | 250 | 500 | 750 | 1000 | 1250 | 1500 | 1750 | 2000 | 2250 | 2500 | 2750 |

ALTITUDE (METERS ABOVE SEA LEVEL)

AFTERCOOLER HEAT REJECTION FACTORS

| | | | | | | | | | | | | | | |
|--------------------|----|------|------|------|------|------|------|------|------|------|------|------|------|------|
| AIR TO TURBO | 50 | 1.23 | 1.27 | 1.30 | 1.34 | 1.38 | 1.42 | 1.45 | 1.49 | 1.53 | 1.56 | 1.60 | 1.64 | 1.67 |
| | 45 | 1.18 | 1.22 | 1.25 | 1.29 | 1.32 | 1.36 | 1.39 | 1.43 | 1.46 | 1.50 | 1.53 | 1.57 | 1.61 |
| | 40 | 1.13 | 1.17 | 1.20 | 1.23 | 1.27 | 1.30 | 1.34 | 1.37 | 1.40 | 1.44 | 1.47 | 1.50 | 1.54 |
| | 35 | 1.08 | 1.12 | 1.15 | 1.18 | 1.21 | 1.24 | 1.28 | 1.31 | 1.34 | 1.37 | 1.41 | 1.44 | 1.47 |
| | 30 | 1.03 | 1.06 | 1.10 | 1.13 | 1.16 | 1.19 | 1.22 | 1.25 | 1.28 | 1.31 | 1.34 | 1.37 | 1.40 |
| | 25 | 1.00 | 1.01 | 1.04 | 1.07 | 1.10 | 1.13 | 1.16 | 1.19 | 1.22 | 1.25 | 1.28 | 1.31 | 1.34 |
| | 20 | 1.00 | 1.00 | 1.00 | 1.02 | 1.05 | 1.07 | 1.10 | 1.13 | 1.16 | 1.19 | 1.21 | 1.24 | 1.27 |
| | 15 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.02 | 1.04 | 1.07 | 1.10 | 1.12 | 1.15 | 1.18 | 1.20 |
| | 10 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.01 | 1.04 | 1.06 | 1.09 | 1.11 | 1.14 |
| | | | 0 | 250 | 500 | 750 | 1000 | 1250 | 1500 | 1750 | 2000 | 2250 | 2500 | 2750 |

ALTITUDE (METERS ABOVE SEA LEVEL)

FREE FIELD MECHANICAL NOISE

| | | | | | | | | | | | | | | | |
|------------------------------------|-----|-----------------------------------|-----------|------------|------------|------------|-------------|-------------|-------------|-------------|--|--|--|--|--|
| | | SOUND PRESSURE LEVEL dB(A) | | | | | | | | | | | | | |
| DISTANCE FROM THE ENGINE (M) | 15M | 96 | 87.7 | 84.6 | 83.8 | 84.1 | 85.3 | 81 | 77 | 69 | | | | | |
| | 7M | 102 | 93.7 | 90.6 | 89.8 | 90.1 | 91.3 | 87 | 83 | 75 | | | | | |
| | 1M | 116 | 104.7 | 101.6 | 100.8 | 101.1 | 102.3 | 98 | 94 | 86 | | | | | |
| | | Overall | 63 | 125 | 250 | 500 | 1000 | 2000 | 4000 | 8000 | | | | | |
| | | Octave Band (Hz) | | | | | | | | | | | | | |

FREE FIELD EXHAUST NOISE

| | | | | | | | | | | | | | | | |
|------------------------------------|------|-----------------------------|-----------|------------|------------|------------|-------------|-------------|-------------|-------------|--|--|--|--|--|
| | | SOUND PRESSURE dB(A) | | | | | | | | | | | | | |
| DISTANCE FROM THE ENGINE (M) | 15M | 96 | 106.6 | 103.7 | 95.4 | 90.1 | 85.7 | 86.2 | 84.3 | 78.9 | | | | | |
| | 7M | 102 | 114.4 | 111.0 | 101.7 | 96.9 | 92.0 | 93.0 | 91.6 | 86.2 | | | | | |
| | 1.5M | 116 | 126.9 | 125.5 | 115.3 | 110.5 | 106.1 | 107.5 | 105.1 | 99.3 | | | | | |
| | | Overall | 63 | 125 | 250 | 500 | 1000 | 2000 | 4000 | 8000 | | | | | |
| | | Octave Band (Hz) | | | | | | | | | | | | | |

TOTAL DERATION FACTORS:

This table shows the deration required for various air inlet temperatures and altitudes. Use this information to help determine actual engine power for your site. The total deration factor includes deration due to altitude and ambient temperature, and air inlet manifold temperature deration.

AFTERCOOLER HEAT REJECTION FACTORS:

Aftercooler heat rejection is given for standard conditions of 25°C and 150 m altitude. To maintain a constant air inlet manifold temperature, as the air to turbo temperature goes up, so must the heat rejection. As altitude increases, the turbocharger must work harder to overcome the lower atmospheric pressure. This increases the amount of heat that must be removed from the inlet air by the aftercooler. Use the aftercooler heat rejection factor to adjust for ambient and altitude conditions. Multiply this factor by the standard aftercooler heat rejection.

GENERATOR EFFICIENCY:

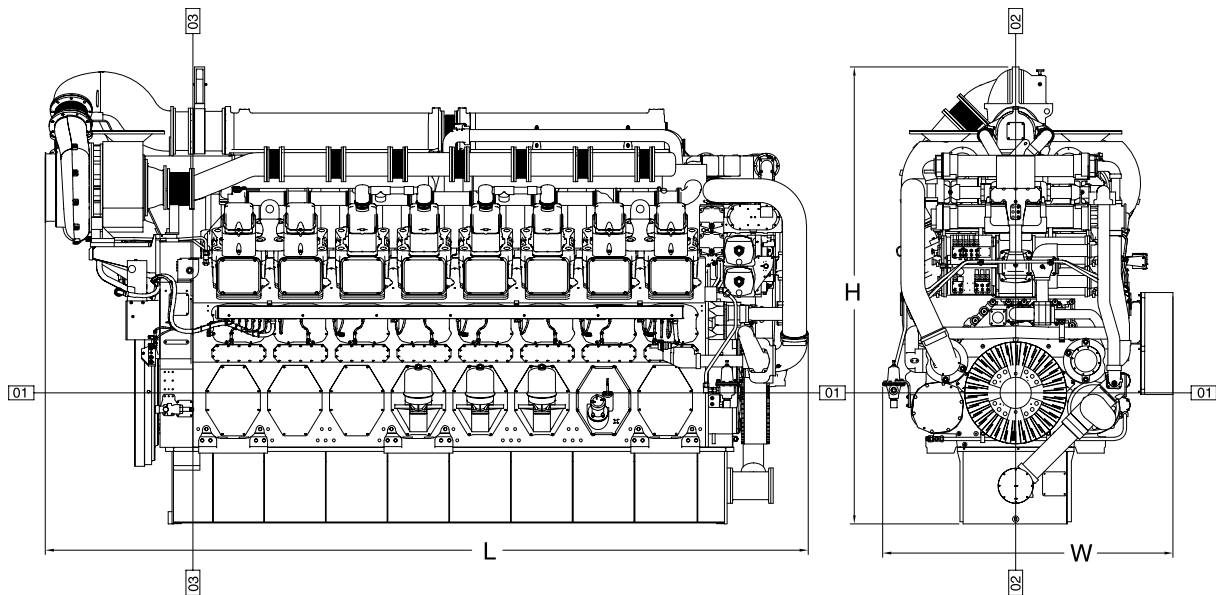
Generator power determined with an assumed generator efficiency of 96% [generator power = engine power x 0.96]. If the actual generator efficiency is less than 96% [and greater than 94.5%], the generator power [eKW] listed in the technical data can still be achieved. The BSFC values must be increased by a factor.

The factor is a percentage = 96% - actual generator efficiency.

SOUND DATA:

Data determined by methods similar to ISO Standard DIS-8528-10. Accuracy Grade 3.

DIMENSIONS



| Engine Dimensions | | |
|-------------------------------|-----------|-----------|
| Length of Engine | 3691 mm | 145.0 in |
| Length with Generator | 7120 mm | 280.3 in |
| Width of Engine | 1961 mm | 70.7 in |
| Height | 3934 mm | 154.9 in |
| Engine Weight – dry (approx.) | 15,680 kg | 34,496 lb |
| Generator Weight – (approx.) | 8165 kg | 18,000 lb |

RATING DEFINITIONS AND CONDITIONS

Prime Power — 6,000 hrs./yr., for applications with load factors less than or equal to 60%. Rated load (100%) usage is limited to 1 hour in 12. 10% overload available.

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, LRS, and RINA. 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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