SPECIFICATIONS

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

Emissions . . . . . . . . . . . . . IMO/EPA Tier 2 Compliant
Bore — mm (in) ...................... 280 (11.0)
Stroke — mm (in) .................... 300 (11.8)
Displacement — L (cu in) .......... 148 (9,031)
Rotation (from flywheel end) . . Counterclockwise
Compression Ratio ..................... 13:1
Aspiration ..................... Turbocharged-Aftercooled
Governor ............................ Electronic
Low Idle Speed — rpm .................. 350
Rated Speed — rpm ................... 1000
Oil Change Interval* — hours ........ 925
Serial Number Prefix ................... PKA
Cooling System ............ Keel or Heat Exchanger
Refill Capacities — L (gal)
  Cooling System ............. 1030-1205 (272-318)
  Lube Oil System .................. 760 (201)

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

STANDARD 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
Caterpillar 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.
## Performance Data

### C280-8 Diesel Engine Technical Data

**Genset**
- **Engine Speed (rpm):** 1000
- **Compression Ratio:** 13:1
- **Aftercooler Water (°C):** 32
- **Jacket Water Inlet (°C):** 90
- **Ignition System:** EUI
- **Exhaust Manifold:** DRY
- **Firing Pressure, Maximum (kPa):** 17300

**Ratings and Notes:**
- **Rating:** Marine Aux - Prime
- **Certification:** IMO/EPA Marine Tier II
- **Engine Power (2) kW:**
  - **Load 110%:** 2981
  - **100%:** 2710
  - **75%:** 2033
  - **50%:** 1355
- **Generator Power (2) kW:**
  - **Load 110%:** 2860
  - **100%:** 2600
  - **75%:** 1950
  - **50%:** 1300
- **BMEP (kPa):**
  - **Load 110%:** 2421
  - **100%:** 2201
  - **75%:** 1651
  - **50%:** 1101
- **Engine Efficiency (ISO 3046/1) (1) %:**
  - **Load 110%:** 42.7%
  - **100%:** 42.4%
  - **75%:** 39.5%
  - **50%:** 39.3%
- **Engine Efficiency (Nominal) (1) %:**
  - **Load 110%:** 41.5%
  - **100%:** 41.1%
  - **75%:** 38.3%
  - **50%:** 38.1%
- **Fuel Consumption (ISO 3046/1) (1) g/bkW-hr:**
  - **Load 110%:** 197.9
  - **100%:** 201.7
  - **75%:** 2201
  - **50%:** 214.4
- **Fuel Consumption (Nominal) (1) g/bkW-hr:**
  - **Load 110%:** 201.7
  - **100%:** 203.8
  - **75%:** 220.5
  - **50%:** 218.5
- **Emissions (Not to Exceed Data):**
  - **NOx (as NO) + THC (molecular weight of 13.018) g/bkW-hr:**
    - **Load 110%:** 10.72
    - **100%:** 10.64
    - **75%:** 9.97
    - **50%:** 9.36
- **Emissions (Nominal Data):**
  - **NOx (as NO) + THC (molecular weight of 13.018) g/bkW-hr:**
    - **Load 110%:** 9.17
    - **100%:** 9.06
    - **75%:** 8.20
    - **50%:** 7.90
- **Fuel Input Energy (LHV) (Nominal) (1) kW:**
  - **Load 110%:** 7189
  - **100%:** 6591
  - **75%:** 5308
  - **50%:** 3556

**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 ±5% of full load data.
2) Engine power tolerance is ±3% of full load data.
3) Heat rejection to atmosphere tolerance is ±10% of full load data.
4) Heat rejection to jacket and exhaust tolerance is ±50% of full load data.
5) Heat rejection to lube oil tolerance is ±20% of full load data.
6) Heat rejection to aftercooler tolerance is ±5% of full load data.
7) Total aftercooler heat = aftercooler heat x ACHR. (heat rate based on treated water)

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## PERFORMANCE DATA

### C280-8 DIESEL ENGINE TECHNICAL DATA

#### ALTITUDE DERATION FACTORS

<table>
<thead>
<tr>
<th>ALTITUDE (METERS ABOVE SEA LEVEL)</th>
<th>50</th>
<th>45</th>
<th>40</th>
<th>35</th>
<th>30</th>
<th>25</th>
<th>20</th>
<th>15</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>AIR (°C)</td>
<td>0.94</td>
<td>0.91</td>
<td>0.88</td>
<td>0.86</td>
<td>0.83</td>
<td>0.81</td>
<td>0.78</td>
<td>0.76</td>
<td>0.74</td>
</tr>
<tr>
<td>TO TURBO (°C)</td>
<td>0.95</td>
<td>0.93</td>
<td>0.90</td>
<td>0.87</td>
<td>0.85</td>
<td>0.82</td>
<td>0.80</td>
<td>0.77</td>
<td>0.75</td>
</tr>
</tbody>
</table>

#### AFTERCOOLER HEAT REJECTION FACTORS

<table>
<thead>
<tr>
<th>ALTITUDE (METERS ABOVE SEA LEVEL)</th>
<th>50</th>
<th>45</th>
<th>40</th>
<th>35</th>
<th>30</th>
<th>25</th>
<th>20</th>
<th>15</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>AIR (°C)</td>
<td>1.23</td>
<td>1.27</td>
<td>1.30</td>
<td>1.34</td>
<td>1.38</td>
<td>1.42</td>
<td>1.45</td>
<td>1.49</td>
<td>1.53</td>
</tr>
<tr>
<td>TO TURBO (°C)</td>
<td>1.18</td>
<td>1.22</td>
<td>1.25</td>
<td>1.29</td>
<td>1.32</td>
<td>1.36</td>
<td>1.39</td>
<td>1.43</td>
<td>1.46</td>
</tr>
</tbody>
</table>

#### FREE FIELD MECHANICAL NOISE

<table>
<thead>
<tr>
<th>SOUND PRESSURE LEVEL dB(A)</th>
<th>15M</th>
<th>7M</th>
<th>1M</th>
<th>Overall</th>
</tr>
</thead>
<tbody>
<tr>
<td>DISTANCE FROM THE ENGINE (M)</td>
<td>63</td>
<td>125</td>
<td>250</td>
<td>500</td>
</tr>
<tr>
<td>94</td>
<td>93.2</td>
<td>90.1</td>
<td>89.3</td>
<td>90.6</td>
</tr>
<tr>
<td>100</td>
<td>96.7</td>
<td>95.6</td>
<td>94.8</td>
<td>95.1</td>
</tr>
<tr>
<td>111</td>
<td>109.7</td>
<td>108.6</td>
<td>105.8</td>
<td>106.1</td>
</tr>
</tbody>
</table>

#### FREE FIELD EXHAUST NOISE

<table>
<thead>
<tr>
<th>SOUND PRESSURE dB(A)</th>
<th>15M</th>
<th>7M</th>
<th>1.5M</th>
<th>Overall</th>
</tr>
</thead>
<tbody>
<tr>
<td>DISTANCE FROM THE ENGINE (M)</td>
<td>63</td>
<td>125</td>
<td>250</td>
<td>500</td>
</tr>
<tr>
<td>97</td>
<td>100.4</td>
<td>115.4</td>
<td>112.9</td>
<td>104.2</td>
</tr>
<tr>
<td>117</td>
<td>128.9</td>
<td>126.0</td>
<td>118.3</td>
<td>112.4</td>
</tr>
</tbody>
</table>

#### 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 turbococharger 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% \[\text{generator power} = \text{engine power} \times 0.96\]. If the actual generator efficiency is less than 96% (and greater than 94.5%), the generator power \[\text{ekW}\] 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.

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Engine Dimensions

<table>
<thead>
<tr>
<th></th>
<th>Length of Engine</th>
<th>Length with Generator</th>
<th>Width of Engine</th>
<th>Height</th>
<th>Engine Weight – dry (approx.)</th>
<th>Generator Weight – (approx.)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>4511 mm</td>
<td>8040 mm</td>
<td>1961 mm</td>
<td>3937 mm</td>
<td>19,000 kg</td>
<td>11,340 kg</td>
</tr>
<tr>
<td></td>
<td>178.0 in</td>
<td>316.5 in</td>
<td>77.2 in</td>
<td>155.0 in</td>
<td>41,800 lb</td>
<td>25,000 lb</td>
</tr>
</tbody>
</table>

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 Caterpillar 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.