**3516**
Land Electric Drilling Module

**CAT® ENGINE SPECIFICATIONS**

V-16, 4-Stroke-Cycle-Diesel

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Emissions</td>
<td>Not Emissions Certified</td>
</tr>
<tr>
<td>Bore</td>
<td>170 mm (6.7 in.)</td>
</tr>
<tr>
<td>Stroke</td>
<td>190 mm (7.5 in.)</td>
</tr>
<tr>
<td>Displacement</td>
<td>69 L (4210 cu. in.)</td>
</tr>
<tr>
<td>Aspiration</td>
<td>Turbocharged-Aftercooled</td>
</tr>
<tr>
<td>Governor and Protection</td>
<td>Woodward</td>
</tr>
<tr>
<td>Engine Weight, net dry (approx)</td>
<td>8205 kg (18,090 lb.)</td>
</tr>
<tr>
<td>Module Weight, net dry (approx)*</td>
<td>18,340 kg (40,433 lb.)</td>
</tr>
<tr>
<td>Lube Oil System (refill)</td>
<td>405 L (107 U.S. gal.)</td>
</tr>
<tr>
<td>Cooling System (engine only)</td>
<td>233 L (61.5 U.S. gal.)</td>
</tr>
<tr>
<td>Cooling System (radiator)</td>
<td>330 L (87.2 U.S. gal.)</td>
</tr>
<tr>
<td>Oil Change Interval</td>
<td>500 hours</td>
</tr>
</tbody>
</table>

*Module weight includes — inner and outer base, radiator, generator, and engine

**FEATURES**

**Engine Design**
- Proven reliability and durability
- Robust diesel strength design prolongs life and lowers owning and operating costs
- Assembled, tested, and validated as a package to minimize package vibration and maximize component life
- Market-leading power density
- Designed to perform in oilfield conditions, including high ambient high altitude applications
- Long overhaul life proven in oilfield applications
- Core engine components designed for reconditioning and reuse at overhaul

**Safety**
- E-Stop pushbutton on instrument panel
- Air shutoff and explosion relief valves
- Configurable alarm and shutdown features
- Extra alarm switches available for customer-supplied panel

**Ease of Installation and Packaging**
- Customer interface harness
- Simple engine/package wiring
- Adapters, fittings, and connectors available for cooling, air and exhaust system

**Improved Serviceability**
Large inspection openings allow convenient access to core engine internals

**Reduction of Owning and Operating Costs**
- Long filter change intervals, aligned with service intervals

**Custom Packaging**
For any petroleum application, trust Caterpillar to meet your exact needs with a factory custom package. Cat® engines, generators, enclosures, controls, radiators, transmissions — anything your project requires — can be custom designed and matched to create a one-of-a-kind solution. Custom packages are globally supported and are covered by a one-year warranty after startup.

**Full Range of Attachments**
Large variety of factory-installed engine attachments reduces packaging time

**Testing**
Every engine is full-load tested to ensure proper engine performance.

**Product Support Offered Through Global Cat Dealer Network**
More than 2,200 dealer outlets
Cat factory-trained dealer technicians service every aspect of your petroleum engine
Cat parts and labor warranty
Preventive maintenance agreements available for repair-before-failure options
S•O•SSM™ program matches your oil and coolant samples against Caterpillar set standards to determine:
- Internal engine component condition
- Presence of unwanted fluids
- Presence of combustion by-products
- Site-specific oil change interval

**Over 80 Years of Engine Manufacturing Experience**
Ownership of these manufacturing processes enables Caterpillar to produce high quality, dependable products.
- Cast engine blocks, heads, cylinder liners, and flywheel housings
- Machine critical components
- Assemble complete engine

**Web Site**
For all your petroleum power requirements, visit www.catoilandgas.cat.com.
STANDARD EQUIPMENT

Air Inlet System
- Aftercooler core — corrosion resistant
- Air cleaner — regular duty

Control System
- Governor, Woodward EG6PC actuator — RH (controls provided by the SCR supplier)
- Magnetic pickup

Cooling System
- Radiator cooled land based
- Outlet controlled thermostats and housing
- Jacket water pump — gear-driven

Exhaust System
- Exhaust flexible fittings, adapters and flanges
- Dual turbochargers with w/c bearings

Flywheels and Flywheel Housings
- SAE No. 00
- SAE standard rotation

Fuel System
- Fuel filter, fuel transfer pump
- Flexible fuel lines
- Fuel priming pump — LH

Instrumentation
- Electronic instrument panel — LH, 8 hole, 7 gauge
- Oil pressure, fuel pressure
- Oil filter differential pressure
- Water temperature
- Tachometer
- Service meter
- Exhaust temperature — dual

Lube System
- Crankcase breather
- Oil cooler, oil filter
- Shallow oil pan
- Oil pan drain valve, 2” NPT female connection

Mounting System
- Oilfield base 7.85 m (25 ft 9 in) length
- Heavy-duty land rig inner baseframe — three-point mount to oilfield base

Power Take-Offs
- Accessory drive

Protection System
- Hydra-mechanical shutoffs (low oil pressure, high water temperature and overspeed, air inlet shutoff); monitoring gauge and emergency remote shutoff
- Alarm switches, low oil pressure, high water temperature (Marine Society approved) for connection to customer-supplied alarm panel
- Manual shutoff control — LH

Starting System
- Air prelube pump
- Air starting motor
- Air silencer

General
- Paint — Cat yellow
- Vibration damper and guard
- Lifting eyes

OPTIONAL EQUIPMENT

Air Inlet System
- Heavy-duty air cleaners and precleaners
- Remote air inlet adapters

Charging Systems
- Battery chargers
- Charging alternators

Control System
- Load sharing modules
- Local speed throttle control

Governor Conversion
- 2301A load sharing governors
- 2301A speed control governor and actuator
- 3161 mechanical governors
- Engine-mounted controls
- Throttle position sensors

Cooling Systems
- High gloss black folded core radiators and conventional core radiator
- Coolant regulator conversions
- Belt guard, radiator guard
- Blower fan
- Fan drive and fan pulley
- Radiator cover, regulators
- Water level switch gauge
- Coolant level sensors

Exhaust System
- Elbows
- Flange and exhaust expanders
- Mufflers

Fuel System
- Flexible fuel lines
- Fuel priming pumps — manual
- Fuel Filters — primary, duplex
- Fuel Cooler

Generator
- Oilfield spec twin-bearing, close-coupled
- Factory aligned

Generator Attachments
- Air filter
- Cable access box
- Bearing temperature detectors
- Generator conversion
- Low voltage extension box
- Manual voltage control

Instrumentation
- Annunciator
- Customer management device
- Removal panel display, remote cylinder temperature display
- Switches and contractors

Lube System
- Fumes disposal
- Oil filter, oil pan accessories
- Sump pumps

Mounting System
- Bases, base removal

Power Take-Offs
- Front housing, flywheel guard
- Flexible couplings, coupling hubs
- Front accessory drive
- Auxiliary drive shaft, auxiliary drive pulleys
- Front stub shaft, flywheel stub shaft
- Pulleys

Protection System
- Explosion relief valve
- Air shutoffs
- Switches and contactors
- Oil pressure monitors

Starting System
- Air pressure regulator
- Starting aids

General
- Tool set
- Caterpillar data link wire
### GENERATOR DATA

60 Hz — Standard

- **ekW / kVA**: 1285 / 2150
- **rpm**: 1200
- **Rated pf.**: 0.7
- **Temperature Rise**: 90°C @ 50°C ambient, VPI
- **Insulation Class**: VPI
- **Overload**: 50% / 2 min
- **Excitation**: Permanent magnet

- **Voltage**: 600
- **Voltage Regulator**: Optional
- **Configuration**: Two-bearing, close-coupled
- **Coastal Protection**: Yes
- **Space Heater**: Included
- **Construction**: Form wound
- **Frame Size**: 868

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### ALTITUDE CAPABILITY

#### Approximate Power (bhp) as a function of Altitude and Inlet Manifold Temperature

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<thead>
<tr>
<th>Ambient Operating Temp. (°F)</th>
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<th>6562</th>
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<td>1413</td>
<td>1486</td>
<td>1562</td>
<td>1609</td>
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</tbody>
</table>
**LAND ELECTRIC DRILLING MODULE**

**Module Dimensions**

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Value</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Length</td>
<td>7874 mm</td>
<td>310 in.</td>
</tr>
<tr>
<td>Width</td>
<td>2385.06 mm</td>
<td>93.9 in.</td>
</tr>
<tr>
<td>Height</td>
<td>2496.82 mm</td>
<td>98.3 in.</td>
</tr>
<tr>
<td>Engine Weight</td>
<td>8205 kg</td>
<td>18,090 lb</td>
</tr>
<tr>
<td>Module Weight</td>
<td>18,340 kg</td>
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</tr>
</tbody>
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*Module weight includes — inner and outer base, radiator, generator, and engine

Note: Do not use for installation design. See general dimension drawings for detail. (Drawing #316-8268)

**RATING DEFINITIONS AND CONDITIONS**

**Ratings** are based on SAE J1995 standard conditions of 100 kPa (29.61 in Hg) and 25° C (77° F). These ratings also apply at ISO3046/1, DIN6271, and BS5514 standard conditions of 100 kPa (29.61 in Hg), 27° C (81° F), and 60% relative humidity. Ratings are valid for air cleaner inlet temperatures up to and including 50° C (122° F).

**Fuel consumption** has a tolerance of +5% and is based on fuel oil of 35° API [16° C (60° F)] gravity having an LHV of 42 780 kJ/kg (18 390 Btu/lb) when used at 29° C (85° F) and weighing 838.9 g/liter (7.001 lbs/U.S. gal). Fuel consumption shown with all oil, fuel, and water pumps, engine driven.

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