3516B Land Electric-Drive Drilling Module

1383 bkW (1855 bhp) 1200 rpm

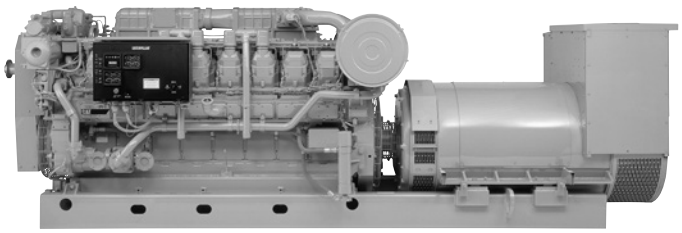


Image shown with optional attachments.

CAT® MODULE SPECIFICATIONS

V-16, 4-Stroke-Cycle-Diesel

Emissions	Non-Current 2000 EPA and CARB Tier 1 Non-Road Emissions Certified
Bore	170 mm (6.7 in)
Stroke	190 mm (7.5 in)
Displacement	69 L (4210 in^3)
Aspiration	Turbocharged-Aftercooled
Governor and Protection	Electronic ADEM™ A3
Engine Weight, net dry (approx)	8675 kg (19,126 lb)
Module Weight, net dry (approx)*	18,810 kg (41,469 lb)
Capacity for Liquids	
Lube Oil System (refill)	405 L (107 U.S. gal)
Cooling System (engine only)	233 L (61.5 U.S. gal)
Cooling System (radiator)	247 L (65.3 U.S. gal)
Oil Change Interval	500 hours

*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

Advanced Digital Engine Management
ADEM A3 engine management system integrates speed control, air/fuel ratio control, and ignition/detonation controls into a complete engine management system. ADEM A3 has improved user interface, display system, shutdown controls, and system diagnostics and allows electronic integration with transmissions.

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
- Excellent fuel economy — direct injection electronic unit injectors precisely meter fuel

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 Cat module 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•S℠ 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 with soot filter
Service indicators

Control System
Caterpillar ADEM A3 ECU — LH

Cooling System
Radiator cooled land based
Outlet controlled thermostat and housing
Jacket water pump — gear-driven
Dual outlet
Aftercooler fresh water cooling pump (SCAC) — gear-driven centrifugal

Exhaust System
Exhaust flexible fitting, adapter 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
Electronically controlled unit injectors

Instrumentation
Electronic instrument panel — LH
Analog gauges with digital display data for: engine oil pressure gauge, engine water temperature gauge, fuel pressure gauge, system DC voltage gauge, air inlet restriction gauge, exhaust temperature (prior to turbochargers) gauge, fuel filter differential pressure gauge, oil filter differential pressure gauge, service meter (digital display only), tachometer (digital display only), instantaneous fuel consumption (digital display only), total fuel consumed (digital display only), engine start-stop (off, auto start, manual start, cooldown timer)

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
ADEM A3 ECU monitoring system provides engine protection strategies to protect against adverse operating conditions. Selected parameters are customer programmable.

Starting System
Air starting motor, air silencer

General
Paint — Cat yellow
Vibration damper and guard
Lifting eyes
Lift and cable tow provisions

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
Governor conversion
2301A load sharing governors

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

European Union Certifications

Exhaust System
Elbows
Flange and exhaust expanders
Mufflers

Fuel System
Flexible fuel lines
Fuel priming pumps — manual
Primary fuel filter, 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
Gauges and pnstrument panels
Switches and contractors

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

Mounting System
Bases, base removal
Vibration isolators, rails

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, shutoffs
Switches and contactors
Oil pressure monitors, sensors

Starting System
Air pressure regulator
Starting aids

General
Tool set
Cat data link wire

GENERATOR DATA

60 Hz — Standard

ekW / kVA ..... 1285 / 2150
rpm 1200
Rated pf 0.7
Temperature Rise ..... 80°C @ 50°C ambient
Insulation Class ..... H
Overload ..... 50% / 2 min
Excitation ..... Permanent magnet
Voltage 600
Voltage Regulator ..... Optional
Configuration ..... 2 bearing close coupled
Coastal Protection ..... Yes
Space Heater ..... Included
Construction ..... Form wound
Frame Size 868

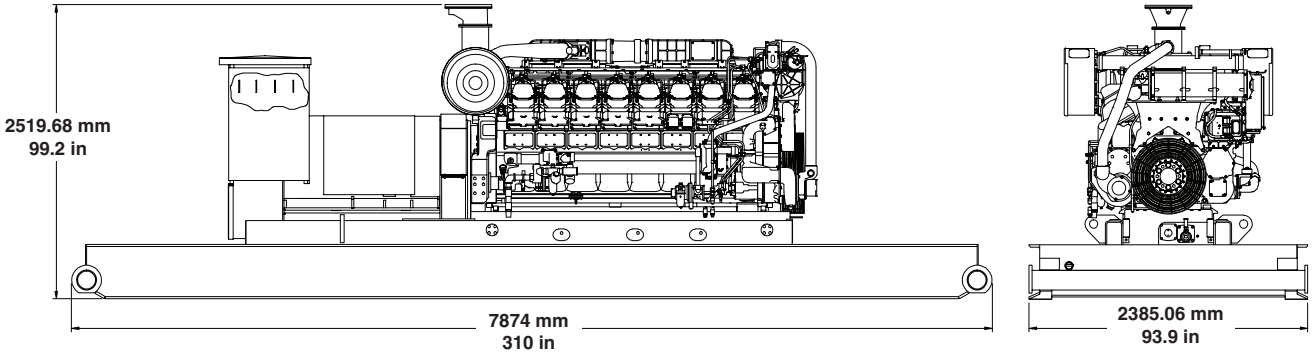
ALTITUDE CAPABILITY

Approximate Power (bhp) as function of Altitude and Inlet Manifold Temperature for DM7044-00									
Inlet Manifold Temp. (°F)	**Altitude (feet)**								
	10,499	**9843**	**8202**	**6562**	**4921**	**3281**	**1640**	**984**	**0**
50	1604	1645	1753	1855	1855	1855	1855	1855	1855
68	1549	1589	1692	1801	1855	1855	1855	1855	1855
86	1498	1537	1636	1742	1852	1855	1855	1855	1855
104	1450	1487	1584	1686	1793	1855	1855	1855	1855
122	1405	1442	1535	1633	1738	1848	1855	1855	1855
Normal	1605	1640	1727	1817	1855	1855	1855	1855	1855

3516B LAND ELECTRIC-DRIVE DRILLING MODULE

1383 bkW (1855 bhp)

LAND ELECTRIC-DRIVE DRILLING MODULE



Right Side View **Front View**

Module Dimensions		
Length	7874 mm	310 in.
Width	2385.06 mm	93.9 in.
Height	2519.68 mm	99.2 in.
Engine Weight (dry)	8675 kg	19,126 lb
Module Weight (dry)*	18,810 kg	41,469 lb

*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 #294-3507)

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.

Performance Number: DM7044-00
LEHW0065-01 (9-14)