CATERPILLAR®

Offshore SCR Power Modules 3512B 3516B

The products briefly described here represent Caterpillar power modules for use as prime rig power on SCR electric drill rigs. These Cat® engines, generators, radiators, and bases are a result of years of experience in the oilfields and an extensive design and testing program aimed at developing oilfield power modules that meet the demands of the drilling contractor.

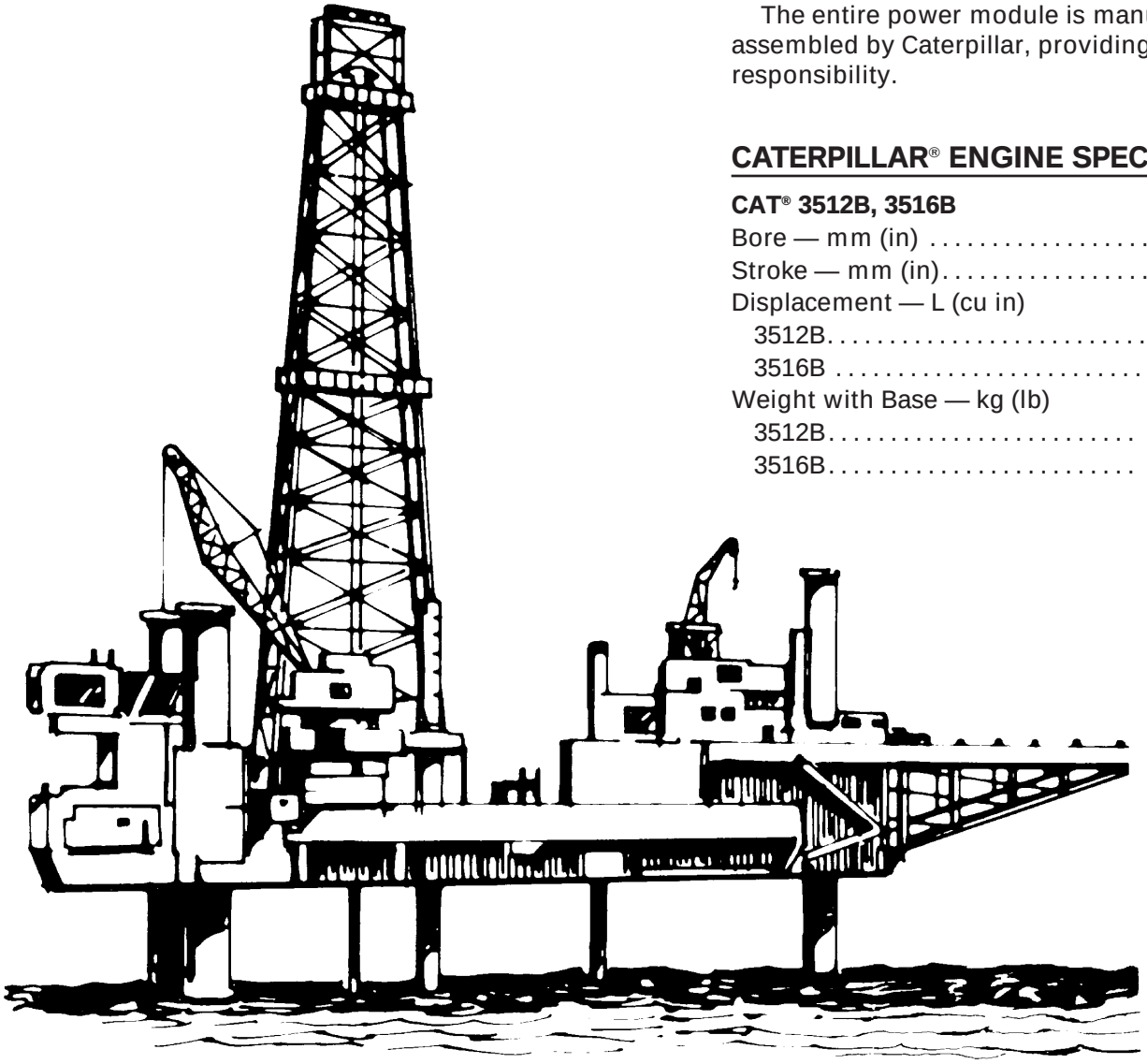
It is essential to have a properly designed base for diesel electric power modules used on drilling rigs. Misalignment between engine and generator can cause vibration and shorten the life of couplings and bearings. Caterpillar has recognized this fact and designed a base which provides a built-in three-point mounting system. The engine and generator are mounted by Caterpillar on this base and aligned to exacting tolerances at the factory.

The entire power module is manufactured and assembled by Caterpillar, providing single source responsibility.

CATERPILLAR® ENGINE SPECIFICATIONS

CAT® 3512B, 3516B

Bore — mm (in)	170 (6.7)
Stroke — mm (in)	190 (7.5)
Displacement — L (cu in)	
3512B	51.8 (3158)
3516B	69 (4210)
Weight with Base — kg (lb)	
3512B	14 742 (32 500)
3516B	16 874 (37 200)



TYPICAL EQUIPMENT

Air Inlet System
Aftercooler core,
corrosion resistant coating
Air cleaners, regular duty, installed
Dual turbochargers, water-cooled bearing housings
Base arrangement
engine and generator three-point mounted into outer base, oil drain extension, oil drip pan
Control System
Dual Advanced Diesel Engine Management II modules with electronically controlled unit injectors (DC power from SCR control system)
Cooling System
Expansion tank and heat exchanger or remote radiator cooled
Jacket water pump, gear driven, centrifugal
Oil cooler
Thermostats and housing, full open temperature 92° C (198° F), LH outlet
Exhaust System
Dry gas-tight manifolds with thermo-laminated heat shields
Dual turbochargers with thermo-laminated heat shields
Flexible exhaust fitting
Flywheels and Flywheel Housings
Flywheel, SAE No. 00, 183 teeth
Flywheel housing, SAE No. 00
Fuel System
Electronically controlled unit injectors
Fuel filter, LH
Fuel transfer and priming pumps
Flexible fuel lines
Generator
SR4, two-bearing, 600 V, 60 Hz, 3 phase, 10 wire, wye connected, brushless (voltage regulator is optional), space heater and temperature detectors
Instrumentation
Electronic instrument panel, LH with analog gauges for: oil and fuel pressure, oil and fuel filter differential, system DC voltage, exhaust and water temperature, fuel pressure, air inlet restriction
digital display for: tachometer, hours, fuel consumption — total and instantaneous
Lube System
Crankcase breather, top mounted
Deep sump oil pan
Oil filler and dipstick
Oil filter, cartridge type, LH
Oil pump, gear type
Protection System
ADEM II Electronic Monitoring System with customer programmable alarm, shutdown and deration strategies
Air inlet shutoff
Emergency stop pushbutton
Alarm contactors
Starting and control
air-driven prelube pump (3516B), air silencer, air starting motor.
General
Lifting eyes, front and rear
Paint, Caterpillar yellow
Vibration damper and guard

ACCESSORY EQUIPMENT

Crankcase explosion relief valves
Customer communication module
Duplex fuel and oil filters
Horizontal exhaust outlet
Jacket water heaters
Mufflers
Primary fuel filter
Pyrometer and cylinder thermocouples
Additional instrumentation
air cleaner restriction (2), intake manifold temperature, lubricating oil temperature, fuel filter differential

RATINGS (without fan)

Pumping and Drilling

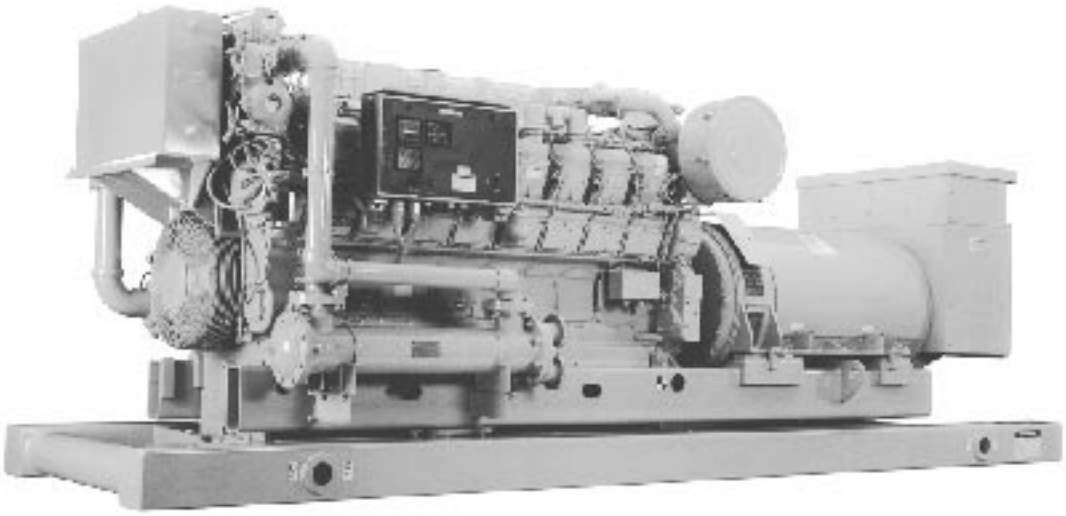
	Marine Society Approved[3]			SR4 Generator
Model	kW[1]	(hp)[1]	rpm	kV•A[2]
3512	933	(1251)	1000	1500
	1102	(1477)	1200	1750
	1165	(1562)	1500	1900
3516	1259	(1688)	1000	2000
	1384	(1855)	1200	2150
	1525	(2045)	1500	2400

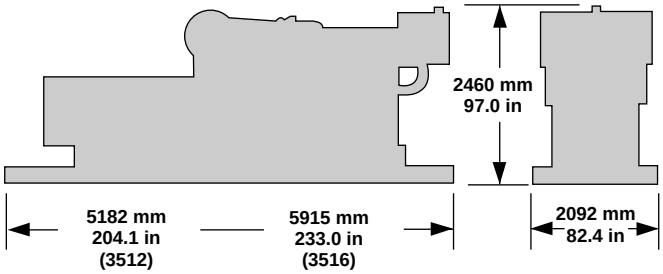
1 Mechanical kW, 10% overload capability Included above setting.
2 Generators oversized to meet low power factor requirements.
3 ABS, LR, DNV Marine Classification Society ratings for marine auxiliary service. Consult your Caterpillar dealer for other ratings and approvals.

CATERPILLAR®

FEATURES

- **EXCELLENT FUEL ECONOMY**
  Highly efficient direct injection fuel system, low friction three-ring piston design
- **LONG ENGINE LIFE**
  Large cylinder displacement, exceptionally rigid high-strength block
- **EASY MAINTENANCE**
  Large inspection openings allow convenient access to internal components, long oil and fuel filter change intervals
- **COMPACT**
  Ease of installation and servicing even when machinery space is limited





Caterpillar® SR4 Generator

- Designed, tested, and sized for SCR drill rig service
- 80° C over 40° C ambient temperature rise
- Form wound stator and rotor
- Class H insulated using vacuum pressure impregnated (VPI) temperature-resistant materials
- Imbedded temperature detectors and generator space heater are standard
- Terminal box and copper bus bars for easy, dependable connections
- Two-bearing generators
- Optional bearing RTDs

Offshore Rig Base

- For use with Caterpillar or customer supplied two-bearing generators
- Built-in three-point mounting system maintains alignment of engine-generator on uneven surface and from substructure flexing that can twist the base and cause engine-generator misalignment.

CATERPILLAR PARTS AND SERVICE

You will find Caterpillar parts and service outlets in major oil producing areas worldwide. With the most comprehensive parts distribution system in the industry, most engine parts orders can be filled immediately over a dealer's counter. As a backup, dealers can quickly convey their parts needs to the nearest location in a network of Caterpillar parts facilities around the world. The dealer places an order with the Caterpillar parts depot and a computerized inventory control system helps fill that order, printing shipping instructions for any part in the system — wherever it might be.

While many oilfield contractors maintain a service department adept at handling repairs, they have the assurance that Caterpillar engine dependability is backed by a force of factory qualified dealer servicemen worldwide — men who are specially trained to keep Cat® engines operating at peak efficiency. For all engine repairs, from minor work to a major overhaul or rebuild, expert attention is as near as your phone or radio. Work is fast and accurate. Downtime is minimized.

Ask about installation and start-up procedures offered by Caterpillar.

RATING DEFINITIONS AND CONDITIONS

Ratings are based on SAE J1349 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.

Electric drive pumping and drilling: The power and speed capability of the engine which can be used to power mud pumps, rotary table, and drawworks on an electric drive drill rig.

LEHW7470
Supersedes LEHW6167