16CM32C • Offshore Production Generating Set

8,691 kWe (10,864 kVA) – 60Hz @ 720rpm • 8,691 kWe (10,864 kVA) – 50Hz @ 750rpm

Image shown may not reflect actual engine

Cat® Engine Specifications

16CM32C, 4-Stroke-Cycle-Diesel

Emissions	IMO Tier II
Bore	320 mm (12.60 in.)
Stroke	460 mm (18.1 in.)
Displacement	592 L (36,126 cu. in.)
Aspiration	Turbocharged-Aftercooled
Governor	Electronic
Rated Speed	
60 Hz	720 rpm
50 Hz	750 rpm
Module Weight, net dry (approx)	150 t (330,000 lbs)
Rotation (from flywheel)	Counterclockwise
System Capacity	
Cooling System	1,900 L (502 gal)
Lube Oil System (refill)	
720 rpm	10,000 L (2,642 U.S. gal)
750 rpm	10,800 L (2,853 U.S. gal)

Features

Engine Design

- World-class reliability and durability
  – Incorporates years of proven component reliability and durability in marine industry
- Medium-speed long-stroke engine design
- Ideal configuration for dynamically positioned semi-submersible rigs and drillships
- Compact cylinder head design
- Nodular cast-iron block with integrated ducts for lube oil and charge air
- Segmental camshaft design
- 25° tilt capability in all directions
- Engine design based on the higher requirements of heavy fuel oil
- High efficiency turbocharger
- Cylinder liner, only cooled outside the engine block
- Engine control terminal with analog instrumentation in robust cast casing
- Connecting rod, split-off design
- Compact module for lower valve drives and injection pump drives with cam followers
- Flexible Camshaft Technology (FCT), optional

Ease of Installation

- Standard modular design allows for ease of installation and reduced complexity
- Installation-friendly, due to pumps and filters installed on the engine
- Cooling water system with simple plug-in connections
- Full range of factory-installed engine attachments allows customization and reduction in installation time

Packaging Concept

- Assembled, tested, and validated as a package to minimize package vibration and maximize component life

Improved Serviceability

- Large inspection openings allow for convenient access to core engine internals for easier serviceability
- Core engine components designed for reconditioning and reuse at overhaul
- Worldwide dealer network with factory-trained technicians means that parts and support are never out of reach
- Simplified parts spectrum by using single-pipe exhaust gas ducting

Web Site

For all your petroleum power requirements, visit **www.catoilandgasinfo.com**

16CM32C Offshore Production Generating Set **8,691 kWe (10,864 kVA)**

Engine
– Motor-driven barring gear, fitted on engine
– Reversing contractor and pushbutton switch with cable
– Electronic speed setting equipment with actuator and speed pick-up
– Emergency shutdown equipment with pushbutton, separate, for manual emergency stop

Engine Indicators
– Gauge board with set liquid damped pressure gauges for: fuel, lube oil, fresh water, starting air, and charge air.
– On-engine thermometers for fuel, lube oil, fresh water, and charge air
– Electric remote speed indicator
– Turbocharger and remote speed indicator
– Exhaust gas temperature indicator

Control
– Manual control on engine, including: control panel with start/stop key, speed setting device, mechanical shutdown device, change over of control functions from engine to remote control
– Starting solenoid valve on engine, 24 V DC
– Separate electronic speed governor

Monitoring for Unattended Operation
Pressure switches, mounted on engine, for:
– Lube oil pressure at full load below danger level
– Low lube oil pressure
– Lube oil pressure below danger level
– Lube oil pressure prelubrication failed
– Low fresh water pressure at engine inlet
– Fresh water pressure at engine inlet below danger level
– Low fresh water pressure in LT circuit
– Low starting air pressure
– Low control air pressure engine/shutdown air pressure
– Low fuel pressure at engine inlet
Switches for:
– High lube oil temperature at engine inlet
– Lube oil temperature at engine inlet above danger level
– High water temperature at engine inlet
– Water temperature at engine outlet above danger level
– High charge-air temperature at engine inlet
– Detection of water in charge-air duct
– Leak fuel level
– Alarm contact for high differential pressure at fuel filter
– Alarm contact for high differential pressure at lube oil back flushing filter
– Set of thermocouples after each cylinder, before and after
– turbocharger
– Crankcase oil mist detector
Control Cabinet with housings for wall mounting, including:
– Protection equipment designed for automatic and manual stop input signals, starting interlock input signals, monitoring for the wire break of the input signal units and the emergency shutdown solenoid
– Speed recording system for overspeed, firing speed and minimum speed
– Start/stop logic, controlled by engine automatic start (optional)
– Service hour counter
– Noris alarm system, cassette type, designed for alarm inputs for the engine including exhaust mean-value monitoring equipment as well as alarm inputs for the propulsion plant
– Group alarm panel for the bridge and with optional and acoustical alarm equipment

Starting Air System
– Separate non-return valve for the starting air pipe to the engine

Air Intake System
– Air intake filter, fitted on the turbocharger
– Air bottles, separate

Diesel Oil System
– Separate circulating pump driven by electric motor, horizontal or vertical
– Duplex filter with differential pressure indication

Exhaust System
– Turbocharger at free end with transition nozzle (0 degrees from the vertical and away from engine), with compressor cleaning device
– Expansion joint separate
– Separate silencer and spark arrester, unlagged 35 dB(A)

Fresh Cooling Water System
– HT pump, fitted on engine
– LT pump, separate, vertical design, electric motor driven
– HT thermostat, not powered and separate
– Engine preheating equipment, fitted on base frame

Lubricating Oil System
– Plate cooler, fitted on engine
– Force pump, fitted on engine
– Prelubrication pump, fitted on base frame, electric motor driven
– Boll and Kirch automatic backflushing filter, separate
– Duplex filter with differential pressure indication, separate
– Pressure control valve, fitted
– Thermostat, not powered, separate

Connecting Parts – Engine
– Set of connecting parts between flange coupling and flywheel
– Flexible flange coupling between engine and generator
– Base frame with flywheel guard and incorporating lube oil sump tank, for engine and generator
– Mounting of engine and generator on the base frame
– Set of bonded rubber rails for resilient mounting of the base frame
– Set of flexible pipe connections

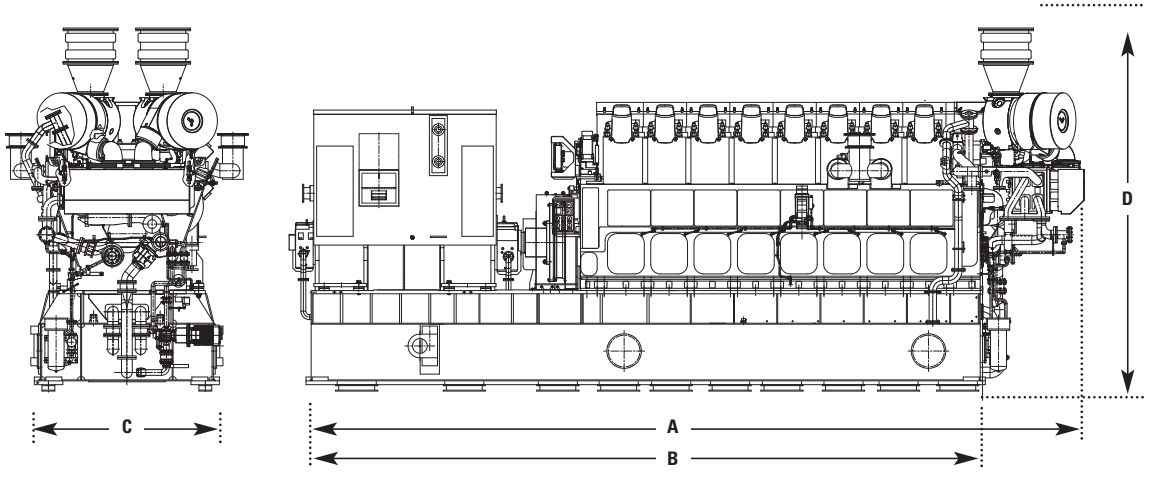
Tools
– Set of tools for the engine including hydraulic tightening tools and nozzle tester
– Set of tools for turbocharger
– Inside micrometer for cylinder liners
– Ruler for cylinder liner

Spare Parts
– Set of engine spare parts for unrestricted operation
– Set of spare flexible pipe connections

Technical Data 16CM32C Offshore Production Generating Set

	60 Hz	50 Hz
Engine Power	8,960 kW (12,015 bhp)	8,960 kW (12,015 bhp)
Generator Set Rating*	8,691 kWe (10,864 kVA)	8,691 kWe (10,864 kVA)
BMEP @ Rated	22.5 bar (326.3 psi)	21.6 bar (313.3 psi)
BSFC @ Rated	181 g/kWh (0.298 lbs/bhp-hr)	182 g/kWh (0.299 lbs/bhp-hr)
Maximum Allowable Fuel Temperature to Engine (MDO)	25°C (77°F)	25°C (77°F)
Air Demand Based on 20°C Inlet Temperature and 101.3 kPa Inlet Pressure	48,535 m^3/h (28,567 cfm)	50,050 m^3/h (29,458 cfm)
Maximum Allowable Air Temperature to Air Filters	45°C (113°F)	45°C (113°F)
Exhaust Flow Based on 310°C Stack Temperature and 105 kPa Stack Pressure	59,870 kg/h (131,991 lbs/hr)	61,833 kg/h (136,318 lbs/hr)
Maximum Allowable Backpressure	3 kPa (12 in. H_2O)	3 kPa (12 in. H_2O)
LT SCAC Heat Rejection	795 kW (45,211 Btu/min)	833 kW (47,372 Btu/min)
HT SCAC Heat Rejection	2,783 kW (158,267 Btu/min)	2,868 kW (163,100 Btu/min)
Maximum Charge Air Cooler (LT-stage) Inlet Temperature	38°C (100°F)	38°C (100°F)
JW Heat Rejection	1,245 kW (63,409 Btu/min)	1,245 kW (63,409 Btu/min)
Radiative Convective Heat Rejection	347 kW (19,733 Btu/min)	347 kW (19,733 Btu/min)

* Assumes 96% efficiency and a power factor of 0.8



Note: Do not use for installation design. See general dimension drawings for detail.

Package Dimensions		
Length (A)	12,060 mm	475 in.
Length (B)	10,510 mm	414 in.
Width (C)	3,000 mm	118 in.
Height (D)	5,661 mm	222.87 in.
Package Weight (dry)*	140 t	308,647 lb

* Dependent on generator type

Rating Definitions and Conditions

Engine Performance is corrected to inlet air standard conditions of 99 kPa (29.31 in. Hg) dry barometer and 25°C (77°F) temperature. These values correspond to the standard atmospheric pressure and temperature as shown in SAE J1995.

Performance measured using a standard fuel with fuel gravity of 35 degrees API having a lower heating value of 42,780 kJ/kg (18,390 BTU/lb) when used at 29°C (84.2°F) where the density is 838.9 g/L (7.001 lb/U.S. gal).

The corrected performance values shown for Cat® engines will approximate the values obtained when the observed performance data is corrected to SAE J1995, ISO 3046-2, ISO 8665, ISO 2288, ISO 9249, ISO 1585, EEC 80/1269, and DIN 70020 standard reference conditions.

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