

Image shown may not reflect actual engine configuration

CAT® PACKAGE SPECIFICATIONS

I-6, 4-Stroke-Cycle Diesel

Emissions	IMO Tier II certified, EPA Marine Tier 3 certified
Peak Torque at Speed	2225 N•m (1641 lb-ft) @ 1400 rpm
Bore	137 mm (5.4 in)
Stroke	171 mm (6.7 in)
Displacement	15.2 L (928 in ³)
Aspiration	Turbocharged-Aftercooled
Governor and Protection	Electronic ADEM™ A4
Package Weight, net dry	3800 kg (8378 lbs)
Capacity for Liquids	
Lube System (refill)	34 L (36 U.S. qts)
Cooling System	78.5 L (83 U.S. qts)
Oil Change Interval	500 hours
Rotation (from flywheel end)	Counterclockwise
Flywheel and Flywheel Housing	SAE No. 1
Flywheel Teeth	113 (SAE No. 1)

FEATURES

Improving Workforce Efficiency

- Standard factory certifications improve worksite safety
 - Class 1 Division 2, Class I Zone 2 (NEC 505) (engine only)
 - ATEX Directive (2014/34/EU) Group II, Category 3G (Zone 2) with Gas Group IIA and Temperature Class T3
- Electrical harness and connectors are certified as safe for Zone 2 and for protection against flame propagation
- Certified flameproof intake and exhaust system to prevent any internal explosions from propagating to external atmosphere
- Industry-standard ADEM A4 control system improves operator interface

Making Your Investment Work Harder

- Optimized for demanding well service applications
 - Workover, pumping, cementing, blending, and acidizing
- Maintains high power over broad range of operating speeds, improving performance
- Steady torque rise provides superior load acceptance
- Optimized ambient and altitude capabilities for operating flexibility

Emissions

- IMO Tier II
- EPA Marine Tier 3

Driving Down Total Cost of Ownership

- Improved serviceability versus the competition
- Industry-leading component overhaul life

HAZPAK SOLUTION

Turnkey solutions

- Matched exhaust and inlet systems
- Integrated Cat control system
- Take the risk out of specification and procurement of individual parts
- All skin temperatures and exhaust gas < 200°C (T3)

- Certified to maintain T3 skin temperatures for up to 45°C ambient applications

Class-leading safety

- ATEX 2014/34/EU
- Machinery Directive 2006/42/EC
- IECEX

STANDARD EQUIPMENT

Air Inlet System

Dry-type two element air filter with restriction indicator, separate circuit aftercooler with ATEX-approved air shutoff valve, inlet flame arrestor

Control System

Industry-standard ADEM A4 control system, inlet air shutoff valve for integration with supervisory safety system, electronic governing, programmable ratings, automatic altitude compensation, power compensation for fuel temperature, programmable low and high idle and top engine speed limit, electronic diagnostics and fault logging, engine monitoring and protection system (speeds, temperature, pressure), J1939 broadcast (diagnostic, engine status and control), wiring suitable for Class 1 Zone 2 or ATEX Zone 2 areas

Cooling System

Cooling package designed for 45°C ambient capability; separate cooling circuit for aftercooler; offshore-capable radiators for jacket water and aftercooler circuits are manufactured using steel fabrications, galvanized solder-dipped cooling elements and all stainless steel nuts and bolts; water pumps are gear driven, centrifugal; engine-mounted fan with ATEX-compliant fan drive and guarding; all guards designed, manufactured, and fitted in accordance with the Machinery Directive 2006/42/EC.

Exhaust System

Exhaust gas cooler, plenum, and outlet box assembly; ATEX-compliant – designed to limit the exhaust gas and exhaust duct surface temperatures to T3 (200°C); exhaust gas flametraps suitable for Gas Group IIA; designed and tested in accordance with the recommendations of EN 1834 and EN 13463; wet and dry exhaust flexibles; ship-loose ATEX-compliant spark arresting muffler

Flywheel and Flywheel Housing

SAE No. 1 cast iron housing, industrial-style flywheel for SAE-1 housing, pilot bore for 100 mm diameter bearings, provides RH and LH starter pocket

Fuel System

Electronic unit injector; upward-angled fuel priming pump, primary filter and water separator; engine-mounted secondary fuel filter

General

Package ambient capability is -10°C to 45°C; designed for Gas Group IIA and temperature class T3 (200°C limit); engine and exhaust system fitted to sub-frame; air filter, fuel/water separator, remote oil filter installed and mounted; earth bonding per standard EN 60079-14

Lube System

Oil cooler, RH and LH oil gauge, remote-mounted oil filters for easy service

OPTIONAL EQUIPMENT

Air Compressor

Reciprocating, single stage, single cylinder, gear-driven, operates at 1.2 times engine speed, rated displacement of 0.44 m³/min (15.7 CFM) @ 1250 rpm (compressor speed)

Charging System

24V 35A EX d ATEX-compliant alternator for Gas Group IIB, temperature class T3; heavy-duty, brushless.
24V 65A alternator, NEC 500 Class 1 Division 2 for Gas Groups C&D, temperature Class T3; heavy-duty, brushless.

Control System

- Air, electric, or hydraulic shutdown system input options available
- *Throttle knob speed control* – ATEX-approved 24V operation; twist knob
- *Messenger display* – electronic display unit for monitoring key engine operation data and diagnostic information on a full graphic LCD screen
- *PCS2 control board* – provides supervisory safety system function and overspeed shutdown control; includes shipped loose start button, run/stop switch, emergency stop button for integration in customer control panel; switches and sensors for exhaust gas temperature, coolant temperature, oil pressure, and engine speed shutdowns; user configurable alarm and shutdown relay inputs
- *ExSCS* - a configurable PLC-based gas detection shutdown system, for the protection of offshore diesel engines operating in hazardous zone 2 area applications. The Ex SCS shutdown system will quickly and reliably trigger a safety shutdown on detection of a diesel engine over speed, high exhaust gas and coolant temperatures, low oil pressure, flammable gas detection in the engine air inlet and manual emergency stop activation.

There are three variants of the Ex SCS shutdown system:

- Ex SCS - FG (Fire & Gas)
- Ex SCS - Single
- Ex SCS - Twin

All three variants have a touchscreen Human Machine Interface (HMI) that displays the current status of the safety shutdown system. The Ex SCS FG has the additional capability to monitor an infrared fire & smoke detection sensors and has a voltage free relay output signal for the activation of a 3rd party fire deluge system.

The Ex SCS Single, enables the system to be applied to single engine applications. The Ex SCS Twin enables the system to be applied to twin engine applications.

Fuel System

Fuel cooler, installed, maintains acceptable fuel temperature when running from day tank

Hydraulic Pump Drive

LH front, rearward facing SAE B drive, 13T 16/32 DP internal spline shaft – 257 N•m (189.5 lb-ft) torque capability; operates at 1.2 times engine speed, CW rotation (opposite of engine)

Starting System

Pneumatic and hydraulic starters

Paint

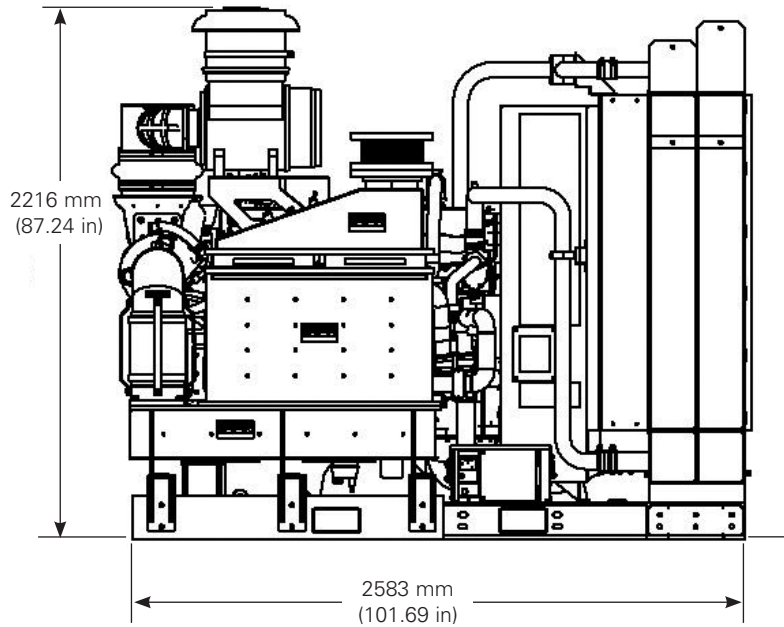
Offshore 3-coat epoxy paint system, 325 micron thickness

Transmission Cooler

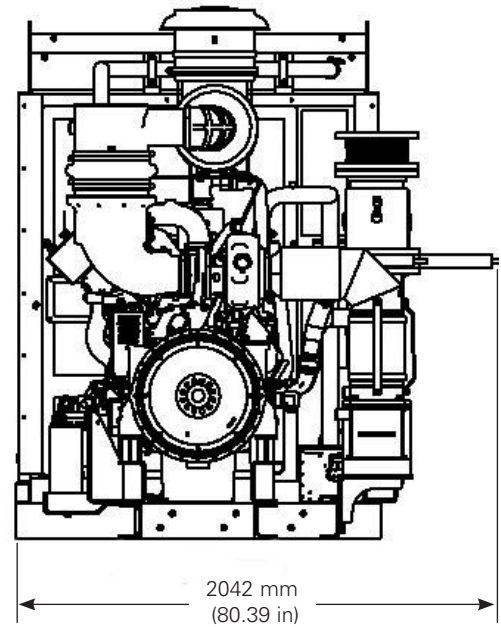
Engine-mounted

DIMENSIONS

RIGHT SIDE VIEW



FRONT VIEW



DIMENSIONS*		
Length	mm (in)	2583 (101.69)
Width	mm (in)	2042 (80.39)
Height	mm (in)	2216 (87.24)
Weight	kg (lb)	3800 (8378)

*Typical dimensions are shown. Dimensions may vary depending on radiator option.