

General Specifications

Taurus™ 60 Gas Turbine

- Industrial, Two Shaft
- Axial Compressor
 - 12 Stage
 - Variable Inlet Guide Vanes
 - Compression Ratio: 12.2:1
 - Inlet Airflow:
 - 21.3 kg/sec (47.0 lb/sec)
 - Max. Speed: 15,000 rpm
 - Vertically Split Case
- Combustion Chamber
 - Annular Type
 - Conventional or Lean-Premixed, Dry, Low Emission (SoLoNOx™)
 - 12 Fuel Injectors
 - Torch Ignitor System
- Gas Producer Turbine
 - 2 Stage, Reaction
 - Max. Speed: 15,000 rpm
- Power Turbine
 - 2 Stage, Reaction
 - Max. Speed: 13,950 rpm
- Bearings
 - Journal: Tilting Pad
 - Thrust, Active: Tilting Pad
 - Thrust, Inactive: Fixed Tapered Land
- Coatings
 - Compressor: Inorganic Aluminum
 - Turbine Nozzles and Blades: Precious Metal Diffusion Aluminide
- Vibration Transducer Type
 - Velocity
 - Proximity Probes

Key Package Features

- Driver Skid with Drip Pans
- Driven Equipment Skid
 - Compressor
 - Compressor Auxiliary Systems
- 316L Stainless Steel Piping ≤ 4"
- Compression-Type Tube Fittings
- Electrical System Options
 - NEC Class I, Group D, Div. 1
 - CENELEC Zone 1
- Turbotronic™ Microprocessor Control System
 - Freestanding Control Console
 - Color Video Display
 - Vibration Monitoring
- Control Options
 - 24-VDC Control Battery/Charger System
 - Gas Turbine and Package Temperature Monitoring
 - Serial Link Supervisory Interface
 - Turbine Performance Map
 - Compressor Performance Map
 - Historical Displays
 - Printer/Logger
 - Predictive Emissions Monitoring
 - Process Controls
 - Compressor Anti-Surge Control
 - Field Programming
- Start Systems
 - Pneumatic
 - Direct Drive AC
- Fuel System: Natural Gas
- Integrated Lube Oil System
 - Turbine-Driven Accessories
- Oil System Options
 - Oil Cooler
 - Oil Heater
 - Tank Vent Separator
 - Flame Trap
- Axial Compressor Cleaning Systems
 - On-Crank
 - On-Crank/On-Line
 - Stationary Cleaning Tank
- Gearbox (if applicable)
 - Speed Increaser
 - Speed Decreaser
- Air Inlet and Exhaust System Options
- Enclosure and Associated Options
- Factory Testing of Turbine and Package
- Documentation
 - Drawings
 - Quality Control Data Book
 - Inspection and Test Plan
 - Test Reports
 - Operation and Maintenance Instruction Manual

Performance

Output Power	5740 kW (7700 hp)
Heat Rate	11 265 kJ/kW-hr (7965 Btu/hp-hr)
Exhaust Flow	77 880 kg/hr (171,690 lb/hr)
Exhaust Temp.	510°C (950°F)

Nominal Rating – ISO
At 15°C (59°F), sea level

No inlet/exhaust losses

Relative humidity 60%

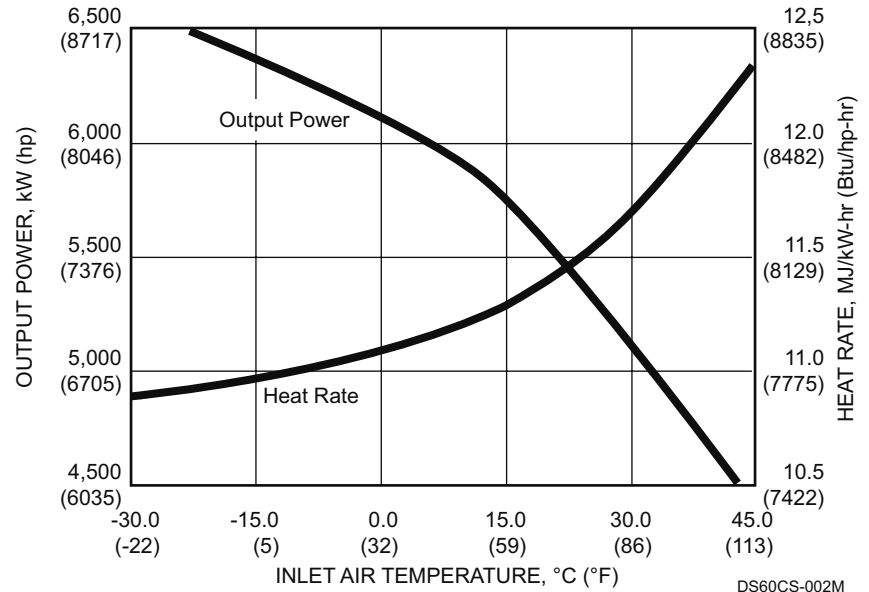
Natural gas fuel with
LHV = 35 MJ/nm³ (940 Btu/scf)

Optimum power turbine speed

AC-driven accessories

Engine efficiency: 32%

Available Power



DS60CS-002M

Package Dimensions

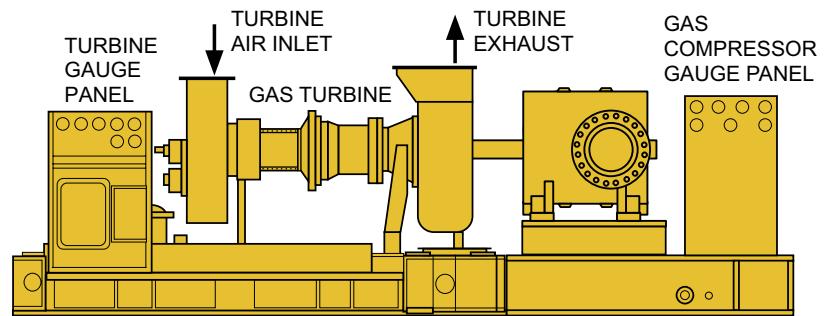
Length: 8.9 m (23' 8")

Width: 2.4 m (8' 0")

Height: 2.7 m (8' 11")

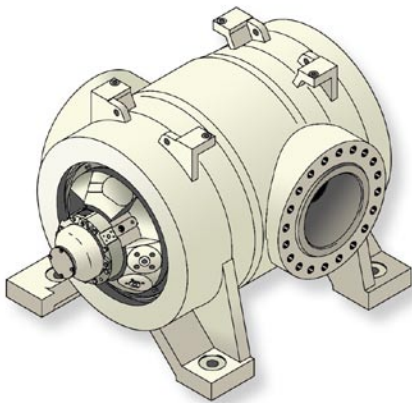
Typical

Weight: 29 480 kg (65,000 lb)



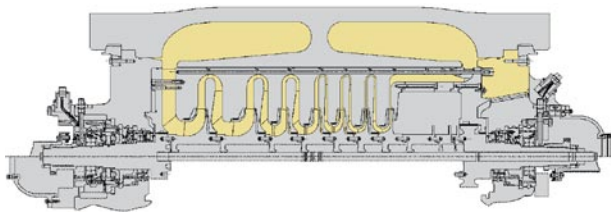
DS60CS-003M

Solar's C33 family of gas compressors is intended for use in gas gathering, recompression, injection/withdrawal and certain high-pressure pipeline applications. The C33s are designed for single-body and tandem applications with the *Titan*™ 130, *Mars*® 100, *Mars 90*, *Taurus*™ 70, *Taurus* 60, *Centaur*® 50, *Centaur* 40 gas turbines. These compressors combine high efficiency, high head rise, high pressure range and wide flow range with a robust design, ease of restaging and a high level of compliance to API 617.



dsc33_001

Typical C33 Gas Compressor



dsc33_003

Typical C33 Flow Path

Key Features

Number of Stages	1 - 12
Seals	Tandem dry gas
Bearings	Journal: Tilting-pad Thrust: Self-aligning, tilting-pad
Inlet/Discharge Flanges	16/16 in. Class 1500
Efficiency	> 85% isotropic
Maximum Speed	19,800 rpm
Maximum Flow	270 m ³ /min, 9500 cfm
Maximum Total Head	325 kJ/kg, 108,000 ft-lb _f /lb _m
Maximum Casing Press.	18 620 kPag, 2700 psig
Maximum Torque	7455 Nm, 66,000 lb _f -in.
Vibration Limits	Within API 617

Instrumentation

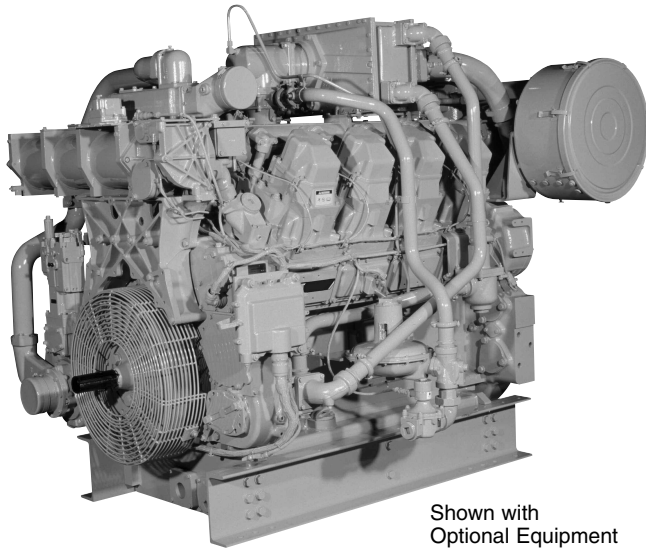
Vibration Monitoring	Journal bearing: X - Y displacement Shaft: Axial displacement and keyphasor
Temperature Monitoring	Journal bearing Thrust bearing Discharge gas
Pressure Monitoring	Suction-to-impeller eye differential Process Gas: Suction and discharge
Dry Gas Seal System	Seal vent flow Seal gas differential pressure Gas filter differential pressure Buffer air differential pressure Case pressurization

Materials

Impeller	15-5PH, Type 100
Casing	ASTM A216 GR WCB
Diaphragm/Guide Vane	ASTM A395
Rotor Spacer	AISI 410
Stub Shafts	AISI 4140
Labyrinth Seals	Steel-backed Babbitt

Typical Weights and Dimensions

Length	1120 - 1600 mm (44 - 63 in.)
Height	1220 mm (48 in.)
Width	1625 mm (64 in.)
Weight	6350 - 8125 kg (14,000 - 18,000 lb)



Shown with
Optional Equipment

CATERPILLAR® ENGINE SPECIFICATIONS

V-8, 4-Stroke-Cycle	
Bore — mm (in)	170 (6.7)
Stroke — mm (in)	190 (7.5)
Combustion	Spark Ignited
Displacement — L (cu in)	34.5 (2,105)
Aspiration	Turbocharged-Aftercooled
Rotation (from flywheel end)	Counterclockwise
Capacity for Liquids — L (U.S. gal)	
Cooling System ¹	114 (30)
Lube Oil System ¹ (refill)	231 (61)
Package Shipping Weight	
(Dry) — kg (lb)	5420 (11,950)

¹Engine only.

FEATURES

- ADEM™ A3 control system providing integrated ignition, speed governing, protection, and controls, including detonation-sensitive variable ignition timing.
- Integrated air/fuel ratio control (AFRC) is available on specified models.
- The standard ADEM A3 ignition and control system is certified by the Canadian Standards Association (CSA) for use in Class I, Division 2, Group D hazardous locations.
- The ADEM A3 control will accept remote speed input signals of either 4-20 mA or 0-5 V.
- Compact remote-mounted Advisor instrument panel provides fully electronic display of engine operating parameters and diagnostic/troubleshooting codes.
- Modular wiring design supports a wide range of engine attachment options with a single harness part number.
- Optional PL1000E communications module provides access to engine operating parameters in Modbus protocol, simplifying integration of engine data into remote master controls. The PL1000E may be mounted inside the Advisor panel.

- Engine operating parameters available on the ADEM A3 system include:

- Unfiltered oil pressure
- Filtered oil pressure
- Coolant (water) temperature
- Oil temperature
- Engine speed
- Battery voltage
- Service hours
- Oil filter differential pressure
- Detonation
- Manifold inlet air pressure
- Coolant (JW) outlet pressure
- Coolant (JW) inlet pressure
- Left turbocharger inlet temperature
- Right turbocharger inlet temperature
- Cylinder port temperature
- Cylinder port temperature deviation from average (high or low)
- Engine oil to engine coolant differential temperature
- Improper gas control valve response
- O₂ level sensor

Factory-designed systems built at Caterpillar ISO 9001:2000 certified facilities.

BENEFITS

- **Reliable and Durable Product**
 - ADEM A3 components have been proven reliable through years of experience on G3600, G3500B, and diesel engine models.
 - ADEM A3 architecture is robust by design, using solid-state modules designed for extreme environments and harnessing with fewer terminal connections to minimize potential sources of trouble.

- **Serviceable Product**
 - ADEM A3 system set-up and troubleshooting are performed using the Electronic Technician (ET) service tool, common to a wide range of Caterpillar products.
 - System diagnostic codes linked to published troubleshooting procedures help speed up servicing, minimizing engine down time.
 - Simple system architecture improves access to engine service points and minimizes parts stocking requirements.

Web Site

For all your petroleum power requirements, visit www.cat-oilandgas.com.

STANDARD EQUIPMENT

Air Inlet System

Air cleaner — intermediate-duty with service indicator

Cooling System

High temperature circuit (engine jacket + oil cooler):

- coolant pump
- thermostats and housing

Low temperature circuit (aftercooler):

- coolant pump
- thermostats and housing
- aftercooler core for salt air atmosphere

Exhaust System

Watercooled exhaust manifolds

Crankcase breather — top mounted

Flywheels & Flywheel Housings

SAE No. 00 flywheel

SAE No. 00 flywheel housing

SAE standard rotation

Fuel System

Gas pressure regulator

Natural gas carburetor

Instrumentation

Advisor panel

Lubrication System

Oil cooler

Oil filter — RH

Oil bypass filter (TA or NA engines only)

Oil pan — shallow

Oil sampling valve

Turbo oil accumulator

Mounting System

Rails, engine mounting — 254 mm (10 in.)

Protection System

Electronic shutoff system

Gas shutoff valve

General

Paint — Caterpillar yellow

Vibration damper and guard — dual 484 mm (23 in.)

OPTIONAL EQUIPMENT

Air Inlet System

Remote air inlet adapters

Precleaners

Charging System

Battery chargers

Charging alternator

Cooling System

Cleanable aftercooler core

Connection flanges

Expansion and overflow tank

Water level switch gauge

Exhaust System

Flexible fittings

Elbows

Connection flanges

Exhaust expanders

Rain cap (NA engine only)

Mufflers

Fuel System

Low pressure gas conversions

Propane gas valve and jet kits

Fuel filter

Air/fuel ratio control

Instrumentation

PL1000 communications modules

Lubrication System

Oil bypass filter removal

Oil pan accessories

Sump pump

Air prelube pump

Manual prelube pump

Lubricating oil

Mounting System

Rails

Vibration isolators

Power Take-Offs

Front accessory drives

Auxiliary drive shafts and pulleys

Front stub shaft

Pulleys

Protection System

Crankcase explosion relief valves

Starting System

Air starting motor

Air pressure regulator

Air silencer

Electric air start controls

Electric starting motors — dual 24-volt

Battery sets (24-volt dry), cables, and rack

General

Flywheel guard removal

Engine barring group

Premium 8:1 pistons

TECHNICAL DATA
G3508 Gas Petroleum Engine — 1200 rpm

		DM8577-00	DM8578-00	DM8579-00	DM8580-00
Fuel System		HPG IMPCO w/AFRC	HPG IMPCO	HPG IMPCO	LPG IMPCO w/AFRC
Engine Power					
@ 100% Load	kW (bhp)	406 (545)	406 (545)	392 (525)	231 (310)
@ 75% Load	kW (bhp)	304 (408)	304 (408)	292 (392)	173 (232)
Engine Speed	rpm	1200	1200	1200	1200
Compression Ratio		9:1	9:1	9:1	9:1
Emissions*					
NO _x	mg/N•m ³ dry (g/bhp-hr)	5161 (13.08)	10,095 (25.03)	9307 (23.27)	6109 (16.08)
CO	mg/N•m ³ dry (g/bhp-hr)	5129 (13.00)	282 (0.70)	200 (0.50)	5091 (13.40)
Total Hydrocarbons	mg/N•m ³ dry (g/bhp-hr)	789 (2.0)	565 (1.40)	640 (1.60)	1140 (3.0)
Fuel Consumption					
@ 100% Load	MJ/bkW-hr (Btu/bhp-hr)	10.91 (7711)	10.36 (7322)	10.38 (7336)	11.01 (7782)
@ 75% Load	MJ/bkW-hr (Btu/bhp-hr)	11.59 (8192)	10.93 (7731)	11.22 (7932)	11.24 (7944)
Heat Balance					
Heat Rejection to Jacket Water					
@ 100% Load	kW (Btu/mn)	391 (22,258)	365 (20,744)	366 (20,816)	191 (11,556)
@ 75% Load	kW (Btu/mn)	343 (19,531)	319 (18,116)	331 (18,845)	146 (8992)
Heat Rejection to Aftercooler					
@ 100% Load	kW (Btu/mn)	45.3 (2581)	47.8 (2722)	35.1 (1996)	
@ 75% Load	kW (Btu/mn)	33.2 (1888)	30.7 (1750)	19.2 (1095)	
Heat Rejection to Exhaust					
@ 100% Load (LHV to 77° F / 25° C)	kW (Btu/mn)	58.4 (15,064)	254 (14,418)	238 (13,562)	194 (11,030)
@ 75% Load (LHV to 77°) (LHV to 77° F / 25° C)	kW (Btu/mn)	51.2 (10,821)	184 (10,472)	179 (10,183)	146 (8298)
Exhaust System					
Exhaust Gas Flow Rate					
@ 100% Load	N•m ³ /bkW-hr (cfm)	3.21 (2329)	3.39 (2344)	3.41 (2231)	3.40 (1513)
@ 75% Load	N•m ³ /bkW-hr (cfm)	3.39 (1761)	3.53 (1773)	3.60 (1714)	3.65 (1162)
Exhaust Stack Temperature					
@ 100% Load	°C (°F)	543 (1010)	506 (943)	492 (918)	610 (1130)
@ 75% Load	°C (°F)	509 (949)	482 (900)	473 (884)	569 (1056)
Intake System					
Air Inlet Flow Rate					
@ 100% Load	N•m ³ /bkW-hr (scfm)	2.90 (757)	3.08 (805)	3.10 (781)	3.08 (457)
@ 75% Load	N•m ³ /bkW-hr (scfm)	3.05 (596)	3.21 (628)	3.27 (614)	3.32 (370)
Gas Pressure	kPag (psig)	172-207 (25-30)	172-207 (25-30)	172-207 (25-30)	14-69 (2-10)

*at 100% load and speed

TECHNICAL DATA
G3508 Gas Petroleum Engine — 1200 rpm

		DM8581-00	DM8582-00	DM8583-00	DM8591-00
Fuel System		HPG IMPCO	HPG IMPCO	HPG IMPCO	HPG IMPCO w/AFRC
Engine Power					
@ 100% Load	kW (bhp)	407 (546)	396 (530)	384 (515)	384 (515)
@ 75% Load	kW (bhp)	305 (409)	297 (398)	288 (386)	288 (386)
Engine Speed	rpm	1200	1200	1200	1200
Compression Ratio		8:1	8:1	8:1	8:1
Emissions*					
NO _x	mg/N•m ³ dry (g/bhp-hr)	745 (2.0)	747 (2.0)	748 (2.0)	749 (2.00)
CO	mg/N•m ³ dry (g/bhp-hr)	521 (1.40)	541 (1.45)	561 (1.50)	561 (1.50)
Total Hydrocarbons	mg/N•m ³ dry (g/bhp-hr)	894 (2.40)	913 (2.44)	932 (2.49)	932 (2.49)
Fuel Consumption					
@ 100% Load	MJ/bkW-hr (Btu/bhp-hr)	10.84 (7661)	10.86 (7681)	10.89 (7700)	10.89 (7700)
@ 75% Load	MJ/bkW-hr (Btu/bhp-hr)	11.06 (7822)	11.10 (7847)	11.13 (7872)	11.23 (7939)
Heat Balance					
Heat Rejection to Jacket Water					
@ 100% Load	kW (Btu/mn)	325 (18,455)	321 (18,239)	317 (18,001)	317 (18,000)
@ 75% Load	kW (Btu/mn)	255 (14,480)	253 (14,364)	250 (14,229)	253 (14,384)
Heat Rejection to Aftercooler					
@ 100% Load	kW (Btu/mn)	80.3 (4569)	70.9 (4033)	61.8 (3519)	61.8 (3519)
@ 75% Load	kW (Btu/mn)	47.2 (2688)	40.2 (2288)	33.5 (1905)	35.4 (2012)
Heat Rejection to Exhaust					
@ 100% Load (LHV to 77° F / 25° C)	kW (Btu/mn)	324 (18,417)	317 (18,023)	310 (17,624)	310 (17,623)
@ 75% Load (LHV to 77°) (LHV to 77° F / 25° C)	kW (Btu/mn)	254 (14,431)	248 (14,101)	242 (13,769)	245 (13,921)
Exhaust System					
Exhaust Gas Flow Rate					
@ 100% Load	N•m ³ /bkW-hr (cfm)	4.92 (3052)	4.93 (2979)	4.93 (2904)	4.93 (2904)
@ 75% Load	N•m ³ /bkW-hr (cfm)	5.17 (2403)	5.17 (2342)	5.18 (2281)	5.24 (2307)
Exhaust Stack Temperature					
@ 100% Load	°C (°F)	425 (797)	427 (801)	429 (804)	429 (804)
@ 75% Load	°C (°F)	425 (797)	426 (799)	427 (801)	426 (799)
Intake System					
Air Inlet Flow Rate					
@ 100% Load	N•m ³ /bkW-hr (scfm)	4.60 (1203)	4.61 (1171)	4.61 (1138)	4.61 (1138)
@ 75% Load	N•m ³ /bkW-hr (scfm)	4.84 (949)	4.85 (924)	4.85 (898)	4.91 (909)
Gas Pressure	kPag (psig)	242-276 (35-40)	242-276 (35-40)	242-276 (35-40)	242-276 (35-40)

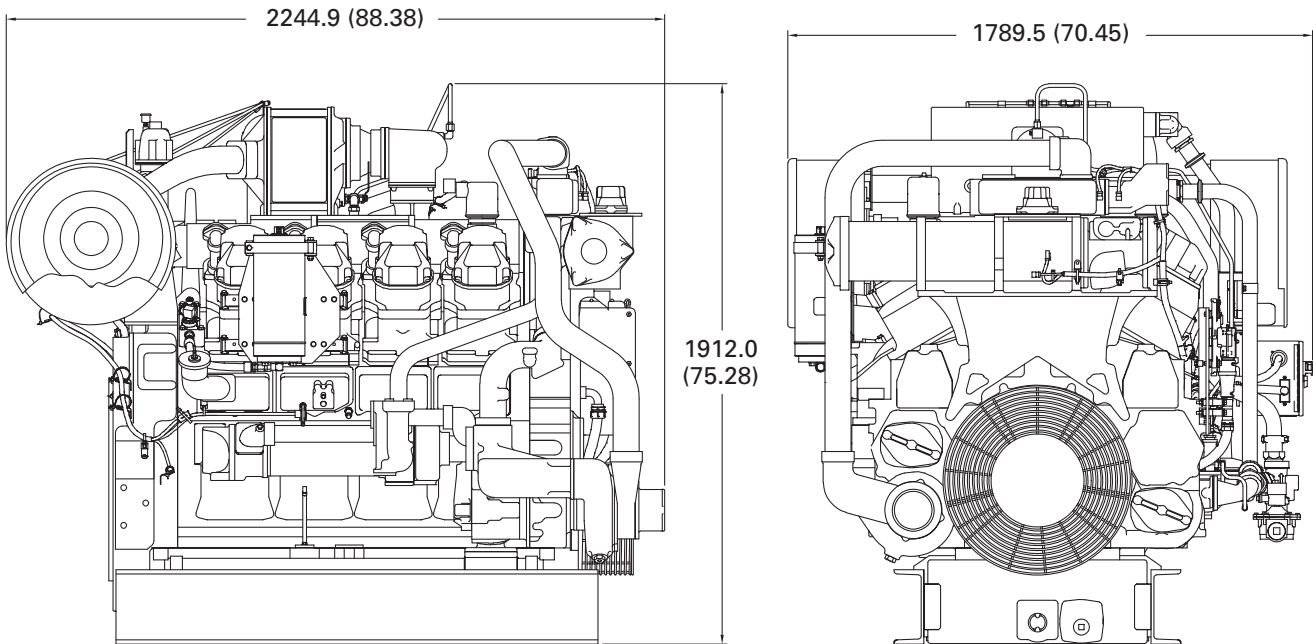
*at 100% load and speed

TECHNICAL DATA
G3508 Gas Petroleum Engine — 1400 rpm

		DM8584-00	DM8585-00	DM8586-00	DM8592-00
Fuel System		HPG IMPCO	HPG IMPCO	HPG IMPCO	LPG IMPCO w/AFRC
Engine Power					
@ 100% Load	bkW (bhp)	500 (670)	470 (630)	485 (650)	470 (630)
@ 75% Load	bkW (bhp)	375 (503)	352 (473)	364 (488)	352 (473)
Engine Speed		1400	1400	1400	1400
Compression Ratio		8:1	8:1	8:1	8:1
Emissions*					
NO _x	mg/N•m ³ dry (g/bhp-hr)	819 (2.0)	803 (2.0)	811 (2.0)	803 (2.0)
CO	mg/N•m ³ dry (g/bhp-hr)	655 (1.6)	642 (1.6)	649 (1.6)	642 (1.6)
Total Hydrocarbons	mg/N•m ³ dry (g/bhp-hr)	980 (2.39)	1111 (2.77)	1045 (2.58)	1111 (2.77)
Fuel Consumption					
@ 100% Load	MJ/bkW-hr (Btu/bhp-hr)	10.58 (7480)	10.67 (7546)	10.63 (7513)	10.67 (7546)
@ 75% Load	MJ/bkW-hr (Btu/bhp-hr)	10.92 (7718)	11.11 (7856)	11.01 (7787)	11.23 (7939)
Heat Balance					
Heat Rejection to Jacket Water					
@ 100% Load	bkW (Btu/mn)	412 (23,403)	398 (22,636)	405 (23,037)	395 (22,461)
@ 75% Load	bkW (Btu/mn)	348 (19,776)	342 (19,422)	345 (19,618)	343 (19,501)
Heat Rejection to Aftercooler					
@ 100% Load	bkW (Btu/mn)	93.1 (5300)	71.3 (4057)	82.1 (4672)	71.3 (4057)
@ 75% Load	bkW (Btu/mn)	52.8 (3006)	37.5 (2135)	45.1 (2568)	40.2 (2290)
Heat Rejection to Exhaust					
@ 100% Load (LHV to 77° F / 25° C)	bkW (Btu/mn)	361 (20,521)	351 (19,964)	356 (20,243)	351 (19,964)
@ 75% Load (LHV to 77°) (LHV to 77° F / 25° C)	bkW (Btu/mn)	270 (15,362)	265 (15,086)	268 (15,225)	270 (15,327)
Exhaust System					
Exhaust Gas Flow Rate					
@ 100% Load	N•m ³ /bkW-hr (cfm)	4.52 (3486)	4.66 (3380)	4.59 (3433)	4.66 (3380)
@ 75% Load	N•m ³ /bkW-hr (cfm)	4.59 (2649)	4.79 (2595)	4.69 (2622)	4.87 (2635)
Exhaust Stack Temperature					
@ 100% Load	°C (°F)	434 (814)	434 (813)	434 (813)	434 (813)
@ 75% Load	°C (°F)	432 (810)	432 (809)	432 (809)	431 (807)
Intake System					
Air Inlet Flow Rate					
@ 100% Load	N•m ³ /bkW-hr (scfm)	4.21 (1350)	4.34 (1311)	4.27 (1331)	4.34 (1311)
@ 75% Load	N•m ³ /bkW-hr (scfm)	4.27 (1028)	4.46 (1009)	4.36 (1018)	4.54 (1027)
Gas Pressure		kPag (psig)	242-276 (35-40)	242-276 (35-40)	242-276 (35-40)

*at 100% load and speed

DIMENSIONS



DIMENSIONS		
Length	mm (in)	2244.9 (88.38)
Width	mm (in)	1789.5 (70.45)
Height	mm (in)	1912.0 (75.28)
Shipping Weight	kg (lb)	5420 (11,950)

Note: General configuration not to be used for installation. See general dimension drawings for detail (drawing #294-0139).

Dimensions are in mm (inches).

RATING DEFINITIONS AND CONDITIONS

Engine performance is obtained in accordance with SAE J1995, ISO3046/1, BS5514/1, and DIN6271/1 standards.

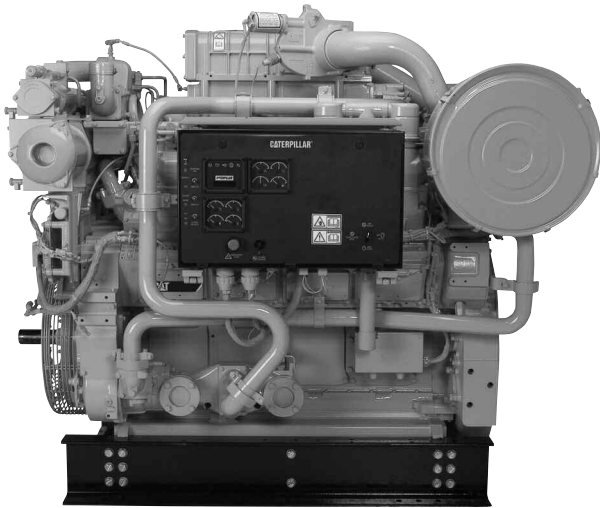
Transient response data is acquired from an engine/generator combination at normal operating temperature and in accordance with ISO3046/1 standard ambient conditions. Also in accordance with SAE J1995, BS5514/1, and DIN6271/1 standard reference conditions.

Conditions: Power for gas engines is based on fuel having an LHV of 33.74 kJ/L (905 Btu/cu ft) at 101 kPa (29.91 in. Hg) and 15° C (59° F). Fuel rate is based on a cubic meter at 100 kPa (29.61 in. Hg) and 15.6° C (60.1° F). Air flow is based on a cubic foot at 100 kPa (29.61 in. Hg) and 25° C (77° F). Exhaust flow is based on a cubic foot at 100 kPa (29.61 in. Hg) and stack temperature.

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Materials and specifications are subject to change without notice. The International System of Units (SI) is used in this publication.
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as well as corporate and product identity used herein, are trademarks of Caterpillar and may not be used without permission.



CATERPILLAR® ENGINE SPECIFICATIONS

Bore	170 mm (6.7 in.)
Stroke	190 mm (7.5 in.)
Displacement	34.5 L (2105 cu. in.)
Low idle	450 rpm
Rotation	Counterclockwise
Weight	4318 kg (9,500 lb.)

The outstanding performance of Caterpillar® engines is the result of over seventy years of experience in diesel power, plus an ongoing research and development program. For the user this means continual improvement and refinement in engine performance.

The diesel engine and attachments described here are offered by Caterpillar for use as prime power on mechanical drilling rigs.

The typical package contains the attachments normally specified on engines powering mechanical rigs. These Cat® engines, when equipped with the user's choice of torque converter or clutch, result in a unit that specifically meets the application requirements of the drilling contractor.

FEATURES

Single Source Supplier

Caterpillar

- Casts engine blocks, heads, cylinder liners, and flywheel housings

- Machines critical components

- Assembles complete engine

Ownership of these manufacturing processes enables Caterpillar to produce high quality, dependable product.

Factory-designed systems built at Caterpillar ISO 9001:2000 certified facilities.

Testing

Prototype testing on every model:

- proves computer design

- verifies system torsional stability

- functionality tests every model

Every Caterpillar engine is dynamometer tested under full load to ensure proper engine performance.

Unmatched Product Support Offered Through Worldwide Caterpillar Dealer Network

More than 2,100 dealer outlets with Caterpillar factory-trained dealer technicians service every aspect of your engine.

99.7% of parts orders filled within 24 hours worldwide.

Caterpillar parts and labor warranty

Preventive maintenance agreements available for repair before failure.

S•O•SSM program matches your oil sample to Caterpillar set standards to determine:

- internal engine component condition

- presence of unwanted fluids

- presence of combustion by-products

Web Site

For all your petroleum power requirements, visit www.cat-oilandgas.com.

STANDARD EQUIPMENT

Air Inlet System

Aftercooler core — corrosion resistant coating
Air cleaners — regular duty, with soot filter
Service indicators
Air inlet shutoff

Control System

ADEM™ A3 electronic control unit (ECU), LH — requires
24 volt DC 10 amp continuous, 20 amp intermittent,
clean electrical power

Cooling System

Radiator cooled
Meets US EPA Tier 2 nonroad emissions requirements
when inlet coolant temperature is 50°C (122° F) or
below, and the SCAC flow rate is at least 130 gpm with
an ambient temperature of 30° C (86° F) and at site
conditions (including altitude considerations).
Outlet controlled thermostat and housing
Jacket water pump — gear driven
Dual outlet
Aftercooler fresh water cooling pump — gear driven
centrifugal
SCAC pump circuit contains a thermostat to keep the
aftercooler coolant from falling below 50° C (122° F)

Exhaust System

Exhaust fittings — flexible, 203 mm (8 in.)
Exhaust flange — weldable, 254 mm (10 in.)
Exhaust manifolds — dry

Flywheels and Flywheel Housings

Flywheel — SAE No. 00
Flywheel housing — SAE No. 00
SAE standard rotation

Fuel System

Electronically controlled unit injectors
Fuel filter — LH
Fuel priming pump — LH
Fuel transfer pump
Flexible fuel lines

Instrumentation

Electronic instrument panel — LH
Analog gauges with digital display for: oil and fuel
pressure, oil and fuel filter differential, system DC
voltage, exhaust temperature (prior to turbochargers),
water temperature, air inlet restriction
Digital display for: tachometer, service meter, hours, fuel
consumption — total and instantaneous
Engine start-stop — 4-position

Lube System

Crankcase breather
Oil cooler
Oil filter — LH
Shallow sump oil pan
Lube oil

Mounting System

Rails — floor type, 254 mm (10 in.)

Power Take-Offs

Accessory Drives
SCAC — upper RH, lower LH front (available for PTO
usage)
Front housing — two sided

Protection System

ADEM™ A3 monitoring system provides engine deration,
alarm, or shutdown strategies to protect against adverse
operating conditions. Selected parameters are customer
programmable. Status available on engine-mounted
instrument panel and can be broadcast through the optional
customer communications module or programmable relay
control module(s). Initially set as follows:

Safety shutoff protection — electrical:

- Oil pressure
- Water temperature
- Overspeed
- Crankcase pressure
- Aftercooler temperature
- Air inlet shutoff activated on overspeed or emergency
stop included

Alarms — electrical:

- ECU voltage
- Oil pressure
- Water temperature (low and high)
- Overspeed
- Crankcase pressure
- Aftercooler temperature (SCAC only)
- Low water level (sensor shipped loose if no mounted
expansion tank or radiator)
- Air inlet restriction
- Exhaust stack temperature
- Filter differential pressure (oil and fuel)

Derate — electrical:

- High water temperature
- Crankcase pressure
- Aftercooler temperature
- Air inlet restriction
- Altitude
- Exhaust temperature

Emergency stop pushbutton (on instrument panel)

Alarm switches (oil pressure and water temperature), for
connection to customer-supplied alarm panel — unwired

Starting System

Air starting motor — RH, 620 to 1034 kPa (90 to 150 psi)
Air silencer
Electric control — RH

General

Lifting eyes, — front and rear
Paint — Caterpillar yellow
Vibration damper and guard

ACCESSORY EQUIPMENT

Air and exhaust
Two-stage air cleaner

Cooling

- Fuel cooler — radiator-type
- Jacket water heater
- Blower fan
- Drive
- Water connections
- Radiators — dual core

Protection devices

- Exhaust pyrometers
- Oil level regulator

Miscellaneous

- Torque converter oil cooler connections

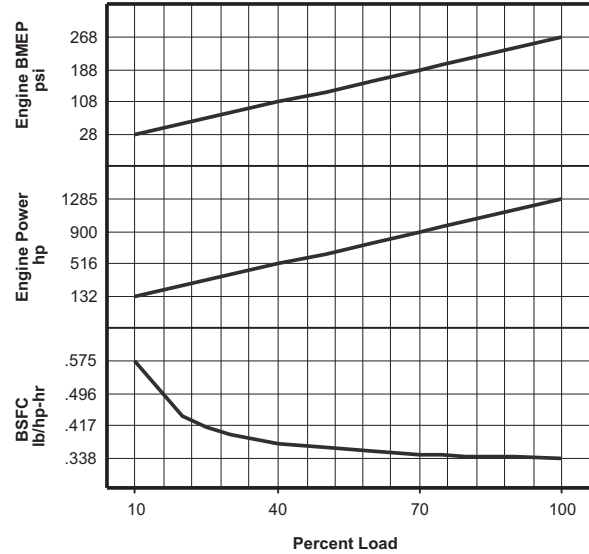
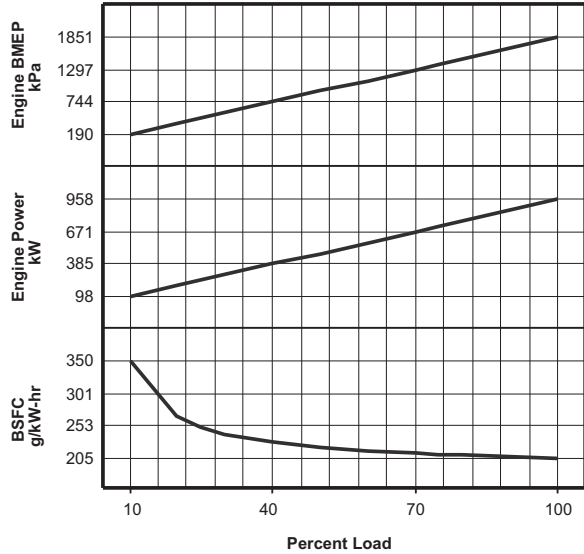
Additional instrumentation

- Air cleaner restriction (2)
- Intake manifold temperature
- Lubricating oil temperature
- Fuel filter differential

OIL & GAS PERFORMANCE DATA

3508B DITA
910 kW — 60 Hz @ 1800 rpm
Prime Rating — DM6977-02

IMO/EPA Certified — Aftercooler Temperature 60°C (140°F)



Gen Power kW	Percent Load	Engine Power kW	Engine BMEP kPa	BSFC g/kW-hr	Fuel Rate L/hr
910	100	957.9	1851	205	234.2
819	90	860.2	1662	207	211.7
728	80	763.5	1475	208	189.7
683	75	715.4	1382	210	178.8
637	70	667.4	1290	211	168.0
546	60	571.9	1105	215	146.5
455	50	476.9	922	220	125.1
364	40	384.3	743	228	104.3
273	30	290.3	561	240	83.2
228	25	242.8	469	251	72.5
182	20	194.9	377	267	62.0
91	10	98.2	190	350	40.9

Gen Power kW	Percent Load	Engine Power hp	Engine BMEP psi	BSFC lb/hp-hr	Fuel Rate gph
910	100	1284.6	268	.337	61.9
819	90	1153.5	241	.339	55.9
728	80	1023.9	214	.343	50.1
683	75	959.4	200	.345	47.2
637	70	895.0	187	.347	44.4
546	60	766.9	160	.353	38.7
455	50	639.5	134	.362	33.0
364	40	515.4	108	.374	27.6
273	30	389.3	81	.395	22.0
228	25	325.6	68	.412	19.2
182	20	261.4	55	.439	16.4
91	10	131.7	28	.575	10.8

Gen Power kW	Intake Manifold Temp °C	Intake Manifold Pressure kPa	Intake Air Flow m³/min	Exh Manifold Temp °C	Exh Stk Temp °C	Exh Gas Flow m³/min
910	72.3	253.60	84.6	579.8	385.7	193.8
819	70.7	230.80	79.8	555.9	369.9	178.8
728	69.1	208.30	74.9	534.0	357.4	164.0
683	68.2	196.20	72.2	523.7	352.6	156.4
637	67.1	181.70	68.8	513.8	349.3	148.3
546	64.9	152.80	62.1	493.9	342.6	132.3
455	63.0	124.10	55.4	473.8	335.9	116.4
364	62.6	97.00	48.9	446.3	325.7	100.9
273	62.2	70.50	42.4	410.9	311.1	85.2
228	62.0	57.60	39.1	389.9	302.0	77.3
182	61.7	46.60	36.4	361.9	286.5	70.1
91	61.0	26.80	31.6	294.2	246.5	56.1

Gen Power kW	Intake Manifold Temp °F	Intake Manifold Pressure in-hg	Intake Air Flow cfm	Exh Manifold Temp °F	Exh Stk Temp °F	Exh Gas Flow cfm
910	162.1	75.10	2987.6	1075.6	726.3	6844.0
819	159.3	68.35	2818.1	1032.6	697.8	6314.3
728	156.4	61.68	2645.1	993.2	675.3	5791.6
683	154.8	58.10	2549.7	974.7	666.7	5523.2
637	152.8	53.81	2429.7	956.8	660.7	5237.2
546	148.8	45.25	2193.0	921.0	648.7	4672.1
455	145.4	36.75	1956.4	884.8	636.6	4110.6
364	144.7	28.73	1726.9	835.3	618.3	3563.3
273	144.0	20.88	1497.3	771.6	592.0	3008.8
228	143.6	17.06	1380.8	733.8	575.6	2729.8
182	143.1	13.80	1285.5	683.4	547.7	2475.6
91	141.8	7.94	1115.9	561.6	475.7	1981.2

Heat Rejection Data

Gen Power kW	Percent Load	Rej to JW kW	Rej to Atmos kW	Rej to Exh kW	From Oil Cir kW
910	100	422	96.4	791	117.0
819	90	394	90.0	713	106.0
728	80	366	84.6	640	95.0
683	75	351	82.3	605	89.0
637	70	337	80.2	570	84.0
546	60	307	76.0	502	73.0
455	50	275	71.9	433	62.0
364	40	243	67.0	367	52.0
273	30	208	61.5	299	41.0
228	25	190	58.6	265	36.0
182	20	170	55.4	231	31.0
91	10	128	48.5	164	20.0

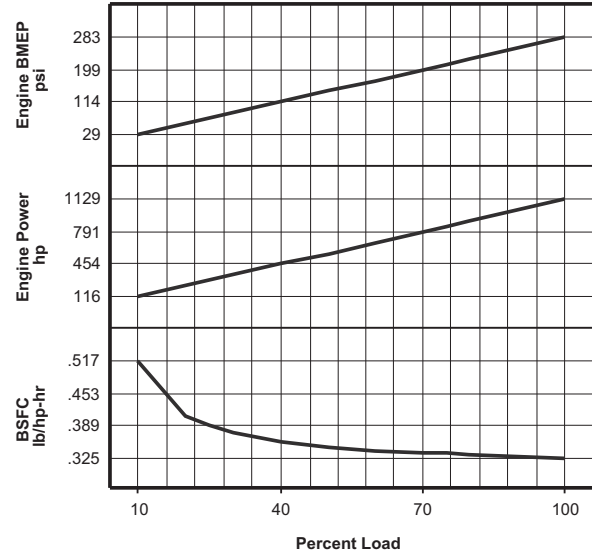
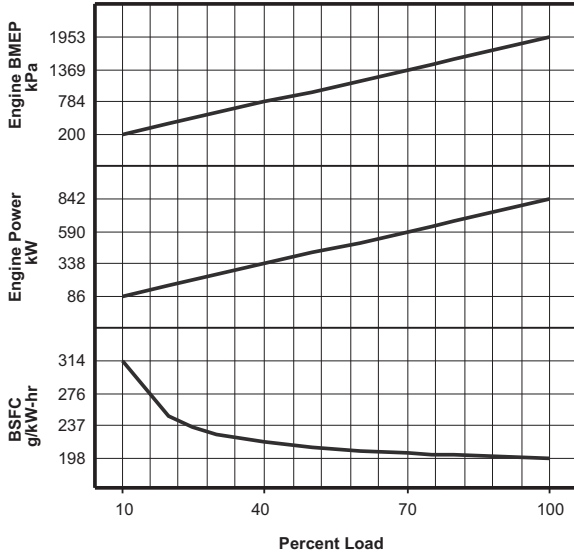
Heat Rejection Data

Gen Power kW	Percent Load	Rej to JW Btu/min	Rej to Atmos Btu/min	Rej to Exh Btu/min	From Oil Cir Btu/min
910	100	23999	5482.3	44984	6653.8
819	90	22407	5118.3	40548	6028.2
728	80	20814	4811.2	36397	5402.6
683	75	19961	4680.4	34406	5061.4
637	70	19165	4561.0	32416	4777.1
546	60	17459	4322.1	28549	4151.5
455	50	15639	4088.9	24625	3525.9
364	40	13819	3810.3	20871	2957.2
273	30	11829	3497.5	17004	2331.7
228	25	10805	3332.6	15071	2047.3
182	20	9668	3150.6	13137	1763.0
91	10	7279	2758.2	9327	1137.4

OIL & GAS PERFORMANCE DATA

3508B DITA
800 ekW — 50 Hz @ 1500 rpm
Prime Rating — DM6973-01

IMO Certified — Aftercooler Temperature 60°C (140°F)



Gen Power ekW	Percent Load	Engine Power kW	Engine BMEP kPa	BSFC g/kW-hr	Fuel Rate L/hr
800	100	842.1	1953	198	198.7
720	90	756.2	1754	199	179.6
640	80	671.2	1556	202	161.4
600	75	628.9	1458	203	152.4
560	70	586.7	1360	204	142.9
480	60	502.7	1166	207	124.0
400	50	419.3	972	211	105.3
320	40	337.8	783	217	87.3
240	30	255.2	592	227	69.1
200	25	213.4	495	236	60.0
160	20	171.4	397	249	50.8
80	10	86.3	200	315	32.4

Gen Power ekW	Percent Load	Engine Power hp	Engine BMEP psi	BSFC lb/hp-hr	Fuel Rate gph
800	100	1129.3	283	.326	52.5
720	90	1014.1	254	.327	47.4
640	80	900.1	226	.332	42.6
600	75	843.4	211	.334	40.3
560	70	786.8	197	.336	37.8
480	60	674.1	169	.340	32.8
400	50	562.3	141	.346	27.8
320	40	453.0	114	.356	23.1
240	30	342.2	86	.374	18.3
200	25	286.2	72	.388	15.9
160	20	229.9	58	.409	13.4
80	10	115.7	29	.517	8.6

Gen Power ekW	Intake Manifold Temp °C	Intake Manifold Pressure kPa	Intake Air Flow m³/min	Exh Manifold Temp °C	Exh Stk Temp °C	Exh Gas Flow m³/min
800	70.8	216.80	63.1	613.0	389.8	148.8
720	69.3	193.50	58.7	594.1	383.0	137.0
640	68.5	171.00	54.3	577.3	378.5	125.8
600	68.1	159.70	52.1	568.9	376.3	120.2
560	67.4	146.40	49.4	560.2	373.6	113.5
480	66.1	119.90	44.1	540.2	366.3	100.1
400	64.9	93.70	38.8	516.9	356.6	86.8
320	64.1	70.40	34.1	483.3	342.9	74.4
240	63.4	49.10	29.6	436.8	321.9	62.3
200	63.0	39.20	27.5	408.6	308.6	56.5
160	62.7	30.90	25.8	371.9	286.5	51.0
80	62.0	17.20	23.2	281.6	227.7	40.6

Gen Power ekW	Intake Manifold Temp °F	Intake Manifold Pressure in-hg	Intake Air Flow cfm	Exh Manifold Temp °F	Exh Stk Temp °F	Exh Gas Flow cfm
800	159.4	64.20	2228.4	1135.4	733.6	5254.8
720	156.7	57.30	2073.0	1101.4	721.4	4838.1
640	155.3	50.64	1917.6	1071.1	713.3	4442.6
600	154.6	47.29	1839.9	1056.0	709.3	4244.8
560	153.3	43.35	1744.5	1040.4	704.5	4008.2
480	151.0	35.51	1557.4	1004.4	691.3	3535.0
400	148.8	27.75	1370.2	962.4	673.9	3065.3
320	147.4	20.85	1204.2	901.9	649.2	2627.4
240	146.1	14.54	1045.3	818.2	611.4	2200.1
200	145.4	11.61	971.2	767.5	587.5	1995.3
160	144.9	9.15	911.1	701.4	547.7	1801.1
80	143.6	5.09	819.3	538.9	441.9	1433.8

Heat Rejection Data

Gen Power ekW	Percent Load	Rej to JW kW	Rej to Atmos kW	Rej to Exh kW	From Oil Cir kW
800	100	362	108.0	625	99.1
720	90	337	102.0	568	89.5
640	80	312	97.0	516	80.5
600	75	299	95.0	490	76.0
560	70	286	92.0	460	71.2
480	60	258	87.0	401	61.8
400	50	229	82.0	342	52.5
320	40	200	74.0	286	43.5
240	30	169	66.0	229	34.5
200	25	153	62.0	201	29.9
160	20	135	57.0	173	25.3
80	10	98	48.0	115	16.1

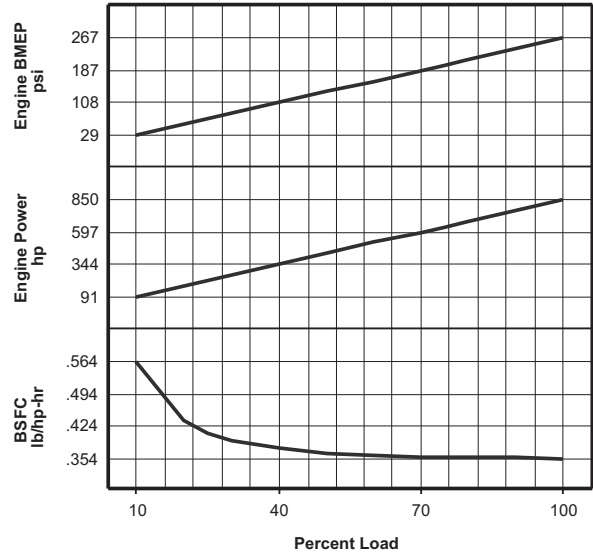
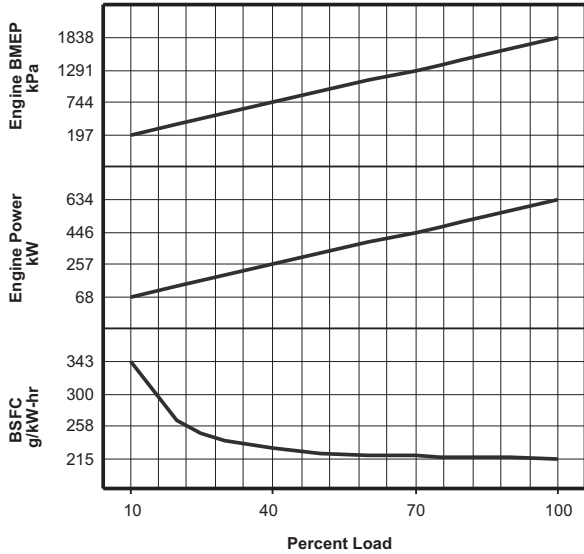
Heat Rejection Data

Gen Power ekW	Percent Load	Rej to JW Btu/min	Rej to Atmos Btu/min	Rej to Exh Btu/min	From Oil Cir Btu/min
800	100	20587	6141.9	35544	5635.8
720	90	19165	5800.7	32302	5089.9
640	80	17743	5516.4	29345	4578.0
600	75	17004	5402.6	27866	4322.1
560	70	16265	5232.0	26160	4049.1
480	60	14672	4947.7	22805	3514.6
400	50	13023	4663.3	19450	2985.7
320	40	11374	4208.4	16265	2473.8
240	30	9611	3753.4	13023	1962.0
200	25	8701	3525.9	11431	1700.4
160	20	7677	3241.6	9838	1438.8
80	10	5573	2729.8	6540	915.6

OIL & GAS PERFORMANCE DATA

3508B DITA
600 kW — 60 Hz @ 1200 rpm
Prime Rating — DM6983-01

IMO/EPA Certified — Aftercooler Temperature 60°C (140°F)



Gen Power kW	Percent Load	Engine Power kW	Engine BMEP kPa	BSFC g/kW-hr	Fuel Rate L/hr
600	100	634.2	1838	215	162.5
540	90	570.6	1654	216	147.2
480	80	507.5	1471	217	131.4
450	75	476.2	1380	218	123.6
420	70	444.8	1289	218	115.7
360	60	382.4	1108	220	100.1
300	50	320.2	928	222	84.8
240	40	260.0	754	228	70.7
180	30	198.0	574	240	56.6
150	25	166.3	482	249	49.4
120	20	134.1	389	265	42.3
60	10	68.1	197	343	27.9

Gen Power kW	Percent Load	Engine Power hp	Engine BMEP psi	BSFC lb/hp-hr	Fuel Rate gph
600	100	850.5	267	.353	42.9
540	90	765.2	240	.356	38.9
480	80	680.6	213	.357	34.7
450	75	638.6	200	.358	32.7
420	70	596.5	187	.359	30.6
360	60	512.8	161	.361	26.4
300	50	429.4	135	.365	22.4
240	40	348.7	109	.375	18.7
180	30	265.5	83	.394	15.0
150	25	223.0	70	.410	13.1
120	20	179.8	56	.435	11.2
60	10	91.3	29	.564	7.4

Gen Power kW	Intake Manifold Temp °C	Intake Manifold Pressure kPa	Intake Air Flow m³/min	Exh Manifold Temp °C	Exh Stk Temp °C	Exh Gas Flow m³/min
600	69.2	251.20	58.0	590.2	405.6	137.0
540	67.9	233.80	55.5	561.6	385.4	127.1
480	66.7	207.50	51.5	534.5	373.1	115.4
450	66.1	194.30	49.4	521.1	367.0	109.6
420	65.6	180.90	47.2	507.5	360.8	103.7
360	64.7	154.00	42.8	480.7	348.6	92.1
300	63.8	126.70	38.1	453.6	336.2	80.5
240	63.2	100.30	33.6	425.4	322.9	69.5
180	62.6	73.10	29.0	394.4	307.9	58.2
150	62.4	59.40	26.6	376.6	299.0	52.5
120	62.2	47.60	24.6	349.9	283.9	47.3
60	61.9	26.70	21.2	281.9	241.5	37.3

Gen Power kW	Intake Manifold Temp °F	Intake Manifold Pressure in-hg	Intake Air Flow cfm	Exh Manifold Temp °F	Exh Stk Temp °F	Exh Gas Flow cfm
600	156.6	74.39	2048.3	1094.4	762.1	4838.1
540	154.2	69.24	1960.0	1042.9	725.7	4488.5
480	152.1	61.45	1818.7	994.1	703.6	4075.3
450	151.0	57.54	1744.5	970.0	692.6	3870.5
420	150.1	53.57	1666.9	945.5	681.4	3662.1
360	148.5	45.60	1511.5	897.3	659.5	3252.5
300	146.8	37.52	1345.5	848.5	637.2	2842.8
240	145.8	29.70	1186.6	797.7	613.2	2454.4
180	144.7	21.65	1024.1	741.9	586.2	2055.3
150	144.3	17.59	939.4	709.9	570.2	1854.0
120	144.0	14.10	868.7	661.8	543.0	1670.4
60	143.4	7.91	748.7	539.4	466.7	1317.2

Heat Rejection Data

Gen Power kW	Percent Load	Rej to JW kW	Rej to Atmos kW	Rej to Exh kW	From Oil Cir kW
600	100	258	99.4	570	81.0
540	90	241	91.6	514	73.4
480	80	222	84.9	458	65.5
450	75	213	81.8	431	61.6
420	70	203	78.8	404	57.7
360	60	184	73.3	350	49.9
300	50	164	68.4	299	42.3
240	40	144	63.9	251	35.3
180	30	123	59.4	203	28.2
150	25	112	56.9	179	24.6
120	20	100	53.8	156	21.1
60	10	75	47.6	108	13.9

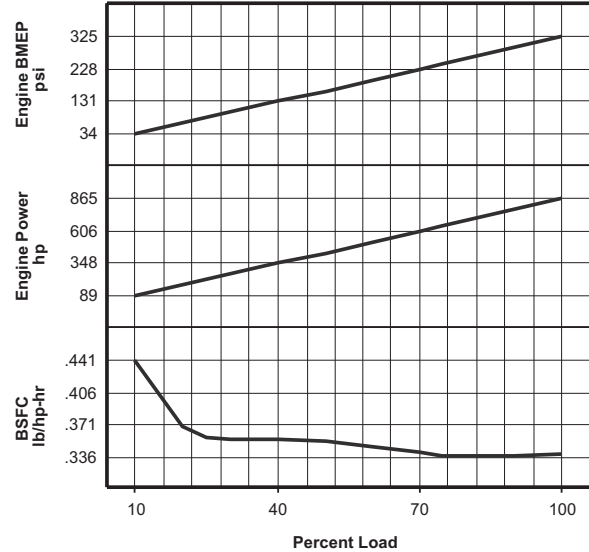
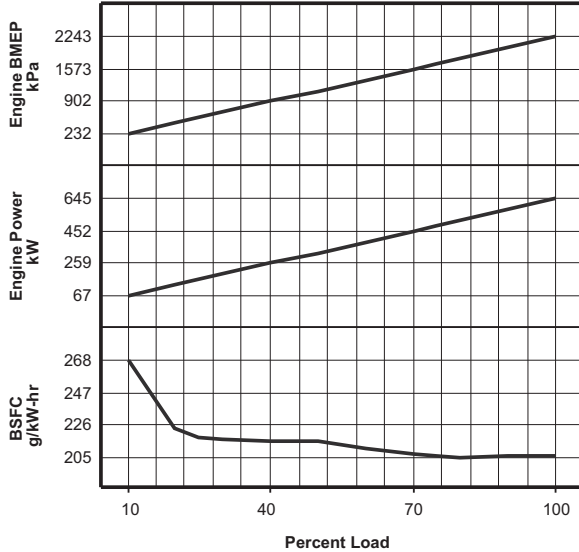
Heat Rejection Data

Gen Power kW	Percent Load	Rej to JW Btu/min	Rej to Atmos Btu/min	Rej to Exh Btu/min	From Oil Cir Btu/min
600	100	14672	5652.9	32416	4606.5
540	90	13706	5209.3	29231	4174.2
480	80	12625	4828.3	26046	3725.0
450	75	12113	4652.0	24511	3503.2
420	70	11545	4481.3	22975	3281.4
360	60	10464	4168.6	19904	2837.8
300	50	9327	3889.9	17004	2405.6
240	40	8189	3634.0	14274	2007.5
180	30	6995	3378.1	11545	1603.7
150	25	6369	3235.9	10180	1399.0
120	20	5687	3059.6	8872	1200.0
60	10	4265	2707.0	6142	790.5

OIL & GAS PERFORMANCE DATA

3508B DITA
590 ekW — 50 Hz @ 1000 rpm
Prime Rating — DM6981-01

IMO Certified — Aftercooler Temperature 60°C (140°F)



Gen Power ekW	Percent Load	Engine Power kW	Engine BMEP kPa	BSFC g/kW-hr	Fuel Rate L/hr
590	100	644.8	2243	206	158.6
531	90	577.1	2007	205	141.3
472	80	510.7	1776	205	124.9
443	75	477.9	1662	206	117.2
413	70	445.1	1548	207	109.9
354	60	380.6	1324	211	95.7
295	50	316.9	1102	216	81.4
236	40	256.7	893	216	66.1
177	30	195.0	678	217	50.4
148	25	163.5	569	217	42.4
118	20	131.7	458	224	35.2
59	10	66.7	232	269	21.3

Gen Power ekW	Percent Load	Engine Power hp	Engine BMEP psi	BSFC lb/hp-hr	Fuel Rate gph
590	100	864.7	325	.339	41.9
531	90	773.9	291	.338	37.3
472	80	684.9	258	.337	33.0
443	75	640.9	241	.338	31.0
413	70	596.9	225	.341	29.0
354	60	510.4	192	.347	25.3
295	50	425.0	160	.354	21.5
236	40	344.2	130	.355	17.5
177	30	261.5	98	.356	13.3
148	25	219.3	83	.357	11.2
118	20	176.6	66	.369	9.3
59	10	89.4	34	.441	5.6

Gen Power ekW	Intake Manifold Temp °C	Intake Manifold Pressure kPa	Intake Air Flow m³/min	Exh Manifold Temp °C	Exh Stk Temp °C	Exh Gas Flow m³/min
590	68.4	254.20	48.1	647.3	417.6	115.6
531	67.0	222.70	43.9	620.5	414.9	105.4
472	65.9	191.80	39.8	596.8	414.5	95.3
443	65.4	176.90	37.8	586.2	415.1	90.4
413	64.9	162.90	35.9	576.3	416.1	86.0
354	64.1	135.40	32.2	556.8	417.9	77.1
295	63.5	108.20	28.5	536.2	416.8	68.1
236	63.1	82.60	25.0	500.5	390.0	57.1
177	62.7	56.30	21.3	450.2	349.7	45.8
148	62.5	43.00	19.5	419.1	324.3	40.1
118	62.2	33.20	18.2	375.4	297.3	35.6
59	61.5	17.70	16.2	278.6	229.3	27.8

Gen Power ekW	Intake Manifold Temp °F	Intake Manifold Pressure in-hg	Intake Air Flow cfm	Exh Manifold Temp °F	Exh Stk Temp °F	Exh Gas Flow cfm
590	155.1	75.28	1698.6	1197.1	783.7	4082.4
531	152.6	65.95	1550.3	1148.9	778.8	3722.2
472	150.6	56.80	1405.5	1106.2	778.1	3365.5
443	149.7	52.39	1334.9	1087.2	779.2	3192.4
413	148.8	48.24	1267.8	1069.3	781.0	3037.1
354	147.4	40.10	1137.1	1034.2	784.2	2722.8
295	146.3	32.04	1006.5	997.2	782.2	2404.9
236	145.6	24.46	882.9	932.9	734.0	2016.5
177	144.9	16.67	752.2	842.4	661.5	1617.4
148	144.5	12.73	688.6	786.4	615.7	1416.1
118	144.0	9.83	642.7	707.7	567.1	1257.2
59	142.7	5.24	572.1	533.5	444.7	981.7

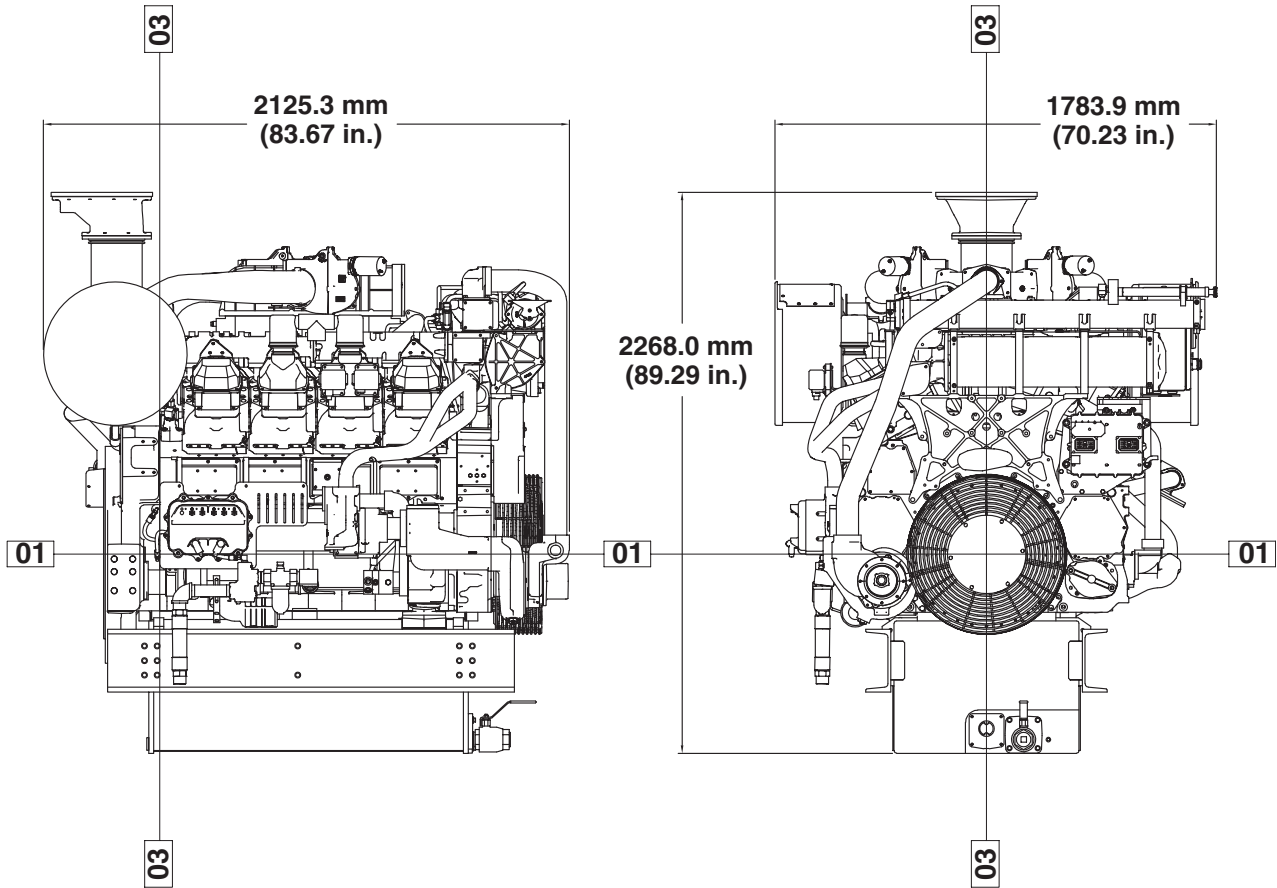
Heat Rejection Data

Gen Power ekW	Percent Load	Rej to JW kW	Rej to Atmos kW	Rej to Exh kW	From Oil Clr kW
590	100	259	119.0	509	79.1
531	90	232	110.0	458	70.4
472	80	206	102.0	412	62.3
443	75	194	99.0	391	58.4
413	70	183	97.0	370	54.8
354	60	160	91.0	331	47.7
295	50	137	86.0	289	40.6
236	40	112	77.0	233	32.9
177	30	87	68.0	176	25.1
148	25	74	63.0	147	21.1
118	20	62	58.0	123	17.5
59	10	39	47.0	79	10.6

Heat Rejection Data

Gen Power ekW	Percent Load	Rej to JW Btu/min	Rej to Atmos Btu/min	Rej to Exh Btu/min	From Oil Clr Btu/min
590	100	14729	6767.5	28947	4498.4
531	90	13194	6255.7	26046	4003.6
472	80	11715	5800.7	23430	3543.0
443	75	11033	5630.1	22236	3321.2
413	70	10407	5516.4	21042	3116.5
354	60	9099	5175.2	18824	2712.7
295	50	7791	4890.8	16435	2308.9
236	40	6369	4379.0	13251	1871.0
177	30	4948	3867.2	10009	1427.4
148	25	4208	3582.8	8360	1200.0
118	20	3526	3298.5	6995	995.2
59	10	2218	2672.9	4493	602.8

DIMENSIONS



Engine Dimensions		
Length	2125.3 mm	83.67 in.
Width	1783.9 mm	70.23 in.
Height	2268.0 mm	89.29 in.
Engine Weight (dry)	4318 kg	9,500 lb.

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

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).



Materials and specifications are subject to change without notice. The International System of Units (SI) is used in this publication.
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