



Dynamic Gas Blending Kit for use with 3512C Generator Set 1045 kW (1492 kVA)
1101 kW (1476 bhp)
1200 rpm
60 Hz

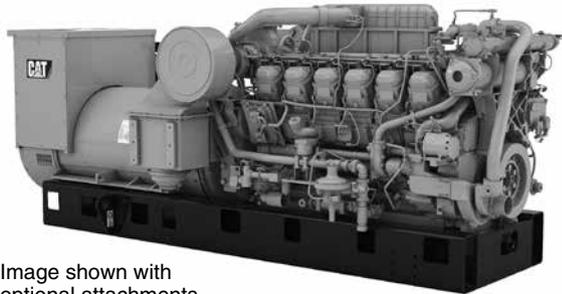


Image shown with optional attachments.

CAT® GENERATOR SET SPECIFICATIONS

V-12, 4-Stroke-Cycle-Diesel

Emissions	Non-regulated
Bore	170 mm (6.69 in)
Stroke	190 mm (7.48 in)
Displacement	52 L (3158 in ³)
Aspiration	Turbocharged-Aftercooled
Fuel System	EUI™
Engine Control and Protection	ADEM™ A4
Generator	SR4B
Voltage	600V
Generator Set Control	EMCP 4.4

FEATURES

Dynamic Gas Blending System

- Achieves up to 70% substitution while maintaining diesel performance and safe engine operation
- Closed loop control system enables maximum substitution over the widest load range in the industry
- Maintains traditional diesel generator set power and transient response performance
- Accepts a wide range of gas quality and automatically adjusts to fuel quality changes, eliminating the need for field calibration
- EMCP 4.4 control panel features simplified rig integration, remote monitoring capabilities, and single point interface for the engine, generator, and Dynamic Gas Blending functions
- Leverages current hardware from G3516 product line while minimizing change to core diesel engine
- Maintains existing diesel maintenance and overhaul intervals proven in oilfield applications

Engine Design

- Market-leading power density
- Proven reliability and durability
- Robust design prolongs life and lowers owning and operating costs
- Long overhaul life proven in oilfield applications
- Core engine components designed for reconditioning and reuse at overhaul

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 inputs
- Flame arrestors

Ease of Installation and Packaging

- EMCP 4.4 control panel uses standard communication protocols to integrate easily with rig monitoring equipment to track engine health and substitution performance
- Paralleling and load sharing capability

- Fully integrated diesel and gas controls into single engine control unit
- Single point operation for generator set and Dynamic Gas Blending system
- Dynamic Gas Blending system automatically activates when gas supply is detected

Custom Packaging

For any petroleum application, trust Caterpillar to meet your project needs with custom factory generator sets and mechanical packages. Cat® engines, generators, controls, radiators, and transmissions can be custom designed and matched in collaboration with our local dealers to create unique solutions. Custom packages are globally supported and are covered by a one-year warranty after startup.

Testing

Every unit is full-load tested to ensure proper 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 Cat product
- Worldwide parts availability, service, and warranty
- Preventive maintenance agreements available for repair-before-failure options
- S•O•SSM program matches your oil and coolant samples against Caterpillar set standards to determine:
 - Internal engine component condition
 - Presence of unwanted fluids and combustion by-products
 - Site-specific oil change interval

Over 80 Years of Engine Manufacturing Experience

The Caterpillar Production System enables manufacturing of products with the highest quality standards for long and dependable operation.

Web Site

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

**STANDARD EQUIPMENT**

Air Inlet System

Aftercooler core — corrosion resistant
Air cleaner — regular duty with soot filter
Service indicators
Flame arrestors

Control System

ADEM A4 ECU
ISM (Integrated Sensor Module) for combustion feedback sensors
Exhaust gas temperature sensors

Cooling System

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

Diesel Fuel System

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

Exhaust System

Exhaust flexible fitting, adapter and flanges
Dual turbochargers with w/c bearings

Flywheels and Flywheel Housings

SAE No. 00
SAE standard rotation

Gaseous Fuel System

Low pressure regulator
Electronically actuated fuel control valve
Gaseous fuel heater
Electronically controlled gas shut-off valve
Gas induction nozzles
CSA certified gas electronic components

Instrumentation

EMCP 4.4 control panel — See full specifications on page 4
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
Heavy-duty land rig inner baseframe — three-point mount to oilfield base

Power Take-Offs

Accessory drive

Protection System

ADEM A4 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
Cat digital voltage regulator
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 — engine mounted
Fan drive and fan pulley
Radiator mounting
Water level switch gauge
Coolant level sensors

European Union Certifications**Exhaust System**

Elbows
Mufflers
Flange and exhaust expanders

Fuel System

Primary fuel filter
Fuel cooler

Generator

Oilfield spec twin-bearing, close-coupled
Factory aligned

Generator Attachments

Air filter
Low voltage extension box
Potential transformer
Manual voltage control
Current droop transformers
Cable access box
Bearing temperature detectors

Instrumentation

Customer programmable annunciator
Gauges and instrument panels
Switches, relays, and contractors

Lube System

Fumes disposal
Oil filter, oil pan accessories
Sump pumps

Mounting System

Oilfield outer base with three-point mount

Power Take-Offs

Front stub shaft
Pulleys

Protection System

Explosion relieve valve, shutoffs
Switches and contacts/relays
Oil pressure monitors, sensors

Starting System

Air pressure regulator
Starting aids

General

Tool set
Cat data link wire



TECHNICAL DATA AND SPECIFICATIONS

Generator Set Data	Units	EM0296 EM0801-01
Rated power	ekW	1045
KVA rating	kVA	1492
Rated power factor		0.7
Frequency	Hz	60
Engine Data		
Engine power	bkW (bhp)	1101 (1476)
Engine speed	rpm	1200
Max. altitude without derate (@ 25°C)	m (ft)	2250 (7382)
BMEP	kPa (psi)	2127 (308)
Gas fuel pressure	kPag (psig)	83-241 (12-35)
Gas fuel flow, maximum (@ 32MN)*	°C (°F)	3580 (56,591)
Gas fuel flow, maximum (@ 45MN)*	MJ/hr (BTU/min)	5078 (80,271)
Gas fuel flow, maximum (@ 65MN)*	MJ/hr (BTU/min)	5923 (93,628)
Gas fuel flow, maximum (@ 85MN)*	MJ/hr (BTU/min)	7593 (120,027)
Max diesel BSFC (diesel mode @ 100% load)	MJ/hr (BTU/min)	200 (0.33)
Air flow rate	m³/min (ft³/min)	93 (3298)
Inlet manifold pressure	kPa (psi)	254 (37)
Inlet manifold temperature	°C (°F)	58 (137)
Aftercooler water temperature	°C (°F)	50 (122)
Jacket water temperature	°C (°F)	99 (210)
Exhaust stack temperature**	°C (°F)	503 (937)
Exhaust flow rate (@ stack temp, 101.3 kPa)	m³/min (ft³/min)	223 (7875)
Engine coolant capacity	L (gal)	157 (41)
Lube oil system capacity	L (gal)	318 (84)
Oil change interval	Hours	500
Generator Data***		
Generator Model		SR4B
Frame size		867
Efficiency @ rated		95%
Voltage (L-L)	Volts	600
Insulation class		H
Temperature rise (@ 40°C ambient temp)	°C	80
Excitation		PM
Number of poles		6
Winding		Form wound
Pitch		0.7333
Number of leads		6
Number of bearings		2
Ingress protection (IP) rating		23
Alignment		Close coupled
Note: Reference the A&I guide for specific gaseous fuel requirements		**Maximum 32MN-85MN gas at rated
*At rated load and maximum substitution		***Represents reference generator set configuration



ALTITUDE AND AMBIENT CAPABILITY

	0°C	10°C	20°C	30°C	40°C	50°C
0 m	1.00	1.00	1.00	1.00	1.00	1.00
500 m	1.00	1.00	1.00	1.00	1.00	1.00
1000 m	1.00	1.00	1.00	1.00	1.00	1.00
1500 m	1.00	1.00	1.00	1.00	1.00	0.98
2000 m	1.00	1.00	1.00	1.00	1.00	0.94
2500 m	1.00	1.00	1.00	0.97	0.94	0.87
3000 m	0.97	0.97	0.94	0.91	0.88	0.79
3500 m	0.93	0.91	0.88	0.85	0.79	0.71
4000 m	0.89	0.85	0.83	0.78	0.71	0.64
4500 m	0.83	0.80	0.77	0.69	0.63	0.56

ENGINE HEAT REJECTION (32 – 85 MN GAS)

PERCENT LOAD	Engine Power		Jacket Water		Aftercooler		Exhaust		Atmosphere	
	bkW	bhp	kW	Btu/min	kW	Btu/min	kW	Btu/min	kW	Btu/min
100	1101	1476	414	23,544	269	15,298	1297	73,759	129	7336
75	826	1108	336	19,108	180	10,236	998	56,755	122	6938
50	550	738	260	14,786	83	4720	704	40,036	115	6540
25	330	443	188	10,691	19	1081	465	26,444	106	6028

EMCP 4.4 FEATURES

140 mm (5.5 in) Graphic Display

- Generator AC voltage
 - 3 phase (L-L & L-N)
 - ± 0.25% Accuracy
- rpm and battery voltage
- Gen. AC current (per phase and average)
- Generator frequency
- Power metering (kW, kVA, kVAr, pf)
- Hour meters (kW-Hour, kVAr-Hour)
- Engine oil pressure (psi, kPa or bar)
- Engine oil temperature (°C or °F)
- Engine coolant temperature (°C or °F)
- Multiple language support
- Engine start and crank attempt counter
- Real-time clock

Communication

- Accessory CAN data link
- RS-485 annunciator data link
- RS-485 SCADA (Modbus RTU)
- Ethernet SCADA (Modbus TCP)

Controls

- Auto/start/stop
- Engine cool-down timer
- Emergency stop
- Engine cycle crank
- Programmable cycle timer
- Paralleling up to eight units

Generator Set Protection

- Over/under voltage
- Over/under frequency
- Generator phase sequence
- Over current (timed and inverse)
- Reverse kW, kVA
- Current balance
- Bus phase sequence
- Low oil pressure
- High coolant temp
- Low coolant level
- Fail to start
- Overspeed

Outputs

- 17 programmable digital outputs
- 3 programmable (4-20mA or ±10V)
- 2 programmable (PWM)

Inputs

- Emergency stop
- Remote start
- 12 programmable digital inputs
- Oil pressure and water temperature
- 4 programmable inputs (±10V, PWM, current, or resistive)
- Oil temperature, fuel level

Other Features

- 16 languages supported: Arabic, Chinese, Danish, Dutch, English, Finnish, French, German, Greek, Italian, Japanese, Portuguese, Russian, Spanish, Swedish, and Turkish
- Programmable security levels
- Reduced power mode
- Programmable kW relay
- Cat switchgear integration
- Status event log

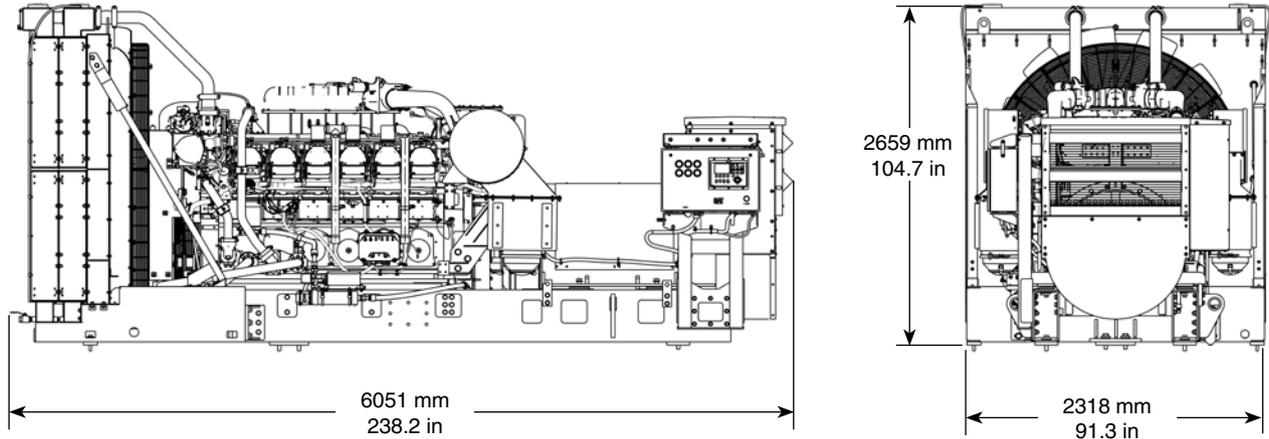


3512C

DYNAMIC GAS BLENDING KIT FOR USE WITH 3512C GENERATOR SET

1045 ekW 60 Hz

GENERATOR SET



Generator Set Dimensions		
Length	6051 mm	238.3 in
Width	2318 mm	91.3 in
Height	2659 mm	104.7 in
Weight	14 453 kg	31,864 lb

Generator set weight is dry and includes engine, generator, and base.

Note: Do not use for installation design. See installation drawing for details.

RATING DEFINITIONS AND CONDITIONS

Prime rating – Output available with varying load for an unlimited time. Prime power in accordance with ISO8528. Typical load factor 60-70%.

Conditions – Performance is obtained and corrected in accordance with ISO 3046/1. Reference atmospheric inlet air: 100 kPa (29.61 in Hg), 25°C (77°F), 30% relative humidity at stated aftercooler temperature. Performance is also in accordance with SAE J1995, BS5514/1, and DIN6271/1 standard reference conditions.

Diesel fuel – Reference fuel is #2 distillate diesel with a 35 degree API gravity, lower heating value is 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/gal).

Gaseous fuel – Reference natural gas has a lower heating value of 33.74 kJ/L (905 BTU/cu. ft.). Low energy ratings are based on 18.64 kW/L (500 BTU/cu. ft.) lower heating value gas. High energy gas ratings are based on 87.56 kJ/L (2350 BTU/cu. ft.) lower heating value gas.

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