

Cat® G3512

Gas Generator Sets



Image shown may not reflect actual configuration

Bore – mm (in)	170 (6.7)
Stroke – mm (in)	190 (7.5)
Displacement – L (in³)	52 (3173)
Compression Ratio	9.7
Aspiration	Turbocharged
Fuel System	Electronic Fuel Control Valve
Governor Type	ADEM™ A4

Standby and Continuous 60 Hz eKW (kVA)	Emissions Performance
1000 (1250)	U.S. EPA Stationary
750 (938)	U.S. EPA Stationary

Standard Features

Cat® Natural Gas Engine

- Meets U.S. EPA Stationary Non-Emergency standards to be used in Emergency and Non-Emergency applications
- Robust high speed block design provides prolonged life and lower owning and operating costs
- Designed for maximum performance on low pressure gaseous fuel supply

Generator Set Package

- Accepts 100% block load in one step and facilitates compliance with NFPA 110, Type 10 starting and loading requirements
- Conforms to ISO 8528-5 G3 load acceptance criteria
- Reliability verified through torsional vibration, fuel consumption, oil consumption, transient performance, and endurance testing

Generators

- Superior motor starting capability minimizes need for oversizing generator
- Designed to match performance and output characteristics of Cat engines

Cooling System

- Cooling systems available to operate in ambient temperatures up to 43°C (110°F)
- Package tested to ensure proper cooling of complete generator set

EMCP 4 Control Panels

- User-friendly interface and navigation
- Scalable system to meet a wide range of installation requirements
- Expansion modules and site specific programming for specific customer requirements

Warranty

- 24 months/1000-hour warranty for standby ratings
- 12 months/unlimited hour warranty for continuous ratings
- Extended service protection is available to provide extended coverage options

Worldwide Product Support

- Cat dealers have over 1,800 dealer branch stores operating in 200 countries
- Your local Cat dealer provides extensive post-sale support, including maintenance and repair agreements

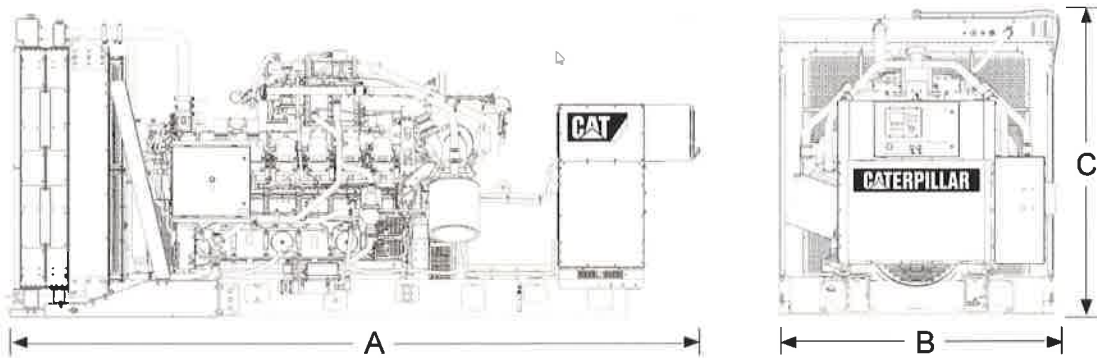
Financing

- Caterpillar offers an array of financial products to help you succeed through financial service excellence
- Options include loans, finance lease, operating lease, working capital, and revolving line of credit
- Contact your local Cat dealer for availability in your region

Package Performance

Performance		Standby & Continuous			
Frequency	60 Hz				
Genset power rating @ 0.8 power factor – kW (kVA)	750 (938kVA)		1000 (1250)		
Emissions	U.S. EPA Stationary				
Performance number	EM4567-01 & EM4494-01		EM4565-01 & EM4492-01		
Fuel Consumption					
100% load with fan – MJ/ekW-hr (Btu/ekW-hr)	10.84	(10282)	10.29	(9757)	
75% load with fan – MJ/ekW-hr (Btu/ekW-hr)	11.60	(10994)	10.78	(10225)	
50% load with fan – MJ/ekW-hr (Btu/ekW-hr)	13.18	(12495)	11.84	(11227)	
Cooling System					
Radiator air flow restriction – kPa (in. water)	0.12	(0.5)	0.12	(0.5)	
Radiator air flow – m ³ /min (cfm)	1830	(64625)	1830	(64625)	
Radiator ambient capability @ 304 m (1000 ft) – °C (°F)	45	(113)	45	(113)	
Auxiliary circuit temperature (maximum inlet) – °C (°F)	54	(130)	54	(130)	
Jacket water temperature (maximum outlet) – °C (°F)	99	(210)	99	(210)	
Inlet Air					
Combustion air inlet flow rate – Nm ³ /bkW-hr (ft ³ /min)	4.59	(2451)	4.37	(3071)	
Altitude Capability					
At 25°C (77°F) ambient, above sea level – m (ft)	2862	(9390)	1928	(6325)	
Exhaust System					
Exhaust temperature – engine outlet – °C (°F)	512	(953)	512	(954)	
Exhaust Gas Flow – Nm ³ /bkW-hr (ft ³ /min)	4.88	(6955)	4.65	(8721)	
Exhaust Gas Mass Flow – kg/bkW-hr (lb/hr)	6.15	(11263)	5.85	(14116)	
Heat Rejection					
Heat rejection to jacket water circuit (JW+AC1+OC) – kW (Btu/min)	491	(27927)	611	(34726)	
Heat rejection to jacket water – kW (Btu/min)	364	(20683)	423	(24072)	
Heat rejection to exhaust (LHV to 120°C/248°F) – kW (Btu/min)	627	(35672)	1002	(44757)	
Auxiliary circuit temperature (maximum inlet) – °C (°F)	54	(130)	54	(130)	
Heat rejection to atmosphere from engine and generator – kW (Btu/min)	138	(7840)	153	(8705)	

Weights and Dimensions



Dim "A" mm (in)	Dim "B" mm (in)	Dim "C" mm (in)	Dry Weight kg (lb)
6011(236)	2809 (110)	2671 (105)	12,500 (27,500)

Note: For reference only. Do not use for installation design. Contact your local Cat dealer for precise weights and dimensions.

Ratings Definitions

Standby

Output available with varying load for the duration of an emergency outage. Average power output is 100% of the standby power rating. Typical operation is 200 hours per year, with maximum expected usage of 500 hours per year.

Continuous

Output available with non-varying load for unlimited time. Average power output is 70-100% of the continuous power rating. Typical peak demand is 100% of continuous rating for 100% of the operating hours.

Applicable Codes and Standards

AS 1359, CSA C22.2 No. 100-04, UL 489, UL 869, UL 2200, NFPA37, NFPA70, NFPA99, NFPA110, IBC, IEC 60034-1, ISO 3046, ISO 8528, NEMA MG1-22, NEMA MG1-33, 2014/35/EU, 2006/42/EC, 2014/30/EU.

Note: Codes may not be available in all model configurations. Please consult your local Cat dealer for availability.

Fuel Rates

- For transient response, ambient, and altitude capabilities consult your local Cat dealer.
- Fuel pressure range specified is to the engine fuel control valve. Additional fuel train components may be required and should be considered in pressure and flow calculations.
- For a complete reference of definitions and conditions see the following datasheets
 - 750ekw Standby / Emergency EM4567 w/fan, EM4568 w/o fan
 - 750ekw Continuous / Standard EM4494 w/fan, EM4495 w/o fan
 - 1000ekw Standby / Emergency EM4565 w/fan, EM4566 w/o fan
 - 1000ekw Continuous / Standard EM4492 w/fan, EM4493 w/o fan

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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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GENSET - WITHOUT RADIATOR

ENGINE SPEED (rpm): 1800
 COMPRESSION RATIO: 9.7
 AFTERCOOLER TYPE: SCAC
 AFTERCOOLER - STAGE 2 INLET (°F): 130
 AFTERCOOLER - STAGE 1 INLET (°F): 198
 JACKET WATER OUTLET (°F): 210
 ASPIRATION: TA
 COOLING SYSTEM: JW+OC+1AC, 2AC
 CONTROL SYSTEM: ADEM4 W/ IM
 EXHAUST MANIFOLD: DRY
 COMBUSTION: LOW EMISSION

RATING STRATEGY: EMERGENCY
FUEL SYSTEM: CAT LOW PRESSURE WITH AIR FUEL RATIO CONTROL

SITE CONDITIONS:
 FUEL: Propak Systems ONEOK Hartford Booster Station
 FUEL PRESSURE RANGE(psig): (See note 1) 0.5-5.0
 FUEL METHANE NUMBER: 82.7
 FUEL LHV (Btu/scf): 956
 ALTITUDE(ft): 550
 INLET AIR TEMPERATURE(°F): 100
 STANDARD RATED POWER: 1114 bhp@1800rpm
 POWER FACTOR: 1.0
 VOLTAGE(V): 4160-13800

MAXIMUM RATING	SITE RATING AT MAXIMUM INLET AIR TEMPERATURE			
	100%	100%	75%	50%

RATING	NOTES	LOAD	MAXIMUM RATING			
			100%	100%	75%	50%
GENSET POWER (WITHOUT FAN)	(2)(3)	ekW	800	800	600	400
GENSET POWER (WITHOUT FAN)	(2)(3)	kVA	800	800	600	400
ENGINE POWER (WITHOUT FAN)	(3)	bhp	1114	1114	840	567
INLET AIR TEMPERATURE		°F	100	100	100	100
GENERATOR EFFICIENCY	(2)	%	96.3	96.3	95.8	94.6
GENSET EFFICIENCY (ISO 3046/1)	(4)	%	35.4	35.4	33.6	30.3
THERMAL EFFICIENCY	(5)	%	49.3	49.3	50.3	52.1
TOTAL EFFICIENCY	(6)	%	84.7	84.7	83.9	82.4

ENGINE DATA							
GENSET FUEL CONSUMPTION (ISO 3046/1)	(7)	Btu/ekW-hr	9638	9638	10168	11257	
GENSET FUEL CONSUMPTION (NOMINAL)	(7)	Btu/ekW-hr	9825	9825	10366	11476	
ENGINE FUEL CONSUMPTION (NOMINAL)	(7)	Btu/bhp-hr	7056	7056	7407	8099	
AIR FLOW (@inlet air temp, 14.7 psia) (WET)	(8)	ft3/min	2557	2557	2007	1462	
AIR FLOW (WET)	(8)	lb/hr	10870	10870	8535	6216	
FUEL FLOW (60°F, 14.7 psia)		scfm	137	137	108	80	
INLET MANIFOLD PRESSURE	(9)	in Hg(abs)	64.3	64.3	51.1	37.7	
EXHAUST TEMPERATURE - ENGINE OUTLET	(10)	°F	953	953	952	948	
EXHAUST GAS FLOW (@engine outlet temp, 14.5 psia) (WET)	(11)	ft3/min	6937	6937	5446	3957	
EXHAUST GAS MASS FLOW (WET)	(11)	lb/hr	11239	11239	8827	6431	
MAX INLET RESTRICTION	(12)	in H2O	10.00	10.00	9.99	9.99	
MAX EXHAUST RESTRICTION	(12)	in H2O	20.39	20.39	20.39	20.39	

REGULATORY INFORMATION							
AGENCY	TIER/STAGE	REGULATION	LOCALITY		MAX LIMITS	YEAR IN	YEAR OUT
EPA		S.I. STATIONARY NON-EMERGENCY - NATURAL GAS	U.S. (EXCL CALIF)	(13)	g/bhp-hr - NOx: 1.0 CO: 2.0 VOC: 0.7	2011	----

EMISSIONS DATA - ENGINE OUT

HEAT REJECTION							
LHV INPUT	(14)	Btu/min	131001	131001	103658	76504	
HEAT REJ. TO JACKET WATER (JW)	(15)	Btu/min	20683	20683	18467	16191	
HEAT REJ. TO ATMOSPHERE (INCLUDES GENERATOR)	(15)	Btu/min	7253	7253	6370	5571	
HEAT REJ. TO LUBE OIL (OC)	(15)	Btu/min	4158	4158	3705	3152	
HEAT REJECTION TO EXHAUST (LHV TO 248°F)	(15)	Btu/min	35574	35574	27925	20235	
HEAT REJ. TO A/C - STAGE 1 (1AC)	(15)(17)	Btu/min	3057	3057	1065	-633	
HEAT REJ. TO A/C - STAGE 2 (2AC)	(15)(17)	Btu/min	3887	3887	3098	2346	
PUMP POWER	(16)	Btu/min	971	971	971	971	

COOLING SYSTEM SIZING CRITERIA							
TOTAL JACKET WATER CIRCUIT (JW+OC+1AC)	(18)	Btu/min	32205	32205			
TOTAL AFTERCOOLER CIRCUIT (2AC)	(18)	Btu/min	4435	4435			
HEAT REJECTION TO EXHAUST (LHV TO 248°F)	(18)	Btu/min	39131	39131			

A cooling system safety factor of 0% has been added to the cooling system sizing criteria.

MINIMUM HEAT RECOVERY							
TOTAL JACKET WATER CIRCUIT (JW+OC+1AC)	(19)	Btu/min	24846	24846			
TOTAL AFTERCOOLER CIRCUIT (2AC)	(19)	Btu/min	3693	3693			
HEAT REJECTION TO EXHAUST (LHV TO 248°F)	(19)	Btu/min	30570	30570			

CONDITIONS AND DEFINITIONS

Engine rating obtained and presented in accordance with ISO 3046/1, adjusted for fuel, site altitude and site inlet air temperature. 100% rating at maximum inlet air temperature is the maximum engine capability for the specified fuel at site altitude and maximum site inlet air temperature. Maximum rating is the maximum capability at the specified aftercooler inlet temperature for the specified fuel at site altitude and reduced inlet air temperature. Lowest load point is the lowest continuous duty operating load allowed. No overload permitted at rating shown.

For notes information consult page three.

*****WARNINGS ISSUED FOR THIS RATING CONSULT PAGE 3*****

GENSET - WITHOUT RADIATOR

NOTES:

1. Fuel pressure range specified is to the engine fuel control valve. Additional fuel train components should be considered in pressure and flow calculations.
2. Generator efficiencies, power factor, and voltage are based on specified generator. [Genset Power (ekW) is calculated as: Engine Power (bkW) x Generator Efficiency], [Genset Power (kVA) is calculated as: Engine Power (bkW) x Generator Efficiency / Power Factor]
3. Rating is with two engine driven water pumps. Tolerance is (+)3, (-)0% of full load.
4. Genset Efficiency published in accordance with ISO 3046/1.
5. Thermal Efficiency is calculated based on energy recovery from the jacket water, lube oil, 1st stage aftercooler, and exhaust to 248°F with engine operation at ISO 3046/1 Genset Efficiency, and assumes unburned fuel is converted in an oxidation catalyst.
6. Total efficiency is calculated as: Genset Efficiency + Thermal Efficiency. Tolerance is ±10% of full load data.
7. ISO 3046/1 Genset fuel consumption tolerance is (+)5, (-)0% at the specified power factor. Nominal genset and engine fuel consumption tolerance is ± 3.0% of full load data at the specified power factor.
8. Air flow value is on a 'wet' basis. Flow is a nominal value with a tolerance of ± 5 %.
9. Inlet manifold pressure is a nominal value with a tolerance of ± 5 %.
10. Exhaust temperature is a nominal value with a tolerance of (+)63°F, (-)54°F.
11. Exhaust flow value is on a "wet" basis. Flow is a nominal value with a tolerance of ± 6 %.
12. Inlet and Exhaust Restrictions are maximum allowed values at the corresponding loads. Increasing restrictions beyond what is specified will result in a significant engine derate.
13. Gaseous emissions data measurements are consistent with those described in EPA 40 CFR PART 60 SUBPART JJJJ and ISO 8178 for measuring VOC, CO, and NOx. Gaseous emissions values are weighted cycle averages and are in compliance with the stationary regulations.
14. LHV rate tolerance is ± 3.0%.
15. Heat rejection values are representative of site conditions. Tolerances, based on treated water, are ± 10% for jacket water circuit, ± 50% for atmosphere, ± 20% for lube oil circuit, ± 10% for exhaust, and ± 5% for aftercooler circuit.
16. Pump power includes engine driven jacket water and aftercooler water pumps. Engine brake power includes effects of pump power.
17. Aftercooler heat rejection is nominal for site conditions and does not include an aftercooler heat rejection factor. Aftercooler heat rejection values at part load are for reference only.
18. Cooling system sizing criteria represent the expected maximum circuit heat rejection for the ratings at site, with applied plus tolerances. Total circuit heat rejection is calculated using formulas referenced in the notes on the standard tech data sheet with the following qualifications. Aftercooler heat rejection data (1AC & 2AC) is based on the standard rating. Jacket Water (JW) and Oil Cooler (OC) heat rejection values are based on the respective site or maximum column. Aftercooler heat rejection factors (ACHRF) are specific for the site elevation and inlet air temperature specified in the site or maximum column, referenced from the table on the standard data sheet
19. Minimum heat recovery values represent the expected minimum heat recovery for the site, with applied minus tolerances. Do not use these values for cooling system sizing.

WARNING(S):

1. The lower heating value of the fuel is higher than or equal to 800 Btu/scf and lower than 1000 Btu/scf which is within the design limits of the engine. Fuel must be Pipeline Natural Gas; operation on field gas is not permitted. Refer to setup instructions M0096245 - Initial Setup for Certified G3512 Generator Set Engines.

RECOMMENDED ACTION

For additional information please contact your Caterpillar engine dealer.