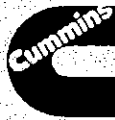


Manufactured by:

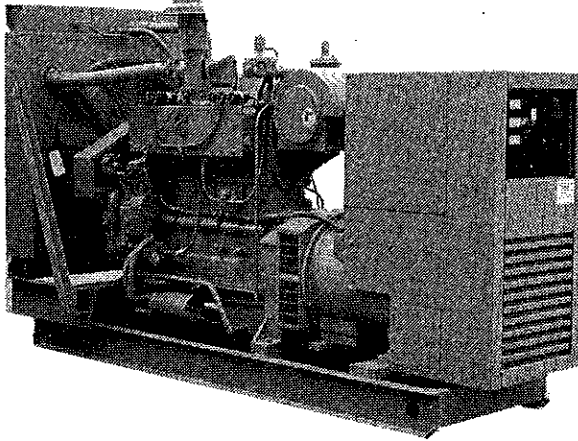
Cummins Great Lakes, Inc.
P.O. Box 5070
De Pere, WI 54115-5070



GTA12 GS/GC

Natural Gas Generator Set

Detector 12 Controls



KW(KVA) @ 0.8 P.F.

Compression Ratio	60 HZ-1800 RPM		50 HZ-1500 RPM	
	Standby	Prime	Standby	Prime
10:1 (note 1)	185(231)	160(200)	150(187)	135(169)
8.5:1 (note 2)	180(225)	150(187)	145(181)	130(163)

Notes:

- 1) 21° C (90° F) or lower water temperature to the aftercooler or use of air to air aftercooler w/100° F or lower air temperature to the radiator.
- 2) 54° C (130° F) or lower water temperature to the aftercooler or use of air to air aftercooler w/130° F or lower air temperature to the radiator.

Fuel Application Guide

Compression Ratio	8.5:1	10:1
Dry Processed Natural Gas	Yes	Yes
Propane (HD-5)	Yes	NA

All gases such as field gas, digester, and sewage gas will require an analysis of the specified gas and pre-approval from CNGE. Consult your Cummins Distributor for details.

Standard Equipment

ENGINE

Cummins 4-cycle, Turbo Charged, After Cooled, in line 6 Cylinder Gas Engine

ALTERNATOR

Brushless AC alternator provides broad range reconnectable output. Designed for service in severe environments.

CONTROL PANEL

Vibration isolated control with analog instrumentation.

- Low reactance generator design offers low waveform distortion with non-linear loads and provides excellent motor starting capabilities.

VOLTAGE REGULATOR

Electronic voltage regulator with 3-phase RMS sensing.

COOLING SYSTEM

High ambient 100°F (38°C) Radiator.

SKID BASE

Supports the alternator and engine. Cooling system mounts to the skid base.

Generator Set Performance

Voltage Regulation

Under load from no load to 100% load will be within ±0.5%.

Random Voltage Variation

For constant loads, from no load 100% load will not exceed ±0.5% of its mean value.

Frequency Regulation

Isochronous under varying loads from no load to 100% load with electric governor.

Random Frequency Variation

Will not exceed ±0.50% of its mean value for constant loads from no load to full load with Isochronous governor.

Electromagnetic Interference Attenuation

Meets requirements of most industrial and commercial applications.

AC Waveform Total Harmonic Distortion

Less than 5% total no load to full load, and less than 3% for any single harmonic.

Telephone Influence Factor (TIF)

Less than 50 per NEMA MG1-22.43.

Telephone Harmonic Factor (THF) Less than 3.

Alternator Temperature Rise

At rated load is less than 105° C at prime power rating and less than 125° C at standby rating, per NEMA MG1-22.40, IEEE115 and AEC 34-1.

Radio Interference

Alternator and voltage regulator meet the provisions of BS.800 and VDE Class G and N.

GTA12 GS/GC Engine: Cummins Gas Engines, 6-cylinder, Turbo Charged, Aftercooled

Design: 4-cycle, water-cooled, turbo charged, aftercooled
Bore: 5.13" (130mm) **Stroke:** 6" (152mm)
Piston Displacement: 743 cubic inches (12.2 liters)
Valves: 4 Valves per Cylinder, Single Springs
Material: Cast Steel, Integral Counterweight-Type Crankshaft
Design: Forged Steel Connecting Rods with I-Beam Design
Compression Ratio: 10:1 / 8.5:1
Starting: 24-volt, negative ground
Cranking Current: 550 Amps at Ambient Temperature of 32° F (0° C).
40 amp battery charging alternator.

Cast Iron Cylinder block: Replaceable Wet Liners
Air Induction System: IMPCO High Altitude, Low Pressure Gas System.
Dry-Element Air Cleaner
Lube Oil Capacity: 30 US quarts (28.4 liters)
Lube Oil Required: API CD 15W-40
Lube Oil Filter: Single, Full Flow/Bypass
Maximum Lube Oil Consumption: 25 US quarts (24 liters) - per 100 Hours
Cooling System
High Ambient 100° F (38° C) Radiator.

Alternator

Design:

Revolving field, single bearing, 4-pole, brushless, drip-proof construction. Standard 125° C temperature rise at standby power rating. Class H insulation system per NEMA MG1-1.65 and BS2757. The main alternator and exciter insulation systems are impregnated for operation in severe environments where sand, salt sea spray and chemical corrosion are installation factors.

Stator:

Skewed stator and $\frac{1}{2}$ pitch windings minimize field heating and voltage harmonics.

Rotor:

Dynamically balanced assembly. Direct coupled to engine by a flexible drive disc. Complete amortisseur (damper) windings help minimize voltage deviations and heating effects under unbalanced loads. The rotor is supported by a pre-lubricated, maintenance-free ball bearing.

Generator™ Control System

Monitors engine performance and AC power output.

- Controls generator set start and shutdown.
- Automatic remote start.
- DC panel lighting.
- Vibration Isolators protect control panel electronics and circuitry from generator set vibration.
- Analog Instrumentation displays performance trends. Rugged, Non-fluctuating, easy to read.

NFPA 110 12-Light Monitor

- Run-stop-remote switch
- Remote starting, 24-volt, 2 wire
- Coolant temperature gauge
- Field circuit breaker
- DC voltmeter
- Running time meter
- Lamp test switch
- Oil pressure gauge
- Fault reset switch
- Cycle cranking

Engine monitor with individual $\frac{1}{2}$ amp relay signals and common external alarm contact for each of the following conditions:

- RUN** (green light)
- PRE-WARNING FOR LOW OIL PRESSURE** (yellow light)
- PRE-WARNING FOR HIGH COOLANT TEMP** (yellow light)
- LOW OIL PRESSURE SHUTDOWN** (red light)
- HIGH COOLANT TEMPERATURE SHUTDOWN** (red light)
- OVERCRANK SHUTDOWN** (red light)
- OVERSPEED SHUTDOWN** (red light)
- SWITCH OFF** (flashing red light - indicate generator set not in automatic start mode)
- LOW COOLANT TEMPERATURE** (yellow light)
- LOW FUEL** (yellow light)
- TWO CUSTOMER SELECTED FAULTS** (red light)

Torque-Matched Voltage Regulation:

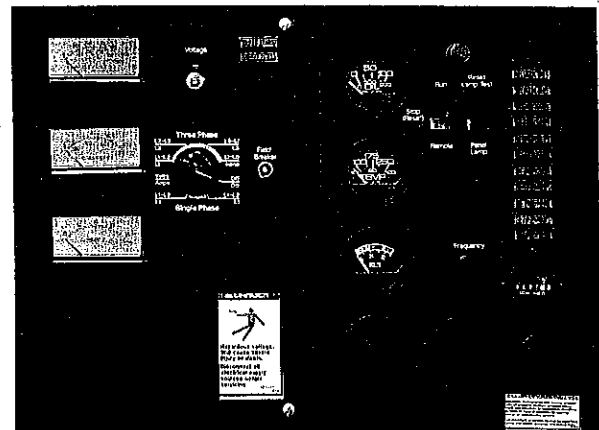
The voltage regulator provides torque-matched underfrequency compensation to optimize motor starting performance and assist the engine during transient load conditions. The brushless exciter armature powers the main alternator field winding through shaft-mounted, three-phase, full wave silicon diode rectifiers. semi-conductor surge suppressors protect the diodes from transient overvoltages induced by load surges.

PMG (Permanent Magnet Generator): Optional

Provides more power for motor starting. Sustains main field excitation for short circuit current fault discrimination and coordination. Provides increased immunity from non-linear loads.

Phase Rotation: A(U), B(V), C(W)

Alternator Cooling: Direct drive centrifugal blower.



Control panel shown includes optional AC Meters and 12-Light Monitoring System.

Optional AC Meter Package

Order with NFPA 110 Monitor to meet code requirements.

- AC voltmeter (dual range)
- AC ammeter (dual range)
- Voltmeter/ammeter phase selector switch with an off position
- Frequency meter
- AC Rheostat (panel mounted) for $\pm 5\%$ voltage adjust.

OPERATING DATA

GTA12 GS/GC

	105°C Alternator					125°C Alternator				
Voltage Ranges * The broad range alternator can supply single phase output up to 2/3 of the set rated 3-phase kW at 1.0 power factor.	120/208 Thru 139/240 240/416 Thru 277/480 120/240*	220/380	347/600			120/208 Thru 139/240 240/416 Thru 277/480 120/240*	220/380	347/600		
Motor Starting Maximum kVA (90% Sustained Voltage)	<u>Broad Range</u> 569		<u>600V</u> 569			<u>Broad Range</u> 605		<u>380V</u> 605		<u>600V</u> 605
Alternator Data Sheet Number	301		301			211		211		211
Full Load Current (Amps @ Standby Rating)	120/208 <u>642</u>	127/220 <u>607</u>	139/240 <u>556</u>	220/380 <u>351</u>	240/416 <u>321</u>	254/440 <u>303</u>	277/480 <u>278</u>	347/600 <u>223</u>		

	STANDBY			
Fuel Fuel Consumption (Approximate)	Load kW CFH	1/2 46 1333	3/4 92 1661	Full 185 2280
Cooling Heat Rejection To Coolant Heat Radiated To Room Coolant Capacity (with radiator) Coolant Flow Rate Maximum Coolant Friction Head Maximum Coolant Static Head Radiator Fan Load		10661 Btu/Min 1463 Btu/Min 25.5 US Gal 72 Gal/Min 5 psi 46 ft 19.4 HP		(188) kw (26) kw (97) L (273) L/Min (34) kPa (14) m (14) kw
Air Combustion Air Maximum Air Cleaner Restriction Alternator Cooling Air Radiator Cooling Air Maximum Restriction at Radiator Discharge (static)		584 cfm 15 in H ₂ O 985 cfm 23500 cfm 0.5 in H ₂ O		(381) mm H ₂ O (27.9) cu m/min (11092) l/sec (13) mm H ₂ O
Exhaust Gas Flow (Full Load) Gas Temperature Maximum Back Pressure		1700 cfm 1100 °F 2 in Hg		(802) l/sec (593) °C (50) mm Hg
Engine Gross Engine Power Output BMEP Piston Speed		287 bhp 170 psi 1800 ft/min		(214) kw (1125) kPa (9.14) m/s

Standby Ratings

The standby power rating is applicable for supplying emergency power for the duration of normal power interruption. No overload capability is available for this rating.

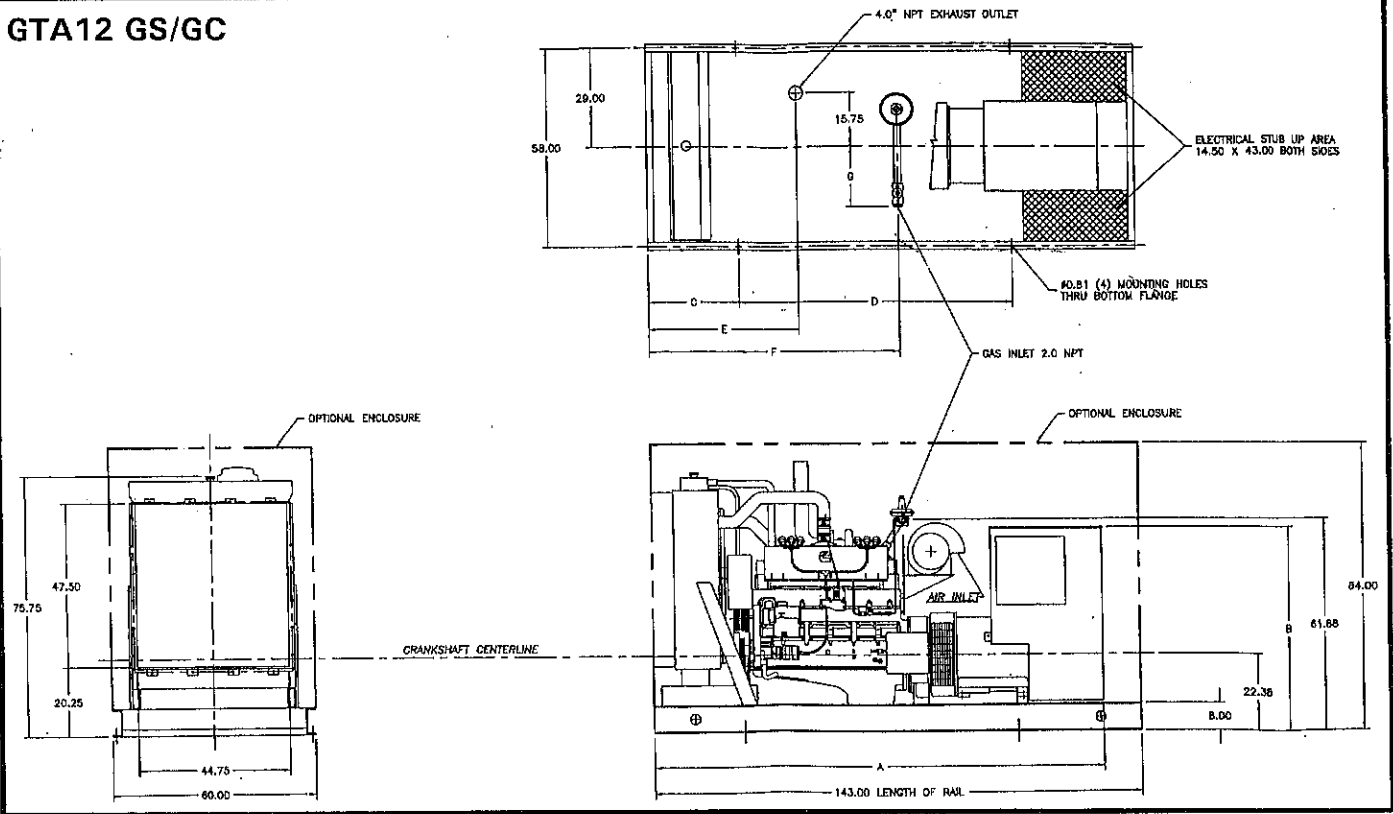
Prime Power Ratings

The prime power rating is electric power in lieu of commercially purchased power. Prime power is the maximum power available at variable load for an unlimited number of hours. A 10% overload capability is available for prime power ratings per BS 5514 and DIN 6271.

For peak shaving, interruptible service or base load applications, consult your authorized distributor.

- 1) Data shown above represents gross engine performance capabilities obtained and corrected in accordance with SAEJ1349 conditions of 29.61 in. Hg.(100KPa) barometric pressure [300 ft. (91m) altitude], 77°F (25°C) inlet air temperature, and 0.30 in Hg.(100KPa) water vapor pressure using dry processed natural gas fuel with 905 BTU per standard cubic foot (33.72 ki/l) lower heating value. Deration may be required due to altitude, temperature or type of fuel. Consult your local Cummins Distributor for details.
- 2) Fuel pressure required to engine mounted regulator is a positive 10" - 20" water column at full load operation.

GTA12 GS/GC



Generator Set Option

Engine

- Heavy-duty air cleaner with safety element
- 120/208/240-volt 2500 W coolant heater (thermostatically controlled)
- 208/240/480-volt 4000 W coolant heater UL-(thermostatically controlled)
- 120-Volt 300 W lube oil heater
- 208/240-volt 300 W lube oil heater
- 480-volt 300 W lube oil heater

Cooling System

- Remote radiator cooling
- Heat exchanger cooling

Alternator

- 105° C Rise alternator
- 80° C Rise alternator
- Anti-condensation heater

Control panel

- Remote fault signal dry contact relay package
- Run relay package
- Low coolant level shutdown
- Time delay start/stop
- Control anti-condensation space heater
- Oil temperature gauge
- Tachometer
- Wattmeter
- Power factor meter
- Fuel-pressure gauge (engine mounted)
- Panel mount engine speed control potentiometer
- Exhaust pyrometer
- Emergency stop
- Junction box
- Over/under voltage relay
- Over/under frequency relay

Fuel System

- Flexible Fuel Connector
- Fuel strainer
- Dual fuel NG/LP vapor
- Dual fuel NG/LP Liquid

Generator Set

- Main line circuit breaker
- AC entrance box
- Battery charger, equalizer, float-type
- Batteries
- Spring isolators
- Remote annunciator panel
- Paralleling modifications
- Weather-protective enclosure with mounted silencer
- 2-year standby warranty

Exhaust System

- Industrial-grade exhaust silencer
- Residential-grade exhaust silencer
- Critical-grade exhaust silencer

Voltage Selections

60 Hz, 1800 rpm,
3-phase, Reconnectible

Broad Range

- | | |
|-----------------------------------|-----------------------------------|
| <input type="checkbox"/> 110/190V | <input type="checkbox"/> 220/380V |
| <input type="checkbox"/> 120/208V | <input type="checkbox"/> 240/416V |
| <input type="checkbox"/> 127/220V | <input type="checkbox"/> 254/440V |
| <input type="checkbox"/> 139/240V | <input type="checkbox"/> 277/480V |
| <input type="checkbox"/> 120/240V | |

50 Hz, 1500 rpm,
3-phase, Reconnectible

Broad Range

- | | |
|-----------------------------------|-----------------------------------|
| <input type="checkbox"/> 110/190V | <input type="checkbox"/> 220/380V |
| <input type="checkbox"/> 115/200V | <input type="checkbox"/> 230/400V |
| <input type="checkbox"/> 120/208V | <input type="checkbox"/> 240/415V |
| <input type="checkbox"/> 127/220V | <input type="checkbox"/> 254/440V |
| <input type="checkbox"/> 100/200V | <input type="checkbox"/> 115/230V |
| <input type="checkbox"/> 110/220V | <input type="checkbox"/> 120/240V |

Dry Weight Unhoused:

6110 lbs (2771 kg)



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