

**SG500 | 25.8L | 500 kW**  
**INDUSTRIAL SPARK-IGNITED GENERATOR SET**  
EPA Certified Stationary Emergency and Non-Emergency

**GENERAC®** | **INDUSTRIAL POWER**

**DEMAND RESPONSE READY**

**Standby Power Rating**

500 kW, 625 kVA, 60 Hz

**Demand Response Rating**

500 kW, 625 kVA, 60 Hz

**Prime Power Rating**

450 kW, 563 kVA, 60 Hz



\*Assembled in the USA using domestic and foreign parts



\*\*Offered on units sold in the U.S. and Canada.



Image used for illustration purposes only

## Codes and Standards

**Not all codes and standards apply to all configurations. Contact factory for details.**



UL2200, UL6200, UL1236, UL489



CSA C22.2, B149



BS5514 and DIN 6271



SAE J1349



NFPA 37, 70, 99, 110



NEC700, 701, 702, 708



NEMA ICS10, MG1, 250, ICS6, AB1



ANSI C62.41



IBC 2009, CBC 2010, IBC 2012,  
ASCE 7-05, ASCE 7-10, ICC-ES  
AC-156 (2012)

## Powering Ahead

Generac provides superior quality by designing and manufacturing most of its generator components, such as alternators, enclosures, control systems and communications software. Generac also makes its own spark-ignited engines, and they can be found on every Generac gaseous-fueled generator. We engineer and manufacture them from the block up — all at our facilities throughout Wisconsin. Applying natural gas and LP-fueled engines to generators requires advanced engineering expertise for reliability, durability and necessary performance. By designing specifically for these dry, hotter-burning fuels, the engines last longer and require less maintenance. Building our own engines also means we control every step of the supply chain and delivery process, so you benefit from single-source responsibility.

Plus, Generac Industrial Power's distribution network provides all parts and service so owners don't have to deal with third-party suppliers. It all leads to a positive owner experience and higher confidence level. Generac spark-ignited engines give more options in commercial and industrial generator applications as well as extended run time from utility-supplied natural gas.

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## INDUSTRIAL SPARK-IGNITED GENERATOR SET

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### STANDARD FEATURES

### DEMAND RESPONSE READY

#### ENGINE SYSTEM

- Oil Drain Extension
- Heavy Duty Air Cleaner
- Stainless Steel Flexible Exhaust Connection
- Factory Filled Oil and Coolant
- Radiator Duct Adapter (Open Set Only)
- Shipped Loose Catalyst Silencer (Open Set Only)
- Oil Temperature Indication and Alarm

#### FUEL SYSTEM

- NPT Fuel Connection on Frame
- Primary and Secondary Fuel Shutoff

#### COOLING SYSTEM

- Closed Coolant Recovery System
- UV/Ozone Resistant Hoses
- Factory-Installed Radiator
- 50/50 Ethylene Glycol Antifreeze
- Radiator Drain Extension

#### ELECTRICAL SYSTEM

- Battery Charging Alternator
- Battery Cables
- Battery Tray
- Rubber-Booted Engine Electrical Connections
- Solenoid Activated Starter Motor

#### ENCLOSURE (If Selected)

- Rust-Proof Fasteners with Nylon Washers to Protect Finish
- High Performance Sound-Absorbing Material (Sound Attenuated Enclosures)
- Gasketed Doors
- Upward Facing Discharge Hood (Radiator and Exhaust)
- Stainless Steel Lift Off Door Hinges
- Stainless Steel Lockable Handles
- RhinoCoat™ - Textured Polyester Powder Coat Paint

#### GENERATOR SET

- Internal Genset Vibration Isolation
- Separation of Circuits - High/Low Voltage
- Separation of Circuits - Multiple Breakers
- Wrapped Exhaust Piping
- Standard Factory Testing
- 2 Year Limited Warranty (Standby and Demand Response Rated Units)
- 1 Year Limited Warranty (Prime Rated Units)
- Silencer Mounted in the Discharge Hood (Enclosed Units Only)

#### ALTERNATOR SYSTEM

- UL2200 GENprotect™
- Class H Insulation Material
- 2/3 Pitch
- Skewed Stator
- Permanent Magnet Excitation
- Sealed Bearing
- Amortisseur Winding
- Full Load Capacity Alternator

### CONTROL SYSTEM



#### Power Zone® Pro Sync Controller

##### Program Functions

- NFPA 110 Level 1 Compliant
- Engine Protective Functions
- Alternator Protective Functions
- Digital Engine Governor Control
- Digital Voltage Regulator
- Multiple Programmable Inputs and Outputs
- Remote Display Capability
- Remote Communication via Modbus® RTU, Modbus TCP/IP, and Ethernet 10/100
- Alarm and Event Logging with Real Time Stamping
- Expandable Analog and Digital Inputs and Outputs

- Remote Wireless Software Update Capable
- BMS and Remote Telemetry
- Built-In Programmable Logic Eliminates the Need for External Controllers Under Most Conditions
- Ethernet Based Communications Between Generators
- Programmable I/O Channel Properties
- Built-In Diagnostics
- Arc Flash Maintenance Mode (When Correctly Equipped)

##### Alarms and Warnings

- Low Oil Pressure
- Low Coolant Level
- High/Low Coolant Temperature
- Sensor Failure
- Oil Temperature
- Over/Under Speed
- Over/Under Voltage
- Over/Under Frequency
- Over/Under Current
- Over Load
- High/Low Battery Voltage
- Battery Charger Current
- Phase to Phase and Phase to Neutral Short Circuits (I<sup>2</sup>T Algorithm)

#### 7 Inch Color Touch Screen Display

- Resistive Color Touch Screen
- Sunlight Readable (1400 NITS)
- Easily Identifiable Icons
- Multi-Lingual
- On Screen Editable Parameters
- Key Function Monitoring
- Three Phase Voltage, Amperage, kW, kVA, and kVAR
- Selectable Line to Line or Line to Neutral Measurements
- Frequency
- Engine Speed
- Engine Coolant Temperature
- Engine Oil Pressure
- Engine Oil Temperature
- Battery Voltage
- Hourmeter
- Warning and Alarm Indication
- Diagnostics
- Maintenance Events/Information

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### CONFIGURABLE OPTIONS

### DEMAND RESPONSE READY

#### ENGINE SYSTEM

- Baseframe Cover/Rodent Guard
- Oil Heater
- Air Filter Restriction Indicator
- Radiator Stone Guard (Open Set Only)
- Level 1 Fan and Belt Guards (Enclosed Units Only)
- Engine Coolant Heater
- Shipped Loose Catalyst Silencer (Open Set Only)

#### FUEL SYSTEM

- NPT Flexible Fuel Line

#### ELECTRICAL SYSTEM

- 10A UL Listed Battery Charger
- Battery Warmer

#### ALTERNATOR SYSTEM

- Alternator Upsizing
- Anti-Condensation Heater

#### CIRCUIT BREAKER OPTIONS

- Main Line Circuit Breaker
- 2<sup>nd</sup> Main Line Circuit Breaker
- 3<sup>rd</sup> Main Line Circuit Breaker
- Shunt Trip and Auxiliary Contact
- Electronic Trip Breakers

#### GENERATOR SET

- Demand Response Rating
- Extended Factory Testing (3-Phase Only)
- 12 Position Load Center

#### ENCLOSURE

- Weather Protected Enclosure
- Level 1 Sound Attenuated
- Level 2 Sound Attenuated
- Level 2 Sound Attenuated with Motorized Dampers
- Level 3 Sound Attenuated (Steel Only)
- Steel Enclosure
- Aluminum Enclosure
- Damper Alarm (with Motorized Dampers Only)
- Up to 200 MPH Wind Load Rating (Contact Factory for Availability)
- AC/DC Enclosure Lighting Kit
- Enclosure Heaters
- Door Open Alarm Switch

#### CONTROL SYSTEM

- NFPA 110 Compliant 21-Light Remote Annunciator
- Remote Relay Assembly (8 or 16)
- Remote E-Stop (Break Glass-Type, Surface Mount)
- Remote E-Stop (Red Mushroom-Type, Surface Mount)
- Remote E-Stop (Red Mushroom-Type, Flush Mount)
- 10A Engine Run Relay
- Ground Fault Annunciator
- 100 dB Alarm
- 120V GFCI and 240V Outlets

#### WARRANTY (Standby Gensets Only)

- 2 Year Extended Limited Warranty
- 5 Year Extended Limited Warranty
- 7 Year Extended Limited Warranty
- 10 Year Extended Limited Warranty

### ENGINEERED OPTIONS

#### ENGINE SYSTEM

- Coolant Heater Ball Valves
- Fluid Containment Pans

#### CONTROL SYSTEM

- Battery Disconnect Switch

#### GENERATOR SET

- Special Testing
- Battery Box

#### CIRCUIT BREAKER OPTIONS

- 4<sup>th</sup> Main Line Circuit Breaker

APPLICATION AND ENGINEERING DATA

DEMAND RESPONSE READY

ENGINE SPECIFICATIONS

General

Make	Generac
Cylinder #	12
Type	V12
Displacement - in³ (L)	1,574.4 (25.8)
Bore: in (mm)	5.19 (132)
Stroke: in (mm)	6.30 (160)
Compression Ratio	10.0:1
Intake Air Method	Turbocharged/Aftercooled
Number of Main Bearings	7
Connecting Rods	Steel Alloy
Cylinder Head	Cast Iron
Cylinder Liners	Cast Steel Alloy
Ignition	Electronic
Piston Type	Cast Aluminum Alloy
Crankshaft Type	Forged Steel Alloy
Lifter Type	Solid
Intake Valve Material	High Temp Steel Alloy
Exhaust Valve Material	High Temp Steel Alloy
Hardened Valve Seats	High Temp Steel Alloy

Engine Governing

Governor	Electronic
Frequency Regulation (Steady State)	±0.25%

Lubrication System

Oil Pump Type	Gear
Oil Filter Type	Full-Flow Cartridge
Engine Oil Capacity with Filter: qt (L)	95 (90)

Cooling System

Cooling System Type	Pressurized Closed Recovery
Fan Type	Pusher
Fan Speed (RPM)	1,640
Fan Diameter - in (mm)	44 (1,118)

Fuel System

Fuel type	Natural Gas
Carburetor	Down Draft
Secondary Fuel Regulator	Standard
Fuel Shutoff Solenoid	Standard
Operating Fuel Pressure - in H <sub>2</sub> O (kPa)	11 - 14 (2.7 - 3.5)
Optional Operating Fuel Pressure - in H <sub>2</sub> O (kPa)	7 - 11 (1.7 - 2.7)

\*When designing the external fuel system, assume a 20% safety factor to the upper and lower limit of the specified fuel pressure range to account for site variation and measurement at the generator test port. Refer to Generac document 10000046207, latest rev. for proper gas supply design guidelines. (Contact Factory for Details)

Engine Electrical System

System Voltage	24 VDC
Battery Charger Alternator	60 A
Battery Size	See battery index 0161970SBY
Battery Voltage	(2) – 12 VDC
Ground Polarity	Negative

ALTERNATOR SPECIFICATIONS

Standard Model	K0500124Y23
Poles	4
Field Type	Revolving
Insulation Class - Rotor	H
Insulation Class - Stator	H
Total Harmonic Distortion	<5%
Telephone Interference Factor (TIF)	<52

Standard Excitation	Permanent Magnet
Bearings	Sealed Ball
Coupling	Direct via Flexible Disc
Prototype Short Circuit Test	Yes
Voltage Regulator Type	Full digital
Number of Sensed Phases	All
Regulation Accuracy (Steady State)	±0.25%

**OPERATING DATA**

**DEMAND RESPONSE READY**

**POWER RATINGS**

	Standby/Demand Response			Prime	
Three-Phase 120/208 VAC @0.8pf	500 kW/625 kVA	Amps: 1,737	450 kW/563 kVA	Amps: 1,563	
Three-Phase 120/240 VAC @0.8pf	500 kW/625 kVA	Amps: 1,505	450 kW/563 kVA	Amps: 1,355	
Three-Phase 277/480 VAC @0.8pf	500 kW/625 kVA	Amps: 753	450 kW/563 kVA	Amps: 677	
Three-Phase 346/600 VAC @0.8pf	500 kW/625 kVA	Amps: 602	450 kW/563 kVA	Amps: 542	

**MOTOR STARTING CAPABILITIES (skVA)**

skVA vs. Voltage Dip			
277/480 VAC	30%	208/240 VAC	30%
K0500124Y23	1,020	K0600124Y23	1,120
K0600124Y23	1,560	G0546124N23	1,760
K0832124Y23	2,800	K0792124Y23	2,130
		K0832124Y23	2,090

**FUEL CONSUMPTION RATES\***

Natural Gas – scfh (m³/hr)		
Percent Load	Standby/Demand Response	Prime
25%	2,550 (72)	2,431 (69)
50%	3,624 (103)	3,409 (97)
75%	4,770 (135)	4,426 (125)
100%	5,862 (166)	5,425 (154)

\*1.5X maximum site rated fuel consumption should be used for gas supply design practices.  
 Refer to Generac 10000046207, latest rev., for more information or contact factory for details.

**COOLING**

		Standby/Demand Response	Prime
Air Flow (Fan Air Flow Across Radiator)	cfm (m³/min)	31,400 (889)	31,400 (889)
Coolant Flow	gpm (Lpm)	225 (852)	225 (852)
Coolant System Capacity	gal (L)	25 (93)	25 (93)
Maximum Operating Ambient Temperature	°F (°C)	122 (50)	122 (50)
Maximum Operating Ambient Temperature (Before Derate)		See Bulletin No. 0199270SSD	See Bulletin No. 0199270SSD
Maximum Additional Radiator Backpressure	in H <sub>2</sub> O (kPa)	0.5 (0.12)	0.5 (0.12)

**COMBUSTION AIR REQUIREMENTS**

	Standby/Demand Response	Prime
Flow at rated power cfm - (m³/min)	935 (26.5)	865 (24.5)

**ENGINE**

		Standby/Demand Response	Prime
Rated Engine Speed	RPM	1,800	1,800
Horsepower at Rated kW**	hp	729	656
Piston Speed	ft/min (m/min)	1,890 (576)	1,890 (576)
BMEP	psi (kPa)	204 (1,404)	183 (1,263)

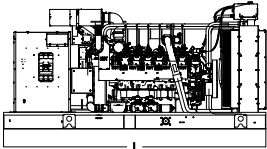
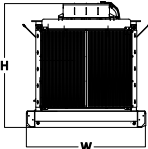
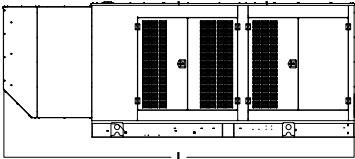
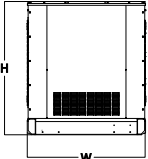
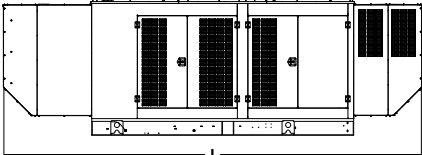
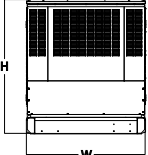
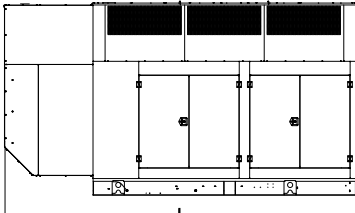
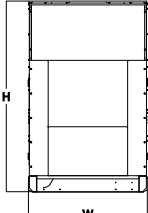
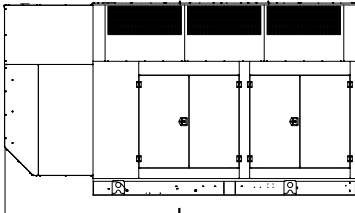
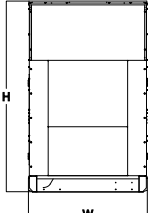
\*\* See "Emissions Data Sheet" for maximum bHP for EPA and SCAQMD permitting purposes.

**EXHAUST**

		Standby/Demand Response	Prime
Exhaust Flow (Rated Output)	cfm (m³/min)	3,186 (90.2)	2,907 (82.3)
Maximum Allowable Backpressure (Post Silencer)	inHg (kPa)	0.75 (2.54)	0.75 (2.54)
Exhaust Temp (Rated Output - Post Silencer)	°F (°C)	1,380 (749)	1,355 (735)

DIMENSIONS AND WEIGHTS\*

DEMAND RESPONSE READY

		<b>OPEN SET (Includes Exhaust Flex)</b> L x W x H - in (mm) 154.4 (3,922) x 70.5 (1,791) x 74.9 (1,902) Weight - lbs (kg) 9,386 - 9,739 (4,257 - 4,417)
		<b>WEATHER PROTECTED ENCLOSURE</b> L x W x H - in (mm) 207.4 (5,268) x 70.9 (1,801) x 80.0 (2,032) Weight - lbs (kg) Steel: 11,576 - 11,929 (5,250 - 5,410) Aluminum: 10,489 - 10,841 (4,757 - 4,917)
		<b>LEVEL 1 SOUND ATTENUATED ENCLOSURE</b> L x W x H - in (mm) 247.5 (6,287) x 71.0 (1,803) x 80.0 (2,032) Weight - lbs (kg) Steel: 12,583 - 12,936 (5,707 - 5,867) Aluminum: 10,921 - 11,274 (4,953 - 5,113)
		<b>LEVEL 2 SOUND ATTENUATED ENCLOSURE</b> L x W x H - in (mm) 207.4 (5,268) x 70.9 (1,801) x 114.1 (2,898) Weight - lbs (kg) Steel: 12,921 - 13,658 (5,860 - 6,194) Aluminum: 11,066 - 11,565 (5,019 - 5,245)
		<b>LEVEL 3 SOUND ATTENUATED ENCLOSURE</b> L x W x H - in (mm) 232.0 (5,893) x 76.9 (1,953) x 129.2 (3,282) Weight - lbs (kg) 15,950 - 16,303 (7,234 - 7,394)

\* All measurements are approximate and for estimation purposes only.

YOUR FACTORY RECOGNIZED GENERAC INDUSTRIAL DEALER

Specification characteristics may change without notice. Dimensions and weights are for preliminary purposes only. Please consult a Generac Power Systems Industrial Dealer for detailed installation drawings