

SG450 | 21.9 L | 450 kW
INDUSTRIAL SPARK-IGNITED GENERATOR SET
EPA Certified Stationary Emergency and Non-Emergency

GENERAC® | **INDUSTRIAL
POWER**

DEMAND RESPONSE READY

Standby Power Rating

450 kW, 562 kVA, 60 Hz

Demand Response Rating

450 kW, 562 kVA, 60 Hz

Prime Power Rating

405 kW, 506 kVA, 60 Hz



*Assembled in the USA using domestic and foreign parts



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 ensures 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 you'll find them 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 to ensure 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 you 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 you more options in commercial and industrial generator applications as well as extended run time from utility-supplied natural gas.

STANDARD FEATURES

DEMAND RESPONSE READY

ENGINE SYSTEM

- Oil Drain Extension
- Air Cleaner
- Stainless Steel Flexible Exhaust Connection
- Factory Filled Oil and Coolant
- Radiator Duct Adapter (Open Set Only)
- Critical Silencer

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

ALTERNATOR SYSTEM

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

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 Rated Units)
- 1 Year Limited Warranty (Prime Rated Units)
- Silencer Mounted in the Discharge Hood (Enclosed Units Only)

ENCLOSURE (If Selected)

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

CONTROL SYSTEM

- 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

Power Zone® Pro Sync Controller

- 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

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 (I²T 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

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) FUEL SYSTEM - NPT Flexible Fuel Line ELECTRICAL SYSTEM 10A UL Listed Battery Charger - Battery Warmer ALTERNATOR SYSTEM - Alternator Upsizing - Anti-Condensation Heater - Tropical Coating CIRCUIT BREAKER OPTIONS - Main Line Circuit Breaker 2nd 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 - Up to 200 MPH Wind Load Rating (Contact Factory for Availability) - AC/DC Enclosure Lighting Kit - Enclosure Heaters (Motorized Dampers Only) - Door Open Alarm Switch	CONTROL SYSTEM - NFPA 110 Level 1 Compliant 21-Light Remote Annunciator - Remote Relay Assembly (8 or 16) - Oil Temperature Indication and Alarm - Remote E-Stop Break Glass-Type, Surface Mount - Remote E-Stop Red Mushroom-Type, Surface Mount - Remote E-Stop Red Mushroom-Type, Flush Mount - Remote Connection - Modem 10A Engine Run Relay - Ground Fault Annunciator 100 dBA Alarm Horn 120V GFCI and 240V Outlets - Damper Alarm Contacts (with Motorized Dampers Only) WARRANTY (Standby Gensets Only) 2 Year Extended Limited Warranty 5 Year Limited Warranty 5 Year Extended Limited Warranty 7 Year Extended Limited Warranty 10 Year Extended Limited Warranty
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ENGINEERED OPTIONS

ENGINE SYSTEM - Fluid Containment Pan - Coolant Heater Ball Valves ALTERNATOR SYSTEM 3rd Breaker System CONTROL SYSTEM - Battery Disconnect Switch	GENERATOR SET - Special Testing - Battery Box
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APPLICATION AND ENGINEERING DATA

DEMAND RESPONSE READY

ENGINE SPECIFICATIONS

General

Make	Generac
Cylinder #	12
Type	V12
Displacement - in³ (L)	1,336.4 (21.9)
Bore - in (mm)	5.03 (128)
Stroke - in (mm)	5.60 (142)
Compression Ratio	10:0:1
Intake Air Method	Turbocharged/Intercooled
Number of Main Bearings	7
Connecting Rods	Steel Alloy
Cylinder Head	Cast Iron
Cylinder Liners	Cast Steel Alloy
Ignition	Electronic
Piston Type	Aluminum Alloy
Crankshaft Type	Steel
Lifter Type	Solid
Intake Valve Material	High Temp Steel Alloy
Exhaust Valve Material	High Temp Steel Alloy
Hardened Valve Seats	Proprietary Alloy

Engine Governing

Governor	Electronic
Frequency Regulation (Steady State)	±0.25%

Lubrication System

Oil Pump Type	Gear
Oil Filter Type	Full-Flow Spin-On Cartridge
Crankcase Capacity - qt (L)	31.7 (30)

Cooling System

Cooling System Type	Pressurized Closed Recovery
Fan Type	Pusher
Fan Speed - RPM	1,404
Fan Diameter - in (mm)	44 (1,118)

Fuel System

Fuel Type	Natural Gas
Carburetor	Down Draft
Secondary Fuel Regulator	Standard
Fuel Shut Off Solenoid	Standard
Operating Fuel Pressure - in H2O (kPa)	11 - 14 (2.7 - 3.5)
Optional Operating Fuel Pressure - in H2O (kPa)	7 - 11 (1.7 - 2.7)

Engine Electrical System

System Voltage	24 VDC
Battery Charger Alternator	57 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% (Three-Phase)
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%

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POWER

OPERATING DATA

DEMAND RESPONSE READY

POWER RATINGS

	Standby/Demand Response		Prime	
Three-Phase 120/208 VAC @0.8pf	450 kW/563 kVA	Amps: 1,563	405 kW/506kVA	Amps: 1,407
Three-Phase 120/240 VAC @0.8pf	450 kW/563 kVA	Amps: 1,355	405 kW/506kVA	Amps: 1,219
Three-Phase 277/480 VAC @0.8pf	450 kW/563 kVA	Amps: 677	405 kW/506kVA	Amps: 610
Three-Phase 346/600 VAC @0.8pf	450 kW/563 kVA	Amps: 542	405 kW/506kVA	Amps: 488

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		

FUEL CONSUMPTION RATES*

Percent Load	Natural Gas – scfh (m³/hr)	
	Standby/Demand Response	Prime
25%	1,800 (51.0)	1,740 (49.3)
50%	2,880 (81.6)	2,640 (74.8)
75%	3,960 (112.1)	3,600 (101.9)
100%	5,040 (142.7)	4,620 (130.8)

*Fuel supply installation must accommodate fuel consumption rates at 100% load.

COOLING

	Standby/Demand Response	Prime
Air Flow (Fan Air Flow Across Radiator)	scfm (m³/min)	28,004 (793)
Coolant Flow	gpm (Lpm)	211 (799)
Coolant System Capacity	gal (L)	15.5 (58.7)
Maximum Operating Ambient Temperature	°F (°C)	122 (50)
Maximum Operating Ambient Temperature (Before Derate)	See Bulletin No. 0199270SSD	
Maximum Additional Radiator Backpressure	in H ₂ O (kPa)	0.5 (0.12)

COMBUSTION AIR REQUIREMENTS

	Standby/Demand Response	Prime
Flow at Rated Power scfm — (m³/min)	801 (22.7)	733 (20.8)

ENGINE

	Standby	Prime
Rated Engine Speed	rpm	1,800
Horsepower at Rated kW**	hp	656
Piston Speed	ft/min (m/min)	1,680 (512)
BMEP	psi (kPa)	216 (1,489)
** See "Emissions Data Sheet" for maximum bHP for EPA and SCAQMD permitting purposes.		

EXHAUST

	Standby	Prime
Exhaust Flow (Rated Output)	scfm (m³/min)	2,685 (76.0)
Max. Back Pressure - (Post Silencer)	inHg (kPa)	0.75 (2.54)
Exhaust Temp (Rated Output - Post Silencer)	°F (°C)	1,350 (732)

Deration – Operational characteristics consider maximum ambient conditions. Derate factors may apply under atypical site conditions.

Please contact a Generac Power Systems Industrial Dealer for additional details. All performance ratings in accordance with ISO3046, BS5514, ISO8528, and DIN6271 standards.

Standby - See Bulletin 0187500SSB

Demand Response - See Bulletin 10000018250

Prime - See Bulletin 0187510SSB

DIMENSIONS AND WEIGHTS*

DEMAND RESPONSE READY

OPEN SET (Includes Exhaust Flex)

L x W x H - in (mm)	154.4 (3,922) x 71.0 (1,803) x 66.5 (1,689)
Weight - lbs (kg)	8,257 - 8,650 (3,745 - 3,923)

WEATHER PROTECTED ENCLOSURE

L x W x H - in (mm)	207.4 (5,268) x 71.0 (1,803) x 80.0 (2,032)
Weight - lbs (kg)	Steel: 10,055 - 10,840 (4,560 - 4,916) Aluminum: 9,357 - 9,753 (4,244 - 4,423)

LEVEL 1 SOUND ATTENUATED ENCLOSURE

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: 11,847 (5,059 - 5,373) Aluminum: 10,185 (4,439 - 4,619)

LEVEL 2 SOUND ATTENUATED ENCLOSURE

L x W x H - in (mm)	207.4 (5,268) x 71.0 (1,803) x 114.1 (2,898)
Weight - lbs (kg)	Steel: 11,783 - 12,185 (5,344 - 5,526) Aluminum: 9,933 - 10,330 (4,505 - 4,685)

LEVEL 3 SOUND ATTENUATED ENCLOSURE

L x W x H - in (mm)	232.0 (5,893) x 76.9 (1,953) x 129.2 (3,282)
Weight - lbs (kg)	13,910 - 14,285 (6,308 - 6,478)

*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.