

## SG400

# 21.9L

## Industrial Spark-Ignited Generator Set

EPA Certified Stationary Emergency

Standby Power Rating  
**400 kW 500 kVA 60 Hz**

Prime Power Rating\*  
**360 kW 450 kVA 60 Hz**

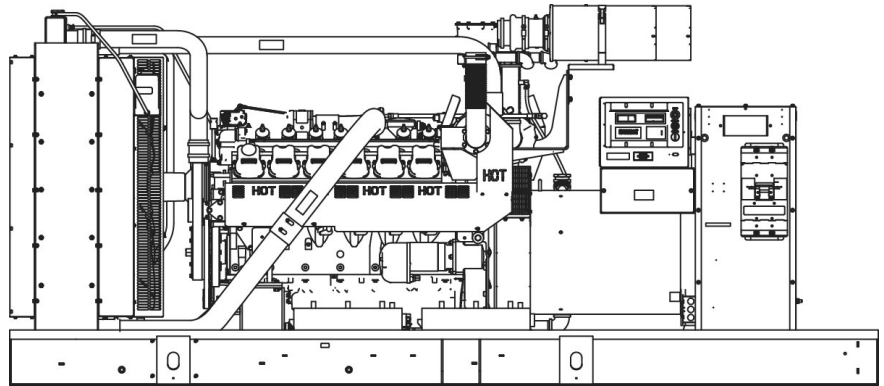


Image used for illustration purposes only

\*EPA Certified Prime ratings are not available in the U.S. or its Territories

## Codes and Standards

Generac products are designed to the following standards:



UL2200, UL508, UL142, UL498



NFPA70, 99, 110, 37



NEC700, 701, 702, 708



ISO9001, 8528, 3046, 7637, Pluses #2b, 4



NEMA ICS10, MG1, 250, ICS6, AB1



ANSI C62.41

American National Standards Institute



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

## Powering Ahead

For over 50 years, Generac has led the industry with innovative design and superior manufacturing.

Generac ensures superior quality by designing and manufacturing most of its generator components, including alternators, enclosures and base tanks, control systems and communications software.

Generac's gensets utilize a wide variety of options, configurations and arrangements, allowing us to meet the standby power needs of practically every application.

Generac searched globally to ensure the most reliable engines power our generators. We choose only engines that have already been proven in heavy-duty industrial application under adverse conditions.

Generac is committed to ensuring our customers' service support continues after their generator purchase.

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## Standard Features

### ENGINE SYSTEM

#### General

- Oil Drain Extension
- Air Cleaner
- Fan Guard
- Stainless Steel flexible exhaust connection
- Critical Exhaust Silencer
- Factory Filled Oil
- Radiator duct adapter (open set only)

#### Fuel System

- Primary and Secondary Fuel Shutoff

#### Cooling System

- Closed Coolant Recovery System
- UV/Ozone resistant hoses
- Factory-installed Radiator
- Radiator drain extension
- 50/50 Ethylene glycol antifreeze

#### Engine Electrical System

- Battery charging alternator
- Battery Cables
- Battery Tray
- Solenoid activated starter motor
- Rubber-booted engine electrical connections

### ALTERNATOR SYSTEM

- UL2200 GENprotect™
- Class H insulation material
- 2/3 Pitch
- Skewed Stator
- Permanent Magnet Excitation
- Sealed Bearings
- 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 Warranty (Prime rated units)
- Silencer mounted in the discharge hood (enclosed only)

### ENCLOSURE (if selected)

- Rust-proof fasteners with nylon washers to protect finish
- High performance sound-absorbing material
- Gasketed doors
- Stamped air-intake louvers
- Air discharge hoods for radiator-upward pointing
- Stainless steel lift off door hinges
- Stainless steel lockable handles
- Rhino Coat™ - Textured polyester powder coat

## CONTROL SYSTEM



#### Control Panel

- Digital H Control Panel - Dual 4x20 Display
- Programmable Crank Limiter
- 7-Day Programmable Exerciser
- Special Applications Programmable PLC
- RS-232/485
- All-Phase Sensing DVR
- Full System Status
- Utility Monitoring
- Low Fuel Pressure Indication
- 2-Wire Start Compatible
- Power Output (kW)
- Power Factor
- kW Hours, Total & Last Run

- Real/Reactive/Apparent Power
- All Phase AC Voltage
- All Phase Currents
- Oil Pressure
- Coolant Temperature
- Coolant Level
- Engine Speed
- Battery Voltage
- Frequency
- Date/Time Fault History (Event Log)
- Isochronous Governor Control
- Waterproof/sealed Connectors
- Audible Alarms and Shutdowns
- Not in Auto (Flashing Light)
- Auto/Off/Manual Switch
- E-Stop (Red Mushroom-Type)
- NFPA110 Level I and II (Programmable)
- Customizable Alarms, Warnings, and Events
- Modbus protocol
- Predictive Maintenance algorithm
- Sealed Boards
- Password parameter adjustment protection

- Single point ground
- 15 channel data logging
- 0.2 msec high speed data logging
- Alarm information automatically comes up on the display

#### Alarms

- Oil Pressure (Pre-programmable Low Pressure Shutdown)
- Coolant Temperature (Pre-programmed High Temp Shutdown)
- Coolant Level (Pre-programmed Low Level Shutdown)
- Low Fuel Pressure Alarm
- Engine Speed (Pre-programmed Over speed Shutdown)
- Battery Voltage Warning
- Alarms & warnings time and date stamped
- Alarms & warnings for transient and steady state conditions
- Snap shots of key operation parameters during alarms & warnings
- Alarms and warnings spelled out (no alarm codes)

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## Configurable Options

### ENGINE SYSTEM

- General
- Engine Block Heater with ball valves
- Flexible Fuel Line - NPT Connection
- Oil Heater
- Air Filter Restriction Indicator
- Stone Guard (Open Set Only)

#### Engine Electrical System

- 10A UL battery charger
- Battery Warmer

### GENERATOR SET

- Gen-Link Communications Software (English Only)
- Extended Factory Testing (3 Phase Only)
- 8 Position Load Center
- 2 Year Extended Warranty
- 5 Year Warranty
- 5 Year Extended Warranty

### ENCLOSURE

- Standard Enclosure
- Level 1 Sound Attenuation
- Level 2 Sound Attenuation
- Steel Enclosure
- Aluminum Enclosure
- 180 MPH Wind Kit
- 12 VDC Enclosure Lighting Kit
- 120 VAC Enclosure Lighting Kit
- AC/DC Enclosure Lighting Kit

### ALTERNATOR SYSTEM

- Alternator Upsizing
- Anti-Condensation Heater
- Tropical coating (480/600 V non-upsized only)

### CIRCUIT BREAKER OPTIONS

- Main Line Circuit Breaker
- 2nd Main Line Circuit Breaker
- Shunt Trip and Auxiliary Contact
- Electronic Trip Breakers

### CONTROL SYSTEM

- |  |  |  |
|--|--|--|
| <ul style="list-style-type: none"> <li><input type="checkbox"/> 21-Light Remote Annunciator</li> <li><input type="checkbox"/> Remote Relay Panel (8 or 16)</li> <li><input type="checkbox"/> Oil Temperature Sender with Indication Alarm</li> </ul> | <ul style="list-style-type: none"> <li><input type="checkbox"/> Remote E-Stop (Break Glass-Type, Surface Mount)</li> <li><input type="checkbox"/> Remote E-Stop (Red Mushroom-Type, Surface Mount)</li> <li><input type="checkbox"/> Remote E-Stop (Red Mushroom-Type, Flush Mount)</li> </ul> | <ul style="list-style-type: none"> <li><input type="checkbox"/> Remote Communication - Modem</li> <li><input type="checkbox"/> Remote Communication - Ethernet</li> <li><input type="checkbox"/> 10A Run Relay</li> <li><input type="checkbox"/> Ground fault indication and protection functions</li> </ul> |
|--|--|--|

## Engineered Options

### ENGINE SYSTEM

- Coolant heater ball valves
- Fluid containment pans

### GENERATOR SET

- Special Testing
- Battery Box

### CONTROL SYSTEM

- Spare inputs (x4) / outputs (x4) - H Panel Only
- Battery Disconnect Switch

### ALTERNATOR SYSTEM

- 3rd Breaker Systems

### ENCLOSURE

- Motorized Dampers
- Enclosure Ambient Heaters
- Door Alarm Switch

## Rating Definitions

**Standby** – Applicable for a varying emergency load for the duration of a utility power outage with no overload capability.

**Prime** – Applicable for supplying power to a varying load in lieu of utility for an unlimited amount of running time. A 10% overload capacity is available for 1 out of every 12 hours. The Prime Power option is only available on International applications.

Power ratings in accordance with ISO 8528-1, Second Edition dated 2005-06-01, definitions for Prime Power (PRP) and Emergency Standby Power (ESP).

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## application and engineering data

### ENGINE SPECIFICATIONS

#### General

Make	Generac
Cylinder #	12
Type	V12
Displacement - L (Cu In)	21.9 (1336.42)
Bore - mm (in)	128 (5.03)
Stroke - mm (in)	142 (5.6)
Compression Ratio	10:1
Intake Air Method	Turbocharged/Aftercooled
Number of Main Bearings	7
Connecting Rods	Alloy Steel
Cylinder Head	Cast Iron - OHV
Cylinder Liners	Cast Alloy Steel
Ignition	Altronic CD200D
Pistons	Aluminum Alloy
Crankshaft	Forged Alloy Steel
Lifter Type	Solid
Intake Valve Material	High Temp Alloy Steel
Exhaust Valve Material	High Temp Alloy Steel
Hardened Valve Seats	High Temp Alloy Steel

#### Engine Governing

Governor	Electronic
Frequency Regulation (Steady State)	(+/-) 0.25%

#### Lubrication System

Oil Pump Type	Gear
Oil Filter Type	Twin Full flow with intercooler
Crankcase Capacity - L (qts)	30 (31.7)

#### Cooling System

Cooling System Type	Pressurized Closed Recovery
Water Pump Flow - gpm (lpm)	211 (800)
Fan Type	Pusher
Fan Speed (rpm)	1404
Fan Diameter mm (in)	44
Coolant Heater Wattage	2500
Coolant Heater Standard Voltage	240 V

#### Fuel System

Fuel Type	Natural Gas
Carburetor	Down Draft
Secondary Fuel Regulator	Standard
Fuel Shut Off Solenoid	Standard (Dual)
Operating Fuel Pressure	11" - 15" H <sub>2</sub> O

#### Engine Electrical System

System Voltage	24 VDC
Battery Charging Alternator	Std
Battery Size	See Battery Index 0161970SBY
Battery Voltage	(2) 12 VDC
Ground Polarity	Negative

### ALTERNATOR SPECIFICATIONS

Standard Model	520
Poles	4
Field Type	Revolving
Insulation Class - Rotor	H
Insulation Class - Stator	H
Total Harmonic Distortion	<5%
Telephone Interference Factor (TIF)	<50
Standard Excitation	Permanent Magnet
Bearings	Sealed Ball
Coupling	Direct, Flexible Disc
Prototype Short Circuit Test	Yes

Voltage Regulator Type	Full Digital
Number of Sensed Phases	5
Regulation Accuracy (Steady State)	+/- 0.25%

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# operating data

## POWER RATINGS

	Natural Gas	
Three-Phase 120/208 VAC @0.8pf	400 kW	Amps: 1389
Three-Phase 120/240 VAC @0.8pf	400 kW	Amps: 1204
Three-Phase 277/480 VAC @0.8pf	400 kW	Amps: 602
Three-Phase 346/600 VAC @0.8pf	400 kW	Amps: 481

## STARTING CAPABILITIES (sKVA)

		sKVA vs. Voltage Dip											
		480 VAC						208/240 VAC					
Alternator	kW	10%	15%	20%	25%	30%	35%	10%	15%	20%	25%	30%	35%
Standard	400	387	581	775	968	1162	1356	345	570	835	1100	1450	1710
Upsize 1	555	457	686	914	1143	1371	1600	-	-	-	-	-	-
Upsize 2	642	471	707	943	1179	1414	1650	543	814	1086	1357	1629	1900

## FUEL CONSUMPTION RATES\*

Natural Gas – ft <sup>3</sup> /hr (m <sup>3</sup> /hr)	
Percent Load	Standby
25%	1856 (52.6)
50%	2845 (80.5)
75%	3833 (108.5)
100%	4823 (136.6)

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

## COOLING

		Standby
Cooling Fan Air Flow (Open Set)	ft <sup>3</sup> /min (m <sup>3</sup> /min)	25,100 (711)
Coolant Flow per Minute	gpm (lpm)	211 (800)
Coolant System Capacity	gal (L)	23 (87)
Heat Rejection to Coolant	BTU/hr	1,102,122
Max. Operating Air Temp on Radiator	°F (°C)	122 (50.0)
Maximum Additional Radiator Backpressure	in H <sub>2</sub> O	0.5

## COMBUSTION AIR REQUIREMENTS

	Standby
Flow at Rated Power	cfm (m <sup>3</sup> /min)
	750 ( 21)

## ENGINE

		Standby
Rated Engine Speed	rpm	1800
Engine Horsepower**	hp	620
Piston Speed	ft/min (m/min)	-
BMEP	psi	123

## EXHAUST

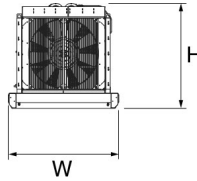
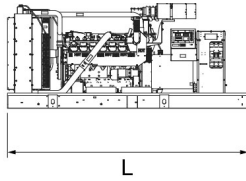
		Standby
Exhaust Flow (Rated Output)	cfm (m <sup>3</sup> /min)	2720 ( 77)
Maximum Recommended Back Pressure (Post Turbo)	inHg	1.5
Exhaust Temp (Rated Output - post silencer)	°F (°C)	1350 (732)
Exhaust Outlet Size (Open Set)	in	3.5" O.D. Flex (No Muffler)

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

Deration – Operational characteristics consider maximum ambient conditions. Derate factors may apply under atypical site conditions. Please consult a Generac Power Systems Industrial Dealer for additional details. All performance ratings in accordance with ISO3046, BS5514, ISO8528 and DIN6271 standards.

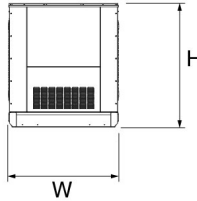
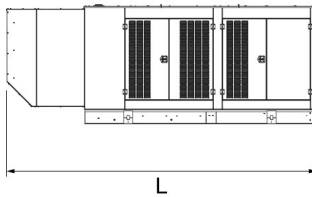
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## dimensions, weights, and sound levels



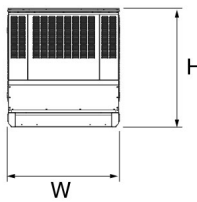
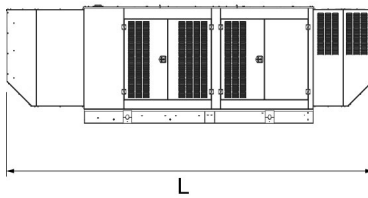
### OPEN SET (Includes Exhaust Flex)

L x W x H in (mm)	154.4 (3923) x 71 (1803) x 67 (1702)
Weight lbs (kg)	8429 (3823)
Sound Level (dBA*)	93



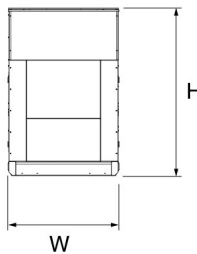
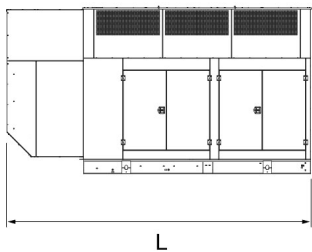
### STANDARD ENCLOSURE

L x W x H in (mm)	207.4 (5268) x 71 (1803) x 80 (2032)
Weight lbs (kg)	Steel: 10428 (4730) Aluminum: 9298 (4217)
Sound Level (dBA*)	92



### LEVEL 1 ACOUSTIC ENCLOSURE

L x W x H in (mm)	247.5 (6285) x 71 (1803) x 80 (2032)
Weight lbs (kg)	Steel: 11211 (5085) Aluminum: 9720 (4409)
Sound Level (dBA*)	84



### LEVEL 2 ACOUSTIC ENCLOSURE

L x W x H in (mm)	207.4 (5268) x 71 (1803) x 114 (2899)
Weight lbs (kg)	Steel: 11759 (5333) Aluminum: 9951 (4513)
Sound Level (dBA*)	75

\*All measurements are approximate and for estimation purposes only. Sound levels measured at 23 ft (7 m) and does not account for ambient site conditions.

<b>YOUR FACTORY RECOGNIZED GENERAC INDUSTRIAL DEALER</b>

Specification characteristics may change without notice. Please consult a Generac Power Systems Industrial Dealer for detailed installation drawings.