GGW400G | 21.9L | 400kVA

INDUSTRIAL SPARK-IGNITED GENERATOR SET

Pramac | Power Engineering Division

*Built in the USA using domestic and foreign parts

Image used for illustration purposes only

Power Ratings*		
GGW400	Standby	400kVA/320kW
	Prime	360kVA/288kW

ENERGY GENERATION

PRAMAC represents a solid industrial reality, covering all aspects of production from manufacturing to commercialization.

PRAMAC can trace its roots back to 1966; from then onwards it has been expanding its activity in the energy and material-handling sector, continuously growing globally with a wide and flexible product range.

In the field of power generation, PRAMAC offers solutions for every kind of power supply demand: portable and industrial generators either for stand by and prime power applications and solutions for outdoor needs, such as mobile and towable lighting.

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STANARD OPTIONS

ENGINE SYSTEM

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

Fuel System

- 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

- GENprotect™
- Class H Insulation Material
- 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 (Enclosed Only)
- Standard Factory Testing
- 1 Year Limited Warranty or 1000 hours
- 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 (Sound Attenuation Enclosures)
- Gasketed Doors
- Stamped Air-Intake Louvers
- Upward Facing Discharge Hoods (Radiator and Exhaust)
- Stainless Steel Lift Off Door Hinges
- Stainless Steel Lockable Handles
- Rhino Coat™ - Textured Polyester Powder Coat Paint

CONTROL SYSTEM

Digital H Control Panel- Dual 4x20 Display

Program Functions

- Programmable Crank Limiter
- 7-Day Programmable Exerciser
- Special Applications Programmable Logic Controller
- RS-232/485 Communications
- 3 Phase Sensing Digital Voltage Regulator
- 2-Wire Start Capability
- 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
- 16 Channel Remote Trending
- 0.2msec High Speed Remote Trending
- Alarm Information Automatically Annunciated on the Display

Full System Status Display

- 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

Alarms and Warnings

- Oil Pressure
- Coolant Temperature
- Coolant Level
- Low Fuel Pressure Alarm
- Engine Overspeed
- Battery Voltage
- Alarms & Warnings Time and Date Stamped
- 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

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

ELECTRICAL SYSTEM

- ○ 10A Battery Charger
- ○ Battery Warmer

ALTERNATOR SYSTEM

- ○ Alternator Upsizing
- ○ Anti-Condensation Heater
- ○ Tropical Coating (231/400V non-upsized only)

CIRCUIT BREAKER OPTIONS

- ○ Main Line Circuit Breaker
- ○ Shunt Trip and Auxiliary Contact
- ○ Electronic Trip Breaker

GENERATOR SET

- ○ GenLink Communications Software (English Only)
- ○ Extended Factory Testing (3 Phase Only)
- ○ 8 Position Load Center

ENCLOSURE

- ○ Weather Protected Enclosure
- ○ Level 1 Sound Attenuation
- ○ Level 2 Sound Attenuation
- ○ Steel Enclosure
- ○ Aluminum Enclosure
- ○ Up to 321 KMH Wind Load Rating*
- ○ AC/DC Enclosure Lighting Kit
- ○ Door Open Alarm Switch

CONTROL SYSTEM

- ○ 21-Light Remote Annunciator
- ○ Remote Relay Assembly (8 or 16)
- ○ Oil Temperature Indicator with 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 Communication - Modem
- ○ 10A Run Relay
- ○ Ground fault indication and protection functions

ENGINEERED OPTIONS

ENGINE SYSTEM

- ○ Fluid Containment Pan
- ○ Low Fuel Pressure System (7”-11” H_2O / 1.7-2.7 kPa)

ALTERNATOR SYSTEM

- ○ 3rd Breaker System

CONTROL SYSTEM

- ○ Spare Inputs (x4) / Outputs (x4)
- ○ Battery Disconnect Switch

GENERATOR SET

- ○ Special Testing
- ○ Battery Box

ENCLOSURE

- ○ Motorized Dampers

RATING DEFINITIONS

Standby - Consult PRAMAC

*Consult factory for availability

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APPLICATION AND ENGINEERING DATA

ENGINE SPECIFICATIONS

General

Make	PRAMAC
Cylinder #	12
Type	V
Displacement - L (Cu In)	21.9 (1336.42)
Bore - mm (in)	128 (5.03)
Stroke - mm (in)	142 (5.6)
Compression Ratio	12.5:1
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
Piston Type	Aluminum Alloy
Crankshaft Type	Forged Alloy Steel
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	Twin Full Flow with Intercooler
Crankcase Capacity - L (qts)	30 (31.7)

Cooling System

Cooling System Type	Pressurized Closed Recovery
Water Pump Flow - gal/min (l/min)	169 (640)
Fan Type	Pusher
Fan Speed (rpm)	1123
Fan Diameter - mm (in)	1016 (40)

Fuel System

Fuel Type	Natural Gas
Carburetor	Down Draft
Secondary Fuel Regulator	Standard
Fuel Shut Off Solenoid	Standard (Dual)
Operating Fuel Pressure in H_2O (kPa)	11-14 (2.7-3.48)
Optional Operating Fuel Pressure in H_2O (kPa)	7-11 (1.7-2.7)

Engine Electrical System

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

ALTERNATOR SPECIFICATIONS

Standard Model	PRAMAC 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	All
Regulation Accuracy (Steady State)	±0.25%

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OPERATING DATA

POWER RATINGS

	Natural Gas
Three Phase 231/400VAC @0.8pf	400 kVA/320 kW Amps: 557

STARTING CAPABILITIES (sKVA)

sKVA vs. Voltage Dip

231/400 VAC

Alternator	kW	10%	15%	20%	25%	30%	35%
Standard	400	323	484	646	807	968	1130
Upsize 1	555	381	572	762	953	1143	1333
Upsize 2	642	393	589	786	983	1178	1375

*Brushless Excitation Only

FUEL CONSUMPTION RATES*

Natural Gas – ft³/hr (m³/hr)

Percent Load	Standby
25%	1485 (42.1)
50%	2276 (64.4)
75%	3066 (86.8)
100%	3858 (109.3)

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

COOLING

		Standby
Air Flow (inlet air combustion and radiator)	ft^3/min (m^3/min)	20,360 (577)
Coolant Flow per Minute	gal/min (l/min)	C/F
Coolant System Capacity	gal (l)	23 (87)
Heat Rejection to Coolant	BTU/hr (kW)	1,102,122 (323)
Maximum Radiator Backpressure	in H_2O (kPa)	0.50 (0.12)

COMBUSTION AIR REQUIREMENTS

	Standby
Flow at Rated Power cfm (m^3/min)	560 (15.9)

ENGINE

		Standby
Rated Engine Speed	rpm	1500
Horsepower at Rated kW**	hp	509
Piston Speed	ft/min (m/min)	C/F
BMEP	psi	168

EXHAUST

		Standby
Exhaust Flow (Rated Output)	cfm (m^3/min)	2659 (75.3)
Max. Allowable Backpressure	inHg (kPa)	2.5 (8.47)
Exhaust Temp (Rated Output - Post Silencer)	°F (°C)	1027 (553)
Exhaust Outlet Size (Open Set)	mm (in)	3.5 (88.9) I.D. Flex (No Silencer)

** 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 Dealer for additional details. All performance ratings in accordance with ISO3046, BS5514, ISO8528 and DIN6271 standards.

C/F- Consult Factory

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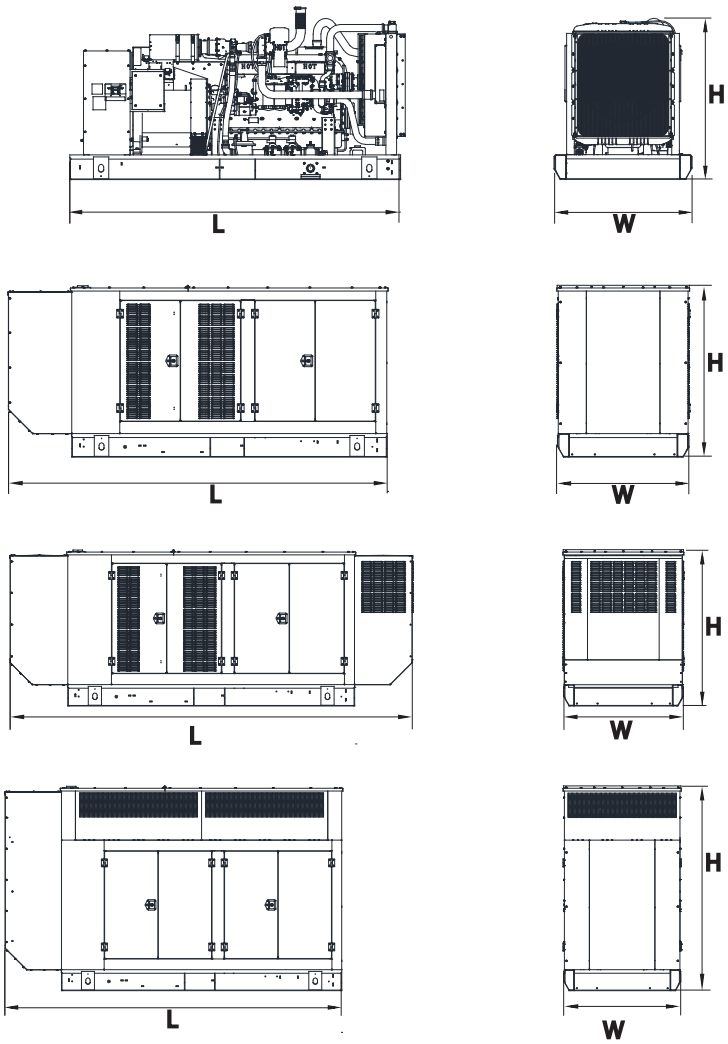
DIMENSIONS AND WEIGHTS*



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)

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)

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)

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)

Pramac Energy Generation | Località Il Piano snc | 53031 Casole d'Elsa, Siena - Italy

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