

Image used for illustration purposes only

| POWER RATINGS | | |
|---------------|---------|------------------|
| GGW400 | STANDBY | 400 kVA / 320 kW |
| | PRIME | 360 kVA / 288 kW |

Designed to the following standards: Ratings definition according to standard ISO8528 1:2005. Ambient conditions 1000mbar, 25°C, 30% relative humidity.

ESP - Emergency Standby Power: Maximum power with varying load that the generator is capable to supply in the event of a utility power outage or under routine exercise conditions for up to 200 h of operation per year with the maintenance intervals as prescribed by the manufacturer. Permissible average power over 24 h shall not exceed 70 % of rated power ESP.

PRP - Prime Power: Maximum power, which a generating set, is capable of delivering continuously with varying load for an unlimited number of hours per year under the agreed operating conditions with the maintenance intervals as prescribed by the manufacturer. The permissible average power output over 24 h of operation shall not exceed 70 % of rated Prime Power. 10% of overload is allowed for emergency use for a maximum of 1 hour in 12 with the limit of 25 hours per year.

Codes And Standards

PRAMAC products are designed to the following standards:



BS 5514 and 6271



SAE J1349



NFPA 37, 70, 99, 110



NEC 700, 701, 702, 708



ISO 3046, 7637, 8528, 9001



NEMA ICS10, MG1, 250, ICS6, AB1



ANSI C62.41

ENERGY GENERATION

PRAMAC ensures superior quality and performance by managing all aspects of production, from design to manufacturing.

PRAMAC can trace its roots back to 1966; from then on, 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 for standby and prime power applications, as well as mobile and towable lighting for outdoor needs.

PRAMAC operates through a wide distribution network and provides global coverage even in the most demanding markets.

STANDARD FEATURES

ENGINE SYSTEM

- Oil Drain Extension
- Heavy Duty Air Cleaner
- Fan Guard
- Stainless Steel Flexible Exhaust Connection
- Factory-Filled Oil And Coolant
- Industrial Exhaust Silencer
- Air Filter restriction indicator

Fuel System

- Primary And Secondary Fuel Shutoff
- Fuel Line NPT Connection

Cooling System

- Close 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
- Solenoid Activated Starter Motor

ALTERNATOR SYSTEM

- Class H Insulation Material
- 2/3 Pitch
- Skewed Stator
- Auxiliary Winding Excitation System
- Sealed Bearing
- Amortisseur Winding
- Full-Load Capacity Alternator

GENERATOR SET

- Internal Gen-set Vibration Isolation
- Wrapped Exhaust Piping (Enclosed Only)
- Bottom (floor) power cable outlet
- Exhaust silencer Mounted in the Discharge Hood (Enclosed Sets)

ENCLOSURE (if selected)

- High-Performance Sound Absorbing Material
- Gasketed Doors
- Galvanized Sheet Metal Construction
- Upward Facing Discharge Hood (exhaust)
- Stainless Steel Hinges

CONTROL SYSTEM



PowerZone 7" touchscreen

Program Functions

- Programmable Crank Limiter
- 7-Day programmable Exerciser
- RS232/485 Communications
- LAN Communication
- 3-Phase Sensing Voltage Regulator
- 2-Wire Start Capability
- Date/Time Fault History (event Log)
- Isochronous Governor Control
- Audible Alarms and Shutdown
- AMF Capability
- E-Stop Button (Mushroom)

- Customizable Alarms, Warnings, Events
- Modbus Protocol
- Predictive Maintenance Algorithm
- Sealed Boards
- Password Parameter Adjustment Protection
- Single Point Ground
- Alarm Information Automatically Announced on the Touchscreen Display

Full System Status Display

- Power Output (kW)
- Power Factor Cos(ϕ)
- kWh Total and Last Run
- Active/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 Over-speed
- Battery Voltage
- Alarms and Warnings Times and Date Stamped
- Snap Shot of key Operation Parameters During Alarms and Warnings
- Alarms and Warnings Spelled Out (No Alarm Codes)
- Multilingual

OPTIONAL FEATURES

ENGINE SYSTEM

- Engine Block Heater (convection type)
- Engine Block Heater (forced circulation)
- 3-Way Catalytic Muffler

ALTERNATOR SYSTEM

- Upsized Alternator
- Anti-Condensation Heaters
- Permanent Magnet (PMG)

CIRCUIT BREAKER OPTIONS

- 4-pole Circuit Breaker
- Shunt Trip and Auxiliary Contact
- Differential Protection

ELECTRICAL SYSTEM

- 10A UL/CE Float Battery Charger

GENERATOR SET

- Leak Proof Tray

CONTROL SYSTEM

- Remote Connection Kit with Antenna
- Modular Parallel Panel with MCCB upgrade

ENCLOSURE

- Special Color Requirements

ENGINEERED OPTIONS

ENGINE SYSTEM

- Engine Battery Warmer
- Heavy-Duty Air Filters
- Synthetic Media Oil Filters

ELECTRICAL SYSTEM

- ATS With Transfer Inhibition
- Load Shedding control
- 20 Amp Battery Charger

ALTERNATOR SYSTEM

- 2 Size Up Alternator
- Tropical Coating
- Thermistors Temperature Sensors
- Thermocouple PT-100 Temperature Sensors

CIRCUIT BREAKER OPTIONS

- Special Bus-bars Connections

GENERATOR SET

- Spring vibration Isolators
- Extended Containment Tray With Leak Detector

ENCLOSURE

- Motorized Louvers
- Sand Traps on Intake Vents
- Non-Standard Sheet Metal
- Containerized Option
- Special Sound Requirements

CONTROL SYSTEM

- Special Firmware Programming
- Non-Standard Language
- Communication Programming

APPLICATION ENGINEERING DATA

ENGINE SPECIFICATIONS

General

Make..... GENERAC
 Cylinder # 12
 Type V
 Displacement [L]..... 21.9
 Bore [mm]..... 128
 Stroke [mm]..... 142
 Compression Ratio..... 10:0
 Intake Method..... Turbocharged/Aftercooled
 N. of Bearings..... 7
 Connecting Rods..... Steel Alloy
 Cylinder Head..... Cast Iron OHV
 Cylinder Liners Cast Iron Alloy
 Ignition..... Electric
 Piston Type 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..... Gear
 Oil Filter Type Twin Full Flow
 Crankcase Capacity [L] 30

Cooling System

Cooling System Type Pressurized Closed Recovery
 Fan Type Pusher
 Fan Diameter [mm]..... 1,118

Fuel System

Fuel Type Natural Gas
 Carburetor Down Draft
 Secondary Fuel Regulator..... Standard
 Fuel Shutoff Solenoid Standard (Dual)
 Operating Fuel Pressure [kPa] 1,7-2,7

Engine Electrical System

System Voltage 24V DC
 Battery Charger Alternator..... Standard
 Battery Size See Battery Index
 Battery Voltage..... 2 x 12 VDC
 Ground Polarity Negative

ALTERNATOR SPECIFICATIONS

Standard Model MeccAlte
 Poles 4
 Field type..... Revolving
 Insulation Class (Rotor)..... H
 Insulation Class (Stator)..... H
 Total Harmonic Distortion (THD) <5%
 Telephone Interference Factor (TIF) <50

Standard Excitation Auxiliary Winding
 Bearings Single Bearing
 Coupling Direct via Flexible Disc
 Sustained Short Circuit Current..... 300% (10s)
 Number of Sensed Phases..... All
 Regulation Accuracy..... ±1%

OPERATING DATA

POWER RATINGS

| | Standby | Prime |
|-------------------------------------|-------------------------|--------------------------|
| Three Phase 400 / 231 V AC @ PF=0,8 | 400kVA / 320kW Amps:577 | 360kVA / 288kW Amps: 519 |

STARTING CAPABILITIES (SKVA)

sKVA vs. Voltage Dip

| Alternator | kVA | 400 / 231 V AC | | | | | | 380 / 220 V AC | | | | | |
|------------|-----|----------------|-----|-----|-----|------|------|----------------|-----|-----|-----|-----|------|
| | | 10% | 15% | 20% | 25% | 30% | 35% | 10% | 15% | 20% | 25% | 30% | 35% |
| Standard | 400 | 201 | 378 | 520 | 688 | 931 | 1216 | 193 | 336 | 470 | 630 | 839 | 1091 |
| Upsized 1 | 500 | 260 | 419 | 579 | 755 | 1023 | 1342 | 243 | 378 | 520 | 688 | 923 | 1216 |

TRANSIENT PERFORMANCES

| | | |
|---------------------------------------|-------|------|
| Performance Class (ISO8528-5) * | Class | G2 |
| Rated Power | kW | 320 |
| First Step (ISO8528-, based on BMEP) | % | 61.4 |
| Second Step (ISO8528-, based on BMEP) | % | 100 |

* ISO 8528-5:2013 states G2 Performance class transient frequency deviation from rated frequency for a sudden power increase should be $\leq -20\%$ of rated frequency for spark-ignition gas engines per Table 4 note e).

FUEL CONSUMPTION RATES*

Natural Gas –in accordance with ISO 3046

| Percent Loads (ESP) | Kg/h | Nm ³ /h |
|---------------------|------|--------------------|
| 50% | 38.4 | 49.6 |
| 75% | 51.3 | 66.3 |
| 100% | 64.8 | 83.8 |

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

ELECTRICAL EFFICIENCY**

| Percent Loads (ESP) | Calculated Values | |
|---------------------|-------------------|--|
| | Efficiency Values | |
| 50% | 31.8% | |
| 75% | 35.7% | |
| 100% | 37.7% | |

** Minimum Heat Value LHV=13.1 kWh/Kg

COOLING

| | | Standby | Prime |
|---|---------------------|--------------|-------|
| Air Flow (Combustion and Cooling) | m ³ /min | 557 | 555 |
| Coolant Flow | l/min | 640 | 640 |
| Coolant System Capacity | L | 77,6 | 77,6 |
| Heat Rejection To Coolant | kW | 323 | 323 |
| Maximum Operating Ambient Temperature | °C | 50 | 50 |
| Maximum Operating Ambient Temperature (before Derate) | | See Bulletin | |
| Maximum Radiator Backpressure | kPa | 0.12 | 0.12 |

COMBUSTION AIR REQUIREMENT

| | Standby | Prime |
|---|---------|-------|
| Flow at Rated Power – m ³ /min | 15.9 | 14.3 |

EXHAUST EMISSIONS – Version with factory-fitted 3-Way Exhaust Catalyst (Optional)

| | | NOx | CO | CH ₂ O |
|----------------------------------|--------------------|-------|------|-------------------|
| 5% O ₂ Concentration | mg/Nm ³ | < 125 | < 20 | < 20 |
| 15% O ₂ Concentration | mg/Nm ³ | < 50 | < 10 | < 50 |

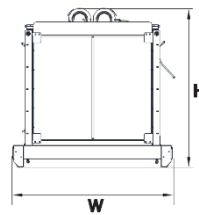
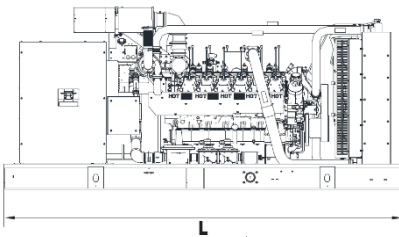
ENGINE

| | | Standby |
|-------------------------|-----|---------|
| Rated Engine Speed | rpm | 1500 |
| Horsepower at rated rpm | bHp | 478 |
| Piston Speed | m/s | 8.50 |
| BMEP | kPa | 1 303.7 |

EXHAUST

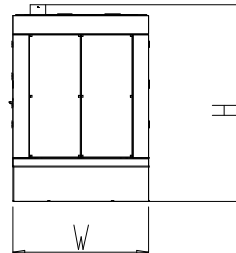
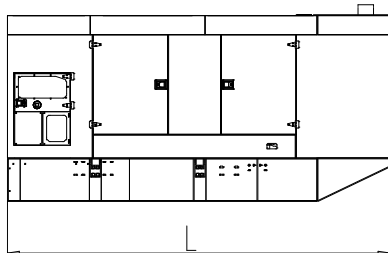
| | | Standby | Prime |
|-------------------|---------------------|---------|-------|
| Exhaust Flow | M ³ /min | 74,8 | 66,5 |
| Max. Backpressure | kPa | 2,54 | 2,54 |
| Exhaust Temp. | °C | 553 | 496 |

OPERATING DATA



OPEN SET (Includes Exhaust Flex)

| | |
|----------------|--------------------|
| L x W x H - mm | 3800 x 1666 x 1870 |
| Weight - Kg | 3940 |



STANDARD ENCLOSURE

| | |
|----------------|--------------------|
| L x W x H - mm | 4700 x 1670 x 2190 |
| Weight - Kg | 5975 |