

# MD400 | 12.5L | 400 kW

## INDUSTRIAL DIESEL GENERATOR SET

EPA Certified Stationary Emergency

### STANDBY POWER RATING

400 kW, 500 kVA, 60 Hz

### PRIME POWER RATING\*

360 kW, 450 kVA, 60 Hz



\*Built in the USA using domestic and foreign parts

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

\*\*Certain options or customization may not hold certification valid.

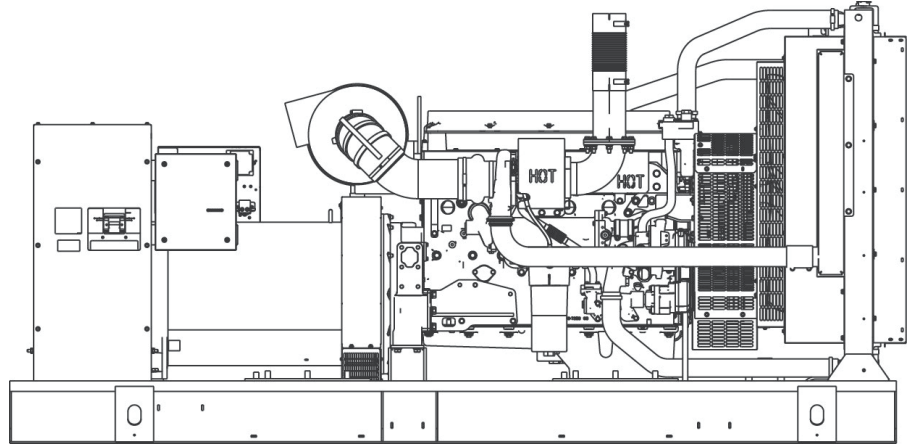



Image used for illustration purposes only


### 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.

**STANDARD FEATURES**

**ENGINE SYSTEM**

**General**

- Oil Drain Extension
- Air Cleaner
- Fan Guard
- Stainless Steel flexible exhaust connection
- Critical Exhaust Silencer (Enclosed Only)
- Factory Filled Oil
- Engine Block Heater

**Fuel System**

- Flexible Fuel Lines
- Primary and Secondary Fuel Filters

**Cooling System**

- Closed Coolant Recovery System
- UV/Ozone resistant hoses
- Factory-Installed Radiator
- 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**

- 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 (enclosed only)
- Standard Factory Testing
- 2 Year Limited Warranty (Standby 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 (L1 & L2)
- Gasketed doors
- Stamped air-intake louvers
- Upward pointing radiator discharge hood
- Stainless steel lift off door hinges
- Stainless steel lockable handles
- Rhino Coat™ - Textured polyester powder coat

**TANKS (IF SELECTED)**

- UL 142
- ULC S-601 Tank
- Double wall
- Vents
- Sloped top
- Sloped bottom
- Factory Pressure Tested (2 psi)
- Rupture basin alarm
- Electric Fuel Level
- Check valve in supply and return lines
- Rhino Coat™ - Textured polyester powder coat tank
- Stainless Steel Hardware

**CONTROL SYSTEM**

**Control Panel**

- Digital G-200 Paralleling Control Panel - Touchscreen
- 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 Level
- 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/O/Manual Switch
- E-Stop (Red Mushroom-Type)
- 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 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)

**PARALLELING CONTROLS (MB600)**

- Auto-synchronization process
- Isochronous load sharing
- Reverse power protection
- Maximum power protection
- Electrically operated, mechanically held paralleling switch
- Sync check system
- Independent on-board paralleling

- Optional programmable logic full auto back-up control (pls)
- Shunt Trip and Auxiliary Contact

## CONFIGURABLE OPTIONS

### ENGINE SYSTEM

#### General

- Oil Heater
- Critical Exhaust Silencer (open set)

#### Engine Electrical System

- 10A UL battery charger
- Battery Warmer

### ALTERNATOR SYSTEM

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

### CIRCUIT BREAKER OPTIONS

- Main Line Circuit Breaker
- Electronic Trip Breakers

### GENERATOR SET

- Gen-Link Communications Software (English 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

### TANKS (Size on last page)

- Electrical Fuel Level
- Mechanical Fuel Level
- 183 Gal (693 L) Usable Capacity
- 438 Gal (1659 L) Usable Capacity
- 693 Gal (2624 L) Usable Capacity
- 946 Gal (3518 L) Usable Capacity
- 1325 Gal (5015 L) Usable Capacity
- 8" Fill Extension
- 13" Fill Extension
- 19" Fill Extension

### CONTROL SYSTEM

- 21-Light Remote Annunciator
- Remote Relay Panel (8 or 16)
- Oil Temperature Sender with Indication 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 - Ethernet
- 10A Run Relay
- Ground Fault Indication and Protection Functions

## ENGINEERED OPTIONS

### ENGINE SYSTEM

- Fluid containment pans

### CONTROL SYSTEM

- Battery Disconnect Switch

### GENERATOR SET

- Special Testing
- Battery Box

### ENCLOSURE

- Motorized Dampers
- Door switched for intrusion alert
- Enclosure ambient heaters

### TANKS

- Overfill Protection Valve
- UL2085 Tank
- ULC S-601 Tank
- Stainless Steel Tank
- Special Fuel Tanks (MIDEQ and FL DEP/DERM, etc.)
- Vent Extensions

## 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

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### APPLICATION AND ENGINEERING DATA

#### ENGINE SPECIFICATIONS

##### General

|                          |                          |
|--------------------------|--------------------------|
| Make                     | Perkins                  |
| EPA Emissions Compliance | Stationary Emergency     |
| EPA Emissions Reference  | See Emissions Data Sheet |
| Cylinder #               | 6                        |
| Type                     | In-Line                  |
| Displacement - L (cu In) | 12.5 (762.80)            |
| Bore - mm (in)           | 130 (5.12)               |
| Stroke - mm (in)         | 157 (6.18)               |
| Compression Ratio        | 16.3:1                   |
| Intake Air Method        | Turbocharged/Aftercooled |
| Cylinder Head Type       | 4 - Valve                |
| Piston Type              | Aluminium                |
| Crankshaft Type          | Drop Forged Steel        |

##### Engine Governing

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

##### Lubrication System

|                              |            |
|------------------------------|------------|
| Oil Pump Type                | Gear       |
| Oil Filter Type              | Full-Flow  |
| Crankcase Capacity - L (qts) | 38 (40.15) |

##### Cooling System

|                                 |                         |
|---------------------------------|-------------------------|
| Cooling System Type             | Closed Recovery         |
| Water Pump                      | Pre-Lubed, Self Sealing |
| Fan Type                        | Pusher                  |
| Fan Speed (rpm)                 | 1656                    |
| Fan Diameter mm (in)            | 927 (36.5)              |
| Coolant Heater Standard Wattage | 1800                    |
| Coolant Heater Standard Voltage | 120 V                   |

##### Fuel System

|                          |                            |
|--------------------------|----------------------------|
| Fuel Type                | Ultra Low Sulfur Diesel #2 |
| Fuel Specifications      | ASTM                       |
| Fuel Filtering (microns) | Primary 10 - Secondary 2   |
| Fuel Injection           | Electronic                 |
| Fuel Pump Type           | Engine Driven Gear         |
| Injector Type            | MEUI                       |
| Engine Type              | Pre-Combustion             |
| Fuel Supply Line mm (in) | 12.7 (1/2" NPT)            |
| Fuel Return Line mm (in) | 12.7 (1/2" NPT)            |

##### Engine Electrical System

|                             |                                 |
|-----------------------------|---------------------------------|
| System Voltage              | 24 VDC                          |
| Battery Charging Alternator | Std                             |
| Battery Size                | See Battery Index<br>0161970SBY |
| Battery Group               | 8D                              |
| Battery Voltage             | (2) - 12 VDC                    |
| Ground Polarity             | Negative                        |

#### ALTERNATOR SPECIFICATIONS

|                                     |                |
|-------------------------------------|----------------|
| Standard Model                      | 520 mm Generac |
| 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                           | Single Sealed Cartridge |
| Coupling                           | Direct, Flexible Disc   |
| Load Capacity - Standby            | 100%                    |
| Prototype Short Circuit Test       | Yes                     |
| Voltage Regulator Type             | Digital                 |
| Number of Sensed Phases            | 3                       |
| Regulation Accuracy (Steady State) | ± 0.25%                 |

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### OPERATING DATA

#### POWER RATINGS

|                                |        | Standby   |
|--------------------------------|--------|-----------|
| 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)

| Alternator | kW  | sKVA vs. Voltage Dip |     |     |      |      |      |
|------------|-----|----------------------|-----|-----|------|------|------|
|            |     | 480 VAC              |     |     |      |      |      |
|            |     | 10%                  | 15% | 20% | 25%  | 30%  | 35%  |
| Standard   | 400 | 387                  | 581 | 775 | 968  | 1162 | 1356 |
| Upsize 1   | 555 | 457                  | 686 | 914 | 1143 | 1371 | 1600 |
| Upsize 2   | 642 | 471                  | 707 | 943 | 1179 | 1414 | 1650 |

#### FUEL CONSUMPTION RATES\*

| Fuel Pump Lift - ft (m)                                    | Diesel - gal/hr (l/hr) |               |
|--|------------------------|---------------|
|  | Percent Load           | gal/hr (l/hr) |
| 12 (3.7)   | 25%                    | 9.8 (37.1)    |
|  | 50%                    | 16.7 (63.2)   |
| Total Fuel Pump Flow (Combustion + Return) - gal/hr (l/hr) | 75%                    | 23.1 (87.4)   |
| 159 (600)  | 100%                   | 27.8 (105.4)  |

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

#### COOLING

|  |                           | STANDBY        |
|--|---------------------------|----------------|
| Coolant Flow per Minute                  | gal/min (l/min)           | 106.2 (402)    |
| Coolant System Capacity                  | gal (L)                   | 13 (49.2)      |
| Heat Rejection to Coolant                | BTU/hr                    | 1,067,520      |
| Inlet Air                                | cfm (m <sup>3</sup> /min) | 18,685 (529.1) |
| Max. Operating Radiator Air Temp         | °F (°C)                   | 122 (50)       |
| 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) | 1180 (33.41) |

#### ENGINE

|                          |        | STANDBY |
|--------------------------|--------|---------|
| Rated Engine Speed       | rpm    | 1800    |
| Horsepower at Rated kW** | hp     | 578     |
| Piston Speed             | ft/min | 1854    |
| BMEP                     | psi    | 369     |

#### EXHAUST

|   |                           | STANDBY     |
|---|---------------------------|-------------|
| Exhaust Flow (Rated Output)                 | cfm (m <sup>3</sup> /min) | 3044 (86.2) |
| Max. Backpressure (Post Silencer)           | inHg (Kpa)                | 1.5 (5.1)   |
| Exhaust Temp (Rated Output - post silencer) | °F (°C)                   | 1256 (680)  |
| Exhaust Outlet Size (Open Set)              | mm (in)                   | 127 (5.0)   |

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

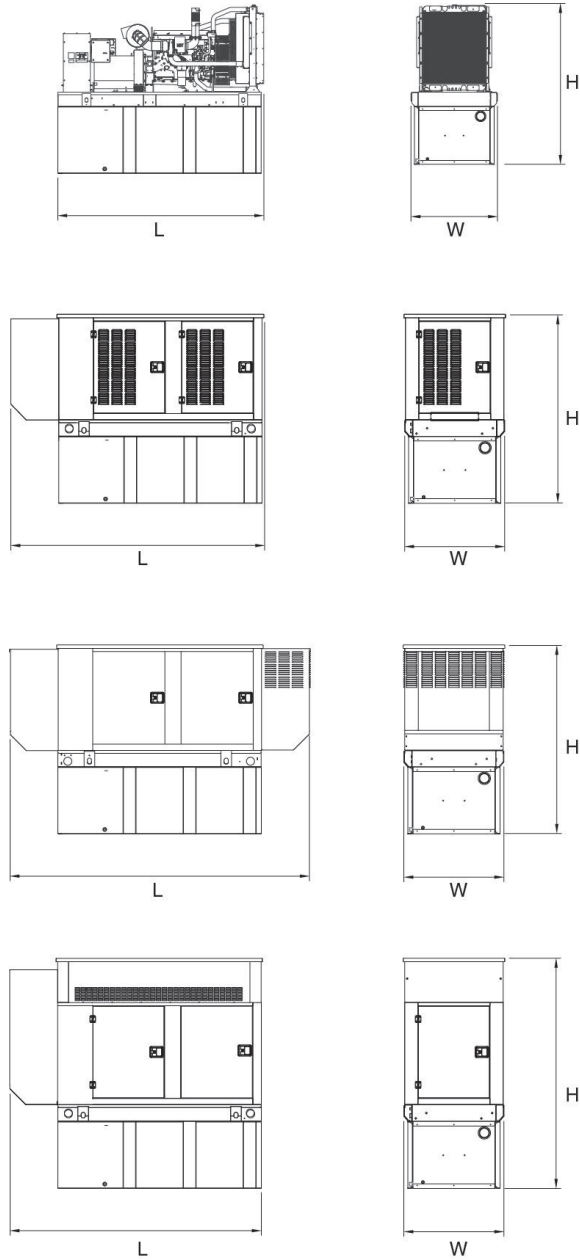
Deration – Operational characteristics consider maximum ambient conditions. Derate factors may apply under atypical site conditions. Please consult a Generac Power Systems Industrial Dealer for additional details. All performance ratings in accordance with ISO3046, BS5514, ISO8528 and DIN6271 standards.

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## INDUSTRIAL DIESEL GENERATOR SET

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### DIMENSIONS AND WEIGHTS\*



#### OPEN SET

| RUN TIME HOURS | USABLE CAPACITY GAL (L) | L x W x H in (mm)                       | WT lbs (kg) - Tank & Open Set |          |
|----------------|-------------------------|---|-------------------------------|----------|
|                |                         |   | Steel                         | Aluminum |
| NO TANK        | -                       | 137.5 (3493) x 57.6 (1463) x 68 (1721)  | 6649 (3016)                   |          |
| 6              | 183 (693)               | 137.5 (3493) x 57.6 (1463) x 81 (2051)  | 7597 (3446)                   |          |
| 15             | 438 (1659)              | 137.5 (3493) x 57.6 (1463) x 93 (2356)  | 7909 (3587)                   |          |
| 25             | 693 (2624)              | 137.5 (3493) x 57.6 (1463) x 105 (2661) | 8212 (3725)                   |          |
| 32             | 946 (3518)              | 208 (5283) x 57.6 (1463) x 109 (2769)   | 9674 (4388)                   |          |
| 48             | 1325 (5015)             | 278 (7061) x 57.6 (1463) x 109 (2769)   | 10689 (4848)                  |          |

#### STANDARD ENCLOSURE

| RUN TIME HOURS | USABLE CAPACITY GAL (L) | L x W x H in (mm)                        | WT lbs (kg) - Enclosure Only |          |
|----------------|-------------------------|--|------------------------------|----------|
|                |                         |  | Steel                        | Aluminum |
| NO TANK        | -                       | 174.7 (4437) x 57.6 (1463) x 77.8 (1976) | 1174 (533)                   |          |
| 6              | 183 (693)               | 174.7 (4437) x 57.6 (1463) x 91 (2311)   | 401 (182)                    |          |
| 15             | 438 (1659)              | 174.7 (4437) x 57.6 (1463) x 103 (2616)  |                              |          |
| 25             | 693 (2624)              | 174.7 (4437) x 57.6 (1463) x 115 (2921)  |                              |          |
| 32             | 946 (3518)              | 208 (5283) x 57.6 (1463) x 118 (2997)    |                              |          |
| 48             | 1325 (5015)             | 278 (7061) x 57.6 (1463) x 118 (2997)    |                              |          |

#### LEVEL 1 ACOUSTIC ENCLOSURE

| RUN TIME HOURS | USABLE CAPACITY GAL (L) | L x W x H in (mm)                      | WT lbs (kg) - Enclosure Only |          |
|----------------|-------------------------|--|------------------------------|----------|
|                |                         |  | Steel                        | Aluminum |
| NO TANK        | -                       | 200 (5085) x 57.6 (1460) x 77.8 (1976) | 2529 (1147)                  |          |
| 6              | 183 (693)               | 200 (5085) x 57.6 (1463) x 91 (2311)   | 864 (392)                    |          |
| 15             | 438 (1659)              | 200 (5085) x 57.6 (1463) x 103 (2616)  |                              |          |
| 25             | 693 (2624)              | 200 (5085) x 57.6 (1463) x 115 (2921)  |                              |          |
| 32             | 946 (3518)              | 234 (5944) x 57.6 (1463) x 118 (2997)  |                              |          |
| 48             | 1325 (5015)             | 304 (7722) x 57.6 (1463) x 118 (2997)  |                              |          |

#### LEVEL 2 ACOUSTIC ENCLOSURE

| RUN TIME HOURS | USABLE CAPACITY GAL (L) | L x W x H in (mm)                         | WT lbs (kg) - Enclosure Only |          |
|----------------|-------------------------|---|------------------------------|----------|
|                |                         |   | Steel                        | Aluminum |
| NO TANK        | -                       | 180.6 (4588) x 57.6 (1463) x 107.2 (2724) | 3132 (1420)                  |          |
| 6              | 183 (693)               | 180.6 (4588) x 57.6 (1463) x 120 (3048)   | 1070 (485)                   |          |
| 15             | 438 (1659)              | 180.6 (4588) x 57.6 (1463) x 132 (3353)   |                              |          |
| 25             | 693 (2624)              | 180.6 (4588) x 57.6 (1463) x 144 (3658)   |                              |          |
| 32             | 946 (3518)              | 208 (5283) x 57.6 (1463) x 147 (3734)     |                              |          |
| 48             | 1325 (5015)             | 278 (7061) x 57.6 (1463) x 147 (3734)     |                              |          |

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\*All measurements are approximate and for estimation purposes only. Sound dBA can be found on the sound data sheet. Enclosure Only weight is added to Tank & Open Set weight to determine total weight.

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.