GENERAC® | INDUSTRIAL POWER

SB500/MB500

Industrial Bi-Fuel Diesel Generator Set

EPA Compliant Stationary Emergency

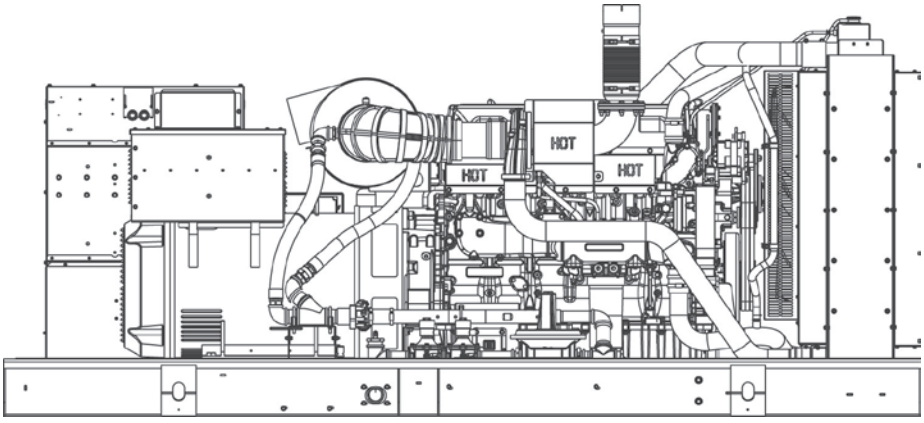
Standby Power Rating
500 kW 625 kVA 60 Hz

Prime Power Rating*
450 kW 563 kVA 60 Hz

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

ISO 9001:2008

USA ENGINEERED & BUILT*
*Built in the USA using domestic and foreign parts



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features

- **INNOVATIVE DESIGN & PROTOTYPE TESTING** are key components of GENERAC'S success in "IMPROVING POWER BY DESIGN." But it doesn't stop there. Total commitment to component testing, reliability testing, environmental testing, destruction and life testing, plus testing to applicable CSA, NEMA, EGSA, and other standards, allows you to choose GENERAC POWER SYSTEMS with the confidence that these systems will provide superior performance.

- **TEST CRITERIA:**
  - ✓ PROTOTYPE TESTED
  - ✓ SYSTEM TORSIONAL TESTED
  - ✓ ELECTRO-MAGNETIC INTERFERENCE
  - ✓ NEMA MG1 EVALUATION
  - ✓ MOTOR STARTING ABILITY
  - ✓ SHORT CIRCUIT TESTING
  - ✓ UL 2200 COMPLIANCE AVAILABLE

- **POWERMANAGER® DIGITAL CONTROL PLATFORM.** The PowerManager® Digital Control Platform (PM-DCP) is a powerful control system built around a 32-bit, industrial microprocessor. Standard factory programming controls the entire engine / generator system, while allowing the PM-DCP, with its onboard PLC, to be customized to meet any application requirement. The system is available on bi-fuel installations as well as Modular Paralleling Systems (MPS).

- **BI-FUEL** provides low cost, low volume fuel storage and operation along with a significant reduction in fuel costs.

- **SINGLE SOURCE SERVICE RESPONSE** from Generac's dealer network provides parts and service know-how for the entire unit, from the engine to the smallest electronic component. You are never on your own when you own a GENERAC POWER SYSTEM.

- **ECONOMICAL POWER.** Microprocessor controlled bi-fuel diesel engine starts on diesel fuel and provides power from an air/natural gas mixture ignited by diesel injection and continuously monitored by the on board control.

- **LONGER ENGINE LIFE.** Generac heavy-duty diesels provide long and reliable operating life.

- **GENERAC TRANSFER SWITCHES, SWITCHGEAR AND ACCESSORIES.** Long life and reliability is synonymous with GENERAC POWER SYSTEMS. One reason for this confidence is that the GENERAC product line includes its own transfer systems, accessories, switchgear and controls for total system compatibility.

primary codes and standards

UL NFPA nec ISO 9001:2008 NEMA oshpd ICC ANSI American National Standards Institute

GENERAC | INDUSTRIAL POWER

SB500/MB500

Standard Features

ENGINE SYSTEM

General

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

Fuel System

- Primary and Secondary Fuel Shutoff
- Flexible Fuel Line - NPT Connection

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 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 (Level 1 & 2)
- 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
- 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)
- 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)

PARALLELING CONTROLS (MB500)

- 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)
- MODBUS Protocol

SB500/MB500

Configurable Options

ENGINE SYSTEM

General

- ○ Air Filter Restriction Indicator
- ○ Stone Guard (Open Set Only)

Engine Electrical System

- ○ 10A battery charger

ALTERNATOR SYSTEM

- ○ Alternator Upsizing
- ○ Anti-Condensation Heater

GENERATOR SET

- ○ Gen-Link Communications Software (English Only)
- ○ Extended Factory Testing
- ○ 180 MPH Wind Certification
- ○ IBC Seismic Certification
- ○ 2 Year Extended Warranty
- ○ 5 Year Warranty
- ○ 5 Year Extended Warranty

CIRCUIT BREAKER OPTIONS

- ○ Main Line Circuit Breaker
- ○ 2nd Main Line Circuit Breaker (SB500 Only)
- ○ Shunt Trip and Auxiliary Contact (SB500 Only)
- ○ Electronic Trip Breakers

ENCLOSURE

- ○ Weather Protected
- ○ Level 1 Sound Attenuation
- ○ Level 2 Sound Attenuation
- ○ Steel Enclosure
- ○ Aluminum Enclosure
- ○ 12 VDC Enclosure Lighting Kits
- ○ 120 VAC Enclosure Lighting Kits
- ○ Combined AC/DC Lighting Kits

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 - Modem
- ○ 10A Run Relay
- ○ Ground fault indication and protection functions
- ○ PLS Full Auto Back-Up for PM-SC

Engineered Options

ENGINE SYSTEM

- ○ Fluid containment pans

ALTERNATOR SYSTEM

- ○ 2nd Breaker Systems (MB500 Only)
- ○ 3rd Breaker Systems (SB500 Only)

GENERATOR SET

- ○ Special Testing

ENCLOSURE

- ○ Motorized Dampers
- ○ Enclosure Ambient Heaters

CONTROL SYSTEM

- ○ Battery Disconnect Switch

TANKS

- ○ Overfill protection valve
- ○ UL2085 Tank
- ○ Stainless Steel Tank
- ○ Special Fuel Tanks (Ex: MIDEQ and FL DEP/ DERM requirements)
- ○ Vent Extensions

Rating Definition

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).

SB500/MB500 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	15.2 (927.56)
Bore - mm (in)	137 (5.39)
Stroke - mm (in)	171 (6.73)
Compression Ratio	16.0:1
Intake Air Method	Turbocharged/Aftercooled
Cylinder Head Type	4 Valve
Piston Type	Aluminum
Connecting Rod Type	I-Beam Section

Engine Governing

Governor	Electronic Isochronous
Frequency Regulation (Steady State)	± 0.25%

Lubrication System

Oil Pump Type	Gear
Oil Filter Type	Full-Flow Cartridge
Crankcase Capacity - L (Gal)	60 (15.8)

Cooling System

Cooling System Type	Closed Recovery
Water Pump	Centrifugal Type, Belt-Driven
Fan Type	Pusher
Fan Speed (rpm)	1658
Fan Diameter mm (in)	927 (36.5)
Coolant Heater Standard Wattage	1500
Coolant Heater Standard Voltage	120 VAC

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 (½" NPT)
Fuel Return Line - mm (in)	12.7 (½" NPT)

Engine Electrical System

System Voltage	24 VDC
Battery Charging Alternator	70 Amps at 24V
Battery Size	See Battery Index 0161970SBY
Battery Group	8D
Battery Voltage	(2) - 12 VDC
Ground Polarity	Negative

HOW DOES A BI-FUEL ENGINE WORK?

The diesel engine is equipped with a metering system that feeds natural gas into the incoming air supply. The standard diesel injection system is used and the injector sprays diesel fuel into the cylinder at the correct time. The diesel fuel ignites and thus ignites the natural gas charge. Total power is derived from a combination of natural gas and diesel. The ratio of natural gas to diesel fuel is a function of several factors, including load and intake air temperature. The higher thermal efficiency of diesel engines and the lower cost of natural gas, along with low emission levels, combine to make the bi-fuel engine a very economical choice.

ALTERNATOR SPECIFICATIONS

Standard Model	WEG
Poles	4
Field Type	Revolving
Insulation Class - Rotor	H
Insulation Class - Stator	H
Total Harmonic Distortion	< 3%
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	All
Regulation Accuracy (Steady State)	± 0.25%

SB500/MB500 operating data (60 Hz)

POWER RATINGS (kW)

Three-Phase 120/208 VAC @0.8pf	500 kW	Amps: 1735
Three-Phase 120/240 VAC @0.8pf	500 kW	Amps: 1504
Three-Phase 277/480 VAC @0.8pf	500 kW	Amps: 752
Three-Phase 346/600 VAC @0.8pf	500 kW	Amps: 601

STARTING CAPABILITIES (sKVA)

sKVA vs. Voltage Dip

480 VAC								208/240 VAC							
Alternator	kW	10%	15%	20%	25%	30%	35%	Alternator	kW	10%	15%	20%	25%	30%	35%
Standard	500	457	686	914	1143	1371	1600	Standard	500	429	643	857	1071	1286	1500
Upsize 1	642	471	707	943	1179	1414	1650	Upsize 1	689	543	814	1086	1357	1629	1900
Upsize 2	832	757	1136	1514	1896	2271	2650	Upsize 2	723	571	857	1143	1429	1714	2000

FUEL CONSUMPTION RATES*

Fuel Pump Lift - ft (m)
12 (3.7)

Percent Load	Diesel Only gph (lph) **
25%	10.5 (39.7)
50%	19.5 (73.8)
75%	23.7 (89.7)
100%	31.2 (118.1)

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

** Natural Gas substitution may vary based on the application and load conditions. Please consult factory for additional details on fuel consumption.

COOLING

		Standby
Coolant Flow per Minute	gpm (lpm)	114.1 (432)
Heat Rejection to Coolant	BTU/hr	1,198,080
Inlet Air	cfm (m^3/min)	30,582 (866)
Max. Operating Radiator Air Temp	°F (°C)	122 (50)
Max. Operating Ambient Temperature	°F (°C)	104 (40)
Coolant System Capacity	gal (L)	13 (49)
Maximum Additional Radiator Backpressure	in H_2O	0.5

COMBUSTION AIR REQUIREMENTS

		Standby
Flow at Rated Power	cfm (m3/min)	1483 (42)

ENGINE

		Standby
Rated Engine Speed	rpm	1800
Horsepower at Rated kW**	hp	762
Piston Speed	ft/min	2020
BMEP	psi	366

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

EXHAUST

		Standby
Exhaust Flow (Rated Output)	cfm (m^3/min)	4020 (114)
Max. Backpressure (Post Turbo)	inHg (Kpa)	2.01 (6.8)
Exhaust Temp (Rated Output - post silencer)	°F (°C)	1047 (564)
Exhaust Outlet Size (Open Set)	mm (in)	6"

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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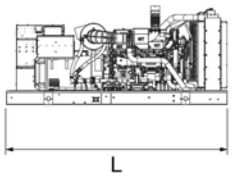
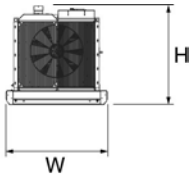
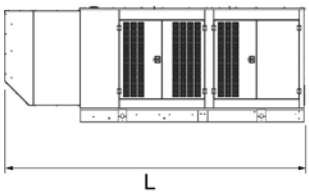
SB500/MB500 enclosure configurations, dimensions, and weights

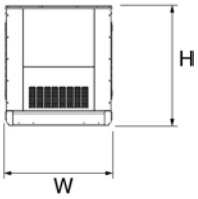




OPEN SET (Includes Exhaust Flex) (No Tank)

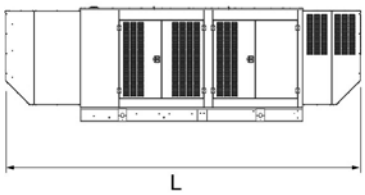
L x W x H in (mm)	154.4 (3923) x 71 (1803) x 67 (1702)
Weight lbs (kg)	8,475 (3,852)

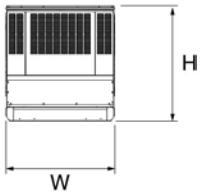




STANDARD ENCLOSURE (No Tank)

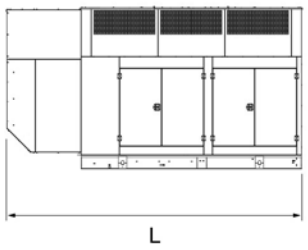
L x W x H in (mm)	207.4 (5268) x 70.9 (1800) x 80.0 (2032)
Weight lbs (kg)	Steel: 10,474 (4,761) Aluminum: 9,344 (4,247)

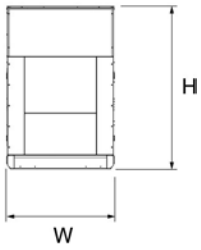




LEVEL 1 ACOUSTIC ENCLOSURE (No Tank)

L x W x H in (mm)	247.5 (6285) x 70.9 (1800) x 80.0 (2023)
Weight lbs (kg)	Steel: 11,257 (5,117) Aluminum: 9,766 (4,439)





LEVEL 2 ACOUSTIC ENCLOSURE (No Tank)

L x W x H in (mm)	207.4 (5268) x 70.9 (1800) x 114.1 (2899)
Weight lbs (kg)	Steel: 11,805 (5,366) Aluminum: 9,997 (4,544)

Run Time Hours*	Usable Capacity gal (L)	Height in (mm)	Weight lbs (kg)
No Tank	-	-	
8	334 (1264.3)	14 (355.6)	1675 (760)
24	1001 (3789.2)	36 (914.4)	2600 (1179)
24	1001 (3789.2)	25 (635)	3150 (1429)
48	2002 (7578.4)	36 (914.4)	4850 (2200)

*Diesel only. Bi-fuel mode will extend run time hours.

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.