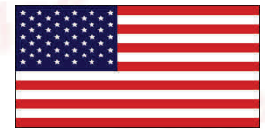




# Generator Joe®



Made in the USA!



Shown with optional equipment

## Defender 2 Series Model: 60 DF2 & DF2-3

### Ratings Natural Gas

Single and/or Three Phase Available

		60 Hz	50 Hz
Standby:	kW	60.0	50.0
	kVA	75.0	62.5
Prime:	kW	54.0	45.0
	kVA	64.8	54.0

### Features

- Single source responsibility for the generator set and accessories.
- Prototype and production tested to insure one step load acceptance per NFPA 110.
- Two year limited warranty on generator sets and accessories.
- Unit conforms to CSA, NEMA, EGSA, ANSI and other standards.
- Heavy duty 4 cycle industrial engine for reliability and fuel efficiency.
- Brushless rotating field generator with class H insulation.
- Heavy duty steel base with integral vibration isolators.
- EPA Emissions Certified
- UL 2200 Available

Voltage L-N / L-L	Phase	Hertz	Natural Gas 130° Rise Standby Rating		LP Gas 130° Rise Standby Rating	
			kW / kVA	Amps	kW / kVA	Amps
277/480	3	60	60/75	90	64/80	96
139/240	3	60	60/75	180	64/80	192
127/220	3	60	60/75	197	64/80	210
240/416	3	60	60/75	N/A	63/79	110
120/208	3	60	60/75	208	63/79	219
120/240	3	60	60/75	180	64/80	192
220/380	3	60	60/75	114	63/79	120
120/240	1	60	55/55	229	55/55	229
120/240	1	60	60/60	250	60/60	250



RATINGS: All three-phase units are rated at 0.8 power factor. All single-phase units are rated at 1.0 power factor.

STANDBY RATINGS: Standby ratings apply to installations served by a reliable utility source. The standby rating is applicable to varying loads for the duration of a power outage. There is no overload capability for this rating. Ratings are in accordance with ISO-3046/1, BS 5514, AS 2789, and DIN 6271.

PRIME POWER RATINGS: Prime power ratings apply to installations where utility power is unavailable or unreliable. At varying load the number of generator set operating hours is unlimited. A 10% overload capacity is available for one hour in twelve. Ratings are in accordance with ISO-8528/1, overload power in accordance with ISO-3046/1, BS5514, AS2789, and DIN 6271. For limited running time and base load ratings consult the factory. The generator set manufacturer reserves the right to change the design or specifications without notice and without any obligation or liability whatsoever.

GENERAL GUIDELINES FOR DERATION: Altitude: Derate 0.5% per 100m (328 ft.) elevation above 1000m (3279 ft.) Temperature: Derate 1.0% per 10°C (18°F) temperature above 40°C (104°F).

# Engine Application Data

Basic Technical Data		Lubrication System	
Manufacturer	General Motors	Type	Full Pressure
Model	Vortec 5.7 L	Oil pan capacity	5.0 qt (4.7 L)
Number of cylinders	8	Oil pan capacity with filter	6.5 qt (6.2 L)
Cylinder arrangement	Vertical in-line	Oil filter: qty and type	1, Cartridge
Cycle	4	<b>Electrical System</b>	
Induction system	Natural Aspiration	Ignition system	Electronic
Compression ratio	9.1:1	Battery charging alternator:	
Bore	4.00 in (101.6 mm)	Ground	negative
Stroke	3.48 in (88.4 mm)	Volts	12
Cubic capacity	350 cu in (5.7 L)	Ampere rating	70
Piston speed	1044 ft/min (318 m/min)	Starter motor rated voltage	12
Main bearings: qty and type	5, M400 Copper Lead	Battery, recommended cold cranking amps (CCA):	
Governor type	Electronic	Qty rating for -18 °C (0 °F)	(1) 630
Rated rpm	1800	Battery voltage	12
Max power at rated rpm	105 hp (78.3 kW)	<b>Operation Requirements</b>	
Engine power at Standby rating	105 hp (78.3 kW)	Radiator-cooled cooling air, m <sup>3</sup> /min (scfm) ‡	6000 scfm (170 m <sup>3</sup> /min)
Frequency regulation, -load to full-load	no Isochronous	Combustion air	185 cfm (5.2 m <sup>3</sup> /min)
Frequency regulation, steady state	± 0.5%	Heat rejected to ambient air: Engine	1760 Btu/min (30.9 kW)
Frequency	Fixed	Alternator	440 Btu/min (7.7 kW)
Air cleaner type	Dry	<b>Fuel System</b>	
		Fuel Type	LP Gas, Natural Gas or Dual Fuel
<b>Exhaust System</b>		<b>Fuel Consumption</b>	
Exhaust manifold type	Dry	<b>Natural Gas</b>	
Exhaust flow at rated kW	580 cfm (16.4 m <sup>3</sup> /min)	100% Load	790 cfh (22.4 m <sup>3</sup> /hr)
Exhaust temperature at rated kW	1200 °F (649 °C)	75% Load	685 cfh (19.4 m <sup>3</sup> /hr)
Maximum allowable back pressure	3.0 in (10.2 kPa)	50% Load	520 cfh (14.7 m <sup>3</sup> /hr)
Exhaust outlet size at engine hookup	3 in (76 mm) O.D.	25% Load	350 cfh (9.9 m <sup>3</sup> /hr)
<b>Cooling System</b>		<b>LP Gas</b>	
Ambient temperature	122 °F (50 °C)	100% Load	330 cfh (9.3 m <sup>3</sup> /hr)
Engine jacket water capacity	1.8 gal (6.8 L)	75% Load	250 cfh (7.1 m <sup>3</sup> /hr)
Radiator system capacity, including engine	5.5 gal (20.8 L)	50% Load	190 cfh (5.4 m <sup>3</sup> /hr)
Engine jacket water flow	31 gpm (117.3 Lpm)	25% Load	135 cfh (3.8 m <sup>3</sup> /hr)
Heat rejected to cooling water at rated kW	3120 Btu/min (54.8kW)		
Max restriction of cooling air, intake and discharge side of radiator	0.5 H <sub>2</sub> O (0.125 kPa)		



# GeneratorJoe®



# Generator Controller Options



## Digital Control Panel

The DGC-2020 digital GenSet controller provides integrated engine-GenSet control, protection, and metering. Microprocessor based technology allows for exact measurement, set point adjustment, and timing functions. Front panel 3 position controls and indicators enable quick and simple operation. The panel is also equipped with an emergency stop push button and an Alarm Horn with silence button. A wide temperature-range liquid crystal display (LCD) with backlighting can be viewed under a wide range of ambient light and temperature conditions down to 40° C.

Features SAE J1939 Engine ECU communications, Multilingual capability, Remote RS-485 communications for Optional RDP-110 Remote Annunciator, Extremely rugged, fully encapsulated design with 4 programmable contact inputs and 10 contact outputs (2 ADC rated). It also features Modbus Communications with RS-485, Battery Backup for Real Time Clock, UL recognized, CSA certified, CE approved, HALT (Highly Accelerated Life Tests) tested, IP 54 Front Panel rating with integrated gasket, and NFPA 110 Level 1 Compatible.



## Analog Top Mount Controller

This Generator control panel has analog instruments to monitor AC voltage, AC frequency, percent of load and, run time/hour meter. Safety shutdowns provide red LED indication for overspeed, overcrank, low oil pressure, and high coolant temperature. Provide green LED indication of engine running. Control switch is provided for local and remote starting with 3 position run/off/remote switch.

There is also an engine mounted emergency by-pass key switch with mechanical oil pressure and coolant temperature gauge.



## Analog End Mount Controller

This Generator control panel has analog instruments to monitor AC voltage, AC frequency, and percent of load. The analog engine instruments monitor oil pressure, water temperature, battery voltage, fuel level, and run time/hour meter. Safety shutdowns provide red LED indication for overspeed, overcrank, low oil pressure, and high coolant temperature. Provide green LED indication of engine running. Control switch is provided for local and remote starting with 3 position run/off/remote switch. There is also an engine mounted emergency by-pass key switch.

# AC Alternator Specifications

## Manufacturer

Marathon

## Type

Ext. Voltage Regulated, Brushless

## Gen Frame

MAGNAPLUS

## Insulation

NEMA

## Material

Class H

## Temperature Rise

130 °C, Standby

## Hertz

60

## Phase

3

## RPM

1800

## Exciter

Rotating

## # Leads

12 Reconnectable or 4 Single Phase

## PF

0.8

## Ambient

40°C

## Coupling Single Bearing

Flexible

## Amortisseur Windings

Full

## Cooling Air Volume

700 CFM

## Peak Motor Starting

30% Voltage Dip, 293 skVA @ 480V

## Voltage Regulation no-load and full-load

1 Phase Sensing 1%  
Optional 3 Phase Sensing 1/2%

- NEMA MG1, IEEE, AND ANSI standards compliance for temperature and motor starting.
- Sustained short-circuit current of the rated current for up to 10 seconds.
- Sustained short-circuit current enabling downstream circuit breakers to trip without collapsing the alternator field.
- Self-ventilated and dripproof construction.
- Superior voltage waveform from a two-thirds pitch stator and skewed rotor.
- Linkboards
- Optimized Electrical Design
- Enhanced Ventilation
- Fully Guarded
- Heavy Duty Bearings



# GeneratorJoe®



# Standard Features and Optional Accessories

## Standard Features

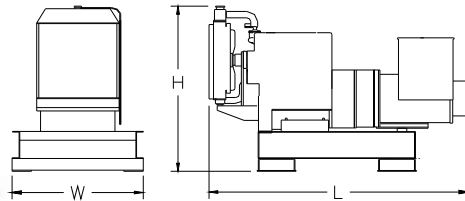
- Heavy duty steel base
- Vibration isolators
- Oil drain valve with extension
- Battery rack
- Battery cables
- Water jacket heater
- Owners manual
- Electronic Isochronous Governor

## Optional Accessories

- Critical Exhaust Silencer
- Flex Exhaust Connector
- Top Mount Analog Control Panel
- End Mount Analog Control Panel
- DGC2020 Digital Control Panel
- Modem for DGC2020
- Enhanced Gen Protection for DGC2020
- Surface Mount Remote Annunciator Panel for DGC2020
- Flush Mount Remote Annunciator Panel for DGC2020
- Remote Mount Break Glass E-Stop Switch
- Line Circuit Breaker
- 3 phase sensing
- Generator strip heater
- Radiator duct flange for open unit
- Weather Enclosure with external muffler
- Weather Enclosure with internal muffler
- Sound Attenuated weather enclosure
- Oil Pan Heater
- Battery & Battery Charger
- Battery Heaters
- Fuel Switching, Manual & Automatic
- Flexible Fuel Lines
- Customize to Your Specifications

## Weights and Dimensions

Overall Size, L x W x H, in.: 96 in. x 46 in. x 62 in.  
Weight (Wet): 2,460 lbs.  
Note: Dim and weights reflect standard open unit with no options



Note: This drawing is provided for reference only and should not be used for planning installation. Contact your local distributor for more detailed information.



# GeneratorJoe®

## GeneratorJoe®

4723 Muirfield Court  
Santa Rosa, CA 95405

Phone: 707 542-2224

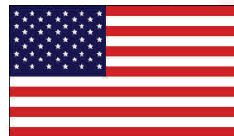
Fax: 707 542-2227

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Web: [www.generatorjoe.net](http://www.generatorjoe.net)

A small business owned by service a connected disabled veteran.

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