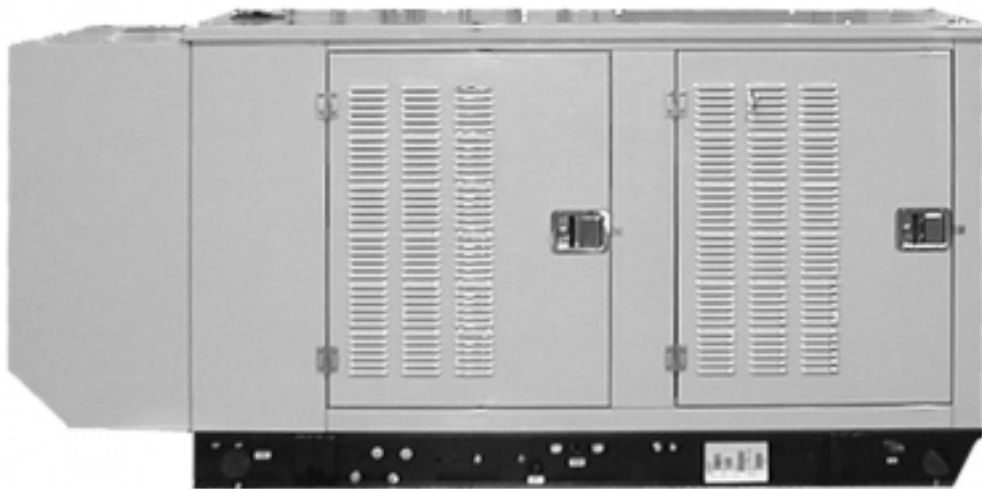


SG020

Liquid Cooled Gas Engine Generator Sets

Standby Power Rating
20KW 60 Hz / 20KVA 50 Hz

Prime Power Rating
15KW 60 Hz / 16KVA 50 Hz



Shown with optional weather protective enclosure

Power Matched
GENERAC 3.9GN ENGINE
Naturally Aspirated

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
- **SOLID-STATE, FREQUENCY COMPENSATED VOLTAGE REGULATION.** This state-of-the-art power maximizing regulation system is standard on all Generac models. It provides optimized FAST RESPONSE to changing load conditions and MAXIMUM MOTOR STARTING CAPABILITY by electronically torque-matching the surge loads to the engine.
- **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.
- **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.

GENERAC[®]
POWER SYSTEMS, INC.

APPLICATION & ENGINEERING DATA

SG020

GENERATOR SPECIFICATIONS

TYPE	Four-pole, revolving field
ROTOR INSULATION	Class H
STATOR INSULATION	Class H
TOTAL HARMONIC DISTORTION	<3%
TELEPHONE INTERFERENCE FACTOR (TIF)	<50
ALTERNATOR	Self-ventilated and drip-proof
BEARINGS (PRE-LUBED & SEALED)	1
COUPLING	Direct, Flexible Disc
LOAD CAPACITY (STANDBY)	100%
LOAD CAPACITY (PRIME)	110%

NOTE: Emergency loading in compliance with NFPA 99, NFPA 110, paragraph 5-13.2.6. Generator rating and performance in accordance with ISO8528-5, BS5514, SAE J1349, ISO3046 and DIN6271.

EXCITATION SYSTEM

- DIRECT DC excitation system ✓
 - Low-velocity brushes and slip rings ✓
 - BRUSHLESS Magnetically coupled DC current ✓
 - Eight-pole exciter w/ battery-driven field boost ✓
 - Mounted outboard of main bearing ✓
 - PERMANENT MAGNET EXCITER Eighteen pole exciter ✓
 - Magnetically coupled DC current ✓
 - Mounted outboard of main bearing ✓
- REGULATION Solid-state ✓
±1% regulation ✓

GENERATOR FEATURES

- Four pole, revolving field generator, directly connected to the engine shaft through a heavy-duty, flexible disc for permanent alignment.
- Generator meets the temperature rise standards for class "F" insulation as defined by NEMA MG1-32.6, while the insulation system meets the requirements for the higher class "H" rating.
- All prototype models have passed a three-phase symmetrical short circuit test to assure system protection and reliability.
- All prototype models are tested for motor starting ability by measuring the instantaneous voltage dip with a waveform data acquisition system.
- All models utilize an advanced wire harness design for reliable interconnection within the circuitry.
- Magnetic circuit, including amortisseur windings, tooth and skewed stator design, provides a minimal level of waveform distortion and an electromagnetic interference level which meets accepted requirements for standard AM radio, TV, and marine radio telephone applications.
- Voltage waveform deviation, total harmonic content of the AC waveform, and T.I.F. (Telephone Influence Factor) have been evaluated to acceptable standards in accordance with NEMA MG1-32.
- Alternator is self-ventilated and drip-proof constructed.
- Fully life-tested protective systems, including "field circuit and thermal overload protection" and optional main-line circuit breakers capable of handling full output capacity.
- System Torsional acceptability confirmed during Prototype Testing.

ENGINE SPECIFICATIONS

MAKE	GENERAC
MODEL	3.9GN
CYLINDERS	V-6
DISPLACEMENT	3.9 Liter (238 cu. in.)
BORE	99.3 mm (3.91 in.)
STROKE	84 mm (3.31 in.)
COMPRESSION RATIO	9.1:1
INTAKE AIR	Naturally Aspirated
NUMBER OF MAIN BEARINGS	4
CONNECTING RODS	6-Drop forged steel
CYLINDER HEAD	Cast Iron
PISTONS	6-Notched Head, Aluminum Alloy
CRANKSHAFT	Nodular Steel

VALVE TRAIN

LIFTER TYPE	Hydraulic Roller
INTAKE VALVE MATERIAL	Aluminized Steel Faced
EXHAUST VALVE MATERIAL	Stellite Faced
HARDENED VALVE SEATS	No

ENGINE GOVERNOR

- ELECTRONIC Standard
- FREQUENCY REGULATION, NO-LOAD TO FULL LOAD ... 0.5%
- STEADY STATE REGULATION ±0.25%

LUBRICATION SYSTEM

TYPE OF OIL PUMP	Gear
OIL FILTER	Full flow, cartridge
CRANKCASE CAPACITY	4.25 Liters (4.5 qts.)

COOLING SYSTEM

TYPE OF SYSTEM	Pressurized, closed recovery
WATER PUMP	Pre-lubed, self-sealing
TYPE OF FAN	Pusher
NUMBER OF FAN BLADES	7
DIAMETER OF FAN	380 mm (15 in.)
COOLANT HEATER	120V, 1800 W

FUEL SYSTEM

- FUEL
- Natural Gas or L.P. Vapor Standard
 - L.P. Liquid Withdrawal Optional
- CARBURETOR Down draft
- SECONDARY FUEL REGULATOR .. Nat. Gas or L.P. Vapor Systems
- HOT WATER VAPORIZER L.P. Liquid Withdrawal Systems
- AUTOMATIC FUEL LOCKOFF SOLENOID Standard
- OPERATING FUEL PRESSURE VAPOR SYSTEMS ... 7" to 15" H₂O Static

ELECTRICAL SYSTEM

BATTERY CHARGE ALTERNATOR	22 Amps at 12 V
STARTER MOTOR	12 V
RECOMMENDED BATTERY	(1) - 12 V, 90 A.H., 27F
GROUND POLARITY	Negative

Rating definitions - Standby: Applicable for supplying emergency power for the duration of the utility power outage. No overload capability is available for this rating. (All ratings in accordance with BS5514, ISO3046 and DIN6271). Prime (Unlimited Running Time): Applicable for supplying electric power in lieu of commercially purchased power. Prime power is the maximum power available at variable load. A 10% overload capacity is available for 1 hour in 12 hours. (All ratings in accordance with BS5514, ISO3046, ISO8528 and DIN6271).

SG020

OPERATING DATA

	STANDBY		PRIME	
	SG020		SG020	
	NG/LP	Rated AMP	NG/LP	Rated AMP
GENERATOR OUTPUT VOLTAGE/KW—60Hz				
120/240V, 1-phase, 1.0 pf	20	83	15	63
120/208V, 3-phase, 0.8 pf	20	69	15	52
120/240V, 3-phase, 0.8 pf	20	60	15	45
277/480V, 3-phase, 0.8 pf	20	30	15	23
600V, 3-phase, 0.8 pf	20	24	15	18
NOTE: Consult your Generac dealer for additional voltages.				
GENERATOR OUTPUT VOLTAGE/KVA-50Hz				
110/220V, 1-phase, 1.0 pf	16	73	12	55
110/220V, 3-phase, 0.8 pf	20	52	16	42
115/200V, 3-phase, 0.8 pf	20	58	16	46
231/400V, 3-phase, 0.8 pf	20	29	16	23
NOTE: Consult your Generac dealer for additional voltages.				
MOTOR STARTING KVA				
Maximum at 35% instantaneous voltage dip				
with standard alternator				
50 / 60 Hz	231/240V	400/480V	231/240V	400/480V
with optional alternator	42 / 50	47 / 56	42 / 50	47 / 56
	175 / 210	212 / 254	175 / 210	212 / 254
FUEL	N.G.	L.P.	N.G.	L.P.
Fuel consumption—60 Hz—100% Load				
ft. ³ /hr.	282	120	225	96
m ³ /hr.	8.0	3.4	6.4	2.7
Fuel consumption—50 Hz—100% Load				
ft. ³ /hr.	225	96	181	77
m ³ /hr.	6.4	2.7	5.1	2.2
COOLING				
Coolant capacity				
System lit. (US gal.)	21.9 (5.8)		21.9 (5.8)	
Engine lit. (US gal.)	7.9 (2.1)		7.9 (2.1)	
Radiator lit. (US gal.)	14.0 (3.7)		14.0 (3.7)	
Coolant flow/min.				
60 Hz lit. (US gal.)	80.6 (21.3)		80.6 (21.3)	
50 Hz lit. (US gal.)	67.2 (17.8)		67.2 (17.8)	
Heat rejection to coolant				
60/50 Hz BTU/hr.	93,000 / 75,800		74,400 / 60,600	
Radiator air flow				
60 Hz m ³ /min. (ft ³ /min.)	272 (9600)		272 (9600)	
50 Hz m ³ /min. (ft ³ /min.)	227 (8000)		227 (8000)	
Max. operating air temp onto radiator * °F	140		140	
Max. operating ambient temperature * °F	120		120	
Max. external pressure drop at radiator	0.5 in. H ₂ O		0.5 in. H ₂ O	
COMBUSTION AIR REQUIREMENTS				
Flow at rated power				
60 Hz m ³ /min. (ft ³ /min.)	2.0 (70)		1.6 (56)	
50 Hz m ³ /min. (ft ³ /min.)	1.5 (53.4)		1.3 (46.7)	
EXHAUST				
Exhaust flow at rated output				
60 Hz m ³ /min. (ft ³ /min.)	5.7 (202)		4.6 (162)	
50 Hz m ³ /min. (ft ³ /min.)	4.4 (155.1)		3.5 (124.1)	
Max. recommended back pressure in. Hg	5.1		5.1	
Exhaust temp at rated output °F	1100		1050	
Exhaust outlet size	4 – bolt flange to 2 inch tube		4 – bolt flange to 2 inch tube	
ENGINE				
Rated RPM	60 / 50 Hz	1800 / 1500	1800 / 1500	
HP at rated eKW (gross)	60 / 50 Hz	34.8 / 29	28.8 / 22	
Piston speed				
60 Hz m/min. (ft./min.)	10.1 (1986)		10.1 (1986)	
50 Hz m/min. (ft./min.)	8.4 (1655)		8.4 (1655)	
BMEP	60 / 50 Hz - psi	64.3 / 59.2	53.3 / 48.8	
POWER ADJUSTMENTS FOR AMBIENT CONDITIONS				
Temperature				
-3.0% for every 10°C above - °C	40		40	
-1.65% for every 10°F above - °F	104		104	
Altitude				
-1.0% for every 100 m above - m	2439		2439	
-3.0% for every 1000 ft. above - ft.	8000		8000	

* Note: Values given are maximum temperatures to which power adjustments can be applied. Consult your Generac Power Systems representative if operating conditions exceed these maximums.

STANDARD ENGINE & SAFETY FEATURES

SG020

- High Coolant Temperature Automatic Shutdown
- Low Coolant Level Automatic Shutdown
- Low Oil Pressure Automatic Shutdown
- Overspeed Automatic Shutdown (Solid-state)
- Crank Limiter (Solid-state)
- Oil Drain Extension
- Radiator Drain Extension
- Factory-Installed Cool Flow Radiator
- Closed Coolant Recovery System
- UV/Ozone Resistant Hoses
- Rubber-Booted Engine Electrical Connections
- Radiator Duct Adapter
- Fuel Lockoff Solenoid
- Secondary Fuel Regulator (N.G. and L.P.)
- Battery Charge Alternator
- Battery Cables
- Battery Tray
- Vibration Isolation of Unit to Mounting Base
- 12 Volt, Solenoid-Activated Starter Motor
- Air Cleaner
- Fan Guard
- Control Console
- Isochronous Governor
- Engine Block Heater

OPTIONS

■ OPTIONAL COOLING SYSTEM ACCESSORIES

- 208/240V Coolant Heater

■ OPTIONAL FUEL ACCESSORIES

- Flexible Fuel Lines
- L.P. Liquid Withdrawal
- Automatic Gaseous Dual Fuel

■ OPTIONAL EXHAUST ACCESSORIES

- Critical Exhaust Silencer (Std. on enclosed gensets)
- Single Exhaust Kit for Indoor Installations

■ OPTIONAL ELECTRICAL ACCESSORIES

- Battery, 12 Volt, 90 A.H., 27F
- Battery Heater
- 2A Battery Charger
- 10A Dual Rate Battery Charger

■ OPTIONAL ALTERNATOR ACCESSORIES

- Alternator Upsizing to 100kW
- Alternator Strip Heater
- Alternator Tropicalization
- Voltage Changeover Switch
- Main Line Circuit Breaker

■ CONTROL CONSOLE OPTIONS

- Analog Control "C" Panel (Bulletin 0151160SBY)
- Analog/Digital Control "E" Panel (Bulletin 0161310SBY)

■ ADDITIONAL OPTIONAL EQUIPMENT

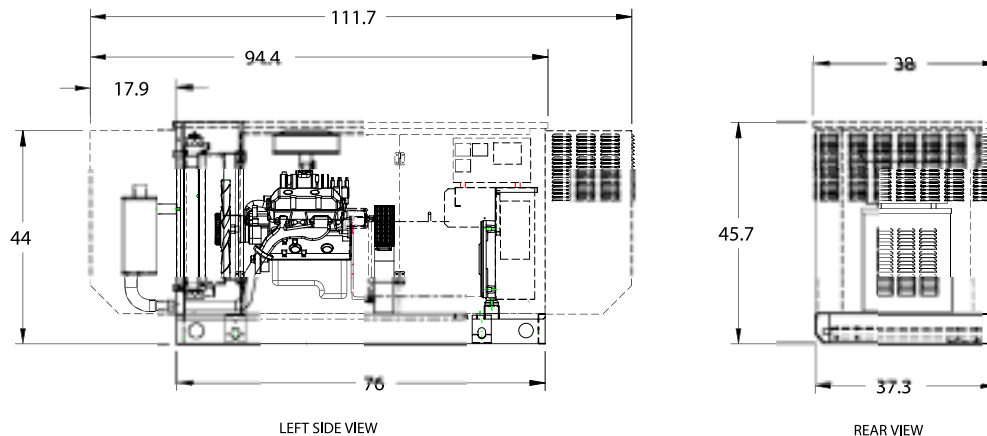
- Automatic Transfer Switch
- 3 Light Remote Annunciator
- 5 Light Remote Annunciator
- 20 Light Remote Annunciator
- Remote Relay Panel
- Unit Vibration Isolators
- Oil Make-Up System
- Oil Heater
- 5 Year Warranties
- Export Boxing
- GenLink® Communications Software

■ OPTIONAL ENCLOSURES

- Weather Protective
- Sound Attenuated
- Aluminum and Stainless Steel
- Enclosed Muffler

Distributed by:

Design and specifications subject to change without notice. Dimensions shown are approximate. Contact your Generac dealer for certified drawings. DO NOT USE THESE DIMENSIONS FOR INSTALLATION PURPOSES.



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