



# SENTRY-PRO POWER SYSTEMS

By Gillette Generators, Inc.

MODEL  
**SP-220**

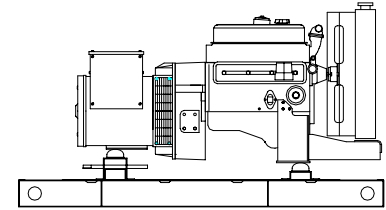
## LIQUID COOLED LPG/NG ENGINE GENERATOR SET

### KW POWER RATINGS RANGE

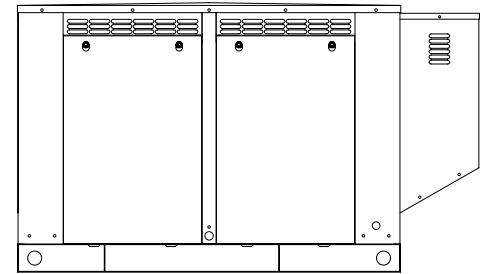
Model	HZ	MAXIMUM 150°C RISE		STANDBY 125°C RISE		PRIME 105°C RISE	
		LPG	N.G.	LPG	N.G.	LPG	N.G.
		<b>SP-220</b>	60	22	22	22	22
	50	18	18	16	16	16	16

### STANDARD FEATURES

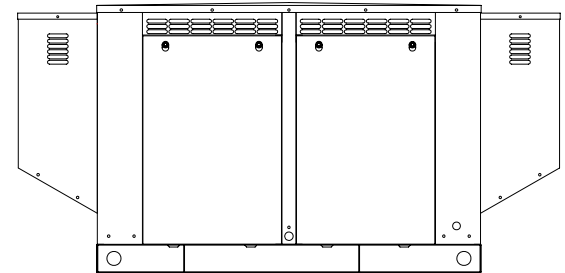
- All generator sets are USA prototype built and thoroughly tested. Production models are USA factory built and 100% load tested.
- All generator sets will accept 100% rated load in one step, per NFPA-110.
- All generators are UL-1446 certified, certain generators are UL 2200 certified.
- Solid state, frequency compensated voltage regulation is standard on all gen-sets.
- Electronic engine governor for precise isochronous frequency regulation.
- A brushless rotating field generator design with shunt wound excitation system and connectable at 1 phase or a broad range of 3 phase voltages.
- SENTINEL "SCOUT" digital controller allows programming to basic engine functions in the field. Controller has stop-manual-auto mode and (8) basic protectors and the functions monitored by LED indicators, plus LCD hour meter.
- All generator set control systems components and accessories provide a 1-year limited warranty at time of initial start-up. Generators and engines are governed by separate warranties.
- "OPEN" Generator Sets: There is no enclosure, so gen-set must be placed within a weather protected area, un-inhabited by humans or animals, with proper ventilation. Muffler and flexible exhaust hose are supplied loose for final exhaust installation by others.
- "STANDARD" Housing: Full weather protection and above average sound attenuation for normal applications. Residential grade muffler is standard.
- "SUPER-SILENT" Housing: Full weather protection and superior sound attenuation for specific low noise applications. Critical grade muffler is standard.



"OPEN" GEN-SET



"STANDARD" HOUSED GEN-SET



"SUPER-SILENT" HOUSED GEN-SET

### GENERATOR RATINGS

GENERATOR MODEL	VOLTAGE		PH	HZ	LIQUID PROPANE GAS FUEL						NATURAL GAS FUEL					
					150°C RISE MAXIMUM RATING		125°C RISE STANDBY RATING		105°C RISE PRIME RATING		150°C RISE MAXIMUM RATING		125°C RISE STANDBY RATING		105°C RISE PRIME RATING	
					KW/KVA	AMP	KW/KVA	AMP	KW/KVA	AMP	KW/KVA	AMP	KW/KVA	AMP	KW/KVA	AMP
SP-220-1-1	120	240	1	60	22/22	92	22/22	92	20/20	83	22/22	92	22/22	92	20/20	83
SP-220-3-2	120	208	3	60	22/27.5	76	22/27.5	76	20/25	69	22/27.5	76	22/27.5	76	20/25	69
SP-220-3-3	120	240	3	60	22/27.5	66	22/27.5	66	20/25	60	22/27.5	66	22/27.5	66	20/25	60
SP-220-3-4	277	480	3	60	22/27.5	33	22/27.5	33	20/25	30	22/27.5	33	22/27.5	33	20/25	30
SP-220-3-5	127	220	3	60	22/27.5	72	22/27.5	72	20/25	66	22/27.5	72	22/27.5	72	20/25	66
SP-220-1-6-5	110	220	1	50	18/18	82	18/18	82	16/16	73	18/18	82	18/18	82	16/16	73
SP-220-3-7-5	110	220	3	50	18/22.5	59	18/22.5	59	16/20	53	18/22.5	59	18/22.5	59	16/20	53
SP-220-3-8-5	219	380	3	50	18/22.5	34	18/22.5	34	16/20	30	18/22.5	34	18/22.5	34	16/20	30
SP-220-3-9-5	240	415	3	50	18/22.5	31	18/22.5	31	16/20	28	18/22.5	31	18/22.5	31	16/20	28
SP-220-3-10-5	231	400	3	50	18/22.5	33	18/22.5	33	16/20	29	18/22.5	33	18/22.5	33	16/20	29

RATINGS: All single phase gen-sets are rated at unity (1.0) power factor. All three phase gen-sets are rated at .8 power factor. "MAXIMUM RATINGS" are for short period running, not exceeding 1 hour, out of every 24 hour period. "STANDBY RATINGS" are strictly for gen-sets that are used for back-up emergency power to a failed normal utility power source. This standby rating allows varying loads, with no overload capability, for the entire duration of utility power outage. "PRIME RATINGS" are strictly for gen-sets that provide the prime source of electric power, where normal utility power is unavailable or unreliable. A 10% overload is allowed for a total of 1 hour, within every 12 hours of operation on PRIME RATED systems. All gen-set power ratings are based on temperature rise measured by resistance method as defined by MIL-STD 705C and IEEE STD 115, METHOD 6.4.4. All generators have class H (180°C) insulation system on both rotor and stator windings. All factory tests and KW/KVA charts shown above are based on 150°C (maximum), 125°C (standby), and 105°C (prime) R/R winding temperature, within a maximum 35°C ambient condition. Generators operated at maximum power ratings will not exceed the temperature rise limitation for class H insulation system, as specified in NEMA MG1-22.40. Specifications & ratings are subject to change without prior notice.



# APPLICATION AND ENGINEERING DATA FOR MODEL SP-220

## COOLING SYSTEM

Type of System ..... Pressurized, closed recovery  
 Coolant Pump ..... Pre-lubricated, self-sealing  
 Cooling Fan Type (no. of blades) ..... Pusher (10)  
 Fan Diameter inches (cm) ..... 18" (46)  
 Ambient Capacity of Radiator °F (°C) ..... 125 (51.6)  
 Engine Jacket Coolant Capacity Gal (L) ..... 1.0 (3.8)  
 Radiator Coolant Capacity Gal. (L) ..... 2.3 (8.7)  
 Maximum Restriction of Cooling Air Intake  
 and discharge side of radiator in. H<sub>2</sub>O (kpa) ..... .5 (.125)  
**Speed** ..... **1800 rpm** ..... **1500 rpm**  
**Frequency** ..... **60 HZ** ..... **50 HZ**  
 Water Pump Capacity gpm (L/min) ..... 18.2 (69) ..... 15.5 (59)  
 Heat Reject Coolant : Btu/min (kw) ..... 1445 (25) ..... 1228 (21)  
 Note: Coolant temp. shut-down switch setting at 212°F (100°C) with 50/50  
 (water/antifreeze) mix.

## AIR REQUIREMENTS

**Speed** ..... **1800 rpm** ..... **1500 rpm**  
**Frequency** ..... **60 HZ** ..... **50 HZ**  
 Radiator Air Flow cfm (m<sup>3</sup>/min) ..... 4800 (137) ..... 4000 (117)  
 Heat Rejected to Ambient:  
 Engine: kw (btu/min) ..... 12.5 (713) ..... 10.6 (606)  
 Alternator: kw (btu/min) ..... 4.0 (245) ..... 3.4 (208)

## EXHAUST SYSTEM

Emissions; HC : g/hp-hr ..... 47-74\*  
 Emissions; CO : g/hp-hr ..... 1104-3680\*  
 Emissions; NoX : g/hp-hr ..... 70-191\*  
 Muffler Inlet – Outlet Size ..... 2"  
 Max. Back Pressure hg ..... 2"  
**Speed** ..... **1800 rpm** ..... **1500 rpm**  
**Frequency** ..... **60 HZ** ..... **50 HZ**  
 Exhaust Flow, kw: cfm (m<sup>3</sup>/min) ..... 289 (8.18) ..... 231 (6.5)  
 Exhaust Temp., kw: °F (°C) ..... 1200 (648) ..... 1100 (593)  
 \*Engine manufacturer's estimated range.

## SOUND LEVELS

	Open Set	Std. Encl.	Super- Silent Encl.
dB(A), Residential Muffler, no load	75	71	N/A
dB(A), Residential Muffler, full load	77	73	N/A
dB(A), Critical Muffler, no load	72	68	66
dB(A), Critical Muffler, full load	73	70	68

Note: Open sets (no enclosure) have loose flexible exhaust hose and loose residential muffler, ready for installation by others. Standard enclosure has installed residential muffler. Super-Silent enclosure has installed critical muffler. "Open" sets can be upgraded to critical muffler. Standard enclosure sets can be upgraded to critical muffler. Reduce all sound levels by 5% for 50 HZ, 1500 RPM operation. Sound tests are averaged from several test points and taken at 23 ft. (7 m) from source of noise.

## DERATE GENERATOR FOR ALTITUDE

3% per 1000 ft. (305m) above 3000 ft. (914m) from sea level

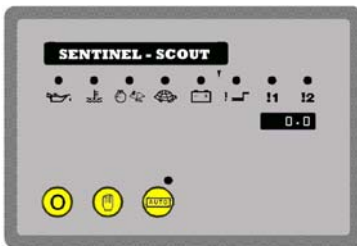
## DERATE GENERATOR FOR TEMPERATURE

2% per 10°F (5.6°C) above 85°F (29.4°C)

## DIMENSIONS AND WEIGHTS

	Open Set	Standard Enclosure	Super- Silent Enclosure
Length in (cm)	68 (173)	82 (208)	96 (244)
Width in (cm)	36 (91)	36 (92)	36 (92)
Height in (cm)	34 (86)	47 (119)	47 (119)
Net Weight lbs (kg)	1010 (458)	1310 (594)	1495 (678)
Ship Weight lbs (kg)	1110 (504)	1410 (640)	1595 (725)

# SENTINEL SCOUT DIGITAL MICROPROCESSOR CONTROLLER



### SENTINEL SCOUT

This flexible controller allows programming to 8 basic engine functions in the field, and is standard equipment on all 4-pole gen-sets.

Controller has STOP-MANUAL-AUTO mode and (8) basic engine LED indicators: Low oil pressure • High engine temp • Over speed • Under speed • Fail to start • Battery charge fail • and two auxiliary LED outputs.

**SPECIAL FEATURES :** Micro-processor design • Auto engine stop-start with (3) start attempts before final shutdown • Auto shutdown on fault condition • Push button operation • Adjustable start or stop delay timer • Energize to stop timer • Pre-heat timer • LED alarm indication • External remote start input • Load switch output capability • Solid state fuel and engine crank outputs • Tamper-proof engine hours LCD counter



### SENTINEL III UPGRADE :

Digital controller with (47) different reporting functions programmable by means of graphic LCD display.



### SENTINEL IV UPGRADE :

This controller is the same as the SENTINEL III, plus: monitors utility power • Communication via optional RS-232 port. Use this controller with remote annunciators.

# STANDARD AND OPTIONAL FEATURES FOR MODEL SP-220

## STANDARD FEATURES

### CONTROL PANEL:

- SENTINEL "SCOUT" digital microprocessor with logic allows programming in the field. Controller has:
  - STOP-MANUAL-AUTO modes and (8) basic engine LED indicators
  - Low oil pressure
  - High engine temp
  - Engine over speed
  - Engine under speed
  - Engine fail to start
  - Battery charge fail
  - Two auxiliary LED outputs
- Also included is tamper-proof engine hour meter

### ENGINE:

- Full flow oil filter • Air filter • Oil pump • Solenoid type starter motor • Hi-temp radiator • Jacket water pump
- Thermostat • Pusher fan and guard • Exhaust manifold
- Residential Silencer • 12 VDC battery charging alternator
- Flexible exhaust connector • "Isochronous" duty, electronic governor • Secondary dry fuel regulator • Dry fuel lock-off solenoid • Vibration isolators • Closed coolant recovery system with 50/50 water to anti-freeze mixture • flexible oil & radiator hose

### GENERATOR:

- AC generator • Shunt excited • Brushless design • Single bearing • Direct connection to engine with flex disc • Class H, 180°C insulation • Self ventilated • Drip proof construction

### VOLTAGE REGULATOR:

- ½% Voltage regulation • EMI filter • Under-speed protection • Over-excitation protection • Total encapsulation

### ELECTRICAL:

- Battery tray • Battery cables • Battery hold down straps
- 2-stage battery float charger

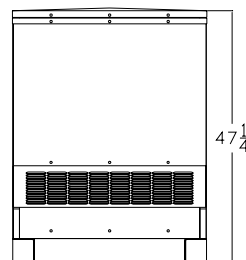
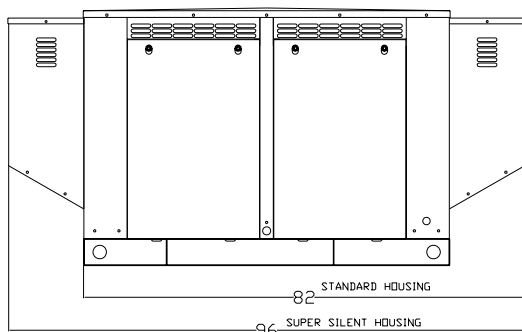
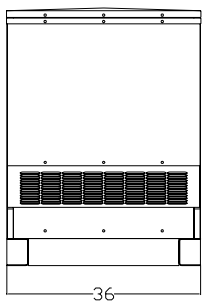
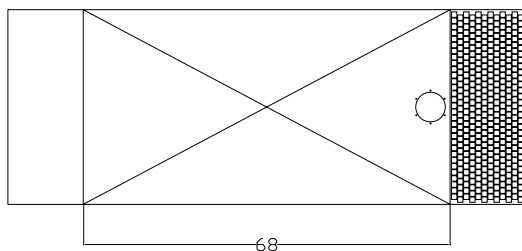
### SUPPORT:

- Operation, maintenance, and installation literature.
- Call 1-800-777-9639 or Fax 1-574-262-1840
- E-mail : [engineering@gillettegenerators.com](mailto:engineering@gillettegenerators.com)
- Web : [www.gillettegenerators.com](http://www.gillettegenerators.com)

## ACCESSORY ITEMS

- Engine Coolant Heater with automatic 60°F on, 80°F off, thermostat
- Starting Battery Heater Blanket with automatic 60°F on, 80°F off, thermostat
- Battery Charger, float type, 12 VDC at max. charge, with ammeter.
- Radiator for dirty environment
- External Permanent Magnet Generator (PMG) for increased induction motor starting capacity on 1Ø or 3Ø sets, and to meet NFPA-110 requirements.
- Exhaust Silencer (Critical Grade) installed on "OPEN sets or standard housings.

- Circuit Breaker installed and wired on gen-set.
- Circuit Breaker with NEMA-3R Enclosure. Note: These breakers are shipped loose for installation in remote outside area by others.
- Single or Three Phase Windings, 50 or 60 Hertz.
- SENTINEL III digital programmable controller with up to (47) different reporting functions.
- SENTINEL IV Controller with all features of Sentinel III, plus allowing full telemetry remote control annunciation, and utility power monitoring.
- Remote annunciator for up to (10) reporting functions. An additional relay expansion module, plus a second annunciator adds another (10) reporting functions. Note: SENTINEL IV must be selected, to achieve remote annunciation.
- All aluminum weather and sound deadening housing for coastal areas. (allow 8-10 weeks for special order)



Design & specifications subject to change without prior notice. Dimensions shown are approximate. Contact Gillette for certified drawings.  
DO NOT USE DIMENSIONS FOR INSTALLATION PURPOSES.