



# SENTRY-PRO POWER SYSTEMS

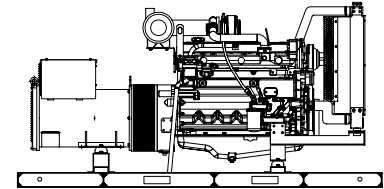
By Gillette Generators, Inc.

MODEL  
**SPJD-1800**  
60 HERTZ

**LIQUID COOLED DIESEL ENGINE GENERATOR SET**

## KW POWER RATINGS RANGE FOR 60 HZ

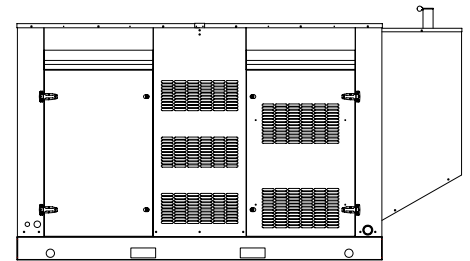
Model	HZ	STANDBY	PRIME
		130°C RISE	105°C RISE
<b>SPJD-1800-60 HERTZ</b>	60	175/180	164/169



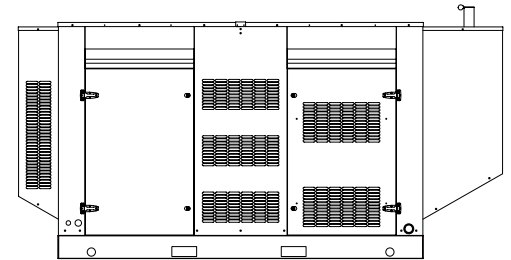
“OPEN” GEN-SET

## 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 and UL-2200 certified.
- Solid state, frequency compensated voltage regulation is standard on all gen-sets.
- Electronic engine governor for precise isochronous frequency regulation.
- SENTINEL “COMMAND” digital controller allows programming to basic engine functions in the field. Controller has stop-manual-auto mode and engine shutdowns, signaled by full text LCD indicators.
- 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 not supplied, as installation requirements are not known. However, these two items are available as optional equipment.
- “STANDARD” Housing: Full weather protection and above average sound attenuation for normal applications. Dual residential grade mufflers are standard.
- “SUPER-SILENT” Housing: Full weather protection and superior sound attenuation for specific low noise applications. Dual critical grade mufflers are standard.



“STANDARD” HOUSED GEN- SET



“SUPER-SILENT” HOUSED GEN-SET

## GENERATOR RATINGS

GENERATOR MODEL	VOLTAGE		PH	HZ	130°C RISE STANDBY RATING		105°C RISE PRIME RATING		POWER LEAD CONNECTIONS
	L-N	L-L			KW/KVA	AMP	KW/KVA	AMP	
SPJD-1800-1-1	120	240	1	60	175/175	729	164/164	683	4 LEAD DEDICATED 1 PH
SPJD-1800-3-2	120	208	3	60	175/218.8	608	164/205	570	12 LEAD LOW WYE
SPJD-1800-3-3	120	240	3	60	175/218.8	527	164/205	494	12 LEAD HIGH DELTA
SPJD-1800-3-4	277	480	3	60	180/225	271	169/211	254	12 LEAD HIGH WYE
SPJD-1800-3-5	127	220	3	60	175/218.8	575	164/205	539	12 LEAD LOW WYE

RATINGS: All single phase gen-sets are dedicated 4 lead windings, rated at unity (1.0) power factor. All three phase gen-sets are 12 lead windings, rated at .8 power factor. 130° C “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. 105° C “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 every 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 130°C (standby), and 105°C (prime) R/R winding temperature, within a maximum 30°C ambient condition. Generators operated at standby power ratings must 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 SPJD-1800-60 HZ

## GENERATOR SPECIFICATIONS

Type ..... 4 Pole, revolving field design  
Exciter ..... Brushless, internal shunt excited  
Voltage Regulator ..... Solid State, HZ/Volts  
Voltage Regulation ..... ½%, No load to full load  
Frequency ..... Field convertible, 60 HZ to 50 HZ  
Frequency Regulation ..... ± ½% (1/2 cycle, no load to full load)  
Unbalanced Load Capability ..... 50% of nameplate rating  
One Step Load Acceptance ..... 100% of nameplate rating  
Motor Starting ..... 35% Dip on specific voltages  
Total Stator and Load Insulation ..... Class H, 180°C  
Temperature Rise ..... 130°C R/R, standby rating @ 30°C amb.  
..... 105°C R/R, prime rating @ 30°C amb.  
1 Ø Motor Starting @ 35% Voltage Dip (240V) ..... 360 KVA  
3 Ø Motor Starting @ 35% Voltage Dip (208-240V) ..... 325 KVA  
3 Ø Motor Starting @ 35% Voltage Dip (480V) ..... 440 KVA  
Bearing ..... 1, Pre-lubed and sealed  
Power Leads ..... 12 Leads re-connectable for three phase  
..... or 4 Leads, dedicated winding for single phase  
Coupling ..... Direct flexible disc.  
Total Harmonic Distortion ..... Max 3½% (MIL-STD705B)  
Telephone Interference Factor ..... Max 50 (NEMA MG1-22)  
Deviation Factor ..... Max 5% (MIL-STD 405B)  
Alternator ..... Self ventilating and drip-proof  
Ltd. Warranty ..... 24 Months from start-up date or  
..... 1000 hours use, which ever comes first

## GENERATOR FEATURES

- Full alternator protection with **SENTINEL “COMMAND”** controller, having UL-508 certification.
- Automatic voltage regulator with over-excitation, under-frequency compensation, under-speed protection, and EMI filtering. Entire solid-state board is encapsulated for moisture protection.
- Alternator power ratings are based on temperature rise, measured by resistance method, as defined in MIL-STD 705C and IEEE STD 115, Method 6.4.4.
- Power ratings will not exceed temperature rise limitation for class H insulation as per NEMA MG1-22.40.
- Insulation resistance to ground, exceeds 1.5 meg-ohm
- Stator receives 2000 V. hi-potential test on main windings, and rotor windings receive a 1500 V. hi-potential test, as per MIL-STD 705B
- Full amortisseur windings with UL-1446 listing on all alternators. Certain generators are UL-2200 certified.
- Complete engine-alternator torsional acceptance, confirmed during initial prototype testing.
- Full load testing on all engine-alternator sets, before shipping.

## ENGINE SPECIFICATIONS AND APPLICATIONS DATA

### ENGINE

Manufacturer ..... John Deere  
Model and Type ..... 6068HF485, 4 cycle, liquid Cooled  
Aspiration ..... Turbocharged  
Cooled System ..... Charged Air-cooled  
Cylinder Arrangement ..... 6 Cylinders, In-Line  
Displacement Cu. In. (Liters) ..... 415 (6.8)  
Bore & Stroke in (L) ..... 4.19 x 5 (10.6 x 12.7)  
Compression Ratio ..... 17.0:1  
Main Bearings & Style ..... 7, Replaceable Inserts  
Cylinder Head ..... Cast Iron  
Pistons ..... 6, Aluminum Alloy  
Crankshaft ..... Forged Steel  
Exhaust Valve ..... Stainless Steel  
Governor ..... JDEC Electronic L14 DENSO HP3  
Frequency Regulation ..... ± 1/4%  
Air Cleaner ..... Dry, Replaceable Cartridge  
Engine Speed ..... 1800 rpm  
Max Power, bhp (kwm) Standby ..... 315 (235)  
Max Power, bhp (kwm) Prime ..... 286 (214)  
BMEP: psi (kpa) Standby ..... 334 (2304)  
BMEP: psi (kpa) Prime ..... 304 (2094)  
Ltd. Warranty ..... 24 months or 2000 hrs, first to occur

### FUEL SYSTEM

Type ..... Diesel Fuel Oil (ASTM No. 2-D)  
Combustion System ..... Direct Injection  
Fuel Injection Pump ..... Stanadyne Rotary Type  
12 VDC air intake heaters ..... Standard Equipment  
Fuel Filter and Water Separator ..... Yes

### FUEL CONSUMPTION

GAL/HR (LITER/HR)	STANDBY	PRIME
100% LOAD	13.6 (51.5)	12.5 (47.3)
75% LOAD	10.4 (39.4)	9.5 (35.9)
50% LOAD	7.4 (28.0)	6.5 (24.6)

### OIL SYSTEM

Type ..... Full Pressure  
Oil Pan Capacity qt. (L) ..... 34.4 (32.5)  
Oil Pan Cap. W/ filter qt. (L) ..... 35.3 (33.4)  
Oil Filter ..... 1, Replaceable Spin-On

### ELECTRICAL SYSTEM

Ignition System ..... Electronic  
Eng. Alternator/Starter: 12 VDC, negative ground, 45 amp/hr.

Recommended battery to -18°C (0° F): 12 VDC, BCI-27 or 27F  
Max. Dimensions: 12 1/4" LG x 7" wide x 9" high, with STD round posts. Max output 800 CCA. , each battery

Note: This model has (2) battery trays, (2) hold down straps, (2) sets of battery cables, and (1) battery charger. Installation of (2) is required, with possible higher AMP/HR ratings, as described above, if normal environment averages -13°F (-25°C) or cooler.

### CERTIFICATIONS

All engines are CARB and EPA emissions certified. All stationary diesel engines are Tier III compliant.

# APPLICATION AND ENGINEERING DATA FOR MODEL SPJD-1800-60 HZ

## COOLING SYSTEM

Type of System ..... Air to Air, Charged Air Cooler  
 Coolant Pump .....Pre-lubricated, self-sealing  
 Cooling Fan Type (no. of blades) .....Pusher (7)  
 Fan Diameter inches (cm)..... 31" (78.7)  
 Ambient Capacity of Radiator °F (°C).....125 (51.6)  
 Engine Jacket Coolant Capacity Qt. (L) ..... 12 (11.3)  
 Radiator Coolant Capacity Qt. (L).....29.2 (27.6)  
 Water Pump Capacity gpm (L/min)..... 231 (61)  
 Heat Reject Coolant: Btu/min (kw) .....4880 (85.8)  
 Air to Air Heat Reject, BTU/min (kw) .....3790 (66.6)  
 Low Radiator Coolant Level Shutdown.....Standard  
 Note: Coolant temp. shut-down switch setting at 212°F (100°C)  
 with 50/50 (water/antifreeze) mix.

## COOLING AIR REQUIREMENTS

Combustion Air cfm (m<sup>3</sup>/min) .....560 (15.9)  
 Max Air Intake Restrictions:  
     Clean Air Cleaner, H<sub>2</sub>O (KPA)..... 15 (3.75)  
 Intake Manifold Pressure, Psi (kpa).....21 (143)  
 Heat Rejection to Coolant at Rated KW:  
     BTU/min (KW).....4880 (85.8)  
 Heat Rejection out of Charger Air Cooler  
     @ Rated KW: BTU/min (kw).....3790 (66.6)  
 Radiator Cooling Air, SCFM (m<sup>3</sup>/min).....13000 (368)

## EXHAUST SYSTEM

Muffler Inlet – size .....4"  
 Max. Back Pressure in. H<sub>g</sub>. (kpa) ..... 10 (3.0)  
 Exhaust Flow, at rated KW, cfm (m<sup>3</sup>/min) ... 1510 (42.8)  
 Exhaust Temp, at rated KW, °F (°C).....980 (527)

## SOUND LEVELS

	Open Set	Std. Encl.	Super-Silent Encl.
dB(A), Residential Muffler, no load	95	91	n/a
dB(A), Residential Muffler, full load	96	92	n/a
dB(A), Critical Muffler, no load	91	88	87
dB(A), Critical Muffler, full load	93	89	86

Note: Open sets (no enclosure) has no furnished muffler system due to unknown job-site applications. Standard enclosure has installed residential muffler. Super-Silent enclosure has installed critical muffler. Standard enclosure sets can be upgraded from residential to critical muffler. 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.(305 meters) above 3000 ft. (914 meters) from sea level.

## DERATE GENERATOR FOR TEMPERATURE

2% per 10°F (12°C) above 85°F (30°C)

## DIMENSIONS AND WEIGHTS

	Open Set	Standard Enclosure	Super-Silent Enclosure
Length in (cm).....	110 (280)	134 (341)	146 (371)
Width in (cm).....	48 (122)	48 (122)	48 (122)
Height in (cm).....	55 (140)	72.5 (183)	72.5 (183)
1 Ø Net Weight lbs (kg) ..	3589 (1628)	4419 (2013)	4839 (2195)
1 Ø Ship Weight lbs (kg) ..	3839 (1741)	4719 (2140)	4979 (2258)
3 Ø Net Weight lbs (kg) ..	3298 (1496)	4149 (1882)	4409 (1996)
3 Ø Ship Weight lbs (kg) ..	3548 (1609)	4429 (2007)	4729 (2145)

# SENTINEL COMMAND DIGITAL MICROPROCESSOR CONTROLLER



### SENTINEL COMMAND

The “**Command**” controller is an auto start control module and the upgrade “**Command Elite**” controller is an auto mains (utility) failure, module, for single gen-set applications.

Both controllers include a backlit LCD display which continuously displays the status of engine and generator at all times. Both will also monitor speed, frequency, voltage, current, oil pressure, coolant temp., and fuel levels. These modules have been designed to display warning and shut down status. They also include: (6) digital inputs • (3) analog inputs • (6) outputs • voltage monitoring (utility mains included on “Command Elite”) • (10) event logs • configurable timers • automatic shutdown or warning during fault detection via red LED indicators • remote start (on or off load) • engine preheat • advanced metering capability • hour meter • text LCD displays • protected solid state outputs • test buttons for: stop/reset • manual mode • auto mode • lamp test • start button

This controller (installed on all generator models as standard equipment) can be accessed via PC laptop using any standard USB cable and downloadable software.



### SENTINEL COMMAND ELITE CONTROLLERS :

The “**Command Elite**” controller is an auto-mains (utility) failure control module that has almost all the Sentinel “**Command**” controller features, plus the additional capability of

being able to monitor a mains (utility) power supply. It is also used where remote annunciation is required.

All controllers are simple to operate and feature a user friendly menu layout for improved clarity. Enhanced features include a real time clock, better event, and performance monitoring, plus Ethernet communications for lower cost monitoring.

# STANDARD AND OPTIONAL FEATURES FOR MODEL SPJD-1800-60 HZ

## STANDARD FEATURES

### CONTROL PANEL:

SENTINEL "COMMAND" digital microprocessor with logic allows programming in the field. Controller has:

- STOP-MANUAL-AUTO modes and automatic engine shutdowns, signaled by full text LCD indicators:
- Low oil pressure
- High engine temp
- Low Radiator Level
- Three auxiliary alarms
- Battery fail alarm
- Engine fail to start
- Engine over speed
- Engine under speed
- Over & under voltage

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

### 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

### WEATHER/SOUND PROOF STEEL HOUSING CORROSION RESISTANT PROTECTION CONSISTING OF:

- 9 Heated And Agitated Wash Stages.
- Zinc Phosphate Etching-coating Stage
- E-Coat: Electrostatic Emerging
- Final Baked On Enamel Powder Coat

## 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.
- External Permanent Magnet Generator (PMG) for increased induction motor starting capacity on 1Ø or 3 Ø sets, and to meet NFPA-110 requirements.
- Exhaust Silencer (Critical Grade) installed on "OPEN" sets or standard housing.

- Circuit Breaker installed and wired on gen-set. Note: NEMA-3R Breakers are shipped loose.
- All aluminum or stainless steel weather and sound deadening housing for coastal areas.
- SENTINEL COMMAND ELITE Controller with all features of Sentinel COMMAND, 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 COMMAND ELITE must be selected, to achieve remote annunciation.

