SENTRY-PRO POWER SYSTEMS

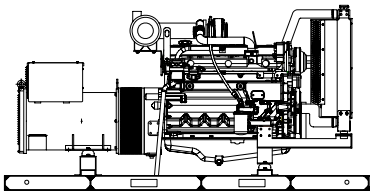
By Gillette Generators, Inc.

FPT IVECO | **DIESEL ENGINE GENERATOR SET**

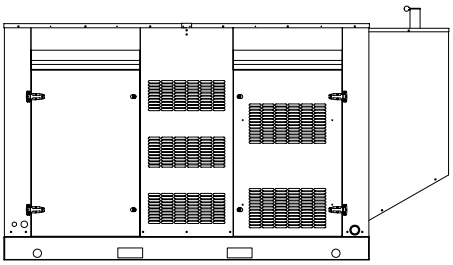
MODEL
SPID-1250
60 HERTZ

KW POWER RATINGS RANGE FOR 60 HZ

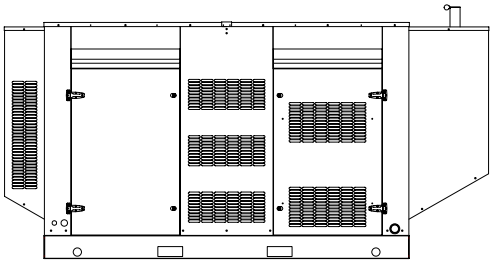
Model	HZ	STANDBY 130°C RISE	PRIME 105°C RISE
SPID-1250-60 HERTZ	60	115/125	103/110



"OPEN" GEN-SET



"STANDARD" HOUSED GEN- SET



"SUPER-SILENT" HOUSED 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.
- Mechanical engine governor for precise 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. 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.

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	
SPID-1250-1-1	120	240	1	60	115/115	479	103/103	429	4 LEAD DEDICATED 1 PH
SPID-1250-3-2	120	208	3	60	125/156	434	110/137.5	382	12 LEAD LOW WYE
SPID-1250-3-3	120	240	3	60	125/156	376	110/137.5	331	12 LEAD HIGH DELTA
SPID-1250-3-4	277	480	3	60	125/156	188	110/137.5	166	12 LEAD HIGH WYE
SPID-1250-3-5	127	220	3	60	125/156	411	110/137.5	361	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 SPID-1250-60 HZ

GENERATOR SPECIFICATIONS

Type ..... 4 Pole, revolving field design
Exciter……..Brushless, 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) ..... 145 KVA
3 Ø Motor Starting @ 35% Voltage Dip (208-240V) .... 295 KVA
3 Ø Motor Starting @ 35% Voltage Dip (480V) ..... 385 KVA
Bearing..... 1, Pre-lubed and sealed
Power Leads..... 12 Leads re-connectable for three phase
..... or 4 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 date of start-up or
..... 1000 hours use, which ever occurs 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..... FPT IVECO
Model and Type ..... NEFF67TM1X, 4 cycle, liquid Cooled
Aspiration..... Turbocharged
Charged Air Cooling System ……Air to Air
Cylinder Arrangement..... 6 Cylinders, In-Line
Displacement Cu. In. (Liters)..... 409 (6.7)
Bore & Stroke In. (mm.) ..... 4.09 x 5.2 (104 x 132)
Compression Ratio..... 17.5:1
Main Bearings..... Tin Overlay with Babbit Backing
Cylinder Head ..... Cast Iron with overhead Cam
Pistons..... Aluminum Alloy with Graphite Coating
Crankshaft..... Induction Hardened, Heat Treated Forged
Valves ..... 2/ Cylinder, Heat Treated and Hardened Ex. Valves
Governor ..... Mechanical
Frequency Regulation ..... ± 1%
Air Cleaner..... Dry, Replaceable Cartridge
Engine Speed ..... 1800 rpm
Max Power, bhp (kwm) Standby 198 (148)
Max Power, bhp (kw)m Prime 180 (135)
BMEP: psi (BAR) Standby 216 (14.7)
BMEP: psi (BAR) Prime..... ..... 197 (13.4)
Ltd. Warranty..... 5 Years or 2000 hrs, first to occur
with max. usage of 400 HRS. / Yr.

FUEL SYSTEM

Type ..... Diesel Fuel Oil (ASTM No. 2-D)
Combustion System ..... Stanadyne Direct Injection
Fuel Injection Pump..... Direct Mechanical
12 VDC Air Intake Heaters..... Standard Equipment
Fuel Filter and Water Separator……...Yes

FUEL CONSUMPTION

GAL/HR (LITER/HR)	STANDBY	PRIME
100% LOAD	10.6 (40.1	10.1 (38.2)
75% LOAD	7.5 (28.4)	7.0 (26.5)
50% LOAD	5.5 (20.8)	5.2 (19.7)

OIL SYSTEM

Type ..... Full Pressure
Oil Pan Capacity qt. (L) 12.7 (12)
Oil Pan Cap. W/ filter qt. (L) 17.9 (17)
Oil Filter..... 1, Replaceable Spin-On

ELECTRICAL SYSTEM

Ignition System ..... Electronic
Eng. Alternator/Starter: 12 VDC, Negative ground, 90 Amp/hr.
Recommended Battery to -18°C (0°F): ..... 12 VDC, Size BCI# 27 or #27F, Max Dimension 12-1/4 "lg X 7" wi X 9"hi, with standard round posts. Max output at 800 CCA. Battery holder, hold down strap, battery cables, and battery charger is furnished. Installation of (1) starting battery is required. Cold weather conditions below -13°F (-25°C) may require a stronger battery.

CERTIFICATION

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

APPLICATION AND ENGINEERING DATA FOR MODEL SPID-1250-60 HZ

COOLING SYSTEM

Type of System ..... Air to Air, Charged Air Cooling
Coolant Pump .....Pre-lubricated, self-sealing
Cooling Fan Type (no. of blades) .....Pusher (12)
Fan Diameter inches (cm).....24 (61)
Ambient Capacity of Radiator °F (°C).....125 (52)
Engine Jacket Coolant Capacity Qt. (L) 11 (10.5)
Radiator Coolant Capacity Qt. (L).....31.7 (30)
Water Pump Capacity gpm (L/min)..... .....44.9 (170)
Heat Reject Coolant: Btu/min 3622
Air to Air Heat Reject Btu/min 1028
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^3/min) 424 (12)
Max. Air Intake Restriction:
Clean Air Cleaner, KPA (MBAR)..... ..... 2 (20)
Max. Temp. out of Air Cooler ....190°F (88°C)
Radiator Cooling Air, SCFM (m^3/min).....12,025(480)

EXHAUST SYSTEM

Muffler Inlet – Outlet Size.....3"
Max. Back Pressure in KPA (MBAR 5 (50)
Exhaust Flow, at rated KW, Kg/hr..... 841
Exhaust Temp, at PRP (77°F)°F (ºC). 896 (466)

SOUND LEVELS

	Open Set	Stnd. Encl..	Super-Silent Encl.
dB(A), Residential Muffler, no load	91	87	n/a
dB(A), Residential Muffler, full load	93	89	n/a
dB(A), Critical Muffler, no load	87	85	83
dB(A), Critical Muffler, full load	89	87	85

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
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DERATE GENERATOR FOR ALTITUDE

3% per 1000 ft. (305 m) above 3000 ft. (914 m) 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)	110 (280)	134 (340)	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)	3130 (1420)	3980 (1805)	4240 (1923)
1 Ø Ship Weight lbs (kg)	3380 (1533)	4260 (1932)	4560 (2068)
3 Ø Net Weight lbs (kg)	3003 (1362)	3853 (1747)	4113 (1865)
3 Ø Ship Weight lbs (kg)	3253 (1475)	4133 (1874)	4433 (2010)

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 SPID-1250-60 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:

Fuel filter and water separator • full flow oil filter • Air filter • Fuel pump • Oil pump • Solenoid type starter motor • Hi-temp radiator • Jacket water pump • Thermostat • Pusher fan and guard • Exhaust manifold • Residential Silencer • Electronic Governor • 12 VDC battery charging alternator • Flexible fuel and exhaust connectors • Vibration isolators • Open coolant recovery system with 50/50 water to anti-freeze mixture • flexible oil & radiator drain hose • Shut-down sensors for low oil pressure, high coolant temp., low coolant level, high ambient temp.

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 • KW rating 130°C @ 30°C ambient

VOLTAGE REGULATOR:

1% 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

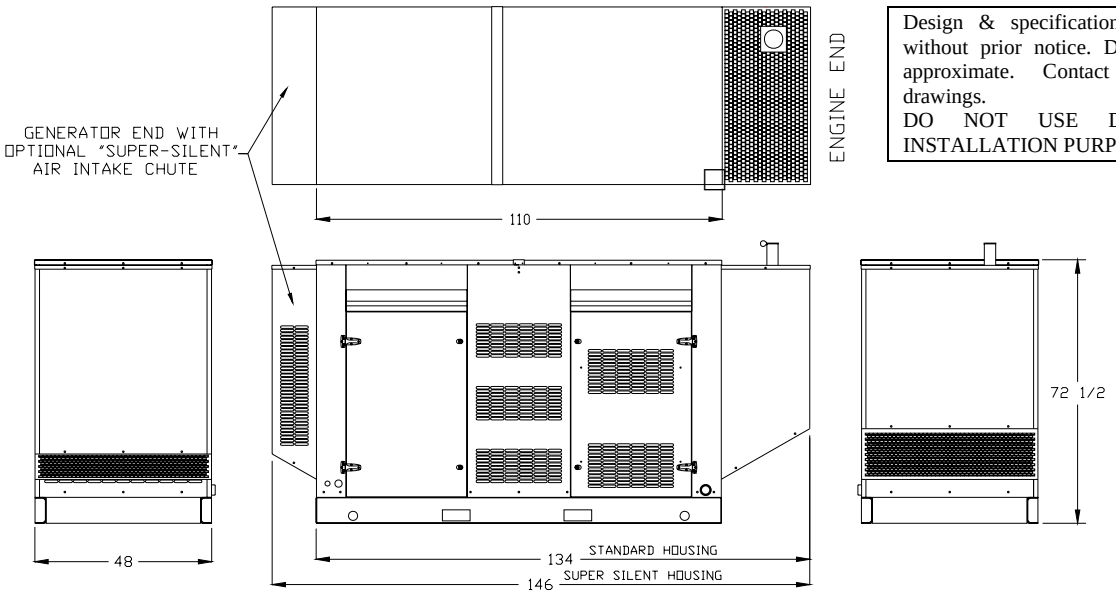
WEATHER / SOUNDPROOF HOSUING:

Corrosion Resistant Protection consisting of:

- (9) Heated and Agitated Wash Stages
- Zinc Phosphate Etching-Coating Stage
- E-Coat: Electrostatic Submerging
- 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.
- ☐ Radiator for dirty environment
- ☐ External Permanent Magnet Generator (PMG) for increased induction motor starting capacity, on 1∅ or 3∅ 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.
- ☐ Double-wall Sub-Base Diesel Fuel Tanks with UL-142 certification
- ☐ Single or Three Phase Windings, 50 or 60 Hertz.
- ☐ 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.



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