GILLETTE GENERATORS

60 HZ MODEL

SPJD-600

LIQUID COOLED DIESEL ENGINE GENERATOR SET

Model	HZ	STANDBY 120°C RISE
SPJD-600-60 HERTZ	60	60

All generator sets are USA prototype built and thoroughly tested. Production models are USA factory built and 100% load tested.

UL2200, UL1446, UL508, UL142, UL498

NFPA 110, 99, 70, 37
All generator sets meet NFPA-110 Level 1, when equipped with the necessary accessories and installed per NFPA standards.

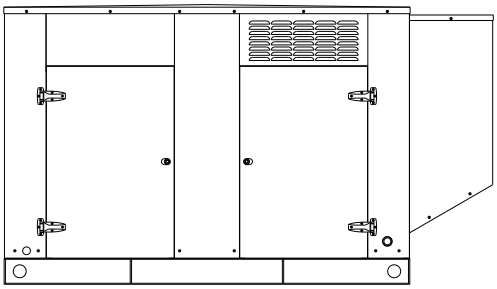
NEC 700, 701, 702, 708

NEMA ICS10, MG1, ICS6, AB1

ANSI C62.41, 27, 59, 32, 480, 40Q, 81U, 360-05

ASCE 7-22
All generator sets meet 200 MPH rating.

EPA 40CFR Part 60, 1048, 1054, 1065, 1068



"LEVEL 2" HOUSED GEN-SET
Full aluminum weather protection and superior sound attenuation for specific low noise applications. Critical grade muffler is standard.

GENERATOR RATINGS

GENERATOR MODEL	VOLTAGE		PH	HZ	120°C RISE STANDBY RATING		POWER LEAD CONNECTIONS
	L-N	L-L			KW/KVA	AMP	
SPJD-600-1-1	120	240	1	60	60/60	250	4 LEAD DEDICATED 1 PH
SPJD-600-3-2	120	208	3	60	60/75	208	12 LEAD LOW WYE
SPJD-600-3-3	120	240	3	60	60/75	181	12 LEAD HIGH DELTA
SPJD-600-3-4	277	480	3	60	60/75	90	12 LEAD HIGH WYE
SPJD-600-3-5	127	220	3	60	60/75	197	12 LEAD LOW WYE
SPJD-600-3-16	346	600	3	60	60/75	72	4 LEAD DEDICATED 3 PH

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. 120° 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. 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 120°C (standby) R/R winding temperature, within a maximum 40°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-600-60 HZ

GENERATOR SPECIFICATIONS

Manufacturer..... Stamford Electric Generators
Model & Type.....UCI224F-06, 4 Pole, 4 Lead, Single Phase
..... UCI224F-311, 4 Pole, 12 Lead re-connectable, Three Phase
..... UCI224E-17, 4 Pole, 6 lead, 600V, Three Phase
Exciter..... Brushless, shunt excited
Voltage Regulator.....Solid State, HZ/Volts
Voltage Regulation ..... ½%, No load to full load
Frequency .....60 HZ
Frequency Regulation.....± ½% (½ cycle, no load to full load)
Unbalanced Load Capability .....100% of standby amps
Total Stator and Load Insulation ..... Class H, 180°C
Temperature Rise.....120°C R/R, standby rating @ 40°C amb.
1 Ø Motor Starting @ 30% Voltage Dip (240V)..... 168 kVA
3 Ø Motor Starting @ 30% Voltage Dip (208-240V) .... 190 kVA
3 Ø Motor Starting @ 30% Voltage Dip (480V)..... 260 kVA
3 Ø Motor Starting @ 30% Voltage Dip (600V)..... 290 kVA
Bearing.....1, Pre-lubed and sealed
Coupling ..... Direct flexible disc.
Total Harmonic Distortion.....Max 3 % (MIL-STD705B)
Telephone Interference Factor.....Max 50 (NEMA MG1-22)
Deviation Factor .....Max 5% (MIL-STD 405B)

GENERATOR FEATURES

- World Renown Stamford Electric Generator having UL-1446 certification.
- Full generator protection with **Deep Sea 7420** 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.
- Generator 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 certification.
- Complete engine-generator torsional acceptance, confirmed during initial prototype testing.
- Full load testing on all engine-generator sets, before shipping.
- Self ventilating and drip-proof & revolving field design

ENGINE SPECIFICATIONS AND APPLICATIONS DATA

ENGINE

Manufacturer.....John Deere
Model and Type.....4045TF285, 4 cycle, liquid Cooled
Aspiration .....Turbocharged
Cylinder Arrangement .....4 Cylinders, In-Line
Displacement Cu. In. (Liters) ..... 275(4.5)
Bore & Stroke In. (Cm.) ..... 4.9 x 5.0 (10.6 x 12.7)
Compression Ratio.....19.0:1
Main Bearings & Style .....6, Replaceable Inserts
Cylinder Head..... Cast Iron
Pistons.....4, Aluminum Alloy
Crankshaft.....Ductile Iron
Exhaust Valve.....Stainless Steel
Governor ..... JDEC, Electronic Level, EUP
Frequency Regulation.....± 1/4%
Air Cleaner..... Dry, Replaceable Cartridge
Engine Speed .....1800 rpm
Max Power, bhp (kwm) Standby 99 (74)
BMEP: psi (kpa) Standby 159 (1096)

FUEL SYSTEM

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

FUEL CONSUMPTION

GAL/HR (LITER/HR)	STANDBY
100% LOAD	5.0(18.9)
75% LOAD	3.6(13.6)
50% LOAD	2.4(9.1)

OIL SYSTEM

Type .....Full Pressure
Oil Pan Capacity qt. (L)..... 11.0 (10.4)
Oil Pan Cap. W/ filter qt. (L) 11.9 (11.3)
Oil Filter.....1, Replaceable Spin-On

ELECTRICAL SYSTEM

Ignition System .....Electronic
Eng. Alternator and Starter:
Ground .....Negative
Volts DC 12
Max. Amp Output of Alternator 55
Recommended Battery to -18°C (0°F): ..12 VDC, Size BCI# 24F Max Dimensions: ..10 3/4" lg X 6 3/4" wi X 9" hi, with standard round posts. Min. output at 600 CCA. Battery tray (max. dim. at 12"lg x 7"wi), hold down straps, battery cables, and battery charger, is furnished. Installation of (1) starting battery is required, with possible higher AMP/HR rating, as described above, if normal environment averages -13°F (-25°C) or cooler.

CERTIFICATIONS

All engines are EPA emissions certified. All stationary diesel engines are Tier III complaint.

APPLICATION AND ENGINEERING DATA FOR MODEL SPJD-600-60 HZ

COOLING SYSTEM (CHARGE AIR COOLED)

Type of System.....Pressurized, closed recovery
Coolant Pump ..... Pre-lubricated, self-sealing
Cooling Fan Type (no. of blades).....Pusher (10)
Fan Diameter inches (cm) .....21" (533)
Ambient Capacity of Radiator °F (°C).....125 (52)
Engine Jacket Coolant Capacity Qt. (L).....9 (8.5)
Radiator Coolant Capacity Qt. (L) 10.0 (9.48)
Engine Heat Reject. Btu/min. (Kw).....2789 (49)
Water Pump Capacity gpm (L/min) 48 (180)
Heat Reject Coolant: Btu/min (kw) 2789 (49)
Low 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)..... .....169 (4.79)
Max. Air Intake restriction:
Clean Air Cleaner, H_2O (kpa)..... .....15 (3.75)
Intake manifold pressure, psi (kpa) 8 (54.1)
Max. Allowable Temp. Rise Amb,
Air to Eng. Inlet, ° F (° C) .... …15 (8)
Radiator Cooling Air, SCFM (m^3/min).....3400 (96)

EXHAUST SYSTEM

Exhaust Outlet Size .....2.5"
Max. Back Pressure in H_2O (kpa) 30 (7.5)
Exhaust Flow, at rated KW,cfm (m^3/min)..... .....500 (14.2)
Exhaust Temp, at rated KW, °F (ºC)..... .....1155 (624)

SOUND LEVELS MEASURED IN dB(A)

	Open Set	Level 2 Encl.
Level 2, Critical Silencer	77	71
Level 3, Hospital Silencer		66

Note: Open sets (no enclosure) have silencer system choices due to unknown job-site applications. Level 2 enclosure has installed critical silencer with upgrade to Level 3 hospital silencer. Sound tests are averaged from several test points and taken at 23 ft. (7 m) from source of noise at normal operation.

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 104°F (40°C)

DIMENSIONS AND WEIGHTS

	Open Set	Level 2 Enclosure
Length in (cm)	78 (199)	94 (238)
Width in (cm)	42 (107)	42 (107)
Height in (cm)	49 (124)	53 (134)
1 Ø Net Weight lbs (kg)	1871 (848)	2396 (1087)
1 Ø Ship Weight lbs (kg)	1971 (894)	2556 (1159)
3 Ø Net Weight lbs (kg)	1814 (823)	2339 (1061)
3 Ø Ship Weight lbs (kg)	1914 (868)	2499 (1133)

DEEP SEA 7420MKII DIGITAL MICROPROCESSOR CONTROLLER



Deep Sea 7420MKII

The "**7420MKII**" controller is an auto start mains (utility) failure module for single gen-set applications. This controller includes a backlit LCD display which continuously displays the status of the engine and generator at all times.

The "**7420MKII**" controller 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. It also includes: (11) configurable inputs • (8) configurable outputs • voltage monitoring • mains (utility) failure detection • (250) event logs • configurable timers • automatic shutdown or warning during fault detection • remote start (on load) • engine preheat • advanced metering capability • hour meter • text LCD 132 x 64 pixel ratio display • protected solid state outputs • test buttons for: stop/reset • manual mode • auto mode • lamp test • start button • power monitoring (kWh, kVAr, kVAh, kVArh) • IP65 rating (with supplied gasket)

This controller includes expansion features including RS232, RS484 (using MODBUS-RTU/TCP), direct USB connection with PC, expansion optioned using DSENet for remote annunciation and remote relay interfacing for a distance of up to 3300FT. The controller software is freely downloadable from the Deep Sea website and allows monitoring with direct USB cable, LAN, or by internet via the built in web interface.

Advanced Features:

PLC editor allow user configurable functions to meet specific application requirements • Data logging to assist with fault finding with 20 parameter data logging and recording on USB drives • Multiple date and time scheduler • Set maintenance periods can be configured to maintain optimum engine performance • Modules can be integrated into building management systems (BMS) using MODBUS • Configurable MODBUS pages with RTU & TCP support • Fully configurable via DSE Configuration Suite PC software • Remote SCADA monitoring via DSE Configuration Suite PC software • Engine exerciser • Automatic load transfer • Multiple configurations

STANDARD FEATURES FOR MODEL SPJD-600-60 HZ

STANDARD FEATURES

CONTROL PANEL:

Deep Sea 7420 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 • 12 VDC battery charging alternator • Flexible exhaust connector • "Isochronous" duty, electronic governor • Vibration isolators • Closed coolant recovery system with 50/50 water to anti-freeze mixture • flexible oil & radiator drain hose.

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

AC GENERATOR SYSTEM:

AC generator • Shunt excited • Brushless design • Circuit Breaker installed and wired to gen-set • Direct connection to engine with flex disc • Class H, 180°C insulation • Self ventilated • Drip proof construction • UL Certified

VOLTAGE REGULATOR:

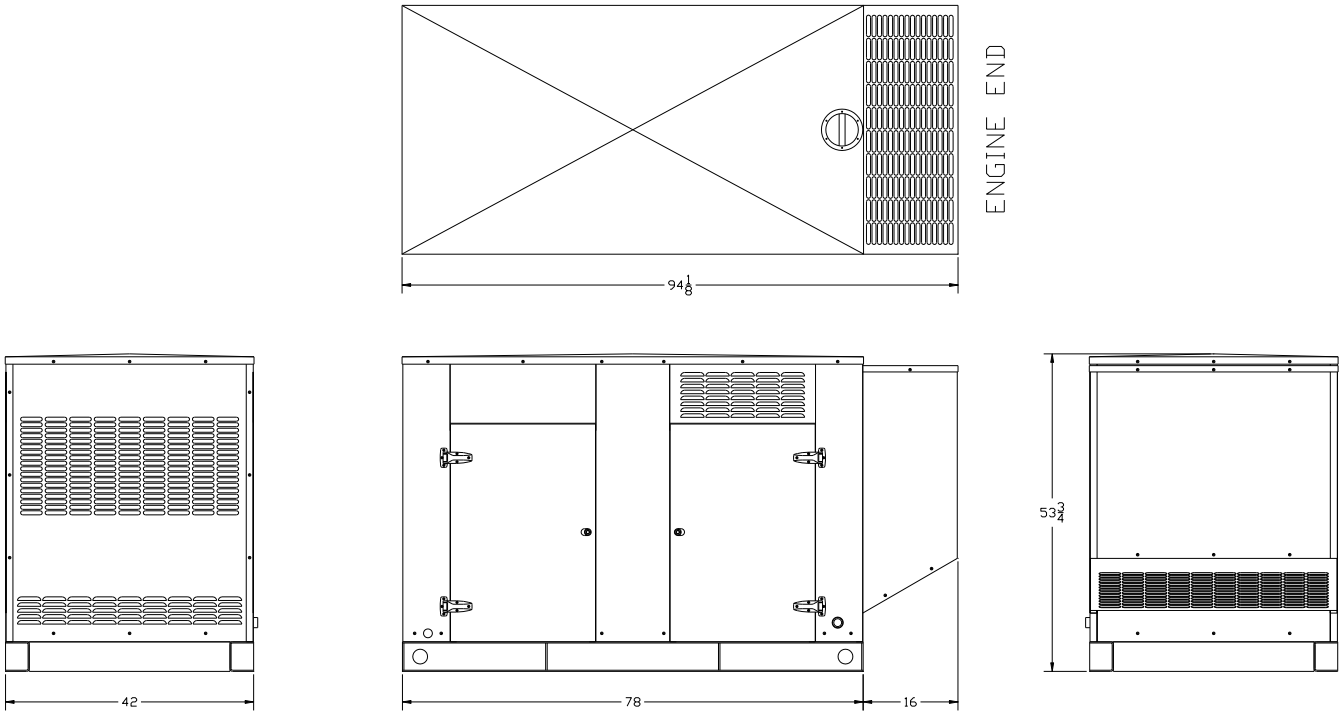
½% Voltage regulation • EMI filter • Under-speed protection • Over-excitation protection • total encapsulation

DC ELECTRICAL SYSTEM:

Battery tray • Battery cables • Battery hold down straps • 2-stage battery float charger with maintaining & recharging automatic charge stages

WEATHER/SOUND PROOF ALUMINUM HOUSING CORROSION RESISTANT PROTECTION CONSISTING OF:

- 9 Heated And Agitated Wash Stages
- Zinc Phosphate Etching-coating Stage
- Final Baked On Enamel Powder Coat
- 18/8 Stainless Steel Hardware



JOHN DEERE

ENGINE PERFORMANCE CURVE

Rating: Gross Power
Application: Generator (60 Hz)
Target: 60 kWe Standby Market

PowerTech E™ 4.5L Engine
Model: 4045TF285

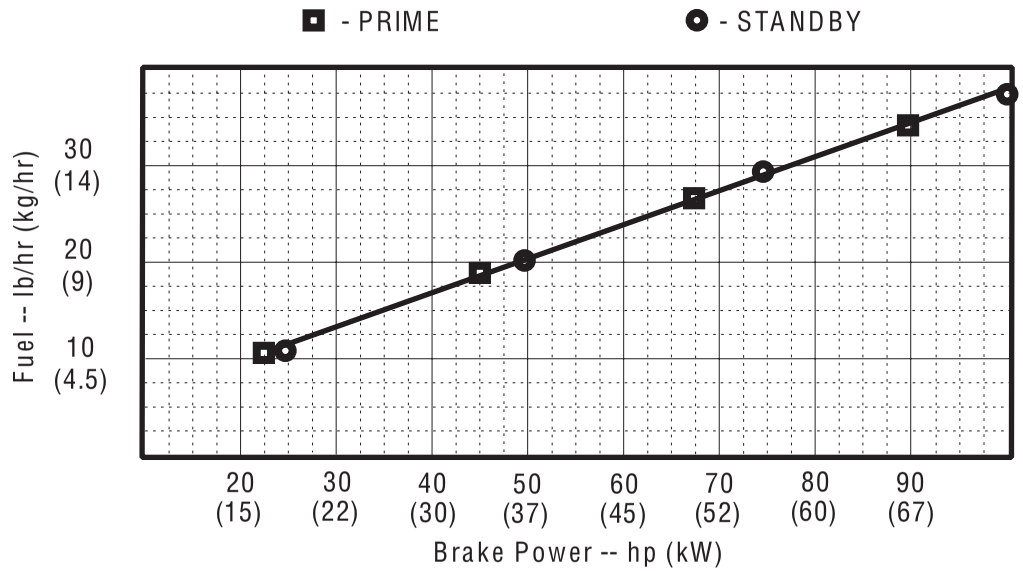
90 hp (67 kW) Prime
99 hp (74 kW) Standby

[See Option Code Tables]

Nominal Engine Power @ 1800 RPM			
Prime		Standby	
HP	kW	HP	kW
90	67	99	74

Generator Efficiency %	Fan Power (6% of Standby)		Power Factor	Prime Rating [2]		Standby Rating [1,2]		ISO 8528 G2 Block Load Capability
	hp	kW		kWe	kVA	kWe	kVA	
88-92	7.0	5.2	0.8	54-57	68-71	61-63	76-79	NA

Note 1: Based on nominal engine power. Derate ___% for 100% block load capability.
Note 2: kWe / kVA rating assumes 90% efficiency. "Generator Efficiency %" will vary.



STANDARD CONDITIONS

Air Intake Restriction ..... 12 in.H_2O (3 kPa)
Exhaust Back Pressure ..... 30 in.H_2O (7.5 kPa)

Gross power guaranteed within + or - 5% at SAE J1995 and ISO 3046 conditions:
- 77 °F (25 °C) air inlet temperature
- 29.31 in.Hg (99 kPa) barometer
- 104 °F (40 °C) fuel inlet temperature
- 0.853 fuel specific gravity @ 60 °F (15.5 °C)

Conversion factors:
- Power: kW = hp x 0.746
- Fuel: 1 gal = 7.1 lb, 1 L = 0.85 kg
- Torque: N•m = lb-ft x 1.356

All values are from currently available data and are subject to change without notice.

Notes:

All OEM Gen Set Engine Applications must be pre-screened for torsional vibration compatibility with the respective alternator end hardware.

OEM Engine Application Engineering will perform this computer-based analysis work upon request.

Tier-3 Emission Certifications:	Certified by:
CARB; EPA Ref: Engine Emission Label	Vincenza Perone 6 June '07

* Revised Data
Curve 4045TF285180099..... Sheet 1 of 2
June 2007

Engine Installation Criteria

General Data	
Model	4045TF285
Number of Cylinders	4
Bore and Stroke--in. (mm)	4.19 x 5.00 (106 x 127)
Displacement--in.^{3} (L)	275 (4.5)
Compression Ratio	19.0:1
Valves per Cylinder--Intake/Exhaust	1 / 1
Firing Order	1-3-4-2
Combustion System	Unit Injection
Engine Type	In-line, 4-Cycle
Aspiration	Turbocharged
Charge Air Cooling System	None
Engine Crankcase Vent System	Open

Physical Data (Estimated)	
Length--in. (mm)	33.9 (860)
Width--in. (mm)	24.1 (612)
Height--in. (mm)	40.9 (1039)
Weight, with oil--lb (kg)	1083 (491)
(Includes flywheel hsg., flywheel & electrics)	
Center of Gravity Location (Estimated based on Tier 2)	
From Rear Face of Block (X-axis)--in. (mm)	9.8 (249)
Right of Crankshaft (Y-axis)--in. (mm)	2.2 (55)
Above Crankshaft (Z-axis)--in. (mm)	5.7 (145)
Max. Allow. Static Bending Moment at Rear Face of Flywhl Hsg w/ 5-G Load--lb-ft (N•m)	600 (814)

Thrust Bearing Load Limit --lb (N)	Forward	Rearward
Intermittent	899 (4000)	450 (2000)
Continuous	495 (2200)	225 (1000)
Max. Front of Crank. Torsional Vibration--DDA	0.25	

Air System	Prime	Standby
Max. Allowable Temp Rise--Ambient Air to Engine Inlet--°F (°C)	15 (8)	
Maximum Air Intake Restriction		
Dirty Air Cleaner--in.H_2O (kPa)	25 (6.25)	
Clean Air Cleaner--in.H_2O (kPa)	15 (3.75)	
Engine Air Flow--ft^3/min (m^3/min)	167(4.72)	169(4.79)
Intake Manifold Pressure--psi (kPa)	7(49.6)	8(54.1)
Air Cleaner Efficiency--%	99.9	

Cooling System	Prime	Standby
Engine Heat Reject.--BTU/min (kW)	2561(45)	2789 (49)
Coolant Flow--gal/min (L/min)	48(180)	
Thermostat Start to Open--°F (°C)	180 (82)	
Thermostat Fully Open--°F (°C)	203 (95)	
Engine Coolant Capacity--qt (L)	9 (8.5)*	
Min. Pressure Cap--psi (kPa)	14.5 (100)	
Max. Top Tank Temp--°F (°C)	230 (110)	
Min. Coolant Fill Rate--gal/min (L/min)	3 (11)	
Min. Air-to-Boil Temperature--°F (°C)	117 (47)	
Min. Pump Inlet Pressure--psi (kPa)	4.4 (30)	

Electrical System	12 Volt	24 Volt
Min. Battery Capacity (CCA)--amp	800	570
Max. Allow. Start. Circ't Resist.--Ohm	0.0012	0.002
Starter Rolling Current:		
At 32 °F (0 °C)--amp	920	600
At -22 °F (-30 °C)--amp	1300	700
Min. Volts at ECU while Cranking--volts	6	10
Max. ECU Temperature--°F (°C)	221 (105)	
Max. Harness Temperature--°F (°C)	248 (120)	
Max. Voltage From Engine Crankshaft/ Generator Shaft to Ground--VAC	0.15	

Exhaust System	Prime	Standby
Exhaust Flow--ft^3/min (m^3/min)	479 (13.6)	500(14.2)
Exhaust Temperature--°F (°C)	1108(598)	1155(624)
Max. Exhaust Restriction----in. H_2O (kPa)	30 (7.5)	
Min. Exhaust Restriction----in. H_2O (kPa)	None	
Max. Bend. Moment, Turbo Out.--lb-ft (N•m)	5.2 (7.0)	
Max. Shear on Turbo Outlet--lb (kg)	24 (11)	

Fuel System	Prime	Standby
ECU Description	L16 Controller	
Fuel Injection Pump	Denso HP3	
Governor Type	Electronic	
Total Fuel Flow--lb/hr (kg/hr)	84(38.0)	90(41.0)
Fuel Consumption--lb/hr (kg/hr)	35(15.7)	37 (17.0)
Max. Fuel Inlet Temp.--°F (°C)	176 (80)	
Fuel Temp. Rise, Inlt to Retrn--°F (°C)	51.7(29)	59.8(33)
Max. Fuel Inlet Restriction--in. H_2O (kPa)	80 (20)	
Max. Fuel Inlet Pressure--in. H_2O (kPa)	NA (NA)	
Max. Fuel Return Pressure--in. H_2O (kPa)	80 (20)	

Lubrication System	Prime	Standby
Oil Press. at Rated Speed--psi (kPa)	46(320)	
Min. Oil Pressure--psi (kPa)	15 (105)	
Max. Oil Carryover in Blow-by--lb/hr (g/hr)	0.002 (1.0)	
Max. Airflow in Blow-by--gal/min (l/min)	26 (100)	
Max. Crankcase Pressure--in. H_2O (kPa)	2 (0.5)	

Performance Data	Prime	Standby
Rated Power--hp (kW)	90 (67)	99 (74)
Rated Speed--rpm	1800	1800
Low Idle Speed--rpm	1150	1150
Rated Torque--lb-ft (N•m)	532 (392)	532 (392)
BMEP--psi (kPa)	159 (1096)	159 (1096)
Friction Power @ Rated Speed--hp (kW)	17 (13)	17 (13)
Altitude Capability--ft (m)	10,000(3050)	10,000(3050)
Ratio--Air : Fuel	21 : 1	19 : 1
Smoke @ Rated Speed--Bosch No.	1.23	2.02
Noise--dB(A) @ 1 m	88.4	88.8

Fuel Consumption -- lb/hr (kg/h)	Prime	Standby
25 % Power	10.6 (4.8)	11.7 (5.3)
50 % Power	18.5 (8.4)	20.3 (9.2)
75 % Power	26.9 (12.2)	29.5 (13.4)
100 % Power	34.2 (15.5)	37.5 (17.0)

All values at rated speed and power with standard options unless otherwise noted.

* Revised Data

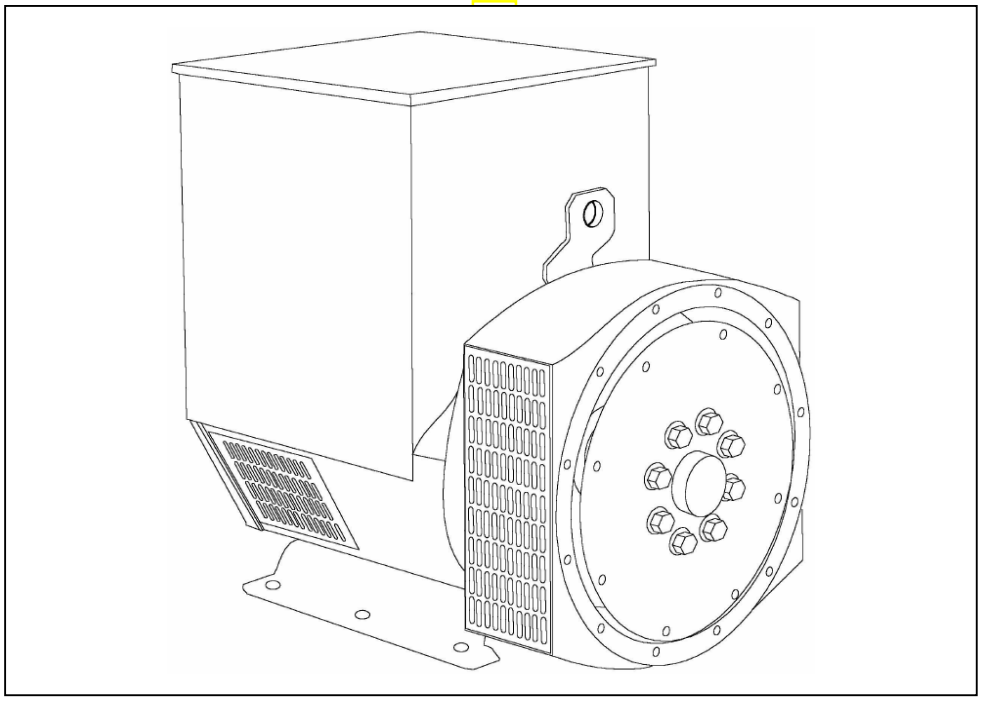
Curve 4045TF285180099 ..... Sheet 2 of 2

June 2007

STAMFORD®

UCI224F - Winding 311

Technical Data Sheet



SPECIFICATIONS & OPTIONS

STANDARDS

Stamford industrial generators meet the requirements of BS EN 60034 and the relevant section of other international standards such as BS5000, VDE 0530, NEMA MG1-32, IEC34, CSA C22.2-100, AS1359.
Other standards and certifications can be considered on request.

VOLTAGE REGULATORS

SX460 AVR - STANDARD

With this self excited control system the main stator supplies power via the Automatic Voltage Regulator (AVR) to the exciter stator. The high efficiency semiconductors of the AVR ensure positive build-up from initial low levels of residual voltage.
The exciter rotor output is fed to the main rotor through a three phase full wave bridge rectifier. This rectifier is protected by a surge suppressor against surges caused, for example, by short circuit.

AS440 AVR

With this self-excited system the main stator provides power via the AVR to the exciter stator. The high efficiency semi-conductors of the AVR ensure positive build-up from initial low levels of residual voltage.
The exciter rotor output is fed to the main rotor through a three-phase full-wave bridge rectifier. The rectifier is protected by a surge suppressor against surges caused, for example, by short circuit or out-of-phase paralleling.
The AS440 will support a range of electronic accessories, including a 'droop' Current Transformer (CT) to permit parallel operation with other ac generators.

MX341 AVR

This sophisticated AVR is incorporated into the Stamford Permanent Magnet Generator (PMG) control system.
The PMG provides power via the AVR to the main exciter, giving a source of constant excitation power independent of generator output. The main exciter output is then fed to the main rotor, through a full wave bridge, protected by a surge suppressor. The AVR has in-built protection against sustained over-excitation, caused by internal or external faults. This de-excites the machine after a minimum of 5 seconds.
An engine relief load acceptance feature can enable full load to be applied to the generator in a single step.
If three-phase sensing is required with the PMG system the MX321 AVR must be used.
We recommend three-phase sensing for applications with greatly unbalanced or highly non-linear loads.

MX321 AVR

The most sophisticated of all our AVRs combines all the features of the MX341 with, additionally, three-phase rms sensing, for improved regulation and performance.
Over voltage protection is built-in and short circuit current level adjustments is an optional facility.

APPROVED DOCUMENT

WINDINGS & ELECTRICAL PERFORMANCE

All generator stators are wound to 2/3 pitch. This eliminates triplen (3rd, 9th, 15th …) harmonics on the voltage waveform and is found to be the optimum design for trouble-free supply of non-linear loads. The 2/3 pitch design avoids excessive neutral currents sometimes seen with higher winding pitches, when in parallel with the mains. A fully connected damper winding reduces oscillations during paralleling. This winding, with the 2/3 pitch and carefully selected pole and tooth designs, ensures very low waveform distortion.

TERMINALS & TERMINAL BOX

Standard generators are 3-phase reconnectable with 12 ends brought out to the terminals, which are mounted on a cover at the non-drive end of the generator. A sheet steel terminal box contains the AVR and provides ample space for the customers' wiring and gland arrangements. It has removable panels for easy access.

SHAFT & KEYS

All generator rotors are dynamically balanced to better than BS6861:Part 1 Grade 2.5 for minimum vibration in operation.

INSULATION/IMPREGNATION

The insulation system is class 'H'.
All wound components are impregnated with materials and processes designed specifically to provide the high build required for static windings and the high mechanical strength required for rotating components.

QUALITY ASSURANCE

Generators are manufactured using production procedures having a quality assurance level to BS EN ISO 9001.

The stated voltage regulation may not be maintained in the presence of certain radio transmitted signals. Any change in performance will fall within the limits of Criteria 'B' of EN 61000-6-2:2001. At no time will the steady-state voltage regulation exceed 2%.

DE RATES

All values tabulated on page 8 are subject to the following reductions

5% when air inlet filters are fitted.
3% for every 500 metres by which the operating altitude exceeds 1000 metres above mean sea level.
3% for every 5°C by which the operational ambient temperature exceeds 40°C.
Note: Requirement for operating in an ambient exceeding 60°C must be referred to the factory.

NB Continuous development of our products entitles us to change specification details without notice, therefore they must not be regarded as binding.

Front cover drawing typical of product range.

UCI224F

STAMFORD

WINDING 311

CONTROL SYSTEM	SEPARATELY EXCITED BY P.M.G.		
A.V.R.	MX321	MX341	
VOLTAGE REGULATION	± 0.5 %	± 1.0 %	With 4% ENGINE GOVERNING
SUSTAINED SHORT CIRCUIT	REFER TO SHORT CIRCUIT DECREMENT CURVES (page 7)		

CONTROL SYSTEM	SELF EXCITED		
A.V.R.	SX460	AS440	
VOLTAGE REGULATION	± 1.0 %	± 1.0 %	With 4% ENGINE GOVERNING
SUSTAINED SHORT CIRCUIT	SERIES 4 CONTROL DOES NOT SUSTAIN A SHORT CIRCUIT CURRENT		

INSULATION SYSTEM	CLASS H						
PROTECTION	IP23						
RATED POWER FACTOR	0.8						
STATOR WINDING	DOUBLE LAYER CONCENTRIC						
WINDING PITCH	TWO THIRDS						
WINDING LEADS	12						
STATOR WDG. RESISTANCE	0.065 Ohms PER PHASE AT 22°C SERIES STAR CONNECTED						
ROTOR WDG. RESISTANCE	0.83 Ohms at 22°C						
EXCITER STATOR RESISTANCE	20 Ohms at 22°C						
EXCITER ROTOR RESISTANCE	0.078 Ohms PER PHASE AT 22°C						
R.F.I. SUPPRESSION	BS EN 61000-6-2 & BS EN 61000-6-4,VDE 0875G, VDE 0875N. refer to factory for others						
WAVEFORM DISTORTION	NO LOAD < 1.5% NON-DISTORTING BALANCED LINEAR LOAD < 5.0%						
MAXIMUM OVERSPEED	2250 Rev/Min						
BEARING DRIVE END	BALL. 6312-2RS (ISO)						
BEARING NON-DRIVE END	BALL. 6309-2RS (ISO)						
	1 BEARING				2 BEARING		
WEIGHT COMP. GENERATOR	337 kg				350 kg		
WEIGHT WOUND STATOR	120 kg				120 kg		
WEIGHT WOUND ROTOR	110.69 kg				102.32 kg		
WR² INERTIA	0.6071 kgm^2				0.5754 kgm^2		
SHIPPING WEIGHTS in a crate	360 kg				371 kg		
PACKING CRATE SIZE	105 x 57 x 96(cm)				105 x 57 x 96(cm)		
	50 Hz				60 Hz		
TELEPHONE INTERFERENCE	THF<2%				TIF<50		
COOLING AIR	0.216 m³/sec 458 cfm				0.281 m³/sec 595 cfm		
VOLTAGE SERIES STAR	380/220	400/231	415/240	440/254	416/240	440/254	460/266	480/277
VOLTAGE PARALLEL STAR	190/110	200/115	208/120	220/127	208/120	220/127	230/133	240/138
VOLTAGE SERIES DELTA	220/110	230/115	240/120	254/127	240/120	254/127	266/133	277/138
kVA BASE RATING FOR REACTANCE VALUES	72.5	72.5	72.5	55	83.8	87.5	87.5	93.8
Xd DIR. AXIS SYNCHRONOUS	2.29	2.07	1.92	1.30	2.52	2.35	2.15	2.12
X'd DIR. AXIS TRANSIENT	0.18	0.16	0.15	0.10	0.21	0.20	0.18	0.18
X"d DIR. AXIS SUBTRANSIENT	0.12	0.11	0.10	0.07	0.14	0.13	0.12	0.12
Xq QUAD. AXIS REACTANCE	1.05	0.95	0.88	0.59	1.16	1.08	0.99	0.98
X"q QUAD. AXIS SUBTRANSIENT	0.16	0.14	0.13	0.09	0.13	0.12	0.11	0.11
X_L LEAKAGE REACTANCE	0.07	0.06	0.06	0.04	0.08	0.07	0.07	0.07
X_2 NEGATIVE SEQUENCE	0.14	0.13	0.12	0.08	0.13	0.12	0.11	0.11
X_0 ZERO SEQUENCE	0.11	0.10	0.09	0.06	0.10	0.09	0.09	0.08
REACTANCES ARE SATURATED	VALUES ARE PER UNIT AT RATING AND VOLTAGE INDICATED							
T'd TRANSIENT TIME CONST.	0.03 s							
T"d SUB-TRANSTIME CONST.	0.008 s							
T'do O.C. FIELD TIME CONST.	0.75 s							
Ta ARMATURE TIME CONST.	0.0065 s							
SHORT CIRCUIT RATIO	1/Xd							

APPROVED DOCUMENT

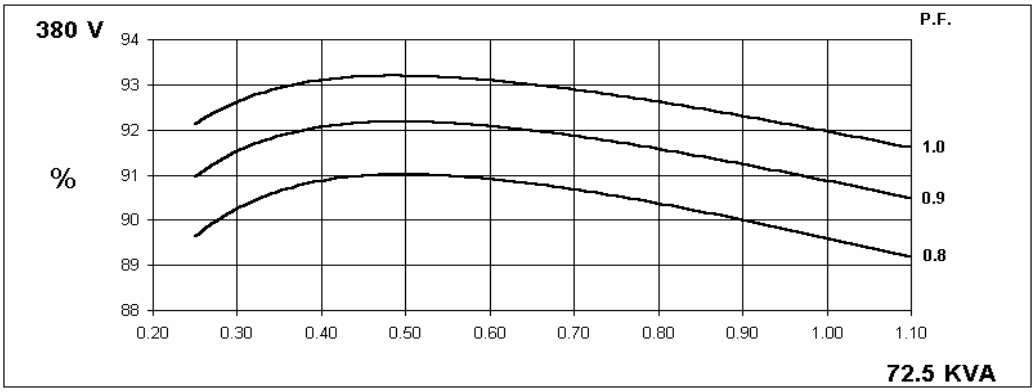
50 Hz

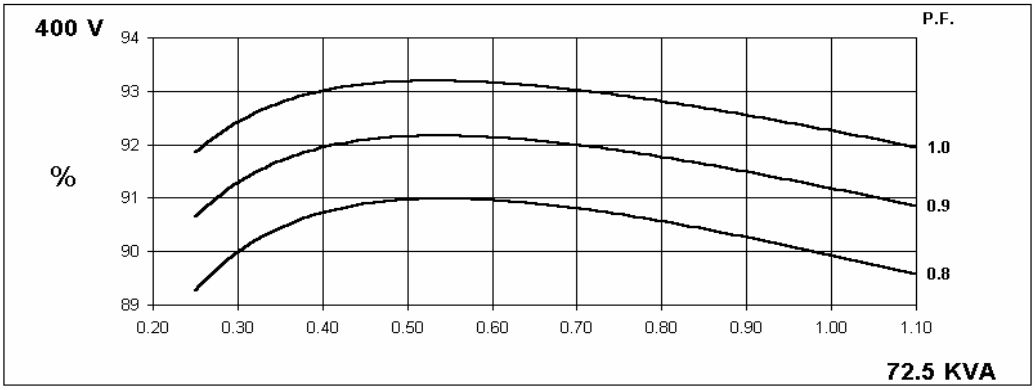
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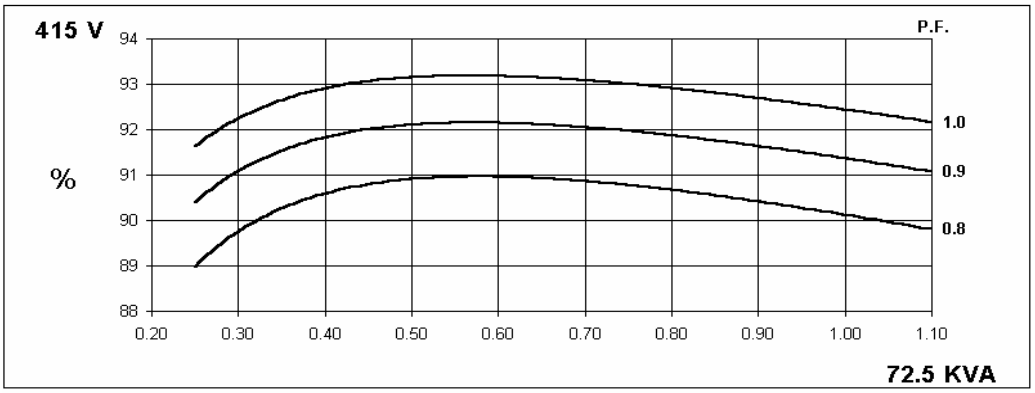
Winding 311

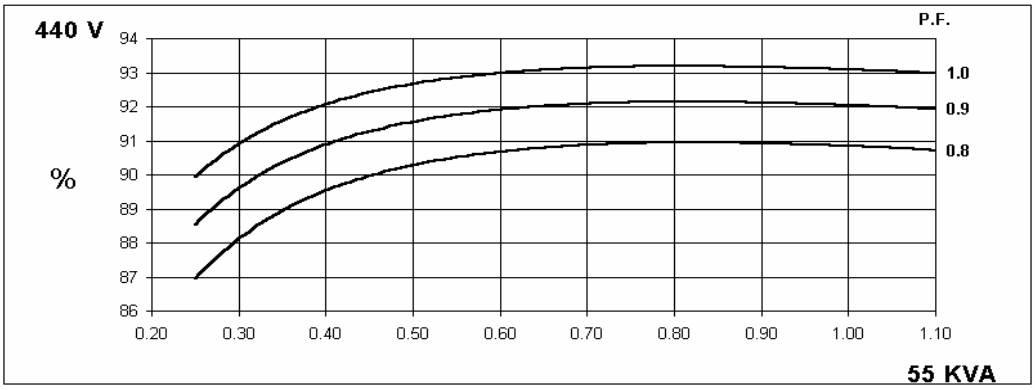
STAMFORD

THREE PHASE EFFICIENCY CURVES









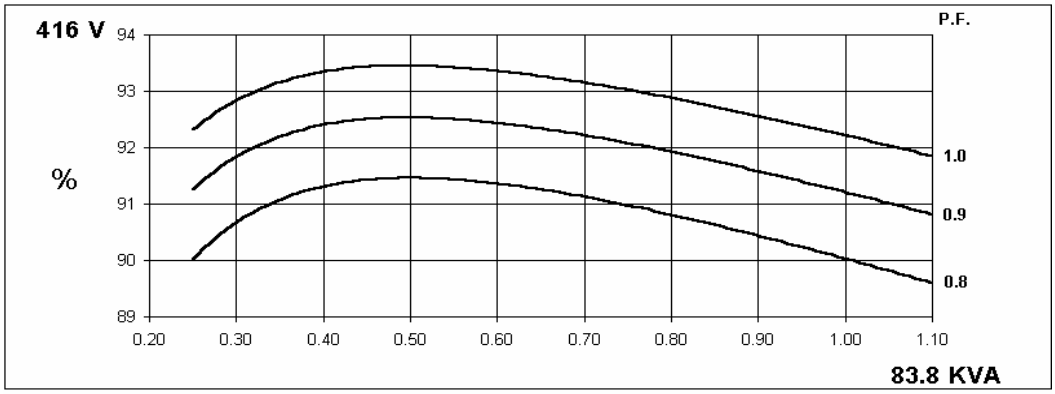
60 Hz

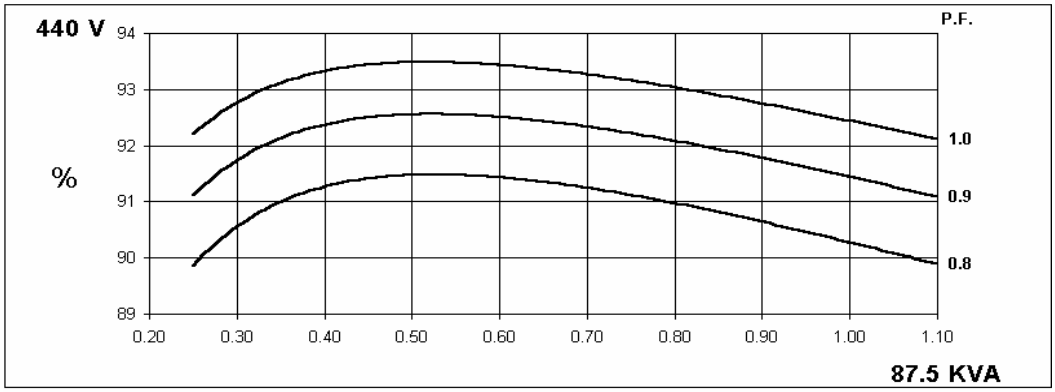
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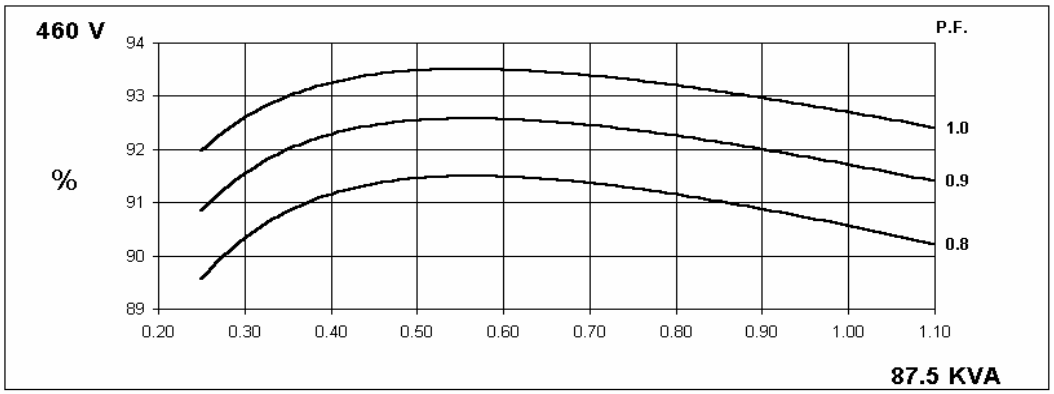
Winding 311

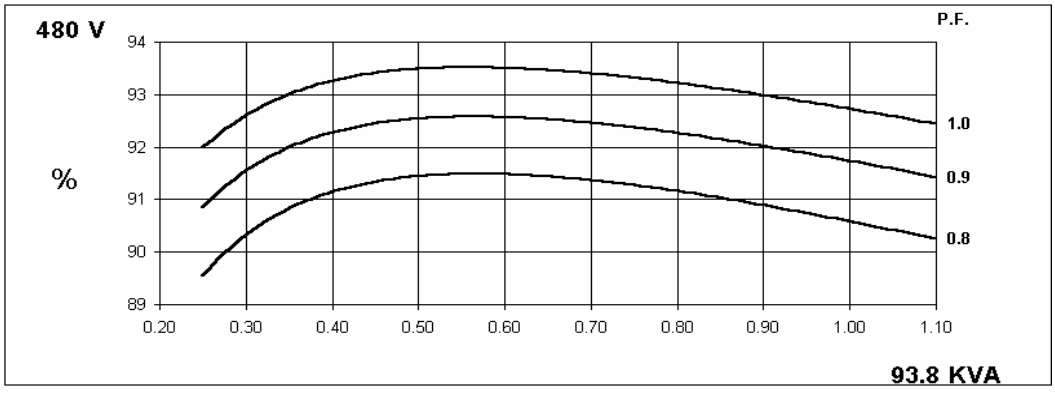
STAMFORD

THREE PHASE EFFICIENCY CURVES









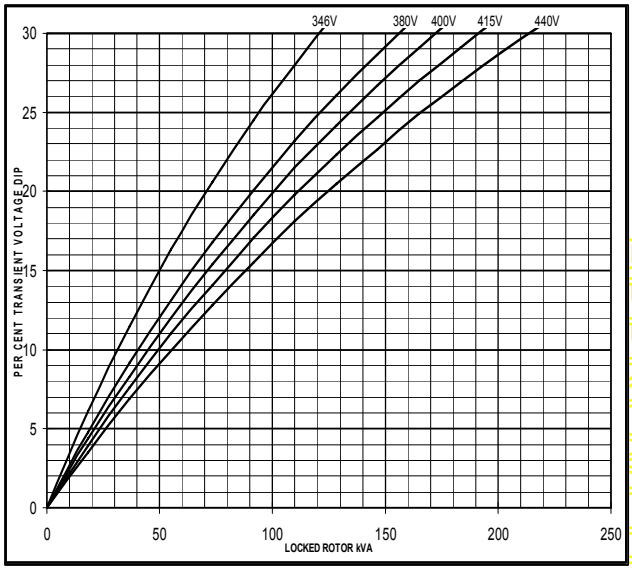
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Winding 311

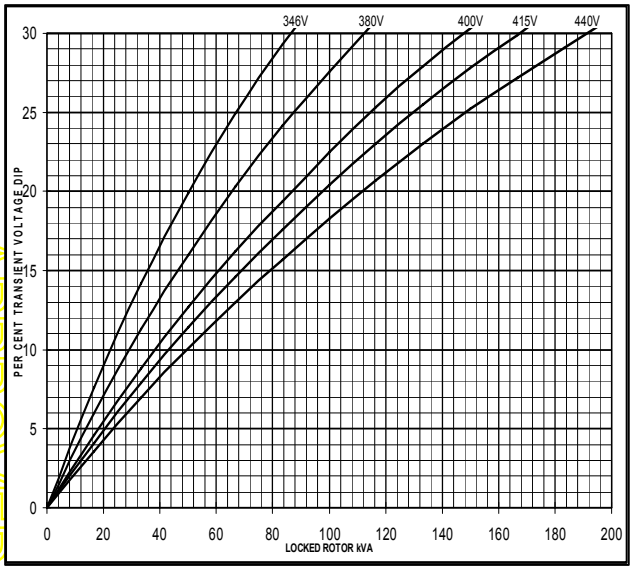
Locked Rotor Motor Starting Curve

50 Hz

MX



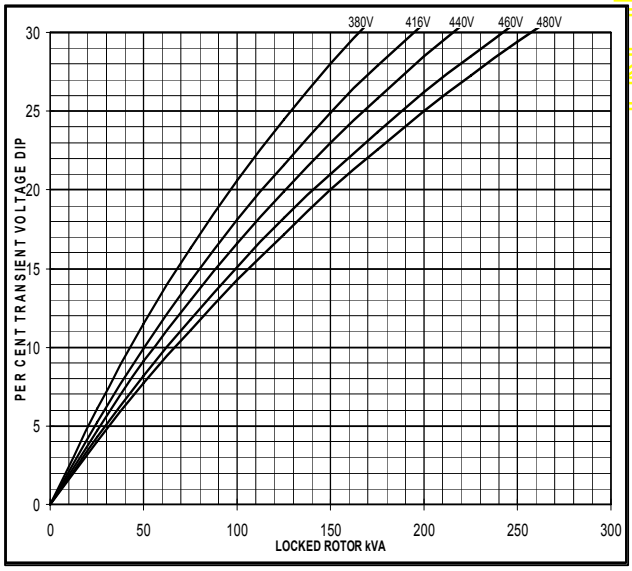
SX



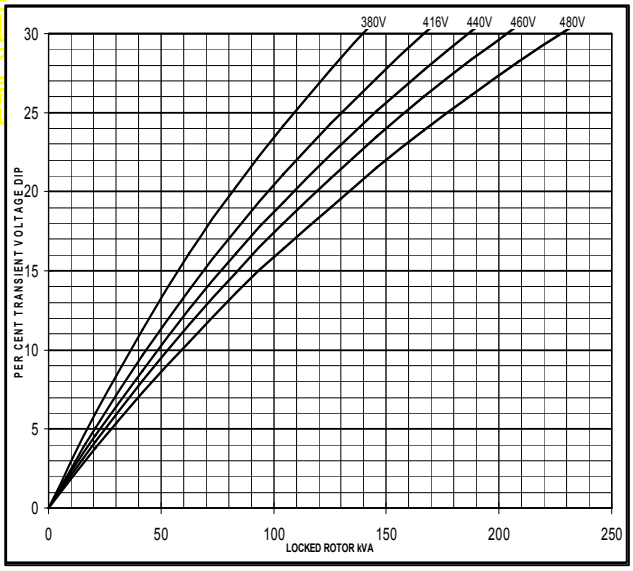
APPROVED DOCUMENT

60 Hz

MX

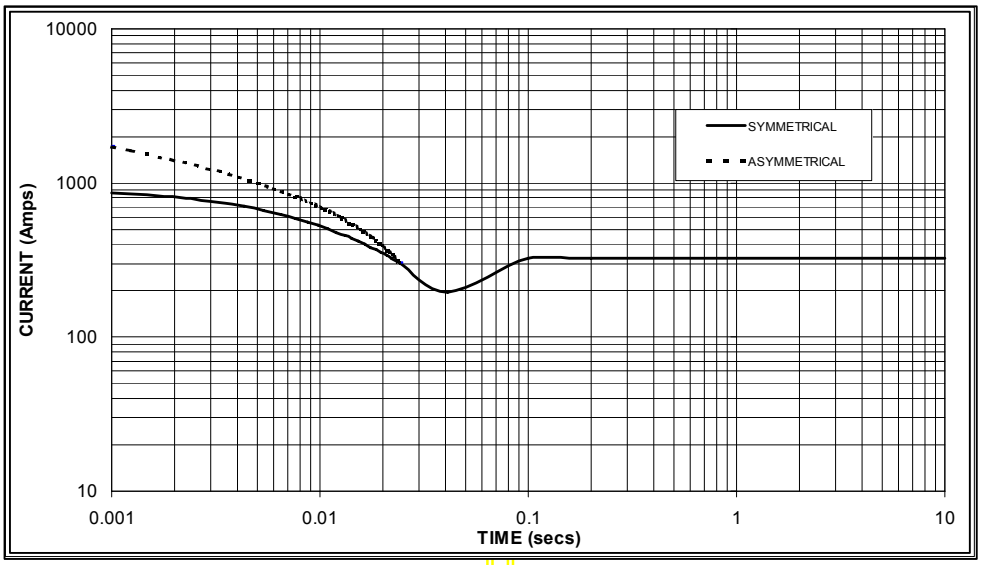


SX



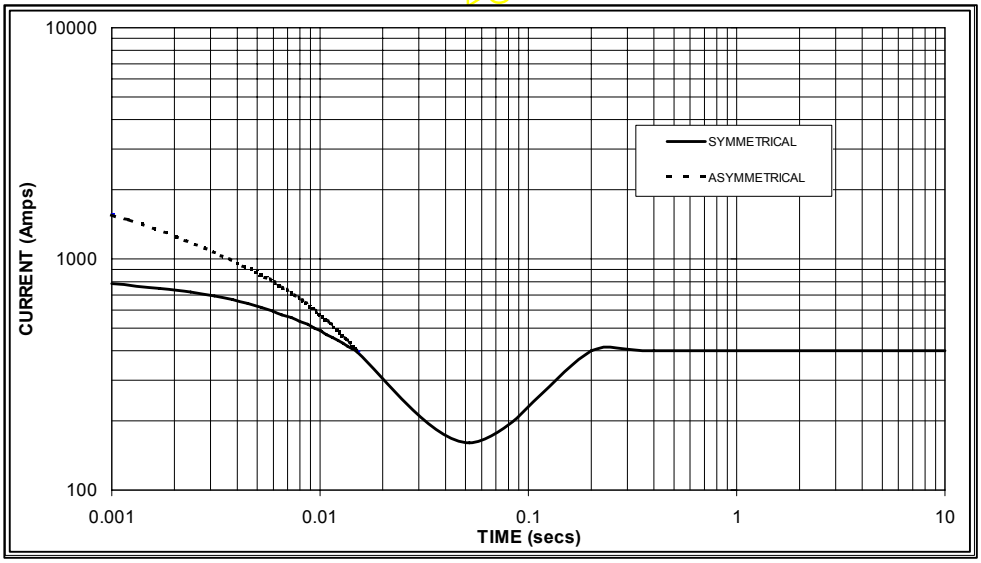
Three-phase Short Circuit Decrement Curve. No-load Excitation at Rated Speed
Based on star (wye) connection.

50 Hz



Sustained Short Circuit = 325 Amps

60 Hz



Sustained Short Circuit = 400 Amps

Note 1

The following multiplication factors should be used to adjust the values from curve between time 0.001 seconds and the minimum current point in respect of nominal operating voltage :

50Hz		60Hz	
Voltage	Factor	Voltage	Factor
380v	X 1.00	416v	X 1.00
400v	X 1.07	440v	X 1.06
415v	X 1.12	460v	X 1.12
440v	X 1.18	480v	X 1.17

The sustained current value is constant irrespective of voltage level

Note 2

The following multiplication factor should be used to convert the values calculated in accordance with NOTE 1 to those applicable to the various types of short circuit :

	3-phase	2-phase L-L	1-phase L-N
Instantaneous	x 1.00	x 0.87	x 1.30
Minimum	x 1.00	x 1.80	x 3.20
Sustained	x 1.00	x 1.50	x 2.50
Max. sustained duration	10 sec.	5 sec.	2 sec.

All other times are unchanged

Note 3

Curves are drawn for Star (Wye) connected machines. For other connection the following multipliers should be applied to current values as shown :

Parallel Star = Curve current value X 2

Series Delta = Curve current value X 1.732

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STAMFORD

Winding 311 / 0.8 Power Factor

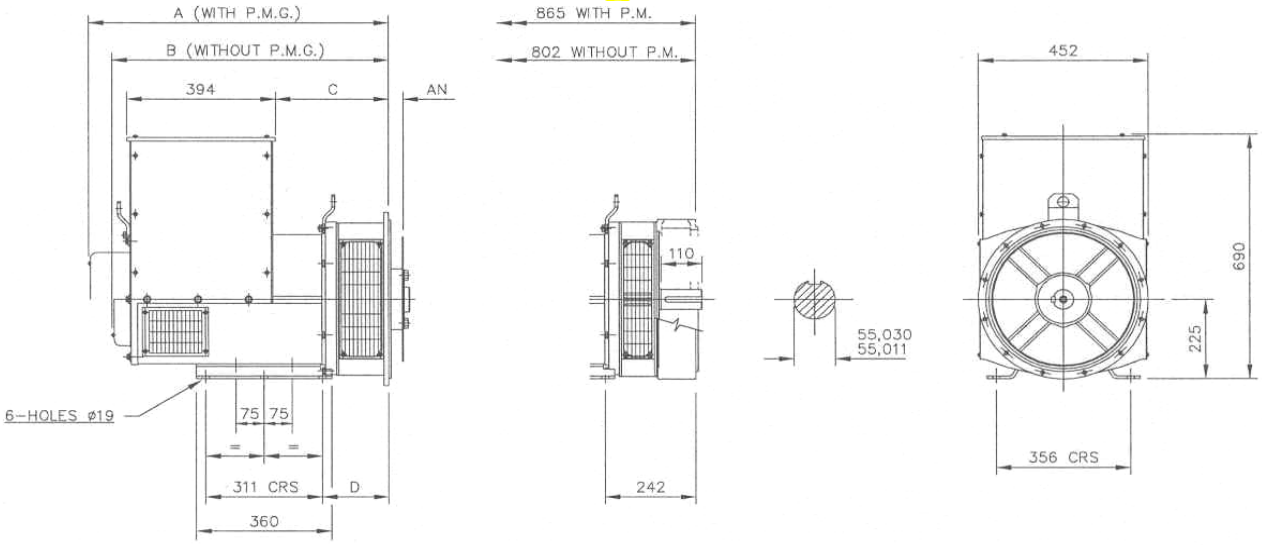
RATINGS

	Class - Temp Rise	Cont. F - 105/40°C				Cont. H - 125/40°C				Standby - 150/40°C				Standby - 163/27°C			
50 Hz	Series Star (V)	380	400	415	440	380	400	415	440	380	400	415	440	380	400	415	440
	Parallel Star (V)	190	200	208	220	190	200	208	220	190	200	208	220	190	200	208	220
	Series Delta (V)	220	230	240	254	220	230	240	254	220	230	240	254	220	230	240	254
	kVA	65.0	65.0	65.0	48.7	72.5	72.5	72.5	55.0	77.0	77.0	77.0	58.0	80.0	80.0	80.0	60.5
	kW	52.0	52.0	52.0	39.0	58.0	58.0	58.0	44.0	61.6	61.6	61.6	46.4	64.0	64.0	64.0	48.4
	Efficiency (%)	90.0	90.3	90.4	90.9	89.6	89.9	90.1	90.8	89.4	89.7	89.9	90.8	89.2	89.6	89.8	90.7
	kW Input	57.8	57.6	57.5	42.9	64.7	64.5	64.4	48.5	68.9	68.7	68.5	51.1	71.7	71.4	71.3	53.4

60 Hz	Series Star (V)	416	440	460	480	416	440	460	480	416	440	460	480	416	440	460	480
	Parallel Star (V)	208	220	230	240	208	220	230	240	208	220	230	240	208	220	230	240
	Delta (V)	240	254	266	277	240	254	266	277	240	254	266	277	240	254	266	277
	kVA	75.0	78.1	78.1	82.5	83.8	87.5	87.5	93.8	88.8	92.5	92.5	100.0	91.9	95.0	95.0	102.5
	kW	60.0	62.5	62.5	66.0	67.0	70.0	70.0	75.0	71.0	74.0	74.0	80.0	73.5	76.0	76.0	82.0
	Efficiency (%)	90.5	90.7	90.9	91.0	90.0	90.3	90.6	90.6	89.8	90.1	90.4	90.4	89.6	89.9	90.3	90.3
	kW Input	66.3	68.9	68.7	72.5	74.5	77.5	77.3	82.8	79.1	82.1	81.9	88.5	82.1	84.5	84.2	90.8

APPROVED DO

DIMENSIONS



SINGLE BEARING MACHINES ONLY						
ADAPTOR	A	B	C	D	COUPLING DISCS	AN
SAE 1	814,3	751,3	314,3	191,3	SAE 8	61,90
SAE 2	800	737	300	177	SAE 10	53,98
SAE 3	800	737	300	177	SAE 11,5	39,68
SAE 4	800	737	300	177	SAE 14	25,40

DSEGenset

DSE

DSE7410/20

AUTO START & AUTO MAINS FAILURE MODULES

FEATURES

The DSE7410 is an Auto Start Control Module and the DSE7420 is an Auto Mains (Utility) Failure Control Module suitable for a wide variety of single, diesel or gas, gen-set applications.

A sophisticated module monitoring an extensive number of engine parameters, the DSE74xx will annunciate warnings, shutdown and engine status information on the back-lit LCD screen, illuminated LED, remote PC, audible alarm and via SMS text alerts. The module includes RS232, RS485 & Ethernet ports as well as dedicated terminals for system expansion.

The DSE7400 Series modules are compatible with electronic (CAN) and non-electronic (magnetic pick-up/alternator sensing) engines and offer a comprehensive number of flexible inputs, outputs and extensive engine protections so the system can be easily adapted to meet the most demanding industry paralleling requirements.

The modules can be easily configured using the DSE Configuration Suite Software. Selected front panel editing is also available.

ENVIRONMENTAL TESTING STANDARDS

ELECTRO-MAGNETIC COMPATIBILITY
BS EN 61000-6-2
EMC Generic Immunity Standard for the Industrial Environment
BS EN 61000-6-4
EMC Generic Emission Standard for the Industrial Environment

ELECTRICAL SAFETY
BS EN 60950
Safety of Information Technology Equipment, including Electrical Business Equipment

TEMPERATURE
BS EN 60068-2-1
Ab/Ae Cold Test -30 °C
BS EN 60068-2-2
Bb/Be Dry Heat +70 °C

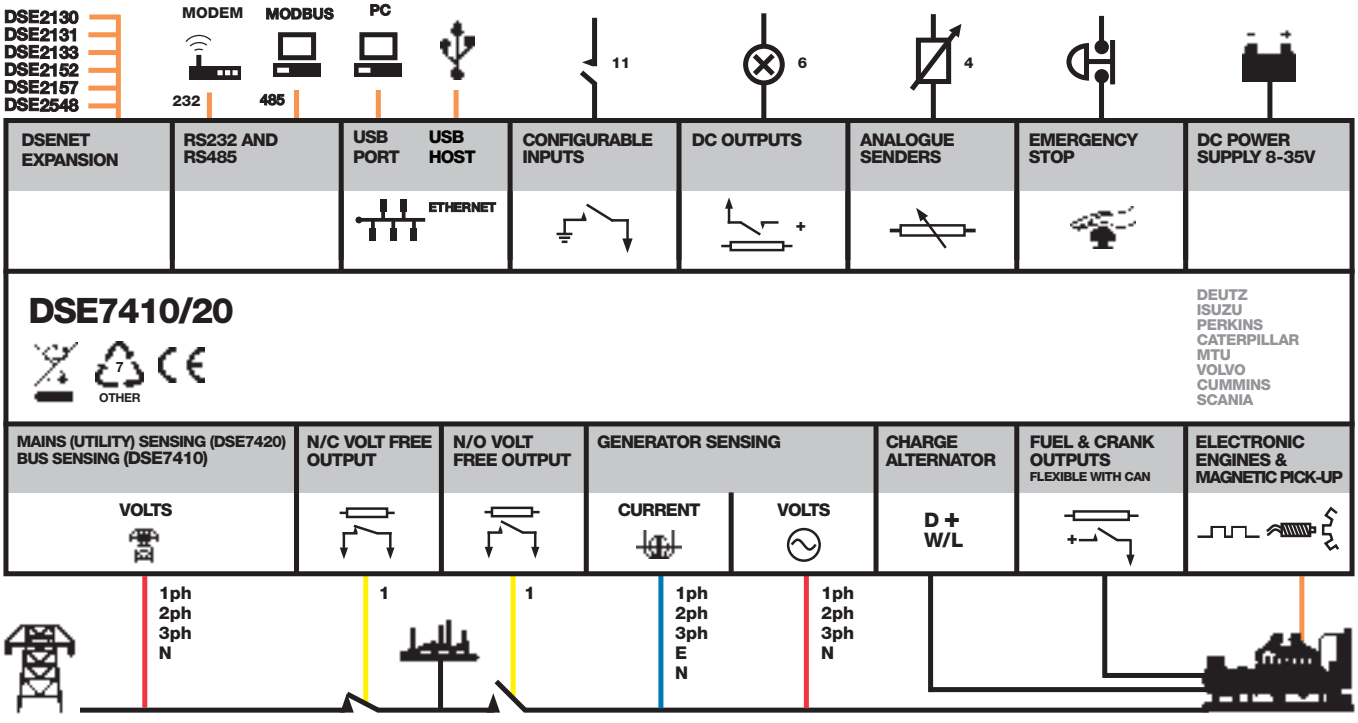
VIBRATION
BS EN 60068-2-6
Ten sweeps in each of three major axes
5 Hz to 8 Hz @ +/-7.5 mm,
8 Hz to 500 Hz @ 2 gn

HUMIDITY
BS EN 60068-2-30
Db Damp Heat Cyclic 20/55 °C
@ 95% RH 48 Hours
BS EN 60068-2-78
Cab Damp Heat Static 40 °C
@ 93% RH 48 Hours

SHOCK
BS EN 60068-2-27
Three shocks in each of three major axes
15 gn in 11 mS

DEGREES OF PROTECTION PROVIDED BY ENCLOSURES
BS EN 60529
IP65 - Front of module when installed into the control panel with the supplied sealing gasket.

COMPREHENSIVE FEATURE LIST TO SUIT A WIDE VARIETY OF GEN-SET APPLICATIONS



ISSUE 1

DSEGenset

DSE

DSE7410/20

AUTO START & AUTO MAINS FAILURE MODULES

FEATURES

DSE7420



DSE7410



KEY FEATURES

- Configurable inputs (11)
- Configurable outputs (8)
- Voltage measurement
- Mains (utility) failure detection
- Dedicated load test button
- kW overload alarms
- Comprehensive electrical protection
- RS232, RS485 & Ethernet remote communications
- Modbus RTU/TCP
- PLC functionality
- Multi event exercise timer
- Back-lit LCD 4-line text display
- Multiple display languages
- Automatic start/Manual start
- Audible alarm
- Fixed and flexible LED indicators
- Event log (250)
- Engine protection
- Fault condition notification to a designated PC
- Front panel mounting
- Protected front panel programming
- Configurable alarms and timers
- Configurable start and stop timers
- Five key menu navigation
- Front panel editing with PIN protection
- 3 configurable maintenance alarms
- CAN and magnetic pick-up/Alt. sensing
- Fuel usage monitor and low fuel alarms
- Charge alternator failure alarm
- Manual speed control (on compatible CAN engines)
- Manual fuel pump control
- “Protections disabled” feature
- Reverse power protection
- Power monitoring (kW h, kV Ar, kV A h, kV Ar h)
- Load switching (load shedding and dummy load outputs)
- Automatic load transfer (DSE7420)
- Unbalanced load protection
- Independent earth fault trip
- Fully configurable via DSE Configuration Suite PC software
- Configurable display languages
- Remote SCADA monitoring via DSE Configuration Suite PC software
- Advanced SMS messaging (additional external modem required)
- Start & stop capability via SMS messaging
- Additional display screens to help with modem diagnostics
- DSENet® expansion
- Integral PLC editor

KEY BENEFITS

- RS232, RS485 & Ethernet can be used at the same time
- DSENet® connection for system expansion
- PLC functionality
- Five step dummy load support
- Five step load shedding support
- High number of inputs and outputs
- Worldwide language support
- Direct USB connection to PC
- Ethernet monitoring
- USB host
- Data logging & trending

RELATED MATERIALS

TITLE	PART NO’S
DSE7410 Installation Instructions	053-085
DSE7420 Installation Instructions	053-088
DSE74xx Quick Start Guide	057-162
DSE74xx Operator Manual	057-161
DSE74xx PC Configuration Suite Manual	057-160

SPECIFICATION

DC SUPPLY
CONTINUOUS VOLTAGE RATING
8 V to 35 V Continuous

CRANKING DROPOUTS
Able to survive 0 V for 50 mS, providing supply was at least 10 V before dropout and supply recovers to 5 V. This is achieved without the need for internal batteries

MAXIMUM OPERATING CURRENT
260 mA at 12 V, 130 mA at 24 V

MAXIMUM STANDBY CURRENT
120 mA at 12 V, 65 mA at 24 V

CHARGE FAIL/EXCITATION RANGE
0 V to 35 V

OUTPUTS
OUTPUT A (FUEL)
15 A DC at supply voltage

OUTPUT B (START)
15 A DC at supply voltage

OUTPUTS C & D
8 A AC at 250 V AC (Volt free)

AUXILIARY OUTPUTS E,F,G,H,I & J
2 A DC at supply voltage

GENERATOR
VOLTAGE RANGE
15 V to 333 V AC (L-N)

FREQUENCY RANGE
3.5 Hz to 75 Hz

MAINS (UTILITY) (DSE7420)
VOLTAGE RANGE
15 V to 333 V AC (L-N)

FREQUENCY RANGE
3.5 Hz to 75 Hz

BUS (DSE7410)
VOLTAGE RANGE
15 V to 333 V AC (L-N)

FREQUENCY RANGE
3.5 Hz to 75 Hz

MAGNETIC PICK UP
VOLTAGE RANGE
+/- 0.5 V to 70 V

FREQUENCY RANGE
10,000 Hz (max)

DIMENSIONS
OVERALL
240 mm x 172 mm x 57 mm
9.4” x 6.8” x 2.2”

PANEL CUTOUT
220 mm x 160 mm
8.7” x 6.3”

MAXIMUM PANEL THICKNESS
8 mm
0.3”

STORAGE TEMPERATURE RANGE
-40 °C to +85 °C

DEEP SEA ELECTRONICS PLC UK
Highfield House, Hunmanby Industrial Estate, Hunmanby YO14 0PH
TELEPHONE +44 (0) 1723 890099 **FACSIMILE** +44 (0) 1723 893303
EMAIL sales@deepseaplc.com **WEBSITE** www.deepseaplc.com

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TELEPHONE +1 (815) 316 8706 **FACSIMILE** +1 (815) 316 8708
EMAIL sales@deepseausa.com **WEBSITE** www.deepseausa.com

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Registered in England & Wales No.01319649
VAT No.316923457

055-108/01/12 (1)

Molded Case Circuit Breakers

Power Defense ™ UL Global Series

Part Number: PDG33G0250B2NJNNNNNN

Powering Business Worldwide

Datasheet creation date: 02/12/2019

PRODUCT VIEW *(Use Mouse to Rotate and Zoom)*

Eaton's Power Defense™ molded case circuit breakers, a globally rated platform designed to help keep your power system safe with latest protection technology. Engineered for the future: IoT and Industry 4.0 features such as built-in communications, advanced energy metering, and algorithms that signal breaker maintenance; zone selective interlock technology that clears faults quickly and locally; ArcFlash reduction options that help protect your people, and not to mention Eaton's best-inclass support and service.

Tech Data for Configured Product

Power Defense Catalog Number	PDG33G0250B2NJNNNNNN
Frame Size	Frame 3
Poles	3 Pole
Voltage	480V AC
Interruption or Breaking Capacity (Icu/Ics)	35kA
Continuous Current Rating (In)	250A
Trip Unit Type	PXR10
Trip Unit Options 1	LSI
Trip Unit Options 2	None
Indicating Accessories	None
Indicating Accessories Terminal	None
Tripping Accessories	None
Tripping Accessory Terminal	None
Tripping Accessory Voltage	None
Line Type Description	Option 1 - Standard Terminal
Line Conductor Options	(1) 250 - 500
Line Terminal Type	Aluminum
Load Type Description	Option 1 - Standard Terminal
Load Conductor Options	(1) 250 - 500
Load Terminal Type	Aluminum
Special Options - Type of Modification	None
Details	None
Additional Description	None

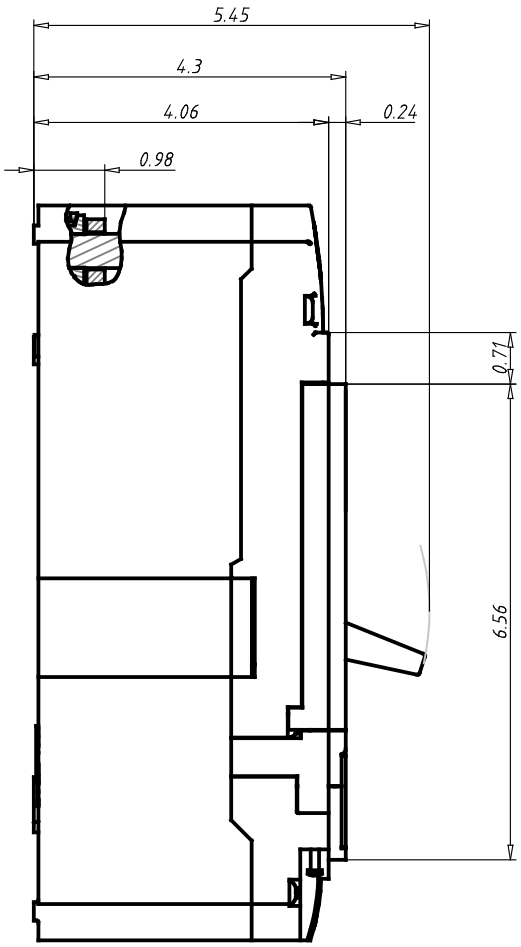
Molded Case Circuit Breakers

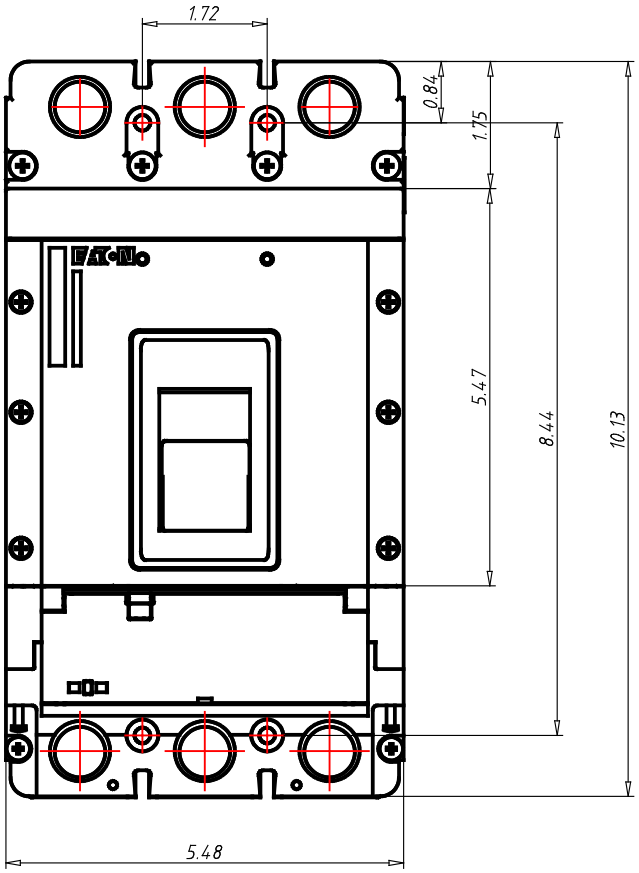
Power Defense ™ UL Global Series

Part Number: PDG33G0250B2NJNNNNNN

Datasheet creation date: 02/12/2019

Technical drawings





PDF Datasheet Powered by CADENAS PARTsolutions

Molded Case Circuit Breakers

Power Defense ™ UL Global Series

Part Number: PDG33G0250B2NJNNNNNN

Powering Business Worldwide

Datasheet creation date: 02/12/2019

General Technical Data

Frame Rating (In)	250A
Reference Standard	UL489, CSA 22.2, IEC 60947-2 & GB
Number of poles	3
Neutral rating	-
Interruption Rating Designator	F / G / K / M / N / P
UL Interruption Rating to UL 489 (240Vac)	35 / 65 / 85 / 100 / 150 / 200kA
UL Interruption Rating to UL 489 (480Vac)	25 / 35 / 50 / 65(a) / 85 / 100kA
UL Interruption Rating to UL 489 (600Vac)	14 / 18 / 25 / 35 / 50 / 65kA
UL Interruption Rating to UL 489 (125/250Vdc)	
UL Current Limiting	N / N / N / Y / Y / Y
Rated breaking capacity to IEC 60947-2 (220-240 Vac Icu)	35 / 55 / 85 / 100 / 150 / 200kA
Rated breaking capacity to IEC 60947-2 (220-240 Vac Ics)	35 / 55 / 85 / 100 / 100 / 150kA
Rated breaking capacity to IEC 60947-2 (380-415 Vac Icu)	25 / 36 / 50 / 70 / 70 / 100kA
Rated breaking capacity to IEC 60947-2 (380-415 Vac Ics)	25 / 36 / 50 / 53 / 70 / 70kA
Rated breaking capacity to IEC 60947-2 (440 Vac Icu)	25 / 30 / 35 / 50 / 70 / 100kA
Rated breaking capacity to IEC 60947-2 (440 Vac Ics)	20 / 22.5 / 35 / 40 / 50 / 50kA
Rated breaking capacity to IEC 60947-2 (525 Vac Icu)	18 / 20 / 25 / 30 / 35 / 40kA
Rated breaking capacity to IEC 60947-2 (525 Vac Ics)	5 / 7.5 / 10 / 15 / 25 / 25kA
Rated breaking capacity to IEC 60947-2 (690 Vac Icu)	- / 8 / 10 / 15 / 20 / 20kA
Rated breaking capacity to IEC 60947-2 (690 Vac Ics)	- / 4 / 5 /7. 5 / 10 / 10kA
Rated breaking capacity to IEC 60947-2 (125V DC Icu)	
Rated breaking capacity to IEC 60947-2 (250V DC 2P in series Ics)	10 / 10 / 10 / 22 / 22 / 22kA
Frequency	50/60Hz
Trip Unit Type	PXR10
Continuous Current Range	90 - 250A
100% UL489 Rated	Yes
Instantaneous/Short Circuit Range	2 - 15 In
Magnetic/Instantaneous Override	4400A
Dimensions H x W x D (inches)	10.125 x 5.47 x 4.297
Pole to pole distance inches	1,719
Approx Weight lbs	16
RoHS Compliance	Yes
UL File Number	E7819
Ambient Temp Calibration	
Derating at 50C	
Derating at 60C	
Derating at 70C	

1. 480Vac corresponds to 277Vac for 1P
2. 600Vac corresponds to 347Vac for 1P

PDF Datasheet Powered by CADENAS PARTsolutions

GILLETTE GENERATORS

STANDARD BATTERY CHARGER 12V SYSTEMS



Description:

1 bank, 6 amp, 12V DC output charger with wide input voltage range (100-240V AC), is microprocessor controlled and has a maintenance mode that will keep the battery fully charged. Meets the CEC (California Energy Commission), DOE, FCC, CE, is RoHS compliant and has UL and CSA listings (cULus).

Electrical Characteristics:

Battery size: Group 24 through 31 (up to 120 Amp-Hr)
Battery Type: 12V lead acid (FLOODED and AGM)
Maximum Recharger time: 12 hours

Input Voltage Range: 100 to 240V AC 50/60 HZ
Input Current rating: 2.0 Amps maximum

Height 3.5 inches 8.89 cm	Width 6.4 inches 16.26 cm	Depth 2.42 inches 6.2 cm

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Additional Details

Soft Start - “Soft Start” slowly charges the battery with 14.25V (10% of rated current). As soon as the max Soft Start timer (starts immediately when entering “Soft Start”) of 6 hours is reached or when the battery reaches 10V for 30 seconds the charger switches to the “Bulk stage”.

Bulk - “Bulk” charges the battery with 14.3V (100% of rated current) until the battery reaches 13.25V. As soon as the battery reaches 13.25V the Bulk timer will start counting after which it can charge the battery up to 12 hours until the voltage reaches 14.25V. As soon as the max Bulk timer (starts when voltage level is above 13.25V while in “Bulk”) of 12 hours is reached or when the battery reaches 14.25V for 30 seconds the charger switches to the “Absorption stage”.

Absorption - “Absorption” charges the battery with 14.25V. As soon as the Absorption timer (starts immediately when entering “Absorption”) reaches 14 hours or when the charge current drops below 10% of the rated current for 30 seconds the charger switches to the “Float stage”.

Float - “Float” keeps the charger on a specific voltage level of 13.25V (100% of rated current) for a period and then will switch to the “Maintenance stage”

Maintenance - As soon as the re-cycle timer reaches 14 days (336 hours) or when the voltage drops below 12.8V for 30 seconds the charger switches back to “Bulk stage”

GILLETTE GENERATORS

1000 WATT BLOCK HEATER S-13C



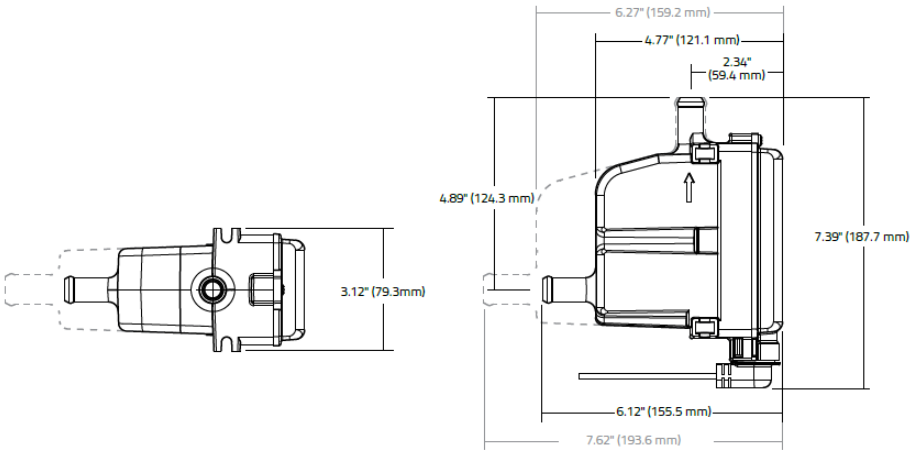
Description:

Provides engine warming for quick, clean starts Reduces time to reach operating temperature
Enhances immediate full-load acceptance
Durable aluminum housing is corrosion and impact resistant
Controls temperature by using a regulating thermostat
UL Listed, UL Recognized, CSA, and CE Certified
Thermostat on 80F, off 100F

Electrical Characteristics:

AC input: 120V, 1000 Watts, 8.3 Amps
Plug Type: NEMA 5-15
Inlet/Outlet Size: 5/8" (15.8mm)

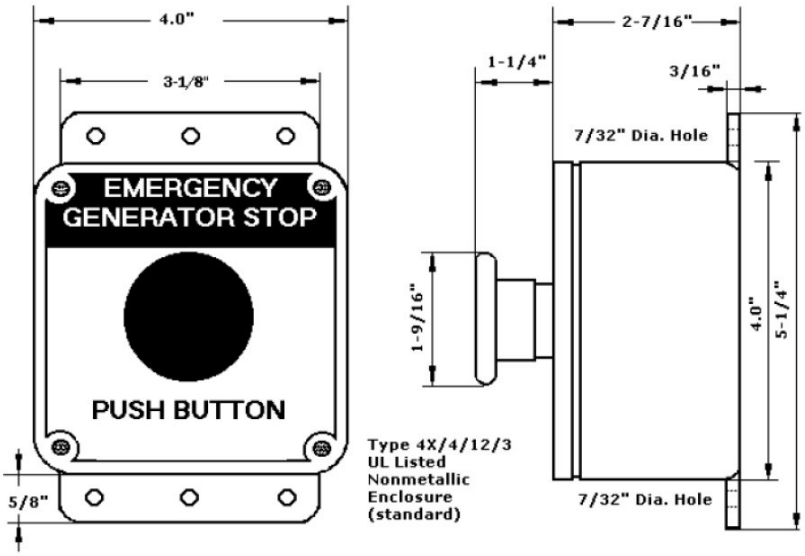
HEATER DIMENSIONS



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GILLETTE GENERATORS

S-17BC EMERGENCY STOP SWITCH WITH CLEAR PLASTIC COVER





Description:

Yellow nonmetallic NEMA 4X enclosure. Accepts one to three contact blocks. Labeled EMERGENCY GENERATOR STOP and PUSH BUTTON. Red operator is labeled PULL TO RESET. Includes clear plastic cover installed.

Electrical Characteristics:

Contact blocks (normally closed)
Screw and captive clamp terminals. Min: 1 X 24 AWG Max: 2 X 16 AWG
600 Vac @ 1.2 Amp 250 Vdc at 0.27Amp 120 Vdc @ 0.55 Amp

Specification:

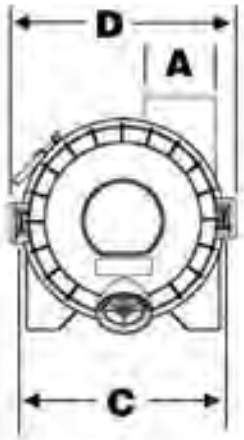
PUSH BUTTON EMERGENCY GENERATOR STOP P/N GS120 uses a single push button operating mode. Using a maintained (push-pull) red 40mm mushroom operator hot stamped PULL TO RESET on the mushroom face. The operating mode reverses the nominal state of the installed contact blocks such that type contact blocks remain open/closed when the operator is pressed or pulled to reset. Clear plastic cover is pad-lockable & installed to prevent accidental operation.

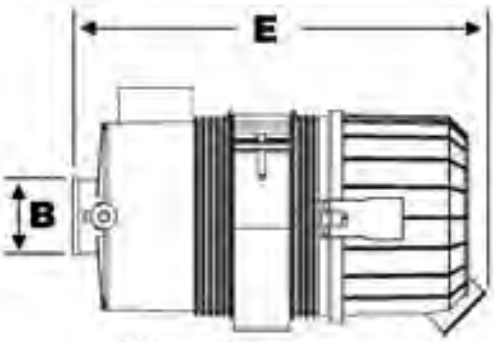
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Plastic Magna Seal Air Cleaners

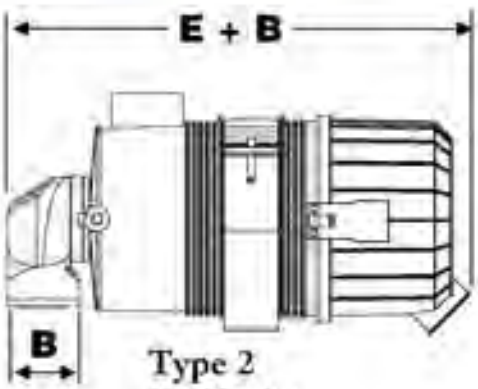


Internal or External Evacuator Valve
High Strength Polymer
Working Temp –40c to +80c (-40F to 176F)
Design Compatibility with other Manufacturers
Industry Standard elements
Can be Mounted Vertical or Horizontal





Type 1
Straight Outlet



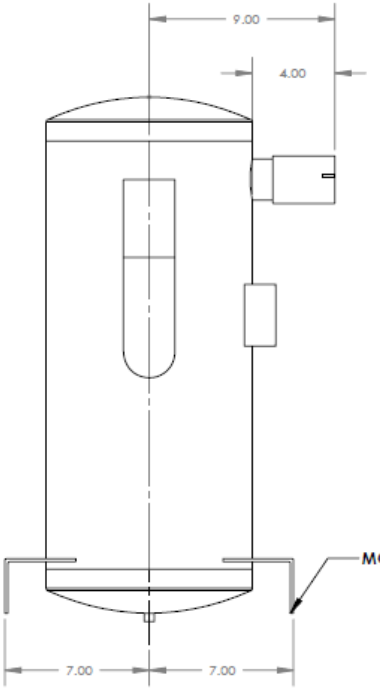
Type 2
90° Outlet

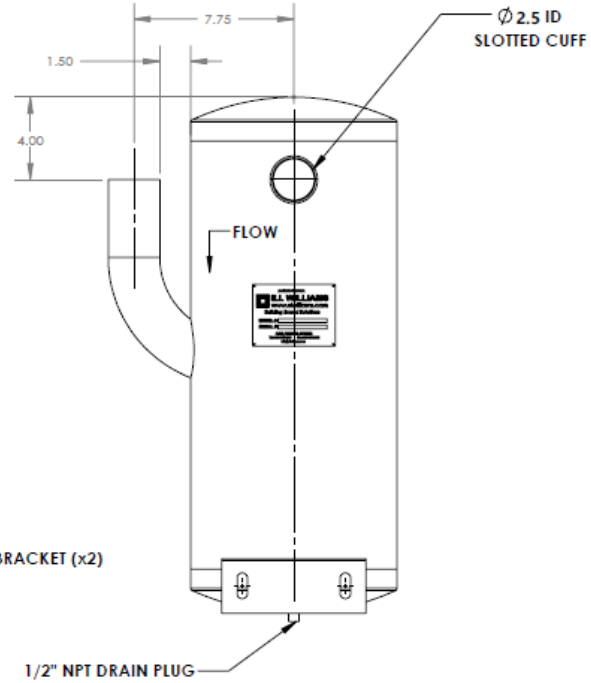
Air Cleaner Assembly																	
			Initial Restriction						A		B		C		D		E	
			6" H2O		8" H2O		10" H2O		OD Inlet		OD Outlet							
Model Number	Part Number	Type	CFM	M3m	CFM	M3m	CFM	M3m	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm
2s-FW-E1	68110	1	75	2.1	90	2.5	105	3.0	2.00	51	1.75	45	4.8	122	6.14	156	8.98	228
2s-FW-E2	68111	1	65	1.8	75	2.1	85	2.4	2.00	51	1.75	45	4.80	122	6.14	156	8.98	228
2s-FW-E1-90	68103	2	63	1.7	73	2.0	82	2.3	2.00	51	1.75	45	4.80	122	6.14	156	10.43	265
2s-FW-E2-90	68107	2	53	1.5	63	1.8	71	2.0	2.00	51	1.75	45	4.80	122	6.14	156	10.43	265
2-FW-E1	68120	1	100	2.8	115	3.3	130	3.7	2.00	51	2.00	51	5.75	146	7.09	180	13.39	340
2-FW-E2	68130	1	90	2.5	105	3.0	115	3.3	2.00	51	2.00	51	5.75	146	7.09	180	13.39	340
2-FW-E1-90	68116	2	88	2.4	102	2.9	113	3.2	2.00	51	2.00	51	5.75	146	7.09	180	14.96	380
2-FW-E2-90	68127	2	77	2.2	92	2.6	103	2.9	2.00	51	2.00	51	5.75	146	7.09	180	14.96	380
2.5-FW-E1	68132	1	150	4.2	175	5.0	195	5.5	2.50	63.5	2.50	63.5	6.89	175	8.15	207	14.13	359
2.5-FW-E2	68133	1	145	4.1	165	4.7	185	5.2	2.50	63.5	2.50	63.5	6.89	175	8.15	207	14.13	359
2.5-FW-E1-90	68131	2	134	3.8	156	4.4	175	5.0	2.50	63.5	2.50	63.5	6.89	175	8.15	207	16.22	412
2.5-FW-E2-90	68134	2	127	3.6	148	4.2	168	4.7	2.50	63.5	2.50	63.5	6.89	175	8.15	207	16.22	412
3-FW-E1	68140	1	160	4.5	190	5.4	210	5.9	3.00	76	3.00	76	7.24	184	8.58	218	14.57	370
3-FW-E2	68150	1	150	4.2	170	4.8	190	5.4	3.00	76	3.00	76	7.24	184	8.58	218	14.57	370
3-FW-E1-90	68140-2	2	154	4.4	181	5.1	196	5.6	3.00	76	3.00	76	7.24	184	8.58	218	17.80	452
3-FW-E2-90	68150-2	2	138	4.0	162	4.6	182	5.2	3.00	76	3.00	76	7.24	184	8.58	218	17.80	452
3.75-FW-E1	68160	1	250	7.1	290	5.4	325	9.2	3.75	95	3.50	89	8.35	212	9.72	247	15.63	397
3.75-FW-E2	68170	1	225	6.4	260	7.4	280	7.9	3.75	95	3.50	89	8.35	212	9.72	247	15.63	397
3.75-FW-E1-90	68157	2	212	6.0	250	7.1	277	7.8	3.75	95	3.50	89	8.35	212	9.72	247	18.5	470
3.75-FW-E2-90	68167	2	188	5.3	220	6.2	250	7.1	3.75	95	3.50	89	8.35	212	9.72	247	18.5	470
4.5-FW-E1	68175	1	375	10.6	425	12.0	475	13.5	4.50	114	4.00	102	10.60	268	11.9	302	19.13	486
4.5-FW-E2	68175-1	1	325	9.2	375	10.6	425	12.0	4.50	114	4.00	102	10.60	268	11.9	302	19.13	486
6-FW-E1	68178	1	600	17.0	685	19.4	770	21.8	6.00	152	5.00	127	12.20	309	13.54	344	22.00	560
6-FW-E2	68179	1	500	14.2	565	16.0	630	17.8	6.00	152	5.00	127	12.20	309	13.54	344	22.00	560
7-FW-E1	68182	1	800	22.7	910	25.8	1060	30.0	7.00	178	6.00	152	15.50	394	16.80	427	21.50	545
7-FW-E2	68185	1	710	20.1	830	23.5	960	27.2	7.00	178	6.00	152	15.50	394	16.80	427	21.50	545

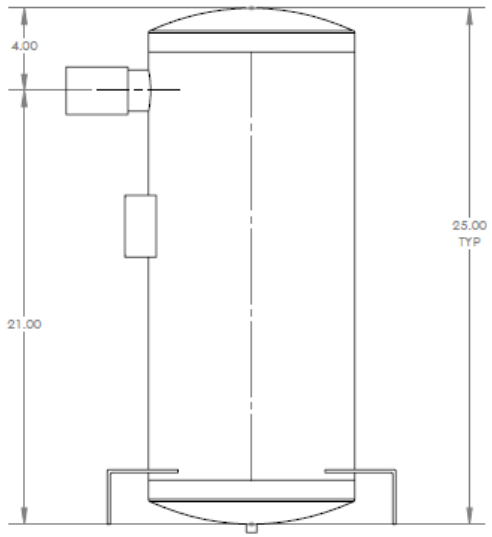
GILLETTE GENERATORS

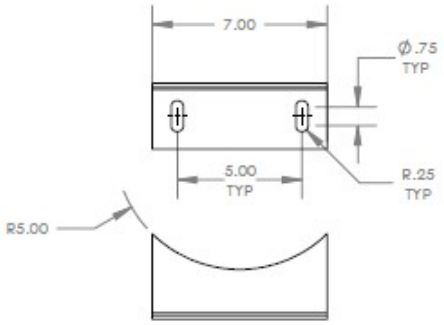
Notes:
All Dimensions are in Inches
Silencer Type: Cylindrical Silencer
Silencer Grade: Critical Grade
Sound Attenuation: 30 - 35 dBA
Insulation: No

CRITICAL SILENCER
TXS-2.5
40-62 KW RANGE

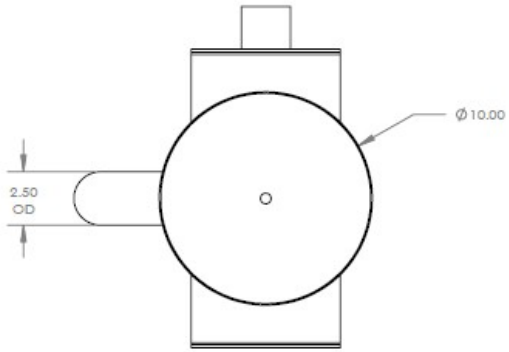


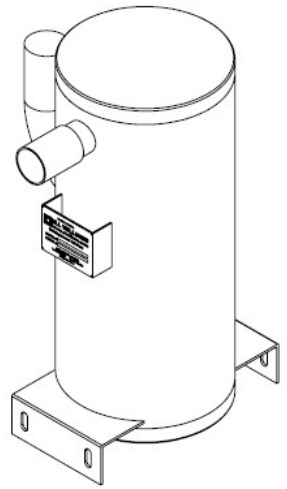






Detail MOUNTING BRACKET (x2)



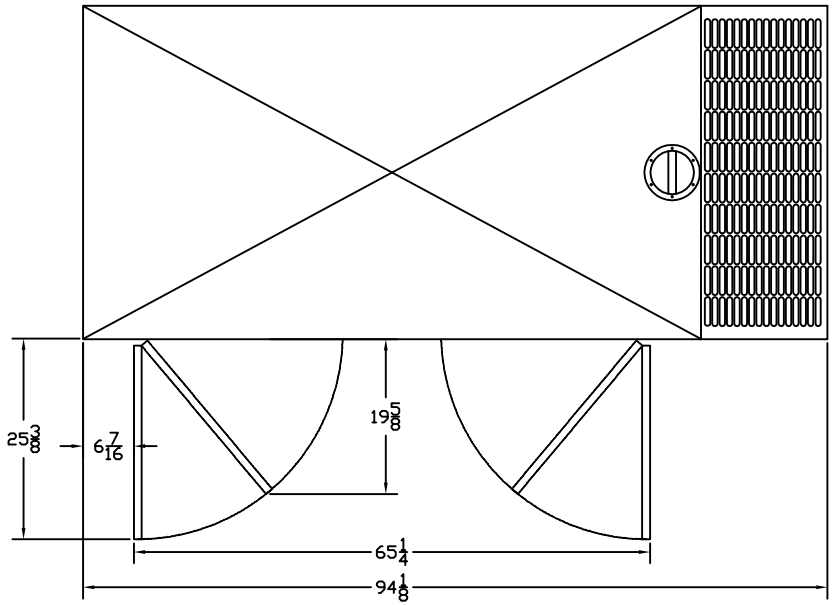


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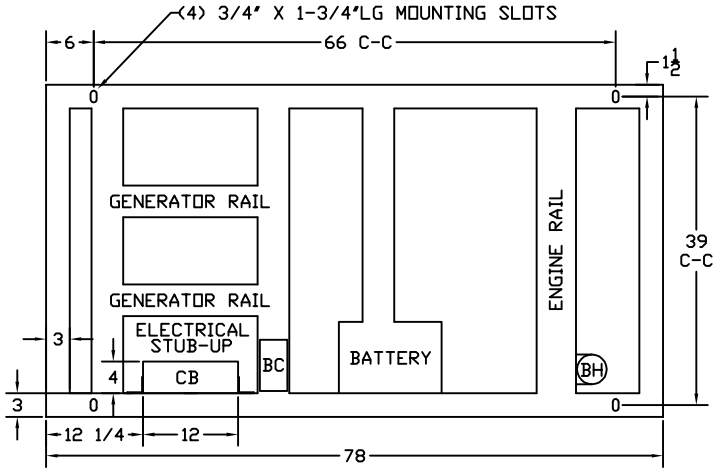
OUTLINE DIMENSIONS FOR 41 THRU 62 KW LEVEL 2 ENCLOSURE
(HINGED DOORS)

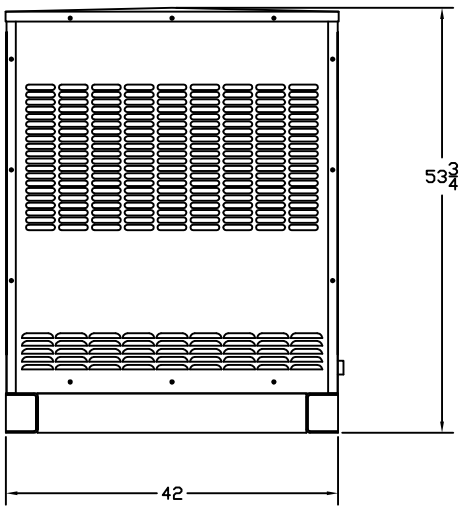
TOP VIEW

(GEN-SET HAS (4) DOORS, (2) SHOWN OPEN ARE TYPICAL FOR BOTH SIDES)

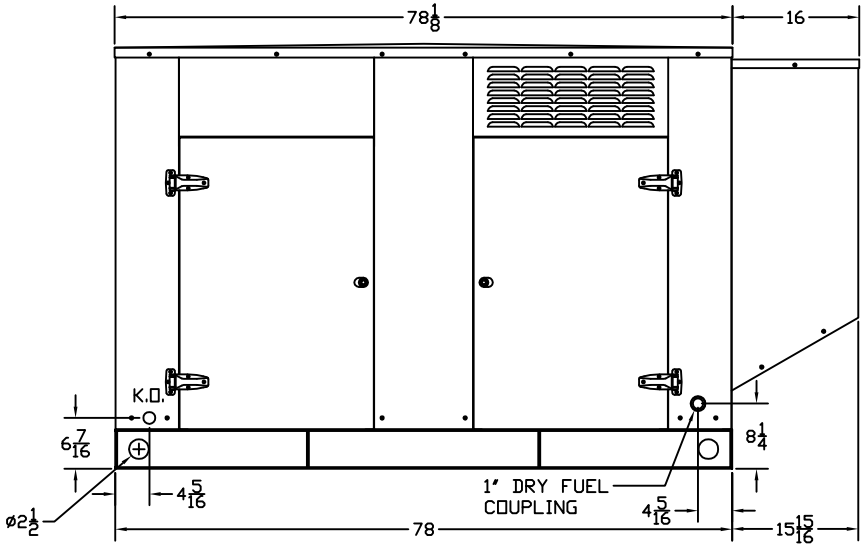


FRAME VIEW

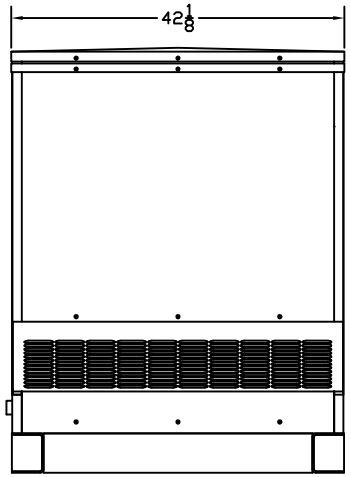




GENERATOR END VIEW

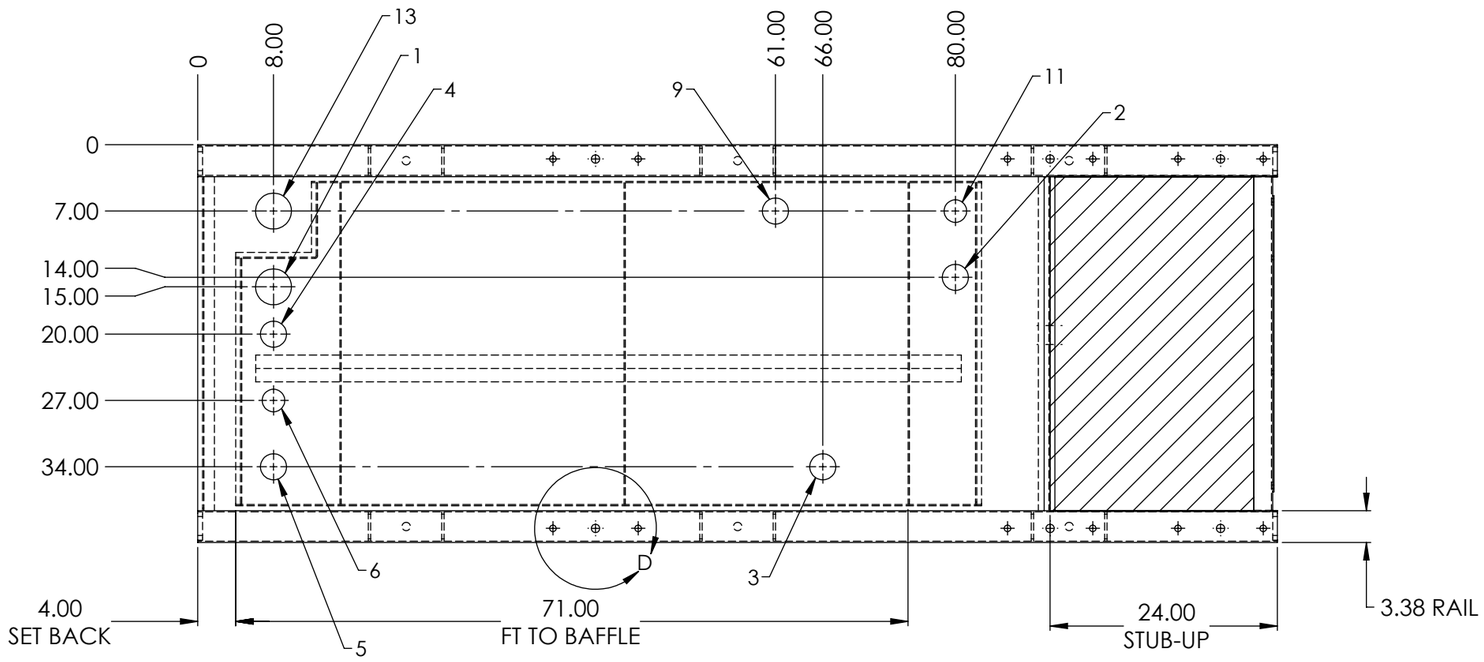


SIDE VIEW



RADIATOR END VIEW

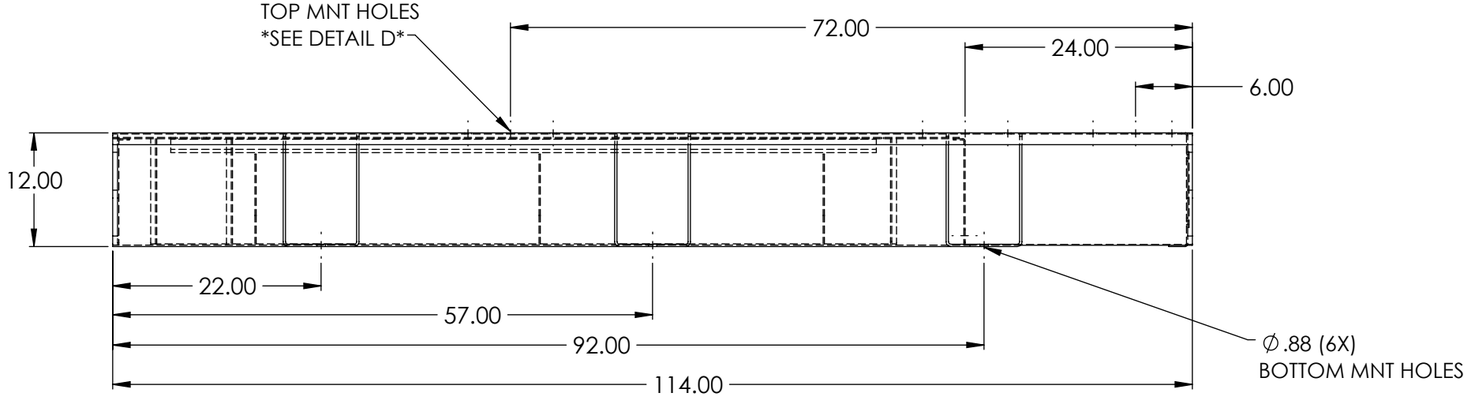
REVISIONS			
REV.	DESCRIPTION	DATE	APPROVED
NR			

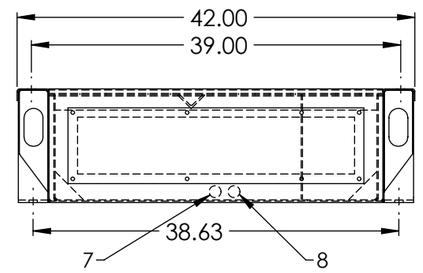


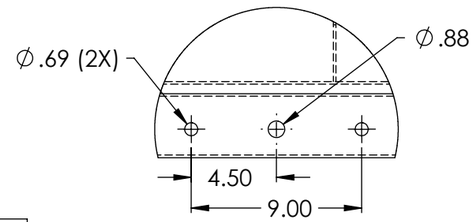
	PORT DESCRIPTIONS	QTY
1	3.00 NPT E-VENT (PRIMARY)	1
2	2.00 NPT x .50 NPT FUEL SUPPLY W/DIPTUBE	1
3	2.00 NPT x .50 NPT FUEL RETURN W/DIPTUBE	1
4	2.00 NPT NORMAL VENT W/10" PIPE	1
5	2.00 NPT FUEL FILL W/4" PIPE	1
6	1.50 NPT FUEL GAUGE	1
7	.50 NPT LEAK SWITCH (SIDE MOUNT)	1
8	.50 NPT DRAIN	1
9	2.00 NPT EXTRA	1
10		
11	1.50 NPT LOW FUEL SWITCH 30%	1
12		
13	3.00 NPT E-VENT (RB)	1

JOB# 23045-
PO# 3026730
DUE DATE
JOB QTY

HOURS







DETAIL D (6X)
SCALE 1 : 8

GALLONS: TOTAL/ 108 USABLE

REV	DESCRIPTION	DATE	INIT
INTERNAL REVISIONS			

APPROVED
JTG
4/13/2023

PROPRIETARY AND CONFIDENTIAL

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UNLESS OTHERWISE SPECIFIED:		NAME	DATE
DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ± ANGULAR: MACH ± BEND ±1° TWO PLACE DECIMAL ±.12 THREE PLACE DECIMAL ±.062	DRAWN	JTG	2/14/23
	CHECKED		
	ENG APPR.		
	MFG APPR.		
INTERPRET GEOMETRIC TOLERANCING PER:	Z.B.M REV	--	--
MATERIAL: 10 GA OUTER	COMMENTS: INNER TANK DIMENSIONS: 78.75"L X 34.25"W X 11.23"H		
FINISH: BLACK			
WEIGHT: 1700 LBS			

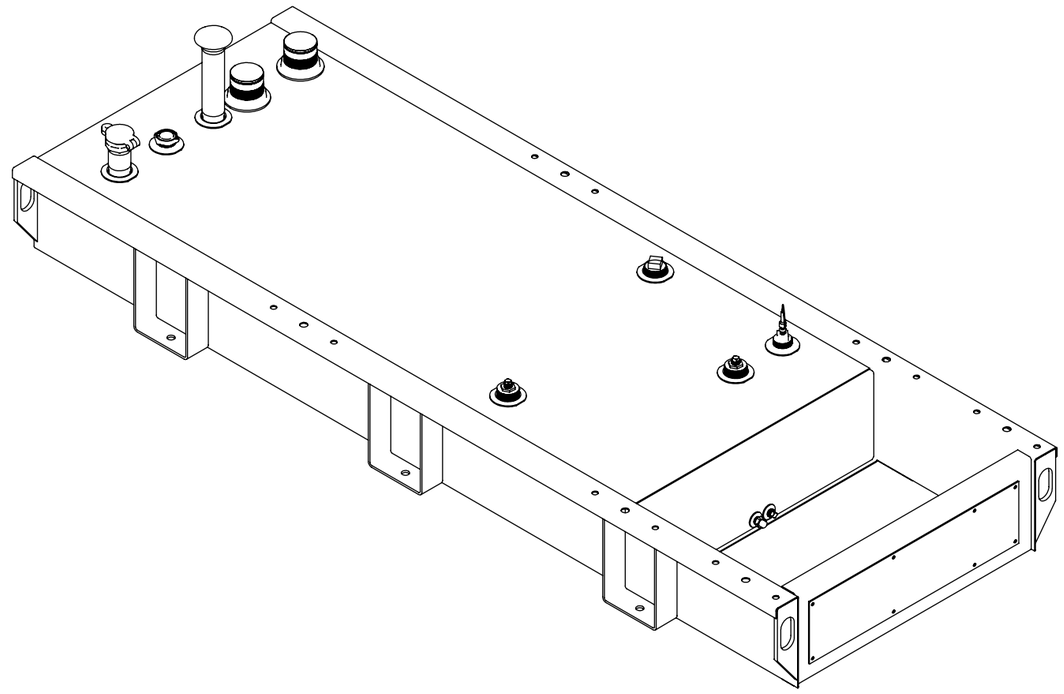
ZBM
ZIERKE BUILT MFG

ZIERKE BUILT MANUFACTURING, INC
120 6th AVENUE S E
WINNEBAGO, MINNESOTA 56098

TITLE:
TANK ASSY (GIGE-S-108) SC DW UL 142
W/24.00 END STUB UP
114.00"L x 48.00"W x 12.00"H

SIZE	DWG. NO.	REV
B	TANK ASSY (GIGE-S-108)	NR
SCALE: 1:24	DO NOT SCALE DRAWING	SHEET 1 OF 2

ITEM NO.	PART NUMBER	DATE	INIT	MaterialType	QTY.
1	RB END 2 (GIGE-S-108)	4/13/23	JTG	10 Ga HRS	1
2	RB END PANEL (GIGE-S-108)	4/13/23	JTG	10 Ga HRS	1
3	FT BODY (GIGE-S-108)	4/13/23	JTG	10 Ga HRS	1
4	FT END (GIGE-S-108)	4/13/23	JTG	10 Ga HRS	1
5	RB BODY (GIGE-S-108)	4/13/23	JTG	10 Ga HRS	1
6	RB END (GIGE-S-108)	4/13/23	JTG	10 Ga HRS	1
7	RB PANEL COVER (GIGE-S-108)	4/13/23	JTG	10 Ga HRS	1
8	SIDE SUPPORT (GIGE-S-108)	4/13/23	JTG	.25 Sheet	6
9	STUB_UP PANEL (GIGE-S-108)	4/13/23	JTG	10ga	1
10	FT END 2 (GIGE-S-108)	4/13/23	JTG	10 Ga HRS	1
11	FT TOP (GIGE-S-108)	4/13/23	JTG	10 Ga HRS	1
12	FT BAFFLE (GIGE-S-108)	4/13/23	JTG	10ga	3
13	TOP SUPPORT (GIGE-S-108)	4/13/23	JTG	ANGLE, 2 X 2 X 3/16	1
14	FT LIFTING BRACKET	4/13/23	JTG	.50 Plate	4



ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	420-3013	FLANGE - 1/2" PRESSED STEEL 0.134 THICKNESS	2
2	420-3006	FLANGE - 1 1/2" PRESSED STEEL	2
3	420-3009	FLANGE - 2" PRESSED STEEL	5
4	420-5002	BUSHING DOUBLE TAP 2 X 1/2	2
5	420-1005	PIPE NIPPLE 2" X 4" SCHED 40	1
6	420-4006	PIPE PLUG .50 SQUARE HEAD BLACK IRON	3
7	440-1005	FILL CAP 2" FNPT HINGED LOCKABLE	1
8	130-3003	FLOAT SWITCH 8"-10" 1-1/2" NPT NO	1
9	130-3014	SIDE MOUNT SWITCH SM-4100-PP	1
10	420-3010	FLANGE - 3" W/PILOT - STANDARD	2
11	450-1003	VENT CAP EMERGENCY 3" UL	2
12	420-1003	PIPE NIPPLE 2" X 10"	1
13	420-4008	PIPE PLUG 2" BLACK IRON SCH. 40	1
14	450-2001	VENT CAP NORMAL 2" MUSHROOM	1
15	110-1001	FUEL GAUGE 10" - 1-1/2" NPT SPIRAL	1

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MFG APPR.		
Q.A.		

COMMENTS:

ZIERKE BUILT MANUFACTURING, INC
120 6th AVENUE S E
WINNEBAGO, MINNESOTA 56098

TITLE:

TANK ASSY (GIGE-S-108)

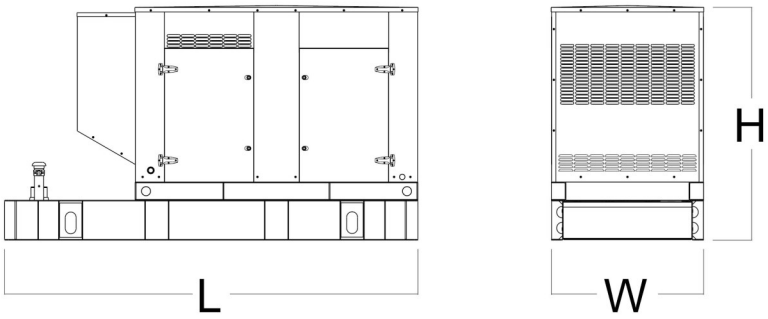
SIZE	DWG. NO.	REV
B	TANK ASSY (GIGE-S-108)	NR

SCALE: 1:20 | DO NOT SCALE DRAWING | SHEET 2 OF 2

GILLETTE GENERATORS

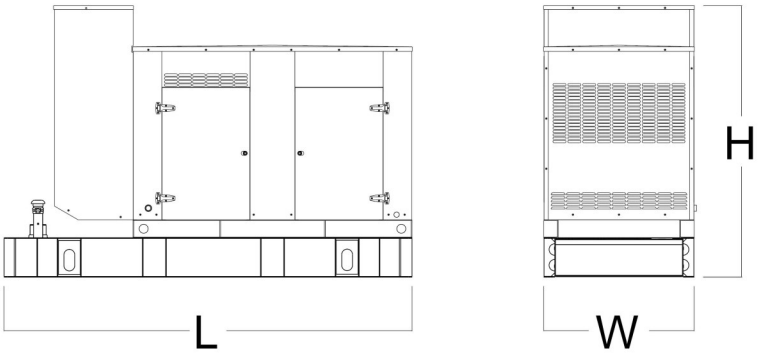
GEN-SET MOUNTED ON DOUBLE WALL SUB-BASE FUEL TANK

SPJD-600 LEVEL 2 ENCLOSURE



RUN TIME HOURS	USABLE CAPACITY GAL.	LTR.	L	W	H	STUB UP	WT.
NO TANK	-	-	94	42	54	-	2396
24	108	408	114	42	66	20	3461
48	216	817	114	42	75	20	3533
72	324	1226	114	42	85	20	4086

SPJD-600 LEVEL 3 ENCLOSURE



RUN TIME HOURS	USABLE CAPACITY GAL.	LTR.	L	W	H	STUB UP	WT.
NO TANK	-	-	100	42	65	-	2561
24	108	408	114	42	77	20	3626
48	216	817	114	42	86	20	3698
72	324	1226	114	42	96	20	4251