

LIQUID COOLED NAT. GAS ENGINE GENERATOR SET

 STANDBY

 120°C RISE

 HZ
 LPG
 N.G.

 SP-2000-60 HERTZ
 60
 136
 200



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 7-05 & 7-10

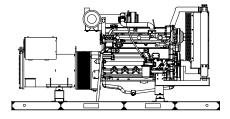
All generator sets meet 180 MPH rating.



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

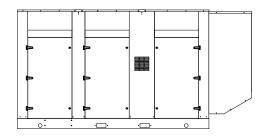
60 HZ MODEL

SP-2000



"OPEN" GEN-SET

There is no enclosure, so gen-set must be placed within a weather protected area, un-inhabited by humans or animals, with proper ventilation. Silencer not supplied, as installation requirements are not known. However, this item is available as optional equipment.



"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			LIQUID PROPANE GAS FUEL		NATURAL GAS FUEL			
GENERATOR MODEL	VOL	ΓAGE	PH	HZ	120°C RISE STANDBY RATING		120°C RISE STA	ANDBY RATING
OENERATOR MODEL	L-N	L-L	• • •		KW/KVA	AMP	KW/KVA	AMP
SP-2000-3-2	120	208	3	60	136/170	472	200/250	694
SP-2000-3-3	120	240	3	60	136/170	409	200/250	602
SP-2000-3-4	277	480	3	60	136/170	204	200/250	301
SP-2000-3-5	127	220	3	60	136/170	446	200/250	656
SP-2000-3-16	346	600	3	60	136/170	163	200/250	241

RATINGS: 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 on 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 SP-2000-60 HZ

GENERATOR SPECIFICATIONS

ManufacturerStamford Electric Generators
Model & Type UCID274J-311, 4 Pole, 12 Lead, Three Phase
UCI274H-17, 4 Pole, 6 Lead, 600V, Three Phase
Exciter Brushless, shunt excited
Voltage RegulatorSolid State, HZ/Volts
Voltage Regulation
FrequencyField convertible, 60 HZ to 50 HZ
Frequency Regulation
Unbalanced Load Capability100% of standby amps
Total Stator and Load InsulationClass H, 180°C
Temperature Rise 120°C R/R, standby rating @ 40°C amb.
3 Ø Motor Starting @ 30% Voltage Dip (208-240V)620 kVA
3 Ø Motor Starting @ 30% Voltage Dip (480V)840 kVA
3 Ø Motor Starting @ 30% Voltage Dip (600V)850 kVA
Bearing
CouplingDirect flexible disc
Total Harmonic Distortion Max 3½% (MIL-STD705B)
Telephone Interference Factor Max 50 (NEMA MG1-22)
Deviation Factor Max 5% (MIL-STD 405B)
Ltd. Warranty Period24 Months from date of start-up or

GENERATOR FEATURES

- World Renown Stamford Electric Generator having UL-1446 certification on full amortisseur windings.
- Full generator protection with **Deep Sea 7420** controller, having UL-508 certification.
- Automatic voltage regulator with over-excitation, underfrequency 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.
- 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

ManufacturerPower Solutions Inc. (PSI)
Model and TypeHeavy Duty 11.1LTCAC, 4 cycle
AspirationTurbocharged & Charge Air Cooled
Cylinder Arrangement
Displacement Cu. In. (Liters)674 (11.1)
Bore & Stroke In. (Cm.)4.84 x 6.1 (12.3 x 15.5)
Compression Ratio
Main Bearings & Style
Cylinder HeadCast Iron
Pistons
CrankshaftForged Steel
Exhaust ValveInconel, A193
Governor Electronic
Frequency Reg. (no load-full load)Isochronous
Frequency Reg. (steady state)± 1/4%
Air CleanerDry, Replaceable Cartridge
Engine Speed
Piston Speed, ft/min (m./min)
Max Power, bhp (kwm) Standby/LPG208 (155)
Max Power, bhp (kwm) Standby/NG315 (235)
Ltd. Warranty Period12 Months or 2000 hrs., first to occur

FUEL SYSTEM

Withdrawal
2.74), 7"-11"
apor System
rd on all sets
2" NPTF

FUEL CONSUMPTION

LP GAS: FT ³ /HR (M ³ /HR)	STANDBY	
100% LOAD	703 (19.9)	
75% LOAD	600 (17.0)	
50% LOAD	406 (11.5)	
LPG = 2500 BTU X FT ³ /HR = Total BTU/HR LPG Conversion: 8.50 FT ³ = 1 LB. : 36.4 FT ³ = 1 GAL.		

NAT. GAS: FT ³ /HR (M ³ /HR)	STANDBY	
100% LOAD	2115 (59.9)	
75% LOAD	1649 (46.7)	
50% LOAD	1158 (32.8)	
NG = 1000 BTU X FT ³ /HR = Total BTU/HR		

OIL SYSTEM

Type	Full Pressure
Oil Pan Capacity qt. (L)	
Oil Pan Cap. W/ filter qt. (L)	
Oil Filter	` ,

ELECTRICAL SYSTEM

Recommended battery to -18°C (0° F):(2) 12 VDC, BCI# 27, Max. Dimensions: 12"lg x 6 3/4" wi x 9" hi, with standard round posts. Min output 700 CCA. Battery tray (max. dim. at 12"lg x 7"wi). This model has (2) battery trays, (2) hold down straps, (2) sets of battery cables, and (1) battery charger. Installation of (2) 12VDC starting batteries connected in series for 24VDC output is required, with possible higher AMP/HR rating, as described above, if the normal environment temperature averages -13° F (-25°C) or cooler.

APPLICATION AND ENGINEERING DATA FOR MODEL SP-2000-60 HZ

COOLING SYSTEM

Type of System	
Coolant Pump	
Cooling Fan Type (no. of blades)	
Fan Diameter inches (mm)	38" (965)
Ambient Capacity of Radiator °F (°C)	125 (51.6)
Engine Jacket Coolant Capacity Gal (L)	5.5 (21.0)
Radiator Coolant Capacity Gal. (L)	30.6 (116)
Maximum Restriction of Cooling Air Intake	
and discharge side of radiator in. H ₂ 0 (kpa)	0.5 (.125)
Water Pump Capacity gpm (L/min)	75 (284)
Heat Reject Coolant: Btu/min (kw)	8100 (142)
Low Radiator Coolant Level Shutdown	Standard
Note: Coolant temp. shut-down switch setting at 230°F (110°C)	with 50/50
(water/antifreeze) mix.	

AIR REQUIREMENTS

Combustion Air, cfm (m ³ /min)	448 (12.7)
Radiator Air Flow cfm (m³/min)	18,000 (510)
Heat Rejected to Ambient:	
Engine: kw (btu/min)	60.3 (3430)
Alternator: kw (btu/min)	16 (910)

EXHAUST SYSTEM

Exhaust Outlet Size	3.5"
Max. Back Pressure, in. hg (KPA)	3.0 (10.2)
Exhaust Flow, at rated kw: cfm (m³/min)	1425 (40.3)
Exhaust Temp., at rated kw: °F (°C)	1382 (750)
Engines are EPA certified for Natural Gas.	

SOUND LEVELS MEASURED IN dB(A)

	Open	Level 2	
	Set	Encl.	
Level 2, Critical Silencer	90	75	
Level 3, Hospital Silencer		71	

Note: Open sets (no enclosure) has (2) optional silencer system choices due to unknown job-site applications. Level 2 enclosure has installed critical silencer with upgrade to 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	Level 2
_	Set	Enclosure
Length in (cm)	152 (386)	186 (473)
Width in (cm)		72 (183)
Height in (cm)	80 (203)	94 (239)
3 Ø Net Weight lbs (kg)	6475 (2937)	8975 (4071)
3 Ø Net Weight lbs (kg)	6825 (3096)	9325 (4230)

DEEP SEA 7420 DIGITAL MICROPROCESSOR CONTROLLER



Deep Sea 7420

The "7420" 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 "7420" 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 displays • protected solid state outputs • test buttons for: stop/reset • manual mode • auto mode • lamp test • start button • power monitoring (kWh, kVAr, kVAh, kVArh)

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 internet and allows monitoring with direct USB cable, LAN, or by internet via the built in web interface.

LOW LOAD CONDITIONS: Operation of PSI HD engines at low-load conditions should be limited to no more than one (1) hour per twenty-four (24) hour period. If the application requires extended time at light loads, it is recommended that the engine load be increased to at least 70% of mechanical rating for a minimum of two (2) hours per fifty (50) hours of low-load operation. Piston sealing rings rely on adequate cylinder firing pressure and temperature to seal the combustion chamber and prevent excessive engine oil from entering the power cylinder. Under low loads these rings will not seal properly, resulting in oil being burned in the combustion chamber and carbon deposits on pistons and valves. This mechanism is well-documented in reciprocating engines of all fuel types and is often referred to as "wet-stacking."

STANDARD FEATURES FOR MODEL SP-2000-60 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
- Engine fail to start
- High engine temp
- Engine over speed
- Low Radiator Level
- Engine under speed
- Three auxiliary alarms
- Over & under voltage
- Battery fail alarm

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
- 24 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

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:

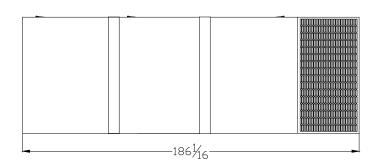
1/2% Voltage regulation • EMI filter • Under-speed protection • Over-excitation protection • total encapsulation

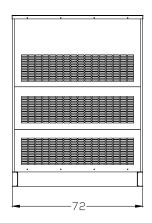
DC ELECTRICAL SYSTEM:

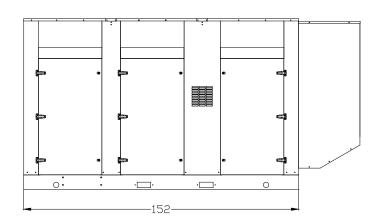
Battery tray • Battery cables • Battery hold down straps • 2-stage battery float charger with maintaining & recharging automatic charge stages

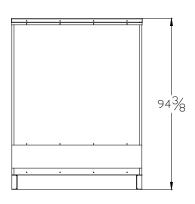
WEATHER/SOUND PROOF ALUMINUM HOUSING CORROSION RESISTANT PROTECTION CONSISTING OF:

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











11.1L ENGINE

INDUSTRIAL STATIONARY

Product Overview

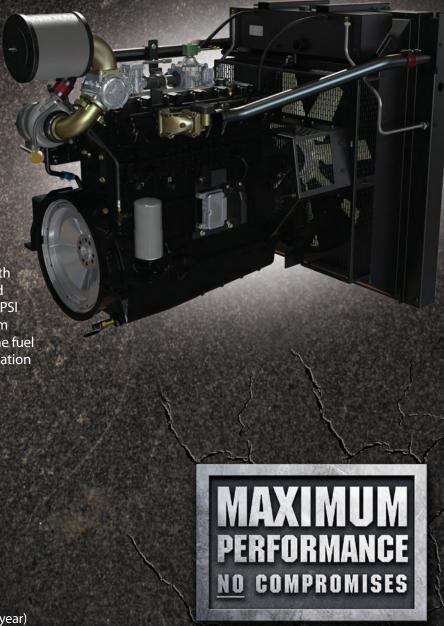
The PSI HD 11.1L is a U.S. EPA-certified natural gas and propane engine developed from the block up to be a reliable and durable power unit. Built upon a proven marine-diesel grade block, the 6-cylinder in-line, turbocharged and after-cooled engine features replaceable wet liners and water-cooled exhaust.

Superior engine performance is provided by an ECU that integrates and coordinates all critical functions including: Governor, Variable Ignition Timing, Air Fuel Ratio Control, Knock Suppression and Engine Protection.

The PSI HD product lineup has six models with displacements of 8.1L, 11.1L, 14.6L, 18.3L and 21.9L. These engines are an extension of the PSI product line, which is based upon blocks from 650cc to 8.8L. All PSI engines feature the same fuel systems and controls, simplifying your application development and support.

FEATURES

- U.S. EPA-Certified and CARB-Compliant
- · Dual Fuel with Automatic Change-Over
- 50C Ambient Cooling Capacity
- 3-Way Catalytic Converter
- Air Filtration
- UL2200-Compliant or Listed Components
- MasterTrak Telematics service (included for 1 year)



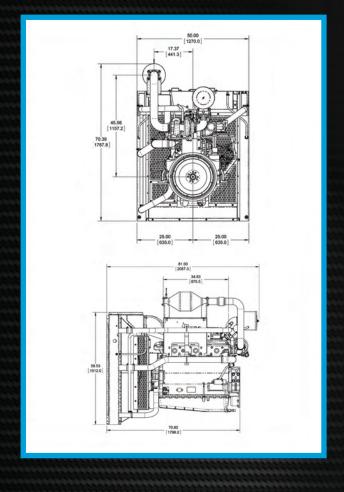


11.1L Industrial Stationary Engine

Displacement	673 cid	11,030 сс			
Compression Ratio	10.5:1				
Bore & Stroke	4.84 in x 6.1 in	123 mm x 155 mm			
kWe	200 @ 1,800 rpm (Natural Gas)	175 @ 1,500 rpm (Natural Gas)			
Emission-Certified	EPA, CARB – Industrial Stationary				
Fuel Types	Natural Gas / Propane				

GENERAL DATA

- Water-cooled, turbo-charged, air-to-air inter-cooled, stoichiometric, replaceable wet cylinder liners
- Cast iron block & heads, 10.5:1 compression ratio, overhead valve/2V configuration
- Crankshaft gear-driven oil system with cartridge-type filter, belt-driven centrifugal water pump
- Full ECU engine control including: coil-on-plug variable timing ignition, electronic governor and fuel-air ratio control
- Engine protection for oil pressure, coolant level, coolant temperature, fuel pressure, over-speed
- Complete fuel system for single fuel (NG/LP) operation with closed-loop control
- Alternator (45A/24VDC)
- Starter (24VDC)
- CANBUS J1939 interface

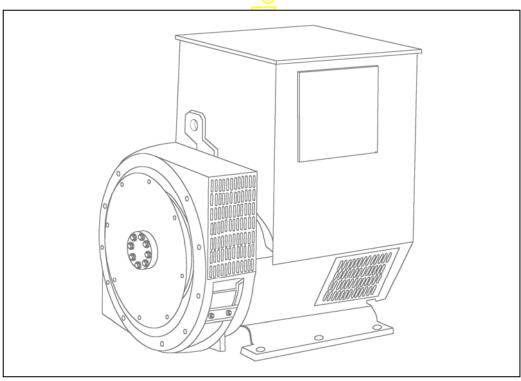


Power shown is gross engine power and has been corrected to SAE J1995. Actual installed power levels may vary depending on the application and OEM supplied components.

STAMFORD

UCDI274J - Winding 311

Technical Data Sheet



STAMFORD

UCDI274J 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 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 threephase 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 deexcites 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.

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.



UCDI274J

WINDING 311

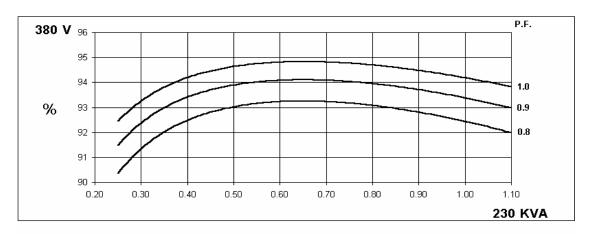
WINDING STI								
CONTROL SYSTEM SER.3	SEPARATE	LY EXCITED	BY P.M.G.					
A.V.R.	MX321	MX341						
VOLTAGE REGULATION	± 0.5 %	± 1.0 %	With 4% EN	GINE GOVE	RNING			
SUSTAINED SHORT CIRCUIT	REFER TO	SHORT CIR	CUIT DECRE			l		
GCC17M42B GHOKT CIRCOTT	INET EIN TO		OUT DEOILE	INILITY COIL	· LO (pago 1)	'		
CONTROL SYSTEM SER.4	SELF EXCIT	ΓED						
A.V.R.	SX460	AS440						
VOLTAGE REGULATION	± 1.0 %	± 1.0 %	With 4% EN	GINE GOVE	RNING			
SUSTAINED SHORT CIRCUIT	SERIES 4 C	ONTROL DO	DES NOT SU	STAIN A SH	ORT CIRCUI	T CURRENT	-	
INSULATION SYSTEM				CLAS	SS H			
PROTECTION				IP2	23			
RATED POWER FACTOR				0.	8			
STATOR WINDING			DOI	JBI F I AYER	R CONCENT	RIC		
WINDING PITCH				TWO T				
	 							
WINDING LEADS				1:				
STATOR WDG. RESISTANCE		0.0126 (Ohms PER PI			STAR CONN	ECTED	
ROTOR WDG. RESISTANCE			<u>י</u>	2.08 Ohm:	s at 22°C			
EXCITER STATOR RESISTANCE			70	20 Ohms	at 22°C			
EXCITER ROTOR RESISTANCE			0.091	Ohms PER	PHASE AT 2	22°C		
R.F.I. SUPPRESSION	BS EN	61000-6-2 &	BS EN 6100	0-6-4,VDE 0	875G, VDE 0	875N. refer t	o factory for	others
WAVEFORM DISTORTION		NO LOAD <	: 1.5% NON-	DISTORTING	BALANCE	D LINEAR LC	AD < 5.0%	
MAXIMUM OVERSPEED				2250 R	ev/Min			
BEARING NON-DRIVE END				BALL. 6310-	-2RS (ISO)			
WEIGHT COMP. GENERATOR				727	. ,			
WEIGHT WOUND STATOR				304				
WEIGHT WOUND ROTOR				271.				
WR² INERTIA			Õ	2.3744	kgm ²			
SHIPPING WEIGHTS in a crate				740	kg			
PACKING CRATE SIZE			()	123 x 67 x	103 (cm)			
			Hz			60		
TELEPHONE INTERFERENCE			<2%			TIF		
COOLING AIR	ļ		c 1230 cfm			0.69 m³/sec	1	T
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 kVA BASE RATING FOR REACTANCE	220/110	230/115	240/120 230	254/127 N/A	240/120 269	254/127 281	266/133 294	277/138 300
VALUES Xd DIR. AXIS SYNCHRONOUS	1.939	1.750	1.626	-	2.651	2.475	2.370	2.221
X'd DIR. AXIS TRANSIENT	0.103	0.093	0.086	-	0.164	0.153	0.147	0.137
X"d DIR. AXIS SUBTRANSIENT	0.070	0.064	0.059	-	0.096	0.090	0.086	0.080
Xq QUAD. AXIS REACTANCE	0.886	0.800	0.743	-	1.206	1.126	1.078	1.010
X"q QUAD. AXIS SUBTRANSIENT	0.163	0.147	0.137	-	0.138	0.129	0.123	0.116
XL LEAKAGE REACTANCE	0.062	0.056	0.052	-	0.081	0.076	0.072	0.068
X2 NEGATIVE SEQUENCE	0.117	0.105	0.098	-	0.117	0.109	0.105	0.098
X ₀ ZERO SEQUENCE	0.044	0.040	0.037	-	0.048	0.045	0.043	0.040
REACTANCES ARE SATURAT			ALUES ARE	PER UNIT A	l			
T'd TRANSIENT TIME CONST.				0.04	5 s			
T"d SUB-TRANSTIME CONST.				0.01				
T'do O.C. FIELD TIME CONST.				1.2				
Ta ARMATURE TIME CONST.	 			0.0				
SHORT CIRCUIT RATIO	<u> </u>	1/Xd						

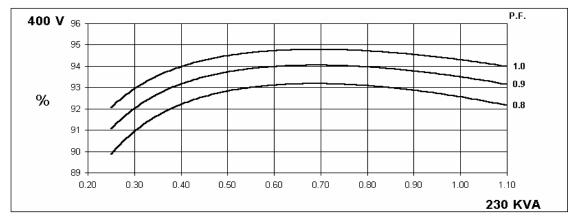
50 Hz

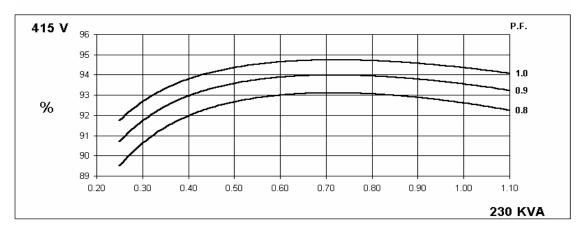
UCDI274J Winding 311

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THREE PHASE EFFICIENCY CURVES





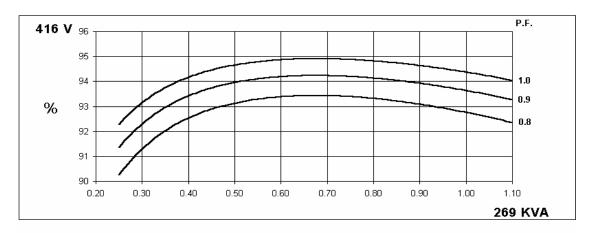


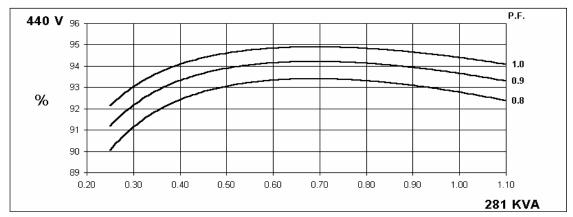
60 Hz

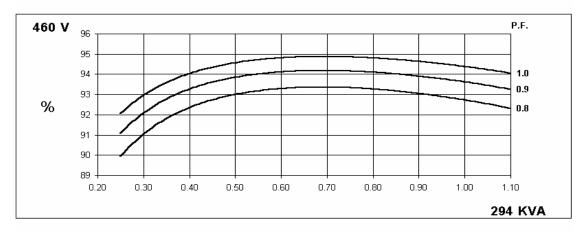
UCDI274J Winding 311

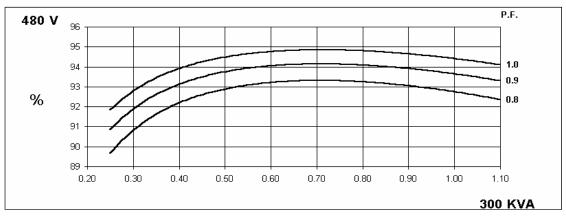
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THREE PHASE EFFICIENCY CURVES







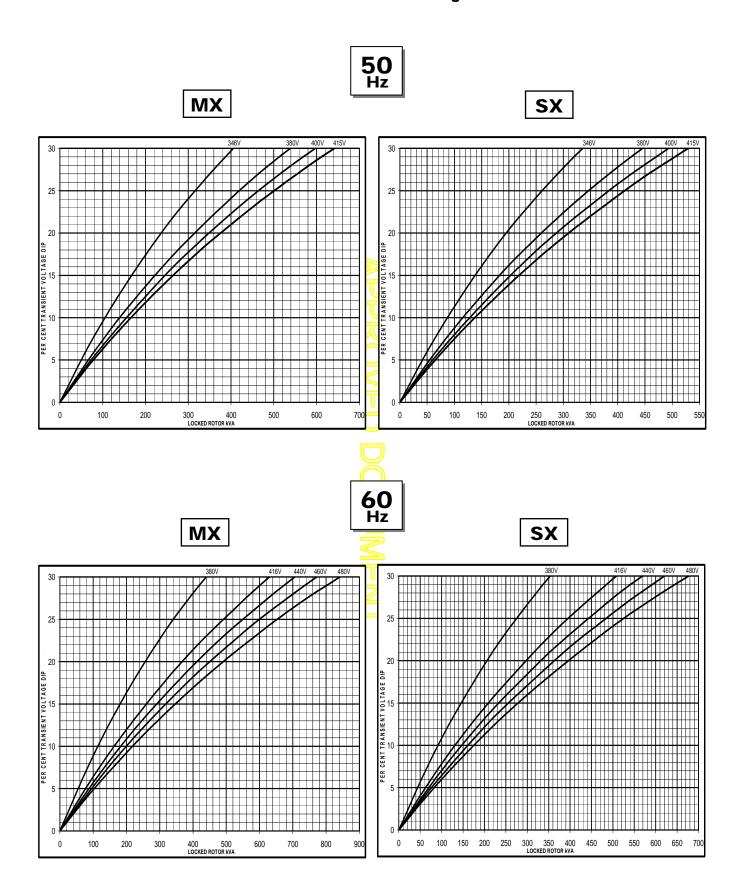




UCDI274J

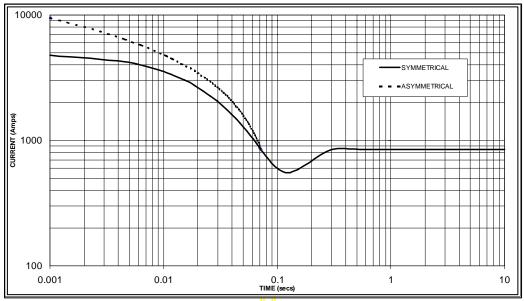
Winding 311

Locked Rotor Motor Starting Curve



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

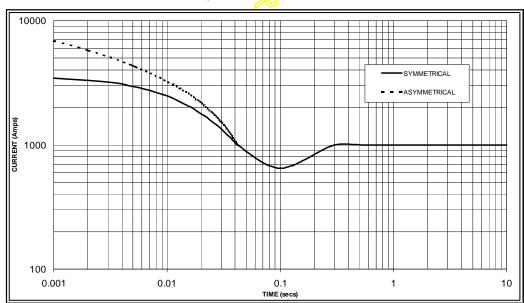




Sustained Short Circuit = 850 Amps



60 Hz



Sustained Short Circuit = 1,000 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:

50	Hz	60Hz			
Voltage	Factor	Voltage	Factor		
380v	X 1.00	416v	X 1.00		
400v	X 1.05	440v	X 1.07		
415v	X 1.10	460v	X 1.12		
		480v	X 1.16		

The sustained current value is constant irrespective of voltage level

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



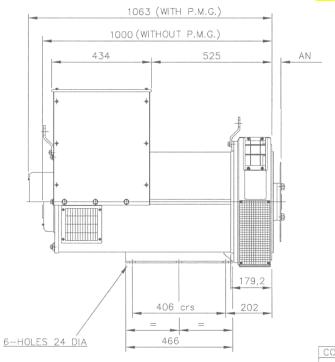
UCDI274J

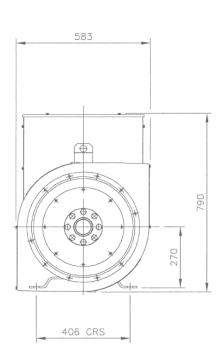
Winding 311 / 0.8 Power Factor

RATINGS

		Class - Temp Rise	Co	ont. F -	105/40°	°C	Co	ont. H -	125/40	°C	Sta	andby -	150/40	°C	Sta	andby -	163/27	°C
5	0	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
	lz	Series Delta (V)	220	230	240	254	220	230	240	254	220	230	240	254	220	230	240	254
		kVA	210	210	210	N/A	230	230	230	N/A	250	250	250	N/A	260	260	260	N/A
		kW	168	168	168	N/A	184	184	184	N/A	200	200	200	N/A	208	208	208	N/A
		Efficiency (%)	92.8	92.8	92.9	N/A	92.4	92.6	92.6	N/A	92.1	92.2	92.3	N/A	91.8	92.0	92.1	N/A
		kW Input	181.0	181.0	180.8	N/A	199.1	198.7	198.7	N/A	217.2	216.9	216.7	N/A	226.6	226.1	225.8	N/A
							-	<u> </u>			=				-			
6	0	Series Star (V)	416	440	460	480	416	440	460	480	416	440	460	480	416	440	460	480
	lz	Parallel Star (V)	208	220	230	240	208	220	230	240	208	220	230	240	208	220	230	240
	· —	Series Delta (V)	240	254	266	277	240	254	266	277	240	254	266	277	240	254	266	277
		kVA	250	264	275	275	269	28	294	300	288	300	313	319	294	306	319	325
		kW	200.0	211.2	220.0	220.0	215.2	224.8	235.2	240.0	230.4	240.0	250.4	255.2	235.2	244.8	255.2	260.0
		Efficiency (%)	93.0	93.0	93.0	93.0	92.8	92.8	92.7	92.8	92.5	92.5	92.5	92.5	92.4	92.4	92.4	92.4
		kW Input	215.1	227.1	236.6	236.6	231.9	242.2	253.7	258.6	249.1	259.5	270.7	275.9	254.5	264.9	276.2	281.4

DIMENSIONS





COUPLING DISC	AN
SAE 11,5	39,68
SAF14	25.4

APPROVED DOCUMENT

STAMFORD

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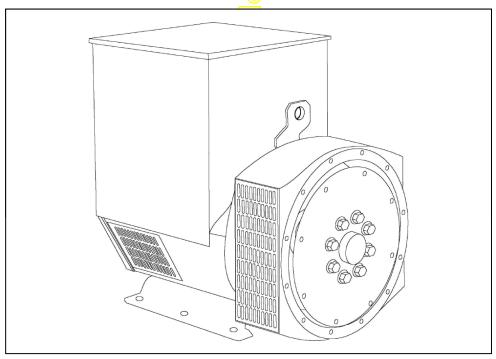
www.cumminsgeneratortechnologies.com

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STAMFORD

UCI274H - Winding 17

Technical Data Sheet



UCI274H



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 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 threephase 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 deexcites 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.

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 6 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.

STAMFORD

UCI274H

WINDING 17

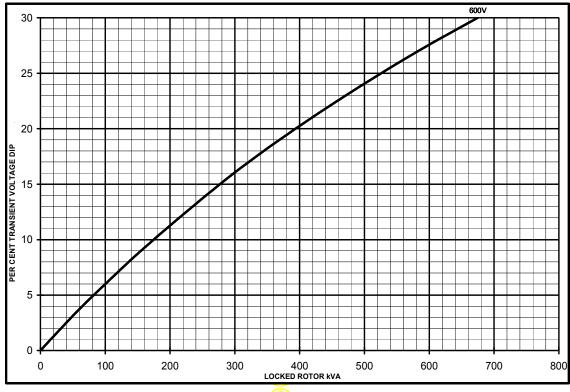
CONTROL SYSTEM	SEPARATELY EXCITED BY P.M.G.						
A.V.R.	MX321	MX341					
VOLTAGE REGULATION	± 0.5 %	± 1.0 %	With 4	% ENGINE GOVER	RNING		
SUSTAINED SHORT CIRCUIT	REFER TO S	REFER TO SHORT CIRCUIT DECREMENT CURVES (page 5)					
	1						
CONTROL SYSTEM	SELF EXCIT	ED	ı				
A.V.R.	SX460	AS440					
VOLTAGE REGULATION	± 1.5 %	± 1.0 %	With 4	% ENGINE GOVER	RNING		
SUSTAINED SHORT CIRCUIT	SERIES 4 C	ONTROL DO	ES NO	T SUSTAIN A SHO	RT CIRCUIT CURRENT		
INSULATION SYSTEM				CLAS	SS H		
PROTECTION				IP2	23		
RATED POWER FACTOR				0.0	8		
STATOR WINDING				DOUBLE LAYER	CONCENTRIC		
WINDING PITCH			5	TWO TI			
				1770 11			
WINDING LEADS							
STATOR WDG. RESISTANCE		0.028 (Jhms	PER PHASE AT 22°	C SERIES STAR CONNECTED		
ROTOR WDG. RESISTANCE			一一	1.82 Ohms	s at 22°C		
EXCITER STATOR RESISTANCE				20 Ohms	at 22°C		
EXCITER ROTOR RESISTANCE		0.091 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. 6315-2RS (ISO)						
BEARING NON-DRIVE END	BALL. 6310-2RS (ISO) 1 BEARING 2 BEARING				· ·		
WEIGHT COMP. GENERATOR			kg kg		2 BEARING 641 kg		
WEIGHT COMP. GENERATOR WEIGHT WOUND STATOR			3 kg		253 kg		
WEIGHT WOUND ROTOR			5 <mark>3</mark> kg		216.57 kg		
WR ² INERTIA			9 kgm²		1.8843 kgm ²		
SHIPPING WEIGHTS in a crate			kg kg		673 kg		
PACKING CRATE SIZE		123 x 67	x <mark>103(</mark>	cm)	123 x 67 x 103(cm)		
TELEPHONE INTERFERENCE		THE	<2%		TIF<50		
COOLING AIR				0.617 m³/sed	c 1308 cfm		
VOLTAGE SERIES STAR				600	OV		
VOLTAGE PARALLEL STAR				300)V		
VOLTAGE SERIES DELTA				346	SV		
kVA BASE RATING FOR REACTANCE VALUES				25	5		
Xd DIR. AXIS SYNCHRONOUS				2.0	07		
X'd DIR. AXIS TRANSIENT				0.1	6		
X"d DIR. AXIS SUBTRANSIENT				0.1	1		
Xq QUAD. AXIS REACTANCE	1.26						
X"q QUAD. AXIS SUBTRANSIENT	0.17						
XL LEAKAGE REACTANCE	0.08						
X2 NEGATIVE SEQUENCE	0.13						
X ₀ ZERO SEQUENCE				0.0	08		
REACTANCES ARE SATURAT	TED VALUES ARE PER UNIT AT RATING AND VOLTAGE INDICATED						
T'd TRANSIENT TIME CONST.	0.042s						
T''d SUB-TRANSTIME CONST.				0.01			
T'do O.C. FIELD TIME CONST.				1.1			
Ta ARMATURE TIME CONST. SHORT CIRCUIT RATIO				0.01			
SHORT GIRCOTT RATIO	1/Xd						

UCI274H

Winding 17

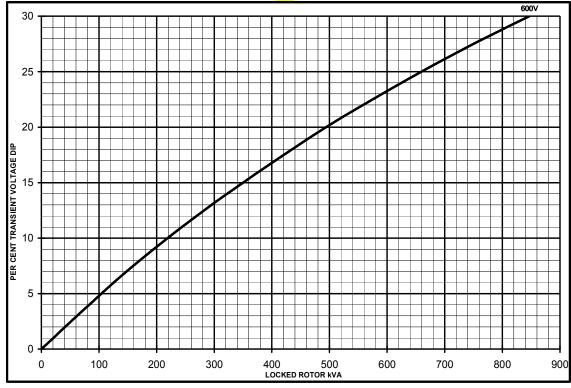
SX

Locked Rotor Motor Starting Curves



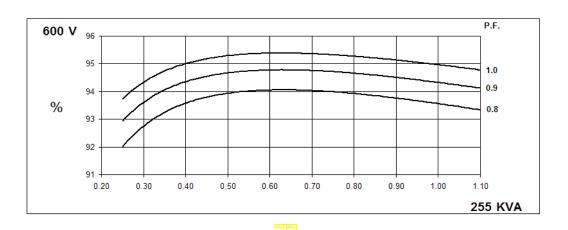
MX



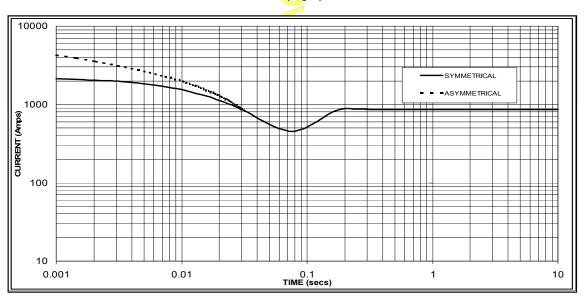


UCI274H Winding 17

THREE PHASE EFFICIENCY CURVES



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



Sustained Short Circuit = 860 Amps

Note

The following multiplication factor should be used to convert the values from curve for 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



UCI274H

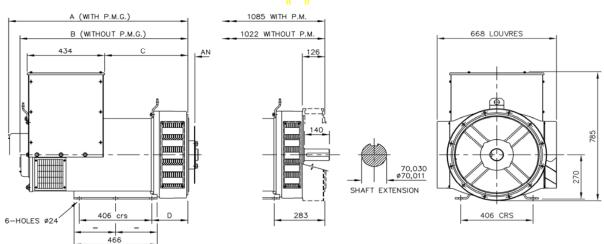
Winding 17 / 0.8 Power Factor

60Hz

RATINGS

Class - Temp Rise	Cont. F - 105/40°C	Cont. H - 125/40°C	Standby - 150/40°C	Standby - 163/27°C
Series Star (V)	600	600	600	600
Parallel Star (V)	300	300	300	300
Series Delta (V)	346	346	346	346
kVA	235.0	255.0	275.0	280.0
kW	188.0	204.0	220.0	224.0
Efficiency (%)	93.7	93.6	93.4	93.3
kW Input	200.6	218.0	235.6	240.0





SINGLE BEARING MACHINES ONLY							
ADAPTOR	A	В	С	D	COUPLING DISCS	AN	
SAE 1	1018,3	955,3	479,3	216,3	SAE 10	53,98	
SAE 2	1004	941	465	202	SAE 11,5	39,68	
SAE 3	1004	941	465	202	SAE 14	25,40	

APPROVED DOCUMENT

STAMFORD

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DSE**7410/20 AUTO START & AUTO MAINS FAILURE MODULES**

FEATURES



The DSE7410 is an Auto Start Control Module and the DSF7420 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 pickup/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

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

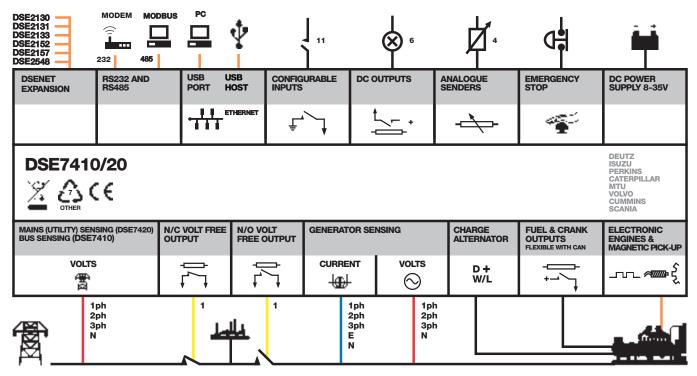
BS EN 60068-2-27 Three shocks in each of three major axes 15 gn in 11 mS

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**



















DSE**7410/20**

AUTO START & AUTO MAINS FAILURE MODULES

FEATURES



DSE**7410**



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

DSE**7420**



- · Five key menu navigation
- Front panel editing with PIN protection
- 3 configurable maintenance alarms
- CAN and magnetic pick-up/Alt. sensina
- 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

SPECIFICATION

CONTINUOUS VOLTAGE RATING

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)

OUTPUT B (START)

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

MAINS (UTILITY) (DSE7420) **VOLTAGE RANGE**

15 V to 333 V AC (L-N)

FREQUENCY RANGE

3.5 Hz to 75 Hz

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

STORAGE TEMPERATURE RANGE

RELATED MATERIALS

DSE7410 Installation Instructions SE7420 Installation Instructions DSE74xx Quick Start Guide

DSE74xx Operator Manual DSE74xx PC Configuration Suite Manual

PART NO'S

053-085 053-088 057-162

057-161

057-160

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EMAIL sales@deepseausa.com WEBSITE www.deepseausa.com

Power Defense ™ UL Global Series

Part Number: PDG33G0400B2NJNNNNNN



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	PDG33G0400B2NJNNNNNN
Frame Size	Frame 3
Poles	3 Pole
Voltage	480V AC
Interruption or Breaking Capacity (Icu/Ics)	35kA
Continuous Current Rating (In)	400A
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	(2) 3/0 - 250
Line Terminal Type	Aluminum
Load Type Description	Option 1 - Standard Terminal
Load Conductor Options	(2) 3/0 - 250
Load Terminal Type	Aluminum
Special Options - Type of Modification	None
Details	None
Additional Description	None

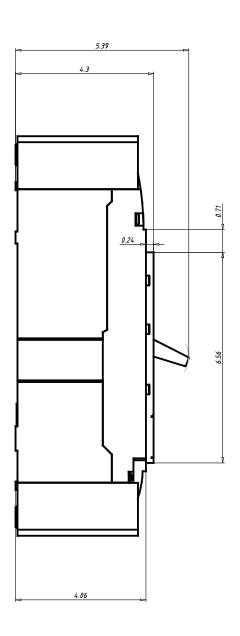
Power Defense ™ UL Global Series

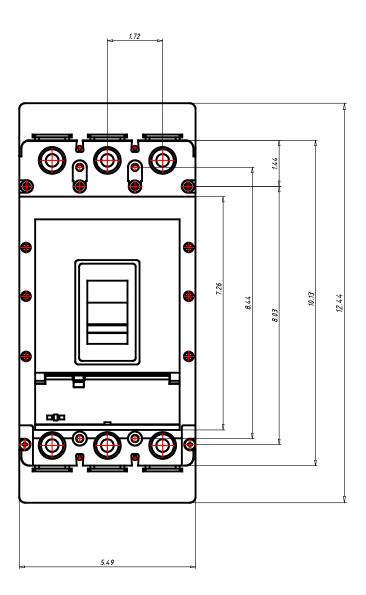
Part Number: PDG33G0400B2NJNNNNNN



Datasheet creation date: 02/12/2019

Technical drawings





Power Defense ™ UL Global Series

Part Number: PDG33G0400B2NJNNNNNN



Datasheet creation date: 02/12/2019

General Technical Data

Frame Rating (In)	400A
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	160 - 400A
100% UL489 Rated	Yes
Instantaneous/Short Circuit Range	2 - 10 ln
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. 480}Vac corresponds to 277Vac for 1P

^{2. 600}Vac corresponds to 347Vac for 1P

Power Defense ™ UL Global Series
Part Number: PDG43G0800B2NJNNNNNN



Datasheet creation date: 20/11/2019

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	PDG43G0800B2NJNNNNNN
Frame Size	Frame 4
Poles	3 Pole
Voltage	240V AC
Interruption or Breaking Capacity (Icu/Ics)	55kA
Continuous Current Rating (In)	800A
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	(3) 3/0 - 400
Line Terminal Type	Aluminum
Load Type Description	Option 1 - Standard Terminal
Load Conductor Options	(3) 3/0 - 400
Load Terminal Type	Aluminum
Special Options - Type of Modification	None
Details	None
Additional Description	None

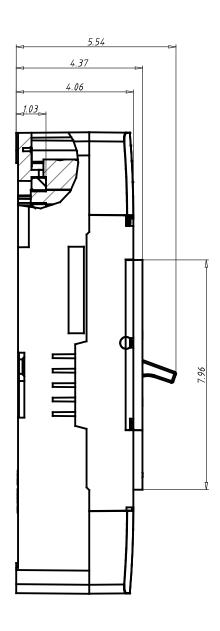
Power Defense ™ UL Global Series

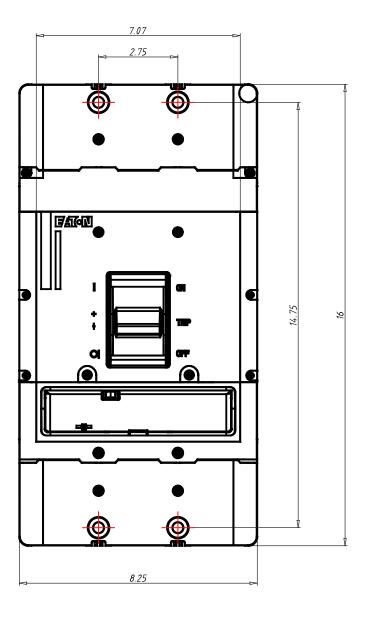
Part Number: PDG43G0800B2NJNNNNNN



Datasheet creation date: 20/11/2019

Technical drawings





Power Defense ™ UL Global Series

Part Number: PDG43G0800B2NJNNNNNN



Datasheet creation date: 20/11/2019

General Technical Data

Frame Rating (In)	800A
Reference Standard	UL489, CSA 22.2, IEC 60947-2 & GB
Number of poles	3
Neutral rating	-
Interruption Rating Designator	G/K/M
UL Interruption Rating to UL 489 (240Vac)	65 / 85 / 100kA
UL Interruption Rating to UL 489 (480Vac)	35 / 50 / 65(a)kA
UL Interruption Rating to UL 489 (600Vac)	18 / 25 / 35kA
UL Interruption Rating to UL 489 (125/250Vdc)	
UL Current Limiting	-
Rated breaking capacity to IEC 60947-2 (220-240 Vac Icu)	55 / 85 / 100 / 100kA
Rated breaking capacity to IEC 60947-2 (220-240 Vac Ics)	55 / 85 / 100 / 100kA
Rated breaking capacity to IEC 60947-2 (380-415 Vac Icu)	36 / 50 / 70 / 70kA
Rated breaking capacity to IEC 60947-2 (380-415 Vac Ics)	36 / 50 / 53 / 70kA
Rated breaking capacity to IEC 60947-2 (440 Vac Icu)	30 / 35 / 50 / 65kA
Rated breaking capacity to IEC 60947-2 (440 Vac Ics)	22.5 / 35 / 40 / 50kA
Rated breaking capacity to IEC 60947-2 (525 Vac Icu)	20 / 25 / 30 / 35kA
Rated breaking capacity to IEC 60947-2 (525 Vac Ics)	16.5 / 20 / 25 / 25kA
Rated breaking capacity to IEC 60947-2 (690 Vac Icu)	8 / 10 / 15 / 20kA
Rated breaking capacity to IEC 60947-2 (690 Vac Ics)	4 / 5 /7. 5 / 10kA
Rated breaking capacity to IEC 60947-2 (125V DC Icu)	
Rated breaking capacity to IEC 60947-2 (250V DC 2P in series Ics)	22 / 22 / 25kA
Frequency	50/60Hz
Trip Unit Type	PXR10
Continuous Current Range	320 - 800A
100% UL489 Rated	Yes
Instantaneous/Short Circuit Range	2 - 8 ln
Magnetic/Instantaneous Override	6800A
Dimensions H x W x D (inches)	16 x 8.25 x 4.38
Pole to pole distance inches	2,75
Approx Weight lbs	29,98
RoHS Compliance	Yes
UL File Number	E7819
Ambient Temp Calibration	
Derating at 50C	
Derating at 60C	
Derating at 70C	

^{1. 480}Vac corresponds to 277Vac for 1P

^{2. 600}Vac corresponds to 347Vac for 1P

Digital Linear Chargers

Specifications

- Waterproof, shock-and vibration-resistant aluminum construction
- Saltwater tested and fully corrosion-resistant
- · Short circuit, reverse polarity, and ignition protected
- For use with 12V/6 cell batteries that are flooded/wet cell, maintenance free or starved electrolyte (AGM) only
- FCC compliant
- UL listed to marine standard 1236
- 3 year warranty
- Replaces all existing current on-board chargers (excluding portables)
- No Price Increase
- Availability: November 2010



DIGITAL LINEAR ON-BOARD CHARGERS		
PRODUCT	PRODUCT	
CODE	DESCRIPTION	
1821065	MK 106D (1 bank x 6 amps)	
1821105	MK-110D (1 bank x 10 amps)	
1822105	MK-210D (2 bank x 5 amps)	
1823155	MK-315D (3 bank x 5 amps)	
1822205	MK-220D (2 bank x 10 amps)	
1823305	MK-330D (3 bank x 10 amps)	
1824405	MK-440D (4 bank x 10 amps)	
1822305	MK-230D (2 bank x 15 amps)	
1823455	MK-345D (3 bank x 15 amps)	
1824605	MK-460D (4 bank x 15 amps)	





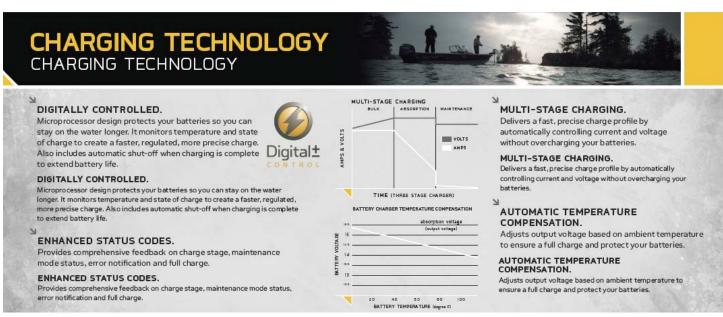


Digital Linear Chargers

Specifications (cont.)

• New 4-color package design

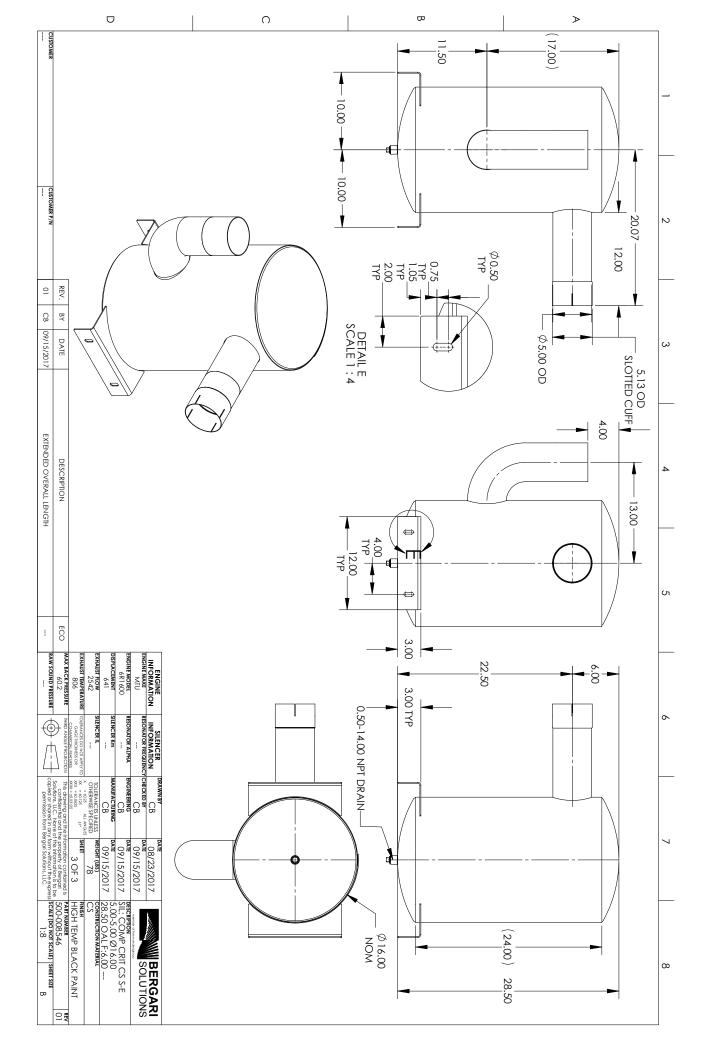






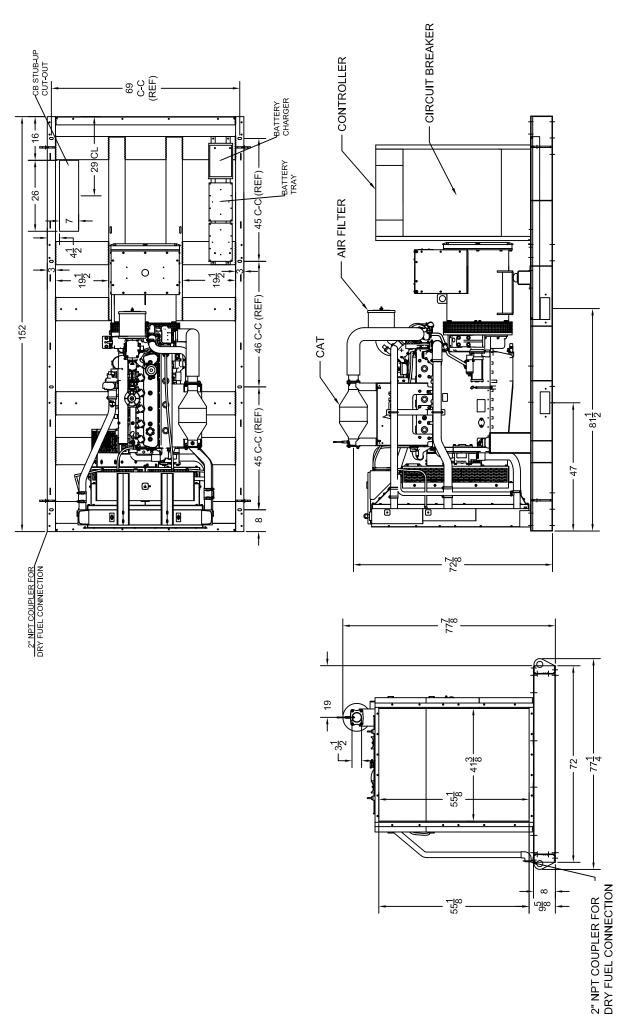






SP-2000 OPEN DIMENSIONAL OVERVIEW





RADIATOR VIEW

SIDE VIEW

