

BILL OF MATERIALS

Model: C4.4GCABR
Quantity: 1
Rating: 100 kW
Frequency: 60 Hz
Voltage: 480 V

The following features will be included:

Quantity	Characteristic Name	Feature Code	Feature Description
1	PGS EMISSION CERTIFICATION	CERTESE_I	EPA STATIONARY EMERGENCY
1	VOLTAGE OPTION	60H0480_I	60HZ 480 VOLT (WYE)
1	APPLICATION INDICATOR	STANDBY_I	STANDBY POWER
1	ENGINE RATING	KW00100_I	60 Hz, 100 kW
1	CONFIGURATION	NAC307P_I	D100GC
1	UL LISTING	ULCEP01_I	cULus UL2200 CERTIFIED GEN SET
1	SEISMIC CERTIFICATION	IBSCCB_I	IBC SEISMIC CERT OF COMPLIANCE
1	DECAL LANGUAGE	LANENGO_I	ENGLISH INSTRUCTION LANGUAGE
1	GOVERNOR TYPE	ADEMA4_I	ADEM A4 GOVERNOR
1	MARKET SEGMENT CODES	MSEPGGN_I	GENERAL EPG
1	CUSTOMER SEGMENT	MSCEC77_I	PUBLIC OR CIVIL SERVICES
1	MARKET WORK CODE	MWCODEF_I	STANDBY POWER
1	AUTHORIZED APPROVAL NUMBER	NA10	AUTHORIZED APPROVAL NUMBER
1	PERMANENT MAGNET	PMEXCI3_I	PERMANENT MAGNET GENERATOR
1	ALTERNATOR TEMPERATURE RISE	GENT130_I	130C TEMP RISE OVER 40C AMB
1	ALTERNATOR	OGNSEJS_I	ALT M2236L4 JS
1	ALT POWER	FULLPWR_I	FULL POWER
1	GEN MOUNTING & DUCT PLATE	GENMTG2_I	GEN MTG & DUCT PLATE 2
1	BATTERY DISCONNECT SWITCH	BATDS03_I	BATTERY DISCONNECT SWITCH
1	BASE TYPE (MOUNTING OPTION)	FTDW043_I	INTEGRAL TANK BASE, 24HR, 182
1	FUEL TANK OPTIONS	FSCO5G_I	5 GALLON SPILL CONTAINMENT
1	FUEL VENT PIPE	FSTDVP_I	VENT PIPE-STD
1	EMERGENCY FUEL VENT PIPE	FFULEV3_I	EMERGENCY FUEL VENT PIPE UL-3"
1	ENCLOSURE	ENCSAB2_I	SA LEVEL 2 ENCLOSURE WHITE B2
1	CONTROL PANEL MODEL	GCCP12U_I	CONTROL PANEL DEEPPSEA 6310
1	GFCI AC RECEPTACLE & WIRING	GFCICS1_I	20A GFCI (CONTROLS SIDE)
1	EMERGENCY STOP	CSB2_I	EXTERNAL EMERGENCY STOP
1	BATTERY OPTIONS	BAT2465_I	WET BATTERY
1	BATTERY CHARGERS	BTC1028_I	BATTERY CHARGER 10 AMP
1	JACKET WATER HEATER	WHH2_I	JACKET WATER HEATER
1	CURRENT TRANSFORMER	CT0250A_I	CURRENT TRANSFORMER 250:5
1	COOLANT RESERVIOR	CWRESV_I	COOLANT RESERVIOR
1	1ST CIRCUIT BREAKER	CB0252A_I	250A LSI 100% RATED BREAKER
1	NEUTRAL BARS	NTS250_I	NEUTRAL BAR 150A & 250A
1	RADIATOR	STDRAD_I	STANDARD RADIATOR
1	MUFFLERS	CAN_I	ENCLOSURE SILENCER
1	TELEMATICS HARDWARE	PL444_I	PRODUCT LINK 4G LTE TELEMATICS
1	CELLULAR BAND	AM_I	AMERICAS BAND
1	TELEMATICS HARDWARE CERTIFIED	TCVYES_I	ACCEPT - REVIEW LINK IN DESC
1	TESTING - GENERATOR SET	STDTEST_I	STD TEST - PKG GEN SET 0.8 PF

GENERATOR SET

Cat® D100 GC

Diesel Generator Sets



Standby : 60 Hz



Image shown might not reflect actual configuration

Engine Model	Cat® C4.4 In-line 4, 4-cycle Diesel
Bore x Stroke	105 mm x 127 mm (4.1in x 5.0 in)
Displacement	4.4 L (269 in³)
Compression Ratio	16.7:1
Aspiration	Turbocharged
Fuel Injection System	Common Rail

Model	Standby	Emission Strategy
D100 GC	100 ekW	EPA TIER III

PACKAGE PERFORMANCE

Performance	Standby	
	3-Phase	1-Phase
Frequency	60 Hz	60 Hz
Genset Power Rating	125 kVA	100 kVA
Genset power rating with fan, 3p@ 0.8 & 1p@1.0 power factor	100 ekW	100 ekW
Performance Number	P4514A	P4514A
Fuel Consumption		
100% load with fan, L/hr (gal/hr)	27.9 (7.4)	28.2 (7.4)
75% load with fan, L/hr (gal/hr)	22.5 (5.9)	22.8 (6.0)
50% load with fan, L/hr (gal/hr)	16.7 (4.4)	16.9 (4.5)
Cooling System ¹		
Radiator air flow restriction (system), kPa (in. water)	0.12 (0.48)	
Engine coolant capacity, L (gal)	7.0 (1.8)	
Radiator coolant capacity, L (gal)	10.0 (2.6)	
Total coolant capacity, L (gal)	17.0 (4.4)	
Inlet Air		
Combustion air inlet flow rate, m³/min (CFM)	8.82 (311)	8.82 (311)
Max. Allowable Combustion Air Inlet Temp, °C (°F)	45 (113)	
Exhaust System		
Exhaust stack gas temperature, °C (°F)	659 (1218)	659 (1218)
Exhaust gas flow rate, m³/min (CFM)	20.2 (712)	20.2 (712)
Exhaust system backpressure (maximum allowable), kPa (in. water)	15.0 (60.2)	15.0 (60.2)
Heat Rejection		
Heat rejection to exhaust (total), kW (BTU/min)	91.3 (5192)	91.3 (5192)
Heat rejection to atmosphere from engine, kW (BTU/min)	15.6 (887)	15.6 (887)
Emissions (Nominal) ²		
NOx + HC, g/kW-hr	3.6	3.6
CO, g/kW-hr	0.9	0.9
PM, g/kW-hr	0.12	0.12

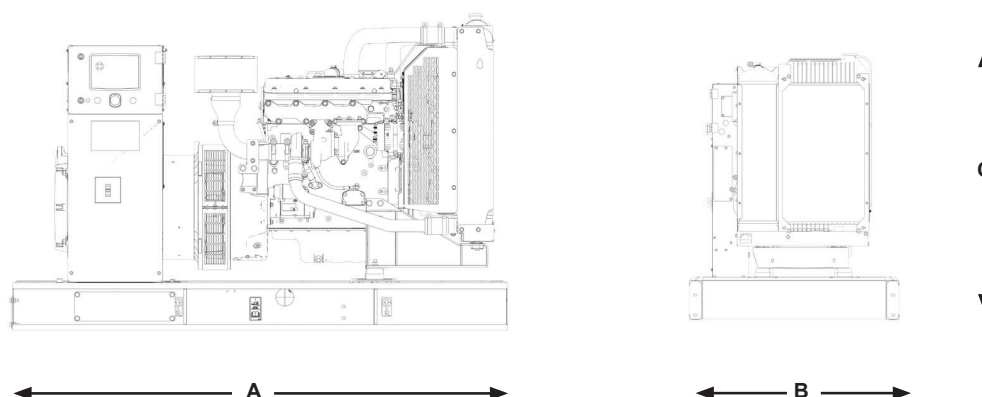
D100 GC Diesel Generator Sets

Electric Power



Alternator ³				
Voltages	480V	208V	600V	240V
Motor starting capability @ 30% Voltage Dip, skVA	165	182	328	229
Current, Amps	150	347	120	417
Frame Size	M2236L4	M2254L4	M2236L4	M2238L4
Excitation	SE	SE	AREP	SE
Temperature Rise, °C	130	105	130	130

WEIGHTS & DIMENSIONS



Dim "A" mm (in)	Dim "B" mm (in)	Dim "C" mm (in)	Dry Weight kg (lb)
2097 (82.6)	1100 (43.3)	1343 (52.9)	1008 (2222)

Note: General configuration not to be used for installation. See general dimension drawings for detail.

APPLICABLE CODES AND STANDARDS:

CSA C22.2 No 100-04, UL142, UL489, UL869, cUL/UL2200, NFPA 37, NFPA 70, NFPA 99, NFPA 110, IBC, IEC60034-1, ISO 3046, ISO 8528, NEMA MG 1-33.

Note: Codes may not be available in all model configurations. Please consult your local Cat Dealer representative for availability.

STANDBY: Output available with varying load for the duration of the interruption of the normal source power. Average power output is 70% of the standby power rating. Typical operation is 200 hours per year, with maximum expected usage of 500 hours per year.

RATINGS: Ratings are based on SAE J1349 standard conditions. These ratings also apply at ISO3046 standard conditions.

DEFINITIONS AND CONDITIONS

¹ For ambient and altitude capabilities consult your Cat dealer. Air flow restriction (system) is added to existing restriction from factory.

² Emissions data measurement procedures are consistent with those described in EPA CFR 40 Part 89, Subpart D & E and ISO8178-1 for measuring HC, CO, PM, NOx. Data shown is based on steady state operating conditions of 77° F, 28.42 in HG and number 2 diesel fuel with 35° API and LHV of 18,390 BTU/lb. The nominal emissions data shown is subject to instrumentation, measurement, facility and engine to engine variations. Emissions data is based on 100% load and thus cannot be used to compare to EPA regulations which use values based on a weighted cycle.

³ UL 2200 Listed packages may have oversized generators with a different temperature rise and motor starting characteristics. Generator temperature rise is based on a 40° C ambient per NEMA MG1-32.

LET'S DO THE WORK.™

LEHE2663-03 (06/22)

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GENERATOR DATA

Selected Model

Engine	C4.4	Generator Frame:	M2236L4	Genset Rating(kW):	100.0	Line Voltage:	480.0
Fuel	Diesel	Generator Arrangement:	5969912	Genset Rating(kVA):	125.0	Phase Voltage:	277
Frequency	60	Excitation Type:	Self Excited	Pwr.Factor:	0.8	Rated Current:	150.4
Duty	STANDBY	Connection:	SERIES STAR	Application:	EPG	Status:	Current
						Version:	42423 /44642 /44146 /11703

Spec Information

Generator Specification				Generator Efficiency		
Frame:	M2236L4	Type	LC	No.of Bearings:	1	
Winding Type:	RANDOM WOUND			Flywheel:	11.5	
Connection:	SERIES	STAR		Housing:	3	
Phases	3			No.of Leads:	12	
Poles:	4			Wires per Lead:	1	
Sync Speed:	1800.0			Generator Pitch:	0.6667	
				Per Unit Load	kW	Efficiency %
				0.25	25.0	88.2
				0.5	50.0	91.5
				0.75	75.0	91.9
				1.0	100.0	91.4
				0.5	100	93.4

Reactances		Per Unit	Ohms
SUBTRANSIENT - DIRECT AXIS X" d		0.0924	0.1704
SUBTRANSIENT - QUADRATURE AXIS X"q		0.1975	0.3641
TRANSIENT - SATURATED X'd		0.1541	0.2840
SYNCHRONOUS - DIRECT AXIS X'd		0.0924	0.1704
SYNCHRONOUS - QUADRATURE AXIS X'q		1.8142	3.3440
NEGATIVE SEQUENCE X'2		0.1450	0.2672
ZERO SEQUENCE X'0		0.0063	0.0117
Time Constants		Seconds	
OPEN CIRCUIT TRANSIENT - DIRECT AXIS T'd0		2.3087	
SHORT CIRCUIT TRANSIENT - DIRECT AXIS T'd		0.1000	
OPEN CIRCUIT SUBTRANSIENT - DIRECT AXIS T" d0		0.0166	
SHORT CIRCUIT SUBTRANSIENT - DIRECT AXIS T" d		0.0100	
OPEN CIRCUIT SUBTRANSIENT - QUADRATURE AXIS T"q0		0.0918	
SHORT CIRCUIT SUBTRANSIENT - QUADRATURE AXIS T" q		0.0100	
EXCITER TIME CONSTANT T e		0.0180	
ARMATURE SHORT CIRCUIT T a		0.0150	
Short Circuit Ratio:0.44		Stator Resistance=0.1005Ohms	Field Resistance=2.3539Ohms

Voltage Regulation		Generator Excitation		
Voltage level adjustment: +/-	5.0%	No Load	Full Load,	(rated)pf
Voltage regulation,steady state: +/-	1.0%		Series	Parallel
Voltage regulation with 3% speed change: +/-	1.0%	Excitation Voltage:	9.2Volts	43.1Volts
Waveform deviation line - line, no load: less than	2.0%			Volts
Telephone influence factor: less than	50%	Excitation Current:	0.8Amps	3.0Amps
				Amps

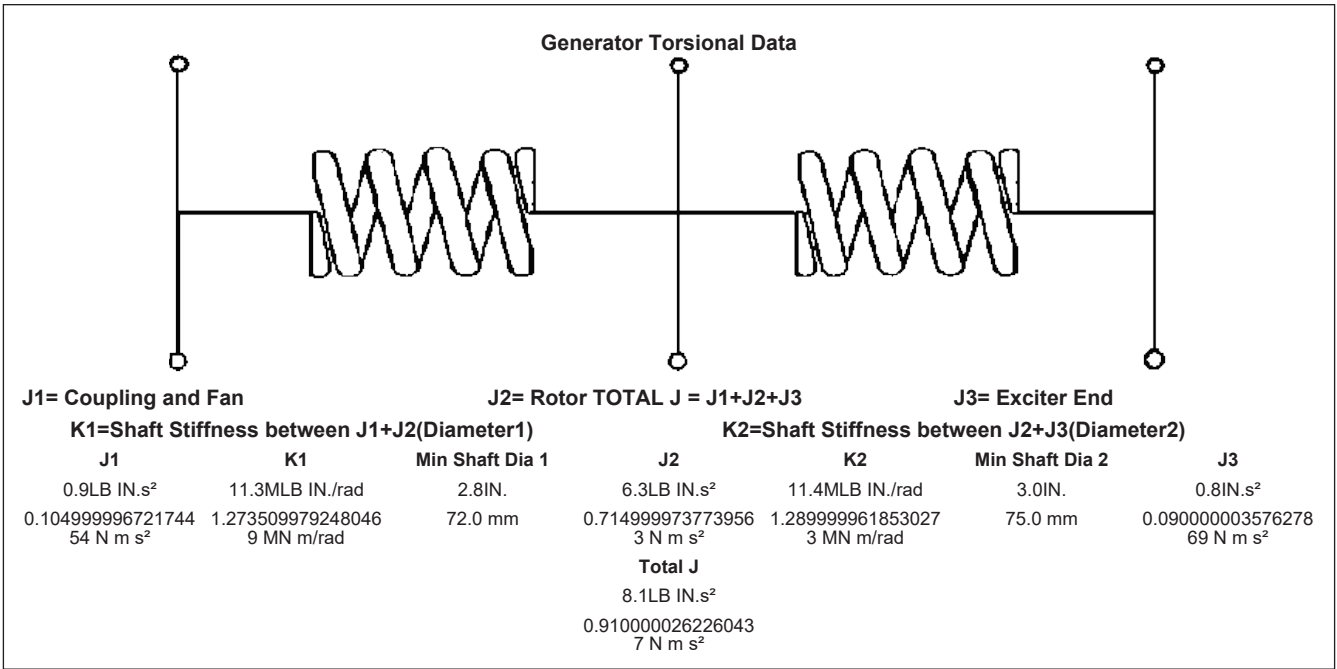
GENERATOR DATA

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Generator Mechanical Information

Center Of Gravity		
Dimension X	-313.0mm	-12.3IN.
Dimension Y	0.0mm	0.0IN.
Dimension Z	0.0mm	0.0IN.
* 'X' is measured from driven end of generator and parallel to rotor.		
* 'Y' is measured vertically from rotor center line. Up is positive.		
* 'Z' is measured left and right of rotor center line. Right is positive.		
Generator WT =	295Kg 650LB	* Rotor WT = 118Kg 260LB
		* Stator WT = 177Kg 390LB
Rotor Balance = 0.0mm deflection PTP		
Overspeed Capacity = 125%of synchronous speed		



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Generator Cooling Requirements - Temperature -Insulation Data			
Cooling Requirements:		Temperature Data: (Ambient 40°C)	
Heat Dissipated:	9.4kW	Stator Rise:	130.0°C
Air Flow:	18.0m³/min	Rotor Rise:	130.0°C
Insulation Class:		H	
Insulation Reg. as shipped:		100.0 M minimum at 40 °C	
Thermal Limits of Generator			
Frequency:	60Hz		
Line to Line Voltage:	480Volts		
B BR 80/40	104.6kVA		
F BR -105/40	119.0kVA		
H BR - 125/40	130.8kVA		
F PR - 130/40	130.8kVA		
H PR - 150/40	138.6kVA		
H PR27 - 163/27	143.9kVA		

GENERATOR DATA

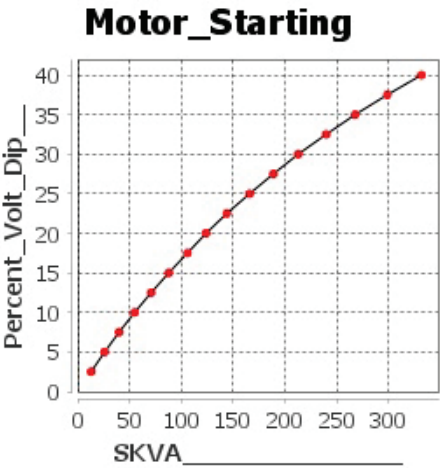
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Starting Capability and Current Decrement

Motor Starting Capability (0.6 pf)

SKVA	Percent Volt Dip
13	2.5
26	5.0
40	7.5
55	10.0
71	12.5
88	15.0
106	17.5
124	20.0
144	22.5
166	25.0
189	27.5
213	30.0
240	32.5
268	35.0
299	37.5
332	40.0

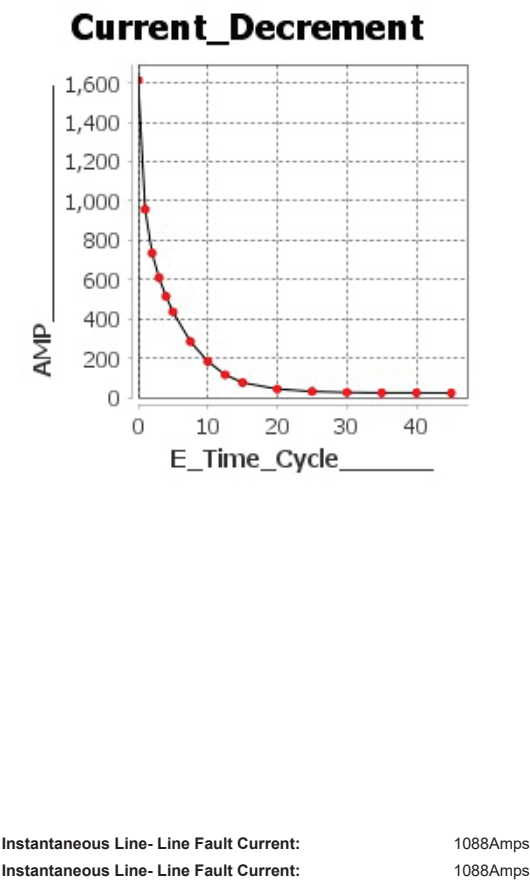


Current Decrement Data

GENERATOR DATA

E Time Cycle	AMP
0.0	1,614
1.0	957
2.0	734
3.0	609
4.0	514
5.0	435
7.5	284
10.0	183
12.5	115
15.0	75
20.0	42
25.0	30
30.0	25
35.0	23
40.0	23
45.0	22

Instantaneous 3 Phase Fault Current: 1614Amps
Instantaneous 3 Phase Fault Current: 1614Amps
Instantaneous Line- Neutral Fault Current: 1088Amps



GENERATOR DATA

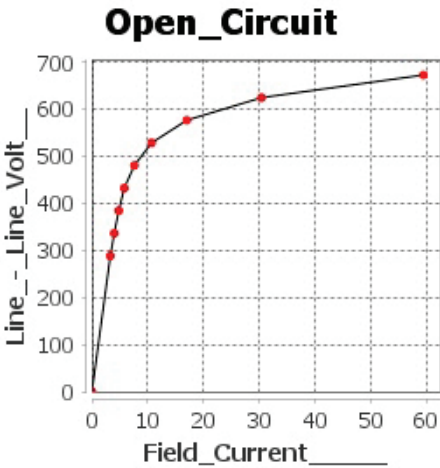
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Generator Output Characteristic Curves

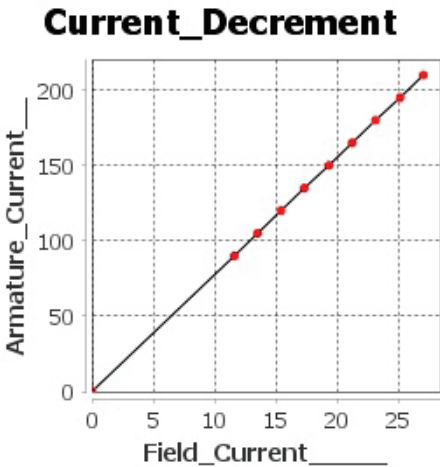
Open Circuit Curve

Field Current	Line - Line Volt
0.0	0
3.3	288
4.0	336
4.8	384
5.8	432
7.6	480
10.7	528
17.0	576
30.4	624
59.4	672



Short Circuit Curve

Field Current	Armature Current
0.0	0
11.6	90
13.5	105
15.4	120
17.3	135
19.3	150
21.2	165
23.1	180
25.1	195
27.0	210



GENERATOR DATA

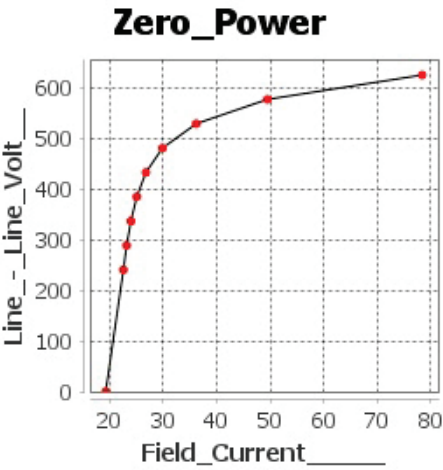
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Frequency	60	Excitation Type:	Self Excited	Pwr.Factor:	0.8	Rated Current:	150.4
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Generator Output Characteristic Curves

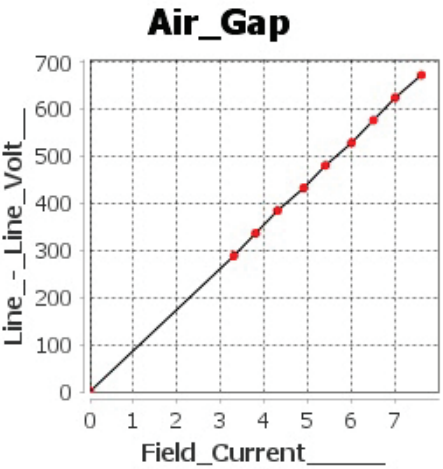
Zero Power Factor Curve

Field Current	Line - Line Volt
19.3	0
22.6	240
23.2	288
24.0	336
25.1	384
26.8	432
29.9	480
36.2	528
49.5	576
78.4	624



Air Gap Curve

Field Current	Line - Line Volt
0.0	0
3.3	288
3.8	336
4.3	384
4.9	432
5.4	480
6.0	528
6.5	576
7.0	624
7.6	672

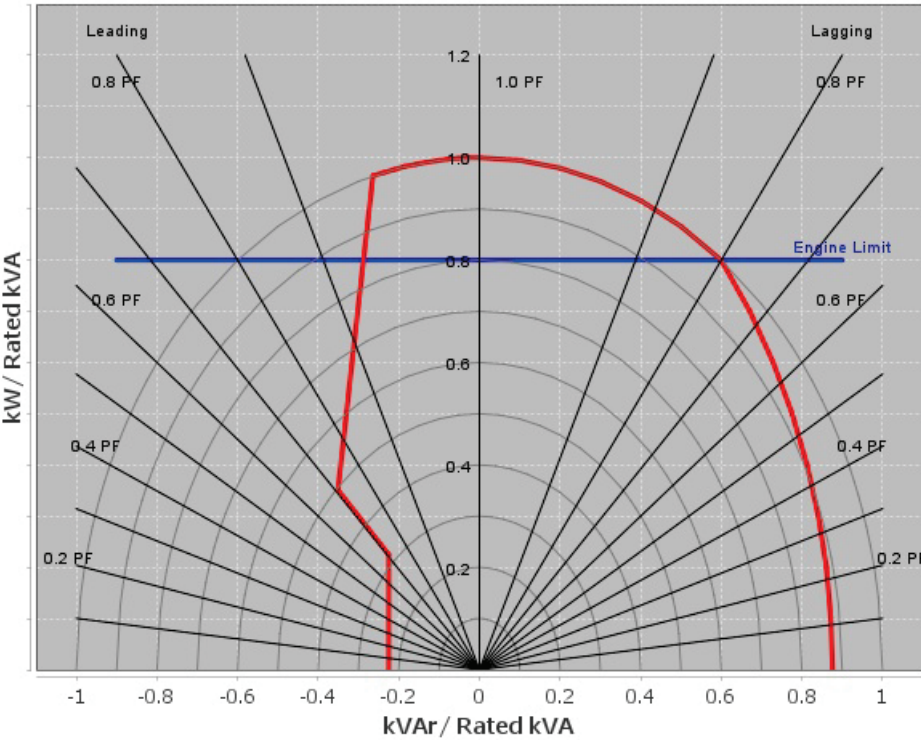


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Reactive Capability Curve
Operating Chart



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Duty	STANDBY	Connection:	SERIES STAR	Application:	EPG	Status:	Current
							Version:
							42423 /11703 /44642 /44146

General Information

GENERATOR INFORMATION (DM7900)

1. Motor Starting
Motor starting curves are obtained in accordance with IEC60034, and are displayed at 0.6 power factor.
2. Voltage Dip
Prediction of the generator synchronous voltage dip can be made by consulting the plot for the voltage dip value that corresponds to the desired motor starting kVA value.
3. Definitions
A) Generator Keys
Frame: abbreviation of generator frame size
Freq: frequency in hertz.
PP/SB: prime/standby duty respectively
Volts: line - line terminal voltage
kW: rating in electrical kilo watts
Model: engine sales model
- B) Generator Temperature Rise
The indicated temperature rises are the IEC/NEMA limits for standby or prime power applications. The quoted rise figures are maximum limits only and are not necessarily indicative of the actual temperature rise of a given machine winding.
- C) Centre of Gravity
The specified centre of gravity is for the generator only. For single bearing, and two bearing close coupled generators, the center of gravity is measured from the generator/engine flywheel-housing interface and from the centreline of the rotor Shaft.
- For two bearing, standalone generators, the center of gravity is measured from the end of the rotor shaft and from the centerline of the rotor shaft.
- D) Generator Current Decrement Curves
The generator current decrement curve indicates the generator armature current arising from a symmetrical three-phase fault at the generator terminals. Generators equipped with AREP or PMG excitation systems will sustain 300% of rated armature current for 10 seconds.
- E) Generator Efficiency Curves
The efficiency curve is displayed for the generator only under the given conditions of rating, voltage, frequency and power factor. This is not the overall generating set efficiency curve.

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D40 GC - D200 GC

Sound Attenuated Level 2 Enclosures

60 Hz: 40 ekW - 200 ekW

Features

Robust/Highly Corrosion Resistant Construction

- Factory installed on skid base or 24hr Integral fuel tank
- Caterpillar white paint
- Environmentally friendly, polyester powder baked paint
- 18 gauge steel minimum.
- Zinc plated fasteners
- Stainless steel hinges
- Internally mounted exhaust silencing system
- Designed and tested to comply with UL 2200 Listed generator set package.
- Enclosures are weatherproof and are extremely rugged to withstand outdoor exposure to the elements of weather.
- Comply with ASCE /SEI 7 for Wind Loads up to 100mph
- Optional seismic certification offered
- Compression door latches providing solid door seal

Excellent Access

- Large cable entry area for installation ease
- Accommodates side mounted single or multiple breakers
- Single door on left hand side
- Dual doors on right hand side
- Doors vertically hinged allow 180° opening rotation
- Doors capable of lift off at 90° opening rotation
- For non-routine service access are removeable panels
- Lube oil drain valve standard with coolant drain and valve piped to the exterior of the enclosure base
- Radiator fill cover

Security and Safety

- Lockable (keyed or padlock) doors which give full access to control panel and breaker
- Cooling fan and battery charging alternator fully guarded
- Fuel fill, oil fill and battery can only be reached via lockable access
- Optional externally mounted emergency stop button
- Designed for spreader bar lifting to ensure safety
- Stub-up area is rodent proof

Options

- Skid base compatible
- UL Listed integral fuel tank with 24 hour running time capacity
- DC lighting package

Enclosure Package Operating Characteristics

A. Sound Attenuated- Level 2

Model	Hz	ekW	SB	Sound Pressure Levels dBA	Air Flow Rate		Ambient Capability* @100% Load	
				7m (23ft)				
				100% Load	m³/s	cfm	°C	°F
D40 GC	60	40	SB	67.7	1.5	3178.3	60	140
D50 GC	60	50	SB	68.6	1.5	3178.3	54	129
D60 GC	60	60	SB	69.6	1.5	3178.3	48	118
D80 GC	60	80	SB	76.5	3.5	7416.1	60	140
D100 GC	60	100	SB	76.4	3.5	7416.1	52	126
D125 GC	60	125	SB	74.8	3.4	7204.2	61	142
D150 GC	60	150	SB	75.4	3.4	7204.2	54	129
D175 GC	60	175	SB	79.3	4.1	8687.4	49	120
D200 GC	60	200	SB	79.5	4.1	8687.4	44	111

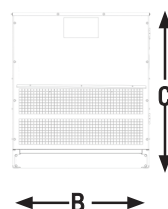
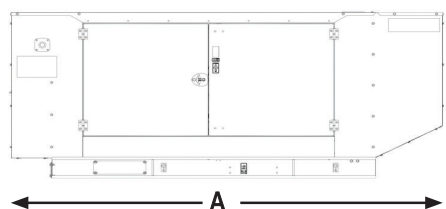
*Cooling system performance at sea level. Consult your Cat dealer for site specific ambient and altitude capabilities.

*Note: Sound level measurements are subject to instrumentation, installation and manufacturing variability, as well as ambient site conditions.

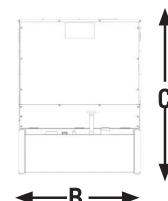
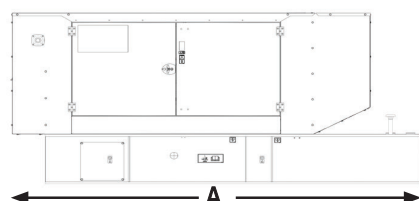
B. Component Weights to Calculate Package Weight

Standby ekW	Wide Skid Base		Sound Attenuated Enclosure (Steel)	
	kg	lb	kg	lb
40-60	92.6	204.1	178.8	394.2
80-100	96.2	212.1	189.1	416.9
125-200	115.9	255.5	274.4	604.9

C. Weights & Dimensions



Sound Attenuated Enclosure on Skid Base



Sound Attenuated Enclosure
on a UL Listed Integral Fuel Tank Base

*Note: For reference only – do not use for installation design. Please contact your local dealer for exact weights and dimensions

Enclosure Type	Standby ratings	Length, L		Width, W		Height, H		Package Weights	
	ekW	mm	in	mm	in	mm	in	kg	lb
Open Set on Skid (wide Base)	40	1976	77.2	1099.8	43.3	1219.2	48.0	837.7	1847
	50	1976	77.2	1099.8	43.3	1219.2	48.0	931.6	2054
	60	1976	77.2	1099.8	43.3	1219.2	48.0	905.8	1997
	80	2098	82.6	1099.8	43.3	1343.6	52.9	950.2	2095
	100	2098	82.6	1099.8	43.3	1343.6	52.9	1007.8	2222
	125	2634	103.7	1300.4	51.2	1402	55.2	1405.6	3099
	150	2634	103.7	1300.4	51.2	1402	55.2	1561.7	3443
	175	2634	103.7	1300.4	51.2	1490.9	58.7	1696.8	3741
	200	2634	103.7	1300.4	51.2	1490.9	58.7	1776.7	3917
Open Set on a UL Listed Integral Fuel Tank Base	40	2707.6	106.6	1099.8	43.3	1384.3	54.5	1536.3	3387
	50	2707.6	106.6	1099.8	43.3	1384.3	54.5	1630.2	3594
	60	2707.6	106.6	1099.8	43.3	1384.3	54.5	1604.3	3537
	80	3035.3	119.5	1099.8	43.3	1582.4	62.3	1914.1	4220
	100	3035.3	119.5	1099.8	43.3	1582.4	62.3	1972.2	4348
	125	3670.3	144.5	1300.4	51.2	1757.6	69.2	3207.8	7072
	150	3670.3	144.5	1300.4	51.2	1757.6	69.2	3363.3	7415
	175	3670.3	144.5	1300.4	51.2	1846.6	72.7	3498.5	7713
	200	3670.3	144.5	1300.4	51.2	1846.6	72.7	3578.4	7889
Sound Attenuated Enclosure on Skid Base	40	2456.1	96.1	1120.1	44.1	1330.9	52.4	1016.5	2241
	50	2456.1	96.1	1120.1	44.1	1330.9	52.4	1110.4	2448
	60	2456.1	96.1	1120.1	44.1	1330.9	52.4	1084.5	2391
	80	2768.6	109.0	1120.1	44.1	1432.5	56.4	1139.4	2512
	100	2768.6	109.0	1120.1	44.1	1432.5	56.4	1197.0	2639
	125	2633.9	103.7	1318.2	51.9	1569.7	61.8	1680.1	3704
	150	2633.9	103.7	1318.2	51.9	1569.7	61.8	1836.1	4048
	175	2633.9	103.7	1318.2	51.9	1569.7	61.8	1971.3	4346
	200	2633.9	103.7	1318.2	51.9	1569.7	61.8	2051.1	4522
Sound Attenuated Enclosure on a UL Listed Integral Fuel Tank Base	40	2931.1	115.4	1120.1	44.1	1496	58.9	1715.0	3781
	50	2931.1	115.4	1120.1	44.1	1496	58.9	1808.9	3988
	60	2931.1	115.4	1120.1	44.1	1496	58.9	1783.1	3931
	80	3256.2	128.2	1120.1	44.1	1673.8	65.9	2103.3	4637
	100	3256.2	128.2	1120.1	44.1	1673.8	65.9	2161.4	4765
	125	4008.1	157.8	1318.2	51.9	1925.3	75.8	3481.8	7676
	150	4008.1	157.8	1318.2	51.9	1925.3	75.8	3637.8	8020
	175	4008.1	157.8	1318.2	51.9	1925.3	75.8	3773.0	8318
	200	4008.1	157.8	1318.2	51.9	1925.3	75.8	3852.8	8494

*Note: Weights include genset, enclosure (where applicable), tank and fuel (where applicable)

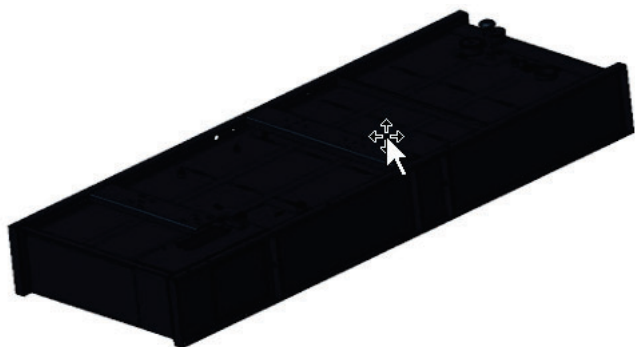
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Integral Fuel Tanks D40 GC – D200 GC

Image show might not reflect actual product

Features

- UL Listed for United States (UL 142) and Canada (CAN/ULC S601)
- Facilitates compliance with NFPA 30 code, NFPA 37 and 110 standards and CSA C282 code
- Dual wall
- Low fuel level warning standard, customer configurable warning or shutdown
- Primary tank leak detection switch in containment basin
- Tank design provides capacity for thermal expansion of fuel
- Fuel supply dip tube is positioned so as not to pick up fuel sediment
- Fuel return and supply dip tube is separated by an internal baffle to prevent immediate re-supply of heated return fuel
- Pressure washed with an iron phosphate solution
- Interior tank surfaces coated with a solvent-based thin-film rust preventative
- Heavy gauge steel gussets with internal lifting rings
- Primary and secondary tanks are leak tested at 20.7 kPa (3 psi) minimum
- Compatible with open packages and enclosures
- Gloss black polyester alkyd enamel exterior paint
- Welded steel containment basin (minimum of 110% of primary tank capacity)
- Direct reading fuel gauge with variable electrical

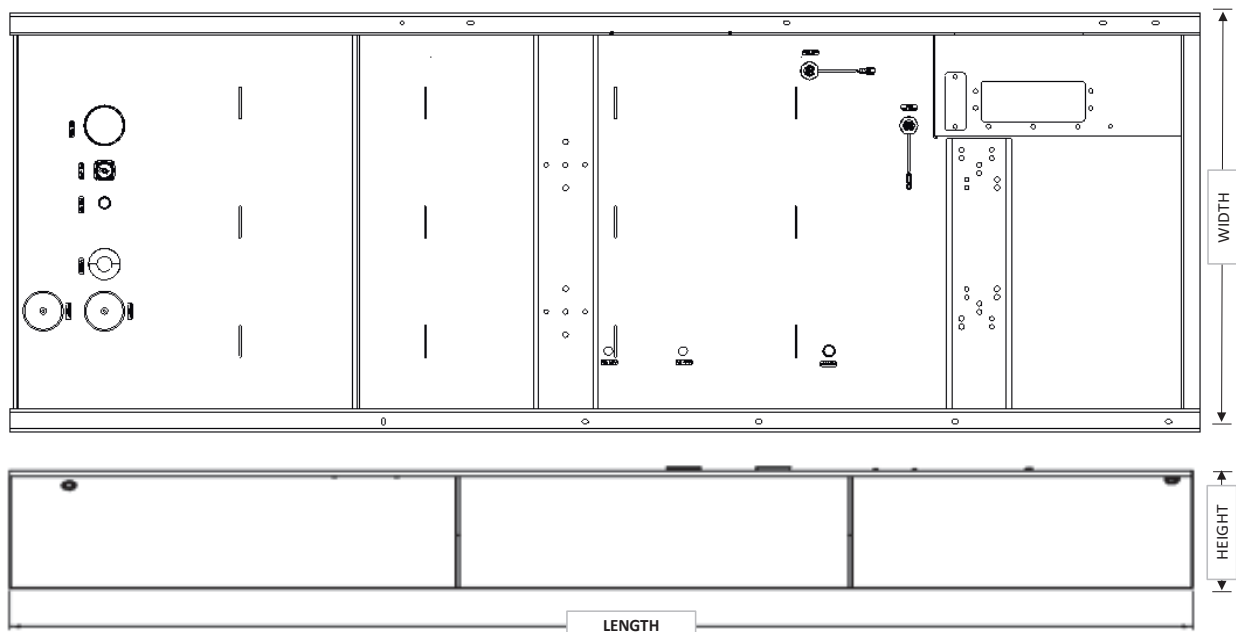
Integral

- Integral diesel fuel tank is incorporated into the generator set base frame
- Robust base design includes linear vibration isolators between tank base and engine generator.

Options

- Audio/visual fuel level alarm panel
- 5 gal (18.9L) spill containment
- Fuel tank fill pipe and lockable cap
- Overfill prevention Valve

Integral Fuel Tank Base Useable Capacities with Fuel Tank Dimensions & Weights



The heights listed above do not include lumber used during manufacturing and shipping

A. Open Set & Sound Attenuated Enclosure

Standby	Feature Code	Total Capacity		Useable Capacity	
		Litre	Gallon	Litre	Gallon
40-60	FTDW044	523	138.2	466	123.1
80-100	FTDW043	769	203.1	690	182.3
125-200	FTDW045	1511	399.2	1355	357.9

Standby	Feature Code	Tank Only								Overall Package Height with Tank			
		Dry Weight		Height 'H'		Length 'L'		Width		Open		Enclosure	
eKW		kg	lb	mm	in	mm	in	mm	in	mm	in	mm	in
40-60	FTDW044	387.5	853.2	365	14.4	2708	106.6	1100	43.3	1384	54.5	1496	58.9
80-100	FTDW043	462.5	1019.6	440	17.3	3035	119.5	1100	43.3	1583	62.3	1673	65.9
125-200	FTDW045	736.1	1622.8	555	21.9	3670	144.5	1300	51.2	1847	72.7	1925	75.8

Time (Hours)

Tank Design	Feature Code	Standby Ratings (kVA)						
		ekW	100%		75%		50%	
			Hrs	L/hr	Hrs	L/hr	Hrs	L/hr
Integral Tank	FTDW044	40	33.5	13.9	43.1	10.8	57.5	8.1
		50	27.7	16.8	36.4	12.8	50.1	9.3
		60	24.0	19.4	27.7	16.8	35.6	13.1
	FTDW043	80	29.1	23.7	36.3	19.0	49.6	13.9
		100	24.0	28.8	29.7	23.2	40.1	17.2
	FTDW045	125	35.8	37.8	44.7	30.3	61.9	21.9
		150	31.5	43.0	38.8	34.9	54.2	25.0
		175	26.5	51.2	32.3	41.9	47.4	28.6
		200	24.0	56.4	29.6	45.8	41.6	32.6

Tanks include RH stub-up area directly below the circuit breaker or power terminal strips.

Fuel tanks and applicable options facilitate compliance with the following United States NFPA Code and Standards:

NFPA 30: Flammable and Combustible Liquids Code

NFPA 37: Standard for the Installation and Use of Stationary Combustion Engines and Gas Turbines

NFPA 110: Standard for Emergency and Standby Power Systems

Fuel tanks and applicable options facilitate compliance with the following Canadian Standard and Code:

CSA C282 – Emergency Electrical Power Supply for Buildings

CSA B139-09 – Installation Code for Oil-Burning Equipment

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FUEL LEVEL ALARMS - FSS

CRITICAL LOW FUEL LEVEL SHUTDOWN AND LOW FUEL LEVEL ALARM

These options provide an alarm on low fuel level and a shutdown on critical low fuel level. This warning is reported by an indicator light on the control panel with an audible alarm also available as an option. This warning can additionally be relayed to a remote annunciator.

Note: Standard Fuel Fill, UL Rated Emergency-vent, Standard vent, Fuel Sender & Leak Detection Probe are included as standard on generator sets fitted with UL Listed fuel tanks.



CRITICAL HIGH FUEL LEVEL ALARM

This option provides an alarm on critical high fuel level. This warning is reported by an indicator light on the control panel with an audible alarm also available as an option. This warning can additionally be relayed to a remote annunciator.

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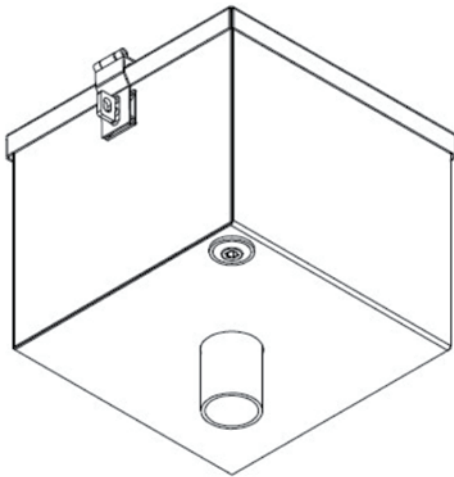


Image shown may not reflect actual configuration

5 Gallon Steel Spill Containment Box

Durable spill containment box designed for containment of small spills during filling of an above ground storage tank.

Features

- Optional overfill prevention valve
- Lockable hinged cover.

Dimensions

- Height: 13.08"
- Height with pipe: 13.40"
- Body Width: 12.38"
- Width: 13.68"
- Weight: 22 lbs.

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ENGINE MONITORING SYSTEM



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Remote Annunciator Module

It is an LED expansion module that can be used with compatible control modules. The module has been designed to display a maximum of eight individual LED indications up to a maximum distance of 1 KM (0.6 miles).

The Annunciator will consist of two modules to provide a 16 Channel Fault annunciation.

It is presented in a vertical enclosure. It includes an alarm sounder that is triggered when the host controller detects an alarm condition. The alarm can be muted using the front push button.

The Panels will be fitted with removable label cards which can be used to identify the standard NFPA alarms if desired.

It includes individual LEDs for each channel and a 'Power On' LED that flashes when the link with the host controller is lost.

Features

- The Remote annunciator has an integral Sounder/Horn
- Eight configurable LEDs (per module)
- Works up to 1 KM (0.6 miles) from the host controller
- A single controller can support five Caterpillar configured remote annunciator control boxes

ENVIRONMENTAL TESTING STANDARD

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

SHOCK

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

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

DEGREES OF PROTECTION PROVIDED BY ENCLOSURES BS EN 60529

IP65 – Front of module when installed into the control panel with the supplied sealing gasket.

SPECIFICATION

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. LEDs and backlight will not be maintained during cranking.

MAXIMUM OPERATING CURRENT

112 mA at 12 V, 53 mA at 24 V

MAXIMUM STANDBY CURRENT

74 mA at 12 V, 35 mA at 24 V

DIMENSIONS OVERALL

355 mm x 369 mm x 90 mm
13.6" x 14.5" x 3.5"

PANEL CUT-OUT

286 mm x 326 mm x 93 mm
11.2" x 12.8" x 3.6"

MAXIMUM PANEL THICKNESS

8 mm
0.3"

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ADEM™ A4 Engine Controller

The ADEM™ A4 is the main Electronic Control Module (ECM) used on select diesel engines. The ADEM A4 provides a higher degree of control over a large number of combustion variables. The ADEM A4 is designed to control/interface Electronic Unit Injector (EUI) equipped engines. The ADEM A4 engine system is composed of the ADEM A4 ECM, control software, sensors, actuators, fuel injectors, and interface to the generator system. The prime benefit of an ADEM A4 engine system is to better control and maintain the particulate emissions, both steady state and transient, while improving engine performance.

Features

Reliable, Durable

All ADEM A4 controllers are designed to survive the harshest environments.

- Environmentally sealed, die-cast aluminum housing isolates and protects electronic components from moisture and dirt contamination
- Rigorous vibration testing ensures product reliability and durability
- Accuracy maintained from -40°C to 85°C
- Electrical noise immunity to 100 volts / meter
- Internal circuits are designed to withstand shorts to + battery and – battery

Simple Servicing

Each ADEM A4 system works in combination with the Cat® ET service tool software to keep the engine operating at peak performance.

- Displays measured parameters
- Retrieves active and logged event code documenting abnormal system operation
- Performs calibrations and diagnostic tests
- Supports flash programming of new software into the ADEM A4 ECM

Self Diagnostics

Each ADEM A4 ECM has a full compliment of diagnostics. The ECM can detect faults in the electrical system and report those faults to the service technician for quick repair.

- Self-diagnostic capability pinpoints operational problems in need of attention.

Advanced Features

- Enhanced performance from fuel injection timing and limiting
- Adjustable monitoring of vital engine parameters
- Programmable speed acceleration ramp rate
- Data link interfaces

Description

The ECM is housed in an environmentally sealed cast-iron. All wiring connections to the ECM are made using two sealed connectors: a single seventy-pin connector and a single one hundred twenty-pin connector.

Engine Speed Governing

Desired engine speed is calculated by the ECM and held within ± 0.2 Hz for isochronous and droop mode. The ECM accounts for droop that is requested. The proper amount of fuel is sent to the injectors due to these calculations. The ECM also employs cooldown/shutdown strategies, acceleration delays on startup, acceleration ramp times and speed reference.

Fuel Limiting

Warm and cold fuel-air ratio control limits are controlled by the ECM. Electronic monitoring system derates, torque limit, and cranking limit, programmable torque scaling, and cold cylinder cutout mode are standard features.

Fuel Injection Timing

Master timing for injection is controlled by the ECM control. Temperature dependencies are accounted for in the fuel injection calculations.

Electronic Monitoring

Electronic monitoring of vital engine parameters can be programmed. Warning, derate, and shutdown event conditions may be customized by the user.

Information Management

The ECM stores information to assist with electronic troubleshooting. Active and logged diagnostic codes, active events, logged events, fuel consumption, engine hours, and instantaneous totals aid service technicians when diagnosing electronic faults and scheduling preventive maintenance.

Calibrations

Engine performance is optimized through injection timing. Auto/manual sensor calibrations are standard features.

On-Board System Tests

System tests are available to assist in electronic troubleshooting. These tests include: injector activation, injector cutout, and override of control outputs.

Data Link Interfaces

The ADEM A4 communicates with the EMCP via a dedicated communication network.

Electronic Sensing

The following sensing is available on the ADEM A4: oil pressure, fuel pressure, fuel temperature, atmospheric pressure, air inlet temperature, turbo outlet pressure, engine coolant temperature, engine speed, throttle position, exhaust temperature, oil filter pressure differential, fuel filter pressure differential, air filter pressure differential and crankcase pressure.

SPECIFICATIONS

Impervious to:

Salt spray, fuel, oil and oil additives, coolant, spray cleaners, chlorinated solvents, hydrogen sulfide and methane gas, and dust.

Input and output protection

All inputs and outputs are protected against short circuits to +battery and –battery

Input voltage range (24 VDC nominal)

18 to 32 VDC

Mounting

Engine mounted

Reverse polarity protected

Shock, withstands 20g

Temperature range

Operating: –40°C to 85°C (–40°F to 185°F)

Storage: –50°C to 120°C (–58°F to 248°F)

Vibration

Withstands 8.0g @ 24 to 2 kHz

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Description

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

The extensive list of features includes enhanced event and performance monitoring, remote communications & PLC functionality. The modules can be easily configured using a configuration suite PC software.

Full Range of Attachments

- Wide range of system expansion attachments, designed specifically to work with the GCCP controller
- Flexible packaging options for easy and cost effective installation

Benefits

- Hours counter provides accurate information for monitoring and maintenance periods
- User-friendly set-up and button layout for ease of use
- Multiple parameters are monitored & displayed simultaneously for full visibility
- The module can be configured to suit a wide range of applications for user flexibility
- PLC editor allows user configurable functions to meet user specific application requirements
- RS485 Communication port can be used for the Remote Monitoring Communication (Compatible with Cat PLG)

World Wide Product Support

- Cat dealers provide extensive pre and post sale support
- Cat dealers have over 1,600 dealer branch stores operating in 200 countries

GCCP 1.2 – Control Panel

GCCP 1.2 is an Auto Start Control Module suitable for a wide variety of diesel gen-set applications. Monitoring an extensive number of engine parameters, the modules will display warnings, shutdown and engine status information on the back-lit LCD screen, illuminated LEDs and remote PC.

Features

- 4-line back-lit LCD text display
- Multiple display languages
- Five-key menu navigation
- LCD alarm indication
- Customisable power-up text and images
- Data logging facility
- Internal PLC editor
- Protections disable feature
- Fully configurable via PC using USB & RS485 communication
- Front panel configuration with PIN protection
- Power save mode
- 3-phase generator sensing and protection
- Generator current and power monitoring (kW, kvar, kVA, pf) kW and kvar overload and reverse power alarms
- Over current protection
- Unbalanced load protection
- Breaker control via fascia buttons
- Fuel and start outputs configurable when using CAN Support for 0V to 10V & 4 mA to 20 mA sensors
- 8 Configurable digital inputs (3 available for Customer use)
- 8 Configurable digital outputs (5 available for Customer use)
- 4 Configurable analogue inputs (3 available for Customer use)
- CAN, MPU and alternator frequency speed sensing in one variant
- Real time clock
- Engine pre-heat and post-heat functions
- Engine run-time scheduler
- Engine idle control for starting & stopping
- Fuel usage monitor and low fuel level alarms
- 3 Configurable maintenance alarms
- MODBUS RTU support
- User configurable MODBUS pages

SPECIFICATIONS

DC SUPPLY

CONTINUOUS VOLTAGE RATING

8V to 35V continuous
5V for upto 1 minute

CRANKING DROPOUTS

Able to survive 0V for 100 mS, providing supply was at least 10V before dropout and supply recovers to 5V. This is achieved without the need for internal batteries.

LEDs and backlight will not be maintained during cranking

MAXIMUM OPERATING CURRENT

260 mA at 12V, 150 mA at 24V

MAXIMUM STANDBY CURRENT

145 mA at 12V, 85 mA at 24V

CHARGE FAIL/EXCITATION RANGE

0V to 35V

GENERATOR & MAINS (UTILITY) VOLTAGE RANGE

15V to 415 V AC (Ph to N)
26 V to 719 V AC (Ph to Ph)

MAGNETIC PICK-UP VOLTAGE RANGE

+/- 0.5V to 70V

FREQUENCY RANGE

10,000 Hz (max)

INPUTS

DIGITAL INPUTS A TO H

Negative switching

ANALOGUE INPUTS A & D

Configurable as:
Resistive / Voltage (0 - 10V) / Current (4 - 20mA)

ANALOGUE INPUTS B & C

Configurable as:
Resistive sensor input only

OUTPUTS

OUTPUT A and B (FUEL & START)

15A DC at supply voltage

AUXILIARY OUTPUTS C, D, E, F, G, H, I & J 2

A DC at supply voltage

DIMENSIONS

OVERALL

216 mm x 158 mm x 43 mm
8.5" x 6.2" x 1.5"

PANEL CUTOUT

184 mm x 137 mm
7.2" x 5.3"

MAXIMUM PANEL THICKNESS

8 mm
0.3"

OPERATING TEMPERATURE

-30°C to +70°C
-22°F to +158°F

STORAGE TEMPERATURE RANGE

-40°C to +85°C
-40°F to +185°F

STANDARDS

UL, cUL Listed

NFPA 70#

Electro-Magnetic Compatibility: BS EN 61000-6-2/6-4 Electrical Safety: BS EN 60950

Temperature: BS EN 60068-2-1, BS EN 60068-2-2

Vibration: BS EN 60068-2-6

Humidity: BS EN 60068-2-30, BS EN 60068-2-78 Shock: BS EN 60068-2-27

Degrees of protection provided by enclosures: BS EN 60529 Ingress Protection:

IP65 – Front of module when installed into the control panel with the optional sealing gasket

Applicable codes and standards facilitate compliance to NFPA 70

OPTIONAL MODULES

Remote annunciator



The Remote annunciator with an integral sounder is an output LED expansion module designed to display a maximum of eight individual LED indications up to a maximum distance of 1 km (0.6 miles). The annunciator will consist of two modules to provide a 16 Channel Fault annunciation. The Panels are fitted with removable label cards which can be used to identify the standard NFPA alarms

Key Features:

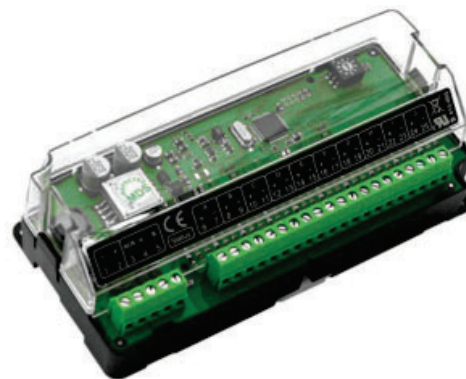
- Panel mount
- Vertical design
- In-built alarm
- Alarm mute button
- Max of 80 configurable LED's

Input Expansion Module

The Input Expansion module is used in conjunction with supported GCCP controllers to provide additional, flexible, input functionality. The module's ID switch is configurable from the module and the 10 inputs can be configured from within the 'host controller'. The inputs can be configured in a number of ways to connect to digital switches, resistive sensors, 0-10V DC signals or 4-20 mA sig.

Key Features:

- DIN rail & chassis mount
- Power on/link lost LED
- 1.2 km (0.75 Mile) working range
- Connect maximum of 4 x Input Modules to a single host controller
- Max of 40 configurable inputs



Output Expansion Module

The output relay expansion module for use with compatible GCCP control modules has been designed to extend a host module's output capabilities. A maximum of 10 relays can be connected to an individual module at any one time. All outputs are configurable via the host controller.

Key Features:

- Power On/Link Lost LED ID SWITCH
- 10 Expansion modules can be connected to 1 host controller at a time
- 8 Configurable relay contacts with LED indicators:
 - o 4 Normally Open (N/O)
 - o 4 Change Over (C/O)
- Terminal strip connection for quick and easy set-up



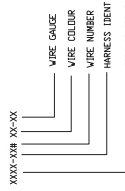
WIRING DIAGRAM

THIS DIAGRAM IS FOR GC GENSET MODELS (60kW to 200kW)
FOR USE WITH : C4.4 & C7.1 ENGINES
GCCP 1.2 CONTROLLER

SIGNAL NAME	TYPE	LOCATION	STATUS
1	1	1	1
2	2	2	2
3	3	3	3
4	4	4	4
5	5	5	5
6	6	6	6
7	7	7	7
8	8	8	8
9	9	9	9
10	10	10	10
11	11	11	11
12	12	12	12
13	13	13	13
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90	90	90	90
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92	92	92	92
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94	94	94	94
95	95	95	95
96	96	96	96
97	97	97	97
98	98	98	98
99	99	99	99
100	100	100	100

SIGNAL NAMES

WIRE NAME	DEFINITION
1	1
2	2
3	3
4	4
5	5
6	6
7	7
8	8
9	9
10	10
11	11
12	12
13	13
14	14
15	15
16	16
17	17
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97	97
98	98
99	99
100	100



COLOUR ABBREVIATIONS

ABBREVIATION	DESCRIPTION
RD	RED
WH	WHITE
DR	DRANGE
YL	YELLOW
PK	PINK
BL	BLACK
GY	GREY
PV	PURPLE
BR	BROWN
GN	GREEN
BLU	BLUE
CU	CUPPER
GN-YL	GREEN-YELLOW

ABBREVIATIONS

ABBREVIATIONS	DESCRIPTION
AC	ALTERNATING CURRENT
AL	ALARM
AVR	AUTOMATIC VOLTAGE REGULATOR
BR	BRAKE
CR	CONTROL RELAY
CM	ENGINE CONTROL MODULE
CR	ENGINE CRANK RELAY
CR	CRUISE CONTROL RELAY
STOP	EMERGENCY STOP
FCR	FUEL CONTROL RELAY
FCR	FUEL COUPLER RELAY
FPS	FUEL PUMP STOP
GRD	GROUND
GR	GENERATOR RUNNING RELAY
MCB	MINIATURE CIRCUIT BREAKER
SW	MANUAL SWITCH
MG	GENERATOR MAGNET GENERATOR
SD	ALARM SWITCH
STR	SHUNT TRIP RELAY
TRM	PANEL TERMINAL
VFC	VOLT FREE CONTACT

SYMBOL LEGEND TABLE

	MINIATURE CIRCUIT BREAKER
	EMERGENCY STOP PUSHBUTTON
	FUSED AUTOMOTIVE RELAY
	RESISTOR
	EARTH/GROUND
	CURRENT TRANSFORMER
	PANEL TERMINAL
	TERMINAL
	CONNECTOR
	BATTERY
	SPLICE
	WIRE
	SCREEN CABLE
	FUSE

INDEX TABLE

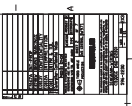
SHEET INDEX	DESCRIPTION	CROSS REFERENCE SHEET INDEX, NOTES
1	CONTROL SCHEMATIC	
2	POWER SCHEMATIC	
3	POWER SCHEMATIC (SINGLE PHASE)	
4	ADDITIONAL OPTIONS	
5	AC OPTIONS	
6		
7	ADDITIONAL INFORMATION	

HARNESS LAYER TABLE

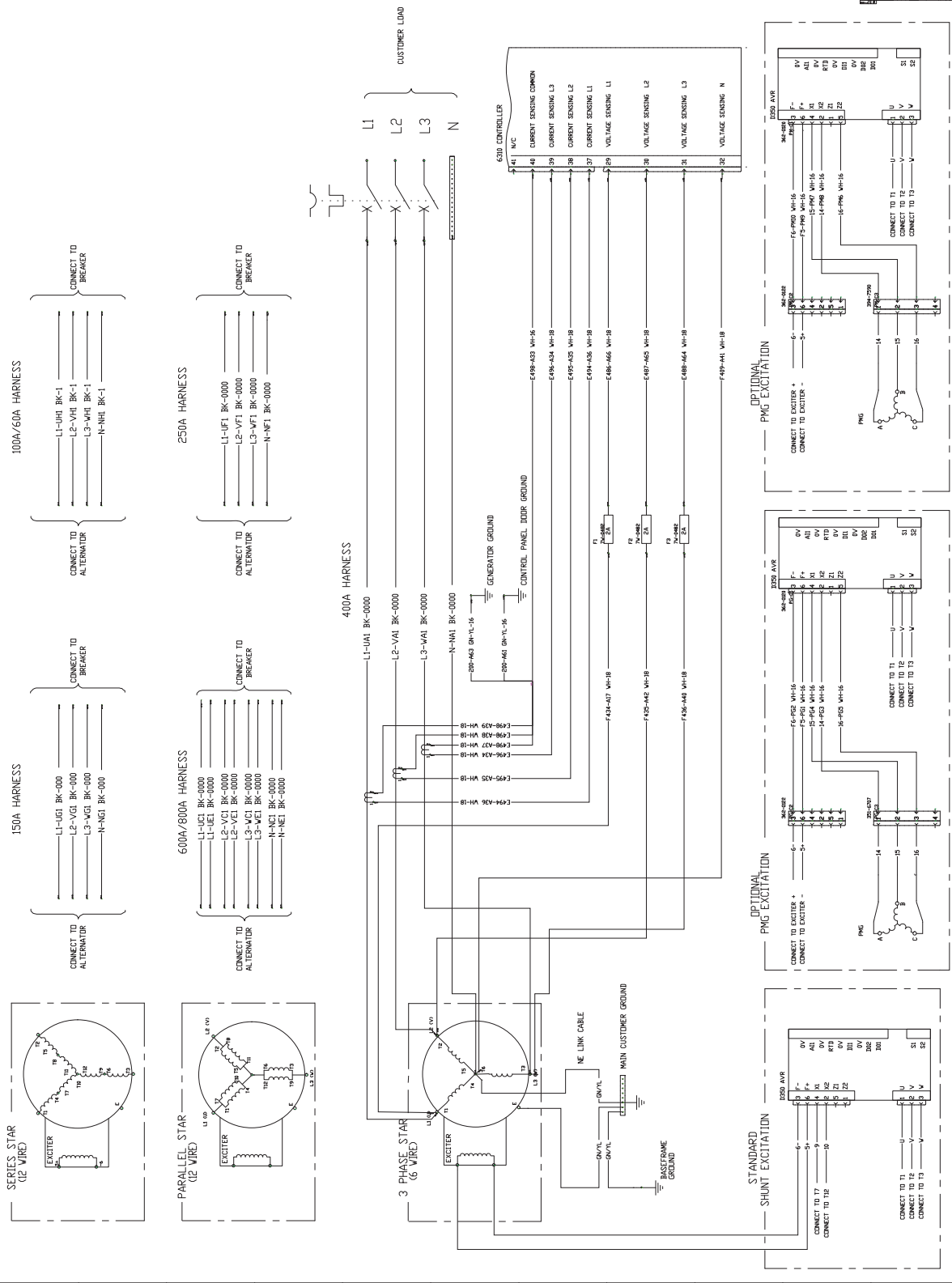
IDENT	HARNESS AS	PART NO	DWG	LOC	DESCRIPTION	NOTE
A		596-2820	00	SH2	DIPE-1820 MAIN HARNESS	
A		598-3162	00	SH2	380-1100 MAIN HARNESS	
B		598-3162	00	SH2	380-1100 MAIN HARNESS	
AV		595-5986	00	SH5	AUX CONTACTS AND SHUNT TRIP	
AV		577-8459	00	SH5	PLG 648601 MODBUS HARNESS	
AV		577-8459	00	SH5	PLG 648601 MODBUS HARNESS	
CD		996-1978	00	SH2	E-STEP LINK (OPEN SET)	
CD		996-1978	00	SH2	E-STEP LINK (OPEN SET)	
CD		605-2936	00	SH5	PLG 648601 MODBUS HARNESS	
CD		605-2936	00	SH5	PLG 648601 MODBUS HARNESS	
EL		595-8469	00	SH5	ENCLOSURE LIGHTS HARNESS	
EL		595-8469	00	SH5	ENCLOSURE LIGHTS HARNESS	
FR		604-4015	00	SH6	BATTERY-CHARGER HARNESS	
FR		605-8126	00	SH5	SHORE POWER L1 LINK	
FR		605-3114	00	SH5	SENSEI RUNNING & COMMON ALARM	
FR		605-3114	00	SH5	SENSEI RUNNING & COMMON ALARM	
PC		604-4010	00	SH5	PLG ADAPTOR HARNESS	
PC		604-4010	00	SH6	ALTERNATOR SPACE HEATER HARNESS	
U		577-3930	00	SH5	PLG 648601 POWER SUPPLY	
U		586-4861	00	SH5	PLG 648601 CAN HARNESS	
WIRE AS	CABLE AS					
P				SH2	BATTERY NEGATIVE	
P				SH2	BATTERY POSITIVE	

NOTE A: FACTORY WIRING NOT PROVIDED AS STANDARD. REFER TO MANUFACTURER INSTALLATION INSTRUCTIONS.

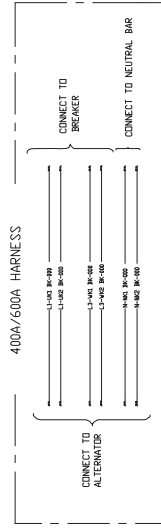
NOTE B: RESISTOR TO BE REMOVED IF ADDITIONAL EXPANSION MODULES ARE CONNECTED.



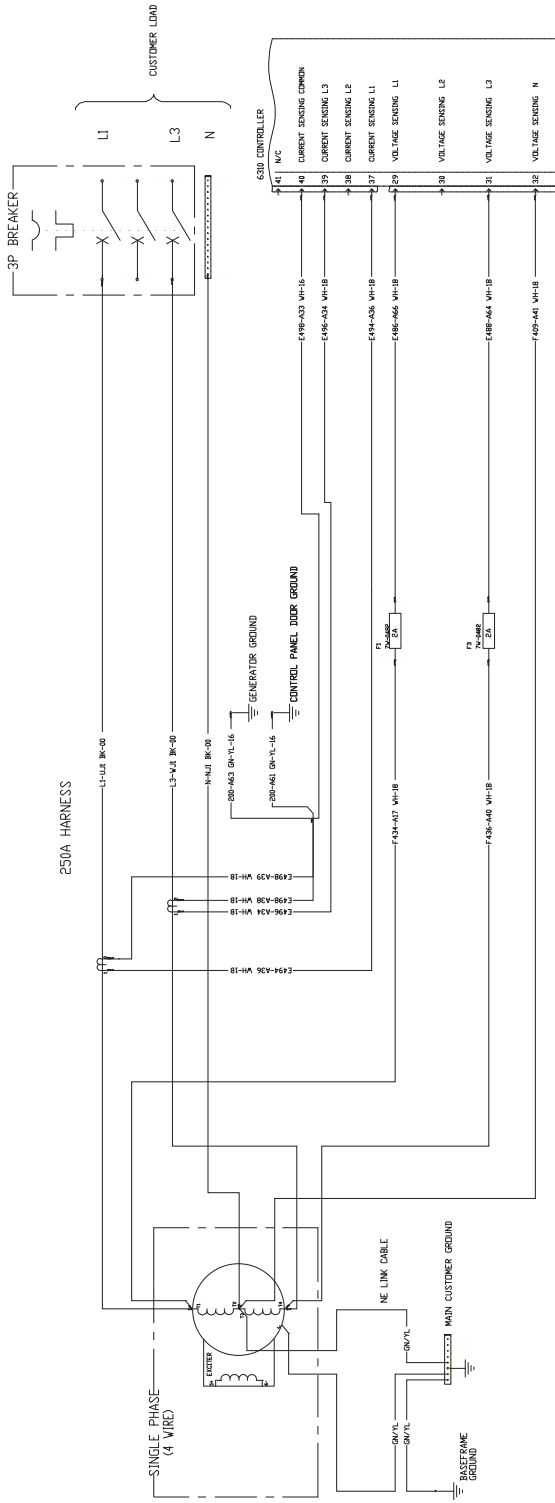
POWER SCHEMATIC



POWER SCHEMATIC (SINGLE PHASE)



250A HARNESS



SINGLE PHASE
(4 WIRE)

NE LINK CABLE

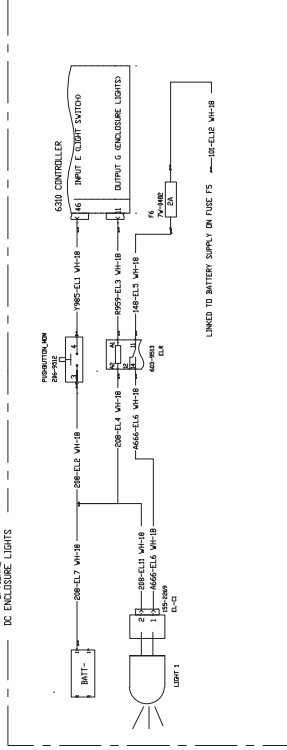
MAIN CUSTOMER GROUND

BASEFRAME
GROUND

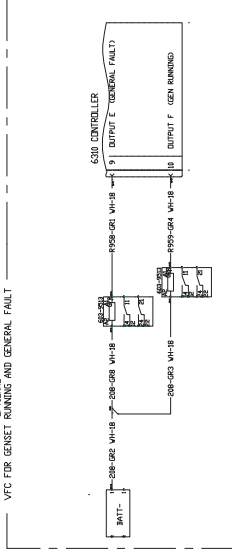
REV	DATE	BY	CHKD	DESCRIPTION
1	01/15/01	WJ	WJ	INITIAL DESIGN
2	02/15/01	WJ	WJ	REVISED FOR 250A HARNESS
3	03/15/01	WJ	WJ	REVISED FOR 400A/600A HARNESS
4	04/15/01	WJ	WJ	REVISED FOR 6380 CONTROLLER
5	05/15/01	WJ	WJ	REVISED FOR 3P BREAKER
6	06/15/01	WJ	WJ	REVISED FOR CUSTOMER LOAD
7	07/15/01	WJ	WJ	REVISED FOR NE LINK CABLE
8	08/15/01	WJ	WJ	REVISED FOR MAIN CUSTOMER GROUND
9	09/15/01	WJ	WJ	REVISED FOR BASEFRAME GROUND
10	10/15/01	WJ	WJ	REVISED FOR 4 WIRE SINGLE PHASE

ADDITIONAL OPTIONS

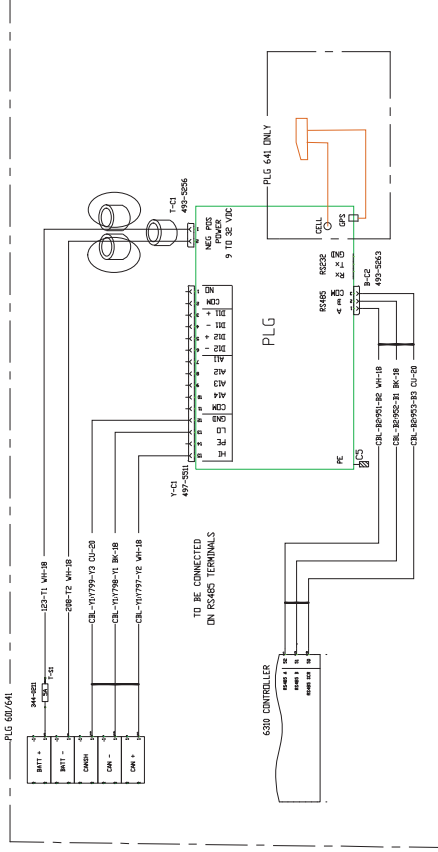
OPTIONAL
DC ENCLOSURE LIGHTS



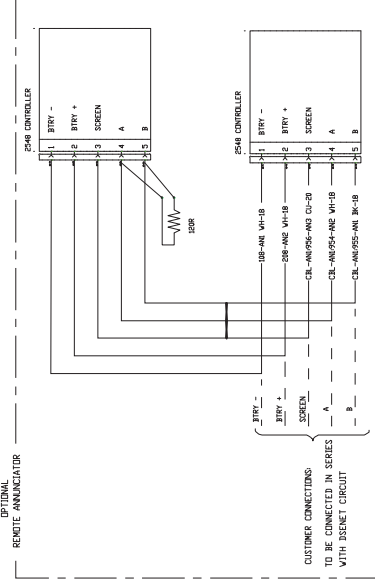
OPTIONAL
VFC FOR GENSET RUNNING AND GENERAL FAULT



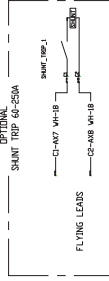
OPTIONAL
PLG 602/641



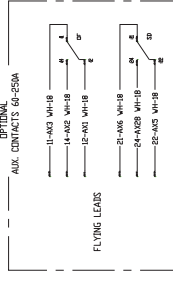
OPTIONAL
REMOTE ANNUNCIATOR



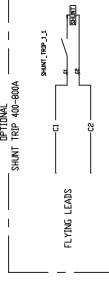
OPTIONAL
SHUNT TRIP 66-250A



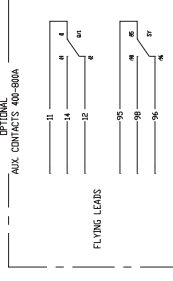
OPTIONAL
AUX CONTACTS 66-250A

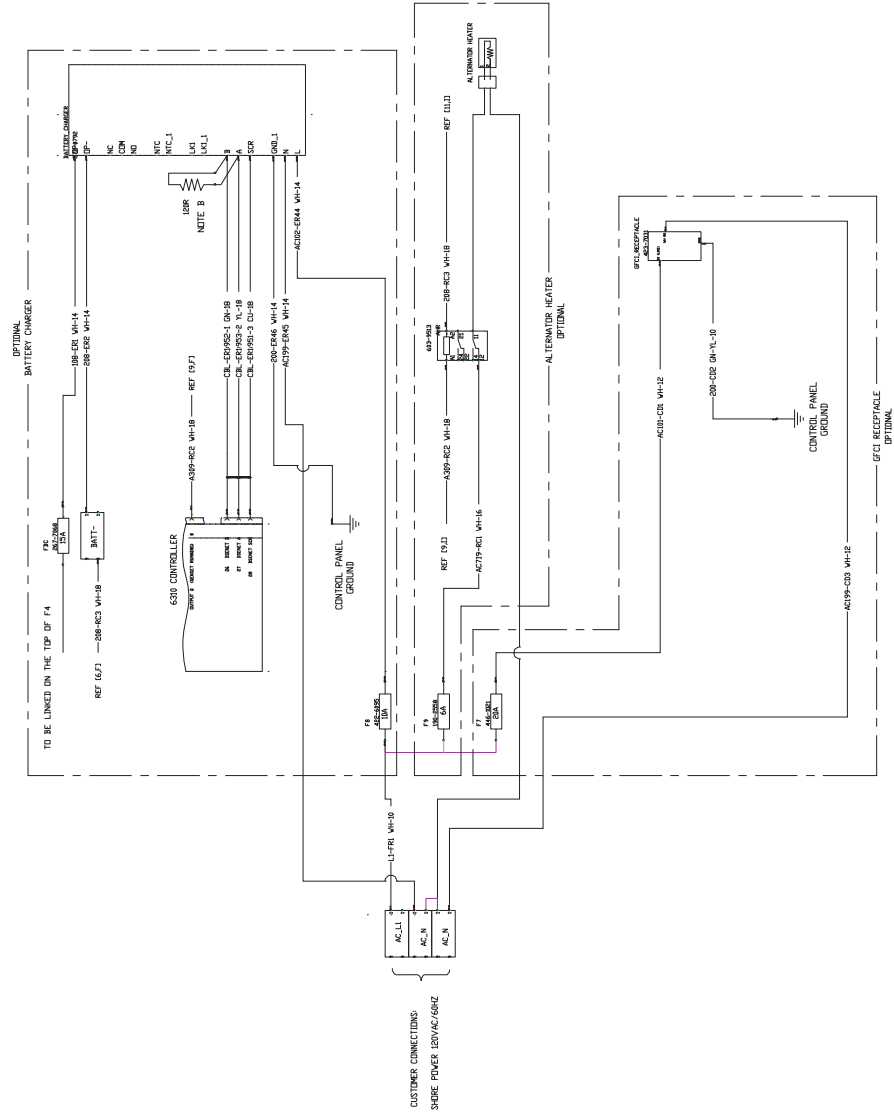


OPTIONAL
SHUNT TRIP 400-800A



OPTIONAL
AUX CONTACTS 400-800A





ADDITIONAL INFORMATION - COMPONENT DETAILS & CUSTOMER CONNECTIONS

MAIN CUSTOMER RAIL
(OPTIONS INCLUDED)

COMPONENT	DESCRIPTION
6	ALTERNATOR SPACE HEATER RELAY
7	EFCT FUSE (20A)
8	BATTERY CHARGER FUSE (10A)
9	ALTERNATOR HEATER FUSE (10A)

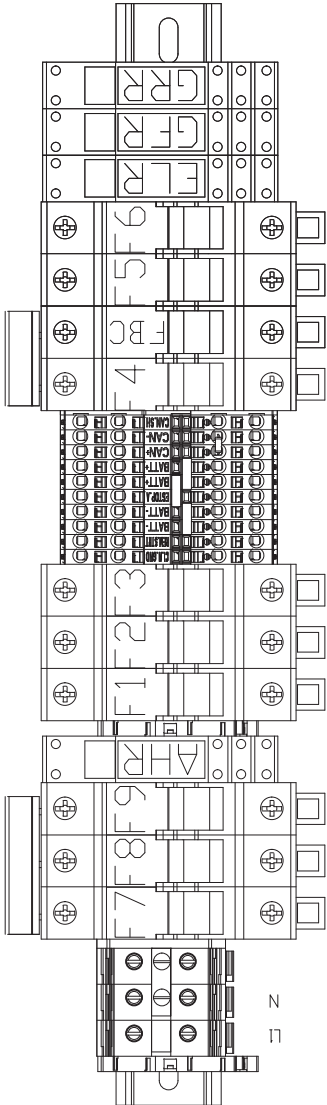
FUSE ID	CURRENT RATING	WIRE ID	DESCRIPTION
4	10A	101, 10B	PANEL SUPPLY
5	25A	101, 10B	BATTERY CHARGER
6	25A	101, 10B	FOR POWER
7	25A	101, 10B	ENCLOSURE LIGHTS

RAIL	CURRENT RATING	DESCRIPTION
6	25A	ENCLOSURE LIGHT RELAY
7	25A	ENCLOSURE LIGHT RELAY
8	25A	ENCLOSURE LIGHTS RELAY

DC FUSES

RELAY VFC CONNECTIONS

DC FUSES



SHORE POWER 120VAC/60HZ
CONNECTION

COMPONENT	DESCRIPTION
1	SHORE POWER AC SUPPLY LINE
2	SHORE POWER AC SUPPLY NEUTRAL

FUSE ID	CURRENT RATING	WIRE ID	DESCRIPTION
1	2A	F434, F486	1. SENSING AC
2	2A	F435, F487	2. SENSING AC
3	2A	F436, F488	3. SENSING AC

AC FUSES

CUSTOMER TERMINALS

TERMINAL ID	WIRE ID	DESCRIPTION
1	E-29	CLEAN GROUND FOR ANALOG INPUTS
2	E-29	WHITE START INPUT
3	E-29	BATTERY POSITIVE
4	E-29	BATTERY NEGATIVE
5	E-29	TEST STOP INPUT
6	E-29	BATTERY POSITIVE (10A FUSED)
7	E-29	BATTERY POSITIVE (10A FUSED)
8	E-29	CAN - COMMS
9	E-29	CAN - SH COMMS

COMPONENT	DESCRIPTION
1	SHORE POWER AC SUPPLY LINE
2	SHORE POWER AC SUPPLY NEUTRAL
3	SHORE POWER AC SUPPLY GROUND
4	SHORE POWER AC SUPPLY GROUND
5	SHORE POWER AC SUPPLY GROUND
6	SHORE POWER AC SUPPLY GROUND
7	SHORE POWER AC SUPPLY GROUND
8	SHORE POWER AC SUPPLY GROUND
9	SHORE POWER AC SUPPLY GROUND
10	SHORE POWER AC SUPPLY GROUND
11	SHORE POWER AC SUPPLY GROUND
12	SHORE POWER AC SUPPLY GROUND
13	SHORE POWER AC SUPPLY GROUND
14	SHORE POWER AC SUPPLY GROUND
15	SHORE POWER AC SUPPLY GROUND
16	SHORE POWER AC SUPPLY GROUND
17	SHORE POWER AC SUPPLY GROUND
18	SHORE POWER AC SUPPLY GROUND

CATERPILLAR ENGINE DIVISION
TECHNICAL COMMUNICATIONS GROUP

Installation Drawing Index
AutoCAD 2015 Format

Installation Drawing No. 6101621 chg 01

SOUND ATTENUATED LVL 2 WITH INTEGRAL TANK BASE

Overall Dimensions:

Length = 3256.80 mm

Width = 1124.80 mm

Height = 1659.40 mm

Engine pricing arrangements found on drawing:

LS4236 chg 00 LS4237 chg 00

Attachment pricing arrangements found on drawing:

LS4264 chg 00 LS4329 chg 00

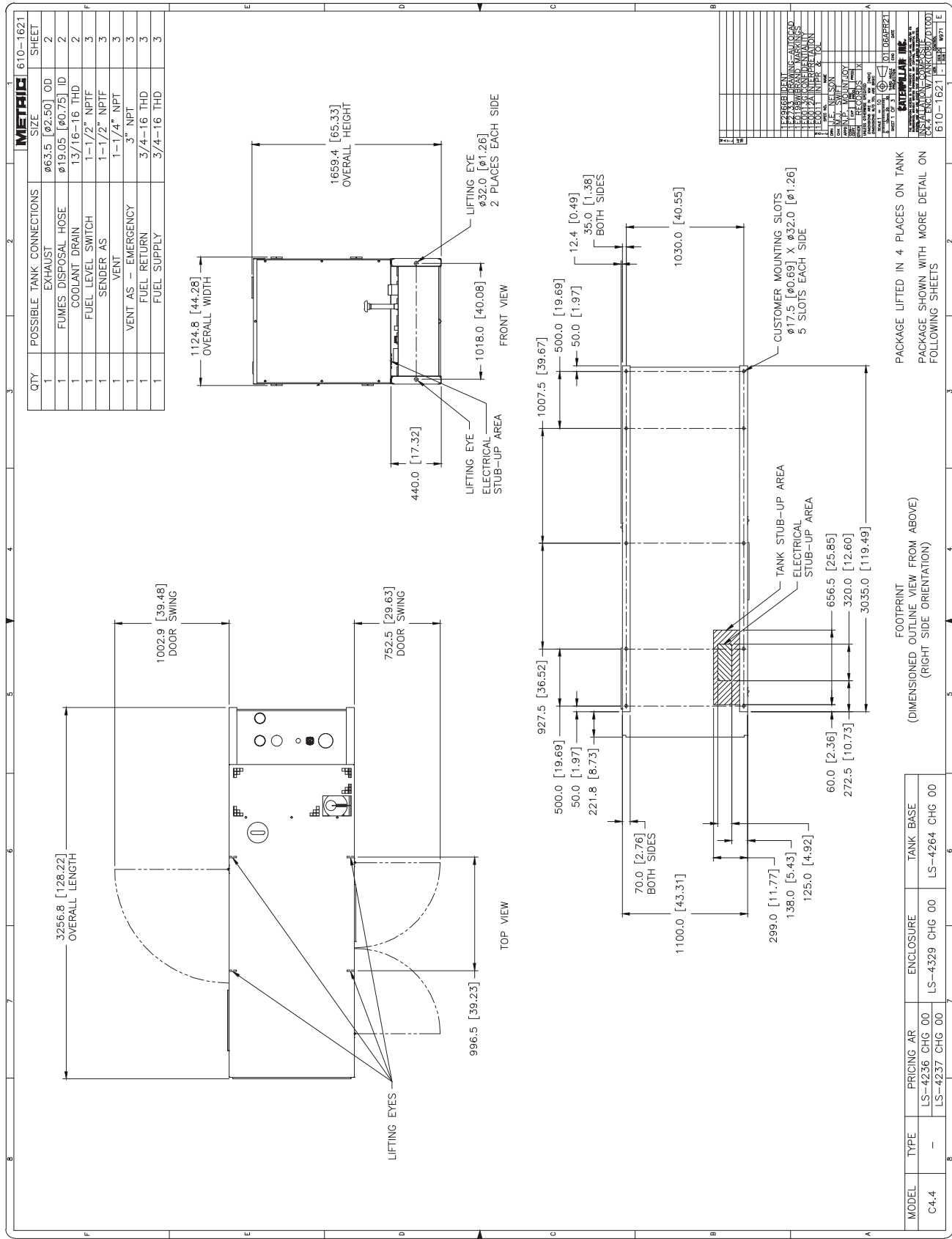
6101621A.dwf = Summary of LS-4264 Chg 00 shown. (sheet1)

LS4236 chg 00 LS4329 chg 00 LS4264 chg 00

LS4237 chg 00

6101621B.dwf = Left side view, Top view, Rear view and Right side view of LS-4264 Chg 00 shown. (sheet2)

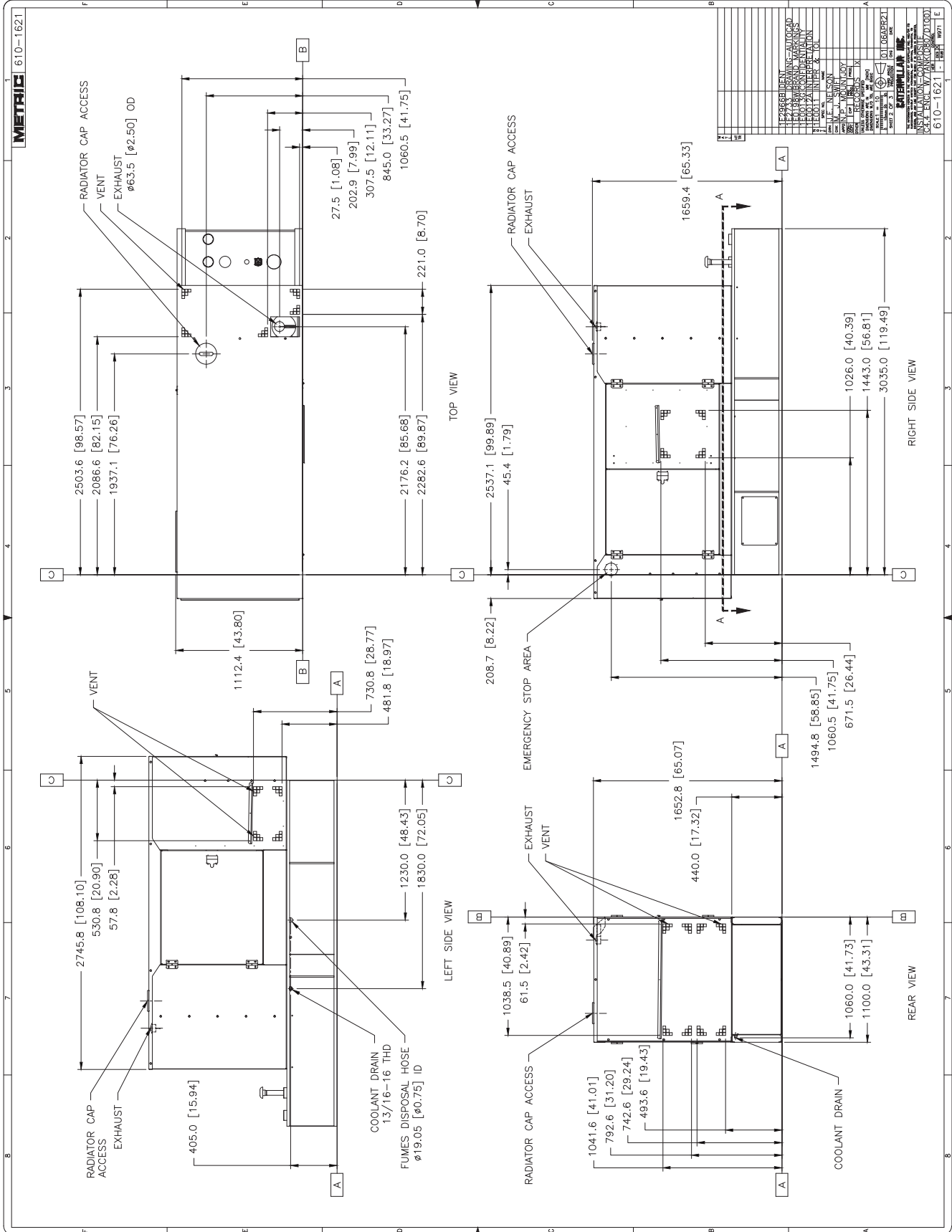
6101621C.dwf = View A-A(Right Side Orientation) of Is-4264 Chg 00 shown. (sheet3)



METAL 610-1621			SHEET		
QTY	POSSIBLE TANK CONNECTIONS	SIZE			
1	EXHAUST	Ø63.5 [Ø2.50] OD	2		
1	FUMES DISPOSAL HOSE	Ø19.05 [Ø0.75] ID	2		
1	COOLANT DRAIN	13/16-16 THD	2		
1	FUEL LEVEL SWITCH	1-1/2" NPTF	3		
1	SENDER AS	1-1/2" NPTF	3		
1	VENT	1-1/4" NPT	3		
1	VENT AS - EMERGENCY	3" NPT	3		
1	FUEL RETURN	3/4-16 THD	3		
1	FUEL SUPPLY	3/4-16 THD	3		

TECHNICAL REPRESENTATIVE	DESIGNER	DATE
PROJECT MANAGER	DATE	
PROJECT ENGINEER	DATE	
PROJECT SUPERVISOR	DATE	
PROJECT COORDINATOR	DATE	
PROJECT ADMINISTRATOR	DATE	
PROJECT CLERK	DATE	
PROJECT OPERATOR	DATE	
PROJECT MAINTENANCE	DATE	
PROJECT INSPECTION	DATE	
PROJECT RECORDING	DATE	
PROJECT REPORTING	DATE	
PROJECT REVIEW	DATE	
PROJECT APPROVAL	DATE	
PROJECT SIGNATURE	DATE	
PROJECT STAMP	DATE	
PROJECT LOG	DATE	
PROJECT CHECKLIST	DATE	
PROJECT SUMMARY	DATE	
PROJECT CONCLUSION	DATE	
PROJECT RECOMMENDATION	DATE	
PROJECT FOLLOW-UP	DATE	
PROJECT CLOSURE	DATE	
PROJECT ARCHIVE	DATE	
PROJECT RELEASE	DATE	
PROJECT RETIREMENT	DATE	

MODEL	TYPE	PRICING AR	ENCLOSURE	TANK BASE
C4.4	-	LS-4236 CHG 00	LS-4329 CHG 00	LS-4264 CHG 00
		LS-4237 CHG 00		



[illegible]

Manually Operated Circuit Breakers for D40 GC – D200 GC Diesel Generator Sets

Current (A)	Frame	Number of Poles	Interrupting Ratings (kA ms)			Trip Unit	(#) Lugs Size	Auxilliary Options
			240V	480V	600V			
60	H	3	65	35	18	LSI	(1) 14-2/0 AWG	Form C (1NC & 1NO) Shunt Trip (12V)
100	H	3	65	35	18			
150	H	3	65	35	18			
250	J	3	65	35	18		(1) 1/0-300 kcmil	
400	XT5	3	65	35	18		Bus Bar	1 Form C + 1 Bell Alarm Shunt Trip (12V)
600	XT6	3	65	35	20			
800	XT6	3	65	35	20			

(*) No of Cables per lug.

Diesel D40 GC – D60 GC

First Breaker	Second Breaker
Circuit Breaker (A)	Circuit Breaker (A)
60	60
100	100
150	150
250	—

Diesel D80 GC – D200 GC

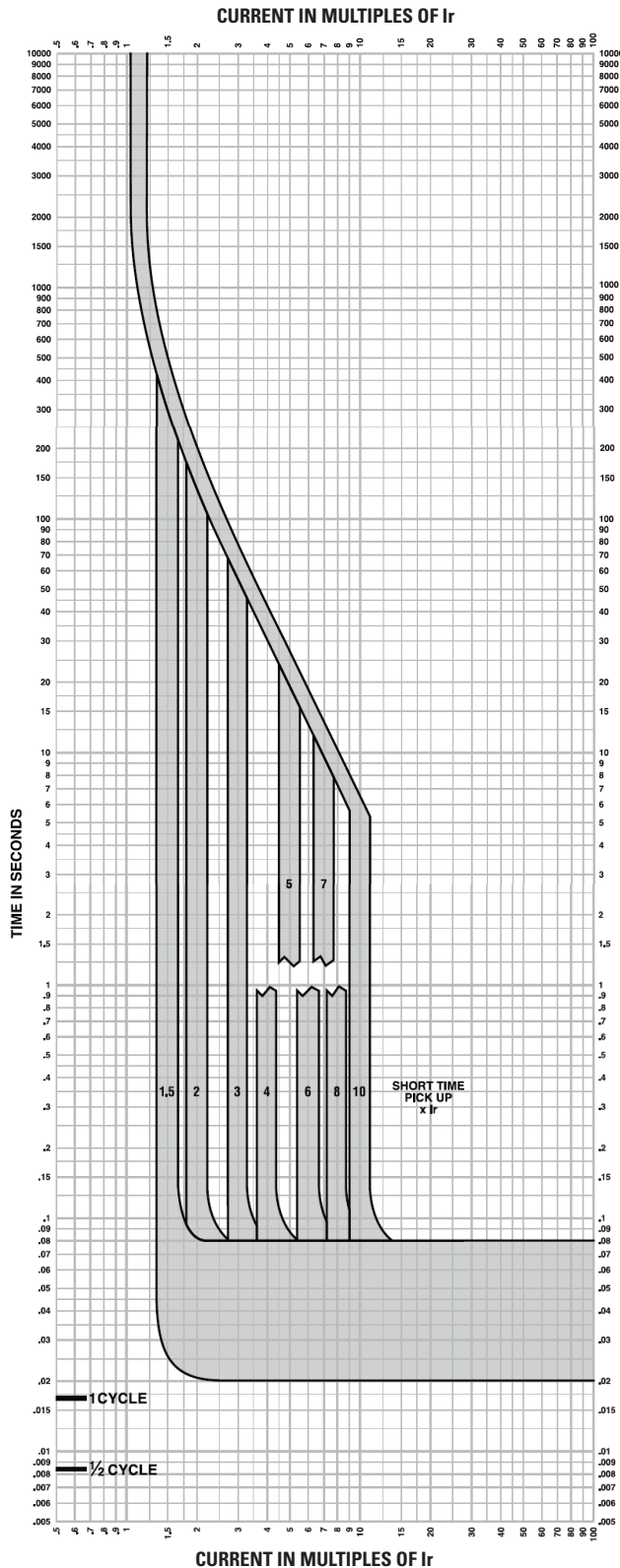
First Breaker	Second Breaker
Circuit Breaker (A)	Circuit Breaker (A)
100	60
150	100
250	150
400	250
600	—
800	—

Available Breaker Configurations	
First Breaker	Second Breaker
H	—
H	H
H	J
J	—
J	J
J	H

Available Breaker Configurations		
First Breaker	Second Breaker	
H	H	J
J	H	J
XT5	H	J
XT6	H	J

H-Frame Circuit Breakers

Electronic Trip Unit Long Time/Short Time Trip Curve



Long Time/Short Time Trip Curve 60A, 100A, 150A H-Frame

The time-current curve information is to be used for application and coordination purposes only.

Notes

1. There is a thermal-imaging effect that can act to shorten the long-time delay. The thermal-imaging effect comes into play if a current above the long-time delay pickup value exists for a time and then is cleared by the tripping of a downstream device or the circuit breaker itself. A subsequent overload will cause the circuit breaker to trip in a shorter time than normal. The amount of time delay reduction is inverse to the amount of time that has elapsed since the previous overload. Approximately 20 minutes is required between overloads to completely reset thermal-imaging.

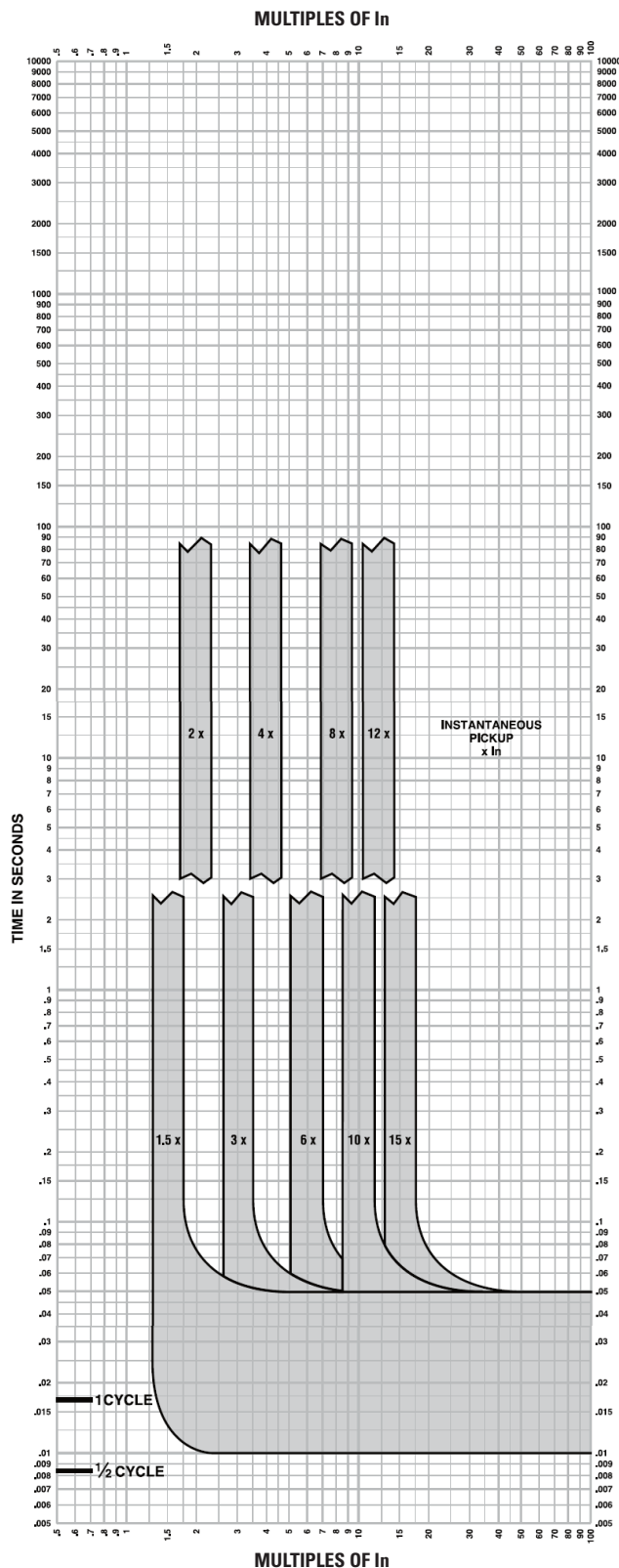
2. Total clearing times shown include the response times of the trip unit, the circuit breaker opening, and the extinction of the current.

Curves apply from -35°C to $+70^{\circ}\text{C}$ (-31°F to $+158^{\circ}\text{F}$) ambient temperature.

Figure 1

H-Frame Circuit Breakers

Electronic Trip Unit Instantaneous Trip Curve



Instantaneous Trip Curve 60A, 100A, 150A H-Frame

The time-current curve information is to be used for application and coordination purposes only.

Notes

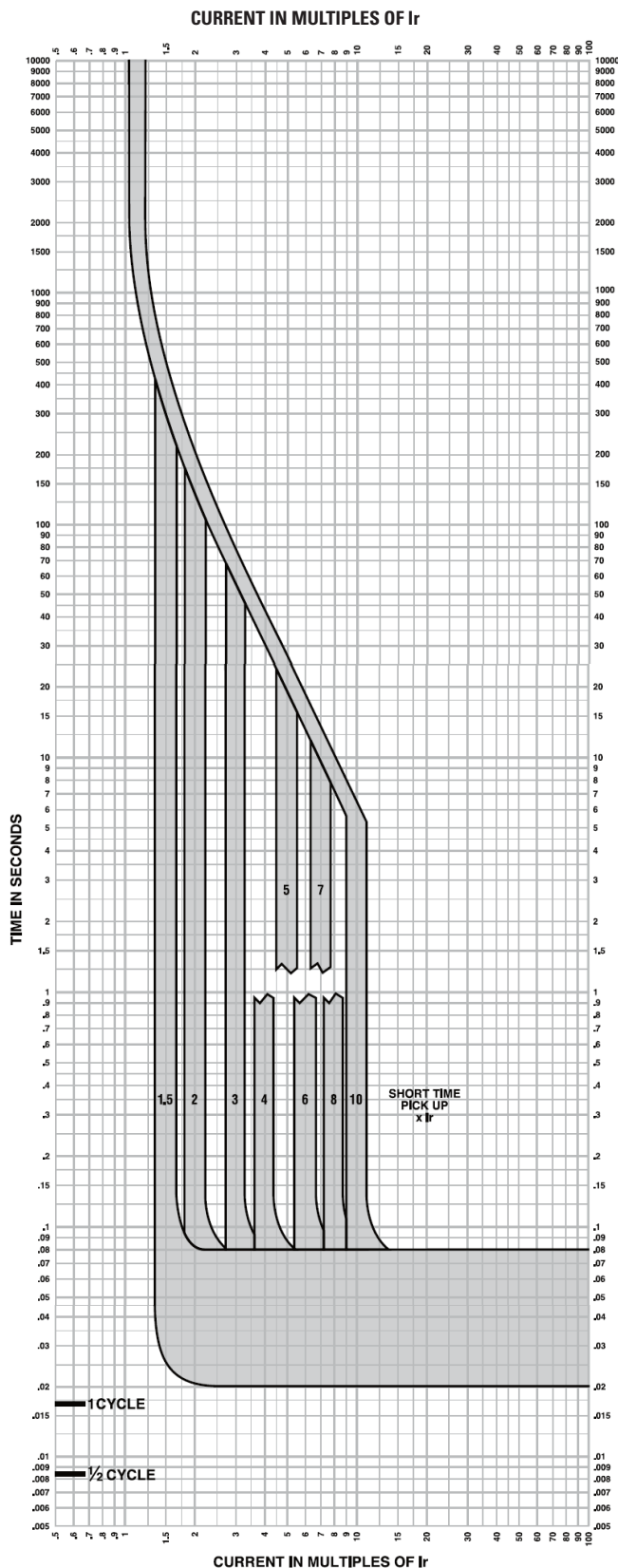
1. There is a thermal-imaging effect that can act to shorten the long-time delay. The thermal-imaging effect comes into play if a current above the long-time delay pickup value exists for a time and then is cleared by the tripping of a downstream device or the circuit breaker itself. A subsequent overload will cause the circuit breaker to trip in a shorter time than normal. The amount of time delay reduction is inverse to the amount of time that elapsed since the previous overload. Approximately 20 minutes is required between overloads to completely reset thermal-imaging.
2. Total clearing times shown include the response times of the trip unit, the circuit breaker opening, and the extinction of the current.
3. I_n = Maximum dial setting of I_r .
 60A H-Frame: $I_n = 60A = \text{Max } I_r \text{ setting}$
 100A H-Frame: $I_n = 100A = \text{Max } I_r \text{ setting}$
 150A H-Frame: $I_n = 150A = \text{Max } I_r \text{ setting}$

Curves apply from -35°C to $+70^\circ\text{C}$ (-31°F to $+158^\circ\text{F}$) ambient temperature.

Figure 2

J-Frame Circuit Breakers

Electronic Trip Unit Long Time/Short Time Trip Curve



Long Time/Short Time Trip Curve 250A J-Frame

The time-current curve information is to be used for application and coordination purposes only.

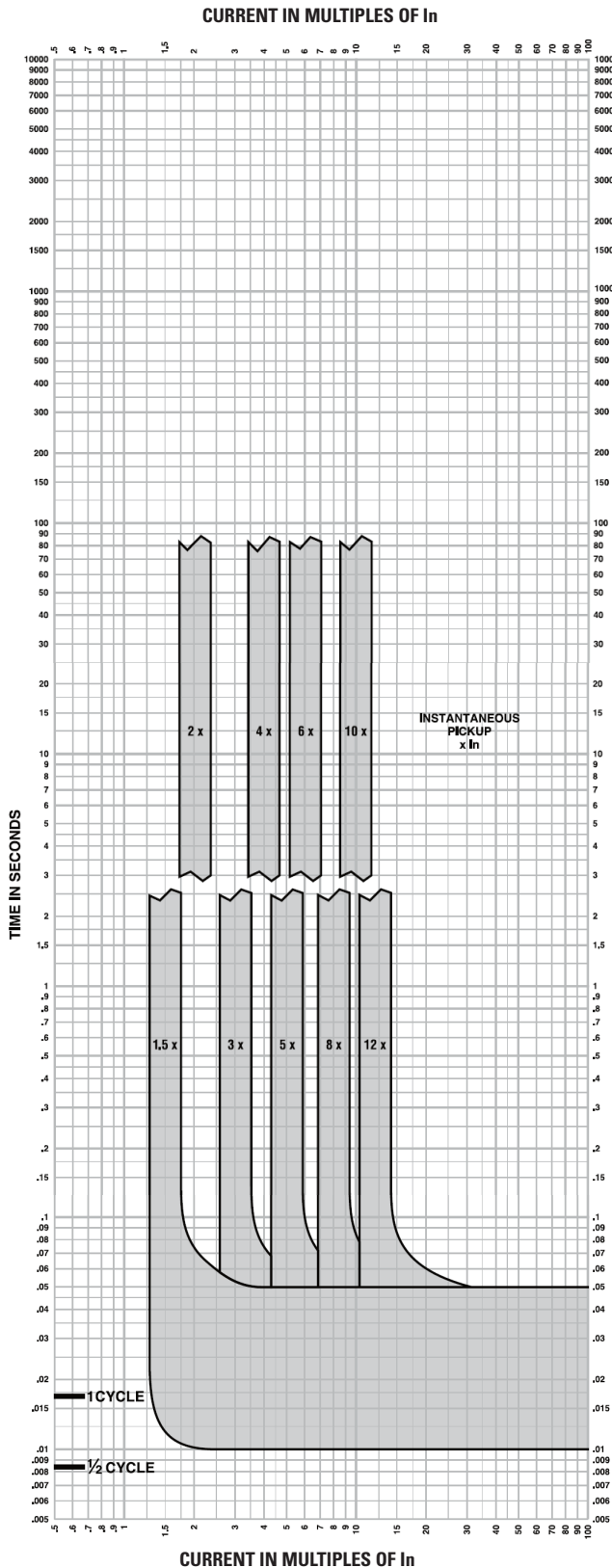
Notes

1. There is a thermal-imaging effect that can act to shorten the long-time delay. The thermal-imaging effect comes into play if a current above the long-time delay pickup value exists for a time and then is cleared by the tripping of a downstream device or the circuit breaker itself. A subsequent overload will cause the circuit breaker to trip in a shorter time than normal. The amount of time delay reduction is inverse to the amount of time that has elapsed since the previous overload. Approximately 20 minutes is required between overloads to completely reset thermal-imaging.
 2. Total clearing times shown include the response times of the trip unit, the circuit breaker opening, and the extinction of the current.
- Curves apply from -35°C to +70°C (-31°F to +158°F) ambient temperature.

Figure 3

J-Frame Circuit Breakers

Electronic Trip Unit Instantaneous Trip Curves



Instantaneous Trip Curve 250A J-Frame

The time-current curve information is to be used for application and coordination purposes only.

Notes

1. There is a thermal-imaging effect that can act to shorten the long-time delay. The thermal-imaging effect comes into play if a current above the long-time delay pickup value exists for a time and then is cleared by the tripping of a downstream device or the circuit breaker itself. A subsequent overload will cause the circuit breaker to trip in a shorter time than normal. The amount of time delay reduction is inverse to the amount of time that has elapsed since the previous overload. Approximately 20 minutes is required between overloads to completely reset thermal-imaging.

2. Total clearing times shown include the response times of the trip unit, the circuit breaker opening, and the extinction of the current.

3. I_n = Maximum dial setting of I_r .
250A J-Frame: I_n = 250A = Max I_r setting

Curves apply from -35°C to $+70^{\circ}\text{C}$ (-31°F to $+158^{\circ}\text{F}$) ambient temperature.

Figure 4

Trip Curves for Circuit Breakers with Electronic Trip Units

XT5 Ekip Dip LSI
L-S-I Functions

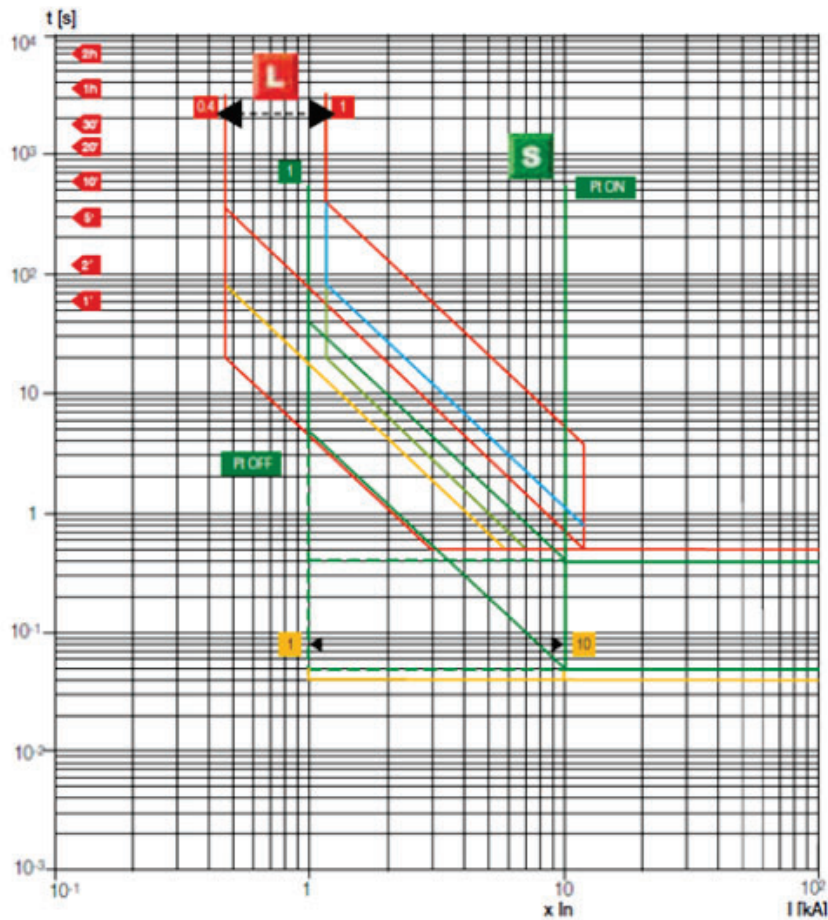


Figure 5

XT6 – XT7 M Ekip Dip LSI L-S-I Functions

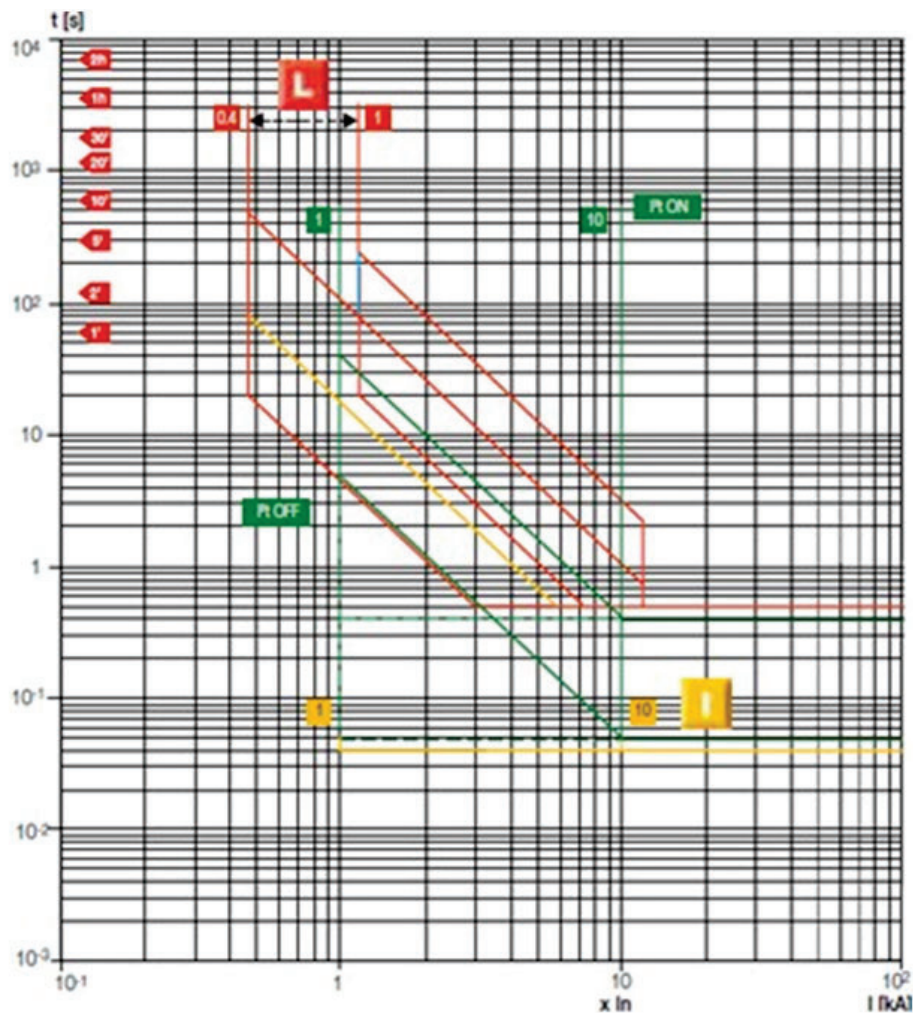


Figure 6

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ANCILLARY EQUIPMENT



Image shown may not reflect actual configuration.

20A Tamper-Resistant, Weather-Resistant GFCI Receptacles

Features and Benefits

- Automatically tests the GFCI every time the reset button is pushed in. The GFCI will not reset if the GFCI circuit is not functioning properly.
- By blocking reset of the GFCI if protection has been compromised, SmartLockPRO reduces the possibility of end-users incorrectly assuming that a reset GFCI outlet is providing ground fault protection when it actually is not.
- A line-load reversal diagnostic feature is provided which prevents the GFCI from being reset and stops power from being fed to the GFCI receptacle face or through to downstream devices. A green LED indicator on the GFCI's face also illuminates to alert the installer to the line-load wiring reversal.

Weather-Resistant GFCIs

- Meet UL 498 requirements for weather-resistant receptacles.

Tamper-Resistant GFCIs

- Shutter mechanism inside the receptacle blocks access to the contacts unless a two-prong plug is inserted, helping ensure foreign objects will be locked out.

Product Features

- Grounding: GFCI ground fault
- Feature: Weather and tamper-resistant
- Amperage: 20 Amp
- Voltage: 125 Volt
- NEMA: 5-20R
- Trip Level: Class A, 5mA plus or minus 1mA
- Pole: 2
- Wire: 3
- Color: White

Standards and Certifications

- NEMA: WD-6
- ANSI: C-73
- UL498: File E13399
- CSA C22.2 No. 42: File LR-57811
- NOM: 057
- UL 943: File E48380

Receptacles contained in a
weather resistant box
and in-use cover.



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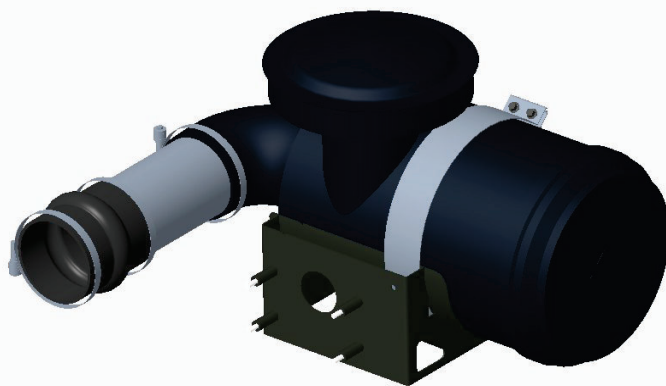


Image shown might not reflect actual configuration

AIR CLEANERS FOR D40 GC – D200 GC ENGINES

GENERAL DESCRIPTION

Air Cleaner reduce contaminants flowing into the air intake system, provide a high level of Engine protection from harmful contaminants and increase engine performance and fuel efficiency.

Dual element air cleaners provide additional protection for the Engine

FEATURES

- Radial Seal Technology
- Easy to read CAT filter service indicator with manual reset[#]
- Standard Yellow Media
- Constant torque clamps
- Engine rear mounted filters with easy access to service filter to open and enclosed Gensets
- Air filters Designed for 250 hrs of service*

[#]service indicator is available only with Canister element

*based on dust Concentration levels

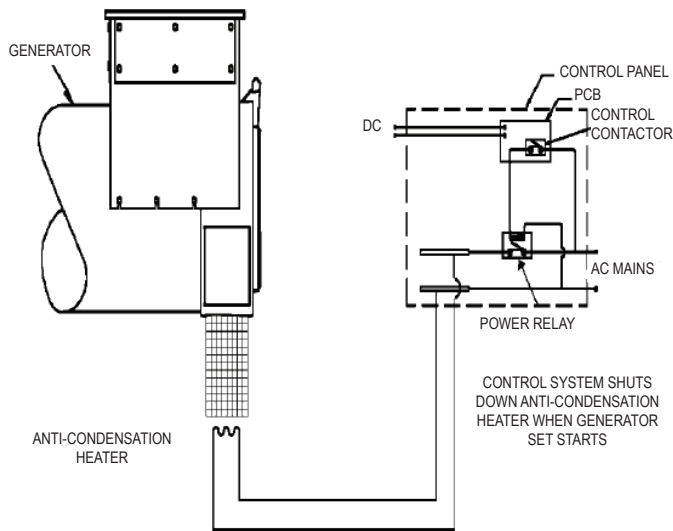
Feature Code	Engine model	Dust Environment	Industry	Element	Housing
<i>Dust Concentration level - 1mg/m3</i>					
STD AIR	D40 GC – D60 GC	Standard Duty	Factory, Office	Canister	N-A
STD AIR	D80 GC – D200 GC	Standard Duty	Factory, Office	Non-Canister	N-A

LEHE20042-00 (10-20)

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Anti-Condensation Heater



Generator Anti-condensation Heater AH1H

Appropriate when the generator set is to be sited in a low ambient and/or high humidity environment, the heater maintains the AC generator at a suitable temperature to prevent winding corrosion due to condensation.

The heater itself is powered by a 110/120 volt (VAC 120) or 208/240 volt (VAC 240) AC auxiliary supply protected by a fuse inside the main control panel. When the generator set is not running the heater is automatically connected to the AC supply through a power relay mounted in the control panel. Upon receiving a start signal the AC supply is automatically disconnected by the power relay and automatically reconnected when the start signal is removed and the engine has stopped.

Generator Frame	Nominal Heater Power Consumption (Watts)
LC15XX, M17XX, M14XX	60
LC31XX, M22XX	100
LC50XX, M27XX	250

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BATTERY CHARGER

The intelligent battery charger has been developed with safety, usability, optimised battery performance and maximum battery lifetimes in mind.

A comprehensive range of input and output protections ensures a continued safe charging environment also enabling the use of the charger as a power supply.

FEATURES

- Intelligent two, three and four stage charging profiles
- Configurable to suit most battery types (12V/24V)
- Adjustable current limit
- Can be used as a battery charger, power supply or both at the same time
- Automatic or Manual boost and storage charge functions to help maintain battery condition
- Digital Microprocessor Technology
- Temperature compensation for battery charging
- Low Output Ripple and superb line regulation
- Three LED Indicators
- AC input Under voltage
- AC input Over voltage
- Battery charger output Over voltage
- Battery charger output Over current
- Optional battery temperature compensation with over temperature protection
- Output short circuit and Inversion polarity with auto recovery
- Configurable charge termination
- UL1236 /UL1564 Compliant

Automatic Boost Mode

- Boosts and equalises cell charge improving battery performance and life

Power Save Mode

- Once the battery is fully charged the chargers switch to Eco-Power to save energy

Communication

- Can be integrated into external systems through MODBUS RTU using RS485
- Fully configurable via PC Software

BENEFITS

- Fully flexible to maximise the life of the battery
- Suitable for a wide range of battery types
- Switched mode design
- Minimum 86% efficiency throughout full operating range
- No external intervention for boost mode
- Multiple chargers can be linked together to provide larger current output
- Can be permanently connected to battery and mains (utility) supply. No need to disconnect through high load conditions.

SPECIFICATION

AC SUPPLY

VOLTAGE RANGE 90 V to 305 V (L-N)

FREQUENCY RANGE

48 Hz to 64 Hz (L-N)

DC OUTPUT RATING

10 A DC at 24 V DC

RIPPLE AND NOISE

<1 %

EFFICIENCY

>86%

REGULATION LINE

<0.5%

LOAD

2%

TEMPERATURE SENSOR INPUT

PT1000

PROTECTIONS

Short Circuit
DC Over Voltage
DC Over Current
Reverse Polarity
Over Temperature
AC Under & Over Voltage

CHARGE FAILURE RELAY

3 A at 30 V DC volt free relay

DIMENSIONS OVERALL

70 mm x200 mm x 130 mm
2.7" x 7.9" x 5.1"

WEIGHT

0.75 kg

OPERATING TEMPERATURE RANGE

-30 °C to +80 °C
-22 °F to +176 °F

STORAGE TEMPERATURE RANGE

-30 °C to +80 °C
-22 °F to +176 °F

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Cat® Batteries



Cat® Batteries – Greater Starting Power – Lower Maintenance – Longer Life

Cat® Heavy Duty (HD) batteries come initially installed in all Cat Machines and Engine GenSets. They are designed to meet stringent Caterpillar design specifications, which provide industry leading cold cranking amps (CCA) capability and maximum vibration resistance. Cat Heavy Duty Batteries were built specifically to help start your tough applications, every time.

The full Heavy Duty line-up includes wet maintenance-free and maintenance-free accessible flooded lead acid battery options.

You can get Cat quality and reliability that fit a range of applications and budgets in our Cat General Duty (GD) battery line. General Duty batteries offer wet maintenance-free and low maintenance flooded lead acid batteries. They also include valve regulated lead acid (VRLA) batteries in AGM (Absorbed Glass Mat) and Gel designs. This line of batteries covers all of your starting and cycling applications. Wide selections of BCI group sizes are available for automotive, light truck, bus, industrial, agricultural, marine, recreational and valve regulated applications.



Cat Batteries

World's Toughest Batteries



Cat Heavy Duty (HD) Batteries – Maximum Vibration Resistance

- Vibration Resistance...three to five times the Industry Standard
- Exclusive “flat top” BCI group 4D & 8D batteries are Maintenance-Free Accessible and have the industries highest cold cranking amps (CCA)
- Popular BCI group 31 Maintenance-Free Accessible batteries with industry leading cold cranking amps...up to 1000 (CCA), for electric power, machine or on-highway truck and bus applications. Deep cycle models are available for truck, marine or recreational usage

Specifications for Cat Heavy Duty Batteries – Available Worldwide

Cat Heavy Duty (HD) Batteries - Selection Guide: Global

BCI Group Size	Part No.	CCA ≈	RC Mins †	Volts	Amp Hr. Capacity @ 20 Hrs.	Construction Notes	Accessibility - Fluid Level Check Hours	BCI Overall Dimensions			
								Length In (mm)	Width In (mm)	Height In (mm)	Wet Lb (kg)
8D	153-5720	1500	465	12	210	C/MFA	A - 1000	20.5 (520)	10.8 (275)	9.8 (248)	132 (59.9)
4D	153-5710	1400	425	12	200	C/MFA	A - 1000	20.5 (520)	8.6 (218)	9.8 (248)	119 (54.0)
4D	153-5700	1125	305	12	145	C/MFA	A - 1000	20.5 (520)	8.6 (218)	9.8 (248)	101 (45.8)
31	175-4390 ³	1000	180	12	90	C/MFA/S	A - 1000	12.9 (329)	6.8 (172)	9.3 (236)	60 (27.2)
31	175-4370 ³	825	190	12	100	C/MFA/S**	A - 1000	12.9 (329)	6.8 (172)	9.3 (236)	61 (27.2)
31/30H	115-2422	1000	170	12	90	C/MFA (2)	A - 1000	12.9 (329)	6.8 (172)	9.5 (241)	63 (28.6)
31/30H	9X-3404	950	165	12	95/100	C/MF (1) ^{EB}	NA	13.0 (331)	6.8 (172)	9.5 (241)	58 (26.3)
31/30H	3T-5760	750	165	12	95/100	C/MF ^{EB}	NA	13.0 (331)	6.8 (172)	9.5 (241)	56 (25.4)
65	230-6368	850	140	12	70	C/MF	NA	11.9 (304)	7.5 (191)	7.5 (191)	46 (20.9)
24	153-5656	650	110	12	52	C/MF	NA	11.0 (279)	6.9 (174)	9.0 (229)	39 (17.7)

Construction Notes:

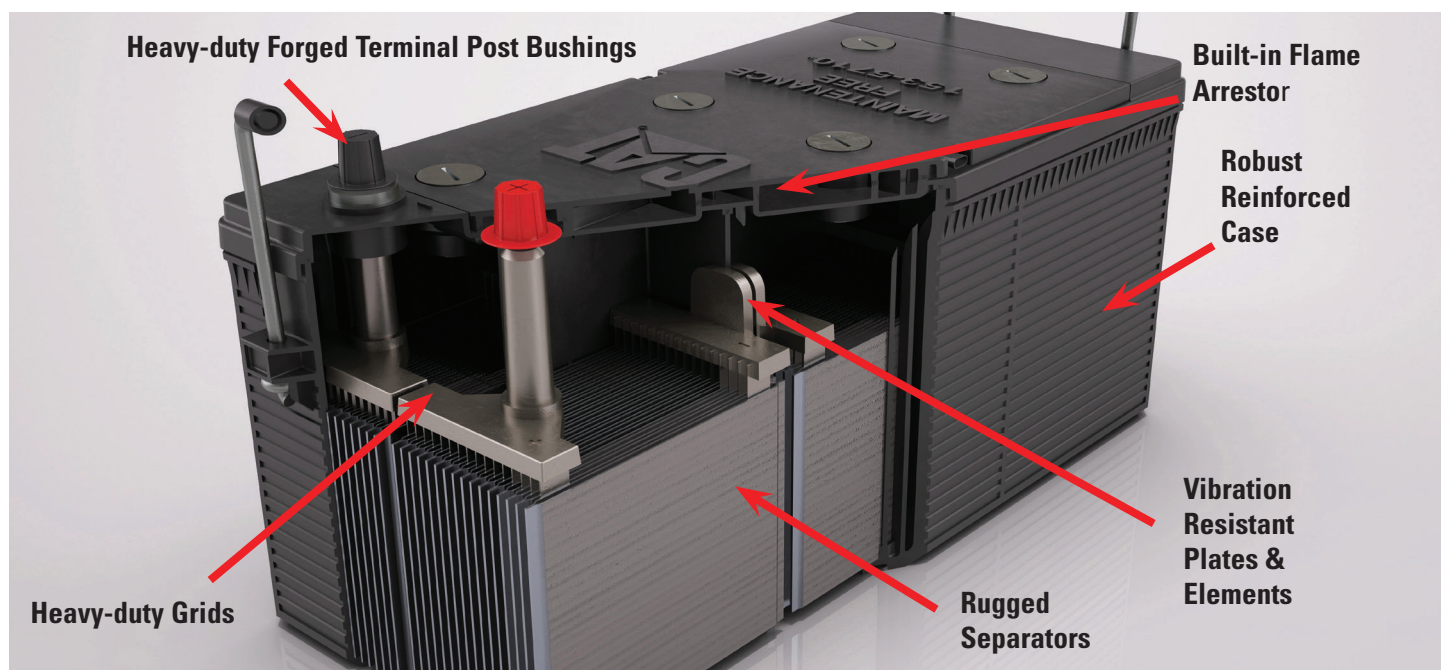
Batteries use SAE taper post design and are shipped wet except as:

- LAC = Low Maintenance - Hybrid Construction
 C = Calcium Lead Alloy Grid Design
 MF = Maintenance-Free Non-Accessible
 MFA = Maintenance-Free Accessible
 A = Accessible
 NA = Non-Accessible
 AV = Accessibly Varies - Accessibility varies depending on supplier used. If it has caps, it is accessible and fluid levels should be checked.
 S = Stud Terminals
 + = Shipped Dry Only
 * = Side Terminals Only
 ** = Starting and Deep Cycle Battery
 *** = Deep Cycle and Starting Battery
 ≈ = Cold Cranking Amps for 30 seconds at 0° F (-18° C)
 † = Reserve Capacity Minutes minimum of 25 amp output at 80° F (27°C)
 SDT = Dual, Top mounted Terminals - Stud and SAE Post. Marine Deep Cycle/ Starting Battery
 1 = Available everywhere outside of North/South America with the exception of Brazil
 2 = Available only in North/South America, excluding Brazil
 3 = Not available in EAME or APD (GD only)
 EB = Europe/Brazil
 AC = Asia/China

Rugged Design—Built Tough—Reliable Starting

- Positive and negative plates are anchored to container bottom and locked at the top of cell element for maximum vibration resistance.
- Heavy-duty forged terminal post bushings provide maximum strength and resistance to acid seepage.
- Hefty full-frame grids, no sharp edges, optimum acid/paste combination provides better charge acceptance after deep discharge.
- Manifold vented cover with built-in Flame Arrestor, a safety feature that directs corrosive gases away from the battery and hold-downs.
- Thick, robust container resists rugged treatment typical of heavy-duty commercial use. Embossed part number and descriptors for easy serviceability.

Cat Batteries



Robust Components = Long Life + Reliable Starts

- Heavy-duty forged terminal post bushings provide maximum strength and resistance to acid seepage that causes corrosion and black posts. Thicker internal terminal posts provide lower electrical resistance and higher cold cranking amp output.
- Rugged micro porous polyethylene envelope separators protect against “shorts” and vibration damage. Deep Cycle batteries utilize double insulated Glass mat separators for longer cycling life.
- Maintenance-Free Accessible batteries utilize calcium lead alloy on both positive and negative plates that reduces gassing and water consumption. Automotive batteries have Silver (Ag) Calcium Alloy Grids for resistance to high underhood temperatures.
- Heavy-duty, full frame battery grids with no sharp edges. An optimum acid/paste combination provides better charge acceptance after a deep discharge.
- Positive and Negative plates are anchored to the container bottom and the cell element is locked at the top for maximum vibration resistance. Straps are thicker, heavier and cast (not welded) into the plates.
- Manifold vented cover with built-in Flame Arrestor, a safety feature that directs corrosive gases away from the battery and hold-downs.
- Robust reinforced case provides extra strength in all temperature extremes. Brickwork design on sides reduces chance of punctures and case flexing. Embossed part number and descriptors for easy serviceability.

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We offer you the right parts and service solutions, when and where you need them.

The Cat Dealer network of highly trained experts keeps your entire fleet up and running to maximize your equipment investment.



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BATTERIES AND ELECTRICAL PARTS

Cat Battery Specifications

General Information

Premium High Output - Maximum Vibration Resistance

- Vibration Resistance-five times the Industry Standard
- Exclusive “flat top” BCI group 4D & 8D batteries are Maintenance Free and have the industry’s highest cold cranking amps (CCA)
- Popular BCI group 31 Maintenance Free batteries with industry leading cold cranking amps...up to 1000 (CCA), for electric power, machine or on-highway truck and bus applications. Deep cycle models are available for truck, marine and recreational usage

Specifications for Cat Premium High Output Batteries-Available Worldwide

BCI Group Size	Part No.	CCA ≈	RC Mins †	Volts	Amp Hr. Capacity @ 20 Hrs.	Construction Notes	Accessibility - Fluid Level Check Hours	BCI Overall Dimensions			Nominal Weight		Nominal Acid to Fill Qt (liter)
								Length In (mm)	Width In (mm)	Height In (mm)	Wet Lb (kg)	Dry Lb(kg)	
8D	153-5720	1500	465	12	210	C/MFA	A - 1000	20.5 (520)	10.8 (275)	9.8 (248)	132 (59.9)	-	-
8D	101-4000	1400	400	12	190	LAC+	A - 1000	20.8 (527)	11.0 (278)	9.8 (248)	132 (59.9)	86 (39.0)	18.0 (17.0)
4D	153-5710	1400	425	12	200	C/MFA	A - 1000	20.5 (520)	8.6 (218)	9.8 (248)	119 (54.0)	-	-
4D	9X-9730	1300	400	12	190	LAC+	A - 1000	20.8 (527)	8.6 (218)	9.8 (248)	120 (54.0)	81 (36.8)	14.8 (14.0)
4D	153-5700	1125	305	12	145	C/MFA	A - 1000	20.5 (520)	8.6 (218)	9.8 (248)	101 (45.8)	-	-
4D	9X-9720	1000	275	12	140	LAC+	A - 1000	20.8 (527)	8.6 (218)	9.8 (248)	102 (45.8)	59 (26.8)	15.9 (15.0)
31	175-4390	1000	180	12	90	C/MFA/S	A - 1000	12.9 (329)	6.8 (172)	9.3 (236)	60 (27.2)	-	-
31	175-4370	825	190	12	100	C/MFA/S**	A - 1000	12.9 (329)	6.8 (172)	9.3 (236)	61 (27.2)	-	-
31	175-4360	710	185	12	100	C/MFA/S***	A - 1000	12.9 (329)	6.8 (172)	9.3 (236)	62 (28.1)	-	-
31/30H	115-2422	1000	170	12	90	C/MFA	A - 1000	12.9 (329)	6.8 (172)	9.5 (241)	63 (28.6)	-	-
31/30H	115-2421	950	170	12	90	C/MFA+	A - 1000	12.9 (329)	6.8 (172)	9.5 (241)	64 (29.1)	44 (20.0)	6.6 (6.2)
31/30H	9X-3404 ⁽¹⁾	950	165	12	95/100	C/MF	NA	13.0 (331)	6.8 (172)	9.5 (241)	58 (26.3)	-	-
31/30H	3T-5760	750	165	12	95/100	C/MF	AV - 1000	13.0 (331)	6.8 (172)	9.5 (241)	56 (25.4)	-	-
65	230-6368	880	140	12	70	C/MF	NA	11.9 (304)	7.5 (191)	7.5 (191)	46 (20.9)	-	-
24	153-5656	650	110	12	52	C/MF	NA	11.0 (279)	6.9 (174)	9.0 (229)	39 (17.7)	-	-

Construction Notes:

Batteries use SAE taper post design and are shipped wet except as:

LAC = Low Maintenance - Hybrid Construction

C = Calcium Lead Alloy Grid Design

MF = Maintenance Free Non-Accessible

MFA = Maintenance Free Accessible

A = Accessible

NA = Non-Accessible

AV = Accessibility Varies - Accessibility varies depending on supplier used. If it has caps, it is accessible and fluid levels should be checked.

S = Stud Terminals

+ = Shipped Dry Only

* = Side Terminals Only

** = Starting and Deep Cycle Battery

*** = Deep Cycle and Starting Battery

≈ = Cold Cranking Amps for 30 seconds at 0° F (-18° C)

† = Reserve Capacity Minutes minimum of 25 amp output at 80° F (27° C)

SDT = Dual, Top mounted Terminals - Stud and SAE Post. Marine Deep Cycle/ Starting Battery

Rugged Design-Built Tough-Reliable Starting

- Positive and negative plates are anchored to container bottom and locked at the top of element for maximum vibration resistance.
- Heavy-duty forged terminal post bushings provide maximum strength and resistance to acid seepage.
- Hefty full-frame grids, no sharp edges, optimum acid/paste combination provides better charge acceptance after deep discharge.
- Manifold vented cover with built-in Flame Arrestor...a safety feature that directs corrosive gases away from the battery and holdowns.
- Thick, robust container resists rugged treatment typical of heavy-duty commercial use. Embossed part number & descriptors for easy serviceability.



Remote Emergency Stop Button

Image shown may not reflect actual configuration.

Features and Benefits

- Enclosure degree of protection – IP 69K (NEMA 6)
- UL Listed (NKCR)
- Assembled enclosure with shroud
- 40 mm mushroom emergency stop
- Twist release
- 2NC – horizontally mounted

Dimensions

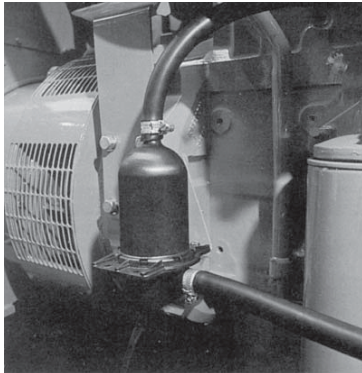
- Net Width: 0.065 m
- Net Height: 0.078 m
- Net Depth: 0.065 m
- Net Weight: 0.124 kg

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Coolant Heater

(WHH / WHHH / WHHA / JWH0089)

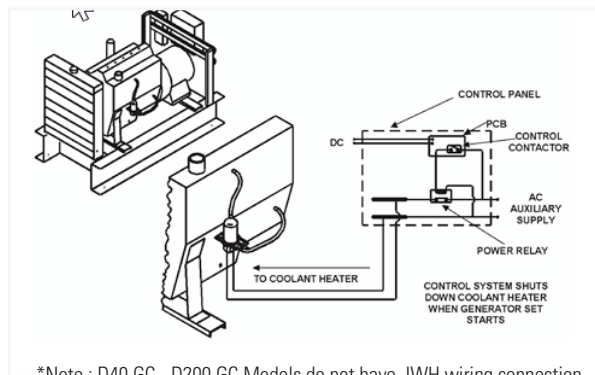
Appropriate when the generator set is to be sited in a low ambient environment, the heater maintains the engine coolant at a temperature [typically 38°C (100°F)] which facilitates rapid starting and load acceptance. The heater assembly uses UL compliant components (to UL1030) and has CSA certification which is to both CSA and UL Standards.

The heater itself is powered either by a 110/120 volt (VAC 120) for 60 Hz or 240V (VAC 240) for 50 Hz AC auxiliary supply protected by a safeguard breaker inside the main control panel. A thermostatic controller is included to regulate the output temperature to within safe limits. When the generator set is not running the heater is automatically connected to the AC supply through a power relay mounted in the control panel.

Upon receiving a start signal the AC supply is automatically disconnected by the power relay and automatically reconnected when the start signal is removed and the engine has stopped*.

Features

- Molded from Polyphenylene Sulphide
- Rust free, corrosion resistant with exceptional tensile strength
- Vibration and shock tested to extreme limits to ensure durability
- Compatible with all coolant additives
- Incoloy element for longer service life



*Note : D40 GC - D200 GC Models do not have JWH wiring connection with the control panel and the JWH wiring connection is up to the customers..

VAC 120/240

Diesel Generator Set Engine Models	Nominal Coolant Heater Power Consumption (Watts)
C2.2, C4.4, C7.1	1000
C9, C13	1500
C15, C18	2500

Gas Generator Set Models	Nominal Coolant Heater Power Consumption (Watts)
DG40,DG45,DG50,DG60,DG70,DG80	1000
DG100, DG125, DG150	1800

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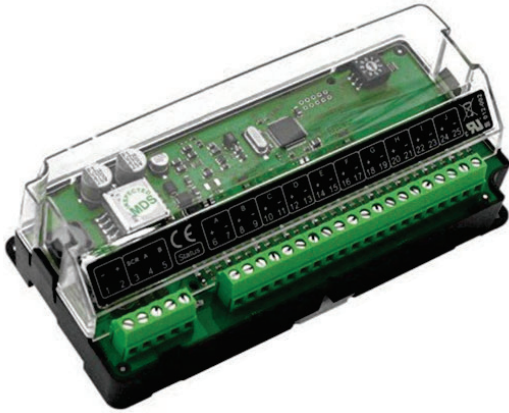
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Input Expansion Module



Picture shown may not reflect actual configuration.

Input Expansion Module

The Ratiometric Input Expansion module is used in conjunction with supported controllers to provide additional, flexible, input functionality. The module's ID switch is configurable from the module and the 10 inputs can be configured from within the 'host controller'.

The ratiometric inputs can be configured in a number of ways to connect to digital switches, resistive sensors, 0 – 10 V DC signals or 4 – 20 mA signals.

LED indication is provided for 'Power On' and 'Link Lost'.

Features

- Power On/Link Lost LED
- 10 inputs configurable for digital/resistive 4 – 20 mA and 0 – 10 V DC
- A maximum of 4 modules can be connected to 1 host control module to provide up to 40 additional configurable inputs
- Works up to 1.2 km (0.75 miles) from the host controller
- Terminal strip connection for quick and easy set-up

ENVIRONMENTAL TESTING STANDARD

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

SHOCK

BS EN 60068-2-27

Three shocks in each of three major axes 15 gn in 11 Ms

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

DEGREES OF PROTECTION PROVIDED BY ENCLOSURES

BS EN 60529

IP21

SPECIFICATION

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. LEDs light will not be maintained during cranking.

MAXIMUM OPERATING CURRENT

292 mA at 12 V, 167 mA at 24 V mA at 24 V

MAXIMUM STANDBY CURRENT

101 mA at 12 V, 167 mA at 24 V

INPUTS

10 inputs configurable for digital/resistive (3k ohms) 4 – 20 mA and 0 – 10 V DC

DIMENSIONS OVERALL

165 mm x 76 mm x 49 mm

STORAGE TEMPERATURE RANGE

-40°C to + 85°C

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Output Expansion Module



Picture shown may not reflect actual configuration.

Output Expansion Module

Output relay expansion module for use with compatible control modules. The Output Expansion module has been designed to extend a host module's output capabilities.

A maximum of 10 Output Expansion modules can be connected to an individual module at any one time. All outputs are configurable via the host controller.

The module will work up to 1 KM (0.6miles) from the host control module.

Features

- Power On/Link Lost LED ID SWITCH
- 10 expansion modules can be connected to 1 host controller at a time
- 8 configurable relay contacts with LED indicators
- 4 Normally Open (N/O)
- 4 Change Over (C/O)
- Terminal strip connection for quick and easy set-up

ENVIRONMENTAL TESTING STANDARD

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

SHOCK

BS EN 60068-2-27

Three shocks in each of three major axes 15 gn in 11 Ms

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

SPECIFICATION

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. LEDs and backlight will not be maintained during cranking.

MAXIMUM OPERATING CURRENT

325 mA at 12 V, 152 mA at 24 V

MAXIMUM STANDBY CURRENT

70 mA at 12 V, 32 mA at 24 V

AUXILIARY RELAY CONTACTS

2 Amp DC rated voltage free

DIMENSIONS OVERALL

165 mm x 76 mm x 49 mm

6.5" x 3" x 1.9"

LET'S DO THE WORK.™

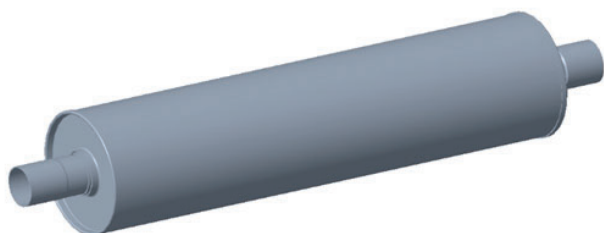
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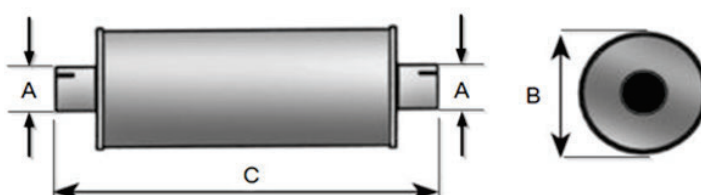
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10 dBA, 20 dBA, 25 dBA & 35 dBA Silencers for C3.3 and C4.4

Picture shown may not reflect actual configuration



Generator Model	Frequency	Sound Attenuation @ 100% Load	Dimensions			Weight
			Length (C) mm	Width (B) mm	Inlet Diameter (A) mm	
	Hz	dBA				Kg
Industrial Silencer – 10 dBA						
C4.4	60	10	830	203	76	6.3
Industrial Silencer – 20 dBA						
C3.3	50 / 60	20	770	158	51	6
	50 / 60	20	830	203	76	6.3
C4.4	50 / 60	20	830	203	76	6.3
Residential Silencer – 25 dBA						
C3.3	50 / 60	25	1176	240	51	17.5
C4.4	50 / 60	25	1353	279	76.2	17.1
Critical Silencer – 35 dBA						
C4.4	60	35	2183	279	76	23.5

Note: 35 dBA Silencer is a combination of 25 dBA & 10 dBA Silencers installed in series & includes connection flange and hardware. The length and weights are accurate sum of the two silencers. 25 dBA Silencer to be installed closest to the Engine.

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INSTALLATION GUIDELINES

RECOMMENDED INSTALLATION GUIDELINES

The following outline contains general requirements for successful installation of a generator set. The list is not meant to be a substitute for other and more specific installation guides by equipment manufacturers, but rather as a general guideline to the installing personnel.

Important! Prior to beginning installation, please reference the enclosed map and contact your Boyd representative. This is your contact person for installation related questions. This no-charge service will save time and money!

Storage of Equipment

All-equipment, especially generators, control panels, transfer switches, etc., should be stored in a clean, dry, and non-corrosive atmosphere between the time of arrival on the jobsite and final installation. Medium-voltage equipment has specific and stricter storage requirements.

Care should be taken in abnormal environments. IE equipment should be properly protected from the effects of chlorine atmosphere as is often encountered in water treatment plants, etc.

Concrete Pad

The concrete pad on which the generator set is mounted should be reinforced with steel mesh or bars. The pad depth should be calculated to support the generator set, the housing and all associated equipment. If the unit includes a base fuel tank, the weight of the fuel must be included.

It is recommended that the pad extend at least 12" beyond all sides of the enclosure.

Ventilation

Enclosure sides and rear must be located a minimum of 48" from any obstruction or wall to insure proper ventilation and permit all doors to be opened fully. Please consult a Boyd representative if more than one side of the enclosure will be in close proximity to an obstruction.

Radiator end should be located to allow proper clearance from any obstruction or wall so no recirculation of hot air or exhaust gases will occur. Units with horizontal radiator discharge generally require clearance equal to the length of the generator set.

When possible, position unit so that the prevailing winds blow from rear to front over the Generator, (generally from south-west to north-east) to help dissipate the hot gases.

OPEN UNITS – verify proper ventilation to provide proper combustion and cooling air flow for unit operation while maintaining $\frac{1}{2}$ " H₂O maximum restriction. ** A general rule of thumb – intake surface area should be 1.5X the discharge area of the radiator. *This is a rule of thumb only and does not guarantee sufficient flow in all cases.*

Exhaust Piping

Engine exhaust should be directed up and away from the generator air intake. Rain caps or weather guards are recommended on the exhaust outlet elbow. Again, the prevailing winds must be considered when locating the exhaust outlet.

Extreme care should be taken to ensure that engine exhaust is not drawn into the buildings intake air system.

OPEN UNITS – must be installed with a stainless flex pipe at the turbo. Care should be taken to prevent any weight bearing on the turbocharger.

Starting and Battery Groups

Jacket water heaters are required for all engine generator sets to ensure NFPA 99/110 starting requirements and to prolong equipment life.

Batteries should be sized to provide at least 60 seconds of cranking time at the minimum ambient temperature. Battery heating pads can be harmful to batteries and are not recommended. Modern battery chargers are temperature compensated and must be located in the same ambient temperature as the batteries. Heating pads may cause temperature compensated chargers to over-charge their batteries.

The battery manufacturer's recommendations should be followed for any battery installation in an outdoor enclosure. Nickel Cadmium batteries are not intended for and should not be used in outdoor enclosure installations.

Electrical Wiring for Package Generator Set and ATS

- *Transfer switch(es) may be energized prior to the arrival of Boyd personnel. Refer to the O&M manual (located inside of the switch) for instructions prior to energizing.*
- *Boyd Technicians will land/terminate control wiring for the generator set and ATS.*
- *A separate interconnect diagram is provided for wiring specifics.*

Power wiring must be connected to the generator by means of a flexible element. In case of an engine mounted generator control panel, it is important that no extra weight be imposed by the flexible conduit on control panel mounts.

Boyd will furnish standard lugs as shipped by the manufacturer, an adder will be charged for providing lugs other than those shipped by the factory.

DC Control Wiring and AC feeds can NOT be in the same conduit.

Shielded cables must be continuous without splices. All control wiring must be clearly marked on both ends prior to technician arrival.

Remote auxiliary/support equipment (IE; fuel tanks, day tanks, pumps, battery chargers, etc.) will require additional wiring. Consult the individual component sections of this submittal or contact your Boyd representative.

Care must be taken not to connect AC voltage to the DC control voltage. AC Circuits should be in separate conduit from all DC control circuits.

Installation & Pre-Start-Up and Start-Up Guidelines

Before factory authorized start-up can be initiated, the following must be completed:

By Installing Contractor

- Generator installed and AC (primary) connections pulled, landed, and properly torqued
 - In certain cases where a load bank test is required the Boyd representative may request that primary cables not be terminated prior to technician arrival
- AC auxiliary service wiring pulled. A Boyd technician will land the aux wiring during start-up. Wiring should be clearly identified/labeled and contractor should be prepared to energize aux service during start-up
- Fuel tanks (main and day) plumbed and filled
- Transfer switch installed with AC (primary) connections pulled, landed, and properly torqued. Utility source must be available during commissioning.
- Enclosure is cleaned and free of debris.
- All other auxiliary equipment needed to operate the generator set shall be installed. Consult with Boyd representative if in doubt.

Prior to a technician being dispatched your Boyd service representative will pre-inspect the project. Please contact your service representative, contact information is on the cover of this submittal.

By Boyd Cat Power Systems Sales Department Representative

- Pre-inspect all applicable systems / Meet with installing contractor if any corrections or additions are necessary.
- Prepare pre-inspection report and authorize dispatch of technician
- Check all fuel levels – verify diesel tanks are filled
- Verify all AC and DC wiring is pulled
- Inspect diesel fuel system – complete and proper installation
- Inspect air intake and exhaust systems.
 - Inspect air cleaner(s) to ensure proper storage (clean/dry)
 - Verify sufficient air-flow/ventilation for installation
- Discuss testing requirements with contractor / coordinate testing.
 - **ATS testing requires outages to fed loads, we cannot complete and certify a start-up without transferring the ATS.**
- Review project information with assigned technician

By Boyd Cat Technician

- Review submittal and testing requirements prior to job
- Land Gen/ATS/Annunciator control wiring
- Connect pre-charged batteries to engine or fill dry-batteries
- Land and energize shore-power (heater, charger, etc.)
- Start engine and check speed
- Check generator phase rotation against utility at the ATS
- Verify matched phase-phase and phase-neutral voltages

- Make sure automatic transfer switch operates correctly and is adjusted as job specifications requires
- Check all alarms, audible and visual
- Adjust the battery charger charge rate for the type of battery being used
- Check engine, cooling system and fuel system for leaks
- Check coolant protection level after running
- Set engine governors for proper operation if electronic or load share type.
- Perform load bank test or building load test as specified and maintain log if required
- Submit a copy of the factory start-up report for insertion into the branch service department history folder and have customer sign start-up report.

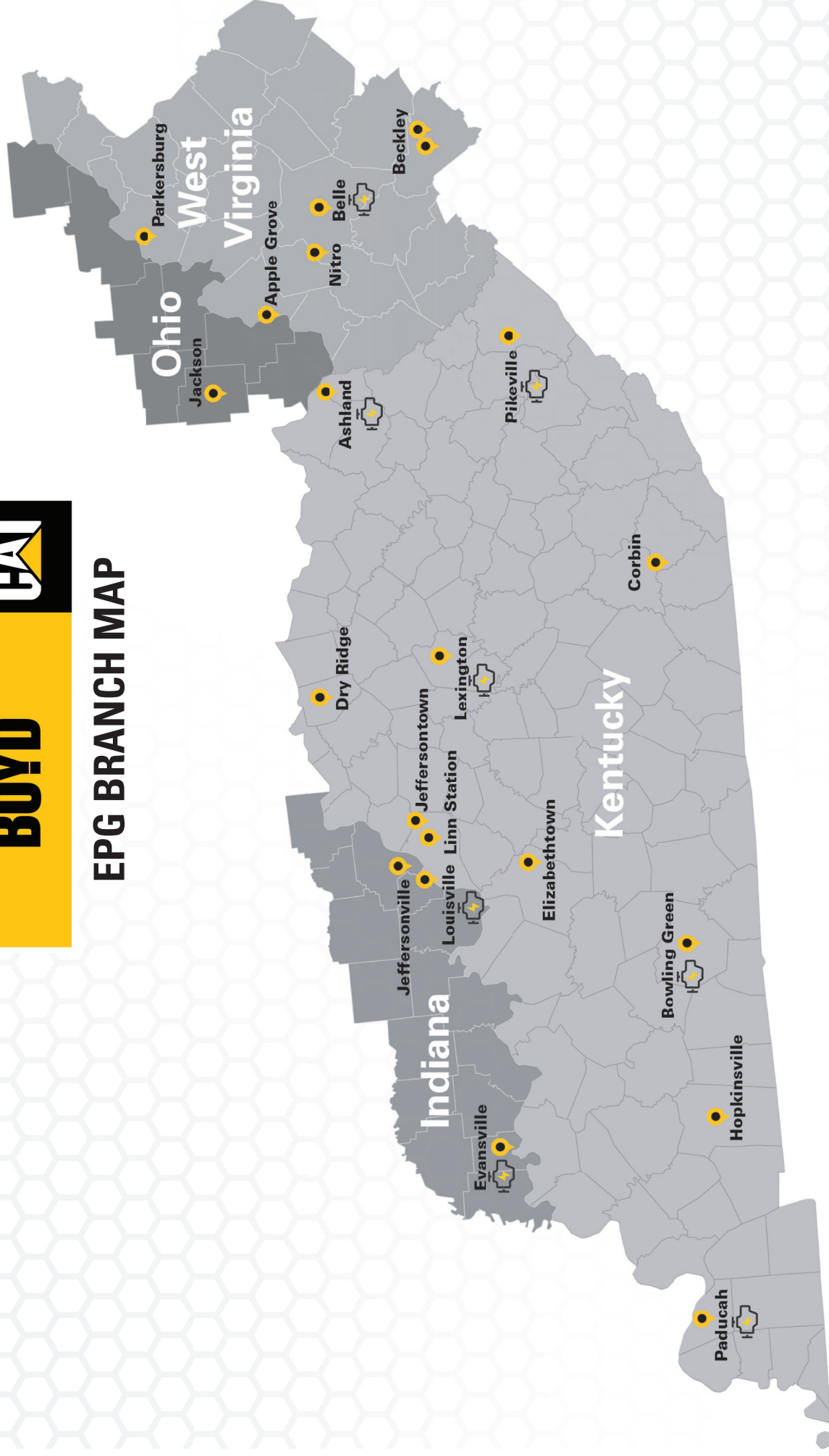
End-user instruction is normally provided by a Boyd Product Support Representative after completion of the start-up.

NOTE: If there are any questions regarding proper installation before, during, or after commissioning, please contact your Boyd Cat representative.

BOYD



EPG BRANCH MAP



Boyd CAT



Dedicated Electric Power Branch

CATERPILLAR LIMITED WARRANTY

Industrial, Petroleum, Locomotive, and Agriculture Engine Products and Electric Power Generation Products

Worldwide

Caterpillar Inc. or any of its subsidiaries ("Caterpillar") warrants new and remanufactured engines and electric power generation products (new and new with Cat® Reman Engines) sold by it (including any products of other manufacturers packaged and sold by Caterpillar), to be free from defects in material and workmanship.

This warranty does not apply to engines sold for use in on-highway vehicle or marine applications; engines in machines manufactured by or for Caterpillar; C175, 3500 and 3600 series engines used in locomotive applications; 3000 Family engines, C0.5 through C4.4 and ACERT™ (C6.6, C7, C7.1, C9, C9.3, C11, C13, C15, C18, C27, and C32) engines used in industrial, mobile agriculture and locomotive applications; or Cat® batteries; or Electric Power Generation products manufactured or assembled and sold in India except GC models, which are covered by this warranty. These products (except for GC models) are covered by other Caterpillar warranties.

This warranty is subject to the following:

Warranty Period

- For industrial engines, engines in a petroleum applications or Petroleum Power Systems (excluding petroleum fire pump application), or engines in a Locomotive application, the warranty period is 12 months after date of delivery to the first user.
- For engines used in petroleum fire pump and mobile agriculture applications the warranty period is 24 months after date of delivery to the first user.
- For standalone controls, configurable and custom switchgear products, (including modernized or retrofitted) and automatic transfer switch products, the warranty period is 24 months after date of delivery to the first user, but not to exceed 30 months from shipment from the Caterpillar place of manufacture.
- For new CG132, CG170 and CG260 series power generation products the warranty period is 24 months after date of delivery to first user, but not to exceed 36 months from shipment from the Caterpillar place of manufacture.
- For electric power generation products other than CG132, CG170 and

CG260 series in prime or continuous applications the warranty period is 12 months. For standby applications the warranty period is 24 months/1000 hours. For emergency standby applications the warranty period is 24 months/400 hours. All terms begin after date of delivery to the first user.

- For other manufacturer branded selective catalytic reduction systems (OMB-SCR) sold thru Caterpillar and installed by Caterpillar or a Cat dealer for use in select Cat 3500 generator sets sold and operating in the United States, the warranty period is 12 months beginning on the date of commissioning of the OMB-SCR. The maximum inventory or time the product is undelivered after receipt by the dealer or customer site is 6 months.
- For all other applications the warranty period is 12 months after date of delivery to the first user.

Caterpillar Responsibilities

If a defect in material or workmanship is found during the warranty period, Caterpillar will, during normal working hours and at a place of business of a Cat dealer or other source approved by Caterpillar:

- Provide (at Caterpillar's choice) new, Remanufactured, or Caterpillar approved repaired parts or assembled components needed to correct the defect.

Note: New, remanufactured, or Caterpillar approved repaired parts or assembled components provided under the terms of this warranty are warranted for the remainder of the warranty period applicable to the product in which installed as if such parts were original components of that product. Items replaced under this warranty become the property of Caterpillar.

- Replace lubricating oil, filters, coolant, and other service items made unusable by the defect.
- Provide reasonable and customary labor needed to correct the defect, including labor to disconnect the product from and reconnect the product to its attached equipment, mounting, and support systems, if required.

For new 3114, 3116, and 3126 engines and, new and Caterpillar rebuild electric power generation products (which includes the following: any new products of other manufacturers packaged and sold by Caterpillar)

- Provide travel labor, up to four hours round trip, if in the opinion of Caterpillar, the product cannot reasonably be transported to a place of business of a Cat dealer or other source approved by Caterpillar (travel labor in excess of four hours round trip, and any meals, mileage, lodging, etc. is the user's responsibility).

For all other products:

- Provide reasonable travel expenses for authorized mechanics, including meals, mileage, and lodging, when Caterpillar chooses to make the repair on-site.

User Responsibilities

The user is responsible for:

- Providing proof of the delivery date to the first user.
- Labor costs, except as stated under "Caterpillar Responsibilities," including costs beyond those required to disconnect the product from and reconnect the product to its attached equipment, mounting, and support systems.
- Travel or transporting costs, except as stated under "Caterpillar Responsibilities."
- Premium or overtime labor costs.
- Parts shipping charges in excess of those that are usual and customary.
- Local taxes, if applicable.
- Costs to investigate complaints, unless the problem is caused by a defect in Caterpillar material or workmanship.
- Giving timely notice of a warrantable failure and promptly making the product available for repair.
- Performance of the required maintenance (including use of proper fuel, oil, lubricants, and coolant) and items replaced due to normal wear and tear.
- Allowing Caterpillar access to all electronically stored data.

Limitations

Caterpillar is not responsible for:

- Failures resulting from any use or installation that Caterpillar judges improper.
- Failures resulting from attachments, accessory items, and parts not sold or approved by Caterpillar.

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- Failures resulting from abuse, neglect, and/or improper repair.
- Failures resulting from user's delay in making the product available after being notified of a potential product problem.
- Failures resulting from unauthorized repairs or adjustments, and unauthorized fuel setting changes.
- Damage to parts, fixtures, housings, attachments, and accessory items that are not part of the engine, Cat Selective Catalytic Reduction System or electric power generation product (including any products of other manufacturers packaged and sold by Caterpillar).
- Repair of components sold by Caterpillar that is warranted directly to the user by their respective manufacturer. Depending on type of application, certain exclusions may apply. Consult your Cat dealer for more information.

PLEASE SEE IMPORTANT TERMS AND CONDITIONS ON PAGE 3 & 4

This warranty covers every major component of the products. Claims under this warranty should be submitted to a place of business of a Cat dealer or other source approved by Caterpillar. For further information concerning either the location to submit claims or Caterpillar as the issuer of this warranty, write Caterpillar Inc., 100 N.E. Adams St., Peoria, IL USA 61629, telephone 1 (309) 675-1000, or go to URL, www.cat.com, Find Your Dealer.

Caterpillar's obligations under this Limited Warranty are subject to, and shall not apply in contravention of, the laws, rules, regulations, directives, ordinances, orders, or statutes of the United States, or of any other applicable jurisdiction, without recourse or liability with respect to Caterpillar.

A) For products operating outside of Australia, Fiji, Nauru, New Caledonia, New Zealand, Papua New Guinea, the Solomon Islands, and Tahiti, the following is applicable:

NEITHER THE FOREGOING EXPRESS WARRANTY NOR ANY OTHER WARRANTY BY CATERPILLAR, EXPRESS OR IMPLIED, IS APPLICABLE TO ANY ITEM CATERPILLAR SELLS THAT IS WARRANTED DIRECTLY TO THE USER BY ITS MANUFACTURER.

THIS WARRANTY IS EXPRESSLY IN LIEU OF ANY OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, EXCEPT CATERPILLAR EMISSION-RELATED COMPONENT WARRANTIES FOR NEW ENGINES, WHERE APPLICABLE. REMEDIES UNDER THIS WARRANTY ARE LIMITED TO THE PROVISION OF MATERIAL AND SERVICES, AS SPECIFIED HEREIN.

CATERPILLAR IS NOT RESPONSIBLE FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES.

CATERPILLAR EXCLUDES ALL LIABILITY FOR OR ARISING FROM ANY NEGLIGENCE ON ITS PART OR ON THE PART OF ANY OF ITS EMPLOYEES, AGENTS, OR REPRESENTATIVES IN RESPECT OF THE MANUFACTURE OR SUPPLY OF GOODS OR THE PROVISION OF SERVICES RELATING TO THE GOODS.

IF OTHERWISE APPLICABLE, THE VIENNA CONVENTION ON CONTRACTS FOR THE INTERNATIONAL SALE OF GOODS IS EXCLUDED IN ITS ENTIRETY.

For personal or family use engines or electric power generation products, operating in the USA, its territories and possessions, some states do not allow limitations on how long an implied warranty may last nor allow the exclusion or limitation of incidental or consequential damages. Therefore, the previously expressed exclusion may not apply to you. This warranty gives you specific legal rights and you may also have other rights, which vary by jurisdiction. To find the location of the nearest Cat dealer or other authorized repair facility, call (800) 447-4986. If you have questions concerning this warranty or its applications, call or write:

In USA and Canada: Caterpillar Inc, 100 N.E. Adams St., Peoria, IL USA 61629, Attention: Customer Service Manager, Telephone 1 (309) 675-1000. Outside the USA and Canada: Contact your Cat dealer, go to URL, www.cat.com, Find Your Dealer.

B) For products operating in Australia, Fiji, Nauru, New Caledonia, New Zealand, Papua New Guinea, the Solomon Islands, and Tahiti, the following is applicable:

THIS WARRANTY IS IN ADDITION TO WARRANTIES AND CONDITIONS IMPLIED BY STATUTE AND OTHER STATUTORY RIGHTS AND OBLIGATIONS THAT BY ANY APPLICABLE

LAW CANNOT BE EXCLUDED, RESTRICTED, OR MODIFIED ("MANDATORY RIGHTS"). ALL OTHER WARRANTIES OR CONDITIONS, EXPRESS OR IMPLIED (BY STATUTE OR OTHERWISE), ARE EXCLUDED. WITHOUT LIMITING THE FOREGOING PROVISIONS OF THIS PARAGRAPH, WHERE A PRODUCT IS SUPPLIED FOR BUSINESS PURPOSES, THE CONSUMER GUARANTEES UNDER THE CONSUMER GUARANTEES ACT 1993 (NZ) WILL NOT APPLY.

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IF THE MANDATORY RIGHTS MAKE CATERPILLAR LIABLE IN CONNECTION WITH SERVICES OR GOODS, THEN TO THE EXTENT PERMITTED UNDER THE MANDATORY RIGHTS, THAT LIABILITY SHALL BE LIMITED AT CATERPILLAR'S OPTION TO (a) IN THE CASE OF SERVICES, THE SUPPLY OF THE SERVICES AGAIN OR THE PAYMENT OF THE COST OF HAVING THE SERVICES SUPPLIED AGAIN AND (b) IN THE CASE OF GOODS, THE REPAIR OR REPLACEMENT OF THE GOODS, THE SUPPLY OF EQUIVALENT GOODS, THE PAYMENT OF THE COST OF SUCH REPAIR OR REPLACEMENT OR THE ACQUISITION OF EQUIVALENT GOODS.

CATERPILLAR EXCLUDES ALL LIABILITY FOR OR ARISING FROM ANY NEGLIGENCE ON ITS PART OR ON THE PART OF ANY OF ITS EMPLOYEES, AGENTS OR REPRESENTATIVES IN RESPECT OF THE MANUFACTURE OR SUPPLY OF GOODS OR THE PROVISION OF SERVICES RELATING TO THE GOODS.

CATERPILLAR IS NOT LIABLE FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES UNLESS IMPOSED UNDER MANDATORY RIGHTS.

IF OTHERWISE APPLICABLE, THE VIENNA CONVENTION ON CONTRACTS FOR THE INTERNATIONAL SALE OF GOODS IS EXCLUDED IN ITS ENTIRETY.

C) For products supplied in Australia:

IF THE PRODUCTS TO WHICH THIS WARRANTY APPLIES ARE:

I. PRODUCTS OF A KIND ORDINARILY ACQUIRED FOR PERSONAL, DOMESTIC OR HOUSEHOLD USE OR CONSUMPTION; OR

II. PRODUCTS THAT COST AUD 100,000 OR LESS,

WHERE THOSE PRODUCTS WERE NOT ACQUIRED FOR THE PURPOSE OF RE-SUPPLY OR FOR THE PURPOSE OF USING THEM UP OR TRANSFORMING THEM IN THE COURSE OF PRODUCTION OR MANUFACTURE OR IN THE COURSE OF REPAIRING OTHER GOODS OR FIXTURES, THEN THIS SECTION C APPLIES.

THE FOLLOWING MANDATORY TEXT IS INCLUDED PURSUANT TO THE AUSTRALIAN CONSUMER LAW AND INCLUDES REFERENCES TO RIGHTS THE USER MAY HAVE AGAINST THE DIRECT SUPPLIER OF THE PRODUCTS: OUR GOODS COME WITH GUARANTEES THAT CANNOT BE EXCLUDED UNDER THE AUSTRALIAN CONSUMER LAW. YOU ARE ENTITLED TO A REPLACEMENT OR REFUND FOR A MAJOR FAILURE AND

COMPENSATION FOR ANY OTHER REASONABLY FORESEEABLE LOSS OR DAMAGE. YOU ARE ALSO ENTITLED TO HAVE THE GOODS REPAIRED OR REPLACED IF THE GOODS FAIL TO BE OF ACCEPTABLE QUALITY AND THE FAILURE DOES NOT AMOUNT TO A MAJOR FAILURE. THE INCLUSION OF THIS TEXT DOES NOT CONSTITUTE ANY REPRESENTATION OR ACCEPTANCE BY CATERPILLAR OF LIABILITY TO THE USER OR ANY OTHER PERSON IN ADDITION TO THAT WHICH CATERPILLAR MAY HAVE UNDER THE AUSTRALIAN CONSUMER LAW.

TO THE EXTENT THE PRODUCTS FALL WITHIN THIS SECTION C BUT ARE NOT OF A KIND ORDINARILY ACQUIRED FOR PERSONAL, DOMESTIC OR HOUSEHOLD USE OR CONSUMPTION, CATERPILLAR LIMITS ITS LIABILITY TO THE EXTENT IT IS PERMITTED TO DO SO UNDER THE AUSTRALIAN CONSUMER LAW TO, AT ITS OPTION, THE REPAIR OR REPLACEMENT OF THE PRODUCTS, THE SUPPLY OF EQUIVALENT PRODUCTS, OR THE PAYMENT OF THE COST OF SUCH REPAIR OR REPLACEMENT OR THE ACQUISITION OF EQUIVALENT PRODUCTS.

THE WARRANTY SET OUT IN THIS DOCUMENT IS GIVEN BY CATERPILLAR INC. OR ANY OF ITS SUBSIDIARIES, 100 N. E. ADAMS ST, PEORIA, IL USA 61629, TELEPHONE 1 309 675 1000, THE USER IS RESPONSIBLE FOR ALL COSTS ASSOCIATED WITH MAKING A CLAIM UNDER THE WARRANTY SET OUT IN THIS DOCUMENT, EXCEPT AS EXPRESSLY STATED OTHERWISE IN THIS DOCUMENT, AND THE USER IS REFERRED TO THE BALANCE OF THE DOCUMENT TERMS CONCERNING CLAIM PROCEDURES, CATERPILLAR RESPONSIBILITIES AND USER RESPONSIBILITIES.

TO THE EXTENT PERMISSIBLE BY LAW, THE TERMS SET OUT IN THE REMAINDER OF THIS WARRANTY DOCUMENT (INCLUDING SECTION B) CONTINUE TO APPLY TO PRODUCTS TO WHICH THIS SECTION C APPLIES.

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