Bickerton Search And Rescue Station Nova Scotia
Emergency Generator Shop Drawing

Public Works and Government Services Canada | Travaux Publics et Services Gouvernementaux Canada

SHOP DRAWING | **DESIGN D'ATELIER**

Reviewed ☐ Revu

Reviewed with Annotation ☑ Revu avec Annotation

Revise and Resubmit ☐ Reviser et Resoumettre

By: Name Hamdi Battikh Par: Nom

Title Professional Electrical Engineer Poste

Signature Date 02 Jan 2018

In accordance with Section 01 33 00 of the Specifications

En conformité avec la section 01 33 00 du devis

Project No.: R.089912.001 Bickerton SAR No. du Projet:

PSPC:

- Advice Departmental Representative 5 working days before shipping to site.
- See additional electrical comments inside.

Specification sheet

Diesel generator set

QSB5 series engine
50-125 kW @ 60 Hz
EPA Tier 3 emissions

Description

Cummins® generator sets are fully integrated power generation systems providing optimum performance, reliability and versatility for stationary Standby applications.

Features

Heavy duty engine - Rugged 4-cycle industrial diesel delivers reliable power and fast response to load changes.

Alternator - Several alternator sizes offer selectable motor starting capability with low reactance 2/3 pitch windings, low waveform distortion with non-linear loads and fault clearing short-circuit capability.

Control system - The PowerCommand® 2.3 electronic control is standard equipment and provides total generator set system integration including automatic remote starting/stopping, precise frequency and voltage regulation, alarm and status message display, output metering, auto-shutdown at fault detection and NFPA 110 Level 1 compliance.

Cooling system - Standard cooling package provides reliable running at up to 50 °C (122 °F) ambient temperature.

Enclosures - The aesthetically appealing enclosure incorporates special designs that deliver one of the quietest generators of its kind. Aluminum material plus durable powder coat paint provides the best anti-corrosion performance. The generator set enclosure has been evaluated to withstand 180 MPH wind loads in accordance with ASCE7 -10. The design has hinged doors to provide easy access for service and maintenance.

Fuel tanks - Dual wall sub-base fuel tanks are offered as optional features, providing economical and flexible solutions to meet extensive code requirements on diesel fuel tanks.

NFPA - The generator set accepts full rated load in a single step in accordance with NFPA 110 for Level 1 systems.

Warranty and service - Backed by a comprehensive warranty and worldwide distributor network.

	Standby 60 Hz		Prime 60 Hz		
Model	**kW**	**kVA**	**kW**	**kVA**	**Data sheets**
C50D6C	50	63	45	56	NAD-6212-EN
C60D6C	60	75	54	68	NAD-6213-EN
C80D6C	80	100	72	90	NAD-6214-EN
C100D6C	100	125	90	113	NAD-6215-EN
C125D6C	125	156	112.5	141	NAD-6216-EN

Generator set specifications

Governor regulation class	ISO8528 Part 1 Class G3
Voltage regulation, no load to full load	± 1.0%
Random voltage variation	± 1.0%
Frequency regulation	Isochronous
Random frequency variation	± 0.50%
Radio frequency emissions compliance	FCC code title 47 part 15 class A and B

Engine specifications

Design	Turbocharged and charge air cooled
Bore	107 mm (4.21 in.)
Stroke	124 mm (4.88 in.)
Displacement	4.5 liters (272 in^3)
Cylinder block	Cast iron, in-line 4 cylinder
Battery capacity	850 amps per battery at ambient temperature of 0 °C (32 °F)
Battery charging alternator	100 amps
Starting voltage	2 x 12 volt in parallel, negative ground
Lube oil filter type(s)	Spin-on with relief valve
Standard cooling system	High ambient radiator
Rated speed	1800 rpm

Alternator specifications

Design	Brushless, 4 pole, drip proof, revolving field
Stator	2/3 pitch
Rotor	Direct coupled, flexible disc
Insulation system	Class H per NEMA MG1-1.65
Standard temperature rise	120 ºC (248 °F) Standby
Exciter type	Torque match (shunt) with PMG as option
Alternator cooling	Direct drive centrifugal blower
AC waveform Total Harmonic Distortion (THDV)	< 5% no load to full linear load, < 3% for any single harmonic
Telephone Influence Factor (TIF)	< 50 per NEMA MG1-22.43
Telephone Harmonic Factor (THF)	< 3%

Available voltages

1-phase	3-phase				
• 120/240	• 120/208	• 120/240	• 277/480	• 347/600	• 127/220

Generator set options

Fuel system
- Basic fuel tanks
- Regional fuel tanks

Engine
- Engine air cleaner – normal or heavy duty
- Shut down – low oil pressure
- Extension – oil drain
- Engine oil heater

Alternator
- 120 °C temperature rise alternator
- 105 °C temperature rise alternator
- PMG excitation
- Alternator heater, 120 V
- Reconnectable full 1 phase output alternator

Control
- AC output analog meters
- Stop switch – emergency
- Auxiliary output relays (2)
- Auxiliary configurable signal inputs (8) and relay outputs (8)

Electrical
- One, two or three circuit breaker configurations
- 80% rated circuit breakers
- 80% or 100% rated LSI circuit breakers
- Battery charger

Enclosure
- Aluminum enclosure Sound Level 1 or Level 2, sandstone or green color
- Aluminum weather protective enclosure with muffler installed, green color

Cooling system
- Shutdown – low coolant level
- Warning – low coolant level
- Extension – coolant drain
- Coolant heater options:
  - <4 °C (40 °F) – cold weather
  - <-18 °C (0 °F) – extreme cold

Exhaust system
- Exhaust connector NPT
- Exhaust muffler mounted

Generator set application
- Base barrier – elevated genset
- Radiator outlet duct adapter

Warranty
- Base warranty – 2 year/1000 hours, Standby
- Base warranty – 1 year/unlimited hours, Prime
- 3 year Standby warranty options
- 5 year Standby warranty options

Our energy working for you.™

Generator set accessories

- Coolant heater
- Battery heater kit
- Engine oil heater
- Remote control displays
- Auxiliary output relays (2)
- Auxiliary configurable signal inputs (8) and relay outputs (8)
- Annunciator – RS485
- Audible alarm
- Remote monitoring device – PowerCommand 500/550
- Battery charger – stand-alone, 12 V
- Circuit breakers
- Enclosure Sound Level 1 to Sound Level 2 upgrade kit
- Base barrier – elevated generator set
- Mufflers – industrial, residential or critical
- Alternator PMG excitation
- Alternator heater

Control system PowerCommand 2.3

PowerCommand 2.3 control - An integrated generator set control system providing voltage regulation, engine protection and operator interface.

Control - Provides battery monitoring and testing features and smart-starting control system.

InPower™ - PC-based service tool available for detailed diagnostics.

PCCNet RS485 - Network interface (standard) to devices such as remote annunciator for NFPA 110 applications.

Control boards - Potted for environmental protection.

Ambient operation - Suitable for operation in ambienet temperatures from -40°C to +70°C and altitudes to 13,000 feet (5,000 meters).

AC protection

- AmpSentry™ protective relay
- Over current warning and shutdown
- Over and under voltage shutdown
- Over and under frequency shutdown
- Over excitation (loss of sensing) fault
- Field overload
- Overload warning
- Reverse kW shutdown
- Reverse Var shutdown
- Short circuit protection

Engine protection

- Overspeed shutdown
- Low oil pressure warning and shutdown
- High coolant temperature warning and shutdown
- Low coolant level warning or shutdown
- Low coolant temperature warning
- High, low and weak battery voltage warning
- Fail to start (overcrank) shutdown
- Fail to crank shutdown
- Redundant start disconnect
- Cranking lockout
- Sensor failure indication
- Low fuel level warning or shutdown
- Emergency stop
- Fuel-in-rupture-basin warning or shutdown

Operator/display panel

- Manual off switch
- 320 x 240 Pixels graphic LED backlight LCD with push button access for viewing engine and alternator data and providing setup, controls, and adjustments (English, Spanish, or French).
- LED lamps indicating genset running, not in auto, common warning, common shutdown, manual run mode and remote start.
- Suitable for operation in ambient temperatures from -20°C to +70°C

Alternator data

- Line-to-Line and Line-to-Neutral AC volts
- 3-phase AC current
- Frequency
- kVa, kW, power factor

Engine data

- DC voltage
- Lube oil pressure
- Coolant temperature

Other data

- Generator set model data
- Start attempts, starts, running hours
- Fault history
- RS485 Modbus® interface
- Data logging and fault simulation (requires InPower service tool)

Digital voltage regulation

- Integrated digital electronic voltage regulator
- 3-phase Line-to-Line sensing
- Configurable torque matching
- Fault current regulation under single or three phase fault conditions

Control functions

- Time delay start and cooldown
- Cycle cranking
- PCCNet interface
- (2) Configurable inputs
- (2) Configurable outputs
- Remote emergency stop
- Automatic Transfer Switch (ATS) control
- Generator set exercise, field adjustable

Options

- Auxiliary output relays (2)
- Remote annunciator with (3) configurable inputs and (4) configurable outputs
- PMG alternator excitation
- PowerCommand 500/550 for remote monitoring and alarm notification (accessory)
- Auxiliary, configurable signal inputs (8) and configurable relay outputs (8)
- AC output analog meters (bargraph)
  - Color-coded graphical display of:
    - 3-phase AC voltage
    - 3-phase current
    - Frequency
    - kVa
- Remote operator panel

Ratings definitions

Emergency Standby Power (ESP):

Applicable for supplying power to varying electrical load for the duration of power interruption of a reliable utility source. Emergency Standby Power (ESP) is in accordance with ISO 8528. Fuel Stop power in accordance with ISO 3046, AS 2789, DIN 6271 and BS 5514.

Limited-Time Running Power (LTP):

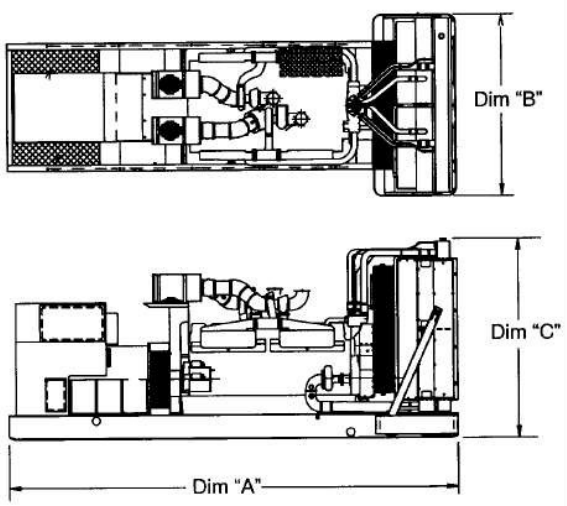
Applicable for supplying power to a constant electrical load for limited hours. Limited Time Running Power (LTP) is in accordance with ISO 8528.

Prime Power (PRP):

Applicable for supplying power to varying electrical load for unlimited hours. Prime Power (PRP) is in accordance with ISO 8528. Ten percent overload capability is available in accordance with ISO 3046, AS 2789, DIN 6271 and BS 5514.

Base Load (Continuous) Power (COP):

Applicable for supplying power continuously to a constant electrical load for unlimited hours. Continuous Power (COP) in accordance with ISO 8528, ISO 3046, AS 2789, DIN 6271 and BS 5514.



This outline drawing is for reference only. See respective model data sheet for specific model outline drawing number.

Do not use for installation design

Model	Dim "A" mm (in.)	Dim "B" mm (in.)	Dim "C" mm (in.)	Set weight*wet kg (lbs.)
Open set				
C50D6C	2482 (98)	965 (38)	1321 (52)	958 (2113)
C60D6C	2482 (98)	965 (38)	1321 (52)	1006 (2217)
C80D6C	2482 (98)	965 (38)	1321 (52)	1054 (2324)
C100D6C	2482 (98)	965 (38)	1321 (52)	1106 (2439)
C125D6C	2482 (98)	965 (38)	1321 (52)	1173 (2586)
Weather protective enclosure				
C50D6C	2482 (98)	1016 (40)	1473 (58)	1039 (2290)
C60D6C	2482 (98)	1016 (40)	1473 (58)	1087 (2396)
C80D6C	2482 (98)	1016 (40)	1473 (58)	1135 (2503)
C100D6C	2482 (98)	1016 (40)	1473 (58)	1187 (2618)
C125D6C	2482 (98)	1016 (40)	1473 (58)	1254 (2765)
Sound attenuated enclosure Level 1				
C50D6C	3016 (119)	1016 (40)	1473 (58)	1221 (2693)
C60D6C	3016 (119)	1016 (40)	1473 (58)	1137 (2507)
C80D6C	3016 (119)	1016 (40)	1473 (58)	1185 (2614)
C100D6C	3016 (119)	1016 (40)	1473 (58)	1237 (2729)
C125D6C	3016 (119)	1016 (40)	1473 (58)	1304 (2876)
Sound attenuated enclosure Level 2				
C50D6C	3456 (136)	1016 (40)	1473 (58)	1228 (2708)
C60D6C	3456 (136)	1016 (40)	1473 (58)	1144 (2522)
C80D6C	3456 (136)	1016 (40)	1473 (58)	1192 (2629)
C100D6C	3456 (136)	1016 (40)	1473 (58)	1244 (2744)
C125D6C	3456 (136)	1016 (40)	1473 (58)	1311 (2891)

* Weights above are average. Actual weight varies with product configuration.

Codes and standards

Codes or standards compliance may not be available with all model configurations – consult factory for availability.

	This generator set is designed in facilities certified to ISO 9001 and manufactured in facilities certified to ISO 9001 or ISO 9002.		The generator set is available Listed to UL 2200, Stationary Engine Generator Assemblies.
	The Prototype Test Support (PTS) program verifies the performance integrity of the generator set design. Cummins products bearing the PTS symbol meet the prototype test requirements of NFPA 110 for Level 1 systems.	**U.S. EPA**	Engine certified to U.S. EPA SI Stationary Emission Regulation 40 CFR, Part 60.
	All low voltage models are CSA certified to product class 4215-01.	**International Building Code**	The generator set is certified to International Building Code (IBC) 2012.

Warning: Back feed to a utility system can cause electrocution and/or property damage. Do not connect to any building's electrical system except through an approved device or after building main switch is open.

For more information contact your local Cummins distributor or visit power.cummins.com

Our energy working for you.™

NAS-6211-EN (10/17)

Generator set data sheet

Model:	**C50D6C**
Frequency:	**60 Hz**
Fuel type:	**Diesel**
kW rating:	**50 Standby** **45 Prime**
Emissions level:	**EPA Tier 3, stationary emergency**

Exhaust emission data sheet:	**EDS-1250**
Exhaust emission compliance sheet:	**EPA-1350**
Sound performance data sheet:	**MSP-1300**
Cooling performance data sheet:	**MCP-1400**
Prototype test summary data sheet:	**PTS-450**

Fuel consumption

	Standby				Prime			
	kW (kVA)				kW (kVA)			
Ratings	50 (63)				45 (56)			
Load	**1/4**	**1/2**	**3/4**	**Full**	**1/4**	**1/2**	**3/4**	**Full**
US gph	2.10	2.90	4.00	5.30	2.00	2.70	3.70	4.70
L/hr	7.95	10.98	15.14	20.06	7.57	10.22	14.00	17.79

Engine

	Standby rating	Prime rating
Engine manufacturer	Cummins Inc.	
Engine model	QSB5-G5	
Configuration	Cast iron, in-line, 4 cylinder	
Aspiration	Turbocharged and charge air-cooled	
Gross engine power output, kWm (bhp)	131 (176)	113 (152)
BMEP at set rated load, kPa (psi)	1027 (149)	928 (134.6)
Bore, mm (in.)	107 (4.21)	
Stroke, mm (in.)	124 (4.88)	
Rated speed, rpm	1800	
Piston speed, m/s (ft/min)	7.44 (1464)	
Compression ratio	17.3:1	
Lube oil capacity, L (qt)	12.2 (12.9)	
Overspeed limit, rpm	2250	

Fuel flow

Maximum fuel flow, L/hr (US gph)	133 (35.0)
Maximum fuel inlet restriction with clean filter, mm Hg (in Hg)	127 (5.0)

Air

	Standby rating	Prime rating
Combustion air, m^3/min (scfm)	9.17 (324)	8.86 (313)
Maximum air cleaner restriction with clean filter, kPa (in H_2O)	1.25 (5)	

Exhaust

Exhaust flow at set rated load, m^3/min (cfm)	17.2 (609)	16.4 (580)
Exhaust temperature, °C (°F)	328 (622)	309 (589)
Maximum back pressure, kPa (in H_2O)	10 (40.18)	10 (40.18)
Available exhaust back pressure with CPG sound level 2 enclosure muffler, kPa (in H_2O)	4.5 (18.1)	5 (20.1)
Available exhaust back pressure with CPG weather enclosure muffler, kPa (in H_2O)	5 (20.1)	5.5 (22.1)

Standard set-mounted radiator cooling[1]

Ambient design, °C (°F)	50 (122)	
Fan load, kW_m (HP)	5.22 (7)	
Coolant capacity (with radiator), L (US gal)	16 (4.2)	
Cooling system air flow, m^3/min (scfm)	218.04 (7700)	
Total heat rejection, MJ/min (Btu/min)	8.12 (7693)	7.64 (7245)
Maximum cooling air flow static restriction, kPa (in H_2O)	0.12 (0.5)	

Weights[2]

Unit wet weight kgs (lbs)	958 (2113)

Notes:
[1] For non-standard remote installations contact your local Cummins representative.
[2] Weights represent a set with standard features. See outline drawing for weights of other configurations.

Derating factors

Standby	Engine power available up to 2012 m (6,600 ft) and ambient temperatures up to 40 °C (104 °F). Above these conditions, derate at 17% per 300 m (1,000 ft) and 16% per 10 °C (18 °F).
Prime	Engine power available up to 2073 m (6,800 ft) and ambient temperatures up to 40 °C (104 °F). Above these conditions, derate at 17% per 300 m (1,000 ft) and 19% per 10 °C (18 °F).

Ratings definitions

Emergency Standby Power (ESP):	Limited-Time Running Power (LTP):	Prime Power (PRP):	Base Load (Continuous) Power (COP):
Applicable for supplying power to varying electrical load for the duration of power interruption of a reliable utility source. Emergency Standby Power (ESP) is in accordance with ISO 8528. Fuel Stop power in accordance with ISO 3046, AS 2789, DIN 6271 and BS 5514.	Applicable for supplying power to a constant electrical load for limited hours. Limited-Time Running Power (LTP) is in accordance with ISO 8528.	Applicable for supplying power to varying electrical load for unlimited hours. Prime Power (PRP) is in accordance with ISO 8528. Ten percent overload capability is available in accordance with ISO 3046, AS 2789, DIN 6271 and BS 5514.	Applicable for supplying power continuously to a constant electrical load for unlimited hours. Continuous Power (COP) is in accordance with ISO 8528, ISO 3046, AS 2789, DIN 6271 and BS 5514.

Alternator data

Standard alternators	Single phase table	Three phase table				
Maximum temperature rise above 40 °C ambient	120 °C	120 °C	120 °C	120 °C	120 °C	120 °C
Feature code	BB90-2	B946-2	B986-2	B943-2	B952-2	BB86-2
Alternator data sheet number	ADS-203	ADS-202	ADS-202	ADS-202	ADS-202	ADS-202
Voltage ranges	120/240	120/208	120/240	277/480	347/600	127/220
Voltage feature code	R104-2	R098-2	R106-2	R002-2	R114-2	R020-2
Surge kW	59.1	61.7	61.7	61.6	61.6	61.0
Motor starting kVA (at 90% sustained voltage) Shunt	188	163	163	163	163	163
Motor starting kVA (at 90% sustained voltage) PMG	221	191	191	191	191	191
Full load current amps at Standby rating	208.3	174	151	75.3	60.2	164

Notes:

[1] Single phase power can be taken from a three phase generator set at up to 2/3 set rated 3-phase kW at 1.0 power factor. Also see Note 3 below.

[2] The broad range alternators can supply single phase output up to 2/3 set rated 3-phase kW at 1.0 power factor.

[3] The extended stack (full single phase output) and 4 lead alternators can supply single phase output up to full set rated 3-phase kW at 1.0 power factor.

Formulas for calculating full load currents:

Three phase output

$$\frac{\text{kW} \times 1000}{\text{Voltage} \times 1.73 \times 0.8}$$

Single phase output

$$\frac{\text{kW} \times \text{SinglePhaseFactor} \times 1000}{\text{Voltage}}$$

Warning: Back feed to a utility system can cause electrocution and/or property damage. Do not connect to any building's electrical system except through an approved device or after building main switch is open.

For more information contact your local Cummins distributor or visit power.cummins.com

Our energy working for you.™

NAD-6212-EN (10/17)

Alternator data sheet

Frame size: UC2F

Characteristics

Weights:	Wound stator assembly:	243 lb	110 kg
	Rotor assembly:	247 lb	112 kg
	Complete alternator:	732 lb	332 kg
Maximum speed:		2250 rpm	
Excitation current:	Full load:	2 Amps	
	No load:	0.5 Amps	
Insulation system:	Class H throughout		

1 Ø Ratings (1.0 power factor)		**60 Hz**			**50 Hz**	
(Based on specific temperature rise at 40 °C ambient temperature)		Double delta	4 lead		Double delta	
		120/240	120/240		110-120 220-240	
125 °C rise ratings	kW/kVA	56/56	60/60		49/49	
105 °C rise ratings	kW/kVA	50/50	54/54		44/44	

3 Ø Ratings (0.8 power factor)		Upper broad range		LBR*	347/600	Broad range		
(Based on specified temperature rise at 40 °C ambient temperature)		120/208 240/416	139/240 277/480	190-208 380-416	347/600	110/190 220/380	120/208 240/415	127/220 254/440
150 °C Rise ratings	kW	71	79	72	79	62	62	59
	kVA	89	99	89	99	77	77	74
125 °C Rise ratings	kW	67	75	68	75	58	58	56
	kVA	84	94	85	94	73	73	70
105 °C Rise ratings	kW	60	66	60	66	52	52	50
	kVA	75	83	75	83	65	65	62
80 °C Rise ratings	kW	52	57	52	57	45	45	43
	kVA	65	72	65	72	56	56	53

3 Ø Reactances (per unit, ± 10%)							
(Based on full load at 105 °C rise rating)							
Synchronous	2.27	1.87	1.95	1.63	2.04	1.71	1.45
Transient	0.17	0.14	0.15	0.13	0.16	0.14	0.12
Subtransient	0.13	0.11	0.11	0.11	0.11	0.09	0.08
Negative sequence	0.13	0.11	0.11	0.11	0.12	0.10	0.09
Zero sequence	0.09	0.07	0.07	0.07	0.09	0.07	0.06

3 Ø Motor starting						
Maximum kVA	(Shunt)	231	231	231	156	
(90% sustained voltage)	(PMG)	272	272	272	194	

Time constants (Sec)					
Transient	0.030	0.030	0.030	0.030	
Subtransient	0.008	0.008	0.008	0.008	
Open circuit	0.750	0.750	0.750	0.750	
DC	0.007	0.007	0.007	0.007	

Alternator data sheet

Frame size: UC2F

Windings	(@ 20° C)				
Stator resistance	(Line to Line, Ohms)	0.1300	0.0960	0.2040	0.1300
Rotor resistance	(Ohms)	0.8000	0.8000	0.8000	0.8000
Number of leads		12	12	6	12

* Lower broad range 110/190 thru 120/208, 220/380 thru 240/416.

Exhaust emission data sheet
C50D6C
60 Hz Diesel generator set

Engine information:			
Model:	Cummins QSB5-G5	Bore:	4.21 in. (106.9 mm)
Type:	4 cycle, in-line, 4 cylinder diesel	Stroke:	4.88 in. (123.9 mm)
Aspiration:	Turbocharged	Displacement:	272 cu. in. (4.45 liters)
Compression ratio:	17.3:1		
Emission control device:	Turbocharged and charge air-cooled		

Performance data	1/4 Standby	1/2 Standby	3/4 Standby	Full Standby	Full Prime
BHP @ 1800 RPM (60 Hz)	23	47	70	93	84
Fuel consumption (gal/Hr)	2.1	2.9	4.0	5.3	4.7
Exhaust gas flow (CFM)	285	397	511	609	580
Exhaust gas temperature (°F)	408	500	560	622	589
Exhaust emission data					
HC (Total unburned hydrocarbons)	0.26	0.10	0.07	0.06	0.06
NOx (Oxides of nitrogen as NO2)	3.22	2.29	2.33	2.23	2.26
CO (Carbon monoxide)	1.53	0.73	0.54	0.53	0.50
PM (Particular Matter)	0.27	0.15	0.12	0.09	0.11
Smoke (Bosch)	0.71	0.75	0.78	0.78	0.82

All values are Grams per HP - Hour

Test conditions

Data is representative of steady-state engine speed (± 25 RPM) at designated genset loads. Pressures, temperatures, and emission rates were stabilized.

Fuel specification:	ASTM D975 No. 2-D diesel fuel with 0.03-0.05% sulfur content (by weight), and 40-48 cetane number.
Fuel temperature:	99 ± 9 °F (at fuel pump inlet)
Intake air temperature:	77 ± 9 °F
Barometric pressure:	29.6 ± 1 in. Hg
Humidity:	NOx measurement corrected to 75 grains H2O/lb dry air
Reference standard:	ISO 8178

The NOx, HC, CO and PM emission data tabulated here are representative of test data taken from a single engine under the test conditions shown above. Data for the other components are estimated. These data are subjected to instrumentation and engine-to-engine variability. Field emission test data are not guaranteed to these levels. Actual field test results may vary due to test site conditions, installation, fuel specification, test procedures and instrumentation. Engine operation with excessive air intake or exhaust restriction beyond published maximum limits, or with improper maintenance, may results in elevated emission levels.

High ambient air temperature radiator cooling system

	Fuel type	Duty	Rating (kW)	Max cooling @ air flow static restriction, unhoused (inches water/mm water)					Housed in free air, no air discharge restriction		
				0.0/0.0	0.25/6.4	0.5/12.7	0.75/19.1	1.0/25.4	F231	F217	F216
				Maximum allowable ambient temperature, degree C							
60 Hz	Diesel	Standby	50	50	50	50	50	N/A	50	50	50
		Prime	45	50	50	50	50	N/A	50	50	50

Notes:

1. Data shown are anticipated cooling performance for typical generator set.
2. Cooling data is based on 1000 ft (305 m) site test location.
3. Generator set power output may need to be reduced at high ambient conditions. Refer generator set data sheet for derate schedules.
4. Cooling performance may be reduced due to several factors including but not limited to: Incorrect installation, improper operation, fouling of the cooling system, and other site installation variables.

Sound data
C50D6C 60 Hz

Sound pressure level @ 7 meters, dB(A)

See notes 2,5,7-11 listed below

Configuration	Exhaust system	Position (note 1)								8 Position average
		1	2	3	4	5	6	7	8	
Standard – unhoused	Infinite exhaust	77.2	79.5	79.4	81.8	78.5	81.1	80.6	79.7	79.9
F216-2 weather protective aluminium	Mounted	78.2	79.6	78.1	81.5	80.5	80.6	79.2	79.2	79.7
F231-2 sound attenuated level 1, aluminium	Mounted	78.1	74.8	70.3	72.5	72.2	72.7	71.9	74.9	74.1
F217-2 sound attenuated level 2, aluminium	Mounted	71.2	70.9	67.7	70.1	70.1	70.4	70.1	71.1	70.3

Sound power level, dB(A)

See notes 2-4, 7 and 8 listed below

Configuration		Octave band center frequency (Hz)										Overall sound power level
		31.5	63	125	250	500	1000	2000	4000	8000	1600	
Standard – unhoused	Infinite exhaust	53.8	79.2	87.4	92.0	100.2	102.0	100.9	97.1	92.4	87.5	106.8
F216-2 weather protective enclosure, aluminium	Mounted	55.3	85.3	93.1	94.8	99.7	101.4	99.6	96.2	91.4	81.9	106.4
F231-2 sound attenuated level 1 enclosure, aluminium	Mounted	58.4	84.0	87.6	89.7	95.6	96.4	94.8	91.7	87.3	79.4	100.7
F217-2 sound attenuated level 2 enclosure, aluminium	Mounted	57.4	83.8	87.2	87.8	92.4	91.3	89.4	86.8	82.5	71.6	97.8

Exhaust sound power level, dB(A)

See notes 4,6 and 9 listed below

Open exhaust (no muffler) @ rated load	Octave band center frequency (Hz)									Overall sound power level
	31.5	63	125	250	500	1000	2000	4000	8000	
	54	81	96	102	107	110	111	109	108	117

Note:

1. Sound pressure levels at 1 meter are measured per the requirements of ISO 3744, ISO 8528-10, ANSI S1.13, ANSI S12.1 and European Communities Directive 2000/14/EC as applicable. The microphone measurement locations are 1 meter from a reference parallelepiped just enclosing the generator set (enclosed or unenclosed).
2. Seven-meter measurement location 1 is 7 meters (23 feet) from the generator (alternator) end of the generator set, and the locations proceed counter clockwise around the generator set at 45° angles at a height of 1.2 meters (48 inches) above the ground surface.
3. Sound Power Levels are calculated according to ISO 3744, ISO 8528-10, and or CE (European Union) requirements.
4. Exhaust Sound Levels are measured and calculated per ISO 6798, Annex A.
5. Reference Sound Pressure Level is 20 µPa.
6. Reference Sound Power Level is 1 pW (10-12 Watt).
7. Sound data for remote-cooled generator sets are based on rated loads without cooling fan noise.
8. Sound data for the generator set with infinite exhaust do not include the exhaust noise contribution.
9. Sound levels are subject to instrumentation, measurement, installation, and manufacturing variability

10. Unhoused/Open configuration generator sets refers to generator sets with no sound enclosures of any kind
11. Housed/Enclosed/Closed/Canopy configuration generator sets refer to generator sets that have noise reduction sound enclosuresinstalled over the generator set and usually integrally attached to the skid base/base frame/fuel container base of the generator set.

PTC® Creo® Parametric

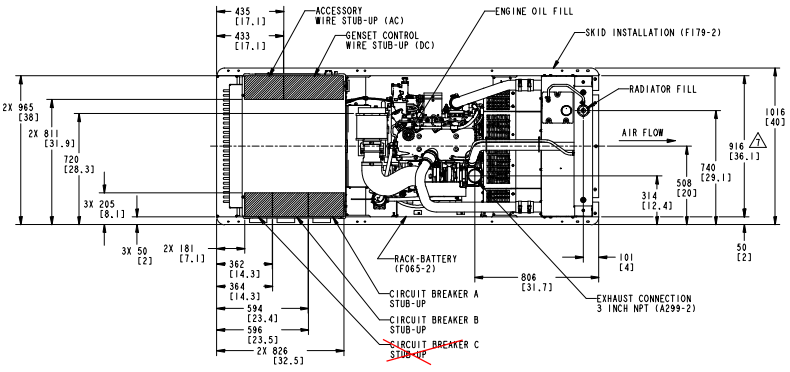
REV. NO	REV	AR	REVISION	MFR	CHD	APVD	DATE
ECO-160476	A	1	PRODUCTION RELEASE	DAH	DAH	JAWALE	17MAR16

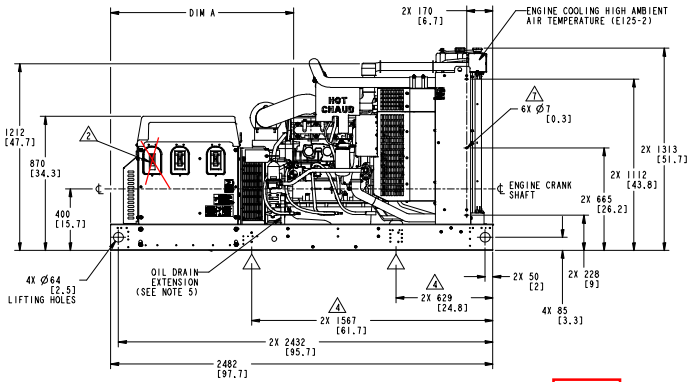
NOTES:

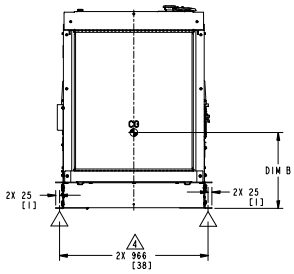
1. DIMENSIONS SHOWN IN [ ] ARE IN INCHES.
2. REFER TO CIRCUIT BREAKER OUTLINE DRAWING FOR ELECTRICAL STUB-UP AREA FOR SPECIFIC BREAKERS.
3. CONTROL INTERFACE CONNECTION SHOULD BE MADE WITH FLEXIBLE CONNECTIONS.
4. Ø21 [0.8] HOLES MARKED BY 4 FOR SECURING TO MOUNTING SURFACE.
5. OIL DRAIN EXTENSION: 5/8 INCH HOSE ID.
6. FOR IBC SEISMIC CERTIFIED INSTALLATION, SEE GENSET IBC SEISMIC INSTALLATION REQUIREMENT DRAWING.
7. Ø7.3 HOLES FOR OPTIONAL COOLING EXHAUST AIR DUCT ADAPTER.
8. REFER TO GENSET FOUNDATION OUTLINE FOR ELECTRICAL AND OTHER FOUNDATION SPECIFICS.
9. GENSET SUPPLIED WITH FLEXIBLE FUEL LINE(S) THAT CAN BE CONNECTED TO GENSET INTERFACE POINT(S).
   9.1 FUEL SUPPLY LINE: 686 [27.0] LONG WITH 1/4" JIC MALE TERMINATION.

TABULATION

ALT DATA SHEET #	DIM A	DIM B	GENSET WET WEIGHT	
			KG	LB
ADS-202	1092	456	1090	2403
ADS-203	1207	495	986	2173
ADS-204	1184	492	1006	2217
ADS-205	1125	486	1054	2324
ADS-206	1086	482	1082	2386
ADS-207	1060	480	1106	2439
ADS-208	998	473	1173	2586
ADS-209	958	469	1211	2670



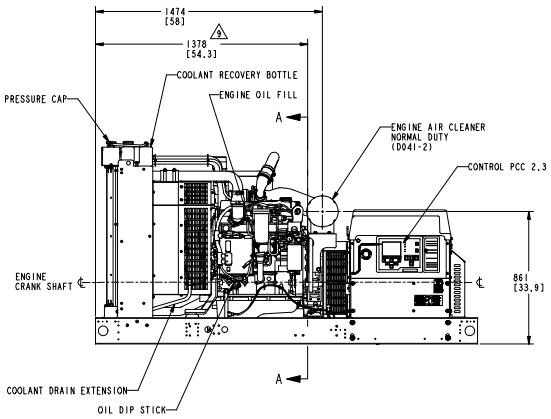


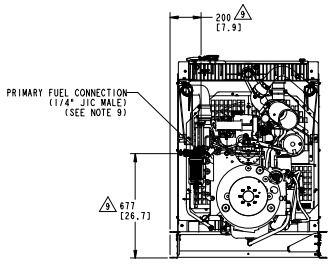


C50 D6C, C60 D6C, C80 D6C, C100 D6C, C125 D6C

UNLESS OTHERWISE SPECIFIED, ALL DIMENSIONS ARE IN MILLIMETERS
DRN D HOFMEISTER
CHD D HOFMEISTER
APVD M JAWALE
DATE 17MAR16
DO NOT SCALE PRINT
SCALE 1:32
CUMMINS POWER GENERATION
OUTLINE,GENSET
SITE CODE
PGF
SIZE D
A054Y897
SHEET 1 OF 2
ARROW

Drawing Name: A054Y898 Revision: A
Part Name: A054Y897 Revision: A
ECO-160476 Sheet 1 of 3





SECTION A-A

C50 D6C, C60 D6C, C80 D6C,
C100 D6C, C125 D6C

REV	BY	REVISION	DRN	CKD	APVD	DATE
ECO-160476	A	1	PRODUCTION RELEASE	DAH	DAH	JAWALE	17MAR16

UNLESS OTHERWISE SPECIFIED, ALL DIMENSIONS ARE IN MILLIMETERS

X	±1	0.00- 4.99 +0.15/-0.00
.X	±0.4	5.00- 9.99 +0.20/-0.15
.XX	±0.38	10.00-17.49 +0.25/-0.15
		17.50-24.99 +0.30/-0.15

ANG TOL ± 1.0° | SCALE 3:32

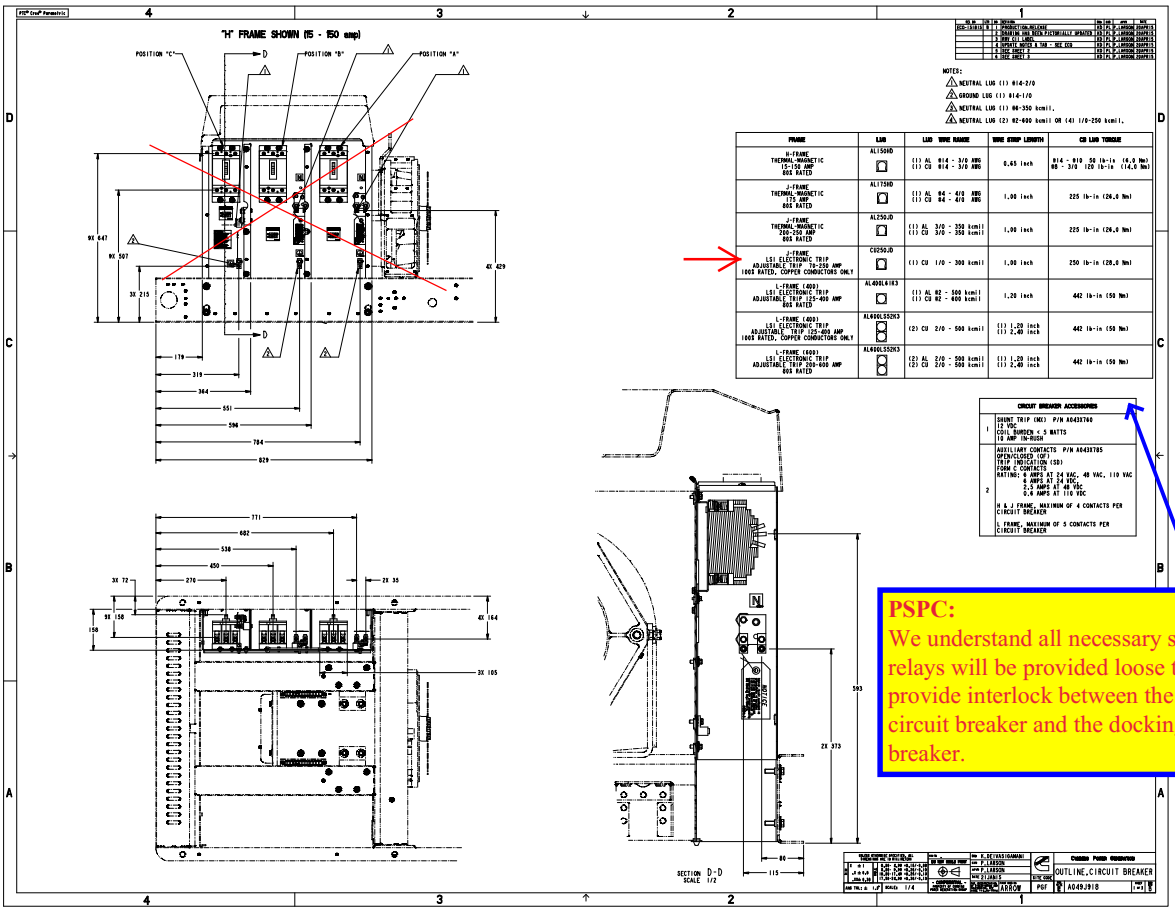
DRN D HOFMEISTER
CKD D HOFMEISTER
APVD M JAWALE
DATE 17MAR16

CUMMINS POWER GENERATION

OUTLINE,GENSET

SITE CODE PGF

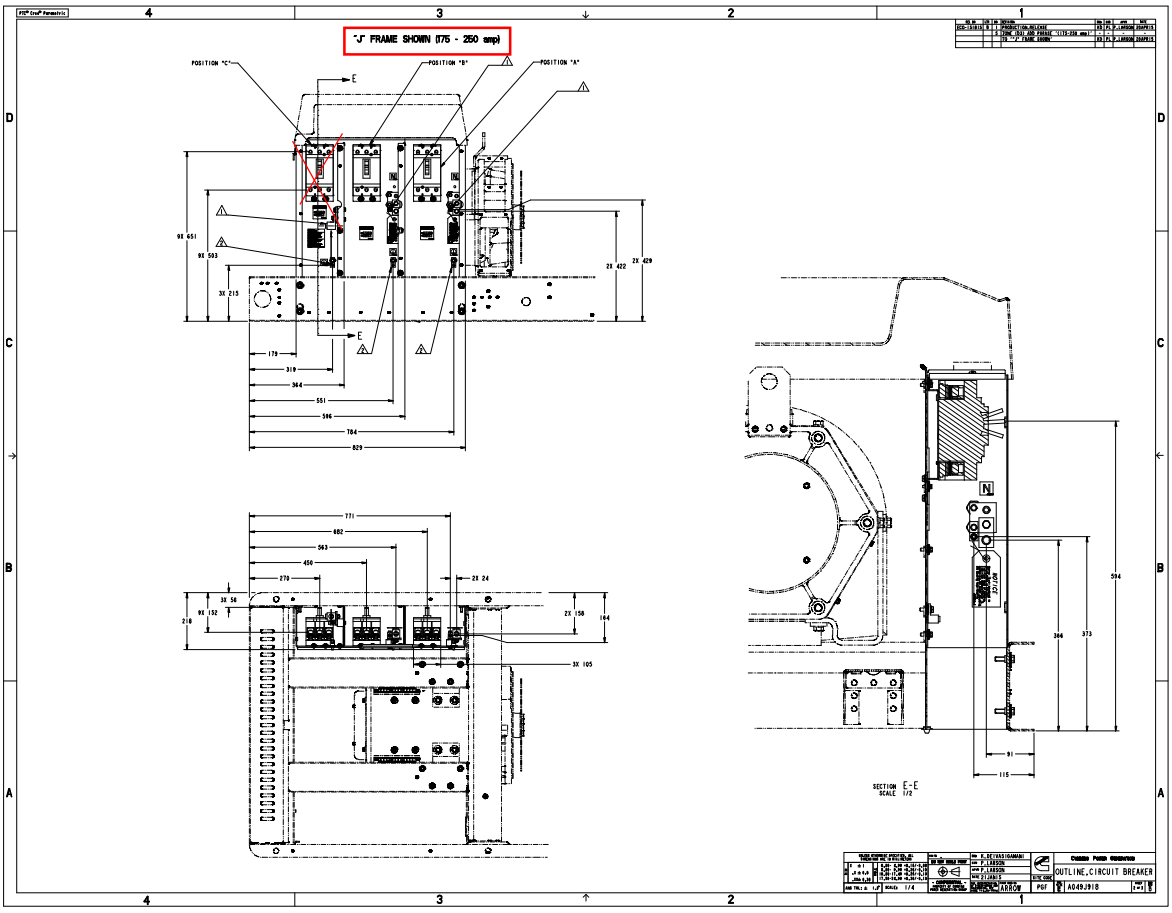
SIZE D | DWG NO A054Y897 | REV A | SHEET 2 OF 2



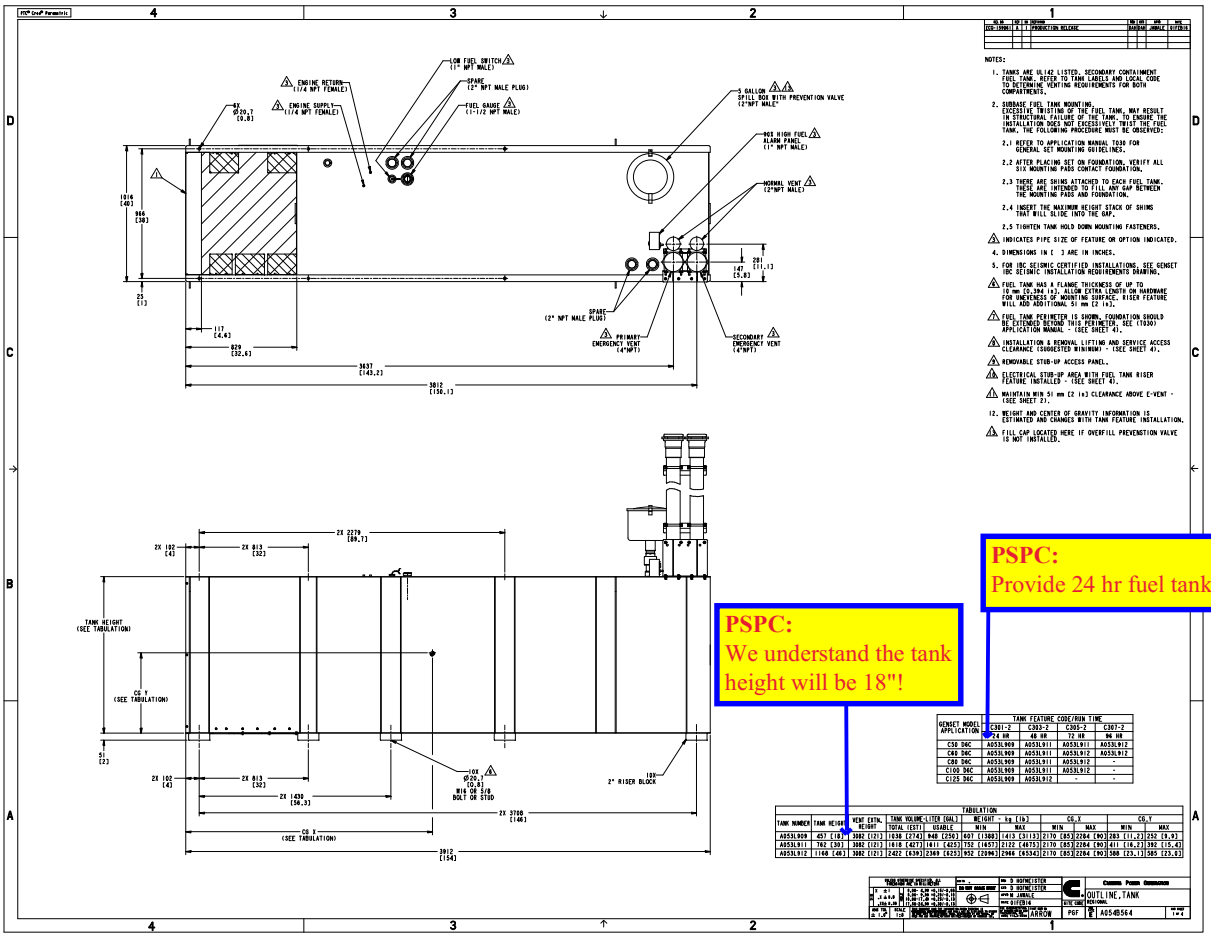
FRAME	LUG	LUG WIRE RANGE	WIRE STRIP LENGTH	CU LUG TORQUE
H-FRAME THERMAL-MAGNETIC 15-150 AMP 600 RATED	AL150HD	(1) AL #14 - 3/0 AWG (1) CU #14 - 3/0 AWG	0.40 inch	#14 - #10 50 lb-in (6.0 Nm) #8 - 3/0 120 lb-in (14.0 Nm)
J-FRAME THERMAL-MAGNETIC 125 AMP 600 RATED	AL175HD	(1) AL #4 - 4/0 AWG (1) CU #4 - 4/0 AWG	1.00 inch	225 lb-in (26.0 Nm)
J-FRAME THERMAL-MAGNETIC 200-250 AMP 600 RATED	AL250JD	(1) AL 3/0 - 350 kcmil (1) CU 3/0 - 350 kcmil	1.00 inch	225 lb-in (26.0 Nm)
J-FRAME LSI ELECTRONIC TRIP ADJUSTABLE TRIP 70-250 AMP 1600 RATED, COPPER CONDUCTORS ONLY	CU250JD	(1) CU 1/0 - 300 kcmil	1.00 inch	250 lb-in (28.0 Nm)
L-FRAME (600) LSI ELECTRONIC TRIP ADJUSTABLE TRIP 125-400 AMP 600 RATED	AL400L61E3	(1) AL #2 - 500 kcmil (1) CU #2 - 400 kcmil	1.20 inch	442 lb-in (50 Nm)
L-FRAME (600) LSI ELECTRONIC TRIP ADJUSTABLE TRIP 200-600 AMP 1600 RATED, COPPER CONDUCTORS ONLY	AL400L552N3	(2) CU 2/0 - 500 kcmil	(1) 1.20 inch (1) 2.40 inch	442 lb-in (50 Nm)
L-FRAME (600) LSI ELECTRONIC TRIP ADJUSTABLE TRIP 200-600 AMP 600 RATED	AL400L552N3	(2) AL 2/0 - 500 kcmil (2) CU 2/0 - 500 kcmil	(1) 1.20 inch (1) 2.40 inch	442 lb-in (50 Nm)

PSPC:
We understand all necessary shunt trips & relays will be provided loose to be used to provide interlock between the generator main circuit breaker and the docking panel circuit breaker.

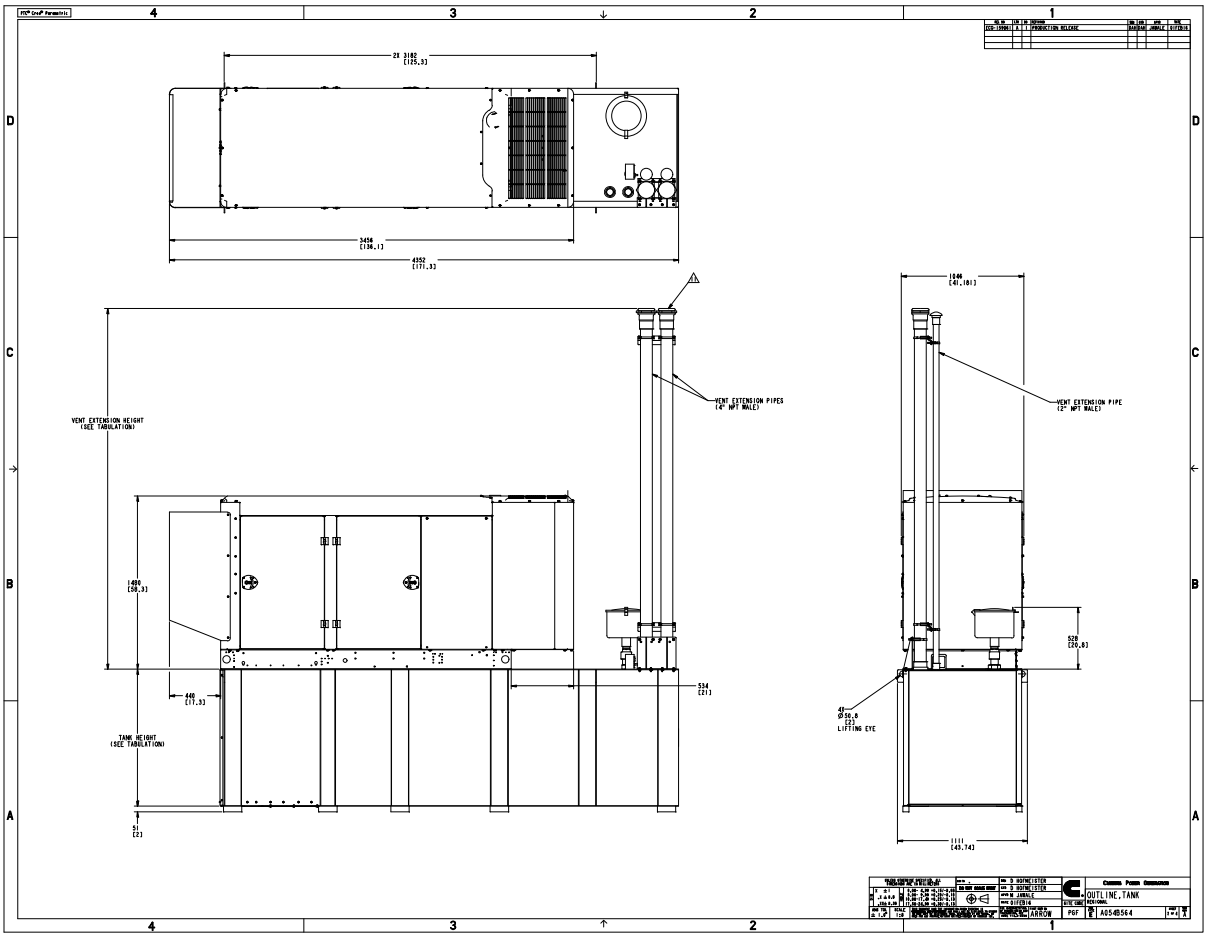
Drawing Name: A049J919 Revision: B
Part Name: A049J918 Revision: B
Sheet 1 of 4



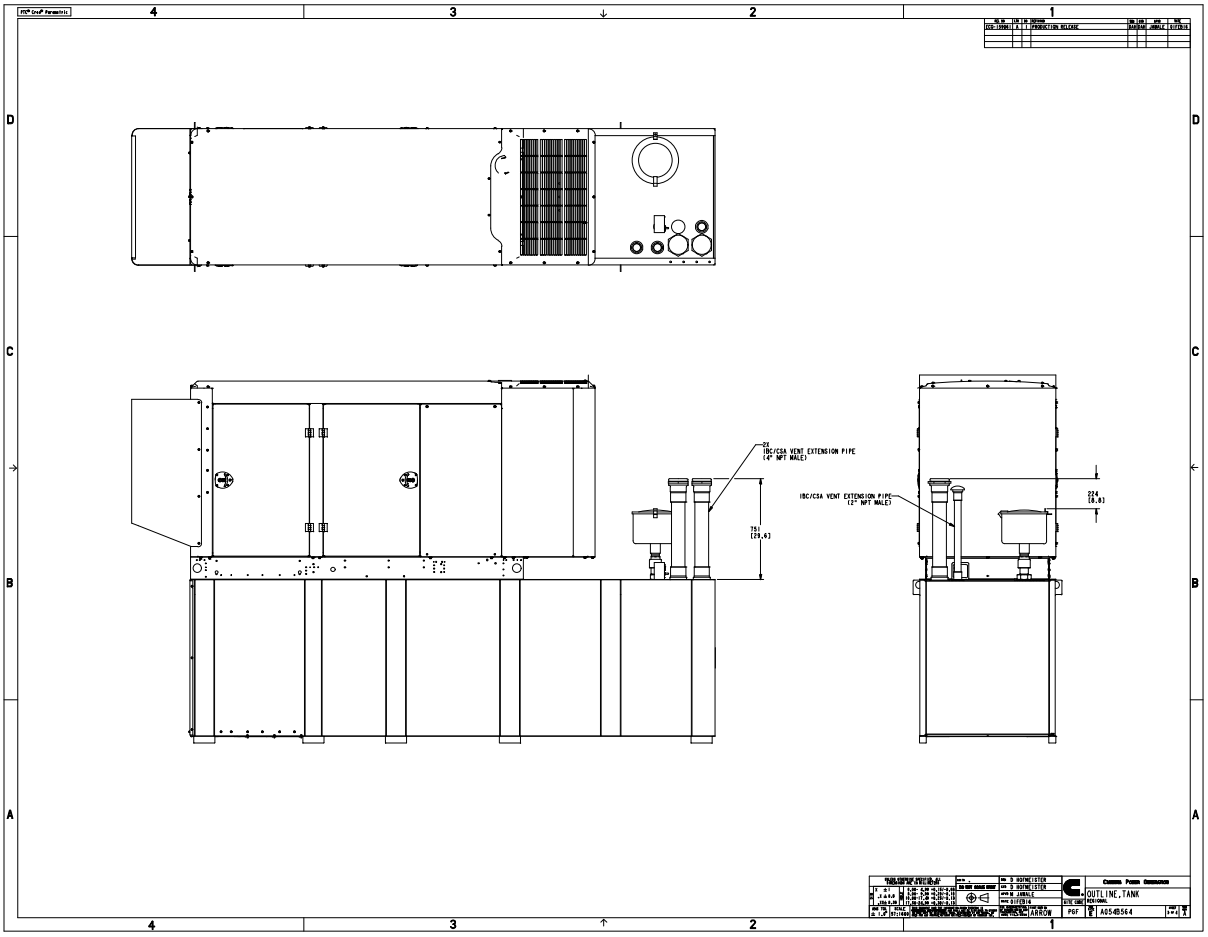
Drawing Name: A049J919 Revision: B
Part Name: A049J918 Revision: B
Sheet 2 of 4



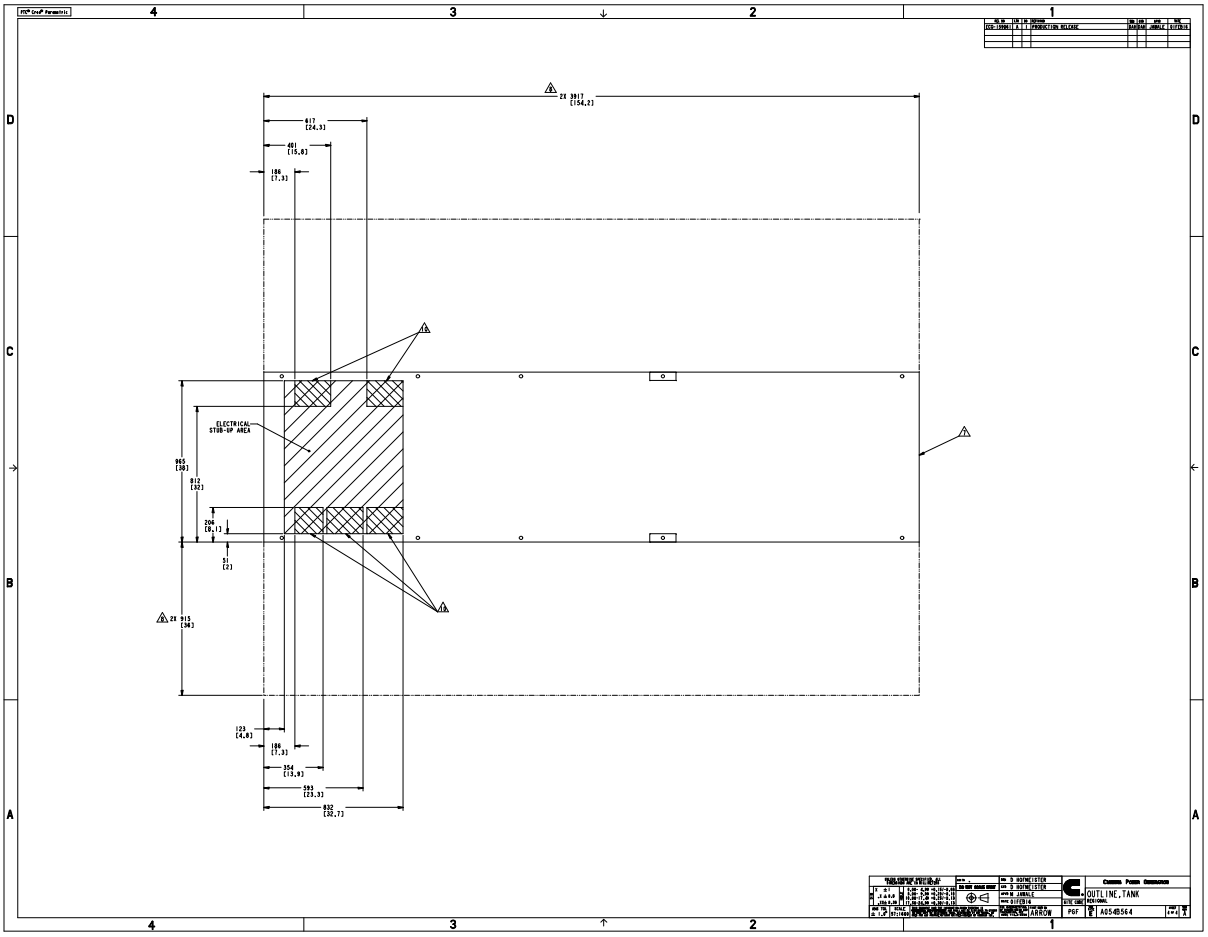
Drawing Name: A054B565 Revision: A
Part Name: A054B564 Revision: A
Sheet 1 of 5



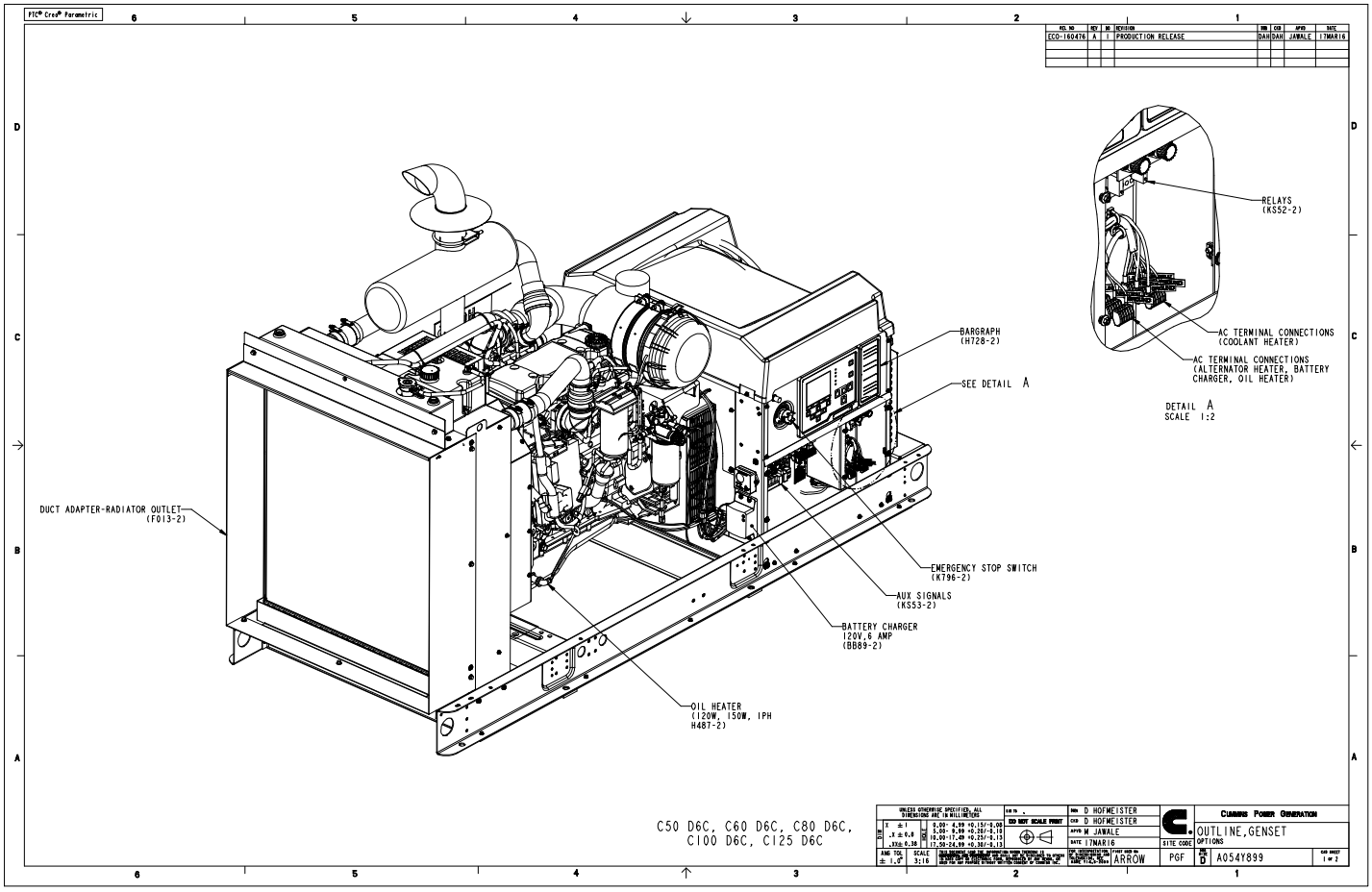
Drawing Name: A054B565 Revision: A
Part Name: A054B564 Revision: A
Sheet 2 of 5



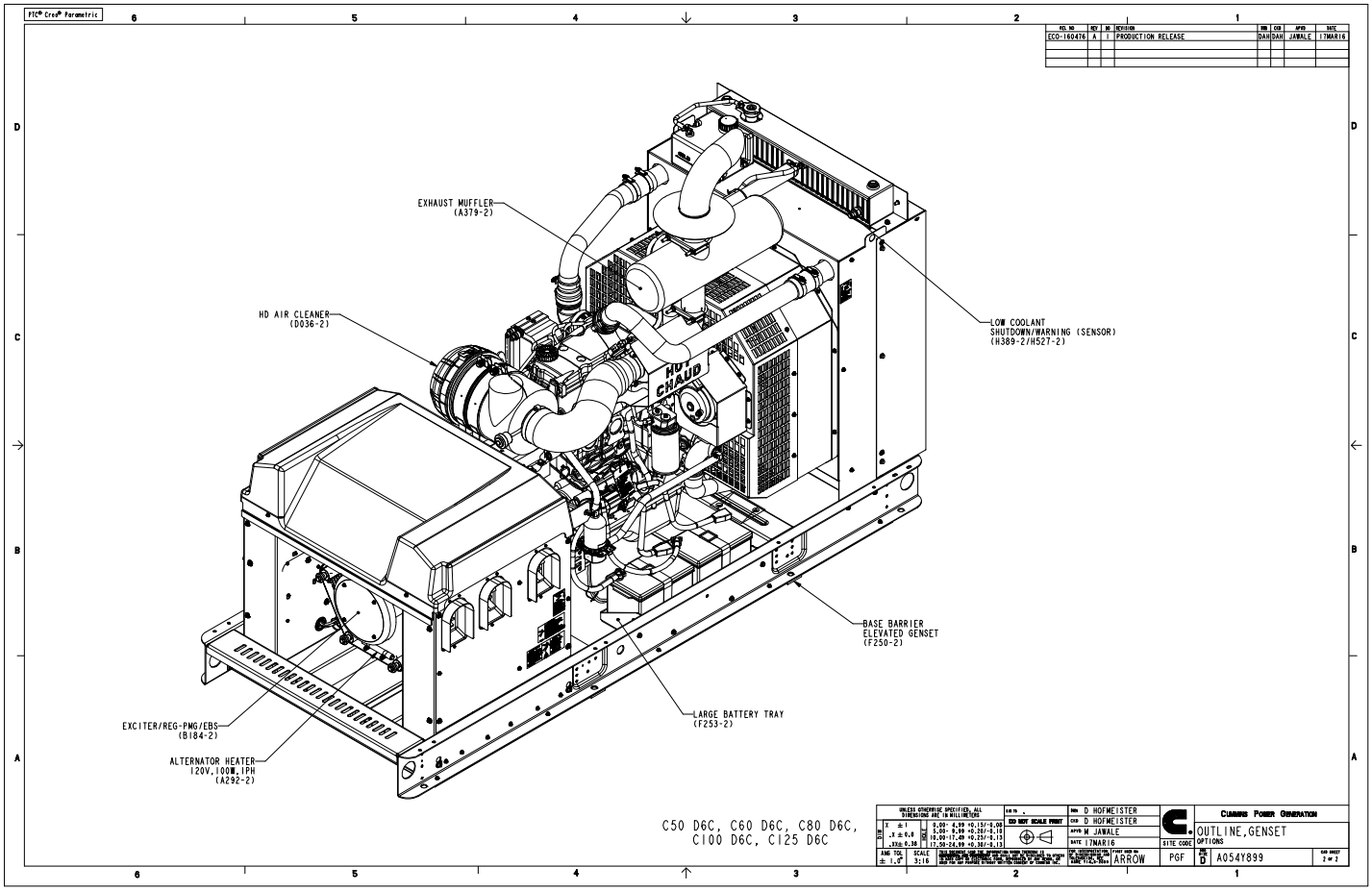
Drawing Name: A054B565 Revision: A
Part Name: A054B564 Revision: A
Sheet 3 of 5



Drawing Name: A054B565 Revision: A
Part Name: A054B564 Revision: A
Sheet 4 of 5



Drawing Name: A054Y900 Revision: A
Part Name: A054Y899 Revision: A
ECO-160476 Sheet 1 of 3



C50 D6C, C60 D6C, C80 D6C,
C100 D6C, C125 D6C

REV	REVISION	DRN	CKD	APVD	DATE
ECO-160476 A 1	PRODUCTION RELEASE	DAH	DAH	JAWALE	17MAR16

DRN D HOFMEISTER
CKD D HOFMEISTER
APVD M JAWALE
DATE 17MAR16

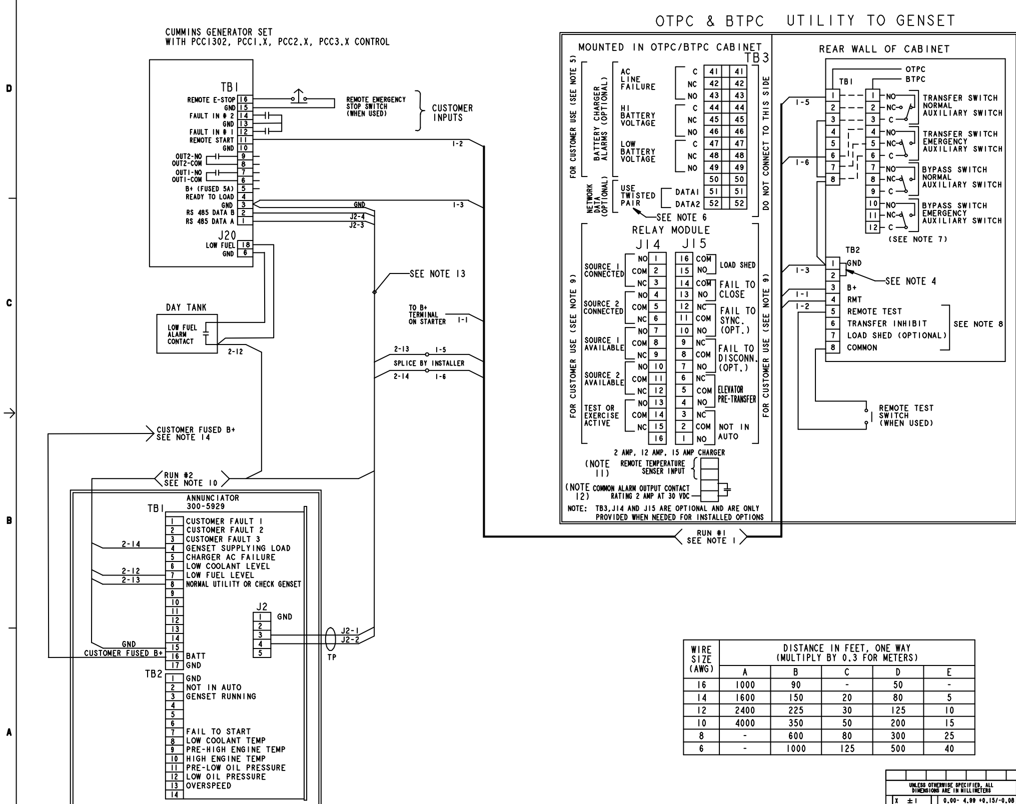
CUMMINS POWER GENERATION

OUTLINE,GENSET
OPTIONS

SITE CODE

PGF | SIZE D | A054Y899 | SHEET 2 OF 2

Drawing Name: A054Y900 Revision: A
Part Name: A054Y899 Revision: A
ECO-160476 Sheet 2 of 3



WIRE SIZE (AWG)	DISTANCE IN FEET, ONE WAY (MULTIPLY BY 0.3 FOR METERS)				
	A	B	C	D	E
16	1000	90	-	50	-
14	1600	150	20	80	5
12	2400	225	30	125	10
10	4000	350	50	200	15
8	-	600	80	300	25
6	-	1000	125	500	40

NOTES:

1. WIRE SIZES MUST BE AS FOLLOWS:
   RUN #1-GENSET TO TRANSFER SWITCH-LEAD SIZE MUST BE INCREASED IF A BATTERY CHARGER IS INSTALLED IN THE SWITCH.
   WITH NO BATT CHARGER-LEADS 1-1, -2, -3, -5, -6 USE COL A.
   WITH 2 AMP CHARGER, MAXIMUM VOLTAGE DROP OF 1.5 VOLTS, LEADS 1-1, &1-3 USE COL B.
   WITH 12/15 AMP CHARGER MAXIMUM VOLTAGE DROP OF 1.5 VOLTS, LEADS 1-1 & 1-3 USE COL. C.
   WITH 2 AMP CHARGER, MAXIMUM VOLTAGE DROP OF 0.75 VOLTS, LEADS 1-1, &1-3 USE COL D.
   WITH 12/15 AMP CHARGER, MAXIMUM VOLTAGE DROP OF 0.75 VOLTS, LEADS 1-1, & 1-3 USE COL E. TO MEET THE NFPA110 REQUIREMENT TO RETURN A FULLY DISCHARGED BATTERY TO 100% OF IT'S AMPERE-HOUR RATING WITHIN 24 HOURS USE COL. E.
2. RUN #2-GENSET TO ANNUNCIATOR-ALL LEADS, USE COL. A
3. FOR MULTIPLE TRANSFER SWITCHES, DUPLICATE RUN #1 FOR EACH SWITCH. DAISY CHAIN CONNECTION IS ACCEPTABLE PROVIDED WIRE SIZE & DISTANCE TO THE LAST SWITCH MEET THE SPECS IN NOTE 1.
4. INSTALL JUMPER BETWEEN TB2-1 & TB2-2.
5. CONTACTS RATED: 4 AMPS AT 30 VDC OR 120V MAX.
6. USE STRANDED TWISTED PAIR WIRES WHEN CONNECTING DATA1 AND DATA2 TO THE NETWORK.
7. TRANSFER SWITCH SHOWN CLOSED TO NORMAL BYPASS SWITCH SHOWN IN NEUTRAL POSITION.
8. CONNECT AN OPEN DRY CONTACT BETWEEN THE APPLICABLE TERMINAL AND COMMON (TB2-8). FOR REMOTE TEST, TRANSFER INHIBIT AND LOAD SHED. CLOSE TO ACTIVATE.
9. CONTACTS RATED: 2 AMPS AT 30 VDC OR 0.60 AMPS AT 120 VAC.
10. REFER TO 0900-0301 FOR INSTALLATION OF 0300-5929.
11. USE THE INVENTER REMOTE TEMPERATURE PROBE (0193-0530).
12. THE FOLLOWING FAILS WILL CAUSE A BATTTERY CHARGER ALARM OUTPUT:
    LOW BATTERY VOLTAGE, HIGH BATTERY VOLTAGE, LOW AC INPUT VOLTAGE, HIGH AC INPUT VOLTAGE OVERCURRENT, HIGH CHARGER TEMPERATURE, BATTERY FAILURE, HIGH BATTERY TEMPERATURE (NOT AVAILABLE ON 2 AMP CHARGER).
13. NETWORK CONNECTIONS: 18 GA TWISTED PAIR OR CAT 5 CABLE. TOTAL NETWORK LENGTH CANNOT EXCEED 4000 FEET. UP TO 20 NODES CAN BE CONNECTED TO THE NETWORK. (NOTE: ANY COMMUNICATIONS WIRE CONNECTED TO THE GENSET MUST BE STRANDED CABLE.)
14. CUSTOMER SUPPLIED FUSED B+ SOURCE. USE AT LEAST 5 AMP FUSE, WIRE SIZE, USE COL.A.

REL NO	LTR	NO	REVISION	ZONE	DWN	CKD	APVD	DATE
ECO-110063	P	-	---	-	GJT	VLO	J.KOCOVSKY	05APR11

UNLESS OTHERWISE SPECIFIED, ALL DIMENSIONS ARE IN MILLIMETERS	SIM TO 0630-1975	DWN L KAPLAN
DIM X ±1, .X ±0.8, .XX± 0.38	DO NOT SCALE PRINT	CKD L SMITH
HOLE 0.00- 4.99 +0.15/-0.08; 5.00- 9.99 +0.20/-0.10; 10.00-17.49 +0.25/-0.13; 17.50-24.99 +0.30/-0.13		APVD L SMITH
ANG TOL: ± 1.0° SCALE: 1/1	• CONFIDENTIAL • PROPERTY OF CUMMINS POWER GENERATION GROUP	DATE 05-21-99
	FOR INTERPRETATION OF DIMENSIONING AND TOLERANCING, SEE ASME Y14.5M-1994	FIRST USED ON OTPC/BTPC

CUMMINS POWER GENERATION
1400 73RD AVENUE NE, MINNEAPOLIS, MN 55432

WD-INTERCONNECTION

SITE CODE PGF · DWG SIZE D · 0630_1974 · SHEET 10 OF 10 · DWG REV P

Pro/ENGINEER

PowerCommand® Annunciator Discrete Input or PCCNet

> Specification sheet

Our energy working for you.™

Power Generation

Description

The Universal Annunciator Module provides visual and audible indication of up to 20 separate alarm or status conditions, based on discrete (relay) inputs or network inputs. Each LED can be controlled by either a discrete wire input or by a signal on the PCCNet network sent from an external device, such as a PCC1301 or PCC2100 (version 2.4 or later) control.

In addition to the LEDs, the annunciator can control four custom relays based on signals received over the PCCNet. When one of the annunciator's discrete inputs is activated, the annunciator will broadcast that information over the network. By taking advantage of the network, discrete inputs and custom relays, the annunciator can be used as expanded I/O for a genset controller.

Easily installed in a location to give immediate notification of an alarm or warning status. Designed to give operating/monitoring personnel quick-glance status information. The module directly senses battery voltage to provide green/yellow/red alarm and status information for that parameter.

Genset controller complies with NFPA level two requirements when used with the display but without the annunciator panel. When used with the annunciator it meets NFPA level one requirements (emergency and standby power systems). The annunciator module can also be used for monitoring of transfer switch or other equipment status.

Features

- Visual and audible warnings of up to 20 separate alarm or status conditions.
- LEDs can be controlled either via PCCNet or discrete input.
- Status of discrete inputs is broadcast on network.
- Four custom relays can be controlled over the PCCNet network.
- Configurable LED color (red, yellow or green) and selectable horn operation allows maximum flexibility.
- Standard NFPA 110 label, field configurable for other alarm status and conditions.
- Each audible alarm is annunciated, regardless of the number of existing alarm conditions displayed.
- Sealed membrane panel design provides environmental protection for internal components and is easy to clean.
- Configurable for negative (ground) input or positive input.
- Integral DC voltage sensing.
- Flush or surface mount provisions.
- UL Listed and labeled; CSA certified; CE marked.

S-1472e (8/09)

Specifications

Signal requirements

Positive - Input impedance is 1.82 kOhms to ground; maximum input voltage = 31 VDC.

Negative - Input impedance is 1.82 kOhms to Bat+: inputs are at Bat+ level when open.

Sink/source current threshold for detection - 150 uA minimum, 3 mA maximum.

Typical conductor size: 16 ga for 304.8 m (1000 ft)

Max conductor size for terminal: 12 ga

Relay outputs

0.2 A at 125 VAC and 1 A at 30 VDC

Network connections

Use Belden 9729 two pair, stranded, shielded 24 AWG twisted pair cable for all PCCNet connections. Total network length can not exceed 1219 m (4000 ft). Up to 20 nodes can be connected to the network.

Note: Any communications wire connected to the generator set should be stranded cable.

Power

Maximum consumption: 15 watts

Battery voltage

Functional range - Audible and visual conditions operational from 6.5 to 31 VDC.

Low voltage setting - 12.0 VDC for 12 Volt nominal systems; 24.0 for 24 Volt nominal systems.

High voltage setting - 16.0 Volt for 12 Volt nominal systems; 32.0 Volt for 24 Volt nominal systems.

Alarm horn

Sound level: 90 dB at 30 cm

Physical

Weight (with enclosure): 1.4 kg (3.0 lbs)

Temperature

-20 °C to +70 °C (-4 °F to +158 °F)

Humidity

10% to 95% RH (non-condensing)

Default lamp configurations

Can be configured for current NFPA 110 standard or as a replacement for Legacy (pre-2001) NFPA 110 annunciator (300-4510 or 300 4511)

		NFPA 110		
Lamp	**Description**	**Color**	**Horn**	**Flash**
DS1	Customer fault 1	Green	No	No
DS2	Customer fault 2	Amber	No	No
DS3	Customer fault 3	Red	No	No
DS4	Genset supplying load	Amber	No	No
DS5	Charger AC failure	Amber	Yes	No
DS6	Low coolant level	Amber	Yes	No
DS7	Low fuel level	Red	Yes	No
DS8	Check generator set	Amber	No	No
DS9	Not in auto	Red	Yes	Yes
DS10	Generator set running	Amber	No	No
DS11	High battery voltage	Amber	Yes	No
DS12	Low battery voltage	Red	Yes	No
DS13	Weak battery	Red	Yes	No
DS14	Fail to start	Red	Yes	No
DS15	Low coolant temp	Red	Yes	No
DS16	Pre-high engine temp	Amber	Yes	No
DS17	High engine temp	Red	Yes	No
DS18	Pre-low oil pressure	Red	Yes	No
DS19	Low oil pressure	Red	Yes	No
DS20	Overspeed	Red	Yes	No

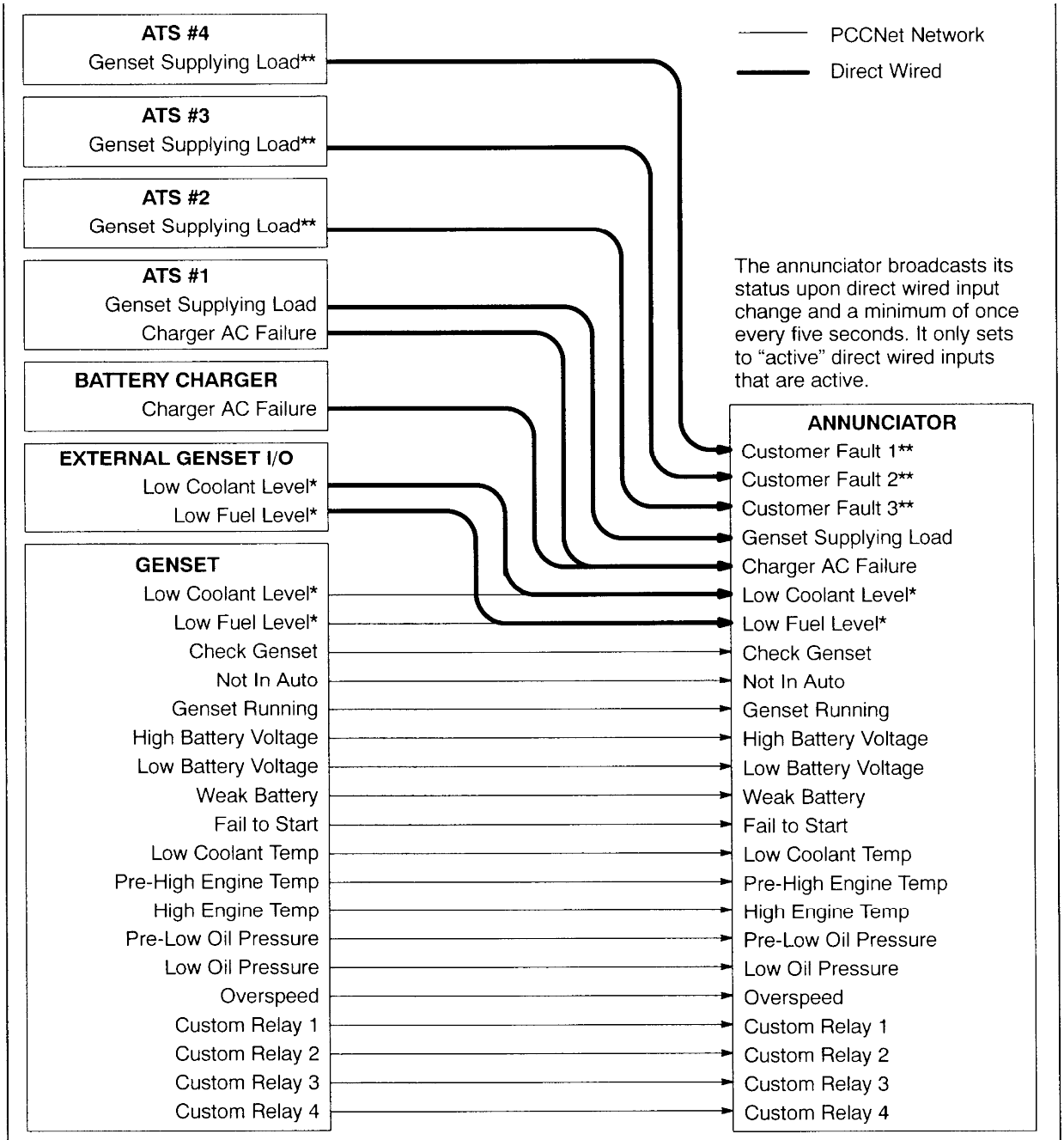
Our energy working for you.™

www.cumminspower.com

S-1472e (8/09)

Cummins Power Generation

Typical installation



* Low Coolant Level and Low Fuel Level statuses can be either direct wired from External Genset I/O or be part of the PCCNet network status coming from the genset. If direct wired, then the annunciator sets the appropriate bit for the genset to reference.

** These can be Genset Supplying Load 2 thru 4 or Customer Faults.

When enabled, High Battery Voltage, Low Battery Voltage, and Normal Battery Voltage takes precedence over the hardwired input.

Normal Battery voltage can replace Weak Battery.

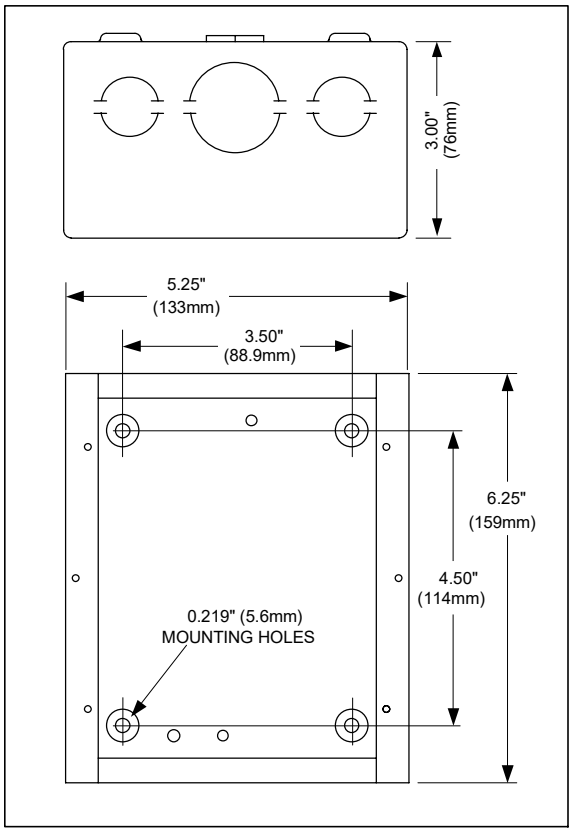
Our energy working for you.™

www.cumminspower.com

S-1472e (8/09)

Cummins Power Generation

Dimensions



Dimensions: in (mm)

Ordering information

Part number	Description
0300-5929-01	Panel mount
0300-5929-02	Panel with enclosure

PCCNet COMPATIBLE

See your distributor for more information.

Cummins Power Generation

Americas
1400 73rd Avenue N.E.
Minneapolis, MN 55432 USA
Phone: 763 574 5000
Fax: 763 574 5298

Europe, CIS, Middle East and Africa
Manston Park Columbus Ave.
Manston Ramsgate
Kent CT 12 5BF United Kingdom
Phone 44 1843 255000
Fax 44 1843 255902

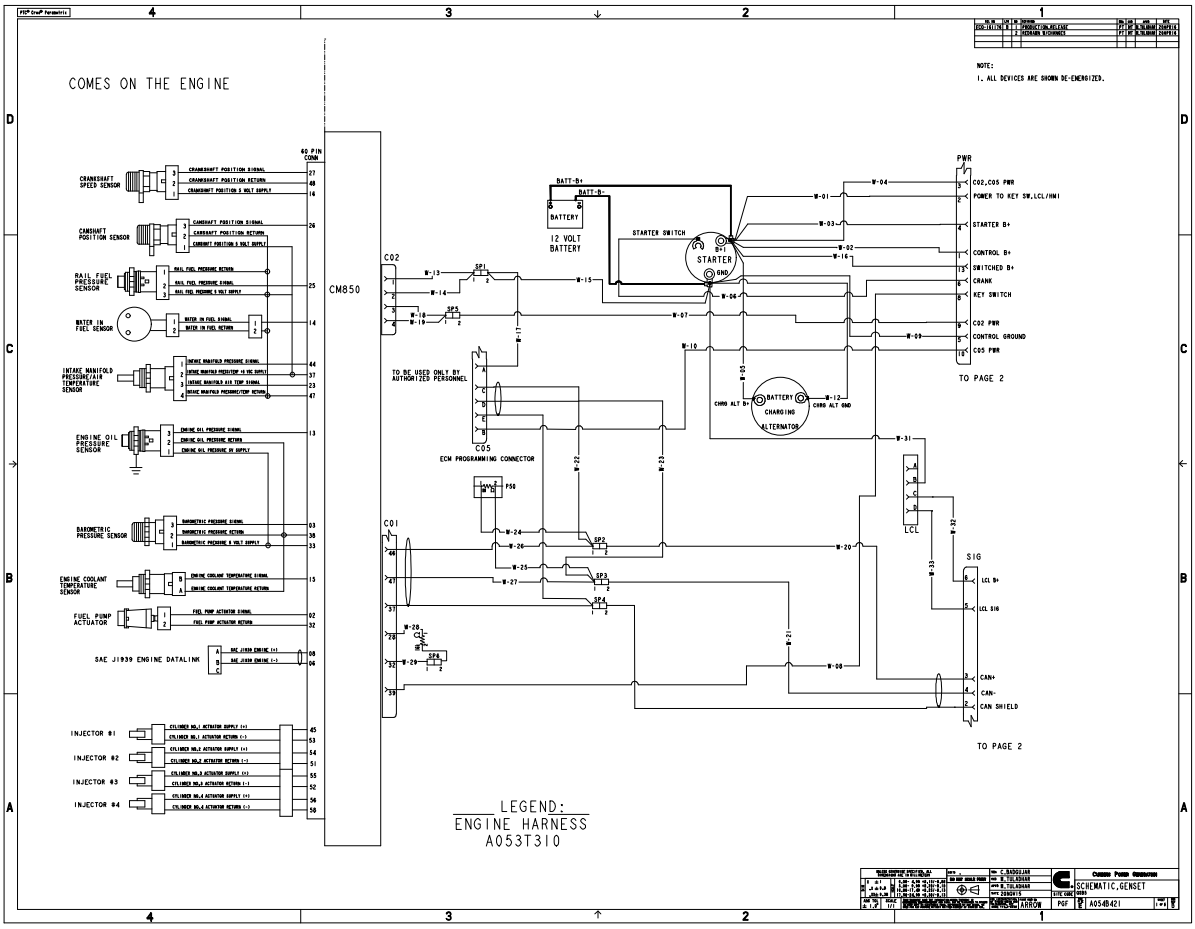
Asia Pacific
10 Toh Guan Road #07-01
TT International Tradepark
Singapore 608838
Phone 65 6417 2388
Fax 65 6417 2399

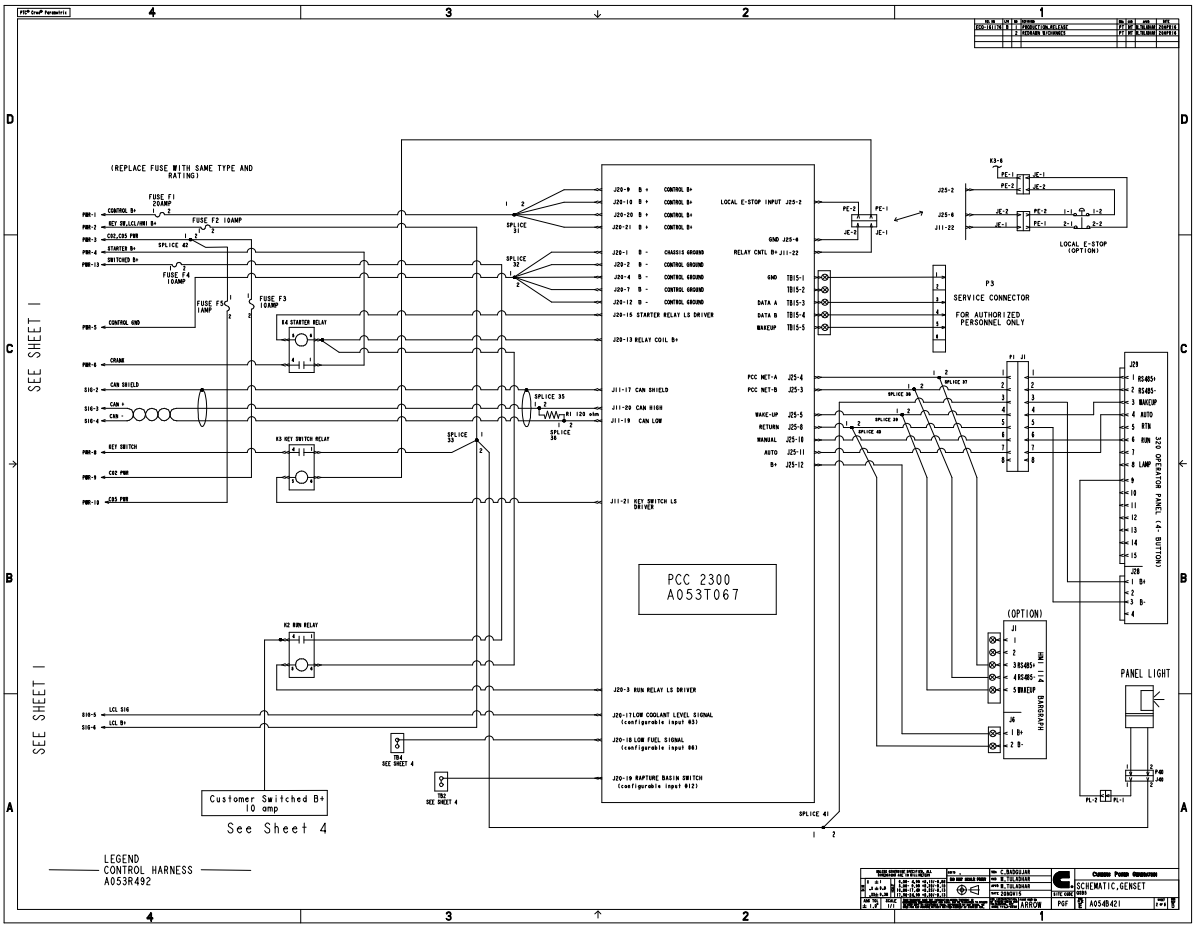
Our energy working for you.™

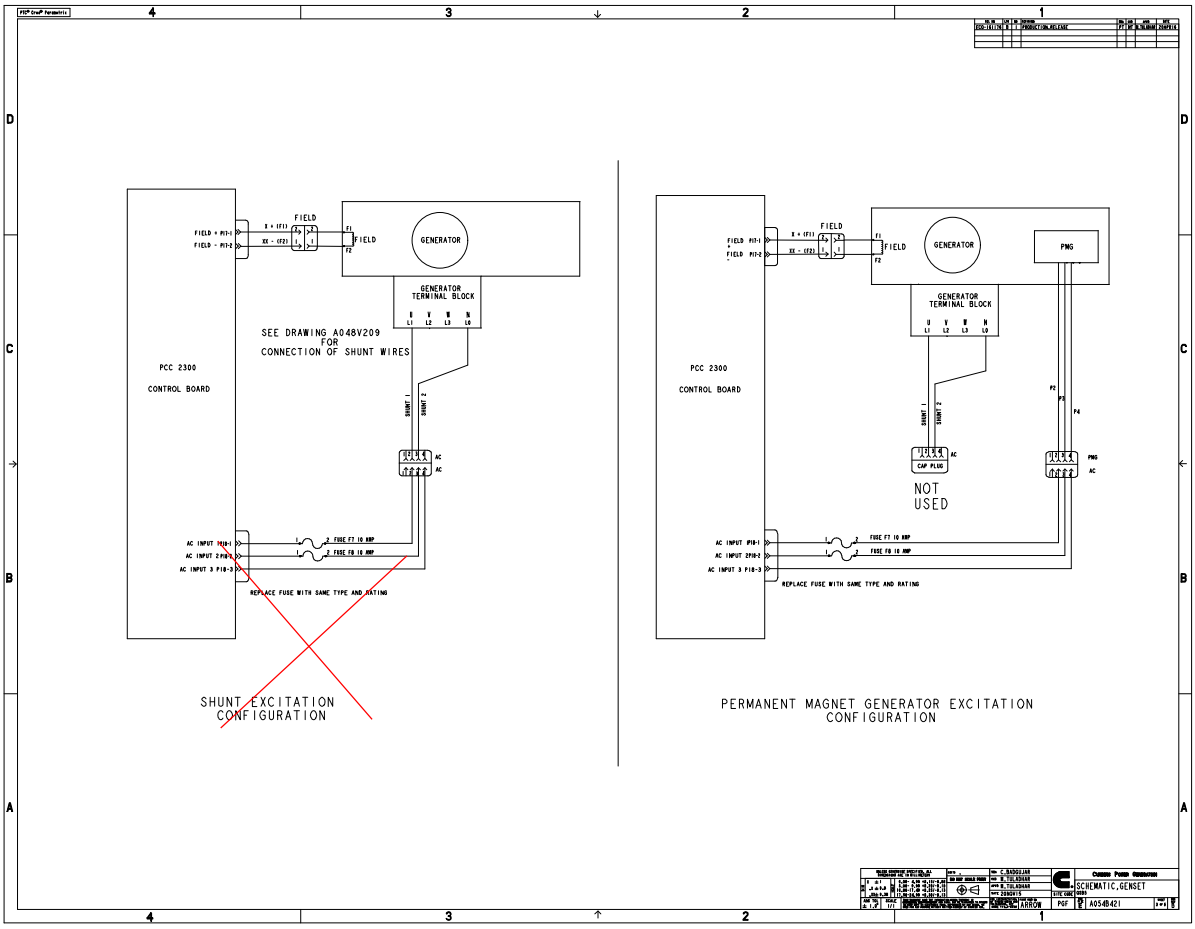
www.cumminspower.com

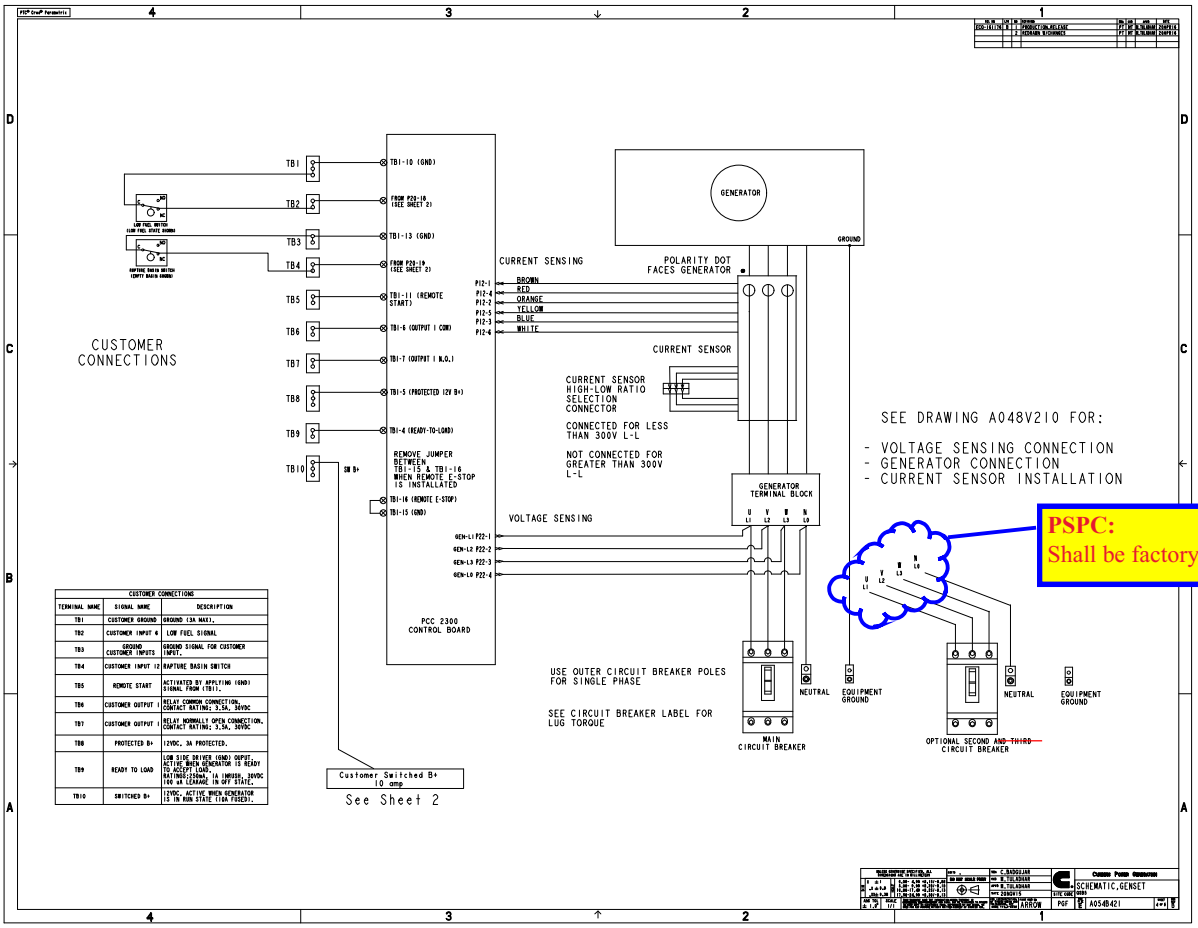
S-1472e (8/09)

Cummins Power Generation

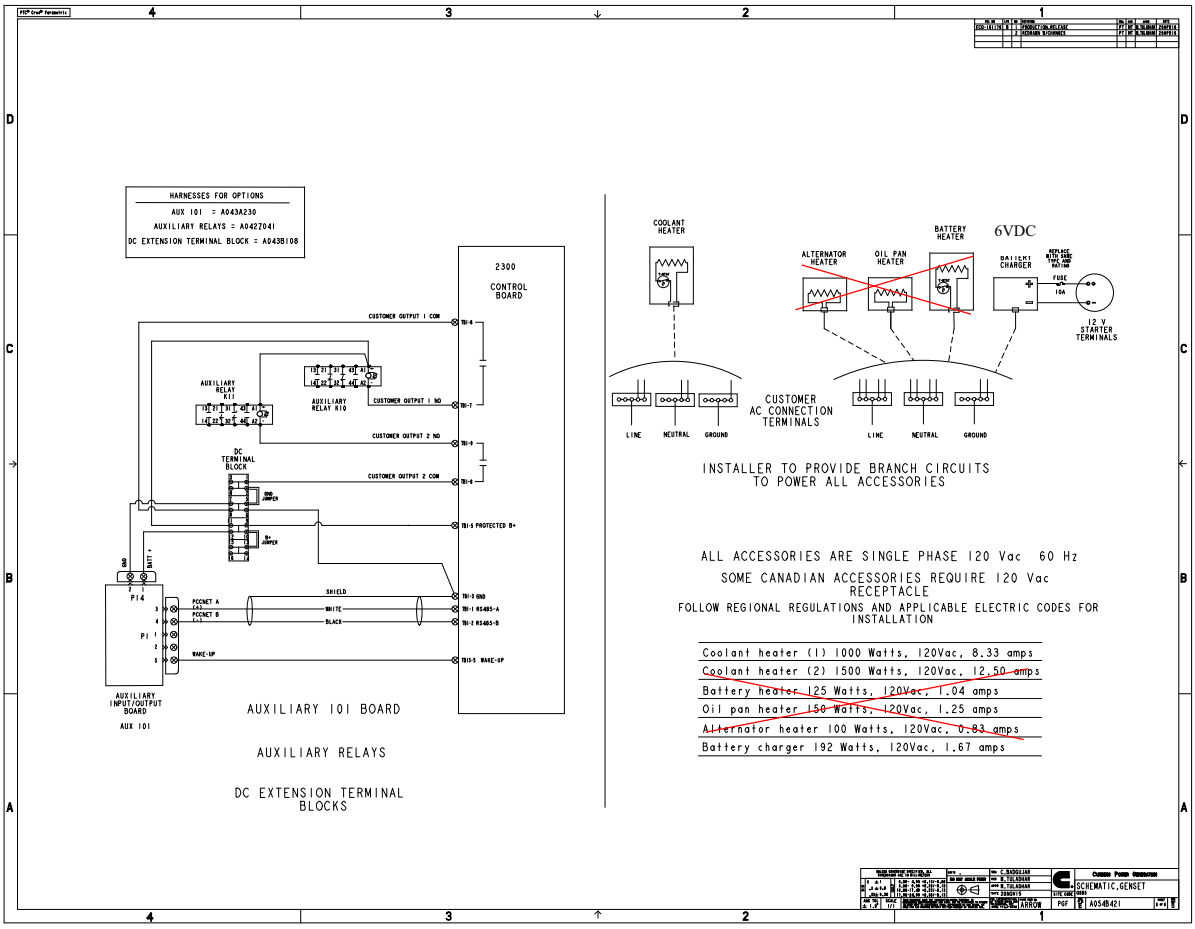

COMES ON THE ENGINE
60 PIN CONN
CM850
CRANKSHAFT SPEED SENSOR
CAMSHAFT POSITION SENSOR
RAIL FUEL PRESSURE SENSOR
WATER IN FUEL SENSOR
INTAKE MANIFOLD PRESSURE/AIR TEMPERATURE SENSOR
ENGINE OIL PRESSURE SENSOR
BAROMETRIC PRESSURE SENSOR
ENGINE COOLANT TEMPERATURE SENSOR
FUEL PUMP ACTUATOR
SAE J1939 ENGINE DATALINK
INJECTOR #1
INJECTOR #2
INJECTOR #3
INJECTOR #4
BATT-B+
BATT-B-
BATTERY
12 VOLT BATTERY
STARTER SWITCH
STARTER
TO BE USED ONLY BY AUTHORIZED PERSONNEL
C05
ECM PROGRAMMING CONNECTOR
BATTERY CHARGING ALTERNATOR
CHRG ALT B+
CHRG ALT GND
PWR
C02,C05 PWR
POWER TO KEY SW,LCL/HMI
STARTER B+
CONTROL B+
SWITCHED B+
CRANK
KEY SWITCH
C02 PWR
CONTROL GROUND
C05 PWR
TO PAGE 2
LCL
SIG
LCL B+
LCL SIG
CAN+
CAN-
CAN SHIELD
TO PAGE 2
LEGEND:
ENGINE HARNESS
A053T310
NOTE:
1. ALL DEVICES ARE SHOWN DE-ENERGIZED.
SCHEMATIC,GENSET
A054B421


(REPLACE FUSE WITH SAME TYPE AND RATING)
FUSE F1 20AMP
FUSE F2 10AMP
FUSE F4 10AMP
FUSE F5 1AMP
FUSE F3 10AMP
K4 STARTER RELAY
K3 KEY SWITCH RELAY
K2 RUN RELAY
CONTROL B+
KEY SW,ACC/RUN) B+
C02,C05 PWR
STARTER B+
SWITCHED B+
CONTROL GND
CRANK
CAN SHIELD
CAN +
CAN -
KEY SWITCH
C02 PWR
C05 PWR
LCL SIG
LCL B+
SPLICE 31
SPLICE 32
SPLICE 33
SPLICE 34
SPLICE 35
SPLICE 36
SPLICE 37
SPLICE 38
SPLICE 39
SPLICE 40
SPLICE 41
SPLICE 42
R1 120 ohm
J20-9 B+ CONTROL B+
J20-10 B+ CONTROL B+
J20-20 B+ CONTROL B+
J20-21 B+ CONTROL B+
J20-1 B- CHASSIS GROUND
J20-2 B- CONTROL GROUND
J20-4 B- CONTROL GROUND
J20-7 B- CONTROL GROUND
J20-12 B- CONTROL GROUND
J20-15 STARTER RELAY LS DRIVER
J20-13 RELAY COIL B+
J11-17 CAN SHIELD
J11-20 CAN HIGH
J11-19 CAN LOW
J11-21 KEY SWITCH LS DRIVER
J20-3 RUN RELAY LS DRIVER
J20-17LOW COOLANT LEVEL SIGNAL (configurable input #3)
J20-16 LOW FUEL SIGNAL (configurable input #8)
J20-19 RAPTURE BASIN SWITCH (configurable input #12)
LOCAL E-STOP INPUT J23-2
GND J25-6
RELAY CNTL B+ J11-22
GND TB15-1
TB15-2
DATA A TB15-3
DATA B TB15-4
WAKEUP TB15-5
PCC NET-A J25-4
PCC NET-B J25-3
WAKE-UP J25-5
RETURN J25-8
MANUAL J25-10
AUTO J25-11
B+ J25-12
PCC 2300
A053T067
P3
SERVICE CONNECTOR
FOR AUTHORIZED PERSONNEL ONLY
LOCAL E-STOP (OPTION)
J29
RS485+
RS485-
WAKEUP
AUTO
MAN
RUN
LAMP
J28
B+
B-
J20 OPERATOR PANEL (4+ BUTTON)
(OPTION)
J1
RS485+
RS485-
WAKEUP
J2
B+
B-
INSTRUMENT PANEL
PANEL LIGHT
TB4
SEE SHEET 4
TB2
SEE SHEET 4
Customer Switched B+ 10 amp
See Sheet 4
SEE SHEET 1
SEE SHEET 1
LEGEND
CONTROL HARNESS
A053R492
SCHEMATIC,GENSET
A054B421


PCC 2300
CONTROL BOARD
FIELD + P17-1
FIELD - P17-2
X + (F1)
XX - (F2)
FIELD
F1
F2
GENERATOR
GENERATOR TERMINAL BLOCK
U L1
V L2
W L3
N L0
SEE DRAWING A048V209 FOR CONNECTION OF SHUNT WIRES
SHUNT 1
SHUNT 2
AC
AC INPUT P18-1
AC INPUT 2 P18-2
AC INPUT 3 P18-3
FUSE F7 10 AMP
FUSE F8 10 AMP
REPLACE FUSE WITH SAME TYPE AND RATING
SHUNT EXCITATION CONFIGURATION
PCC 2300
CONTROL BOARD
FIELD
GENERATOR
PMG
GENERATOR TERMINAL BLOCK
P2
P3
P4
CAP PLUG
NOT USED
PMG
AC
AC INPUT P18-1
AC INPUT 2 P18-2
AC INPUT 3 P18-3
FUSE F7 10 AMP
FUSE F8 10 AMP
REPLACE FUSE WITH SAME TYPE AND RATING
PERMANENT MAGNET GENERATOR EXCITATION CONFIGURATION
SCHEMATIC,GENSET
A054B421



CUSTOMER CONNECTIONS		
TERMINAL NAME	SIGNAL NAME	DESCRIPTION
TB1	CUSTOMER GROUND	GROUND (3A MAX).
TB2	CUSTOMER INPUT 4	LOW FUEL SIGNAL
TB3	GROUND CUSTOMER INPUTS	GROUND SIGNAL FOR CUSTOMER INPUT.
TB4	CUSTOMER INPUT 12	RAPTURE BASIN SWITCH
TB5	REMOTE START	ACTIVATED BY APPLYING (GND) SIGNAL FROM (TB1).
TB6	CUSTOMER OUTPUT 1	RELAY COMMON CONNECTION, CONTACT RATING: 3.5A, 30VDC
TB7	CUSTOMER OUTPUT 1	RELAY NORMALLY OPEN CONNECTION, CONTACT RATING: 3.5A, 30VDC
TB8	PROTECTED B+	12VDC, 3A PROTECTED.
TB9	READY TO LOAD	LOW SIDE DRIVER (GND) OUPUT, ACTIVE WHEN GENERATOR IS READY TO ACCEPT LOAD. 100 mA MAXIMUM IN UNUSED, 200VDC 100 uA LEAKAGE IN OFF STATE.
TB10	SWITCHED B+	12VDC, ACTIVE WHEN GENERATOR IS IN RUN STATE (10A FUSED).


HARNESSES FOR OPTIONS
AUX 101 = A043A230
AUXILIARY RELAYS = A042Z041
DC EXTENSION TERMINAL BLOCK = A043B108
2300
CONTROL
BOARD
CUSTOMER OUTPUT 1 COM
CUSTOMER OUTPST 1 NO
CUSTOMER OUTPST 2 NO
CUSTOMER OUTPUT 2 COM
TB1-5 PROTECTED B+
TB1-3 GND
TB1-1 RS485-A
TB1-2 RS485-B
TB15-5 WAKE-UP
AUXILIARY RELAY K11
AUXILIARY RELAY K10
DC TERMINAL BLOCK
GND JUMPER
B+ JUMPER
GND
BATT +
P14
P11
PCCNET A (+)
PCCNET B (-)
SHIELD
WHITE
BLACK
WAKE-UP
AUXILIARY INPUT/OUTPUT BOARD
AUX 101
AUXILIARY 101 BOARD
AUXILIARY RELAYS
DC EXTENSION TERMINAL BLOCKS
COOLANT HEATER
ALTERNATOR HEATER
OIL PAN HEATER
BATTERY HEATER
6VDC
BATTERY CHARGER
FUSE
10A
12 V STARTER TERMINALS
CUSTOMER AC CONNECTION TERMINALS
LINE
NEUTRAL
GROUND
LINE
NEUTRAL
GROUND
INSTALLER TO PROVIDE BRANCH CIRCUITS TO POWER ALL ACCESSORIES
ALL ACCESSORIES ARE SINGLE PHASE 120 Vac 60 Hz
SOME CANADIAN ACCESSORIES REQUIRE 120 Vac RECEPTACLE
FOLLOW REGIONAL REGULATIONS AND APPLICABLE ELECTRIC CODES FOR INSTALLATION
Coolant heater (1) 1000 Watts, 120Vac, 8.33 amps
Coolant heater (2) 1500 Watts, 120Vac, 12.50 amps
Battery heater 125 Watts, 120Vac, 1.04 amps
Oil pan heater 150 Watts, 120Vac, 1.25 amps
Alternator heater 100 Watts, 120Vac, 0.83 amps
Battery charger 192 Watts, 120Vac, 1.67 amps
SCHEMATIC,GENSET
A054B421