Pump Station & Force Main Improvements Project
Gleneden Beach, Oregon

Submittal Transmittal No. *011*

Contractor: R&G Excavating, Inc.	Engineer: Harper Hour Peterson Righellis Inc	Date Received:	
Address: 39300 Montgomery Dr. Scio, OR 97374 (503) 394-2190 (503) 394-2169	Address: Ken Condit 205 SE Spokane Street, Suite 200 Portland, OR 97202	Checked By: Date Checked: Date Returned: Spec Section: 1st Submittal?	 *26 32 13* *X*
Date Transmitted: 5/17/2021	Previous Transmittal Date:	ReSubmittal?	

No. Copies	Description	Manufacturer	Dwg or Data No.	Action Taken
electronic	Generator- 125 kw - Laurel Street PS	Cummins		

NO EXCEPTION TAKEN

CHECKING IS ONLY FOR GENERAL CONFORMANCE WITH THE DESIGN CONCEPT OF THE PROJECT AND GENERAL COMPLIANCE WITH THE INFORMATION GIVEN IN THE CONTRACT DOCUMENTS. ANY ACTION SHOWN IS SUBJECT TO THE REQUIREMENTS OF THE PLANS AND SPECIFICATIONS. CONTRACTOR IS RESPONSIBLE FOR: DIMENSIONS WHICH SHALL BE CONFIRMED AND CORRELATED AT THE JOB SITE; FABRICATION PROCESSES AND TECHNIQUES OF CONSTRUCTION, COORDINATION OF THEIR WORK WITH THAT OF ALL OTHER TRADES AND THE SATISFACTORY PERFORMANCE OF HIS WORK.

MFIA, INC.
CONSULTING ENGINEERS
2007 S.E. ASH STREET
PORTLAND, OR 97214

DATE: 6.8.21 **BY:** R Connell

Remarks:

MFIA Electrical Review

NET-- No Exceptions Taken
MCN -- Make Corrections Noted
A&R -- Amend and Resubmit
R-- Rejected
NR -- Engineer's review not required

CONTRACTOR: Must certify one of the following statements pertaining to the transmittal or submittal sent for review:

__ The undersigned, acting on behalf of the Contractor, certifies that this submittal has been reviewed and is approved; products have been verified as being as specified, field measurements and field construction criteria have been or will be coordinated, and the submittal is in compliance with Contract Documents.

___ As the general contractor for this project we certify that the material or equipment contained in this submittal meets all the requirements specified except for the attached deviations.

Glinda Ireland, Operations Manager

Engineer Comments:

DIVISION 26 - ELECTRICAL

SECTION 26 32 13 - DIESEL-ENGINE-DRIVEN GENERATOR SETS

PART 1 - GENERAL

1.1 DESCRIPTION

A. Provide complete factory assembled diesel engine driven electric generator set and related equipment as specified herein and as shown on the drawings.

B. Provide factory test, startup by a supplier authorized by the equipment manufacturer(s), and on-site testing of the system.

C. The generator set manufacturer shall warrant all equipment provided under this section, whether or not it is manufactured by the generator set manufacturer, so that there is one source for warranty and product service. Technicians specifically trained and certified by the manufacturer to support the product and employed by the generator set supplier shall service the generator sets.

1.2 QUALITY ASSURANCE

A. The generator set installation and on-site testing shall conform to the requirements of the following codes and standards, as applicable. The generator set shall include necessary features to meet the requirements of these standards.

1. CSA 282 – Emergency Electrical Power Supply for Buildings
2. IEEE446 – Recommended Practice for Emergency and Standby Power Systems for Commercial and Industrial Applications
3. NFPA37
4. NFPA70 – National Electrical Code with any State modifications. Equipment shall be suitable for use in systems in compliance to Article 700, 701, and 702.
5. NFPA99 – Essential Electrical Systems for Health Care Facilities
6. NFPA110 – Emergency and Standby Power Systems. The generator shall meet all requirements for Level 1 systems. Level 1 prototype tests required by this standard shall have been performed on a complete and functional unit. Component level type tests will not substitute for this requirement.

B. The generator set and supplied accessories shall meet the requirements of the following standards:

1. NEMA MG1. Alternator shall comply with the requirements of the current version of this standard as they apply to AC alternators.
2. UL142 – Sub-base Tanks
3. UL1236 – Battery Chargers
4. UL2200. The generator set shall be listed to UL2200 or submit to an independent third party certification process to verify compliance as installed.

C. The control system for the generator set shall comply with the following requirements:

1. CSA C22.2, No. 14 – M91 Industrial Control Equipment.
2. EN50082-2, Electromagnetic Compatibility – Generic Immunity Requirements, Part 2: Industrial.

3. EN55011, Limits and Methods of Measurement of Radio Interference Characteristics of Industrial, Scientific and Medical Equipment.
4. FCC Part 15, Subpart B.
5. IEC8528 part 4. Control Systems for Generator Sets
6. IEC Std 801.2, 801.3, and 801.5 for susceptibility, conducted, and radiated electromagnetic emissions.
7. UL508. The entire control system of the generator set shall be UL508 listed and labeled.
8. UL1236 – Battery Chargers.

D. The generator set manufacturer shall be certified to ISO 9001 International Quality Standard and shall have third party certification verifying quality assurance in design/development, production, installation, and service, in accordance with ISO 9001.

1.2 SUBMITTALS

A. Shop Drawings: Detail fabrication, piping, wiring, and installation of the field-installed portions of the system. Include general arrangement drawings showing locations of auxiliary components in relation to the engine generator set and duct, piping, and wiring connections between the generator set and the auxiliary equipment. Show connections, mounting, and support provisions and access and working space requirements. Single-line diagrams of transfer switch units showing connections between automatic transfer switch, power source and load, wiring diagrams, elementary or schematic, differentiating between manufacturer-installed and field-installed wiring, including required interconnection between the generator set, the transfer switch, and the remote annunciator panel.

B. Product Data: Include data on features, components, ratings, and performance. Include dimensioned outline plan and elevation drawings of engine generator set and other system components. Include product data for each transfer switch, including dimensioned plans, sections, and elevations showing minimum clearances; conductor entry provisions; gutter space; installed features and devices; and materials lists. Provide motor-starting KVA performance data (graphical) along with calculations indicating worst-case motor starting scenario. See drawings for loads on the generator, and confirm load sizes with actual equipment to be furnished.

C. Operating and Maintenance Data.

Submit at later date

D. Factory Start-Up Test Report.

E. Site Test Report.

F. Submit stamped drawings and calculations prepared by a structural engineer licensed in the State of Oregon for the design of the generator-set seismic restraint and bracing.

PART 2 - PRODUCTS

2.1 MATERIALS

Cummins

A. Acceptable Manufacturers: Caterpillar, Kohler, Onan, Olympian, Generac, and MTU Onsite Power.

B. Other Manufacturers: Submit Substitution Request prior to bid date.

2.2 GENERATOR SET:

A. Generator set shall be the product of a manufacturer regularly engaged in the production of this type of equipment and one that has a local distributor and service organization. The generator shall have a continuous standby rating as indicated on the drawings.

B. Factory Assembly:

1. The entire generating system shall be built, tested and shipped so as to assure the unit is factory engineered and assembled so there is only one source of supply, service, and warranty responsibility.
2. The manufacturer shall have local parts and service facilities within a 100 mile radius of site to assure prompt emergency service within 24 hours.
3. The manufacturer shall have a flat-rate maintenance agreement program available to the customer.

C. Performance Requirements:

1. Frequency regulation shall by isochronous from steady state no load to steady state rated load. Random frequency variation with any steady load from no load to full load shall not exceed plus or minus 0.5 percent.
2. Voltage manually adjustable from + 5% of nominal voltage.
3. Ambient conditions.
   a. Altitude of site at Hood River, Oregon.
   b. 100 degrees F air temperature at engine intake.
4. Voltage regulation shall be plus or minus 0.5 percent for any constant load between no load and rated load. Random voltage variation with any steady load from no load to full load shall not exceed plus or minus 0.5 percent.
5. Voltage transient performance +/- 20% line to line with step removal/application 30% of rated load up to 90% of rated load, including motor loads. Recovery time shall not exceed 1.5 seconds.
6. Motor starting performance: 20% maximum line-to-line voltage dip with step removal/application of any motor load while balance of loads are running.
7. On cold start-up voltage and frequency shall stabilize within specified bandwidths at the same time (not to exceed 2 seconds).
8. The alternator shall produce a clean AC voltage waveform, with not more than 5% total harmonic distortion at full linear load, when measured from line to neutral, and with not more than 3% in any single harmonic, and no 3rd order harmonics or their multiples. Telephone influence factor shall be less than 40.
9. The generator set shall be certified by the engine manufacturer to be suitable for use at the installed location and rating, and shall meet all applicable exhaust emission requirements at the time of commissioning.

D. Construction

1. The generator set shall consist of one diesel engine directly coupled to one AC alternator, mounted on a heavy-duty steel base to maintain alignment between components. The base shall incorporate a battery tray with hold-down clamps within the rails.
2. All switches, lamps, and meters in the control system shall be oil-tight and dust-tight. All active control components shall be installed within a UL/NEMA 3R enclosure. There shall be no exposed points in the control (with the door open) that operate in excess of 50 volts.

E. Connections

1. The generator set load connections shall be composed of silver or tin plated copper bus bars, drilled to accept mechanical or compression terminations of the number and type as shown on the drawings. Sufficient lug space shall be provided for use with cables of the number and size as shown on the drawings.
2. Power connections to auxiliary devices shall be made at the devices, with required protection located at a wall-mounted common distribution panel.
3. Generator set control interfaces to other system components shall be made on a permanently labeled terminal block assembly. Labels describing connection point functions shall be provided.

F. Engine and Engine Equipment: The engine shall be diesel, 4 cycle, radiator and fan cooled. The horsepower rating of the engine at its minimum tolerance level shall be sufficient to drive the alternator and all connected accessories. Two cycle engines are not acceptable. Engine accessories and features shall include:

1. An electronic governor system shall provide automatic isochronous frequency regulation. The governing system dynamic capabilities shall be controlled as a function of engine coolant temperature to provide fast, stable operation at varying engine operating temperature conditions. The control system shall actively control the fuel rate and excitation as appropriate to the state of the generator set. Fuel rate shall be regulated as a function of starting, accelerating to start disconnect speed, accelerating to rated speed. The governing system shall include a programmable warm up at idle and cooldown at idle function. While operating in idle state, the control system shall disable the alternator excitation system.
2. Skid-mounted radiator and cooling system rated for full load operation in 122 degrees F (50 degrees C) ambient as measured at the alternator air inlet. Radiator fan shall be suitable for use in a system with 0.5 in H2O restriction. Radiator shall be sized based on a core temperature that is 20F higher than the rated operation temperature, or prototype tested to verify cooling performance of the engine/radiator/fan operation in a controlled environment. Radiator shall be provided with a duct adapter flange. The equipment manufacturer shall fill the cooling system with a 50/50-ethylene glycol/water mixture prior to shipping. Rotating parts shall be guarded against accidental contact.
3. Electric starter(s) capable of three complete cranking cycles without overheating.
4. Positive displacement, mechanical, full pressure, lubrication oil pump.
5. Full flow lubrication oil filters with replaceable spin-on canister elements and dipstick oil level indicator.
6. An engine driven, mechanical, positive displacement fuel pump. Fuel filter with replaceable spin-on canister element. Fuel cooler, suitable for operation of the generator set at full rated load in the ambient temperature specified shall be provided if required for operation due to the design of the engine and the installation.
7. Replaceable dry element air cleaner with restriction indicator.
8. Flexible supply and return fuel lines.
9. Engine mounted battery charging alternator, 40-ampere minimum, and solid-state voltage regulator.
10. Coolant Heater:
    a. Engine mounted, thermostatically controlled, coolant heater(s) for each engine. Heater voltage shall be as shown on the project drawings. The coolant heater shall be UL499 listed and labeled.

b. The coolant heater shall be installed on the engine with silicone hose connections. Steel tubing shall be used for connections into the engine coolant system wherever the length of pipe run exceeds 12 inches. The coolant heater installation shall be specifically designed to provide proper venting of the system. The coolant heaters shall have provisions to isolate the heater for replacement of the heater element without draining the coolant from the generator set. The quick disconnect/automatic sealing couplers shall allow the heater element to be replaced without draining the engine cooling system or significant coolant loss.

c. The coolant heater shall be provided with a DC thermostat, installed at the engine thermostat housing. An AC power connection box shall be provided for a single AC power connection to the coolant heater system.

d. The coolant heater(s) shall be sized as recommended by the engine manufacturer to warm the engine to a minimum of 104F (40C) in a 40F (4C) ambient, in compliance with NFPA110 requirements, or the temperature required for starting and load pickup requirements of this specification.

11. Provide vibration isolators, spring/pad type, quantity as recommended by the generator set manufacturer. Isolators shall include seismic restraints if required by site location.
12. Starting and Control Batteries shall be calcium/lead antimony type, 24 volt DC, sized as recommended by the engine manufacturer, complete with battery cables and connectors. The batteries shall be capable of a minimum of three complete 15-second cranking cycles at 40F ambient temperature when fully charged.
13. Provide exhaust silencer(s) for each engine of size and type as recommended by the generator set manufacturer and approved by the engine manufacturer. The muffler(s) shall be critical grade. Exhaust system shall be installed according to the engine manufacturer's recommendations and applicable codes and standards.
14. Provide a minimum 12 amp battery charger for each
15. All fuel and lube oil filters shall be "spin-on" type.
16. Provide a packaged fuel tank system including double-wall sub-base fuel tank, integral float switch, low fuel level warning alarm contacts and a fuel level gauge. Size for 24-hr 75% full load run time. Tank and vents, fills, etc. shall comply with all State and Local codes.
17. An immersion-type oil heater operating on 120 VAC shall be installed in lube pan sump.
18. Engine starting shall be initiated via the generator control panel mode selector switch either manually or through remote 2-wire system. It shall include an electric 24V DC starting system.
19. Charging system shall include an engine-driven 35 amp 24V DC battery charging alternator, lead acid starting batteries rated at a minimum of 225 amp hours each, an automatic constant potential battery charger rated 10 amps, operating on 120V AC with voltmeter, ammeter, input and output fuse protection, float equalize switch, and low battery voltage contacts.
20. Cooling system shall be unit-mounted radiator with blower-type fan to cool engine at 100% rated load at 104 degrees F ambient. Provide an immersion-type block heater with adjustable thermostat and oil pressure disconnect switch for operation on 120 V AC. Supply in system a rust inhibitor in addition to the anti-freeze required. Anti-freeze protection shall equal 0 degrees F.
21. Safety alarms shall include an automatic shutdown system to protect from high water temperature, low oil pressure, overspeed, and overcrank

22. Instrumentation shall include control panel mounted gauges to monitor lube oil pressure, engine coolant temperature, battery charge rate, hours of operation, "Auto-Off/Reset-Test" engine mode selector switch, and push to test pilot lights indicating nature of shutdown conditions.

E. General Description - Alternator:

1. Alternator shall be a brushless, single bearing, and directly coupled to the engine flywheel via a flexible disk. It shall be engine driven, synchronous type, with amortisseur windings. Insulation shall be non-hygroscopic Class H, with a temperature rise not to exceed 105 degrees C above a 40 degrees C ambient. Alternator shall be a 10 or 12 lead machine with leads brought to a terminal box.
2. Voltage regulator shall be a solid-state type with no moving parts. It shall include overvoltage and underfrequency protection and be moisture proof.
3. Alternator and control panel strip heaters for use on 120V AC to raise the temperature 35 degrees C above ambient for moisture protection. Provide relay to disconnect heaters when generator is running.
4. Instrumentation includes control panel mounted gauges to monitor voltage, amps, frequency, four-position phase selector switch, voltage adjusting rheostats, and push to test pilot lights indicating breaker tripped. Engine and breaker must be manually reset after shutdown. Breaker shall not trip on overcrank. The control panel shall contain field adjustable solid-state circuitry for overcrank protection designed to open the cranking circuit after a minimum of three cranking cycles of 30 second crank/15 second pause if engine fails to start.

F. Vibration isolation shall be accomplished by mounting unit on a minimum of six spring-type vibration isolators with adjusting screws and earthquake restraints, unless manufacturer recommends no external vibration isolation.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install the engine-generator set, battery charger, and batteries per the manufacturers recommendations and as shown on the Drawings.

B. Provide proper filters for fuel and lubricating oils and fill engine with proper type and amount of oil.

C. Fill the engine cooling system with ethylene-glycol antifreeze solution and water in a 50/50 mixture.

D. Provide all necessary connections for a complete and operating installation.

E. Provide seismic restraint and bracing for the generator set in accordance with the current Oregon Structural Specialty Code and as designed by a professional engineer licensed in the State of Oregon.

3.2 MAINTENANCE INSTRUCTIONS

A. All personnel directly concerned with the operation of the system shall be thoroughly instructed in the use of the systems by authorized distributor personnel. Such service shall be provided in conjunction with the system equipment. Allocate 4 hours of site training for Owner's personnel. Schedule training time with Owner.

3.3 WARRANTY

A. The complete diesel engine generator system shall be guaranteed for two years from date of acceptance.

B. In addition to the manufacturer's standard warranty, the warranty shall include 100% parts, labor, travel mileage, transportation costs, and freight associated with failure unless failure is caused by misuse, abuse, or accident (e.g. fires, floods, etc.). Manufacturer's factory service personnel, skilled in the repair of the unit, shall be dispatched to repair the equipment at the site within 24 hours after receiving the purchaser's call.

3.4 TESTING

A. Prior to installation of the engine generator set, a factory test shall be performed and a logged test report issued to the Owner. A resistive load bank shall be connected to the load side of the standby generator. The load bank shall be used to test the generator set for full load and half load. The log shall include the length of time for generator set start-up after the commercial source is interrupted, the length of time for the generator set to reach frequency stability after zero to half load and from half load to full load switching. The generator set shall be run for a minimum of four hours at full load. All the temperatures of the engine and the voltages, frequency and amperages shall be recorded on every 15 minute interval during the test.

B. A site test shall be performed, logged and witnessed by the Owner's representative. The total facility standby load shall be connected to the unit for one full hour. Each breaker shall be used to approximate half and full load. The log shall indicate the same information contained in the pre-installation test. Notify the Owner 72 hours in advance so that his representative can be present at the test.

3.5 ACCEPTANCE

A. Upon satisfactory completion of tests instruction and completion of the project, the system shall be deemed accepted.

END OF SECTION

Sales and Service

CUMMINS INC
4711 N Basin
Portland, OR 97217
971-280-0800

May 12th, 2021

Submittal for:
Gleneden Beach PS

Cummins Inc. Project No. 211478
PO No.: PO2103

Customer Requested Delivery Date:_____

Customer Requested Equipment Delivery Address:_____

_____

Contact Person & Phone # for Deliveries:_____

Prepared for:
Glinda Ireland
Gleneden Beach PS
Full Address undetermined

Phone No.: 503-394-2190

Fax No. :

Email

bids@rgexcavating.com

Prepared by: Robinson Cantero

Office Number: 971-280-0800

Mobile Number: -

Fax Number: -

Email address: Robinson.cantero@cummins.com

Customer Approval

□ Revise and Resubmit

□ Approved as Noted/Release for Production

□ Released for Production

By: _____ Dated:_____

Important:
1. By signing this submittal you're approving it as submitted unless noted.
2. Any change to the scope of supply may impact the current shipping schedule and the contract price, as such, Cummins Inc. can NOT accept any changes to the scope of supply within 60 Calendar days before shipment.
3. **Our Company policy states that "We can NOT order any materials or proceed with production without an approved and release submittal that includes a required ship date".**

May12h, 2021
Project Name:Gleneden Beach PS
Project Number: 211478

Dear: Glinda Ireland

Thank you for your order. The next step in the process is the submittals phase.
Attached please find the submittal, prepared by Robinson Cantero, the Project Manager assigned to your project. Please review the submittal and return it to him as soon as possible along with your approval and/or changes clearly indicated so we can continue to process your order.

Our company policy states we cannot order any materials or proceed with any production without an approved submittal returned from you along with requested delivery date.

Current lead time is approximately **16-18 Weeks** from submittal approval. Split shipments and drop shipments on equipment that do not need local upfit are possible, but requirements must be advised at the time of release.

Note: Requested delivery date is not a guarantee of delivery date. Leadtimes at time of release can vary due to market conditions and manufacturing production capacities. We will advise you of our closest delivery target to match your request within 1-2 weeks.

A Cummins Project Team has now been assigned to your project. Their names and contact info are listed below. For all issues your Project Manager, Robinson Cantero, will best be able to assist you.

Name	Title	Function	Phone	email
Chris Walhberg	Territory Manager	Sales	503-806-0322	christopher.c.Wahlberg@cummins.com
Robinson Cantero	Project Manager Portland	Prepares Submittals, handles all Project issues	971-280-0800	Robinson.cantero@cummins.com
Chris Walhberg	Territory Manager	Sales	503-307-7529	christopher.c.Wahlberg@cummins.com
Jenness Mann	PC	Project Coordinator	503-972-6646	jenness.mann@cummins.com
John McWilliams	Senior Application Engineer	Technical Resource for all projects	510-347-6673	john.l.mcwilliams@cummins.com
TBD	TBD	Schedules pre-inspect and S&T	TBD	TBD
Dan Lanske	Director of Sales Powergen	Director of Sales Power Gen	206-450-2383	dan lanske@cummins.com

Best regards,

Robinson Cantero
Cummins Inc.

Sales and Service

May 12th, 2021
Project Name: Gleneden Beach PS
Project Number: **211478**
PO Number: **2103**

Summary Sheet

(Not for Construction, please refer to specific materials within submittal or call Cummins Inc. to double check values.)

Project Manager Robinson Cantero 971-280-0800

Major Equipment Shipping Weights and Dimensions

Equipment	Length (in)	Width (in)	Height (in)	Weight (lbs)	Color	Sources Drawing Number
C125 D6C	154	40	72	4500	Green	
Diesel Fuel Gallonage						
				-		
Total Genset Package						

Generator Set - Lug Information

Max. Breaker Amps	Wire (Cooper)	
	Quantity	Size
200A	1	350MCM

Automatic Transfer Switch - Lug Information

Amperage	Cable/Phase	Cable Size
225A ATS	1	300MCM

AC Power Supplies needed for Genset Accessories

Accessories	No. phases	Voltage	Wattage
Engine Oil Heater	1	120Vac	432
Alternator Heater	1	120Vac	276
Coolant Heater	1	120Vac	1000

*For genset 250kW and below refer to drawing 0333-0588 for reconnectable heater.

General Wiring Guidelines

Interconnection Wiring To Be # 14 AWG Stranded Wire Minimum. Ac and Dc Control Wires to Be Run In Separate Conduits

Battery Charger to Battery to Be Sized For Charger Output And length of run.

For AC Connections Use # 14 AWG or larger for lengths up to 40 Feet.

Use # 12 AWG or larger for lengths up to 50 Feet.

Use # 10 AWG or larger for lengths up to 100 Feet.

For DC Connections Use # 14 AWG or larger for lengths up to 100 Feet.

Paralleling load share cable to be 18 AWG 4 - conductor twisted shielded cable.
Modbus and PCCnet cable to be Belden model 9729 twisted shielded pair.
Echelon Lontalk network cable to be stranded CAT5.
We recommend running additional 20% spare wires for each circuit.
****REFER TO WIRING DIAGRAMS SUPPLIED WITH SUBMITTAL FOR SPECIFIC INFORMATION****

Special Requirements / Submittal Review Notes

Warranty Statement

Global Commercial Warranty Statement

Generator Set

English
Original Instructions

7-2017

A028U870 (Issue 5)

Our energy working for you.™

Power Generation

Limited Warranty

Commercial Generating Set

This limited warranty applies to all Cummins Power Generation® branded commercial generating sets and associated accessories (hereinafter referred to as "Product").

This warranty covers any failures of the Product, under normal use and service, which result from a defect in material or factory workmanship.

Warranty Period:

The warranty start date† is the date of initial start up, first rental, demonstration or 18 months after factory ship date, whichever is sooner. See table for details.

Continuous Power (COP) is defined as being the maximum power which the generating set is capable of delivering continuously whilst supplying a constant electrical load when operated for an unlimited number of hours per year. No overload capability is available for this rating.

Prime Power (PRP) is defined as being the maximum power which a generating set is capable of delivering continuously whilst supplying a variable electrical load when operated for an unlimited number of hours per year. The permissible average power output over 24 hours of operation shall not exceed 70% of the PRP. For applications requiring permissible average output higher than stated, a COP rating should be used.

Limited-Time Running Power (LTP) is defined as the maximum power available, under the agreed operating conditions, for which the generating set is capable of delivering for up to 500 hours of operation per year.

Emergency Standby Power (ESP) is defined as the maximum power available during a variable electrical power sequence, under the stated operating conditions, for which a generating set is capable of delivering in the event of a utility power outage or under test conditions for up to 500 hours of operation per year. The permissible average power output over 24 hours of operation shall not exceed 70% of the ESP.

Environmental Protection Agency – Stationary Emergency (EPA-SE) is defined as being the maximum power available during a variable electrical power sequence, under the stated operating conditions, for which a generator set is capable of delivering in the event of a utility power outage or under test conditions and used in strict accordance with the EPA NSPS for stationary engines, 40 CFR part 60, subparts IIII and JJJJ, where a reliable utility must be present. The permissible average power output over 24 hours of operation shall not exceed 70% of the EPA-SE.

Data Center Continuous (DCC) is defined as the maximum power which the generator is capable of delivering continuously to a constant or varying electrical load for unlimited hours in a data center application.

Base Warranty Coverage Duration (Whichever occurs first)

Rating	Months	Max. Hours
COP	12	Unlimited
PRP	12	Unlimited
LTP	12	500 hrs
ESP	24	1000 hrs
EPA-SE	24	Unlimited
DCC	24	Unlimited

† Warranty start date for designated rental and oil and gas model Products is determined to be date of receipt of Product by the end customer.

Cummins Power Generation® Responsibilities:

In the event of a failure of the Product during the warranty period due to defects in material or workmanship, Cummins Power Generation® will only be responsible for the following costs:

- All parts and labor required to repair the Product.
- Reasonable travel expenses to and from the Product site location.
- Maintenance items that are contaminated or damaged by a warrantable failure.

Owner Responsibilities:

The owner will be responsible for the following:

- Notifying Cummins Power Generation® distributor or dealer within 30 days of the discovery of failure.
- Installing, operating, commissioning and maintaining the Product in accordance with Cummins Power Generation®'s published policies and guidelines.
- Providing evidence for date of commissioning.
- Providing sufficient access to and reasonable ability to remove the Product from the installation in the event of a warrantable failure.
- Incremental costs and expenses associated with Product removal and reinstallation resulting from non-standard installations.
- Costs associated with rental of generating sets used to replace the Product being repaired.
- Costs associated with labor overtime and premium shipping requested by the owner.
- All downtime expenses, fines, all applicable taxes, and other losses resulting from a warrantable failure.

Limitations:

This limited warranty does not cover Product failures resulting from:

- Inappropriate use relative to designated power rating.
- Inappropriate use relative to application guidelines.
- Inappropriate use of an EPA-SE application generator set relative to EPA's standards.
- Normal wear and tear.
- Improper and/or unauthorized installation.
- Negligence, accidents or misuse.
- Lack of maintenance or unauthorized repair.
- Noncompliance with any Cummins Power Generation® published guideline or policy.
- Use of improper or contaminated fuels, coolants or lubricants.
- Improper storage before and after commissioning.
- Owner's delay in making Product available after notification of potential Product problem.
- Replacement parts and accessories not authorized by Cummins Power Generation®.
- Use of Battle Short Mode.
- Owner or operator abuse or neglect such as: operation without adequate coolant or lubricants; overfueling; overspeeding; lack of maintenance to lubricating, cooling or air intake systems; late servicing and maintenance; improper storage, starting, warm-up, run-in or shutdown practices, or for progressive damage resulting from a defective shutdown or warning device.
- Damage to parts, fixtures, housings, attachments and accessory items that are not part of the generating set.

This limited warranty does not cover costs resulting from:

- Difficulty in gaining access to the Product.
- Damage to customer property.

A "Data center" is defined as a dedicated facility that house computers and associated equipment for data storage and data handling.

Reliable utility is defined as utility power without routine or regularly scheduled black-outs.

Please contact your local Cummins Power Generation® Distributor for clarification concerning these limitations.

CUMMINS POWER GENERATION® RIGHT TO FAILED COMPONENTS:

Failed components claimed under warranty remain the property of Cummins Power Generation®. Cummins Power Generation® has the right to reclaim any failed component that has been replaced under warranty.

Extended Warranty:

Cummins Power Generation® offers several levels of Extended Warranty Coverage. Please contact your local Cummins Power Generation ® Distributor for details.

www.power.cummins.com

THE WARRANTIES SET FORTH HEREIN ARE THE SOLE WARRANTIES MADE BY CUMMINS POWER GENERATION ® IN REGARD TO THE PRODUCT. CUMMINS POWER GENERATION® MAKES NO OTHER WARRANTIES, EXPRESS OR IMPLIED, OR OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.

IN NO EVENT IS CUMMINS POWER GENERATION® LIABLE FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES.

This limited warranty shall be enforced to the maximum extent permitted by applicable law. This limited warranty gives the owner specific rights that may vary from state to state or from jurisdiction to jurisdiction.

Product Model Number:_____
Product Serial Number:_____
Date in Service:_____

Specification Sheet

Diesel Generator Set

QSB5 Series Engine
50-125 kW Standby
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® 1.1 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. The PowerCommand 2.3 control is also optional and is UL 508 Listed and provides AmpSentry™ protection.

Cooling system - Standard cooling package provides reliable running at up to 50 ℃ (122 ℉) ambient temperature.

Enclosures - The aesthetically appealing enclosure incorporates special designs that deliver one of the quietest generators of its kind. Aluminium 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-6333-EN
C60D6C	60	75	54	68	NAD-6334-EN
C80D6C	80	100	72	90	NAD-6335-EN
C100D6C	100	125	90	113	NAD-6336-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 L (272 in^3)
Cylinder block	Cast iron, in-line 4 cylinder
Battery capacity	850 amps per battery at ambient temperature of 0 ℃ (32 ℉)
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 ℉) 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 ℃ temperature rise alternator
- 105 ℃ 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
- Sound Level 1 or Level 2 enclosure, sandstone or green color
- Weather protective enclosure with muffler installed, green color
- Winter protective enclosure, green color

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

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 1.1

PowerCommand control is an integrated generator set control system providing voltage regulation, engine protection, operator interface and isochronous governing (optional). Major features include:

- Battery monitoring and testing features and smart starting control system.
- Standard PCCNet interface to devices such as remote annunciator for NFPA 110 applications.
- Control boards potted for environmental protection.
- Control suitable for operation in ambient temperatures from -40 °C to +70 °C (-40 °F to +158 °F) and altitudes to 5000 meters (13,000 feet).
- Prototype tested; UL, CSA, and CE compliant.
- InPower™ PC-based service tool available for detailed diagnostics.

Operator/display panel

- Manual off switch
- Alpha-numeric display with pushbutton access for viewing engine and alternator data and providing setup, controls and adjustments (English or international symbols)
- LED lamps indicating generator set running, not in auto, common warning, common shutdown, manual run mode and remote start
- Suitable for operation in ambient temperatures from -40 °C to +70 °C
- Bargraph display (optional)

AC protection

- Over current warning and shutdown
- Over and under voltage shutdown
- Over and under frequency shutdown
- Over excitation (loss of sensing) fault
- Field overload

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 (over crank) shutdown
- Fail to crank shutdown
- Redundant start disconnect
- Cranking lockout
- Sensor failure indication
- Low fuel level warning or shutdown

Alternator data

- Line-to-Line and Line-to-neutral AC volts
- 3-phase AC current
- Frequency
- Total kVA

Engine data

- DC voltage
- Lube oil pressure
- Coolant temperature
- Engine speed

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 governing (optional)

- Integrated digital electronic isochronous governor
- Temperature dynamic governing

Digital voltage regulation

- Integrated digital electronic voltage regulator
- 2-phase Line-to-Line sensing
- Configurable torque matching

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
- PowerCommand 2.3 control with AmpSentry protection

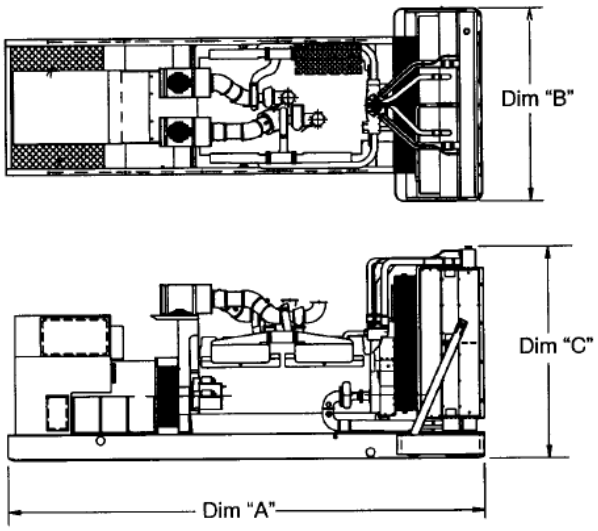
Ratings Definitions

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)	1016 (40)	1321 (52)	958 (2113)
C60D6C	2482 (98)	1016 (40)	1321 (52)	1006 (2217)
C80D6C	2482 (98)	1016 (40)	1321 (52)	1054 (2324)
C100D6C	2482 (98)	1016 (40)	1321 (52)	1106 (2439)
C125D6C	2482 (98)	1016 (40)	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)
Winter protective enclosure				
C50D6C	3701 (146)	1016 (40)	1473 (58)	1254 (2758)
C60D6C	3701 (146)	1016 (40)	1473 (58)	1169 (2572)
C80D6C	3701 (146)	1016 (40)	1473 (58)	1218 (2679)
C100D6C	3701 (146)	1016 (40)	1473 (58)	1270 (2794)
C125D6C	3701 (146)	1016 (40)	1473 (58)	1337 (2941)

* 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

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NAS-6211-EN - 06DEC2019.DOCX (12/19) A055Y560

Generator Set Data Sheet

Model:	C125D6C
Frequency:	60 Hz
Fuel type:	Diesel
KW rating:	125 Standby 112.5 Prime
Emissions level:	EPA Tier 3, Stationary Emergency

Exhaust emission data sheet:	EDS-1254
Exhaust emission compliance sheet:	EPA-1354
Sound performance data sheet:	MSP-1304
Cooling performance data sheet:	MCP-1404
Prototype test summary data sheet:	PTS-451

Fuel Consumption

	Standby				Prime			
	kW (kVA)				kW (kVA)			
Ratings	125 (156)				112.5 (141)			
Load	1/4	1/2	3/4	Full	1/4	1/2	3/4	Full
US gph	3.30	6.10	8.30	10.30	3.00	5.60	8.40	9.30
L/hr	12.49	23.09	31.42	38.99	11.36	21.20	31.80	35.20

Engine

	Standby rating	Prime rating
Engine manufacturer	Cummins Inc.	
Engine model	QSB5-G6	
Configuration	Cast iron, in-line, 4 cylinder	
Aspiration	Turbocharged and charge air cooled	
Gross engine power output, kWm (bhp)	155 (208)	136 (183)
BMEP at set rated load, kPa (psi)	2317 (336)	2041 (296)
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)	95 (25.0)
Maximum fuel inlet restriction with clean filter, mm Hg (in Hg)	127 (5.0)

Air

	Standby rating	Prime rating
Combustion air, m3/min (scfm)	10.42 (368)	10.48 (370)
Maximum air cleaner restriction with clean filter, kPa (in H2O)	1.25 (5)	

Exhaust

Exhaust flow at set rated load, m^3/min (cfm)	25.6 (903)	24.4 (861)
Exhaust temperature, °C (°F)	528 (982)	489 (913)
Maximum back pressure, kPa (in H_2O)	10 (40.19)	10 (40.19)
Actual exhaust back pressure with CPG sound level 2 enclosure muffler, kPa (in H_2O)	0 (0)	0 (0)
Actual exhaust back pressure with CPG weather enclosure muffler, kPa (in H_2O)	0 (0)	0.5 (2)

Standard Set-mounted Radiator Cooling

Ambient design, ° C (° F)	40 (104)	
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)	14.17 (13429)	13.06 (12382)
Maximum cooling air flow static restriction, kPa (in H_2O)	0.12 (0.5)	

Weight[2]

Unit wet weight kgs (lbs)	1173 (2586)

Notes:
[1] For non-standard remote installations contact your local Cummins Power Generation 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 1097 m (3600 ft) and ambient temperatures up to 40° C (104° F). Above these conditions, derate at 35% per 300 m (1000 ft) and 53% per 10° C (18° F)
Prime	Engine power available up to 1158 m (3800 ft) and ambient temperatures up to 40° C (104° F). Above these conditions, derate at 35% per 300 m (1000 ft) and 58% 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[2]		Three phase[1]			
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-209	ADS-208	ADS-208	ADS-208	ADS-208	ADS-208
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	137.8	141.8	141.8	143.5	143.5	142.6
Motor starting kVA (at 90% sustained voltage) Shunt		516	516	422	422	516
Motor starting kVA (at 90% sustained voltage) PMG		607	607	497	497	607
Full load current amps at standby rating	521	434	376	188	188	411

Alternator Data

Standard Alternators	Single phase[2]			Three phase[1]		
Maximum temperature rise above 40 °C ambient	105 °C	105 °C	105 °C	105 °C	105 °C	105 °C
Feature code	BB91-2	BB93-2	BB94-2	BB95-2	BB92-2	BB85-2
Alternator data sheet number	ADS-209	ADS-209	ADS-209	ADS-208	ADS-208	ADS-209
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	137.8	143.5	143.5	143.5	143.5	143.8
Motor starting kVA (at 90% sustained voltage) Shunt		516	516	422	422	516
Motor starting kVA (at 90% sustained voltage) PMG		607	607	497	497	607
Full load current amps at standby rating	521	434	376	188	150	411

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
[2] Full 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.

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Specification Sheet

PowerCommand® 1.1 Control System

Description

The PowerCommand control system is a microprocessor-based generator set monitoring, metering and control system designed to meet the demands of today's engine driven generator sets. The integration of all control functions into a single control system provides enhanced reliability and performance compared to conventional generator set control systems. These control systems have been designed and tested to meet the harsh environment in which gensets are typically applied.

Features

Easy to view: HMI 211RS for residential use. 128 x 64 pixel graphic LED backlight LCD.

Easy to use: Tactile buttons for generator set start/stop. Residential Standby display for convenient use.

Modbus® interface: Eliminates need for MODLON.

Progressive protective functions: Advanced Overcurrent Protection – Generator set monitoring & protection.

Digital voltage regulation: Single phase full wave SCR type regulator compatible with either shunt or PMSG systems.

Digital engine speed governing: Provides isochronous frequency regulation.

12 and 24 VDC battery operation.

Automatic mains failure: Smooth & automatic transfer and re-transfer of load from utility to generator set & vice-versa.

Exerciser clock: Runs generator set exerciser routines for dependability of operation.

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

Certification: Suitable for us on generator sets that are designed, manufactured, tested and certified to relevant UL, NFPA, ISO, IEC Mil Std., CE and CSA standards.

PowerCommand Digital Generator Set Control PCC 1302

Description

The PowerCommand generator set control is suitable for use on a wide range of generator sets in non-paralleling applications. The PowerCommand control is compatible with shunt or PMG excitation style. It is suitable for use with reconnectable or non-reconnectable generators, and it can be configured for any frequency, voltage and power connection from 120-600 VAC Line-to-Line.

Power for this control system is derived from the generator set starting batteries. The control functions over a voltage range from 8 VDC to 30 VDC.

Features

- 12 and 24 VDC battery operation.
- Digital voltage regulation.
- Digital engine speed governing (where applicable) - Provides isochronous frequency regulation.
- Full authority engine communications (where applicable) - Provides communication and control with the Engine Control Module (ECM).
- Common harnessing - with higher feature Cummins controls allows for easy field upgrades.
- Generator set monitoring - Monitors status of all critical engine and alternator functions.
- Digital genset metering (AC and DC).
- Genset battery monitoring system - to sense and warn against a weak battery condition.
- Engine starting - Includes relay drivers for starter, fuel shut off (FSO), glow plug/spark ignition power and switch B+ applications.
- Generator set protection - Protects engine and alternator.
- Advanced serviceability - using InPower™, a PC-based software service tool.
- Environmental protection - The control system is designed for reliable operation in harsh environments. The main control board is a fully encapsulated module that is protected from the elements.
- Exerciser function – Routine exercising of generator set.
- Supports dual fuel control.
- Automatic Mains Failure function built in generator set controller. Modbus interface - for interconnecting to customer equipment.
- Configurable inputs and outputs - Four discrete inputs and two dry contact relay outputs.
- Warranty and service - Backed by a comprehensive warranty and worldwide distributor service network.
- Certifications - Suitable for use on generator sets that are designed, manufactured, tested and certified to relevant UL, NFPA, ISO, IEC, Mil Std., CE and CSA standards.

Base Control Functions

HMI capability

Operator adjustments - The HMI includes provisions for many set up and adjustment functions.

Generator set hardware data - Access to the control and software part number, generator set rating in kVA and generator set model number is provided from the HMI or InPower™.

Data logs - Includes engine run time, controller on time, number of start attempts.

Fault history - Provides a record of the most recent fault conditions with control hours time stamp. Up to 10 events are stored in the control non-volatile memory.

Alternator data

- Voltage (single or three phase Line-to-Line and Line-to-Neutral)
- Current (single or three phase)
- kVA (three phase and total)
- Frequency
- Engine data
- Starting battery voltage
- Engine speed
- Engine temperature
- Engine oil pressure
- Partial Full Authority Engine (FAE) data (where applicable)
- Service adjustments - The HMI includes provisions for adjustment and calibration of generator set control functions. Adjustments are protected by a password. Functions include:
- Engine speed governor adjustments
- Voltage regulation adjustments
- Cycle cranking
- Configurable fault set up
- Configurable output set up
- Meter calibration
- Units of measurement

Engine control

SAE-J1939 CAN interface to full authority ECMs (where applicable) - Provides data swapping between genset and engine controller for control, metering and diagnostics.

12 VDC/24 VDC battery operations - PowerCommand will operate either on 12 VDC or 24 VDC batteries.

Isochronous governing (where applicable) - Capable of controlling engine speed within +/-0.25% for any steady state load from no load to full load. Frequency drift will not exceed +/-0.5% for a 33 °C (60 °F) change in ambient temperature over an 8 hour period.

Temperature dependent governing dynamics (with electronic governing) - Modifies the engine governing control parameters as a function of engine temperature. This allows the engine to be more responsive when warm and more stable when operating at lower temperature levels.

Remote start mode - Accepts a ground signal from remote devices to automatically start the generator set and immediately accelerate to rated speed and voltage. The remote start signal will also wake up the control from sleep mode. The control can incorporate a time delay start and stop.

Remote and local Emergency stop - The control accepts a ground signal from a local (genset mounted) or remote (facility mounted) Emergency stop switch to cause the generator set to immediately shut down. The generator set is prevented from running or cranking with the switch engaged. If in sleep mode, activation of either Emergency stop switch will wake up the control.

Sleep mode - The control includes a configurable low current draw state to minimize starting battery current draw when the genset is not operating. The control can also be configured to go into a low current state while in auto for Prime applications or applications without a battery charger.

Engine starting - The control system supports automatic engine starting. Primary and backup start disconnects are achieved by one of three methods: magnetic pickup, battery charging alternator feedback or main alternator output frequency. The control also supports configurable glow plug control when applicable.

Cycle cranking - Configurable for the number of starting cycles (1 to 7) and duration of crank and rest periods. Control includes starter protection algorithms to prevent the operator from specifying a starting sequence that might be damaging.

Time delay start and stop (cooldown) - Configurable for time delay of 0-300 seconds prior to starting after receiving a remote start signal and for time delay of 0-600 seconds prior to shut down after signal to stop in normal operation modes. Default for both time delay periods is 0 seconds.

Alternator control

The control includes an integrated line-to-line sensing voltage regulation system that is compatible with shunt or PMG excitation systems. The voltage regulation system is full wave rectified and has an SCR output for good motor starting capability. Major system features include:

Digital output voltage regulation - Capable of regulating output voltage to within +/-1.0% for any loads between no load and full load. Voltage drift will not exceed +/-1.5% for a 40 ºC (104 ºF) change in temperature in an eight hour period. On engine starting or sudden load acceptance, voltage is controlled to a maximum of 5% overshoot over nominal level.

The automatic voltage regulator feature can be disabled to allow the use of an external voltage regulator.

Torque-matched V/Hz overload control - The voltage roll-off set point and rate of decay (i.e. the slope of the V/Hz curve) is adjustable in the control.

Protective Functions

On operation of a protective function the control will indicate a fault by illuminating the appropriate status LED on the HMI, as well as display the fault code and fault description on the LCD. The nature of the fault and time of occurrence are logged in the control. The service manual and InPower service tool provide service keys and procedures based on the service codes provided. Protective functions include:

Battle short mode

When enabled and the battle short switch is active, the control will allow some shutdown faults to be bypassed. If a bypassed shutdown fault occurs, the fault code and description will still be annunciated, but the genset will not shutdown. This will be followed by a fail to shutdown fault. Emergency stop shutdowns and others that are critical for proper operation are not bypassed. Please refer to the Control Application Guide or Manual for list of these faults.

Configurable alarm and status inputs

The control accepts up to four alarm or status inputs (configurable contact closed to ground or open) to indicate a configurable (customer-specified) condition. The control is programmable for warning, shutdown or status indication and for labelling the input.

Emergency stop

Annunciated whenever either Emergency stop signal is received from external switch.

General engine protection

Low and high battery voltage warning - Indicates status of battery charging system (failure) by continuously monitoring battery voltage.

Weak battery warning - The control system will test the battery each time the generator set is signaled to start and indicate a warning if the battery indicates impending failure.

Fail to start (overcrank) shutdown - The control system will indicate a fault if the generator set fails to start by the completion of the engine crack sequence.

Fail to crank shutdown - Control has signaled starter to crank engine but engine does not rotate.

Cranking lockout - The control will not allow the starter to attempt to engage or to crank the engine when the engine is rotating.

Hydro mechanical fuel system engine protection

Overspeed shutdown - Default setting is 115% of nominal.

Low lube oil pressure warning/shutdown - Level is pre-set (configurable with InPower) to match the capabilities of the engine used. Control includes time delays to prevent nuisance alarms.

High lube oil temperature warning/shutdown - Level is pre-set (configurable with InPower) to match the capabilities of the engine used. Control includes time delays to prevent nuisance alarms.

High engine temperature warning/shutdown - Level is pre-set (configurable with InPower) to match the capabilities of the engine used. Control includes time delays to prevent nuisance alarms.

Low coolant temperature warning - Indicates that engine temperature may not be high enough for a 10 second start or proper load acceptance.

Sensor failure indication - Logic is provided on the base control to detect analog sensor or interconnecting wiring failures.

Full authority electronic engine protection

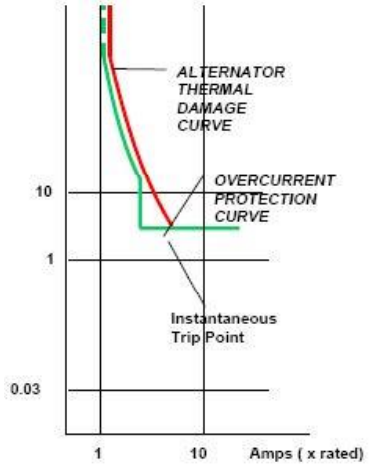
Engine fault detection is handled inside the engine ECM. Fault information is communicated via the SAE-J1939 data link for annunciation in the HMI

Alternator protection

High AC voltage shutdown (59) - Output voltage on any phase exceeds pre-set values. Time to trip is inversely proportional to amount above threshold. Values adjustable from 105-130% of nominal voltage, with time delay adjustable from 0.1-10 seconds. Default value is 110% for 10 seconds.

Low AC voltage shutdown (27) - Voltage on any phase has dropped below a pre-set value. Adjustable over a range of 50-95% of reference voltage, time delay 2-20 seconds. Default value is 85% for 10 seconds.

Overcurrent warning/shutdown - Implementation of the thermal damage curve with instantaneous trip level calculated based on current transformer ratio and application power rating.



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Under frequency shutdown (81 u) - Generator set output frequency cannot be maintained. Settings are adjustable from 2-10 Hz below nominal governor set point, for a 5-20 second time delay. Default: 6 Hz, 10 seconds.

Over frequency shutdown/warning (81o) - Generator set is operating at a potentially damaging frequency level. Settings are adjustable from 2-10 Hz above nominal governor set point for a 1-20 second time delay. Default: 6 Hz, 10 seconds, enabled.

Loss of sensing voltage shutdown - Shutdown of generator set will occur on loss of voltage sensing inputs to the control.

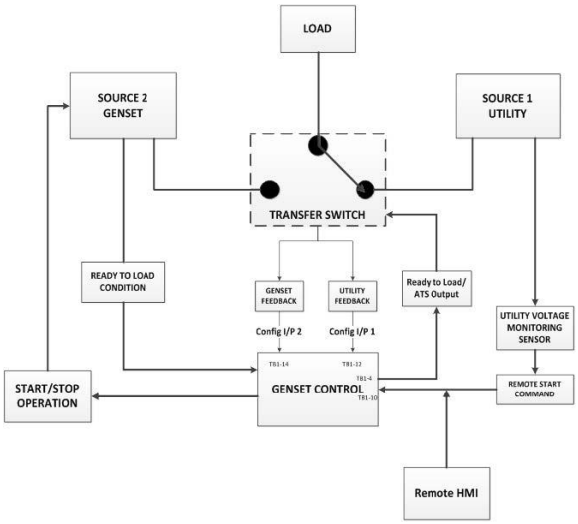
Field overload shutdown - Uses field voltage to shutdown generator set when a field overload condition occurs.

Advanced Functions

Automatic mains failure*

The built in AMF feature provides the automatic transfer and re-transfer of the load from utility to generator set and vice-versa.

- Automatically starts-stops the generator set in the event of utility failure.
- Annunciates faults.



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* A utility voltage monitoring sensor (as shown in the AMF diagram above) must be connected in order to use the AMF feature on the 1302 control. Use Schneider Electric Relay RSB1A120U7 and Socket RSZE1S35M.

Exerciser clock

The exerciser clock runs the generator set exerciser routines for dependability of operation.

Field Control Interface

Input signals to the base control include:

- Remote start
- Local and Emergency stop
- Configurable inputs: Control includes (4) input signals from customer discrete devices that are configurable for warning, shutdown or status indication, as well as message displayed.

Output signals from the PowerCommand control include:

- Configurable relay outputs: Control includes (2) relay output contacts rated at 2 A. These outputs can be configured to activate on any control warning or shutdown fault as well as ready to load, not in auto, common alarm, common warning and common shutdown.
- Ready to load (generator set running) signal: Operates when the generator set has reached 90% of rated speed and voltage and latches until generator set is switched to off or idle mode.

PowerCommand Human Machine Interface HMI211

Description

This control system includes an intuitive operator interface panel that allows for complete genset control as well as system metering, fault annunciation, configuration and diagnostics. The interface includes five generator set status LED lamps with both internationally accepted symbols and English text to comply with customer needs. The interface also includes an LED backlit LCD display with tactile feel soft-switches for easy operation and screen navigation. It is configurable for units of measurement and has adjustable screen contrast and brightness.

The *run/off/auto* switch function is integrated into the interface panel.

All data on the control can be viewed by scrolling through screens with the navigation keys. The control displays the current active fault and a time-ordered history of the five previous faults.

Features

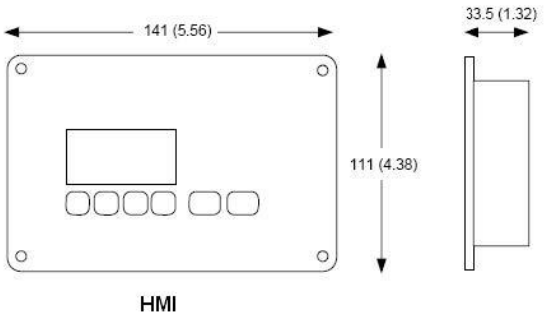
- LED indicating lamps:
  - Remote start
  - Not in auto
  - Shutdown
  - Warning
  - Auto
  - Run
- 128 x 64 pixels graphic LED backlight LCD.
- Four tactile feel membrane switches for LCD defined operation. The functions of these switches are defined dynamically on the LCD.
- Two tactile feel membrane switches dedicated for off and back.
- Allows for complete genset control setup.
- Certifications: Suitable for use on generator sets that are designed, manufactured, tested and certified to relevant UL, NFPA, ISO, IEC, Mil Std., CE and CSA standards.
- HMI 211RS provides convenience for residential use.

Communications Connections

PC tool interface - This RS-485 communication port allows the HMI to communicate with a personal computer running InPower.

This RS-485 communication port allows the HMI to communicate with the main control board.

Mechanical Drawing



Dimensions: mm (inches)

Software

InPower (beyond 6.0 version) is a PC-based software service tool that is designed to directly communicate to PowerCommand generator sets and transfer switches, to facilitate service and monitoring of these products.

Environment

The control is designed for proper operation without recalibration in ambient temperatures from -40 ºC (-40 ºF) to +70º C (158 ºF), and for storage from -55 ºC (-67 ºF) to +80 ºC (176 ºF). Control will operate with humidity up to 95%, non-condensing.

The HMI is designed for proper operation in ambient temperatures from -40 ºC* (-40 ºF) to +70 ºC (158 ºF), and for storage from -40 ºC* (-40 ºF) to +80 ºC (176 ºF).

The control board is fully encapsulated to provide superior resistance to dust and moisture. Display panel has a single membrane surface, which is impervious to effects of dust, moisture, oil and exhaust fumes. This panel uses a sealed membrane to provide long reliable service life in harsh environments.

The control system is specifically designed and tested for resistance to RFI/EMI and to resist effects of vibration to provide a long reliable life when mounted on a generator set. The control includes transient voltage surge suppression to provide compliance to referenced standards.

* Heater accessory (pn: A040H853) is available for enhanced operation below -20 ºC

Certifications

PowerCommand meets or exceeds the requirements of the following codes and standards:

- NFPA 110 for level 1 and 2 systems.
- ISO 8528-4: 1993 compliance, controls and switchgear.
- CE marking: The control system is suitable for use on generator sets to be CE-marked.
- EN 50081-1,2 residential/light industrial emissions or industrial emissions.
- EN 50082-1,2 residential/light industrial or industrial susceptibility.
- ISO 7637-2, level 2; DC supply surge voltage test.
- Mil Std. 202C, Method 101 and ASTM B117: Salt fog test.
- PowerCommand control systems and generator sets are designed and manufactured in ISO 9001 certified facilities.
- UL 6200 recognized and suitable for use on UL 2200 Listed generator sets.
- CSA C282-M1999 compliance.
- CSA 22.2 No. 14 M91 industrial controls.

Warranty

All components and subsystems are covered by an express limited one year warranty. Other optional and extended factory warranties and local distributor maintenance agreements are available

Accessories

1301-1302 Upgrade Kit (HM)	0541-1431
PowerCommand 500 (LAN)	A040X126
Remote HMI 211	0541-1394
Remote HMI 211RS	A046K103
I/O Expansion (Aux 101)	0541-1291
HMI Heater Accessory Kit	A040H853

Parts Ordering Information

1302 Control Board	0327-1617-02
1302 control Board – Arrow	A043W505
Aux 104 (Governor Control)	0327-1507
HMI 211 Without Heater	0300-6014
HMI 211 with Heater	A026G237

Additional Resources

Resource	Where to find
1302 Service Manual	QSOL
Accessories Catalog	cumminspower.com
Additional Controls Information	PowerSuite Library

PCCNet COMPATIBLE

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

Our energy working for you.™

PDS-1566 | PD00000147 | (09/19)

Alternator data sheet

Frame size: UC3E

Characteristics

Weights:	Wound stator assembly:	320 lb	145 kg
	Rotor assembly:	373 lb	169 kg
	Complete alternator:	1041 lb	472 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 ℃ ambient temperature)		Double delta		4 lead		Double delta		
		120/240		120/240		110-120 220-240		
125 ℃ rise ratings	kW/kVA	96/96		115/115		85/85		
105 ℃ rise ratings	kW/kVA	84/84		100/100		75/75		
3 Ø Ratings (0.8 power factor)		Upper broad range		LBR*	347/600	Broad range		
(Based on specified temperature rise at 40 ℃ 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 ℃ Rise ratings	kW	136	150	136	150	116	116	108
	kVA	170	188	170	188	145	145	135
125 ℃ Rise ratings	kW	128	143	128	143	112	112	104
	kVA	160	179	160	179	140	140	130
105 ℃ Rise ratings	kW	112	128	112	128	100	100	94
	kVA	140	160	140	160	125	125	118
80 ℃ Rise ratings	kW	96	110	96	110	90	90	84
	kVA	120	138	120	138	113	113	105
3 Ø Reactances (per unit, ±10%)								
(Based on full load at 105 ℃ rise rating)								
Synchronous		2.34	2.01	1.77	1.85	2.08	1.74	1.46
Transient		0.21	0.18	0.16	0.16	0.19	0.16	0.14
Subtransient		0.14	0.12	0.11	0.11	0.14	0.12	0.10
Negative sequence		0.16	0.14	0.12	0.12	0.14	0.12	0.10
Zero sequence		0.10	0.08	0.07	0.08	0.09	0.07	0.06
3 Ø Motor starting								
Maximum kVA	(Shunt)	422		422	422	311		
(90% sustained voltage)	(PMG)	497		497	497	389		
Time constants	(Sec)							
Transient		0.032		0.032	0.032	0.032		
Subtransient		0.010		0.010	0.010	0.010		
Open circuit		0.850		0.850	0.850	0.850		
DC		0.007		0.007	0.007	0.007		

Alternator data sheet

Frame size: UC3E

Windings	(@ 20° C)				
Stator resistance	(Line to Line, Ohms)	0.0620	0.0460	0.0900	0.0620
Rotor resistance	(Ohms)	1.3100	1.3100	1.3100	1.3100
Number of leads		12	12	6	12

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

Data Sheet

Circuit Breakers

Description

This Data sheet provides circuit breaker manufacturer part numbers and specifications. The Circuit breaker box description is the rating of that breaker box installation on a Cummins Generator. Please refer to the website of the circuit breaker manufacturer for breaker specific ratings and technical information.

Applicable Models

Engine	Models					
Kubota	C10D6	C15D6	C20D6			
QSJ2.4	C20N6	C25N6	C30N6	C30N6H	C36N6	C36N6H
	C40N6	C40N6H	C50N6H	C60N6H		
B3.3	C25D6	C30D6	C35D6	C40D6	C50D6	C60D6
QSJ5.9G	C45N6	C50N6	C60N6	C70N6	C80N6	C100N6
QSJ8.9G	C125N6	C150N6				
QSB5	DSFAC	DSFAD	DSFAE	C50D6C	C60D6C	C80D6C
	C100D6C	C125D6C				
QSB7	DSGAA	DSGAB	DSGAC	DSGAD	DSGAE	
		C125D6D	C150D6D	C175D6D	C200D6D	
QSL9	DSHAD	DQDAA	DQDAB	DQDAC		
QSM11	DQHAB					
QSX15	DFEJ	DFEK				

Instructions

1. Locate the circuit breaker feature code or part number and use the charts below to find the corresponding manufacturer circuit breaker catalog number.

2. Use the first letter of the circuit breaker catalog number to determine the "frame" of the breaker. If the first letter is an “N”, use the second letter. Then follow the corresponding website link from the table below to find the breaker catalog number description.

Please refer to the catalog numbering systems page, which is given in the chart, to understand the nomenclature of the catalog number.

Frame	Catalog name*	Catalog number description page(s)
P	0612CT0101 http://www.schneider-electric.us/en/download/document/0612CT0101/	16-17
H, J, and L	0611CT1001 http://www.schneider-electric.us/en/download/document/0611CT1001/	8-9
Q	0734CT0201 http://www.schneider-electric.us/en/download/document/0734CT0201/	4

*The following link may also be used to search specifically by the breaker part number or for the catalog name listed above. http://products.schneider-electric.us/technical-library/

3. Search the catalog by using the first 3 letters of the breaker catalog number and the first 5 numbers to find information such as trip curves, accessories, and dimensional details regarding the circuit breaker.

*If the catalog number starts with “N”, skip the N and begin your search with the second letter.

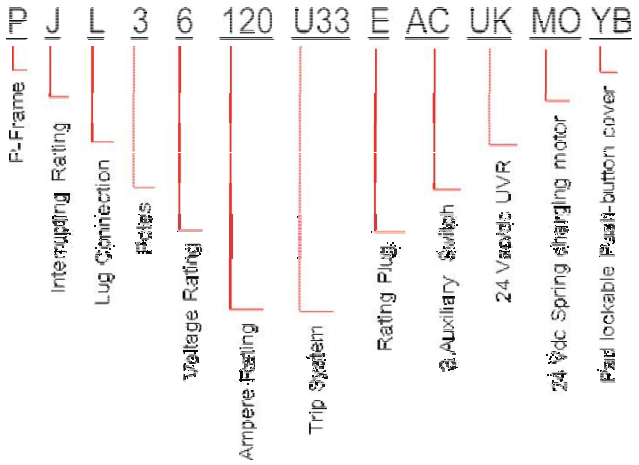
*If the first 3 letters are “PJP,” the search will not work. You will need to start with just “PJ” and use the description pages to obtain the information you are looking for on the “PJP.”

Example

After finding your circuit breaker catalog number to be "PJL36120U33EACUKMOYB," navigate to the P-frame catalog by using the link provided.

Look at pages 16-17 of the pdf catalog to find the nomenclature of the breaker.

Search the P-frame spec sheet using the search "PJL36120.”



Feature Code	Breaker Box Description	Cummins Part #	Manufacturer	Breaker Catalog Number	Trip Unit	Plug Type
KV35-2	CB,Loc A,50A,3P,600VAC,80%,UL	A043L461	Schneider Electric	HDL36050	Thermal Magnetic	N/A
KV36-2	CB,Loc A,60A,3P,600VAC,80%,UL	A043L459	Schneider Electric	HDL36060	Thermal Magnetic	N/A
KV37-2	CB,Loc A,70A,3P,600VAC,80%,UL	A043L451	Schneider Electric	HDL36070	Thermal Magnetic	N/A
KV38-2	CB,Loc A,80A,3P,600VAC,80%,UL	A043L012	Schneider Electric	HDL36080	Thermal Magnetic	N/A
KV39-2	CB,Loc A,90A,3P,600VAC,80%,UL	A043K997	Schneider Electric	HDL36090	Thermal Magnetic	N/A
KV40-2	CB,Loc A,100A,3P,600VAC,80%,UL	A043L024	Schneider Electric	HDL36100	Thermal Magnetic	N/A
KV41-2	CB,Loc A,125A,3P,600VAC,80%,UL	A043K994	Schneider Electric	HDL36125	Thermal Magnetic	N/A
KV42-2	CB,Loc A,150A,3P,600VAC,80%,UL	A043K991	Schneider Electric	HDL36150	Thermal Magnetic	N/A
KV43-2	CB,Loc A,175A,3P,600VAC,80%,UL	A043L619	Schneider Electric	JDL36175	Thermal Magnetic	N/A
KV44-2	CB,Loc A,200A,3P,600VAC,80%,UL	A043L520	Schneider Electric	JDL36200	Thermal Magnetic	N/A
KV45-2	CB,Loc A,225A,3P,600VAC,80%,UL	A043L517	Schneider Electric	JDL36225	Thermal Magnetic	N/A
KV46-2	CB,Loc A,250A,3P,600VAC,80%,UL	A043L510	Schneider Electric	JDL36250	Thermal Magnetic	N/A
KV47-2	CB,Loc A,250A,3P,600VAC,100%,UL	A044C640	Schneider Electric	JDL36250U31XLC	MicroLogic 3.2S	N/A
KV55-2	CB,Loc B,15A,2P,600VAC,80%,UL	A043E189	Schneider Electric	HDL26015	Thermal Magnetic	N/A
KV57-2	CB,Loc B,25A,2P,600VAC,80%,UL	A043E191	Schneider Electric	HDL26025	Thermal Magnetic	N/A
KV58-2	CB,Loc B,30A,2P,600VAC,80%,UL	A043E185	Schneider Electric	HDL26030	Thermal Magnetic	N/A
KV59-2	CB,Loc B,40A,2P,600VAC,80%,UL	A043E183	Schneider Electric	HDL26040	Thermal Magnetic	N/A

Prototype Test Support (PTS)
60 Hz test summary

Generator set models	Representative prototype	
C125D6C	Model:	C125D6C
	Alternator:	UC27 F
	Engine:	QSB5-G6

The following summarizes prototype testing conducted on the designated representative prototype of the specified models. This testing is conducted to verify the complete generator set electrical and mechanical design integrity. Prototype testing is conducted only on generator sets not sold as new equipment.

Maximum surge power: 143.5 kW

The generator set was evaluated to determine the stated maximum surge power.

Maximum motor starting: 178.8 kVA

The generator set was tested to simulate motor starting by applying the specified kVA load at low lagging power factor (0.4 or lower). With this load applied, the generator set recovered to a minimum of 90% rated voltage.

Alternator temperature rise:

The highest rated temperature rise (120 °C) test results are reported as follows to verify that worst case temperature rises do not exceed allowable NEMA MG1 limits for class H insulation. Tests were conducted per IEEE 115, rise by resistance and embedded detector, with the rated voltages. Only the highest temperatures are reported.

Location	Maximum rise (ºC)
Alternator stator	N/A
Alternator rotor	N/A
Exciter stator	N/A
Exciter rotor	N/A

Torsional analysis and testing:

The generator set was tested to verify that the design is not subjected to harmful torsional stresses. A spectrum analysis of the transducer output was conducted.

Cooling system: 40 °C ambient, 0.5 in. H_2O restriction

The cooling system was tested to determine ambient temperature and static restriction capabilities. The test was performed at full rated load in elevated ambient temperature under static restriction conditions.

Durability:

The C125D6C generator set was subjected to a minimum 500 hour endurance test operating at variable load up to the Standby rating based upon MIL-STD-705 to verify structural soundness and durability of the design.

Electrical and mechanical strength:

The generator set was tested to several single phase and three phase faults to verify that the generator can safely withstand the forces associated with short circuit conditions. The generator set was capable of producing full rated output at the conclusion of the testing.

Steady state performance:

The generator set was tested to verify if the steady state operating performance was within the specified maximum limits.

Voltage regulation:	± 1%
Random voltage variation:	± 1%
Frequency regulation:	± Isochronous
Random frequency variation:	± 0.5%

Transient performance:

The generator set was tested to verify single step loading capability as required by NFPA 110 and verify acceptable voltage and frequency response on load addition or rejection. The following results were recorded at 1.0 power factor:

Full load acceptance:

Voltage dip:	28.2%
Recovery time:	1.8 seconds
Frequency dip:	14.5%
Recovery time:	2.8 seconds

Full load rejection:

Voltage rise:	26.9%
Recovery time:	0.8 seconds
Frequency rise:	7.7%
Recovery time:	2.0 seconds

Harmonic analysis:

(per MIL-STD-705B, method 601.4)

	Line to Line		Line to Neutral	
Harmonic	No load	Full load	No load	Full load
3	0.1	0.2	0.1	0.3
5	0.7	1.1	0.7	1.0
7	0.8	2.4	0.9	2.4
9	0.0	0.0	0.0	0.1
11	0.2	0.3	0.2	0.3
13	0.2	0.5	0.2	0.5
15	0.0	0.0	0.0	0.0

2020 EPA Tier 3 exhaust emission compliance statement C125D6C Stationary emergency

60 Hz Diesel generator set

Compliance information:

The engine used in this generator set complies with Tier 3 emissions limit of U.S. EPA New Source Performance Standards for stationary emergency engines under the provisions of 40 CFR 60 Subpart IIII.

Engine manufacturer:	Cummins Inc.
EPA certificate number:	LCEXL0275AAK-026
Effective date:	7/8/2019
Date issued:	7/8/2019
EPA engine family (Cummins emissions family):	LCEXL0275AAK

Engine information:

Model:	QSB5-G6	Bore:	4.21 in. (106.9 mm)
Engine nameplate HP:	208	Stroke:	4.88 in. (123.9 mm)
Type:	4 cycle, in-line, 4 cylinder	Displacement:	272 cu. in. (4.45 liters)
Diesel aspiration:	Turbocharged	Compression ratio:	17.3:1
Emission control device:		Exhaust stack diameter:	4 in. (102 mm)

Diesel fuel emission limits

D2 cycle exhaust emissions

	Grams per BHP-hr			Grams per kWm-hr		
	NO_x + NMHC	CO	PM	NO_x + NMHC	CO	PM
Test Results	2.8	0.7	0.11	3.8	1.0	0.15
EPA Emissions Limit	3.0	2.6	0.15	4.0	3.5	0.20

Test methods: EPA emissions recorded per 40 CFR Part 60, 89, 1039, 1065 and weighted at load points prescribed in the regulations for constant speed engines.

Diesel fuel specifications: Cetane number: 40-50, Reference: ASTM D975 No. 2-D, 300-500 ppm Sulphur

Reference conditions: Air Inlet Temperature: 25 °C (77 °F), Fuel Inlet Temperature: 40 °C (104 °F). Barometric Pressure: 100 kPa (29.53 in Hg), Humidity: 10.7 g/kg (75 grains H2O/lb) of dry air; required for NOx correction, Restrictions: Intake Restriction set to a maximum allowable limit for clean filter; Exhaust Back Pressure set to a maximum allowable limit.

Tests conducted using alternate test methods, instrumentation, fuel or reference conditions can yield different results. Engine operation with excessive air intake or exhaust restriction beyond published maximum limits, or with improper maintenance, may result in elevated emission levels.

Specification sheet

Dual wall sub-base diesel fuel tanks -

10-200 kW generator sets

Description

Cummins® offers two series of fuel tanks (basic series and regional series) for the 10~125 kW diesel generator sets. The “basic” series of fuel tanks provide economical solutions for areas with no or minimal local/regional code requirements on diesel fuel tanks. The footprint of “basic” tanks matches the generator set’s footprint. The “regional” series of fuel tanks provide flexible and upgradable solutions for areas with extensive local/regional code requirements on diesel fuel tanks. The footprint of the “regional” series of fuel tanks extends beyond the generator set to allow room for installation of optional features at factory or accessories in the field for meeting local/regional code requirements or customer specification on diesel fuel tanks. All fuel tanks and optional features are compatible with factory installed enclosures.

These tanks are constructed of heavy gauge steel and include an internally reinforced baffle structure for supporting the generator set. The fuel tank design features fewer seams and welds for better corrosion resistance performance.

These tanks are pre-treated with a conversion coating and then finished with a textured powder paint. The paint has superior UV and chemical resistance with best-in-class adhesion, flexibility, and durability to resist chipping and substrate corrosion. Both interior compartments are treated with a rust preventative for extended corrosion protection.

These tanks are UL and ULC Listed as secondary containment generator base tanks. Inner and outer containments are leak checked per UL and ULC testing procedures to ensure their integrity.

These fuel tanks are offered in various sizes to satisfy different fuel capacities requirements.

Compatible generator set model

Engine	D1703M	V2203M	4BT3.3-G5	4BTAA3.3-G7	QSB5-G5	QSB7-G5
Generator set model names	C10D6	C20D6	C25D6	C50D6	C50D6C	C125D6D
	C15D6		C30D6	C60D6	C60D6C	C150D6D
			C35D6		C80D6C	C175D6D
			C40D6		C100D6C	C200D6D
					C125D6C	

Regional fuel tanks

Standard features:

UL 142 and ULC-S601 listed - Minimum 110% secondary IBC 2012 and 2015 certified - All optional features are seismically certified with this range of tanks and generator sets. Requires factory-installed 2 ft vent extensions or higher.

UL 142 & ULC-S601 listed - Minimum 125% secondary containment capacity.

NFPA & IFC - Capable of meeting NFPA 30, NFPA 110, and IFC codes with available factory-installed optional features.

Emergency pressure relief vents - Ensure adequate ventilation of the primary and secondary tank compartments under extreme temperature and emergency conditions.

Normal atmospheric vent - "Mushroom" style vent ensures adequate venting of the primary tank during fill, generator set running, and temperature variations. Raised above fuel fill.

Raised fuel fill - Includes lockable sealed fuel cap.

Lifting eyes - Allow lifting of fuel tank with generator set installed.

Optional features:

Secondary containment basin switch (rupture switch) - Activates a warning in the event of a primary tank leak. Side Mounted.

Low fuel level switch - Activates a warning when 40% of the fuel is left in the tank.

Fuel level gauge - Provides direct reading of fuel level. Top mounted.

Electric fuel level sender with gauge - Allows remote electrical monitoring of fuel tank level. Flying leads for customer connection.

Tank to foundation clearance - 2-inch bolt-thru risers allow visual inspection under tank including rodent barrier.

Spill containment box for fuel fill - 5 gallon capacity with integral drain (to tank). Lockable lid.

Overfill prevention valve - Shuts off fuel flow during filling at approximately 95% full*. Includes fill down tube, as needed, to terminate within 6" of the bottom of the fuel tank. Uses a 2 inch type "F" cam lock adapter for filling.

High fuel switch - Activates at 90% of full fuel level. Flying leads for customer connection.

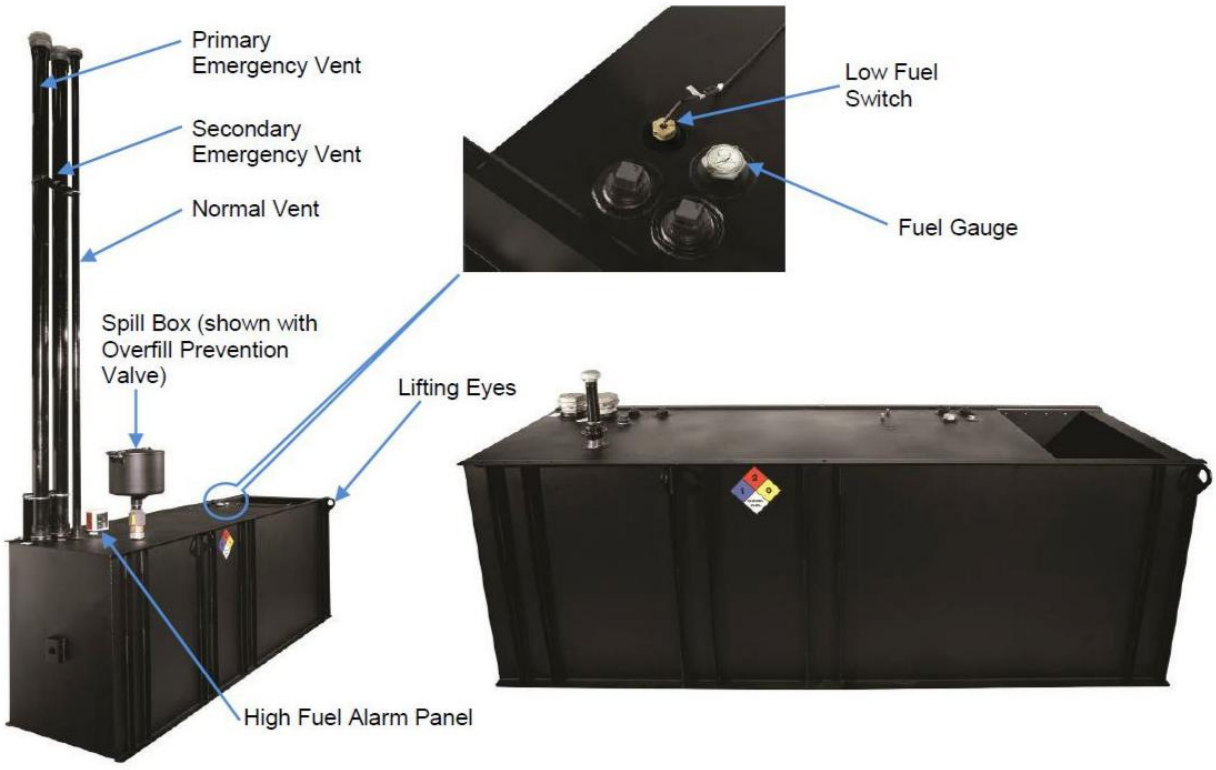
High fuel alarm panel - Provides audible & visual alarm when fuel level reaches 90% of full fuel level.

Fill drop tube - Terminates fuel fill location within 6" of the bottom of the fuel tank.

Vent extensions - Terminate normal and emergency vents (both primary and secondary) a minimum of 12 ft above the bottom of tank.

Seismic vent extensions - 2 ft normal and emergency (both primary & secondary) extensions to meet IBC/OSHPD seismic requirements.

* The OFPV inherently shuts off fuel at approximately 2" below the top of the fuel tank. Some tanks will shut off below this 95% fill level.



*Picture is for reference only. See outline drawing for tank specific information by model.

Regional tanks

Generator set Standby power output	Generator set model	Engine model	Fuel consumption (100% load, Standby)	Tank feature code	Minimum run time feature	Tank dimensions (L x W x H)	Nominal dry weight*	Tank usable volume	Actual run time w/o OFPV	Actual run time w/OFPV
kW			gal/hr		hr	inch	lbs	gal	hr	hr
10	C10 D6	D1703M	1.12	C301-2	24	87.6 x 34 x 15	510	74	66	56
				C303-2	48	87.6 x 34 x 15	510	74	66	56
				C305-2	72	87.6 x 34 x 23	723	132	118	107
				C307-2	96	87.6 x 34 x 23	723	132	118	107
15	C15 D6	D1703M	1.38	C301-2	24	87.6 x 34 x 15	510	74	53	45
				C303-2	48	87.6 x 34 x 15	510	74	53	45
				C305-2	72	87.6 x 34 x 23	723	132	95	86
				C307-2	96	87.6 x 34 x 32	962	195	141	132
20	C20 D6	V2203M	1.81	C301-2	24	87.6 x 34 x 15	510	74	41	35
				C303-2	48	87.6 x 34 x 23	723	132	73	66
				C305-2	72	87.6 x 34 x 32	962	195	108	101
				C307-2	96	87.6 x 34 x 32	962	195	108	101
25	C25 D6	4BT3.3-G5	2.42	C301-2	24	121 x 34 x 10.5	514	74	31	25
				C303-2	48	121 x 34 x 16.2	686	132	54	47
				C305-2	72	121 x 34 x 22.1	879	195	80	73
				C307-2	96	121 x 34 x 29.5	1120	263	109	101
30	C30 D6	4BT3.3-G5	2.81	C301-2	24	121 x 34 x 10.5	514	74	26	21
				C303-2	48	121 x 34 x 22.1	879	195	69	63
				C305-2	72	121 x 34 x 29.5	1120	263	94	87
				C307-2	96	121 x 34 x 42.0	1461	389	138	132
35	C35 D6	4BT3.3-G5	3.16	C301-2	24	121 x 34 x 16.2	686	132	42	36
				C303-2	48	121 x 34 x 22.1	879	195	62	56
				C305-2	72	121 x 34 x 29.5	1120	263	83	77
				C307-2	96	121 x 34 x 42.0	1461	389	123	117
40	C40 D6	4BT3.3-G5	3.66	C301-2	24	121 x 34 x 16.2	686	132	36	31
				C303-2	48	121 x 34 x 22.1	879	195	53	48
				C305-2	72	121 x 34 x 42.0	1461	389	106	101
				C307-2	96	121 x 34 x 42.0	1461	389	106	101
50	C50 D6	4BTAA3.3-G7	4.25	C301-2	24	121 x 34 x 16.2	686	132	31	27
				C303-2	48	121 x 34 x 29.5	1120	263	62	58
				C305-2	72	121 x 34 x 42.0	1461	389	92	87
60	C60 D6	4BTAA3.3-G7	5.04	C301-2	24	121 x 34 x 16.2	686	132	26	23
				C303-2	48	121 x 34 x 29.5	1120	263	52	49
				C305-2	72	121 x 34 x 42.0	1461	389	77	73
50	C50D6C	QSB5-G5	5.30	C301-2	24	154 x 40 x 22	1388	250	47	45
				C303-2	48	154 x 40 x 32	1657	425	80	76
				C305-2	72	154 x 40 x 32	1657	425	80	76
				C307-2	96	154 x 40 x 46	2096	625	118	112
60	C60D6C	QSB5-G5	6.10	C301-2	24	154 x 40 x 22	1388	250	41	39
				C303-2	48	154 x 40 x 32	1657	425	70	66
				C305-2	72	154 x 40 x 46	2096	625	102	97
				C307-2	96	154 x 40 x 46	2096	625	102	97
80	C80D6C	QSB5-G5	7.30	C301-2	24	154 x 40 x 22	1388	250	34	33
				C303-2	48	154 x 40 x 32	1657	425	58	55
				C305-2	72	154 x 40 x 46	2096	625	85	81
100	C100D6C	QSB5-G5	8.90	C301-2	24	154 x 40 x 22	1388	250	28	27
				C303-2	48	154 x 40 x 32	1657	425	48	45
				C305-2	72	154 x 40 x 46	2096	625	70	66
125	C125D6C	QSB5-G6	10.30	C301-2	24	154 x 40 x 22	1388	250	24	23
				C303-2	48	154 x 40 x 46	2096	625	60	58

* All weights are approximate.

Regional tanks

Generator set Standby power output	Generator set model	Engine model	Fuel consumption (100% load, Standby)	Tank feature code	Minimum run time feature	Tank dimensions (L x W x H)	Nominal dry weight*	Tank usable volume	Actual run time w/o OFPV	Actual run time w/OFPV
kW			gal/hr		hr	inch	lbs	gal	hr	hr
125	C125D6D	QSB7-G5	10.1	C301-2	24	180x40x21	1477	351	34	30
				C303-2	48	180x40x42	2302	737	72	69
				C305-2	72	180x40x42	2302	737	72	69
				C307-2	96	180x65.5x35.3	3552	1055	104	98
150	C150D6D		11.7	C301-2	24	180x40x21	1477	351	30	26
				C303-2	48	180x40x42	2302	737	63	59
				C305-2	72	180x65.5x35.3	3552	1055	90	84
175	C175D6D		13.3	C301-2	24	180x40x21	1477	351	26	23
				C303-2	48	180x40x42	2302	737	55	52
				C305-2	72	180x65.5x35.3	3552	1055	79	74
200	C200D6D		14.9	C301-2	24	180x40x21	1477	351	24	21
				C303-2	48	180x40x42	2302	737	49	47
				C305-2	72	180x65.5x35.3	3552	1055	72	66

Certifications/standards/codes

UL 142 Listed - Cummins dual wall sub-base tanks are UL Listed and constructed in accordance with Underwriters Laboratories Standard UL 142 “steel aboveground tanks for flammable and combustible liquids,” as a “secondary containment generator base tank”

NFPA - Cummins tanks are built in accordance with all applicable NFPA codes:

- NFPA 30 - Flammable and Combustible Liquids code
- NFPA 37 - Standard for Installation and use of Stationary Combustible Engine and Gas Turbines
- NFPA 110 - Standard for Emergency and Standby Power Systems

ISO9001 - This product was designed and manufactured in facilities certified to ISO9001.

ULC - Cummins tanks are built in accordance with all applicable ULC codes

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

Our energy working for you.™

NAAC-5868-EN (02/18)

VMC GROUP
THE POWER OF TOGETHER™

CERTIFICATE OF COMPLIANCE
SEISMIC DESIGN OF NONSTRUCTURAL COMPONENTS AND SYSTEMS

Certification No.

VMA-51071-01C (Revision 7)

Expiration Date: 6/30/2021

Certification Parameters:

The nonstructural products (mechanical and/or electrical components) listed on this certificate are CERTIFIED[1] FOR SEISMIC APPLICATIONS in accordance with the following building code[2] releases.

IBC 2012, 2015, 2018

The following model designations, options, and accessories are included in this certification. Reference report number VMA-51071-01 as issued by The VMC Group for a complete list of certified models, included accessories/options, and certified installation methods.

Cummins Power Generation, Inc.; Diesel Gensets
Commerical Series; 10kW-200kW

The above referenced equipment is **APPROVED** for seismic application when properly installed[3], used as intended, and contains a Seismic Certification Label referencing this Certificate of Compliance[4]. As limited by the tabulated values, below grade, grade, and roof-level installations, installations in essential facilities, for life safety applications, and/or of equipment containing hazardous contents are permitted and included in this certification with an Equipment Importance Factor assigned as I_p=1.5. The equipment is qualified by successful seismic shake table testing at the nationally recognized Dynamic Certification Laboratories under the witness of the ISO Accredited Product Certification Agency, the VMC Group.

Certified Seismic Design Levels			
Certified **IBC**	**Importance $I_p \leq 1.5$** Soil Classes A-E Risk Categories I-IV Design Categories A-F	z/h ≤ 1.0	z/h = 0.0
		$S_{DS} \leq 2.000$ g	$S_{DS} \leq 2.500$ g

Certified Seismic Installation Methods
Rigid Mounting From Unit Base To Rigid Structure

HEADQUARTERS
113 Main Street
Bloomingdale, NJ 07403
Phone: 973.838.1780
Toll Free: 800.569.8423
Fax: 973.492.8430

CALIFORNIA
180 Promenade Circle
Suite 300
Sacramento, CA 95834
Phone: 916.634.7771

TEXAS
11930 Brittmoore Park Drive
Houston, TX 77041
Phone: 713.466.0003
Fax: 713.466.1355

thevmcgroup.com

VMC GROUP
THE POWER OF TOGETHER™

CERTIFICATE OF COMPLIANCE

SEISMIC DESIGN OF NONSTRUCTURAL COMPONENTS AND SYSTEMS

Certified Product Table:

Model	Power Rating	RPM	Max Length (in)	Max Width (in)	Max Height (in)	Max Weight with Enclosure (lbs.)	Certified Fuel Tank Capacities (gal.)	S_{DS} (g) @ z/h = 0.0	S_{DS} (g) @ z/h = 1.0
C10 D6	10 kW	1800	98	34	88	4300	46, 74, 91, 132, 195, 263	2.5	2
C15 D6	15 kW					4400			
C20 D6	20 kW					4470			
C25 D6	25 kW		131			5890	74, 132, 195, 263, 389		
C30 D6	30 kW					5930			
C35 D6	35 kW					5960			
C40 D6	40 kW					6140			
C50 D6	50 kW					6260			
C60 D6	60 kW								
C50 D6C	50 kW		170	40	104	8943	250, 425, 625		2.5
C60 D6C	60 kW					8990			
C80 D6C	80 kW					9040			
C100 D6C	100 kW					9216			
C125 D6C	125 kW					9300			
C125 D6D			180	71	111	14300	351, 737, 1055		
C150 D6D	150 kW								
C175 D6D	175 kW								
C200 D6D	200 kW								

Group	Type	S_{DS} (z/h=0)	S_{DS} (z/h=1)	A_{Flex-H}	A_{Rig-H}	A_{Flex-V}	A_{Rig-V}	F_p/W_p
Seismic	AC156	2.5	2	3.2	2.4	1.667	0.675	2.4

This certification includes the open generator set and the enclosed generator set when installed with or without the sub-base tank. This certification also includes the sub-base tank as a stand-alone accessory. The generator set and included options shall be a catalogue design and factory supplied. The generator set and applicable options shall be installed and attached to the building structure per the manufacturer supplied seismic installation instructions. This certification excludes all non-factory supplied accessories, including but not limited to mufflers, isolation/restraint devices, remote control panels, remote radiators, pumps and other electrical/mechanical components.

IBC CERTIFIED VMC GROUP

VMA-51071-01C (Revision 7)
Issue Date: Friday, July 3, 2015
Revision Date: Tuesday, June 23, 2020
Expiration Date: Wednesday, June 30, 2021

VMC GROUP
THE POWER OF TOGETHER™

CERTIFICATE OF COMPLIANCE

SEISMIC DESIGN OF NONSTRUCTURAL COMPONENTS AND SYSTEMS

Notes & Comments:

1. All equipment listed herein successfully passed the seismic acceptance criteria for shake testing non-structural components and systems as set forth in the ICC AC-156. The Test Response Spectrum (TRS) enveloped the Required Response Spectrum (RRS) for all units tested. The units cited in this certification were representative sample(s) of a contingent of models and all remained captive and structurally sound after the seismic shake simulation. The units also remained functionally operational after the simulation testing as functional testing was completed by the equipment manufacturer before and after the seismic simulations. Although a seismic qualified unit inherently contains some wind resisting capacity, that capacity is undetermined and is excluded from this certification. Snow/Ice loads have been neglected and thus limit the unit to be installed both indoors (covered by an independent protective structure) and out of doors (exposed to accumulating snow/ice) for ground snow loads no greater than 30 psf for all applications.

2. The following building codes are addressed under this certification:
   IBC 2018 referencing ASCE7-16 and ICC-ES AC-156
   IBC 2015 referencing ASCE7-10 and ICC-ES AC-156
   IBC 2012 referencing ASCE7-10 and ICC-ES AC-156

3. Refer to the manufacturer supplied installation drawings for anchor requirements and mounting considerations for seismic applications. Required anchor locations, size, style, and load capacities (tension and shear) may be specified on the installation drawings or specified by a 3rd party. Mounting requirement details such as anchor brand, type, embedment depth, edge spacing, anchor-to-anchor spacing, concrete strength, special inspection, wall design, and attachment to non-building structures must be outlined and approved by the Engineer of Record for the project or building. Structural walls, structural floors, and housekeeping pads must also be seismically designed and approved by the project or building Structural Engineer of Record to withstand the seismic anchor loads as defined on the installation drawings. The installing contractor is responsible for ensuring the proper installation of all anchors and mounting hardware.

4. For this certificate and certification to remain valid, this certificate must correspond to the "Seismic Certification Label" found affixed to the unit by the factory. The label ensures the manufacturer built the unit in conformance to the IBC seismic design criteria set forth by the Certified Seismic Qualification Agency, the VMC Group, and meets the seismic design levels claimed by this certificate.

5. Mechanical, Electrical, and Plumbing connections to the equipment must be flexibly attached as to not transfer load through the connection. The structural integrity of any conduit, cable trays, piping, ductwork and/or flexible connections is the responsibility of others. This certification does not guarantee the equipment will remain compliant to NEMA, IP, UL, or CSA standards after a seismic event.

6. This certificate applies to units manufactured at:
   1400 73rd Ave NE, OF 143, Minneapolis, MN 55432

John P. Giuliano, PE
President, VMC Group

IBC® CERTIFIED VMC GROUP

VMA-51071-01C (Revision 7)
Issue Date: Friday, July 3, 2015
Revision Date: Tuesday, June 23, 2020
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Cooling system data
C125D6C

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	125	40	40	40	40	N/A	40	40	40
		Prime	112.5	40	40	40	40	N/A	40	40	40

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
C125D6C 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	78.5	80.4	80.8	82.9	78.4	82.2	81.9	80.8	81
F216-2 weather protective aluminium	Mounted	79.7	80.8	79.8	82.4	81.2	81.9	80.7	80.3	81
F231-2 sound attenuated level 1, aluminium	Mounted	79.4	76	72	73.4	72.9	73.9	73.2	76.1	75.3
F217-2 sound attenuated level 2, aluminium	Mounted	73.6	73.3	70.4	71.6	71.1	71.4	72.4	72.6	72.2

Sound power level, dB(A)

See notes 1,3,6-11 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	54.9	79.7	89.9	92.0	101.2	102.4	102.4	98.5	95.2	91.2	107.9
F216-2 sound attenuated Level 2	Mounted	56.5	90.1	100.1	100.4	103.3	104.3	102.4	100.4	96.3	86.2	110.1
F231-2 sound attenuated Level 1	Mounted	58.4	87.0	89.4	91.5	96.0	97.7	96.0	93.1	90.1	82.6	103
F217-2 sound attenuated Level 2	Mounted	57.5	86.8	88.6	90.1	93.4	93.1	90.9	88.4	85.1	75.5	99.4

Exhaust sound power level, dB(A)

See notes 4,6, 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	
	58	86	101	107	115	115	119	119	116	125

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

REL NO	LTR	NO	REVISION	DWN	CKD	APVD	DATE
ECO-160476	C	1	ADD NEW MODELS TO TAB FOR PHASE 4A	DAH	DAH	JAWALE	22MAR16
		2	ADD EXISTING MODELS TO NOTE 4	DAH	DAH	JAWLAE	22MAR16

NOTES:

1. DIMENSIONS IN [ ] ARE IN INCHES.

2 (triangle) GENERATOR SET BASE HAS A FLANGE THICKNESS OF 3.42 MM ALLOW EXTRA LENGTH ON HARDWARE FOR UNEVENESS OF MOUNTING SURFACE.

3 (triangle) GENERATOR SET BASE PERIMETER IS SHOWN. FOUNDATION SHOULD BE EXTENDED BEYOND THIS PERIMETER. SEE (T030) APPLICATION MANUAL.

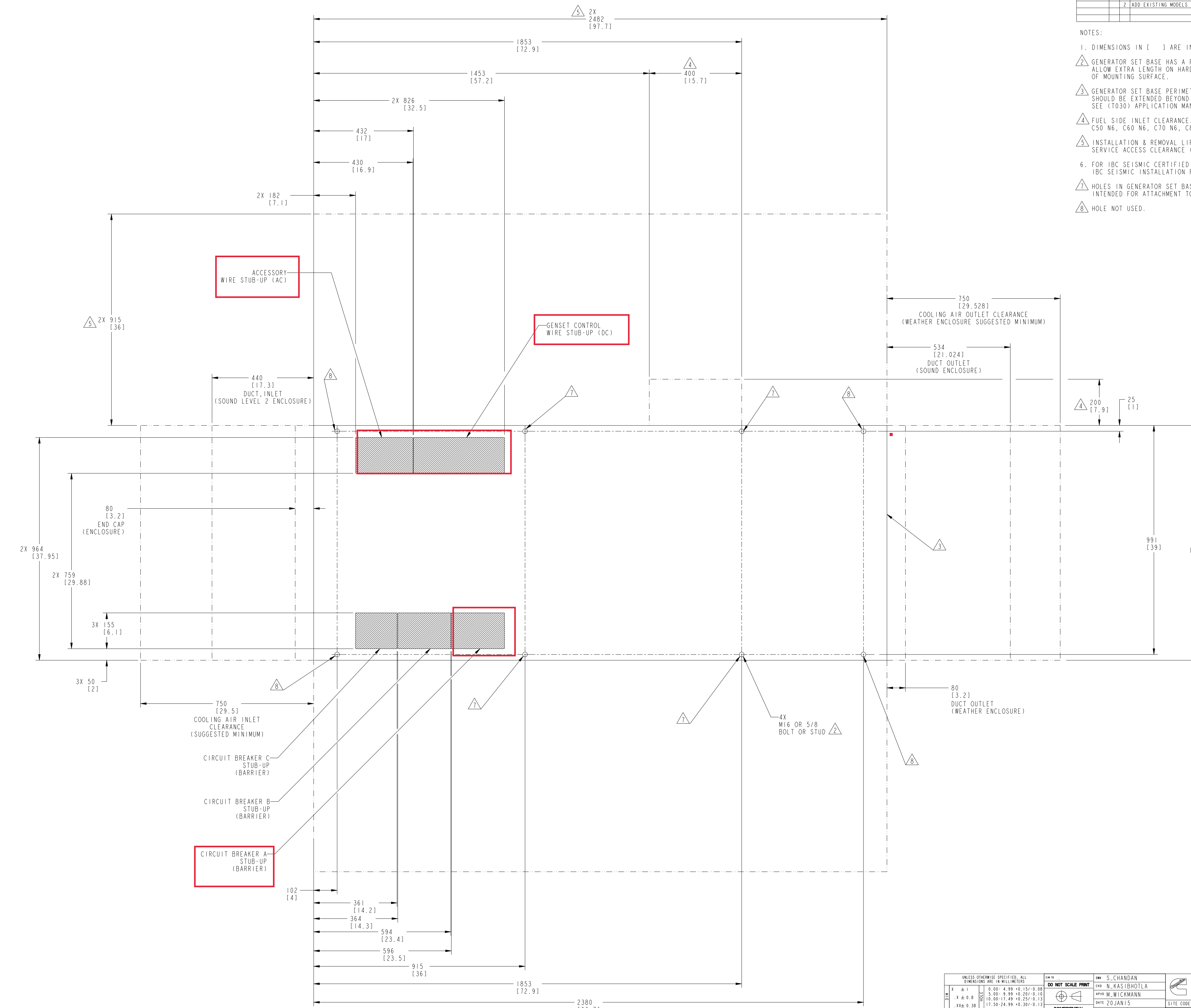
4 (triangle) FUEL SIDE INLET CLEARANCE. APPLICABLE TO MODELS C45 N6, C50 N6, C60 N6, C70 N6, C80 N6, & C100 N6.

5 (triangle) INSTALLATION & REMOVAL LIFTING AND SERVICE ACCESS CLEARANCE (SUGGESTED MINIMUM).

6. FOR IBC SEISMIC CERTIFIED INSTALLATIONS, SEE GENSET IBC SEISMIC INSTALLATION REQUIREMENTS DRAWING.

7 (triangle) HOLES IN GENERATOR SET BASE AT THESE LOCATIONS ARE INTENDED FOR ATTACHMENT TO THE MOUNTING SURFACE.

8 (triangle) HOLE NOT USED.



GENSET MODEL APPLICATION
C45 N6
C50 N6
C60 N6
C70 N6
C80 N6
C100 N6
C50 D6C
C60 D6C
C80 D6C
C100 D6C
C125 D6C

UNLESS OTHERWISE SPECIFIED, ALL DIMENSIONS ARE IN MILLIMETERS

DIM		HOLE	
X	± 1	0.00- 4.99	+0.15/-0.08
.X	± 0.8	5.00- 9.99	+0.20/-0.10
.XX	± 0.38	10.00-17.49	+0.25/-0.13
		17.50-24.99	+0.30/-0.13

ANG TOL: ± 1.0° SCALE: 3/16

SIM TO .

DO NOT SCALE PRINT

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DWN S_CHANDAN
CKD N_KASIBHOTLA
APVD M_WICKMANN
DATE 20JAN15

FOR INTERPRETATION OF DIMENSIONING AND TOLERANCING, SEE ASME Y14.5M-1994

FIRST USED ON ARROW

SITE CODE PGF

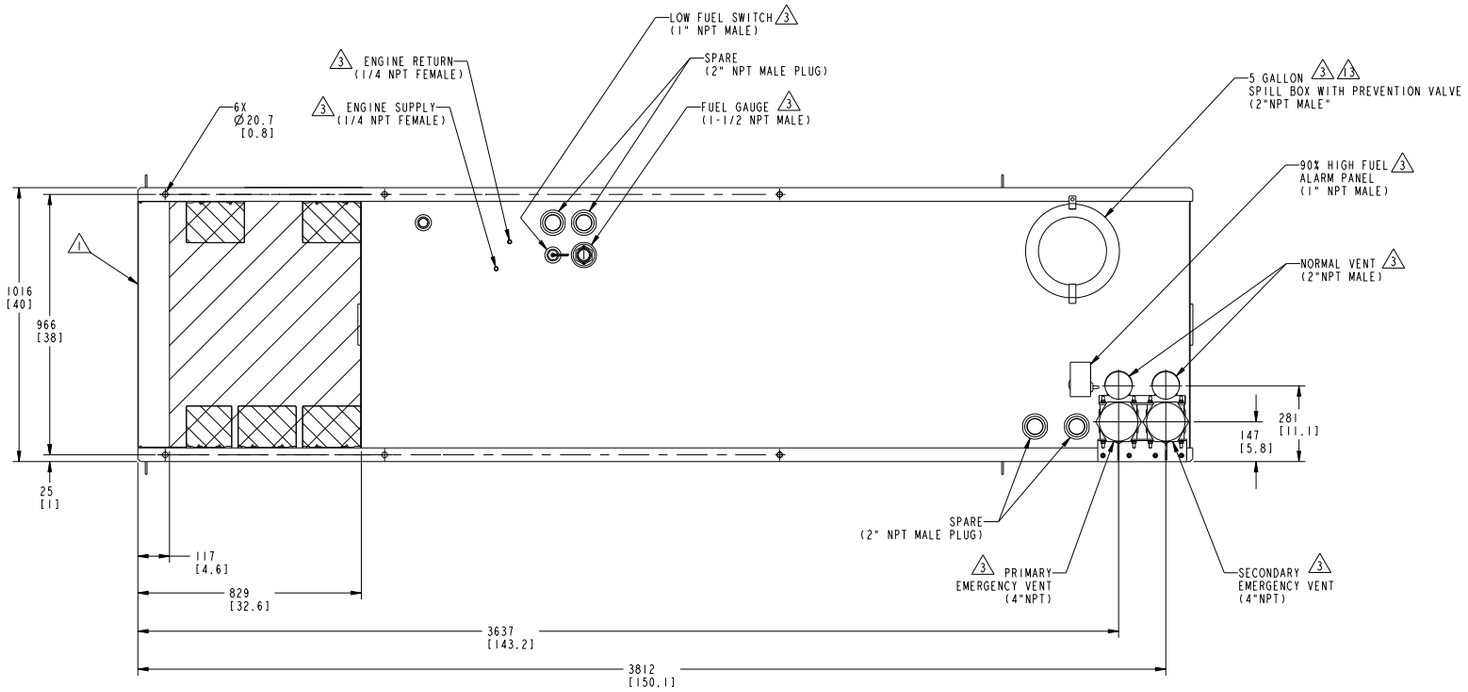
CUMMINS POWER GENERATION

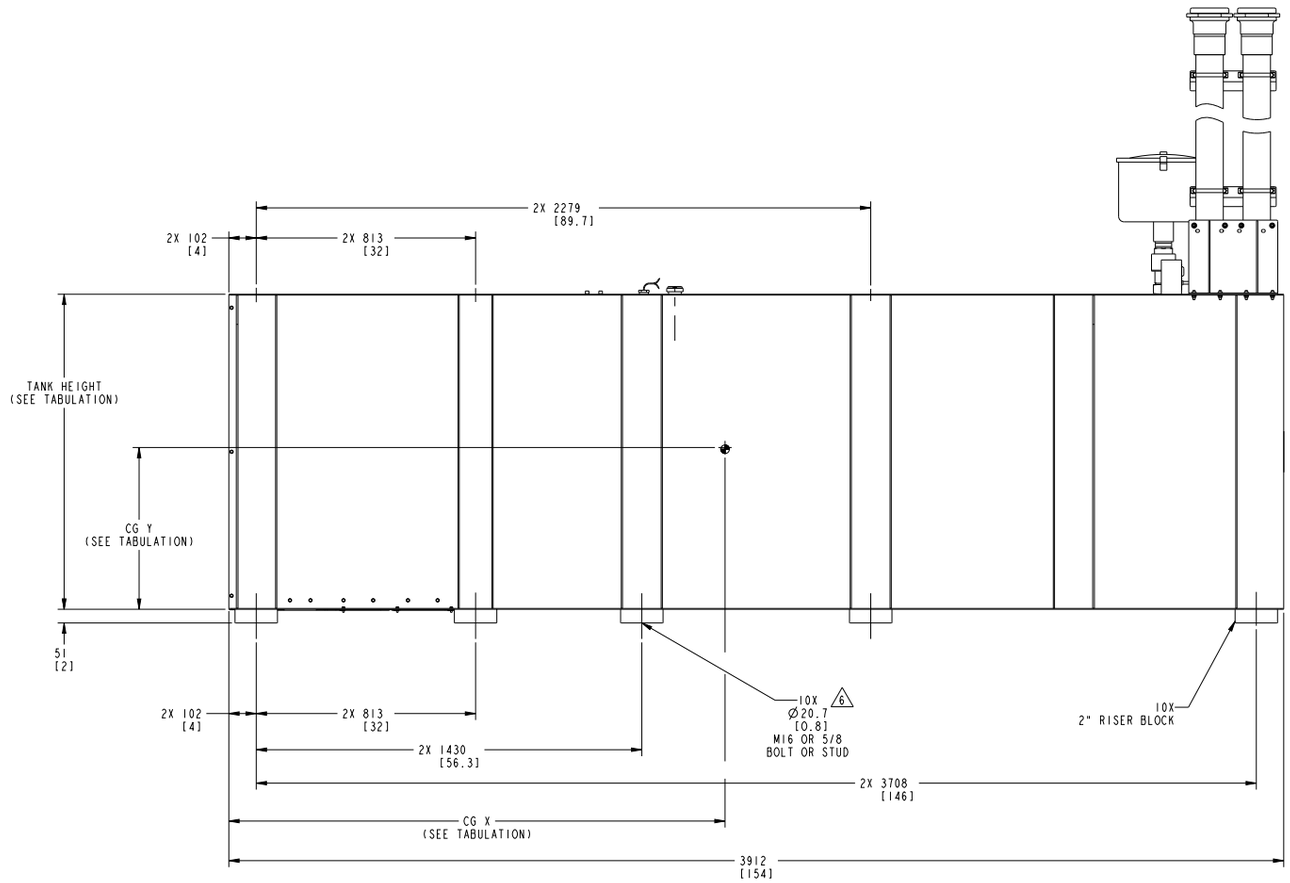
OUTLINE,GENSET
FOUNDATION

DWG SIZE E A050P698 SHEET 1 OF 1 DWG REV C

PTC® Creo® Parametric

REL NO	REV	NO	REVISION	DRN	CKD	APVD	DATE
ECO-173968	C	1	ADD SHEET 4	CJF	MF	M WINGFIELD	06DEC17
		2	ZONE A-2: 558.8 [22] WAS 457 [18]	CJF	MF	M WINGFIELD	06DEC17
		3	ZONE A-2: 812.8 [32] WAS 762 [30]	CJF	MF	M WINGFIELD	06DEC17
		4	ADD FLAG NOTE 14	CJF	MF	M WINGFIELD	06DEC17
		5	SEE SHEET 2	CJF	MF	M WINGFIELD	06DEC17
		6	SEE SHEET 2	CJF	MF	M WINGFIELD	06DEC17





NOTES:

1. TANKS ARE UL142 LISTED. SECONDARY CONTAINMENT FUEL TANK. REFER TO TANK LABELS AND LOCAL CODE TO DETERMINE VENTING REQUIREMENTS FOR BOTH COMPARTMENTS.
2. SUBBASE FUEL TANK MOUNTING. EXCESSIVE TWISTING OF THE FUEL TANK, MAY RESULT IN STRUCTURAL FAILURE OF THE TANK. TO ENSURE THE INSTALLATION DOES NOT EXCESSIVELY TWIST THE FUEL TANK, THE FOLLOWING PROCEDURE MUST BE OBSERVED:
   - 2.1 REFER TO APPLICATION MANUAL T030 FOR GENERAL SET MOUNTING GUIDELINES.
   - 2.2 AFTER PLACING SET ON FOUNDATION, VERIFY ALL SIX MOUNTING PADS CONTACT FOUNDATION.
   - 2.3 THERE ARE SHIMS ATTACHED TO EACH FUEL TANK. THESE ARE INTENDED TO FILL ANY GAP BETWEEN THE MOUNTING PADS AND FOUNDATION.
   - 2.4 INSERT THE MAXIMUM HEIGHT STACK OF SHIMS THAT WILL SLIDE INTO THE GAP.
   - 2.5 TIGHTEN TANK HOLD DOWN MOUNTING FASTENERS.
3. INDICATES PIPE SIZE OF FEATURE OR OPTION INDICATED.
4. DIMENSIONS IN [ ] ARE IN INCHES.
5. FOR IBC SEISMIC CERTIFIED INSTALLATIONS, SEE GENSET IBC SEISMIC INSTALLATION REQUIREMENTS DRAWING.
6. FUEL TANK HAS A FLANGE THICKNESS OF UP TO 10 mm [0.394 in], ALLOW EXTRA LENGTH ON HARDWARE FOR UNEVENESS OF MOUNTING SURFACE. RISER FEATURE WILL ADD ADDITIONAL 51 mm [2 in].
7. FUEL TANK PERIMETER IS SHOWN. FOUNDATION SHOULD BE EXTENDED BEYOND THIS PERIMETER. SEE (T030) APPLICATION MANUAL - (SEE SHEET 4).
8. INSTALLATION & REMOVAL LIFTING AND SERVICE ACCESS CLEARANCE (SUGGESTED MINIMUM) - (SEE SHEET 4).
9. REMOVABLE STUB-UP ACCESS PANEL.
10. ELECTRICAL STUB-UP AREA WITH FUEL TANK RISER FEATURE INSTALLED - (SEE SHEET 4).
11. MAINTAIN MIN 51 mm [2 in] CLEARANCE ABOVE E-VENT - (SEE SHEET 2).
12. WEIGHT AND CENTER OF GRAVITY INFORMATION IS ESTIMATED AND CHANGES WITH TANK FEATURE INSTALLATION.
13. FILL CAP LOCATED HERE IF OVERFILL PREVENSTION VALVE IS NOT INSTALLED.
14. EMERGENCY VENT EXTENSIONS ON SHEET 2 COME WITH OPTIONAL FEATURE C315-2 OR WITH FEATURE L196-2 (CSA), L224-2 (IBC), OR L225-2 (OSHPD).

GENSET MODEL APPLICATION	TANK FEATURE CODE/RUN TIME			
	C301-2	C303-2	C305-2	C307-2
	24 HR	48 HR	72 HR	96 HR
C50 D6C	A053L909	A053L911	A053L911	A053L912
C60 D6C	A053L909	A053L911	A053L912	A053L912
C80 D6C	A053L909	A053L911	A053L912	-
C100 D6C	A053L909	A053L911	A053L912	-
C125 D6C	A053L909	A053L912	-	-

TABULATION

TANK NUMBER	TANK HEIGHT	VENT EXTN. HEIGHT	TANK VOLUME-LITER [GAL]		WEIGHT - kg [lb]		CG_X		CG_Y	
			TOTAL (EST)	USABLE	MIN	MAX	MIN	MAX	MIN	MAX
A053L909	558.8 [22]	3082 [121]	1038 [274]	948 [250]	607 [1388]	1413 [3113]	2170 [85]	2284 [90]	283 [11.2]	252 [9.9]
A053L911	812.8 [32]	3082 [121]	1618 [427]	1611 [425]	752 [1657]	2122 [4675]	2170 [85]	2284 [90]	411 [16.2]	392 [15.4]
A053L912	1168 [46]	3082 [121]	2422 [639]	2369 [625]	952 [2096]	2966 [6534]	2170 [85]	2284 [90]	588 [23.1]	585 [23.0]

UNLESS OTHERWISE SPECIFIED, ALL DIMENSIONS ARE IN MILLIMETERS
DIM: X ±1; .X ± 0.8; .XX± 0.38; ANG TOL ± 1.0°
SCALE: 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; SCALE 1:8
SIZE: E
DO NOT SCALE PRINT
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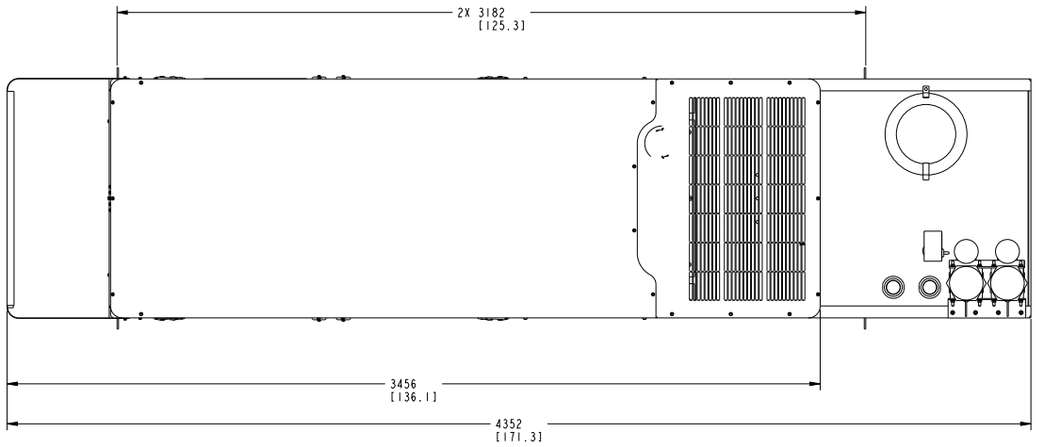
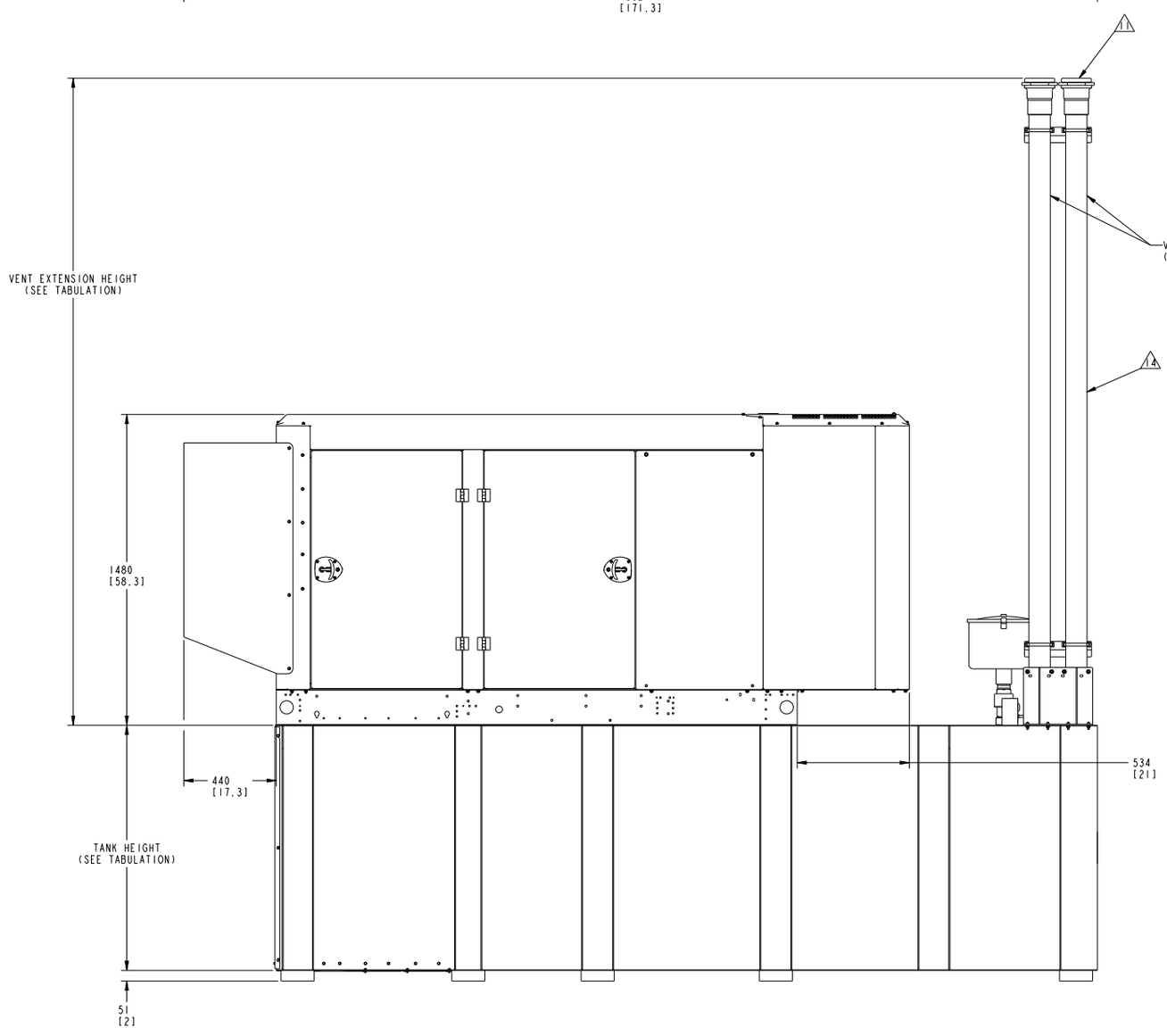
DRN D HOFMEISTER
CKD D HOFMEISTER
APVD M JAWALE
DATE 01FEB16
FIRST USED ON ARROW
FOR INTERPRETATION OF DIMENSIONS AND TOLERANCES, SEE ASME Y14.5-2009
CUMMINS POWER GENERATION
SITE CODE PGF
REGIONAL
OUTLINE, TANK
DWG SIZE E
A054B564
CAD SHEET 1 of 4

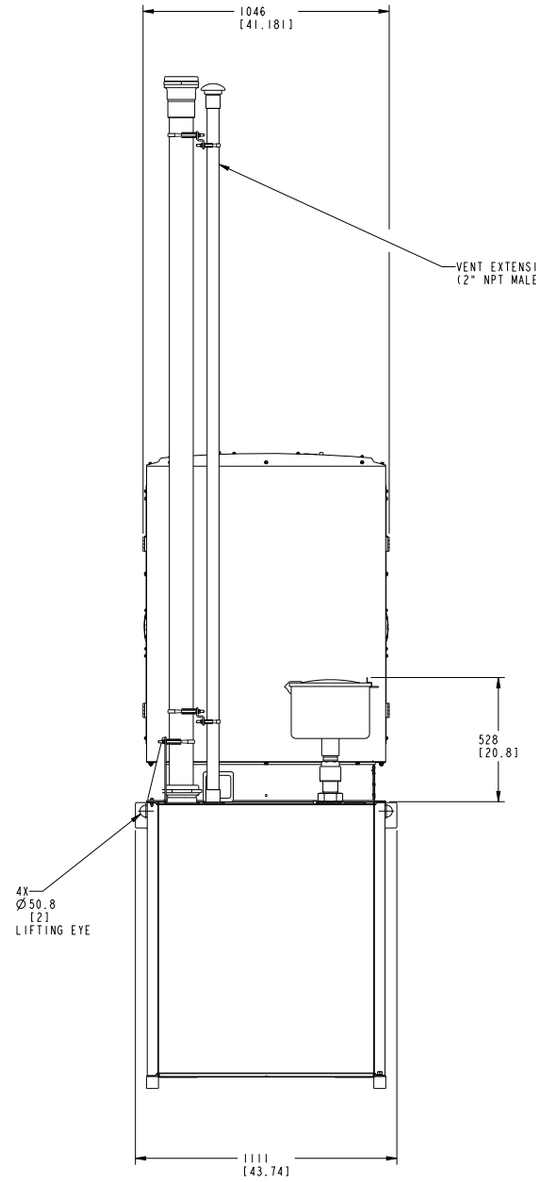
Drawing Name: A054B565 Revision: C
Part Name: A054B564 Revision: C
ECO-173968 Sheet 1 of 5

PTC® Creo® Parametric

REL NO	REV	NO	REVISION	DRN	CKD	APVD	DATE
ECO-173968	C	5	ZONE C-2: ADD FLAG NOTE 14 CALL OUT	CJF	MF	M WINGFIELD	06DEC17
		6	ZONE A-3: ADD NOTE "(WITH---EXTENSIONS)"	CJF	MF	M WINGFIELD	06DEC17







(WITH VENT EXTENSIONS)

UNLESS OTHERWISE SPECIFIED, ALL DIMENSIONS ARE IN MILLIMETERS

DIM: X ±1 | .X ±0.8 | .XX± 0.38

SCALE: 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

ANG TOL ± 1.0° | SCALE 1:8

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FOR INTERPRETATION OF DIMENSIONS AND TOLERANCES SEE ASME Y14.5-2009

FIRST USED ON ARROW

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APVD	M JAWALE
DATE	01FEB16

CUMMINS POWER GENERATION

OUTLINE, TANK REGIONAL

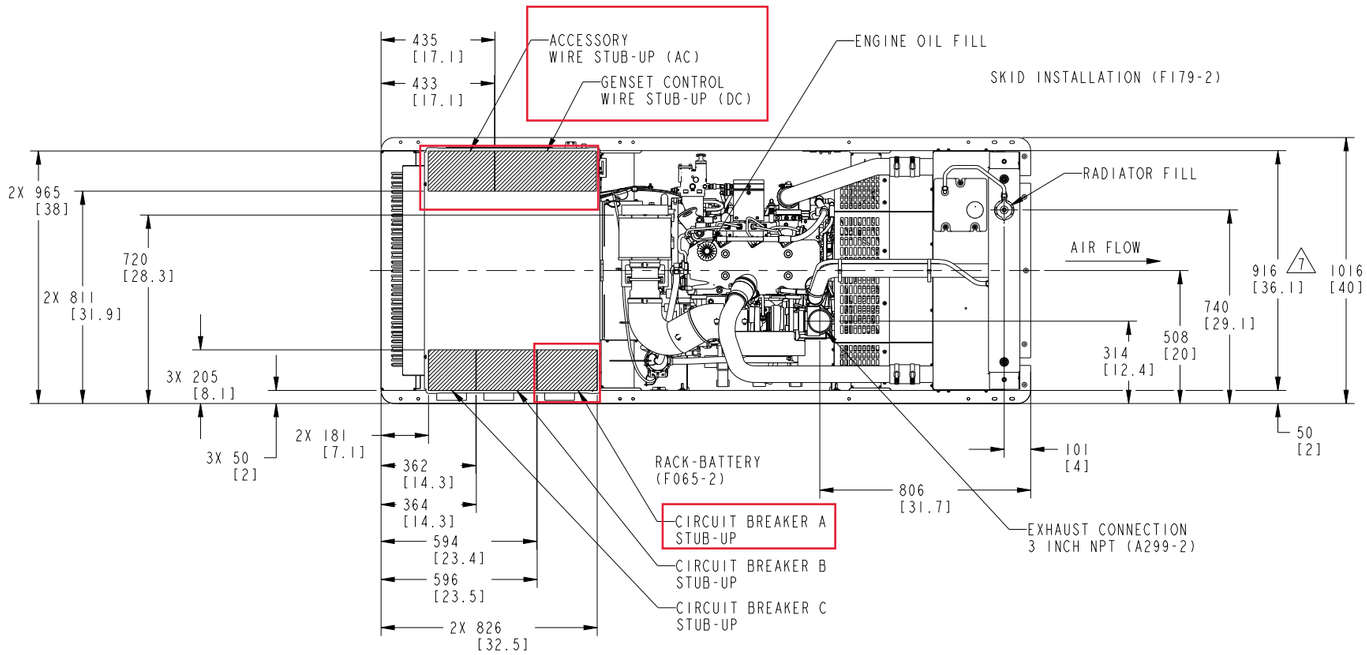
SITE CODE PGF

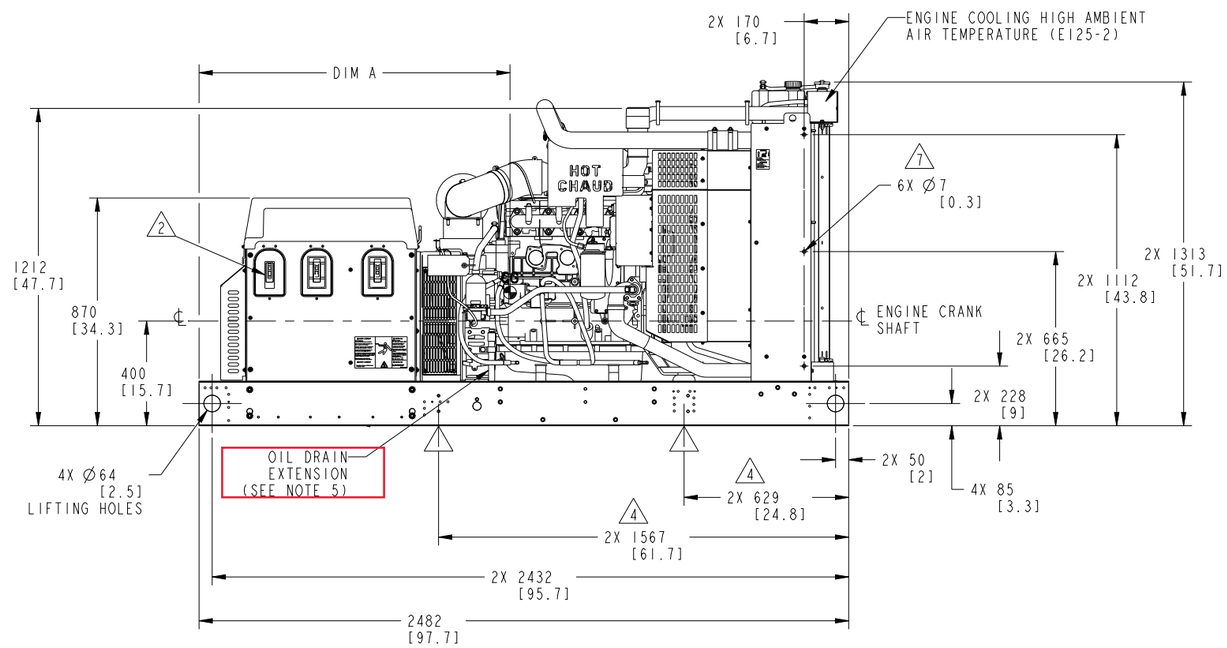
SIZE E | DWG A054B564 | CAD SHEET 2 of 4

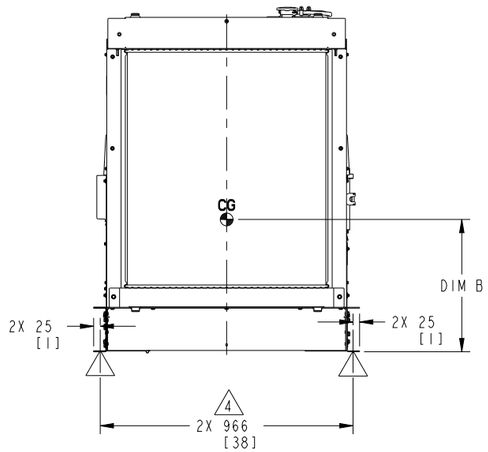
Drawing Name: A054B565 Revision: C
Part Name: A054B564 Revision: C
ECO-173968 Sheet 2 of 5

PTC® Creo® Parametric

REL NO	REV	NO	REVISION	DWN	CKD	APVD	DATE
ECO-179354	B	1	NOTE 9.1: 5/16" WAS 1/4"	CJF	FE	M FRITSCHE	07AUG18
		2	SEE SHEET 2	CJF	FE	M FRITSCHE	07AUG18







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 △ 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 5/16" 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

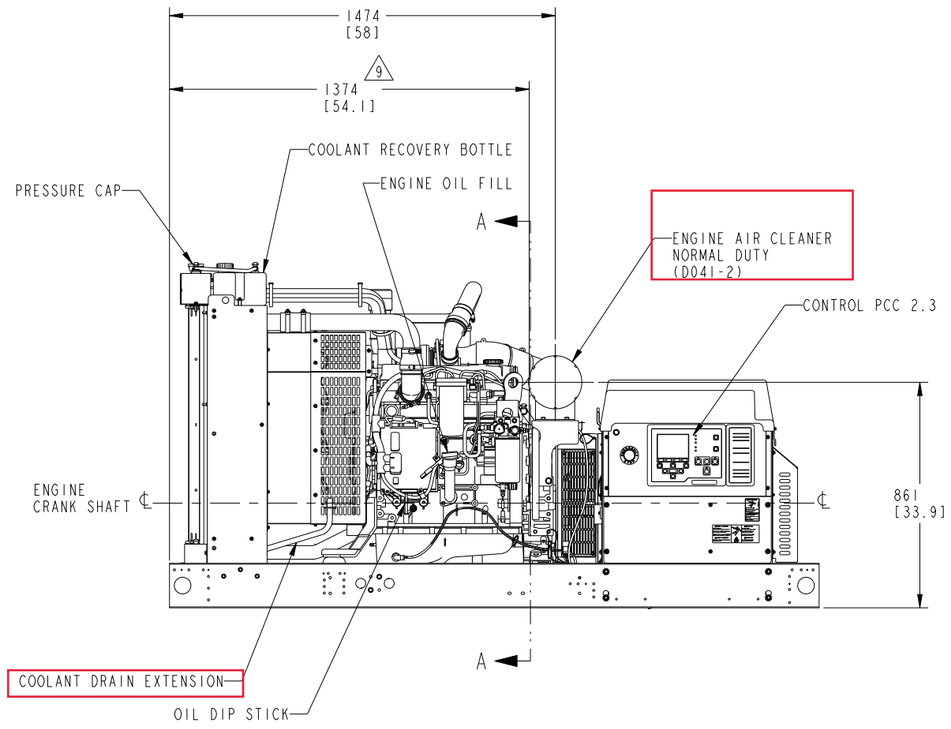
C50 D6C, C60 D6C, C80 D6C, C100 D6C, C125 D6C

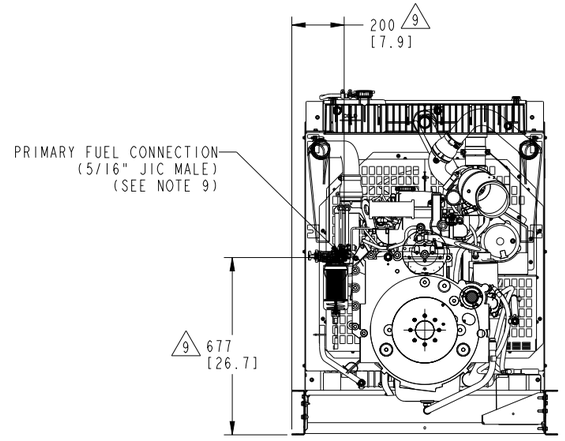
UNLESS OTHERWISE SPECIFIED, ALL DIMENSIONS ARE IN MILLIMETERS
DIM: X ±1 | .X ±0.8 | .XX± 0.38
HOLE: 0.00- 4.99 +0.15/-0.08 | 5.00- 9.99 +0.20/-0.10 | 10.00-17.49 +0.25/-0.13 | 17.50-24.99 +0.30/-0.13
ANG TOL ± 1.0°
SCALE 3:32
SIM TO .
DO NOT SCALE PRINT

FOR INTERPRETATION OF DIMENSIONING AND TOLERANCING, SEE ASME Y14.5-2009
FIRST USED ON ARROW
DWN D HOFMEISTER
CKD D HOFMEISTER
APVD M JAWALE
DATE 17MAR16
SITE CODE PGF
CUMMINS POWER GENERATION
OUTLINE,GENSET
DWG SIZE D A054Y897
CAD SHEET 1 OF 2

PTC® Creo® Parametric

REL NO	REV	NO	REVISION	DWN	CKD	APVD	DATE
ECO-179354	B	2	ZONE C-3: 5/16" WAS 1/4"	CJF	FE	M FRITSCHE	07AUG18





SECTION A-A

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

UNLESS OTHERWISE SPECIFIED, ALL DIMENSIONS ARE IN MILLIMETERS

DIM		HOLE	
X	± 1		0.00- 4.99 +0.15/-0.08
.X	± 0.8		5.00- 9.99 +0.20/-0.10
.XX	± 0.38		10.00-17.49 +0.25/-0.13
			17.50-24.99 +0.30/-0.13

ANG TOL ± 1.0°

SCALE 3:32

SIM TO .

DO NOT SCALE PRINT

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

FOR INTERPRETATION OF DIMENSIONING AND TOLERANCING, SEE ASME Y14.5-2009 — FIRST USED ON: ARROW

Cummins®

CUMMINS POWER GENERATION

SITE CODE: PGF

OUTLINE, GENSET

DWG SIZE: D — A054Y897 — CAD SHEET 2 OF 2

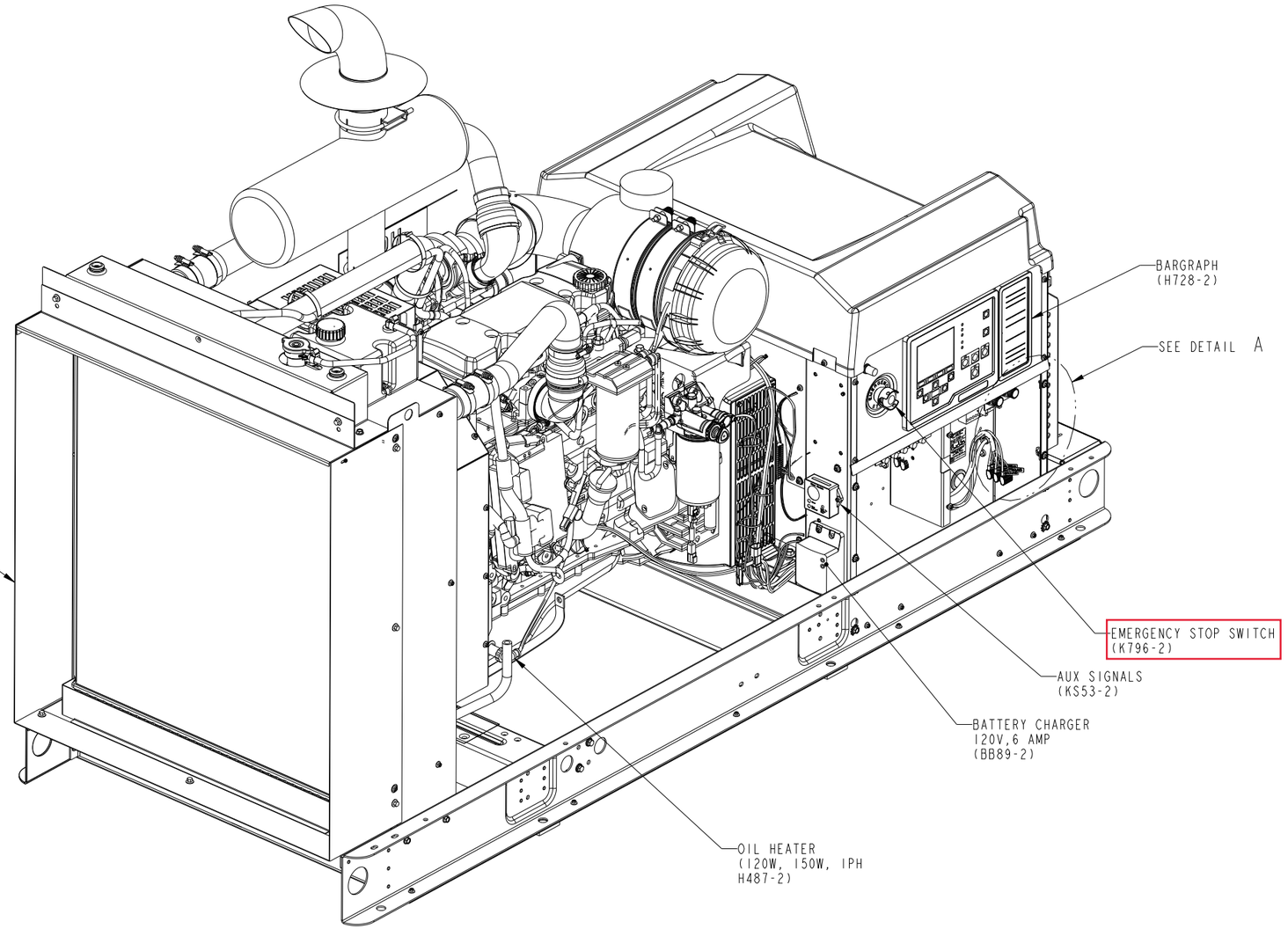
Drawing Name: A054Y898 Revision: B
Part Name: A054Y897 Revision: B
ECO-179354 Sheet 2 of 3

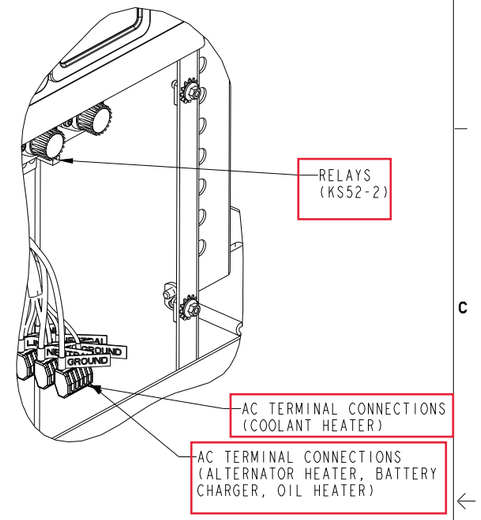
PTC® Creo® Parametric

REL NO	REV	NO	REVISION	DWN	CKD	APVD	DATE
ECO-182590	C	1	SEE SHEET 2	CJF	MF	M FRITSCHE	27DEC18

NOTES:

1. DIMENSIONS SHOWN IN [ ] ARE IN INCHES.





DETAIL A
SCALE 1:2

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

UNLESS OTHERWISE SPECIFIED, ALL DIMENSIONS ARE IN MILLIMETERS

DIM		HOLE	
X	± 1	0.00- 4.99	+0.15/-0.08
.X	± 0.8	5.00- 9.99	+0.20/-0.10
.XX	± 0.38	10.00-17.49	+0.25/-0.13
		17.50-24.99	+0.30/-0.13

ANG TOL ± 1.0°

SCALE 3:16

SIM TO .

DO NOT SCALE PRINT

FOR INTERPRETATION OF DIMENSIONING AND TOLERANCING, SEE ASME Y14.5-2009

FIRST USED ON ARROW

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

CUMMINS POWER GENERATION

OUTLINE,GENSET
OPTIONS

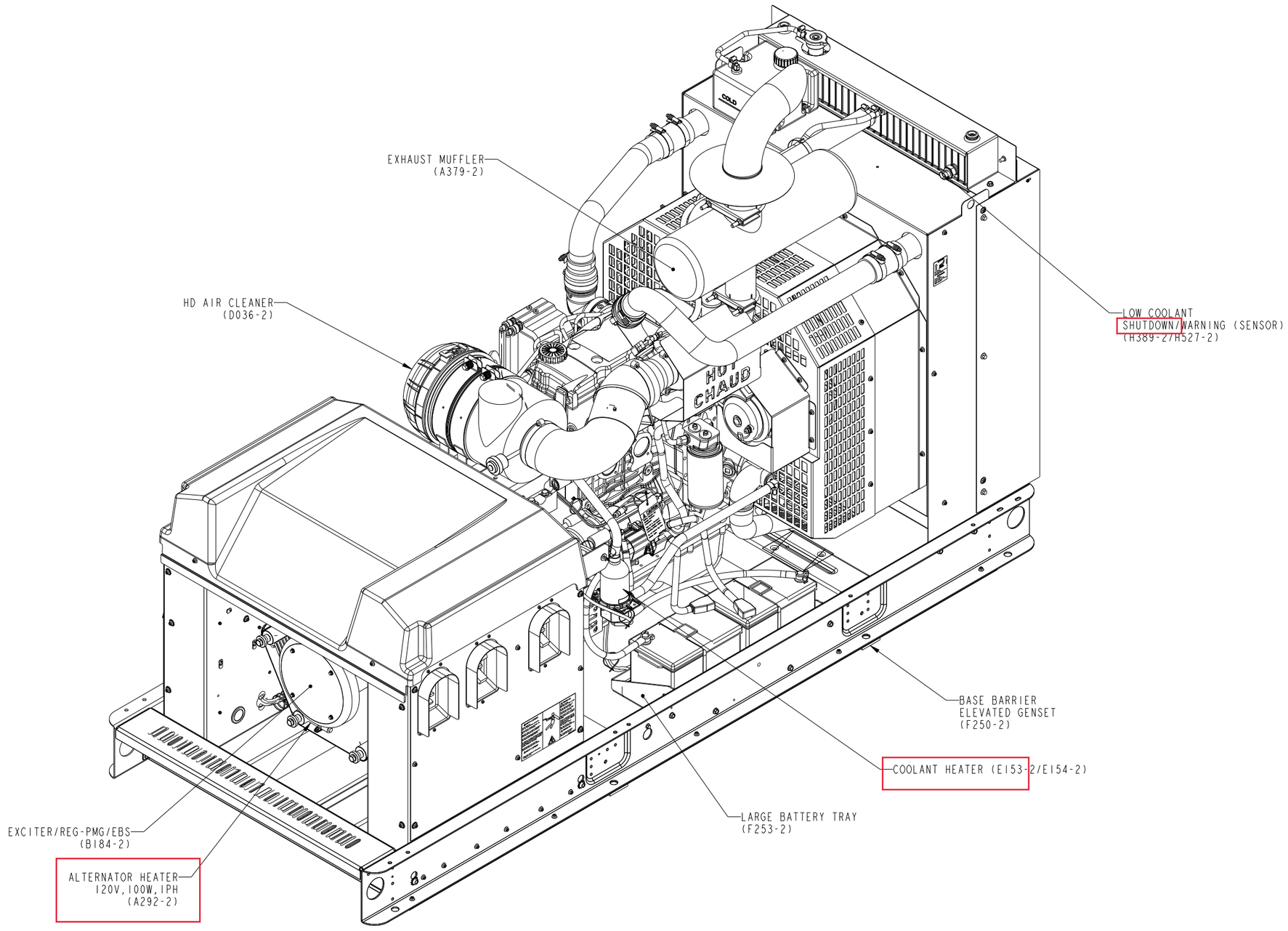
SITE CODE PGF

DWG SIZE D | A054Y899 | CAD SHEET 1 OF 3

Drawing Name: A054Y900 Revision: C
Part Name: A054Y899 Revision: C
ECO-182590 Sheet 1 of 4

PTC® Creo® Parametric

REL NO	REV	NO	REVISION	DWN	CKD	APVD	DATE
ECO-182590	C	1	ZONE A-3: ADD NOTE "COOLANT---E154-2)"	CJF	MF	M FRITSCHE	27DEC18



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

UNLESS OTHERWISE SPECIFIED, ALL DIMENSIONS ARE IN MILLIMETERS

DIM		HOLE
X	± 1	0.00- 4.99 +0.15/-0.08
.X	± 0.8	5.00- 9.99 +0.20/-0.10
.XX	± 0.38	10.00-17.49 +0.25/-0.13
		17.50-24.99 +0.30/-0.13

ANG TOL ± 1.0° | SCALE 3:16

SIM TO .

DO NOT SCALE PRINT

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

FOR INTERPRETATION OF DIMENSIONING AND TOLERANCING, SEE ASME Y14.5-2009 | FIRST USED ON ARROW

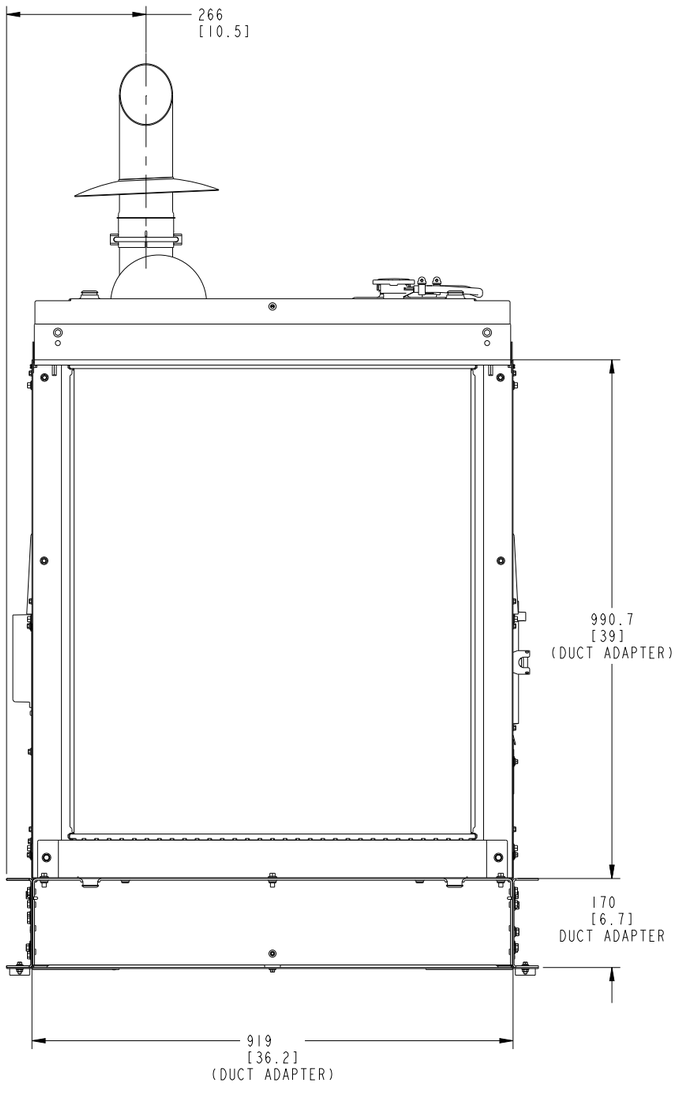
CUMMINS POWER GENERATION

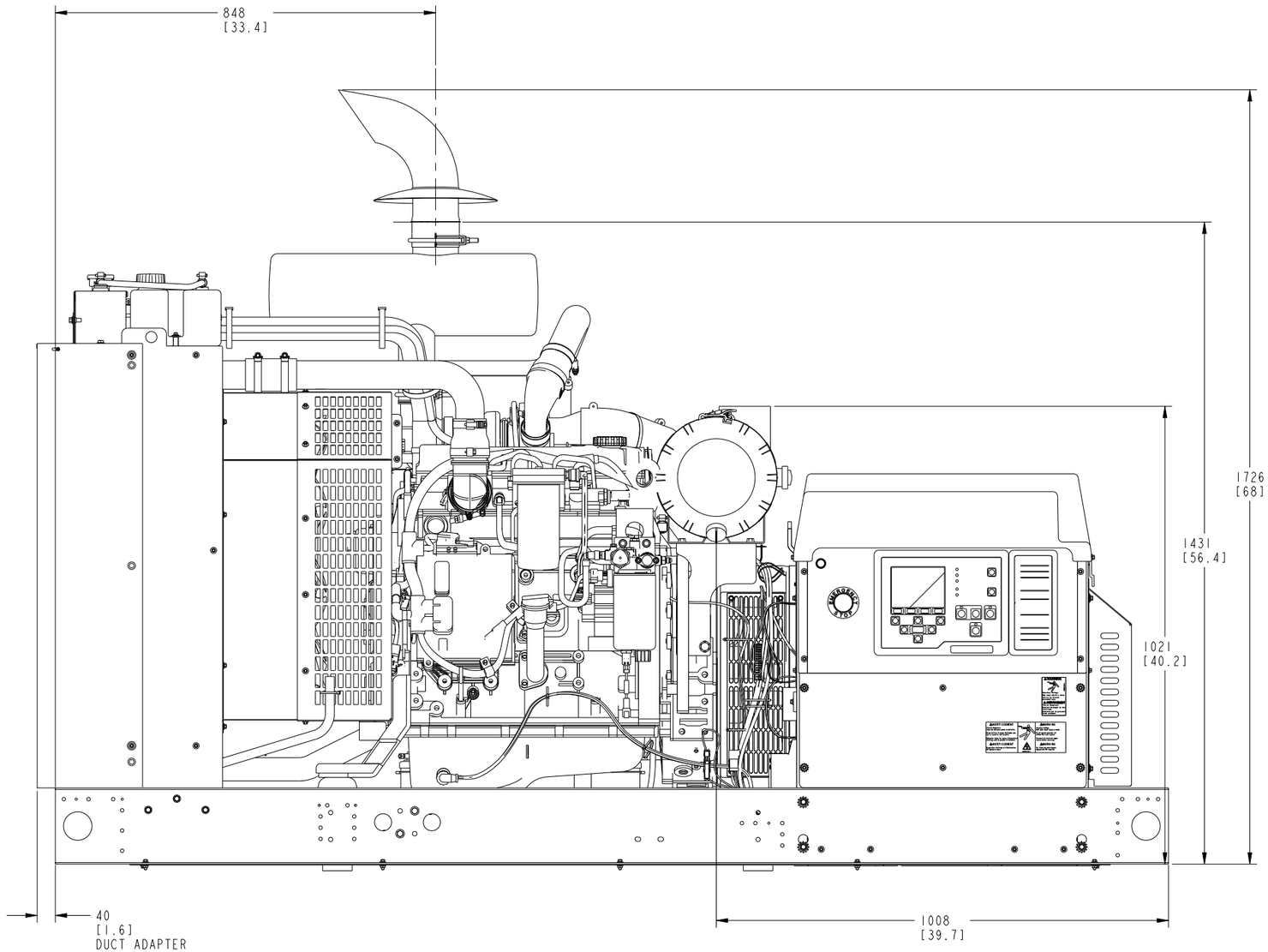
OUTLINE,GENSET OPTIONS

SITE CODE PGF | DWG SIZE D | A054Y899 | CAD SHEET 2 of 3

PTC® Creo® Parametric

REL NO	REV	NO	REVISION	DWN	CKD	APVD	DATE
ECO-182590	C	--	-----	CJF	MF	W FRITSCHE	27DEC18



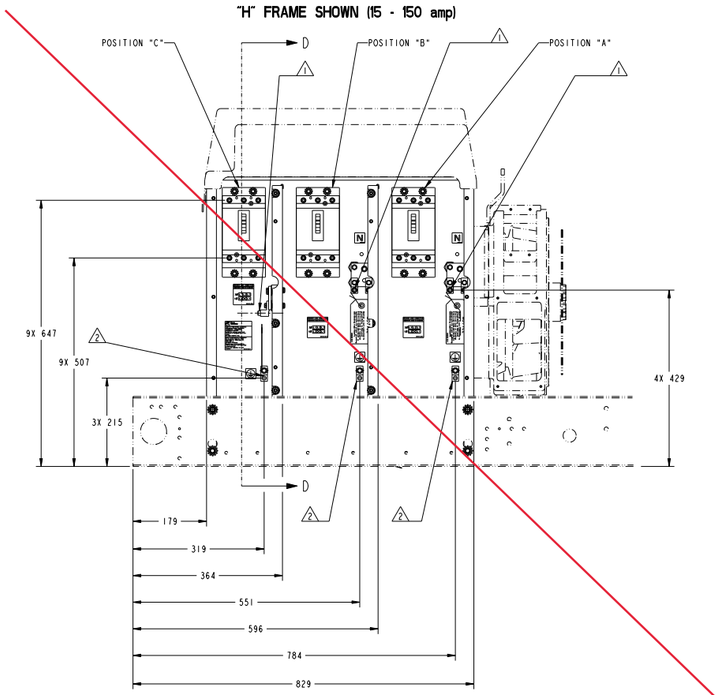


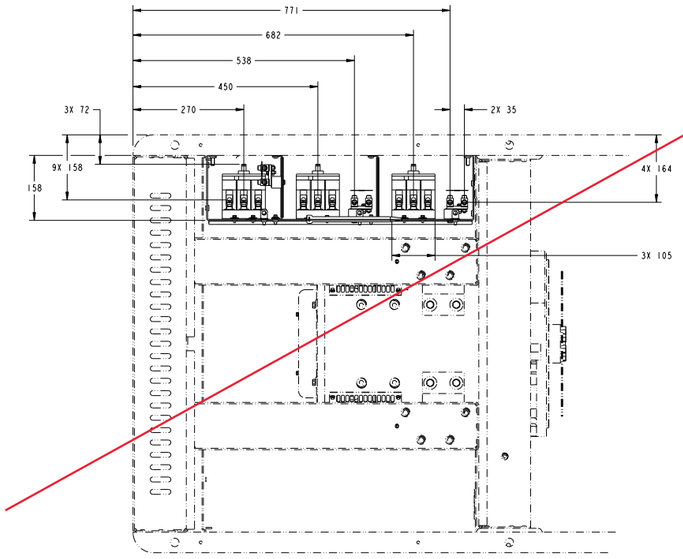
UNLESS OTHERWISE SPECIFIED, ALL DIMENSIONS ARE IN MILLIMETERS			SIM TO .	DWN D HOFMEISTER	CUMMINS POWER GENERATION
DIM: X ±1 / .X ±0.8 / .XX± 0.38	HOLE: 0.00- 4.99 +0.15/-0.08; 5.00- 9.99 +0.20/-0.10; 10.00-17.49 +0.25/-0.13; 17.50-24.99 +0.30/-0.13		DO NOT SCALE PRINT	CKD D HOFMEISTER	OUTLINE, GENSET OPTIONS
ANG TOL ± 1.0°	SCALE 3:16	THIS DOCUMENT (AND THE INFORMATION SHOWN THEREON) IS CONFIDENTIAL AND PROPRIETARY AND SHALL NOT BE DISCLOSED TO OTHERS IN HARD COPY OR ELECTRONIC FORM, REPRODUCED BY ANY MEANS, OR USED FOR ANY PURPOSE WITHOUT WRITTEN CONSENT OF CUMMINS INC.		APVD M JAWALE	
				DATE 17MAR16	
				FOR INTERPRETATION OF DIMENSIONS AND TOLERANCING, SEE ASME Y14.5-2009	FIRST USED ON ARROW
				SITE CODE PGF	DWG SIZE D A054Y899 CAD SHEET 3 of 3

PTC® Creo® Parametric

REL NO	LTR	NO	REVISION	BY	CHD	APVD	DATE
ECO-151815	B	1	PRODUCTION RELEASE	KD	PL	P.LARSON	20APR15
		2	DRAWING HAS BEEN PICTORIALLY UPDATED	KD	PL	P.LARSON	20APR15
		3	RMV C11 LABEL	KD	PL	P.LARSON	20APR15
		4	UPDATE NOTES & TAB - SEE ECO	KD	PL	P.LARSON	20APR15
		5	SEE SHEET 2	KD	PL	P.LARSON	20APR15
		6	SEE SHEET 3	KD	PL	P.LARSON	20APR15

"H" FRAME SHOWN (15 - 150 amp)





SECTION D-D
SCALE 1/2

NOTES:

1. NEUTRAL LUG (1) #14-2/0
2. GROUND LUG (1) #14-1/0
3. NEUTRAL LUG (1) #6-350 kcmil.
4. NEUTRAL LUG (2) #2-600 kcmil OR (4) 1/0-250 kcmil.

FRAME	LUG	LUG WIRE RANGE	WIRE STRIP LENGTH	CB LUG TORQUE
H-FRAME THERMAL-MAGNETIC 15-150 AMP 80% RATED	AL150HD	(1) AL #14 - 3/0 AWG (1) CU #14 - 3/0 AWG	0.65 inch	#14 - #10 50 lb-in (6.0 Nm) #8 - 3/0 120 lb-in (14.0 Nm)
J-FRAME THERMAL-MAGNETIC 175 AMP 80% 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 80% 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 100% RATED, COPPER CONDUCTORS ONLY	CU250JD	(1) CU 1/0 - 300 kcmil	1.00 inch	250 lb-in (28.0 Nm)
L-FRAME (400) LSI ELECTRONIC TRIP ADJUSTABLE TRIP 125-400 AMP 80% RATED	AL400L61K3	(1) AL #2 - 500 kcmil (1) CU #2 - 600 kcmil	1.20 inch	442 lb-in (50 Nm)
L-FRAME (400) LSI ELECTRONIC TRIP ADJUSTABLE TRIP 125-400 AMP 100% RATED, COPPER CONDUCTORS ONLY	AL600LS52K3	(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 80% RATED	AL600LS52K3	(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)

CIRCUIT BREAKER ACCESSORIES	
1	SHUNT TRIP (MX) P/N A043X760 12 VDC COIL BURDEN < 5 WATTS 10 AMP IN-RUSH
2	AUXILIARY CONTACTS P/N A043X785 OPEN/CLOSED (OF) TRIP INDICATION (SD) FORM C CONTACTS RATING: 6 AMPS AT 24 VAC, 48 VAC, 110 VAC 6 AMPS AT 24 VDC, 2.5 AMPS AT 48 VDC 0.6 AMPS AT 110 VDC H & J FRAME, MAXIMUM OF 4 CONTACTS PER CIRCUIT BREAKER L FRAME, MAXIMUM OF 5 CONTACTS PER CIRCUIT BREAKER

UNLESS OTHERWISE SPECIFIED, ALL DIMENSIONS ARE IN MILLIMETERS
X ±1 | .X ±0.8 | .XX± 0.38 | ANG TOL: ± 1.0°
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
SCALE: 1/4
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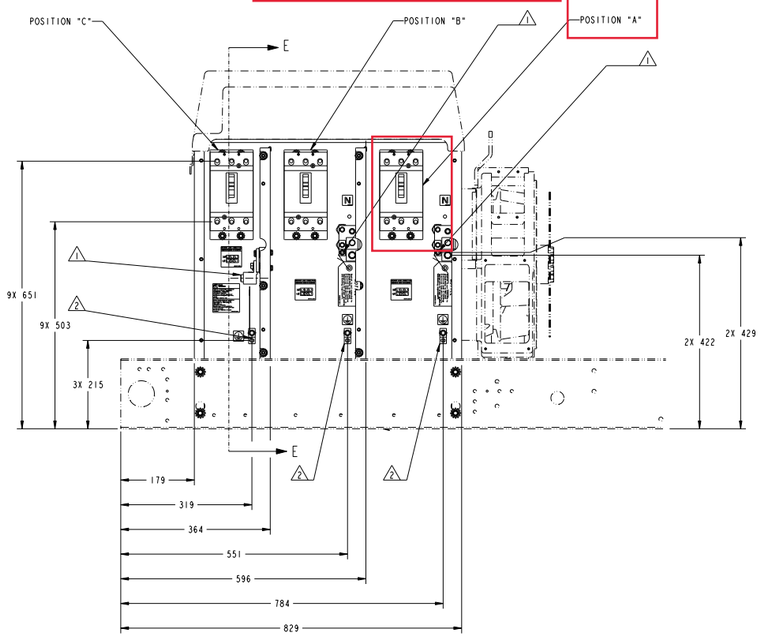
CONFIDENTIAL - PROPERTY OF CUMMINS POWER GENERATION GROUP
DRN K.DEIVASIGAMANI | CHD P.LARSON | APVD P.LARSON | DATE 21JAN15
NEXT ASSY ARROW
CUMMINS POWER GENERATION
SITE CODE PGF
OUTLINE,CIRCUIT BREAKER
SIZE E | DWG NO A049J918 | SHEET 1 of 3 | REV B

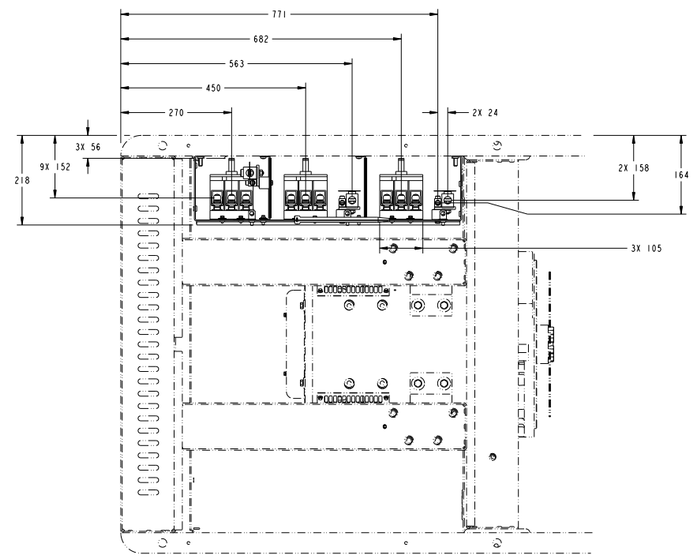
Drawing Name: A049J919 Revision: B
Part Name: A049J918 Revision: B
Sheet 1 of 4

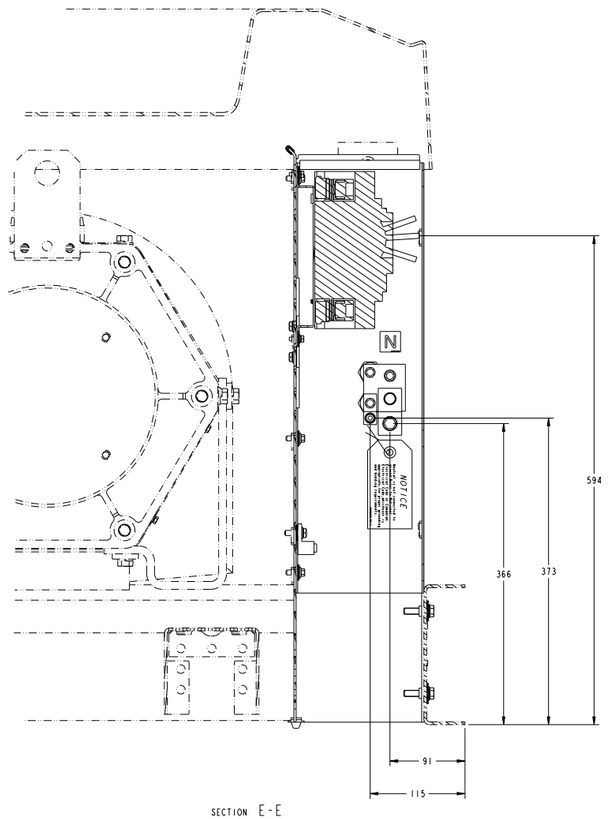
PTC® Creo® Parametric

REL NO	LTR	NO	REVISION	DRN	CHD	APVD	DATE
ECO-1518115	B	1	PRODUCTION RELEASE	KD	PL	P.LARSON	20APR15
		5	ZONE (D3) ADD PHRASE "(175-250 amp)" TO "J" FRAME SHOWN"	KD	PL	P.LARSON	20APR15

"J" FRAME SHOWN (175 - 250 amp)







SECTION E-E
SCALE 1/2

UNLESS OTHERWISE SPECIFIED: ALL DIMENSIONS ARE IN MILLIMETERS
DO NOT SCALE PRINT
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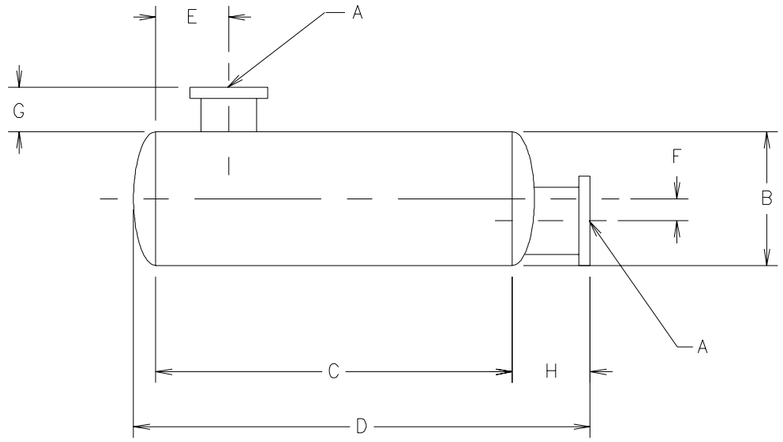
DRN K.DEIVASIGAMANI
CHD P.LARSON
APVD P.LARSON
DATE 21JAN15
NEXT ASSY IN ARROW
SITE CODE PGF
CUMMINS POWER GENERATION
OUTLINE, CIRCUIT BREAKER
SIZE E
A049J918
SHEET 2 OF 3
REV B

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

155-2342 C

ER NO.	LTR	NO.	REVISION	ZONE	DR	CHKR	APPROVED	DATE
63391	E	1	REDRAWN TO CAD W/CHANGES PER ER	-	CC	BG	GLT	07-27-92
63284	G	1	ADD NOTE 4	2-C	DR	DY	RJG	01-25-93
		2	ADD -09 TAB	4-A	DR	DY	RJG	01-25-93
65236	H	1	-11 THRU -19 PRODUCTION RELEASE	-	JFK	GS	BGC	06-05-93
		2	ADDED MATERIAL TO TAB	-	JFK	GS	BGC	06-05-93
72644	**J**	**1**	**OSBOLETE -11 THRU -19 (SEE ER)**	**-**	**CC**	**BG**	**RJG**	**04-18-96**
72644	J	1	OSBOLETE -11 THRU -19 (SEE ER)	-	CC	BG	RJG	04-18-96
FRD691	K	1	ADD -10 TAB	4-A	SZR	BVM	BVM	02-11-99
FRD1300	L	1	-10 TAB: ADD DIMENSINS C, E, H, & WEIGHT	4-A	GWH	BVM	BVM	04-13-99
FRD1754	M	1	-10, DIM "H" 9.5 WAS 3.4	4-A	CB	BG	BVM	05-26-99
FRD3714	N	1	NOTE 1 WAS "PART NAME: NELSON..."	2C	CB	BG	DCK	12-22-99
		2	RMV NOTE 2 "VENDOR..."	2C	CB	BG	DCK	12-22-99
		3	ADD CODES & STANDARDS LABEL	4A	CB	BG	DCK	12-22-99
		4	RMV NELSON PART NUMBER COLUMN FROM TAB	4B	CB	BG	DCK	12-22-99
FRD4796	P	1	-01 DIM D WAS 76.4, -02 DIM D WAS 82.3	4B	RMM	BG	GILLETT	06-14-00
		2	-03 DIM D WAS 79.5, -04 DIM D WAS 108.4	4B	RMM	BG	GILLETT	06-14-00
		3	-05 DIM D WAS 66.5, -06 DIM D WAS 61.2	4B	RMM	BG	GILLETT	06-14-00
		4	-07 DIM D WAS 52.8, -08 DIM D WAS 49.6	4B	RMM	BG	GILLETT	06-14-00
		5	-09 DIM D WAS 42.4, -10 DIM D WAS 111.6	4A	RMM	BG	GILLETT	06-14-00
FRD6540	R	1	REVISED PER ECOR	-	RMM	BG	GILLETT	09-19-00



N4

NOTES:

N1 1. THIS PART IS VENDOR SOURCE CONTROLLED (SEE APVL).

N2 2.

3. FLANGES DRILLED TO 125#ASA STANDARD.

G1 4. SILENCER COATED WITH BAKED ON HIGH HEAT RESISTING SILICONE BLACK PAINT.

TABULATION

ITEM DASH NO.	CURRENT ER NUMBER	FLANGE "A"	DIM. B	DIM. C	DIM. D	DIM. E	DIM. F	DIM. G	DIM. H	WEIGHT (LBS)
-01	FRD6540	6" ASA FLANGE	16.12	69.0	76.4	5.0	3.06	4.0	5.9	180
-02	FRD6540	8" ASA FLANGE	22.12	72.1	82.3	8.0	0.0	4.0	6.9	255
-03	FRD6540	10" ASA FLANGE	26.12	72.1	83.4	9.0	0.0	4.0	7.4	387
-04	FRD6540	12" ASA FLANGE	30.12	96.0	108.4	10.0	0.0	4.0	8.0	610
-05	FRD6540	5" ASA FLANGE	14.12	60.0	67.5	4.0	2.56	4.0	5.7	112
-06	FRD6540	4" NPT	12.12	55.0	61.2	4.0	1.82	3.0	4.5	82
-07	FRD6540	3" NPT	11.12	47.0	52.8	3.0	0.0	3.0	4.3	58
-08	FRD6540	2.5" NPT	10.12	45.0	49.3	3.0	0.0	2.5	3.5	50
-09	FRD6540	2" NPT	9.00	38.0	42.4	2.5	0.0	2.0	3.0	34
-10	FRD6540	14" ASA FLANGE	42.25	96.0	111.6	10.0	0.0	4.0	9.5	1290

P1 P2 P3 P4 P5 G2 M1 K1 L1

N3

-THIS IS A CONTROLLED PRODUCT-
PER ONAN PROCEDURE FRE-1002

TO MAINTAIN COMPLIANCE WITH REQUIREMENTS OF THE CODES, STANDARDS, OR AGENCIES LISTED BELOW

☐ CSA ☒ UL ☐ EC ☐ RVIA ☐ ABYC
☐ OTHER _____ ☐ OTHER _____
AND/OR ASSIGN INTERNAL ONAN DESIGN CONTROL FACILITIES ☐

CHANGES, DEVIATIONS, OR SUBSTITUTIONS OF MATERIAL, PROCESS, OR PERFORMANCE FOR THIS PRODUCT MUST BE APPROVED BY THE FOLLOWING DESIGN CONTROL FACILITIES

DESIGN CONTROL FACILITY FRIDLEY
DESIGN CONTROL FACILITY _____

REVISIO DWG

DO NOT SCALE PRINT

TOLERANCE UNLESS OTHERWISE SPECIFIED

DIM mm		DIM Inch	
X	±	.X	± ---
.X	±	.XX	± ---
.XX	±	.XXX	± ---
HOLE 0.09- 4.99	±0.15/-0.08	.004-.388	+.006/-.003
5.00- 9.99	±0.20/-0.10	.201-.421	+.008/-.004
10.00-17.49	±0.25/-0.13	.422-.703	+.010/-.005
17.50-24.99	±0.38/-0.13	.704-.999	+.012/-.005
ANG TOL ± ---		DRAWN TO SCALE OF	NONE

QTY

SIM TO 155-2340 C
COPIED FROM
THIRD ANGLE PROJECTION

ITEM	PART NO.	DWG SIZE	DESCRIPTION OR MATERIAL	REF DES

	NAME	DATE
DR	CYNTHIA CLARK	07-27-92
CHKR ☐ MFG ☐	BRUCE GROSS	07-27-92
APPROVED	G THOMPSON	07-29-92

FOR INTERPRETATION OF DIMENSIONING AND TOLERANCING, SEE ANSI Y14.5M-1982

MODEL FIRST USED ON DM SERIES

Cummins Onan

MINNEAPOLIS, MINNESOTA 55432

TITLE MUFFLER (CRITICAL)

DWG NO. 155-2342 SHEET 1 OF 1 DWG SIZE C

Battery charger-10 amp
A026H213

> Specification sheet

Our energy working for you.™

Power Generation

Description

Cummins Power Generation fully automatic battery chargers are constant voltage/constant current chargers incorporating a 4-stage charging algorithm. Designed for use in applications where battery life and reliability are important; these chargers, complete with built-in equalize charge capability, are ideal for stationary or portable starting battery charging service.

To achieve optimum battery life, a 4-stage charging cycle is implemented. The four charging stages are constant current, high-rate taper charge, finishing charge, and maintaining charge. During the constant current cycle the charger operates at maximum possible output in the fast charge mode. During the high-rate taper charge cycle the charger stays at fast charge voltage level until battery current acceptance falls to a portion of the chargers rated output. During the finishing charge cycle the charger operates at the float voltage and completes the battery charge. During the maintaining charge cycle the charger supplies only a few milliamps required by the battery to stay at peak capability.

An optional temperature sensor may be used to adjust charging voltage based on temperature of the battery. Use of a battery temperature sensor helps to increase battery life by preventing over or under charging. The battery temperature sensor also protects the battery from overheating. Temperature compensation is recommended in all applications, but is particularly valuable for generator sets in outdoor applications.

Battery chargers are field-configurable for charging either 12 or 24 VDC battery systems at 60 Hz operation. Simple jumper selectors enable selection of output voltage and battery type. (If 50/60 Hz operation is required use model NRG22-10-HC, consult the factory for details.)

Features

Protection – Surge protected to IEEE and EN standards. All models include single pole cartridge type fuses mounted on the printed circuit board to protect against input or output overcurrent.

Easy installation – Clearly marked terminal blocks and panel knockouts provide convenient connections of input and output leads.

User display – Output voltage and current, fault information and status are indicated on the front panel. Includes precision ammeter and voltmeter.

Monitoring – Status LED indicators are provided to show the condition of the charger. LED's on the right side of the monitor indicate operational functions for Temperature Compensation active (Green), AC on (Green), Float (Green) or Boost (Amber) mode, as well as Battery Fault (Red). LED's on the left side of the monitor illuminate (in Red) when Charger fail, High or Low VDC or AC fail occur.

Adjustable float voltage – Float voltage can be set, using easy to understand jumpers, for optimum battery performance and life.

Construction – NEMA-1 (IP20) corrosion resistant aluminum enclosure designed for wall mounting.

Faults – The charger senses and annunciates the following fault conditions: AC power loss, battery overvoltage, battery undervoltage, battery fault conditions and charger failure. Includes an individual 30 volt/2 amp isolated contact for each alarm.

Vibration resistant design - complies with UL 991 class B vibration resistance requirements.

Listed – C-UL listed to UL 1236 CSA standard 22.2 no 107.2-M89. Suited for flooded and AGM lead acid and NiCd batteries in generator set installations.

Specifications

Performance and physical characteristics

Output:	Nominal voltage	12 or 24 VDC
	Float voltage – 12 V batteries	12.87, 13.08, 13.31, 13.50, 13.62, 14.30
	Float voltage – 24 V batteries	25.74, 26.16, 26.62, 27.00, 27.24, 28.60
	Equalize-voltage	6.5% above float voltage sensing
	Output voltage regulation	±0.5% (1/2%) line and load regulation
	Maximum output current	10 A @ 12 VDC nom or 10 A @ 24 VDC
	Equalize charging	Battery interactive autoboost
Input:	Voltage AC	120, 208, 240 ±10%
	Frequency	60 Hz ±5%
Approximate net weight:		25 lbs (11.36 Kg)
Approximate dimensions: height x width x depth-in(mm)		12.5 x 7.7 x 6.5 (318 x 195 x 165)
Ambient temperature operation: At full rated output		- 4°F to 104 °F (-20 °C to 45 °C)

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

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

Warning: For professional use only. Must be installed by a qualified service technician. Improper installation presents hazards of electrical shock and improper operation, resulting in severe personal injury and/or property damage.

Our energy working for you.™

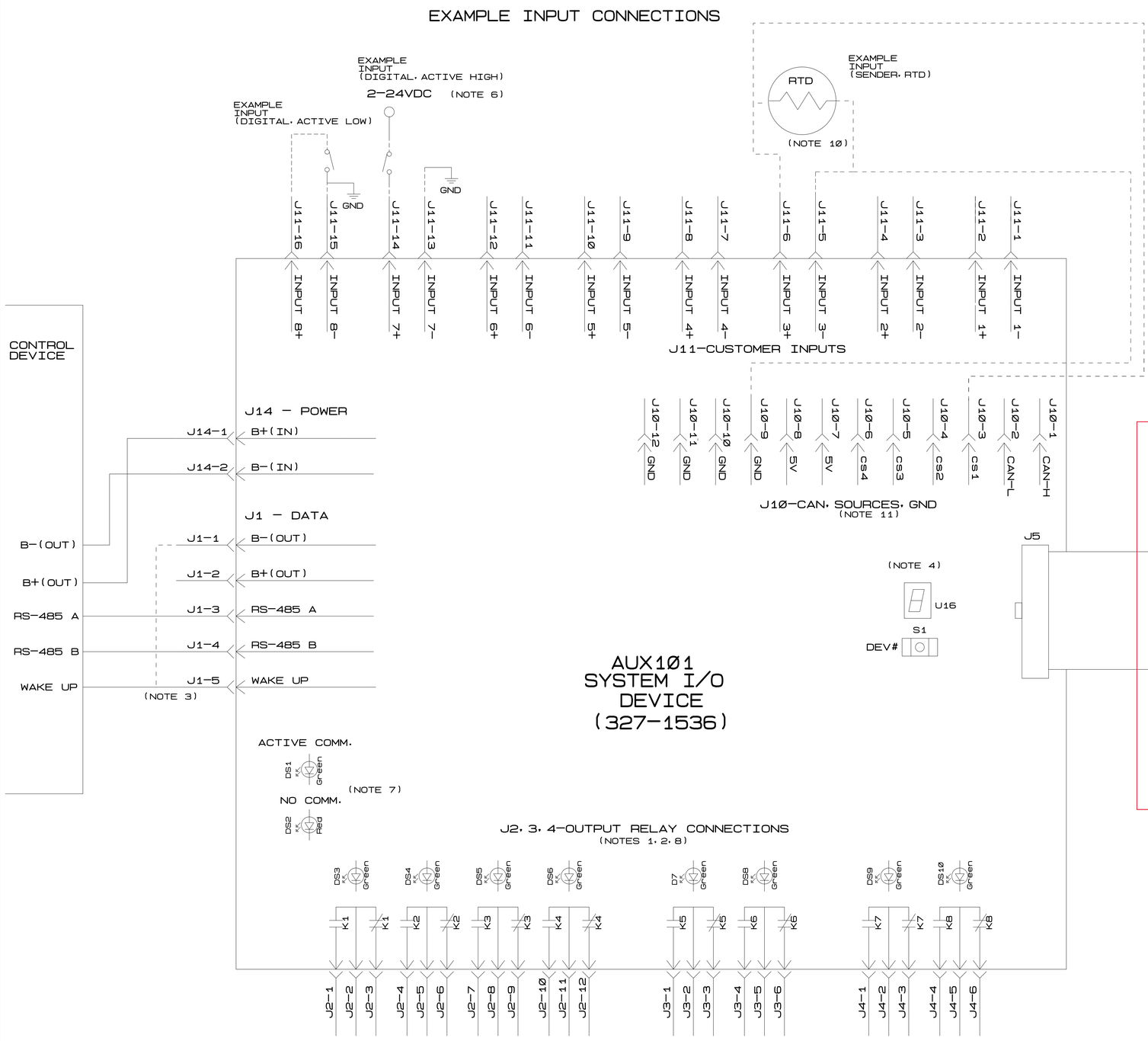
www.cumminspower.com

Cummins Power Generation

0630-3142 D

REL NO.	LTR	NO.	REVISION	ZONE	DR	CHKR	APPROVED	DATE
FRD25376	A	1	PRODUCTION RELEASE	–	TAW	JFM	TAW	07-25-05
ECO-187041	B	1	SPEC 3.3 MAX VOLTAGE WAS 24V	–	MRD	MS	SCHEVERELL	05OCT05
		2	SPEC 3.3 DIFF VOLT INPUT 1.2 WAS -5-5V	–	MRD	MS	SCHEVERELL	05OCT05

EXAMPLE INPUT CONNECTIONS



SPECIFICATIONS

1. POWER
   - 1.1 INPUT VOLTAGE = 5-40VDC (OPERATING RANGE) 12VDC = 900mA, 24VDC = 450mA
   - 1.2 INPUT CONNECTIONS = J14-1(+) J14-2(-)
   - 1.3 OUTPUT CONNECTIONS = J1-2(+) J1-1(-)
2. DATA
   - 2.1 TYPE RS-485
   - 2.1.1 CONNECTIONS = J1-3(A) J1-4(B)
   - 2.2 CAN
   - 2.2.1 CONNECTIONS = J10-1(CAN-H) J10-2(CAN-L)
   - 2.3 WAKE UP(ACT. LOW) = J1-5(WU)
3. CUSTOMER INPUTS
   - 3.1 TYPE = DISCRETE OR ANALOG
   - 3.2 NUMBER = 8 : 12 WITH EXPANSION BOARD, AUX102
   - 3.3 MAX. VOLTAGE ALLOWED AT ANY INPUT: -10-24VDC (1-6) 40VDC (7-8)
     DIFFERENTIAL VOLTAGE RANGE: -4.9V-5V(Inputs 1,2) 0V-5V(Inputs 3-6) 0V-38V(INPUTS 7,8)
   - 3.4 INPUT CONNECTIONS = J11
4. CUSTOMER OUTPUTS
   - 4.1 CURRENT SOURCES = J10-3,4,5,6 (1mA - 20mA)
   - 4.2 VOLTAGE SOURCES = J10-7,8 (5VDC, 20mA)
   - 4.3 GROUND = J10-9, 10, 11, 12
5. OUTPUT RELAYS
   - 5.1 TYPE = NON-LATCHING
   - 5.2 NUMBER = 8 : 16 WITH EXPANSION BOARD
   - 5.3 CONTACTS = 1 FORM C 250VAC OR 30VDC NC CONTACTS = 3A(AUX101) NO CONTACTS = 5A(AUX101) AUX102 CONTACTS = 2A(AUX102)
   - 5.4 CONNECTIONS = J2, J3, J4(AUX101) J1, J2, J3(AUX102)
6. ENVIRONMENTAL
   - 6.1 STORAGE TEMPERATURE = -40 TO 85 °C
   - 6.2 OPERATING TEMPERATURE = -40 TO 60 °C
   - 6.3 HUMIDITY = UP TO 95% RH

NOTES

1. ALL RELAYS SHOWN IN RESET OR DE-ENERGIZED POSITION. DO NOT MAINTAIN THE LAST STATE WHEN POWER IS LOST.
2. OUTPUT RELAYS ARE CONTROLLED VIA THE NETWORK.
3. TIE J1-1 and J1-5 TO HOLD DEVICE IN WAKE UP STATE.
4. DISPLAYS THE DEVICE NUMBER. IF MORE THAN ONE AUX101 IS ON NETWORK BOTH NEED A UNIQUE DEVICE NUMBER.
5. CONNECT J2 RING TERMINAL TO A GOOD EARTH GROUND. USE AN 'EXTERNAL TOOTH' LOCKWASHER BETWEEN RING AND GROUNDING SURFACE.
6. DIGITAL INPUTS NEED THE (-) INPUT GROUNDED.
7. DS1 INDICATES ACTIVE NETWORK COMMUNICATION. DS2 INDICATES NO NETWORK CONNECTIVITY.
8. DS3-DS10(GREEN) ON THE AUX101 INDICATE WHICH RELAYS ARE ENERGIZED. DS1-DS8(GREEN) ON THE AUX102 INDICATE WHICH RELAYS ARE ENERGIZED.
9. AUX102 INPUTS ARE ONLY DIGITAL ACTIVE LOW
10. RTD SENDERS CAN ONLY BE USED ON INPUTS 3-6
11. PROGRAMMABLE CURRENT SOURCE USE
    - CS1 IS USED FOR INPUT 3 ONLY.
    - CS2 IS USED FOR INPUT 4 ONLY.
    - CS3 IS USED FOR INPUT 5 ONLY.
    - CS4 IS USED FOR INPUT 6 ONLY.

QTY	ITEM	PART NO.	DWG SIZE	DESCRIPTION OR MATERIAL	REF DES

TOLERANCES UNLESS OTHERWISE SPECIFIED
mm: DIM X. ± .X ± .XX ± HOLE 0.89-4.99 ±0.15/-0.00; 5.00-9.99 ±0.20/-0.18; 10.00-17.49 ±0.25/-0.13; 17.50-24.99 ±0.30/-0.13
Inch: DIM .X ± .XX ± .XXX ± .XXX HOLE .004-.008 +.005/-.003; .021-.421 +.005/-.004; .422-.703 +.010/-.005; .704-.999 +.010/-.005
SIM TO
COPIED FROM
THIRD ANGLE PROJECTION

FOR INTERPRETATION OF DIMENSIONS AND TOLERANCES SEE ANSI Y14.5M-1982

	NAME	DATE
DR	TROY WINSAND	7-20-05
CHKR ☒ MFG ☐	JOHN MCCARTHY	10-4-05
APPROVED	TROY WINSAND	7-20-05

MODEL FIRST USED ON: SID

SITE CODE: PGA

ZUKEN

DO NOT SCALE PRINT

ANG TOL ±

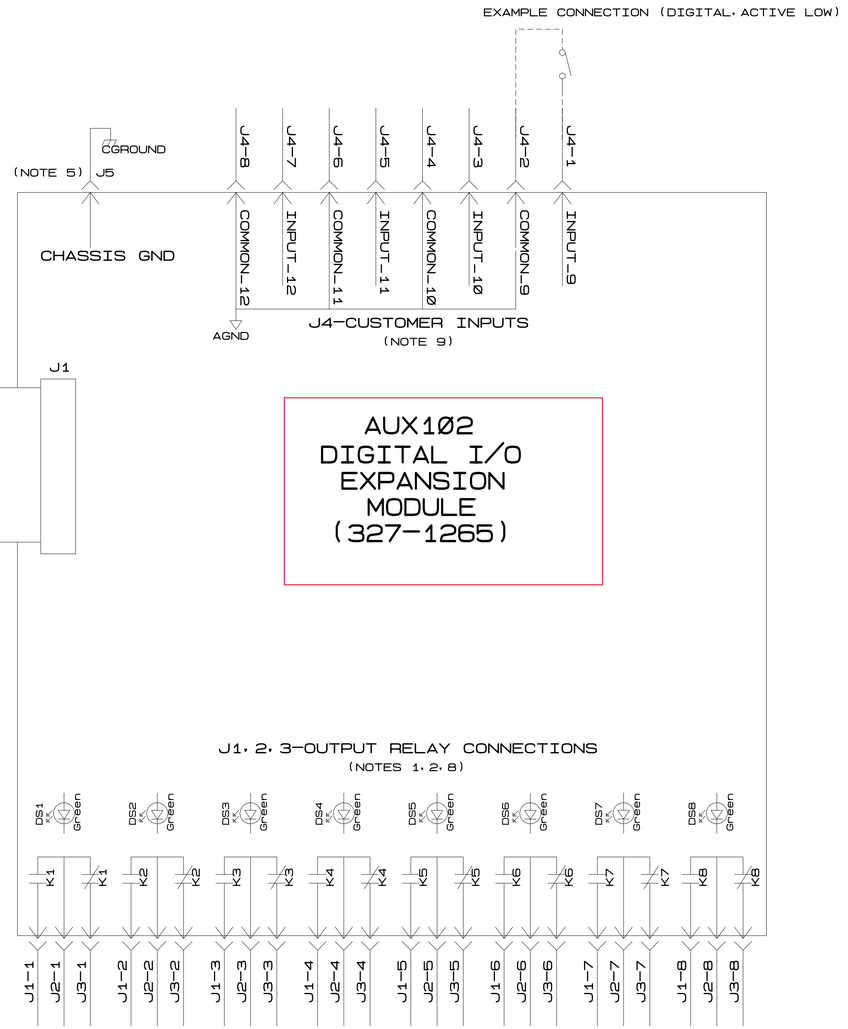
DRAWN TO SCALE OF

CUMMINS POWER GENERATION
1400 73rd AVE NE
MINNEAPOLIS MN 55432

TITLE: WD-CONTROL (SYSTEM I/O DEVICE)

DWG NO. 0630-3142 | SHEET 1 of 2 | DWG SIZE D

REL NO	LTR	NO.	REVISION	ZONE	DR	CHKR	APPROVED	DATE
FRD25376	A	1	PRODUCTION RELEASE	–	TAW	JFM	TAW	07-25-05
ECO-187041	B	–	----------	–	MRD	MS	SCHEVERELL	05OCT05



QTY	ITEM	PART NO.	DWG SIZE	DESCRIPTION OR MATERIAL	REF DES

TOLERANCES UNLESS OTHERWISE SPECIFIED

	mm	Inch
DIM	X. ± / .X ± / .XX ±	.X ± / .XX ± .XX / .XXX ± .XXX
HOLE	0.09~4.99 +0.15/-0.08	.004~.200 +.006/-.003
	5.00~9.99 +0.20/-0.10	.201~.421 +.008/-.004
	10.00~17.49 +0.25/-0.13	.422~.703 +.010/-.005
	17.50~24.99 +0.30/-0.13	.704~.999 +.012/-.005

SIM TO
COPIED FROM
THIRD ANGLE PROJECTION

FOR INTERPRETATION OF DIMENSIONS AND TOLERANCES SEE ANSI Y14.5M-1982

	NAME	DATE
DR	TROY WINSAND	7-20-05
CHKR ☒ MFG ☐	JOHN MCCARTHY	10-4-05
APPROVED	TROY WINSAND	7-20-05

MODEL FIRST USED ON
SID

SITE CODE
PGA

ZUKEN

DO NOT SCALE PRINT

ANG TOL ±

DRAWN TO SCALE OF

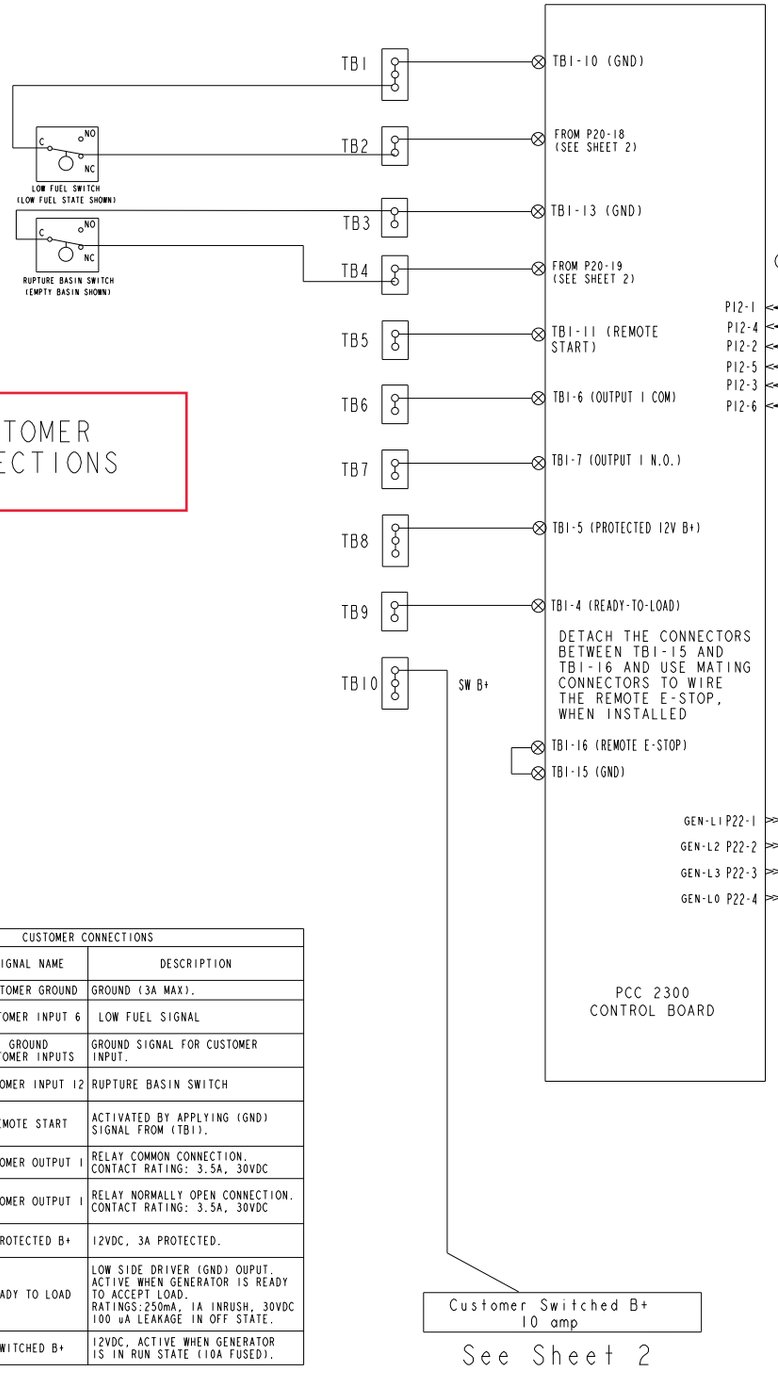
CUMMINS POWER GENERATION
1400 73rd AVE NE
MINNEAPOLIS, MN 55432

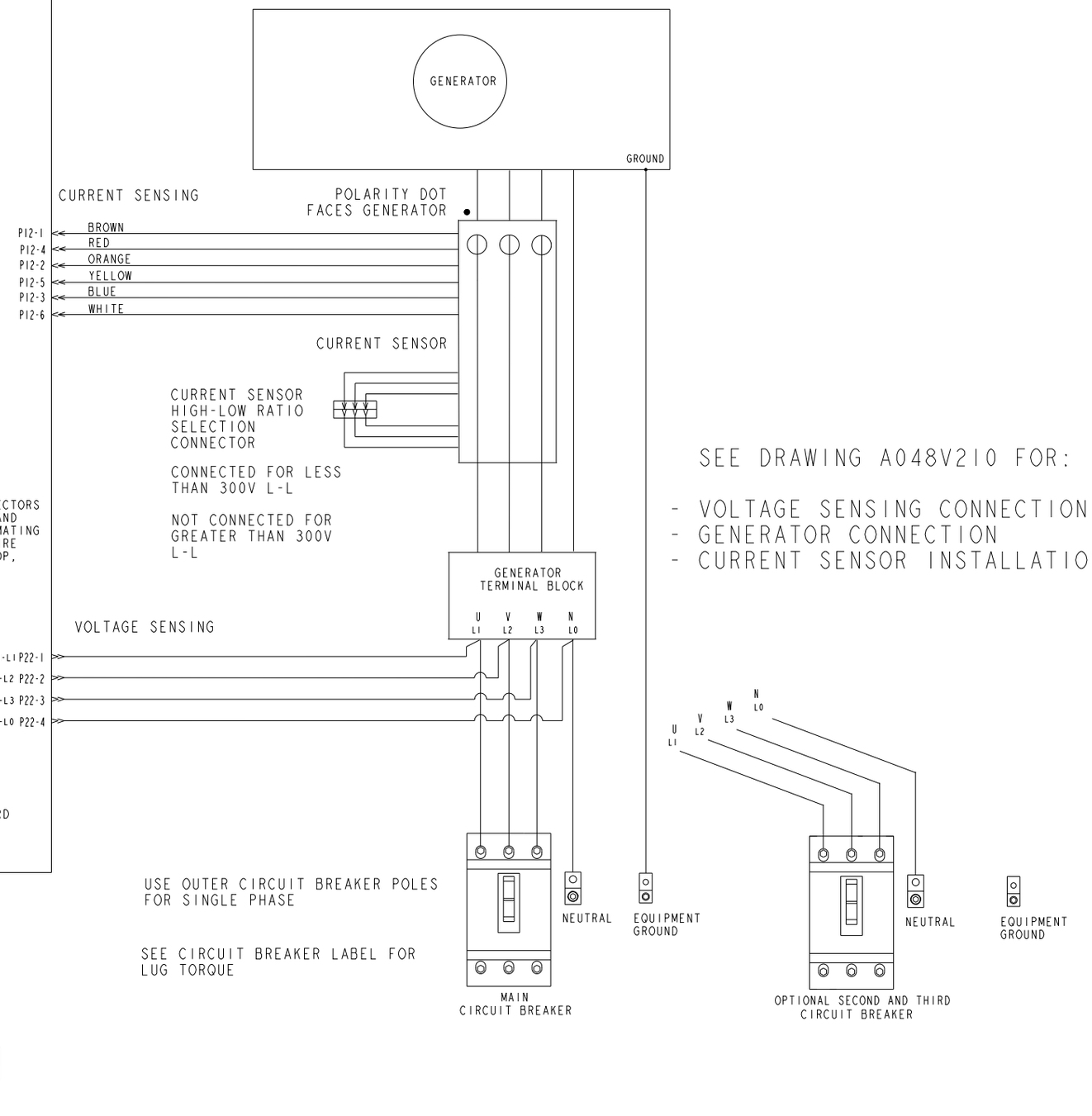
TITLE WD-CONTROL (SYSTEM I/O DEVICE)

DWG NO. 0630-3142 | SHEET 2 OF 2 | DWG SIZE D

REL NO	REV	NO	REVISION	DRN	CKD	APVD	DATE
ECO-181411	E	--	---	PT	MT	M.TULADHAR	01NOV18

CUSTOMER CONNECTIONS





SEE DRAWING A048V210 FOR:

- VOLTAGE SENSING CONNECTION
- GENERATOR CONNECTION
- CURRENT SENSOR INSTALLATION

CUSTOMER CONNECTIONS		
TERMINAL NAME	SIGNAL NAME	DESCRIPTION
TB1	CUSTOMER GROUND	GROUND (3A MAX).
TB2	CUSTOMER INPUT 6	LOW FUEL SIGNAL
TB3	GROUND CUSTOMER INPUTS	GROUND SIGNAL FOR CUSTOMER INPUT.
TB4	CUSTOMER INPUT 12	RUPTURE 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. RATINGS:250mA, 1A INRUSH, 30VDC 100 uA LEAKAGE IN OFF STATE.
TB10	SWITCHED B+	12VDC, ACTIVE WHEN GENERATOR IS IN RUN STATE (10A FUSED).

UNLESS OTHERWISE SPECIFIED, ALL DIMENSIONS ARE IN MILLIMETERS
DO NOT SCALE PRINT
DIM: X ±1, .X ±0.8, .XX± 0.38
ROUGH: 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
ANG TOL ± 1.0° | SCALE 1/1

FOR INTERPRETATION OF DIMENSIONS AND TOLERANCES REFER TO ASME Y14.5-2009
FIRST USED ON: ARROW

DRN C.BADGUJAR | CKD M.TULADHAR | APVD M.TULADHAR | DATE 20NOV15
SITE CODE: PGF
CUMMINS POWER GENERATION
DIAGRAM, GENSET SCHEMATIC
PART NO. E | A054B421 | CAD SHEET 4 of 5

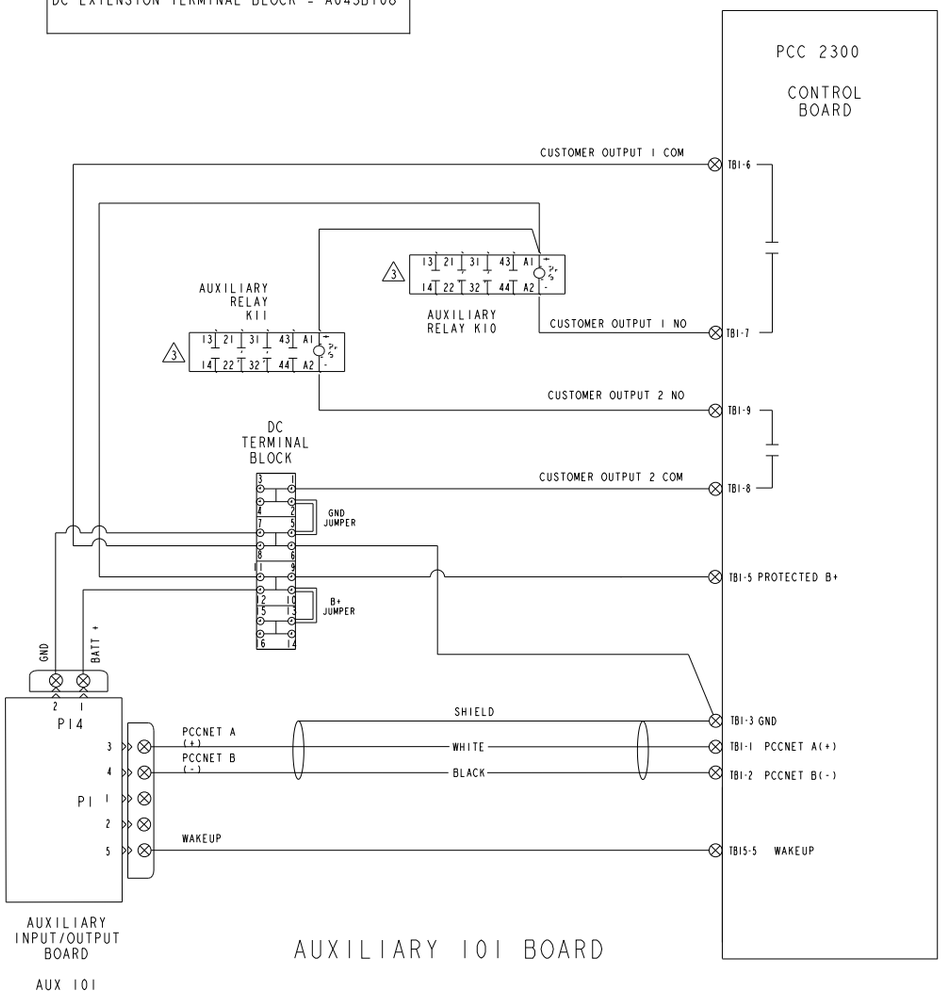
REL NO	REV	NO	REVISION	DRN	CKD	APVD	DATE
ECO-181411	E	1	ZONE D2, ADD PHRASE "208---AMBIENT"	PT	MT	M.TULADHAR	01NOV18
		2	ZONE C2, ADD PHRASE "USED---AMBIENT"	PT	MT	M.TULADHAR	01NOV18
		3	ADD PHRASE "120 Vac" TO COOLANT HEATER, ALTERNATOR HEATER, OIL PAN HEATER, BATTERY HEATER AND BATTERY CHARGER DIAGRAM	--	--	--	--
		4	ZONE B2, RMV PHRASE "SOME CANADIAN---RECEPTACLE"	PT	MT	M.TULADHAR	01NOV18

HARNESSES FOR OPTIONS

AUX 101 = A043A230

AUXILIARY RELAYS = A042Z041

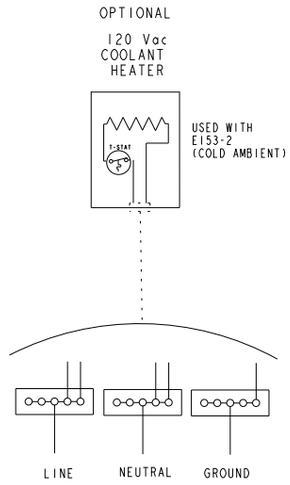
DC EXTENSION TERMINAL BLOCK = A043B108

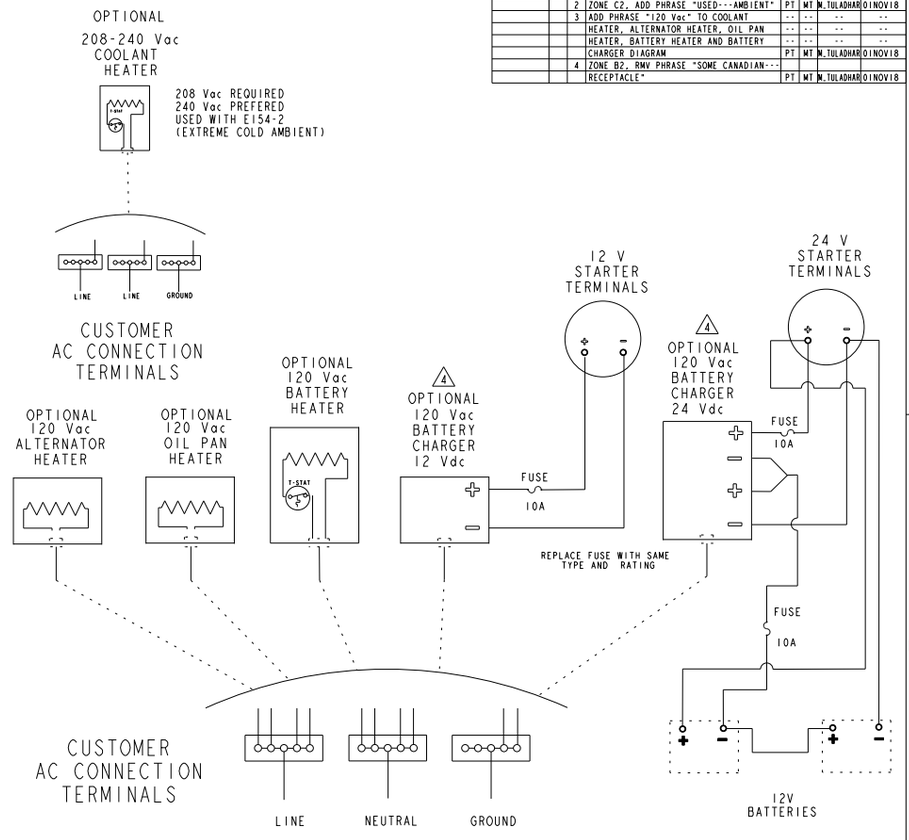


AUXILIARY 101 BOARD

AUXILIARY RELAYS

DC EXTENSION TERMINAL BLOCKS





INSTALLER TO PROVIDE BRANCH CIRCUITS TO POWER ALL ACCESSORIES

ALL ACCESSORIES ARE SINGLE PHASE 120/240 Vac 60 Hz

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
Coolant heater (3) 2000 Watts, 240Vac, 8.4 amps / 1500 Watts, 208Vac, 7.2 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 (12V), 192 Watts, 120Vac, 1.67 amps (max)
Battery charger (24V), 300 Watts, 120Vac, 2.5 amps (max)

UNLESS OTHERWISE SPECIFIED, ALL DIMENSIONS ARE IN MILLIMETERS
DIM ID .
DO NOT SCALE PRINT
DIM: X ±1, .X ±0.8, .XX± 0.38
ANG TOL ± 1.0°
SCALE 1/1
DECIMAL: 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

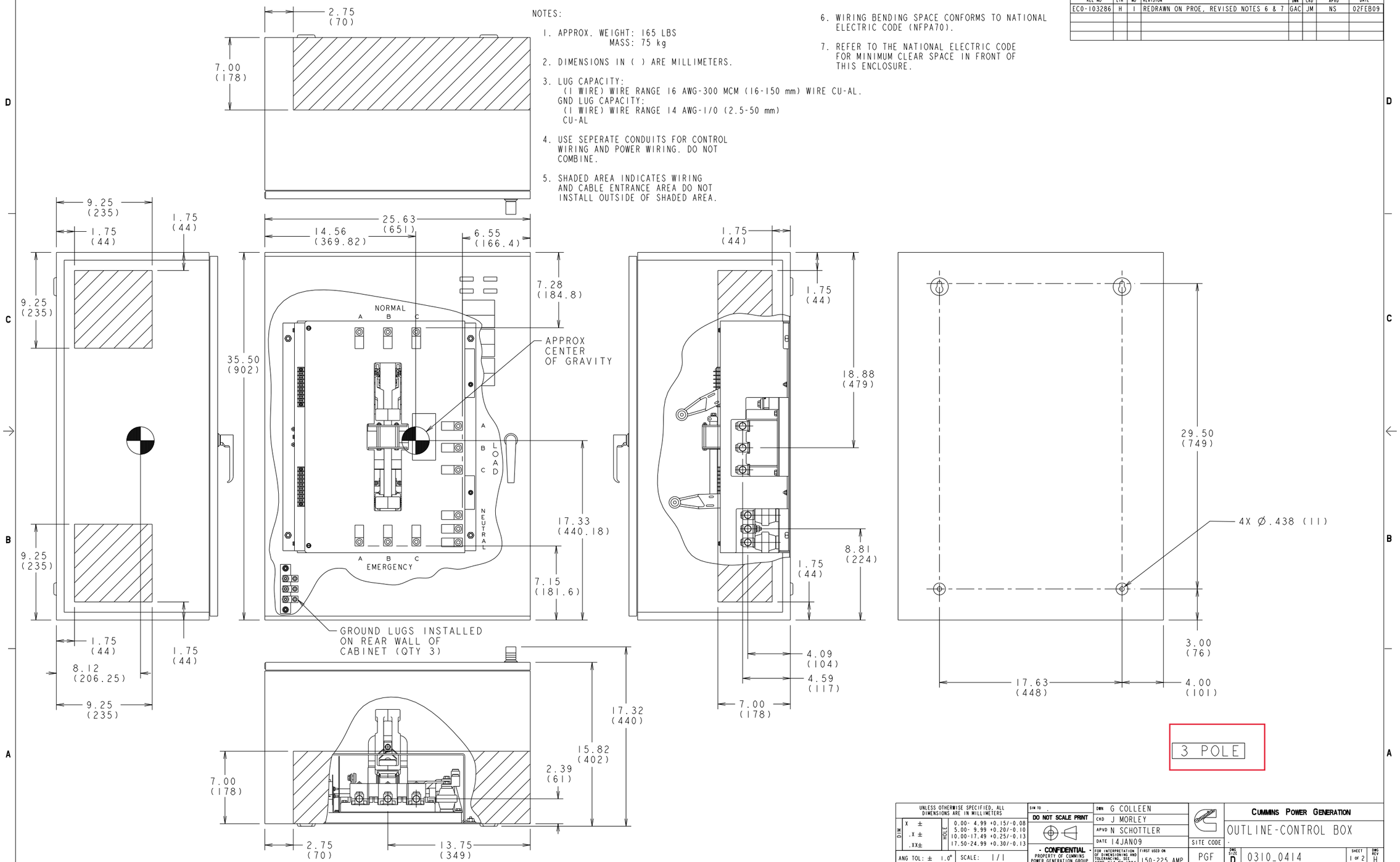
DRN C.BADGUJAR
CKD M.TULADHAR
APVD M.TULADHAR
DATE 20NOV15
FOR INTERPRETATION OF DIMENSIONS AND TOLERANCES, SEE ASME Y14.5-2009
FIRST USED ON ARROW
SITE CODE PGF
CUMMINS POWER GENERATION
DIAGRAM,GENSET SCHEMATIC
SIZE E
A054B421
CAD SHEET 5 of 5

Pro/ENGINEER

REL NO	LTR	NO	REVISION	DWN	CKD	APVD	DATE
EC0-103286	H	1	REDRAWN ON PROE, REVISED NOTES 6 & 7	GAC	JM	NS	02FEB09

NOTES:

1. APPROX. WEIGHT: 165 LBS
   MASS: 75 kg
2. DIMENSIONS IN ( ) ARE MILLIMETERS.
3. LUG CAPACITY:
   (1 WIRE) WIRE RANGE 16 AWG-300 MCM (16-150 mm) WIRE CU-AL.
   GND LUG CAPACITY:
   (1 WIRE) WIRE RANGE 14 AWG-1/0 (2.5-50 mm)
   CU-AL
4. USE SEPERATE CONDUITS FOR CONTROL WIRING AND POWER WIRING. DO NOT COMBINE.
5. SHADED AREA INDICATES WIRING AND CABLE ENTRANCE AREA DO NOT INSTALL OUTSIDE OF SHADED AREA.
6. WIRING BENDING SPACE CONFORMS TO NATIONAL ELECTRIC CODE (NFPA70).
7. REFER TO THE NATIONAL ELECTRIC CODE FOR MINIMUM CLEAR SPACE IN FRONT OF THIS ENCLOSURE.



3 POLE

UNLESS OTHERWISE SPECIFIED, ALL DIMENSIONS ARE IN MILLIMETERS			SIM TO .	DWN G COLLEEN	CUMMINS POWER GENERATION
DIM: X ±, .X ±, .XX±	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		DO NOT SCALE PRINT	CKD J MORLEY	OUTLINE-CONTROL BOX
ANG TOL: ± 1.0°	SCALE: 1/1		- CONFIDENTIAL - PROPERTY OF CUMMINS POWER GENERATION GROUP	APVD N SCHOTTLER	SITE CODE: PGF
			FOR INTERPRETATION OF DIMENSIONING AND TOLERANCING, SEE ASME Y14.5M-1994	DATE 14JAN09	DWG SIZE D: 0310_0414
			FIRST USED ON 150-225 AMP		SHEET 1 of 2
					DWG REV H