

SUBMITTAL PACKAGE

CSDG - 5159-5160
(2000KW GENERATOR)

Prepared For:

Central States Diesel Generators, LLC
2001 S Prairie Ave
Waukesha, WI 53189

Date: 10/21/2026

Opportunity # O-835964

BMS# 486985

Customer PO# Signed Quote

Serving Cummins Customers
cummins.com/sales-and-service

--

DISCLAIMER

Serving Cummins Customers

Cummins power solutions are supported by the largest and best-trained worldwide certified sales/distributor network in the industry. This network will help you select and install the critical power solution to meet the requirements of your specific application. This same network provides experts with advanced technology to make your life easier while providing a seamless support experience.

IMPORTANT: *The critical power solution information and specifications included in this pdf can be used by the site contractor(s) and/or engineer(s) to assist with planning for and accomplishing the overall power solution installation. Please forward this document to the appropriate personnel, as necessary.*

It is the obligation of the electrical contractor and reviewing engineer to determine that the item quantities and accuracy of this submittal is correct as required for the job. Any inaccuracies or deviations must be addressed with Cummins Inc. before release to manufacturing. Any releases of material to manufacturing by the above parties constitute an acceptance of the accuracy of the submittal. Any changes after release will be viewed as a change order, subject to pricing changes. Please take the time to review this package for accuracy to prevent any after-shipment problems that could cause delay in energization.

Cummins certifies that these drawings, material lists, specification and datasheets have been checked prior to submittal and they:

- *accurately depict the proposed equipment*
- *provide current information to the date of the submittal and*
- *present true and accurate equipment information.*

This Approval Drawing Package is submitted as our interpretation of the project requirements and/or the specifications for this job. Please note that issuance of these submittals shall not be deemed or interpreted as performance nor acceptance of your purchase order terms and conditions.

For questions or comments regarding this submittal, please contact the Cummins Project Manager listed on the title page.

TABLE OF CONTENTS

Section 1 - Project Information
Project Bill of Material

Section 2 - Generator Specification Sheets
Generator Specification Sheet
Generator Data Sheet
PowerCommand Control (PCC) Specification Sheet
Enclosure and Fuel Tank Specification Sheet
Alternator Data Sheet
Cooling System Data Sheet
Exhaust Emission Data Sheet
Exhaust Emission Compliance Statement
Prototype Test Summary Report

Section 3 - Generator Accessories
Coolant Heater Specification Sheet
Circuit Breaker Data Sheet
Ground Fault Indication Relay Specification Sheet
Battery Charger Specification Sheet
Battery and Accessories Specification Sheet

Section 4 - Generator Drawings
Generator Outline Drawing
Circuit Breaker Outline Drawing
Enclosure and Fuel Tank Outline Drawing
PCC Controller Customer Connection Diagram

Section 5 - Startup & Warranty
Pre Commissioning Inspection Form
Generator Warranty Statement

SECTION 1

Project Information

Cummins Sales and Service

Project: CSDG - 5159-5160

October 21, 2026

Bill of Material

Feature Code	Description	Qty
C2000D6E	**C2000D6E, Diesel Genset, 60Hz, 2000kW**	**2**
Install-US-Stat	U.S. EPA, Stationary Emergency Application	
L170-2	Emission Certification, EPA, Tier 2, NSPS CI Stationary Emergency	
L090-2	Listing - UL 2200	
A331-2	Duty Rating - Standby Power (ESP)	
R184-2	Low Voltage (220/380V - 347/600V)	
R002-2	Voltage - 277/480, 3 Phase, Wye, 4 Wire	
E170-2	Ambient Temperature (40C/104F)	
E169-2	240VAC	
L050-2	Literature - English	
H536-2	Control Display Language - English	
KR78-2	Output Terminals - 2 - Hole Lug, NEMA	
BE10-2	105C Temperature Rise	
B280-2	Alternator - 60Hz, Wye, 480V, 105C Standby	
H679-2	Control Mounting - Front Facing	
H704-2	PowerCommand 3.3 Controller, Paralleling Capable	
H606-2	Analog Meters - AC Output	
H720-2	AmpSentryTM UL Listed Protective Relay	
KA08-2	Alarm - Audible, Engine Shutdown	
H678-2	LCD Control Display	
M683-2	Circuit Breaker or Entrance Box - Single	
M700-2	Manual Circuit Breaker - Right	
0431	CB dual breaker type_None	
KB72-2	Circuit Breaker or Entrance Box - Bottom Entry,Right Side	
KU62-2	Circuit Breaker - 3000A, 3P, 600/690V, UL/IEC, Right	
0440	Circuit Breaker or Entrance Box - None - Left	
H668-2	Indication - Ground Fault, 4 - Pole, Transfer Switch and Circuit Breaker Right Side	
A333-2	Battery Charging Alternator	
H756-2	Water in Fuel (WIF) sensor	
H545-2	Low fuel pressure sensor	
H389-2	Shutdown - Low Coolant Level	
H527-2	Warning - Low Coolant Level	
E166-2	Temperature independent coolant heater (208/240)	
D041-2	Engine Air Cleaner - Normal Duty	
DC02-2	Air Cleaner Restriction Indicator - Mechanical	
H607-2	Engine Oil Filters, Full Flow with Bypass	
H734-2	Oil Sampling Valve	
C333-2	Fuel Hoses	
L312-2	Genset Warranty - 3 Years Base, 1000 hours	
A358-2	Packing - Standard. This is the standard packing for domestic over-the-road deliveries	
C325-2	Fuel Filters - Engine, Single	
A334-2	Engine Starter - 24 Volt DC Motor	
A072H671-FRD	Battery Charger-10Amp, 120/208/240VAC, 12/24V, 50/60Hz	
A065D000-FRD	Installation, Duct	
A064H664-FRD	Installation, Fuel System	

Enclosure	**GWE-G2-2000-3356 - GPC Weather House Level Reduction Two Sound Attenuated Enclosure**	**2**
Fuel tank	**SB2N-3356 - UL-142 Listed Sub Base Fuel Tank, 24 hr Usable Gallons**	**2**

NOTES:

Proposal is for equipment only, offloading, rigging, and installation by others.
Fuel and permits, unless listed above, is not included.
Cummins Standard Start-up and testing is included. Additional tests, such as NETA testing, if required, is by others
Coordination Study not provided.

SECTION 2

Generator Specifications

C1750D6E
C2000D6E

DIESEL GENERATOR SET SPECIFICATION SHEET

QSK50 ENGINE, 1750-2000 kWe, 60 Hz, EPA TIER 2 NSPS CERTIFIED (STATIONARY EMERGENCY)

DESCRIPTION

Cummins commercial generator sets are fully integrated power generation systems for stationary standby power and data center applications.
The Centum™ Series meets the demand for efficient and sustainable power with performance, flexibility, and commitment – for the next generation of power.



FEATURES

Cummins Heavy-Duty Engine: Rugged, four-cycle industrial diesel delivers reliable power, low emissions 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, fault clearing short-circuit capability and class H insulation.

ISO 8528-5 G3 Capable: Consult factory for site and configuration specific transient performance information.

HVO Fuel Compatible: Approved for use with paraffinic fuels (EN15940), including Hydrotreated Vegetable Oil (HVO), which has a very low life cycle carbon emission.

Data Center Continuous (DCC): Applicable for supplying power continuously to a constant or varying electrical load for unlimited hours in a data center application.

Uptime compliant: Meets the requirement of a Tier III and IV data center site by being rated to run for unlimited hours of operation when loaded to 'N' demand for the engine generator set.

Permanent Magnet Generator (PMG): Offers enhanced motor starting and fault clearing short circuit capability.

Control System: The PowerCommand® digital control is standard equipment and provides total genset system integration including automatic remote starting/stopping, precise frequency and voltage regulation, alarm, and status message display, AmpSentry™ protective relay, output metering, auto-shutdown at fault detection and NFPA 110 Level 1 compliance.

Cooling System: High ambient (40 °C) and enhanced high ambient (50 °C), integral set-mounted radiator systems, designed and tested for rated ambient temperatures, simplifies facility design requirements for rejected heat.

NFPA: Capable of meeting NFPA 110 Type 10 for Level 1 Emergency or Standby Power Supply Systems (EPSSs) when installed and operated per Cummins and NFPA guidelines.

Warranty and Service: Backed by a standard three-year warranty and worldwide distributor network.

MODELS

	Emergency Standby Power (ESP) Rating[1] kWe (kVA)	Prime Power (PRP) Rating[1,2] kWe (kVA)	Data Center Continuous (DCC) Rating[1,2] kWe (kVA)	Data Sheet
C1750D6E	1750 (2188)	1600 (2000)	1600 (2000)	NAD-6744
C2000D6E	2000 (2500)	1825 (2281)	1825 (2281)	NAD-6745

[1] All ratings include radiator fan losses.
[2] Prime rating and DCC at standby power rating available subject to Cummins' site-specific assessment; contact your Cummins distributor.

Bulletin NAS-6746 PD00001955 Produced in U.S.A. (Rev. 08/24)
©2024 Cummins Inc.

Centum SERIES GENERATORS

GENERATOR SET SPECIFICATIONS

Performance class	Genset models have been tested in accordance with ISO 8528-5. Consult factory for transient performance information
Voltage regulation, no load to full load	± 0.5%
Random voltage variation	± 1.0%
Frequency regulation	Isochronous
Random frequency variation	± 0.25%
Electromagnetic compatibility performance	Emissions to EN 61000-6-2:2005 Immunity to EN 61000-6-4:2007+A1:2011 Complies with FCC PART 15 subpart B and ICES-002

ENGINE SPECIFICATIONS

Bore	159 mm (6.26 in.)
Stroke	159 mm (6.26 in.)
Displacement	49.8 liters (3039 in3)
Configuration	Four Cycle; Vee; 16 Cylinder
Battery capacity	1800 amps minimum at ambient temperature of -18 °C (0 °F)
Battery charging alternator	100A
Starting voltage	24 volts, negative ground
Fuel system	Cummins YZ Modular Common Rail System (MCRS)
Fuel filter	Two-stage, spin-on fuel filter and water separator system. Stage 1: remote mounted, 5 µm duplex filter with two priming pumps. Stage 2: engine mounted, 3 µm triple element filter
Air cleaner	Dry replaceable element
Lube oil filter	Four spin-on, combination full flow filter and bypass filters
Standard cooling system	High ambient cooling system

ALTERNATOR SPECIFICATIONS

Design	Brushless, 4-pole, drip proof, revolving field
Stator	2/3 pitch
Rotor	Single bearing, flexible disc
Insulation system	Class H
Standard temperature rise	125 ºC standby
Exciter type	Permanent Magnet Generator (PMG)
Phase rotation	A (U), B (V), C (W)
Alternator cooling	Direct drive centrifugal blower fan
AC waveform total harmonic distortion (THDV)	< 5% no load to full linear load

AVAILABLE VOLTAGES (60 Hz LINE-TO-NEUTRAL / LINE-TO-LINE)[3]

277/480	254/440	220/380	2400/4160	347/600	7976/13800
7620/13200	3810/6600	3640/6300	3985/6900	6350/11000	7200/12470

[3] Additional voltages may be available; contact your Cummins distributor

GENERATOR SET OPTIONS AND ACCESSORIES[4]

Generator Set
- Oil sampling valve
- 10A battery charger
- Set mounted circuit breakers up to 3200 Amps
- Circuit breaker aux and trip contacts
- Anti-vibration mounts
- Battery temperature sensor
- IBC Certification
- HCAI Certification

Engine
- 240V thermo-statically controlled coolant heater
- 120/240V 500W lube oil heaters
- Heavy duty air cleaner
- Remote duplex fuel filter
- Engine oil filters - full flow with bypass
- Automatic oil make up system and monitoring
- Engine toolkit

Control Panel
- Masterless load demand
- Multiple language support
- 120/240V 100W control anti- condensation heater
- Exhaust pyrometer
- Ground fault indication
- Paralleling relay package
- Shutdown alarm relay package
- Mechanical hour meter
- 6x user-configurable relays
- 8 additional I/O relays

Alternator
- ~~80°C/~~105°C ~~/125°C/150°C~~ rise
- Stator winding temp sensor 2 RTDs/phase
- Bearing temp sensor RTDs
- 1-hole or 2-hole lug output terminal
- Cable entrance box set mounted top or bottom entry
- 120/240V 225W anti- condensation heater
- Generator Louvres

Exhaust System
- Industrial grade silencer
- Residential grade silencer
- Critical grade silencer

Cooling System
- Enhanced high ambient temperature (50 °C)
- Low coolant level warning
- Coolant heater

Data Center options
- Automatic oil make up system
- Closed crank ventilation system
- Oil sampling valve
- Propylene glycol coolant
- Customized testing

Miscellaneous
- Multilingual manuals
- 3-year extended warranty
- 5-year extended warranty
- 10-year extended warranty
- Witness testing
- Virtual witness test
- Tier 4 compliant aftertreatment kits shipped loose

[4] Some options may not be available on all models; contact your Cummins distributor.
Data Center options are available through RFQ with the Custom Applications Group and could result in additional lead-times. Please consult with the Custom Applications Group to understand feasibility

Bulletin NAS-6746 PD00001955 Produced in U.S.A. (Rev. 08/24)
©2024 Cummins Inc.

Centum SERIES GENERATORS

PowerCommand® 3.3

CONTROL SYSTEM DESCRIPTION

The PowerCommand® 3.3 is an integrated, microprocessor-based, generator set control system providing voltage regulation, engine protection, alternator protection, operator interface and isochronous governing. Refer to document S-1570 for more detailed information on the control.

AmpSentry™: Includes integral AmpSentry™ protection, which provides a full range of alternator protection functions that are matched to the alternator provided.

Power Management: Control function provides battery monitoring and testing features and smart starting control system.

Advanced Control Methodology: Three phase sensing, full wave rectified voltage regulation, with a PWM output for stable operation with all load types.

Communications Interface: Control comes standard with PCCNet and Modbus interface.

Service: InPower™ PC-based service tool available for detailed diagnostics, setup, data logging and fault simulation.

Easily Upgradeable: PowerCommand® controls are designed with common control interfaces.

Reliable Design: The control system is designed for reliable operation in harsh environment.

Multi-Language Support

OPERATOR PANEL FEATURES

Operating/Display Functions

- Displays paralleling breaker status
- Provides direct control of the paralleling breaker
- 320 x 240 pixels graphic LED backlight LCD
- Auto, manual, start, stop, fault reset and lamp test/panel lamp switches
- Alpha-numeric display with pushbuttons
- LED lamps indicating genset running, remote start, not in auto, common shutdown, common warning, manual run mode, auto mode and stop

Paralleling Control Functions

- First Start Sensor™ system selects first genset to close to bus
- Phase lock loop synchronizer with voltage matching
- Sync check relay
- Isochronous kW and kVAR load sharing
- Load govern control for utility paralleling
- Extended paralleling (base load/peak shave) mode
- Digital power transfer control, for use with a breaker pair to provide open transition, closed transition, ramping closed transition, peaking and base load functions

Alternator Data

- Line-to-Neutral and Line-to-Line AC volts
- 3-phase AC current
- Frequency
- kW, kVAR, power factor kVA (three-phase and total)

Engine Data

- DC voltage
- Engine speed
- Lube oil pressure and temperature
- Coolant temperature
- Comprehensive FAE data (where applicable)



OPERATOR PANEL FEATURES (CONT.)

Other Data

- Genset model data
- Start attempts, starts, running hours, kWh
- Load profile (operating hours at #load in 5% increments)
- Fault history
- Data logging and fault simulation (requires InPower™)

STANDARD CONTROL FEATURES

Digital Governing

- Integrated digital electronic isochronous governor
- Temperature dynamic governing

Digital Voltage Regulation

- Integrated digital electronic voltage regulator
- 3-phase, 4-wire Line-to-Line sensing
- Configurable torque matching

AmpSentry™ AC Protection

- AmpSentry™ protective relay
- Over current and short circuit shutdown
- Over current warning
- Single and three phase fault regulation
- Over and under voltage shutdown
- Over and under frequency shutdown
- Overload warning with alarm contact
- Reverse power and reverse Var shutdown
- Field overload shutdown

Engine Protection

- Battery voltage monitoring, protection, and testing
- Overspeed shutdown
- Low oil pressure warning and shutdown
- High coolant temperature warning and shutdown
- Low coolant level warning or shutdown
- Fail to start (overcrank) shutdown
- Fail to crank shutdown
- Cranking lockout
- Sensor failure indication
- Full authority electronic engine protection

Control Functions

- Time delay start and cool down
- Real time clock for fault and event time stamping
- Exerciser clock and time of day start/stop
- Data logging
- Cycle cranking
- Load shed
- Configurable inputs and outputs (4)
- Remote emergency stop

Options

- Auxiliary output relays (2)

Bulletin NAS-6746 PD00001955 Produced in U.S.A. (Rev. 08/24)
©2024 Cummins Inc.

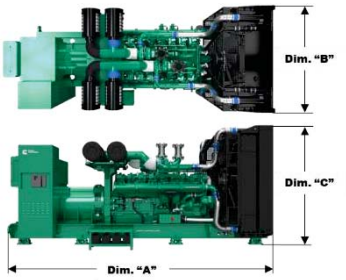
Centum SERIES GENERATORS

RATING DEFINITIONS

Emergency Standby Power (ESP)	Prime Power (PRP)	Data Center Continuous (DCC)
Applicable for supplying power to varying electrical loads for the duration of power interruption of a reliable utility source. Emergency Standby Power (ESP) is in accordance with ISO 8528. Data shown above represents gross engine performance and capabilities as per ISO 3046-1, obtained and corrected in accordance with ISO 15550.	Prime Power for Stationary Emergency ratings apply to installations served by a reliable utility source. Applicable for supplying power to varying electrical loads for unlimited hours. Prime Power (PRP) is in accordance with ISO 8528. Ten percent overload capability is available in accordance with ISO 3046-1. Data shown above represents gross engine performance and capabilities as per ISO 3046-1, obtained and corrected in accordance with ISO 15550.	Applicable for supplying power continuously to a constant or varying electrical load for unlimited hours in a data center application. Designed to comply with Uptime Institute® Tier III and IV data center site requirements by being rated to run for unlimited hours of operation when loaded to 'N' demand for the engine generator set.

GENERATOR SET DIMENSIONS AND WEIGHTS[5]

See the enclosure/fuel tank outline drawing in Section 4 for total weights and dimensions.



Model Name	Dim. "A" mm (in)	Dim. "B" mm (in)	Dim. "C" mm (in)
C1750D6E C2000D6E	5708 (224.7)	2470 (97.2)	2441 (96.1)

Model Name	As Shipped Cooling System Weight (Dry) kg (lb)	Installed Set Weight (Wet) kg (lb)
C1750D6E C2000D6E	14135 (31169)	14512 (32001)

[5] Do not use for installation design. Longest alternator (G-core) used for dimension "A". All weights are approximate and represent a generator set with standard features and heaviest alternator (low voltage G-core). "As Shipped Set Weight (No Cooling System)" includes weight from engine oil. "Installed Set Weight (Wet)" includes weight from engine oil and coolant. See respective model data sheet for specific model outline drawing number that contains weights of other configurations.

CODES AND STANDARDS[6]

ISO 9001 ISO 14001 ISO 45001	This product was manufactured in a facility whose quality management system is certified to ISO 9001 and its Health Safety Environmental Management Systems certified to ISO 14001 and ISO 45001.	UL LISTED	UL Listing to UL 2200, "Stationary Engine Generator Assemblies" is available for this genset model. The PowerCommand® control is listed to UL 508 – Category NITW7 for U.S. and Canadian usage.
PTS	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.	UNITED STATES ENVIRONMENTAL PROTECTION AGENCY	Engine certified to Stationary Emergency U.S. EPA New Source Performance Standards (NSPS), 40 CFR 60 subpart IIII Tier 2 exhaust emission levels. U.S. applications must be applied per this EPA regulation.
CSA®	All genset models are available as CSA certifiedto CSA C22.2 No. 100.	IBC INTERNATIONAL BUILDING CODE®	The generator set package is available certified for seismic application in accordance with International Building Code.

[6] Codes or standards compliance may not be available with all model configurations; contact your Cummins distributor.

Bulletin NAS-6746 PD00001955 Produced in U.S.A. (Rev. 08/24)
©2024 Cummins Inc.

C2000D6E

DIESEL GENERATOR SET DATA SHEET

MODEL:	**C2000D6E**
FREQUENCY:	**60 Hz**
FUEL TYPE:	**DIESEL**
RATING:	**2000 kWe (2500 kVA) EMERGENCY STANDBY POWER (ESP)[1]**
	1825 kWe (2281 kVA) DATA CENTER CONTINUOUS (DCC)[1,2]
EMISSIONS CERTIFICATION:	**EPA NSPS STATIONARY EMERGENCY TIER 2**

GENERATOR SET PUBLICATIONS

Exhaust emission data sheet	EDS-3135 / EDS-3136
Exhaust emission compliance statement	EPA-2100 / EPA-2101
Sound data sheet	MSP-4178
Cooling system data sheet	MCP-2257 / MCP-2258
Seismic certificate of compliance	VMA-53914-01C
Prototype test support data sheet	PTS-785 / PTS-803
Genset outline drawing	A060C089
Genset wiring schematic diagram	A073F079

ENGINE SPECIFICATIONS

		Emergency Standby Power (ESP)	Data Center Continuous (DCC)
Manufacturer		Cummins Inc.	
Model		QSK50 - G24 / G25	
Configuration		Four Cycle; Vee; 16 Cylinder	
Aspiration		Turbocharged and Charge Air Cooled	
Gross engine power output	kWm (bhp)	2204 (2956)	1975 (2648)
Brake mean effective pressure at set rated load	kPa (psi)	2951 (428)	2641 (383)
Bore	mm (in)	159 (6.26)	
Stroke	mm (in)	159 (6.26)	
Displacement	L (in^3)	49.8 (3039)	
Rated speed	rpm	1800	
Piston speed at rated speed	m/s (ft/min)	19.1 (3756)	
Compression ratio		14.2:1	
Lube oil capacity	L (US gal)	121 (32.0)	
Overspeed limit	rpm	2070	
Regenerative power	kWm (hp)	166 (223)	

FUEL CONSUMPTION

Rating	kWe (kVA)	2000 (2500)				1825 (2281)			
Load		25%	50%	75%	100%	25%	50%	75%	100%
Fuel Consumption	US gph	41.5	75	108	139.8	38	68	97	128.0
Fuel Consumption	L/h	157.0	283.9	408.8	529.1	143.8	257.4	367.1	484.5

[1] Generator set ratings include radiator fan losses
[2] DCC at standby power available subject to Cummins' site-specific assessment; contact your Cummins distributor

©2024 Cummins Inc.

Centum SERIES GENERATORS

FUEL SYSTEM

		Emergency Standby Power (ESP)	Data Center Continuous (DCC)
Maximum fuel flow	L/h (US gph)	958 (253)	
Maximum fuel inlet restriction	kPa (inHg)	28 (8.3)	
Maximum fuel return line restriction	kPa (inHg)	35.1 (10.4)	
Maximum fuel inlet temperature	°C (°F)	70 (158)	
Maximum fuel return temperature	°C (°F)	129 (264)	

AIR SYSTEM

Combustion air flow (at set rated load)	m^3/min (scfm)	159.7 (5639)	156.3 (5521)
Maximum air cleaner restriction (dirty filter)	kPa (inH2O)	3.7 (15)	
Alternator cooling air flow	m^3/min (scfm)	222 (7850)	

EXHAUST SYSTEM

Exhaust flow (at set rated load)	m^3/min (cfm)	436 (15388)	415 (14654)
Exhaust temperature (at set rated load)	°C (°F)	535 (996)	512 (954)
Maximum back pressure	kPa (inH_2O)	6.7 (26.9)	

COOLING SYSTEM (SET MOUNTED) – HIGH AMBIENT

Engine model		QSK50 - G24	
Ambient design (limiting ambient temp.)	°C (°F)	40 (104)	
Fan load	kWm (hp)	89.5 (120)	
Coolant capacity (engine + radiator)	L (US gal)	140 (37)	
Cooling system air flow (at max. restriction)	m^3/min (acfm)	2073 (73210)	
Total heat rejection to radiator	MJ/min (Btu/min)	88 (83282)	80 (76207)
Total heat radiated to room	MJ/min (Btu/min)	7.0 (6675)	5.5 (5237)
Nominal air flow static restriction	kPa (inH_2O)	0.12 (0.5)	
Maximum fuel return line restriction	kPa (in Hg)	34.9 (10.3)	

COOLING SYSTEM (SET MOUNTED) – ENHANCED HIGH AMBIENT

Engine model		QSK50 - G25	
Ambient design (limiting ambient temp.)	°C (°F)	50.0 (122)	
Fan load	kWm (hp)	105.9 (142)	
Coolant capacity (engine + radiator)	L (US gal)	140 (37)	
Cooling system air flow (at max. restriction)	m^3/min (acfm)	2421 (85483)	
Total heat rejection to radiator	MJ/min (Btu/min)	88 (83282)	80 (76207)
Total heat radiated to room	MJ/min (Btu/min)	7.6 (7192)	6.4 (6026)
Nominal air flow static restriction	kPa (inH_2O)	0.12 (0.5)	
Maximum fuel return line restriction	kPa (in Hg)	34.9 (10.3)	

GENERATOR SET WEIGHTS[3]

		As Shipped Cooling System Weight (Dry)	Installed Set Weight (Wet)
C2000D6E	kg (lb)	14135 (31169)	14512 (32001)

[3] All weights are approximate and represent a generator set with standard features and heaviest alternator (low voltage G-core). “As Shipped Set Weight (No Cooling System)” includes weight from engine oil. “Installed Set Weight (Wet)” includes weight from engine oil and coolant. See respective model data sheet for specific model outline drawing number that contains weights of other configurations.

©2024 Cummins Inc.

Centum SERIES GENERATORS

GENERATOR SET FULL POWER ALTITUDE CAPABILITIES[4]

		Emergency Standby Power (ESP)	Data Center Continuous (DCC)
Max Altitude for Full Power Output - High Ambient Cooling System			
at 25 °C	m (ft)	690 (2264)	2182 (7158)
at 40 °C	m (ft)	581 (1908)	1600 (5249)
at 45 °C	m (ft)	261 (856)	1220 (4003)
at 50 °C	m (ft)	---	542 (1779)
Max Altitude for Full Power Output - Enhanced High Ambient Cooling System			
at 25 °C	m (ft)	834 (2735)	1000 (3281)
at 40 °C	m (ft)	633 (2078)	965 (3165)
at 45 °C	m (ft)	368 (1206)	805 (2641)
at 50 °C	m (ft)	98 (321)	534 (1754)
Max Temperature for Full Power Output			
High Ambient Cooling System at Sea Level	°C (°F)	47 (117)	-

[4] Note: Ambient operating temperature is defined as the air temperature measured at the engine inlet. Power and altitude capabilities are for reference purposes assuming standard options selected; refer to Cummins' sizing tool GenSize or your Cummins distributor for a more detailed assessment.

RATING DEFINITIONS

Emergency Standby Power (ESP)	Data Center Continuous (DCC)
Applicable for supplying power to varying electrical loads for the duration of power interruption of a reliable utility source. Emergency Standby Power (ESP) is in accordance with ISO 8528. Data shown above represents gross engine performance and capabilities as per ISO 3046-1, obtained and corrected in accordance with ISO 15550.	Applicable for supplying power continuously to a constant or varying electrical load for unlimited hours in a data center application. Designed to comply with Tier III and IV data center site requirements by being rated to run for unlimited hours of operation when loaded to 'N' demand for the engine generator set.

FORMULAS

Calculating Power Factor	Calculating Full Load Current (Three Phase AC Output)	Calculating Full Load Current (Single Phase AC Output)
$\cos\theta = \frac{Active\ (True, Real)\ Power}{Apparent\ Power} = \frac{P_{(kW)}}{\lvert S\rvert_{(kVA)}}$ Power Factor = 0.8 (industry standard)	$I = \frac{\lvert S\rvert_{(kVA)}}{\sqrt{3} \times V} = \frac{1000 \times P_{(kW)}}{\sqrt{3} \times V \times \cos\theta}$	$I = \frac{\lvert S\rvert_{(kVA)}}{V} = \frac{1000 \times P_{(kW)}}{V \times \cos\theta}$

©2024 Cummins Inc.

Centum SERIES GENERATORS

Specification Sheet

PowerCommand® 3.3 Generator Set Digital Integrated Control System



Bargraph Optional

Introduction

The PowerCommand® 3.3 control system is a microprocessor-based generator set monitoring, metering, and control system, which is comprised of PowerCommand® Control 3300 and the Human Machine Interface 320. PCC3300 supports multiple operation modes including:

- Standalone,
- Synchronization only,
- Isolated bus paralleling,
- Utility single generator set paralleling,
- Utility multiple generator set paralleling,
- Utility single generator set paralleling with power transfer control (automatic mains failure),
- Isolated bus paralleling with Masterless Load Demand

PowerCommand® Control 3300 is designed to meet the exacting demands of the harsh and diverse environments of today's typical power generation applications for Full Authority Electronic or Hydromechanical engine power generator sets.

Offering enhanced reliability and performance over more conventional generator set controls via the integration of all generator control functions into a single system, PCC3300 is your Power of One generator set control solution.

Benefits and Features

- 320 x 240 pixels graphical LED backlit LCD
- Multiple languages supported
- AmpSentry™ protection provides industry-leading generator overcurrent protection
- Digital Power Transfer Control (Automatic Mains Failure) provides load transfer operation in open transition, closed transition, or soft (ramping) transfer modes
- Extended Paralleling (Peak Shave/Base Load) regulates the genset real and reactive power output while paralleled to the utility. Power can be regulated at either the genset or utility bus monitoring point
- Digital frequency synchronization and voltage matching
- Isochronous Load Sharing
- Droop kW and kVAr control
- Real time clock for fault and event time stamping
- Exerciser clock and time of day start/stop initiate a test with or without load, or a Base Load or Peak Shave session
- Digital automatic voltage regulation is provided using three phase sensing and full wave FET type regulator, which is compatible with either shunt or PMG excited systems with a standard AUX103 AVR or an option for a more powerful high-current field drive capability AUX106 AVR
- Digital engine speed governing is provided on applicable platforms
- Generator set monitoring (including metering) and protection with PCC3300 measuring voltage, current, kW and kVAr offering a measurement accuracy of 1%
- Utility / AC Bus metering and protection with PCC3300 voltage, current, kW and kVAr offering a measurement accuracy of 1%
- 12 V (DC) and 24 V (DC) battery operation
- RS-485 Modbus® interface for interconnecting to customer equipment
- Warranty and service – Cummins Power Generation offers a comprehensive warranty and worldwide distributor service network
- Global regulatory certification and compliance: PCC3300 is suitable for use on gensets that are designed, manufactured, tested and certified to relevant UL, NFPA, ISO, IEC, Mil Std., UKCA, and CE standards

©2022 Cummins Inc. | S-1570 (02/23)

PowerCommand® Generator Set Digital Control System PCC 3300



Introduction

PCC3300 is an industry-leading digital generator set control suitable for usage on a wide range of diesel and lean burn natural gas generator sets in both standalone as well as paralleling applications.

PowerCommand® is compatible with either shunt or PMG excitation, and is suitable for usage with reconnectable or non-reconnectable generators. Configuration for any frequency, voltage and power connection from 120 V (AC) to 600 V (AC) line-to-line or 601 V (AC) to 45k V (AC) with an external PT is supported. The PCC3300 derives its own power from the generator set starting batteries and functions over a voltage range of 8 V (DC) to 30 V (DC).

Features

- PCC3300 supports configurable control features via software download using InPower PC-compatible software
- 12 V (DC) and 24 V (DC) battery operation
- Digital automatic voltage regulation is provided using three phase sensing and full wave FET type regulator, which is compatible with either shunt or PMG excited systems with a standard AUX103 AVR or an option for a more powerful high-current field drive capability AUX106 AVR
- Digital engine speed governing on applicable platform is provided, which is capable of providing isochronous frequency regulation
- Full authority J1939 CANBus® prime mover communications and control is provided for platforms with an Engine Control Module (ECM)
- AmpSentry" protection provides industry-leading alternator overcurrent protection:
  - Time-based generator protection applicable to both line-to-line and line-to-neutral, that can detect an unbalanced fault condition and swiftly react appropriately. Balanced faults can also be detected by AmpSentry and appropriate acted upon.
  - Reduces the risk of Arc Flash due to thermal overload or electrical faults by inverse time protection
- Generator set monitoring offers status information for all critical prime mover and generator functions
- AC and DC digital generator set metering is provided. AC measurements are configurable for single or three phase sensing with PCC3300 measuring voltage, current, kW and kVAr offering a measurement accuracy of 1%
- Battery monitoring system continually monitors the battery output and warns of the potential occurrence of a weak battery condition
- Relay drivers for prime mover starter, fuel shutoff (FSO), glow plug/spark ignition power and switched B+ applications are provided
- Integrated generator set protection is offered to protect the prime mover and generator
- Real time clock for fault and event time stamping
- Exerciser clock and time of day start/stop initiate a test with or without load, or a Base Load or Peak Shave session
- Digital Power Transfer Control (Automatic Mains Failure) provides load transfer operation in open transition, closed transition, or soft (ramping) transfer modes
- Extended Paralleling (Peak Shave/Base Load) regulates the genset real and reactive power output while paralleled to the utility. Power can be regulated at either the genset or utility bus monitoring point
- Digital frequency synchronization and voltage matching
- Isochronous Load Sharing
- Droop kW and kVAr Control
- The synchronization check function provides adjustments for phase angle window, voltage window, frequency window and time delay
- Utility / AC Bus metering and protection with PCC3300 voltage, current, kW and kVAr offering a measurement accuracy of 1%
- Advanced serviceability is offered via InPower™, a PC-based software service tool
- PCC3300 is designed for reliable operation in harsh environments with the unit itself being a fully encapsulated module
- RS-485 ModBus interface for interconnecting to customer equipment
- Native on PCC3300: Four discrete inputs, two dry contact relay outputs and two low-side driver outputs are provided and are all configurable.
  - Optional extra PCC3300 input and output capability available via AUX101
- Warranty and service – Cummins Power Generation offers a comprehensive warranty and worldwide distributor service network
- Global regulatory certification and compliance: PCC3300 is suitable for use on gensets that are designed, manufactured, tested and certified to relevant UL, NFPA, ISO, IEC, Mil Std., UKCA and CE standards

©2022 Cummins Inc. | S-1570 (02/23)

Base Control Functions

HMI capability

Options: Local and remote HMI320 options are available

Operator adjustments: The HMI320 includes provisions for many set up and adjustment functions.

Genset hardware data: Access to the control and software part number, genset rating in kVA and genset model number is provided from the HMI320 or InPower.

Data logs: Information concerning all of the following parameters is periodically logged and available for viewing; engine run time, controller on time, number of start attempts, total kilowatt hours, and load profile. (Control logs data indicating the operating hours at percent of rated kW load, in 5% increments. The data is presented on the operation panel based on total operating hours on the generator.)

Fault history: Provides a record of the most recent fault conditions with control date and time stamp. Up to 32 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)
- kW, kVAr, Power Factor, kVA (three phase and total)
- Frequency

For Lean Burn Natural Gas Engine applications:

- Alternator heater status
- Alternator winding temperature (per phase) as well as alternator drive end and non-drive end bearing

Utility/AC bus data

- Voltage (three phase line-to-line and line-to-neutral)
- Current (three phase and total)
- kW, kVAR, Power Factor, kVA (three phase and total)
- Frequency

AmpSentry: 3x current regulation for downstream tripping/motor inrush management. Thermal damage curve (3-phase short) or fixed timer (2 sec for 1-Phase Short or 5 sec for 2-Phase short).

Engine data

- Starting battery voltage
- Engine speed
- Engine temperature
- Engine oil pressure
- Engine oil temperature
- Intake manifold temperature
- Coolant temperature
- Comprehensive Full Authority Engine (FAE) data (where applicable)

Lean Burn Natural Gas (LBNG) application parameters include:

- Safety shutoff valve status
- Valve proving status
- Downstream gas pressure
- Gas inlet pressure
- Gas mass flow rate
- Control valve position
- Gas outlet pressure
- Manifold pressure and temperature
- Throttle position
- Compressor outlet pressure
- Turbo speed
- Compressor bypass position
- Cylinder configuration (e.g., drive end and non-drive end configurations)
- Coolant pressure 1 and 2 as well as coolant temperature 1 and 2 for both HT/LT respectively
- Exhaust port temperature (up to 18 cylinders)
- Pre-filter oil pressure
- Exhaust back pressure
- Parent ECM internal temperature and isolated battery voltage
- Speed bias
- Child ECM internal temperature and isolated battery voltage
- Knock level, spark advance, and knock count (for up to 18 cylinders)
- Auxiliary supply disconnector status
- Engine heater status
- Coolant circulating pump status
- Lube oil priming pump status
- Lube oil status
- Oil heater status
- Derate authorization status
- Start system status
- Ventilator fan status
- Ventilation louvre status
- Radiator fan status
- DC PSU status
- Start inhibit/enable status and setup

Service adjustments – The HMI320 includes provisions for adjustment and calibration of genset control functions. Adjustments are protected by a password. Functions include:

- Engine speed governor adjustments
- Voltage regulation adjustments
- Cycle cranking
- Configurable fault set up
- Configurable input and output set up
- Meter calibration
- Paralleling setup
- Display language and units of measurement

©2022 Cummins Inc. | S-1570 (02/23)

Prime Mover Control

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

12 V (DC) or 24 V (DC) nominal battery voltage is supported by PCC3300 for normal operation.

Temperature dependant prime mover governing dynamics: This function is supported enabling the engine to be responsive when warm and more stable when operating at lower temperature via providing control and modification over electronic governing parameters as a function of engine temperature.

Isochronous governing is provided in order to control prime mover speed within ±0.25% of nominal rated speed for any steady state load from no load to full load. During operation frequency drift should not exceed ±0.5% of nominal frequency given a 33ºC (or 60ºF) chance in ambient temperature within an eight-hour period.

Droop electronic speed is governing capability is natively offered by PCC3300 to permit droop from 0% to 10% between no load to full load.

Remote start capability is built into the PCC3300 as the unit accepts a ground signal from remote devices to automatically command the starting of the generator set as well as the reaching of rated speed, voltage and frequency or otherwise run at idle speed until prime mover temperature is adequate. The presence of a remote start signal shall cause the PCC3300 to leave sleep mode and return to normal power mode. PCC3300 supports an option for delayed start or stop.

Remote Start Integrity: In compliance with NEC2017 Start Signal Integrity standard – NFPA70 Article 700.10(D)(3), the remote start circuit from ATS to PCC3300 is continuously monitored for signal disturbance due to broken, disconnected or shorted wires via a configurable input. Loss of signal integrity results in activation of a remote start signal.

Remote and local emergency stopping capability: PCC3300 accepts ground signal from a locally or remoted mounted emergency stop switch to cause the generator set to immediately shutdown. The generator set is prevented from either running or cranking with the emergency stop switch engaged. If PCC3300 is in sleep mode, then the activation of any emergency stop switch shall return PCC3300 is normal powered state along with the activation of the corresponding shutdown and run-prevention states.

Sleep mode: PowerCommand 3.3 supports a configurable low current draw state, which is design with consideration to the needs of prime applications or others application without a battery charger (in order to minimize battery current drain).

Automatic prime mover starting: Any generator set controlled by PCC3300 is capable of automatic starting achieved via either magnetic pickup or main alternator output frequency. PCC3300 additionally supports configurable glow plug control where applicable.

Prime mover cycle cranking: PCC3300 supports configurable starting cycles and rest periods. Built in starter protection are incorporated to prevent the operator from specifying a starting sequence that may be damaging.

Configurable time delay functionality: PCC3300 supports time delayed generator set starting and stopping (for cooldown). Permissible time delays are as follows (noting a default setting is 0 seconds):

1. Start delay: 0 seconds to 300 seconds prior to starting after receiving a remote start signal.
2. Stop delay: 0 seconds to 600 seconds prior to shut down after receiving a signal to stop in normal operation modes.

Lean Burn Natural Gas application specific parameters

PCC3300 supports prime mover inhibiting in order to permit application-specific processes (i.e. Auxiliaries) to be started first.

Generator Control

PCC3300 performs both Genset voltage sensing and Genset voltage regulation as follows:

- Voltage sensing is integrated into PCC3300 via three phase line-to-line sensing that is compatible with shunt or PMG excitation systems
- Automatic voltage regulation is accomplished by using a three phase fully rectified input and has a FET output for good motor starting capability.

Major features of generator control 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.

Droop voltage regulation - Control can be adjusted to droop from 0-10% from no load to full load.

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.

Fault current regulation - PowerCommand® will regulate the output current on any phase to a maximum of three times rated current under fault conditions for both single phase and three phase faults. In conjunction with a permanent magnet generator, it will provide three times rated current on all phases for motor starting and short circuit coordination purpose.

Cylinder Cut-off System (CCS): PCC 3300 supports Cylinder Cut-off System which is used to operate the engines on half bank at no load and light load conditions. CCS has below benefits on engine

performance- improved emission standards, improved fuel efficiency, reduced hydrocarbons, reduced white smoke, reduced wet stacking and higher exhaust temperature at light loads to improve turbocharger operations and catalyst performance.

Step Timing Control (STC): PCC 3300 supports STC functionality which is used to advance the engine timing of a hydro-mechanical engine during start up and light load conditions. During ADVANCED injection timing, it:

- Improves cold weather idling characteristics
- Reduces cold weather white smoke
- Improves light load fuel economy
- Reduces injector carboning

Paralleling Functions

First Start Sensor™ system – PowerCommand® provides a unique control function that positively prevents multiple gensets from simultaneously closing to an isolated bus under black start conditions. The First Start Sensor system is a communication system between the gensets that allows the gensets to work together to determine which genset is a system should be the first to close to the bus. The system includes an independent backup function, so that if the primary system is disabled the required functions are still performed.

Synchronizing – Control incorporates a digital synchronizing function to force the genset to match the frequency, phase and voltage of another source such as a utility grid. The synchronizer includes provisions to provide proper operation even with highly distorted bus voltage waveforms. The synchronizer can match other sources over a range of 60-110% of nominal voltage and -24 to +6 hertz. The synchronizer function is configurable for slip frequency synchronizing for applications requiring a known direction of power flow at instant of breaker closure or for applications where phase synchronization performance is otherwise inadequate.

Load sharing control – The genset control includes an integrated load sharing control system for both real (kW) and reactive (kVar) loads when the genset(s) are operating on an isolated bus. The control system determines kW load on the engine and kVar load on the alternator as a percent of genset capacity, and then regulates fuel and excitation systems to maintain system and genset at the same percent of load without impacting voltage or frequency regulation. The control can also be configured for operation in droop mode for kW or Kvar load sharing.

Load govern control– When PowerCommand® receives a signal indicating that the genset is paralleled with an infinite source such as a utility (mains) service, the genset will operate in load govern mode. In this mode the genset will synchronize and close to the bus, ramp to a pre-programmed kW and kVar load level, and then operate at that point. Control is adjustable for kW values from 0-100% of standby rating, and 0.7-1.0 power factor (lagging). Default setting is 80% of standby and 1.0 power factor. The control includes inputs to allow independent control of kW and kVar load level by a remote device while in the load govern mode. The rate of load increase and decrease is also adjustable in the control. In addition, the control can be configured for operation in kW or kVAR load govern droop.

Load demand control – The control system includes the ability to respond to an external signal to initiate load demand operation. On command, the genset will ramp to no load, open its paralleling breaker, cool down, and shut down. On removal of the command, the genset will immediately start, synchronize, connect, and ramp to its share of the total load on the system.

Sync check – The sync check function decides when permissive conditions have been met to allow breaker closure. Adjustable criteria are: phase difference from 0.1-20 deg, frequency difference from 0.001-1.0 Hz, voltage difference from 0.5-10%, and a dwell time from 0.5-5.0 sec. Internally the sync check is used to perform closed transition operations. An external sync check output is also available.

Genset and utility/AC bus source AC metering – The control provides comprehensive three phase AC metering functions for both monitored sources, including: 3-phase voltage (L-L and L-N) and current, frequency, phase rotation, individual phase and totalized values of kW, kVAR, kVA and Power Factor; totalized positive and negative kW-hours, kVAR-hours, and kVA-hours. Three wire or four wire voltage connection with direct sensing of voltages to 600V, and up to 45kV with external transformers. Current sensing is accomplished with either 5 amp or 1 CT secondaries and with up to 10,000 amp primary. Maximum power readings are 32,000kW/kVAR/kVA.

Power transfer control – provides integrated automatic power transfer functions including source availability sensing, genset start/stop and transfer pair monitoring and control. The transfer/retransfer is configurable for open transition, fast closed transition (less than 100msec interconnect time), or soft closed transition (load ramping) sequences of operation. Utility source failure will automatically start genset and transfer load, retransferring when utility source returns. Test will start gensets and transfer load if test with load is enabled. Sensors and timers include:

Under voltage sensor: 3-phase L-N or L-L under voltage sensing adjustable for pickup from 85-100% of nominal. Dropout adjustable from 75-98% of pickup. Dropout delay adjustable from 0.1-30 sec.

Over voltage sensor: 3-phase L-N or L-L over voltage sensing adjustable for pickup from 95-99% of dropout. Dropout adjustable from 105-135% of nominal. Dropout delay adjustable from 0.5-120 sec. Standard configuration is disabled and is configurable to enabled in the field using the HMI or InPower service tools.

©2022 Cummins Inc. | S-1570 (02/23)

Over/Under frequency sensor: Center frequency adjustable from 45-65 Hz. Dropout bandwidth adjustable from 0.3-5% of center frequency beyond pickup bandwidth. Pickup bandwidth adjustable from 0.3-20% of center frequency. Field configurable to enable.

Loss of phase sensor: Detects out of range voltage phase angle relationship. Field configurable to enable.

Phase rotation sensor: Checks for valid phase rotation of source. Field configurable to enable.

Breaker tripped: If the breaker tripped input is active, the associated source will be considered as unavailable.

Timers: Control provides adjustable start delay from 0 - 300sec, stop delay from 0 - 800sec, transfer delay from 0-120sec, retransfer delay from 0-1800sec, programmed transition delay from 0-60sec, and maximum parallel time from 0-1800sec.

Negative Sequence Current Protection: PCC3300 supports this protection natively in order to determine if the generator is at any point was running subject to negative phase sequencing.

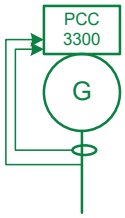
Breaker control – Utility and Genset breaker interfaces include separate relays for opening and closing breaker, as well as inputs for both 'a' and 'b' breaker position contacts and tripped status. Breaker diagnostics include Contact Failure, Fail to Close, Fail to Open, Fail to Disconnect, and Tripped. Upon breaker failure, appropriate control action is taken to maintain system integrity.

Exerciser clock –The exerciser clock (when enabled) allows the system to be operated at preset times in either test without load, test with load, or extended parallel mode. A Real Time Clock is built in. Up to 12 different programs can be set for day of week, time of day, duration, repeat interval, and mode. For example, a test with load for 1 hour every Tuesday at 2AM can be programmed. Up to 6 different exceptions can also be set up to block a program from running during a specific date and time period.

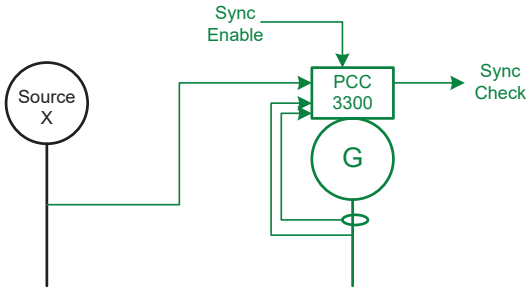
Extended paralleling – In extended paralleling mode (when enabled) the controller will start the genset and parallel to a utility source and then govern the real and reactive power output of the genset based on the desired control point. The control point for the real power (kW) can be configured for either the genset metering point ("Base Load") or the utility metering point ("Peak Shave"). The control point for the reactive power (kVAR or Power Factor) can also be independently configured for either the genset metering point or the utility metering point. This flexibility would allow base kW load from the genset while maintaining the utility power factor at a reasonable value to avoid penalties due to low power factor. The System always operates within genset ratings. The control point can be changed while the system is in operation. Set points can be adjusted via hardwired analog input or adjusted through an operator panel display or service tool.

Application types – Controller is configured to operating in one of six possible application types. These topologies are often used in combinations in larger systems, with coordination of the controllers in the system either by external device or by interlocks provided in the control. Topologies that may be selected in the control include:

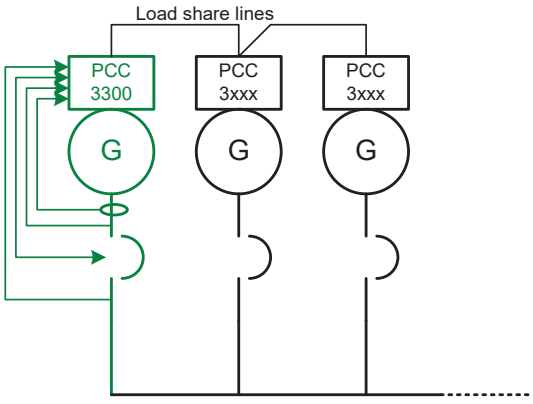
Standalone: Control provides monitoring, protection and control in a non-paralleling application.



Synchronizer only: control will synchronize the genset to other source when commanded to either via a hardwired or Modbus driven input.

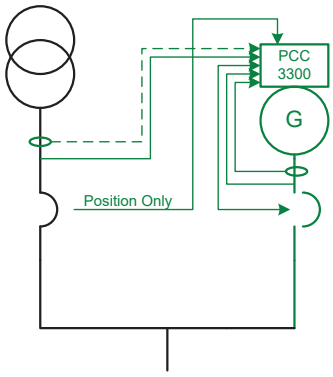


Isolated Bus: allows the genset to perform a dead bus closure or synchronize to the bus and isochronously share kW and kVAR loads with other gensets.

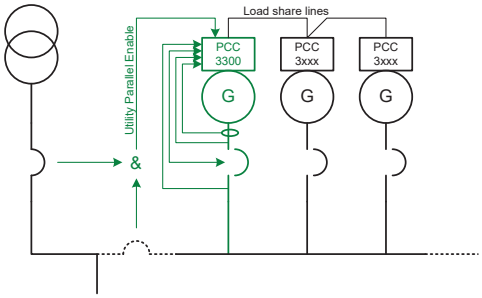


©2022 Cummins Inc. | S-1570 (02/23)

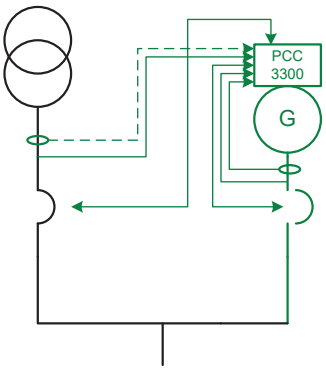
Utility Single: Control monitors one genset and utility. The control will automatically start and provide power to a load if the utility fails. The control will also resynchronize the genset back to the utility and provides extended paralleling capabilities.



Utility Multiple: Supports all functionality of Isolated Bus and provides extended paralleling to the utility. Extended paralleling load set points follow a constant setting; dynamically follow an analog input, Modbus register or HMI.

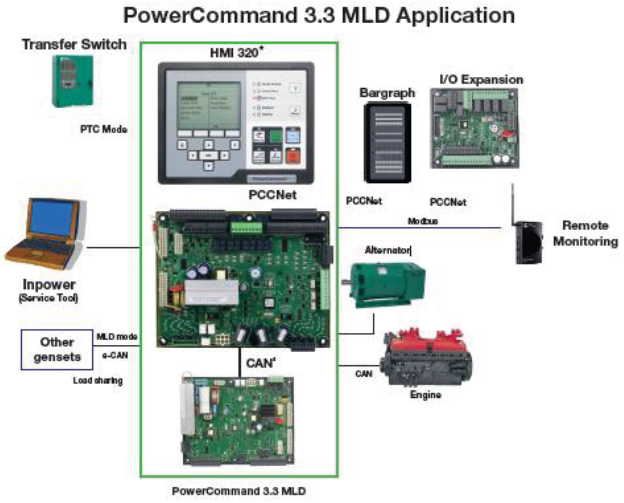


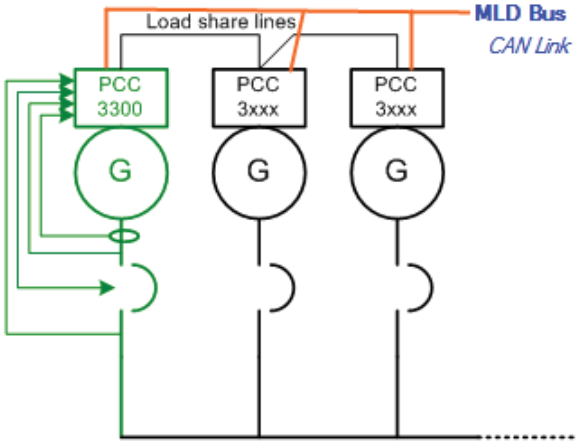
Power Transfer Control: Control operates a single genset/single utility transfer pair in open transition, fast closed transition, or soft closed transition. Extended paralleling functionality also provides base load and peak shave options.



Masterless Load Demand (Optional Feature):

PowerCommand® 3.3 with Masterless Load Demand (MLD) technology enables generator sets to start/stop automatically based on load demand. Masterless Load Demand-capable generators are equipped with an additional s-CAN network connection that allows sharing of information amongst paralleled generator sets. MLD has been designed for hassle-free installation, commissioning and operation. MLD functionality. Integrated on-board system logic provides the MLD topology control without the need for any additional system.





PCC3300 External Voltage and Frequency Biasing Inputs

PCC3300 supports externally driven voltage and frequency biasing capability in order to permit external paralleling (if intending to use this feature please contact your local distributor for further information).

©2022 Cummins Inc. | S-1570 (02/23)

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 (or are handled by the engine ECM) are not bypassed. Please refer to the Control Application Guide or Manual for list of these faults.

Derate

The Derate function reduces output power of the genset in response to a fault condition. If a Derate command occurs while operating on an isolated bus, the control will issue commands to reduce the load on the genset via contact closures or Modbus. If a Derate command occurs while in utility parallel mode, the control will actively reduce power by lowering the base load kW to the derated target kW.

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, derate, shutdown, shutdown with cooldown or status indication and for labeling the input.

Emergency stop

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

General prime mover 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 genset is signaled to start and indicate a warning if the battery indicates impending failure.

Low coolant level warning – Can be set up to be a warning or shutdown.

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

Fail to start (overcrank) shutdown - The control system will indicate a fault if the genset 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.

Fault simulation –The control in conjunction with InPower software, will accept commands to allow a technician to verify the proper operation of the control and its interface by simulating failure modes or by forcing the control to operate outside of its normal operating ranges. InPower also provides a complete list of faults and settings for the protective functions provided by the controller.

For Lean Burn Natural Gas Engine applications:

Off load running (protection) – This feature protects the engine in the event the genset is being called to go off load for too long.

Hydro Mechanical fuel system engine protection:

Overspeed shutdown – Default setting is 115% of nominal

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

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

High engine temperature warning/shutdown – Level is preset (configurable with InPower or HMI) 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.

High intake manifold temperature shutdown – Level is preset (configurable with InPower or HMI) to match the capabilities of the engine used. Control includes time delays to prevent nuisance alarms.

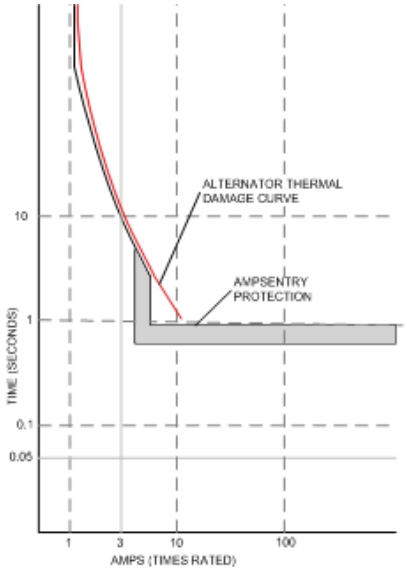
Full authority electronic engine protection:

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

©2022 Cummins Inc. | S-1570 (02/23)

Alternator Protection

AmpSentry protective relay - A comprehensive monitoring and control system integral to the PowerCommand® Control System that guards the electrical integrity of the alternator and power system by providing protection against a wide array of fault conditions in the genset or in the load. It also provides single and three phase fault current regulation (3x Current) so that downstream protective devices have the maximum current available to quickly clear fault conditions without subjecting the alternator to potentially catastrophic failure conditions. Thermal damage curve (3 phase short) or fixed timer (2sec for 1P short, 5sec for 2P short). See document R1053 for a full-size time over current curve. The control does not included protection required for interconnection to a utility (mains) service.



AmpSentry Maintenance Mode (AMM) - Instantaneous tripping, if AmpSentry Maintenance mode is active (50mS response to turn off AVR excitation/shutdown genset) for arc flash reduction when personnel are near genset.

High AC voltage shutdown (59) - Output voltage on any phase exceeds preset values. Time to trip is inversely proportional to amount above threshold. Values adjustable from 105-125% 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 preset value. Adjustable over a range of 50-95% of reference voltage, time delay 2-20 seconds. Default value is 85% for 10 seconds. Function tracks reference voltage. Control does not nuisance trip when voltage varies due to the control directing voltage to drop, such as during a V/Hz roll-off or synchronizing.

Under frequency shutdown (81 u) - Genset output frequency cannot be maintained. Settings are adjustable from 2-10 Hz below reference governor set point, for a 5-20 second time delay. Default: 6 Hz, 10 seconds. Under frequency protection is disabled when excitation is switched off, such as when engine is operating in idle speed mode.

Over frequency shutdown/warning (81o) - Genset 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, 20 seconds, disabled.

Overcurrent warning/shutdown (51) - Implementation of the thermal damage curve with instantaneous trip level calculated based on current transformer ratio and application power rating.

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

Field overload shutdown - Monitors field voltage to shutdown genset when a field overload condition occurs.

Over load (kW) warning - Provides a warning indication when engine is operating at a load level over a set point. Adjustment range: 80-140% of application rated kW, 0-120 second delay. Defaults: 105%, 60 seconds.

Reverse power shutdown (32) - Adjustment range: 5-20% of standby kW rating, delay 1-15 seconds. Default: 10%, 3 seconds.

Reverse Var shutdown (40) - Shutdown level is adjustable: 15-50% of rated Var output, delay 10-60 seconds. Default: 20%, 10 seconds.

Short circuit protection - Output current on any phase is more than 175% of rating and approaching the thermal damage point of the alternator. Control includes algorithms to protect alternator from repeated over current conditions over a short period of time.

Negative sequence overcurrent warning (46) – Control protects the generator from damage due to excessive imbalances in the three phase load currents and/or power factors.

Custom overcurrent warning/shutdown (51) – Control provides the ability to have a custom time overcurrent protection curve in addition to the AmpSentry protective relay function.

Ground fault overcurrent (51G) – Control detects a ground fault either by an external ground fault relay via a contact input or the control can measure the ground current from an external current transformer. Associated time delays and thresholds are adjustable via InPower or HMI.

©2022 Cummins Inc. | S-1570 (02/23)

Paralleling Protection

Breaker fail to close Warning: When the control signals a circuit breaker to close, it will monitor the breaker auxiliary contacts and verify that the breaker has closed. If the control does not sense a breaker closure within an adjustable time period after the close signal, the fail to close warning will be initiated.

Breaker fail to open warning: The control system monitors the operation of breakers that have been signaled to open. If the breaker does not open within and adjustable time delay, a Breaker Fail to Open warning is initiated.

Breaker position contact warning: The controller will monitor both 'a' and 'b' position contacts from the breaker. If the contacts disagree as to the breaker position, the breaker position contact warning will be initiated.

Breaker tripped warning: The control accepts inputs to monitor breaker trip / bell alarm contact and will initiate a breaker tripped warning if it should activate.

Fail to disconnect warning: In the controller is unable to open either breaker, a fail to disconnect warning is initiated. Typically, this would be mapped to a configurable output, allowing an external device to trip a breaker.

Fail to synchronize warning: Indicates that the genset could not be brought to synchronization with the bus. Configurable for adjustable time delay of 10 -900 seconds, 120 default.

Phase sequence sensing warning: Verifies that the genset phase sequence matches the bus prior to allowing the paralleling breaker to close.

Maximum parallel time warning (power transfer control mode only): During closed transition load transfers, control independently monitors paralleled time. If time is exceeded, warning is initiated and genset is disconnected.

Bus or genset PT input calibration warning: The control system monitors the sensed voltage from the bus and genset output voltage potential transformers. When the paralleling breaker is closed, it will indicate a warning condition if the read values are different.

Field Control Interface

Input signals to the PowerCommand® control include:

- Coolant level (where applicable)
- Fuel level (where applicable)
- Remote emergency stop
- Remote fault reset
- Remote start
- Rupture basin
- Start type signal
- Battle short
- Load demand stop
- Synchronize enable
- Genset circuit breaker inhibit
- Utility circuit breaker inhibit
- Single mode verify
- Transfer inhibit – prevent transfer to utility (in power transfer control mode)
- Retransfer inhibit – prevent retransfer to genset (in power transfer control mode)
- kW and kVAR load setpoints

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

Input signals for Lean Burn Natural Gas Engine applications:

- Gearbox oil pressure/temperature protection
- Fire fault
- Earth fault support as a discrete input via an appropriate secondary detection device
- Differential fault
- DC power supply fault
- Genset Interface Box (GIB) isolator open fault
- Start inhibit/enable (x3)
- Radiator fan trip
- Ventilator fan trip
- Ventilation louvers closed
- Start system trip
- Alternator heater trip
- Alternator heater status
- Alternator winding temperature (PT100 RTDx3)
- Alternator drive end bearing temperature (PT100 RTD)
- Alternator non-drive end bearing temperature (PT100 RTD)

Output signals from the PowerCommand® control include:

- Load dump signal: Operates when the genset is in an overload condition.
- Delayed off signal: Time delay-based output which will continue to remain active after the control has removed the run command. Adjustment range: 0 - 120 seconds. Default: 0 seconds.

©2022 Cummins Inc. | S-1570 (02/23)

- Configurable relay outputs: Control includes (4) relay output contacts (3 A, 30VDC). 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 (genset running) signal: Operates when the genset has reached 90% of rated speed and voltage and latches until genset is switched to off or idle mode.
- Paralleling circuit breaker relays outputs: Control includes (4) relay output contacts (3.5A, 30 VDC) for opening and closing of the genset and utility breakers.

Output Signals for Lean Burn Natural Gas Engine applications:

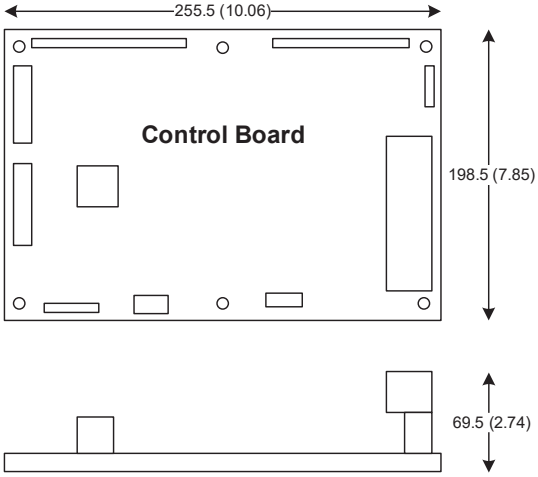
- Start inhibit/enable event
- Emergency stop event
- Ventilator fan run control
- Louvre control
- Radiator fan control
- Alternator heater control
- Engine at idle speed event

Communications connections include:

- PC tool interface: This RS-485 communication port allows the control to communicate with a personal computer running InPower software.
- Modbus RS-485 port: Allows the control to communicate with external devices such as PLCs using Modbus protocol.

  Note - An RS-232 or USB to RS-485 converter is required for communication between PC and control.
- Networking: This RS-485 communication port allows connection from the control to the other Cummins Power Generation products.

Mechanical Drawing



©2022 Cummins Inc. | S-1570 (02/23)

PowerCommand® Human Machine Interface HMI320



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 genset status LED lamps with both internationally accepted symbols and English text to comply with customer's 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.

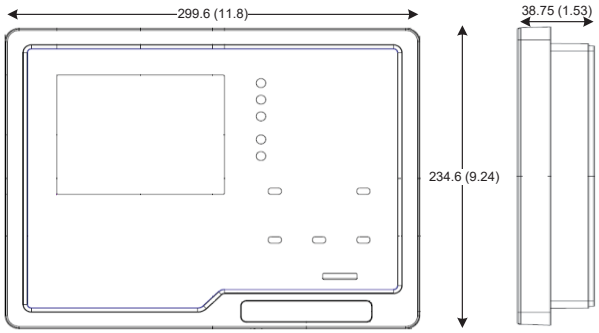
Features:

- LED indicating lamps
  - genset running
  - remote start
  - not in auto
  - shutdown
  - warning
  - auto
  - manual and stop
  - Circuit breaker open (if equipped)
  - Circuit breaker closed (if equipped)
- 320 x 240 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.
- Seven tactile feel membrane switches dedicated screen navigation buttons for up, down, left, right, ok, home and cancel.
- Six tactile feel membrane switches dedicated to control for auto, stop, manual, manual start, fault reset and lamp test/panel lamps.
- Two tactile feel membrane switches dedicated to control of circuit breaker (where applicable).
- Allows for complete genset control setup.
- Certifications: Suitable for use on gensets that are designed, manufactured, tested and certified to relevant UL, NFPA, ISO, IEC, Mil Std., UKCA and CE standards.
- Languages supported: English, Spanish, French, German, Italian, Greek, Portuguese, Finnish, Norwegian, Danish, Russian (Cyrillic), Chinese, Hungarian, Japanese, Polish, Korean, Romanian, Brazilian Portuguese, Turkish, Dutch, and Czech

Communications connections include:

- 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



HMI

Dimensions: mm (inches)

Software

InPower (beyond 6.5 version) is a PC-based software service tool that is designed to directly communicate to PowerCommand® gensets and transfer switches, to facilitate service and monitoring of these products.

©2022 Cummins Inc. | S-1570 (02/23)

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 -20 ºC (-4 ºF) to +70 ºC (158 ºF), and for storage from -30 ºC (-22 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 genset. The control includes transient voltage surge suppression to provide compliance to referenced standards.

Certifications

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

- NFPA 110 for level 1 and 2 systems.
- ISO 8528-4:2005 compliance, controls and switchgear (second edition)
- CE marking: The CE marking is only valid when equipment is used in a fixed installation application. Material compliance declaration is available upon request.
- UKCA marking- The UKCA marking is only valid when equipment is used in a fixed installation application. Material compliance declaration is available upon request.
- EN 61000-6-3,4 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.
- UL 6200 recognized, suitable for use on UL 2200 Listed generator sets.
- CSA C282-M1999 compliance
- CSA 22.2 No. 14 M91 industrial controls.
- PowerCommand® control systems and generator sets are designed and manufactured in ISO 9001 certified facilities.
- ROHS (Restriction of Hazardous substance) complaint both for HMI 320 & PCC3300v2.

Reference Documents

Please refer to the following reference documents available in the PowerSuite library:

- PowerCommand™ 3.3. Application Guide
- T-037: PowerCommand Control Application Manual (ANSI Protective Functions)
- T-040: PowerCommand 3.3 Paralleling Application Guide

Please refer to the following reference documents available on Cummins Quickserve:

- Service Manuals for PC3.3 (non-MLD) and PC3.3 (MLD)
- Modbus Register Mapping

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.

PCCNet COMPATIBLE

©2022 Cummins Inc. | S-1570 (02/23)

GLOBAL POWER COMPONENTS®

Date: 10/16/2026

Project Name: TBD

Company Name: Cummins North

Job Number: 143923

Table of Contents:

Section 1: Bill of Materials

Section 2: Enclosure Components

Section 3: Tank Components

Section 6: Enclosure Color Chart

Section 7: Warranty Statement

Bill of Materials

Section 1

EVERYTHING BUT THE GENERATOR™
• Genset Enclosures • Equipment Centers • Fuel Tanks • Trailers • Iso Containers •

PRODUCT DATA

Qty	Part #	Description
		GPC Enclosure Model
		GWE-G2-2000-3356
		136"H x 116"W x 386"L +111" Intake Hood
1	GWE-G2	GPC Weather House Enclosure Level 20-25 dba Reduction Two Sound Attenuated 14 Gauge Galvannealed Construction
7	6505	Hinged Door
7	6501	Stainless Steel Door Hardware (Pad-Lockable)
7	6507	Stainless Steel Door Restraint
1	6610	External Intake Hood
1	6615	Internal Vertical Discharge Plenum
1	6522	Insulated w/3" Insulation Board
1	6520	Perforated Interior Lining
1	Color	Paint Color Selection To Be Determined
		Options Included
4	6982	LED Fixture (4' Vapor Tight)
1	6914	100A LOAD CENTER (120/240V OR 120/208V, 1 PHASE)
1	6905	(2) 3 Way Light Switches
1	6916	GFCI Outlet (20A)
1	6918	GFCI PROTECTED OUTLET (20A)
1	6518E	Extend Fumes Disposal to Exterior of EnclosureExtend Oil & Coolant Drains to Exterior (Generator Set to be Supplied w/Valves)
		Exhaust System
1	6843	GPC Supplied Exhaust System (GPC Supplied Flex)
1	6855	Internally Mounted Silencer
1	6805	Rain Collar
1	6870	Vertical Silencer Discharge (Includes Elbow and Rain Cap - Ships Loose)

Qty	Part #	Description
		UL-142 Listed Sub Base Fuel Tank Model
		SB2N-3356 24 hr Usable Gallons
		26"H x 116"W x 386"L
1	DW-101	Double Wall Secondary Containment
1	4001	Notched Electrical Stub Up Area
1	8002	Removable Stub Up Access Panel
1	3660	1" Supply/Return Dip Tube Package (2" NPT)
1	1000	Low Level Alarm (2" NPT, Set at 50%)
1	3502	Basin Drain, 1/2" NPT
1	1003	Rochester Fuel Level Gauge (2" NPT, Swing Arm)
1	3005	Locking Manual Fill Cap (2" NPT)
1	3152	Standard Vent Cap (2" NPT)
4	3166	Emergency Vent (6" NPT)
4	8410	Flush Mount Lifting Plate (Minimum of 4)
1	9638	Paint Color Gloss Black
7	8303	6" I-Beam Generator Set Support
14	8425	Isolator Pad Support Channel (For Internal Stiffeners)
		Options Included
1	4300	Fuel in Basin Alarm (2" NPT, Top Mounted)
1	1010	High Level Alarm (2" NPT, Set at 90%)
2	700-1075	Spring Check Valve, 1" NPT On engine supply lines
2	3195	Extra Fitting w/Plug (2" NPT)
1	3520	Rain RUNOFF™ Option
1	3518	Vents Located at Radiator End/Fill Internal
2	3193	Extra Fitting w/Plug (1" NPT) for oil and coolant drains
1	3610	Additional 1" Dip Tube (2" NPT)
1	4005	Stub Up Covers
1	Install Package	Mount Generator Set & Enclosure to Tank and Install Fuel Lines
14	8426	GPC to Provide Isolators (Model M2SS-1E)

Shipping Dimensions & Weights (Approximate)
Enclosure & Tank
167"H x 116"W (120"W w/ Handles) x 497" OAL including hood
Dry Weights: 61550# (Includes Generator Set Weight of 32001)

Notes and Clarifications
Sound attenuation performance is a reduction from base noise levels and assumes the following conditions. No guarantee of specific dBA rating at any other distance from enclosure is provided: 1) Test area is a clear 100' circle 2) Sound levels are recorded 42" above grade and at 8 equal distant points 7 meters from enclosure 3) Performance results are a reduction from open unit starting dba @ full load

Enclosure Components

Section 2

SYLVANIA

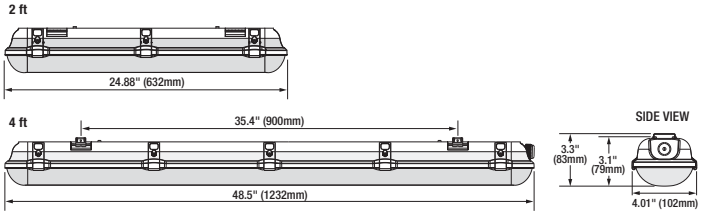
LEDVANCE Luminaires

Vapor Tight

Catalog #	Type
Project	
Notes	
Date	
Prepared by	



Dimensions



Dimensions in inches (mm)

Product Features

The Vapor Tight luminaires are environmentally preferable LED alternatives to traditional HID or fluorescent luminaires, offering up to 67% in energy savings. Ideal in place of traditional luminaires, or as new installations, the Vapor Tight series is suitable for illuminating garages, stairwells, industrial areas, canopies, and outdoor walkways.

The Vapor Tight luminaires are IP65 rated and are offered with integrated sensor and emergency backup options. LEDVANCE luminaires assure optimum light engine performance for extended service and rated life (≥66,000 hours L_{70}).

Wattage Comparison Chart

Vapor Tight

Traditional Source	Traditional System Wattage	LED System Wattage	Energy Savings
2 F17T8	33	25	24%
2 F32T8	27	25	7%
50W HPS	62	25	60%
70W HPS	92	25	67%
2 F28 T8	50	40	20%
2 F32 T8	54	40	26%
1 F96 T12	86	40	53%
70W HPS	91	40	56%
2 F28 T8	50	50	0%
2 F32 T8	54	50	7%
1 F96 T12	86	50	42%
70W HPS	91	50	45%

Specifications

Weight: 2 ft: 2.5 lbs. (1.2 kg)
4 ft: 4.8 lbs (2.2 kg) Standard 5.5 lbs (2.5 kg) Emergency
5.1 lbs (2.3 kg) Sensor 5.8 lbs (2.6 kg) Sensor and Emergency

Construction: One-piece polycarbonate housing with one-piece polycarbonate lens and stainless steel clips. The standard color is gray.

LED System: LED system with a life rating of ≥66,000 hours (UNV) and ≥84,000 hours (HUV) at L_{70} @25°C. Luminaire efficacy up to 140 LPW.

Electrical: Offered in 25, 40 and 50 Watts, the luminaire is designed to operate through the 120V-277V$_{AC}$ universal voltage and 347-480V$_{AC}$ high universal voltage range. The LED driver has a 2.5kV inherent surge suppression and is a constant current device, meeting UL1310 and UL48 Class 2 with built-in over temperature protection. The power factor is ≥90% and THD is ≤20%.

Dimming: The driver is 0-10V dimmable (down to 6%). Please reference the dimmer compatibility document (LEDLUM012).

Color Characteristics: CRI>80; CCT of 4000K or 5000K.

Optics: Type V distribution with a clear etched polycarbonate lens.

Installation: Luminaire mounts to recessed outlet box or can be surface or chain mounted (chain not included). Connector available for tandem wiring. External controls can be added through existing knockouts.

Operating Temperature: -40°F to +104°F (-40°C to +40°C);
EM: +14°F to +104°F (-10°C to +40°C).

Listings: cULus listed to UL1598 standards for wet locations and IP65 rated.

Warranty: Standard 5-year luminaire warranty (LEDLUM001).

Note: Specifications subject to change without notice. IES files available online.

*DLC Premium only applicable to 25W and 40W versions with clear lens option

Ordering Guide

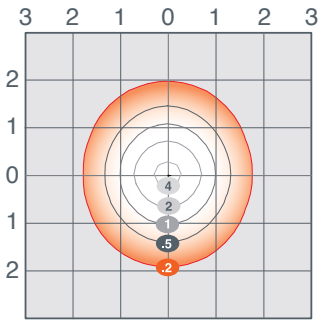
Item Number:

VAPOR	XX	/	XXX	XXX	D	8	XX	/	XX	EC	/	GR	/	XX
Product Name	Generation		Wattage	Voltage	Dimming	CRI	Color Temp (CCT)		Size	Optics		Color/Finish		Options
VAPOR	1B		025 = 25 Watts 040 = 40 Watts 050 = 50 Watts	UNV = 120-277V HUV = 347-480V*	D = 0-10V	8≥80	40 = 4000K 50 = 5000K		24 = 24" long 48 = 48" long	EC = Etched Lens Type V Distribution		GR = Gray		Blank = No Option D = Motion/Daylighting Sensor** E = Emergency**

*HUV version only available in 50W
**Only available on 48" UNV versions

Photometric Data

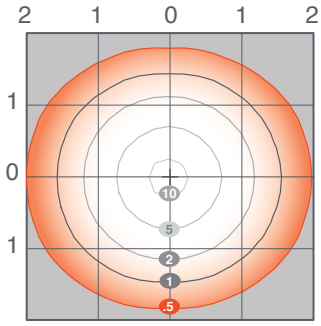
VAPOR1A/025UNVD8X0
Isofootcandle Lines at 15' Mounting Height



For other mounting heights apply the following multipliers:

Mounting Height	10'	12'	15'	18'	20'
Multiplier	2.25	1.56	1.00	0.44	0.36

VAPOR1A/040UNVD8X0
Isofootcandle Lines at 12' Mounting Height



For other mounting heights apply the following multipliers:

Mounting Height	8'	10'	12'	15'	16'	18'
Multiplier	2.25	1.44	1.00	0.73	0.56	0.44

Fixture Spacing Chart

	VAPOR1A/025UNVD840/48EC/GR			VAPOR1B/040UNVD840/48EC/GR		
	On Center Fixture Spacing			On Center Fixture Spacing		
	8'x10'	10'x10'	10'x12'	8'x10'	10'x10'	10'x12'
8'	39	29	23.2	65.6	51.2	40.2
10'	37.9	28.1	22.5	63.6	49.9	39.2
12'	35.2	27.3	21.9	63.4	48.3	38.1
14'	34.2	26.6	21.3	61.7	47.3	37.2
16'	33.2	25.6	20.7	55.5	46.3	36.2
18'	32.3	24.9	20.1	53.9	44.7	35.3

Average Illuminance (fc) at 0" AFF.
80/50/20 reflectances.

Ordering Information

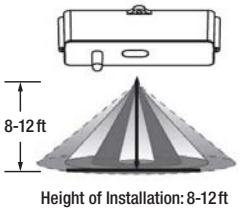
Item Number	Ordering Abbreviation	Power (W)	Input Voltage	Dimming	CRI	Color Temp (CCT)	Total Fixture Lumens Clear Lens	Total Fixture Lumens Diffuse Lens	LPW* Clear Lens	LPW* Diffuse Lens	DLC** Clear Lens	DLC** Diffuse Lens	Options
74530	VAPOR1A/025UNVD840/24EC/GR	25	120-277V	0-10V	>80	4000K	3100	2800	135	121	Prm	Std	–
74531	VAPOR1A/025UNVD850/24EC/GR	25	120-277V	0-10V	>80	5000K	3100	2800	137	123	Prm	Std	–
74222	VAPOR1A/050UNVD840/48EC/GR	50	120-277V	0-10V	>80	4000K	5000	–	102	–	–	–	–
74223	VAPOR1A/050UNVD850/48EC/GR	50	120-277V	0-10V	>80	5000K	5000	–	103	–	–	–	–
74224	VAPOR1A/050UNVD840/48EC/GR/D	50	120-277V	0-10V	>80	5000K	4000	–	102	–	–	–	Sensor
74225	VAPOR1A/050UNVD850/48EC/GR/D	50	120-277V	0-10V	>80	5000K	5000	–	103	–	–	–	Sensor
74227	VAPOR1A/050UNVD850/48EC/GR/E	50	120-277V	0-10V	>80	5000K	5000	–	103	–	–	–	Emergency
74229	VAPOR1A/050UNVD850/48EC/GR/DE	50	120-277V	0-10V	>80	5000K	5000	–	103	–	–	–	Sensor, Emergency
74552	VAPOR1A/050HUVD840/48EC/GR	50	347-480V	0-10V	>80	4000K	5700	–	111	–	Std	–	–
74553	VAPOR1A/050HUVD850/48EC/GR	50	347-480V	0-10V	>80	5000K	5700	–	111	–	Std	–	–
74376	VAPOR1B/040UNVD840/48EC/GR	40	120-277V	0-10V	>80	4000K	5300	4600	139	120	Prm	Std	–
74377	VAPOR1B/040UNVD850/48EC/GR	40	120-277V	0-10V	>80	5000K	5300	4700	137	122	Prm	Std	–
74378	VAPOR1B/040UNVD840/48EC/GR/D	40	120-277V	0-10V	>80	4000K	5400	4500	140	116	Prm	Std	Sensor
74379	VAPOR1B/040UNVD850/48EC/GR/D	40	120-277V	0-10V	>80	5000K	5400	4600	137	119	Prm	Std	Sensor
74554	VAPOR1B/040UNVD840/48EC/GR/E	40	120-277V	0-10V	>80	4000K	5300	4600	139	120	Prm	Std	Emergency
74555	VAPOR1B/040UNVD850/48EC/GR/E	40	120-277V	0-10V	>80	5000K	5300	4700	137	122	Prm	Std	Emergency
74556	VAPOR1B/040UNVD840/48EC/GR/DE	40	120-277V	0-10V	>80	4000K	5400	4500	140	116	Prm	Std	Sensor, Emergency
74557	VAPOR1B/040UNVD850/48EC/GR/DE	40	120-277V	0-10V	>80	5000K	5400	4600	137	119	Prm	Std	Sensor, Emergency

*LPW per LM79 report.
**Prm for DLC Premium; Std for DLC Standard
For further information and to learn more about utility rebates, contact your local SYLVANIA sales representative.

Options Information

Sensor: Motion and Daylight sensors are both available.
Motion Sensor (Default Setting):

Motion	100% lumen output
≥5min with no motion	30% lumen output
≥30min with no motion	Off



Height of Installation: 8-12ft



Detection Range
Height of installation: 8ft

Daylight (Default Setting): 5fc/24H

For customized settings: Purchase remote control separately and refer to the Vapor Tight Remote document LEDLUM015 for further instructions.

Emergency Battery Backup:

Activates when normal power supply to the fixture fails, providing a minimum of 500 lumens for at least 90 minutes.

Accessories and Replacement Parts

Item Number	Ordering Abbreviation	Item Description
74310	VAPOR1A/REMOTE	Vapor Tight Sensor Remote compatible with VAPOR1A
74541	VAPOR1B/REMOTE	Vapor Tight Sensor Remote compatible with VAPOR1B
74744	VAPOR1X/LENS/24D5	2ft Diffused Lens
74538	VAPOR1X/LENS/48D5	4ft Diffused Lens
74448	VAPOR1A/LENS/48EC	4ft Replacement Lens
74920	VAPOR1A/CONN/BL	Tandem Wiring Connector

LEDVANCE LLC
200 Ballardvale Street
Wilmington, MA 01887 USA
Phone 1-800-LIGHTBULB (1-800-544-4828)
www.sylvania.com

SYLVANIA and LEDVANCE are registered trademarks.
All other trademarks are those of their respective owners.
Licensee of product trademark SYLVANIA in general lighting.
Specifications subject to change without notice.

/sylvania /sylvania

© 2017 LEDVANCE LLC

Switches, Three Way
20A, 120-277V AC
Specification Grade Commercial Switch

HUBBELL

Features

- Thread cleaning captive mounting screw
- Abuse resistant nylon toggle
- Steel, zinc plated bridge is corrosion resistant



Ordering Information

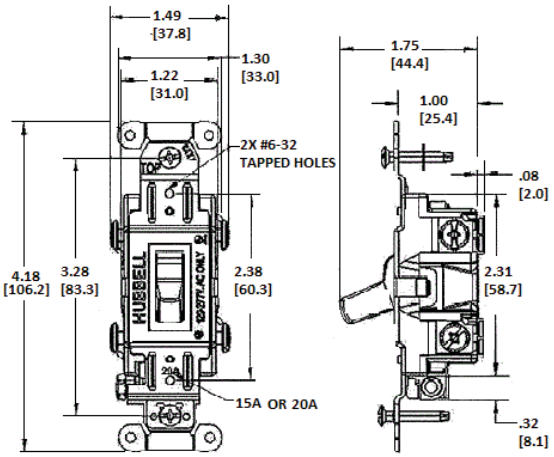
Description	Toggle Color	UPC	Catalog Number
Toggle, back and side wired	Ivory	783585154220	CSB320I

Listings

UL Listed
CSA Certified
Fed. Spec. W-S-896

Specifications

Top Material	Thermoplastic, Gray
Base Material	Thermoplastic, Black
Toggle Material	Nylon
Contacts	Silver Alloy
Terminal Screws	Brass
Auto Grounding Mounting Bridge	Zinc Plated Steel
Ground Screw	Brass (Green)



Performance

Electrical

Dielectric Voltage	Withstands 1500V AC minimum for 1 minute
Max. Continuous Current	20A
Max. Working Voltage	277V AC
Overload	Minimum 4.8 times rated current for 100 cycles
Temperature Rise	30°C maximum at rated current

Mechanical

Terminal Accommodations	#14 AWG min. - #10 AWG max. solid and stranded copper wire only

Environmental

Flammability	UL 94V-2
Operating Temperature	Max. continuous: 75°C; Min. continuous: -40°C without impact

Online Resources

Customer Use Drawing
eCatalog

Dimensions in Inches (mm)

HUBBELL Wiring Device-Kellems

Ground Fault Products

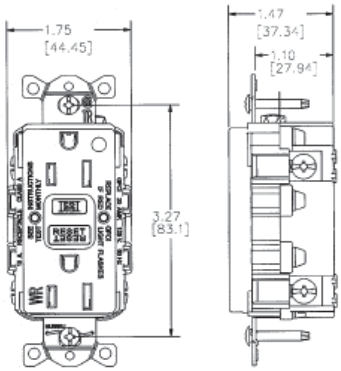
Commercial Tamper-Resistant and Weather Resistant GFCI Receptacles

HUBBELL

Features

- Patented shutter design for tamper-resistant protection
- Meets NEC requirements for TR (517-18c) and WR (406.9), UV and corrosion resistance for harsh and damp applications
- Patented AUTOGUARD® self test technology
- Protects against line and load reversal, no power to the face or downstream if device is miswired





Ordering Information

Description	Color	UPC	Catalog Number
20A, 125V, Style Line®, AUTOGUARD® self test GFCI receptacle, tamper-resistant and weather resistant, flush face, back and side wired, multiple drive screws	Ivory	883778122675	GFTWRST20I

Listings

UL Listed - Canadian and U.S.
Meets ADA Standards
Meets all NEC® requirements
CSA Certified
NEMA® WD-6 Compliant

Specifications

Face	Nylon
Base	Nylon
Power Contacts	Brass
Ground Contacts	Brass
Mounting Strap	Zinc plated steel
Mounting Screws	Zinc plated steel

Online Resources

Customer Use Drawing
eCatalog
Installation Instructions

Dimensions in Inches (mm)

Hubbell Wiring Device-Kellems • Hubbell Incorporated (Delaware) • 40 Waterview Drive • Shelton, CT 06484
Phone (800) 288-6000 • Fax (800) 255-1031 • Specifications subject to change without notice.

HUBBELL® Wiring Device-Kellems

Straight Blade Devices
20A, 125V, 2 Pole, 3 Wire Grounding
Commercial Specification Grade Duplex Receptacles

HUBBELL

Features

- Easy access split circuit tab
- Nylon face and base
- Wrap-around galvanized steel strap
- Triple wipe contacts



Ordering Information

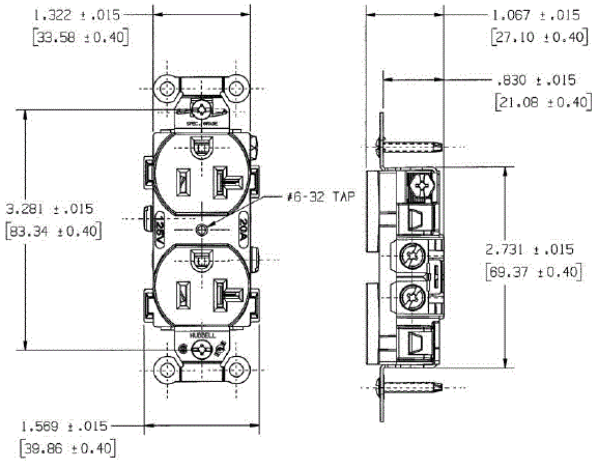
Description	Device Color	UPC	Catalog Number
Smooth face, back and side wired.	Ivory	783585834887	BR20I

Listings

UL Listed to UL498 File No. E2186
Certified to CSA 22.2, No. 42
Fed. Spec. W-C-596
NEMA® WD-6 Compliant

Specifications

Face	Nylon
Base	Nylon
Power Contacts	.030 in. (.8) Brass
Ground Contacts	Brass
Wire Clamp	.062 in. (1.6) Nickel plated steel
Terminal Screws	Plated steel
Mounting Strap	.040 in. (1) Galvanized steel
Automatic Self-grounding Staple	Stainless steel
Mounting Screws	Galvanized Steel



Performance

Electrical

Current Interrupting	Certified for current interrupting at full rated current
Dielectric Voltage	Withstands 2,000V minimum

Mechanical

Product Identification	Ratings are a permanent part of the device
Terminal Accommodation	#12-#10 AWG copper stranded or solid conductor only
Terminal Identification	Terminals identified in accordance with UL 498 and CSA

Environmental

Flammability	UL 94 V-2
Operating Temperatures	Maximum continuous 75°C; minimum -40°C (w/o impact)

Accessories

Wallplate or Weatherproof Cover Duplex Opening

Resources

Customer Use Drawing
eCatalog

Dimensions in Inches (mm)

Hubbell Wiring Device-Kellems • Hubbell Incorporated (Delaware) • 40 Waterview Drive • Shelton, CT 06484
Phone (800) 288-6000 • Fax (800) 255-1031 • Specifications subject to change without notice.

HUBBELL® Wiring Device-Kellems

Product data sheet
Characteristics

QO120M100
LOAD Center QO MB 240V 100A 1PH 20SP

Product availability : Stock - Normally stocked in distribution facility



Main

Product or component type	Load Center
Range of product	QO
Load center type	Main breaker
Line Rated Current	100 A
Number of spaces	20
Short-circuit current	22 kA
Number of circuits	20
Number of tandem circuit breakers	0
Phase	1 phase
System Voltage	120/240 V AC

Complementary

AWG gauge	AWG 6...AWG 1 (aluminium/copper)
NEMA degree of protection	NEMA 1 indoor
Cover type	Order separately
Electrical connection	Lugs
Device composition	Grounding bar (ordered separately)
Electrical connection	Lugs
Wiring configuration	3-wire
Material	Tin plated copper busbar
Enclosure material	Welded sheet steel
Surface finish	Baked enamel grey
Box number	6
Product certifications	UL listed
Height	17.91 in (455 mm)
Width	14.25 in (362 mm)

Disclaimer: This documentation is not intended as a substitute for and is not to be used for determining suitability or reliability of these products for specific user applications

Ordering and shipping details

Category	00001 - QO 1PH LC,12-42 CKT,NEMA1
Discount Schedule	DE3A
GTIN	00785901847878
Nbr. of units in pkg.	1
Package weight(Lbs)	11.73
Returnability	Y
Country of origin	US

Offer Sustainability

RoHS (date code: YYWW)	Compliant - since 1248 - Schneider Electric declaration of conformity Schneider Electric declaration of conformity
REACh	Reference not containing SVHC above the threshold Reference not containing SVHC above the threshold
Product end of life instructions	Need no specific recycling operations
California proposition 65	WARNING: This product can expose you to chemicals including:
- - - - - - - Substance 1	Lead and lead compounds which is known to the State of California to cause cancer and birth defects or other reproductive harm.
- - - - - - - More information	For more information go to www.p65warnings.ca.gov

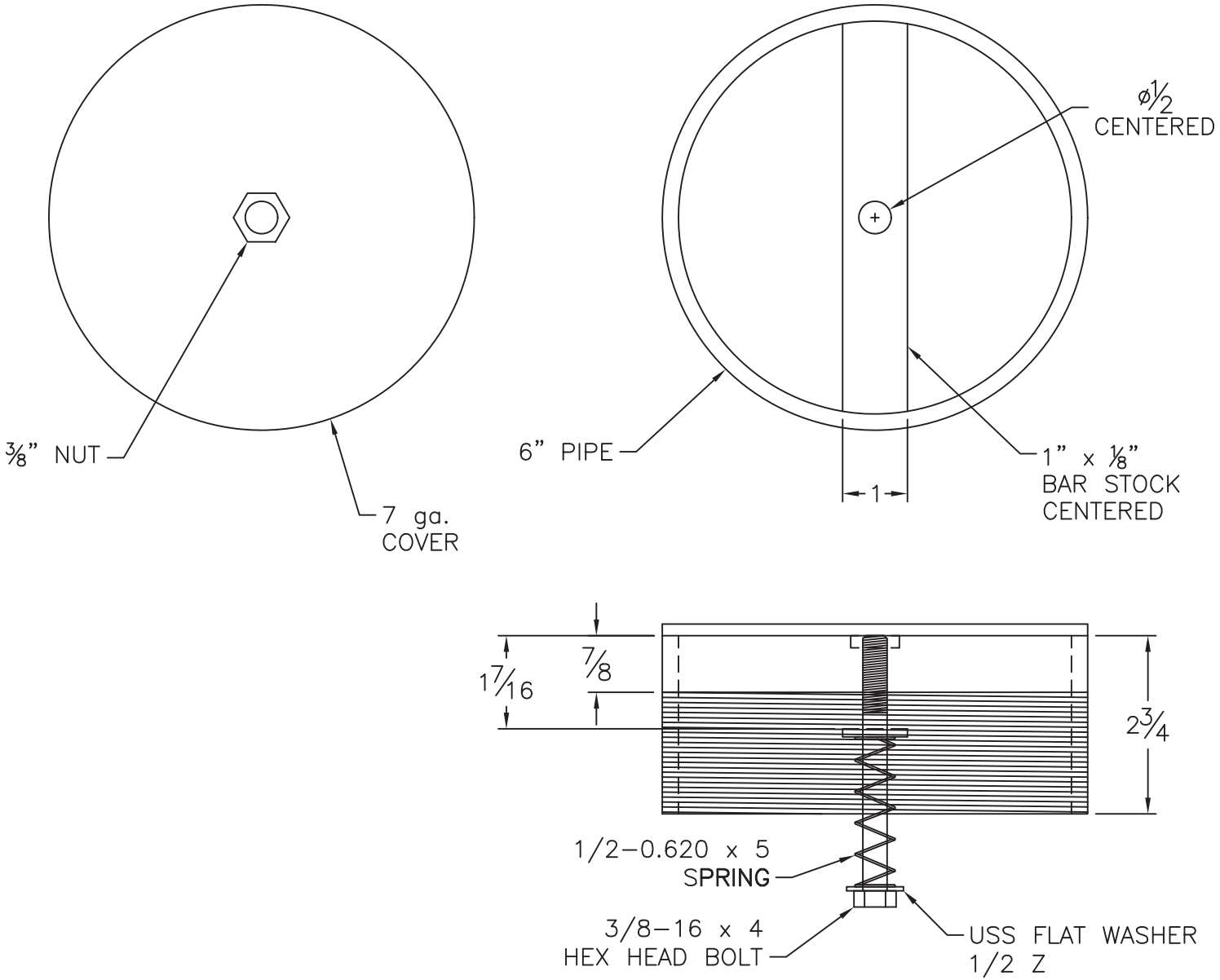
Contractual warranty

Warranty period	18 months

Tank Components

Section 3

PART #: 3166



THIS AUTOCAD DRAWING IS THE PROPERTY OF GLOBAL POWER COMPONENTS AND MAY NOT BE USED IN ANY WAY DETRIMENTAL TO THE INTERESTS OF GPC. ANY MANUAL CHANGES WILL VOID THIS DRAWING. SPECIFICATIONS MAY CHANGE WITHOUT NOTICE.

REVISIONS				REVISIONS				REVISIONS			
REV	DATE:	CHANGE MADE	BY	REV	DATE:	CHANGE MADE	BY	REV	DATE:	CHANGE MADE	BY
								CUSTOMER/ID:	X		
								JOB REF:	X		

GLOBAL POWER COMPONENTS

DRAWING REF: X	DATE: 2-27-03
DWG #: E-VENTS	DRAWN BY: JLZ

250 lb WWP Bronze Ring Check® Valves

Fire Protection Valve •Inline Lift Type • Rubber Discs • Spring Actuated

Dezincification Resistant

250 PSI/17.2 Bar Non-Shock Cold Working Pressure[1]

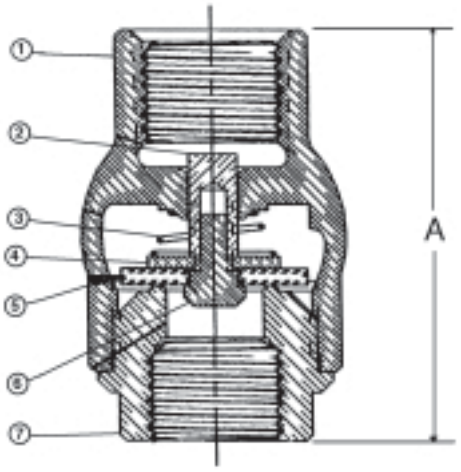


T-480
Threaded

CONFORMS TO MSS SP-80

MATERIAL LIST

PART		SPECIFICATION
1.	Body	Bronze ASTM B 584 Alloy C84400
2.	Stem	Stainless Steel ASTM A 582 Alloy C30300
3.	Spring	316 Stainless Steel
4.	Disc Holder	Stainless Steel Type 301
5.	Disc	Water, Oil or Gas (Buna-N)
6.	Seat Screw	Stainless Steel ASTM A 276 Alloy S43000
7.	Body End	Bronze ASTM B 584 Alloy C84400



T-480
NPT x NPT

DIMENSIONS—WEIGHTS—QUANTITIES

Size		Dimensions A		B		C		T-480		Master
In.	mm.	In.	mm.	In.	mm.	In.	mm.	In.	mm.	Ctn. Qty.
⅜	10	2.00	51	1.38	35	1.44	37	0.41	0.19	100
½	15	2.06	52	1.38	35	1.19	30	0.36	0.16	100
¾	20	2.25	57	1.63	41	1.31	33	0.48	0.22	100
1	25	2.63	67	2.00	51	1.50	38	0.77	0.35	50
1 ¼	32	2.94	75	2.38	60	1.69	43	1.14	0.51	30
1 ½	40	3.31	84	2.75	70	2.00	51	1.63	0.74	30
2	50	3.69	94	3.38	86	2.31	59	2.27	1.03	10

Ordering: The T-480 has standard Buna-N Discs.
Also available with TFE (Y) Discs; specify T-480-Y.
⅜" thru 2" require ½ pound pressure to open.

NIBCO check valves may be installed in both horizontal and vertical lines with upward flow or in any intermediate position.

WARNING - Valve must be installed downstream of receiver tank if used in line with reciprocating air compressor.

Do Not Use as a Footvalve.

Warning – Do Not Use For Reciprocating Air Compressor Service.

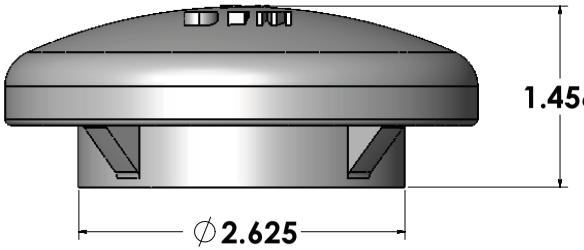
THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF GLOBAL POWER COMPONENTS. ANY REPRODUCTION IN PART OR WHOLE WITHOUT THE WRITTEN PERMISSION OF BOHN METAL FABRICATING IS PROHIBITED.

REVISIONS			
REV.	DESCRIPTION	DATE	APPROVED
A	RELEASED	XX-XX-XX	XXX/XXX/XXX





ISO VIEW



2" STANDARD VENT CAP
PART# 3152

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ARE:
ONE PLACE .X ± .1
TWO PLACE .XX ± .01
THREE PLACE .XXX ± .005
ANGLE ± 1°
HOLE DIA. ± .003
THIRD ANGLE PROJECTION
DO NOT SCALE DRAWING

CAD GENERATED DRAWING.
DO NOT MANUALLY UPDATE

	APPROVALS	DATE
DRAWN	KJS	1-10-06
CHECKED	KJS	1-10-06
ENG APPROVE		
MFG APPROVE		
MATERIAL	SEE NOTE	
FINISH	SEE NOTE	

GLOBAL POWER COMPONENTS
5600 W. GRERNFIELD AVE.
MILWAUKEE, WI 53224
PH (414) 973-3000 FAX (414) 453-8461

DESCRIPTION
CUSTOMER
DIE #XXXX
CUSTOMER REV: A

SIZE D | DWG. NO. 3152 | REV A
SCALE: 1:1 | SHEET 1 OF 1

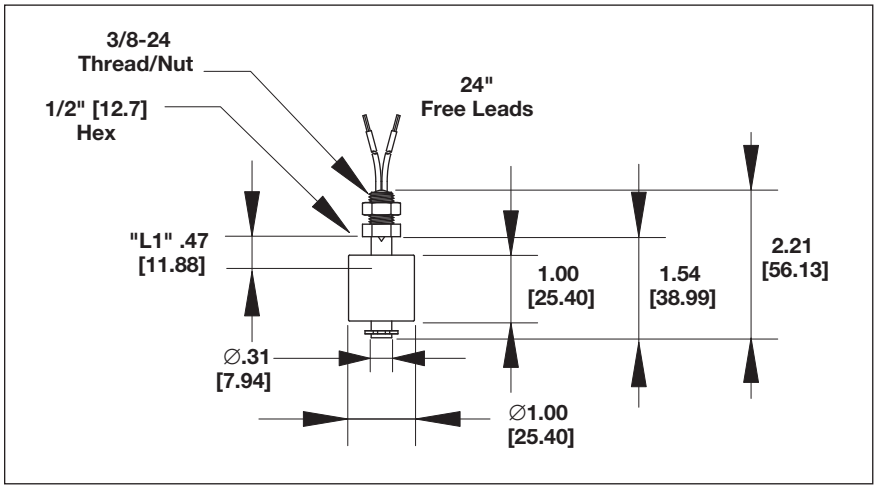
L003 Series

Compact, Low-Cost Switches – Ideal for High Volume Use

Key Features:

- Ideal for shallow tanks
- Broad media compatibility
- Selectable to Normally-Open or Normally-Closed operation by inverting the float
- 50 VA switch (standard)

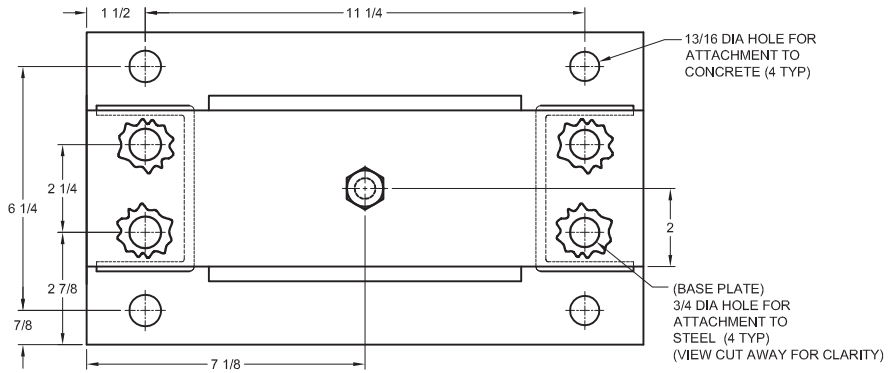


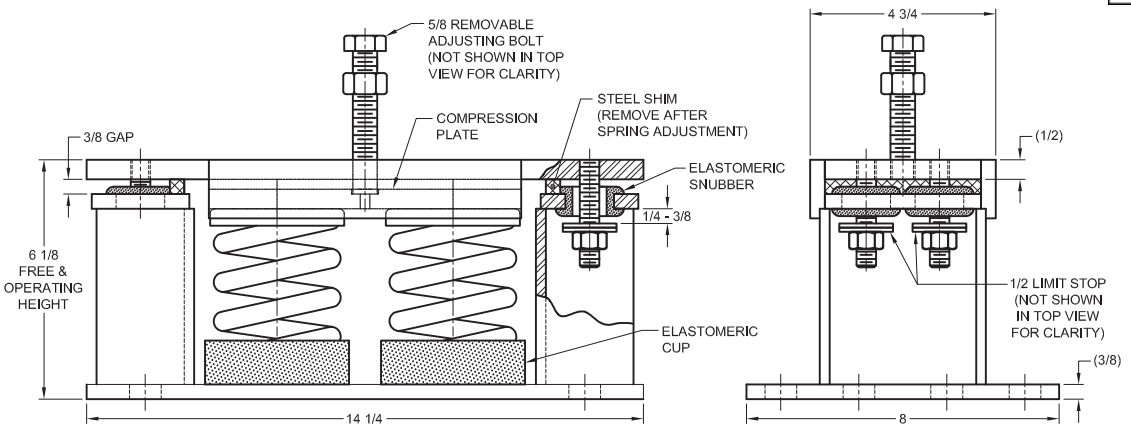


Series	Mounting	Stem/Float Materials	SG	Temperature	Pressure	P/N
L003 **Compact, Low-Cost Switches**	⅛" NPT	Solid/PP	.90	-40° to +150° F	150 PSIG	L003-0102-0303
	⅜"-24	Solid/PP	.90	-40° to +150° F	150 PSIG	L003-1802-0303
	⅛" NPT	Hollow/PP	.70	-40° to +150° F	50 PSIG	L003-0102-0203
	⅜"-24	Hollow/PP	.70	-40° to +150° F	50 PSIG	L003-1802-0203
	⅛" NPT	PVC/PVC	.90	-40° to +140° F	50 PSIG	L003-0105-0503
	⅜"-24	PVC/PVC	.90	-40° to +140° F	50 PSIG	L003-1805-0503
	⅛" NPT	PVDF/PVDF	1.0	-40° to +150° F	50 PSIG	L003-0104-0403
	⅜"-24	PVDF/PVDF	1.0	-40° to +150° F	50 PSIG	L003-1804-0403
	⅛" NPT	Nylon/Buna	.80	-40° to +150° F	150 PSIG	L003-0118-2003
	⅜"-24	Nylon/Buna	.80	-40° to +150° F	150 PSIG	L003-1818-2003

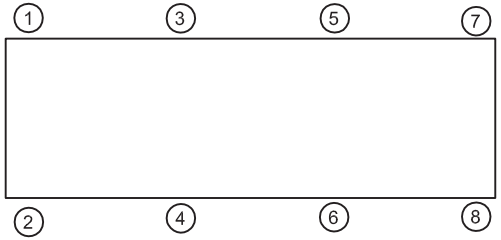
172R–101101	REV.: 10

REV.	DESCRIPTION	DATE	BY





MODEL M2SS-1E SEISMICALLY RESTRAINED VIBRATION ISOLATOR FOR 1" DEFLECTION				
SEISMIC MOUNT SIZE	RATED LOAD (LBS)	RATED DEFLECTION (IN)	SPRING RATE (LBS/IN)	COLOR CODE
M2SS-1E-1650N	1650	1.07	1538	RED/DK. BLUE
M2SS-1E-2000	2000	1.00	2000	TAN
M2SS-1E-3400N	3400	1.10	3100	PINK/DK. BLUE
M2SS-1E-4000	4000	1.11	3600	WHITE
M2SS-1E-5150N	5150	1.11	4626	WHITE/DK. PURPLE
M2SS-1E-5980N	5980	1.11	5364	WHITE/DK. GREEN
M2SS-1E-6500N	6500	1.04	6250	WHITE/GRAY



ISOLATOR SELECTIONS	
LOC 1:	LOC 2:
LOC 3:	LOC 4:
LOC 5:	LOC 6:
LOC 7:	LOC 8:
CUSTOMER EQP'T. TAG:	

NOTE: MATERIAL SHOWN IS FOR (1) SET.

NOTES:
1. ALL DIMENSIONS ARE IN INCHES, INTERPRET PER ANSI Y14.
2. STANDARD FINISH: HOUSING - POWDER COAT (COLOR:BLACK), SPRING - POWDER COAT (COLOR: SEE TABLE), HARDWARE ZINC-ELECTROPLATE.
3. EQUIPMENT MUST BE BOLTED OR WELDED TO THE TOP PLATE TO MEET ALLOWABLE SEISMIC RATINGS.
4. ISOLATOR BASE PLATE MUST BE ANCHORED TO CONCRETE WITH (4) 3/4 DIA ANCHORS.
5. ALL SPRINGS ARE DESIGNED FOR 50% OVERLOAD CAPACITY.
6. REFER TO SHEET 2 OF 2 FOR INSTALLATION INSTRUCTIONS.
7. RATED DEFLECTIONS ARE WITHIN 25% OF NOMINAL. HIGHER DEFLECTIONS ARE ALLOWED IF THEY MEET SPECIFICATIONS.

OTHER MATERIALS, COMPOUNDS, OR FINISHES WITH EQUAL OR SUPERIOR PROPERTIES MAY BE SUBSTITUTED AS THEY BECOME AVAILABLE.

CERTIFIED FOR:

JOB NAME: _____

CUSTOMER : _____

CUSTOMER P.O.: _____

SALES ORDER: _____

MODEL M2SS-1E 1650-6500 LBS. VIBRATION ISOLATOR WITH INTEGRAL SEISMIC RESTRAINT AND EXTERNAL ADJUSTMENT FOR 1 INCH DEFLECTION

THE VMC GROUP
The Power of Together
Bloomingdale, NJ 07403
Houston, TX 77041

SCALE : NONE

SHEET: 1 OF 2

DRAWING NO.:

REVISION

Member VISCMA

PROPRIETARY: EXCEPT AS OTHERWISE AGREED IN WRITING, THE INFORMATION AND DESIGN DISCLOSED HEREIN ARE THE PROPERTY OF THE VMC GROUP AND MUST NOT BE COPIED OR DISTRIBUTED OUTSIDE THE VMC GROUP EXCEPT TO AUTHORIZED PERSONS WITH A GENUINE NEED TO KNOW WHO BY THE USE HEREOF ACKNOWLEDGE THE VMC GROUP'S OWNERSHIP AND AGREE TO MAINTAIN THIS INFORMATION AND DESIGN IN STRICT CONFIDENCE.

172R–101101 | REV.: 10

REV.	DESCRIPTION	DATE	BY

1. **READ INSTRUCTIONS IN THEIR ENTIRETY BEFORE BEGINNING INSTALLATION.**

2. ISOLATORS ARE SHIPPED FULLY ASSEMBLED AND ARE TO BE POSITIONED IN ACCORDANCE WITH THE SUBMITTAL DRAWINGS OR AS OTHERWISE RECOMMENDED.

3. SET ISOLATORS ON FLOOR, HOUSEKEEPING PAD, OR SUB-BASE, ENSURING THAT ALL ISOLATOR CENTERLINES MATCH THE EQUIPMENT MOUNTING HOLES. THE VMC GROUP RECOMMENDS THAT THE ISOLATOR BASE PLATES ("B") BE INSTALLED ON A LEVEL SURFACE. SHIM OR GROUT AS REQUIRED, LEVELING ALL ISOLATOR BASE PLATES AT THE SAME ELEVATION (1/4-INCH MAXIMUM DIFFERENCE CAN BE TOLERATED).

4. ANCHOR ALL ISOLATORS TO THE FLOOR, HOUSEKEEPING PAD, OR SUB-BASE USING THRU HOLES ("C") FOR CONCRETE OR ("D") FOR STEEL AS REQUIRED. USE ANCHORS MEETING THE DESIGN REQUIREMENTS SPECIFIED ON SHEET 1 OF 2. WELDING TO STEEL IS PERMITTED PROVIDING THE WELD ACHIEVES THE REQUIRED STRENGTH.

5. ISOLATORS ARE SHIPPED TO THE JOBSITE WITH (2) REMOVABLE SPACER SHIMS ("E") BETWEEN THE TOP PLATE AND THE HOUSING. THESE SHIMS **MUST** BE IN PLACE WHEN THE EQUIPMENT IS POSITIONED OVER THE ISOLATORS.

6. WITH ALL SHIMS ("E") IN PLACE, REMOVE ADJUSTING BOLT "G", AND SET ASIDE. KEEP THE NUT "H" SCREWED ONTO THE ADJUSTING BOLT. PLACE THE MACHINE OR EQUIPMENT ONTO TOP PLATE "A", ALIGNING THE EQUIPMENT MOUNTING HOLE WITH THE TAPPED HOLE IN THE TOP PLATE. REATTACH THE ADJUSTING BOLT BY BOLTING THROUGH THE EQUIPMENT MOUNTING HOLE INTO THE TAPPED HOLE OF THE (**Cont.**)

6. (Cont.)
ISOLATOR. TURN THE ADJUSTING BOLT UNTIL IT STARTS TO COMPRESS THE SPRING. LEAVE NUT "H" AT THE TOP OF THE ADJUSTING BOLT, LEAVING ROOM FOR ADJUSTING THE ISOLATOR PER STEP 9.

7. **THE ADJUSTMENT PROCESS CAN ONLY BEGIN AFTER THE EQUIPMENT OR MACHINE IS AT ITS FULL OPERATING WEIGHT.**

8. BACK OFF EACH OF THE (2) OR (4) LIMIT STOP LOCKNUTS ("F") PER ISOLATOR 1/4- TO 3/8-INCH.

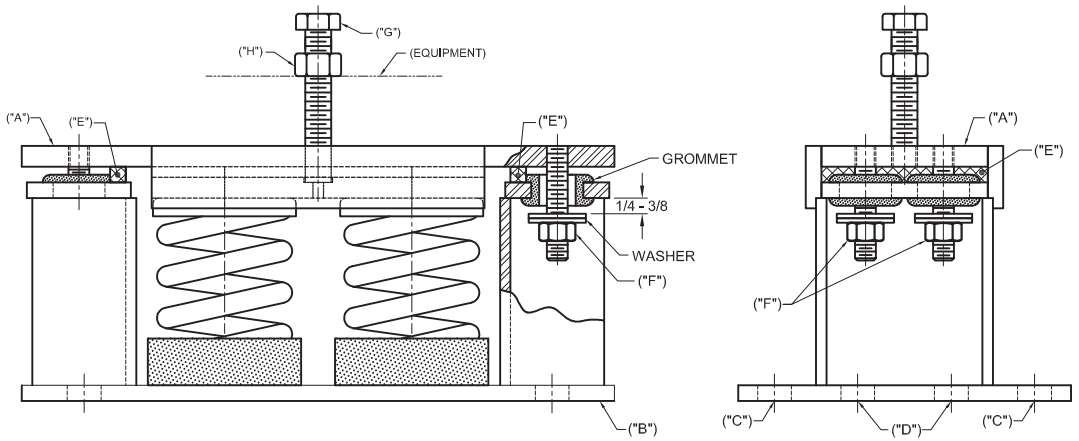
9. ADJUST EACH ISOLATOR IN SEQUENCE BY TURNING ADJUSTING BOLT(S) "G" ONE FULL CLOCKWISE TURN AT A TIME. REPEAT THIS PROCEDURE ON ALL ISOLATORS, ONE AT A TIME. CHECK THE LIMIT STOP LOCKNUTS ("F") PERIODICALLY TO ENSURE THAT CLEARANCE BETWEEN THE WASHER AND RUBBER GROMMET IS MAINTAINED. STOP ADJUSTMENT OF AN ISOLATOR ONLY WHEN THE TOP PLATE ("A") HAS RISEN JUST ABOVE THE SHIM ("E").

10. REMOVE ALL SPACER SHIMS ("E").

11. FINE ADJUST ISOLATORS TO LEVEL EQUIPMENT.

12. ADJUST ALL LIMIT STOP LOCKNUTS ("F") PER ISOLATOR TO OBTAIN 3/8-INCH GAP. THE LIMIT STOP NUTS MUST BE KEPT AT THIS 3/8-INCH GAP TO ENSURE UNIFORM BOLT LOADING DURING UPLIFT (AS IN THE CASE WHEN A COOLING TOWER IS DRAINED).

13. INSTALLATION IS COMPLETE.



OTHER MATERIALS, COMPOUNDS, OR FINISHES WITH EQUAL OR SUPERIOR PROPERTIES MAY BE SUBSTITUTED AS THEY BECOME AVAILABLE.

CERTIFIED FOR:

JOB NAME: _____

CUSTOMER : _____

CUSTOMER P.O.: _____

SALES ORDER: _____

MODEL M2SS-1E 1650-6500 LBS. VIBRATION ISOLATOR WITH INTEGRAL SEISMIC RESTRAINT AND EXTERNAL ADJUSTMENT FOR 1 INCH DEFLECTION

THE VMC GROUP
The Power of Together
Bloomingdale, NJ 07403
Houston, TX 77041

SCALE : NONE

SHEET: 2 OF 2

Member VISCMA

DRAWING NO.:

REVISION

PROPRIETARY: EXCEPT AS OTHERWISE AGREED IN WRITING, THE INFORMATION AND DESIGN DISCLOSED HEREIN ARE THE PROPERTY OF THE VMC GROUP AND MUST NOT BE COPIED OR DISTRIBUTED OUTSIDE THE VMC GROUP EXCEPT TO AUTHORIZED PERSONS WITH A GENUINE NEED TO KNOW WHO BY THE USE HEREOF ACKNOWLEDGE THE VMC GROUP'S OWNERSHIP AND AGREE TO MAINTAIN THIS INFORMATION AND DESIGN IN STRICT CONFIDENCE.

Enclosure Color Chart

Section 6

GLOBAL POWER COMPONENTS™

COLOR SELECTOR



Signal White

Eggshell

Cream

Yellow

Green

Forest Green

Gray

ANSI 61 Gray

Gloss Black

PPG We protect and beautify the world®

The color chips in this selector cannot be considered totally accurate color matches and are not to be used as approved standards. Please contact a Global Power Components representative for additional information. The PPG Logo is a registered trademarks and We protect and beautify the world is a trademark of PPG Industries Ohio, Inc. © 2018 PPG Industries, Inc. All rights reserved.

USE OF THIS DOCUMENT
All printed copies of this document are uncontrolled and are intended for reference only. Verify revision before use.

Warranty Statement

Section 7

GPC TERMS AND CONDITIONS OF SALE/ WARRANTY

1. **Complete Agreement and Acceptance**: These terms and conditions (the "Terms") apply to the sale of any goods covered by Seller's Quotation ("Quotation") accepted by Buyer. Any additional or different terms or conditions proposed by Buyer shall not be effective unless and until the additional or different terms or conditions are accepted by Seller by written signature. Buyer's issuance of a purchase order ("PO") constitutes Buyer's acceptance of the provisions herein, without the addition of Buyer's proposed different or additional terms. All terms and conditions contained in any PO or other documents from Buyer that supplement or contradict the Quotation or these Terms are hereby expressly rejected, including delivery dates. All sales are expressly conditioned upon Buyer's assent to these Terms.

2. **General Warranties and Standards:** Seller makes those of the following warranties as are appropriate for any goods supplied: (a) the goods will be produced according to Seller's standard manufacturing process and (b) at the time of delivery, meet Seller's published specifications. Seller further warrants the goods against defects in Seller's workmanship and materials under normal use and service, in conformance with recommended installation for a period of twelve (12) months from the date of shipment. Seller excludes any warranty or liability arising out of or relating to: (i) accident, theft, misuse or neglect; (ii) lack of routine care or maintenance, rust, oxidation or other surface damage caused by paint or finish failure due to improper repair of surface damage, Buyer's or its agent's negligence, unauthorized modifications to the goods, improper storage or handling of the goods, improper or contaminated fuel, fluids or lubrication, use of parts that do not meet Seller's specifications; (iii) failure to use or take proper precautions; (iv) modification of any product; (v) defects, problems, or failures created by third-party products or their interface with Seller's products; (vi) failure or addition of OEM or other component parts not manufactured by Seller (including but not limited to pumps, tires, wheels, brakes, bearings, axles, couplers, switches, motors, batteries, etc.) and such claims shall be directed to the OEM manufacturer); (vii) in the case of goods sold FOB Seller's facility, damage to goods occurring during or resulting from transportation, detention or demurrage, or unloading at Buyer's destination; (viii) selection of materials, unless Seller's Quotation includes specifications; and in no case for undisclosed field conditions or requirements; (ix) charges for labor and/or materials for any field repair unless expressly authorized in writing by an officer of GPC prior to the commencement of the work; (x) performance rating or uptime; and (xi) Force Majeure. Buyer's sole and exclusive remedy in the event of a breach of the warranty described herein is limited to, at Seller's sole discretion, repair, replacement of, or credit against future purchases for, the non-conforming portion of the goods. All return shipping charges must be prepaid by the Buyer. If at Buyer's request, Seller agrees to conduct an inspection of goods away from Seller's facility in Milwaukee, Wisconsin ("field repair") to determine if a warranty claim exists and Seller determines the issue is not covered by this warranty, then all expenses relating to said field repair service call shall be billed to the Buyer.

"Force Majeure" shall mean causes beyond a party's reasonable control, including but not limited to acts of God, fire, strike or other labor difficulty, flood, military authority, government regulation, embargoes, supply chain issues including but not limited to shortages of, or delays in delivery of, materials or components or labor, or other circumstances causing work slowdown or stoppages such as an epidemic or pandemic resulting from a communicable disease or any other type of health or environmental crisis.

THE ABOVE ARE THE SELLER'S SOLE AND EXCLUSIVE WARRANTIES AND THE SOLE AND EXCLUSIVE REMEDIES AVAILABLE TO THE BUYER. EXCEPT AS OTHERWISE SET FORTH HEREIN, SELLER EXPRESSLY DISCLAIMS ANY AND ALL OTHER WARRANTIES, EXPRESS OR IMPLIED INCLUDING, WITHOUT LIMITATION, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, OF TITLE, AND NON-INFRINGEMENT.

3. **Terms and Warranties Applicable to the Sale of Tanks, Pumps, and Controllers**. In addition to the Terms and Warranties Applicable to the Sale of Tanks, Pumps, and Controllers. In addition to the other Terms described herein (including Seller's exclusions of warranties and limitations of liability) Seller's sale of tanks, tank parts and controllers ("Tanks") shall be subject to these additional terms and conditions. The seller shall supply the Tank, pumps, parts, and controllers only. Seller is not responsible for installation, connectivity, or incorporation of any Tank into any existing system. Seller is not responsible for any fuel spills, environmental contamination, or labor costs under any circumstances, regardless of the cause of such spills or contamination. Buyer agrees and acknowledges it shall be solely responsible for installing and connecting the Tank to other tanks, fuel systems, machines, or equipment on-site. Buyer is solely responsible for testing and commissioning of the Tank on-site. The seller's warranty for Tanks covers parts only. Buyer's sole and exclusive remedy in the event of a breach of the Tank warranty is limited to replacement parts.

4. **Delivery, Inspection, and Title for Goods Sold FOB Seller's Facility:** This paragraph applies where sale terms are FOB Seller's Facility as specified in Seller's Quotation. Unless otherwise stated in writing, shipments and deliveries are FOB Seller's facility in Milwaukee, Wisconsin, and title and risk of loss pass to Buyer immediately prior to loading at Seller's facility. Buyer is responsible for all costs of loading and transportation from Seller's facility including carrier freight insurance covering the goods during loading, while in transit and in unloading, and any third-party cargo insurance. Buyer acknowledges and agrees that if Seller procures transportation on Buyer's behalf under FOB Seller's Facility terms, in procuring freight insurance for the goods Seller may rely on Buyer's reasonable declaration of value for goods Buyer supplies ("Buyer's Declared Value"). In quoting freight charges in this scenario, the Buyer is providing an estimate only and the Buyer shall be responsible for actual freight and shipping charges, including any detention or demurrage charges actually incurred. Seller shall not be liable for any loss of or damage to goods occurring

during loading, while in transit, or during unloading, even if such loss or damage exceeds the insurance limits. Seller retains a purchase money security interest in the goods until all payments (including deferred payments) are received in full. Upon Seller's request, Buyer agrees to do all acts necessary to perfect and maintain such security interest, including executing a security agreement.

5. **Delivery, Inspection, and Title for Goods Sold FOB Buyer's Destination:** This paragraph applies where sale terms are FOB Buyer's Destination as specified in Seller's Quotation. Unless otherwise stated in writing, all prices, quotes, order acknowledgments, shipments, and deliveries are FOB Buyer's destination at the location identified in the PO, determined by the point where a public road ends at the destination ("Destination"). Title and risk of loss pass to Buyer upon arrival of the goods at the Destination, unless within forty-eight (48) hours after arrival, Buyer provides written notice to Seller that the goods are non-conforming. Seller shall not be liable for loss of or damage to goods occurring during loading, unloading or transit unless Buyer (a) inspects the goods prior to unloading; (b) provides Seller written notice of loss or damage to the goods within forty-eight hours after the goods arrive at the Destination; and (c) preserves evidence of the damaged goods such that Seller may make a claim for damages with the carrier and/or third-party insurer. In procuring freight insurance for the goods, Seller may rely on Buyer's reasonable declaration of value as to any goods Buyer supplies Seller in conjunction with the goods described in the PO ("Buyer's Declared Value"). However, in no case shall Seller be liable for any loss of or damage to goods that occur during inspection or unloading. Seller retains a purchase money security interest in the goods until all payments (including deferred payments) are received in full. Upon Seller's written request, Buyer agrees to do all acts necessary to perfect and maintain such security interest including executing a security agreement.

   REGARDLESS OF THE DELIVERY TERM (FOB SELLER'S FACILITY OR DESTINATION) SELLER DOES NOT GUARANTEE A FIRM DELIVERY DATE. DELIVERY DATES IN THE QUOTATION ARE ESTIMATES ONLY. DELIVERY DATES ARE SUBJECT TO THE AVAILABILITY OF PARTS, COMPONENTS AND MANUFACTURING CAPACITY AT THE SELLER'S FACILITY.

6. **Assumption of Risk and Limitation of Seller's Liability**: Buyer assumes all risk and liability for inspection, unloading, storage, and use of goods. Notwithstanding any term or condition herein, in no event will Seller be liable (a) for indirect damages (including but not limited to, special, incidental, and consequential damages, even if Seller has been advised of the possibility of same e.g., lost profits, rental costs, downtime, liquidated damages, labor costs for repairs or other associated work, installation charges, transportation charges, remediation of spills, spare parts procured from OEMs, storage costs, demurrage charges, etc.); or (b) for direct damages in an amount exceeding the invoiced price of the goods Buyer paid to Seller. Buyer expressly agrees that this limitation of liability is an allocation of risk constituting part of the consideration supporting sale of the goods.

7. **No Waiver; Modification; Entire Agreement:** Seller's waiver of any breach of these Terms shall not constitute a waiver of any other breach. Seller's Quotation and these Terms constitute the entire understanding and agreement between Seller and Buyer and may only be modified or amended by a written document or change order signed by one of Seller's officers.

8. **Cancellation or Breach; Remedies**. In the event Buyer cancels an order after issuing a PO, fails to take delivery or timely pay Seller's invoice, Seller's damages shall be, at Seller's option, restitution of the costs Seller has incurred since the PO was issued, or Seller's damages for breach of contract.

9. **Venue; Choice of Law.** This Quotation and any resulting contract for the sale of products shall be interpreted and governed by the laws of the State of Wisconsin, without regard to its conflict of law principles. Buyer expressly agrees that any dispute will be resolved by a court of competent jurisdiction in the State of Wisconsin and Buyer expressly consents to personal jurisdiction in Wisconsin courts.

10. **Interest; Costs of Collection.** Buyer agrees that any unpaid invoice amount shall accrue interest at the rate of 1.25% per month. In the event Seller must seek legal action to recover amounts due and owing or for other breach, Seller shall be entitled to recover its costs of collection including Seller's actual attorney's fees and costs.

Alternator Data Sheet
Frame Size: S7L1D-H4

Characteristics

		1-bearing		2-bearing	
Weights:	Stator assembly:	4363 lb	1979 kg	4363 lb	1979 kg
	Rotor assembly:	3732 lb	1693 kg	3640 lb	1651 kg
	Complete assembly:	9001 lb	4083 kg	8937 lb	4054 kg
Maximum speed:		2250 rpm			
Excitation current:	Full load:	Wdg 07: 2.7, Wdg 13: 2.8, Wdg 312: 2.9			
	No load:	Wdg 07: 0.73, Wdg 13: 1.02, Wdg 312: 0.81-0.74			
Insulation system:	Class H throughout				

3 Ø Ratings (0.8 power factor)			**60 Hz** (winding no)					
			600 (07)	380 (13)	400 (13)	416 (13)	440 (312)	480 (312)
163° C rise ratings	@ 27° C	kW	2360	2230	2230	2230	2175	2360
		kVA	2950	2788	2788	2788	2719	2950
150° C rise ratings	@ 40° C	kW	2290	2170	2170	2170	2110	2290
		kVA	2862	2713	2713	2713	2637	2862
125° C rise ratings	@ 40° C	kW	2200	2090	2090	2090	2030	2200
		kVA	2750	2613	2613	2613	2537	2750
105° C rise ratings	@ 40° C	kW	2050	1945	1945	1945	1890	2050
		kVA	2562	2431	2431	2431	2362	2562
80° C rise ratings	@ 40° C	kW	1895	1800	1800	1800	1745	1895
		kVA	2369	2250	2250	2250	2181	2369

3 Ø Reactances (Based on full load at 125° C rise rating)	600 (07)	380 (13)	400 (13)	416 (13)	440 (312)	480 (312)
Synchronous	3.15	1.98	1.79	1.66	2.31	2.11
Transient	0.19	0.18	0.16	0.15	0.18	0.16
Subtransient	0.14	0.13	0.12	0.11	0.13	0.12
Negative sequence	0.16	0.15	0.14	0.13	0.16	0.14
Zero sequence	0.03	0.03	0.03	0.02	0.03	0.03

3 Ø Motor starting	600 (07)	380 (13)	400 (13)	416 (13)	440 (312)	480 (312)
Maximum kVA (90% sustained voltage)	2521	2543	7839	7839	2520	2520

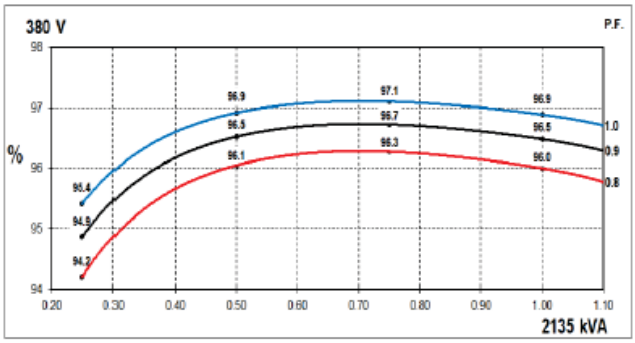
Time constants (sec)	600 (07)	380 (13)	400 (13)	416 (13)	440 (312)	480 (312)
Transient	0.156	0.147	0.147	0.147	0.159	0.159
Subtransient	0.014	0.013	0.013	0.013	0.0133	0.0133
Open circuit	4.55	4.69	4.69	4.69	4.83	4.83
DC	0.03	0.04	0.04	0.04	0.032	0.032

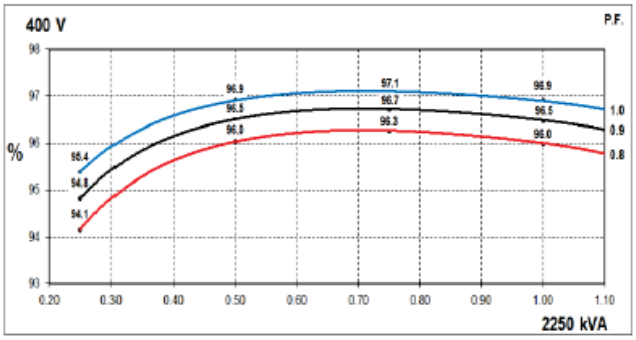
Windings (@22° C)		600 (07)	380 (13)	400 (13)	416 (13)	440 (312)	480 (312)
Stator resistance	(L-L Ohms)	0.0020	0.0008	0.0008	0.0008	0.012	0.012
Rotor resistance	(Ohms)	2.38	2.38	2.38	2.38	2.38	2.38
Number of leads		6	6	6	6	6	6

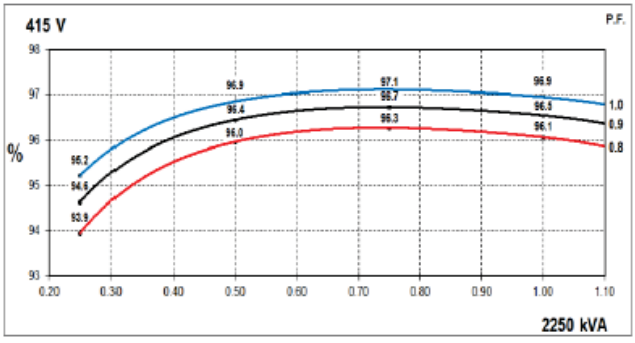
S7L1D-H4 Wdg.312

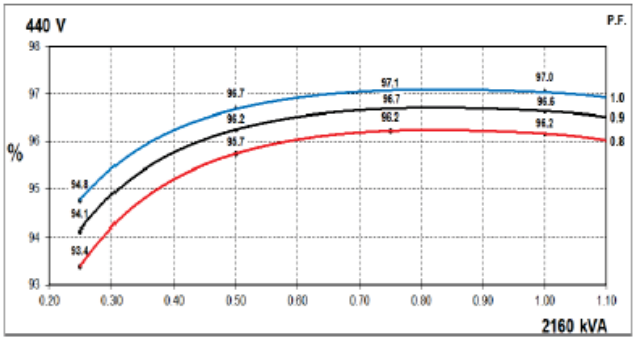
THREE PHASE EFFICIENCY CURVES

50Hz

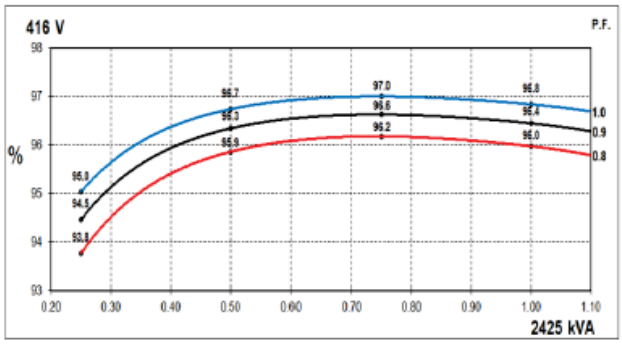


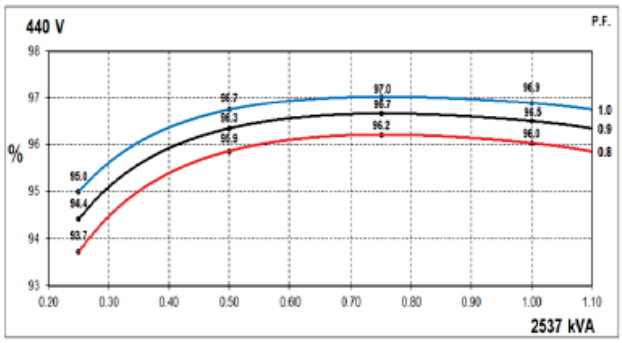


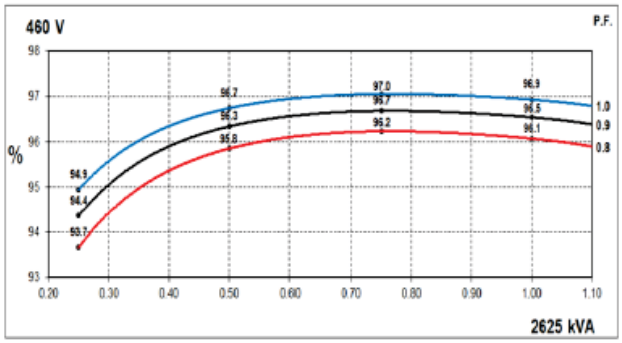


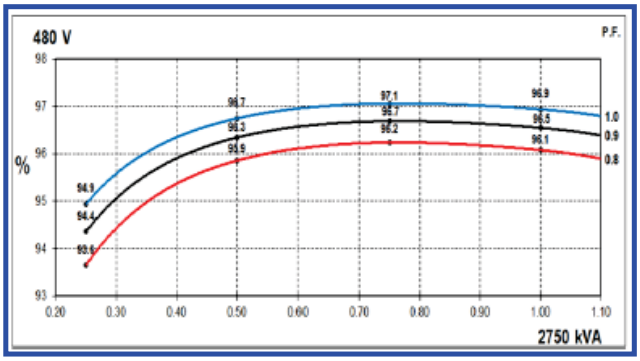


60Hz





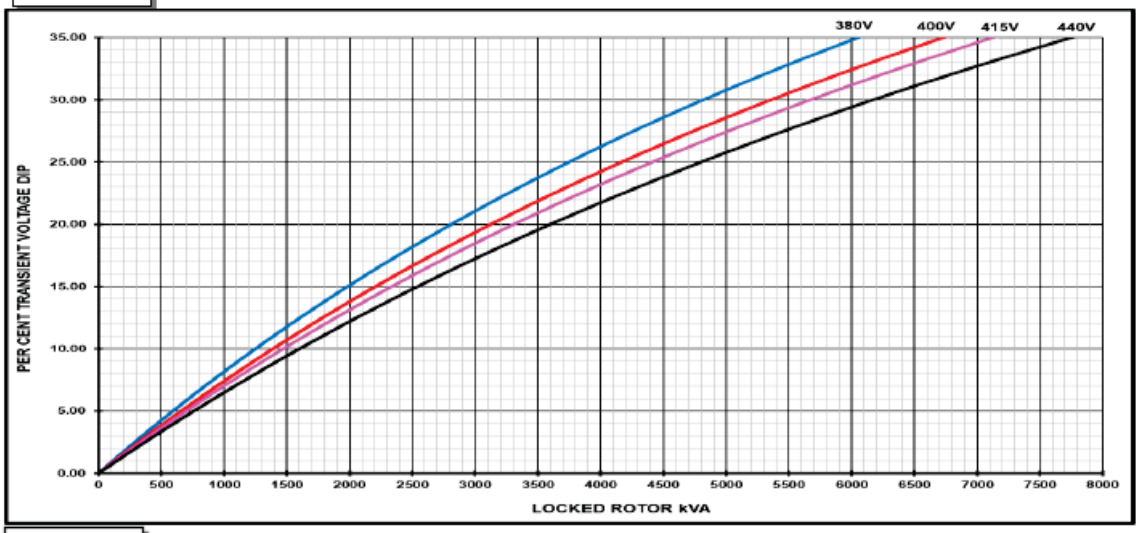




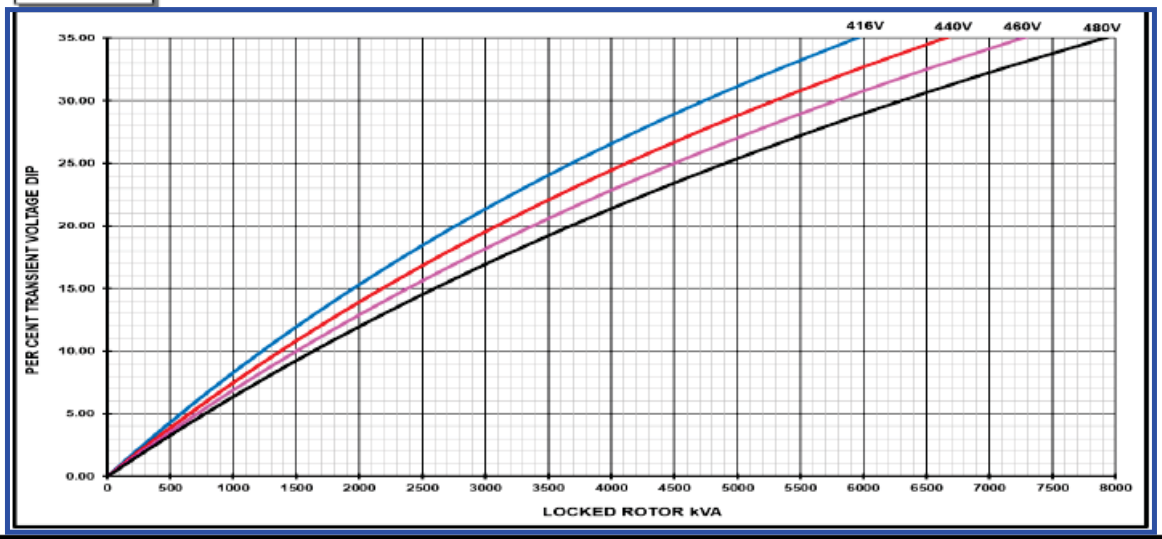
S7L1D-H4 Wdg.312

Locked Rotor Motor Starting Curves - Separately Excited

50Hz



60Hz



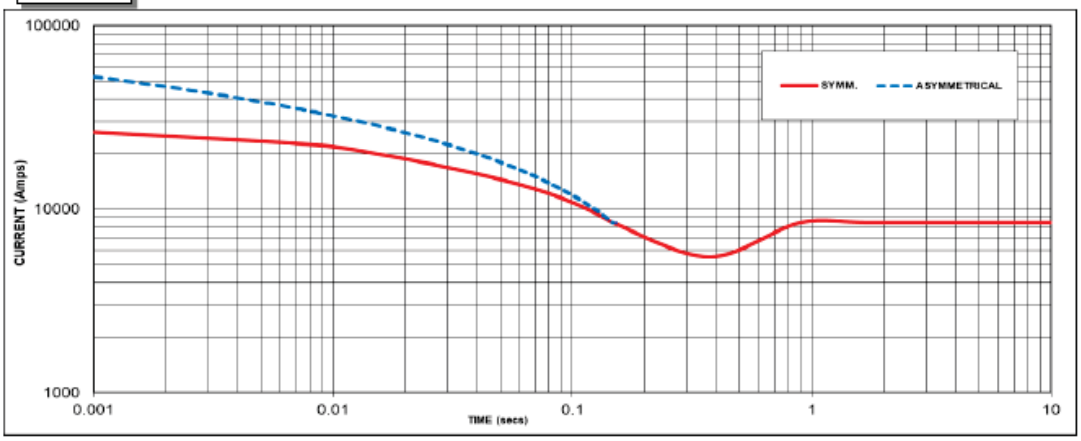
Transient Voltage Dip Scaling Factor	
PF	Factor
< 0.5	1
0.5	0.97
0.6	0.93
0.7	0.9
0.8	0.85
0.9	0.83

Transient Voltage Rise Scaling Factor
For voltage rise multiply voltage dip by 1.25

S7L1D-H4 Wdg.312

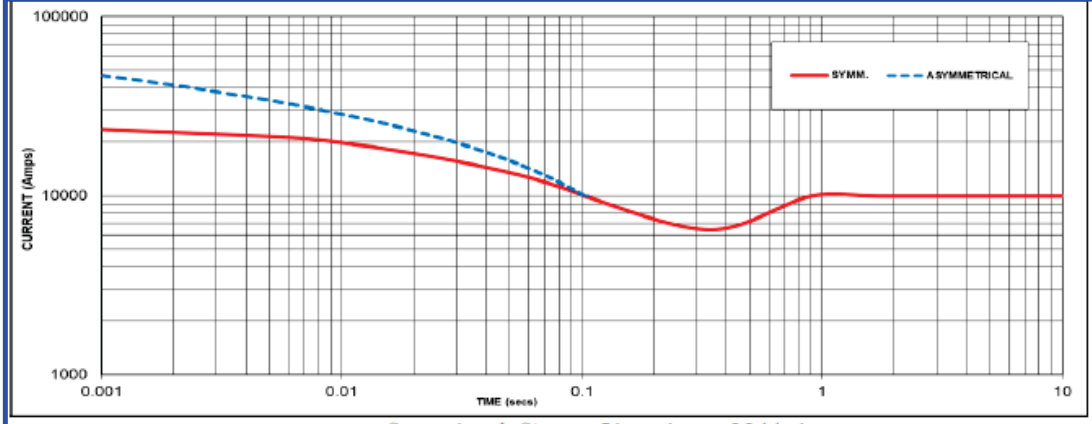
Three-phase Short Circuit Decrement Curve - Separately Excited

50Hz



Sustained Short Circuit = 8453 Amps

60Hz



Sustained Short Circuit = 9944 Amps

Note 1
The following multiplication factors should be used to adjust the values from curve between time 0.001 seconds and the minimum current point in respect of nominal operating voltage :

50Hz		60Hz	
Voltage	Factor	Voltage	Factor
380V	X 1.00	416V	X 1.00
400V	X 1.05	440V	X 1.06
415V	X 1.09	460V	X 1.10
440V	X 1.16	480V	X 1.15

The sustained current value is constant irrespective of voltage level

Note 2
The sustained current values are for MX341 AVR. For MX322 and Digital AVR 1.2 factor to be applied to the sustained short circuit

Note 3
The following multiplication factor should be used to convert the values calculated in accordance with NOTE 1 to those applicable to the various types of short circuit :

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

All other times are unchanged

Note 4
Curves are drawn for Star connected machines under no-load excitation at rated speeds. For other connection (where applicable) the following multipliers should be applied to current values as shown :
Parallel Star = Curve current value X 2
Series Delta = Curve current value X 1.732

Cooling System Data
C2000D6E
QSK50-G24

High Ambient Air Temperature Radiator Cooling System									
				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	Enclosed
	Fuel Type	Duty	Rating (kW)	Maximum allowable ambient temperature, degree C					
60 Hz	Diesel	Standby	2000	47.6	45.0	41.5	38.6	35.4	N/A
		Prime	1825	N/A	N/A	N/A	N/A	N/A	N/A
		DCC	1825	N/A	N/A	N/A	N/A	N/A	N/A
				Airflow (m^3/s) – Actual @ Fan					
				36.3	35.4	34.6	33.4	32.4	N/A

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. Consult 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.

Exhaust Emission Data Sheet
C2000D6E
60 Hz Diesel Generator Set

Engine Information:

Model:	Cummins Inc. QSK50-G24	Bore:	6.26 in. (159 mm)
Type:	4 Cycle, Vee, 16-cylinder Diesel	Stroke:	6.26 in. (159 mm)
Aspiration:	Turbocharged and Charge Air Cooled	Displacement:	3039 cu. in. (49.8 liters)
Compression Ratio:	14.2:1		

Performance Data	1/4 Standby	1/2 Standby	3/4 Standby	Full Standby	Full DCC
Engine BHP @ 1800 RPM (60 Hz)	739	1478	2217	2956	2648
Fuel Consumption (US Gal/Hr)	41.5	73.7	112.0	139.8	128.0
Exhaust Gas Flow (CFM)	6229	9733	13648	15388	15654
Exhaust Gas Temperature (°F)	650	696	894	996	954
Air to Fuel Ratio	42:1	36:1	29:1	24:1	26:1
Exhaust Emission Data					
HC (Total Unburned Hydrocarbons)	0.15	0.07	0.04	0.03	0.03
NOx (Oxides of Nitrogen as NO_2)	2.8	3.9	3.9	6.7	5.4
CO (Carbon Monoxide)	1.13	0.33	0.35	0.31	0.31
PM (Particulate Matter)	0.05	0.05	0.04	0.01	0.02
SO_2 (Sulfur Dioxide)	0.13	0.11	0.12	0.10	0.11
Smoke (Bosch)	0.2	0.3	0.2	0.1	0.2

(All values are cited: g/HP-hr)

Test Conditions

Steady-state emissions recorded per ISO8178-1 during operation at rated engine speed (+/-2%) and stated constant load (+/-2%) with engine temperatures, pressures and emission rates stabilized.

Fuel Specification:	ASTM D975 No. 2-D S15 diesel fuel with 0.0015 Wt.% Sulfur content, 42-48 Cetane Number
Air Inlet Temperature	25 °C (77 °F)
Fuel Inlet Temperature:	40 °C (104 °F)
Barometric Pressure:	100 kPa (29.53 in Hg)
Humidity:	NOx measurement corrected to 10.7 g/kg (75 grains H_2O/lb) of dry air
Intake Restriction:	Set to 18 in of H_2O as measured from compressor inlet
Exhaust Back Pressure:	Set to 1.5 in Hg
Note:	mg/m^3 values are measured dry, corrected to 5% O_2 and normalized to standard temperature and pressure (0°C, 101.325 kPa)

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

2026 EPA Tier 2 Exhaust Emission Compliance Statement C2000D6E Stationary Emergency

60 Hz Diesel Generator Set

Compliance Information:

The engine used in this generator set complies with Tier 2 emissions limit of U.S. EPA New Source Performance Standards for stationary emergency engines under the provisions of 40 CFR 60 Subpart IIII when tested per ISO8178 D2.

Engine Manufacturer:	Cummins Inc.
EPA Certificate Number:	TCEXL050.AAD-040
Effective Date:	11/14/2025
Date Issued:	11/14/2025
EPA Engine Family (Cummins Emissions Family):	TCEXL050.AAD

Engine Information:

Model:	QSK50-G24	Bore:	6.26 in. (159 mm)
Engine Nameplate HP:	2956	Stroke:	6.26 in. (159 mm)
Type:	4 cycle, Vee, 16 Cylinder Diesel	Displacement:	3039 cu. in. (50 liters)
Aspiration:	Turbocharged and Charge Air Cooled	Compression Ratio:	14.2:1
Emission Control Device:	Turbocharged and Charge Air Cooled		

Diesel Fuel Emissions Limits

D2 Cycle Exhaust Emissions

	Grams per BHP-hr			Grams per kW_m-hr		
	NO_X + NMHC	CO	PM	NO_X + NMHC	CO	PM
EPA Emissions Limit	4.7	2.6	0.15	6.4	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 Sulfur

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.

Prototype Test Support (PTS)
60 Hz test summary

Generator set models	Representative prototype	
C1750D6E	Model:	C2000D6E
C2000D6E	Engine:	QSK50-G24
	Alternator:	S7L1D-J4

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: 2032 kW

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

Maximum motor starting: 5600 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 (150 °C) test result 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 rated voltages. Only the highest temperatures are reported.

Location	Maximum Rise (°C)
Alternator Stator:	150
Alternator Rotor:	150
Exciter Stator:	150
Exciter Rotor:	150

Torsional analysis and testing:

The generator set on S7L1D-J4 was tested to verify that the design is not subjected to harmful torsional stresses. A spectrum analysis of the transducer output was conducted over the speed range of 1650 to 1950 RPM.

Cooling system: 40°C ambient
0.5 in H2O restriction

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

Durabilty:

The generator set was subjected to 800 hour of endurance testing replicating field duty cycles operating at variable load up to the standby rating based on 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 steady state operating performance. It was within the specified maximum limits.

Voltage regulation:	± 0.25%
Random voltage variation:	± 0.36%
Frequency regulation:	Isochronous
Random frequency variation:	± 0.12%

Transient performance:

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

Full load acceptance:

Voltage dip:	52.3%
Recovery time:	4.3 seconds
Frequency dip:	24.2%
Recovery time:	4.7 seconds

Full load rejection:

Voltage rise:	9.3%
Recovery time:	0.8 seconds
Frequency rise:	4.4%
Recovery time:	0.6 seconds

All data based on 1.0 power factor:

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	0.04	0.06	0.07	0.21
5	0.15	2.42	0.14	2.43
7	0.67	0.45	0.67	0.42
9	0.03	0.02	0.03	0.12
11	0.57	0.29	0.57	0.31
13	0.28	0.29	0.27	0.27
15	0.02	0.00	0.02	0.07

SECTION 3

Generator Accessories

Hotstart
THERMAL MANAGEMENT

HOTflow® Heating System

CKM



Hotstart's CKM HOTflow® heating system is a coolant preheater, developed to maintain optimal temperatures for diesel and gas engines in stationary land power, marine, construction equipment and truck applications.

INTEGRATED DESIGN

The CKM's mechanically-driven pump is integrated directly into the stainless steel heating tank using a custom designed volute – maximizing coolant flow while minimizing the heater's footprint.

ENERGY EFFICIENT

Like all HOTflow® heaters, the CKM is an energy efficient alternative to legacy convection-based heaters for common genset and heavy equipment engine size applications. Pump-driven forced circulation allows for even, consistent heating while lowering overall operating costs.

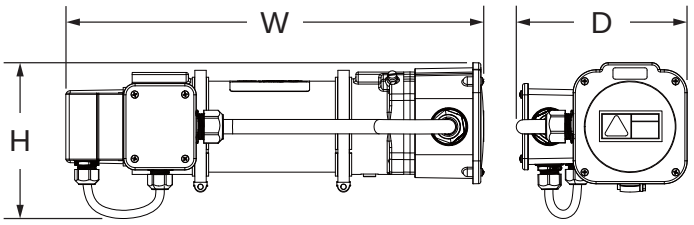
USER FRIENDLY

With the technician in mind, the CKM is constructed to provide easy access to all major components. A built in bleed screw allows installers to flush air from the heater before operation and an integrated high-limit thermostat can be manually reset without the need for expensive maintenance.

SIMPLE UPGRADE OPTION

Combined with its ability to be installed horizontally or vertically, the CKM's compact configuration makes it an easy drop-in replacement for traditional convection-based systems.

© 2020 Hotstart



Height (H)	Width (W)	Depth (D)	Weight
6.9"	18.4"	8.5"	13.2 lbs
175 mm	467 mm	216 mm	6.0 kg

System	
Phase	single-phase (1 Ø)
Voltage (60 Hz)	120V | 240V
Voltage (50 Hz)	230V
Terminal Box Ingress	IPX6
Motor Ingress (UL-recognized)	NEMA 2
Motor Ingress (CE-compliant)	IP44
Min./Max. Ambient Temp	-40°F / 104°F (-40°C / 40°C)
Vibration Specification	Meets IEC 60068-2-64
Shock Specification	Meets IEC 60068-2-27
Max Pressure	125 psi (860 kPa)
Certification	UL/C-US recognized models available (E250789) CE-compliant models available

Coolant				
Fluid Type	Water | Coolant mix (50% water/50% glycol)			
Heat Power	3 kW	4 kW	5 kW	6 kW
Temp. Control	Fixed, 100 – 120 °F (38–49°C)			
Temp. High Limit	205 °F (96°C)			
Pump Power	70 W (50 Hz) / 97 W (60 Hz)			
Flow	9 gpm @ 10 ft H_2O (34.1 L/min @ 3 m H_2O			
Inlet/Outlet	SAE J1926/1:1 5/16-12 (SAE #16 STOR)			

Ordering Information

CKM

Engine Displacement	Power Supply V	Hz	Heating System kW	Amps	Model Number
1000–1500 CID 15–23 L	120	60	3	25.0	CKM1030160-000
	230	50	3	13.0	*CKM1030250-000
	240	60	3	13.0	CKM1030260-000
1500–2000 CID 23–30 L	230	50	4	13.0	*CKM1040250-000
	240	60	4	16.7	CKM1040260-000
2000–2500 CID 30–38 L	230	50	5	21.7	*CKM1050250-000
	240	60	5	20.8	CKM1050260-000
2500–3000 CID 38–50 L	230	50	6	26.1	*CKM1060250-000
	240	60	6	25.0	CKM1060260-000

* – CE-compliant
(All other models – UL/C-US recognized)

Optional Inlet/Outlet Adapter Fittings (CKM Models only)			
From	To	Part Number	Part Description
SAE #16 STOR	0.75" hose barb	HB-16STORX3/4HB	#16 STOR to ¾" hose barb adapter. Installs in #16 STOR female inlet or outlet of heater.
SAE #16 STOR	1.0" hose barb	HB-16STORX1HB	#16 STOR to 1" hose barb adapter. Installs in #16 STOR female inlet or outlet of heater.

© 2020 Hotstart

Product data sheet

Specifications



POWERPACT R-FRAME, MOLDED CASE CIRCUIT BREAKER, 600V, 3000A, 3P, 50kA

RLF36300U31A

Main

Range	PowerPact
Product name	PowerPact R
Product or Component Type	Circuit breaker
Device application	Distribution

Complementary

Line Rated Current	3000 A
Number of Poles	3P
Control type	Operating handle
Breaking capacity code	L
Breaking capacity	AIR 125 kA 240 V AC 50/60 Hz UL 489 AIR 100 kA 480 V AC 50/60 Hz UL 489 AIR 50 kA 600 V AC 50/60 Hz UL 489 Icu 125 kA 240 V AC 50/60 Hz IEC 60947-2 Icu 85 kA 380/415 V AC 50/60 Hz IEC 60947-2
[Ue] rated operational voltage	600 V AC 50/60 Hz UL 489
Network Frequency	50/60 Hz
[Ics] rated service breaking capacity	65 kA 240 V AC 50/60 Hz IEC 60947-2 45 kA 380/415 V AC 50/60 Hz IEC 60947-2
[Uimp] rated impulse withstand voltage	8 kV IEC 60947-2
Trip unit technology	Electronic, standard, Micrologic 3.0, LI
[Ui] rated insulation voltage	750 V IEC 60947-2
Trip unit name	Micrologic 3.0
Suitability for isolation	Yes IEC 60947-2
Utilisation category	Category A
AWG gauge	Please see CB outline drawing for lug and termination details
Local signalling	Alarm 1 LED yellow)long-time pick up)
Mounting mode	Unit mount busbar)
Mounting Support	Busbar

Electrical connection	Busbar connection line Busbar connection load
Terminal identifier	Please see CB outline drawing for lug and termination details
Tightening torque	548.75 lbf.in (62 N.m) 0.08…0.62 in² (50…400 mm²) (AWG 1/0...750 kcmil) 548.75 lbf.in (62 N.m) 0.08…0.23 in² (50…150 mm²) (2 x AWG 1/0...2 x 300 kcmil)
Number of slots	2 auxiliary switch OF plug-in) 1 alarm switch SD plug-in) 1 voltage release MN or MX plug-in)
Power wire stripping length	1.38 in (35 mm)
Height	16.24 in (412.50 mm)
Width	16.54 in (420.12 mm)
Depth	14.49 in (368.05 mm)
Net Weight	52 lb(US) (23.59 kg)
Quantity per Set	1

Environment

Quality labels	CE
Standards	UL CSA NEMA NMX J-266 IEC 60947-2
Product certifications	UL CSA NOM
IP degree of protection	IP40
Pollution degree	3 IEC 60947-1
Ambient Air Temperature for Operation	-13…158 °F (-25…70 °C)
Ambient Air Temperature for Storage	-58…185 °F (-50…85 °C)
Operating altitude	< 6561.68 ft (2000 m) without derating 13123.36 ft (4000 m) with derating

Ordering and shipping details

Category	01245-RG,H,J,K,L,N UNIT MT BREAKERS
Discount Schedule	DE2
Package weight(Lbs)	75.00 lb(US) (34.019 kg)
Returnability	Yes
Country of origin	US

Offer Sustainability

Sustainable offer status	Green Premium product
California proposition 65	WARNING: This product can expose you to chemicals including: DINP, which is known to the State of California to cause cancer, and DIDP, which is known to the State of California to cause birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov
REACh Regulation	REACh Declaration
EU RoHS Directive	Compliant EU RoHS Declaration
Mercury free	Yes
RoHS exemption information	Yes
China RoHS Regulation	China RoHS declaration Product out of China RoHS scope. Substance declaration for your information.

Environmental Disclosure	Product Environmental Profile
Circularity Profile	End of Life Information
PVC free	Yes
Halogen content performance	Halogen free plastic parts product

Micrologic™ 3.0 Electronic Trip Unit

ENGLISH

Instruction Bulletin

48049-207-05
Rev. 01, 07/2012

Retain for future use.



Schneider Electric™

ENGLISH

Section 1—General Information

Introduction

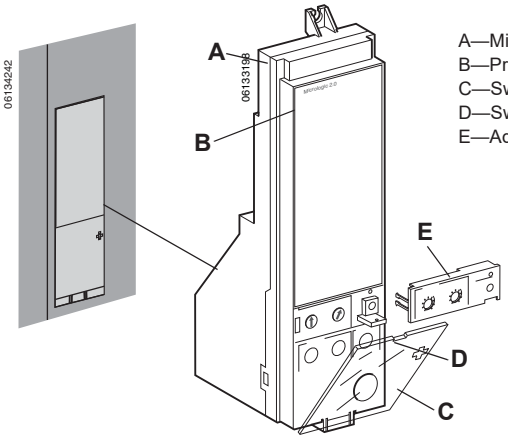
Micrologic™ trip units (A) provide adjustable tripping functions on electronic trip circuit breakers. The product name (B) specifies the level of protection provided by the trip unit.

Micrologic 3.0 Trip Unit

- Type of protection
  - 2—Basic IEC protection (LS0)
  - 3—Basic UL protection (LI)
  - 5—Selective protection (LSI)
- Trip unit series
  - 0—Indicates the first version

Micrologic trip units are field replaceable to allow for upgrading of the trip unit in the field. For complete information on available circuit breaker models, frame sizes, interrupting ratings, sensor plugs, rating plugs and trip units, see the product catalog.

Figure 1: Micrologic Trip Unit



A—Micrologic Trip Unit
B—Product Name
C—Switch Cover
D—Switch Cover Opening Slot
E—Adjustable Rating Plug

Trip Unit Settings

On the face of the trip unit are adjustable switches to allow changing of trip characteristics. Trip units are shipped with the long-time pickup switch set at 1.0 and all other trip unit adjustments set at their lowest settings.

© 1999–2012 Schneider Electric All Rights Reserved

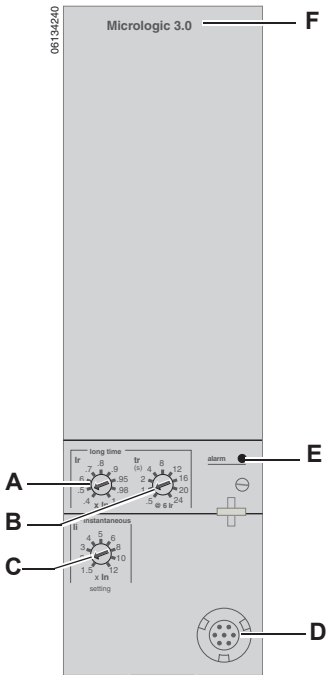
ENGLISH

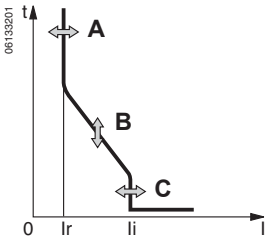
Micrologic 3.0 Trip Unit

The Micrologic 3.0 trip unit provides basic (LI) protection.

A. Long-time pickup (Ir) switch
B. Long-time delay (tr) switch
C. Instantaneous pickup (Ii) switch
D. Test plug receptacle
E. Overload indicator light
F. Trip unit name

Figure 3: Micrologic 3.0 Trip Unit





© 1999–2012 Schneider Electric All Rights Reserved

ENGLISH

Trip Unit Switches

Long-Time Protection

Long-time protection protects equipment against overloads.

- Long-time protection is standard on all trip units.
- The long-time pickup (Ir) (A) sets maximum current level (based on sensor plug rating In) which circuit breaker will carry continuously. If current exceeds this value, circuit breaker will trip after the preset time delay. The long-time pickup (Ir) is adjustable from 0.4–1.0 times the sensor plug rating (In).
- The long-time delay (tr) (B) sets the length of time that the circuit breaker will carry an overcurrent below the short-time or instantaneous pickup current level before tripping. See Table 1 for long-time delay settings.
- The overload indicator light (C) indicates that the Ir long-time pickup threshold has been exceeded.
- Both long-time pickup and long-time delay are on the field-replaceable adjustable rating plug. To change settings to more precisely match the application, various rating plugs are available. For instructions on replacing the rating plug, see Section 4—Adjustable Rating Plug Replacement.
- The In value can be changed by replacing the sensor plug below the trip unit. For further information, see the instructions packed with the sensor plug replacement kit.
- Long-time protection uses true RMS measurement.

Thermal imaging provides continuous temperature rise status of the wiring, both before and after the device trips. This allows the circuit breaker to respond to a series of overload conditions which could cause conductor overheating, but would go undetected if the long-time circuit was cleared every time the load dropped below the pickup setting or after every tripping event.

NOTE: If checking trip times, wait a minimum of 15 minutes after circuit breaker trips before resetting to allow the thermal imaging to reset completely to zero.

Figure 5: Long-Time Protection Switches

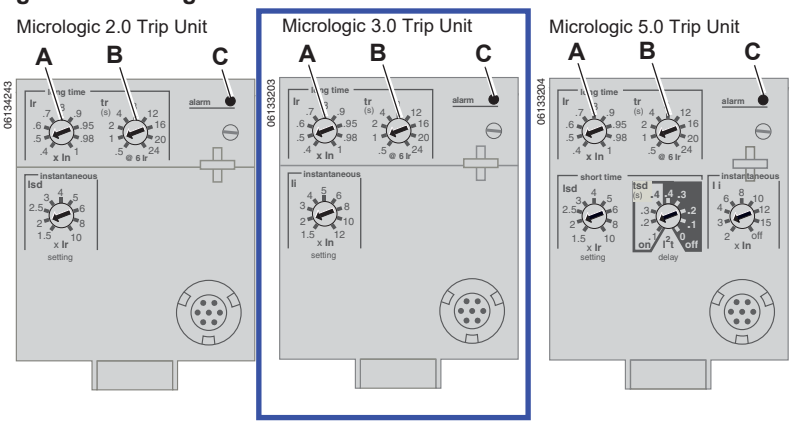


Table 1: Micrologic Trip Unit Long-Time Delay Values

Setting[1]	Long-Time Delay in Seconds[2]								
tr at 1.5 x Ir	12.5	25	50	100	200	300	400	500	600
tr at 6 x Ir	0.5	1	2	4	8	12	16	20	24
tr at 7.2 x Ir	0.34[3]	0.69	1.38	2.7	5.5	8.3	11	13.8	16.6

[1]In = sensor rating. Ir = In x long-time pickup. Trip threshold between 1.05 and 1.20 Ir.
[2]Time-delay accuracy +0/-20%
[3]For Micrologic 5.0 trip units, when tsd is set to 0.4 off or 0.4 on, then tr = 0.5 instead of 0.34.

© 1999–2012 Schneider Electric All Rights Reserved

ENGLISH

Instantaneous Protection

Instantaneous protection protects equipment against short circuits with no intentional time delay.

- Instantaneous protection (Ii) (A) is standard on 3.0 and 5.0 trip units.*
- Instantaneous protection for 2.0 trip units is based on the circuit breaker sensor rating (Ir).
- Instantaneous protection for 3.0 and 5.0 trip units is based on the long-time delay pickup (In).
- Circuit breaker open command is issued as soon as threshold current is exceeded.
- Instantaneous protection for 3.0 and 5.0 trip units use peak current measurement. Instantaneous protection for 2.0 trip units use RMS current measurement.
- When instantaneous protection switch is set to off, the instantaneous protection is disabled.

*Instantaneous protection on 2.0 trip units is achieved by using short-time protection (Isd) with short-time delay factory set to 0 (zero).

Figure 7: Instantaneous Protection Switches

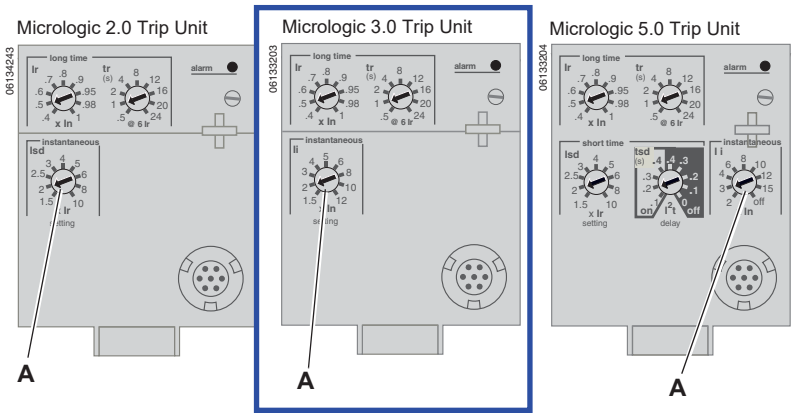


Table 3: Micrologic Instantaneous Values

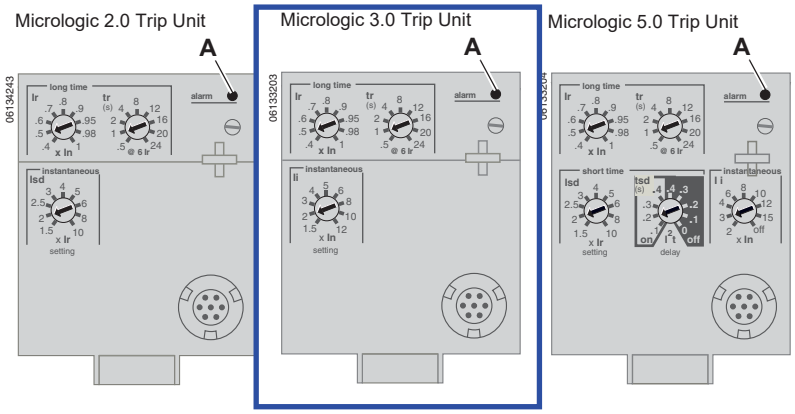
Setting	Interruption Current								
2.0 Isd (= Ir x..)	1.5	2	2.5	3	4	5	6	8	10
3.0 Ii (= In x..)	1.5	2	3	4	5	6	8	10	12
5.0 Ii (= In x..)	2	3	4	6	8	10	12	15	off

Ii = UL and ANSI instantaneous
Isd = IEC instantaneous (short-time with zero delay)
In = sensor rating
Ir = long-time pickup

Overload Indicator Light

The overload indicator light (A) lights when the Ir long-time pickup level has been exceeded.

Figure 8: Overload Indicator Lights



Trip Unit Testing

Trip unit functions can be tested using primary injection testing or secondary injection testing.

© 1999–2012 Schneider Electric All Rights Reserved

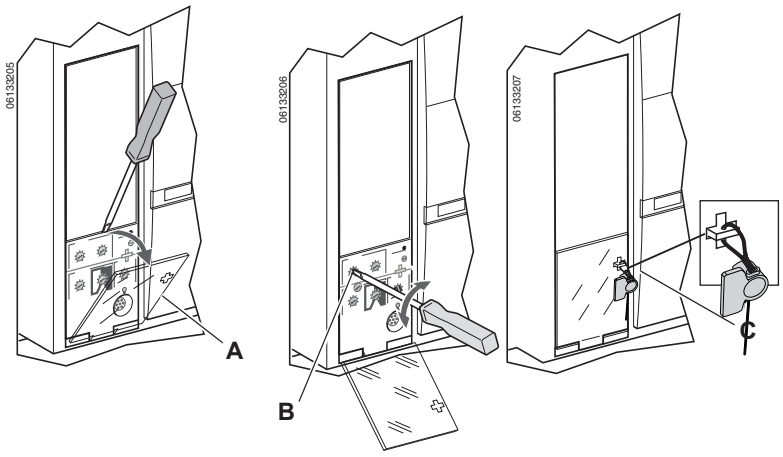
ENGLISH

Section 2—Operation

Switch Adjustment

1. Open switch cover (A).
2. Adjust the appropriate switches (B) to desired values.
3. Replace switch cover. Use wire seal MICROTUSEAL (C), if necessary, to provide tamper evidence.

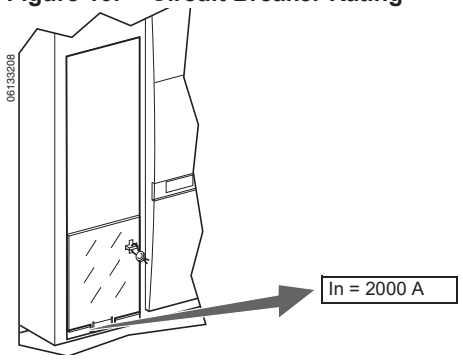
Figure 9: Adjust Switch Settings



Examples

Circuit breaker is rated 2000 A.

Figure 10: Circuit Breaker Rating



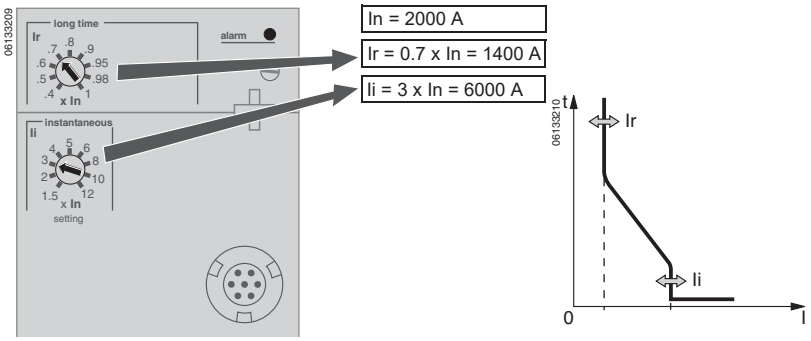
© 1999–2012 Schneider Electric All Rights Reserved

ENGLISH

Micrologic 3.0 Trip Unit

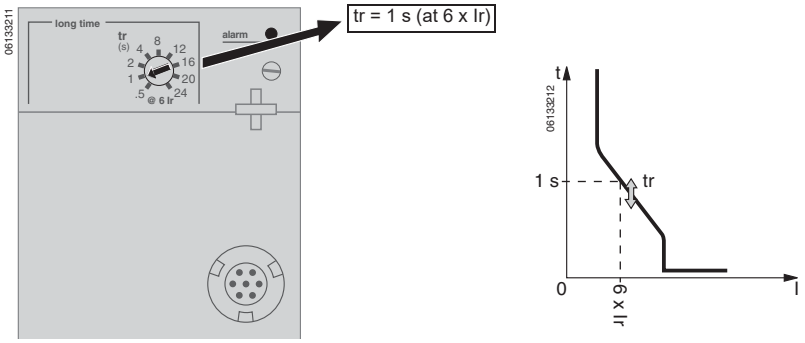
1. Set pickup levels.

Figure 13: Set Pickup Levels



2. Set time delay.

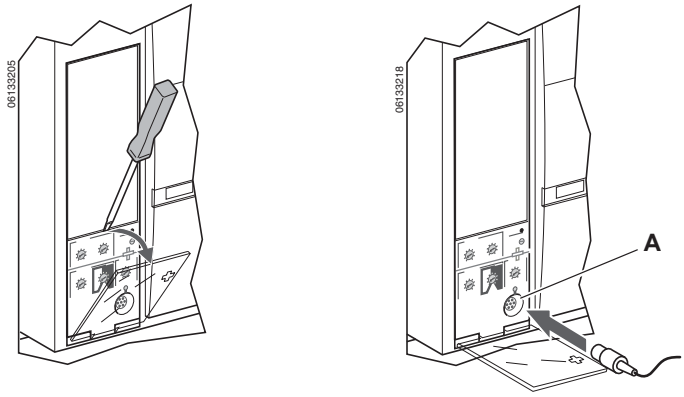
Figure 14: Set Time Delay



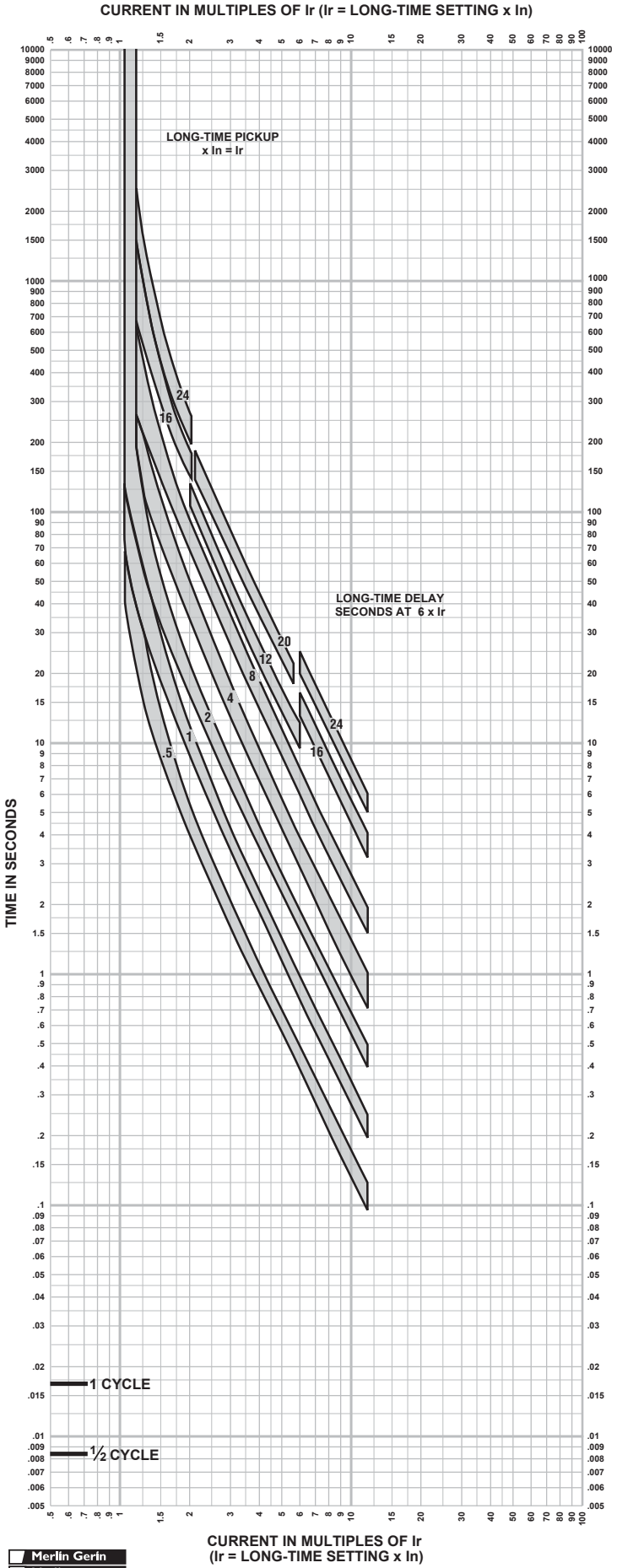
Trip Unit Operation Verification

Use a test kit connected to the trip unit test plug receptacle (A) to verify trip unit is functioning as desired. See instructions shipped with test kit to perform verification tests.

Figure 17: Verify Trip Unit Operation



© 1999–2012 Schneider Electric All Rights Reserved



MICROLOGIC® 3.0 A TRIP UNIT CHARACTERISTIC TRIP CURVE NO. 613-6

Long-time Pickup and Delay

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

Curves apply from -30°C to +60°C ambient temperature.

Notes:

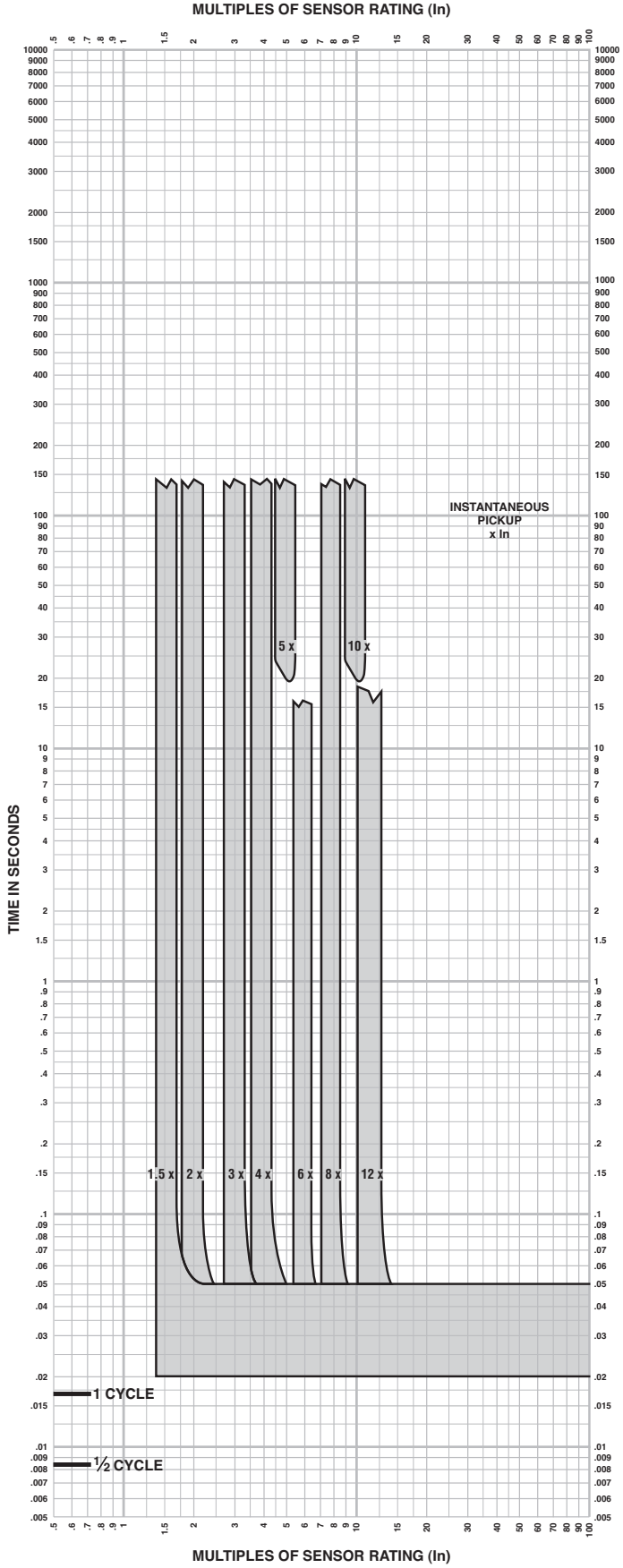
1. There is a thermal-imaging effect that can act to shorten the long-time delay. The thermal-imaging effect comes into play if a current above the long-time delay pickup value exists for a time and then is cleared by the tripping of a downstream device or the circuit breaker itself. A subsequent overload will cause the circuit breaker to trip in a shorter time than normal. The amount of time delay reduction is inverse to the amount of time that has elapsed since the previous overload. Approximately 20 minutes is required between overloads to completely reset thermal-imaging.
2. The end of the curve is determined by the instantaneous setting.
3. Total clearing times shown include the response times of the trip unit, the circuit breaker opening, and the extinction of the current.
4. See 613-8 for instantaneous pickup trip curve.

Merlin Gerin
Modicon
Square D
Telemecanique
Federal Pioneer
Federal Pacific
Schneider Electric Brands

Schneider Electric

© 2000 Schneider Electric all rights reserved

Curve No. 0613TC0006
December 2000
Drawing No. B48095-613-06



MICROLOGIC® 3.0 A TRIP UNIT CHARACTERISTIC TRIP CURVE NO. 613-8

Instantaneous Pickup
1.5x-12x

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

Curves apply from -30° to +60°C ambient temperature.

Instantaneous override values are given on 613-10.

Notes:

1. The end of the curve is determined by the interrupting rating of the circuit breaker.
2. Total clearing times shown include the response times of the trip unit, the circuit breaker opening, and the extinction of the current.
3. The instantaneous region of the trip curve shows maximum total clearing times. Actual clearing times in this region can vary depending on the circuit breaker mechanism design and other factors. The actual clearing time can be considerably faster than indicated. Contact your local Sales Office for additional information.
4. See 613-6 for long-time pickup and delay trip curves.

a brand of Schneider Electric

Merlin Gerin
Square D
Telemecanique

Schneider Electric

© 2008 Schneider Electric all rights reserved

Curve No. 0613TC0808
January 2008
Drawing No. 48095-0613-08
(Replaces 0613TC0008)

Specification Sheet

Ground Fault Indication Relay – H668



Code requirements

NFPA 70, the U.S. National Electrical Code (NEC) requires that services of 1000 amps and larger in capacity which operate at more than 150 volts from Line-to-Neutral must be provided with ground fault equipment. Generator sets rated at 1000 amps and larger which serve as emergency power must be provided with ground fault indication equipment. Health care facilities that utilize ground fault protection equipment must be provided with a coordinated multi-level ground fault system.

Cummins ground fault indication equipment is designed for use in Emergency/Standby power systems, for indication of ground fault conditions during generator set operation.

Features

Suitable for indicating a ground fault condition on a generator set which is either locally or remotely grounded.

Supply voltage - Operates on 24 VDC (nominal) control power - fully functional at voltages from 18-30 VDC.

Direct connection - Suitable for direct connection to generator sets operating at voltages up to 600 VAC (Line to Line).

Ground fault current settings - 100-1200 A, in 10 discrete settings: 100, 150, 200, 250, 300, 450, 600, 750, 800, 1200 A.

Monitoring - Provides continuous monitoring of neutral-to-ground with LED indication for open connection.

Factory mounted controls - Available factory mounted and interconnected to Cummins Detector™ series PowerCommand® controls.

Link reconnection - For use with either 3-pole (solid neutral) or 4-pole (switched neutral) transfer switches.

Indicating lamps - For relay on (green), ground fault current over setting (red), loss of ground connection (red).

Time delay settings – Adjustable 0-10 seconds.

Circuit board - One-piece molded case fully potted.

Contacts - One set of form C output, 8A at 250 VAC, 8A at 30 VDC.

“Test” - Push-button.

“Reset” - Push-button.

Percent full scale metering output - 0-1 mA full scale.

Bonding jumper - Sized per NEC requirements.

©2022 Cummins Inc. | AC-160 PDA059Y287 (06/22)

Construction

The relay is provided in a non-conducting phenolic case, with provisions for panel mounting or mounting to a standard DIN rail (panel mounting is recommended for mounting on a generator set). Relay components are fully potted with epoxy resin for vibration resistance and durability.

The relay includes an integral terminal block assembly, which accepts wires up to 12-gauge.

Relay function selection link (auto/hand reset).

Environmental range - Operating -10 °C to +60 °C, storage -20 °C to 70 °C.

DC supply burden - 2.5 W.

Transfer switch type selection link - (3-pole or 4-pole).

System operation

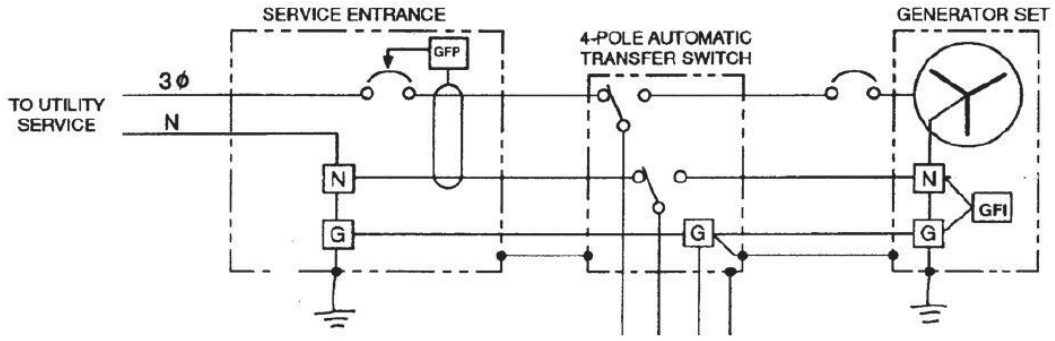
The ground fault relay continuously monitors the voltage across the neutral-to-ground bonding jumper and lights the ground fault alarm lamp on the generator set control when the connection is broken.

When the generator set is running, the relay continuously monitors the neutral-to-ground generator set connection and lights the ground fault alarm lamp on the generator set control when a ground fault condition is sensed.

Alarm condition can be cleared by pushing the reset switch on the generator set control panel. Actual ground fault current level can be monitored with a 0-1 mA meter, directly from the relay. A push button test switch is provided to simulate ground fault conditions and operate the relay and indication circuitry. Addition of the auto-reset link activates automatic reset of the relay after the ground fault condition has cleared.

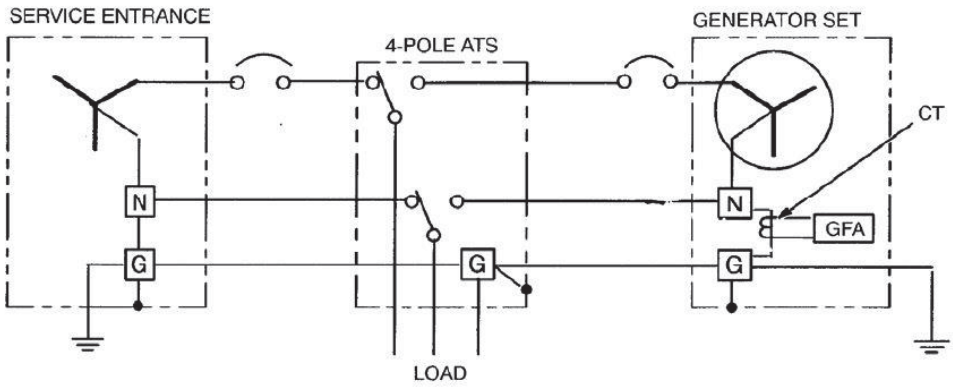
System schematic

Separately derived system connections (local grounding connection).



Neutral-to-ground bonding jumper must be sized per code requirements. For non-separately derived systems (3-phase/4-wire systems with 3-pole transfer switch), the ground connection and the neutral-to ground bonding jumper on the generator set are removed, and the 3-pole ATS link is added to the ground fault relay. For non-separately derived systems a label must be applied to the service entrance switchboard, indicating that removal of the equipment-bonding jumper can cause hazardous operating conditions.

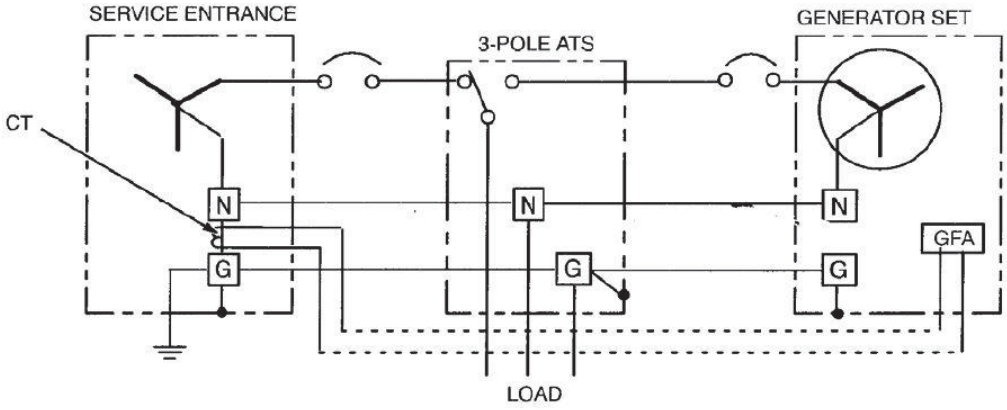
0179-3509 – TYPE A



THREE-PHASE, FOUR-WIRE UTILITY, 4-POLE ATS

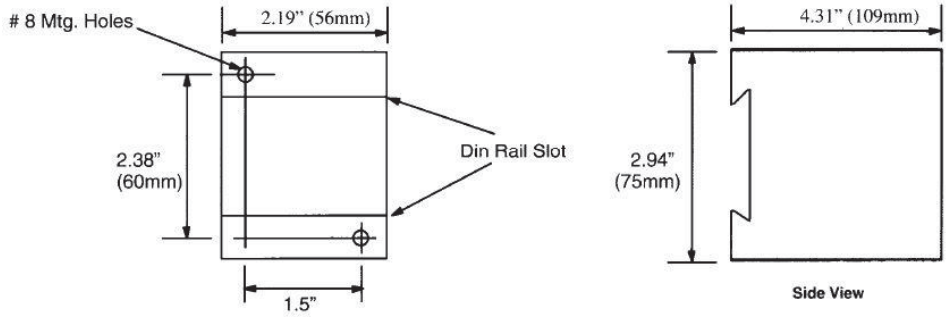
©2022 Cummins Inc. | AC-160 PDA059Y287 (06/22)

0179-3509 – TYPE B



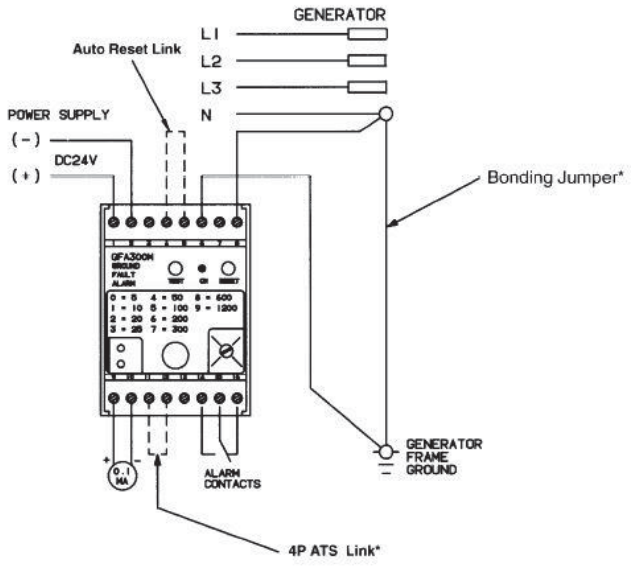
THREE-PHASE, FOUR-WIRE UTILITY, 3-POLE ATS

Outline detail



Weight: 19 oz (540 grams)

Interconnection detail



* Required only with separately derived systems. Bonding jumper is included in kit.

©2022 Cummins Inc. | AC-160 PDA059Y287 (06/22)

Field installation kits

Accessory kit #	Corresponding production part #	Critical component	Used with alt frame size 4 or 5	Used with alt frame size 6 or 7	Feature code	Miscellaneous	Instruction sheet
0179-3244-05	0179-3244-03	0307-3003-01	X		H550	For use with PCC2100	C645
0179-3244-06	0179-3244-07	0307-3003-01		X	H550	For use with PCC2100	C645
0179-3244-09	0179-3244-08	0307-3003-01	X			For use with PCC2100	C645
0179-3428-02	0179-3428-01	0307-3003-01	X		H550	For use with PCC3200, PCC3201	C706
0179-3509-03	0179-3509-01	0307-3003-01		X	H667/ H668	Ground Fault Kit – PCC2100/3100, 4 pole. Separately derived transfer switch (SDTS). Installation onto generator set equipped with or without set mounted circuit breaker box.	C656
0179-3509-04	0179-3509-02	0307-3003-01		X	H666	Ground Fault Kit – PCC3200, 3-pole NSDTS (H666) NON-separately derived transfer switch (NSDTS). Installation onto generator set equipped with or without set mounted circuit breaker box.	C656
0179-3509-07	0179-3509-05	0307-3003-01		X	H667/ H668	Ground Fault Kit – PCC3200, 4-pole. Separately derived transfer switch (SDTS). Installation onto generator set equipped with or without set mounted circuit breaker box.	C656
0179-3509-08	0179-3509-06	0307-3003-01		X	H666	Ground Fault Kit – PCC3200, 3-pole. NON-separately derived transfer switch (NSDTS). Installation onto generator set equipped with or without set mounted circuit breaker box.	C656
0300-4582-05	0300-4582-03	0307-3003-01	X		H550	For use with PCC3100	C646

Feature descriptions

H550-2 = The unit is equipped with an adjustable sensor to detect a ground fault condition on the main alternator output. A fault condition illuminates an indicating lamp on the genset control panel. Sensor features include: -0 to 1.0 second adjustable time delay. Ground fault pickup settings: 100, 150, 200, 250, 300, 450, 600, 750, 800, 1200 Amps – “Test” and “Reset” buttons and functional condition indicating lights. Suitable for operating voltages up to 600 VAC.

H666-2 = The generator set is equipped with a current transformer and a ground fault indication relay for use with or without a set mounted circuit breaker. The CT and the relay supplied with the LV Genset will work only when the system has the single Genset and the CT is placed on the N-G bond. For a separately derived system with multiple Gensets, the current in the N-G bonds of the each Genset must be summed and then wired to the protective relay. For a non-separately derived system the CT should be placed in the N-G bond. In most of the cases this bond will be the part of the switchgear where a service entrance utility breaker is installed. Limitation of this design would be number of CTs which could be placed on the N-G bond and the number of the auxiliary contacts available on the protective relay.

H667-2 = The generator set is equipped with a current transformer and ground fault indication relay for use with a 4-pole, separately derived transfer switch and set mounted circuit breaker. The CT is mounted in the circuit breaker box mounted on the left side of the genset as viewed from the generator end. The genset neutral and ground are bonded.

H668-2 = The generator set is equipped with a current transformer and ground fault indication relay for use with a 4-pole, separately derived transfer switch and set mounted circuit breaker. The CT is mounted in the circuit breaker box mounted on the right side of the genset as viewed from the generator end. The genset neutral and ground are bonded.

Certification

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

©2022 Cummins Inc. | AC-160 PDA059Y287 (06/22)

SENS®

Cummins **Battery Charger-10Amp, 120/208/240VAC, 12/24V, 50/60Hz**
PN A072H671

Micro Genius®2

Intelligent Battery Charger



Model	Power	12V Output	24V Output
MicroGenius 180	180 watts	10 amps	6 amps
MicroGenius 300	300 watts	12 amps	10 amps
MicroGenius 450	450 watts	15 amps	15 amps

Small. Powerful. Rugged.

Patented Dynamic Boost™ Charge - safely recharges batteries faster than competing products

HELIX™ technology - significantly increases battery life and cuts risk of sudden battery failure

Field selectable 12/24 volt output - simplifies inventory management & field service

Hardened switchmode powertrain - delivers first-class abuse resistance & state-of-the-art energy efficiency

Small, lightweight, water resistant package - allows installation in nearly any location

Standard J-1939 and Modbus communications - easily enable genset, workboat & building integration

SENS® STORED ENERGY SYSTEMS



MicroGenius 2 Intelligent Battery Charger

MicroGenius 2 Charger Combines Breakthrough Technologies With Robust Reliability

Designed for mission-critical applications, **MicroGenius 2** battery chargers pack advanced technology charging into a small, lightweight and rainproof package. **MicroGenius 2** is the only charger that delivers high performance charging while prolonging useful life of batteries and significantly reducing risk of sudden battery failure.

Designed and assembled in Colorado, SENS employs rigorous worst-case analysis design processes and extensive abuse testing to ensure reliable operation in adverse environments. State-of-the-art automation in assembly, test and burn-in processes provide unmatched levels of consistency and quality for years of trouble-free service.

Four unique technologies that together make **MicroGenius 2** the most advanced battery charger available include:

Patented Dynamic Boost™ Charge safely recharges batteries faster than competing products

HELIX™ technology significantly increases genset battery life and cuts risk of sudden battery failure

Class-leading energy efficiency that saves money and exceeds energy efficiency regulation requirements

Cool-running, water & corrosion-resistant design that is rainproof UL® listed, ABS type approved

MicroGenius 2 Chargers Deliver Significant Benefits to Mission-Critical Users

- Longer-lasting batteries cut risk of end user application downtime
- Lower chance of catastrophic battery failure cuts safety risks for personnel and facilities
- Energy efficiency savings can more than pay for the charger over its lifetime
- Engineered-in reliability reduces service cost and risk of charger failure



Emergency Generator Battery Charging



Reliable Switchgear Power



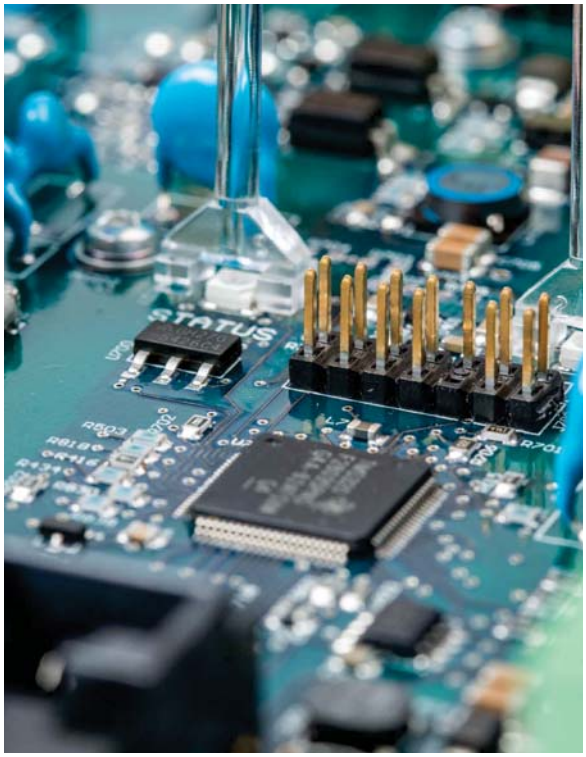
Stationary Battery Charging & DC Power



Marine Battery Charging & DC Power

SENS
STORED ENERGY SYSTEMS

What's Inside? Advanced Battery Charging Technologies

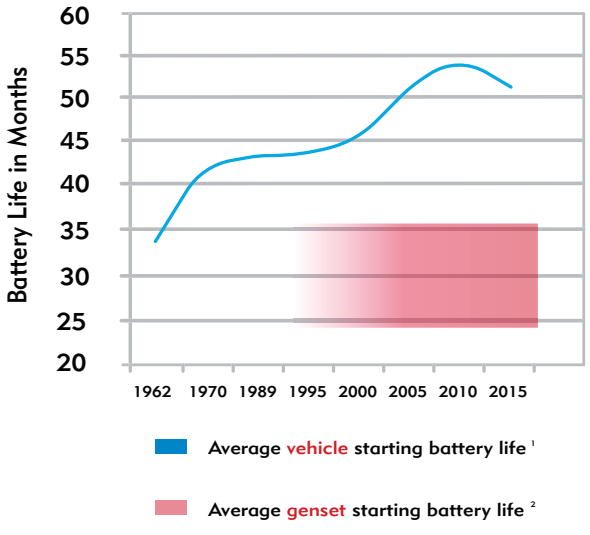


Dynamic Boost™ enables fast recharging while minimizing risk of overcharge.

It is well understood that boost charging at elevated voltage is the fastest way to charge batteries. When the battery nears full charge, however, voltage must be reduced to prevent overcharge. The right time to make this transition varies with depth of discharge, fixed DC loads, battery health, and the relationship of battery to charger size. Until SENS created Dynamic Boost, no charger was able to determine the correct time to spend at boost voltage.

Patented Dynamic Boost™ charging technology automatically determines, for each discharge cycle, the optimal time to shift from boost to float charging mode. Dynamic Boost enables **MicroGenius 2** to charge batteries faster and more completely than similarly rated conventional chargers, but with significantly lower risk of overcharge.

Average Starting Battery Life, in Months



1. BCI Technical Subcommittee Report on Battery Failure Modes, May 2015

2. LIfe range from 24 to 36 months, based on typical PM service replacement

HELIX™ charging technology saves batteries and energy.

Lead-acid starting batteries used in gensets are replaced nearly twice as often (every 2-3 years) as identical batteries used for vehicle starting (~ every 4-5 years). And in genset applications these batteries too often fail catastrophically, instead of gradually as they do in vehicle applications.

By enabling genset batteries to last as long as vehicle batteries, revolutionary HELIX (High Efficiency, LIfe-eXtending) technology from SENS reduces risk of early battery failure. HELIX also cuts risk of catastrophic battery failure at end of life. These improvements deliver significantly better genset starting reliability and user safety.

SENS
STORED ENERGY SYSTEMS

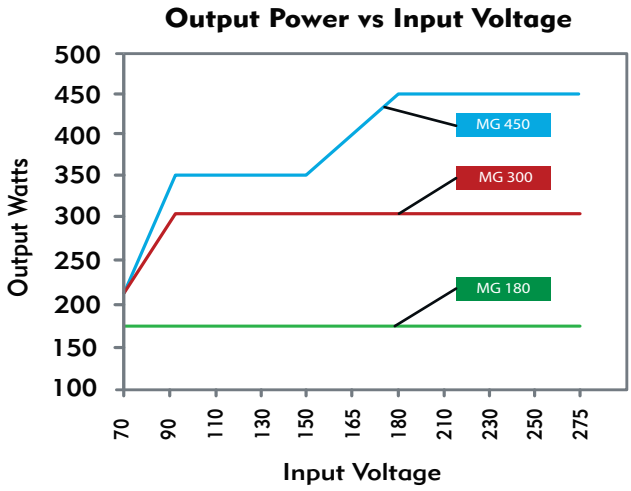
What's inside? Class-leading Energy Efficiency & Advanced Thermal Management

Class-leading energy efficiency & sustainability

Running 24/7, other battery chargers waste a lot of energy. Energy efficiency standards from the California Energy Commission mandate high efficiency operation of all single-phase input chargers as of January 1, 2017.
Achieving outstanding power conversion efficiency of up to 93%, **MicroGenius 2** consumes less than 3 watts in Eco-float. The most efficient charger in its class, MicroGenius with HELIX technology surpasses all known efficiency standards.



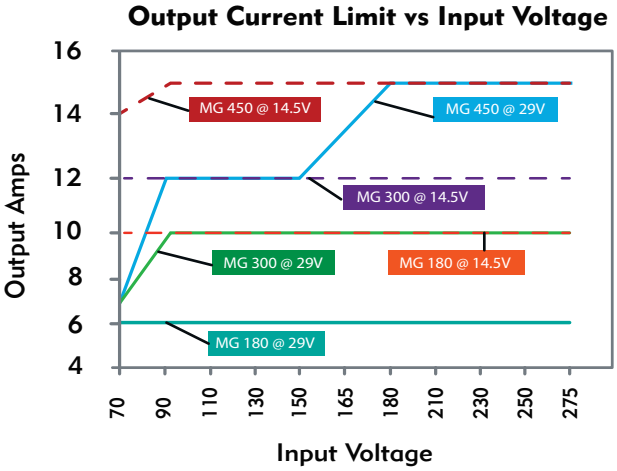
Large heat sink ensures cool running



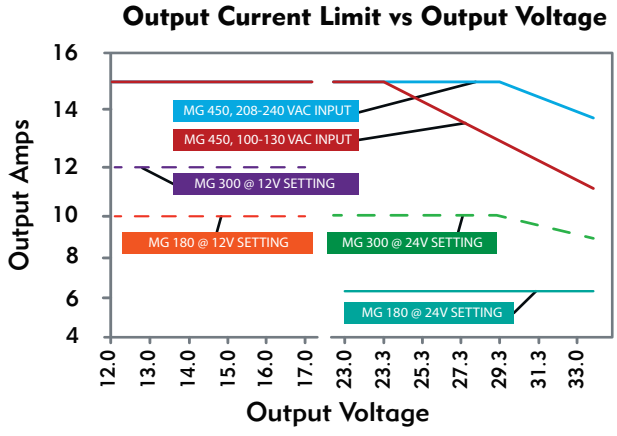
Cool running, water and corrosion-resistant package

Other chargers in hot, damp genset and marine environments rely on failure-prone fans or generous open venting that allows water onto charger components.

The **MicroGenius 2** heat sink delivers such effective convection cooling that only small side vents are required for operation in the hottest environments. Conformal coating on all electronics provides additional corrosion protection. **MicroGenius 2** is rated "rainproof" by UL, and conforms to ABS and Coast Guard marine requirements without the need for a drip shield.







SENS
STORED ENERGY SYSTEMS

MicroGenius2 Specifications

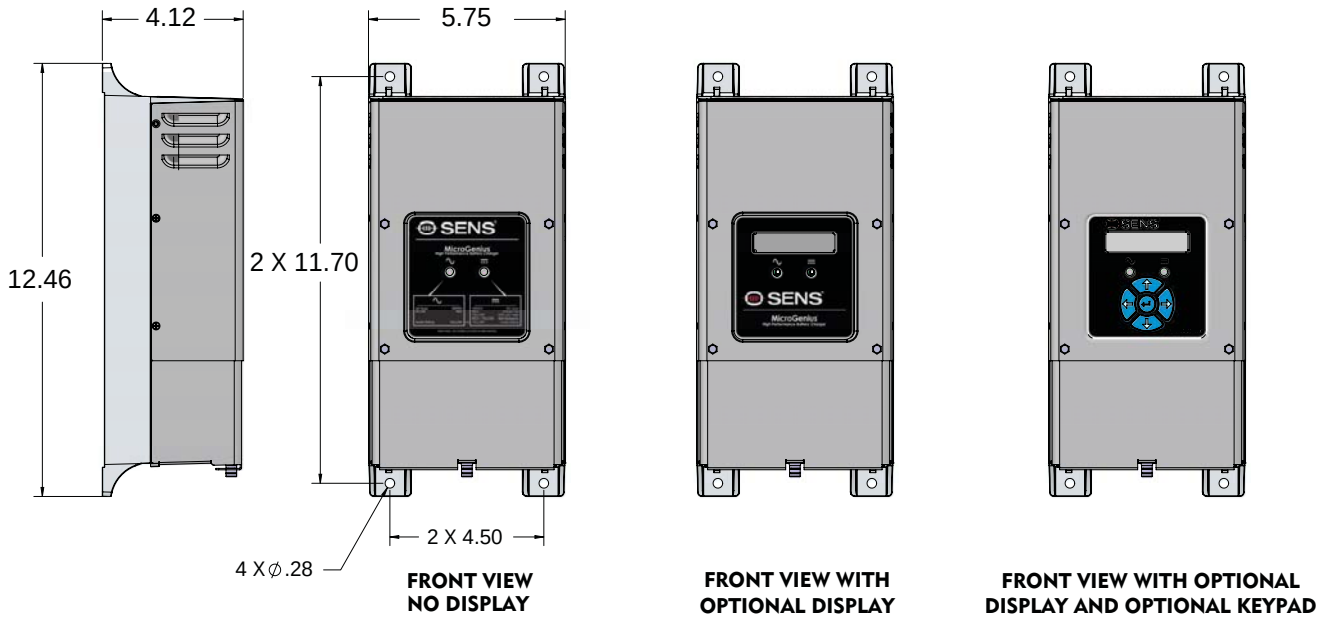
AC Input	VAC, Hz	90-265 [1] VAC, 47-63 Hz
	Protection	Supplementary overcurrent protection fuse, transient protected to EN61000-4-5 level 4
	Efficiency	Up to 93%; meets CA Energy Commission Title 20 Appliance Efficiency Regulations; standby AC draw < 3W
	Power factor	>.95 typical
DC output	Voltage	12/24 V nominal, field selectable, adjustable from 0-34V using computer to charger cable [2]
	MicroGenius 180	Selectable 12/24 volt nom., 10/6 amps. 180W max.
	MicroGenius 300	Selectable 12/24 volt nom., 12/10 amps. 300W max.
	MicroGenius 450	Selectable 12/24 volt nom., 15/15* amps, 450W max. (*24V, 12A max below 170 VAC input voltage)
	Charging modes	Float voltage, boost voltage. Two additional HELIX charging voltages in flooded lead-acid battery program
	DC power supply operation	Delivers fast-responding, stable, well-filtered DC without battery
	Current limit	100% current capability subject to temperature limits shown on charts (previous page). Field adjustable
	Charging characteristic	Constant voltage, current limited; patented Dynamic Boost control
	Line & load regulation	±0.5%
	Output ripple	< 100 mV wideband
	Battery temp. compensation	Standard. Optional remote battery temperature probe [3]
	Output protection	Current limit, supplementary overcurrent protection fuse, transient protected
	Overvoltage protection	Self-resetting and selective (shutdown only operates if charger causes the overvoltage condition)
	Dead battery charge	Starts into, and recharges zero volt battery without user intervention
	Parallel operation	Two or more chargers operate with all modes synchronized for increased current or fault tolerance [4]
Adjustment & Controls	Charge mode control	Fully automatic patented Dynamic Boost system
	Internal adjustments	12 or 24-volt; Battery type program; fine voltage setting
	Battery type programs	Flooded lead-acid, AGM or Ni-Cd for engine starting; VRLA for reserve power; ultracapacitor
	Factory adjustment	All charger adjustments factory set to customer specifications. Field reconfigurable
	Field voltage adjustment	3 manually selectable voltage settings. Infinite adjustment using computer to charger cable [2]
	Computer adjustment	Change or customize settings from computer using computer to charger cable [2]
	Keypad adjustment	Enable or change all settings from front panel [5]
Status Display	LEDs	Two multi-color front panel status LEDs
	Digital metering	Voltmeter accurate to ±2%; ammeter to ±5% [6]
	Status messages	20-character display of status & alarm messages
Alarms	Alarms	Factory set and field reconfigurable. Standard genset configuration includes summary; AC fail; charger fail; high DC volts, low DC volts, low cranking volts. Other alarm conditions [7] are available to replace, or be summed with the standard values. Contact SENS to request different factory alarm profile.
	Alarm: Output via network	All alarms available via either J-1939 or Modbus ports
	Alarms: Form C contacts	Two Form C contacts, each rated 30V, 2A resistive, assignable [8]
	Alarm: Output via network	Five Form C contacts, each rated 30V, 2A resistive, assignable [9]
Networking	J-1939 communications	CAN 2.0 extended ID on RJ-45 port
	Modbus communications	Modbus RS-485 on RJ-45 port
	SENSbus	Proprietary bus for connection of paralleled chargers and future SENS accessories
Environmental	Operating temp: 180	-40C to +70C; meets full specification from -40C to +60C, natural convection cooled [10]
	Operating temp: 300	-40C to +70C; meets full specification from -40C to +50C, natural convection cooled
	Operating temp: 450	-40C to +70C; meets full specification from -40C to +40C, natural convection cooled
	Storage temperature	-40C to +85C
	Humidity	5% to 95%, non-condensing
	Water ingress	IP 22; NEMA 3R
	Vibration	Swept Sine (EN60068-2-6): 4G, 18-500 Hz, 3 primary axes. Random: 20-500Hz, .01G^2/Hz
	Shock	EN 60068-2-27 (15G)
	Electrical transient	ANSI/IEEE C62.41 & EN 61000-4-12 on power terminals
Abuse Protection	Reverse polarity	Charger self-protects without fuse clearing. Indication via LED & optional LCD
	Wrong voltage battery	Charger-battery voltage mismatch shuts down charger. Indication via LED & optional LCD
	Overtemp protection	Gradual output power reduction if heatsink temperature becomes excessive
Regulatory Compliance	North America	C-UL Listed for US & Canada: UL 1236 categories BBGQ, BBHH, BBJY and QWIR [11]; CSA 22.2, No. 107.2
		Certified to UL 1236 supplements SB (marine), SC (fire pump) and SE (emergency generator)
		NFPA-70, NFPA-110 [12]
		FCC Part 15, Class B
		Seismic: Rigid & non-structure wall mount; max S_{DS} of 2.5G. IBC 2000-2012, Calif. BC 2007-2010
		American Bureau of Shipping, type approved
	European Union (CE)	EMC: 2014/30/EU (EN 61000-6-2 & EN 61000-6-4)
		LVD: 2014/35/EU (EN 60335-1 & EN 60335-2-29)
		RoHS 2: 2011/65/EU (EN 50581)
Construction	Housing/configuration	Die-cast aluminum heatsink base with stainless steel covers & fasteners
	Dimensions & Weight	See drawings, dimensions & weight section on last page
	Weight	6.0 lbs; 2.7 Kg
	Connections	AC & DC terminal blocks: 14 to 10 AWG. J-1939 and Modbus-485: RJ-45. Form C alarms: 28 to 16 AWG

1 Output power derates below 100 VAC input; full 15A output of 450W available only above 170 VAC input 2 Requires optional computer to charger adapter SENS p/n 209254 plus free SENS software available at www.sens-usa.com 3 Remote battery temp sensor is optional. Order SENS p/n 209481 4 Requires standard RJ-45 network cable to connect paralleling bus. Order SENS p/n 208118-72 (72-inch length) or 208118-180 (180-inch length) 5 Requires that digit 12 of the model number be F 6 Requires that digit 12 of the model number be D, E, or F 7 Overvoltage shutdown, reverse polarity battery, incompatible battery, invalid settings, I/O bus inactive, thermal fold back, no temperature probe, current limiting, ground fault, low current 8 Models with E or G as digit 12 of the model number include 2 ea. Form C alarm contacts 9 Models with D or F as digit 12 of the model number include 5 ea. Form C alarm contacts 10 At 65 deg. C and above the LCD display may be unreadable and display life will be reduced 11 Except 180W unit in 24V configuration, which is not listed to QWIR 12 All chargers equipped with an alarm / display board meet NFPA-110 requirements. For chargers without an alarm / display board to meet NFPA-110, charger performance and alarm data available on the J-1939 port must be annunciated by the genset control panel.

MicroGenius2

All unit dimensions are identical.
All units weigh 6.0 lbs. (2.8 KG).
All dimensions are in inches.

Dimensions & Weight



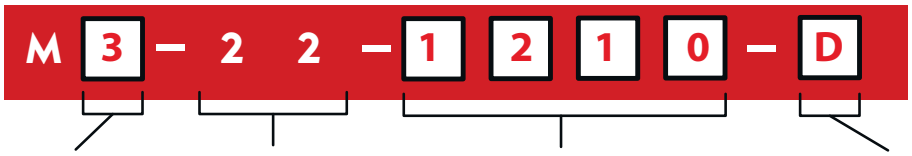
FRONT VIEW NO DISPLAY

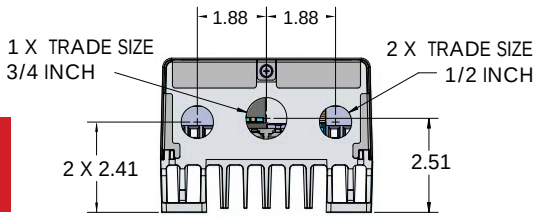
FRONT VIEW WITH OPTIONAL DISPLAY

FRONT VIEW WITH OPTIONAL DISPLAY AND OPTIONAL KEYPAD

How To Order

Use the Model Number Breakout below to configure your charger:





Power
1= 180w
3= 300w
4= 450w

Output Voltage
22 = 12/24V

Output Current
1006 = 10A @ 12V; 6A @ 24V (180 only)
1210 = 12A @ 12V; 10A @ 24V (300 only)
1515 = 15A @ 12V; 15A @ 24V (450 only)

Alarm & Communication Options
A = base model; includes J-1939 & Modbus communications
D = base model + LCD display + 5 ea. Form C alarm relays
E = base model + LCD display + 2 ea. Form C alarm relays
F = base model + LCD display + 5 ea. Form C alarm relays + keypad control

Example: M3-22-1210-F

The most rugged, advanced technology industrial charger available

Contact SENS or your local sales representative for additional specification and installation information, or visit our website for latest available data.
Specification subject to change without notice.

SENS, Stored Energy Systems, the battery/rectifier logo, Dynamic Boost, HELIX, and MicroGenius are trademarks of Stored Energy Systems LLC.
Patented US 9,270,140; 9,385,556; 9,413,186; 9,509,164. Other patents pending.

Contact Information

Sales 1.866.736.7872 • 303.678.7500 • Fax 303.678.7504 • www.sens-usa.com • info@sens-usa.com
Stored Energy Systems, LLC 1840 Industrial Circle, Longmont, CO 80501 USA
111066 B

Specification Sheet

Battery and Accessories



Battery Specifications

Battery Part Number	Group Size	CCA	Reserve Capacity	Battery	Voltage	Length	Width	Height	Ship Weight lbs.	Quarts Electrolyte
0416-1330	24XL	810	146	Wet	12	10.3	9.0	6.6	43	5.9
0416-1051	26	530	80	Wet	12	8.2	6.8	8.1	31	3.7
0416-0796	31	725	150	Wet	12	12.7	6.0	9.3	62	4.2
0416-0980	31	1000	185	Wet	12	13.0	6.8	9.5	59	4.2
A045P632	34	850	NA	Wet	12	10.3	6.6	8.0	NA	NA
0416-1291	34	800	100	Sealed	12	10.0	6.9	7.9	38	4.0
A030Y976	4D	1050	290	Wet	12	20.7	8.7	10.0	100	NA
0416-0439	8D	1400	430	Dry	12	20.8	10.7	9.5	110	16.0
0416-1105	8D	1400	430	Wet	12	20.8	10.8	9.5	125	16.0
A062X621	24	800	135	Wet	12	10.1	6.8	8.7	42	N/A
A062X622	34	800	120	Wet	12	10.2	6.9	7.9	38	N/A

Note: Proposed battery selection subject to change.

©2022 Cummins Inc. AC-150 PDAC-150 (05/23)

SECTION 4

Generator Drawings

NOTES:

1. ALL DIMENSIONS ARE REFERENCE, UNLESS SPECIFICALLY TOLERANCED.

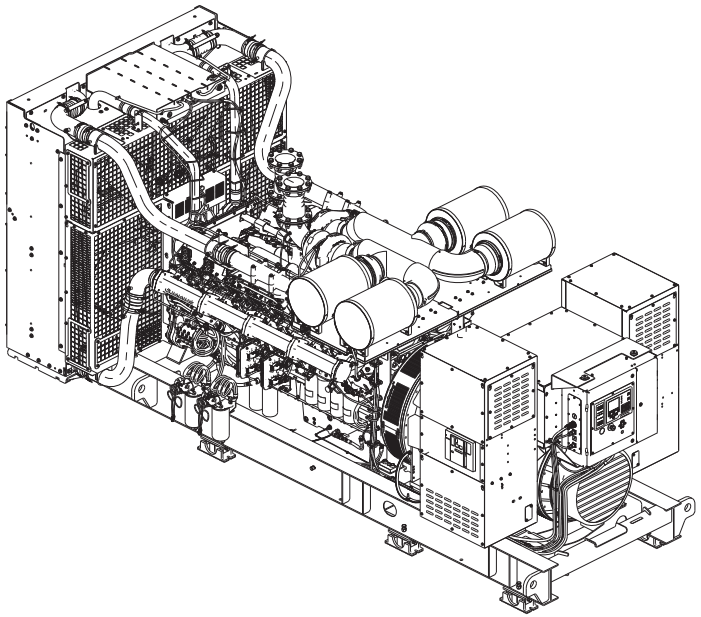
TABLE OF CONTENTS	
SHEET NUMBER	CONTENT
SHEET 1	TABLE OF CONTENTS
SHEET 2	OVERVIEW - GENERAL
SHEET 3	OVERALL DIMS - S7 WITH FRONT/REAR CONTROL
SHEET 4	OVERALL DIMS - S9 WITH LHS CONTROL
SHEET 5	FUEL SUPPLY AND DRAIN, LIFTING, LUBRICATION SYSTEM AND NON-SEISMIC ISOLATOR DETAILS
SHEET 6	LIFTING ARRANGEMENT-WITH S9 ALTERNATOR
SHEET 7	LIFTING ARRANGEMENT-WITH S7 ALTERNATOR
SHEET 8	GENSET OVERALL DIMENSIONS, WEIGHT AND COFG DATA FOR ALL CONFIGURATIONS
SHEET 9	DRAG DETAILS AND CONTROL PANEL DETAILS
SHEET 10	EXHAUST SYSTEM DETAILS- MUFFLER & BELLOWS
SHEET 11	OVERALL DIMS - S7 WITH LHS CONTROL

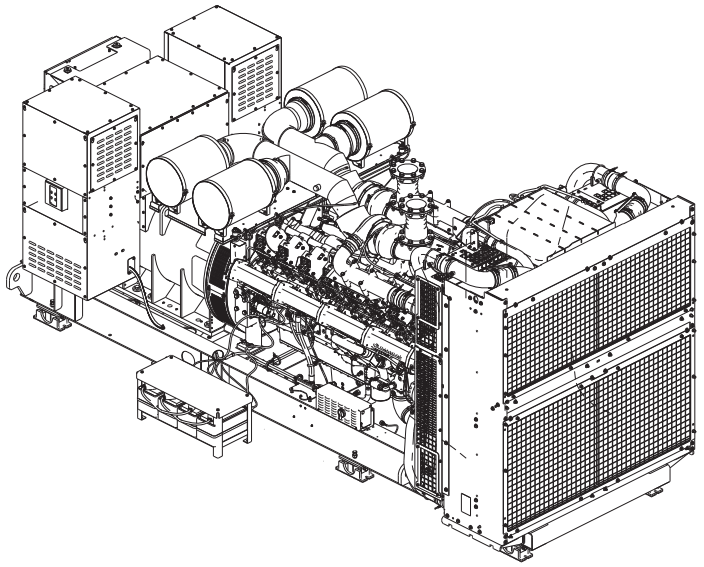
LAST DATUM LETTER USED: -	LAST REFERENCE LETTER USED: G
MODEL/PLATFORM: QSK50	THIS PART IS SIMILAR TO: -
PART NUMBER: A060C089	PART REVISION: F
PART NAME: OUTLINE,GENSET	
DRAWING CATEGORY: DETAIL	
STATE: RELEASED	SHEET: 1 OF 12
CUMMINS DATA CLASSIFICATION: CUMMINS CONFIDENTIAL	

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.

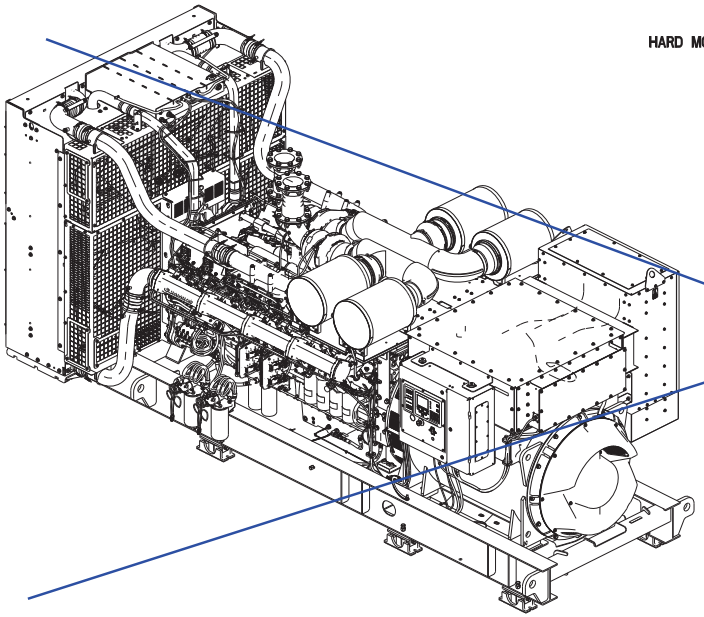
Cummins Inc.

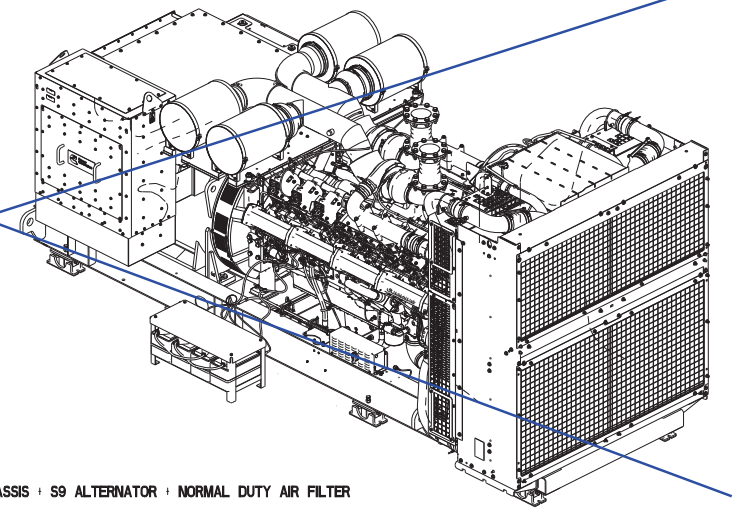
DIMENSIONS ARE IN: MILLIMETERS [ ] ARE IN: INCHES	SIZE: A0 SCALE:0.063
DIMENSIONING AND TOLERANCING PER: ASME Y14.5-2009	THIRD ANGLE PROJECTION
	CAD SYSTEM PTC® Creo® Parametric





HARD MOUNTED CHASSIS + S7 ALTERNATOR + NORMAL DUTY AIR FILTER





HARD MOUNTED CHASSIS + S9 ALTERNATOR + NORMAL DUTY AIR FILTER

GENSET MODEL CONFIGURATION TABLE

GENSET MODEL	ENGINE	INSTALLATION FAN (COOLING SYSTEM)	ALTERNATOR	AIR CLEANER	CB
C1750D6E & C2000D6E	OSK50-G24	A073W661 INSTALLATION, FAN (STD FAN)	S7-C	NORMAL DUTY HEAVY DUTY	2 CB 1 CB ENTRANCE BOX ONLY (NO CB)
	OSK50-G25	A073W321 INSTALLATION, FAN (HIGH SPEED FAN)		NORMAL DUTY HEAVY DUTY	
	OSK50-G24	A073W661 INSTALLATION, FAN (STD FAN)	S7-D	NORMAL DUTY HEAVY DUTY	2 CB 1 CB ENTRANCE BOX ONLY (NO CB)
	OSK50-G25	A073W321 INSTALLATION, FAN (HIGH SPEED FAN)		NORMAL DUTY HEAVY DUTY	
	OSK50-G24	A073W661 INSTALLATION, FAN (STD FAN)	S7-E	NORMAL DUTY HEAVY DUTY	2 CB 1 CB ENTRANCE BOX ONLY (NO CB)
	OSK50-G25	A073W321 INSTALLATION, FAN (HIGH SPEED FAN)		NORMAL DUTY HEAVY DUTY	
	OSK50-G24	A073W661 INSTALLATION, FAN (STD FAN)	S7-F	NORMAL DUTY HEAVY DUTY	2 CB 1 CB ENTRANCE BOX ONLY (NO CB)
	OSK50-G25	A073W321 INSTALLATION, FAN (HIGH SPEED FAN)		NORMAL DUTY HEAVY DUTY	
	OSK50-G24	A073W661 INSTALLATION, FAN (STD FAN)	S7-G	NORMAL DUTY HEAVY DUTY	2 CB 1 CB ENTRANCE BOX ONLY (NO CB)
	OSK50-G25	A073W321 INSTALLATION, FAN (HIGH SPEED FAN)		NORMAL DUTY HEAVY DUTY	
	OSK50-G24	A073W661 INSTALLATION, FAN (STD FAN)	S7-H	NORMAL DUTY HEAVY DUTY	2 CB 1 CB ENTRANCE BOX ONLY (NO CB)
	OSK50-G25	A073W321 INSTALLATION, FAN (HIGH SPEED FAN)		NORMAL DUTY HEAVY DUTY	
	OSK50-G24	A073W661 INSTALLATION, FAN (STD FAN)	S7-J	NORMAL DUTY HEAVY DUTY	2 CB 1 CB ENTRANCE BOX ONLY (NO CB)
	OSK50-G25	A073W321 INSTALLATION, FAN (HIGH SPEED FAN)		NORMAL DUTY HEAVY DUTY	
	OSK50-G24	A073W661 INSTALLATION, FAN (STD FAN)	S9-B	NORMAL DUTY HEAVY DUTY	ENTRANCE BOX ONLY (NO CB)
	OSK50-G25	A073W321 INSTALLATION, FAN (HIGH SPEED FAN)		NORMAL DUTY HEAVY DUTY	
	OSK50-G24	A073W661 INSTALLATION, FAN (STD FAN)	S9-C	NORMAL DUTY HEAVY DUTY	ENTRANCE BOX ONLY (NO CB)
	OSK50-G25	A073W321 INSTALLATION, FAN (HIGH SPEED FAN)		NORMAL DUTY HEAVY DUTY	
	OSK50-G24	A073W661 INSTALLATION, FAN (STD FAN)	S9-D	NORMAL DUTY HEAVY DUTY	ENTRANCE BOX ONLY (NO CB)
	OSK50-G25	A073W321 INSTALLATION, FAN (HIGH SPEED FAN)		NORMAL DUTY HEAVY DUTY	

OTHER AVAILABLE OPTIONS	
1	COOLANT HEATER
2	OIL DRAIN VALVE
3	OIL HEATER
4	ALTERNATOR HEATER
6	BATTERY HEATER
7	OIL MAKE UP
8	OIL SAMPLING VALVE
9	FUEL IN AND DRAIN HOSES
10	EXHAUST BELLOWS
11	MUFFLER
12	REDUNDANT STARTER/BATTERY SYSTEM
13	AIR RESTRICTION INDICATORS
14	SEISMIC-ANTI-VIBRATION ISOLATORS
15	BATTERY CHARGER

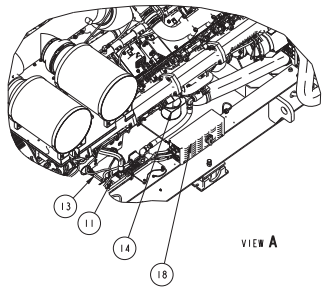
PART NUMBER: A060C089 | PART REVISION: F
PART NAME: OUTLINE,GENSET
DRAWING CATEGORY: DETAIL
STATE: RELEASED | SHEET: 2 OF 12
CUMMINS DAT A CLASSIFICATION: CUMMINS CONFIDENTIAL

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.

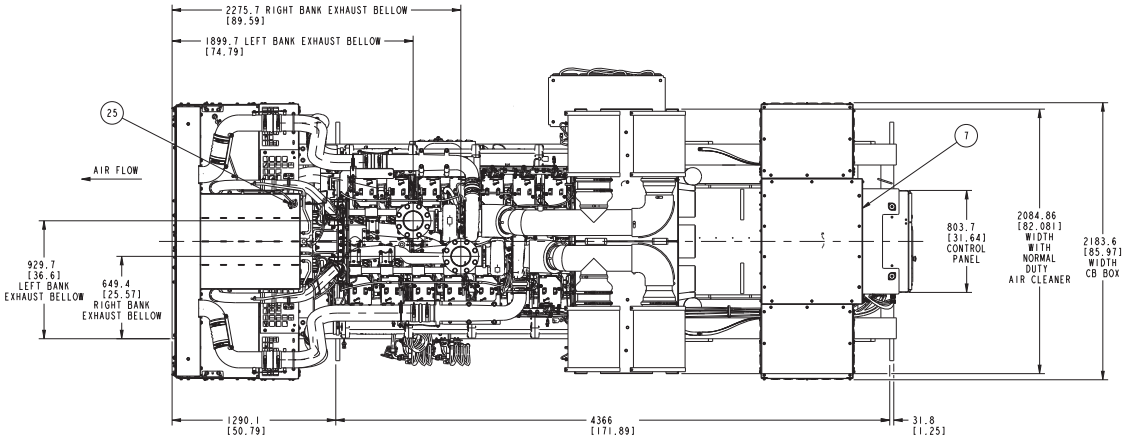
Cummins Inc.

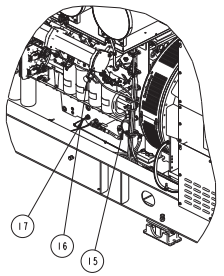
DIMENSIONS ARE IN: MILLIMETERS [ ] ARE IN: INCHES
SIZE: A0 SCALE: 0.071
DIMENSIONING AND TOLERANCING PER: ASME Y14.5-2009
THIRD ANGLE PROJECTION
CAD SYSTEM: PTC® Creo® Parametric

OVERALL DIMENSIONS- S7 ALTERNATOR WITH FRONT/REAR CONTROL MOUNT

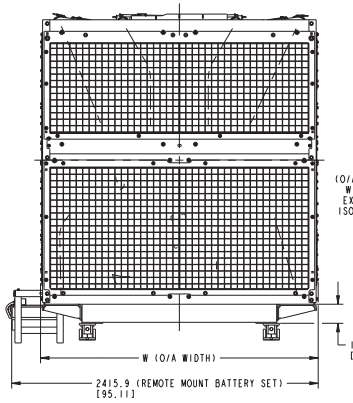


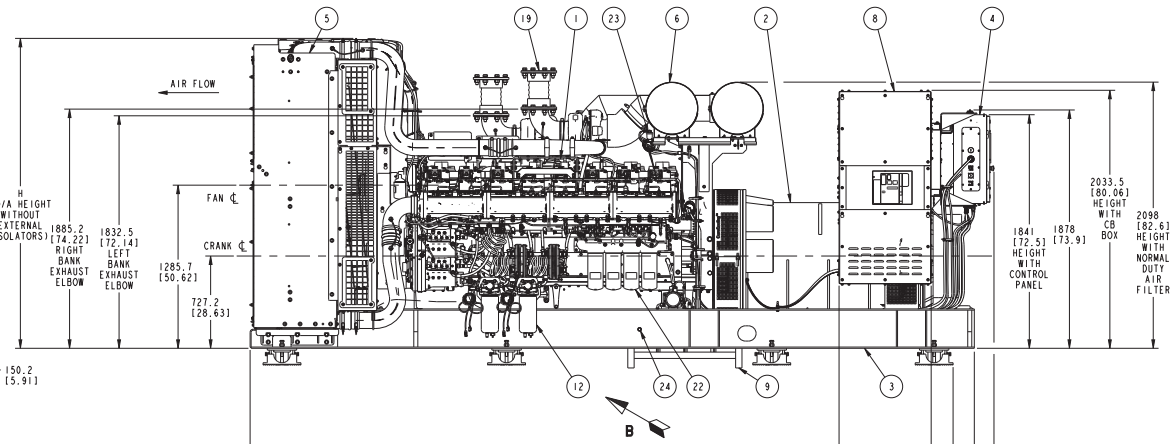
VIEW A

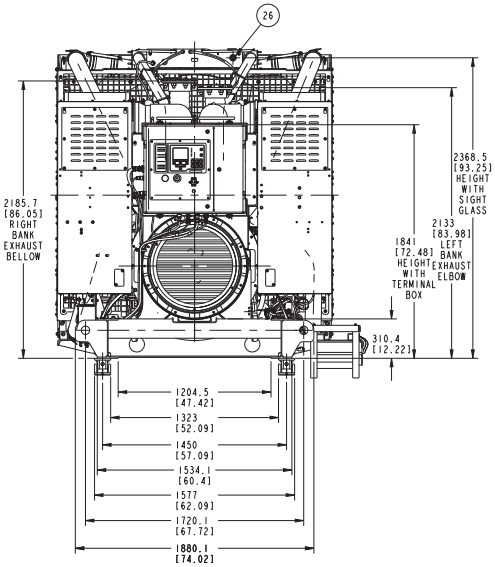


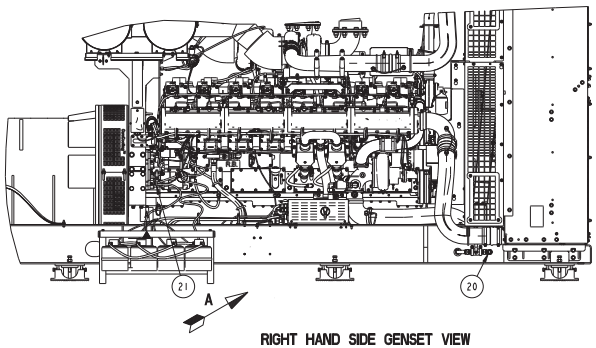


VIEW B









RIGHT HAND SIDE GENSET VIEW

ALTERNATOR	J	K	L (UP TO CONTROL PANEL)
S7 C CORE	4356	4356	5578
S7 D CORE	4476	4476	5698
S7 E CORE	4476	4476	5698
S7 F CORE	4476	4476	5698
S7 G CORE	4556	4556	5778
S7 H CORE	4677	4677	5898
S7 J CORE	4642	4642	5863

QTY	FIND NO.	DESCRIPTION
1	27	CRANK CASE VENTILATION
1	26	COOLANT LEVEL GAUGE
1	25	RADIATOR FILL POINT
1	24	LUBE OIL FILL POINT
1	23	AIR RESTRICTION INDICATOR
4	22	LUBE OIL FILTER
2	21	STARTER MOTOR

QTY	FIND NO.	DESCRIPTION
1	20	COOLANT DRAIN
2	19	EXHAUST BELLOWS
1	18	HEATER CONTROL BOX
1	17	OIL HEATER
1	16	OIL SAMPLING VALVE
1	15	ENGINE LUBE OIL LEVEL MAINTAINER
1	14	OIL DRIP CAN
1	13	OIL DRAIN VALVE
2	12	FUEL WATER SEPERATOR
1	11	COOLANT HEATER
4	10	REDUNDANT STARTER BATTERY/TRAY OPTION (REMOTE MOUNT)
4	9	STANDARD STARTER BATTERY/TRAY OPTION (REMOTE MOUNT)
1	8	CIRCUIT BREAKER BOX
1	7	TERMINAL BOX
4	6	AIR FILTER
1	5	COOLING SYSTEM
1	4	CONTROL PANEL
1	3	CHASSIS-HARD MOUNT
1	2	ALTERNATOR-S7J
1	1	ENGINE QSK50-G24/G25

PART NUMBER: A060C089 | PART REVISION: F
PART NAME: OUTLINE,GENSET
DRAWING CATEGORY: DETAIL
STATE: RELEASED | SHEET: 3 OF 12
CUMMINS DAT A CLASSIFICATION: CUMMINS CONFIDENTIAL

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.

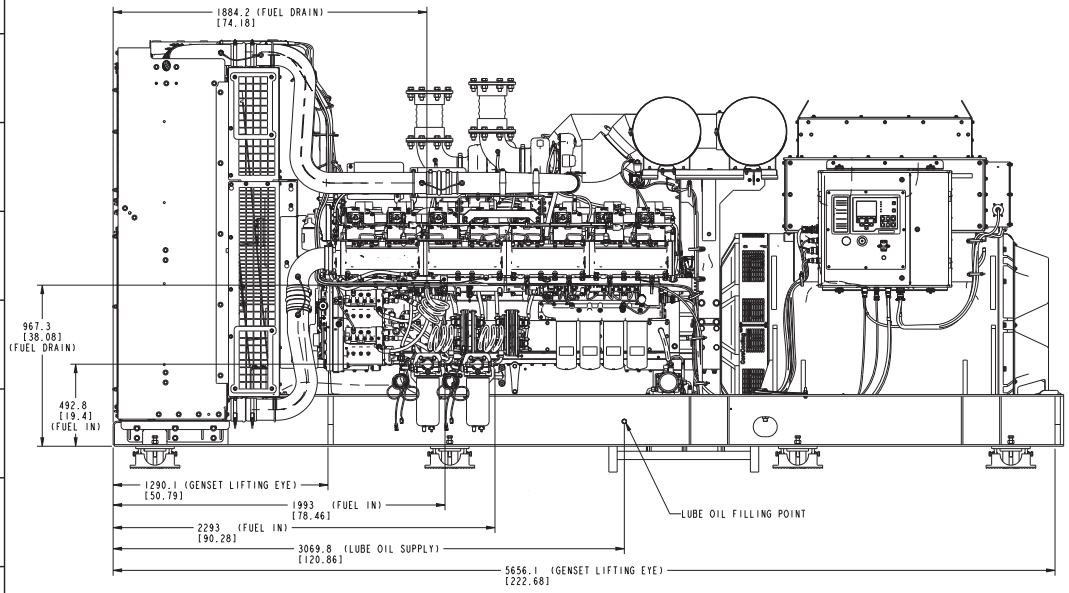
Cummins Inc.

DIMENSIONS ARE IN: MILLIMETERS [ ] ARE IN: INCHES
SIZE: A0 SCALE: 0.071
DIMENSIONING AND TOLERANCING PER: ASME Y14.5-2009
THIRD ANGLE PROJECTION
CAD SYSTEM PTC® Creo® Parametric

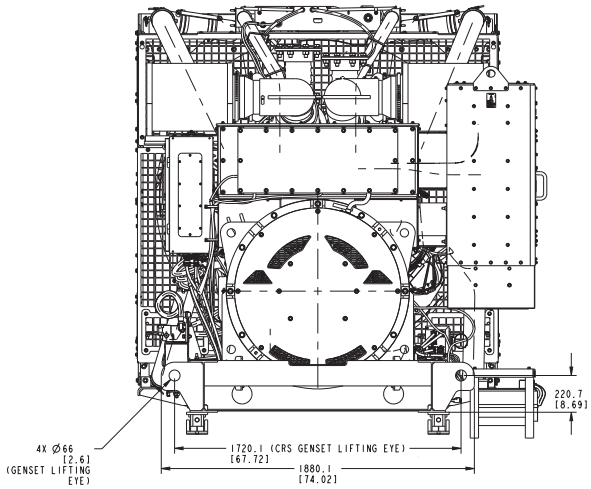
FUEL SUPPLY, LIFTING LUG, OIL MAINTAINER AND S7, S9 NON-SEISMIC ISOLATOR INSTALLATION DETAIL

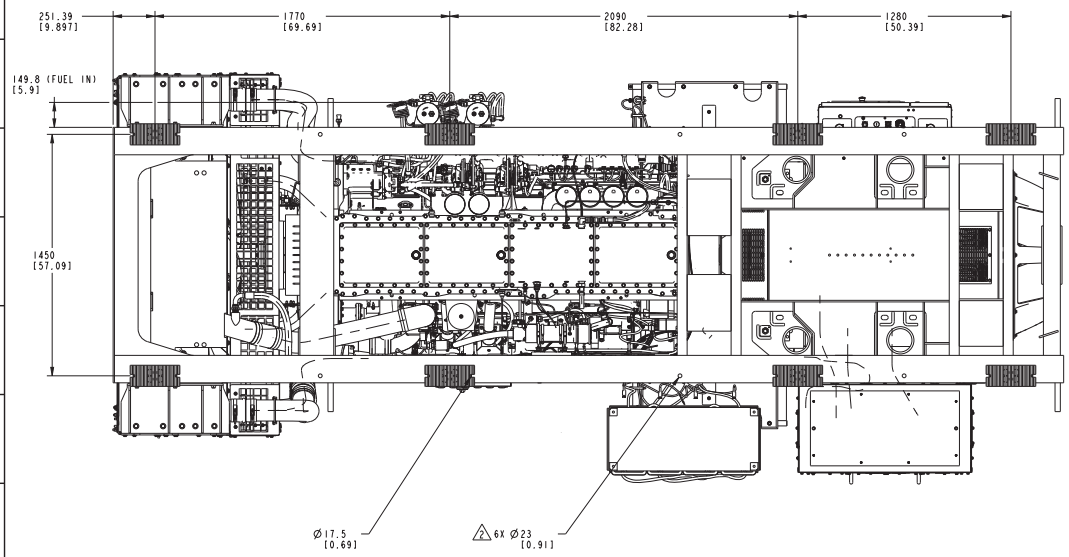
NOTES:

1. REFER TO GENSET INSTALLATION DRAWING A065D207-INSTALLATION, GENSET SEISMIC ISOLATOR AND A065D206-INSTALLATION, GENSET NON SEISMIC INSTALLATION DETAILS



SCALE 0.094





FUEL SYSTEM CONNECTOR DETAILS			
DESCRIPTION	ON FILTER	HOSE	
		FILTER SIDE	CUSTOMER SIDE
FUEL IN	1-1/16-12 UN JIC SWIVEL 37° FLARE	1-1/16-12 90° ELBOW JIC SWIVEL 37°	3/4 NPTF MALE PIPE

FUEL SYSTEM CONNECTOR DETAILS			
DESCRIPTION	ON ENGINE	HOSE	
		ENGINE SIDE	CUSTOMER SIDE
FUEL DRAIN	1-1/16-12 UN-2A 37° FLARE	1-1/16-12 STRAIGHT JIC SWIVEL FEMALE 37° FLARE	3/4 NPTF MALE PIPE

OIL MAINTAINER SYSTEM CONNECTOR DETAILS	
LUBE OIL SUPPLY	3/4"(THREAD) JIC 37°(SAE J514)

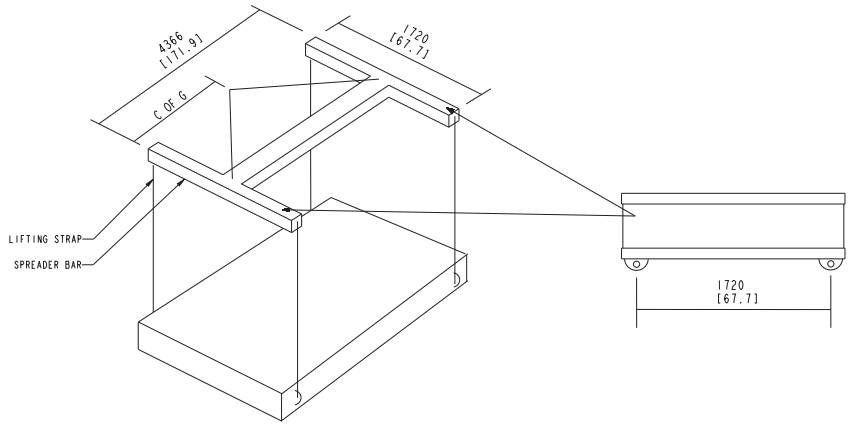
PART NUMBER: A060C089	PART REVISION: F	Cummins Inc.	
PART NAME: OUTLINE,GENSET			
DRAWING CATEGORY: DETAIL		DIMENSIONS ARE IN: MILLIMETERS [ ] ARE IN: INCHES	SIZE: A0 SCALE: 0.063
STATE: RELEASED	SHEET: 5 OF 12	DIMENSIONING AND TOLERANCING PER: ASME Y14.5-2009	THIRD ANGLE PROJECTION
CUMMINS DAT A CLASSIFICATION: CUMMINS CONFIDENTIAL			CAD SYSTEM PTC® Creo® Parametric

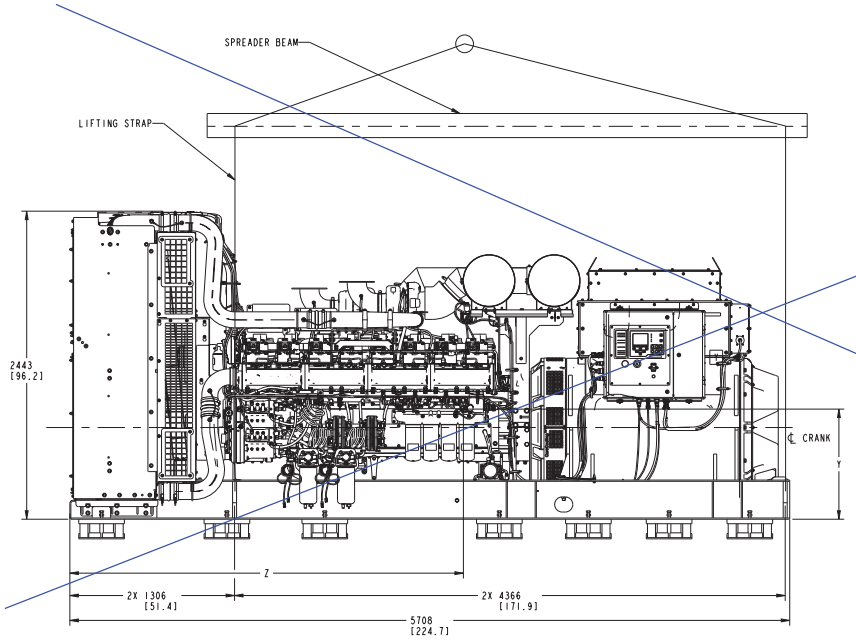
THIS DOCUMENT AND THE INFORMATION SHOWN THEREON IS CONFIDENTIAL AND PROPRIETARY AND SHALL NOT BE DISCLOSED TO OTHERS IN HARD COPY OR ELECTRONIC FORM, REPRODUCED BY ANY MEANS, OR USED FOR ANY PURPOSE WITHOUT WRITTEN CONSENT OF CUMMINS INC.

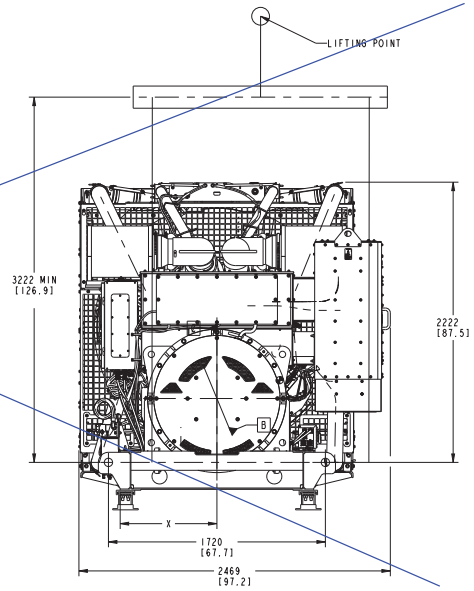
PARALLEL LIFT:
S9 ALTERNATOR CONFIGURATION

IDEAL LIFTING FRAME AND STRAPS

FOR C OF G VALUES REFER TO
SHEET 8 : FOR S9 (ALL CORE) ALTERNATOR
SHEET 8 : FOR S7(ALL CORE) ALTERNATOR







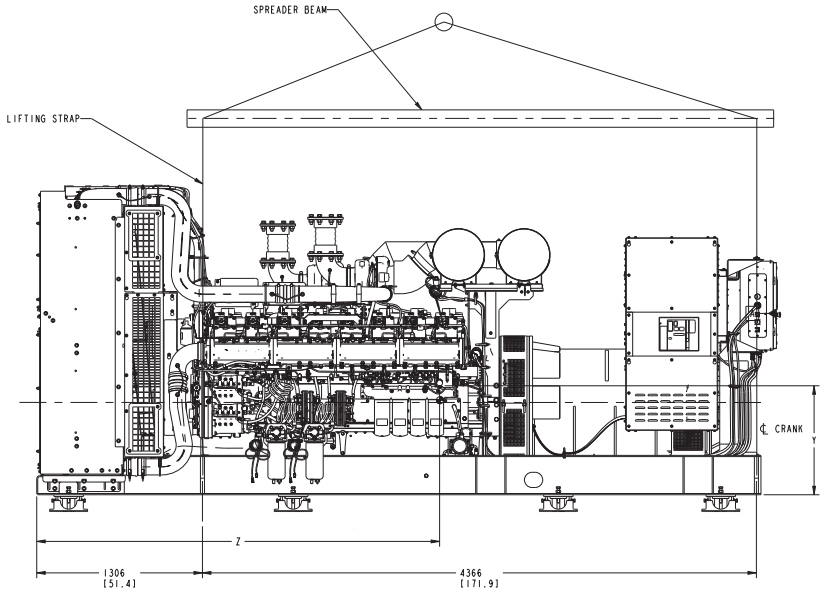
PART NUMBER: A060C089	PART REVISION: F
PART NAME: OUTLINE,GENSET	
DRAWING CATEGORY: DETAIL	
STATE: RELEASED	SHEET: 6 OF 12
CUMMINS DAT A CLASSIFICATION: CUMMINS CONFIDENTIAL	

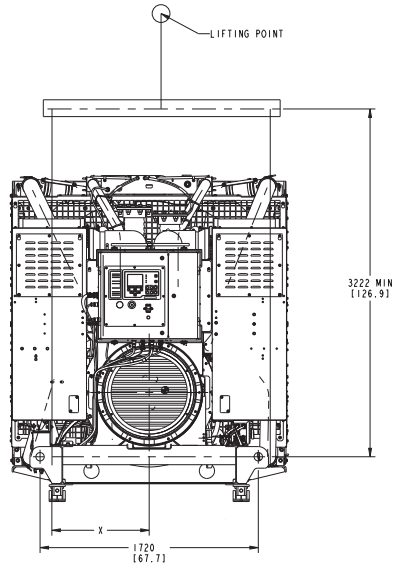
THIS DOCUMENT AND THE INFORMATION SHOWN THEREON IS CONFIDENTIAL AND PROPRIETARY AND SHALL NOT BE DISCLOSED TO OTHERS IN HARD COPY OR ELECTRONIC FORM, REPRODUCED BY ANY MEANS, OR USED FOR ANY PURPOSE WITHOUT WRITTEN CONSENT OF CUMMINS INC.

Cummins Inc.

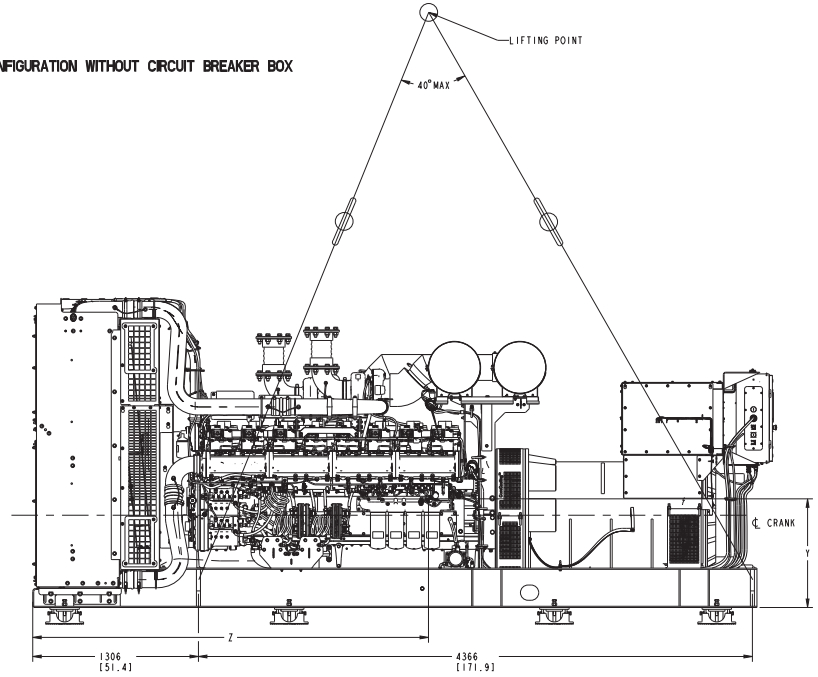
DIMENSIONS ARE IN: MILLIMETERS [ ] ARE IN: INCHES
SIZE: A0 SCALE: 0.071
DIMENSIONING AND TOLERANCING PER: ASME Y14.5-2009
THIRD ANGLE PROJECTION
CAD SYSTEM PTC® Creo® Parametric

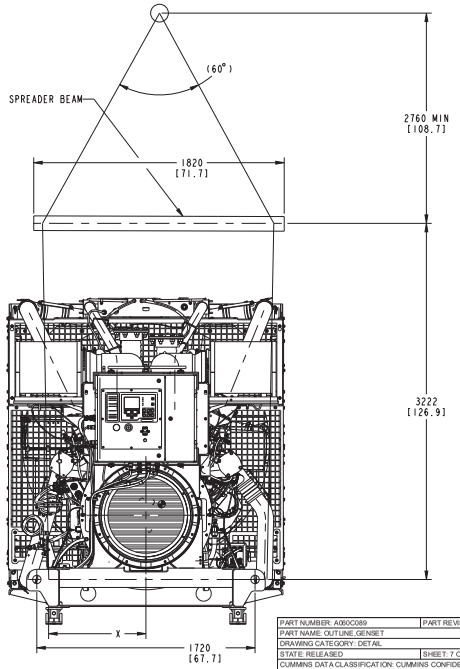
PARALLEL LIFT:
S7 ALTERNATOR CONFIGURATION WITH CIRCUIT BREAKER BOX





SINGLE POINT LIFT:
S7 ALTERNATOR CONFIGURATION WITHOUT CIRCUIT BREAKER BOX





PART NUMBER: A060C089	PART REVISION: F
PART NAME: OUTLINE,GENSET	
DRAWING CATEGORY: DETAIL	
STATE: RELEASED	SHEET: 7 OF 12
CUMMINS DATA CLASSIFICATION: CUMMINS CONFIDENTIAL	

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.

Cummins Inc.

DIMENSIONS ARE IN: MILLIMETERS [ ] ARE IN: INCHES
SIZE: A0 SCALE: 0.071
DIMENSIONING AND TOLERANCING PER: ASME Y14.5-2009
THIRD ANGLE PROJECTION
CAD SYSTEM: PTC® Creo® Parametric

REFER SHEET 3 FOR DRAWING VIEW AND SHEET 7 FOR COFG

ENGINE	ALTERNATOR	AIR CLEANER	CB OPTION	GENSET WET WEIGHT(KG)	GENSET WET WEIGHT(LBS)	GENSET DRY WEIGHT(KG)	GENSET DRY WEIGHT(LBS)	OVERALL DIMENSIONS MM (INCH)			COFG MM (INCH)		
								LENGTH	WIDTH (WITHOUT REMOTE MOUNT BATTERY)	HEIGHT (WITHOUT EXTERNAL ISOLATORS)	X	Y	Z
QSK50-G24/G25	S7-C	NORMAL DUTY/ HEAVY DUTY	2 CB	12070	26609	11693	25778	5708 (224.7)	2187 (86.1)	2443 (96.2)	760 (29.9)	897 (35.3)	2865 (112.8)
			LHS CB (VIEW FROM NDE OF ALTERNATOR)	11779	25972	11111	24499				779 (30.6)	887 (34.9)	2817 (110.9)
			RHS CB (VIEW FROM NDE OF ALTERNATOR)	11889	26212	11512	25383				748 (29.4)	891 (35)	2835 (111.6)
			NO CB	11598	25573	11221	24742				767 (30.2)	881 (34.7)	2786 (109.7)
	S7-D	NORMAL DUTY/ HEAVY DUTY	2 CB	12226	26953	11849	26122	5708 (224.7)	2187 (86.1)	2443 (96.2)	760 (29.9)	895 (35.2)	2900 (114.2)
			LHS CB (VIEW FROM NDE OF ALTERNATOR)	11935	26316	11558	25485				779 (30.7)	885 (34.8)	2850 (112.2)
			RHS CB (VIEW FROM NDE OF ALTERNATOR)	12045	26559	11668	25727				748 (29.4)	889 (35)	2869 (112.9)
			NO CB	11754	25917	11377	25086				767	878	2818
	S7-E	NORMAL DUTY/ HEAVY DUTY	2 CB	12510	27579	12133	26748	5708 (224.7)	2187 (86.1)	2443 (96.2)	760 (29.9)	891 (35)	2944 (115.9)
			LHS CB (VIEW FROM NDE OF ALTERNATOR)	12219	26942	11842	26111				779 (30.7)	881 (34.7)	2897 (114)
			RHS CB (VIEW FROM NDE OF ALTERNATOR)	12329	27185	11952	26354				749 (29.5)	885 (34.9)	2915 (114.7)
			NO CB	12038	26543	11661	25712				767 (30.2)	875 (34.4)	2867 (112.9)
	S7-F	NORMAL DUTY/ HEAVY DUTY	2 CB	12510	27579	12133	26748	5708 (224.7)	2187 (86.1)	2443 (96.2)	760 (29.9)	891 (35)	2944 (115.9)
			LHS CB (VIEW FROM NDE OF ALTERNATOR)	12219	26942	11842	26111				779 (30.7)	881 (34.7)	2897 (114)
			RHS CB (VIEW FROM NDE OF ALTERNATOR)	12329	27185	11952	26354				749 (29.5)	885 (34.9)	2915 (114.7)
			NO CB	12038	26543	11661	25712				767 (30.2)	875 (34.4)	2867 (112.9)
	S7-G	NORMAL DUTY/ HEAVY DUTY	2 CB	12817	28256	12440	27425	5778 (227.4)	2187 (86.1)	2443 (96.2)	760 (29.9)	886 (34.9)	2995 (117.9)
			LHS CB (VIEW FROM NDE OF ALTERNATOR)	12526	27619	12149	26788				778 (30.6)	876 (34.5)	2948 (116)
			RHS CB (VIEW FROM NDE OF ALTERNATOR)	12636	27862	12259	27031				749 (29.5)	881 (34.7)	2966 (116.8)
			NO CB	12345	27220	11968	26389				767 (30.2)	870 (34.3)	2918 (114.9)
	S7-H	NORMAL DUTY/ HEAVY DUTY	2 CB	13261	29235	12884	28404	5898 (232.2)	2187 (86.1)	2443 (96.2)	761 (29.9)	881 (34.7)	3070 (120.9)
			LHS CB (VIEW FROM NDE OF ALTERNATOR)	12970	28598	12593	27767				778 (30.6)	871 (34.3)	3024 (119)
			RHS CB (VIEW FROM NDE OF ALTERNATOR)	13080	28841	12703	28010				750 (29.5)	875 (34.4)	3042 (119.7)
			NO CB	12789	28199	12412	27368				767 (30.2)	865 (34)	2995 (117.9)
	S7-J	NORMAL DUTY/ HEAVY DUTY	2 CB	13662	30119	13285	29288	5863 (230.8)	2187 (86.1)	2443 (96.2)	761 (30)	877 (34.5)	3100 (122)
			LHS CB (VIEW FROM NDE OF ALTERNATOR)	13371	29483	12994	28651				778 (30.6)	868 (34.2)	3058 (120.4)
			RHS CB (VIEW FROM NDE OF ALTERNATOR)	13481	29725	13104	28894				750 (29.5)	872 (34.3)	3074 (121)
			NO CB	13190	29083	12813	28252				767 (30.2)	862 (33.9)	3030 (119.3)

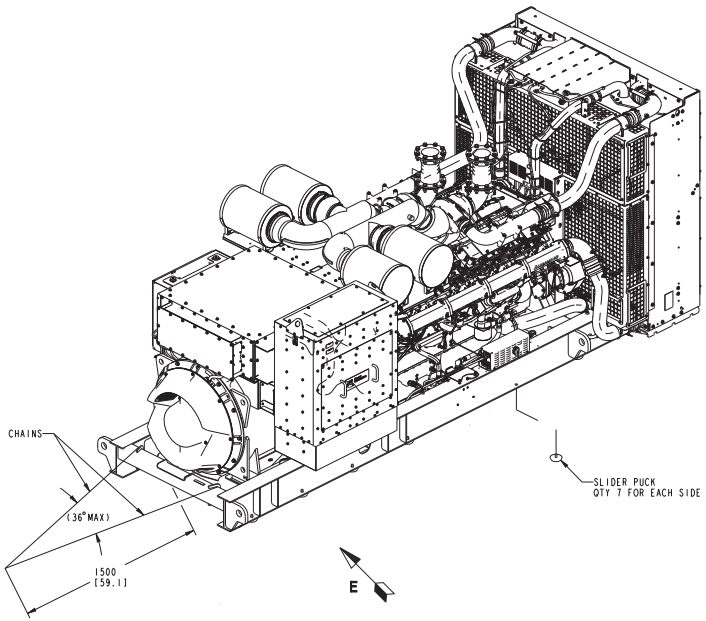
REFER SHEET 4 FOR DRAWING VIEW AND SHEET 6 FOR COFG

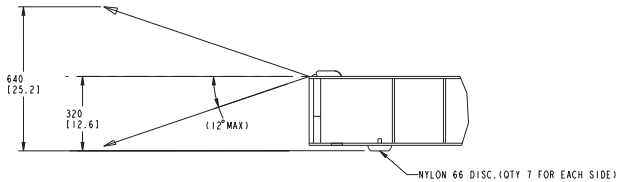
ENGINE	ALTERNATOR	AIR CLEANER	CB OPTION	GENSET WET WEIGHT(KG)	GENSET WET WEIGHT(LBS)	GENSET DRY WEIGHT(KG)	GENSET DRY WEIGHT(LBS)	OVERALL DIMENSIONS MM (INCH)			COFG MM (INCH)		
								LENGTH	WIDTH (WITHOUT REMOTE MOUNT BATTERY)	HEIGHT (WITHOUT EXTERNAL ISOLATORS)	X	Y	Z
QSK50-G24/G25	S9-B	NORMAL DUTY/ HEAVY DUTY	NO CB NO ENTRANCE BOX	13717	30245	13340	29414	5708 (224.7)	2189 (86.2)	2443 (96.1)	764 (30)	866 (34)	3098 (121.9)
			ENTRANCE BOX ONLY	14013	30898	13636	30067	5708 (224.7)	2470 (97.2)	2443 (96.1)	785 (30.9)	873 (34.4)	3131 (123.2)
	S9-C	NORMAL DUTY/ HEAVY DUTY	NO CB NO ENTRANCE BOX	13917	30686	13540	29855	5708 (224.7)	2189 (86.2)	2443 (96.1)	764 (30)	864 (34)	3124 (123)
			ENTRANCE BOX ONLY	14213	31339	13836	30508	5708 (224.7)	2470 (97.2)	2443 (96.1)	785 (30.9)	871 (34.3)	3156 (124.2)
	S9-D	NORMAL DUTY/ HEAVY DUTY	NO CB NO ENTRANCE BOX	14217	31348	13840	30517	5708 (224.7)	2189 (86.2)	2443 (96.1)	764 (30)	862 (34)	3161 (124.5)
			ENTRANCE BOX ONLY	14513	32001	14136	31169	5708 (224.7)	2470 (97.2)	2443 (96.1)	785 (30.9)	868 (34.2)	3192 (125.7)

PART NUMBER: A060C089	PART REVISION: F	Cummins Inc.
PART NAME: OUTLINE,GENSET		
DRAWING CATEGORY: DETAIL		
STATE: RELEASED	SHEET: 8 OF 12	DIMENSIONS ARE IN: MILLIMETERS [ ] ARE IN: INCHES SIZE: A0 SCALE: 0.063
CUMMINS DAT A CLASSIFICATION: CUMMINS CONFIDENTIAL		DIMENSIONING AND TOLERANCING PER: ASME Y14.5-2009 THIRD ANGLE PROJECTION
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.		CAD SYSTEM PTC® Creo® Parametric

NOTES:

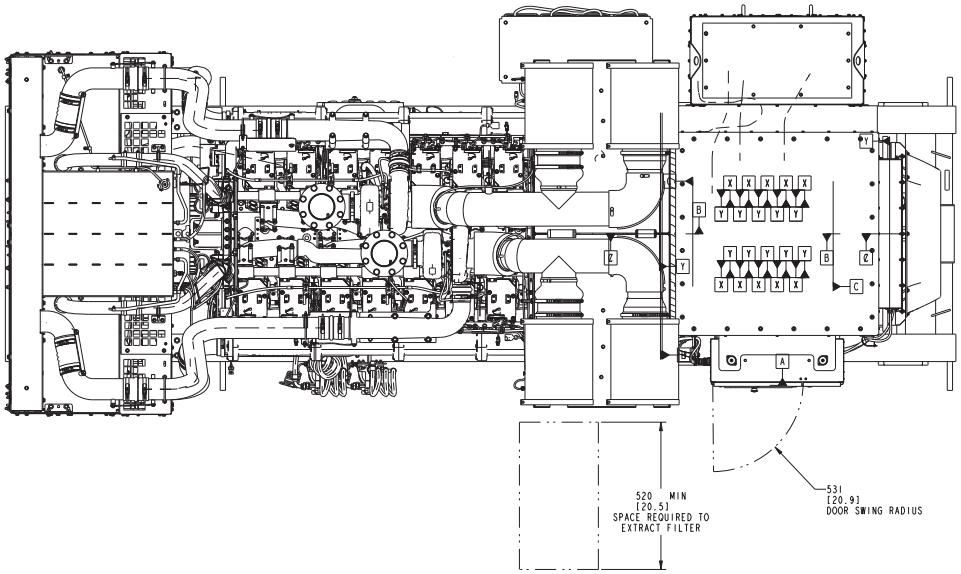
3. GENSET DRAGGING CHAIN ATTACHMENT FEATURE.THIS FEATURE CAN BE USED TO ASSIST IN THE EXTRACTION OF THE GENSET FROM AN ISO SHIPPING CONTAINER.FRICTION REDUCING SLIDER PUCKS MUST BE PRESENT AND INTACT BETWEEN THE CHASSIS AND CONTAINER FLOOR BEFORE AND DURING DRAGGING. MAXIMUM DRAGGING DISTANCE MUST NOT EXCEED THE LENGTH OF THE CONTAINER PLUS 1 METER.CONTAINER MUST BE ON LEVEL GROUND.GROUND SURFACE TO CONSIST OF SMOOTH CONCRETE, STEEL OR WOOD.WINCHING OPERATION TO BE DONE SMOOTHLY AT LOW SPEED.ADHERE TO CHAIN ANGLE LIMITS SHOWN IN THIS DRAWING.





VIEW **E**
SCALE 0.125

3 **VIEW TO SHOW DRAGGING DETAILS FOR THE REMOVAL OF THE GENSET FROM AN ISO CONTAINER.**



FOR ALL CONFIGURATIONS WITH CONTROL PANEL AND NORMAL DUTY AIR FILTER
TOP VIEW - S9 ALTERNATOR VIEW SHOWN FOR REFERENCE
SCALE 0.094

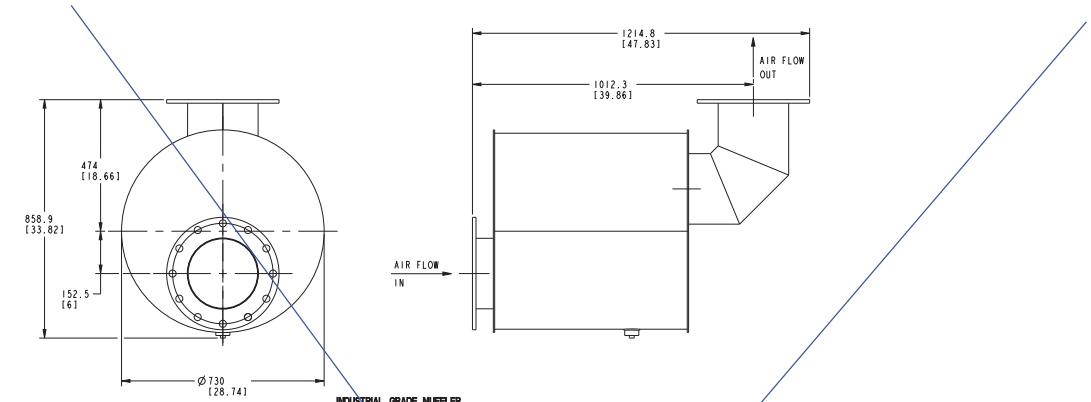
PART NUMBER: A060C089	PART REVISION: F
PART NAME: OUTLINE,GENSET	
DRAWING CATEGORY: DETAIL	
STATE: RELEASED	SHEET: 9 OF 12
CUMMINS DAT A CLASSIFICATION: CUMMINS CONFIDENTIAL	

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.

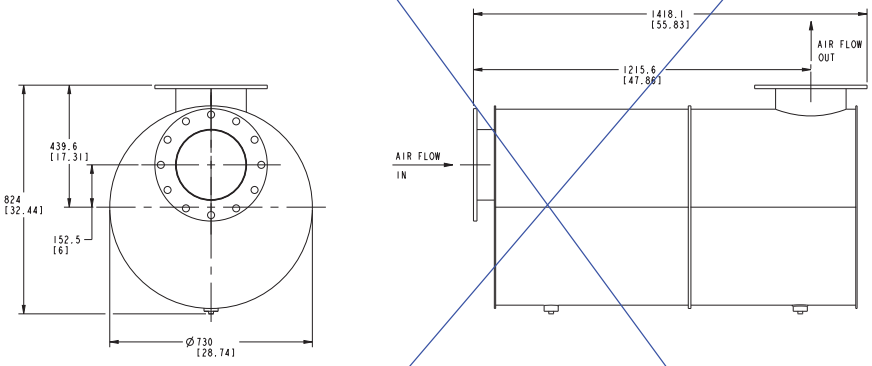
Cummins Inc.

DIMENSIONS ARE IN: MILLIMETERS [ ] ARE IN: INCHES
SIZE: A0 SCALE: 0.063
DIMENSIONING AND TOLERANCING PER: ASME Y14.5-2009
THIRD ANGLE PROJECTION
CAD SYSTEM PTC® Creo® Parametric

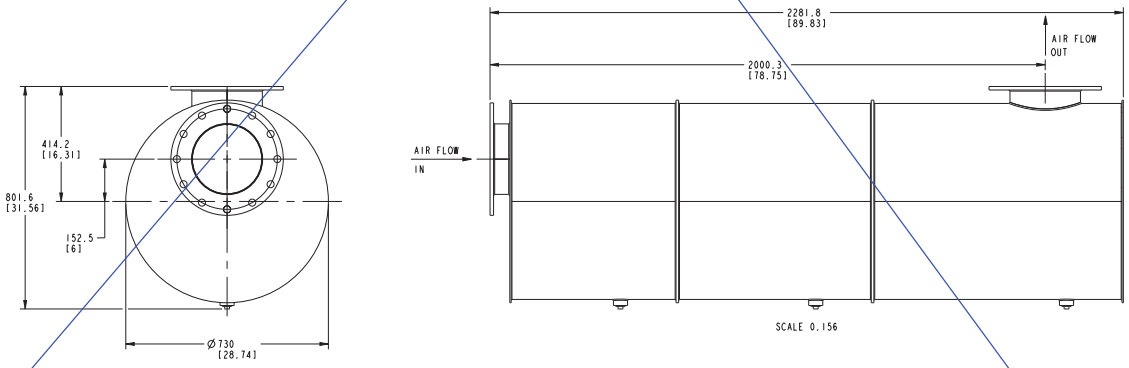
EXHAUST SYSTEM DETAILS - MUFFLER AND BELLOWS



INDUSTRIAL GRADE MUFFLER



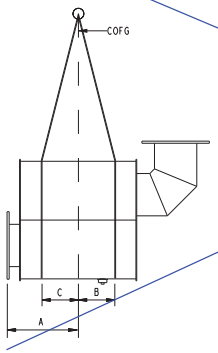
RESIDENTIAL GRADE MUFFLER



CRITICAL GRADE MUFFLER

SCALE 0.156

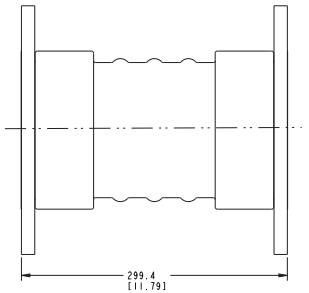
RECOMMENDED LIFTING ARRANGEMENTS FOR MUFFLER USING STRAPS



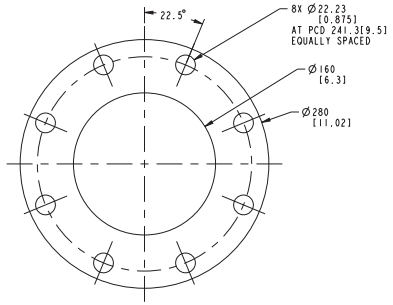
SCALE 0.094

MUFFLER	DIM A		DIM B		DIM C	
	MM	INCH	MM	INCH	MM	INCH
INDUSTRIAL	433.2	17.05	609.6	24	304.8	12
RESIDENTIAL	833.0	32.79	304.8	12	304.8	12
CRITICAL	1383.0	54.45	457.2	18	457.2	18

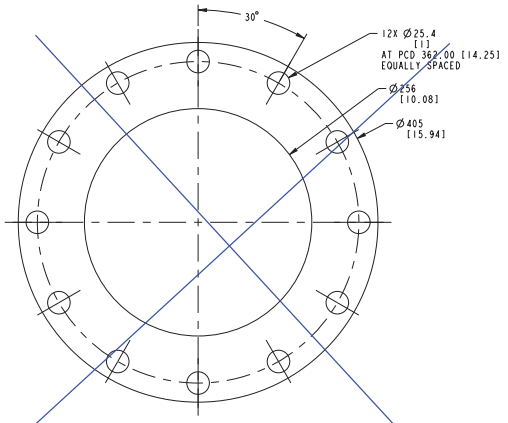
Not provided. Shown for sizing reference only.



EXHAUST BELLOW
SCALE 0.5

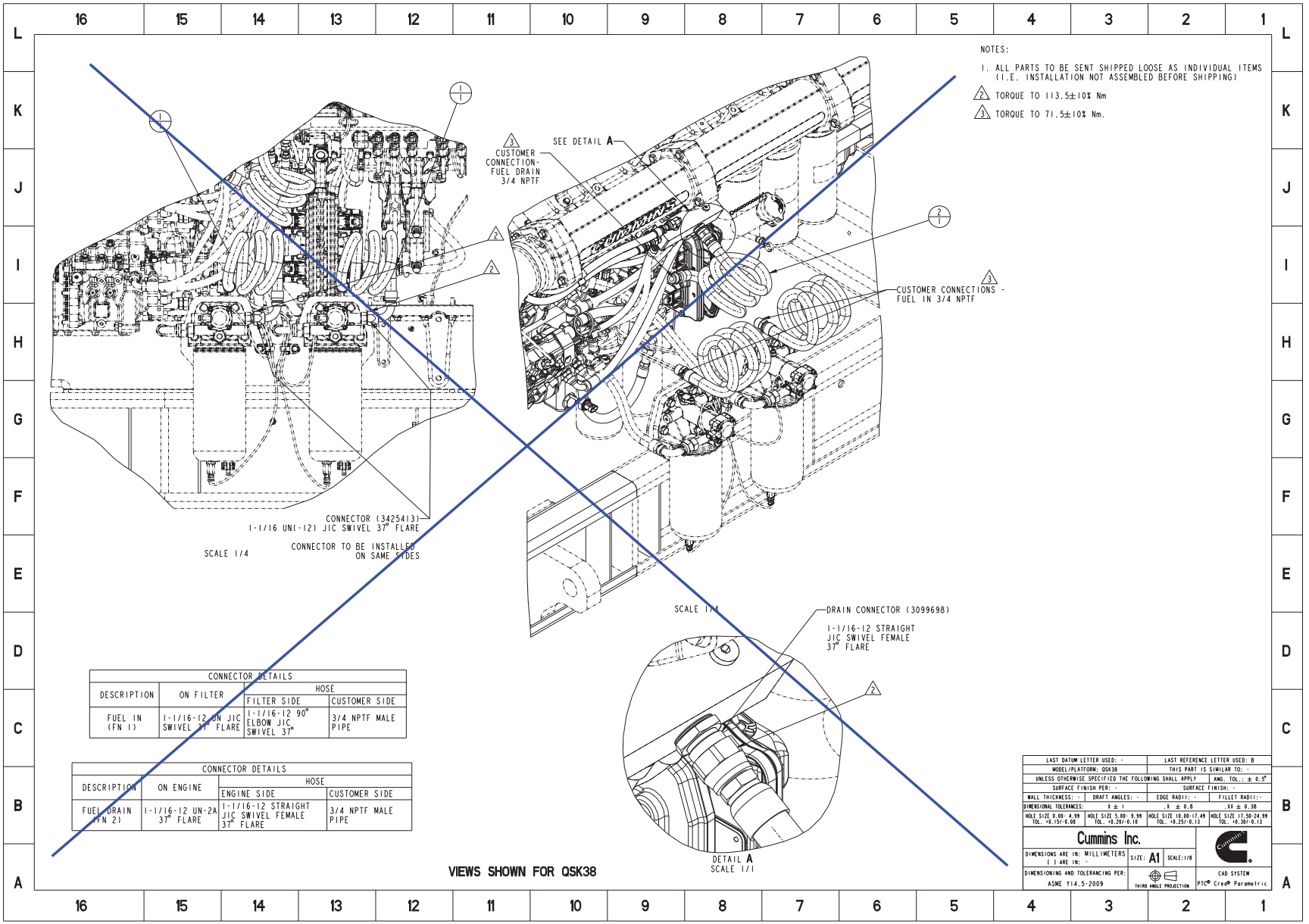


EXHAUST BELLOW FLANGE
SCALE 0.5



MUFFLER FLANGE DETAILS
SCALE 0.5

PART NUMBER: A060C089	PART REVISION: F	Cummins Inc.	
PART NAME: OUTLINE,GENSET			
DRAWING CATEGORY: DETAIL			
STATE: RELEASED	SHEET: 10 OF 12	DIMENSIONS ARE IN: MILLIMETERS [ ] ARE IN: INCHES	SIZE: A0 SCALE: 0.063
CUMMINS DATA CLASSIFICATION: CUMMINS CONFIDENTIAL		DIMENSIONING AND TOLERANCING PER: ASME Y14.5-2009	THIRD ANGLE PROJECTION
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.			CAD SYSTEM PTC® Creo® Parametric

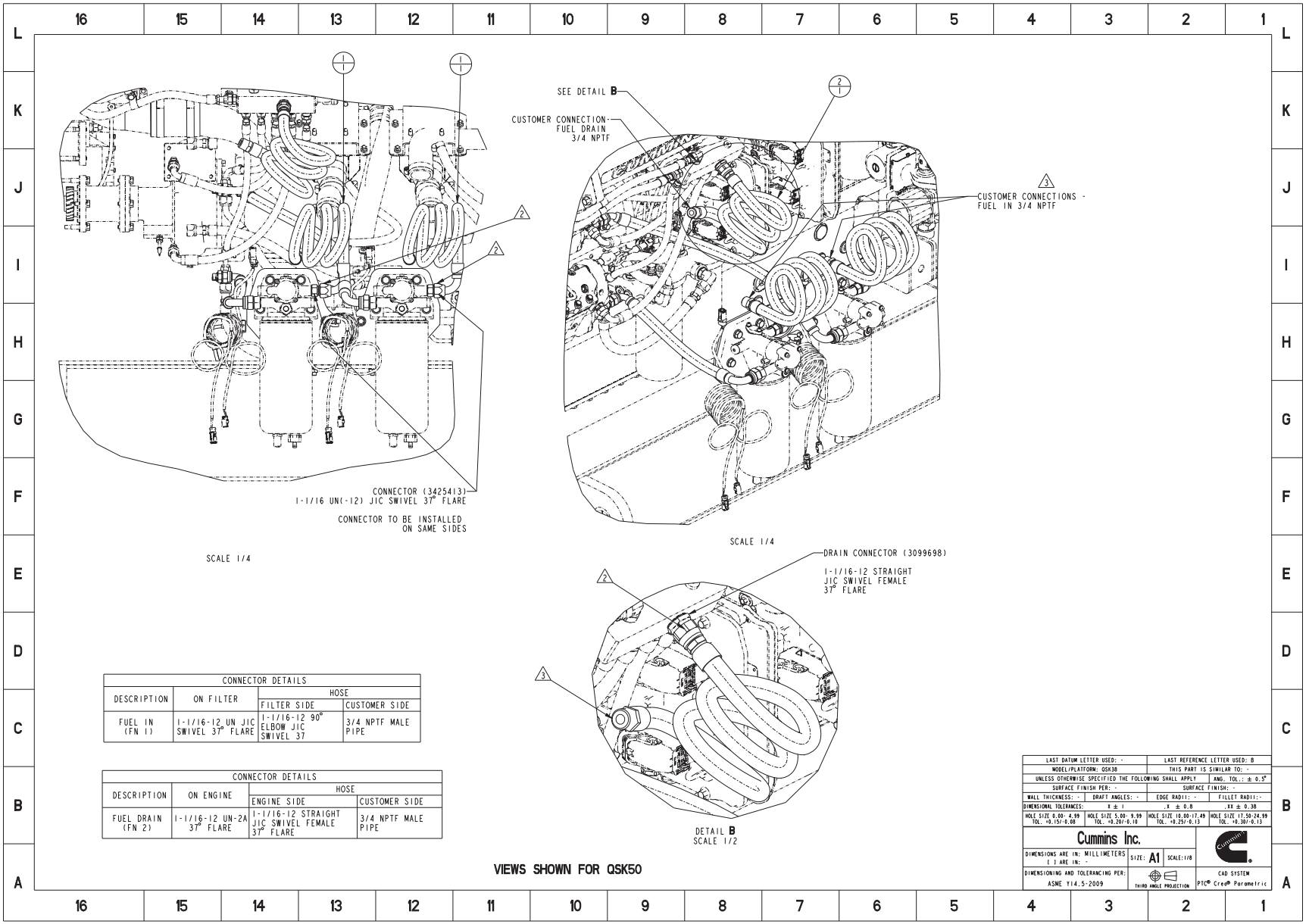


Document Generated: **27FEB2025 18:11 GMT**

Cummins Data Classification:
Cummins Confidential

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.

Part Number: **A064H664** Part Revision: **G**
Part Name: **INSTALLATION,FUEL SYSTEM**
Drawing Category: **Detail** State: **Released** Sheet **1** of **3**



CONNECTOR DETAILS			
DESCRIPTION	ON FILTER	HOSE	
		FILTER SIDE	CUSTOMER SIDE
FUEL IN (FN 1)	1-1/16-12 UN JIC SWIVEL 37° FLARE	1-1/16-12 90° ELBOW JIC SWIVEL 37	3/4 NPTF MALE PIPE

CONNECTOR DETAILS			
DESCRIPTION	ON ENGINE	HOSE	
		ENGINE SIDE	CUSTOMER SIDE
FUEL DRAIN (FN 2)	1-1/16-12 UN-2A 37° FLARE	1-1/16-12 STRAIGHT JIC SWIVEL FEMALE 37° FLARE	3/4 NPTF MALE PIPE

LAST DATUM LETTER USED: -		LAST REFERENCE LETTER USED: B	
MODEL/PLATFORM: QSK38		THIS PART IS SIMILAR TO: -	
UNLESS OTHERWISE SPECIFIED THE FOLLOWING SHALL APPLY			ANG. TOL.: ± 0.5°
SURFACE FINISH PER: -		SURFACE FINISH: -	
WALL THICKNESS: -	DRAFT ANGLES: -	EDGE RADII: -	FILLET RADII: -
DIMENSIONAL TOLERANCES:	X ± 1	.X ± 0.8	.XX ± 0.38
HOLE SIZE 0.00- 4.99 TOL. +0.15/-0.08	HOLE SIZE 5.00- 9.99 TOL. +0.20/-0.10	HOLE SIZE 10.00-17.49 TOL. +0.25/-0.13	HOLE SIZE 17.50-24.99 TOL. +0.38/-0.13
Cummins Inc.			
DIMENSIONS ARE IN: MILLIMETERS [ ] ARE IN: -	SIZE: A1	SCALE: 1/8	
DIMENSIONING AND TOLERANCING PER: ASME Y14.5-2009	THIRD ANGLE PROJECTION	CAD SYSTEM PTC® Creo® Parametric	

Document Generated: **27FEB2025 18:11 GMT**

Cummins Data Classification:
Cummins Confidential

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.

Part Number: **A064H664** Part Revision: **G**
Part Name: **INSTALLATION,FUEL SYSTEM**
Drawing Category: **Detail** State: **Released**

Part Number: A064H664

Change Notice	CN00170988	Alternates	
Manufacturer Part (MEP)	No	Usage	Accessory Only
Release Phase Code	Production (P)	Drawing Specification	Number: A064H664_DET
External Regulations	No External Regulation		Revision: G



3D image provided when available for visual reference only.

Engineering Bill Of Material

Find No.	Number	Name	Quantity	Unit of Measure	Method of Use
1	A064G489	HOSE,FUEL	2	Each (ea)	Standard
2	A064G490	HOSE,FUEL	1	Each (ea)	Standard

Method of Use Definitions
- **Standard: The exact quantity provided shall be utilized for the items specified**
- **As Required: The quantity of the specified items may be updated per manufacturing requirements if needed**
- **Reference: The specified items are reference only for assembly and traceability purposes.**

Associated Specifications

Number	Title	Type	Category	Sub-Category
10903	Substances,Prohibited and Restricted	Engineering Specification	Administrative Specification	Source Control

Drawing Revision Information

Description of Change(s) Note: Change information is provided for reference only and does not supersede the drawing's primary content.
SEE CHANGE NOTICE. 1. PART ATTRIBUTE: USAGE: "ACCESSORY ONLY" WAS "PRODUCTION ONLY" 2. PART ATTRIBUTE: USER ITEM TYPE: "ACCESSORY ITEM - MAKE" WAS "UNASSIGNED"

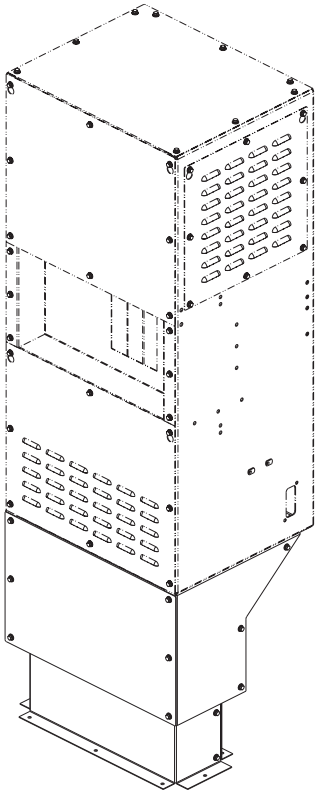
Drawing Authorization

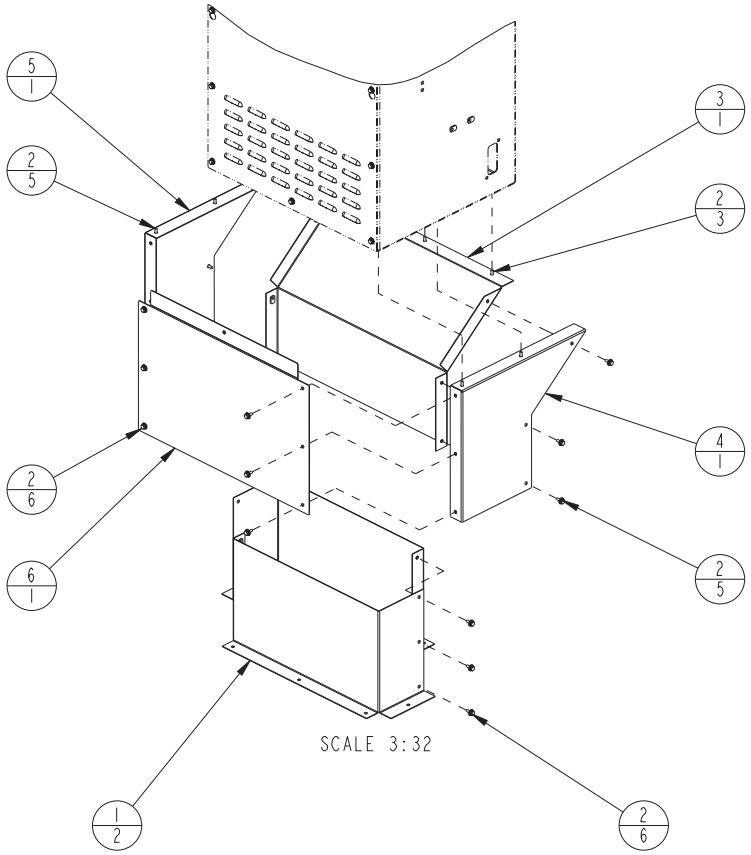
Drafter	Somnath B Naikwadi	Date	27FEB2025
Checker	Kiran Anandrao More	Date	27FEB2025
Approver	Muhammad Maher Hasan	Date	27FEB2025

Document Generated: **27FEB2025 18:11 GMT**

Cummins Data Classification:
Cummins Confidential

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.





SCALE 3:32

NOTES:

1. REMOVE ALL BURRS AND SHARP EDGES, FOR SAFE HANDLING.
2. SURFACE AREA TO BE FREE OF WELD AND WELD SPATTER.
3. NOMINAL WEIGHT BASED ON CAD MODEL: (3.09 KG)
   NOT FOR INSPECTION.

MODEL/PLATFORM: QSK50		THIS PART IS SIMILAR TO: .	
UNLESS OTHERWISE SPECIFIED THE FOLLOWING SHALL APPLY			ANG. TOL.: ± 1.0°
DIMENSIONAL TOLERANCES:	X ± 1	.X ± 0.8	.XX ± 0.38
HOLE SIZE 0.00-4.99 TOL. +0.15/-0.08	HOLE SIZE 5.00-9.99 TOL. +0.20/-0.10	HOLE SIZE 10.00-17.49 TOL. +0.25/-0.13	HOLE SIZE 17.50-24.99 TOL. +0.30/-0.13

PART NUMBER: A065D000	PART REVISION: E
PART NAME: INSTALLATION,DUCT	
DRAWING CATEGORY: DETAIL	
STATE: RELEASED	SHEET: 1 OF 2
CUMMINS DATA CLASSIFICATION: CUMMINS CONFIDENTIAL	

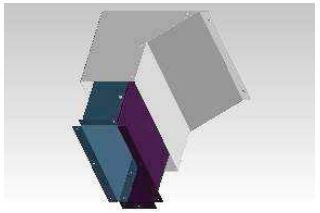
THIS DOCUMENT (AND THE INFORMATION SHOWN THEREON) IS CONFIDENTIAL AND PROPRIETARY AND SHALL NOT BE DISCLOSED TO OTHERS IN HARD COPY OR ELECTRONIC FORM, REPRODUCED BY ANY MEANS, OR USED FOR ANY PURPOSE WITHOUT WRITTEN CONSENT OF CUMMINS INC.

Cummins Inc.

DIMENSIONS ARE IN: MILLIMETERS [ ] ARE IN: -	SIZE: A2	SCALE:3:32	
DIMENSIONING AND TOLERANCING PER: ASME Y14.5-2009	THIRD ANGLE PROJECTION		CAD SYSTEM PTC® Creo® Parametric

Part Number: A065D000

Change Notice	CN00171156	Alternates	
Manufacturer Part (MEP)	No	Usage	Accessory Only
Release Phase Code	Production (P)	Drawing Specification	Number: A065D000_DET
External Regulations	No External Regulation		Revision: E



3D image provided when available for visual reference only.

Engineering Bill Of Material

Find No.	Number	Name	Quantity	Unit of Measure	Method of Use
1	A061T343	COVER,OUTPUT BOX	2	Each (ea)	Standard
2	0821-6003-01	SCREW,HEX HEAD	25	Each (ea)	Standard
3	A061P610	COVER,OUTPUT BOX	1	Each (ea)	Standard
4	A062A503	COVER,OUTPUT BOX	1	Each (ea)	Standard
5	A062A507	COVER,OUTPUT BOX	1	Each (ea)	Standard
6	A061P614	COVER,OUTPUT BOX	1	Each (ea)	Standard

Method of Use Definitions
- **Standard: The exact quantity provided shall be utilized for the items specified**
- **As Required: The quantity of the specified items may be updated per manufacturing requirements if needed**
- **Reference: The specified items are reference only for assembly and traceability purposes.**

Associated Specifications

Number	Title	Type	Category	Sub-Category
10903	Substances,Prohibited and Restricted	Engineering Specification	Administrative Specification	Source Control

Drawing Revision Information

Description of Change(s)
Note: Change information is provided for reference only and does not supersede the drawing's primary content.

SEE CHANGE NOTICE.

1. PART ATTRIBUTE: USER ITEM TYPE: "ACCESSORY ITEM - MAKE" WAS "PHANTOM ITEM"
2. PART ATTRIBUTE: USAGE: "ACCESSORY ONLY" WAS "PRODUCTION ONLY"
3. PART ATTRIBUTE: CUMMINS DATA CLASSIFICATION: "CUMMINS CONFIDENTIAL" WAS "CUMMINS INTERNAL USE ONLY"

Drawing Authorization

Drafter	Somnath B Naikwadi	Date	19FEB2025
Checker	Kiran Anandrao More	Date	19FEB2025
Approver	Muhammad Maher Hasan	Date	19FEB2025

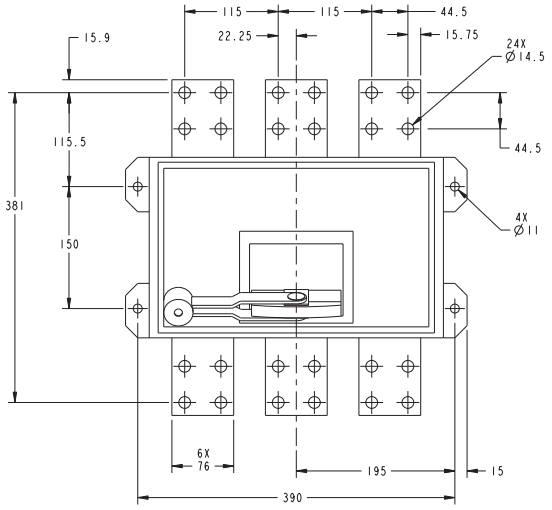
Cummins Data Classification:
Cummins Confidential

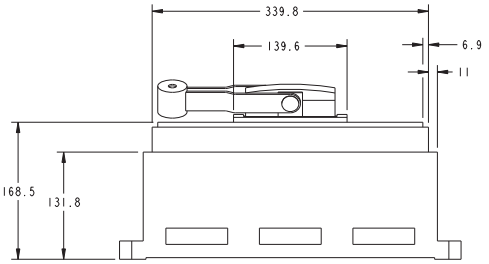
This document (and the information shown thereon) is **Confidential and Proprietary** and shall not be disclosed to others in hard copy or electronic form, reproduced by any means, or used for any purpose without written consent of Cummins Inc.

Document Generated: **19FEB2025 16:07 GMT**

0320_2164	D	Pro/ENGINEER	METRIC DWG

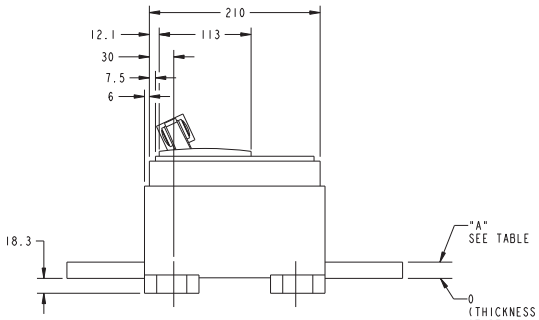
REL NO	LTR	NO	REVISION	ZONE	BY	CHKR	APPROVED	DATE
ECO-103185	H	1	ADD P/N A029B150 & A029B151	-	DA	DA	PL	07JAN09
		2	UPDATED NOTES	-	DA	DA	PL	07JAN09





TABULATION	
PART NO.	CURRENT_ER
0320_2164_01	FRD26895
0320_2164_02	FRD26895
0320_2164_03	FRD26895
0320_2164_04	FRD26895
0320_2164_05	FRD26895
0320_2164_06	FRD26895
0320_2164_07	FRD27516
A029B150	ECO-103185
A029B151	ECO-103185

BREAKER SIZE	TERMINAL THICKNESS "A"	
	mm	[IN]
1600 A	12.8	[0.50]
2000 A	16.0	[0.63]
2500 A	20.0	[0.79]
3000 A	20.0	[0.79]



NOTES:

1. THIS PART IS MANUFACTURING SOURCE CONTROLLED.
2. ELECTRONIC TRIP CIRCUIT BREAKER. STANDARD MICROLOGIC 3.0 TRIP UNIT. (LI)
~~FOR 0320_2164_07, ELECTRONIC MICROLOGIC TRIP UNIT IS 6.0A (LSIG).~~
3. BREAKERS TO BE SUPPLIED WITH TYPE F PLUG.

TYPE F PLUG AMPERAGE SETTINGS									
TYPE F	84%	86%	88%	90%	92%	94%	96%	98%	100%
-01	2100	2150	2200	2250	2300	2350	2400	2450	2500
-02	1680	1720	1760	1800	1840	1880	1920	1960	2000
-03	1344	1376	1408	1440	1472	1504	1536	1568	1600

BREAKERS TO BE SUPPLIED WITH TYPE A PLUG.

TYPE A PLUG AMPERAGE SETTINGS									
TYPE A	40%	45%	50%	60%	63%	70%	80%	90%	100%
-07	640	720	800	960	1008	1120	1280	1440	1600
A029B150	1200	1350	1500	1800	1890	2100	2400	2700	3000

4. BREAKERS TO BE SUPPLIED WITH NO LUGS (AS SHOWN).
5. AGENCIES: 3 POLE UL LISTED
IEC
6. INTERRUPTING RATING

CIRCUIT BREAKER	UL/CSA RATING (60 Hz)			IEC 60947-2 RATING (50/60 Hz)			
				240 Vac		380/415 Vac	
	240 Vac	480 Vac	600 Vac	Icu	Ics	Icu	Ics
RL	125 kA	100 kA	50 kA	125 kA	65 kA	85 kA	45 kA

7. LEVEL OF OPERATION ABOVE 80% CONTINUOUS LOAD REQUIRES SPECIAL TESTING, INSTALLATION AND APPLICATION REQUIREMENTS PER VENDOR LITERATURE.

PRODUCTION P/N	BREAKER	POLES	RATINGS	PLUG TYPE
0320_2164_01	RL2500	3	SEE NOTE 6	F
0320_2164_02	RL2000	3	SEE NOTE 6	F
0320_2164_03	RL1600	3	SEE NOTE 6	F
0320_2164_07	RL1600	3	SEE NOTE 6	A
A029B150	RL3000	3	SEE NOTE 6	A

ACCESSORIES P/N	BREAKER	POLES	MATERIAL
0320_2164_04	RL2500	3	0320_2164_01
0320_2164_05	RL2000	3	0320_2164_02
0320_2164_06	RL1600	3	0320_2164_03
A029B151	RL3000	3	A029B150

·THIS IS A CONTROLLED PRODUCT·
PER ONAN PROCEDURE PRE-1002
TO MAINTAIN COMPLIANCE WITH REQUIREMENTS OF THE CODES, STANDARDS, OR AGENCIES LISTED BELOW
☐ CSA ☐ UL ☐ IEC ☐ NAVA ☐ NEPC
☐ 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
DESIGN CONTROL FACILITY

DO NOT SCALE PRINT
ANG TOL± 1.0
DRAWN TO SCALE OF 3/8

ITEM	PART NO	QTY PER	DESCRIPTION OR MATERIAL	REF NO

	NAME	DATE
DR	D CRANE	03-21-03
CHKR MFG	E_CZECHOWSKI	03-21-03
APPROVED	E_CZECHOWSKI	03-21-03

HC6/HC7

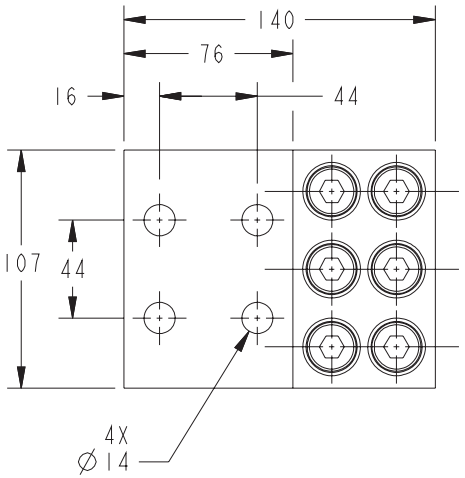
CUMMINS POWER GENERATION
1400 73RD AVE NE
MINNEAPOLIS, MINNESOTA 55432

SITE CODE: PGA
TITLE: CIRCUIT_BREAKER .
DRG NO: 0320_2164
SHEET 1 of 1
REV D

THIS DOCUMENT IS THE PROPERTY OF CUMMINS POWER GENERATION. IT CONTAINS CONFIDENTIAL AND PROPRIETARY INFORMATION WHICH MAY NOT BE REPRODUCED, DISCLOSED OR USED IN WHOLE OR IN PART WITHOUT THE EXPRESS WRITTEN PERMISSION OF CUMMINS POWER GENERATION OR ITS REPRESENTATIVE.

0332_3949	B	Pro/ENGINEER	METRIC DWG

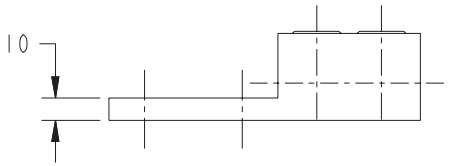
REL NO	LTR	NO	REVISION	ZONE	DR	CHKR	APPROVED	DATE
FRD16141	A	1	PRODUCTION_RELEASE	-	DC	EC	EC	03-24-03

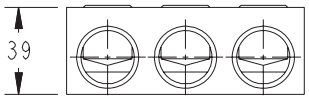


Note: The unit is equipped with two mechanical lugs per phase plus neutral (eight lugs total) and mounting hardware for the load side of an R-frame circuit breaker. Each lug is capable of handling up to three 600 KCMIL wires.

NOTES:

1. THIS PART IS VENDOR SOURCE CONTROLLED. SEE APPROVED PRODUCT VENDOR LIST.
2. TYPE L3D4-600 ELECTRO TIN PLATED.
3. WIRE SIZE #2 TO 600 MCM.
4. MATERIAL 6061-T6 ALUMINUM.
5. CSA / UL 90°C RATING 486B LISTED.





USE FOR INTERNAL CONTROL ONLY

THIS DOCUMENT IS CONTROLLED TO MAINTAIN COMPLIANCE WITH CODES AND STANDARDS:

☒ UL ☒ CSA ☐ US TESTING ☐ OTHER _____

AND/OR TO RETAIN DESIGN RESPONSIBILITY. ☐

ANY CHANGES OR DEVIATIONS TO THIS DOCUMENT MUST BE APPROVED BY THE COORDINATOR LISTED.

FACILITY _____ DATE _____

SIGNATURE _____

FACILITY _____ DATE _____

SIGNATURE _____

DO NOT SCALE PRINT | ANG TOL ± 1.0° | DRAWN TO SCALE OF 1/2

TOLERANCE UNLESS OTHERWISE SPECIFIED — SIM TO , — COPIED FROM , — THIRD ANGLE PROJECTION

	mm	Inch
DIM	X ± 1 .X ± 0.8 .XX± 0.38	.X ± .XX ± .XXX±
HOLE	0.09- 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	.004-.200 ±.006/-.003 .201-.421 ±.008/-.004 .422-.703 ±.010/-.005 .704-.999 ±.012/-.005

THIS DOCUMENT IS THE PROPERTY OF CUMMINS POWER GENERATION. IT CONTAINS PROPRIETARY AND CONFIDENTIAL INFORMATION WHICH MUST NOT BE DUPLICATED, USED OR DISCLOSED OTHER THAN EXPRESSLY AUTHORIZED BY CUMMINS POWER GENERATION OR IT'S REPRESENTATIVE

ITEM	PART NO	DWG SIZE	DESCRIPTION OR MATERIAL	REF DES

	NAME	DATE
DR	D_CRANE	03-24-03
CHKR ☒ MFG ☐	E_CZECHOWSKI	03-24-03
APPROVED	E_CZECHOWSKI	03-24-03

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

MODEL FIRST USED ON: HC6/HC7 CB

SITE CODE: PGA

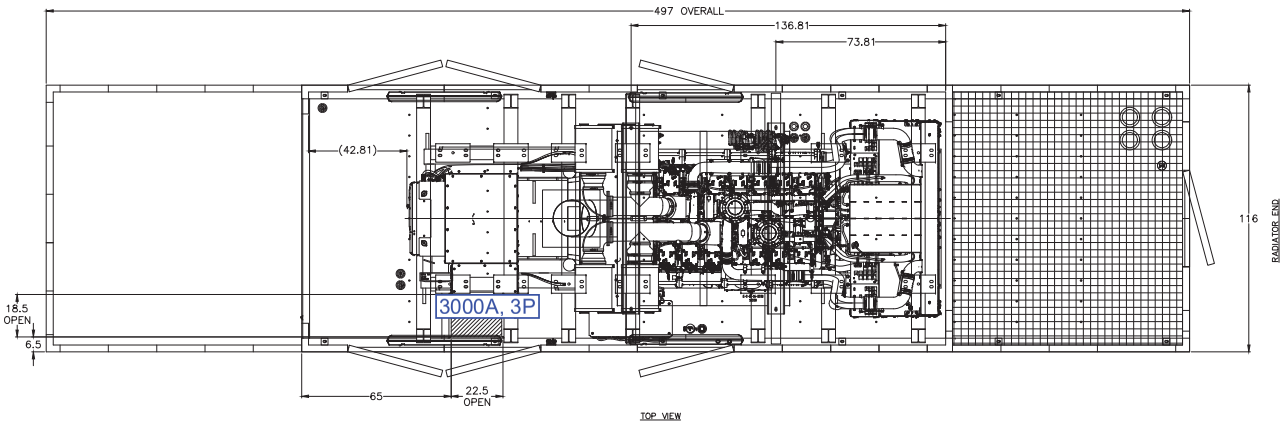
CUMMINS POWER GENERATION
1400 73RD AVE NE
MINNEAPOLIS, MINNESOTA 55432

TITLE: LUG-CABLE (SOLDERLESS)

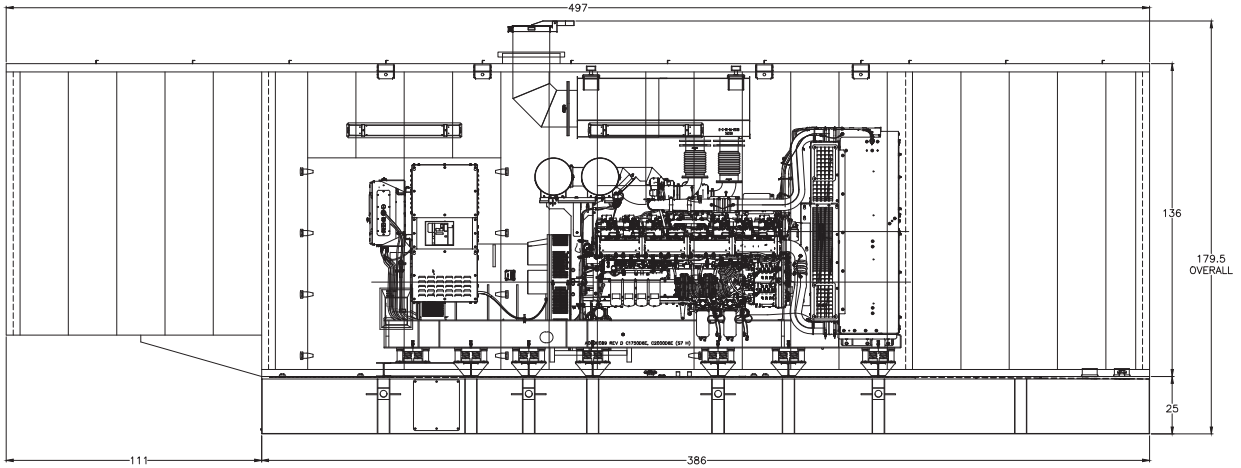
DWG NO: 0332_3949 | SHEET: 1 OF 1 | DWG SIZE: B

APPROVAL BY	APPR. DATE	GENSET MODEL	TANK CAPACITY	USEABLE CAPACITY
		C2000D6E, S7L1D-J4-60, 40C	3518 GAL	3356 GAL

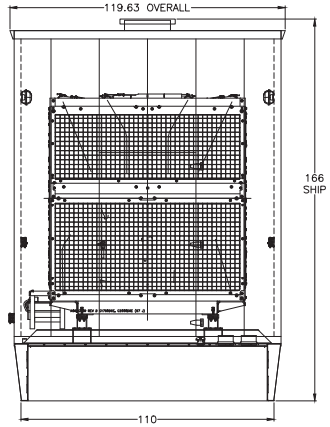
GALVANNEALED CONSTRUCTION



TOP VIEW



SIDE VIEW



RADIATOR VIEW

BILL OF MATERIAL		
PART #	DESCRIPTION	QTY
GWE-G2	GALVANNEALED CONSTRUCTION	1
6505	ACCESS DOOR	7
6501	STAINLESS STEEL DOOR HARDWARE	7
6507	DOOR RESTRAINT	7
6508	PANIC HARDWARE	7
6610	EXTERNAL VERTICAL INTAKE HOOD	1
6615	INTERNAL VERTICAL DISCHARGE PLENUM	1
6520	PERFORATED INTERIOR LININING	1
6522	3" INSULATION BOARD	1
6805	RAIN COLLAR	1
6843	GPC SUPPLIED EXHAUST SYSTEM	1
6855	INTERNALLY MOUNTED SILENCER	1
	SIL: E-C-12-16-2330	1
	FLEX: BLWA-8-1406-2346	1
	FLEX: BLWA-8-1406-2347	1
6870	VERTICAL SILENCER DISCHARGE	1
	ELBOW: 1001289	1
	RAIN CAP: PF-55-03-16	1
6902	WIRE BLOCK HEATER	1
6904	MOUNT & WIRE BATTERY CHARGER	1
6518E	EXTEND DRAINS TO EXTERIOR OF VALVE PRESENT	1
6982	LED COMPACT FIXTURE(4' VAPOR TIGHT)	4
6905	3-WAY LIGHT SWITCH	2
6916	GFCI OUTLET (20A)	1
6918	GFCI PROTECTED OUTLET (20A)	1
6914	100A LOAD CENTER (1, 120/208V)	1
SPECIAL	INSTALL CUSTOMER FLEET GUARD FILTERS	1
XXXX	PAINT COLOR TO BE DETERMINED	

REVISION TABLE				
REV.	DESCRIPTION	DATE	DRAWN	APPROVED
A	INITIAL RELEASE	9/15/2026	LAR	DJM

GLOBAL POWER COMPONENTS
2300 S. 51st ST
MILWAUKEE, WI 53219
PH 414.475.3000
WWW.GLOBALPOWERCOMPONENTS.COM

THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF GLOBAL POWER COMPONENTS AND REPRODUCTION IN PART OR WHOLE WITHOUT THE WRITTEN PERMISSION OF GLOBAL POWER COMPONENTS IS PROHIBITED.

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES

ISO 9001:2015

TOLERANCES:
ONE PLACE (.X) ± .1
TWO PLACE (.XX) ± .06
HOLE DIA. ± .005
ANGLE ± 2°
STRUCTURAL LENGTH +.03 -.12

THIRD ANGLE PROJECTION

CUSTOMER: CUMMINS NORTH

SALES ORDER REFERENCE: L2 ENCLOSURE 24 HR TANK

DRAWING REF: 886770-00

ASSEMBLY WEIGHT: 55,800 LBS

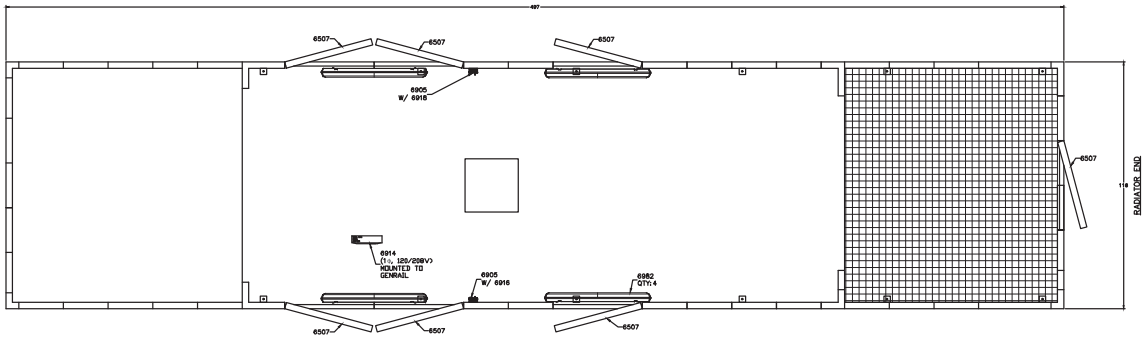
DESCRIPTION: TOP LEVEL ASSEMBLY

SIZE: B | DWG. NO.: 143923-0001 SUBMITTAL | REV.: A

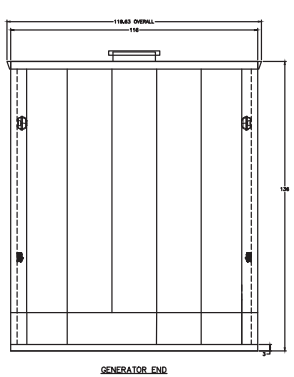
DO NOT SCALE | DRAWN BY: LAR | DATE: 09/15/26 | SHEET 1 OF 1

APPROVAL BY	APPR. DATE	GENSET MODEL
		C2000D6E, S7L1D-J4-60, 40C

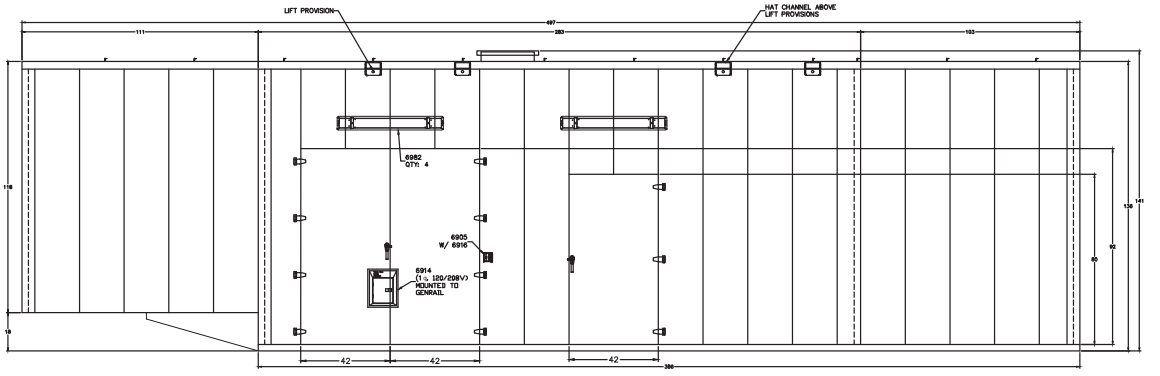
GALVANNEALED CONSTRUCTION



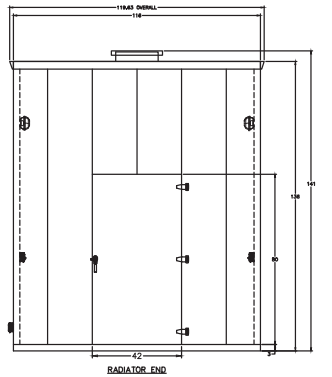
TOP VIEW



GENERATOR END



RIGHT SIDE



RADIATOR END

BILL OF MATERIAL		
PART #	DESCRIPTION	QTY
GWE-G2	GALVANNEALED CONSTRUCTION	1
6505	ACCESS DOOR	7
6501	STAINLESS STEEL DOOR HARDWARE	7
6507	DOOR RESTRAINT	7
6508	PANIC HARDWARE	7
6610	EXTERNAL VERTICAL INTAKE HOOD	1
6615	INTERNAL VERTICAL DISCHARGE PLENUM	1
6520	PERFORATED INTERIOR LININING	1
6522	3" INSULATION BOARD	1
6805	RAIN COLLAR	1
6843	GPC SUPPLIED EXHAUST SYSTEM	1
6855	INTERNALLY MOUNTED SILENCER	1
	SIL: E-C-I2-16-2330	1
	FLEX: BLWA-8-1406-2346	1
	FLEX: BLWA-8-1406-2347	1
6870	VERTICAL SILENCER DISCHARGE	1
	ELBOW: 1001289	1
	RAIN CAP: PF-55-03-16	1
6902	WIRE BLOCK HEATER	1
6904	MOUNT & WIRE BATTERY CHARGER	1
6518E	EXTEND DRAINS TO EXTERIOR OF VALVE PRESENT	1
6982	LED COMPACT FIXTURE(4' VAPOR TIGHT)	4
6905	3-WAY LIGHT SWITCH	2
6916	GFCI OUTLET (20A)	1
6918	GFCI PROTECTED OUTLET (20A)	1
6914	100A LOAD CENTER (1, 120/208V)	1
SPECIAL	INSTALL CUSTOMER FLEET GUARD FILTERS	1
XXXX	PAINT COLOR TO BE DETERMINED	

REVISION TABLE				
REV.	DESCRIPTION	DATE	DRAWN	APPROVED
A	INITIAL RELEASE	9/15/2026	LAR	DJM

GLOBAL POWER COMPONENTS™
2300 S. 51st ST
MILWAUKEE, WI 53219
PH 414.475.3000
WWW.GLOBALPOWERCOMPONENTS.COM

THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF GLOBAL POWER COMPONENTS ANY REPRODUCTION IN PART OR WHOLE WITHOUT THE WRITTEN PERMISSION OF GLOBAL POWER COMPONENTS IS PROHIBITED.

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES

ISO 9001:2015

TOLERANCES:
ONE PLACE (.X) ± .1
TWO PLACE (.XX) ± .05
HOLE DIA. ± .005
ANGLE ± 2°
STRUCTURAL LENGTH +.03 -.12

THIRD ANGLE PROJECTION

CUSTOMER: CUMMINS NORTH

SALES ORDER REFERENCE: L2 ENCLOSURE 24 HR TANK

DRAWING REF: 886770-00

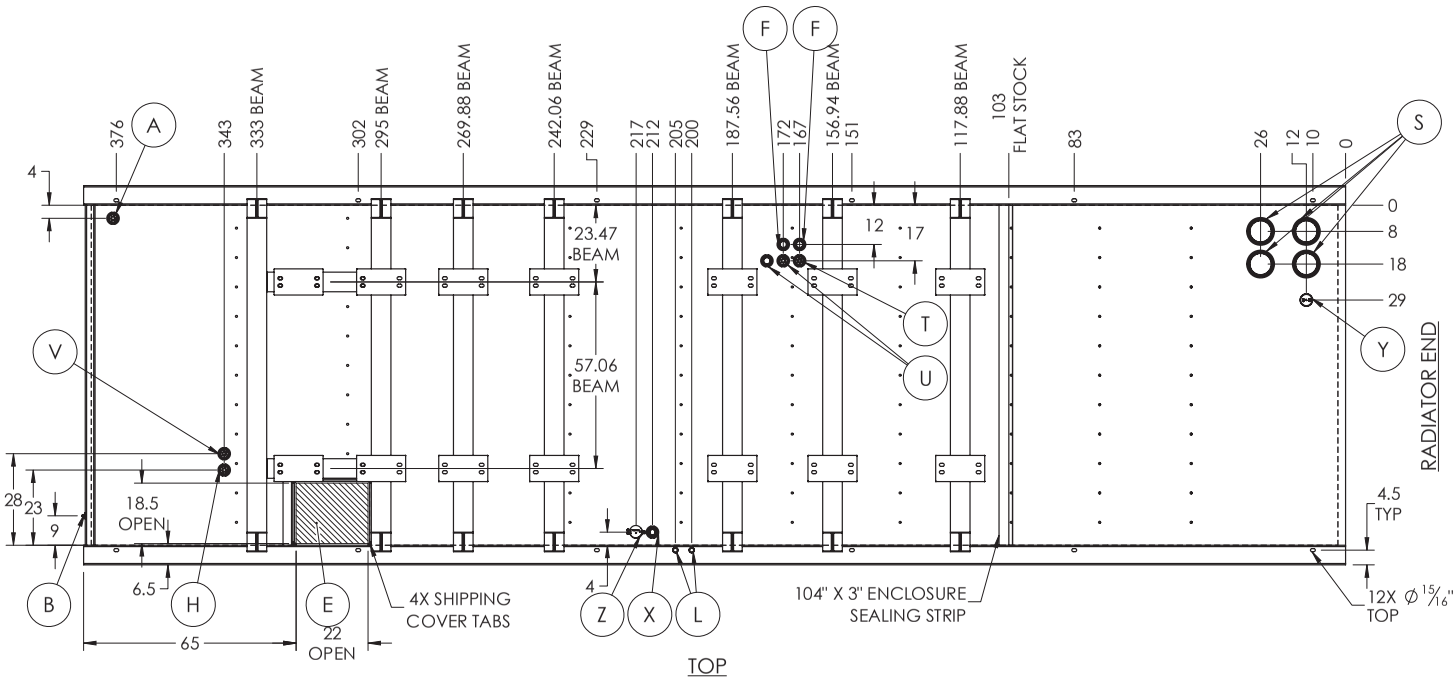
ENCLOSURE WEIGHT: 13,125 LBS

DESCRIPTION: ENCLOSURE ASSEMBLY

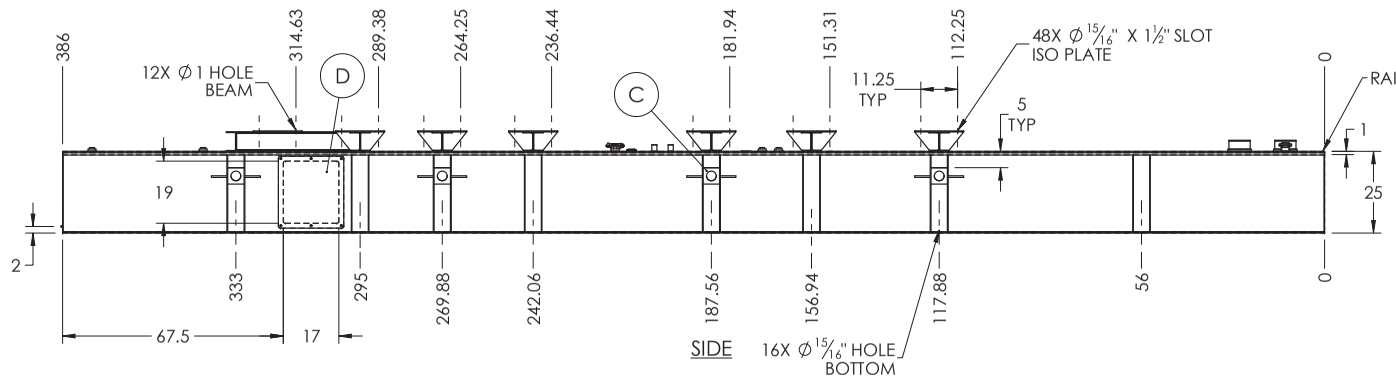
SIZE B | DWG. NO. 143923-3000 SUBMITTAL | REV. A

DO NOT SCALE | DRAWN BY: LAR | DATE: 09/15/26 | SHEET 1 OF 1

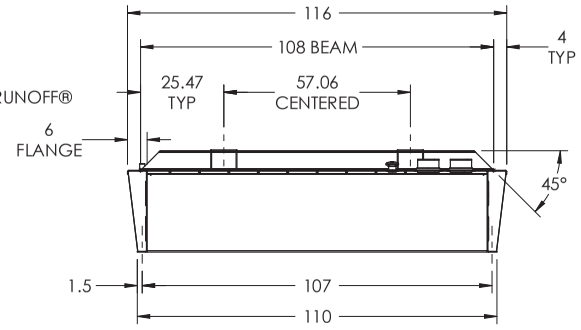
S.O. #	TANK CAPACITY ACTUAL	TANK CAPACITY USEABLE	TANK WEIGHT	GENSET MODEL	GENSET FOOTPRINT	THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF GLOBAL POWER COMPONENTS. ANY REPRODUCTION IN PART OR WHOLE WITHOUT THE WRITTEN PERMISSION OF GLOBAL POWER COMPONENTS IS PROHIBITED.	APPROVED BY:	DATE:
143923	3518 GAL	3356 GAL	10325.00 LBS	C2000D6E	86.1" X 224.7"			



TOP



SIDE



END

BILL OF MATERIALS

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
S	3166	FLANGE, 6", EMERGENCY VENT	4
T	3660R	FLANGE, 2", FUEL RETURN W/ 1" DIP TUBE	1
U	3660S	FLANGE, 2" FUEL SUPPLY W/ 1" DIP TUBE	2
	700-1075	1" SPRING CHECK VALVE	2
V	1000	FLANGE, 2", LOW LEVEL ALARM (SET AT 12-1/2")	1
X	1003	FLANGE, 2" FUEL LEVEL GAUGE (SET AT 22-1/2")	1
Y	3152	FLANGE, 2", STANDARD VENT CAP	1
Z	3005	FLANGE, 2", LOCKING FILL PORT	1
A	4300	FLANGE, 2", FUEL IN BASIN ALARM	1
B	3502	FLANGE, 1/2", BASIN DRAIN	1
C	8410	1/2" FLUSH MOUNT LIFTING PLATE	8
D	8002	REMOVABLE STUB UP ACCESS PANEL	1
E	4001	NOTCHED ELECTRICAL STUB UP AREA	1
	4005	STUB UP COVER	1
F	3195	FLANGE, 2", EXTRA FITTING W/ PLUG	2
H	1010	FLANGE, 2", HIGH LEVEL ALARM (SET AT 3")	1
L	3193	F. COUPLING, 1", EXTRA FITTING W/PLUG	2
	8303	W6x15 I-BEAM GENSET SUPPORT	9
	1000111	ISO GUSSET, 7.35" x 5.67" x 0.25" THK, (W6 x 15 x 15.00")	44
	1000128	ISOLATOR PAD SUPPORT PLATE	14
	3520	RAIN RUNOFF® OPTION	1
DW-101		DOUBLE WALL SECONDARY CONTAINMENT	1
PAINT COLOR		GLOSS BLACK (9638)	

REVISIONS			
REV.	DESCRIPTION	DATE	BY

GLOBAL POWER COMPONENTS®
2300 S. 51st ST
MILWAUKEE, WI 53219
PH 414.475.3000
WWW.GLOBALPOWERCOMPONENTS.COM

THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF GLOBAL POWER COMPONENTS. ANY REPRODUCTION IN PART OR WHOLE WITHOUT THE WRITTEN PERMISSION OF GLOBALPOWER COMPONENTS IS PROHIBITED.

Underwriters Laboratories® Inc. Listed MH18481 FILE NO. MH46743 MH25279

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES. ONE PLACE TWO PLACE ANGLES HOLES DIA. THE TOLERANCES ARE X ± .1 XX ± .04 ANGLES ± .5° ± .005

THIRD ANGLE PROJECTION

CUSTOMER NAME: CUMMINS NORTH	DATE: 9/14/2026
JOB REFERENCE: L2 ENCLOSURE 24 HR TANK	DRAWN BY: LAR
DRAWING REFERENCE: 886770-00	SIZE: B
	SCALE: 1:38

DESCRIPTION: **SUBBASE TANK WITH RUPTURE BASIN**

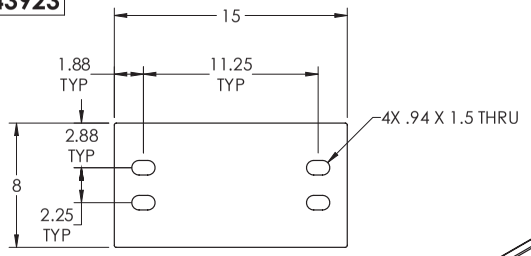
DWG. NO. **143923-1000**

REV. A

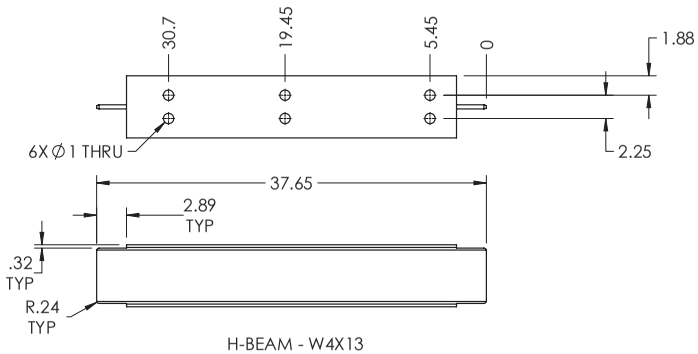
S.O. #
143923

THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF GLOBAL POWER COMPONENTS. ANY REPRODUCTION IN PART OR WHOLE WITHOUT THE WRITTEN PERMISSION OF GLOBAL POWER COMPONENTS IS PROHIBITED.

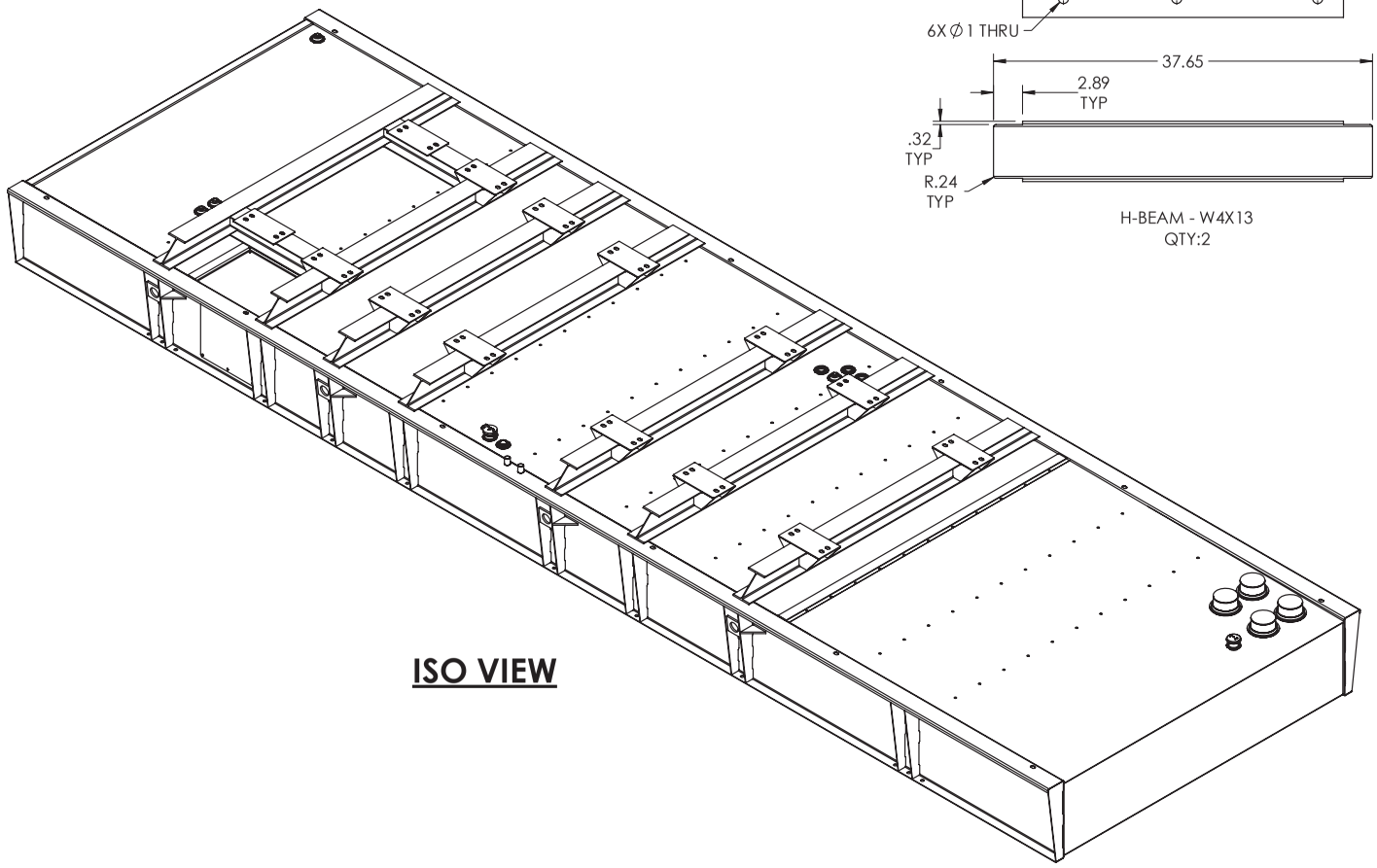
APPROVED BY: **DATE:**



1000128
ISOLATOR PAD SUPPORT
QTY: 14



H-BEAM - W4X13
QTY:2



ISO VIEW

Gallons Per Inch Chart	
Inches	Gallons
1	150.10
2	300.21
3	450.31
4	600.42
5	750.52
6	900.62
7	1050.73
8	1200.83
9	1350.94
10	1501.04
11	1651.14
12	1801.25
13	1951.35
14	2101.45
15	2251.56
16	2401.66
17	2551.77
18	2701.87
19	2851.97
20	3002.08
21	3152.18
22	3302.29
22.4375	3367.96
23	3452.39
23.4375	3518.06

USABLE CAPACITY

GLOBAL POWER COMPONENTS®
2300 S. 51st ST
MILWAUKEE, WI 53219
PH 414.475.3000
WWW.GLOBALPOWERCOMPONENTS.COM

THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF GLOBAL POWER COMPONENTS. ANY REPRODUCTION IN PART OR WHOLE WITHOUT THE WRITTEN PERMISSION OF GLOBAL POWER COMPONENTS IS PROHIBITED.

Underwriters Laboratories® Inc.
Listed
MH18481
FILE NO. MH46743
MH25279

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
DECIMALS ARE
ONE PLACE X ± .1
TWO PLACE .XX ± .04
ANGLES ± 1°
HOLES DIA. ± .005

THIRD ANGLE PROJECTION

CUSTOMER NAME: CUMMINS NORTH
JOB REFERENCE: L2 ENCLOSURE 24 HR TANK
DRAWING REFERENCE: 886770-00

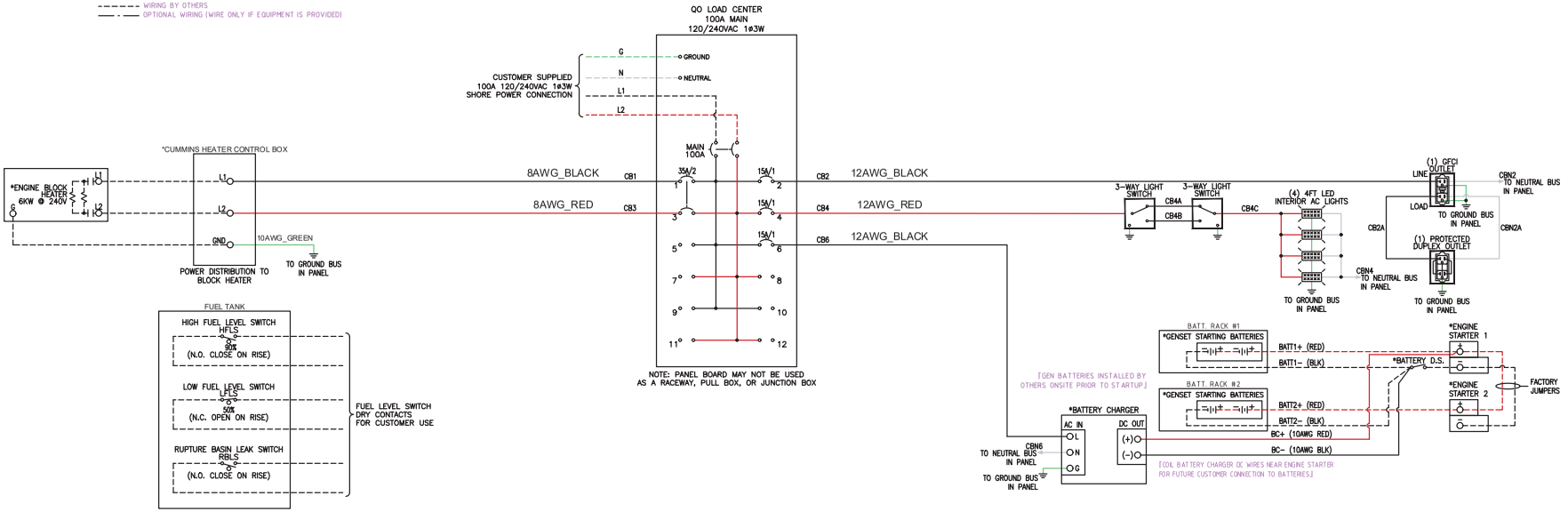
DATE: 9/14/2026
DRAWN BY: LAR

DESCRIPTION: **ISO VIEW**
SIZE: B
DWG. NO.: **143923-1000**
REV.: A
SCALE: 1:44
SHEET 3 OF 6

JOB #	THIS AUTOCAD DRAWING IS THE PROPERTY OF GLOBAL POWER COMPONENTS AND MAY NOT BE USED IN ANY WAY DETRIMENTAL TO THE INTERESTS OF G.P.C. ANY MANUAL CHANGES WILL VOID THIS DRAWING. SPECIFICATIONS MAY CHANGE WITHOUT NOTICE.
143923	

NOTES:
- MINIMUM 12AWG THHN STRANDED WIRING TO BE USED FOR DISTRIBUTION PANEL FEEDER CIRCUITS UNLESS OTHERWISE NOTED
- ALL CIRCUITS TO BE WIRED IN EMT CONDUIT
- * - PROVIDED BY OTHERS

——— GPC WIRING
- - - - - - WIRING BY OTHERS
—·— OPTIONAL WIRING (WIRE ONLY IF EQUIPMENT IS PROVIDED)



BILL OF MATERIAL

QTY	DESCRIPTION	MANUFACTURER	PART NO.
1	QO LOAD CENTER, 100A, 120/240V 1Ø3W	SQUARE D	QO112M100P
1	LOAD CENTER TRIM	SQUARE D	QOC12US
1	GROUND BAR (FOR LOAD CENTER)	SQUARE D	PK9GTA
1	CIRCUIT BREAKER, 35A, 2P, 10KAIC, PLUG-ON	SQUARE D	QO235
3	CIRCUIT BREAKER, 15A, 1P, 10KAIC, PLUG-ON	SQUARE D	QO115
1	GFCI OUTLET	HUBBELL	GFRTW20I
1	DUPLEX OUTLET	HUBBELL	BR20I
4	4FT LED LIGHTS	SYLVANIA	VAPOR3A/S050UNH D8SC7/48/GR
2	3-WAY SWITCHES	HUBBELL	CSB320I

GWE-G2-2000-3356-ELECTRICAL

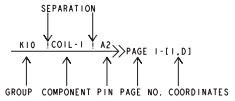
CUSTOMER/ID: CUMMINS NORTH
JOB REF: L2 ENCLOSURE 24 HR TANK
DRAWING REF: X
DWG #: 45-143923 1-PHASE
DATE: 09/16/26 | DRAWN BY: ANL

GLOBAL POWER COMPONENTS

REV: N/A	DATE: N/A	DECRIPTIONS	BY: N/A
REVISIONS		WIRING	

NOTES

1. REMOVABLE SHORTING LINK FOR REMOTE E-STOP IS CONNECTED ON THE LOAD SIDE
2. CTB2,3,4,5,6-4 OUTPUTS FUSED AT 20 AMPS
3. CTB7,8,9, 10,11,12-4 (MAX CURRENT=30 AMPS)
4. NOMINAL CONDUCTOR SIZE PER TERMINAL 26-12 AWG
5. WIRE TYPE, USE 60°C RATED MINIMUM, STRANDED COPPER WIRE
6. STRIP WIRE LENGTH TO 10.0MM
7. TO REMOVE WIRES FROM TERMINAL BLOCK, PUSH IN ORANGE TAB NEXT TO WIRE TERMINATION
8. LOW SIDE DRIVER OUTPUT RATED AT 250mA, 3A IN-RUSH 30VDC 100 MICRO-A LEAKAGE IN OFF STATE. SURGE SUPPRESION DIDOE REQUIRED FOR INDUCTIVE COILS.
9. RELAY OUTPUT RATED AT 3.5A 30VDC, 250VAC.
10. TO CONNECT TO OPTIONAL GROUND FAULT RELAY REMOVE SAFETY SHORTING BLOCK IF AVAILABLE FROM HARNESS AND CONNECT TO GROUND FAULT RELAY TERMINALS.
11. CROSS REFERENCE WIRES ARE ON THE FOLLOWING FORMAT:



12. AUX101 BOARD SPECIFICATIONS (SHEET 13)
    12.1 CUSTOMER INPUTS
    12.1.1 TYPE=DISCRETE OR ANALOG
    NUMBER=8
    MAX. VOLTAGE ALLOWED AT ANY INPUT: -10-24 VDC (1-6)
    40 VDC (7,8)
    DIFFERENTIAL VOLTAGE RANGE: -4.9-5V (INPUTS 1,2)
    0-5V (INPUTS 3-6)
    0-38V (INPUTS 7,8)
    INPUTS CONNECTIONS=J11
    12.2 CUSTOMER OUTPUTS
    12.2.1 CURRENT SOURCES=J10-3,4,5,6 (1mA- 20mA)
    12.2.2 VOLTAGE SOURCES=J1-7,8 (5VDC, 20mA)
    12.2.3 GROUND=J10-9,10,11,12
    12.3 OUTUPUT RELAYS
    12.3.1 TYPE=NON-LATCHING
    12.3.2 NUMBER=8
    12.3.3 CONTACTS=1 FORM C
    250VAC OR 30VDC
    NC CONTACTS=3A
    NO CONTACTS=5A
    12.3.4 CONNECTIONS=J2, J3, J4
13. ALL RELAYS SHOWN IN RESET OR DE-ENERGIZED POSITION DO NOT MAINTAIN THE LAST STATE WHEN POWER IS LOST (SHEET 13).
14. OUTPUT RELAYS ARE CONTROLLED VIA THE NETWORK (SHEET 13).
15. TIE J1-1 AND J1-5 TO HOLD DEVICE IN WAKE UP STATE (SHEET 13).
16. DISPLAYS THE DEVICE NUMBER. IF MORE THAN ONE AUX IO IS CONNECTED ON NETWORK BOTH NEED A UNIQUE DEVICE NUMBER (SHEET 13).
17. CONNECT J2 RING TERMINAL TO A GOOD EARTH GROUND. USE AN EXTERNAL TOOTH LOCKWASHER BETWEEN RING AND GROUNDING SURFACE (SHEET 13).
18. DIGITAL INPUTS NEED THE (-) INPUT GROUNDED (SHEET 13).
19. DS1 INDICATES ACTIVE NETWORK COMMUNICATION. DS2 INDICATES NO NETWORK CONNECTIVITY (SHEET 13).
20. DS3-DS10 (GREEN) INDICATE WHICH RELAYS ARE ENERGIZED (SHEET 13).
21. RTD SENDERS CAN ONLY BE USED ON INPUTS 3-6 (SHEET 13).
22. PROGRAMMABLE CURRENT SOURCE USE (SHEET 13)
    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

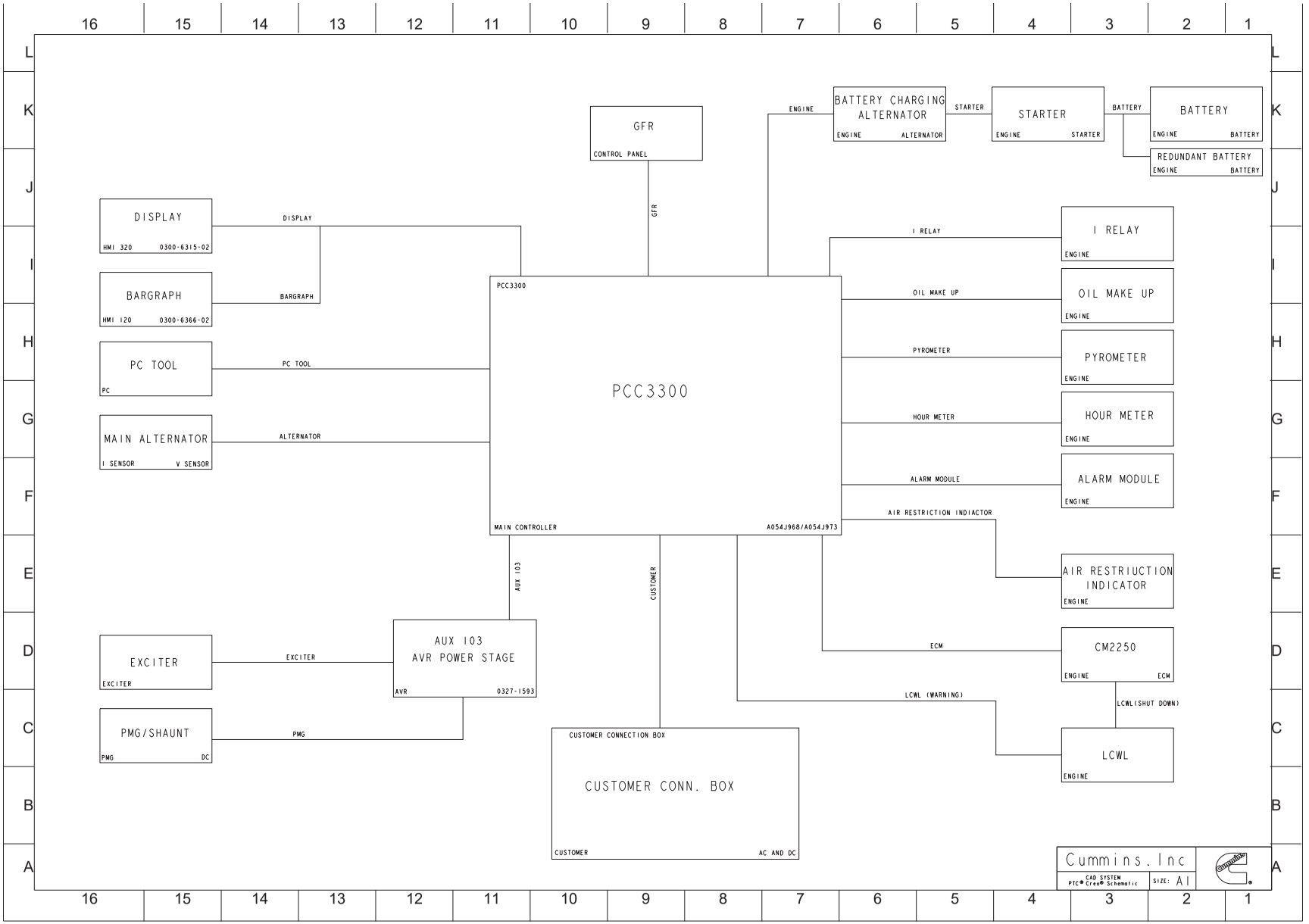
Cummins Inc | CAD SYSTEM PTC® Creo® Schematic | SIZE: A1

Document Generated: **07APR2026 15:10 GMT**

Cummins Data Classification:
Cummins Confidential

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.

Part Number: **A073F079** Part Revision: **E**
Part Name: **DIAGRAM,WIRING SCHEMATIC**
Drawing Category: **Detail** State: **Released**

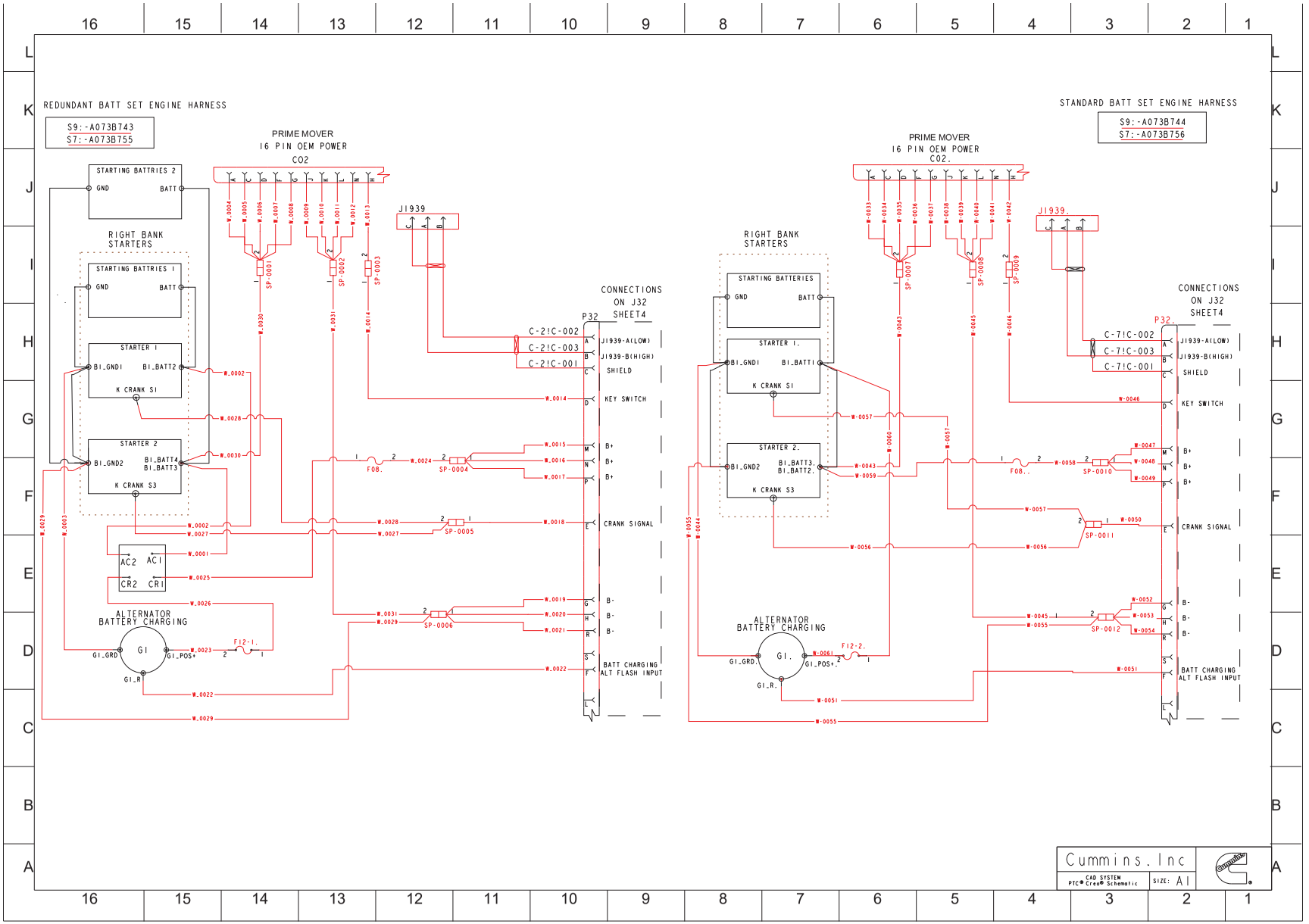


Document Generated: **07APR2026 15:10 GMT**

Cummins Data Classification:
Cummins Confidential

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.

Part Number: **A073F079** Part Revision: **E**
Part Name: **DIAGRAM,WIRING SCHEMATIC**
Drawing Category: **Detail** State: **Released** Sheet **2** of **19**

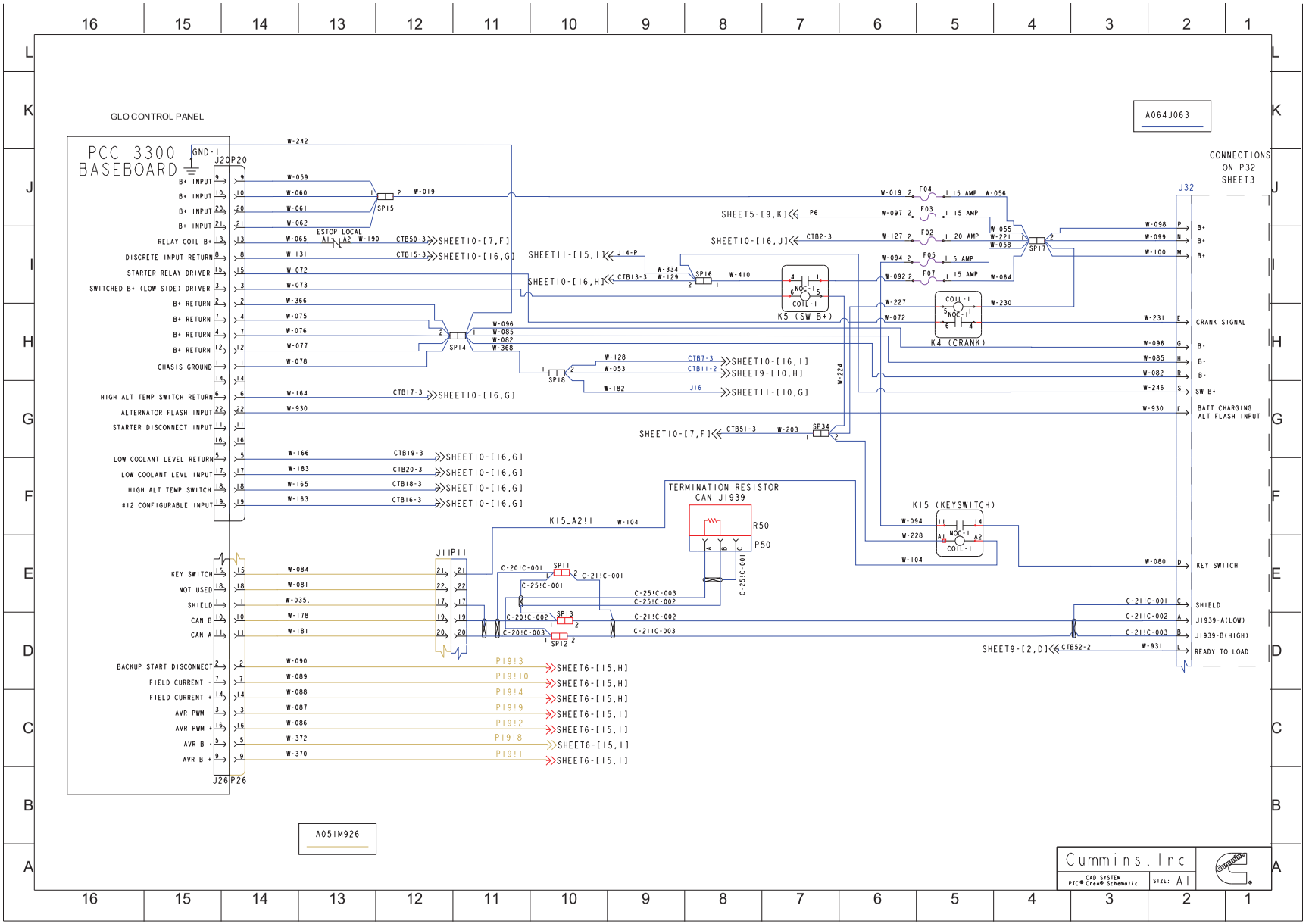


Cummins Data Classification:
Cummins Confidential

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.

Part Number: **A073F079** Part Revision: **E**
Part Name: **DIAGRAM,WIRING SCHEMATIC**
Drawing Category: **Detail** State: **Released** Sheet **3** of **19**

Document Generated: **07APR2026 15:10 GMT**

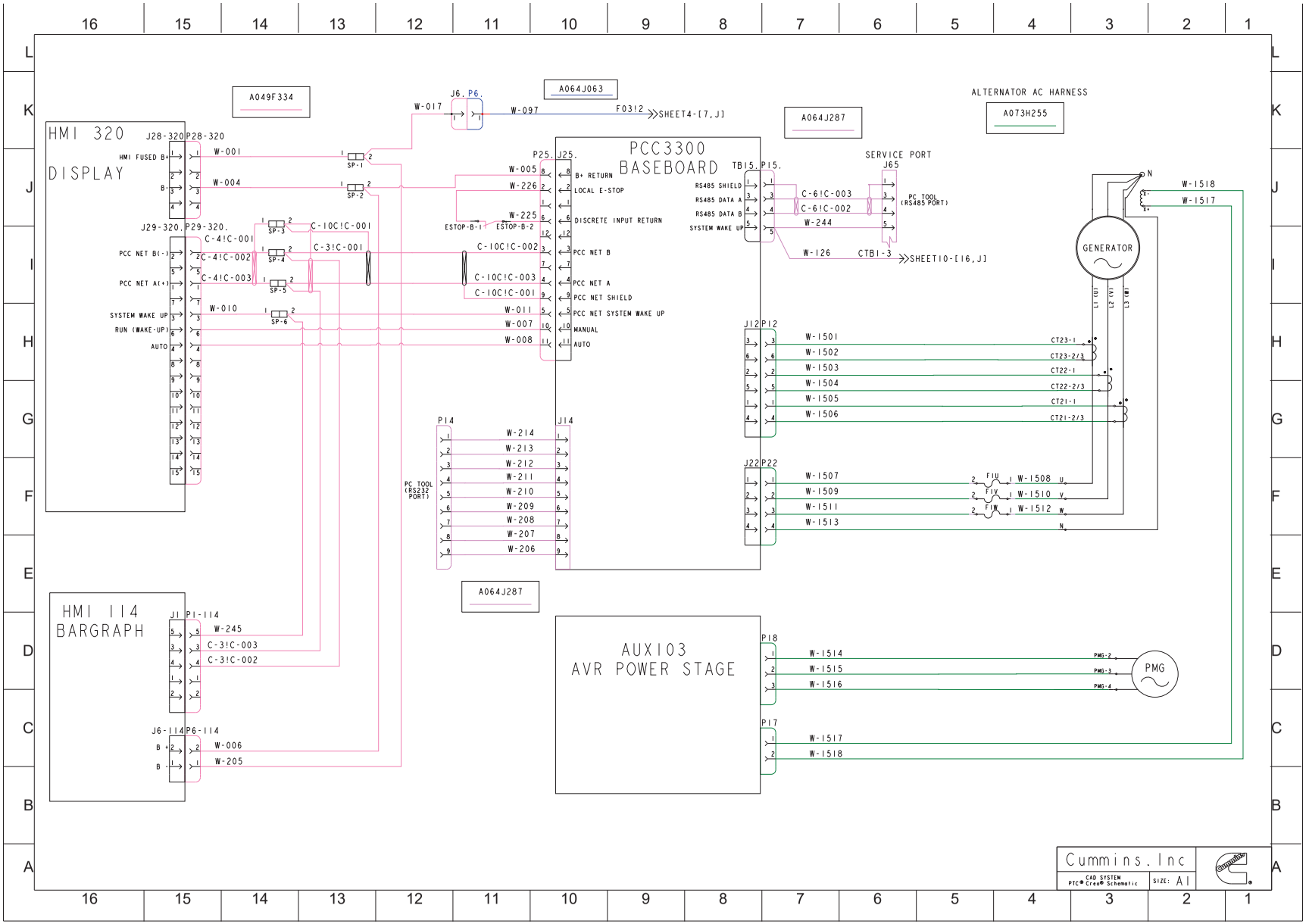


Document Generated: **07APR2026 15:10 GMT**

Cummins Data Classification:
Cummins Confidential

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.

Part Number: **A073F079** Part Revision: **E**
Part Name: **DIAGRAM,WIRING SCHEMATIC**
Drawing Category: **Detail** State: **Released** Sheet **4** of **19**

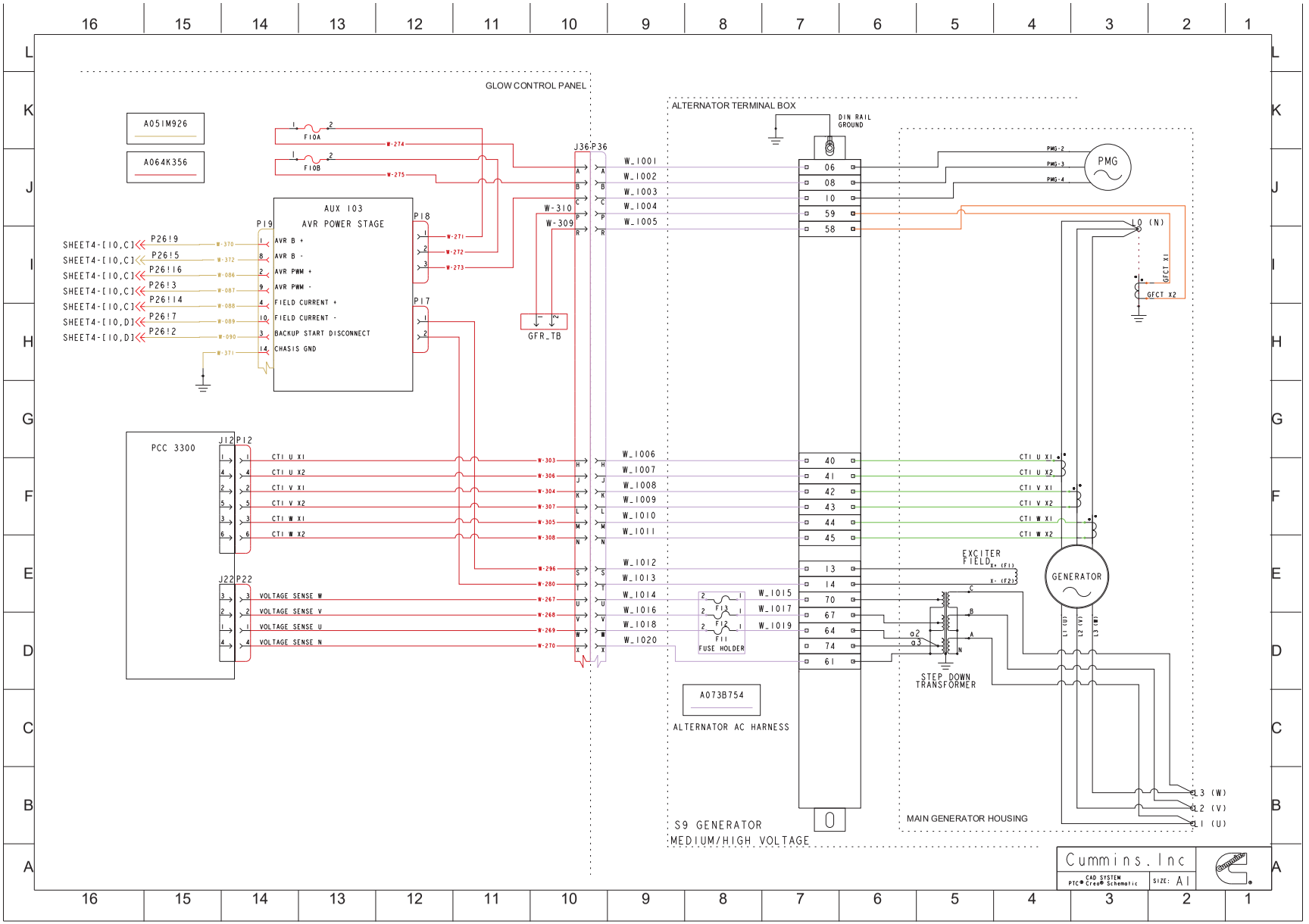


Document Generated: **07APR2026 15:10 GMT**

Cummins Data Classification:
Cummins Confidential

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.

Part Number: **A073F079** Part Revision: **E**
Part Name: **DIAGRAM,WIRING SCHEMATIC**
Drawing Category: **Detail** State: **Released** Sheet **5** of **19**

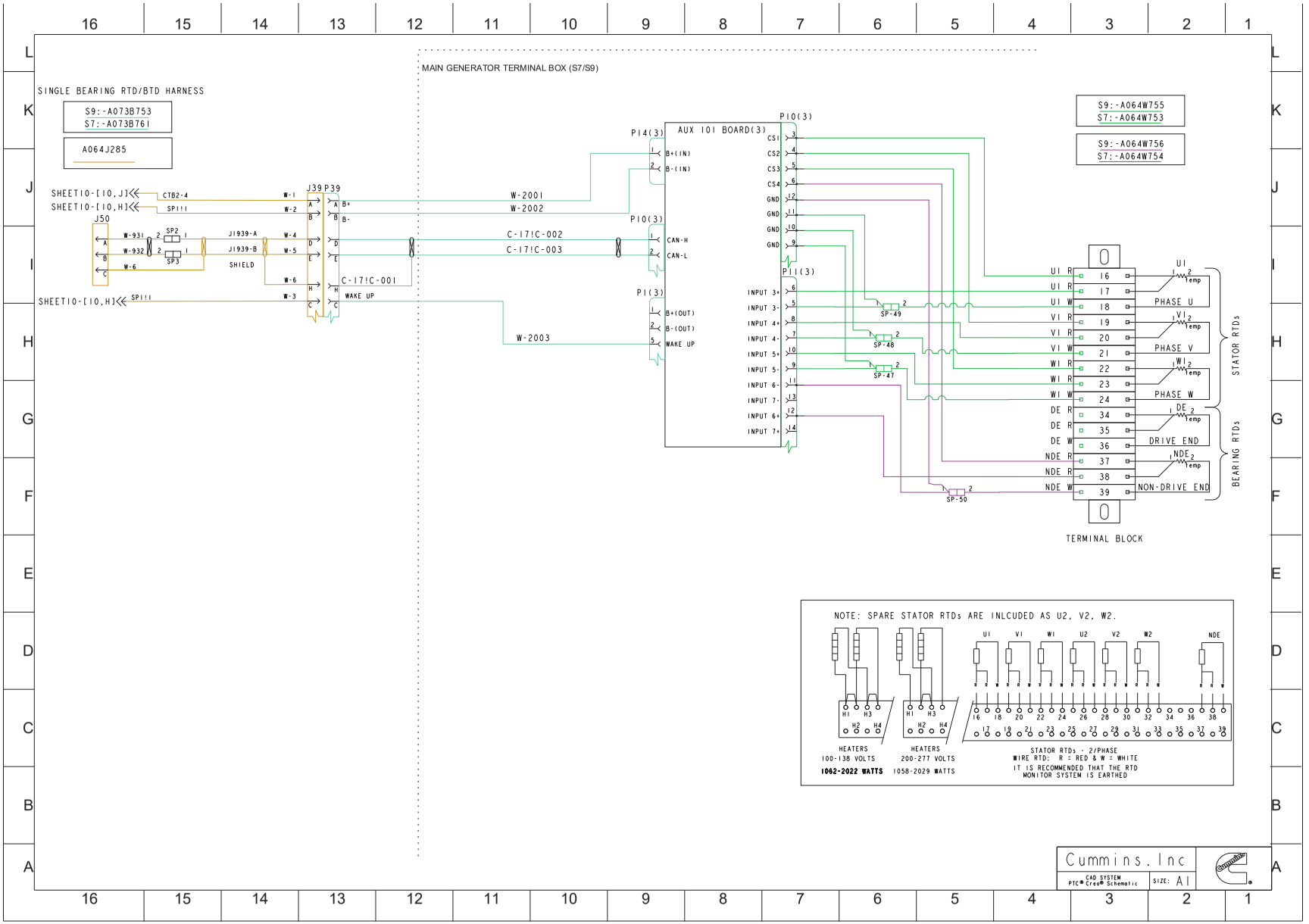


Document Generated: **07APR2026 15:10 GMT**

Cummins Data Classification:
Cummins Confidential

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.

Part Number: **A073F079** Part Revision: **E**
Part Name: **DIAGRAM,WIRING SCHEMATIC**
Drawing Category: **Detail** State: **Released** Sheet **6** of **19**

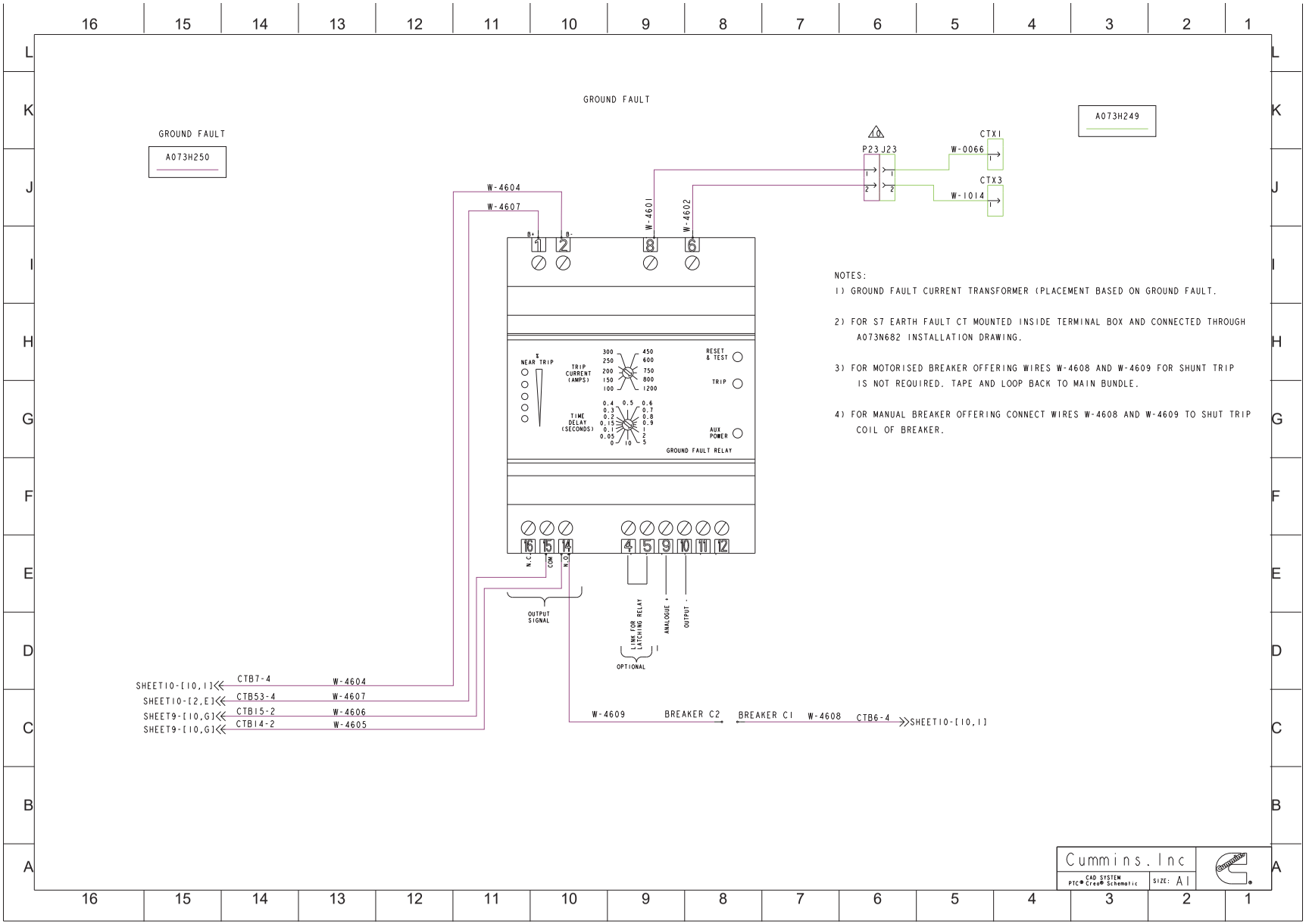


Document Generated: **07APR2026 15:10 GMT**

Cummins Data Classification:
Cummins Confidential

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.

Part Number: **A073F079** Part Revision: **E**
Part Name: **DIAGRAM,WIRING SCHEMATIC**
Drawing Category: **Detail** State: **Released** Sheet **7** of **19**

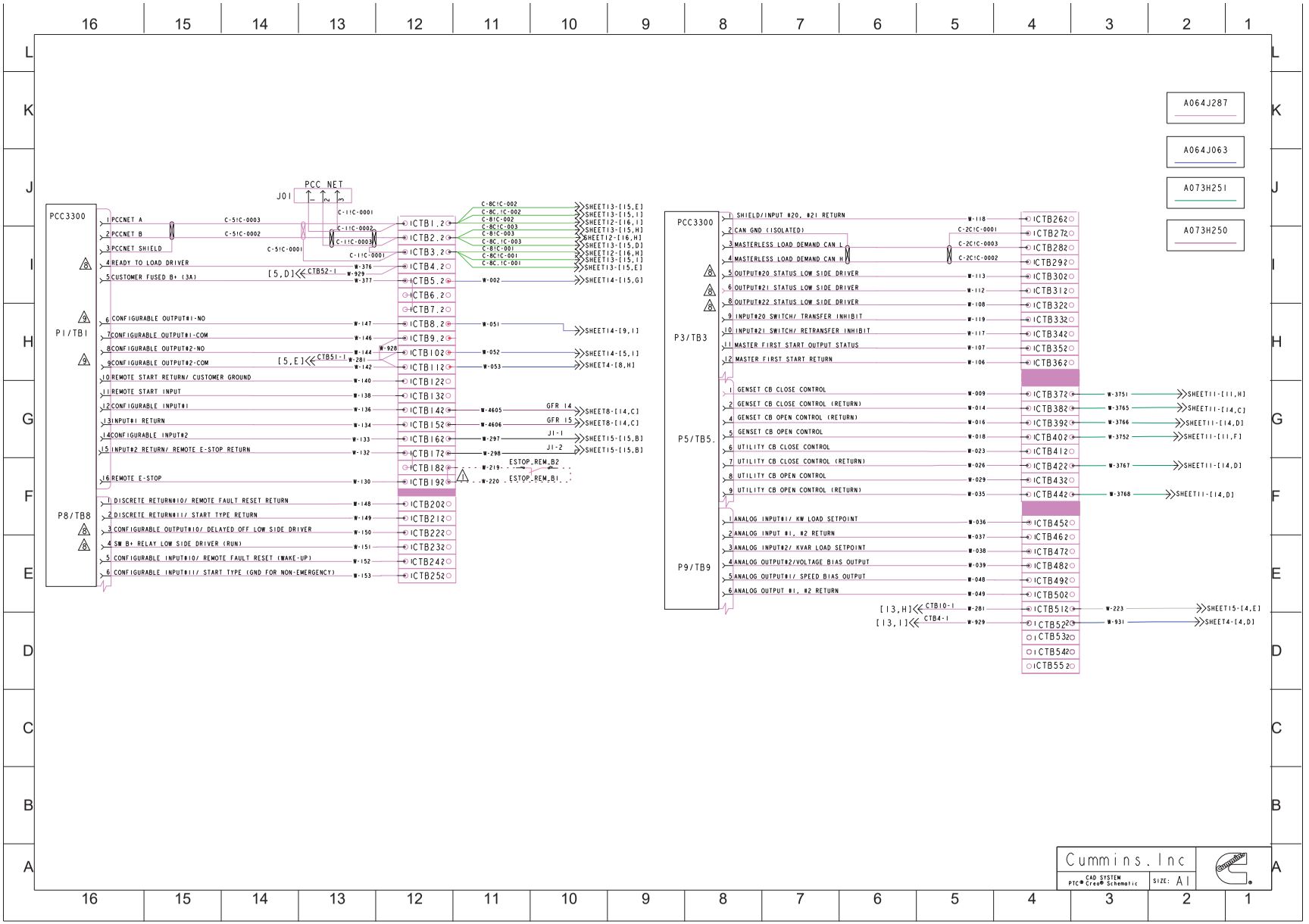


Document Generated: **07APR2026 15:10 GMT**

Cummins Data Classification:
Cummins Confidential

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.

Part Number: **A073F079** Part Revision: **E**
Part Name: **DIAGRAM,WIRING SCHEMATIC**
Drawing Category: **Detail** State: **Released** Sheet **8** of **19**

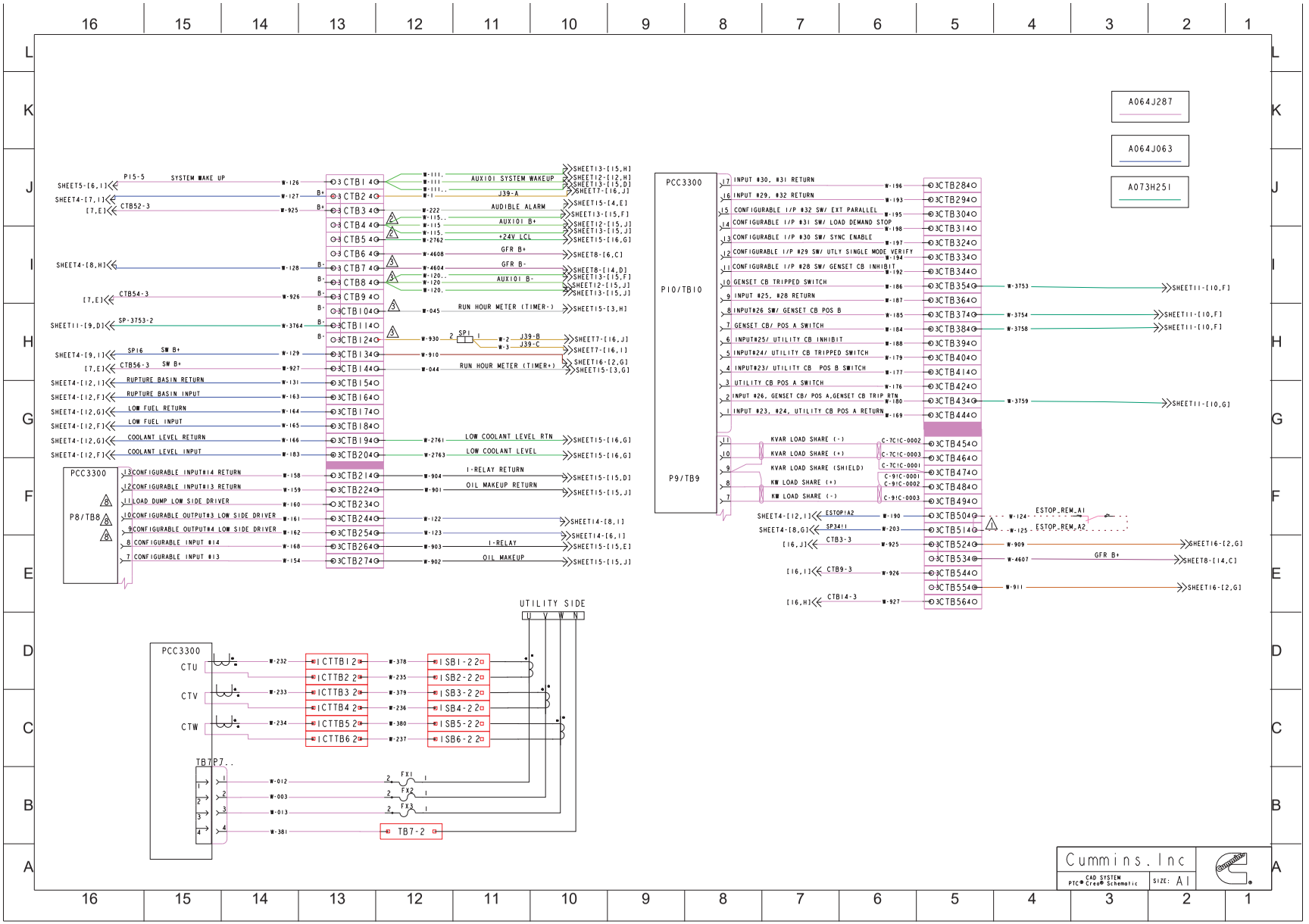


Document Generated: **07APR2026 15:10 GMT**

Cummins Data Classification:
Cummins Confidential

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.

Part Number: **A073F079** Part Revision: **E**
Part Name: **DIAGRAM,WIRING SCHEMATIC**
Drawing Category: **Detail** State: **Released** Sheet **9** of **19**

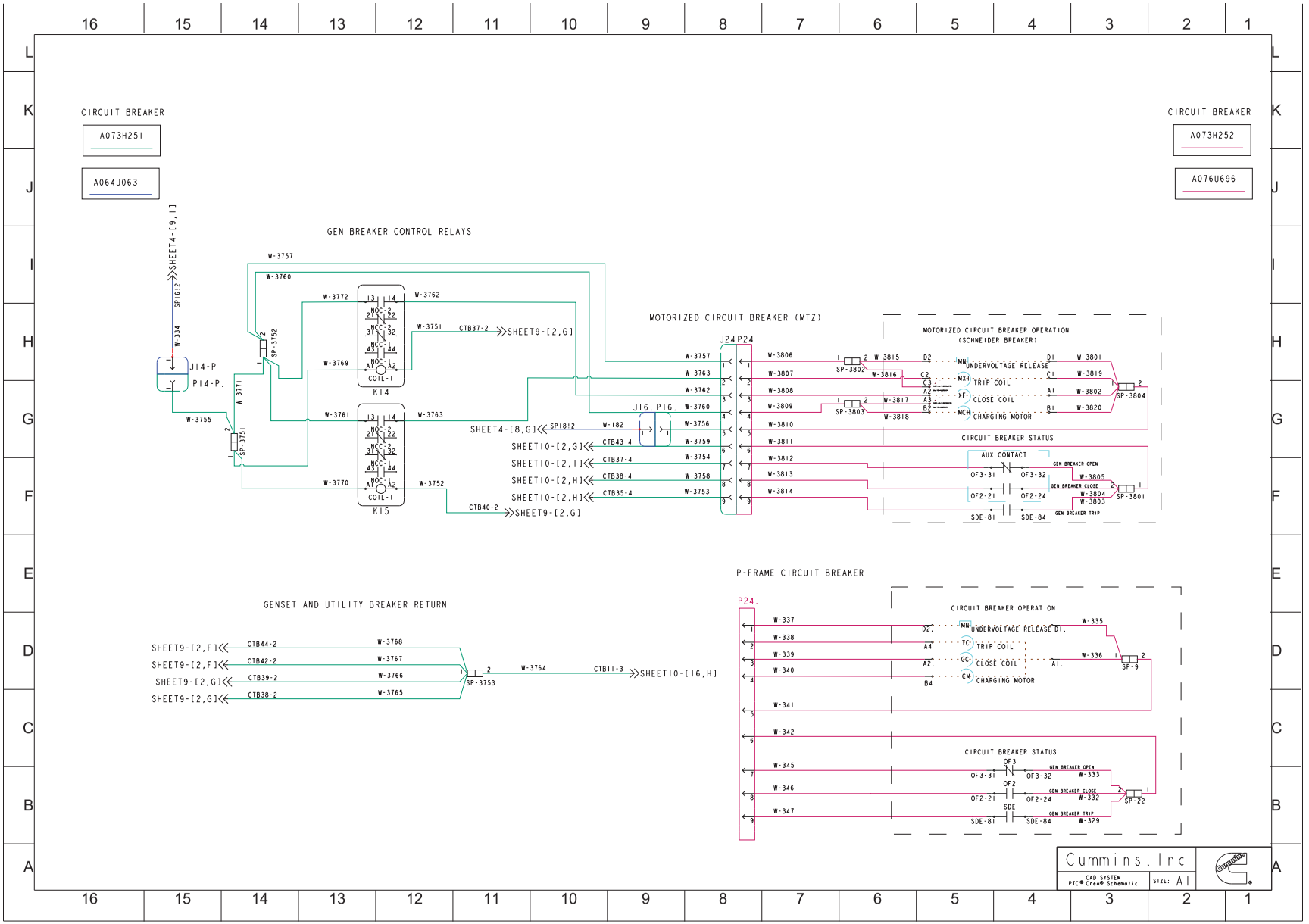


Document Generated: **07APR2026 15:10 GMT**

Cummins Data Classification:
Cummins Confidential

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.

Part Number: **A073F079** Part Revision: **E**
Part Name: **DIAGRAM,WIRING SCHEMATIC**
Drawing Category: **Detail** State: **Released** Sheet **10** of **19**

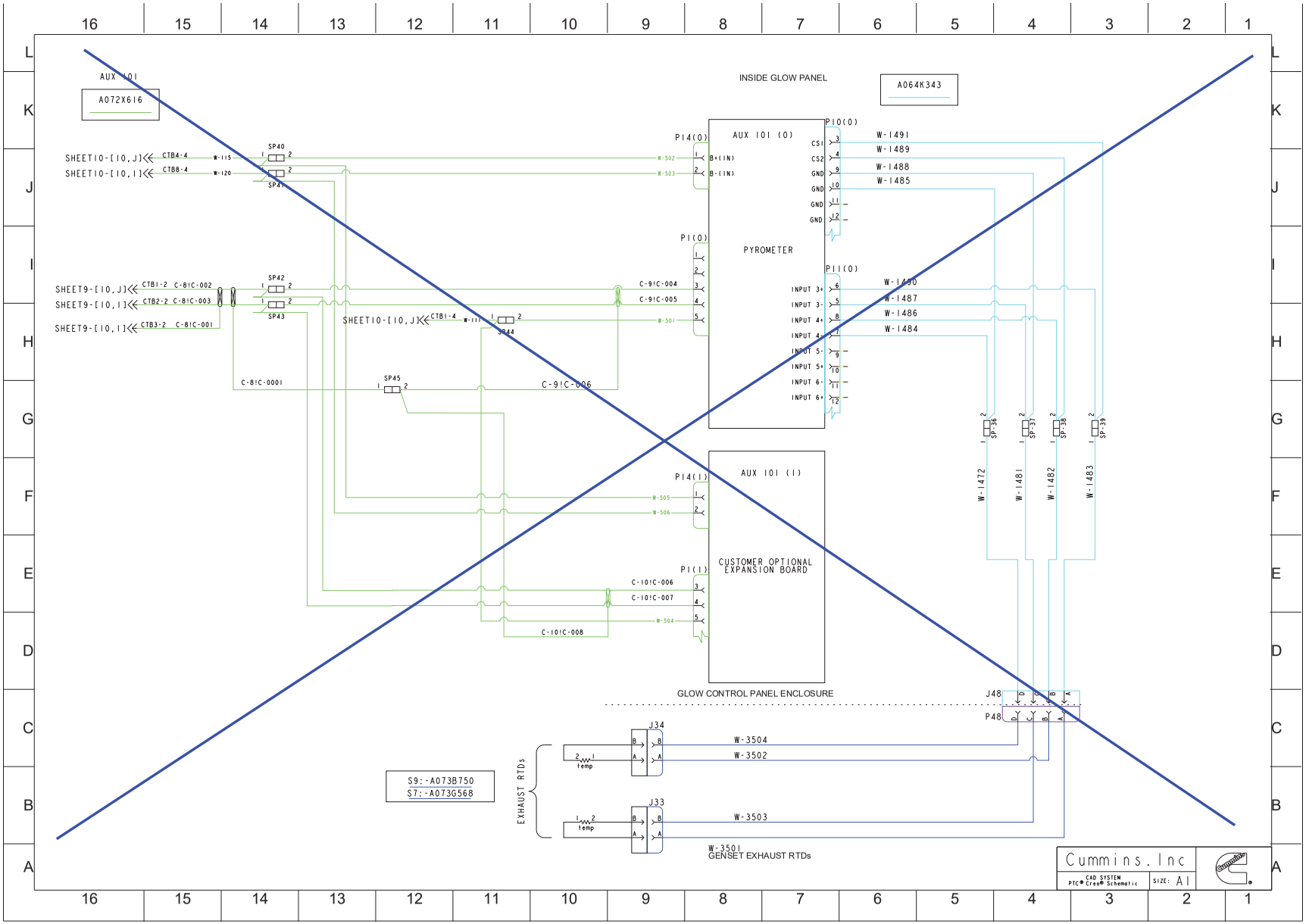


Document Generated: **07APR2026 15:10 GMT**

Cummins Data Classification:
Cummins Confidential

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.

Part Number: **A073F079** Part Revision: **E**
Part Name: **DIAGRAM,WIRING SCHEMATIC**
Drawing Category: **Detail** State: **Released** Sheet **11** of **19**

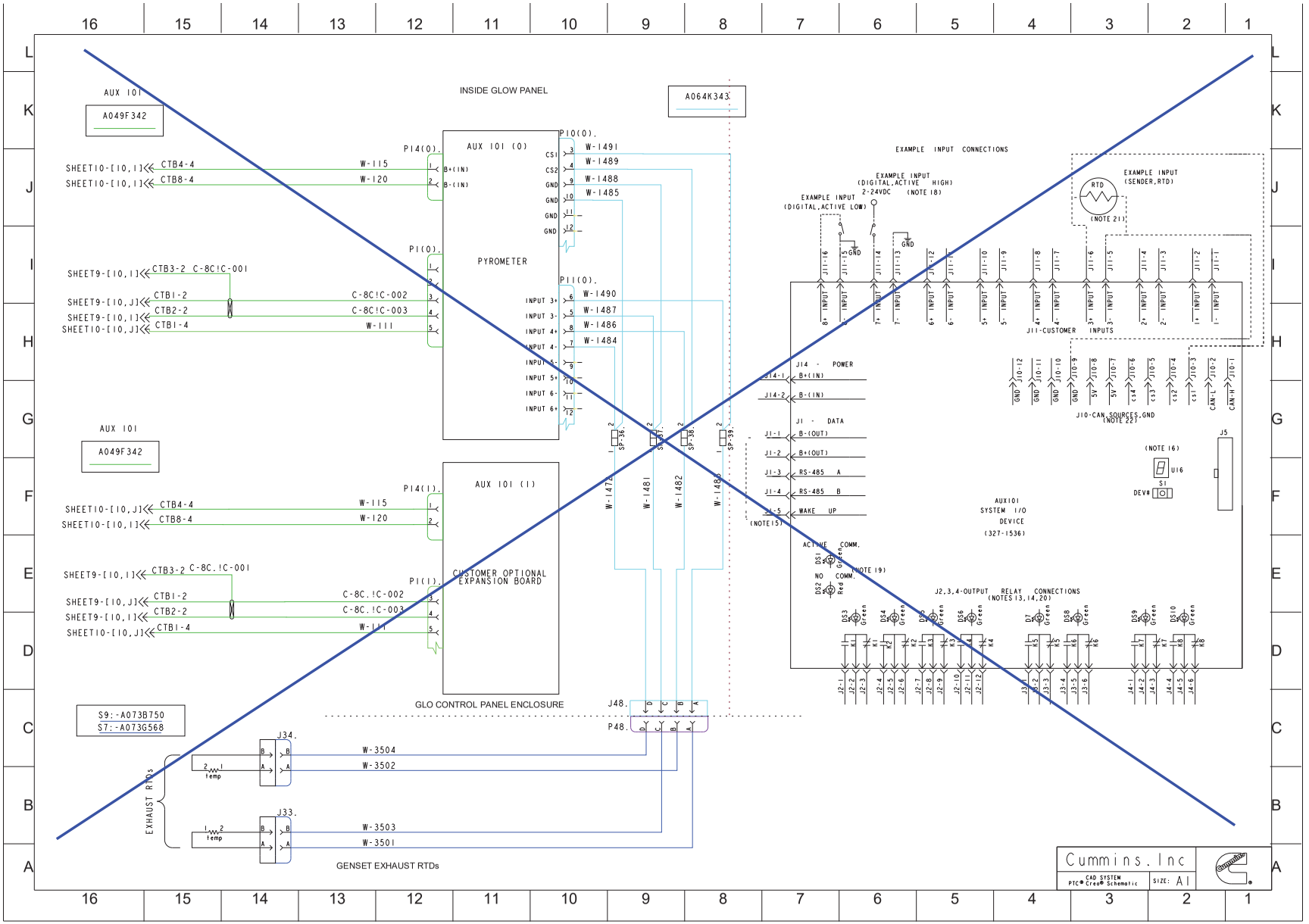


Cummins Data Classification:
Cummins Confidential

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.

Part Number: **A073F079** Part Revision: **E**
Part Name: **DIAGRAM,WIRING SCHEMATIC**
Drawing Category: **Detail** State: **Released** Sheet **12** of **19**

Document Generated: **07APR2026 15:10 GMT**

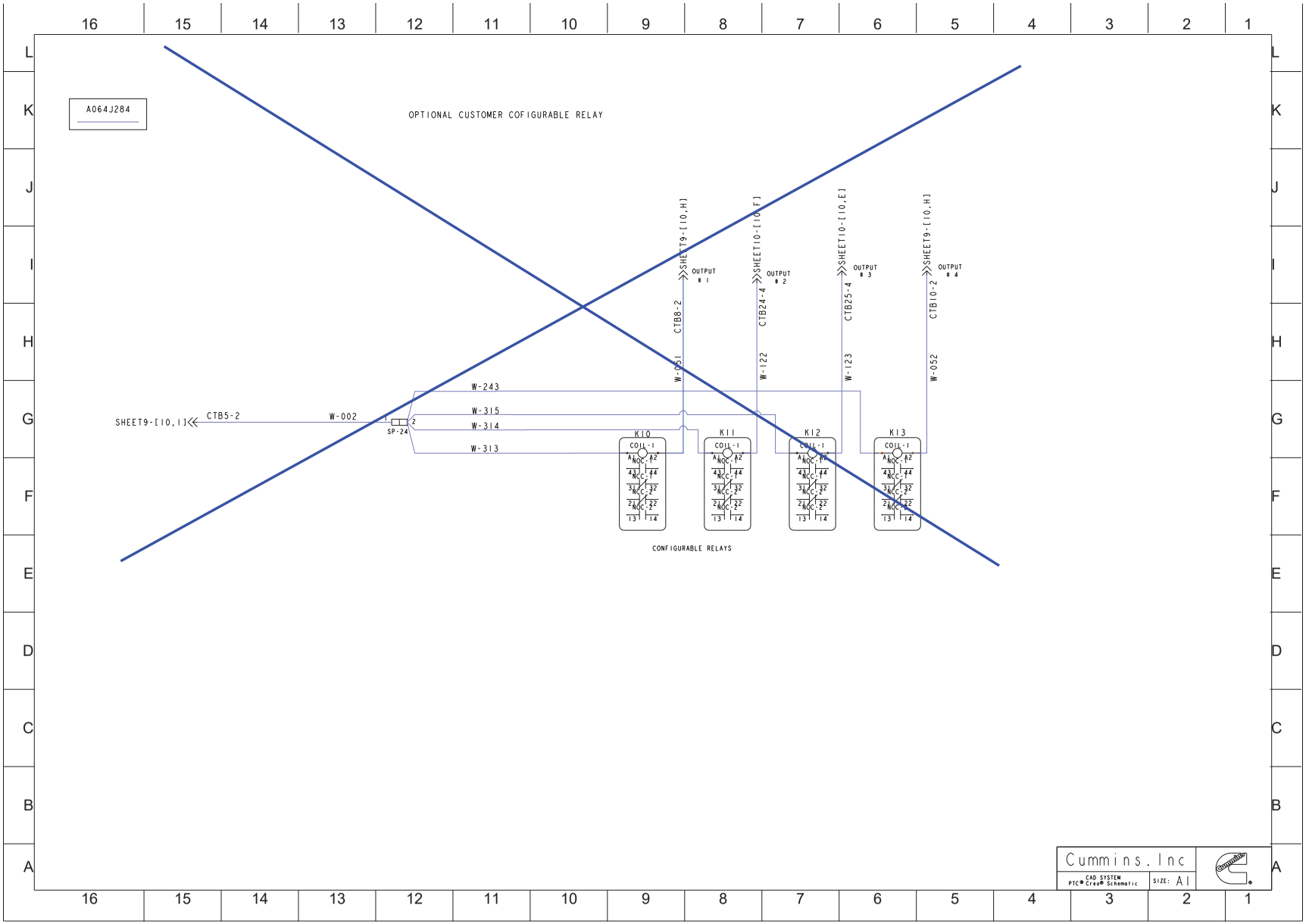


Cummins Data Classification:
Cummins Confidential

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.

Part Number: **A073F079** Part Revision: **E**
Part Name: **DIAGRAM,WIRING SCHEMATIC**
Drawing Category: **Detail** State: **Released** Sheet **13** of **19**

Document Generated: **07APR2026 15:10 GMT**

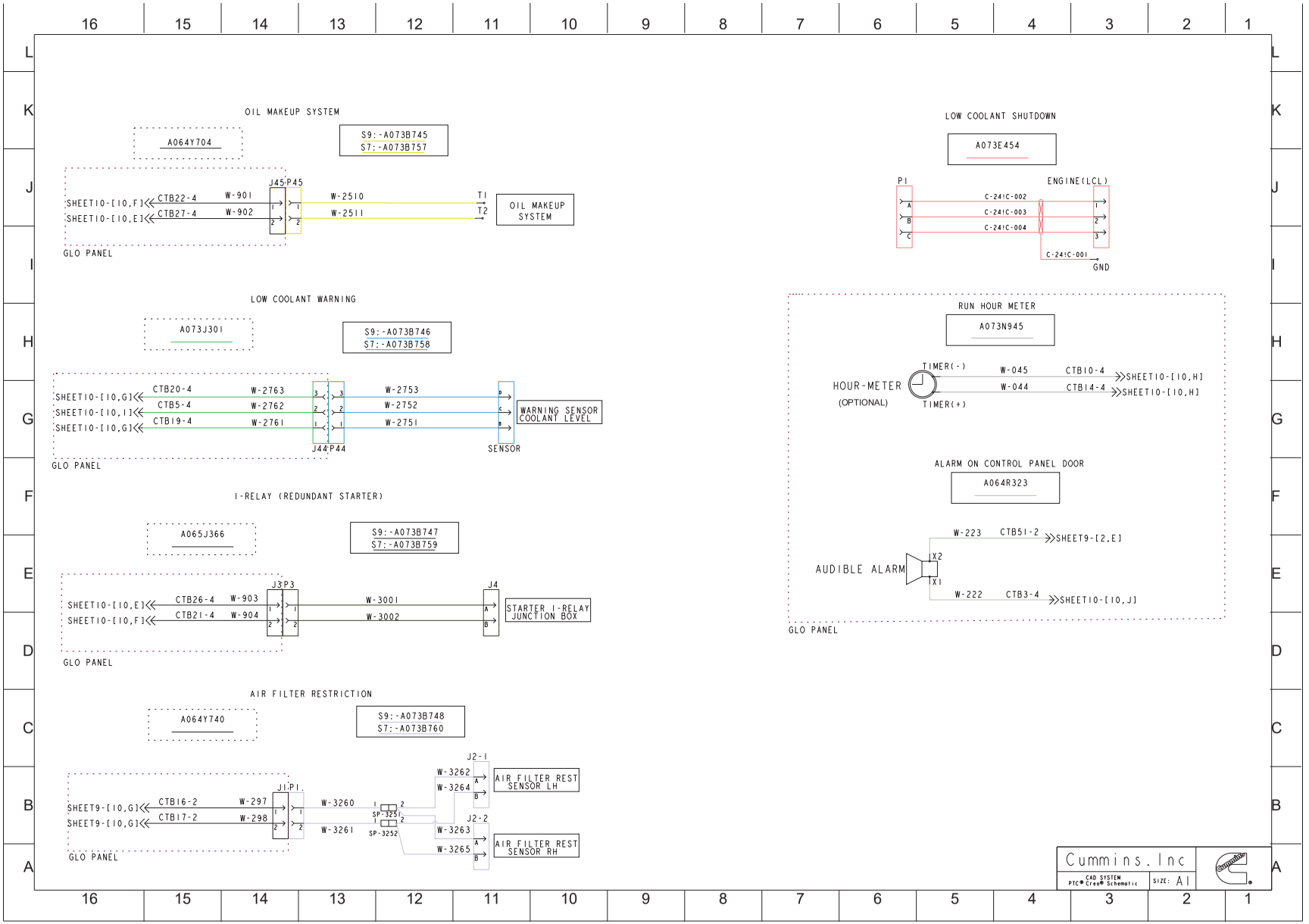


Cummins Data Classification:
Cummins Confidential

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.

Part Number: **A073F079** Part Revision: **E**
Part Name: **DIAGRAM,WIRING SCHEMATIC**
Drawing Category: **Detail** State: **Released** Sheet **14** of **19**

Document Generated: **07APR2026 15:10 GMT**

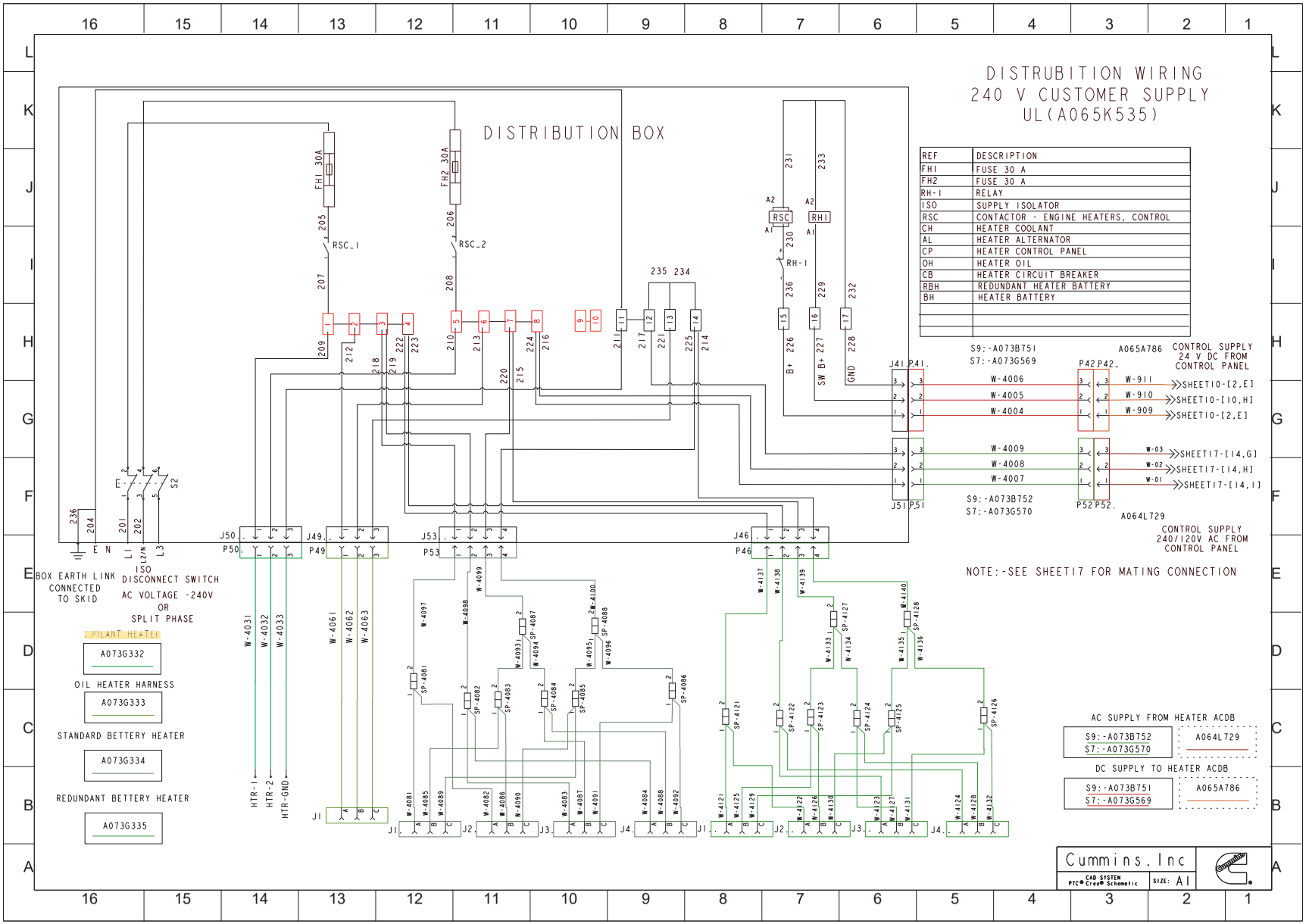


Document Generated: **07APR2026 15:10 GMT**

Cummins Data Classification:
Cummins Confidential

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.

Part Number: **A073F079** Part Revision: **E**
Part Name: **DIAGRAM,WIRING SCHEMATIC**
Drawing Category: **Detail** State: **Released** Sheet **15** of **19**

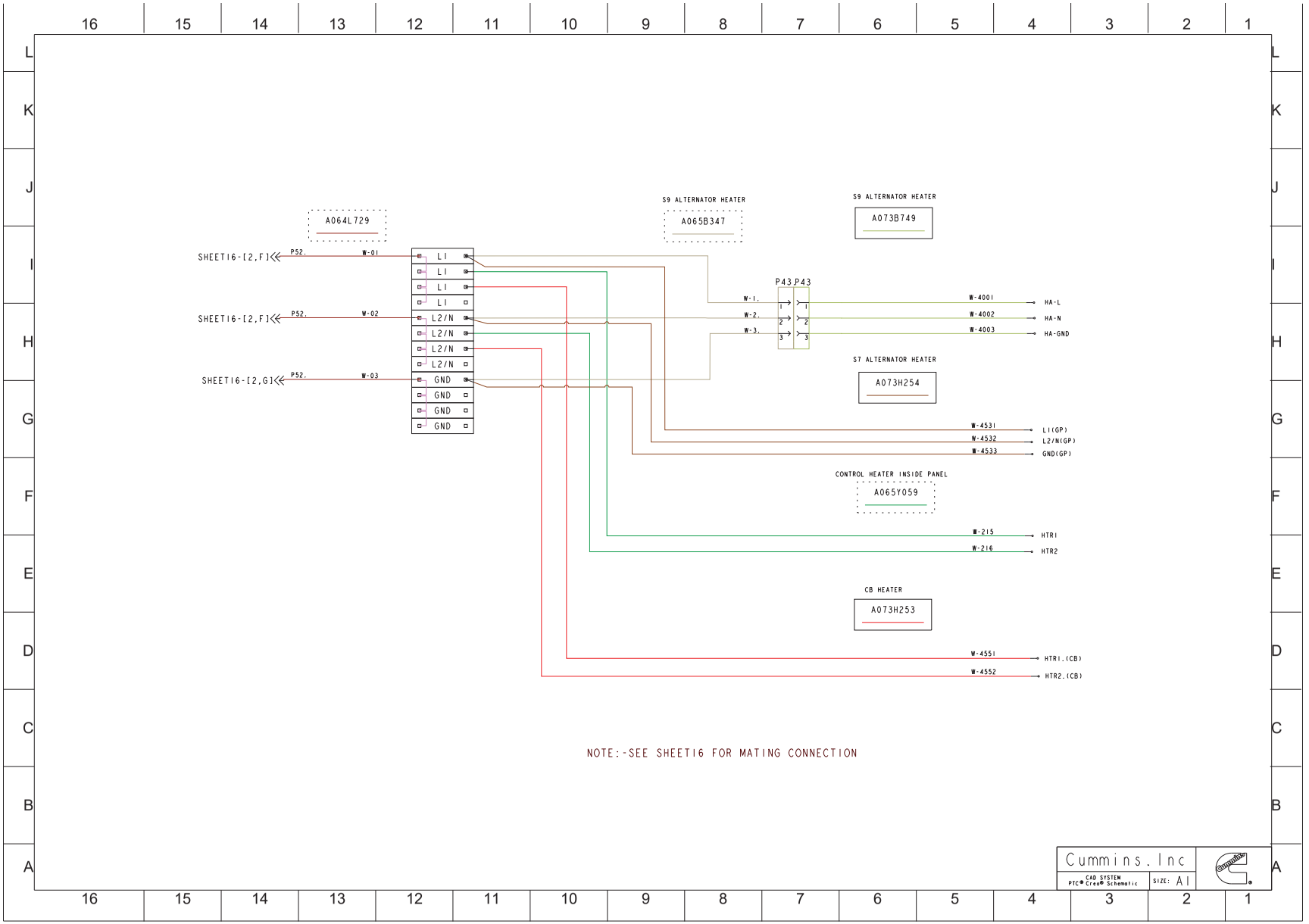


Document Generated: **07APR2026 15:10 GMT**

Cummins Data Classification:
Cummins Confidential

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.

Part Number: **A073F079** Part Revision: **E**
Part Name: **DIAGRAM,WIRING SCHEMATIC**
Drawing Category: **Detail** State: **Released** Sheet **16** of **19**



Document Generated: **07APR2026 15:10 GMT**

Cummins Data Classification:
Cummins Confidential

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.

Part Number: **A073F079** Part Revision: **E**
Part Name: **DIAGRAM,WIRING SCHEMATIC**
Drawing Category: **Detail** State: **Released** Sheet **17** of **19**

SECTION 5

Startup & Warranty

Cummins Sales and Service

Customer / Contractor Pre Commissioning Inspection Form

The intent of this form is for the contractor to prepare for equipment to be commissioned by a certified Cummins Field Service Power Generation Technician. Filling out this form is required and will minimize delays due to equipment failing to meet requirements. Completing this checklist in its entirety should minimize the need for additional billing beyond the previously provided commissioning quote.

The items listed are the responsibility of the contractor and not Cummins Sales and Service.

Project Name/End User: _____

Contractor: _____

Contact Name: _____

Business Phone:_____ Cell Phone:_____

Address: _____

City: _____ State/Prov: _____Zip/Postal Code_____

Email: _____

REQUIRED ON SITE INFORMATION:

On-Site Contact Name:_____

Phone: _____Email: _____

Time Requested Onsite_____ Are the starting batteries at site? Yes ☐ No ☐

Address: _____

City: _____ State/Prov: _____Zip/Postal Code_____

Location of Generator (Roof, basement, floor, outside): _____

Access: Does the facility have: Loading Dock ☐ Elevator ☐ Stairs ☐

Distance from vehicle parking to generator: _____

Parking: Is parking available on-site for service truck: Yes ☐ No ☐

Permits: Have all necessary air quality & local permits been secured: Yes ☐ No ☐ N/A ☐

Fuel Tank Testing: Is fuel tank testing required: Yes ☐ No ☐

If yes when is the inspector scheduled for: _____

Do prevailing wages apply to the commissioning services for this project? Yes ☐ No ☐

Cummins Sales and Service

ON SITE INFORMATION CONTINUED

YES	NA	NO	
☐	☐	☐	Is the facility occupied and is customer aware there will be power outages after generator is started?
☐	☐	☐	Will there be any site safety training needed for technician prior to beginning? On site contact for training: _____
☐	☐	☐	Will customer representative be on site for operator training? On site contact for operator training: _____

MECHANICAL LOCATION AND PLACEMENT OF THE GENERATOR SET

YES	NA	NO	
☐	☐	☐	Generator is properly secured to pad or vibration isolators
☐	☐	☐	Generator Enclosure and/or Room is free of all debris
☐	☐	☐	No airflow obstructions to the engine or generator are present for cooling combustion (See T-030 or Installation manual of generator set)
☐	☐	☐	Room is designed for adequate inlet and outlet airflow

GASEOUS FUEL Natural Gas/LP Vapor/LP Liquid

YES	NA	NO	
☐	☐	☐	Natural gas and/or LPG fuel supply is connected.
☐	☐	☐	Fuel piping is the appropriate size based on full-load CFH/BTU requirement. Pipe size after service regulator: _____
☐	☐	☐	Service regulator(s), (if supplied), fuel strainer(s), flexible fuel line(s) and manual shut off are installed
☐	☐	☐	Fuel pressure after service regulator is:_____inches of H2O

I have read and fully understand the fuel requirements for this equipment, I am verifying that the piping and fuel supply meets or exceeds those requirements. I also understand failure to meet the requirements will result in additional charges.

_____ _____

Contractor "requestor" Signature ***Date***

Sales and Service

DIESEL FUELED GENERATORS

YES	NA	NO	
☐	☐	☐	Flexible fuel connections, (supply and return) are connected to generator and piping.
☐	☐	☐	Day tank installed, wired and plumbed (lines free of obstruction) to genset and main fuel tank if applicable. Only black iron pipe for fuel lines, never use copper or galvanized pipe.
☐	☐	☐	All tanks filled with enough fuel to perform startup and testing.
☐	☐	☐	A return line from engine to day tank and day tank to main tank should be in place

EXHAUST SYSTEM

YES	NA	NO	
☐	☐	☐	Exhaust wrapped or isolated to prevent accidental activation of fire protection devices and sprinklers.
☐	☐	☐	Exhaust flex-pipe is installed at engine exhaust outlet (The silencer and flex-pipe are supplied with the generator set).
☐	☐	☐	Silencer is installed with appropriate supports (no weight should be placed on the exhaust outlet of the genset).
☐	☐	☐	Exhaust system has proper expansion joints and wall thimbles (Thimbles are required for wall or roof penetration).

GENERATOR ELECTRICAL CONNECTIONS

YES	NA	NO	
☐	☐	☐	Load conductors connected to breakers
☐	☐	☐	Flexible connections used on all conduit connections to the generator set output box
☐	☐	☐	Remote start interconnection **stranded** wiring is installed between the generator set and the automatic transfer switch(s) and annunciator.
☐	☐	☐	AC Power conductors in dedicated conduit separate from any DC control or network wiring
☐	☐	☐	Ground fault connected/functioning on generator, if supplied
☐	☐	☐	AC power wired to the coolant heaters (Do NOT energize)
☐	☐	☐	Check for AC oil pan heater, control heater or generator winding heater (Needing AC wiring)
☐	☐	☐	Generator is grounded in compliance with local codes
☐	☐	☐	If applicable, louver motors are operational and connected to generator controls

Sales and Service

GENERATOR ELECTRICAL CONNECTIONS CONTINUED

YES	NA	NO	
☐	☐	☐	Annunciator mounted in a location where someone can observe a fault of the remote generator system Where is annunciator located? _____
☐	☐	☐	Are there additional ancillary devices/equipment that need to be integrated into the system? If yes, please define_____
☐	☐	☐	Battery charger mounted (free of vibration, weather, accessible for an operator to observe easily) and connected to the appropriate AC and DC wiring to operate the charger.

TRANSFER SWITCH ELECTRICAL CONNECTIONS

YES	NA	NO	
☐	☐	☐	Conductors connected for Utility, Load and Emergency
☐	☐	☐	Remote start interconnection **stranded** wiring is installed between the generator set and the automatic transfer switch(s).
☐	☐	☐	Four Pole Transfer Switch: Is generator neutral grounded? ☐

DAY OF STARTUP

YES	NA	NO	
☐	☐	☐	Training of facility personnel will be done on the same day as start up. Additional trips for operational training will be an additional charge.
☐	☐	☐	Can transfer switch be tested at time of generator startup? (There will be a power interruption) ***Note: After hours testing could result in additional charges.***
☐	☐	☐	If the associated switchgear and/or ATS(s) are not Onan/Cummins, will the manufacturer's representative be on site?

Exercise with or without load? ☐

If known, Transfer Time delay set recommendations Generator Set to exercise Day:_____ Time:_____

_____ _____

Contractor "requestor" Signature ***Printed Name***

Date: _____

Please complete this form and return to schedule start up within 5 business days prior to confirming schedule startup. I understand that the start-up date may have to be rescheduled at my expense if the above items have not been completed properly.

Warranty Statement

CENTUM™ Series Generator Set

English
Original Instructions

5-2025

A072R157 (Issue 3)

Limited Warranty

CENTUM™ Series Generator Set

This limited warranty applies to all Cummins Inc. branded CENTUM™ Series generator 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 3 years or 1,000 hours, whichever occurs first. 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	36	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 Inc. Responsibilities:

In the event of a failure of the Product during the warranty period due to defects in material or workmanship, Cummins Inc. 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 Inc., its distributors or dealers within 30 days of the discovery of failure.
- Installing, operating, commissioning and maintaining the Product in accordance with Cummins Inc.'s published policies and guidelines.
- Providing evidence for date of commissioning.

Copyright © 2025 Cummins Inc.

- 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 Inc. 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 Inc.
- 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 Inc. Distributor for clarification concerning these limitations.

CUMMINS INC. RIGHT TO FAILED COMPONENTS:

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

Extended Warranty:

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

power.cummins.com

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

IN NO EVENT IS CUMMINS INC. LIABLE FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES.

This limited warranty shall be enforced to the maximum extent permitted by applicable law. In the United States, some states do not allow limitations on how long an implied warranty lasts or the exclusion or limitation of incidental or consequential damages, so the above limitation or exclusion may not apply to you. This warranty gives you specific legal rights, and you may have other rights which vary from state to state or jurisdiction to jurisdiction.

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

Copyright © 2025 Cummins Inc.

power.cummins.com

Copyright © 2025 Cummins Inc. All rights reserved.
Cummins, the "C" logo, Centum, PowerCommand, AmpSentry, and InPower are trademarks of Cummins Inc. Other company, product, or service names may be trademarks or service marks of others. Specifications are subject to change without notice.