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SUBMITTAL ACCEPTANCE

I hereby authorize Woodstock Power Company to use this form as confirmation of acceptance in regard to the equipment shown on aforementioned submittal, which clearly establishes definite specifications of material presented.

Accepted by:

Company Woodstock Power Company

Print Name:

Title:

Signature: _____

Date: _____



RECORD ONLY SUBMITTAL PACKAGE

WOODSTOCK 1000 S-17 10-15

Date: 1/16/2026



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.

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SECTION 1

Project Information



Bill of Material

Feature Code	Description	Qty
C1000D6ED	C1000D6ED, Commercial Diesel Generator Set, 60Hz, 1000 kW (Bundle Product)	2
C1000 D6ED	C1000D6ED, Diesel Genset, 60Hz, 1000 kW	
A331-2	Duty Rating - Standby Power (ESP)	
L170-2	EmissionCert,EPA,Tier 2,NSPS CI Stationary Emergency	
L090-2	Listing - UL 2200	
R002-2	Voltage - 277/480, 3 Phase, Wye, 4 Wire	
BE10-2	Stator Temperature Rise - 105C	
B876-2	Alternator - 60Hz, Wye, 480V, 105C-Stby	
Install-US-Stat	U.S. EPA, Stationary Emergency Application	
F282-2	Enclosure Wind Rating, 120 MPH	
F202-2	Housing-QS2,Base Mounted,Steel,with Exhaust	
P175-2	Enclosure Color - Green, Steel	
H657-2	DistributionPnl-PrewiredAC Features	
H703-2	GENSET CONTROL-POWERCOMMAND 2.3	
C345-2	1770 Gallon Sub-base Fuel Tank	
C346-2	Fuel fill cap with 6" riser (Universal)	
H609-2	Control Mtg-Left Facing	
H606-2	Meters-AC OutputAlog	
H678-2	Display-Control,LCD	
KP74-2	Stop Switch-Emergency,ExterlyMtd	
H536-2	Control Display Language - English	
M683-2	Circuit Breaker or Entrance Box - Single	
KU94-2	CB or EB or TB-Right Only	
M700-2	Manual Circuit Breaker - Right	
KP86-2	CB-1600A,Right,3P,UL 600,IEC 415,UL Serv Ent 100%	
KB72-2	CB or EB or TB-Bottom Entry, Right	
1000LongE&F	1000LongE&F	
D041-2	Engine Air Cleaner - Normal Duty	
DC02-2	Air cleaner restriction Indicator - Mechanical	
E082-2	Engine Cooling-Radiator,40C Ambient	
H389-2	Shutdown - Low Coolant Level	
H556-2	Coolant Heater-208/240/480V,40F Minimum Ambient Temp	
L182-2	Standby 3 Year 1500 Hour Parts	
L050-2	Literature - English	
A412-2	Packing - None, Base Mounted Housing	

Sales notes have been removed from BOM.

SECTION 2

Generator Specifications



C1000D6ED

C900D6E

C800D6E

C750D6E

C600D6E

DIESEL GENERATOR SET SPECIFICATION SHEET

S17 ENGINE, 600-1000 kW_e, 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.

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 Type 10 Level 1 compliance.



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

Enclosures: Optional weather protective and sound attenuated enclosures are available.

Fuel tanks: Dual wall sub-base fuel tanks are also available.

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 kW _e (kVA)	Data Sheet
C1000D6ED	1000 (1250)	D-6787
C900D6E	900 (1125)	D-6809
C800D6E	800 (1000)	D-6788
C750D6E	750 (938)	D-6810
C600D6E	600 (750)	D-6789

¹ All ratings include radiator fan losses



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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	± 1.0%
Random voltage variation	± 1.0%
Frequency regulation	Isochronous
Random frequency variation	± 0.5%
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	148 mm (5.83 in)
Stroke	163 mm (6.42 in)
Displacement	16.8 L (1025 in ³)
Configuration	Four-cycle; in-line; 6-cylinder
Battery capacity	1700 A minimum at ambient temperature of -18 °C (0 °F) to 0 °C (32 °F)
Battery charging alternator	105 A
Starting voltage	24 V, negative ground
Fuel system	XPI
Fuel filter	One-stage, spin-on fuel filter and water separator system. Generator set mounted, 5 µm nanonet element filter
Air cleaner	One unhusd, dry replaceable elements standard; heavy-duty optional
Lube oil filter	Two spin-on, combination full flow filter and bypass filters
Standard cooling system	High ambient (40 °C) cooling system; Enhanced high ambient (50 °C) Optional

ALTERNATOR SPECIFICATIONS

Design	Brushless, 4-pole, drip proof, revolving field
Stator	2/3 pitch
Rotor	One bearing, Close coupled flex plate
Insulation system	Class H
Standard temperature rise	150 °C standby at 40 °C ambient
Exciter type	Permanent Magnet Generator (PMG)
Phase rotation	A (U), B (V), C (W)

AVAILABLE VOLTAGES (60 Hz LINE-TO-NEUTRAL / LINE-TO-LINE)⁵

- | | | | |
|-----------|------------------|-----------|-----------|
| • 120/208 | • 127/220 | • 220/380 | • 240/416 |
| • 255/440 | • 277/480 | • 347/600 | |

⁵ Additional voltages may be available; contact your Cummins distributor

GENERATOR SET OPTIONS AND ACCESSORIES⁶

Engine

- **208 V and 240V, 1 Phase, 5 kW thermosiphon coolant heater**
- Heavy-duty air cleaners

Cooling System

- Enhanced high ambient (50 °C)

Exhaust System

- Residential grade silencer
- Critical grade silencer

Control Panel

- Masterless load demand
- Multiple language support
- Front, **left**, and right **mounting**
- Warning high bearing temperature
- Alternator temp. monitoring
- Exhaust gas temp. monitoring
- 4-6x user-configurable relays
- 120 / 240 V heater control cabinet
- **Mechanical hour meter**
- 2x digital input/output

Alternator

- 80, **105**, 125, & 150 °C rise
- 120 or 240 V, 285/255 W anti-condensation heater

Alternator (cont.)

- Temp. sensor - RTDs, 2 / phase
- Temp. sensor - alternator bearing RTD
- Differential current transformers

Generator Set

- Battery
- PowerCommand® network
- Remote annunciator panel
- **Standby 3-, 4- and 5-year limited hour warranties**

⁶ Some options may not be available on all models; contact your Cummins distributor.



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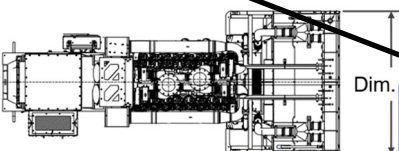
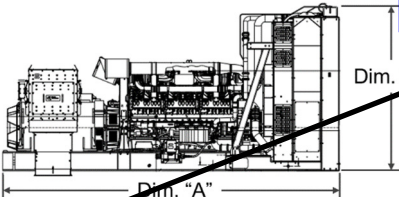
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RATING DEFINITIONS

Emergency Standby Power (ESP)

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.

GENERATOR SET DIMENSIONS AND WEIGHTS⁷

	Model Name	Dim. "A" mm (in)	Dim. "B" mm (in)	Dim. "C" mm (in)
	C1000D6ED	4028 (159)	1890 (74)	2099 (83)
	C900D6E			
	C800D6E			
	C750D6E			
	Refer to drawings for specific weights and dimensions			
	Model Name	Generator Set Weight (Dry) kg (lb)	Generator Set Weight (Wet) kg (lb)	
	C1000D6ED	6143 (13543)	6246 (13770)	
	C900D6E			
	C800D6E			
C750D6E				
C600D6E	5780 (12743)	5883 (12970)		

Refer to drawings for specific weights and dimensions

⁷ Do not use for installation design. Longest alternator (F-core) used for dimension "A". All weights are approximate and represent a generator set with standard features and heaviest alternator (low voltage F-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 STANDARDS⁸

	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 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.
	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 Type 10 Level 1 compliance.		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.
	All genset models are available as CSA certified to CSA C22.2 No. 100.		The generator set package is available certified for seismic application in accordance with International Building Code and California building code for healthcare application (OSP).

⁸ Codes or standards compliance may not be available with all model configurations; contact your Cummins distributor



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C1000D6ED

DIESEL GENERATOR SET DATA SHEET

MODEL:	C1000D6ED
FREQUENCY:	60 Hz
FUEL TYPE:	DIESEL
RATING:	1000 kWe (1250kVA) EMERGENCY STANDBY POWER (ESP)¹
EMISSIONS CERTIFICATION:	EPA TIER 2 NSPS (STATIONARY EMERGENCY)

GENERATOR SET PUBLICATIONS

Exhaust emission data sheet	EDS-3161
Exhaust emission compliance statement	EPA-2114
Sound data sheet	MSP-4198
Cooling system data sheet	MCP-2304
Seismic certificate of compliance	VMA-50957-01C
Prototype test support data sheet	PTS-832
Genset outline drawing	A074S111
Genset wiring schematic diagram	A073D300

ENGINE SPECIFICATIONS

Manufacturer		Cummins Inc.
Model		S17-G1
Configuration		Four-cycle; inline; 6-cylinder
Aspiration		Turbocharged and charge-air cooled
Gross engine power output	kWm (bhp)	1099 (1474)
Brake mean effective pressure at set rated load	kPa (psi)	4360 (633)
Bore	mm (in)	148 (5.83)
Stroke	mm (in)	163 (6.42)
Displacement	L (in ³)	16.8 (1031)
Rated speed	rpm	1800
Piston speed at rated speed	m/s (ft/min)	9.78 (1925)
Compression ratio		14.5:1
Lube oil capacity	L (US gal)	79 (21)
Overspeed limit	rpm	2100
Regenerative power	kWm (hp)	100 (134)

FUEL CONSUMPTION

Rating	kWe (kVA)	1000 (1250)			
Load		25%	50%	75%	100%
Fuel Consumption	US gph	20.3	37.2	54.5	71.3
Fuel Consumption	L/h	77	141	206	270

¹Generator set ratings include radiator fan losses



FUEL SYSTEM

Maximum fuel flow	L/h (US gph)	398 (105)
Maximum fuel inlet restriction, clean/dirty	kPa (inHg)	17 (5) / 34 (10)
Maximum fuel inlet temperature	°C (°F)	70 (158)
Maximum fuel return restriction	kPa (inHg)	35 (10)

AIR SYSTEM

Combustion air flow (at set rated load)	m ³ /min (scfm)	77.5 (2737)
Maximum air cleaner restriction (dirty filter)	kPa (inH ₂ O)	6.2 (25)
Alternator cooling air flow	m ³ /min (scfm)	97.8 (3454)

EXHAUST SYSTEM

Exhaust flow (at set rated load)	m ³ /min (scfm)	195 (6872)
Exhaust temperature (at set rated load)	°C (°F)	499 (931)
Maximum back pressure	kPa (inH ₂ O)	6.8 (27.3)

COOLING SYSTEM (SET MOUNTED) – ENHANCED HIGH AMBIENT

Ambient design (limiting ambient temp.)	°C (°F)	50.0 (122.0)
Maximum air flow static restriction	kPa (inH ₂ O)	0.25 (1.0)
Cooling system air flow (at max. restriction)	m ³ /min (acfm)	1512 (53400)
Fan load	kWm (hp)	39 (52)
Coolant capacity (engine + radiator)	L (US gal)	141 (37.2)

GENERATOR SET WEIGHTS⁶

C1000D6ED	kg (lb)	Refer to drawings for specific weights and dimensions
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⁶ All weights are approximate and represent a generator set with standard features and heaviest alternator (F-core). "As Shipped Set Weight (Dry)" does not include 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.

GENERATOR SET DERATING FACTORS⁷

Emergency Standby Power (ESP)

High Ambient Cooling System: Full genset power available up to 838 m (2750 ft) at ambient temperatures up to 40 °C (104 °F). Above these conditions, derate at 2.2% per 305 m (1000 ft) and 7% per 10 °C (18 °F).

Enhanced High Ambient Cooling System: Generator set derated 3.6% at sea level at temperatures up to 50 °C (122 °F). Above these conditions, derate at 1.8% per 305 m (1000 ft) and 11.9% per 10 °C (18 °F).

⁷ Ambient operating temperature is defined as the air temperature measured at the turbocharger compressor inlet. Derate statements assume a cooling system with 0.25 kPa (1.0 inH₂O) backpressure and 50% relative humidity. Please contact Sales Application Engineering for operation above 1000 m (3281 ft) of altitude or outside of the temperature range in the derate statement.

RATING DEFINITIONS

Emergency Standby Power (ESP):

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.

⁸ Alternator data is configured for a set with ratings including engine cooling fan losses and standard features at 40 °C ambient temperature. For non-standard configurations check appropriate alternator data sheets or contact your Cummins distributor. N/A: Not Applicable

⁹ ESP: Emergency Standby Power

¹⁰ Maximum surge: maximum rated starting kVA that results in a minimum of 90% of rated sustained voltage during starting



ALTERNATOR DATA⁹ (ESP: 1000 kW_e)

Voltage	Connection	Winding Number	Ambient Temp. (°C)	Temp. Rise (°C)	Duty Rating ⁹	Model	Max. Surge ¹⁰ (kVA)	Alternator Data Sheet	Feature Code
208	Wye; 3-phase	311	40	150	ESP	S6L1D-F4	4725	ADS-633	BE82
208	Wye; 3-phase	311	40	125	ESP	S6L1D-F4	4725	ADS-633	B732
220	Wye; 3-phase	311	40	125	ESP	S6L1D-F4	4725	ADS-633	B975
220	Wye; 3-phase	311	40	105	ESP	S6L1D-F4	4725	ADS-633	BC41
220	Wye; 3-phase	311	40	150	ESP	S6L1D-E4	4200	ADS-632	BE82
380	Wye; 3-phase	14	40	150	ESP	S6L1D-E4	3975	ADS-632	B769
380	Wye; 3-phase	14	40	125	ESP	S6L1D-E4	3975	ADS-632	B872
380	Wye; 3-phase	13	40	105	ESP	S6L1D-F4	4725	ADS-633	BC43
400	Wye; 3-phase	14	40	125	ESP	S6L1D-E4	3975	ADS-632	BC40
400	Wye; 3-phase	13	40	105	ESP	S6L1D-F4	4725	ADS-633	BC42
400	Wye; 3-phase	14	40	150	ESP	S6L1D-E4	3975	ADS-632	BE13
416	Wye; 3-phase	311	40	150	ESP	S6L1D-F4	4725	ADS-633	B682
416	Wye; 3-phase	311	40	125	ESP	S6L1D-F4	4725	ADS-633	B732
440	Wye; 3-phase	311	40	125	ESP	S6L1D-F4	4725	ADS-633	B975
440	Wye; 3-phase	311	40	105	ESP	S6L1D-F4	4725	ADS-633	BC41
440	Wye; 3-phase	311	40	150	ESP	S6L1D-E4	4200	ADS-632	B701
480	Wye; 3-phase	311	40	125	ESP	S6L1D-E4	4200	ADS-632	B884
480	Wye; 3-phase	311	40	150	ESP	S6L1D-E4	4200	ADS-632	B769
480	Wye; 3-phase	311	40	105	ESP	S6L1D-F4	4725	ADS-633	B876
600	Wye; 3-phase	7	40	105	ESP	S6L1D-E4	4200	ADS-632	B839
600	Wye; 3-phase	7	40	125	ESP	S6L1D-E4	4200	ADS-632	B739
600	Wye; 3-phase	7	40	150	ESP	S6L1D-E4	4200	ADS-632	BD50

FORMULAS

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





PowerCommand®

2.3 Control System



Control System Description

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

Features

- 320 x 240 pixels graphic LED backlight LCD.
- Multiple language support.
- AmpSentry™ protective relay - true alternator overcurrent protection.
- Real time clock for fault and event time stamping.
- Exerciser clock and time of day start/stop.
- Digital voltage regulation. Three phase full wave FET type regulator compatible with either shunt or PMG systems.
- Generator set monitoring and protection.
- 12 and 24 VDC battery operation.
- Modbus® interface for interconnecting to customer equipment.
- Warranty and service. Backed by a comprehensive warranty and worldwide distributor service network.
- Certifications - suitable for use on generator sets that are designed, manufactured, tested and certified to relevant UL, NFPA, ISO, IEC, Mil Std., CE, UKCA and CSA standards.

PowerCommand Digital Genset Control PCC 2300



Description

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

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

Features

- 12 and 24 VDC battery operation.
- Digital voltage regulation - Three phase full wave FET type regulator compatible with either shunt or PMG systems. Sensing is three phase.
- Full authority engine communications (where applicable) - Provides communication and control with the Engine
- due to thermal 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 overload or electrical faults by inverse time protection
- Common harnessing - with higher feature Cummins controls. Allows for easy field upgrades.
- Generator set monitoring - Monitors status of all critical engine and alternator functions.
- Digital genset metering (AC and DC).
- Genset battery monitoring system to sense and warn against a weak battery condition.
- Configurable for single or three phase AC metering.
- Engine starting - Includes relay drivers for starter, Fuel Shut Off (FSO), glow plug/spark ignition power and switch B+ applications.
- Generator set protection – Protects engine and alternator.
- Real time clock for fault and event time stamping.
- Exerciser clock and time of day start/stop.
- Advanced serviceability - using InPower™, a PC-based software service tool.

- Environmental protection - The control system is designed for reliable operation in harsh environments. The main control board is a fully encapsulated module that is protected from the elements.
- Modbus interface for interconnecting to customer equipment.
- Configurable inputs and outputs - Four discrete inputs and four dry contact relay outputs.
- Warranty and service - Backed by a comprehensive warranty and worldwide distributor service network.
- Certifications - Suitable for use on generator sets that are designed, manufactured, tested and certified to relevant UL, NFPA, ISO, IEC, Mil Std., CE and CSA standards.

Base Control Functions

HMI Capability

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

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

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

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
- Comprehensive Full Authority Engine (FAE) data (where applicable)

Service adjustments - The HMI includes provisions for adjustment and calibration of generator set control functions. Adjustments are protected by a password. Functions include:

Service adjustments (continued)

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

Engine Control

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

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

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

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

Droop electronic speed governing - Control can be adjusted to droop from 0 to 10% from no load to full load.

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

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

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

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

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

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

Alternator Control

The control includes an integrated three phase Line-to-Line sensing voltage regulation system that is compatible with shunt or PMG excitation systems. The voltage regulation system is a three phase full wave rectified and has an FET output for good motor starting capability.

Major system features include:

Digital output voltage regulation - Capable of regulating output voltage to within $\pm 1.0\%$ for any loads between no load and full load. Voltage drift will not exceed $\pm 1.5\%$ for a $40\text{ }^{\circ}\text{C}$ ($104\text{ }^{\circ}\text{F}$) 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.

Protective Functions

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

Battle Short Mode

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

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.

Configurable Alarm and Status Inputs

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

Emergency Stop

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

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.

General Engine Protection

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

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

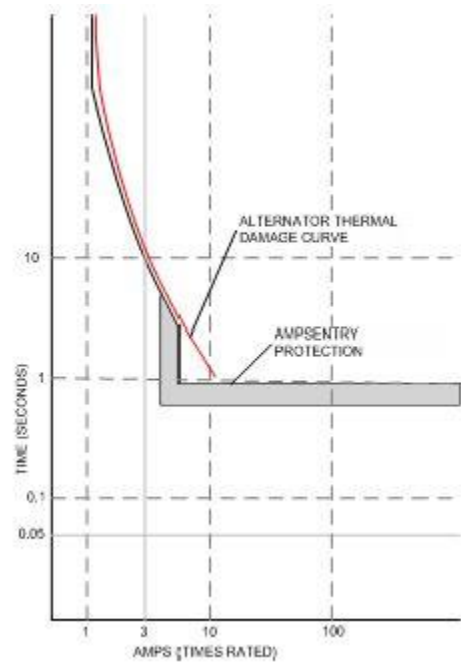
Fail to start (overcrank) shutdown - The control system will indicate a fault if the generator set fails to start by the completion of the engine crank sequence.

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.

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 generator set or in the load. It also provides single and three phase fault current regulation 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 (2 sec for 1-Phase short, 5 sec for 2-Phase short). See document R1053 for a full-size time over current curve.



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 during synchronizing.

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

Overcurrent warning/shutdown - Thresholds and time delays are configurable. 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 generator set will occur on loss of voltage sensing inputs to the control.

Field overload shutdown - Monitors field voltage to shutdown generator set 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 - 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.

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
- Battleshort
- Rupture basin
- Start type signal
- Configurable inputs - Control includes (4) input signals from customer discrete devices that are configurable for warning, shutdown or status indication, as well as message displayed

Output signals from the PowerCommand control include:

- Load dump signal: Operates when the generator set 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.

- Configurable relay outputs: Control includes (4) relay output contacts (3 A, 30 VDC). These outputs can be configured to activate on any control warning or shutdown fault as well as ready to load, not in auto, common alarm, common warning and common shutdown.
- Ready to load (generator set running) signal: Operates when the generator set has reached 90% of rated speed and voltage and latches until generator set is switched to off or idle mode.

Communications Connections Include:

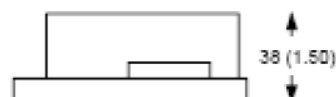
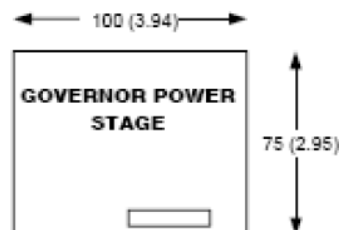
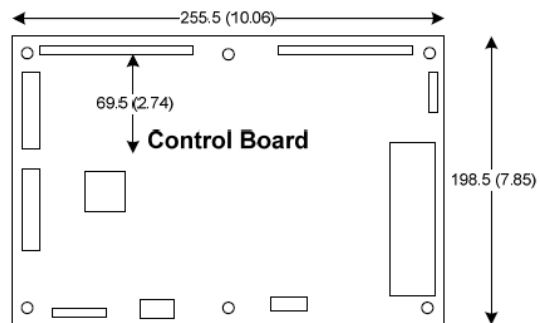
- PC tool interface: This RS-485 communication port allows the control to communicate with a personal computer running InPower software.

- 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 products.

Mechanical Drawings



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

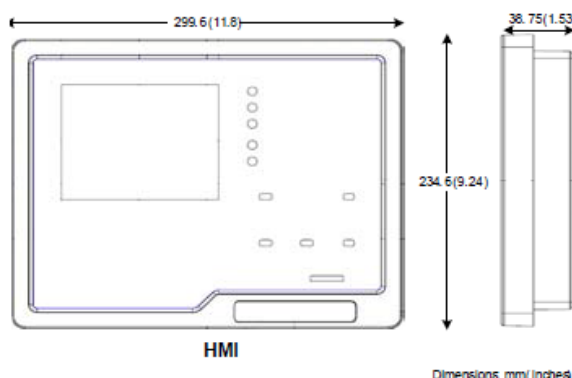
- LED indicating lamps:
 - Genset running
 - Remote start
 - Not in auto
 - Shutdown
 - Warning
 - Auto
 - Manual and stop
- 320 x 240 pixels graphic LED backlight LCD.
- Four tactile feel membrane switches for LCD defined operation. The functions of these switches are defined dynamically on the LCD.
- 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 generator sets that are designed, manufactured, tested and certified to relevant UL, NFPA, ISO, IEC, Mil Std., CE and CSA standards.
- LCD languages supported: English, Spanish, French, German, Italian, Greek, Dutch, Portuguese, Finnish, Norwegian, Danish, Russian and Chinese Characters.

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



Software

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

Environment

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

The HMI is designed for proper operation in ambient temperatures from -20 °C to +70 °C (-4 °F to 158 °F) and for storage from -30 °C to +80 °C (-22 °F to 176 °F).

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

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

Certifications

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

- NFPA 110 for level 1 and 2 systems.
- ISO 8528-4: 1993 compliance, controls and switchgear.
- CE marking: The 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.
- EN50081-1,2 residential/light industrial emissions or industrial emissions.
- EN50082-1,2 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 and 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.

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.



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

Our energy working for you.™





Alternator Data Sheet

Frame Size: S6L1D-F4

Characteristics													
			No of Bearings:		1-bearing		2-bearing						
Weights:			Stator assembly:		2421 lb	1098 kg	2421 lb	1098 kg					
			Rotor assembly:		2130 lb	966 kg	2037 lb	924 kg					
			Complete assembly:		5128 lb	2326 kg	5002 lb	2269 kg					
Maximum speed:			2250 rpm										
Excitation current:			Full load:		Wdg 07: 2.7, Wdg 311/312: 2.6, Wdg 13: 2.6								
			No load:		Wdg 07: 0.79, Wdg 311/312: 0.68-0.55, Wdg 13: 1.1								
Insulation system:			Class H throughout										
3 Ø Ratings (0.8 power factor)			60 Hz (winding no)										
			<u>347/600</u> (07)	<u>190/380</u> (13)	<u>200/400</u> (13)	<u>208/416</u> (13)	<u>208/416</u> (311/312)	<u>220/440</u> (311/312)	<u>230/460</u> (311/312)	<u>240/480</u> (311/312)			
			150° C rise ratings	@ 40° C	kW	1220	1164	1164	1164	1080	1125	1160	1200
					kVA	1525	1455	1455	1455	1350	1406	1450	1500
			125° C rise ratings	@ 40° C	kW	1150	1100	1100	1100	1020	1070	1110	1150
					kVA	1438	1375	1375	1375	1275	1338	1388	1438
			105° C rise ratings	@ 40° C	kW	1050	1008	1008	1008	950	990	1020	1050
					kVA	1313	1260	1260	1260	1188	1238	1275	1313
			80° C rise ratings	@ 40° C	kW	900	872	872	872	824	860	880	900
					kVA	1125	1090	1090	1090	1030	1075	1100	1125
Reactances (per unit ± 10%)			<u>347/600</u> (07)	<u>190/380</u> (13)	<u>200/400</u> (13)	<u>208/416</u> (13)	<u>208/416</u> (311/312)	<u>220/440</u> (311/312)	<u>230/460</u> (311/312)	<u>240/480</u> (311/312)			
(Based on full load at 125° C rise rating)													
Synchronous			1.96	1.54	1.39	1.29	3.00	2.82	2.67	3.00			
Transient			0.14	0.15	0.13	0.12	0.18	0.17	0.16	0.15			
Subtransient			0.11	0.12	0.10	0.10	0.14	0.13	0.13	0.12			
Negative sequence			0.15	0.15	0.14	0.13	0.21	0.20	0.19	0.18			
Zero sequence			0.04	0.02	0.02	0.01	0.06	0.06	0.06	0.05			
Motor starting			<u>347/600</u> (07)	<u>190/380</u> (13)	<u>200/400</u> (13)	<u>208/416</u> (13)	<u>208/416</u> (311/312)	<u>220/440</u> (311/312)	<u>230/460</u> (311/312)	<u>240/480</u> (311/312)			
Maximum kVA (90% sustained voltage)			4725	4125	4125	4125	4725	4725	4725	4725			
Time constants (sec)			<u>347/600</u> (07)	<u>190/380</u> (13)	<u>200/400</u> (13)	<u>208/416</u> (13)	<u>208/416</u> (311/312)	<u>220/440</u> (311/312)	<u>230/460</u> (311/312)	<u>240/480</u> (311/312)			
Transient			0.104	0.102	0.102	0.102	0.097	0.097	0.097	0.097			
Subtransient			0.012	0.012	0.012	0.012	0.0162	0.0162	0.0162	0.0162			
Open circuit			4.066	3.979	3.979	3.979	4.09	4.09	4.09	4.09			
DC			0.027	0.026	0.026	0.026	0.0221	0.0221	0.0221	0.0221			
Windings (@22° C)			<u>347/600</u> (07)	<u>190/380</u> (13)	<u>200/400</u> (13)	<u>208/416</u> (13)	<u>208/416</u> (311/312)	<u>220/440</u> (311/312)	<u>230/460</u> (311/312)	<u>240/480</u> (311/312)			
Stator resistance (L-L Ohms)			0.0048	0.002	0.002	0.002	0.0018	0.0018	0.0018	0.0018			
Rotor resistance (Ohms)			2.13	2.13	2.13	2.13	2.13	2.13	2.13	2.13			
Number of leads			6	6	6	6	12/6	12/6	12/6	12/6			

* Parallel Star connection only available with 12 leads winding option



Alternator Data Sheet

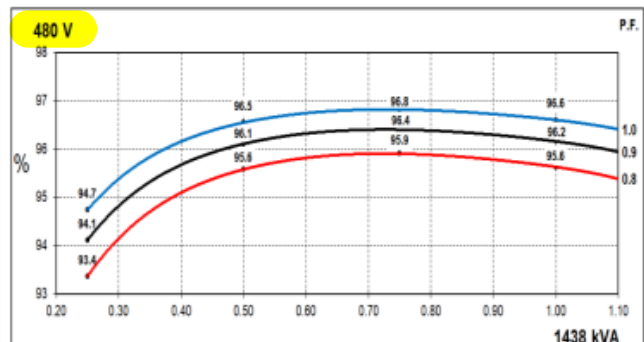
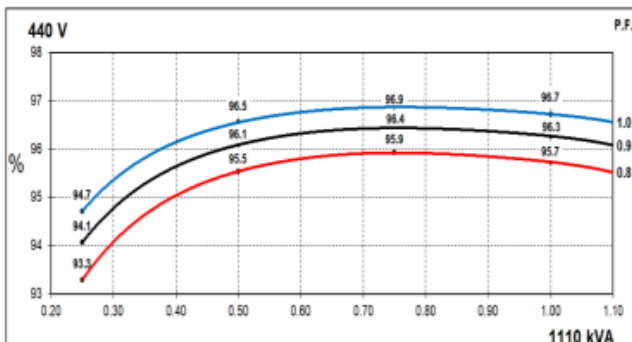
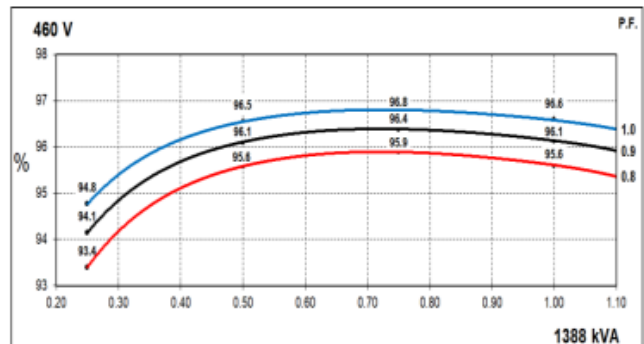
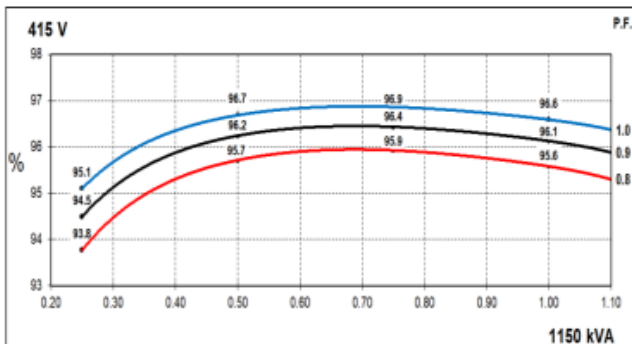
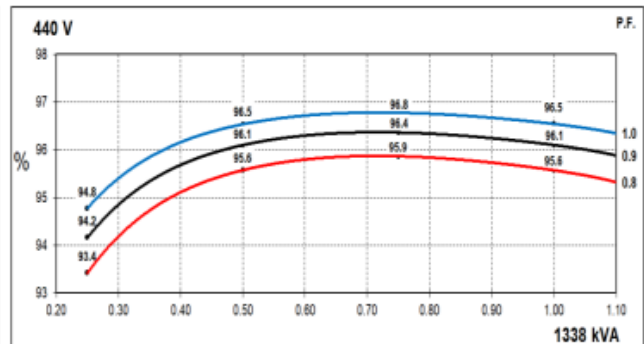
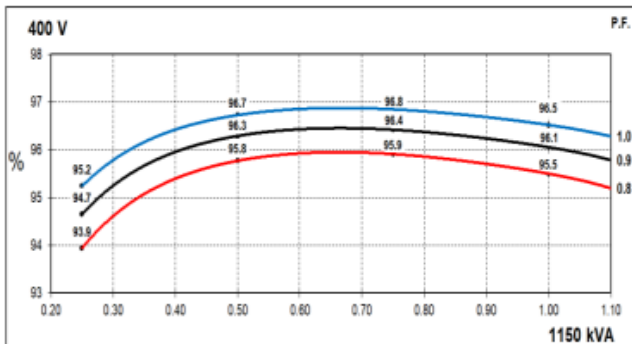
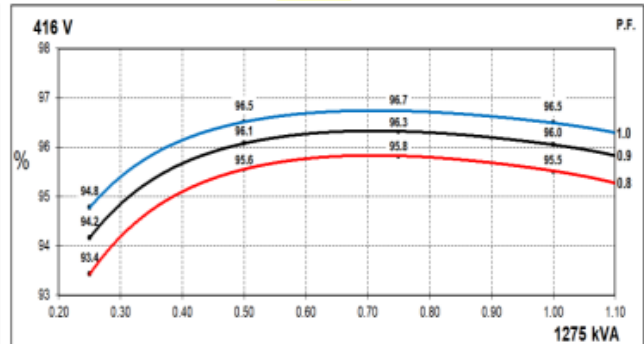
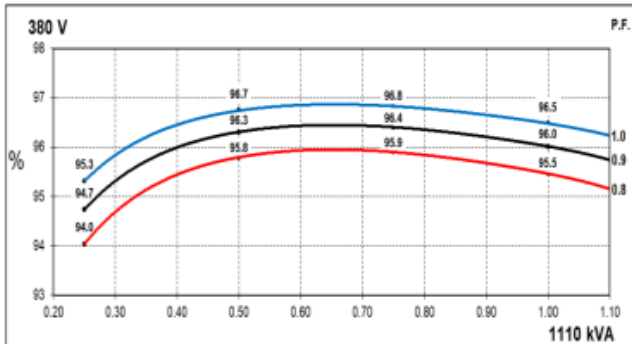
Frame Size: S6L1D-F4

S6L1D-F4 Wdg.311/312

THREE PHASE EFFICIENCY CURVES

50Hz

60Hz



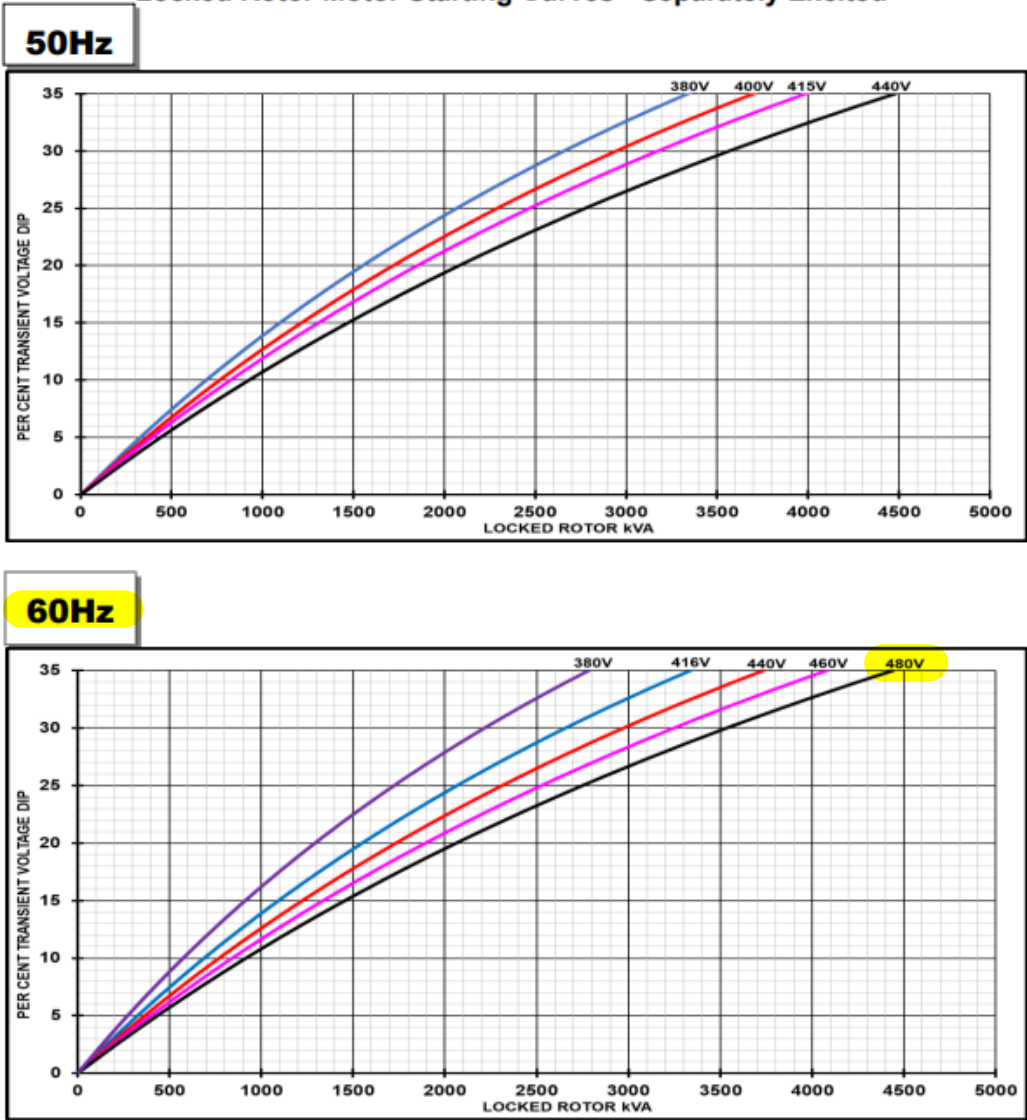


Alternator Data Sheet

Frame Size: S6L1D-F4

S6L1D-F4 Wdg.311/312

Locked Rotor Motor Starting Curves - Separately Excited



Transient Voltage Dip Scaling Factor		Transient Voltage Rise Scaling Factor	
Lagging PF	Scaling Factor	Lagging PF	Scaling Factor
<= 0.4	1.00	<= 0.4	1.25
0.5	0.95	0.5	1.20
0.6	0.90	0.6	1.15
0.7	0.86	0.7	1.10
0.8	0.83	> 0.7	1.00
0.9	0.75		
0.95	0.70		
1	0.65		

Note: To determine % Transient Voltage Dip or Voltage Rise at various PF, multiply the % Voltage Dip from the curve directly by the Scaling Factor.



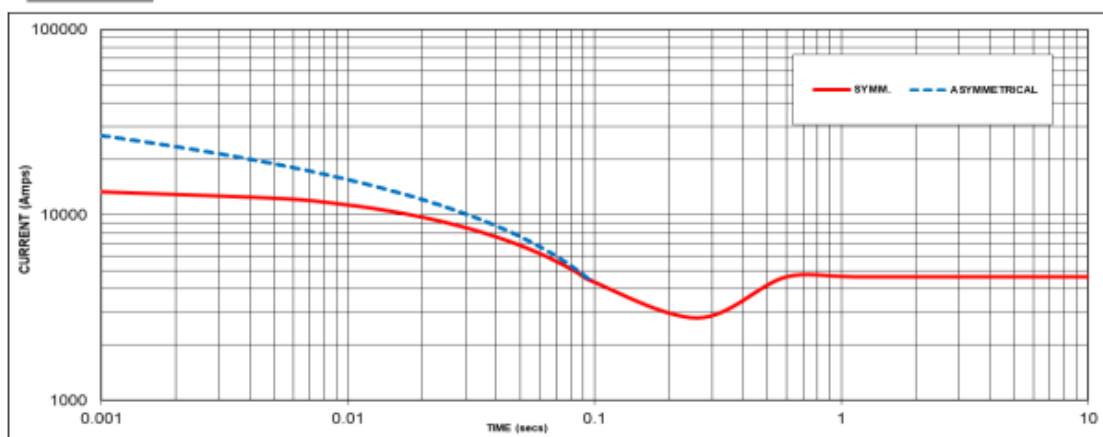
Alternator Data Sheet

Frame Size: S6L1D-F4

S6L1D-F4 Wdg.311/312

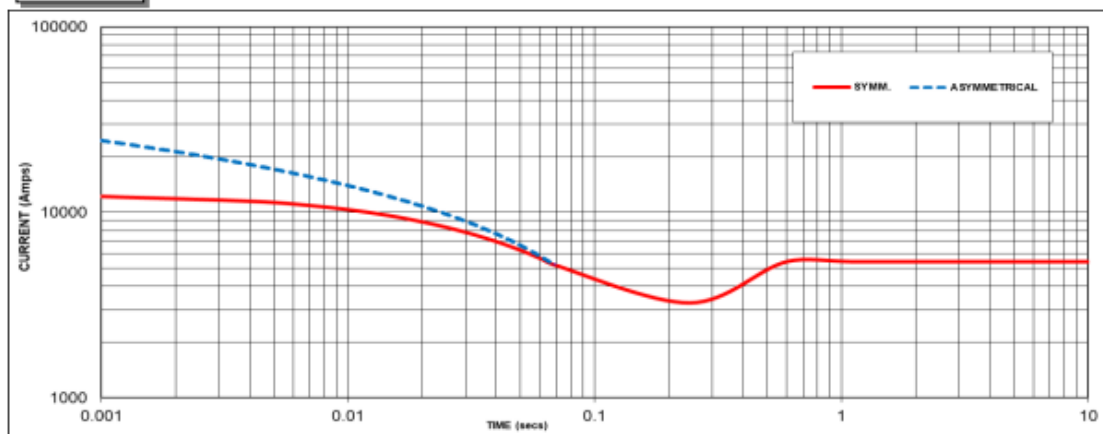
Three-phase Short Circuit Decrement Curve - Separately Excited

50Hz



60Hz

Sustained Short Circuit = 4650 Amps



Sustained Short Circuit = 5420 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	-	440V	-
415V	-	460V	-
440V	-	480V	-

The sustained current value is constant irrespective of voltage level

If MX322 or digital AVR is used, the sustained short-circuit current value is to be multiplied by a factor of 1.1.

Note 2

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.

Note 3

All other times are unchanged

Curves are drawn for Star connections 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



Sound Data

C1000D6ED

S17-G1 60Hz Diesel

A-weighted Sound Pressure Level @ 7 meters, dB(A)

See notes 2, 5 and 7-11 listed below

Configuration	Exhaust	Applied Load	Position (Note 2)								8 Position Average
			1	2	3	4	5	6	7	8	
Standard - Unhoused	Infinite Exhaust	0% Standby	89.5	96.7	96.5	96.8	95.6	97.4	93.6	94.3	95.6
		75% Standby	92.2	98.6	98.6	98.7	95.2	98.1	95.7	95.9	97.1
		100% Standby	93.2	99.8	100.2	99.5	95.5	98.6	96.1	96.5	98.0
Housed (F200)	Mounted Muffler	0% Standby	88.9	86.3	82.3	85.1	85.2	86.1	82.4	84.5	85.6
		75% Standby	90.0	87.1	83.3	86.2	86.0	87.1	83.3	86.7	86.7
		100% Standby	91.3	87.6	84.6	87.0	86.7	88.2	84.1	86.7	87.6
Housed (F201)	Mounted Muffler	0% Standby	79.1	73.6	71.7	74.7	77.4	75.4	72.4	72.7	75.3
		75% Standby	79.9	74.4	73.0	75.5	77.5	76.0	73.6	74.1	76.1
		100% Standby	80.5	75.8	74.4	76.4	77.9	77.0	75.1	76.0	77.0
Housed (F202)	Mounted Muffler	0% Standby	76.5	71.5	70.6	73.4	74.9	73.7	71.0	72.0	73.4
		75% Standby	78.4	72.9	71.7	73.8	75.0	74.5	73.3	74.4	74.7
		100% Standby	79.4	74.8	72.9	74.6	75.3	75.7	74.8	75.8	75.8



Sound Data

C1000D6ED

S17-G1 60Hz Diesel

Average A-weighted Sound Pressure Level @ 1 meter, dB(A)

See notes 1, 5 and 7-14 listed below

Configuration	Exhaust	Applied Load	Octave Band Center Frequency (Hz)											Overall Sound Pressure Level
			16	31.5	63	125	250	500	1000	2000	4000	8000	16000	
Standard - Unhoused	Infinite Exhaust	0% Standby	N/A	51.1	64.0	76.3	97.2	98.2	99.9	98.1	92.3	85.6	72.7	104.8
		75% Standby	N/A	51.0	68.5	79.0	97.2	98.4	100.7	99.1	98.3	96.6	78.0	106.4
		100% Standby	N/A	51.5	69.4	79.9	97.3	98.8	101.0	99.8	99.9	98.1	79.1	107.1
Housed (F200)	Mounted Muffler	0% Standby	N/A	50.9	73.7	78.0	85.0	88.4	93.0	91.2	84.4	75.4	59.3	96.7
		75% Standby	N/A	50.7	78.6	82.8	85.6	89.6	93.1	90.8	85.2	82.2	62.7	97.2
		100% Standby	N/A	51.0	78.1	82.6	86.9	90.2	93.6	91.5	86.0	84.1	62.9	97.9
Housed (F201)	Mounted Muffler	0% Standby	N/A	52.0	62.8	68.7	76.9	78.9	81.4	79.7	72.9	64.5	51.3	85.9
		75% Standby	N/A	54.1	66.6	72.4	77.2	79.2	81.6	80.2	75.9	70.3	53.4	86.6
		100% Standby	N/A	55.4	67.0	73.3	78.1	80.3	82.2	80.9	78.2	74.3	57.3	87.6
Housed (F202)	Mounted Muffler	0% Standby	N/A	56.3	64.6	69.8	76.2	78.1	79.0	76.9	70.6	62.8	50.6	84.2
		75% Standby	N/A	57.0	67.2	72.9	76.5	78.4	78.8	77.3	74.7	69.5	52.5	84.9
		100% Standby	N/A	57.9	68.7	74.6	77.4	79.2	79.2	78.2	77.0	73.5	56.8	86.0



Sound Data

C1000D6ED

S17-G1 60Hz Diesel

A-weighted Sound Pressure Level @ Operator Location, dB(A)

See notes 5 and 7-15 listed below

Configuration	Exhaust	Applied Load	Octave Band Center Frequency (Hz)											Overall Sound Pressure Level
			16	31.5	63	125	250	500	1000	2000	4000	8000	16000	
Standard - Unhoused	Infinite Exhaust	0% Standby	N/A	47.0	65.3	76.4	96.3	101.6	99.3	98.4	92.7	85.1	70.1	105.6
		75% Standby	N/A	45.8	70.4	78.3	96.1	101.8	100.2	99.5	96.8	99.3	84.4	107.2
		100% Standby	N/A	46.9	72.2	79.4	95.8	102.4	100.9	100.0	97.7	101.3	82.2	108.0
Housed (F200)	Mounted Muffler	0% Standby	N/A	47.8	69.2	71.9	80.9	81.3	85.3	81.5	75.2	67.8	49.5	89.0
		75% Standby	N/A	46.0	76.2	79.5	81.9	81.6	86.3	81.7	77.0	78.3	57.2	90.5
		100% Standby	N/A	47.9	77.2	80.1	81.6	83.7	87.5	82.8	77.8	81.5	57.5	91.7
Housed (F201)	Mounted Muffler	0% Standby	N/A	47.6	55.9	63.2	72.9	71.2	72.4	68.8	65.2	57.7	43.8	78.1
		75% Standby	N/A	45.8	59.5	68.1	74.2	72.8	72.6	70.3	67.2	66.2	48.3	79.6
		100% Standby	N/A	48.6	60.8	69.4	76.4	74.7	73.7	71.2	68.7	68.7	49.9	81.3
Housed (F202)	Mounted Muffler	0% Standby	N/A	45.2	57.4	66.1	73.9	72.5	71.4	68.4	63.5	56.9	42.8	78.4
		75% Standby	N/A	44.5	65.0	74.1	76.3	74.1	72.3	69.4	66.0	66.9	48.0	81.5
		100% Standby	N/A	46.0	66.9	75.2	77.6	75.2	72.9	70.0	67.4	63.8	48.2	82.3



Sound Data

C1000D6ED

S17-G1 60Hz Diesel

A-weighted Sound Power Level, dB(A)

See notes 3 and 6-14 listed below

Configuration	Exhaust	Applied Load	Octave Band Center Frequency (Hz)											Overall Sound Power Level
			16	31.5	63	125	250	500	1000	2000	4000	8000	16000	
Standard - Unhoused	Infinite Exhaust	0% Standby	N/A	70.6	83.5	95.7	116.7	117.7	119.4	117.6	111.7	105.1	92.2	124.3
		75% Standby	N/A	70.5	88.0	98.5	116.7	117.9	120.2	118.6	117.8	116.1	97.5	125.9
		100% Standby	N/A	71.0	88.9	99.4	116.7	118.3	120.4	119.3	119.4	117.6	98.6	126.6
Housed (F200)	Mounted Muffler	0% Standby	N/A	71.8	94.6	98.9	105.9	109.2	113.8	112.0	105.2	96.2	80.1	117.5
		75% Standby	N/A	71.5	99.4	103.7	106.5	110.4	113.9	111.7	106.0	103.1	83.5	118.1
		100% Standby	N/A	71.9	99.0	103.5	107.8	111.1	114.5	112.4	106.9	105.0	83.8	118.8
Housed (F201)	Mounted Muffler	0% Standby	N/A	72.9	83.7	89.6	97.8	99.7	102.2	100.6	93.7	85.4	72.2	106.8
		75% Standby	N/A	75.0	87.4	93.2	98.1	100.1	102.5	101.0	96.8	91.1	74.2	107.5
		100% Standby	N/A	76.3	87.8	94.2	98.9	101.2	103.0	101.8	99.0	95.2	78.1	108.5
Housed (F202)	Mounted Muffler	0% Standby	N/A	77.3	85.6	90.8	97.2	99.1	100.0	97.9	91.6	83.8	71.6	105.2
		75% Standby	N/A	78.0	88.2	93.9	97.5	99.4	99.8	98.3	95.7	90.5	73.5	106.2
		100% Standby	N/A	78.9	89.7	95.6	98.4	100.2	100.2	99.2	98.0	94.5	77.8	107.0



Sound Data

C1000D6ED

S17-G1 60Hz Diesel

Exhaust Sound Power Level, dB(A)

See notes 4 and 6-14 listed below

Configuration	Exhaust	Applied Load	Octave Band Center Frequency (Hz)											Overall Sound Power Level
			16	31.5	63	125	250	500	1000	2000	4000	8000	16000	
Standard - Unhoused	No Muffler	0% Standby	N/A	61.7	96.9	103.9	108.2	106.9	103.3	101.8	97.8	88.0	74.5	112.7
		75% Standby	N/A	68.0	105.1	111.6	115.4	121.5	121.3	122.7	120.4	119.8	110.8	128.6
		100% Standby	N/A	70.1	107.5	113.4	116.7	124.6	124.5	127.2	124.3	124.5	114.3	132.4

Global Notes:

1. Sound pressure levels at 1 meter are measured per the requirements of ISO 3744, ISO 8528-10, and European Communities Directive 2000/14/EC as applicable. The microphone measurement locations are 1 meter from a reference parallelepiped just enclosing the generator set (enclosed or unenclosed).
2. Seven-meter measurement location 1 is 7 meters (23 feet) from the generator (alternator) end of the generator set, and the locations proceed counter-clockwise around the generator set at 45° angles at a height of 1.2 meters (48 inches) above the ground surface.
3. Sound Power Levels are calculated according to ISO 3744, ISO 8528-10, and or CE (European Union) requirements..
4. Exhaust Sound Levels are measured and calculated per ISO 6798, Annex A.
5. Reference Sound Pressure Level is 20 µPa.
6. Reference Sound Power Level is 1 pW (10^{-12} Watt).
7. Sound data for remote-cooled generator sets are based on rated loads without cooling fan noise.
8. Sound data for the generator set with infinite exhaust do not include the exhaust noise contribution.
9. Published sound levels are measured at CE certified test site and are subject to instrumentation, measurement, installation and manufacturing variability.
10. Unhoused/Open configuration generator sets refers to generator sets with no sound enclosures of any kind.
11. Housed/Enclosed/Closed/Canopy configuration generator sets refer to generator sets that have noise reduction sound enclosures installed over the generator set and usually integrally attached to the skid base/base frame/fuel container base of the generator set.
12. Published sound levels meet the requirements India's Central Pollution Control Board (Ministry of Environment & Forests), vide GSR 371 (E), which states the A-weighted sound level at 1 meter from any diesel generator set up to a power output rating of 1000kVA shall not exceed 75dB(A)
13. For updated noise pollution information for India see website: <http://www.envfor.nic.in/legis/legis.html>
14. Sound levels must meet India's Ambient Air Noise Quality Standards detailed for Daytime/Night-time operation in Noise Pollution (Regulation and Control) Rules, 2000
15. Operator Location is near genset control panel and is at 1 meter distance from genset control panel and at 1.6 meter height.



Cooling System Data

C1000D6ED

S17-G1

High Ambient Air Temperature Radiator Cooling System											
	Fuel Type	Duty	Rating (kW)	Max cooling @ air flow static restriction, unboxed (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	Weather (F200)	Sound Level 1 (F201)	Sound Level 2 (F202)
				Maximum allowable ambient temperature, degree C							
60 Hz	Diesel	Standby	1000	55.7	54.6	53.6	52.5	51.4	48.5	N/A	42.5
				Airflow (m³/s) – Actual @ Fan							
				TBD	TBD	TBD	TBD	TBD	TBD	N/A	TBD

Enhanced High Ambient Air Temperature Radiator Cooling System											
	Fuel Type	Duty	Rating (kW)	Max cooling @ air flow static restriction, unboxed (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	Weather (F200)	Sound Level 1 (F201)	Sound Level 2 (F202)
				Maximum allowable ambient temperature, degree C							
60 Hz	Diesel	Standby	1000	58.7	56.9	56.0	55.0	54.0	51.0	N/A	50.0
				Airflow (m³/s) – Actual @ Fan							
				TBD	TBD	26.7	25.9	25.2	TBD	N/A	TBD

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.



2026 EPA Tier 2 Exhaust Emission Compliance Statement C1000D6ED 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: TCEXL17.0AAA-001
Effective Date: 04/30/2025
Date Issued: 04/30/2025
EPA Engine Family (Cummins Emissions Family): TCEXL17.0AAA

Engine Information:

Model:	S17-G1	Bore:	5.83 in. (148 mm)
Engine Nameplate HP:	1474	Stroke:	6.42 in. (163mm)
Type:	4 Cycle, In-line, 6 Cylinder Diesel	Displacement:	1025 cu. in. (17 liters)
Aspiration:	Turbocharged and Charge Air Cooled	Compression ratio:	14.5:1
Emission Control Device:	Turbocharged and Charge Air Cooled	Exhaust stack diameter:	8 in. (203 mm)

Diesel Fuel Emission Limits

D2 Cycle Exhaust Emissions

	Grams per BHP-hr			Grams per kWm-hr		
	<u>NO_x + NMHC</u>	<u>CO</u>	<u>PM</u>	<u>NO_x + NMHC</u>	<u>CO</u>	<u>PM</u>
EPA Emissions Limit	4.8	2.6	0.15	6.4	3.5	0.20

Test methods: EPA emissions recorded per 40CFR89 (ref ISO8178-1) and weighted at load points prescribed in the Subpart E, Appendix A for constant speed engines.

Diesel fuel specifications: 40-48 Cetane number, 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 NO_x 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.



Exhaust Emission Data Sheet

C1000D6ED

60 Hz Diesel Generator Set

Engine Information:

Model:	Cummins Inc. S17-G1	Bore:	5.83 in. (148 mm)
Type:	Four Cycle, Inline, 6 Cylinder Diesel	Stroke:	6.42 in. (163 mm)
Aspiration:	Turbocharged and Charge Air Cooled	Displacement:	1025 cu. In. (16.8 liters)
Compression Ratio:	14.5:1		

	<u>1/4</u>	<u>1/2</u>	<u>3/4</u>	<u>Full</u>
<u>Performance Data</u>	<u>Standby</u>	<u>Standby</u>	<u>Standby</u>	<u>Standby</u>
Engine BHP @ 1800 RPM (60 Hz)	368	737	1105	1474
Fuel Consumption (US Gal/Hr)	20.2	37.1	54.3	71.0
Exhaust Gas Flow (CFM)	2582	4305	5755	6872
Exhaust Gas Temperature (°F)	715	731	820	931
Air to Fuel Ratio	34.6:1	31.5:1	27.1:1	23.2:1

Exhaust Emission Data

HC (Total Unburned Hydrocarbons)	0.13	0.05	0.05	0.07
NOx (Oxides of Nitrogen)	3.46	3.24	4.40	6.84
CO (Carbon Monoxide)	0.69	0.33	0.50	0.18
PM (Particulate Matter)	0.15	0.07	0.07	0.00
SO ₂ (Sulfur Dioxide)	0.004	0.004	0.003	0.003
Smoke (FSN)	1.11	0.71	0.85	0.07

(All values, except Smoke, are cited: g/BHP-hr)

Test Conditions

Tests to demonstrate compliance with the regulated levels were conducted per 97/68/EC (Ref. ISO8178-1) and weighted at load points prescribed in 97/68/EC Annex 3, "test procedures". (ref ISO8178-4, D2)

Fuel Specification:	52-54 Cetane Number, 0.03 Max Wt.% Sulfur; as referenced by directive 97/68/EC.
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 ₂ O/lb) of dry air.
Intake Restriction:	Set to maximum allowable limit for clean filter.
Exhaust Back Pressure:	Set to maximum allowable limit.



Prototype Test Support (PTS) 60 Hz test summary



Generator set models

C600D6E

C750D6E

C800D6E

C900D6E

C1000D6ED

Representative prototype

Model: C1000D6ED

Engine: S17-G1

Alternator: S6L1D-F4

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: 1015 kW

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

Maximum motor starting: 3657 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 S6L1D-F4 was tested to verify that the design is not subjected to harmful torsional stresses in excess of 8565 psi. A spectrum analysis of the transducer output was conducted over the speed range of 1650 to 1950 RPM.

Cooling system: 54°C ambient
1.0 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.

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:	± 0.5%
Random voltage variation:	± 1%
Frequency regulation:	Isochronous
Random frequency variation:	± 0.25%

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 0.8 power factor:

Full load acceptance:

Voltage dip:	40.51%
Recovery time:	4.74 seconds
Frequency dip:	11.77%
Recovery time:	5.88 seconds

Full load rejection:

Voltage rise:	10.77%
Recovery time:	1.57 seconds
Frequency rise:	2.94%
Recovery time:	1.97 seconds

All data based on 0.8 power factor:

Harmonic analysis:

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

Harmonic	<u>Line to Line</u>		<u>Line to Neutral</u>	
	<u>No load</u>	<u>Full load</u>	<u>No load</u>	<u>Full load</u>
3	0.18	0.18	0.18	0.18
5	0.30	0.30	0.30	0.30
7	0.42	0.42	0.42	0.42
9	0.54	0.54	0.54	0.54
11	0.66	0.66	0.66	0.66
13	0.78	0.78	0.78	0.78
15	0.90	0.90	0.90	0.90

SECTION 3

Generator Accessories



Product data sheet

Specifications

SQUARE D

Green Premium[®]



Circuit breaker, PowerPacT R,
1600A, 3 pole, 600VAC, 50kA,
busbar, Micrologic 5.0

RLF36160U33F

Main

Range	PowerPact
Product Name	PowerPact R
Product Or Component Type	Circuit breaker
Device Application	Distribution

Complementary

Line Rated Current	1600 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 5.0, LSI
[Ui] Rated Insulation Voltage	750 V IEC 60947-2
Trip Unit Name	MicroLogic 5.0
Suitability For Isolation	Yes IEC 60947-2
Utilisation Category	Category A
Awg Gauge	AWG 3/0...750 kcmil aluminium/copper
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

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

Terminal Identifier	AL2500RK
Tightening Torque	601.85 lbf.in (68 N.m) 0.08...0.62 in ² (50...400 mm ²) (AWG 1/0...750 kcmil) 601.85 lbf.in (68 N.m) 0.08...0.23 in ² (50...150 mm ²) (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
Circuit Breaker Application	HACR rated

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	US10DE201245
Discount Schedule	0DE2
Gtin	
Returnability	Yes
Country Of Origin	US

Packing Units

Unit Type Of Package 1	PCE
Number Of Units In Package 1	1
Package 1 Height	12.99 in (33.0 cm)
Package 1 Width	20.08 in (51.0 cm)
Package 1 Length	20.08 in (51.0 cm)
Package 1 Weight	52.00 lb(US) (23.587 kg)

Contractual warranty

Warranty

18 months

Sustainability

Green Premium™ label is Schneider Electric's commitment to delivering products with best-in-class environmental performance. Green Premium promises compliance with the latest regulations, transparency on environmental impacts, as well as circular and low-CO₂ products.

Guide to assessing product sustainability is a white paper that clarifies global eco-label standards and how to interpret environmental declarations.

[Learn more about Green Premium >](#)

[Guide to assess a product's sustainability >](#)



Transparency RoHS/REACH

Well-being performance

✓ Mercury Free

✓ Rohs Exemption Information [Yes](#)

✓ Pvc Free

✓ Halogen Free Plastic Parts Product

Certifications & Standards

Reach Regulation [REACH Declaration](#)

Eu Rohs Directive Compliant with Exemptions

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](#)

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

Micrologic™ 5.0 Electronic Trip Unit

ENGLISH

Instruction Bulletin

48049-207-05

Rev. 01, 07/2012

Retain for future use.

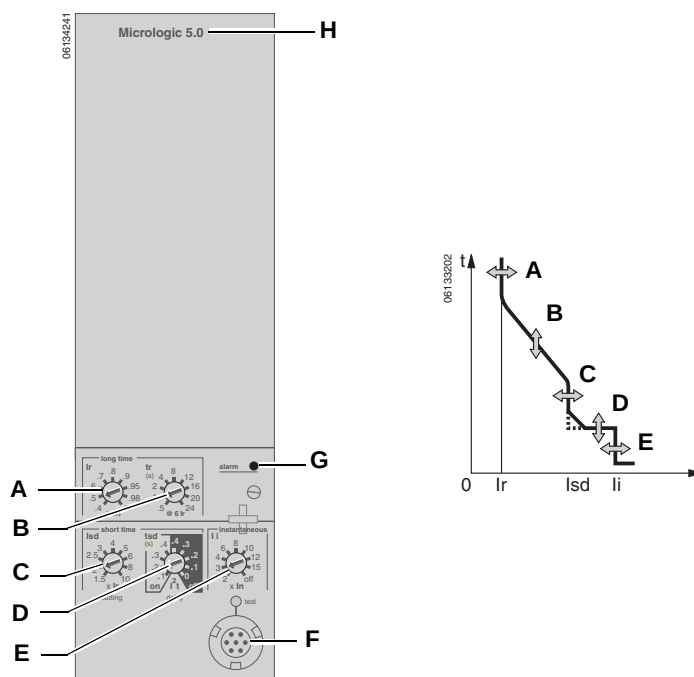


Micrologic 5.0 Trip Unit

The Micrologic 5.0 trip unit provides selective (LSI) protection.

- A. Long-time pickup (I_r) switch
- B. Long-time delay (t_r) switch
- C. Short-time pickup (I_{sd}) switch
- D. Short-time delay (t_{sd}) switch
- E. Instantaneous pickup (I_i) switch
- F. Test plug receptacle
- G. Overload indicator light
- H. Trip unit name

Figure 4: Micrologic 5.0 Trip Unit



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 (I_r) (A) sets maximum current level (based on sensor plug rating I_n) which circuit breaker will carry continuously. If current exceeds this value, circuit breaker will trip after the preset time delay. The long-time pickup (I_r) is adjustable from 0.4–1.0 times the sensor plug rating (I_n).
- The long-time delay (t_r) (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 I_r 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 I_n 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

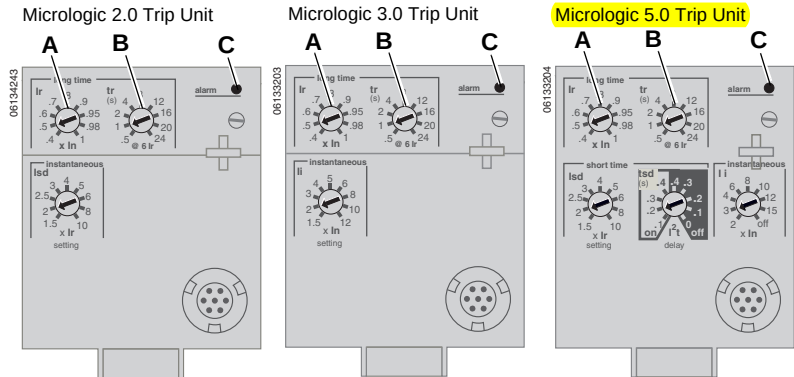


Table 1: Micrologic Trip Unit Long-Time Delay Values

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 I_n = sensor rating. I_r = I_n x long-time pickup. Trip threshold between 1.05 and 1.20 I_r .

²Time-delay accuracy +0/-20%

³For Micrologic 5.0 trip units, when tsd is set to 0.4 off or 0.4 on, then t_r = 0.5 instead of 0.34.

Short-Time Protection

Short-time protection protects equipment against short circuits.

- Short-time protection is standard on 2.0 and 5.0 trip units. It is not available on 3.0 trip units.
- Short-time protection is based on the long-time pickup (I_r)
- The short-time pickup (I_{sd}) (A) sets the current level (below instantaneous trip level) where the circuit breaker will trip after the preset time delay.
- The short-time delay (t_{sd}) (B) sets the length of time that the circuit breaker will carry an overcurrent above the short-time pickup current level before tripping. It is adjustable on the 5.0 trip unit and factory set to zero on the 2.0 trip unit.
- The I^2t on/ I^2t off option provides improved selectivity with downstream protective devices:
 - With I^2t off selected, fixed time delay is provided.
 - With I^2t on selected, inverse time I^2t protection is provided up to $10 \times I_r$. Above $10 \times I_r$, a fixed time delay is provided.
 - Intermittent currents in the short-time tripping range which do not last sufficiently long to trigger a trip are accumulated and shorten the trip delay appropriately.
- Setting t_{sd} to the 0 setting turns off time-delay features.
- Short-time protection uses true RMS measurement.
- Short-time delay can be adjusted to provide selectivity with a downstream circuit breaker.

Figure 6: Short-Time Protection Switches

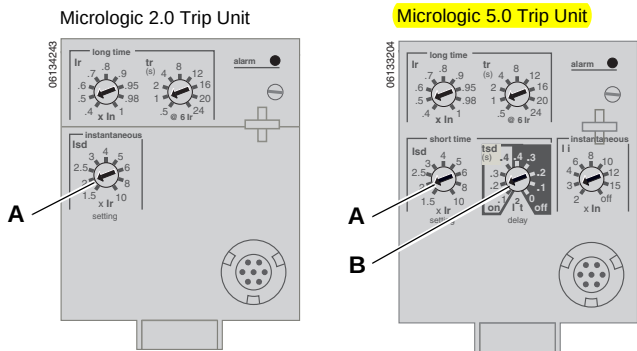


Table 2: Micrologic Trip Unit Short-Time Delay Values

Setting	Short-Time Delay				
	I^2t off (I_{sd} at 10 I_r) (seconds)	I^2t on (I_{sd} at 10 I_r) (seconds)	t_{sd} (min. trip) (milliseconds)	t_{sd} (max. trip) (milliseconds)	
I^2t off (I_{sd} at 10 I_r) (seconds)	0	0.1	0.2	0.3	0.4
I^2t on (I_{sd} at 10 I_r) (seconds)	—	0.1	0.2	0.3	0.4
t_{sd} (min. trip) (milliseconds)	20	80	140	230	350
t_{sd} (max. trip) (milliseconds)	80	140	200	320	500

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

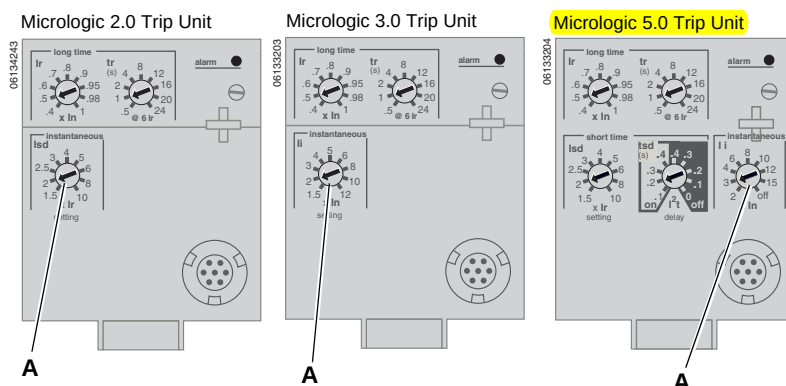


Table 3: Micrologic Instantaneous Values

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)

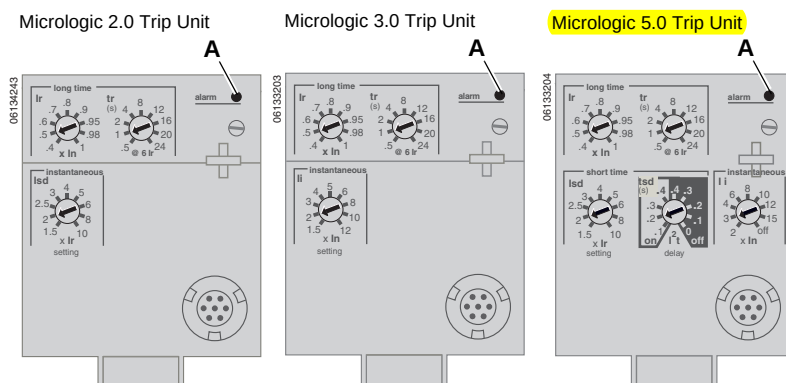
In = sensor rating

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

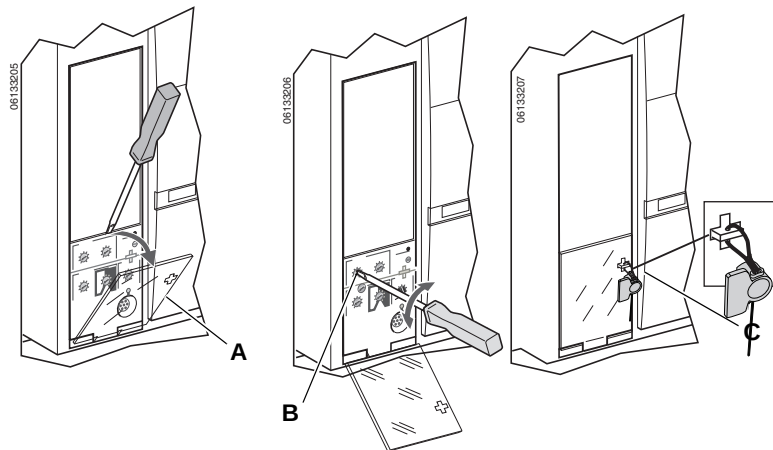
Trip unit functions can be tested using primary injection testing or secondary injection testing.

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.

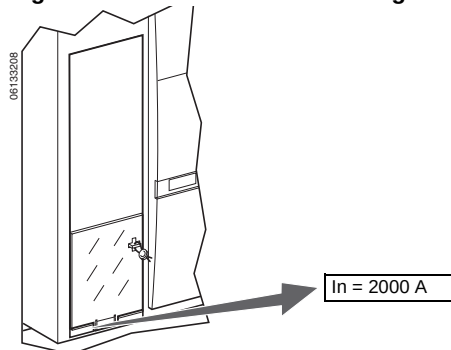
Figure 9: Adjust Switch Settings



Examples

Circuit breaker is rated 2000 A.

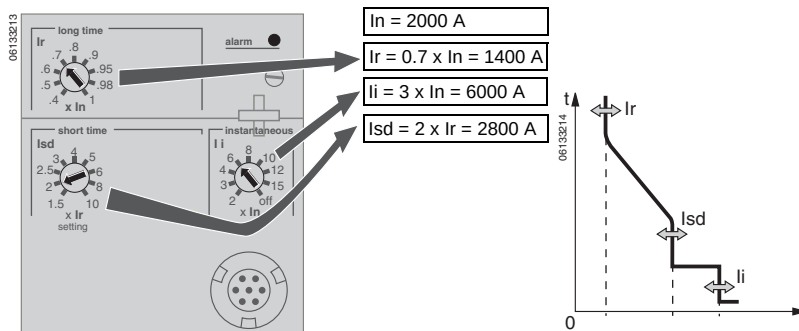
Figure 10: Circuit Breaker Rating



Micrologic 5.0 Trip Unit

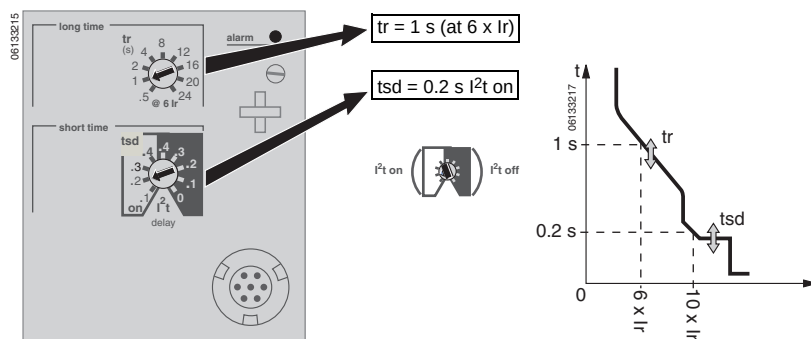
1. Set pickup levels.

Figure 15: Set Pickup Levels



2. Set time delay.

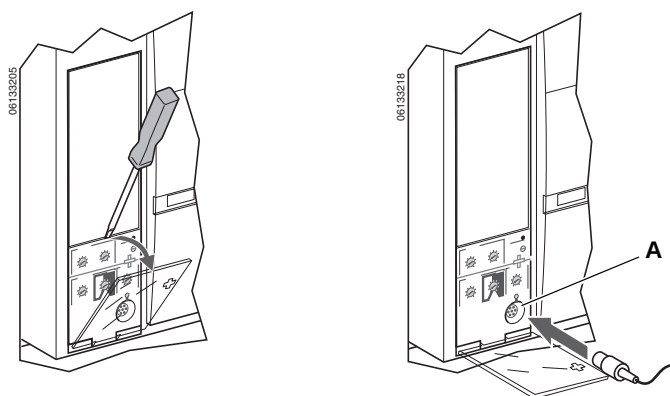
Figure 16: Set Time Delay

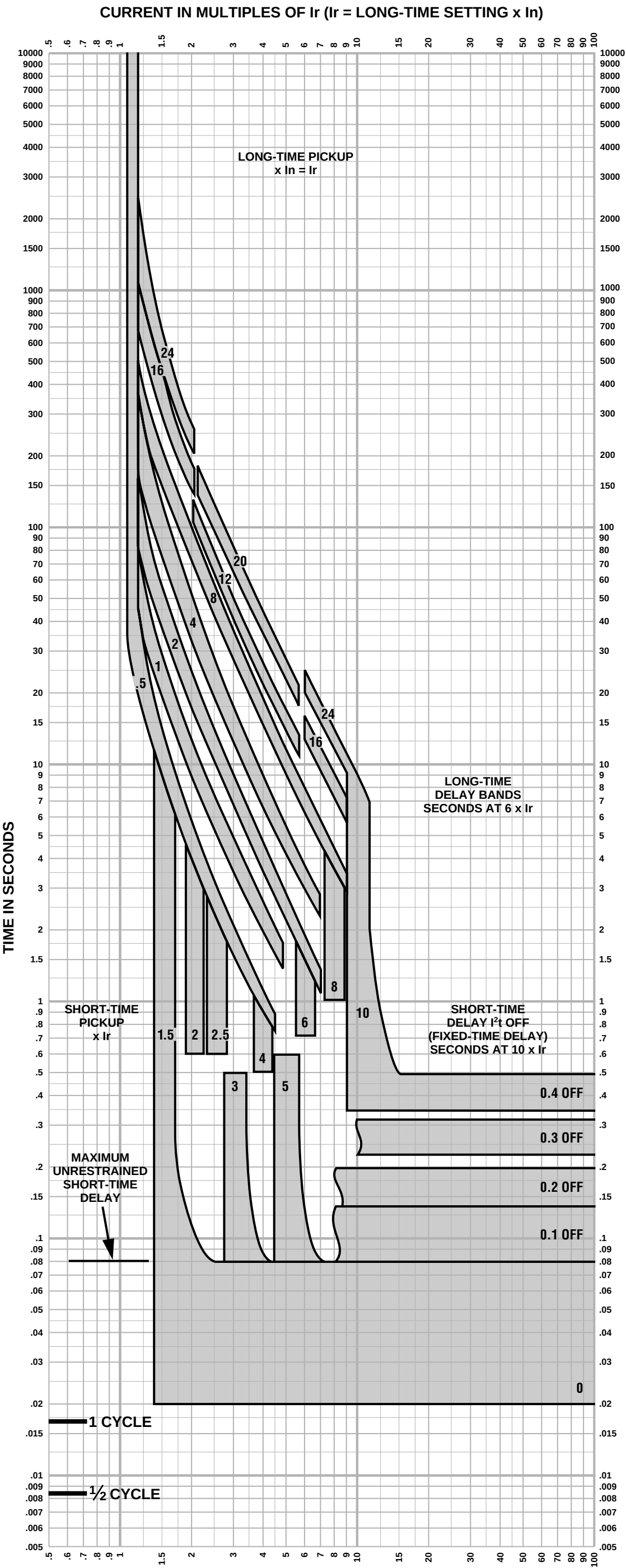


Trip Unit Operation Verification

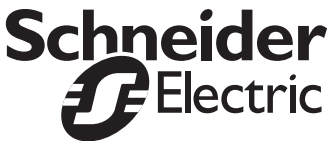
Use a test kit connected to the trip unit test plug receptacle (A) to verify trip unit is functioning as desired. See instructions shipped with test kit to perform verification tests.

Figure 17: Verify Trip Unit Operation





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



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MICROLOGIC® 5.0/6.0 A/P/H TRIP UNIT CHARACTERISTIC TRIP CURVE NO. 613-4

Long-time Pickup and Delay
Short-time Pickup and I^2t OFF Delay

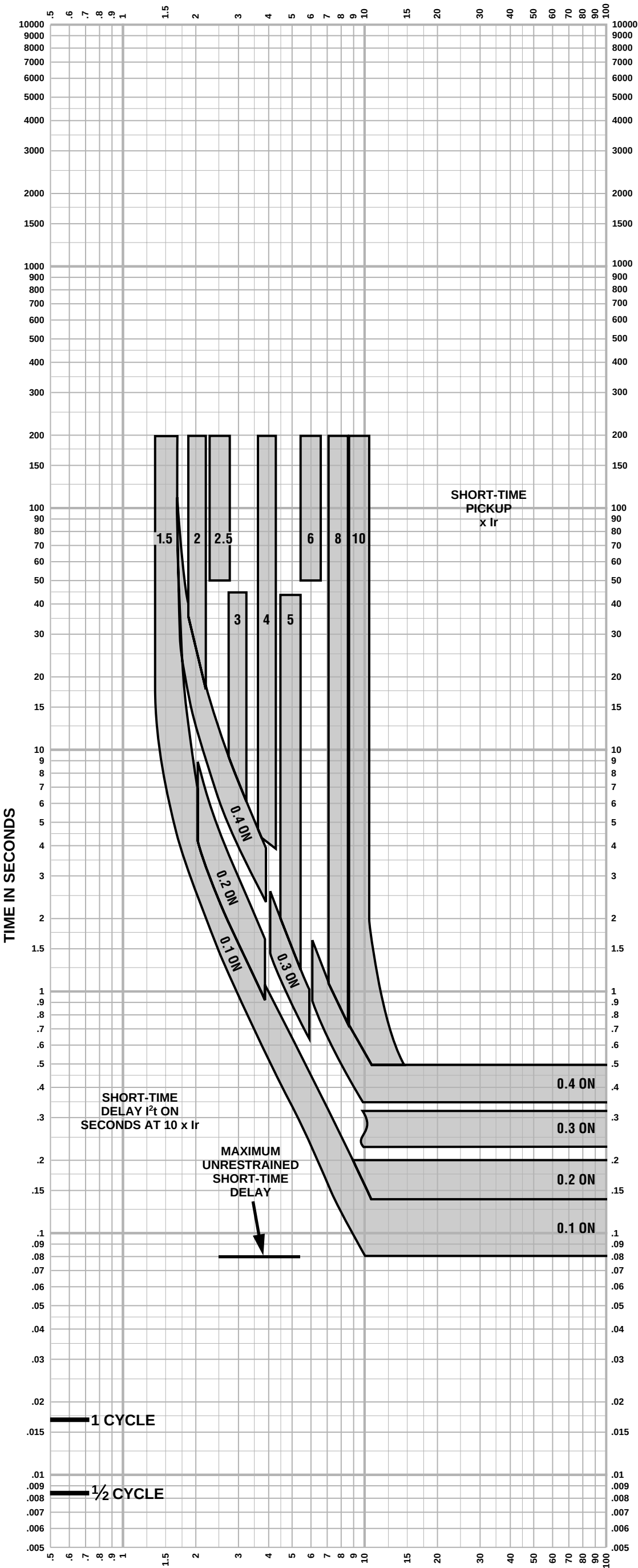
The time-current curve information is to be used for application and coordination purposes only.

Curves apply from -30°C to $+60^{\circ}\text{C}$ ambient temperature.

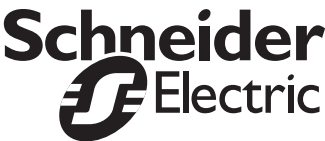
Notes:

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 interrupting rating of the circuit breaker.
3. With zone-selective interlocking on, short-time delay utilized and no restraining signal, the maximum unrestrained short-time delay time band applies regardless of the setting.
4. Total clearing times shown include the response times of the trip unit, the circuit breaker opening, and the extinction of the current.
5. For a withstand circuit breaker, instantaneous can be turned OFF. See 613-7 for instantaneous trip curve. See 613-10 for instantaneous override values.
6. Overload indicator illuminates at 100%.

CURRENT IN MULTIPLES OF Ir (Ir = LONG-TIME SETTING x In)



- Merlin Gerin
- Modicon
- Square D
- Telemecanique
- Federal Pioneer
- Federal Pacific



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MICROLOGIC® 5.0/6.0 A/P/H TRIP UNIT CHARACTERISTIC TRIP CURVE NO. 613-5

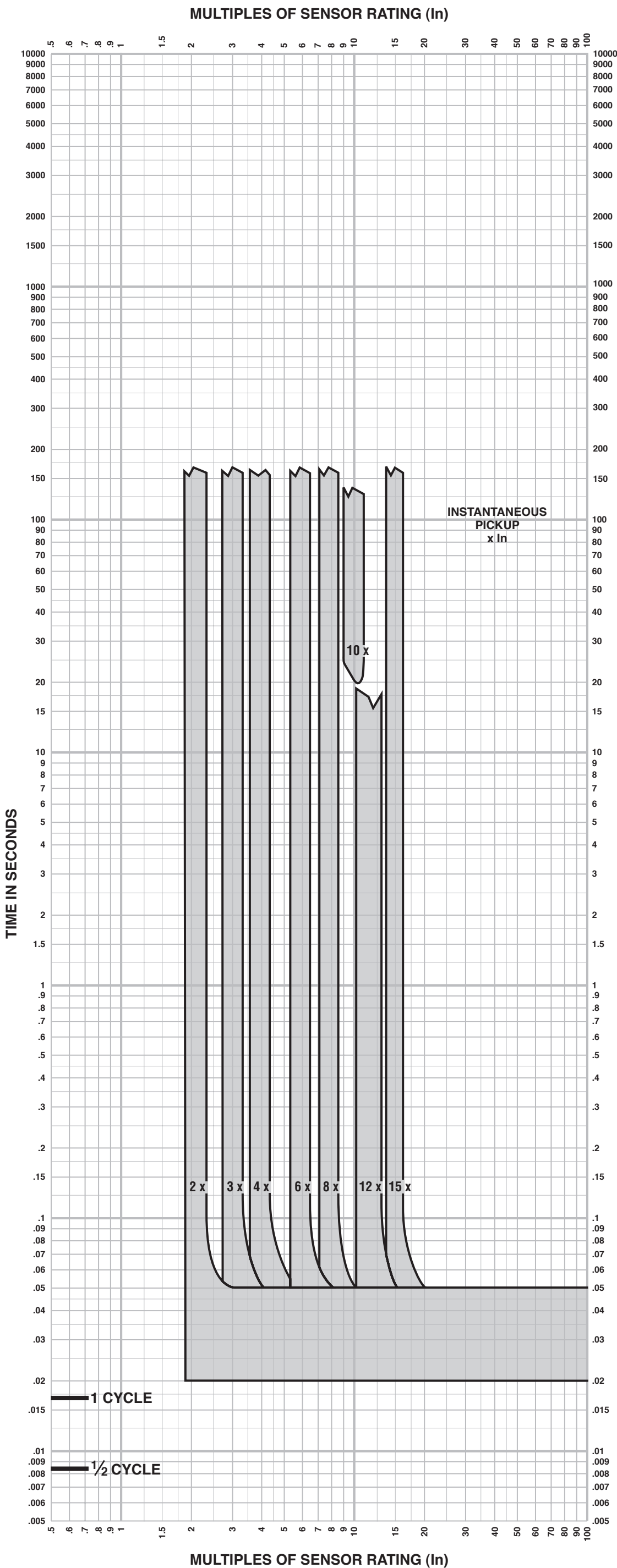
Short-time Pickup and I²t ON Delay

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:

- 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.
- The end of the curve is determined by the interrupting rating of the circuit breaker.
- With zone-selective interlocking on, short-time delay utilized and no restraining signal, the maximum unrestrained short-time delay time band applies regardless of the setting.
- Total clearing times shown include the response times of the trip unit, the circuit breaker opening, and the extinction of the current.
- For a withstand circuit breaker, instantaneous can be turned OFF. See 613-7 for instantaneous trip curve. See 613-10 for instantaneous override values.
- See 613-4 for long-time pickup and delay trip curve.



**MICROLOGIC® 5.0/6.0 A/P/H TRIP UNIT
CHARACTERISTIC TRIP CURVE NO. 613-7**

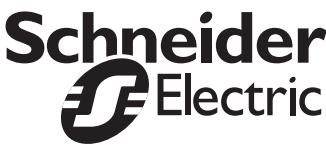
Instantaneous Pickup
2x–15x and OFF

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

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

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. For a withstand circuit breaker, instantaneous can be turned OFF. See 613-7 for instantaneous trip curve. See 613-10 for instantaneous override values.
5. See 613-4 and 613-5 for long-time pickup, long-time delay, short-time pickup, and short-time delay trip curves.



INSTANTANEOUS OVERRIDE VALUES NO. 613-10

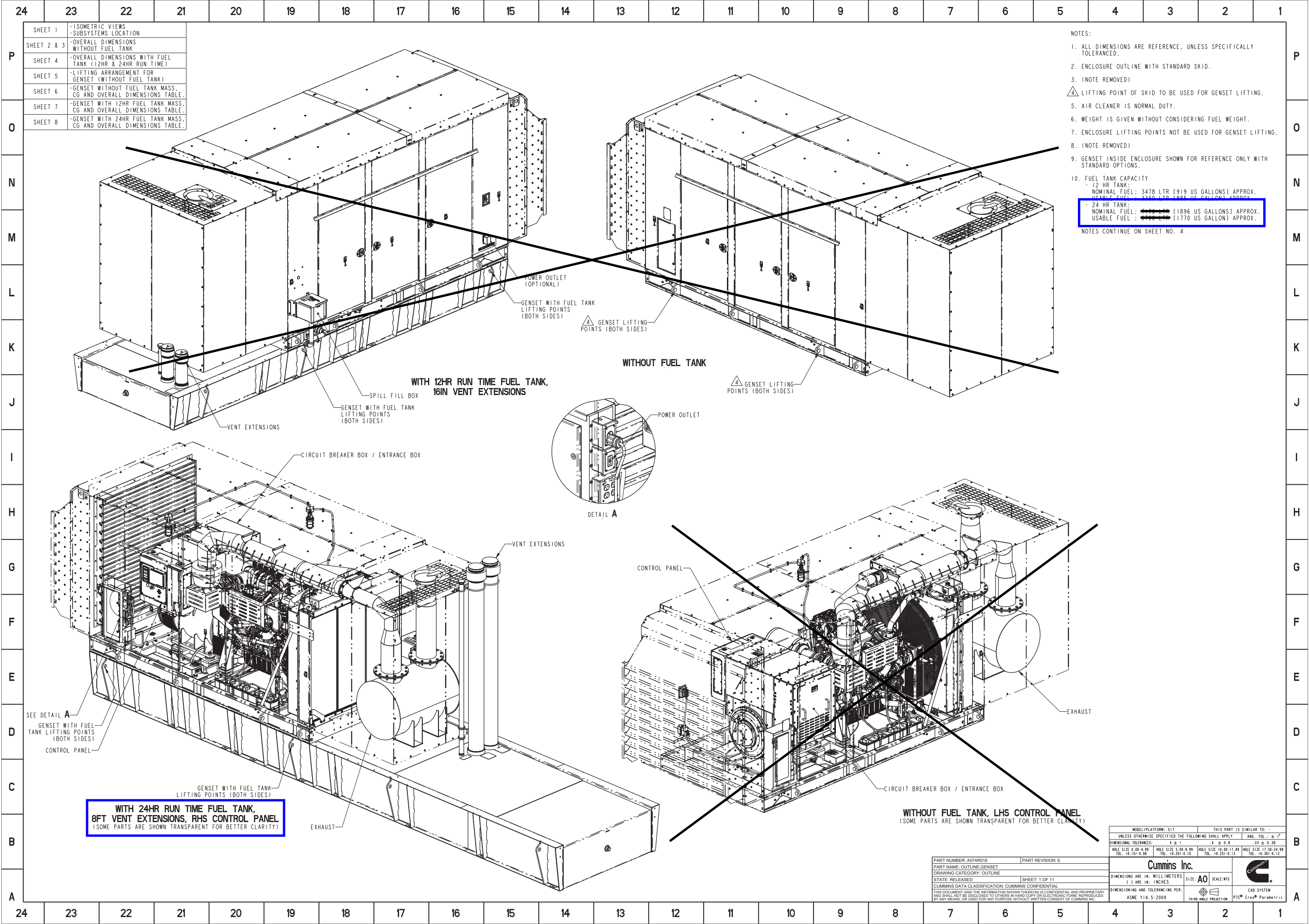
MASTERPACT NW/NT		MASTERPACT NW/NT		MASTERPACT NW/NT		POWERPACT / HORIZON / SELECT / COMPACT	
ANSI CB Model No.	Inst. Override (kA RMS) +/- 10%	UL CB Model No.	Inst. Override (kA RMS) +/- 10%	IEC CB Model No.	Inst. Override (kA RMS) +/- 10%	UL/IEC CB Model No.	Inst. Override (kA RMS) +/- 10%
NW08N1 ★	24	NW08N ★	24	NW08N1	None	RG 600	57
NW08N1	None	NW08N	40	NW10N1	None	RG 800	57
NW16N1	None	NW12N	40	NW12N1	None	RG 1000	57
NW08H1 ★	24	NW16N	40	NW16N1	None	RG 1200	57
NW08H1	None	NW20N	40	NW08H1	None	RG 1600	57
NW16H1	None	NW08H ★	24	NW10H1	None	RG 2000	57
NW20H1	None	NW08H	40	NW12H1	None	RG 2500	57
NW32H1	None	NW12H	40	NW16H1	None	RJ 600	48▲
NW08H2 ★	24	NW16H	40	NW20H1	None	RJ 800	48▲
NW08H2	None	NW20H	40	NW25H1	None	RJ 1000	48▲
NW16H2	None	NW25H	65	NW32H1	None	RJ 1200	48▲
NW20H2	None	NW30H	65	NW40H1	None	RJ 1600	48▲
NW32H2	None	NW40H	75	NW50H1	None	RJ 2000	48▲
NW40H2	None	NW50H	75	NW63H1	None	RJ 2500	48▲
NW50H2	None	NW60H	75	NW08H2 ★	24	RK 600	57
NW08H3 ★	24	NW08L ★	24	NW08H2	85	RK 800	57
NW08H3	85	NW08L	35	NW10H2	85	RK 1000	57
NW16H3	85	NW08LF	24	NW16H2	85	RK 1200	57
NW20H3	85	NW12L	35	NW20H2	85	RK 1600	57
NW32H3	85	NW12LF	24	NW25H2	85	RK 2000	57
NW40H3	85	NW16L	35	NW32H2	85	RK 2500	57
NW50H3	85	NW16LF	24	NW40H2	85	RL 600	48▲
NW08L1 ★	24	NW20L	65	NW50H2	117	RL 800	48▲
NW08L1	35	NW20LF	24	NW63H2	117	RL 1000	48▲
NW08L1F	24	NW25L	65	NW20H3	65	RL 1200	48▲
NW16L1	35	NW30L	65	NW25H3	65	RL 1600	48▲
NW16L1F	24	NW40L	75	NW32H3	65	RL 2000	48▲
NW20L1	35	NW50L	75	NW40H3	65	RL 2500	48▲
NW20L1F	24	NW60L	75	NW08L1 ★	24	PG 250	24
NW32L1	117	NW08HF	40	NW08L1	35	PG 400	24
NW40L1	117	NW12HF	40	NW10L1	35	PG 600	24
NW50L1	117	NW16HF	40	NW12L1	35	PG 800	24
NW08HA	None	NW20HF	40	NW16L1	35	PG 1000	24
NW16HA	None	NW25HF	65	NW20L1	35	PG 1200	24
NW20HA	None	NW30HF	65	NW08H10	None	PJ 250	7
NW32HA	None	NW40HF	75	NW10H10	None	PJ 400	10
NW40HA	None	NW50HF	75	NW12H10	None	PJ 600	10
NW50HA	None	NW60HF	75	NW16H10	None	PJ 800	10
NW08HF	85	NW08HB	35	NW20H10	None	PJ 1000	10
NW16HF	85	NW12HB	35	NW25H10	None	PJ 1200	10
NW20HF	85	NW16HB	35	NW32H10	None	PK 250	24
NW32HF	85	NW20HB	65	NW40H10	None	PK 400	24
NW40HF	85	NW25HB	65	NW08NA	None	PK 600	24
NW50HF	85	NW30HB	65	NW10NA	None	PK 800	24
NW08HC	35	NW40HB	75	NW16NA	None	PK 1000	24
NW16HC	35	NW50HB	75	NW08HA	None	PK 1200	24
NW20HC	35	NW60HB	75	NW10HA	None	PL 250	7
NW32HC	117	NT08N ★	24	NW12HA	None	PL 400	10
NW40HC	117	NT08N	40	NW16HA	None	PL 600	10
NW50HC	117	NT12N	40	NW20HA	None	PL 800	10
NT08N1 ★	24	NT16N	40	NW25HA	None	PL 1000	10
NT08N1	None	NT08H ★	24	NW32HA	None	PL 1200	10
NT08H1 ★	24	NT08H	40	NW40HA	None	MG 300	12▲
NT08H1	None	NT12H	40	NW50HA	None	MG 350	12▲
NT08L1F	10	NT16H	40	NW63HA	None	MG 400	12▲
NT08NA	None	NT08L1	10	NW08HF	85	MG 450	12▲
		NT12L1	10	NW10HF	85	MG 500	12▲
		NT16L1	10	NW12HF	85	MG 600	12▲
		NT08L	10	NW16HF	85	MG 700	12▲
		NT08LF	10	NW20HF	85	MG 800	12▲
		NT12L	10	NW25HF	85	MJ 300	12▲
		NT16L	10	NW32HF	85	MJ 350	12▲
		NT12LF	10	NW40HF	85	MJ 400	12▲
		NT08HF	40	NW08HA10	None	MJ 450	12▲
		NT12HF	40	NW10HA10	None	MJ 500	12▲
		★ Maximum sensor plug 250 A		NW12HA10	None	MJ 600	12▲
				NW16HA10	None	MJ 700	12▲
				NW20HA10	None	MJ 800	12▲
				NW25HA10	None		
				NW32HA10	None	NS 800b N	57
				NW40HA10	None	NS 1000b N	57
				NT08H1	None	NS 1250b N	57
				NT10H1	None	NS 1600b N	57
				NT12H1	None	NS 2000 N	57
				NT16H1	None	NS 2500 N	57
				NT08L1	10	NS 3200 N	57
				NT08H10	None	NS 800b H	48▲
				NT10H10	None	NS 1000b H	48▲
				NT12H10	None	NS 1250b H	48▲
				NT16H10	None	NS 1600b H	48▲
				NT08HA	None	NS 2000 H	48▲
				NT10HA	None	NS 2500 H	48▲
				NT12HA	None	NS 3200 H	48▲
				NT16HA	None		
				NT08HA10	None	NS 630b N	24
				NT10HA10	None	NS 800 N	24
				NT12HA10	None	NS 1000 N	24
				NT16HA10	None	NS 1250 N	24
						NS 1600 N	24
						NS 630b H	24
						NS 800 H	24
						NS 1000 H	24
						NS 1250 H	24
						NS 1600 H	24
						NS 630b L	24
						NS 800 L	24
						NS 1000 L	24
						NS 1250 L	24
						NS 1600 L	24

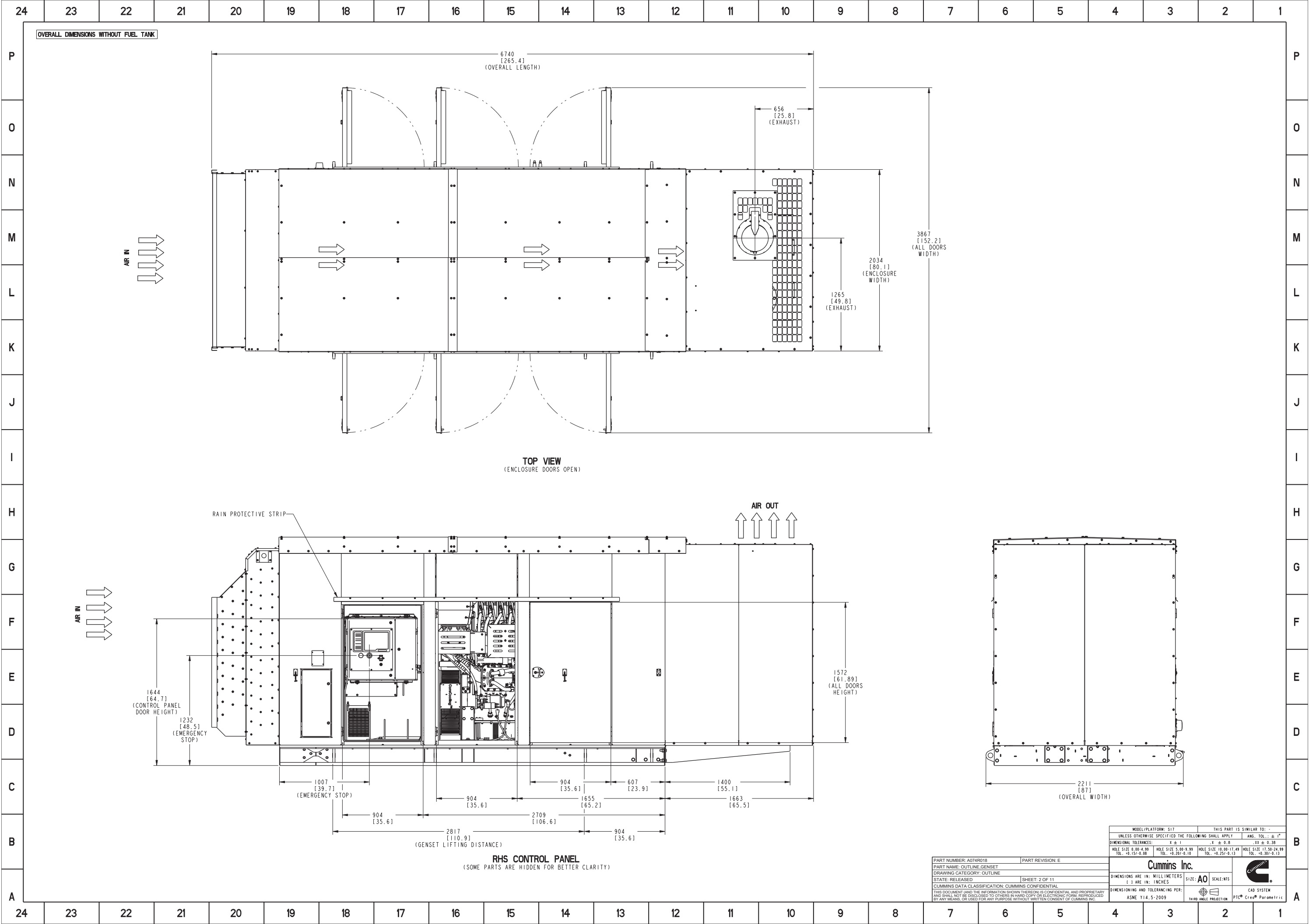
▲ Tolerance +/- 15%

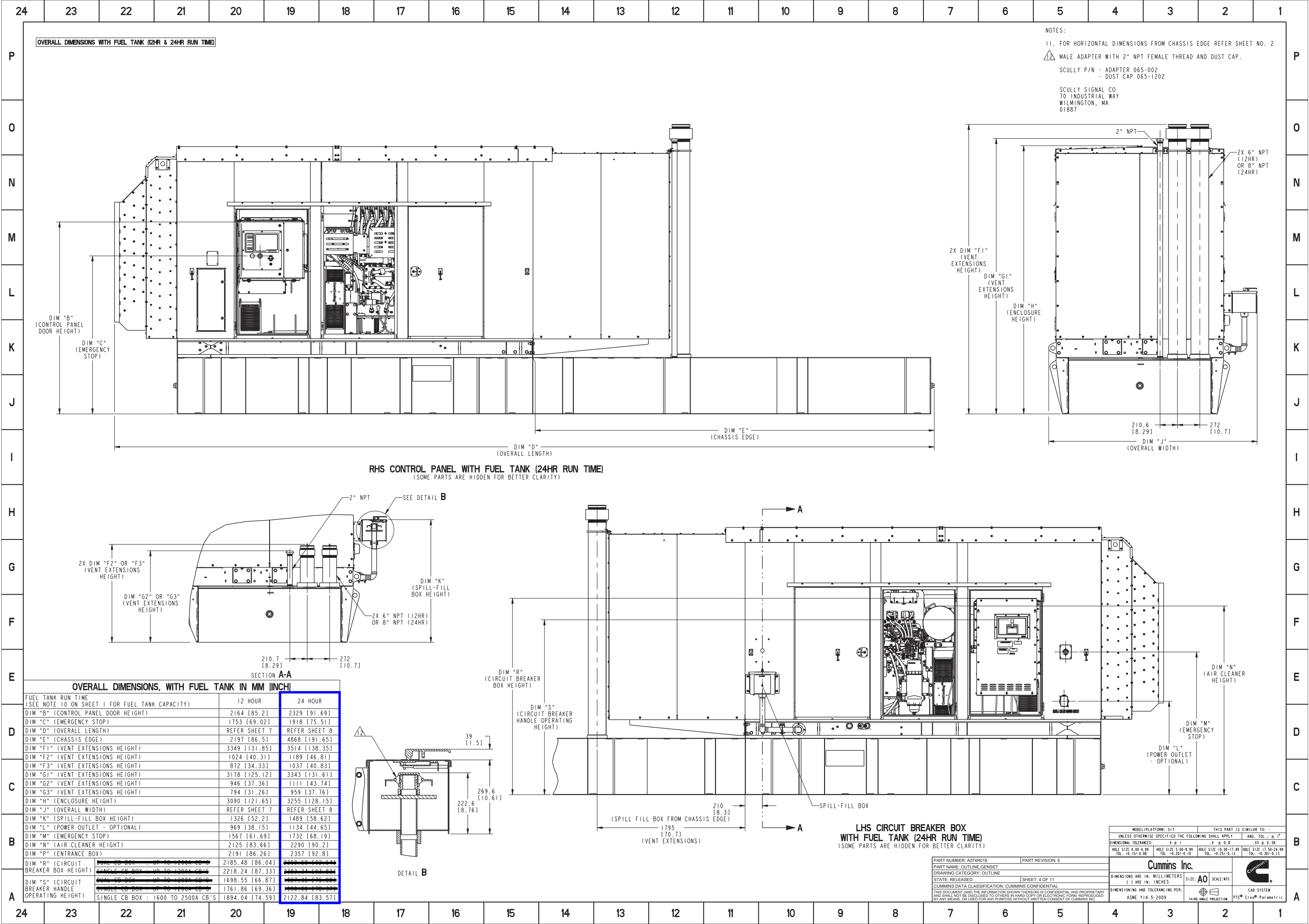
SECTION 4

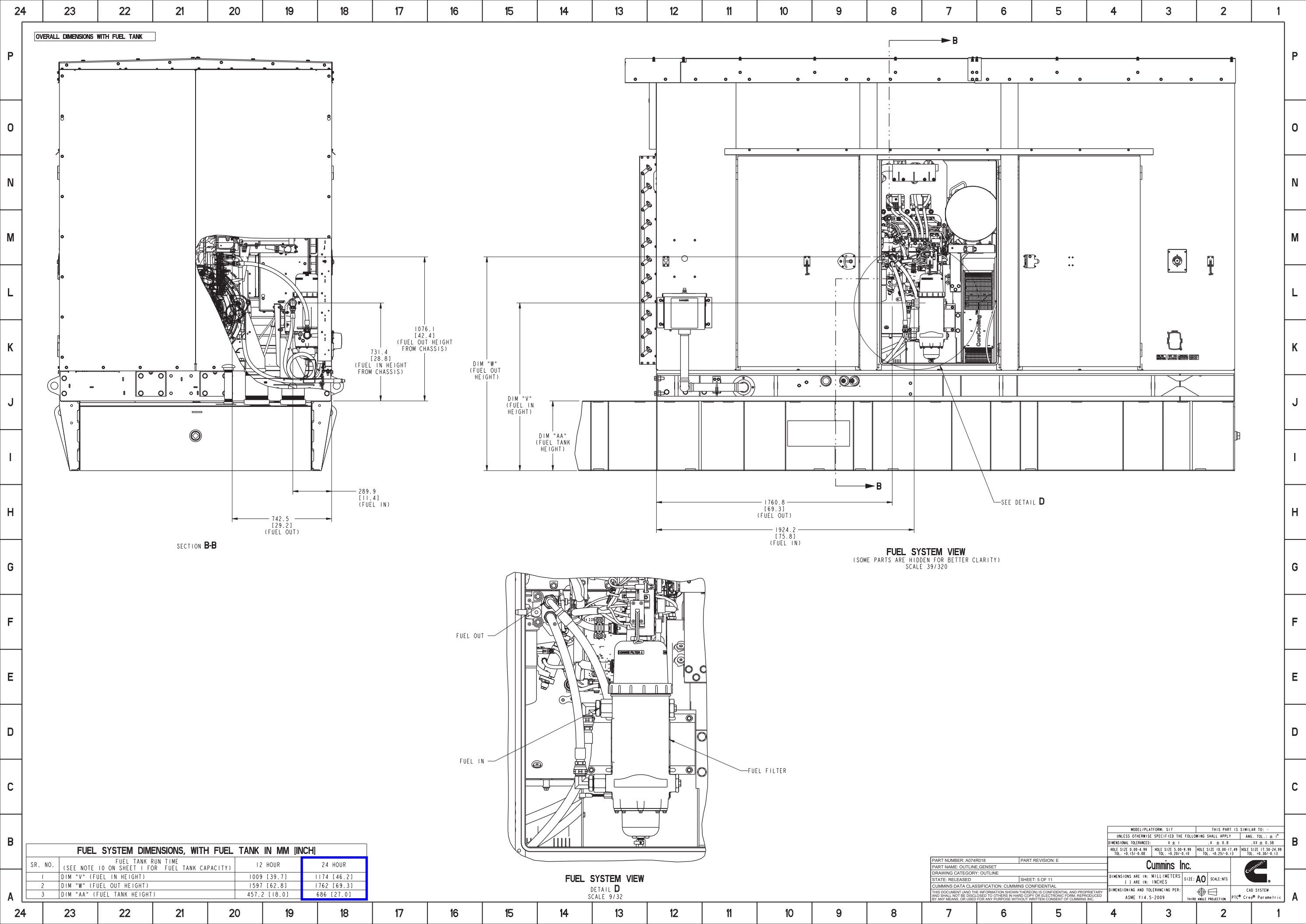
Generator Drawings and Interconnects







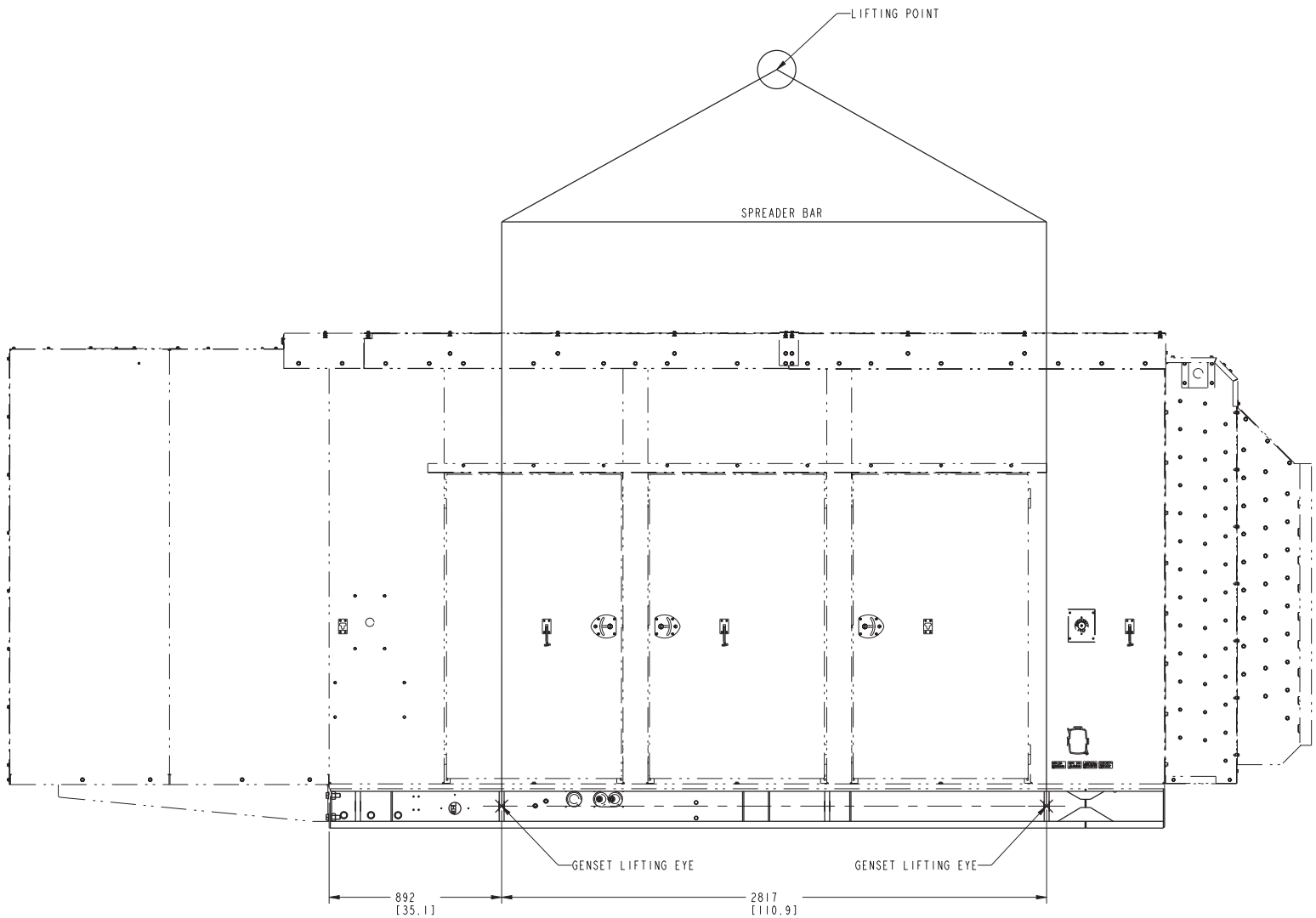
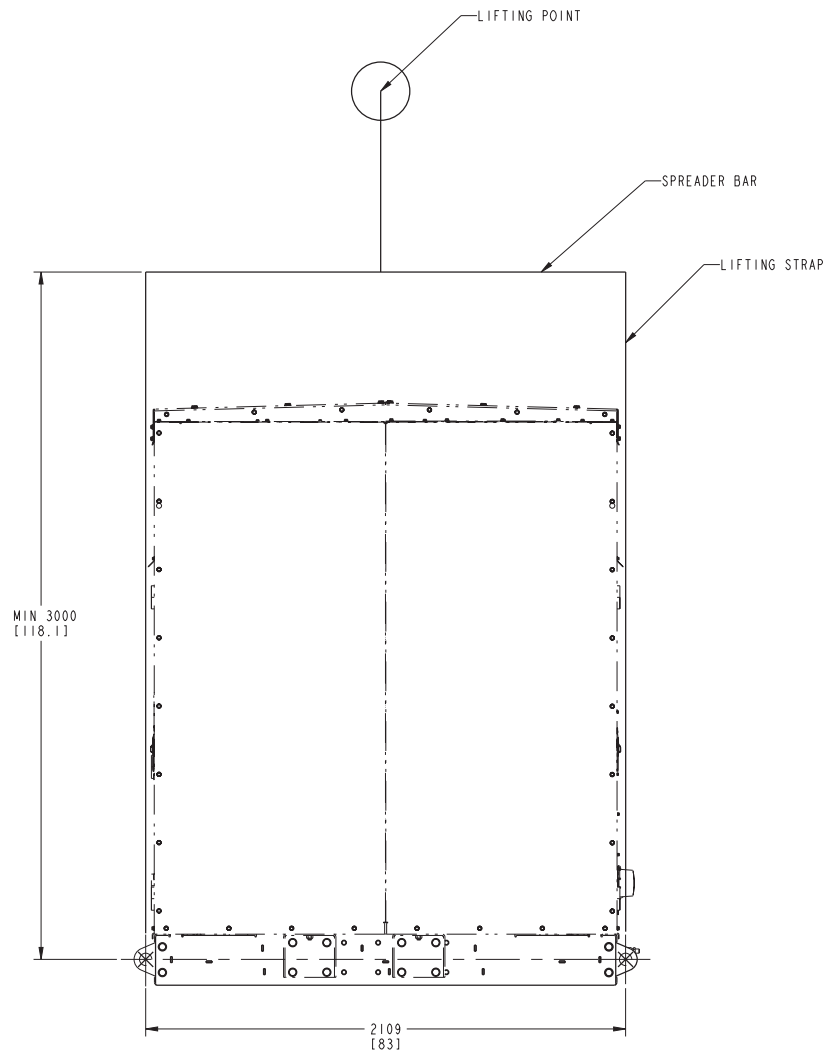
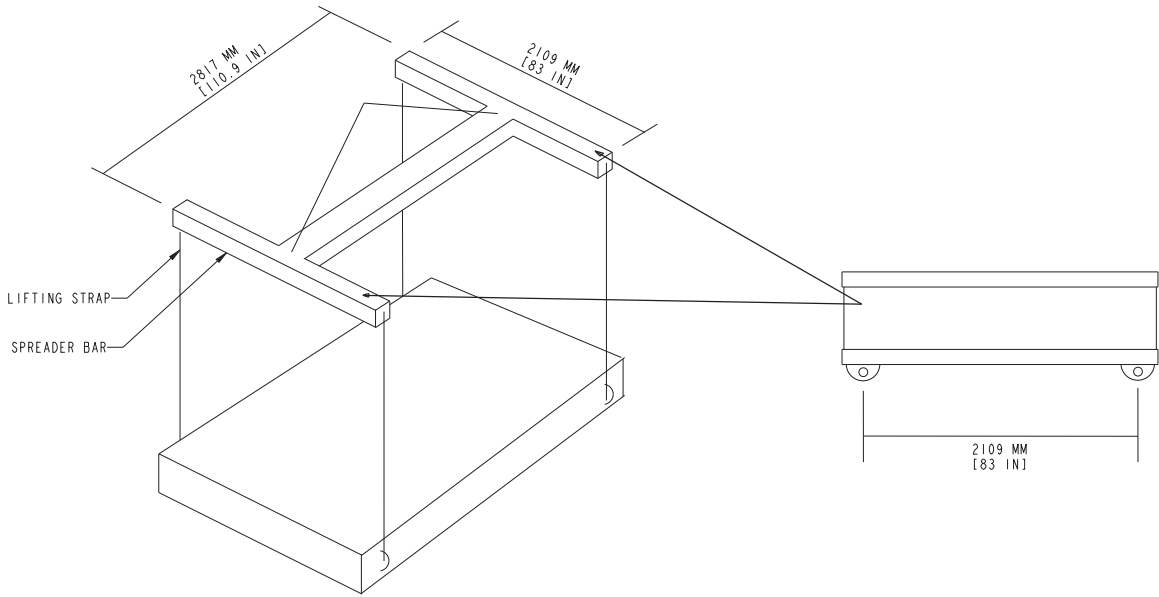




24 23 22 21 20 19 18 17 16 15 14 13 12 11 10 9 8 7 6 5 4 3 2 1

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LIFTING ARRANGEMENT FOR GENSET (WITHOUT FUEL TANK)



PART NUMBER: A074R018
PART NAME: OUTLINE GENSET
DRAWING CATEGORY: OUTLINE
STATE: RELEASED
CUMMINS DATA CLASSIFICATION: CUMMINS CONFIDENTIAL
THIS DOCUMENT (AND THE INFORMATION SHOWN THEREON) IS CONFIDENTIAL AND PROPRIETARY AND SHALL NOT BE DISCLOSED TO OTHERS IN HAND COPY OR ELECTRONIC FORM, REPRODUCED BY ANY MEANS, OR USED FOR ANY PURPOSE WITHOUT WRITTEN CONSENT OF CUMMINS INC.

PART REVISION: E
SHEET: 6 OF 11
DIMENSIONS ARE IN: MILLIMETERS
[] ARE IN: INCHES
DIMENSIONING AND TOLERANCING PER: ASME Y14.5-2009
THIRD ANGLE PROJECTION

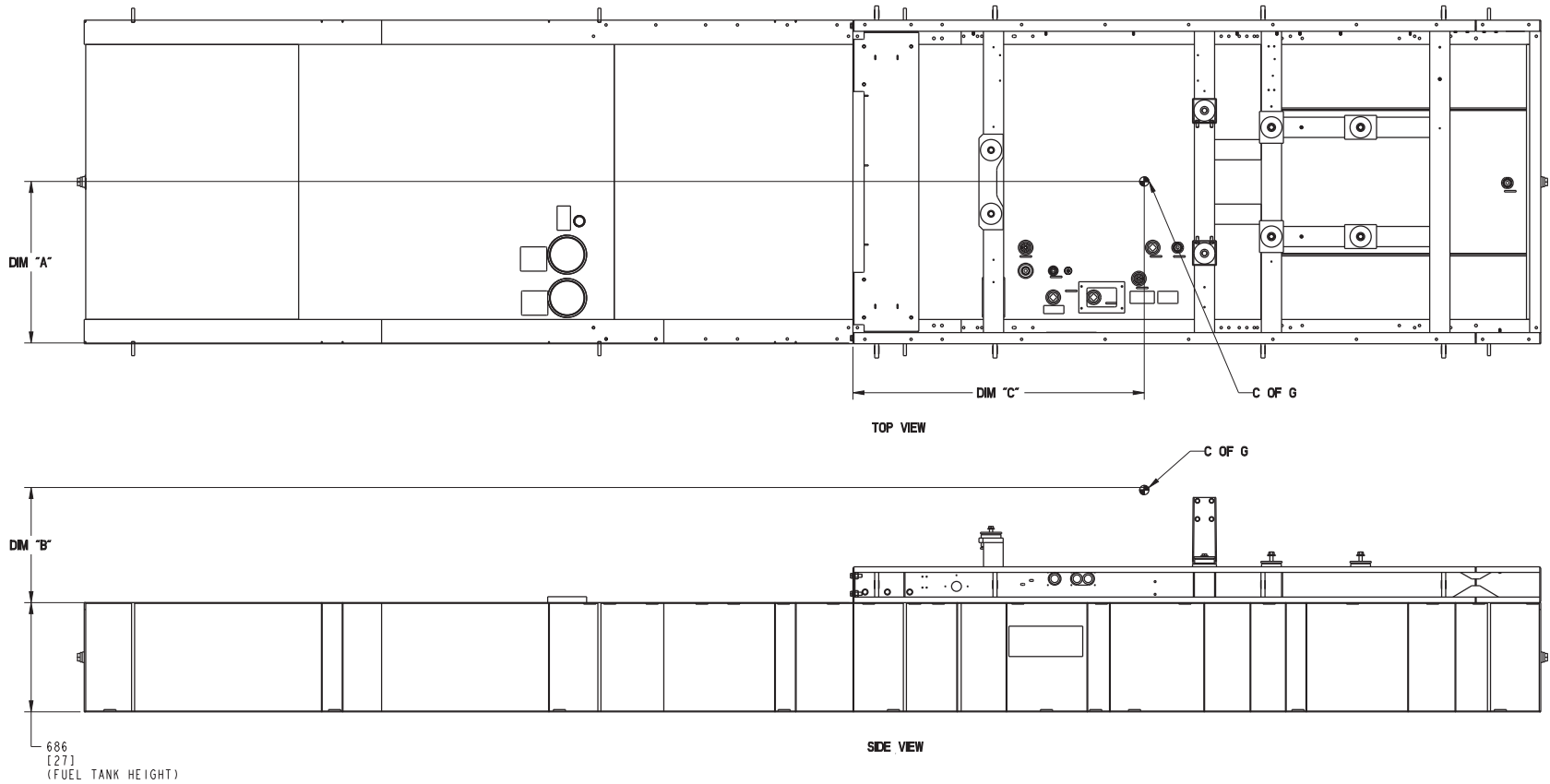
MODEL/PLATFORM: S17		THIS PART IS SIMILAR TO: -	
UNLESS OTHERWISE SPECIFIED THE FOLLOWING SHALL APPLY		ANG. TOL.: ± 1°	
DIMENSIONAL TOLERANCES:		X ± 0.8	
HOLE SIZE 0.00-4.99		HOLE SIZE 5.00-9.99	
TOL. +0.15/-0.08		TOL. +0.20/-0.10	
HOLE SIZE 10.00-17.49		HOLE SIZE 17.50-24.99	
TOL. +0.25/-0.13		TOL. +0.30/-0.13	
Cummins Inc.		CAD SYSTEM	
DIMENSIONS ARE IN: MILLIMETERS [] ARE IN: INCHES		PTC® Creo® Parametric	

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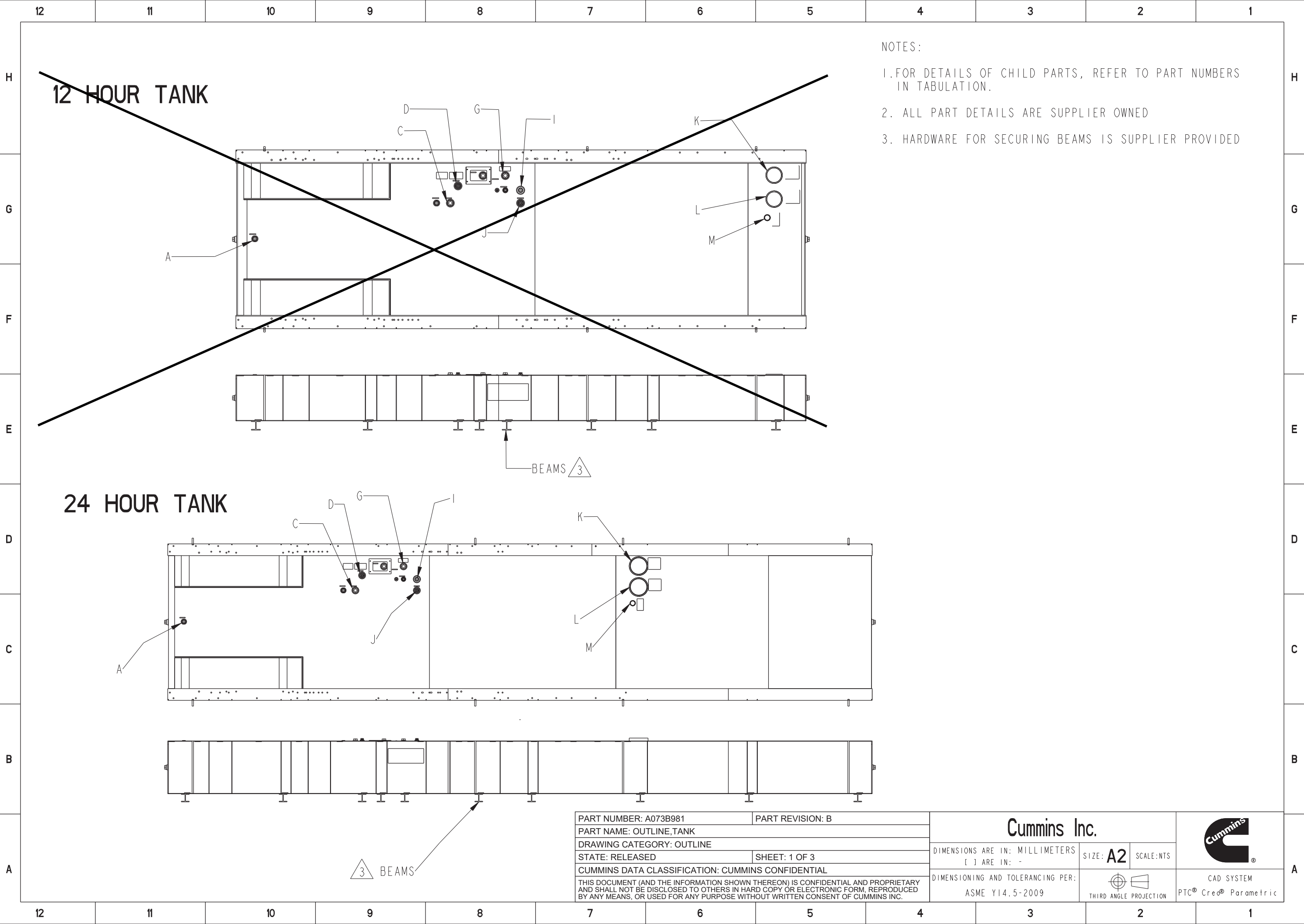
24 23 22 21 20 19 18 17 16 15 14 13 12 11 10 9 8 7 6 5 4 3 2 1

24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	
P																								P
O																								O
N																								N
M																								M
L																								L
K																								K
J																								J
I																								I
H																								H
G																								G
F																								F
E																								E
D																								D
C																								C
B																								B
A																								A

TABLE FOR GENSET MASS, C OF G AND OVERALL DIMENSIONS - WITH 24 HR FUEL TANK																
NODES	ENGINE	CHASSIS	ENCLOSURE	ALTERNATOR TYPE (S6)	CONTROL PANEL	AIR CLEANER	CIRCUIT BREAKER BOX (CB) / ENTRANCE BOX (EB)	GENSET WET WEIGHT IN KG [LBS]	GENSET DRY WEIGHT IN KG [LBS]	OVERALL DIMENSIONS (REFER SHEET 4)				C OF G (FROM CHASSIS REFERENCES AS SHOWN IN VIEW BELOW)		
										LENGTH	WIDTH	HEIGHT		A	B	C
												8FT VENT EXTENSION	OTHER VENT EXTENSION			
C600D6E, C750D6E, C800D6E, C900D6E, C1000D6ED	S17	WITH 24 HR FUEL TANK	STEEL SOUND LEVEL 2	SLID-C4, SLID-D4	LHS	NORMAL DUTY	1 CB RHS	11532.02 [25423.72]	11204.02 [24700.6]					1006.25 [39.62]	661.21 [26.03]	1370.45 [53.95]
				SLID-E4	RHS		1 CB LHS	11532.02 [25423.72]	11204.02 [24700.6]					1002.62 [39.47]	661.21 [26.03]	1368.66 [53.88]
				SLID-F4	LHS		1 CB RHS	11931.42 [26304.24]	11603.42 [25581.13]					1007.24 [39.66]	660.14 [25.99]	1442.32 [56.78]
				SLID-F4	RHS		1 CB LHS	11931.42 [26304.24]	11603.42 [25581.13]					1003.73 [39.52]	660.14 [25.99]	1440.59 [56.72]
				SLID-C4, SLID-D4	LHS		2 CB RHS	11538 [25436.9]	11210 [24713.79]					1006.98 [39.64]	661.06 [26.03]	1369.82 [53.93]
				SLID-D4	RHS		2 CB LHS	11538 [25436.9]	11210 [24713.79]					1001.9 [39.44]	661.06 [26.03]	1370.12 [53.94]
				SLID-E4, SLID-F4	LHS		2 CB RHS	11937.39 [26317.4]	11609.39 [25594.29]					1007.95 [39.68]	660 [25.98]	1441.68 [56.76]
				SLID-F4	RHS		2 CB LHS	11937.39 [26317.4]	11609.39 [25594.29]					1003.04 [39.49]	660 [25.98]	1441.97 [56.77]
				SLID-C4, SLID-D4	LHS		IEB (RHS) BOTTOM	11560.6 [25486.72]	11232.6 [24763.61]					1007.65 [39.67]	663.31 [26.11]	1372.08 [54.02]
				SLID-D4	RHS		IEB (LHS) BOTTOM	11530.58 [25420.54]	11202.58 [24697.43]					1002.33 [39.46]	661.43 [26.04]	1367.92 [53.86]
C600D6E, C750D6E, C800D6E, C900D6E, C1000D6ED	S17	WITH 24 HR FUEL TANK	STEEL WEATHER	SLID-C4, SLID-D4	LHS	NORMAL DUTY	IEB (RHS) BOTTOM	11959.99 [26367.23]	11631.99 [25644.11]					1008.60 [39.70]	662.17 [26.07]	1443.7 [56.84]
				SLID-E4, SLID-F4	RHS		IEB (LHS) BOTTOM	11929.97 [26301.05]	11601.97 [25577.93]					1003.46 [39.51]	660.36 [26]	1439.88 [56.69]
				SLID-C4, SLID-D4	LHS		1 CB RHS	11420.24 [25177.28]	11092.24 [24454.17]					1010.83 [39.8]	638.76 [25.15]	1380.31 [54.34]
				SLID-D4	RHS		1 CB LHS	11420.24 [25177.28]	11092.24 [24454.17]					1007.16 [39.65]	638.76 [25.15]	1378.5 [54.27]
				SLID-E4, SLID-F4	LHS		1 CB RHS	11819.64 [26057.81]	11491.64 [25334.69]					1011.68 [39.83]	638.44 [25.14]	1452.52 [57.19]
				SLID-D4	RHS		1 CB LHS	11819.64 [26057.81]	11491.64 [25334.69]					1008.14 [39.69]	638.44 [25.14]	1450.78 [57.12]
				SLID-C4, SLID-D4	LHS		2 CB RHS	11426.22 [25190.47]	11098.22 [24467.35]					1011.57 [39.83]	638.62 [25.14]	1379.67 [54.32]
				SLID-F4	RHS		2 CB LHS	11426.22 [25190.47]	11098.22 [24467.35]					1006.44 [39.62]	638.62 [25.14]	1379.98 [54.33]
				SLID-E4, SLID-F4	LHS		2 CB RHS	11825.61 [26070.97]	11497.61 [25347.86]					1012.39 [39.86]	638.31 [25.13]	1451.87 [57.16]
				SLID-F4	RHS		2 CB LHS	11825.61 [26070.97]	11497.61 [25347.86]					1007.44 [39.66]	638.31 [25.13]	1452.17 [57.17]
C600D6E, C750D6E, C800D6E, C900D6E, C1000D6ED	S17	WITH 24 HR FUEL TANK	ALUMINIUM SOUND LEVEL 2	SLID-C4, SLID-D4	LHS	NORMAL DUTY	IEB (RHS) BOTTOM	11448.82 [25240.29]	11120.82 [24517.18]					1012.24 [39.85]	640.94 [25.23]	1381.94 [54.41]
				SLID-E4, SLID-F4	RHS		IEB (LHS) BOTTOM	11418.8 [25174.11]	11090.8 [24450.99]					1006.88 [39.64]	638.98 [25.16]	1377.76 [54.24]
				SLID-C4, SLID-D4	LHS		IEB (RHS) BOTTOM	11848.21 [26120.8]	11520.21 [25397.68]					1013.04 [39.88]	640.55 [25.22]	1453.92 [57.24]
				SLID-D4	RHS		IEB (LHS) BOTTOM	11818.19 [26054.61]	11490.19 [25331.5]					1007.86 [39.68]	638.66 [25.14]	1450.07 [57.09]
				SLID-E4, SLID-F4	LHS		1 CB RHS	10905.02 [24041.42]	10577.02 [23318.3]					1005.63 [39.59]	609.96 [24.01]	1379.86 [54.33]
				SLID-D4	RHS		1 CB LHS	10905.02 [24041.42]	10577.02 [23318.3]					1001.79 [39.44]	609.96 [24.01]	1377.97 [54.25]
				SLID-E4, SLID-F4	LHS		1 CB RHS	11304.42 [24921.95]	10976.42 [24198.83]					1006.7 [39.63]	610.65 [24.04]	1455.38 [57.3]
				SLID-F4	RHS		1 CB LHS	11304.42 [24921.95]	10976.42 [24198.83]					1003 [39.49]	610.65 [24.04]	1453.56 [57.23]
				SLID-C4, SLID-D4	LHS		2 CB RHS	10911 [24054.6]	10583 [23331.49]					1006.4 [39.62]	609.84 [24.01]	1379.19 [54.3]
				SLID-D4	RHS		2 CB LHS	10911 [24054.6]	10583 [23331.49]					1001.03 [39.41]	609.84 [24.01]	1379.51 [54.31]
C600D6E, C750D6E, C800D6E, C900D6E, C1000D6ED	S17	WITH 24 HR FUEL TANK	ALUMINIUM WEATHER	SLID-C4, SLID-D4	LHS	NORMAL DUTY	2 CB RHS	11310.39 [24935.11]	10982.39 [24211.99]					1007.45 [39.66]	610.52 [24.04]	1454.7 [57.27]
				SLID-E4, SLID-F4	RHS		2 CB LHS	11310.39 [24935.11]	10982.39 [24211.99]					1002.27 [39.46]	610.52 [24.04]	1455.01 [57.28]
				SLID-C4, SLID-D4	LHS		IEB (RHS) BOTTOM	10933.6 [24104.43]	10605.6 [23381.31]					1007.12 [39.65]	612.32 [24.11]	1381.56 [54.39]
				SLID-D4	RHS		IEB (LHS) BOTTOM	10903.58 [24038.25]	10575.58 [23315.13]					1001.49 [39.43]	610.19 [24.02]	1377.19 [54.22]
				SLID-E4, SLID-F4	LHS		IEB (RHS) BOTTOM	11332.99 [24984.93]	11004.99 [24261.82]					1008.14 [39.69]	612.92 [24.13]	1456.84 [57.36]
				SLID-F4	RHS		IEB (LHS) BOTTOM	11302.97 [24918.75]	10974.97 [24195.63]					1002.71 [39.48]	610.87 [24.05]	1452.82 [57.2]
				SLID-C4, SLID-D4	LHS		1 CB RHS	10734.24 [23664.92]	10406.24 [22941.8]					1010.16 [39.77]	584.07 [22.99]	1377.77 [54.24]
				SLID-F4	RHS		1 CB LHS	10734.24 [23664.92]	10406.24 [22941.8]					1006.26 [39.62]	584.07 [22.99]	1375.85 [54.17]
				SLID-E4, SLID-F4	LHS		1 CB RHS	11133.64 [24545.44]	10805.64 [23822.33]					1011.09 [39.81]	585.7 [23.06]	1454.53 [57.26]
				SLID-D4	RHS		1 CB LHS	11133.64 [24545.44]	10805.64 [23822.33]					1007.33 [39.66]	585.7 [23.06]	1452.68 [57.19]
C600D6E, C750D6E, C800D6E, C900D6E, C1000D6ED	S17	WITH 24 HR FUEL TANK	ALUMINIUM WEATHER	SLID-C4, SLID-D4	LHS	NORMAL DUTY	2 CB RHS	10740.22 [23678.1]	10412.22 [22954.98]					1010.95 [39.8]	583.96 [22.99]	1377.1 [54.22]
				SLID-E4, SLID-F4	RHS		2 CB LHS	10740.22 [23678.1]	10412.22 [22954.98]					1005.49 [39.59]	583.96 [22.99]	1377.42 [54.23]
				SLID-C4, SLID-D4	LHS		2 CB RHS	11139.61 [24558.6]	10811.61 [23835.49]					1011.84 [39.84]	585.58 [23.05]	1453.84 [57.24]
				SLID-F4	RHS		2 CB LHS	11139.61 [24558.6]	10811.61 [23835.49]					1006.58 [39.63]	585.58 [23.05]	1454.15 [57.25]
				SLID-E4, SLID-F4	LHS		IEB (RHS) BOTTOM	10762.82 [23727.92]	10434.82 [23004.81]					1011.66 [39.83]	586.54 [23.09]	1379.51 [54.31]
				SLID-D4	RHS		IEB (LHS) BOTTOM	10732.8 [23661.74]	10404.8 [22938.63]					1005.95 [39.6]	584.3 [23]	1375.06 [54.14]
				SLID-C4, SLID-D4	LHS		IEB (RHS) BOTTOM	11162.21 [24608.43]	10834.21 [23885.31]					1012.53 [39.86]	588.07 [23.15]	1456.01 [57.32]
				SLID-F4	RHS		IEB (LHS) BOTTOM	11132.19 [24542.24]	10804.19 [23819.13]					1007.03 [39.65]	585.92 [23.07]	1451.92 [57.16]



PART NUMBER: A074R018	PART REVISION: E
PART NAME: OUTLINE GENSET	
DRAWING CATEGORY: OUTLINE	
STATE: RELEASED	SHEET: 9 OF 11
CUMMINS DATA CLASSIFICATION: CUMMINS CONFIDENTIAL	
THIS DOCUMENT (AND THE INFORMATION SHOWN THEREON) IS CONFIDENTIAL AND PROPRIETARY AND SHALL NOT BE DISCLOSED TO OTHERS IN ANY MANNER OR REPRODUCED BY ANY MEANS, OR USED FOR ANY PURPOSE WITHOUT THE WRITTEN CONSENT OF CUMMINS INC.	
MODEL/PLATFORM: S17	
THIS PART IS SIMILAR TO: -	
UNLESS OTHERWISE SPECIFIED THE FOLLOWING SHALL APPLY	
ANG. TOL.: ± 1°	
DIMENSIONAL TOLERANCES:	
HOLE SIZE 0.00-4.99	
HOLE SIZE 5.00-9.99	
HOLE SIZE 10.00-17.99	
HOLE SIZE 17.50-24.99	
HOLE SIZE 25.00-31.99	
HOLE SIZE 32.00-39.99	
HOLE SIZE 40.00-49.99	
HOLE SIZE 50.00-59.99	
HOLE SIZE 60.00-69.99	
HOLE SIZE 70.00-79.99	



24 23 22 21 20 19 18 17 16 15 14 13 12 11 10 9 8 7 6 5 4 3 2 1

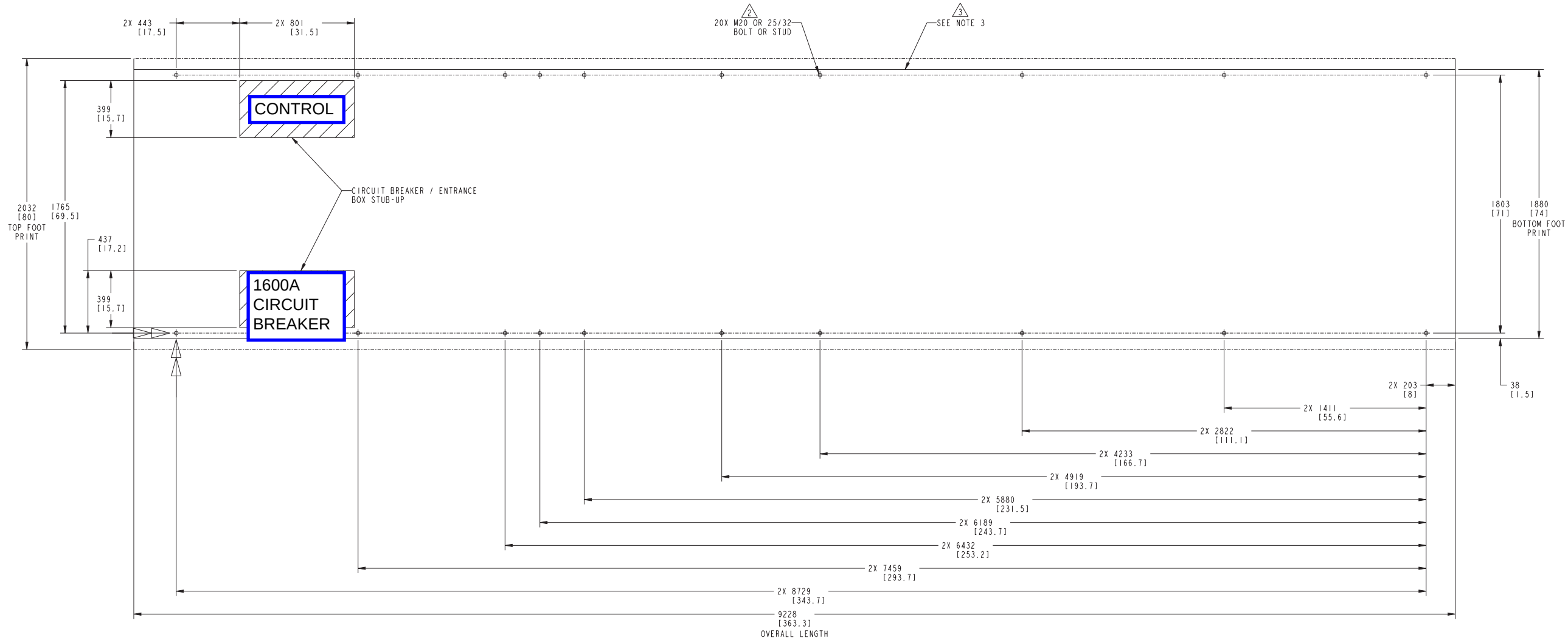
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PLEASE NOTE
This is NOT a pad drawing.
Please add at least 1' to overall
length and width of generator
when determining pad layout.

NOTES:
1. DIMENSIONS IN [] ARE IN INCHES.
2. FUEL TANK HAS A FLANGE THICKNESS OF 4.76mm [.19 INCHES]. ALLOW EXTRA LENGTH ON HARDWARE FOR UNEVENNESS OF MOUNTING SURFACE.
3. LIFTING BASE OR FUEL TANK PERIMETER IS SHOWN. FOUNDATION SHOULD BE EXTENDED BEYOND THIS PERIMETER. SEE (T030) APPLICATION MANUAL.

NOTE: Only this drawing shall be used for stub-up dimensional information



24HR RUN TIME FUEL TANK

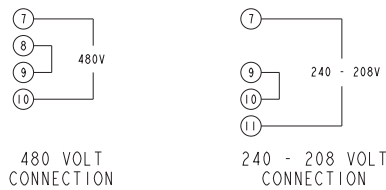
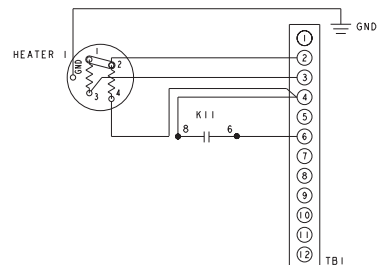
PART NUMBER: A075K190		PART REVISION: A	
PART NAME: OUTLINE GENSET			
DRAWING CATEGORY: OUTLINE			
STATE: RELEASED		SHEET: 1 OF 2	
CUMMINS DATA CLASSIFICATION: CUMMINS CONFIDENTIAL			
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MODEL/PLATFORM: -		THIS PART IS SIMILAR TO: -	
UNLESS OTHERWISE SPECIFIED THE FOLLOWING SHALL APPLY		ANG. TOL.: ± 0.5°	
WALL THICKNESS: -	DRAFT ANGLES: -	EDGE RADIUS: -	FILLET RADIUS: -
DIMENSIONAL TOLERANCES:		X ± .1	XX ± 0.39
HOLE SIZE 0.00-4.99	HOLE SIZE 5.00-9.99	HOLE SIZE 10.00-17.49	HOLE SIZE 17.50-24.99
TOL. +0.15/-0.08	TOL. +0.20/-0.10	TOL. +0.25/-0.13	TOL. +0.30/-0.13
CUMMINS Inc.		CAD SYSTEM	
DIMENSIONS ARE IN: MILLIMETERS		SCALE: 1	
[] ARE IN: INCHES		THIRD ANGLE PROJECTION	
DIMENSIONING AND TOLERANCING PER: ASME Y14.5-2009		PTC® Creo® Parametric	

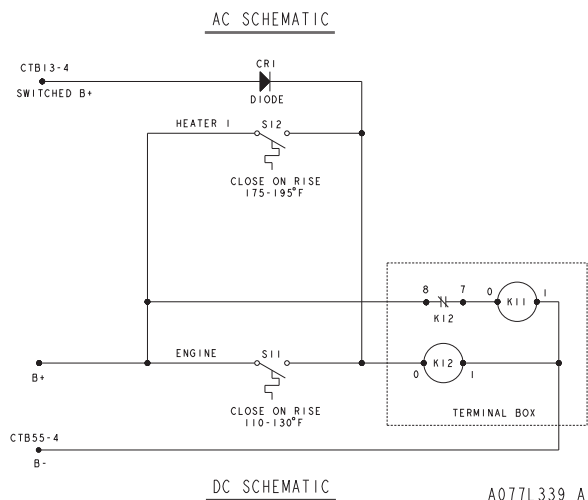


NOTES:

- 1. HEATERS ARE NOT POWERED WHEN:
 - 1.1 THE ENGINE IS RUNNING OR
 - 1.2 THE ENGINE HAS REACHED DESIGN TEMPERATURE.



JUMPERS ARE FACTORY INSTALLED
IN THE 480 VOLT CONFIGURATION
FOR 240 - 208 VOLT MOVE JUMPERS AS SHOWN



HEATER AMPERAGE TABLE		
SINGLE PHASE HEATER VOLTAGE	FEATURE CODE H556 ONE HEATER	
	HEATER AMPS	TOTAL WATTS
208	18.0	3744
240	20.8	4990
480	10.4	4990

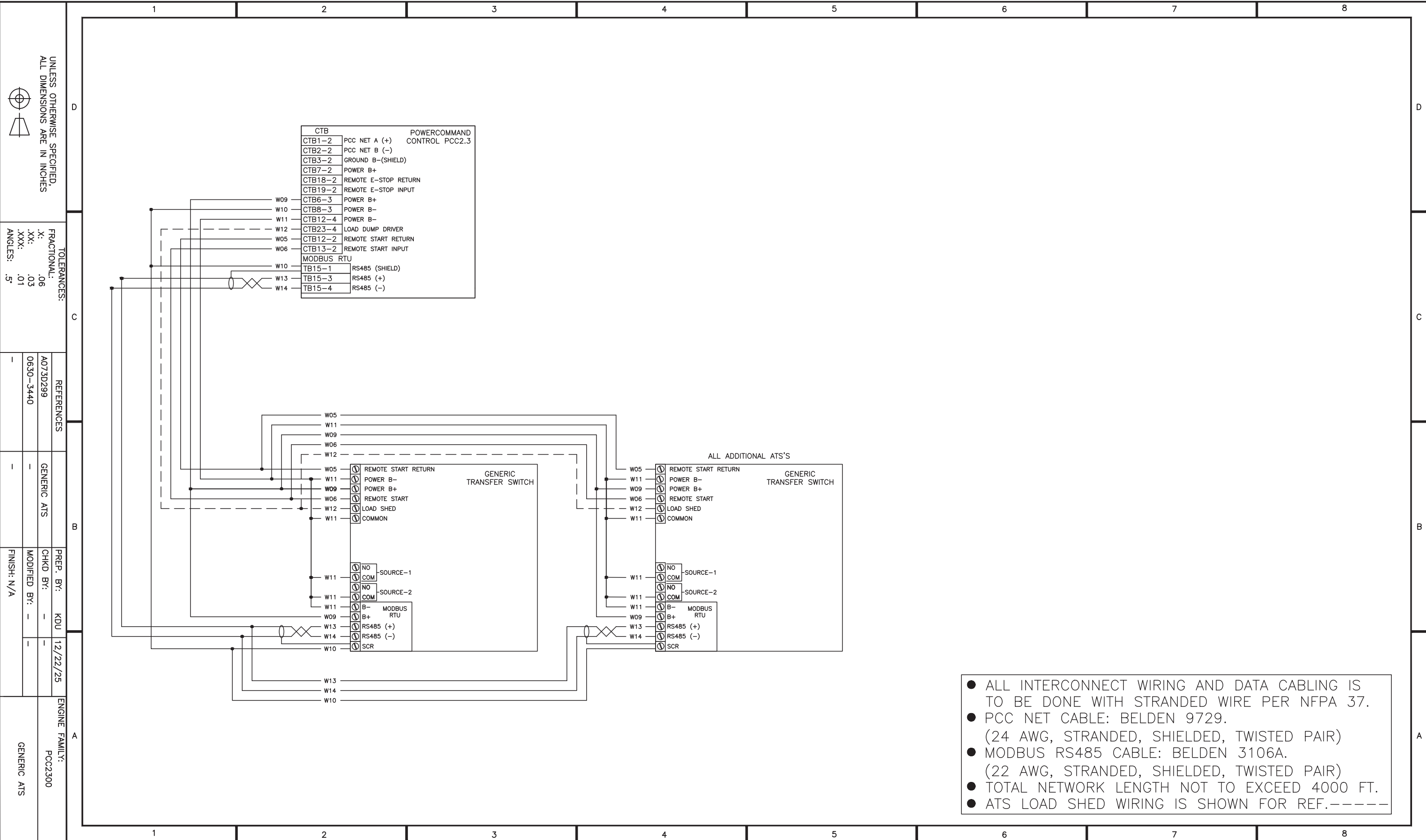
LAST DATUM LETTER USED: .		LAST REFERENCE LETTER USED: .	
MODEL/PLATFORM:		THIS PART IS SIMILAR TO:	
UNLESS OTHERWISE SPECIFIED THE FOLLOWING SHALL APPLY		ANG. TOL.: ± #°	
SURFACE FINISH PER: -		SURFACE FINISH: Rmax #. #	
WALL THICKNESS:	DRAFT ANGLES:	EDGE RADIUS:	FILLET RADIUS:
DIMENSIONAL TOLERANCES:	± #	.X ± 0. #	.XX ± 0. ##
HOLE SIZE 0.00-0.00 TOL. +0.00/-0.00	HOLE SIZE 0.00-0.00 TOL. +0.00/-0.00	HOLE SIZE 0.00-0.00-0.00 TOL. +0.00/-0.00	HOLE SIZE 0.00-0.00-0.00 TOL. +0.00/-0.00

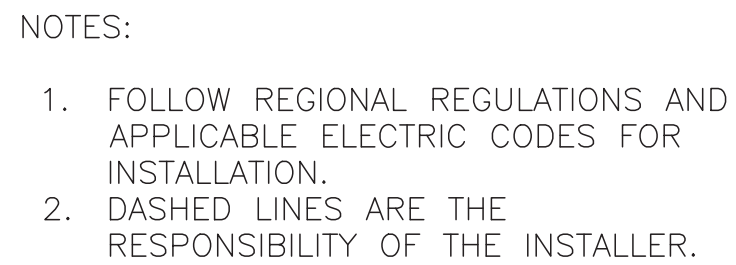
PART NUMBER: A078G837		PART REVISION: A	
PART NAME: OUTLINE/HEATER INTERFACE			
DRAWING CATEGORY: DETAIL			
STATE: RELEASED		SHEET: 1 OF 3	
CUMMINS DATA CLASSIFICATION: CUMMINS RESTRICTED CONFIDENTIAL			
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CAD SYSTEM
PTC® Creo® Parametric

Drawing Name: A054K365 Revision: A
Part Name: A054K368 Revision: A
Sheet 1 of 2





SECTION 5

Warranty





Warranty Statement

Generator Sets

Commercial Standby Extended Warranty

Limited Standby 3 Year or 1,500 Hour Parts Extended Warranty – L182

Commercial Generating Set

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

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

Warranty Period:

The warranty start date is the date of initial start up, first rental, demonstration or 18 months after factory ship date, whichever is sooner. The coverage duration is 3 years from warranty start date or 1,500 hours, whichever occurs first.

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. The permissible average power output over 24 hours of operation shall not exceed 70% of the ESP.

Cummins Power Generation® Responsibilities:

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

- All parts required to repair the Product.
- Maintenance items that are contaminated or damaged by a warrantable failure.

Owner Responsibilities:

The owner will be responsible for the following:

- Notifying Cummins Power Generation® distributor or dealer within 30 days of the discovery of failure.
- Installing, operating, commissioning and maintaining the Product in accordance with Cummins Power Generation®'s published policies and guidelines.
- Providing evidence for date of commissioning.
- Providing sufficient access to and reasonable ability to remove the Product from the installation in the event of a warrantable failure.

In addition, the owner will be responsible for:

- 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 extended warranty does not cover Product failures resulting from:

- Inappropriate use relative to designated power rating.
- Inappropriate use relative to application guidelines.
- Failures due to normal wear, corrosion, varnished fuel system parts, lack of reasonable and necessary maintenance, unauthorized modifications and/or repair, and use of add-on or modified parts.
- Improper and/or unauthorized installation.
- Owner's or operator's negligence, accidents or misuse.
- Noncompliance with any Cummins Power Generation® published guideline or policy.
- Use of improper or contaminated fuels, coolants or lubricants.
- Improper storage before and after commissioning.
- Owner's delay in making Product available after notification of potential Product problem.
- Replacement parts and accessories not authorized by Cummins Power Generation®.
- Use of Battle Short Mode

Limitations Continued:

- 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 extended warranty does not cover costs resulting from:

- Difficulty in gaining access to the Product.
- Damage to customer property.
- Repair of cosmetic damage to enclosures.

Items not covered by this limited extended warranty:

- Batteries
- Enclosures
- Coolant heaters
- Exhaust systems and aftertreatment components
- Maintenance items

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CUMMINS POWER GENERATION® RIGHT TO FAILED COMPONENTS:

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

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

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

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

Product Model Number: _____

Product Serial Number: _____

Date in Service: _____