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Woodstock Power Company
4055 Richmond Street
Philadelphia, PA 19137
P: 610-658-3242
E: sales@woodstockpower.com

Generator

Rehlko Model: 350REOZJD

This diesel generator set equipped with a 5M4027 alternator operating at 277/480 volts is rated for 360 kW/450 kVA. Output amperage: 541.

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Qty	Description
	350REOZJD Generator System
1	350REOZJD Generator Set

Includes the following:

Literature Languages	English
Approvals and Listings	UL2200 Listing
Engine	350REOZJD, 24V, 60Hz
Nameplate Rating	Standby 130C Rise
Voltage	60Hz, 277/480V, Wye, 3Ph, 4W
Alternator	5M4027
Cooling System	Unit Mounted Radiator, 50C
Skid and Mounting	Skid
Air Intake	Standard Duty
Controller	APM603
Enclosure Type	Sound Level 2
Enclosure Material	Steel
Fuel Tank Type	State
Fuel Runtime (Approx.)	24 Hours
Subbase Fuel Tank Capacity	774 Gallons
Fill Pipe/Spill Fill Options	5 Gal Spill Cont w/95% Shutoff
Fuel Tank Vent	Normal Vent, 12' Above Grade
High Fuel Switch	High Fuel Switch
Tank Marking Options	NFPA 704 Identification
Starting Aids, Installed	2500W,90-120V,1Ph,w/Valves
Electrical Accy.,Installed	Battery, 2/12V, Wet,Battery Charger, 10A,Run Relay,Failure Relay w/Harness,1Fault,Generator Heater,15 Relay I/O Board
Rating, LCB 1 Right	80% Rated
Amps, LCB 1 Right	400
Trip Type, LCB 1 Right	Electronic, LSI
LCB 1 Right Interrupt Rating	35kA at 480V
Aux Trip, LCB 1 Right	Shunt Trip
Frame, LCB 1 Right	LG
Position, LCB 1 Right	1
Rating, LCB 2 Right	80% Rated
Amps, LCB 2 Right	100
Trip Type, LCB 2 Right	Electronic, LSI
LCB 2 Right Interrupt Rating	35kA at 480V
Aux Trip, LCB 2 Right	Shunt Trip
Frame, LCB 2 Right	HG

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	Position, LCB 2 Right	2
	LCB Accy. Installed	Breaker Separation Between LCB,Shunt Trip Wirin
	Fuel Lines, Installed	Flexible Fuel Lines, Stainless
	Exceeds LTL Shipping Height	Add'l Shipping Charge Accepted
	Miscellaneous Accy,Installed	Air Cleaner Restriction Ind.,Coolant in Genset,Crankcase Emissions Canister
	Warranty	Standard
	Testing, Additional	Power Factor Test,0.8,3Ph Only
	Total unit length in inches	277
	Total unit width in inches	59
	Total unit height in inches	127
	Total unit weight (lbs)	14,281
	Weight/Dimensions Disclaimer *	Estimates-Not for Construction
1	NEC Remote, E-Stop	
1	Lit Kit, NFPA-110, 350REOZJD	
1	Lit Kit, Production, 350REOZJD	
1	RSA III, Annunciator only	

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Spec Sheets

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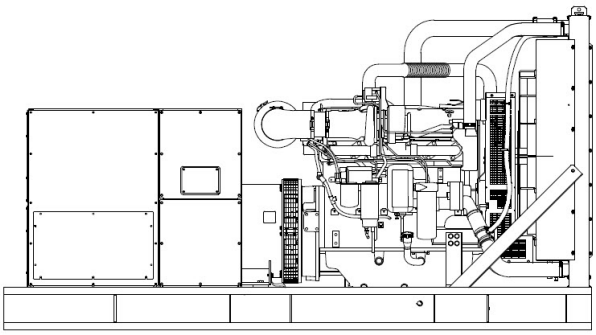
350REOZJD
Diesel



Standard Features

- Discovery Energy, LLC and its affiliates dba Rehlko provides one-source responsibility for the generating system and accessories.
- Approved for use with certified renewable Hydrotreated Vegetable Oil (HVO) / Renewable Diesel (RD) fuels compliant with EN15940/ASTM D975.
- The generator set and its components are prototype-tested, factory-built, and production-tested.
- The 60 Hz generator set offers a UL 2200 listings.
- The generator set accepts rated load in one step.
- The 60 Hz emergency generator set meets NFPA 110, Level 1, when equipped with the necessary accessories and installed per NFPA standards.
- A one-year limited warranty covers all systems and components. Two-and five-year extended warranties are also available.
- Tier 3 EPA-certified for Stationary Emergency Applications
- Alternator Protection
- Battery Rack and Cables
- Customer Connection (standard with Decision-Maker 6000 controller only)
- Local Emergency Stop Switch
- Oil Drain Extension
- Operation and Installation Literature

Alternator Features

- The pilot-excited, permanent-magnet (PM) alternator provides superior short-circuit capability.
- The brushless, rotating-field alternator has broad range reconnectability.

Other Features

- Rehlko designed controllers for guaranteed system integration and remote communication.
- The low coolant level shutdown prevents overheating (standard on radiator models only).Integral vibration isolation eliminates the need for under-unit vibration spring isolators.
- An electronic, isochronous governor delivers precise frequency regulation.
- Mount up to four circuit breakers to allow circuit protection of selected priority loads.

Generator Set Rating

Standby 130C Rise Ratings

Alternator	Voltage	Ph	Hz	Peak kVA	kW/kVA	Amps
5M4027	277/480	3	60	2200	360/450	541

RATINGS: All three-phase units are rated at 0.8 power factor. All single-phase units are rated at 1.0 power factor.
Standby Ratings: The standby rating is applicable to varying loads for the duration of a power outage. There is no overload capability for this rating.
Prime Power Ratings: At varying load, the number of generator set operating hours is unlimited. A 10% overload capacity is available for one hour in twelve.

Ratings are in accordance with ISO-8528-1 and ISO-3046-1. For limited running time and continuous ratings, consult the factory.

Model: 350REOZJD, continued

Alternator Specifications

Specifications	Alternator
Alternator manufacturer	Rehlko
Type	4-Pole, Rotating-Field
Exciter type	Brushless, Permanent-Magnet, Pilot Exciter
Leads, quantity	12, Reconnectable
Voltage regulator	Solid State, Volts/Hz
Insulation	NEMA MG1
Insulation: Material	Class H, Synthetic, Nonhydroscopic
Insulation: Temperature Rise	130°C, 150°C Standby
Coupling	Flexible Disc
Amortisseur windings	Full
Rotor balancing (50Hz)	125%
Rotor balancing (60Hz)	125%
Voltage regulation, no-load to full-load RMS	Controller Dependent
One-Step Load Acceptance	100% of rating
Unbalanced load capability	100% of Rated Standby Current

• NEMA MG1, IEEE, and ANSI standards compliance for temperature rise and motor starting.
• Sustained short-circuit current of up to 300% of the rated current for up to 10 seconds.
• Sustained short-circuit current enabling down stream circuit breakers to trip without collapsing the alternator field.
• Self-ventilated and dripproof construction.
• Superior voltage waveform from a two-thirds pitch stator and skewed rotor.
• Brushless alternator with brushless pilot exciter for excellent load response.

Engine

Engine Specification

Engine Manufacturer	John Deere
Engine Model	6135HFG84B
Engine: type	Turbocharged, Charge Air-Cooled
Cylinder arrangement	6, Inline
Displacement, L (cu. in.)	13.5 (824)
Bore and stroke, mm (in.)	132 x 165 (5.2 x 6.5)
Compression ratio	16.0:1
Piston speed, m/min. (ft./min.)	594 (1950)
Rated rpm	1800
Max. power at rated rpm, kWm (BHP)	401 (538)
Crankshaft material	Forged Steel
Valve (exhaust) material Intake	Nickel-Chromium Head
Valve (exhaust) material	Chromium-Silicone Stem
Governor: type, make/model	JDEC Electronic L15
Frequency regulation, no-load to-full load	Isochronous
Frequency regulation, steady state	±0.25%
Frequency	Fixed
Air cleaner type, all models	Dry

Model: 350REOZJD, continued

Exhaust

Exhaust System

Exhaust Manifold Type	Dry
Exhaust flow at rated kW, m3/min. (cfm)	68 (2387)
Exhaust temperature at rated kW, dry exhaust, °C (°F)	547 (1017)
Maximum allowable back pressure, kPa (in. Hg)	Min. 4 (1.2) Max. 7.5 (2.2)

Engine Electrical

Engine Electrical System

Battery charging alternator: Ground (negative/positive)	Negative
Battery charging alternator: Volts (DC)	24
Battery charging alternator: Ampere rating	60
Starter motor rated voltage (DC)	24
Battery, recommended cold cranking amps (CCA): Qty., CCA rating each	Two, 925
Battery voltage (DC)	12

Fuel

Fuel System

Fuel type	Diesel
Fuel supply line, min. ID, mm (in.)	13 (0.50)
Fuel return line, min. ID, mm (in.)	10 (0.38)
Max. lift, fuel pump: type, m (ft.)	Electronic 2.1 (6.8)
Max. fuel flow, Lph (gph)	180.6 (47.7)
Max. return line restriction, kPa (in. Hg)	35 (10.3)
Fuel prime pump	Electronic
Fuel Filter Secondary	2 Microns @ 98% Efficiency
Fuel Filter Primary	10 Microns
Fuel Filter Water Separator	Yes
Recommended fuel	#2 Diesel/HVO/RD

Lubrication

Lubrication System

Type	Full Pressure
Oil pan capacity, L (qt.)	40.0 (42.3)
Oil pan capacity with filter, L (qt.)	42.0 (44.4)
Oil filter: quantity, type	1, Cartridge
Oil cooler	Water-Cooled

Model: 350REOZJD, continued

Cooling

Radiator System

Ambient temperature, °C (°F)	50 (122)
Engine jacket water capacity, L (gal.)	18 (4.8)
Radiator system capacity, including engine, L (gal.)	67.2 (17.8)
Engine jacket water flow, Lpm (gpm)	400 (106)
Heat rejected to cooling water at rated kW, dry exhaust, kW (Btu/min.)	175 (9661)
Heat rejected to charge air cooling water at rated kW, dry exhaust, Kw Btu/min.	75 (4269)
Water pump type	Centrifugal
Fan diameter, including blades, mm (in.)	965 (38)
Fan, kWm (HP)	18 (24)
Max. restriction of cooling air, intake and discharge side of radiator, kPA (in. H20)	0.125 (0.5)

* Enclosure with internal silencer reduces ambient temperature capability by 5°C (9°F).

Operation Requirements

Air Requirements

Radiator-cooled cooling air, m3/min. (scfm) *	435 (15400)
Cooling air required for generator set when equipped with city water cooling or remote radiator, based on 14°C (25°F) rise, m3/min. rise and ambient temp. of 29°C (85°F) m3/min. (cfm)	285 (10067)
Combustion air, m3/min. (cfm)	25 (883)
Heat rejected to ambient air: Engine, kW (Btu/min.)	43 (2448)
Heat rejected to ambient air: Alternator, kW (Btu/min.)	36.6 (2082)

*Air density = 1.20 kg/m3 (0.075 lbm/ft3)

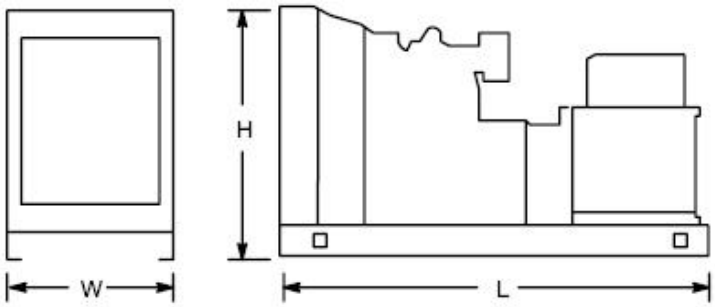
Fuel Consumption

	Rating
Standby Fuel Consumption at 100% load	100.3 Lph (26.5 gph)
Standby Fuel Consumption at 75% load	80.3 Lph (21.2 gph)
Standby Fuel Consumption at 50% load	56.7 (15.0)
Standby Fuel Consumption at 25% load	29.5 (7.8)
Continuous Fuel Consumption at 0% load	** Volumetric Fuel consumption is up to 4% higher when using HVO/RD than #2 ULSC.

Dimensions and Weights

Dim Weight Spec	Dim Weight Value
Fuel	Diesel
Engine Manufacturer	John Deere
Overall Size, L x W x H, mm (in.):	3630 x 1425 x 1936 (142.9 x 56.1 x 76.2)
Weight (radiator model), wet, kg (lb.):	3883 (8560)

Model: 350REOZJD, continued



NOTE: This drawing is provided for reference only and should not be used for planning installation. Contact your local distributor for more detailed information.

Industrial Generator Set Accessories

Generator Set Controller

The APM603 generator set controller provides advanced control, system monitoring, and system diagnostics for a single generator set or paralleling multiple generator sets. The APM603 interfaces the generator set to other power system equipment and network management systems using standard industry network communications. It uses a patented digital voltage regulator and unique software logic to manage alternator thermal overload protection as well as serves as an overcurrent protective relay, features normally requiring additional hardware. The APM603 controller meets NFPA 110, Level 1.

Display, Interface, and Accessibility

- A 7-inch color TFT touchscreen for easy local access to data.
  - Home screen can be customized to show critical data at a glance.
  - Create a custom favorites list for quick access to important data
- Measurements are selectable in metric or English units.
- Supports Modbus® protocol through serial bus and Ethernet networks, and supports SNMP and BACnet® through Ethernet networks.

Global Support

- Sales, installation, and service support from more than 800 Rehlko and SDMO service providers around the world.

On-board Diagnostics

- Immediate visibility of warnings and faults with text description and code display.
  - 15 seconds of critical data are captured around each warning and fault
  - Critical data can be viewed on the display and downloaded
- Store up to 10,000 events locally along with historical data logging of successful starts.
  - Accurate time stamp from real-time clock
  - Event log can be downloaded
- Data logging of customized parameter list for report generation and advanced troubleshooting.
  - Store to external USB drive for easy transfer to another device

Modbus® is a registered trademark of Schneider Electric.
BACnet® is a registered trademark of ASHRAE.

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200 Twin Oaks Road, Kohler, WI 53044 USA
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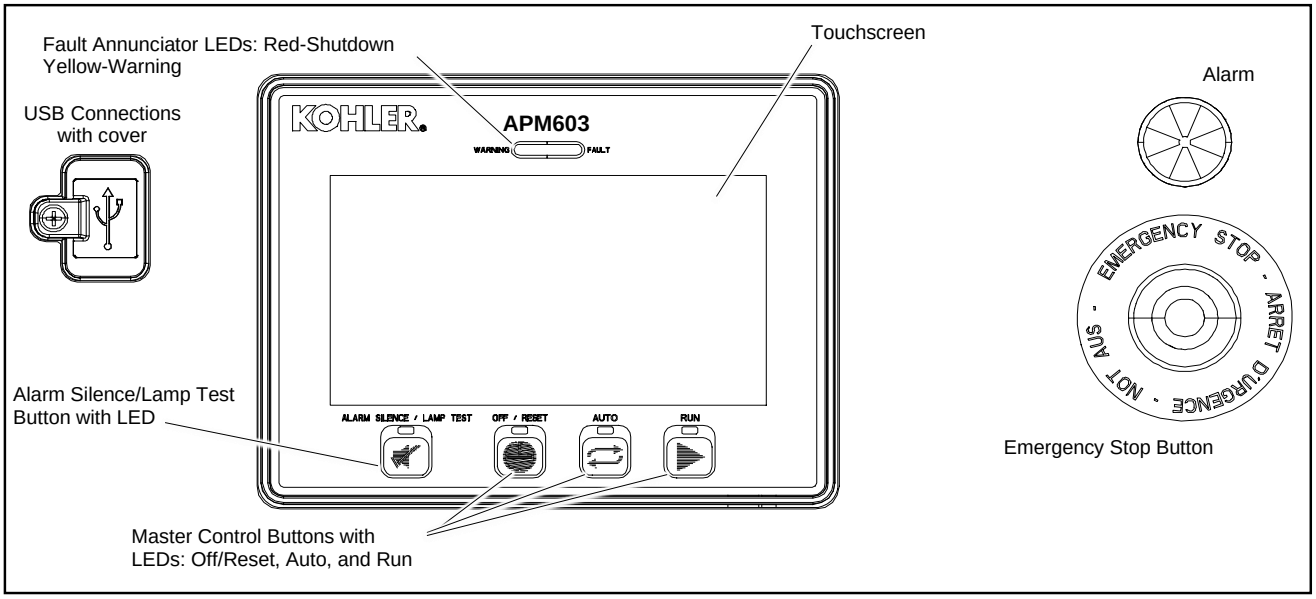

Controller Features

AC Output Voltage Regulator Adjustment	Maximum of ±10% of the system voltage
Alarm Horn	Indicates a generator set warning or shutdown condition
Alarm Silence	For NFPA-110 application or user convenience
Alternator Protection	Generator set overload and short circuit protection
Cyclic Cranking	Provides automatic restart after a failed start attempt with programmable on/off time and number of attempts
ECU Diagnostics	Displays engine ECU fault codes and descriptions for engine troubleshooting
Emergency Stop Button	Shuts down the generator set immediately, for emergency situations
Engine Start Aid	Control for an optional engine starting aid
Environmentally Sealed Membrane Keypad	Three master control buttons with LEDs: Off/Reset, Auto, and Run
Patented High-Speed RMS Digital Voltage Regulator	±0.25% no-load to full-load regulation with three-phase true RMS sensing
Lamp Test	Verifies functionality of the indicator LEDs
Real-time Clock	Includes battery back-up to retain date and time through controller power cycle
Remote Reset	Allows remote fault resets and restarting of the generator set
Remote Monitoring Panel	Compatible with the Remote Serial Annunciator
Run Time Hourmeter	Displays generator set run time
Run Relay	Indicates that the generator set is running
Time Delay Engine Cooldown (TDEC)	Time delay before the generator set shuts down
Time Delay Engine Start (TDES)	Time delay before the generator set starts

Controller Features

Emergency Battle Mode	• Allows critical emergency operation where uninterrupted power is essential. • Overrides most shutdowns and warnings except for E-Stop, Overspeed, Maintenance Mode, or shutdown faults from the ECU.
Maintenance mode	• Lowers the fault threshold which reduces fault setting times and activates a trip • Acts as a safety device like an E-Stop • Adjustable from 0-150% of rated current

Communication

USB Port	(1) Mini-USB port for PC connection (1) USB port for storage device
Serial (RS-485) Port	(1) Non-isolated for RSA III (1) Isolated for Modbus devices (1) Isolated for paralleling communication
Ethernet Port	(1) RJ45 for Modbus TCP, SNMP, and BACnet

Controller Specifications

Nominal voltage	12 or 24 VDC protected against reverse battery connection
Power	800 mAmps at 12 VDC 400 mAmps at 24 VDC
Operating Temperature	-40ºC to 70ºC (-40ºF to 158ºF)
Storage Temperature	-40ºC to 85ºC (-40ºF to 158ºF)
Humidity	5% to 95% non-condensing
Display Size, W x H	154 x 86 mm (6.0 x 3.4 inches)
Protection Index	IP65 Front

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Paralleling Features

- Isochronous control with real and reactive load sharing with other APM603 controller equipped generator sets
  - Supports paralleling up to 8 generators
- Random first-on logic to prevent two or more generator sets from closing to a dead bus and provides the fastest response for a single generator online
- Automatic synchronizer with dead bus closing
- Soft loading and unloading for generator management
- Protective relay functions:
  - Synch check (25C)
  - Over current (51)
  - Over frequency (81O)
  - Over power (32O)
  - Over voltage (59)
  - Reverse power (32R)
  - Reverse reactive power (32RQ)
  - Under frequency (81U)
  - Under voltage (27)
- Generator management to allow the start and stop of generators based on load demand or state of other generators
  - Fuel level
  - Run time
  - Manual order
  - Time of day
  - Efficiency
- Simplified paralleling system view from any generator controller in the system

Overcurrent Protective Device

- Provides protection against line-to-line and line-to-neutral faults
- Uses thermal and instantaneous current limit settings for alternator protection

Load Management Features

- Programmable outputs included to command the connect and disconnect of loads based on generator or paralleling system state
  - Loads connected based on available capacity
  - Loads disconnected at system startup
  - Loads disconnected based on a maximum kW setting or underfrequency setting
- Supports up to 16 prioritized load steps per system
  - Can be used on a single generator system
  - Can be combined in a paralleling system for a total system load control capability
- Simplified load management system view from any generator controller in the system
- Requires input/output module option

Advanced Programmable I/O

- Configurable inputs and outputs can be programmed for customer specific use
- PLC-like capability for applying logic to customize generator system behavior

Troubleshooting Features

- 15 seconds of key data automatically captured around each warning and shutdown
  - Data can be exported for detailed analysis
  - Data can be viewed on controller for convenient on-site troubleshooting support
- Configurable data logger will allow you to select parameters to monitor
  - Data stored to USB device for flexibility on amount of data stored and ability to export for detailed analysis
  - Data capture controlled by user to allow capturing specific data required

NFPA 110 Requirements

In order to meet NFPA 110, Level 1 requirements, the generator set controller monitors the engine/generator functions/faults shown below.

- Engine functions:
  - Overcrank
  - Low coolant temperature warning
  - High coolant temperature warning
  - High coolant temperature shutdown
  - Low oil pressure shutdown
  - Low oil pressure warning
  - High engine speed
  - Low fuel (level or pressure) *
  - Low coolant level
  - EPS supplying load
  - High battery voltage
  - Low battery voltage
- General functions:
  - Master switch not in auto
  - Battery charger fault *
  - Lamp test
  - Contacts for local and remote common alarm
  - Audible alarm silence button
  - Remote emergency stop *

* Function requires optional input sensors or kits and is engine dependent, see Engine Data.

Standards

The generator set controller has been tested and verified for compliance with the following standards.

- NFPA 99
- NFPA 110, Level 1
- CSA 282-09
- UL 6200
- ASTM B117 (salt spray test)

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Controller Functions

The controller displays warning, shutdown, and status messages. **All functions are available as relay outputs**.
Warning causes the yellow fault LED to show and sounds the alarm horn, signaling an impending problem.
Shutdown causes the red fault LED to show, sounds the alarm horn, and stops the generator set.

The controller communicates with the engine ECU and supports a large number of warning and shutdown events that are not listed here. This table highlights the items required for NFPA 110.

Event	Warning	Shutdown
Alternator Thermal Protection †		●
Battery Charger Fault *	▲	
CAN Option Board1 Comm Loss	▲	
Critically Low Fuel Level (diesel) *	▲	
ECU Diagnostic Event	▲	
ECU Mismatch Shutdown †		●
Fuel Leak Alarm (diesel) *	▲	
High Battery Voltage Warning	▲	
High Coolant Temperature Shutdown †		●
High Coolant Temperature Warning	▲	
High Fuel Level Warning (diesel) *	▲	
High Oil Temperature Shutdown †		●
High Oil Temperature Warning	▲	
Local Emergency Stop Shutdown †		●
Loss ECU Comms Shutdown †		●
Loss of Signal Low Coolant Level Voltage	▲	
Low Battery Voltage Warning	▲	
Low Coolant Level Shutdown †		●
Low Coolant Temperature Warning	▲	
Low Fuel Level Shutdown (diesel) * †		●
Low Fuel Level Warning (diesel) *	▲	
Low Fuel Pressure Warning (gas) *	▲	
Low Oil Pressure Shutdown †		●
Low Oil Pressure Warning	▲	
Low RTC (clock) Battery Voltage	▲	
Maintenance Reminder1	▲	
Maintenance Reminder2	▲	
Maintenance Reminder3	▲	
Maximum Power Shutdown †		●
Maximum Power Warning	▲	
Not In Auto Alarm	▲	
Over Crank Shutdown †		●
Over Current Shutdown (L1, L2, L3) †		●
Over Current Warning (L1, L2, L3)	▲	
Over Frequency Shutdown †		●
Over Frequency Warning	▲	
Over Power Shutdown †		●
Over Power Warning	▲	
Over Speed Shutdown †		●
Over Voltage Shutdown (L-L, L-N, each phase) †		●
Over Voltage Warning (L-L, L-N, each phase)	▲	
Remote Emergency Stop Shutdown †		●
Reverse Power Shutdown †		●
Reverse VAR Shutdown †		●
Under Frequency Shutdown †		●
Under Frequency Warning	▲	
Under Voltage Shutdown (L-L, L-N, each phase) †		●
Under Voltage Warning (L-L, L-N, each phase)	▲	
Weak Cranking Battery	▲	
Status Messages		
Auto Button Pressed		
EPS Supplying Load		
Generator Running		
Generator Started		
Generator Stopped		
GFCI Warning *		
Load Shed Overload		
Load Shed Under Frequency		
Off Button Pressed		
RSA Event Programmable Digital Inputs, 1-8		
Run Button Pressed		

* Function requires optional input sensors or kits
† Items included with common fault shutdown 10
‡ Shutdown overrides are designated by engine supplier and may vary between generator set models. An event, outside of Overspeed, E-stop, Maintenance Mode, and ECU-forced shutdown, may cause the generator to shutdown.

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John Deere Engine-Powered Models Inputs and Outputs

Standard Dedicated User Inputs	Input Type
Auxiliary Fault (Shutdown)	Digital Input
Auxiliary Warning	
Battery Charger Fault	
Breaker Closed *	
Breaker Open *	
Excitation Over Voltage (350 kW and up)	
Fuel Leak Alarm	
Low Fuel Level Switch	
Remote Emergency Stop	
Remote Engine Start	Two-wire input
Speed Bias	Analog Voltage Input, Scalable up to +/-10 VDC
Voltage Bias	

Standard Dedicated User Outputs	Output Type
Close Breaker *	Relay Driver Output
Common Failure	
Run	
Trip Breaker/Shunt Trip *	
* Only with remote-mounted electrically operated circuit breakers.	

Optional Configurable User Inputs and Outputs	
User Configurable Inputs	2 Analog, 0-5 VDC 4 Dry Contact Digital
User Configurable Relay Outputs	14 NO/NC Relays 1 Common Fault Relay
Note: Programmable I/O is configurable by authorized technician	

JD Engine Data

The following John Deere engine data is displayed on the APM603 controller.

Parameter
Engine Model Number
Engine Serial Number
ECU Serial Number
Coolant Temperature
Engine Speed
Fuel Pressure
Fuel Consumption Rate
Oil Pressure
Run Time Hours

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APM603 Available Options

- ❑ **Common Failure Relay** provides a relay output to signal a generator set fault.
- ❑ **Battery Charger** available with 6 amp, 10 amp, and 20 amp output for 12 and 24V DC voltage output. (Availability is generator model dependent.) The 10 amp and 20 amp models provide NFPA 110 charging and alarming capability.
- ❑ **Electrically Operated Circuit Breakers**
  - For paralleling systems
  - Available generator-mounted or remote-mounted
  - 24VDC
- ❑ **Ground Fault Relay** provides a relay output to signal a ground fault is detected.
- ❑ **Input/Output Module** for Diesel (KD) and Mitsubishi models provides:
  - 16 digital input connections with connection to ground
  - 8 relay output connections (Form C, rated 8A, 240 VAC or rated 0.5 A, 48 VDC)
- ❑ **Input/Output Module** for models other than KD or Mitsubishi provides:
  - 2 analog inputs (0-5 VDC)
  - 4 digital input connections with connection to ground
  - 14 relay output connections (Form C, rated 10A, 120V)
  - 1 common fault relay output (NO, rated 2A, 24VDC)
- ❑ **Key Switch** to allow selection of RUN, OFF and AUTO modes. Lockable in the AUTO position by removing the key.
- ❑ **Remote Emergency Stop Switch** available as a wall mounted panel to remotely shut down the generator set.
- ❑ **Remote Monitoring Panel.** The Remote Serial Annunciator (RSA) enables the operator to monitor the status of the generator set from a remote location, which may be required for NFPA 99 and NFPA 110 installations, and up to four Automatic transfer switches.
- ❑ **Shunt Trip Wiring provides** relay outputs to trip a shunt trip circuit breaker and to signal the common fault shutdowns. Contacts rated at 10 amps at 28 VDC or 120 VAC.

Availability is subject to change without notice. Discovery Energy, LLC reserves the right to change the design or specifications without notice and without any obligation or liability whatsoever. Contact your local authorized generator set distributor for availability.

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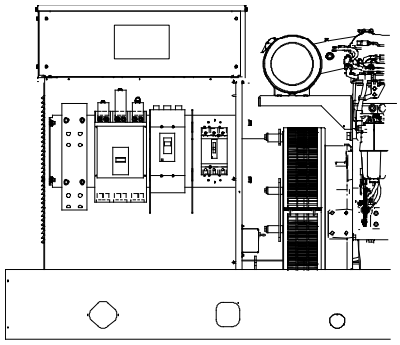
Industrial Generator Set Accessories

Line Circuit Breakers 15-3250 kW



Multiple Circuit Breaker Kit with Neutral Bus Bar 180-300 kW Model Shown

Standard Features

- The line circuit breaker interrupts the generator set output during a short circuit and protects the wiring when an overload occurs. Use the circuit breaker to manually disconnect the generator set from the load during generator set service.
- Circuit breaker kits are mounted to the generator set and are provided with load-side lugs and neutral bus bar.
- Rehlko offers a wide selection of molded-case line circuit breaker kits including single, dual, and multiple configurations for each generator set.
- Four types of line circuit breakers are available: (see page 2 for definitions and pages 3 and 4 for application details)
  - Magnetic trip
  - Thermal magnetic trip
  - Electronic trip
  - Electronic with ground fault (LSIG) trip
- In addition, line circuit breakers are offered with 80% and 100% ratings.
- Single line circuit breaker kits allow circuit protection of the entire electrical system load.
- Dual line circuit breaker kits allow circuit protection of selected priority loads from the remaining electrical system load.
- Multiple line circuit breaker kits with field connection barrier allow circuit protection for special applications (350-2500 kW models and selected 80-300 kW models).
- Up to four line circuit breakers can be used on 350-2500 kW models.
- Line circuit breakers comply with the following codes and standards unless otherwise stated.
  - UL 489 Molded Case Circuit Breakers
  - UL 1077 Supplementary Protectors
  - UL 2200 Stationary Engine Generator Assemblies

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Line Circuit Breaker Types

Magnetic Trip

The magnetic trip features an electromagnet in series with the load contacts and a moveable armature to activate the trip mechanism. When a sudden and excessive current such as a short circuit occurs, the electromagnet attracts the armature resulting in an instantaneous trip.

Thermal Magnetic Trip

Thermal magnetic trip contains a thermal portion with a bimetallic strip that reacts to the heat produced from the load current. Excessive current causes it to bend sufficiently to trip the mechanism. The trip delay is dependent on the duration and excess of the overload current. Elements are factory-calibrated. A combination of both thermal and magnetic features allows a delayed trip on an overload and an instantaneous trip on a short circuit condition.

Electronic Trip

These line circuit breakers use electronic controls and miniature current transformers to monitor electrical currents and trip when preset limits are exceeded.

LI breakers are a combination of adjustable trip functions including long-time ampere rating, long-time delay, and instantaneous pickup. LSI breakers have all of the LI breaker features plus short-time pickup, short-time delay, and defeatable instantaneous pickup. LSIG breakers have all of the LSI breaker features plus ground-fault pickup and delay.

NOTE: MG-frame does not have a long-time delay when selected with LI breakers.

Electronic with Ground Fault Trip

The ground fault trip feature is referred to as LSIG in this document. Models with LSIG compare current flow in phase and neutral lines, and trip when current unbalance exists.

Ground fault trip units are an integral part of the circuit breaker and are not available as field-installable kits. The ground fault pickup switch sets the current level at which the circuit breaker will trip after the ground fault delay. Ground fault pickup values are based on circuit breaker sensor plug only and not on the rating plug multiplier. Changing the rating plug multiplier has no effect on the ground fault pickup values.

80% Rated Circuit Breaker

Most molded-case circuit breakers are 80% rated devices. An 80% rated circuit breaker can only be applied at 80% of its rating for continuous loads as defined by NFPA 70. Circuit conductors used with 80% rated circuit breakers are required to be rated for 100% of the circuit breaker's rating.

The 80% rated circuit breakers are typically at a lower cost than the 100% rated circuit breaker but load growth is limited.

100% Rated Circuit Breaker

Applications where all UL and NEC restrictions are met can use 100% rated circuit breakers where 100% rated circuits can carry 100% of the circuit breaker and conductor current rating.

The 100% rated circuit breakers are typically at a higher cost than the 80% rated circuit breaker but have load growth possibilities.

When applying 100% rated circuit breakers, comply with the various restrictions including UL Standard 489 and NEC Section 210. If any of the 100% rated circuit breaker restrictions are not met, the circuit breaker becomes an 80% rated circuit breaker.

Line Circuit Breaker Options

❑ **Alarm Switch**

The alarm switch indicates that the circuit breaker is in a tripped position caused by an overload, short circuit, ground fault, the operation of the shunt trip, an undervoltage trip, or the push-to-trip pushbutton. The alarm resets when the circuit breaker is reset.

❑ **Auxiliary Contacts**

These switches send a signal indicating whether the main circuit breaker contacts are in the open or closed position.

❑ **Breaker Separators (350-2500 kW)**

Provides adequate clearance between breaker circuits.

❑ **Bus Bars**

Bus bar kits offer a convenient way to connect load leads to the generator set when a circuit breaker is not present. **15-300 kW.** Bus bar kits are available on alternators with leads for connection to the generator set when circuit breakers are not ordered.

350-2500 kW. A bus bar kit is provided when no circuit breaker is ordered. Bus bars are also available in combination with circuit breakers or other bus bars on the opposite side of the junction box. On medium voltage (3.3 kV and above) units, a bus bar kit is standard (not applicable to KD models).

❑ **Field Connection Barrier**

Provides installer wiring isolation from factory connections.

❑ **Ground Fault Annunciation**

A relay contact for customer connection indicates a ground fault condition and is part of a ground fault alarm.

❑ **Lockout Device (padlock attachment)**

This field-installable handle padlock attachment is available for manually operated circuit breakers. The attachment can accommodate three padlocks and will lock the circuit breaker in the OFF position only.

❑ **Lugs**

Various lug sizes are available to accommodate multiple cable sizes for connection to the neutral or bus bar.

❑ **Overcurrent Trip Switch**

The overcurrent trip switch indicates that the circuit breaker has tripped due to overload, ground fault, or short circuit and returns to the deenergized state when the circuit breaker is reset.

❑ **Shunt Trip, 12 VDC or 24 VDC**

A shunt trip option provides a solenoid within the circuit breaker case that, when momentarily energized from a remote source, activates the trip mechanism. This feature allows the circuit breaker to be tripped by customer-selected faults such as alternator overload or overspeed. The circuit breaker must be reset locally after being tripped. Tripping has priority over manual or motor operator closing.

❑ **Shunt Trip Wiring**

Connects the shunt trip to the generator set controller. (standard on KD models with the APM802 controller)

❑ **Undervoltage Trip, 12 VDC or 24 VDC**

The undervoltage trips the circuit breaker when the control voltage drops below the preset threshold of 35%-70% of the rated voltage.

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300-2250* kW Line Circuit Breaker Specifications

* Includes models 300REZXB and 300RZXB. For models 300REOZJ and 300REZXC, see the 15-300 kW section.
For KD model generator sets, see pages 8 and 9.

80% Rating Circuit Breaker

Alt. Model	Ampere Range	Trip Type	C. B. Frame Size
4M 5M 7M	15-150	Thermal Magnetic	HD
	60-150	Electronic LI	HD
		Electronic LSI	
		Electronic LSIG	
	175-250	Thermal Magnetic	JD
	250	Electronic LI	
		Electronic LSI	
		Electronic LSIG	
	60-150	Electronic LI	HG
		Electronic LSI	
		Electronic LSIG	
	250	Electronic LI	JG
		Electronic LSI	
		Electronic LSIG	
	30	9-325 A. Mag. Trip	HJ
	50	84-546 A. Mag. Trip	
	100	180-1040 A. Mag. Trip	
	150	348-1690 A. Mag. Trip	
	250	684-2500 A. Mag. Trip	JJ
	300-400	Thermal Magnetic	LA
	400	500-1000 A. Mag. Trip	
		750-1600 A. Mag. Trip	
		1000-2000 A. Mag. Trip	
		1125-2250 A. Mag. Trip	
		1250-2500 A. Mag. Trip	
		1500-3000 A. Mag. Trip	
		1750-3500 A. Mag. Trip	
		2000-4000 A. Mag. Trip	
	400-600	Electronic LI	LG
		Electronic LSI	
		Electronic LSIG	
	800	Electronic LI	MG
	1000-1200	Thermal Magnetic	PG
	800-1200	Electronic LSI	
		Electronic LSIG	
	1200	Thermal Magnetic	PJ
		Electronic LSI	
		Electronic LSIG	
	1600-2500	Thermal Magnetic	RJ
		Electronic LSI	
		Electronic LSIG	

100% Rating Circuit Breaker

Alt. Model	Ampere Range	Trip Type	C. B. Frame Size
4M 5M 7M	15-150	Thermal Magnetic	HD
	60-150	Electronic LI	
		Electronic LSI	
		Electronic LSIG	
	175-250	Thermal Magnetic	JD
	250	Electronic LI	
		Electronic LSI	
		Electronic LSIG	
	60-150	Electronic LI	HG
		Electronic LSI	
		Electronic LSIG	
	250	Electronic LI	JG
		Electronic LSI	
		Electronic LSIG	
	400	Electronic LI	LG
		Electronic LSI	
		Electronic LSIG	
	600-1200	Electronic LSI	PG
		Electronic LSIG	
	1200	Electronic LSI	PJ
		Electronic LSIG	
	1600-2500	Electronic LSI	RJ
		Electronic LSIG	
	1600-3000	Electronic LSI	NW
		Electronic LSIG	

100% Rating Electrically Operated Breakers

For use as paralleling breakers.*

Alt. Model	Amps	Trip Unit	Frame
4M 5M 7M	250, 400, 600, 800, 1000, 1200	3.0 LI	PJ
		5.0 LSI	PJ
		3.0 LI	PL
		5.0 LSI	PL
	1600. 2000. 2500. 3000	Electronic LSI	NW
		Electronic LSIG	NW

* P-frame breakers can be used with the Decision-Maker® 6000 Controller/DPS System or APM603 controller.
NW breakers are for use with the APM603 only.
All circuit breakers listed in this table include line side bus and load side lugs, 24VDC motor operators, and 1 type C SDE overcurrent switch contact. P-frame breakers include 2 type C auxiliary contacts. NW breakers include 4 auxiliary contacts.
No second breakers are allowed in combination with these breakers.

Load Bus Rating

Gen. Set kW	Alt. Model	Rating, Amperes	Type
350-2250 kW	4M/5M/7M	3000	Load Bus

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300-2250* kW Line Circuit Breaker Specifications

* Includes models 300REZXB and 300RZXB. For models 300REOZJ and 300REZXC, see the 15-300 kW section.
For KD model generator sets, see pages 8 and 9.

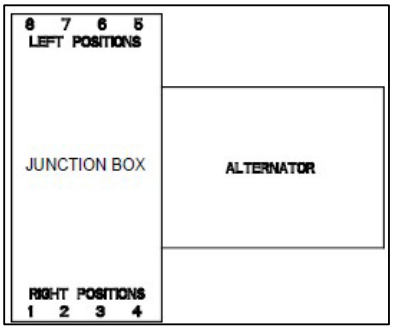
Interrupting Ratings

Circuit Breaker Frame Size	240 Volt, kA	480 Volt, kA	600 Volt, kA
HD	25	18	14
HG	65	35	18
HJ	100	65	25
JD	25	18	14
JG	65	35	18
JJ	100	65	25
LA	42	30	22
LG	65	35	18
MG			
NW	100	100	85
PG	65	35	18
PJ	100	65	25
PL	125	65	25
RJ	100	65	25

Circuit Breaker Lugs Per Phase (Al/Cu)

Frame Size	Ampere Range	Wire Range
H	15-150	One #14 to 3/0
J	175	One 1/0 to 4/0
	200-250	One 3/0 to 350 kcmil
LA	300-400	One #1 to 600 kcmil or Two #1 to 250 kcmil
LG	400-600	Two 2/0 to 500 kcmil
M	800	Three 3/0 to 500 kcmil
P	600-800	Three 3/0 to 500 kcmil
	1000-1200	Four 3/0 to 500 kcmil
RJ	1600-2500	(8) 1/0 to 750 kcmil or (16) 1/0 to 300 kcmil
NW	1600-3000	(10) 1/0 to 750 kcmil or (20) 1/0 to 300 kcmil

Breaker Positions



NOTE: Breaker and load bus phasing on right positions is A-B-C and on left positions is C-B-A.

NOTE: H, HG, J, JG, and LG-frames when selected with LSIG trip require two mounting spaces (one space for the breaker and one space for the LSIG neutral). These combinations are not reflected in the Multiple Circuit Breaker Combinations table on this page.

Multiple Circuit Breaker Combinations

Alternator Model	Positions 1 or 5	2 or 6	3 or 7	4 or 8
4M/ 5M/ 7M	H/J			
	H/J	H/J		
	H/J	H/J	H/J	
	H/J	H/J	H/J	H/J
	LA			
	LA	H/J		
	LA	LA		
	LA	H/J	H/J	
	LA	LA	H/J	
	LA	LA	LA	
	LA	H/J	H/J	H/J
	LA	LA	H/J	H/J
	LA	LA	LA	H/J
	LA	LA	LA	LA
	LG			
	LG	H/J		
	LG	LA		
	LG	LG		
	LG	H/J	H/J	
	LG	LA	H/J	
	LG	LA	LA	
	LG	LG	H/J	
	LG	LG	LA	
	LG	LG	LG	
	LG	H/J	H/J	H/J
	LG	LA	H/J	H/J
	LG	LA	LA	H/J
	LG	LA	LA	LA
	LG	LG	H/J	H/J
	LG	LG	LA	H/J
	LG	LG	LA	LA
	LG	LG	LG	H/J
	LG	LG	LG	LA
	LG	LG	LG	LG †
	M/P			
	M/P		H/J	
	M/P		LA	
	M/P		LG	
	M/P		M/P ‡	
	M/P		H/J	H/J
	M/P		LA	H/J
	M/P		LA	LA
	M/P		LG	H/J
	M/P		LG	LA
	M/P		LG	LG †
	R §			
	NW §			
	LOAD BUS KIT §			

† Frame size LG is not available in position 4 with 1219 mm (48 in.) junction box.

‡ Frame sizes M/P are not available in position 3 or 4 with 1219 mm (48 in.) junction box.

§ R breakers, NW breakers, and the load bus kit occupy all four positions on a side.

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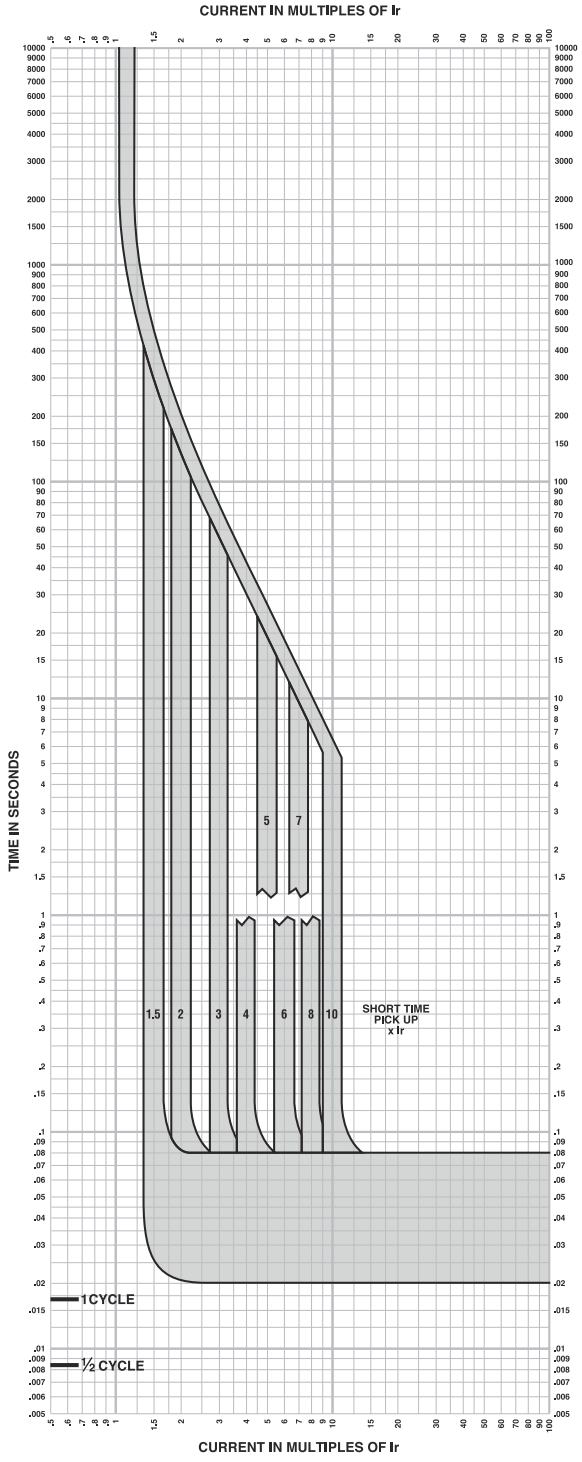
Figure 81: Micrologic 3.2S Electronic Trip Unit Long Time / Short Time Trip Curve



MICROLOGIC™ ELECTRONIC TRIP UNITS
Micrologic™ 3.2S Long Time/
Short Time Trip Curve
60A, 100A, 150A H-Frame

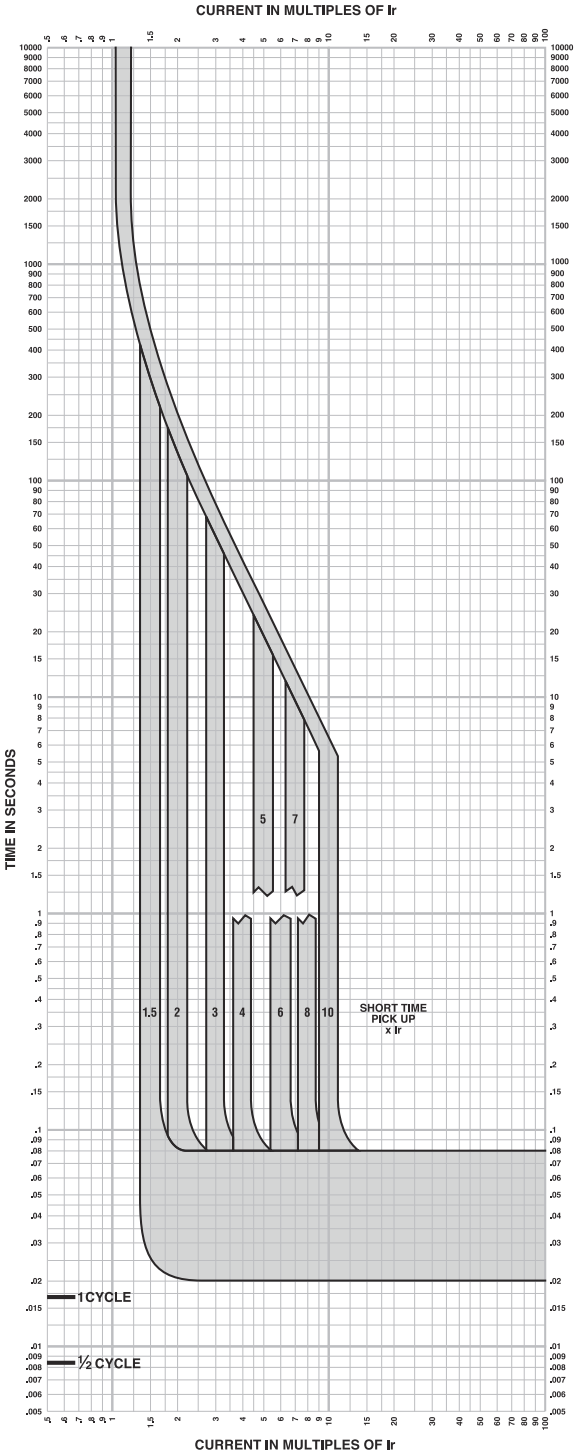
The time-current curve information is to be used for application and coordination purposes only.

Notes:

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

Curves apply from -35ºC to +70ºC (-31ºF to +158ºF) ambient temperature.

Figure 96: Micrologic 3.3S and 3.3S-W Electronic Trip Unit Long Time/Short Time Trip Curve



MICROLOGIC™ ELECTRONIC TRIP UNITS
Micrologic™ 3.3S and 3.3S-W
Long Time/Short Time Trip Curve
250A, 400A L-Frame

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

Notes:

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

Curves apply from -35ºC to +70ºC (-31ºF to +158ºF) ambient temperature.

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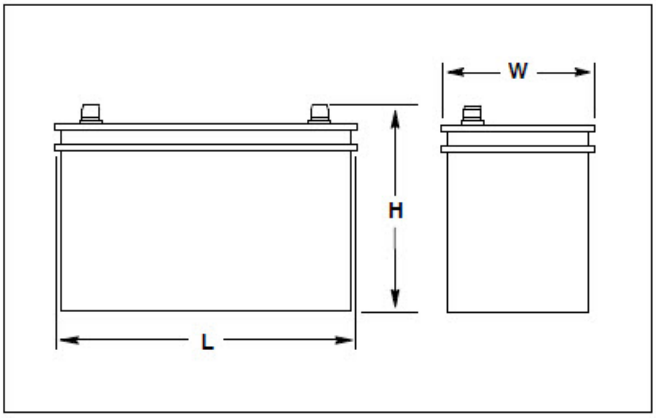
ISO 9001 KOHLER POWER SYSTEMS NATIONALLY REGISTERED

Typical Overall Dimensions

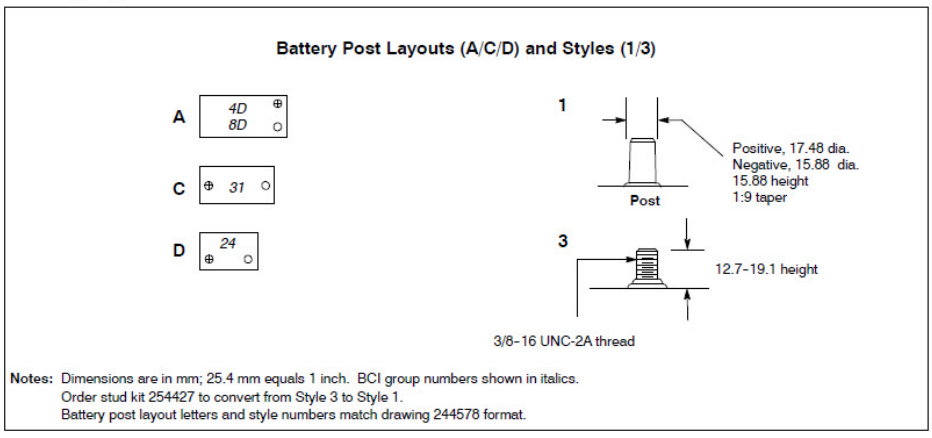


Standard Features

- Rehlko selects batteries to meet the engine manufacturer's specifications and to comply with NFPA requirements for engine-cranking cycles.
- Heavy-duty starting batteries are the most cost-effective means of engine cranking and provide excellent reliability in generator set applications.
- Tough polypropylene cases protect against life-shortening vibration and impact damage.
- Batteries are rated according to SAE standard J-537.
- All batteries are 12-volts. Kits that contain two or four batteries are availabe for 24-volt systems and/or systems with redundant starters.
- Wet- and dry-charged batteries have lead-calcium or lead-antimony plates and use sulferic acide electrolyte. Removable cell covers allow checking of electrolyte specific gravity.
- Absorbant glass mat (AGM) batteries are sealed and maintenance free.
- Batteries are for applications below and above 0°C (32°F).

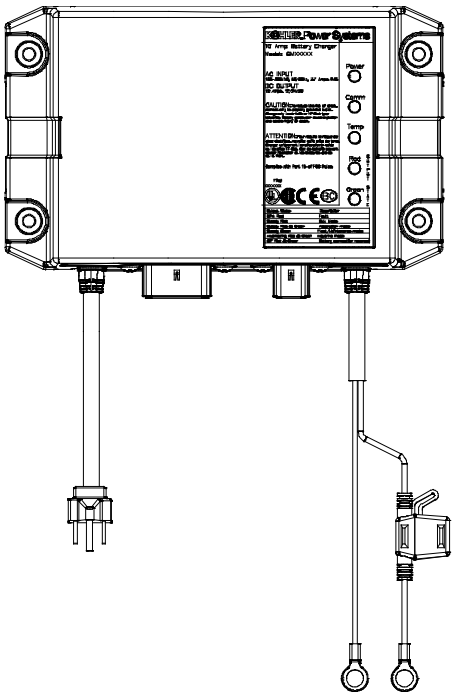
Charge Type*	Battery Part Number	Battery Qty. per Size	BCI Group Size	Battery SAE Dimension, mm (in.)			Cold Cranking Amps at 18ºC (0ºF) Min.	Reserve Capacity Minutes at 27º (80ºF) Min.	Battery Post Layout and Style
				L	W	H			
Wet	GM106375	2	31	330.2 (13.0)	171.0 (6.8)	239.8 (9.4)	925	180	C/3

Battery Specifications



Industrial Generator Set Accessories

12/24 Volt, 10 Amp
Automatic Multi-Stage Battery Charger



The battery charger is a fully-automatic, high efficiency battery charger that charges batteries rapidly and safely. The battery charger is designed for an industrial environment.

The battery charger is designed for operation with an engine cranking battery.

The battery charger is universal voltage input capable, comes with a standard 120 V/60 Hz AC plug, and charges 12 VDC or 24 VDC battery systems.

Five LED lights indicate power, communication status, temperature compensation status, charge curve, and charger status.

With the optional battery temperature sensor connected, the battery charger can adjust output voltages for optimal charging.

Standard Features

- 12 or 24 VDC output
  - Automatic voltage detection
- Automatic multi-stage charging modes
  - Recovery charge
  - Bulk charge
  - Absorption charge
  - Float charge
  - Equalize charge
- Charges the following type batteries:
  - Flooded lead acid (FLA)
  - AGM
  - Gel cell
  - High performance AGM
  - Nickel-cadmium (NiCad)
- 5 LED status indicators
- Durable potted assembly for waterproofing and vibration resistance
- Reverse-polarity protection
- Short-circuit protection
- Electronically limited output current
- Optional temperature compensation (FLA only)
- User adjustable parameters to support optimal manufacturer recommended charge curve.
- Code compliance:
  - UL 1236 Listed
  - NFPA 110, Level 1 compatible (when used with controller and connected to engine harness)
  - CSA-C22.2 No. 107.2-01
  - FCC-Title 47, Part 15 Class A
  - CE
  - IBC 2015
  - OSHPD

DC Output		AC Input		Overall Dimensions W x D x H	Shipping Weight	
Volts (Nominal)	Amps	Volts (Nominal)	Amps		kgs	lbs
12/24	10	100-260	3.7	253 mm x 152 mm x 74 mm (10.0 in x 6.0 in x 2.9 in)	3.6	7.9

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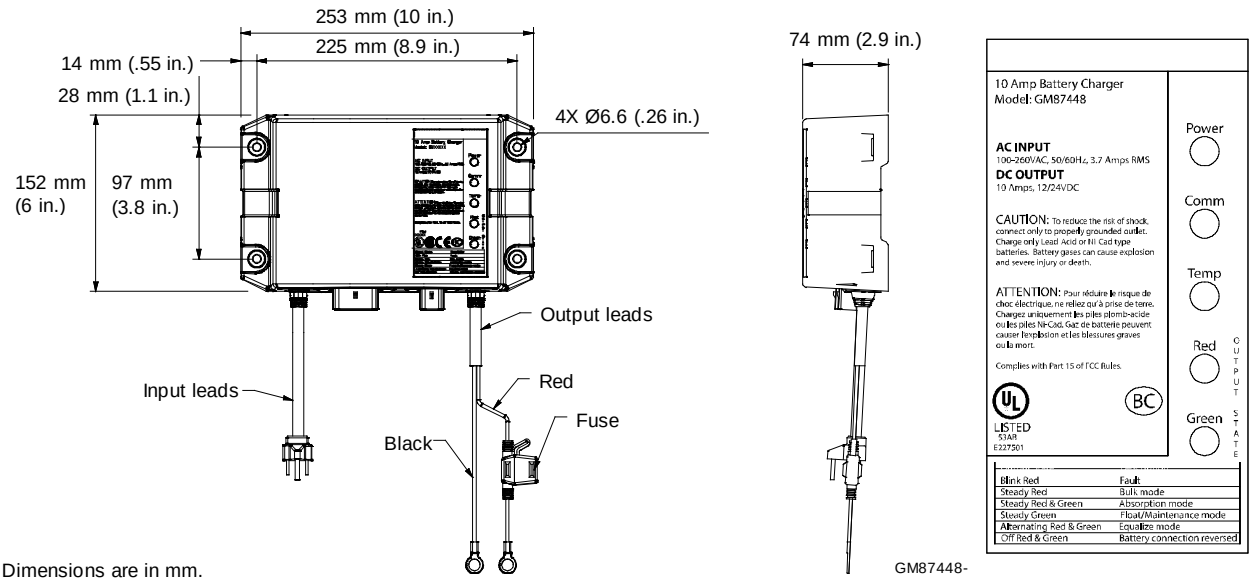
Industrial Generator Set Accessories

12/24 Volt, 10 Amp
Automatic Multi-Stage Battery Charger



Dimensions are in mm.

Specifications

AC Input	100-260 VAC
Frequency Input	50/60 Hz
DC Output	10 Amps @ 12 VDC or 10 Amps @ 24 VDC (On battery voltage regulation ±1%; current is electronically limited
Fuse Protection	15 amps ATC
Battery Types	Flooded Lead Acid (FLA) AGM Gel Cell High Performance AGM Nickel-Cadmium (NiCad)
Monitoring	
LED Indications	Power Communication Temperature compensation Output charger curve and charger status: ○ Red ○ Green
Environmental	
Operating	-20° to 70°C (-4° to 158° F)
Storage	-40° to 85°C (-40° to 185° F)
Relative Humidity	5 to 95% (non-condensing)
Salt Spray Testing	ASTM B117
Corrosion Resistant	From battery gases

Enclosure	
Environmental Resistant	From rain, snow, dust, and dripping water (IP-64)
Battery Connections	
Lead Length	1.8 m (6 ft.) red and black leads
Battery Connections	9.5 mm (3/8 in.) ring terminals
AC Power Connections	
Lead Length	1.8 m (6 ft.)
Storage	Standard US style 3-prong AC plug
Available Options	
Temperature compensation	

Availability is subject to change without notice. Discovery Energy, LLC reserves the right to change the design or specifications without notice and without any obligation or liability whatsoever. Contact your local Rehlko generator set distributor for availability.

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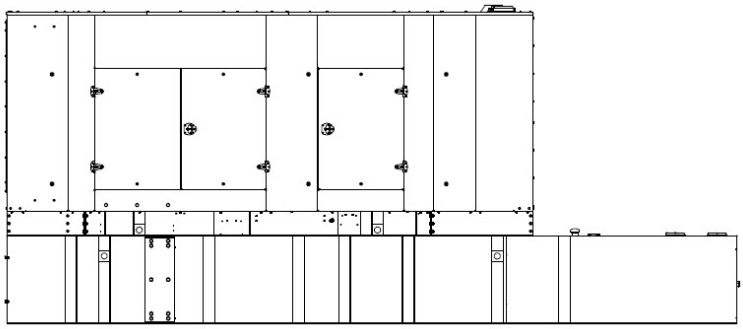
Sound Enclosure with Subbase Fuel Tank Package



Sound Enclosure Standard Features

• Internal silencer, flexible exhaust connector and rain cap.

• Mounts to generator set skid. Steel construction with hinged doors.

• Fade-, scratch-, and corrosion-resistant Kohler® Power Armor cream beige automotive-grade textured finish.

• Enclosure has six large access doors which allow for easy maintenance.

• Lockable, flush-mounted door latches.

• Air inlet louvers reduce rain entry.

• Internal vertical discharge plenum directs air up to reduce noise.

• Acoustic insulation that meets UL 94 HF1 flammability classification.

• Sound enclosure offers level 2 sound reduction suing acoustic insulation.

Subbase Fuel Tank Features

• The fuel tank has a Power Armor Plus textured epoxy-based rubberized coating.

• The above-ground rectangular secondary containment tank mounts directly to the generator set, below the generator set skid (subbase).

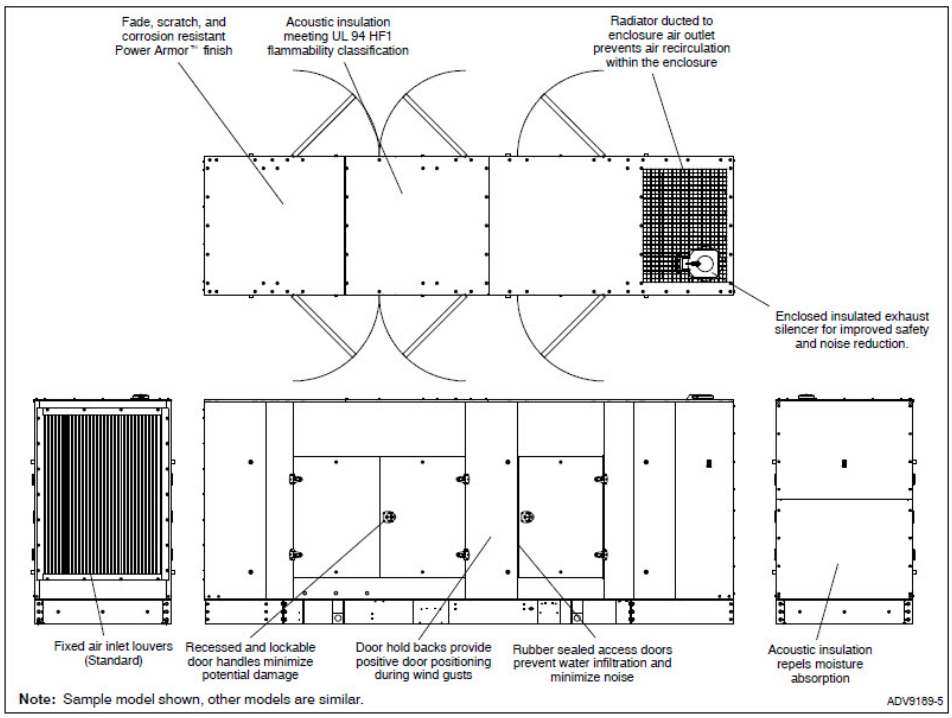
• Both the inner and outer tanks have emergency relief vents.

• Flexible fuel lines are provided with subbase fuel tank selection.

• The secondary containment tanks construction protects against fuel leaks or ruptures. The inner (primary) tank is sealed inside the outer (secondary) tank. The outer tank contains the fuel if the inner tank leaks or ruptures.

• State tanks with varying capacities are an available option. Florida Dept. of Environmental Protection (FDEP) File No. EQ-634 approved.

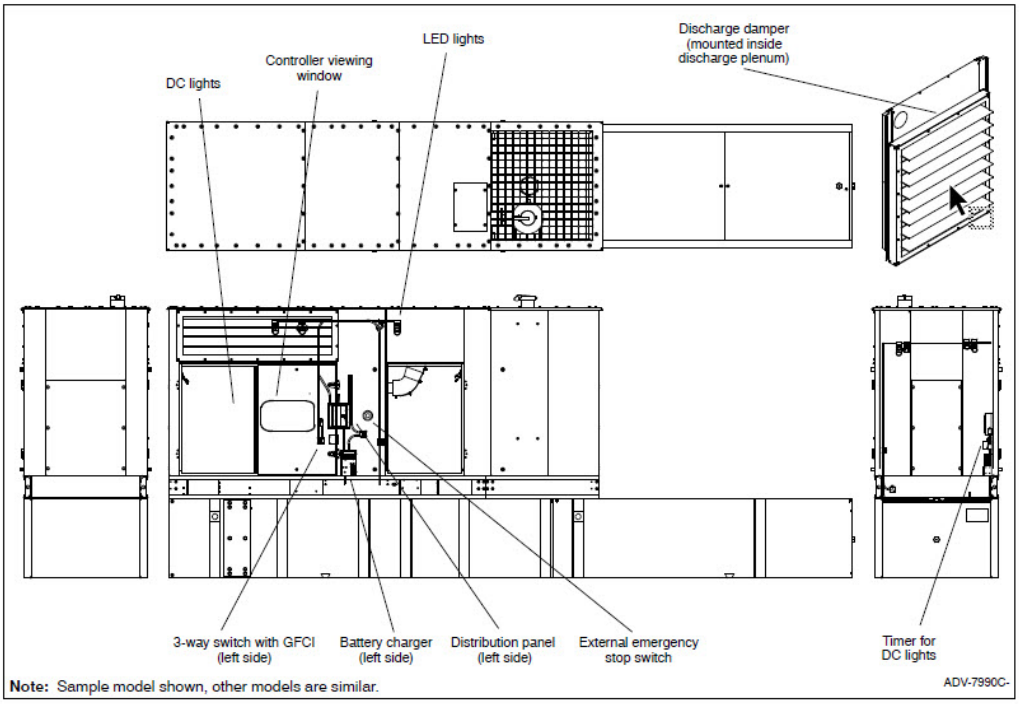
Level 1 Sound Enclosure



Sound Enclosure Features

- Heavy-duty formed panels, solid construction. Preassembled package offering corrosion resistant, dent resilient structure mounting directly to the generator set skid. Available in 14 gauge steel.
- Power Armor automotive-grade finish resulting in advanced corrosion and abrasion protection as well as enhanced edge coverage and color retention.
- Internal exhaust silencer offering maximum component life and operator safety.
- Note: Installing an additional length of exhaust tail pipe may increase backpressure levels. Please refer to the generator set spec sheet for the maximum backpressure value.
- Service access. Multi-personnel doors for easy access to generator set control and servicing of the fuel fill, fuel gauge, oil fill, and battery.
- Interchangeable modular panel construction. Allows complete serviceability or replacement without compromising enclosure design.
- Bolted panels facilitate service, future modification upgrades, or field replacement.
- Cooling/combustion air intake. Weather protective designs using fixed air inlet louvers. Sized for maximum cooling airflow.
- Cooling air discharge. Attenuated models offering an internal vertical discharge scoop that redirects cooling air up and above the enclosure to reduce noise.
- Sound-attenuating design using a silencer and acoustic insulation UL 94 HF1 listed for flame resistance.

Weather and Sound Enclosure Options



- Extended operation. Usable tank capacities offers full load standby operation of up to 72 hours.
- Power Armor Plus textured epoxy-based rubberized coating that creates an ultra-thick barrier between the tank and harsh environmental conditions like humidity, saltwater, and extreme temperatures, and provides advanced corrosion and abrasion protection.
- UL listed. Secondary containment generator set base tank meeting UL 142 tank requirements.
- NFPA compliant. Designed to comply with the installation standards of NFPA 30 and NFPA 37.
- Integral external lift lugs. Enables crane with spreader-bar lifting of the complete package (empty tank, mounted generator set, and enclosure) to ensure safety.
- Emergency pressure relief vents. Meets UL requirements; ensures adequate venting of inner and outer tank under extreme pressure and/or emergency conditions.
- Normal vent with cap. Vent is raised above lockable fuel fill.
- Fuel level sender with fuel level and low and high fuel warning annunciated through the generator set controller.
- Leak detection switch. Annunciates a contained primary tank fuel leak condition at generator set control.
- Electrical stub-up.

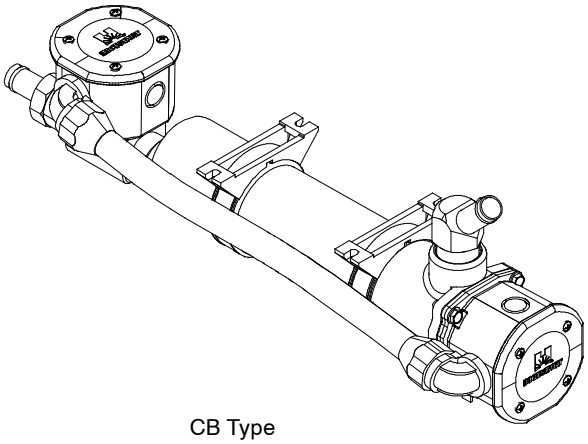
Fuel Tank Capacity, L (gal.)	Est. Fuel Supply Hours at 60 Hz with Full Load	Enclosure and Fuel Tank Length, mm (in.)	Enclosure and Fuel Tank Width, mm (in.)	Enclosure and Fuel Tank Weight, kg (lb.)	Enclosure and Fuel Tank Height, mm (in.)	Fuel Tank Height (H), mm (in.)	Sound Pressure Level, dB(A)
Lift base	0	5520 (217)	1495 (59)	4881 (10760)	2400 (94)	0 (0)	81.7
2930 (774)	24	6714 (264)	1495 (59)	6428 (14171)	3060 (120)	660 (26)	74.2

Note: Data in table is for reference only, refer to the respective ADV drawings for details.
Note: Refer to TIB-114 for generator set sound data.
* Max. weight includes the generator set (wet) with largest alternator option, enclosure, silencer, and tank (no fuel).

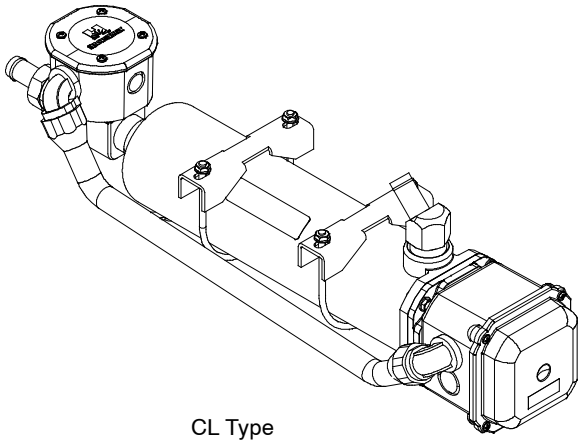
KOHLER

Industrial Generator Set Accessories

Engine Block Heater Kits



CB Type



CL Type

Block Heater Kit, Typical

Applicable Models

- 180- 200RZXB
- 180- 200REZXB
- 230- 275REOZJE
- 300- 500REOZJ
- 350- 500REOZJB
- 350- 500REOZJC
- 350- 400REOZJD
- 500REOZVC
- 550- 600REOZVB

Standard Features

- UL- C/US listed
- CE compliant
- Controls for automatic operation
- Compact design
- Easy to install

Description

The engine block heater kit heats the engine coolant in cold ambient, warming the cylinders, oil, and charge air circuit which all help to give a faster starting time. The engine block heater uses thermosiphon action to circulate warm coolant into the engine and supplies constant heating to the engine. The engine block heater helps to extend element life and gives a significant reduction in electrical consumption.

The engine block heater has a fixed setting thermostat that turns ON when the engine coolant temperature reaches 27°C (80°F) and turns OFF when the engine coolant temperature reaches 38°C (100°F).

The engine block heater kit is recommended for ambient temperatures below 10°C (50°F).

The engine block heater kits are available in 120 V, 208 V, 240 V, and 480 V versions.

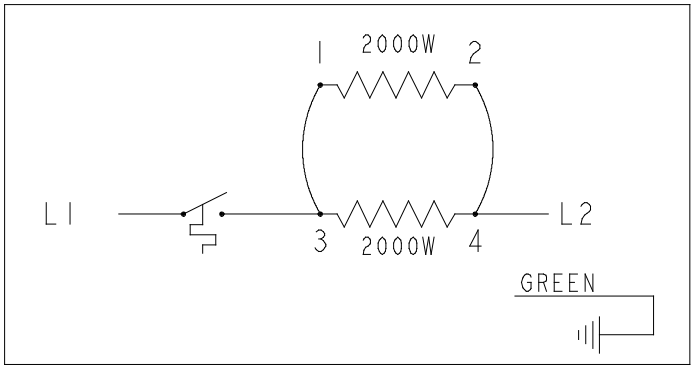
Block Heater Specifications

Heating Fluid	Water, Coolant Mix (50% Glycol/50% Water)
Thermostat Temperature Range	27°- 38°C (80°- 100°F)
Temperature High Limit	96°C (205°F)
Max. Pressure	125 psi (860 kPa)
Inlet/Outlet Plumbing	1 in. NPT
System Ingress	NEMA 4

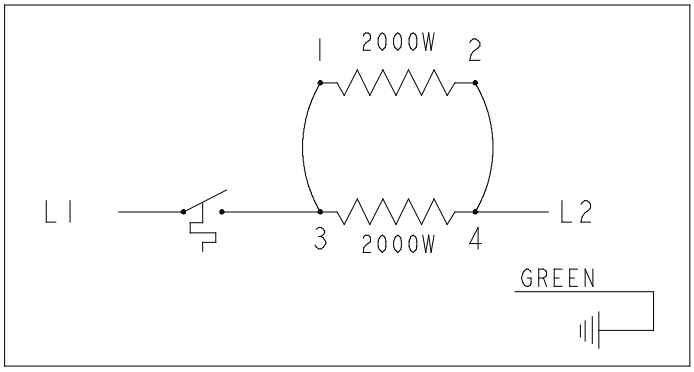
Specifications

Block Heater Kit Number	Component	Watts	Voltage	Phase
GM75809- KA1	GM76113	2500	90- 120	1
GM75809- KA2	GM76114	2500	190- 208	1
GM75809- KA3	GM76115	2500	210- 240	1
GM75809- KA4	GM76116	2500	380- 480	1
GM76120- KA1	GM76113	2500	90- 120	1
GM76120- KA2	GM76114	2500	190- 208	1
GM76120- KA3	GM76115	2500	210- 240	1
GM76120- KA4	GM76116	2500	380- 480	1
GM79186- KA1	GM79182	4000	190- 208	1
GM79186- KA2	GM79183	4000	210- 240	1
GM79186- KA3	GM79184	4000	380- 480	1
GM79186- KP1	GM79182	4000	190- 208	1
GM79186- KP2	GM79183	4000	210- 240	1
GM79186- KP3	GM79184	4000	380- 480	1
GM79187- KA1	GM79182	4000	190- 208	1
GM79187- KA2	GM79183	4000	210- 240	1
GM79187- KA3	GM79184	4000	380- 480	1
GM79187- KP1	GM79182	4000	190- 208	1
GM79187- KP2	GM79183	4000	210- 240	1
GM79187- KP3	GM79184	4000	380- 480	1
GM84820- KA1	GM76113	2500	90- 120	1
GM84820- KA2	GM76114	2500	190- 208	1
GM84820- KA3	GM76115	2500	210- 240	1
GM84820- KA4	GM76116	2500	380- 480	1

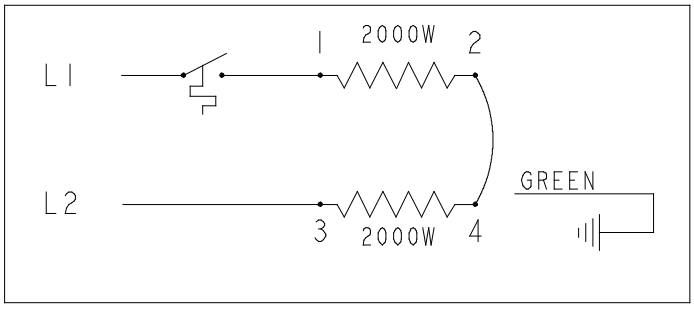
Wiring Diagram



208 VAC single phase- parallel



240 VAC single phase- parallel



480 VAC single phase- parallel

GM79182

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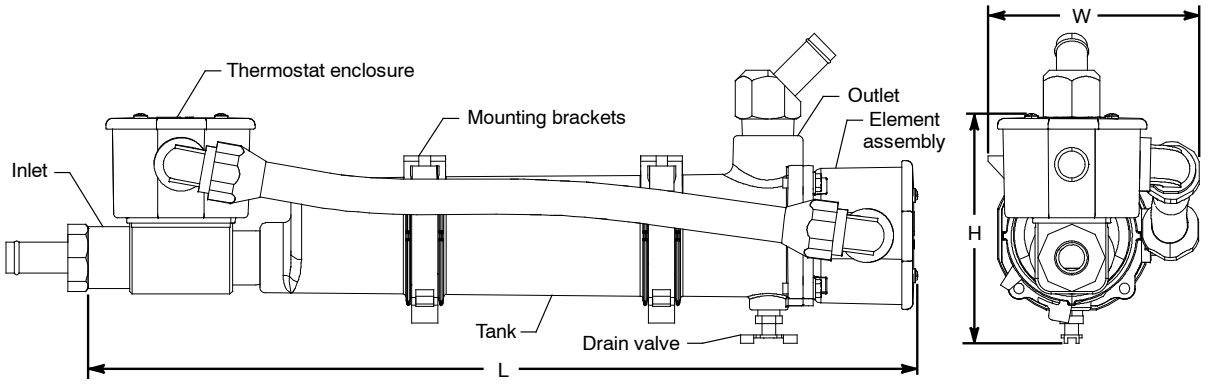
Phone 920-457-4441, Fax 920-459-1646
For the nearest sales and service outlet in the US and Canada, phone 1-800-544-2444
KOHLERPower.com

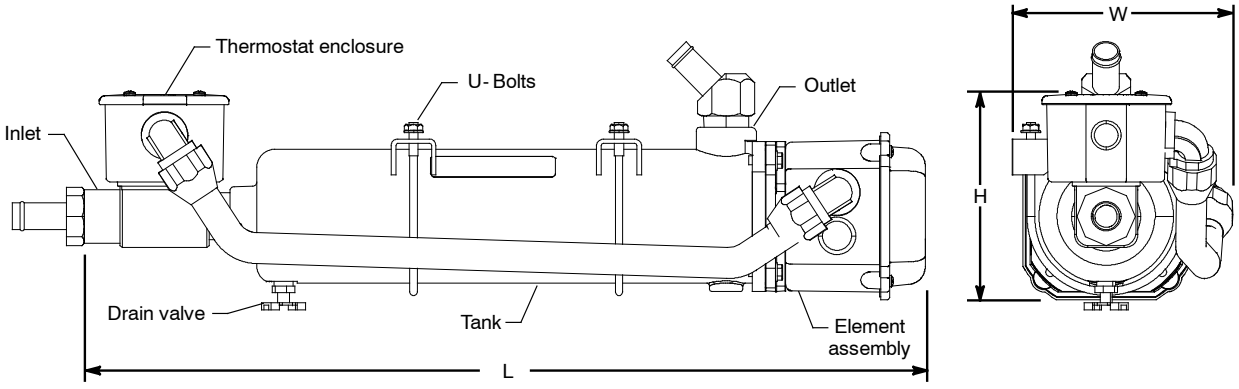
Dimensions and Weights

CB type block heater size, L x H x W, mm (in):	510 x 132 x 129 (20.1 x 5.2 x 5.1)
CL type block heater size, L x H x W, mm (in):	597 x 147 x 158 (23.5 x 5.8 x 6.2)
CB type block heater weight, kg (lb):	3 (6.9)
CL type block heater weight, kg (lb):	4.5 (10)



CB type

GM76113



CL type

GM79182

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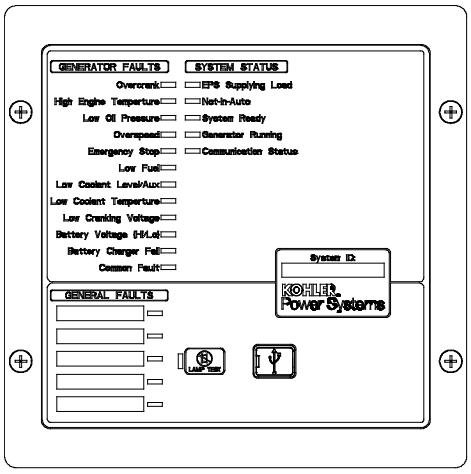
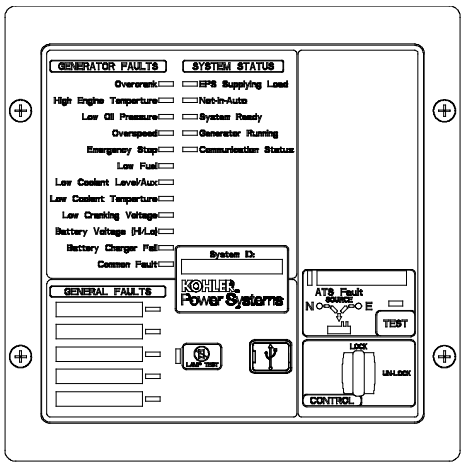
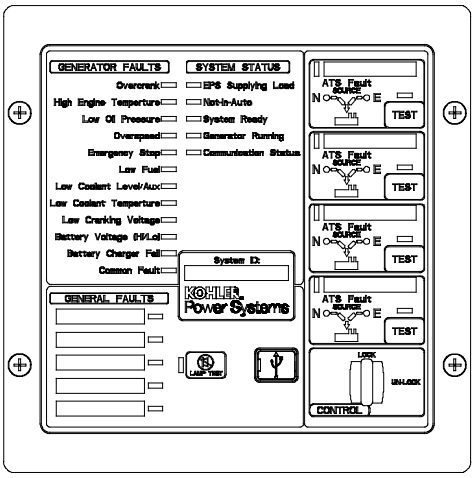


RSA III



RSA III with a Single ATS Control



RSA III with Four ATS Controls

Remote Serial Annunciator III (RSA III) for Kohler® Controllers

- Monitors the generator set equipped with one of the following controllers:
  APM402 — Decision-Maker® 3000
  APM603 — Decision-Maker® 3500
  APM802 — Decision-Maker® 6000
  Decision-Maker® 3+ — Decision-Maker® 8000
  Decision-Maker® 550 — KPC 1000
- Allows monitoring of the common alarm, remote testing of the automatic transfer switch, and monitoring of the normal/emergency source for up to four ATS with any of the following controllers:
  Decision-Maker® MPAC® 750, 1200, and 1500
  MPAC® 1000 and 1500
- Configuration via a personal computer (PC) software.
- Writable surfaces (white boxes in illustrations) for user-defined selections.
- Uses Modbus® RTU protocol.
- Controller connections:
  RS-485 for serial bus network
  USB port. Connect a personal computer and use Kohler® SiteTech™ software to view events and adjust settings. *
  12-/24-volt DC power supply
  120/208 VAC power supply (available accessory)
- Meets the National Fire Protection Association Standard NFPA 110, Level 1.

Dimensions

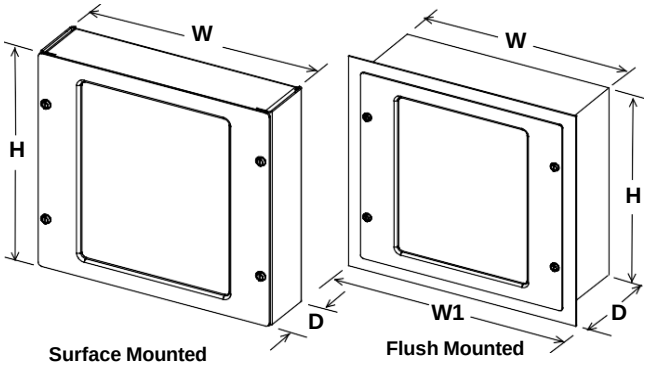
- Dimensions—W x H x D, mm (in.).

Surface Mounted:
203 x 203 x 83 (8.0 x 8.0 x 3.3)

Flush Mounted (Inside Wall):
203 x 203 x 76 (8.0 x 8.0 x 3.0)
Flush mounting plate W1: 254 (10.0)

* SiteTech™ software is available to Kohler authorized distributors and dealers.

Modbus® is a registered trademark of Schneider Electric.



Surface Mounted **Flush Mounted**

Fault and Status Conditions	Fault LEDs	Fault Horn	System Ready LED	Generator Running LED	Communication Status LED
Overcrank Shutdown	Red	On	Red	Off	Green
High Engine Temperature Warning *	Yellow	On	Red	Green	Green
High Engine Temperature Shutdown	Red	On	Red	Off	Green
Low Oil Pressure Warning *	Yellow	On	Red	Green	Green
Low Oil Pressure Shutdown	Red	On	Red	Off	Green
Overspeed Shutdown	Red	On	Red	Off	Green
Emergency Stop *	Red	On	Red	Off	Green
Low Coolant Level/Aux. Shutdown	Red	On	Red	Off	Green
Low Coolant Temperature *	Yellow	On	Red	Off	Green
Low Cranking Voltage	Yellow	On	Red	Off	Green
Low Fuel—Level or Pressure *	Yellow	On	Red	Green or Off	Green
Not-In-Auto	Red	On	Red	Green or Off	Green
Common Fault	Red/Yellow	On	Green	Green or Off	Green
Battery Charger Fault (1) *	Yellow	On	Red	Green or Off	Green
Battery Charger Fault (2) *	Yellow	On	Green	Green or Off	Green
High Battery Voltage *	Yellow	Off	Green	Green or Off	Green
Low Battery Voltage *	Yellow	Off	Green	Green or Off	Green
User Input #1 (Warning)	Yellow	Off	Green	Green or Off	Green
User Input #1 (Shutdown)	Red	On	Green	Off	Green
User Input #2 (Warning)	Yellow	Off	Green	Green or Off	Green
User Input #2 (Shutdown)	Red	On	Green	Off	Green
User Input #3 (Warning) (1) [	Yellow	Off	Green	Green or Off	Green
User Input #3 (Shutdown) (1) [	Red	On	Green	Off	Green
User Input #4 (Warning) (1)	Yellow	Off	Green	Green or Off	Green
User Input #4 (Shutdown) (1)	Red	On	Green	Off	Green
User Input #5 (Warning) (1)	Yellow	Off	Green	Green or Off	Green
User Input #5 (Shutdown) (1)	Red	On	Green	Off	Green
EPS Supplying Load	Yellow	Off	Green	Green	Green
Communications Status (Fault mode)	—	Off	Green or Red	Green or Off	Red
ATS Fault (RSA III with ATS Controls only)	Red	On	Red or Yellow	Green or Off	Green

Green LEDs appear as steady on when activated.
Yellow (common warning) LEDs slow flash when activated except steady on with EPS supplying load and high battery voltage.
Red (common fault) LEDs slow flash when activated except fast flash with loss of communication and not-in-auto.

Specifications

- LED indicating lights for status, warning, and/or shutdown.
- Power source with circuit protection: 12- or 24-volt DC
- Power source with120/208 VAC, 50/60 Hz adapter (option)
- Power draw: 200 mA
- Humidity range: 0% to 95% noncondensing
- Operating temperature range: -20°C to +70°C (-4°F to +158°F)
- Storage temperature range: -40°C to +85°C (-40°F to +185°F)
- Standards:
  - NFPA 110, level 1
  - UL 508 recognized
  - CE directive
  - NFPA 99
  - ENS 61000-4-4
  - EN6II-4-4 fast transient immunity
- RS-485 Modbus® isolated port @ 9.6/19.2/38.4/57.6 kbps (default is 19.2 kbps)
- USB device port
- NEMA 1 enclosure

(1) All generator set controllers except Decision-Maker® 3+ controller.
(2) Decision-Maker® 3+ controller only.
* May require optional kit or user-provided device to enable function and LED indication.
† Digital input #3 is factory-set for high battery voltage on the Decision-Maker® 3+ controller.

Modbus® is a registered trademark of Schneider Electric.

ATS Controls (RSA III with ATS controls only)

- ATS position LED (normal or emergency)
- Power source indicator LED (normal or emergency)
- ATS fault LED
- Key-operated lock/unlock switch for Test feature
- Test pushbutton

NFPA Requirements

- NFPA 110 compliant
- Engine functions:
  - High battery voltage warning *
  - High engine temperature shutdown
  - High engine temperature warning *
  - Low battery voltage warning *
  - Low coolant level/aux. shutdown
  - Low coolant temperature warning *
  - Low cranking voltage
  - Low fuel warning (level or pressure) *
  - Low oil pressure shutdown
  - Low oil pressure warning *
  - Overcrank shutdown
  - Overspeed shutdown
- General functions:
  - Audible alarm silence
  - Battery charger fault *
  - Lamp test
  - Master switch not-in-auto

Fault and Status LEDs and Lamp Test Switch

Alarm Horn. Horn sounds giving a minimum 90 dB at 0.1 m (0.3 ft.) audible alarm when a warning or shutdown fault condition exists except on high/low battery voltage or EPS supplying load.

Alarm Silenced. Red LED on lamp test switch lights when alarm horn is deactivated by alarm silence switch.

Alarm Silence Switch. Lamp test switch quiets the alarm during servicing. The horn will reactivate upon additional faults.

ATS Fault. Red LED lights when ATS fails to transfer.

Battery Charger Fail. LED lights if battery charger malfunctions. Requires battery charger with alarm contact.

Battery Voltage Hi/Lo. LED flashes if battery or charging voltage drops below preset level. LED lights steady if battery voltage exceeds preset level.

Common Fault. LED lights when a single or multiple common faults occur.

Communication Status. Green LED lights indicating annunciator communications functional. Red LED indicates communication fault.

EPS Supplying Load. LED lights when the Emergency Power System (EPS) generator set is supplying the load (APM402, APM603, APM802, and Decision-Maker® 550, 3000, 3500, 6000, and 8000 controllers) or when transfer switch is in the emergency position (Decision-Maker® 3+ controller).

Emergency Stop. LED lights and engine stops when emergency stop is made. May require a local emergency stop switch on some Decision-Maker® 3+ controllers.

Generator Running. LED lights when generator set is in operation.

High Engine Temperature. Red LED lights if engine has shut down because of high engine coolant temperature. Yellow LED lights if engine coolant temperature approaches shutdown range. Requires warning sender on some models.

Lamp Test (Switch). Switch tests all the annunciator indicator LEDs and horn.

Low Coolant Level/Aux. LED lights when engine coolant level is below acceptable range on radiator-mounted generator sets only. When used with a Decision-Maker® 3+ controller, the LED indicates low coolant level or an auxiliary fault shutdown. Requires user-supplied low coolant level switch on remote radiator models.

Low Coolant Temperature. LED lights if optional engine block heater malfunctions and/or engine coolant temperature is too low. Requires prealarm sender on some models.

Low Cranking Voltage. LED lights if battery voltage drops below preset level during engine cranking.

Low Fuel (Level or Pressure). LED lights if fuel level in tank approaches empty with diesel models or fuel pressure is low on gas models. Requires customer-supplied switch.

Low Oil Pressure. Red LED lights if generator set shuts down because of insufficient oil pressure. Yellow LED lights if engine oil pressure approaches shutdown range. Requires warning sender on some models.

Not In Auto. LED lights when the generator set controller is not set to automatic mode.

Overcrank. LED lights and cranking stops if engine does not start in either continuous cranking or cyclic cranking modes.

Overspeed. LED lights if generator set shuts down because of overspeed condition.

System Ready. Green LED lights when generator set master switch is in AUTO position and the system senses no faults. Red LED indicates system fault.

User-Defined Digital Inputs #1- #5. Monitors five digital auxiliary inputs (can be configured as warnings or shutdowns). User-defined digital inputs are selected via the RSA III master for local or remote (generator set or ATS). The user-defined digital input can be assigned via PC using SiteTech™ setup software.

KOHLER CO., Kohler, Wisconsin 53044 USA
Phone 920-457-4441, Fax 920-459-1646
For the nearest sales and service outlet in the US and Canada, phone 1-800-544-2444
KOHLERPower.com

Accessories

- ❑ Power source adapter kit 120/208 VAC, 50/60 Hz.
- ❑ Modbus®/Ethernet converter GM41143-KP2 for serial to Ethernet communication.
- ❑ Communication module GM32644-KA1 or GM32644-KP1 is required with Decision-Maker® 3+ controllers.

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rehlko

Alternator Data

TECHNICAL INFORMATION BULLETIN

Alternator Data Sheet

Alternator Model: 5M4027 12-MAR-19

Kilowatt ratings at	1800 RPM	60 Hertz		12 Leads	
kW (kVA)	3 Phase	0.8 Power Factor		Dripproof or Open Enclosure	
	CONTINUOUS ①②			STANDBY ①②	
Voltage*	NEMA B / 80 °C	NEMA F / 105 °C	NEMA H / 125 °C	NEMA F / 130 °C	NEMA H / 150 °C
240/480	440 (550)	500 (625)	515 (644)	515 (644)	560 (700)
220/440	410 (513)	460 (575)	485 (606)	500 (625)	520 (650)
208/416	400 (500)	445 (556)	470 (588)	475 (594)	505 (631)
200/400	382 (478)	427 (534)	441 (551)	443 (554)	459 (574)
190/380	360 (450)	405 (506)	405 (506)	405 (506)	405 (506)

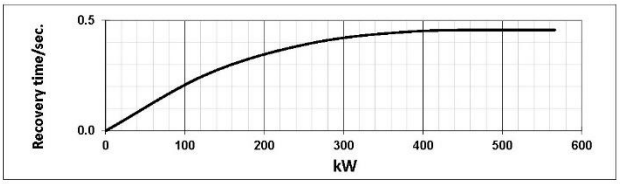
① Rise by resistance method, Mil-Std-705, Method 680.1b. ② Machine rated for Max Ambient of 40 °C, Max Altitude 3300 ft

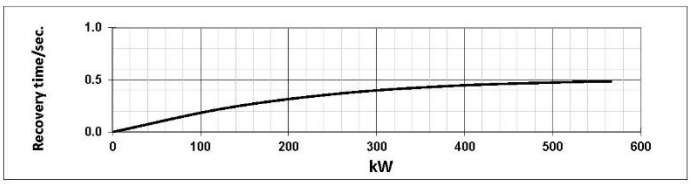
Submittal Data: 480 Volts*, 515 kW, 644 kVA, 0.8 P.F., 1800 RPM, 60 Hz, 3 Phase **High Wye CONNECTION**

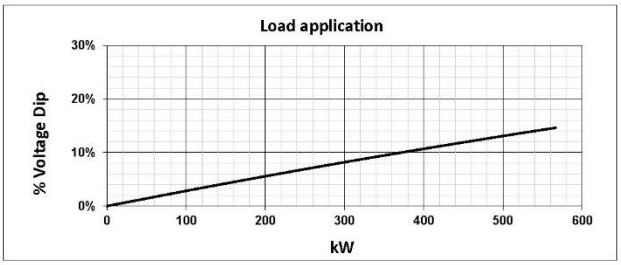
Mil-Std-705B Method	Description	Value	Units	Mil-Std-705C Method	Description	Value	Units
301.1b	Insulation Resistance	>1.5 Meg	Ohms	505.3b	Overspeed	2250	RPM
302.1a	High Potential Test			507.1c	Phase Sequence CCW-ODE	ABC	
	Main Stator	1960	Volts	508.1c	Voltage Balance, L-L or L-N	0.2%	
	Main Rotor	1500	Volts	601.4a	L-L Harmonic Max - Total (Distortion Factor)	5.0%	
	Exciter Stator	1500	Volts				
	Exciter Rotor	1500	Volts	601.4a	L-L Harmonic Max - Single	3.0%	
	PMG Stator	1500	Volts	601.1c	Deviation Factor	5.0%	
401.1a	Stator Resistance, Line to Line High Wye Connection	0.01260	Ohms	---	TIF (1960 Weightings)	<50	
				---	THF (IEC, BS & NEMA Weightings)	<2%	
	Rotor Resistance	0.398	Ohms				
	Exciter Stator	23	Ohms				
	Exciter Rotor	0.045	Ohms				
	PMG Stator	2.1	Ohms				
410.1a	No Load Exciter Field Amps at 480 Volts Line to Line	0.7	A DC	**Additional Prototype Mil-Std Methods are Available on Request.**			
420.1a	Short Circuit Ratio	0.591					
421.1a	Xd Synchronous Reactance	2.670	PU	--	Generator Frame	572	
		0.956	Ohms	--	Type	MagnaMax	
422.1a	X2 Negative Sequence React.	0.226	PU	--	Insulation	Class H	
		0.081	Ohms	--	Coupling - Single Bearing	Flexible	
423.1a	X0 Zero Sequence Reactance	0.056	PU	--	Amortisseur Windings	Full	
		0.020	Ohms	--	Excitation	Ext. Voltage Regulated, Brushless	
425.1a	X'd Transient Reactance	0.162	PU	--	Voltage Regulator	DVR2000E+	
		0.058	Ohms	--	Voltage Regulation	0.25%	
426.1a	X''d Subtransient Reactance	0.137	PU				
		0.049	Ohms				
--	Xq Quadrature Synchronous Reactance	1.100	PU	--	Cooling Air Volume	1520	CFM
		0.394	Ohms	--	Heat rejection rate	2033	Btu's/min
427.1a	T'd Transient Short Circuit Time Constant	0.114	Sec	--	Full load current	774.3	Amps
				--	Minimum Input hp required	738.3	HP
428.1a	T''d Subtransient Short Circuit Time Constant	0.01	Sec	--	Full load torque	2153	Lb-ft
				--	Efficiency at rated load :	93.5%	
430.1a	T'do Transient Open Circuit Time Constant	1.68	Sec				
432.1a	Ta Short Circuit Time Constant of Armature Winding	0.017	Sec	--	Weight	2840	lbs

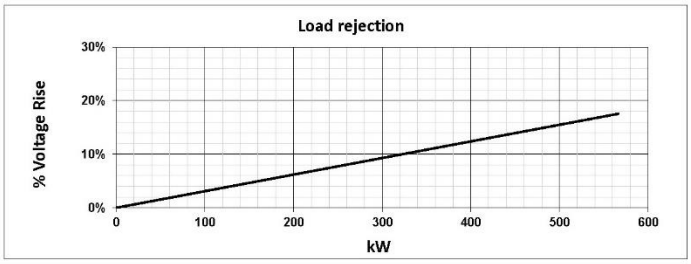
* Voltage refers to wye (star) connection, unless otherwise specified.

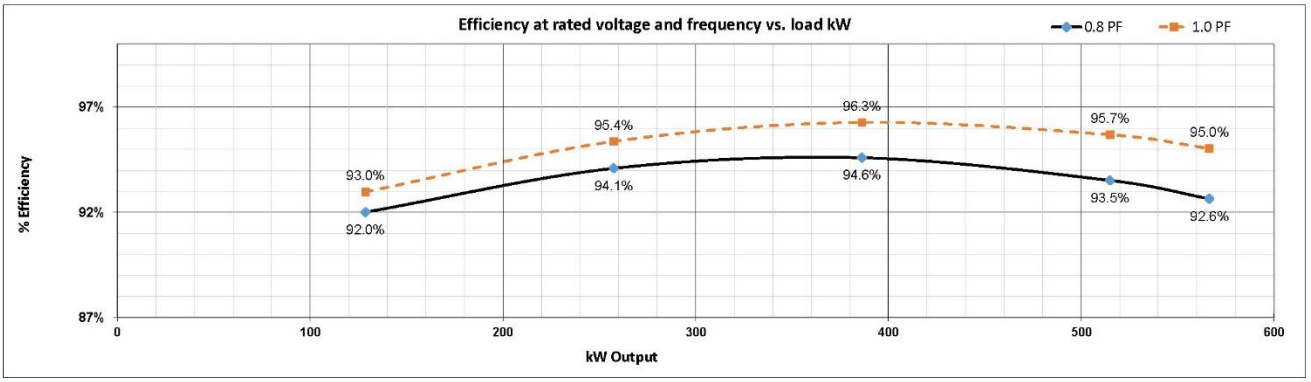
TYPICAL DYNAMIC CHARACTERISTICS

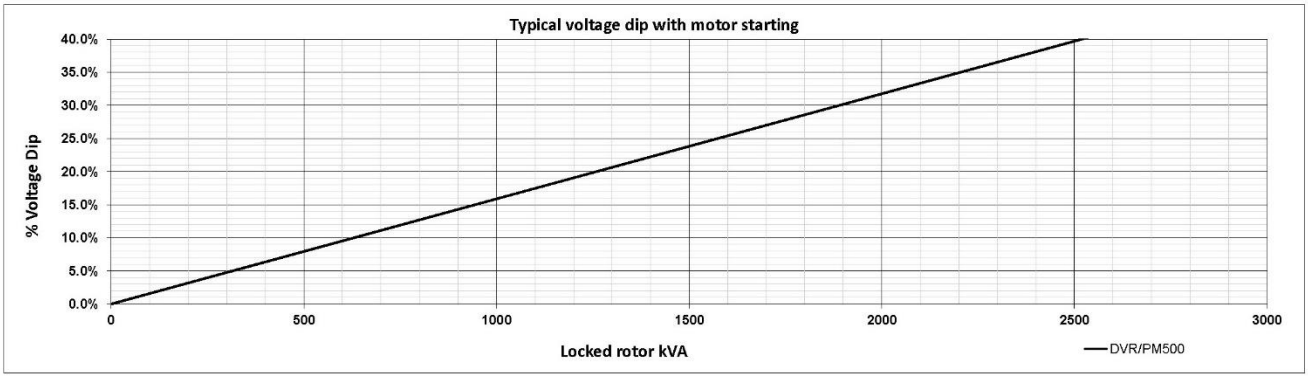








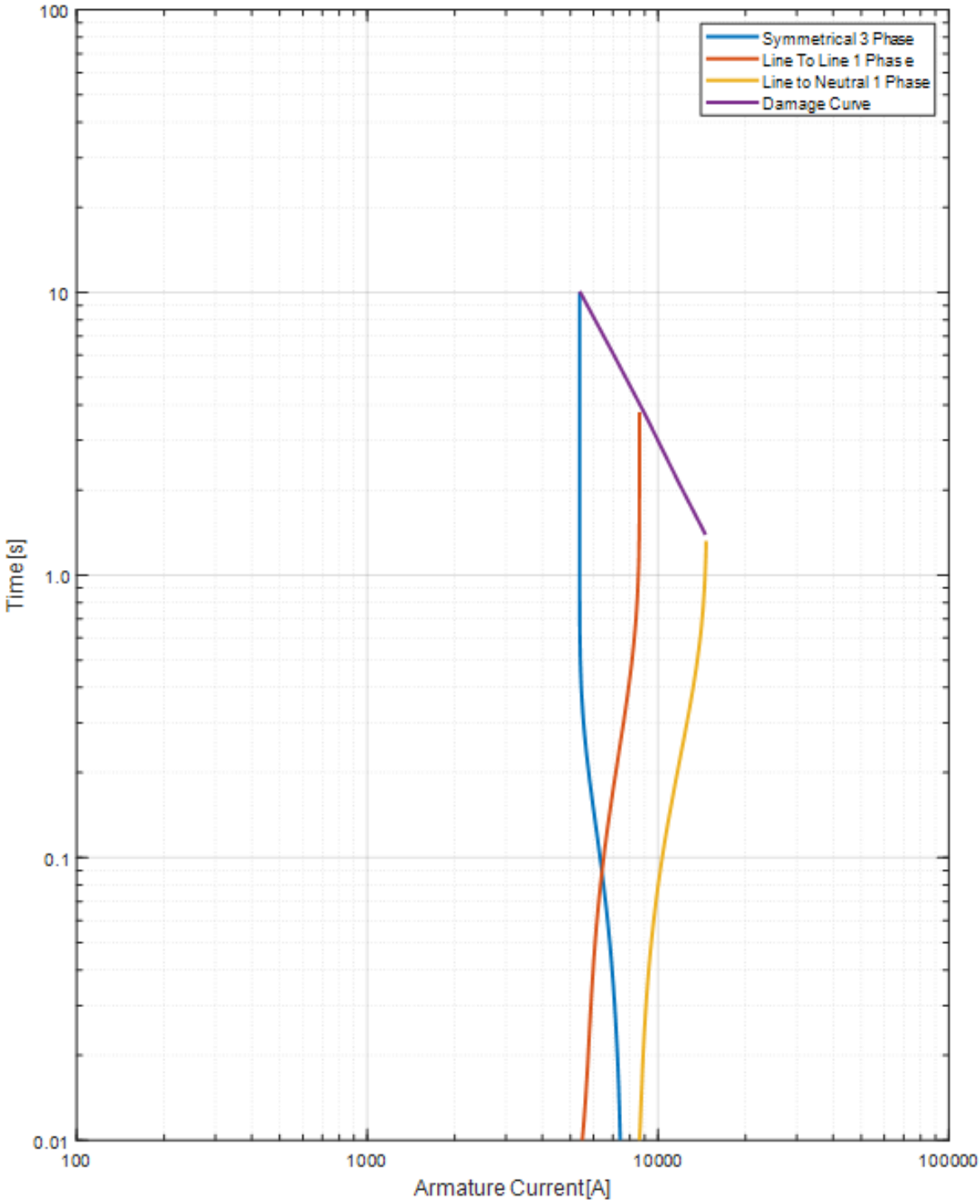




Voltage refers to wye (star) connection, unless otherwise specified..

SHORT CIRCUIT DECREMENT CURVE
60 Hz, Low Wye or Delta Connection

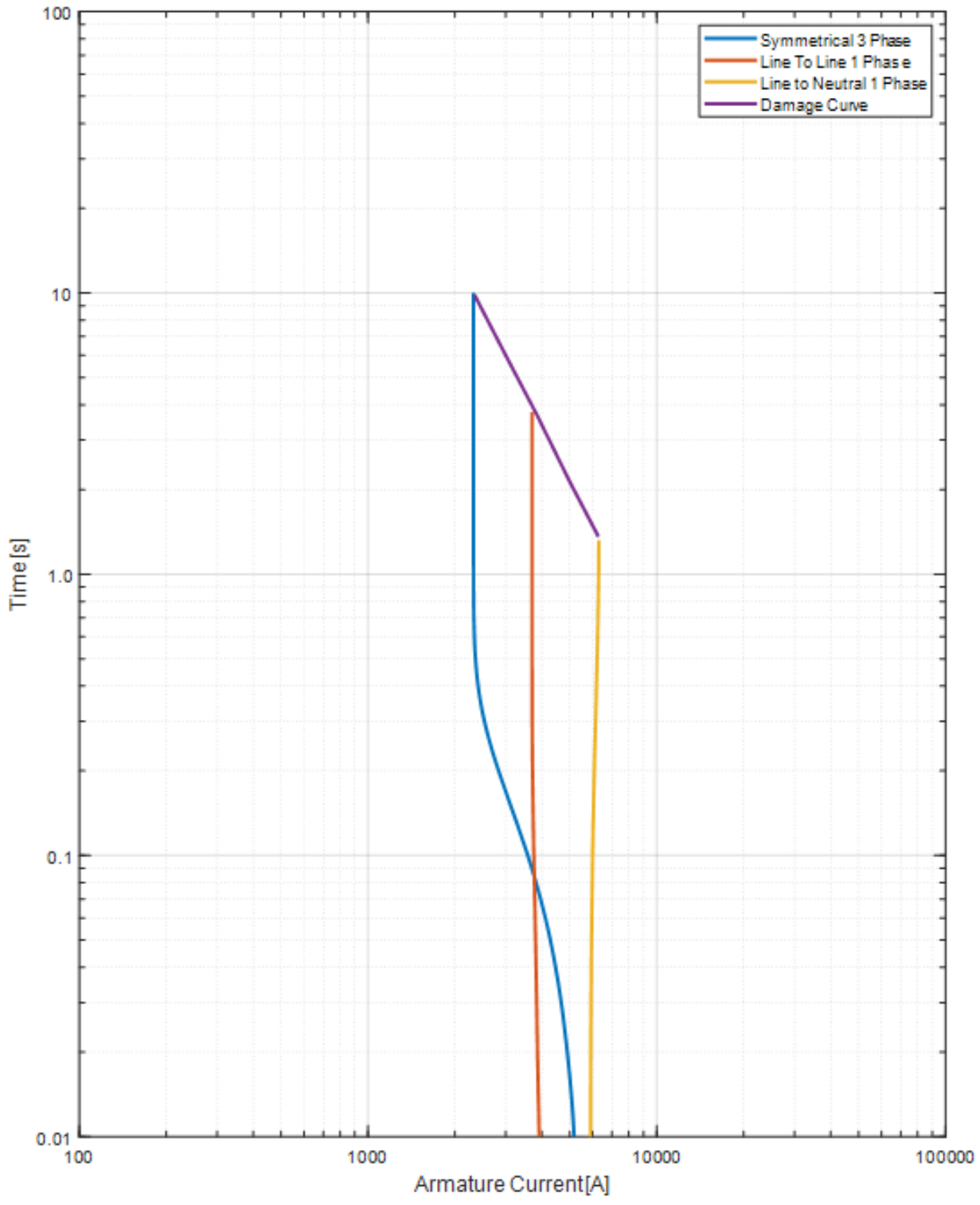
Full Load Current: 1788 Amps **Steady State S.C. Current:** 5364 Amps **Max. 3 ph. Symm. S.C. Current:** 9770 Amps



NOTE: Symmetrical component values are shown, maximum asymmetrical values are 1.732 times the symmetrical values.

SHORT CIRCUIT DECREMENT CURVE
60 Hz, High Wye Connection

Full Load Current: 775 Amps **Steady State S.C. Current:** 2325 Amps **Max. 3 ph. Symm. S.C. Current:** 5657 Amps



NOTE: Symmetrical component values are shown, maximum asymmetrical values are 1.732 times the symmetrical values.

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Cooling Data

TECHNICAL INFORMATION BULLETIN

Generator Set Cooling System Data Sheet

	50°C Ambient Temperature Cooling System								
350REOZJD 60Hz (Standby Duty)	**Total external restriction on open unit[7]**	Pa *(in.H_2O)*	0 (0)	125 (0.5)	187 (0.75)	250 (1)	312 (1.25)	375 (1.5)	**Enclosed Units**
	Maximum allowable ambient temperature	°C *(°F)*	52 (126)	49 (120)	47 (117)	45 (113)	44 (111)	NA (NA)	47 (117)
	Cooling system airflow	m^3/min *(ft^3/min)*	435 (15400)	410 (14500)	395 (13900)	380 (13400)	365 (12900)	NA (NA)	NA (NA)

1. The data shown above is the anticipated cooling performance for a typical generator set when following proper installation techniques.
2. Cooling performance is based on operation at 100 m (328 ft.) above sea level. For elevations higher than 100 m (328 ft.), typical cooling performance derate is 1°C (1.8°F) per 250 m (820 ft.).
3. For high ambient conditions, check TIB-101 for the generator set power output derate schedule.
4. Incorrect installation, improper operation, fouling of the cooling system, and other variable conditions may reduce cooling performance.
5. Kohler manufactured sound enclosed models are rated in free air with no additional restriction. Consult factory for other variants or conditions such as additional ducting or hoods.
6. Performance is based on a 50/50 water and ethylene glycol mixture.
7. Total external restriction includes restriction upstream and downstream of the unit – any ducting supplying intake air to the unit and any ducting for the discharge.

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Sound Data

TECHNICAL INFORMATION BULLETIN

Generator Set Sound Data Sheet

			Sound Pressure Data in dB(A)				
Generator Set Model	**Hz**	**Load**	**Raw Exhaust**	**Open Unit, Isolated Exhaust**	**Weather Enclosure**	**Level 1 Sound Enclosure**	**Level 2 Sound Enclosure**
350REOZJD	60	100% Load	119.5	93.2	91.3	81.7	74.2
		No Load	102.6	90.3	88.4	76.8	70.9

Note: Sound pressure data is the logarithmic average of eight perimeter measurement points at a distance of 7 m (23 ft.), except Raw Exhaust data which is a single measurement point at 1 m (3.3 ft.) from the mouth of a straight pipe exhaust.

350REOZJD		**60 Hz**		**Sound Pressure Levels, dB(A)**								
Load	Distance, m (ft)	Enclosure	Measurement Clock Position	Octave Band Center Frequency (Hz)								Overall Level
				63	125	250	500	1000	2000	4000	8000	
100% Load	7 (23)	Level 2 Sound	3:00	54.7	65.9	64.2	64.9	67.6	62.8	53.4	46.6	72.5
			1:30	54.8	68.0	67.1	66.9	68.6	63.8	55.4	48.3	74.3
			12:00-Engine	55.8	65.1	67.0	68.7	67.2	66.2	60.3	51.0	74.3
			10:30	53.1	67.2	66.1	68.3	68.4	66.2	58.4	50.2	74.5
			9:00	54.4	68.2	68.3	66.2	66.5	65.9	56.3	49.0	74.3
			7:30	55.2	70.6	67.1	65.4	66.9	65.8	54.5	51.5	74.7
			6:00-Alternator	58.4	68.2	69.5	68.5	64.2	65.9	58.5	55.2	74.9
			4:30	53.8	69.5	65.2	63.9	67.7	65.0	52.0	49.4	73.8
			8-pos. log avg.	55.3	68.2	67.1	66.9	67.3	65.3	56.9	50.9	74.2

350REOZJD		**60 Hz**		**Sound Pressure Levels, dB(A)**								
Load	Distance, m (ft)	Enclosure	Measurement Clock Position	Octave Band Center Frequency (Hz)								Overall Level
				63	125	250	500	1000	2000	4000	8000	
No Load	7 (23)	Level 2 Sound	3:00	52.5	61.6	63.0	62.3	63.5	56.8	47.8	40.9	69.1
			1:30	50.9	63.5	64.8	62.6	66.3	58.0	48.1	41.4	70.8
			12:00-Engine	52.2	62.4	65.6	62.2	64.2	57.6	48.8	39.3	70.2
			10:30	50.8	63.4	63.3	63.2	63.8	57.8	47.9	40.7	69.8
			9:00	53.2	62.3	67.6	61.2	62.1	59.1	48.6	41.4	70.6
			7:30	52.9	63.4	67.5	60.9	63.6	61.0	49.3	43.3	71.1
			6:00-Alternator	56.8	66.0	70.5	64.7	63.6	60.8	54.7	49.6	73.5
			4:30	52.9	64.8	64.8	60.8	64.2	59.9	47.1	42.1	70.4
			8-pos. log avg.	53.2	63.6	66.6	62.4	64.1	59.1	49.8	43.7	70.9

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Exhaust System Data

TECHNICAL INFORMATION BULLETIN

Enclosed Generator Set Exhaust System Data Sheet

Model	Enclosure Type	Consumed Back Pressure (in H20)	Consumed Back Pressure (in Hg)	Back Pressure Limit(s) (in H20)	Back Pressure Limit(s) (in Hg)	Flex Exhaust Tube(s)	Silencer	Drawing
350REOZJD	All Weather & Sound Level 1 (SL1) Enclosures	24.0	1.8	16-30	1.2-2.2	GM110933	GM110935	ADV-8189
	All Sound Level 2 (SL2) Enclosures	18.5	1.4	16-30	1.2-2.2	GM110330 Flex GM110329 Cross Tube	GM109791 & GM109792	ADV-8189

1. Total system exhaust back pressure is applicable to generator sets equipped with Kohler standard enclosure packages.
2. For generator sets with multiple exhaust outlets, total system exhaust back pressure value represents each outlet.
3. The total system back pressure should not exceed the manufacturer's recommended limit.
4. The total back pressure only includes exhaust components installed inside the Kohler enclosure. Customers must calculate any additional back pressure caused by piping, extensions, or components added after the silencer outlet. Refer to the installation manual for additional details.

TECHNICAL INFORMATION BULLETIN

Enclosed Generator Set Exhaust System Data Sheet

Model	Enclosure Type	Consumed Back Pressure (in H20)	Consumed Back Pressure (in Hg)	Back Pressure Limit(s) (in H20)	Back Pressure Limit(s) (in Hg)	Flex Exhaust Tube(s)	Silencer	Drawing
350REOZJD	All Weather & Sound Level 1 (SL1) Enclosures	24.0	1.8	16-30	1.2-2.2	GM110933	GM110935	ADV-8189
	All Sound Level 2 (SL2) Enclosures	18.5	1.4	16-30	1.2-2.2	GM110330 Flex GM110329 Cross Tube	GM109791 & GM109792	ADV-8189

1. Total system exhaust back pressure is applicable to generator sets equipped with Kohler standard enclosure packages.
2. For generator sets with multiple exhaust outlets, total system exhaust back pressure value represents each outlet.
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4. The total back pressure only includes exhaust components installed inside the Kohler enclosure. Customers must calculate any additional back pressure caused by piping, extensions, or components added after the silencer outlet. Refer to the installation manual for additional details.

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Emissions Data

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350REOZJD

60 HZ. DIESEL INDUSTRIAL GENERATOR SET
EMISSION DATA SHEET

ENGINE INFORMATION

Model:	John Deere, 6135HFG84B	Bore:	132mm (5.2 in.)
Nameplate BHP @ 1800 RPM:	538	Stroke:	165mm (6.5 in.)
Type:	4-Cycle, 6 Cylinder, Inline	Displacement:	13.5 L (824 cu. in.)
Aspiration:	Turbocharged, Charge Air-Cooled		
Compression Ratio	16.0:1	EPA Family:	SJDXL13.5146
		EPA Certificate:	SJDXL13.5146-008

Table 1

PERFORMANCE DATA:	1/4 Standby	1/2 Standby	3/4 Standby	Full Standby
Engine bkW @ Stated Load	100	201	301	401
Fuel Consumption (g/kWh)	249	239	226	212
Exhaust Gas Flow (m^3/min)				68
Exhaust Temperature (°C)				547

Table 2

EXHAUST EMISSION DATA:	EPA D2 Cycle 5-mode weighted
HC (Total Unburned Hydrocarbons)	0.18
NOx (Oxides of Nitrogen as NO2)	3.56
CO (Carbon Monoxide)	1.5
PM (Particulate Matter)	0.12

Values are in g/kWh unless otherwise noted

TEST METHODS AND CONDITIONS

The emission data listed is measured from a laboratory test engine according to the test procedures of 40 CFR 89 or 40 CFR 1039, as applicable. The test engine is intended to represent nominal production hardware, and there is no guarantee that every production engine will have identical test results. The family parent data represents multiple ratings and this data may have been collected at a different engine speed and load. Emission results may vary due to engine manufacturing tolerances, engine operating conditions, fuels used, alternate test methods, or other conditions.

Data and specifications subject to change without notice.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
2025 MODEL YEAR
CERTIFICATE OF CONFORMITY
WITH THE CLEAN AIR ACT

OFFICE OF TRANSPORTATION AND AIR QUALITY
ANN ARBOR, MICHIGAN 48105

Certificate Issued To: **Deere & Company**
(U.S. Manufacturer or Importer)

Certificate Number: SJDXL13.5146-008

Effective Date: 06/17/2024

Expiration Date: 12/31/2025

Byron J. Bunker, Division Director
Compliance Division

Issue Date: 06/17/2024

Revision Date: N/A

Model Year: 2025
Manufacturer Type: Original Engine Manufacturer
Engine Family: SJDXL13.5146

Mobile/Stationary Indicator: Stationary
Emissions Power Category: 450<=kW<=560
Fuel Type: Diesel
After Treatment Devices: No After Treatment Devices Installed
Non-after Treatment Devices: Electronic Control, Smoke Puff Limiter, Engine Design Modification, Non-standard Non-After Treatment Device Installed

Pursuant to Section 111 and Section 213 of the Clean Air Act (42 U.S.C. sections 7411 and 7547) and 40 CFR Part 60, and subject to the terms and conditions prescribed in those provisions, this certificate of conformity is hereby issued with respect to the test engines which have been found to conform to applicable requirements and which represent the following engines, by engine family, more fully described in the documentation required by 40 CFR Part 60 and produced in the stated model year.

This certificate of conformity covers only those new compression-ignition engines which conform in all material respects to the design specifications that applied to those engines described in the documentation required by 40 CFR Part 60 and which are produced during the model year stated on this certificate of the said manufacturer, as defined in 40 CFR Part 60.

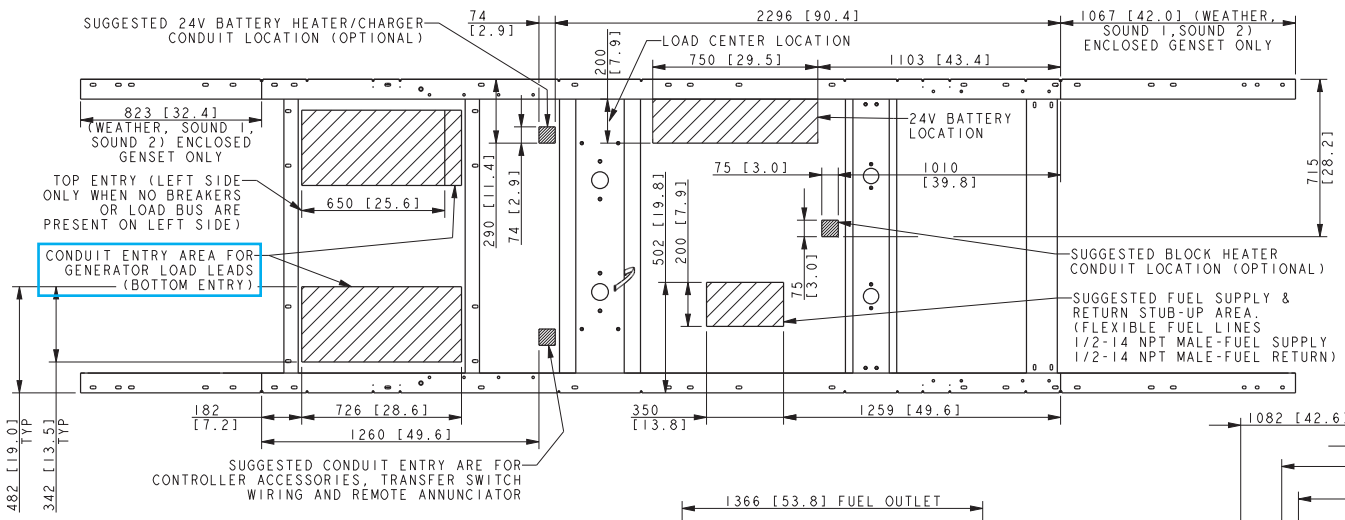
It is a term of this certificate that the manufacturer shall consent to all inspections described in 40 CFR 1068 and authorized in a warrant or court order. Failure to comply with the requirements of such a warrant or court order may lead to revocation or suspension of this certificate for reasons specified in 40 CFR Part 60. It is also a term of this certificate that this certificate may be revoked or suspended or rendered void *ab initio* for other reasons specified in 40 CFR Part 60.

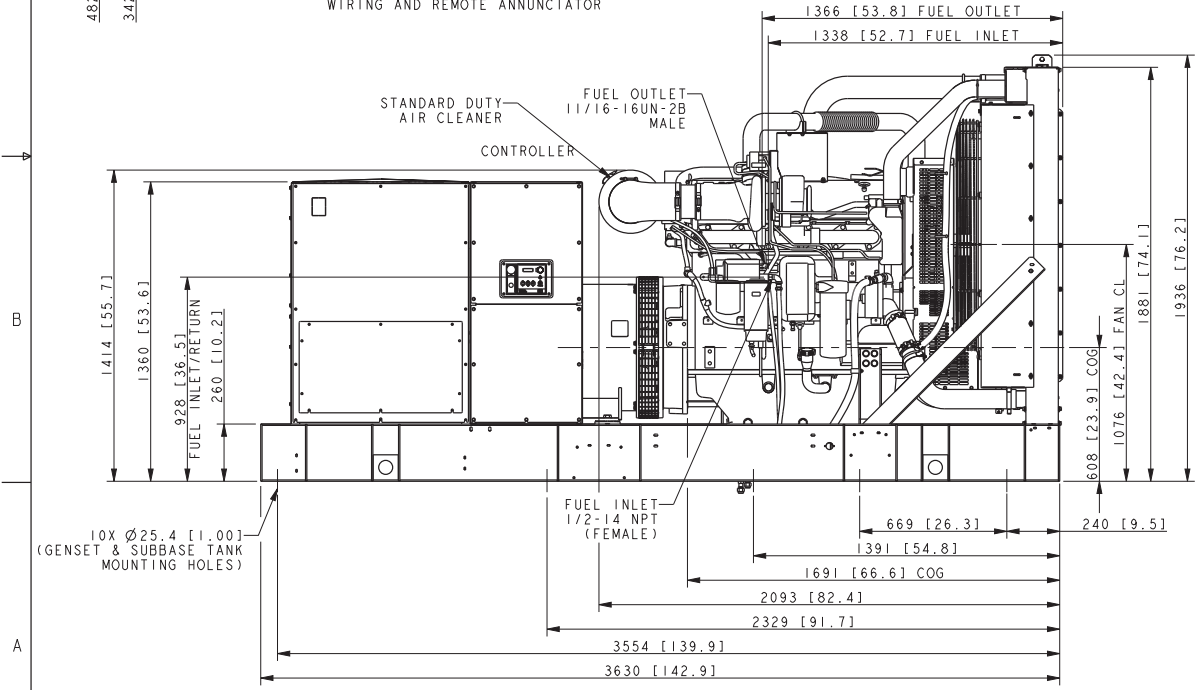
This certificate does not cover engines sold, offered for sale, or introduced, or delivered for introduction, into commerce in the U.S. prior to the effective date of the certificate.

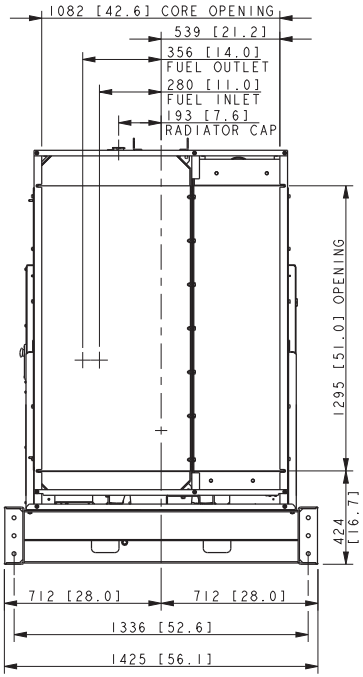
The actual engine power may lie outside the limits of the Emissions Power Category shown above. See the certificate application for details.

rehlko

Dimensional Drawings







INSTALLATION NOTE
IF SUBBASE FUEL TANK AND/OR ENCLOSURE IS USED. REFER TO SUBBASE FUEL TANK/ENCLOSUER ADV TO DETERMINE MOUNTING LOCATION.

MODEL	ALT.	GENSET WEIGHT (WET)
350	4M4019	3541 Kg [7790 LBS]
350/400	4M4021	3552 Kg [7815 LBS]
500	5M4024	3711 Kg [8180 LBS]
350/400/500	5M4027	3768 Kg [8290 LBS]
400/500	5M4028	3864 Kg [8500 LBS]
350/400	4M4266	3552 Kg [7815 LBS]
500	5M4270	3760 Kg [8290 LBS]
350/400/500	5M4272	3883 Kg [8560 LBS]

NOTES:
1) DIMENTIONS IN [] ARE ENGLISH EQUIVALENTS.

2) IF AN ENCLOSURE IS USED THE FUEL LINE MUST BE STUBBED UP FROM DIRECTLY UNDER THE UNIT. REFER TO ENCLOSURE ADV.

3) IF IBC CERTIFICATION IS REQUIRED SEE SEISMIC ADV FOR INSTALLATION INSTRUCTIONS.

350 MODEL 60HZ
4M4019, 4M4021, 5M4027, 4M4266, 5M4272
400 MODEL 60HZ
4M4021, 5M4027, 5M4028, 4M4266, 5M4272
500 MODEL 60HZ
5M4024, 5M4027, 5M4028, 5M4270, 5M4272
RECONN. & 600V ALTERNATORS
JOHN DEERE 6135HF, TIER III

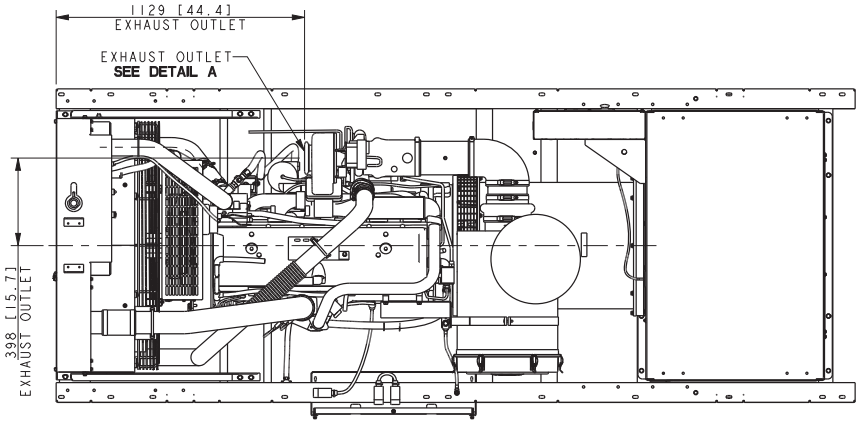
REV	DATE	ON COMPOSITE DWGS, SEE PART NO. FOR REVISION LEVEL	BY
-	05FEB2020	NEW DRAWING [CT201734]	YBY
A	29APR2021	LOAD CENTER COMMENT ADDED [CT211746]	BCC

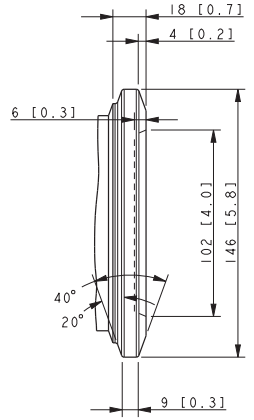
DO NOT SCALE, REFERENCE THE MODEL FOR ALL UNSPECIFIED DIMENSIONS
UNLESS OTHERWISE SPECIFIED: ALL DIMENSIONS IN MILLIMETERS GENERAL TOLERANCES: N/A

APPROVALS		DATE
DRAWN	YBY	05FEB2020
CHECKED	KJB	05FEB2020
APPROVED	DMS	05FEB2020

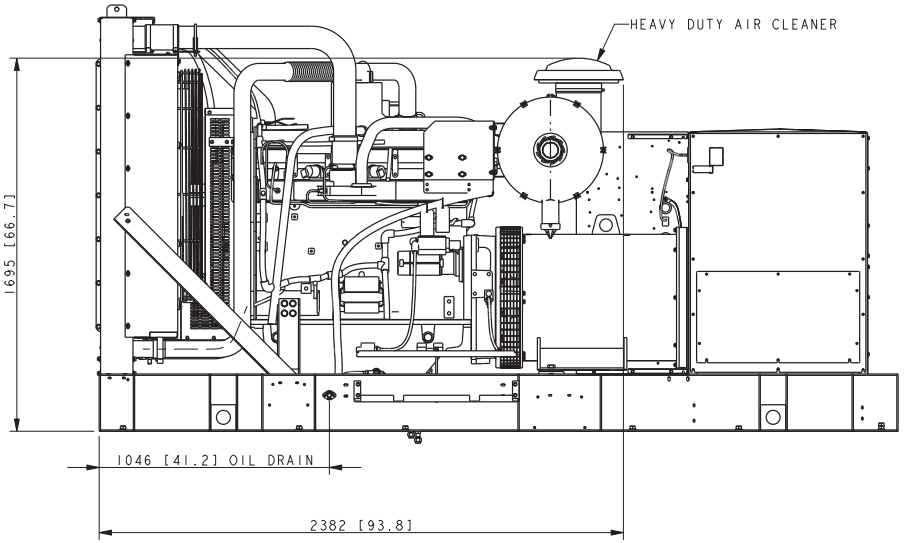
KOHLER
KOHLER, WISCONSIN 53044

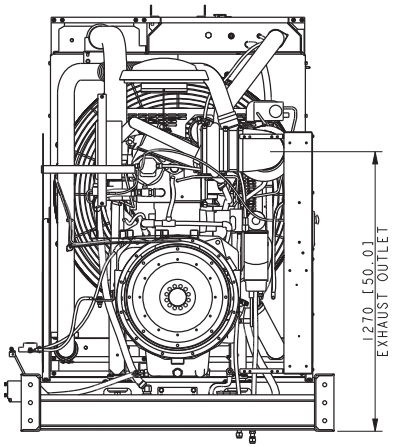
TITLE: DIMENSION PRINT, 350-500 RE0ZJC/D
SCALE: NA | CAD NO. | SHEET 1 of 2
DWG NO.: ADV-9193 | D





EXHAUST OUTLET
DETAIL A





J-BOX HIDDEN FOR CLARITY

DIMENTIONS IN [] ARE ENGLISH EQUIVALENTS.

350 MODEL 60HZ
4M4019, 4M4021, 5M4027, 4M4266, 5M4272
400 MODEL 60HZ
4M4021, 5M4027, 5M4028, 4M4266, 5M4272
500 MODEL 60HZ
5M4024, 5M4027, 5M4028, 5M4270, 5M4272
RECONN. & 600V ALTERNATORS
JOHN DEERE 6135HF, TIER III

REV	DATE	ON COMPOSITE DWGS, SEE PART NO. FOR REVISION LEVEL	BY
-	05FEB2020	NEW DRAWING [CT201734]	YBY

DO NOT SCALE, REFERENCE THE MODEL FOR ALL UNSPECIFIED DIMENSIONS

UNLESS OTHERWISE SPECIFIED:
ALL DIMENSIONS IN MILLIMETERS
GENERAL TOLERANCES: N/A

THIRD ANGLE PROJECTION

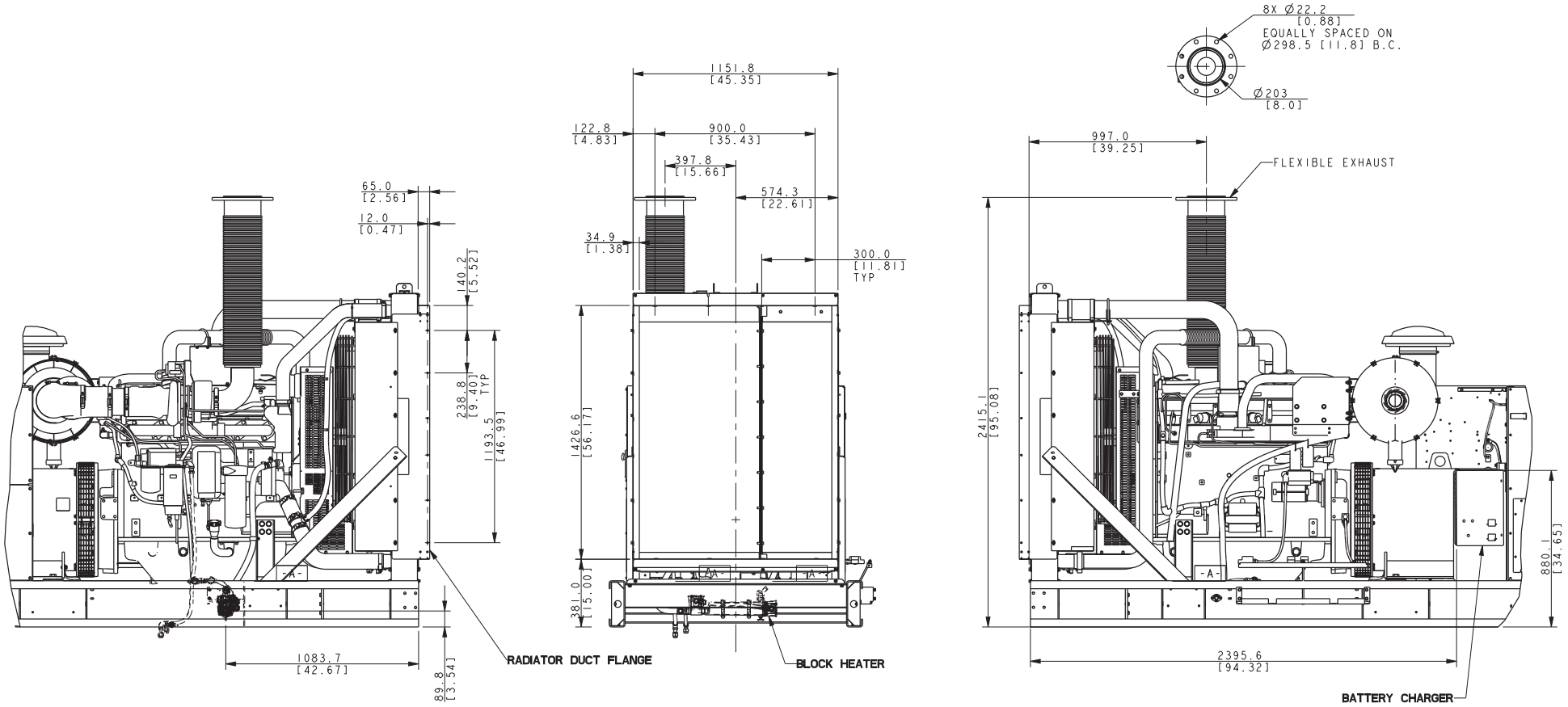
APPROVALS		DATE
DRAWN	YBY	05FEB2020
CHECKED	KJB	05FEB2020
APPROVED	DMS	05FEB2020

KOHLER.
KOHLER, WISCONSIN 53044

TITLE: DIMENSION PRINT, 350-500 RE0ZJC/D

SCALE: NA | CAD NO. | SHEET 2 of 2

DWG NO. ADV-9193 | D



350 MODEL 60 HZ
4M4019, 4M4021, 5M4027, 4M4266, 5M4272
400 MODEL 60 HZ
4M4021, 5M4027, 5M4028, 4M4266, 5M4272
500 MODEL 60 HZ
5M4024, 5M4027, 5M4028, 5M4270, 5M4272
RECONN. & 600V ALTERNATORS
JOHN DEERE 6135HF, TIER III

REV	DATE	ON COMPOSITE DWGS, SEE PART NO. FOR REVISION LEVEL	BY
-	10-22-12	NEW DRAWING [CT28128]	KNN
A	05-06-14	(D-3) 871.1 DIM. REMOVED & 997.0 DIM. ADDED [CT80055]	SSH

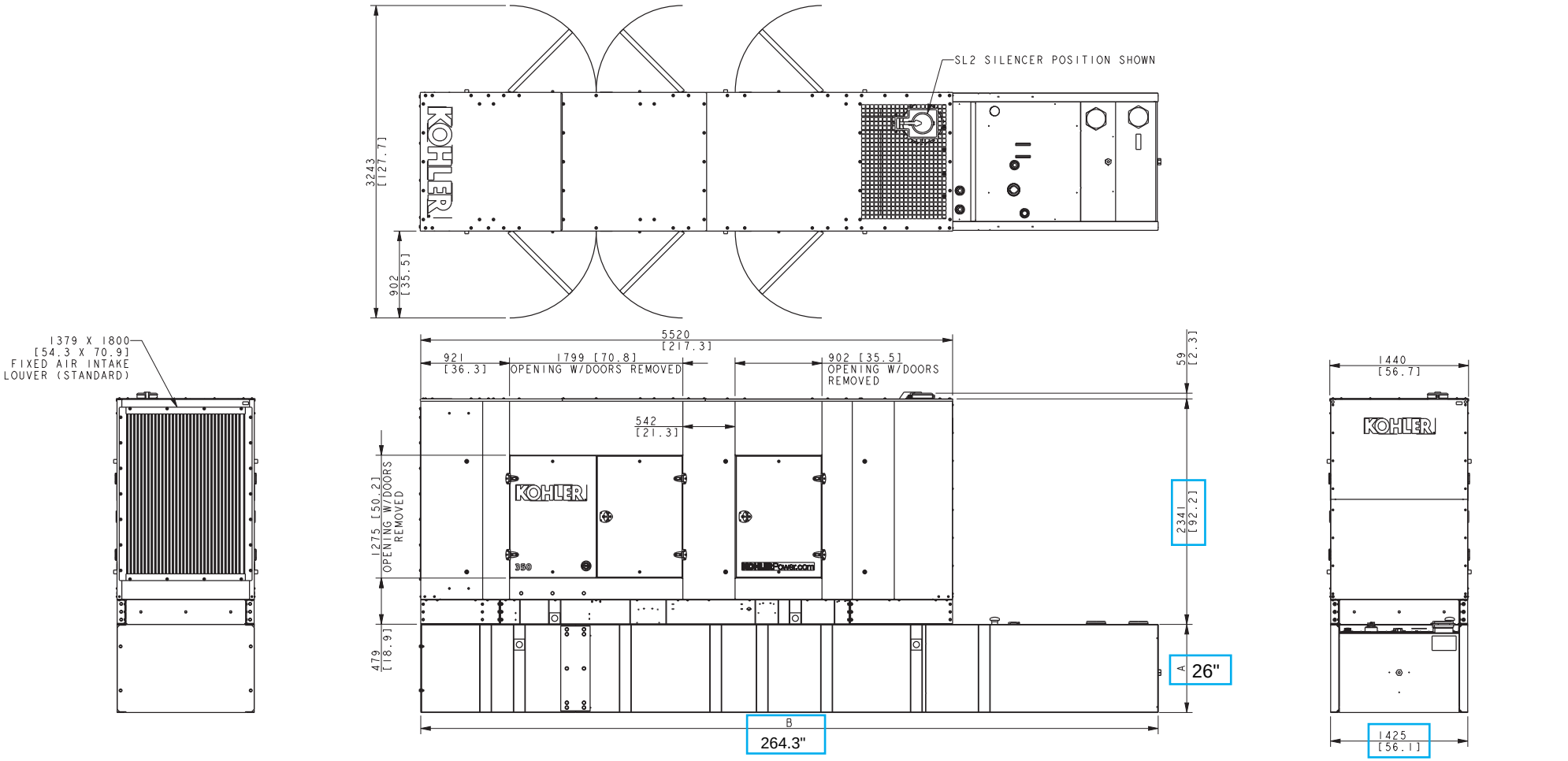
UNLESS OTHERWISE SPECIFIED:
1) DIMENSIONS ARE IN MILLIMETERS
2) TOLERANCES ARE:
X .XX ± 0.25
X.X ± 1.0
X ± 1.5
ANGLES ± 0° 30' SURFACE FINISH 125 MAX.
THIRD ANGLE PROJECTION

APPROVALS		DATE
DRAWN	KNN	10-22-12
CHECKED	DJV	10-22-12
APPROVED	JDZ	10-22-12

KOHLER CO. METRIC PRO-E
POWER SYSTEMS, KOHLER, WI 53044 U.S.A.

TITLE
DIMENSION PRINT, 350-500 REOZJB ACCESSORY

SCALE 0.09 | CAD NO. | SHEET 1 of 1
DWG NO. ADV-8527 | D



TANK INFORMATION

LITERS [GALLONS] MIN HOURS	GENSETS	DIM A MM [INCH]	DIM B MM [INCH]	TANK WEIGHT KG [LBS] (NO FUEL)
1530 [404] 12 HOURS	350-400KW	406.4 [16.0]	5760.8[226.8]	1110 [2446]
1771 [468] 12 HOURS	500KW	457.2 [18.0]	5760.8[226.8]	1158 [2554]
2930 [774] 24 HOURS	350-400KW	762.0 [30.0]	5760.8[226.8]	1401 [3089]
3384 [894] 24 HOURS	500KW	838.2 [33.0]	5760.8[226.8]	1484 [3271]
4394 [1161] 36 HOURS	350-400KW	914.4 [36.0]	6459.8[254.3]	1789 [3945]
5047 [1333] 36 HOURS	500KW	914.4 [36.0]	7094.8[279.3]	1986 [4379]
1530 [404] 12 HOURS STATE	350-400KW	381.0 [15.0]	6713.8[264.3]	1299 [2864]
1771 [468] 12 HOURS STATE	500KW	431.8 [17.0]	6713.8[264.3]	1333 [2939]
2930 [774] 24 HOURS STATE	350-400KW	660.4 [26.0]	6713.8[264.3]	1547 [3411]
3384 [894] 24 HOURS STATE	500KW	736.6 [29.0]	6713.8[264.3]	1630 [3594]
4394 [1161] 36 HOURS STATE	350-400KW	914.4 [36.0]	6891.6[271.3]	1847 [4072]
5047 [1333] 36 HOURS STATE	500KW	914.4 [36.0]	7653.6[301.3]	2094 [4616]

350-500KW REOZJC/D
STEEL & ALUMINUM ENCL.
12 - 36 HOUR TANKS

350-500 REOZJC/D	KG [LBS]
STEEL SOUND L2 ENCLOSURE WEIGHT	1000 [2205] APPROX
ALUM. SOUND L2 ENCLOSURE WEIGHT	590 [1300] APPROX
STEEL SOUND L1 ENCLOSURE WEIGHT	870 [1920] APPROX
ALUM. SOUND L1 ENCLOSURE WEIGHT	460 [1015] APPROX
STEEL WEATHER ENCLOSURE WEIGHT	850 [1875] APPROX

REV	DATE	ON COMPOSITE DWGS, SEE PART NO. FOR REVISION LEVEL	BY
-	25NOV2019	NEW DRAWING [CT200393]	YBY
A	17AUG2021	SHEET 6 & 7 [CT214138]	RNN
B	1NOV2021	SHEET 8 ADDED; SEE SHEET 7 & 8 [CT215771]	SAK
C	14DEC2021	SHEET 9 & 10 ADDED [CT216616]	MVT

DO NOT SCALE, REFERENCE THE MODEL FOR ALL UNSPECIFIED DIMENSIONS

THIRD-ANGLE PROJECTION

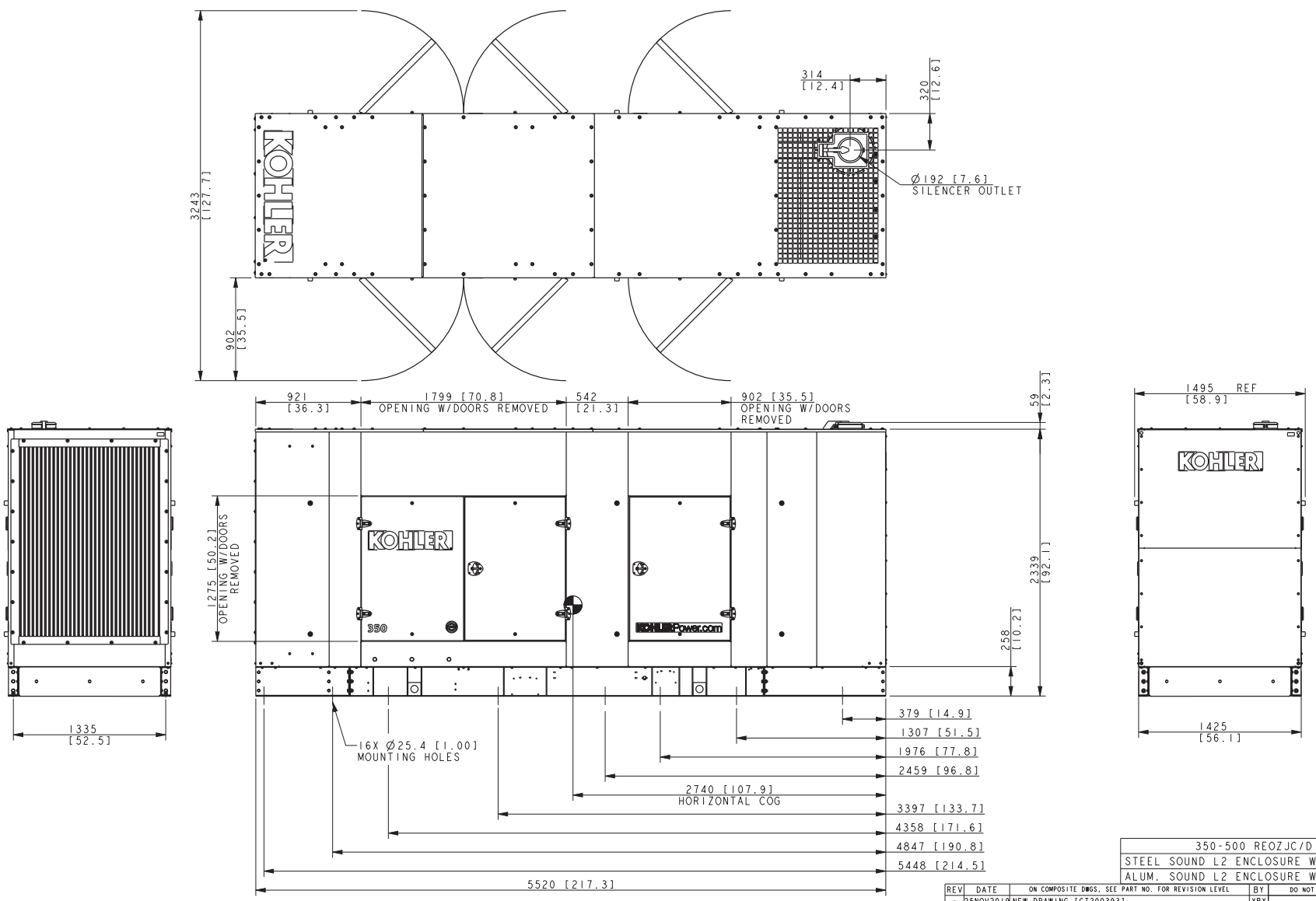
APPROVALS		DATE
DRAWN	YBY	25NOV2019
CHECKED	KJB	25NOV2019
APPROVED	DMS	25NOV2019

KOHLER
KOHLER, WISCONSIN 53044

TITLE: DIMENSION PRINT, 350-500REOZJC/D ENCL & TANKS

SCALE 0.05 | CAD NO. | SHEET of 10

DWG NO. ADV-9189 | D



350-500 REOZJC/D	KG [LBS]
STEEL SOUND L2 ENCLOSURE WEIGHT	1000 [2205] APPROX
ALUM. SOUND L2 ENCLOSURE WEIGHT	590 [1300] APPROX

REV	DATE	ON COMPOSITE DWGS, SEE PART NO. FOR REVISION LEVEL	BY
-	25NOV2019	NEW DRAWING [CT200393]	YBY
A	17AUG2021	SEE SHEET 6 & 7 [CT214138]	RNN
B	1NOV2021	SEE SHEET 7 & 8 [CT215771]	SAK
C	14DEC2021	SEE SHEET 1, 9 & 10 [CT216616]	MVT

DO NOT SCALE, REFERENCE THE MODEL FOR ALL UNSPECIFIED DIMENSIONS

350-500KW REOZJC/D
STEEL & ALUMINUM SL2 ENCL.

THIRD-ANGLE PROJECTION

APPROVALS		DATE
DRAWN	YBY	25NOV2019
CHECKED	KJB	25NOV2019
APPROVED	DMS	25NOV2019

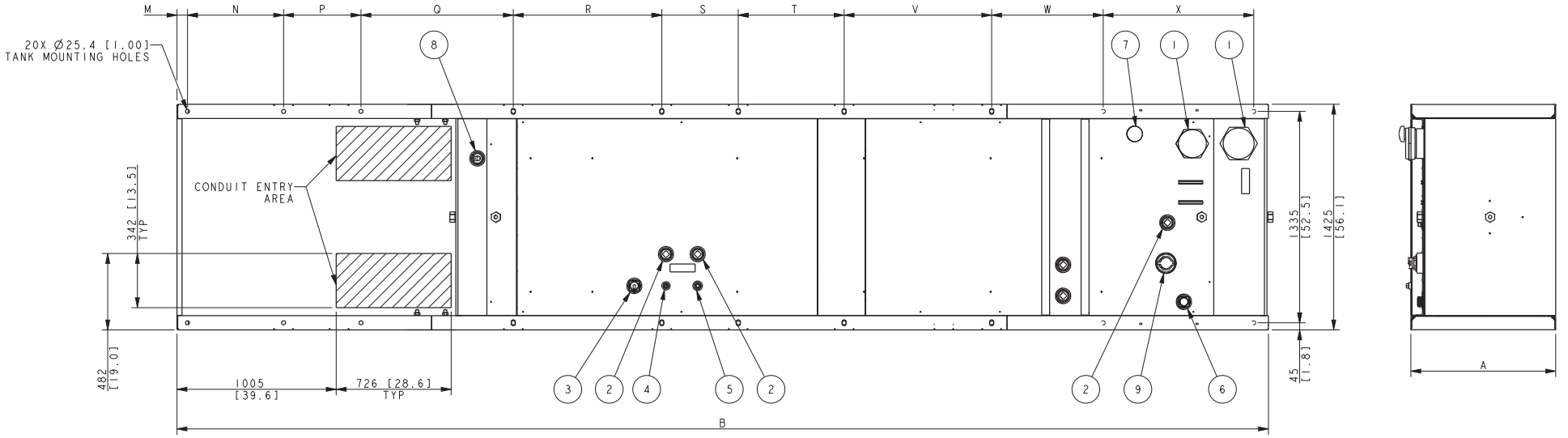
TITLE: **DIMENSION PRINT, 350-500REOZJC/D ENCL & TANKS**

SCALE 0.06 | CAD NO. | SHEET 1 of 10

DWG NO. **ADV-9189** | **D**

TANK INFORMATION

LITERS [GALLONS] MIN HOURS	GENSETS	DIM A MM [INCH]	DIM B MM [INCH]	M	N	P	Q	R	S	T	V	W	X
1530 [404] 12 HOURS	350-400KW	406.4 [16.0]	5760.8 [226.8]	66.3 [2.61]	606.8 [23.89]	488.5 [19.23]	961.7 [37.86]	937.9 [36.93]	482.6 [19.00]	668.6 [26.32]	931.5 [36.67]	931.5 [36.67]	523.9 [20.63]
1771 [468] 12 HOURS	500KW	457.2 [18.0]	5760.8 [226.8]										
2930 [774] 24 HOURS	350-400KW	762.0 [30.0]	5760.8 [226.8]										
3384 [894] 24 HOURS	500KW	838.2 [33.0]	5760.8 [226.8]										
4394 [1161] 36 HOURS	350-400KW	914.4 [36.0]	6459.8 [254.3]									574.6 [22.62]	648.3 [25.52]
5047 [1333] 36 HOURS	500KW	914.4 [36.0]	7094.8 [279.3]									577.0 [22.72]	576.6 [22.70]
1530 [404] 12 HOURS STATE	350-400KW	381.0 [15.0]	6713.8 [264.3]									664.2 [26.15]	812.7 [32.00]
1771 [468] 12 HOURS STATE	500KW	431.8 [17.0]	6713.8 [264.3]										
2930 [774] 24 HOURS STATE	350-400KW	660.4 [26.0]	6713.8 [264.3]									704.3 [27.73]	772.6 [30.42]
3384 [894] 24 HOURS STATE	500KW	736.6 [29.0]	6713.8 [264.3]										
4394 [1161] 36 HOURS STATE	350-400KW	914.4 [36.0]	6891.6 [271.3]										950.4 [37.42]
5047 [1333] 36 HOURS STATE	500KW	914.4 [36.0]	7653.6 [301.3]									891.3 [35.09]	821.1 [32.33]



4396 [1161 GAL.] 36 HOUR STATE TANK SHOWN.

ITEM	DESCRIPTION
9	FILL CAP, 2" LOCKABLE W/PIPE RISER
8	SWITCH, FUEL IN BASIN TOP MTD, 2"
7	VENT, NORMAL
6	GAUGE, FUEL LEVEL, DIRECT READ
5	RETURN, FUEL (3/4" NPT)
4	SUPPLY, FUEL (1/2" NPT)
3	GAUGE, FUEL LEVEL, W/ SENDER
2	PLUG, PIPE (2" NPT)
1	CAP, EMERGENCY VENT

REV	DATE	ON COMPOSITE DWGS, SEE PART NO. FOR REVISION LEVEL	BY
-	25NOV2019	NEW DRAWING [CT200393]	YBY
A	17AUG2021	(C-8) 20X Ø25.4 [1.00] ADDED, SEE SHEET 7	
		[CT214138]	RNN
B	1NOV2021	SEE SHEET 7 & 8 [CT215771]	SAK
C	14DEC2021	SEE SHEET 1, 9 & 10 [CT216616]	MVT

DO NOT SCALE, REFERENCE THE MODEL FOR ALL UNSPECIFIED DIMENSIONS

THIRD-ANGLE PROJECTION

APPROVALS		DATE
DRAWN	YBY	25NOV2019
CHECKED	KJB	25NOV2019
APPROVED	DMS	25NOV2019

TITLE: DIMENSION PRINT, 350-500REOZJC/D ENCL & TANKS

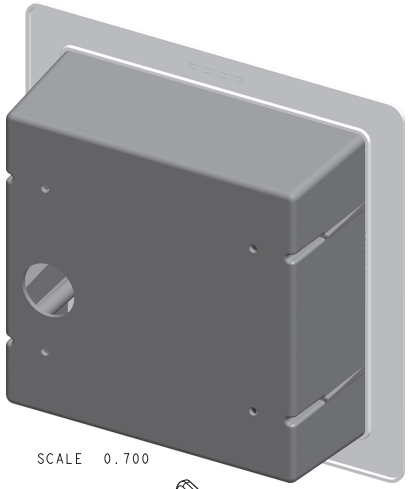
SCALE 0.08 | CAD NO. | SHEET 6 of 10

DWG NO. ADV-9189 | D

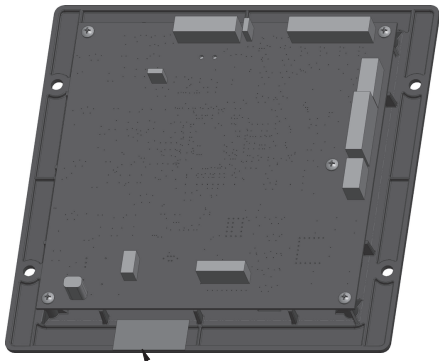
350-500KW REOZJC/D ENCLOSED 12 - 36 HOUR TANKS

PART NO.	REV		ITEM 1	ITEM 2	ITEM 3	COMMENTS
GM85123-1	C		GM85127	GM85129	GM86126-1	MULTIPLE ATS
GM85123-2	C		GM85131	GM85129	GM86126-2	SINGLE ATS
GM85123-3	C		GM85132	-	GM86126-3	ANNUNCIATOR ONLY
GM85123-4	C		GM85133	-	GM86126-3	SDMO - ANNUNCIATOR ONLY

SCALE 0.700

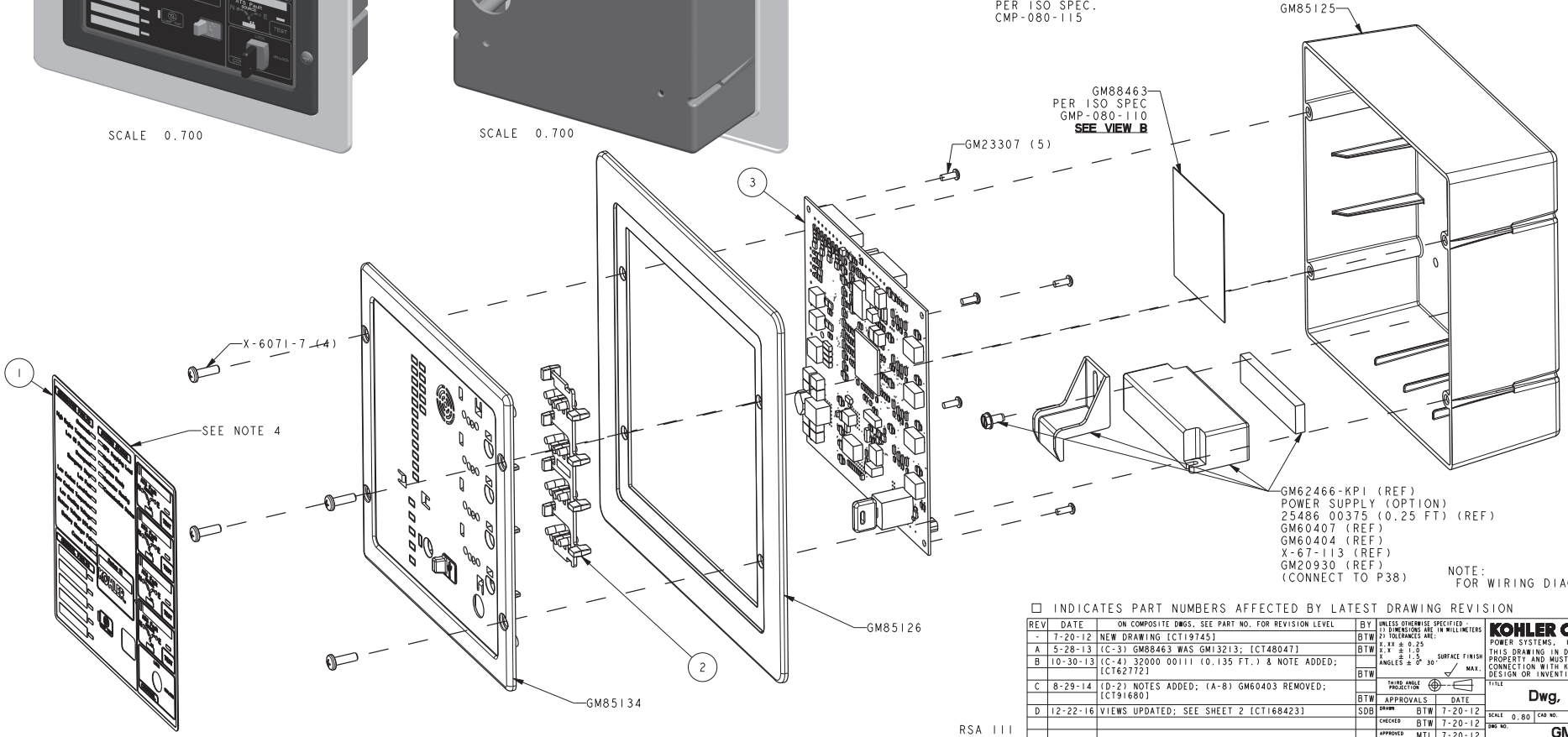


SCALE 0.700



32000 00111 (0.135 FT.)
PER ISO SPEC.
CMP-080-115

NOTES:
1. FUNCTIONALLY TEST ACCORDING TO ISO DOCUMENT ETF-WI-001, PER SPECIFICATION ETF-TD-003.
2. ASSEMBLE PCBA TO BACK OF BEZEL USING FIXTURE JT-0001.
3. TORQUE ALL SCREWS TO 7-10 in lbs.
4. PEEL BACKING OFF FACE PLATE AND APPLY TO BEZEL. APPLY EVEN PRESSURE TO ENTIRE SURFACE TO ENSURE COMPLETE ADHESION.



NOTE:
FOR WIRING DIAGRAM, SEE GM62554.

☐ INDICATES PART NUMBERS AFFECTED BY LATEST DRAWING REVISION

REV	DATE	ON COMPOSITE DWGS, SEE PART NO. FOR REVISION LEVEL	BY
-	7-20-12	NEW DRAWING [CT19745]	BTW
A	5-28-13	(C-3) GM88463 WAS GM13213; [CT48047]	BTW
B	10-30-13	(C-4) 32000 00111 (0.135 FT.) & NOTE ADDED; [CT62772]	BTW
C	8-29-14	(D-2) NOTES ADDED; (A-8) GM60403 REMOVED; [CT91680]	BTW
D	12-22-16	VIEWS UPDATED; SEE SHEET 2 [CT168423]	SDB

UNLESS OTHERWISE SPECIFIED:
1) DIMENSIONS ARE IN MILLIMETERS
2) TOLERANCES ARE:
X .XX ± 0.25
X.X ± 1.0
X ± 1.5
ANGLES ± 0° 30'
SURFACE FINISH 125 MAX.
THIRD ANGLE PROJECTION

APPROVALS		DATE
DRAWN	BTW	7-20-12
CHECKED	BTW	7-20-12
APPROVED	MTL	7-20-12

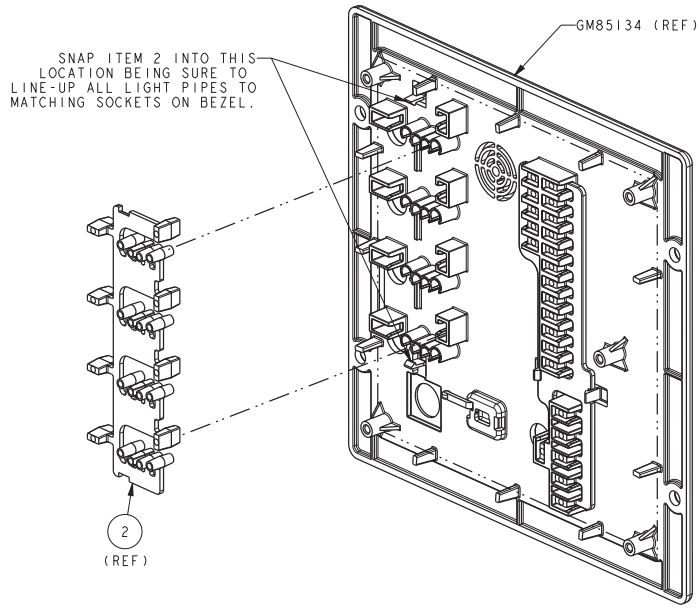
KOHLER CO. METRIC PRO-E
POWER SYSTEMS, KOHLER, WI 53044 U.S.A.

TITLE: Dwg, RSA III Assy

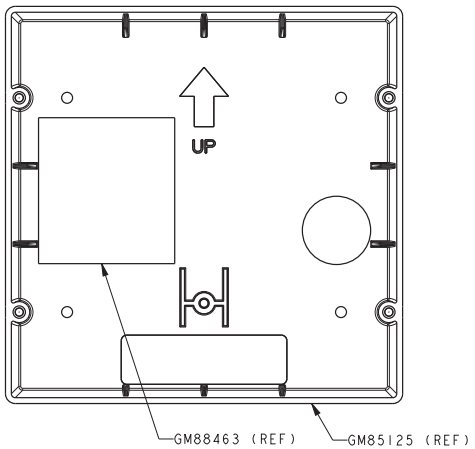
SCALE 0.80 CAD NO. SHEET 1 of 2

DWG NO. GM85123 D

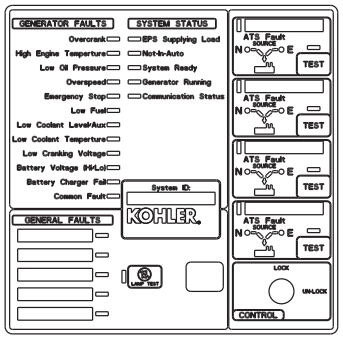
RSA III



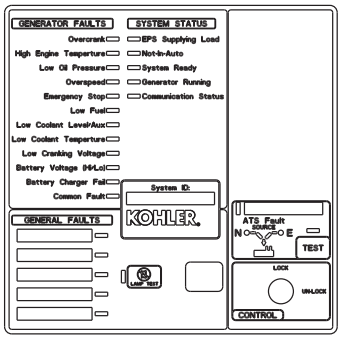
BACK VIEW OF BEZEL
SCALE 1.000



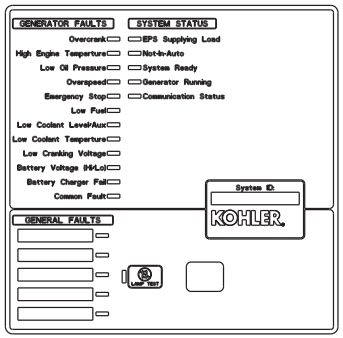
VIEW B
FRONT OF BOX



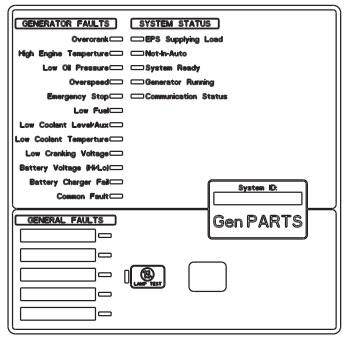
ITEM 1
(P/N: GM85127 REF)



ITEM 1
(P/N: GM85131 REF)



ITEM 1
(P/N: GM85132 REF)



ITEM 1
(P/N: GM85133 REF)

REV	DATE	ON COMPOSITE DWGS, SEE PART NO. FOR REVISION LEVEL	BY
-	7-30-12	NEW DRAWING [CT19745]	BTW
A	5-28-13	(A-8) GM88463 (REF) WAS GM13213 (REF); [CT48047]	BTW
B	10-30-13	SEE SHEET 1 [CT62772]	BTW
C	8-29-14	VIEW A REMOVED; [CT91680]	BTW
D	12-22-16	VIEWS UPDATED; SEE SHEET 1 [CT168423]	SDB

UNLESS OTHERWISE SPECIFIED: (1) DIMENSIONS ARE IN MILLIMETERS (2) TOLERANCES ARE: X.XX ± 0.25, X.X ± 1.0, X ± 1.5, ANGLES ± 0° 30' SURFACE FINISH 125 MAX. THIRD ANGLE PROJECTION

APPROVALS		DATE
DRAWN	BTW	7-30-12
CHECKED	BTW	7-30-12
APPROVED	MTL	7-30-12

KOHLER CO. METRIC PRO-E
POWER SYSTEMS, KOHLER, WI 53044 U.S.A.

TITLE: **Dwg, RSA III Assy**

SCALE 0.80 | CAD NO. | SHEET 2 of 2

DWG NO. **GM85123** | **D**

rehlko

Wiring Schematics

SRC NO.	PART NO.	DESCRIPTION	OPTION	FIELD
1	XXXXXX	BATTERY CABLE POSITIVE	–	–
2	XXXXXX	BATTERY CABLE NEGATIVE	–	–
3	GM105805	350–400KW CONTROL BOX HARNESS	–	–
4	GM77970	ENGINE HARNESS	–	–
5	GM77977	ENGINE DIAGNOSTIC HARNESS	–	–
6	GM105367	COMMON FAILURE RELAY	X	X
7	GM105366	15 RELAY DRY CONTACT	X	X
8	GM105663	RUN/OFF/AUTO KEYSWITCH	X	X
9	GM11501	CURRENT SENSE HARNESS	–	–
10	GM105377	VOLTAGE SENSE HARNESS	–	–
11	GM105845	4D ACTIVATOR/CURRENT/VOLT SENSE	–	–
12	GM105378	SHUNT TRIP RELAY HARNESS	X	X
13	GM105379	GROUND FAULT HARNESS	X	X
14	GM105380	LOCAL MOTORIZED BREAKER HARNESS	X	–
15	GM105382	REMOTE MOTORIZED BREAKER HARNESS	X	X
16	XXXXXX	FUEL LEVEL SENDER HARNESS	–	–
17	XXXXXX	FUEL LEAK ALARM HARNESS	–	–

LEGEND

BCA – BATTERY CHARGING ALTERNATOR
BTCS – BATTERY TEMP COMPENSATION SENSOR
CLS – COOLANT LEVEL SENDER
CT(#) – CURRENT TRANSFORMER
CTS – COOLANT TEMPERATURE SENDER
DIAG – DIAGNOSTIC LAMP
ECM – ENGINE CONTROL MODULE
ESS – EMERGENCY STOP SWITCH
FLA – FUEL LEAK ALARM
FLS – FUEL LEVEL SENDER
LCT – LOW COOLANT TEMPERATURE SWITCH
P(#) – PLUG
QCON(#) – QUICK CONNECT
SM – STARTER MOTOR
SS – STARTER SOLENOID
STAT – STATOR
SW(#) – SWITCH
TB(#) – TERMINAL BLOCK
W(#) – WIRE WELD

EBG – ENGINE BLOCK GROUND
GND – CONTROLLER BOX GROUND
PGND – PANEL GROUND

GENERATOR ALTERNATOR SHEET 5
ALTERNATOR
ACTIVATOR
4D
CONNECT AS PER ADV–5875
P1
CT
J26
P26
J2
P2
CURRENT SENSING
VOLTAGE SENSING
P1D
J1D
OPTIONAL MANUAL BREAKER
SHUNT TRIP OPTIONAL
BREAKER BOX
OPTIONAL MOTORIZED BREAKER
BREAKER BATTERY
CHARGER
L1
L2
L3
L0
USER POWER SHEET 7 OR 8
SHUNT TRIP RELAY
OPTIONAL
GFI
JG1
PG1
JX1
PX1
CONTROL BOX SHEET 2
SEE NOTE1
BREAKER MOTOR RELAY'S
TX1
TX5
PX1
JX1
PB1
JB1
LOCAL E–STOP
OPTIONAL
APM603
RDO CONNECTOR FACTORY USE ONLY
RDO CONNECTOR FACTORY USE ONLY
PX3
PX2
PX1
JX1
OPTIONAL SHEET 2
AUTO/OFF/MANUAL KEY SWITCH
HORN
FUEL LEVEL SENDER
FUEL LEAK SWITCH
SHEET 6
QCONS
RUN RELAY
OPTIONAL
COMMON FAILURE RELAY
15 RELAY BOARD
OPTIONAL
JD ENGINE SHEET 3
ECM
P4 (ON J.D. HARNESS)
ENGINE SENSOR'S
BCA
P1
J1
CRANK, RUN, GP RELAYS
P2
J2
DIAGNOSTIC PORT
CUSTOMER CONNECTION
TB12 (DIN RAIL)
FUSE
RED
BLK
BATTERY SHEET 3
BATTERY CHARGER
SHEET 3
ENGINE BLOCK GROUND
QCONS

NOTES:
1: TX1 ONLY USED FOR REMOTE MOUNTED BREAKERS.

TB12 CONNECTION CHART			
FUNCTION	POS	SIGNAL DESCRIPTION	
REMOTE E–STOP	1	REMOTE EMERGENCY STOP	
	2		
REMOTE START	3	REMOTE START SIGNAL	
	4		
CUSTOMER INTERFACE	5	FUSED BATTERY POWER	
	6	BATT VOLTS WHEN RUNNING	
	7	BATTERY NEGATIVE	
CUSTOMER INTERFACE	8	A (–)	ISOLATED RS–485 #2 (PGEN)
	9	B (+)	
	10	SHIELD	
LOW FUEL	11	LOW FUEL LEVEL SWITCH	
RES IN RETURN	12	LOW FUEL LEVEL SWITCH RETURN	
BAT CHRG FLT	13	BATTERY CHARGER FAULT	
RES IN RETURN	14	BATTERY CHARGER FAULT RETURN	
AUX WARNING	15	AUXILIARY WARNING	
RES IN RETURN	16	AUXILIARY WARNING RETURN	
AUX FAULT	17	AUXILIARY FAULT	
RES IN RETURN	18	AUXILIARY FAULT RETURN	
CUSTOMER INTERFACE	19	A (–)	ISOLATED RS–485 #3 (MODBUS/PGEN)
	20	B (+)	
	21	SHIELD	
CUSTOMER INTERFACE	22	A (–)	NON–ISOLATED RS–485 #4 (MODBUS RSA)
	23	B (+)	
	24	SHIELD	
RUN RELAY	25	COMMON CONTACT	
	26	NORMALLY OPEN CONTACT	
	27	NORMALLY CLOSED CONTACT	
SPEED BIAS	28	SPEED BIAS (+)	
	29	SPEED BIAS (–)	
	30	SHIELD	
VOLTAGE BIAS	31	VOLTAGE BIAS (+)	
	32	VOLTAGE BIAS (–)	
	33	SHIELD	
SPARE	34	SPARE	
SPARE	35	SPARE	
DROOP SELECT	36	ISOCHRONOUS	DROOP
		JP2 IN	JP2 OUT
ANALOG THROTTLE CONTROL	37*	+5 VDC REF	
	38*	SIGNAL (+2.5 VDC NORM)	
	39*	SENSOR RETURN	
IDLE MODE	40	CONSULT FACTORY	
	41		
SPARE	42	SPARE	
SPARE	43	SPARE	
SPARE	44	SPARE	

* REMOVE RESISTORS IF PARALLELING

REV	DATE	REVISION	BY
B	2–05–19	SEE SHEETS 7 & 8 [CT193517]	SMH
C	3–18–19	(A–1,–2) UPDATED TB12 CHART FOR VOLTAGE AND SPEED BIAS; SEE SHEET 2 [CT194009]	SMH
D	5–13–19	(A,B,C–1) TB12–42 THRU 44 ADDED, MOVED VOLTAGE AND SPEED BIAS ON TB12, SEE SHEET 2 [CT195741]	TEV
E	9–22–21	SEE SHEET 7 [CT214970]	TEV
F	04DEC2024	SEE SHEET 4, 6, 7 & 8 [CT240239]	CJK

APM603 CONTROLLER
350–500 KW JOHN DEERE TIER III
W/ 4D ACTIVATOR, 1ø, 3ø & 600V

KOHLER CO. KOHLER, WI 53044
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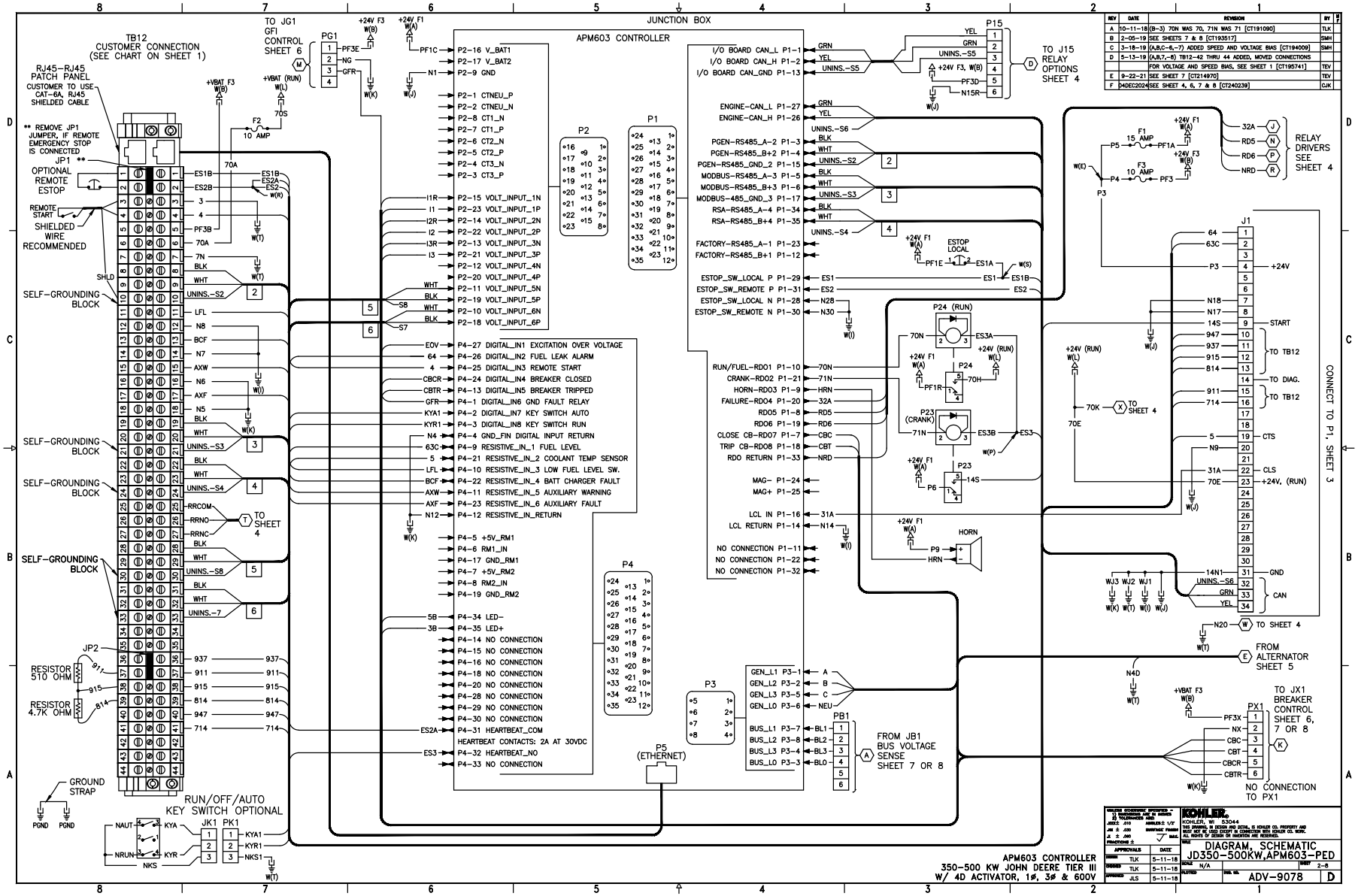
APPROVALS	DATE
DRAWN TLK	5–11–18
CHECKED TLK	5–11–18
APPROVED JLS	5–11–18

DIAGRAM, SCHEMATIC
JD350–500KW,APM603–PED
SCALE N/A SHEET 1–8
CUSTOMER DWG. NO. ADV–9078 D



REV	DATE	REVISION	BY
A	10-11-18	(B-3) 70N WAS 70, 71N WAS 71 [CT191090]	TLK
B	2-05-19	SEE SHEETS 7 & 8 [CT193517]	SMH
C	3-18-19	(A,B,C-6,-7) ADDED SPEED AND VOLTAGE BIAS [CT194009]	SMH
D	5-13-19	(A,B,7,-8) TB12-42 THRU 44 ADDED, MOVED CONNECTIONS FOR VOLTAGE AND SPEED BIAS, SEE SHEET 1 [CT195741]	TEV
E	9-22-21	SEE SHEET 7 [CT214970]	TEV
F	04DEC2024	SEE SHEET 4, 6, 7 & 8 [CT240239]	CJK

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KOHLER, WI 53044
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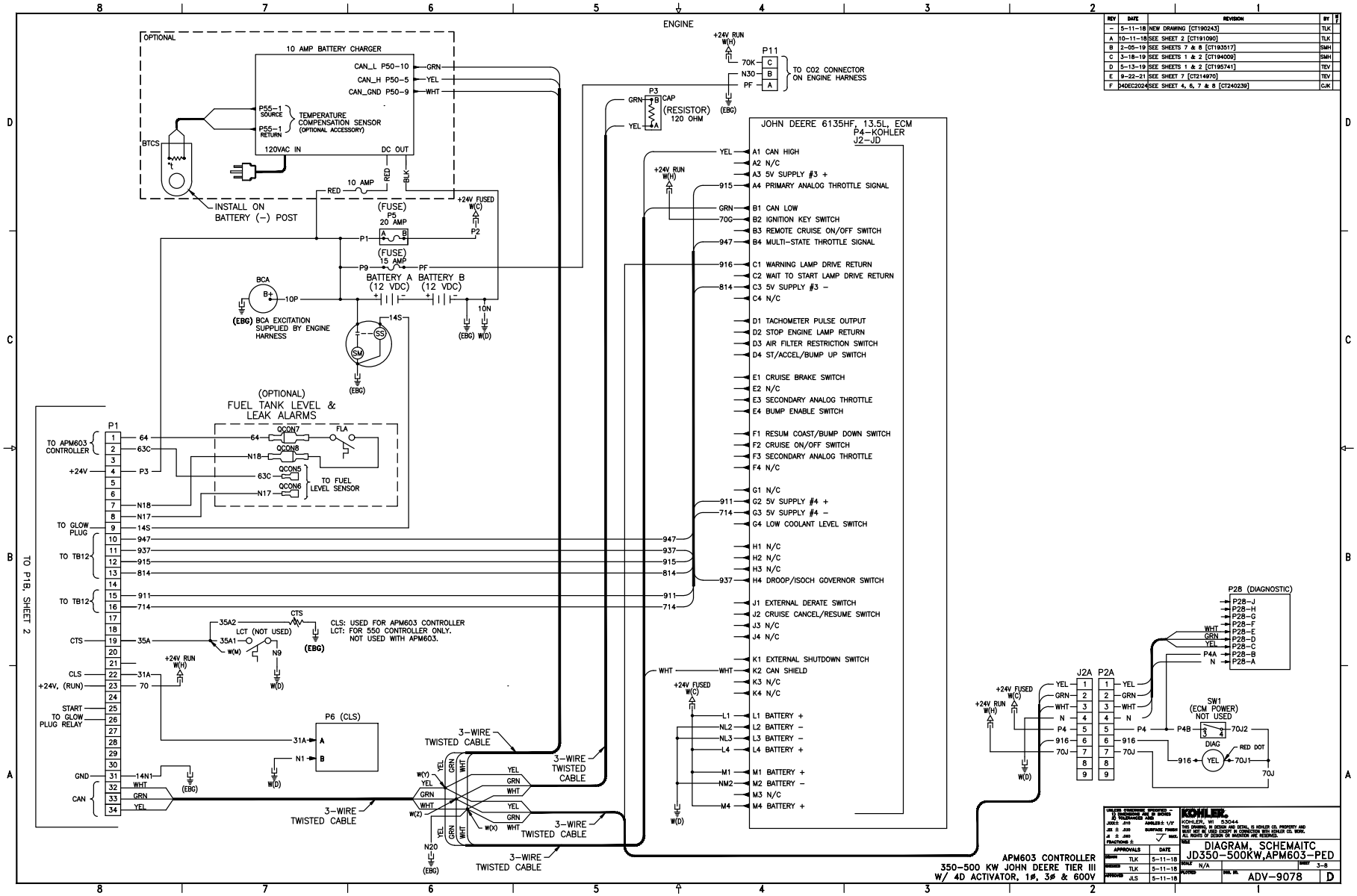
APPROVALS	DATE
DRAWN TLK	5-11-18
CHECKED TLK	5-11-18
ENGINEER JLS	5-11-18

DIAGRAM, SCHEMATIC
JD350-500KW,APM603-PED
SCALE N/A
SHEET 2-8
SIZE D
DWG. NO. ADV-9078



REV	DATE	REVISION	BY
–	5-11-18	NEW DRAWING [CT190243]	TLK
A	10-11-18	SEE SHEET 2 [CT191090]	TLK
B	2-05-19	SEE SHEETS 7 & 8 [CT193517]	SMH
C	3-18-19	SEE SHEETS 1 & 2 [CT194009]	SMH
D	5-13-19	SEE SHEETS 1 & 2 [CT195741]	TEV
E	9-22-21	SEE SHEET 7 [CT214970]	TEV
F	04DEC2024	SEE SHEET 4, 6, 7 & 8 [CT240239]	CJK

KOHLER, WI 53044

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APPROVALS	DATE
DRAWN TLK	5-11-18
DESIGNED TLK	5-11-18
APPROVED JLS	5-11-18

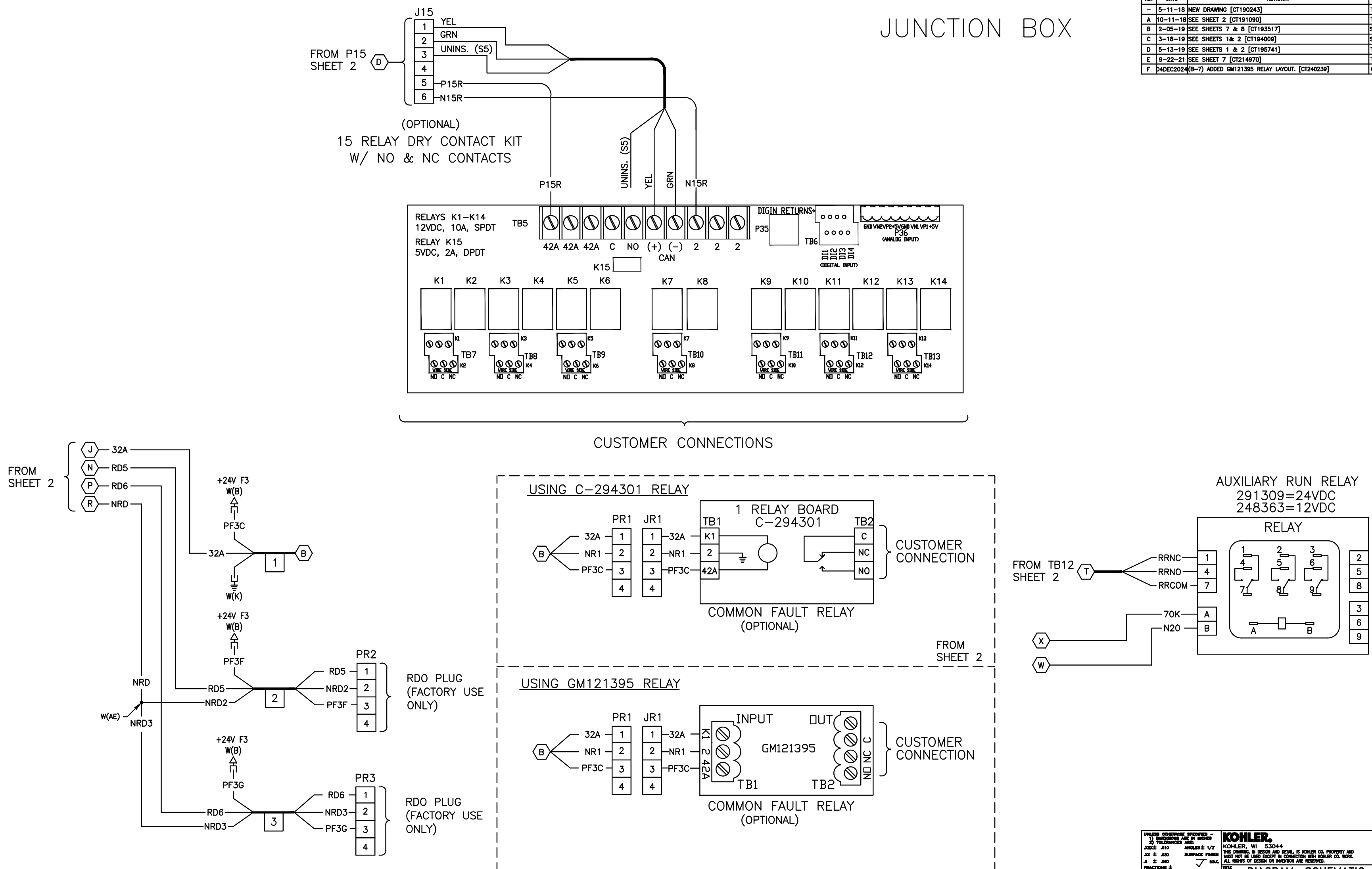
DIAGRAM, SCHEMAITC
JD350-500KW,APM603-PED

SCALE N/A | SHEET 3-8

DWG. NO. ADV-9078 | D

JUNCTION BOX

REV	DATE	REVISION	BY	MF
–	5–11–18	NEW DRAWING [CT190243]	TLK	
A	10–11–18	SEE SHEET 2 [CT191090]	TLK	
B	2–05–19	SEE SHEETS 7 & 8 [CT193517]	SMH	
C	3–18–19	SEE SHEETS 1& 2 [CT194009]	SMH	
D	5–13–19	SEE SHEETS 1 & 2 [CT195741]	TEV	
E	9–22–21	SEE SHEET 7 [CT214970]	TEV	
F	04DEC2024	(B–7) ADDED GM121395 RELAY LAYOUT. [CT240239]	CJK	



J15
YEL
GRN
UNINS. (S5)
P15R
N15R
FROM P15
SHEET 2
(OPTIONAL)
15 RELAY DRY CONTACT KIT
W/ NO & NC CONTACTS
RELAYS K1–K14
12VDC, 10A, SPDT
RELAY K15
5VDC, 2A, DPDT
TB5
42A 42A 42A C NO (+) (–) 2 2 2
CAN
K15
DIGIN RETURNS
P35
TB6
P36
(ANALOG INPUT)
DI1 DI2 DI3 DI4
(DIGITAL INPUT)
K1 K2 K3 K4 K5 K6 K7 K8 K9 K10 K11 K12 K13 K14
TB7 TB8 TB9 TB10 TB11 TB12 TB13
NO C NC
CUSTOMER CONNECTIONS
FROM
SHEET 2
32A
RD5
RD6
NRD
+24V F3
W(B)
PF3C
W(K)
PF3F
PF3G
NRD2
NRD3
W(AE)
PR2
PR3
RDO PLUG
(FACTORY USE
ONLY)
USING C–294301 RELAY
PR1
JR1
NR1
1 RELAY BOARD
C–294301
TB1
TB2
CUSTOMER
CONNECTION
COMMON FAULT RELAY
(OPTIONAL)
USING GM121395 RELAY
INPUT
OUT
GM121395
AUXILIARY RUN RELAY
291309=24VDC
248363=12VDC
RELAY
FROM TB12
SHEET 2
RRNC
RRNO
RRCOM
70K
N20

APM603 CONTROLLER
350–500 KW JOHN DEERE TIER III
W/ 4D ACTIVATOR, 1ø, 3ø & 600V

UNLESS OTHERWISE SPECIFIED –
1) DIMENSIONS ARE IN INCHES
2) TOLERANCES ARE:
.XXX ± .010 ANGLES ± 1/2°
.XX ± .030 SURFACE FINISH
.X ± .060 MAX.
FRACTIONS ±

APPROVALS		DATE
DRAWN	TLK	5–11–18
CHECKED	TLK	5–11–18
APPROVED	JLS	5–11–18

KOHLER.
KOHLER, WI 53044

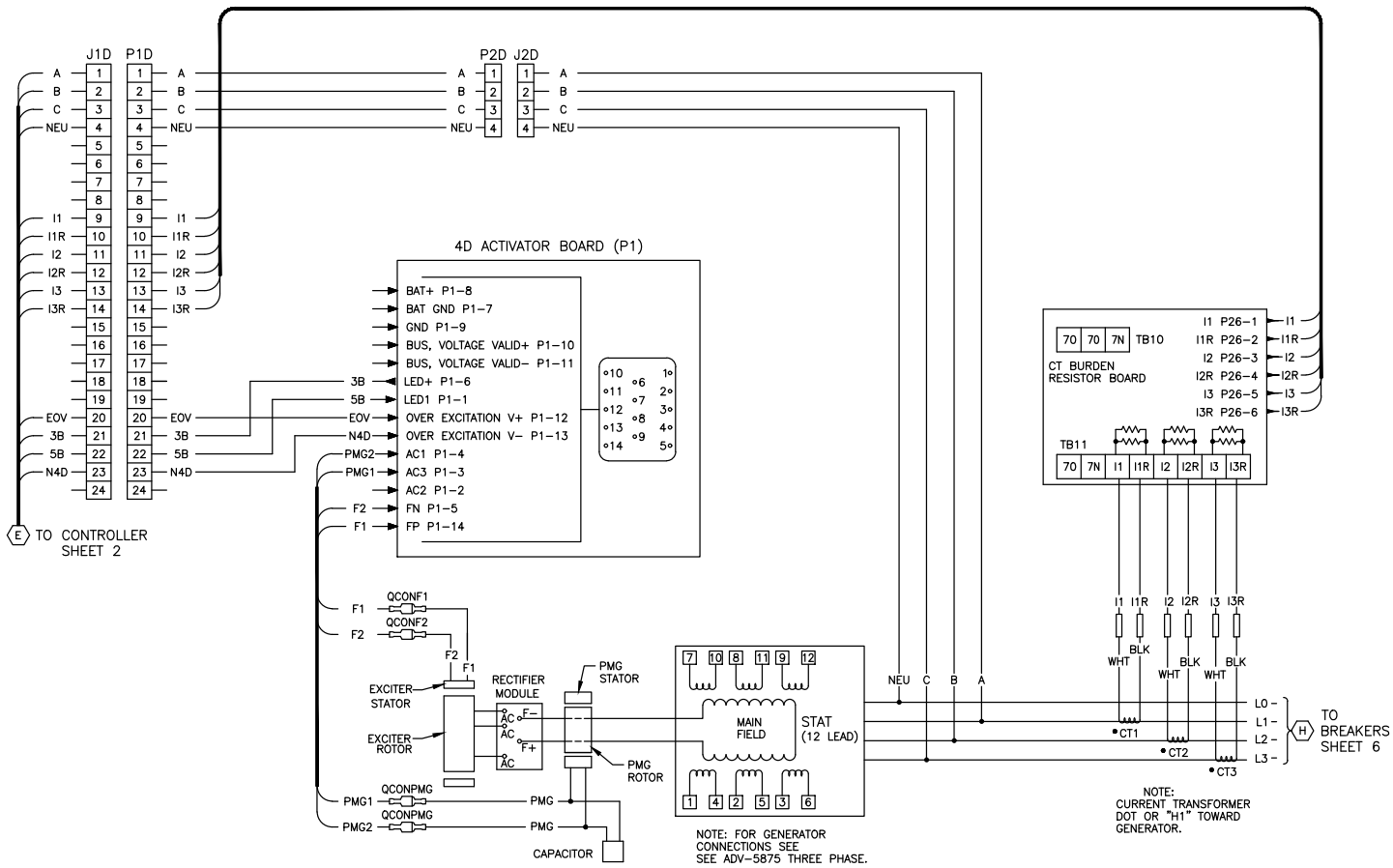
TITLE DIAGRAM, SCHEMATIC JD350–500KW,APM603–PED

SCALE N/A SHEET 4–8

PLOTTED DWG. NO. ADV–9078 D

ALTERNATOR

REV	DATE	REVISION	BY
–	5-11-18	NEW DRAWING [CT190243]	TLK
A	10-11-18	SEE SHEET 2 [CT191090]	TLK
B	2-05-19	SEE SHEETS 7 & 8 [CT193517]	SMH
C	3-18-19	SEE SHEETS 1& 2 [CT194009]	SMH
D	5-13-19	SEE SHEETS 1 & 2 [CT195741]	TEV
E	9-22-21	SEE SHEET 7 [CT214970]	TEV
F	04DEC2024	SEE SHEET 4, 6, 7 & 8 [CT231692]	CJK



ALTERNATOR SIDE
APM603 CONTROLLER
350-500 KW JOHN DEERE TIER III
W/ 4D ACTIVATOR, 1ø, 3ø & 600V

KOHLER CO.
KOHLER, WI 53044

APPROVALS	DATE
TLK	5-11-18
TLK	5-11-18
JLS	5-11-18

DIAGRAM, SCHEMATIC
JD350-500KW,APM603-PED

SCALE N/A SHEET 5-8

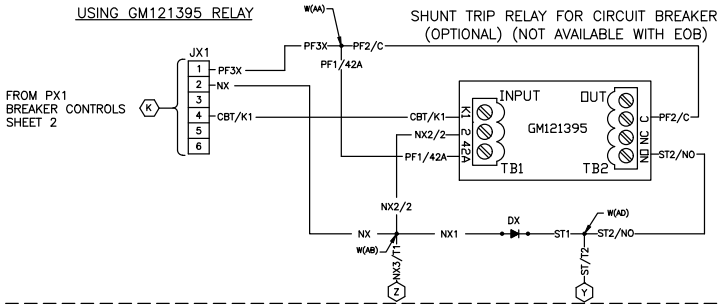
DRAWING NO. ADV-9078 D

REV	DATE	REVISION	BY
–	5-11-18	NEW DRAWING [CT190243]	TLK
A	10-11-18	SEE SHEET 2 [CT191090]	TLK
B	2-05-19	SEE SHEETS 7 & 8 [CT193517]	SMH
C	3-18-19	SEE SHEETS 1& 2 [CT194009]	SMH
D	5-13-19	SEE SHEETS 1 & 2 [CT195741]	TEV
E	9-22-21	SEE SHEET 7 [CT214970]	TEV
F	04DEC2024(D-6)	ADDED GM121395 RELAY LAYOUT. [CT240239]	CJK

JUNCTION BOX

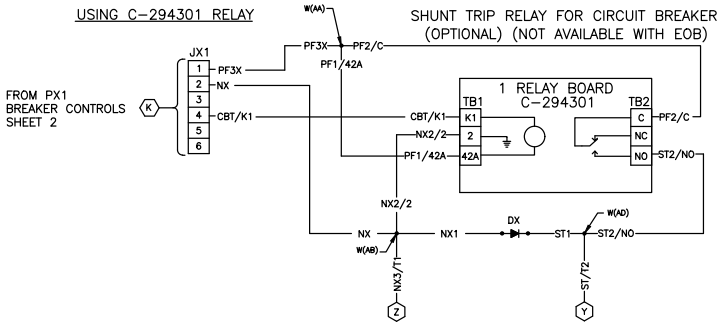
USING GM121395 RELAY

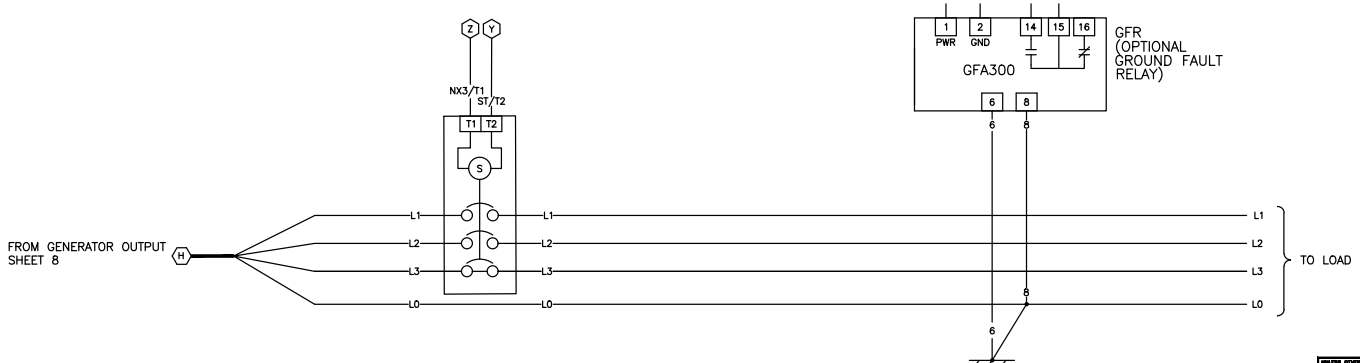
SHUNT TRIP RELAY FOR CIRCUIT BREAKER (OPTIONAL) (NOT AVAILABLE WITH EOB)



USING C-294301 RELAY

SHUNT TRIP RELAY FOR CIRCUIT BREAKER (OPTIONAL) (NOT AVAILABLE WITH EOB)





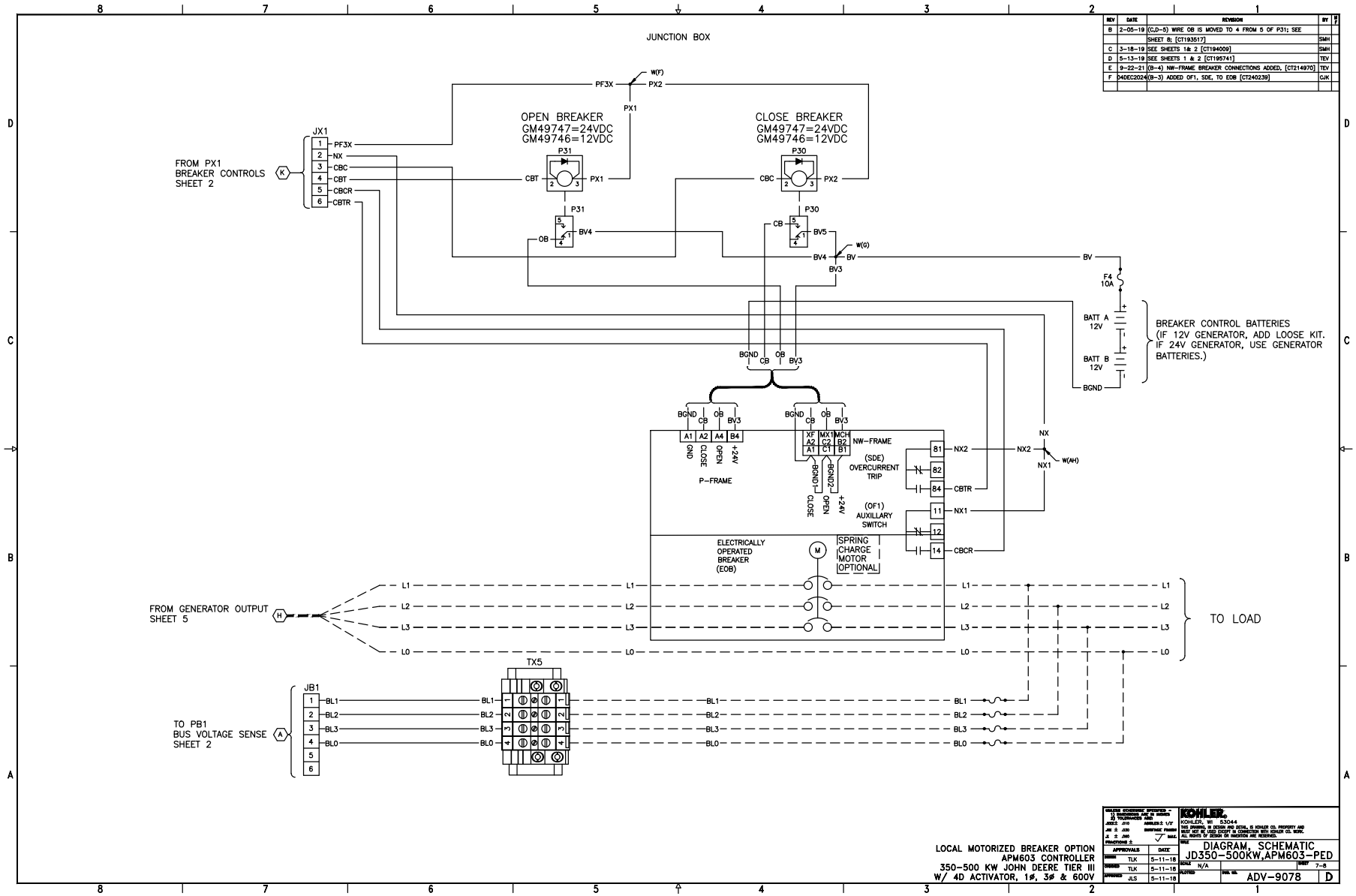
SHUNT TRIP OPTION
APM603 CONTROLLER
350-500 KW JOHN DEERE TIER III
W/ 4D ACTIVATOR, 1ø, 3ø & 600V

KOHLER CO.
KOHLER, WI 53044

APPROVALS	DATE
TLK	5-11-18
TLK	5-11-18
JLS	5-11-18

TITLE: DIAGRAM, SCHEMATIC
JD350-500KW,APM603-PED

SCALE: N/A
SHEET: 6-8
DRAWING NO.: ADV-9078
SIZE: D



REV	DATE	REVISION	BY
B	2-05-19	(C,D-5) WIRE OB IS MOVED TO 4 FROM 5 OF P31; SEE SHEET 8; [CT193517]	SMH
C	3-18-19	SEE SHEETS 1& 2 [CT194009]	SMH
D	5-13-19	SEE SHEETS 1 & 2 [CT195741]	TEV
E	9-22-21	(B-4) NW-FRAME BREAKER CONNECTIONS ADDED, [CT214970]	TEV
F	04DEC2024	(B-3) ADDED OF1, SDE, TO EOB [CT240239]	CJK

LOCAL MOTORIZED BREAKER OPTION
APM603 CONTROLLER
350-500 KW JOHN DEERE TIER III
W/ 4D ACTIVATOR, 1ø, 3ø & 600V

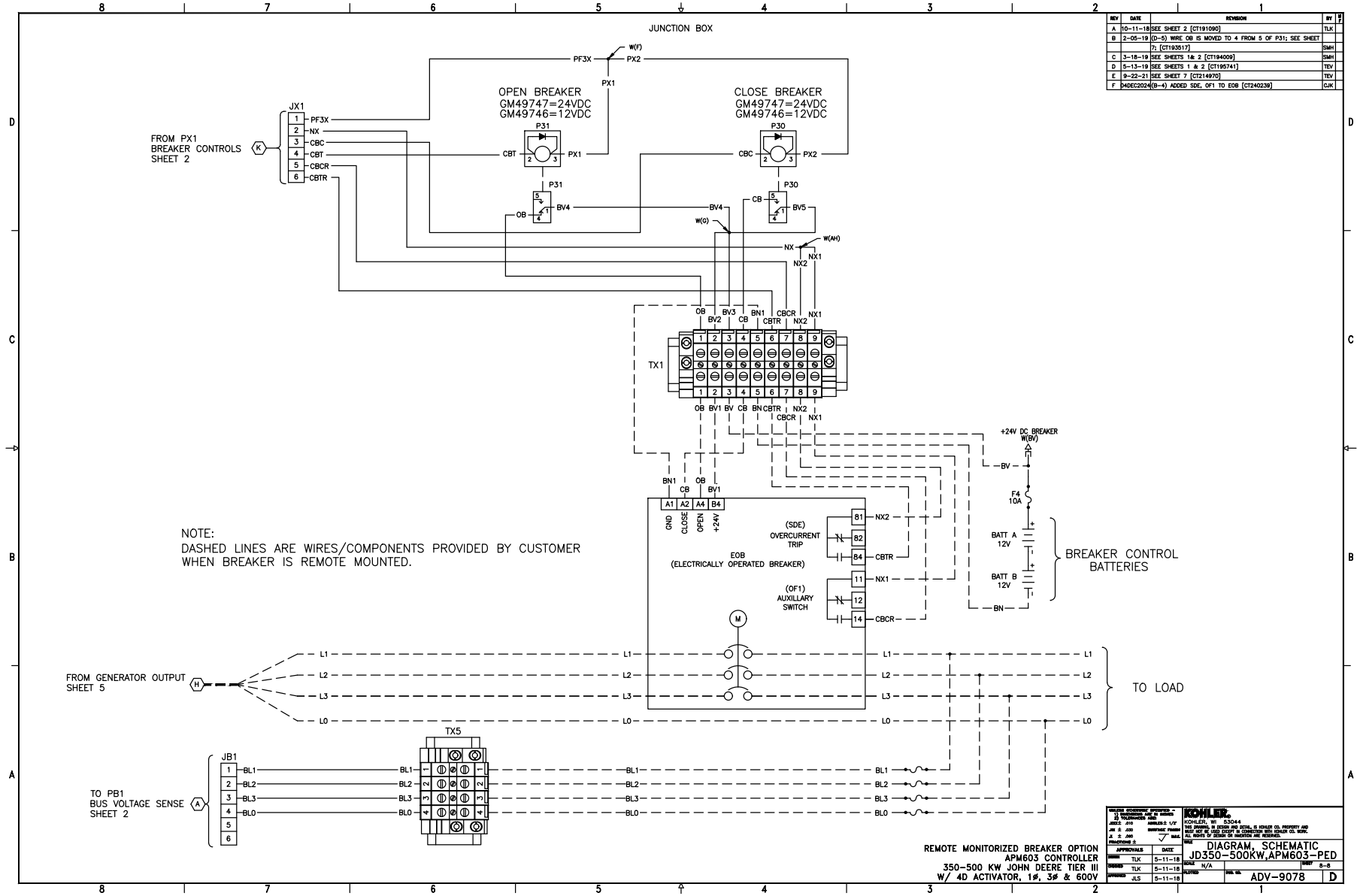
KOHLER CO.
KOHLER, WI 53044

APPROVALS	DATE
TLK	5-11-18
TLK	5-11-18
JLS	5-11-18

DIAGRAM, SCHEMATIC
JD350-500KW,APM603-PED

SCALE N/A SHEET 7-8

DRAWING NO. ADV-9078 D



REV	DATE	REVISION	BY
A	10-11-18	SEE SHEET 2 [CT191090]	TLK
B	2-05-19	(D-5) WIRE OB IS MOVED TO 4 FROM 5 OF P31; SEE SHEET 7; [CT193517]	SMH
C	3-18-19	SEE SHEETS 1& 2 [CT194009]	SMH
D	5-13-19	SEE SHEETS 1 & 2 [CT195741]	TEV
E	9-22-21	SEE SHEET 7 [CT214970]	TEV
F	04DEC2024	(B-4) ADDED SDE, OF1 TO EOB [CT240239]	CJK

REMOTE MONITORIZED BREAKER OPTION
APM603 CONTROLLER
350-500 KW JOHN DEERE TIER III
W/ 4D ACTIVATOR, 1ø, 3ø & 600V

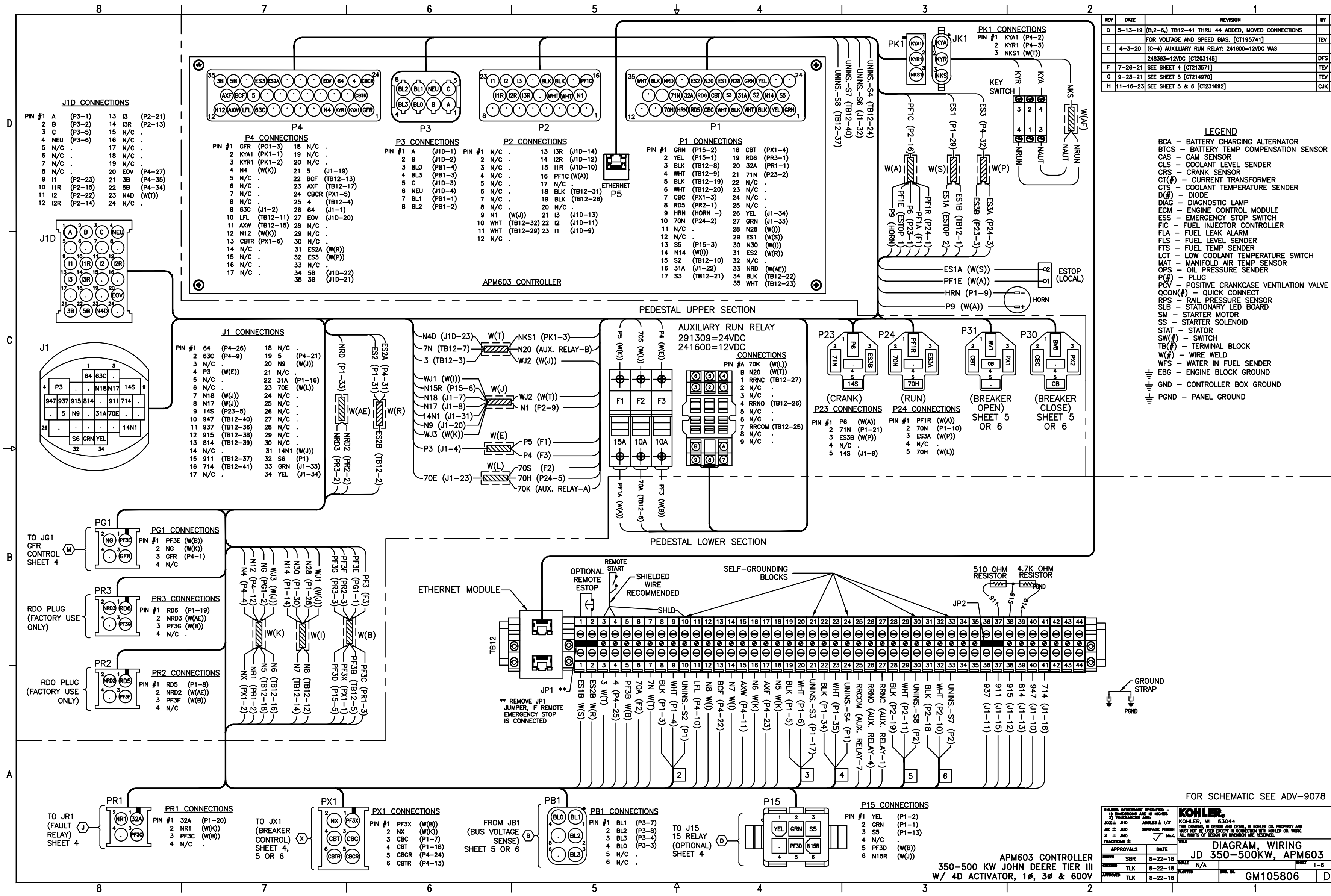
KOHLER CO.
KOHLER, WI 53044

APPROVALS	DATE
TLK	5-11-18
TLK	5-11-18
JLS	5-11-18

DIAGRAM, SCHEMATIC
JD350-500KW,APM603-PED

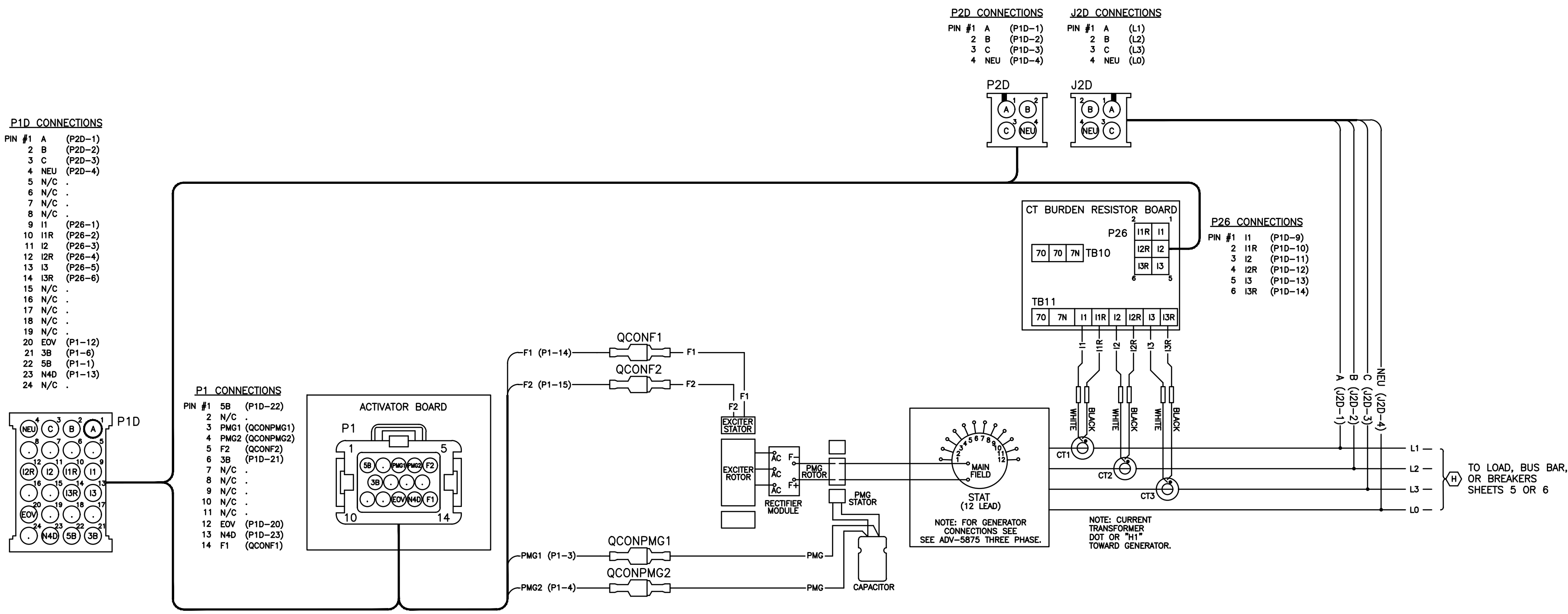
SCALE N/A SHEET 8-8

DWG NO. ADV-9078 REV D


REV | DATE | REVISION | BY
D | 5-13-19 | (B,2-6,) TB12-41 THRU 44 ADDED, MOVED CONNECTIONS FOR VOLTAGE AND SPEED BIAS. [CT195741] | TEV
E | 4-3-20 | (C-4) AUXILIARY RUN RELAY: 241600=12VDC WAS 248363=12VDC [CT203145] | DFS
F | 7-26-21 | SEE SHEET 4 [CT213571] | TEV
G | 9-23-21 | SEE SHEET 5 [CT214970] | TEV
H | 11-16-23 | SEE SHEET 5 & 6 [CT231692] | CJK
LEGEND
BCA - BATTERY CHARGING ALTERNATOR
BTCS - BATTERY TEMP COMPENSATION SENSOR
CAS - CAM SENSOR
CLS - COOLANT LEVEL SENDER
CRS - CRANK SENSOR
CT(#) - CURRENT TRANSFORMER
CTS - COOLANT TEMPERATURE SENDER
D(#) - DIODE
DIAG - DIAGNOSTIC LAMP
ECM - ENGINE CONTROL MODULE
ESS - EMERGENCY STOP SWITCH
FIC - FUEL INJECTOR CONTROLLER
FLA - FUEL LEAK ALARM
FLS - FUEL LEVEL SENDER
FTS - FUEL TEMP SENDER
LCT - LOW COOLANT TEMPERATURE SWITCH
MAT - MANIFOLD AIR TEMP SENSOR
OPS - OIL PRESSURE SENDER
P(#) - PLUG
PCV - POSITIVE CRANKCASE VENTILATION VALVE
QCON(#) - QUICK CONNECT
RPS - RAIL PRESSURE SENSOR
SLB - STATIONARY LED BOARD
SM - STARTER MOTOR
SS - STARTER SOLENOID
STAT - STATOR
SW(#) - SWITCH
TB(#) - TERMINAL BLOCK
W(#) - WIRE WELD
WFS - WATER IN FUEL SENDER
EBG - ENGINE BLOCK GROUND
GND - CONTROLLER BOX GROUND
PGND - PANEL GROUND
APM603 CONTROLLER
PEDESTAL UPPER SECTION
PEDESTAL LOWER SECTION
AUXILIARY RUN RELAY
291359=24VDC
241600=12VDC
ETHERNET MODULE
SELF-GROUNDING BLOCKS
SHIELDED WIRE RECOMMENDED
OPTIONAL REMOTE ESTOP
REMOTE START
510 OHM RESISTOR
4.7K OHM RESISTOR
** REMOVE JP1 JUMPER, IF REMOTE EMERGENCY STOP IS CONNECTED
GROUND STRAP
FOR SCHEMATIC SEE ADV-9078
APM603 CONTROLLER
350-500 KW JOHN DEERE TIER III
W/ 4D ACTIVATOR, 1Ø, 3Ø & 600V
KOHLER
KOHLER, WI 53044
DIAGRAM, WIRING
JD 350-500KW, APM603
GM105806
D
SHEET 1-6

REV	DATE	REVISION	BY	MF
B	2-05-19	SEE SHEETS 1, 5 & 6 [CT193517]	SMH	
C	2-28-19	SEE SHEET 1 [CT194009]	SMH	
D	5-13-19	SEE SHEET 1 [CT195741]	TEV	
E	4-3-20	SEE SHEET 1 [CT203145]	DFS	
F	7-26-21	SEE SHEET 4 [CT213571]	TEV	
G	9-23-21	SEE SHEET 5 [CT214970]	TEV	
H	11-16-23	SEE SHEET 5 & 6 [CT231692]	CJK	

JUNCTION BOX



P1D CONNECTIONS
PIN #1 A (P2D-1)
2 B (P2D-2)
3 C (P2D-3)
4 NEU (P2D-4)
5 N/C .
6 N/C .
7 N/C .
8 N/C .
9 I1 (P26-1)
10 I1R (P26-2)
11 I2 (P26-3)
12 I2R (P26-4)
13 I3 (P26-5)
14 I3R (P26-6)
15 N/C .
16 N/C .
17 N/C .
18 N/C .
19 N/C .
20 EOV (P1-12)
21 3B (P1-6)
22 5B (P1-1)
23 N4D (P1-13)
24 N/C .
P1D
P1 CONNECTIONS
PIN #1 5B (P1D-22)
2 N/C .
3 PMG1 (QCONPMG1)
4 PMG2 (QCONPMG2)
5 F2 (QCONF2)
6 3B (P1D-21)
7 N/C .
8 N/C .
9 N/C .
10 N/C .
11 N/C .
12 EOV (P1D-20)
13 N4D (P1D-23)
14 F1 (QCONF1)
ACTIVATOR BOARD
P1
P2D CONNECTIONS
PIN #1 A (P1D-1)
2 B (P1D-2)
3 C (P1D-3)
4 NEU (P1D-4)
J2D CONNECTIONS
PIN #1 A (L1)
2 B (L2)
3 C (L3)
4 NEU (L0)
P2D
J2D
CT BURDEN RESISTOR BOARD
P26
TB10
TB11
P26 CONNECTIONS
PIN #1 I1 (P1D-9)
2 I1R (P1D-10)
3 I2 (P1D-11)
4 I2R (P1D-12)
5 I3 (P1D-13)
6 I3R (P1D-14)
QCONF1
QCONF2
F1 (P1-14)
F2 (P1-15)
EXCITER STATOR
EXCITER ROTOR
RECTIFIER MODULE
PMG ROTOR
PMG STATOR
CAPACITOR
QCONPMG1
QCONPMG2
PMG1 (P1-3)
PMG2 (P1-4)
MAIN FIELD
STAT
(12 LEAD)
NOTE: FOR GENERATOR CONNECTIONS SEE SEE ADV-5875 THREE PHASE.
CT1
CT2
CT3
WHITE
BLACK
NOTE: CURRENT TRANSFORMER DOT OR "H1" TOWARD GENERATOR.
A (J2D-1)
B (J2D-2)
C (J2D-3)
NEU (J2D-4)
L1
L2
L3
L0
TO LOAD, BUS BAR, OR BREAKERS SHEETS 5 OR 6

APM603 CONTROLLER
350-500 KW JOHN DEERE TIER III
W/ SPLIT ACTIVATOR, 1ø, 3ø & 600V

UNLESS OTHERWISE SPECIFIED –
1) DIMENSIONS ARE IN INCHES
2) TOLERANCES ARE:
.XXX ± .010 ANGLES ± 1/2°
.XX ± .030 SURFACE FINISH
.X ± .060 MAX.
FRACTIONS ±

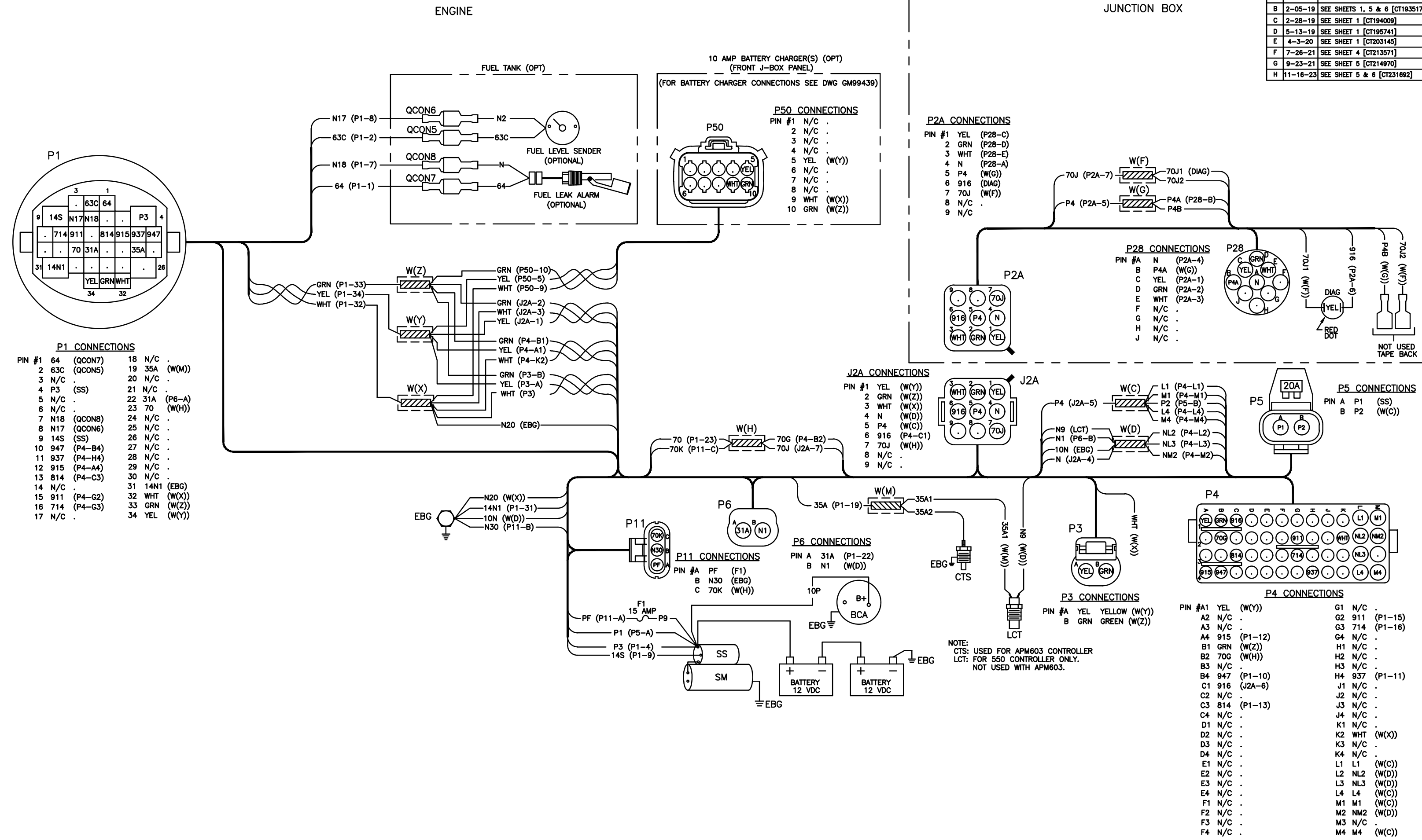
APPROVALS		DATE
DRAWN	SBR	5-8-18
CHECKED	TLK	8-14-18
APPROVED	TLK	8-14-18

KOHLER®
KOHLER, WI 53044

TITLE: DIAGRAM, WIRING
JD 350-500KW, APM603

SCALE: N/A SHEET: 2-6
PLOTTED: DWG. NO. GM105806 D

REV	DATE	REVISION	BY	M F
B	2-05-19	SEE SHEETS 1, 5 & 6 [CT193517]	SMH	
C	2-28-19	SEE SHEET 1 [CT194009]	SMH	
D	5-13-19	SEE SHEET 1 [CT195741]	TEV	
E	4-3-20	SEE SHEET 1 [CT203145]	DFS	
F	7-26-21	SEE SHEET 4 [CT213571]	TEV	
G	9-23-21	SEE SHEET 5 [CT214970]	TEV	
H	11-16-23	SEE SHEET 5 & 6 [CT231692]	CJK	



ENGINE
JUNCTION BOX
FUEL TANK (OPT)
QCON6
QCON5
QCON8
QCON7
N17 (P1-8)
63C (P1-2)
N18 (P1-7)
64 (P1-1)
FUEL LEVEL SENDER (OPTIONAL)
FUEL LEAK ALARM (OPTIONAL)
10 AMP BATTERY CHARGER(S) (OPT) (FRONT J-BOX PANEL)
(FOR BATTERY CHARGER CONNECTIONS SEE DWG GM99439)
P50
P1
W(Z)
W(Y)
W(X)
W(H)
W(M)
W(F)
W(G)
W(C)
W(D)
P2A
P28
J2A
P5
P6
P11
P3
P4
EBG
CTS
LCT
BCA
SS
SM
BATTERY 12 VDC
F1 15 AMP
DIAG
RED DOT
NOT USED TAPE BACK
P1 CONNECTIONS
PIN #1 64 (QCON7)
2 63C (QCON5)
3 N/C .
4 P3 (SS)
5 N/C .
6 N/C .
7 N18 (QCON8)
8 N17 (QCON6)
9 14S (SS)
10 947 (P4-B4)
11 937 (P4-H4)
12 915 (P4-A4)
13 814 (P4-C3)
14 N/C .
15 911 (P4-G2)
16 714 (P4-G3)
17 N/C .
18 N/C .
19 35A (W(M))
20 N/C .
21 N/C .
22 31A (P6-A)
23 70 (W(H))
24 N/C .
25 N/C .
26 N/C .
27 N/C .
28 N/C .
29 N/C .
30 N/C .
31 14N1 (EBG)
32 WHT (W(X))
33 GRN (W(Z))
34 YEL (W(Y))
P50 CONNECTIONS
PIN #1 N/C .
2 N/C .
3 N/C .
4 N/C .
5 YEL (W(Y))
6 N/C .
7 N/C .
8 N/C .
9 WHT (W(X))
10 GRN (W(Z))
P2A CONNECTIONS
PIN #1 YEL (P28-C)
2 GRN (P28-D)
3 WHT (P28-E)
4 N (P28-A)
5 P4 (W(G))
6 916 (DIAG)
7 70J (W(F))
8 N/C .
9 N/C
P28 CONNECTIONS
PIN #A N (P2A-4)
B P4A (W(G))
C YEL (P2A-1)
D GRN (P2A-2)
E WHT (P2A-3)
F N/C .
G N/C .
H N/C .
J N/C .
J2A CONNECTIONS
PIN #1 YEL (W(Y))
2 GRN (W(Z))
3 WHT (W(X))
4 N (W(D))
5 P4 (W(C))
6 916 (P4-C1)
7 70J (W(H))
8 N/C .
9 N/C .
P5 CONNECTIONS
PIN A P1 (SS)
B P2 (W(C))
P11 CONNECTIONS
PIN #A PF (F1)
B N30 (EBG)
C 70K (W(H))
P6 CONNECTIONS
PIN A 31A (P1-22)
B N1 (W(D))
P3 CONNECTIONS
PIN #A YEL YELLOW (W(Y))
B GRN GREEN (W(Z))
NOTE:
CTS: USED FOR APM603 CONTROLLER
LCT: FOR 550 CONTROLLER ONLY. NOT USED WITH APM603.
P4 CONNECTIONS
PIN #A1 YEL (W(Y))
A2 N/C .
A3 N/C .
A4 915 (P1-12)
B1 GRN (W(Z))
B2 70G (W(H))
B3 N/C .
B4 947 (P1-10)
C1 916 (J2A-6)
C2 N/C .
C3 814 (P1-13)
C4 N/C .
D1 N/C .
D2 N/C .
D3 N/C .
D4 N/C .
E1 N/C .
E2 N/C .
E3 N/C .
E4 N/C .
F1 N/C .
F2 N/C .
F3 N/C .
F4 N/C .
G1 N/C .
G2 911 (P1-15)
G3 714 (P1-16)
G4 N/C .
H1 N/C .
H2 N/C .
H3 N/C .
H4 937 (P1-11)
J1 N/C .
J2 N/C .
J3 N/C .
J4 N/C .
K1 N/C .
K2 WHT (W(X))
K3 N/C .
K4 N/C .
L1 L1 (W(C))
L2 NL2 (W(D))
L3 NL3 (W(D))
L4 L4 (W(C))
M1 M1 (W(C))
M2 NM2 (W(D))
M3 N/C .
M4 M4 (W(C))

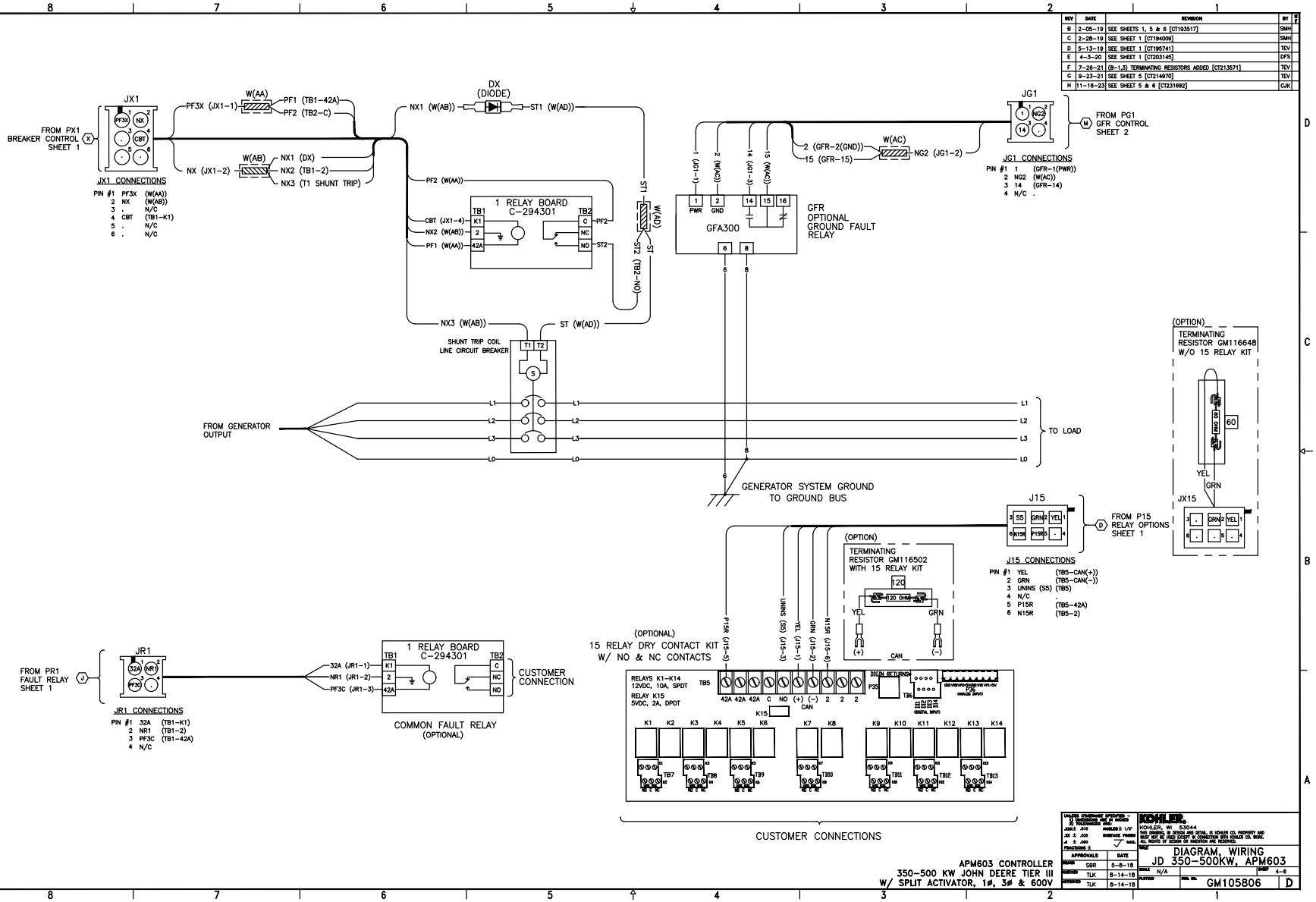
APM603 CONTROLLER
350-500 KW JOHN DEERE TIER III
W/ SPLIT ACTIVATOR, 1ø, 3ø & 600V

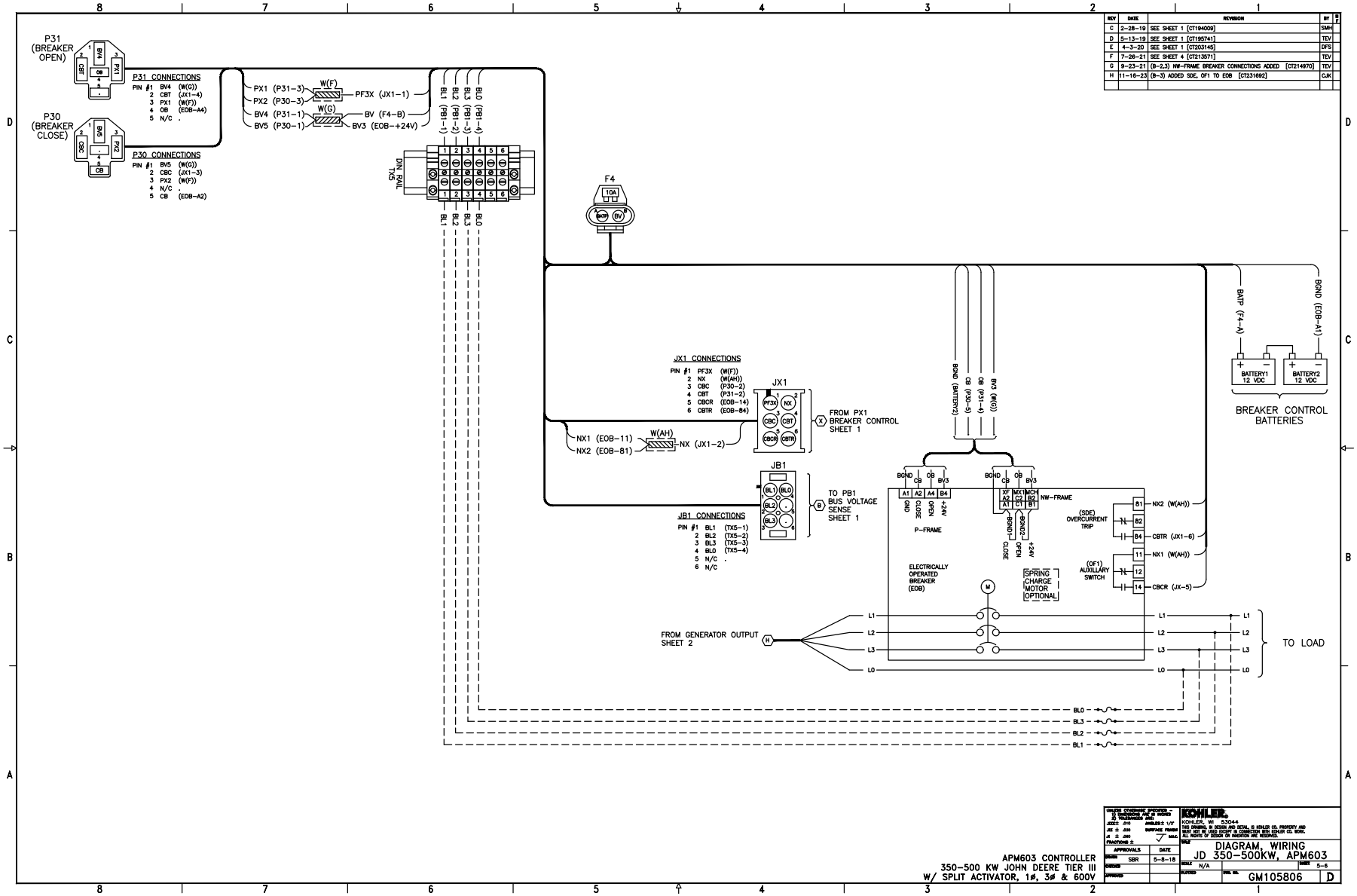
UNLESS OTHERWISE SPECIFIED -
1) DIMENSIONS ARE IN INCHES
2) TOLERANCES ARE:
.XXX ± .010 ANGLES ± 1/2°
.XX ± .030 SURFACE FINISH
.X ± .060 MAX.
FRACTIONS ±

APPROVALS		DATE
DRAWN	SBR	5-8-18
CHECKED	TLK	8-14-18
APPROVED	TLK	8-14-18

KOHLER.
KOHLER, WI 53044

TITLE: DIAGRAM, WIRING JD 350-500KW, APM603
SCALE N/A
SHEET 3-6
PLOTTED
DWG. NO. GM105806 D


REV | DATE | REVISION | BY
B | 2-05-19 | SEE SHEETS 1, 5 & 6 [CT193517] | SMH
C | 2-28-19 | SEE SHEET 1 [CT194009] | SMH
D | 5-13-19 | SEE SHEET 1 [CT195741] | TEV
E | 4-3-20 | SEE SHEET 1 [CT203145] | DFS
F | 7-26-21 | (B-1,3) TERMINATING RESISTORS ADDED [CT213571] | TEV
G | 9-23-21 | SEE SHEET 5 [CT214970] | TEV
H | 11-16-23 | SEE SHEET 5 & 6 [CT231692] | CJK
JX1
FROM PX1 BREAKER CONTROL SHEET 1
JX1 CONNECTIONS
PIN #1 PF3X (W(AA))
2 NX (W(AB))
3 . N/C
4 CBT (TB1-K1)
5 . N/C
6 . N/C
W(AA)
PF3X (JX1-1)
PF1 (TB1-42A)
PF2 (TB2-C)
W(AB)
NX (JX1-2)
NX1 (DX)
NX2 (TB1-2)
NX3 (T1 SHUNT TRIP)
DX (DIODE)
NX1 (W(AB))
ST1 (W(AD))
PF2 (W(AA))
CBT (JX1-4)
NX2 (W(AB))
PF1 (W(AA))
1 RELAY BOARD C-294301
TB1 K1 2 42A
TB2 C NC NO
PF2
ST2
ST1
W(AD)
ST
ST2 (TB2-NO)
NX3 (W(AB))
ST (W(AD))
SHUNT TRIP COIL LINE CIRCUIT BREAKER
T1 T2 S
FROM GENERATOR OUTPUT
L1 L2 L3 L0
TO LOAD
GENERATOR SYSTEM GROUND TO GROUND BUS
JG1
FROM PG1 GFR CONTROL SHEET 2
JG1 CONNECTIONS
PIN #1 1 (GFR-)(PWR)
2 NG2 (W(AC))
3 14 (GFR-14)
4 N/C .
2 (GFR-2(GND))
15 (GFR-15)
W(AC)
NG2 (JG1-2)
1 (JG1-1)
2 (W(AC))
14 (JG1-3)
15 (W(AC))
GFA300
1 PWR
2 GND
14 15 16
GFR OPTIONAL GROUND FAULT RELAY
6 8
(OPTION)
TERMINATING RESISTOR GM116648 W/O 15 RELAY KIT
120 OHM
YEL
GRN
JX15
J15
FROM P15 RELAY OPTIONS SHEET 1
J15 CONNECTIONS
PIN #1 YEL (TB5-CAN(+))
2 GRN (TB5-CAN(-))
3 UNINS (S5) (TB5)
4 N/C .
5 P15R (TB5-42A)
6 N15R (TB5-2)
(OPTION)
TERMINATING RESISTOR GM116502 WITH 15 RELAY KIT
120 OHM
YEL
GRN
(+)
(-)
CAN
(OPTION)
15 RELAY DRY CONTACT KIT W/ NO & NC CONTACTS
P15R (J15-5)
UNINS (S5) (J15-3)
YEL (J15-1)
GRN (J15-2)
N15R (J15-6)
RELAYS K1-K14 12VDC, 10A, SPDT
RELAY K15 5VDC, 2A, DPDT
TB5
42A 42A 42A C NO (+) (-) 2 2 2
CAN
P25
TB6
K15
K1 K2 K3 K4 K5 K6 K7 K8 K9 K10 K11 K12 K13 K14
TB7 TB8 TB9 TB10 TB11 TB12 TB13
CUSTOMER CONNECTIONS
JR1
FROM PR1 FAULT RELAY SHEET 1
JR1 CONNECTIONS
PIN #1 32A (TB1-K1)
2 NR1 (TB1-2)
3 PF3C (TB1-42A)
4 N/C
32A (JR1-1)
NR1 (JR1-2)
PF3C (JR1-3)
1 RELAY BOARD C-294301
TB1 K1 2 42A
TB2 C NC NO
CUSTOMER CONNECTION
COMMON FAULT RELAY (OPTIONAL)
APM603 CONTROLLER
350-500 KW JOHN DEERE TIER III
W/ SPLIT ACTIVATOR, 1ø, 3ø & 600V
KOHLER
KOHLER, WI 53044
DIAGRAM, WIRING
JD 350-500KW, APM603
SIZE D
DWG NO. GM105806
REV D
SCALE N/A
SHEET 4-6
APPROVALS
DRAWN SBR 5-8-18
CHECKED TLK 8-14-18
APPROVED TLK 8-14-18



REV	DATE	REVISION	BY	S
C	2-28-19	SEE SHEET 1 [CT1194009]	SMH	
D	5-13-19	SEE SHEET 1 [CT1195741]	TEV	
E	4-3-20	SEE SHEET 1 [CT2203145]	DFS	
F	7-26-21	SEE SHEET 4 [CT2213571]	TEV	
G	9-23-21	(B-2,3) NW-FRAME BREAKER CONNECTIONS ADDED [CT2214970]	TEV	
H	11-16-23	(B-3) ADDED SDE, OF1 TO EOB [CT2231692]	CJK	

APM603 CONTROLLER
350-500 KW JOHN DEERE TIER III
W/ SPLIT ACTIVATOR, 1ø, 3ø & 600V

KOHLER CO.
KOHLER, WI 53044

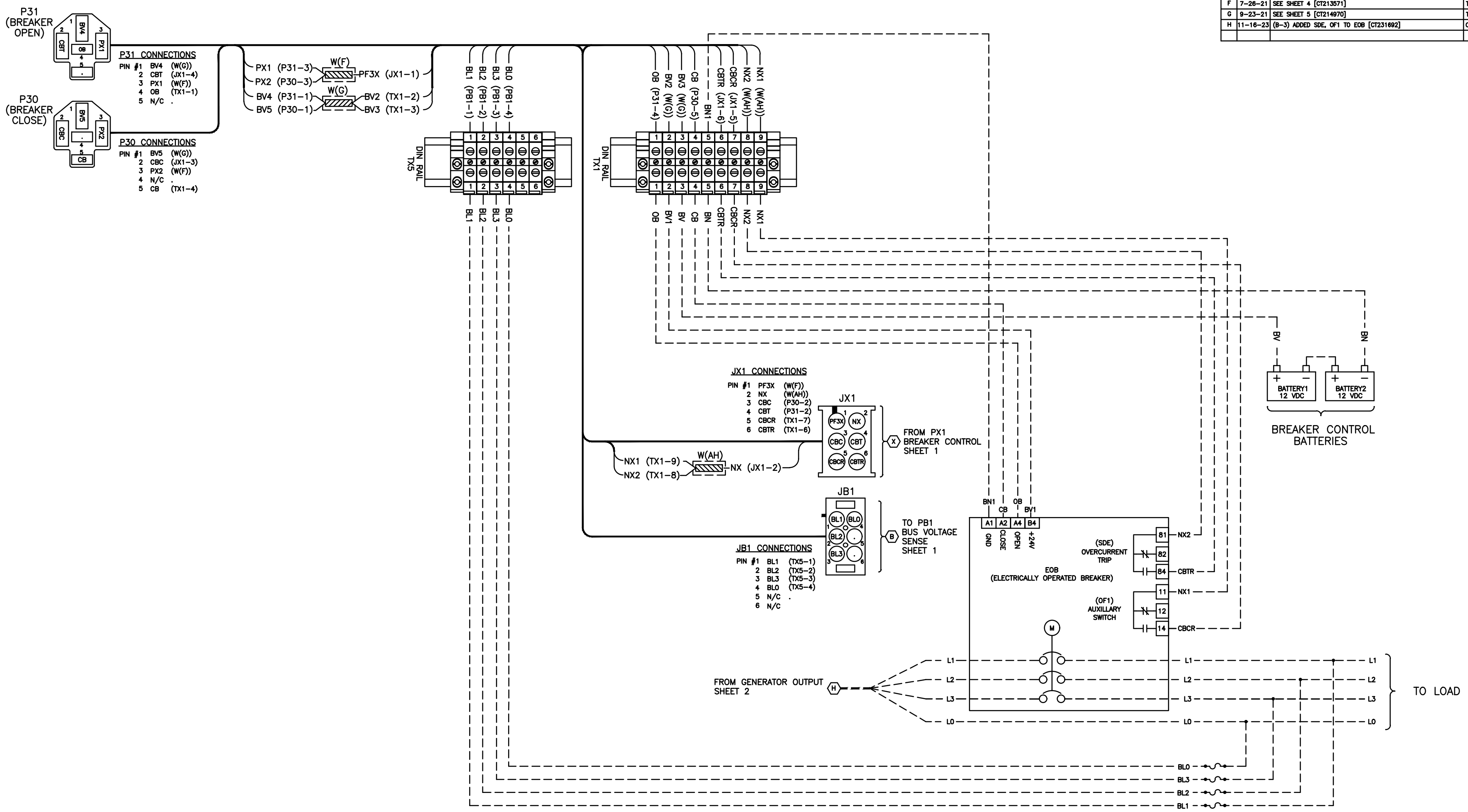
APPROVALS	DATE
DRAWN SBR	5-8-18
CHECKED	
APPROVED	

DIAGRAM, WIRING
JD 350-500KW, APM603

SCALE N/A | SHEET 5-6

DRAWING NO. GM105806 | D

REV	DATE	REVISION	BY	MF
C	2-28-19	SEE SHEET 1 [CT194009]	SMH	
D	5-13-19	SEE SHEET 1 [CT195741]	TEV	
E	4-3-20	SEE SHEET 1 [CT203145]	DFS	
F	7-26-21	SEE SHEET 4 [CT213571]	TEV	
G	9-23-21	SEE SHEET 5 [CT214970]	TEV	
H	11-16-23	(B-3) ADDED SDE, OF1 TO EOB [CT231692]	CJK	



NOTE:
DASHED LINES ARE WIRES/COMPONENTS PROVIDED BY CUSTOMER WHEN BREAKER IS REMOTE MOUNTED.

APM603 CONTROLLER
350–500 KW JOHN DEERE TIER III
W/ SPLIT ACTIVATOR, 1ø, 3ø & 600V

UNLESS OTHERWISE SPECIFIED –
1) DIMENSIONS ARE IN INCHES
2) TOLERANCES ARE:
.XXX ± .010 ANGLES ± 1/2°
.XX ± .030 SURFACE FINISH
.X ± .060 MAX.
FRACTIONS ±

APPROVALS		DATE
DRAWN	SBR	5-8-18
CHECKED		
APPROVED		

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KOHLER, WI 53044

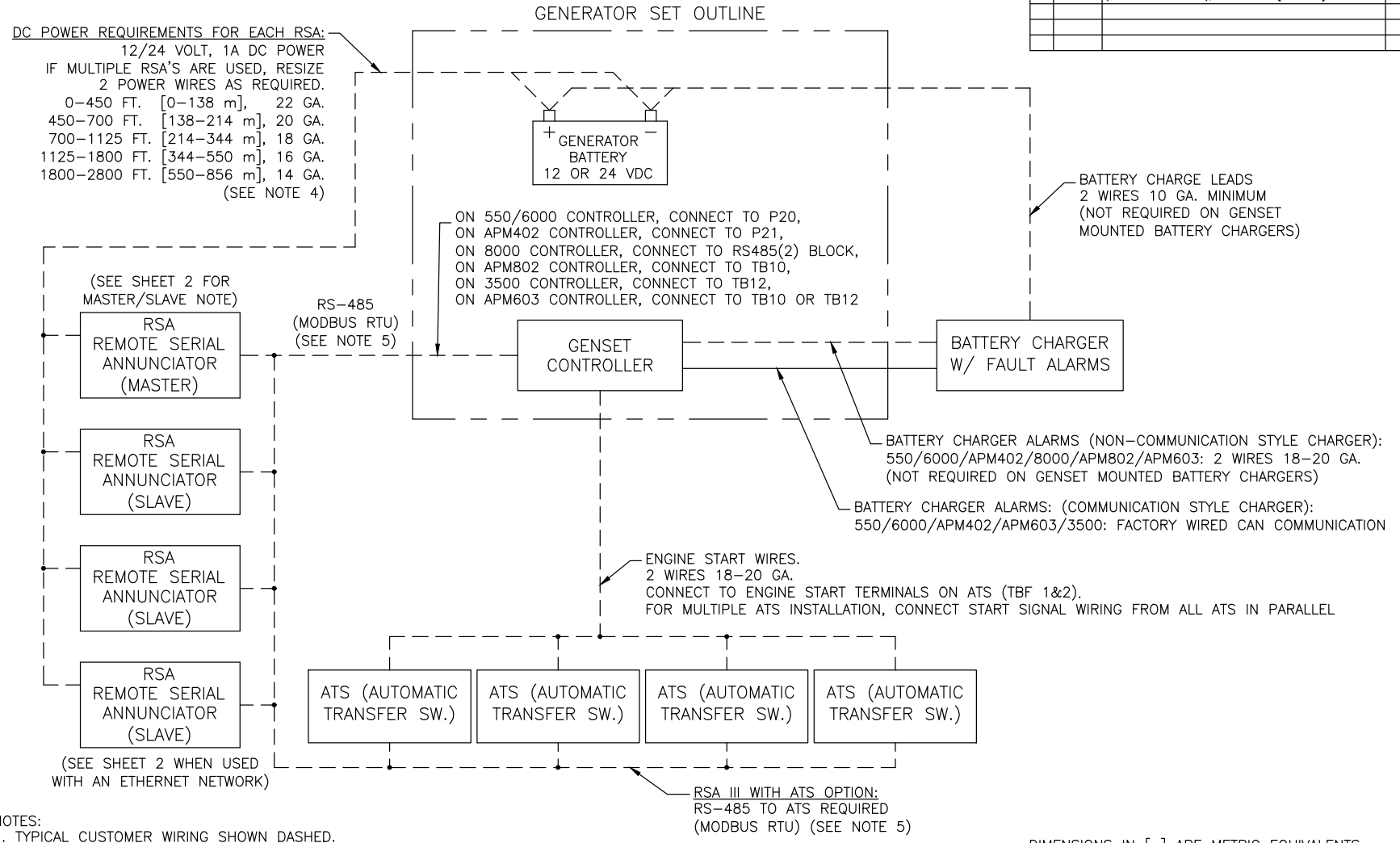
TITLE: DIAGRAM, WIRING JD 350–500KW, APM603

SCALE N/A | SHEET 6-6

PLOTTED | DWG. NO. GM105806 | D

RS–485 NETWORK CONNECTIONS

REV	DATE	REVISION	BY	M F
–	8–16–19	NEW DRAWING. REPLACES ADV–6990 [CT198499]	TLK	
A	5–27–22	(B–1–3) CONNECT TO ENGINE START TERMINALS ON ATS		
		(TBF 1&2) WAS CONNECT TO POSITION CONTACTS ON ATS		
		(CLOSED IN EMERGENCY); SEE SHEET 2 [CT220029]	BCC	



NOTES:
1. TYPICAL CUSTOMER WIRING SHOWN DASHED.
2. CUSTOMER RESPONSIBLE FOR ADDITIONAL WIRING SHOWN IF COMPONENTS ARE SHIPPED LOOSE (BATTERY CHARGER, DRY–CONTACT BOX, ETC.)
3. IF BATTERY CHARGER IS SHIPPED LOOSE ADDITIONAL WIRES MAY BE REQUIRED FOR PROPER VOLTAGE SENSING. REFERENCE DRAWING ADV–5971 FOR INTERCONNECT.
4. DC VOLTAGE FOR EACH RSA REMOTE ANNUNCIATOR MAY ALSO BE SUPPLIED BY A LOCALLY MOUNTED 12 OR 24 VDC, 200 mA MIN., AC ADAPTER KIT (GM62466–KP1).
5. USE BELDEN #9841 OR EQUIVALENT. MAXIMUM DISTANCE = 4000 FT. [1219 m]

REFER TO WIRING DIAGRAM GM62554 (NETWORK COMMUNICATIONS) FOR CONNECTION DETAIL.

INTERCONNECTION DIAGRAM CONTROLLER WITH RSA ANNUNCIATOR

DIMENSIONS IN [ ] ARE METRIC EQUIVALENTS.

UNLESS OTHERWISE SPECIFIED – 1) DIMENSIONS ARE IN INCHES 2) TOLERANCES ARE: .XXX± .010 ANGLES± 1/2° .XX ± .030 SURFACE FINISH .X ± .060 MAX. FRACTIONS ±

APPROVALS		DATE
DRAWN	TLK	8–16–19
CHECKED	TLK	8–16–19
APPROVED	MD	8–16–19

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TITLE: DIAGRAM, RSA INTERCONNECTION

SCALE: / / / SHEET 1–2

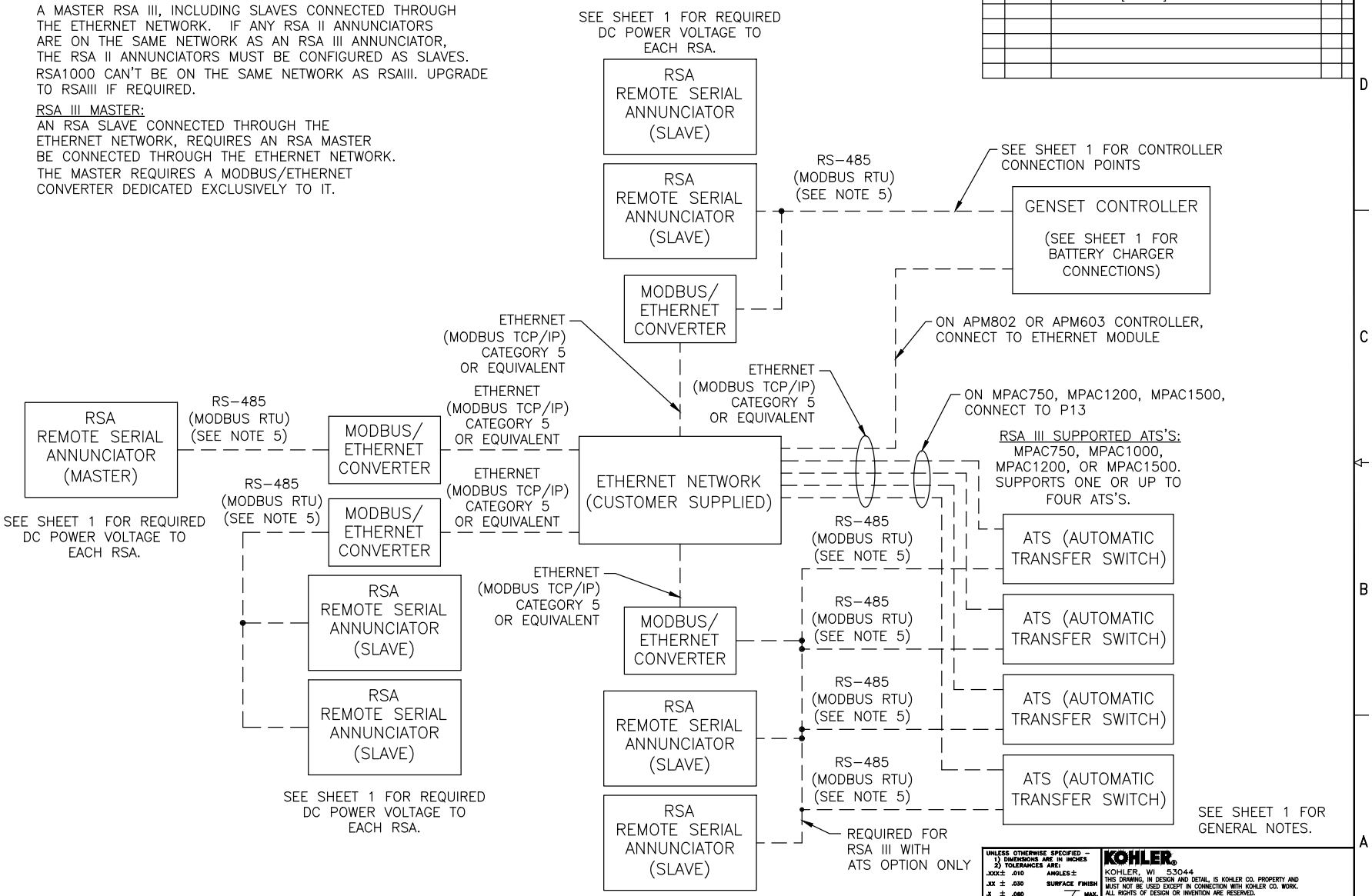
PLOTTED: DWG. NO. ADV–9169 C

ETHERNET NETWORK CONNECTIONS

REV	DATE	REVISION	BY	M F
–	8–16–19	NEW DRAWING. REPLACES ADV–6990 [CT198499]	TLK	
A	5–27–22	SHEET SHEET 1 [CT220029]	BCC	

RSA III:
A MAXIMUM OF 5 SLAVES CAN BE CONNECTED TO A MASTER RSA III, INCLUDING SLAVES CONNECTED THROUGH THE ETHERNET NETWORK. IF ANY RSA II ANNUNCIATORS ARE ON THE SAME NETWORK AS AN RSA III ANNUNCIATOR, THE RSA II ANNUNCIATORS MUST BE CONFIGURED AS SLAVES. RSA1000 CAN'T BE ON THE SAME NETWORK AS RSAIII. UPGRADE TO RSAIII IF REQUIRED.

RSA III MASTER:
AN RSA SLAVE CONNECTED THROUGH THE ETHERNET NETWORK, REQUIRES AN RSA MASTER BE CONNECTED THROUGH THE ETHERNET NETWORK. THE MASTER REQUIRES A MODBUS/ETHERNET CONVERTER DEDICATED EXCLUSIVELY TO IT.



INTERCONNECTION DIAGRAM
CONTROLLER
WITH RSA ANNUNCIATOR

UNLESS OTHERWISE SPECIFIED – 1) DIMENSIONS ARE IN INCHES 2) TOLERANCES ARE: .XXX ± .010 ANGLES ± .XX ± .030 SURFACE FINISH .X ± .060 √ MAX. FRACTIONS ±

APPROVALS		DATE
DRAWN	TLK	8–16–19
CHECKED	TLK	8–16–19
APPROVED	MD	8–16–19

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KOHLER, WI 53044

TITLE: DIAGRAM, RSA INTERCONNECTION

SCALE: / / / SHEET 2–2

PLOTTED: DWG. NO. ADV–9169 C

Drawing Sheet Reference

Sheet	Description
1	Networked Devices, General Notes, This Sheet
2	Converters, Ethernet Network, PC, Data Interface System
3	16-Light (DEC3+), 550 (DEC550), KPC 1000 Legacy Genset Controllers
4	DEC3000 / APM402 Genset Controller
5	DEC6000 Genset Controller
6	APM603 Genset Controller for non-KD series, Standard PGEN Network
7	This Sheet Reserved for Future Features
8	APM603 Genset Controller for KD Series, Standard PGEN Network
9	This Sheet Reserved for Future Features
10	APM802 Genset Controller
11	DEC8000 Genset Controller
12	DEC3500 Genset Controller, Towable 10 Position Customer Terminal Block
13	Series 1000 (MPAC1000), 340 (M340/M340+), Power Monitor Legacy ATS (Automatic Transfer Switch Controllers)
14	MPAC1500, MPAC-DM 750/1200/1500 ATS (Automatic Transfer Switch Controllers)
15	Legacy RSAII (Remote Serial Annunciator)
16	RSAIII (Remote Serial Annunciator)

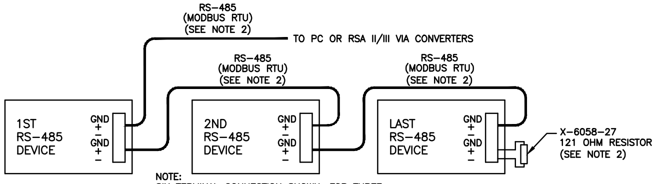
REV	DATE	REVISION	BY	MF
N	5-30-19	THIS SHEET ADDED; COMPATIBILITY CHART, STANDARD NOTES,		
		AND NETWORKED DEVICES MOVED TO THIS SHEET; ISOLATED/		
		NON-ISOLATED RS-485 IDENTIFIED ON ALL SHEETS [CT197795]	TLK	
P	6-24-20	(D-8) SHEET 6 NOTE: NON-KD SERIES WAS JOHN DEERE		
		80-500 KW, SHEET 12 NOTE: ADDED		
		TOWABLE 10 POSITION CUSTOMER TERMINAL BLOCK [CT204963]	TLK	
R	28APR2021	(A-8,7) "PEP-RML-001" NOTE ADDED; SEE SHEET 15 [CT212605]	CLN	

Controller/Annunciator Compatibility Chart

	Monitor III	SiteTech	RSA2	RSA3
550 Genset	X	X	X	X
16-Light Genset	X		X	X
DEC 3000 / APM402 Genset	X	X	X	X
KPC 1000 Genset			X	X
6000 Genset	X	X	X	X
8000 Genset				4
APM802				X
APM603		X		X
DEC-3500 Genset		X		X
MPAC 1500	X		X	X
MPAC-DM 750, 1200, 1500		X	X	X
Series 1000 ATS	X		X	X
340 ATS	X			
340 Power Monitor	X			

"X" Designates supported devices. "4" Designates RS-485 Only.

DETAIL A (EXAMPLE OF)
NETWORKED RS-485 DEVICES



NOTE:
SIX TERMINAL CONNECTION SHOWN. FOR THREE TERMINAL CONNECTION, USE TWO WIRES PER TERMINAL STRIP SCREW.

NOTES:

1.) MAXIMUM CABLE LENGTH FOR RS-232 IS 50 FEET. USE RS-485 IF LONGER THAN 50 FEET IS REQ'D.

2.) CUSTOMER SUPPLIED WIRE. USE BELDEN #9841 OR EQUIVALENT CABLE. USE A MAXIMUM CABLE LENGTH OF 1219 METERS (4000 FT.) FROM THE RS-485 CONVERTER TO THE LAST RS-485 DEVICE IN THE NETWORK. THE "LAST DEVICE" IS THE DEVICE FURTHEST FROM THE CONTROLLER. CONNECT "+" TO "+", "−" TO "−". CONNECT THE CABLE SHIELD TO "GND" AT ONE END OF CABLE ONLY, LEAVE OTHER END DISCONNECTED. IF OPERATING OVER 19.2 K BAUD RATE AND WIRE LENGTH > 305 METERS (1000 FT.), CONNECT 121 OHM TERMINATING RESISTOR (X-6058-27) TO "+" AND "−" ON THE LAST DEVICE ON THE NETWORK. IF ONLY ONE DEVICE IS USED, IT IS THE LAST DEVICE. THE TERMINATING RESISTOR IS SELECTABLE INSIDE THE MODBUS/ETHERNET CONVERTER AND REMOTE SERIAL ANNUNCIATOR2 (RSA2) VIA P34. PLACE THE P34 JUMPER ON THE "IN" PINS IF THE MODBUS/ETHERNET CONVERTER, RSA2, OR RSA3 IS THE LAST DEVICE IN THE NETWORK. IF NOT THE LAST DEVICE, PLACE THE P34 JUMPER ON THE "OUT" PINS.

3.) THE 550 & 6000 CONTROLLER CAN BE USED AS A RS-232/RS-485 CONVERTER. CONNECT THE 9-PIN SERIAL PORT ON THE PC TO P18 ON THE 550 OR 6000 CONTROLLER AS SHOWN. THEN CONNECT P20 ON THE 550 OR 6000 CONTROLLER TO THE OTHER RS-485 DEVICES IN THE NETWORK.

4.) EACH MODBUS/ETHERNET CONVERTER CAN COMMUNICATE WITH UP TO 4 ETHERNET NETWORK DEVICES SIMULTANEOUSLY. IF A MODBUS/ETHERNET CONVERTER IS ATTACHED TO A SLAVE REMOTE SERIAL ANNUNCIATOR, A MODBUS/ETHERNET CONVERTER CONNECTED TO A MASTER REMOTE SERIAL ANNUNCIATOR IS REQUIRED. SEE NOTE 2 FOR P34 (TERMINATING RESISTOR) SETTING.

5.) ONLY ONE MASTER IS ALLOWED PER RS-485 NETWORK. ANY COMBINATION OF MASTERS IS ALLOWED IF COMMUNICATING VIA MODBUS/ETHERNET CONVERTERS.

6.) THIS ASSEMBLY OR PART MUST COMPLY WITH PEP-RML-001

UNLESS OTHERWISE SPECIFIED –
1) DIMENSIONS ARE IN INCHES
2) TOLERANCES ARE:
.XXX ± .010 ANGLES ± 1/2°
.XX ± .030 SURFACE FINISH
.X ± .060 MAX.
FRACTIONS ±

APPROVALS		DATE
DRAWN	TLK	5-30-19
CHECKED	TLK	5-30-19
APPROVED	MD	5-30-19

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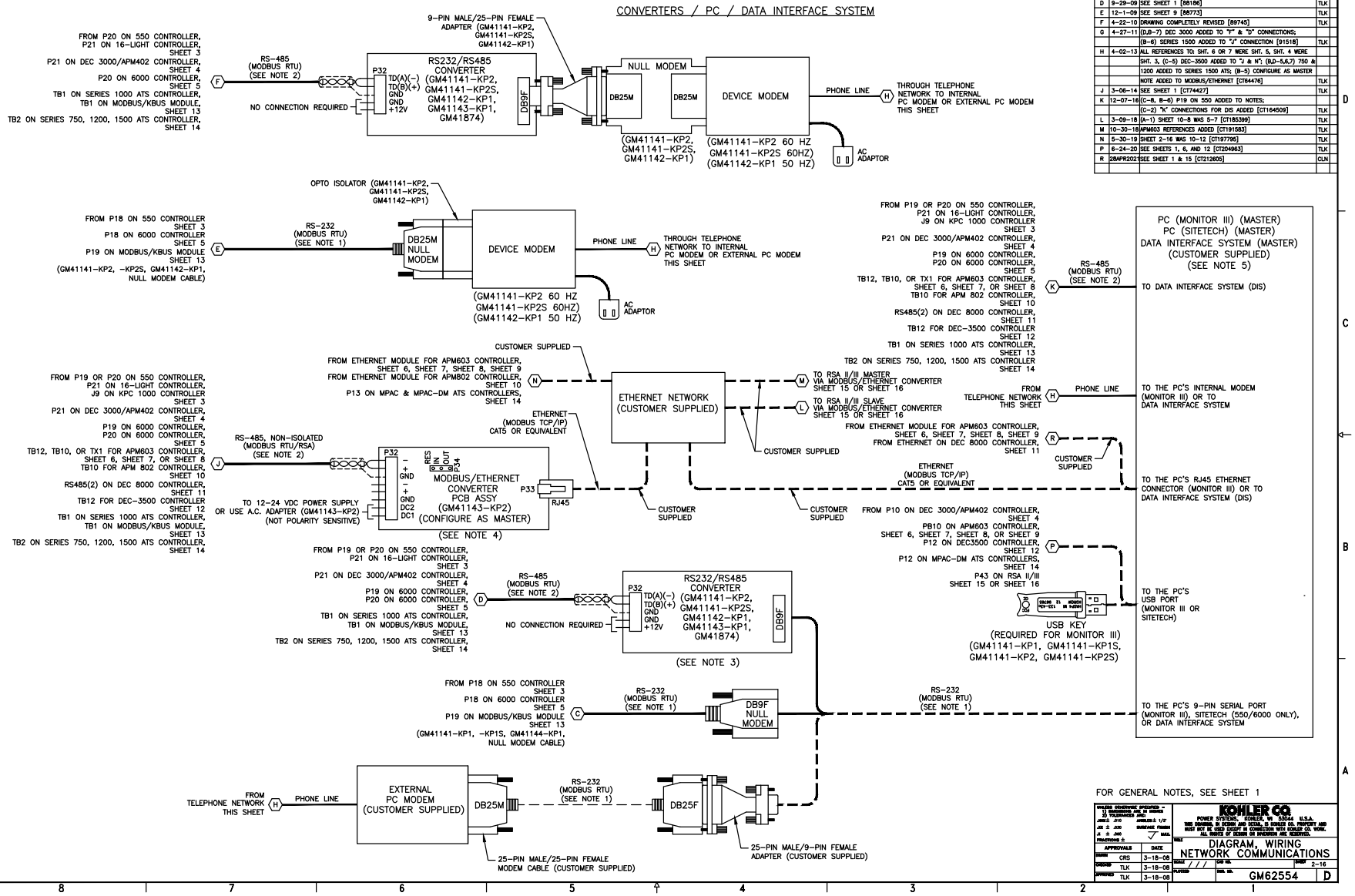
TITLE: DIAGRAM, WIRING NETWORK COMMUNICATIONS

SCALE: / / / | CAD NO. | SHEET 1-16
PLOTTED | DWG. NO. GM62554 | D

CONVERTERS / PC / DATA INTERFACE SYSTEM



REV	DATE	REVISION	BY
D	9-29-09	SEE SHEET 1 [88186]	TLK
E	12-1-09	SEE SHEET 9 [88773]	TLK
F	4-22-10	DRAWING COMPLETELY REVISED [89745]	TLK
G	4-27-11	(D,B-7) DEC 3000 ADDED TO "F" & "D" CONNECTIONS;	
		(B-6) SERIES 1500 ADDED TO "J" CONNECTION [91518]	TLK
H	4-02-13	ALL REFERENCES TO: SHT. 6 OR 7 WERE SHT. 5, SHT. 4 WERE	
		SHT. 3, (C-5) DEC-3500 ADDED TO "J & N"; (B,D-5,6,7) 750 &	
		1200 ADDED TO SERIES 1500 ATS; (B-5) CONFIGURE AS MASTER	
		NOTE ADDED TO MODBUS/ETHERNET [C164476]	TLK
J	3-06-14	SEE SHEET 1 [C174427]	TLK
K	12-07-16	(C-8, B-6) P19 ON 550 ADDED TO NOTES;	
		(C-2) "K" CONNECTIONS FOR DIS ADDED [C164509]	TLK
L	3-09-18	(A-1) SHEET 10-8 WAS 5-7 [C185399]	TLK
M	10-30-18	APM603 REFERENCES ADDED [C191583]	TLK
N	5-30-19	SHEET 2-16 WAS 10-12 [C1197795]	TLK
P	6-24-20	SEE SHEETS 1, 6, AND 12 [C1204963]	TLK
R	28APR202	SEE SHEET 1 & 15 [C1212605]	CLN

FOR GENERAL NOTES, SEE SHEET 1

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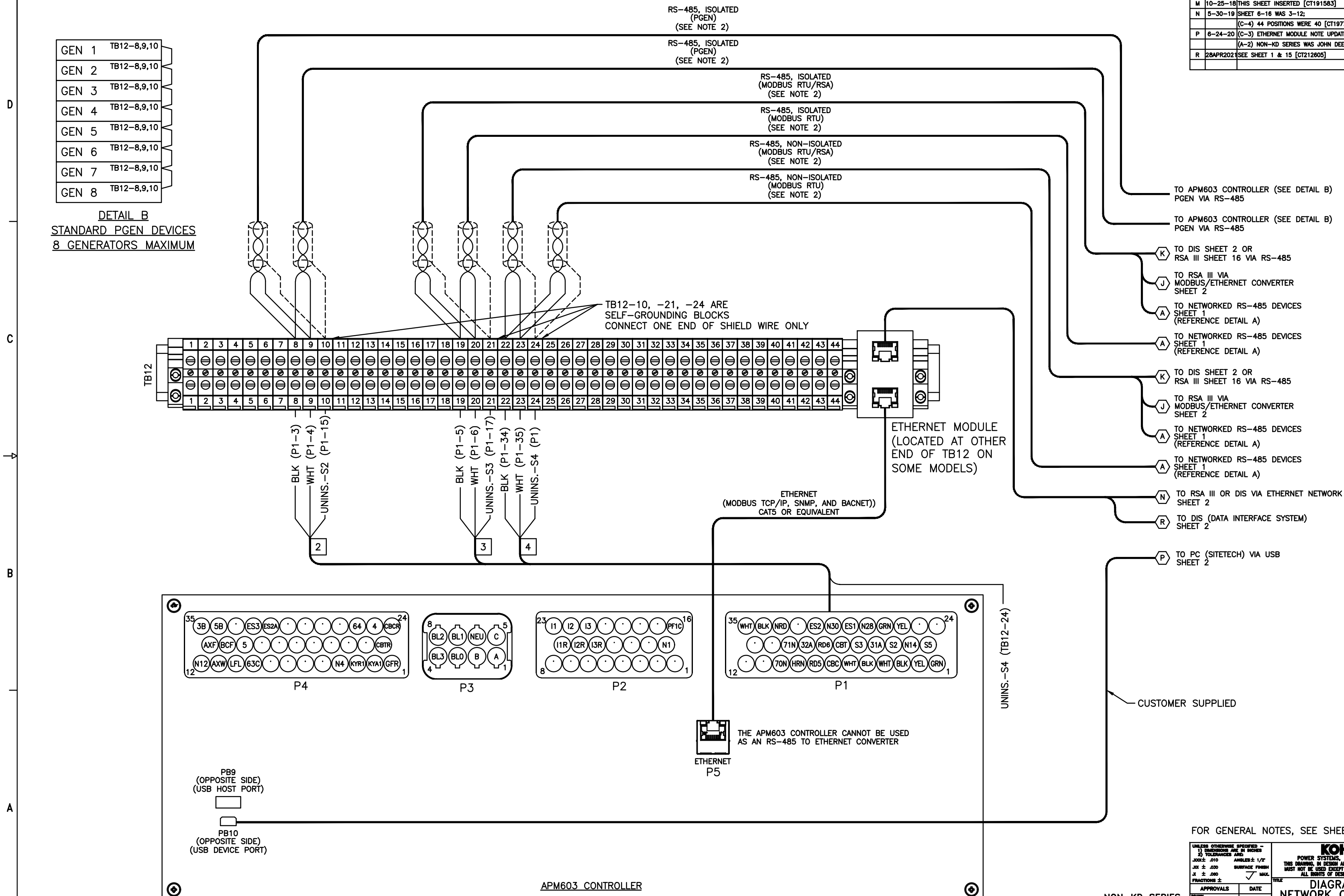
APPROVALS	DATE
DRS	3-18-08
TLK	3-18-08
TLK	3-18-08

TITLE: DIAGRAM, WIRING NETWORK COMMUNICATIONS
SCALE: /// DWG NO. SHEET 2-16
PLOTTED: DWG. NO. GM62554 D

REV	DATE	REVISION	BY	MF
M	10-25-18	THIS SHEET INSERTED [CT191583]	TLK	
N	5-30-19	SHEET 6-16 WAS 3-12;		
		(C-4) 44 POSITIONS WERE 40 [CT197795]	TLK	
P	6-24-20	(C-3) ETHERNET MODULE NOTE UPDATED;		
		(A-2) NON-KD SERIES WAS JOHN DEERE 80-500 KW [CT204963]	TLK	
R	28APR2021	SEE SHEET 1 & 15 [CT212605]	CLN	



NON-KD SERIES
STANDARD PGEN NETWORK

FOR GENERAL NOTES, SEE SHEET 1

UNLESS OTHERWISE SPECIFIED –
1) DIMENSIONS ARE IN INCHES
2) TOLERANCES ARE:
.XXX ± .010 ANGLES ± 1/2°
.XX ± .030 SURFACE FINISH
.X ± .060 √ MAX.
FRACTIONS ±

APPROVALS		DATE
DRAWN	CRS	3-18-08
CHECKED	TLK	3-18-08
APPROVED	TLK	3-18-08

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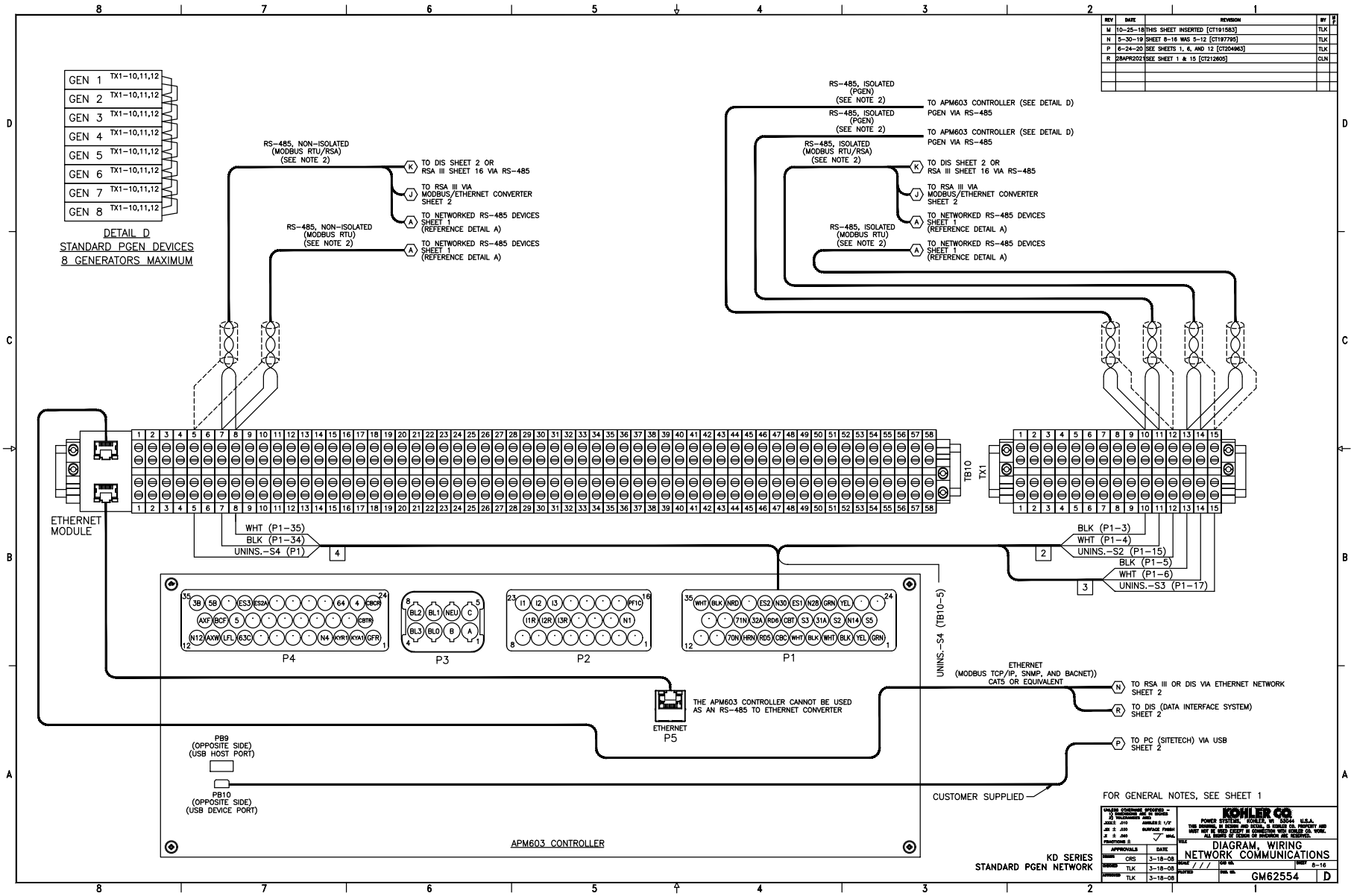
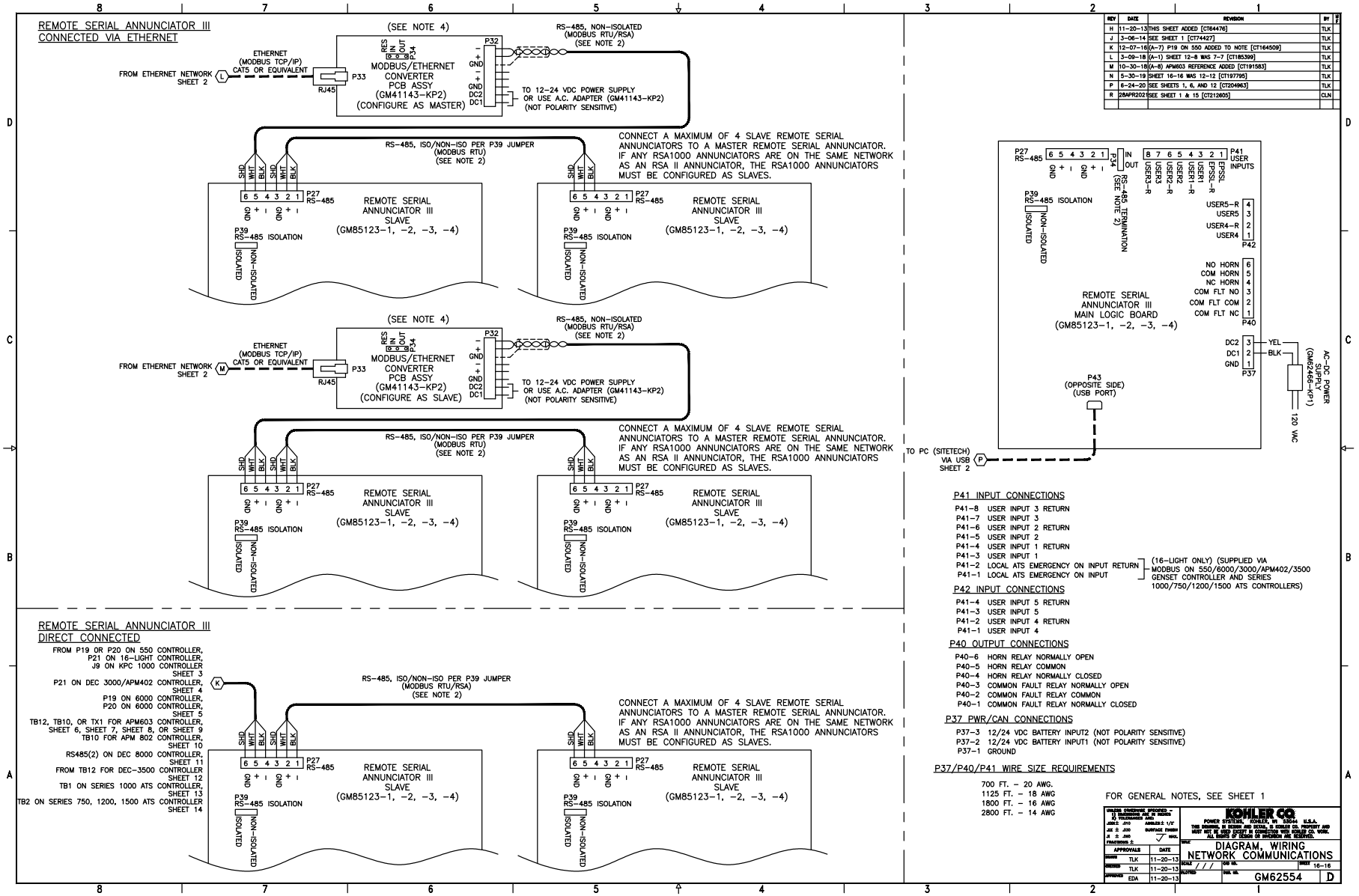
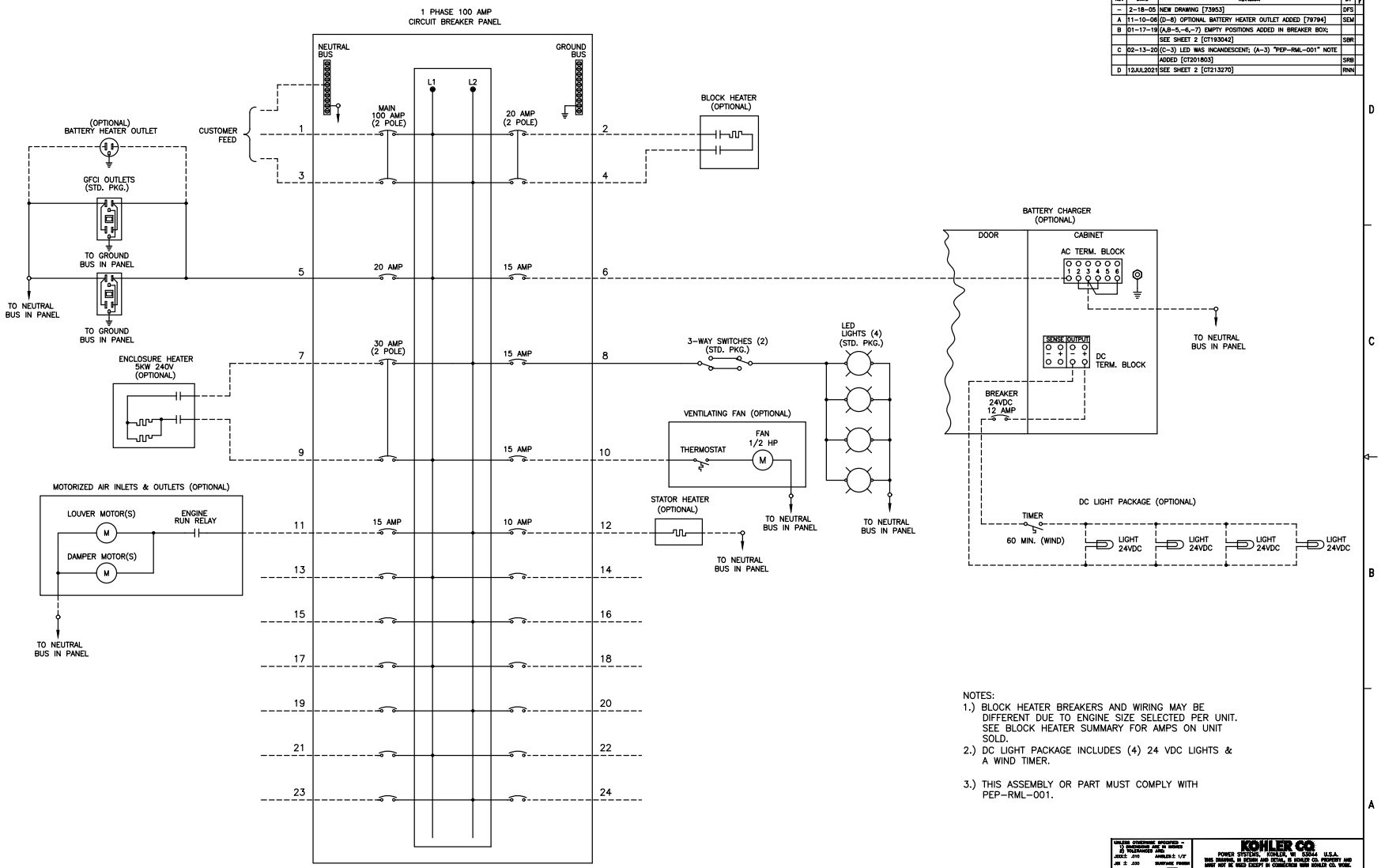
TITLE: DIAGRAM, WIRING NETWORK COMMUNICATIONS

SCALE / / / CAD NO. SHEET 6-16
PLOTTED DWG. NO. GM62554 D


REV | DATE | REVISION | BY
M 10-25-18 THIS SHEET INSERTED [CT191583] TLK
N 5-30-19 SHEET 8-16 WAS 5-12 [CT197795] TLK
P 6-24-20 SEE SHEETS 1, 6, AND 12 [CT204963] TLK
R 28APR2021 SEE SHEET 1 & 15 [CT212605] CLN
GEN 1 TX1-10,11,12
GEN 2 TX1-10,11,12
GEN 3 TX1-10,11,12
GEN 4 TX1-10,11,12
GEN 5 TX1-10,11,12
GEN 6 TX1-10,11,12
GEN 7 TX1-10,11,12
GEN 8 TX1-10,11,12
DETAIL D
STANDARD PGEN DEVICES
8 GENERATORS MAXIMUM
RS-485, NON-ISOLATED (MODBUS RTU/RSA) (SEE NOTE 2)
K TO DIS SHEET 2 OR RSA III SHEET 16 VIA RS-485
J TO RSA III VIA MODBUS/ETHERNET CONVERTER SHEET 2
A TO NETWORKED RS-485 DEVICES SHEET 1 (REFERENCE DETAIL A)
RS-485, NON-ISOLATED (MODBUS RTU) (SEE NOTE 2)
A TO NETWORKED RS-485 DEVICES SHEET 1 (REFERENCE DETAIL A)
RS-485, ISOLATED (PGEN) (SEE NOTE 2)
TO APM603 CONTROLLER (SEE DETAIL D) PGEN VIA RS-485
RS-485, ISOLATED (PGEN) (SEE NOTE 2)
TO APM603 CONTROLLER (SEE DETAIL D) PGEN VIA RS-485
RS-485, ISOLATED (MODBUS RTU/RSA) (SEE NOTE 2)
K TO DIS SHEET 2 OR RSA III SHEET 16 VIA RS-485
J TO RSA III VIA MODBUS/ETHERNET CONVERTER SHEET 2
A TO NETWORKED RS-485 DEVICES SHEET 1 (REFERENCE DETAIL A)
RS-485, ISOLATED (MODBUS RTU) (SEE NOTE 2)
A TO NETWORKED RS-485 DEVICES SHEET 1 (REFERENCE DETAIL A)
ETHERNET MODULE
TB10
TX1
WHT (P1-35)
BLK (P1-34)
UNINS.-S4 (P1)
4
BLK (P1-3)
WHT (P1-4)
UNINS.-S2 (P1-15)
2
BLK (P1-5)
WHT (P1-6)
UNINS.-S3 (P1-17)
3
P4
P3
P2
P1
UNINS.-S4 (TB10-5)
ETHERNET
P5
THE APM603 CONTROLLER CANNOT BE USED AS AN RS-485 TO ETHERNET CONVERTER
ETHERNET (MODBUS TCP/IP, SNMP, AND BACNET)) CAT5 OR EQUIVALENT
N TO RSA III OR DIS VIA ETHERNET NETWORK SHEET 2
R TO DIS (DATA INTERFACE SYSTEM) SHEET 2
P TO PC (SITETECH) VIA USB SHEET 2
PB9 (OPPOSITE SIDE) (USB HOST PORT)
PB10 (OPPOSITE SIDE) (USB DEVICE PORT)
CUSTOMER SUPPLIED
APM603 CONTROLLER
FOR GENERAL NOTES, SEE SHEET 1
KOHLER CO.
POWER SYSTEMS, KOHLER, WI 53044 U.S.A.
DIAGRAM, WIRING NETWORK COMMUNICATIONS
KD SERIES
STANDARD PGEN NETWORK
GM62554 D
SHEET 8-16


REMOTE SERIAL ANNUNCIATOR III
CONNECTED VIA ETHERNET
(SEE NOTE 4)
ETHERNET
(MODBUS TCP/IP)
CAT5 OR EQUIVALENT
FROM ETHERNET NETWORK
SHEET 2
MODBUS/ETHERNET
CONVERTER
PCB ASSY
(GM41143-KP2)
(CONFIGURE AS MASTER)
RJ45
P33
P32
RS-485, NON-ISOLATED
(MODBUS RTU/RSA)
(SEE NOTE 2)
TO 12-24 VDC POWER SUPPLY
OR USE A.C. ADAPTER (GM41143-KP2)
(NOT POLARITY SENSITIVE)
RS-485, ISO/NON-ISO PER P39 JUMPER
(MODBUS RTU)
(SEE NOTE 2)
CONNECT A MAXIMUM OF 4 SLAVE REMOTE SERIAL
ANNUNCIATORS TO A MASTER REMOTE SERIAL ANNUNCIATOR.
IF ANY RSA1000 ANNUNCIATORS ARE ON THE SAME NETWORK
AS AN RSA II ANNUNCIATOR, THE RSA1000 ANNUNCIATORS
MUST BE CONFIGURED AS SLAVES.
REMOTE SERIAL
ANNUNCIATOR III
SLAVE
(GM85123-1, -2, -3, -4)
P27
RS-485
P39
RS-485 ISOLATION
ISOLATED
NON-ISOLATED
SHD
WHT
BLK
GND
(SEE NOTE 4)
ETHERNET
(MODBUS TCP/IP)
CAT5 OR EQUIVALENT
FROM ETHERNET NETWORK
SHEET 2
MODBUS/ETHERNET
CONVERTER
PCB ASSY
(GM41143-KP2)
(CONFIGURE AS SLAVE)
RJ45
P33
P32
RS-485, NON-ISOLATED
(MODBUS RTU/RSA)
(SEE NOTE 2)
TO 12-24 VDC POWER SUPPLY
OR USE A.C. ADAPTER (GM41143-KP2)
(NOT POLARITY SENSITIVE)
RS-485, ISO/NON-ISO PER P39 JUMPER
(MODBUS RTU)
(SEE NOTE 2)
CONNECT A MAXIMUM OF 4 SLAVE REMOTE SERIAL
ANNUNCIATORS TO A MASTER REMOTE SERIAL ANNUNCIATOR.
IF ANY RSA1000 ANNUNCIATORS ARE ON THE SAME NETWORK
AS AN RSA II ANNUNCIATOR, THE RSA1000 ANNUNCIATORS
MUST BE CONFIGURED AS SLAVES.
REMOTE SERIAL
ANNUNCIATOR III
SLAVE
(GM85123-1, -2, -3, -4)
REMOTE SERIAL ANNUNCIATOR III
DIRECT CONNECTED
FROM P19 OR P20 ON 550 CONTROLLER,
P21 ON 16-LIGHT CONTROLLER,
J9 ON KPC 1000 CONTROLLER
SHEET 3
P21 ON DEC 3000/APM402 CONTROLLER,
SHEET 4
P19 ON 6000 CONTROLLER,
P20 ON 6000 CONTROLLER,
SHEET 5
TB12, TB10, OR TX1 FOR APM603 CONTROLLER,
SHEET 6, SHEET 7, SHEET 8, OR SHEET 9
TB10 FOR APM 802 CONTROLLER,
SHEET 10
RS485(2) ON DEC 8000 CONTROLLER,
SHEET 11
FROM TB12 FOR DEC-3500 CONTROLLER
SHEET 12
TB1 ON SERIES 1000 ATS CONTROLLER,
SHEET 13
TB2 ON SERIES 750, 1200, 1500 ATS CONTROLLER
SHEET 14
RS-485, ISO/NON-ISO PER P39 JUMPER
(MODBUS RTU/RSA)
(SEE NOTE 2)
CONNECT A MAXIMUM OF 4 SLAVE REMOTE SERIAL
ANNUNCIATORS TO A MASTER REMOTE SERIAL ANNUNCIATOR.
IF ANY RSA1000 ANNUNCIATORS ARE ON THE SAME NETWORK
AS AN RSA II ANNUNCIATOR, THE RSA1000 ANNUNCIATORS
MUST BE CONFIGURED AS SLAVES.
REMOTE SERIAL
ANNUNCIATOR III
SLAVE
(GM85123-1, -2, -3, -4)
P27
RS-485
P39
RS-485 ISOLATION
ISOLATED
NON-ISOLATED
SHD
WHT
BLK
GND
P27
RS-485
P14
IN
OUT
RS-485 TERMINATION
(SEE NOTE 2)
P41
USER
INPUTS
USER3-R
USER3
USER2-R
USER2
USER1-R
USER1
EPSSL-R
EPSSL
P39
RS-485 ISOLATION
ISOLATED
NON-ISOLATED
USER5-R
USER5
USER4-R
USER4
P42
REMOTE SERIAL
ANNUNCIATOR III
MAIN LOGIC BOARD
(GM85123-1, -2, -3, -4)
NO HORN
COM HORN
NC HORN
COM FLT NO
COM FLT COM
COM FLT NC
P40
DC2
DC1
GND
P37
YEL
BLK
AC-DC POWER
SUPPLY
(GM62466-KP1)
120 VAC
P43
(OPPOSITE SIDE)
(USB PORT)
TO PC (SITETECH)
VIA USB
SHEET 2
P41 INPUT CONNECTIONS
P41-8 USER INPUT 3 RETURN
P41-7 USER INPUT 3
P41-6 USER INPUT 2 RETURN
P41-5 USER INPUT 2
P41-4 USER INPUT 1 RETURN
P41-3 USER INPUT 1
P41-2 LOCAL ATS EMERGENCY ON INPUT RETURN
P41-1 LOCAL ATS EMERGENCY ON INPUT
(16-LIGHT ONLY) (SUPPLIED VIA
MODBUS ON 550/6000/3000/APM402/3500
GENSET CONTROLLER AND SERIES
1000/750/1200/1500 ATS CONTROLLERS)
P42 INPUT CONNECTIONS
P41-4 USER INPUT 5 RETURN
P41-3 USER INPUT 5
P41-2 USER INPUT 4 RETURN
P41-1 USER INPUT 4
P40 OUTPUT CONNECTIONS
P40-6 HORN RELAY NORMALLY OPEN
P40-5 HORN RELAY COMMON
P40-4 HORN RELAY NORMALLY CLOSED
P40-3 COMMON FAULT RELAY NORMALLY OPEN
P40-2 COMMON FAULT RELAY COMMON
P40-1 COMMON FAULT RELAY NORMALLY CLOSED
P37 PWR/CAN CONNECTIONS
P37-3 12/24 VDC BATTERY INPUT2 (NOT POLARITY SENSITIVE)
P37-2 12/24 VDC BATTERY INPUT1 (NOT POLARITY SENSITIVE)
P37-1 GROUND
P37/P40/P41 WIRE SIZE REQUIREMENTS
700 FT. - 20 AWG.
1125 FT. - 18 AWG
1800 FT. - 16 AWG
2800 FT. - 14 AWG
FOR GENERAL NOTES, SEE SHEET 1
REV DATE REVISION BY
H 11-20-13 THIS SHEET ADDED [CT64476] TLK
J 3-06-14 SEE SHEET 1 [CT74427] TLK
K 12-07-16 (A-7) P19 ON 550 ADDED TO NOTE [CT164509] TLK
L 3-09-18 (A-1) SHEET 12-8 WAS 7-7 [CT185399] TLK
M 10-30-18 (A-8) APM603 REFERENCE ADDED [CT191583] TLK
N 5-30-19 SHEET 16-16 WAS 12-12 [CT197795] TLK
P 5-24-20 SEE SHEETS 1, 6, AND 12 [CT204963] TLK
R 28APR2021 SEE SHEET 1 & 15 [CT212605] CLN
KOHLER CO.
POWER SYSTEMS, KOHLER, WI 53044 U.S.A.
DIAGRAM, WIRING
NETWORK COMMUNICATIONS
APPROVALS DATE
DRAWN TLK 11-20-13
CHECKED TLK 11-20-13
APPROVED EDA 11-20-13
SCALE NONE
SHEET 16-16
GM62554
D

REV	DATE	REVISION	BY
–	2-18-05	NEW DRAWING [73953]	DFS
A	11-10-06	(D-8) OPTIONAL BATTERY HEATER OUTLET ADDED [78794]	SEM
B	01-17-19	(A,B-5,-6,-7) EMPTY POSITIONS ADDED IN BREAKER BOX; SEE SHEET 2 [CT193042]	SBR
C	02-13-20	(C-3) LED WAS INCANDESCENT; (A-3) "PEP-RML-001" NOTE ADDED [CT201803]	SRB
D	12JUL2021	SEE SHEET 2 [CT213270]	RNN



NOTES:
1.) BLOCK HEATER BREAKERS AND WIRING MAY BE DIFFERENT DUE TO ENGINE SIZE SELECTED PER UNIT. SEE BLOCK HEATER SUMMARY FOR AMPS ON UNIT SOLD.
2.) DC LIGHT PACKAGE INCLUDES (4) 24 VDC LIGHTS & A WIND TIMER.

3.) THIS ASSEMBLY OR PART MUST COMPLY WITH PEP-RML-001.

TPIK HOUSING
ELECTRICAL ACCESSORIES
1 PHASE

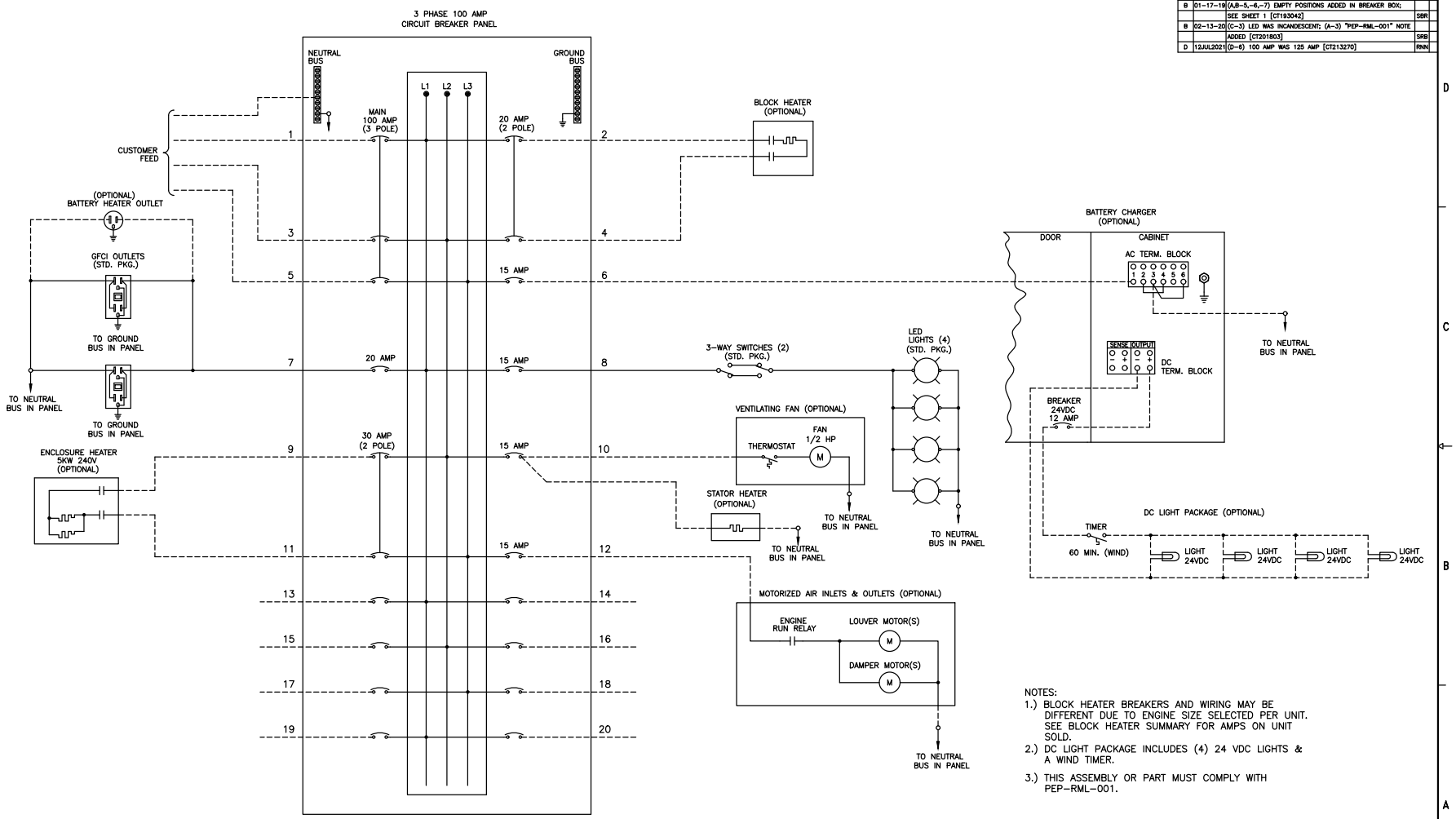
APPROVALS		DATE
DRAWN	DFS	2-18-05
CHECKED	TLK	2-21-05
APPROVED	EB	2-21-05

KOHLER CO.
POWER SYSTEMS, KOHLER, WI 53044 U.S.A.

TITLE: DIAGRAM, SCHEMATIC
TPIK ELECTRICAL PANEL

SCALE: / / / | DWG NO. ADV7035A.DWG | SHEET 1-2
PLOTTED | DWG NO. ADV-7035 | D

REV	DATE	REVISION	BY	N F
–	2-18-05	NEW DRAWING [73953]	DFS	
A	11-10-06	(C-8) OPTIONAL BATTERY HEATER OUTLET ADDED [79794]	SEM	
B	01-17-19	(A,B-5,-6,-7) EMPTY POSITIONS ADDED IN BREAKER BOX;		
		SEE SHEET 1 [CT193042]	SBR	
B	02-13-20	(C-3) LED WAS INCANDESCENT; (A-3) "PEP-RML-001" NOTE		
		ADDED [CT201803]	SRB	
D	12JUL2021	(D-6) 100 AMP WAS 125 AMP [CT213270]	RNN	



NOTES:
1.) BLOCK HEATER BREAKERS AND WIRING MAY BE DIFFERENT DUE TO ENGINE SIZE SELECTED PER UNIT. SEE BLOCK HEATER SUMMARY FOR AMPS ON UNIT SOLD.
2.) DC LIGHT PACKAGE INCLUDES (4) 24 VDC LIGHTS & A WIND TIMER.
3.) THIS ASSEMBLY OR PART MUST COMPLY WITH PEP-RML-001.

APPROVALS		DATE
DRAWN	DFS	2-18-05
CHECKED	TLK	2-21-05
ENGINEER	EB	2-21-05

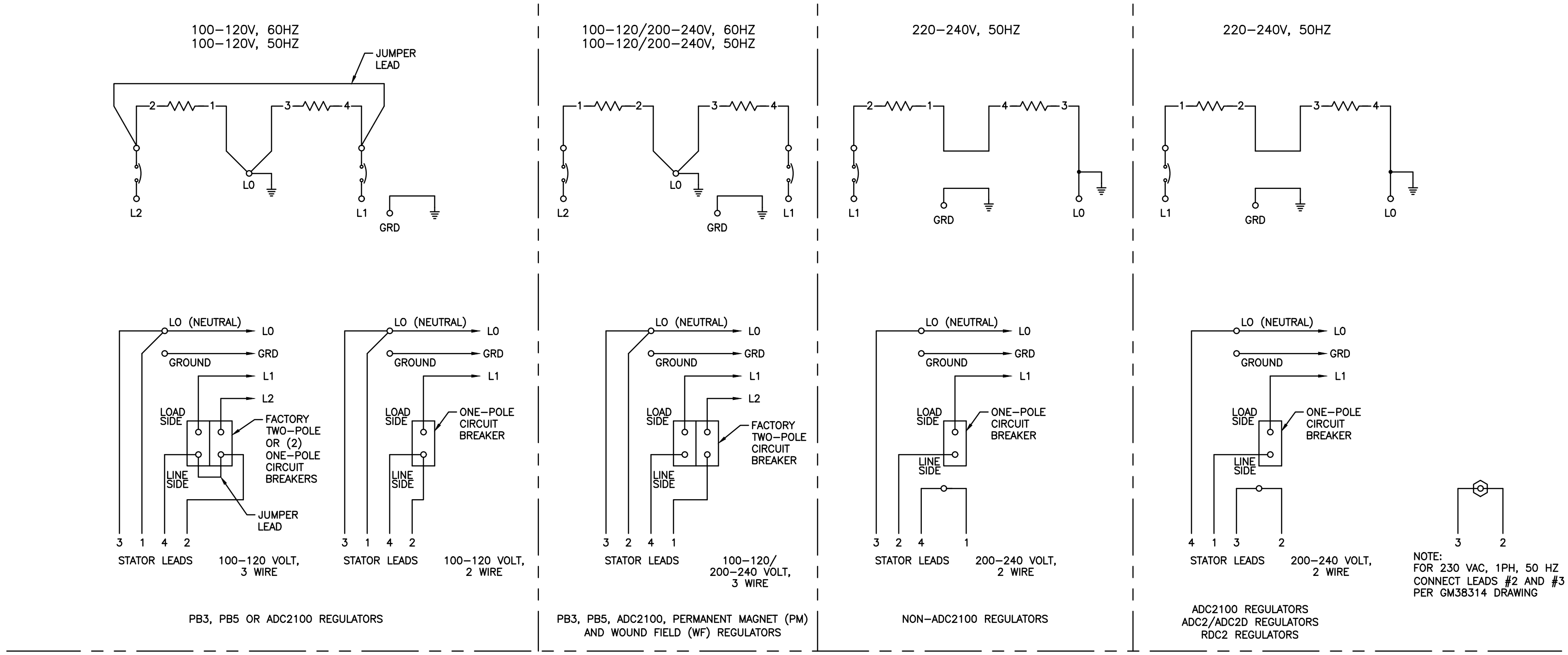
KOHLER CO.
POWER SYSTEMS, KOHLER, WI 53044 U.S.A.

TITLE: DIAGRAM, SCHEMATIC
TPIK ELECTRICAL PANEL

SCALE: /// DWG NO. ADV7035B.DWG SHEET 2-2
PLOTTED: DWG. NO. ADV-7035 D6

TPIK HOUSING
ELECTRICAL ACCESSORIES
3 PHASE

REV	DATE	REVISION	BY	MF
AB	10-4-19	SEE SHEET 4 [CT199071]	DS	
AC	02-25-20	SEE SHEET 5 [CT202143]	SBR	
AD	3-30-23	SEE SHEETS 4, 6 & 8 [CT226524]	SBR	
AE	11-4-23	SEE SHEET 6 [CT231345]	SBR	
AF	2-28-24	SEE SHEET 7 [CT233796]	PM	



NOTES:
SOME 4E, 4 LEAD, DEDICATED SINGLE PHASE STATORS HAVE DUAL LEADS LABELED 1, 2, 3, 4, AND 1A, 2A, 3A, 4A. IN THIS CASE CONNECT 1 & 1A, 2 & 2A, 3 & 3A, 4 & 4A
SOME STATORS HAVE DUAL LEADS. ALWAYS CONNECT LEADS OF THE SAME LABEL TOGETHER.

SINGLE PHASE
4 LEAD ALTERNATORS

UNLESS OTHERWISE SPECIFIED –
1) DIMENSIONS ARE IN INCHES
2) TOLERANCES ARE:
.XXX ± .010 ANGLES ± 1/2°
.XX ± .030 SURFACE FINISH
.X ± .060 √ MAX.
FRACTIONS ±

APPROVALS		DATE
DRAWN	CRS	9-25-06
CHECKED	TLK	9-25-06
APPROVED	TLK	9-25-06

KOHLER CO.
POWER SYSTEMS, KOHLER, WI 53044 U.S.A.

TITLE: DIAGRAM, ALTERNATOR CONNECTIONS

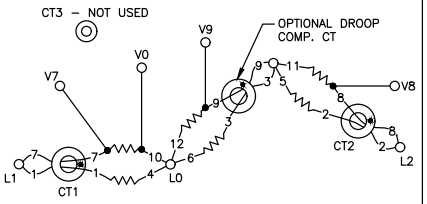
SCALE: NONE | CAD NO.: | SHEET: 1–9
PLOTTED: | DWG. NO.: ADV–5875 | D

REV	DATE	REVISION	BY	M F
AB	10-4-19	SEE SHEET 4 [CT199071]	DS	
AC	02-25-20	SEE SHEET 5 [CT202143]	SBR	
AD	3-30-23	SEE SHEETS 4, 6 & 8 [CT226524]	SBR	
AE	11-4-23	SEE SHEET 6 [CT231345]	SBR	
AF	2-28-24	SEE SHEET 7 [CT233796]	PM	

12 LEAD ALTERNATOR, 3 WIRE, SINGLE PHASE

60 HZ: 100/200V
60 HZ: 120/240V
50 HZ: 100/200V
50 HZ: 110/220V

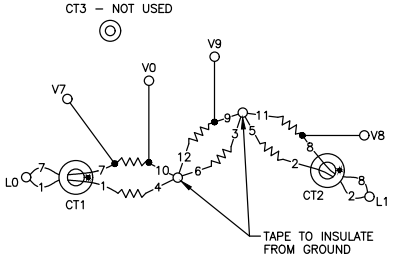
SOME SETS NOT RATED FOR SINGLE PHASE – SEE MANUALS



TB3 UP V7 LO METER SCALE LAMP JUMPER

12 LEAD ALTERNATOR, 3 WIRE, SINGLE PHASE

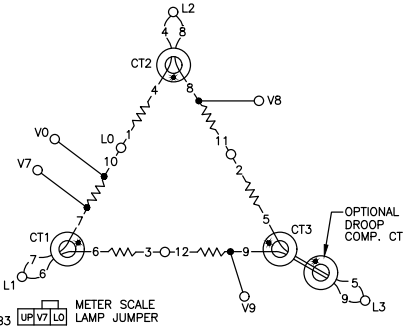
60 HZ: 240V
50 HZ: 220V
(MARINE ONLY)



TB3 UP V7 LO METER SCALE LAMP JUMPER

12 LEAD ALTERNATOR, 4 WIRE, DELTA

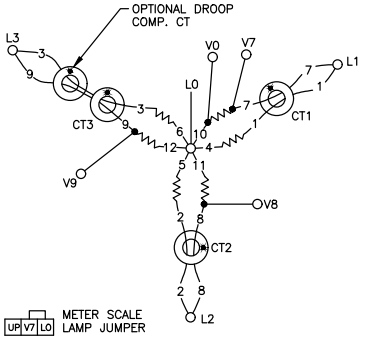
60 HZ: 120/240V
50 HZ: 110/220V



TB3 UP V7 LO METER SCALE LAMP JUMPER

12 LEAD ALTERNATOR, 4 WIRE, LOW WYE

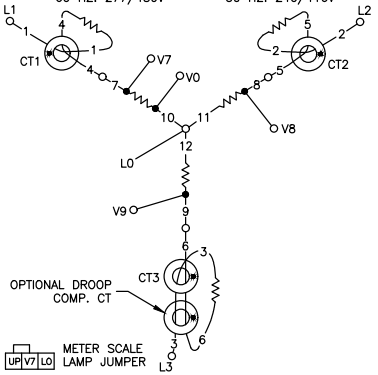
60 HZ: 120/208V
60 HZ: 127/220V
60 HZ: 139/240V
50 HZ: 110/190V
50 HZ: 115/200V
50 HZ: 120/208V



TB3 UP V7 LO METER SCALE LAMP JUMPER

12 LEAD ALTERNATOR, 4 WIRE, HI WYE

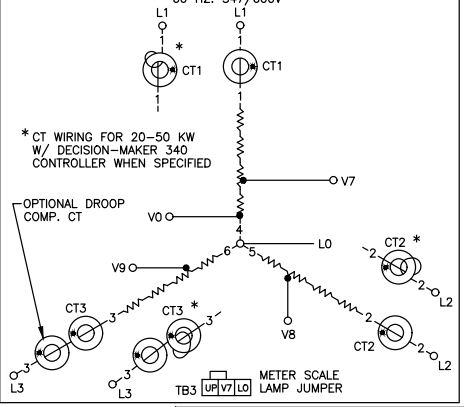
60 HZ: 220/380V
60 HZ: 240/416V
60 HZ: 277/480V
50 HZ: 220/380V
50 HZ: 230/400V
50 HZ: 240/416V



TB3 UP V7 LO METER SCALE LAMP JUMPER

6 LEAD ALTERNATOR, 4 WIRE, WYE

60 HZ: 347/600V



TB3 UP V7 LO METER SCALE LAMP JUMPER

NOTES:

CURRENT TRANSFORMER DOT OR "H1" TOWARD GENERATOR.
CURRENT TRANSFORMERS NOT USED ON ALL SETS.
SOME STATORS HAVE DUAL LEADS. ALWAYS CONNECT LEADS OF THE SAME LABEL TOGETHER.

PHASE ROTATION

A	B	C
L1	L2	L3

3 PHASE
FRII ALTERNATORS,
20–60KW WOUND EXCITER FIELD ALTERNATORS,
AND 10–20KW SMALL STANDBY

UNLESS OTHERWISE SPECIFIED – 1) DIMENSIONS ARE IN INCHES 2) TOLERANCES ARE: .XXX± .010 ANGLES± 1/2° .XX ± .030 SURFACE FINISH .X ± .060 MAX. FRACTIONS ±

APPROVALS		DATE
DRAWN	DFS	7-28-92
CHECKED	TLK	6-23-99
APPROVED	JMH	6-23-99

TITLE: DIAGRAM, ALTERNATOR CONNECTIONS

SCALE: NONE | CAD NO. | SHEET 2-9

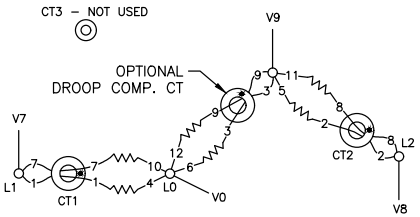
PLOTTED | DWG. NO. ADV-5875 | C

REV	DATE	REVISION	BY	M
AB	10-4-19	SEE SHEET 4 [CT199071]	DS	
AC	02-25-20	SEE SHEET 5 [CT202143]	SBR	
AD	3-30-23	SEE SHEETS 4, 6 & 8 [CT226524]	SBR	
AE	11-4-23	SEE SHEET 6 [CT231345]	SBR	
AF	2-28-24	SEE SHEET 7 [CT233796]	PM	

12 LEAD ALTERNATOR, 3 WIRE, SINGLE PHASE

60 HZ: 100/200V
60 HZ: 120/240V
50 HZ: 100/200V
50 HZ: 110/220V

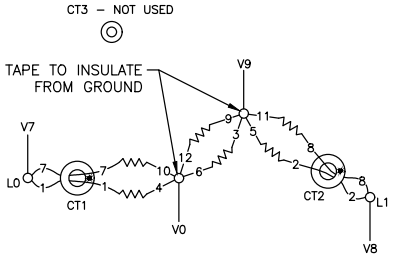
SOME SETS NOT RATED FOR SINGLE PHASE – SEE MANUALS



TB3 UP V7 LO METER SCALE LAMP JUMPER

12 LEAD ALTERNATOR, 3 WIRE, SINGLE PHASE

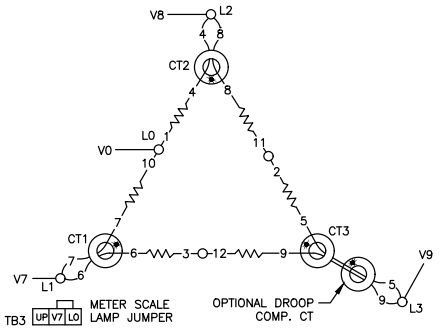
60 HZ: 240V
50 HZ: 220V
(MARINE ONLY)



TB3 UP V7 LO METER SCALE LAMP JUMPER

12 LEAD ALTERNATOR, 4 WIRE, DELTA

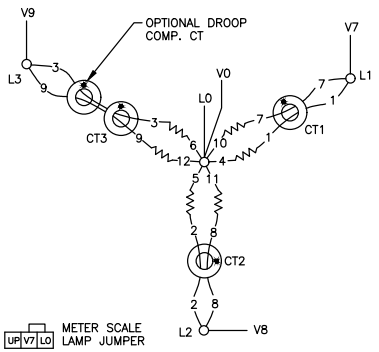
60 HZ: 120/240V
50 HZ: 110/220V



TB3 UP V7 LO METER SCALE LAMP JUMPER

12 LEAD ALTERNATOR, 4 WIRE, LOW WYE

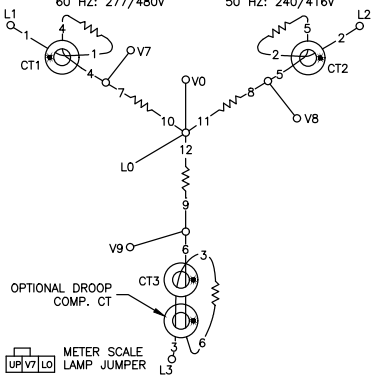
60 HZ: 120/208V
60 HZ: 127/220V
60 HZ: 139/240V
50 HZ: 110/190V
50 HZ: 115/200V
50 HZ: 120/208V



TB3 UP V7 LO METER SCALE LAMP JUMPER

12 LEAD ALTERNATOR, 4 WIRE, HI WYE

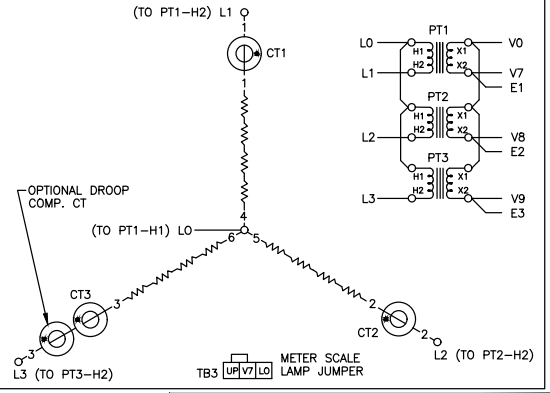
60 HZ: 220/380V
60 HZ: 240/416V
60 HZ: 277/480V
50 HZ: 220/380V
50 HZ: 230/400V
50 HZ: 240/416V



TB3 UP V7 LO METER SCALE LAMP JUMPER

6 LEAD ALTERNATOR, 4 WIRE, WYE

60 HZ: 347/600V



TB3 UP V7 LO METER SCALE LAMP JUMPER

NOTES:
CURRENT TRANSFORMER DOT OR "H1" TOWARD GENERATOR.
CURRENT TRANSFORMERS NOT USED ON ALL SETS.
SOME STATORS HAVE DUAL LEADS. ALWAYS CONNECT LEADS OF THE SAME LABEL TOGETHER.

PHASE ROTATION

A	B	C
L1	L2	L3

3 PHASE
60 (I.M.S.)–300 KW WOUND EXCITER FIELD
600V FRII
ALTERNATORS

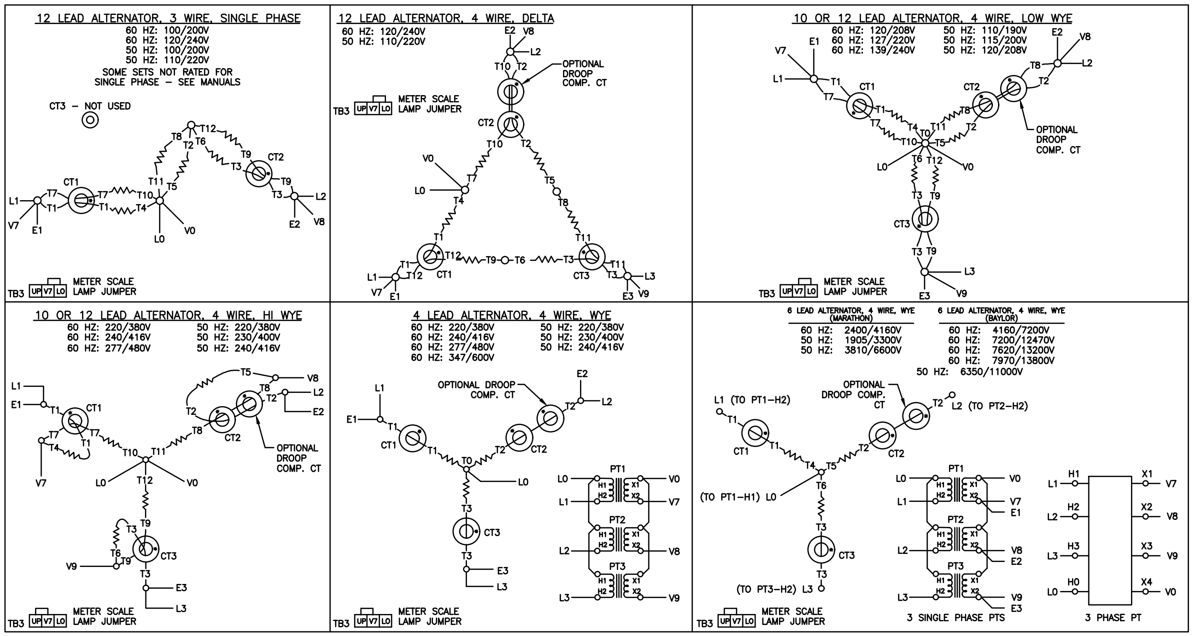
APPROVALS		DATE
DRAWN	LDS	8-25-98
CHECKED	TLK	6-23-99
APPROVED	JMH	6-23-99

KOHLER CO.
POWER SYSTEMS, KOHLER, WI 53044 U.S.A.

TITLE: DIAGRAM, ALTERNATOR CONNECTIONS
SCALE: NONE
CAD NO.
SHEET 3-9
PLOTTED
DWG. NO. ADV-5875
C

REV	DATE	REVISION	BY	MF
AB	10-4-19	(D-6,7,8) 12 LEAD ALTERNATOR: 3 WIRE, SINGLE PHASE & 4		
		WIRE, DELTA RECONNECTION DIAGRAM UPDATED [CT199071]	DS	
AC	02-25-20	SEE SHEET 5 [CT202143]	SBR	
AD	3-30-23	(A-2,-3) ADDED NOTES, SEE SHEETS 6 & 8 [CT226524]	SBR	
AE	11-4-23	SEE SHEET 6 [CT231345]	SBR	
AF	2-28-24	SEE SHEET 7 [CT233796]	PM	

3 PHASE GENERATOR CONNECTIONS

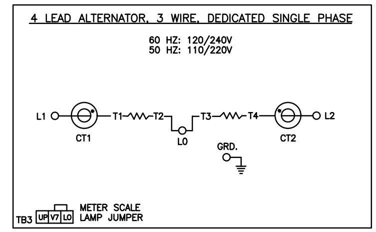


12 LEAD ALTERNATOR, 3 WIRE, SINGLE PHASE
60 HZ: 100/200V
60 HZ: 120/240V
50 HZ: 100/200V
50 HZ: 110/220V
SOME SETS NOT RATED FOR SINGLE PHASE - SEE MANUALS
CT3 - NOT USED
12 LEAD ALTERNATOR, 4 WIRE, DELTA
60 HZ: 120/240V
50 HZ: 110/220V
OPTIONAL DROOP COMP. CT
10 OR 12 LEAD ALTERNATOR, 4 WIRE, LOW WYE
60 HZ: 120/208V
60 HZ: 127/220V
60 HZ: 139/240V
50 HZ: 110/190V
50 HZ: 115/200V
50 HZ: 120/208V
OPTIONAL DROOP COMP. CT
10 OR 12 LEAD ALTERNATOR, 4 WIRE, HI WYE
60 HZ: 220/380V
60 HZ: 240/416V
60 HZ: 277/480V
50 HZ: 220/380V
50 HZ: 230/400V
50 HZ: 240/416V
OPTIONAL DROOP COMP. CT
4 LEAD ALTERNATOR, 4 WIRE, WYE
60 HZ: 220/380V
60 HZ: 240/416V
60 HZ: 277/480V
60 HZ: 347/600V
50 HZ: 220/380V
50 HZ: 230/400V
50 HZ: 240/416V
OPTIONAL DROOP COMP. CT
6 LEAD ALTERNATOR, 4 WIRE, WYE (MARATHON)
60 HZ: 2400/4160V
50 HZ: 1905/3300V
50 HZ: 3810/6600V
6 LEAD ALTERNATOR, 4 WIRE, WYE (BAYLOR)
60 HZ: 4160/7200V
60 HZ: 7200/12470V
60 HZ: 7620/13200V
60 HZ: 7970/13800V
50 HZ: 6350/11000V
OPTIONAL DROOP COMP. CT
L1 (TO PT1-H2)
L2 (TO PT2-H2)
(TO PT1-H1) L0
(TO PT3-H2) L3
3 SINGLE PHASE PTS
3 PHASE PT
TB3 METER SCALE LAMP JUMPER

PHASE ROTATION

A	B	C
L1	L2	L3

SINGLE PHASE GENERATOR CONNECTIONS



NOTES:

ON 10 LEAD GENERATORS, LEADS T10, T11 & T12 ARE ALL BROUGHT OUT TOGETHER AND LABELED "T0".

CURRENT TRANSFORMER DOT OR "H1" TOWARD GENERATOR.
CURRENT TRANSFORMERS NOT USED ON ALL SETS.

SOME STATORS HAVE DUAL LEADS. ALWAYS CONNECT LEADS OF THE SAME LABEL TOGETHER.

DEC550, DEC6000 &
APM402 CONTROLLERS ONLY
MARATHON ALTERNATORS

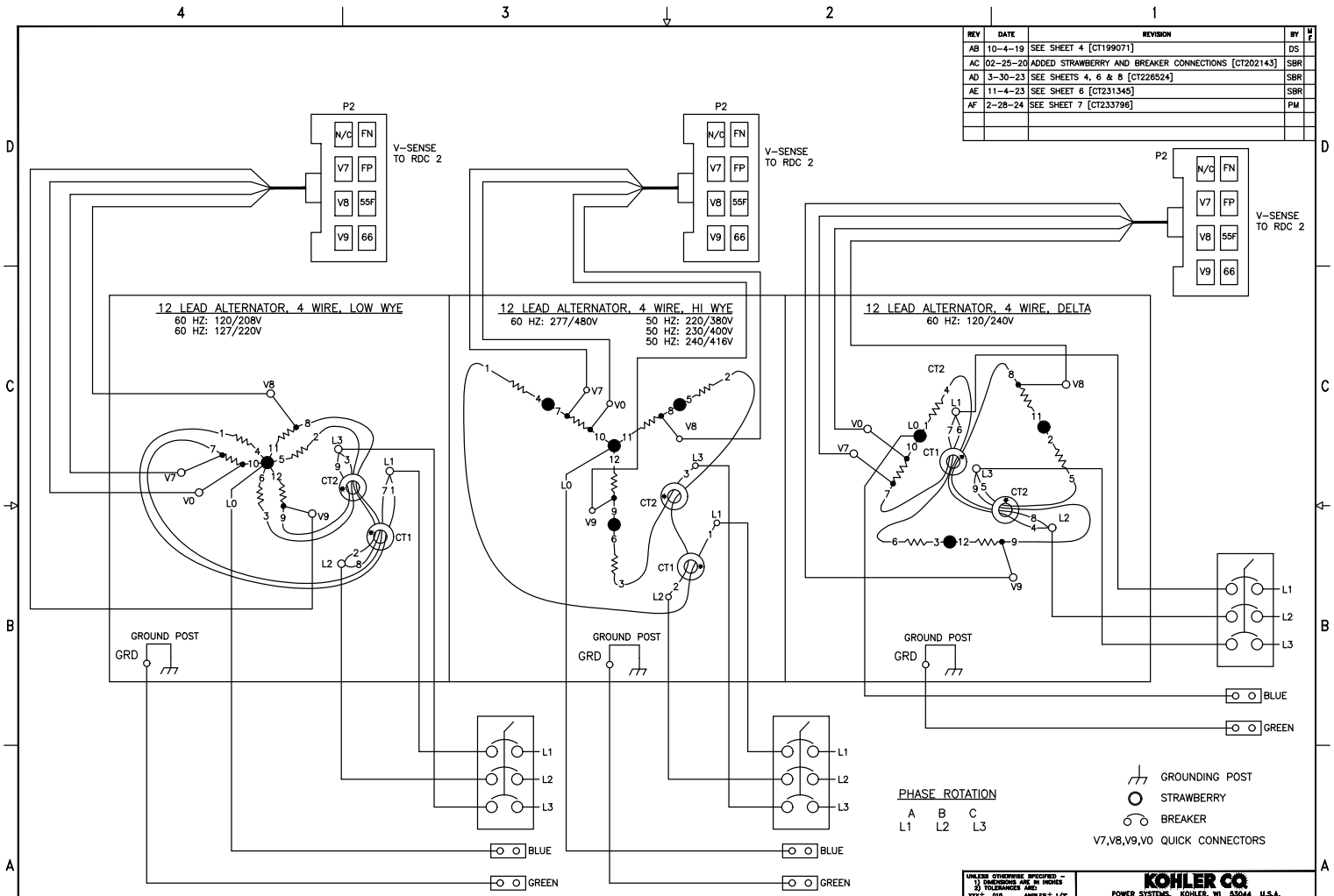
UNLESS OTHERWISE SPECIFIED -
1) DIMENSIONS ARE IN INCHES
2) TOLERANCES ARE:
.XXX ± .010 ANGLES ± 1/2°
.XX ± .030 SURFACE FINISH
.X ± .060 MAX.
FRACTIONS ±

APPROVALS		DATE
DRAWN	DFS	5-27-04
CHECKED	JS	5-27-04
APPROVED	JS	5-27-04

KOHLER CO.
POWER SYSTEMS, KOHLER, WI 53044 U.S.A.

TITLE: DIAGRAM, ALTERNATOR CONNECTIONS

SCALE: NONE | CAD NO. | SHEET: 4-9
PLOTTED | DWG. NO. ADV-5875 | D



REV	DATE	REVISION	BY	M F
AB	10-4-19	SEE SHEET 4 [CT199071]	DS	
AC	02-25-20	ADDED STRAWBERRY AND BREAKER CONNECTIONS [CT202143]	SBR	
AD	3-30-23	SEE SHEETS 4, 6 & 8 [CT226524]	SBR	
AE	11-4-23	SEE SHEET 6 [CT231345]	SBR	
AF	2-28-24	SEE SHEET 7 [CT233796]	PM	

NOTES:

CURRENT TRANSFORMER DOT OR "H1" TOWARD GENERATOR.
SOME STATORS HAVE DUAL LEADS. ALWAYS CONNECT LEADS OF THE SAME LABEL TOGETHER.

3 PHASE
RDC2 CONTROLLER
w/2 CURRENT TRANSFORMERS

UNLESS OTHERWISE SPECIFIED – 1) DIMENSIONS ARE IN INCHES 2) TOLERANCES ARE: .XXX± .010 ANGLES± 1/2° .XX ± .030 SURFACE FINISH .X ± .060 MAX. FRACTIONS ±

APPROVALS		DATE
DRAWN	CRS	5-21-12
CHECKED	PH	5-21-12
APPROVED	PH	5-21-12

TITLE: DIAGRAM, ALTERNATOR CONNECTIONS

SCALE: NONE | CAD NO. | SHEET 5-9

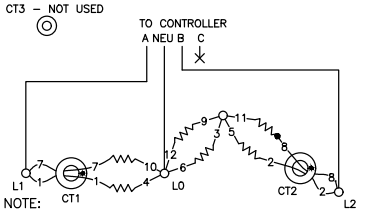
PLOTTED | DWG. NO. ADV-5875 | C

REV	DATE	REVISION	BY
AB	10-4-19	SEE SHEET 4 [CT199071]	DS
AC	02-25-20	SEE SHEET 5 [CT202143]	SBR
AD	3-30-23	(A-2,-3) ADDED NOTES, SEE SHEETS 4 & 8 [CT226524]	SBR
AE	11-4-23	(L0-L2) ADDED 4 LEAD ALTERNATOR , 4 WIRE WYE [CT231345]	SBR
AF	2-28-24	SEE SHEET 7 [CT233796]	PM

12 LEAD ALTERNATOR, 3 WIRE, SINGLE PHASE

60 HZ: 100/200V
60 HZ: 120/240V
50 HZ: 100/200V
50 HZ: 110/220V

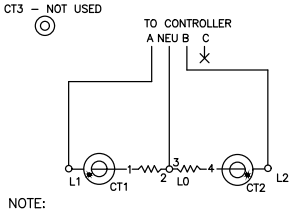
SOME SETS NOT RATED FOR SINGLE PHASE – SEE MANUALS



NOTE:
NEU MUST BE CONNECTED TO LO, EVEN IF LO IS NOT CONNECTED TO THE LOAD.

4 LEAD ALTERNATOR, 3 WIRE, SINGLE PHASE

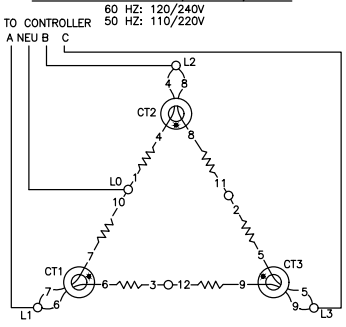
60 HZ: 100–120/200–240V
50 HZ: 100–120/200–240V



NOTE:
NEU MUST BE CONNECTED TO LO, EVEN IF LO IS NOT CONNECTED TO THE LOAD.

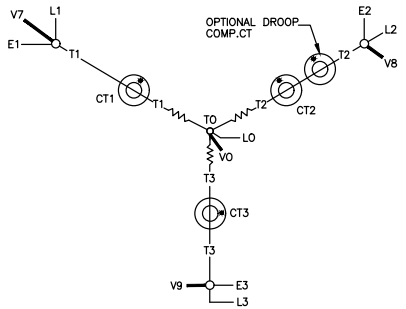
12 LEAD ALTERNATOR, 4 WIRE, DELTA

60 HZ: 120/240V
50 HZ: 110/220V



4 LEAD ALTERNATOR, 4 WIRE, WYE

60 HZ: 220/380V
60 HZ: 240/416V
60 HZ: 277/480V
60 HZ: 347/600V
50 HZ: 220/380V
50 HZ: 230/400V
50 HZ: 240/416V



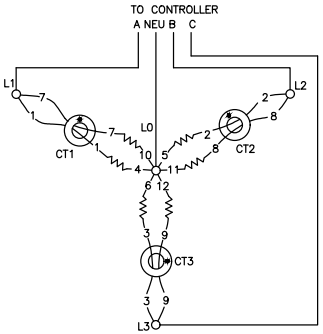
TB3 | UP | V7 | LO | METER SCALE LAMP JUMPER | W/APM603 CONTROLLER

PHASE ROTATION

A	B	C
L1	L2	L3

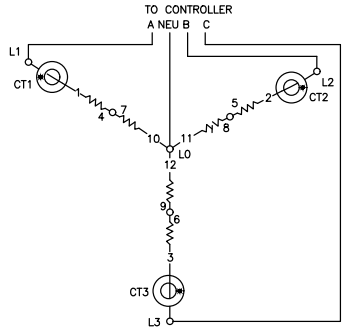
12 LEAD ALTERNATOR, 4 WIRE, LOW WYE

60 HZ: 120/208V
60 HZ: 127/220V
60 HZ: 139/240V
50 HZ: 110/190V
50 HZ: 115/200V
50 HZ: 120/208V



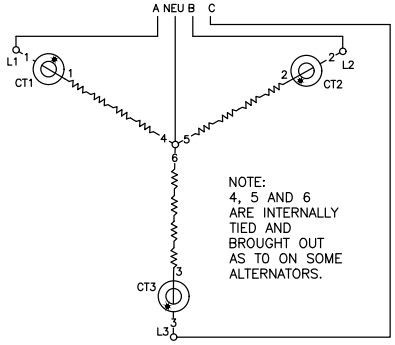
12 LEAD ALTERNATOR, 4 WIRE, HI WYE

60 HZ: 220/380V
60 HZ: 240/416V
60 HZ: 277/480V
50 HZ: 220/380V
50 HZ: 230/400V
50 HZ: 240/416V



6 LEAD ALTERNATOR, 4 WIRE, WYE

60 HZ: 347/600V
TO CONTROLLER



NOTE:
4, 5 AND 6 ARE INTERNALLY TIED AND BROUGHT OUT AS TO ON SOME ALTERNATORS.

PHASE ROTATION

A	B	C
L1	L2	L3

NOTES:
CURRENT TRANSFORMER DOT OR "H1" TOWARD GENERATOR.
CURRENT TRANSFORMERS NOT USED ON ALL SETS.
SOME STATORS HAVE DUAL LEADS. ALWAYS CONNECT LEADS OF THE SAME LABEL TOGETHER.

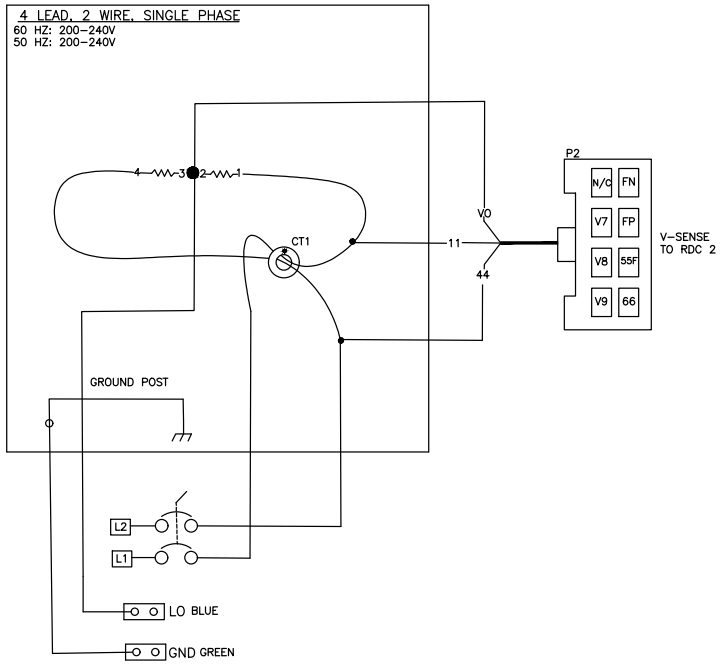
DEC3500 CONTROLLER
APM603 CONTROLLER
KOHLER & MARATHON ALTERNATORS ONLY

APPROVALS	DATE
PRH	5-27-04
IF	5-27-04
IF	5-27-04

KOHLER CO.
POWER SYSTEMS, KOHLER, WI 53044 U.S.A.

TITLE: DIAGRAM, ALTERNATOR CONNECTIONS
SCALE: NONE | DWG NO. ADV-5875 | SHEET 6-9 | SIZE D

REV	DATE	REVISION	BY
AB	10-4-19	SEE SHEET 4 [CT199071]	DS
AC	02-25-20	SEE SHEET 5 [CT202143]	SBR
AD	3-30-23	SEE SHEETS 4, 6 & 8 [CT226524]	SBR
AE	11-4-23	SEE SHEET 6 [CT231345]	SBR
AF	2-28-24	SINGLE PHASE RDC CONTROLLER WITH 1 CURRENT TRANSFORMER ADDED[CT233798]	PM



NOTES:
CURRENT TRANSFORMER DOT OR "H1" TOWARD GENERATOR.
CURRENT TRANSFORMERS NOT USED ON ALL SETS.
SOME STATORS HAVE DUAL LEADS. ALWAYS CONNECT LEADS OF THE SAME LABEL TOGETHER.

SINGLE PHASE
RDC 2 CONTROLLER
WITH ONE CURRENT TRANSFORMER

UNLESS OTHERWISE SPECIFIED - DIMENSIONS ARE IN INCHES. TOLERANCES ARE: FRACTIONS ± .XXX ± .010 .XX ± .030 ANGLES ± 1/2° SURFACE FINISH 125 MAX.

APPROVALS	DATE
PM	3-5-24
CW	3-5-24
CW	3-5-24

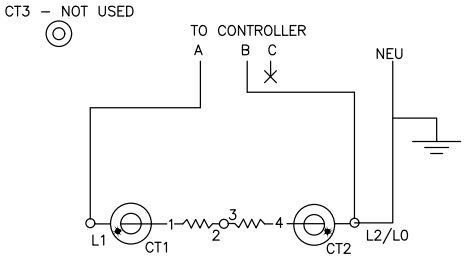
KOHLER CO.
POWER SYSTEMS, KOHLER, WI 53044 U.S.A.

TITLE: DIAGRAM, ALTERNATOR CONNECTIONS
SCALE: NONE | DO NO. | SHEET 7-9
PLOTTED | DWG. NO. ADV-5875 | D

REV	DATE	REVISION	BY
AB	10-4-19	SEE SHEET 4 [CT199071]	DS
AC	02-25-20	SEE SHEET 5 [CT202143]	SBR
AD	3-30-23	SEE SHEETS 4, 6 & 8 [CT226524]	SBR
AE	11-4-23	SEE SHEET 6 [CT231345]	SBR
AF	2-28-24	SEE SHEET 7 [CT233796]	PM

4 LEAD ALTERNATOR, 2 WIRE, SINGLE PHASE

60 HZ: 200-240V
50 HZ: 200-240V



NOTE:
NEU MUST BE CONNECTED TO L2/L0, EVEN IF LO IS NOT CONNECTED TO THE LOAD.

NOTES:

CURRENT TRANSFORMER DOT OR "H1" TOWARD GENERATOR.

CURRENT TRANSFORMERS NOT USED ON ALL SETS.

SOME STATORS HAVE DUAL LEADS. ALWAYS CONNECT LEADS OF THE SAME LABEL TOGETHER.

PHASE ROTATION

A	B	C
L1	L2	L3

APM603 CONTROLLER
DEC3500 CONTROLLER

APPROVALS	DATE
PRH	5-27-04
IF	5-27-04
IF	5-27-04

KOHLER CO.
KOHLER, WI 53044 U.S.A.
POWER SYSTEMS

TITLE: DIAGRAM, ALTERNATOR CONNECTIONS

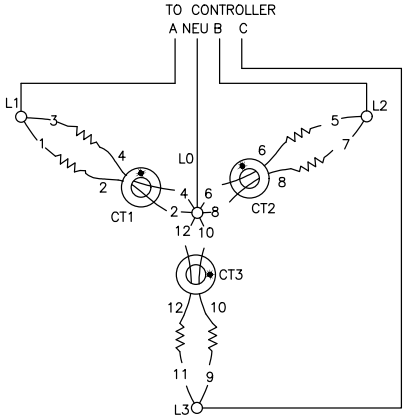
SCALE: NONE | DWG NO. | SHEET 8-9

DRAWING NO. ADV-5875 | D

REV	DATE	REVISION	BY
AB	10-4-19	SEE SHEET 4 [CT199071]	DS
AC	02-25-20	SEE SHEET 5 [CT202143]	SRM
AD	3-30-23	(A-2,-3) ADDED NOTES, SEE SHEETS 4 & 6 [CT226524]	SRM
AE	11-4-23	SEE SHEET 6 [CT231345]	SRM
AF	2-28-24	SEE SHEET 7 [CT233796]	PM

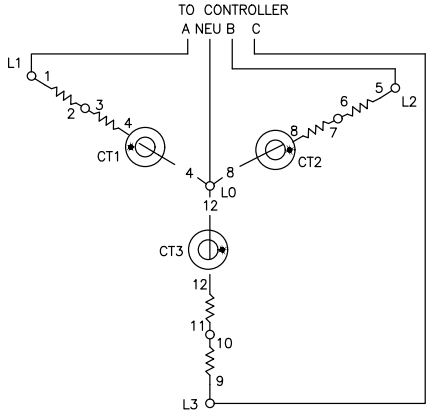
12 LEAD ALTERNATOR, 4 WIRE, LOW WYE, PARALLEL STAR

60 HZ: 120/208V
60 HZ: 127/220V
60 HZ: 139/240V
50 HZ: 110/190V
50 HZ: 115/200V
50 HZ: 120/208V



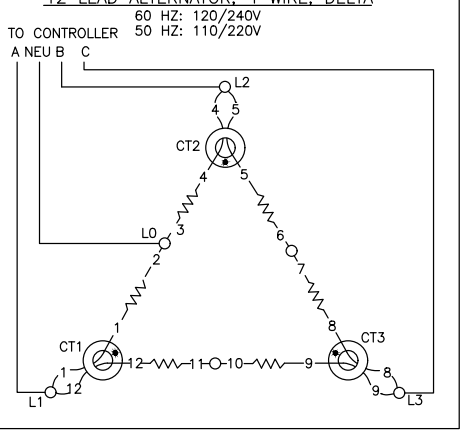
12 LEAD ALTERNATOR, 4 WIRE, HI WYE, SERIES STAR

60 HZ: 220/380V
60 HZ: 240/416V
60 HZ: 277/480V
50 HZ: 220/380V
50 HZ: 230/400V
50 HZ: 240/416V



12 LEAD ALTERNATOR, 4 WIRE, DELTA

60 HZ: 120/240V
50 HZ: 110/220V



PHASE ROTATION

A	B	C
L1	L2	L3

NOTES:
CURRENT TRANSFORMER DOT OR "H1" TOWARD GENERATOR.
CURRENT TRANSFORMERS NOT USED ON ALL SETS.
SOME STATORS HAVE DUAL LEADS. ALWAYS CONNECT LEADS OF THE SAME LABEL TOGETHER.

APM802 CONTROLLER
APM603 CONTROLLER
MECC ALTE ALTERNATOR

KOHLER CO.
POWER SYSTEMS, KOHLER, WI 53044 U.S.A.

APPROVALS	DATE
PRH	5-27-04
IF	5-27-04
IF	5-27-04

TITLE: DIAGRAM, ALTERNATOR CONNECTIONS
SCALE: NONE
DRG NO.: ADV-5875
SHEET: 9-9
DWG SIZE: D

rehlko

Miscellaneous

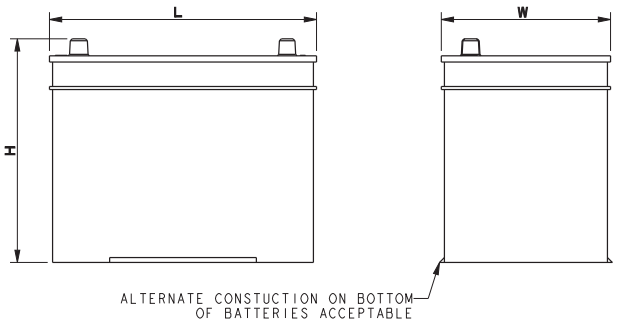
PART NO.	REV		SAE DIMENSION L	SAE DIMENSION W	SAE DIMENSION H	VOLTAGE	COLD CRANKING AMPS AT 0°F MINIMUM	RESERVE CAP MINUTES AT 80°F MINIMUM	POST LAYOUT /STYLE	CHARGE TYPE	BATTERY CONSTRUCTION (SEE SHEET 2)	BCI GROUP	INTERNAL RESISTANCE (MΩ)
~~244578~~	~~AF~~		~~333.5 [13.13]~~	~~181.1 [7.13]~~	~~238.5 [9.39]~~	~~6~~	~~700~~	~~275~~	~~B/1~~	~~DRY~~	~~SEE NOTE 1~~	~~~~	-
~~244750~~	~~AD~~		~~342.9 [13.50]~~	~~173.2 [6.82]~~	~~238.3 [9.38]~~	~~12~~	~~600~~	~~165~~	~~D/1~~	~~DRY~~	~~SEE NOTE 1~~	~~~~	-
~~239102~~	~~AK~~		~~198.1 [7.80]~~	~~133.4 [5.25]~~	~~187.5 [7.38]~~	~~12~~	~~200~~	~~32~~	~~D/2~~	~~DRY~~	~~SEE NOTE 1~~	~~~~	-
~~289515~~	~~AC~~		~~539.8 [21.25]~~	~~282.7 [11.13]~~	~~276.4 [10.88]~~	~~12~~	~~1150~~	~~450~~	~~A/1~~	~~DRY~~	~~SEE NOTE 1~~	~~~~	-
~~291918~~	~~AC~~		~~333.2 [13.12]~~	~~173.0 [6.81]~~	~~239.8 [9.44]~~	~~12~~	~~700~~	~~150~~	~~C/3~~	~~WET~~	~~SEE NOTE 1~~	~~~~	-
~~299981~~	~~AD~~		~~333.2 [13.12]~~	~~173.0 [6.81]~~	~~239.8 [9.44]~~	~~12~~	~~700~~	~~150~~	~~C/3~~	~~DRY~~	~~SEE NOTE 1~~	~~~~	-
~~254425~~	~~AD~~		~~333.2 [13.12]~~	~~173.0 [6.81]~~	~~239.8 [9.44]~~	~~12~~	~~1000~~	~~200~~	~~C/3~~	~~WET~~	~~SEE NOTE 1~~	~~~~	-
~~299982~~	~~AC~~		~~333.2 [13.12]~~	~~173.0 [6.81]~~	~~239.8 [9.44]~~	~~12~~	~~950~~	~~200~~	~~C/3~~	~~DRY~~	~~SEE NOTE 1~~	~~~~	-
~~324367~~	~~BM~~		~~208.0 [8.19]~~	~~179.4 [7.06]~~	~~196.9 [7.75]~~	~~12~~	~~675~~	~~90~~	~~C/1~~	~~WET~~	~~SEE NOTE 1~~	~~~~	-
~~324368~~	~~AC~~		~~206.5 [8.13]~~	~~166.9 [6.57]~~	~~205.2 [8.08]~~	~~12~~	~~675~~	~~90~~	~~C/1~~	~~DRY~~	~~SEE NOTE 1~~	~~~~	-
~~324586~~	~~BU~~		~~330.2 [13.00]~~	~~173.0 [6.81]~~	~~239.8 [9.44]~~	~~12~~	~~950~~	~~185~~	~~C/3~~	~~WET~~	~~SEE NOTE 2~~	~~31~~	-
~~324587~~	~~BU~~	□	~~330.2 [13.00]~~	~~173.0 [6.81]~~	~~239.8 [9.44]~~	~~12~~	~~950~~	~~200~~	~~C/3~~	~~DRY~~	~~SEE NOTE 2~~	~~31~~	-
~~256984~~	~~BT~~		~~273.0 [10.75]~~	~~173.0 [6.81]~~	~~228.6 [9.00]~~	~~12~~	~~650~~	~~120~~	~~D/1~~	~~WET~~	~~SEE NOTE 1~~	~~24~~	-
~~225289~~	~~BT~~	□	~~273.0 [10.75]~~	~~173.0 [6.81]~~	~~228.6 [9.00]~~	~~12~~	~~650~~	~~130~~	~~D/1~~	~~DRY~~	~~SEE NOTE 1~~	~~24~~	-
~~345197~~	~~BS~~		~~273.0 [10.75]~~	~~173.0 [6.81]~~	~~228.6 [9.00]~~	~~12~~	~~510~~	~~80~~	~~E/1~~	~~WET~~	~~SEE NOTE 2~~	~~24F~~	-
354147	BT		330.2 [13.00]	173.0 [6.81]	239.8 [9.44]	12	700	170	C/3	WET	SEE NOTE 2	31	-
~~354148~~	~~BU~~		~~330.2 [13.00]~~	~~173.0 [6.81]~~	~~239.8 [9.44]~~	~~12~~	~~700~~	~~150~~	~~C/3~~	~~DRY~~	~~SEE NOTE 2~~	~~31~~	-
345309	BR		219.2 [8.63]	153.9 [6.06]	212.9 [8.38]	12	525	-	E/1	WET	SEE NOTE 1	55	-
~~GM22348~~	~~AC~~		~~525.3 [20.68]~~	~~220.5 [8.68]~~	~~251.0 [9.88]~~	~~12~~	~~1000~~	~~320~~	~~A/1~~	~~DRY~~	~~SEE NOTE 1~~	~~~~	-
~~GM22349~~	~~BT~~	□	~~527.1 [20.75]~~	~~282.4 [11.12]~~	~~276.4 [10.88]~~	~~12~~	~~1150~~	~~400~~	~~A/1~~	~~DRY~~	~~SEE NOTE 1~~	~~8D~~	-
~~GM34399~~	~~BT~~		~~527.1 [20.75]~~	~~282.4 [11.12]~~	~~276.4 [10.88]~~	~~12~~	~~1400~~	~~430~~	~~A/1~~	~~WET~~	~~SEE NOTE 1~~	~~8D~~	-
~~GM48784~~	~~BT~~		~~208.0 [8.19]~~	~~173.0 [6.81]~~	~~196.9 [7.75]~~	~~12~~	~~525~~	~~70~~	~~D/1~~	~~WET~~		~~26~~	-
~~GM75512~~	~~BT~~		~~238.0 [9.38]~~	~~129.0 [5.06]~~	~~223.0 [8.81]~~	~~12~~	~~500~~	~~85~~	~~D/1~~	~~WET~~	-	~~51~~	-
10702000701	A		527.1 [20.75]	216.0 [8.50]	258.0 [10.16]	12	1050	290	A/1	WET	-	4D	-
10702001800	A		527.1 [20.75]	216.0 [8.50]	254.0 [10.0]	12	1110	380	A/1	AGM	SEE NOTE 3	4D	-
GM106681	-		260.0 [10.25]	171.0 [6.75]	208.0 [8.19]	12	690	105	D/1	WET	-	34	4.29
GM106375	-		330.2 [13.00]	171.0 [6.75]	239.8 [9.44]	12	925	180	C/3	WET	SEE NOTE 2	31	3.31
GM106373	-		260.0 [10.25]	171.0 [6.75]	229.0 [9.00]	12	650	95	D/1	WET	SEE NOTE 1	24	4.71
GM106377	-		527.1 [20.75]	279.0 [11.0]	254.0 [10.00]	12	1400	380	A/1	WET	SEE NOTE 1	80	2.53
GM106369	-		208.0 [8.19]	172.0 [6.77]	200.0 [7.87]	12	500	95	D/1	WET	-	26	5.85
GM106374	-		237.0 [9.32]	125.0 [4.94]	220.0 [8.66]	12	500	70	D/1	WET	-	51	5.00
GM117040	-		286.0 [11.25]	171.0 [6.73]	238.0 [9.37]	12	750	140	D/3	AGM	SEE NOTE 3	24	-
GM117041	-		330.2 [13.00]	172.0 [6.77]	241.0 [9.48]	12	950	185	C/3	AGM	SEE NOTE 3	31	-
GM117042	-		520.0 [20.47]	269.0 [10.59]	238.0 [9.37]	12	1450	480	A/1	AGM	SEE NOTE 3	8D	-

NOTE:

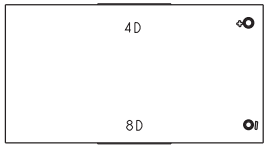
DIMENSIONS IN [ ] ARE ENGLISH EQUIVALENTS.

THIS ASSEMBLY OR PART MUST COMPLY WITH PEP-RML-001.

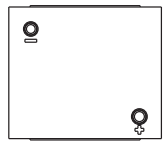
□ INDICATES PART NUMBERS AFFECTED BY LATEST DRAWING REVISION



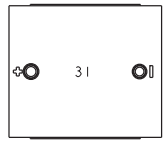
LAYOUT A



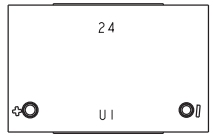
LAYOUT B



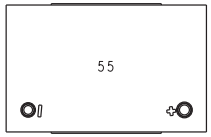
LAYOUT C



LAYOUT D



LAYOUT E



REV	DATE	ON COMPOSITE DWGS, SEE PART NO. FOR REVISION LEVEL	BY
CA	4-15-19	(C-8) GM106681, GM106375, GM106373, GM106377,	
		GM106369 & GM106374 ADDED; (D-3) INTERNAL	
		RESISTANCE (MΩ) COLUMN ADDED; (D-8) 324586 &	
		256984 VOIDED; (C-8) GM34399, GM48784, GM75512	
		VOIDED;(A,B-8,7,6,5,4) VIEWS & NOTES MOVED TO	
		SHEET 2, SHEET 2 ADDED [CT194425]	DS
CB	25MAY2021	(B-8) GM117040, GM117041 & GM117042 ADDED,	
		"PEP-RML-001" NOTE ADDED [PR09852]	PAR
CC	23JUL2021	(C,D-8) 225289, 324587 & GM22349 VOIDED [CT212924]	PAR
CD	31JAN2023	SEE SHEET 2 [CT225049]	PBG

DO NOT SCALE, REFERENCE THE MODEL FOR ALL UNSPECIFIED DIMENSIONS

UNLESS OTHERWISE SPECIFIED: ALL DIMENSIONS IN MILLIMETERS GENERAL TOLERANCES: X.XX ± 0.25, X.X ± 1.0, X ± 1.5, ANGLES ± 0°30' SURFACE FINISH MAX. THIRD-ANGLE PROJECTION

APPROVALS		DATE
DRAWN	SLR	4-15-19
CHECKED	EB	4-15-19
APPROVED	RAD	4-15-19

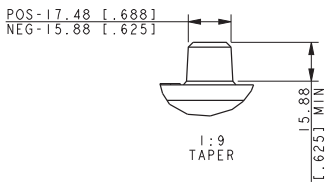
KOHLER.
KOHLER, WISCONSIN 53044

TITLE: DWG, BATTERY

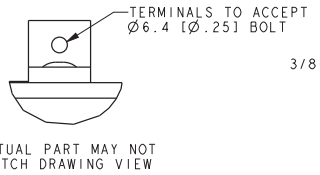
SCALE 0.30 | CAD NO. | SHEET 1 of 2

DWG NO. 244578-CMP | D

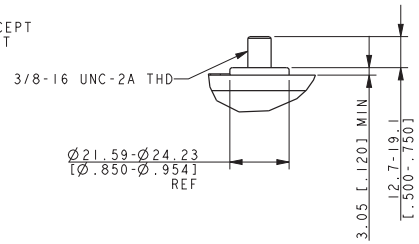
STYLE 1



STYLE 2



STYLE 3



NOTES:
1) STYLE 3 CAN BE CONVERTED TO STYLE 1 BY INSTALLATION OF 254427 STUD CONVERTION KIT.
2) BATTERIES USING ``STYLE 3'' STUDS MUST HAVE EITHER THE ``POS'' OR ``NEG'' STUD CLEARLY IDENTIFIED.
3) STYLE 3 TERMINAL TORQUE 10 Nm [15 FT LBS].
4) "POS" & "NEG" IDENTIFICATION MUST BE MARKED AS SHOWN ON THE PART LAYOUT AND WITHIN 5mm OF THE STUD.

NOTES:

1. (APPLIES TO ALL BATTERIES)
   SAE J537 DIMENSIONS ARE MAX ALLOWABLE DIMENSIONS.
   COLD CRANKING AMPS ARE MINIMUM ACCEPTABLE VALUES.
   HOLD DOWN DESIGN IN COMPLIANCE WITH SAE STANDARDS.
   BATTERY WARNING LABEL TO BE LOCATED ON TAP OF BATTERY. (BETWEEN TERMINALS ON LAYOUT D)
   MANUFACTURER MUST PROVIDE A CERTIFICATE CONTAINING MFGRS. NAME, MFGRS. PART NUMBER,
   AND KOHLER PART NUMBER AND DATE OF MANUFACTURE CERTIFYING THAT THE BATTERY WAS BUIT TO INDUSTRY STANDARDS.
   SEE N.F.P.A.-110 FOR SPECIFIC DETAILS. CERTIFICATE REQUIRED ONLY ONCE PER BATTERY PART NUMBER.
   MAY NOT BE CALCIUM-CALCIUTYPE.

2. (CHARGE TYPE)
   ALL DRY CHARGED BATTERIES MUST BE SUPPLIED WITH ACTIVATION INSTRUCTIONS ADHERED TO BATTERY
   AND LOOSE. BATTERY MUST ALSO BE IDENTIFED ON TOP AS: ``DRY CHARGED, MUST ADD BATTERY GRADE
   ELECTROLYTE, SEE ACTIVATION INSTRUCTIONS''.
   BATTERIES SHOULD BE RECEIVED APPROPRIATELY MARKED AS DRYCHARGED OR WET STORAGE.
   ONE OF THE BATTERY POSTS MUST BE SHIELDED WHEN BATTERIES ARE WET CHARGED.
   BATTERIES WHEN SHIPPED DRY - DO NOT REQUIRE POST PROTECTORS.

3. (BATTERY CONSTRUCTION)
   1) MUST BE LEAD-CALCIUM HYBRID OR LEAD-ANTIMONY TYPE.
   2) LEAD-CALCIUM GRID.
   3) ABSORBED GLASS MAT. (AGM)

REV	DATE	ON COMPOSITE DWGS, SEE PART NO. FOR REVISION LEVEL	BY
CA	4-15-19	NEW DRAWING; SEE SHEET 1 [CT194425]	DS
CB	25MAY2021	SEE SHEET 1 [PR09852]	PAR
CC	23JUL2021	SEE SHEET 1 [CT212924]	PAR
CD	31JAN2023	(C-8)NOTE 1 UPDATED [CT225049]	PBG

DO NOT SCALE, REFERENCE THE MODEL FOR ALL UNSPECIFIED DIMENSIONS

UNLESS OTHERWISE SPECIFIED:
ALL DIMENSIONS IN MILLIMETERS
GENERAL TOLERANCES:
X.XX ± 0.25
X.X ± 1.0
X ± 1.5
ANGLES ± 0°30'
SURFACE FINISH 63 MAX.
THIRD-ANGLE PROJECTION

APPROVALS		DATE
DRAWN	DS	4-15-19
CHECKED	GFR	4-15-19
APPROVED	AMM	4-15-19

KOHLER.
KOHLER, WISCONSIN 53044

TITLE: DWG, BATTERY

SCALE 0.30 | CAD NO. | SHEET 2 of 2

DWG NO. 244578-CMP | D

OVERVIEW:
THE AUTOMATIC MULTI-LEVEL FLOAT/ EQUALIZE CHARGER SPECIFIED BELOW IS INTENDED TO CHARGE ENGINE STARTING BATTERIES EITHER INDEPENDENT OR IN CONJUNCTION WITH AN ENGINE DRIVEN CHARGING SYSTEM.

BATTERY TYPES TO BE CHARGED:
- LEAD ACID
  - AGM
  - GEL CELL
  - HIGH PERFORMANCE AGM
  - FLOODED
- NICKEL CADMIUM (NiCd)

INPUT AC:
- INPUT VOLTAGE: 90-265V SINGLE PHASE
- INPUT FREQUENCY: 47-63 Hz

INPUT LEAD:
APPROXIMATELY 1.8M (72") (REF) TYPE SJTOW -40°C TO 105°C UL RATED WIRE AND INSULATION. TERMINATED IN PRE-MOLDED UL RATED 3 PRONG NEMA 5-15 MALE AC PLUG.

DC OUTPUT:
10A @ 12V
10A @ 24V
VOLTAGE REGULATION: +/-1% (VOLTAGE AT EACH STAGE IS TOPOLOGY DEPENDENT)

OUTPUT LEAD:
APPROX. 1.8M (72") (REF) TYPE SJTOOW -40°C TO 105°C UL RATED WIRE WITH RED AND BLACK WIRE INSULATION. TERMINATED IN 9.5 mm (REF) RING STYLE TERMINALS.

FUSES:
THE FUSE MUST BE LOCATED APPROXIMATELY 6" FROM RING TERMINAL ON RED OUTPUT LEAD.
20A ATC

ENVIRONMENTAL:
- STORAGE TEMPERATURE RANGE: -40 TO +85°C (-40 TO +185°F)
- OPERATING TEMPERATURE RANGE: -20 TO +70°C (-4 TO +158°F)
- HUMIDITY: 5 TO 95% (NON-CONDENSING)
- SALT SPRAY TESTING - ASTM B117
- CORROSIN RESISTANT FROM GASSING OF BATTERIES

REVERSE POLARITY PROTECTION:
THE CHARGER SHALL SUSTAIN NO DAMAGE WHEN INCORRECTLY CONNECTED TO THE BATTERY IN REVERSE ORIENTATION.

MOUNTING:
4 NON-THREADED THROUGH HOLES FOR M6 FASTENERS TO PASS THOUGH

ENCLOSURE:
SHALL PROTECT THE CHARGER COMPONENTS FROM RAIN, SNOW, DUST AND DRIPPING WATER AND UNINTENTIONAL INPACTS. ALL INTERNAL COMPONENTS PROTECTED FROM WATER DROPLETS.

INDICATORS:
- POWER: INDICATES THE ACCEPTABILITY OF AC INPUT TO THE CHARGER
- COMMUNICATION: INDICATES THE STATE OF THE COMMUNICATION SYSTEM
- TEMPERATURE COMPENSATION: INDICATES THE STATE OF THE TEMPERATUARE COMPENSATION SUBSYSTEM WHEN INSTALLED
- VOLTAGE OUTPUT: INDICATES THE STATE OF THE BATTERY AND CERTAIN FAULT CONDITIONS.

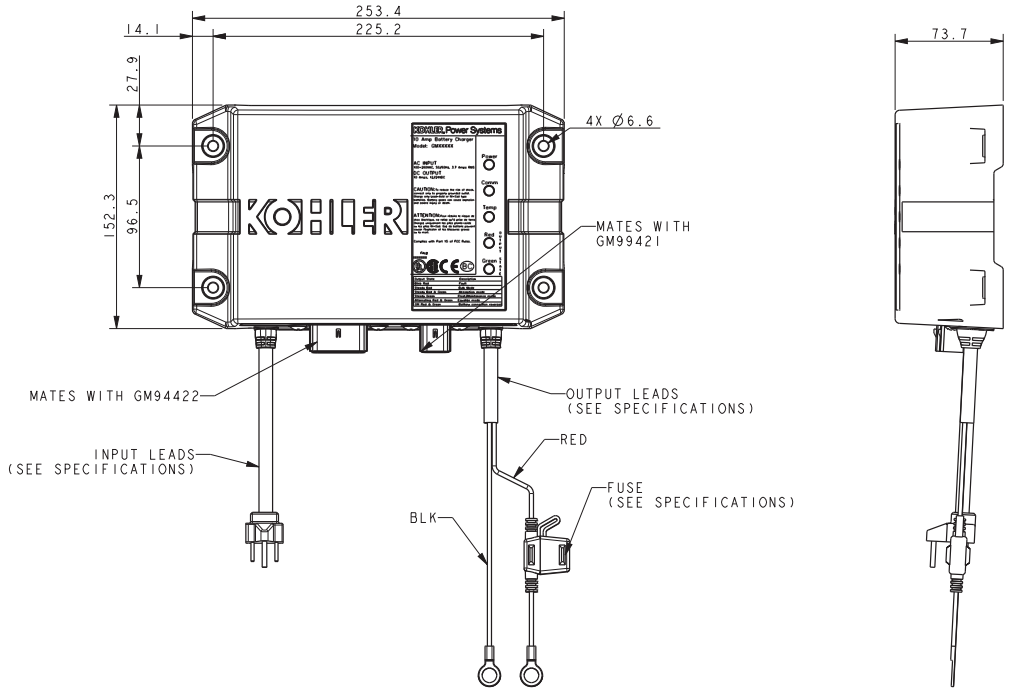
DOCUMENTATION:
THERE SHALL BE AN INSTALLATION / OPERATIONAL MANUAL SUPPLIED WITH EACH CHARGER. PER KOHLER SUPPLIED ARTWORK.

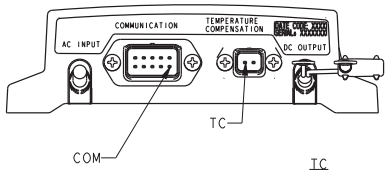
CERTIFICATIONS (US AND CANADA):
- UL1236
- CSA - C22.2 NO 107.2-01
- FCC- TITLE 47, PART 15 CLASS A
- CE
- EN 61000-6-2
- CEC AND DOE
- NFPA-110 LEVEL1 (WHEN SUPPORTED WITH APPLICABLE KOHLER CONTROLLER)
- IBC

PRODUCT LABELING:
THE LABEL ATTACHED TO THE CHARGER SHALL HAVE THE FOLLOWING INFORMATION:
- UL LISTING
- KOHLER PART NUMBER
- DESCRIPTION OF ALL INDICATOR
- OUTPUT CURRENT AND VOLTAGE
- INPUT VOLTAGE AND FREQUENCY

PACKAGING LABEL:
THE PACKAGING LABEL SHALL CONTAIN THE FOLLOWING INFORMATION:
- KOHLER P/N
- DESCRIPTION - BATTERY CHARGER
- MFG. MODEL NO.
- MFG. PART NUMBER
- DATE CODE

WARRANTY:
2 YEAR FROM DATE OF PURCHASE FROM MANUFACTURE.





COM
PIN 1 N/C
2 ID SEL 1
3 ID SEL 2
4 N/C
5 CAN-H
6 N/C
7 ID SEL 1 RTN
8 ID SEL 2 RTN
9 CAN-GND
10 CAN-L

TC
PIN 1 TC SENSOR W1
2 TC SENSOR W2

REV	DATE	ON COMPOSITE DWGS, SEE PART NO. FOR REVISION LEVEL	BY
-	9-22-14	NEW DRAWING [CT91634]	SAM
A	5-9-17	(C-4,2) MATING NOTE ADDED (A-2, 4) PIN CONNECTIONS ADDED [CT174256]	SAM

UNLESS OTHERWISE SPECIFIED:
1) DIMENSIONS ARE IN MILLIMETERS
2) TOLERANCES ARE:
X .XX ± 0.25
X.X ± 1.0
X ± 1.5
ANGLES ± 0° 30'
SURFACE FINISH ✓ MAX.
THIRD ANGLE PROJECTION

APPROVALS		DATE
DRAWN	SAM	9-22-14
CHECKED	SAM	9-22-14
APPROVED	AGT	9-22-14

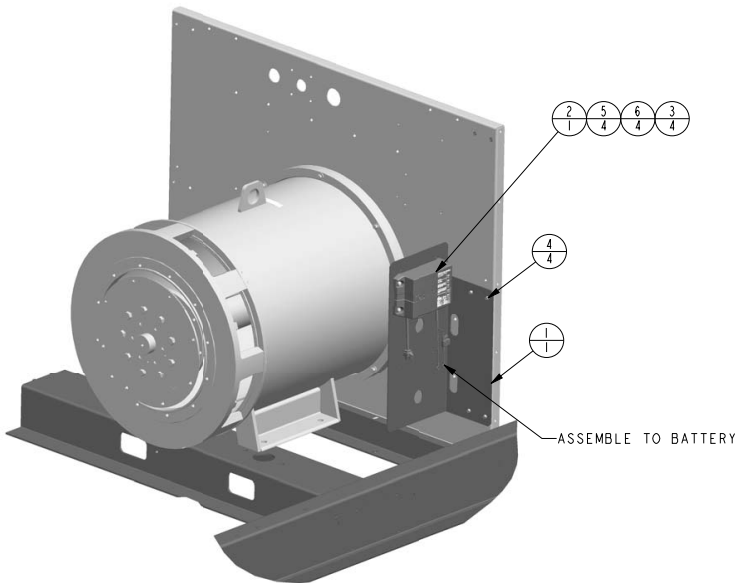
KOHLER CO. METRIC PRO-E
POWER SYSTEMS, KOHLER, WI 53044 U.S.A.

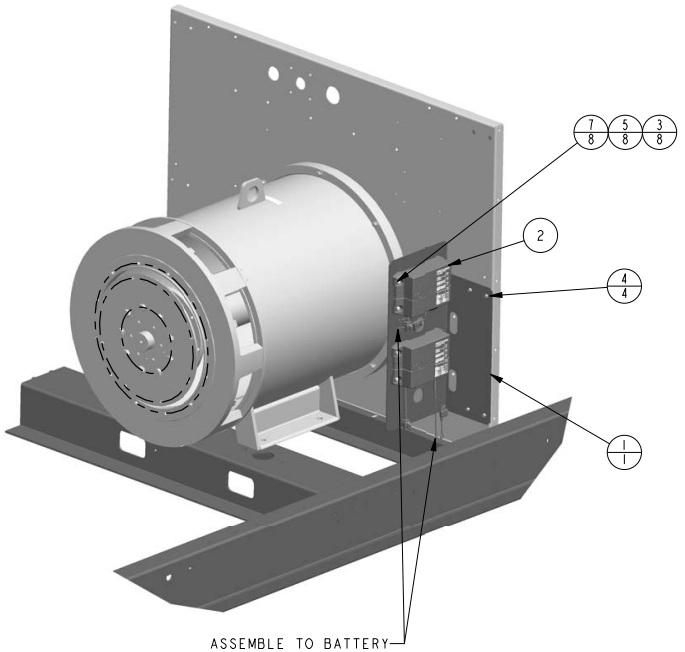
TITLE
CHARGER, BATTERY 10 AMP

SCALE 0.50 | CAD NO. | SHEET 1 of 1
DWG NO. GM87448 | D

KIT NO.	ITEM	PART NO	QTY	DESCRIPTION
GM94922-KA1				ASSY BATTERY CHARGER 12/24V-10A
	1	GM78810	1	BRACKET, BATTERY CHARGER
	2	GM87448	1	CHARGER, BATTERY
	3	M125A-06-80	4	WASHER, PLAIN 6.4 ID X 12.0 OD
	4	M6921-06016-60	4	SCREW, HEX FLNGE M6X16MM FLLY THRD JS500
	5	M6923-06-80	4	NUT, HEX 6MM
	6	M933-06030-60	4	SCREW, HEX CAP
GM94922-KA2				BATTERY CHARGER, FLOAT, 12/24V-10A
	1	GM78810	1	BRACKET, BATTERY CHARGER
	2	GM87448	2	CHARGER, BATTERY
	3	M125A-06-80	8	WASHER, PLAIN 6.4 ID X 12.0 OD
	4	M6921-06016-60	4	SCREW, HEX FLNGE M6X16MM FLLY THRD JS500
	5	M6923-06-80	8	NUT, HEX 6MM
	7	M933-06030-60	8	SCREW, HEX CAP
	8	GM95050	1	HARNESS, Y

THIS IS AN AUTOMATED TABLE. ALL UPDATES MUST BE MADE IN THE ASSEMBLY.





NOTE: FOR PROPER ASSEMBLY METHOD OF HARDWARE, USE G-585 AS A GUIDELINE.

REV	DATE	ON COMPOSITE DWGS, SEE PART NO. FOR REVISION LEVEL	BY
-	10-1-14	NEW DRAWING [CT95303]	SAM

UNLESS OTHERWISE SPECIFIED:
1) DIMENSIONS ARE IN MILLIMETERS
2) TOLERANCES ARE:
X.XX ± 0.25
X.X ± 1.0
X ± 1.5
ANGLES ± 0° 30' SURFACE FINISH MAX.

THIRD ANGLE PROJECTION

APPROVALS		DATE
DRAWN	SAM	10-1-14
CHECKED	SAM	10-1-14
APPROVED	AGT	10-1-14

KOHLER CO. METRIC PRO-E
POWER SYSTEMS, KOHLER, WI 53044 U.S.A.

TITLE
DWG, ASSY BATTERY CHARGER

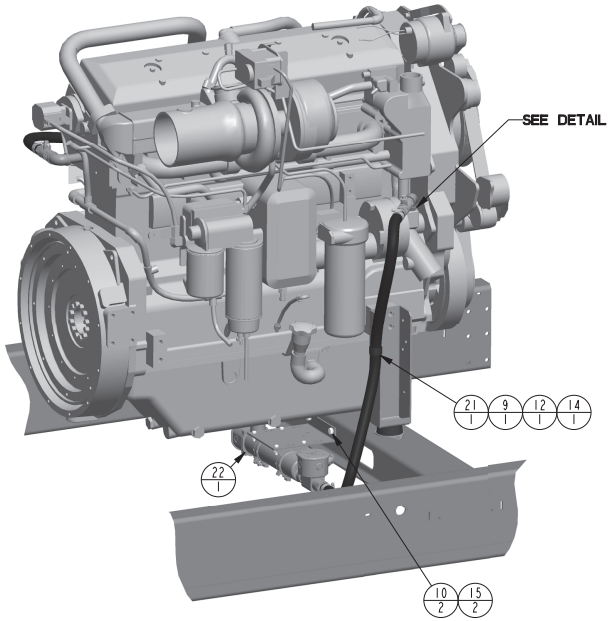
SCALE 0.12 | CAD NO. | SHEET 1 of 1

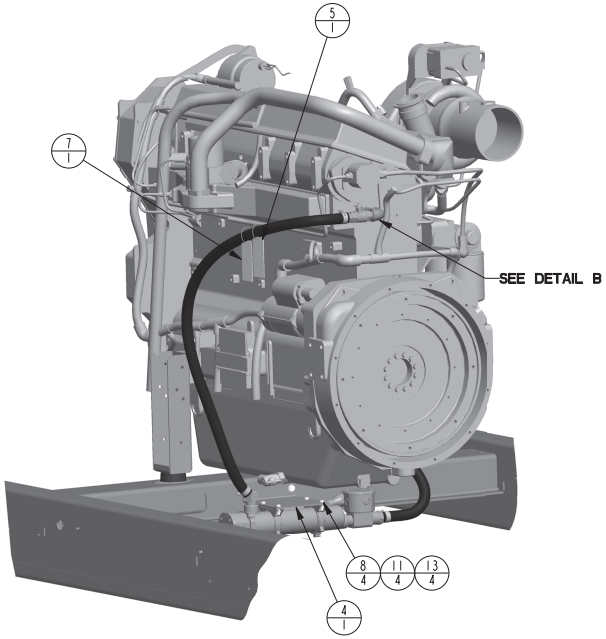
DWG NO. GM94922 | D

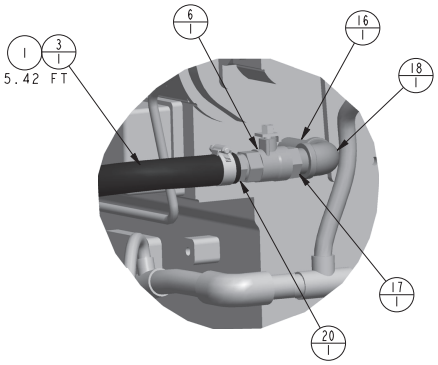
BATTERY CHARGER KIT

KIT NO.	ITEM	PART NO	QTY	DESCRIPTION
GM75809-KB				BASE GROUP, BLOCK HEATER
	1	25452-00075	9.09FT	HOSE, COOLANT
	2	X-6367-1 (REF)	1	HOSE, COOLANT 44"
	3	X-6367-9 (REF)	1	HOSE, COOLANT 65"
	4	274431	1	BRACKET, SUPPORT
	5	279047	1	TAG, INSTRUCTION
	6	GM19666	2	VALVE, SHUTOFF (3/4-14NPT)
	7	GM39752	1	TAG, HANG
	8	M125A-06-80	4	WASHER, PLAIN 6.4 ID X 12.0 OD
	9	M125A-08-80	1	WASHER, PLAIN 8.4 ID X 16.0 OD
	10	M125A-10-80	2	WASHER, PLAIN 10.5 ID X 20.0 OD
	11	M6923-06-80	4	NUT, HEX 6MM
	12	M6923-08-80	1	NUT, HEX 8MM
	13	M933-06025-60	4	SCREW, HEX CAP
	14	M933-08025-60	1	SCREW, HEX CAP
	15	M933-10025-60	2	SCREW, HEX CAP
	16	X-206-6	1	PIPE (3/4"NPT X 3.50")
	17	X-206-9	3	PIPE (3/4"NPT X 1.38") (KM)
	18	X-215-2	2	ELBOW, PIPE (90 DEG X 3/4"NPT)
	19	X-426-12	4	CLAMP, HOSE, .69/1.25 IN.
	20	X-582-8	2	CONNECTOR, HOSE + VIBRA SEAL
	21	X-672-20	1	CLAMP, INSULATED, 1.25 IN.
GM75809-KA1				BLOCK HEATER, 2500W, 90/120V 1PH
	22	GM76113	1	BLOCK HEATER
GM75809-KA2				BLOCK HEATER, 2500W,190/208V 1PH
	22	GM76114	1	BLOCK HEATER
GM75809-KA3				BLOCK HEATER, 2500W,210/240V 1PH
	22	GM76115	1	BLOCK HEATER
GM75809-KA4				BLOCK HEATER, 2500W,380/480V 1PH
	22	GM76116	1	BLOCK HEATER

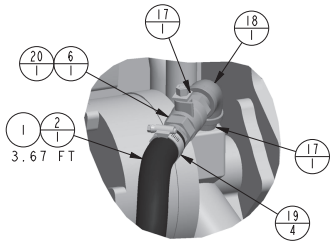
THIS IS AN AUTOMATED TABLE. ALL UPDATES MUST BE MADE IN THE ASSEMBLY. ITEMS 1-3 & 26 ARE FIXED. ITEM 1 IS A MANUAL BALLOONS.







DETAIL B
SCALE 0.40



DETAIL A
SCALE 0.40

NOTE: FOR PROPER ASSEMBLY METHOD OF HARDWARE, USE G-585 AS A GUIDELINE.

BLOCK HEATER KITS
350-500 MODELS
JOHN DEERE

REV	DATE	ON COMPOSITE DWGS, SEE PART NO. FOR REVISION LEVEL	BY
-	8-10-10	NEW DRAWING [90056-3]	DJV
A	12-1-10	(D-8) M125A-08-80 QTY 1 WAS 2, M6923-08-80	
		QTY 1 WAS 2; X-672-4 QTY 1 WAS 2; (C/D-1:2)	
		COOLANT HOSE ROUTING UPDATED [90686-3]	DJV
B	3-31-11	(C-8) X-672-20 WAS X-672-4; (D-8) M125A-06-80	
		WAS X-22-11; X-206-9 WAS X-206-2 [91353-3]	DJV
C	9-14-11	274431 WAS GM51263 [92293-3]	DJV

UNLESS OTHERWISE SPECIFIED:
1) DIMENSIONS ARE IN MILLIMETERS
2) TOLERANCES ARE:
X.XX ± 0.25
X.X ± 1.0
X ± 1.5
ANGLES ± 0° 30' SURFACE FINISH 125 MAX.
THIRD ANGLE PROJECTION

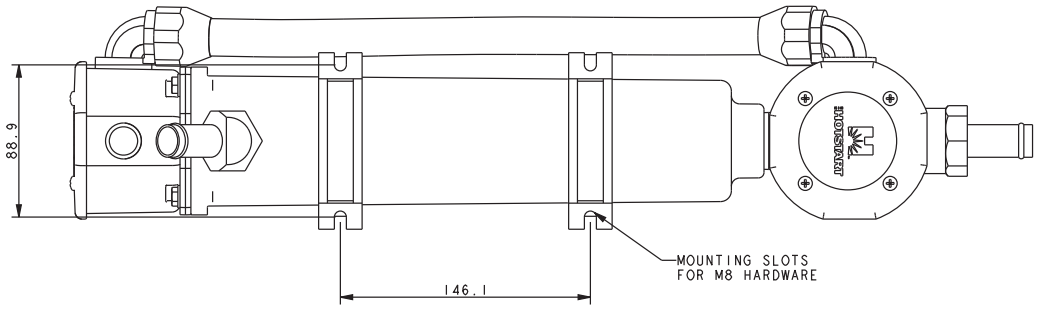
APPROVALS		DATE
DRAWN	DJV	8-10-10
CHECKED	CWF	8-10-10
APPROVED	JDZ	8-10-10

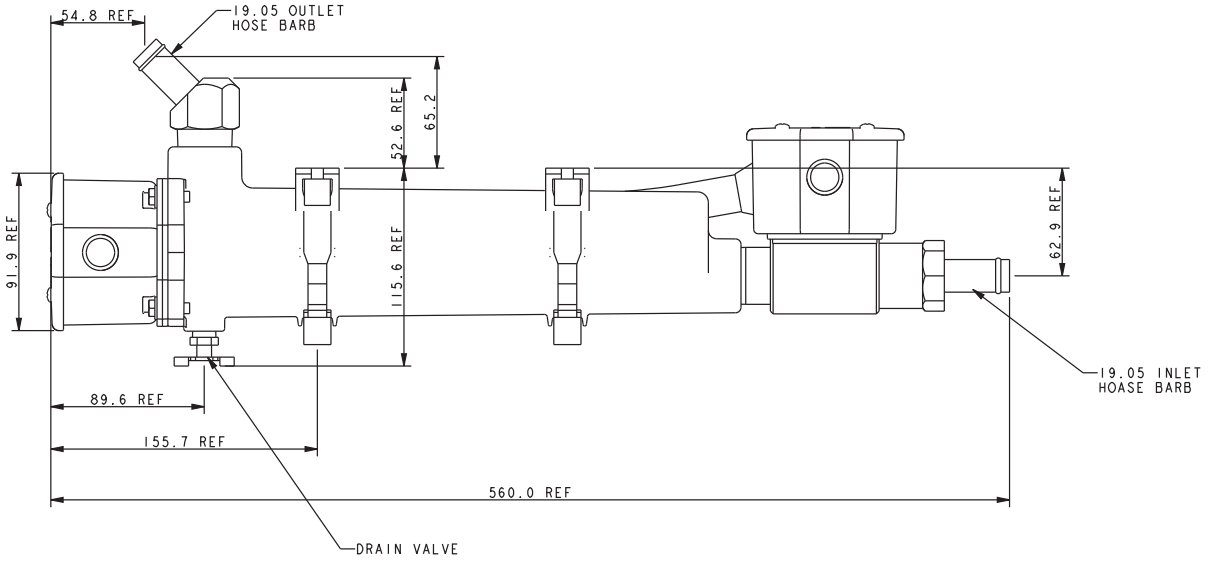
TITLE
DWG, ASSY BLOCK HEATER

SCALE 0.14 | CAD NO. | SHEET 1 of 1

DWG NO. **GM75809** | **D**

PART NO	REV	WATTS	VOLTS	AMPS	TEMP RANGE	REPLACEMENT ELEMENT
GM76113	A	2500	90/120	15.6/20.8	27/38° C [80/100° F]	GM29477
GM76114	A		190/208	11.0/12.0		GM29478
GM76115	A		210/240	9.1/10.4		GM29474
GM76116	A		380/480	4.1/5.2		GM29479
ES-75616	A		240/227	7.8/9.0		ES-75542





200/350 KW JD

REV	DATE	ON COMPOSITE DWGS, SEE PART NO. FOR REVISION LEVEL	BY
-	6-9-10	NEW DRAWING [89933-1]	SAM
A	12-9-10	(D-8) ES-75616 ADDED, GM76113: 15.6/20.8 WAS 27.8/20.8, GM76114: 11.0/12.0 WAS 13.2/12.0, GM76115: 9.1/10.4 WAS 11.9/10.4, GM76116: 4.1/5.2 WAS 6.6/5.2 [90699]	SAM

UNLESS OTHERWISE SPECIFIED:
1) DIMENSIONS ARE IN MILLIMETERS
2) TOLERANCES ARE:
X.XX ± 0.25
X.X ± 1.0
X ± 1.5
ANGLES ± 0° 30'
SURFACE FINISH 3.2 MAX.
THIRD ANGLE PROJECTION

APPROVALS		DATE
DRAWN	SAM	6-9-10
CHECKED	JMS	6-9-10
APPROVED	WRD	6-9-10

KOHLER CO. METRIC PRO-E
POWER SYSTEMS, KOHLER, WI 53044 U.S.A.

TITLE
HEATER, BLOCK

SCALE 0.70 | CAD NO. | SHEET 1 of 1
DWG NO. GM76113 | D

PART NO.	PART REV	DESCRIPTION	AMPS	INTERRUPT kA @480 VAC	CONNECTION TYPE		POLES	RATING	TRIP TYPE	MAGNETIC TRIP ONLY		SQUARE D PART NO.
					LINE	LOAD				FULL LOAD AMPS	ADJUSTABLE TRIP RANGE	
GM47475-15	C	BREAKER, CIRCUIT 15A HDL	15	18	AL150HD LUGS	AL150HD LUGS	3	80%	THERMAL MAGNETIC	-	-	HDL36015
GM47475-17	D	BREAKER, CIRCUIT 15A HDP		18	TERMINAL NUTS	AL150HD LUGS	3	80%	THERMAL MAGNETIC	-	-	HDP36015TX
GM47475-18	D	BREAKER, CIRCUIT 15A HDP		18	TERMINAL NUTS	CU150HD LUGS	3	100%	THERMAL MAGNETIC	-	-	HDP36015CTX
GM47475-9	C	BREAKER, CIRCUIT 20A HDL	20	18	AL150HD LUGS	AL150HD LUGS	3	80%	THERMAL MAGNETIC	-	-	HDL36020
GM47475-19	D	BREAKER, CIRCUIT 20A HDP		18	TERMINAL NUTS	AL150HD LUGS	3	80%	THERMAL MAGNETIC	-	-	HDP36020TX
GM47475-20	D	BREAKER, CIRCUIT 20A HDP		18	TERMINAL NUTS	CU150HD LUGS	3	100%	THERMAL MAGNETIC	-	-	HDP36020CTX
GM47475-10	C	BREAKER, CIRCUIT 25A HDL	25	18	AL150HD LUGS	AL150HD LUGS	3	80%	THERMAL MAGNETIC	-	-	HDL36025
GM47475-21	D	BREAKER, CIRCUIT 25A HDP		18	TERMINAL NUTS	AL150HD LUGS	3	80%	THERMAL MAGNETIC	-	-	HDP36025TX
GM47475-22	D	BREAKER, CIRCUIT 25A HDP		18	TERMINAL NUTS	CU150HD LUGS	3	100%	THERMAL MAGNETIC	-	-	HDP36025CTX
GM47475-11	C	BREAKER, CIRCUIT 30A HDL	30	18	AL150HD LUGS	AL150HD LUGS	3	80%	THERMAL MAGNETIC	-	-	HDL36030
GM47475-23	D	BREAKER, CIRCUIT 30A HDP		18	TERMINAL NUTS	AL150HD LUGS	3	80%	THERMAL MAGNETIC	-	-	HDP36030TX
GM47475-24	D	BREAKER, CIRCUIT 30A HDP		18	TERMINAL NUTS	CU150HD LUGS	3	100%	THERMAL MAGNETIC	-	-	HDP36030CTX
GM47475-25	D	BREAKER, CIRCUIT 30A HJP		65	TERMINAL NUTS	AL150HD LUGS	3	-	MAGNETIC ONLY	1.5-25	9-325	HJP36030M71TX
GM47475-12	C	BREAKER, CIRCUIT 35A HDL	35	18	AL150HD LUGS	AL150HD LUGS	3	80%	THERMAL MAGNETIC	-	-	HDL36035
GM47475-26	D	BREAKER, CIRCUIT 35A HDP		18	TERMINAL NUTS	AL150HD LUGS	3	80%	THERMAL MAGNETIC	-	-	HDP36035TX
GM47475-27	D	BREAKER, CIRCUIT 35A HDP		18	TERMINAL NUTS	CU150HD LUGS	3	100%	THERMAL MAGNETIC	-	-	HDP36035CTX
GM47475-1	C	BREAKER, CIRCUIT 40A HDL	40	18	AL150HD LUGS	AL150HD LUGS	3	80%	THERMAL MAGNETIC	-	-	HDL36040
GM47475-28	D	BREAKER, CIRCUIT 40A HDP		18	TERMINAL NUTS	AL150HD LUGS	3	80%	THERMAL MAGNETIC	-	-	HDP36040TX
GM47475-29	D	BREAKER, CIRCUIT 40A HDP		18	TERMINAL NUTS	CU150HD LUGS	3	100%	THERMAL MAGNETIC	-	-	HDP36040CTX
GM47475-13	C	BREAKER, CIRCUIT 45A HDL	45	18	AL150HD LUGS	AL150HD LUGS	3	80%	THERMAL MAGNETIC	-	-	HDL36045
GM47475-30	D	BREAKER, CIRCUIT 45A HDP		18	TERMINAL NUTS	AL150HD LUGS	3	80%	THERMAL MAGNETIC	-	-	HDP36045TX
GM47475-31	D	BREAKER, CIRCUIT 45A HDP		18	TERMINAL NUTS	CU150HD LUGS	3	100%	THERMAL MAGNETIC	-	-	HDP36045CTX
GM47475-14	C	BREAKER, CIRCUIT 50A HDL	50	18	AL150HD LUGS	AL150HD LUGS	3	80%	THERMAL MAGNETIC	-	-	HDL36050
GM47475-32	D	BREAKER, CIRCUIT 50A HDP		18	TERMINAL NUTS	AL150HD LUGS	3	80%	THERMAL MAGNETIC	-	-	HDP36050TX
GM47475-33	D	BREAKER, CIRCUIT 50A HDP		18	TERMINAL NUTS	CU150HD LUGS	3	100%	THERMAL MAGNETIC	-	-	HDP36050CTX
GM47475-34	D	BREAKER, CIRCUIT 50A HJP		65	TERMINAL NUTS	AL150HD LUGS	3	-	MAGNETIC ONLY	14-42	84-546	HJP36050M72TX
GM47475-2	C	BREAKER, CIRCUIT 60A HDL	60	18	AL150HD LUGS	AL150HD LUGS	3	80%	THERMAL MAGNETIC	-	-	HDL36060
GM47475-35	D	BREAKER, CIRCUIT 60A HDP		18	TERMINAL NUTS	AL150HD LUGS	3	80%	THERMAL MAGNETIC	-	-	HDP36060TX
GM47475-36	D	BREAKER, CIRCUIT 60A HDP		18	TERMINAL NUTS	AL150HD LUGS	3	100%	THERMAL MAGNETIC	-	-	HDP36060CTX
GM47475-53	-	BREAKER, CIRCUIT 60A HDP		18	TERMINAL NUTS	AL150HD LUGS	3	80%	MICROLOGIC 3.2 LI	-	-	HDP36060U31XTX
GM47475-54	-	BREAKER, CIRCUIT 60A HDP		18	TERMINAL NUTS	AL150HD LUGS	3	80%	MICROLOGIC 3.2S LSI	-	-	HDP36060U33XTX
GM47475-55	-	BREAKER, CIRCUIT 60A HDP		18	TERMINAL NUTS	AL150HD LUGS	3	80%	MICROLOGIC 6.2A LSIG	-	-	HDP36060U44XTX
GM47475-56	-	BREAKER, CIRCUIT 60A HDP		18	TERMINAL NUTS	CU150HD LUGS	3	100%	MICROLOGIC 3.2 LI	-	-	HDP36060CU31XTX
GM47475-57	-	BREAKER, CIRCUIT 60A HDP		18	TERMINAL NUTS	CU150HD LUGS	3	100%	MICROLOGIC 3.2S LSI	-	-	HDP36060CU33XTX
GM47475-58	-	BREAKER, CIRCUIT 60A HDP		18	TERMINAL NUTS	CU150HD LUGS	3	100%	MICROLOGIC 6.2A LSIG	-	-	HDP36060CU44XTX
GM47475-59	-	BREAKER, CIRCUIT 60A HGP		35	TERMINAL NUTS	AL150HD LUGS	3	80%	MICROLOGIC 3.2 LI	-	-	HGP36060U31XTX
GM47475-60	-	BREAKER, CIRCUIT 60A HGP		35	TERMINAL NUTS	AL150HD LUGS	3	80%	MICROLOGIC 3.2S LSI	-	-	HGP36060U33XTX
GM47475-61	-	BREAKER, CIRCUIT 60A HGP		35	TERMINAL NUTS	AL150HD LUGS	3	80%	MICROLOGIC 6.2A LSIG	-	-	HGP36060U44XTX
GM47475-62	-	BREAKER, CIRCUIT 60A HGP		35	TERMINAL NUTS	CU150HD LUGS	3	100%	MICROLOGIC 3.2 LI	-	-	HGP36060CU31XTX
GM47475-63	-	BREAKER, CIRCUIT 60A HGP		35	TERMINAL NUTS	CU150HD LUGS	3	100%	MICROLOGIC 3.2S LSI	-	-	HGP36060CU33XTX
GM47475-64	-	BREAKER, CIRCUIT 60A HGP		35	TERMINAL NUTS	CU150HD LUGS	3	100%	MICROLOGIC 6.2A LSIG	-	-	HGP36060CU44XTX
GM47475-3	C	BREAKER, CIRCUIT 70A HDL	70	18	AL150HD LUGS	AL150HD LUGS	3	80%	THERMAL MAGNETIC	-	-	HDL36070
GM47475-37	D	BREAKER, CIRCUIT 70A HDP		18	TERMINAL NUTS	AL150HD LUGS	3	80%	THERMAL MAGNETIC	-	-	HDP36070TX
GM47475-38	D	BREAKER, CIRCUIT 70A HDP		18	TERMINAL NUTS	CU150HD LUGS	3	100%	THERMAL MAGNETIC	-	-	HDP36070CTX

KOHLER PART NUMBER TO BE CLEARLY VISIBLE ON CIRCUIT BREAKER AND ON INDIVIDUAL PACKAGING.

CONNECTION CHART		
CONNECTION TYPE	CONNECTION (PER PHASE)	TORQUE
AL150HD LUGS	(1) #14-#10 AWG	5 Nm [50 IN-LB]
AL150HD LUGS	(1) #8-3/0 AWG	14 Nm [120 IN-LB]
CU150HD LUGS	(1) #14-2/0 AWG (CU 90°C WIRE ONLY)	14 Nm [120 IN-LB]
TERMINAL NUTS	(1) M6	9-10.2 Nm [80-90 IN-LB]

▲ DENOTES A CRITICAL CHARACTERISTIC THAT MUST BE ADDRESSED IN THE PRODUCTION CONTROL PLAN. TOTAL QUANTITY OF CRITICAL CHARACTERISTICS ON THIS DRAWING = 0

◇ DENOTES A MAJOR CHARACTERISTIC THAT MUST BE ADDRESSED IN THE PRODUCTION CONTROL PLAN. TOTAL QUANTITY OF MAJOR CHARACTERISTICS ON THIS DRAWING = 0

SQUARE D H-FRAME 600V

☐ INDICATES PART NUMBERS AFFECTED BY LATEST DRAWING REVISION

REV	DATE	ON COMPOSITE DWGS, SEE PART NO. FOR REVISION LEVEL	BY
B	3-18-08	(D-4) GM47475-15 ADDED [S.O.#10054327201]	RDH
C	11-16-10	REDRAWN IN PRO-E & CHART UPDATED, GM47475-16 ADDED; [90604-1]	BTW
D	1-6-11	(B-5) GM47475-16 2 POLES WAS 3; GM47475-17 THRU -52 ADDED; SHEET 2 ADDED [90647-15]	WSD
E	4-13-12	(A-1) SHEET 3 ADDED; (B-8) GM47475-53 THRU -64 ADDED; (A-1) GM47475-CMP WAS GM47475 [CT145161]	WSD
F	11-4-15	SEE SHEET 2 [CT127756]	DDH

UNLESS OTHERWISE SPECIFIED: 1) DIMENSIONS ARE IN MILLIMETERS 2) TOLERANCES ARE: X.XX ± 0.25, X.X ± 1.0, X ± 1.5, ANGLES ± 0° 30' SURFACE FINISH 125 MAX. THIRD ANGLE PROJECTION

APPROVALS		DATE
DRAWN	WSD	10-21-05
CHECKED	WSD	6-13-06
APPROVED	AJH	6-15-06

TITLE: DWG, CIRCUIT BREAKER

SCALE | CAD NO. | SHEET 1 of 3

DWG NO. GM47475-CMP | D

PART NO.	PART REV		DESCRIPTION	AMPS	INTERRUPT kA @480 VAC	CONNECTION TYPE		POLES	RATING	TRIP TYPE	MAGNETIC TRIP ONLY		SQUARE D PART NO.
						LINE	LOAD				FULL LOAD AMPS	ADJUSTABLE TRIP RANGE	
GM47475-4	C		BREAKER, CIRCUIT 80A HDL	80	18	AL150HD LUGS	AL150HD LUGS	3	80%	THERMAL MAGNETIC	-	-	HDL36080
GM47475-39	D		BREAKER, CIRCUIT 80A HDP		18	TERMINAL NUTS	AL150HD LUGS	3	80%	THERMAL MAGNETIC	-	-	HDP36080TX
GM47475-40	D		BREAKER, CIRCUIT 80A HDP		18	TERMINAL NUTS	CU150HD LUGS	3	100%	THERMAL MAGNETIC	-	-	HDP36080CTX
GM47475-5	C		BREAKER, CIRCUIT 90A HDL	90	18	AL150HD LUGS	AL150HD LUGS	3	80%	THERMAL MAGNETIC	-	-	HDL36090
GM47475-41	D		BREAKER, CIRCUIT 90A HDP		18	TERMINAL NUTS	AL150HD LUGS	3	80%	THERMAL MAGNETIC	-	-	HDP36090TX
GM47475-42	D		BREAKER, CIRCUIT 90A HDP		18	TERMINAL NUTS	CU150HD LUGS	3	100%	THERMAL MAGNETIC	-	-	HDP36090CTX
GM47475-6	C		BREAKER, CIRCUIT 100A HDL	100	18	AL150HD LUGS	AL150HD LUGS	3	80%	THERMAL MAGNETIC	-	-	HDL36100
GM47475-43	D		BREAKER, CIRCUIT 100A HDP		18	TERMINAL NUTS	AL150HD LUGS	3	80%	THERMAL MAGNETIC	-	-	HDP36100TX
GM47475-44	D		BREAKER, CIRCUIT 100A HDP		18	TERMINAL NUTS	CU150HD LUGS	3	100%	THERMAL MAGNETIC	-	-	HDP36100CTX
GM47475-45	D		BREAKER, CIRCUIT 100A HJP		65	TERMINAL NUTS	AL150HD LUGS	3	-	MAGNETIC ONLY	30-80	180-1040	HJP36100M73TX
GM47475-65	-		BREAKER, CIRCUIT 100A HDP		18	TERMINAL NUTS	AL150HD LUGS	3	80%	MICROLOGIC 3.2 LI	-	-	HDP36100U31XTX
GM47475-66	-		BREAKER, CIRCUIT 100A HDP		18	TERMINAL NUTS	AL150HD LUGS	3	80%	MICROLOGIC 3.2S LSI	-	-	HDP36100U33XTX
GM47475-67	-		BREAKER, CIRCUIT 100A HDP		18	TERMINAL NUTS	AL150HD LUGS	3	80%	MICROLOGIC 6.2A LSIG	-	-	HDP36100U44XTX
GM47475-68	-		BREAKER, CIRCUIT 100A HDP		18	TERMINAL NUTS	CU150HD LUGS	3	100%	MICROLOGIC 3.2 LI	-	-	HDP36100CU31XTX
GM47475-69	-		BREAKER, CIRCUIT 100A HDP		18	TERMINAL NUTS	CU150HD LUGS	3	100%	MICROLOGIC 3.2S LSI	-	-	HDP36100CU33XTX
GM47475-70	-		BREAKER, CIRCUIT 100A HDP		18	TERMINAL NUTS	CU150HD LUGS	3	100%	MICROLOGIC 6.2A LSIG	-	-	HDP36100CU44XTX
GM47475-71	-		BREAKER, CIRCUIT 100A HGP		35	TERMINAL NUTS	AL150HD LUGS	3	80%	MICROLOGIC 3.2 LI	-	-	HGP36100U31XTX
GM47475-72	-		BREAKER, CIRCUIT 100A HGP		35	TERMINAL NUTS	AL150HD LUGS	3	80%	MICROLOGIC 3.2S LSI	-	-	HGP36100U33XTX
GM47475-73	-		BREAKER, CIRCUIT 100A HGP		35	TERMINAL NUTS	AL150HD LUGS	3	80%	MICROLOGIC 6.2A LSIG	-	-	HGP36100U44XTX
GM47475-74	-		BREAKER, CIRCUIT 100A HGP		35	TERMINAL NUTS	CU150HD LUGS	3	100%	MICROLOGIC 3.2 LI	-	-	HGP36100CU31XTX
GM47475-75	-		BREAKER, CIRCUIT 100A HGP		35	TERMINAL NUTS	CU150HD LUGS	3	100%	MICROLOGIC 3.2S LSI	-	-	HGP36100CU33XTX
GM47475-76	-		BREAKER, CIRCUIT 100A HGP		35	TERMINAL NUTS	CU150HD LUGS	3	100%	MICROLOGIC 6.2A LSIG	-	-	HGP36100CU44XTX
GM47475-51	D		BREAKER, CIRCUIT 110A HDP	110	18	TERMINAL NUTS	AL150HD LUGS	3	80%	THERMAL MAGNETIC	-	-	HDP36110TX
GM47475-52	D		BREAKER, CIRCUIT 110A HDP		18	TERMINAL NUTS	CU150HD LUGS	3	100%	THERMAL MAGNETIC	-	-	HDP36110CTX
											-	-	
GM47475-7	C		BREAKER, CIRCUIT 125A HDL	125	18	AL150HD LUGS	AL150HD LUGS	3	80%	THERMAL MAGNETIC	-	-	HDL36125
GM47475-16	D		BREAKER, CIRCUIT 125A HDP		18	TERMINAL NUTS	CU150HD LUGS	2	100%	THERMAL MAGNETIC	-	-	HDP26125CTX
GM47475-46	D		BREAKER, CIRCUIT 125A HDP		18	TERMINAL NUTS	AL150HD LUGS	3	80%	THERMAL MAGNETIC	-	-	HDP36125TX
GM47475-47	D		BREAKER, CIRCUIT 125A HDP		18	TERMINAL NUTS	CU150HD LUGS	3	100%	THERMAL MAGNETIC	-	-	HDP36125CTX
GM47475-8	C		BREAKER, CIRCUIT 150A HDL	150	18	AL150HD LUGS	AL150HD LUGS	3	80%	THERMAL MAGNETIC	-	-	HDL36150
GM47475-48	D		BREAKER, CIRCUIT 150A HDP		18	TERMINAL NUTS	AL150HD LUGS	3	80%	THERMAL MAGNETIC	-	-	HDP36150TX
GM47475-49	D		BREAKER, CIRCUIT 150A HDP		18	TERMINAL NUTS	CU150HD LUGS	3	100%	THERMAL MAGNETIC	-	-	HDP36150CTX
GM47475-50	D		BREAKER, CIRCUIT 150A HJP		65	TERMINAL NUTS	AL150HD LUGS	3	-	MAGNETIC ONLY	58-130	348-1690	HJP36150M74TX
GM47475-77	-		BREAKER, CIRCUIT 150A HDP		18	TERMINAL NUTS	AL150HD LUGS	3	80%	MICROLOGIC 3.2 LI	-	-	HDP36150U31XTX
GM47475-78	-		BREAKER, CIRCUIT 150A HDP		18	TERMINAL NUTS	AL150HD LUGS	3	80%	MICROLOGIC 3.2S LSI	-	-	HDP36150U33XTX
GM47475-79	-		BREAKER, CIRCUIT 150A HDP		18	TERMINAL NUTS	AL150HD LUGS	3	80%	MICROLOGIC 6.2A LSIG	-	-	HDP36150U44XTX
GM47475-80	-		BREAKER, CIRCUIT 150A HDP		18	TERMINAL NUTS	CU150HD LUGS	3	100%	MICROLOGIC 3.2 LI	-	-	HDP36150CU31XTX
GM47475-81	-		BREAKER, CIRCUIT 150A HDP		18	TERMINAL NUTS	CU150HD LUGS	3	100%	MICROLOGIC 3.2S LSI	-	-	HDP36150CU33XTX
GM47475-82	-		BREAKER, CIRCUIT 150A HDP		18	TERMINAL NUTS	CU150HD LUGS	3	100%	MICROLOGIC 6.2A LSIG	-	-	HDP36150CU44XTX
GM47475-83	-		BREAKER, CIRCUIT 150A HGP		35	TERMINAL NUTS	AL150HD LUGS	3	80%	MICROLOGIC 3.2 LI	-	-	HGP36150U31XTX
GM47475-84	-		BREAKER, CIRCUIT 150A HGP		35	TERMINAL NUTS	AL150HD LUGS	3	80%	MICROLOGIC 3.2S LSI	-	-	HGP36150U33XTX
GM47475-85	-		BREAKER, CIRCUIT 150A HGP		35	TERMINAL NUTS	AL150HD LUGS	3	80%	MICROLOGIC 6.2A LSIG	-	-	HGP36150U44XTX
GM47475-86	-		BREAKER, CIRCUIT 150A HGP		35	TERMINAL NUTS	CU150HD LUGS	3	100%	MICROLOGIC 3.2 LI	-	-	HGP36150CU31XTX
GM47475-87	-		BREAKER, CIRCUIT 150A HGP		35	TERMINAL NUTS	CU150HD LUGS	3	100%	MICROLOGIC 3.2S LSI	-	-	HGP36150CU33XTX
GM47475-88	-		BREAKER, CIRCUIT 150A HGP		35	TERMINAL NUTS	CU150HD LUGS	3	100%	MICROLOGIC 6.2A LSIG	-	-	HGP36150CU44XTX
GM47475-89	-	☐	BREAKER, CIRCUIT 150A HDP		18	TERMINAL NUTS	CU150HD LUGS	2	100%	THERMAL MAGNETIC	-	-	HDP26150CTX

☐ INDICATES PART NUMBERS AFFECTED BY LATEST DRAWING REVISION

SQUARE D H-FRAME
600V

REV	DATE	ON COMPOSITE DWGS, SEE PART NO. FOR REVISION LEVEL	BY
D	1-6-11	SHEET 2 ADDED [90647-15]	WSD
E	4-13-12	GM47475-65 THRU -88 ADDED [CT14516]	WSD
F	11-4-15	(A-8) GM47475-89 ADDED [CT127756]	DDH

UNLESS OTHERWISE SPECIFIED: 1) DIMENSIONS ARE IN MILLIMETERS 2) TOLERANCES ARE: X.XX ± 0.25, X.X ± 1.0, X ± 1.5, ANGLES ± 0° 30' SURFACE FINISH MAX. THIRD ANGLE PROJECTION

APPROVALS		DATE
DRAWN	WSD	1-6-11
CHECKED	WSD	1-6-11
APPROVED	AJH	1-6-11

KOHLER CO. METRIC PRO-E
POWER SYSTEMS, KOHLER, WI 53044 U.S.A.

TITLE: DWG, CIRCUIT BREAKER

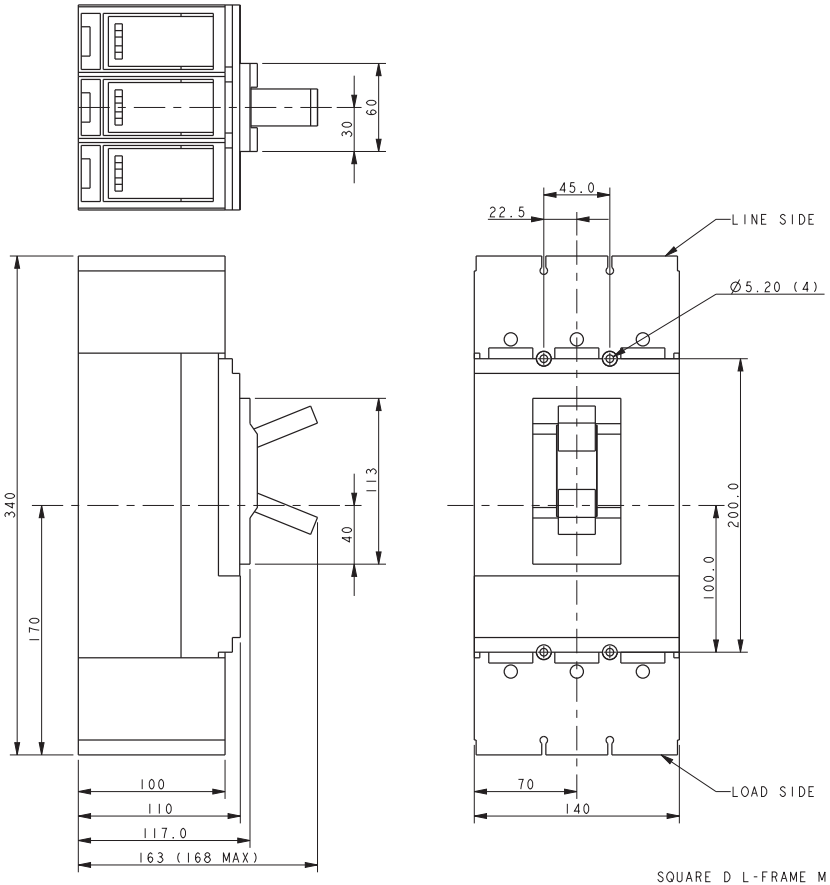
SCALE 1.25 | CAD NO. | SHEET 2 of 3

DWG NO. GM47475-CMP | D

PART NO.	PART REV		DESCRIPTION	AMPS	INTERRUPT kA @480 VAC	CONNECTION TYPE		POLES	VOLTS	RATING	TRIP TYPE	SQUARE D PART NO.
						LINE	LOAD					
GM85432-1	-		BREAKER, CIRCUIT 400A LGP	400	35	BUS	AL600LS52K3 LUGS	3	600	80%	MICROLOGIC 3.3 LI	LGP36400U31X
GM85432-2	-		BREAKER, CIRCUIT 400A LGP							80%	MICROLOGIC 3.3S LSI	LGP36400U33X
GM85432-3	-		BREAKER, CIRCUIT 400A LGP							80%	MICROLOGIC 6.3A LSIG	LGP36400U44X
GM85432-4	-		BREAKER, CIRCUIT 400A LGP							100%	MICROLOGIC 3.3 LI	LGP36400CU31X
GM85432-5	-		BREAKER, CIRCUIT 400A LGP							100%	MICROLOGIC 3.3S LSI	LGP36400CU33X
GM85432-6	-		BREAKER, CIRCUIT 400A LGP							100%	MICROLOGIC 6.3A LSIG	LGP36400CU44X
GM85432-7	-		BREAKER, CIRCUIT 600A LGP	600	35	BUS	AL600LS52K3 LUGS	3	600	80%	MICROLOGIC 3.3 LI	LGP36600U31X
GM85432-8	-		BREAKER, CIRCUIT 600A LGP							80%	MICROLOGIC 3.3S LSI	LGP36600U33X
GM85432-9	-		BREAKER, CIRCUIT 600A LGP							80%	MICROLOGIC 6.3A LSIG	LGP36600U44X

CONNECTION CHART		
CONNECTION TYPE	CONNECTIONS (PER PHASE)	TORQUE
BUS	(1) M10	50 Nm [442 IN-LB]
AL600LS52K3 LUGS	(2) 2/0-500 KCMIL AL/CU	50 Nm [442 IN-LB]

NOTE:
(4) M5 X 85 MOUNTING SCREWS, WASHERS AND NUTS INCLUDED.
(3) M10 X 25 BUS CONNECTION SCREWS AND SPRING WASHERS INCLUDED.



SQUARE D L-FRAME MICROLOGIC BREAKERS

▲ DENOTES A CRITICAL CHARACTERISTIC THAT MUST BE ADDRESSED IN THE PRODUCTION CONTROL PLAN.
TOTAL QUANTITY OF CRITICAL CHARACTERISTICS ON THIS DRAWING = 0

◇ DENOTES A MAJOR CHARACTERISTIC THAT MUST BE ADDRESSED IN THE PRODUCTION CONTROL PLAN.
TOTAL QUANTITY OF MAJOR CHARACTERISTICS ON THIS DRAWING = 0

KOHLER PART NUMBER TO BE CLEARLY VISIBLE ON CIRCUIT BREAKER AND ON INDIVIDUAL PACKAGING.

☐ INDICATES PART NUMBERS AFFECTED BY LATEST DRAWING REVISION

REV	DATE	ON COMPOSITE DWGS, SEE PART NO. FOR REVISION LEVEL	BY
-	4-3-12	NEW DRAWING [CT145I6]	WSD

UNLESS OTHERWISE SPECIFIED:
1) DIMENSIONS ARE IN MILLIMETERS
2) TOLERANCES ARE:
X.XX ± 0.25
X.X ± 1.0
X ± 1.5
ANGLES ± 0° 30'
SURFACE FINISH 32 MAX.
THIRD ANGLE PROJECTION

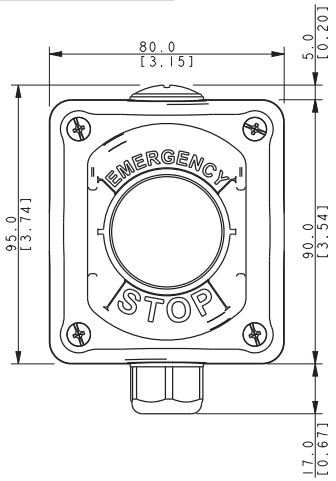
APPROVALS		DATE
DRAWN	WSD	4-3-12
CHECKED	WSD	4-3-12
APPROVED	AJH	4-3-12

KOHLER CO. METRIC PRO-E
POWER SYSTEMS, KOHLER, WI 53044 U.S.A.

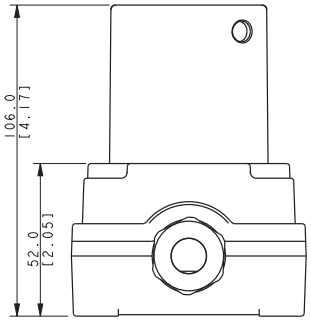
TITLE
DWG, CIRCUIT BREAKER

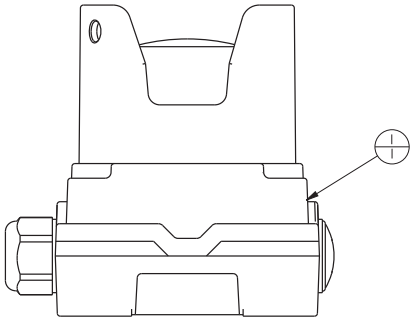
SCALE 0.60 | CAD NO. | SHEET 1 of 1
DWG NO. GM85432-CMP | D

KIT NO.	ITEM	PART NO	QTY	DESCRIPTION
GM103743				E-STOP, NEC REMOTE
	1	GM103743-1	1	E-STOP W/ YELLOW SHROUD, LOTO
	2	GM103743-2	4	#10 X 1.25□ Sheetmetal Screw
	3	GM103743-3	1	TERMINAL, FAST-ON, MALE, 18-22 AWG
	4	GM103743-4	1	TERMINAL, FAST-ON, FEMALE, 18-22 AWG
	5	GM103743-5	2	TERMINAL, SPADE, 22-16 AWG
	6	GM103743-6	1	LITERATURE, TT-1736
THIS IS AN AUTOMATED TABLE. ALL UPDATES MUST BE MADE IN THE ASSEMBLY.				



SCALE 1.50





NOTE:

DIMENSIONS IN [ ] ARE IN INCH EQUIVALENTS.

SCREWS AND TERMINALS ARE TO BE BAGGED AND PLACED IN THE BOX

REV	DATE	ON COMPOSITE DWGS, SEE PART NO. FOR REVISION LEVEL	BY
-	2-12-18	NEW DRAWING [CT176728]	CCL

UNLESS OTHERWISE SPECIFIED:
1) DIMENSIONS ARE IN MILLIMETERS
2) TOLERANCES ARE:
X.XX ± 0.25
X.X ± 1.0
X ± 1.5
ANGLES ± 0° 30'
SURFACE FINISH 63 MAX.
THIRD ANGLE PROJECTION

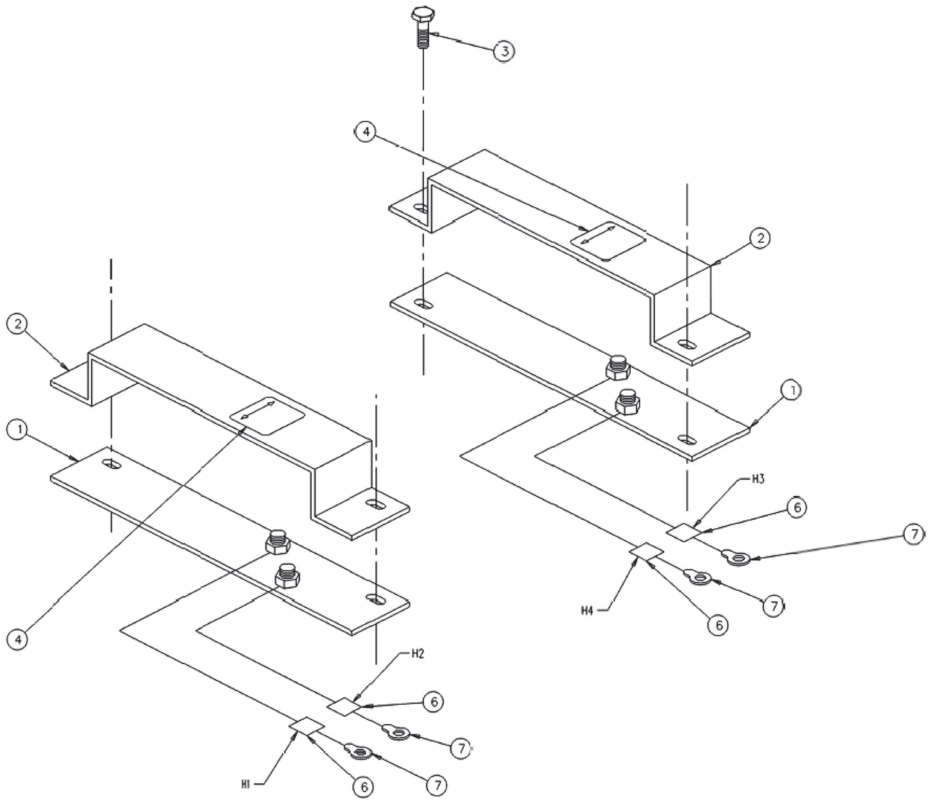
APPROVALS		DATE
DRAWN	CCL	2-12-18
CHECKED	KJB	2-12-18
APPROVED	KJB	2-12-18

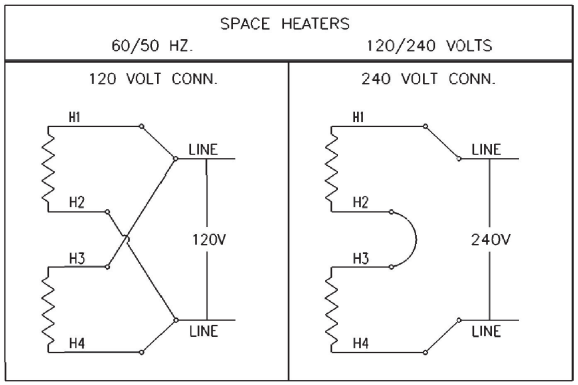
KOHLER CO. METRIC PRO-E
POWER SYSTEMS, KOHLER, WI 53044 U.S.A.

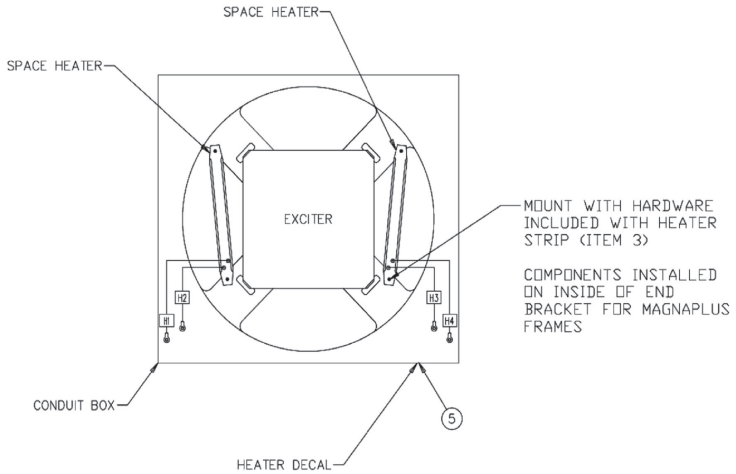
TITLE: E-STOP, NEC REMOTE

SCALE 1.50 | CAD NO. | SHEET 1 of 1

DWG NO. GM103743 | D







NOTE:

1. ALIGN THE SPACE HEATER AND GUARDS WITH THE PREDRILLED HOLES IN THE FRONT BRACKET AND MOUNT WITH THE SCREWS PROVIDED IN THE SPACE HEATER KIT.
2. APPLY THE SPACE HEATER CONNECTION DECAL ON THE BOTTOM OF THE CONDUIT BOX IN A VISIBLE LOCATION.
3. WIRE THE SPACE HEATER TO EITHER 120 VOLTS OR 240 VOLTS ACCORDING TO THE CONNECTION DIAGRAM. INSULATE THE CONNECTION.
4. ASSEMBLE CAUTION DECAL IN DIRECTION OF ARROW.

DESCRIPTION			FOR #572-575 AND #740 FRAMES			FOR #431-433 FRAME - MAGNAMAX			FOR #430-433 FRAME - MAGNAPLUS		
			REV			REV			REV		
KOHLER KIT NUMBER				H	272800		H	279750	☐	-	GM109472-KA1
PURCHASED COMPLETE FROM MARATHON			☐	A	272803	☐	A	279749	☐	-	GM10947I
1	2	SPACE HEATER			A-21138-33			A-21138-32			A-21138-32
2	2	GUARD			A-525855			A-525591			B-527461
3	4	SCREW			A-9646-75			A-9646-75			A-9646-75
4	2	DECAL, CAUTION			A-525590			A-525590			A-525590
5	1	DECAL, CONNECTION			A-510663			A-510663			A-510663
6	8	MARKERS			A-57829B			A-57829B			A-57829B
7	4	LEAD ASSEMBLY			L6H16W-24B8B8			L6H16W-24B8B8			L6H16W-42B8B8
ITEM	QTY.	DESCRIPTION			PART NO. MARATHON			PART NO. MARATHON			PART NO. MARATHON

350-1000 KW DDC
120/240 VOLT MARATHON GENERATOR HEATER
TOTAL HEATER WATTAGE 500 WATTS

REV	DATE	ON COMPOSITE DWGS, SEE PART NO. FOR REVISION LEVEL	BY
D	6-24-97	(A-2) 1000 KW WAS 800 KW [50803]	JDH
E	5-18-98	(A-2,A-7) #572, 573, 574, 575 & 740 WAS #570;	
		#433 WAS #430 [54622]	LDS
F	10-29-98	(A-6,7,8) KIT # AND DESCRIPTION ADDED [56529]	LDS
G	9-21-09	(B-1) X-101-8 (4), X-465-7 (4) AND X-25-53 (8)	
		REMOVED (C-1) NOTE REVISED [88337]	SAM
H	7-11-12	(B-1) VIEW A-A REMOVED , HARDWARE NOTE ADDED [CT15979]	SAM
J	7-31-19	CREO FORMAT WAS AUTOCAD; (A-7,8) TABLE UPDATED;	
		(A-6) GM10947I AND GM109472-KA1 ADDED; (B-2)	
		NOTE ADDED [CT197472]	HM

DO NOT SCALE, REFERENCE THE MODEL FOR ALL UNSPECIFIED DIMENSIONS

UNLESS OTHERWISE SPECIFIED:
ALL DIMENSIONS IN MILLIMETERS
GENERAL TOLERANCES:
X.XX ± 0.25
X.X ± 1.0
X ± 1.3
ANGLES ± 0°30'
SURFACE FINISH 63 MAX.
THIRD-ANGLE PROJECTION

APPROVALS		DATE
DRAWN	DCC/RD	10-20-86
CHECKED	RLD	10-26-86
APPROVED	DRF	11-29-86

KOHLER.
KOHLER, WISCONSIN 53044

TITLE: **DRAWING, ASSEMBLY**

SCALE | CAD NO. | SHEET 1 of 1

DWG NO. **S-272000** **D**

rehlko

Warranty

Stationary Standby and Prime Power Industrial Generator Set One-Year or Two Thousand (2000)-Hour Limited Warranty

Your product has been manufactured and inspected with care by experienced craftsmen. If you are the original end user, Discovery Energy, LLC and its affiliates dba Rehlko -hereafter referred to as "the manufacturer"- warrants, for the period indicated below, each product to be free from defects in materials and workmanship. In the event of a defect in materials or workmanship, the manufacturer will repair, replace, or make appropriate adjustment at the manufacturer's option if the product, upon the manufacturer's inspection, is found to be properly installed, maintained, and operated in accordance with the manufacturer's instruction manuals. A distributor, dealer, or authorized service representative must perform startup.

Product	**Warranty Coverage**
Stationary Standby Generator Set & Accessories	One (1) year from registered startup or two thousand (2000) hours (whichever occurs first). In any event, the warranty period will expire not later than thirty (30) months from the date of shipment from the manufacturer's factory.
Stationary Prime Power Generator Set & Accessories	One (1) year from registered startup or two thousand (2000) hours (whichever occurs first). In any event, the warranty period will expire not later than thirty (30) months from the date of shipment from the manufacturer's factory.

Standby rated generators may only be used in Stationary "emergency" applications, where the generator set is the secondary power source, and a dependable utility is the primary power source. Use of a standby rated generator in a stationary "non-emergency" application, or any non-stationary application, is not allowed and voids all factory warranties.

The following will **not** be covered by the warranty:

1. Normal wear, routine tuneups, tuneup parts, adjustments, and periodic service.
2. Damage, including but not limited to damage caused by accidents, improper installation or handling, faulty repairs not performed by an authorized service representative, improper storage, or acts of God.
3. Damage caused by operation at speeds, or with fuel, loads, conditions, modifications or installation contrary to published specifications.
4. Damage caused by negligent maintenance such as:
   a. Failure to provide the specified type and sufficient quantity of lubricating oil.
   b. Failure to keep the air intake and cooling fin areas clean.
   c. Failure to service the air cleaner.
   d. Failure to provide sufficient coolant and/or cooling air.
   e. Failure to perform scheduled maintenance as prescribed in supplied manuals.
   f. Failure to regularly exercise the generator set under load (stationary applications only).
5. Original installation charges and startup costs.
6. Starting batteries and the following related expenses:
   a. Labor charges related to battery service.
   b. Travel expenses related to battery service.
7. Engine coolant heaters, heater controls, and circulating pumps after the first year of the warranty period.
8. Additional expenses for repairs performed after normal business hours, i.e. overtime or holiday labor rates.
9. Rental of equipment during the performance of warranty repairs.
10. Removal and replacement of non-Rehlko-supplied options and equipment.
11. Non-Rehlko replacement parts. Replacement of a failed part with a non-Rehlko part voids the warranty on that part.
12. Radiators replaced rather than repaired.
13. Fuel injection pumps not repaired by an authorized service representative.
14. Non-authorized repair shop labor without prior approval from the manufacturer Warranty Department.
15. Engine fluids such as fuel, oil, or coolant/antifreeze.
16. Shop supplies such as adhesives, cleaning solvents, and rags.
17. Expenses incurred investigating performance complaints unless the problem is caused by defective materials or workmanship.
18. Maintenance items such as fuses, lamps, filters, spark plugs, loose or leaking clamps, and adjustments.
19. Travel time and mileage exceeding 300 miles round trip.

To obtain warranty service, call 1-800-544-2444 for your nearest authorized service representative or write the manufacturer Service Department, MS072, Kohler, WI 53044 USA.

THE MANUFACTURER SHALL NOT BE LIABLE FOR SPECIAL, INCIDENTAL, AND/OR CONSEQUENTIAL DAMAGES OF ANY KIND including, but not limited to, incidental and/or consequential labor costs, installation charges, telephone charges, or transportation charges in connection with the replacement or repair of defective parts.

This is our exclusive written warranty. We make no other express warranty nor is anyone authorized to make any on our behalf.

ANY IMPLIED OR STATUTORY WARRANTY, INCLUDING ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, IS EXPRESSLY LIMITED TO THE DURATION OF THIS WARRANTY. Some states do not allow limitations on how long an implied warranty lasts, or the exclusion or limitation of incidental and/or consequential damages, so the above limitation or exclusion may not apply to you.

This warranty gives you specific legal rights, and you may also have other rights which vary from state to state.

rehlko

Discovery Energy, LLC
200 Twin Oaks Road, Kohler, WI 53044 USA
For the nearest sales and service outlet in the US and Canada, phone 1-800-544-2444
powersystems.rehlko.com

TP-5374 12/24h

rehlko

Certification

Certificate of Registration

QUALITY MANAGEMENT SYSTEM - ISO 9001:2015

This is to certify that:

Kohler Power Systems
N7650 Lakeshore Road
Sheboygan
Wisconsin
53083
USA

Holds Certificate No: **FM 727336**

and operates a Quality Management System which complies with the requirements of ISO 9001:2015 for the following scope:

Design, manufacture, and distributor support for electrical generators, alternators, fuel tanks, automatic transfer switches and switchgear, including the manufacture of leads and harness, skids, and fabricated components with distribution of generator sets supported by warehouse operations.

For and on behalf of BSI:

Jessica Patel, Senior Vice President, Assurance Americas

Original Registration Date: 1995-02-28
Effective Date: 2024-11-07
Latest Revision Date: 2024-11-05
Expiry Date: 2027-11-06

...making excellence a habit.™

Certificate No: **FM 727336**

Location	Registered Activities
Kohler Power Systems - GK 900 Highland Drive Bldg 604 Kohler Wisconsin 53004 USA	Manufacture of leads and harness, automatic transfer switches and switchgear. Distribution of generator sets.
Kohler Power Systems N7650 Lakeshore Road Sheboygan Wisconsin 53083 USA	Design, manufacture, and distributor support for electrical generators, automatic transfer switches and switchgear.
Kohler Power Systems 300 N Dekora Woods Blvd Saukville Wisconsin 53080 USA	Manufacture of fuel tanks, skids, fabricated components and generators.
Kohler Power Systems Muth Warehouse 2821 Muth Court Sheboygan Wisconsin 53083 USA	The distribution of generator sets.
Kohler Power Systems KWIP Warehouse 4327 County EE Sheboygan Wisconsin 53081 USA	Receiving, sequencing and warehousing of generator components.

Original Registration Date: 1995-02-28

Effective Date: 2024-11-07

Latest Revision Date: 2024-11-05

Expiry Date: 2027-11-06

ENGINEERING EXPRESS®
160 SW 12TH AVE SUITE 106, DEERFIELD BEACH, FL 33442
(954) 354-0660 | ENGINEERINGEXPRESS.COM

Technical Evaluation Report

DIVISION: 48 10 00–ELECTRICAL POWER GENERATION EQUIPMENT

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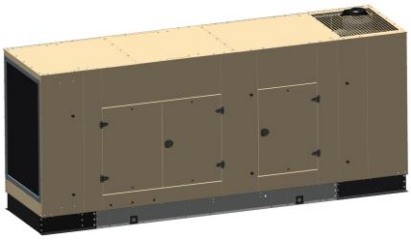
(Subject to Renew March 1, 2022 or next code cycle)

EVALUATION SUBJECT: **350-500REOZJC/D Sound Level 2 Aluminum Enclosure** TER-20-25965.1

REPORT HOLDER:
KOHLER POWER SYSTEMS
7650 LAKESHORE ROAD
SHEBOYGAN, WI 53083 USA
(920) 457-4441 | KOHLERPOWER.COM

Florida Building Code Sixth & Seventh Editions (2017 & 2020)
International Building Code (2012, 2015 & 2018)



NOTE: THE GRAPHICAL DEPICTIONS IN THIS REPORT ARE FOR ILLUSTRATIVE PURPOSES ONLY AND MAY DIFFER IN APPEARANCE.

SCOPE OF EVALUATION (compliance with the following codes):

THIS IS A STRUCTURAL (WIND) PERFORMANCE EVALUATION ONLY. NO ELECTRICAL OR TEMPERATURE PERFORMANCE RATINGS OR CERTIFICATIONS ARE OFFERED OR IMPLIED HEREIN.

This Product Evaluation Report is being issued in accordance with the requirements of the **International Building Code (2012, 2015, & 2018)** and the **Florida Building Code Sixth & Seventh Editions (2017& 2020)** per ASCE 7, FBC Building Ch. 16, FBC Building Sections 104.11 and 453.25.5, FBC Existing Building Sections 707.1 and 707.2, FBC Residential M1202.1 and M1301.1, FMC 301.15, and FS 471.025. The product noted on this report has been tested and/or evaluated as summarized herein.

IN ACCORDANCE WITH THESE CODES EACH OF THESE REPORTS MUST BEAR THE ORIGINAL SIGNATURE & RAISED SEAL OF THE EVALUATING ENGINEER.

SUBSTANTIATING DATA:

• Product Evaluation Documents

Substantiating documentation has been submitted to provide this TER and is summarized in the sections below.

• Structural Engineering Calculations

Structural engineering calculations have been prepared which evaluate the product based on rational analysis to qualify the following design criteria:

- Maximum rated wind pressures via Components & Cladding methodology.
- Structural component connection integrity, verified by a unity check between tension and shear.
- Anchorage integrity for unit and tank mounts.

Calculation summary is included in this TER and appears below. NOTE: No 33% increase in allowable stress has been used in the design of this product.

INSTALLATION:

The product(s) listed above shall be installed in strict compliance with this TER & manufacturer-provided enclosure model specifications.
The product components shall be of the material specified in the manufacturer-provided product specifications. All screws, bolts and rivet must be installed in accordance with the applicable provisions & anchor manufacturer's published installation instructions.

LIMITATIONS & CONDITIONS OF USE:

Use of this product shall be in strict accordance with this TER as noted herein. Adjustment factors noted herein and the applicable codes must be considered, where applicable. Installation shall conform to the minimum standards stated in the referenced building code(s) in addition to tie-down details and limitations stated herein.
See final page for complete limitations & conditions of use.

UNIT CASING MATERIAL:

1/8" Al 5052-H32 top and side panels and 1/4" steel ASTM A36 for bottom skids, secured with 3/16" Ø SS GR. 50, M6 low carbon steel drill screws, M6 class 4.8 machine screws, 5/16" A2-70 SS bolts and M12 bolts class 8.8. (see enclosure, component drawings per manufacturer for specific locations).

TERMINOLOGY:

See list of abbreviations on the final page of this report.

OPTIONS:

This evaluation is valid for KOHLER 350-500REOZJC/D Sound Level 2 Aluminum Enclosures described herein.
This evaluation includes standard product only. Contact the manufacturer for Engineering Special (ES) orders. Any structural changes outside of the design as described herein would void this certification.

STRUCTURAL PERFORMANCE:

Models referenced herein are subject to the following design limitations:

Maximum Rated Wind Pressure*:
+/- 65 psf

- Required design pressures shall be determined on a site-specific basis in accordance with ASCE 7 and applicable sections of the building code(s) being referenced in accordance with ASD methodology.
- Required design pressures shall be less than or equal to the maximum pressures listed herein.
- *Maximum Rated Wind Pressures indicate the maximum pressures that all units listed herein are approved for. Valid for at-grade applications only. See limitations herein.
- Site-specific wind analysis may produce alternate limitations provided maximum rated wind pressures stated herein are not exceeded.

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OR DIGITAL SEAL REQUIRED TO BE VALID PER CODE:

PE SEAL REQUIRED

August 21, 2020

Frank Bennardo, P.E., SECB
ENGINEERING EXPRESS®
FL PE #0046549 FLCA #9885

☐ If Checked, Certifying Engineer and PE # Appear Above

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PRINTED DOCUMENT NOTICE: IF THIS DOCUMENT IS PRINTED **& DOES NOT CONTAIN AN ENGINEER'S ORIGINAL SIGNATURE & SEAL, THIS DOCUMENT IS VOID & NOT VALID FOR USE. PHOTOCOPIES ARE NOT PERMITTED FOR USE.**

The FBC 6th & 7th Editions (2017 & 2020) define APPROVED SOURCE (Section 202) as: "An independent person, firm or corporation, approved by the building official, who is competent and experienced in the application of engineering principles to materials, methods or systems analyses." Engineering Express® professionals meet the competency requirements as defined in the FBC and can seal their work. Engineering Express® is regularly engaged in conducting and providing engineering evaluations of single-element and full-scale building systems tests.

SECTION 1 SUMMARY

Engineering Express has reviewed the design requirements per the Florida Building Code Sixth & Seventh Editions (2017 & 2020) and ASCE 7 for the structural integrity of the Kohler aluminum housing units with steel skid to withstand the maximum rated wind pressures stated herein. This TER certifies the enclosures listed herein for maximum uniform static wind loading pressures stated herein and anchorage integrity only. Our analysis includes the unit framing and housing only and requires a permanent near-grade (non-rooftop) attachment to a concrete, metal, or wood host structure as certified/verified by others. Steel skid tie-down anchor locations shall conform to Section 3 of this TER. Additionally, the unit shall not be installed in a location susceptible to channeling effects from upwind obstacles. It shall be the installer's responsibility to ensure that the criteria for the unit housing integrity, as listed above, is applicable for use at the location of installation and the mounting method meets or exceeds the requirements of the local code and it is approved by the appropriate local authority before installation.

This certification is intended to certify the structural capacity and integrity of the structural framing members, wall and roof sheet metal skins, generator skid and internal structural connections only for the sound aluminum enclosures listed herein to resist the stated maximum rated uniform wind pressures. Design of the generator itself, mechanical designs, energy/electrical criteria, generator slab support, anchorage and tie-down method accompanying components and all non-structural items shall be verified by others and outside the scope of this certification. Upon analysis of the aluminum housing unit vs. the critical ultimate design loads illustrated below, this engineer has concluded that the aluminum housing enclosure provides adequate resistance to the specified ultimate design loads.

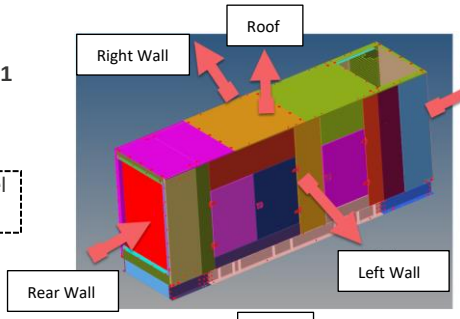
Structural Engineering Calculations

Structural engineering calculations have been prepared which evaluate the aluminum unit housing based on rational analysis using Finite Element Analysis to qualify the following design criteria:

1. Maximum ultimate design pressures as evaluated below:

Load Case 1

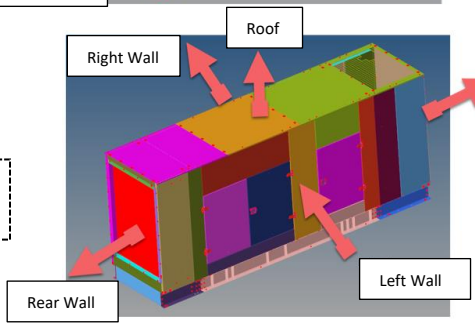
(Wind parallel to long side)



		Pressure, psf (x 10^{-3} MPa)				
Load Case	Wind Direction	Rear Wall	Front Wall	Left Wall	Right Wall	Roof
1		61.26 (2.933)	-48.85 (-2.339)	-48.85 (-2.339)	-47.30 (-2.265)	-96.92 (-4.641)

Load Case 2

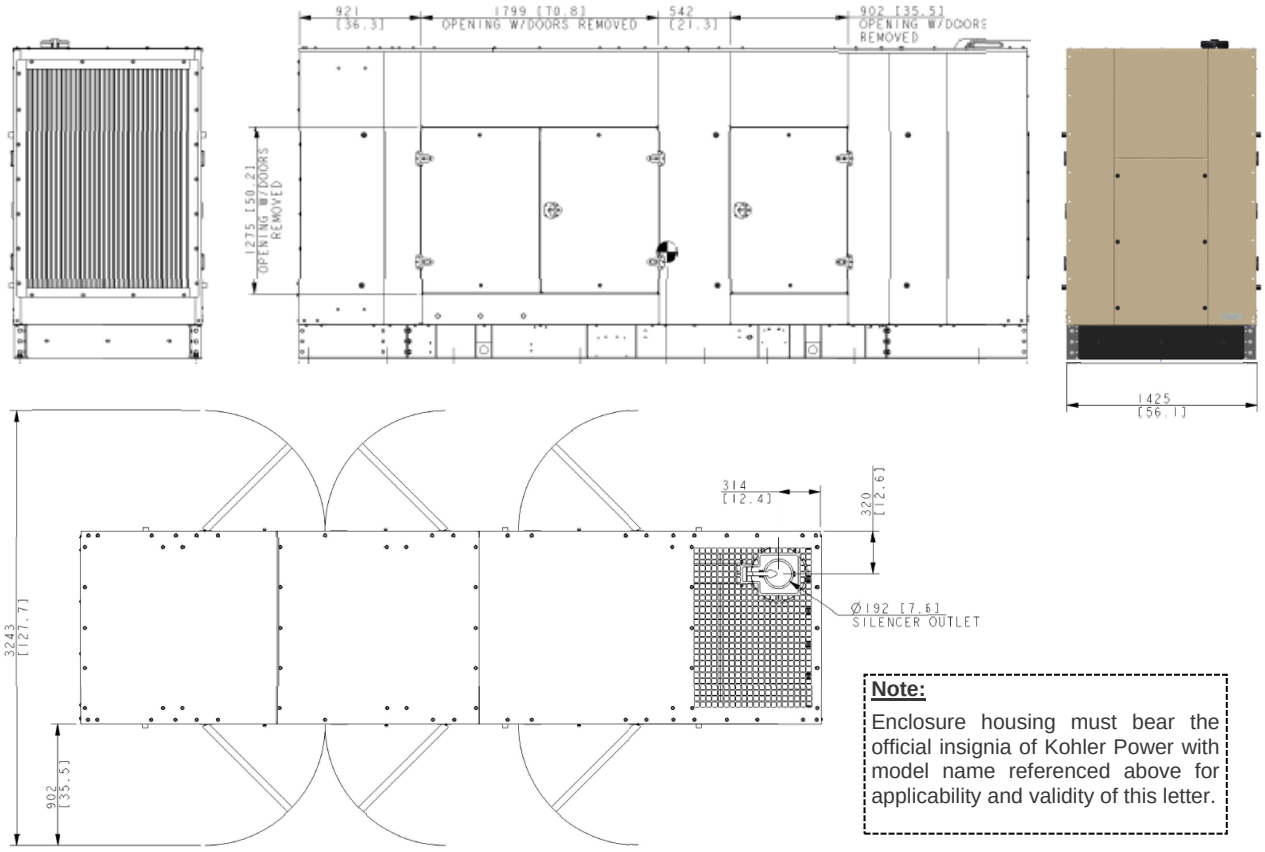
(Wind perpendicular to long side)



		Pressure, psf (x 10^{-3} MPa)				
Load Case	Wind Direction	Rear Wall	Front Wall	Left Wall	Right Wall	Roof
2		-48.85 (-2.339)	-48.85 (-2.339)	61.26 (2.933)	-47.30 (-2.265)	-96.92 (-4.641)

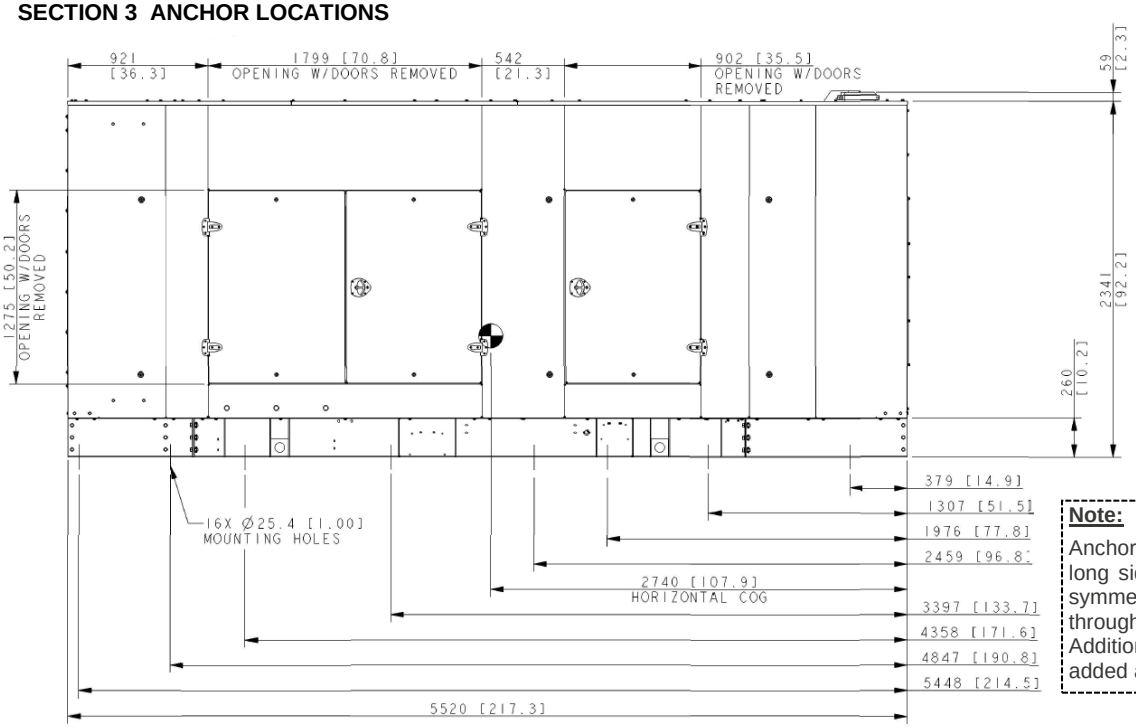
2. Supplemental FEA has been performed to evaluate the front and left walls of the enclosure to +/- 65 psf. Upon thorough review of the results, it is the opinion of this engineer that the results, coupled with the FEA above, satisfactorily indicate the enclosure and skid stresses remain below ultimate tensile stress and thus, provide adequate resistance to the maximum wind pressures stated herein.
3. Maximum housing unit dimensions: 218" L x 57" W x 93" H. For exact enclosure dimensions, see ADV-9189. Enclosure weight shall be between 1000 lb and 2000 lb. Weights outside of this range shall be approved by this office.
4. Enclosure materials have been analyzed for yield and ultimate tensile stresses using Von Mises stress criteria in accordance with the 2015 Aluminum Design Manual & AISC Steel Construction Manual 14th Edition. For both load cases, Von Mises stresses were below the ultimate tensile stresses of the respective materials; therefore, the sound aluminum enclosure will provide enough structural capacity to resist wind pressures shown.
5. All internal connection capacities, including bolted and welded components, have been checked for applicable tension and shear by applying a unity interaction equation where applicable and have been approved by this office.

SECTION 2 DIMENSIONS & ELEVATIONS



Note:
Enclosure housing must bear the official insignia of Kohler Power with model name referenced above for applicability and validity of this letter.

SECTION 3 ANCHOR LOCATIONS



Note:
Anchors are located along the long sides of the unit and are symmetric. Refer to Sections 5 through 7 for specifications. Additional holes might be added as needed.

IN ALL CONDITIONS IT IS THE RESPONSIBILITY OF THE PERMIT HOLDER TO ENSURE THE HOST STRUCTURE IS CAPABLE OF WITHSTANDING THE RATED GRAVITY, LATERAL, AND UPLIFT FORCES BY SITE-SPECIFIC DESIGN. NO WARRANTY OF ANY KIND, EXPRESSED OR IMPLIED, IS OFFERED BY ENGINEERING EXPRESS AS TO THE INTEGRITY OF THE HOST STRUCTURE TO CARRY DESIGN FORCE LOADS INCURRED BY THIS UNIT.

SECTION 4 ENCLOSURE MODELS INCLUDED

GENERATOR	ENCLOSURE TYPE	ENCLOSURE DRAWING NUMBER	REVISION & DATE	RETROFIT DRAWING NUMBER	REVISION & DATE
350-500REOZJC 350-400REOZJD	350-500REOZJC/D Sound Level 2 Aluminum Enclosure	GM110077	Rev A - 1/17/20	GM109392	Rev – 2/4/20

SECTION 5 ANCHOR DIRECTIVE

GENSET MODELS	FUEL TANK		A - ANCHOR			B - EMBEDMENT (in.)	C - MIN. EDGE DISTANCE (in.)	D - MIN. CONCRETE THICKNESS (in.)	# OF ANCHORS FOR TANK TO CONCRETE*	# OF THRU-BOLTS FOR SKID TO TANK
	LITERS	GAL	ANCHOR BRAND	MODEL	DIAMETER (IN.)					
350REOZJC/D 400REOZJC/D 500REOZJC	NO TANK		HILTI	KWIK BOLT 3 (CARBON STEEL) ESR-2302	0.75	4.75	6	8	16**	-
	1529-5047	404-1333							18	16***
	5042-9993	1332-2640							18	12****
	11602-13325	3065-3520							24	12****

ANCHOR DIRECTIVE NOTES

- Refer to ADV-9189 and Section 7 for additional specifications. NOTE: Only anchorage integrity is being certified for I-beams and tanks.

*For tank anchorage to concrete, it is allowed for ground I-beams to be used as an intermediary between tank and concrete as opposed to mounting the tank directly to concrete. See Ground I-Beam Directive below for the required minimum number of I-beams for this condition. I-beams shall have a min. spacing of 18", typ. (Note: I-beams and tank flanges shall be 3/16" min. thick and Fy = 36 ksi min. steel.

GROUND I-BEAM DIRECTIVE			
FUEL TANK		I-BEAMS REQUIRED	
LITERS	GAL	ALONG LENGTH OF ENCLOSURE	ALONG REMAINING TANK LENGTH
1529-5047	404-1333	7	1 FOR EVERY 48" IN TANK LENGTH BEYOND ENCLOSURE LENGTH
5042-9993	1332-2640	6	
11602-13325	3065-3520	5	

- For each I-beam top connection to tank, employ (2) M20 UNC GR. 8.8 steel thru-bolts with 2" min. OD washers top and bottom, (1) thru-bolt per side, typ. Position thru-bolt no more than 6" away from the end of the I-beam, typ. Provide 1.5" min. edge distance between the thru-bolt and any edge of the members in contact (tank flange and I-beam flange).

- For each I-beam bottom connection to concrete, employ (2) 3/4" Ø HILTI KWIK BOLT 3 Carbon Steel Expansion Anchors with 4-3/4" embedment and 18" min. spacing from neighboring anchors, (1) anchor per side, typ. Provide 6" min. edge distance between the anchor and any edge of the concrete, typ. Provide 1.5" min. edge distance between the anchor and any edge of I-beam flange. Position anchor no more than 6" away from the end of the I-beam, typ. Provide 8" min. thick 4 ksi concrete (concrete by others).

**For the case in which no tank is used, the genset skid shall mount directly to the concrete using the starred number of anchors with the specifications stated in the directive. Skid flange shall be 3/16" min. thick and Fy = 36 ksi min. steel.

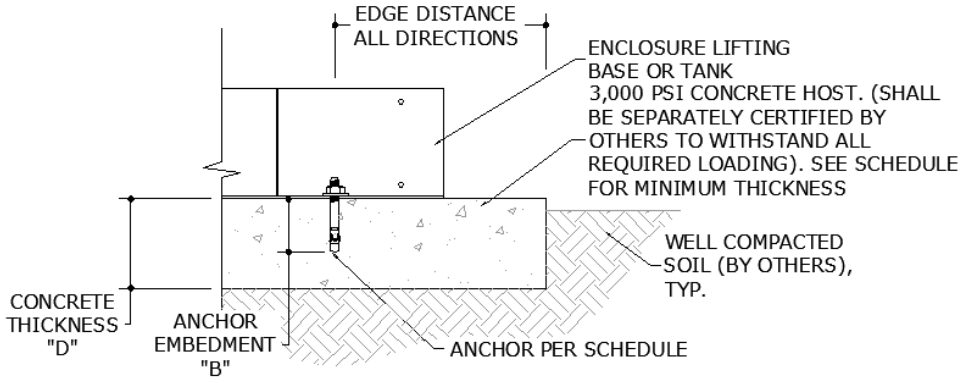
***The unit skid shall mount directly to the tank with the specified number of M20 UNC GR.8.8 thru-bolts with 2" min. OD washers top and bottom, typ. Provide 1.5" min. edge distance from edge of members in contact (skid flange and tank flange). Members in contact shall be 3/16" min. thick Fy = 36 ksi min. steel.

****For skid anchorage to tank, it is allowed for I-beams to be used as an intermediary between skid and tank as opposed to mounting the tank directly to concrete for the associated starred cases only, in which the width of the tank exceeds the width of the unit. A minimum of (6) I-beams with 18" min. spacing shall be implemented for this condition. Skid flange, tank flange, and I-beams shall be 3/16" min. thick Fy = 36 ksi min. steel.

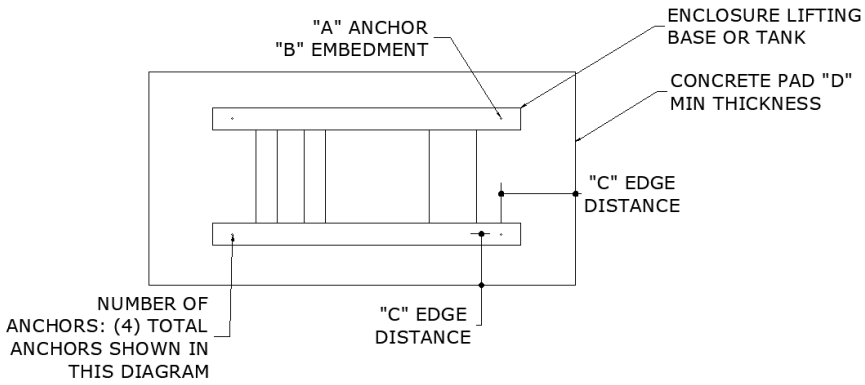
- For each I-beam top connection to skid, employ (2) M20 UNC GR. 8.8 steel thru-bolts with 2" min. OD washers top and bottom, (1) thru-bolt per side, typ. Position thru-bolt no more than 6" away from the end of the I-beam, typ. Provide 1.5" min. edge distance between the thru-bolt and any edge of the members in contact (skid flange and I-beam flange). (12) total thru-bolts min., (6) min. per long side.

- For each I-beam bottom connection to tank, employ (2) M20 UNC GR. 8.8 steel thru-bolts with 2" min. OD washers top and bottom, (1) thru-bolt per side, typ. Position thru-bolt no more than 6" away from the end of the I-beam, typ. Provide 1.5" min. edge distance between the thru-bolt and any edge of the members in contact (I-beam flange and tank flange). (12) total thru-bolts min., (6) min. per long side.

SECTION 6 ANCHOR ILLUSTRATIONS



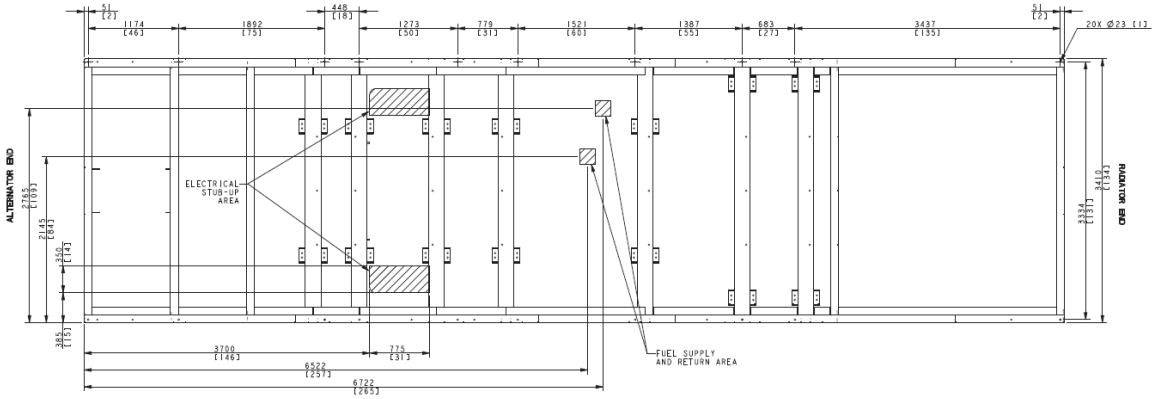
DETAIL A



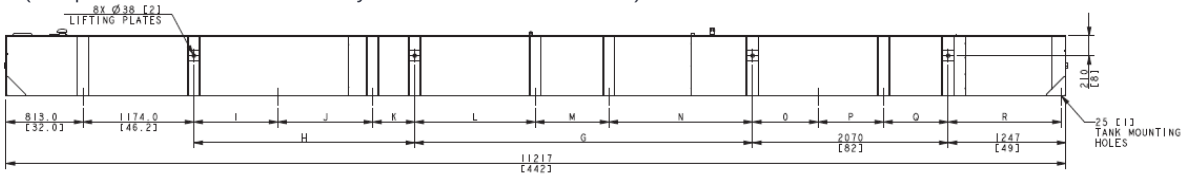
ANCHORAGE PLAN VIEW ILLUSTRATION

Instructions:

1. For enclosures anchored directly to host without fuel tank, go to ADV-9189 and place the specified anchors using the mounting locations. See below example for a sample lifting base's mounting holes:
2. (Sample lifting base for illustration only. Not included in certification)



3. For enclosures mounted on fuel tanks and anchored to host, go to ADV-9189 and place the specified anchors using the mounting locations. See below example for fuel tank's mounting holes:
   (Sample fuel tank for illustration only. Not included in certification)



4. Refer to KOHLER ADV-9189 for additional installation instruction directives.

SECTION 7: WIND INSTALLATION REQUIREMENTS:

The following are requirements for wind-rated installation:

1. The design of post-installed anchors in concrete used for the component anchorage has been evaluated by this engineer for wind applications in accordance with ASCE 7 as reference herein.
2. Anchors must be installed in minimum 4000 psi compressive strength normal weight concrete. Concrete aggregate must comply with ASTM C33. Installation in structural lightweight concrete is not permitted unless otherwise approved by the structural engineer of record.
3. Anchors must be installed to the torque specification as recommended by the anchor manufacturer to obtain maximum loading.
4. Anchors must be installed in the locations specified in the Kohler ADV-9189 dimension print in correlation with signed and sealed engineering herein. The more stringent requirement from either document shall apply in cases of uncertainty.
5. Anchor plates from Kohler must be installed at each anchor location between anchor head and equipment for tension load distribution.
6. Concrete floor slab and concrete housekeeping pads must be designed, and rebar reinforced for wind applications in accordance with ACI 318 and ASCE 7 as referenced herein
7. All housekeeping pad thicknesses must be designed in accordance with pre-qualification test report or a minimum of 1.5x the anchor embedment depth, whichever is largest.
8. All housekeeping pads must be doweled or cast into the building structural floor slab and designed for wind application per appropriate code requirements for the subject jurisdiction and as approved by the structural engineer of record.
9. Wall mounted equipment must be installed to a rebar reinforced structural concrete wall that is designed for wind applications and approved by the engineer of record to resist the added wind loads from the components being anchored to the wall.
10. Floor mounted equipment (with or without housekeeping pad) must be installed to a rebar reinforced structural concrete floor that is designed for wind applications and approved by the engineer of record to resist the added wind loads from components being anchored to the floor.
11. When installing to a floor, rebar interference must be considered.
12. Attaching equipment to any floor other than those constructed of structural concrete and designed to accept the wind loads from said equipment is not permitted by this specification and beyond the scope of this certification.
13. Attaching equipment to any concrete block walls or cinder block walls is not permitted by this specification and beyond the scope of this certification.
14. Rooftop installations are not permitted by this evaluation and is beyond the scope of this certification.
15. Installation upon rooftop curbs shall be coordinated with the curb manufacturer and the Structural Engineer of Record. Any curb or concrete pad that supports the RTU unit is beyond the scope of this certification.
16. Anchor locations, size, type and load requirements shall be as specified on the certified installation specification. Mounting requirements details such as brand, type, embedment depth, edge spacing, anchor spacing, concrete strength, wall bracing, and special inspection must be outlined and approved by the project Structural Engineer of Record to withstand the wind anchor loads as defined on the certified installation specification. The installing contractor is responsible for the proper installation of all anchors and mounting hardware, observing the mounting requirement details outlined by the Engineer of Record. Contact Kohler if a detailed Wind Installation Calculation Package is required.
17. Electrical wiring, piping, duct and other connections to the equipment is the responsibility of the installing contractor. It is necessary that these remain intact, functional and do not inhibit the functionality of the generator set after a wind event.
18. Concrete pad dimensions are minimum values to satisfy only the anchor bolt requirements. The pad must be designed by the project structural engineer of record.

TERMINOLOGY (CONTINUED):

The following abbreviations may appear in this report: “ASCE” for “American Society of Civil Engineers”, “ASD” for “Allowable Stress Design”, “FBC” for “Florida Building Code”, “FLCA” for “Florida Certificate of Authorization”, “FMC” for “Florida Mechanical Code”, “GR.” For “grade”, “HVAC” for “heating, ventilation, and air conditioning”, “max.” for “maximum”, “min.” for “minimum”, “NTS” for “not to scale”, “OD” for “outer diameter”, “PE” for “Professional Engineer”, “psf” for “pounds per foot squared (lb/ft2)”, “SAE” for “Society of Automotive Engineering”, “SECB” for “Structural Engineering Certification Board”, “SMS” for “sheet metal screws”, “SS” for “stainless steel”, “TER” for “Technical Evaluation Report”, “typ.” For “typical”, “U.N.O.” for “unless noted otherwise”, “w/o” for “without”, “#” for “number”, and “Ø” for “diameter”. For additional abbreviation/terminology clarifications, please contact this office.

LIMITATIONS & CONDITIONS OF USE (CONTINUED):

Host Structure:

The supporting host structure shall be designed to resist all superimposed loads as determined by others on a site-specific basis as may be required by the Authority Having Jurisdiction. No evaluation is offered for the host supporting structure by use of this document;

Production Drawings:

The following drawings shall be accessible if required for a full permit application to be submitted to the Authority Having Jurisdiction in conjunction with this TER:

- Electrical schematic(s)
- Final assembly drawings and parts lists sufficient to detail primary components, operator controls, and their locations
- Complete set of mechanical drawings for all machined parts
- Complete part specifications (including manufacturer’s model numbers, size, ratings, etc.) for all purchased parts
- Specification sheets for all parts/components
- Drawings showing all construction details
- Product label drawing(s) showing all required marking information. The label drawing shall show the proposed label location on the equipment and artwork showing the manufacturer’s name, address, model and serial numbers, equipment ratings, warning markings.

Drawing and Change Control:

The manufacturer shall establish a system of product configuration control that shall allow no unauthorized changes to the product. Changes to critical documents, identified in this Technical Evaluation Report, must be reported to, and authorized by, this office prior to implementation for production.

Survivability:

This evaluation report is valid for a newly installed unit and does not include certification of the product beyond a design event if impacted. Inspections shall be implemented during annual equipment maintenance or after a named storm; all fasteners and cabinet components are to be verified, and all damaged, loose, corroded and/or broken fasteners and cabinet components shall be replaced to ensure structural integrity against hurricane wind forces. Contact this office for any reevaluation needs as designated by the Authority Having Jurisdiction.

Durability:

Components or component assemblies shall not deteriorate, crack, fail, or lose functionality due to galvanic corrosion or weathering. All supporting components which are permanently installed shall be protected against corrosion, contamination, and other such damage at all times. Each component or component assembly shall be supported and oriented in its intended installation position. All exposed plastic components shall be certified to resist sunlight exposure as specified by ASTM B117, or ASTM G155 in Broward or Miami Dade counties.

Extent of Certification:

As described above, this certification pertains to the structural integrity of the unit components listed herein, subject to the limitations and criteria stated herein. Operability and water infiltration are outside the bounds of this certification. No other certifications are intended.
This evaluation alone does not offer any evaluation for large missile impact debris or cyclic wind requirements; see TER-20-25965.2 for these evaluations.

Remarks	Drawn	Checked	Date
Initial Issue	EPR	RWN	7/29/20
Amend Anchor Directive	EPR	RWN	8/7/20

Kohler Standby/Prime Generator Set Test Program

Testing is an integral part of quality assurance. In keeping with our uncompromising commitment to quality, safety, and reliability, every Kohler Standby/Prime power generator set undergoes an extensive series of prototype and production testing.

Prototype Testing

Prototype testing includes the potentially destructive tests necessary to verify design, proper function of protective devices and safety features, and reliability expectations. Kohler's prototype testing includes the following:

- Alternator temperature rise test per NEMA MG1-32.6. Standby and prime ratings of the alternator are established during this test.
- Maximum power test to assure that the prime mover and alternator have sufficient capacity to operate within specifications.
- Alternator overload test per NEMA MG1-32.8.
- Steady-state load test to ensure voltage regulation meets or exceeds ANSI C84.1, NEMA MG1-32.17 requirements and to verify compliance with steady-state speed control specifications.
- Transient test to verify speed controls meets or exceeds specifications.
- Transient load tests per NEMA MG1-32.18, and ISO 8528 to verify specifications of transient voltage regulation, voltage dip, voltage overshoot, recovery voltage, and recovery time.
- Motor starting tests per NEMA MG1-32.18.5 to evaluate capabilities of generator, exciter, and regulator system.
- Three-phase symmetrical short-circuit test per NEMA MG1-32.13 to demonstrate short circuit performance, mechanical integrity, ability to sustain short-circuit current.
- Harmonic analysis, voltage waveform deviation per NEMA MG1-32.10 to confirm that the generator set is producing clean voltage within acceptable limits.
- Generator set cooling and air flow tests to verify maximum operating ambient temperature.
- Reliability tests to demonstrate product durability, followed by root cause analysis of discovered failures and defects. Corrective action is taken to improve the design, workmanship, or components.
- Acoustical noise intensity and sound attenuation effects tests.

Production Testing

In production, Kohler Standby/Prime generator sets are built to the stringent standards established by the prototype program. Every Kohler generator set is fully tested prior to leaving the factory. Production testing includes the following:

- Stator and exciter winding high-potential test on all generators. Surge transient tests on stators for generators 180 kW or larger. Continuity and balance tests on all rotors.
- One-step, full-load pickup tests to verify that the performance of each generator set, regulator, and governor meets published specifications.
- Regulation and stability of voltage and frequency are tested and verified at no load, 1/4 load, 1/2 load, 3/4 load, and full-rated load.
- Voltage, amperage, frequency and power output ratings verified by full-load test.
- The proper operation of controller logic circuitry, prealarm warnings, and shutdown functions is tested and verified.
- Any defect or variation from specification discovered during testing is corrected and retested prior to approval for shipment to the customer.

Torsional analysis data, to verify torsional effects are not detrimental and that the generator set will provide dependable service as specified, is available upon request.

Kohler offers other testing at the customer's request at an additional charge. These optional tests include power factor testing, customized load testing for specific application, witness testing, and a broad range of MIL-STD-705c testing. A certified test report is also available at an additional charge.

KOHLER®

KOHLER CO. Kohler, Wisconsin 53044
Phone 920-565-3381, Fax 920-459-1646
For the nearest sales/service outlet in the US and Canada, phone 1-800-544-2444
KohlerPowerSystemscom

G18-56 12/05b

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PreStartup Checklist

Generator Set/Transfer Switch Installation Checklist

This document has generic content and some items may not apply to some applications. Check only the items that apply to the specific application. Read and understand all of the safety precautions found in the Operation and Installation Manuals. Make the following installation checks before performing the Startup Checklist.

Note: Use this form as a general guide, along with any applicable codes or standards. Comply with all applicable codes and standards. Improper installation voids the warranty.

Equipment Room or Weather Housing

Yes	Does Not Apply		
❑	❑	1.	Is the equipment installed in a fire-resistant room (made of non-combustible material) or in an outdoor weather housing?
❑	❑	2.	Is there adequate clearance between the engine and floor for service maintenance?
❑	❑	3.	Is there emergency lighting available at the equipment room or weather housing?
❑	❑	4.	Is there adequate heating for the equipment room or outdoor weather housing?
❑	❑	5.	Is the equipment room clean with all materials not related to the emergency power supply system removed?
❑	❑	6.	Is the equipment room protected with a fire protection system?

Engine and Mounting

❑	❑	7.	Is the mounting surface(s) properly constructed and leveled?
❑	❑	8.	Is the mounting surface made from non-combustible material?
❑	❑	9.	Was the generator-to-engine alignment performed after attaching the skid to the mounting base? Generator sets with two-bearing generators require alignment.

Lubrication

❑	❑	10.	Is the engine crankcase filled with the specified oil?

Cooling and Ventilation

❑	❑	11.	Is the cooling system filled with the manufacturer's specified coolant/antifreeze and purged of air?
❑	❑	12.	Is there adequate inlet and outlet air flow (electric louvers adjusted and ventilation fan motor(s) connected to the corresponding voltage)?
❑	❑	13.	Is the radiator duct properly sized and connected to the air vent or louver?
❑	❑	14.	Are flexible sections installed in the cooling water lines?

Fuel

❑	❑	15.	Is there an adequate/dedicated fuel supply?
❑	❑	16.	Are the fuel filters installed?
❑	❑	17.	Are the fuel tanks and piping installed in accordance with applicable codes and standards?
❑	❑	18.	Is there adequate fuel transfer tank pump lift capacity and is the pump motor connected to the corresponding voltage?
❑	❑	19.	Is the fuel transfer tank pump connected to the emergency power source?
❑	❑	20.	Are flexible fuel lines installed between the engine fuel inlet and fuel piping?
❑	❑	21.	Is the specified gas pressure available at the fuel regulator inlet?
❑	❑	22.	Does the gas solenoid valve function?
❑	❑	23.	Are the manually operated fuel and cooling water valves installed allowing manual operation or bypass of the solenoid valves?

Exhaust

❑	❑	24.	Is the exhaust line sized per guidelines and does it have flexible connector(s)? Is the flexible connector(s) straight?
❑	❑	25.	Is there an exhaust line condensate trap with a drain installed?
❑	❑	26.	Is the specified silencer installed and are the hanger and mounting hardware tightened?
❑	❑	27.	Is a heat-isolating thimble(s) installed at points where exhaust lines pass through combustible wall(s) or partition(s)?
❑	❑	28.	Is the exhaust line free of excessive bends and restrictions? Is the backpressure within specifications?
❑	❑	29.	Is the exhaust line installed with a downward pitch toward the outside of the building?
❑	❑	30.	Is the exhaust line protected from entry by rain, snow, and animals?
❑	❑	31.	Does the exhaust system outlet location prevent entry of exhaust gases into buildings or structures?
❑	❑	32.	Are individuals protected from exposure to high temperature exhaust parts and are hot parts safety decals present?

AC Electrical System

❑	❑	33.	Does the nameplate voltage/frequency of the generator set and transfer switch match normal/utility source ratings?
❑	❑	34.	Do the generator set load conductors have adequate ampacity and are they correctly connected to the circuit breakers and/or the emergency side of the transfer switch?
❑	❑	35.	Are the load conductors, engine starting cables, battery charger cables, and remote annunciator leads installed in separate conduits?
❑	❑	36.	Is the battery charger AC circuit connected to the corresponding voltage?

Transfer Switch, Remote Control System, Accessories

❑	❑	37.	Is the transfer switch mechanism free of binding? **Note:** Disconnect all AC sources and operate the transfer switch manually.
❑	❑	38.	Are the transfer switch AC conductors correctly connected? Verify lead designations using the appropriate wiring diagrams.
❑	❑	39.	Is all other wiring connected, as required?

Batteries and DC Electrical System

❑	❑	40.	Does the battery(ies) have the specified CCA rating and voltage?
❑	❑	41.	Is the battery(ies) filled with electrolyte and connected to the battery charger?
❑	❑	42.	Are the engine starting cables connected to the battery(ies)?
❑	❑	43.	Do the engine starting cables have adequate length and gauge?
❑	❑	44.	Is the battery(ies) installed with adequate air ventilation?
❑	❑	45.	Are the ends of all spark plug wires properly seated onto the coil/distributor and the spark plug?

Special Requirements

❑	❑	46.	Is the earthquake protection adequate for the equipment and support systems?
❑	❑	47.	Is the equipment protected from lightning damage?

Generator Set/Transfer Switch Startup Checklist

This document has generic content and some items may not apply to some applications. Check only the items that apply to the specific application. Read and understand all of the safety precautions found in the Operation and Installation Manuals. Complete the Installation Checklist before performing the initial startup checks. Refer to Service Bulletin 616 for Warranty Startup Procedure Requirements regarding generator set models with ECM-controlled engines.

Yes	Does Not Apply		
❑	❑	1.	Verify that the engine is filled with oil and the cooling system is filled with coolant/antifreeze.
❑	❑	2.	Prime the fuel system.
❑	❑	3.	Open all water and fuel valves. Temporarily remove the radiator cap to eliminate air in the cooling system. Replace radiator cap in step 21.
❑	❑	4.	Place the generator set master switch in the OFF/RESET position. Observe Not-in-Auto lamp and alarm, if equipped, on the controller.
❑	❑	5.	Press the lamp test, if equipped on controller. Do all the alarm lamps on the panel illuminate?
❑	❑	6.	Open the main line circuit breakers, open the safeguard breaker, and/or remove fuses connected to the generator set output leads.
❑	❑	7.	Turn down the speed control (electronic governor) or speed screw (mechanical governor).*
❑	❑	8.	Verify the presence of lube oil in the turbocharger, if equipped. See the engine and/or generator set operation manual.
❑	❑	9.	Place the generator set master switch in the RUN position. Allow the engine to start and run for several seconds.
❑	❑	10.	Verify that the day tank, if equipped, is energized.
❑	❑	11.	Place the generator set master switch in the OFF/RESET position. Check for oil, coolant, and exhaust leaks.
❑	❑	12.	Turn on the water/oil heaters and fuel lift pumps.
❑	❑	13.	Check the battery charger ammeter for battery charging indication.
❑	❑	14.	Place the generator set master switch in the RUN position. Verify whether there is sufficient oil pressure. Check for oil, coolant, and exhaust leaks.
❑	❑	15.	Close the safeguard circuit breaker. Adjust the engine speed to 50/60 Hz if equipped with an electronic governor or to 52.8/63 Hz if equipped with a mechanical governor.*
❑	❑	16.	If the speed is unstable, adjust according to the appropriate engine and/or governor manual.*
❑	❑	17.	Adjust the AC output voltage to match the load voltage using the voltage adjusting control. See the generator set/controller operation manual.
❑	❑	18.	Allow the engine to reach normal operating coolant temperature.
❑	❑	19.	Check the operating temperature on city water-cooled models and adjust the thermostatic valve as necessary.
❑	❑	20.	Manually overspeed the engine to cause an engine shutdown (68-70 Hz on 60 Hz models and 58-60 Hz on 50 Hz models). Place the generator set master switch in the OFF/RESET position.*
❑	❑	21.	Check the coolant level, add coolant as necessary, and replace the radiator cap. Verify that all hose clamps are tight and secure.
❑	❑	22.	Place the generator set master switch in the RUN position.
❑	❑	23.	Verify the engine low oil pressure and high coolant temperature shutdowns.*
❑	❑	24.	Check the overcrank shutdown.*
❑	❑	25.	Place the generator set master switch in the OFF/RESET position.
❑	❑	26.	Open the normal source circuit breaker or remove fuses to the transfer switch.
❑	❑	27.	Disconnect the power switching device and logic controller wire harness at the inline disconnect plug at the transfer switch.
❑	❑	28.	Manually transfer the load to the emergency source.
❑	❑	29.	Close the normal source circuit breaker or replace fuses to the transfer switch.
❑	❑	30.	Check the normal source voltage, frequency, and phase sequence on three-phase models. The normal source must match the load.
❑	❑	31.	Open the normal source circuit breaker or remove fuses to the transfer switch.
❑	❑	32.	Manually transfer the load to the normal source.
❑	❑	33.	Close the generator set main line circuit breakers, close the safeguard breaker, and/or replace the fuses connected to the transfer switch.
❑	❑	34.	Place the generator set master switch in the RUN position.
❑	❑	35.	Check the generator set voltage, frequency, and phase sequence on three-phase models. The generator set must match normal source and load.
❑	❑	36.	Place the generator set master switch in the OFF/RESET position.
❑	❑	37.	Open the generator set main line circuit breakers, open the safeguard breaker, and/or remove the fuses connected to the transfer switch.
❑	❑	38.	Reconnect the power switching device and logic controller wire harness at the inline disconnect plug at the transfer switch.
❑	❑	39.	Close the normal source circuit breaker or replace fuses to the transfer switch. Place the generator set master switch to the AUTO position.
❑	❑	40.	Close the generator set main line circuit breakers, close the safeguard breaker, and/or replace the fuses connected to the transfer switch.
❑	❑	41.	Place the transfer switch in the TEST position (load test or open normal source circuit breaker). **NOTE:** Obtain permission from the building authority before proceeding. This procedure tests transfer switch operation and connects building load to generator set power.
❑	❑	42.	Readjust frequency to 50 or 60 Hz with total building loads.*
❑	❑	43.	Verify that the current phase is balanced for three phase systems.
❑	❑	44.	Release the transfer switch test switch or close the normal circuit breaker. The transfer switch should retransfer to the normal source after appropriate time delay(s).
❑	❑	45.	Allow the generator set to run and shut down automatically after the appropriate cool down time delay(s).
❑	❑	46.	Set the plant exerciser to the customer's required exercise period, if equipped.
❑	❑	47.	Verify that all options on the transfer switch are adjusted and functional for the customer's requirements.
❑	❑	48.	If possible, run the building loads on the generator set for several hours or perform the load bank test if required.
❑	❑	49.	Verify that all the wire connections from the generator set to the transfer switch and optional accessories are tight and secure.
❑	❑	50.	Verify that the customer has the appropriate engine/generator set and transfer switch literature. Instruct the customer in the operation and maintenance of the power system.
❑	❑	51.	Fill out the startup notification at this time and send the white copy to the Generator Warranty Dept. Include the warranty form if applicable.

* Some models with an Engine Electronic Control Module (ECM) may limit or prohibit adjusting the engine speed or testing shutdowns. Refer to appropriate documentation available from the manufacturer.