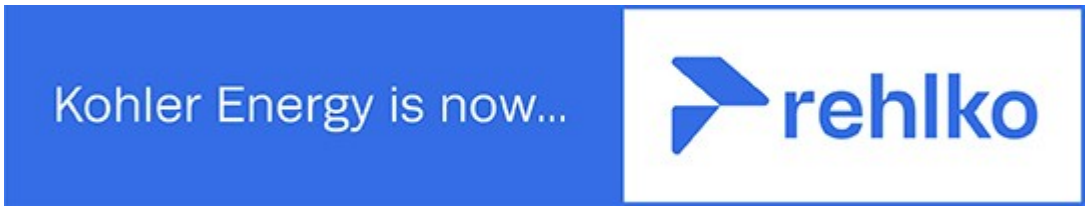
Submittal Package

rehlko



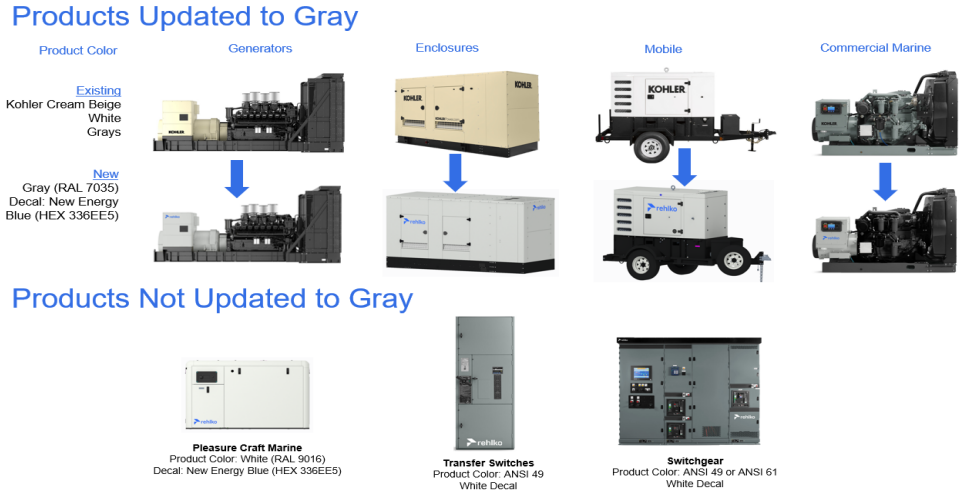
For more than 100 years Kohler Energy has delivered innovative, resilient energy solutions that provide independence, agility, and security to mission-critical infrastructure, facilities and residences. Now, with a new name and increased focus, Rehlko is giving customers more control over where energy is sourced and where it goes, from industrial applications to backyards. Rehlko is creating an energy resilient world for a better future.

As Rehlko undergoes this brand transition, some products may be delivered with updated color and brand labeling. While Rehlko is committed to minimizing any impact to customers, please be aware that there will be a period where documentation (ex: specification sheets, installation manuals, drawings, technical documentation, etc.) product color, and brand labeling may reflect a mix of both Rehlko and Kohler elements. Rest assured, the quality of the products will remain consistently high, regardless of the branding or color.

The color change will replace the traditional beige color with a new light gray color (RAL-7035). Any component that was painted beige will now be painted light gray. Any new orders entered on or after May 12th, 2025 will be shipped to the new gray color scheme and branded Rehlko. Orders currently in backlog that have a planned production start date on or after June 25th, 2025 will also be delivered to the new gray color scheme and Rehlko branded. Any order that must remain to the old color scheme that has a planned factory start date on or after June 25th, 2025 must request an ES change to keep the beige color. See the image below for examples of the update brand colors on different components and product families.

For any further questions, please contact your Rehlko representative.

For more information about Rehlko, please read the press release or visit Rehlko's website.



rehlko

TABLE OF CONTENTS

Misc

Battery	244578
Battery Charger	GM87448
Battery Charger Assembly	GM103365
Block Heater	326220
Circuit Breaker	GM24181
Flexible Fuel Line	X-504

Warranty

Warranty	TP-5374
Warranty	TP-5561

Certification

ISO9001 Certificate	G15-152
Prototype Test Summary	G18-526
Prototype Test Certificate	G18-56

Pre-Startup Checklist

Pre-Startup Checklist	PreStartUpCheckList

Generator

Rehlko Model: KG200

This gas generator set equipped with a 4S13X alternator operating at 120/208 volts is rated for 180 kW/225 kVA. Output amperage: 625.

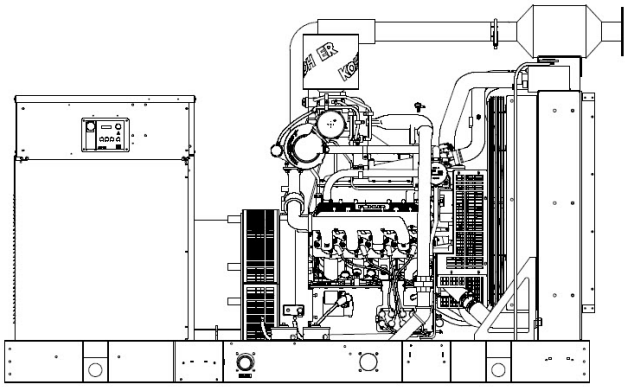
Qty	Description	
	KG200 Generator System	
3	KG200 Generator Set	
	Includes the following:	
	Literature Languages	English
	Approvals and Listings	UL2200 Listing/cUL Genset List
	Engine	SnglFuel,UL,PreAlarm,NG,Stdby
	Nameplate Rating	Standby 130C Rise
	Voltage	60Hz, 120/208V, Wye, 3Ph, 4W
	Alternator	4S13X
	Cooling System	Unit Mounted Radiator, 50C
	Skid and Mounting	Skid, 53"
	Air Intake	Standard Duty
	Controller	APM603
	Enclosure Type	Sound
	Enclosure Material	Steel
	Starting Aids, Installed	1500W,120V
	Electrical Accy.,Installed	Battery, 1/12V, Wet,Battery Charger, 10A,Run Rela
	Rating, LCB 1	100% Rated
	Amps, LCB 1	800
	Trip Type, LCB 1	Electronic, LSI
	Interrupt Rating LCB 1	35kA at 480V
	Miscellaneous Accy,Installed	Coolant in Genset
	Warranty	5 Year Comprehensive
	Testing, Additional	Power Factor Test,0.8,3Ph Only
	Total unit length in inches	172
	Total unit width in inches	54
	Total unit height in inches	83
	Total unit weight (lbs)	5,157
	Weight/Dimensions Disclaimer *	Estimates-Not for Construction
3	Flexible Fuel Line	
3	Lit Kit, KG200 Production	

rehlko

Spec Sheets

rehlko

KG200
Natural Gas



Standard Features

- EPA-Certified for Stationary Emergency Applications
- Kohler Co. provides one-source responsibility for the generating system and accessories.
- The generator set and its components are prototype-tested, factory-built, and production-tested.
- The 60 Hz generator set offers a cULus listing.
- The generator set accepts rated load in one step.
- The 60 Hz 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 generator set systems and components. Two- and five-year extended limited warranties are also available for purchases in some jurisdictions.
- Natural gas, LP gas, and dual fuel models are available.
- Air Restriction
- Alternator Protection
- Battery Rack and Cables
- Closed Crankcase Ventilation (CCV) Filters
- Gas Fuel System (includes fuel mixer, electronic secondary gas regulator, gas solenoid valve, and flexible fuel line between the engine and the skid-mounted fuel system components)
- Integral Vibration Isolation
- Local Emergency Stop Switch
- Oil Drain Extension
- Operation and Installation Literature
- Open Unit Accessory Kit (Duct Flange, Stone Guard, And Three-Way Exhaust Catalyst)

Alternator Features

- The unique Fast-Response™ X excitation system delivers excellent voltage response and short-circuit capability using a rare-earth, permanent magnet (PM)-excited alternator.
- The brushless, rotating-field alternator has broad range reconnectability.

Generator Set Rating

Standby 130C Rise Ratings

Alternator	Voltage	Ph	Hz	Peak kVA	kW/kVA	Amps
4S13X	120/208	3	60		180/225	625

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.
Ratings are in accordance with ISO-8528-1 and ISO-3046-1.
Obtain technical information bulletin (TIB-101) for ratings quidelines, complete ratings definitions, and site condition derates.

Model: KG200, continued

Alternator Specifications

Specifications	Alternator
Alternator manufacturer	Kohler
Type	4-Pole, Rotating-Field
Exciter type	Brushless, Rare-Earth Permanent-Magnet
Leads, quantity	12, Reconnectable
Voltage regulator	Solid State, Volts/Hz
Insulation	NEMA MG1
Insulation: Material	Class H
Insulation: Temperature Rise	130°C, 150°C Standby
Bearing: quantity, type	1, Sealed
Coupling	Flexible disc
Amortisseur windings	Full
Voltage regulation, no-load to full-load	Controller Dependent
One-Step Load Acceptance	100% of rating
Unbalanced load capability	100% of rating current

• NEMA MG1, IEEE, and ANSI standards compliances 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 downstream circuit breakers to trip witout collapsing the alternator field.
• Self-ventilated and dripproof construction.
• Windings are vacuum-impregnated with epoxy varnish for dependability and long life.
• Superior voltage waveform from a two-thirds pitch stator and skewed rotor.

Engine

Engine Specification

Engine Manufacturer	Kohler
Engine Model	KG10V08T- 6DGS
Engine: type	10.3 L, 4-Cycle, Turbocharged and Aftercooled
Cylinder arrangement	V-8
Displacement, L (cu. in.)	10.3 (632)
Bore and stroke, mm (in.)	116.8 x 120.6 (4.6 x 4.7)
Compression ratio	9.3:1
Piston speed, m/min. (ft./min.)	434.3 (1425)
Main bearings: quantity, type	5, Tri-Metal
Rated rpm	1800
Max. power at rated rpm, kWm (BHP)	227 (304)
Cylinder head material	Cast Iron
Piston: type, material	Dished Top Forged Aluminum
Crankshaft material	Forged Steel
Valve (exhaust) material	Inconel
Governor: type, make/model	Electronic
Frequency regulation, no-load to-full load	Isochronous
Frequency regulation, steady state	±0.75%
Frequency	Fixed
Air cleaner type, all models	Dry

Model: KG200, continued

Exhaust

Exhaust System

Exhaust Manifold Type	Dry
Exhaust flow at rated kW,m3/min. (cfm)	41.6 (1469)
Exhaust temperature at rated kW, dry exhaust, EPA certified, °C (°F)	764 (1407)
Maximum allowable back pressure after catalyst, kPa (in. Hg)	14.3 (4.24)
Maximum allowable back pressure, kPa (in. Hg)	19.8 (5.87)

Engine Electrical

Engine Electrical System

Ignition system	Coil Pack
Battery charging alternator: Ground (negative/positive)	Negative
Battery charging alternator: Volts (DC)	12
Battery charging alternator: Ampere rating	130
Starter motor rated voltage (DC)	12
Battery, recommended cold cranking amps (CCA): Qty., rating for --18 C (0?F)	one, 925
Battery voltage (DC)	12

Fuel

Fuel System

Fuel type	Natural Gas
Fuel supply line inlet	2 NPT
Natural gas/LPG fuel supply pressure, kPa (in. H20). Fuel supply pressure measured at the generator set fuel inlet downstream of any fuel system equipment accessories.	1.74-2.74 (7-11)

Fuel Composition

Fuel Composition

Natural Gas: Methane, % by volume	90 min.
Natural Gas: Ethane, % by volume	4.0 max.
Natural Gas: Propane, % by volume	1.0 max.
Natural Gas: Propene, % by volume	0.1 max.
Natural Gas: C4 and higher, % by volume	0.3 max.
Natural Gas: Sulfur, ppm mass	25 max.
Natural Gas: Lower heating value, kJ/m3 (Btu/ft3), min.	33.2 (890)

* Fuels with other compositions may be acceptable. If your fuel is outside the listed specifications, contact your local distributor for further analysis and advice.

Lubrication

Lubrication System

Type	Full Pressure
Oil pan capacity, L (qt.)	11.3 (12)
Oil pan capacity with filter, L (qt.)	15.1 (16)
Oil filter: quantity, type	1, Cartridge

Model: KG200, continued

Cooling

Radiator System

Ambient temperature, °C (°F)	50 (122)
Engine jacket water capacity, L (gal.)	11 (2.9)
Radiator system capacity, including engine, L (gal.)	34 (9)
Engine jacket water flow, Lpm (gpm)	219 (58)
Heat rejected to cooling water at rated kW, dry exhaust, kW (Btu/min.)	102 (5800)
Heat rejected to charge air cooling water at rated kW, dry exhaust, Kw Btu/min.	20.1 (1143)
Heat rejected to engine oil at rated kW,kW (Btu/min.)	20.5 (1165)
Water pump type	Centrifugal
Fan diameter, including blades, mm (in.)	900 (35.4)
Fan, kWm (HP)	15 (20.1)
Max. restriction of cooling air, intake and discharge side of radiator, kPA (in. H20)	0.125 (0.5)

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

Operation Requirements

Air Requirements

Radiator-cooled cooling air, m3/min. (scfm) *	331 (11700)
Combustion air, m3/min. (cfm)	11.33 (400)
Heat rejected to ambient air: Engine, kW (Btu/min.)	58.2 (3309)
Heat rejected to ambient air: Alternator, kW (Btu/min.)	16 (910)

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

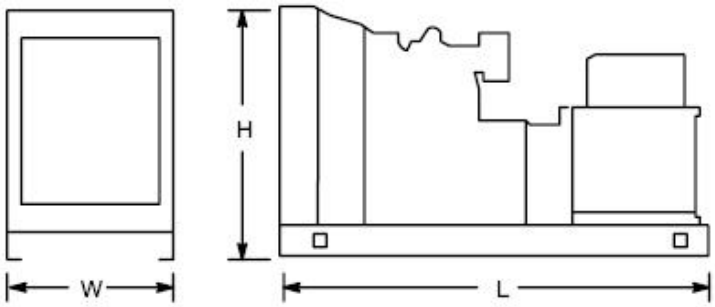
Fuel Consumption

Natural Gas, m3/hr. (cfh) at % load	Rating
Standby Fuel Consumption at 100% load	67.9 m3/hr. (2398 cfh)
Standby Fuel Consumption at 75% load	53.1 m3/hr. (1874 cfh)
Standby Fuel Consumption at 50% load	38.2 m3/hr. (1350 cfh)
Standby Fuel Consumption at 25% load	23.4 m3/hr. (826 cfh)
Standby Fuel Consumption at 0% load	8.5 m3/hr. (302 cfh)

Dimensions and Weights

Dim Weight Spec	Dim Weight Value
Fuel	All
Engine Manufacturer	Kohler
Overall Size, L x W x H, mm (in.):	2800 x 1340 x 1809 (110.2 x 52.8 x 71.2)
Weight (radiator model), wet, kg (lb.):	2030 (4480)

Model: KG200, 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

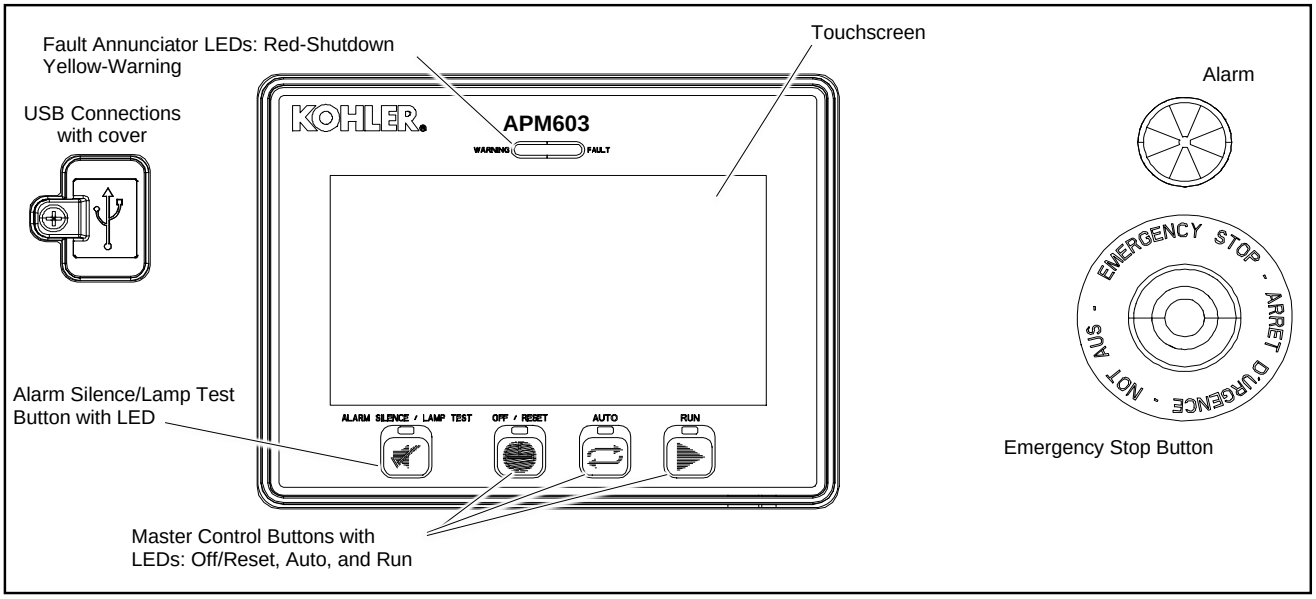
- Sales, installation, and service support from more than 800 Rehlko and SDMO service providers around the world.

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.

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



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

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

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)

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

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.

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

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

KD 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 Tripped/Open *	
Fuel Leak Alarm	
Fuel Level	
Idle Switch	
Key Switch Enable	
Low Fuel Level Switch	
Low Oil Level	
Remote Emergency Stop	
Remote Reset	
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	
Common Warning	
EPS Supplying Load	
Generator Running	
Horn	
Low Coolant Temperature	
Not in Auto	
System Ready	
Trip Breaker/Shunt Trip *	
* Only with remote-mounted electrically operated circuit breakers.	

Optional Configurable User Inputs and Outputs	
User Configurable Inputs	16 Dry Contact Digital
User Configurable Relay Outputs	8 NO/NC Relays
Note: Programmable I/O is configurable by authorized technician.	

KD Engine Data

The following Diesel engine data is displayed on the APM603 controller.

Parameter
Engine Model Number
Engine Serial Number
Ambient Temperature
Charge Air Pressure
Charge Air Temperature
Common Rail Fuel Pressure
Coolant Level
Coolant Temperature
Crankcase Pressure
Engine Speed
Fuel Consumption Rate
Fuel Pressure
Fuel Temperature
Intercooler Coolant Temperature (K175 engines only)
Oil Temperature
Oil Pressure
Run Time Hours

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

Mitsubishi 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 Tripped *	
Coolant Temperature	
Emergency Stop, Local	
Emergency Stop, Remote	
Excitation Over Voltage	
Fuel Leak Alarm	
Fuel Level	
Ground Fault Relay	
Key Switch Auto	
Key Switch Run	
Low Fuel Level Switch	
Remote Engine Start	Two-wire input
Coolant Temperature, Degrees	Analog Input
Fuel Level %	
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	16 Dry Contact Digital
User Configurable Relay Outputs	8 NO/NC Relays
Note: Programmable I/O is configurable by authorized technician	

Mitsubishi Engine Data

The following Mitsubishi engine data is displayed on the APM603 controller.

Parameter
Battery Voltage
Coolant Temperature
Engine Speed
Intercooler Temperature (NA on some engine sizes)
Oil Pressure
Total Run Time Hours

Volvo 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 Tripped *	
Coolant Temperature	
Emergency Stop, Local	
Emergency Stop, Remote	
Excitation Over Voltage	
Fuel Leak Alarm	
Fuel Level	
Ground Fault Relay	
Key Switch Auto	
Key Switch Run	
Low Fuel Level Switch	
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	

Volvo Engine Data

The following Volvo engine data is displayed on the APM603 controller.

Parameter
Air Intake Pressure
Air Intake Temperature
Ambient Temperature
Barometric Pressure
Coolant Temperature
ECU Battery Voltage
ECU Runtime Hours
Engine Speed
Fuel Consumption Rate
Fuel Pressure
Intake Manifold Pressure
Intake Manifold Temperature
Intercooler Temperature
Mechanical Engine Load
Oil Pressure
Oil Temperature

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

KG 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 Tripped/Open *	
Emergency Stop, Local	
Emergency Stop, Remote	
Excitation Over Voltage	
Ground Fault Relay	
Fuel Type	
Low Fuel Pressure	
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	
Common Warning	
Crank	
High Coolant Temperature	
Horn	
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	

PSI/Doosan 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 Tripped/Open *	
Emergency Stop, Local	
Emergency Stop, Remote	
Excitation Over Voltage	
Ground Fault Relay	
Fuel Type	
Low Fuel Pressure	
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	
Common Warning	
Crank	
High Coolant Temperature	
Horn	
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	

KG Engine Data

The following KG engine data is displayed on the APM603 controller.

Parameter
Coolant Temperature
ECU Runtime Hours
Engine Speed
Intake Manifold Pressure
Intake Manifold Temperature
Intercooler Temperature
Fuel Pressure
Oil Pressure
Oil Temperature

PSI/Doosan Engine Data

The following engine data is displayed on the APM603 controller.

Parameter
Ambient Temperature
Coolant Temperature
ECU Runtime Hours
Engine Speed
Intake Manifold Pressure
Intake Manifold Temperature
Intercooler Temperature
Fuel Pressure
Mechanical Engine Load
Oil Pressure
Oil Temperature

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

APM603 Available Options

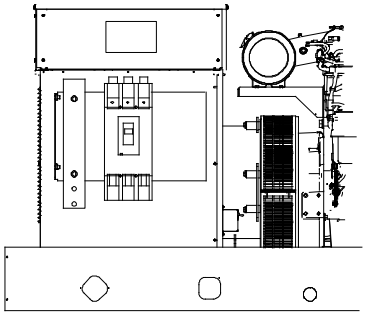
- ❑ **Common Failure Relay** provides a relay output to signal a generator set fault.
- ❑ **Battery Charger** available with 6 amp, 10 amp, and 20 amp output for 12 and 24V DC voltage output. (Availability is generator model dependent.) The 10 amp and 20 amp models provide NFPA 110 charging and alarming 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.

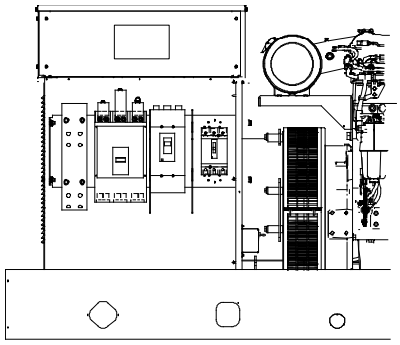
Discovery Energy, LLC
200 Twin Oaks Road, Kohler, WI 53044 USA
For the nearest sales and service outlet in the US and
Canada, phone 1-800-544-2444 - powersystems.rehlko.com

Industrial Generator Set Accessories

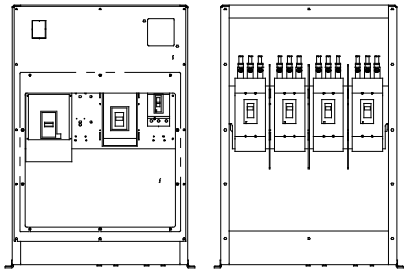
Line Circuit Breakers 15-3250 kW



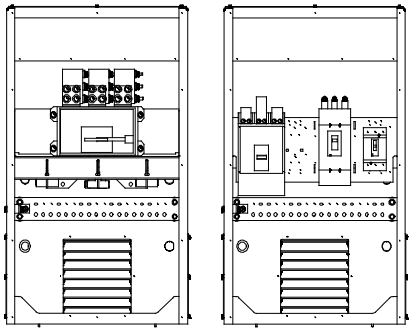
Single Circuit Breaker Kit with Neutral Bus Bar 15-300 kW Model Shown



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



Multiple Circuit Breaker Kits with Neutral Bus Bar 350-2250 kW Model Shown (also applies to some 300 kW models)



Circuit Breaker Kits with Neutral Bus Bar 700-3250 kW KD 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

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

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.

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

15-300* kW Line Circuit Breaker Specifications

* Includes models 300REOZJ and 300REZXC. For other 300 kW models, see the 350-2250 kW section.

80% Rating Circuit Breaker

Alt. Model	Ampere Range	Trip Type	C. B. Frame Size
4D/4E	15-150	Thermal magnetic	HD
	60-150	Electronic LSI	
	60-150	Electronic LSI	HG
4P/4PX/ 4Q/4QX	15-150	Thermal magnetic	HD
	60-150	Electronic LSI	
	60-150	Electronic LSI	HG
	175-250	Thermal magnetic	JD
	250	Electronic LSI	
	250	Electronic LSI	JG
	300-400	Thermal magnetic	LA
	400	Electronic LSI	LG

Alt. Model	Ampere Range	Trip Type	C. B. Frame Size
4RX 4S/4SX 4TX/4V 4UA 4M6226	15-150	Thermal magnetic	HD
	60-150	Electronic LSI	
	60-150	Electronic LSI	HG
	175-250	Thermal magnetic	JD
	250	Electronic LSI	
	250	Electronic LSI	JG
	300-400	Thermal magnetic	LA
	400-600	Electronic LSI	LG
	800	Electronic LSI	PG
4UA 4M6226	1000-1200	Thermal magnetic	PG
		Electronic LSI	
	1200	Thermal Magnetic	PJ
		Electronic LSI	

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

15-300* kW Line Circuit Breaker Specifications

* Includes models 300REOZJ and 300REZXC. For other 300 kW models, see the 300-2250 kW section.

100% Rating Circuit Breaker

Alt. Model	Ampere Range	Trip Type	C. B. Frame Size
4D/4E	15-150	Thermal magnetic	HD
	60-150	Electronic LSI	
	60-150	Electronic LSI	HG
4P/4PX 4Q/4QX	15-150	Thermal magnetic	HD
	60-150	Electronic LSI	
	60-150	Electronic LSI	HG
	175-250	Thermal magnetic	JD
	250	Electronic LSI	JD
	250	Electronic LSI	JG
	400	Electronic LSI	LG
4RX 4S/4SX 4TX 4V 4UA 4M6226	15-150	Thermal magnetic	HD
	60-150	Electronic LSI	
	60-150	Electronic LSI	HG
	175-250	Thermal magnetic	JD
	250	Electronic LSI	
	250	Electronic LSI	JG
	400	Electronic LSI	LG
	600-800	Electronic LSI	PG
4UA 4M6226	1000-1200	Electronic LSI	PG
	1200	Electronic LSI	PJ

100% Rating Electrically Operated Breakers

For use as paralleling breakers with the Decision-Maker® 6000 Controller/DPS System or APM603 controller.

Generator-Mounted P-Frame, 24VDC Electrically Operated			
Alt. Model	**Amps**	**Trip Unit**	**Frame**
4RX 4S/4SX 4TX 4V	250 400 600 800	5.0 LSI	PJ
		5.0 LSI	PL
4UA 4M6226	250 400 600 800 1000 1200	5.0 LSI	PJ
		5.0 LSI	PL
All circuit breakers listed in this table include line side bus and load side lugs, 24VDC motor operators, 2 type C auxiliary contacts, and 1 type C SDE overcurrent switch contact. No second breakers are allowed in combination with these breakers.			

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			
PG	65	35	18
PJ	100	65	25
PL	125	100	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 AL/CU
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
Mechanical Load Lugs Included with H, J, and LG LSIG Neutrals		
H	60-150	One #14 to 3/0 AL/CU
J	250	One 3/0 to 350 kcmil AL/CU
LG	400-600	Two 4/0 to 500 kcmil AL/CU

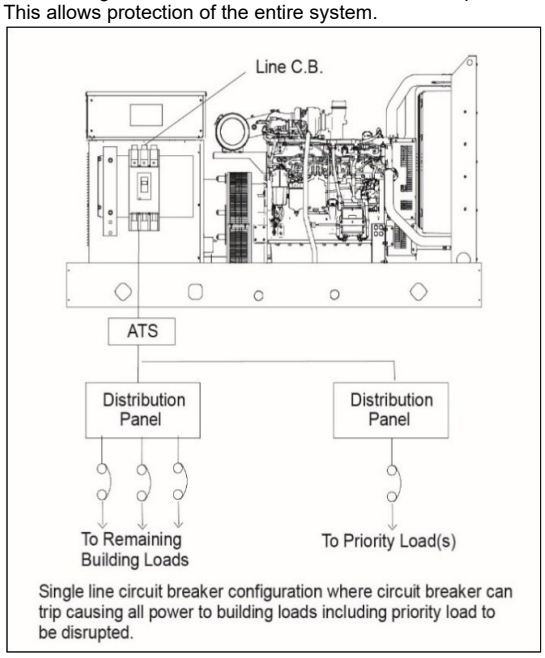
Discovery Energy, LLC
200 Twin Oaks Road, Kohler, WI 53044 USA
For the nearest sales and service outlet in the US and Canada, phone 1-800-544-2444 - powersystems.rehlko.com

15-300* kW Line Circuit Breaker Applications

* Includes models 300REOZJ and 300REZXC. For other 300 kW models, see the 300-2250 kW section.

Single Circuit Breaker Installations

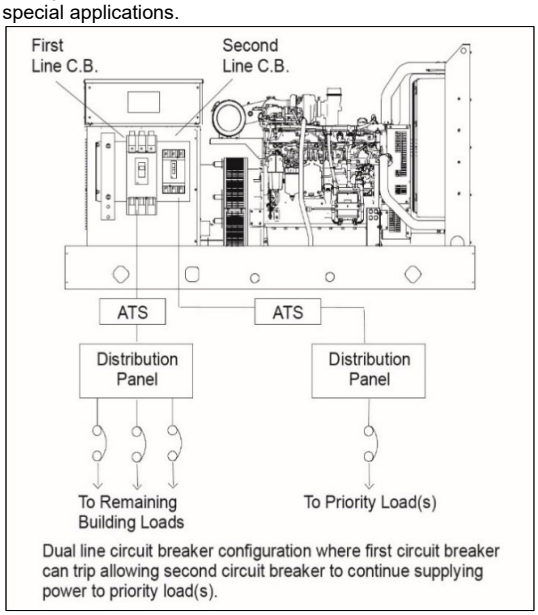
A generator set with a single circuit breaker installed typically feeds a single transfer switch and then a distribution panel. This allows protection of the entire system.



Single line circuit breaker configuration where circuit breaker can trip causing all power to building loads including priority load to be disrupted.

Multiple Circuit Breaker Installations

A generator set with dual circuit breakers installed is used to separate critical loads. Typically, one circuit breaker will feed a main transfer switch with noncritical loads and the other circuit breaker will feed a second transfer switch that feeds critical or priority loads. Multiple circuit breakers allow circuit protection for special applications.



Dual line circuit breaker configuration where first circuit breaker can trip allowing second circuit breaker to continue supplying power to priority load(s).

Circuit Breaker Combinations

Alternator	First C. B. Frame	Second C. B. Frame	Third C. B. Frame	Trip Type
ALL except 4D/4E	H	—	—	All
	J	—	—	
	LA	—	—	
	LG	—	—	
4D/4E	H	—	—	Standard or LSIG
	H	H	—	No LSIG
4P/4PX 4Q/4QX	H	H or J	—	No LSIG
	J		—	
	LA		—	
	LG	H, J or LG	—	
4RX 4S/4SX 4TX 4V	M	—	—	All
	P	—	—	All
	H or J	H or J	—	No LSIG
	LA	H, J, or LA	—	
	LG	H, J, LA, or LG	—	
	M			
	P			
	H or J	H or J	H or J	
4UA 4M6226	M or P	—	—	All
	H or J	H or J	—	
	LA	H, J, or LA	—	
	LG	H, J, LA, or LG	—	
	M or P	H, J, LA, or LG	—	
	P	P	—	No LSIG
	H or J	H or J	H or J	
	LA	H or J	H or J	
		LA	H, J, or LA	
	LG	H or J	H or J	
		LA	H, J, or LA	
		LG	H, J, LA, or LG	
	M or P	H or J	H or J	
		LA	H, J, or LA	
		LG	H, J, or LG	

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

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

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

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.

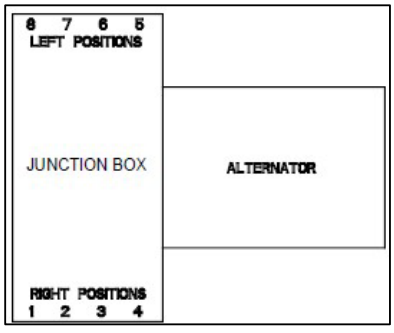
Interrupting Ratings

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.

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

700-3250 kW KD Model Line Circuit Breaker Specifications

80% Rating Circuit Breaker

Alt. Model	Ampere Range	Trip Type	C. B. Frame Size
KH	15-150	Thermal Magnetic	HD
	60-150	Electronic LI	
		Electronic LSI	
		Electronic LSIG	
	60-150	Electronic LI	HG
		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	
	175-250	Thermal Magnetic	JD
	250	Electronic LI	
		Electronic LSI	
		Electronic LSIG	
	250	Electronic LI	JG
		Electronic LSI	
		Electronic LSIG	
	250	684-2500 A. Mag. Trip	JJ
	400	2000-4800 A Mag. Trip	LG
	600	3000-7200 A Mag. Trip	
	400-600	Electronic LI	
		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
KH	15-150	Thermal Magnetic	HD
	60-150	Electronic LI	
		Electronic LSI	
		Electronic LSIG	
	60-150	Electronic LI	HG
		Electronic LSI	
		Electronic LSIG	
	175-250	Thermal Magnetic	JD
	250	Electronic LI	
		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	
	4000-5000	Electronic LSIG	MTZ

100% Rating Electrically Operated Breakers

For use as paralleling breakers with the APM603 controller.

Alt. Model	Amps	Trip Unit	Frame
KH	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
	4000, 5000	Electronic LSIG	MTZ

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 and MTZ breakers include 4 auxiliary contacts.
No second breakers are allowed in combination with these breakers.

Load Bus Rating

Gen. Set Model	Alt. Model	Rating, Amperes	Type
KD700- KD1750 KD2000-KD3250	KH	2000-3000 4000-5000	Load Bus

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

700-3250 kW KD Model Line Circuit Breaker Specifications

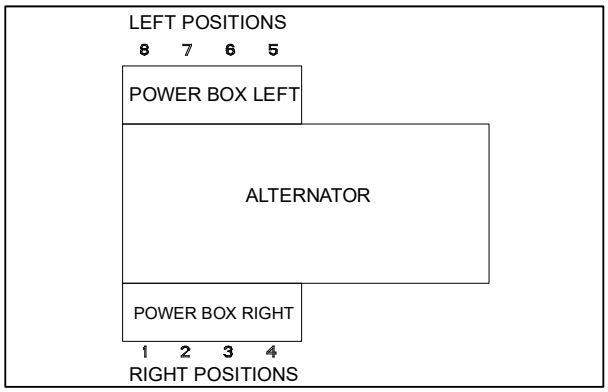
Interrupting Ratings

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
LG	65	35	18
MG			
PG			
PJ	100	65	25
RJ			
NW	100	100	85
MTZ			

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
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
R	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
MTZ	4000-5000	(12) 4/0 to 1250 kcmil
Mechanical Load Lugs Included with H, J, and LG LSIG Neutrals		
H	60- 150	One #14 to 3/0 AL/CU
J	250	One 3/0 to 350 kcmil AL/CU
LG	400-600	Two 4/0 to 500 kcmil AL/CU

Breaker Positions



NOTE: For KD700-KD1750 and KD2000-KD2500 with KD62V12 engine, the breaker and load bus phasing on right positions is A-B-C and on left positions is C-B-A. However, for KD2000-KD2500 with KD62V12A engine and KD2800-KD3250 with KD83V16A engine, the phases are switched (right positions is C-B-A and on left positions is A B-C).

NOTE: H, J, 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.

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

Multiple Circuit Breaker Combinations (KD700)

Alternator Model	Positions 1	2	3	4	5	6	7	8
KH (KH03546TO4D)	Load Bus or No LCB							
	H/J			-	-			H/J
	H/J	H/J		-	-		H/J	H/J
	H/J	H/J	H/J	-	-	H/J	H/J	H/J
	LG			-	-			LG
	LG	H/J		-	-		H/J	LG
	LG	LG					LG	LG
	LG	H/J	H/J	-	-	H/J	H/J	LG
	LG	LG	H/J	-	-	H/J	LG	LG
	LG	LG	LG	-	-	LG	LG	LG
	M/P *		-	-	-	-	M/P *	
	P EO *		-	-	-	-	P EO *	
	M/P *		H/J	-	-	H/J	M/P *	
	M/P *		LG	-	-	LG	M/P *	
	R §							
	NW §							

* M and P breakers occupy two positions each.

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

Alternator Model	Positions 1	2	3	4	5	6	7	8
KH (KH02970TO4D)	Load Bus or No LCB							
	-			H/J	H/J			-
	-		H/J	H/J	H/J	H/J		-
	-	H/J	H/J	H/J	H/J	H/J	H/J	-
	-			LG	LG			-
	-		H/J	LG	LG	H/J		-
			LG	LG	LG	LG		
	-	H/J	H/J	LG	LG	H/J	H/J	-
	-	H/J	LG	LG	LG	LG	H/J	-
	-	LG	LG	LG	LG	LG	LG	-
	-	-	M/P *				-	-
	-	-	P EO *				-	-
	-	H/J	M/P *				H/J	-
	-	LG	M/P *				LG	-
	R §							
	NW §							

* M and P breakers occupy two positions each.

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

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

Multiple Circuit Breaker Combinations (KD750)

Alternator Model	Positions 1	2	3	4	5	6	7	8
KH (KH02970TO4D) (KH03450TO4D)	Load Bus or No LCB							
	-			H/J	H/J			-
	-		H/J	H/J	H/J	H/J		-
	-	H/J	H/J	H/J	H/J	H/J	H/J	-
	-			LG	LG			-
	-		H/J	LG	LG	H/J		-
			LG	LG	LG	LG		
	-	H/J	H/J	LG	LG	H/J	H/J	-
	-	H/J	LG	LG	LG	LG	H/J	-
	-	LG	LG	LG	LG	LG	LG	-
			M/P *					
			P EO *					
		H/J	M/P *				H/J	
		LG	M/P *				LG	
	R §							
	NW §							

* M and P breakers occupy two positions each.

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

Multiple Circuit Breaker Combinations (KD800-KD1750 and KD2000-KD2500 with KD62V12 engine)

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

* M and P breakers occupy two positions each.

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

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

Multiple Circuit Breaker Combinations (KD2000–KD2500 with KD62V12A engine and KD2800–KD3250 with KD83V16A engines)

Alternator Model	Positions 1	2	3	4	5	6	7	8
KH	Load Bus or No LCB							
	-			H/J	H/J			-
	-		H/J	H/J	H/J	H/J		-
	-	H/J	H/J	H/J	H/J	H/J	H/J	-
	-			LG	LG			-
	-		H/J	LG	LG	H/J		-
			LG	LG	LG	LG		
	-	H/J	H/J	LG	LG	H/J	H/J	-
	-	H/J	LG	LG	LG	LG	H/J	-
	-	LG	LG	LG	LG	LG	LG	-
			M/P *					
			P EO *					
		H/J	M/P *				H/J	
		LG	M/P *				LG	
	R §							
	NW §							
	MTZ §							

* M and P breakers occupy two positions each.

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

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

Enclosed Circuit Breakers

The following loose circuit breakers are available in NEMA 1 or NEMA 3R enclosures for remote mounting.

80% Rating Circuit Breakers

Ampere Range		Trip Type	C. B. Frame Size
15-150		Thermal Magnetic	HD
60-150		Electronic LI	HD
		Electronic LSI	
175-250		Thermal Magnetic	JD
250		Electronic LI	
		Electronic LSI	
60-150		Electronic LI	HG
		Electronic LSI	
250		Electronic LI	JG
		Electronic LSI	
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	
800		Electronic LI	MG
1000-1200		Thermal Magnetic	PG
800-1200		Electronic LSI	
1200		Thermal Magnetic	PJ
		Electronic LSI	

100% Rating Circuit Breakers

Ampere Range	Trip Type	C. B. Frame Size
15-150	Thermal Magnetic	HD
60-150	Electronic LI	
	Electronic LSI	
175-250	Thermal Magnetic	JD
250	Electronic LI	
	Electronic LSI	
60-150	Electronic LI	HG
	Electronic LSI	
250	Electronic LI	JG
	Electronic LSI	
400	Electronic LI	LG
	Electronic LSI	
600-800	Electronic LSI	PG
	Electronic LSIG	

Circuit Breaker Lugs Per Phase (Al/Cu)

Frame Size	Ampere Range	Wire Range
H	15-150	One #14 to 3/0
J	175	One #4 to 4/0
	200-250	One 3/0 to 350 kcmil
LA	300	One #1 to 600 kcmil
		Two #1 to 250 kcmil
LG	250	One #2 to 500 kcmil
	400-600	Two 2/0 to 500 kcmil
M	800	Three 3/0 to 500 kcmil
P	250-800	Three 3/0 to 500 kcmil
	1000-1200	Four 3/0 to 500 kcmil

Accessories

Accessory	Breaker Frame
Auxiliary Contacts	H, J, LA, LG, M, P
Shunt Trip 12VDC	H, J, LA, LG
Shunt Trip 24VDC	H, J, LA, LG, M, P
Undervoltage Trip 12VDC	H, J, LA, LG, M, P
Undervoltage Trip 24VDC	H, J, LA, LG, M, P
Alarm Switch	H, J, LA, LG, M, P
Overcurrent Switch	H, J, LA, LG, M, P
Note: LA frame accepts a maximum combination of (2) internal accessories (not including padlock attachment)	

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

Enclosed Circuit Breakers

Enclosure Specifications

Frame Size	Dimensions, L x W x H, mm (in.)	
	NEMA 1	NEMA 3R
H, J	365 x 156 x 797 (14.4 x 6.2 x 31.4)	374 x 156* x 820 (14.8 x 6.2* x 32.3)
LA	388 x 165* x 1130 (15.3 x 6.5* x 44.5)	391 x 200* x 1118 (15.4 X 7.9* X 44.0)
LG †	519 x 293 x 1515 (20.4 x 11.5 x 59.6)	519 x 293 x 1515 (20.4 x 11.5 x 59.6)
M, P	533 x 248 x 1324 (21.0 x 9.58 x 52.1)	533 x 309 x 1324 (21.0 x 12.2 x 52.1)

* Width does not include circuit breaker operating handle.
† Enclosures accept 80% rated L- frame circuit breakers 600A max OR 100% rated L-frame circuit breakers 400A max.

Solid Neutral Assemblies and Ground Kits

Frame Size	Neutral or Ground	Maximum Ampere Rating	Terminals	Conductors per Terminal	Wire Size	Type
H, J	Neutral	100	2	1	#14 to 1/0	CU
					#12 to 1/0	AL
	Neutral	250	2	1 or 2	#1 to 600 #1 to 250	AL or CU
			2	1	#4 to 300	AL or CU
	Ground	250	2	1	#6 to 300	AL or CU
LA	Neutral	400	2	1 or 2	#1 to 600	AL or CU
			2	1 or 2	#1 to 250	AL or CU
	Ground	—	2	1	#10 to 2/0	CU
			2	1	#6 to 2/0	AL
LG	Neutral	200- 1000	2	3	3/0 to 500	AL or CU
	Ground	—	4	1	#6 to 250	AL or CU
M, P	Neutral	1200	8 (4 in, 4 out)	1	3/0 to 500	AL or CU
				2	#6 to 350	AL or CU
	Ground	—	4	1	#6 to 300	AL or CU

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

Enclosed Circuit Breakers and Fused Disconnect Switches

The following loose circuit breakers and fused disconnect switches are available in NEMA 1 enclosures for remote mounting.

100% Rating 3P Circuit Breakers, 2500-3250 kW

Amps	Trip Type	Volts	Hz	kW	Approvals
3000	Electronic LI	600	60	2500	UL891
4000		780	60	2500	UL891
4000		600	60	2800/ 3000/ 3250	UL891
5000		380	50	2500/ 2800/ 3250	IEC
5000		480	60	2800/ 3000/ 3250	IEC
3000	Electronic LSIG	600	60	2500	UL891
4000		480	60	2500	UL891
4000		600	60	2800/ 3000/ 3250	UL891
5000		380	50	2500/ 2800/ 3250	IEC
5000		480	60	2800/ 3000/ 3250	IEC

NEMA 1 Enclosure Specifications, Breakers

Size	Dimensions, L x W x H, mm (in.)	
	mm	in.
3000 A	914.4 x 914.4 x 2324	36 x 36 x 91.5
4000 A	1219 x 1067 x 2324	48 x 42 x 91.5
5000 A	1219 x 1219 x 2324	48 x 48 x 91.5

Fused Disconnect Switches 50/60 Hz, HVL-CC Switch, UL and IEC

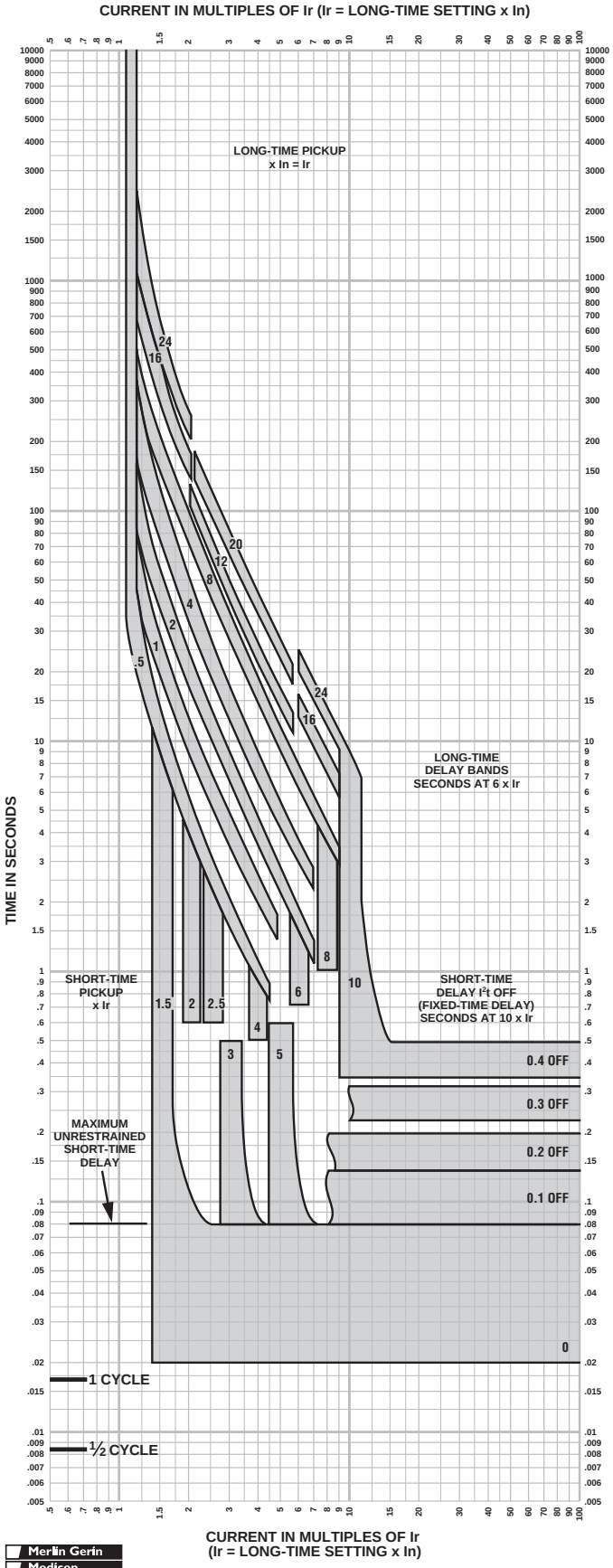
Amps	Trip Type	Poles	Accessories
200 400 600	Fuse	3P	None
			3 Auxiliary Contacts
			3 Auxiliary Contacts and Blown Fuse Indicator
			3 Auxiliary Contacts, Blown Fuse Indicator, and Protective Relay

NEMA 1 Enclosure Specifications, Fused Disconnect Switches

Size	Dimensions, L x W x H, mm (in.)	
	mm	in.
13.8 kV	946 x 749 x 2591 *	37.25 x 29.5 x 102
4160 V	946 x 883 x 2591 *	37.25 x 34.75 x 102
* Height includes pull box.		

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

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



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

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

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

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

Notes:

1. There is a thermal-imaging effect that can act to shorten the long-time delay. The thermal-imaging effect comes into play if a current above the long-time delay pickup value exists for a time and then is cleared by the tripping of a downstream device or the circuit breaker itself. A subsequent overload will cause the circuit breaker to trip in a shorter time than normal. The amount of time delay reduction is inverse to the amount of time that has elapsed since the previous overload. Approximately 20 minutes is required between overloads to completely reset thermal-imaging.
2. The end of the curve is determined by the interrupting rating of the circuit breaker.
3. With zone-selective interlocking on, short-time delay utilized and no restraining signal, the maximum unrestrained short-time delay time band applies regardless of the setting.
4. Total clearing times shown include the response times of the trip unit, the circuit breaker opening, and the extinction of the current.
5. For a withstand circuit breaker, instantaneous can be turned OFF. See 613-7 for instantaneous trip curve. See 613-10 for instantaneous override values.
6. Overload indicator illuminates at 100%.

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

Schneider Electric

Curve No. 0613TC0004
December 2000
Drawing No. B48095-613-04

POWERPACT® P- and R-Frame Molded Case Circuit Breakers (Standard or 100% rated up to 2500 A)

The most compact and innovative molded case circuit breakers

P-Frame 1200 A

R-Frame

POWERPACT Molded Case Circuit Breakers lead the industry with proven, reliable protection and innovative design. Providing unparalleled performance and control, this generation of P- and R-frame circuit breakers features exclusive MICROLOGIC® Trip Units, which allow for a range of sophisticated applications for metering and monitoring. In addition, units can be interchanged to allow for maximum flexibility and are field-installable for easy upgrades as needed.

The compact P- and R-frame circuit breakers permit smaller footprint and higher density installations using I-LINE® Panelboards and Switchboards. These circuit breakers are available in 100% rated construction up to 2500 A to meet a broad range of commercial and industrial application needs.

Full-Featured Performance

- P-frame – 1200 A available in both standard and 100% ratings with sensor sizes 250–1200 A. Interrupting ratings (AIR) G-35kAIR, J-65kAIR and L-100kAIR at 480 VAC
- R-frame – 2500 A available in both standard and 100% ratings with sensor sizes 600–2500 A. Interrupting ratings (AIR) G-35kAIR, J-65kAIR and L-100kAIR at 480 VAC
- Compact breaker size allows for smaller footprint installations using I-LINE Panelboards and Switchboards. 9" width on P-frame designs and 15" width on R-frame designs provide increased density installations
- Most field-installable accessories are common to all frame sizes for easier stocking and installation
- Selection of four interchangeable MICROLOGIC Trip Units with POWERLOGIC® power metering and monitoring capabilities available in advanced trip units
- Compatible with POWERLOGIC® systems and high amperage power circuit breakers
- Built-in MODBUS® protocol provides an open communications platform and eliminates the need to purchase additional, proprietary network solutions
- Connection options include bus, cable or I-Line for installation flexibility
- Additional options are available for 5-cycle closing, stored energy mechanisms and draw-out mounting of 1200 A breakers

Merlin Gerin
Modicon
Square D
Telemecanique
Schneider Electric

SQUARE D
Schneider Electric

POWERPACT® P- and R-Frame Molded Case Circuit Breakers
(Standard or 100% rated up to 2500 A)

Onboard Intelligence

For “smarter breakers,” a range of MICROLOGIC® Trip Units provides advanced functionality, such as a communications interface, and power metering and monitoring capabilities. With the appropriate MICROLOGIC Trip Unit, you can communicate with breakers, gather power information, monitor events and remotely control breakers based on predetermined conditions, leading to substantial savings in electrical system operating costs.

These interchangeable, microprocessor-controlled, plug-in devices provide the next generation of protection, measurement and control functions, delivering not only greater electrical system safety but also improved system integration and coordination.

MICROLOGIC® Trip Units

Choose the Model that Meets Your Needs

MICROLOGIC 3.0 and 5.0

- Basic circuit protection including long-time, instantaneous and optional short-time adjustments

MICROLOGIC 3.0A, 5.0A and 6.0A

- Long-time, instantaneous and optional short-time adjustments
- Integrated ammeter and phase loading bar graph
- LED trip indicator
- Zone selective interlocking with downstream and upstream breakers
- Optional ground-fault protection
- Optional MODBUS® communications interface

MICROLOGIC 5.0P and 6.0P

- Long-time, instantaneous and optional short-time adjustments
- Advanced relay protection (current imbalance, under/over voltage, etc.)
- Inverse Definite Minimum Time Lag (IdmtL) long-time delay curve shaping for improved coordination
- Basic power metering and monitoring functions
- Standard MODBUS communications interface compatibility with POWERLOGIC® installations
- Standard GF alarm on 5.0P. 6.0P has equipment ground-fault tripping protection

MICROLOGIC 5.0H and 6.0H

- All 5.0P and 6.0P functions
- Enhanced POWERLOGIC power metering and monitoring capabilities
- Basic power quality (harmonic) measurement
- Waveform capture

Contact your Square D sales representative for additional information. Or, visit www.SquareD.com.

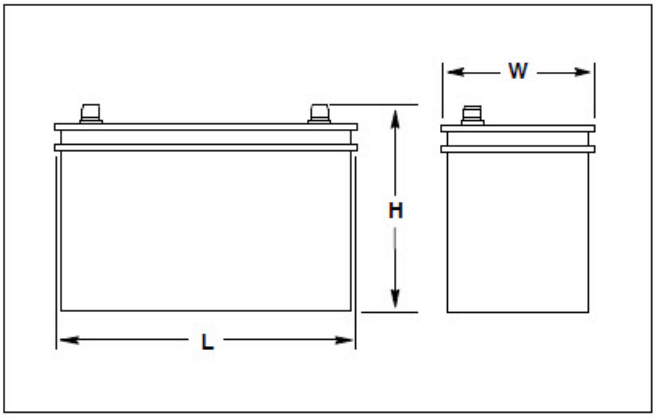
Order Number 0612HO0201

SQUARE D
Schneider Electric

rehlko

ISO 9001 KOHLER POWER SYSTEMS NATIONALLY REGISTERED

Typical Overall Dimensions

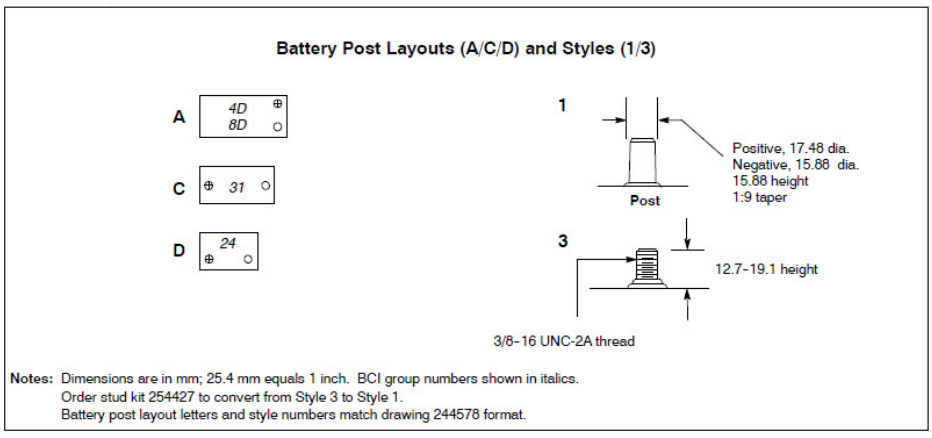


Standard Features

- 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).

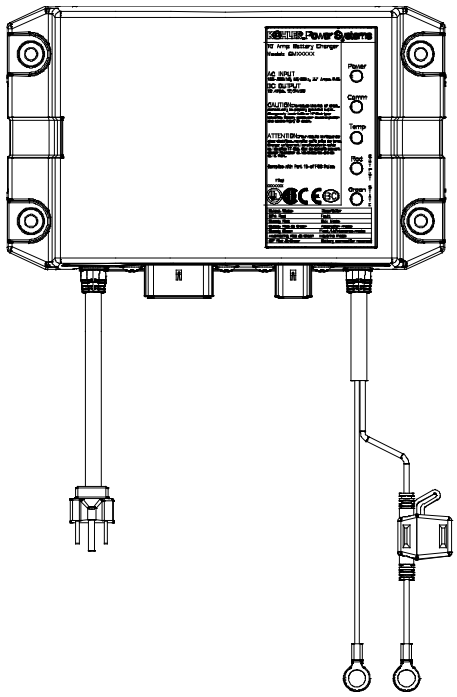
Charge Type*	Battery Part Number	Battery Qty. per Size	BCI Group Size	Battery SAE Dimension, mm (in.)			Cold Cranking Amps at 18ºC (0ºF) Min.	Reserve Capacity Minutes at 27º (80ºF) Min.	Battery Post Layout and Style
				L	W	H			
Wet	GM106375	1	31	330.2 (13.0)	171.0 (6.8)	239.8 (9.4)	925	180	C/3

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

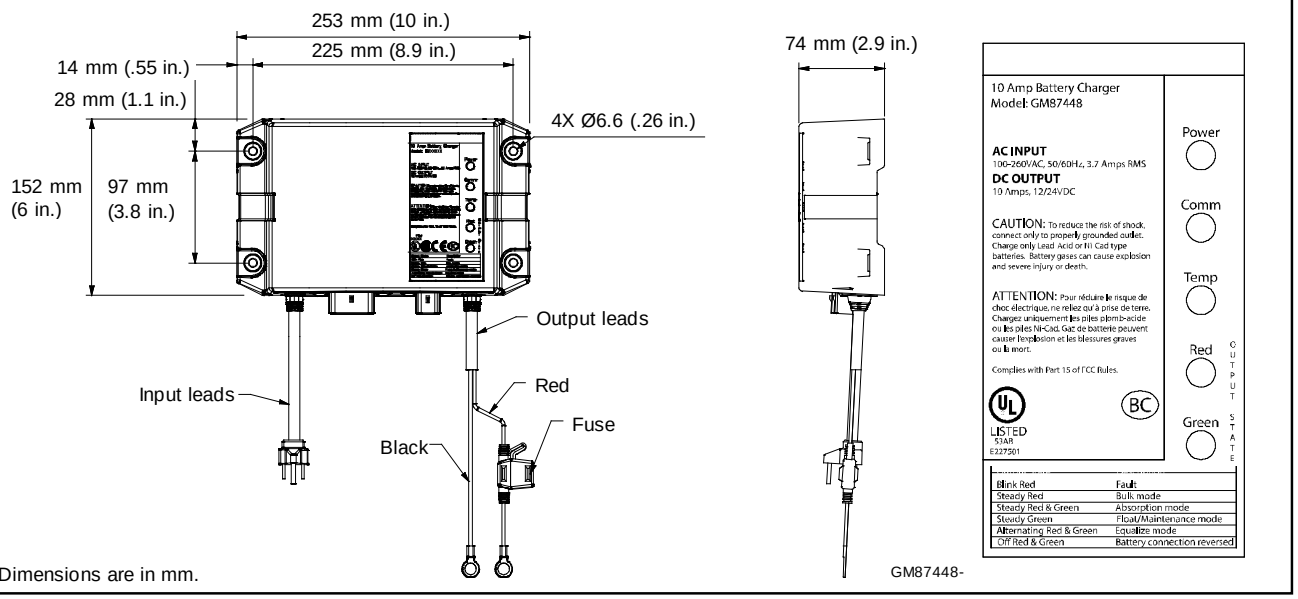
- 12 or 24 VDC output
  - Automatic voltage detection
- Automatic multi-stage charging modes
  - Recovery charge
  - Bulk charge
  - Absorption charge
  - Float charge
  - Equalize charge
- Charges the following type batteries:
  - Flooded lead acid (FLA)
  - AGM
  - Gel cell
  - High performance AGM
  - 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

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

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

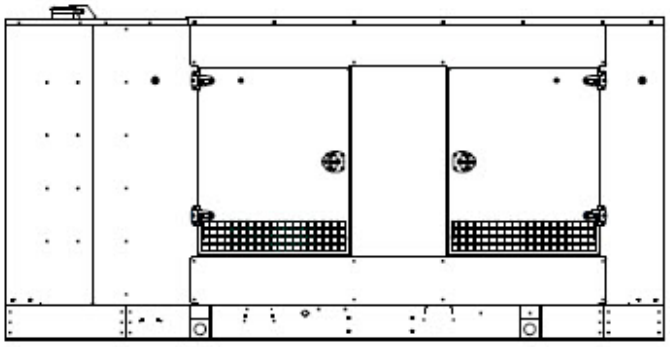
Enclosure	
Environmental Resistant	From rain, snow, dust, and dripping water (IP-64)
Battery Connections	
Lead Length	1.8 m (6 ft.) red and black leads
Battery Connections	9.5 mm (3/8 in.) ring terminals
AC Power Connections	
Lead Length	1.8 m (6 ft.)
Storage	Standard US style 3-prong AC plug
Available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

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

rehlko

ISO 9001 KOHLER POWER SYSTEMS NATIONALLY REGISTERED



Standard Enclosure

Sound Enclosure Standard Features

• Internal-mounted critical silencer and flexible exhaust connector.

• Skid-mounted, steel construction with hinged doors. Steel enclosures are recommended for high humidity and or high salt/coastal regions.

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

• Enclosure has four access doors which allow for easy maintenance.

• Lockable, flush-mounted door latches.

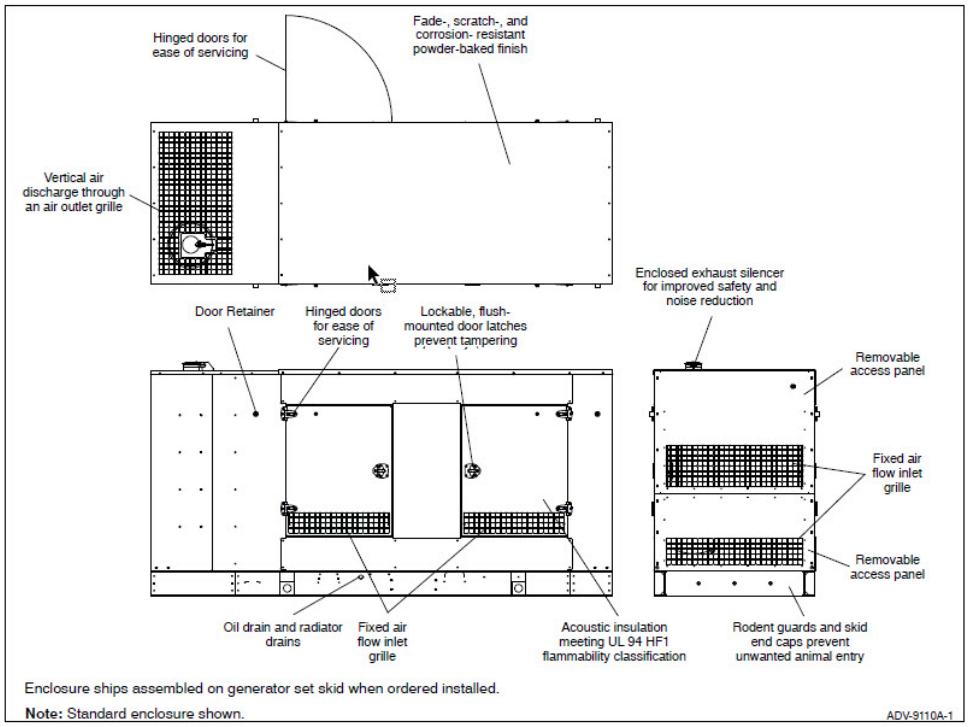
• Vertical air inlet and outlet discharge to redirect air and reduce noise.

• Acoustic insulation that meets UL 94 HF1 flammability classification and repels moisture adsorption.

• Sound attenuated enclosure that uses up to 51 mm (2 in.) of acoustic-lined air discharge hood.

• Steel sound enclosure is analyzed to 150 mph (241 kph) wind load rating.

Standard Weather and Sound Enclosure



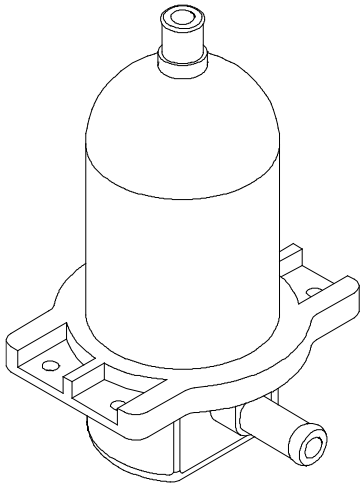
Sound Enclosure Features

- Power Armor automotive-grade finish resulting in advanced corrosion and abrasion protection as well as enhanced edge coverage and color retention.
- Internal critical exhaust silencer offering maximum component life and operator safety.
- Interchangeable modular panel construction. Allows complete serviceability or replacement without compromising enclosure design.
- Cooling/combustion air intake with a horizontal air inlet. Sized for maximum cooling airflow.
- Service access. Multi-personnel doors for easy access to generator set control and servicing of the oil fill and battery.
- Sound-attenuating design. Mechanically restrained acoustic insulation UL 94 HF1 listed for flame resistance.
- Cooling air discharge. The sound enclosures include acoustic insulation with urethane film.

Fuel Tank Capacity, L (gal.)	Est. Fuel Supply Hours at 60 Hz with Full Load	Max. Length, mm (in.)	Max. Width, mm (in.)	Sound Pressure Level, dB(A)	Max. Height, mm (in.)	Weight, kg (lb.)
Lift base	0	3848 (151.5)	1340 (52.8)	73	1949 (76.7)	2698 (5952)

Note: Data in table is for reference only, refer to the respective ADV drawings for details.
Max. weight includes the generator set (wet) with largest alternator option, enclosure, and silencer.
Log average sound pressure level of 8 measured positions around perimeter of the unit at a distance of 7 m (23 ft). Refer to TIB-114 for details.

Engine Block Heater Kits



Block Heater Kit, typical

Applicable Models

- KG40-KG125
- KG150-KG200
- KG150R
- 25-45REZG
- 25-60REZGB
- 50REZGC/125REZGC/150REZGC
- 50-60REOZJD
- 50REOZJE
- 80REZGD/100REZGD
- 80RZGD/100RZGD
- 80-200REOZJF
- 80-150REOZJG4
- 125RZGC/150RZGC
- 125REOZJG/180REOZJG

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 kit helps to extend element life and gives a significant reduction in electrical consumption.

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, 240 V, and 277 V versions.

Block Heater Specifications

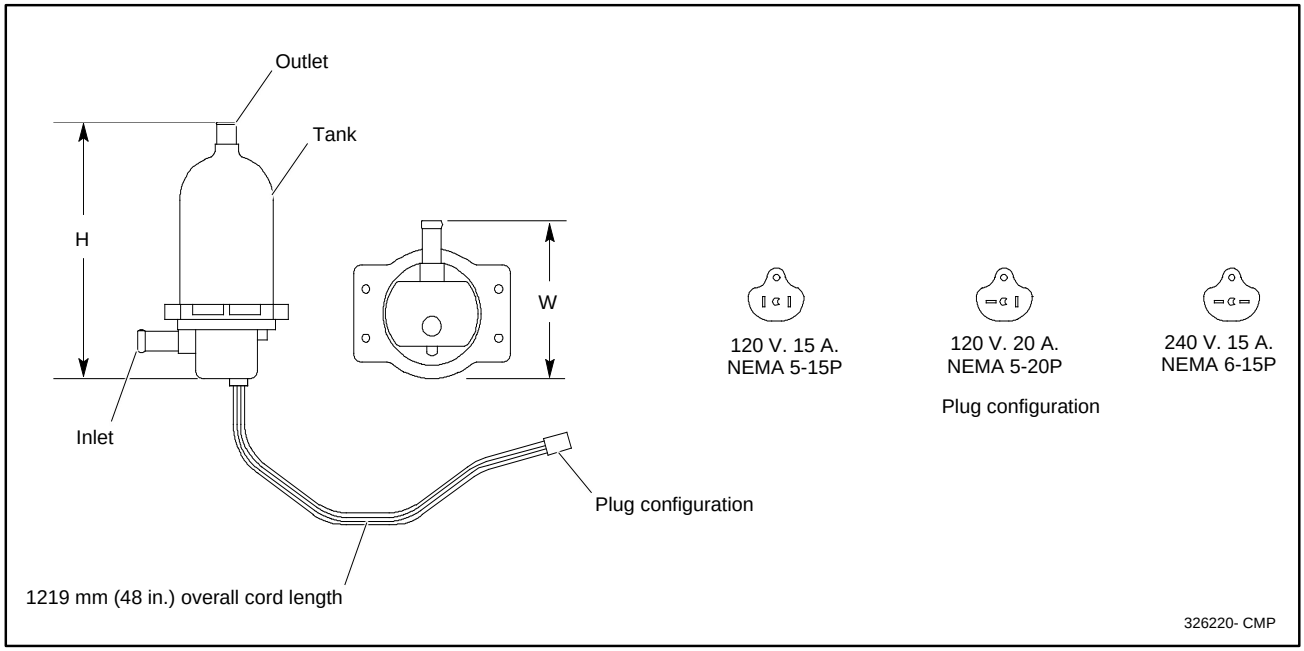
Heating Fluid	Water, Coolant Mix (50% Glycol/50% Water)
Max. Pressure	90 psi (620 kPa)
Heating Element Material	Incoloy 800
Inlet/Outlet Plumbing	0.625 in. hose barb
System Ingress	IP41
Power Connection	NEMA Plug and EURO Plug
Power Chord Length	48 in. (1219 mm)

Specifications

					Thermostat Temperature	
Block Heater Kit Number	**Component**	**Watts**	**Voltage**	**Phase**	**ON**	**OFF**
GM58098-KA1	358311	1000	120	1	27°C (80°F)	38°C (100°F)
GM75536-KA1	326228	1500	120	1	49°C (120°F)	60°C (140°F)
GM75555-KA5	GM75552	1800	120	1	27°C (80°F)	38°C (100°F)
GM75555-KA6	GM75553	2000	240	1		
GM75556-KA1	352945	1500	120	1		
GM75557-KA1	352945	1500	120	1		
GM75564-KA1	358311	1000	120	1		
GM75565-KA1	352945	1500	120	1		
GM77944-KA1	352945	1500	120	1		
GM77944-KA2	352946	1500	240	1		
GM85060-KA1	GM75552	1800	120	1		
GM85060-KA2	GM75553	2000	240	1		
GM89427-KA2	GM75552	1800	120	1		
GM91708-KA1	352945	1500	120	1		
GM94248-KA1	352945	1500	120	1		
GM104799-KA1	352945	1500	120	1		
GM105165-KA1	352945	1500	120	1		
GM105165-KA2	352946	1500	240	1		
GM105409-KA1	352945	1500	120	1		
GM105409-KA2	352946	1500	240	1		
GM115370-KA1	352945	1500	120	1		
GM115370-KA2	352946	1500	240	1		

Dimensions and Weights

Overall Size, H x W, mm (in):	199 x 122 (7.8 x 4.8)
Weight, kg (lb):	0.77 (1.7)



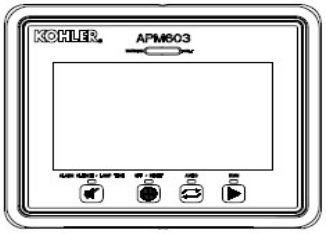
KOHLER CO., Kohler, Wisconsin 53044 USA
Phone 920-457-4441, Fax 920-459-1646
For the nearest sales and service outlet in
the US and Canada, phone 1-800-544-2444
KOHLERPower.com

DISTRIBUTED BY:

Availability is subject to change without notice. Kohler Co. reserves the right to change the design or specifications without notice and without any obligation or liability whatsoever. Contact your local Kohler® generator distributor for availability.

rehlko

Integral Voltage Regulator with Kohler® APM603 Controllers and Menu-Driven Selections (80-4000 kW Generator Set Models)



APM603 Controller
with Integral Voltage Regulator

The voltage regulator is integral to the controller and uses patented high speed digital voltage regulator design providing ±0.25% no-load to full-load regulation using root-mean-square (RMS) voltage sensing.

Voltage Regulators

The following information provides general features, specifications, and functions of available voltage regulators.

This information generally applies to a single generator set and multiple generator sets with paralleling applications. Refer to the respective generator set specification sheet and see your authorized distributor for information regarding specific voltage regulator applications and availability.

Integral Voltage Regulators with APM603

Calibration	Range Settings	Default Selection
Voltage Adjustment	±10% of System Voltage	System Voltage
Controller Gain	40 to 70 Hz	P: 1.3 I: 1.0 D: 0.25
Underfrequency Unload or Frequency Setpoint	40 to 70 Hz	0.5 Hz Below System Frequency (ECM)
Underfrequency Unload Scope	0-10% of System Voltage (Volts per Cycle)	15 volts per Cycle at 480 Volts (3.1%)
Reactive Droop	0-10% of System Voltage	4% of System Voltage
VAR Control	-50% to 110%	0 kVAR
PF Adjust Control	-0.50 to 1.0 to 0.50	0.8 Lagging
VAR/PF Gain Adjustment	P: 0.3 to 3.00 I: 0.3 to 3.00 D: 0.3 to 3.00	P: 1.0 I: 1.0 D: 0.25

rehlko

Specification/Feature	Integral with APM603
Generator Set Availability	80-4000 kW
Type	Patented Hybrid Design
Status and Shutdown Indicators	LEDs and Text LCD Display
Operating Temperature	-40°C to 70°C (-40°F to 158°F)
Storage Temperature	-40°C to 85°C (-40°F to 185°F)
Humidity	5-95% Non-Condensing
Circuit Protection	Solid-State, Redundant Software and Fuses
Sensing, Nominal	100-600 Volts (L-L), 50-60 Hz
Sensing Mode	RMS, Single- or 3-Phase
Input Requirements	8-36 VDC
Continuous Output	5.0 ADC with GM88453 Activator Board
Maximum Output	7.8 ADC with GM88453 Activator Board
Transition Frequency	50-70 Hz
Exciter Field Resistance	4-30 Ohms with GM88453 Activator Board
No-Load to Full-Load Voltage Regulation	±0.25%
Thermal Drift	<0.5% (-40°C to 70°C) [-40°F to 158°F] Range
Response Time	3-phase: 1 mS 1-phase: 5 mS
System Voltage Adjust.	±10%
Voltage Adjustment	Controller Display
Remote Voltage Adjustment	Analog 0-5 VDC (±10%) Input Optional
Paralleling Capability	Full Load Share and Control plus Reactive Droop

Integral Voltage Regulator with APM603 Controller

- A 7.5-inch color TFT touchscreen provides access to data.
- The controller provides an interface between the generator set and switchgear for paralleling applications incorporating multiple generator set and/or utility feeds.
- The controller can control Fast Response™ II, Fast Responset™X, and PMG alternators using the GM88453 activator board.

Voltage Regulator Settings, APM603 Controller

- Voltage Regulator Configuration
  - Under Frequency Unload Settings
  - Single and Three Phase Sensing
  - Voltage Target
  - Voltage Regulator Gains

Paralleling Settings, APM603

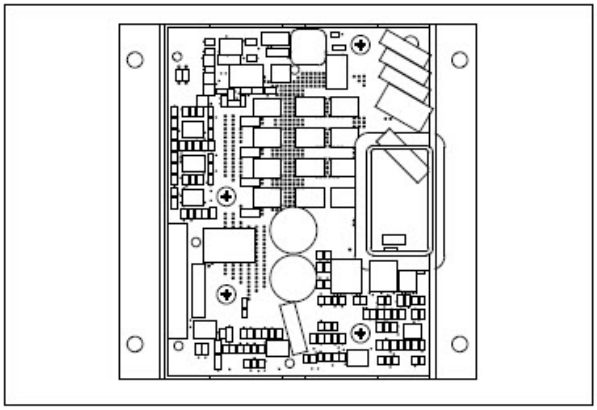
- Synchronizing parameters setup
  - Voltage matching
  - Frequency matching
  - Phase matching
  - Time delay
- Load sharing
  - kW sharing
  - kVAR sharing
  - Baseload settings
  - Droop

Paralleling Metering, APM603

- Paralleling State
- Paralleling Mode
- System Voltage
- System Frequency
- Connected Generators
- Sync Status
- Engine Speed

VAR/PF Control Input	VAR Control Mode, PF Control Mode, System VAR Control, System PF Control

Activator Board GM88453



- Interfaces between the controller and alternator assembly using rotor field leads, auxiliary power windings, and optic board leads.
- Allows the Decision-Maker® controllers the ability to control a wound-field alternator using the same control signal as Fast Response
- Permits the generator set controller to control the current to the exciter field of a wound-field excited alternator.
- Contains two isolated relay driver outputs (RDO) rated at 250 mA. Provides RDO outputs indicating a field over-excitation condition and that the alternator is supplying voltage to the activator.

rehlko

Alternator Data

TECHNICAL INFORMATION BULLETIN

Alternator Data Sheet

Alternator Model: 4S13X
Frequency: 60 Hz
Speed: 1800 RPM
Leads: 12 (6 Lead, 600 Volt)

Voltage L-N/L-L	Phase	Power Factor	Connection	kW* (kVA)						
				Class B	Class F				Class H	
				80°C Continuous	90°C Lloyds	95°C ABS	105°C Continuous	130°C Standby	125°C Continuous	150°C Standby
139/240 277/480	3	0.8	Wye	176.0 (220.0)	184.5 (230.5)	189.5 (236.5)	197.5 (246.5)	211.0 (263.5)	208.5 (260.5)	221.0 (276.0)
127/220 254/440	3	0.8	Wye	162.5 (203.0)	170.0 (212.5)	174.0 (217.5)	182.0 (227.5)	194.0 (242.5)	191.5 (239.0)	203.0 (253.5)
120/208 240/416	3	0.8	Wye	154.5 (193.0)	162.0 (202.5)	165.5 (206.5)	173.5 (216.5)	184.0 (230.0)	182.0 (227.5)	192.5 (240.5)
110/190 220/380	3	0.8	Wye	141.0 (176.0)	147.5 (184.0)	151.0 (188.5)	158.0 (197.5)	168.0 (210.0)	166.0 (207.5)	175.5 (219.0)
120/240	3	0.8	Delta	154.5 (193.0)	162.0 (202.5)	165.5 (206.5)	173.5 (216.5)	184.0 (230.0)	182.0 (227.5)	192.5 (240.5)
120/240	1	1.0	Dogleg	109.0 (109.0)	111.0 (111.0)	112.5 (112.5)	113.0 (113.0)	113.0 (113.0)	113.0 (113.0)	113.0 (113.0)
347/600	3	0.8	Wye	142.0 (177.0)	150.0 (187.0)	154.0 (192.0)	162.0 (202.0)	181.0 (226.0)	177.0 (221.0)	194.0 (242.0)

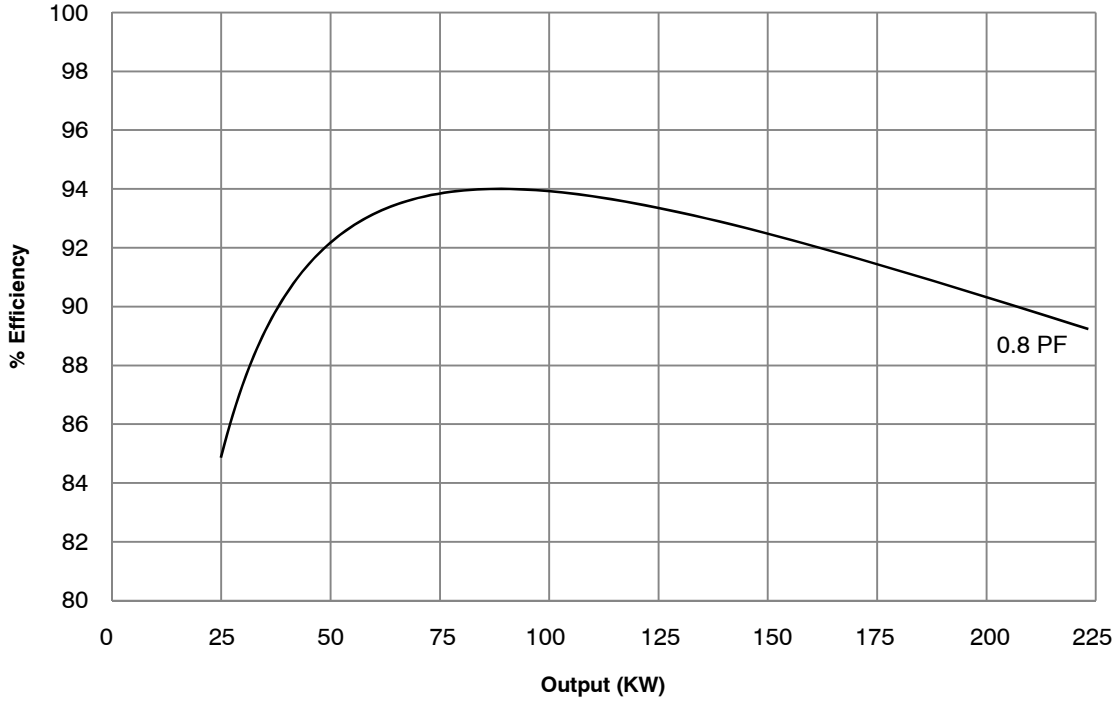
* All data tested in accordance with IEEE Standard 115. Kohler Co. reserves the right to change the design or specifications without notice and without any obligation or liability whatsoever.

Submittal Data: 139/240 Volts, 0.8 PF, 1800 RPM, 60 Hz, 3 Phase, 130°C Rise

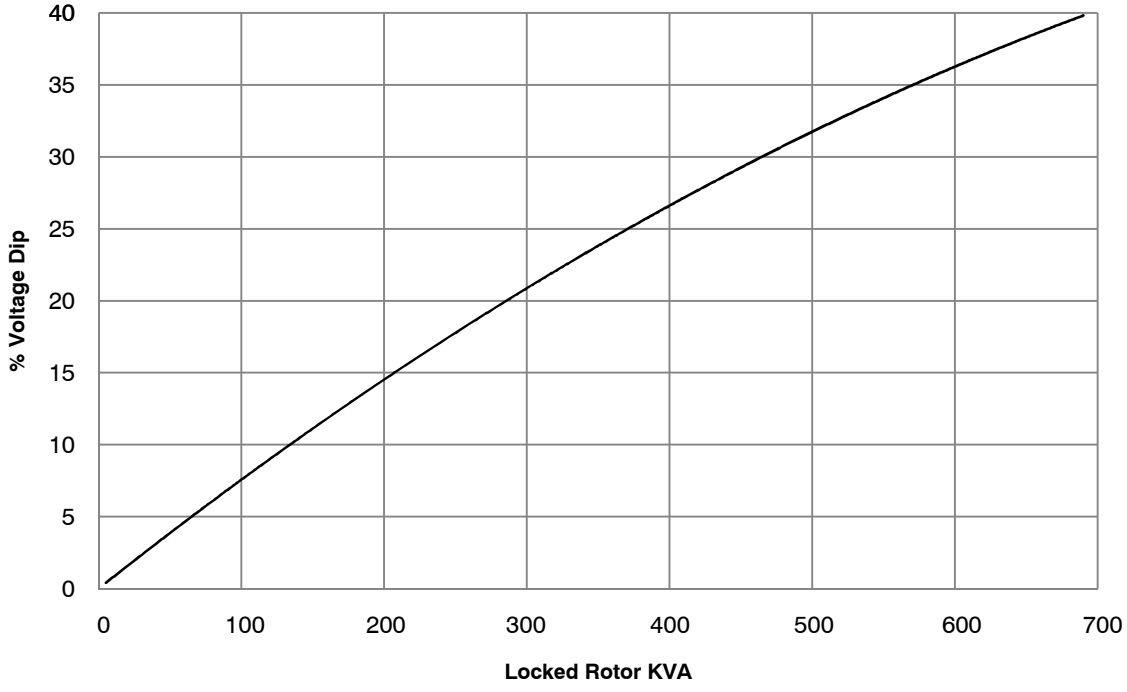
	Symbol	PerUnit	Ohms
Typical Cold Resistances			
Phase Resistance		0.032	0.007
Rotor Resistance		26.43	5.774
Typical Reactances			
Synchronous			
Direct	X_d	4.926	1.076
Quadrature	X_q	2.428	0.530
Transient			
Unsaturated	X'_{du}	0.474	0.104
Saturated	X'_d	0.417	0.091
Subtransient			
Direct	X''_d	0.144	0.031
Quadrature	X''_q	0.143	0.031
Negative Sequence	X_2	0.143	0.031
Zero Sequence	X_0	0.012	0.003

	Symbol	Value
Typical Time Constants		
Armature Short Circuit	T_a	0.011 sec.
Transient Short Circuit	T'_d	0.149 sec.
Transient Open Circuit	T'_{do}	1.759 sec.
Typical Field Current		
Full Load	If_{FL}	21.6 amps
No Load	If_{NL}	3.9 amps
Typical Short Circuit Ratio		0.203
Harmonic Distortion		
RMS Total Harmonic Distortion		3.59%
Max. Single Harmonic		5th
Deviation Factor (No Load, L-L)		<5%
Telephone Influence Factor		<50
Insulation Class		
per NEMA MG1-1.66		H
Phase Rotation		ABC

4S13X, 60 Hz, 139/240, 277/480 Volts, Wye
TYPICAL ALTERNATOR EFFICIENCY*

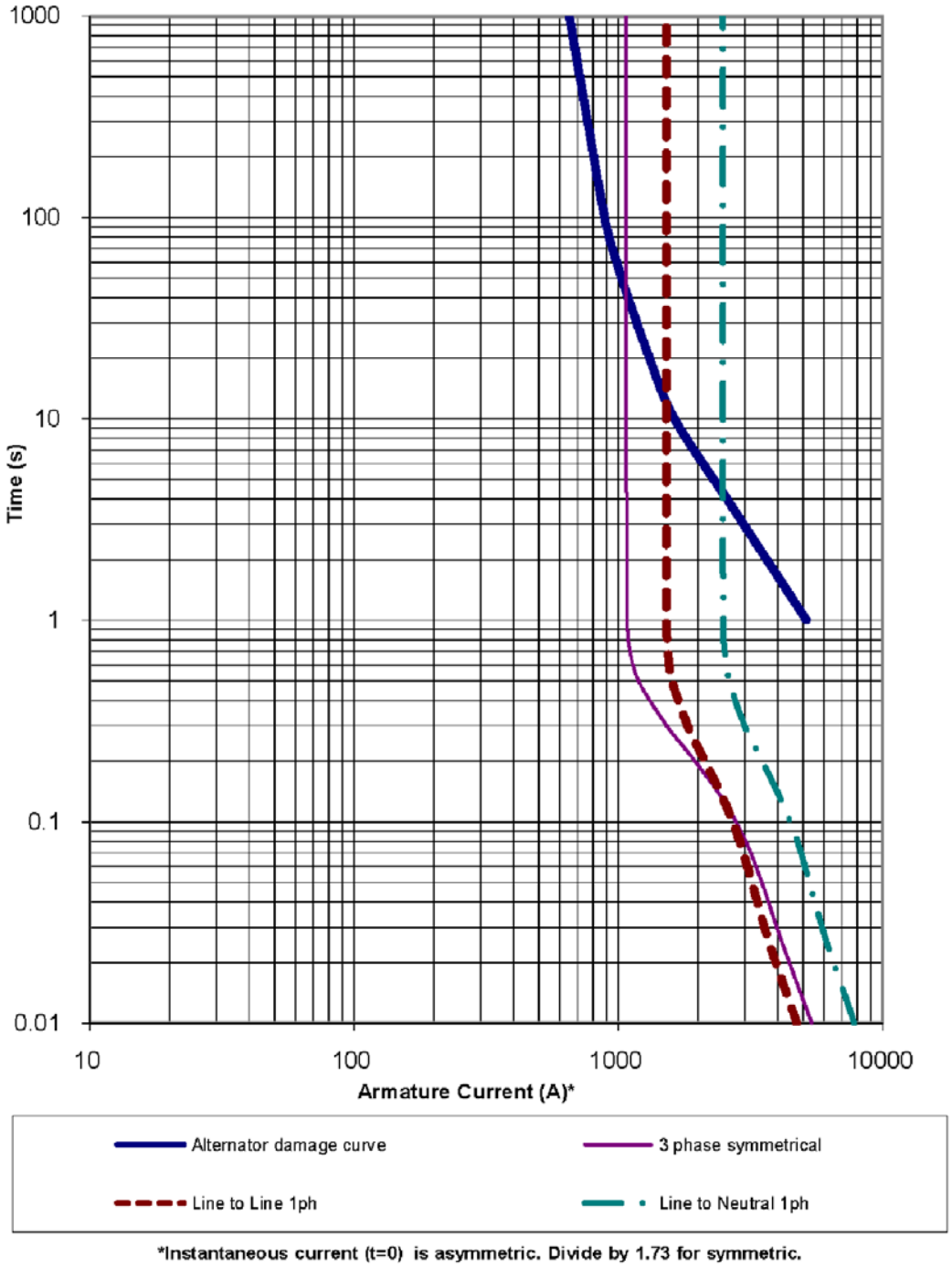


4S13X, 60 Hz, 139/240, 277/480 Volts, Wye
TYPICAL MOTOR STARTING CHARACTERISTICS*



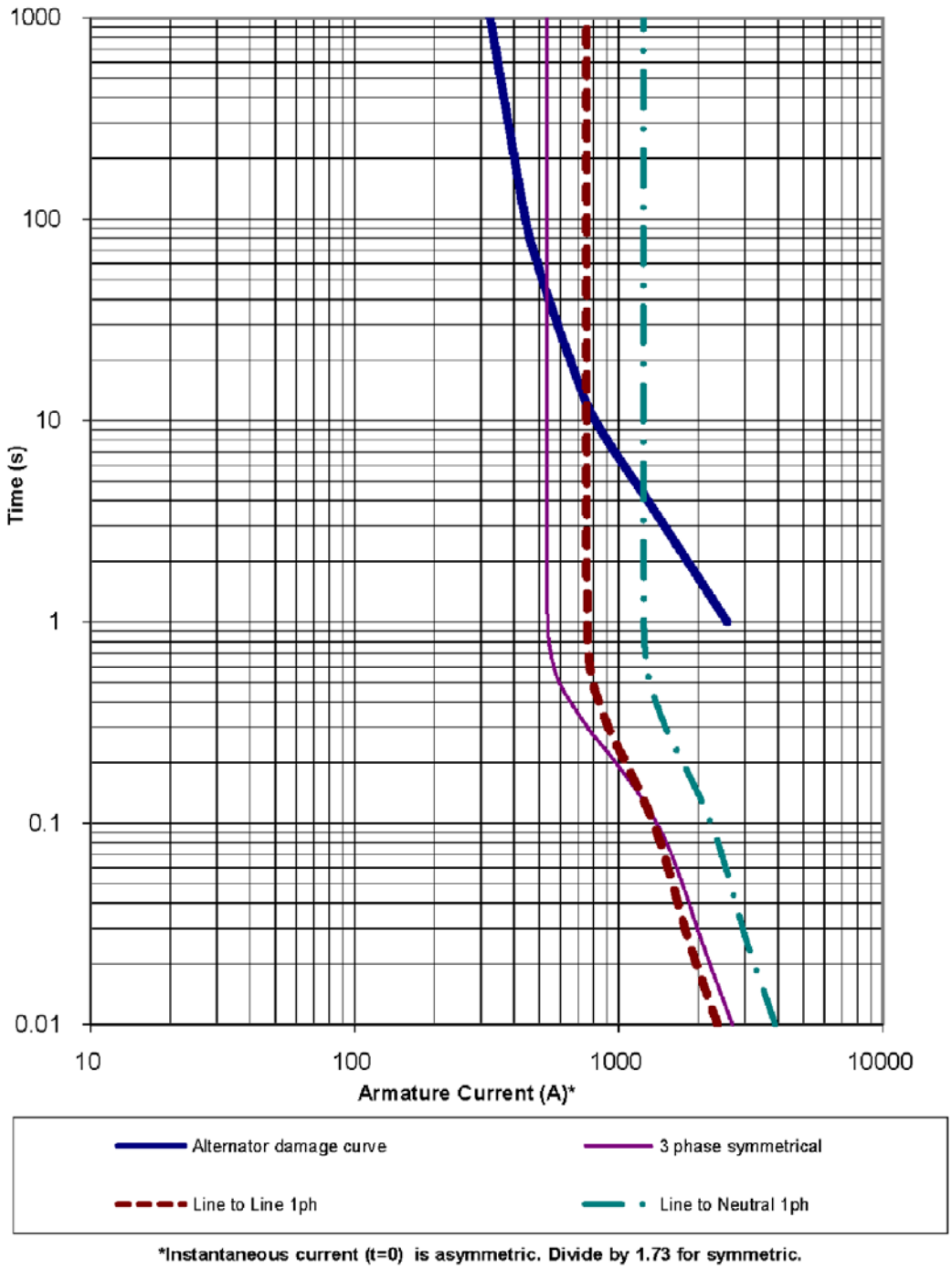
* All data tested in accordance with IEEE Standard 115. Kohler Co. reserves the right to change the design or specifications without notice and without any obligation or liability whatsoever.

4S13X, 60 Hz, Low Wye or Delta Connection
SHORT CIRCUIT DECREMENT CURVE



*Instantaneous current (t=0) is asymmetric. Divide by 1.73 for symmetric.

4S13X, 60 Hz, High Wye Connection
SHORT CIRCUIT DECREMENT CURVE



*Instantaneous current (t=0) is asymmetric. Divide by 1.73 for symmetric.

rehlko

Cooling Data

TECHNICAL INFORMATION BULLETIN

Generator Set Cooling System Data Sheet

	50°C Ambient Temperature Cooling System								
KG200 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)*	50 (122)	48 (118)	47 (117)	45 (113)	43 (109)	41 (106)	45 (113)
	Cooling system airflow	m^3/min *(ft^3/min)*	330 (11700)	308 (10900)	295 (10400)	282 (10000)	268 (9500)	253 (8900)	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.

rehlko

Sound Data

TECHNICAL INFORMATION BULLETIN

Generator Set Sound Data Sheet

			Sound Pressure Data in dB(A)					
Generator Set Model	**Hz**	**Load**	**Raw Exhaust (No Catalyst, No Silencer)**	**Raw Exhaust (Open Unit Catalyst, No Silencer)**	**Open Unit, Isolated Exhaust**	**Weather Enclosure**	**Standard Sound**	**Premium Sound**
KG200	**60**	100% Load	110.8	103.5	87.4	85.5	73.4	70.8
		No Load	95.9	94.5	82.8	80.9	68.5	65.8

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.

KG200		**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)	Premium Sound	3:00	52.2	61.6	62.8	63.3	62.8	61.1	56.2	50.7	69.7
			1:30	48.0	62.5	61.9	65.1	65.3	61.7	58.1	50.7	70.9
			12:00-Engine	50.5	62.4	62.7	65.1	65.1	62.4	60.9	54.6	71.3
			10:30	52.0	62.9	61.2	65.8	66.4	63.0	60.7	54.5	71.8
			9:00	50.5	59.2	60.5	63.7	64.4	62.0	58.3	51.9	69.8
			7:30	51.2	61.4	61.7	63.1	64.8	64.1	56.9	51.2	70.5
			6:00-Alternator	53.6	63.1	64.9	63.5	65.2	64.4	58.5	54.2	71.7
			4:30	51.0	62.5	63.9	62.5	64.1	63.0	55.6	51.3	70.5
			8-pos. log avg.	51.4	62.1	62.7	64.2	64.9	62.8	58.5	52.7	70.8

				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)	Standard Sound	3:00	54.9	63.2	64.8	68.6	63.7	61.0	57.4	53.6	72.3
			1:30	51.6	63.0	63.5	68.1	65.3	63.0	58.8	53.2	72.3
			12:00-Engine	53.6	62.6	62.7	66.7	66.0	63.6	62.1	56.1	72.3
			10:30	53.8	62.6	63.3	68.6	65.7	63.2	60.8	56.5	72.8
			9:00	53.0	63.8	65.1	68.8	65.9	64.3	62.0	57.3	73.5
			7:30	54.8	63.5	65.8	69.5	65.3	63.6	60.8	57.6	73.6
			6:00-Alternator	54.5	66.7	70.2	70.4	66.3	63.7	62.6	60.2	75.6
			4:30	54.4	65.5	65.3	70.6	63.9	62.6	60.1	55.5	73.9
			8-pos. log avg.	53.9	64.1	65.8	69.1	65.4	63.2	60.9	56.8	73.4

				Sound Pressure Levels, dB(A)								
Load	Distance, m (ft)	Enclosure	Measurement Clock Position	3:00	1:30	12:00 Eng.	10:30	9:00	7:30	6:00 Alt.	4:30	8-pos. log avg.
100% Load	7 (23)	Weather	Overall Levels	85.8	86.0	84.9	85.9	86.8	85.9	82.6	84.9	85.5

				Sound Pressure Levels, dB(A)								
Load	Distance, m (ft)		Measurement Clock Position	Octave Band Center Frequency (Hz)								Overall Level
				63	125	250	500	1000	2000	4000	8000	
100% Load	7 (23)	Open Unit, Isolated Exhaust	3:00	50.2	65.9	75.2	80.5	80.0	82.3	80.4	77.0	87.7
			1:30	54.3	66.1	76.9	81.0	81.0	82.4	79.3	75.7	87.9
			12:00-Engine	53.3	67.8	76.6	79.9	82.4	79.9	74.6	74.2	86.8
			10:30	53.2	67.4	73.9	80.3	81.0	81.9	80.1	78.4	87.8
			9:00	54.6	71.2	76.6	81.0	79.5	84.5	80.5	77.9	88.7
			7:30	52.3	67.7	76.5	81.3	79.6	81.6	79.7	78.1	87.8
			6:00-Alternator	50.7	65.8	76.8	78.2	76.8	77.2	75.8	74.2	84.5
			4:30	56.2	65.5	75.3	79.9	79.4	80.9	79.3	76.4	86.8
			8-pos. log avg.	53.5	67.6	76.1	80.4	80.2	81.8	79.1	76.8	87.4

Load	Distance, m (ft)	Exhaust	Sound Pressure Levels, dB(A)								
			Octave Band Center Frequency (Hz)								Overall Level
			63	125	250	500	1000	2000	4000	8000	
100% Load	1 (3.3)	Raw Exhaust (Open Unit Catalyst, No Silencer)	69.4	90.4	98.6	94.5	95.5	98.0	90.9	79.7	103.5

Load	Distance, m (ft)	Exhaust	Sound Pressure Levels, dB(A)								
			Octave Band Center Frequency (Hz)								Overall Level
			63	125	250	500	1000	2000	4000	8000	
100% Load	1 (3.3)	Raw Exhaust (No Catalyst, No Silencer)	76.3	88.2	98.9	104.5	104.7	105.6	101.8	94.5	110.8

KG200		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)	Premium Sound	3:00	47.1	54.9	60.0	58.9	56.3	53.8	46.4	37.4	64.5
			1:30	44.3	56.8	57.7	59.9	58.5	55.4	48.1	37.4	65.1
			12:00-Engine	45.1	56.5	60.2	58.7	59.0	56.3	48.0	39.9	65.5
			10:30	46.2	57.4	61.7	60.8	57.6	54.6	48.1	38.9	66.2
			9:00	46.5	53.4	57.6	57.3	55.2	53.9	47.8	39.5	63.1
			7:30	47.3	57.7	61.4	58.5	58.1	57.3	47.1	37.2	66.0
			6:00-Alternator	50.2	58.2	63.5	60.8	62.0	59.7	51.2	42.9	68.3
			4:30	46.7	57.1	60.8	58.3	58.0	55.9	47.1	37.8	65.5
			8-pos. log avg.	47.0	56.7	60.8	59.3	58.5	56.3	48.2	39.3	65.8

Load	Distance, m (ft)	Enclosure	Measurement Clock Position	Sound Pressure Levels, dB(A)								
				Octave Band Center Frequency (Hz)								Overall Level
				63	125	250	500	1000	2000	4000	8000	
No Load	7 (23)	Standard Sound	3:00	48.9	59.1	62.9	64.5	58.0	53.1	47.8	41.6	68.2
			1:30	45.7	59.7	60.8	63.6	58.5	54.7	47.5	37.9	67.4
			12:00-Engine	48.1	59.1	60.2	61.5	59.4	55.7	47.1	38.4	66.7
			10:30	46.5	57.8	61.6	63.4	58.1	56.1	47.3	39.0	67.3
			9:00	49.7	59.3	62.1	64.0	57.4	55.9	49.6	41.9	67.9
			7:30	50.3	59.4	63.6	63.3	58.4	56.3	48.4	39.2	68.2
			6:00-Alternator	53.1	62.8	69.5	65.2	60.4	56.1	49.5	42.0	72.0
			4:30	51.6	60.6	62.8	63.1	56.7	54.6	48.1	38.6	67.8
			8-pos. log avg.	49.9	60.0	64.1	63.7	58.5	55.4	48.3	40.1	68.5

Load	Distance, m (ft)	Enclosure	Measurement Clock Position	Sound Pressure Levels, dB(A)							
				3:00	1:30	12:00 Eng.	10:30	9:00	7:30	6:00 Alt.	4:30	8-pos. log avg.
No Load	7 (23)	Weather	Overall Levels	80.6	82.6	80.2	81.6	81.5	81.0	78.2	80.0	80.9

Load	Distance, m (ft)	Enclosure	Measurement Clock Position	Sound Pressure Levels, dB(A)								
				Octave Band Center Frequency (Hz)								Overall Level
				63	125	250	500	1000	2000	4000	8000	
No Load	7 (23)	Open Unit, Isolated Exhaust	3:00	49.3	64.5	72.7	76.3	77.1	76.0	73.3	64.7	82.5
			1:30	49.2	64.4	75.1	76.7	79.0	79.5	74.6	65.3	84.5
			12:00-Engine	48.4	65.1	74.6	74.1	76.8	76.1	71.4	63.5	82.1
			10:30	48.8	63.5	72.7	76.0	78.5	77.6	74.6	66.1	83.5
			9:00	50.1	64.2	74.5	77.7	76.4	77.2	74.4	65.8	83.4
			7:30	48.6	64.7	74.6	76.7	76.6	76.6	73.4	65.0	82.9
			6:00-Alternator	48.6	63.9	74.8	74.3	73.5	71.4	67.3	58.5	80.1
			4:30	49.7	64.5	73.5	75.0	76.9	75.1	71.9	62.4	81.9
			8-pos. log avg.	49.1	64.4	74.2	76.0	77.1	76.7	73.1	64.4	82.8

Load	Distance, m (ft)	Exhaust	Sound Pressure Levels, dB(A)								
			Octave Band Center Frequency (Hz)								Overall Level
			63	125	250	500	1000	2000	4000	8000	
No Load	1 (3.3)	Raw Exhaust (No Silencer)	60.9	83.1	82.7	88.6	89.0	88.1	83.7	75.2	94.5

Load	Distance, m (ft)	Exhaust	Sound Pressure Levels, dB(A)								
			Octave Band Center Frequency (Hz)								Overall Level
			63	125	250	500	1000	2000	4000	8000	
No Load	1 (3.3)	Raw Exhaust (No Catalyst, No Silencer)	56.9	77.2	85.9	90.0	90.8	90.0	83.0	75.3	95.9

rehlko

Exhaust System Data

TECHNICAL INFORMATION BULLETIN

Enclosed Generator Set Exhaust System Data Sheet

Model	Enclosure Type	Consumed Back Pressure in. Hg (in. H_2O)	Consumed Back Pressure kPa	Back Pressure Limit(s) in. Hg (in. H_2O)	Back Pressure Limit(s) kPa	Flex Exhaust Tube(s)	Silencer	Drawing
KG200	All Weather and Sound Enclosures	3.1 (43.5)	10.5	5.8 (80.0)	19.8	GM105539 Flex Tube	GM107092 Catalyst Muffler	ADV-9045

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.

rehlko

Emissions Data

KG200

60 Hz. Gas Generator Set
EPA Certified for Stationary Emergency Applications
EMISSION DATA SHEET

ENGINE INFORMATION

Model:	KG10V08T-6DGS	Bore:	116.8mm (4.6 in.)
Max kW @ 1800 RPM:	227 (NG) 178 (LPG)	Stroke:	120.6mm (4.7 in.)
Type:	4-Cycle,V8 Cylinder	Displacement:	10.3 L (632 cu. in.)
Aspiration:	Turbocharged	EPA Family:	SKHXB10.3TNL
Compression Ratio:	9.3:1	EPA Certificate:	SKHXB10.3TNL-008
Catalyst Required:	Yes		

EXHAUST EMISSION DATA[1] (g/kW-hr):

	LPG	NG
CO_2	833	600
NOx	0.15	0.20
THC/VOC[2]	0.03	0.03
CO	0.54	0.40
BSFC	294	219

1) Emissions shown are certified third-party zero-hour data points suitable for site permitting calculations

2) LPG as THC, NG as VOC

TEST METHODS AND CONDITIONS

Standby and overload ratings based on ISO 3046. Continuous ratings based on ISO 8528.
Max power rating is measured at the flywheel operating at standard conditions in a test cell.
Production tolerances in engines and installed components can account for power variations of +/- 5%. Corrections for altitude, temperature and excessive exhaust and intake restrictions should be applied to power calculations.

Electrical ratings are an estimate based on assumed fan and generator losses and may vary depending on actual equipment losses.
Emission rates are based on multi-mode, cycle-weighted testing in accordance with EPA regulations.
BSFC is based on cycle-weighted gross flywheel power rating and does not include fan or generator losses.

Data was taken from a single engine test according to EPA engine test methods, fuel specifications and reference conditions and is subject to instrumentation and engine-to-engine variability. Tests conducted with alternate test methods, instrumentation, fuel or reference conditions may yield different results.

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: **Discovery Energy, LLC.**
(U.S. Manufacturer or Importer)

Certificate Number: SKHXB10.3TNL-008

Effective Date: 12/13/2024

Expiration Date: 12/31/2025

Byron J. Bunker, Division Director
Compliance Division

Issue Date: 12/13/2024

Revision Date: N/A

Manufacturer: Discovery Energy, LLC.
Engine Family: SKHXB10.3TNL
Mobile/Stationary Certification Type: Stationary
Fuel : Natural Gas (CNG/LNG)
LPG/Propane
Emission Standards :
Stationary Part 1048
HC + NOx (g/kW-hr) : 2.7
NMHC + NOx (g/kW-hr) : 2.7
CO (g/kW-hr) : 4.4
Part 60 Subpart JJJ Table 1
NOx (g/Hp-hr) : 2.0
VOC (g/Hp-hr) : 1.0
CO (g/Hp-hr) : 4.0
Emergency Use Only : Y

Pursuant to Section 213 of the Clean Air Act (42 U.S.C. section 7547) and 40 CFR Part 60, 40 CFR Part 60, 1065, 1068, and 60 (stationary only and combined stationary and mobile) 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 nonroad engines, by engine family, more fully described in the documentation required by 40 CFR Part 60, 40 CFR Part 60 and produced in the stated model year.

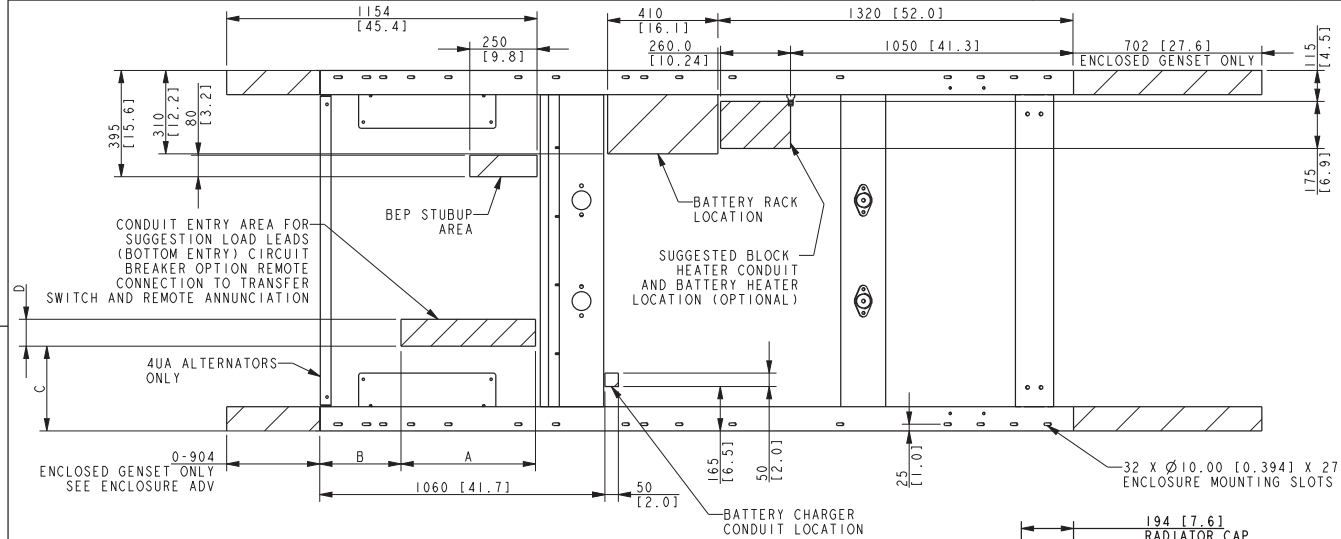
This certificate of conformity covers only those new nonroad spark-ignition engines which conform in all material respects to the design specifications that applied to those engines described in the documentation required by 40 CFR Part 60, 40 CFR Part 60 and which are produced during the model year stated on this certificate of the said manufacturer, as defined in 40 CFR Part 60, 40 CFR Part 60. This certificate of conformity does not cover nonroad engines imported prior to the effective date of the certificate.

It is a term of this certificate that the manufacturer shall consent to all inspections described in 40 CFR 1068.20 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, 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, 40 CFR Part 60.

This certificate does not cover large nonroad 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.

rehlko

Dimensional Drawings



	4UA9, 4UA13 mm [IN]	4R13X, 4S12X, 4T13X, 4S13X mm [IN]
A	500 [19.7]	400 [15.7]
B	302 [11.9]	400 [15.7]
C	315 [12.4]	300 [11.8]
D	100 [3.9]	150 [5.9]
E	1376 [54.2]	1244 [49.0]
F	50 [2.0]	311 [12.2]

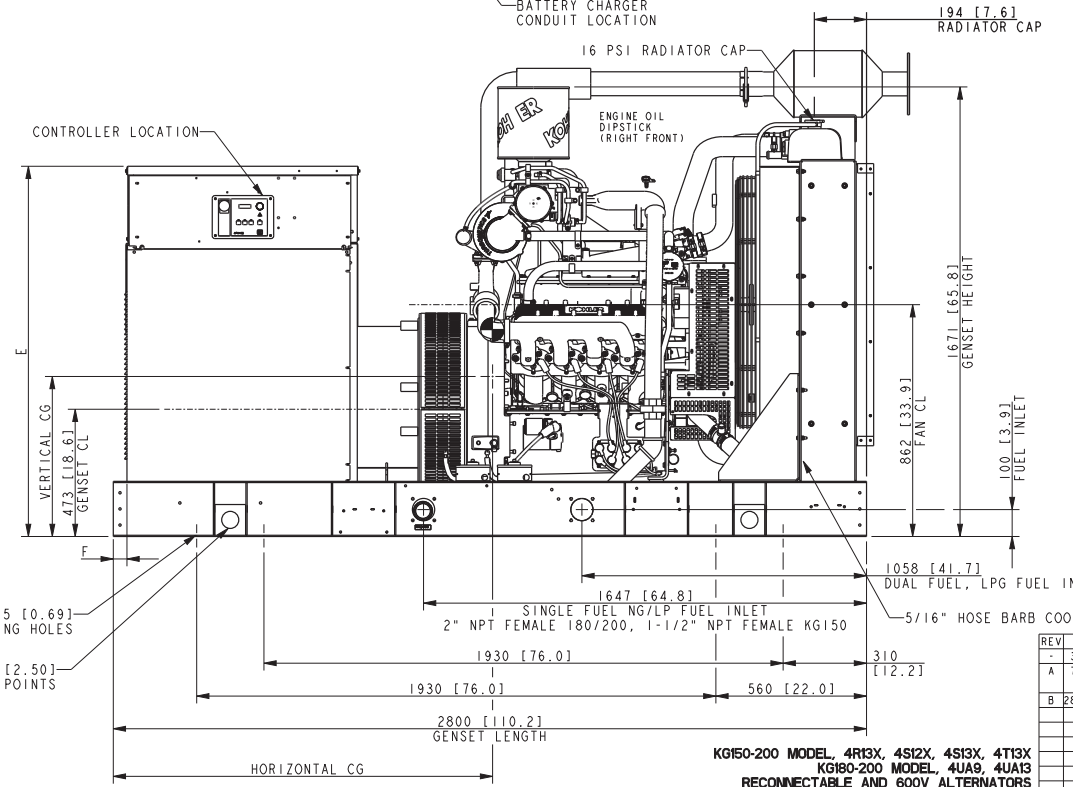
NOTES:

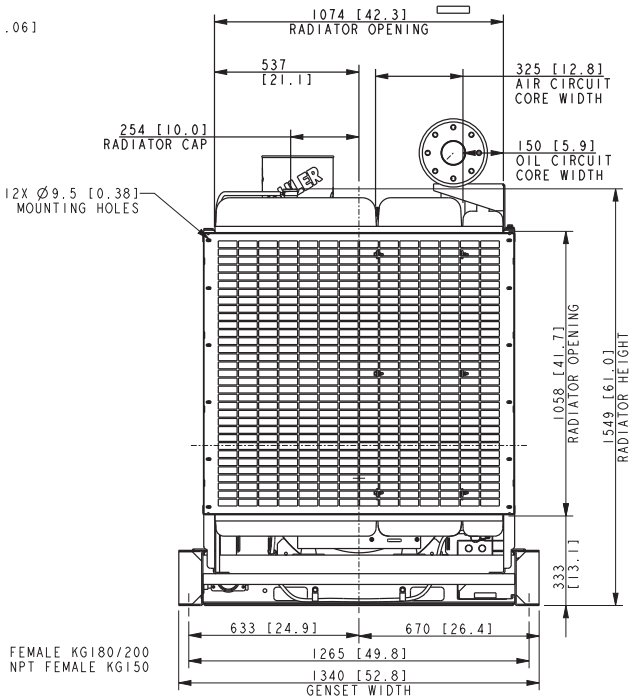
1. IF ENCLOSURE IS INSTALLED, REFER TO ENCLOSURE ADV.
2. IF IBC CERTIFICATION IS REQUIRED SEE SEISMIC ADV FOR INSTALLATION INSTRUCTIONS.

NOTE: DIMENSIONS IN [ ] ARE ENGLISH EQUIVALENTS.

MODEL	ALTERNATOR	GENSET MAX WEIGHT kg (lb)	HORIZONTAL CG mm [IN]	VERTICAL CG mm [IN]
KG150	4R13X	1420 [3135]	1410 [55.5]	600 [23.5]
KG150	4T13X	1420 [3135]	1410 [55.5]	600 [23.5]
KG150 / KG180	4S12X	1460 [3225]	1380 [54.3]	585 [23.0]
KG150 / KG180 / KG200	4S13X	1500 [3310]	1350 [53.3]	585 [23.0]
KG200	4UA9	1850 [4085]	1230 [48.5]	555 [21.8]
KG180 / KG200	4UA13	2030 [4480]	1155 [45.5]	555 [21.8]

* WOOD BASE IS AN ADDITIONAL 120 kg [265 lb]





KG150-200 MODEL, 4R13X, 4S12X, 4S13X, 4T13X
KG180-200 MODEL, 4UA9, 4UA13
RECONNECTABLE AND 600V ALTERNATORS

REV	DATE	ON COMPOSITE DWGS, SEE PART NO. FOR REVISION LEVEL	BY
-	3-19-20	NEW DRAWING [CT202736]	PAS
A	7-14-21	(D-7) DIM 1154 ADDED, DIM 250 ADDED;(D-8) DIM 80 ADDED, DIM 395 ADDED [CT213319]	WHA
B	28OCT2021	SEE SHEET 2 [CT215755]	SAK

DO NOT SCALE, REFERENCE THE MODEL FOR ALL UNSPECIFIED DIMENSIONS

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

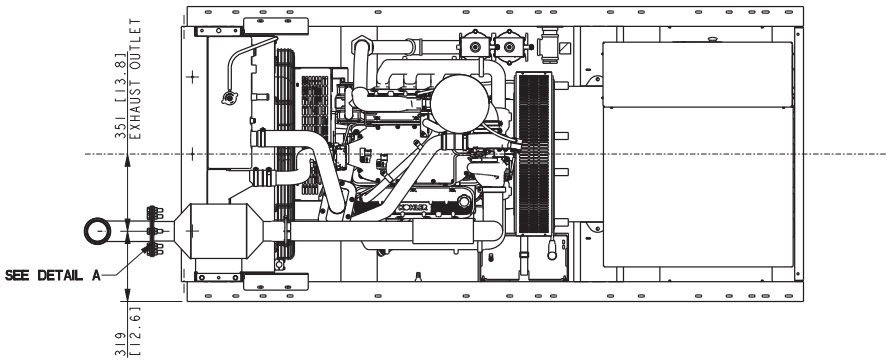
THIRD ANGLE PROJECTION

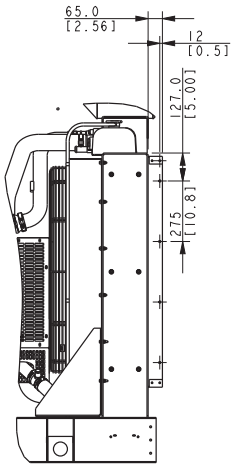
APPROVALS		DATE
DRAWN	PAS	3-19-20
CHECKED	DJV	3-19-20
APPROVED	WDG	3-19-20

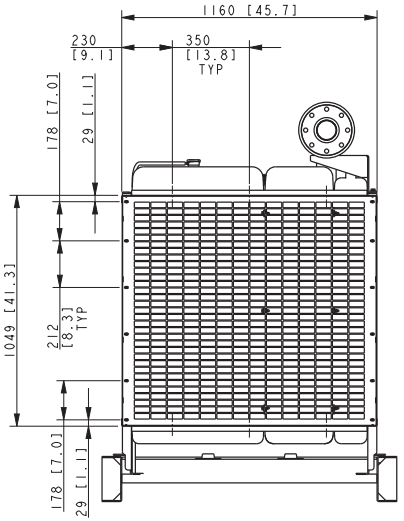
TITLE: DIMENSION PRINT, KG150-200

SCALE 0.11 | CAD NO. | SHEET 1 of 3

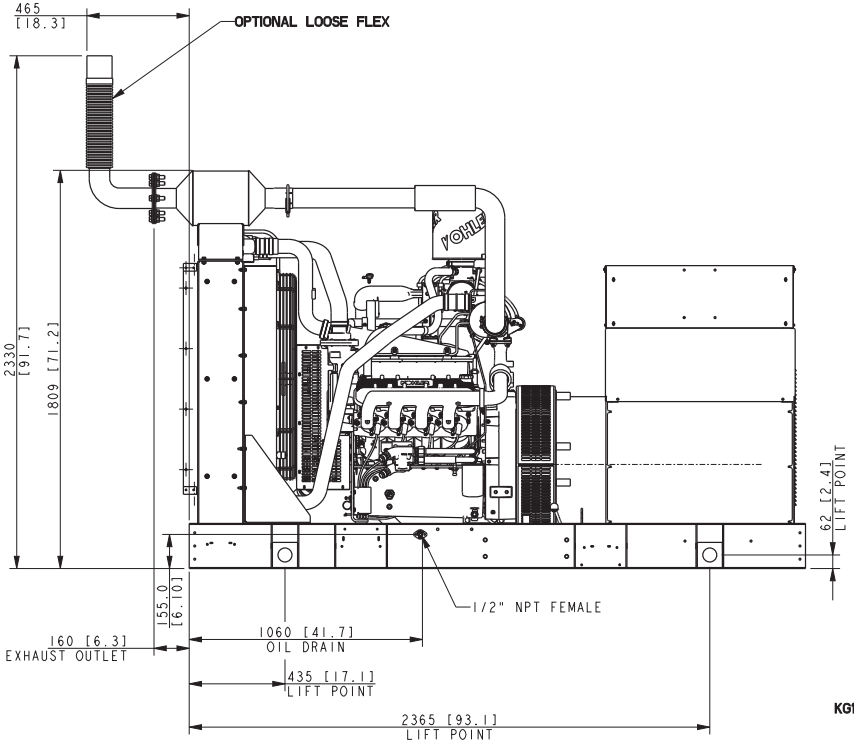
DWG NO. ADV-9045 | D

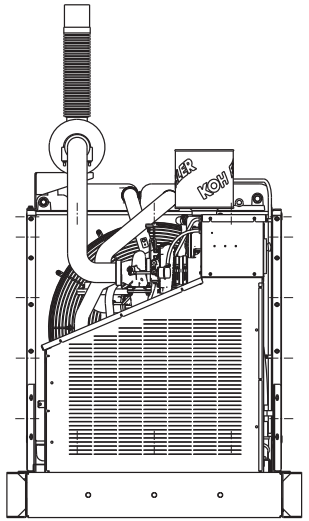


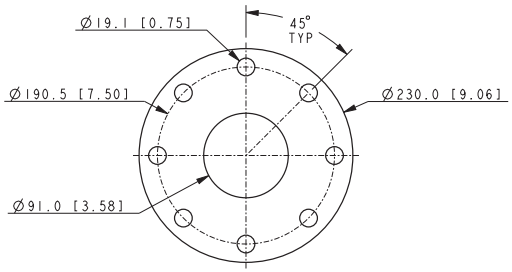




OPTIONAL RADIATOR DUCT FLANGE AND STONE GUARD







SCALE 0.38

EXHAUST OUTLET
ASME B16.5 NPS 4

DETAIL A

KG150-200 MODEL, 4R13X, 4S12X, 4S13X, 4T13X
KG180-200 MODEL, 4UA9, 4UA13
RECONNECTABLE AND 600V ALTERNATORS

REV	DATE	ON COMPOSITE DWGS, SEE PART NO. FOR REVISION LEVEL	BY
-	3-19-20	NEW DRAWING [CT202736]	PAS
A	7-14-21	SEE SHEET 1 [CT213319]	WHA
B	28OCT2021	VIEWS UPDATED TO SHOW FLEX EXHAUST, (B-812330 ADDED, (C-8) 465 ADDED [CT215755]	SAK

DO NOT SCALE, REFERENCE THE MODEL FOR ALL UNSPECIFIED DIMENSIONS

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

THIRD-ANGLE PROJECTION

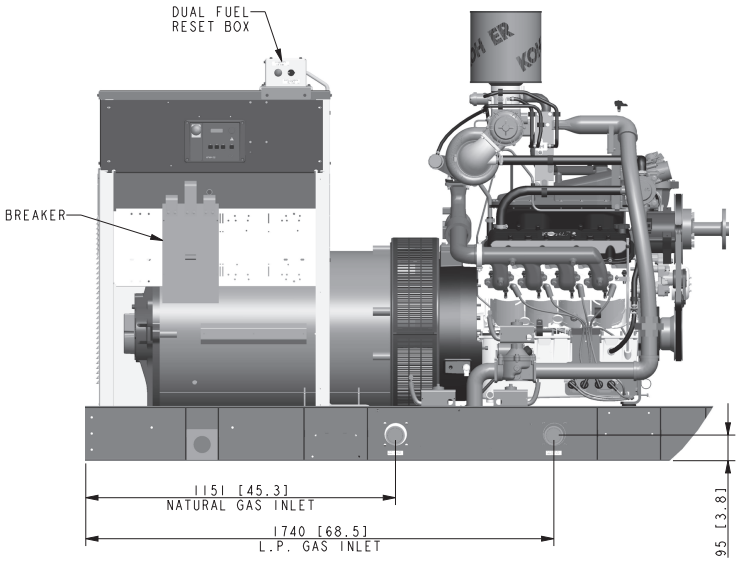
APPROVALS		DATE
DRAWN	PAS	3-19-20
CHECKED	DJV	3-19-20
APPROVED	WDG	3-19-20

KOHLER.
KOHLER, WISCONSIN 53044

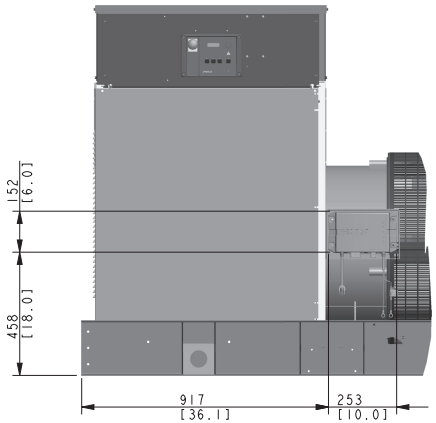
TITLE
DIMENSION PRINT, KG150-200

SCALE 0.09 | CAD NO. | SHEET 2 of 3

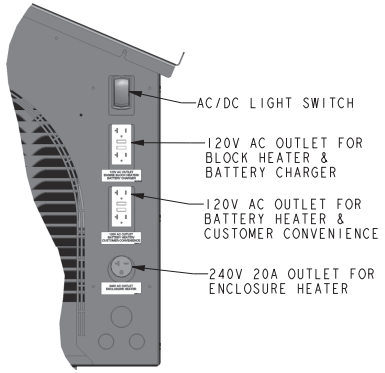
DWG NO. ADV-9045 | D



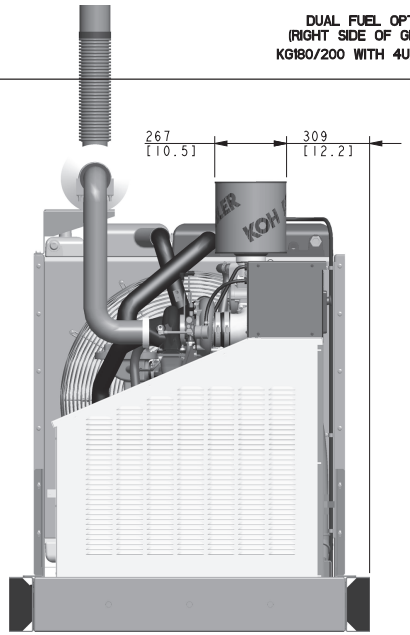
DUAL FUEL OPTION
(RIGHT SIDE OF GENSET)
KG180/200 WITH 4UA SHOWN

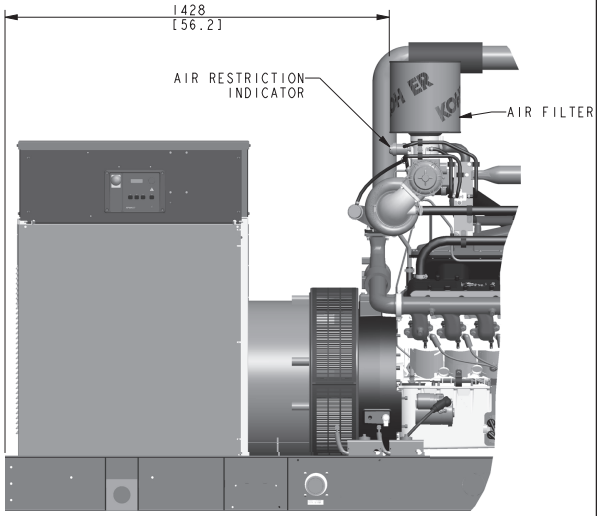


BATTERY CHARGER
(RIGHT SIDE OF GENSET)

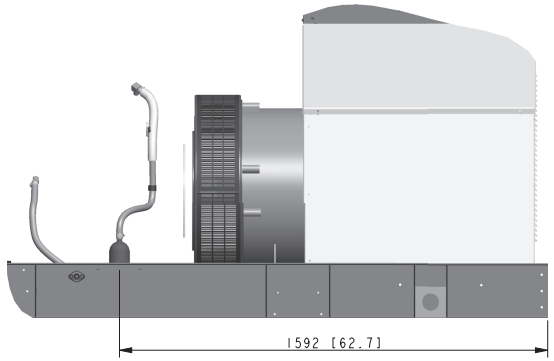


BASIC ELECTRICAL PACKAGE
SCALE 0.25
VIEW OF FRONT OF JUNCTION BOX
FROM FRONT OF GENSET





STANDARD DUTY AIR CLEANER
(RIGHT SIDE OF GENSET)



BLOCK HEATER
(LEFT SIDE OF GENSET)

REV	DATE	ON COMPOSITE DWGS, SEE PART NO. FOR REVISION LEVEL	BY
-	3-19-20	NEW DRAWING [CT202736]	PAS
A	7-14-21	SEE SHEET 1 [CT213319]	WHA
B	28OCT2021	SEE SHEET 2 [CT215755]	SAK

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	PAS	3-19-20
CHECKED	DJV	3-19-20
APPROVED	WDG	3-19-20

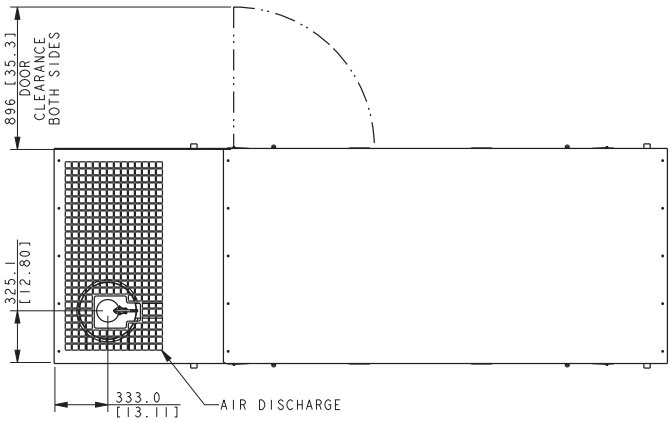
KOHLER.
KOHLER, WISCONSIN 53044

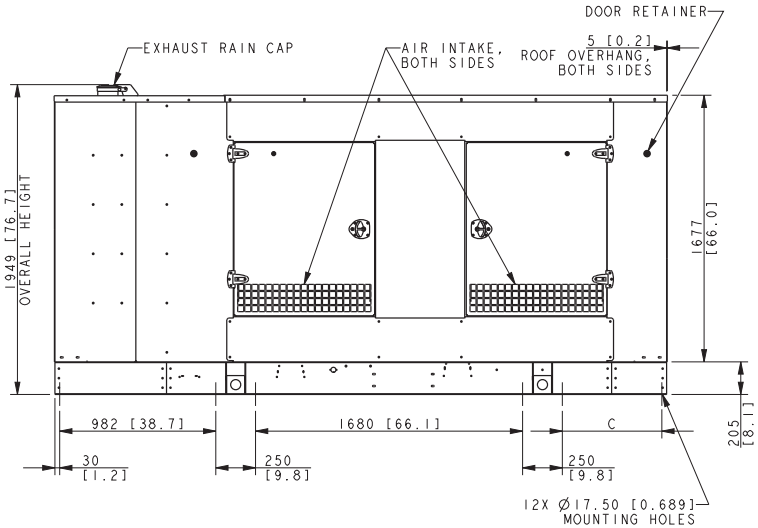
TITLE
DIMENSION PRINT, KG150-200

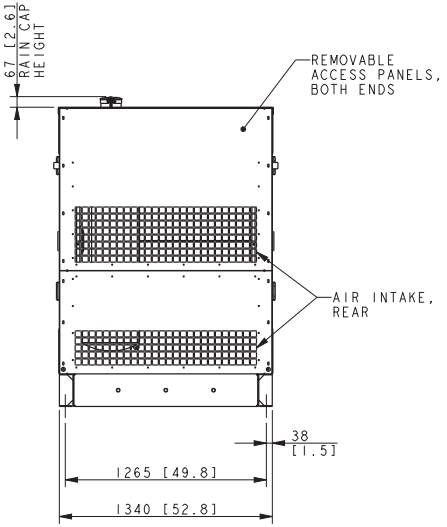
SCALE 0.11 | CAD NO. | SHEET 3 of 3

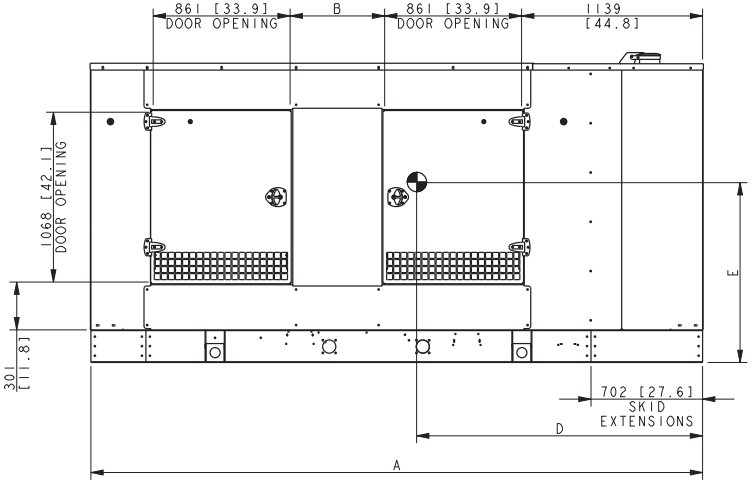
DWG NO. ADV-9045 | D

ENCLOSURE INFORMATION							
NODE	MODEL	ENCLOSURE WEIGHT kg [lb]	LENGTH DIM A mm [in]	DOOR DIM B mm [in]	MOUNTING DIM C mm [in]	HOR CG DIM D mm [in]	VER CG DIM E mm [in]
150	STANDARD STEEL SOUND	632 [1393]	3502 [137.9]	335 [13.2]	NA	1593 [62.7]	1089 [42.9]
	STANDARD STEEL WEATHER	611 [1347]				1590 [62.6]	1082 [42.6]
	STANDARD ALUM SOUND	476 [1050]				1547 [60.9]	1045 [41.2]
180-200	STANDARD STEEL SOUND	668 [1472]	3848 [151.5]	595 [23.4]	626 [24.6]	1741 [68.5]	1100 [43.3]
	STANDARD STEEL WEATHER	645 [1422]				1743 [68.6]	1082 [42.6]
	STANDARD ALUM SOUND	607 [1339]				1793 [70.6]	1136 [44.7]









NOTE:

IF IBC CERTIFICATION IS REQUIRED, SEE SEISMIC ADV FOR INSTALLATION INSTRUCTIONS

DIMENSIONS IN [ ] ARE ENGLISH EQUIVALENTS

REV	DATE	ON COMPOSITE DWGS, SEE PART NO. FOR REVISION LEVEL	BY
-	15NOV2019	NEW DRAWING [CT200025]	ZJS
A	07MAY2020	(D-1) REMOVED NON-PRODUCTION MODEL	
		INFORMATION FROM TABLE [CT204048]	ZJS
B	25JUL2020	SEE SHEET 2 [CT205576]	SSS

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	ZJS	15NOV2019
CHECKED	KJB	15NOV2019
APPROVED	JMP	15NOV2019

KOHLER
KOHLER, WISCONSIN 53044

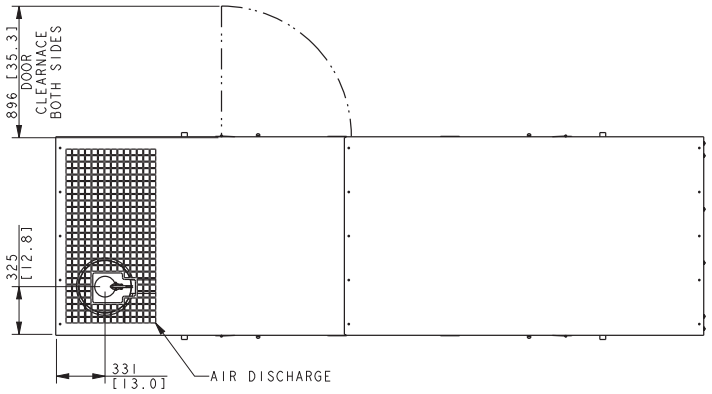
TITLE: DIMENSION PRINT, KG150-200 10.3L ENCL

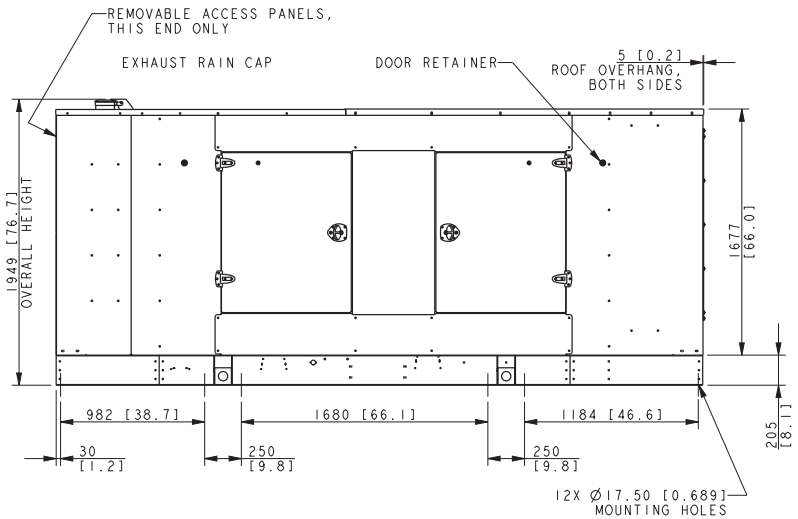
SCALE 0.07 | CAD NO. | SHEET 1 of 3

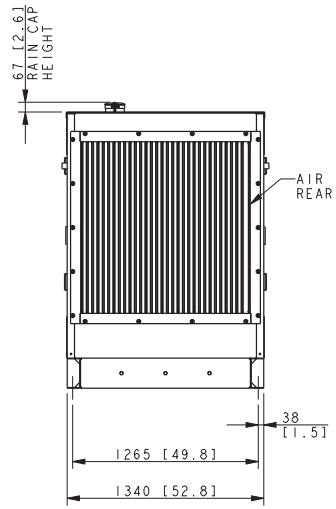
DWG NO. ADV-9110 | D

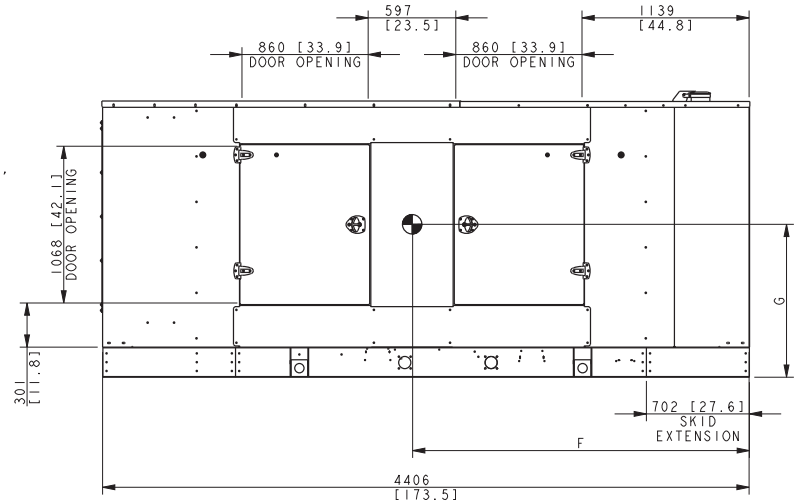
KG150 STANDARD
KG180-200 STANDARD
ENCLOSURES

ENCLOSURE INFORMATION				
NODE	MODEL	ENCLOSURE WEIGHT kg [lb]	HOR CG DIM F mm [in]	VER CG DIM G mm [in]
150-200	PREMIUM STEEL SOUND	780 [1720]	2243 [88.3]	1087 [42.8]
	PREMIUM ALUM SOUND	608 [1340]	2293 [90.3]	1042 [41]









NOTE:

IF IBC CERTIFICATION IS REQUIRED, SEE SEISMIC ADV FOR INSTALLATION INSTRUCTIONS

DIMENSIONS IN [ ] ARE ENGLISH EQUIVALENTS

REV	DATE	ON COMPOSITE DWGS, SEE PART NO. FOR REVISION LEVEL	BY
-	15NOV2019	NEW DRAWING [CT200025]	ZJS
A	07MAY2020	SEE SHEET 1 [CT204048]	ZJS
B	25JUL2020	(D-3) "PREMIUM" WAS "CONFIGURED" [CT205576]	SSS

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	ZJS	15NOV2019
CHECKED	KJB	15NOV2019
APPROVED	JMP	15NOV2019

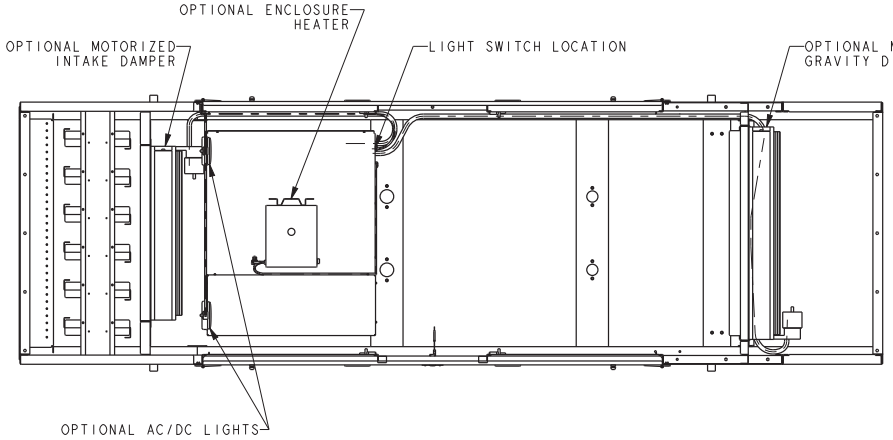
KOHLER
KOHLER, WISCONSIN 53044

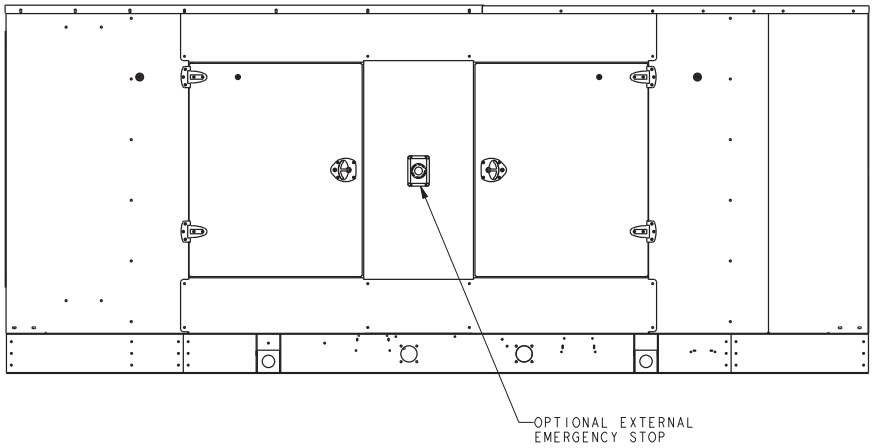
TITLE: DIMENSION PRINT, KG150-200 10.3L ENCL

SCALE 0.06 | CAD NO. | SHEET 2 of 3

DWG NO. ADV-9110 | D

KG150-200 CONFIGURED ENCLOSURES





KG150-200 CONFIGURED OPTIONAL ACCESSORIES

REV	DATE	ON COMPOSITE DWGS, SEE PART NO. FOR REVISION LEVEL	BY
-	15NOV2019	NEW DRAWING [CT200025]	ZJS
A	07MAY2020	SEE SHEET 1 [CT204048]	ZJS
B	25JUL2020	SEE SHEET 2 [CT205576]	SSS

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	ZJS	15NOV2019
CHECKED	KJB	15NOV2019
APPROVED	JMP	15NOV2019

KOHLER.
KOHLER, WISCONSIN 53044

TITLE
DIMENSION PRINT, KG150-200 10.3L ENCL

SCALE 0.08 | CAD NO. | SHEET 3 of 3

DWG NO. **ADV-9110** | **D**

rehlko

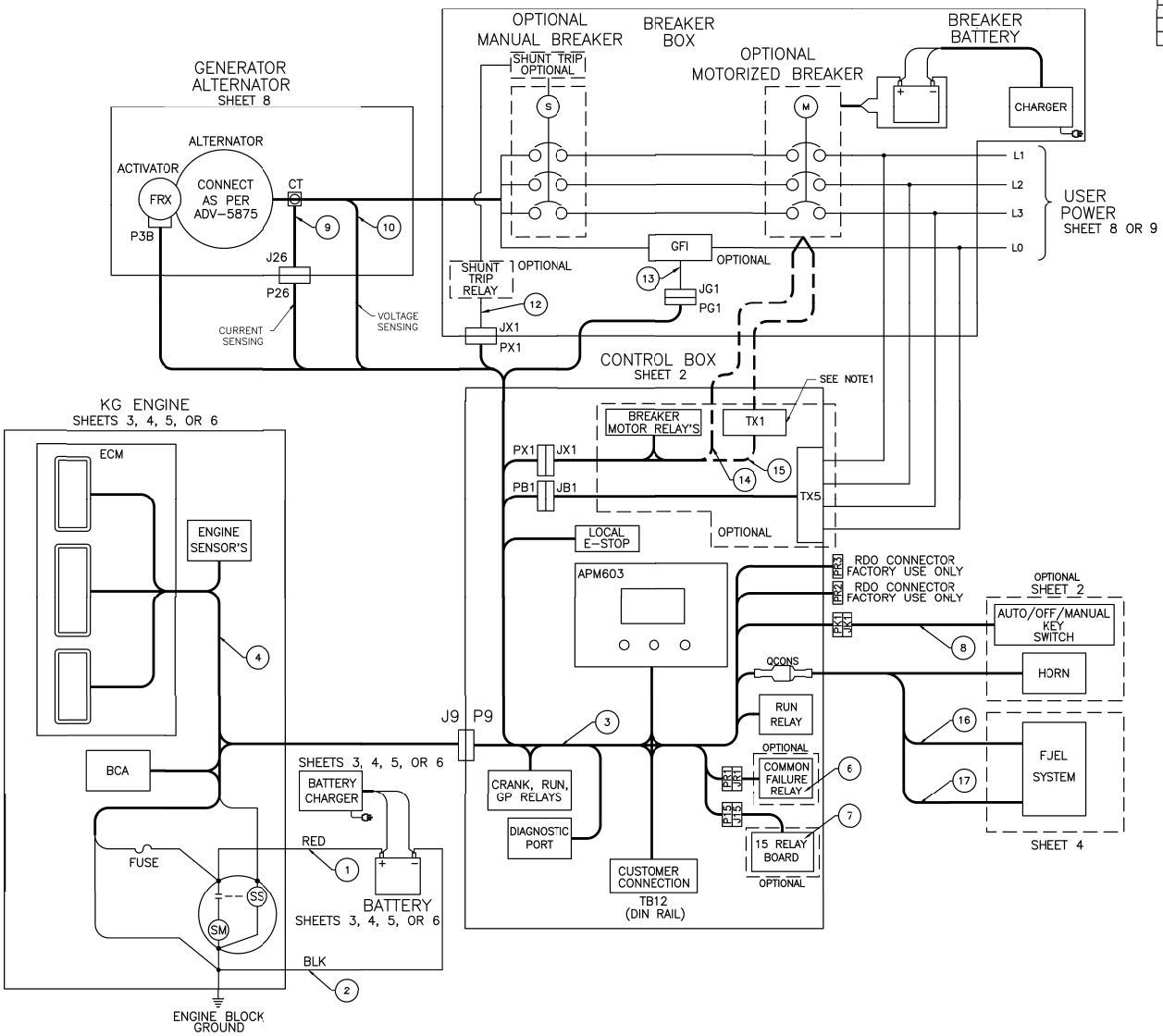
Wiring Schematics

SB NO.	PART NO.	DESCRIPTION	OPTION	FIELD
1	XXXXXX	BATTERY CABLE POSITIVE	–	–
2	XXXXXX	BATTERY CABLE NEGATIVE	–	–
3	GM105222	150–200KW CONTROL BOX HARNESS	–	–
4	GMxxxxxx	ENGINE HARNESS (150–200 KW)	–	–
5	XXXXXX	-	–	–
6	GM105367	COMMON FAILURE RELAY	X	X
7	GM105366	15 RELAY DRY CONTACT	X	X
8	GM105663	RUN/OFF/AUTO KEYSWITCH	X	X
9	GM105368	CURRENT SENSE HARNESS	–	–
10	(GM105222)	VOLTAGE SENSE HARNESS	–	–
11	XXXXXX	-	–	–
12	GM105369	SHUNT TRIP RELAY HARNESS	X	X
13	GM105370	GROUND FAULT HARNESS	X	X
14	GM105371	LOCAL MOTORIZED BREAKER HARNESS	X	–
15	GM105373	REMOTE MOTORIZED BREAKER HARNESS	X	X
16	XXXXXX	FUEL LEVEL SENDER HARNESS	–	–
17	XXXXXX	FUEL LEAK ALARM HARNESS	–	–

REV	DATE	REVISION	BY	H F
D	3-31-20	SEE SHEET 8 [CT203122]	SBR	
E	5-14-20	SEE SHEETS 3 AND 4 [CT203817]	SBR	
F	6-16-20	SEE SHEETS 2 AND 4 [CT204852]	TEV	
G	3-23-21	SEE SHEET 3 [CT210777]	TEV	
H	30APR2024	SEE SHEETS 8 & 9 [CT235296]	DUB	
J	09JAN2025	SEE SHEETS 3 & 4 [CT241463]	CJK	

LEGEND

BCA – BATTERY CHARGING ALTERNATOR
BTCS – BATTERY TEMP COMPENSATION SENSOR
CACT – CHARGE AIR COOLER OUTLET TEMP
CAS – CAM SENSOR
CIT – COMPRESSOR INLET TEMP
CLS – COOLANT LEVEL SENDER
CRS – CRANK SENSOR
CT(#) – CURRENT TRANSFORMER
CTS – COOLANT TEMPERATURE SENDER
D(#) – DIODE
DIAG – DIAGNOSTIC LAMP
ECM – ENGINE CONTROL MODULE
EGR – EXHAUST GAS RECIRCULATION VALE
EGRT – EXHAUST GAS RECIRCULATION TEMP
ESS – EMERGENCY STOP SWITCH
FIC – FUEL INJECTOR CONTROLLER
FLA – FUEL LEAK ALARM
FLS – FUEL LEVEL SENDER
FPC – FUEL PUMP CONNECTOR
FTS – FUEL TEMP SENDER
GPR – GLOW PLUG RELAY
LCT – LOW COOLANT TEMPERATURE SWITCH
MAP – MANIFOLD AIR PRESSURE
MAT – MANIFOLD AIR TEMP SENSOR
OPS – OIL PRESSURE SENDER
P(#) – PLUG
PCV – POSITIVE CRANCRASE VENT 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
TSS – TURBO SPEED SENSOR
VGT – VARIABLE GEOMETRY TURBO
W(#) – WIRE WELD
WFS – WATER IN FUEL SENDER
EBG – ENGINE BLOCK GROUND
GND – CONTROLLER BOX GROUND
PGND – PANEL GROUND



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 PRESSURE	
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	
	28		
	29		
	30		
	31		
	32		
	33		
	34		
SPEED BIAS	35	WHT +/– 10V–	SPEED BIAS (+/– 5%)
	36	BLK +/– 10V+	
	37	S9 UNINS.	
VOLTAGE BIAS	38	WHT +/– 10V–	VOLTAGE BIAS (+/– 5%)
	39	BLK +/– 10V+	
	40	S10 UNINS.	

* REMOVE RESISTORS IF PARALLELING

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

APM603 CONTROLLER
150–200KW 10.3L
W/ SPLIT ACTIVATOR, 1ø, 3ø & 600V

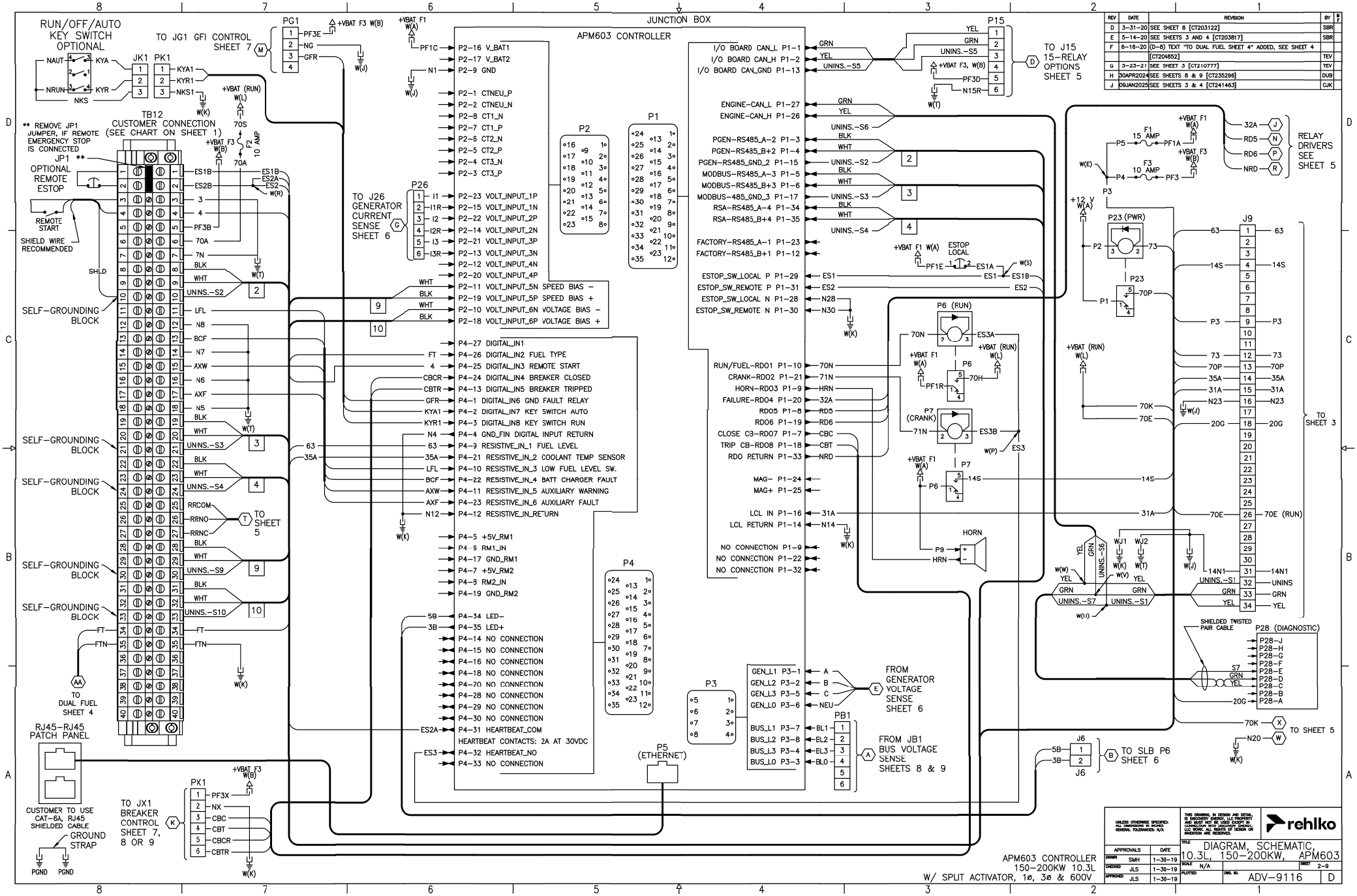
UNLESS OTHERWISE SPECIFIED: FOLLOWDIMENSIONS IN INCHES GENERAL TOLERANCES: N/A

THIS DRAWING, IN DESIGN AND DETAIL, IS DISCOVERY ENERGY, LLC PROPERTY AND MUST NOT BE USED, EXCEPT IN CONNECTION WITH WORK DONE BY DISCOVERY ENERGY, LLC. WORK. ALL RIGHTS OF DESIGN OR INVENTION ARE RESERVED.

rehlko

APPROVALS		DATE
DRAWN	SMH	1-30-19
CHECKED	JLS	1-30-19
APPROVED	JLS	1-30-19

TITLE: DIAGRAM, SCHEMATIC, 10.3L, 150–200KW, APM603
SCALE: N/A
SHEET: 1-9
PLOTTED:
DWG. NO.: ADV-9116
D

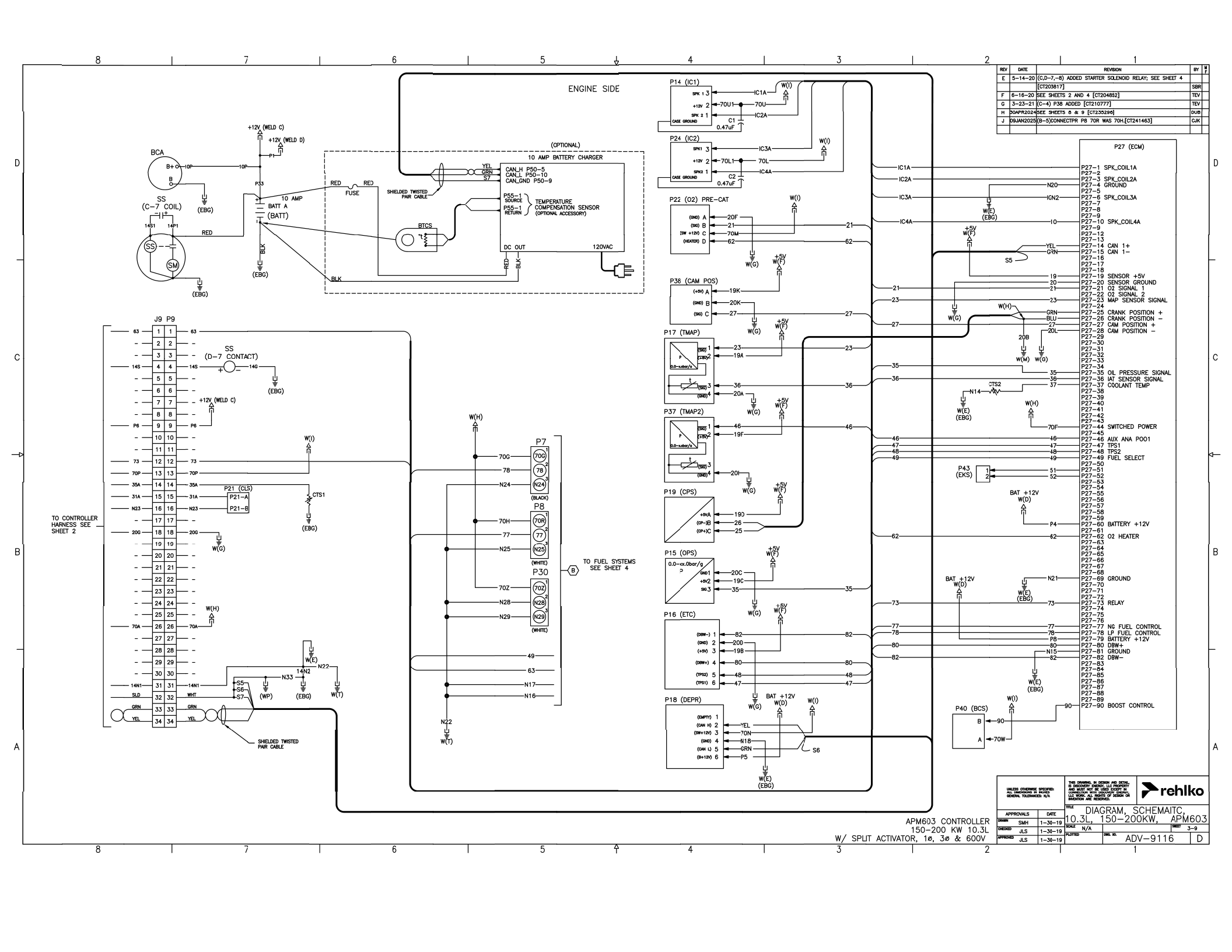


REV	DATE	REVISION	BY	H F
D	3-31-20	SEE SHEET 8 [CT203122]	SBR	
E	5-14-20	SEE SHEETS 3 AND 4 [CT203817]	SBR	
F	6-16-20	(D-8) TEXT "TO DUAL FUEL SHEET 4" ADDED, SEE SHEET 4		
		[CT204852]	TEV	
G	3-23-21	SEE SHEET 3 [CT210777]	TEV	
H	30APR2024	SEE SHEETS 8 & 9 [CT235296]	DUB	
J	09JAN2025	SEE SHEETS 3 & 4 [CT241463]	CJK	

APPROVALS	DATE
DRAWN SMH	1-30-19
CHECKED JLS	1-30-19
APPROVED JLS	1-30-19

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

SCALE N/A | SHEET 2-9 | PLOTTED | DWG. NO. ADV-9116 | D



REV	DATE	REVISION	BY	H F
E	5-14-20	(C,D-7,-8) ADDED STARTER SOLENOID RELAY; SEE SHEET 4		
		[CT203817]	SBR	
F	6-16-20	SEE SHEETS 2 AND 4 [CT204852]	TEV	
G	3-23-21	(C-4) P38 ADDED [CT210777]	TEV	
H	30APR2024	SEE SHEETS 5 & 9 [CT235296]	DUB	
J	09JAN2025	(B-5)CONNECTPR P8 70R WAS 70H.[CT241463]	CJK	

APM603 CONTROLLER
150-200 KW 10.3L
W/ SPLIT ACTIVATOR, 1ø, 3ø & 600V

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

APPROVALS	DATE
DRAWN SMH	1-30-19
CHECKED JLS	1-30-19
APPROVED JLS	1-30-19

rehlko

TITLE: DIAGRAM, SCHEMAITC, 10.3L, 150-200KW, APM603

SCALE N/A | SHEET 3-9

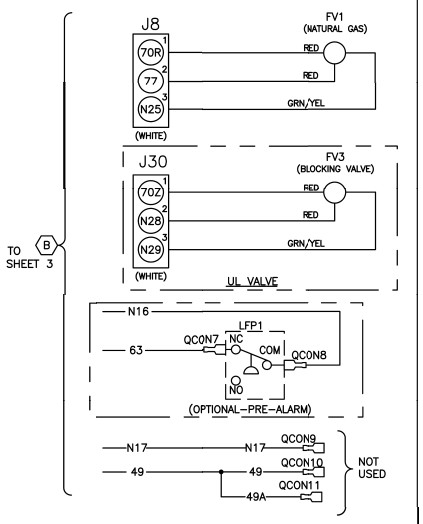
PLOTTED | DWG. NO. ADV-9116 | D

REV	DATE	REVISION	BY	H F
E	5-14-20	(A,B,C-1 TO 3) DELETED AUTO CHANGEOVER OPTION; SEE		
		SHEET 3 [CT203817]	SBR	
F	6-16-20	(D-2,3,4) AUTO CHANGEOVER OPTION ADDED; SEE SHEET 1		
		[CT204852]	TEV	
G	3-23-21	SEE SHEET 3 [CT210777]	TEV	
H	30APR2024	SEE SHEETS 8 & 9 [CT235296]	DUB	
J	09JAN2025	(C-2),(C-8) CONNECTPR J8 70R WAS 70H.[CT241463]	CJK	

FUEL SYSTEMS

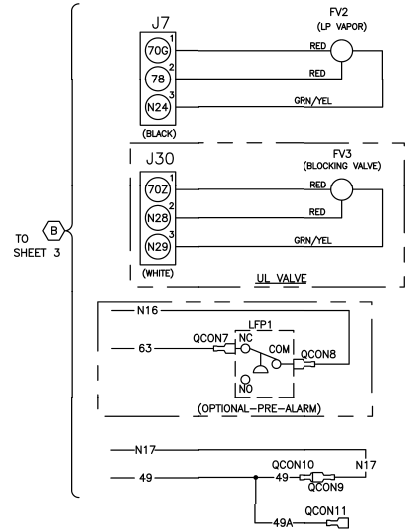
NATURAL GAS

FUEL VALVE ASSEMBLY

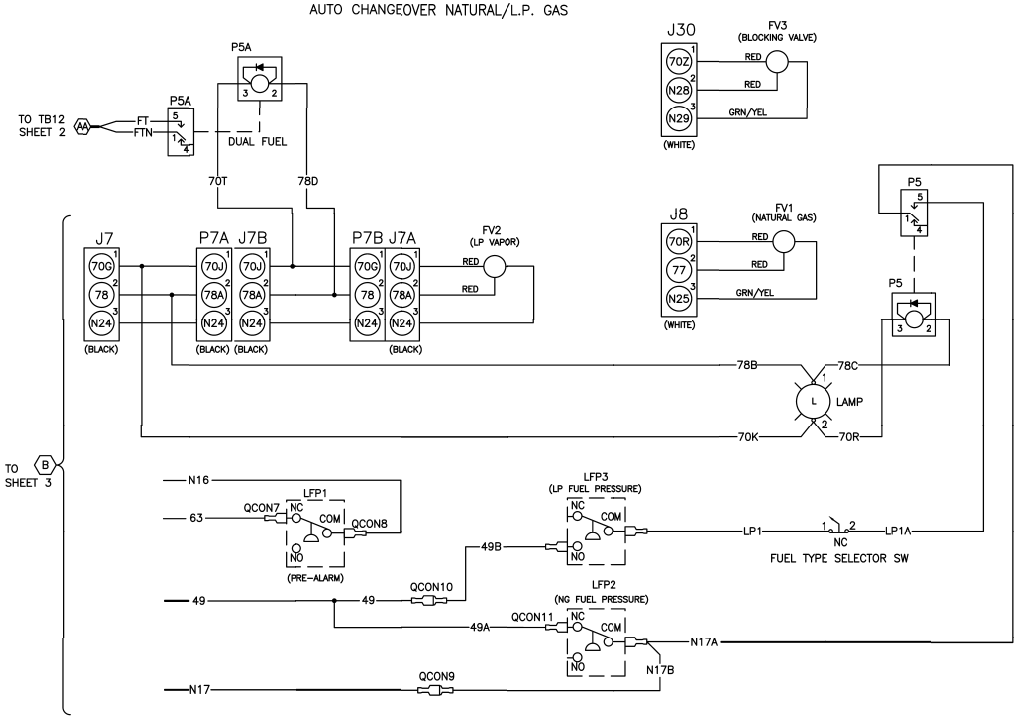


L.P. VAPOR

FUEL VALVE ASSEMBLY



AUTO CHANGEOVER NATURAL/L.P. GAS



APM603 CONTROLLER
150-200 KW 10.3L
W/ SPLIT ACTIVATOR, 1ø, 3ø & 600V

UNLESS OTHERWISE SPECIFIED: FULL DIMENSIONS IN INCHES GENERAL TOLERANCES: N/A		
APPROVALS		DATE
DRAWN	SMH	1-30-19
CHECKED	JLS	1-30-19
APPROVED	JLS	1-30-19

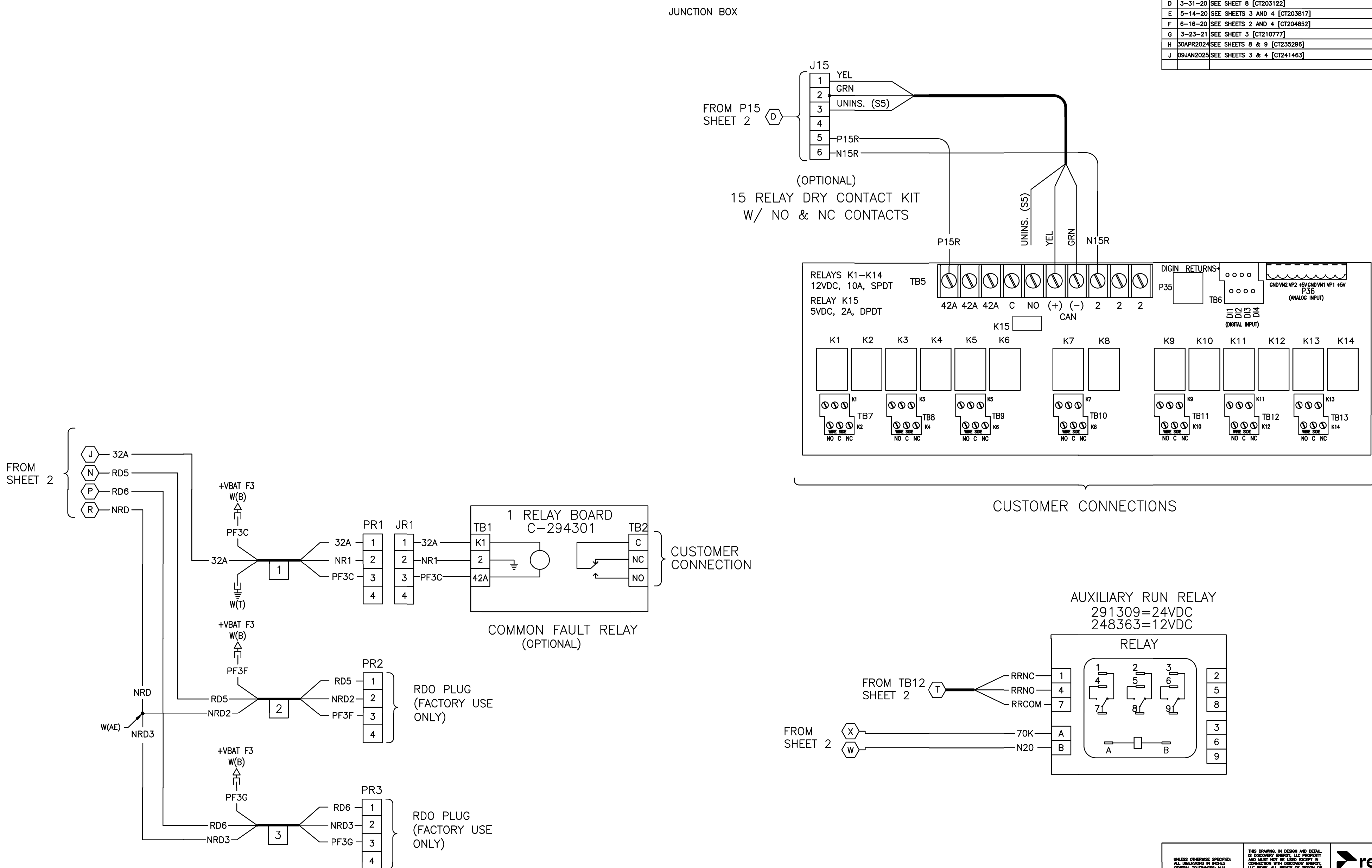
rehlko

TITLE: DIAGRAM, SCHEMAITC, 10.3L, 150-200KW, APM603

SCALE: N/A | SHEET: 4-9

PLOTTED | DWG. NO. ADV-9116 | D

REV	DATE	REVISION	BY	MF
D	3-31-20	SEE SHEET 8 [CT203122]	SBR	
E	5-14-20	SEE SHEETS 3 AND 4 [CT203817]	SBR	
F	6-16-20	SEE SHEETS 2 AND 4 [CT204852]	TEV	
G	3-23-21	SEE SHEET 3 [CT210777]	TEV	
H	30APR2024	SEE SHEETS 8 & 9 [CT235296]	DUB	
J	09JAN2025	SEE SHEETS 3 & 4 [CT241463]	CJK	



APM603 CONTROLLER
150-200KW 10.3L
W/ SPLIT ACTIVATOR, 1ø, 3ø & 600V

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

rehlko

APPROVALS		DATE
DRAWN	SMH	1-30-19
CHECKED	JLS	1-30-19
APPROVED	JLS	1-30-19

TITLE: DIAGRAM, SCHEMATIC, 10.3L, 150-200KW, APM603

SCALE: N/A

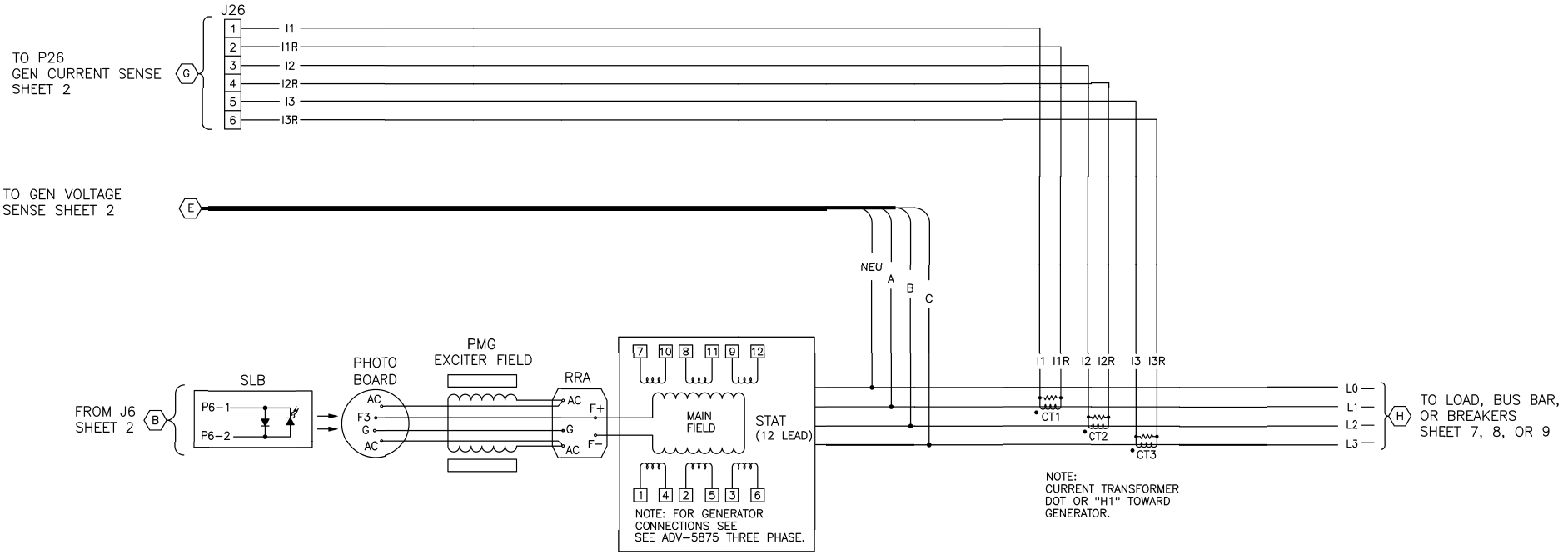
SHEET: 5-9

PLOTTED:

DWG. NO.: ADV-9116 D

ALTERNATOR

REV	DATE	REVISION	BY	H F
D	3-31-20	SEE SHEET 8 [CT203122]	SBR	
E	5-14-20	SEE SHEETS 3 AND 4 [CT203817]	SBR	
F	6-16-20	SEE SHEETS 2 AND 4 [CT204852]	TEV	
G	3-23-21	SEE SHEET 3 [CT210777]	TEV	
H	30APR2024	SEE SHEETS 8 & 9 [CT235298]	DUB	
J	09JAN2025	SEE SHEETS 3 & 4 [CT241463]	CJK	



ALTERNATOR SIDE
APM603 CONTROLLER
150-200KW 10.3L
W/ SPLIT ACTIVATOR, 1ø, 3ø & 600V

UNLESS OTHERWISE SPECIFIED:
FULL DIMENSIONS IN INCHES
GENERAL TOLERANCES: N/A

APPROVALS		DATE
DRAWN	SMH	1-30-19
CHECKED	JLS	1-30-19
APPROVED	JLS	1-30-19

rehlko

TITLE: DIAGRAM, SCHEMATIC, 10.3L, 150-200KW, APM603

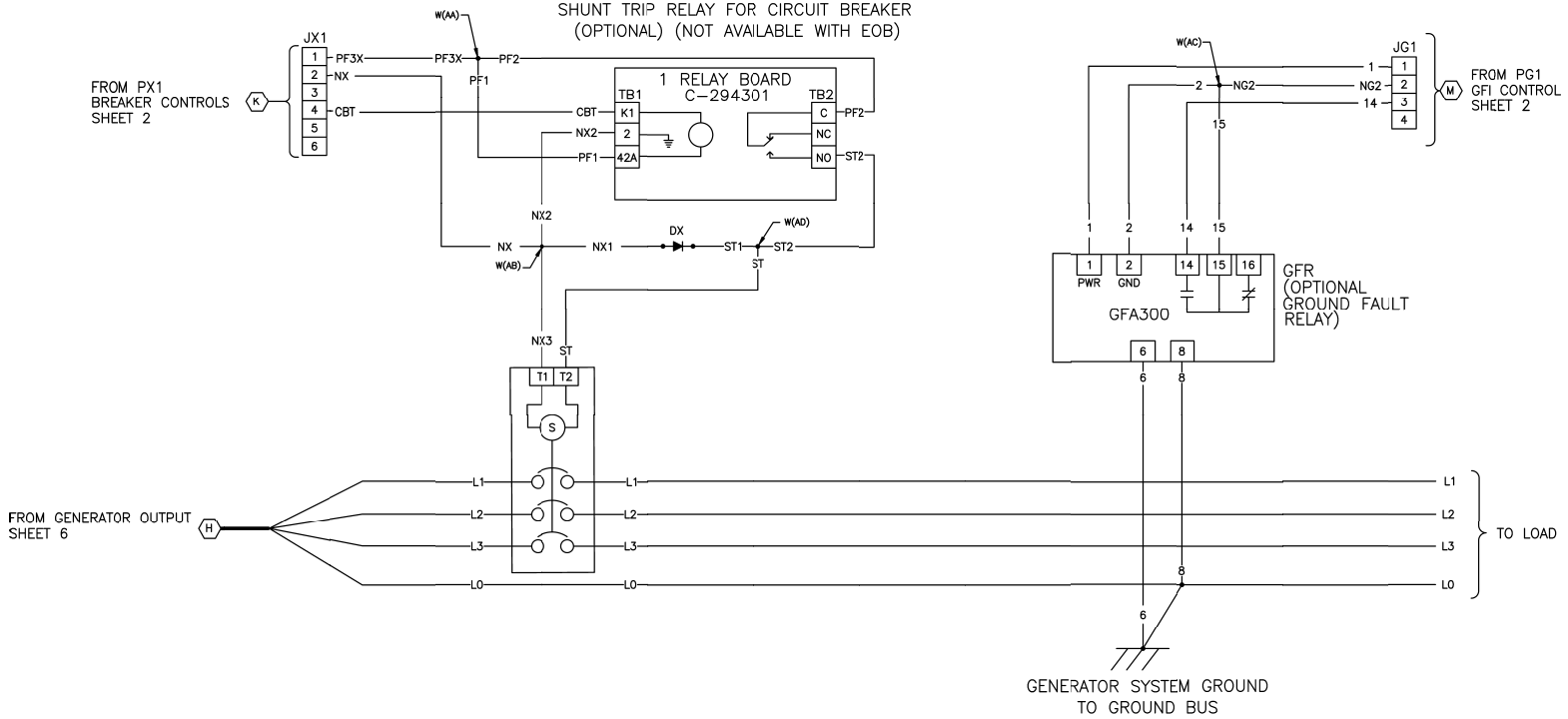
SCALE: N/A | SHEET: 6-9

PLOTTED | DWG. NO. ADV-9116 | D

REV	DATE	REVISION	BY	H F
D	3-31-20	SEE SHEET 8 [CT203122]	SBR	
E	5-14-20	SEE SHEETS 3 AND 4 [CT203817]	SBR	
F	6-16-20	SEE SHEETS 2 AND 4 [CT204852]	TEV	
G	3-23-21	SEE SHEET 3 [CT210777]	TEV	
H	30APR2024	SEE SHEETS 8 & 9 [CT235296]	DUB	
J	09JAN2025	SEE SHEETS 3 & 4 [CT241463]	CJK	

JUNCTION BOX

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



SHUNT TRIP OPTION
APM603 CONTROLLER
150-200KW 10.3L
W/ SPLIT ACTIVATOR, 1ø, 3ø & 600V

UNLESS OTHERWISE SPECIFIED:
FOR DIMENSIONS IN INCHES
GENERAL TOLERANCES: N/A

APPROVALS	DATE
DRAWN SMH	1-30-19
CHECKED JLS	1-30-19
APPROVED JLS	1-30-19

rehlko

TITLE: DIAGRAM, SCHEMATIC, 10.3L, 150-200KW, APM603

SCALE: N/A | SHEET: 7-9

PLOTTED | DWG. NO. ADV-9116 | D

REV	DATE	REVISION	BY	H F
D	3-31-20	(C,D-5) P31: OB-4 WAS OB-5 [CT203122]	SBR	
E	5-14-20	SEE SHEETS 3 AND 4 [CT203817]	SBR	
F	6-16-20	SEE SHEETS 2 AND 4 [CT204852]	TEV	
G	3-23-21	SEE SHEET 3 [CT210777]	TEV	
H	30APR2024	(B-3)ADDED SDE TO OVERCURRENT TRIP & OF1 TO AUXILLARY		
		SWITCH AND SEE SHEET 9 [CT235296]	DUB	
J	09JAN2025	SEE SHEETS 3 & 4 [CT241463]	CJK	

JUNCTION BOX

FROM PX1
BREAKER CONTROLS
SHEET 2

JX1
1 PF3X
2 NX
3 CBC
4 CBT
5 CBCR
6 CBTR

PF3X — W(F) — PX2
PX1

OPEN BREAKER
GM49747=24VDC
GM49746=12VDC

CLOSE BREAKER
GM49747=24VDC
GM49746=12VDC

P31 — CBT — PX1
P31 — OB — BV4
P30 — CBC — PX2
P30 — CB — BV5
BV4 — W(G) — RV
BV3

RV — F4 10A — BATT A 12V — BATT B 12V — BGND

BREAKER CONTROL BATTERIES
(IF 12V GENERATOR, ADD LOOSE KIT.
IF 24V GENERATOR, USE GENERATOR
BATTERIES.)

BGND CB OB BV3
A1 A2 A4 B4
GND CLOSE OPEN +24V

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

(SDE)
OVERCURRENT
TRIP
81 NX2
82
84 CBTR

(OF1)
AUXILLARY
SWITCH
11 NX1
12
14 CBCR

NX — NX2 — W(AH) — NX1

M

FROM GENERATOR OUTPUT
SHEET 6
H
L1 L2 L3 L0

TO LOAD

TX5

JB1
1 BL1
2 BL2
3 BL3
4 BL0
5
6

TO PB1
BUS VOLTAGE SENSE
SHEET 2
A

ELECTRICALLY OPERATED BREAKER OPTION
LOCAL GENERATOR MOUNTED BREAKER
APM603 CONTROLLER
150-200KW 10.3L
W/ SPLIT ACTIVATOR, 1ø, 3ø & 600V

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

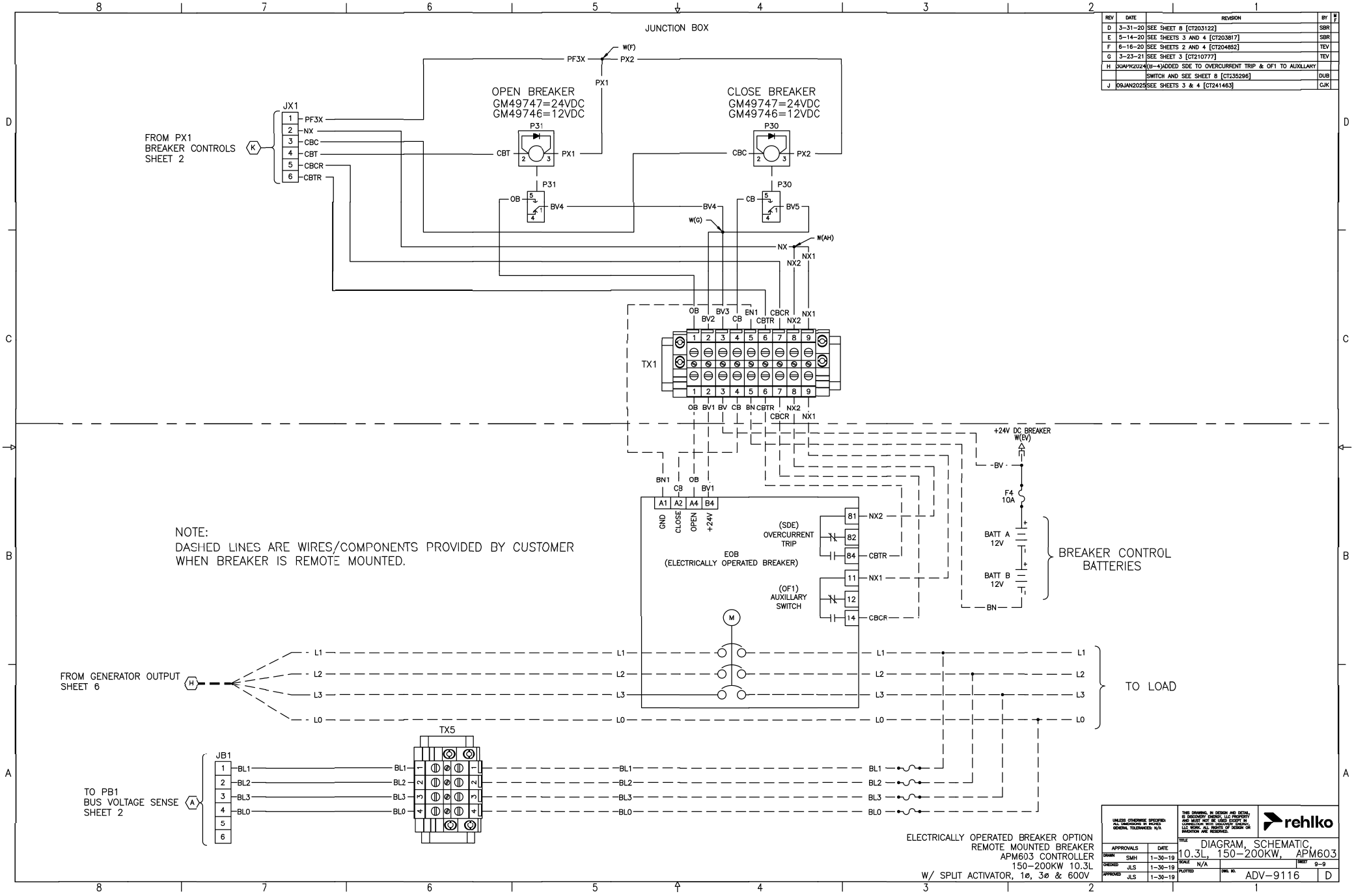
rehlko

APPROVALS		DATE
DRAWN	SMH	1-30-19
CHECKED	JLS	1-30-19
APPROVED	JLS	1-30-19

TITLE: DIAGRAM, SCHEMATIC,
10.3L, 150-200KW, APM603

SCALE N/A — SHEET 8-9

PLOTTED — DWG NO. ADV-9116 — D



REV	DATE	REVISION	BY	H F
D	3-31-20	SEE SHEET 8 [CT203122]	SBR	
E	5-14-20	SEE SHEETS 3 AND 4 [CT203817]	SBR	
F	6-16-20	SEE SHEETS 2 AND 4 [CT204852]	TEV	
G	3-23-21	SEE SHEET 3 [CT210777]	TEV	
H	30APR2024	(8-4)ADDED SDE TO OVERCURRENT TRIP & OF1 TO AUXILLARY SWITCH AND SEE SHEET 8 [CT235296]	DUB	
J	09JAN2025	SEE SHEETS 3 & 4 [CT241463]	CJK	

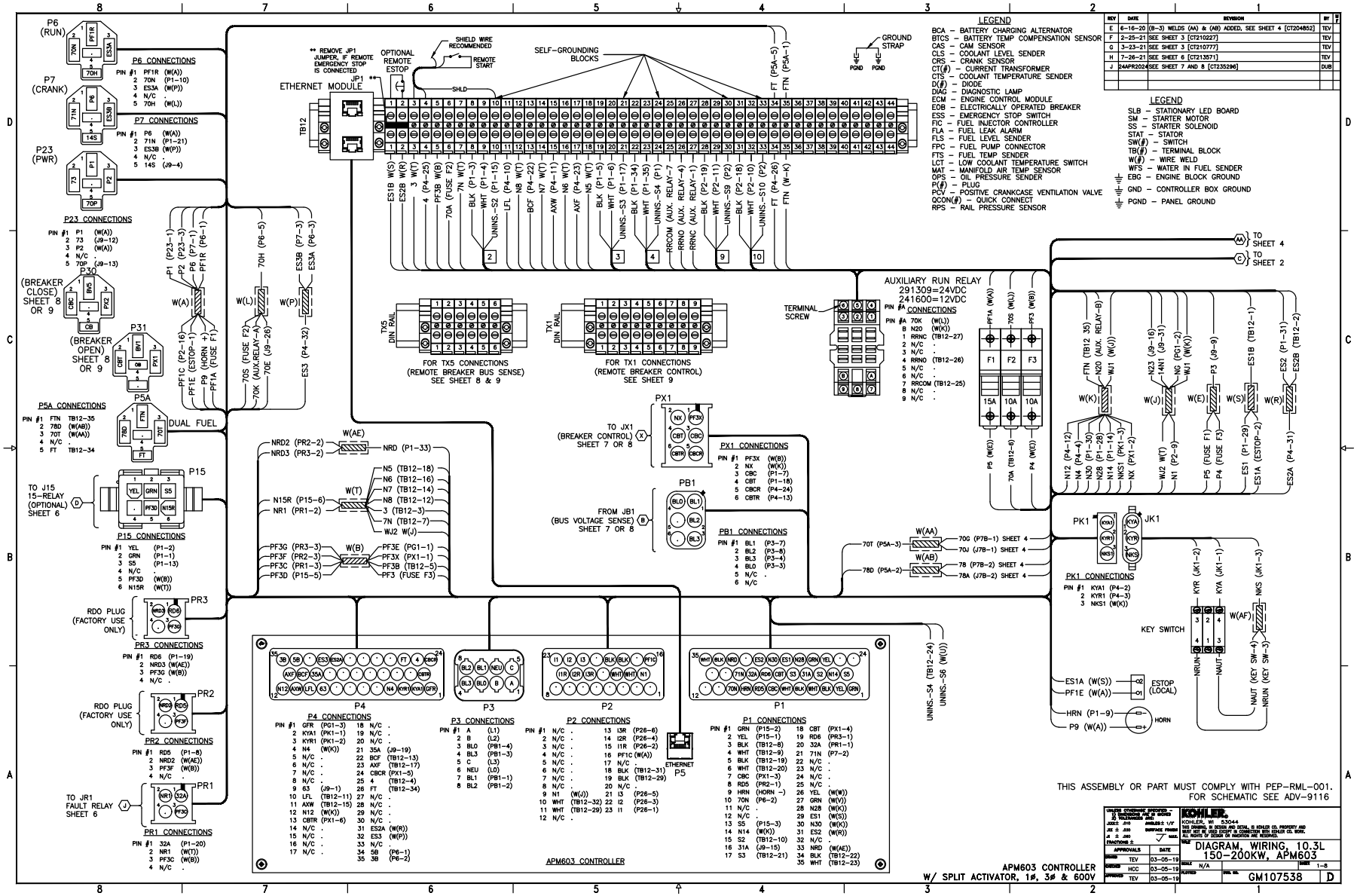
ELECTRICALLY OPERATED BREAKER OPTION
REMOTE MOUNTED BREAKER
APM603 CONTROLLER
150-200KW 10.3L
W/ SPLIT ACTIVATOR, 1ø, 3ø & 600V

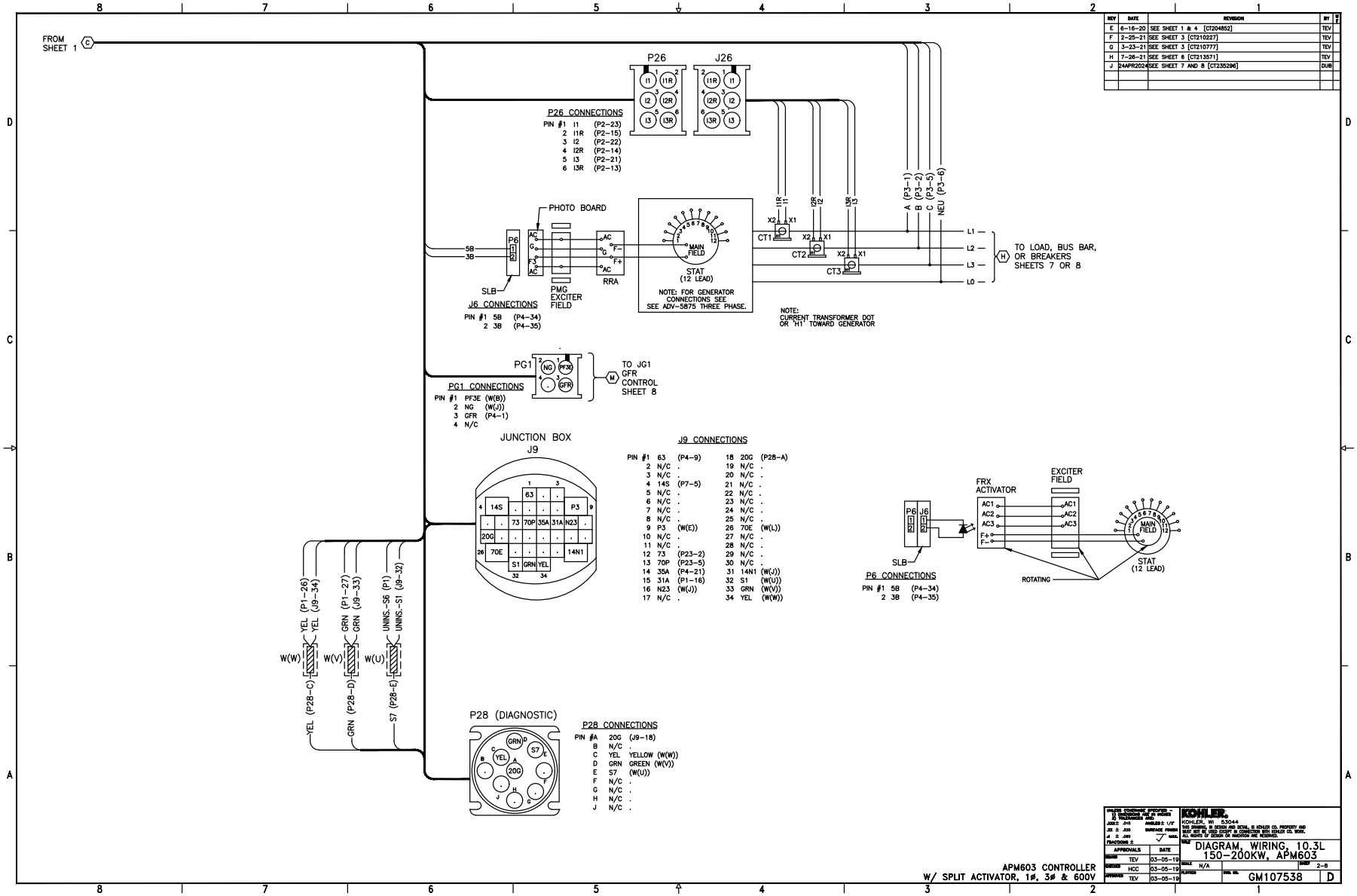
UNLESS OTHERWISE SPECIFIED: FOR DIMENSIONS IN INCHES GENERAL TOLERANCES: N/A

rehlko

APPROVALS		DATE
DRAWN	SMH	1-30-19
CHECKED	JLS	1-30-19
APPROVED	JLS	1-30-19

TITLE: DIAGRAM, SCHEMATIC, 10.3L, 150-200KW, APM603
SCALE: N/A
SHEET: 9-9
PLOTTED:
DWG. NO.: ADV-9116
D


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
EOB – ELECTRICALLY OPERATED BREAKER
ESS – EMERGENCY STOP SWITCH
FIC – FUEL INJECTOR CONTROLLER
FLA – FUEL LEAK ALARM
FLS – FUEL LEVEL SENDER
FPC – FUEL PUMP CONNECTOR
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
REV DATE REVISION BY
E 6-16-20 (B-3) WELDS (AA) & (AB) ADDED, SEE SHEET 4 [CT204852] TEV
F 2-25-21 SEE SHEET 3 [CT210227] TEV
G 3-23-21 SEE SHEET 3 [CT210777] TEV
H 7-26-21 SEE SHEET 6 [CT213571] TEV
J 24APR2024 SEE SHEET 7 AND 8 [CT235296] DUB
** REMOVE JP1 JUMPER, IF REMOTE EMERGENCY STOP IS CONNECTED
OPTIONAL REMOTE ESTOP
SHIELD WIRE RECOMMENDED
REMOTE START
SELF-GROUNDING BLOCKS
GROUND STRAP
ETHERNET MODULE
JP1 **
TB12
SHLD
P6 (RUN)
P7 (CRANK)
P23 (PWR)
P6 CONNECTIONS
PIN #1 PF1R (W(A))
2 70N (P1-10)
3 ES3A (W(P))
4 N/C .
5 70H (W(L))
P7 CONNECTIONS
PIN #1 P6 (W(A))
2 71N (P1-21)
3 ES3B (W(P))
4 N/C .
5 14S (J9-4)
P23 CONNECTIONS
PIN #1 P1 (W(A))
2 73 (J9-12)
3 P2 (W(A))
4 N/C .
5 70P (J9-13)
P30 (BREAKER CLOSE) SHEET 8 OR 9
P31 (BREAKER OPEN) SHEET 8 OR 9
P5A CONNECTIONS
PIN #1 FTN TB12-35
2 78D (W(AB))
3 70T (W(AA))
4 N/C .
5 FT TB12-34
DUAL FUEL
P15 CONNECTIONS
PIN #1 YEL (P1-2)
2 GRN (P1-1)
3 S5 (P1-13)
4 N/C .
5 PF3D (W(B))
6 N15R (W(T))
TO J15 15-RELAY (OPTIONAL) SHEET 6
RDO PLUG (FACTORY USE ONLY)
PR3 CONNECTIONS
PIN #1 RD6 (P1-19)
2 NRD3 (W(AE))
3 PF3C (W(B))
4 N/C .
PR2 CONNECTIONS
PIN #1 RD5 (P1-8)
2 NRD2 (W(AE))
3 PF3F (W(B))
4 N/C .
PR1 CONNECTIONS
PIN #1 32A (P1-20)
2 NR1 (W(T))
3 PF3C (W(B))
4 N/C .
TO JR1 FAULT RELAY SHEET 6
FOR TX5 CONNECTIONS (REMOTE BREAKER BUS SENSE) SEE SHEET 8 & 9
FOR TX1 CONNECTIONS (REMOTE BREAKER CONTROL) SEE SHEET 9
AUXILIARY RUN RELAY
291309=24VDC
241600=12VDC
TERMINAL SCREW
PX1 CONNECTIONS
PIN #1 PF3X (W(B))
2 NX (W(K))
3 CBC (P1-7)
4 CBT (P1-18)
5 CBCR (P4-24)
6 CBTR (P4-13)
TO JX1 (BREAKER CONTROL) SHEET 7 OR 8
PB1 CONNECTIONS
PIN #1 BL1 (P3-7)
2 BL2 (P3-8)
3 BL3 (P3-4)
4 BL0 (P3-3)
5 N/C .
6 N/C
FROM JB1 (BUS VOLTAGE SENSE) SHEET 7 OR 8
PK1 CONNECTIONS
PIN #1 KYA1 (P4-2)
2 KYR1 (P4-3)
3 NKS1 (W(K))
KEY SWITCH
ESTOP (LOCAL)
HORN
TO SHEET 4
TO SHEET 2
70T (P5A-3)
78D (P5A-2)
70G (P7B-1) SHEET 4
70J (J7B-1) SHEET 4
78 (P7B-2) SHEET 4
78A (J7B-2) SHEET 4
P4 CONNECTIONS
PIN #1 GFR (PG1-3)
2 KYA1 (PK1-1)
3 KYR1 (PK1-2)
4 N4 (W(K))
5 N/C .
6 N/C .
7 N/C .
8 N/C .
9 63 (J9-1)
10 LFL (TB12-11)
11 AXW (TB12-15)
12 N12 (W(K))
13 CBTR (PX1-6)
14 N/C .
15 N/C .
16 N/C .
17 N/C .
18 N/C .
19 N/C .
20 N/C .
21 35A (J9-19)
22 BCF (TB12-13)
23 AXF (TB12-17)
24 CBCR (PX1-5)
25 4 (TB12-4)
26 FT (TB12-34)
27 N/C .
28 N/C .
29 N/C .
30 N/C .
31 ES2A (W(R))
32 ES3 (W(P))
33 N/C
34 5B (P6-1)
35 3B (P6-2)
P3 CONNECTIONS
PIN #1 A (L1)
2 B (L2)
3 BL0 (PB1-4)
4 BL3 (PB1-3)
5 C (L3)
6 NEU (L0)
7 BL1 (PB1-1)
8 BL2 (PB1-2)
P2 CONNECTIONS
PIN #1 N/C .
2 N/C .
3 N/C .
4 N/C .
5 N/C .
6 N/C .
7 N/C .
8 N/C .
9 N1 (W(J))
10 WHT (TB12-32)
11 WHT (TB12-29)
12 N/C .
13 L3R (P26-6)
14 I2R (P26-4)
15 I1R (P26-2)
16 PF1C (W(A))
17 N/C .
18 BLK (TB12-31)
19 BLK (TB12-29)
20 N/C .
21 I3 (P26-5)
22 I2 (P26-3)
23 I1 (P26-1)
P1 CONNECTIONS
PIN #1 GRN (P15-2)
2 YEL (P15-1)
3 BLK (TB12-8)
4 WHT (TB12-9)
5 BLK (TB12-19)
6 WHT (TB12-20)
7 CBC (PX1-3)
8 RD5 (PR2-1)
9 HRN (HORN –)
10 70N (P6-2)
11 N/C .
12 N/C .
13 S5 (P15-3)
14 N14 (W(K))
15 S2 (TB12-10)
16 31A (J9-15)
17 S3 (TB12-21)
18 CBT (PX1-4)
19 RD6 (PR3-1)
20 32A (PR1-1)
21 71N (P7-2)
22 N/C .
23 N/C .
24 N/C .
25 N/C .
26 YEL (W(W))
27 GRN (W(V))
28 N28 (W(K))
29 ES1 (W(S))
30 N30 (W(K))
31 ES2 (W(R))
32 N/C .
33 NRD (W(AE))
34 BLK (TB12-22)
35 WHT (TB12-23)
APM603 CONTROLLER
THIS ASSEMBLY OR PART MUST COMPLY WITH PEP-RML-001. FOR SCHEMATIC SEE ADV-9116
KOHLER CO. KOHLER, WI 53044
DIAGRAM, WIRING, 10.3L 150-200KW, APM603
APPROVALS DATE
DRAWN TEV 03-05-19
CHECKED HCC 03-05-19
APPROVED TEV 03-05-19
SCALE N/A
SHEET 1-8
PUBLISH DWG. NO. GM107538 D
APM603 CONTROLLER W/ SPLIT ACTIVATOR, 1Ø, 3Ø & 600V



REV	DATE	REVISION	BY
E	6-16-20	SEE SHEET 1 & 4 [CT204852]	TEV
F	2-25-21	SEE SHEET 3 [CT210227]	TEV
G	3-23-21	SEE SHEET 3 [CT210777]	TEV
H	7-26-21	SEE SHEET 6 [CT213571]	TEV
J	24APR2024	SEE SHEET 7 AND 8 [CT235296]	DUB

APM603 CONTROLLER
W/ SPLIT ACTIVATOR, 1ø, 3ø & 600V

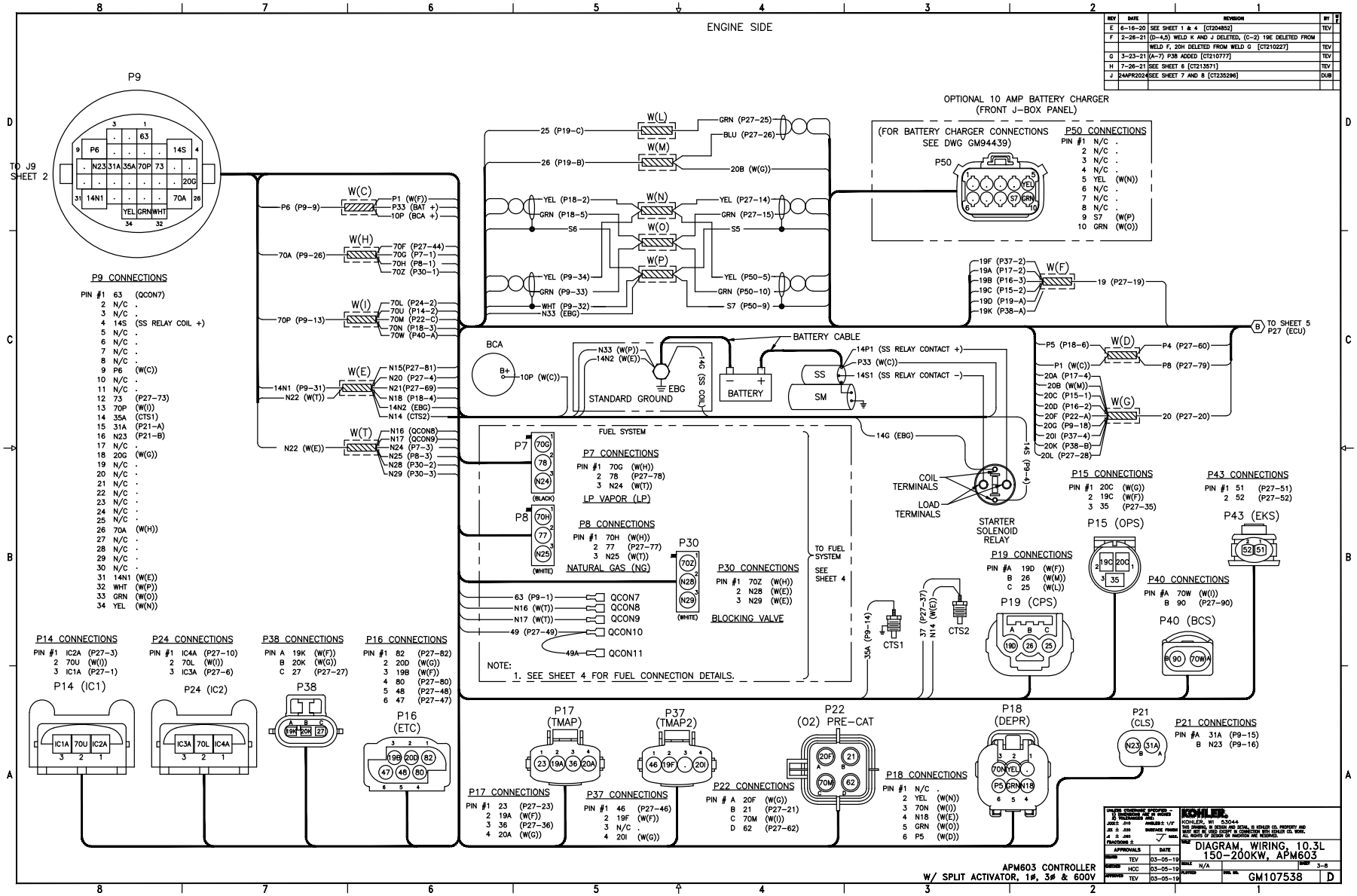
KOHLER CO.
KOHLER, WI 53044

APPROVALS	DATE
DRAWN TEV	03-05-19
CHECKED HCC	03-05-19
APPROVED TEV	03-05-19

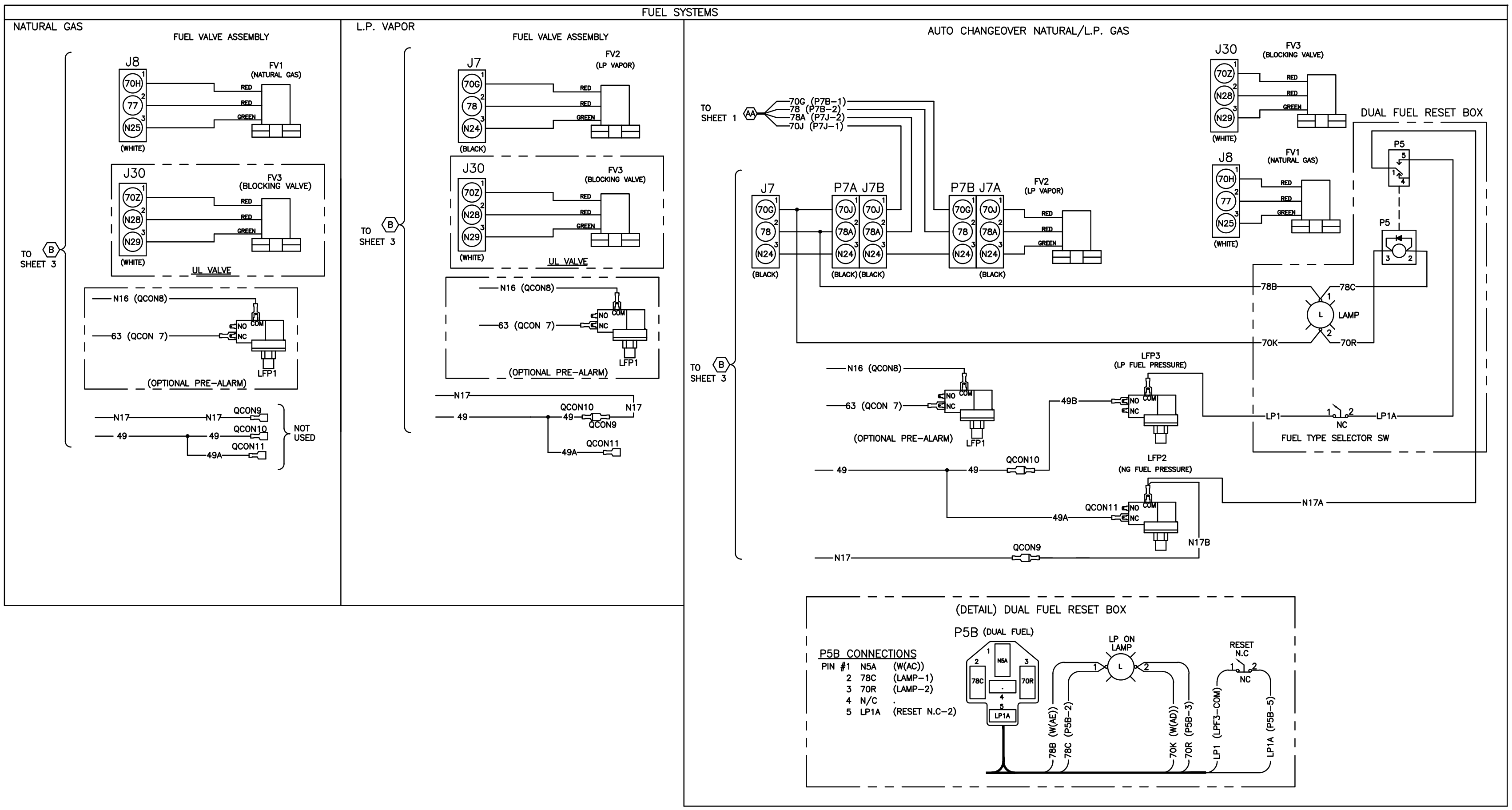
DIAGRAM, WIRING, 10.3L
150-200KW, APM603

SCALE N/A | SHEET 2-8

PART NO. GM107538 | D


ENGINE SIDE
REV | DATE | REVISION | BY
E | 6-16-20 | SEE SHEET 1 & 4 [CT204852] | TEV
F | 2-26-21 | (D-4,5) WELD K AND J DELETED, (C-2) 19E DELETED FROM WELD F, 20H DELETED FROM WELD G [CT210227] | TEV
G | 3-23-21 | (A-7) P38 ADDED [CT210777] | TEV
H | 7-26-21 | SEE SHEET 6 [CT213571] | TEV
J | 24APR2024 | SEE SHEET 7 AND 8 [CT2352296] | DUB
P9
TO J9 SHEET 2
P9 CONNECTIONS
PIN #1 63 (QCON7)
2 N/C .
3 N/C .
4 14S (SS RELAY COIL +)
5 N/C .
6 N/C .
7 N/C .
8 N/C .
9 P6 (W(C))
10 N/C .
11 N/C .
12 73 (P27-73)
13 70P (W(I))
14 35A (CTS1)
15 31A (P21-A)
16 N23 (P21-B)
17 N/C .
18 20G (W(G))
19 N/C .
20 N/C .
21 N/C .
22 N/C .
23 N/C .
24 N/C .
25 N/C .
26 70A (W(H))
27 N/C .
28 N/C .
29 N/C .
30 N/C .
31 14N1 (W(E))
32 WHT (W(P))
33 GRN (W(O))
34 YEL (W(N))
OPTIONAL 10 AMP BATTERY CHARGER (FRONT J-BOX PANEL)
(FOR BATTERY CHARGER CONNECTIONS SEE DWG GM94439)
P50
P50 CONNECTIONS
PIN #1 N/C .
2 N/C .
3 N/C .
4 N/C .
5 YEL (W(N))
6 N/C .
7 N/C .
8 N/C .
9 S7 (W(P))
10 GRN (W(O))
25 (P19-C)
26 (P19-B)
W(L)
W(M)
GRN (P27-25)
BLU (P27-26)
20B (W(G))
YEL (P18-2)
GRN (P18-5)
S6
W(N)
W(O)
W(P)
YEL (P27-14)
GRN (P27-15)
S5
YEL (P9-34)
GRN (P9-33)
WHT (P9-32)
N33 (EBG)
YEL (P50-5)
GRN (P50-10)
S7 (P50-9)
19F (P37-2)
19A (P17-2)
19B (P16-3)
19C (P15-2)
19D (P19-A)
19K (P38-A)
W(F)
19 (P27-19)
TO SHEET 5 P27 (ECU)
P6 (P9-9)
W(C)
P1 (W(F))
P33 (BAT +)
10P (BCA +)
70A (P9-26)
W(H)
70F (P27-44)
70G (P7-1)
70H (P8-1)
70Z (P30-1)
70P (P9-13)
W(I)
70L (P24-2)
70U (P14-2)
70M (P22-C)
70N (P18-3)
70W (P40-A)
14N1 (P9-31)
N22 (W(T))
W(E)
N15(P27-81)
N20 (P27-4)
N21(P27-69)
N18 (P18-4)
14N2 (EBG)
N14 (CTS2)
N22 (W(E))
W(T)
N16 (QCON5)
N17 (QCON9)
N24 (P7-3)
N25 (P8-3)
N28 (P30-2)
N29 (P30-3)
BCA
B+
10P (W(C))
N33 (W(P))
14N2 (W(E))
14G (SS COIL)
EBG
STANDARD GROUND
BATTERY CABLE
BATTERY
14P1 (SS RELAY CONTACT +)
P33 (W(C))
14S1 (SS RELAY CONTACT −)
SS
SM
P5 (P18-6)
P1 (W(C))
20A (P17-4)
20B (W(M))
20C (P15-1)
20D (P16-2)
20F (P22-A)
20G (P9-18)
20I (P37-4)
20K (P38-B)
20L (P27-28)
W(D)
P4 (P27-60)
P8 (P27-79)
W(G)
20 (P27-20)
14G (EBG)
14S (P9-4)
COIL TERMINALS
LOAD TERMINALS
STARTER SOLENOID RELAY
FUEL SYSTEM
P7
P7 CONNECTIONS
PIN #1 70G (W(H))
2 78 (P27-78)
3 N24 (W(T))
LP VAPOR (LP)
P8
P8 CONNECTIONS
PIN #1 70H (W(H))
2 77 (P27-77)
3 N25 (W(T))
NATURAL GAS (NG)
P30
P30 CONNECTIONS
PIN #1 70Z (W(H))
2 N28 (W(E))
3 N29 (W(E))
BLOCKING VALVE
TO FUEL SYSTEM SEE SHEET 4
63 (P9-1) QCON7
N16 (W(T)) QCON8
N17 (W(T)) QCON9
49 (P27-49) QCON10
49A QCON11
NOTE:
1. SEE SHEET 4 FOR FUEL CONNECTION DETAILS.
35A (P9-14)
CTS1
37 (P27-37)
N14 (W(E))
CTS2
P15 CONNECTIONS
PIN #1 20C (W(G))
2 19C (W(F))
3 35 (P27-35)
P15 (OPS)
P19 CONNECTIONS
PIN #A 19D (W(F))
B 26 (W(M))
C 25 (W(L))
P19 (CPS)
P43 CONNECTIONS
PIN #1 51 (P27-51)
2 52 (P27-52)
P43 (EKS)
P40 CONNECTIONS
PIN #A 70W (W(I))
B 90 (P27-90)
P40 (BCS)
P14 CONNECTIONS
PIN #1 IC2A (P27-3)
2 70U (W(I))
3 IC1A (P27-1)
P14 (IC1)
P24 CONNECTIONS
PIN #1 IC4A (P27-10)
2 70L (W(I))
3 IC3A (P27-6)
P24 (IC2)
P38 CONNECTIONS
PIN A 19K (W(F))
B 20K (W(G))
C 27 (P27-27)
P38
P16 CONNECTIONS
PIN #1 82 (P27-82)
2 20D (W(G))
3 19B (W(F))
4 80 (P27-80)
5 48 (P27-48)
6 47 (P27-47)
P16 (ETC)
P17 (TMAP)
P17 CONNECTIONS
PIN #1 23 (P27-23)
2 19A (W(F))
3 36 (P27-36)
4 20A (W(G))
P37 (TMAP2)
P37 CONNECTIONS
PIN #1 46 (P27-46)
2 19F (W(F))
3 N/C .
4 20I (W(G))
P22 (02) PRE-CAT
P22 CONNECTIONS
PIN # A 20F (W(G))
B 21 (P27-21)
C 70M (W(I))
D 62 (P27-62)
P18 (DEPR)
P18 CONNECTIONS
PIN #1 N/C .
2 YEL (W(N))
3 70N (W(I))
4 N18 (W(E))
5 GRN (W(O))
6 P5 (W(D))
P21 (CLS)
P21 CONNECTIONS
PIN #A 31A (P9-15)
B N23 (P9-16)
APM603 CONTROLLER
W/ SPLIT ACTIVATOR, 1Ø, 3Ø & 600V
KOHLER
DIAGRAM, WIRING, 10.3L 150-200KW, APM603
APPROVALS | DATE
DRAWN TEV 03-05-19
CHECKED HCC 03-05-19
APPROVED TEV 03-05-19
SCALE N/A
SHEET 3-8
PLOTTED
DWG. NO. GM107538
D

REV	DATE	REVISION	BY	MF
E	6-16-20	(D-3,4) AUTO CHANGEOVER OPTION ADDED; SEE SHEET 1		
		[CT204852]	TEV	
F	2-25-21	SEE SHEET 3 [CT210227]	TEV	
G	3-23-21	SEE SHEET 3 [CT210777]	TEV	
H	7-26-21	SEE SHEET 6 [CT213571]	TEV	
J	24APR2024	SEE SHEET 7 AND 8 [CT235296]	DUB	



APM603 CONTROLLER
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	TEV	3-5-19
CHECKED	HCC	3-5-19
APPROVED	TEV	3-5-19

KOHLER
KOHLER, WI 53044

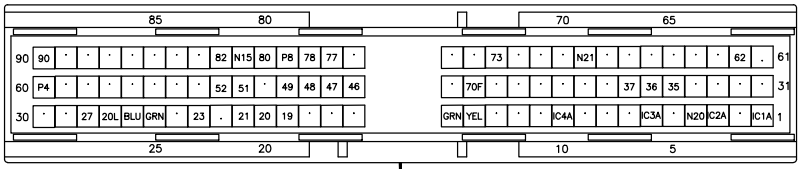
TITLE: DIAGRAM, WIRING, 10.3L 150-200KW, APM603

SCALE / / / SHEET 4-8

PLOTTED DWG. NO. GM107538 D

REV	DATE	REVISION	BY	APP'D
E	6-16-20	SEE SHEET 1 & 4 [CT204852]	TEV	
F	2-25-21	SEE SHEET 3 [CT210227]	TEV	
G	3-23-21	SEE SHEET 3 [CT210777]	TEV	
H	7-26-21	SEE SHEET 6 [CT213571]	TEV	
J	24APR2024	SEE SHEET 7 AND 8 [CT235296]	DUB	

P27
(ENGINE ECU)



TO SHEET 3 (B)

P27 CONNECTIONS

PIN	#1	IC1A	(P14-3)
	2	N/C	.
	3	IC2A	(P14-1)
	4	N20	(W(E))
	5	N/C	.
	6	IC3A	(P24-3)
	7	N/C	.
	8	N/C	.
	9	N/C	.
	10	IC4A	(P24-1)
	11	N/C	.
	12	N/C	.
	13	N/C	.
	14	YEL	(W(N))
	15	GRN	(W(O))
	16	N/C	.
	17	N/C	.
	18	N/C	.
	19	19	(W(F))
	20	20	(W(G))
	21	21	(P22-B)
	22	N/C	.
	23	23	(P17-1)
	24	N/C	.
	25	GRN	(W(L))
	26	BLU	(W(M))
	27	27	(P38-C)
	28	20L	(W(G))
	29	N/C	.
	30	N/C	.
	31	N/C	.
	32	N/C	.
	33	N/C	.
	34	N/C	.
	35	35	(P15-3)
	36	36	(P17-3)
	37	37	(CTS2)
	38	N/C	.
	39	N/C	.
	40	N/C	.
	41	N/C	.
	42	N/C	.
	43	N/C	.
	44	70F	(W(H))
	45	N/C	.

PIN	#46	46	(P37-1)
		47	(P16-6)
		48	(P16-5)
		49	(QCON10)
		N/C	.
		51	(P43-1)
		52	(P43-2)
		N/C	.
		N/C	.
		N/C	.
		N/C	.
		N/C	.
		N/C	.
		N/C	.
		60	(W(D))
		N/C	.
		62	(P22-D)
		N/C	.
		N/C	.
		N/C	.
		N/C	.
		N/C	.
		N/C	.
		69	(W(E))
		N/C	.
		N/C	.
		N/C	.
		73	(P9-12)
		N/C	.
		N/C	.
		N/C	.
		77	(P8-2)
		78	(P7-2)
		P8	(W(D))
		80	(P16-4)
		N15	(W(E))
		82	(P16-1)
		N/C	.
		N/C	.
		N/C	.
		N/C	.
		N/C	.
		N/C	.
		N/C	.
		N/C	.

APM603 CONTROLLER
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 FRACTIONS ± MAX.

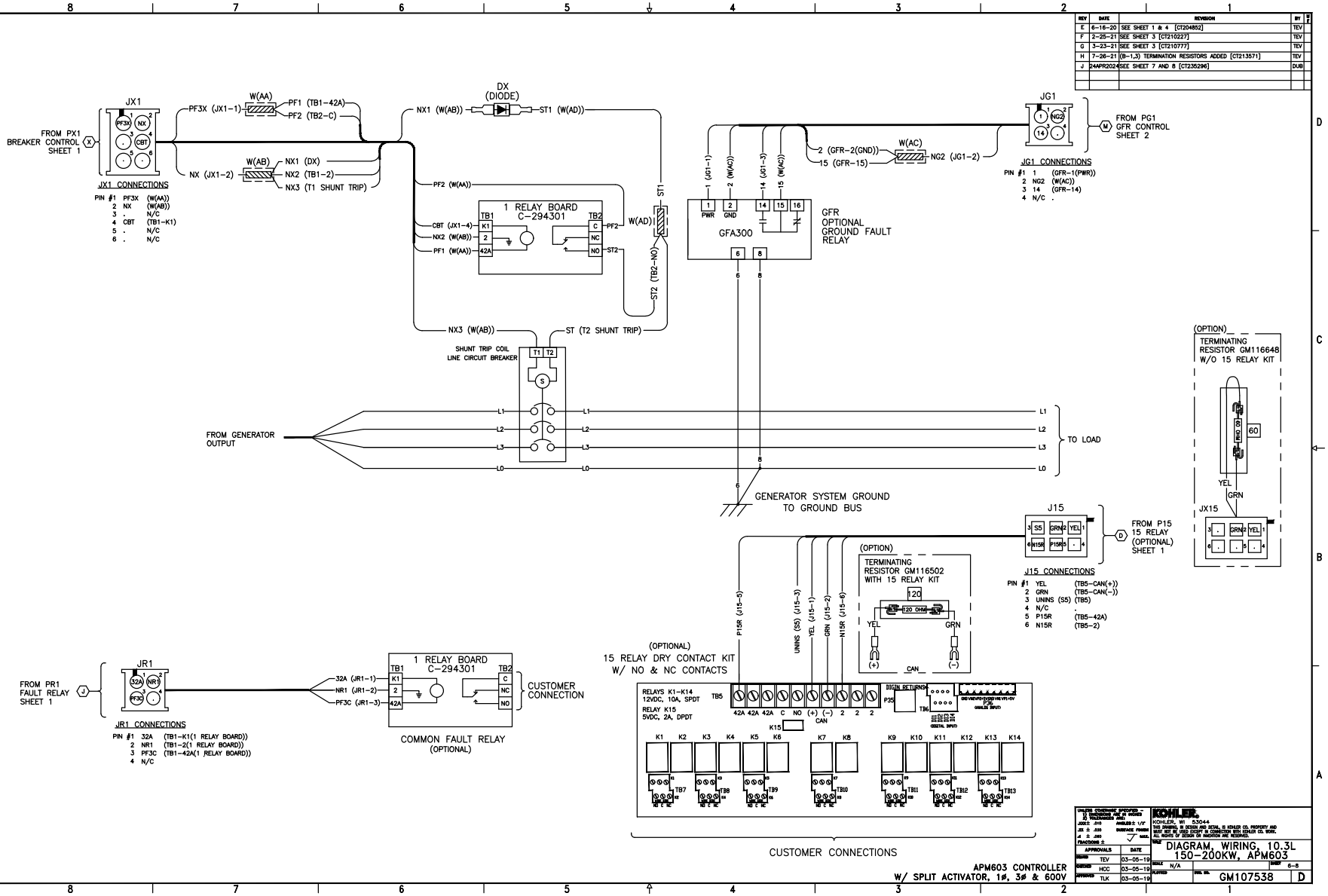
APPROVALS	DATE
DRAWN TEV	03-05-19
CHECKED HCC	03-05-19
APPROVED TEV	03-05-19

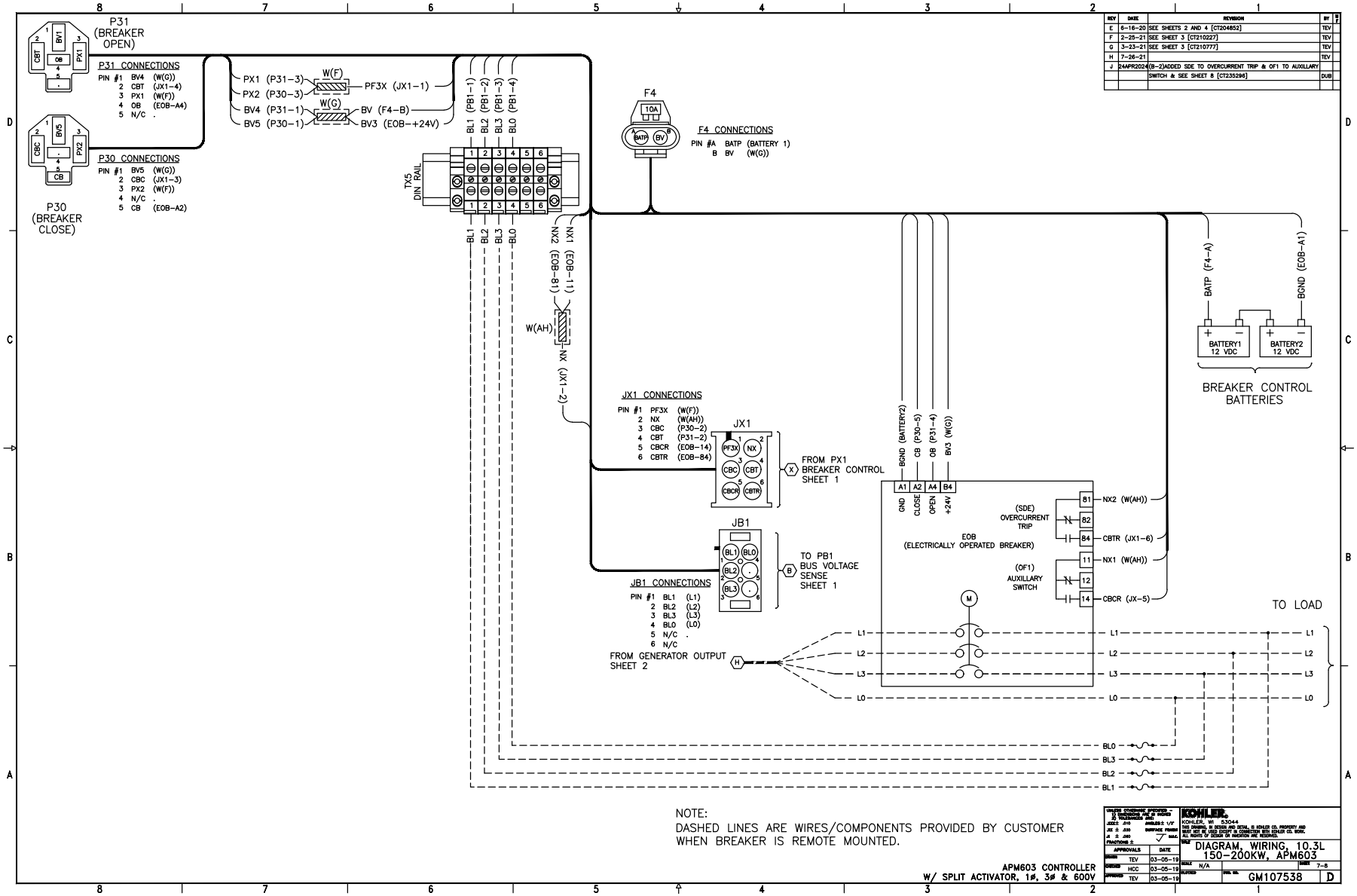
KOHLER.
KOHLER, WI 53044

TITLE: DIAGRAM, WIRING, 10.3L 150-200KW, APM603

SCALE N/A | SHEET 5-8

PART/DWG. NO. GM107538 | D


REV | DATE | REVISION | BY
E | 6-16-20 | SEE SHEET 1 & 4 [CT204852] | TEV
F | 2-25-21 | SEE SHEET 3 [CT210227] | TEV
G | 3-23-21 | SEE SHEET 3 [CT210777] | TEV
H | 7-26-21 | (B-1,3) TERMINATION RESISTORS ADDED [CT213571] | TEV
J | 24APR2024 | SEE SHEET 7 AND 8 [CT2352961] | DUB
JX1
FROM PX1 BREAKER CONTROL SHEET 1
PF3X (JX1-1)
W(AA)
PF1 (TB1-42A)
PF2 (TB2-C)
NX (JX1-2)
W(AB)
NX1 (DX)
NX2 (TB1-2)
NX3 (T1 SHUNT TRIP)
JX1 CONNECTIONS
PIN #1 PF3X (W(AA))
2 NX (W(AB))
3 . N/C
4 CBT (TB1-K1)
5 . N/C
6 . N/C
DX (DIODE)
NX1 (W(AB))
ST1 (W(AD))
PF2 (W(AA))
1 RELAY BOARD C-294301
TB1
TB2
K1
2
42A
C
NC
NO
CBT (JX1-4)
NX2 (W(AB))
PF1 (W(AA))
PF2
ST1
ST2
ST2 (TB2-NO)
W(AD)
NX3 (W(AB))
ST (T2 SHUNT TRIP)
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-1(PWR))
2 NG2 (W(AC))
3 14 (GFR-14)
4 N/C .
2 (GFR-2(GND))
15 (GFR-15)
W(AC)
NG2 (JG1-2)
(JG1-1)
(JG1-2)
(JG1-3)
(JG1-4)
GFA300
PWR
GND
GFR OPTIONAL GROUND FAULT RELAY
(OPTION)
TERMINATING RESISTOR GM116648 W/O 15 RELAY KIT
60
YEL
GRN
JX15
J15
FROM P15 15 RELAY (OPTIONAL) 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)
P15R (J15-5)
UNINS (S5) (J15-3)
YEL (J15-1)
GRN (J15-2)
N15R (J15-6)
(OPTION)
TERMINATING RESISTOR GM116502 WITH 15 RELAY KIT
120
(+)
(-)
CAN
(OPTION)
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
K15
K1 K2 K3 K4 K5 K6 K7 K8 K9 K10 K11 K12 K13 K14
TB7 TB8 TB9 TB10 TB11 TB12 TB13
CUSTOMER CONNECTIONS
FROM PR1 FAULT RELAY SHEET 1
JR1
JR1 CONNECTIONS
PIN #1 32A (TB1-K1(1 RELAY BOARD))
2 NR1 (TB1-2(1 RELAY BOARD))
3 PF3C (TB1-42A(1 RELAY BOARD))
4 N/C
32A (JR1-1)
NR1 (JR1-2)
PF3C (JR1-3)
CUSTOMER CONNECTION
COMMON FAULT RELAY (OPTIONAL)
APM603 CONTROLLER
W/ SPLIT ACTIVATOR, 1ø, 3ø & 600V
KOHLER
KOHLER, WI 53044
DIAGRAM, WIRING, 10.3L 150-200KW, APM603
APPROVALS
DRAWN TEV 03-05-19
CHECKED HCC 03-05-19
APPROVED TLK 03-05-19
SCALE N/A
SHEET 6-8
PLOTTED
DWG. NO. GM107538
D



REV	DATE	REVISION	BY
E	6-16-20	SEE SHEETS 2 AND 4 [CT204852]	TEV
F	2-25-21	SEE SHEET 3 [CT210227]	TEV
G	3-23-21	SEE SHEET 3 [CT210777]	TEV
H	7-26-21		TEV
J	24APR2024	(B-2)ADDED SDE TO OVERCURRENT TRIP & OF1 TO AUXILLARY SWITCH & SEE SHEET 8 [CT235296]	DUB

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

APM603 CONTROLLER
W/ SPLIT ACTIVATOR, 1ø, 3ø & 600V

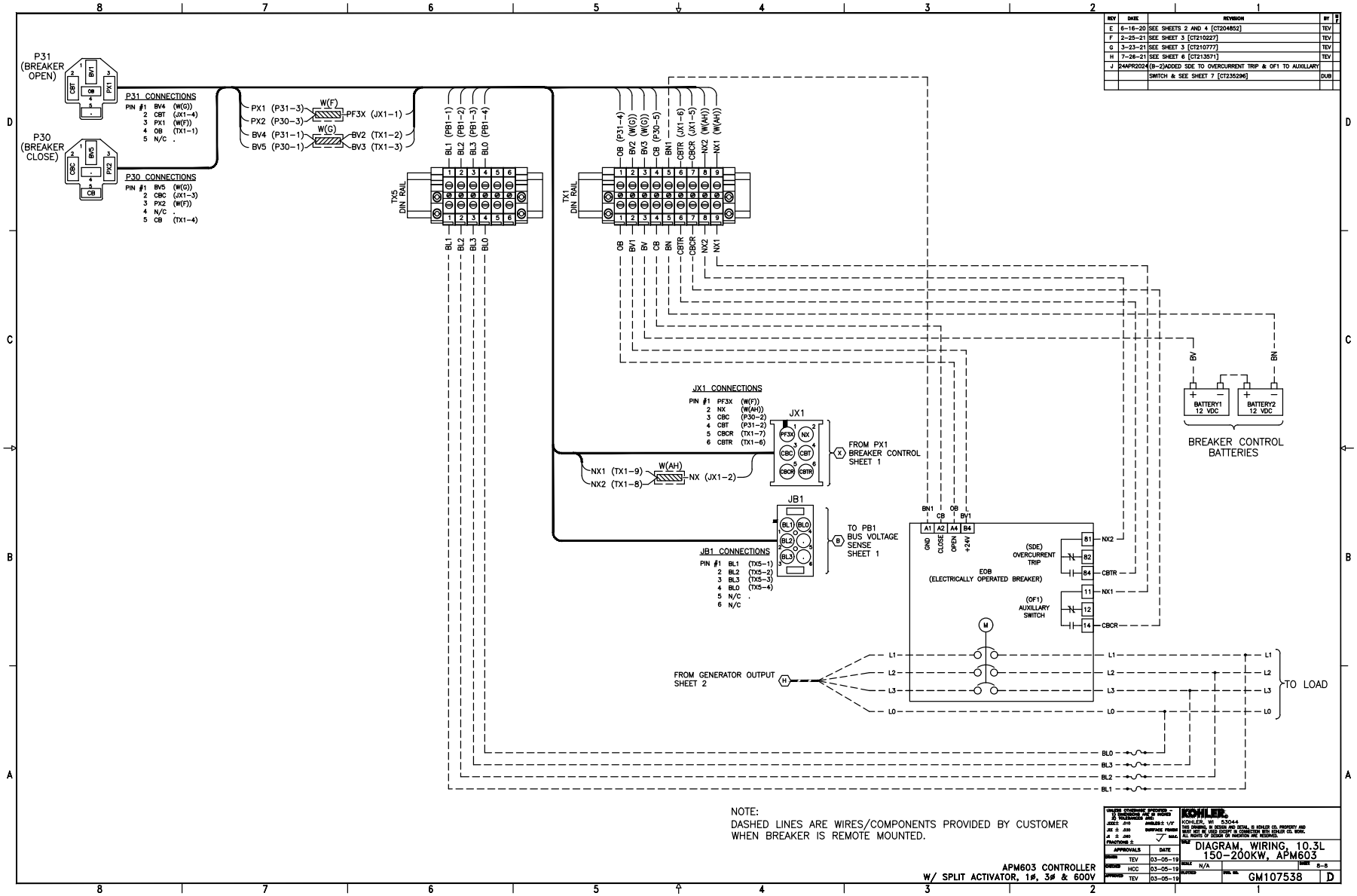
KOHLER CO.
KOHLER, WI 53044

APPROVALS	DATE
DRAWN TEV	03-05-19
CHECKED HCC	03-05-19
APPROVED TEV	03-05-19

DIAGRAM, WIRING, 10.3L 150-200KW, APM603

SCALE N/A | SHEET 7-8

DRAWING NO. GM107538 | D



REV	DATE	REVISION	BY	ECO
E	6-16-20	SEE SHEETS 2 AND 4 [CT204852]	TEV	
F	2-25-21	SEE SHEET 3 [CT210227]	TEV	
G	3-23-21	SEE SHEET 3 [CT210777]	TEV	
H	7-26-21	SEE SHEET 6 [CT213571]	TEV	
J	24APR2024	(B-2)ADDED SDE TO OVERCURRENT TRIP & OF1 TO AUXILLARY SWITCH & SEE SHEET 7 [CT2352296]	DUB	

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

APM603 CONTROLLER
W/ SPLIT ACTIVATOR, 1ø, 3ø & 600V

KOHLER.

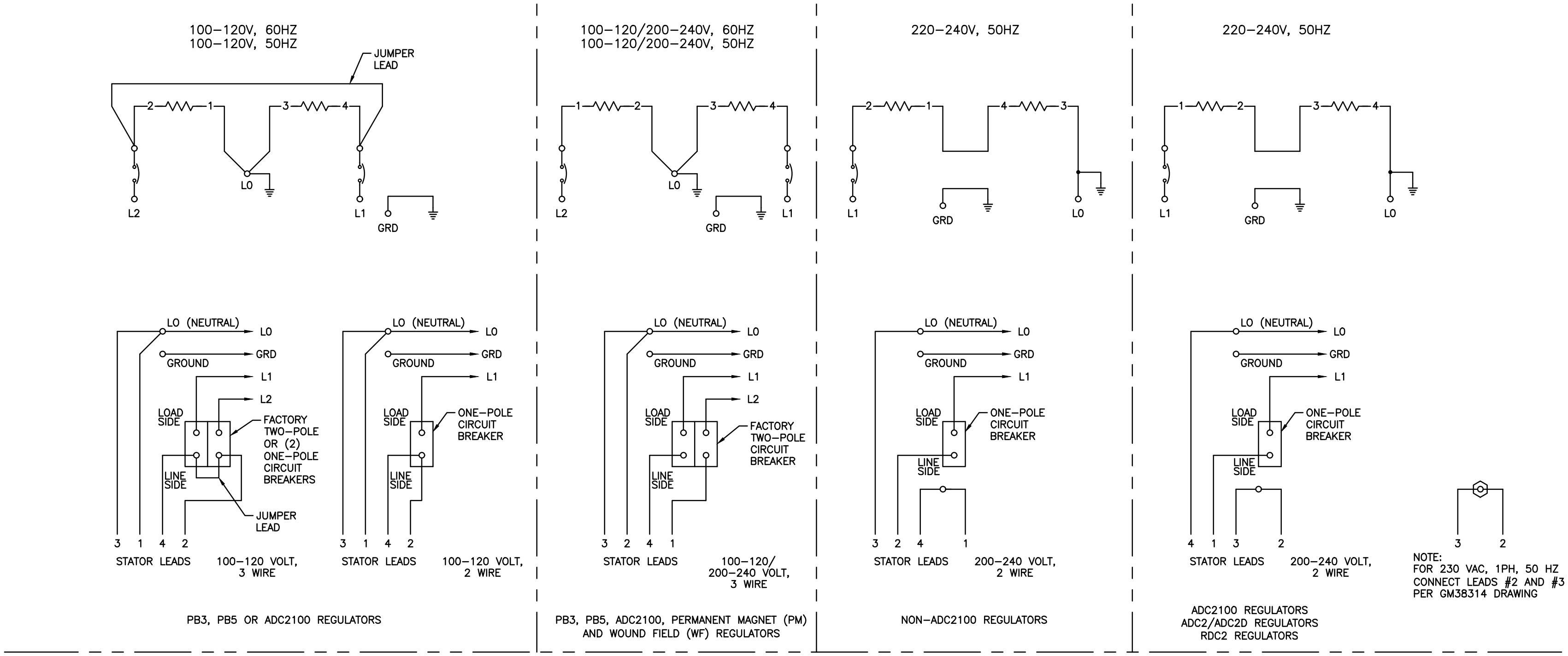
APPROVALS	DATE
DRAWN TEV	03-05-19
CHECKED HCC	03-05-19
APPROVED TEV	03-05-19

DIAGRAM, WIRING, 10.3L 150-200KW, APM603

SCALE N/A | SHEET 8-8

REVISED | DWG. NO. GM107538 | D

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.

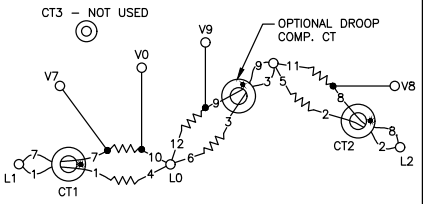
TITLE: DIAGRAM, ALTERNATOR CONNECTIONS
SCALE: NONE
CAD NO.:
SHEET: 1-9
PLOTTED:
DWG. NO.: ADV-5875 | D

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

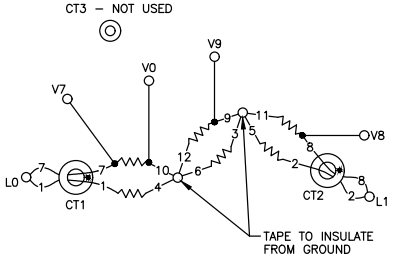
SOME SETS NOT RATED FOR SINGLE PHASE – SEE MANUALS



TB3 UP V7 LO METER SCALE LAMP JUMPER

12 LEAD ALTERNATOR, 3 WIRE, SINGLE PHASE

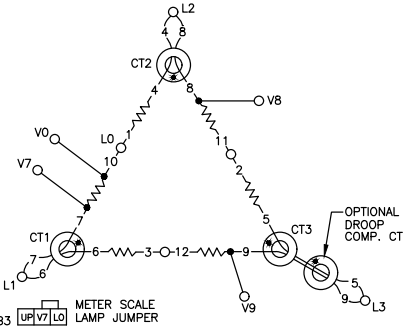
60 HZ: 240V
50 HZ: 220V
(MARINE ONLY)



TB3 UP V7 LO METER SCALE LAMP JUMPER

12 LEAD ALTERNATOR, 4 WIRE, DELTA

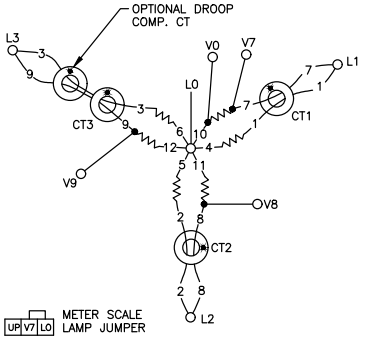
60 HZ: 120/240V
50 HZ: 110/220V



TB3 UP V7 LO METER SCALE LAMP JUMPER

12 LEAD ALTERNATOR, 4 WIRE, LOW WYE

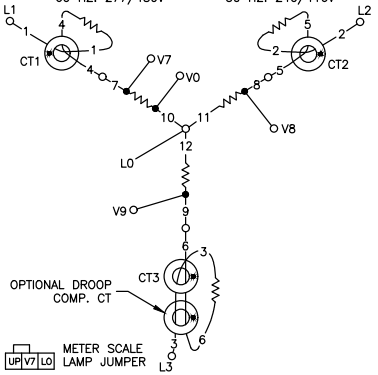
60 HZ: 120/208V
60 HZ: 127/220V
60 HZ: 139/240V
50 HZ: 110/190V
50 HZ: 115/200V
50 HZ: 120/208V



TB3 UP V7 LO METER SCALE LAMP JUMPER

12 LEAD ALTERNATOR, 4 WIRE, HI WYE

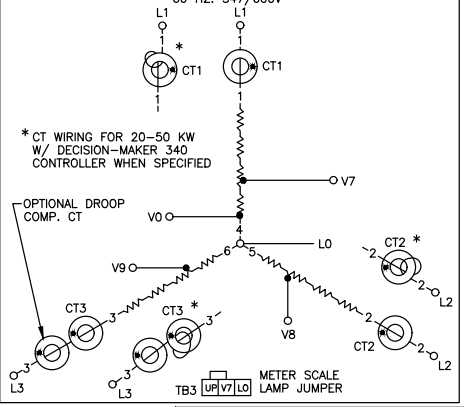
60 HZ: 220/380V
60 HZ: 240/416V
60 HZ: 277/480V
50 HZ: 220/380V
50 HZ: 230/400V
50 HZ: 240/416V



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

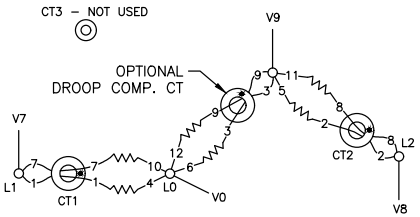
PLOTTED | DWG. NO. ADV-5875 | C

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

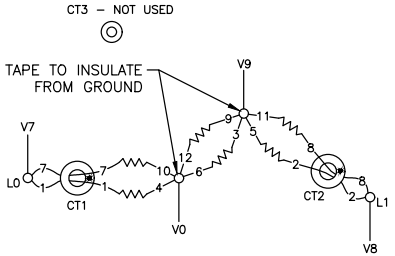
SOME SETS NOT RATED FOR SINGLE PHASE – SEE MANUALS



TB3 UP V7 LO METER SCALE LAMP JUMPER

12 LEAD ALTERNATOR, 3 WIRE, SINGLE PHASE

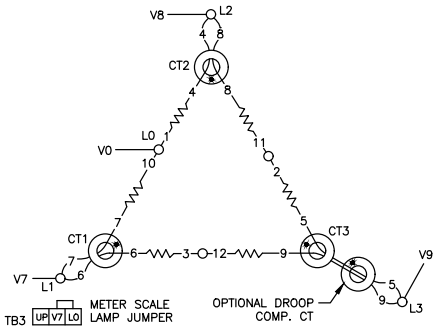
60 HZ: 240V
50 HZ: 220V
(MARINE ONLY)



TB3 UP V7 LO METER SCALE LAMP JUMPER

12 LEAD ALTERNATOR, 4 WIRE, DELTA

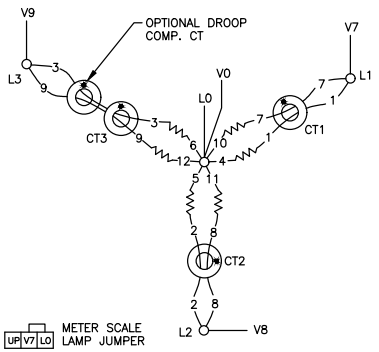
60 HZ: 120/240V
50 HZ: 110/220V



TB3 UP V7 LO METER SCALE LAMP JUMPER

12 LEAD ALTERNATOR, 4 WIRE, LOW WYE

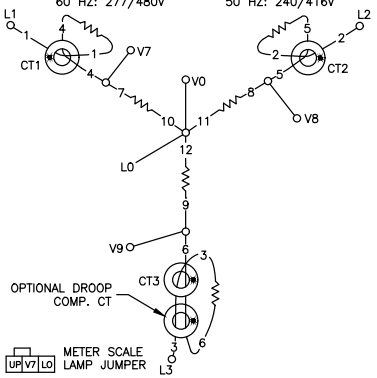
60 HZ: 120/208V
60 HZ: 127/220V
60 HZ: 139/240V
50 HZ: 110/190V
50 HZ: 115/200V
50 HZ: 120/208V



TB3 UP V7 LO METER SCALE LAMP JUMPER

12 LEAD ALTERNATOR, 4 WIRE, HI WYE

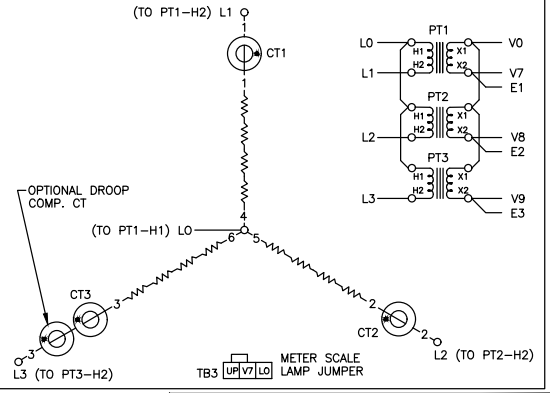
60 HZ: 220/380V
60 HZ: 240/416V
60 HZ: 277/480V
50 HZ: 220/380V
50 HZ: 230/400V
50 HZ: 240/416V



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

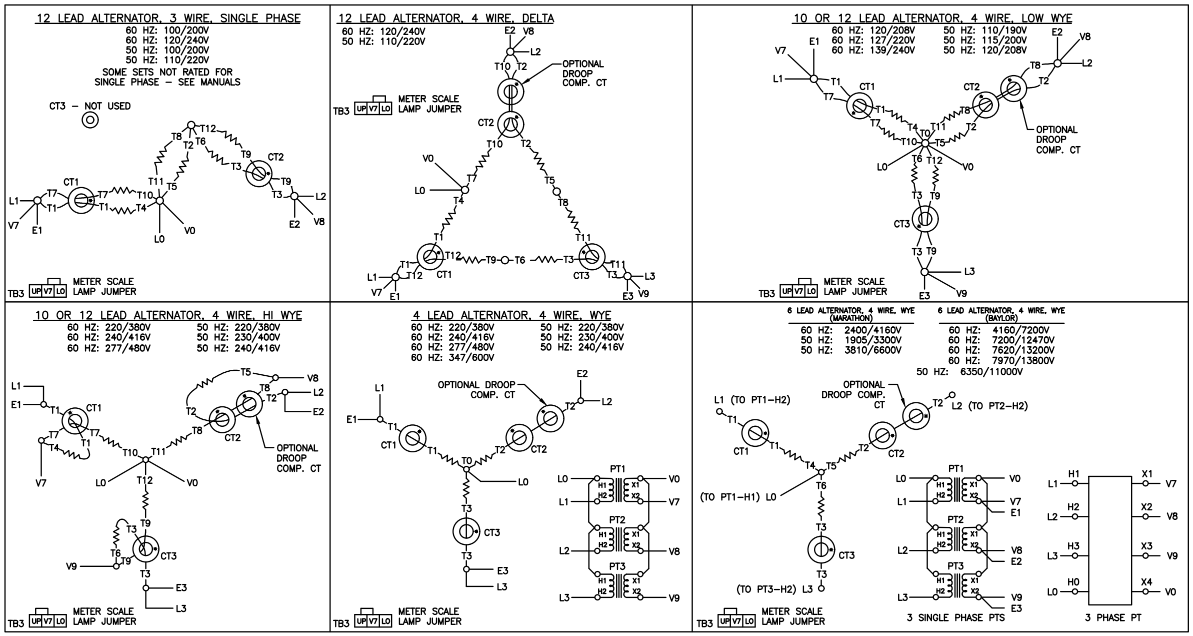
APPROVALS		DATE
DRAWN	LDS	8-25-98
CHECKED	TLK	6-23-99
APPROVED	JMH	6-23-99

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	

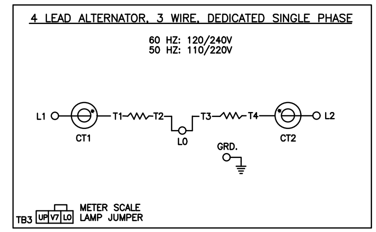
3 PHASE GENERATOR CONNECTIONS



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 ±

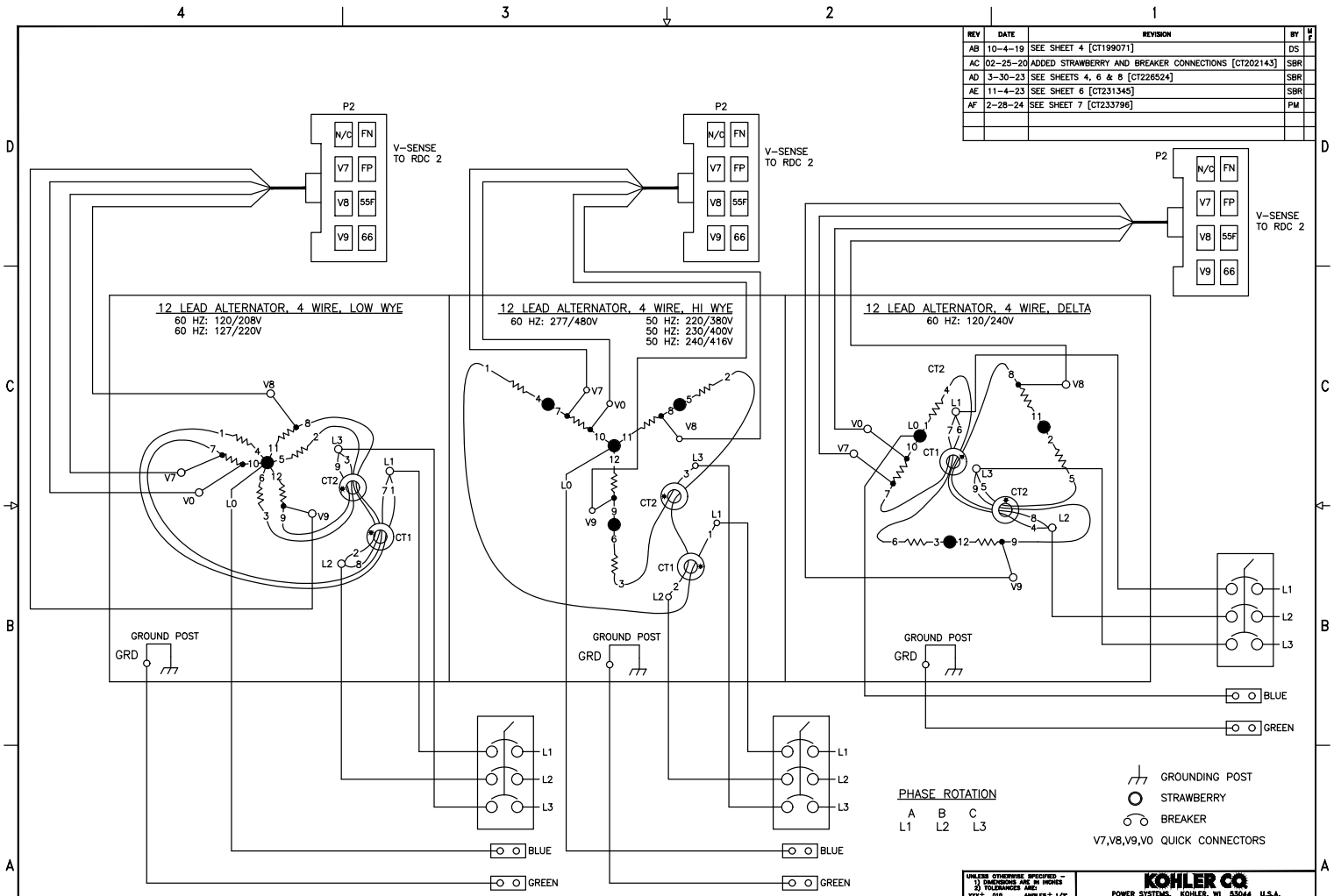
APPROVALS		DATE
DRAWN	DFS	5-27-04
CHECKED	JS	5-27-04
APPROVED	JS	5-27-04

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

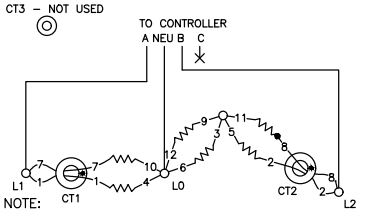
PLOTTED | DWG. NO. ADV-5875 | C

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

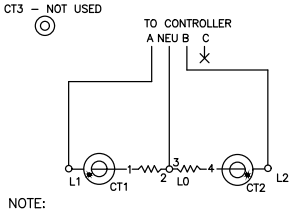
SOME SETS NOT RATED FOR SINGLE PHASE – SEE MANUALS



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

4 LEAD ALTERNATOR, 3 WIRE, SINGLE PHASE

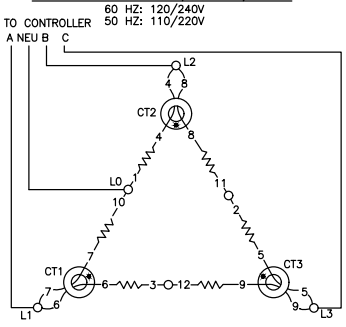
60 HZ: 100–120/200–240V
50 HZ: 100–120/200–240V



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

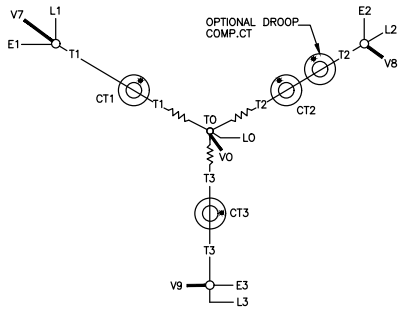
12 LEAD ALTERNATOR, 4 WIRE, DELTA

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



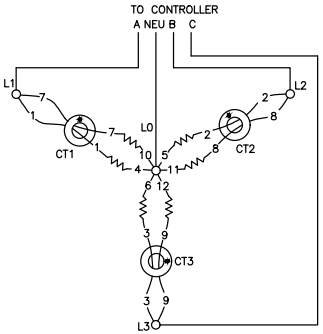
TB3 | UP | V7 | LO | METER SCALE LAMP JUMPER | W/APM603 CONTROLLER

PHASE ROTATION

A	B	C
L1	L2	L3

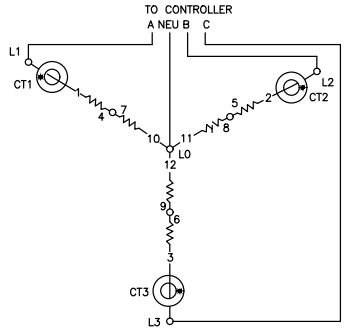
12 LEAD ALTERNATOR, 4 WIRE, LOW WYE

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



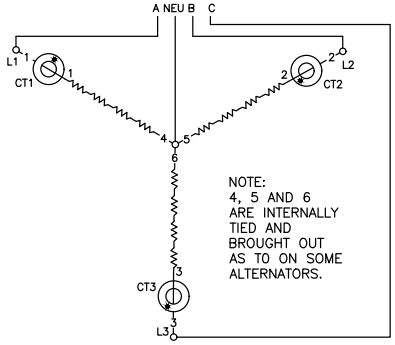
12 LEAD ALTERNATOR, 4 WIRE, HI WYE

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.

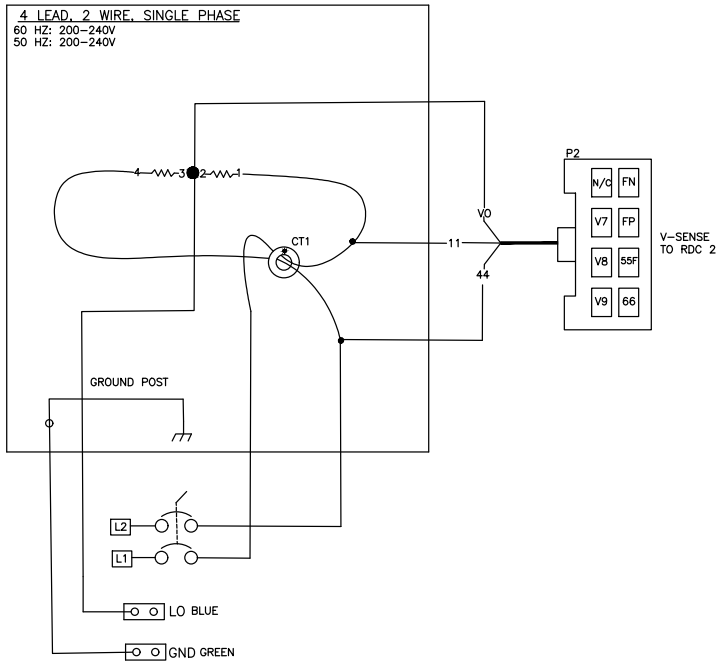
DEC3500 CONTROLLER
APM603 CONTROLLER
KOHLER & MARATHON ALTERNATORS ONLY

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

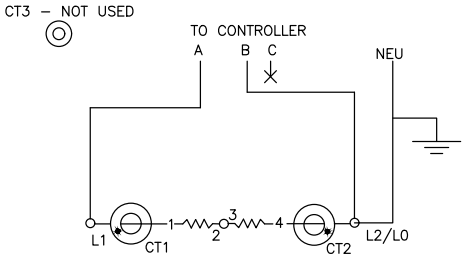
KOHLER CO.
POWER SYSTEMS, KOHLER, WI 53044 U.S.A.

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

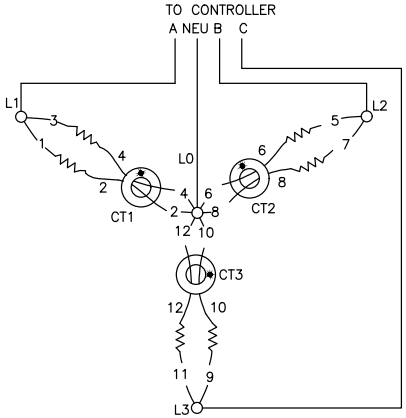
SCALE: NONE | DWG NO. | SHEET 8-9

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

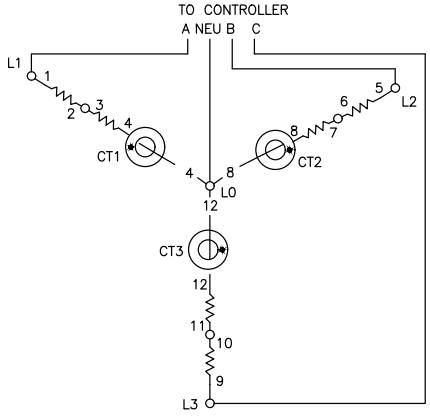
12 LEAD ALTERNATOR, 4 WIRE, LOW WYE, PARALLEL STAR

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



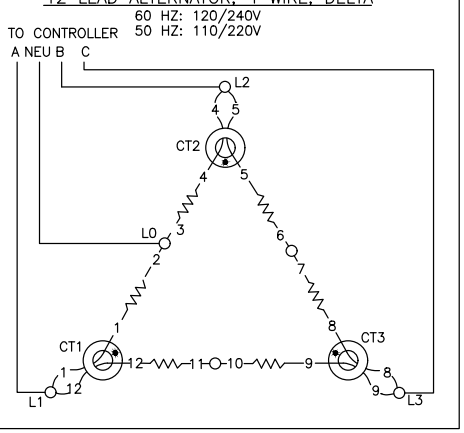
12 LEAD ALTERNATOR, 4 WIRE, HI WYE, SERIES STAR

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

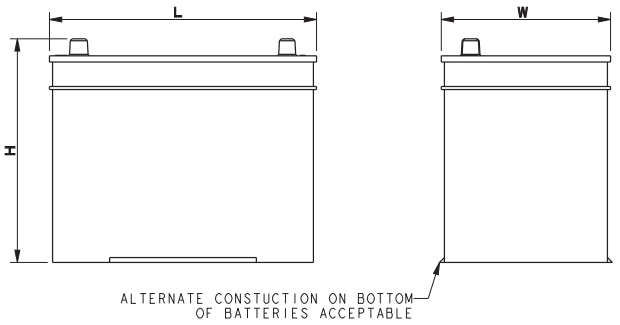
PART NO.	REV		SAE DIMENSION L	SAE DIMENSION W	SAE DIMENSION H	VOLTAGE	COLD CRANKING AMPS AT 0°F MINIMUM	RESERVE CAP MINUTES AT 80°F MINIMUM	POST LAYOUT /STYLE	CHARGE TYPE	BATTERY CONSTRUCTION (SEE SHEET 2)	BCI GROUP	INTERNAL RESISTANCE (MΩ)
~~244578~~	~~AF~~		~~333.5 [13.13]~~	~~181.1 [7.13]~~	~~238.5 [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:

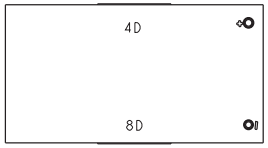
DIMENSIONS IN [ ] ARE ENGLISH EQUIVALENTS.

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

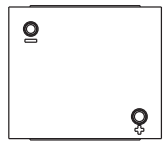
□ INDICATES PART NUMBERS AFFECTED BY LATEST DRAWING REVISION



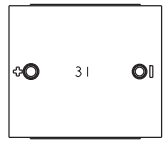
LAYOUT A



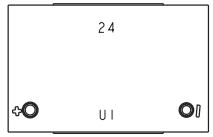
LAYOUT B



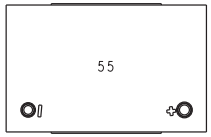
LAYOUT C



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

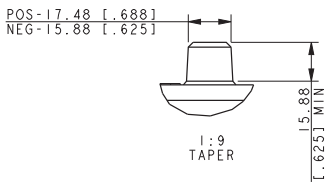
KOHLER.
KOHLER, WISCONSIN 53044

TITLE: DWG, BATTERY

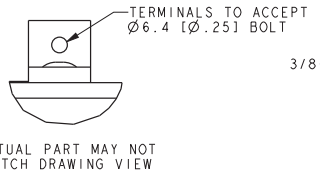
SCALE 0.30 | CAD NO. | SHEET 1 of 2

DWG NO. 244578-CMP | D

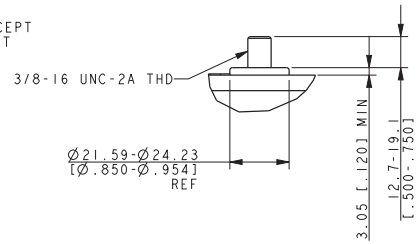
STYLE 1



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.

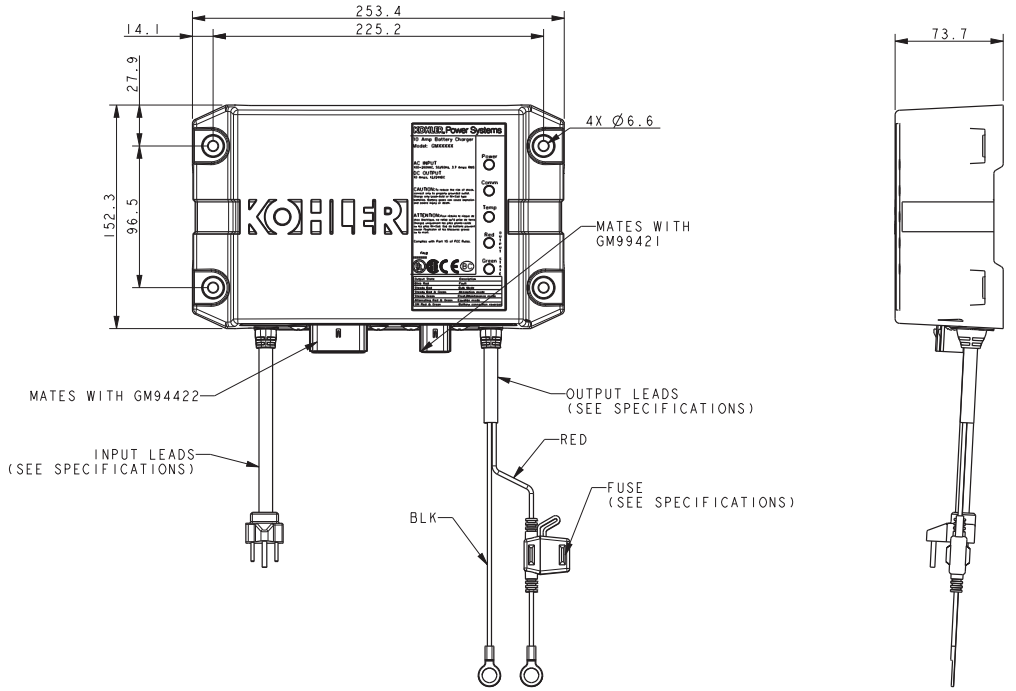
DOCUMENTATION:
THERE SHALL BE AN INSTALLATION / OPERATIONAL MANUAL SUPPLIED WITH EACH CHARGER. PER KOHLER SUPPLIED ARTWORK.

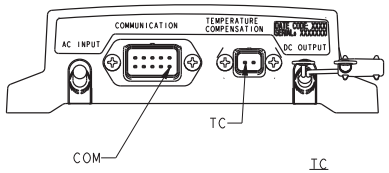
CERTIFICATIONS (US AND CANADA):
- UL1236
- CSA - C22.2 NO 107.2-01
- FCC- TITLE 47, PART 15 CLASS A
- CE
- EN 61000-6-2
- CEC AND DOE
- NFPA-110 LEVEL1 (WHEN SUPPORTED WITH APPLICABLE KOHLER CONTROLLER)
- IBC

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

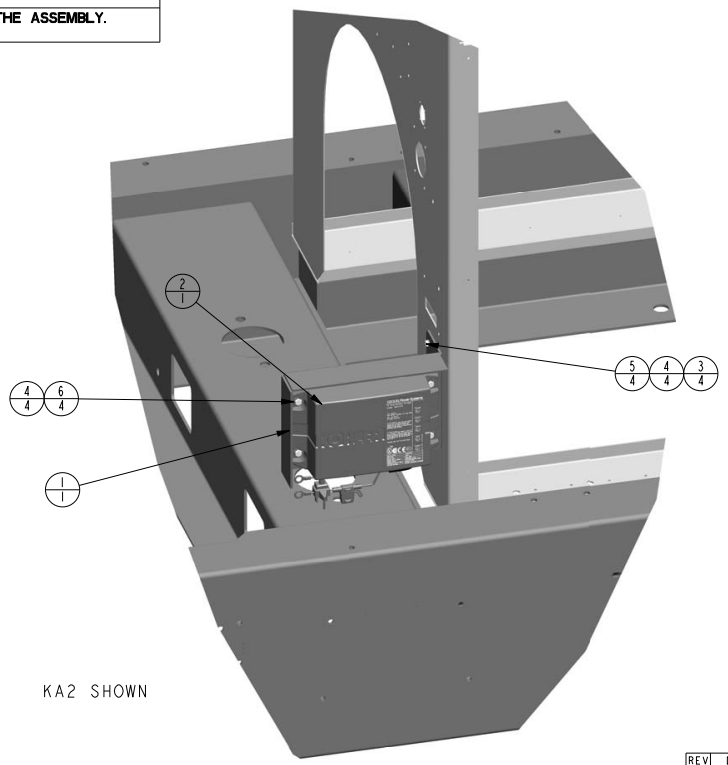
KOHLER CO. METRIC PRO-E
POWER SYSTEMS, KOHLER, WI 53044 U.S.A.

TITLE
CHARGER, BATTERY 10 AMP

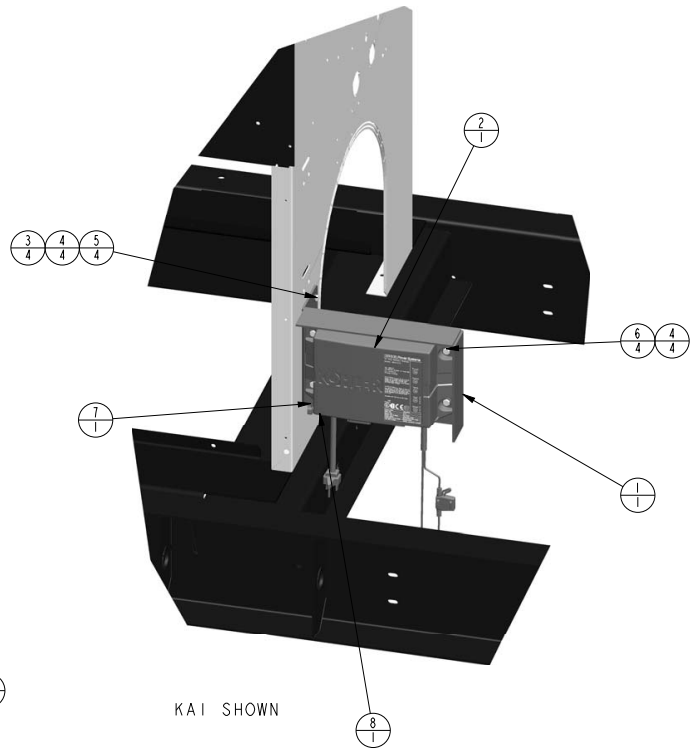
SCALE 0.50 | CAD NO. | SHEET 1 of 1
DWG NO. GM87448 | D

GROUP NO.	ITEM	PART NO	QTY	DESCRIPTION
GM103365-KA1				BATTERY CHARGER, 12V 10A
	1	GM103339	1	BRACKET, BATTERY CHARGER
	2	GM87448	1	CHARGER, BATTERY
	3	M125A-06-80	4	WASHER, PLAIN 6.4 ID X 12.0 OD
	4	M6923-06-80	8	NUT, HEX 6MM
	5	M933-06016-60	4	SCREW, HEX CAP
	6	M933-06025-60	4	SCREW, HEX CAP
	7	361567	1	BASE, TIE WRAP SNAPIN
	8	X-468-1	1	CABLE TIE
GM103365-KA2				BATTERY CHARGE, 12V 10A
	1	GM103340	1	BRACKET, BATTERY CHARGER
	2	GM87448	1	CHARGER, BATTERY
	3	M125A-06-80	4	WASHER, PLAIN 6.4 ID X 12.0 OD
	4	M6923-06-80	8	NUT, HEX 6MM
	5	M933-06016-60	4	SCREW, HEX CAP
	6	M933-06025-60	4	SCREW, HEX CAP

THIS IS AN AUTOMATED TABLE. ALL UPDATES MUST BE MADE IN THE ASSEMBLY. ITEM 7 IS FIXED



KA2 SHOWN



KA1 SHOWN

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
-	5-1-17	NEW DRAWING [CT173023]	SAM

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	SAM	5-1-17
CHECKED	KJB	5-1-17
APPROVED	KJB	5-1-17

KOHLER.
KOHLER, WISCONSIN 53044

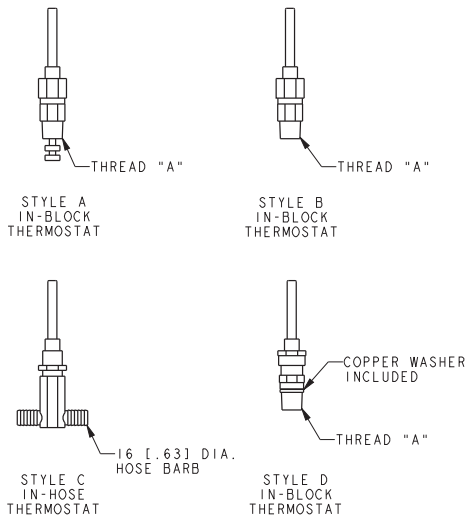
TITLE
DWG, ASSY BATTERY CHARGER 10A

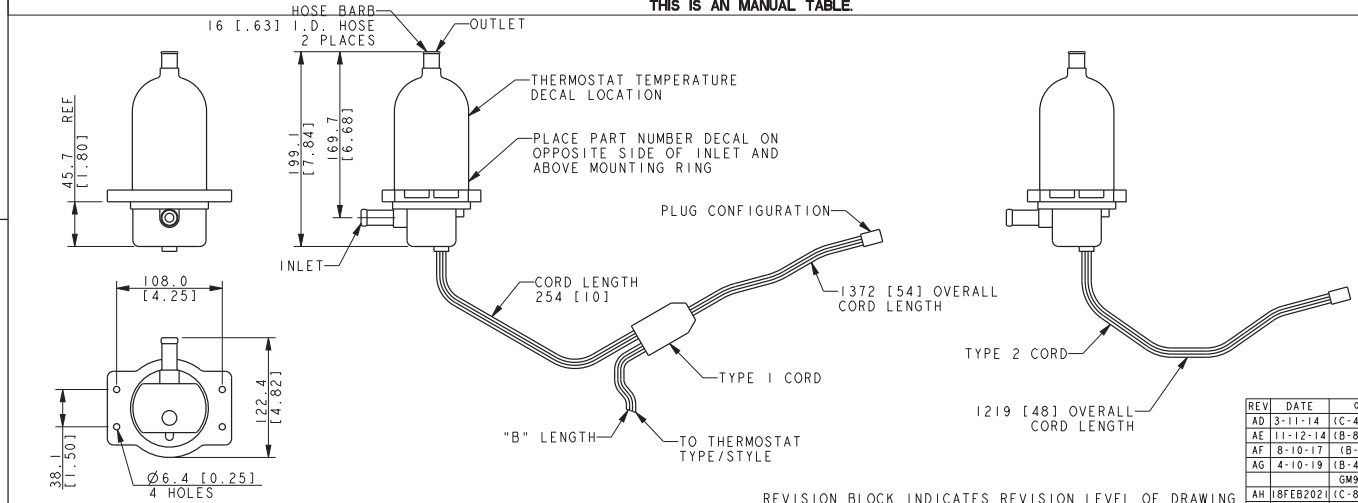
SCALE 0.25 | CAD NO. | SHEET 1 of 1

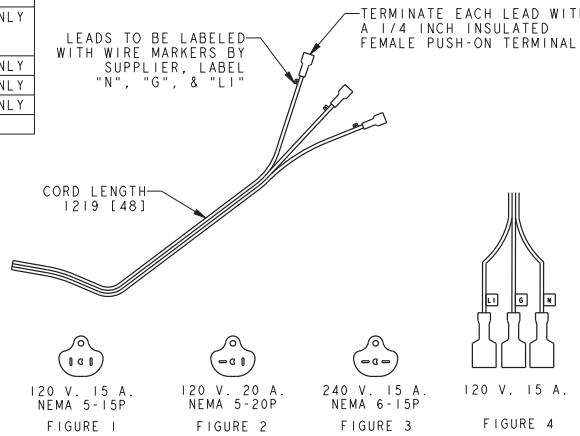
DWG NO. **GM103365** | **D**

PART NO.	REV		VOLTS	WATTS	AMPS	THERMOSTAT TYPE/STYLE	REMOTE SENSOR TEMP. RANGE	TANK SENSOR TEMP RANGE	THREAD SIZE "A"	PLUG CONFIG.	LENGTH "B"	CORD TYPE	REMARKS
324930	W		120	1800	15.0	IN BLOCK/B	38°/49°C[100°/120°F]	49°/60°C[120°/140°F]	1/2 NPT	FIG-2	1575 [62.0]	1	-
324931	W		240	2000	8.3	IN BLOCK/B	38°/49°C[100°/120°F]	49°/60°C[120°/140°F]	1/2 NPT	FIG-3	1575 [62.0]	1	-
326220	W		120	1000	8.3	IN BLOCK/A	38°/49°C[100°/120°F]	49°/60°C[120°/140°F]	5/8-18 UNF 2A	FIG-1	1372 [54.0]	1	-
326221	W		240	1000	4.2	IN BLOCK/A	38°/49°C[100°/120°F]	49°/60°C[120°/140°F]	5/8-18 UNF 2A	FIG-3	1372 [54.0]	1	-
326222	W		120	1000	8.3	IN HOSE/C	27°/38°C[80°/100°F]	38°/49°C[100°/120°F]	-	FIG-1	1372 [54.0]	1	-
326224	Z		240	1000	4.2	IN HOSE/C	27°/38°C[80°/100°F]	38°/49°C[100°/120°F]	-	FIG-3	1372 [54.0]	1	-
326228	W		120	1500	12.5	IN BLOCK/A	38°/49°C[100°/120°F]	49°/60°C[120°/140°F]	1/2 NPT	FIG-1	1372 [54.0]	1	-
326229	W		240	1500	6.3	IN BLOCK/A	38°/49°C[100°/120°F]	49°/60°C[120°/140°F]	1/2 NPT	FIG-3	1372 [54.0]	1	-
326234	W		120	1800	15.0	IN BLOCK/A	38°/49°C[100°/120°F]	49°/60°C[120°/140°F]	1/2 NPT	FIG-2	1575 [62.0]	1	-
326235	W		240	2000	8.3	IN BLOCK/A	38°/49°C[100°/120°F]	49°/60°C[120°/140°F]	1/2 NPT	FIG-3	1575 [62.0]	1	-
326247	W		120	1500	12.5	IN BLOCK/A	38°/49°C[100°/120°F]	49°/60°C[120°/140°F]	5/8-18 UNF 2A	FIG-1	1372 [54.0]	1	-
326248	W		240	1500	6.3	IN BLOCK/A	38°/49°C[100°/120°F]	49°/60°C[120°/140°F]	5/8-18 UNF 2A	FIG-3	1372 [54.0]	1	-
336703	W		120	1500	12.5	IN HOSE/C	16°/27°C[60°/80°F]	38°/49°C[100°/120°F]	-	FIG-1	1372 [54.0]	1	-
352945	Y		120	1500	12.5	-	-	27°/38°C[80°/100°F]	-	FIG-1	1524 [60.0]	2	IN-BASE SENSING UNIT ONLY
ES-89230	-		120	1500	12.5	-	-	38°/49°C[100°/120°F]	-	FIG-1	1524 [60.0]	1	IN-BASE SENSING UNIT ONLY
352946	W		240	1500	6.3	-	-	27°/38°C[80°/100°F]	-	FIG-3	1219 [48.0]	2	IN-BASE SENSING UNIT ONLY
358311	Y		120	1000	8.3	-	-	27°/38°C[80°/100°F]	-	FIG-1	-	2	IN-BASE SENSING UNIT ONLY
358327	W		240	1000	4.2	-	-	27°/38°C[80°/100°F]	-	FIG-3	-	2	IN-BASE SENSING UNIT ONLY
GM23005	W		120	1800	15.0	IN BLOCK/D	27°/38°C[80°/100°F]	49°/60°C[120°/140°F]	28-1.25 6g METRIC	FIG-2	762 [30.0]	1	-
GM23006	W		240	2000	8.3	IN BLOCK/D	27°/38°C[80°/100°F]	49°/60°C[120°/140°F]	28-1.25 6g METRIC	FIG-3	762 [30.0]	1	-
GM24947	W		240	2000	8.3	IN BLOCK/A	38°/49°C[100°/120°F]	49°/60°C[120°/140°F]	M14-1.5 METRIC	FIG-3	1575 [62.0]	1	-
GM24948	W		120	1800	15.0	IN BLOCK/A	38°/49°C[100°/120°F]	49°/60°C[120°/140°F]	M14-1.5 METRIC	FIG-2	1575 [62.0]	1	-
GM28585	W		120	1000	8.3	-	-	27°/38°C[80°/100°F]	-	FIG-1	-	2	CORD THERMOSTAT [40°/60°F]
GM31942	Y		120	1000	8.3	IN BLOCK/A	27°/38°C[80°/100°F]	49°/60°C[120°/140°F]	1/2 NPT	FIG-1	1372 [54.0]	1	-
GM31943	Y		240	1000	4.2	IN BLOCK/A	27°/38°C[80°/100°F]	49°/60°C[120°/140°F]	1/2 NPT	FIG-3	1372 [54.0]	1	-
GM62682	Y		120	1000	8.3	-	-	27°/38°C[80°/100°F]	-	FIG-4	-	3	-
GM75552	AA		120	1800	15.0	-	-	27°/38°C[80°/100°F]	-	FIG-2	-	2	IN-BASE SENSING UNIT ONLY
GM75553	AA		240	2000	8.3	-	-	27°/38°C[80°/100°F]	-	FIG-3	-	2	IN-BASE SENSING UNIT ONLY
GM83980	AD		120	1000	8.3	-	-	16°/27°C[60°/80°F]	-	FIG-1	1524 [60.0]	2	IN-BASE SENSING UNIT ONLY INCLUDES THERMOSTAT TEMPERATURE DECAL
GM83981	AB		120	1500	12.5	-	-	16°/27°C[60°/80°F]	-	FIG-1	1219 [48.0]	2	IN-BASE SENSING UNIT ONLY INCLUDES THERMOSTAT TEMPERATURE DECAL
GM95436	-		120	500	4.2	-	-	27°/38°C[80°/100°F]	-	FIG-1	-	2	IN-BASE SENSING UNIT ONLY
GM95437	-		240	500	2.1	-	-	27°/38°C[80°/100°F]	-	FIG-3	-	2	IN-BASE SENSING UNIT ONLY
GM103846	-		120	1800	15.0	-	-	16°/27°C[60°/80°F]	-	FIG-2	-	2	IN-BASE SENSING UNIT ONLY

THIS IS AN MANUAL TABLE.







REVISION BLOCK INDICATES REVISION LEVEL OF DRAWING NOT PART REVISION. SEE PART REVISION LEVEL BEHIND PART NUMBER FOR CURRENT PART REVISION LEVEL.

VALUES IN [ ] ARE ENGLISH EQUIVALENTS.

☐ INDICATES PART NUMBERS AFFECTED BY LATEST REVISION

REV	DATE	ON COMPOSITE DWGS, SEE PART NO. FOR REVISION LEVEL	BY
AD	3-11-14	(C-4) GM83980 "LENGTH" 1524 WAS 1219 [CT74793]	JMR
AE	11-12-14	(B-8) GM95436 AND GM95437 ADDED [CT99196]	DRA
AF	8-10-17	(B-8) GM103846 ADDED [CT177684]	SAM
AG	4-10-19	(B-4) "CORD TYPE 2" ADDED FOR GM95436 &	
		GM95437 [CT194828]	PAS
AH	18FEB2021	(C-8) ES-89230 ADDED [CT210046]	AMH

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	9-22-11
CHECKED	CF	9-22-11
APPROVED	CF	9-22-11

TITLE: **DWG, HEATER, BLOCK**

SCALE 0.40 | CAD NO. | SHEET 1 of 1

DWG NO. **326220-CMP** | **D**

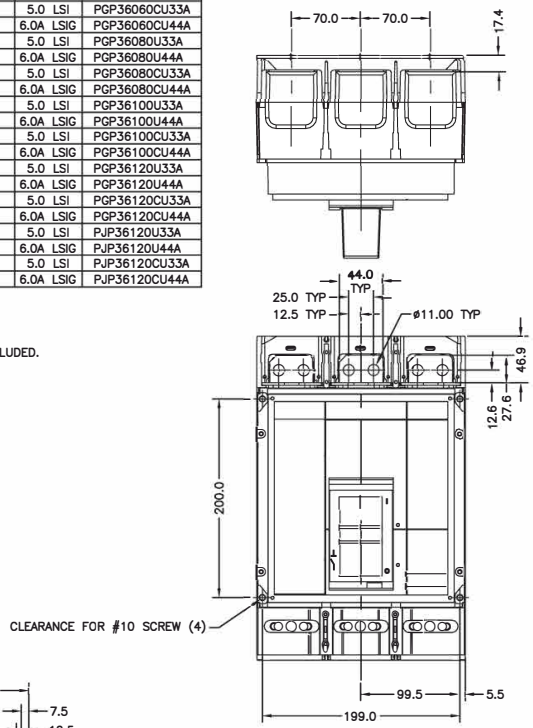
PART NO.	REV	AMPS	% RATING	GFI	INT@480V	TRIP	VENDOR NO.
GM24181-1	C	600	100	NO	35kA	5.0 LSI	PGP36060CU33A
GM24181-2	C	600	100	YES	35kA	6.0A LSIG	PGP36060CU44A
GM24181-3	C	800	80	NO	35kA	5.0 LSI	PGP36080U33A
GM24181-4	C	800	80	YES	35kA	6.0A LSIG	PGP36080U44A
GM24181-5	C	800	100	NO	35kA	5.0 LSI	PGP36080CU33A
GM24181-6	C	800	100	YES	35kA	6.0A LSIG	PGP36080CU44A
GM24181-7	C	1000	80	NO	35kA	5.0 LSI	PGP36100U33A
GM24181-8	C	1000	80	YES	35kA	6.0A LSIG	PGP36100U44A
GM24181-9	C	1000	100	NO	35kA	5.0 LSI	PGP36100CU33A
GM24181-10	C	1000	100	YES	35kA	6.0A LSIG	PGP36100CU44A
GM24181-11	C	1200	80	NO	35kA	5.0 LSI	PGP36120U33A
GM24181-12	C	1200	80	YES	35kA	6.0A LSIG	PGP36120U44A
GM24181-13	C	1200	100	NO	35kA	5.0 LSI	PGP36120CU33A
GM24181-14	C	1200	100	YES	35kA	6.0A LSIG	PGP36120CU44A
GM24181-15	D	1200	80	NO	65kA	5.0 LSI	PJP36120U33A
GM24181-16	D	1200	80	YES	65kA	6.0A LSIG	PJP36120U44A
GM24181-17	D	1200	100	NO	65kA	5.0 LSI	PJP36120CU33A
GM24181-18	D	1200	100	YES	65kA	6.0A LSIG	PJP36120CU44A

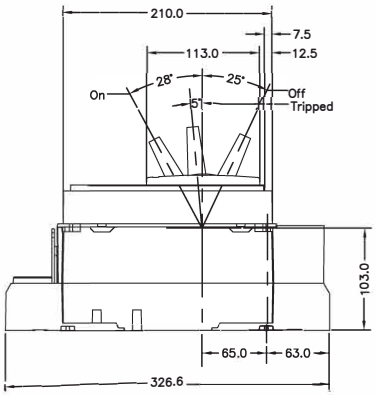
NOTE: (4) #10-32 X 4.5 INCH MOUNTING SCREWS INCLUDED.

REV	DATE	REVISION	BY
–	3-22-02	NEW DRAWING [58248]	WSD
A	8-12-03	(D-4) THREADED BAR NOTE ADDED. [70090]	SRL
B	11-12-03	(D-7) GM24181-13 GFI: NO WAS YES [70985]	WSD
C	2-23-07	(D-3) KOHLER NOTE ADDED [76285]	GFN
D	1-10-11	(D-8) GM24181-15 THRU -18 ADDED [80647-15]	WSD

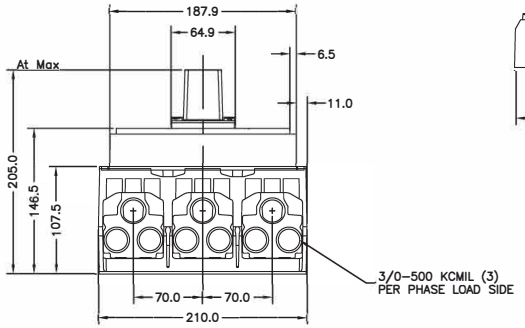
NOTE:
KOHLER PART # TO BE CLEARLY VISIBLE ON CIRCUIT BREAKER AND ON INDIVIDUAL PACKAGING.

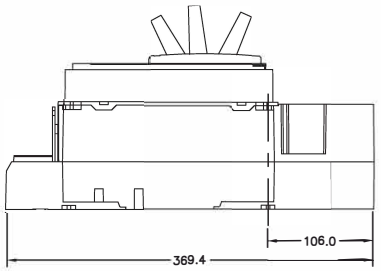
NOTE:
THREADED BAR SUPPLIED WITH BREAKER IS USED WITH LUGS OR WHEN BUS BARS ARE INSTALLED WITH BOLTS INSERTED FROM THE FRONT. REMOVE AND DISCARD BAR WHEN BOLTS ARE INSTALLED FROM THE REAR OF BREAKER.

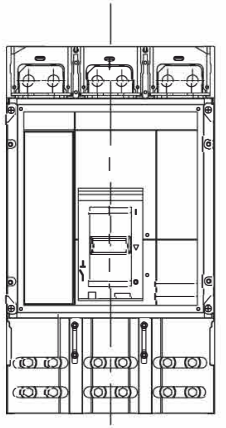


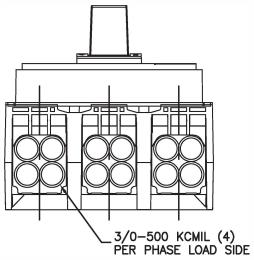


600-800A









1000-1200A
DIMENSIONS SAME AS 600-800A
EXCEPT WHERE NOTED

METRIC CAD FILE

SQUARE D P-FRAME CIRCUIT BREAKER
3 POLE ELECTRONIC TRIP

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

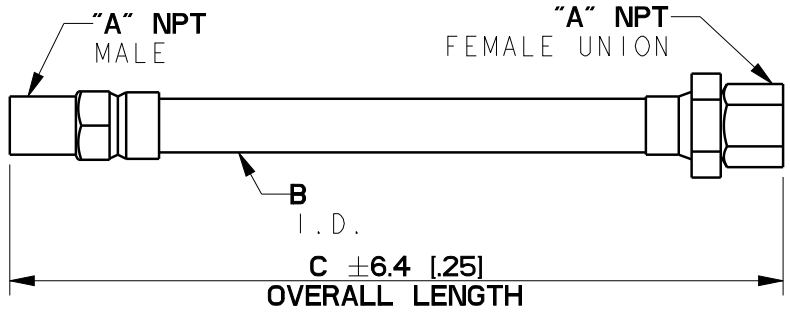
KOHLER CO.
POWER SYSTEMS, KOHLER, WI 53044 U.S.A.

TITLE: BREAKER, CIRCUIT

APPROVALS		DATE
DRAWN	WSD	3-22-02
CHECKED	WSD	3-22-02
APPROVED	AJH	3-22-02

SCALE .5XP | DWG NO. GM24181.DWG | SHEET 1-1
DWG. NO. GM24181 | D
PLOTTED DATE

PART NO.	REV		A	B	C		SERVICE ONLY
					MM	IN	
X-504-1	AT	□	1/2	1/2	304.8	12	
X-504-2	AS		3/4	3/4	304.8	12	X
~~X-504-12~~	~~AS~~		~~3/8~~	~~3/8~~	~~385.8~~	~~15 3/16~~	
X-504-16 *	AT	□	2	2	457.2	18	
X-504-17	AS		1	1	508.0	20	X
X-504-18	AS		3/4	3/4	730.3	28 3/4	X
X-504-20 *	AT	□	1	1	736.6	29	
X-504-21 *	AV	□	1	1	457.2	18	
X-504-22 *	AV	□	1 1/2	1 1/2	717.6	28 1/4	
~~X-504-23~~	~~AS~~		~~1~~	~~1~~	~~342.9~~	~~13 1/2~~	
X-504-25 *	AU	□	1/4	3/8	1066.8	42	
X-504-26 *	AU	□	3	3	838.2	33	
X-504-27 *	A	□	2	2	825	32 1/2	
THIS IS A MANUAL TABLE							



MATERIAL:
ANNULAR CORRUGATED BRONZE/STAINLESS STEEL HOSE WITH BRONZE/
STAINLESS STEEL TUBULAR WIRE BRAID OR EQUIV.

FITTINGS-
FEMALE UNION - STEEL OR BRASS (NO GALVANIZED FITTING)
ALL FLUX USED IN BRAZING MUST BE REMOVED.
INSTALL HAND TIGHT.
* PRODUCT SHALL MEET UL 536 AND ULC ORD-C536 FOR CANADA
-USE-
NATURAL GAS, LP FUEL, GASOLINE, DIESEL FUEL, WATER & OIL.

NOTE:
PAINT MALE ENDS OF FUEL LINE
1200° F, HIGH TEMPERATURE BLACK.

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

□ INDICATES PART NUMBERS AFFECTED BY LATEST DRAWING REVISION

REV	DATE	ON COMPOSITE DWGS, SEE PART NO. FOR REVISION LEVEL	BY
AW	1-9-19	(A-2,3) NOTE: CSA B149 WAS CSA 8.1 [CT192179]	PAS
AY	3-11-19	(C-3) X-504-2, 12, 17, 18 & 23 VOIDED;	
		'SERVICE ONLY' COLUMN ADDED; X-504-1, 16,	
		20, 25, 26, 27 CSA ASTERISK ADDED [CT194154]	ARP
BA	10-9-19	(B-1,2) NOTE "PRODUCT SHALL MEET UL 536...CANADA" WAS	
		"MUST MEET CSA B149"; (C-1,2) MATERIAL NOTE UPDATED;	
		(D-4) X-504-1: "*" SYMBOL REMOVED; (B-4)	
		"PEP-RML-001" NOTE ADDED; (D-1,2) VIEW & NOTES	
		UPDATED [CT199012]	YBY

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	DKO	11-19-62
CHECKED	EB	9-21-68
APPROVED	SAS	2-22-84

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

TITLE
DWG, LINE, FLEX FUEL

SCALE 1.00 | CAD NO. | SHEET 1 of 1
DWG NO. X-504 | B

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

Stationary Standby Industrial Generator Set Extended Five-Year or Three Thousand (3000)-Hour Comprehensive 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	Five (5) years from registered startup or three thousand (3000) hours (whichever occurs first).

Extended warranty purchase must take place prior to expiration of standard warranty. Extended warranty is effective upon submission of purchase order in the online warranty system.

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. Damage to exterior or interior components resulting from extreme environmental conditions, including but not limited to heat, cold, humidity, flooding, salt, and high winds.
6. Damage caused by operation when emergency battle mode is enabled.
7. Original installation charges and startup costs.
8. Starting batteries and the following related expenses:
   a. Labor charges related to battery service.
   b. Travel expenses related to battery service.
9. Engine coolant heaters, heater controls, and circulating pumps after the first year of the warranty period.
10. Additional expenses for repairs performed after normal business hours, i.e. overtime or holiday labor rates.
11. Rental of equipment during the performance of warranty repairs.
12. Removal and replacement of non-Rehlko-supplied options and equipment.
13. Non-Rehlko replacement parts. Replacement of a failed part with a non-Rehlko part voids the warranty on that part.
14. Radiators replaced rather than repaired.
15. Fuel injection pumps not repaired by an authorized service representative.
16. Non-Rehlko-authorized repair shop labor without prior approval from the manufacturer Warranty Department.
17. Engine fluids such as fuel, oil, or coolant/antifreeze.
18. Shop supplies such as adhesives, cleaning solvents, and rags.
19. Expenses incurred investigating performance complaints unless the problem is caused by defective materials or workmanship.
20. Maintenance items such as fuses, lamps, filters, spark plugs, loose or leaking clamps, and adjustments.
21. 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-5561 6/25i

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

PROTOTYPE TEST REPORT

Models Covered:	**KG200**	Alternator Tested:	**4UA13**
Model Tested:	**KG200**	Engine Tested:	**KG10.3L**
Cooling System Tested:	**50C**	Voltage Tested:	**480V**

GENSET

Maximum power test to assure that the prime mover and alternator have sufficient capacity to operate within specifications.

Meets Rated Load

Steady-state load test to ensure voltage stability meets or exceeds ISO8528-5 requirements and to verify compliance with steady state speed control specifications.

Natural Gas

±0.75 % Frequency Band **±0.50** % Voltage Devation

LP Gas

±0.75 % Frequency Band **±0.50** % Voltage Devation

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. Values shown for model tested above. Please contact factory for additional details.

Natural Gas

Full Load Acceptance		Full Load Rejection	
-44.3	% Voltage Dip	**12.2**	% Voltage Overshoot
6.11	Seconds of Recovery Time	**1.90**	Seconds of Recovery Time
-24.13	% Frequency Dip	**6.72**	% Frequency Overshoot
8.65	Seconds of Recovery Time	**4.40**	Seconds of Recovery Time

G2 ISO8528-5 Class (G1, G2, G3)

LP Gas

Full Load Acceptance		Full Load Rejection	
-23.2	% Voltage Dip	**10.6**	% Voltage Overshoot
2.01	Seconds of Recovery Time	**3.33**	Seconds of Recovery Time
-14.25	% Frequency Dip	**6.57**	% Frequency Overshoot
1.81	Seconds of Recovery Time	**2.08**	Seconds of Recovery Time

G3 ISO8528-5 Class (G1, G2, G3)

PROTOTYPE TEST REPORT

Models Covered:	**KG200**	Alternator Tested:	**4UA13**
Model Tested:	**KG200**	Engine Tested:	**KG10.3L**
Cooling System Tested:	**50C**	Voltage Tested:	**480V**

GENSET

NFPA 110 one step testing to determine the amount of time required for the generator set to reach 90% voltage and frequency to allow the ATS to transfer.

Complies with NFPA 110 Type 10

Vibrational analysis to verify that generator vibrations are within acceptable limits per ISO 8528-9.

Complies

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

Complies

Generator set cooling and air flow tests to verify maximum operating ambient temperature. (Cooling system test results are available on TIB-118)

Acoustical noise intensity and sound attenuation effects tests (Acoustical noise results are available on TIB-114 &115)

Exhaust Back Pressure test completed to demonstrate within engine limitation (Exhaust back pressure test results are available on TIB-119)

ALTERNATOR

Alternator temperature rise test per NEMA MG1-32.6. Standby and prime ratings of the alternator are established during this test.

Alternator overload test per NEMA MG1-32.8. 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.

(Alternator detailed test results are available on TIB-102)

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

rehlko

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.