



Woodstock Power Company

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Submittal Package



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Voltage Diagram ADV-5875

Misc

Battery 244578
Battery Charger GM96383
Battery Charger Assembly GM103666
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



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Generator

Kohler 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	<p>KG200 Generator Set</p> <p>Includes the following:</p> <table border="0" style="width: 100%;"> <tr> <td style="width: 60%;">Literature Languages</td> <td>English</td> </tr> <tr> <td>Approvals and Listings</td> <td>UL2200 Listing/cUL Genset List</td> </tr> <tr> <td>Engine</td> <td>SnglFuel,UL,PreAlarm,NG,Stdby</td> </tr> <tr> <td>Nameplate Rating</td> <td>Standby 130C Rise</td> </tr> <tr> <td>Voltage</td> <td>60Hz, 120/208V, Wye, 3Ph, 4W</td> </tr> <tr> <td>Alternator</td> <td>4S13X</td> </tr> <tr> <td>Cooling System</td> <td>Unit Mounted Radiator, 50C</td> </tr> <tr> <td>Skid and Mounting</td> <td>Skid, 53"</td> </tr> <tr> <td>Air Intake</td> <td>Standard Duty</td> </tr> <tr> <td>Controller</td> <td>APM603</td> </tr> <tr> <td>Enclosure Type</td> <td>Sound</td> </tr> <tr> <td>Enclosure Material</td> <td>Steel</td> </tr> <tr> <td>Starting Aids, Installed</td> <td>1500W,120V</td> </tr> <tr> <td>Electrical Accy.,Installed</td> <td>Battery, 1/12V, Wet</td> </tr> <tr> <td>Electrical Accy.,Installed</td> <td>Battery Charger, 6A</td> </tr> <tr> <td>Electrical Accy.,Installed</td> <td>Run Relay</td> </tr> <tr> <td>Rating, LCB 1</td> <td>100% Rated</td> </tr> <tr> <td>Amps, LCB 1</td> <td>800</td> </tr> <tr> <td>Trip Type, LCB 1</td> <td>Electronic, LSI</td> </tr> <tr> <td>Interrupt Rating LCB 1</td> <td>35kA at 480V</td> </tr> <tr> <td>Miscellaneous Accy,Installed</td> <td>Coolant in Genset</td> </tr> <tr> <td>Miscellaneous Accy,Installed</td> <td>Rodent Guards</td> </tr> <tr> <td>Warranty</td> <td>5 Year Comprehensive</td> </tr> <tr> <td>Testing, Additional</td> <td>Power Factor Test,0.8,3Ph Only</td> </tr> <tr> <td>Total unit length in inches</td> <td>172</td> </tr> </table>	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	Electrical Accy.,Installed	Battery Charger, 6A	Electrical Accy.,Installed	Run Relay	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	Miscellaneous Accy,Installed	Rodent Guards	Warranty	5 Year Comprehensive	Testing, Additional	Power Factor Test,0.8,3Ph Only	Total unit length in inches	172
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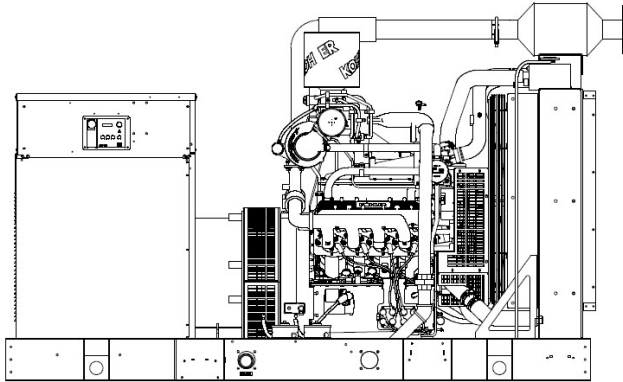


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	Total unit width in inches	54
	Total unit height in inches	83
	Total unit weight (lbs)	5,157
	Weight/Dimensions Disclaimer *	Estimates-Not for Construction
3	Flexible Fuel Line	
3	Lit Kit, KG200 Production	

KOHLER®

Spec Sheets



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.
- 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

Alternator	Voltage	Ph	Hz	Standby 130C Rise Ratings		
				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 guidelines, complete ratings definitions, and site condition derates.

The generator set manufacturer reserves the right to change the design or specifications without notice and without any obligation or liability whatsoever.

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
<ul style="list-style-type: none"> • NEMA MG1, IEEE, and ANSI standards compliances for temperature rise and motor starting. <ul style="list-style-type: none"> • 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 without collapsing the alternator field. <ul style="list-style-type: none"> • Self-ventilated and drip-proof construction. • Windings are vacuum-impregnated with epoxy varnish for dependability and long life. <ul style="list-style-type: none"> • 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)	245 (330)
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)
Exh. outlet size at eng. hookup, mm (in.)	Flanged Outlet at Catalyst, see ADV drawing

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. H2O). 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. H2O)	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)

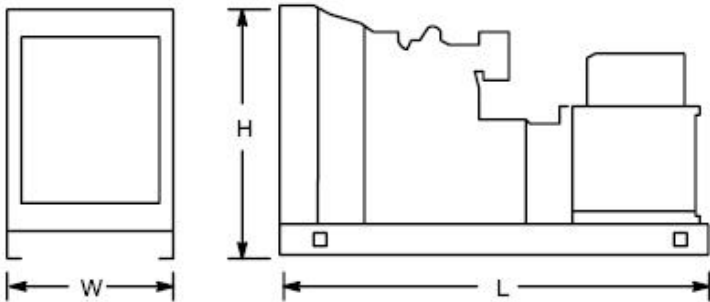
Fuel Consumption

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.



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.

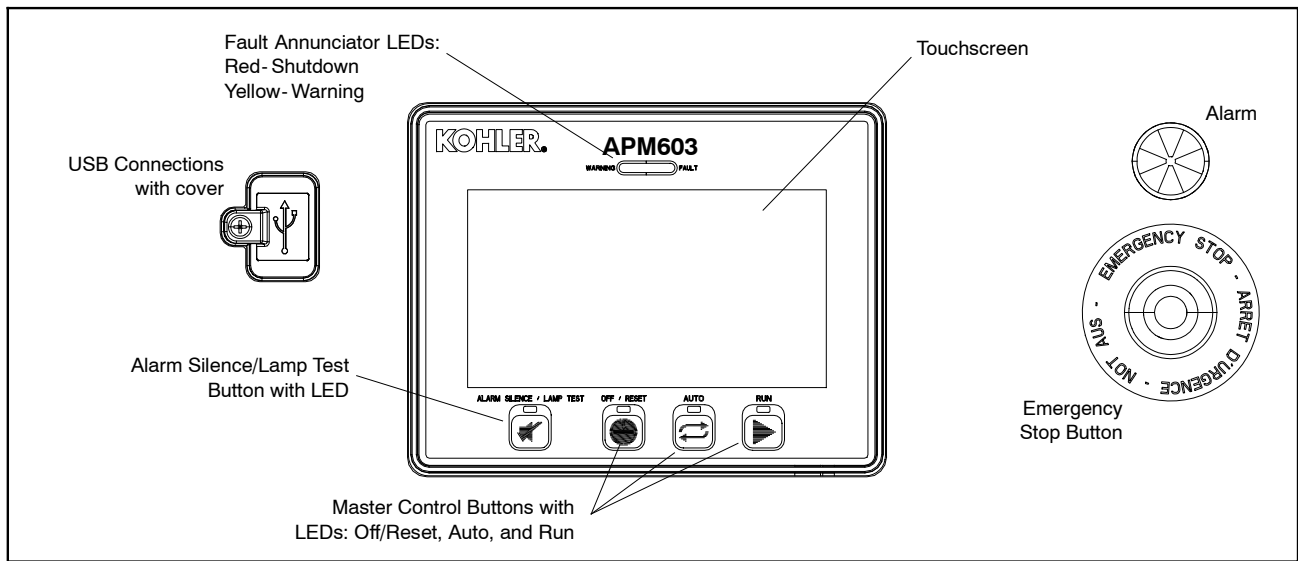
Global Support

- Sales, installation, and service support from more than 800 Kohler 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.



Controller Features

AC Output Voltage Regulator Adjustment	Maximum of $\pm 10\%$ 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	$\pm 0.25\%$ 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 Kohler® 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

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	-40°C to 70°C (-40°F to 158°F)
Storage Temperature	-40°C to 85°C (-40°F to 185°F)
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

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
- Includes a maintenance mode for arc flash reduction per NEC 240.87

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)

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)	▲	

Event	Warning	Shutdown
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		

Kohler 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	
Speed Bias	Analog Voltage Input, Scalable up to +/- 10 VDC
Voltage Bias	Analog Voltage Input, Scalable up to +/- 10 VDC

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 a Kohler-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-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	
Speed Bias	Analog Voltage Input, Scalable up to +/- 10 VDC
Voltage Bias	Analog Voltage Input, Scalable up to +/- 10 VDC

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 a Kohler-authorized technician	

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

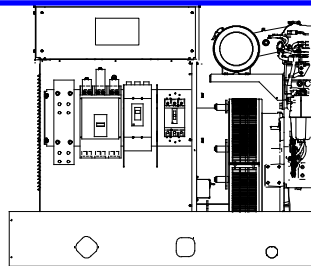
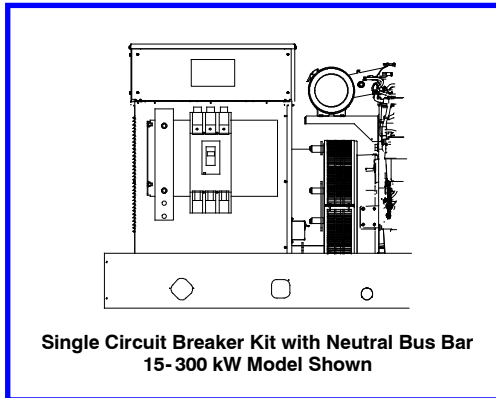
APM603 Available Options

- 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 Kohler 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 Kohler® 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.

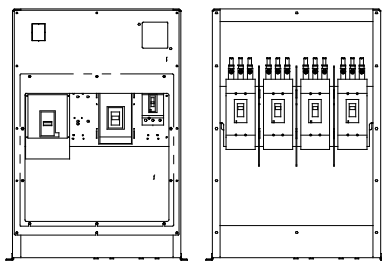
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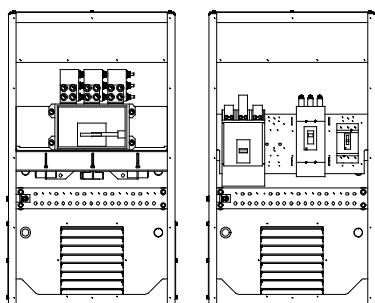
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Multiple Circuit Breaker Kit with Neutral Bus Bar
180- 300 kW Model Shown



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- 2500 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.
- Kohler Co. 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

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.

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	
		Electronic LI		
		Electronic LSI		
	60- 150	Electronic LSI		
		Electronic LSI		
		Electronic LSI		
4P/4PX 4Q/4QX	15- 150	Thermal magnetic	HD	
		Electronic LI		
		Electronic LSI		
	60- 150	Electronic LSI		
		Electronic LSI		
		Electronic LSI		
4RX 4S/4SX 4TX 4V 4UA 4M6226	15- 150	Thermal magnetic	HD	
		Electronic LI		
		Electronic LSI		
	60- 150	Electronic LSI		
		Electronic LSI		
		Electronic LSI		
4RX 4S/4SX 4TX 4V 4UA 4M6226	175- 250	Thermal magnetic	JD	
		Electronic LI		
		Electronic LSI		
	250	Electronic LSI		
		Electronic LSI		
		Electronic LSI		
4RX 4S/4SX 4TX 4V 4UA 4M6226	250	Electronic LI	JG	
		Electronic LSI		
		Electronic LSI		
	400	Electronic LI		
		Electronic LSI		
		Electronic LSI		
4RX 4S/4SX 4TX 4V 4UA 4M6226	15- 150	Thermal magnetic	HD	
		Electronic LI		
		Electronic LSI		
	60- 150	Electronic LSI		
		Electronic LSI		
		Electronic LSI		
4RX 4S/4SX 4TX 4V 4UA 4M6226	60- 150	Electronic LI	HG	
		Electronic LSI		
		Electronic LSI		
	175- 250	Thermal magnetic		JD
		Electronic LI		
		Electronic LSI		
4RX 4S/4SX 4TX 4V 4UA 4M6226	250	Electronic LI	JG	
		Electronic LSI		
		Electronic LSI		
	400	Electronic LI		LG
		Electronic LSI		
		Electronic LSI		
4RX 4S/4SX 4TX 4V 4UA 4M6226	600- 800	Electronic LSI	PG	
		Electronic LSI		
		Electronic LSI		
	1000- 1200	Electronic LSI		PG
		Electronic LSI		
		Electronic LSI		
1200	Electronic LSI	PJ		
	Electronic LSI			
	Electronic LSI			

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	3.0 LI	PJ
	400	5.0 LSI	PJ
	600	3.0 LI	PL
	800	5.0 LSI	PL
4UA 4M6226	250	3.0 LI	PJ
	400	5.0 LSI	PJ
	600	3.0 LI	PL
	800	5.0 LSI	PL
	1200	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			
MG	65	35	18
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
E (480 V max.)	30- 100	Up to two wire terminals fitting 10-32 or 1/4-20 stud
H	15- 150	One #14 to 3/0
	175	One 1/0 to 4/0
J	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 LSI 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



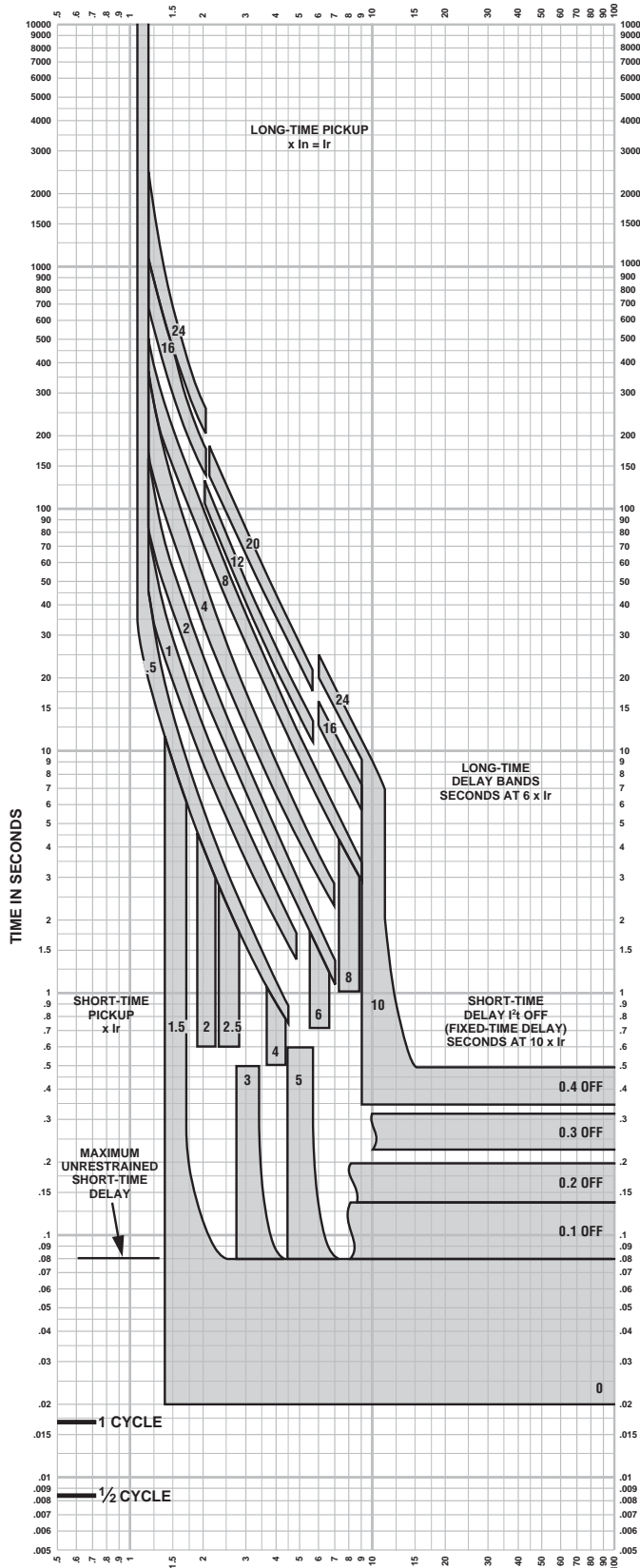
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CURRENT IN MULTIPLES OF I_r ($I_r = \text{LONG-TIME SETTING} \times I_n$)



**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 1/4 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



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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 – 1200A available in both standard and 100% ratings with sensor sizes 250–1200A. Interrupting ratings (AIR) G-35kAIR, J-65kAIR and L-100kAIR at 480 VAC
- R-frame – 2500A available in both standard and 100% ratings with sensor sizes 600–2500A. 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

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

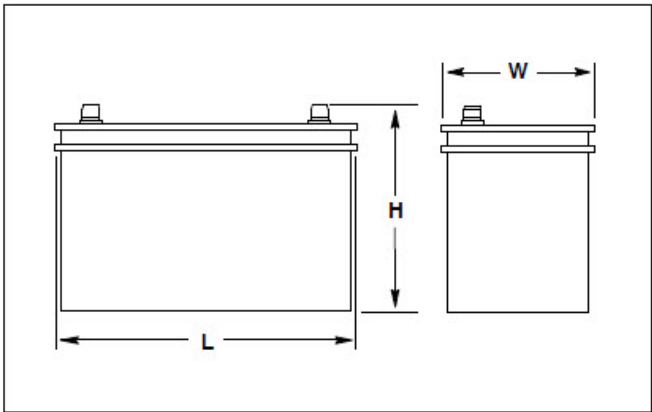
- All 5.0P and 6.0P functions
- Enhanced POWERLOGIC power metering and monitoring capabilities
- Basic power quality (harmonic) measurement
- Waveform capture

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Typical Overall Dimensions

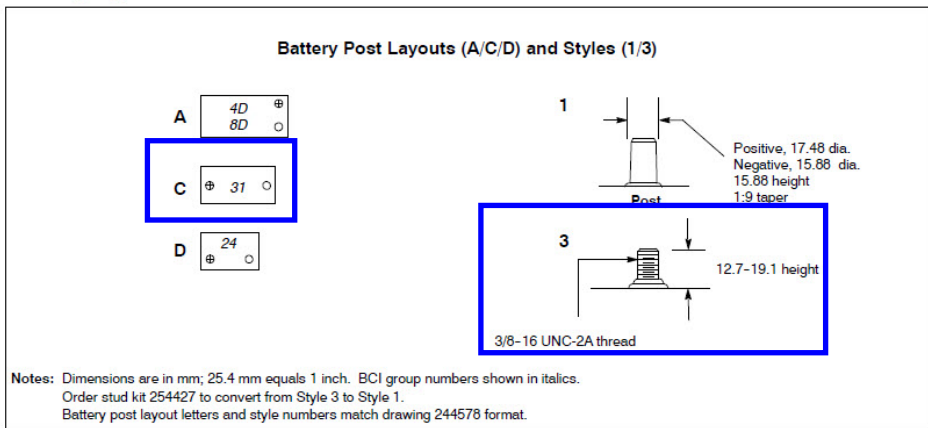


Standard Features

- Kohler Co. 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 available for 24-volt systems and/or systems with redundant starters.
- Wet- and dry-charged batteries have lead-calcium or lead-antimony plates and use sulfuric acid 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 18°C (0°F) Min.	Reserve Capacity Minutes at 27° (80°F) Min.	Battery Post Layout and Style
				L	W	H			
Wet	324586	1	31	330.2 (13.0)	173.0 (6.8)	239.8 (9.4)	950	185	C/3

Battery Specifications



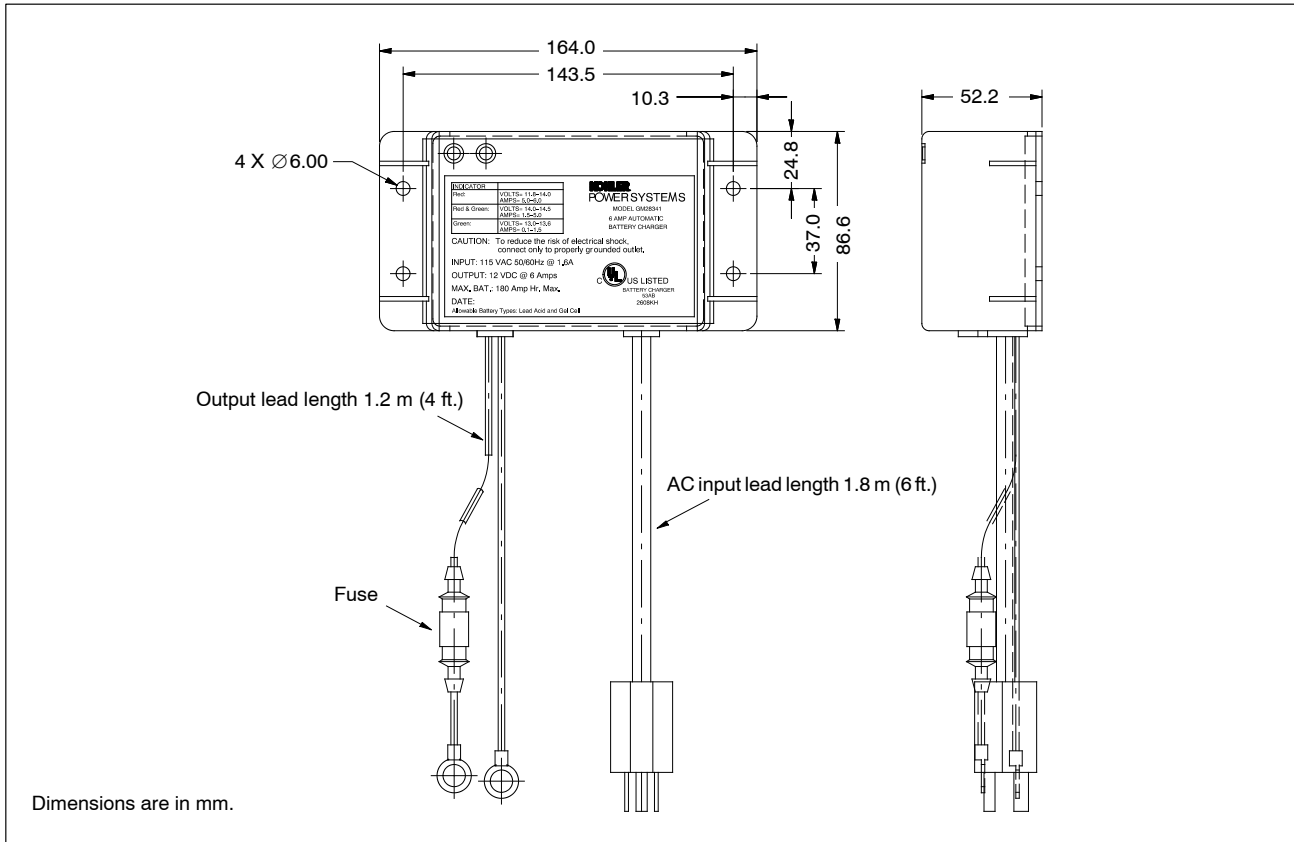


Standard Features

- 12 VDC output. * Use two battery chargers for 24-volt electrical systems
- Automatic 3-stage float/equalize battery charger
- Charges both lead-acid and gel-cell type batteries
- Indicator lamps: red and green LEDs indicate bulk charge, absorption, and float charge stages
- Durable potted assembly for full waterproofing and shockproofing
- Reverse-polarity protection
- Short-circuit protection
- UL 1236 listed
- UL 2200 compliant
- UL 991 compliant for vibration and shock
- UL listed to Canadian safety standards
- UL rated inline fuse
- FCC Class B-compliant for EMI/RFI (Date code 8/26/04 or later)
- One-year warranty
- Easy installation:
 - Integral mounting flanges
 - Ring terminals for battery connection
 - **Standard US style 3-prong AC plug**

Specifications

Input Voltage	90-135 VAC
Input Frequency	50/60 Hz
DC Output:	
Bulk	11.8-14.0 VDC @ 5.0-6.0 amps
Absorption	14.0-14.5 VDC @ 1.5-5.0 amps
Float	13.3-14.5 VDC @ 0.1-1.5 amps
Steady Full-Load Output Current	6 amps
Current Limit	7 amps
Output Power Limit	70 +2/-5 watts
Line Regulation Across Input Voltage Range	1%
Isolation, Input to Output	2500 V
Dimensions (L x W x D)	164 x 87 x 53 mm (6.4 x 3.5 x 2.1 in)
Weight	1.6 kg (3.5 lb.)
Temperature Range, Operating and Storage	-40° to 70°C (-40° to 158° F)
Humidity	0 to 100% (condensing)



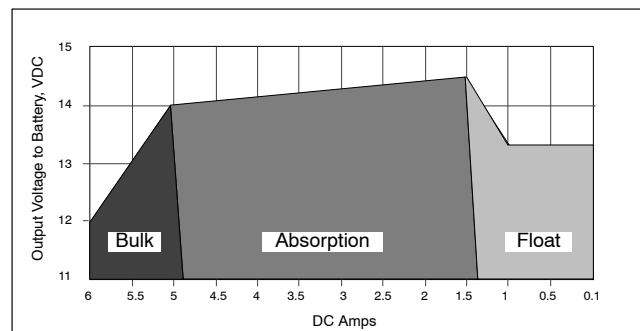
Battery Connections

- Lead Length: 1.2 m (4 ft.)
- Battery Connections: 9.5 mm (3/8 in.) ring terminals

AC Power Connections

- Lead Length: 1.8 m (6 ft.)
- Connection: **Standard US style 3-prong AC plug**

Charging Curves



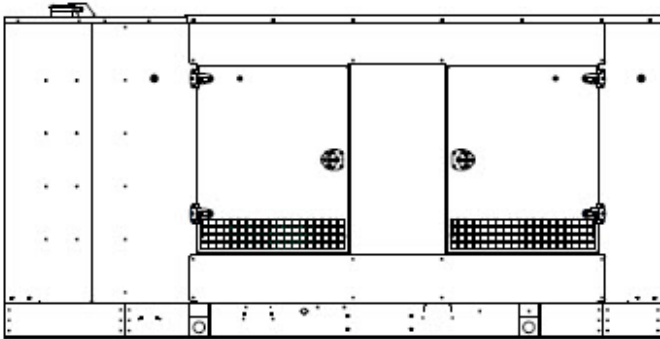
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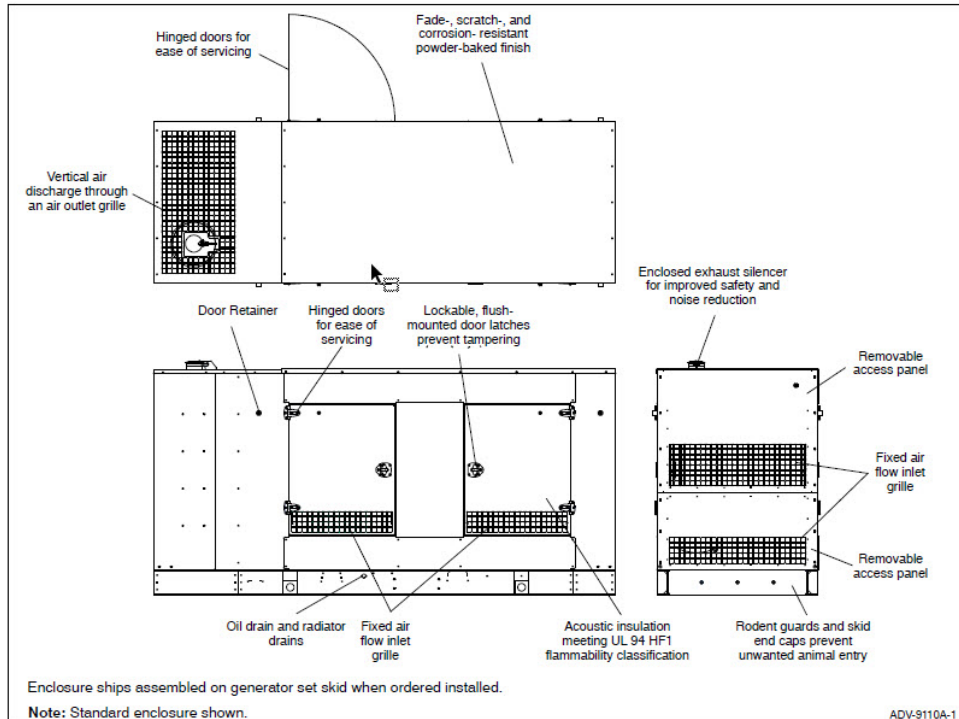


Standard Enclosure

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

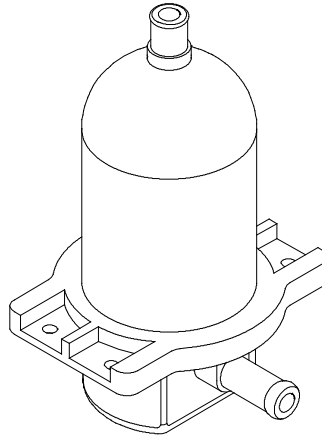
- Power Armor automotive-grade finish resulting in advanced corrosion and abrasion protection as well as enhanced edge coverage and color retention.
- Internal critical exhaust silencer offering maximum component life and operator safety.
- Interchangeable modular panel construction. Allows complete 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.



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

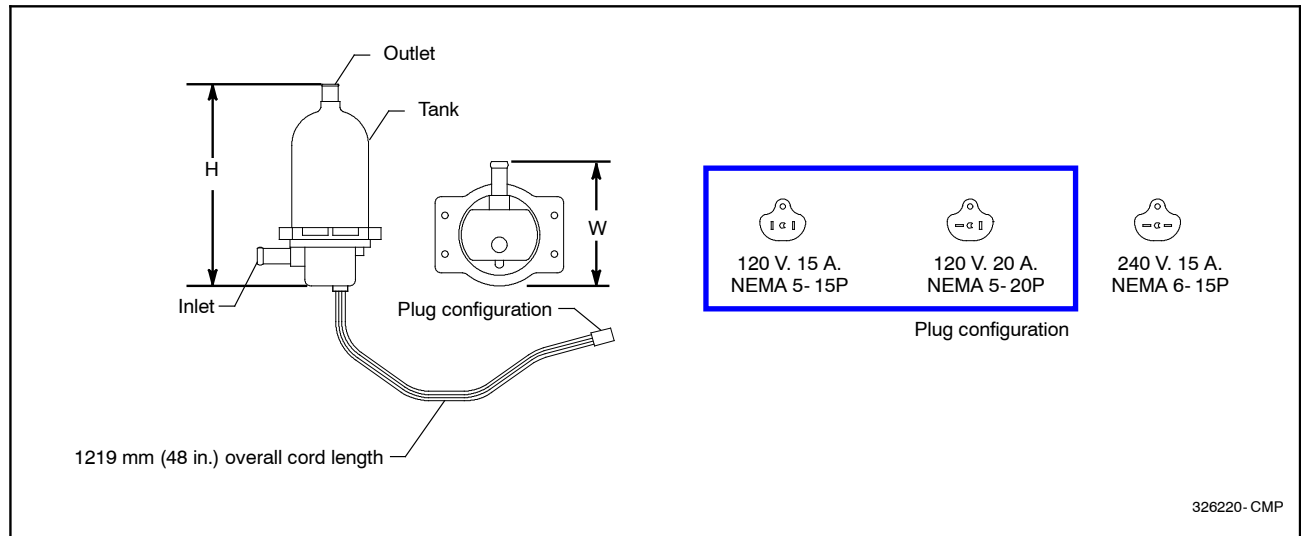
Heating Fluid	Water, Coolant Mix (50% Glycol/50% Water)
Max. Pressure	90 psi (620 kPa)
Heating Element Material	Incoloy 800
Inlet/Outlet Plumbing	0.625 in. hose barb
System Ingress	IP41
Power Connection	NEMA Plug and EURO Plug
Power Chord Length	48 in. (1219 mm)

Specifications

Block Heater Kit Number	Component	Watts	Voltage	Phase	Thermostat Temperature	
					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		

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

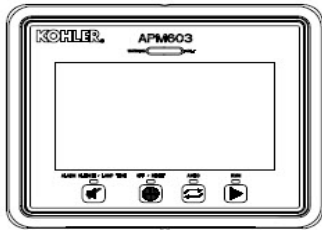
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**Integral Voltage Regulator with Kohler® APM603
Controllers and Menu-Driven Selections (80-4000 kW
Generator Set Models)**



**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



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

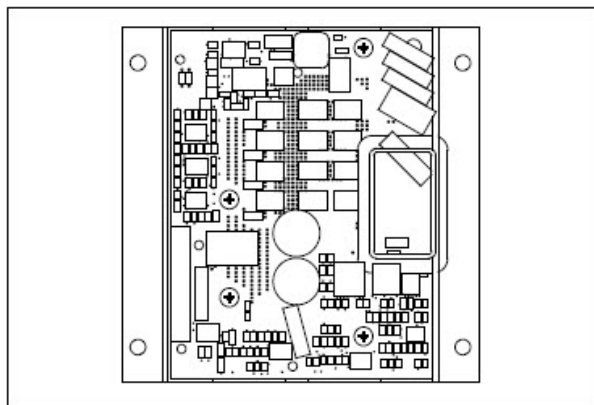
- Synchronizing parameters setup
 - Voltage matching
 - Frequency matching
 - Phase matching
 - Time delay
- Load sharing
 - kW sharing
 - kVAR sharing
 - Baseload settings
 - Droop

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.

Modbus® is a registered trademark of Schneider Electric.

KOHLER®

Alternator Data

TECHNICAL INFORMATION BULLETIN

Alternator Data Sheet

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

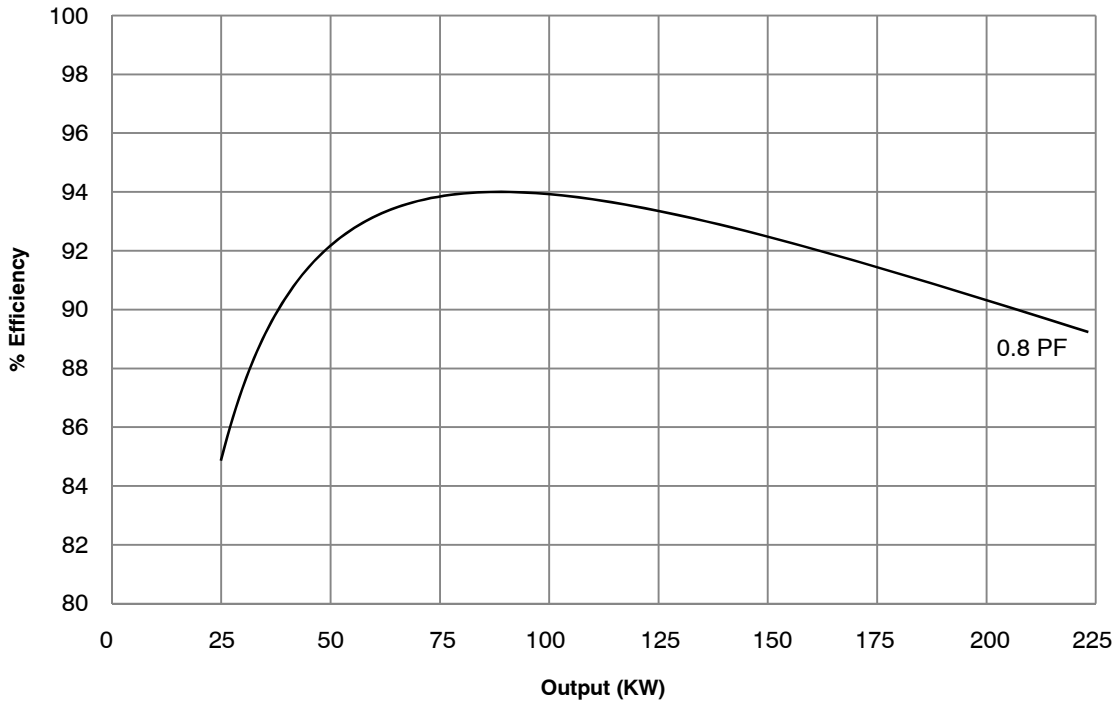
Voltage L-N/L-L	Phase	Power Factor	Connection	kW* (kVA)							
				Class B	Class F				Class H		
				80°C Continuous	90°C Lloyds	95°C ABS	105°C Continuous	130°C Standby	125°C Continuous	150°C Standby	
139/240 277/480	3	0.8	Wye	176.0 (220.0)	184.5 (230.5)	189.5 (236.5)	197.5 (246.5)	211.0 (263.5)	208.5 (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.

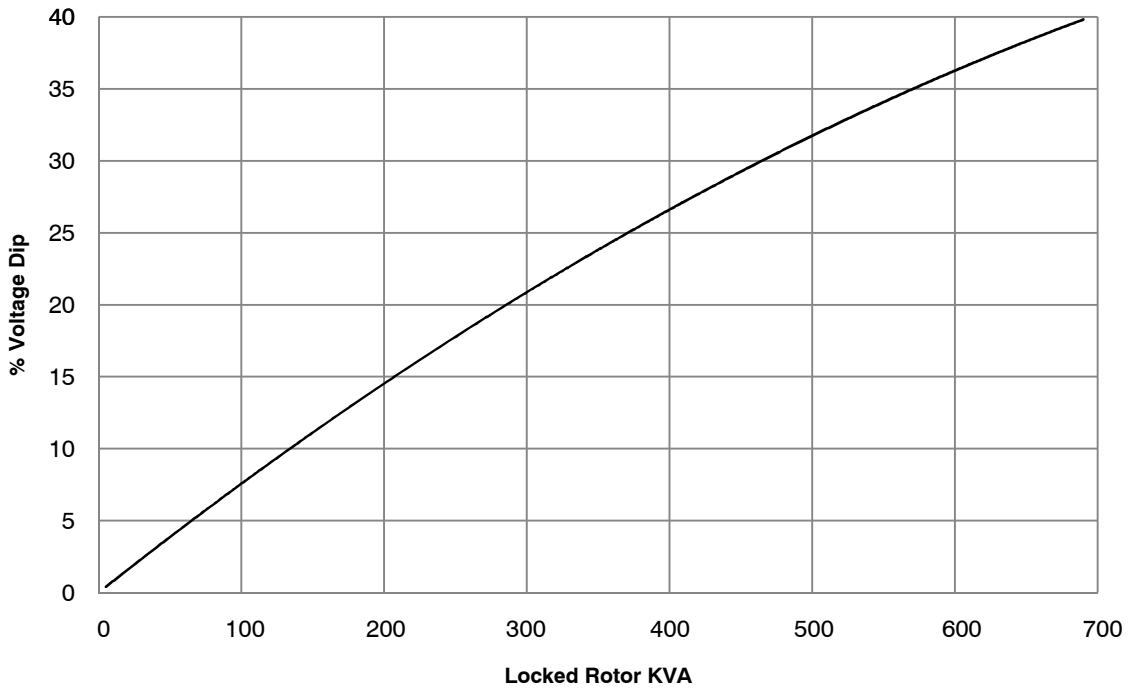
Submittal Data: 139/240 Volts, 0.8 PF, 1800 RPM, 60 Hz, 3 Phase, 130°C Rise

	Symbol	PerUnit	Ohms		Symbol	Value
Typical Cold Resistances				Typical Time Constants		
Phase Resistance		0.032	0.007	Armature Short Circuit	T _a	0.011 sec.
Rotor Resistance		26.43	5.774	Transient Short Circuit	T' _d	0.149 sec.
Typical Reactances				Transient Open Circuit	T' _{do}	1.759 sec.
Synchronous				Typical Field Current		
Direct	X _d	4.926	1.076	Full Load	I _{fFL}	21.6 amps
Quadrature	X _q	2.428	0.530	No Load	I _{fNL}	3.9 amps
Transient				Typical Short Circuit Ratio		0.203
Unsaturated	X' _{du}	0.474	0.104	Harmonic Distortion		
Saturated	X' _d	0.417	0.091	RMS Total Harmonic Distortion		3.59%
Subtransient				Max. Single Harmonic		5th
Direct	X'' _d	0.144	0.031	Deviation Factor (No Load, L-L)		<5%
Quadrature	X'' _q	0.143	0.031	Telephone Influence Factor		<50
Negative Sequence	X ₂	0.143	0.031	Insulation Class		
Zero Sequence	X ₀	0.012	0.003	per NEMA MG1-1.66		H
				Phase Rotation		ABC

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

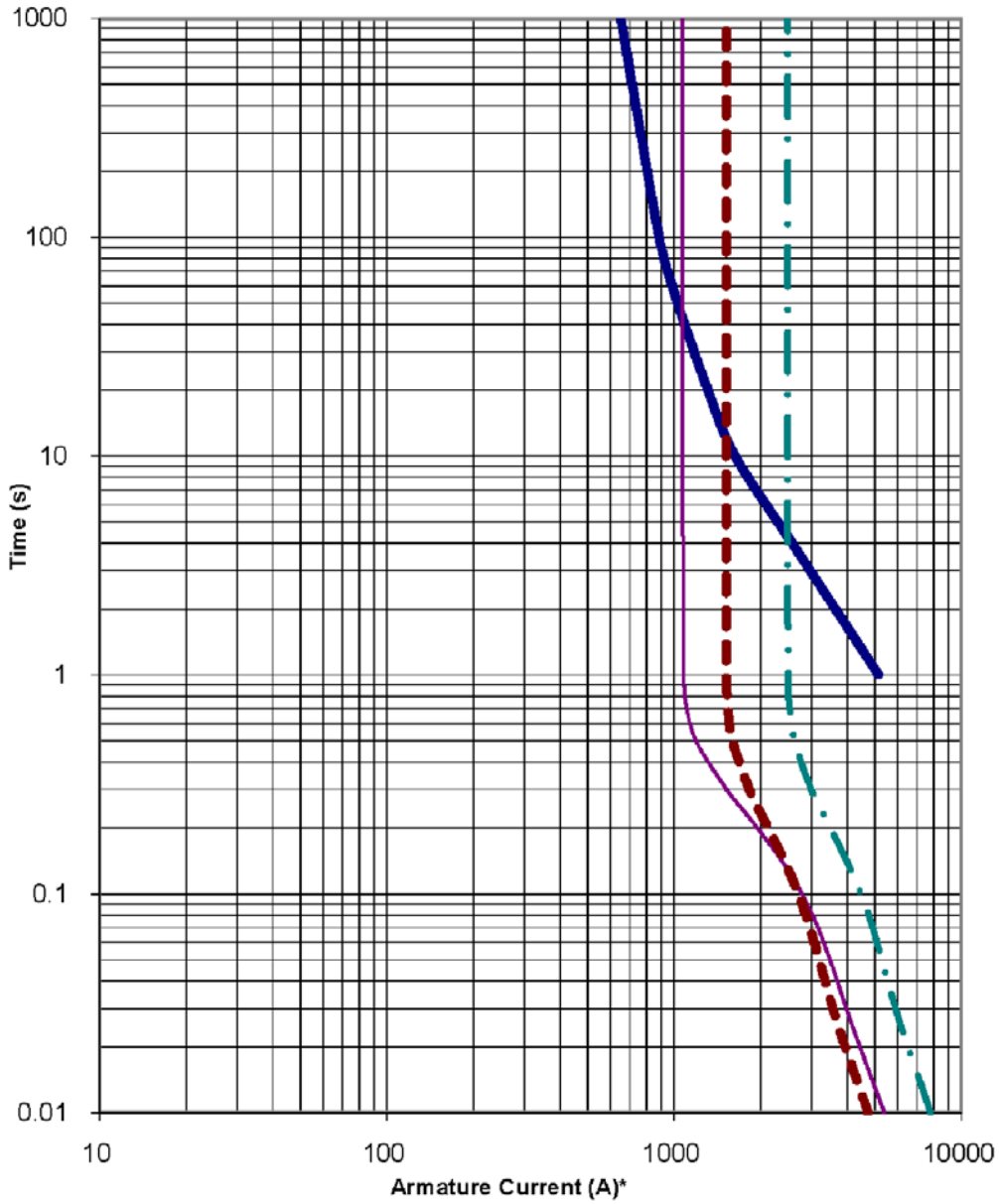


**4S13X, 60 Hz, 139/240, 277/480 Volts, Wye
TYPICAL MOTOR STARTING CHARACTERISTICS***



* 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.

KOHLER®

Cooling Data

TECHNICAL INFORMATION BULLETIN

Generator Set Cooling System Data Sheet

KG200 60Hz (Standby Duty)	50°C Ambient Temperature Cooling System								
	Total external restriction on open unit⁷	Pa <i>(in. H₂O)</i>	0 (0)	125 (0.5)	187 (0.75)	250 (1)	312 (1.25)	375 (1.5)	Enclosed Units
	Maximum allowable ambient temperature	°C <i>(°F)</i>	50 (122)	48 (118)	47 (117)	45 (113)	43 (109)	41 (106)	45 (113)
	Cooling system airflow	m ³ /min <i>(ft³/min)</i>	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.

KOHLER®

Sound Data

TECHNICAL INFORMATION BULLETIN

Generator Set Sound Data Sheet

Generator Set Model	Hz	Load	Sound Pressure Data in dB(A)					
			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	

				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)	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

			Sound Pressure Levels, dB(A)								
Load	Distance, m (ft)	Exhaust	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

			Sound Pressure Levels, dB(A)								
Load	Distance, m (ft)	Exhaust	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	

			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)	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	

			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.
				No Load	7 (23)	Weather	Overall Levels	80.6	82.6	80.2	81.6	

			Sound Pressure Levels, dB(A)									
Load	Distance, m (ft)	Open Unit, Isolated Exhaust	Measurement Clock Position	Octave Band Center Frequency (Hz)								Overall Level
				63	125	250	500	1000	2000	4000	8000	
No Load	7 (23)		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	

			Sound Pressure Levels, dB(A)								
Load	Distance, m (ft)	Exhaust	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

			Sound Pressure Levels, dB(A)								
Load	Distance, m (ft)	Exhaust	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

KOHLER®

Exhaust System Data

TECHNICAL INFORMATION BULLETIN

Enclosed Generator Set Exhaust System Data Sheet

Model	Enclosure Type	Consumed Back Pressure in. Hg (in. H ₂ O)	Consumed Back Pressure kPa	Back Pressure Limit(s) in. Hg (in. H ₂ O)	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.

KOHLER®

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.)
Nameplate kW @ 1800 RPM:	207 (NG) 169 (LPG)	Stroke:	120.6mm (4.7 in.)
Type:	4-Cycle, V8 Cylinder	Displacement:	10.3 L (632 cu. in.)
Aspiration:	Turbocharged	EPA Family:	NKHXB10.3TNL
Compression Ratio:	9.3:1	EPA Certificate:	NKHXB10.3TNL-003
Catalyst Required:	Yes		

EXHAUST EMISSION DATA (g/kW-hr):

	<u>LPG</u>	<u>NG</u>
CO ₂	833	638
NOx	0.42	0.26
THC/VOC*	0.03	0.01
CO	0.86	0.27
BSFC	294	247

* LPG as THC, NG as VOC

TEST METHODS AND CONDITIONS

Standby and overload ratings based on ISO 3046. Continuous ratings based on ISO 8528.

Nameplate 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.

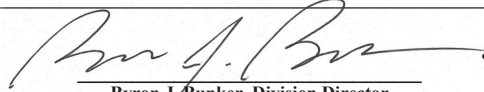


**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
2023 MODEL YEAR
CERTIFICATE OF CONFORMITY
WITH THE CLEAN AIR ACT**

**OFFICE OF TRANSPORTATION
AND AIR QUALITY
ANN ARBOR, MICHIGAN 48105**

Certificate Issued To: Kohler Co.
(U.S. Manufacturer or Importer)
Certificate Number: PKHXB10.3TNL-004

Effective Date:
11/21/2022
Expiration Date:
12/31/2023



Byron J. Bunker, Division Director
Compliance Division

Issue Date:
11/21/2022
Revision Date:
N/A

Manufacturer: Kohler Co.
Engine Family: PKHXB10.3TNL
Mobile/Stationary Certification Type: Stationary
Fuel : LPG/Propane
Natural Gas (CNG/LNG)
Emission Standards :
Part 60 Subpart JJJJ Table 1
CO (g/Hp-hr) : 4.0
VOC (g/Hp-hr) : 1.0
NOx (g/Hp-hr) : 2.0
Stationary Part 1048
CO (g/kW-hr) : 4.4
NMHC + NOx (g/kW-hr) : 2.7
HC + NOx (g/kW-hr) : 2.7
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.

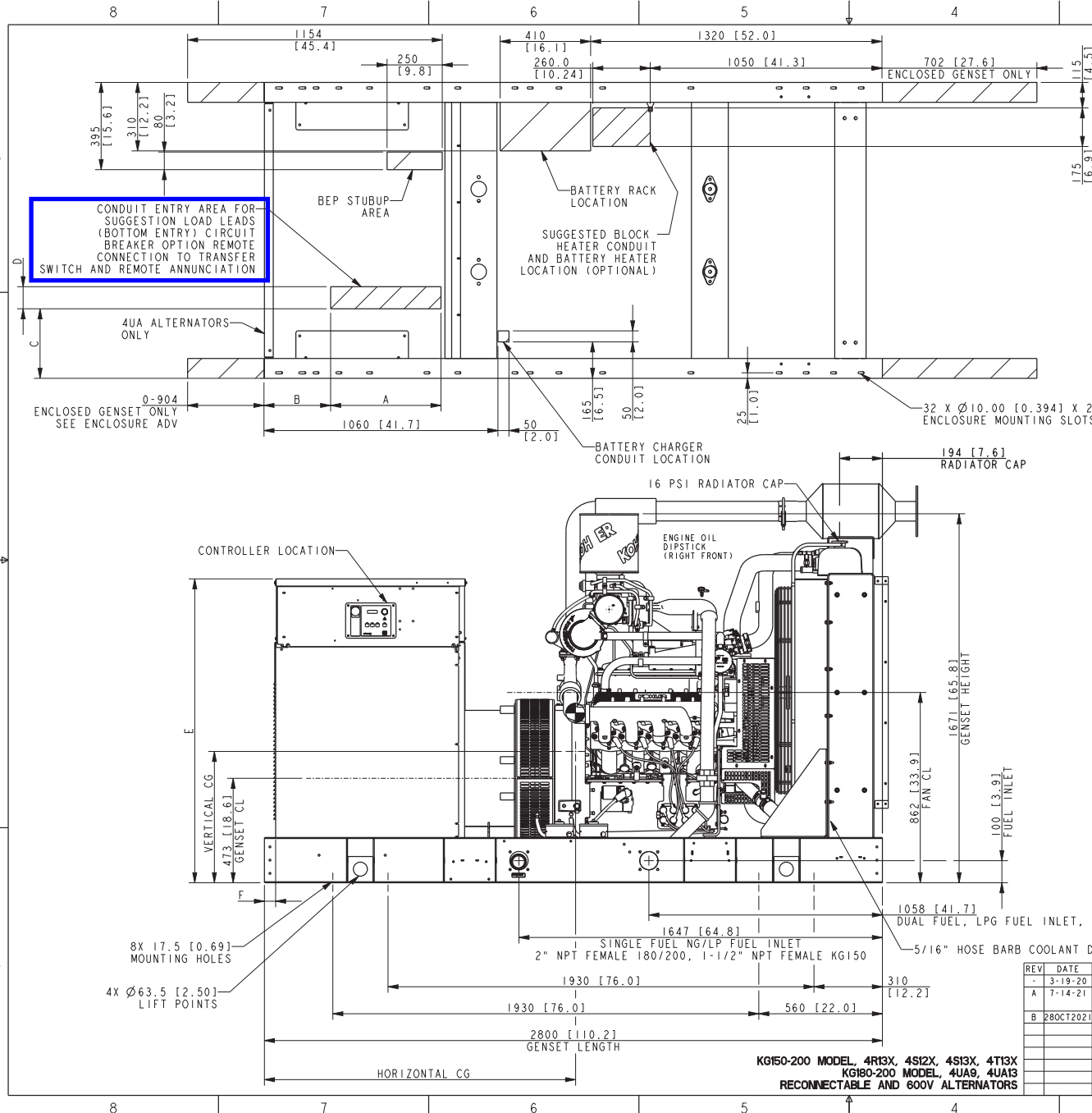
This certificate of conformity covers only those new nonroad spark-ignition engines which conform in all material respects to the design specifications that applied to those engines described in the documentation required by 40 CFR Part 60, 40 CFR Part 60 and which are produced during the model year 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.

KOHLER®

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]

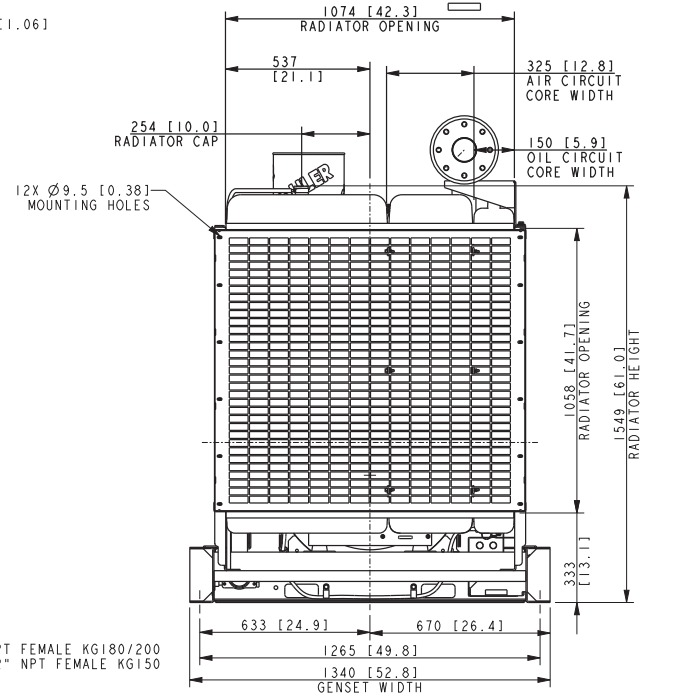
NOTES:

- IF ENCLOSURE IS INSTALLED, REFER TO ENCLOSURE ADV.
- 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]

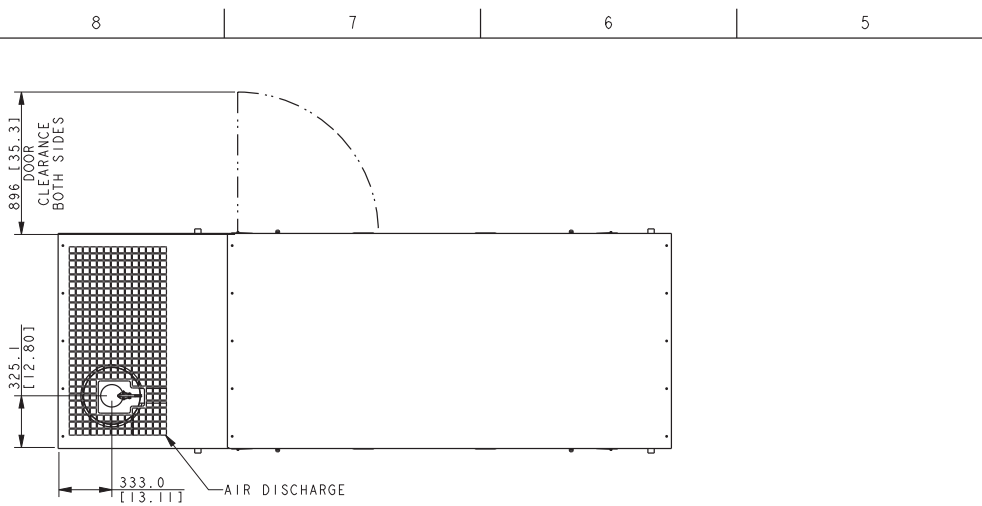


KG150-200 MODEL, 4R13X, 4S12X, 4S13X, 4T13X
KG180-200 MODEL, 4UA9, 4UA13
RECONNECTABLE AND 600V ALTERNATORS

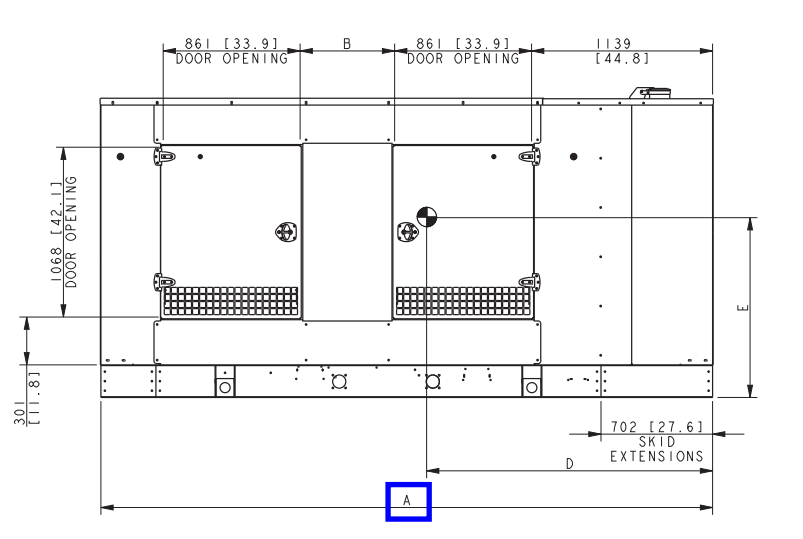
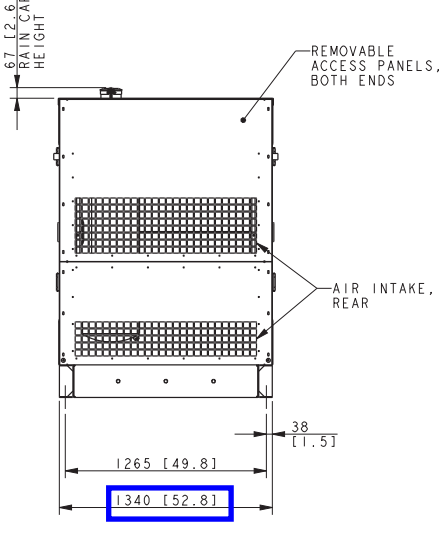
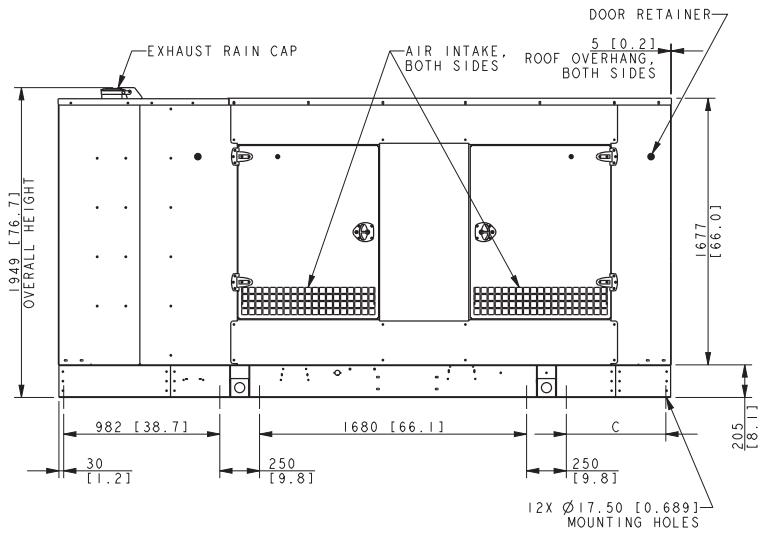
REV	DATE	ON COMPOSITE DWGS. SEE PART NO. FOR REVISION LEVEL	BY	DO NOT SCALE. REFERENCE THE MODEL FOR ALL UNSPECIFIED DIMENSIONS UNLESS OTHERWISE SPECIFIED.
-	3-19-20	NEW DRAWING [CT202736]	PAS	UNLESS OTHERWISE SPECIFIED: SCALE DIMENSIONS TO MILLIMETERS GENERAL TOLERANCES: N/A
A	7-14-21	(D-7) DIM 1154 ADDED, DIM 250 ADDED; (D-8) DIM 80 ADDED, DIM 395 ADDED [CT213319]	MHA	
B	8/02/2021	SEE SHEET 2 [CT215755]	SAR	

APPROVALS	DATE	TITLE
DRW	PAS 3-19-20	DIMENSION PRINT, KG150-200
CHECKED	DJV 3-19-20	
APPROVED	WDG 3-19-20	

SCALE	0.11	CAD NO.	
DWG NO.	ADV-9045	SHEET	1 OF 3



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 [] ARE ENGLISH EQUIVALENTS

KG150 STANDARD
KG180-200 STANDARD
ENCLOSURES

REV	DATE	ON COMPOSITE DWGS. SEE PART NO. FOR REVISION LEVEL	BY	DO NOT SCALE. REFERENCE THE MODEL FOR ALL UNSPECIFIED DIMENSIONS
-	15NOV2019	NEW DRAWING [CT200025]	ZJS	UNLESS OTHERWISE SPECIFIED, ALL DIMENSIONS IN MILLIMETERS
A	07MAY2020	(D-1) REMOVED NON-PRODUCTION MODEL INFORMATION FROM TABLE [CT204048]	ZJS	GENERAL TOLERANCES: N/A
B	25JUL2020	SEE SHEET 2 [CT205576]	SSS	

APPROVALS	DATE	<p>KOHLER KOHLER VIBROCORRUS 8384 THIS DRAWING IN DESIGN AND DETAIL IS KOHLER CO. PROPERTY AND MUST NOT BE USED EXCEPT IN CONNECTION WITH KOHLER CO. WORK. ALL RIGHTS OF DESIGN OR INVENTION ARE RESERVED.</p>
DRIVER	ZJS 15NOV2019	
CHECKED	KJB 15NOV2019	
APPROVED	JMP 15NOV2019	<p>TITLE: DIMENSION PRINT, KG150-200 10.3L ENCL</p> <p>SCALE: 0.07 CAD NO. ADV-910 SHEET 1 of 3</p>

KOHLER®

Wiring Schematics

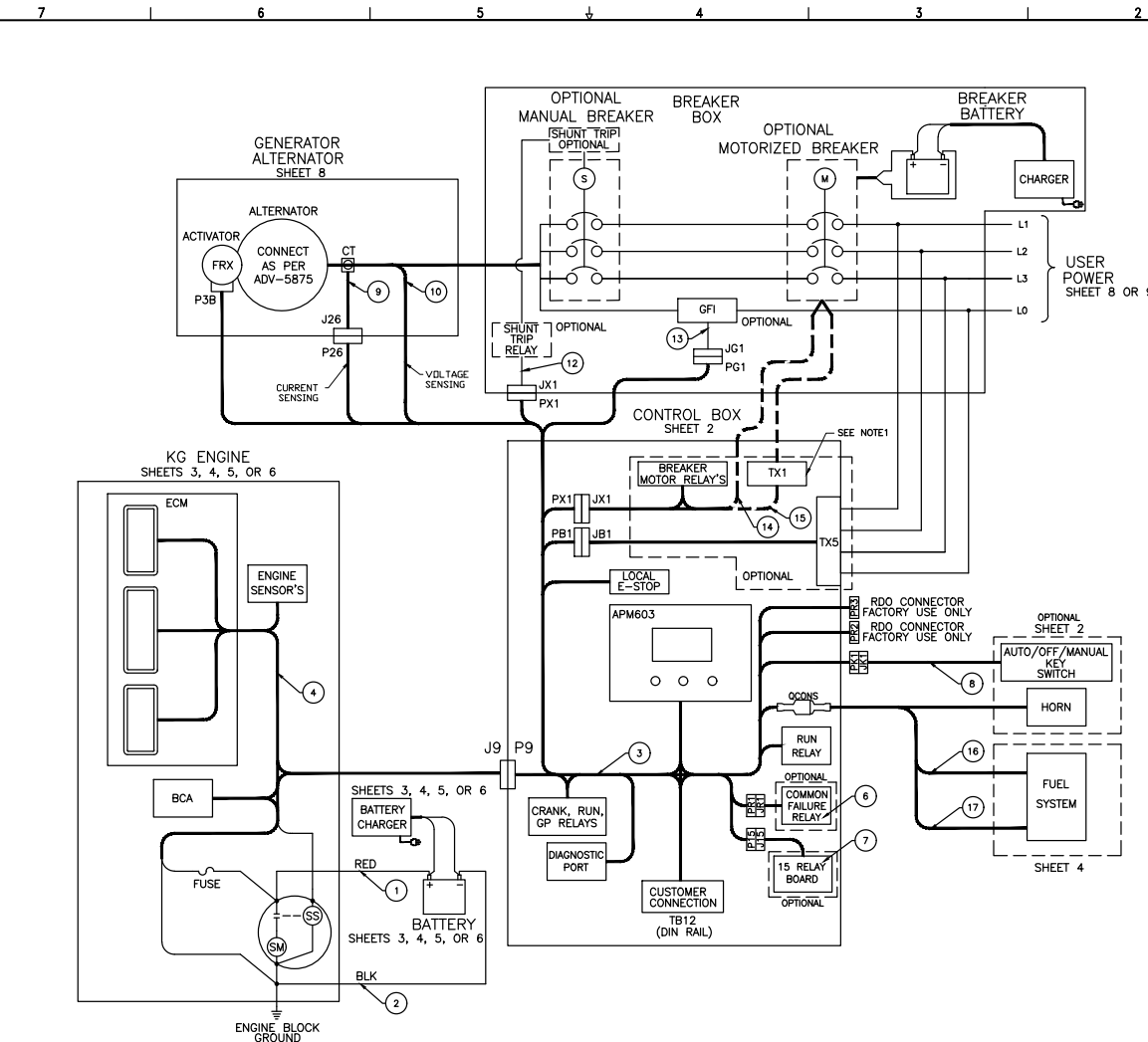
REV	DATE	REVISION	BY
D	3-31-20	SEE SHEET 8 (CT203122)	SBH
E	5-14-20	SEE SHEETS 3 AND 4 (CT203817)	SBH
F	6-16-20	SEE SHEETS 2 AND 4 (CT204852)	TEV
G	3-23-21	SEE SHEET 3 (CT210777)	TEV

REV	DATE	REVISION	BY
D	3-31-20	SEE SHEET 8 (CT203122)	SBH
E	5-14-20	SEE SHEETS 3 AND 4 (CT203817)	SBH
F	6-16-20	SEE SHEETS 2 AND 4 (CT204852)	TEV
G	3-23-21	SEE SHEET 3 (CT210777)	TEV

REV	DATE	REVISION	BY
D	3-31-20	SEE SHEET 8 (CT203122)	SBH
E	5-14-20	SEE SHEETS 3 AND 4 (CT203817)	SBH
F	6-16-20	SEE SHEETS 2 AND 4 (CT204852)	TEV
G	3-23-21	SEE SHEET 3 (CT210777)	TEV

REV	DATE	REVISION	BY
D	3-31-20	SEE SHEET 8 (CT203122)	SBH
E	5-14-20	SEE SHEETS 3 AND 4 (CT203817)	SBH
F	6-16-20	SEE SHEETS 2 AND 4 (CT204852)	TEV
G	3-23-21	SEE SHEET 3 (CT210777)	TEV

REV	DATE	REVISION	BY
D	3-31-20	SEE SHEET 8 (CT203122)	SBH
E	5-14-20	SEE SHEETS 3 AND 4 (CT203817)	SBH
F	6-16-20	SEE SHEETS 2 AND 4 (CT204852)	TEV
G	3-23-21	SEE SHEET 3 (CT210777)	TEV



FUNCTION	POS	SIGNAL DESCRIPTION
REMOTE E-STOP	1	REMOTE EMERGENCY STOP
REMOTE START	2	REMOTE START SIGNAL
CUSTOMER INTERFACE	3	FUSED BATTERY POWER
CUSTOMER INTERFACE	4	BATT VOLTS WHEN RUNNING
CUSTOMER INTERFACE	5	BATTERY NEGATIVE
CUSTOMER INTERFACE	6	ISOLATED RS-485 #2 (PGEN)
CUSTOMER INTERFACE	7	ISOLATED RS-485 #3 (MODBUS/PGEN)
CUSTOMER INTERFACE	8	NON-ISOLATED RS-485 #4 (MODBUS RSA)
CUSTOMER INTERFACE	9	COMMON CONTACT
CUSTOMER INTERFACE	10	NORMALLY OPEN CONTACT
CUSTOMER INTERFACE	11	NORMALLY CLOSED CONTACT
CUSTOMER INTERFACE	12	COMMON CONTACT
CUSTOMER INTERFACE	13	NORMALLY OPEN CONTACT
CUSTOMER INTERFACE	14	NORMALLY CLOSED CONTACT
CUSTOMER INTERFACE	15	COMMON CONTACT
CUSTOMER INTERFACE	16	NORMALLY OPEN CONTACT
CUSTOMER INTERFACE	17	NORMALLY CLOSED CONTACT
CUSTOMER INTERFACE	18	COMMON CONTACT
CUSTOMER INTERFACE	19	NORMALLY OPEN CONTACT
CUSTOMER INTERFACE	20	NORMALLY CLOSED CONTACT
CUSTOMER INTERFACE	21	COMMON CONTACT
CUSTOMER INTERFACE	22	NORMALLY OPEN CONTACT
CUSTOMER INTERFACE	23	NORMALLY CLOSED CONTACT
CUSTOMER INTERFACE	24	COMMON CONTACT
CUSTOMER INTERFACE	25	NORMALLY OPEN CONTACT
CUSTOMER INTERFACE	26	NORMALLY CLOSED CONTACT
CUSTOMER INTERFACE	27	COMMON CONTACT
CUSTOMER INTERFACE	28	NORMALLY OPEN CONTACT
CUSTOMER INTERFACE	29	NORMALLY CLOSED CONTACT
CUSTOMER INTERFACE	30	COMMON CONTACT
CUSTOMER INTERFACE	31	NORMALLY OPEN CONTACT
CUSTOMER INTERFACE	32	NORMALLY CLOSED CONTACT
CUSTOMER INTERFACE	33	COMMON CONTACT
CUSTOMER INTERFACE	34	NORMALLY OPEN CONTACT
CUSTOMER INTERFACE	35	NORMALLY CLOSED CONTACT
CUSTOMER INTERFACE	36	COMMON CONTACT
CUSTOMER INTERFACE	37	NORMALLY OPEN CONTACT
CUSTOMER INTERFACE	38	NORMALLY CLOSED CONTACT
CUSTOMER INTERFACE	39	COMMON CONTACT
CUSTOMER INTERFACE	40	NORMALLY OPEN CONTACT

* REMOVE RESISTORS IF PARALLELING

APPROVAL	DATE	BY
DESIGN	1-30-19	SMH
TEST	1-30-19	JLS
ISSUE	1-30-19	JLS

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

DIAGRAM, SCHEMATIC
150-200KW 10.3L APM603
REV 1-9
ADV-9116

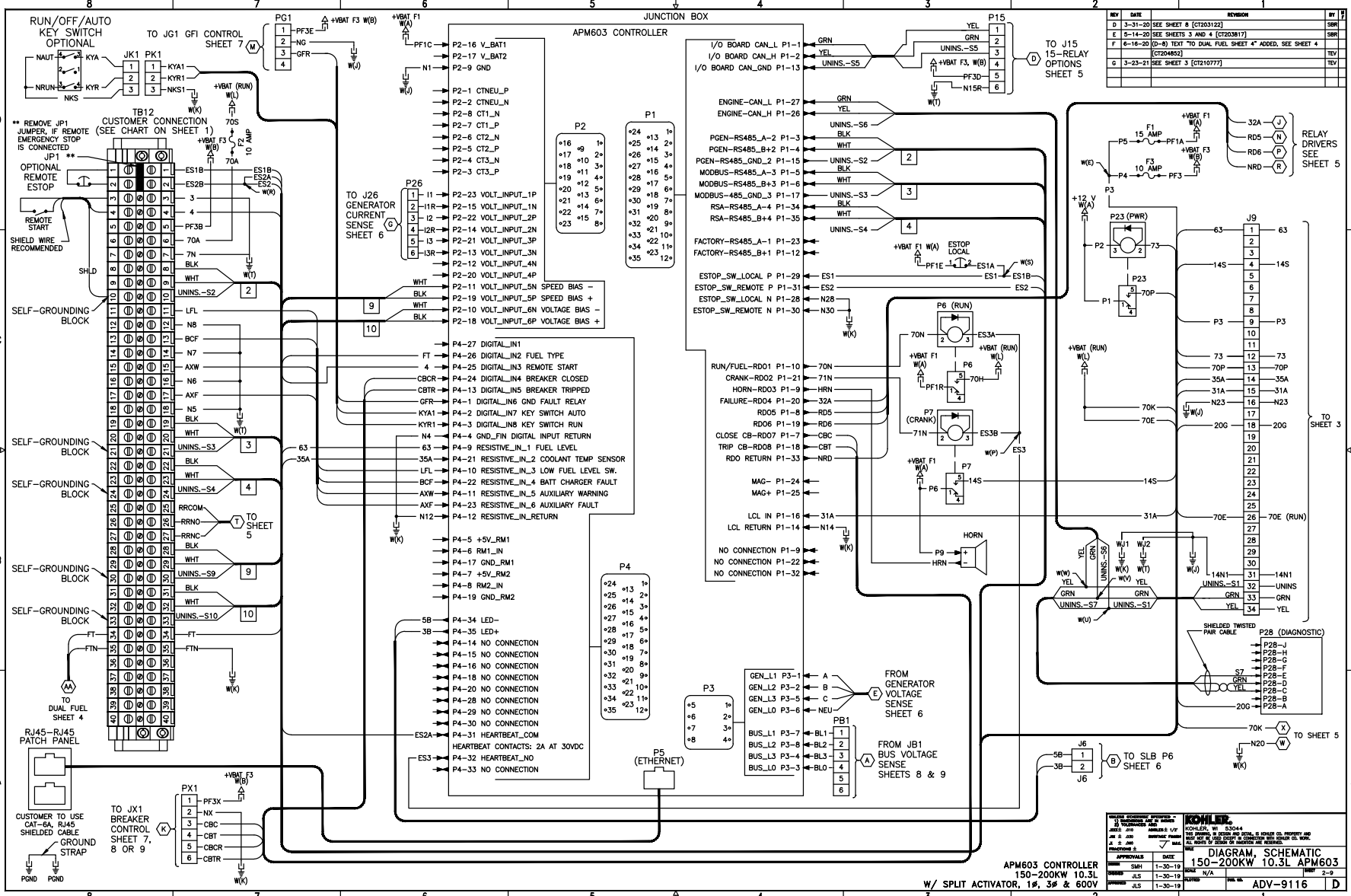
LEGEND

BCA - BATTERY CHARGING ALTERNATOR
BTCS - BATTERY TEMP COMPENSATION SENSOR
CACT - CHARGE AIR COOLER OUTLET TEMP
CAS - CAM SENSOR
CT - COMPRESSOR INLET TEMP
CLS - COOLANT LEVEL SENDER
CRS - CRANK SENSOR
CT(T) - 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

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

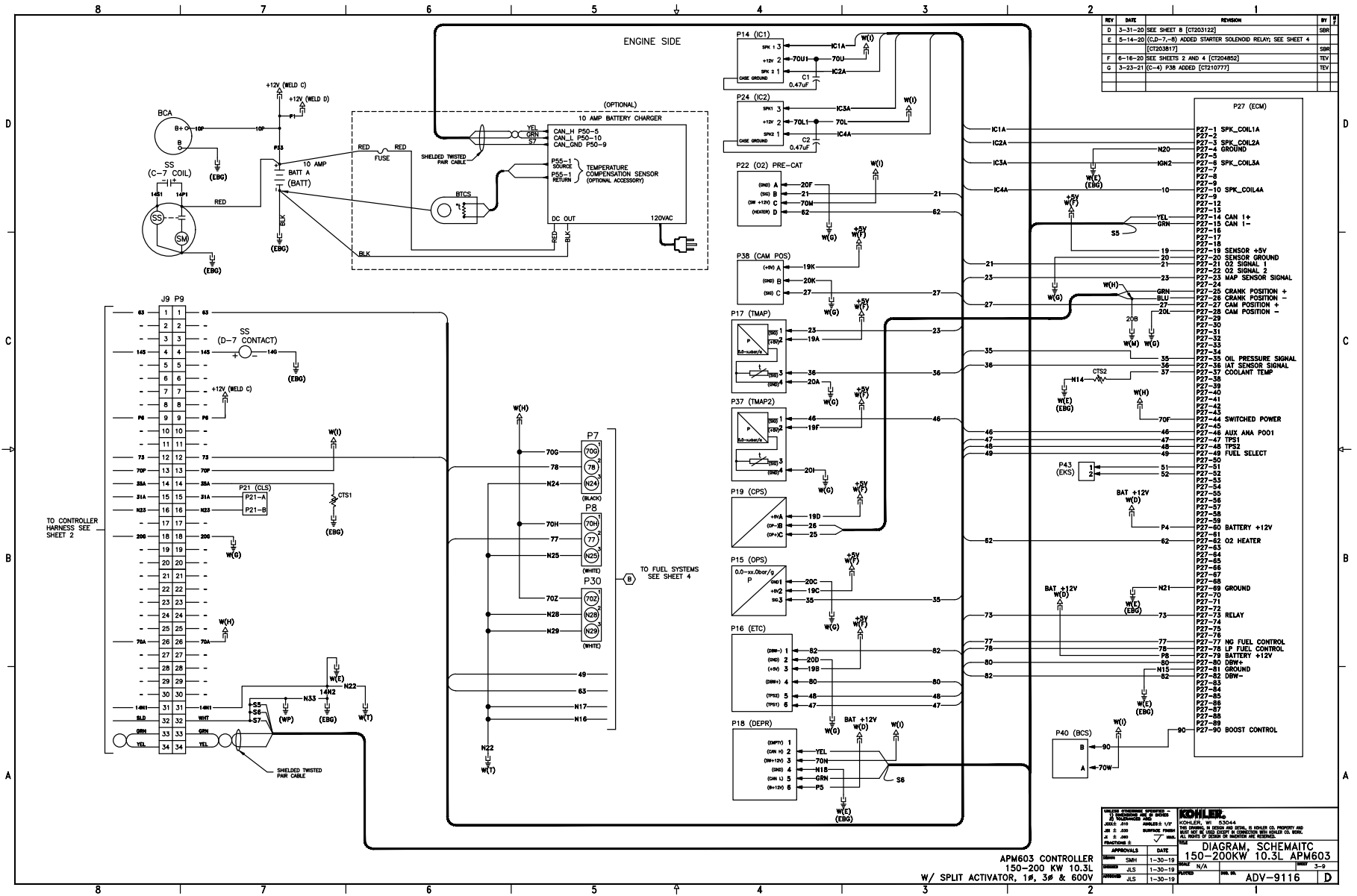
REV	DATE	DESCRIPTION	BY
D	3-31-20	SEE SHEET 8 (C1203122)	SMH
E	5-14-20	SEE SHEETS 3 AND 4 (C1203817)	SMH
F	6-16-20	(D-B) TEXT TO DUAL FUEL SHEET 4* ADDED, SEE SHEET 4 (C1204452)	TRV
G	3-23-21	SEE SHEET 3 (C1210777)	TRV

APPROVALS	DATE	APPROVALS	DATE
SMH	1-30-19	DATE	
JLS	1-30-19	DATE	
JLS	1-30-19	DATE	



APM603 CONTROLLER
150-200KW 10.3L
W/ SPLIT ACTIVATOR, 1#, 3# & 600V
DIAGRAM, SCHEMATIC
150-200KW 10.3L APM603
ADV-9116

REV	DATE	REVISION	BY
D	3-31-20	SEE SHEET 8 [C1203122]	SBR
E	5-14-20	[C1D-7,-8] ADDED STARTER SOLENOID RELAY; SEE SHEET 4 [C1203817]	SBR
F	6-16-20	SEE SHEETS 2 AND 4 [C1204852]	TEV
G	3-23-21	[C-4] P38 ADDED [C1210777]	TEV



APPROVALS	DATE	DATE	DATE	DATE
DESIGNED BY	SMH	1-30-19	DATE	N/A
CHECKED BY	JLS	1-30-19	DATE	N/A
APPROVED BY	JLS	1-30-19	DATE	N/A

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

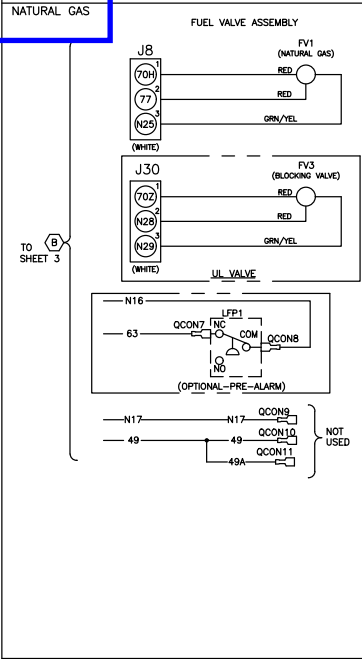
DIAGRAM, SCHEMATIC
150-200KW 10.3L APM603

ADV-9116

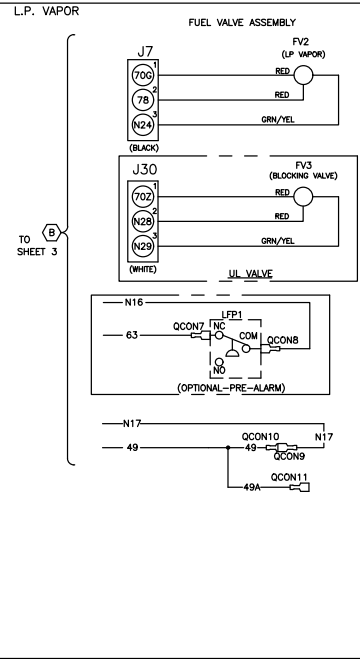
FUEL SYSTEMS

REV	DATE	REVISION	BY
D	3-31-20	SEE SHEET 6 [C1203122]	SRB
E	5-14-20	(A,B,C-1 TO 3) DELETED AUTO CHANGEOVER OPTION; SEE SHEET 3 [C1203617]	SRB
F	6-16-20	(D-2,3,4) AUTO CHANGEOVER OPTION ADDED; SEE SHEET 1 [C1204822]	TEV
G	3-23-21	SEE SHEET 3 [C1210777]	TEV

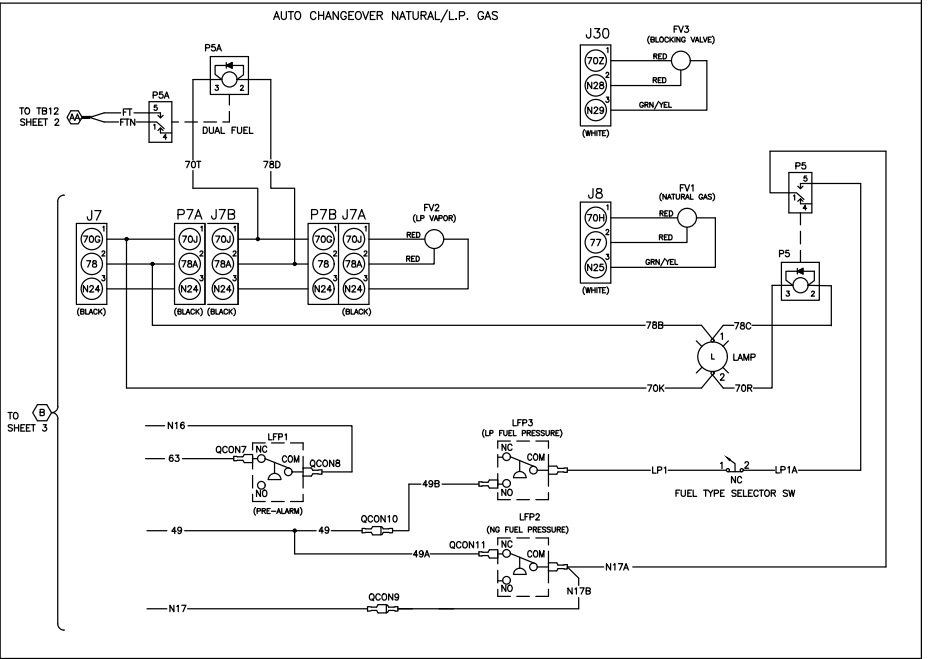
NATURAL GAS



L.P. VAPOR



AUTO CHANGEOVER NATURAL/L.P. GAS

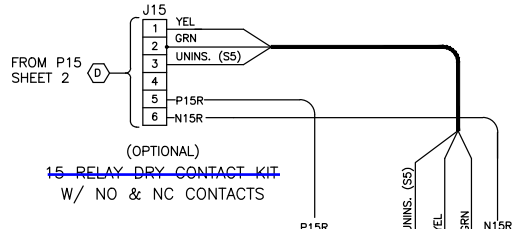


CHECK REVISIONS AGAINST THE PREFERRED LISTING		APPROVALS		DATE	
DATE	BY	DATE	BY	DATE	BY
1-30-19	SRB	1-30-19	SRB	1-30-19	SRB
1-30-19	SRB	1-30-19	SRB	1-30-19	SRB
1-30-19	SRB	1-30-19	SRB	1-30-19	SRB

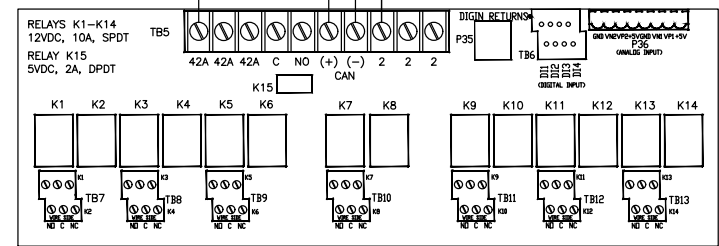
KOHLER
 150-200KW 10.3L APM603
 W/ SPLIT ACTIVATOR, 1#, 3# & 600V
 ADV-9116

REV	DATE	REVISION	BY
D	3-31-20	SEE SHEET 8 [CT203122]	SMH
E	5-14-20	SEE SHEETS 3 AND 4 [CT203817]	SMH
F	6-16-20	SEE SHEETS 2 AND 4 [CT204852]	TEV
G	3-23-21	SEE SHEET 3 [CT210777]	TEV

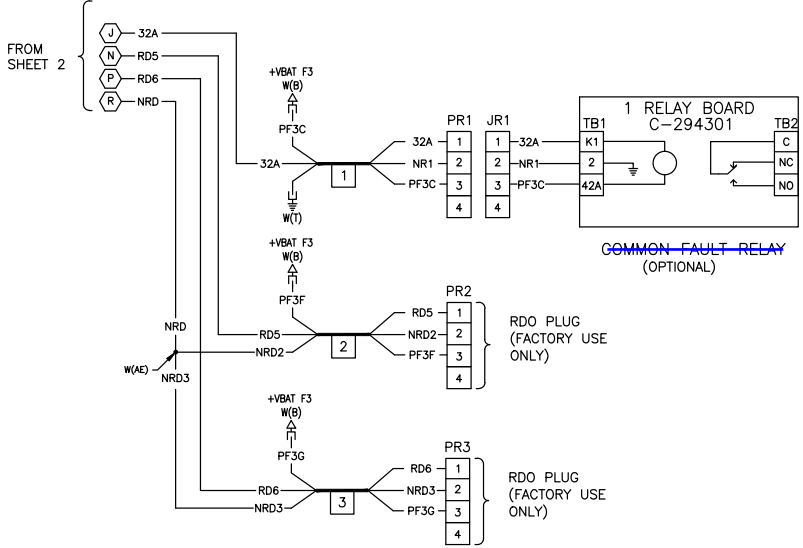
JUNCTION BOX



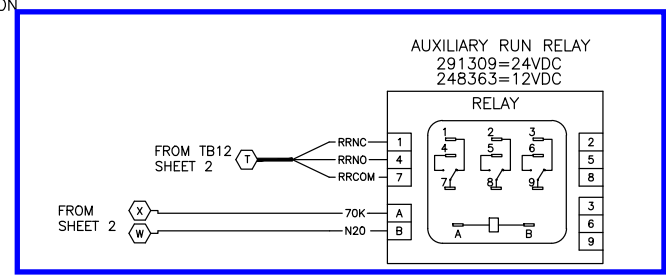
(OPTIONAL)
15 RELAY DRY CONTACT KIT
 W/ NO & NC CONTACTS



CUSTOMER CONNECTIONS



COMMON FAULT RELAY
 (OPTIONAL)



APPROVALS		DATE		BY	
SMH	JLS	1-30-19	1-30-19	SMH	JLS
APPROVALS		DATE		BY	
SMH	JLS	1-30-19	1-30-19	SMH	JLS

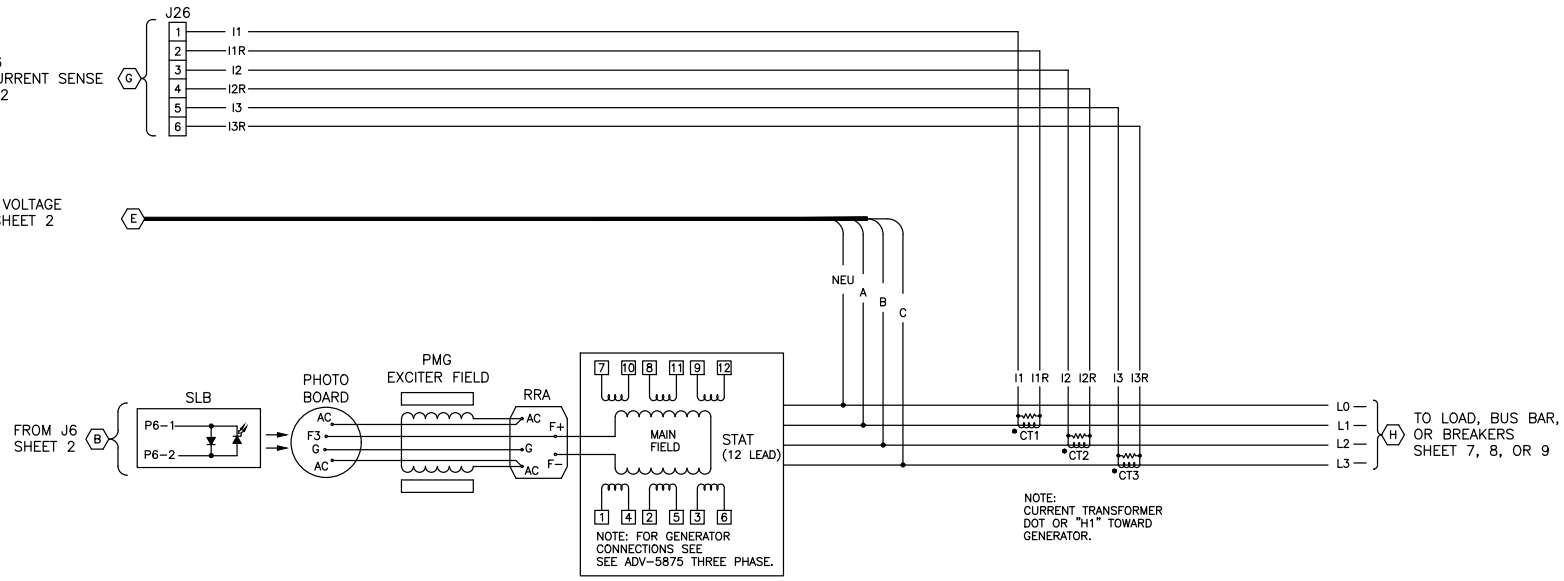
APM603 CONTROLLER
 150-200KW 10.3L
 W/ SPLIT ACTIVATOR, 1#, 3# & 600V

DIAGRAM, SCHEMATIC
 150-200KW 10.3L APM603

ADV-9116

ALTERNATOR

REV	DATE	REVISION	BY
D	3-31-20	SEE SHEET 8 (CT203122)	SMR
E	5-14-20	SEE SHEETS 3 AND 4 (CT203817)	SMR
F	6-16-20	SEE SHEETS 2 AND 4 (CT204852)	TEV
G	3-23-21	SEE SHEET 3 (CT210777)	TEV

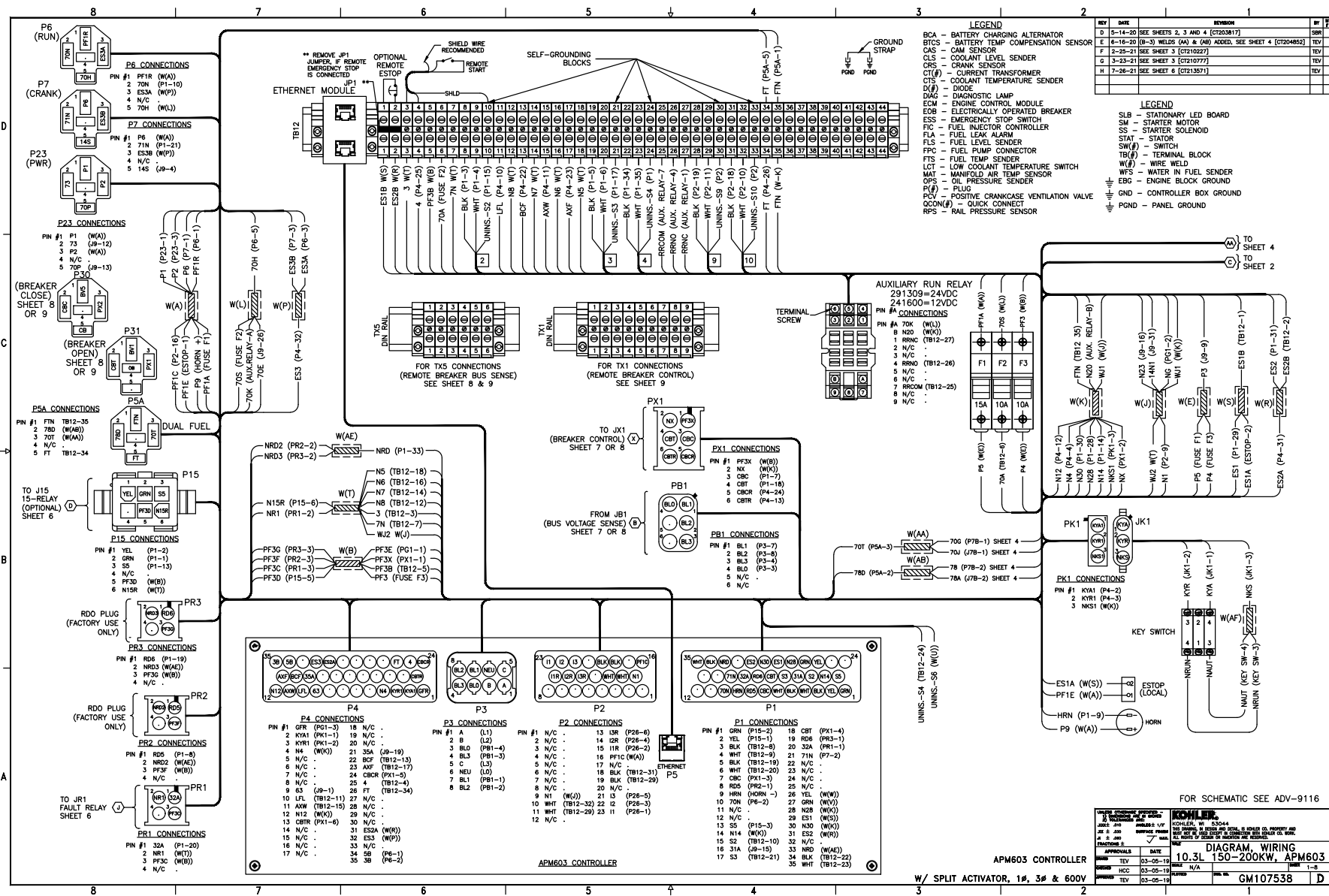


APPROVALS		DATE	BY

KOHLER KOHLER, WI 53044 150-200KW 10.3L APM603	
ALTERNATOR SIDE APM603 CONTROLLER 150-200KW 10.3L W/ SPLIT ACTIVATOR, 1Ø, 3Ø & 600V	DIAGRAM, SCHEMATIC 150-200KW 10.3L APM603 N/A ADV-9116

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

ADV-9116 D



FOR SCHEMATIC SEE ADV-9116

DATE	03-06-19	REV	1-8
APPVAL	HCC	DATE	03-06-19
REV	03-06-19	REV	03-06-19
REV	03-06-19	REV	03-06-19

APM603 CONTROLLER

APM603 CONTROLLER

W/ SPLIT ACTIVATOR, 1#, 3# & 600V

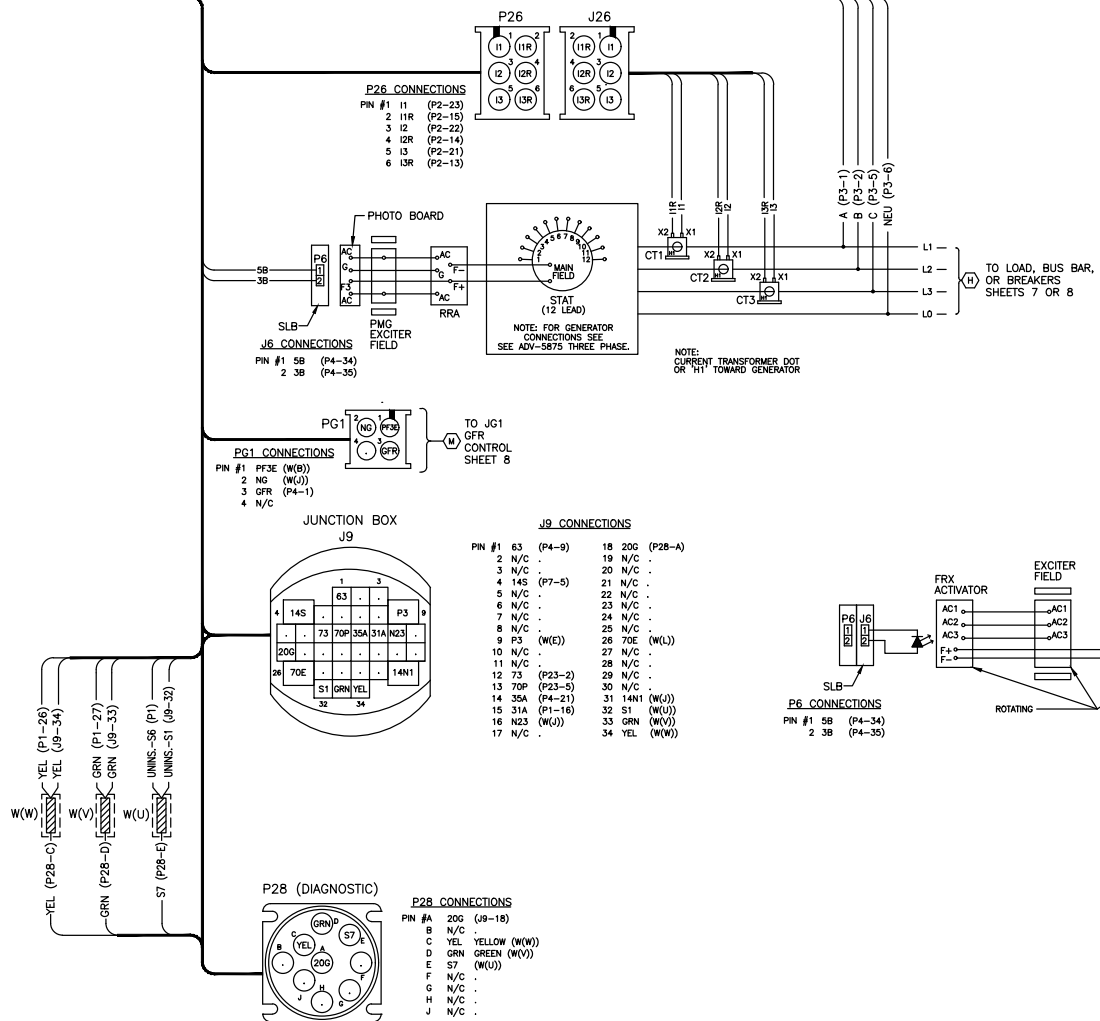
DIAGRAM, WIRING

10.3L 150-200KW, APM603

GM107538

REV	DATE	REVISION	BY
C	2-11-20	SEE SHEET 1 & 4. [C7201838]	TEV
D	5-14-20	(B-4, -5) JP WAS J1; SEE SHEETS 3 AND 4 [C7203817]	SRB
E	6-16-20	SEE SHEET 1 & 4. [C7204852]	TEV
F	2-25-21	SEE SHEET 3 [C7210227]	TEV
G	3-23-21	SEE SHEET 3 [C7210777]	TEV
H	7-26-21	SEE SHEET 6 [C7213571]	TEV

FROM SHEET 1

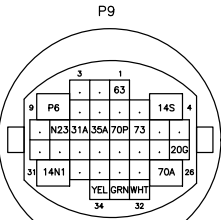


APPROVALS DESIGNED BY: [Signature] CHECKED BY: [Signature] DATE: 03-05-19	KOHLER KOHLER, WI 53044 10.3L 150-200KW, APM603 DIAGRAM WIRING GM107538
--	--

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

ENGINE SIDE

REV	DATE	REVISION	BY
D	5-14-20	(B,C-2,3) ADDED STARTER SOLENOID RELAY; SEE SHEETS 2 AND 4 [C7203817]	SRM
E	6-16-20	SEE SHEET 1 & 4 [C7204852]	TEV
F	2-28-21	(D-4,5) WELD K AND J DELETED; (C-2) 19C DELETED FROM WELD F; 20H DELETED FROM WELD G [C7210227]	TEV
G	3-23-21	(A-7) P38 ADDED [C7210777]	TEV
H	7-28-21	SEE SHEET 6 [C7213571]	TEV



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))

P14 CONNECTIONS

- PIN #1 IC2A (P27-3)
- 2 70U (W(I))
- 3 IC1A (P27-1)

P24 CONNECTIONS

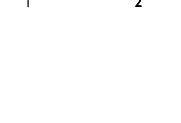
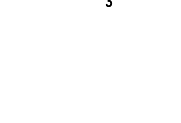
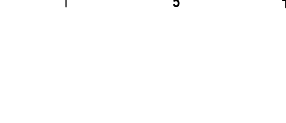
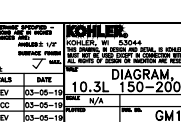
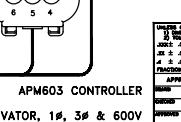
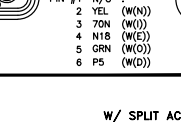
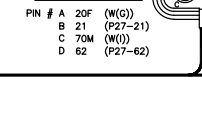
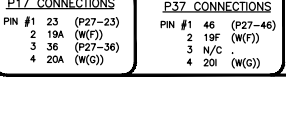
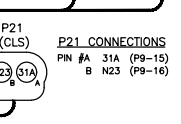
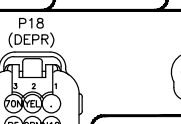
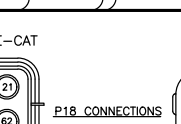
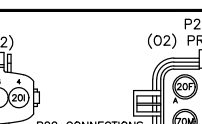
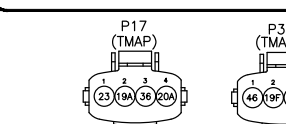
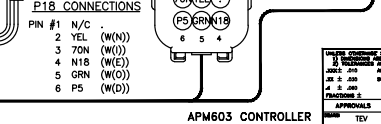
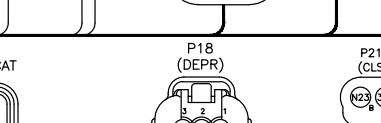
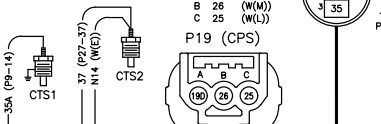
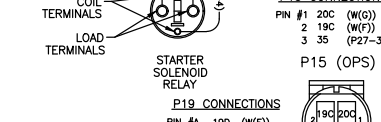
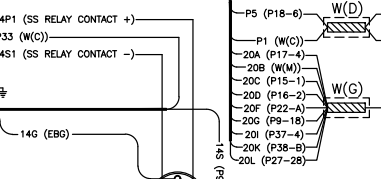
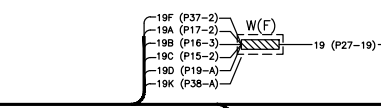
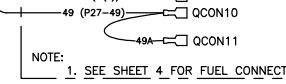
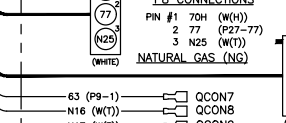
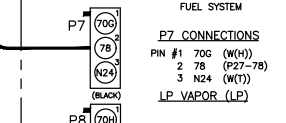
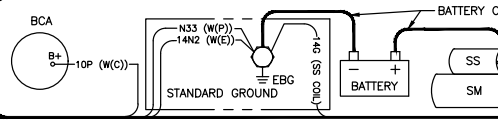
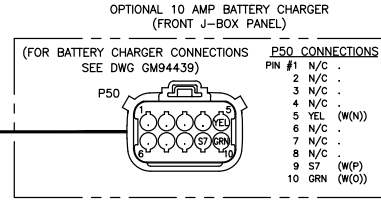
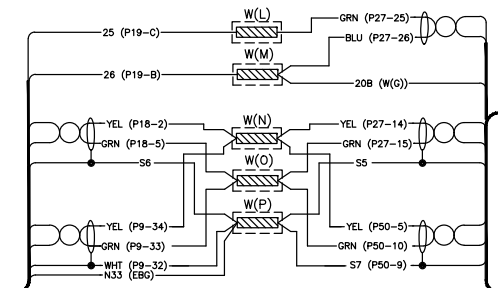
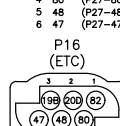
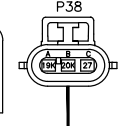
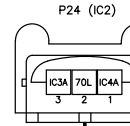
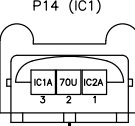
- PIN #1 IC4A (P27-10)
- 2 70L (W(I))
- 3 IC3A (P27-6)

P38 CONNECTIONS

- PIN A 19K (W(F))
- B 20K (W(G))
- C 27 (P27-27)

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)



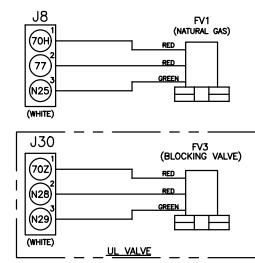
APM603 CONTROLLER	W/ SPLIT ACTIVATOR, 1#, 3# & 600V
DATE	03-05-19
DESIGN	HCC
APPROVAL	TEV
DATE	03-05-19
REVISION	N/A
DATE	03-05-19
REVISION	N/A
DATE	03-05-19
REVISION	N/A

DIAGRAM, WIRING
10.3L 150-200KW, APM603
GM107538

REV	DATE	REVISION	BY
D	5-14-20	(BLC-1,-2) REMOVED AUTOCHANGEOVER OPTION; SEE SHEETS 2 AND 3 [CT203817]	SRB
E	6-18-20	(G-3,A) 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	7-28-21	SEE SHEET 6 [CT213871]	TEV

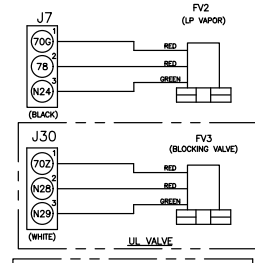
NATURAL GAS

FUEL VALVE ASSEMBLY



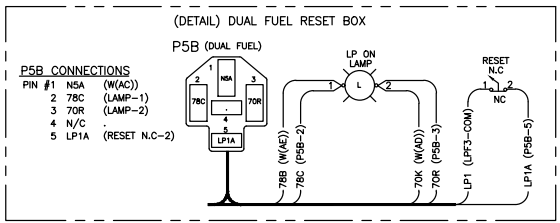
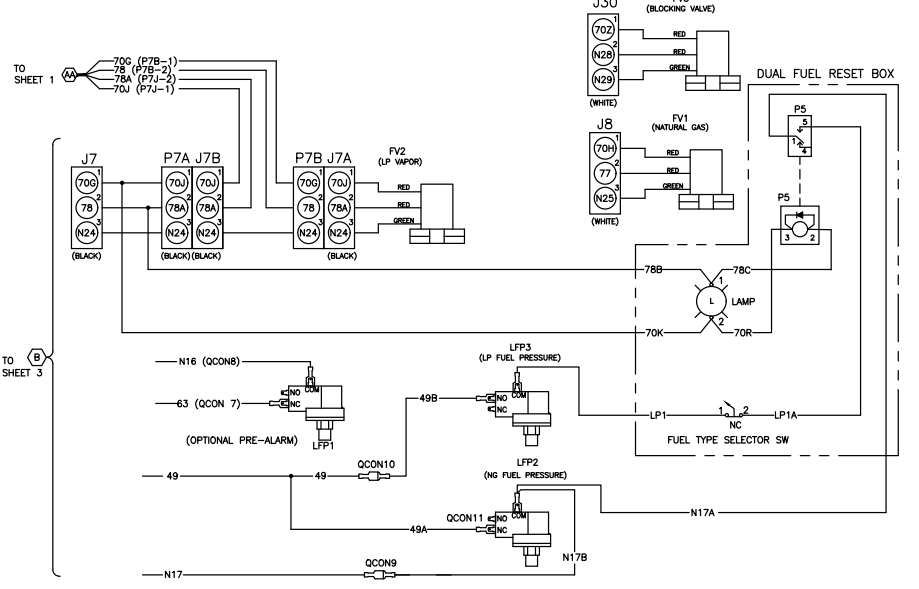
L.P. VAPOR

FUEL VALVE ASSEMBLY



FUEL SYSTEMS

AUTO CHANGEOVER NATURAL/L.P. GAS

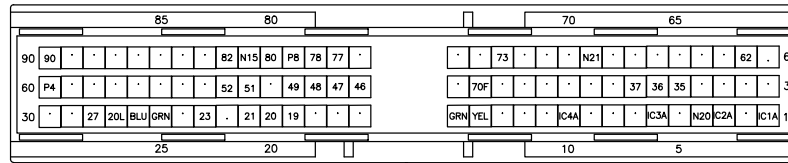


APPROVALS	DATE	REVISION
TEV	3-5-19	1
TEC	3-5-19	2
TEV	3-5-19	3

APM603 CONTROLLER
W/ SPLIT ACTIVATOR, 1φ, 3φ & 600V
10.3L 150-200KW, APM603
GM107538

8 7 6 5 4 3 2 1

P27 (ENGINE ECU)



REV	DATE	REVISION	BY
C	2-14-20	SEE SHEET 1 & 4 [C201038]	TEV
D	5-14-20	SEE SHEETS 2, 3 AND 4 [C203017]	SR
E	6-16-20	SEE SHEETS 1 & 4 [C204852]	TEV
F	2-25-21	SEE SHEET 3 [C210227]	TEV
G	3-23-21	SEE SHEET 3 [C210777]	TEV
H	7-26-21	SEE SHEET 6 [C213571]	TEV

TO SHEET 3

P27 CONNECTIONS

PIN #	IC1A (P14-3)	PIN #	46 (P37-1)
2	N/C	47	47 (P16-6)
3	IC2A (P14-1)	48	48 (P16-5)
4	N20 (W(E))	49	49 (OCON10)
5	N/C	50	50 N/C
6	IC3A (P24-3)	51	51 (P43-1)
7	N/C	52	52 (P43-2)
8	N/C	53	53 N/C
9	N/C	54	54 N/C
10	IC4A (P24-1)	55	55 N/C
11	N/C	56	56 N/C
12	N/C	57	57 N/C
13	N/C	58	58 N/C
14	YEL (W(N))	59	59 N/C
15	GRN (W(C))	60	P4 (W(D))
16	N/C	61	61 N/C
17	N/C	62	62 (P22-D)
18	N/C	63	63 N/C
19	19 (W(F))	64	64 N/C
20	20 (W(G))	65	65 N/C
21	21 (P22-B)	66	66 N/C
22	N/C	67	67 N/C
23	23 (P17-1)	68	68 N/C
24	N/C	69	N21 (W(E))
25	GRN (W(L))	70	70 N/C
26	BLU (W(M))	71	71 N/C
27	27 (P38-C)	72	72 N/C
28	Z0L (W(G))	73	73 (P9-12)
29	N/C	74	74 N/C
30	N/C	75	75 N/C
31	N/C	76	76 N/C
32	N/C	77	77 (P8-2)
33	N/C	78	78 (P7-2)
34	N/C	79	P8 (W(D))
35	35 (P15-3)	80	80 (P16-4)
36	36 (P17-3)	81	N15 (W(C))
37	37 (C1S2)	82	82 (P16-1)
38	N/C	83	83 N/C
39	N/C	84	84 N/C
40	N/C	85	85 N/C
41	N/C	86	86 N/C
42	N/C	87	87 N/C
43	N/C	88	88 N/C
44	70F (W(H))	89	89 N/C
45	N/C	90	90 (P40-B)

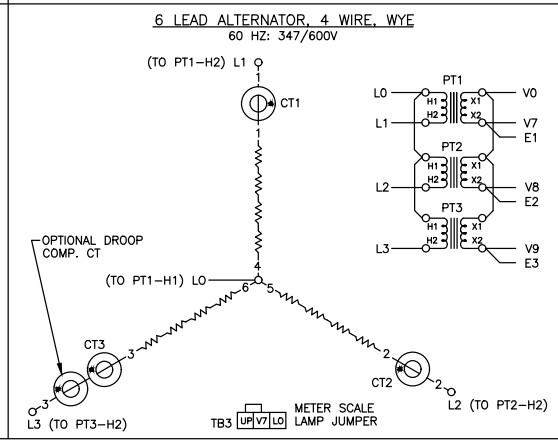
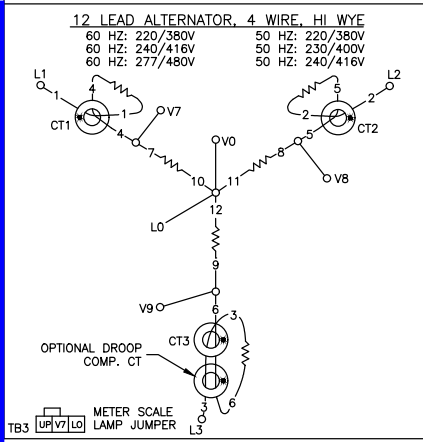
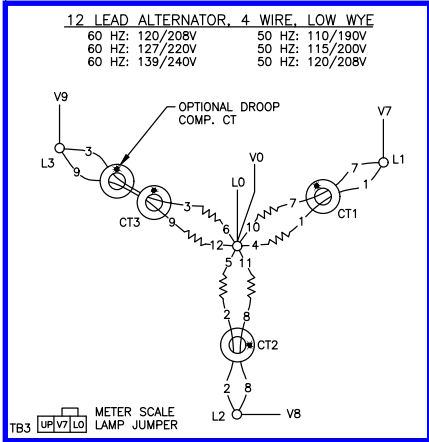
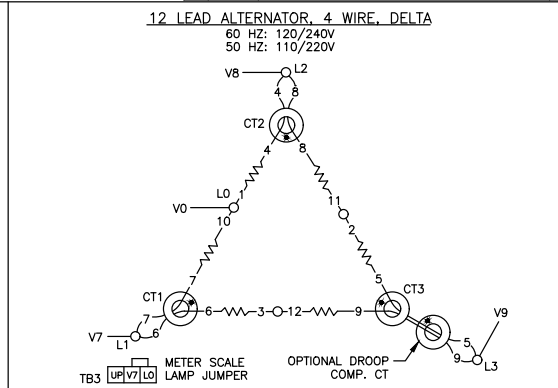
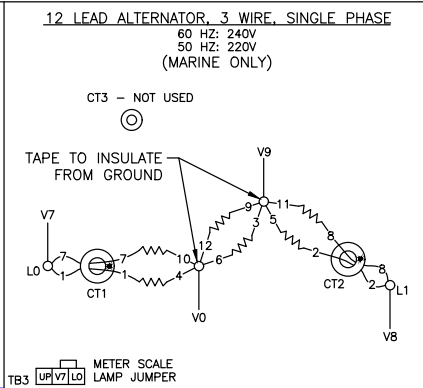
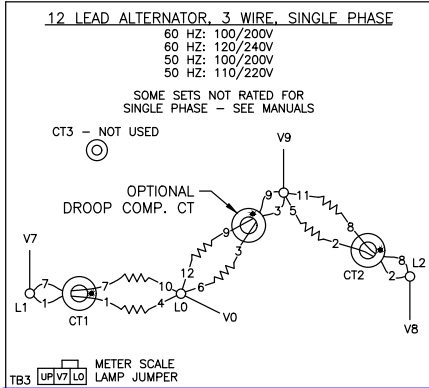
APPROVALS	DATE	REV	DESCRIPTION
TEV	03-05-19	N/A	
HCC	03-05-19	N/A	
TEV	03-05-19	N/A	

KOHLER
 KOHLER, WI 53044
 10.3L 150-200KW, APM603
 DIAGRAM, WIRING
 GM107538

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

8 7 6 5 4 3 2 1

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



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 FRIL
 ALTERNATORS

UNLESS OTHERWISE SPECIFIED -	
1) DIMENSIONS ARE IN INCHES	
2) TOLERANCES ARE:	
3) .002 - .010	FRACTIONS ±
.01 - .030	DECIMALS ± 1/2
.03 - .060	SURFACE FINISH
.06 - .120	✓ MAX

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

THIS DRAWING IS DESIGN AND DETAIL OF KOHLER CO. PROPERTY AND MUST NOT BE USED EXCEPT AS CONNECTION WITH KOHLER CO. WORK. ALL RIGHTS OF DESIGN OR INVENTION ARE RESERVED.

DIAGRAM, ALTERNATOR CONNECTIONS

APPROVALS	DATE	TITLE
DRAWN LDS	8-25-08	
CHECKED TLK	8-23-09	SCALE NONE
APPROVED JMH	8-23-09	SHEET 3-8

ADV-5875

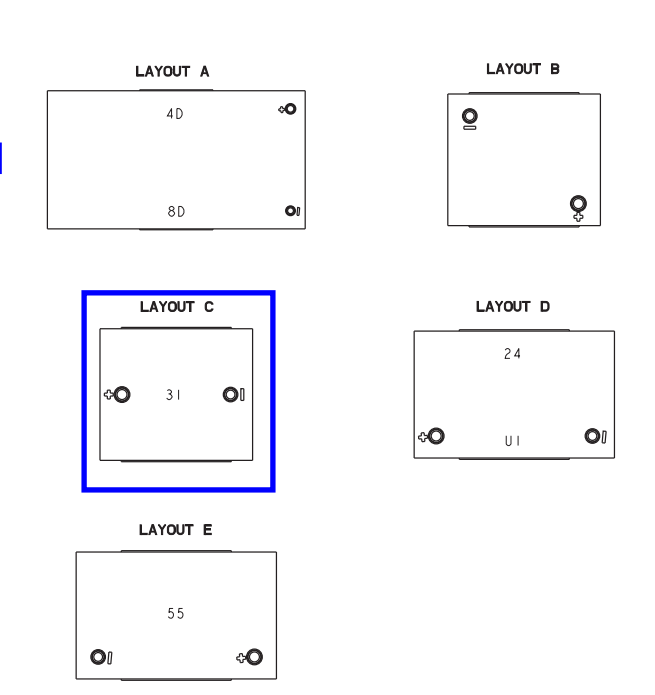
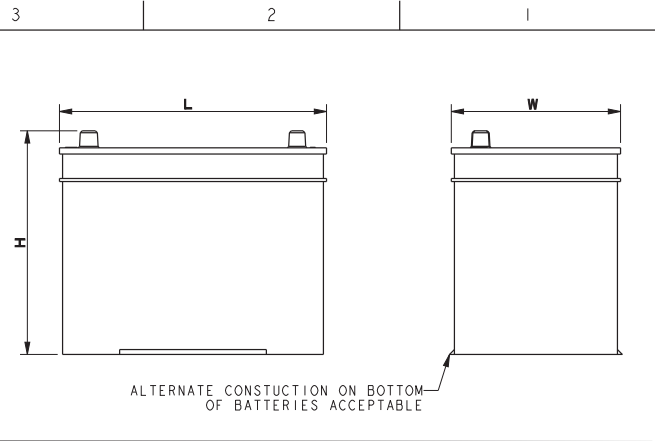
KOHLER®

Miscellaneous

PART NO.	REV	SAE DIMENSION			VOLTAGE	COLD CRANKING AMPS AT 0°F MINIMUM	RESERVE CAP. MINUTES AT 80°F MINIMUM	POST LAYOUT /STYLE	CHARGE TYPE	BATTERY CONSTRUCTION	BCI GROUP	INTERNAL RESISTANCE (MΩ)
		L	W	H								
244578	BF	333.5 [13.13]	181.1 [7.13]	238.5 [9.39]	6	700	275	B/1	DRY	SEE NOTE 1	-	
244750	DD	342.9 [13.50]	173.2 [6.82]	238.3 [9.38]	12	600	165	D/1	DRY	SEE NOTE 1	-	
239102	DK	198.1 [7.80]	133.4 [5.25]	187.5 [7.38]	12	200	32	B/2	DRY	SEE NOTE 1	-	
289515	DC	539.8 [21.25]	282.7 [11.13]	276.4 [10.88]	12	1150	450	A/1	DRY	SEE NOTE 1	-	
291918	DC	333.2 [13.12]	173.0 [6.81]	239.8 [9.44]	12	700	150	C/3	WET	SEE NOTE 1	-	
299981	DD	333.2 [13.12]	173.0 [6.81]	239.8 [9.44]	12	700	150	C/3	DRY	SEE NOTE 1	-	
254425	DD	333.2 [13.12]	173.0 [6.81]	239.8 [9.44]	12	1000	200	C/3	WET	SEE NOTE 1	-	
299982	DC	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	DC	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	BT	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	BR	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	DC	525.3 [20.68]	220.5 [8.68]	251.0 [9.88]	12	1000	320	A/1	DRY	SEE NOTE 1	-	
GM22349	BR	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	298.0 [11.73]	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	AGM	-	4D	
10702001800	A	527.1 [20.75]	216.0 [8.50]	254.0 [10.00]	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 [11.00]	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	

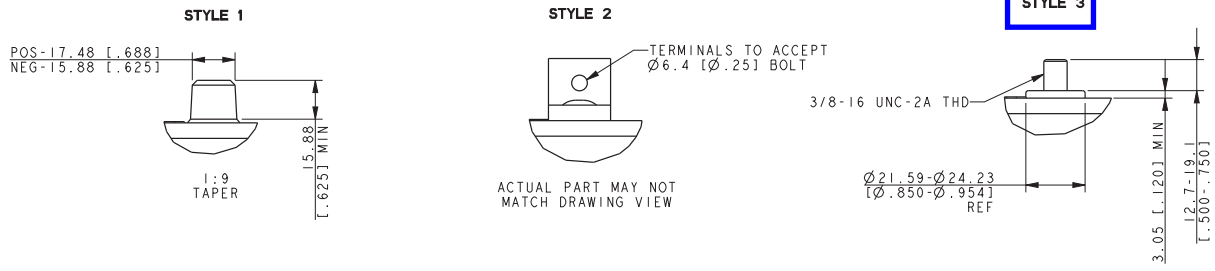
NOTE: DIMENSIONS IN [] ARE ENGLISH EQUIVALENTS.

☐ INDICATES PART NUMBERS AFFECTED BY LATEST DRAWING REVISION



REV	DATE	ON COMPOSITE DWGS. SEE PART NO. FOR REVISION LEVEL	BY	DO NOT SCALE. REFERENCE THE MODEL FOR ALL UNSPECIFIED DIMENSIONS
BY	5-6-16	(C-6) 10702001800: COLD CRANKING AMPS 1110	BGW	UNLESS OTHERWISE SPECIFIED: ALL DIMENSIONS IN MILLIMETERS GENERAL TOLERANCES: F: ± 0.25 M: ± 0.15 H: ± 0.10 ANGLES & R: 30° MAX.
CA	4-15-19	GM106681, GM106375, GM106373, GM106377, GM106369 & GM106374 ADDED; (D-3) INTERNAL RESISTANCE (MΩ) COLUMN ADDED; (D-8) 324586 & 256984 VOIDED; (C-8)		KOHLER KOHLER, WISCONSIN 53044 THIS DRAWING IN DESIGN AND DETAIL IS KOHLER CO. PROPERTY AND MUST NOT BE USED EXCEPT IN CONNECTION WITH KOHLER CO. WORK. ALL RIGHTS OF DESIGN OR INVENTION ARE RESERVED.
		GM34399, GM48784, GM75512 VOIDED; (A, B-8, 7, 6, 5, 4) VIEWS & NOTES MOVED TO SHEET 2, SHEET 2 ADDED [CT194425]	DS	TITLE DWG. BATTERY, DRY CHARGED
				SCALE 0.30 [CAD NO.] SHEET 1 of 2
				DWG NO. 244578-CMP

8 7 6 5 4 3 2 1



- NOTES:
- 1) STYLE 3 CAN BE CONVERTED TO STYLE 1 BY INSTALLATION OF 254427 STUD CONVERSION 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: (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 TOP OF BATTERY. (BETWEEN TERMINALS ON LAYOUT D)
 MANUFACTURER MUST PROVIDE A CERTIFICATE CONTAINING MFGRS. NAME, MFGRS. PART NUMBER,
 AND KOHLER PART NUMBER CERTIFYING THAT THE BATTERY WAS BUILT TO INDUSTRY STANDARDS.
 SEE N.F.P.A. -110 FOR SPECIFIC DETAILS. CERTIFICATE REQUIRED ONLY ONCE PER BATTERY PART NUMBER.
 MAY NOT BE CALCIUM-CALCIUM TYPE.

NOTES: (CHARGE TYPE)

ALL DRY CHARGED BATTERIES MUST BE SUPPLIED WITH ACTIVATION INSTRUCTIONS ADHERED TO BATTERY AND LOOSE. BATTERY MUST ALSO BE IDENTIFIED 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.

NOTES: (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	DO NOT SCALE. REFERENCE THE MODEL FOR ALL UNSPECIFIED DIMENSIONS
CA	4-15-19	NEW DRAWING; SEE SHEET 1 [CT194425]	DS	UNLESS OTHERWISE SPECIFIED: ALL DIMENSIONS IN MILLIMETERS GENERAL TOLERANCES: F ±0.25 M ±0.50 H ±0.75 SURFACE FINISH Y ±0.15 ANGLES ±0°30' MAX. TYPICAL DIMENSIONS
APPROVALS				TITLE
DRWN	DS	DATE	4-15-19	KOHLER KOHLER VISIONS 8384 THIS DRAWING IN DESIGN AND DETAIL IS KOHLER CO. PROPERTY AND MUST NOT BE USED EXCEPT IN CONNECTION WITH KOHLER CO. WORK. ALL RIGHTS OF DESIGN OR INVENTION ARE RESERVED.
CHECKED	GER	DATE	4-15-19	DWG, BATTERY, DRY CHARGED
APPROVED	AMM	DATE	4-15-19	SCALE 0.30 CAD NO. SHEET 2 of 2 DWG NO. 244578-CMP D

8 7 6 5 4 3 2 1

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
 GEL CELL

INPUT:
 INPUT VOLTAGE: 90-135 VOLTS AC
 INPUT FREQUENCY: 50/60 Hz

INPUT LEAD:
 APPROXIMATELY 1.8M (72") (REF) TYPE SJTOW -40°C TO 105°C UL RATED WIRE.
 TERMINATED IN PRE-MOLDED US STYLE 120 V 3 PRONG AC PLUG.

DC OUTPUT:
 AUTOMATIC FLOAT EQUALIZE
 STEADY FULL LOAD CURRENT: 6 AMPS
 BULK 11.8-14.0 VOLTS @ 5.0-6.0 AMPS
 ABSORPTION VOLTAGE: 14.0-14.5 VOLTS @ 1.5-5.0 AMPS
 FLOAT VOLTAGE: 13.3-14.5 VOLTS @ 0.1-1.5 AMPS
 BULK TO ABSORPTION TRANSITION: 14.0 VOLTS
 ABSORPTION TO FLOAT TRANSITION: 1.5 AMPS
 CURRENT LIMIT 7 AMPS
 OUTPUT POWER LIMITS: 70 +2/-5 WATTS
 FLOAT TO ABSORPTION TRANSITION: 2.06 VOLTS PER CELL
 LINE REGULATION ACROSS INPUT
 VOLTAGE RANGE: 1%
 SPARK PROTECTION CONNECTION AND OPERATION

OUTPUT LEAD:
 APPROX. 1.2M (48") (REF) TYPE SJTOOW -50°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 5" FROM RING TERMINAL ON RED OUTPUT LEAD.
 DC OUTPUT: RATED PER UL (125% RATED OUTPUT)

ISOLATION:
 INPUT TO OUTPUT: 2500V

ENVIRONMENTAL:
 STORAGE TEMPERATURE RANGE: -40 TO +70°C (-40 TO +158°F)
 OPERATING TEMPERATURE RANGE: -40 TO +70°C (-40 TO +158°F)
 HUMIDITY: 0 TO 100% (CONDENSING)
 VIBRATION AND SHOCK: UL991

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

MOUNTING: SHALL HAVE INTEGRAL MTG. FLANGES.

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

INDICATORS:
 SHALL HAVE CHARGE INDICATOR LAMP TO INDICATE BULK CHARGE AND FLOAT CHARGE CYCLES.

OPERATIONAL:
 CAPABLE OF WITHSTANDING AN INDEFINITE OUTPUT SHORT CIRCUIT WITHOUT DAMAGE TO THE CHARGER.
 SHALL OPERATE PROPERLY AND SUSTAIN NO DAMAGE WHEN CONNECTED TO INPUT POWER WHILE CONNECTED TO THE BATTERY AND CHARGING SYSTEM OF ENGINE WHILE ENGINE IS CRANKED, RUNNING OR SHUTDOWN.

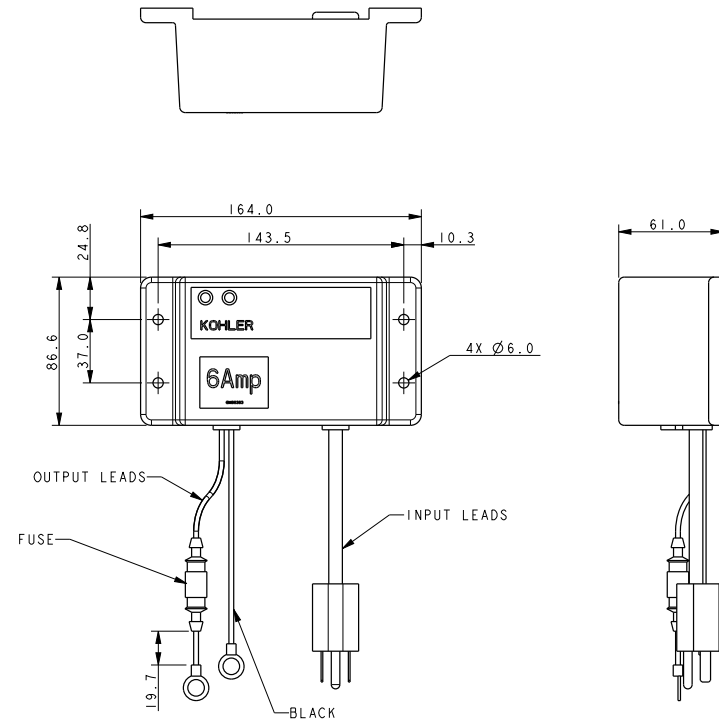
DOCUMENTATION:
 THERE SHALL BE AN INSTALLATION / OPERATIONAL MANUAL SUPPLIED WITH EACH CHARGER.
 PER KOHLER SUPPLIED ARTWORK.

CERTIFICATIONS (US AND CANADA):
 MUST COMPLY WITH UL2200
 UL1236
 MUST MEET CSA REQUIREMENTS
 EMI / RFI FCC CLASS B COMPLIANT AFTER CHARGER DATE CODE 8/26/04

PRODUCT LABELING:
 THE LABEL ATTACHED TO THE CHARGER SHALL HAVE THE FOLLOWING INFORMATION:
 UL LISTING
 KOHLER PART NUMBER
 DESCRIPTION OF ALL INDICATOR
 ALLOWABLE RANGE OF BATTERY UNIT CAPACITY
 ALLOWABLE BATTERY TYPES
 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

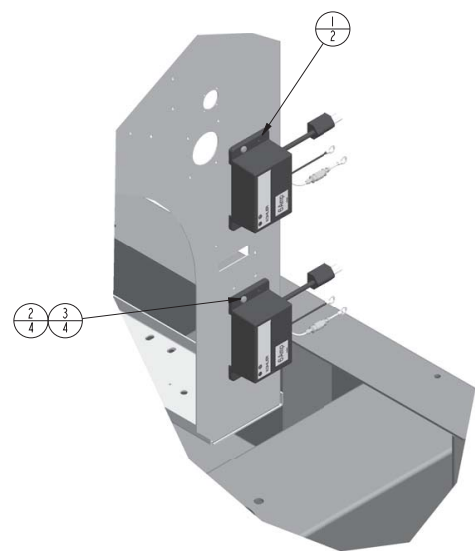
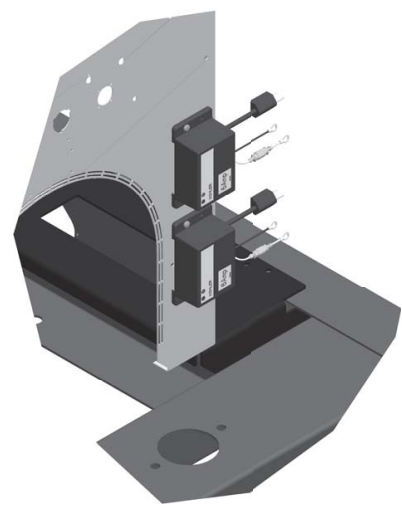
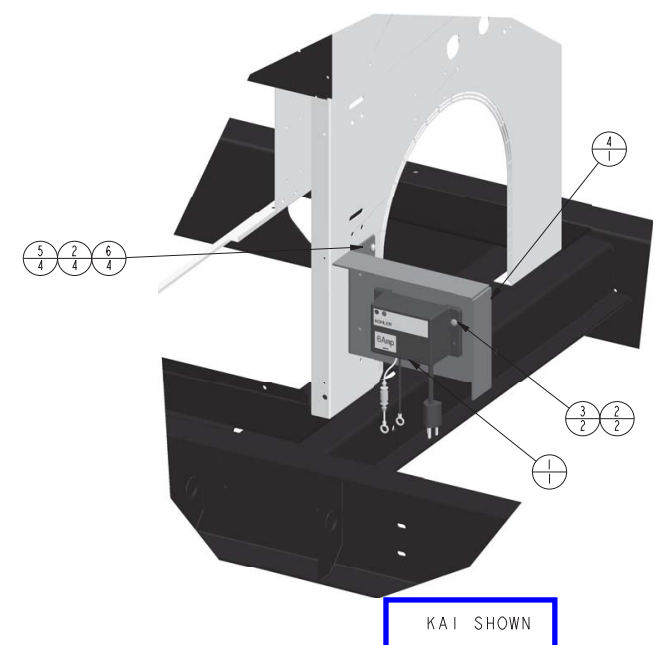
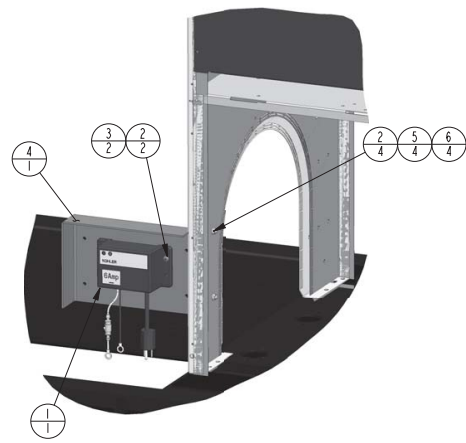
WARRANTY:
 2 YEAR FROM DATE OF PURCHASE FROM MANUFACTURE.



REV	DATE	ON COMPOSITE DWGS. SEE PART NO. FOR REVISION LEVEL	BY	UNLESS OTHERWISE SPECIFIED: 1) DIMENSIONS ARE IN MILLIMETERS 2) TOLERANCES ARE: X .XX ± 0.25 Z .X ± 1.5 SURFACE FINISH ANGLES ± 0° 30' / MAX.	APPROVALS	DATE	TITLE
-	11-8-16	NEW DRAWING (CT164513)	SAM			11-8-16	KOHLER CO. METRIC PRO-E POWER SYSTEMS, KOHLER, WI 53044 U.S.A. THIS DRAWING IN DESIGN AND DETAIL IS KOHLER CO. PROPERTY AND MUST NOT BE USED EXCEPT IN CONNECTION WITH KOHLER CO. BOM. ALL RIGHTS OF DESIGN OR INVENTION ARE RESERVED.
							BATTERY CHARGER 12V, 6A
							SCALE 0.50 CDR NO. SHEET 1 of 1
							DWG NO. GM96383 D

GROUP NO	ITEM	PART NO	QTY	DESCRIPTION
GMI03366-KA1	1	GM96383	1	BATTERY CHARGER 12V, 6A
	2	M6923-06-80	6	NUT, HEX 6MM
	3	M7985A-06020-20	2	SCREW, PAN HEAD MACHINE
	4	GMI03339	1	BRACKET, BATTERY CHARGER
	5	M125A-06-80	4	WASHER, PLAIN 6.4 ID X 12.0 OD
	6	M933-06016-60	4	SCREW, HEX CAP
GMI03366-KA2				BATTERY CHARGER 24V, 6A
	1	GM96383	2	BATTERY CHARGER 12V, 6A
	2	M6923-06-80	4	NUT, HEX 6MM
GMI03366-KA3				BATTERY CHARGER 12V, 6A
	1	GM96383	1	BATTERY CHARGER 12V, 6A
	2	M6923-06-80	6	NUT, HEX 6MM
	3	M7985A-06020-20	2	SCREW, PAN HEAD MACHINE
	4	GMI03340	1	BRACKET, BATTERY CHARGER
	5	M125A-06-80	4	WASHER, PLAIN 6.4 ID X 12.0 OD
6	M933-06016-60	4	SCREW, HEX CAP	

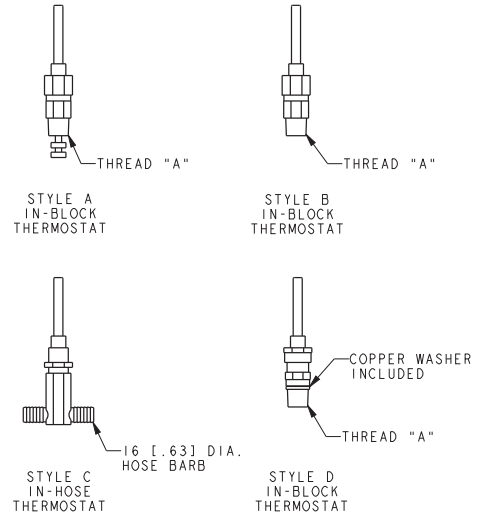
THIS IS AN AUTOMATED TABLE ALL UPDATES MUST BE MADE IN THE ASSEMBLY.



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

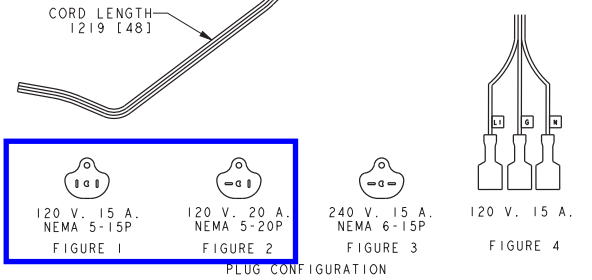
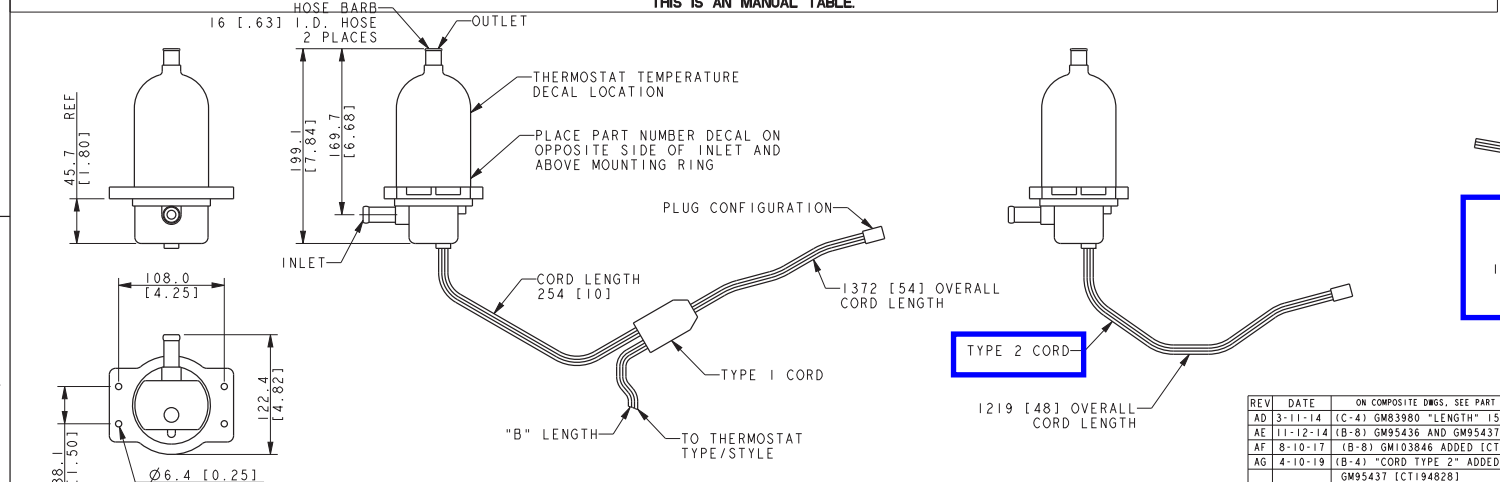
REV	DATE	ON COMPOSITE DWGS. SEE PART NO. FOR REVISION LEVEL	BY	DO NOT SCALE. REFERENCE THE MODEL FOR ALL UNSPECIFIED DIMENSIONS
-	5-2-17	NEW DRAWING [CT173023]	SAM	UNLESS OTHERWISE SPECIFIED: ALL DIMENSIONS IN MILLIMETERS
A	5-17-18	(C-8) GMI03366-KA3 KIT ADDED [CT186638]	PAR	GENERAL TOLERANCES: X: 3 ± 0.25 Y: 3 ± 0.25 Z: 3 ± 0.25 SURFACE FINISH: R: 0.4 ANGLES & R: 30° MAX.
				KOHLER KOHLER HYDROPOWER SYSTEMS THIS DRAWING IN DESIGN AND DETAIL IS KOHLER CO. PROPERTY AND MUST NOT BE USED EXCEPT IN CONNECTION WITH KOHLER CO. WORK. ALL RIGHTS OF DESIGN OR INVENTION ARE RESERVED.
				TITLE: DWG, ASSY BATTERY CHARGER 6A
				SCALE: 0.25 CAD NO. SHEET 1 of 1
				DWG NO. GMI03366

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	W	120	1500	12.5	-	-	38*/49*C[100*/120*F]	-	FIG-1	1324 [52.0]	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



LEADS TO BE LABELED WITH WIRE MARKERS BY SUPPLIER, LABEL "N", "G", & "L1"

TERMINATE EACH LEAD WITH A 1/4 INCH INSULATED FEMALE PUSH-ON TERMINAL



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

REV	DATE	ON COMPOSITE DWGS. SEE PART NO. FOR REVISION LEVEL	BY	UNLESS OTHERWISE SPECIFIED: 25 DIMENSIONS ARE IN MILLIMETERS 27 TOLERANCES ARE:
AD	3-11-14	(C-4) GM83980 "LENGTH" 1524 WAS 1219 [CT74793]	JMR	±.125 ± 0.25
AE	11-12-14	(B-8) GM95436 AND GM95437 ADDED [CT99196]	DRA	±.125 ± 0.25
AF	8-10-17	(B-8) GM103846 ADDED [CT177684]	SAM	±.125 ± 0.25 SURFACE FINISH
AG	4-10-19	(B-4) "CORD TYPE 2" ADDED FOR GM95436 & GM95437 [CT194828]	PAS	ANGLE ± 0° 30' / MAX.
AH	18FEB2021	(C-8) ES-89230 ADDED [CT210046]	AMH	

INDICATES PART NUMBERS AFFECTED BY LATEST REVISION

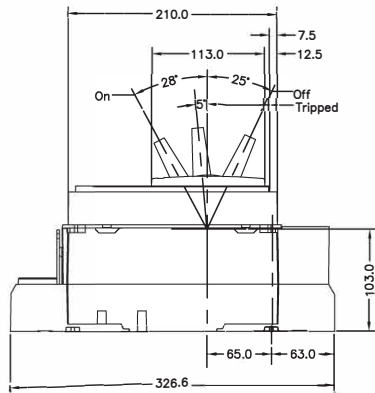
APPROVALS	DATE
DRAWN: SAM	9-22-11
CHECKED: CF	9-22-11
APPROVED: CF	9-22-11

KOHLER CO. METRIC PRO-E
 POWER SYSTEMS, KOHLER, WI 53044 U.S.A.
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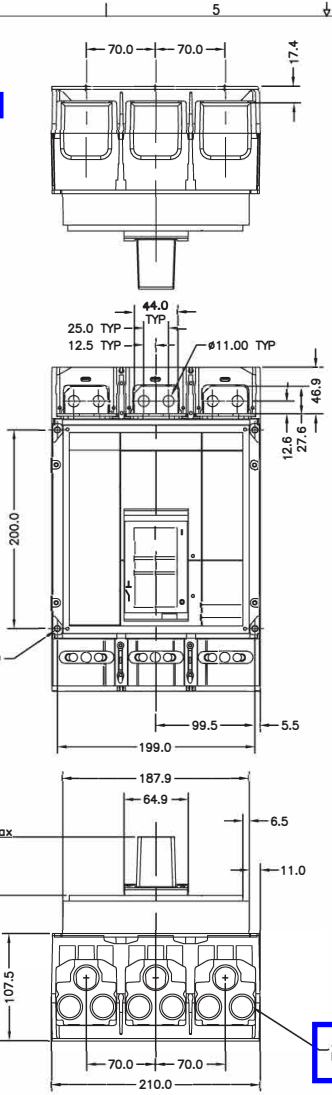
TITLE: **DWG. HEATER, BLOCK**
 SCALE: 0.40 CAD NO.:
 DWG NO.: **326220-CMP** SHEET 1 of 1

PART NO.	REV	AMPS	% RATING	GF1	INT@480V	TRIP	VENDOR NO.
GM24181-1	C	600	100	NO	35kA	5.0 LSI	PGP36080CU33A
GM24181-2	C	600	100	YES	35kA	6.0A LSIG	PGP36080CU44A
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.



600-800A



3/0-500 KCMIL (3)
PER PHASE LOAD SIDE

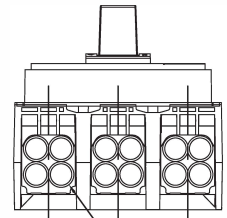
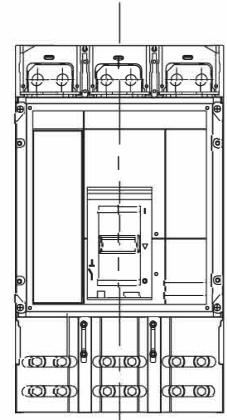
NOTE:
KOHLER PART # TO BE CLEARLY VISIBLE ON
CIRCUIT BREAKER AND ON INDIVIDUAL PACKAGING.

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.

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

METRIC CAD FILE

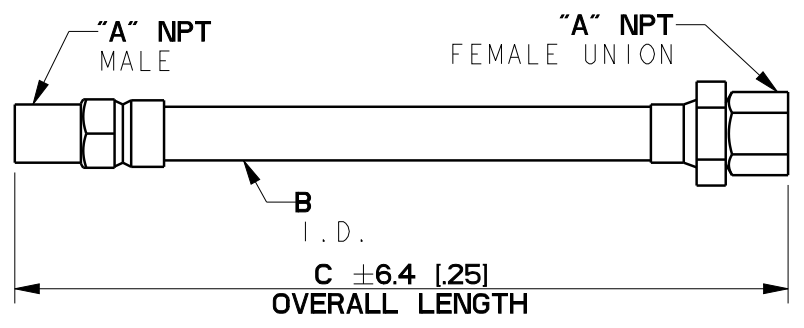
REV	DATE	REVISION	BY
1	3-22-02	NEW DRAWING [6034E]	MSD
A	8-12-03	(D-5) THREADED BAR NOTE ADDED [70080]	MSL
B	11-12-03	(D-7) GM24181-13 GFI: NO WAS YES [70080]	MSD
C	2-23-07	(D-3) KOHLER NOTE ADDED [78285]	GFR
D	1-10-11	(D-5) GM24181-15 THRU -18 ADDED [80647-15]	MSD



THESE CHANGES APPLIED - (1) TOLERANCES PER ASME Y14.5 UNLESS OTHERWISE SPECIFIED SURFACE FINISH R 3.2 UNLESS OTHERWISE SPECIFIED UNLESS OTHERWISE SPECIFIED		KOHLER CO POWER SYSTEMS, KOHLER, WI 53044 U.S.A. THE COMPANY OR ITS AFFILIATES, AGENTS OR CONTRACTORS SHALL BE RESPONSIBLE FOR THE DESIGN AND CONSTRUCTION OF THE PROJECT. ALL RIGHTS OF INVENTION ARE RESERVED.	
TITLE AND NUMBER SQUARE D P-FRAME CIRCUIT BREAKER 3 POLE ELECTRONIC TRIP		BREAKER, CIRCUIT GM24181	
APPROVALS DESIGNED BY CHECKED BY DRAWN BY DATE	DATE 3-22-02 3-22-02 3-22-02	DWG NO. GM24181.DWG	SHEET NO. 1-1

SQUARE D P-FRAME CIRCUIT BREAKER
3 POLE ELECTRONIC TRIP

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	UNLESS OTHERWISE SPECIFIED - 1) DIMENSIONS ARE IN MILLIMETERS 2) TOLERANCES ARE:	KOHLER CO. METRIC PRO-E POWER SYSTEMS, KOHLER, WI 53044 U.S.A. THIS DRAWING IN DESIGN AND DETAIL IS KOHLER CO. PROPERTY AND MUST NOT BE USED EXCEPT IN CONNECTION WITH KOHLER CO. WORK. ALL RIGHTS OF DESIGN OR INVENTION ARE RESERVED.
AW	1-9-19	(A-2,3) NOTE: CSA B149 WAS CSA 8.1 [CT192179]	PAS	X.XX ± 0.25	
AY	3-11-19	(C-3) X-504-2, 12, 17, 18 & 23 VOIDED;		X.X ± 1.0	
		'SERVICE ONLY' COLUMN ADDED; X-504-1, 16,		X ± 1.5	
		20, 25, 26, 27 CSA ASTERISK ADDED [CT194154]	ARP	ANGLES ± 0° 30' SURFACE FINISH ✓ MAX.	
BA	10-9-19	(B-1,2) NOTE "PRODUCT SHALL MEET UL 536...CANADA" WAS		THIRD ANGLE PROJECTION	
		"MUST MEET CSA B149"; (C-1,2) MATERIAL NOTE UPDATED;		APPROVALS DATE	
		(D-4) X-504-1: "*" SYMBOL REMOVED; (B-4)		DRAWN DKO 11-19-62	
		"PEP-RML-001" NOTE ADDED; (D-1,2) VIEW & NOTES		CHECKED EB 9-21-68	
		UPDATED [CT199012]	YBY	APPROVED SAS 2-22-84	
					TITLE DWG, LINE, FLEX FUEL SCALE 1.00 CAD NO. SHEET 1 of 1 DWG NO. X-504 B

KOHLER®

Warranty

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

Your Kohler product has been manufactured and inspected with care by experienced craftsmen. If you are the original end user, Kohler Co. 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, Kohler Co. will repair, replace, or make appropriate adjustment at Kohler Co.'s option if the product, upon Kohler Co.'s inspection, is found to be properly installed, maintained, and operated in accordance with Kohler Co.'s instruction manuals. A Kohler distributor, dealer, or authorized service representative must perform startup.

Kohler Product

Stationary Standby Generator Set & Accessories

Warranty Coverage

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 Kohler Co.'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 Kohler Co.'s factory.

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 Kohler 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. Additional expenses for repairs performed after normal business hours, i.e. overtime or holiday labor rates.
8. Rental of equipment during the performance of warranty repairs.
9. Removal and replacement of non-Kohler-supplied options and equipment.
10. Non-Kohler replacement parts. Replacement of a failed Kohler part with a non-Kohler part voids the warranty on that part.
11. Radiators replaced rather than repaired.
12. Fuel injection pumps not repaired by an authorized Kohler service representative.
13. Non-Kohler-authorized repair shop labor without prior approval from Kohler Co. Warranty Department.
14. Engine fluids such as fuel, oil, or coolant/antifreeze.
15. Shop supplies such as adhesives, cleaning solvents, and rags.
16. Expenses incurred investigating performance complaints unless the problem is caused by defective Kohler materials or workmanship.
17. Maintenance items such as fuses, lamps, filters, spark plugs, loose or leaking clamps, and adjustments.
18. Travel time and mileage exceeding 300 miles round trip.

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

KOHLER CO. 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.

KOHLER®

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

TP-5374 12/15f

Stationary Standby Industrial Generator Set Extended Five-Year or Three Thousand (3000)-Hour Comprehensive Limited Warranty

Your Kohler product has been manufactured and inspected with care by experienced craftsmen. If you are the original end user, Kohler Co. 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, Kohler Co. will repair, replace, or make appropriate adjustment at Kohler Co.'s option if the product, upon Kohler Co.'s inspection, is found to be properly installed, maintained, and operated in accordance with Kohler Co.'s instruction manuals. A Kohler distributor, dealer, or authorized service representative must perform startup.

Kohler Product

Stationary Standby Generator Set & Accessories

Warranty Coverage

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 Kohler 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-Kohler-supplied options and equipment.
11. Non-Kohler replacement parts. Replacement of a failed Kohler part with a non-Kohler part voids the warranty on that part.
12. Radiators replaced rather than repaired.
13. Fuel injection pumps not repaired by an authorized Kohler service representative.
14. Non-Kohler-authorized repair shop labor without prior approval from Kohler Co. 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 Kohler 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 Kohler service representative or write Kohler Co., Service Department, MS072, Kohler, WI 53044 USA.

KOHLER CO. 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.

KOHLER®

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

TP-5561 9/23g

KOHLER®

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.

For and on behalf of BSI:



Carlos Pitanga, Chief Operating Officer Assurance – Americas

Original Registration Date: 1995-02-28

Latest Revision Date: 2021-10-29

Effective Date: 2021-11-07

Expiry Date: 2024-11-06

Page: 1 of 2



...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

Latest Revision Date: 2021-10-29

Effective Date: 2021-11-07

Expiry Date: 2024-11-06

Page: 2 of 2

This certificate remains the property of BSI and shall be returned immediately upon request.

An electronic certificate can be authenticated [online](https://www.bsigroup.com/ClientDirectory). Printed copies can be validated at www.bsigroup.com/ClientDirectory
To be read in conjunction with the scope above or the attached appendix.

Information and Contact: BSI, Kitemark Court, Davy Avenue, Knowlhill, Milton Keynes MK5 8PR. Tel: + 44 345 080 9000
BSI Assurance UK Limited, registered in England under number 7805321 at 389 Chiswick High Road, London W4 4AL, UK.
A Member of the BSI Group of Companies.

G15-152 10/21

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.

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.

- 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.

KOHLER®

KOHLER CO. Kohler, Wisconsin 53044
Phone 920-565-3381, Fax 920-459-1646
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