Woodstock Power Company
4055 Richmond Street
Philadelphia, PA 19137
P: 610-658-3242
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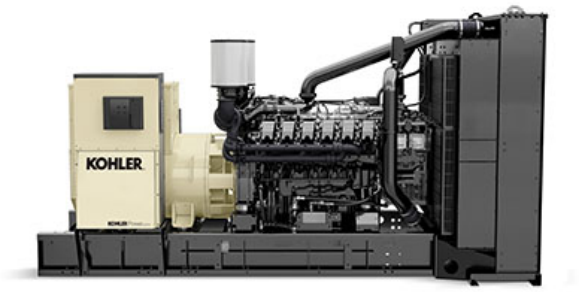
Generator



Kohler Model: KD1000

This diesel generator set equipped with a KH04070TO4D alternator operating at 277/480 volts is rated for 1000 kW/1250 kVA. Output amperage: 1504

Standard Features:

- Kohler Co. provides one-source responsibility for the generating system and accessories.
- Approved for use with certified renewable Hydrotreated Vegetable Oil (HVO) / Renewable Diesel (RD) fuels compliant with EN15940/ASTM D975.
- The generator set and its components are prototype-tested, factory-built, and production-tested.
- The 60 Hz generator set offers a UL 2200 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 standard three-year or 1000-hour limited warranty for standby applications. Five-yare basic, five-year comprehensive, and ten-year extended limited warranties are also available.
- A standard two-year or 8700-hour limited warranty for prime power applications.
- Tier 2 EPA-certified for Stationary Emergency Applications
- Battery Rack and Cables
- Closed Crankcase Ventilation (CCV) Filters
- Customer Connection
- Integral Vibration Isolation
- Local Emergency Stop Switch
- Oil Drain and Coolant Drain Extension
- Operation and Installation Literature

Other Features:

- Kohler designed controllers for one-source system integration and remote communication.
- The low coolant level shutdown prevents overheating (standard on radiator models only).

Alternator Features:

- The pilot-excited, permanent magnet (PM) alternator provides superior short-circuit capability.
- All models are brushless, rotating-field alternators.
- NEMA MG1, IEEE, and ANSI standards compliance for temperature rise and motor starting.
- Sustained short-circuit current of up to 300% of the rated current for up to 10 seconds.
- Sustained short-circuit current enabling downstream circuit breakers to trip without collapsing the alternator field.
- Self-ventilated and dripproof construction.
- Superior voltage waveform from two-thirds pitch windings and skewed stator.

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Qty	Description
	KD1000 Generator System
1	KD1000 Generator Set

Includes the following:

Literature Languages	English
Approvals and Listings	UL2200 Listing
Approvals and Listings	IBC Seismic Certification
Engine	KD1000, 60Hz, EPA, Tier 2
Nameplate Rating	Standby 130C Rise
Voltage	60Hz, 277/480V, Wye, 3Ph, 4W
Alternator	KH04070TO4D
Cooling System	Unit Mounted Radiator, 50C
Skid and Mounting	Skid, High Iso Mount
Air Intake	Standard Duty
Controller	APM603
Controller Accy, Installed	Digital I/O
Enclosure Type	Sound
Enclosure Material	Aluminum
Enclosure Silencer	Internal Silencer
Enclosure Electrical Package	Basic Electrical Pkg, 1 Ph
Enclosure Service AMPs	100 AMP Enclosure Service
Enclosure Electrical Acc.	Wire Generator Heater
Enclosure Electrical Acc.	Wire Block Heater
Enclosure Electrical Acc.	Wire Battery Charger
Fuel Tank Type	State
Fuel Runtime (Approx.)	24 Hours
Subbase Fuel Tank Capacity	1749 Gallons
Fill Pipe/Spill Fill Options	5 Gal Spill Cont w/95% Shutoff
Fuel Tank Vent	Emergency Vent, 5", IBC
Tank Marking Options	Combust Lqds - Keep Fire Away
Tank Marking Options	NFPA 704 Identification
Tank Marking Options	Tank Number & Safe Fill Height
Starting Aids, Installed	6000W,208V,1Ph,w/Valves
Electrical Accy.,Installed	Battery, 2/12V, AGM
Electrical Accy.,Installed	Batt. Rack & Cables
Electrical Accy.,Installed	Battery Charger, 24V-20AMP
Electrical Accy.,Installed	Generator Heater
Rating, LCB 1 Right	100% Rated
Amps, LCB 1 Right	1,600

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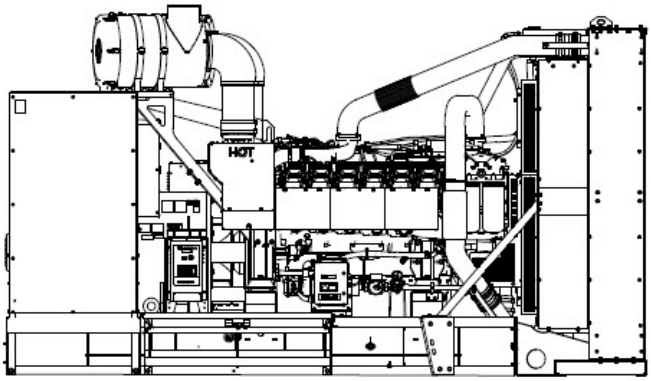
	Trip Type, LCB 1 Right	Electronic, LSI
	LCB1 Right Interrupt Rating	65kA At 480V
	LCB Accy. Installed	Ground Fault Relay Indication
	Fuel Lines, Installed	Flexible Fuel Lines
	Fuel System Acc.,Installed	Fuel/Water Separator
	Exceeds LTL Shipping Height	Add'l Shipping Charge Accepted
	Miscellaneous Accy,Installed	Coolant in Genset
	Miscellaneous Accy,Installed	Oil in Genset
	Warranty	Standard
	Testing, Additional	Power Factor Test,0.8,3Ph Only
1	RSA III, Annunciator only	
1	NEC Remote, E-Stop	
1	Lit Kit, General Maint, 60Hz, KD1000	

KOHLER®

Spec Sheets

KOHLER®

KD1000
Diesel



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Generator Set Rating

Standby 130C Rise Ratings

Alternator	Voltage	Ph	Hz	Peak kVA	kW/kVA	Amps
KH04070TO4D	277/480	3	60	3774	1000/1250	1504

RATINGS: All three-phase units are rated at 0.8 power factor.
Standby Ratings: The standby rating is applicable to varying loads for the duration of a power outage. There is no overload capability for this rating.
Prime Power Ratings: At varying load, the number of generator set operating hours is unlimited.
A 10% overload capacity is available for one hour in twelve. Ratings are in accordance with ISO-8528-1 and ISO-3046-1. For limited running time and continuous ratings, consult the factory.
Obtain technical information bulletin (TIB-101) for ratings guidelines, complete ratings definitions, and site condition derates.

Model: KD1000, continued

Alternator Specifications

Specifications	Alternator
Alternator manufacturer	Kohler
Type	4-Pole, Rotating-Field
Exciter type	Brushless, Permanent-Magnet Pilot Exciter
Voltage regulator	Solid State, Volts/Hz
Insulation	NEMA MG1, UL 1446, Vacuum Pressure Impregnated (VPI)
Insulation: Material	Class H, Synthetic, Nonhygroscopic
Insulation: Temperature Rise	130°C, 150°C Standby
Bearing: quantity, type	1, Sealed
Coupling	Flexible disc
Amortisseur windings	Full
Rotor balancing (60Hz)	125%
Alternator winding type	Random Wound
Voltage regulation, no-load to full-load RMS	+/-0.25%
Unbalanced load capability	100% of Rated Standby Current

• The pilot-excited, permanent magnet (PM) alternator provides superior short-circuit capability.
• All models are brushless, rotating-field alternators.
• NEMA MG1, IEEE, and ANSI standards compliance for temperature rise and motor starting.
• Sustained short-circuit current of up to 300% of the rated current for up to 10 seconds.
• Sustained short-circuit current enabling downstream circuit breakers to trip without collapsing the alternator field.
• Self-ventilated and dripproof construction.
• Superior voltage waveform from two-thirds pitch windings and skewed stator.
• Brushless alternator with brushless pilot exciter for excellent load response.

Engine

Engine Specification

Engine Manufacturer	Kohler Diesel
Engine Model	KD27V12
Engine: type	4-Cycle, Turbocharged
Cylinder arrangement	12-V
Displacement, L (cu. in.)	27 (1648)
Bore and stroke, mm (in.)	135 x 157 (5.31 x 6.18)
Compression ratio	15.0:1
Piston speed, m/min. (ft./min.)	565 (1854)
Main bearings: quantity, type	7, Precision Half-Shell
Rated rpm	1800
Max. power at rated rpm, kWm (BHP)	1114 (1494)
Cylinder head material	Cast Iron
Crankshaft material	Steel
Valve (exhaust) material	Steel
Governor: type, make/model	KODEC Electronic Control
Frequency regulation, no-load to-full load	Isochronous
Frequency regulation, steady state	±0.25%
Frequency	Fixed
Air cleaner type, all models	Dry

Model: KD1000, continued

Exhaust

Exhaust System

Exhaust flow at rated kW,m3/min. (cfm)	201.6 (7119)
Exhaust temperature at rated kW, dry exhaust, °C (°F)	530 (986)
Maximum allowable back pressure, kPa (in. Hg)	8.5 (2.5)

Fuel

Fuel System

Fuel type	Diesel
Fuel supply line, min. ID, mm (in.)	14 (0.55)
Fuel return line, min. ID, mm (in.)	14 (0.55)
Max. fuel flow, Lph (gph)	380 (100)
Min./max. fuel pressure at engine supply connection, kPa (in. Hg)	-30/30 (-8.8/8.8)
Maximum diesel fuel lift, m (ft.)	3.7 (12)
Max. return line restriction, kPa (in. Hg)	30 (8.8)
Fuel Filter Primary	1
Fuel Filter Water Separator	1
Recommended fuel	#2 Diesel ULSD/HVO/RD

Lubrication

Lubrication System

Type	Full Pressure
Oil pan capacity dipstick mark max., L (qt.)	79 (83.5)
Oil pan capacity, initial filling, L (qt.)	101 (106.7)
Oil filter: quantity, type	2, Cartridge
Oil cooler	Water-Cooled

Cooling

Radiator System

Ambient temperature, °C (°F)	40 (104) 50 (122)
Engine jacket water flow, Lpm (gpm)	1015 (268)
Engine jacket water capacity, L (gal.)	55 (14.4)
Radiator system capacity, including engine, L (gal.)	113.5 (30) 123 (32.4)
Heat rejected to cooling water at rated kW, dry exhaust, kW (Btu/min.)	404 (22996)
Heat rejected to air charge cooler at rated kW, dry exhaust, kW (Btu/min.)	260 (14799)
Charge cooler air inlet temperature, °C (°F)	219 (426)
Water pump type	Vane Wheel
Fan diameter, including blades, mm (in.)	1350 (53.1)
Fan, kWm (HP)	48 (64.3)
Max. restriction of cooling air, intake and discharge side of radiator, kPA (in. H20)	0.125 (0.5)

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

Model: KD1000, continued

Remote Radiator System

Exhaust manifold type	Dry
Water inlet/outlet, mm (in.)	85 (3.35)
Charge air cooler inlet/outlet (pipe dia. of flange), mm (in.)	127 (5)
Static head allowable above engine, kPa (ft. H2O)	70 (23.5)
Note:	Contact your local distributor for cooling system options and specifications based on your specific requirements.

Operation Requirements

Air Requirements

Radiator-cooled cooling air, m3/min. (scfm) *	1212 (42801)
Cooling air required for generator set when equipped with city water cooling or remote radiator, based on 14°C (25°F) rise, m3/min. rise and ambient temp. of 29°C (85°F) m3/min. (cfm)	653.9 (23092)
Combustion air, m3/min. (cfm)	72.7 (2566)
Heat rejected to ambient air: Engine, kW (Btu/min.)	136 (7741)
Heat rejected to ambient air: Alternator, kW (Btu/min.)	48 (2732)

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

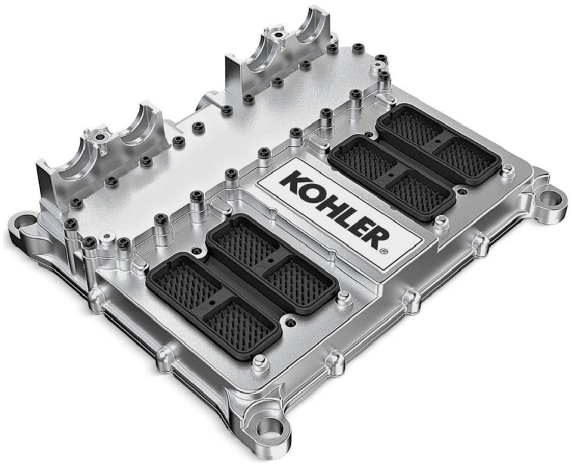
Fuel Consumption

Diesel, Lph (gph), at % load	Rating
Standby Fuel Consumption at 100% load	269 Lph (70.9 gph)
Standby Fuel Consumption at 75% load	209 Lph (55.3 gph)
Standby Fuel Consumption at 50% load	146 Lph (38.6 gph)
Standby Fuel Consumption at 25% load	84 Lph (22.2 gph)

KOHLER. Power Systems

800–3250 kW Industrial Generator Set Engine Control Unit (ECU)

ISO 9001 KOHLER POWER SYSTEMS NATIONALLY REGISTERED



Applicable to the following:

KD800 to KD3250

KD800-YF to KD3250-YF

The ECU2-HD, rated I6K9K, can be used under harsh conditions with connected or disconnected cable harness. The control is suitable for diesel engines with up to 12 cylinders.

In a cascaded configuration, it controls up to 20 cylinders. The ECU is compatible with the common rail system found on the KD Series Kohler engine. The control unit also fulfills functional safety requirements of international safety standards. Due to the integrated diagnostics, the ECU can do self-checks, facilitating maintenance. Integrated fuel cooling ensures safe and reliable operation of the ECU.

Features

- Combined control of engine and exhaust gas treatment.
- Twelve power outputs for injector evaluation.
- Control of up to 20 cylinders in a cascaded configuration.
- Suitable for direct mounting on the engine.
- High performance, self-diagnostics for safe operation.
- Standardized communication interfaces J1939, UDS.
- Functional safety features according to EN ISO 13849.
- Temperature range from –40°C to 125°C (–40°F to 257°F).
- Reliable operation in harsh conditions.
- Platform for EU Stage IV/V, Euro V/VI, and EPA Tier 4f.

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

Kohler Power Systems
Asia Pacific Headquarters
7 Jurong Pier Road
Singapore 619159
Phone (65) 6264-6422, Fax (65) 6264-6455

Specifications and Features

Specification/Feature	
Generator Set Availability	KD800–3250
Microcontroller	Freescale SPC56xx Family
Frequency	256 MHz
Housing	Diecast aluminum
Dimensions	334 X 296 X 85.9 mm (13.1 x 11.7 x 3.4 in.) without strain relief clamp
Weight	5.4 kg (11.9 lbs.)
Rated voltage	+24 VDC
Operating temperature	–40°C to +80°C (–40°F to 176°F) with air cooling, –40°C to max +125°C (–40°F to max. 257°F) with fuel cooling
Flammability	UL 94 V–0
IP rating	IP6K9K with and without connected cable harness
Memory	4 MB Flash, 256 kB RAM internal, 4 MB RAM external (optional), 128 kB EEPROM external
Digital inputs	10 x configurable logic levels
Analog inputs	2 x configurable 0–5 V/0–25 mA, 17 x 0–5 V, 14 x 0–33 V
Resistance inputs	19 x resistance 0–50 kOhms
Frequency inputs	2 x Hall speed sensor, 8 x universal frequency measurement range 0.5 Hz to 10 kHz
Constant voltage outputs	12 x 5 V, 2 x 12 V, 11 x UBATT
Pulse Width Modulation (PWM) outputs	10 x half-bridge configuration with current measurement
Digital outputs	12 x high-side, 8 x low-side
Controlled analog outputs	1
Communication interfaces	4 x CAN according to ISO 11898-2, thereof one galvanically isolated
Power outputs for injectors	12 x split into four stages
Plug	Deutsch DRC 280 Pins (4 x 70)

DISTRIBUTED BY:

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

Generator Set Controller

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

Display, Interface, and Accessibility

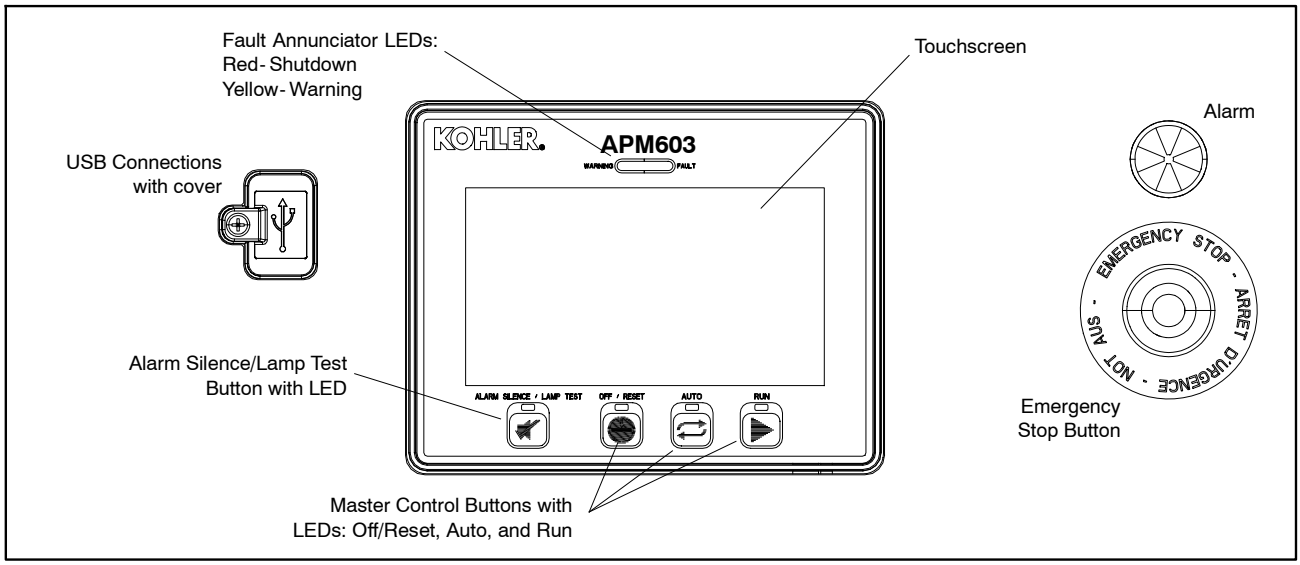
- A 7-inch color TFT touchscreen for easy local access to data.
  - Home screen can be customized to show critical data at a glance.
  - Create a custom favorites list for quick access to important data
- Measurements are selectable in metric or English units.
- Supports Modbus® protocol through serial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

Global Support

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



Controller Features

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

Inputs and Outputs

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

Standard Dedicated User Outputs	Output Type
Close Breaker *	Relay Driver Output
Common Failure	
Common Warning	
EPS Supplying Load	
Generator Running	
Horn	
Low Coolant Temperature	
Not in Auto	
System Ready	
Trip Breaker / Shunt Trip *	
* Only with remote- mounted electrically operated circuit breakers.	

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

KD Engine Data

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

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

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

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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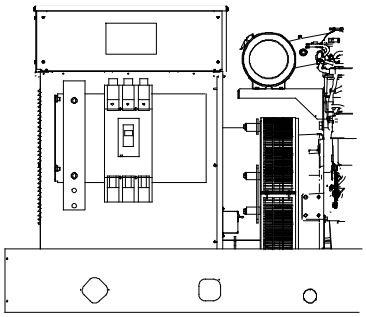
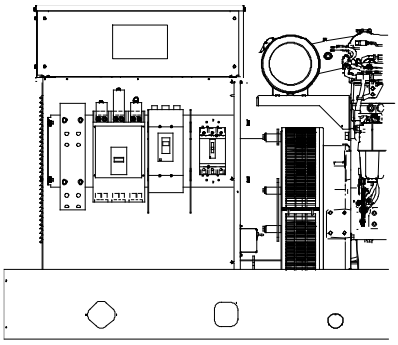
KOHLER Industrial Generator Set Accessories

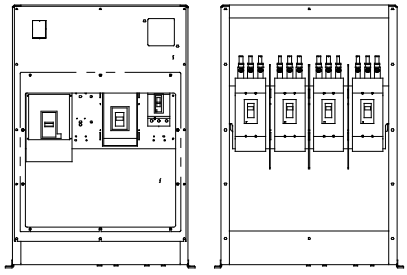
Line Circuit Breakers 15-3250 kW



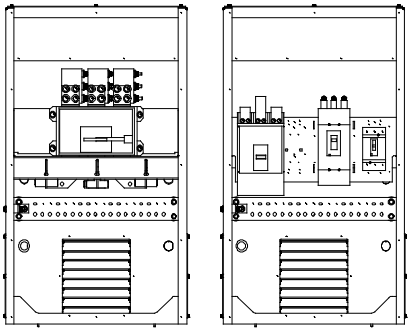
Single Circuit Breaker Kit with Neutral Bus Bar 15-300 kW Model Shown



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



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



Circuit Breaker Kits with Neutral Bus Bar 700-2500 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.

700-2500 kW KD Model Line Circuit Breaker Specifications

80% Rating Circuit Breaker

Alt. Model	Ampere Range	Trip Type	C. B. Frame Size
KH	15-150	Thermal Magnetic	HD
	60-150	Electronic LI	
		Electronic LSI	
		Electronic LSIG	
	60-150	Electronic LI	HG
		Electronic LSI	
		Electronic LSIG	
	30	9-325 A. Mag. Trip	HJ
	50	84-546 A. Mag. Trip	
	100	180-1040 A. Mag. Trip	
	150	348-1690 A. Mag. Trip	
	175-250	Thermal Magnetic	JD
	250	Electronic LI	
		Electronic LSI	
		Electronic LSIG	
	250	Electronic LI	JG
		Electronic LSI	
		Electronic LSIG	
	250	684-2500 A. Mag. Trip	JJ
	400	2000-4800 A Mag. Trip	LG
	600	3000-7200 A Mag. Trip	
	400-600	Electronic LI	
		Electronic LSI	
		Electronic LSIG	
	800	Electronic LI	MG
	1000-1200	Thermal Magnetic	PG
	800-1200	Electronic LSI	
		Electronic LSIG	
	1200	Thermal Magnetic	PJ
		Electronic LSI	
		Electronic LSIG	
	1600-2500	Thermal Magnetic	RJ
		Electronic LSI	
		Electronic LSIG	

100% Rating Circuit Breaker

Alt. Model	Ampere Range	Trip Type	C. B. Frame Size
KH	15-150	Thermal Magnetic	HD
	60-150	Electronic LI	
		Electronic LSI	
		Electronic LSIG	
	60-150	Electronic LI	HG
		Electronic LSI	
		Electronic LSIG	
	175-250	Thermal Magnetic	JD
	250	Electronic LI	
		Electronic LSI	
		Electronic LSIG	
	250	Electronic LI	JG
		Electronic LSI	
		Electronic LSIG	
	400	Electronic LI	LG
		Electronic LSI	
		Electronic LSIG	
	600-1200	Electronic LSI	PG
		Electronic LSIG	
	1200	Electronic LSI	PJ
		Electronic LSIG	
	1600-2500	Electronic LSI	RJ
		Electronic LSIG	
	1600-3000	Electronic LSI	NW
		Electronic LSIG	
	4000-5000	Electronic LSIG	MTZ

100% Rating Electrically Operated Breakers

For use as paralleling breakers with the APM603 controller.

Alt. Model	Amps	Trip Unit	Frame
KH	250, 400, 600, 800, 1000, 1200	3.0 LI	PJ
		5.0 LSI	PJ
		3.0 LI	PL
		5.0 LSI	PL
	1600, 2000, 2500, 3000	Electronic LSI	NW
		Electronic LSIG	NW
	4000, 5000	Electronic LSIG	MTZ

All circuit breakers listed in this table include line side bus and load side lugs, 24VDC motor operators, and 1 type C SDE overcurrent switch contact. P-frame breakers include 2 type C auxiliary contacts. NW and MTZ breakers include 4 auxiliary contacts. No second breakers are allowed in combination with these breakers.

Load Bus Rating

Gen. Set Model	Alt. Model	Rating, Amperes	Type
KD700-KD750 KD800-KD1750 KD2000-KD2500	KH	2000-3000 2000-4000 3000-5000	Load Bus

700-2500 kW KD Model Line Circuit Breaker Specifications

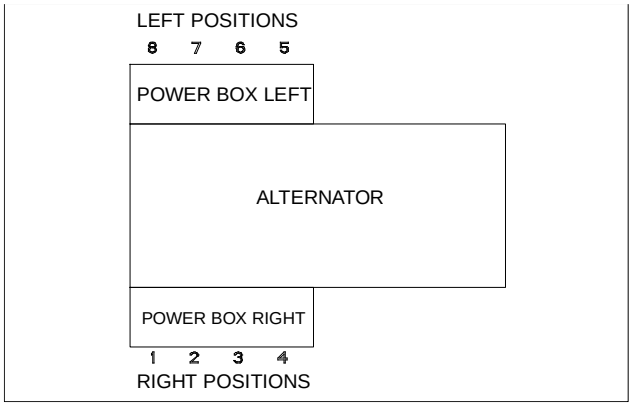
Interrupting Ratings

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

Circuit Breaker Lugs Per Phase (Al/Cu)

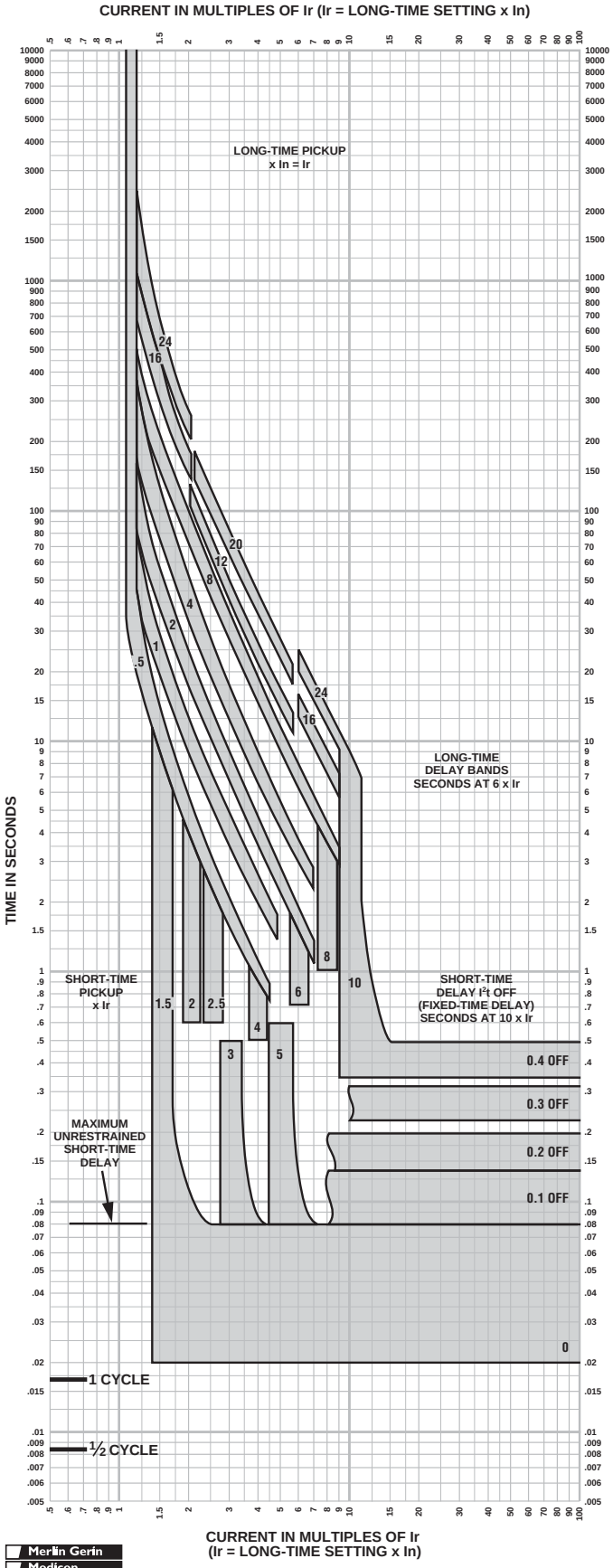
Frame Size	Ampere Range	Wire Range
H	15-150	One #14 to 3/0
J	175	One 1/0 to 4/0
	200-250	One 3/0 to 350 kcmil
LG	400-600	Two 2/0 to 500 kcmil
M	800	Three 3/0 to 500 kcmil
P	600-800	Three 3/0 to 500 kcmil
	1000-1200	Four 3/0 to 500 kcmil
R	1600-2500	(8) 1/0 to 750 kcmil or (16) 1/0 to 300 kcmil
NW	1600-3000	(10) 1/0 to 750 kcmil or (20) 1/0 to 300 kcmil
MTZ	4000-5000	(12) 4/0 to 1250 kcmil
Mechanical Load Lugs Included with H, J, and LG LSIG Neutrals		
H	60- 150	One #14 to 3/0 AL/CU
J	250	One 3/0 to 350 kcmil AL/CU
LG	400-600	Two 4/0 to 500 kcmil AL/CU

Breaker Positions



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

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



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

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

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

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

Notes:

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

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

Schneider Electric

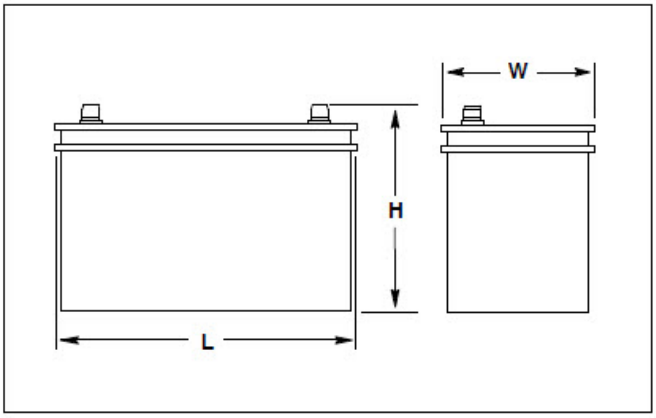
Curve No. 0613TC0004
December 2000
Drawing No. B48095-613-04

KOHLER®

System Batteries

ISO 9001 KOHLER POWER SYSTEMS NATIONALLY REGISTERED

Typical Overall Dimensions

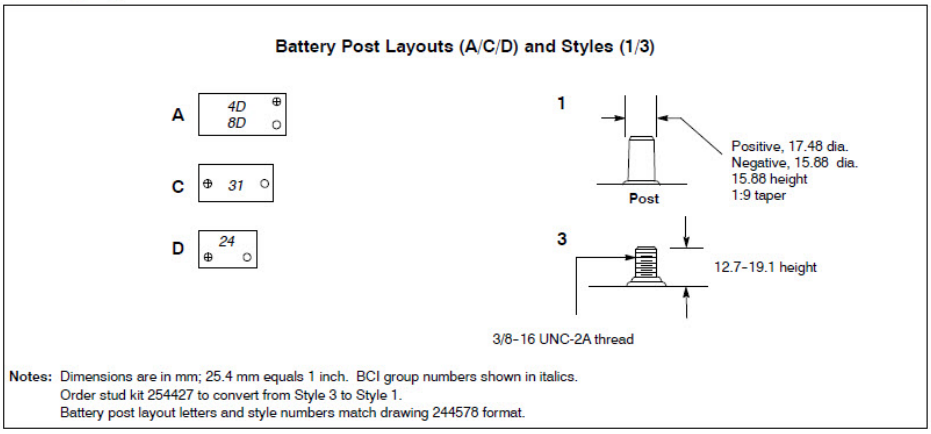


Standard Features

- 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.
- Batteries are rated according to SAE standard J-537. All batteries are 12-volt and have lead-calcium or lead-antimony plates with sulfuric acid electrolyte.
- Most generator set battery kits offer dry-charged or wet-charged batteries.
- Tough polypropylene cases protect against life-shortening vibration and impact damage.
- Removable cell covers allow checking of electrolyte specific gravity.
- Absorbant glass mat (AGM) batteries are sealed and maintenance free.
- Batteries are for applications below and above 0°C (32°F).

Charge Type*	Battery Part Number	Battery Qty. per Size	BCI Group Size	Battery SAE Dimension, mm (in.)			Cold Cranking Amps at 18ºC (0ºF) Min.	Reserve Capacity Minutes at 27º (80ºF) Min.	Battery Post Layout and Style
				L	W	H			
AGM	10702001800	2	4D	527.1 (20.8)	216.0 (8.5)	258.0 (10.2)	1110	380	A/1

Battery Specifications



24V, 20A Battery Charger

Applicable to the following:
KD Model Generator Sets

Standard Features

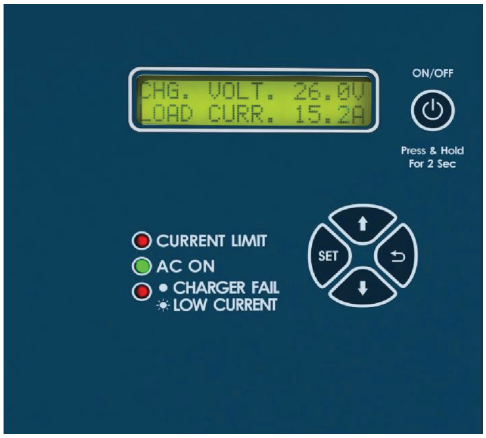
- Microprocessor Controlled High Frequency Charging Technology
- Single Phase AC Input 105- 264VAC, 45- 65Hz
- LCD Display
- Charger Failure Alarm with LED Indicator and Form “C” Dry Type Relay Contact
- Adjustable Float Voltage
- AC to DC Isolation
- Filtering Suitable for VRLA Batteries
- Internal Temperature Compensation with Disable Option
- Input and Output Fuses
- Adjustable Current Limiting
- Meets NFPA 110 and C62.41A
- UL/cUL 1236 Listed

The battery charger uses High Frequency charging technology. The battery charger incorporates Power Factor Correction Circuitry to achieve high efficiency and a wide input range.

This filtered output unit is designed and built to charge VRLA (Gel- Cell, AGM), Flooded Lead Acid, and Nickel Cadmium batteries.

The battery charger is equipped with an LCD display showing DC Volts, DC Amps, and three status LEDs. Integrated Battery Charge Divider / Isolator provides connections for charging up to three independent batteries simultaneously.

Front Panel Display



DC Output		AC Input			Shipping Weight	
Volts (Nominal)	Amps	Volts (Nominal)	Amps	Overall Dimensions W x D x H	kgs	lbs
24	20	105/264	5.0/2.45	243 x 116.1 x 403 mm 9.63 x 4.58 x 16.25 in	5.05	11.14

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

Specifications

AC Input	105- 264 VAC, 45- 65 HZ, Single Phase
Nominal DC Output	20A @ 24 V
Regulation - Power Stage Only	
Line:	± 10%
Load:	<± 0.5%
Protection	
Input:	Fuse with surge and transient protection
Output:	Fuse with surge protection
	Reverse current polarity
	Short circuit protection
Thermal:	Shuts down when overheated
AC Over Voltage	
Output Current Limit	Factory set at 100%
	Adjustable from 50- 105%
Metering	LCD DC Output Digital Voltmeter and Ammeter (1%)
Adjustable Voltage Range (Per Cell)	2.15- 2.35 volts/cell (Lead)
	1.39- 1.49 volts/cell (NiCad)
Alarm Contacts	Charger Failure (Form “C” Contact for Charger Failure)
Monitoring	
LCD Display:	Volts
	Amps
LED Indications:	Current Limit (Red)
	AC ON (Green)
	Charger Fail (Red)
	Low Current (Red- Blinking)
Environmental	
Operating:	- 20°C to 50°C (- 4°F to 122°F) (Derated up to 70°C (158°F))
Storage:	- 40°C to 85°C (- 40°F to 185°F)
Relative Humidity:	0% to 95% non condensing
Enclosure	
Structural Design:	Wall Mounting / Powder coat finish
Cable Entry:	Bottom
Standards	USCG requirements
	ANSI C62- 41
	cUL
	NFPA 110

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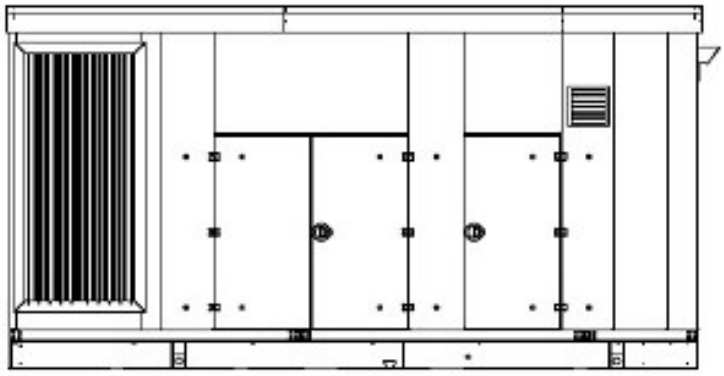
KOHLER®

Sound Enclosure Level 1 with Subbase Fuel Tank Package

ISO 9001 KOHLER POWER SYSTEMS NATIONALLY REGISTERED



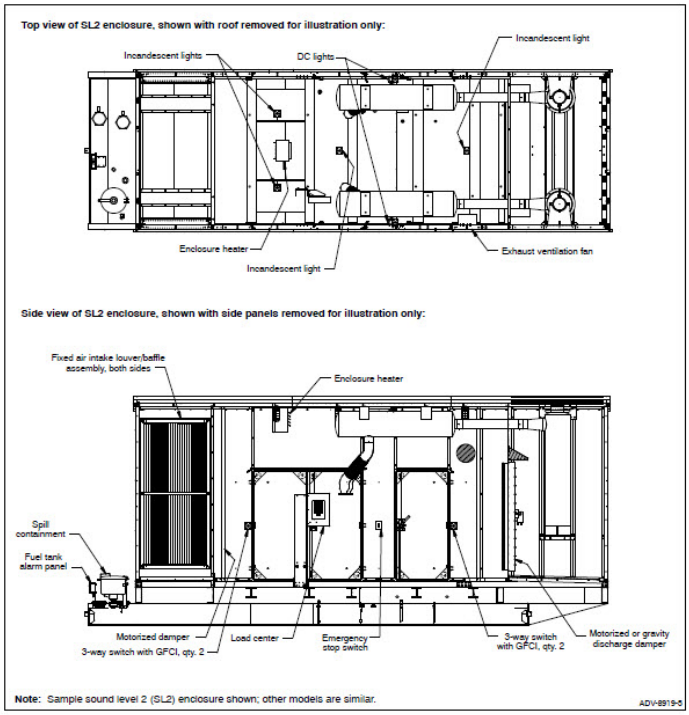
Sound Level 1 Enclosure Standard Features

• Internal silencers with flexible exhaust connectors, exhaust elbows, and rain caps.
• Mounts to lift base and subbase fuel tank.
• Aluminum construction with six large, hinged removable doors for easy maintenance.
• Fade-, scratch-, and corrosion-resistant Kohler® cream beige powder-baked finish.
• Lockable, flush-mounted door latches.
• Air inlet louvers reduce rain and snow entry.
• Slope roof to reduce the buildup of moisture and debris.
• Acoustic insulation that meets UL 94 HF1 flammability classification.
• Sound level 1 enclosure is designed to 150 mph (241 kph) wind load rating.

Subbase Fuel Tank Features

• The fuel tank has a Power Armor Plus textured epoxy-based rubberized coating.
• The above-ground rectangular secondary containment tank mounts directly to the generator set, below the generator set skid (subbase).
• Both the inner and outer UL-listed tanks have emergency relief vents.
• Flexible fuel lines are provided with subbase fuel tank selection.
• The containment tank's construction protects against fuel leaks or ruptures. The inner (primary) tank is sealed inside the outer (secondary) tank. The outer tank contains the fuel if the inner tank leaks or ruptures.
• The above ground secondary containment subbase fuel tank meets UL 142 requirements.
• State tanks with varying capacities are available. Florida Dept. of Environmental Protection (FDEP) File No. EQ-634 approved.

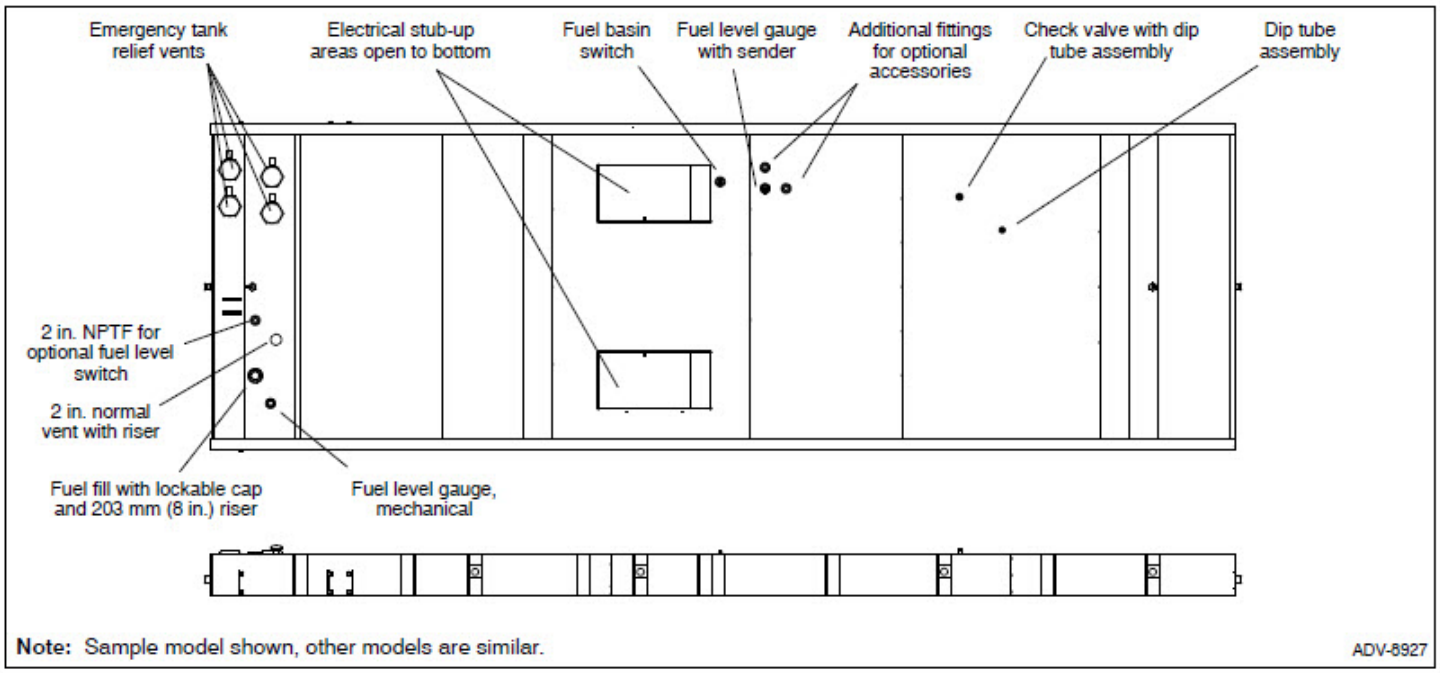
Aluminum Sound Enclosure Options



Sound Enclosure Features

- Heavy-duty formed panels, solid construction. Preassembled package offering corrosion resistant, dent resilient structure mounting directly to lift base or fuel tank.
- Polyurethane enamel paint. Superior finish, durability, and appearance.
- The enclosure has a sloped roof to reduce the buildup of moisture and debris.
- Internal exhaust silencer offering maximum component life and operator safety.
- Note: Installing an additional length of exhaust tail pipe may increase backpressure levels. Please refer to the generator set spec sheet for the maximum backpressure value.
- Service access. Multiple personnel doors for easy access to generator set control and servicing of the fuel fill, fuel gauge, oil fill, and battery.
- Interchangeable modular panel construction. Allows complete serviceability or replacement without compromising enclosure design.
- Bolted panels facilitate service, future modification upgrades, or field replacement.
- Cooling/combustion air intake. Fixed air intake louvers.
- Sound-attenuating design using two critical silencers. Acoustic insulation UL 94 HF1 listed for flame resistance.

Subbase Fuel Tank



- Extended operation. State tanks with various capacities for multiple hour requirements.
- UL listed. Secondary containment generator set base tank meeting UL 142 requirements.
- NFPA compliant. Designed to comply with the installation standards of NFPA 30 and NFPA 37.
- Emergency pressure relief vents. Meets UL requirements; ensures adequate venting of inner and outer tank under extreme pressure and/or emergency conditions.
- Normal vent with cap. Vent is raised above lockable fuel fill.
- Fuel level gauge with sender.
- Mechancial fuel level gauge.
- Leak detection switch. Annunciates a contained primary tank fuel leak condition at generator set control.
- Electrical stub-up area open to bottom.
- Additional 2 in. NPT fittings for optional accessories.

Fuel Tank Capacity, L (gal.)	Est. Fuel Supply Hours at 60 Hz with Full Load	Enclosure and Fuel Tank Length, mm (in.)	Enclosure and Fuel Tank Width, mm (in.)	Enclosure and Fuel Tank Weight, kg (lb.)	Enclosure and Fuel Tank Height, mm (in.)	Fuel Tank Height (H), mm (in.)	Sound Pressure Level, dB(A)
Lift base	0	6582 (259)	2616 (103)	10810 (23833)	3350 (132)	0	92
6621 (1749)	24	7309 (288)	2616 (103)	14878 (32802)	3934 (155)	584 (23.0)	92

Note: Data in table is for reference only. Height includes enclosure, lift base, and tank (if equipped). Refer to your authorized Kohler distributor for enclosure and subbase fuel tank specification details.
Max. weight includes the generator set (wet), enclosure, silencer, lift base, and tank (no fuel).
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.

Accessories

Electrical Accessories
Block heater wiring, single-phase

Wire Generator Heater
Wire Generator Heater

Electrical Accessories
Battery charger wiring

KOHLER

Industrial Generator Set Accessories

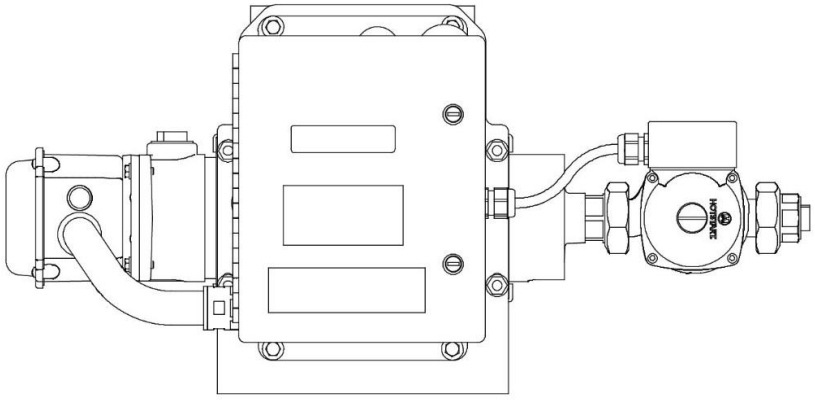
Load Center

- Part Number - SA20461
- Model - QO124M100
- QO Load Center
- Main Breaker
- 100A, 1PH- 3W, 24SP
- NEMA1

Specifications

Product	Load Center
Marketing Trade Name	QO
Load Center Type	Main Breaker
Line Rated Current	100 A
Number of Spaces	24
Short Circuit Current Rating	22 kA
Maximum Number of Single Pole Circuits	24
Maximum Number of Tandem Breakers	0
Phase	1 Phase
System Voltage	120/240 VAC
Wire Size	AWG 6...AWG 2/0 (Aluminum/Copper)
Enclosure Rating	NEMA 1 Indoor
Electrical Connection	Lugs
Grounding Bar	Grounding Bar included
Wiring Configuration	3- Wire
Busbar Material	Tin Plated Copper Busbar
Enclosure Material	Welded Sheet Steel
Cover Finish	Baked Enamel Grey
Box Number	7
Product Certifications	UL listed
Height	20.90 in (531 mm)
Width	14.25 in (362 mm)
Package Weight (Lbs)	13.2

Engine Block Heater Kits



Block Heater Kit, Typical

Applicable Models

- KD800-KD1750
- KD2000-KD3250
- KD3500-KD4000

Standard Features

- UL-C/US listed (60 Hz Models) -E250789CE
- 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 has a thermostat, pump, and temperature control system. The pump circulates 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 has a fixed setting thermostat that turns ON when the engine coolant temperature reaches 49°C (120°F) and turns OFF when the engine coolant temperature reaches 60°C (140°F).

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

The engine block heater kits are available in 208 V, 240 V, 380 V, and 480 V versions.

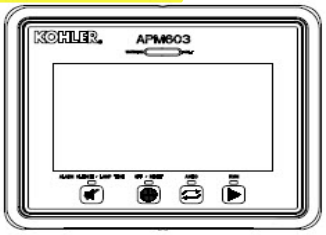
Block Heater Specifications

Heating Fluid	Engine Coolant (50% Glycol/50% Water)
Fixed Thermostat	49°–60°C (120°–140°F)
Flow	10 GPM (2.2 m^3/hr) @ 10 ft head (3 mWc)
Pump Power	70 W (50 Hz), 97 W (60 Hz)
Max. Pressure	125 psi (860 kPa)
Pressure Loss	0.2 psi (1.5 kPa)
Inlet Plumbing	1.0 in NPT
Outlet Plumbing	1.0 in NPT
Main Control Box Ingress Protection	NEMA 4 (IP66)
Motor Ingress Protection	IP44 (50 Hz), NEMA 2 (60 Hz)

Specifications

Block Heater Kit Number	Component	Watts	Voltage	Phase
10305000145-KA1	10305000200	6000	480	3
10305000145-KA2	10305000300	6000	240	1
10305000145-KA3	10305000400	6000	480	1
10305000145-KA4	10305000500	6000	240	3
10305000145-KA5	10305000600	6000	380	3
10305000145-KA6	10305000700	6000	208	1
10305000145-KA7	10305003100	6000	208	3
10305001400-KA1	10305001500	9000	480	3
10305001400-KA2	10305001600	9000	240	1
10305001400-KA3	10305001700	9000	480	1
10305001400-KA4	10305001800	9000	240	3
10305001400-KA5	10305001900	9000	380	3
10305001400-KA6	10305002000	9000	208	1
10305001400-KA7	10305003300	9000	208	3
10305002800-KA1	10305001800	9000	240	3
10305002800-KA2	10305001500	9000	480	3
10305002800-KA3	10305001600	9000	240	1
10305002800-KA4	10305001700	9000	480	1
10305002800-KA5	10305001900	9000	380	3
10305002800-KA6	10305002000	9000	208	1
10305002800-KA7	10305003300	9000	208	3
10305003501-KA1	10305001500	9000	480	3
10305003501-KA2	10305001600	9000	240	1
10305003501-KA3	10305001700	9000	480	1
10305003501-KA4	10305001800	9000	240	3
10305003501-KA5	10305001900	9000	380	3
10305003501-KA6	10305002000	9000	208	1
10305003501-KA7	10305003300	9000	208	3
10305003601-KA1	10305003804	12000	240	3
10305003601-KA2	10305003807	12000	480	3
10305003601-KA3	10305003803	12000	240	1
10305003601-KA4	10305003806	12000	480	1
10305003601-KA5	10305003805	12000	380	3
10305003601-KA6	10305003801	10500	208	1
10305003601-KA7	10305003802	12000	208	3
10305004001-KA1	10305003804	12000	240	3
10305004001-KA2	10305003807	12000	480	3
10305004001-KA3	10305003803	12000	240	1
10305004001-KA4	10305003806	12000	480	1
10305004001-KA5	10305003801	10500	208	1
10305004001-KA6	10305003802	12000	208	3

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

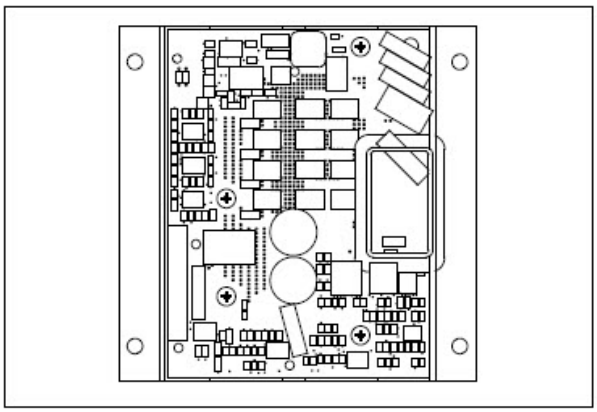
- Synchronizing parameters setup
  - Voltage matching
  - Frequency matching
  - Phase matching
  - Time delay
- Load sharing
  - kW sharing
  - kVAR sharing
  - Baseload settings
  - Droop

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

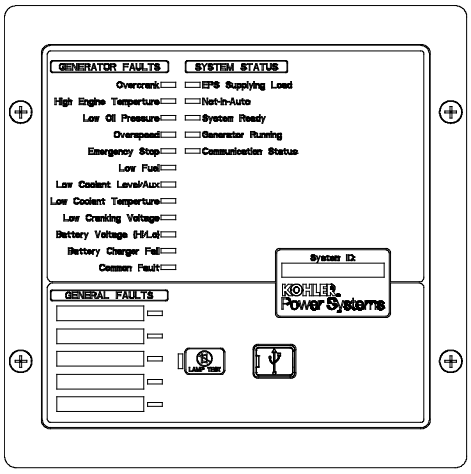
Activator Board GM88453



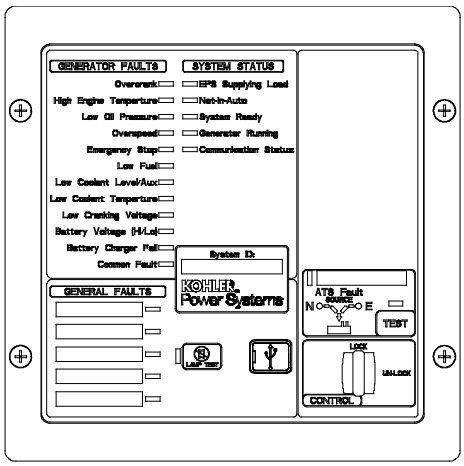
- Interfaces between the controller and alternator assembly using rotor field leads, auxiliary power windings, and optic board leads.
- Allows the Decision-Maker® controllers the ability to control a wound-field alternator using the same control signal as Fast Response
- Permits the generator set controller 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.

Remote Serial Annunciator III (RSA III)

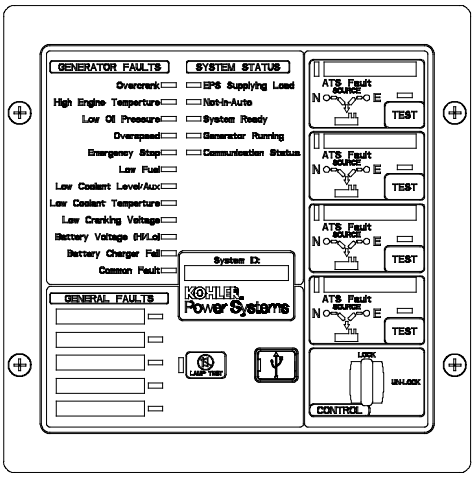
*



RSA III



RSA III with a Single ATS Control



RSA III with Four ATS Controls

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

- Monitors the generator set equipped with one of the following controllers:

APM402	Decision-Maker® 3000
APM603	Decision-Maker® 3500
APM802	Decision-Maker® 6000
Decision-Maker® 3+	Decision-Maker® 8000
Decision-Maker® 550	KPC 1000

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

Dimensions

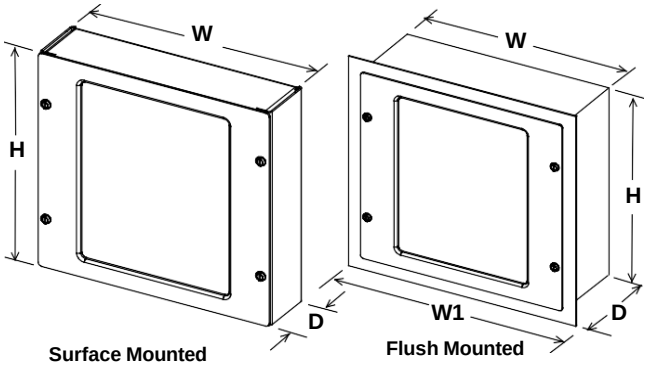
- Dimensions—W x H x D, mm (in.).

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

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

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

Modbus® is a registered trademark of Schneider Electric.



Surface Mounted **Flush Mounted**

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

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

Specifications

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

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

Modbus® is a registered trademark of Schneider Electric.

NFPA Requirements

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

Fault and Status LEDs and Lamp Test Switch

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

KOHLER®

Alternator Data

DATASHEET ALTERNATOR

Alternator ref. KH04070T
Alternator type KH04070TO4D

-GENERAL CHARACTERISTICS-

Tension denomination (V)	480/277	**Altitude (m)**	0-1000
Number of Phase	Three phase	**AVR Regulation**	Yes
Number of pole	4	**Indication of protection**	IP23

Capacity for maintaining short circuit at 3 In for 10 s Yes
Winding type Standard

Efficiency & Power

Frequency (Hz) 60 Hz **Nominal voltage (V)** 480

	Class H				Class F
	125°C/ 40°C continuous	**130°C/ 25°C standby**	**150°C/ 40°C standby**	**163°C/ 27°C standby**	**105°C/ 40°C continuous**
Nominal Rating(Kva)	1400	1428	1450	1525	1300
Nominal Rating(KW)	1120	1142	1160	1220	1040
Efficiency 100%	96	95,90	95,90	95,80	96,10

-ELECTRICAL CHARACTERISTICS-

Voltage regulation at established rating (+/- %)	0,50
Insulation class	H
T° class (H/125°), continuous 40°C	H / 125°K
T° class, standby 27°C	H / 163°K
Wave form : NEMA=TIF	<40
Unbalanced load acceptance ratio (%)	100
Winding type	12
Total Harmonic Distortion in no-load DHT (%)	2,1
Wave form : CEI=FHT	<2
Total Harmonic Distortion, on load DHT (%)	1,5
Technology	Without collar or brush
L-L Harmonic Maximum - Single (%)	<3
Deviation Factor (%)	6
Shaft Current	<80
Main Stator Capacitance to ground (mdf)	0,05

Reactances

Direct axis synchro reactance unsaturated (Xd) (%)	382,40
Direct axis transcient reactance saturated (X'd) (%)	17,90
Direct axis subtranscient reactance saturated (X''d) (%)	9,20
Quadra axis synchro reactance unsaturated (Xq) (%)	162,70
Quadra axis subtranscient reactance saturated (X"q) (%)	17,90
Zero sequence reactance unsaturated (Xo) (%)	3,89
Negative sequence reactance saturated (X2) (%)	13,50

DATASHEET ALTERNATOR

Alternator ref. KH04070T
Alternator type KH04070TO4D

KOHLER

Short circuit ratio

Short circuit ratio (Kcc)	0,35
Subtranscient time constant (T"d) (ms)	18
Short circuit transcient time constant (T'd) (ms)	245
Open circuit time constant (T'do) (ms)	8100
Subtranscient time constant (T"q) (ms)	18
Leakage stator reactance (Xa)(%)	4,30
Stator Resistance (Ra)(%)	0,0950
Armature time constant (Ta) (ms)	24
No load excitation current (io) (A)	0,50
Full load excitation current (ic) (A)	3
Full load excitation voltage (uc) (V)	31,90
Heat rejection (W)	46667
No load losses (W)	17400
Stator resistance (for 20°C ambient) (Ω)	0,0078
Rotor resistance (for 20°C ambient) (Ω)	2,50
Exciter resistance - stator/inductor (for 20° ambient) (Ω)	10,63
Exciter resistance - rotor/armature (for 20° ambient) (Ω)	0,13
Recovery time (Delta U = 20% transcient) (ms)	200
Engine start (Delta U = 20% perm. or 50% trans.) (kVA)	4080
Transcient dip (4/4 load) - PF : 0,8 AR (%)	14,34

Additional electrical characteristics-

Winding X1, X2 auxiliary resistance (for 20° ambient) (Ω)	0,7130
Auxiliary winding X1, X2 excitation voltage at no load (V)	229
Auxiliary winding X1, X2 excitation voltage on load (V)	244

-MECHANICAL CHARACTERISTICS-

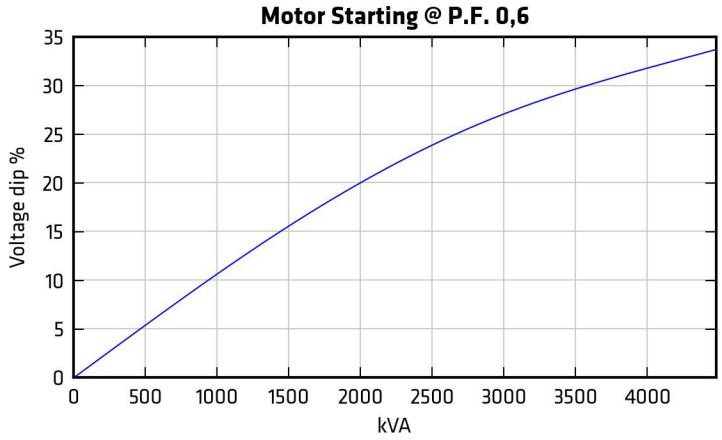
Number of bearing	1
Overspeed (rpm)	2250
Coupling	Direct

DATASHEET ALTERNATOR

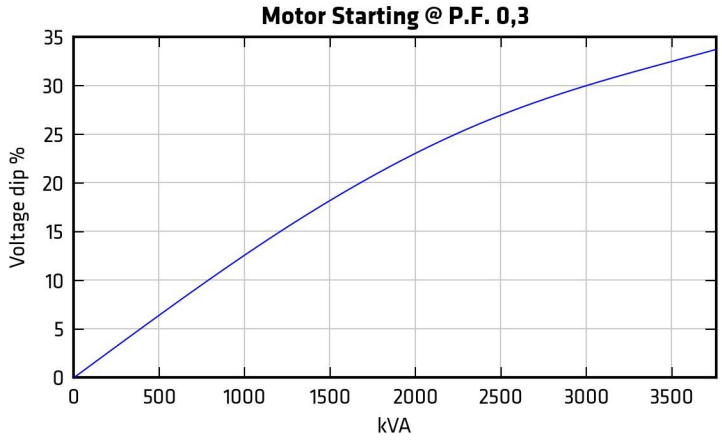
Alternator ref. KH04070T
Alternator type KH04070TO4D

-TECHNICAL CURVES-

Motor starting curve locked rotor (0,6PF)



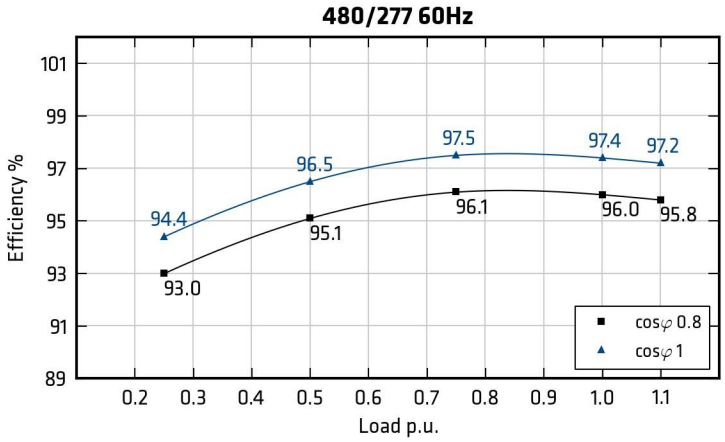
Motor starting curve locked rotor (0,3PF)



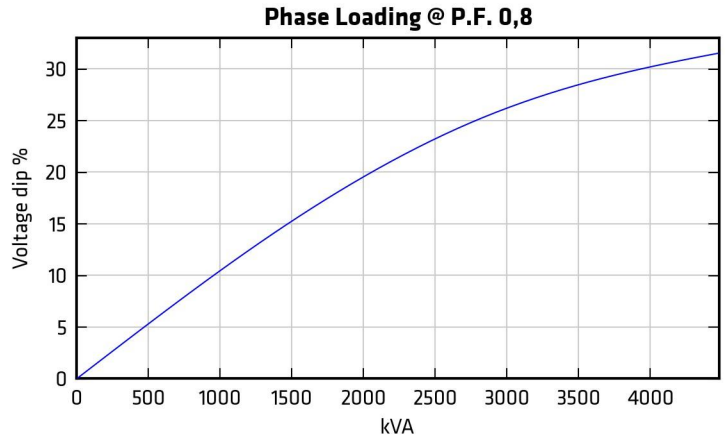
DATASHEET ALTERNATOR

Alternator ref. KH04070T
Alternator type KH04070TO4D

Efficiencies curve (by excitation system)



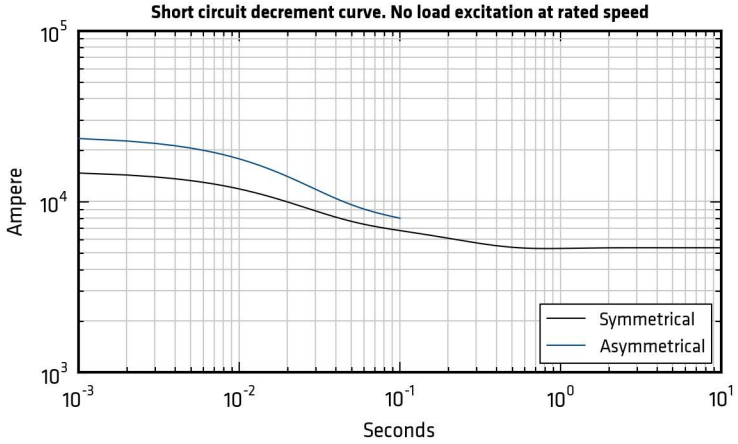
Loading curve (by excitation system)



DATASHEET ALTERNATOR

Alternator ref. KH04070T
Alternator type KH04070TO4D

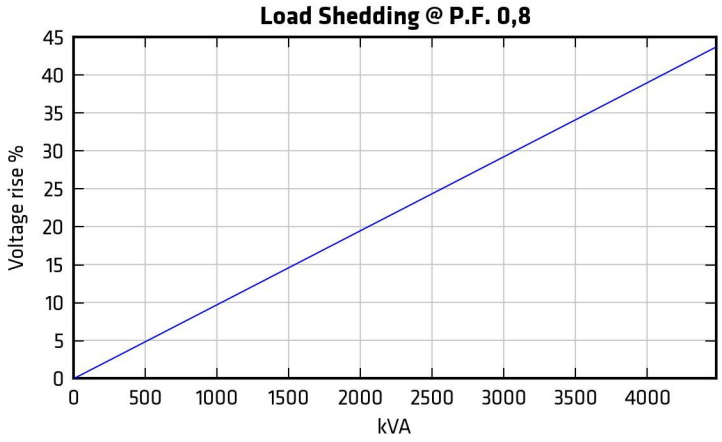
Short circuit curve at no load and rated speed



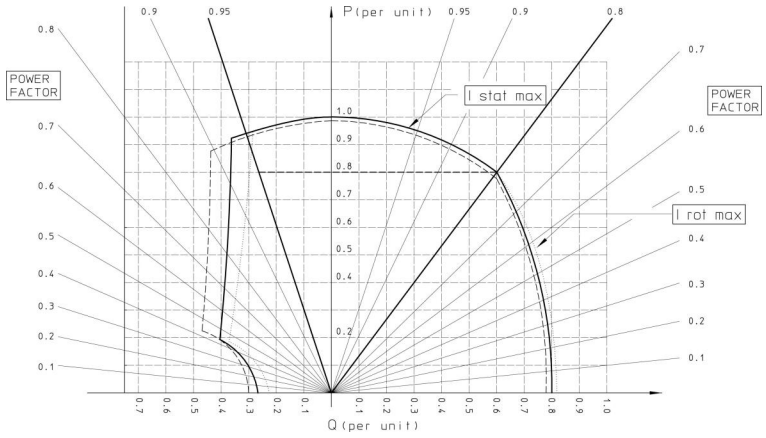
DATASHEET ALTERNATOR

Alternator ref. KH04070T
Alternator type KH04070TO4D

Rejection curve (by excitation system)



Capability curve (PQ diagram)

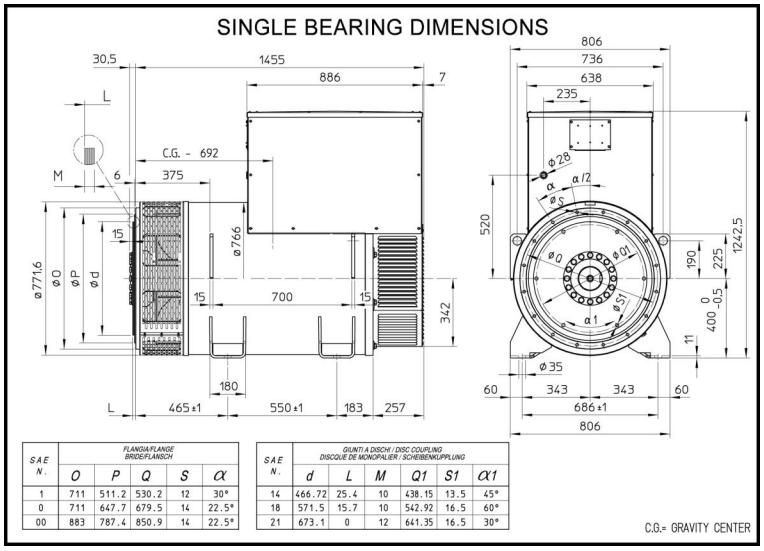


DATASHEET ALTERNATOR

Alternator ref. KH04070T
Alternator type KH04070TO4D

DIMENSIONS-

Overall dimension drawing (Single bearing)



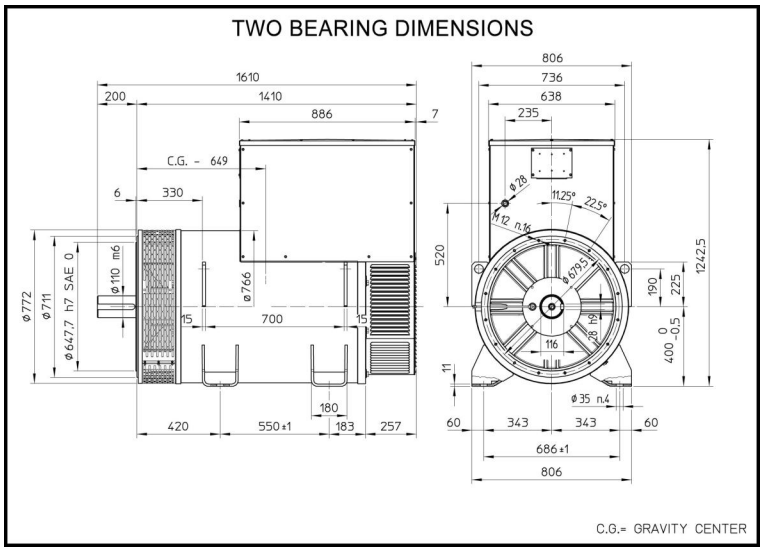
SAE N.	FLANGIA/FLANGE BRIDEFLANSCH				
	O	P	Q	S	α
1	711	511.2	530.2	12	30°
0	711	647.7	679.5	14	22.5°
00	883	787.4	850.9	14	22.5°

SAE N.	GIUNTI A DISCHI / DISC COUPLING DISQUE DE MONOPALIER / SCHEIBENKUPPLUNG					
	d	L	M	Q1	S1	α1
14	466.72	25.4	10	438.15	13.5	45°
18	571.5	15.7	10	542.92	16.5	60°
21	673.1	0	12	641.35	16.5	30°

DATASHEET ALTERNATOR

Alternator ref. KH04070T
Alternator type KH04070TO4D

Overall dimension drawing (Two bearings)

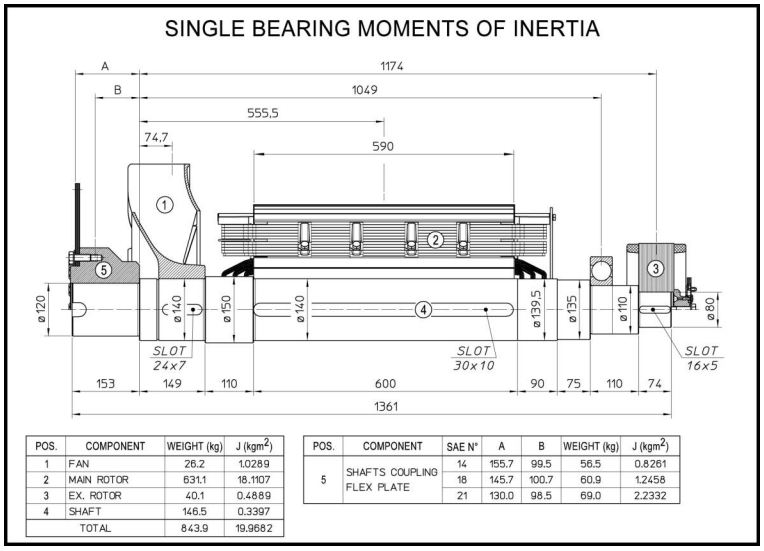


DATASHEET ALTERNATOR

Alternator ref. KH04070T
Alternator type KH04070TO4D

-TORSIONAL ANALYSIS DATA-

Rotation part drawing for torsional vibration calculation (Single bearing)



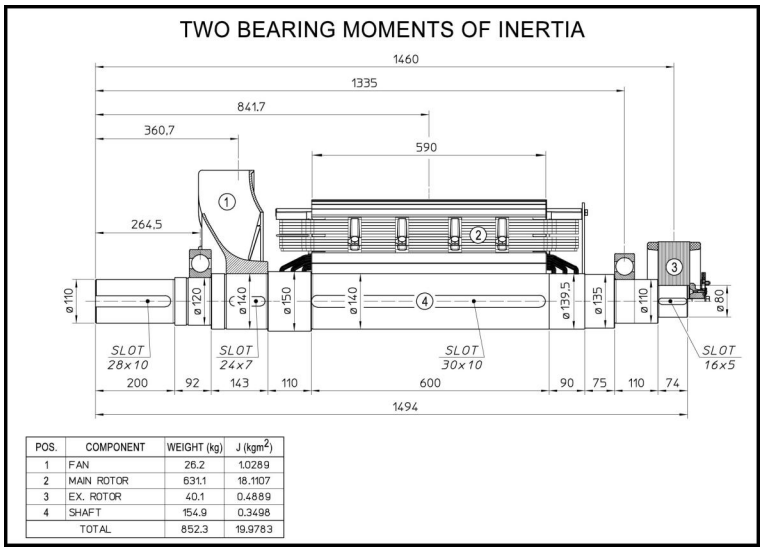
POS.	COMPONENT	WEIGHT (kg)	J (kgm^2)
1	FAN	26.2	1.0289
2	MAIN ROTOR	631.1	18.1107
3	EX. ROTOR	40.1	0.4889
4	SHAFT	146.5	0.3397
TOTAL		843.9	19.9682

POS.	COMPONENT	SAE N°	A	B	WEIGHT (kg)	J (kgm^2)
5	SHAFTS COUPLING FLEX PLATE	14	155.7	99.5	56.5	0.8261
		18	145.7	100.7	60.9	1.2458
		21	130.0	98.5	69.0	2.2332

DATASHEET ALTERNATOR

Alternator ref. KH04070T
Alternator type KH04070TO4D

Rotation part drawing for torsional vibration calculation (Two bearings)



POS.	COMPONENT	WEIGHT (kg)	J (kgm^2)
1	FAN	26.2	1.0289
2	MAIN ROTOR	631.1	18.1107
3	EX. ROTOR	40.1	0.4889
4	SHAFT	154.9	0.3498
TOTAL		852.3	19.9783

KOHLER®

Cooling Data

TECHNICAL INFORMATION BULLETIN

Generator Set Cooling System Data Sheet

	50°C Ambient Temperature Cooling System								
KD1000 60Hz (Standby Duty)	**Total external restriction on open unit[7]**	Pa *(in.H_2O)*	0 (0)	125 (0.5)	187 (0.75)	250 (1)	312 (1.25)	375 (1.5)	**Enclosed Units**
	Maximum allowable ambient temperature	°C *(°F)*	52 (126)	50 (122)	49 (120)	48 (118)	46 (115)	45 (113)	45 (113)
	Cooling system airflow	m^3/min *(ft^3/min)*	1350 (47700)	1289 (45500)	1261 (44500)	1221 (43100)	1170 (41300)	1120 (39600)	NA (NA)

	40°C Ambient Temperature Cooling System								
KD1000 60Hz (Standby Duty)	**Total external restriction on open unit[7]**	Pa *(in.H_2O)*	0 (0)	125 (0.5)	187 (0.75)	250 (1)	312 (1.25)	375 (1.5)	**Enclosed Units**
	Maximum allowable ambient temperature	°C *(°F)*	46 (115)	44 (111)	43 (109)	42 (108)	40 (104)	39 (102)	39 (102)
	Cooling system airflow	m^3/min *(ft^3/min)*	1212 (42800)	1165 (41100)	1134 (40000)	1102 (38900)	1060 (37400)	1020 (36000)	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

KOHLER Power Systems

TIB-114

TECHNICAL INFORMATION BULLETIN

Generator Set Sound Data Sheet

			Sound Pressure Data in dB(A)			
Generator Set Model	**Hz**	**Load**	**Raw Exhaust**	**Open Unit, Isolated Exhaust**	**Level 1 Sound Enclosure**	
KD1000	60	100% Load	124.4	96.2	91.8	
		No Load	111.3	92.8	88.6	

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.

KD1000	**60 Hz**

				Sound Pressure Levels, dB(A)								
				Octave Band Center Frequency (Hz)								Overall Level
Load	Distance, m (ft)	Enclosure	Measurement Clock Position	63	125	250	500	1000	2000	4000	8000	
100% Load	7 (23)	Level 1 Sound	3:00	63.5	72.9	76.2	81.0	78.1	75.0	71.8	63.9	84.8
			1:30	64.4	76.0	86.6	88.4	91.0	88.7	86.4	79.1	95.7
			12:00 - Engine	68.6	78.8	81.4	89.3	91.5	83.1	78.2	70.8	94.4
			10:30	61.8	77.8	86.6	88.4	91.9	90.2	87.8	78.5	96.5
			9:00	61.8	73.8	74.9	81.6	78.3	74.9	71.4	63.7	85.0
			7:30	56.2	70.3	76.8	74.2	79.3	75.3	67.2	60.4	83.2
			6:00 - Alternator	51.5	64.4	76.4	73.7	69.8	67.1	61.6	53.9	79.4
			4:30	59.7	69.7	76.0	76.3	76.6	75.9	69.7	65.5	82.8
			8-pos. log avg.	63.2	74.8	82.0	85.1	87.5	84.3	81.6	73.4	91.8

				Sound Pressure Levels, dB(A)								
				Octave Band Center Frequency (Hz)								Overall Level
Load	Distance, m (ft)	Enclosure	Measurement Clock Position	63	125	250	500	1000	2000	4000	8000	
No Load	7 (23)	Level 1 Sound	3:00	61.0	68.2	72.3	73.9	74.7	69.4	61.5	55.6	79.5
			1:30	60.1	68.0	83.5	88.4	85.1	83.0	76.7	71.9	91.8
			12:00 - Engine	63.7	71.2	80.9	82.4	92.3	83.8	76.5	70.6	93.6
			10:30	59.7	67.1	83.4	84.7	88.1	84.3	76.8	70.8	91.7
			9:00	61.2	68.2	72.3	75.7	75.6	70.5	61.8	56.0	80.5
			7:30	54.3	63.1	75.9	71.8	77.9	73.4	63.9	54.8	81.5
			6:00 - Alternator	52.1	60.9	75.9	72.6	67.3	65.6	55.7	48.3	78.3
			4:30	56.3	64.6	73.4	72.9	76.3	74.9	66.2	58.9	80.9
			8-pos. log avg.	59.9	67.4	79.4	82.0	85.5	79.9	72.7	67.1	88.6

KOHLER®

Exhaust System Data

TECHNICAL INFORMATION BULLETIN

Enclosed Generator Set Exhaust System Data Sheet

Model	Enclosure Type	Consumed Back Pressure (in H20)	Consumed Back Pressure (in Hg)	Back Pressure Limit(s) (in H20)	Back Pressure Limit(s) (in Hg)	Flex Exhaust Tube(s)	Silencer	Drawing
KD1000	All NON-AQMD-Ready Sound Level 1 (SL1) Enclosures	18.2	1.3	34.0	2.5	10901000908, 10901001008	Internal, Genset Compartment: 10901000508 (qty=2)	ADV-8919
	All AQMD-Ready Sound Level 1 (SL1) Enclosures	3.0	0.2	34.0	2.5	10901000908, 10901001008	None	ADV-8919
	All NON-AQMD-Ready Sound Level 2 (SL2) Enclosures	26.0	1.9	34.0	2.5	10901000908, 10901001008	Internal, Genset Compartment: 10901000508 (qty=2) And Internal, Plenum: 10901000608 (qty=2)	ADV-8919
	All AQMD-Ready Sound Level 2 (SL2) Enclosures	3.0	0.2	34.0	2.5	10901000908, 10901001008	None	ADV-8919

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

KOHLER®

KD1000

60 Hz. Diesel Generator Set
Tier 2 EPA Certified for Stationary Emergency Applications
EMISSION OPTIMIZED DATA SHEET

ENGINE INFORMATION

Model:	KD27V12	Bore:	135 mm (5.31 in.)
Nameplate kW @ 1800 RPM:	1114	Stroke:	157 mm (6.18 in.)
Type:	4-Cycle, 12-V Cylinder	Displacement:	27 L (1648 cu. in.)
Aspiration:	Turbocharged, Charge Air Cooled	EPA Family:	RLHAL45.0ESP
Compression ratio:	15:0:1	EPA Certificate:	RLHAL45.0ESP-011
Emission Control Device:	Direct Diesel Injection, Engine Control Module, Turbocharger, Charge Air Cooler		

EXHAUST EMISSION DATA:		**EPA D2 Cycle 5-mode weighted**
HC	(Hydrocarbons)	0.06 g/kWh
NO_x	(Oxides of Nitrogen as NO_2)	5.59 g/kWh
CO	(Carbon Monoxide)	0.53 g/kWh
PM	(Particulate Matter)	0.06 g/kWh

TEST METHODS AND CONDITIONS

Test Methods:
Steady-State emissions recorded per EPA CFR 40 Part 1065, and ISO8178-1 during operation at rated engine speed (+/-2%) and stated constant load (+/-2%) with engine temperatures, pressures and emission rates stabilized.

Fuel Specification:
ASTM D975 No. 2-D S15 or 40 CFR Part 1065 Petroleum Diesel Fuel.

Reference Conditions:
25 °C (77 °F) Air Inlet Temperature, 40 °C (104 °F) Fuel Inlet Temperature, 100 kPa (29.53 in Hg) Barometric Pressure; 10.7 g/kg (75 grains H2O/lb.) of dry air Humidity (required for NOx correction); Intake Restriction set to maximum allowable limit for clean filter; Exhaust Back pressure set to maximum allowable limit.

Data was taken from a single engine test according to the test methods, fuel specification and reference conditions stated above and is subjected to instrumentation and engine-to-engine variability. Tests conducted with alternate test methods, instrumentation, fuel or reference conditions can yield different results.

Data and specifications subject to change without notice.

KOHLER®

KD1000

60 Hz. Diesel Generator Set
Tier 2 EPA Certified for Stationary Emergency Applications
EMISSION OPTIMIZED DATA SHEET

ENGINE INFORMATION

Model:	KD27V12	Bore:	135 mm (5.31 in.)
Type:	4-Cycle, 12-V Cylinder	Stroke:	157 mm (6.18 in.)
Aspiration:	Turbocharged, Intercooled	Displacement:	27 L (1648 cu. in.)
Compression ratio:	15:0:1		
Emission Control Device:	Direct Diesel Injection, Engine Control Module, Turbocharger, Charge Air Cooler		

NOMINAL EMISSION DATA

Cycle point	100% ESP	75% ESP	50% ESP	25% ESP
Power [kW]	1114	836	557	279
Speed [rpm]	1800	1800	1800	1800
Exhaust Gas Flow [kg/h]	5368	4924	4436	3065
Exhaust Gas Temperature [C]	541	483	388	359
NO_X [g/kWh]	10.1	6.5	4.2	2.9
CO [g/kWh]	0.3	0.3	0.5	1.1
HC [g/kWh]	0.02	0.03	0.06	0.11
PM [g/kWh]	0.01	0.01	0.04	0.27

NOT TO EXCEED EMISSION DATA

Cycle point	100% ESP	75% ESP	50% ESP	25% ESP
NO_X [g/kWh]	11.4	7.4	4.8	3.3
CO [g/kWh]	1.3	1.4	2.3	5.8
HC [g/kWh]	0.03	0.04	0.08	0.13
PM [g/kWh]	0.03	0.03	0.14	0.88

TEST METHODS AND CONDITIONS

Test Methods:
Steady-State emissions recorded per EPA CFR 40 Part 1065, and ISO8178-1 during operation at rated engine speed (+/-2%) and stated constant load (+/-2%) with engine temperatures, pressures and emission rated stabilized.

Fuel Specification:
40-48 Cetane Number, 0.05 Wt. % max. Sulfur; Reference ISO8178-5, 40CFR86.1313-98 Type 2-D and ASTM D975 No. 2-D.

Reference Conditions:
25 °C (77 °F) Air Inlet Temperature, 40 °C (104 °F) Fuel Inlet Temperature, 100 kPa (29.53 in Hg) Barometric Pressure; 10.7 g/kg (75 grains H2O/lb.) of dry air Humidity (required for NOx correction); Intake Restriction set to maximum allowable limit for clean filter; Exhaust Back pressure set to maximum allowable limit.

Data was taken from a single engine test according to the test methods, fuel specification and reference conditions stated above and is subjected to instrumentation and engine-to-engine variability. Tests conducted with alternate test methods, instrumentation, fuel or reference conditions can yield different results.

Data and specifications subject to change without notice.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
2024 MODEL YEAR
CERTIFICATE OF CONFORMITY
WITH THE CLEAN AIR ACT

OFFICE OF TRANSPORTATION AND AIR QUALITY
ANN ARBOR, MICHIGAN 48105

Certificate Issued To: **Liebherr Machines Bulle SA**
(U.S. Manufacturer or Importer)

Certificate Number: **RLHAL45.0ESP-011**

Effective Date: 10/18/2023

Expiration Date: 12/31/2024

Byron J. Bunker, Division Director
Compliance Division

Issue Date: 10/18/2023

Revision Date: N/A

Model Year: 2024
Manufacturer Type: Original Engine Manufacturer
Engine Family: RLHAL45.0ESP

Mobile/Stationary Indicator: Stationary
Emissions Power Category: kW>560
Fuel Type: Diesel
After Treatment Devices: No After Treatment Devices Installed
Non-after Treatment Devices: Electronic Control

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

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

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

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

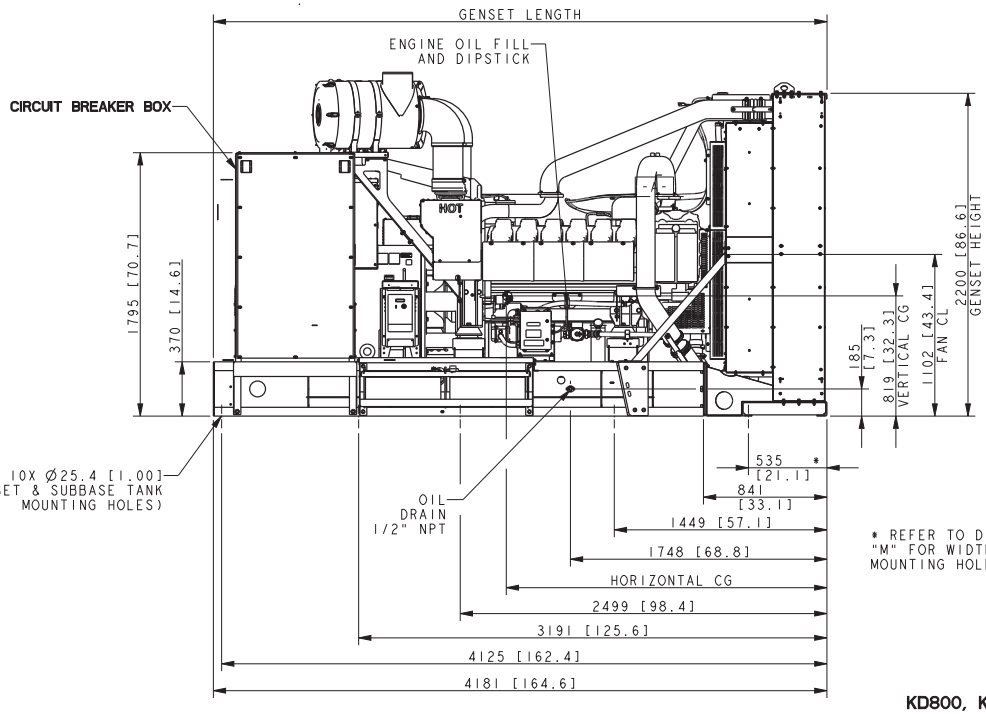
KOHLER®

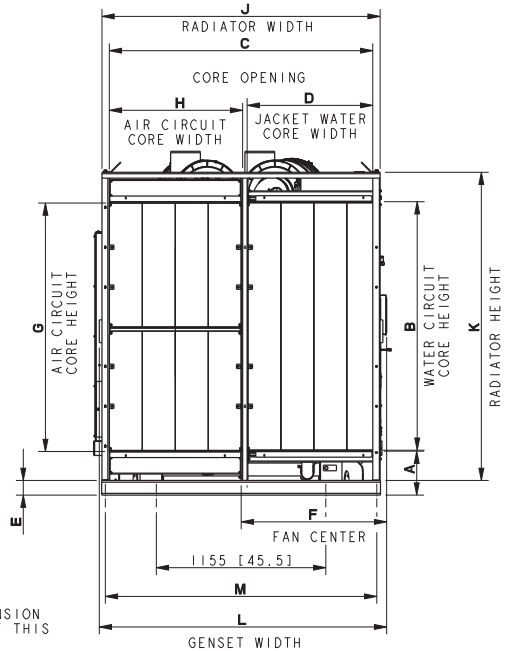
Dimensional Drawings

MODEL	ALT.	GENSET MAXIMUM WEIGHT (WET)	(HORIZONTAL CG) (WET)	GENSET LENGTH
KD800	KH02970TO4D	6916 Kg [15248 LBS]	2185 [86]	4181 [164.6]
KD800/900	KH03450TO4D	7155 Kg [15773 LBS]	2225 [87.6]	4181 [164.6]
KD800/900/1000	KH04070TO4D	7457 Kg [16440 LBS]	2277 [89.6]	4181 [164.6]
KD900/1000	KH04830TO4D	7770 Kg [17131 LBS]	2340 [92.1]	4181 [164.6]
KD1000	KH05520TO4D	8083 Kg [17821 LBS]	2391 [94.1]	4224 [166.3]*

* KH05520TO4D ALTERNATOR EXTENDS PAST SKID

MODEL	A	B	C	D	E	F	G	H	J	K	L	M
KD800 50Hz FUEL OPT	400 [15.7]	1587 [62.5]	1394 [54.8]	674 [26.5]	194 [7.6]	747 [29.4]	1487 [58.5]	674 [26.5]	1494 [58.8]	2030 [79.9]	1924 [75.7]	1850 [72.8]
KD900/1000 50Hz FUEL OPT	305 [12.0]	1687 [66.4]	1618 [63.7]	899 [35.4]	100 [3.9]	859 [33.8]	1587 [62.5]	674 [26.5]	1718 [67.6]	2099 [82.6]	1941 [76.4]	1688 [66.4]
KD800 60Hz (50C COOLING) KD900/1000 60Hz(40C COOLING)	400 [15.7]	1587 [62.5]	1618 [63.7]	674 [26.5]	100 [3.9]	859 [33.8]	1487 [58.5]	899 [35.4]	1718 [67.6]	2125 [83.6]	1924 [75.7]	1850 [72.8]
KD900/1000 60Hz (50C COOLING)	306 [12.0]	1687 [66.4]	1844 [72.6]	899 [35.4]	100 [3.9]	948 [37.3]	1687 [66.4]	899 [35.4]	1896 [74.6]	2100 [82.6]	1986 [78.2]	1850 [72.8]





* REFER TO DIMENSION "M" FOR WIDTH OF THIS MOUNTING HOLE

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

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

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

4) IF SUBBASE FUEL TANK AND/OR ENCLOSURE IS USED. REFER TO SUBBASE FUEL TANK/ENCLOSURE ADV TO DETERMINE MOUNTING LOCATION.

KD800, KD900, KD1000 KD27V12

REV	DATE	ON COMPOSITE DWGS, SEE PART NO. FOR REVISION LEVEL	BY
D	10-8-18	IMPERIAL DIMENSIONS ADDED TO ALL DIMENSIONS;	
		SEE SHEET 2, 3, 4 & 5 [CT191046]	ADP
E	2-19-20	(C-1,4) TABLE UPDATED; SEE SHEET 4 [CT202039]	DS
F	13MAY2020	(B-8) CIRCUIT BREAKER BOX CALLOUT ADDED;	
		(D-8,-7,-6) CONTROLLER CALLOUT, 1121 [44.1], 680	
		[26.8] & 335 [13.2] ADDED; SEE SHEET 2 [CT204162]	PAR
G	02AUG2021	(D-1) 1850 [72.8] WAS 1688 [66.4] & 1688	
		[66.4] WAS 1850 [72.8] [CT213748]	ABB

DO NOT SCALE, REFERENCE THE MODEL FOR ALL UNSPECIFIED DIMENSIONS

UNLESS OTHERWISE SPECIFIED: ALL DIMENSIONS IN MILLIMETERS GENERAL TOLERANCES: X.XX ± 0.25, X.X ± 1.0, X ± 1.3, ANGLES ± 0°30' SURFACE FINISH 125 MAX. THIRD ANGLE PROJECTION

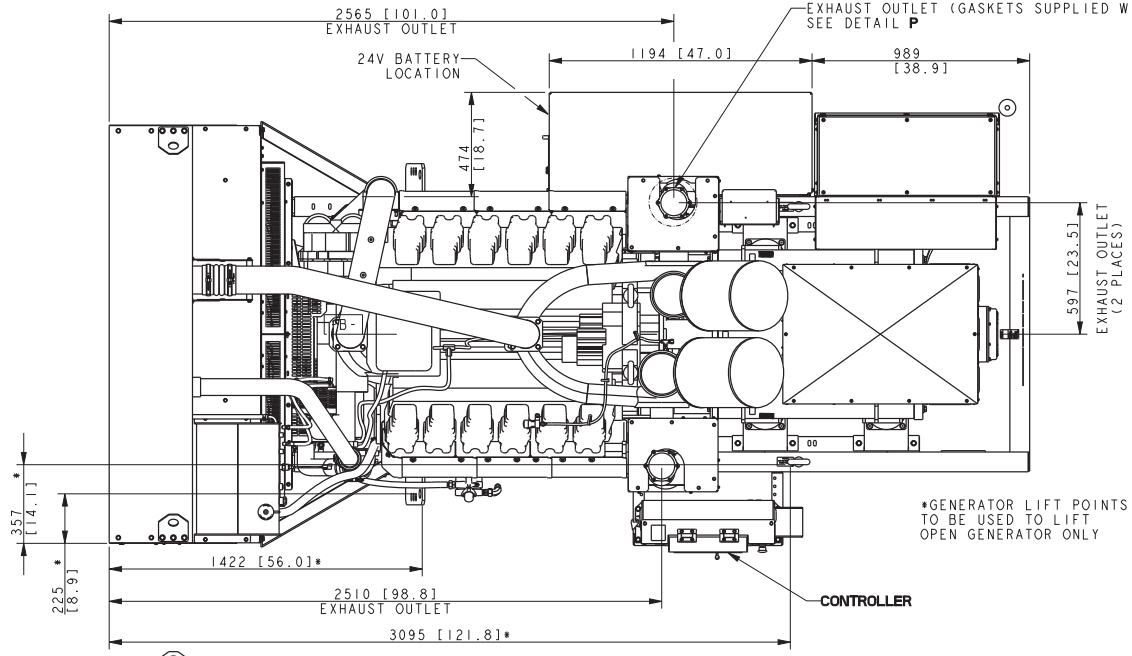
APPROVALS		DATE
DRAWN	SSS	9-8-16
CHECKED	DJV	9-8-16
APPROVED	BMK	9-8-16

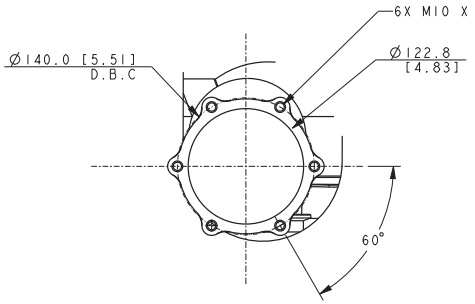
KOHLER
KOHLER, WISCONSIN 53044

TITLE: DIMENSION PRINT, KD800-1000

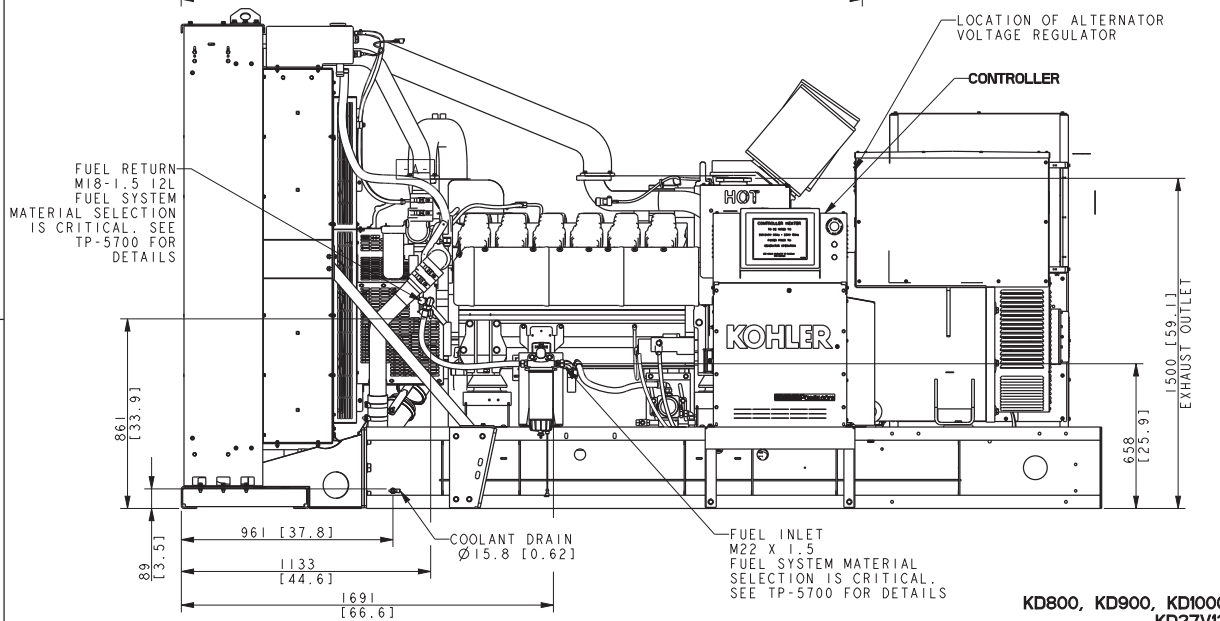
SCALE 0.06 | CAD NO. | SHEET 1 of 5

DWG NO. ADV-8868 | D





DETAIL P
SCALE 0.40



KD800, KD900, KD1000
KD27V12

REV	DATE	ON COMPOSITE DWGS, SEE PART NO. FOR REVISION LEVEL	BY
C	10-10-17	SEE SHEET 1 [CT1801111]	RRT
D	10-8-18	IMPERIAL DIMENSIONS ADDED TO ALL DIMENSIONS;	
		(D-5,6) 474 WAS 476, 989 WAS 995; (A-4,7)	
		658 WAS 644; (A-7) 1691 WAS 1730; SEE SHEET	
		1, 3, 4 & 5 [CT191046]	ADP
E	2-19-20	SEE SHEET 1 & 4 [CT2020391]	DS
F	13MAY2020	(B,D-5) CONTROLLER CALLOUT ADDED; SEE SEEET	
		1 [CT204162]	PAR
G	02AUG2021	SEE SHEET 1 [CT213748]	ABB

DO NOT SCALE, REFERENCE THE MODEL FOR ALL UNSPECIFIED DIMENSIONS

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

APPROVALS		DATE
DRAWN	SSS	9-8-16
CHECKED	DJV	9-8-16
APPROVED	BMK	9-8-16

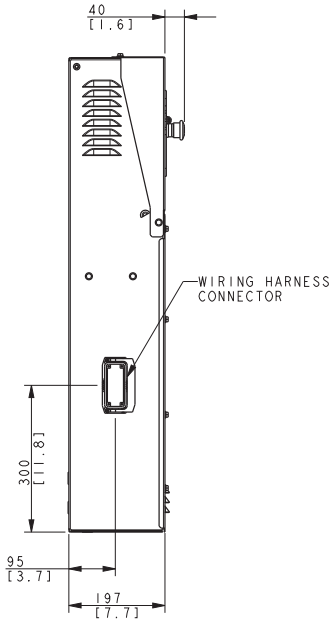
KOHLER.
KOHLER, WISCONSIN 53044

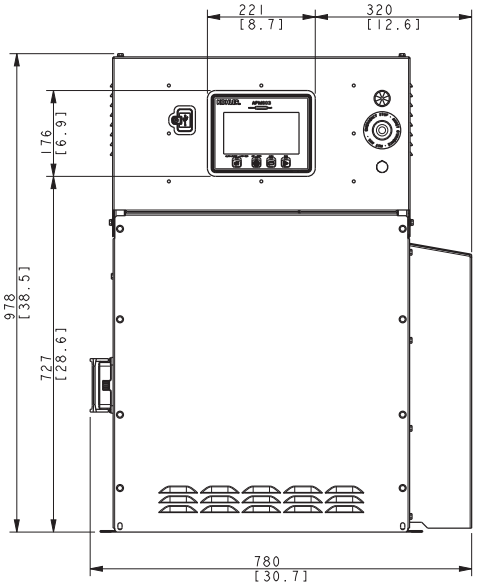
TITLE
DIMENSION PRINT, KD800-1000

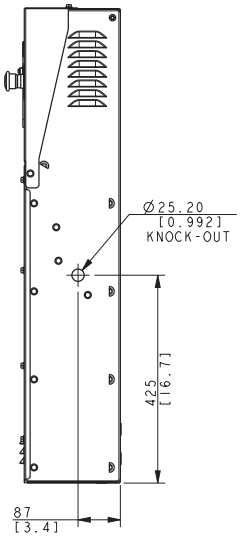
SCALE 0.09 | CAD NO. | SHEET 2 of 5

DWG NO. **ADV-8868** | **D**

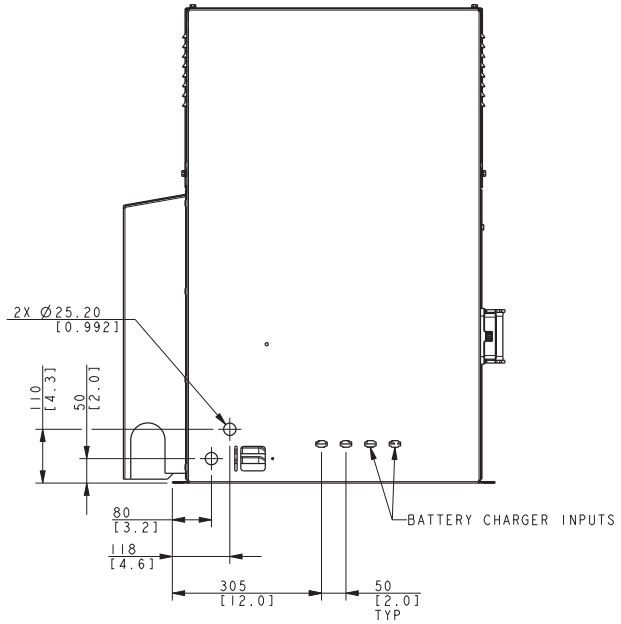
APM603

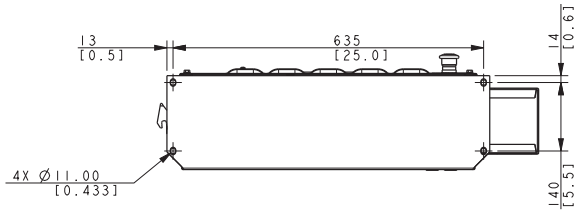






RIGHT SIDE VIEW WITH
WIRING CHUTE REMOVED





NOTE: DIMENSIONS IN [ ] ARE ENGLISH EQUIVALENTS.

KDI 800-4000KW
CONTROLLER

REV	DATE	☐ INDICATES PART NUMBERS AFFECTED BY LATEST DRAWING REVISION	BY
A	4-1-19	VIEWS ADDED FOR APM603 [CT194757]	YBY
B	8-2-19	SEE SHEET 1 [CT197629]	SMH

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

APPROVALS		DATE (M-D-Y)
DRAWN	YBY	4-1-19
CHECKED	DJV	4-1-19
APPROVED	LAC	4-1-19

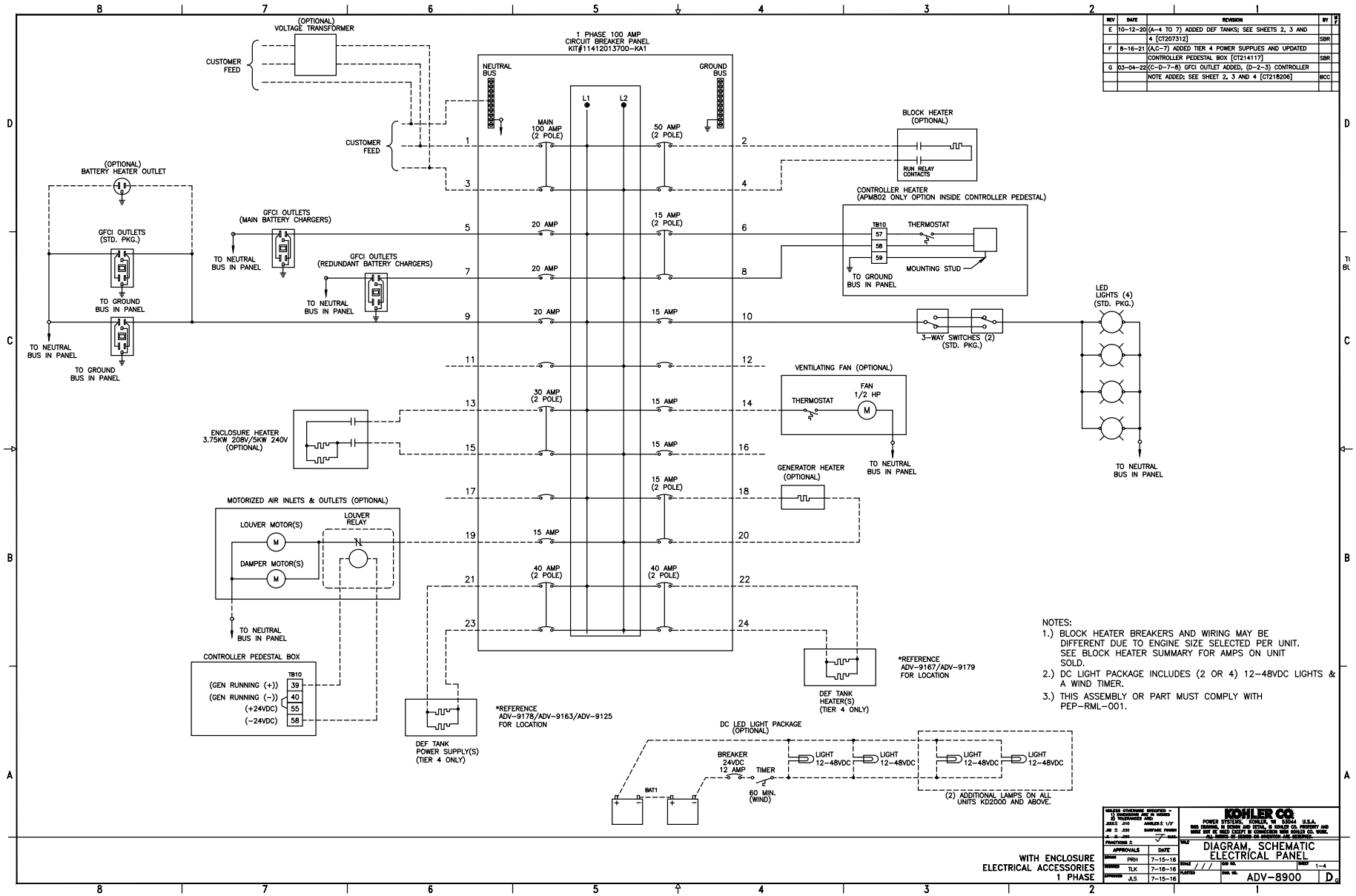
KOHLER CO. / SDMO — METRIC / PRO-E

KOHLER POWER SYSTEMS, KOHLER, WI 53044 U.S.A.
SDMO, CS 92648, 29228 BREST CEDEX 2, FRANCE

TITLE: DIMENSION PRINT, CONTROLLER

SCALE 0.20 | CAD NO. | SHEET 2 of 2

DWG NO. ADV-8869 | D



REV	DATE	REVISION	BY	# F.
E	10-12-20	(A-4 TO 7) ADDED DEF TANKS; SEE SHEETS 2, 3 AND		
		4 [CT207312]	SBR	
F	8-16-21	(A,C-7) ADDED TIER 4 POWER SUPPLIES AND UPDATED		
		CONTROLLER PEDESTAL BOX [CT214117]	SBR	
G	03-04-22	(C-D-7-8) GFCI OUTLET ADDED, (D-2-3) CONTROLLER		
		NOTE ADDED; SEE SHEET 2, 3 AND 4 [CT218206]	BCC	

NOTES:
1.) BLOCK HEATER BREAKERS AND WIRING MAY BE DIFFERENT DUE TO ENGINE SIZE SELECTED PER UNIT. SEE BLOCK HEATER SUMMARY FOR AMPS ON UNIT SOLD.
2.) DC LIGHT PACKAGE INCLUDES (2 OR 4) 12-48VDC LIGHTS & A WIND TIMER.
3.) THIS ASSEMBLY OR PART MUST COMPLY WITH PEP-RML-001.

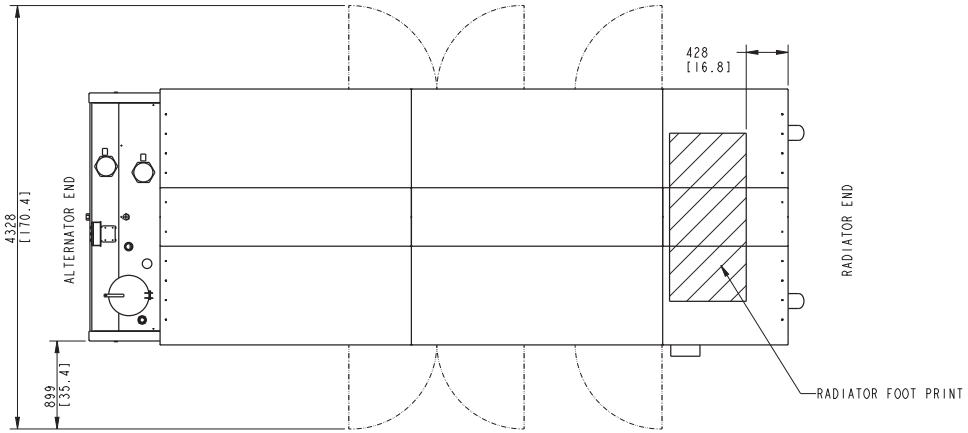
WITH ENCLOSURE
ELECTRICAL ACCESSORIES
1 PHASE

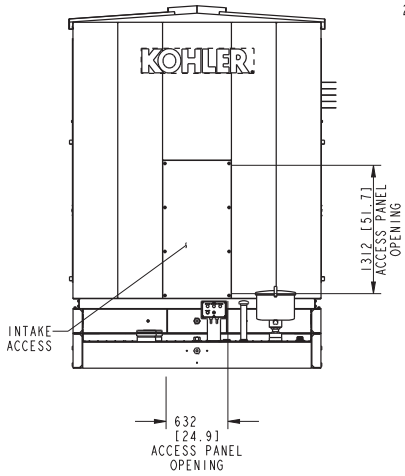
APPROVALS	DATE
DRAWN PRH	7-15-16
DESIGNED TLK	7-18-16
APPROVED JLS	7-15-16

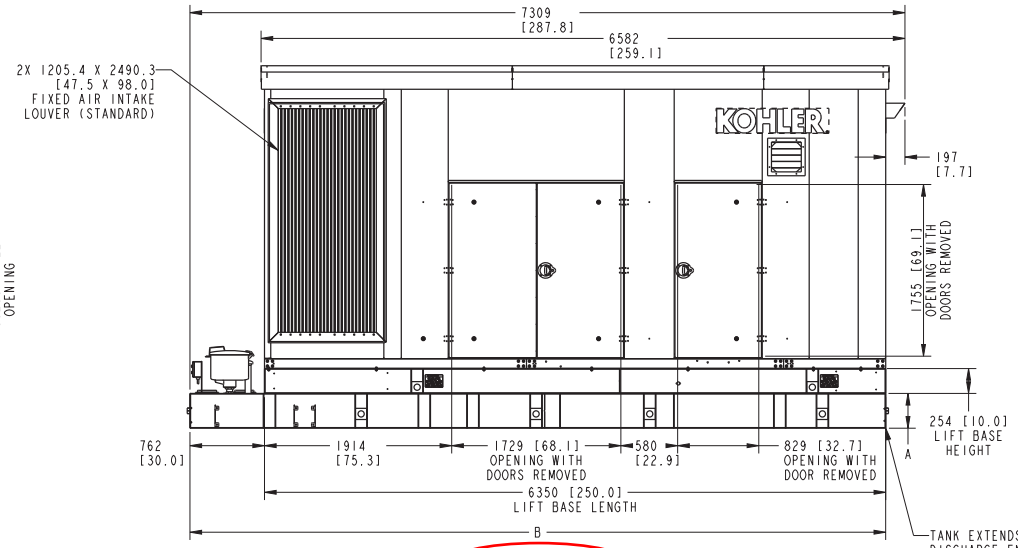
KOHLER CO.
POWER SYSTEMS, KOHLER, WI 53044 U.S.A.

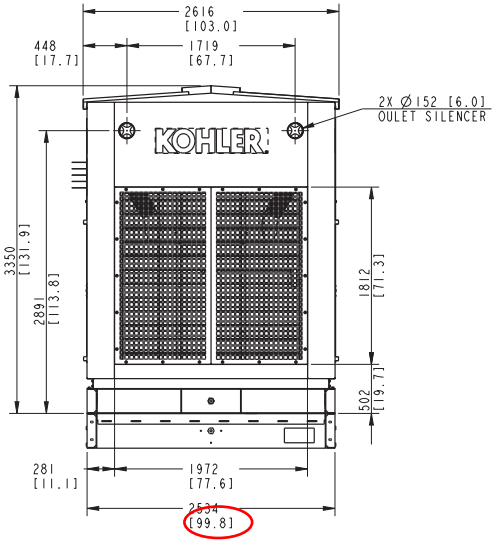
TITLE: DIAGRAM, SCHEMATIC
ELECTRICAL PANEL

SCALE: /// DWG NO. ADV-8900 SHEET 1-4 REV D6









280" L

NOTE:
DIMENSIONS IN [ ] ARE ENGLISH EQUIVALENTS.
*WEIGHT INCLUDES ENCLOSURE & SILENCER.

TANK & LIFT BASE INFORMATION				
LITERS [GALLONS] MIN HOURS	GENSETS	DIM A MM [INCH]	DIM B MM [INCH]	WEIGHT KG [LBS] (NO FUEL)
SL1 LIFT BASE	KD800-1000	SEE NOTE	SEE NOTE	951 [2,096 LB]
3475 [918] 12 HOURS	KD800-1000	356 [14.0]	7112 [280.0]	3588 [7,910 LB]
6621 [1749] 24 HOURS	KD800-1000	584 [23.0]	7112 [280.0]	4068 [8,969 LB]
10573 [2793] 48 HOURS	KD800	914 [36.0]	7112 [280.0]	4647 [10,246 LB]
12969 [3426] 48 HOURS	KD900-1000	940 [37.0]	8400 [330.7]	5851 [12,900 LB]
15740 [4158] 72 HOURS	KD800	1016 [40.0]	9144 [360.0]	6058 [13,356 LB]
19381 [5120] 72 HOURS	KD900-1000	1016 [40.0]	11050 [435.0]	7030 [15,497 LB]

ALUM SL1 ENCLOSURE & SILENCER WEIGHT KG [LBS]	1776 [3916 LB]

TANK WEIGHT + LIFT BASE WEIGHT + ENCLOSURE WEIGHT + GENERATOR SET WEIGHT (REFERENCE FROM GENERATOR SET ADV) = TOTAL WEIGHT

800-1000KW SL1 ENCLOSURE AND LIFTING BASE WITH SUB BASE TANK OPTION

REV	DATE	ON COMPOSITE DWGS, SEE PART NO. FOR REVISION LEVEL	BY
B	3-29-17	SEE SHEET 7,8 & 9 [CT172948]	KMP
C	7-24-17	(C-1) 2X Ø152 DIMENSION ADDED;SEE SHEET 3	
		[CT176858]	MVT
D	12-13-17	SEE SHEET 5 [CT182350]	RVM
E	4-22-19	(A-3) TANK EXTENSION NOTE ADDED; (A-2)	
		TOLERANCES REMOVED [CT194818]	SUD
F	12JAN2021	SEE SHEET 3, 7 & 8 [CT207481]	ARP
G	02MAY2023	SEE SHEET 5 [CT227188]	APM

DO NOT SCALE, REFERENCE THE MODEL FOR ALL UNSPECIFIED DIMENSIONS

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

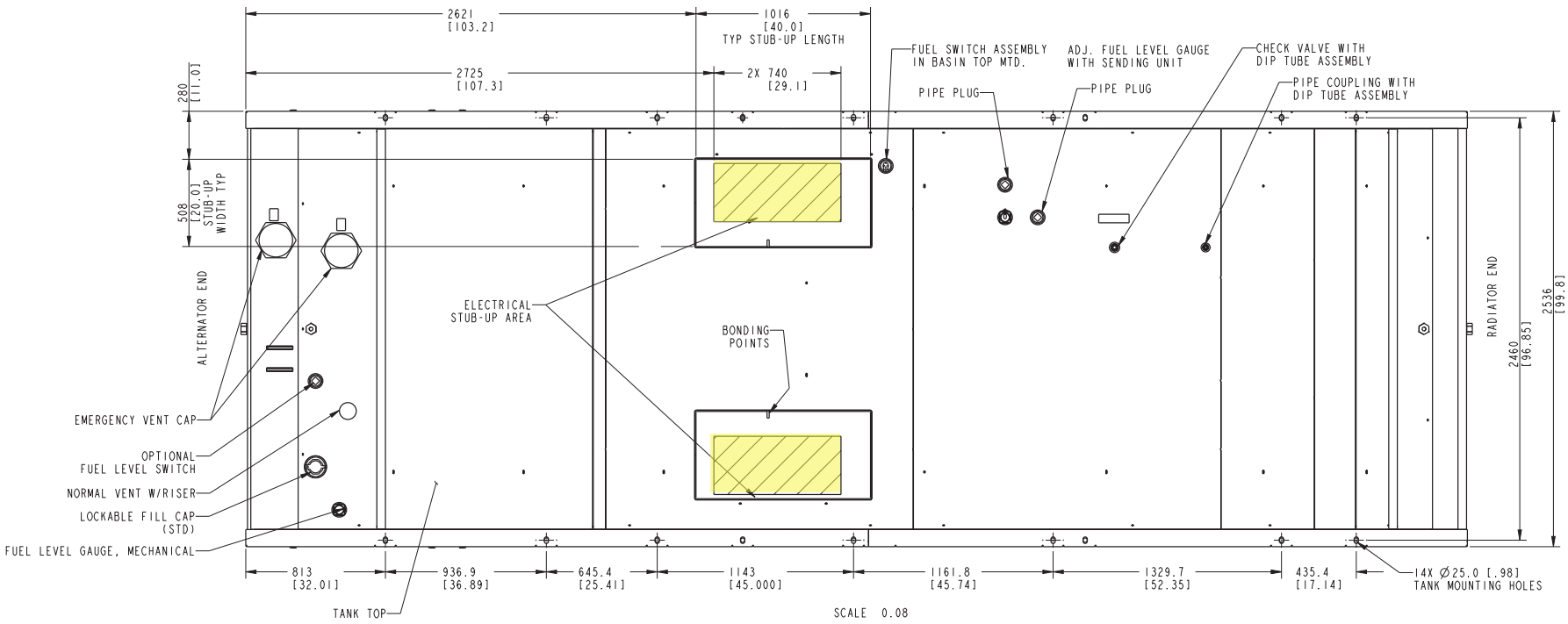
APPROVALS		DATE
DRAWN	RMJ	4-17-19
CHECKED	RMJ	4-17-19
APPROVED	BLM	4-17-19

KOHLER
KOHLER, WISCONSIN 53044

TITLE: DIMENSION PRINT KD800-1000 TANK & ENCLOSURE

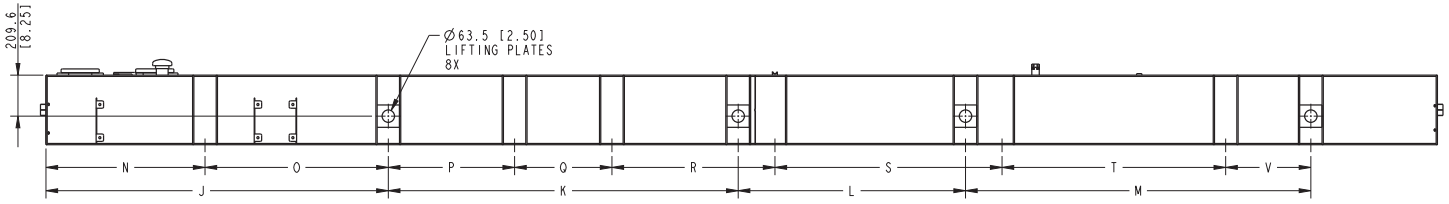
SCALE 0.04 | CAD NO. | SHEET 1 of 10

DWG NO. ADV-8919 | D



SCALE 0.08

LIFT BASE MOUNTING HOLE LOCATIONS
918 GAL. 12 HOUR TANK SHOWN
ALSO REFERENCING TANKS:
1749 GAL. 24 HOURS, 2793 GAL. 48 HOURS,
3426 GAL. 48 HOURS & 4158 GAL. 72 HOURS



TANK LIFTING HOLE LOCATIONS
918 GAL. 12 HOUR TANK SHOWN
ALSO REFERENCING TANKS:
1749 GAL. 24 HOURS, 2793 GAL. 48 HOURS

TANK MOUNTING INFORMATION								
LITERS [GALLONS] MIN HOURS	DIM "N"	DIM "O"	DIM "P"	DIM "Q"	DIM "R"	DIM "S"	DIM "T"	DIM "V"
3475 [918] 12 HOURS	813 [32.0]	936.9 [36.89]	645.4 [25.41]	497.6 [19.59]	833.2 [32.80]	1160.7 [45.70]	1143 [45.0]	435.5 [17.15]
6621 [1749] 24 HOURS	813 [32.0]	936.9 [36.89]	645.4 [25.41]	497.6 [19.59]	645.4 [25.41]	1348.4 [53.09]	1143 [45.0]	435.5 [17.15]
10573 [2793] 48 HOURS	813 [32.0]	936.9 [36.89]	645.4 [25.41]	497.6 [19.59]	645.4 [25.41]	1161.9 [45.74]	1329.6 [52.35]	435.5 [17.15]

TANK LIFT PLATE INFORMATION				
LITERS [GALLONS] MIN HOURS	DIMENSION "J"	DIMENSION "K"	DIMENSION "L"	DIMENSION "M"
3475 [918] 12 HOURS	1750 [68.9]	1788 [70.4]	1162 [45.7]	1765 [69.5]
6621 [1749] 24 HOURS	1750 [68.9]	1788 [70.4]	1162 [45.7]	1765 [69.5]
10573 [2793] 48 HOURS	1750 [68.9]	1788 [70.4]	1162 [45.7]	1765 [69.5]

REV	DATE	ON COMPOSITE DWGS, SEE PART NO. FOR REVISION LEVEL	BY
B	3-29-17	(A-2 THRU-7) DIM N THRU V ADDED; (A-8) TANK	
		MOUNTING INFORMATION TABLE ADDED; SEE SHEET	
		8 & 9 [CT172948]	KMP
C	7-24-17	SEE SHEET 1 & 3 [CT176858]	MVT
D	13-12-17	SEE SHEET 5 [CT182350]	RVM
E	4-22-19	(A-2) TOLERANCES REMOVED [CT194818]	SUD
F	12JAN2021	(B-5,4) "LIFT BASE...LOCATIONS" WAS	
		"MOUNTING...LOCATIONS"; SEE SHEET 3 & 8	
		[CT207481]	ARP
G	02MAY2023	SEE SHEET 5 [CT227188]	APM

DO NOT SCALE, REFERENCE THE MODEL FOR ALL UNSPECIFIED DIMENSIONS

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

APPROVALS		DATE
DRAWN	RMJ	7-28-16
CHECKED	RMJ	7-28-16
APPROVED	BLM	7-28-16

KOHLER.
KOHLER, WISCONSIN 53044

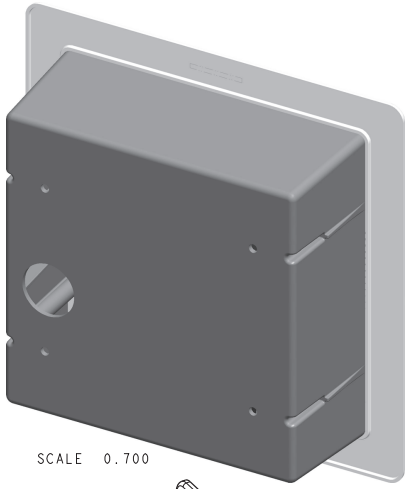
TITLE: **DIMENSION PRINT KD800-1000 TANK & ENCLOSURE**

SCALE 0.04 | CAD NO. | SHEET 7 of 10

DWG NO. **ADV-8919** | **D**

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

SCALE 0.700



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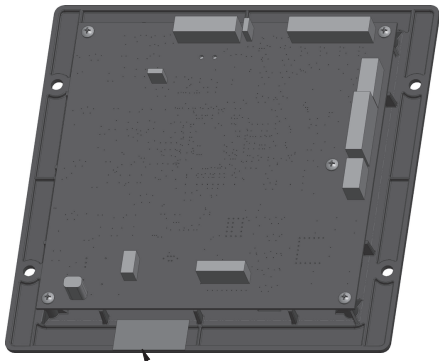
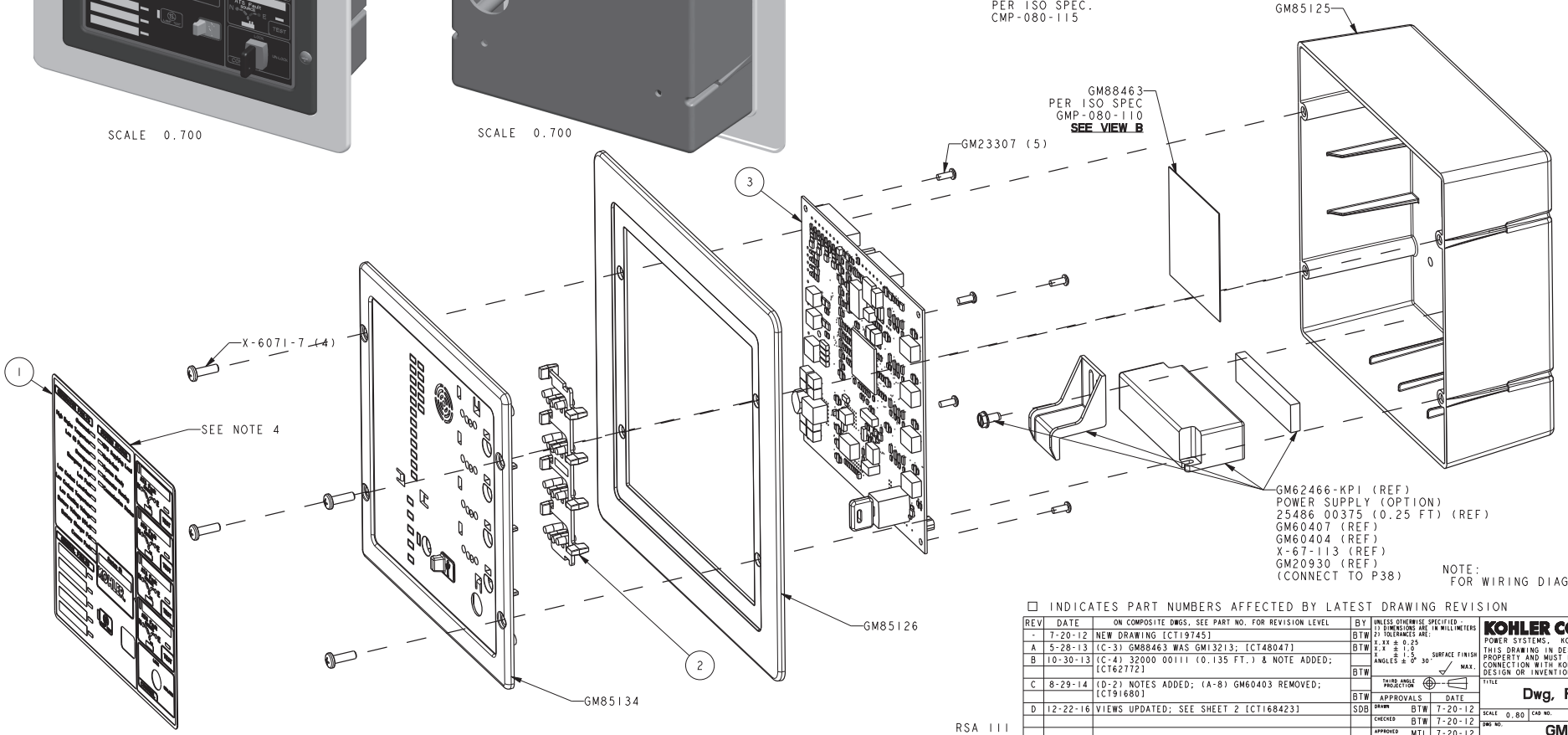


32000 00111 (0.135 FT.)
PER ISO SPEC.
CMP-080-115

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



NOTE:
FOR WIRING DIAGRAM, SEE GM62554.

☐ INDICATES PART NUMBERS AFFECTED BY LATEST DRAWING REVISION

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

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

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

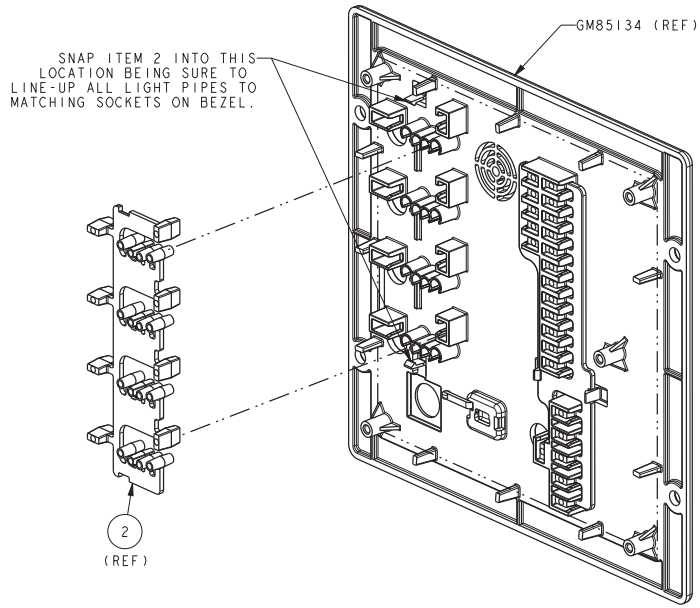
METRIC | PRO-E

TITLE: Dwg, RSA III Assy

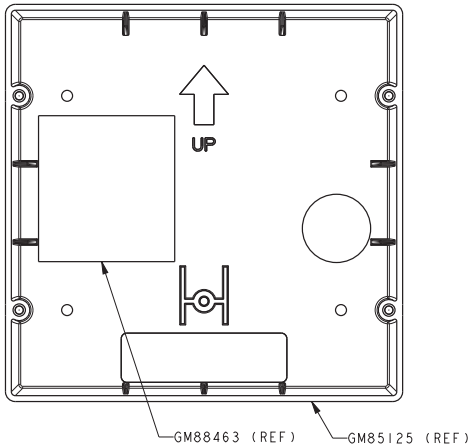
SCALE 0.80 | CAD NO. | SHEET 1 of 2

DWG NO. GM85123 | D

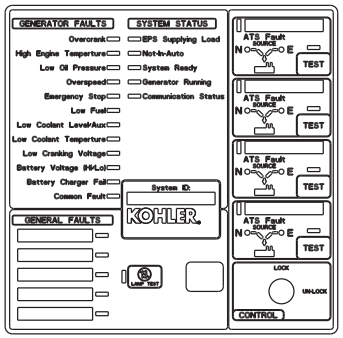
RSA III



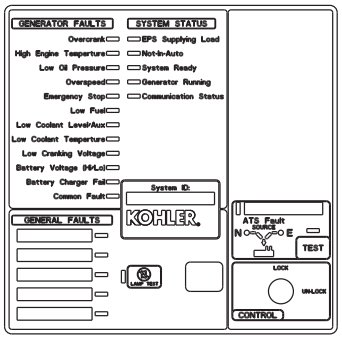
BACK VIEW OF BEZEL
SCALE 1.000



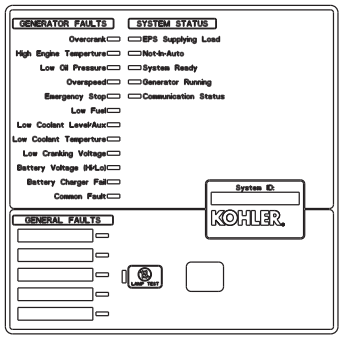
VIEW B
FRONT OF BOX



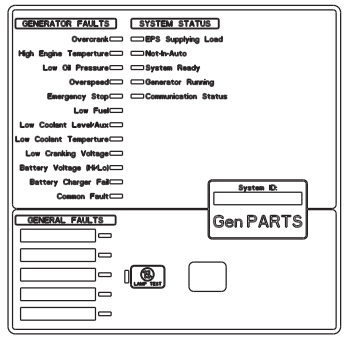
ITEM 1
(P/N: GM85127 REF)



ITEM 1
(P/N: GM85131 REF)



ITEM 1
(P/N: GM85132 REF)



ITEM 1
(P/N: GM85133 REF)

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

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

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

KOHLER CO. METRIC | PRO-E

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

TITLE: **Dwg, RSA III Assy**

SCALE 0.80 | CAD NO. | SHEET 2 of 2

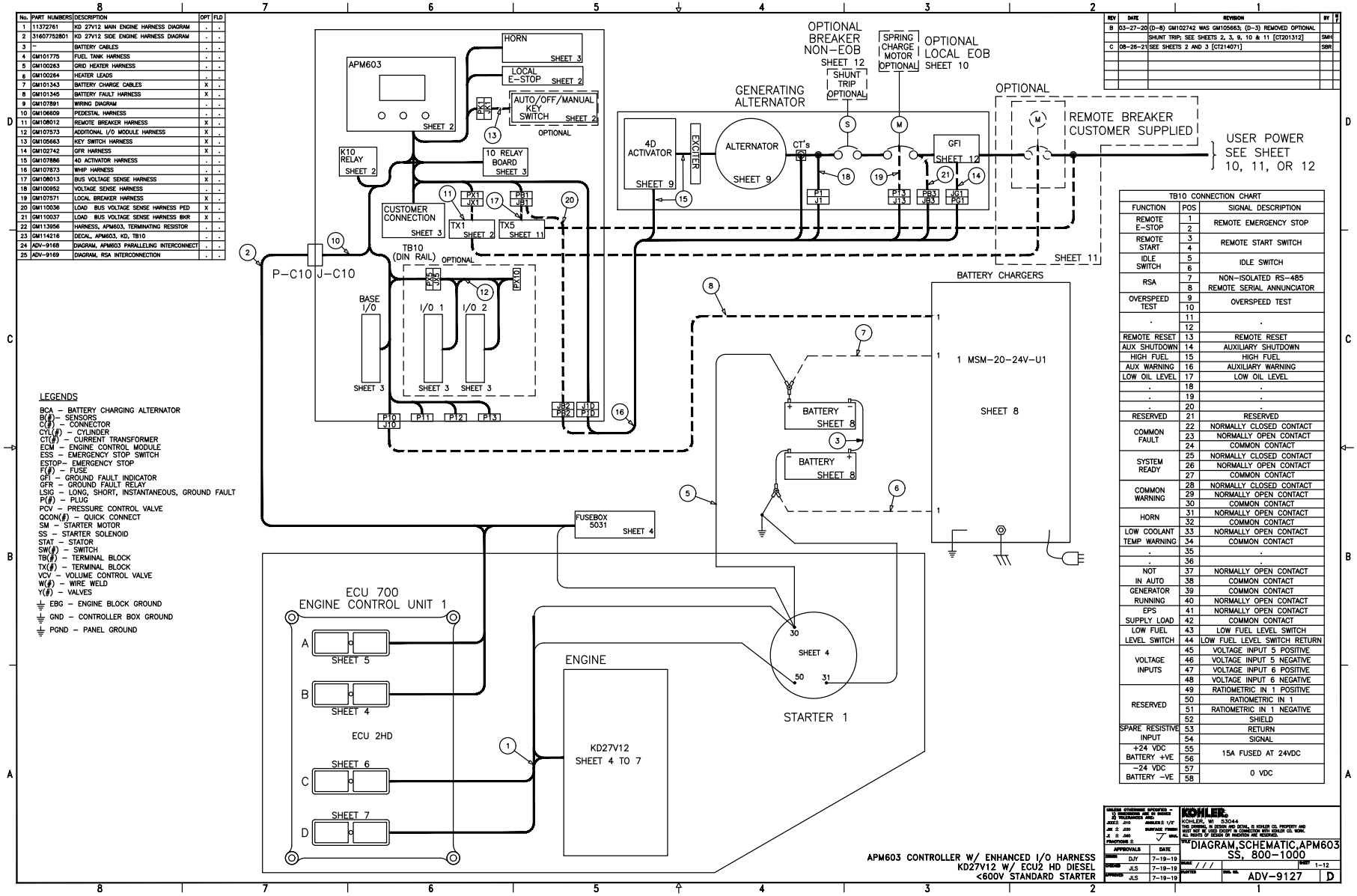
DWG NO. **GM85123** | **D**

KOHLER®

Wiring Schematics

No.	PART NUMBERS	DESCRIPTION	OPT	FLD
1	11372761	KD 27V12 MAIN ENGINE HARNESS DIAGRAM	.	.
2	316077528O1	KD 27V12 SIDE ENGINE HARNESS DIAGRAM	.	.
3	--	BATTERY CABLES	.	.
4	GM101775	FUEL TANK HARNESS	.	.
5	GM100263	GRID HEATER HARNESS	.	.
6	GM100264	HEATER LEADS	.	.
7	GM101343	BATTERY CHARGE CABLES	X	.
8	GM101345	BATTERY FAULT HARNESS	X	.
9	GM107891	WIRING DIAGRAM	.	.
10	GM106609	PEDESTAL HARNESS	.	.
11	GM108012	REMOTE BREAKER HARNESS	X	.
12	GM107573	ADDITIONAL I/O MODULE HARNESS	X	.
13	GM105663	KEY SWITCH HARNESS	X	.
14	GM102742	GFR HARNESS	X	.
15	GM107886	4D ACTIVATOR HARNESS	.	.
16	GM107873	WHIP HARNESS	.	.
17	GM108013	BUS VOLTAGE SENSE HARNESS	X	.
18	GM100952	VOLTAGE SENSE HARNESS	.	.
19	GM107571	LOCAL BREAKER HARNESS	X	.
20	GM110036	LOAD BUS VOLTAGE SENSE HARNESS PED	X	.
21	GM110037	LOAD BUS VOLTAGE SENSE HARNESS BKR	X	.
22	GM113956	HARNESS, APM603, TERMINATING RESISTOR	.	.
23	GM114216	DECAL, APM603, KD, TB10	.	.
24	ADV-9168	DIAGRAM, APM603 PARALLELING INTERCONNECT	.	.
25	ADV-9169	DIAGRAM, RSA INTERCONNECTION	.	.

REV	DATE	REVISION	BY
B	03-27-20	(D-8) GM102742 WAS GM105663; (D-3) REMOVED OPTIONAL SHUNT TRIP; SEE SHEETS 2, 3, 9, 10 & 11 [CT201312]	SMH
C	08-26-21	SEE SHEETS 2 AND 3 [CT214071]	SBR



LEGENDS

BCA – BATTERY CHARGING ALTERNATOR
B(#)– SENSORS
C(#) – CONNECTOR
CYL(#) – CYLINDER
CT(#) – CURRENT TRANSFORMER
ECM – ENGINE CONTROL MODULE
ESS – EMERGENCY STOP SWITCH
ESTOP– EMERGENCY STOP
F(#) – FUSE
GFI – GROUND FAULT INDICATOR
GFR – GROUND FAULT RELAY
LSIG – LONG, SHORT, INSTANTANEOUS, GROUND FAULT
P(#) – PLUG
PCV – PRESSURE CONTROL VALVE
QCON(#) – QUICK CONNECT
SM – STARTER MOTOR
SS – STARTER SOLENOID
STAT – STATOR
SW(#) – SWITCH
TB(#) – TERMINAL BLOCK
TX(#) – TERMINAL BLOCK
VCV – VOLUME CONTROL VALVE
W(#) – WIRE WELD
Y(#) – VALVES
EBG – ENGINE BLOCK GROUND
GND – CONTROLLER BOX GROUND
PGND – PANEL GROUND

TB10 CONNECTION CHART		
FUNCTION	POS	SIGNAL DESCRIPTION
REMOTE E-STOP	1	REMOTE EMERGENCY STOP
	2	
REMOTE START	3	REMOTE START SWITCH
	4	
IDLE SWITCH	5	IDLE SWITCH
	6	
RSA	7	NON-ISOLATED RS-485
	8	REMOTE SERIAL ANNUNCIATOR
OVERSPEED TEST	9	OVERSPEED TEST
	10	
.	11	.
	12	
REMOTE RESET	13	REMOTE RESET
AUX SHUTDOWN	14	AUXILIARY SHUTDOWN
HIGH FUEL	15	HIGH FUEL
AUX WARNING	16	AUXILIARY WARNING
LOW OIL LEVEL	17	LOW OIL LEVEL
.	18	.
.	19	.
.	20	.
RESERVED	21	RESERVED
COMMON FAULT	22	NORMALLY CLOSED CONTACT
	23	NORMALLY OPEN CONTACT
	24	COMMON CONTACT
SYSTEM READY	25	NORMALLY CLOSED CONTACT
	26	NORMALLY OPEN CONTACT
	27	COMMON CONTACT
COMMON WARNING	28	NORMALLY CLOSED CONTACT
	29	NORMALLY OPEN CONTACT
	30	COMMON CONTACT
HORN	31	NORMALLY OPEN CONTACT
	32	COMMON CONTACT
LOW COOLANT TEMP WARNING	33	NORMALLY OPEN CONTACT
	34	COMMON CONTACT
.	35	.
.	36	.
NOT IN AUTO	37	NORMALLY OPEN CONTACT
	38	COMMON CONTACT
GENERATOR RUNNING	39	COMMON CONTACT
	40	NORMALLY OPEN CONTACT
EPS SUPPLY LOAD	41	NORMALLY OPEN CONTACT
	42	COMMON CONTACT
LOW FUEL LEVEL SWITCH	43	LOW FUEL LEVEL SWITCH
	44	LOW FUEL LEVEL SWITCH RETURN
VOLTAGE INPUTS	45	VOLTAGE INPUT 5 POSITIVE
	46	VOLTAGE INPUT 5 NEGATIVE
	47	VOLTAGE INPUT 6 POSITIVE
	48	VOLTAGE INPUT 6 NEGATIVE
RESERVED	49	RATIOMETRIC IN 1 POSITIVE
	50	RATIOMETRIC IN 1
	51	RATIOMETRIC IN 1 NEGATIVE
	52	SHIELD
SPARE RESISTIVE INPUT	53	RETURN
	54	SIGNAL
+24 VDC BATTERY +VE	55	15A FUSED AT 24VDC
	56	
−24 VDC BATTERY −VE	57	0 VDC
	58	

APM603 CONTROLLER W/ ENHANCED I/O HARNESS
KD27V12 W/ ECU2 HD DIESEL
<600V STANDARD STARTER

APPROVALS	DATE
DRAWN DJY	7-19-19
CHECKED JLS	7-19-19
ENGINEER JLS	7-19-19

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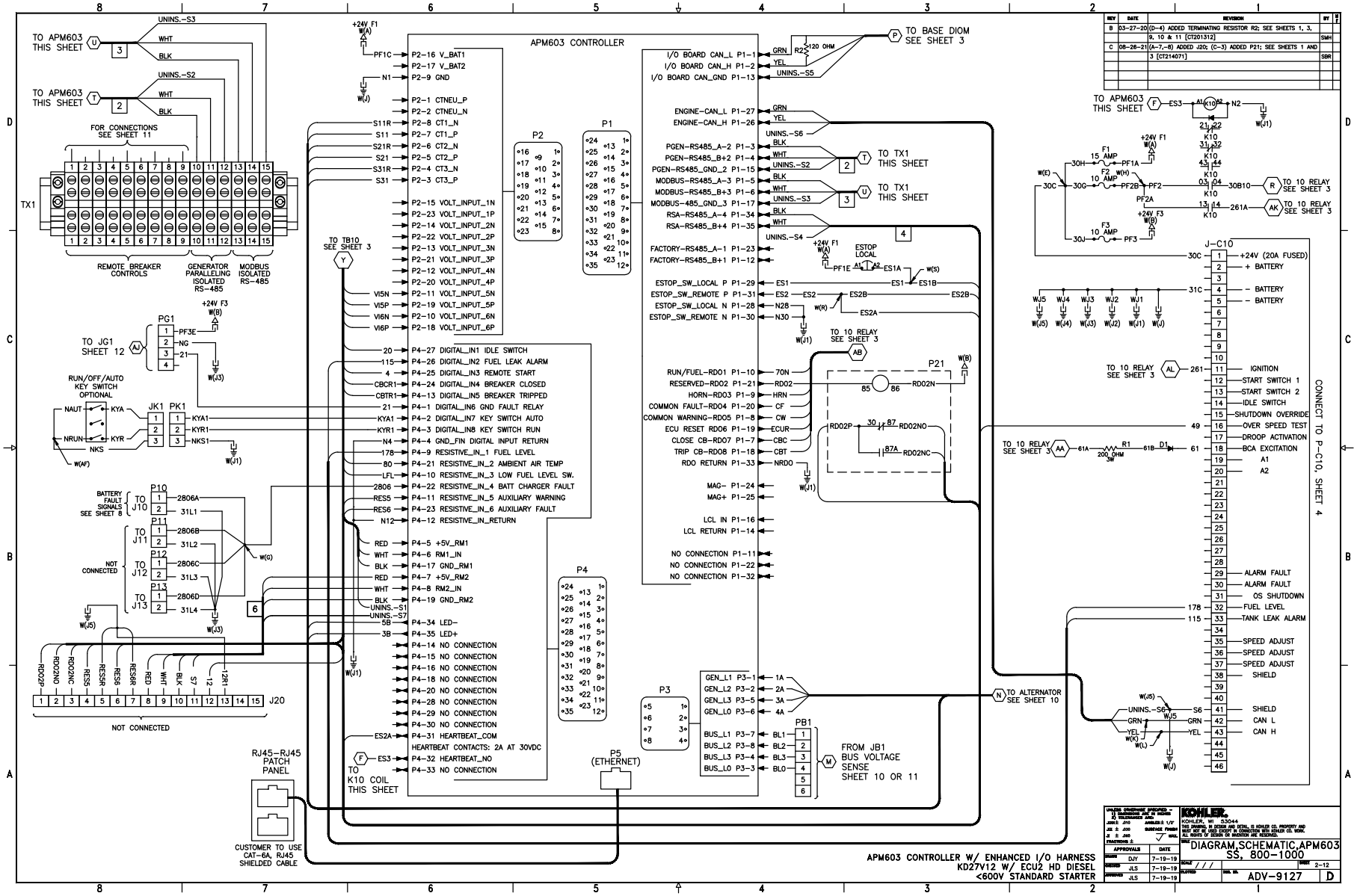
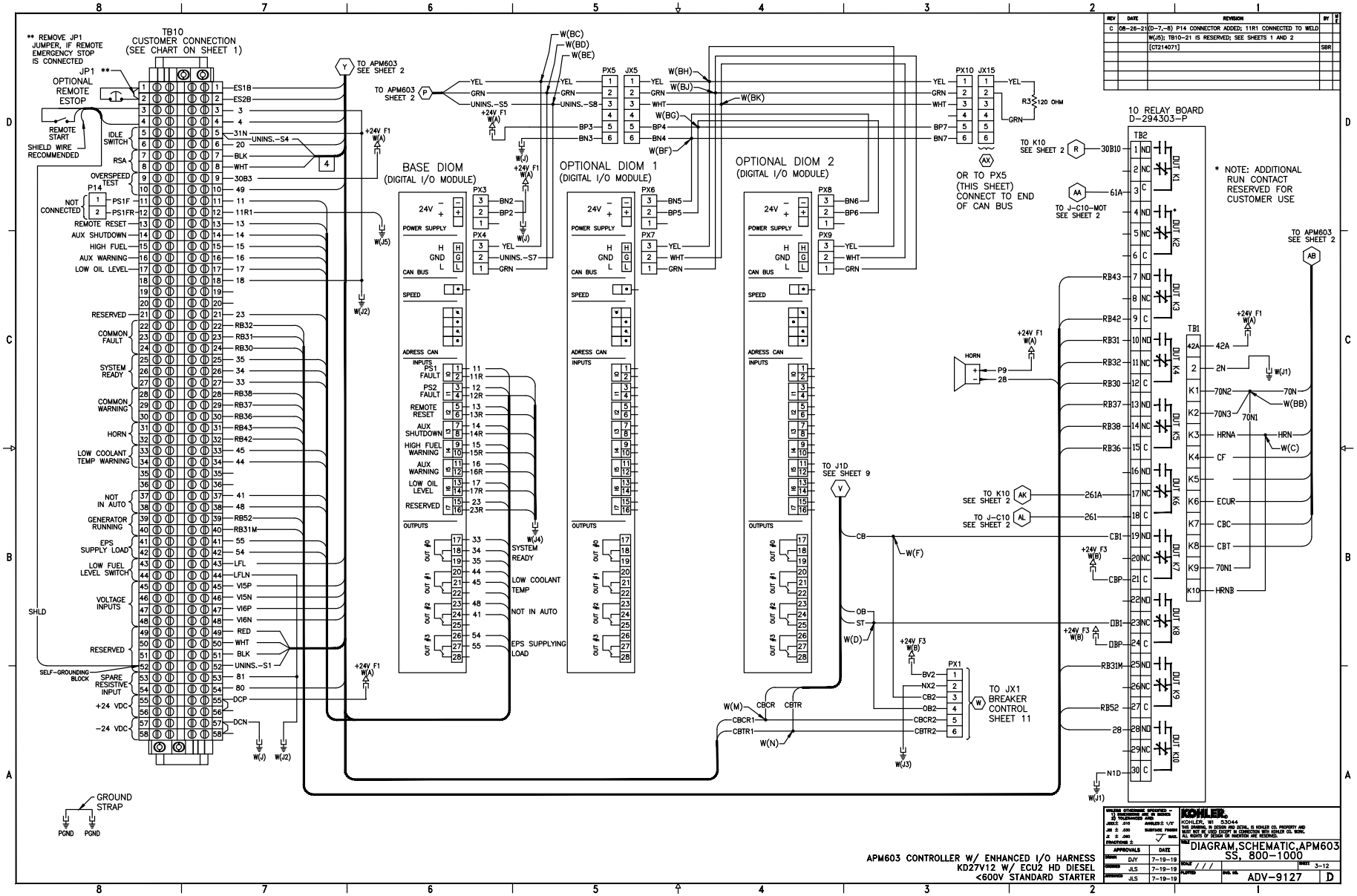
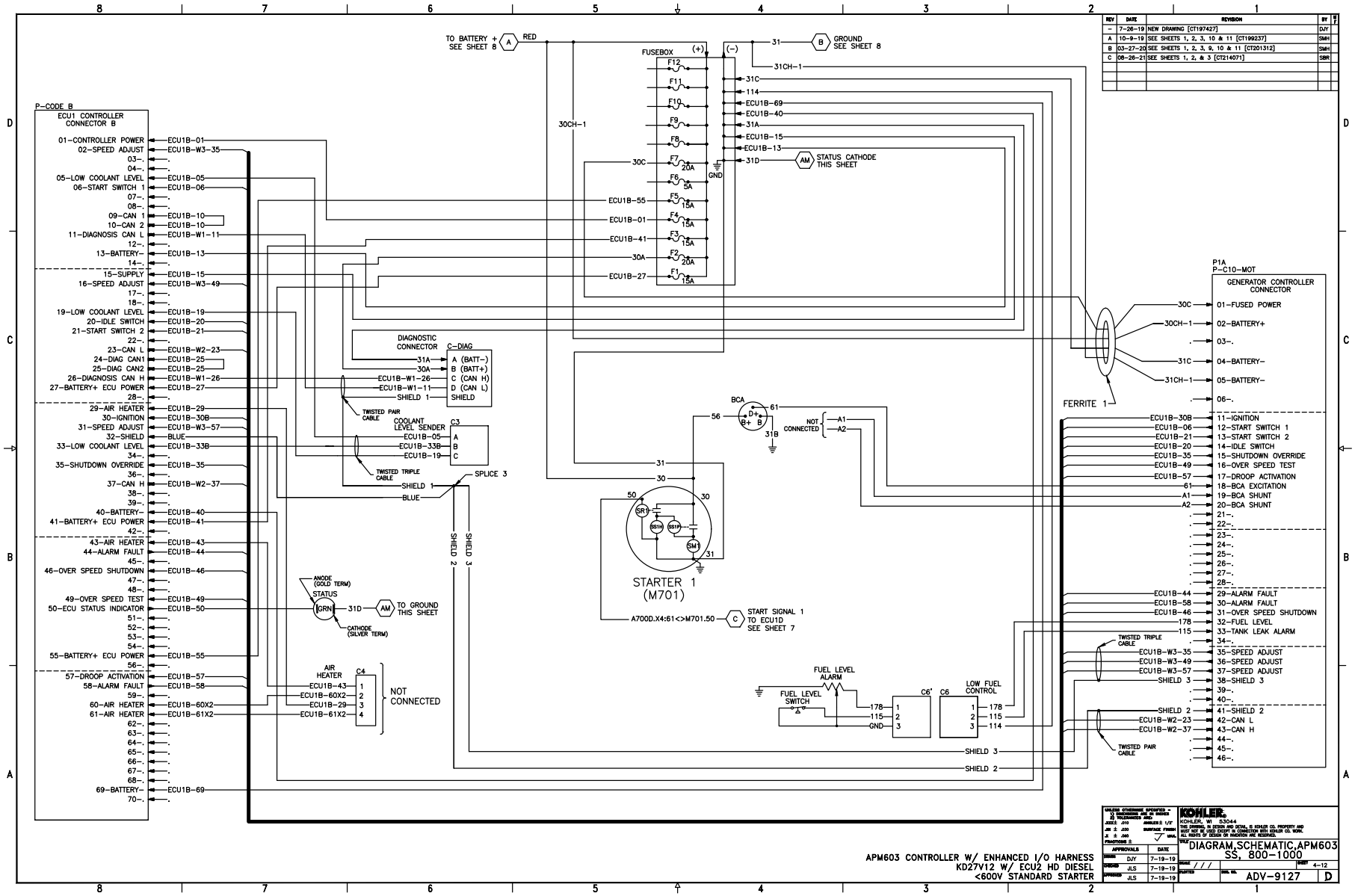
TITLE: DIAGRAM,SCHEMATIC,APM603 SS, 800-1000

SCALE: / / / SHEET 1-12

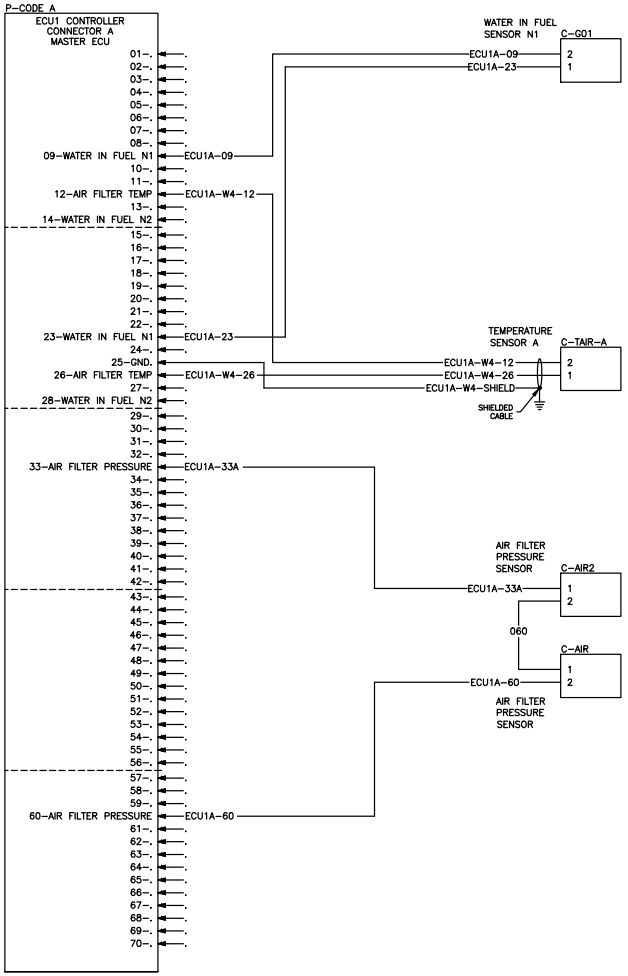
CUSTOMER: DWG. NO. ADV-9127 D


APM603 CONTROLLER
TO APM603 THIS SHEET
TO BASE DIOM SEE SHEET 3
TO TX1 THIS SHEET
TO 10 RELAY SEE SHEET 3
TO ALTERNATOR SEE SHEET 10
FROM JB1 BUS VOLTAGE SENSE SHEET 10 OR 11
CONNECT TO P-C10, SHEET 4
J-C10
P1
P2
P3
P4
P5 (ETHERNET)
P21
PB1
J20
TX1
PG1
JK1 PK1
P10
P11
P12
P13
RJ45-RJ45 PATCH PANEL
CUSTOMER TO USE CAT-6A, RJ45 SHIELDED CABLE
TO K10 COIL THIS SHEET
TO TB10 SEE SHEET 3
TO JG1 SHEET 12
RUN/OFF/AUTO KEY SWITCH OPTIONAL
REMOTE BREAKER CONTROLS
GENERATOR PARALLELING ISOLATED RS-485
MODBUS ISOLATED RS-485
NOT CONNECTED
BATTERY FAULT SIGNALS SEE SHEET 8
ESTOP LOCAL
APM603 CONTROLLER W/ ENHANCED I/O HARNESS
KD27V12 W/ ECU2 HD DIESEL
<600V STANDARD STARTER
DIAGRAM,SCHEMATIC,APM603 SS, 800-1000
ADV-9127
D


TB10
CUSTOMER CONNECTION
(SEE CHART ON SHEET 1)
** REMOVE JP1 JUMPER, IF REMOTE EMERGENCY STOP IS CONNECTED
JP1 **
OPTIONAL REMOTE ESTOP
REMOTE START
SHIELD WIRE RECOMMENDED
IDLE SWITCH
RSA
OVERSPEED TEST
P14
NOT CONNECTED
PS1F
PS1FR
REMOTE RESET
AUX SHUTDOWN
HIGH FUEL
AUX WARNING
LOW OIL LEVEL
RESERVED
COMMON FAULT
SYSTEM READY
COMMON WARNING
HORN
LOW COOLANT TEMP WARNING
NOT IN AUTO
GENERATOR RUNNING
EPS SUPPLY LOAD
LOW FUEL LEVEL SWITCH
VOLTAGE INPUTS
SHLD
RESERVED
SELF-GROUNDING BLOCK
SPARE RESISTIVE INPUT
+24 VDC
-24 VDC
ES1B
ES2B
3
4
31N
20
BLK
WHT
30B3
49
11
11R1
13
14
15
16
17
18
23
RB32
RB31
RB30
35
34
33
RB38
RB37
RB36
RB43
RB42
45
44
41
48
RB52
RB31M
55
54
LFL
LFLN
VI5P
VI5N
VI6P
VI6N
RED
WHT
BLK
UNINS.-S1
81
80
DCP
DCN
UNINS.-S4
TO APM603 SEE SHEET 2
+24V F1 W(A)
W(J5)
W(J2)
W(J)
GROUND STRAP
PGND
PGND
BASE DIOM
(DIGITAL I/O MODULE)
OPTIONAL DIOM 1
(DIGITAL I/O MODULE)
OPTIONAL DIOM 2
(DIGITAL I/O MODULE)
POWER SUPPLY
CAN BUS
SPEED
ADRESS CAN
INPUTS
OUTPUTS
PS1 FAULT
PS2 FAULT
REMOTE RESET
AUX SHUTDOWN
HIGH FUEL WARNING
AUX WARNING
LOW OIL LEVEL
RESERVED
OUT #0
OUT #1
OUT #2
OUT #3
SYSTEM READY
LOW COOLANT TEMP
NOT IN AUTO
EPS SUPPLYING LOAD
PX3
PX4
PX5
JX5
PX6
PX7
PX8
PX9
PX10
JX15
BN2
BP2
BN3
BP3
BN4
BP4
BN5
BP5
BN6
BP6
BN7
BP7
UNINS.-S5
UNINS.-S7
UNINS.-S8
W(BC)
W(BD)
W(BE)
W(BF)
W(BG)
W(BH)
W(BJ)
W(BK)
R3 120 OHM
OR TO PX5 (THIS SHEET) CONNECT TO END OF CAN BUS
10 RELAY BOARD
D-294303-P
TB2
TB1
DUT K1
DUT K2
DUT K3
DUT K4
DUT K5
DUT K6
DUT K7
DUT K8
DUT K9
DUT K10
TO K10 SEE SHEET 2
TO J-C10-MOT SEE SHEET 2
30B10
61A
261A
261
CB1
CBP
DB1
DBP
RB43
RB42
RB31
RB32
RB30
RB37
RB38
RB36
RB31M
RB52
28
N1D
* NOTE: ADDITIONAL RUN CONTACT RESERVED FOR CUSTOMER USE
HORN
P9
28
+24V F1 W(A)
+24V F3 W(B)
42A
2N
70N2
70N3
70N1
HRNA
CF
ECUR
CBC
CBT
HRNB
70N
HRN
W(J1)
W(BB)
W(C)
TO J1D SEE SHEET 9
CB
OB
ST
W(F)
W(D)
W(M)
W(N)
CBCR
CBTR
CBCR1
CBTR1
CBCR2
CBTR2
PX1
BV2
NX2
CB2
OB2
TO JX1 BREAKER CONTROL SHEET 11
W(J3)
TO APM603 SEE SHEET 2
APM603 CONTROLLER W/ ENHANCED I/O HARNESS
KD27V12 W/ ECU2 HD DIESEL
<600V STANDARD STARTER
KOHLER
KOHLER, WI 53044
DIAGRAM,SCHEMATIC,APM603 SS, 800-1000
ADV-9127
D
SHEET 3-12
REV C 08-26-21 (D-7,-8) P14 CONNECTOR ADDED; 11R1 CONNECTED TO WELD
W(J5); TB10-21 IS RESERVED; SEE SHEETS 1 AND 2
[CT214071] SBR


REV | DATE | REVISION | BY
– | 7-26-19 | NEW DRAWING [CT197427] | DJY
A | 10-9-19 | SEE SHEETS 1, 2, 3, 10 & 11 [CT199237] | SMH
B | 03-27-20 | SEE SHEETS 1, 2, 3, 9, 10 & 11 [CT201312] | SMH
C | 06-26-21 | SEE SHEETS 1, 2, & 3 [CT214071] | SBR
TO BATTERY + SEE SHEET 8
RED
GROUND SEE SHEET 8
FUSEBOX
P-CODE B
ECU1 CONTROLLER CONNECTOR B
01–CONTROLLER POWER
02–SPEED ADJUST
05–LOW COOLANT LEVEL
06–START SWITCH 1
09–CAN 1
10–CAN 2
11–DIAGNOSIS CAN L
13–BATTERY–
15–SUPPLY
16–SPEED ADJUST
19–LOW COOLANT LEVEL
20–IDLE SWITCH
21–START SWITCH 2
23–CAN L
24–DIAG CAN1
25–DIAG CAN2
26–DIAGNOSIS CAN H
27–BATTERY+ ECU POWER
29–AIR HEATER
30–IGNITION
31–SPEED ADJUST
32–SHIELD
33–LOW COOLANT LEVEL
35–SHUTDOWN OVERRIDE
37–CAN H
40–BATTERY–
41–BATTERY+ ECU POWER
43–AIR HEATER
44–ALARM FAULT
46–OVER SPEED SHUTDOWN
49–OVER SPEED TEST
50–ECU STATUS INDICATOR
55–BATTERY+ ECU POWER
57–DROOP ACTIVATION
58–ALARM FAULT
60–AIR HEATER
61–AIR HEATER
69–BATTERY–
DIAGNOSTIC CONNECTOR
C–DIAG
A (BATT–)
B (BATT+)
C (CAN H)
D (CAN L)
SHIELD
TWISTED PAIR CABLE
COOLANT LEVEL SENDER
C3
TWISTED TRIPLE CABLE
SPLICE 3
SHIELD 1
SHIELD 2
SHIELD 3
BLUE
BCA
NOT CONNECTED
STARTER 1 (M701)
A700D.X4:61<>M701.50
START SIGNAL 1 TO ECU1D SEE SHEET 7
ANODE (GOLD TERM)
STATUS
IGRN
CATHODE (SILVER TERM)
TO GROUND THIS SHEET
AIR HEATER
C4
NOT CONNECTED
FUEL LEVEL ALARM
FUEL LEVEL SWITCH
C6'
C6
LOW FUEL CONTROL
STATUS CATHODE THIS SHEET
FERRITE 1
P1A
P-C10-MOT
GENERATOR CONTROLLER CONNECTOR
01–FUSED POWER
02–BATTERY+
04–BATTERY–
05–BATTERY–
11–IGNITION
12–START SWITCH 1
13–START SWITCH 2
14–IDLE SWITCH
15–SHUTDOWN OVERRIDE
16–OVER SPEED TEST
17–DROOP ACTIVATION
18–BCA EXCITATION
19–BCA SHUNT
20–BCA SHUNT
29–ALARM FAULT
30–ALARM FAULT
31–OVER SPEED SHUTDOWN
32–FUEL LEVEL
33–TANK LEAK ALARM
35–SPEED ADJUST
36–SPEED ADJUST
37–SPEED ADJUST
38–SHIELD 3
41–SHIELD 2
42–CAN L
43–CAN H
APM603 CONTROLLER W/ ENHANCED I/O HARNESS
KD27V12 W/ ECU2 HD DIESEL
<600V STANDARD STARTER
KOHLER
KOHLER, WI 53044
DIAGRAM,SCHEMATIC,APM603 SS, 800-1000
DRAWN DJY 7-19-19
CHECKED JLS 7-19-19
APPROVED JLS 7-19-19
SIZE D
DWG. NO. ADV-9127
REV D

REV	DATE	REVISION	BY	APP'D
–	7-26-19	NEW DRAWING [CT197427]	DJY	
A	10-9-19	SEE SHEETS 1, 2, 3, 10 & 11 [CT199237]	SMH	
B	03-27-20	SEE SHEETS 1, 2, 3, 9, 10 & 11 [CT201312]	SMH	
C	08-26-21	SEE SHEETS 1, 2, & 3 [CT214071]	SBR	



APM603 CONTROLLER W/ ENHANCED I/O HARNESS
KD27V12 W/ ECU2 HD DIESEL
<600V STANDARD STARTER

UNLESS OTHERWISE SPECIFIED –
1) DIMENSIONS ARE IN INCHES
2) TOLERANCES ARE:
.XX ± .010 ANGLES ± 1/2°
.XXX ± .030 SURFACE FINISH
FRACTIONS ± 1/64 MAX.

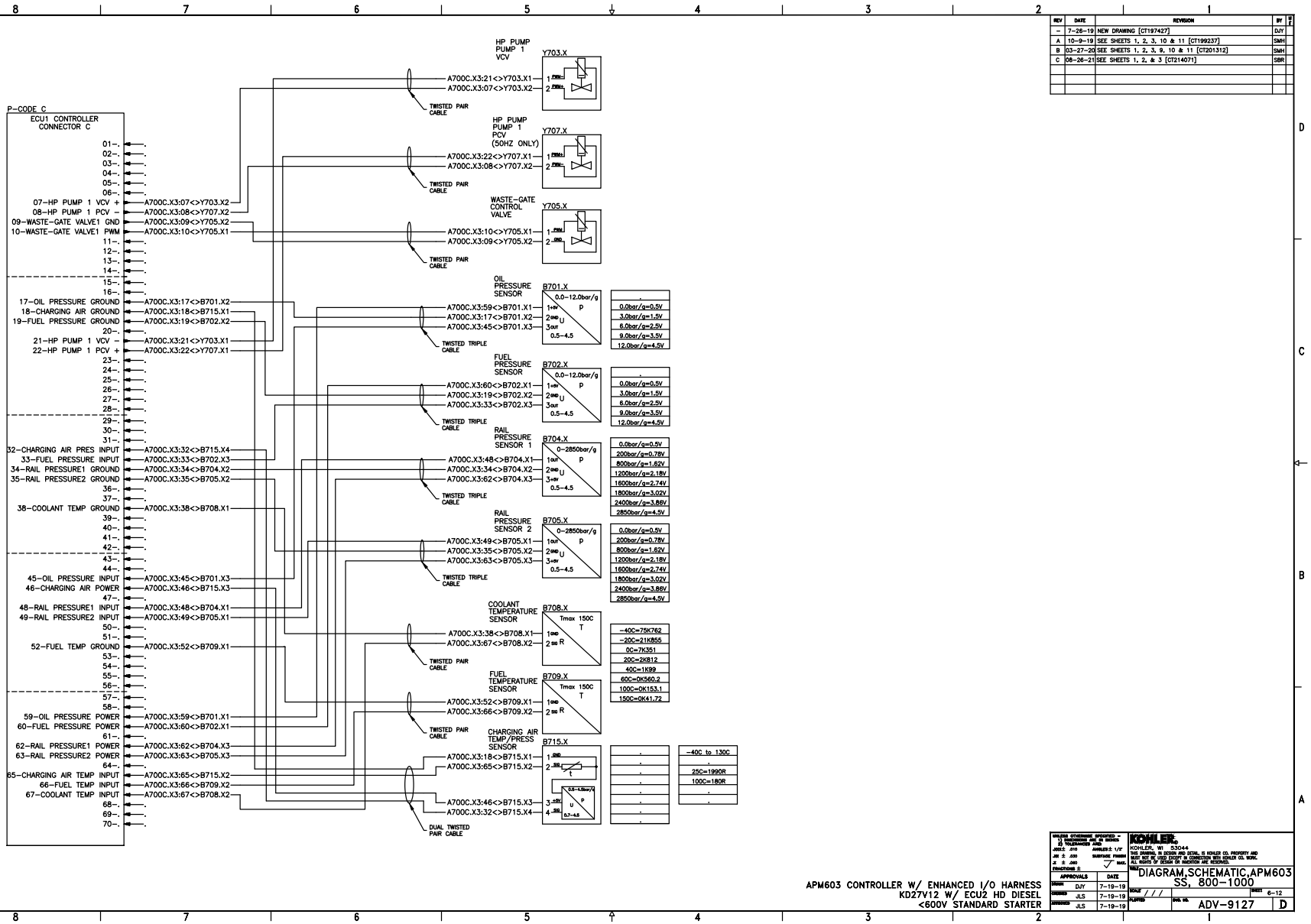
APPROVALS	DATE
DRAWN DJY	7-19-19
CHECKED JLS	7-19-19
ENGINEER JLS	7-19-19

KOHLER Co.
KOHLER, WI 53044

TITLE: DIAGRAM,SCHEMATIC,APM603
SS, 800-1000

SCALE: / / / SHEET 5-12

FILENAME: ADV-9127 D



REV	DATE	REVISION	BY	APP'D
–	7-26-19	NEW DRAWING [CT197427]	DJY	
A	10-9-19	SEE SHEETS 1, 2, 3, 10 & 11 [CT199237]	SMH	
B	03-27-20	SEE SHEETS 1, 2, 3, 9, 10 & 11 [CT201312]	SMH	
C	08-26-21	SEE SHEETS 1, 2, & 3 [CT214071]	SBR	

APM603 CONTROLLER W/ ENHANCED I/O HARNESS
KD27V12 W/ ECU2 HD DIESEL
<600V STANDARD STARTER

APPROVALS	DATE
DJY	7-19-19
JLS	7-19-19
JLS	7-19-19

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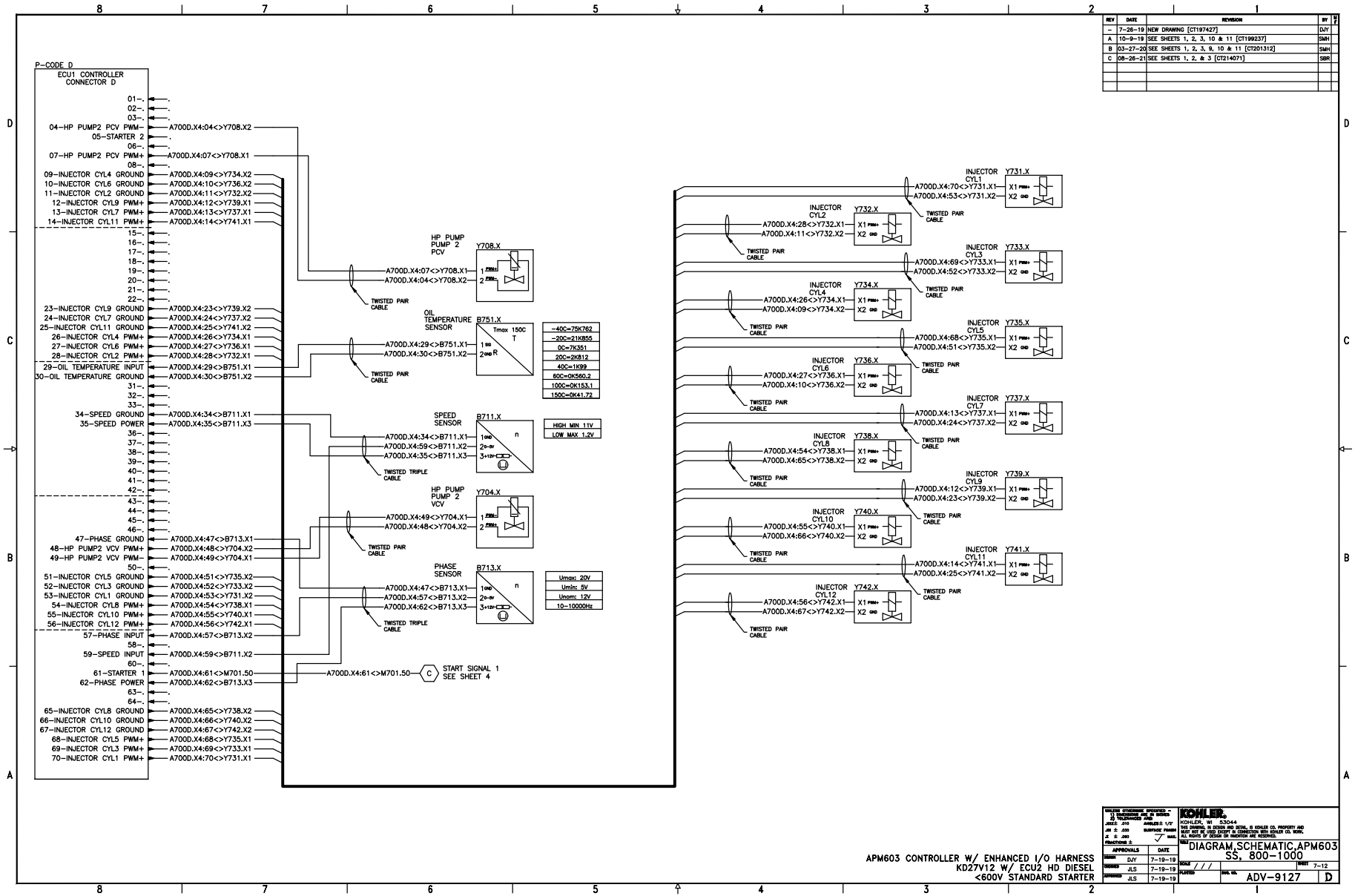
DIAGRAM,SCHEMATIC,APM603 SS, 800-1000

SCALE /// SHEET 6-12
DWG. NO. ADV-9127 D



REV	DATE	REVISION	BY	ECN
–	7-26-19	NEW DRAWING [CT197427]	DJY	
A	10-9-19	SEE SHEETS 1, 2, 3, 10 & 11 [CT199237]	SMH	
B	03-27-20	SEE SHEETS 1, 2, 3, 9, 10 & 11 [CT201312]	SMH	
C	08-26-21	SEE SHEETS 1, 2, & 3 [CT214071]	SBR	

APM603 CONTROLLER W/ ENHANCED I/O HARNESS
KD27V12 W/ ECU2 HD DIESEL
<600V STANDARD STARTER

APPROVALS	DATE
DJY	7-19-19
JLS	7-19-19
JLS	7-19-19

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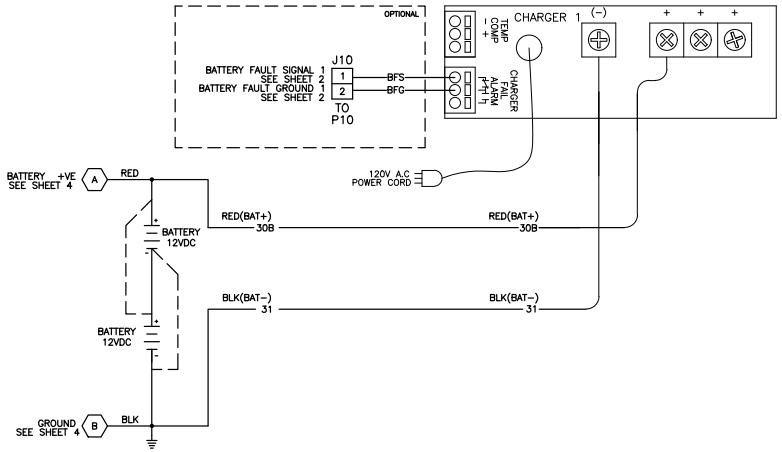
DIAGRAM,SCHEMATIC,APM603 SS, 800-1000

SCALE: / / / SHEET 7-12

DWG. NO. ADV-9127 D

REV	DATE	REVISION	BY	APP'D
–	7-26-19	NEW DRAWING [CT197427]	DJY	
A	10-9-19	SEE SHEETS 1, 2, 3, 10 & 11 [CT199237]	SMH	
B	03-27-20	SEE SHEETS 1, 2, 3, 9, 10 & 11 [CT201312]	SMH	
C	08-26-21	SEE SHEETS 1, 2, & 3 [CT214071]	SBR	



APM603 CONTROLLER W/ ENHANCED I/O HARNESS
KD27V12 W/ ECU2 HD DIESEL
<600V STANDARD STARTER

UNLESS OTHERWISE SPECIFIED –
1) DIMENSIONS ARE IN INCHES
2) TOLERANCES ARE:
.XX ± .010 ANGLES ± 1/2°
.XXX ± .030 SURFACE FINISH
∠ ± .005 MAX.
FRACTIONS ±

APPROVALS	DATE
DJY	7-19-19
JLS	7-19-19
JLS	7-19-19

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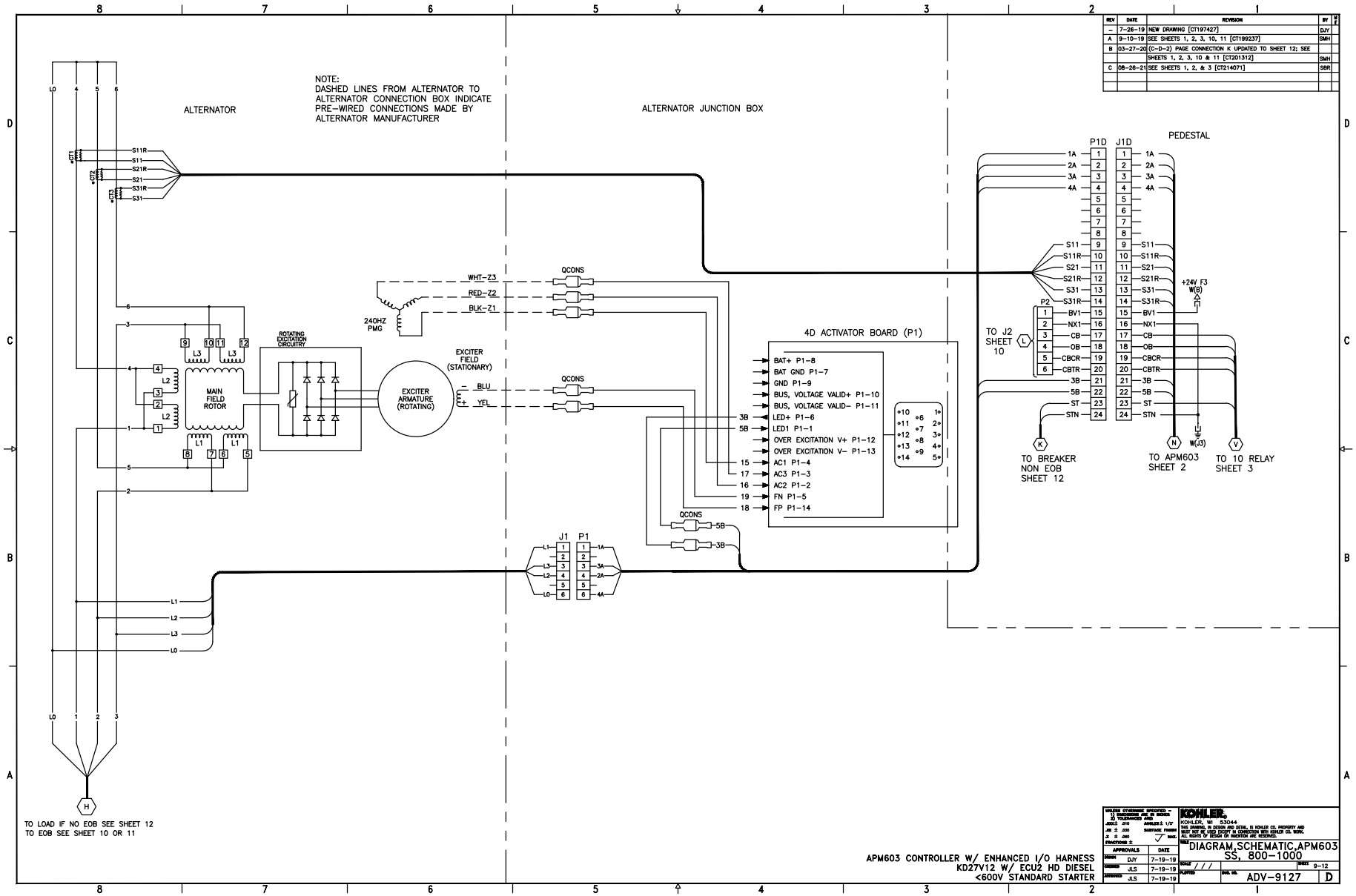
DIAGRAM,SCHEMATIC,APM603 SS, 800–1000

SCALE NONE | SHEET 8–12

DWG. NO. ADV–9127 | D



REV	DATE	REVISION	BY	APP'D
–	7-26-19	NEW DRAWING [CT197427]	DJY	
A	9-10-19	SEE SHEETS 1, 2, 3, 10, 11 [CT199237]	SMH	
B	03-27-20	(C-D-2) PAGE CONNECTION K UPDATED TO SHEET 12; SEE SHEETS 1, 2, 3, 10 & 11 [CT201312]	SMH	
C	08-26-21	SEE SHEETS 1, 2, & 3 [CT214071]	SBR	

APM603 CONTROLLER W/ ENHANCED I/O HARNESS
KD27V12 W/ ECU2 HD DIESEL
<600V STANDARD STARTER

APPROVALS	DATE
DRAWN DJY	7-19-19
CHECKED JLS	7-19-19
APPROVED JLS	7-19-19

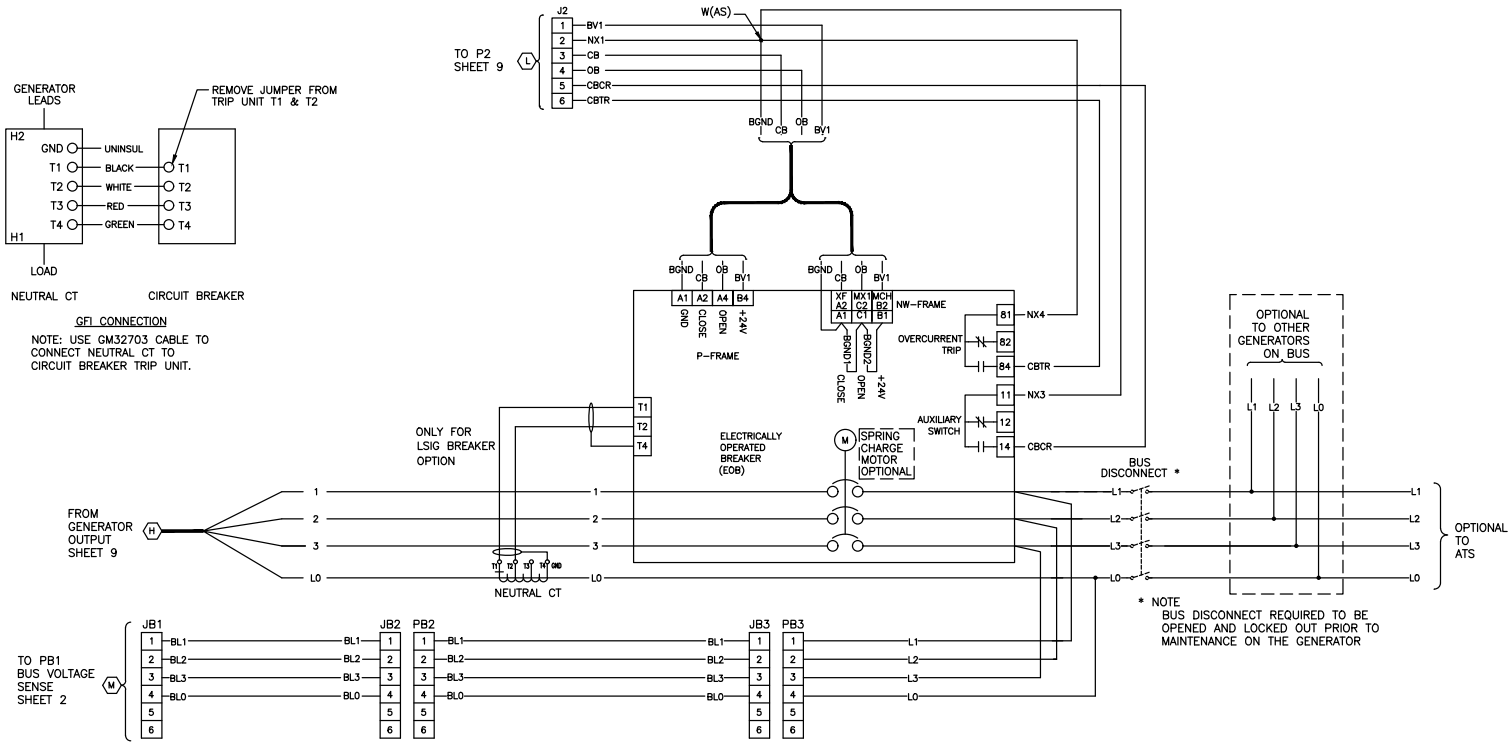
KOHLER CO.
KOHLER, WI 53044

DIAGRAM,SCHEMATIC,APM603 SS, 800-1000

SCALE /// SHEET 9-12

DWG NO. ADV-9127 D

REV	DATE	REVISION	BY
A	10-9-19	(A-B-2 TO 6) ADDED JB2, PB2, JB3, PB3, BUS DISCONNECT,	
		EXTENSION TO OTHER GENERATORS ON BUS; SEE SHEET 1, 2,	
		3 & 11 [CT199237]	SMH
B	03-27-20	(C-4) REMOVED SHUNT TRIP CONNECTIONS & NW FRAME	
		CONNECTIONS UPDATED; SEE SHEETS 1, 2, 3, 9 & 11	
		[CT201312]	SMH
C	08-26-21	SEE SHEETS 1, 2, & 3 [CT214071]	SBR



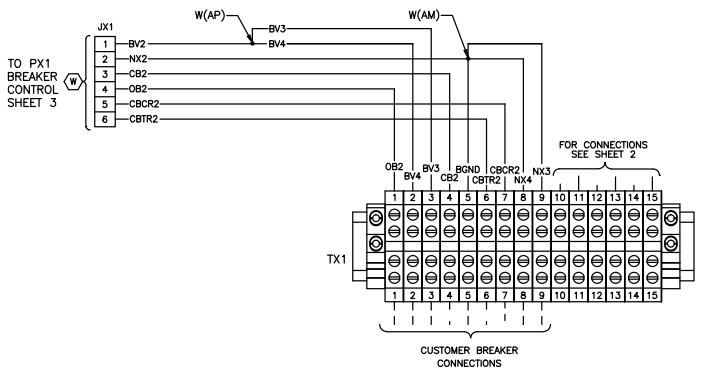
LOCAL BREAKER OPTION
APM603 CONTROLLER W/ ENHANCED I/O HARNESS
KD27V12 W/ ECU2 HD DIESEL
<600V STANDARD STARTER

KOHLER CO.
KOHLER, WI 53044

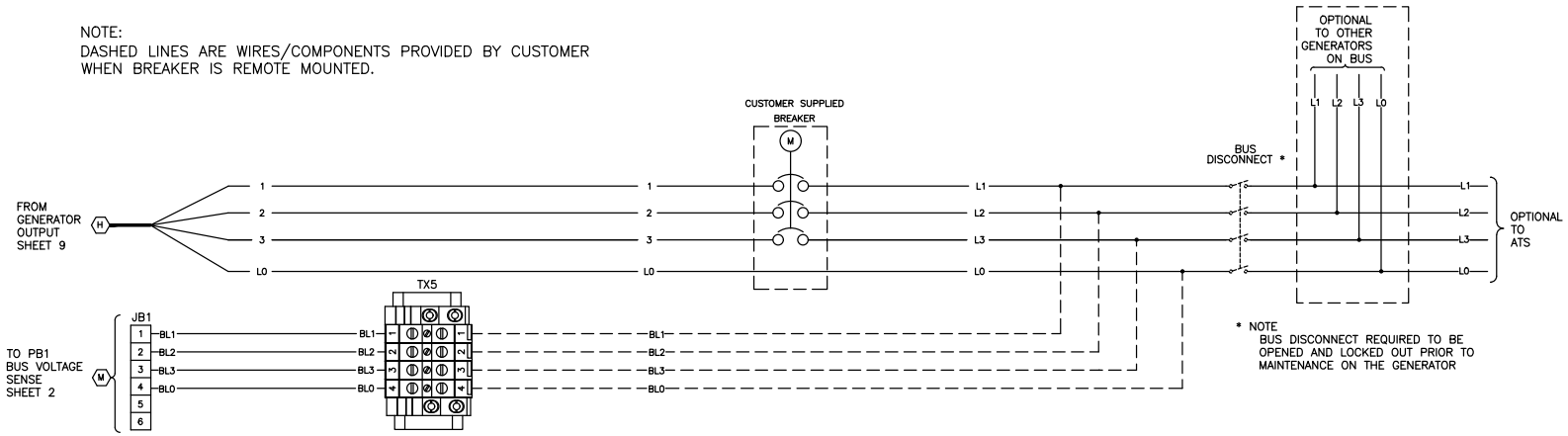
APPROVALS	DATE
DRAWN DJY	7-19-19
REVIEWED JLS	7-19-19
APPROVED JLS	7-19-19

DIAGRAM,SCHEMATIC,APM603 SS, 800-1000
SCALE NONE
SHEET 10-12
DWG. NO. ADV-9127
REVISED D

REV	DATE	REVISION	BY
–	7-26-19	NEW DRAWING [CT197427]	DJY
A	10-9-19	(B-2) ADDED BUS DISCONNECT AND EXTENSION TO OTHER GENERATORS ON BUS; SEE SHEETS 1, 2, 3 & 10 [CT199237]	SMH
B	03-27-20	(A--4) FUSES REMOVED FROM BL0, BL1, BL2, BL3; SEE SHEETS 1, 2, 3, 9, 10 & 11 [CT201312]	SMH
C	08-26-21	SEE SHEETS 1, 2, & 3 [CT214071]	SBR



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



* NOTE
BUS DISCONNECT REQUIRED TO BE OPENED AND LOCKED OUT PRIOR TO MAINTENANCE ON THE GENERATOR

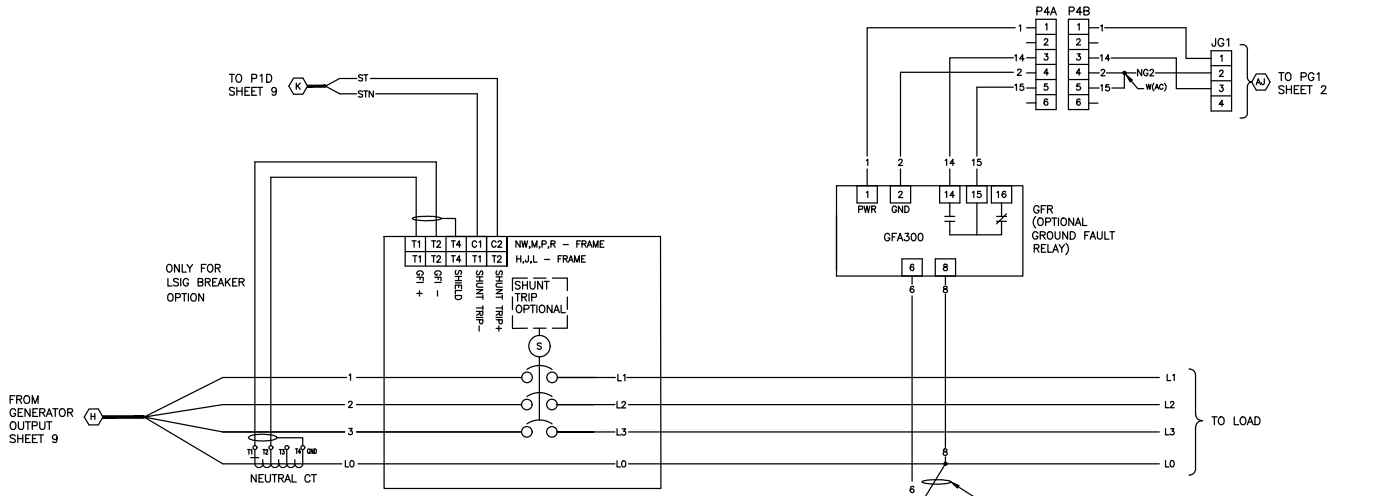
REMOTE BREAKER OPTION
APM603 CONTROLLER W/ ENHANCED I/O HARNESS
KD27V12 W/ ECU2 HD DIESEL
<600V STANDARD STARTER

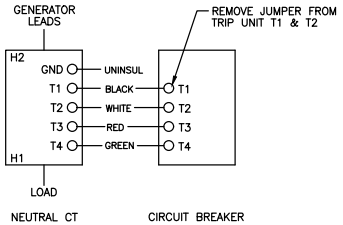
KOHLER CO.
KOHLER, WI 53044

APPROVALS	DATE
DRAWN DJY	7-19-19
CHECKED JLS	7-19-19
APPROVED JLS	7-19-19

DIAGRAM,SCHEMATIC,APM603
SS, 800-1000
SCALE NONE
SHEET 11-12
DWG. NO. ADV-9127
REV D

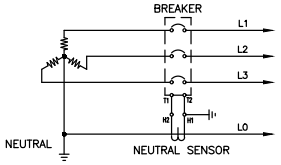
REV	DATE	REVISION	BY
–	7-26-19	NEW DRAWING [CT197427]	DJY
A	10-9-19	SEE SHEETS 1, 2, 3, 10 & 11 [CT199237]	SMH
B	03-27-20	SEE SHEETS 1, 2, 3, 9, 10 & 11 [CT201312]	SMH
C	08-26-21	SEE SHEETS 1, 2, & 3 [CT214071]	SBR





GFI CONNECTION

NOTE: USE GM32703 CABLE TO CONNECT NEUTRAL CT TO CIRCUIT BREAKER TRIP UNIT.



GROUND FAULT SENSOR WIRING

GM51855–KA9 THROUGH –KA12

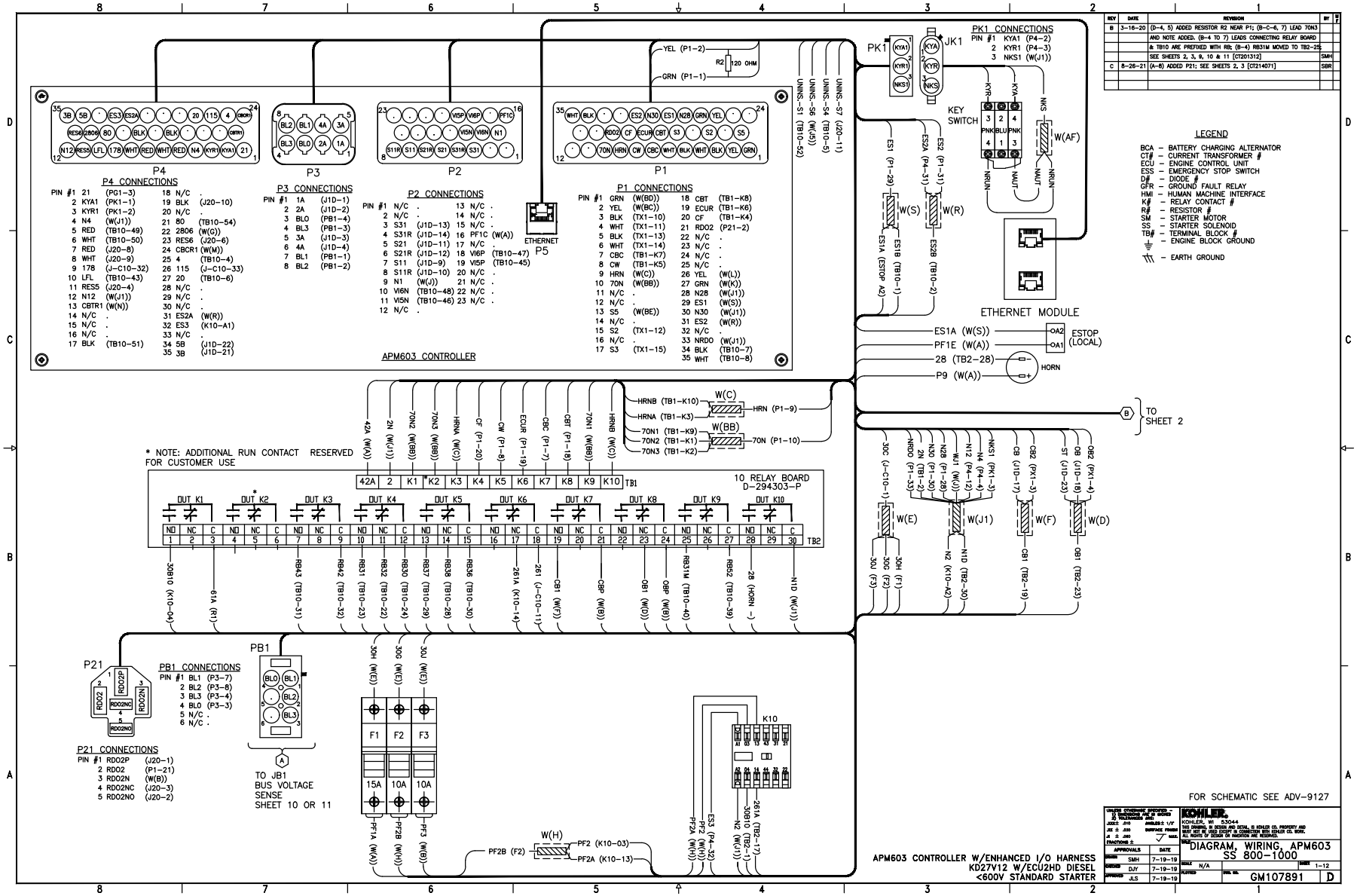
USE 20219 01328 (2 FEET OR AS REQUIRED) TO CONNECT SENSOR T1 & T2 TO LCB T1 & T2. STRIP ENDS .25 INCH. TERMINATE SENSOR END OF BARE GROUND AS SHOWN AND CONNECT UNDER BUS MOUNTING SCREW. TRIM OFF BREAKER END OF BARE GROUND. (REF INSTRUCTION BULLETIN INCLUDED WITH NEUTRAL SENSOR)

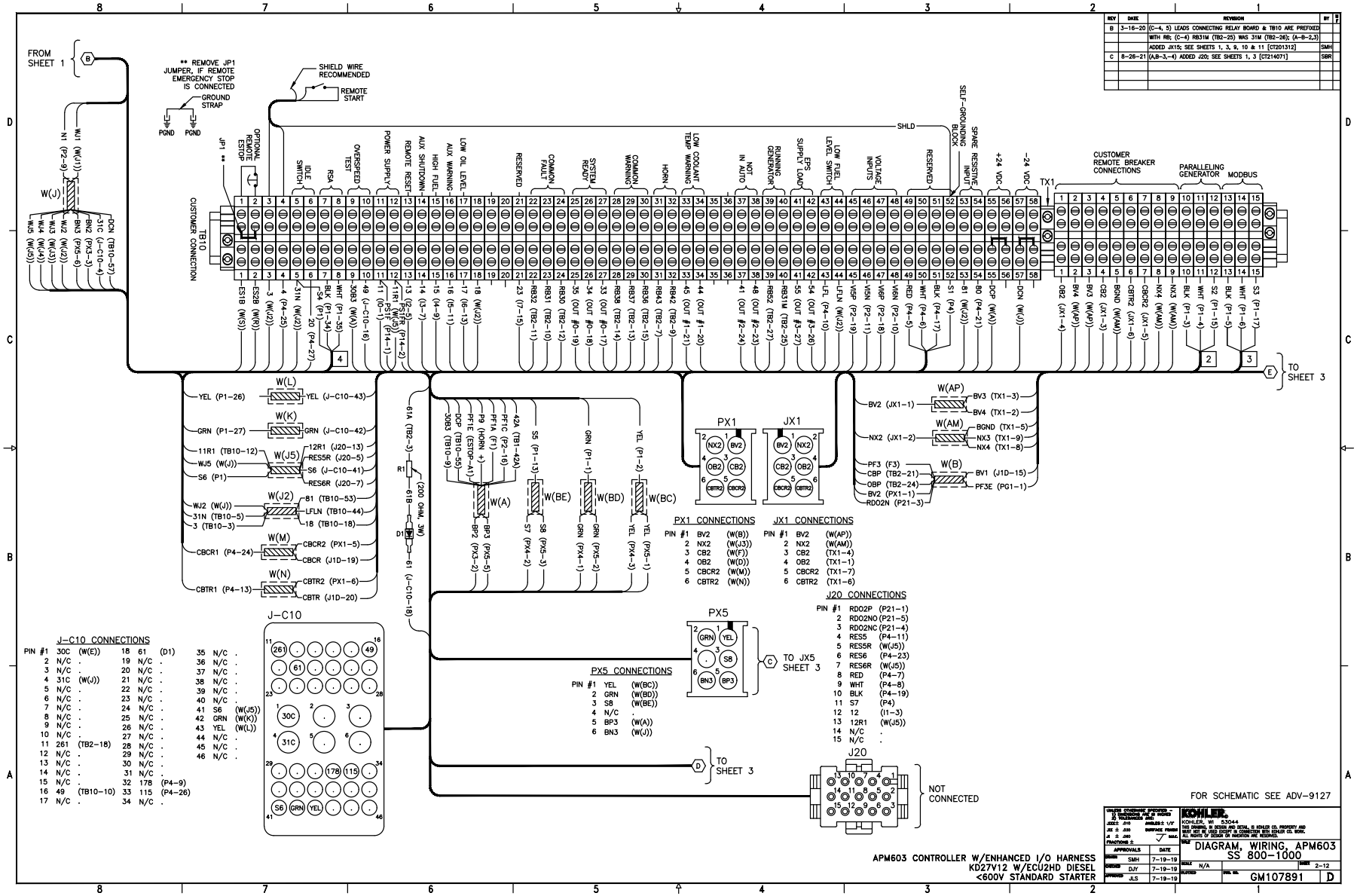
NON EOB OPTION
APM603 CONTROLLER W/ ENHANCED I/O HARNESS
KD27V12 W/ ECU2 HD DIESEL
<600V STANDARD STARTER

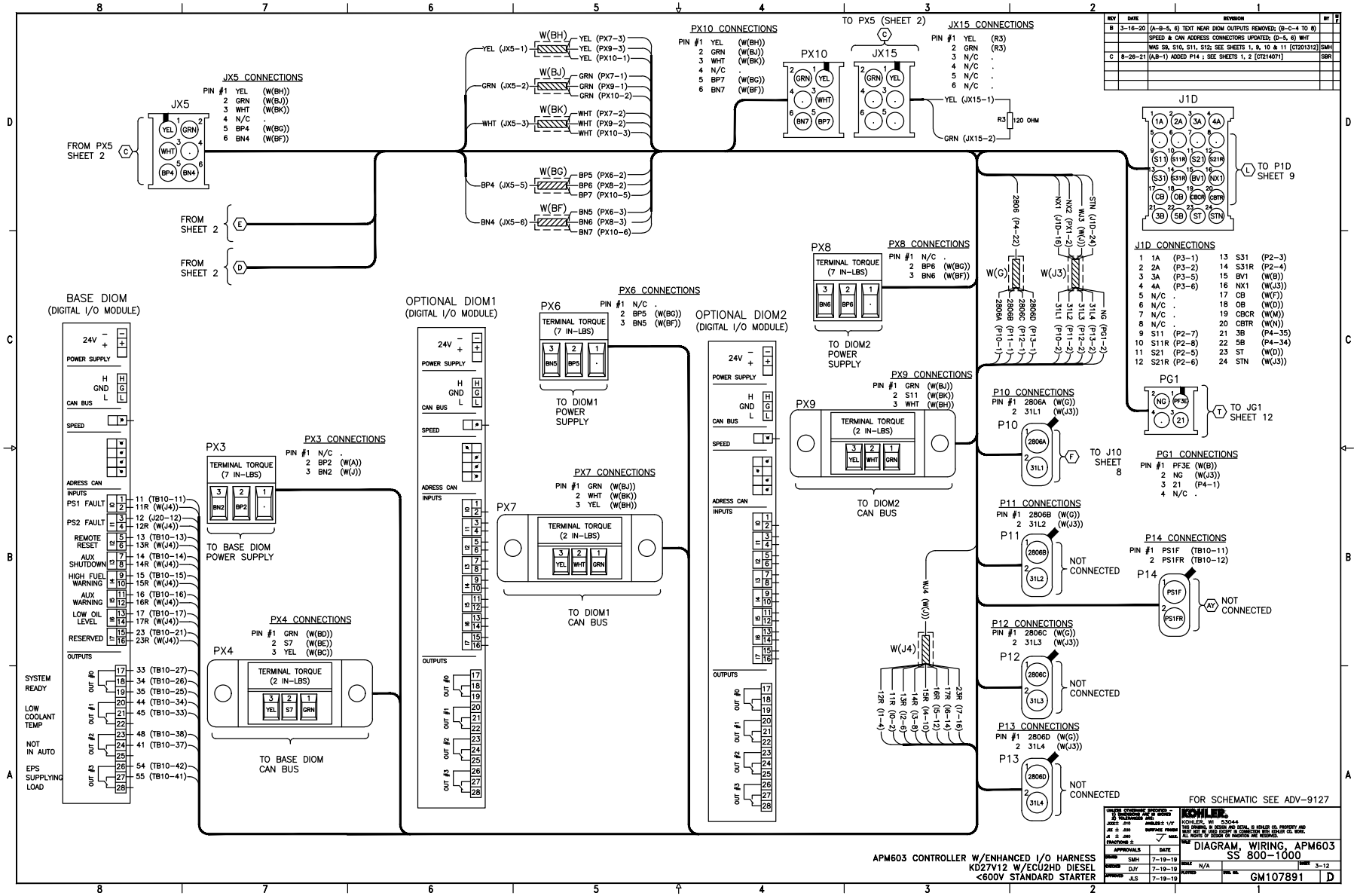
APPROVALS	DATE
DRAWN DJY	7-19-19
CHECKED JLS	7-19-19
APPROVED JLS	7-19-19

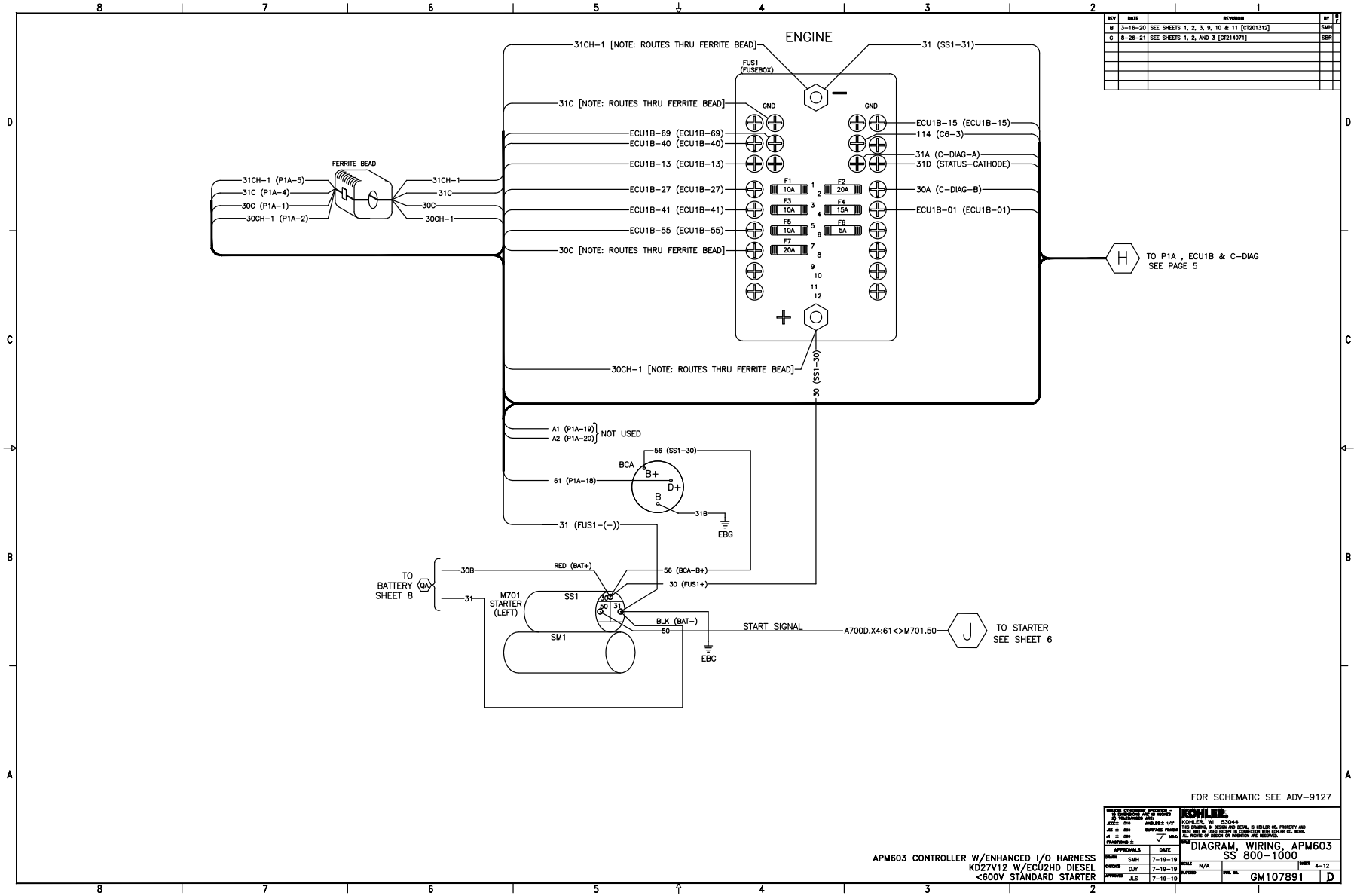
KOHLER.
KOHLER, WI 53044

TITLE: DIAGRAM,SCHEMATIC,APM603 SS, 800–1000
SCALE: NONE
SHEET 12–12
DWG. NO. ADV–9127
REV D


P4 CONNECTIONS
P3 CONNECTIONS
P2 CONNECTIONS
P1 CONNECTIONS
APM603 CONTROLLER
ETHERNET
P5
PK1 CONNECTIONS
PK1
JK1
KEY SWITCH
W(AF)
ETHERNET MODULE
ESTOP (LOCAL)
HORN
TO SHEET 2
LEGEND
BCA – BATTERY CHARGING ALTERNATOR
CT# – CURRENT TRANSFORMER #
ECU – ENGINE CONTROL UNIT
ESS – EMERGENCY STOP SWITCH
D# – DIODE #
GFR – GROUND FAULT RELAY
HMI – HUMAN MACHINE INTERFACE
K# – RELAY CONTACT #
R# – RESISTOR #
SM – STARTER MOTOR
SS – STARTER SOLENOID
TB# – TERMINAL BLOCK #
– ENGINE BLOCK GROUND
– EARTH GROUND
* NOTE: ADDITIONAL RUN CONTACT RESERVED FOR CUSTOMER USE
10 RELAY BOARD D-294303-P
TB1
TB2
W(C)
W(BB)
HRN (P1-9)
70N (P1-10)
P21
P21 CONNECTIONS
PB1
PB1 CONNECTIONS
TO JB1 BUS VOLTAGE SENSE SHEET 10 OR 11
F1 15A
F2 10A
F3 10A
K10
W(H)
PF2B (F2)
PF2 (K10-03)
PF2A (K10-13)
FOR SCHEMATIC SEE ADV-9127
APM603 CONTROLLER W/ENHANCED I/O HARNESS
KD27V12 W/ECU2HD DIESEL
<600V STANDARD STARTER
KOHLER
DIAGRAM, WIRING, APM603
SS 800-1000
GM107891
D


FROM SHEET 1
** REMOVE JP1 JUMPER, IF REMOTE EMERGENCY STOP IS CONNECTED
GROUND STRAP
SHIELD WIRE RECOMMENDED
REMOTE START
SHLD
SELF-GROUNDING BLOCK
SPARE RESISTIVE INPUT
+24 VDC
-24 VDC
CUSTOMER REMOTE BREAKER CONNECTIONS
PARALLELING GENERATOR MODBUS
TX1
TB10
CUSTOMER CONNECTION
OPTIONAL REMOTE ESTOP
IDLE SWITCH
RSA
OVERSPEED TEST
POWER SUPPLY
REMOTE RESET
AUX SHUTDOWN
HIGH FUEL
AUX WARNING
LOW OIL LEVEL
RESERVED
COMMON FAULT
SYSTEM READY
COMMON WARNING
HORN
LOW COOLANT TEMP WARNING
NOT IN AUTO
RUNNING GENERATOR
EPS SUPPLY LOAD
LOW FUEL LEVEL SWITCH
VOLTAGE INPUTS
RESERVED
TO SHEET 3
W(L)
W(K)
W(J5)
W(J2)
W(M)
W(N)
W(A)
W(BE)
W(BD)
W(BC)
W(AP)
W(AM)
W(B)
PX1
JX1
PX1 CONNECTIONS
JX1 CONNECTIONS
J-C10
J-C10 CONNECTIONS
PX5
PX5 CONNECTIONS
TO JX5 SHEET 3
J20
J20 CONNECTIONS
NOT CONNECTED
FOR SCHEMATIC SEE ADV-9127
APM603 CONTROLLER W/ENHANCED I/O HARNESS
KD27V12 W/ECU2HD DIESEL
<600V STANDARD STARTER
DIAGRAM, WIRING, APM603
SS 800-1000
GM107891
D


JX5 CONNECTIONS
PIN #1 YEL (W(BH))
2 GRN (W(BJ))
3 WHT (W(BK))
4 N/C .
5 BP4 (W(BG))
6 BN4 (W(BF))
JX5
FROM PX5 SHEET 2
FROM SHEET 2
FROM SHEET 2
W(BH) YEL (PX7-3) YEL (PX9-3) YEL (PX10-1)
W(BJ) GRN (PX7-1) GRN (PX9-1) GRN (PX10-2)
W(BK) WHT (PX7-2) WHT (PX9-2) WHT (PX10-3)
W(BG) BP5 (PX6-2) BP6 (PX8-2) BP7 (PX10-5)
W(BF) BN5 (PX6-3) BN6 (PX8-3) BN7 (PX10-6)
YEL (JX5-1)
GRN (JX5-2)
WHT (JX5-3)
BP4 (JX5-5)
BN4 (JX5-6)
PX10 CONNECTIONS
PIN #1 YEL (W(BH))
2 GRN (W(BJ))
3 WHT (W(BK))
4 N/C .
5 BP7 (W(BG))
6 BN7 (W(BF))
PX10
TO PX5 (SHEET 2)
JX15
JX15 CONNECTIONS
PIN #1 YEL (R3)
2 GRN (R3)
3 N/C .
4 N/C .
5 N/C .
6 N/C .
YEL (JX15-1)
GRN (JX15-2)
R3 120 OHM
REV DATE REVISION BY
B 3-16-20 (A-8-5, 6) TEXT NEAR DIOM OUTPUTS REMOVED; (B-C-4 TO 8) SPEED & CAN ADDRESS CONNECTORS UPDATED; (D-5, 6) WHT WAS S9, S10, S11, S12; SEE SHEETS 1, 9, 10 & 11 [CT201312] SMH
C 8-26-21 (A,B-1) ADDED P14 ; SEE SHEETS 1, 2 [CT214071] SBR
J1D
TO P1D SHEET 9
J1D CONNECTIONS
1 1A (P3-1)
2 2A (P3-2)
3 3A (P3-5)
4 4A (P3-6)
5 N/C .
6 N/C .
7 N/C .
8 N/C .
9 S11 (P2-7)
10 S11R (P2-8)
11 S21 (P2-5)
12 S21R (P2-6)
13 S31 (P2-3)
14 S31R (P2-4)
15 BV1 (W(B))
16 NX1 (W(J3))
17 CB (W(F))
18 OB (W(D))
19 CBCR (W(M))
20 CBTR (W(N))
21 3B (P4-35)
22 5B (P4-34)
23 ST (W(D))
24 STN (W(J3))
2806 (P4-22)
NX1 (J1D-16)
NX2 (PX1-2)
W(J3) (W(J))
STN (J1D-24)
W(G)
W(J3)
2806A (P10-1)
2806B (P11-1)
2806C (P12-1)
2806D (P13-1)
31L1 (P10-2)
31L2 (P11-2)
31L3 (P12-2)
31L4 (P13-2)
NG (PG1-2)
PG1
TO JG1 SHEET 12
PG1 CONNECTIONS
PIN #1 PF3E (W(B))
2 NG (W(J3))
3 21 (P4-1)
4 N/C .
P10 CONNECTIONS
PIN #1 2806A (W(G))
2 31L1 (W(J3))
P10
TO J10 SHEET 8
P11 CONNECTIONS
PIN #1 2806B (W(G))
2 31L2 (W(J3))
P11
NOT CONNECTED
P14 CONNECTIONS
PIN #1 PS1F (TB10-11)
2 PS1FR (TB10-12)
P14
NOT CONNECTED
P12 CONNECTIONS
PIN #1 2806C (W(G))
2 31L3 (W(J3))
P12
NOT CONNECTED
P13 CONNECTIONS
PIN #1 2806D (W(G))
2 31L4 (W(J3))
P13
NOT CONNECTED
PX8
TERMINAL TORQUE (7 IN-LBS)
PX8 CONNECTIONS
PIN #1 N/C .
2 BP6 (W(BG))
3 BN6 (W(BF))
TO DIOM2 POWER SUPPLY
PX9
TERMINAL TORQUE (2 IN-LBS)
PX9 CONNECTIONS
PIN #1 GRN (W(BJ))
2 S11 (W(BK))
3 WHT (W(BH))
TO DIOM2 CAN BUS
W(J4)
W4 (W(J))
12R (11-4)
11R (10-2)
13R (12-6)
14R (13-8)
15R (14-10)
16R (15-12)
17R (16-14)
23R (7-16)
BASE DIOM
(DIGITAL I/O MODULE)
24V
POWER SUPPLY
H GND L
CAN BUS
SPEED
ADRESS CAN
INPUTS
PS1 FAULT 11 (TB10-11) 11R (W(J4))
PS2 FAULT 12 (J20-12) 12R (W(J4))
REMOTE RESET 13 (TB10-13) 13R (W(J4))
AUX SHUTDOWN 14 (TB10-14) 14R (W(J4))
HIGH FUEL WARNING 15 (TB10-15) 15R (W(J4))
AUX WARNING 16 (TB10-16) 16R (W(J4))
LOW OIL LEVEL 17 (TB10-17) 17R (W(J4))
RESERVED 23 (TB10-21) 23R (W(J4))
OUTPUTS
SYSTEM READY 33 (TB10-27)
LOW COOLANT TEMP 34 (TB10-26) 35 (TB10-25)
NOT IN AUTO 44 (TB10-34) 45 (TB10-33)
EPS SUPPLYING LOAD 48 (TB10-38) 41 (TB10-37) 54 (TB10-42) 55 (TB10-41)
PX3
TERMINAL TORQUE (7 IN-LBS)
PX3 CONNECTIONS
PIN #1 N/C .
2 BP2 (W(A))
3 BN2 (W(J))
TO BASE DIOM POWER SUPPLY
PX4
TERMINAL TORQUE (2 IN-LBS)
PX4 CONNECTIONS
PIN #1 GRN (W(BD))
2 S7 (W(BE))
3 YEL (W(BC))
TO BASE DIOM CAN BUS
OPTIONAL DIOM1
(DIGITAL I/O MODULE)
PX6
TERMINAL TORQUE (7 IN-LBS)
PX6 CONNECTIONS
PIN #1 N/C .
2 BP5 (W(BG))
3 BN5 (W(BF))
TO DIOM1 POWER SUPPLY
PX7
TERMINAL TORQUE (2 IN-LBS)
PX7 CONNECTIONS
PIN #1 GRN (W(BJ))
2 WHT (W(BK))
3 YEL (W(BH))
TO DIOM1 CAN BUS
OPTIONAL DIOM2
(DIGITAL I/O MODULE)
FOR SCHEMATIC SEE ADV-9127
APM603 CONTROLLER W/ENHANCED I/O HARNESS
KD27V12 W/ECU2HD DIESEL
<600V STANDARD STARTER
KOHLER
DIAGRAM, WIRING, APM603
SS 800-1000
GM107891 D



REV	DATE	REVISION	BY	CK
B	3-16-20	SEE SHEETS 1, 2, 3, 9, 10 & 11 [CT201312]	SMH	
C	8-26-21	SEE SHEETS 1, 2, AND 3 [CT214071]	SBR	

FOR SCHEMATIC SEE ADV-9127

APM603 CONTROLLER W/ENHANCED I/O HARNESS
KD27V12 W/ECU2HD DIESEL
<600V STANDARD STARTER

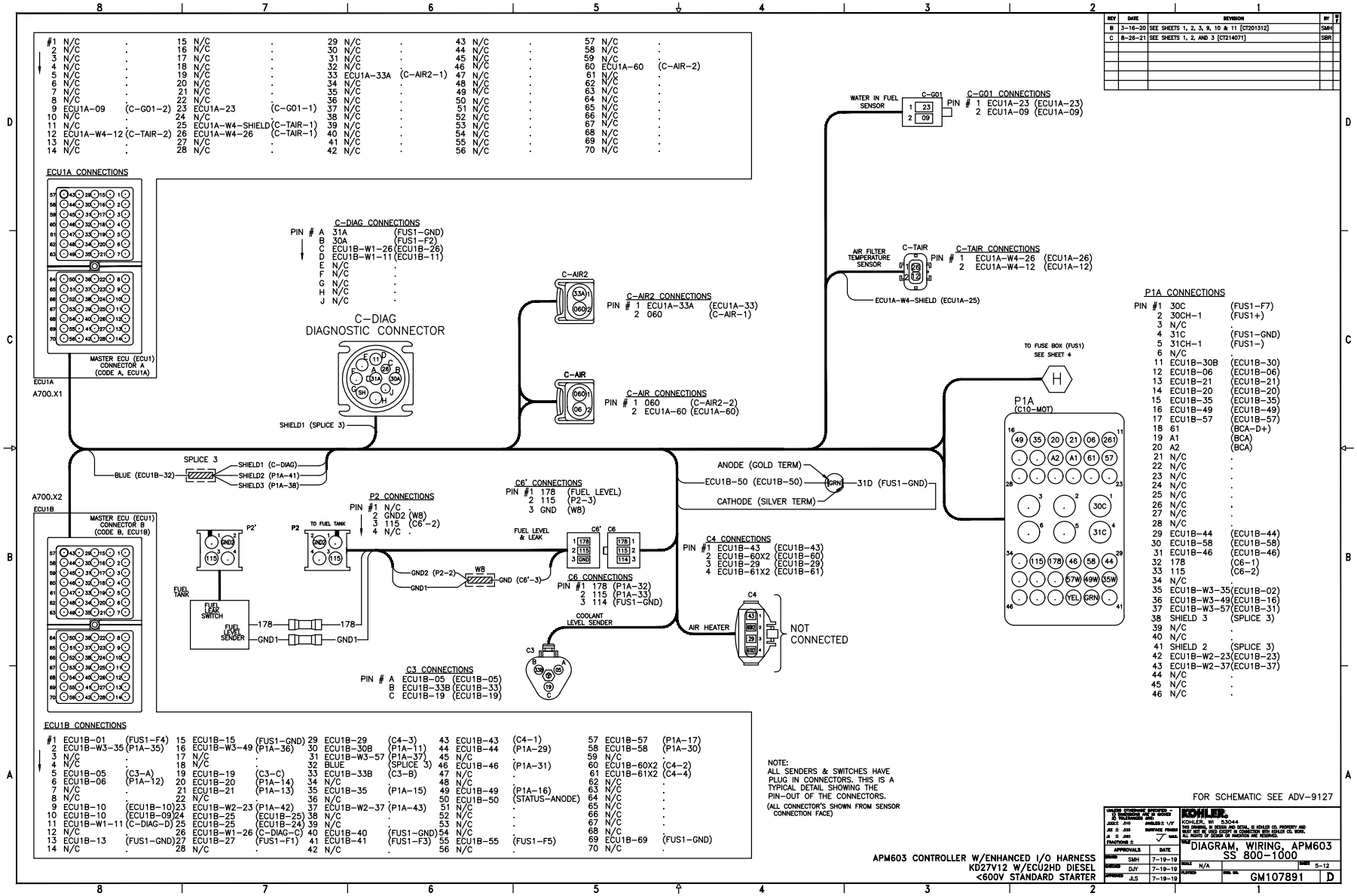
KOHLER CO.
KOHLER, WI 53044

APPROVALS	DATE
DRAWN SMH	7-19-19
CHECKED DJY	7-19-19
APPROVED JLS	7-19-19

DIAGRAM, WIRING, APM603
SS 800-1000

SCALE N/A | SHEET 4-12

REVISED | DWG. NO. GM107891 | D



REV	DATE	REVISION	BY
B	3-16-20	SEE SHEETS 1, 2, 3, 9, 10 & 11 [CT201312]	SMH
C	8-26-21	SEE SHEETS 1, 2, AND 3 [CT214071]	SBR

NOTE:
ALL SENDERS & SWITCHES HAVE PLUG IN CONNECTORS. THIS IS A TYPICAL DETAIL SHOWING THE PIN-OUT OF THE CONNECTORS.
(ALL CONNECTOR'S SHOWN FROM SENSOR CONNECTION FACE)

FOR SCHEMATIC SEE ADV-9127

APM603 CONTROLLER W/ENHANCED I/O HARNESS
KD27V12 W/ECU2HD DIESEL
<600V STANDARD STARTER

KOHLER.
KOHLER, WI 53044

APPROVALS	DATE
SMH	7-19-19
DJY	7-19-19
JLS	7-19-19

DIAGRAM, WIRING, APM603
SS 800-1000

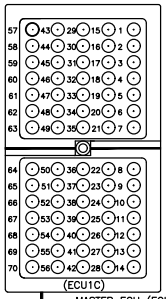
SCALE N/A | SHEET 5-12

DWG NO. GM107891 | D

REV	DATE	REVISION	BY
B	3-16-20	SEE SHEETS 1, 2, 3, 9, 10 & 11 [CT201312]	SMH
C	8-26-21	SEE SHEETS 1, 2, AND 3 [CT214071]	SBR

A700C.X3 CONNECTIONS

PIN															
#1	N/C	15	N/C	29	N/C	43	N/C	57	N/C
2	N/C	16	N/C	30	N/C	44	N/C	58	N/C
3	N/C	17	A700C.X3:17<>B701.X2	31	N/C	45	A700C.X3:45<>B701.X3	59	A700C.X3:59<>B701.X1
4	N/C	18	A700C.X3:18<>B715.X1	32	A700C.X3:32<>B715.X4	46	A700C.X3:46<>B715.X3	60	A700C.X3:60<>B702.X1
5	N/C	19	A700C.X3:19<>B702.X2	33	A700C.X3:33<>B702.X3	47	N/C	61	N/C
6	N/C	20	N/C	34	A700C.X3:34<>B704.X2	48	A700C.X3:48<>B704.X1	62	A700C.X3:62<>B704.X3
7	A700C.X3:07<>Y703.X2	21	A700C.X3:21<>Y703.X1	35	A700C.X3:35<>B705.X2	49	A700C.X3:49<>B705.X1	63	A700C.X3:63<>B705.X3
8	A700C.X3:08<>Y707.X2	22	A700C.X3:22<>Y707.X1	36	N/C	50	N/C	64	N/C
9	A700C.X3:09<>Y705.X2	23	N/C	37	N/C	51	N/C	65	A700C.X3:65<>B715.X2
10	A700C.X3:10<>Y705.X1	24	N/C	38	A700C.X3:38<>B708.X1	52	A700C.X3:52<>B709.X1	66	A700C.X3:66<>B709.X2
11	N/C	25	N/C	39	N/C	53	N/C	67	A700C.X3:67<>B708.X2
12	N/C	26	N/C	40	N/C	54	N/C	68	N/C
13	N/C	27	N/C	41	N/C	55	N/C	69	N/C
14	N/C	28	N/C	42	N/C	56	N/C	70	N/C

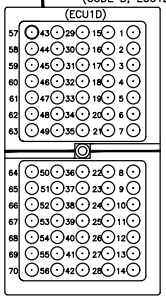


MASTER ECU (ECU1)
CONNECTOR C
(CODE C, ECU1C)

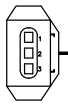
A700.X3

A700.X4

MASTER ECU (ECU1)
CONNECTOR D
(CODE D, ECU1D)



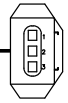
B705.X



B705.X CONNECTIONS
PIN#1 A700C.X3:49<>B705.X1
2 A700C.X3:35<>B705.X2
3 A700C.X3:63<>B705.X3

RAIL PRESSURE SENSOR 2

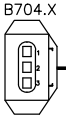
B701.X



OIL PRESSURE SENSOR

B701.X CONNECTIONS
PIN#1 A700C.X3:59<>B701.X1
2 A700C.X3:17<>B701.X2
3 A700C.X3:45<>B701.X3

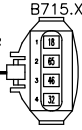
B704.X



B704.X CONNECTIONS
PIN#1 A700C.X3:48<>B704.X1
2 A700C.X3:34<>B704.X2
3 A700C.X3:62<>B704.X3

RAIL PRESSURE SENSOR 1

B715.X



CHARGING AIR TEMP/PRESS SENSOR

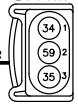
B715.X CONNECTIONS
PIN#1 A700C.X3:18<>B715.X1
2 A700C.X3:65<>B715.X2
3 A700C.X3:46<>B715.X3
4 A700C.X3:32<>B715.X4

Y704.X

Y704.X CONNECTIONS
PIN #1 A700D.X4:49<>Y704.X1
2 A700D.X4:48<>Y704.X2

HP PUMP PUMP 2 PCV

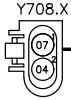
B711.X



SPEED SENSOR

B711.X CONNECTIONS
PIN #1 A700D.X4:34<>B711.X1
2 A700D.X4:59<>B711.X2
3 A700D.X4:35<>B711.X3

Y708.X



Y708.X CONNECTIONS
PIN #1 A700D.X4:07<>Y708.X1
2 A700D.X4:04<>Y708.X2

HP PUMP PUMP 2 PCV

B751.X

OIL TEMPERATURE SENSOR

B751.X CONNECTIONS
PIN #1 A700D.X4:29<>B751.X1
2 A700D.X4:30<>B751.X2

A700D.X4 CONNECTIONS

PIN															
#1	N/C	15	N/C	29	A700D.X4:29<>B751.X1	43	N/C	57	A700D.X4:57<>B713.X2
2	N/C	16	N/C	30	A700D.X4:30<>B751.X2	44	N/C	58	N/C
3	N/C	17	N/C	31	N/C	45	N/C	59	A700D.X4:59<>B711.X2
4	A700D.X4:04<>Y708.X2	18	N/C	32	N/C	46	N/C	60	N/C
5	N/C	19	N/C	33	N/C	47	A700D.X4:47<>B713.X1	61	A700D.X4:61<>M701.50
6	N/C	20	N/C	34	A700D.X4:34<>B711.X1	48	A700D.X4:48<>Y704.X2	62	A700D.X4:62<>B713.X3
7	A700D.X4:07<>Y708.X1	21	N/C	35	A700D.X4:35<>B711.X3	49	A700D.X4:49<>Y704.X1	63	N/C
8	N/C	22	N/C	36	N/C	50	N/C	64	N/C
9	A700D.X4:09<>Y734.X2	23	A700D.X4:23<>Y739.X2	37	N/C	51	A700D.X4:51<>Y735.X2	65	A700D.X4:65<>Y738.X2
10	A700D.X4:10<>Y736.X2	24	A700D.X4:24<>Y737.X2	38	N/C	52	A700D.X4:52<>Y733.X2	66	A700D.X4:66<>Y740.X2
11	A700D.X4:11<>Y732.X2	25	A700D.X4:25<>Y741.X2	39	N/C	53	A700D.X4:53<>Y731.X2	67	A700D.X4:67<>Y742.X2
12	A700D.X4:12<>Y739.X1	26	A700D.X4:26<>Y734.X1	40	N/C	54	A700D.X4:54<>Y738.X1	68	A700D.X4:68<>Y735.X1
13	A700D.X4:13<>Y737.X1	27	A700D.X4:27<>Y736.X1	41	N/C	55	A700D.X4:55<>Y740.X1	69	A700D.X4:69<>Y733.X1
14	A700D.X4:14<>Y741.X1	28	A700D.X4:28<>Y732.X1	42	N/C	56	A700D.X4:56<>Y742.X1	70	A700D.X4:70<>Y731.X1

HP PUMP PUMP 1 VCV

Y703.X

Y703.X CONNECTIONS
PIN #1 A700C.X3:21<>Y703.X1
2 A700C.X3:07<>Y703.X2

HP PUMP PUMP 1 PCV

Y707.X

Y707.X CONNECTIONS
PIN #1 A700C.X3:22<>Y707.X1
2 A700C.X3:08<>Y707.X2

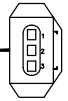
WASTE-GATE CONTROL VALVE

Y705.X

Y705.X CONNECTIONS
PIN #1 A700C.X3:10<>Y705.X1
2 A700C.X3:09<>Y705.X2

FUEL PRESSURE SENSOR

B702.X



B702.X CONNECTIONS
PIN #1 A700C.X3:60<>B702.X1
2 A700C.X3:19<>B702.X2
3 A700C.X3:33<>B702.X3

COOLANT TEMPERATURE SENSOR

B708.X

B708.X CONNECTIONS
PIN #1 A700C.X3:38<>B708.X1
2 A700C.X3:67<>B708.X2

N

TO CYLINDER INJECTORS SEE SHEET 7

FUEL TEMPERATURE SENSOR

B709.X

B709.X CONNECTIONS
PIN #1 A700C.X3:52<>B709.X1
2 A700C.X3:66<>B709.X2

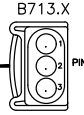
A700D.X4:61<>M701.50

J

TO STARTER SEE SHEET 4

PHASE SENSOR

B713.X



B713.X CONNECTIONS
PIN #1 A700D.X4:47<>B713.X1
2 A700D.X4:57<>B713.X2
3 A700D.X4:62<>B713.X3

FOR SCHEMATIC SEE ADV-9127

APM603 CONTROLLER W/ENHANCED I/O HARNESS
KD27V12 W/ECU2HD DIESEL
<600V STANDARD STARTER

UNLESS OTHERWISE SPECIFIED - DIMENSIONS ARE IN INCHES TOLERANCES ARE: .XXX± .010 .XX± .020 .X ± .060 FRACTIONS ± ANGLES± 1/2° SURFACE FINISH MAX.

APPROVALS	DATE
DRAWN SMH	7-19-19
CHECKED DJY	7-19-19
APPROVED JLS	7-19-19

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KOHLER, WI 53044

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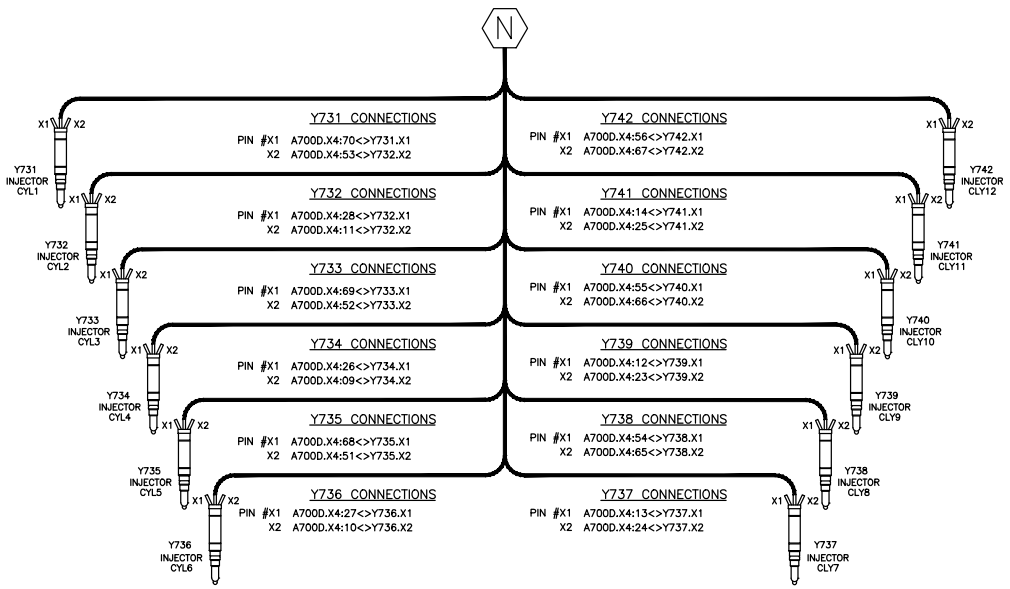
TITLE DIAGRAM, WIRING, APM603 SS 800-1000

SCALE N/A SHEET 6-12

PLOTTED SHEET NO. GM107891 D

REV	DATE	REVISION	BY	VP
B	3-16-20	SEE SHEETS 1, 2, 3, 9, 10 & 11 [CT201312]	SMH	
C	8-26-21	SEE SHEETS 1, 2, AND 3 [CT214071]	SBR	

FROM ECU1D, CONNECTOR D
SEE SHEET 6



FOR SCHEMATIC SEE ADV-9127

APM603 CONTROLLER W/ENHANCED I/O HARNESS
KD27V12 W/ECU2HD DIESEL
<600V STANDARD STARTER

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

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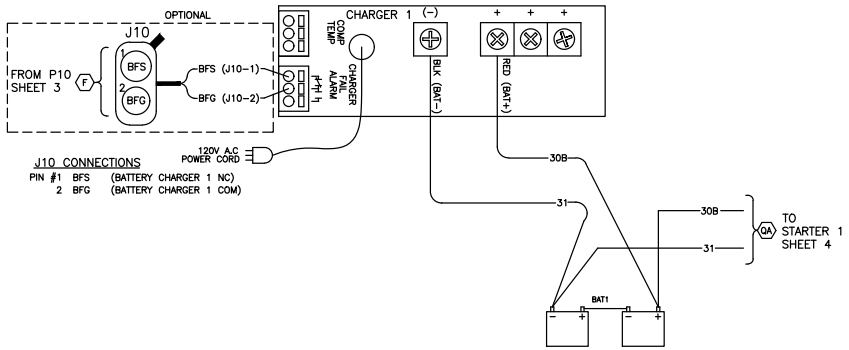
APPROVALS	DATE
DRAWN SMH	7-19-19
CHECKED DJY	7-19-19
APPROVED JLS	7-19-19

TITLE DIAGRAM, WIRING, APM603 SS 800-1000
SCALE N/A SHEET 7-12
PLOTTED DWG. NO. GM107891 D

REV	DATE	REVISION	BY	APP'D
B	3-16-20	SEE SHEETS 1, 3, 9, 10 & 11 [CT201312]	SMH	
C	8-26-21	SEE SHEETS 1, 2, AND 3 [CT214071]	SBR	



FOR SCHEMATIC SEE ADV-9127

APM603 CONTROLLER W/ENHANCED I/O HARNESS
KD27V12 W/ECU2HD DIESEL
<600V STANDARD STARTER

UNLESS OTHERWISE SPECIFIED - 1) DIMENSIONS ARE IN INCHES 2) TOLERANCES ARE: .XXX± .010 .XX± .020 .X ± .060 FRACTIONS ± ANGLES± 1/2° SURFACE FINISH MAX.

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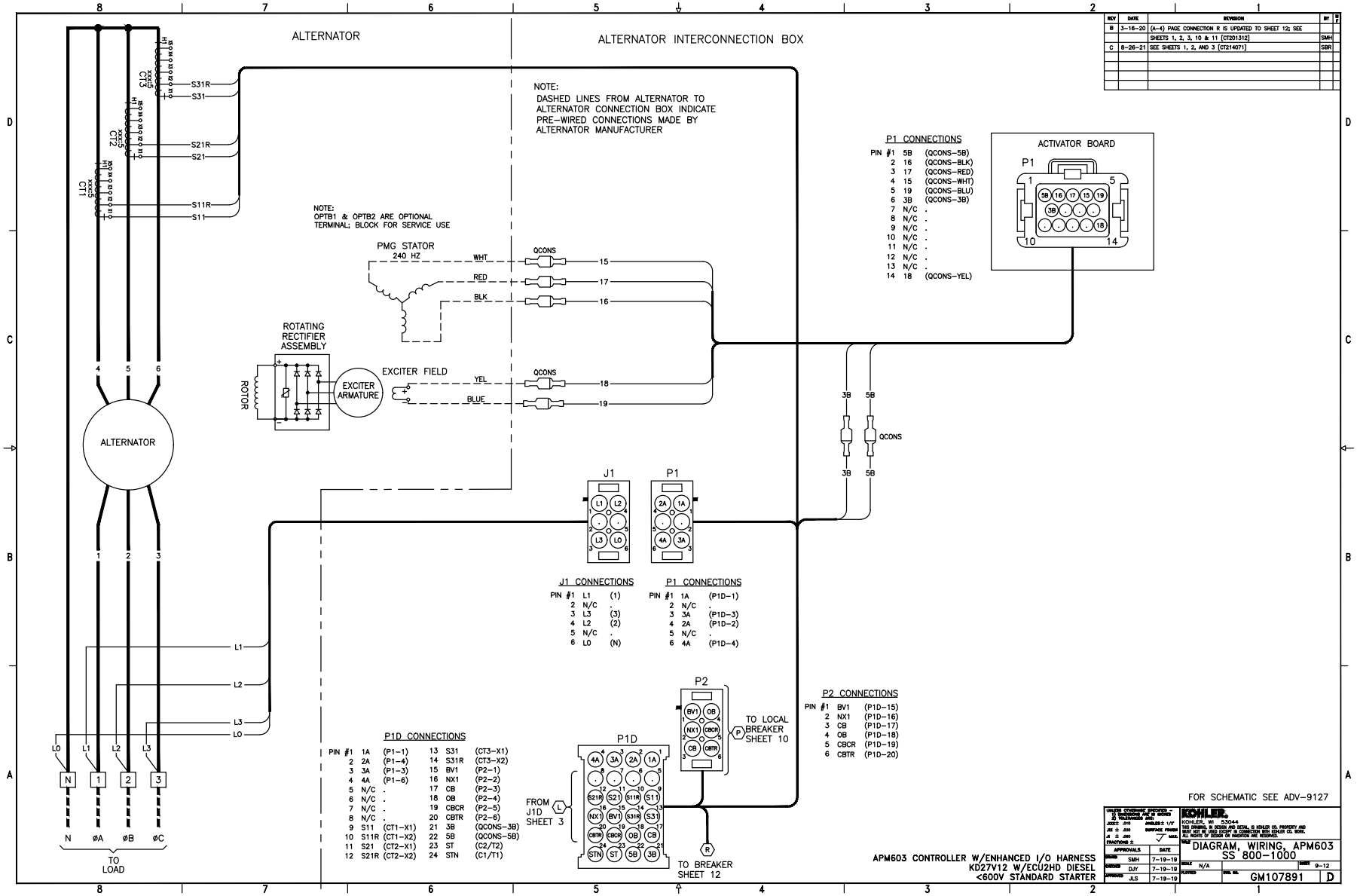
APPROVALS	DATE
DRAWN SMH	7-19-19
CHECKED DJY	7-19-19
APPROVED JLS	7-19-19

TITLE: DIAGRAM, WIRING, APM603 SS 800-1000

SCALE N/A | SHEET 8-12

PLOTTED | DWG. NO. GM107891 | D

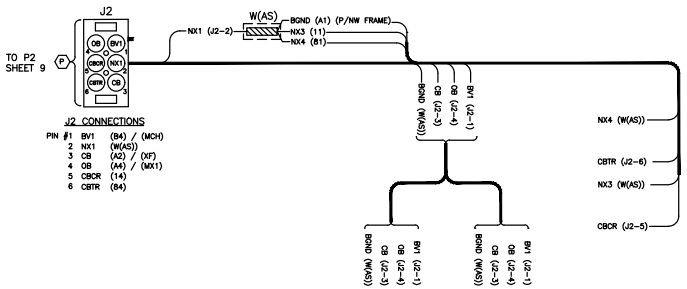


REV	DATE	REVISION	BY
B	3-16-20	(A-4) PAGE CONNECTION R IS UPDATED TO SHEET 12; SEE	
		SHEETS 1, 2, 3, 10 & 11 [CT201312]	SMH
C	8-26-21	SEE SHEETS 1, 2, AND 3 [CT214071]	SBR

APPROVALS	DATE
SMH	7-19-19
DJY	7-19-19
JLS	7-19-19

SCALE N/A
SHEET 9-12

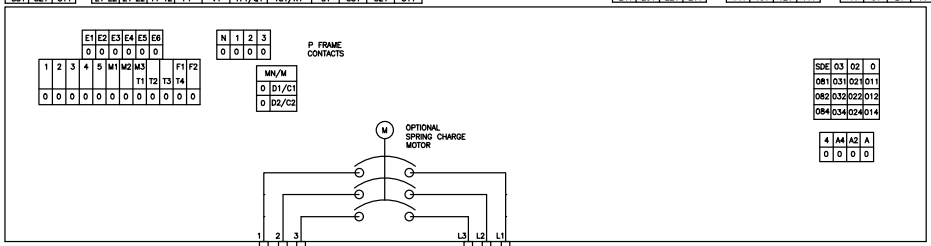
REV	DATE	REVISION	BY	CHK'D
B	3-16-20	(B-C-5, 6) REMOVED SHUNT TRIP CONNECTIONS & NW FRAME		
		CONNECTIONS UPDATED; SEE SHEETS 1, 2, 3, 9 & 11 [CT201312]	SMH	
C	8-26-21	SEE SHEETS 1, 2, AND 3 [CT214071]	SBR	

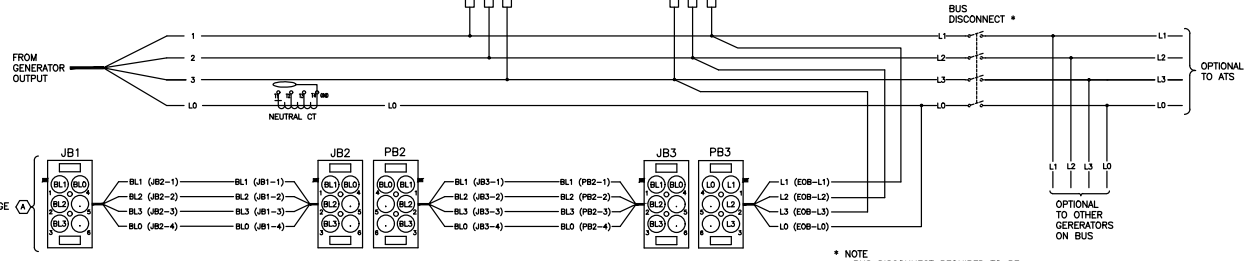


J2 CONNECTIONS

PIN #1	BV1	(B4) / (MCH)
2	NX1	(W(AS))
3	QB	(A2) / (XF)
4	QB	(A4) / (MX1)
5	CBCR	(14)
6	CBTR	(84)

CELL SWITCHES			TRIP UNIT								CELL SWITCHES			REMOTE OPERATION				AUXILIARY CONTACTS											
CD3	CD2	CD1	COM	UC1	UC2	UC3	UC4	M2C/MSC	SDE2/REC	SDE1	CE3	CE2	CE1	MN/MX2	MX1	MX1a	XF	XFa	OF24	OF23	OF22	OF21	OF14	OF13	OF12	OF11	OF4	OF3	OF2	OF1
834	824	814	E5	E6	Z6	M1	M2	M3	F2+	V3	484/G3	184/K2	B4	334	324	314	D2/C12	C2	C3	A2	A3	244	234	224	214	144	134	124	114	44	34	24	14
832	822	812	E3	E4	Z3	Z4	T3	T4	VN	V2	474/G3	182	B2	332	322	312	D1/C11	C1		A1		242	232	222	212	142	132	122	112	42	32	22	12
831	821	811	E1	E2	Z1	Z2	T1	T2	F1−	V1	471/Q1	181/K1	B1	331	321	311						241	231	221	211	141	131	121	111	41	31	21	11





JB1 CONNECTIONS

PIN #1	BL1	(JB2-1)
2	BL2	(JB2-2)
3	BL3	(JB2-3)
4	BL0	(JB2-4)
5	N/C	.
6	N/C	.

JB2 CONNECTIONS

PIN #1	BL1	(JB1-1)
2	BL2	(JB1-2)
3	BL3	(JB1-3)
4	BL0	(JB1-4)
5	N/C	.
6	N/C	.

PB2 CONNECTIONS

PIN #1	BL1	(JB3-1)
2	BL2	(JB3-2)
3	BL3	(JB3-3)
4	BL0	(JB3-4)
5	N/C	.
6	N/C	.

JB3 CONNECTIONS

PIN #1	BL1	(PB2-1)
2	BL2	(PB2-2)
3	BL3	(PB2-3)
4	BL0	(PB2-4)
5	N/C	.
6	N/C	.

PB3 CONNECTIONS

PIN #1	L1	(EOB-L1)
2	L2	(EOB-L2)
3	L3	(EOB-L3)
4	L0	(EOB-L0)
5	N/C	.
6	N/C	.

* NOTE
BUS DISCONNECT REQUIRED TO BE OPENED AND LOCKED OUT PRIOR TO MAINTENANCE ON THE GENERATOR

FOR SCHEMATIC SEE ADV-9127

LOCAL EOB BREAKER OPTION
APM603 CONTROLLER W/ENHANCED I/O HARNESS
KD27V12 W/ECU2HD DIESEL
<600V STANDARD STARTER

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

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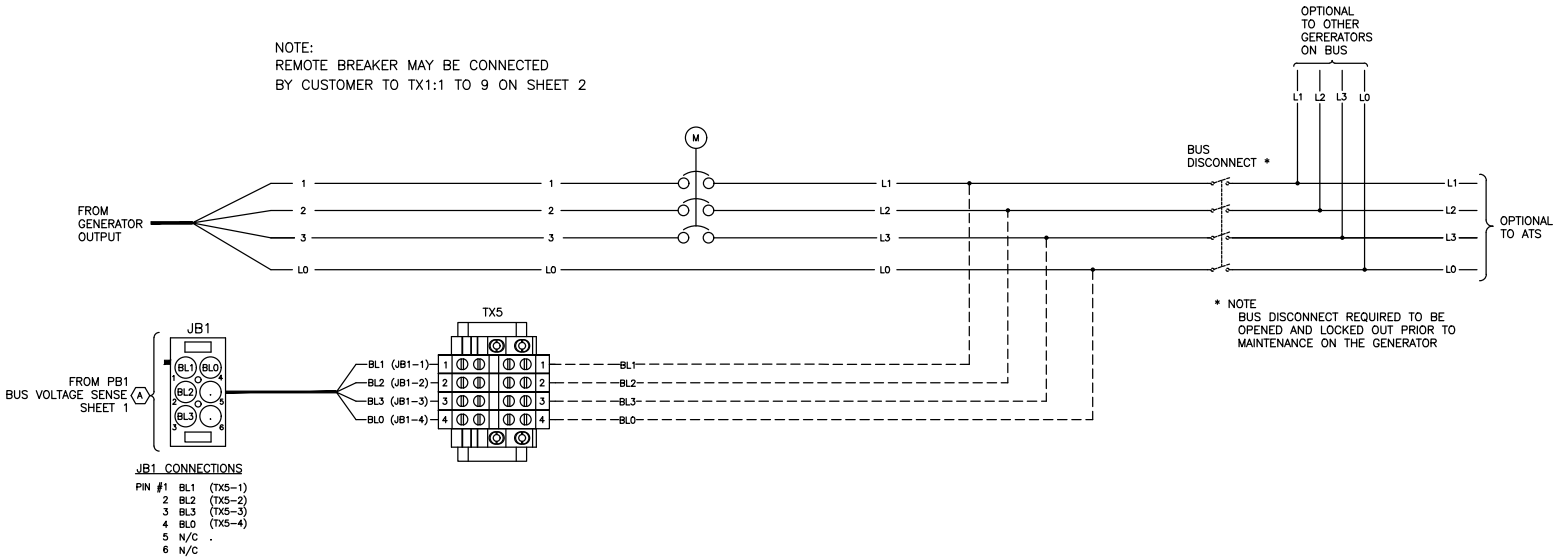
APPROVALS	DATE
DRAWN SMH	7-19-19
CHECKED DJY	7-19-19
APPROVED JLS	7-19-19

TITLE: DIAGRAM, WIRING, APM603 SS 800-1000
SCALE: N/A
SHEET: 10-12
PLOTTED
DWG. NO. GM107891 | D

REV	DATE	REVISION	BY	CK
B	3-16-20	(B-5) FUSES REMOVED FROM BL0, BL1, BL2, BL3; SEE SHEETS 1, 2, 3, 9 & 10 [CT201312]	SMH	
C	8-26-21	SEE SHEETS 1, 2, AND 3 [CT214071]	SBR	



FOR SCHEMATIC SEE ADV-9127

REMOTE BREAKER OPTION
APM603 CONTROLLER W/ENHANCED I/O HARNESS
KD27V12 W/ECU2HD DIESEL
<600V STANDARD STARTER

UNLESS OTHERWISE SPECIFIED - 1) DIMENSIONS ARE IN INCHES 2) TOLERANCES ARE: .XXX± .010 .XX± .020 ANGLES± 1/2° SURFACE FINISH 125 MAX. FRACTIONS ±

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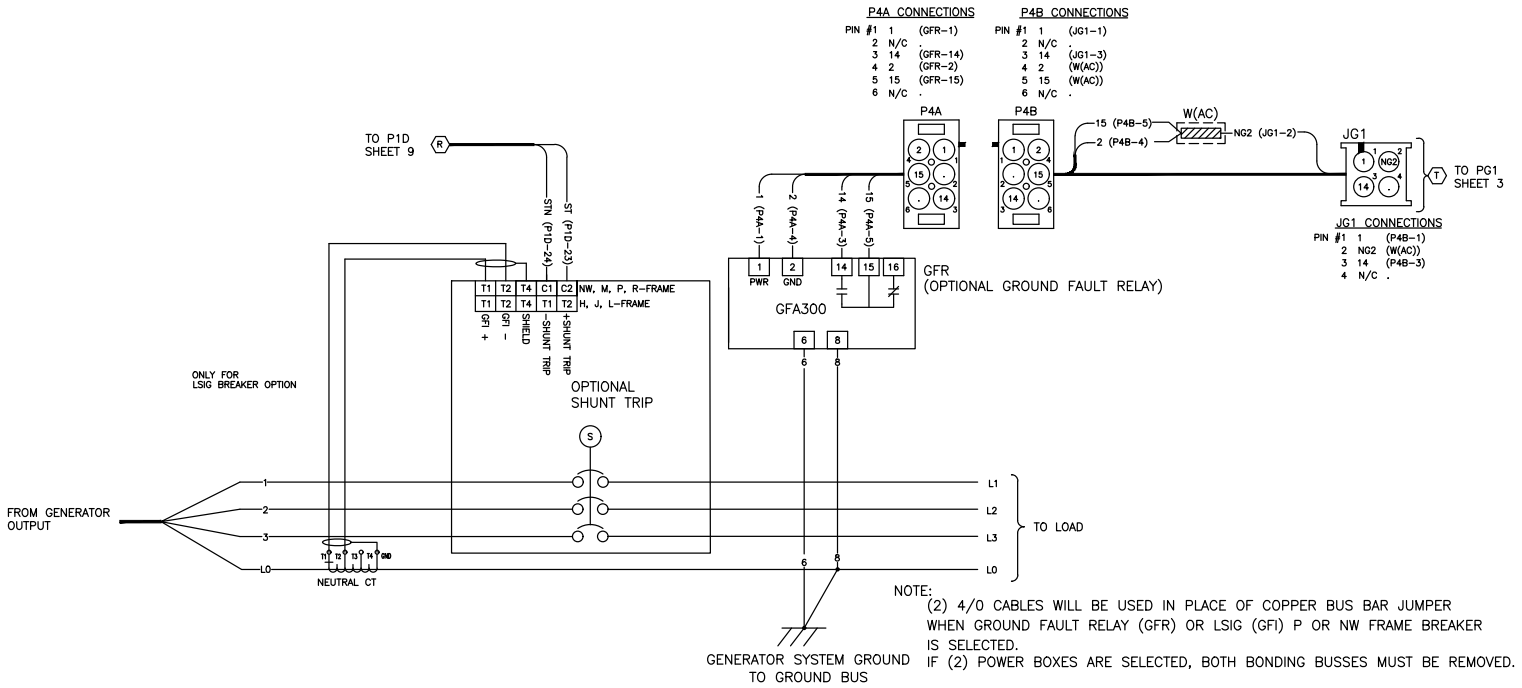
APPROVALS	DATE
DRAWN SMH	7-19-19
CHECKED DJY	7-19-19
APPROVED JLS	7-19-19

TITLE: DIAGRAM, WIRING, APM603
SS 800-1000

SCALE N/A | SHEET 11-12

PLOTTED | DWG. NO. GM107891 | D

REV	DATE	REVISION	BY
B	3-16-20	SEE SHEETS 1, 2, 3, 9, 10 & 11 [CT201312]	SMH
C	8-26-21	SEE SHEETS 1, 2, AND 3 [CT214071]	SBR



NOTE:
(2) 4/0 CABLES WILL BE USED IN PLACE OF COPPER BUS BAR JUMPER WHEN GROUND FAULT RELAY (GFR) OR LSIG (GFI) P OR NW FRAME BREAKER IS SELECTED.
IF (2) POWER BOXES ARE SELECTED, BOTH BONDING BUSSES MUST BE REMOVED.

FOR SCHEMATIC SEE ADV-9127

NON EOB BREAKER OPTION
APM603 CONTROLLER W/ENHANCED I/O HARNESS
KD27V12 W/ECU2HD DIESEL
<600V STANDARD STARTER

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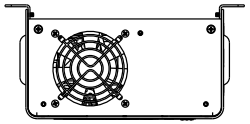
APPROVALS	DATE
DRAWN SMH	7-19-19
CHECKED DJY	7-19-19
APPROVED JLS	7-19-19

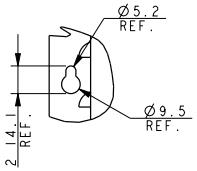
TITLE: DIAGRAM, WIRING, APM603 SS 800-1000
SCALE N/A
SHEET 12-12
PLOTTED
DWG. NO. GM107891 D

KOHLER®

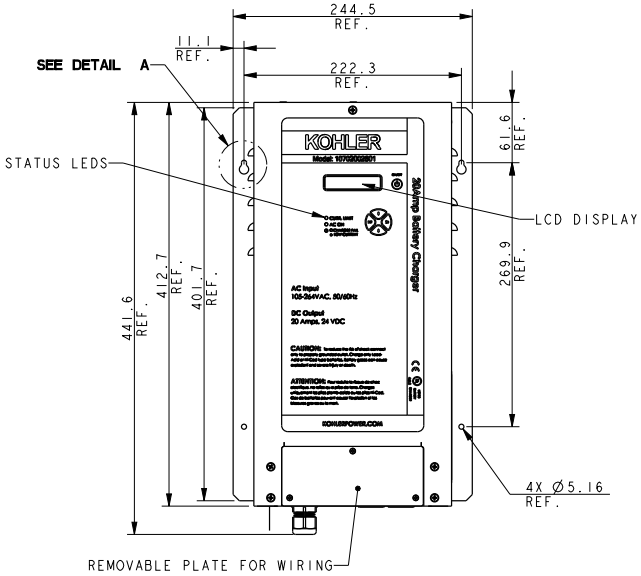
Miscellaneous

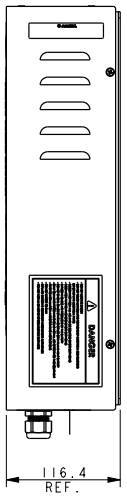
PART NO.	REV.	
10702002600	C	□
10702002601	-	□





DETAIL A
SCALE 0.800





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

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

NOTES:
LAMARCHE P/N: MSM-20-24V-UI
SEE SPECIFICATION SHEET FOR PURCHASED / INSTALLATION DATA

□ INDICATES PART NUMBERS AFFECTED BY LATEST DRAWING REVISION

REV	DATE	ON COMPOSITE DWGS, SEE PART NO. FOR REVISION LEVEL	BY
A	4-29-16	NEW DRAWING [CT145512]	BGW
B	4-20-17	(B-5) 269.88 REF WAS 286.56 REF [CT173600]	BGW
C	3-13-18	(D-8) 10702002600 VOIDED; 10702002601 ADDED	
		[CT186805]	SSS

KD27V12
KD45V20
KD36V16
KD62V12
KD83V16
KD103V20

DO NOT SCALE, REFERENCE THE MODEL FOR ALL UNSPECIFIED DIMENSIONS

UNLESS OTHERWISE SPECIFIED:
ALL DIMENSIONS IN MILLIMETERS
GENERAL TOLERANCES:
X.XX ± 0.25
X.X ± 1.0
X ± 1.3
ANGLES ± 0°30'
SURFACE FINISH 125 MAX.
THIRD-ANGLE PROJECTION

APPROVALS		DATE
DRAWN	BGW	4-25-18
CHECKED	DJV	4-25-18
APPROVED	JDZ	4-25-18

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KOHLER, WISCONSIN 53044

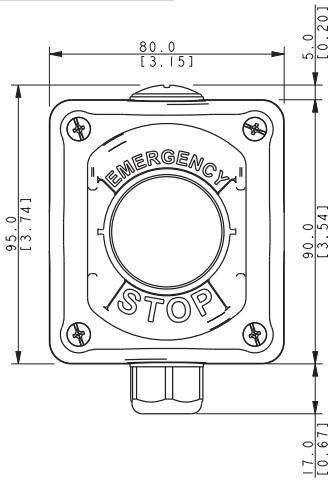
TITLE: DWG, BATTERY CHARGER 24V

SCALE 0.40 | CAD NO. | SHEET 1 of 1

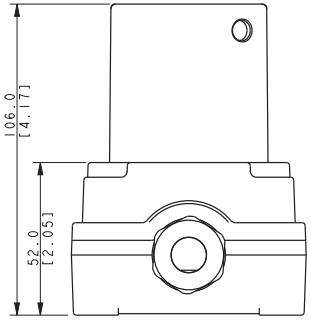
DWG NO. 107020026XX | D

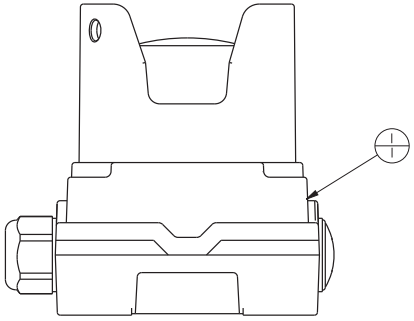
KIT NO.	ITEM	PART NO	QTY	DESCRIPTION
GM103743				E-STOP, NEC REMOTE
	1	GM103743-1	1	E-STOP W/ YELLOW SHROUD, LOTO
	2	GM103743-2	4	#10 X 1.25□ Sheetmetal Screw
	3	GM103743-3	1	TERMINAL, FAST-ON, MALE, 18-22 AWG
	4	GM103743-4	1	TERMINAL, FAST-ON, FEMALE, 18-22 AWG
	5	GM103743-5	2	TERMINAL, SPADE, 22-16 AWG
	6	GM103743-6	1	LITERATURE, TT-1736

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



SCALE 1.50





NOTE:

DIMENSIONS IN [ ] ARE IN INCH EQUIVALENTS.

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

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

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

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

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

TITLE: E-STOP, NEC REMOTE

SCALE 1.50 | CAD NO. | SHEET 1 of 1

DWG NO. GM103743 | D

KOHLER®

Warranty

Stationary Standby Industrial Generator Set Three-Year or One Thousand (1000)-Hour Limited Warranty for KD Model Generator Sets

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	**Warranty Coverage**
Stationary Standby Generator Set & Accessories	Three (3) years from registered startup or one thousand (1000) hours* (whichever occurs first). In any event, the warranty period will expire not later than fifty-four (54) months from the date of shipment from Kohler Co.'s factory. If the unit is not registered within 18 months from the factory ship date the warranty will start from the date of shipment from Kohler Co.'s factory. * Unlimited hours are allowed for standby applications within the U.S.

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-7048 2/17c

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Certification

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CERTIFICATE OF COMPLIANCE
SEISMIC DESIGN OF NONSTRUCTURAL COMPONENTS AND SYSTEMS

Certification No.

VMA-50771-01C (Revision 9)

Expiration Date: 12/31/2025

Certification Parameters:

The nonstructural products (mechanical and/or electrical components) listed on this certificate are CERTIFIED[1] FOR SEISMIC APPLICATIONS in accordance with the following building code[2] releases.

IBC 2018, 2015, 2012, 2009

The following model designations, options, and accessories are included in this certification. Reference report number VMA-50771-01 as issued by The VMC Group for a complete list of certified models, included accessories/options, and certified installation methods.

Kohler; Diesel Gensets
KD Series; 610kW - 4000kW

The above referenced equipment is **APPROVED** for seismic application when properly installed[3], used as intended, and contains a Seismic Certification Label referencing this Certificate of Compliance[4]. As limited by the tabulated values, below grade, grade, and roof-level installations, installations in essential facilities, for life safety applications, and/or of equipment containing hazardous contents are permitted and included in this certification with an Equipment Importance Factor assigned as I_p=1.5. The equipment is qualified by successful seismic shake table testing at the nationally recognized CERL (US Army Corp. of Engineers) Laboratory and University of California Berkeley Pacific Earthquake Engineering Research Center under the witness of the ISO Accredited Product Certification Agency, the VMC Group.

Certified Seismic Design Levels			
Certified **IBC**	**Importance $I_p \leq 1.5$** Soil Classes A-E Risk Categories I-IV Design Categories A-F	z/h ≤ 1.0	z/h = 0.0
		$S_{DS} \leq 0.667$ g	$S_{DS} \leq 2.000$ g

Certified Seismic Installation Methods[8]	
Rigid Mounting From Unit Base To Rigid Structure	External Isolation Mounting From Unit Base To Rigid Structure
Rigid Mounting From Unit Base To Fuel Tank	External Isolation Mounting From Unit Base To Fuel Tank

HEADQUARTERS
113 Main Street
Bloomingdale, NJ 07403
Phone: 973.838.1780
Toll Free: 800.569.8423
Fax: 973.492.8430

CALIFORNIA
180 Promenade Circle
Suite 300
Sacramento, CA 95834
Phone: 916.634.7771

TEXAS
11930 Brittmoore Park Drive
Houston, TX 77041
Phone: 713.466.0003
Fax: 713.466.1355

thevmcgroup.com

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CERTIFICATE OF COMPLIANCE

SEISMIC DESIGN OF NONSTRUCTURAL COMPONENTS AND SYSTEMS

Certified Product Table:

Model	Max Rating [kW]	Configuration	Max Length [in.]	Max Width [in.]	Max Heigh [in.]	Open Genset Max Weight [lbs.]	Enclosed Genset On Tank Max Weight [lbs.]	Mounting Configurations
KD610	610	Open or Enclosed, On or Off Tank	404	120	180	11,505	67,575	Rigid/Isolated
KD700	700					12,345	68,415	
KD750	750					12,875	68,945	
KD800	800		360	103	171.879	16,440	74,052	
KD900	900		435	103	172	17,131	77,928	
KD1000	1000					17,821	78,618	
KD1250	1250		439	119	180.895	30,191	104,120	
KD1250-A					189			
KD1350	1350							
	1500							
KD1600	1600							
KD1750	1750							
KD2000	2000		536	137	207	53,000	107,396	
KD2250	2250							
KD2500	2500					59,598	121,295	
KD2800 - KD3250	2800	Open	301	125	136	69,240	N/A	Isolated
KD3500- KD4000	4000		321	125	136	77,631		

*Note: All models are certified in the Standard and Remote Radiator Configuration
**Note: Remote Radiator Configuration does not allow for the use of Tanks & Enclosures

Group	Type	S_{DS} (z/h=0)	S_{DS} (z/h=1)	A_{Flex-H}	A_{Rig-H}	A_{Flex-V}	A_{Rig-V}	F_p/W_p
All Models not using Level 2 Enclousre PN# 114010263XX	AC156	2.000	0.670	2.000	0.800	1.330	0.530	2.000
All Models using Level 2 Enclousre PN# 114010263XX		1.520	0.510	1.520	0.610	1.020	0.410	1.520

This certification also includes the sub-base tank as a stand-alone accessory. The generator set and included options shall be a catalogue design and factory supplied. The generator set and applicable options shall be installed and attached to the building structure per the manufacturer supplied seismic installation instructions. This certification excludes all non-factory supplied accessories, including but not limited to mufflers, isolation/restraint devices, remote control panels, remote radiators, pumps and other electrical/mechanical components.

IBC CERTIFIED
VMC GROUP

VMA-50771-01C (Revision 9)
Issue Date: Thursday, December 29, 2016
Revision Date: Monday, May 8, 2023
Expiration Date: Wednesday, December 31, 2025

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CERTIFICATE OF COMPLIANCE

SEISMIC DESIGN OF NONSTRUCTURAL COMPONENTS AND SYSTEMS

Notes & Comments:

1. All equipment listed herein successfully passed the seismic acceptance criteria for shake testing non-structural components and systems as set forth in the ICC AC-156. The Test Response Spectrum (TRS) enveloped the Required Response Spectrum (RRS) for all units tested. The tested units were representative sample(s) of a contingent of models and all remained captive and structurally sound after the seismic shake simulation. The units also remained functionally operational after the simulation testing as functional testing was completed by the equipment manufacturer before and after the seismic simulations. Although a seismic qualified unit inherently contains some wind resisting capacity, that capacity is undetermined and is excluded from this certification. Snow/Ice loads have been neglected and thus limit the unit to be installed both indoors (covered by an independent protective structure) and out of doors (exposed to accumulating snow/ice) for ground snow loads no greater than 30 psf for all applications.

2. The following building codes are addressed under this certification:
   IBC 2018 referencing ASCE7-16 and ICC-ES AC-156
   IBC 2015 referencing ASCE7-10 and ICC-ES AC-156
   IBC 2012 referencing ASCE7-10 and ICC-ES AC-156
   IBC 2009 referencing ASCE7-05 and ICC-ES AC-156

3. Refer to the manufacturer supplied installation drawings for anchor requirements and mounting considerations for seismic applications. Required anchor locations, size, style, and load capacities (tension and shear) may be specified on the installation drawings or specified by a 3rd party. Mounting requirement details such as anchor brand, type, embedment depth, edge spacing, anchor-to-anchor spacing, concrete strength, special inspection, wall design, and attachment to non-building structures must be outlined and approved by the Engineer of Record for the project or building. Structural walls, structural floors, and housekeeping pads must also be seismically designed and approved by the project or building Structural Engineer of Record to withstand the seismic anchor loads as defined on the installation drawings. The installing contractor is responsible for ensuring the proper installation of all anchors and mounting hardware.

4. For this certificate and certification to remain valid, this certificate must correspond to the "Seismic Certification Label" found affixed to the unit by the factory. The label ensures the manufacturer built the unit in conformance to the IBC seismic design criteria set forth by the Certified Seismic Qualification Agency, the VMC Group, and meets the seismic design levels claimed by this certificate.

5. Mechanical, Electrical, and Plumbing connections to the equipment must be flexibly attached as to not transfer load through the connection. The structural integrity of any conduit, cable trays, piping, ductwork and/or flexible connections is the responsibility of others. This certification makes no statements of compliance in regards to NEMA, IP, UL, CSA, or other relevant standards after a seismic event. For compliance to other relevant standards, please contact the manufacturer.

6. This certificate applies to units manufactured at:
   Kohler, N7650 Lakeshore Road, Sheboygan, WI 53083
   Kohler SDMO, 270 Rue de Kerervern Guipavas France 29490

7. This certification follows the VMC Group's ISO-17065 Scheme.

8. The certified seismic installation methods states are a summary for all series this certificate covers, for more detailed information on the certified seismic installation methods, see the certified product tables.

John P. Giuliano, PE
President, VMC Group

IAS ACCREDITED Product Certification Agency

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IBC® CERTIFIED VMC GROUP

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
Effective Date: 2021-11-07
Latest Revision Date: 2021-10-29
Expiry Date: 2024-11-06

...making excellence a habit.™

Certificate No: **FM 727336**

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

Original Registration Date: 1995-02-28

Latest Revision Date: 2021-10-29

Effective Date: 2021-11-07

Expiry Date: 2024-11-06

PROTOTYPE TEST REPORT

KOHLER

Models Covered: **KD800, KD900, KD1000**
Model Tested: **KD1000**
Cooling System Tested: **50C**
Alternator Tested: **KH04070TO4D**
Engine Tested: **KD27V12**
Voltage Tested: **480V**

GENSET

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

Meets Rated Load

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

± 0.25 % Frequency Band
± 0.25 % Voltage Deviation

Transient load tests per NEMA MG1-32.18, and ISO 8528 to verify specifications of transient voltage regulation, voltage dip, voltage overshoot, recovery voltage, and recovery time. Values shown for model tested above. Please contact factory for additional details.

Full Load Acceptance	Full Load Rejection
37.7 % Voltage Dip	**14.3** % Voltage Overshoot
4.34 Seconds of Recovery Time	**1.80** Seconds of Recovery Time
15.4 % Frequency Dip	**9.30** % Frequency Overshoot
3.41 Seconds of Recovery Time	**2.29** Seconds of Recovery Time

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

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

Complies with NFPA 110 Type 10

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

Complies

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

Complies

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

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

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

PROTOTYPE TEST REPORT

Models Covered: **KD800, KD900, KD1000**
Model Tested: **KD1000**
Cooling System Tested: **50C**

Alternator Tested: **KH04070TO4D**
Engine Tested: **KD27V12**
Voltage Tested: **480V**

ALTERNATOR

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

Alternator overload test per NEMA MG1-32.8. Motor starting tests per NEMA MG1-32.18.5 to evaluate capabilities of generator, exciter, and regulator system.

Three-phase symmetrical short-circuit test per NEMA MG1-32.13 to demonstrate short circuit performance, mechanical integrity, ability to sustain short-circuit current.

Harmonic analysis, voltage waveform deviation per NEMA MG1-32.10 to confirm that the generator set is producing clean voltage within acceptable limits.

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

Kohler Standby/Prime Generator Set Test Program

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

Prototype Testing

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

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

Production Testing

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

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

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

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

KOHLER®

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

G18-56 12/05b