CITY OF OBERLIN, OH

ORDINANCE No. 22-01 AC CMS

AN ORDINANCE DETERMINING THAT A REAL AND PRESENT EMERGENCY EXISTS IN THE OBERLIN POLICE DEPARTMENT AND AUTHORIZING THE CITY MANAGER TO ENTER INTO A CONTRACT WITH ZENITH SYSTEMS OF BEDFORD HEIGHTS, OHIO, FOR THE REPLACEMENT OF THE POLICE DEPARTMENT BACKUP GENERATOR AS AN EMERGENCY MEASURE.

WHEREAS, the Police Department backup generator failed in June of 2021; and

WHEREAS, this backup generator is essential to Police Department operations by ensuring that critical dispatching and City computer systems continue to function in the event of power outages; and

WHEREAS, it has been determined that this backup generator is obsolete based on its age and the availability of parts for repair; and

WHEREAS, it is necessary to expeditiously contract for the replacement of the generator, as the anticipated timeframe for the manufacture and installation of a new generator is forty-nine weeks; and

NOW THEREFORE, BE IT ORDAINED by the Council of the City of Oberlin, County of Lorain, State of Ohio:

SECTION 1. That under the provisions of Section 735.051 of the Ohio Revised Code it is hereby declared and determined that a real and present emergency exists in the Oberlin Police Department due to the failure of the backup generator requiring immediate authority for the City Manager to enter into an agreement without advertisement or competitive bidding for the removal, installation and building modifications related to the replacement of the police department backup generator.

SECTION 2. That the City Manager is authorized and directed to enter into a contract with Zenith Systems of Broadview Heights, Ohio, for the removal, installation and building modifications related to the replacement of the Police Department backup generator in an amount not to exceed $75,000.

SECTION 3. It is hereby found and determined that all formal actions of this Council concerning or relating to the adoption of this ordinance were adopted in an open meeting of this Council, and that all deliberations of this Council and of any of its committees that resulted in such formal action, were in meetings open to the public in compliance with all legal requirements, including Section 121.22 of the Ohio Revised Code.

SECTION 4. That this Ordinance is hereby declared to be an emergency measure necessary for the immediate preservation of the public peace, health and safety of the citizens of the City of Oberlin, to wit: to facilitate the replacement of the Police Department emergency backup generator in an expedient manner and provided that it is elevated to emergency status by the affirmative vote

of at least five (5) members of council and receives the affirmative vote of at least five (5) members of council upon final passage, it shall go into full force and effect from and immediately after its passage; otherwise, it shall take effect on the earliest date allowed by law.

PASSED:

1st Reading: January 18, 2022

2nd Reading: _____

3rd Reading: _____

ATTEST:

BELINDA B. ANDERSON, MMC
CLERK OF COUNCIL

HEATHER ADELMAN
PRESIDENT OF COUNCIL

POSTED: 01/19/2022

EFFECTIVE DATE: 01/18/2022

POLICE GENERATOR CONTRACT

ZENITH SYSTEMS

ORDINANCE NO. 22-01 AC CMS

Oberlin Police Station, Generator Replacement.docx

Oberlin PS Gen Install Sketch.bmp

FINAL-SUBMITTAL OPERLIN PD.pdf

11/10/21

OMLPS

Attention: Doug McMillan

Project: Oberlin Police Station, Generator Replacement

Notes:

- Per previous scope clarification email:

OMLPS:

- Purchase and Set Generator
- Remove transformers and enclosures
- ~~Remove existing generator?~~
- Remove all fuel related items….monitoring system, fuel, fuel lines both inside and outside, storage tank.
- Keep temporary generator on site until new generator tested and turned over.

Zenith:

- Permit and sketch to the city and Remove existing generator
- Wire and conduit for secondary conductors. Possibly tap onto existing exterior feeders if available.
- Run controls, block heater and battery charger conduit and wire from the existing ATS to the new outside generator.
- Cut and patch existing pad for new conduit to come in under the new generator enclosure.
- Remove, patch and paint louver openings.
- Remove exhaust piping and vents. Patch and paint holes in exterior wall.
- Remove misc electrical conduits and wire not required.

Provide communication cable to the dispatch control room and install remote annunciator.

- Existing generator concrete pad to remain inside the building.
- Due to commodities constantly rising Zenith can only hold pricing for 30 days.

Work Scope broken down between building and electrical…

Building:

1. Saw cut the existing concrete pad to receive the generator conduit that runs to the ATS. Cut to accommodate power and control conduits. Remove concrete spoils from site.
2. Hand dig from the generator pad to the building. Install red caution tape in ground and backfill with spoils.
3. Remove existing generator in pieces. Also remove exhaust and exhaust louver.
4. Remove two louver openings in walls. Infill wall openings to match existing. Exterior portion of wall to be infilled with Dryvit System.
5. Remove and patch remaining openings caused by vents, exhaust and fuel lines.
6. Remove abandoned unistrut and patch wall.
7. Match and paint both interior and exterior of the building. Match colors as close as possible.

BUILDING CONST. AND CONCRETE PAD PREP COSTS $ 22,160.00

ZENITH
SYSTEMS
Powered for Brilliance

ELECTRICAL:

1. Coordinate outages and removal of existing transformers.
2. Provide and install a new junction box, per sketch, on the existing utility conduits and then run (3) new conduits from the junction box to the utility pole.
3. Install (3) sets of conductors from the junction box to the utility pole and up the pole. Coordinate terminations with OMLPS to re-energize the building service.
4. Once OMLPS sets new generator Zenith is to install power and control conduits from the new generator to the building. Surface mount up the exterior of the building to enter into the building and run conduits to the existing ATS.
5. Pull all conductors needed for proper power and controls. Included but not limited to service conductors, control conductors, block heaters and battery charger. Service conductors to be sized per generator provided specs and documents.
6. Provide conduit and control wires from the existing ATS and new Generator to the remote annunciator to be located in the Dispatch Control Room. Annunciator to be provided with the new generator.
7. All existing and new openings in walls created by this work will be fire stopped and plugged properly. Any exterior penetrations will have proper “link seals” installed for water control.
8. Generator fuel fill will be provided and performed by OMLPS.
9. Generator startup, testing and training is to be a part of the new generators costs.

ELECTRICAL INSTALLATION COSTS $ 49,919.00

ZENITH
SYSTEMS
Powered for Brilliance

TOTAL PROJECT COSTS $ 72,079.00

Respectfully,

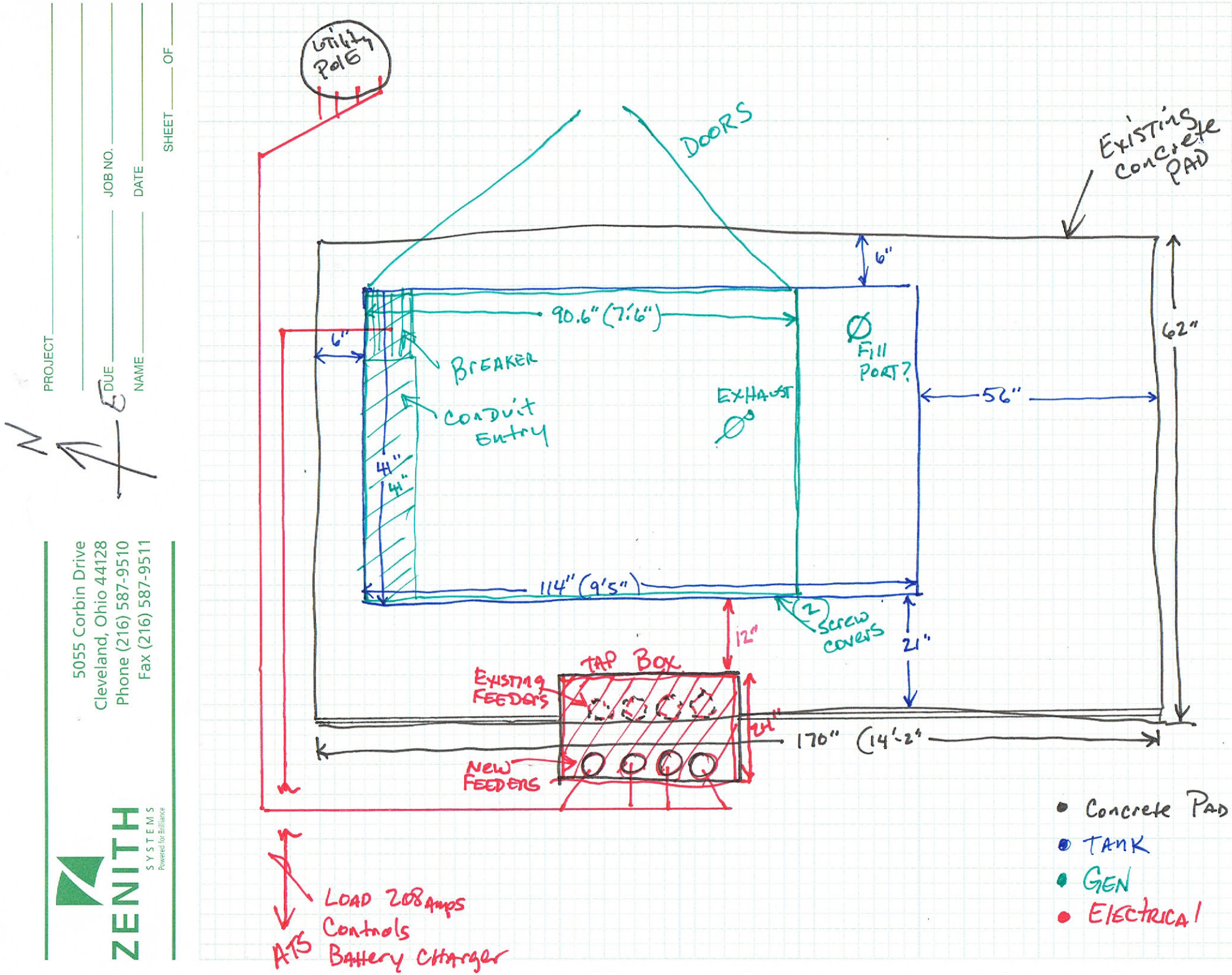
Jeff Bartolovich

PROJECT _____ JOB NO. _____ SHEET _____ OF _____

DUE _____ DATE _____

NAME _____

ZENITH SYSTEMS
Powered for Brilliance
5055 Corbin Drive
Cleveland, Ohio 44128
Phone (216) 587-9510
Fax (216) 587-9511



Buckeye Power Sales

Quality Equipment Solutions Since 1947

SUBMITTAL PACKAGE

Oberlin Police Dept

CONTRACTOR / INSTALLER:

Project Manager: John Sidol
Mobile: 330-715-5288
Email: jsidol@buckeyepowersales.com

Project Engineer:Gene Gentile
Mobile: 330-486-5134
Email: ggentile@buckeyepowersales.com

Sales Specialist: John Sidol
Mobile: 330-715-5288
Email: jsidol@buckeyepowersales.com

John Sidol

PROJECT MANAGER

330-715-5288
jsidol@buckeyepowersales.com
Twinsburg

Gene Gentile

PROJECT ENGINEER

330-486-5134
ggentile@buckeyepowersales.com
Twinsburg

- **Internal Project Setup**
- **Submittal Requests**
- **Release Equipment**
- **Vendor POC**
- **Track Shipping Schedules**
- **Coordinate Delivery**
- **Invoice Management**
- **Close Out Documents**

- **Buckeye Power Sales**
  Project Engineer
- **Buckeye Power Sales**
  Service Tech.

- **Submittal Follow Up**
- **Submittal Approvals**
- **On-Site Walk Thru**
- **Engineering Diagrams**
- **Oversee Equip. Installation**
- **Pre-Startup Inspections**
- **Startup Planning/Scheduling**
- **Commissioning Assistance**

BPS

KOHLER.
IN POWER. SINCE 1920.

Project Engineer

T

SUBMITTAL **Preparation**

Project Engineer

I

FOLLOW UP **on Submittal STATUS**

Project Manager

M

Once Submittal Approved RELEASE EQUIPMENT **for MANUFACTURING**

Kohler

E

Build EQUIPMENT

Project Manager

L

COORDINATE **site DELIVERY**

Project Engineer

I

Equipment INSTALLATION

Project Engineer

N

STARTUP

Project Manager

E

JOB CLOSE**OUT**

KOHLER®

Warranty

	Warranty	TP-5374
	Warranty	TP-5561

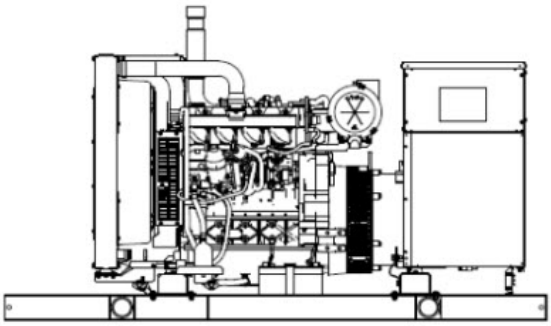
Certification

	ISO9001 Certificate	G15-152
	Prototype Test Summary	G18-482
	Prototype Test Certificate	G18-56

Pre-Startup Checklist

	Pre-Startup Checklist	PreStartUpCheckList

Generator



Kohler Model: 60REOZK

This diesel generator set equipped with a 4P10X alternator operating at 120/208 volts is rated for 60 kW/75 kVA. Output amperage: 208

Qty	Description
	60REOZK Generator System
1	60REOZK Generator Set

Includes the following:

Literature Languages	English
Approvals and Listings	UL2200 Listing
Engine	60REOZK, 12V, 60Hz, KDI3404TM
Nameplate Rating	Standby 130C Rise
Voltage	60Hz, 120/208V, Wye, 3Ph, 4W
Alternator	4P10X
Cooling System	Unit Mounted Radiator, 50C
Skid and Mounting	Skid/Tank
Air Intake	Heavy Duty
Controller	APM402
Enclosure Type	Sound
Enclosure Material	Steel
Enclosure Silencer	Internal Silencer
Fuel Tank Type	State
Fuel Runtime (Approx.)	24 Hours
Subbase Fuel Tank Capacity	142 Gallons

Fill Pipe/Spill Fill Options	5 Gal Spill Fill Containment
Fuel Tank Vent	Normal Vent, 12' Above Grade
High Fuel Switch	High Fuel Switch
Tank Marking Options	Combust Lqds - Keep Fire Away
Tank Marking Options	NFPA 704 Identification
Starting Aids, Installed	1000W,110-120V
Electrical Accy.,Installed	Battery, 1/12V, Wet
Electrical Accy.,Installed	Battery Charger, 10A
Electrical Accy.,Installed	Run Relay
Electrical Accy.,Installed	2 Input/5 OutputModule
Electrical Accy.,Installed	Governor, Electronic
Rating, LCB 1	100% Rated
Amps, LCB 1	225
Trip Type, LCB 1	Thermal Magnetic
Interrupt Rating LCB 1	18kA at 480V
Aux Trip, LCB 1	Shunt Trip
LCB Accy. Installed	Shunt Trip Wiring
Fuel Lines, Installed	Flexible Fuel Lines
Miscellaneous Accy,Installed	Air Cleaner Restriction Ind.
Miscellaneous Accy,Installed	Coolant in Genset
Miscellaneous Accy,Installed	Rodent Guards
Miscellaneous Accy,Installed	Oil in Genset
Warranty	5 Year Comprehensive
Testing, Additional	Power Factor Test,0.8,3Ph Only

1 NEC Remote, E-Stop
1 Lit Kit, General Maint., 60REOZK
1 RSA III, Annunciator only

Distributor Start-Up

- Start-up including - antifreeze, lube oil, battery, preparation (single visit during normal business hours). If a start-up needs to be done at a time other than normal business hours, then prior arrangements need to be made and overtime charges may apply.
- Fuel by others, including for testing.
- On Site Fuel Tank Pressure Testing As Required By The State of Ohio Fire Marshall included
- Warranty-five (5) year comprehensive

One spare set of oil, fuel and air filters, fuses and lamps as required.

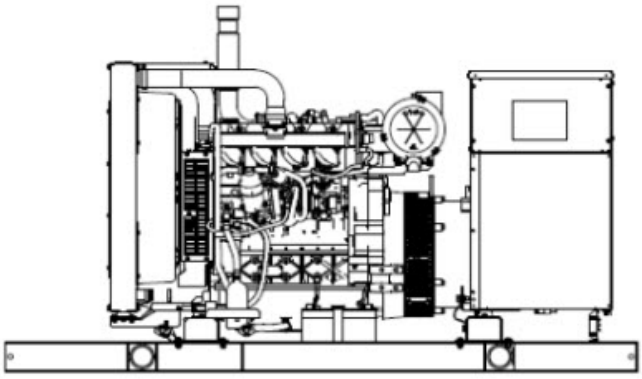
- Load bank test - two (2) performed during start-up
- Certified test reports - 0.8 pF

KOHLER®

Spec Sheets

KOHLER®

60REOZK
Diesel



Standard Features

- Kohler Co. provides one-source responsibility for the generating system and accessories.
- The generator set and its components are prototype-tested, factory-built, and production-tested.
- The 60 Hz generator set offers a 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.
- The generator set engine is certified to meet the Environmental Protection Agency (EPA) emergency stationary emissions requirements.
- Tier 3 EPA-Certified for Stationary Emergency Applications (Not for sale in California)
- A one-year limited warranty covers all generator set systems and components. Two-and five-year extended limited warranties are also available.
- Air Cleaner, Heavy Duty
- Alternator Protection
- Battery Rack and Cables
- Open Crankcase Ventilation

Alternator Features

- Oil Drain and Coolant Drain with Hose Barb
- Oil Drain Extension (with narrow skid and enclosures models only)
- Operation and Installation Literature
- Radiator Drain Extension (with enclosure models only)
- Stainless Steel Fasteners on Enclosure (with enclosure models only)
- The unique Fast-Response X excitation system delivers excellent voltage response and short-circuit capability using a rare-earth, permanent magnet (PM)-excited alternator

Other Features

- Kohler designed controllers for guaranteed system integration and remote communication. See Controller son page 3.
- The low coolant level shutdown prevents overheating (standard on radiator models only.)
- Integral vibration isolation eliminates the need for under-unit vibration spring isolators.

Generator Set Ratings

Standby 130C Rise Ratings

Alternator	Voltage	Ph	Hz	Peak kVA	kW/kVA	Amps
4P10X	120/208	3	60	205	60 / 75	208

RATINGS: All three-phase units are rated at 0.8 power factor. All single-phase units are rated at 1.0 power factor.
Standby Ratings: The standby rating is applicable to varying loads for the duration of a power outage. There is no overload capability for this rating.
Prime Power Ratings: At varying load, the number of generator set operating hours is unlimited.
A 10% overload capacity is available for one hour in twelve. Continuous Ratings: At constant or nonvarying load, the number of generator set operating hours is unlimited.
There is no overload capability for this rating. Ratings are in accordance with ISO-8528-1 and ISO-3046-1. For limited running time ratings, consult the factory.
Obtain technical information bulletin (TIB-101) for ratings guidelines, complete ratings definitions, and site condition derates.
The generator set manufacturer reserves the right to change the design or specifications without notice and without any obligation or liability whatsoever.

Model: 60REOZK, continued

Alternator Specifications

Specifications	Alternator
Alternator manufacturer	Kohler
Type	4-Pole, Rotating-Field
Exciter type	Brushless, Rare-Earth Permanent-Magnet
Leads, quantity	12, Reconnectable 4, 110-120/220-240
Voltage regulator	Solid State, Volts/Hz
Insulation	NEMA MG1
Insulation: Material	Class H
Insulation: Temperature Rise	130°C, 150°C Standby
Bearing: quantity, type	1, Sealed
Coupling	Flexible Disc
Amortisseur windings	Full
Voltage regulation, no-load to full-load RMS	Controller Dependent
One-Step Load Acceptance	100% of rating
Unbalanced load capability	100% of Rated Standby Current

- NEMA MG1, IEEE, and ANSI standards compliance for temperature rise and motor starting.
- Sustained short-circuit current of up to 300% of the rated current for up to 10 seconds.
- Sustained short-circuit current enabling downstream circuit breakers to trip without collapsing the alternator field.
- Self-ventilated and dripproof construction.
- Windings are vacuum-impregnated with epoxy varnish for dependability and long life.
- Superior voltage waveform from a two-thirds pitch stator and skewed rotor.

Engine

Engine Specification

Engine Manufacturer	Kohler Diesel
Engine Model	KDI 3404TM
Engine: type	4-Cycle, Turbocharged
Cylinder arrangement	4 Inline
Displacement, L (cu. in.)	3.4 (207)
Bore and stroke, mm (in.)	96 x 116 (3.28 x 4.57)
Compression ratio	18.5:1
Piston speed, m/min. (ft./min.)	418 (1371)
Main bearings: quantity, type	5, Replaceable Insert
Rated rpm	1800
Max. power at rated rpm, kWm (BHP)	70 (94)
Cylinder head material	Cast Iron
Valve (exhaust) material Intake	Chromium-Silicon Steel
Valve (exhaust) material	Chromium Steel
Governor: type, make/model	Stanadyne/Mechanical
Frequency regulation, no-load to-full load	Droop, 5% (or Isochronous)
Frequency regulation, steady state	±0.5%
Frequency	Fixed
Air cleaner type, all models	Dry

Model: 60REOZK, continued

Exhaust

Exhaust System

Exhaust Manifold Type	Dry
Exhaust flow at rated kW, m3/min. (cfm)	14.3 (505)
Exhaust temperature at rated kW, dry exhaust, °C (°F)	490 (914)
Maximum allowable back pressure, kPa (in. Hg)	6 (1.8)/9 (2.7)
Exh. outlet size at eng. hookup, mm (in.)	63.5 (2.5)

Engine Electrical

Engine Electrical System

Battery charging alternator: Ground (negative/positive)	Negative
Battery charging alternator: Volts (DC)	12
Battery charging alternator: Ampere rating	90
Starter motor rated voltage (DC)	12
Battery, recommended cold cranking amps (CCA): Qty., CCA rating each	One, 650
Battery voltage (DC)	12

Fuel

Fuel System

Fuel type	Diesel
Fuel supply line, min. ID, mm (in.)	8.0 (0.31)
Fuel return line, min. ID, mm (in.)	6.0 (0.25)
Max. lift, engine-driven fuel pump, m (ft.)	6.0 (20.0)
Max. fuel flow, Lph (gph)	46 (12.2)
Max. return line restriction, kPa (in. Hg)	20 (5.9)
Fuel Filter: Prefilter	74 Microns
Fuel Filter Water Separator	5 Microns @ 98% Efficiency
Recommended fuel	#2 Ultra Low Sulfur Diesel

Lubrication

Lubrication System

Type	Full Pressure
Oil pan capacity, L (qt.)	15.3 (16.2)
Oil pan capacity with filter, L (qt.)	15.6 (16.5)
Oil filter: quantity, type	1, Cartridge
Oil cooler	Water-Cooled

Model: 60REOZK, continued

Cooling

Radiator System

Ambient temperature, °C (°F)	50 (122)
Engine jacket water capacity, L (gal.)	4.5 (1.19)
Radiator system capacity, including engine, L (gal.)	12.3 (3.2)
Engine jacket water flow, Lpm (gpm)	125 (33)
Heat rejected to cooling water at rated kW, dry exhaust, kW (Btu/min.)	43 (2447)
Heat rejected to air charge cooler at rated kW, dry exhaust, kW (Btu/min.)	14.3 (814)
Water pump type	Centrifugal
Fan diameter, including blades, mm (in.)	597 (23.5)
Fan, kWm (HP)	1.8 (2.3)
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).

Operation Requirements

Air Requirements

Radiator-cooled cooling air, m3/min. (scfm) *	130 (4600)
Combustion air, m3/min. (cfm)	5.3 (187)
Heat rejected to ambient air: Engine, kW (Btu/min.)	15.5 (880)
Heat rejected to ambient air: Alternator, kW (Btu/min.)	8.9 (505)
Max. air intake restriction, kPa (in. Hg)	5.2 (1.54)

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

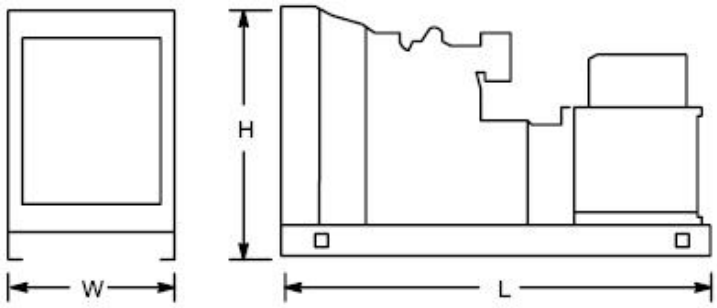
Fuel Consumption

Diesel, Lph (gph), at % load	Rating
Standby Fuel Consumption at 100% load	20.4 Lph (5.4 gph)
Standby Fuel Consumption at 75% load	16.3 Lph (4.3 gph)
Standby Fuel Consumption at 50% load	10.6 Lph (2.8 gph)
Standby Fuel Consumption at 25% load	6.0 Lph (1.6 gph)
Prime Fuel Consumption at 100% load	18.5 Lph (4.9 gph)
Prime Fuel Consumption at 75% load	14.4 Lph (3.8 gph)
Prime Fuel Consumption at 50% load	9.8 Lph (2.6 gph)
Prime Fuel Consumption at 25% load	5.8 Lph (1.5 gph)

Dimensions and Weights

Dim Weight Spec	Dim Weight Value
Overall Size, L x W x H, mm (in.): Wide Skid	2300 x 1040 x 1133 (90.6 x 41.0 x 44.6)
Overall Size, L x W x H, mm (in.): Narrow Skid	1875 x 780 x 1067 (73.8 x 30.7 x 42.0)
Weight (radiator model), wet, kg (lb.):	841 (1855)

Model: 60REOZK, continued



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

APM402

Kohler® APM402 Controller

General Description and Function

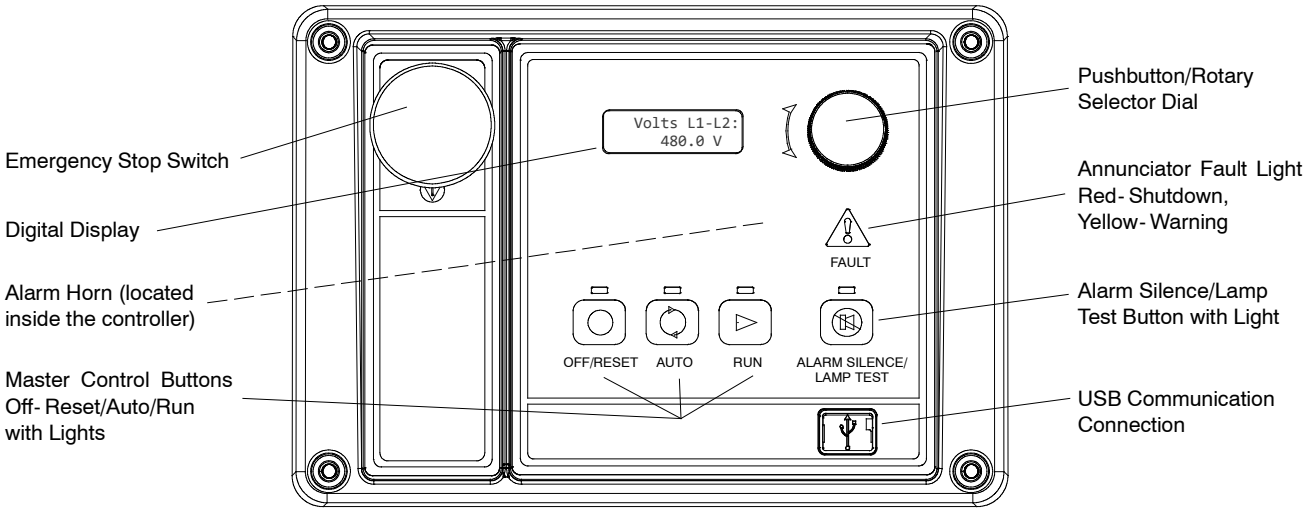
The APM402 generator set controller provides advanced control, system monitoring, and system diagnostics for optimum performance.

The APM402 controller meets NFPA 110, Level 1 when equipped with the necessary accessories and installed per NFPA standards.

The APM402 controller uses a patented hybrid voltage regulator and unique software logic to manage alternator thermal overload protection features normally requiring additional hardware. Additional features include:

- A digital display and pushbutton/rotary selector dial provide easy local access to data.
- Measurements selectable in metric or English units.
- The controller can communicate directly with a personal computer via a network or serial configuration using SiteTech™ or Monitor III software.
- The controller supports Modbus® protocol. Use with serial bus or Ethernet networks. (Ethernet requires an external Modbus®/Ethernet converter module.)
- Scrolling display shows critical data at a glance.
- Digital display of power metering (kW and kVA).
- Integrated hybrid voltage regulator providing ±0.5% regulation.
- Built-in alternator thermal overload protection.

Modbus® is a registered trademark of Schneider Electric.



User Interface Controls and Components

- Emergency stop switch
- Backlit LCD digital display with two lines of 12 characters *(see User Interface Displays for menus)*
- Alarm horn indicates generator set shutdown and warning faults
- Environmentally sealed membrane keypad with three master control buttons with lights
  - Off/Reset (red)
  - Auto (green)
  - Run (yellow)
- Pushbutton/rotary selector dial for menu navigation
  - Rotate dial to access main menus
  - Push dial and rotate to access sub menus
  - Press dial for 3 seconds to return to top of main menu
- Annunciator fault light
  - System shutdown (red)
  - System warning (yellow)
- Alarm silence/lamp test button
  - Alarm silence
  - Lamp test
- USB and RS-485 connections
  - Allows software upgrades
  - Provides access for diagnostics
  - PC communication using SiteTech™ or Monitor III software
- Dedicated user inputs
  - Remote emergency stop switch
  - Remote 2-wire start for transfer switch
  - Auxiliary shutdown
- Integrated hybrid voltage regulator
- Auto-resettable circuit protection mounted on circuit board.
- One relay output standard. Optional five relay output available.
- One analog and three digital inputs standard. Optional two inputs available.

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 Controller Displays as Provided by the Engine ECM.

User Interface Displays

The listing below has ● denoting main menus and ○ denoting sub-menus.

- Overview
  - Software version
  - Active shutdowns and warnings (if any are present)
  - Engine run time, total hours
  - Average voltage line-to-line
  - Frequency
  - Average current
  - Coolant temperature
  - Fuel level or pressure *
  - Oil pressure
  - Battery voltage
- Engine Metering
  - Engine speed
  - Oil pressure
  - Coolant temperature
  - Battery voltage
- Generator Metering
  - Total power, VA
  - Total power, W
  - Rated power, %
  - Voltage, L- L and L- N for all phases
  - Current, L1, L2, L3
  - Frequency
- GenSet Information
  - Generator set model number
  - Generator set serial number
  - Controller serial number
- GenSet Run Time
  - Engine run time, total hours
  - Engine loaded, hours
  - Number of engine starts
  - Total energy, kWh
- GenSet System
  - System voltage
  - System frequency, 50 or 60 Hz
  - System phase, single or three (wye or delta)
  - Power rating, kW
  - Amp rating
  - Power type, standby or prime
  - Measurement units, metric or English (user selectable)
  - Alarm silence, always or auto only (NFPA 110)
  - Manual speed adjust *
- GenSet Calibration
  - Voltage, L- L and L- N for all phases
  - Current, L1, L2, L3
  - Reset calibration
- Voltage Regulation
  - Adjust voltage, ±10%
- Digital Inputs
  - Input settings and status
- Digital Outputs
  - Output settings and status
- Analog Inputs
  - Input settings and status
- Event Log
  - Event history (stores up to 1000 system events)
- Selector Switch (requires initial activation by SiteTech™)

Controller Features

- **AC Output Voltage Regulator Adjustment**. The voltage adjustment provides a maximum of ±10% of the system voltage.
- **Alarm Silence.** The controller can be set up to silence the alarm horn only when in the AUTO mode for NFPA-110 application or Always for user convenience.
- **Alternator Protection**. The controller provides generator set overload and short circuit protection matched to each alternator for the particular voltage/phase configuration.
- **Automatic Restart**. The controller automatic restart feature initiates the start routine and recrank after a failed start attempt.
- **Common Failure Relay.** This relay is integrated on the controller circuit board. Contacts are rated 2 amps at 32 VDC or 0.5 amp at 120 VAC.
- **Communication.** Controller communication is available.
- **Cyclic Cranking.** The controller has programmable cyclic cranking.
- **ECM Diagnostics.** The controller displays engine ECM fault code descriptions to help in engine troubleshooting.
- **Engine Start Aid**. The starting aid feature provides control for an optional engine starting aid.
- **Event Logging**. The controller keeps a record (up to 1000 entries) for warning and shutdown faults. This fault information becomes a stored record of system events and can be reset.
- **Historical Data Logging**. Total number of generator set successful starts is recorded and displayed.
- **Integrated Hybrid Voltage Regulator**. The voltage regulator provides ±0.5% no-load to full-load regulation with three-phase sensing.
- **Lamp Test**. Press the alarm silence/lamp test button to verify functionality of the indicator lights.
- **LCD Display.** Adjustable contrast for improving visibility.
- **Measurement Units.** The controller provides selection of English or metric displays.
- **Power Metering**. Controller digital display provides kW and kVA.
- **Programming Access (USB)**. Provides software upgrades and diagnostics.
- **Remote Reset**. The remote reset function resets faults and allows restarting of the generator set without going to the master control switch off/reset position.
- **Remote Monitoring Panel.** The controller is compatible with the Kohler® Remote Serial Annunciator.
- **Run Time Hourmeter**. The generator set run time is displayed.
- **Time Delay Engine Cooldown (TDEC)**. The TDEC provides a time delay before the generator set shuts down.
- **Time Delay Engine Start (TDES)**. The TDES provides a time delay before the generator set starts.
- **Voltage Selection Menu.** This menu provides the capability of quickly switching controller voltage calibrations. Requires initial activation using SiteTech™ software. **NOTE:** Generator set output leads require voltage reconnection.

Controller Functions

The following chart shows which functions cause a warning or shutdown. All functions are available as relay outputs.

Warning causes the fault light to show yellow and sounds the alarm horn signaling an impending problem.

Shutdown causes the fault light to show red, sounds the alarm horn, and stops the generator set.

	Warning Function	Shutdown Function
Engine Functions		
Critically high fuel level *	○	
ECM communication loss		●
ECM diagnostics	●	●
Engine over speed		●†
Engine start aid active		
Engine under speed		●
Fuel tank leak *	○	○
High battery voltage	●	
High coolant temperature	●	●†
High fuel level *	○	
Low battery voltage	●	
Low coolant level		●
Low coolant temperature	●	
Low cranking voltage	●	
Low engine oil level *	○	○
Low fuel level (diesel models) *	○	○
Low fuel pressure (gas models) *	○	
Low oil pressure	●	●†
No coolant temperature signal		●
No oil pressure signal		●
Overcrank		●†
Speed sensor fault	●	
General Functions		
Alarm horn silenced		
Analog inputs	○	○
Battery charger fault *	●	
Chicago code active *		
Common fault **(includes †)**		●
Common warning	●	
Digital inputs	○	○
Emergency stop		●†
Engine cooldown (delay) active		
Engine start delay active		
Engine started		
Engine stopped		
EPS supplying load		
Generator running		
Input/output communication loss	●	
Internal failure		●
Master switch not in auto	●	
NFPA 110 alarm active		
Remote start		
System ready		
Generator Functions		
AC sensing loss	●	●
Alternator protection		●
Ground fault input *	●	
kW overload		●
Locked rotor		●
Overfrequency		●
Overvoltage (each phase)		●
Underfrequency		●
Undervoltage (each phase)		●

● Standard function
○ Available user function
* Function requires optional input sensors or kits and is engine dependent; see Controller Displays as Provided by the Engine ECM.
† Items included with common fault shutdown

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

Controller Displays as Provided by the Engine ECM	Engine Manufacturer (and Model)						
	Kohler Diesel (KDI M, TM*)	Kohler Diesel (KDI TCR)	Kohler Gas (KG2204, KG2204T)	Kohler Gas (KG6208, KG6208T, KG10V08, KG10V08T)	GM and PSI/Doosan	John Deere	Volvo
Intake air pressure							D
Intake air Temperature		D		D	D	D	D
Coolant level			D	D	D	D	D
Coolant temperature		D	C/S/D	C/S/D	C/S/D	C/S/D	C/S/D
Crankcase pressure							D
ECM battery voltage	S		S/D	S	S		
Engine speed	C/S/D	C/S/D	C/S/D	C/S/D	C/S/D	C/S/D	C/S/D
Fuel pressure		D		C/S/D	C/S/D	C/S†	C/S/D
Fuel temperature		D				S/D	S
Oil level				S†	S†	S†	S†
Oil pressure		C/S/D	D	C/S/D	C/S/D	C/S/D	C/S/D
Oil temperature			S				SD

C = Value displayed on controller, S = Value displayed in Site Tech, D = ECU diagnostic is supported
* Electronic governor and ECM are optional on KDI M and TM engines.
† Controller uses local analog input to obtain this information.

Note: REOZMD/ROZMC (Mitsubishi engines) have an ECM but do not send signals to the generator set controller.

Note: See the generator set specification sheet for engine model identification.

Controller Specifications

- Power source with circuit protection: 12- or 24-volt DC
- Power drain: 200 milliamps at 12 VDC or 100 milliamps at 24 VDC
- Humidity range: 5% to 95% noncondensing
- Operating temperature range: -40°C to +70°C (-40°F to +158°F)
- Storage temperature range: -40°C to +85°C (-40°F to +185°F)
- Standards:
  - CE Directive
  - NFPA 99
  - NFPA 110, Level 1
  - CSA 282-09
  - UL 508
  - ASTM B117 (salt spray test)
- Panel dimensions—W x H, 229 x 160 mm (9.0 x 6.3 in.)

Communication and PC Software Available Options

Refer to G6-76 Monitor III Software and the communication literature for additional communication and PC software information including Modbus® communication.

❑ **Monitor III Software for Monitoring and Control (Windows®-based user interface)**

❑ **Converter, Modbus®/Ethernet.** Supports a power system using controllers accessed via the Ethernet. Converter is supplied with an IP address by the site administrator. Refer to G6-79 for converter details.

❑ **Converter, RS-232/RS-485.** Supports a power system using controllers accessed via a serial (RS-232) connection.

APM402 Available Options

❑ **Float/Equalize Battery Charger** available with 6 or 10 amp output for 12 or 24V DC voltage output. The 10 amp model provides NFPA 110 charging and alarming capability.

❑ **Manual Speed Adjust** available for applications using closed transition ATS. Adjustment range for 60 Hz: 1751-1849 rpm (58.2-61.8 Hz) and for 50 Hz: 1451-1549 rpm (48.2-51.8 Hz).

❑ **Prime Power Switch** prevents battery drain during generator set non-operation periods and when the generator set battery cannot be maintained by an AC battery charger.

❑ **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.

❑ **Run Relay** provides a relay indicating that the generator set is running.

❑ **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.

❑ **Two Input/Five Output Module** provides a generator set mounted panel with two inputs and five relay outputs.

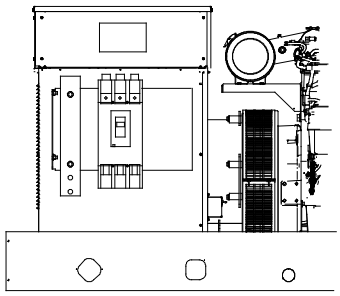
DISTRIBUTED BY:

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 set distributor for availability.

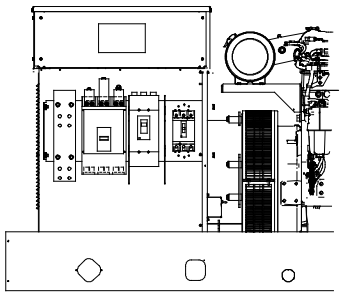
KOHLER®

Industrial Generator Set Accessories

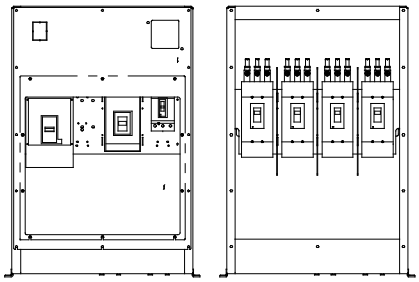
Line Circuit Breakers 15-3250 kW



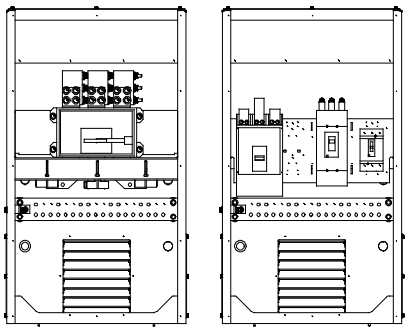
Single Circuit Breaker Kit with Neutral Bus Bar
15-300 kW Model Shown



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
800-2500 kW KD Model Shown

Standard Features

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

Line Circuit Breaker Types

Magnetic Trip

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

Thermal Magnetic Trip

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

Electronic Trip

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

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

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

Electronic with Ground Fault Trip

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

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

80% Rated Circuit Breaker

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

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

100% Rated Circuit Breaker

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

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

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

Line Circuit Breaker Options

❑ Alarm Switch

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

❑ Auxiliary Contacts

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

❑ Breaker Separators (350- 2500 kW)

Provides adequate clearance between breaker circuits.

❑ Bus Bars

Bus bar kits offer a convenient way to connect load leads to the generator set when a circuit breaker is not present.
15- 300 kW. Bus bar kits are available on alternators with leads for connection to the generator set when circuit breakers are not ordered.
350- 2500 kW. A bus bar kit is provided when no circuit breaker is ordered. Bus bars are also available in combination with circuit breakers or other bus bars on the opposite side of the junction box. On medium voltage (3.3 kV and above) units, a bus bar kit is standard (not applicable to KD models).

❑ Field Connection Barrier

Provides installer wiring isolation from factory connections.

❑ Ground Fault Annunciation

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

❑ Lockout Device (padlock attachment)

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

❑ Lugs

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

❑ Overcurrent Trip Switch

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

❑ Shunt Trip, 12 VDC or 24 VDC

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

❑ Shunt Trip Wiring

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

❑ Undervoltage Trip, 12 VDC or 24 VDC

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

15- 300* kW Line Circuit Breaker Specifications

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

100% Rating Circuit Breaker

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

100% Rating Electrically Operated Breakers

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

Generator-Mounted P-Frame, 24VDC Electrically Operated			
Alt. Model	**Amps**	**Trip Unit**	**Frame**
4RX 4S/4SX 4TX 4V	250 400 600 800	3.0 LI	PJ
		5.0 LSI	PJ
		3.0 LI	PL
		5.0 LSI	PL
4UA 4M6226	250 400 600 800 1000 1200	3.0 LI	PJ
		5.0 LSI	PJ
		3.0 LI	PL
		5.0 LSI	PL
All circuit breakers listed in this table include line side bus and load side lugs, 24VDC motor operators, 2 type C auxiliary contacts, and 1 type C SDE overcurrent switch contact. No second breakers are allowed in combination with these breakers.			

Interrupting Ratings

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

Circuit Breaker Lugs Per Phase (Al/Cu)

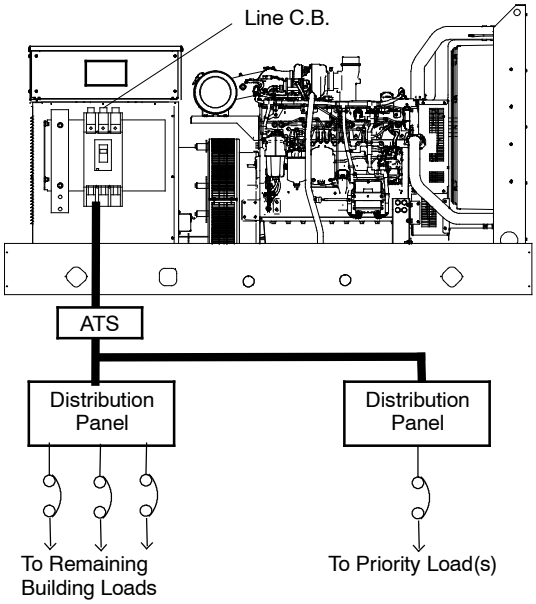
Frame Size	Ampere Range	Wire Range
E (480 V max.)	30- 100	Up to two wire terminals fitting 10-32 or 1/4-20 stud
H	15- 150	One #14 to 3/0
J	175	One 1/0 to 4/0
	200- 250	One 3/0 to 350 kcmil
LA	300- 400	One #1 to 600 kcmil or Two #1 to 250 kcmil
LG	400- 600	Two 2/0 to 500 kcmil AL/CU
M	800	Three 3/0 to 500 kcmil
P	600-800	Three 3/0 to 500 kcmil
	1000-1200	Four 3/0 to 500 kcmil
Mechanical Load Lugs Included with H, J, and LG LSIG Neutrals		
H	60- 150	One #14 to 3/0 AL/CU
J	250	One 3/0 to 350 kcmil AL/CU
LG	400- 600	Two 4/0 to 500 kcmil AL/CU

15- 300* kW Line Circuit Breaker Applications

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

Single Circuit Breaker Installations

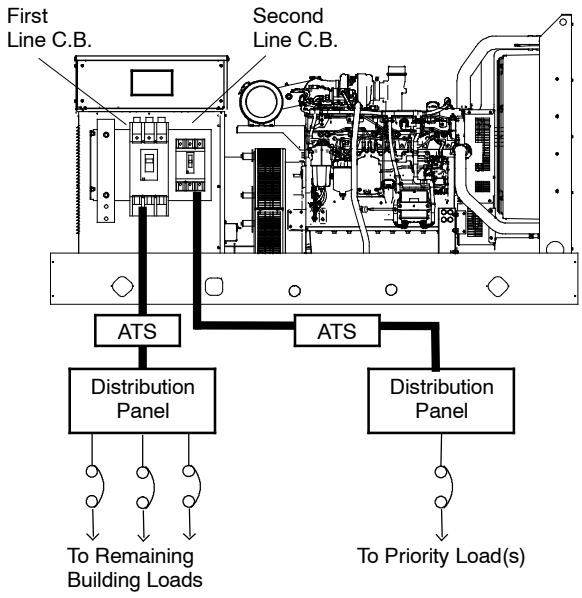
A generator set with a single circuit breaker installed typically feeds a single transfer switch and then a distribution panel. This allows protection of the entire system.



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

Multiple Circuit Breaker Installations

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



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

Circuit Breaker Combinations

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

Powerpact® H- and J-Frame 15A to 250A Molded Case Circuit Breakers

HD and HG 2-Pole

H-Frame 150A

J-Frame 250A

Delivering unmatched application flexibility

Well-suited to a wide range of applications, the Powerpact H- and J-Frame Molded Case Circuit Breakers feature a full complement of field installable accessories, field installable trip units and improved interrupting ratings. These Molded Case Circuit Breakers deliver unmatched design flexibility for 15A to 250A applications and share identical mounting holes, handle locations, trim dimensions and accessories, allowing customers to standardize equipment designs for 15A to 250A applications.

Full-Featured Performance

- H-Frame – 150A available in both standard and 100% ratings with standard amperage ratings from 15 to 150A. Interrupting ratings (AIR) include D-18kA, G-35kA, J-65kA and L-100kA at 480VAC
- J-Frame – 250A available in both standard and 100% ratings with standard amperage ratings from 150A to 250A. Interrupting ratings (AIR) include D-18kA, G-35kA, J-65kA, and L-100kA at 480VAC
- Field installable accessories are common for H- and J-Frame Circuit Breakers to make stocking and installation easy
- Unique snap-in terminals make converting bus bar and lug configurations simple and easy
- Field-installable trip units lower inventory costs and reduce stocking space by configuring products at point of use
- Allows design standardization for 15A to 250A applications with common mounting holes, handle locations, and trim dimensions for both H- and J-Frame Circuit Breakers
- Many configuration options provide application flexibility, with I-Line®, plug-in, drawout, rear connected, distribution lug, crimp lug and din-rail configurations
- Motor operators, rotary handles and cable operators provide options for integrating into a variety of applications
- Certified to global standards, including UL, IEC, CSA and NOM

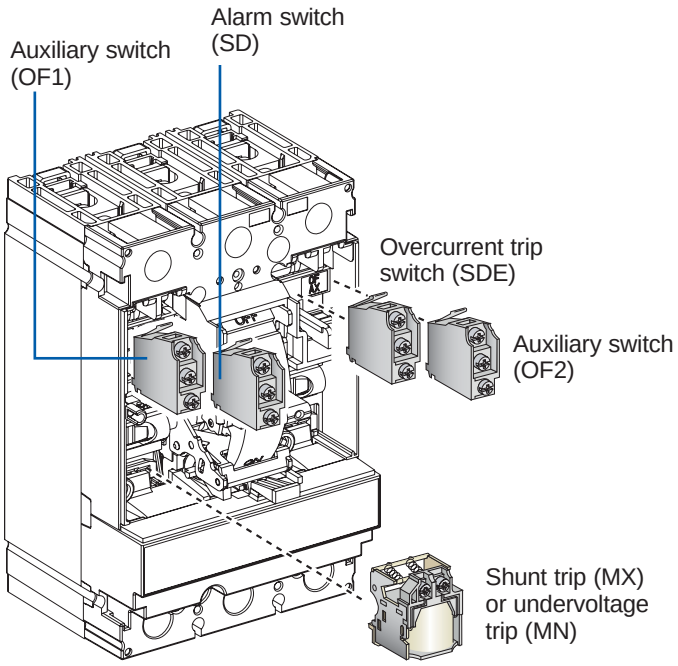
H-Frame **J-Frame** **H-Frame** **J-Frame**

Standardize Designs

Designed to help simplify the design process, the Powerpact H- and J-Frame Molded Case Circuit Breakers feature common mounting holes, handle locations and trim dimensions.

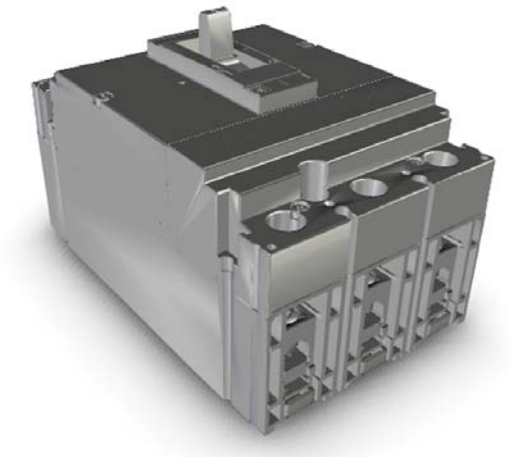
Consolidate Inventory

Reduce inventory costs with the Powerpact H- and J-Frame Molded Case Circuit Breakers. These circuit breakers are designed to work with common components like operating handles, auxiliary switches, shunt trips and many other accessories. They also offer savings in the form of rationalized mounting pans, door trims and enclosures.



Simplify Installation

Field-installable accessories provide flexibility for late specification changes or installation at point of use. Auxiliary switches, shunt trip and undervoltage release are easy to install, reliable and common to many Powerpact Circuit Breakers.



Streamline Design Integration

Comprehensive technical literature, CAD drawings and 3D models are available online to support the Powerpact H- and J-Frame Circuit Breaker line. In addition, 3D models can be downloaded in most CAD formats.

Easy to Convert

Unique snap-in lugs make converting between bus bar and lug options simple and easy. Whether the application calls for lugs on the line side, load side or both, conversions are simple, making the Powerpact H- and J-Frame Molded Case Circuit Breakers ideal for applications that require configuring products at the point of use. The terminal nut or mechanical lug is set on a plastic retainer that slides and snaps into place, without the use of tools.

Bus Bar Option

Lug Option

Powerpact® H- and J-Frame 15A to 250A Molded Case Circuit Breakers

Multiple Configurations

Cradle

Plug-in Base

I-Line

Rear Connected

Ordering Flexibility for Various Applications

- **Purchase Standard Circuit Breaker**
  Features fixed trip unit capable of reverse connection.
- **Circuit Breaker and Separate Trip Units***
  Save valuable inventory costs by configuring products at point of use. Only three frame sizes are needed to cover the entire range from 15A to 250A (shown below with H-Frame Circuit Breaker).
- **Purchase the Complete Circuit Breaker with Field-Interchangeable Trip Unit***
  Respond to last minute specification changes with the flexibility of a field interchangeable trip unit.

**Marked line and load and not suitable for reverse connection*

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

Schneider Electric - North American Operating Division

1415 S. Roselle Road
Palatine, IL 60067
Tel: 847-397-2600
Fax: 847-925-7500

Order Number 0611HO0401

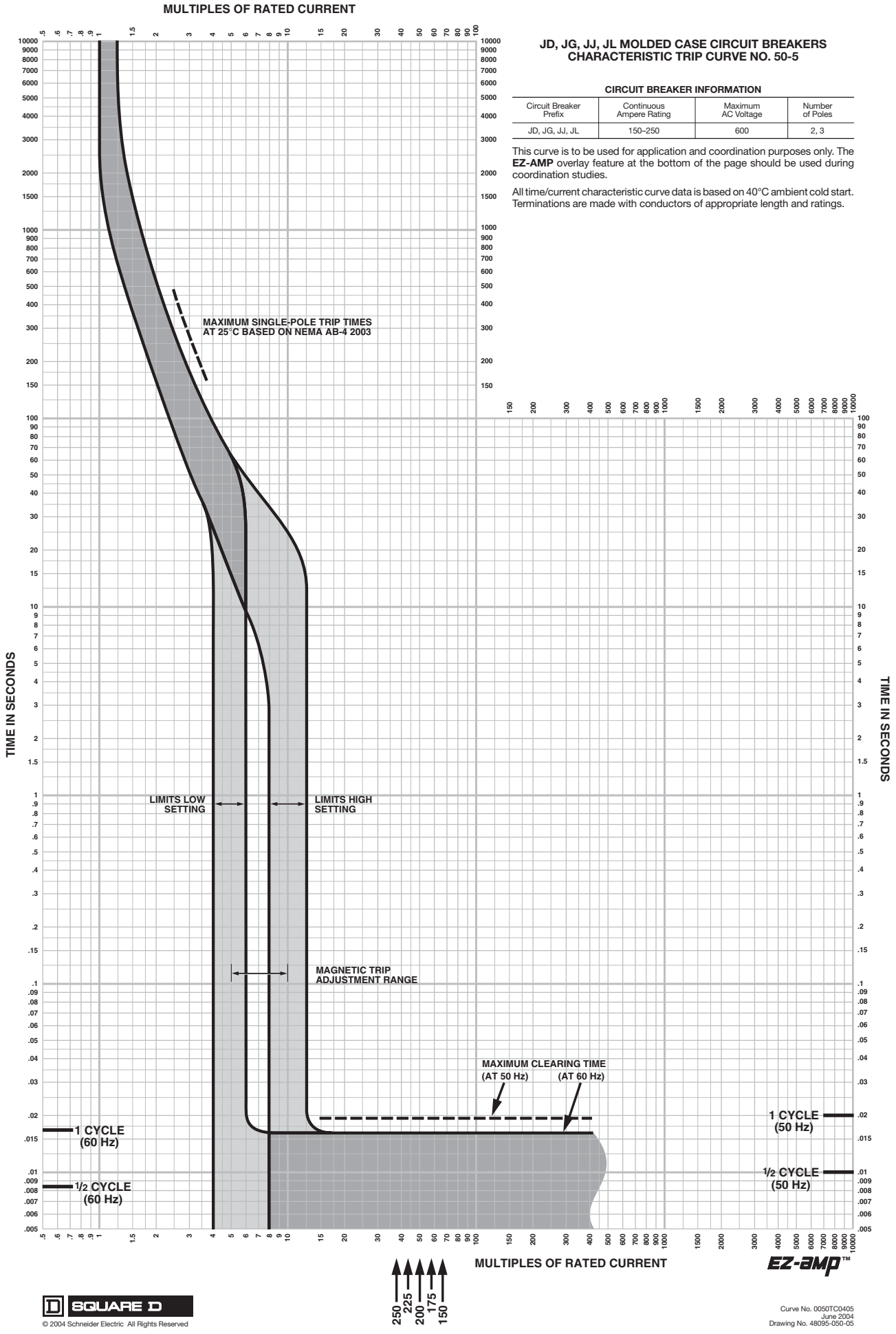
JD, JG, JJ, JL MOLDED CASE CIRCUIT BREAKERS
CHARACTERISTIC TRIP CURVE NO. 50-5

CIRCUIT BREAKER INFORMATION

Circuit Breaker Prefix	Continuous Ampere Rating	Maximum AC Voltage	Number of Poles
JD, JG, JJ, JL	150–250	600	2, 3

This curve is to be used for application and coordination purposes only. The **EZ-AMP** overlay feature at the bottom of the page should be used during coordination studies.

All time/current characteristic curve data is based on 40°C ambient cold start. Terminations are made with conductors of appropriate length and ratings.

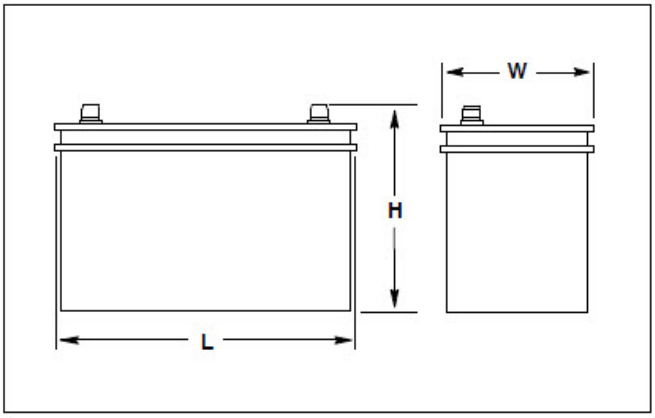


Curve No. 0050TC0405
June 2004
Drawing No. 48095-050-05

KOHLER®

ISO 9001 KOHLER POWER SYSTEMS NATIONALLY REGISTERED

Typical Overall Dimensions

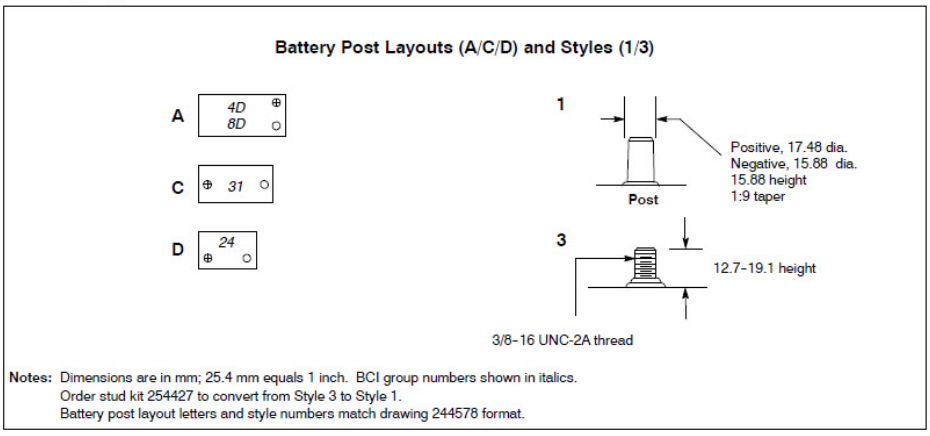


Standard Features

- 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.
- Tough polypropylene cases protect against life-shortening vibration and impact damage.
- Batteries are rated according to SAE standard J-537.
- All batteries are 12-volts. Kits that contain two or four batteries are availabe for 24-volt systems and/or systems with redundant starters.
- Wet- and dry-charged batteries have lead-calcium or lead-antimony plates and use sulferic acide electrolyte. Removable cell covers allow checking of electrolyte specific gravity.
- Absorbant glass mat (AGM) batteries are sealed and maintenance free.
- Batteries are for applications below and above 0°C (32°F).

Charge Type*	Battery Part Number	Battery Qty. per Size	BCI Group Size	Battery SAE Dimension, mm (in.)			Cold Cranking Amps at 18ºC (0ºF) Min.	Reserve Capacity Minutes at 27º (80ºF) Min.	Battery Post Layout and Style
				L	W	H			
Wet	256984	1	24	273.0 (10.8)	173.0 (6.8)	228.6 (9.0)	650	130	D/1

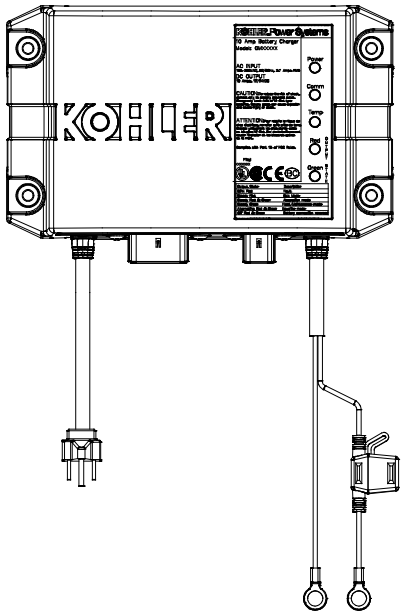
Battery Specifications



KOHLER

Industrial Generator Set Accessories

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



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

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

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

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

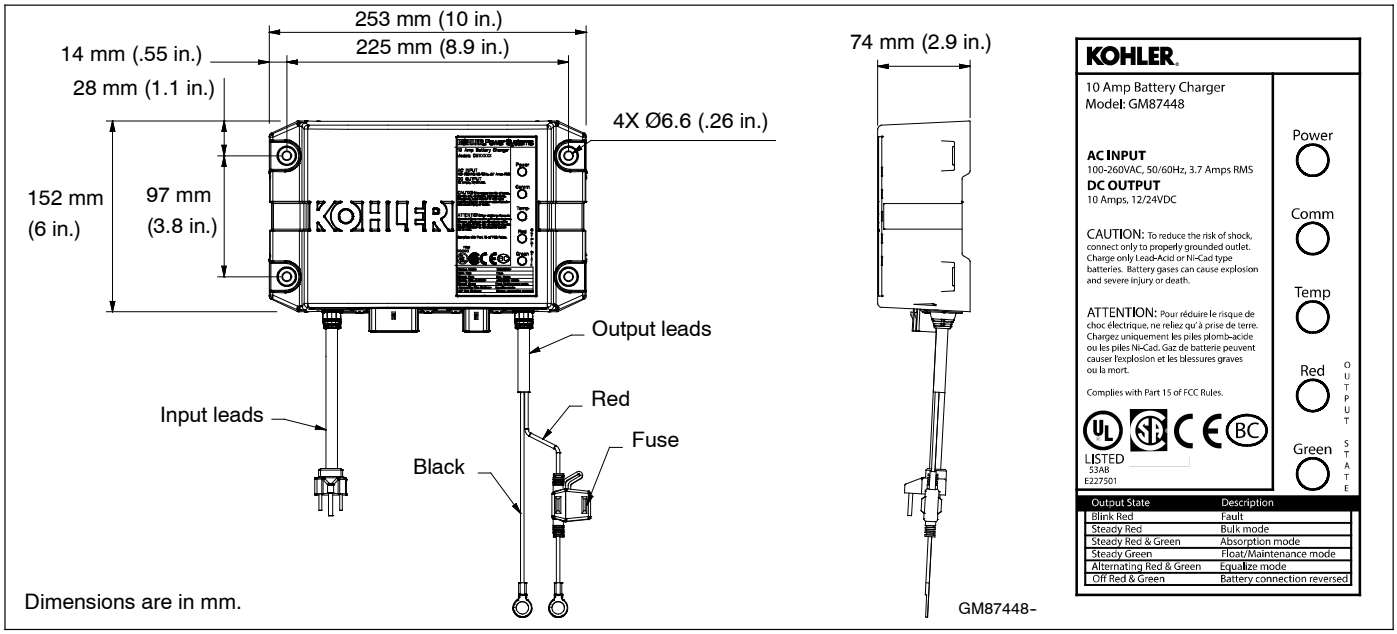
With the optional battery temperature sensor connected, the battery charger can adjust output voltages for optimal charging.

Standard Features

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

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

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

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

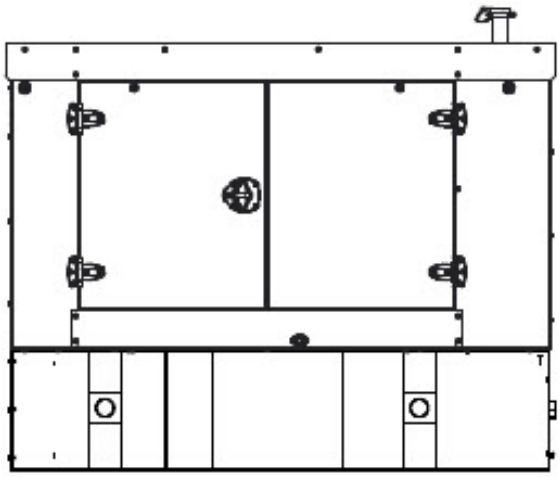
DISTRIBUTED BY:

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.

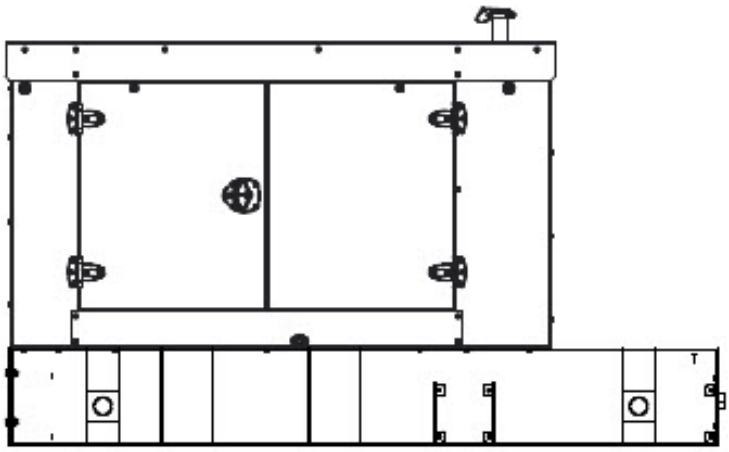
Industrial Generator Set Accessories

Sound Enclosure with Subbase Fuel Tank Package

ISO 9001 KOHLER POWER SYSTEMS NATIONALLY REGISTERED



Enclosure with Standard Subbase Fuel Tank



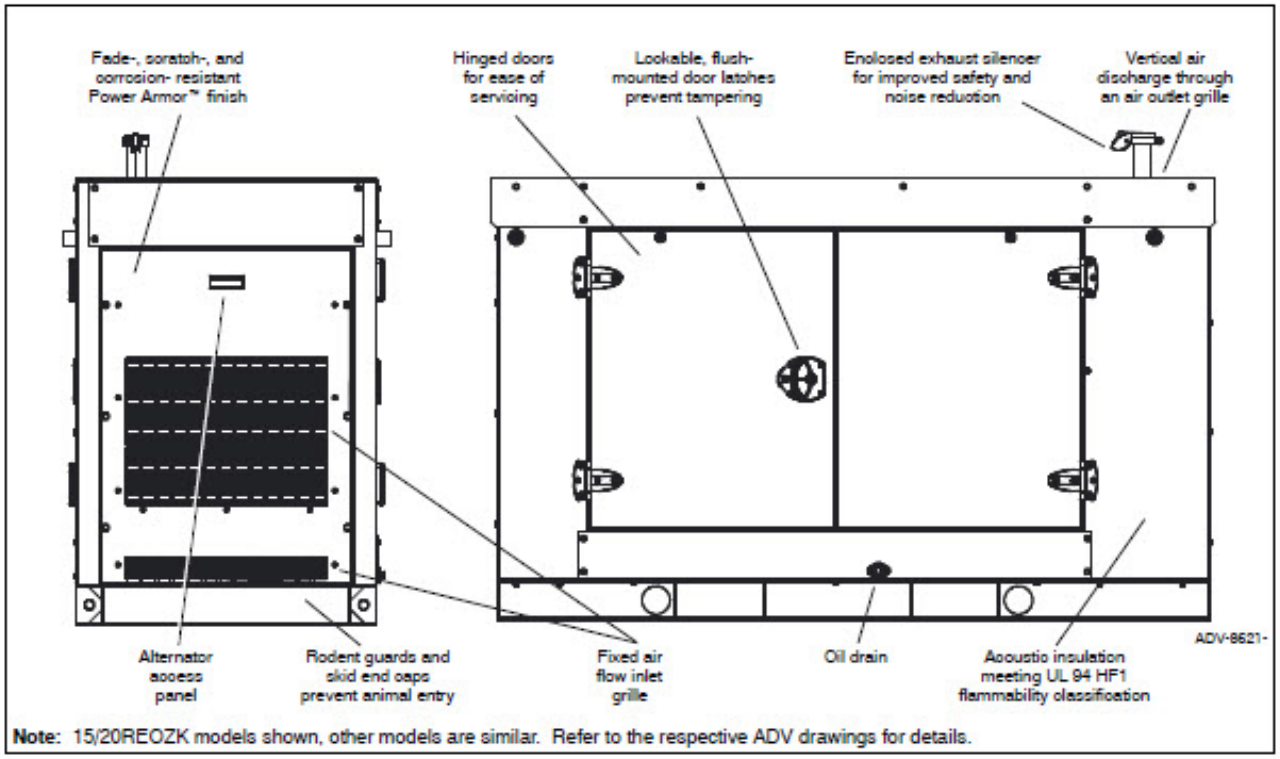
Enclosure with State Code Subbase Fuel Tank

Sound Enclosure Standard Features

- Internal-mounted critical silencer and flexible exhaust connector.
- Lift base or tank-mounted, steel construction with hinged doors on the service side and easily removeable panels on the non-service side.
- Fade-, scratch-, and corrosion-resistant Kohler® Power Armor cream beige automotive-grade textured finish.
- Enclosure has four large access doors/panels which allow for easy maintenance.
- Lockable, flush-mounted door latches.
- Horizontal air inlet and vertical outlet discharge to redirect air and redirect noise.
- Acoustic insulation that meets UL 94 HF1 flammability classification and repels moisture adsorption.
- Sound attenuated enclosure that uses up to 51 mm (2 in.) of acoustic insulation.

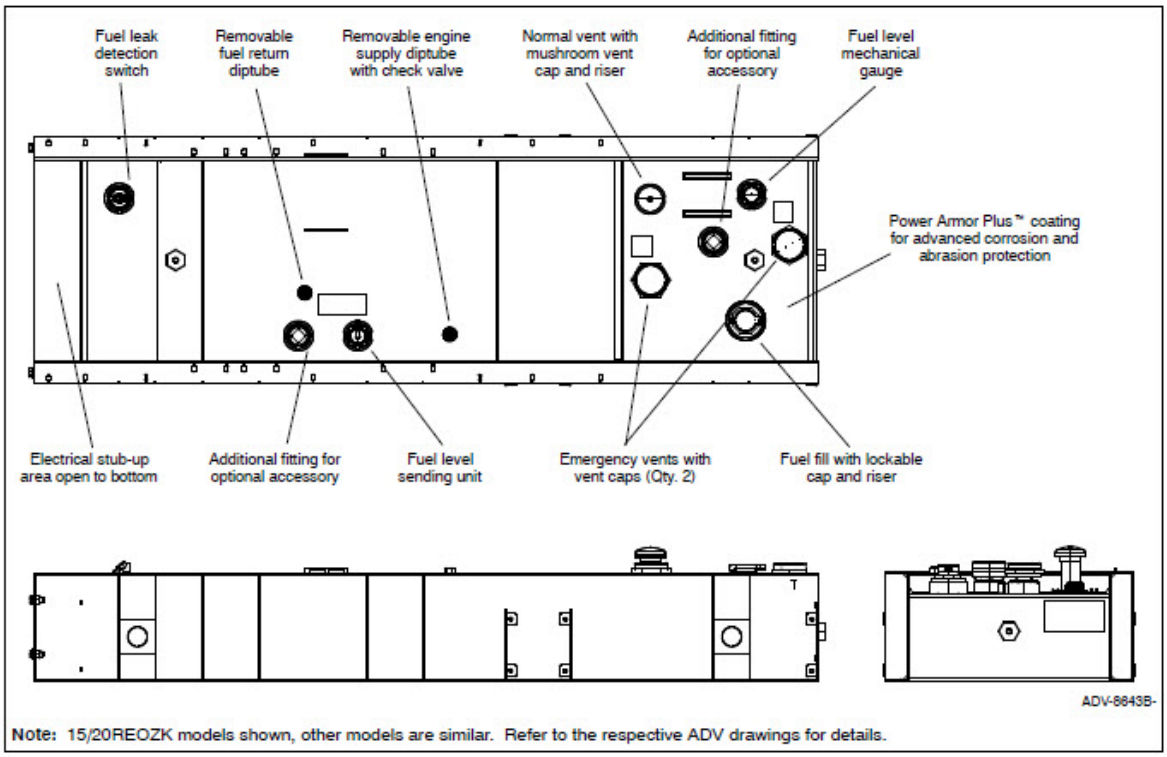
Subbase Fuel Tank Features

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



Sound Enclosure Features

- Available in steel (14 gauge) formed panel, solid construction. Preassembled package offering corrosion resistant, dent resilient structure that mounts directly to lift base or fuel tank.
- Power Armor automotive-grade finish resulting in advanced corrosion and abrasion protection as well as enhanced edge coverage and color retention.
- Internal exhaust silencer offering maximum component life and operator safety.
- Note: Installing an additional length of exhaust tail pipe may increase backpressure levels. Please refer to the generator set spec sheet for the maximum backpressure value.
- Interchangeable modular panel construction. Allows complete serviceability or replacement without compromising enclosure design.
- Cooling/combustion air intake with a horizontal air inlet. Sized for maximum cooling airflow.
- Service access. Multi-personnel doors/panels for easy access to generator set control and servicing of the fuel fill, fuel gauge, oil fill, and battery.
- Cooling air discharge. Weather protective design featuring vertical air discharge. Redirects cooling air up and above the enclosure to reduce ambient noise.
- Cooling air discharge. The sound enclosures include acoustic insulation with urethane film.



- Extended operation. Usable tank capacity for multiple hour requirements.
- Power Armor Plus textured epoxy-based rubberized coating that creates an ultra-thick barrier between the tank and harsh environmental conditions like humidity, saltwater, and extreme temperatures. Provides an advanced corrosion and abrasion protection.
- UL listed. Secondary containment generator set base tank meeting UL 142 tank requirements.
- NFPA compliant. Designed to comply with the installation standards of NFPA 30 and NFPA 37.
- Integral external lift lugs. Enables crane with spreader-bar lifting of the complete package (empty tank, mounted generator set, and enclosure) to ensure safety.
- Emergency pressure relief vents. Vents ensure adequate venting of inner and outer tank under extreme pressure and/or emergency conditions.
- Normal vent with cap and riser
- Leak detection switch. Annunciates a contained primary tank fuel leak condition at generator set control.
- Electrical stup-up.
- State tank designed to comply with the installation standards of the Florida Dept. of Environmental Protection (FDEP) File No. EQ-634.
- Usable tank capacity offers full load standby operation of up to 96 hours.

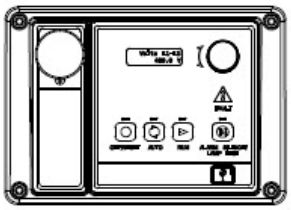
Fuel Tank Capacity, L (gal.)	Est. Fuel Supply Hours at 60 Hz with Full Load	Enclosure and Fuel Tank Weight, kg (lb.)	Enclosure and Fuel Tank Height, mm (in.)	Fuel Tank Height (H), mm (in.)	Sound Pressure Level, dB(A)
541 (142)	24/26	1579 (3482)	1787 (70.4)	432 (17)	65

Note: Data in table is for reference only, refer to the respective ADV drawings for details. Refer to TIB-114 for generator set sound data.
* Max. weight includes the generator set (wet) with largest alternator option, enclosure with acoustic insulation added, silencer, and tank (no fuel).
State code fuel tank specifications (height and weight) do not include I-beam option. Width dimension shown includes rubber door stops.

KOHLER®

ISO 9001 KOHLER POWER SYSTEMS NATIONALLY REGISTERED

Integral Voltage Regulator with Kohler® APM402/ Decision-Maker® 3000 and Menu-Driven Selections (15-1000 kW Generator Set Models)



APM402 and Decision-Maker® 3000 Controller with Integral Voltage Regulator

The voltage regulator is integral to the controller and uses patented hybrid voltae regulator design providing ±0.5% no-load to full-load regulation using root-mean-square (RMS) voltage sensing. The voltage regulator features three-phase sensing and is available for 12- or 24-volt engine electrical systems.

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 APM402/Decision-Maker® 3000 Controllers

Calibration	Digital Display	Range Settings	Default Selection
Voltage Adjustment	Volt Adj	±10% of System Voltage	System Voltage
Underfrequency Unload or Frequency Setpoint	Frequency Setpoint	42 to 62 Hz	2.5 Hz Below Nominal Frequency
Underfrequency Unload Scope	Slope	0-10% of System Voltage (Volts per Cycle)	5% of System Voltage

KOHLER®

Specification/Feature	Integral with APM402/Decision-Maker® 3000
Generator Set Availability	15-1000 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	100-240 Volts (L-L), 50-60 Hz
Sensing Mode	RMS, Single- or 3-Phase
Input Requirements	8-36 VDC
Continuous Output	5 VDC @ 100mA max. 5.0 ADC with GM88453 Activator Board
Maximum Output	5 VDC @ 100mA max. 7.8 ADC with GM88453 Activator Board
Transition Frequency	42.0-62.0Hz
Exciter Field Resistance	4-30 Ohms with GM88453 Activator Board
No-Load to Full-Load Voltage Regulation	±0.5%
Thermal Drift	<0.5% (-40°C to 70°C) [-40°F to 158°F] Range
Response Time	Less than 5µS
System Voltage Adjust.	±10%
Voltage Adjustment	Controller Menu Knob
Remote Voltage Adjustment	not available
Paralleling Capability	not available
VAR/PF Control Input	not available

Integral Voltage Regulator with APM402/Decision-Maker® 3000 Controller

- The APM402/Decision-Maker® 3000 digital display and pushbutton/rotary dial provide access to data. A two-line LCD display provides complete and concise information. A two-line vacuum fluorescent display provides complete and concise information.
- The Decision-Maker® 3000 graphical display and pushbutton/rotary dial provide access to data. A five-line, 35-characters per line LCD display provides complete and concise information include gain, ramp rate, reactive droop, VAR control (P, I, D gains) and PF control (P, I, D gains).
- The controllers provide ISO 8528-5, Class G3, compliance for transient response on some 20-300 kW generator set models. Both controllers support Modbus®.
- These controllers can control Fast Response™ II, Fast Response™ X, and wound field alternators using the GM88453 activator board.

Voltage Regulator Menu

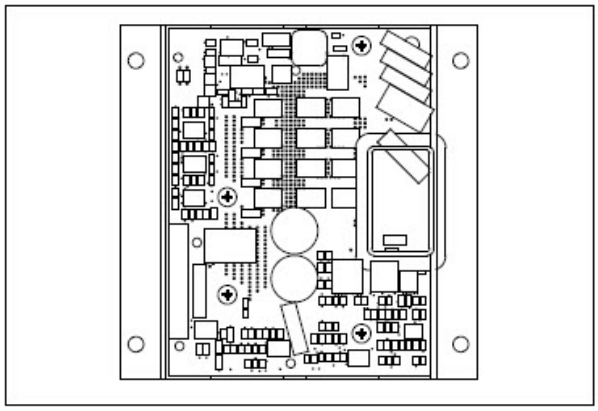
- Voltage adjustment, ±10% of system voltage
- V/Hz cut-in, 42-62 Hz
- Underfrequency unload slope, 0-10% of system voltage

Generator Set Calibration Menu (APM402/DEC 3000)

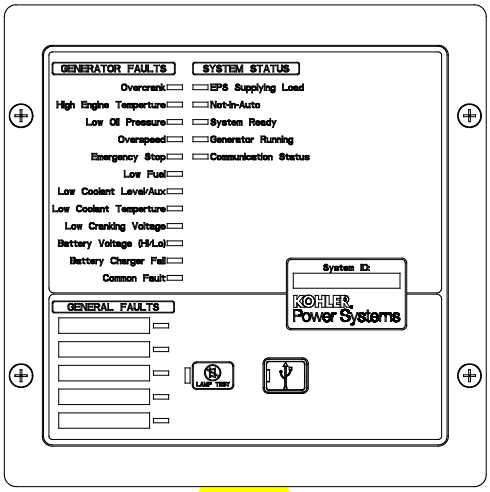
- L1-L2 volts
- L2-L3 volts (3-phase)
- L3-L1 volts (3-phase)
- L1-N volts
- L2-N volts
- L3-N volts (3-phase)

KOHLER®

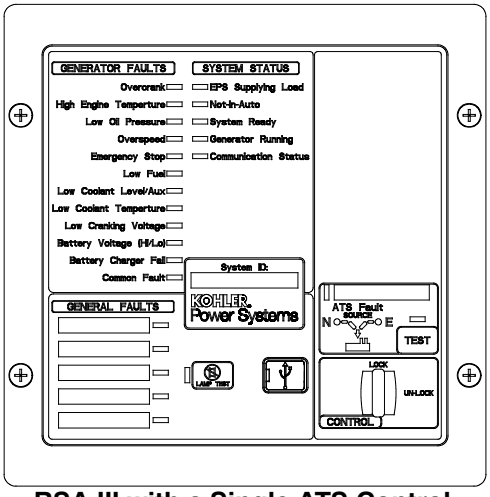
Activator Board GM88453



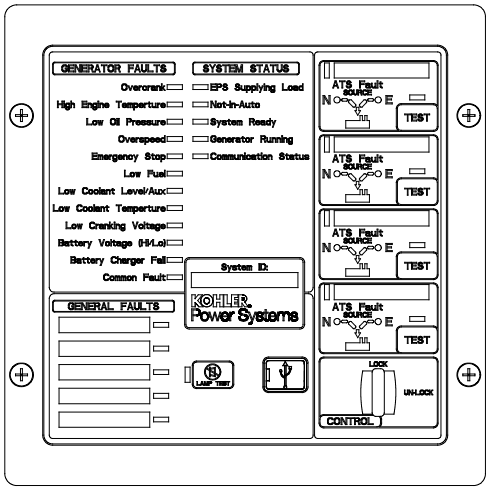
- Interfaces between the controller and alternator assembly using rotor field leads, auxiliary power windings, and optic board leads.
- Allows the Decision-Maker® controllers the ability to control a wound-field alternator using the same control signal as Fast Response™ alternator.
- Permits the generator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



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

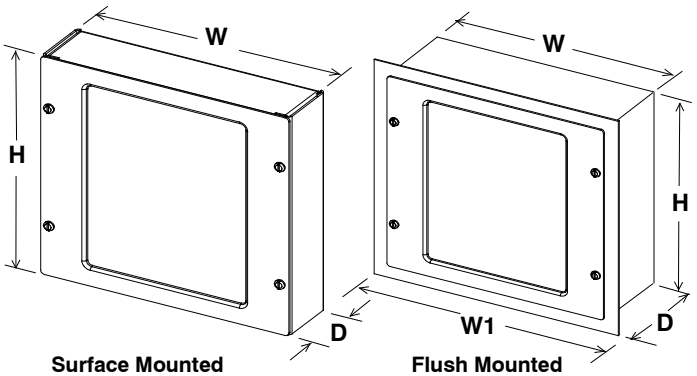
- Dimensions—W x H x D, mm (in.).

  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	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 LEDs slow flash when activated except steady on with EPS supplying load and high battery voltage.
Red LEDs slow flash when activated except fast flash with loss of communication and not-in-auto.

Specifications

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

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

ATS Controls (RSA III with ATS controls only)

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

NFPA Requirements

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

Fault and Status LEDs and Lamp Test Switch

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Accessories

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

Modbus® is a registered trademark of Schneider Electric.

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 set distributor for availability.

KOHLER®

Alternator Data

TECHNICAL INFORMATION BULLETIN

Alternator Data Sheet

Alternator Model: 4P10X
Frequency: 60 Hz
Speed: 1800 RPM
Leads: 12 (6 Lead, 600 Volt)

Voltage L-N/L-L	Phase	Power Factor	Connection	kW* (kVA)						
				Class B	Class F				Class H	
				80°C Continuous	90°C Lloyds	95°C ABS	105°C Continuous	130°C Standby	125°C Continuous	150°C Standby
139/240 277/480	3	0.8	Wye	66.0 (82.5)	69.5 (86.5)	71.0 (88.5)	74.5 (93.0)	82.0 (102.5)	80.5 (100.5)	87.5 (109.0)
127/220 254/440	3	0.8	Wye	66.5 (83.0)	69.5 (86.5)	71.5 (89.0)	74.5 (93.0)	81.0 (101.0)	80.0 (100.0)	86.5 (108.0)
120/208 240/416	3	0.8	Wye	65.0 (81.0)	67.5 (84.0)	68.5 (85.5)	71.5 (89.0)	77.5 (96.5)	76.0 (95.0)	82.0 (102.5)
110/190 220/380	3	0.8	Wye	59.0 (73.5)	61.5 (76.5)	62.5 (78.0)	65.0 (81.0)	70.5 (88.0)	69.0 (86.0)	74.5 (93.0)
120/240	3	0.8	Delta	65.0 (81.0)	67.5 (84.0)	68.5 (85.5)	71.5 (89.0)	77.5 (96.5)	76.0 (95.0)	82.0 (102.5)
120/240	1	1.0	Dogleg	53.0 (53.0)	54.5 (54.5)	55.0 (55.0)	58.5 (58.5)	63.0 (63.0)	62.0 (62.0)	66.5 (66.5)
120/240	1	0.8	Dogleg	38.0 (47.5)	40.0 (50.0)	41.0 (51.0)	43.0 (53.5)	46.5 (58.0)	46.0 (57.5)	49.0 (61.0)
347/600	3	0.8	Wye	65.5 (81.5)	69.0 (86.0)	70.5 (88.0)	74.0 (92.5)	81.5 (101.5)	80.0 (100.0)	87.0 (108.5)

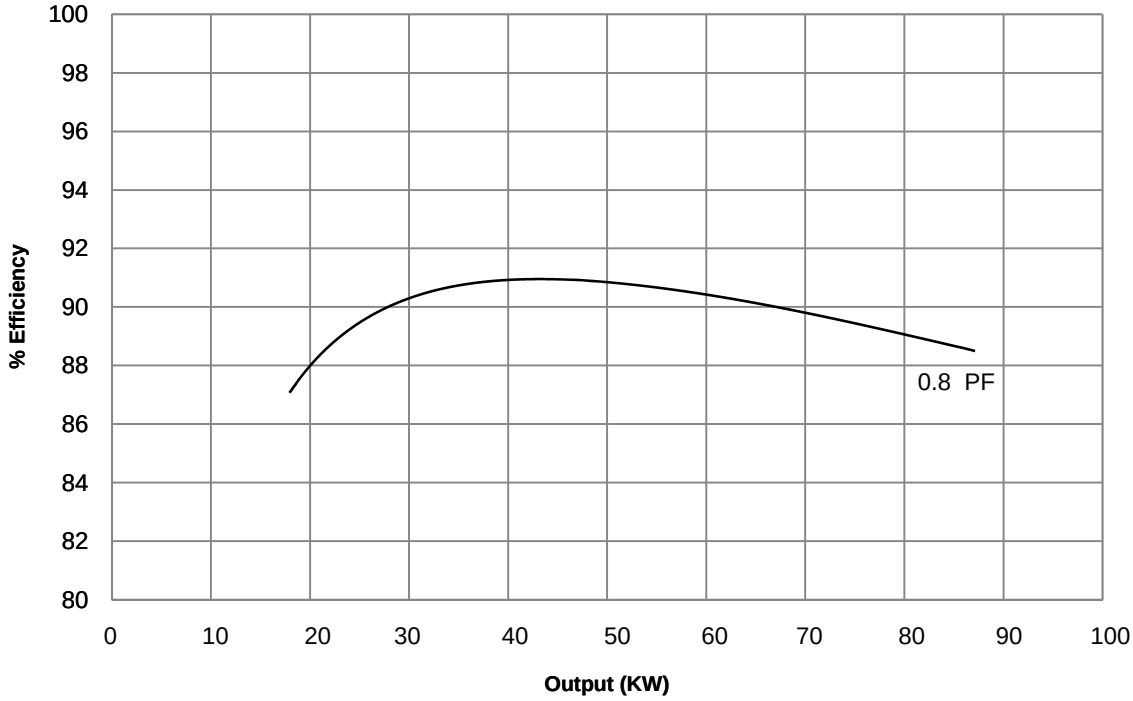
* All data tested in accordance with IEEE Standard 115. Kohler Co. reserves the right to change the design or specifications without notice and without any obligation or liability whatsoever.

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

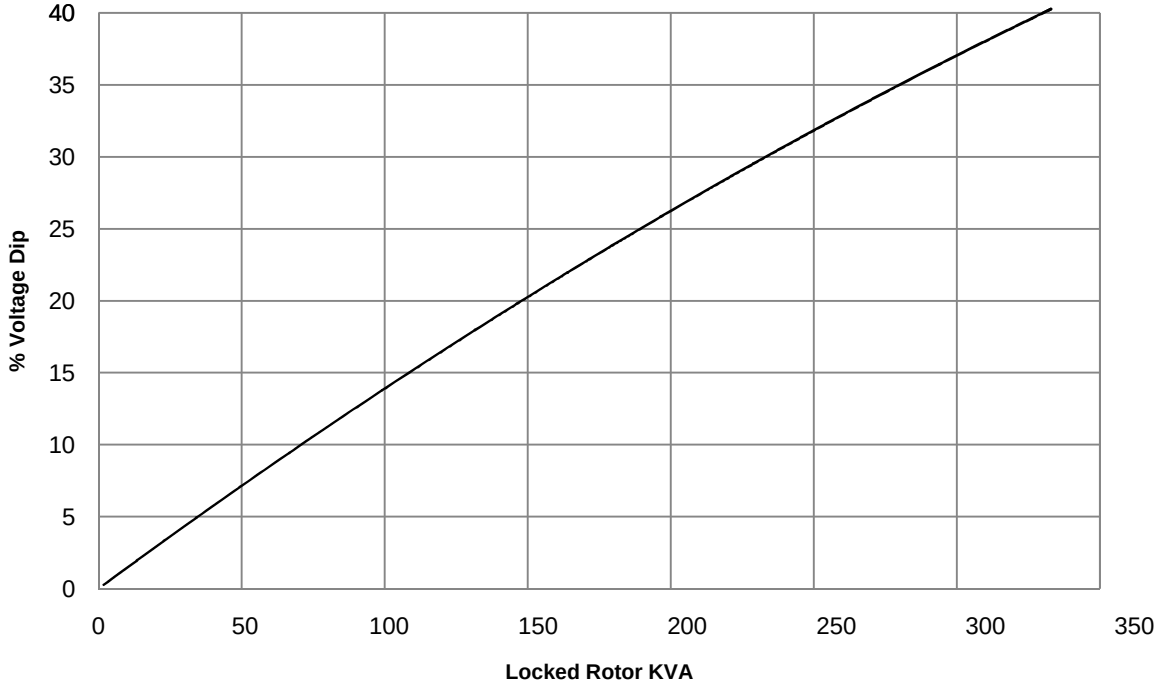
	Symbol	PerUnit	Ohms
Typical Cold Resistances			
Phase Resistance		0.028	0.016
Rotor Resistance		12.75	7.169
Typical Reactances			
Synchronous			
Direct	X_d	3.137	1.763
Quadrature	X_q	1.517	0.853
Transient			
Unsaturated	X'_{du}	0.327	0.184
Saturated	X'_d	0.288	0.162
Subtransient			
Direct	X''_d	0.126	0.071
Quadrature	X''_q	0.118	0.067
Negative Sequence	X_2	0.122	0.069
Zero Sequence	X_0	0.009	0.005

	Symbol	Value
Typical Time Constants		
Armature Short Circuit	T_a	0.009 sec.
Transient Short Circuit	T'_d	0.074 sec.
Transient Open Circuit	T'_{do}	0.809 sec.
Typical Field Current		
Full Load	If_{FL}	15.9 amps
No Load	If_{NL}	4.1 amps
Typical Short Circuit Ratio		0.319
Harmonic Distortion		
RMS Total Harmonic Distortion		2.57%
Max. Single Harmonic		5th
Deviation Factor (No Load, L-L)		<5%
Telephone Influence Factor		<50
Insulation Class		
per NEMA MG1-1.66		H
Phase Rotation		ABC

4P10X, 60 Hz, 139/240, 277/480 Volts, Wye
TYPICAL ALTERNATOR EFFICIENCY*

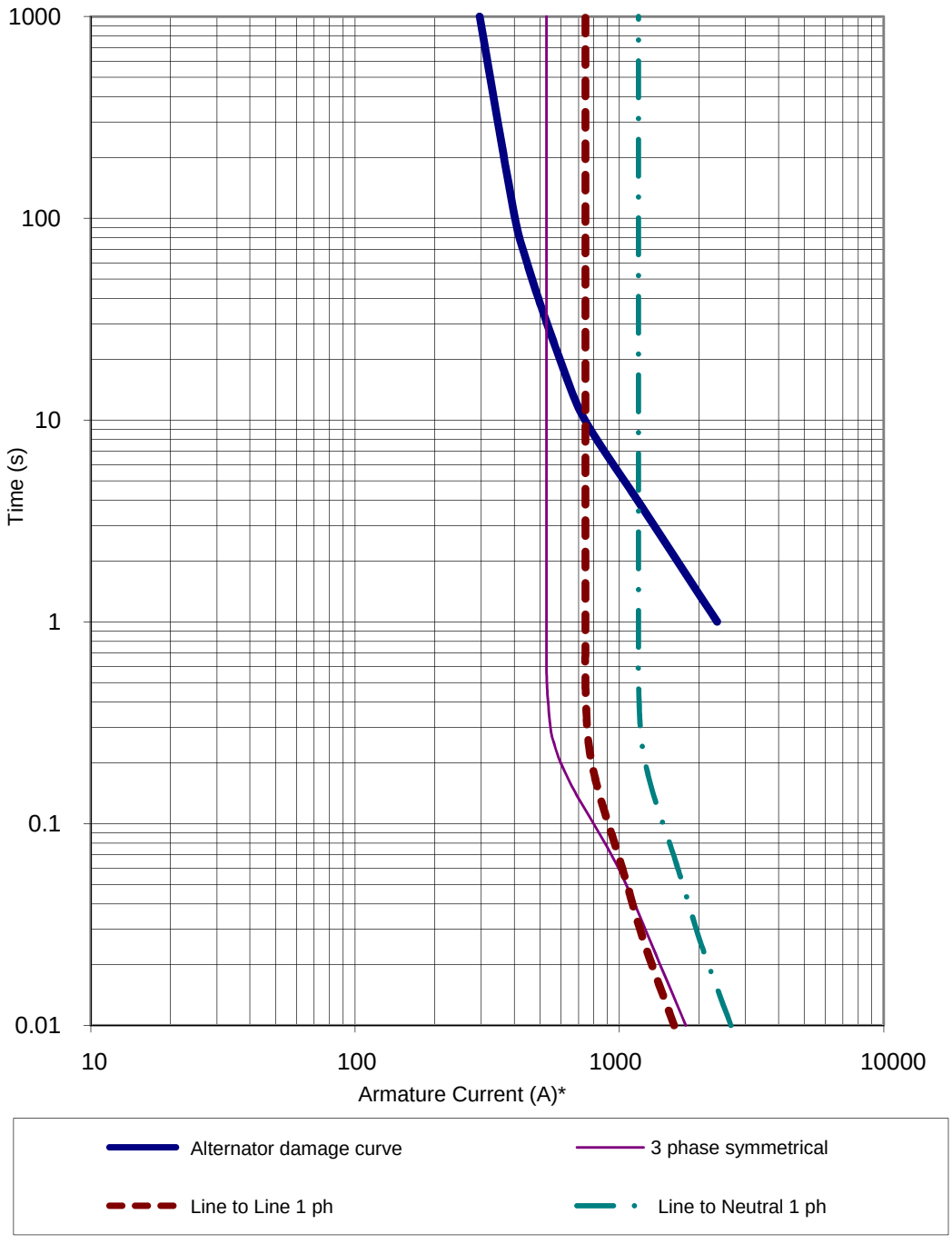


4P10X, 60 Hz, 139/240, 277/480 Volts, Wye
TYPICAL MOTOR STARTING CHARACTERISTICS*



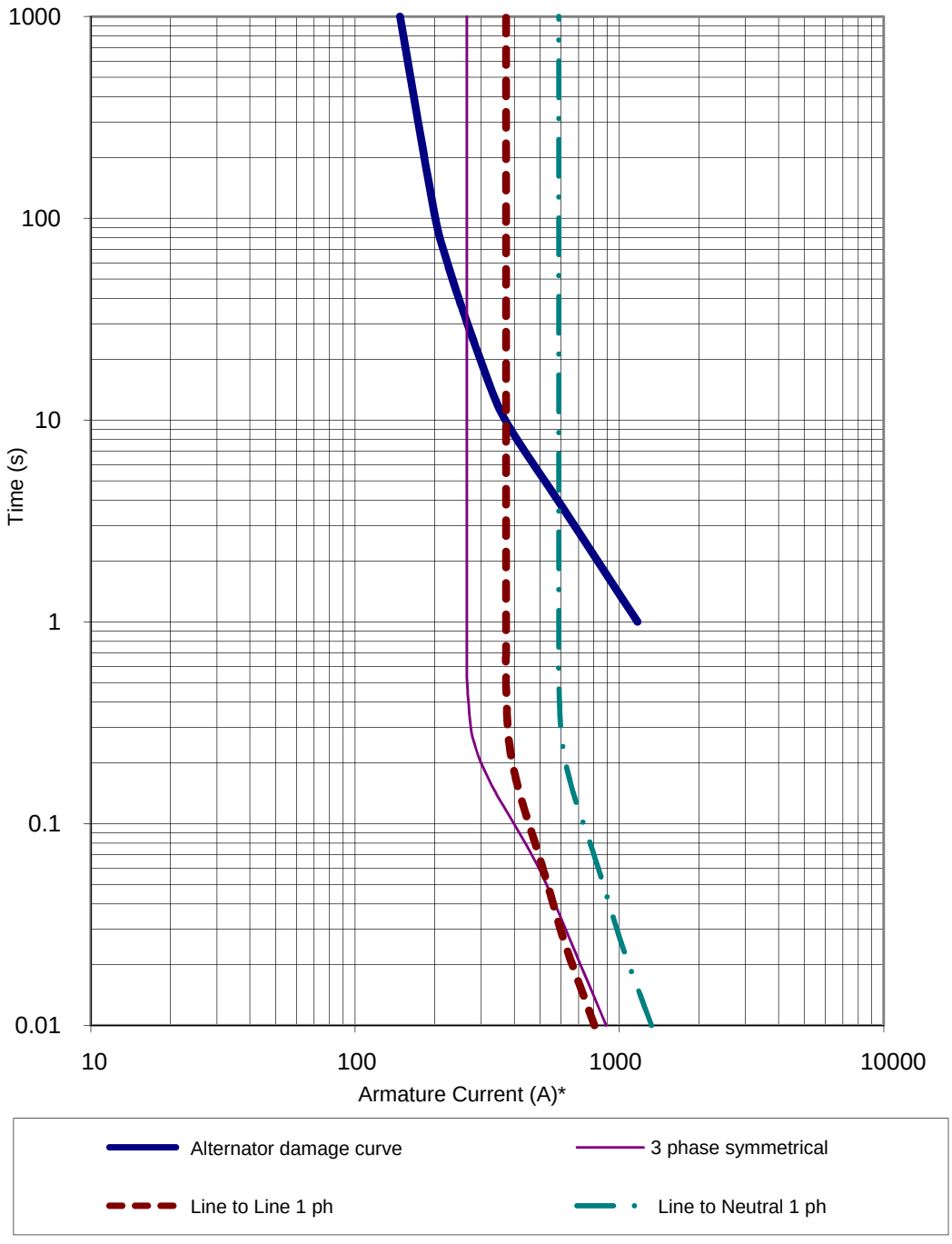
* All data tested in accordance with IEEE Standard 115. Kohler Co. reserves the right to change the design or specifications without notice and without any obligation or liability whatsoever.

4P10X, 60 Hz, Low Wye or Delta Connection
SHORT CIRCUIT DECREMENT CURVE



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

4P10X, 60 Hz, High Wye Connection
SHORT CIRCUIT DECREMENT CURVE



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

KOHLER®

Sound Data

TECHNICAL INFORMATION BULLETIN

Generator Set Sound Data Sheet

			Sound Pressure Data in dB(A)			
Generator Set Model	**Hz**	**Load**	**Raw Exhaust**	**Open Unit, Isolated Exhaust**	**Weather Enclosure**	**Sound Enclosure**
60REOZK	60	100% Load	104.4	82.0	80.1	65.3
		No Load	95.4	80.9	79.0	62.7

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.

60REOZK	60 Hz

				Sound Pressure Levels, dB(A)								
				Octave Band Center Frequency (Hz)								
Load	Distance, m (ft)	Enclosure	Measurement Clock Position	63	125	250	500	1000	2000	4000	8000	Overall Level
100% Load	7 (23)	Sound	3:00	48.5	55.6	60.2	57.2	55.9	60.1	52.4	50.3	65.7
			1:30	47.4	52.2	55.5	56.1	57.6	58.4	50.9	48.3	63.9
			12:00-Engine	47.4	52.9	57.3	57.8	60.6	57.4	52.5	49.6	65.3
			10:30	45.2	53.1	58.8	58.3	62.5	61.4	52.3	48.4	67.1
			9:00	49.1	56.3	59.9	57.8	56.6	58.3	51.2	48.9	65.4
			7:30	48.1	53.1	59.6	56.8	57.8	60.7	51.1	45.7	65.6
			6:00-Alternator	41.5	53.2	55.7	55.4	54.2	55.4	47.8	41.4	62.1
			4:30	41.3	53.0	57.7	57.3	56.2	61.7	52.0	47.7	65.4
			8-pos. log avg.	46.8	53.9	58.4	57.2	58.5	59.6	51.5	48.2	65.3

				Sound Pressure Levels, dB(A)							
Load	Distance, m (ft)	Enclosure	Measurement Clock Position	3:00	1:30	12:00 Eng.	10:30	9:00	7:30	6:00 Alt.	4:30	8-pos. log avg.
100% Load	7 (23)	Weather	Overall Levels	80.2	80.2	80.1	81.7	79.8	80.4	77.4	79.8	80.1

				Sound Pressure Levels, dB(A)								
				Octave Band Center Frequency (Hz)								
Load	Distance, m (ft)		Measurement Clock Position	63	125	250	500	1000	2000	4000	8000	Overall Level
100% Load	7 (23)	Open Unit, Isolated Exhaust	3:00	52.4	59.3	69.9	70.3	76.1	78.8	72.5	67.6	82.1
			1:30	51.5	62.2	69.9	73.2	78.0	76.1	72.6	66.9	82.1
			12:00-Engine	51.9	67.0	70.3	76.0	76.0	76.6	71.6	62.6	82.0
			10:30	55.0	62.1	71.6	74.8	78.9	79.2	73.0	64.3	83.6
			9:00	51.0	61.4	71.3	71.5	75.9	77.6	72.6	66.2	81.7
			7:30	46.2	58.4	70.5	71.6	78.7	77.1	71.8	65.1	82.3
			6:00-Alternator	56.4	60.2	71.1	73.0	73.8	73.0	66.9	61.6	79.3
			4:30	48.6	58.2	67.9	72.9	77.5	76.6	71.4	65.0	81.7
			8-pos. log avg.	52.6	62.1	70.4	73.3	77.1	77.2	71.8	65.3	82.0

			Sound Pressure Levels, dB(A)								
			Octave Band Center Frequency (Hz)								
Load	Distance, m (ft)	Exhaust	63	125	250	500	1000	2000	4000	8000	Overall Level
100% Load	1 (3.3)	Raw Exhaust (No Silencer)	65.5	87.3	86.3	95.8	95.3	98.8	99.0	95.6	104.4

60REOZK	60 Hz

Load	Distance, m (ft)	Enclosure	Measurement Clock Position	Sound Pressure Levels, dB(A)								
				Octave Band Center Frequency (Hz)								Overall Level
				63	125	250	500	1000	2000	4000	8000	
No Load	7 (23)	Sound	3:00	40.2	52.1	56.9	55.0	52.8	52.8	47.1	42.1	61.6
			1:30	42.9	48.1	56.3	55.5	54.1	53.8	47.1	40.9	61.5
			12:00-Engine	46.1	50.2	59.5	59.4	54.9	54.3	47.4	40.7	64.1
			10:30	45.3	49.2	58.5	59.1	56.8	56.7	48.4	41.8	64.3
			9:00	41.6	52.4	57.8	57.8	53.2	52.4	46.2	42.0	62.7
			7:30	39.1	49.9	57.3	56.4	55.9	56.3	46.1	39.5	62.9
			6:00-Alternator	40.4	51.1	54.6	56.0	50.5	52.9	45.5	34.6	60.7
			4:30	38.6	49.4	58.1	55.4	54.0	57.3	47.7	40.8	62.9
			8-pos. log avg.	42.6	50.5	57.6	57.1	54.4	54.9	47.0	40.7	62.7

Load	Distance, m (ft)	Enclosure	Measurement Clock Position	Sound Pressure Levels, dB(A)								
				3:00	1:30	12:00 Eng.	10:30	9:00	7:30	6:00 Alt.	4:30	8-pos. log avg.
No Load	7 (23)	Weather	Overall Levels	77.9	79.9	79.6	80.6	78.0	79.6	75.3	79.2	79.0

Load	Distance, m (ft)	Enclosure	Measurement Clock Position	Sound Pressure Levels, dB(A)								
				Octave Band Center Frequency (Hz)								Overall Level
				63	125	250	500	1000	2000	4000	8000	
No Load	7 (23)	Open Unit, Isolated Exhaust	3:00	45.2	55.1	68.4	69.5	75.7	75.2	68.6	60.7	79.8
			1:30	43.8	56.0	69.8	73.2	78.6	75.6	70.0	62.5	81.8
			12:00-Engine	46.3	55.0	71.1	76.4	76.1	75.3	69.1	58.4	81.5
			10:30	51.1	54.7	68.0	74.5	78.4	77.6	71.4	61.9	82.5
			9:00	50.3	55.7	66.5	70.7	75.5	75.2	70.1	62.6	79.9
			7:30	52.2	55.0	69.6	71.3	78.3	75.8	70.1	63.3	81.5
			6:00-Alternator	47.6	56.3	69.9	71.1	72.3	69.9	62.6	52.2	77.2
			4:30	45.9	54.1	69.7	73.2	77.3	75.6	68.2	59.1	81.1
			8-pos. log avg.	48.7	55.3	69.3	73.0	76.9	75.4	69.3	61.0	80.9

Load	Distance, m (ft)	Exhaust	Sound Pressure Levels, dB(A)								
			Octave Band Center Frequency (Hz)								Overall Level
			63	125	250	500	1000	2000	4000	8000	
No Load	1 (3.3)	Raw Exhaust (No Silencer)	52.3	68.5	80.9	86.0	88.3	89.5	89.3	86.7	95.4

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
60REOZK	All Weather & Sound Enclosures	24.4	1.8	24-36	1.7-2.6	GM94612	GM95578	ADV-8740
	All AQMD Weather & Sound Enclosures	30.0	2.2	32-54	2.3-4.0	GM102366 - Flex 483.002180.092.00.0 - Lombardini CAT	GM95578	ADV-8740

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®

60REOZK

49-State

60 HZ. DIESEL INDUSTRIAL GENERATOR SET

EMISSION DATA SHEET

ENGINE INFORMATION

Model:	KDI3404TM/G18	Bore, mm (in.)	96 (3.28)
Nameplate BHP @ 1800 RPM:	94	Stroke, mm (in.)	116 (4.57)
Type:	4-Cycle, 4 Cyl., Inline	Displacement, L (cu. In.)	3.4 (207)
Aspiration:	Turbocharged		
Compression Ratio:	18.5:1	EPA Family:	MKHXL03.4EST
		EPA Certificate:	MKHXL03.4EST-005

PERFORMANCE DATA:

Engine bkW @ 1800 RPM	70
Fuel Consumption (Lph) @ 100% Load (Standby)	20.4
Exhaust Gas Flow (m^3/min)	14.3
Exhaust Temperature (°C)	490

EXHAUST EMISSION DATA:

	EPA D2 Cycle 5-mode Weighted
NMHC	0.07
CO2	811
NOx (Oxides of Nitrogen as NO_2)	3.99
CO (Carbon Monoxide)	1.1
PM (Particulate Matter)	0.38

Values are in g/kWh unless otherwise noted

TEST METHODS AND CONDITIONS

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

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
2021 MODEL YEAR
CERTIFICATE OF CONFORMITY
WITH THE CLEAN AIR ACT

OFFICE OF TRANSPORTATION AND AIR QUALITY
ANN ARBOR, MICHIGAN 48105

Certificate Issued To: **Kohler Co.**
(U.S. Manufacturer or Importer)

Certificate Number: MKHXL03.4EST-005

Effective Date: 12/02/2020

Expiration Date: 12/31/2021

Byron J. Bunker, Division Director
Compliance Division

Issue Date: 12/02/2020

Revision Date: N/A

Model Year: 2021
Manufacturer Type: Original Engine Manufacturer
Engine Family: MKHXL03.4EST

Mobile/Stationary Indicator: Stationary
Emissions Power Category: 56<=kW<75
Fuel Type: Diesel
After Treatment Devices: No After Treatment Devices Installed
Non-after Treatment Devices: Engine Design Modification

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

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

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

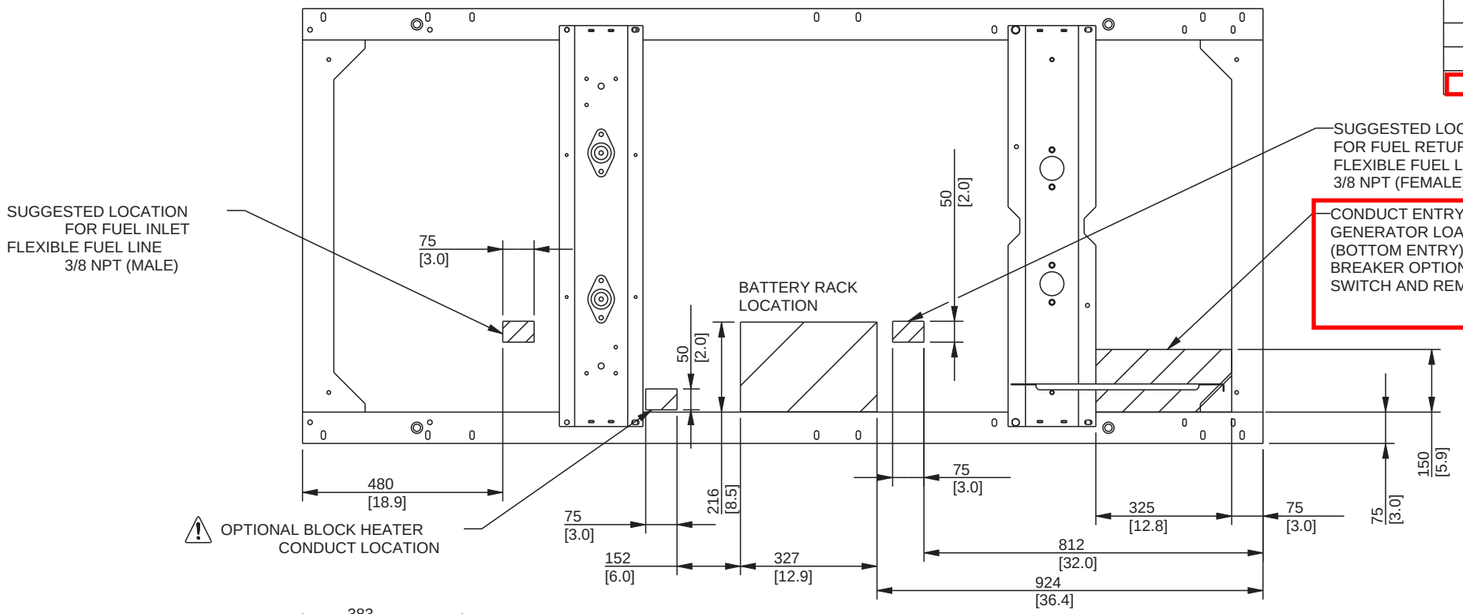
This certificate does not cover engines sold, offered for sale, or introduced, or delivered for introduction, into commerce in the U.S. prior to the effective date of the certificate.

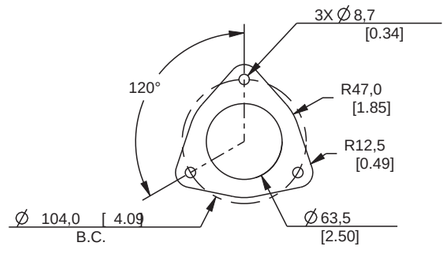
The actual engine power may lie outside the limits of the Emissions Power Category shown above. See the certificate application for details.

KOHLER®

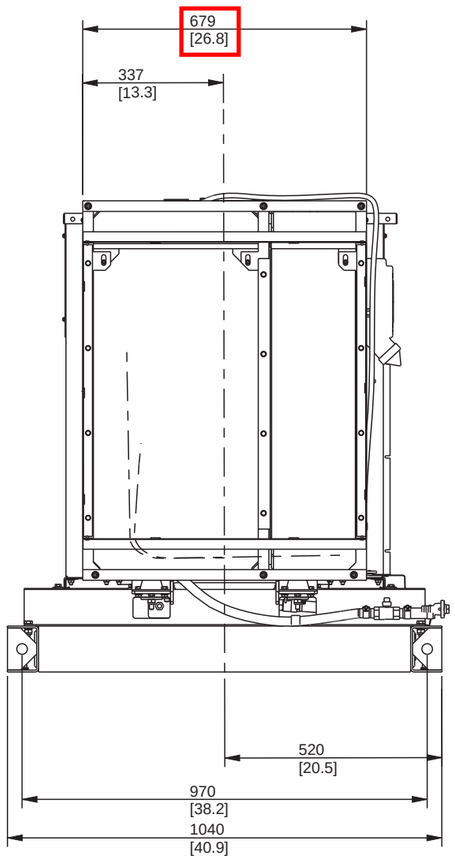
Dimensional Drawings

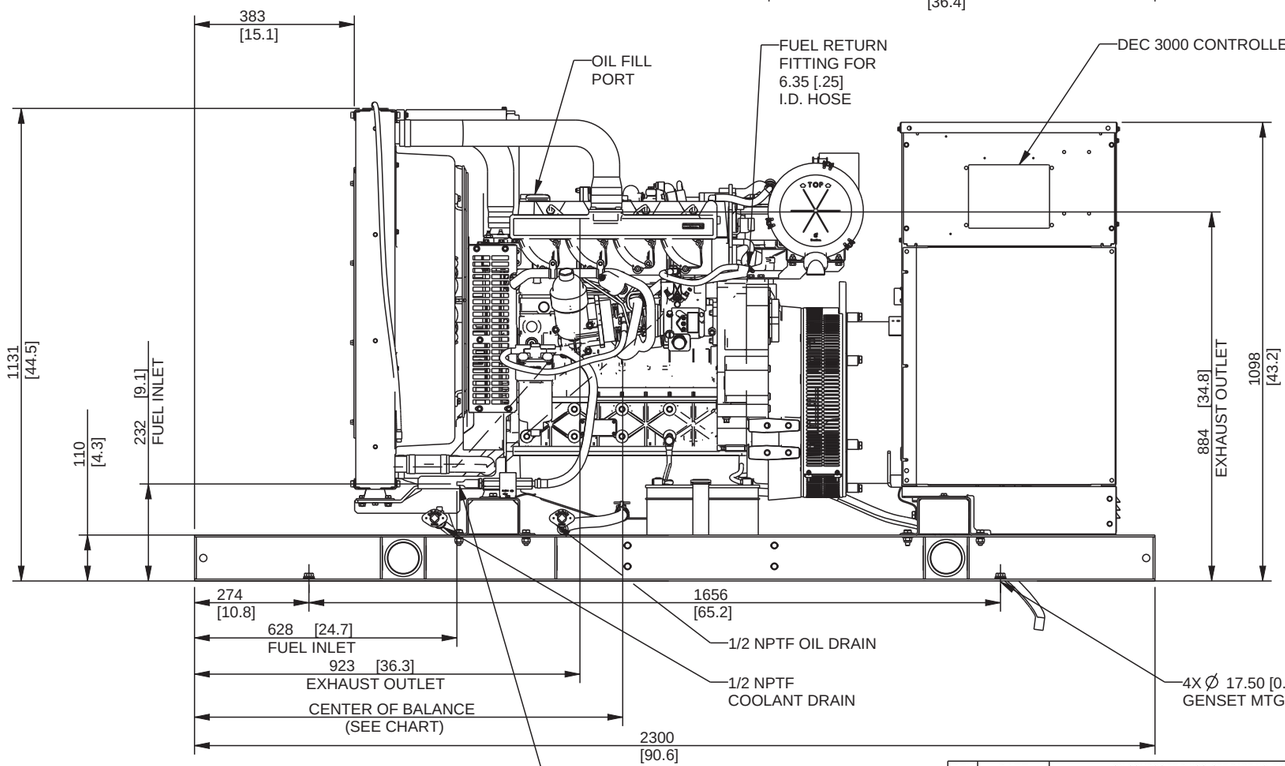
MODEL	COB OPEN	GENSET WEIGHT (WET) KG [LBS]
40 4P/Q5X	52.6"	750 [1654]
40/50 4P/Q78X	53.6"	787 [1735]
50/60 4P/Q8X	54"	802 [1769]
60 4P/Q10X	55"	841 [1855]





EXHAUST OUTLET





INSTALLATION NOTE:
IF A SUBBASE FUEL TANK AND/OR ENCLOSURE IS USED, REFER TO SUBBASE FUEL TANK ADV TO DETERMINE MOUNTING LOCATIONS.

NOTES:
1. WHEN SUBBASE TANK IS USED, CONDUIT MUST BE LOCATED OUTSIDE OF TANK AREA OR IN STUB-UP AREA FOR SUBBASE TANK. REFER TO SUBBASE ADV.

2. DIMENSIONS IN [] ARE ENGLISH EQUIVALENTS.

3. IF AN ENCLOSURE IS USED, THE FUEL LINE MUST BE STUBBED UP FROM DIRECTLY UNDER THE UNIT OR BROUGHT IN FROM THE END OF THE SKID. REFER TO ENCLOSURE ADV.

49 STATE
60HZ 4P5X, 4Q5X,
4P7BX, 4Q7BX, 4P8X,
4Q8X, 4P10X, 4Q10X,
RECON. 600V ALTERNATORS
40,50,60KW KOHLER DIESEL

REV	DATE	ON COMPOSITE DWGS, SEE PART NO. FOR REVISION LEVEL	BY
-	1-30-15	NEW DRAWING [CT105282]	KNN
A	9-29-15	SEE SHEET 2 [CT126143]	CEK
B	4-22-16	SEE SHEET 3 [CT144988]	RRT
C	10-4-16	(C-2) DIM. Ø 104,0 [4.09] ADDED [CT161121]	ADP
D	12-22-16	SEE SHEET 2 [CT168590]	ADP
E	10-20-17	SHEETS 4, 5 & 6 ADDED [CT180516]	CEK
F	2-2-18	SEE SHEETS 4 & 5 [CT184126]	CEK

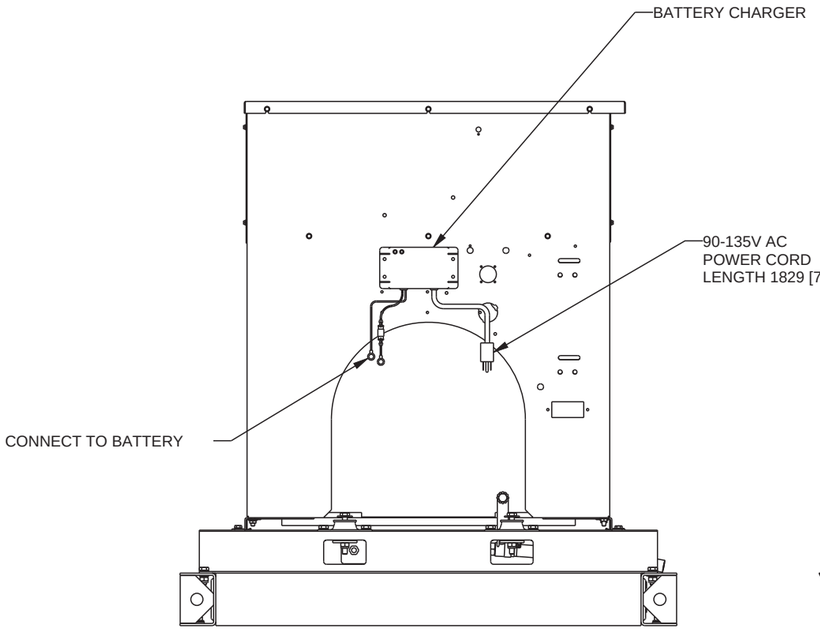
UNLESS OTHERWISE SPECIFIED -
1) DIMENSIONS ARE IN MILLIMETERS
2) TOLERANCES ARE:
SURFACE FINISH MAX.
THIRD ANGLE PROJECTION

KOHLER CO. | METRIC | PRO-E

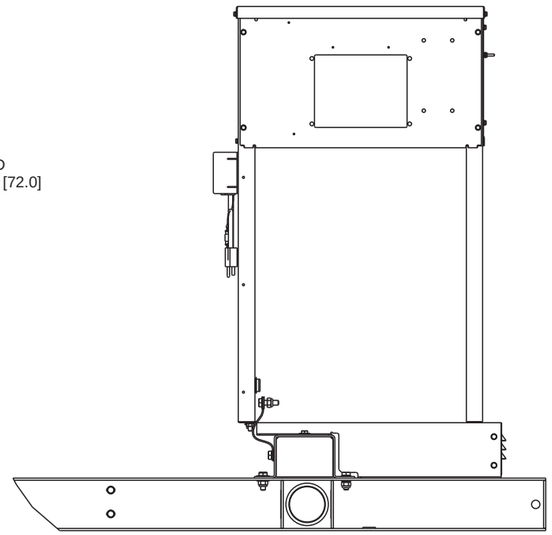
TITLE: DIMENSION PRINT 40-60 KW KDI

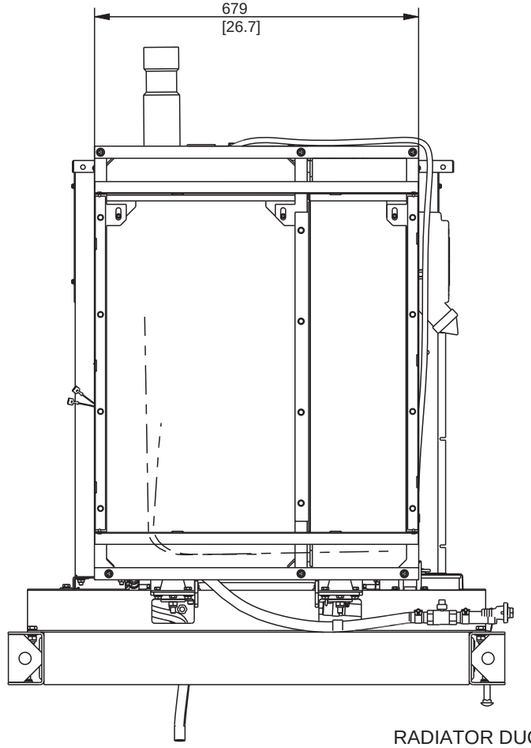
APPROVALS		DATE
DRAWN	KNN	1-30-15
CHECKED	KNN	1-30-15
APPROVED	BMK	1-30-15

SCALE 0.14 | CAD NO. | SHEET 1 of 6
DWG NO. ADV-8739 | D

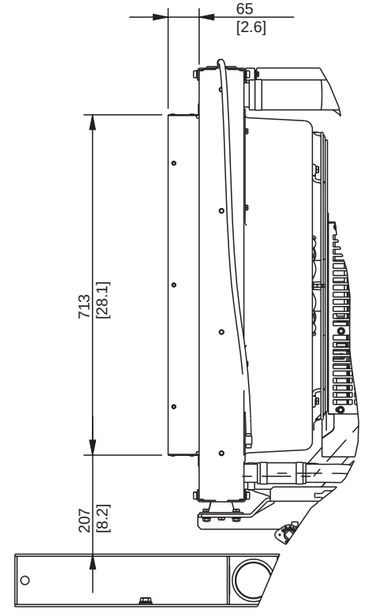


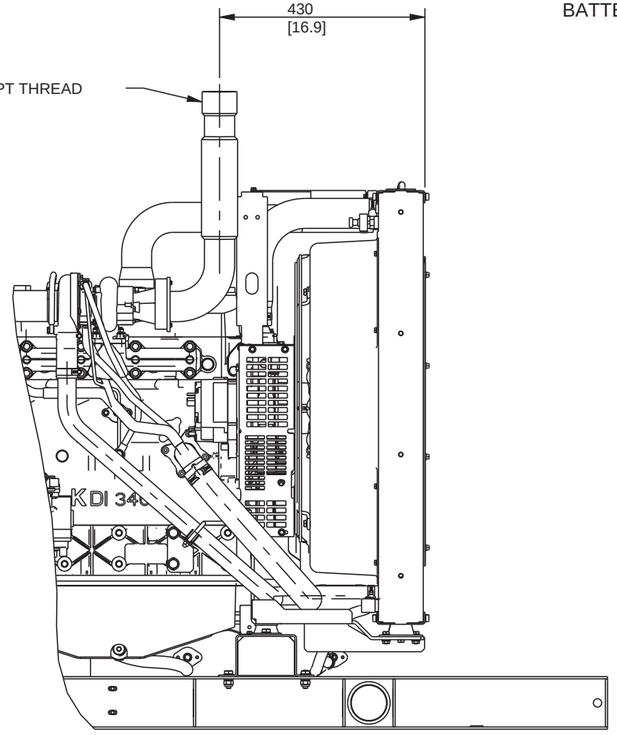
BATTERY CHARGER

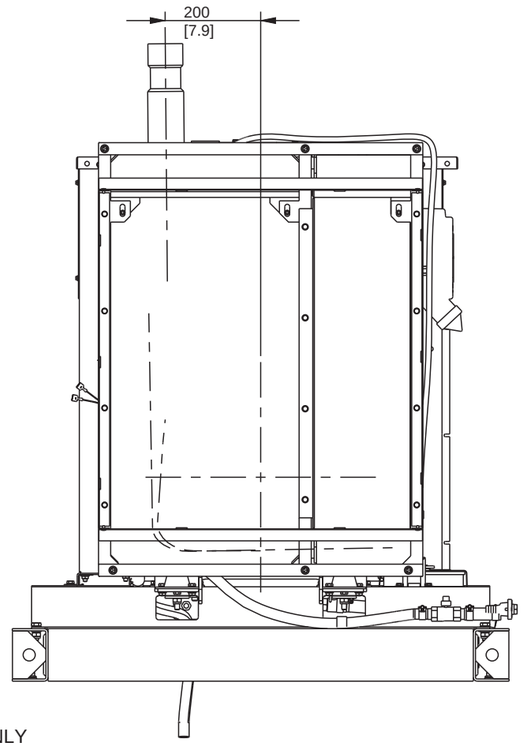




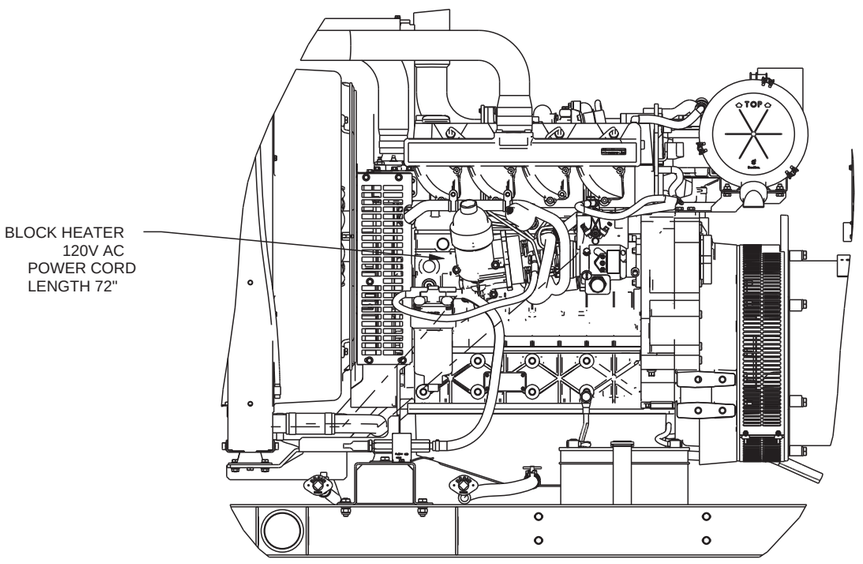
RADIATOR DUCT FLANGE







FLEXIBLE EXHAUST- 49 STATE ONLY
(SEE SHEET 6 FOR SCAQMD/CALIFORNIA)



BLOCK HEATER (INTERNAL)

REV	DATE	ON COMPOSITE DWGS, SEE PART NO. FOR REVISION LEVEL	BY
-	1-30-15	NEW DRAWING [CT105282]	KNN
A	9-29-15	SEE SHEET 2 [CT126143]	CEK
B	4-22-16	(B-8) NPT THREAD: 2.5 INCH WAS 3 [CT144988]	RRT
C	10-4-16	SEE SHEET 1 [CT161121]	ADP
D	12-22-16	SEE SHEET 2 [CT168590]	ADP
E	10-20-17	SHEETS 4, 5 & 6 ADDED [CT180516]	CEK
F	2-2-18	SEE SHEETS 4 & 5 [CT184126]	CEK

UNLESS OTHERWISE SPECIFIED -
1) DIMENSIONS ARE IN MILLIMETERS
2) TOLERANCES ARE:

SURFACE FINISH MAX.

THIRD ANGLE PROJECTION

APPROVALS		DATE
DRAWN	KNN	1-30-15
CHECKED	KNN	1-30-15
APPROVED	BMK	1-30-15

KOHLER CO. METRIC PRO-E

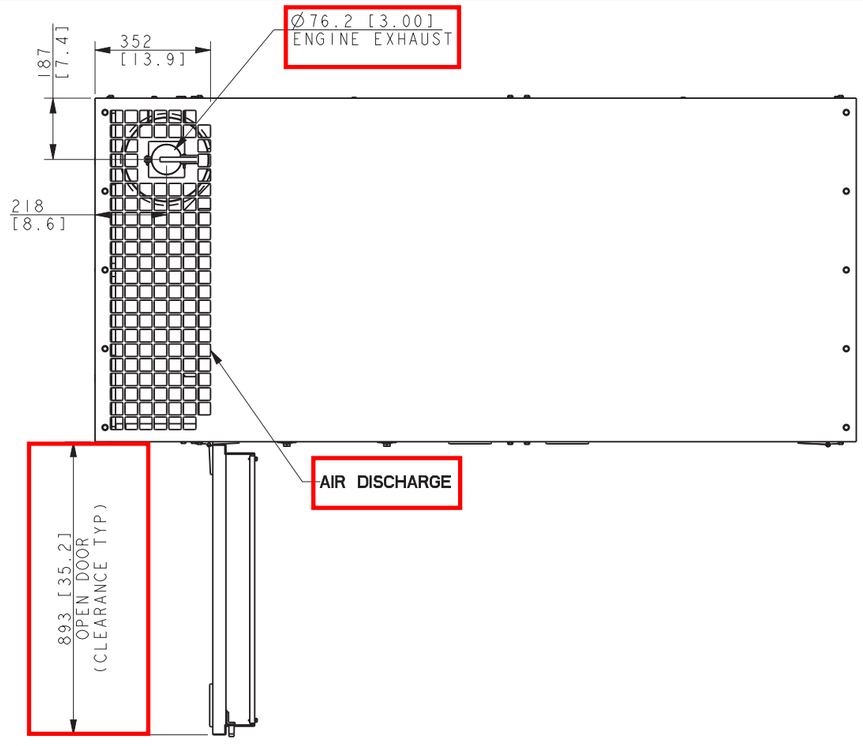
POWER SYSTEMS, KOHLER, WI 53044 U.S.A.

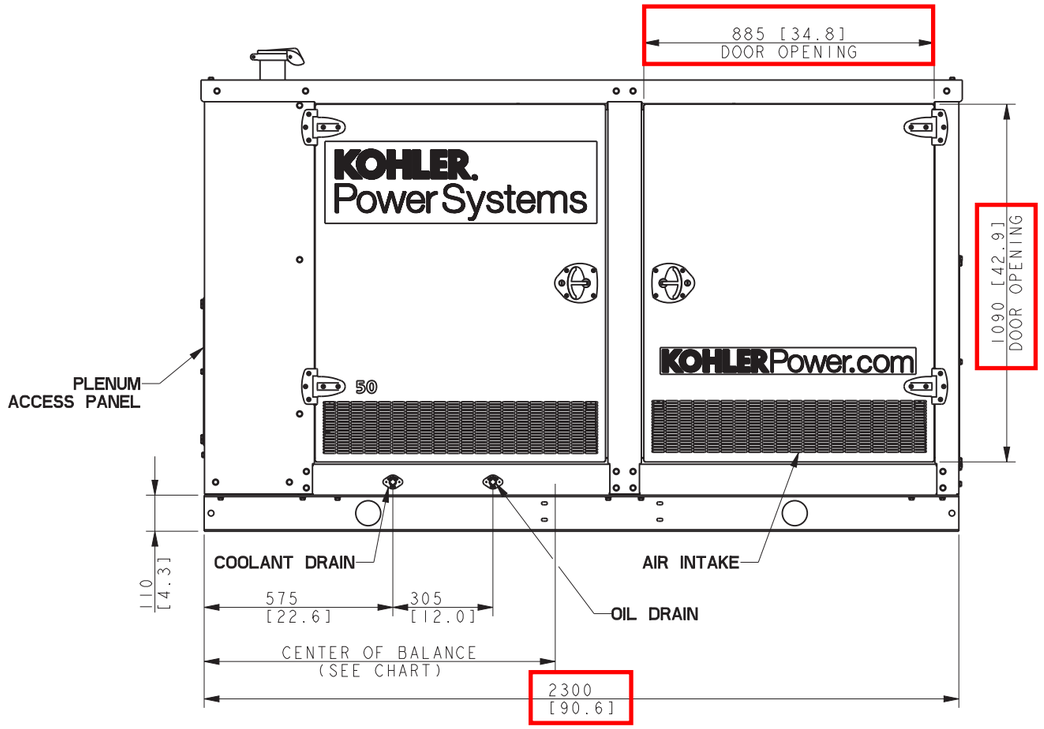
TITLE: DIMENSION PRINT 40-60 KW KDI

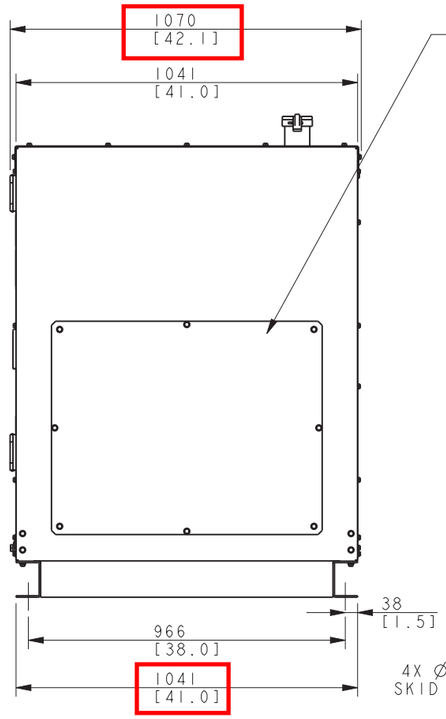
SCALE 0.16 | CAD NO. | SHEET 3 of 6

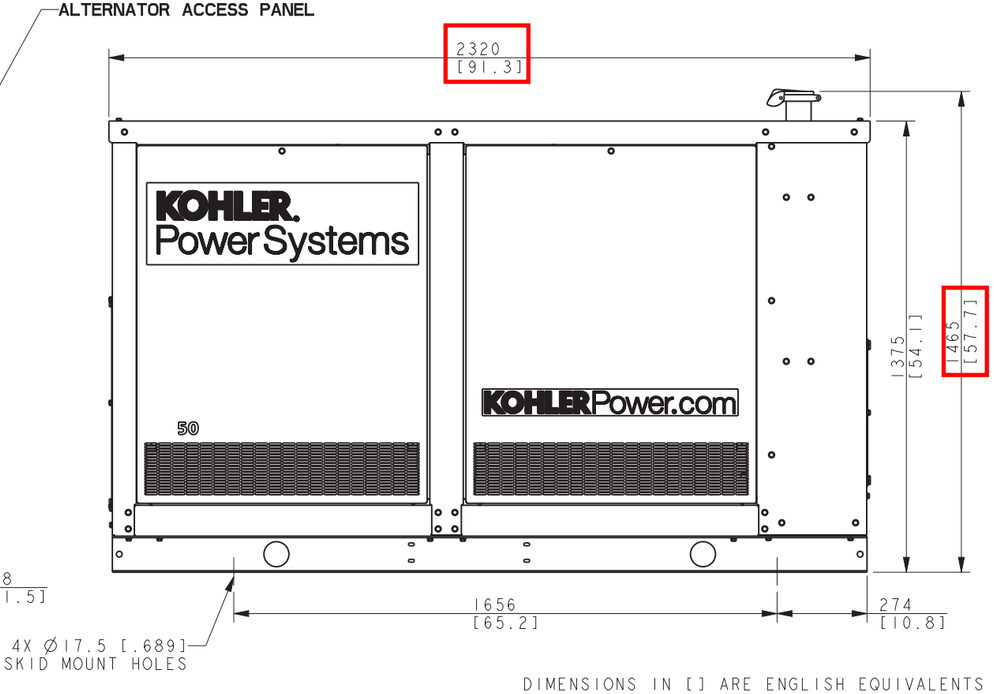
DWG NO. ADV-8739 | D

MODEL	DESCRIPTION	ENCLOSURE WEIGHT KG [LBS]	ENCLOSED CENTER OF BALANCE
4P5X	STEEL WEATHER, 40-60KW	261 [575]	50.3
	STEEL SOUND, 40-60KW	272 [600]	50.3
	ALUMINUM SOUND, 40-60KW	170 [375]	51.0
4P7BX	STEEL WEATHER, 40-60KW	261 [575]	51.1
	STEEL SOUND, 40-60KW	272 [600]	51.1
	ALUMINUM SOUND, 40-60KW	170 [375]	51.8
4P8X	STEEL WEATHER, 40-60KW	261 [575]	51.5
	STEEL SOUND, 40-60KW	272 [600]	51.4
	ALUMINUM SOUND, 40-60KW	170 [375]	52.2
4P10X	STEEL WEATHER, 40-60KW	261 [575]	52.2
	STEEL SOUND, 40-60KW	272 [600]	52.1
	ALUMINUM SOUND, 40-60KW	170 [375]	52.9









DIMENSIONS IN [] ARE ENGLISH EQUIVALENTS

NOTE:

1. IF TANK IS ORDERED, ENCLOSURE MOUNT DIRECTLY TO TANK.
2. TANK MAY EXTEND BEYOND ENCLOSURE (DISCHARGE END ONLY)

60HZ 4P5X, 4Q5X,
4P7BX, 4Q7BX, 4P8X,
4Q8X, 4P10X, 4Q10X,
RECON. 600V ALTERNATORS
40,50,60 KW KOHLER DIESEL

REV	DATE	ON COMPOSITE DWGS, SEE PART NO. FOR REVISION LEVEL	BY
-	2-03-15	NEW DRAWING [CT1105282]	KNN
A	9-25-17	(D-7) DIM. Ø76.2 [3.00] ADDED [CT177004]	SRM

UNLESS OTHERWISE SPECIFIED -
1) DIMENSIONS ARE IN MILLIMETERS
2) TOLERANCES ARE:
X.XX
X.X
X
ANGLES
SURFACE FINISH
MAX.
THIRD ANGLE PROJECTION

APPROVALS		DATE
DRAWN	KNN	02.03.15
CHECKED	KNN	02.03.15
APPROVED	BMK	02.03.15

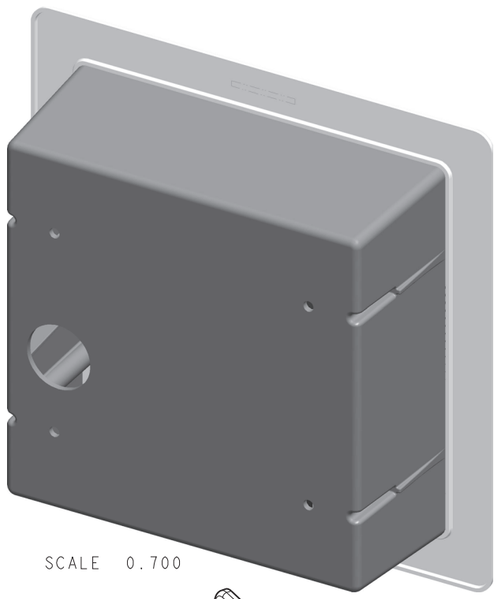
KOHLER CO. METRIC PRO-E
POWER SYSTEMS, KOHLER, WI 53044 U.S.A.

TITLE
DIMENSION PRINT, ENCL. 40-60 KW KDI

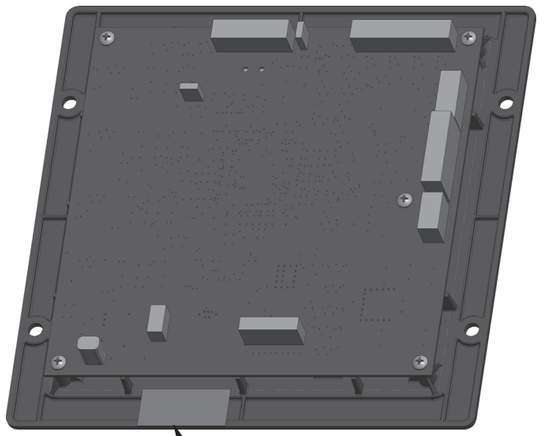
SCALE 0.11 | CAD NO. | SHEET 1 of 1
DWG NO. ADV-8740 | D

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

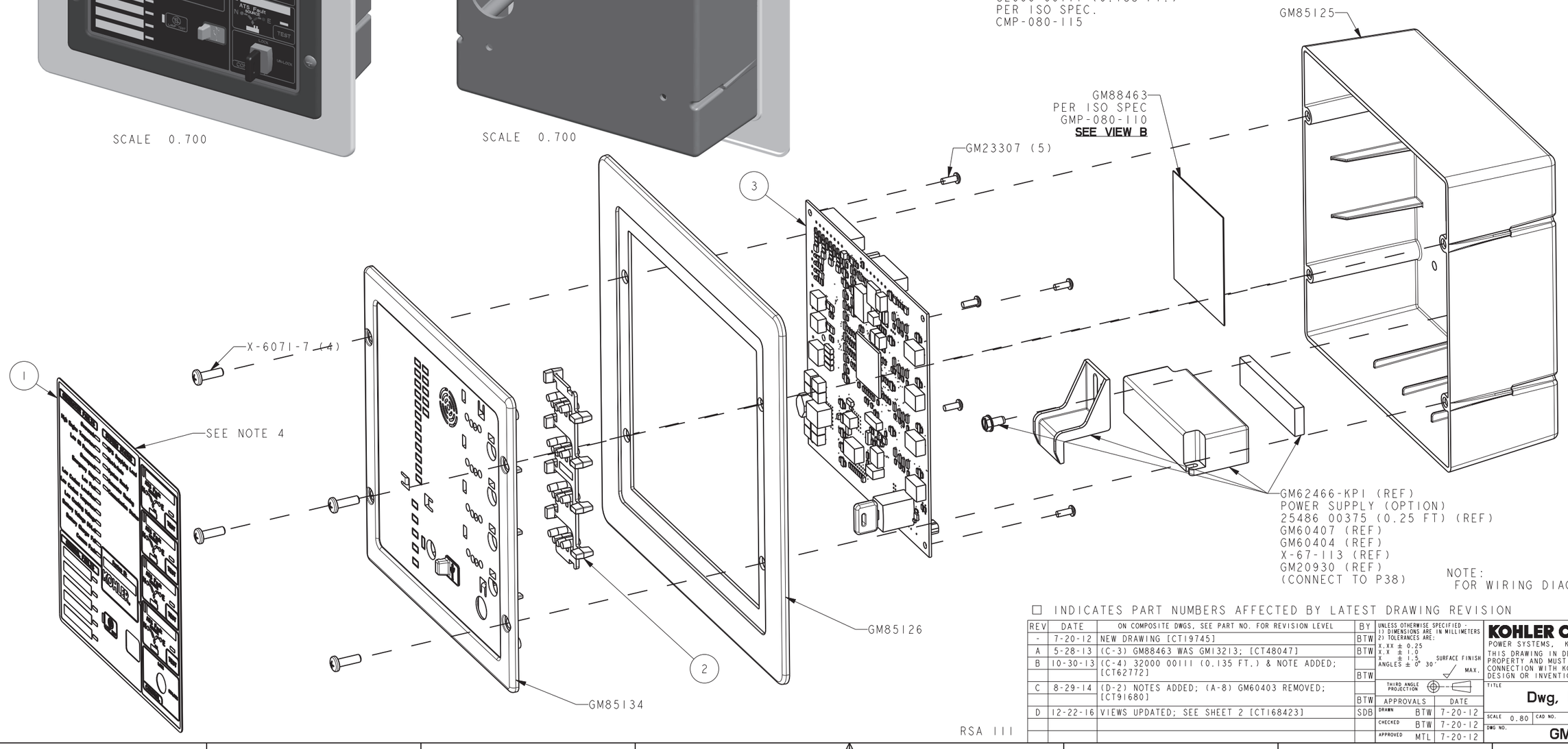


SCALE 0.700



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

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



NOTE:
FOR WIRING DIAGRAM, SEE GM62554.

☐ INDICATES PART NUMBERS AFFECTED BY LATEST DRAWING REVISION

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

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

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

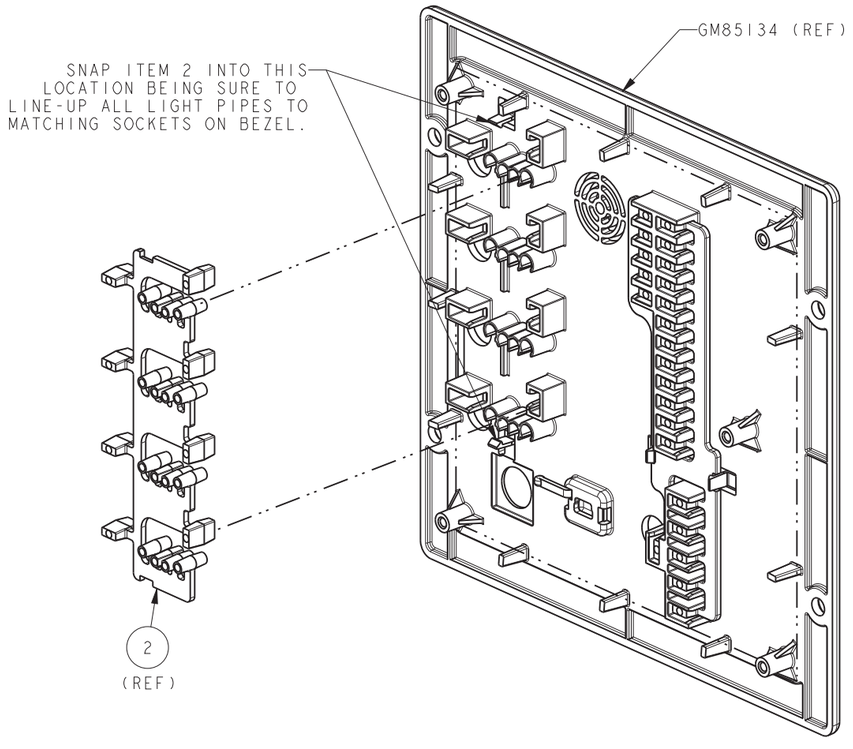
KOHLER CO. METRIC PRO-E
POWER SYSTEMS, KOHLER, WI 53044 U.S.A.

TITLE: Dwg, RSA III Assy

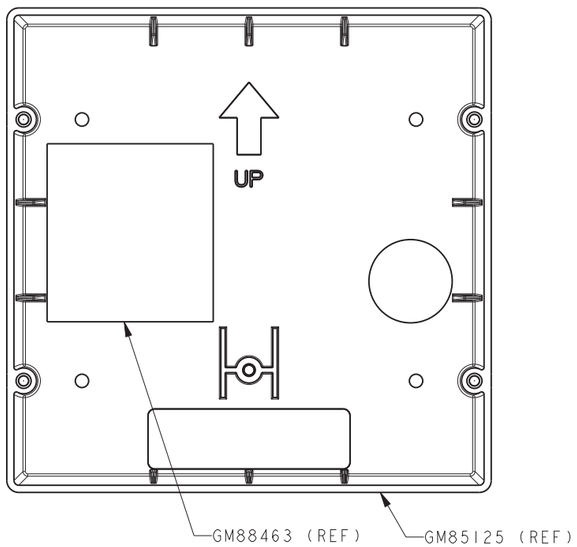
SCALE 0.80 | CAD NO. | SHEET 1 of 2

DWG NO. GM85123 | D

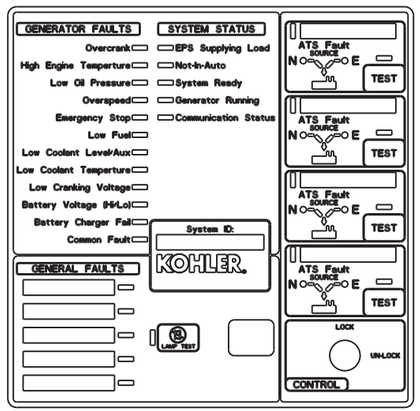
RSA III



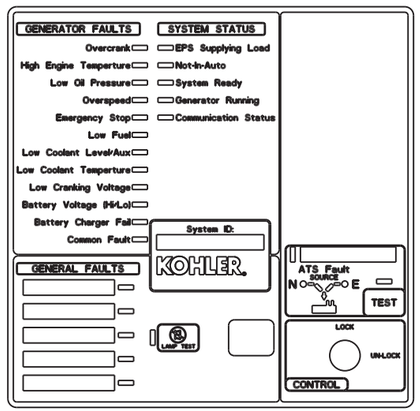
BACK VIEW OF BEZEL
SCALE 1.000



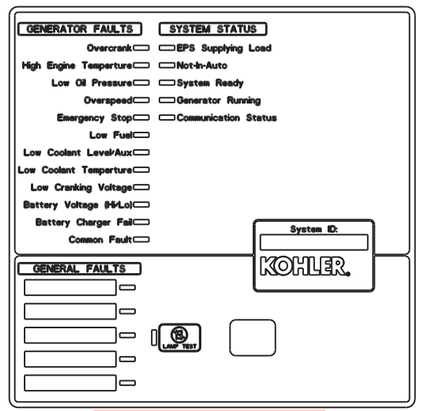
VIEW B
FRONT OF BOX



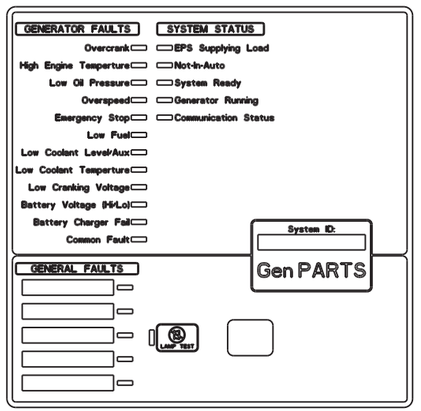
ITEM 1
(P/N: GM85127 REF)



ITEM 1
(P/N: GM85131 REF)



ITEM 1
(P/N: GM85132 REF)



ITEM 1
(P/N: GM85133 REF)

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

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

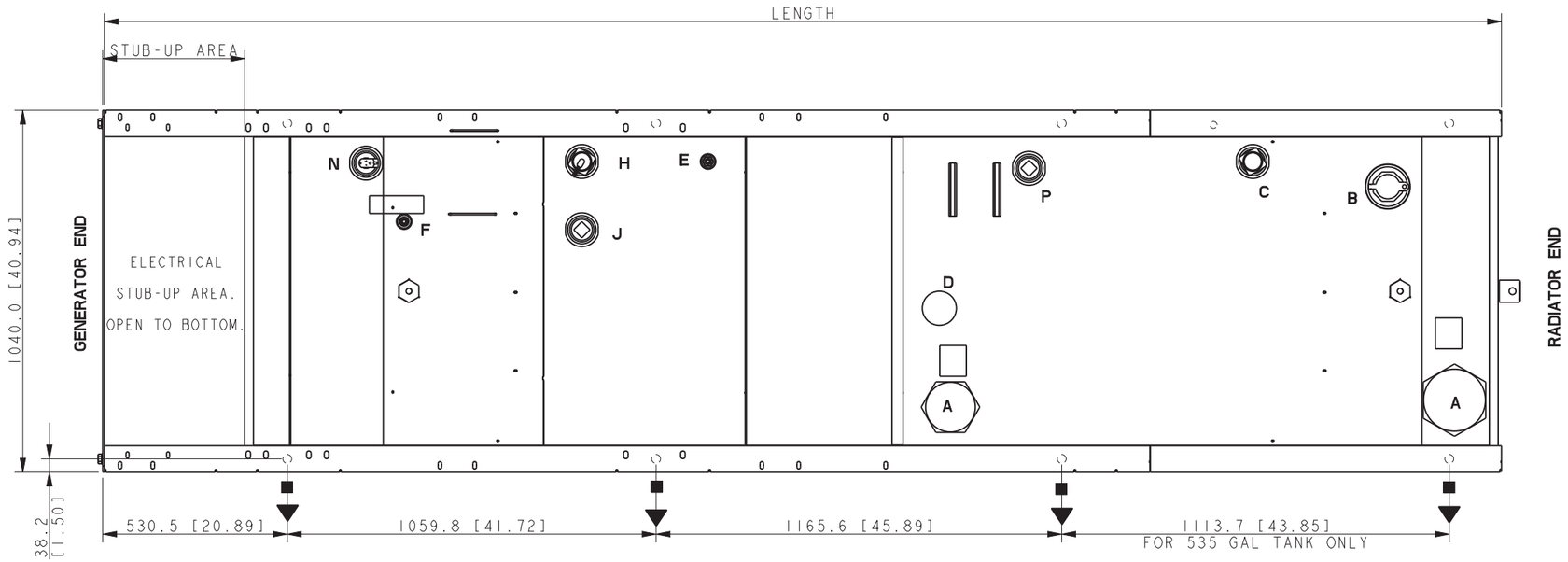
TITLE
Dwg, RSA III Assy

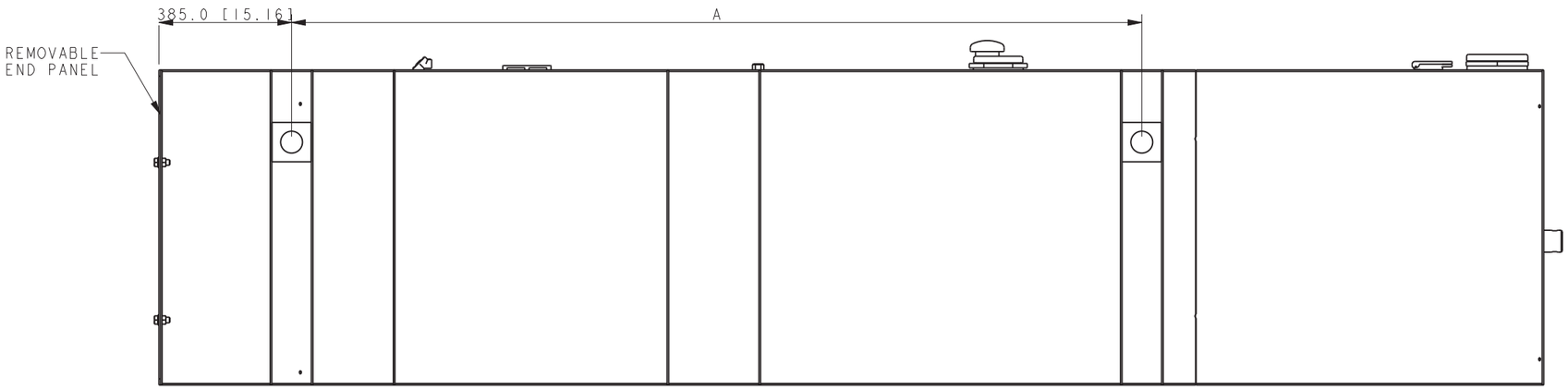
SCALE 0.80 | CAD NO. | SHEET 2 of 2
DWG NO. **GM85123** **D**

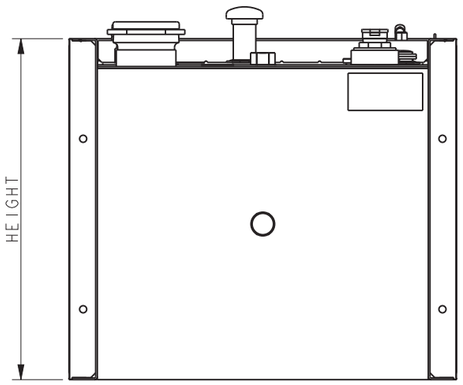
MODEL	CAPACITY		WEIGHT		LENGTH		HEIGHT		STUB-UP LENGTH		LIFTING EYE DIM A		MTG HOLES	EMERGENCY VENT (A) INNER/OUTER
	LITERS	GAL	KG	LBS	MM	IN	MM	IN	MM	IN	MM	IN	QTY	IN
40/50/60kW	541	142	466	1027	2895.6	114.0	431.8	17.0	408.0	16.1	2184.5	86.0	6	3/3
50/60kW	898	237	599	1321	2895.6	114.0	660.4	26.0	408.0	16.1	2184.5	86.0	6	3/3
40/60kW	1057	279	658	1452	2895.6	114.0	762.0	30.0	408.0	16.1	2184.3	86.0	6	3/4
40/50/60kW	1520	401	777	1714	2895.6	114.0	914.4	36.0	304.8	12.0	2184.3	86.0	6	4/4
50/60kW	2028	535	978	2156	4019.6	158.3	914.4	36.0	408.0	16.1	2467.9	97.2	8	4/5

TANK FITTINGS:

A. A" NPT EMERGENCY VENT FITTING PER NFPA 30 WITH VENT CAPS (QTY 2).
B. 4" NPT FUEL FILL FITTING BUSHED TO 2" NPT WITH LOCKABLE FILL CAP AND 2" RISER
C. 2" NPT FUEL LEVEL GAUGE FITTING W/ DIRECT READING MECHANICAL GAUGE.
D. 2" NPT NORMAL VENT FITTING WITH MUSHROOM VENT CAP AND 5" RISER.
E. 1/2" NPT FITTING FOR REMOVABLE ENGINE SUPPLY DIP TUBE (3/8" NPT FEMALE) WITH CHECK VALVE.
F. 1/2" NPT FITTING FOR REMOVABLE FUEL RETURN DIP TUBE (3/8" NPT FEMALE).
H. 2" NPT FUEL LEVEL SENDING UNIT.
J. 2" NPT FITTING FOR OPTIONAL SWITCH (INSTALL 2"NPT PIPE PLUG)
N. 2" NPT FOR FUEL IN BASIN SWITCH
P. 2" NPT FITTING FOR OPTIONAL SWITCH (INSTALL 2"NPT PIPE PLUG)







NOTE:
FOR FURTHER TANK DETAIL SEE INDIVIDUAL DRAWINGS

■ Ø25.4 [1.00] STANDARD MOUNTING

▼ Ø25.4 [1.00] BOTTOM BEAM MOUNTING

STATE TANK

REV	DATE	ON COMPOSITE DWGS, SEE PART NO. FOR REVISION LEVEL	BY
-	11-18-14	NEW DRAWING [CT998111]	SDS
A	2-3-15	(D-5) DIM A AND MTG HOLES QTY ADDED (B-4) 1113.7 DIM ADDED [CT105100]	SAM
B	1-18-18	(D-8) 40/50/60kW, 50/60kW WAS 40/60kW; (D-5) 2184.3 WAS 2184.5, 2467.9 WAS 2498.4; SEE SHEET 1 [CT183307]	SRM

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

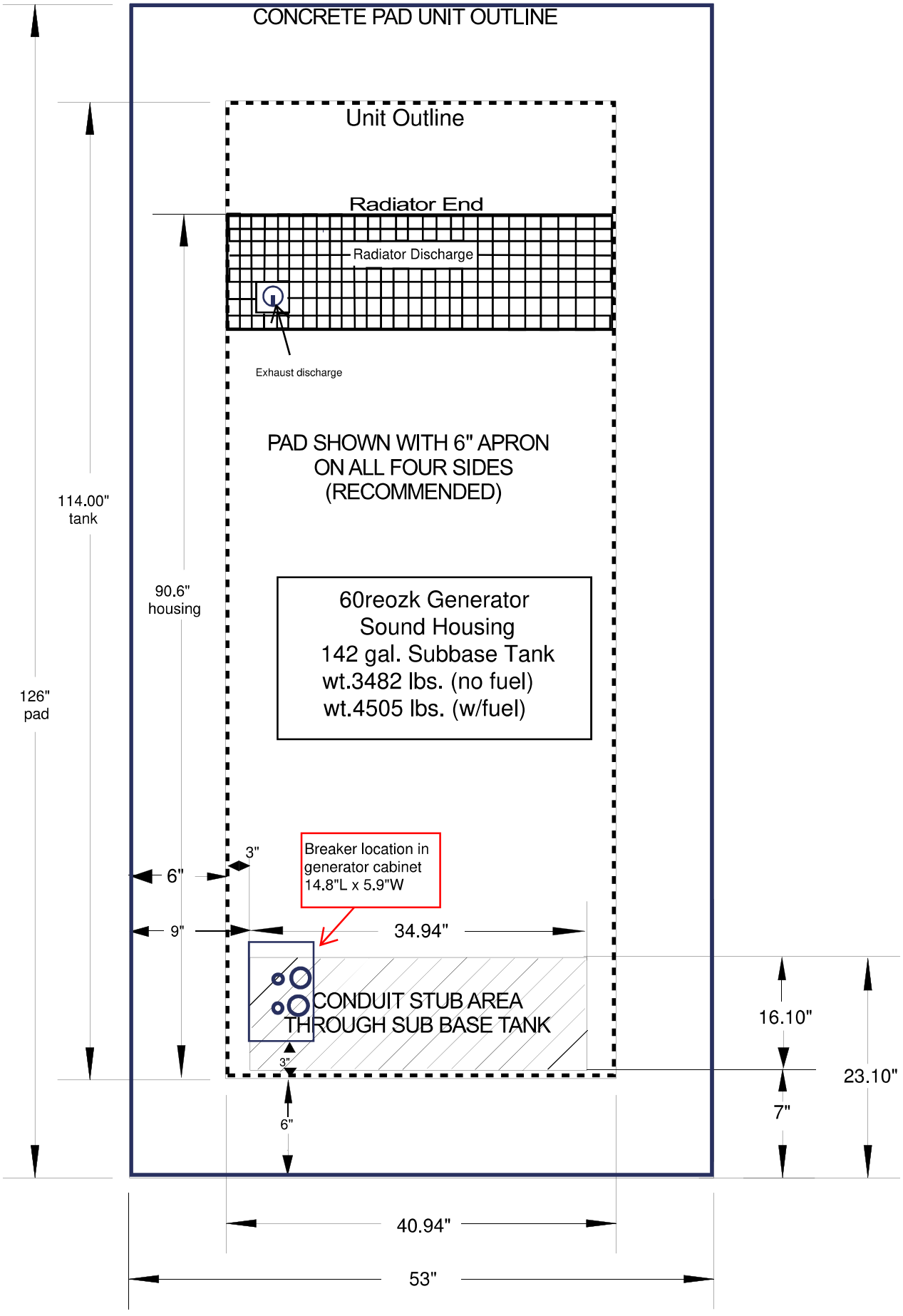
APPROVALS		DATE
DRAWN	SDS	11-18-14
CHECKED	SDS	11-18-14
APPROVED	AJD	11-18-14

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

TITLE
DIMENSION PRINT

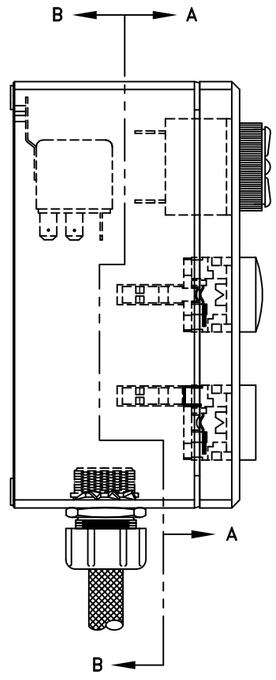
SCALE 0.13 | CAD NO. | SHEET 2 of 2
DWG NO. **ADV-8753** | **D**

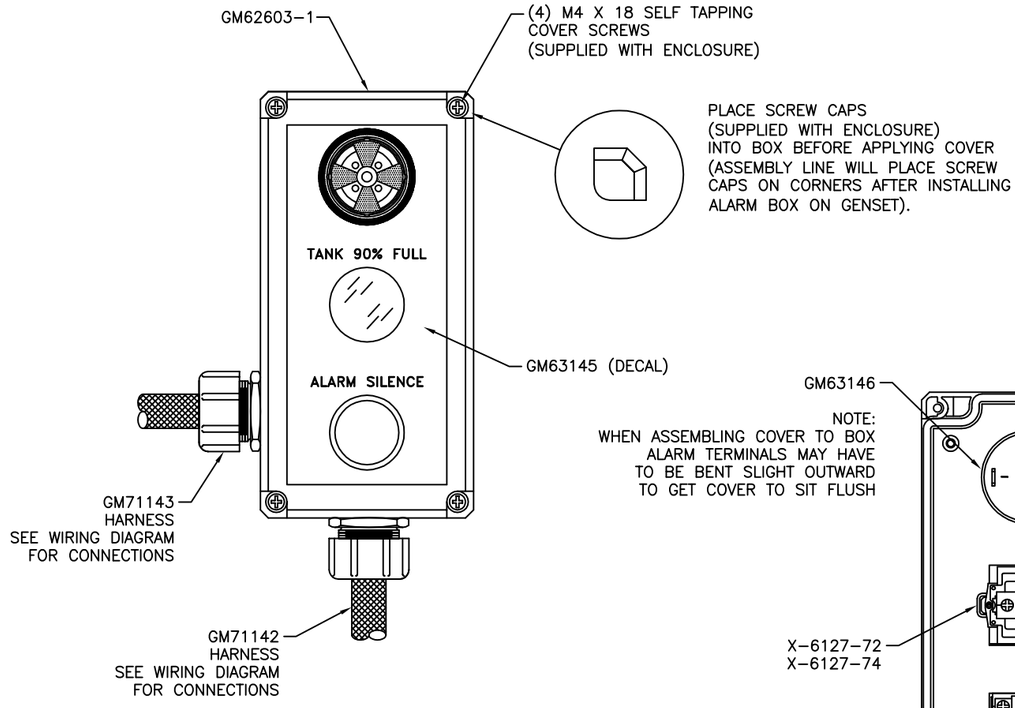
PAD LAYOUT

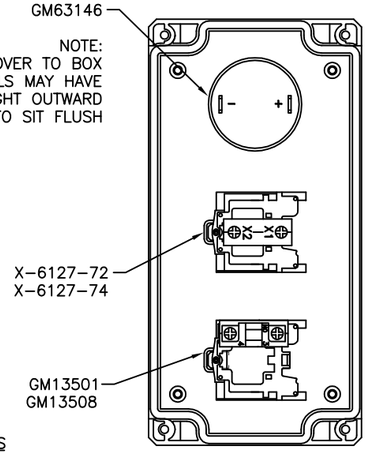


NOTE: This pad layout is designed to assist in preferred conduit locations. Please refer to the tank ADV drawing for exact dimensions.

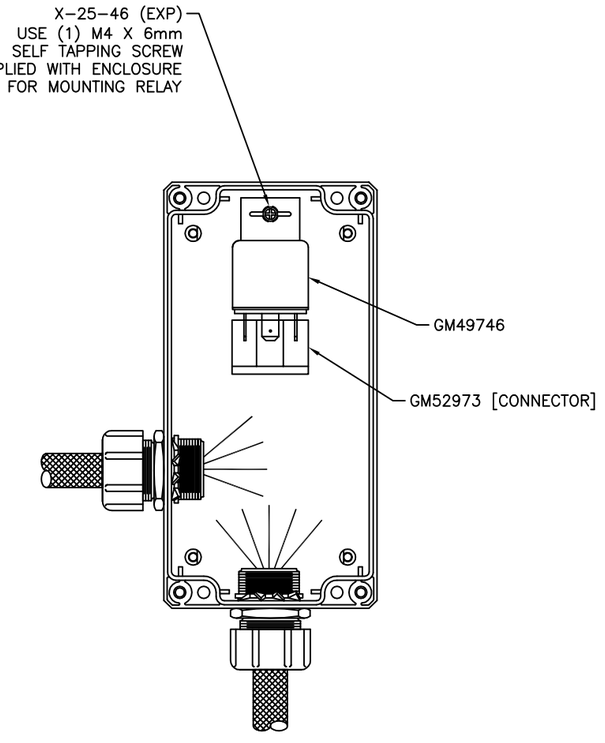
REV	DATE	REVISION	BY
–	5-20-08	NEW DRAWING [GV10255]	MJN
A	3-6-09	(C-2) GM49746 WAS 259391 [86641]	DJG
B	8-7-09	(B-7) WIRING DIAGRAM UPDATED; (C-6) GM71142 WAS GM62602 &	
		GM71143 ADDED; (B-2) GM52973 ADDED; (D-6) GM62603-1 WAS	
		GM62603 [88212]	CRS
C	12-9-09	(D-4) SCREW CAP INSTALLATION NOTE REVISED [88964]	DFS



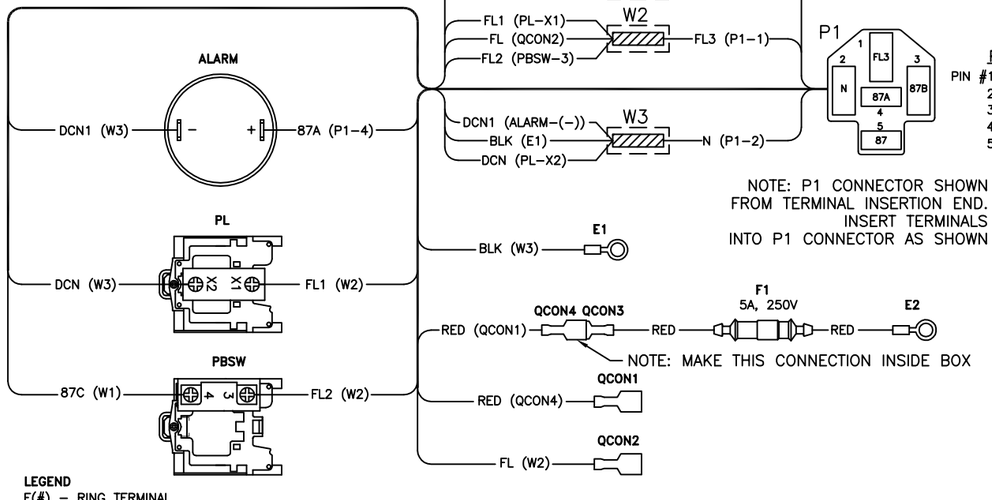




VIEW A–A



VIEW B–B



P1 CONNECTIONS

PIN #1	FL3	(W2)
2	N	(W3)
3	87B	(W1)
4	87A	(ALARM-(+))
5	87	(W1)

NOTE: P1 CONNECTOR SHOWN
FROM TERMINAL INSERTION END.
INSERT TERMINALS
INTO P1 CONNECTOR AS SHOWN

LEGEND
E(#) – RING TERMINAL
F1 – FUSE
P1 – RELAY CONNECTOR
PL – 90% FULL LIGHT
PBSW – ALARM SILENCE PUSHBUTTON SWITCH
QCON(#) – QUICK CONNECT TERMINAL
W(#) – SONIC WELD

WIRING DIAGRAM

NOTE:
AFTER UNIT IS COMPLETELY ASSEMBLED
DISCARD ANY REMAINING HARDWARE
SUPPLIED WITH ENCLOSURE.

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

NOTE:
ASSEMBLY REPRESENTATION MODELED IN PRO–E AS
A .PRT FILE.

METRIC CAD FILE

12V

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

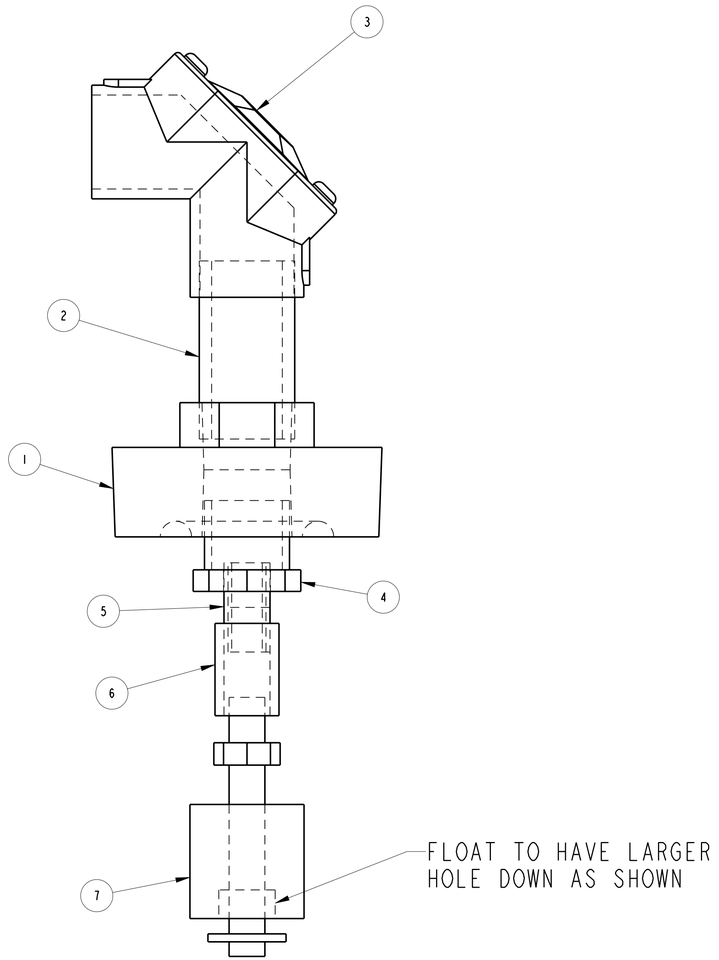
APPROVALS		DATE
DRAWN	MJN	5-21-08
CHECKED	DEF	5-21-08
APPROVED	DEF	5-21-08

TITLE: BOX, FUEL ALARM

SCALE: FULL | CAD NO. | SHEET 1–1

DWG. NO. GM62600 | D

PLOTTED DATE



ITEM	PART NO.	QTY.	DESCRIPTION
7	SA12273	1	LIQUID LEVEL SWITCH
6	SA10234	1	COUPLING, PIPE, 1/8" NPT
5	SA10919	1	PIPE NIPPLE, 1/8" NPT
4	SA10228	1	HEX HEAD REDUCER BUSHING
3	SA10313	1	PULLING ELBOW, 1/2" RIDGID X 90
2	SA23790	1	GALV. PIPE NIPPLE, 1/2" NPT
1	SA10253	1	DOUBLE TAP BUSHING

NOTE: FOR USE ON TANKS 203.3MM [8 IN] TO 762MM [30 IN] HIGH

REV	DATE	ON COMPOSITE DWGS, SEE PART NO. FOR REVISION LEVEL	BY
B	6-18-08	NEW DRAWING. CONVERTED TO PRO/E. [GV10255]	GJW

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 GJW	6-18-08
CHECKED DEF	6-18-08
APPROVED DEF	6-18-08

KOHLER CO. METRIC PRO-E

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

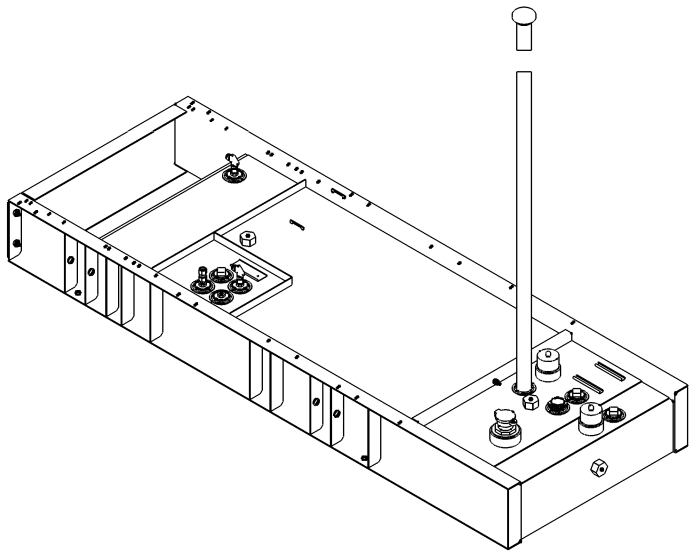
TITLE
SWITCH, HIGH FUEL LEVEL 90%

SCALE 1.50 | CAD NO. | SHEET 1 of 1

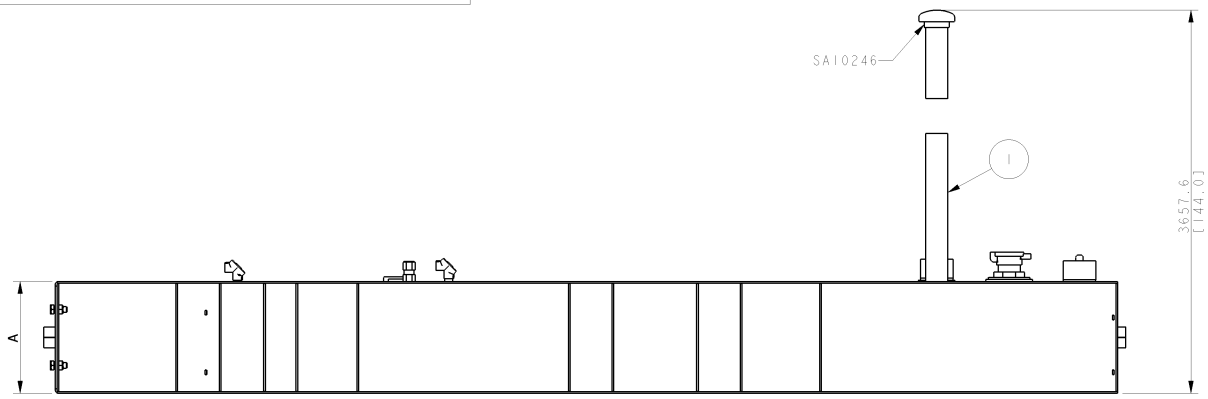
DWG NO. **GM41683** **D**

KIT NO.		REV	TANK HEIGHT A		ITEM 1
			MM	INCH	
GM61177-KA1	GM61177-TA1	-	203.200	8.00	SA27193
GM61177-KA2	GM61177-TA2	-	228.600	9.00	SA27194
GM61177-KA3	GM61177-TA3	-	254.000	10.00	SA27195
GM61177-KA4	GM61177-TA4	-	279.400	11.00	SA27196
GM61177-KA5	GM61177-TA5	-	304.800	12.00	SA27197
GM61177-KA6	GM61177-TA6	-	330.200	13.00	SA27198
GM61177-KA7	GM61177-TA7	-	355.600	14.00	SA27199
GM61177-KA8	GM61177-TA8	-	381.000	15.00	SA27200
GM61177-KA9	GM61177-TA9	-	406.400	16.00	SA27201
GM61177-KA10	GM61177-TA10	-	431.800	17.00	SA27202
GM61177-KA11	GM61177-TA11	-	457.200	18.00	SA27203
GM61177-KA12	GM61177-TA12	-	482.600	19.00	SA27204
GM61177-KA13	GM61177-TA13	-	508.000	20.00	SA27205
GM61177-KA14	GM61177-TA14	-	533.400	21.00	SA27206
GM61177-KA15	GM61177-TA15	-	558.800	22.00	SA27207
GM61177-KA16	GM61177-TA16	-	584.200	23.00	SA27208
GM61177-KA17	GM61177-TA17	-	609.600	24.00	SA27209
GM61177-KA18	GM61177-TA18	-	635.000	25.00	SA27210
GM61177-KA19	GM61177-TA19	-	660.400	26.00	SA27211
GM61177-KA20	GM61177-TA20	-	685.800	27.00	SA27212
GM61177-KA21	GM61177-TA21	-	711.200	28.00	SA27213
GM61177-KA22	GM61177-TA22	-	736.600	29.00	SA27214
GM61177-KA23	GM61177-TA23	-	762.000	30.00	SA27215
GM61177-KA24	GM61177-TA24	-	787.400	31.00	SA27216
GM61177-KA25	GM61177-TA25	-	812.800	32.00	SA27217
GM61177-KA26	GM61177-TA26	-	838.200	33.00	SA27218
GM61177-KA27	GM61177-TA27	-	863.600	34.00	SA27219
GM61177-KA28	GM61177-TA28	-	889.000	35.00	SA27220
GM61177-KA29	GM61177-TA29	-	914.400	36.00	SA27221
GM61177-KA30	GM61177-TA30	-	203.200	8.00	SA27193
GM61177-KA31	GM61177-TA31	-	228.600	9.00	SA27194
GM61177-KA32	GM61177-TA32	-	254.000	10.00	SA27195
GM61177-KA33	GM61177-TA33	-	279.400	11.00	SA27196
GM61177-KA34	GM61177-TA34	-	304.800	12.00	SA27197
GM61177-KA35	GM61177-TA35	-	330.200	13.00	SA27198
GM61177-KA36	GM61177-TA36	-	355.600	14.00	SA27199
GM61177-KA37	GM61177-TA37	-	381.000	15.00	SA27200
GM61177-KA38	GM61177-TA38	-	406.400	16.00	SA27201
GM61177-KA39	GM61177-TA39	-	431.800	17.00	SA27202
GM61177-KA40	GM61177-TA40	-	457.200	18.00	SA27203
GM61177-KA41	GM61177-TA41	-	482.600	19.00	SA27204
GM61177-KA42	GM61177-TA42	-	508.000	20.00	SA27205
GM61177-KA43	GM61177-TA43	-	533.400	21.00	SA27206
GM61177-KA44	GM61177-TA44	-	558.800	22.00	SA27207
GM61177-KA45	GM61177-TA45	-	584.200	23.00	SA27208
GM61177-KA46	GM61177-TA46	-	609.600	24.00	SA27209
GM61177-KA47	GM61177-TA47	-	635.000	25.00	SA27210
GM61177-KA48	GM61177-TA48	-	660.400	26.00	SA27211
GM61177-KA49	GM61177-TA49	-	685.800	27.00	SA27212
GM61177-KA50	GM61177-TA50	-	711.200	28.00	SA27213
GM61177-KA51	GM61177-TA51	-	736.600	29.00	SA27214
GM61177-KA52	GM61177-TA52	-	762.000	30.00	SA27215
GM61177-KA53	GM61177-TA53	-	787.400	31.00	SA27216
GM61177-KA54	GM61177-TA54	-	812.800	32.00	SA27217
GM61177-KA55	GM61177-TA55	-	838.200	33.00	SA27218
GM61177-KA56	GM61177-TA56	-	863.600	34.00	SA27219
GM61177-KA57	GM61177-TA57	-	889.000	35.00	SA27220
GM61177-KA58	GM61177-TA58	-	914.400	36.00	SA27221
GM61177-KA59	GM61177-TA59	-	152.400	6.00	SA35419
GM61177-KA60	GM61177-TA60	-	177.800	7.00	SA35420
GM61177-KA61	GM61177-TA61	-	152.400	6.00	SA35419
GM61177-KA62	GM61177-TA62	-	177.800	7.00	SA35420
GM61177-KA63	GM61177-TA63	-	203.200	8.00	SA27193
GM61177-KA64	GM61177-TA64	-	228.600	9.00	SA27194
GM61177-KA65	GM61177-TA65	-	254.000	10.00	SA27195
GM61177-KA66	GM61177-TA66	-	279.400	11.00	SA27196
GM61177-KA67	GM61177-TA67	-	304.800	12.00	SA27197
GM61177-KA68	GM61177-TA68	-	330.200	13.00	SA27198
GM61177-KA69	GM61177-TA69	-	355.600	14.00	SA27199
GM61177-KA70	GM61177-TA70	-	381.000	15.00	SA27200
GM61177-KA71	GM61177-TA71	-	406.400	16.00	SA27201
GM61177-KA72	GM61177-TA72	-	431.800	17.00	SA27202
GM61177-KA73	GM61177-TA73	-	457.200	18.00	SA27203
GM61177-KA74	GM61177-TA74	-	482.600	19.00	SA27204
GM61177-KA75	GM61177-TA75	-	508.000	20.00	SA27205
GM61177-KA76	GM61177-TA76	-	533.400	21.00	SA27206
GM61177-KA77	GM61177-TA77	-	558.800	22.00	SA27207
GM61177-KA78	GM61177-TA78	-	584.200	23.00	SA27208
GM61177-KA79	GM61177-TA79	-	609.600	24.00	SA27209
GM61177-KA80	GM61177-TA80	-	635.000	25.00	SA27210
GM61177-KA81	GM61177-TA81	-	660.400	26.00	SA27211
GM61177-KA82	GM61177-TA82	-	685.800	27.00	SA27212
GM61177-KA83	GM61177-TA83	-	711.200	28.00	SA27213
GM61177-KA84	GM61177-TA84	-	736.600	29.00	SA27214
GM61177-KA85	GM61177-TA85	-	762.000	30.00	SA27215
GM61177-KA86	GM61177-TA86	-	787.400	31.00	SA27216
GM61177-KA87	GM61177-TA87	-	812.800	32.00	SA27217
GM61177-KA88	GM61177-TA88	-	838.200	33.00	SA27218
GM61177-KA89	GM61177-TA89	-	863.600	34.00	SA27219
GM61177-KA90	GM61177-TA90	-	889.000	35.00	SA27220
GM61177-KA91	GM61177-TA91	-	914.400	36.00	SA27221

THIS IS AN AUTOMATED TABLE, ALL CHANGES
MUST BE MADE IN THE FAMILY TABLE OF THE GENERIC MODEL



SCALE 0.100



NORMAL VENT
144" ABOVE GRADE

REV	DATE	ON COMPOSITE DWGS, SEE PART NO. FOR REVISION LEVEL	BY
-	5-23-08	NEW DRAWING [GV10255]	DJG
A	2-25-09	-TA KIT NUMBERS ADDED TO CHART [GV10657]	DJG
B	10-8-09	(A-8) GM61177-KA59, -KA60, -KA61 & -KA62 ADDED. [88216]	GFR
C	12-14-11	(A-8) ADDED GM61177-KA63 THRU -KA91 [92430-5]	CEK

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	DJG	5-23-08
CHECKED	CWF	5-23-08
APPROVED	CWF	5-23-08

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

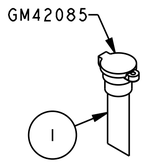
TITLE: NORMAL VENT KIT

SCALE 0.20 | CAD NO. | SHEET 1 of 1

DWG NO GM61177 D

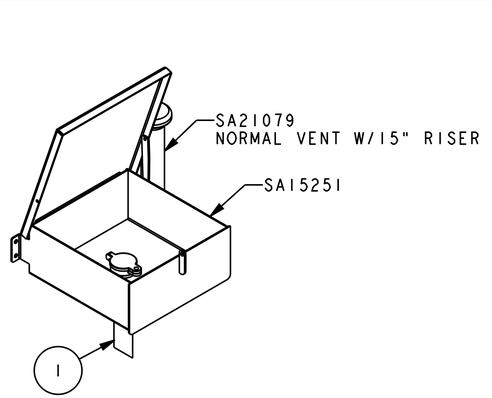
FILL PIPE EXTENSION KIT			
KIT NO.		ITEM 1	TANK HEIGHT
GM58956-KA1	GM58956-TA1	SA29390	203.2
GM58956-KA2	GM58956-TA2	SA29391	228.6
GM58956-KA3	GM58956-TA3	SA29392	254.0
GM58956-KA4	GM58956-TA4	SA29393	279.4
GM58956-KA5	GM58956-TA5	SA29394	304.8
GM58956-KA6	GM58956-TA6	SA29395	330.2
GM58956-KA7	GM58956-TA7	SA29396	355.6
GM58956-KA8	GM58956-TA8	SA29397	381.0
GM58956-KA9	GM58956-TA9	SA29398	406.4
GM58956-KA10	GM58956-TA10	SA29399	431.8
GM58956-KA11	GM58956-TA11	SA29400	457.2
GM58956-KA12	GM58956-TA12	SA29401	482.6
GM58956-KA13	GM58956-TA13	SA29402	508.0
GM58956-KA14	GM58956-TA14	SA29403	533.4
GM58956-KA15	GM58956-TA15	SA29404	558.8
GM58956-KA16	GM58956-TA16	SA29405	584.2
GM58956-KA17	GM58956-TA17	SA29406	609.6
GM58956-KA18	GM58956-TA18	SA29407	635.0
GM58956-KA19	GM58956-TA19	SA29408	660.4
GM58956-KA20	GM58956-TA20	SA29409	685.8
GM58956-KA21	GM58956-TA21	SA29410	711.2
GM58956-KA22	GM58956-TA22	SA29411	736.6
GM58956-KA23	GM58956-TA23	SA29412	762.0
GM58956-KA24	GM58956-TA24	SA29413	787.4
GM58956-KA25	GM58956-TA25	SA29414	812.8
GM58956-KA26	GM58956-TA26	SA29415	838.2
GM58956-KA27	GM58956-TA27	SA29416	863.6
GM58956-KA28	GM58956-TA28	SA29417	889.0
GM58956-KA29	GM58956-TA29	SA29418	914.4
GM58956-KA66	GM58956-TA66	SA35417	177.8

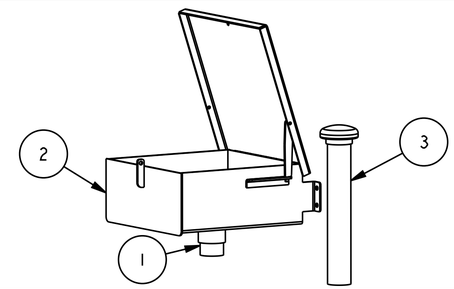
THIS IS AN AUTOMATED TABLE. ALL CHANGES TO THIS TABLE MUST BE MADE IN THE FAMILY TABLE OF THE GENERIC MODEL.



5 GALLON SPILL W/FILL PIPE EXTENSION KIT			
KIT NO.		ITEM 1	TANK HEIGHT
GM58956-KA30	GM58956-TA30	SA29390	203.2
GM58956-KA31	GM58956-TA31	SA29391	228.6
GM58956-KA32	GM58956-TA32	SA29392	254.0
GM58956-KA33	GM58956-TA33	SA29393	279.4
GM58956-KA34	GM58956-TA34	SA29394	304.8
GM58956-KA35	GM58956-TA35	SA29395	330.2
GM58956-KA36	GM58956-TA36	SA29396	355.6
GM58956-KA37	GM58956-TA37	SA29397	381.0
GM58956-KA38	GM58956-TA38	SA29398	406.4
GM58956-KA39	GM58956-TA39	SA29399	431.8
GM58956-KA40	GM58956-TA40	SA29400	457.2
GM58956-KA41	GM58956-TA41	SA29401	482.6
GM58956-KA42	GM58956-TA42	SA29402	508.0
GM58956-KA43	GM58956-TA43	SA29403	533.4
GM58956-KA44	GM58956-TA44	SA29404	558.8
GM58956-KA45	GM58956-TA45	SA29405	584.2
GM58956-KA46	GM58956-TA46	SA29406	609.6
GM58956-KA47	GM58956-TA47	SA29407	635.0
GM58956-KA48	GM58956-TA48	SA29408	660.4
GM58956-KA49	GM58956-TA49	SA29409	685.8
GM58956-KA50	GM58956-TA50	SA29410	711.2
GM58956-KA51	GM58956-TA51	SA29411	736.6
GM58956-KA52	GM58956-TA52	SA29412	762.0
GM58956-KA53	GM58956-TA53	SA29413	787.4
GM58956-KA54	GM58956-TA54	SA29414	812.8
GM58956-KA55	GM58956-TA55	SA29415	838.2
GM58956-KA56	GM58956-TA56	SA29416	863.6
GM58956-KA57	GM58956-TA57	SA29417	889.0
GM58956-KA58	GM58956-TA58	SA29418	914.4
GM58956-KA68	GM58956-TA68	SA35417	177.8

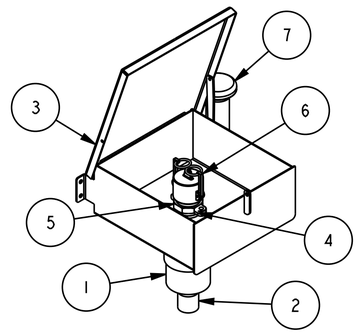
THIS IS AN AUTOMATED TABLE. ALL CHANGES TO THIS TABLE MUST BE MADE IN THE FAMILY TABLE OF THE GENERIC MODEL.

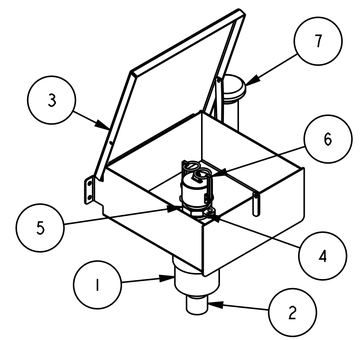


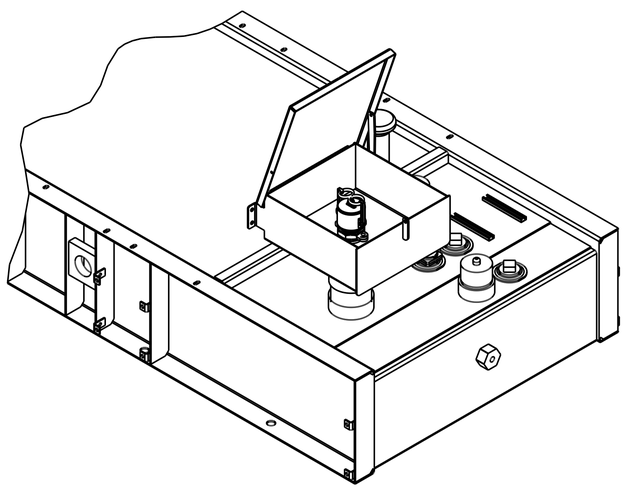


KIT NUMBER GM58956-KA59/GM58956-TA59 5 GALLON SPILL CONTAINMENT			
ITEM	PART NO	QTY	DESCRIPTION
1	X-219-9	1	PIPE, NIPPLE (2" NPT X 2.00")
2	SA15251	1	SPILL BOX, 5 GAL LOCKABLE LOW PROFILE
3	SA21079	1	VENT, NORMAL 2" W/15" RISER

KIT NUMBER GM58956-KA69/GM58956-TA69 OSHPD/IBC, 5 GAL. SPILL			
ITEM	PART NO	QTY	DESCRIPTION
1	X-219-9	1	PIPE, NIPPLE (2" NPT X 2.00")
2	SA15251	1	SPILL BOX, 5 GAL LOCKABLE LOW PROFILE
3	GM84329	1	VENT, NORMAL W/ BAFFLES







KIT NUMBER GM58956-KA60/GM58956-TA60 5 GALLON SPILL CONTAINMENT W/95% SHUTOFF FOR TANK HEIGHTS 203.2 [8 IN] TO 406.4 [16IN] TALL			
ITEM	PART NO	QTY	DESCRIPTION
1	SA21073	1	PIPE, NIPPLE (4" NPT X 4.0")
2	SA30119	1	VALVE, OVERFILL PREVENTION, 1228-03-25M07
3	SA15251	1	SPILL BOX, 5 GAL LOCKABLE LOW PROFILE
4	X-219-9	1	PIPE, NIPPLE (2" NPT X 2.00")
5	GM42350	1	ADAPTER, FUEL CAP
6	GM42349	1	CAP, FUEL
7	SA21079	1	VENT, NORMAL 2" W/15" RISER

KIT NUMBER GM58956-KA70/GM58956-TA70 OSHPD/IBC, 5 GAL. W/ 95% OPV FOR TANK HEIGHTS 203.2 [8 IN] TO 406.4 [16IN] TALL			
ITEM	PART NO	QTY	DESCRIPTION
1	SA21073	1	PIPE, NIPPLE (4" NPT X 4.0")
2	SA30119	1	VALVE, OVERFILL PREVENTION, 1228-03-25M07
3	SA15251	1	SPILL BOX, 5 GAL LOCKABLE LOW PROFILE
4	X-219-9	1	PIPE, NIPPLE (2" NPT X 2.00")
5	GM42350	1	ADAPTER, FUEL CAP
6	GM42349	1	CAP, FUEL
7	GM84329	1	VENT, NORMAL W/ BAFFLES

KIT NUMBER GM58956-KA61/GM58956-TA61 5 GALLON SPILL CONTAINMENT W/95% SHUTOFF FOR TANK HEIGHTS GREATER THAN 406.4 [16IN] TALL.			
ITEM	PART NO	QTY	DESCRIPTION
1	SA21073	1	PIPE, NIPPLE (4" NPT X 4.0")
2	SA30120	1	VALVE, OVERFILL PREVENTION, 1228-03-25M08
3	SA15251	1	SPILL BOX, 5 GAL LOCKABLE LOW PROFILE
4	X-219-9	1	PIPE, NIPPLE (2" NPT X 2.00")
5	GM42350	1	ADAPTER, FUEL CAP
6	GM42349	1	CAP, FUEL
7	SA21079	1	VENT, NORMAL 2" W/15" RISER

KIT NUMBER GM58956-KA71/GM58956-TA71 OSHPD/IBC, 5 GAL. W/95% OPV > 17" FOR TANK HEIGHTS GREATER THAN 406.4 [16IN] TALL.			
ITEM	PART NO	QTY	DESCRIPTION
1	SA21073	1	PIPE, NIPPLE (4" NPT X 4.0")
2	SA30120	1	VALVE, OVERFILL PREVENTION, 1228-03-25M08
3	SA15251	1	SPILL BOX, 5 GAL LOCKABLE LOW PROFILE
4	X-219-9	1	PIPE, NIPPLE (2" NPT X 2.00")
5	GM42350	1	ADAPTER, FUEL CAP
6	GM42349	1	CAP, FUEL
7	GM84329	1	VENT, NORMAL W/ BAFFLES

5 GALLON AND 7 GALLON SPILL CONTAINMENT KITS

REV	DATE	ON COMPOSITE DWGS, SEE PART NO. FOR REVISION LEVEL	BY
-	6-13-08	NEW DRAWING [GVI02551]	CWF
A	2-23-09	-TA KIT NUMBERS ADDED TO ALL CHARTS [GVI0657]	CWF
B	10-8-09	(C-8) GM58956-KA66 ADDED. (B,C-6)	
		GM58956-KA68 ADDED. [88216]	GFR
C	2-19-10	SEE SHEET 2 OF 2 [88990-2]	JB2
D	10-13-11	SEE SHEET 2 [92367]	PKD
E	11-2-11	(C-2) GM58956-KA69/TA69,(A-2,3) GM58956-KA70/TA70 &	
		GM58956-KA71/TA71 ADDED [92430-4]	JB2

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	CWF	6-13-08
CHECKED	DEF	6-13-08
APPROVED	DEF	6-13-08

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

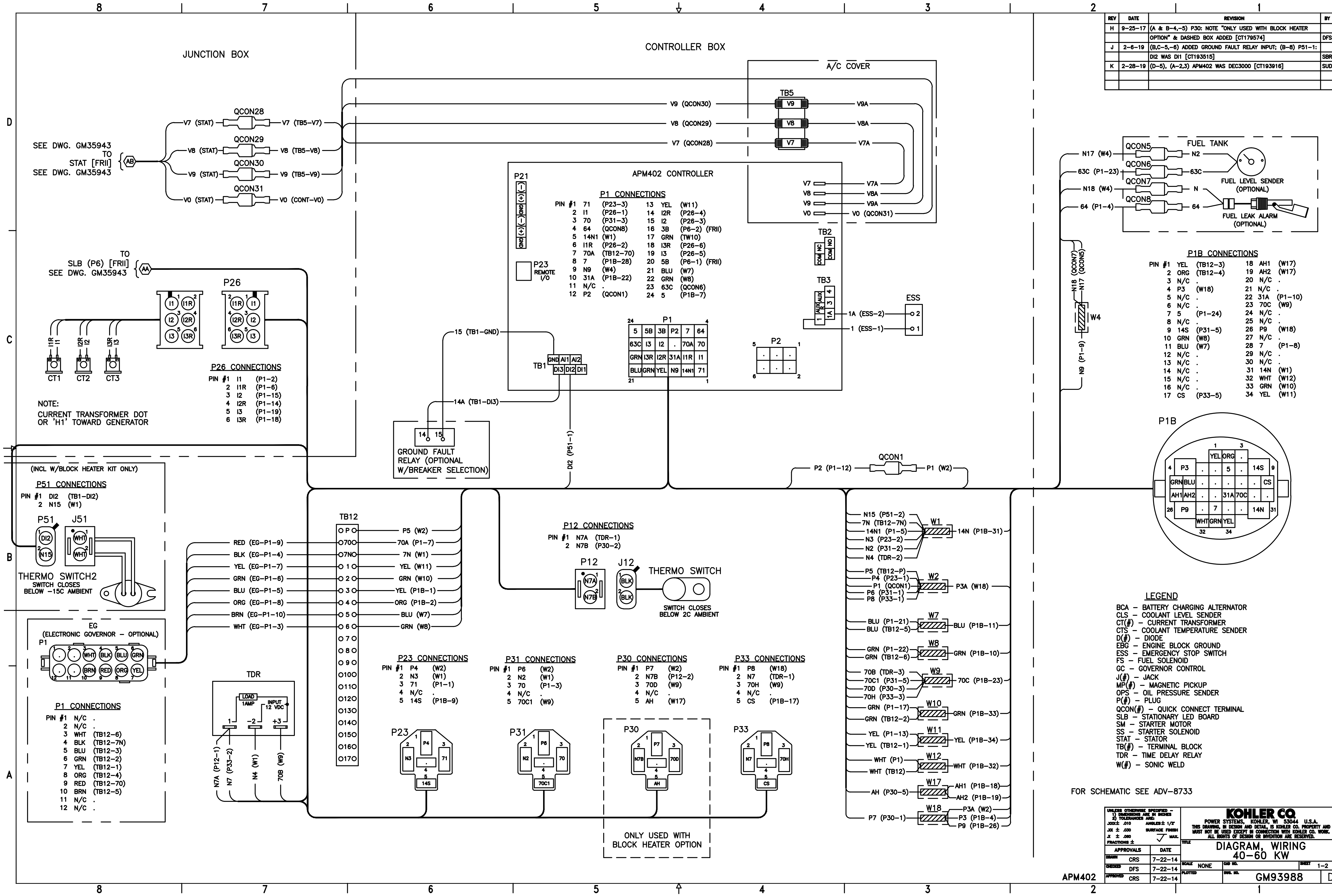
TITLE: DWG, ASSY 5/7 GAL SPILL CONTAINMENT

SCALE 0.13 | CAD NO. | SHEET 1 of 2

DWG NO. GM58956 | D

KOHLER®

Wiring Schematics



JUNCTION BOX
CONTROLLER BOX
A/C COVER
REV | DATE | REVISION | BY
H | 9-25-17 | (A & B-4,-5) P30: NOTE "ONLY USED WITH BLOCK HEATER OPTION" & DASHED BOX ADDED [CT179574] | DFS
J | 2-6-19 | (B,C-5,-6) ADDED GROUND FAULT RELAY INPUT; (B-8) P51-1: DI2 WAS DI1 [CT193515] | SBR
K | 2-28-19 | (D-5), (A-2,3) APM402 WAS DEC3000 [CT193916] | SUD
SEE DWG. GM35943 TO STAT [FRII] SEE DWG. GM35943
QCON28
QCON29
QCON30
QCON31
V7 (STAT)
V7 (TB5-V7)
V8 (STAT)
V8 (TB5-V8)
V9 (STAT)
V9 (TB5-V9)
V0 (STAT)
V0 (CONT-V0)
V9 (QCON30)
V8 (QCON29)
V7 (QCON28)
TB5
V9A
V8A
V7A
V0 (QCON31)
APM402 CONTROLLER
P21
P1 CONNECTIONS
PIN #1 71 (P23-3)
2 I1 (P26-1)
3 70 (P31-3)
4 64 (QCON8)
5 14N1 (W1)
6 I1R (P26-2)
7 70A (TB12-70)
8 7 (P1B-28)
9 N9 (W4)
10 31A (P1B-22)
11 N/C .
12 P2 (QCON1)
13 YEL (W11)
14 I2R (P26-4)
15 I2 (P26-3)
16 3B (P6-2) (FRII)
17 GRN (TW10)
18 I3R (P26-6)
19 I3 (P26-5)
20 5B (P6-1) (FRII)
21 BLU (W7)
22 GRN (W8)
23 63C (QCON6)
24 5 (P1B-7)
P23 REMOTE I/O
TB2
TB3
ESS
1A (ESS-2)
1 (ESS-1)
P1
P2
15 (TB1-GND)
TB1
14A (TB1-DI3)
GROUND FAULT RELAY (OPTIONAL W/BREAKER SELECTION)
DI2 (P51-1)
TO SLB (P6) [FRII] SEE DWG. GM35943
P26
CT1
CT2
CT3
P26 CONNECTIONS
PIN #1 I1 (P1-2)
2 I1R (P1-6)
3 I2 (P1-15)
4 I2R (P1-14)
5 I3 (P1-19)
6 I3R (P1-18)
NOTE:
CURRENT TRANSFORMER DOT OR 'H1' TOWARD GENERATOR
(INCL W/BLOCK HEATER KIT ONLY)
P51 CONNECTIONS
PIN #1 DI2 (TB1-DI2)
2 N15 (W1)
P51
J51
THERMO SWITCH2
SWITCH CLOSES BELOW -15C AMBIENT
EG (ELECTRONIC GOVERNOR - OPTIONAL)
P1 CONNECTIONS
PIN #1 N/C .
2 N/C .
3 WHT (TB12-6)
4 BLK (TB12-7N)
5 BLU (TB12-3)
6 GRN (TB12-2)
7 YEL (TB12-1)
8 ORG (TB12-4)
9 RED (TB12-70)
10 BRN (TB12-5)
11 N/C .
12 N/C .
TB12
RED (EG-P1-9)
BLK (EG-P1-4)
YEL (EG-P1-7)
GRN (EG-P1-6)
BLU (EG-P1-5)
ORG (EG-P1-8)
BRN (EG-P1-10)
WHT (EG-P1-3)
P5 (W2)
70A (P1-7)
7N (W1)
YEL (W11)
GRN (W10)
YEL (P1B-1)
ORG (P1B-2)
BLU (W7)
GRN (W8)
TDR
LOAD 1AMP
INPUT 12 VDC
N7A (P12-1)
N7 (P33-2)
N4 (W1)
70B (W9)
P12 CONNECTIONS
PIN #1 N7A (TDR-1)
2 N7B (P30-2)
P12
J12
THERMO SWITCH
SWITCH CLOSES BELOW 2C AMBIENT
P23 CONNECTIONS
PIN #1 P4 (W2)
2 N3 (W1)
3 71 (P1-1)
4 N/C .
5 14S (P1B-9)
P31 CONNECTIONS
PIN #1 P6 (W2)
2 N2 (W1)
3 70 (P1-3)
4 N/C .
5 70C1 (W9)
P30 CONNECTIONS
PIN #1 P7 (W2)
2 N7B (P12-2)
3 70D (W9)
4 N/C .
5 AH (W17)
P33 CONNECTIONS
PIN #1 P8 (W18)
2 N7 (TDR-1)
3 70H (W9)
4 N/C .
5 CS (P1B-17)
P23
P31
P30
P33
ONLY USED WITH BLOCK HEATER OPTION
QCON1
P2 (P1-12)
P1 (W2)
N15 (P51-2)
7N (TB12-7N)
14N1 (P1-5)
N3 (P23-2)
N2 (P31-2)
N4 (TDR-2)
W1
14N (P1B-31)
P5 (TB12-P)
P4 (P23-1)
P1 (QCON1)
P6 (P31-1)
P8 (P33-1)
W2
P3A (W18)
BLU (P1-21)
BLU (TB12-5)
W7
BLU (P1B-11)
GRN (P1-22)
GRN (TB12-6)
W8
GRN (P1B-10)
70B (TDR-3)
70C1 (P31-5)
70D (P30-3)
70H (P33-3)
W9
70C (P1B-23)
GRN (P1-17)
GRN (TB12-2)
W10
GRN (P1B-33)
YEL (P1-13)
YEL (TB12-1)
W11
YEL (P1B-34)
WHT (P1)
WHT (TB12)
W12
WHT (P1B-32)
AH (P30-5)
W17
AH1 (P1B-18)
AH2 (P1B-19)
P7 (P30-1)
W18
P3A (W2)
P3 (P1B-4)
P9 (P1B-26)
FUEL TANK
QCON5
QCON6
QCON7
QCON8
N17 (W4)
63C (P1-23)
N18 (W4)
64 (P1-4)
N2
63C
N
64
FUEL LEVEL SENDER (OPTIONAL)
FUEL LEAK ALARM (OPTIONAL)
N18 (QCON7)
N17 (QCON5)
W4
N9 (P1-9)
P1B CONNECTIONS
PIN #1 YEL (TB12-3)
2 ORG (TB12-4)
3 N/C .
4 P3 (W18)
5 N/C .
6 N/C .
7 5 (P1-24)
8 N/C .
9 14S (P31-5)
10 GRN (W8)
11 BLU (W7)
12 N/C .
13 N/C .
14 N/C .
15 N/C .
16 N/C .
17 CS (P33-5)
18 AH1 (W17)
19 AH2 (W17)
20 N/C .
21 N/C .
22 31A (P1-10)
23 70C (W9)
24 N/C .
25 N/C .
26 P9 (W18)
27 N/C .
28 7 (P1-8)
29 N/C .
30 N/C .
31 14N (W1)
32 WHT (W12)
33 GRN (W10)
34 YEL (W11)
P1B
LEGEND
BCA - BATTERY CHARGING ALTERNATOR
CLS - COOLANT LEVEL SENDER
CT(#) - CURRENT TRANSFORMER
CTS - COOLANT TEMPERATURE SENDER
D(#) - DIODE
EBG - ENGINE BLOCK GROUND
ESS - EMERGENCY STOP SWITCH
FS - FUEL SOLENOID
GC - GOVERNOR CONTROL
J(#) - JACK
MP(#) - MAGNETIC PICKUP
OPS - OIL PRESSURE SENDER
P(#) - PLUG
QCON(#) - QUICK CONNECT TERMINAL
SLB - STATIONARY LED BOARD
SM - STARTER MOTOR
SS - STARTER SOLENOID
STAT - STATOR
TB(#) - TERMINAL BLOCK
TDR - TIME DELAY RELAY
W(#) - SONIC WELD
FOR SCHEMATIC SEE ADV-8733
KOHLER CO.
POWER SYSTEMS, KOHLER, WI 53044 U.S.A.
DIAGRAM, WIRING 40-60 KW
APPROVALS | DATE
CRS 7-22-14
DFS 7-22-14
CRS 7-22-14
SCALE NONE
SHEET 1-2
GM93988
D
APM402

REV	DATE	REVISION	BY	N/F
H	9-25-17	SEE SHEET 1 [CT179574]	DFS	
J	2-6-19	SEE SHEET 1 [CT193515]	SBR	
K	2-28-19	SEE SHEET 1 [CT193916]	SUD	

OPTIONAL 10 AMP BATTERY CHARGER
(FRONT J-BOX PANEL)

(FOR BATTERY CHARGER CONNECTIONS SEE DWG GM94439)

P50 CONNECTIONS

PIN		
#1	N/C	.
2	N/C	.
3	N/C	.
4	N/C	.
5	YEL	(W13)
6	N/C	.
7	N/C	.
8	N/C	.
9	WHT	(W15)
10	GRN	(W14)

P38 CONNECTIONS

PIN		
A	YEL	(W13)
B	ORG	(W14)

ENGINE

P1A

P1A CONNECTIONS

PIN			PIN		
#1	YEL	(ACT)	18	AH1	(W16)
2	ORG	(ACT)	19	AH2	(W16)
3	N/C	.	20	N/C	.
4	P3	(SS)	21	N/C	.
5	N/C	.	22	31A	(P8-A)
6	N/C	.	23	70C	(W6)
7	5	(CTS)	24	N/C	.
8	N/C	.	25	N/C	.
9	14S	(SS)	26	P9	(SS)
10	GRN	(QCON11)	27	N/C	.
11	BLU	(QCON10)	28	7	(OPS)
12	N/C	.	29	N/C	.
13	N/C	.	30	N/C	.
14	N/C	.	31	14N	(W3)
15	N/C	.	32	WHT	(P50)
16	N/C	.	33	GRN	(P50-10)
17	CS	(P10-1)	34	YEL	(P50-5)

W16: AH1 (P1A-18), AH2 (P1A-19) → AH (AH)

W3: 14N (P1A-31) → N20 (W15), N8 (P8-B), N9 (P10-2), 14N1 (EBG), N5 (P6-2)

W6: 70C (P1A-23) → 70G (D1), 70E (P6-1), 70F (FS)

W13: YEL (P1A-34) → YEL, YEL

W14: GRN (P1A-33) → GRN, ORG

W15: WHT (P1A-32), N20 (W3) → WHT

ORG (P1A-2), YEL (P1A-1) → ACT (OPTIONAL)

AH (W16) → AH

14N1 (W3) → EBG

P8 CLS

P8 CONNECTIONS

PIN		
A	31A	(P1A-22)
B	N8	(W3)

70F (W6) → FS

7 (P1A-28) → OPS

5 (P1A-7) → CTS

P10 (COLD START)

P10 CONNECTIONS

PIN		
#1	CS	(P1A-17)
2	N9	(W3)

BLU (P1A-11), GRN (P1A-10) → QCON10, QCON11

P6 (LIFT PUMP)

P6 CONNECTIONS

PIN		
#1	70E	(W6)
2	N5	(W3)

70G (W6) → D1 → 70D1

BCA (D+, B+)

10P

P9 (P1A-26), P3 (P1A-4), 14S (P1A-9) → SS, SM

BATTERY 12 VDC

MP

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

APPROVALS		DATE
DRAWN	CRS	7-22-14
CHECKED	DFS	7-22-14
APPROVED	CRS	7-22-14

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

TITLE: DIAGRAM, WIRING 40-60 KW

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

PLOTTED | DWG. NO. GM93988 | D

RS-485 NETWORK CONNECTIONS

REV	DATE	REVISION	BY	M F
–	8-16-19	NEW DRAWING. REPLACES ADV-6990 [CT198499]	TLK	

GENERATOR SET OUTLINE

DC POWER REQUIREMENTS FOR EACH RSA:
12/24 VOLT, 1A DC POWER
IF MULTIPLE RSA'S ARE USED, RESIZE 2 POWER WIRES AS REQUIRED.
0–450 FT. [0–138 m], 22 GA.
450–700 FT. [138–214 m], 20 GA.
700–1125 FT. [214–344 m], 18 GA.
1125–1800 FT. [344–550 m], 16 GA.
1800–2800 FT. [550–856 m], 14 GA.
(SEE NOTE 4)

+ GENERATOR BATTERY 12 OR 24 VDC –

BATTERY CHARGE LEADS
2 WIRES 10 GA. MINIMUM
(NOT REQUIRED ON GENSET MOUNTED BATTERY CHARGERS)

ON 550/6000 CONTROLLER, CONNECT TO P20,
ON APM402 CONTROLLER, CONNECT TO P21,
ON 8000 CONTROLLER, CONNECT TO RS485(2) BLOCK,
ON APM802 CONTROLLER, CONNECT TO TB10,
ON 3500 CONTROLLER, CONNECT TO TB12,
ON APM603 CONTROLLER, CONNECT TO TB10 OR TB12

(SEE SHEET 2 FOR MASTER/SLAVE NOTE)

RS-485 (MODBUS RTU) (SEE NOTE 5)

RSA REMOTE SERIAL ANNUNCIATOR (MASTER)

RSA REMOTE SERIAL ANNUNCIATOR (SLAVE)

RSA REMOTE SERIAL ANNUNCIATOR (SLAVE)

RSA REMOTE SERIAL ANNUNCIATOR (SLAVE)

(SEE SHEET 2 WHEN USED WITH AN ETHERNET NETWORK)

GENSET CONTROLLER

BATTERY CHARGER W/ FAULT ALARMS

BATTERY CHARGER ALARMS (NON-COMMUNICATION STYLE CHARGER):
550/6000/APM402/8000/APM802/APM603: 2 WIRES 18–20 GA.
(NOT REQUIRED ON GENSET MOUNTED BATTERY CHARGERS)

BATTERY CHARGER ALARMS: (COMMUNICATION STYLE CHARGER):
550/6000/APM402/APM603/3500: FACTORY WIRED CAN COMMUNICATION

ENGINE START WIRES.
2 WIRES 18–20 GA.
CONNECT TO POSITION CONTACTS ON ATS (CLOSED IN EMERGENCY).
WIRE OR'D FOR MULTIPLE ATS INSTALLATION

ATS (AUTOMATIC TRANSFER SW.)

ATS (AUTOMATIC TRANSFER SW.)

ATS (AUTOMATIC TRANSFER SW.)

ATS (AUTOMATIC TRANSFER SW.)

RSA III WITH ATS OPTION:
RS-485 TO ATS REQUIRED
(MODBUS RTU) (SEE NOTE 5)

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

DIMENSIONS IN [ ] ARE METRIC EQUIVALENTS.

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

INTERCONNECTION DIAGRAM CONTROLLER WITH RSA ANNUNCIATOR

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

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

TITLE: DIAGRAM, RSA INTERCONNECTION

SCALE: / / / SHEET 1–2

PLOTTED DWG. NO. ADV-9169 C

REV	DATE	REVISION	BY	M F
–	8–16–19	NEW DRAWING. REPLACES ADV–6990 [CT198499]	TLK	

ETHERNET NETWORK CONNECTIONS

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

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

SEE SHEET 1 FOR REQUIRED DC POWER VOLTAGE TO EACH RSA.

RSA REMOTE SERIAL ANNUNCIATOR (SLAVE)

RSA REMOTE SERIAL ANNUNCIATOR (SLAVE)

RS–485 (MODBUS RTU) (SEE NOTE 5)

SEE SHEET 1 FOR CONTROLLER CONNECTION POINTS

GENSET CONTROLLER

(SEE SHEET 1 FOR BATTERY CHARGER CONNECTIONS)

MODBUS/ ETHERNET CONVERTER

ETHERNET (MODBUS TCP/IP) CATEGORY 5 OR EQUIVALENT

ON APM802 OR APM603 CONTROLLER, CONNECT TO ETHERNET MODULE

ETHERNET (MODBUS TCP/IP) CATEGORY 5 OR EQUIVALENT

ON MPAC750, MPAC1200, MPAC1500, CONNECT TO P13

RSA III SUPPORTED ATS'S:
MPAC750, MPAC1000, MPAC1200, OR MPAC1500. SUPPORTS ONE OR UP TO FOUR ATS'S.

RSA REMOTE SERIAL ANNUNCIATOR (MASTER)

RS–485 (MODBUS RTU) (SEE NOTE 5)

MODBUS/ ETHERNET CONVERTER

ETHERNET (MODBUS TCP/IP) CATEGORY 5 OR EQUIVALENT

ETHERNET NETWORK (CUSTOMER SUPPLIED)

SEE SHEET 1 FOR REQUIRED DC POWER VOLTAGE TO EACH RSA.

RS–485 (MODBUS RTU) (SEE NOTE 5)

MODBUS/ ETHERNET CONVERTER

ETHERNET (MODBUS TCP/IP) CATEGORY 5 OR EQUIVALENT

RS–485 (MODBUS RTU) (SEE NOTE 5)

ATS (AUTOMATIC TRANSFER SWITCH)

RSA REMOTE SERIAL ANNUNCIATOR (SLAVE)

RSA REMOTE SERIAL ANNUNCIATOR (SLAVE)

SEE SHEET 1 FOR REQUIRED DC POWER VOLTAGE TO EACH RSA.

ETHERNET (MODBUS TCP/IP) CATEGORY 5 OR EQUIVALENT

MODBUS/ ETHERNET CONVERTER

RS–485 (MODBUS RTU) (SEE NOTE 5)

ATS (AUTOMATIC TRANSFER SWITCH)

RSA REMOTE SERIAL ANNUNCIATOR (SLAVE)

RS–485 (MODBUS RTU) (SEE NOTE 5)

ATS (AUTOMATIC TRANSFER SWITCH)

RSA REMOTE SERIAL ANNUNCIATOR (SLAVE)

RS–485 (MODBUS RTU) (SEE NOTE 5)

ATS (AUTOMATIC TRANSFER SWITCH)

REQUIRED FOR RSA III WITH ATS OPTION ONLY

SEE SHEET 1 FOR REQUIRED DC POWER VOLTAGE TO EACH RSA.

SEE SHEET 1 FOR GENERAL NOTES.

INTERCONNECTION DIAGRAM CONTROLLER WITH RSA ANNUNCIATOR

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

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

KOHLER.
KOHLER, WI 53044

TITLE: DIAGRAM, RSA INTERCONNECTION

SCALE: / / / SHEET 2–2

PLOTTED

DWG. NO. ADV–9169 C

REV	DATE	REVISION	BY	W F
N	5-30-19	THIS SHEET ADDED; COMPATIBILITY CHART, STANDARD NOTES,		
		AND NETWORKED DEVICES MOVED TO THIS SHEET; ISOLATED/		
		NON-ISOLATED RS-485 IDENTIFIED ON ALL SHEETS [CT197795]	TLK	

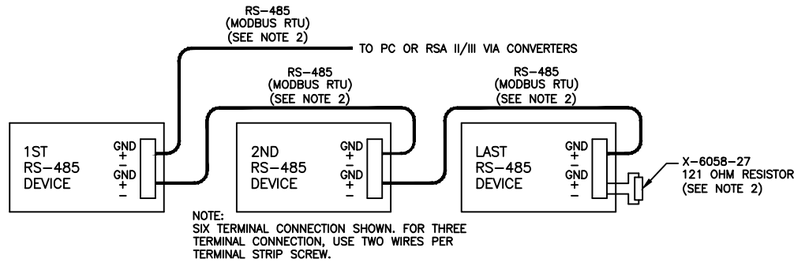
Drawing Sheet Reference	
Sheet	**Description**
1	Networked Devices, General Notes, This Sheet
2	Converters, Ethernet Network, PC, Data Interface System
3	16-Light (DEC3+), 550 (DEC550), KPC 1000 Legacy Genset Controllers
4	DEC3000 / APM402 Genset Controller
5	DEC6000 Genset Controller
6	APM603 Genset Controller for John Deere 80-500 Kw, Standard PGEN Network
7	This Sheet Reserved for Future Features
8	APM603 Genset Controller for KD Series, Standard PGEN Network
9	This Sheet Reserved for Future Features
10	APM802 Genset Controller
11	DEC8000 Genset Controller
12	DEC3500 Genset Controller
13	Series 1000 (MPAC1000), 340 (M340/M340+), Power Monitor Legacy ATS (Automatic Transfer Switch Controllers)
14	MPAC1500, MPAC-DM 750/1200/1500 ATS (Automatic Transfer Switch Controllers)
15	Legacy RSAII (Remote Serial Annunciator)
16	RSAIII (Remote Serial Annunciator)

Controller/Annunciator Compatibility Chart

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

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

DETAIL A (EXAMPLE OF)
NETWORKED RS-485 DEVICES



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

NOTES:

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

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

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

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

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

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

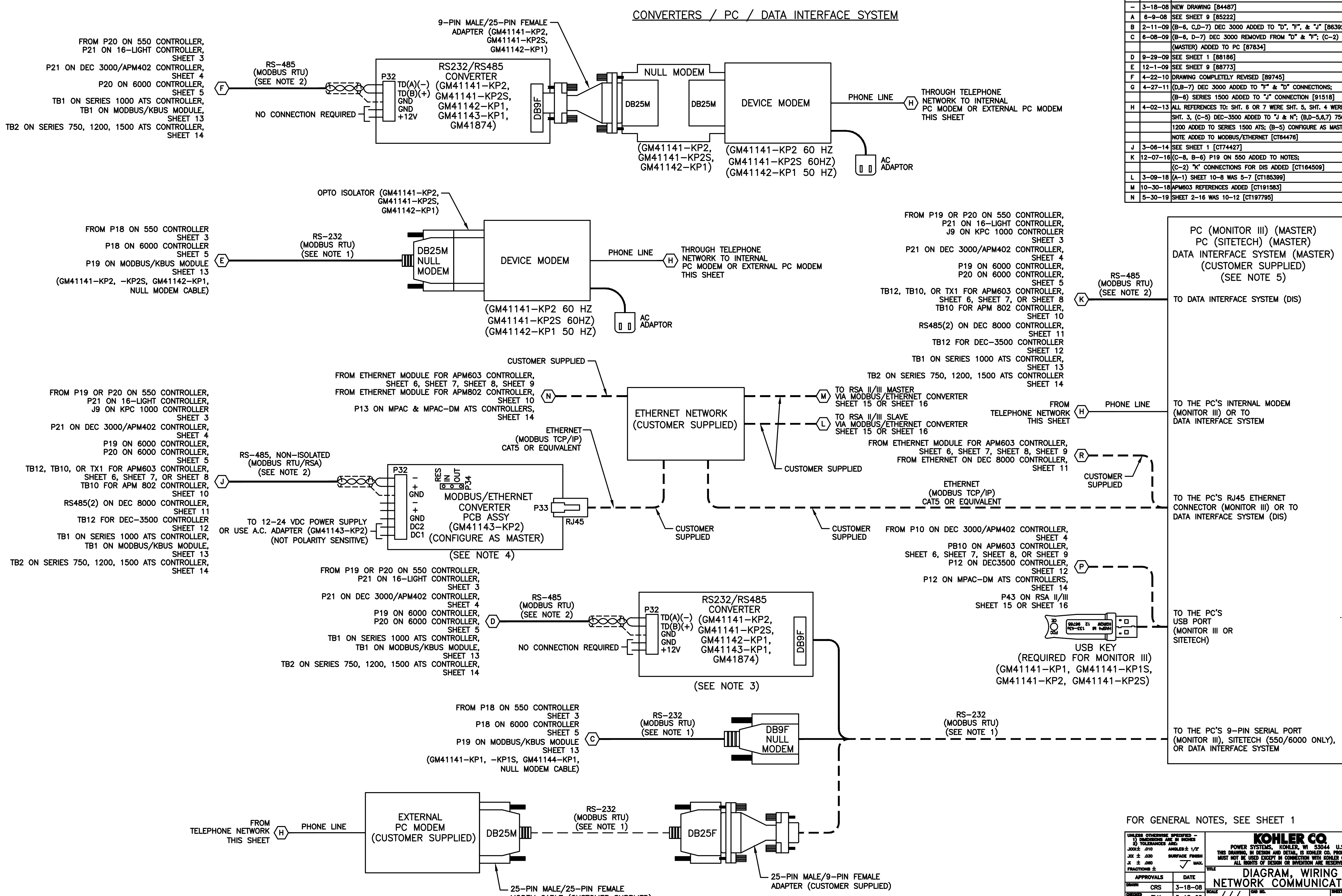
APPROVALS	DATE
DRAWN TLK	5-30-19
CHECKED TLK	5-30-19
APPROVED MD	5-30-19

TITLE: DIAGRAM, WIRING
NETWORK COMMUNICATIONS

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

REV	DATE	REVISION	BY	MF
–	3-18-08	NEW DRAWING [84487]	CRS	
A	6-9-08	SEE SHEET 9 [85222]	SEM	
B	2-11-09	(B-6, C,D-7) DEC 3000 ADDED TO "D", "F", & "J" [86392]	TLK	
C	6-08-09	(B-6, D-7) DEC 3000 REMOVED FROM "D" & "F"; (C-2)		
		(MASTER) ADDED TO PC [87834]	TLK	
D	9-29-09	SEE SHEET 1 [88186]	TLK	
E	12-1-09	SEE SHEET 9 [88773]	TLK	
F	4-22-10	DRAWING COMPLETELY REVISED [89745]	TLK	
G	4-27-11	(D,B-7) DEC 3000 ADDED TO "F" & "D" CONNECTIONS;		
		(B-6) SERIES 1500 ADDED TO "J" CONNECTION [91518]	TLK	
H	4-02-13	ALL REFERENCES TO: SHT. 6 OR 7 WERE SHT. 5, SHT. 4 WERE		
		SHT. 3, (C-5) DEC-3500 ADDED TO "J & N"; (B,D-5,6,7) 750 &		
		1200 ADDED TO SERIES 1500 ATS; (B-5) CONFIGURE AS MASTER		
		NOTE ADDED TO MODBUS/ETHERNET [CT64476]	TLK	
J	3-06-14	SEE SHEET 1 [CT74427]	TLK	
K	12-07-16	(C-8, B-6) P19 ON 550 ADDED TO NOTES;		
		(C-2) "K' CONNECTIONS FOR DIS ADDED [CT164509]	TLK	
L	3-09-18	(A-1) SHEET 10-8 WAS 5-7 [CT185399]	TLK	
M	10-30-18	APM603 REFERENCES ADDED [CT191583]	TLK	
N	5-30-19	SHEET 2-16 WAS 10-12 [CT197795]	TLK	

CONVERTERS / PC / DATA INTERFACE SYSTEM



FROM P20 ON 550 CONTROLLER, P21 ON 16-LIGHT CONTROLLER, SHEET 3
P21 ON DEC 3000/APM402 CONTROLLER, SHEET 4
P20 ON 6000 CONTROLLER, SHEET 5
TB1 ON SERIES 1000 ATS CONTROLLER, TB1 ON MODBUS/KBUS MODULE, SHEET 13
TB2 ON SERIES 750, 1200, 1500 ATS CONTROLLER, SHEET 14
RS-485 (MODBUS RTU) (SEE NOTE 2)
NO CONNECTION REQUIRED
P32
TD(A)(-) TD(B)(+) GND GND +12V
RS232/RS485 CONVERTER (GM41141-KP2, GM41141-KP2S, GM41142-KP1, GM41143-KP1, GM41874)
DB9F
9-PIN MALE/25-PIN FEMALE ADAPTER (GM41141-KP2, GM41141-KP2S, GM41142-KP1)
NULL MODEM
DB25M
DB25M
(GM41141-KP2, GM41141-KP2S, GM41142-KP1)
DEVICE MODEM
(GM41141-KP2 60 HZ GM41141-KP2S 60HZ) (GM41142-KP1 50 HZ)
PHONE LINE
THROUGH TELEPHONE NETWORK TO INTERNAL PC MODEM OR EXTERNAL PC MODEM THIS SHEET
AC ADAPTOR
OPTO ISOLATOR (GM41141-KP2, GM41141-KP2S, GM41142-KP1)
FROM P18 ON 550 CONTROLLER SHEET 3
P18 ON 6000 CONTROLLER SHEET 5
P19 ON MODBUS/KBUS MODULE SHEET 13
(GM41141-KP2, -KP2S, GM41142-KP1, NULL MODEM CABLE)
RS-232 (MODBUS RTU) (SEE NOTE 1)
DB25M NULL MODEM
DEVICE MODEM
(GM41141-KP2 60 HZ GM41141-KP2S 60HZ) (GM41142-KP1 50 HZ)
PHONE LINE
THROUGH TELEPHONE NETWORK TO INTERNAL PC MODEM OR EXTERNAL PC MODEM THIS SHEET
AC ADAPTOR
FROM P19 OR P20 ON 550 CONTROLLER, P21 ON 16-LIGHT CONTROLLER, J9 ON KPC 1000 CONTROLLER SHEET 3
P21 ON DEC 3000/APM402 CONTROLLER, SHEET 4
P19 ON 6000 CONTROLLER, P20 ON 6000 CONTROLLER, SHEET 5
TB12, TB10, OR TX1 FOR APM603 CONTROLLER, SHEET 6, SHEET 7, OR SHEET 8
TB10 FOR APM 802 CONTROLLER, SHEET 10
RS485(2) ON DEC 8000 CONTROLLER, SHEET 11
TB12 FOR DEC-3500 CONTROLLER SHEET 12
TB1 ON SERIES 1000 ATS CONTROLLER, SHEET 13
TB2 ON SERIES 750, 1200, 1500 ATS CONTROLLER SHEET 14
RS-485 (MODBUS RTU) (SEE NOTE 2)
PC (MONITOR III) (MASTER) PC (SITETECH) (MASTER) DATA INTERFACE SYSTEM (MASTER) (CUSTOMER SUPPLIED) (SEE NOTE 5)
TO DATA INTERFACE SYSTEM (DIS)
CUSTOMER SUPPLIED
FROM ETHERNET MODULE FOR APM603 CONTROLLER, SHEET 6, SHEET 7, SHEET 8, SHEET 9
FROM ETHERNET MODULE FOR APM802 CONTROLLER, SHEET 10
P13 ON MPAC & MPAC-DM ATS CONTROLLERS, SHEET 14
ETHERNET NETWORK (CUSTOMER SUPPLIED)
TO RSA II/III MASTER VIA MODBUS/ETHERNET CONVERTER SHEET 15 OR SHEET 16
TO RSA II/III SLAVE VIA MODBUS/ETHERNET CONVERTER SHEET 15 OR SHEET 16
CUSTOMER SUPPLIED
FROM TELEPHONE NETWORK THIS SHEET
PHONE LINE
TO THE PC'S INTERNAL MODEM (MONITOR III) OR TO DATA INTERFACE SYSTEM
FROM P19 OR P20 ON 550 CONTROLLER, P21 ON 16-LIGHT CONTROLLER, J9 ON KPC 1000 CONTROLLER SHEET 3
P21 ON DEC 3000/APM402 CONTROLLER, SHEET 4
P19 ON 6000 CONTROLLER, P20 ON 6000 CONTROLLER, SHEET 5
TB12, TB10, OR TX1 FOR APM603 CONTROLLER, SHEET 6, SHEET 7, OR SHEET 8
TB10 FOR APM 802 CONTROLLER, SHEET 10
RS485(2) ON DEC 8000 CONTROLLER, SHEET 11
TB12 FOR DEC-3500 CONTROLLER SHEET 12
TB1 ON SERIES 1000 ATS CONTROLLER, TB1 ON MODBUS/KBUS MODULE, SHEET 13
TB2 ON SERIES 750, 1200, 1500 ATS CONTROLLER, SHEET 14
ETHERNET (MODBUS TCP/IP) CAT5 OR EQUIVALENT
RS-485, NON-ISOLATED (MODBUS RTU/RSA) (SEE NOTE 2)
P32
RES IN OUT P34
GND GND DC2 DC1
MODBUS/ETHERNET CONVERTER PCB ASSY (GM41143-KP2) (CONFIGURE AS MASTER)
P33
RJ45
TO 12-24 VDC POWER SUPPLY OR USE A.C. ADAPTER (GM41143-KP2) (NOT POLARITY SENSITIVE)
(SEE NOTE 4)
CUSTOMER SUPPLIED
CUSTOMER SUPPLIED
FROM ETHERNET MODULE FOR APM603 CONTROLLER, SHEET 6, SHEET 7, SHEET 8, SHEET 9
FROM ETHERNET ON DEC 8000 CONTROLLER, SHEET 11
CUSTOMER SUPPLIED
ETHERNET (MODBUS TCP/IP) CAT5 OR EQUIVALENT
TO THE PC'S RJ45 ETHERNET CONNECTOR (MONITOR III) OR TO DATA INTERFACE SYSTEM (DIS)
FROM P10 ON DEC 3000/APM402 CONTROLLER, SHEET 4
PB10 ON APM603 CONTROLLER, SHEET 6, SHEET 7, SHEET 8, OR SHEET 9
P12 ON DEC3500 CONTROLLER, SHEET 12
P12 ON MPAC-DM ATS CONTROLLERS, SHEET 14
P43 ON RSA II/III SHEET 15 OR SHEET 16
USB KEY (REQUIRED FOR MONITOR III) (GM41141-KP1, GM41141-KP1S, GM41141-KP2, GM41141-KP2S)
TO THE PC'S USB PORT (MONITOR III OR SITETECH)
FROM P19 OR P20 ON 550 CONTROLLER, P21 ON 16-LIGHT CONTROLLER, SHEET 3
P21 ON DEC 3000/APM402 CONTROLLER, SHEET 4
P19 ON 6000 CONTROLLER, P20 ON 6000 CONTROLLER, SHEET 5
TB1 ON SERIES 1000 ATS CONTROLLER, TB1 ON MODBUS/KBUS MODULE, SHEET 13
TB2 ON SERIES 750, 1200, 1500 ATS CONTROLLER, SHEET 14
RS-485 (MODBUS RTU) (SEE NOTE 2)
NO CONNECTION REQUIRED
P32
TD(A)(-) TD(B)(+) GND GND +12V
RS232/RS485 CONVERTER (GM41141-KP2, GM41141-KP2S, GM41142-KP1, GM41143-KP1, GM41874)
DB9F
(SEE NOTE 3)
FROM P18 ON 550 CONTROLLER SHEET 3
P18 ON 6000 CONTROLLER SHEET 5
P19 ON MODBUS/KBUS MODULE SHEET 13
(GM41141-KP1, -KP1S, GM41144-KP1, NULL MODEM CABLE)
RS-232 (MODBUS RTU) (SEE NOTE 1)
DB9F NULL MODEM
RS-232 (MODBUS RTU) (SEE NOTE 1)
TO THE PC'S 9-PIN SERIAL PORT (MONITOR III), SITETECH (550/6000 ONLY), OR DATA INTERFACE SYSTEM
FROM TELEPHONE NETWORK THIS SHEET
PHONE LINE
EXTERNAL PC MODEM (CUSTOMER SUPPLIED)
DB25M
RS-232 (MODBUS RTU) (SEE NOTE 1)
DB25F
25-PIN MALE/25-PIN FEMALE MODEM CABLE (CUSTOMER SUPPLIED)
25-PIN MALE/9-PIN FEMALE ADAPTER (CUSTOMER SUPPLIED)

FOR GENERAL NOTES, SEE SHEET 1

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

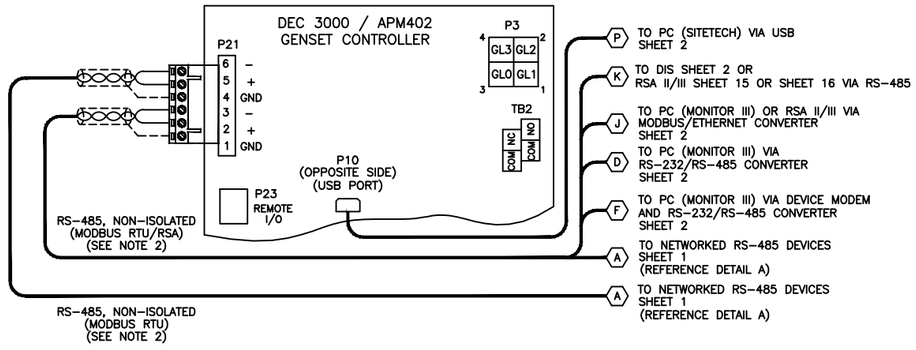
APPROVALS		DATE
DRAWN	CRS	3-18-08
CHECKED	TLK	3-18-08
APPROVED	TLK	3-18-08

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

TITLE: DIAGRAM, WIRING NETWORK COMMUNICATIONS

SCALE: / / / CAD NO.: SHEET: 2-16
PLOTTED: DWG. NO.: GM62554 D

REV	DATE	REVISION	BY	CHK
N	5-30-19	THIS SHEET ADDED;		
		DEC3000 MOVED TO THIS SHEET [CT197795]	TLK	



FOR GENERAL NOTES, SEE SHEET 1

UNLESS OTHERWISE SPECIFIED –
1) DIMENSIONS ARE IN INCHES
2) TOLERANCES ARE:
.XXX ± .010 ANGLES ± 1/2°
.XX ± .030 SURFACE FINISH
.X ± .060 125 MAX.
FRACTIONS ±

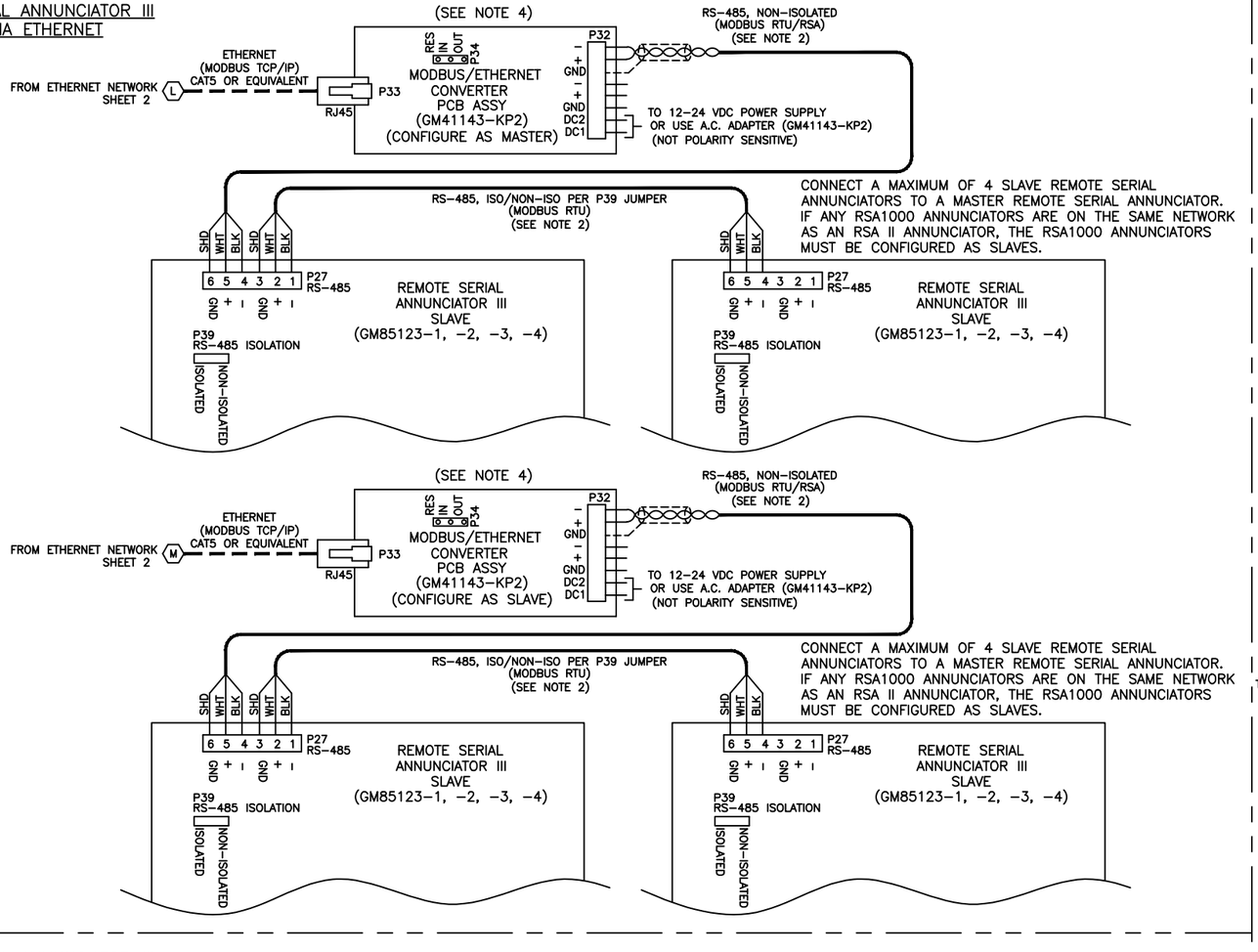
APPROVALS		DATE
DRAWN	TLK	5-30-19
CHECKED	TLK	5-30-19
APPROVED	MD	5-30-19

TITLE
DIAGRAM, WIRING
NETWORK COMMUNICATIONS

SCALE /// DWG NO. SHEET 4-16
PLOTTED REV. NO. GM62554 D

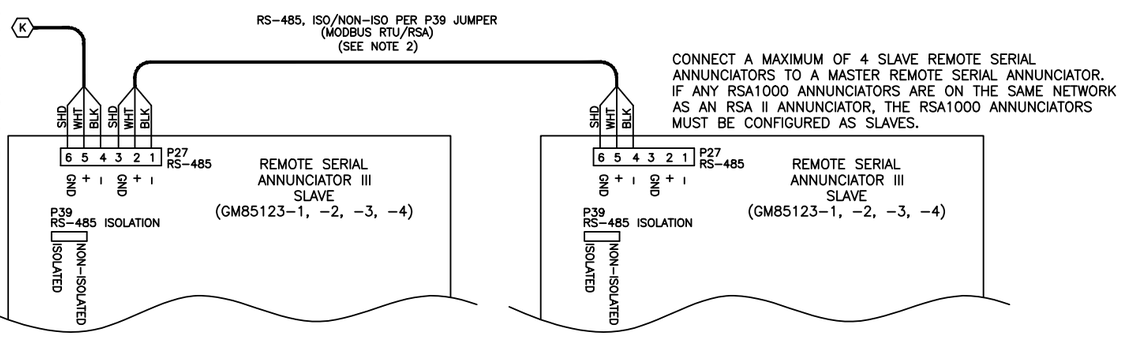
REV	DATE	REVISION	BY	CHK'D
H	11-20-13	THIS SHEET ADDED [CT64476]	TLK	
J	3-06-14	SEE SHEET 1 [CT74427]	TLK	
K	12-07-16	(A-7) P19 ON 550 ADDED TO NOTE [CT164509]	TLK	
L	3-09-18	(A-1) SHEET 12-8 WAS 7-7 [CT185399]	TLK	
M	10-30-18	(A-8) APM603 REFERENCE ADDED [CT191583]	TLK	
N	5-30-19	SHEET 16-16 WAS 12-12 [CT197795]	TLK	

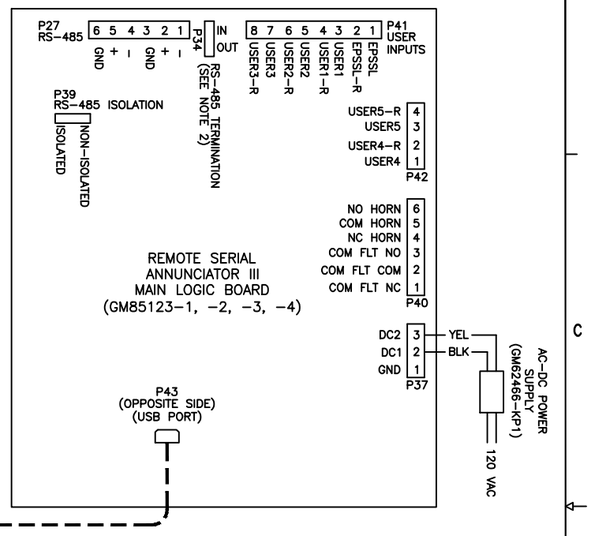
REMOTE SERIAL ANNUNCIATOR III CONNECTED VIA ETHERNET



REMOTE SERIAL ANNUNCIATOR III DIRECT CONNECTED

FROM P19 OR P20 ON 550 CONTROLLER, P21 ON 16-LIGHT CONTROLLER, J9 ON KPC 1000 CONTROLLER SHEET 3
P21 ON DEC 3000/APM402 CONTROLLER, SHEET 4
P19 ON 6000 CONTROLLER, P20 ON 6000 CONTROLLER, SHEET 5
TB12, TB10, OR TX1 FOR APM603 CONTROLLER, SHEET 6, SHEET 7, SHEET 8, OR SHEET 9
TB10 FOR APM 802 CONTROLLER, SHEET 10
RS485(2) ON DEC 8000 CONTROLLER, SHEET 11
FROM TB12 FOR DEC-3500 CONTROLLER SHEET 12
TB1 ON SERIES 1000 ATS CONTROLLER, SHEET 13
TB2 ON SERIES 750, 1200, 1500 ATS CONTROLLER SHEET 14





P41 INPUT CONNECTIONS

P41-8 USER INPUT 3 RETURN
P41-7 USER INPUT 3
P41-6 USER INPUT 2 RETURN
P41-5 USER INPUT 2
P41-4 USER INPUT 1 RETURN
P41-3 USER INPUT 1
P41-2 LOCAL ATS EMERGENCY ON INPUT RETURN
P41-1 LOCAL ATS EMERGENCY ON INPUT
(16-LIGHT ONLY) (SUPPLIED VIA MODBUS ON 550/6000/3000/APM402/3500 GENSET CONTROLLER AND SERIES 1000/750/1200/1500 ATS CONTROLLERS)

P42 INPUT CONNECTIONS

P41-4 USER INPUT 5 RETURN
P41-3 USER INPUT 5
P41-2 USER INPUT 4 RETURN
P41-1 USER INPUT 4

P40 OUTPUT CONNECTIONS

P40-6 HORN RELAY NORMALLY OPEN
P40-5 HORN RELAY COMMON
P40-4 HORN RELAY NORMALLY CLOSED
P40-3 COMMON FAULT RELAY NORMALLY OPEN
P40-2 COMMON FAULT RELAY COMMON
P40-1 COMMON FAULT RELAY NORMALLY CLOSED

P37 PWR/CAN CONNECTIONS

P37-3 12/24 VDC BATTERY INPUT2 (NOT POLARITY SENSITIVE)
P37-2 12/24 VDC BATTERY INPUT1 (NOT POLARITY SENSITIVE)
P37-1 GROUND

P37/P40/P41 WIRE SIZE REQUIREMENTS

700 FT. – 20 AWG.
1125 FT. – 18 AWG
1800 FT. – 16 AWG
2800 FT. – 14 AWG

FOR GENERAL NOTES, SEE SHEET 1

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

APPROVALS	DATE
DRAWN TLK	11-20-13
CHECKED TLK	11-20-13
APPROVED EDA	11-20-13

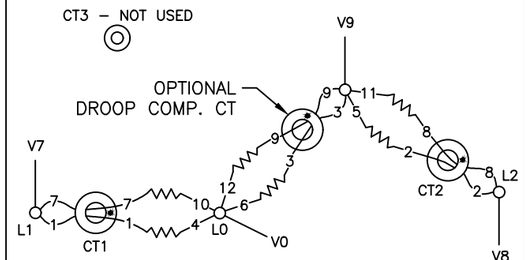
TITLE: DIAGRAM, WIRING NETWORK COMMUNICATIONS
SCALE: / / / CAD NO. SHEET 16-16
PLOTTED DWG. NO. GM62554 D

REV	DATE	REVISION	BY	M F
AB	10-4-19	SEE SHEET 4 [CT199071]	DS	
AC	02-25-20	SEE SHEET 5 [CT202143]	SBR	

12 LEAD ALTERNATOR, 3 WIRE, SINGLE PHASE

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

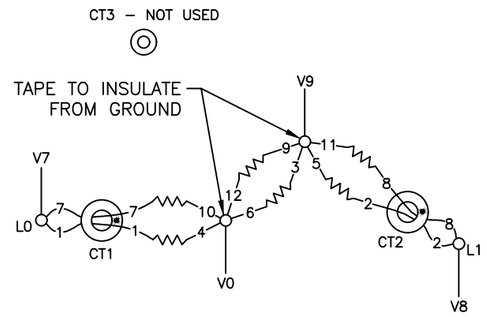
SOME SETS NOT RATED FOR SINGLE PHASE – SEE MANUALS



TB3 UP V7 LO METER SCALE LAMP JUMPER

12 LEAD ALTERNATOR, 3 WIRE, SINGLE PHASE

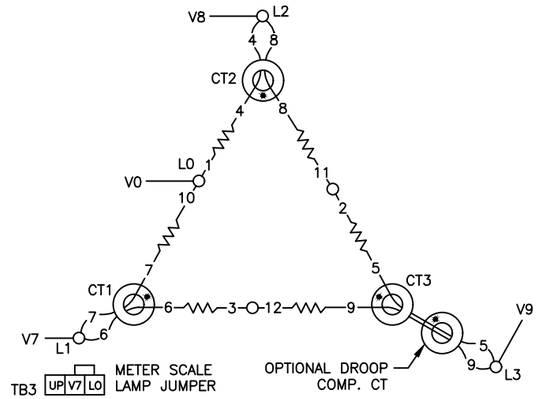
60 HZ: 240V
50 HZ: 220V
(MARINE ONLY)



TB3 UP V7 LO METER SCALE LAMP JUMPER

12 LEAD ALTERNATOR, 4 WIRE, DELTA

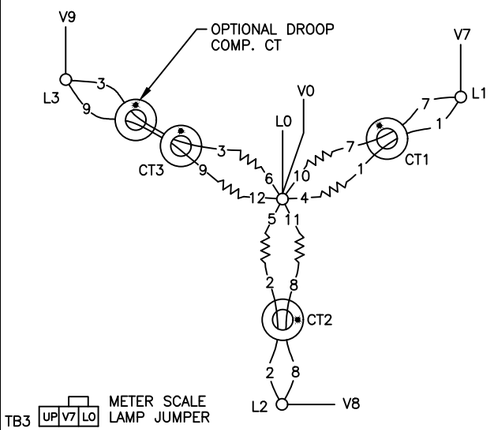
60 HZ: 120/240V
50 HZ: 110/220V



TB3 UP V7 LO METER SCALE LAMP JUMPER

12 LEAD ALTERNATOR, 4 WIRE, LOW WYE

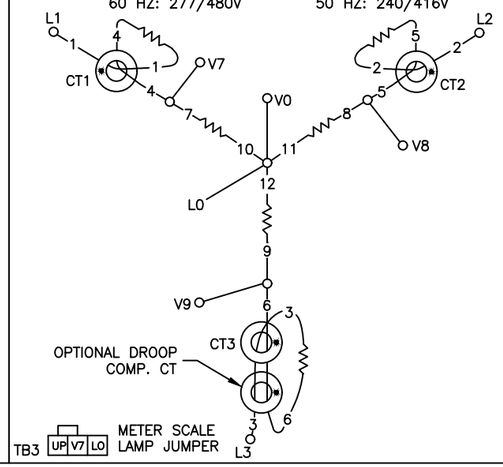
60 HZ: 120/208V
60 HZ: 127/220V
60 HZ: 139/240V
50 HZ: 110/190V
50 HZ: 115/200V
50 HZ: 120/208V



TB3 UP V7 LO METER SCALE LAMP JUMPER

12 LEAD ALTERNATOR, 4 WIRE, HI WYE

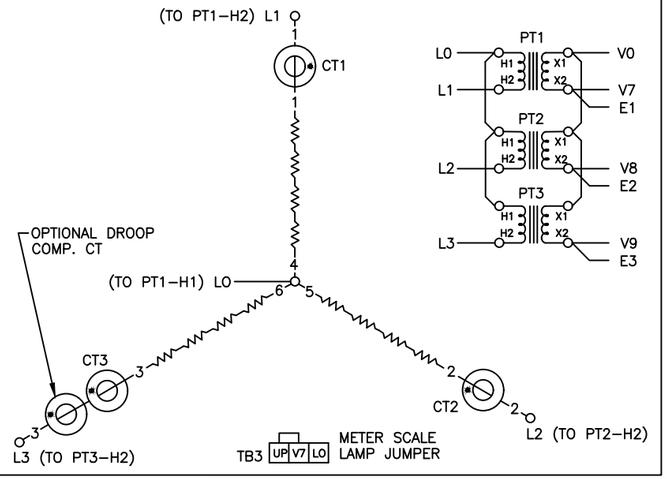
60 HZ: 220/380V
60 HZ: 240/416V
60 HZ: 277/480V
50 HZ: 220/380V
50 HZ: 230/400V
50 HZ: 240/416V



TB3 UP V7 LO METER SCALE LAMP JUMPER

6 LEAD ALTERNATOR, 4 WIRE, WYE

60 HZ: 347/600V



TB3 UP V7 LO METER SCALE LAMP JUMPER

NOTES:

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

PHASE ROTATION

A	B	C
L1	L2	L3

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

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

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

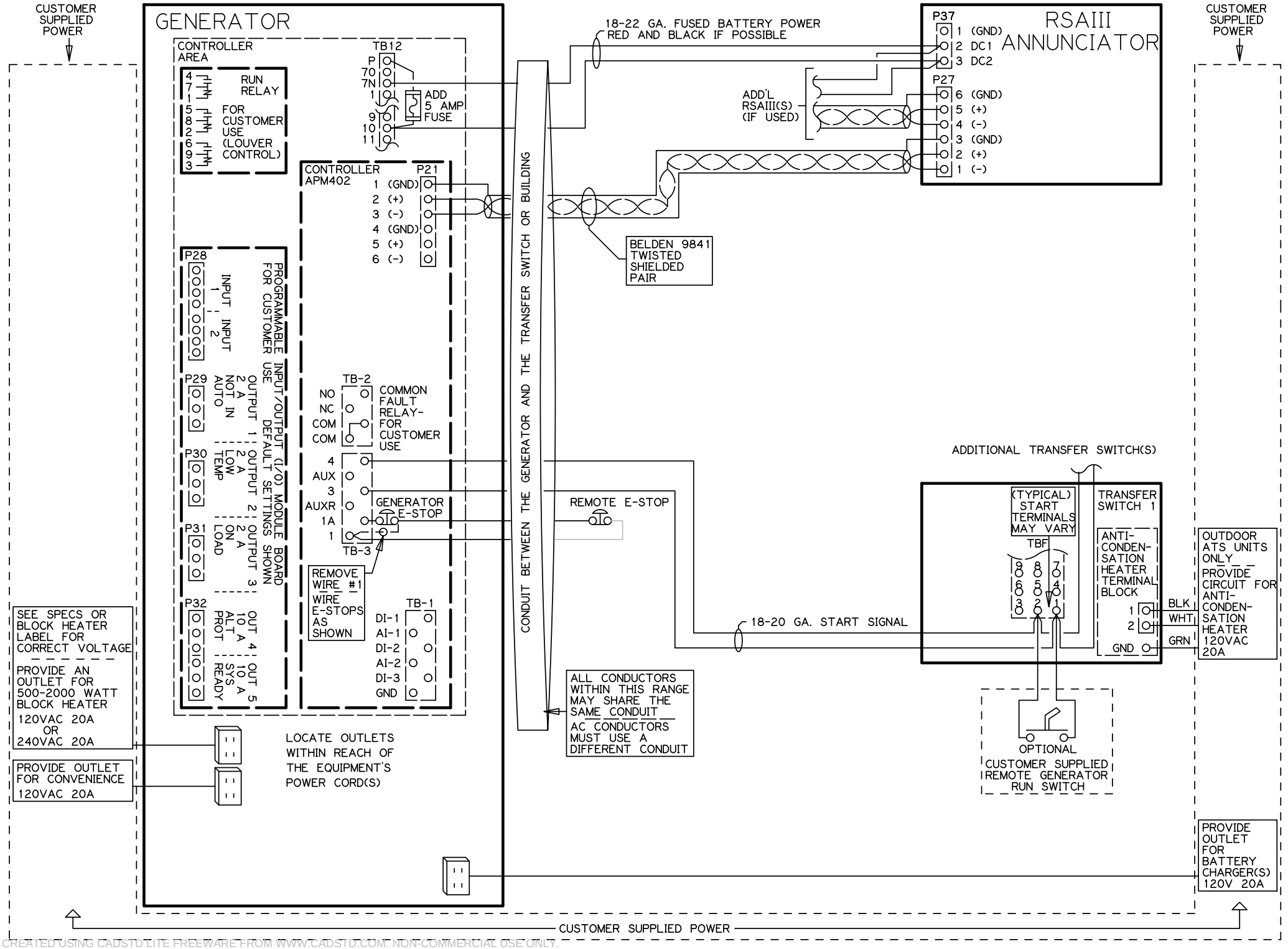
KOHLER CO.
POWER SYSTEMS, KOHLER, WI 53044 U.S.A.

TITLE: DIAGRAM, ALTERNATOR CONNECTIONS

SCALE NONE | CAD NO. | SHEET 3-8

PLOTTED | DWG. NO. ADV-5875 | C

FIELD WIRING APM402 CONTROLLER



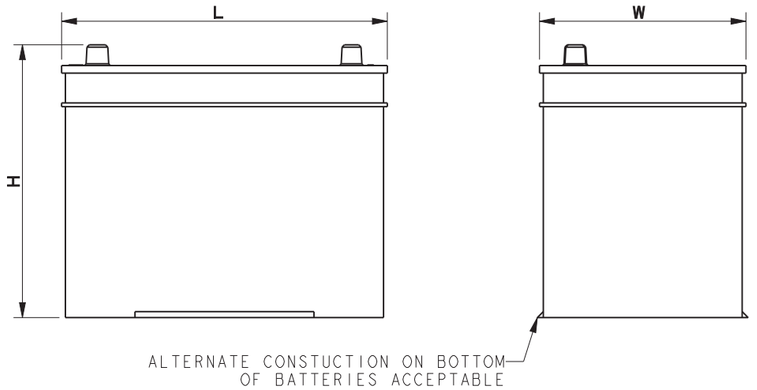
KOHLER®

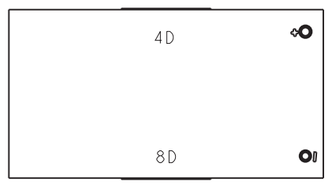
Miscellaneous

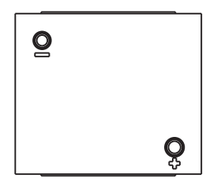
PART NO.	REV		SAE DIMENSION L	SAE DIMENSION W	SAE DIMENSION H	VOLTAGE	COLD CRANKING AMPS AT 0°F MINIMUM	RESERVE CAP MINUTES AT 80°F MINIMUM	POST LAYOUT /STYLE	CHARGE TYPE	BATTERY CONSTRUCTION	BCI GROUP	INTERNAL RESISTANCE (MΩ)
~~244578~~	~~BF~~		~~333.5 [13.13]~~	~~181.1 [7.13]~~	~~238.5 [9.39]~~	~~6~~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

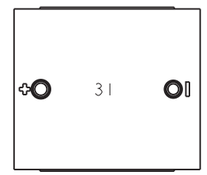
NOTE: DIMENSIONS IN [ ] ARE ENGLISH EQUIVALENTS.

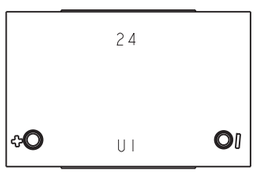
□ INDICATES PART NUMBERS AFFECTED BY LATEST DRAWING REVISION

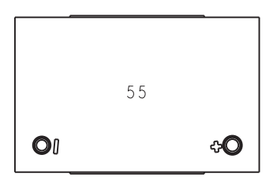












REV	DATE	ON COMPOSITE DWGS, SEE PART NO. FOR REVISION LEVEL	BY
BY	5-6-16	(C-6) 10702001800: COLD CRANKING AMPS 1110	
		WAS 1100 [CTI46053]	BGW
CA	4-15-19	(C-8) GM106681, GM106375, GM106373,	
		GM106377, GM106369 & GM106374 ADDED; (D-3)	
		INTERNAL RESISTANCE (MΩ) COLUMN ADDED;	
		(D-8) 324586 & 256984 VOIDED; (C-8)	
		GM34399, GM48784, GM75512	
		VOIDED;(A,B-8,7,6,5,4) VIEWS & NOTES MOVED	
		TO SHEET 2, SHEET 2 ADDED [CTI94425]	DS

DO NOT SCALE. REFERENCE THE MODEL FOR ALL UNSPECIFIED DIMENSIONS

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

THIRD ANGLE PROJECTION

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

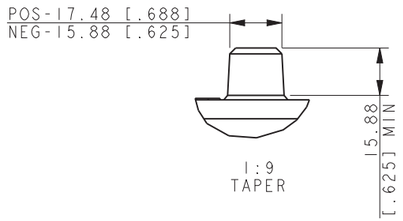
KOHLER.
KOHLER, WISCONSIN 53044

TITLE
DWG, BATTERY, DRY CHARGED

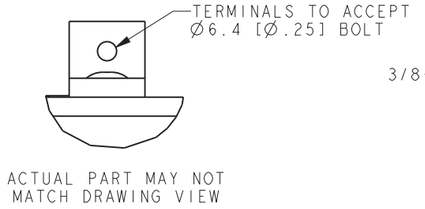
SCALE 0.30 | CAD NO. | SHEET 1 of 2

DWG NO. **244578-CMP** | **D**

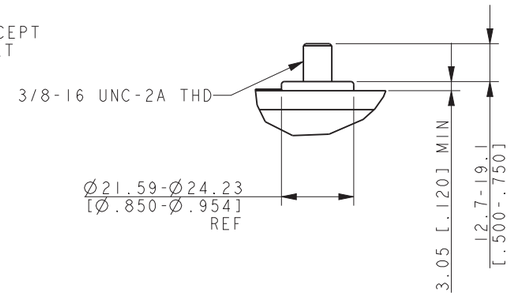
STYLE 1



STYLE 2



STYLE 3



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

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

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

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

REV	DATE	ON COMPOSITE DWGS, SEE PART NO. FOR REVISION LEVEL	BY
CA	4-15-19	NEW DRAWING; SEE SHEET 1 [CTI94425]	DS

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	DS	4-15-19
CHECKED	GFR	4-15-19
APPROVED	AMM	4-15-19

TITLE
DWG, BATTERY, DRY CHARGED

SCALE 0.30 | CAD NO. | SHEET 2 of 2
DWG NO. **244578-CMP** | **D**

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

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

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

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

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

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

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

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

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

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

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

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

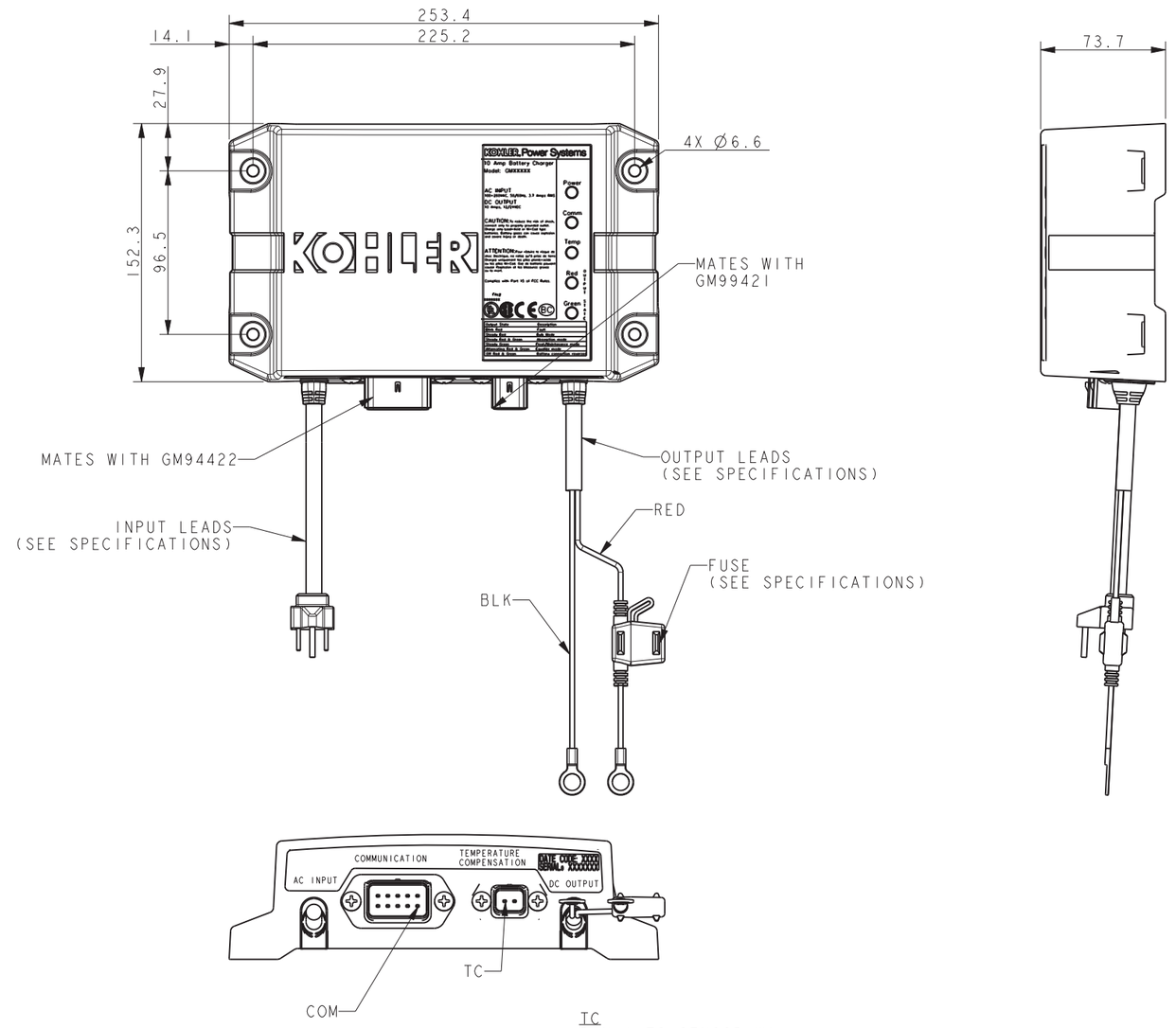
DOCUMENTATION:
THERE SHALL BE AN INSTALLATION / OPERATIONAL MANUAL SUPPLIED WITH EACH CHARGER.
PER KOHLER SUPPLIED ARTWORK.

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

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

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

WARRANTY:
2 YEAR FROM DATE OF PURCHASE FROM MANUFACTURE.



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

TC
PIN 1 TC SENSOR W1
2 TC SENSOR W2

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

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

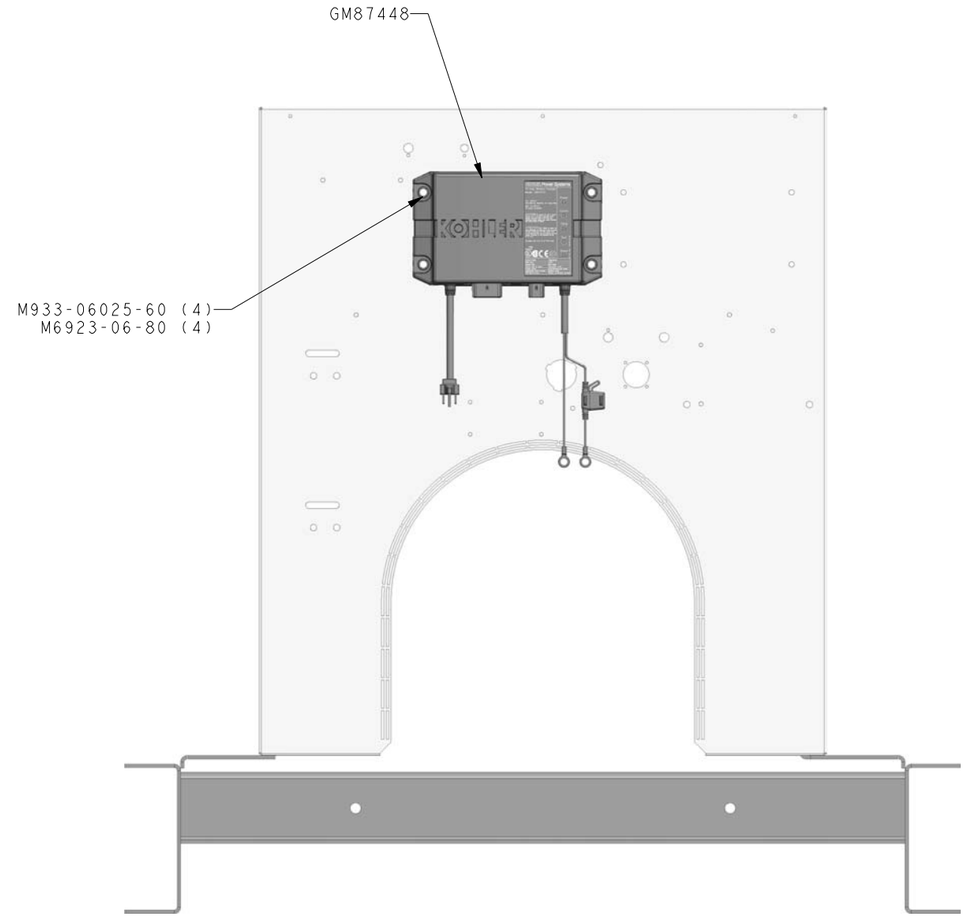
APPROVALS		DATE
DRAWN	SAM	9-22-14
CHECKED	SAM	9-22-14
APPROVED	AGT	9-22-14

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

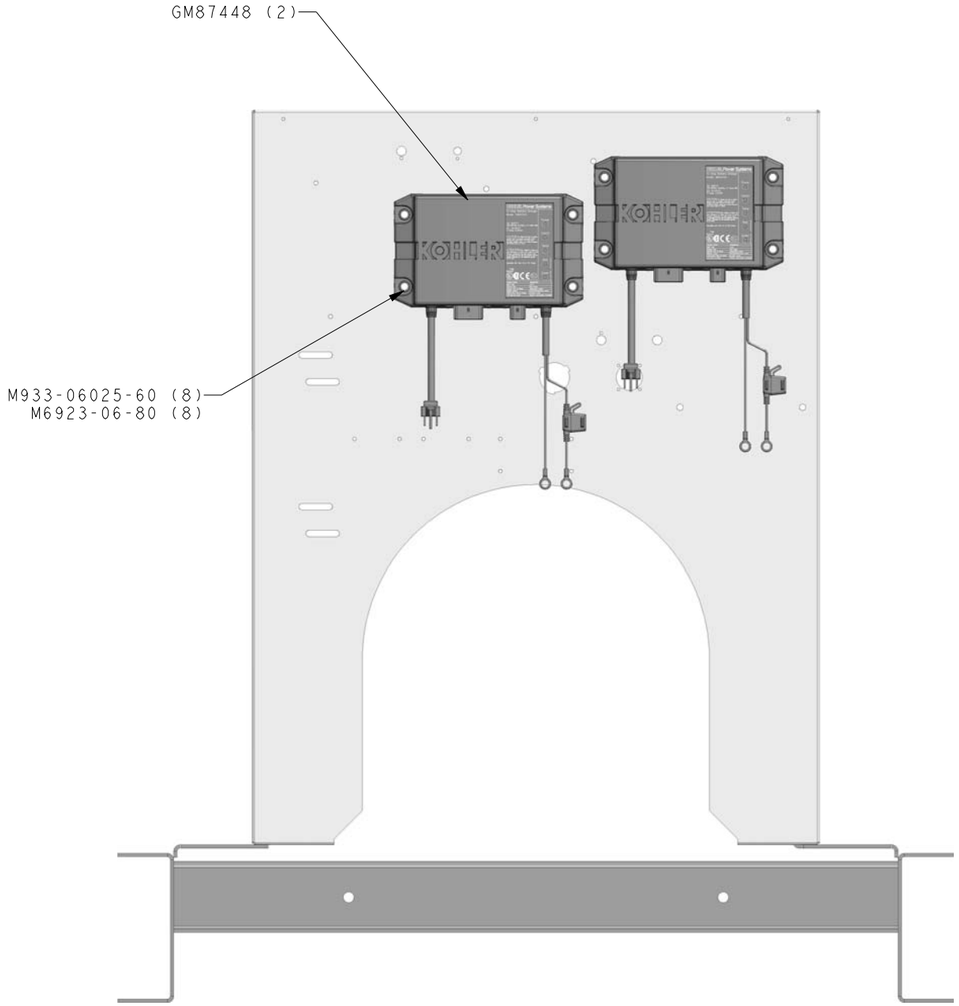
TITLE
CHARGER, BATTERY 10 AMP

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

KIT NUMBER	VIEW	DESCRIPTION
GM94447-KA1	VIEW 1	BATTERY CHARGER, FLOAT 12V 10A
GM94447-KA2	VIEW 2	BATTERY CHARGER, FLOAT 24V 10A



VIEW 1



VIEW 2

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

REV	DATE	ON COMPOSITE DWGS, SEE PART NO. FOR REVISION LEVEL	BY
-	9-23-14	NEW DRAWING [CT94502]	SAM

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

APPROVALS		DATE
DRAWN	SAM	9-23-14
CHECKED	SAM	9-23-14
APPROVED	AGT	9-23-14

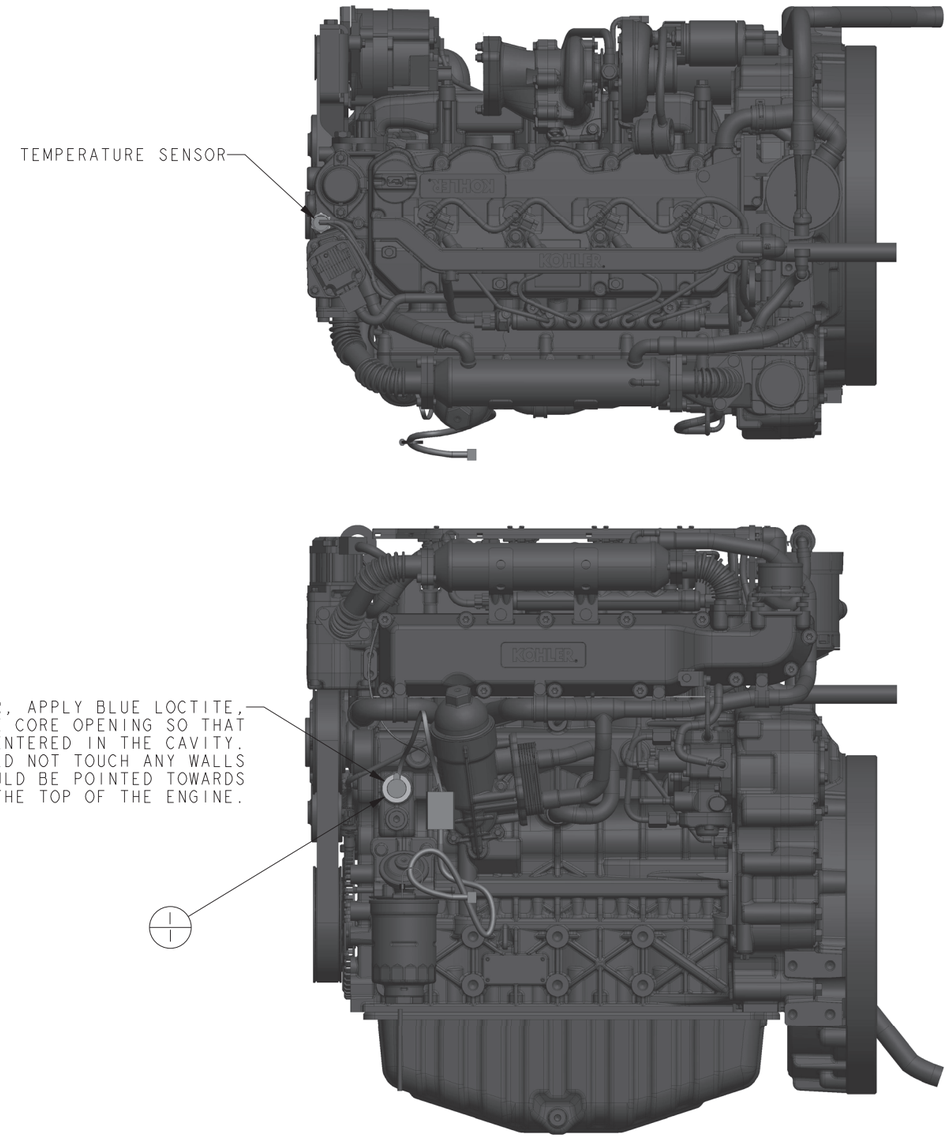
KOHLER CO. METRIC PRO-E
POWER SYSTEMS, KOHLER, WI 53044 U.S.A.

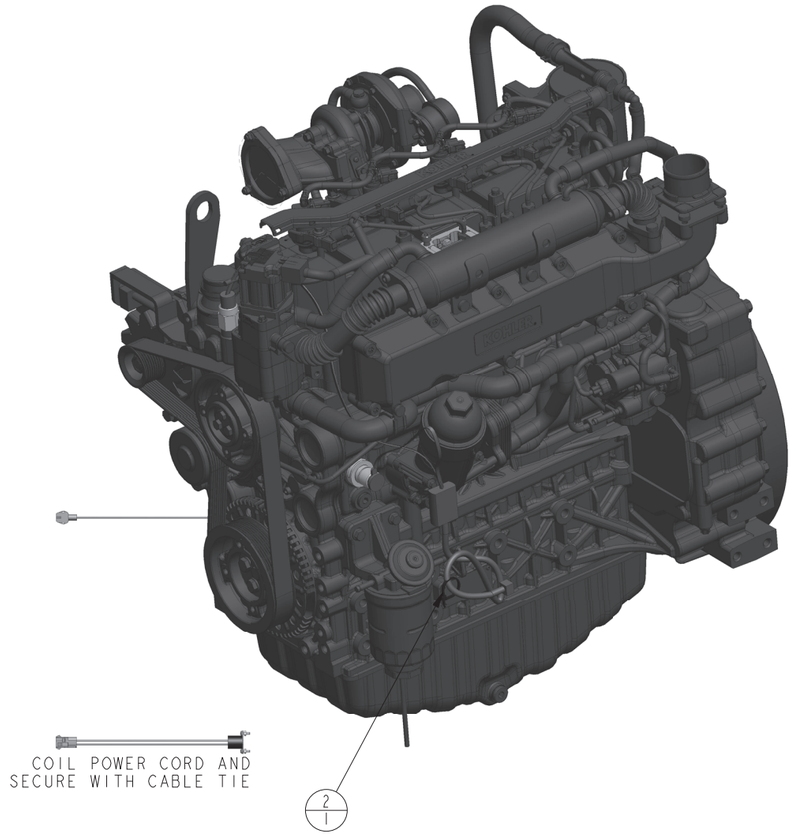
TITLE
DWG, ASSY BATTERY CHARGER

SCALE 0.40 | CAD NO. | SHEET 1 of 1
DWG NO. GM94447 | D

KIT NO.	ITEM	PART NO	QTY	DESCRIPTION
GM102361-KA1				BLOCK HEATER, 120V, 1000W, AQMD
	1	GM103076	1	HEATER, BLOCK, 120V 1000W
	2	X-468-1	1	TIE, CABLE

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





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

REV	DATE	ON COMPOSITE DWGS, SEE PART NO. FOR REVISION LEVEL	BY
-	6-12-17	NEW DRAWING [CTI75538]	CEK
A	1-24-18	GM102361-KA2 ADDED, SHEET 2 ADDED [CTI83674]	CEK
B	4-27-18	SEE SHEET 2 [CTI85140]	SB
C	11-28-18	SHEET 3 ADDED [CTI91939]	APB

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	CEK	6-12-17
CHECKED	CEK	6-12-17
APPROVED	RMF	6-12-17

TITLE
DWG, BLOCK HEATER, 120V 1000W

SCALE 0.25 | CAD NO. | SHEET 1 of 3

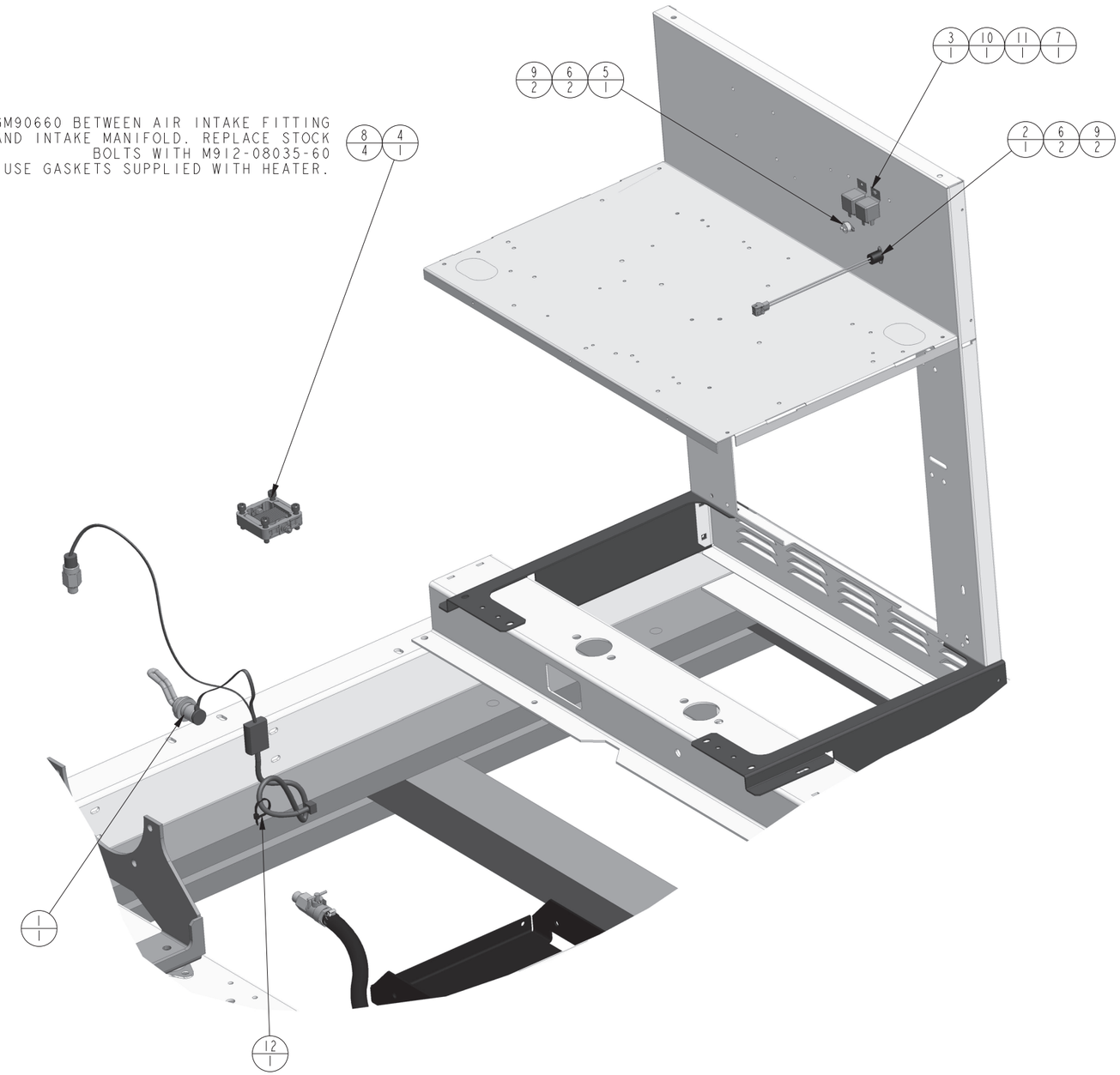
DWG NO. **GM102361** **D**

40-60KW REOZK AQMD

KIT NO.	ITEM	PART NO	QTY	DESCRIPTION
GM102361-KA2				BLOCK HEATER, 120V, 1000W
	1	GM103076	1	HEATER, BLOCK, 120V 1000W
	2	GM105001	1	SWITCH THERMAL
	3	GM49746	1	RELAY, 12 VDC
	4	GM90660	1	HEATER, MANIFOLD KDI2504M
	5	GM98816	1	ASSEMBLY, TEMPERATURE SWITCH
	6	M7985A-03010-20	4	SCREW, PAN HEAD M3X10
	7	M7985A-04010-20	1	SCREW, PAN HEAD MACHINED
	8	M912-08035-60	4	SCREW, SOCKET HEAD CAP
	9	M934-03-50	4	NUT, HEX 3MM
	10	M934-04-50	1	NUT, HEX 4MM
	11	X-22-7	1	WASHER, LOCK
	12	X-468-1	1	TIE, CABLE

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

INSTALL GM90660 BETWEEN AIR INTAKE FITTING AND INTAKE MANIFOLD. REPLACE STOCK BOLTS WITH M912-08035-60 USE GASKETS SUPPLIED WITH HEATER.



40-60KW REOZK

REV	DATE	ON COMPOSITE DWGS, SEE PART NO. FOR REVISION LEVEL	BY
A	1-24-18	GM102361-KA2 ADDED, SHEET 2 ADDED [CTI83674]	CEK
B	4-27-18	(D-8) GM105001 (1) WAS GM94766 (1) ,	
		M7985A-03010-20 (4) WAS (2) , M934-03-50 (4)	
		WAS (2) & M125A-06-80, M6923-06-80,	
		M933-06020-60 REMOVED [CTI85140]	SB
C	11-28-18	SHEET 3 ADDED [CTI91939]	APB

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 3.2 MAX.

THIRD ANGLE PROJECTION

APPROVALS		DATE
DRAWN	CEK	1-24-18
CHECKED	CEK	1-24-18
APPROVED	RMF	1-24-18

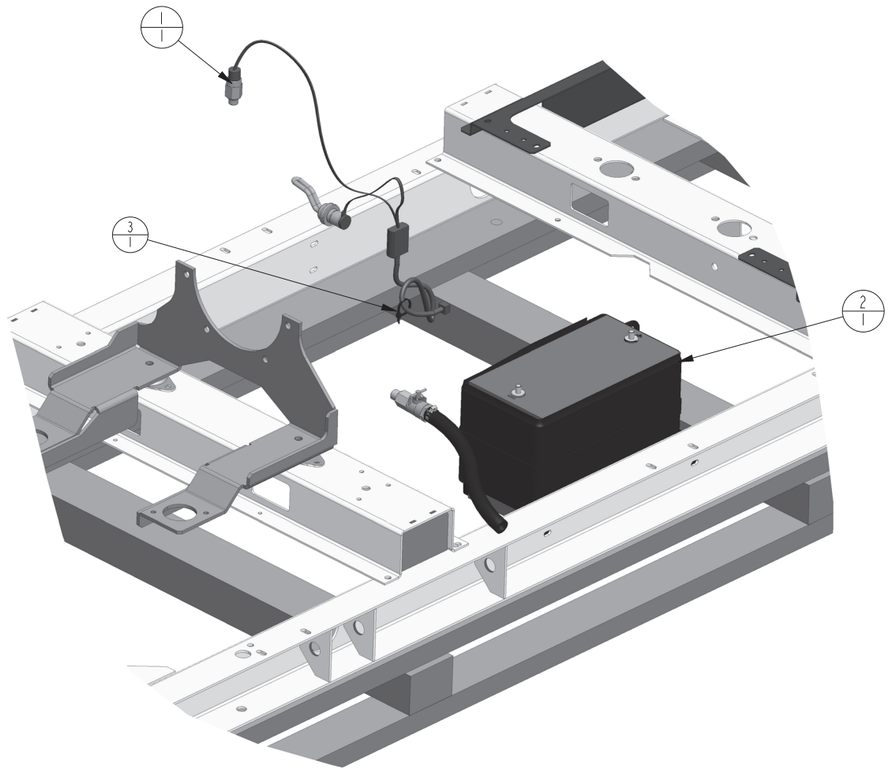
TITLE
DWG, BLOCK HEATER, 120V 1000W

SCALE 0.25 | CAD NO. | SHEET 2 of 3

DWG NO. **GM102361** | **D**

KIT NO.	ITEM	PART NO	QTY	DESCRIPTION
GM102361-KA3				COLD WEATHER PACKAGE
	1	GM103076	1	HEATER, BLOCK, 120V 1000W
	2	GM103784	1	HEATER, BATTERY WRAP 120V, 80W
	3	X-468-1	1	TIE, CABLE

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



48REOZK4
55REOZT4

REV	DATE	ON COMPOSITE DWGS, SEE PART NO. FOR REVISION LEVEL	BY
C	11-28-18	(D-8) GM102361-KA3 ADDED; SHEET 3 ADDED	
		[CT191939]	APB

DO NOT SCALE. REFERENCE THE MODEL FOR ALL UNSPECIFIED DIMENSIONS

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

THIRD ANGLE PROJECTION

APPROVALS		DATE
DRAWN	APB	11-28-18
CHECKED	KJB	11-28-18
APPROVED	JMP	11-28-18

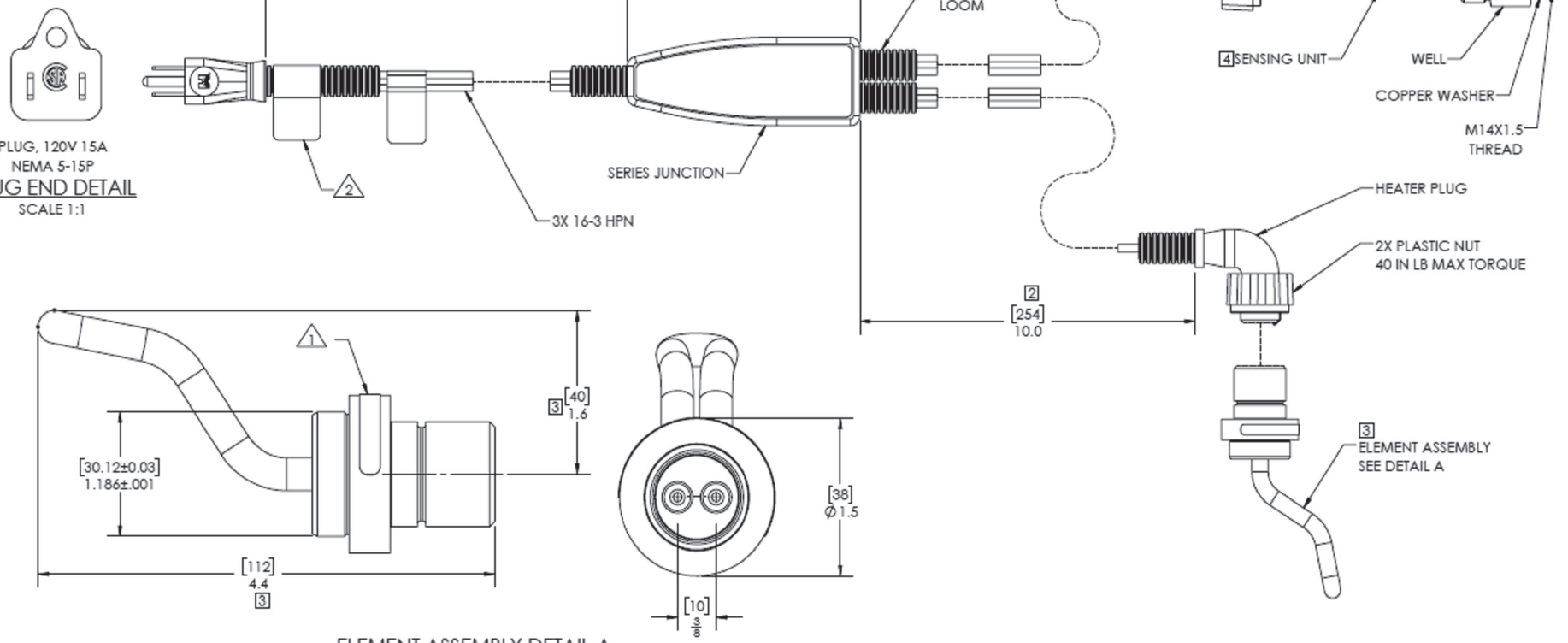
KOHLER
KOHLER, WISCONSIN 53044

TITLE
DWG, BLOCK HEATER, 120V 1000W

SCALE 0.20 | CAD NO. | SHEET 3 of 3

DWG NO. GM102361 | D

REVISIONS						
REV.	ECO	DATE	DESCRIPTION	AUTH.	DR.	ZONE
2	9257	10-11-17	CHANGED CORD LENGTHS	YP	BLF	C3, D3
3	9459	08-29-18	UPDATED ELEMENT BEND PROFILE	YP	BLF	B2, B6, B7
4	9459	10-02-18	CHANGED SENSING UNIT TO 60-80F	YP	BLF	A5, A6, D2



ELEMENT ASSEMBLY DETAIL A
SCALE 1:1

NOTES:

1. LABELED WITH PART NUMBER, WATTS, VOLTS AND DATE CODE.
2. LABELED WITH PART NUMBER, TEMPERATURE RANGE AND DATE CODE.
3. DIMENSIONS ARE FOR REFERENCE ONLY.

PART NUMBER	DESCRIPTION	4 SENSING UNIT	CUSTOMER
GM103076	IB FP ELEM ASM 1000W 120V 30mm TO W/WELL M14STCW 60-80F	4 60-80°F [16-27°C]	KOHLER

HOTSTART. HOTSTART, INC. SPOKANE, WA.

PROPRIETARY INFORMATION

This drawing and the information shown on it are property of Hotstart, Inc., and are for the sole purpose of doing business with us. Any copying or transmittal to others of this information is strictly prohibited without prior written consent from Hotstart.

TITLE: IB FP ELEM ASM 1000W 120V 30mm TO W/WELL 14STCW 60-80F

APPROVALS	DATE	UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES [mm]	DWG. NO.
DRAWN BY BLF	06-05-17	TOLERANCES (Fractional ± 1/64)	A-8478-0S
APPROVED BY YP	06-06-17	.XX ± N/A ANGULAR ± N/A°	SIZE B ORIGIN CO9257
THIRD ANGLE PROJECTION		.XXX ± N/A DO NOT SCALE DRAWING	SCALE 1:2 SHEET 1 OF 1 REV. 4

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

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

DIMENSIONS ARE REFERENCE ONLY.

PART MAY NOT BE AS PICTURED.

REV	DATE	ON COMPOSITE DWGS, SEE PART NO. FOR REVISION LEVEL	BY
-	6-19-17	NEW DRAWING [173822]	CEK
A	10-10-18	(A-6) 60-80°F [16-27°C] WAS 80-100F (27-38C)	
		[CT190210]	SLR

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	CEK	6-19-17
CHECKED	CEK	6-19-17
APPROVED	RMF	6-19-17

KOHLER. KOHLER, WISCONSIN 53044

TITLE: BLOCK HEATER, 120V, 1000W

SCALE N/A | CAD NO. | SHEET 1 of 1

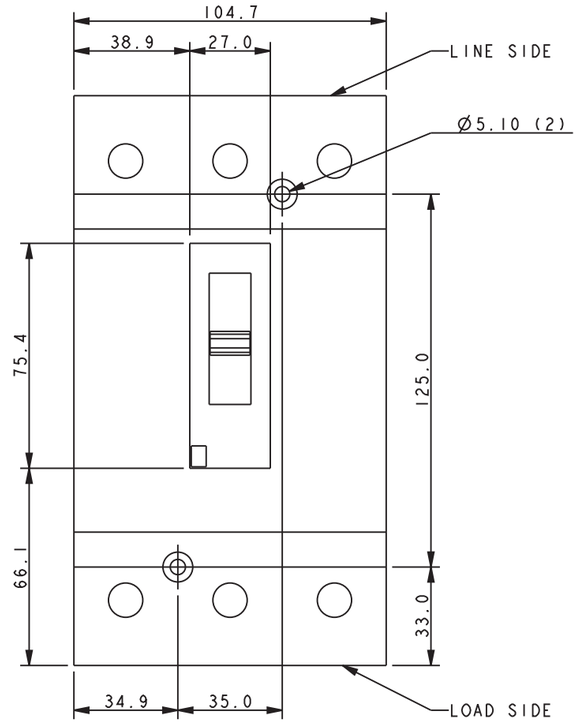
DWG NO. GM103076 | D

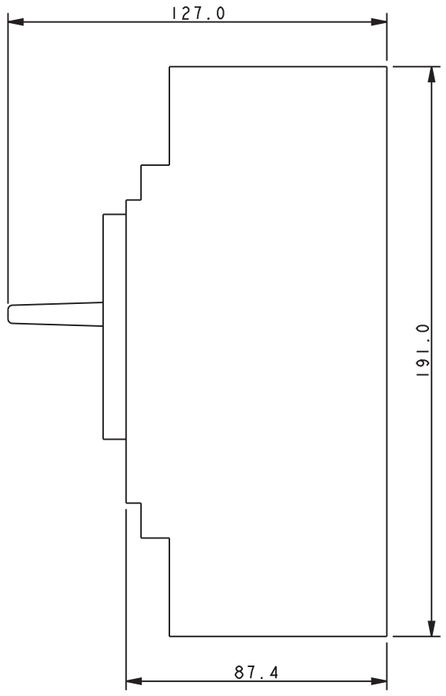
LOMBARDINI 40-60KW

PART NO.	PART REV		DESCRIPTION	AMPS	INTERRUPT kA @480 VAC	CONNECTION TYPE		POLES	RATING	TRIP TYPE	MAG TRIP ONLY		SQUARE D PART NO.
						LINE	LOAD				FULL LOAD AMPS	ADJUSTABLE TRIP RANGE	
GM47476-1	B		BREAKER, CIRCUIT 175A JDL	175	18	AL175JD LUGS	AL175JD LUGS	3	80%	THERMAL MAGNETIC	-	-	JDL36175
GM47476-6	C		BREAKER, CIRCUIT 175A JDP		18	TERMINAL NUTS	AL175JD LUGS	3	80%	THERMAL MAGNETIC	-	-	JDP36175TX
GM47476-7	C		BREAKER, CIRCUIT 175A JDP		18	TERMINAL NUTS	CU250JD LUGS	3	100%	THERMAL MAGNETIC	-	-	JDP36175CTX
GM47476-27	-	□	BREAKER, CIRCUIT 175A JDP		18	TERMINAL NUTS	CU250JD LUGS	2	100%	THERMAL MAGNETIC	-	-	JDP26175CTX
GM47476-2	B		BREAKER, CIRCUIT 200A JDL	200	18	AL250JD LUGS	AL250JD LUGS	3	80%	THERMAL MAGNETIC	-	-	JDL36200
GM47476-5	B		BREAKER, CIRCUIT 200A JDP		18	TERMINAL NUTS	CU250JD LUGS	2	100%	THERMAL MAGNETIC	-	-	JDP26200CTX
GM47476-8	C		BREAKER, CIRCUIT 200A JDP		18	TERMINAL NUTS	AL250JD LUGS	3	80%	THERMAL MAGNETIC	-	-	JDP36200TX
GM47476-9	C		BREAKER, CIRCUIT 200A JDP		18	TERMINAL NUTS	CU250JD LUGS	3	100%	THERMAL MAGNETIC	-	-	JDP36200CTX
GM47476-3	B		BREAKER, CIRCUIT 225A JDL	225	18	AL250JD LUGS	AL250JD LUGS	3	80%	THERMAL MAGNETIC	-	-	JDL36225
GM47476-10	C		BREAKER, CIRCUIT 225A JDP		18	TERMINAL NUTS	AL250JD LUGS	3	80%	THERMAL MAGNETIC	-	-	JDP36225TX
GM47476-11	C		BREAKER, CIRCUIT 225A JDP		18	TERMINAL NUTS	CU250JD LUGS	3	100%	THERMAL MAGNETIC	-	-	JDP36225CTX
GM47476-4	B		BREAKER, CIRCUIT 250A JDL	250	18	AL250JD LUGS	AL250JD LUGS	3	80%	THERMAL MAGNETIC	-	-	JDL36250
GM47476-12	C		BREAKER, CIRCUIT 250A JDP		18	TERMINAL NUTS	AL250JD LUGS	3	80%	THERMAL MAGNETIC	-	-	JDP36250TX
GM47476-13	C		BREAKER, CIRCUIT 250A JDP		18	TERMINAL NUTS	CU250JD LUGS	3	100%	THERMAL MAGNETIC	-	-	JDP36250CTX
GM47476-14	C		BREAKER, CIRCUIT 250A JJP		65	TERMINAL NUTS	AL250JD LUGS	3	-	MAGNETIC ONLY	114-217	684-2500	JJP36250M75TX
GM47476-15	-		BREAKER, CIRCUIT 250A JDP		18	TERMINAL NUTS	AL250JD LUGS	3	80%	MICROLOGIC 3.2 LI	-	-	JDP36250U31XTX
GM47476-16	-		BREAKER, CIRCUIT 250A JDP		18	TERMINAL NUTS	AL250JD LUGS	3	80%	MICROLOGIC 3.2S LSI	-	-	JDP36250U33XTX
GM47476-17	-		BREAKER, CIRCUIT 250A JDP		18	TERMINAL NUTS	AL250JD LUGS	3	80%	MICROLOGIC 6.2A LSIG	-	-	JDP36250U44XTX
GM47476-18	-		BREAKER, CIRCUIT 250A JDP		18	TERMINAL NUTS	CU250JD LUGS	3	100%	MICROLOGIC 3.2 LI	-	-	JDP36250CU31XTX
GM47476-19	-		BREAKER, CIRCUIT 250A JDP		18	TERMINAL NUTS	CU250JD LUGS	3	100%	MICROLOGIC 3.2S LSI	-	-	JDP36250CU33XTX
GM47476-20	-		BREAKER, CIRCUIT 250A JDP		18	TERMINAL NUTS	CU250JD LUGS	3	100%	MICROLOGIC 6.2A LSIG	-	-	JDP36250CU44XTX
GM47476-21	-		BREAKER, CIRCUIT 250A JGP		35	TERMINAL NUTS	AL250JD LUGS	3	80%	MICROLOGIC 3.2 LI	-	-	JGP36250U31XTX
GM47476-22	-		BREAKER, CIRCUIT 250A JGP		35	TERMINAL NUTS	AL250JD LUGS	3	80%	MICROLOGIC 3.2S LSI	-	-	JGP36250U33XTX
GM47476-23	-		BREAKER, CIRCUIT 250A JGP		35	TERMINAL NUTS	AL250JD LUGS	3	80%	MICROLOGIC 6.2A LSIG	-	-	JGP36250U44XTX
GM47476-24	-		BREAKER, CIRCUIT 250A JGP		35	TERMINAL NUTS	CU250JD LUGS	3	100%	MICROLOGIC 3.2 LI	-	-	JGP36250CU31XTX
GM47476-25	-		BREAKER, CIRCUIT 250A JGP		35	TERMINAL NUTS	CU250JD LUGS	3	100%	MICROLOGIC 3.2S LSI	-	-	JGP36250CU33XTX
GM47476-26	-		BREAKER, CIRCUIT 250A JGP		35	TERMINAL NUTS	CU250JD LUGS	3	100%	MICROLOGIC 6.2A LSIG	-	-	JGP36250CU44XTX

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

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





CONNECTION CHART		
CONNECTION TYPE	CONNECTION (PER PHASE)	TORQUE
AL175JD LUGS	(1) #4-4/0 AL/CU	25 Nm [225 IN-LB]
AL250JD LUGS	(1) 3/0-350 KCMIL AL/CU	25 Nm [225 IN-LB]
CU250JD LUGS	(1) 1/0-300 KCMIL (CU 90°C WIRE ONLY)	28 Nm [250 IN-LB]
TERMINAL NUTS	(1) M8	9-10.2 Nm [80-90 IN-LB]

NOTE: 2-POLE BREAKERS HAVE AN UNPOPULATED CENTER POLE.

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

□ INDICATES PART NUMBERS AFFECTED BY LATEST DRAWING REVISION

SQUARE D J-FRAME
600V

REV	DATE	ON COMPOSITE DWGS, SEE PART NO. FOR REVISION LEVEL	BY
-	10-21-05	NEW DRAWING [79677]	RAC
A	12-18-06	(D-4) JDL WAS JDP (4 PLACES), LUG DATA ADDED; [79677]	WSD
B	11-16-10	REDRAWN IN PRO-E & CHART UPDATED,GM47476-5 ADDED; [90604-1]	BTW
C	1-6-11	GM47476-6 THRU -14 ADDED [90647-15]	WSD
D	4-13-12	GM47476-15 THRU -26 ADDED; (A-1) GM47476-CMP WAS GM47476 [CT14516]	WSD
E	12-6-13	(D-8) GM47476-27 ADDED [CT66339]	WSD

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

APPROVALS		DATE
DRAWN	RAC	10-21-05
CHECKED	JMS	6-13-06
APPROVED	SLJ	6-15-06

METRIC | PRO-E

TITLE: DWG, CIRCUIT BREAKER

SCALE | CAD NO. | SHEET 1 of 1

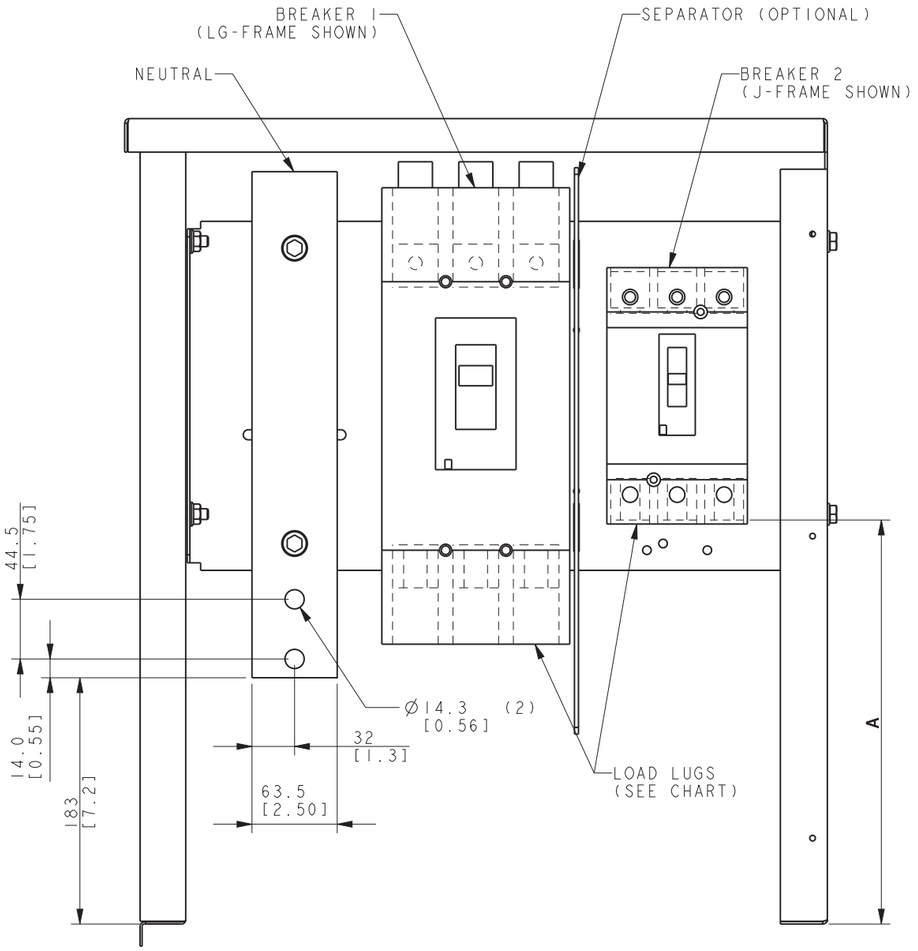
DWG NO. GM47476-CMP | D

AL/CU MECHANICAL LOAD LUGS PER PHASE			A WIRE BENDING SPACE
BREAKER FRAME	**AMPS**	**WIRE RANGE**	
H	15-150	(1) #14 TO 3/0	315 [12.4]
J	175	(1) 1/0 TO 4/0	301 [11.9]
	200-250	(1) 3/0 TO 350 KCMIL	
LA	300-400	(1) #1 TO 600 KCMIL OR (2) #1 TO 250 KCMIL	254 [10.0]
LG	400	(2) 2/0 TO 500 KCMIL AL/CU	250 [9.8]
MECHANICAL LOAD LUGS INCLUDED WITH H, J & LG LSIG NEUTRALS			
H	60-150	(1) #14 TO 3/0 AWG AL/CU	
J	250	(1) 3/0 TO 350 KCMIL AL/CU	
LG	400	(2) 4/0 TO 500 KCMIL AL/CU	

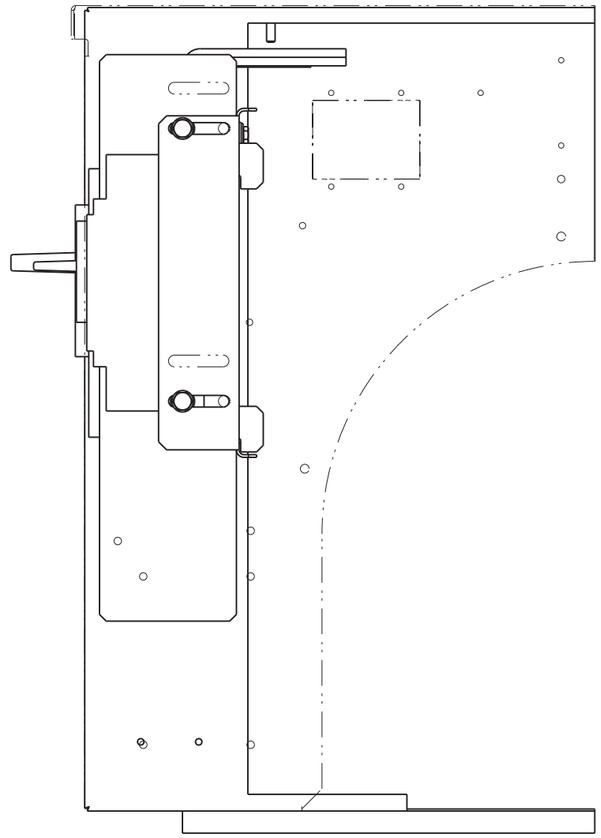
STANDARD BREAKER COMBINATIONS		
BREAKER 1	**BREAKER 2**	**TRIP TYPE**
H OR J	-	ALL
LA	-	ALL
LG	-	ALL
H OR J	**H OR J**	NO LSIG
LA	**H OR J**	NO LSIG
LG	**H OR J**	NO LSIG
LG	**LG**	NO LSIG

NOTES:

1) SEE UNIT DIMENSION PRINT (ADV-XXXX) FOR ADDITIONAL DIMENSIONS, JUNCTION BOX AND STUB-UP LOCATION.
2) ADD SKID DEPTH TO WIRE BENDING HEIGHTS ON THIS PRINT TO ARRIVE AT FULL WIRE-BENDING SPACE.
3) CONSULT FACTORY FOR BREAKER COMBINATIONS NOT SHOWN ON THIS PRINT.
4) MECHANICAL LUGS ARE AVAILABLE FOR NON-LSIG NEUTRAL. SEE ADV-7376. LSIG NEUTRALS INCLUDE LUGS (SEE CHART).
5) NEUTRALS ARE BONDED TO GROUND AS STANDARD. CONSULT LOCAL CODES OR SYSTEM REQUIREMENTS.
6) CIRCUIT BREAKER FRAMES REFER TO STANDARD SQUARE-D PRODUCT.
7) STANDARD NEUTRALS PROVIDED ARE SIZED FOR MAXIMUM UNIT AMPS. LSIG NEUTRALS ARE MATCHED TO THEIR CIRCUIT BREAKER AMPS.
8) DIMENSIONS ARE MM, DIMENSIONS IN [ ] ARE INCHES.



RIGHT SIDE SHOWN WITH COVERS REMOVED



VIEW FROM ENGINE END
(HALF VIEW SHOWN)

ELECTRONIC TRIP UNITS		
FRAME	**TRIP UNIT**	
H	LI	MICROLOGIC 3.2
	LSI	MICROLOGIC 3.2S
	LSIG	MICROLOGIC 6.2A
J	LI	MICROLOGIC 3.2
	LSI	MICROLOGIC 3.2S
	LSIG	MICROLOGIC 6.2A
LG	LI	MICROLOGIC 3.3
	LSI	MICROLOGIC 3.3S
	LSIG	MICROLOGIC 6.3A

UL INTERRUPT kA RATINGS			
BREAKER	**@ 240V**	**@ 480V**	**@ 600V**
HD	25	18	14
HG	65	35	18
HJ	100	65	25
JD	25	18	14
JG	65	35	18
JJ	100	65	25
LA	42	30	22
LG	65	35	18

LINE CIRCUIT BREAKER (LCB) KITS
4P/4PX/4Q/4QX ALTERNATOR FRAME STYLES

REV	DATE	ON COMPOSITE DWGS, SEE PART NO. FOR REVISION LEVEL	BY
-	5-16-07	NEW DRAWING [79677]	WSD
A	9-7-07	(D-6) D WITH D COMBINATION ADDED [83718]	WSD
B	4-22-08	(D-8) 15-150 WAS 40-150 [84767]	WSD
C	10-19-12	UPDATED D TO LG, 100% H/J ADDED, LA ADDED, LSIG NEUTRAL LUG CHART ADDED [CT26372]	WSD
D	11-2-16	(D-8) REMOVED SEPARATE LINES FOR H & J 100% LUGS; (D-4) CLARIFIED TRIP TYPES [CTI14236]	WSD
E	3-26-19	(A-7) LA FRAME INTERRUPTS ADDED [CT194577]	WSD

DO NOT SCALE. REFERENCE THE MODEL FOR ALL UNSPECIFIED DIMENSIONS

THIRD ANGLE PROJECTION

APPROVALS		DATE
DRAWN	WSD	5-16-07
CHECKED	WSD	5-16-07
APPROVED	AJH	5-16-07

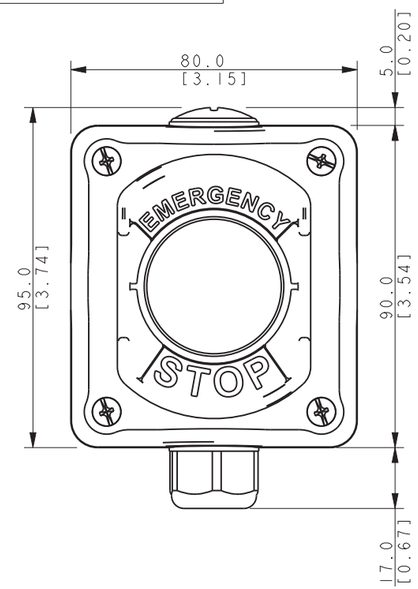
TITLE
PRINT, DIMENSION

SCALE 0.45 | CAD NO. | SHEET 1 of 1

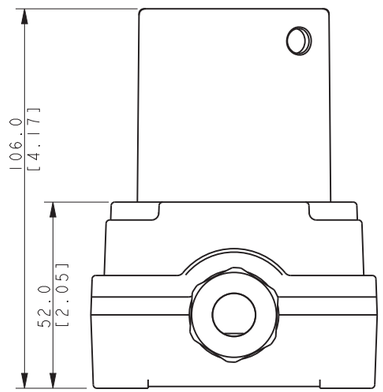
DWG NO. **ADV-7370** **D**

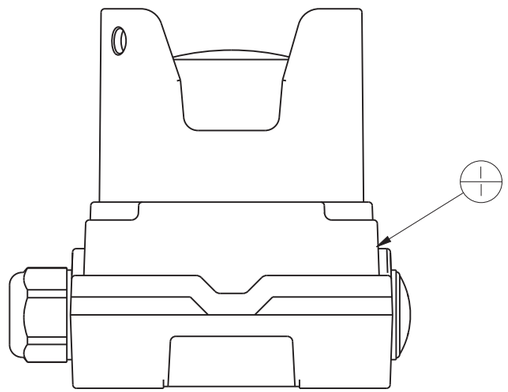
KIT NO.	ITEM	PART NO	QTY	DESCRIPTION
GM103743				E-STOP, NEC REMOTE
	1	GM103743-1	1	E-STOP W/ YELLOW SHROUD, LOTO
	2	GM103743-2	4	#10 X 1.25□ Sheetmetal Screw
	3	GM103743-3	1	TERMINAL, FAST-ON, MALE, 18-22 AWG
	4	GM103743-4	1	TERMINAL, FAST-ON, FEMALE, 18-22 AWG
	5	GM103743-5	2	TERMINAL, SPADE, 22-16 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 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 and Prime Power Industrial Generator Set One-Year or Two Thousand (2000)-Hour Limited Warranty

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

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

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

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

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

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

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

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

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

KOHLER®

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

TP-5374 12/15f

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

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

Kohler Product	**Warranty Coverage**
Stationary Standby Generator Set & Accessories	Five (5) years from registered startup or three thousand (3000) hours (whichever occurs first).

This warranty is effective only upon Kohler Co.'s receipt of an extended warranty registration form and warranty fee within one year of registered startup. The comprehensive limited warranty start date is determined by the standard limited warranty requirements and runs concurrent with the standard limited warranty during the first year. To receive extended comprehensive limited warranty coverage, the provisions of the standard limited warranty registration must be met.

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

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

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

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

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

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

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

KOHLER®

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

TP-5561 8/16f

KOHLER®

Certification

Certificate of Registration

QUALITY MANAGEMENT SYSTEM - ISO 9001:2015

This is to certify that:

Kohler Power Systems
N7650 Lakeshore Road
Sheboygan
Wisconsin
53083
USA

Holds Certificate No: **FM 727336**

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

Design, manufacture, and distributor support for electrical generators, alternators, fuel tanks, automatic transfer switches and switchgear.

This certificate is traceable to this company's original registration certificate number 16852 dated February 28, 1995 and issued by NQA.

For and on behalf of BSI:

Carlos Pitanga, Chief Operating Officer Assurance – Americas

Original Registration Date: 1995-02-28
Latest Revision Date: 2020-05-07

Effective Date: 2020-05-07
Expiry Date: 2021-11-06

...making excellence a habit.™

Certificate No: **FM 727336**

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

Original Registration Date: 1995-02-28

Effective Date: 2020-05-07

Latest Revision Date: 2020-05-07

Expiry Date: 2021-11-06

PROTOTYPE TEST REPORT

KOHLER

Models Covered: **40, 50, 60REOZK**
Model Tested: **60REOZK**
Cooling System Tested: **50C**

Alternator Tested: **4Q10X**
Engine Tested: **KDI3404TM**
Voltage Tested: **240V**

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.

± 0.50 % Frequency Band

± 0.50 % 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
36.7 % Voltage Dip	**13.8** % Voltage Overshoot
1.20 Seconds of Recovery Time	**0.50** Seconds of Recovery Time
16.1 % Frequency Dip	**10.6** % Frequency Overshoot
3.30 Seconds of Recovery Time	**2.60** Seconds of Recovery Time

G2 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: **40, 50, 60REOZK**
Model Tested: **60REOZK**
Cooling System Tested: **50C**

Alternator Tested: **4Q10X**
Engine Tested: **KDI3404TM**
Voltage Tested: **240V**

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

BUCKEYE POWER SALES - FAMILY OWNED AND OPERATED SINCE 1947

RELIABLE POWER.
FIVE-STAR SERVICE.
PREMIUM PRODUCTS.

EARNING LIFELONG RELATIONSHIPS

Family owned and operated since 1947, Buckeye Power Sales is the solutions provider for businesses, contractors, engineers, municipalities, and homeowners. From power generators to light construction to grounds care - we have the equipment, parts & service to help you get the job done.

www.buckeyepowersales.com

OUR PRODUCTS

INDUSTRIAL GENERATORS

As a leading manufacturer of integrated generator power systems, Kohler can provide power systems for any size application from residential to multi-genset industrial applications. Kohler offers individual gas and diesel-fueled models from 8.5kW to 3250kW, as well as, electronic controls, automatic transfer switches and switchgear.

LIGHT COMMERCIAL GENERATORS

Keep your customers happy and your business moving and safe with a Kohler commercial backup generator. They're compact and quiet. They run on natural gas, so you don't have to worry about finding fuel or filling up the tank. Gain an advantage on your competition by being in business during the next outage.

RESIDENTIAL GENERATORS

Kohler automatic residential generator systems provide dependable protection during unexpected power outages. Kohler generators provide clean power for sensitive home electronics; fast power to get you up and running; and reliable backup power to ensure your life goes on even when the utility power doesn't. BPS offers quality, powerful residential generators from Kohler that maintain home power in the harshest conditions.

OUR SERVICES

SERVICE

Whether you need engine or generator repairs, Buckeye Power Sales will get the job done right. Our service technicians are all fully trained to factory specifications on a regular basis and have accumulated many years of on-the-job experience. In addition, our technicians are Electrical Generating Systems Association (EGSA) certified. EGSA is the world's largest organization exclusively dedicated to on-site power generation. We offer 24 hour service and a fleet of service vans stocked with parts so that your on-site power system stays up and running. After normal business hours, call us and we'll return your call within 30 minutes or less and come up with a plan to resolve your issue. If your power system does not perform as expected, we'll arrive on site within four hours or sooner to diagnose and fix the problem.

PLANNED MAINTENANCE

Like any other equipment, your onsite power system needs periodic maintenance. We offer customized planned maintenance programs to keep it in top condition and ready to operate when the power goes out.
Programs include:

- Regularly scheduled visits
- Multi-point inspections
- Fluid and filter changes
- Complete system testing
- Optional oil analysis
- Environmentaly safe disposal

PARTS

Buckeye Power Sales is dedicated to making sure that the generator parts you need are available when you need them and at a fair price. Our vast inventory contains thousands of parts in five locations throughout Ohio, Indiana and Illinois. We stock Kohler generator and many other parts. We're your source for unique and hard-to-find generator parts.

MARINE GENERATORS

Kohler marine generators feature improved sound shields and quieter engines. The enhanced Kohler sound shield design utlitizes loaded vinyl barrier foam, acoustically superior to standard foam in absorbing sound. Kohler marine generators have fewer pieces and drop-over assembly, they are much easier and take far less time to install. When you're on the water, you need more than just a dependable product - you need a product that performs when you need it to.

TOWABLE GENERATORS

Unlike standby generators, towable generators adapt to your needs. With features like heavy-duty camlock kits, rugged trailer and housing construction to withstand the elements, and state-of-the art digital controls, Kohler has quickly become the clear choice in the industry.

- Flexible for temporary power needs
- Emission certified
- Decision Maker 3500 controller
- Voltage Selector Switch
- Rugged DOT-approved trailer

PARALLELING SWITCHGEAR

Kohler Decision-Maker™ Paralleling Systems offer something other paralleling systems don't - 100% integration. So whether your need is for emergency, prime power, interruptible rate or peak shaving applications, Buckeye Power Sales and Kohler can custom-engineer the switchgear to back it up. Our team takes care of you every step of the way, from concept to startup.

RENTAL

We understand the importance of rental power. Our rental professionals are trained in our market and its needs. We made a modern, well-equipped rental fleet. Whether it's a planned factory expansion or shutdown, a multi-location concert tour or recovery from a severe weather event- Buckeye Power Sales is ready with an instant inventory of mobile generators, power distribution and power management. We can provide access to an engineering staff capable of ensuring that the job is done correctly. We are a turn-key solutions provider.

Buckeye Power Sales has expanded its rental capabilities and event support with a 1.5 million dollar investment of equipment in 2012 more than doubling our inventory of rental equipment. In 2015 we expanded our capabilities even more with the addition of compact construction equipment, such as excavators, skid and track loaders, wheel loaders, aerial lift platforms and much more. We're ready to help you prepare for a smooth transition.

SUPPORT

- Fleet of service vans for superior field support
- Trained technicians provide timely, reliable work
- 24/7 commitment to keep the power on
- On-site delivery
- Comprehensive parts inventory
- Dedicated generator facility that keeps the fleet ready to go
- Family owned & operated
- Experienced knowledgeable sales staff

KOHLER®
IN POWER. SINCE 1920.

Authorized Distributor

OUR STORY

COMPANY HISTORY

Buckeye Power Sales Company, Inc. was founded by Edward Sebastian in 1947. From the very beginning we have been a servicing generator distributor serving Ohio, Indiana and Illinois with locations in Columbus, Cleveland, Cincinnati, Indianapolis and Chicago. As the oldest signed Kohler distributor we pride ourselves in providing premium service before, during and after the sale.

Our dedicated power facilities are designed for the processes of a company supplying and servicing customers for power. Headquartered in Columbus, Ohio the company started with just three employees and has now grown to employ 200+. With convenient locations across Ohio, Indiana and Illinois, Buckeye Power Sales is recognized as a leader of full service on-site power systems.

EXPERIENCE

We have a large installed base of generator set installations for standby and prime power. Our long list of repeat customers acquired over 70 years is a testimony to our success, reputation for quality work and experience in power generation.

All of our service technicians are thoroughly factory-trained professionals. And we don't limit ourselves to just the popular brand products - we repair all generator and automatic transfer switch makes and models.

Our experienced sales staff provides hands-on reliable support through all stages of the sales process.

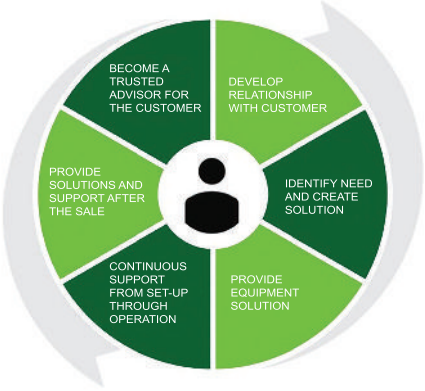
- Hands-on support from local people
- Engineering for design and application
- Load calculations
- Specifications
- Technical assistance
- After sales support for parts, warranty and maintenance

RESOURCES

A full service power supply distributor that makes a difference.

- Reliable support before, during and after the sale
- Fleet of service vans ensuring our products remain fully operational 24 hours a day, 7 days a week
- Full rental fleet
- Load testing generators
- On-site maintenance
- Dedicated generator facility
- Inventories of equipment and parts for rapid response
- Dealer network

PROCESSES



Buckeye Power Sales is your reliable power equipment partner. The BPS Flywheel, helps you get your job done by:

- Focusing on developing long term relationships with our customers
- Identifying your need and developing a solution
- Providing quality equipment that meets your needs
- Verifying your equipment is performing properly
- Supporting you after the sale
- Advising you when it's more practical to replace than to repair

Buckeye Power Sales
Reliable Power Professionals Since 1947

COLUMBUS, OH | 8155 Howe Industrial Pkwy., Canal Winchester, OH 43110 | 614-751-4515
CINCINNATI, OH | 4992 Rialto Road, West Chester, OH 45069 | 513-755-2323
CLEVELAND, OH | 8465 Tower Drive, Twinsburg, OH 44087 | 330-425-9165
INDIANAPOLIS, IN | 1707 S. Franklin Road, Indianapolis, IN 46239 | 317-271-9661
CHICAGO, IL | 1308 Marquette Drive, Romeoville, IL 60446 | 630-914-3000

WWW.BUCKEYEPOWERSALES.COM

USA ULTIMATE SERVICE ASSOCIATES
For nationwide service capabilities. Call 918-836-8701

KOHLER®

Prestartup Checklist

Buckeye Power Sales

Reliable Power Professionals Since 1947

☐**Columbus, Ohio**
8155 Howe Industrial Parkway
Canal Winchester, Ohio 43110-8758
Ron Vance, Service
Phone: (866) 889-2628
Fax: 614-751-4514
columbusgeneratorsupport@buckeyepowersales.com
rvance@buckeyepowersales.com

☐**Cincinnati, Ohio**
4992 Rialto Road
West Chester, Ohio 45069
Tim Hutchenson, Service
Phone: (800) 368-7422
Fax: 513-755--4515
wcservice@buckeyepowersales.com
thutcheson@buckeyepowersales.com

☐**Cleveland, Ohio**
8465 Tower Drive
Twinsburg, Ohio 44087-0394
Tim Klein, Service
Phone: (800) 966-2825
Fax: 330-425-9167
twinsburggeneratorsupport@buckeyepowersales.com
tklein@buckeyepowersales.com

☐**Indianapolis, IN**
1707 S Franklin Road
Indianapolis, IN 46239
William Knepper, Service
Phone: (800) 632-0339
Fax: 317-271-0242
Indianapolisoffice@buckeyepowersales.com
wknepper@buckeyepowersales.com

Pre-Start Up Checklist

Job Site Location:
Jobsite Address: City: State:
Jobsite Contact Name: Jobsite Contact Phone:

Facility Owner:
Email/Fax: _____ Phone:_____
Generator Model #: 60reozk

Serial Number:

Included with your generator package is a complete start-up service.
Before this service can be scheduled the following checklist must be completed, signed and returned to the service department for the appropriate branch listed above.

Start-up dates are reserved on a first come first serve basis and require at least a 2-week notice.

Please Check off below items completed. If you have questions concerning any items on the list, please contact the BPS Salesman or respective BPS location performing the Start-Up services.

1. _____Generator must be bolted to the concrete pad which has been engineered to meet code.

2. _____ **Exhaust System**
   Indoor units must have the exhaust completely installed. The flexible connector must not be used as an offset of 90 degree. An engineered thimble MUST be used were the exhaust penetrates the roof or wall. At the termination there must a rain cap on vertical discharge and on horizontal discharge there must be either a rain cap or the pipe cuts off at a 45 degree with bird screen installed.

   Outdoor units require the exhaust to be completely installed including the rain cap which must be able to open and close freely. Rain caps may be secured for shipping.

3. _____ **Load Conductors**
   Generator load conductors must be connected to the generator output breaker and the transfer switch. **If different size lugs are needed contact your sales representative and note they may take 3 weeks to deliver.** Generators generally have the neutral bonded to ground from the factory. If the system requires a solid neutral, then the jumper on the generator must be removed. It is usually from the ground stud on the main alternator to the neutral bar.

4. _____ **Control Wiring**
   Control wiring should be in a conduit separate from the load conductors. Start wires need to be a minimum of number 18 and labeled #3&#4. They need to be pulled up into the generator controller and to the connection point in the transfer switch. If start wires are in the same conduit as the load conductors, they should be shielded.

5. _____ **Elevator Controls**

If Elevator Controls are required, wiring needs to be pulled to the specific ATS that has the Elevator load. Time delays for Pre and Post signals must be acquired before BPS arrival so those can be programmed during startup services. Additional Charges will apply for return trips to program.

6._____**Remote Annunciator**

Remote annunciator panel requires 2 number 14awg minimum from the generator to the annunciator. A Belden 9841 cable is also required. On a standard RSAIII without a key switch, pull one Belden 9841 from the generator to the RSAIII. If using an RSAIII with a key switch for testing a single ATS, then the one Belden 9841 should be pulled from the generator to the ATS and an additional Belden 9841 from the ATS to the RSAIII. If using with a building network, contact the service department for proper installation requirements.

7. _____ **Utility Power**

Utility power must be connected and available to the transfer switch. ***Don't plug the controller in!*** Building loads must be available. Transfer switch must be allowed to be tested. Transfer Switch must be powered down to plug in controller. Power outages will occur during testing.

8. _____ **Radiator Ductwork**

Cooling system duct at radiator must be installed. Intake and exhaust louvers must be operational.

9. _____ **Diesel Fuel System**

Fuel tank must have pressure test completed before scheduling start up. The tank should be at least 75% full of #2 off highway diesel supreme. Do NOT use biodiesel. Even if it is acceptable to the engine manufacturer, it does NOT work in standby applications.

10. _____ **Spark Ignited Engines**

Fuel system must be installed per the Kohler installation manual, TP-5700, pages 21-24 and 32. Gas pressure ***MUST*** always be 4-6 oz or 7-11 inches of water column at the generator fuel inlet . Supply volume must be sized for 100% rated load. Volume requirement is supplied on the generator data sheet.

11. ____ **Block Heater**

Block heater must be wired for the appropriate voltage. ***Do Not Energize!***

12. ____ **Battery Charger**

Battery charger must be installed and wired. Check installation instructions. If charger is more than 15 feet from batteries, additional sensing wires may be required. If this is a NFPA 110 installation 3 additional wires must be pulled from the charger to the generator controller for alarms.

13. _____**Heater Kits**

*If a 125kW or 150kW Natural Gas/L.P. generator is equipped or ordered with a Crank Case Vent Heater Kit (CCV Heater), then an extra 15A Circuit, 120V Receptacle will need to be installed.

*If a Generator Strip Heater has been supplied with the generator, then you will need to contact a BPS Field Technician.

*If an ATS Strip Heater has been supplied with the generator, then an extra 15A, 120V Hard Wire Circuit will need to be installed. Consult with a Field Technician on how to install and wire properly.

*If a Fuel Tank Heater has been supplied, please contact BPS for the rating of the additional circuit that needs to be supplied.

*If a KD Model Generator Set is being used a 10A, 208V Breaker should be installed and a BPS Field Technician should be contacted.

14._____**Tank Pressure Test & Fire Marshall permits** (As required by the State of Ohio or where applicable by other authorities having jurisdiction)

Note:
Prior to the initial fueling, by installing contractor, the State of Ohio Fire Code 3401.4 requires all generator sub-base diesel fuel storage tanks (60 gallons and above) be permitted to install, remove, alter or place temporarily out of service. In addition, the tank is required to be tested in accordance with NFPA 30, (2008 edition) Section 21.5.2 in order to receive an approved "Installation & Alteration Permit." This testing must be witnessed & approved by the Local Municipality's Fire Inspector, if available or the State Fire Marshall's Inspector if the state is issuing the permit.
If requested, Buckeye Power Sales will provide a quoted price to the installing contractor to get the approved permit and/or on-site testing completed per the local municipality and State of Ohio code requirements.

**Security fencing and vehicle protection bollards are NOT included in this fee. Permits cannot be approved until a security fence and vehicle protection bollards are installed, if applicable. The contractor is responsible for the installation of these items.

Startups are to be performed during normal business hours and generally, can be completed in 1-2 business days.
If after hours testing is required there will be additional charges.

If there is anything on this list that is marked as being ready and it is not, requiring a second trip, the contractor will be held responsible for the additional trip charges.

Robert H. Hilard
Name (print)

Signature

1/26/2022
Date

City of Oberlin
Company Name

Approved as to form:
Jon D. Clark
Jon D. Clark, Law Director