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

Generator

Kohler Model: 150REOZJF

This diesel generator set equipped with a 4S12X alternator operating at 120/208 volts is rated for 154 kW/193 kVA. Output amperage: 534

Standard Features:

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

Other Features:

- Kohler designed controllers for one-source system integration and remote communication.
- The low coolant level shutdown prevents overheating (standard on radiator models only).Integral vibration isolation eliminates the need for under-unit vibration spring isolators.
- Mount up to three circuit breakers to allow circuit protection of selected priority loads.

Alternator Features:

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

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Qty	Description
	150REOZJF Generator System
4	150REOZJF Generator Set

Includes the following:

Literature Languages	English
Approvals and Listings	UL2200 Listing
Approvals and Listings	IBC Seismic Certification
Engine	150REOZJF, 12V, 60Hz
Nameplate Rating	Standby 130C Rise
Voltage	60Hz, 120/208V, Wye, 3Ph, 4W
Alternator	4S12X
Cooling System	Unit Mounted Radiator, 50C
Skid and Mounting	Skid, 44"
Air Intake	Standard Duty
Controller	APM402
Enclosure Type	Sound
Enclosure Material	Aluminum
Enclosure Silencer	Internal Silencer
Fuel Tank Type	State
Fuel Runtime (Approx.)	24 Hours
Subbase Fuel Tank Capacity	316 Gallons
Fill Pipe/Spill Fill Options	5 Gal Spill Cont w/95% Shutoff
Fuel Tank Options	Fuel in Basin Switch, FDEP
Fuel Tank Vent	Norm Vent 12' & E-Vent 4", IBC
High Fuel Switch	High Fuel Switch FDEP Approved
Tank Marking Options	Combust Lqds - Keep Fire Away
Tank Marking Options	NFPA 704 Identification
Tank Marking Options	Tank Number & Safe Fill Height
Starting Aids, Installed	1800W,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

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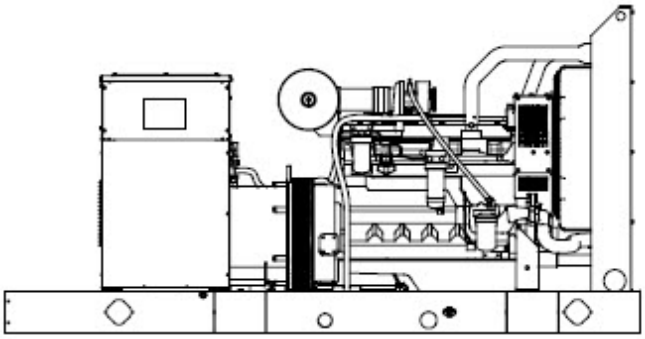
	Rating, LCB 1	100% Rated
	Amps, LCB 1	600
	Trip Type, LCB 1	Electronic, LSI
	Interrupt Rating LCB 1	35kA at 480V
	Fuel Lines, Installed	Flexible Fuel Lines
	Miscellaneous Accy,Installed	Air Cleaner Restriction Ind.
	Miscellaneous Accy,Installed	Coolant in Genset
	Miscellaneous Accy,Installed	Skid Extension & Caps
	Warranty	Standard
	Testing, Additional	Power Factor Test,0.8,3Ph Only
4	NEC Remote, E-Stop	
4	RSA III, Annunciator only	
4	Lit Kit, 150REOZJF,General Maintenance	

KOHLER®

Spec Sheets

KOHLER®

150REOZJF
Diesel



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Generator Set Rating

Standby 130C Rise Ratings

Alternator	Voltage	Ph	Hz	Peak kVA	kW/kVA	Amps
4S12X	120/208	3	60	360	154/193	534

RATINGS: All three-phase units are rated at 0.8 power factor. All single-phase units are rated at 1.0 power factor.
Standby Ratings: The standby rating is applicable to varying loads for the duration of a power outage. There is no overload capability for this rating.
Prime Power Ratings: At varying load, the number of generator set operating hours is unlimited.
A 10%overload capacity is available for one hour in twelve. Ratings are in accordance with ISO-8528-1 and ISO-3046-1. For limited running time and continuous ratings, consult the factory.
Obtain technical information bulletin (TIB-101) for ratings guidelines, complete ratings definitions, and site condition derates.

Alternator Specifications

Specifications	Alternator
Alternator manufacturer	Kohler
Type	4-Pole, Rotating-Field
Exciter type	Brushless, Rare-Earth Permanent-Magnet
Leads, quantity	4RX: 12, Reconnectable 4TX: 4, 120-240
Voltage regulator	Solid State, Volts/Hz
Insulation	NEMA MG1
Insulation: Material	Class H
Insulation: Temperature Rise	130 ° 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 down stream circuit breakers to trip without collapsing the alternator field.
• Self-ventilated and dripproof construction.
• Vacuum-impregnated windings with fungus-resistant epoxy varnish for dependability and long life.
• Superior voltage waveform from a two-thirds pitch stator and skewed rotor.

Engine

Engine Specification

Engine Manufacturer	John Deere
Engine Model	6068HF285K
Engine: type	4-Cycle, Turbocharged, Charge Air-Cooled
Cylinder arrangement	6 Inline
Displacement, L (cu. in.)	6.8 (415)
Bore and stroke, mm (in.)	106 x 127 (4.19 x 5.00)
Compression ratio	17.0:1
Piston speed, m/min. (ft./min.)	457 (1500)
Main bearings: quantity, type	7, Replaceable Insert
Rated rpm	1800
Max. power at rated rpm, kWm (BHP)	177 (237)
Cylinder head material	Cast Iron
Crankshaft material	Forged Steel
Valve (exhaust) material Intake	Chromium-Silicon Steel
Valve (exhaust) material	Stainless Steel
Governor: type, make/model	JDEC Electronic L16 Denso HP3
Frequency regulation, no-load to-full load	Isochronous
Frequency regulation, steady state	± 0.25%
Frequency	Fixed
Air cleaner type, all models	Dry

Exhaust

Exhaust System

Exhaust Manifold Type	Dry
Exhaust flow at rated kW, m3/min. (cfm)	33.9 (1197)
Exhaust temperature at rated kW, dry exhaust, ° C (° F)	510 (950)
Maximum allowable back pressure, kPa (in. Hg)	7.5 (2.2)
Exh. outlet size at eng. hookup, mm (in.)	98 (3.86)

Engine Electrical

Engine Electrical System

Battery charging alternator	12 Volt/24 Volt
Battery charging alternator: Ground (negative/positive)	Negative
Battery charging alternator: Volts (DC)	24-Dec
Battery charging alternator: Ampere rating	65/45
Starter motor rated voltage (DC)	24-Dec
Battery, recommended cold cranking amps (CCA): Qty., CCA rating each	One, 640/Two, 570
Battery voltage (DC)	12

Fuel

Fuel System

Fuel type	Diesel
Fuel supply line, min. ID, mm (in.)	11.0 (0.44)
Fuel return line, min. ID, mm (in.)	6.0 (0.25)
Max. lift, fuel pump: type, m (ft.)	Electronic 1.8 (6.0)
Max. fuel flow, Lph (gph)	96.9 (25.6)
Max. return line restriction, kPa (in. Hg)	20 (5.9)
Fuel prime pump	Manual
Fuel Filter Secondary	2 Microns @ 98% Efficiency
Fuel Filter Primary	30 Microns
Recommended fuel	#2 Diesel/HVO/RD

Lubrication

Lubrication System

Type	Full Pressure
Oil pan capacity, L (qt.)	27.0 (28.5)
Oil pan capacity with filter, L (qt.)	27.9 (29.5)
Oil filter: quantity, type	1, Cartridge
Oil cooler	Water-Cooled

Cooling

Radiator System

Ambient temperature, ° C (° F)	50 (122)
Engine jacket water capacity, L (gal.)	11.3 (3.0)
Radiator system capacity, including engine, L (gal.)	25.7 (6.8)
Engine jacket water flow, Lpm (gpm)	174 (46)
Heat rejected to cooling water at rated kW, dry exhaust, kW (Btu/min.)	76.3 (4340)
Heat rejected to air charge cooler at rated kW, dry exhaust, kW (Btu/min.)	31.8 (1810)
Water pump type	Centrifugal
Fan diameter, including blades, mm (in.)	660 (26)
Fan, kWm (HP)	7.7 (10.3)
Max. restriction of cooling air, intake and discharge side of radiator, kPA (in. H20)	0.125 (0.5)

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

Operation Requirements

Air Requirements

Radiator-cooled cooling air, m3/min. (scfm) *	226.5 (8000)
Combustion air, m3/min. (cfm)	13.6 (480)
Heat rejected to ambient air: Engine, kW (Btu/min.)	35.9 (2040)
Heat rejected to ambient air: Alternator, kW (Btu/min.)	12.3 (700)

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

Fuel Consumption

Diesel, Lph (gph), at % load	Rating
Standby Fuel Consumption at 100% load	44.3 Lph (11.7 gph)
Standby Fuel Consumption at 75% load	35.1 Lph (9.3 gph)
Standby Fuel Consumption at 50% load	26.3 Lph (6.9 gph)
Standby Fuel Consumption at 25% load	16.2 Lph (4.3 gph)

Generator Set Controller

APM402

Kohler® APM402 Controller

General Description and Function

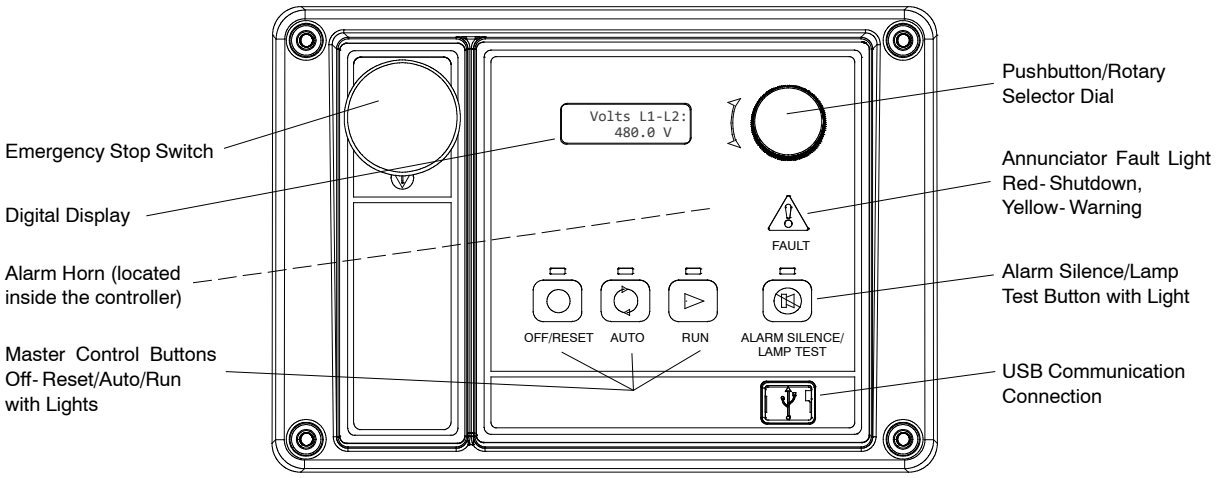
The APM402 generator set controller provides advanced control, system monitoring, and system diagnostics for optimum performance.

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

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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.)

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.

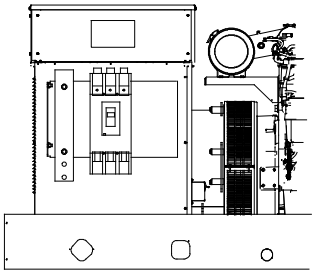
DISTRIBUTED BY:

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.

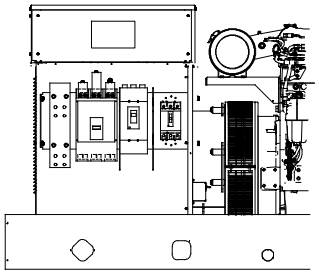
KOHLER

Industrial Generator Set Accessories

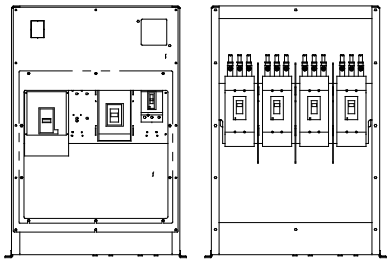
Line Circuit Breakers 15- 3250 kW



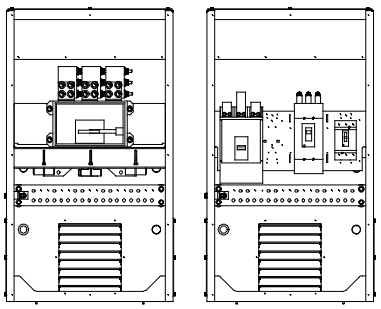
Single Circuit Breaker Kit with Neutral Bus Bar
15- 300 kW Model Shown



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
700- 2500 kW KD Model Shown

Standard Features

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

Line Circuit Breaker Types

Magnetic Trip

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

Thermal Magnetic Trip

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

Electronic Trip

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

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

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

Electronic with Ground Fault Trip

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

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

80% Rated Circuit Breaker

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

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

100% Rated Circuit Breaker

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

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

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

Line Circuit Breaker Options

❑ Alarm Switch

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

❑ Auxiliary Contacts

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

❑ Breaker Separators (350- 2500 kW)

Provides adequate clearance between breaker circuits.

❑ Bus Bars

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

❑ Field Connection Barrier

Provides installer wiring isolation from factory connections.

❑ Ground Fault Annunciation

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

❑ Lockout Device (padlock attachment)

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

❑ Lugs

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

❑ Overcurrent Trip Switch

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

❑ Shunt Trip, 12 VDC or 24 VDC

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

❑ Shunt Trip Wiring

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

❑ Undervoltage Trip, 12 VDC or 24 VDC

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

15- 300* kW Line Circuit Breaker Specifications

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

100% Rating Circuit Breaker

Alt. Model	Ampere Range	Trip Type	C. B. Frame Size
4D/4E	15- 150	Thermal magnetic	HD
	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)

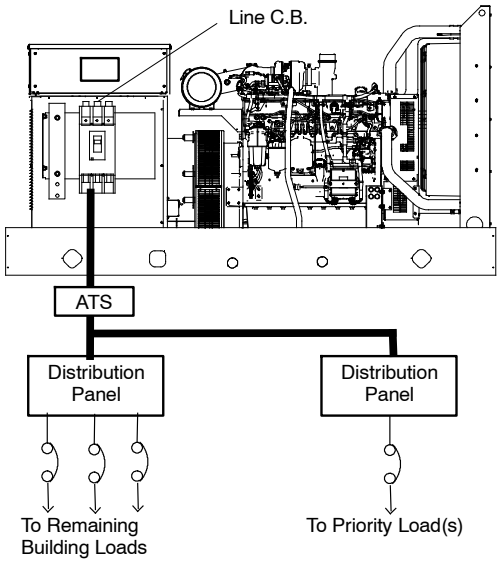
Frame Size	Ampere Range	Wire Range
E (480 V max.)	30- 100	Up to two wire terminals fitting 10-32 or 1/4-20 stud
H	15- 150	One #14 to 3/0
J	175	One 1/0 to 4/0
	200- 250	One 3/0 to 350 kcmil
LA	300- 400	One #1 to 600 kcmil or Two #1 to 250 kcmil
LG	400- 600	Two 2/0 to 500 kcmil AL/CU
M	800	Three 3/0 to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

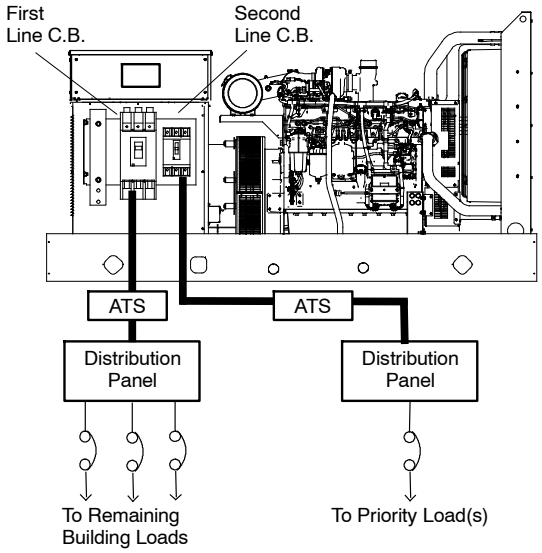
A generator set with a single circuit breaker installed typically feeds a single transfer switch and then a distribution panel. This allows protection of the entire system.



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

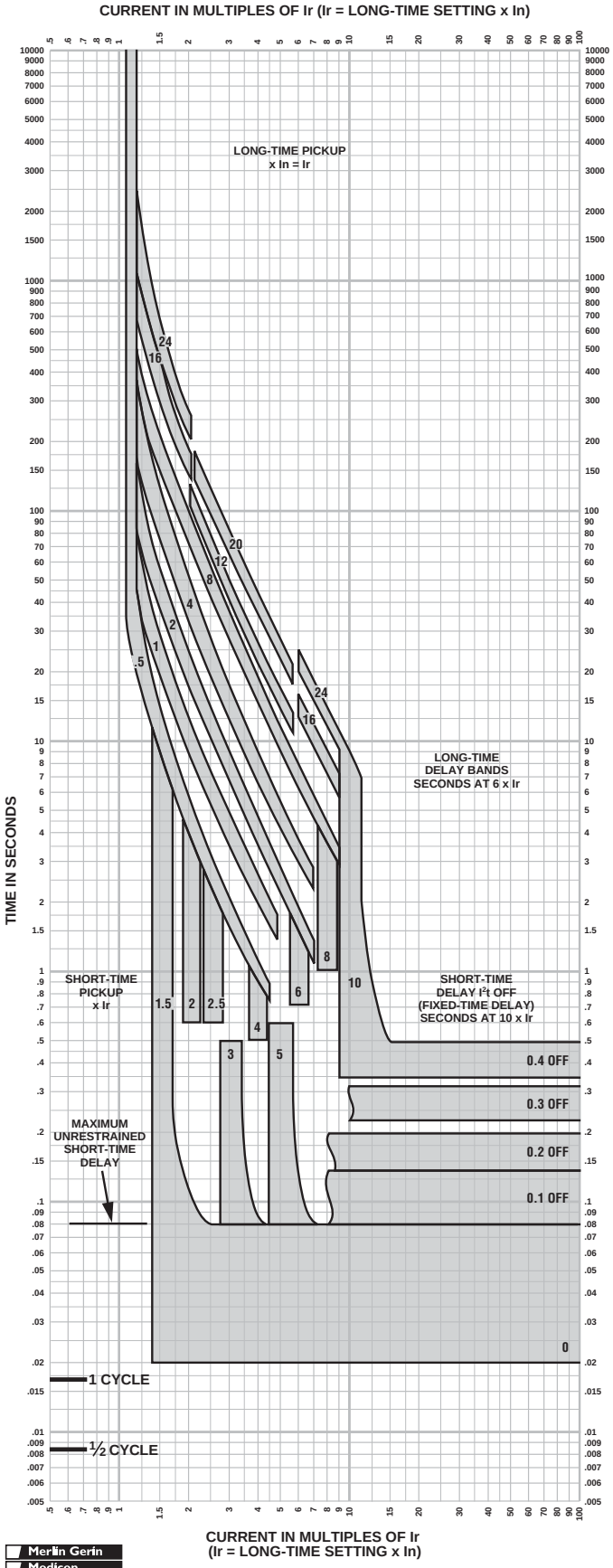
A generator set with dual circuit breakers installed is used to separate critical loads. Typically, one circuit breaker will feed a main transfer switch with noncritical loads and the other circuit breaker will feed a second transfer switch that feeds critical or priority loads. Multiple circuit breakers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



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

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

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

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

Notes:

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

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

Schneider Electric

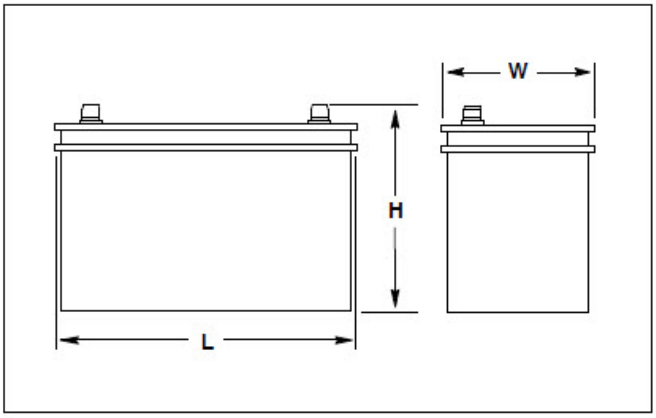
Curve No. 0613TC0004
December 2000
Drawing No. B48095-613-04

KOHLER®

System Batteries

ISO 9001 KOHLER POWER SYSTEMS NATIONALLY REGISTERED

Typical Overall Dimensions

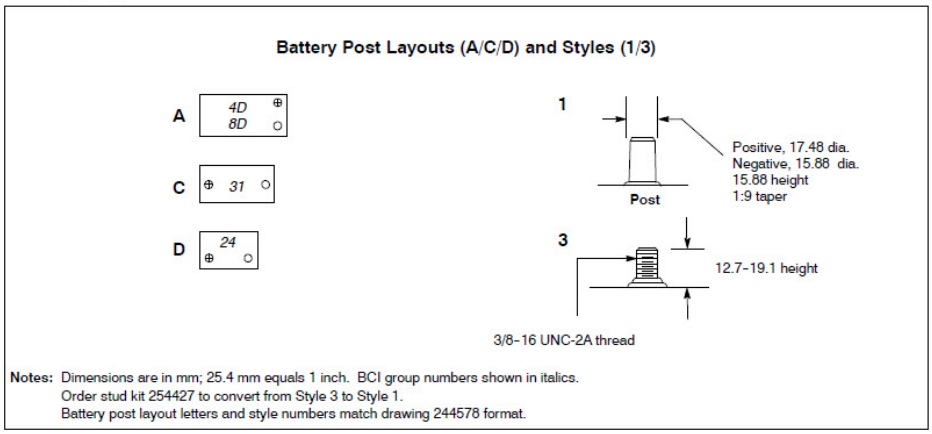


Standard Features

- Kohler Co. selects batteries to meet the engine manufacturer's specifications and to comply with NFPA requirements for engine-cranking cycles.
- Heavy-duty starting batteries are the most cost-effective means of engine cranking and provide excellent reliability in generator set applications.
- 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 18°C (0°F) Min.	Reserve Capacity Minutes at 27° (80°F) Min.	Battery Post Layout and Style
				L	W	H			
Wet	324586	1	31	330.2 (13.0)	173.0 (6.8)	239.8 (9.4)	950	185	C/3

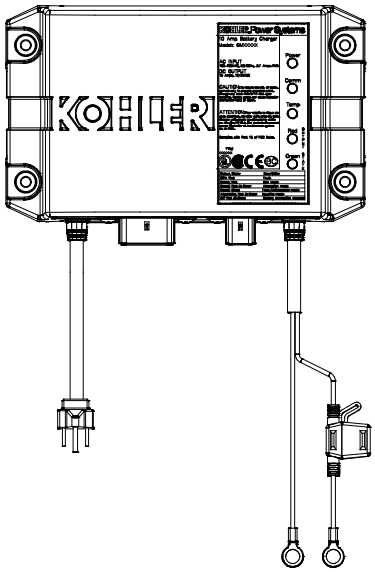
Battery Specifications



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.

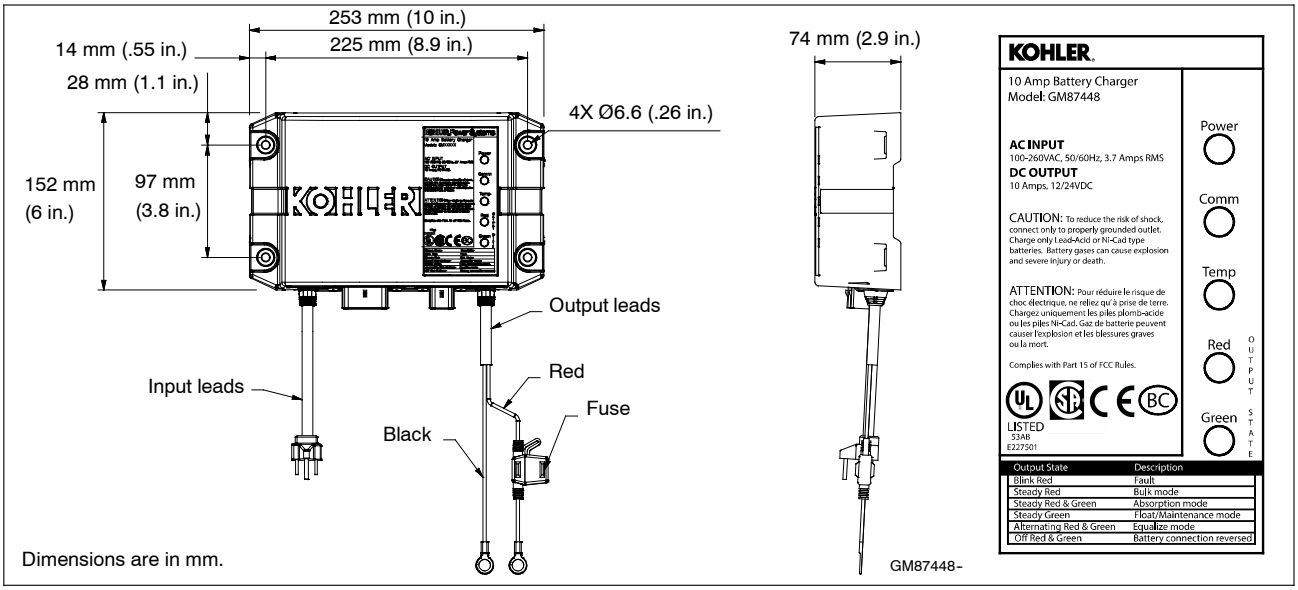
With the optional battery temperature sensor connected, the battery charger can adjust output voltages for optimal charging.

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

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	

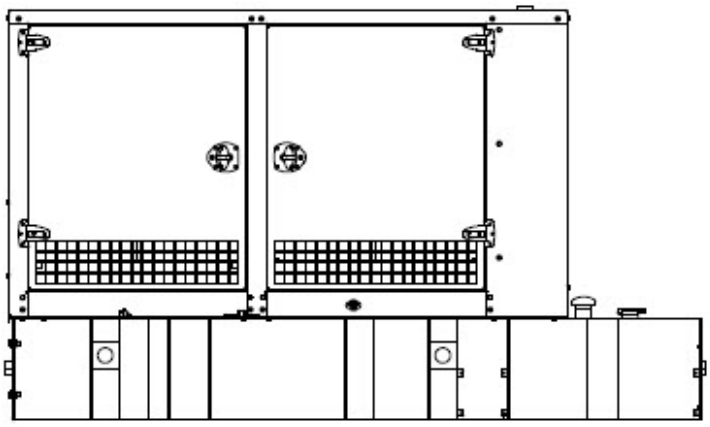
DISTRIBUTED BY:

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.

KOHLER®

Sound Enclosure with Subbase Fuel Tank Package

ISO 9001 KOHLER POWER SYSTEMS NATIONALLY REGISTERED



Enclosure with State Code Subbase Fuel Tank

Sound Enclosure Standard Features

• Internal-mounted critical silencer and flexible exhaust connector.

• Lift base-mounted or tank mounted aluminum construction with hinged doors. Aluminum enclosures are recommended for high humidity and/or high salt/coastal regions

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

• Power Armor surpasses 3,000-hour salt spray corrosion tests per ASTM B- 1117

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

• Lockable, flush-mounted door latches.

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

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

• Sound-attenuated that uses up to 51 mm (2 in.) of acoustic insulation.

• Aluminum sound enclosure is certified to 186 mph (299 kph) wind load rating for 80-150REOZJ models.

Subbase Fuel Tank Features

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

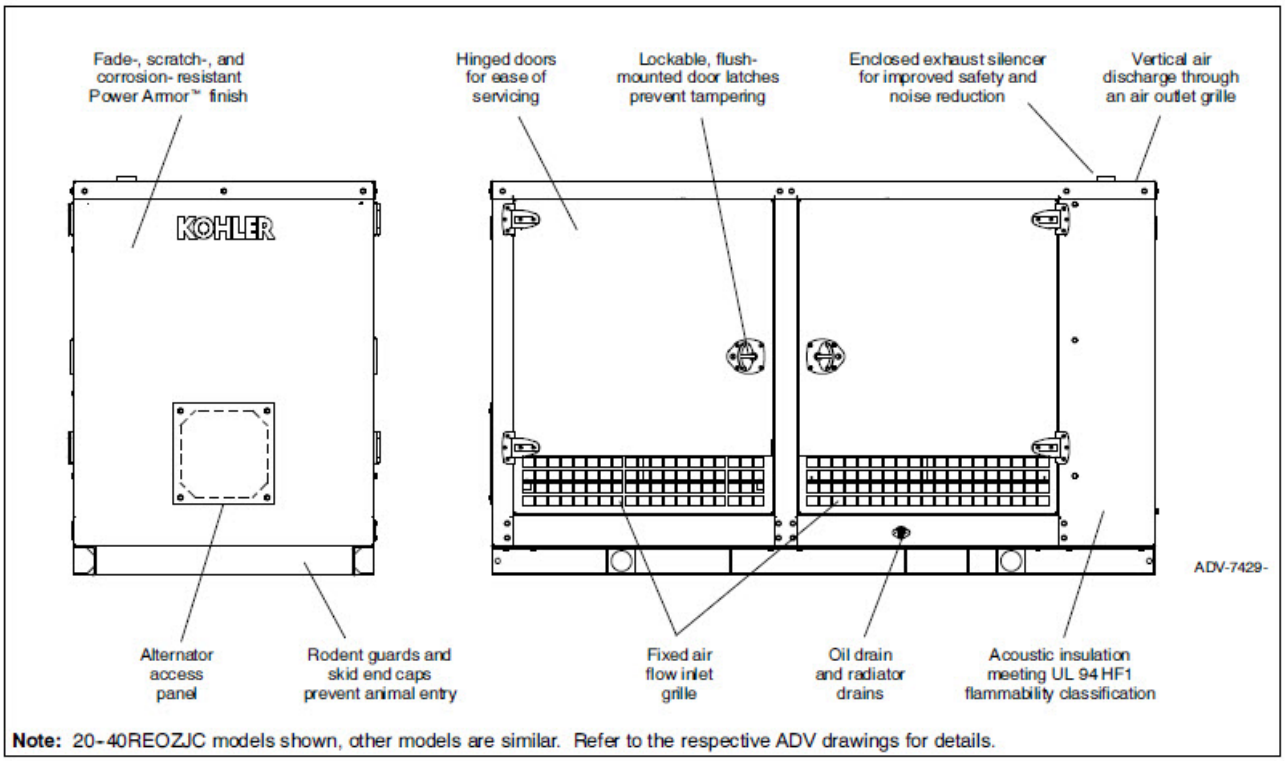
• The above-ground rectangular secondary containment tank mounts directly to the generator set, below the generator set skid (subbase).

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

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

• The secondary containment generator set base tank meets UL 142 tank requirements. The inner (primary) tank is sealed inside the outer (secondary) tank. The outer tank contains the fuel if the inner tank leaks or ruptures.

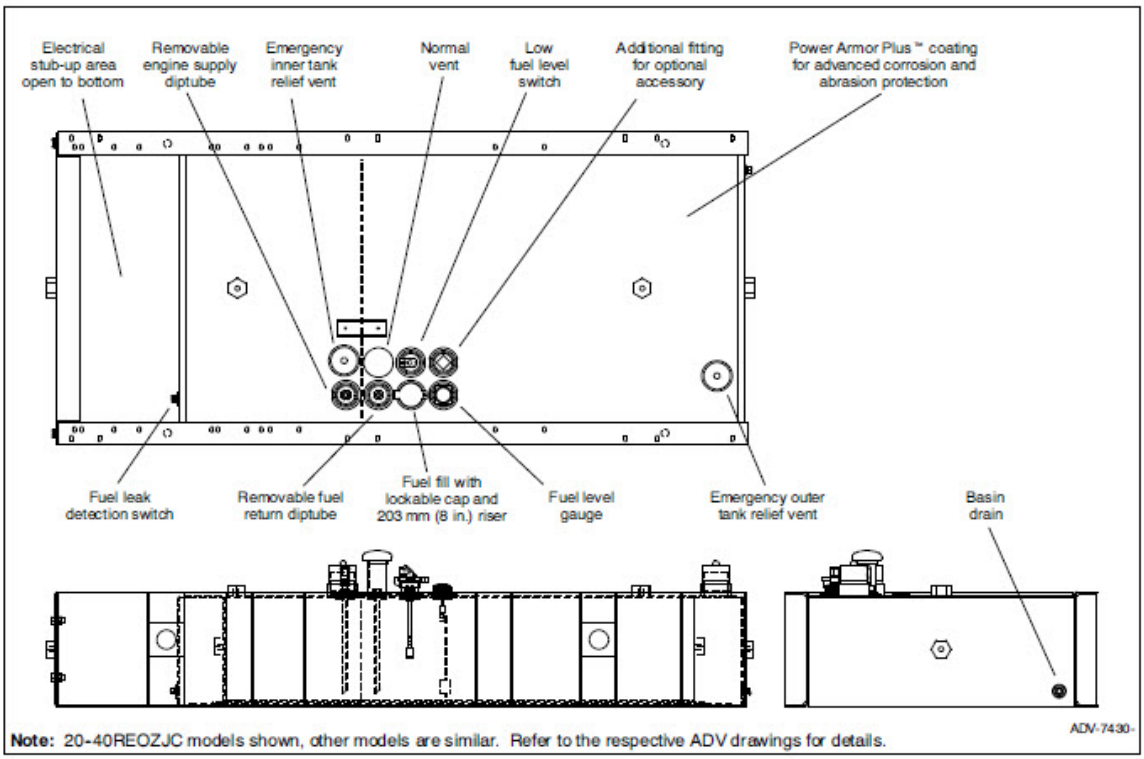
• State tanks with varying capacities are an available option. Florida Dept. of Environmental Protection (FDEP) File No. EQ-634 approved.



Note: 20-40REOZJC models shown, other models are similar. Refer to the respective ADV drawings for details.

Sound Enclosure Features

- Available in aluminum 3.2mm (0.125 in.) formed panel, solid construction. Preassembled package offering corrosion resistant, dent resilient structure mounting 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.
- Interchangeable modular panel construction. Allows complete serviceability or replacement without compromising enclosure design.
- Cooling/combustion air intake with a horizontal air inlet. Sized for maximum cooling airflow.
- Service access. Multi-personnel doors for easy access to generator set control and servicing of the 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.
- Attenuated design. Acoustic insulation UL 94 HF1 listed for flame resistance offering up to 51 mm (2 in.) mechanically restrained acoustic insulation.
- 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.

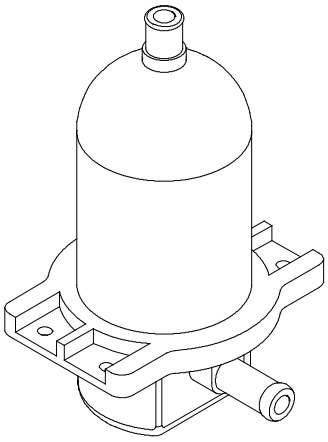


- Extended operation. Usable tank capacities offers full load standby operation of up to 72 hours.
- Power Armor Plus textured epoxy-based rubberized coating that creates an ultra-thick barrier between the tank and harsh environmental conditions like humidity, saltwater, and extreme temperatures, and provides advanced corrosion and abrasion protection.
- UL listed. Secondary containment generator set base tank meeting UL 142 tank requirements.
- NFPA compliant. Designed to comply with the installation standards of NFPA 30 and NFPA 37.
- Integral external lift lugs. Enables crane with spreader-bar lifting of the complete package (empty tank, mounted generator set, and enclosure) to ensure safety.
- Emergency pressure relief vents. Meets UL requirements; ensures adequate venting of inner and outer tank under extreme pressure and/or emergency conditions.
- Normal vent with cap. Vent is raised above lockable fuel fill.
- Low fuel level switch. Annunciates a 50% low fuel level condition at generator set control.
- Leak detection switch. Annunciates a contained primary tank fuel leak condition at generator set control.
- Electrical stub-up.
- State tank designed to comply with the installation standards of the Florida Dept. of Environmental Protection (FDEP) File No. EQ-634.

Fuel Tank Capacity, L (gal.)	Est. Fuel Supply Hours at 60 Hz with Full Load	Max. Length, mm (in.)	Enclosure and Fuel Tank Length, mm (in.)	Enclosure and Fuel Tank Width, mm (in.)	Enclosure and Fuel Tank Weight, kg (lb.)	Enclosure and Fuel Tank Height, mm (in.)	Fuel Tank Height (H), mm (in.)	Sound Pressure Level, dB(A)
Lift base	0	1153 (45.4)	3532 (139.0)	1153 (45.4)	1724 (3800)	1753 (69)	0 (0)	75
1196 (316)	24/27	4414 (173.8)	1153 (45.4)	2455 (5412)	2328 (91.7)	483 (19)		75

Note: Refer to the respective ADV drawings for details.
Note: Refer to TIB-114 for generator sound data.
Max. weight includes the generator set (wet), enclosure, silencer, and tank (no fuel). The generator set weight represents using the largest alternator option. The enclosure weight is with acoustic insulation added.

Engine Block Heater Kits



Block Heater Kit, typical

Applicable Models

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

Standard Features

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

Description

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

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

The engine block heater kits are available in 120 V, 240 V, and 277 V versions.

Block Heater Specifications

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

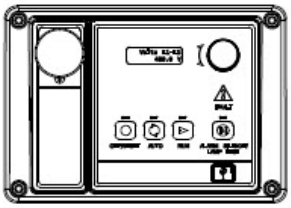
Specifications

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

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

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. 5.0 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

Jumpers

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

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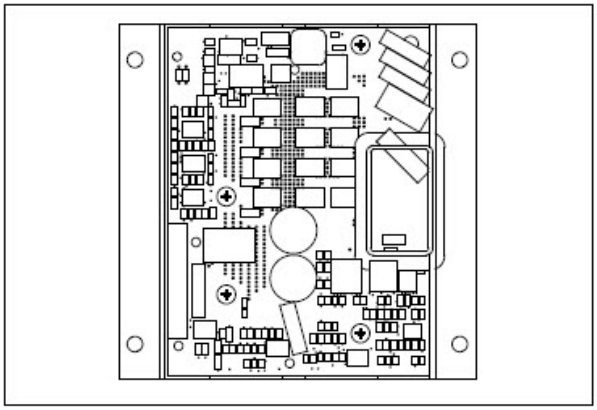
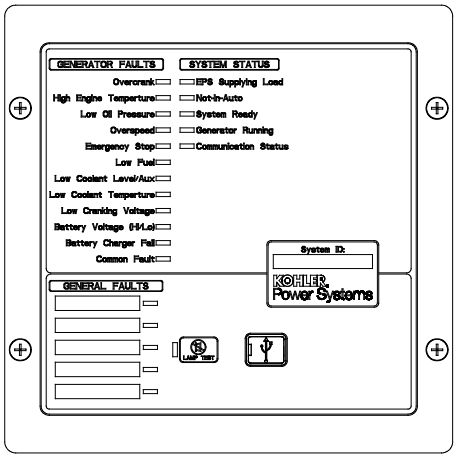


- Interfaces between the controller and alternator assembly using rotor field leads, auxiliary power windings, and optic board leads.
- Allows the Decision-Maker® controllers the ability to control a wound-field alternator using the same control signal as Fast Response™ alternator.
- Permits the generator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

Remote Serial Annunciator III (RSA III)



RSA III

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

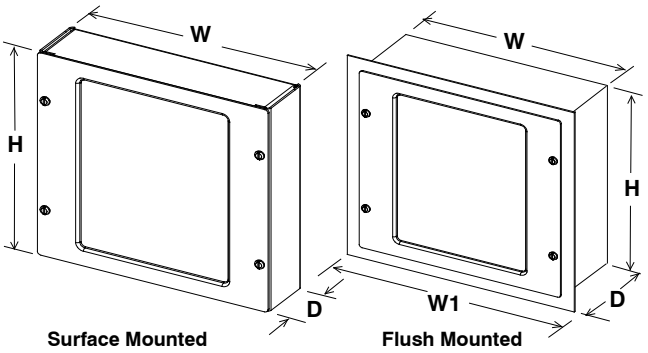
- Allows monitoring of the common alarm, remote testing of the automatic transfer switch, and monitoring of the normal/emergency source for up to four ATS with any of the following controllers:
  - Decision-Maker® MPAC® 750, 1200, and 1500
  - MPAC® 1000 and 1500
- Configuration via a personal computer (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.

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.

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Alternator Data

TECHNICAL INFORMATION BULLETIN

Alternator Data Sheet

Alternator Model: 4S12X
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	146.5 (183.0)	155.0 (193.5)	160.0 (200.0)	168.0 (210.0)	181.0 (226.0)	178.5 (223.0)	189.0 (236.0)
127/220 254/440	3	0.8	Wye	136.0 (170.0)	143.0 (178.5)	146.5 (183.0)	152.5 (190.5)	164.0 (205.0)	162.0 (202.5)	171.5 (214.0)
120/208 240/416	3	0.8	Wye	130.0 (162.5)	136.5 (170.5)	139.0 (173.5)	144.0 (180.0)	154.5 (193.0)	152.5 (190.5)	161.5 (201.5)
110/190 220/380	3	0.8	Wye	118.5 (148.0)	124.5 (155.5)	126.5 (158.0)	131.0 (163.5)	140.5 (175.5)	139.0 (173.5)	147.0 (183.5)
120/240	3	0.8	Delta	130.0 (162.5)	136.5 (170.5)	139.0 (173.5)	144.0 (180.0)	154.5 (193.0)	152.5 (190.5)	161.5 (201.5)
120/240	1	1.0	Dogleg	81.0 (81.0)	90.5 (90.5)	95.0 (95.0)	105.0 (105.0)	106.0 (106.0)	106.0 (106.0)	106.0 (106.0)
347/600	3	0.8	Wye	135.0 (169.0)	143.0 (179.0)	147.0 (184.0)	155.0 (194.0)	172.0 (215.0)	168.0 (210.0)	180.0 (225.0)

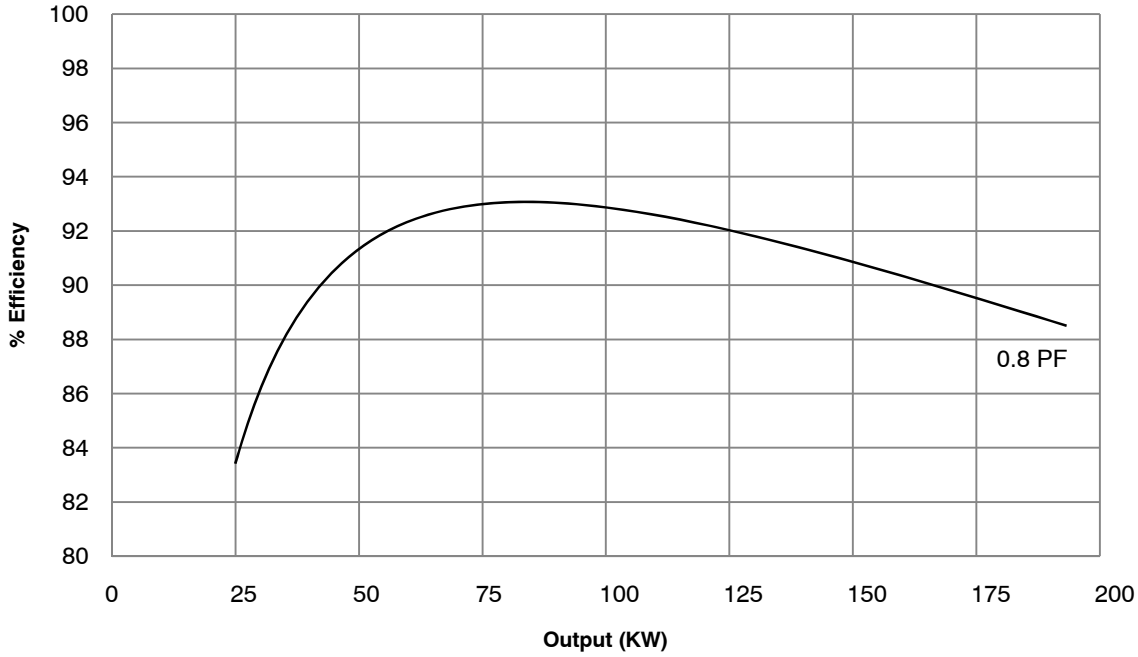
* All data tested in accordance with IEEE Standard 115. Kohler Co. reserves the right to change the design or specifications without notice and without any obligation or liability whatsoever.

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

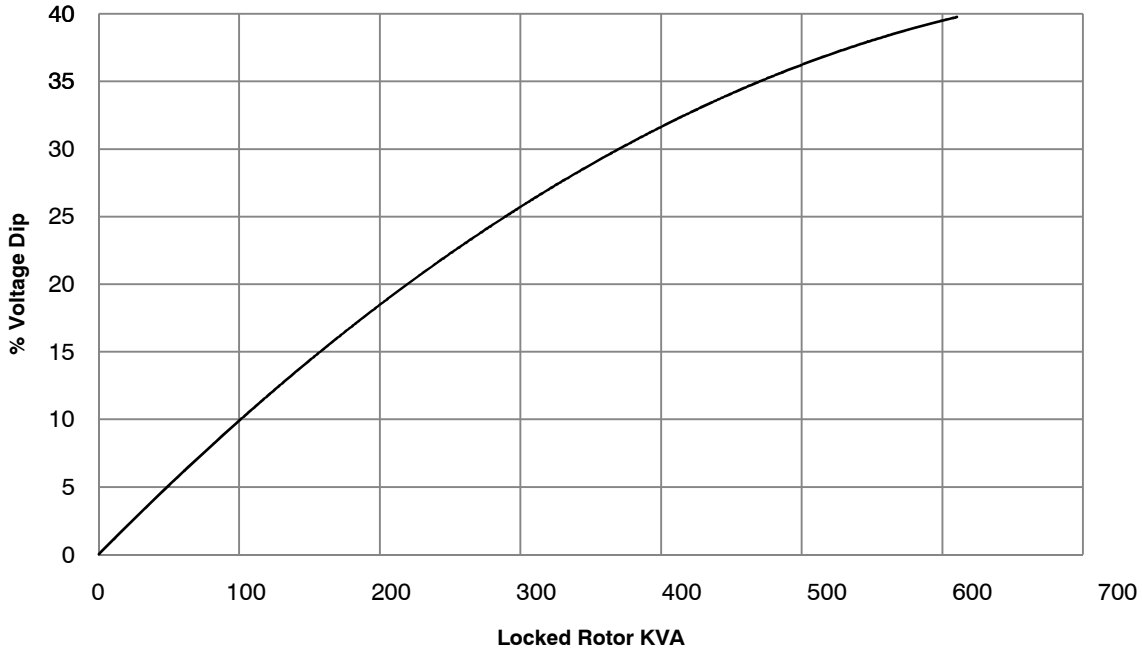
	Symbol	PerUnit	Ohms
Typical Cold Resistances			
Phase Resistance		0.031	0.008
Rotor Resistance		20.58	5.239
Typical Reactances			
Synchronous			
Direct	X_d	4.982	1.268
Quadrature	X_q	2.468	0.628
Transient			
Unsaturated	X'_{du}	0.504	0.128
Saturated	X'_d	0.443	0.113
Subtransient			
Direct	X''_d	0.171	0.044
Quadrature	X''_q	0.169	0.043
Negative Sequence	X_2	0.17	0.043
Zero Sequence	X_0	0.013	0.003

	Symbol	Value
Typical Time Constants		
Armature Short Circuit	T_a	0.012 sec.
Transient Short Circuit	T'_d	0.154 sec.
Transient Open Circuit	T'_{do}	1.728 sec.
Typical Field Current		
Full Load	If_{FL}	21.1 amps
No Load	If_{NL}	3.8 amps
Typical Short Circuit Ratio		0.201
Harmonic Distortion		
RMS Total Harmonic Distortion		4.04%
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

4S12X, 60 Hz, 139/240, 277/480 Volts, Wye
TYPICAL ALTERNATOR EFFICIENCY*



4S12X, 60 Hz, 139/240, 277/480 Volts, Wye
TYPICAL MOTOR STARTING CHARACTERISTICS*



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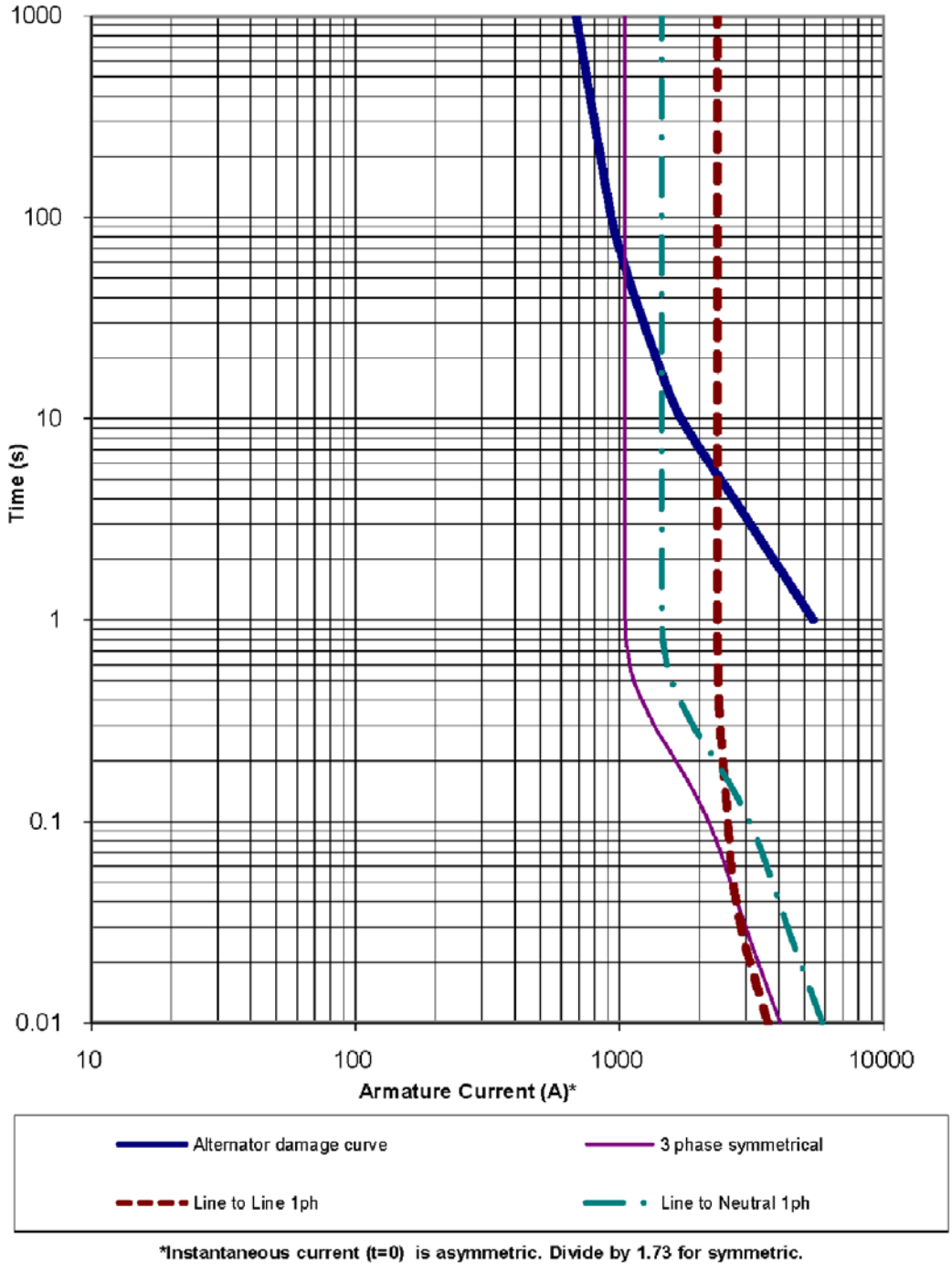
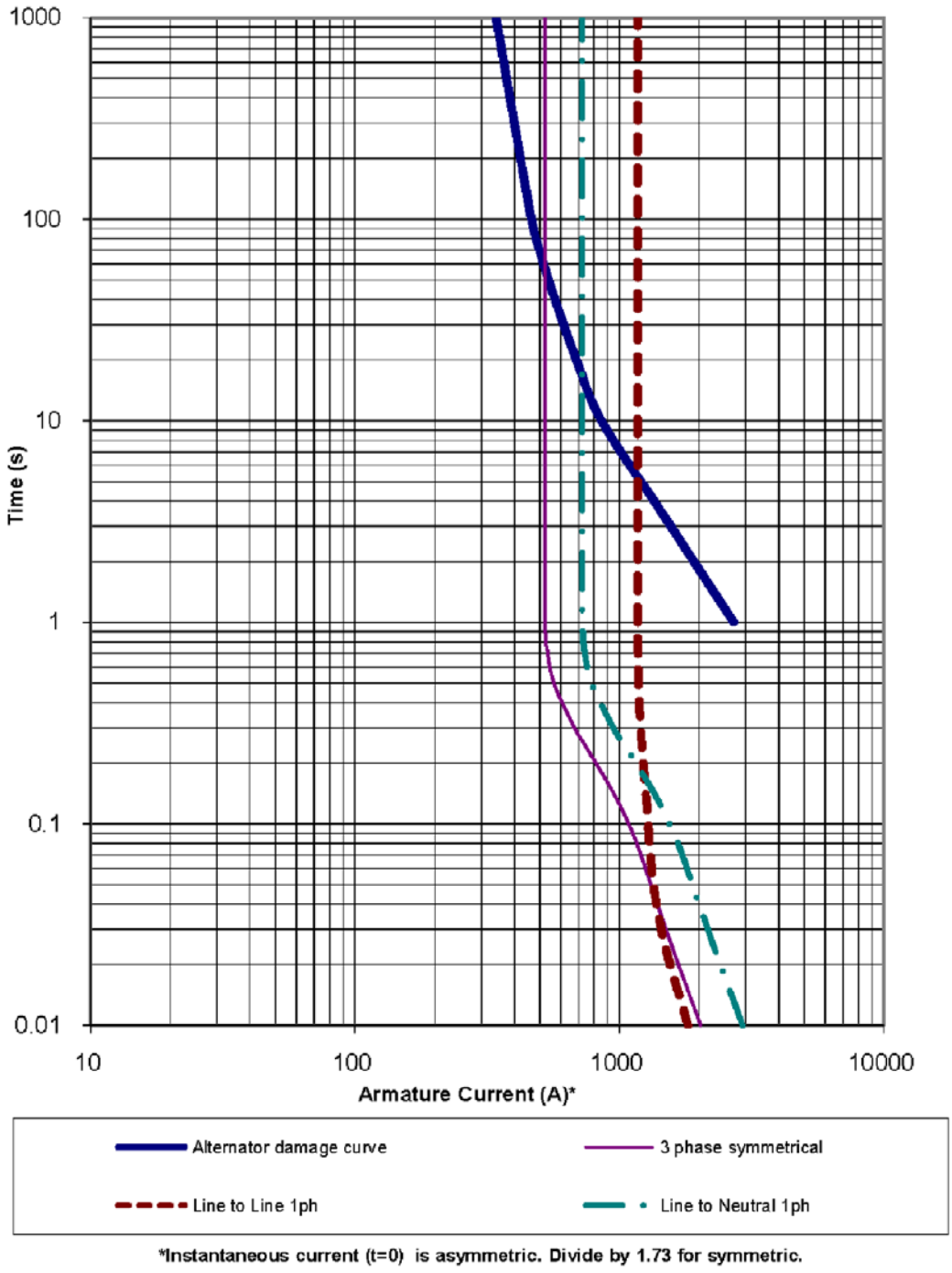
4S12X, 60 Hz, Low Wye or Delta Connection
SHORT CIRCUIT DECREMENT CURVE



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

4S12X, 60 Hz, High Wye Connection
SHORT CIRCUIT DECREMENT CURVE



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

KOHLER®

Cooling Data

TECHNICAL INFORMATION BULLETIN

Generator Set Cooling System Data Sheet

150REOZJF 60Hz (Standby Duty)	**50°C Ambient Temperature Cooling System**								
	Total external restriction on open unit[7]	Pa *(in.H_2O)*	0 (0)	125 (0.5)	187 (0.75)	250 (1)	312 (1.25)	375 (1.5)	**Enclosed Units**
	Maximum allowable ambient temperature	°C *(°F)*	50 (122)	47 (117)	45 (113)	43 (109)	41 (106)	NA (NA)	45 (113)
	Cooling system airflow	m^3/min *(ft^3/min)*	227 (8000)	213 (7500)	206 (7300)	199 (7000)	192 (6800)	NA (NA)	NA (NA)

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

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**	
150REOZJF	60	100% Load	99.6	88.4	86.5	75.6	
		No Load	90.1	87.7	85.8	73.7	

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.

				Sound Pressure Levels, dB(A)								
Load	Distance, m (ft)	Enclosure	Measurement Clock Position	Octave Band Center Frequency (Hz)								Overall Level
				63	125	250	500	1000	2000	4000	8000	
100% Load	7 (23)	Sound	3:00	53.2	63.0	66.7	70.3	67.0	66.9	63.2	55.4	74.8
			1:30	61.7	66.3	67.6	72.4	66.7	65.5	61.7	52.8	75.9
			12:00-Engine	59.5	64.6	66.0	70.4	68.6	66.7	64.4	53.2	75.3
			10:30	57.5	64.1	69.1	72.2	67.4	66.6	65.1	55.8	76.2
			9:00	59.6	66.5	70.0	69.5	66.8	66.7	65.0	57.7	75.7
			7:30	61.8	68.0	68.3	68.2	67.4	66.5	64.1	56.7	75.4
			6:00-Alternator	54.8	61.0	72.0	69.3	69.0	66.2	60.8	57.2	76.0
			4:30	63.5	68.0	67.6	69.1	68.0	66.0	61.3	56.4	75.4
			8-pos. log avg.	60.1	65.7	68.8	70.4	67.7	66.4	63.5	55.9	75.6

				Sound Pressure Levels, dB(A)								
Load	Distance, m (ft)	Enclosure	Measurement Clock Position	Octave Band Center Frequency (Hz)								Overall Level
				63	125	250	500	1000	2000	4000	8000	
No Load	7 (23)	Sound	3:00	49.4	59.2	64.9	69.6	65.5	64.3	55.2	48.8	73.0
			1:30	47.8	56.9	66.6	71.7	66.0	63.8	55.7	46.9	74.3
			12:00-Engine	51.7	58.9	65.4	70.1	67.6	64.6	57.4	47.8	73.8
			10:30	49.2	57.7	68.3	71.7	65.7	63.8	57.1	48.1	74.6
			9:00	53.0	59.2	68.4	68.1	64.1	63.4	56.5	48.8	73.0
			7:30	53.2	60.4	63.6	67.6	65.5	63.6	56.5	47.5	72.0
			6:00-Alternator	50.7	57.9	71.3	68.7	67.8	63.4	56.6	48.2	74.8
			4:30	53.9	61.2	66.9	68.5	66.4	63.4	55.5	46.7	73.1
			8-pos. log avg.	51.6	59.1	67.6	69.8	66.2	63.8	56.4	47.9	73.7

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
150REOZJF	All Weather & Sound Enclosures & Snow Package Enclosure	17.5	1.3	30.0	2.2	GM73885	GM71385	ADV-7825 ADV-8763

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®

150REOZJF

60 HZ. DIESEL INDUSTRIAL GENERATOR SET
EMISSION DATA SHEET

ENGINE INFORMATION			
Model:	John Deere, 6068HF285K	Bore:	106mm (4.19 in.)
Nameplate BHP @ 1800 RPM:	237	Stroke:	127mm (5.0 in.)
Type:	4-Cycle, 6 Cylinder, Inline	Displacement:	6.8 L (415 cu. in.)
Aspiration:	Turbocharged, Charge Air-Cooled		
Compression Ratio	17.0:1	EPA Family:	PJDXL06.8120
		EPA Certificate:	PJDXL06.8120-009

	Table 1			
PERFORMANCE DATA:	1/4 Standby	1/2 Standby	3/4 Standby	Full Standby
Engine bkW @ Stated Load	44	89	133	177
Fuel Consumption (g/kWh)	250	244	222	214
Exhaust Gas Flow (m^3/min)				34
Exhaust Temperature (°C)				510

EXHAUST EMISSION DATA:	Table 2 EPA D2 Cycle 5-mode weighted
HC (Total Unburned Hydrocarbons)	0.12
NOx (Oxides of Nitrogen as NO2)	3.79
CO (Carbon Monoxide)	1.2
PM (Particulate Matter)	0.12

Values are in g/kWh unless otherwise noted

TEST METHODS AND CONDITIONS

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

Data and specifications subject to change without notice.

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

OFFICE OF TRANSPORTATION AND AIR QUALITY
ANN ARBOR, MICHIGAN 48105

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

Certificate Number: **PJDXL06.8120-009**

Effective Date: 06/16/2022

Expiration Date: 12/31/2023

Byron J. Bunker, Division Director
Compliance Division

Issue Date: 06/16/2022

Revision Date: N/A

Model Year: 2023
Manufacturer Type: Original Engine Manufacturer
Engine Family: PJDXL06.8120

Mobile/Stationary Indicator: Stationary
Emissions Power Category: 130<=kW<225
Fuel Type: Diesel
After Treatment Devices: No After Treatment Devices Installed
Non-after Treatment Devices: Electronic Control, Smoke Puff Limiter, Engine Design Modification, Non-standard Non-After Treatment Device Installed

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

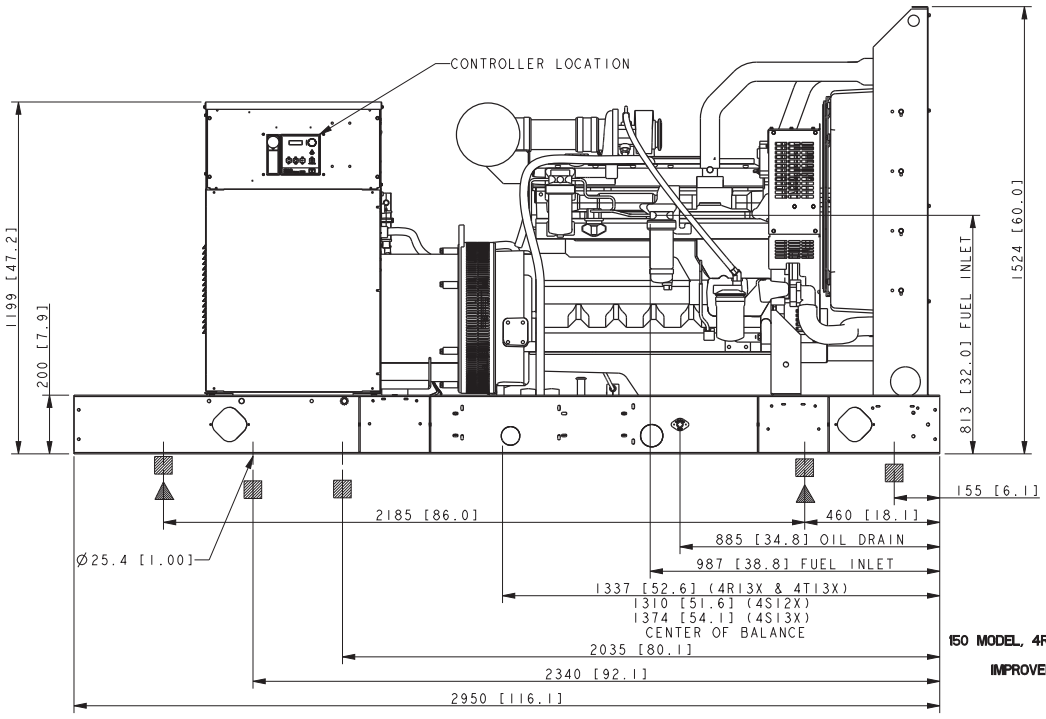
This certificate of conformity covers only those new compression-ignition engines which conform in all material respects to the design specifications that applied to those engines described in the documentation required by 40 CFR Part 60 and which are produced during the model year stated on this certificate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

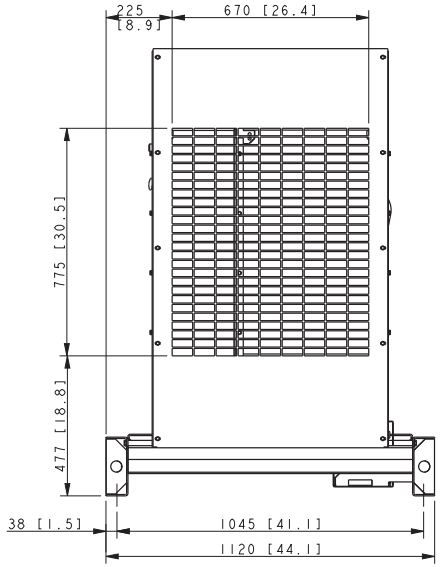
It is a term of this certificate that the manufacturer shall consent to all inspections described in 40 CFR 1068 and authorized in a warrant or court order. Failure to comply with the requirements of such a warrant or court order may lead to revocation or suspension of this certificate for reasons specified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

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

KOHLER®

Dimensional Drawings





INSTALLATION NOTE

IF SUBASE FUEL TANK AND/OR SOUND HOUSING IS USED, REFER TO SUBBASE FUEL TANK DRAWING TO DETERMINE MOUNTING LOCATIONS

MODEL	GENSET WEIGHT (WET)
150 4R13X, 4T13X	1342 KG [2959 LBS]
150 4S12X	1295 KG [2855 LBS]
150 4S13X	1402 KG [3090 LBS]

NOTES
DIMENSIONS IN [ ] ARE INCH EQUIVALENTS

IF AN ENCLOUSURE 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.

▲ 4 HOLES FOR STANDARD MOUNTING Ø25.4 [1.00]

▨ 10 HOLES FOR IBC MOUNTING Ø25.4 [1.00]

IF IBC CERTIFICATION IS REQIURED SEE SEISMIC ADV FOR INSTALLATION INSTRUCTIONS.

150 MODEL, 4R13X, 4T13X, 4S12X, 4S13X RECONNECTABLE, IMPROVED MOTOR STARTING (IMS), RECONNECTABLE & 600V ALTERNATOR JOHN DEERE 6068HF

REV	DATE	ON COMPOSITE DWGS, SEE PART NO. FOR REVISION LEVEL	BY
-	5-20-11	NEW DRAWING [91379-4]	KMP
A	10-7-13	(A-8) Ø25.4 [1.00] WAS Ø17.5 [.68] [CT59787]	SVP

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

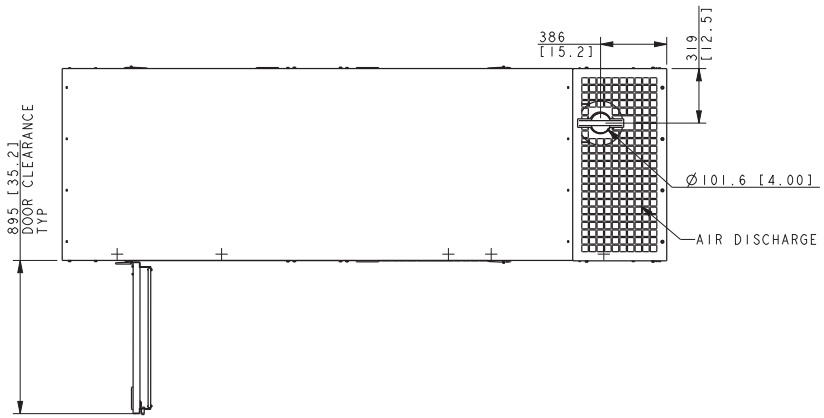
APPROVALS		DATE
DRAWN	KMP	5-20-11
CHECKED	PLD	5-20-11
APPROVED	GDF	5-20-11

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

TITLE: **DIMENSION PRINT, 150 MODEL**

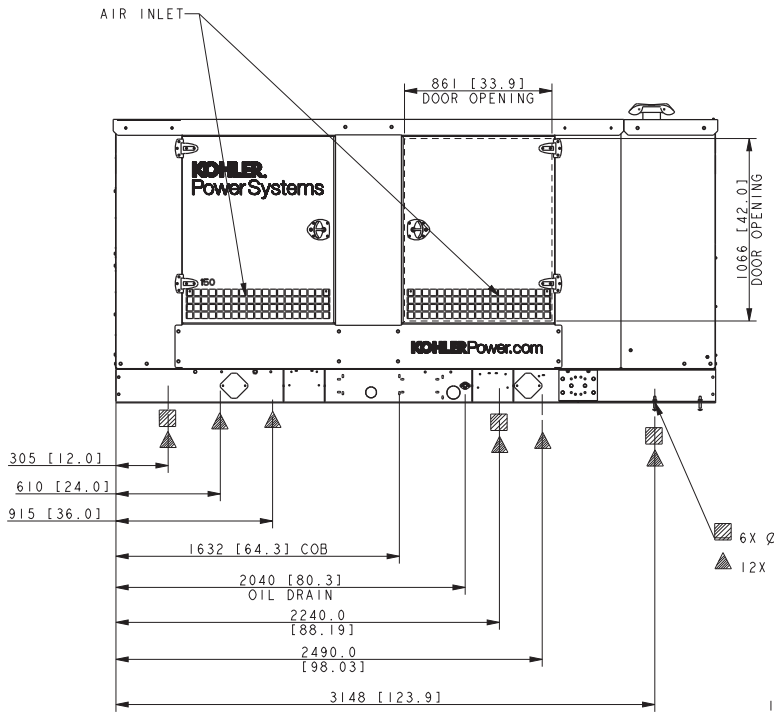
SCALE 0.12 | CAD NO. | SHEET 1 of 2

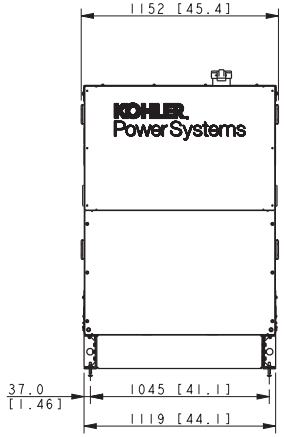
DWG NO. **ADV-8183** | **D**



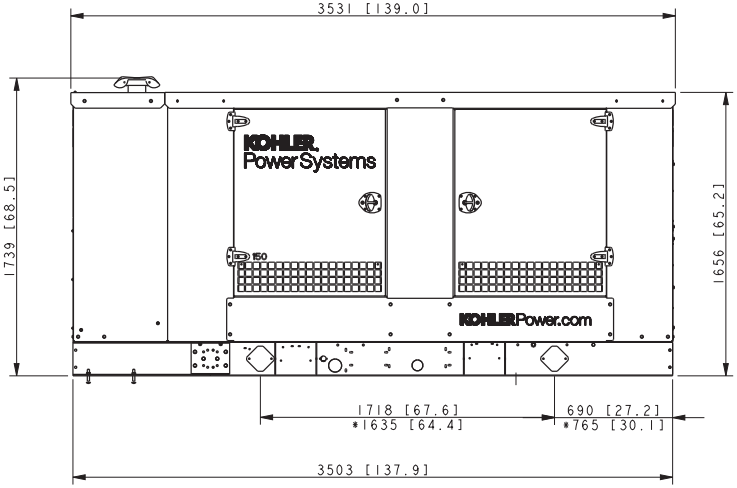
MODEL	ENCLOSURE WEIGHT KG [LBS]
STEEL WEATHER	340 [750]
STEEL SOUND	363 [800]
ALUMINUM SOUND	227 [500]

NOTE:
1. TANK (IF ORDERED) MOUNTS BELOW SKID
2. TANK MAY EXTEND BEYOND ENCLOSURE (DISCHARGE END ONLY)





6X Ø25.4 [1.0] STD MOUNTING HOLES
12X Ø25.4 [1.0] IBC MOUNTING HOLES



DIMENSIONS IN [ ] ARE INCH EQUIVALENTS

(*) DESIGNATES 125KW 4045HF ENGINE

125 MODEL 4SI1, 4SI3, 4R12X, 4R13X, 4T13X
150 MODEL 4SI3, 4SI5, 4R13X, 4T13X, 4SI2X, 4SI3X
RECONNECTABLE
IMPROVE MOTOR STARTING (IMS) RECONNECTABLE
600V & 1 PHASE ALTERNATORS
4045HF285 & 6068HF285 JOHN DEERE TIER III

REV	DATE	ON COMPOSITE DWGS, SEE PART NO. FOR REVISION LEVEL	BY
B	7-29-10	(A-6) 6X 17.5 NOTE ADDED [90041]	SAM
C	9-28-10	(A-5) 12X Ø17.5 ADDED [90301]	SAM
D	1-3-12	(A-4) 125 & 150 MODEL NOTE UPDATED [92681]	PKD
E	2-5-12	(A-1) 1-2 WAS 1-1, SEE SHEET 2 [CT32174]	SAM
F	10-3-13	(A-5) Ø25.4 [1.0] WAS Ø17.5 [.69]; SEE SHEET 2 [CT59787]	SVP
G	8-4-17	(D-6) DIM. Ø101.6 (4.00) ADDED [CT177004]	SRM
H	9-27-18	ALL VIEWS AND DIMENSIONS UPDATED; SEE SHEET 2 [CT190707]	PAR

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	MRS	11-5-09
CHECKED	MRS	11-5-09
APPROVED	ALC	11-5-09

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

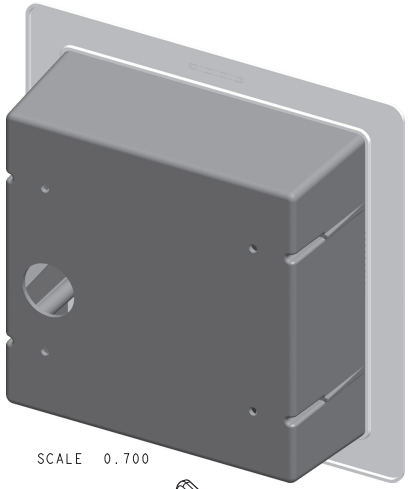
TITLE: **DIMENSION PRINT**

SCALE 0.07 | CAD NO. | SHEET 1 of 2

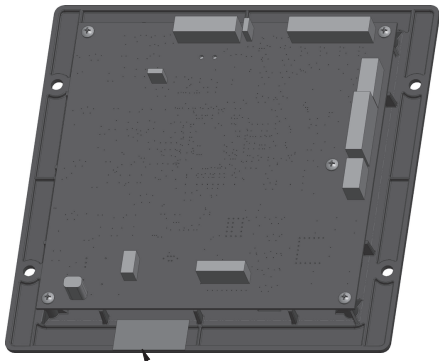
DWG NO. **ADV-7825** | **D**

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

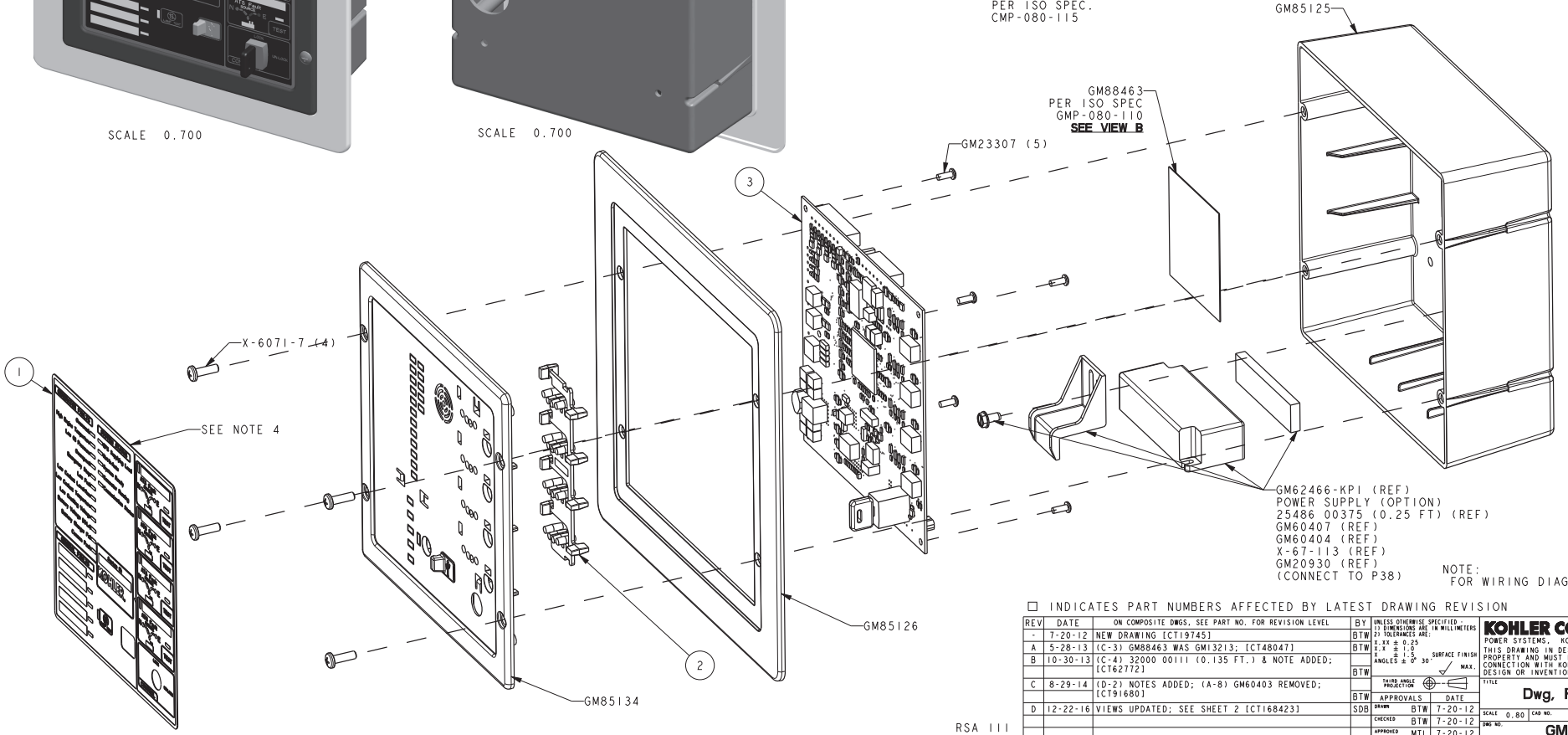


SCALE 0.700



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 125 MAX.
THIRD ANGLE PROJECTION

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

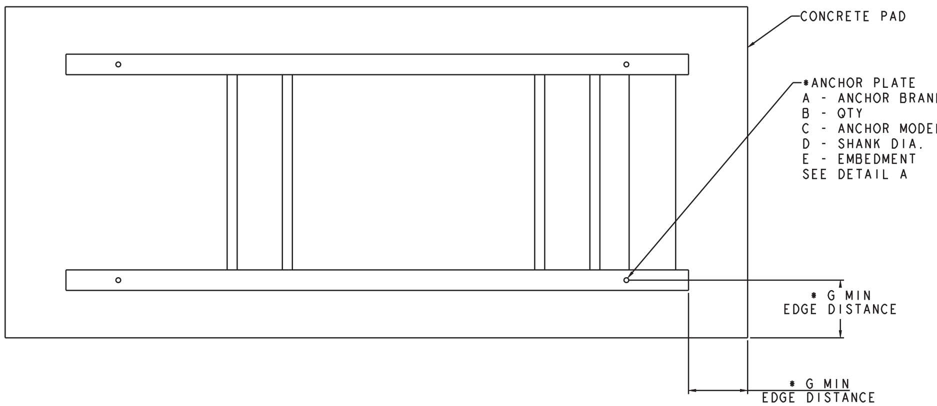
METRIC | PRO-E

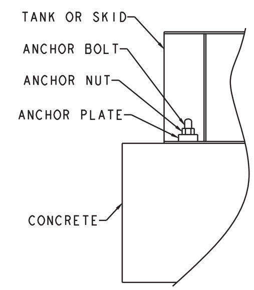
TITLE: Dwg, RSA III Assy

SCALE 0.80 | CAD NO. | SHEET 1 of 2

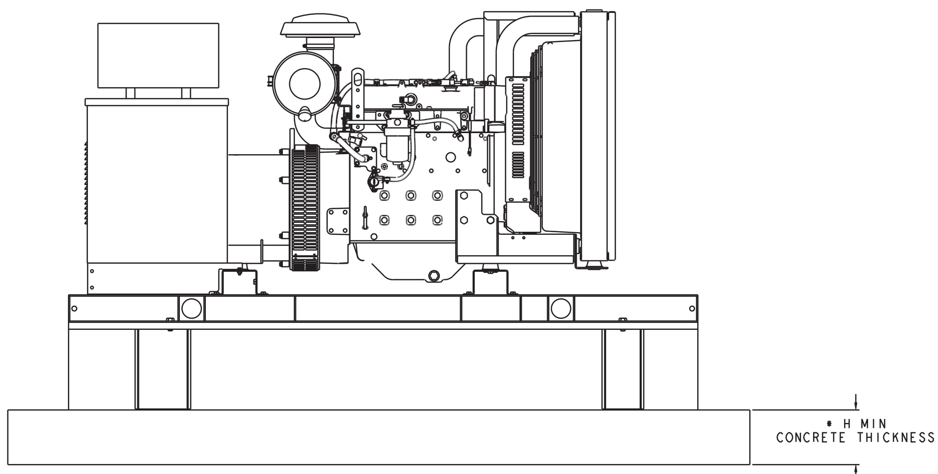
DWG NO. GM85123 | D

RSA III





DETAIL A



60 REOZJC SHOWN

NOTE:

1) SPECIAL INSPECTION PER IBC IS REQUIRED ON ALL INSTALLATIONS. ALL ANCHORS MUST BE INSTALLED TO MEET COMPLIANCE.

2) NO OTHER ANCHORS ARE ALLOWED WITHIN MINIMUM SPACING DISTANCE WITHOUT ADVANCED APPROVAL OF THE STRUCTURAL PROJECT ENGINEER OF RECORD.

3) *SEE NOTE 3 ON SHEETS 2, 3 & 4

DIMENSIONS IN [ ] ARE INCH EQUIVALENT

SEISMIC INSTRUCTIONS

REV	DATE	ON COMPOSITE DWGS, SEE PART NO. FOR REVISION LEVEL ☐ INDICATES PART NUMBERS AFFECTED BY LATEST DRAWING REVISION	BY
T	04OCT2021	SEE SHEET 3 [CT215170]	RVM
U	05APR2023	CREO FORMAT WAS AUTOCAD & SEE SHEET 2, 3 & 4	PAS

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

THIRD ANGLE PROJECTION

MAJOR ○ = 0
CRITICAL ◉ = 0
CHARACTERISTICS COMPLY WITH KPS-80022

DRAWN: SAM
APPROVED: SEE PLM SYSTEM
DATE: 9-11-13

DO NOT SCALE.
THIS ASSEMBLY OR PART MUST COMPLY WITH PEP-RML-001.
REFERENCE CAD MODEL FOR UNSPECIFIED DIMENSIONS.

KOHLER.

NONE | SHEET SIZE: D | SHEET: 1 OF 5

TITLE: SEISMIC CERTIFICATION

DWG NO.: ADV-8629

MAXIMUM SEISMIC DESIGN RATING APPLIES AS A SYSTEM TO GENSET,TANKS, ENCLOSURES AND ACCESSORIES

GENSET MODELS	ENCLOSURE	ATTACHMENT METHOD	FUEL TANK CAPACITY LITERS	FUEL TANK CAPACITY GAL	S_{DS} @ Z/H=0.0	S_{DS} @ Z/H=1.0	ANCHORING PLACEMENT LOCATIONS	ANCHORING SYSTEMS A ANCHOR BRAND	B QTY	C ANCHOR MODEL	D SHANK DIA	E EMBEDMENT	G MIN. EDGE DISTANCE	H MIN. THICKNESS	CONCRETE PRESSURE
80 REOZJF 100 REOZJF	OPEN OR ENCLOSED UNITS	DIRECT TO STEEL	813-3089	215-816	2.0	2.0	FOR MTG. HOLES SEE GENSET/ENCLOSURE/ TANK ADVS RESPECTIVELY	–	16	ASTM A307	19.05 [.75]	–	–	–	–
		DIRECT TO CONCRETE	813-3089	215-816	2.0	2.0		KWIK BOLT	16	KWIK BOLT TZ-CS	19.05 [.75]	121.9 [4.8]	96.5 [3.8]	228.6 [9.0]	4000 PSI
		DIRECT TO STEEL	_		2.0	2.0		–	6	ASTM A307	19.05 [.75]	–	–	–	–
		DIRECT TO CONCRETE	_		2.0	2.0		KWIK BOLT	6	KWIK BOLT TZ-CS	19.05 [.75]	96.5 [3.8]	152.4 [6.0]	152.4 [6.0]	4000 PSI
125REOZJ 150REOZJF	OPEN OR ENCLOSED UNITS	DIRECT TO STEEL	1196-4402	316-1163	2.0	2.0		–	10	ASTM A307	19.05 [.75]	–	–	–	–
		DIRECT TO CONCRETE	1196-4402	316-1163	2.0	2.0		HILTI	10	HIT-HY 200 + HAS-B 105	19.05 [.75]	223.5 [8.8]	457.2 [18.0]	457.2 [18.0]	4000 PSI
		DIRECT TO STEEL	_		2.0	2.0		–	8	ASTM A307	19.05 [.75]	–	–	–	–
		DIRECT TO CONCRETE	_		2.0	2.0		HILTI	8	HIT-HY 200 + HAS-B 105	19.05 [.75]	96.5 [3.8]	152.4 [6.0]	152.4 [6.0]	4000 PSI
180REOZJG 200REOZJF	OPEN OR ENCLOSED UNITS	DIRECT TO STEEL	1574-5742	416-1517	2.0	2.0		–	12	ASTM A307	19.05 [.75]	–	–	–	–
		DIRECT TO CONCRETE	1574-5742	416-1517	2.0	2.0		HILTI	12	HIT-HY 200 + HAS-B 105	19.05 [.75]	248.9 [9.8]	457.2 [18.0]	457.2 [18.0]	4000 PSI
		DIRECT TO STEEL	–		2.0	2.0		–	10	ASTM A307	19.05 [.75]	–	–	–	–
		DIRECT TO CONCRETE	–		2.0	2.0		KWIK BOLT	10	KWIK BOLT TZ-CS	19.05 [.75]	96.5 [3.8]	152.4 [6.0]	152.4 [6.0]	4000 PSI
230REOZJE 250REOZJG 275REOZJE 300REOZJ	OPEN OR ENCLOSED UNITS	DIRECT TO STEEL	2100-4065	555-1074	2.0	2.0		-	14	ASTM A307	19.05 [.75]	–	–	–	–
		DIRECT TO CONCRETE	2100-4065	555-1074	2.0	2.0		HILTI	14	HIT-HY 200 + HAS-B 105	19.05 [.75]	177.8 [7.0]	304.8 [12.0]	304.8 [12.0]	4000 PSI
		DIRECT TO STEEL	–		2.0	2.0		-	10	ASTM A307	19.05 [.75]	–	–	–	–
		DIRECT TO CONCRETE	–		2.0	2.0		KWIK BOLT	10	KWIK BOLT TZ-CS	19.05 [.75]	121.9 [4.8]	228.6 [9.0]	228.6 [9.0]	4000 PSI
350REOZJC 350REOZJD 400REOZJC 400REOZJD 500REOZJC	OPEN OR ENCLOSED UNITS	DIRECT TO STEEL	1529-13324	404-3520	2.0	2.0		_	10	ASTM A307	19.05 [.75]	–	–	–	–
		DIRECT TO CONCRETE	1529-13324	404-3520	2.0	2.0		HILTI	10	HIT-HY 200 + HAS-B 105	19.05 [.75]	314.9 [12.4]	457.2 [18.0]	457.2 [18.0]	4000 PSI
		DIRECT TO STEEL	_		2.0	2.0		_	8	ASTM A307	19.05 [.75]	–	–	–	–
		DIRECT TO CONCRETE	_		2.0	2.0		HILTI	8	HIT-HY 200 + HAS-B 105	19.05 [.75]	139.7 [5.5]	304.8 [12.0]	304.8 [12.0]	4000 PSI

DIMENSIONS IN [ ] ARE INCH EQUIVALENT

NOTE:
1) SPECIAL INSPECTION PER IBC IS REQUIRED ON ALL INSTALLATIONS. ALL ANCHORS MUST BE INSTALLED TO MEET COMPLIANCE.

2) NO OTHER ANCHORS ARE ALLOWED WITHIN MINIMUM SPACING DISTANCE WITHOUT ADVANCED APPROVAL OF THE STRUCTURAL PROJECT ENGINEER OF RECORD.

3) Z/H=0.0 EQUATES TO AT GRADE
Z/H=1.0 EQUATES TO AT ROOF TOP

SEISMIC INSTRUCTIONS

REV	DATE	DESCRIPTION	BY
U	05/APR/2013	SHEET 4 ADDED; (0-7,2-5) COLUMNS FOR "ATTACHMENT METHOD" & CONCRETE PRESSURE" ADDED; (2-4,6-9) ROWS ADDED FOR "80-100 REOZJF, 125REOZJG 150REOZJF, 180REOZJG, 200REOZJF, 230REOZJE, 250REOZJG, 275REOZJE, 300REOZJ, 350REOZJC, 350REOZJD, 400REOZJC, 400REOZJD, 500REOZJC & SEE SHEETS 2 & 3	PAB

DO NOT SCALE. THIS ASSEMBLY OR PART MUST COMPLY WITH PDP-RML-001. REFERENCE CAD MODEL FOR UNSPECIFIED DIMENSIONS.

KOHLER.

DRAWN	SAM	DATE
APPROVED		5-11-13

NONE | SHEET SIZE: D | SHEET: 4 OF 5

TITLE: SEISMIC CERTIFICATION

DWG NO.: ADV-9629

SEISMIC INSTALLATION REQUIREMENTS:

THE FOLLOWING ARE REQUIREMENTS FOR SEISMIC INSTALLATION

1. THE DESIGN OF POST-INSTALLED ANCHORS IN CONCRETE USED FOR THE COMPONENT ANCHORAGE IS PRE-QUALIFIED FOR SEISMIC APPLICATIONS IN ACCORDANCE WITH ACI 355.2 AND DOCUMENTED IN A REPORT BY A REPUTABLE TESTING AGENCY. (EX. THE EVALUATION SERVICE REPORT ISSUED BY THE INTERNATIONAL CODE COUNCIL)
2. ANCHORS MUST BE INSTALLED TO AN EMBEDMENT DEPTH AS RECOMMENDED IN THE PRE-QUALIFICATION TEST REPORT AS DEFINED IN NOTE 1.
3. ANCHORS MUST BE INSTALLED IN MINIMUM 4000 PSI COMPRESSIVE STRENGTH NORMAL WEIGHT CONCRETE. CONCRETE AGGREGATE MUST COMPLY WITH ASTM C33. INSTALLATION IN STRUCTURAL LIGHTWEIGHT CONCRETE IS NOT PERMITTED UNLESS OTHERWISE APPROVED BY THE STRUCTURAL ENGINEER OF RECORD.
4. ANCHORS MUST BE INSTALLED TO THE TORQUE SPECIFICATION AS RECOMMENDED BY THE ANCHOR MANUFACTURER TO OBTAIN MAXIMUM LOADING
5. ANCHORS MUST BE INSTALLED IN THE LOCATIONS SPECIFIED THE KOHLER ADV DIMENSION PRINT.
6. ANCHOR BOLT DESIGN LOADS OR SPECIFIC ANCHORS ARE SPECIFIED ON SEISMIC KOHLER ADV.
7. ANCHOR PLATES FROM KOHLER MUST BE INSTALLED AT EACH ANCHOR LOCATION BETWEEN ANCHOR HEAD AND EQUIPMENT TO TENSION LOAD DISTRIBUTION.
8. CONCRETE FLOOR SLAB AND CONCRETE HOUSEKEEPING PADS MUST BE DESIGNED AND REBAR REINFORCED FOR SEISMIC APPLICATIONS IN ACCORDANCE WITH ACI 318.
9. ALL HOUSEKEEPING PAD THICKNESS MUST BE DESIGNED IN ACCORDANCE WITH PRE-QUALIFICATION TEST REPORT AS DEFINED IN NOTE 1 OR A MINIMUM OF 1.5X THE ANCHOR EMBEDMENT DEPTH, WHICHEVER IS LARGEST
10. ALL HOUSEKEEPING PADS MUST BE DOWELED OR CAST INTO THE BUILDING STRUCTURAL FLOOR SLAB AND DESIGNED FOR SEISMIC APPLICATION PER ACI 318 AND AS APPROVED BY THE STRUCTURAL ENGINEER OF RECORD
11. WALL MOUNTED EQUIPMENT MUST BE INSTALLED TO A REBAR REINFORCED STRUCTURAL CONCRETE WALL THAT IS SEISMICALLY DESIGNED AND APPROVED BY THE ENGINEER OF RECORD TO RESIST THE ADDED SEISMIC LOADS FROM THE COMPONENTS BEING ANCHORED TO THE WALL.
12. FLOOR MOUNTED EQUIPMENT (WITH OR WITHOUT HOUSEKEEPING PAD) MUST BE INSTALLED TO A REBAR REINFORCED STRUCTURAL CONCRETE FLOOR THAT IS SEISMICALLY DESIGNED AND APPROVED BY THE ENGINEER OF RECORD TO RESIST THE ADDED SEISMIC LOADS FROM COMPONENTS BEING ANCHORED TO THE FLOOR.
13. WHEN INSTALLING TO A FLOOR OR WALL, REBAR INTERFERENCE MUST BE CONSIDERED.
14. ATTACHING SEISMIC CERTIFIED EQUIPMENT TO ANY FLOOR OR WALL OTHER THAN THOSE CONSTRUCTED OF STRUCTURAL CONCRETE AND DESIGNED TO ACCEPT THE SEISMIC LOADS FORM SAID EQUIPMENT IS NOT PERMITTED BY THIS SPECIFICATION AND BEYOND THE SCOPE OF THIS CERTIFICATION.
16. ATTACHING SEISMIC CERTIFIED EQUIPMENT TO ANY CONCRETE BLOCK WALLS OR CINDER BLOCK WALLS IS NOT PERMITTED BY THIS SPECIFICATION AND BEYOND THE SCOPE OF THIS CERTIFICATION.
17. FOR INSTALLATIONS UPON ROOFTOP, STEEL DUNNAGE SHALL BE COORDINATED WITH THE STRUCTURAL ENGINEER OF RECORD.
18. INSTALLATION UPON ONLY ROOFTOP CURB SHALL BE COORDINATED WITH THE CURB MANUFACTURER AND THE STRUCTURAL ENGINEER OF RECORD. ANY CURB OR CONCRETE PAD THAT SUPPORTS THE RTU UNIT IS BEYOND THE SCOPE OF THIS CERTIFICATION.
19. ANCHOR LOCATIONS, SIZE, TYPE AND LOAD REQUIREMENTS ARE SPECIFIED ON THE INSTALLATION DRAWING. MOUNTING REQUIREMENTS DETAILS SUCH AS BRAND, TYPE, EMBEDMENT DEPTH, EDGE SPACING, ANCHOR SPACING, CONCRETE STRENGTH, WALL BRACING, AND SPECIAL INSPECTION MUST BE OUTLINED AND APPROVED BY THE PROJECT STRUCTURAL ENGINEER OF RECORD TO WITHSTAND THE SEISMIC ANCHOR LOADS AS DEFINED ON THE SEISMIC INSTALLATION DRAWING. THE INSTALLING CONTRACTOR IS RESPONSIBLE FOR THE PROPER INSTALLATION OF ALL ANCHORS AND MOUNTING HARDWARE, OBSERVING THE MOUNTING REQUIREMENT DETAILS OUTLINED BY THE ENGINEER OF RECORD. CONTACT KOHLER IF A DETAIL SEISMIC INSTALLATION CALCULATION PACKAGE IS REQUIRED.
20. ELECTRICAL WIRING, PIPING, DUCT AND OTHER CONNECTIONS TO THE EQUIPMENT IS THE RESPONSIBILITY OF THE INSTALLING CONTRACTOR. IT IS NECESSARY THAT THESE REMAIN IN TACT, FUNCTIONAL AND DO NOT INHIBIT THE FUNCTIONALITY OF THE GENERATOR SET AFTER A SEISMIC EVENT. ADEQUATE SLACK SHALL BE ALLOWED CABLE AND PIPING TO ALLOW FOR MOTIONS OF SET DURING A SEISMIC EVENT.
*21. CONCRETE PAD DIMENSIONS ARE MINIMUM VALUES TO SATISFY ONLY THE ANCHOR BOLT REQUIREMENTS. THE PAD MUST BE DESIGNED BY THE PROJECT STRUCTURAL ENGINEER OF RECORD.
*22 ANCHOR BOLT AND CONCRETE RECOMMENDATIONS ARE FOR THE MAXIMUM SEISMIC DESIGN LEVELS SHOWN. IF THE SPECIFIC APPLICATION HAS A LOWER LEVEL, THINNER CONCRETE OR ALTERNATE ANCHORS MAY BE ACCEPTABLE. CONSULT KOHLER.

REV	DATE	DESCRIPTION	BY
T	04OCT2021	SEE SHEET 3 (ECR#1672)	SAM
U	06APR2022	SEE SHEET 3, 3 & 4	PAB

DO NOT SCALE. THIS ASSEMBLY OR PART MUST COMPLY WITH PDP-RML-001. REFERENCE GHD MODEL FOR UNSPECIFIED DIMENSIONS.

KOHLER.

SIZE: C | SHEET SIZE: D | SHEET: 5 OF 5

DRAWN: SAM | DATE:

APPROVED: SEE ECR DETAILS | DATE: 04AUG2022

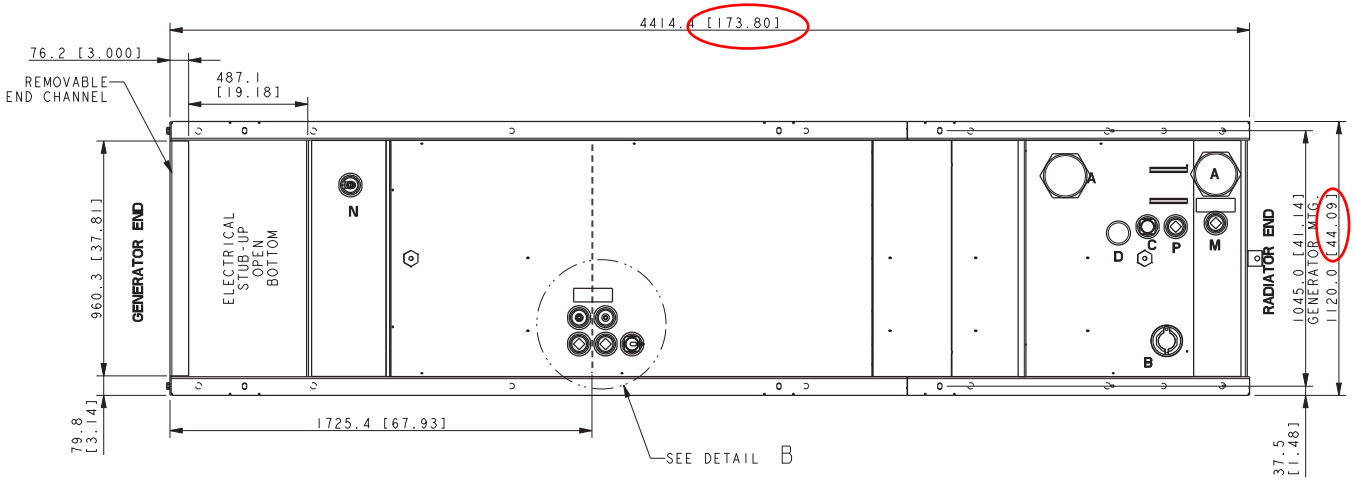
TITLE: SEISMIC CERTIFICATION

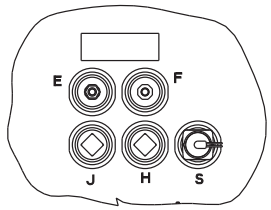
DWG NO.: ADV-9629

MODEL	CAPACITY		WEIGHT		HEIGHT		E-Vent	
	LITERS	GAL	KG	LBS	MM	IN	SIZE (IN)	QTY
125/150kW	1198	316	731	1612	482.6	19.0	4.0	2.0
125/150kW	2255	595	1003	2211	838.2	33.0	5.0	2.0

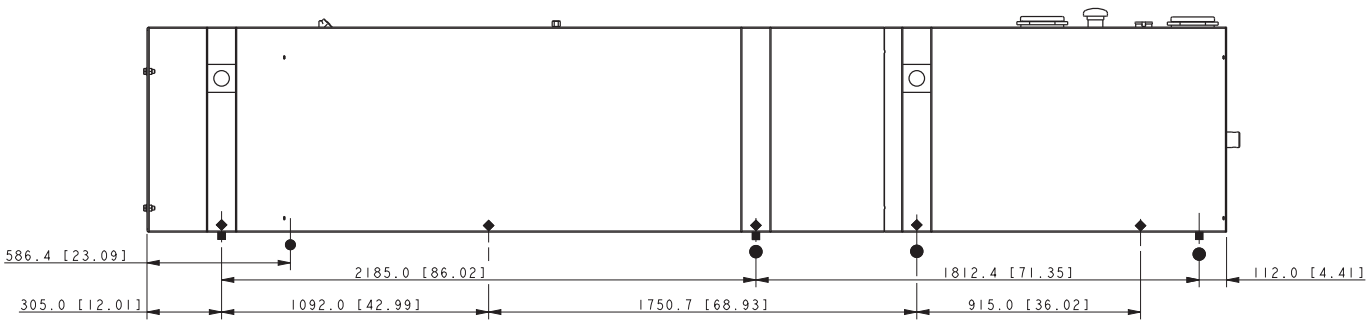
TANK FITTINGS:

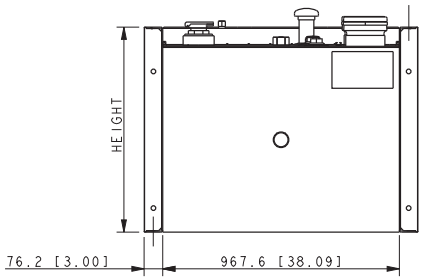
A. 'A' NPT EMERGENCY VENT FITTING PER NFPA 30 WITH VENT CAPS
B. 4" NPT FUEL FILL FTTING WITH LOCKABLE CAP AND RISER. PLUG & SHIP WITH TANK NI NBOX ATTACHED TO TANK
C. 2" NPT FUEL LEVEL GAUGE FITING WITH DIRECT READING MECHANICAL GAUGE
D. 2" NPT NORMAL VENT FITTING WITH MUSHROOM VENT CAP AND 5" RISER. REMOVE AFTER PAINT AND REPLACE W/ STEEL PLUG & SHIP WITH TANK IN BOX ATTACHED TO TANK
E. 2" NPT FITTING FOR REMOVABLE ENGINE SUPPLY DIP TUBE (3/8" NPT FEMALE WITH CHECK VALVE)
F. 2" NPT FITTING FOR REMOVABLE FUEL RETURN DIP TUBE (3/8" NPT FEMALE)
H. 2" NPT FOR LOW LEVEL SWITCH (SET AT 50% FULL, SILICONE PACKED)
J. 2" NPT ADDITIONAL FITTING FOR OPTIONAL ACCESSORY (INSTALL 2" NPT PIPE PLUG)
M. 2" NPT BASIN DRAIN (PLUGGED)
N. 2" NPT FOR FUEL IN BASIN SWITCH
P. 2" NPT ADDITIONAL FITTING FOR OTPIONAL ACCESORY (INSTALL 2" NPT PIPE PLUG)
S. 2" NPT FUEL LEVEL GAUGE FITTING WITH SENDER





DETAIL B
SCALE 0.200





■ 6X Ø25.4[1.0] MOUNTING HOLES
◆ 10X22.2 [0.87] IBC MOUNTING
● 8XØ25.4 [1.0] BOTTOM BEAM MOUNTING

SUBBASE -STATE TANK
125 MODEL 4R12X, 4R13X, 4T13X
150 MODEL 4R13X, 4S12X, 4S13X, 4T13X
RECONNECTABLE
IMPROVED MOTOR STARTING (IMS) & 600V ALTERNATOR
JOHN DEERE 6068HF285, TIER III

REV	DATE	ON COMPOSITE DWGS, SEE PART NO. FOR REVISION LEVEL	BY
D	11-22-11	VIEWS UPDATED [92417-3]	PKD
E	2-7-12	(A-4) 125 & 150 MODEL NOTE UPDATED, SEE SHEET 1	
		[92681]	PKD
F	2-19-18	SEE SHEET 3 [CT184674]	PAS
G	5-25-18	(A-4) 125 &150 MODEL NOTE UPDATED, SEE SHEET 1	
		[CT187737]	YPW

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

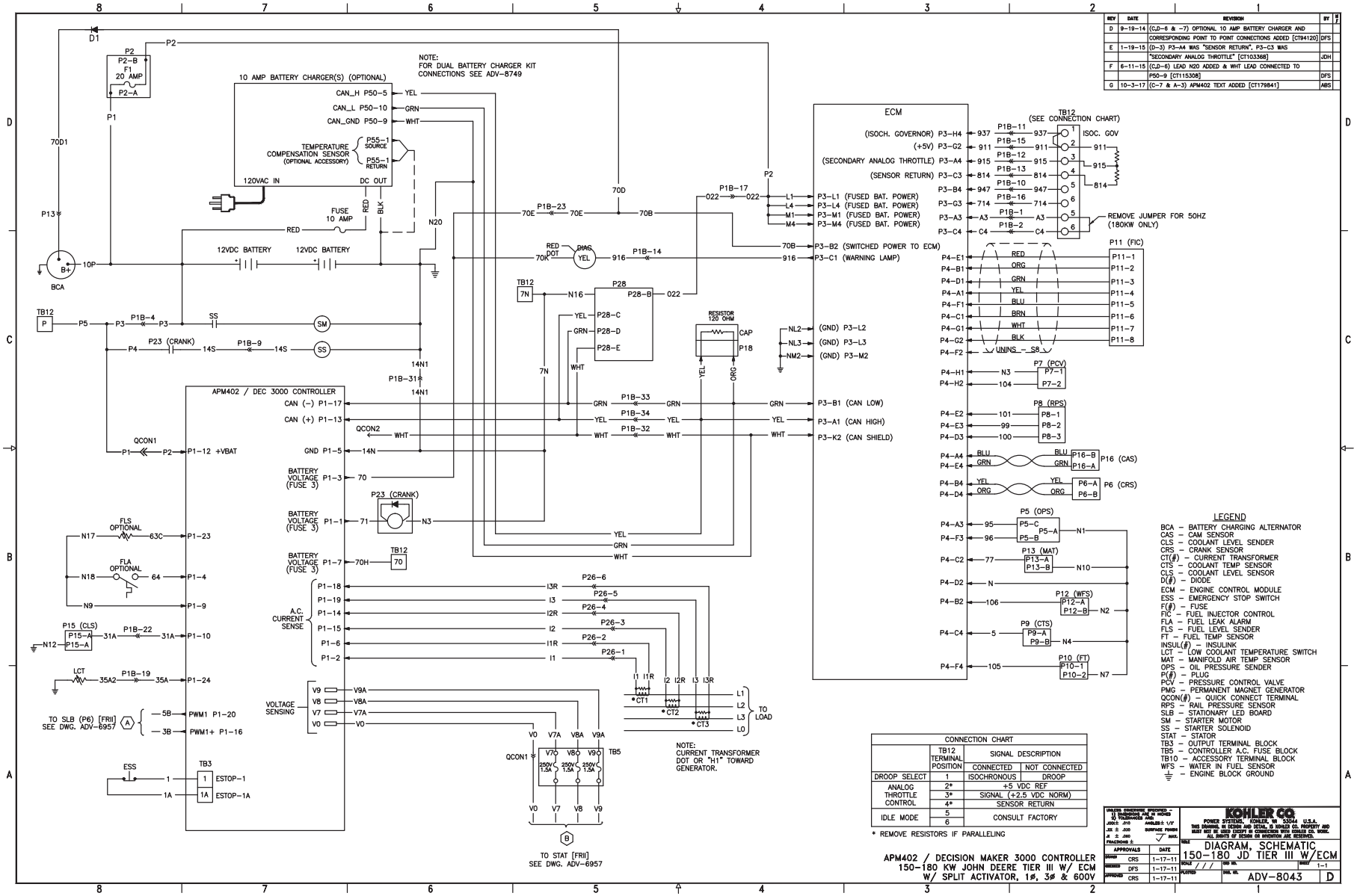
APPROVALS		DATE
DRAWN	PKD	1-15-10
CHECKED	AJD	1-15-10
APPROVED	AJD	1-15-10

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

TITLE: DIMENSION PRINT
SCALE 0.10 | CAD NO. | SHEET 2 of 3
DWG NO. ADV-7881 | D

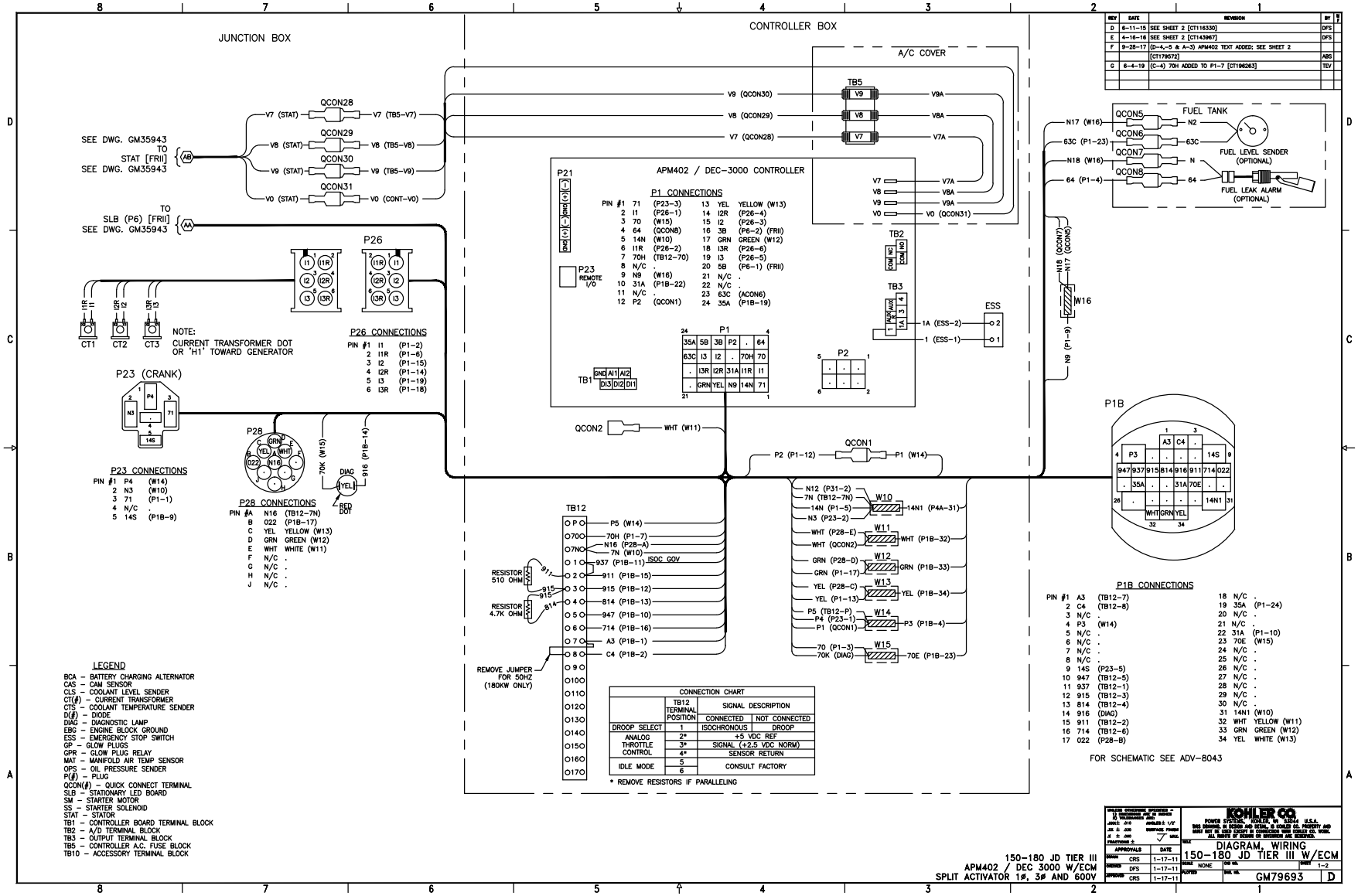
KOHLER®

Wiring Schematics



REV	DATE	REVISION	BY
D	9-19-14	(C,D-6 & -7) OPTIONAL 10 AMP BATTERY CHARGER AND	
		CORRESPONDING POINT TO POINT CONNECTIONS ADDED [CT94120]	DFS
E	1-19-15	(D-3) P3-A4 WAS "SENSOR RETURN", P3-C3 WAS	
		"SECONDARY ANALOG THROTTLE" [CT103368]	JDH
F	6-11-15	(C,D-6) LEAD N20 ADDED & WHT LEAD CONNECTED TO	
		P50-9 [CT115308]	DFS
G	10-3-17	(C-7 & A-3) APM402 TEXT ADDED [CT179841]	ABS

APPROVALS	DATE
CRS	1-17-11
DFS	1-17-11
CRS	1-17-11



REV	DATE	REVISION	BY	?
D	6-11-15	SEE SHEET 2 [CT116330]	DFS	
E	4-16-16	SEE SHEET 2 [CT143967]	DFS	
F	9-28-17	(D-4,-5 & A-3) APM402 TEXT ADDED; SEE SHEET 2		
		[CT179572]	ABS	
G	6-4-19	(C-4) 70H ADDED TO P1-7 [CT196263]	TEV	

LEGEND

BCA – BATTERY CHARGING ALTERNATOR
CAS – CAM SENSOR
CLS – COOLANT LEVEL SENDER
CT(#) – CURRENT TRANSFORMER
CTS – COOLANT TEMPERATURE SENDER
D(#) – DIODE
DIAG – DIAGNOSTIC LAMP
EBG – ENGINE BLOCK GROUND
ESS – EMERGENCY STOP SWITCH
GP – GLOW PLUGS
GPR – GLOW PLUG RELAY
MAT – MANIFOLD AIR TEMP SENSOR
OPS – OIL PRESSURE SENDER
P(#) – PLUG
QCON(#) – QUICK CONNECT TERMINAL
SLB – STATIONARY LED BOARD
SM – STARTER MOTOR
SS – STARTER SOLENOID
STAT – STATOR
TB1 – CONTROLLER BOARD TERMINAL BLOCK
TB2 – A/D TERMINAL BLOCK
TB3 – OUTPUT TERMINAL BLOCK
TB5 – CONTROLLER A.C. FUSE BLOCK
TB10 – ACCESSORY TERMINAL BLOCK

CONNECTION CHART			
	TB12 TERMINAL POSITION	SIGNAL DESCRIPTION	
		CONNECTED	NOT CONNECTED
DROOP SELECT	1	ISOCHRONOUS	DROOP
ANALOG THROTTLE CONTROL	2*	+5 VDC REF	
	3*	SIGNAL (+2.5 VDC NORM)	
	4*	SENSOR RETURN	
IDLE MODE	5	CONSULT FACTORY	
	6		

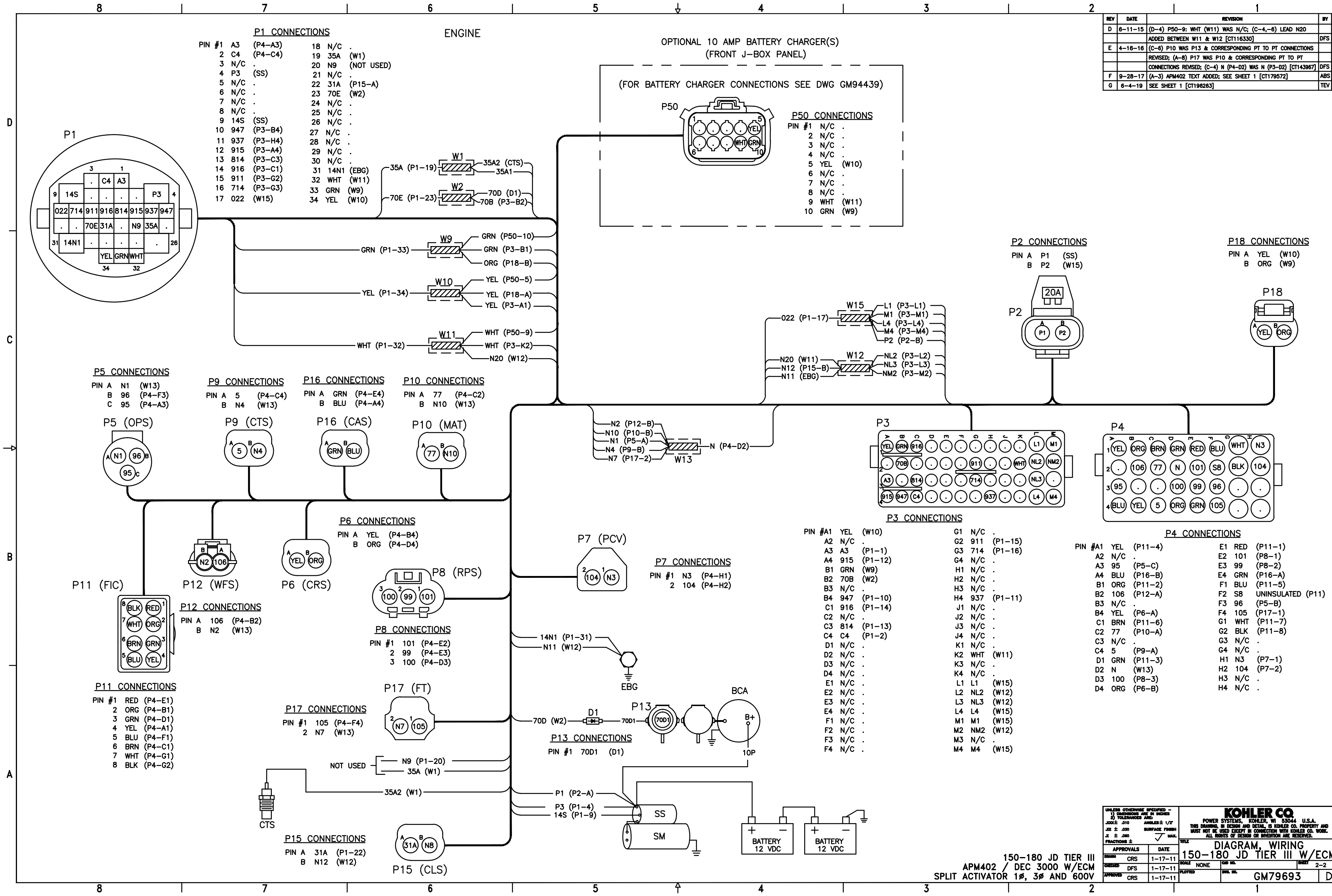
* REMOVE RESISTORS IF PARALLELING

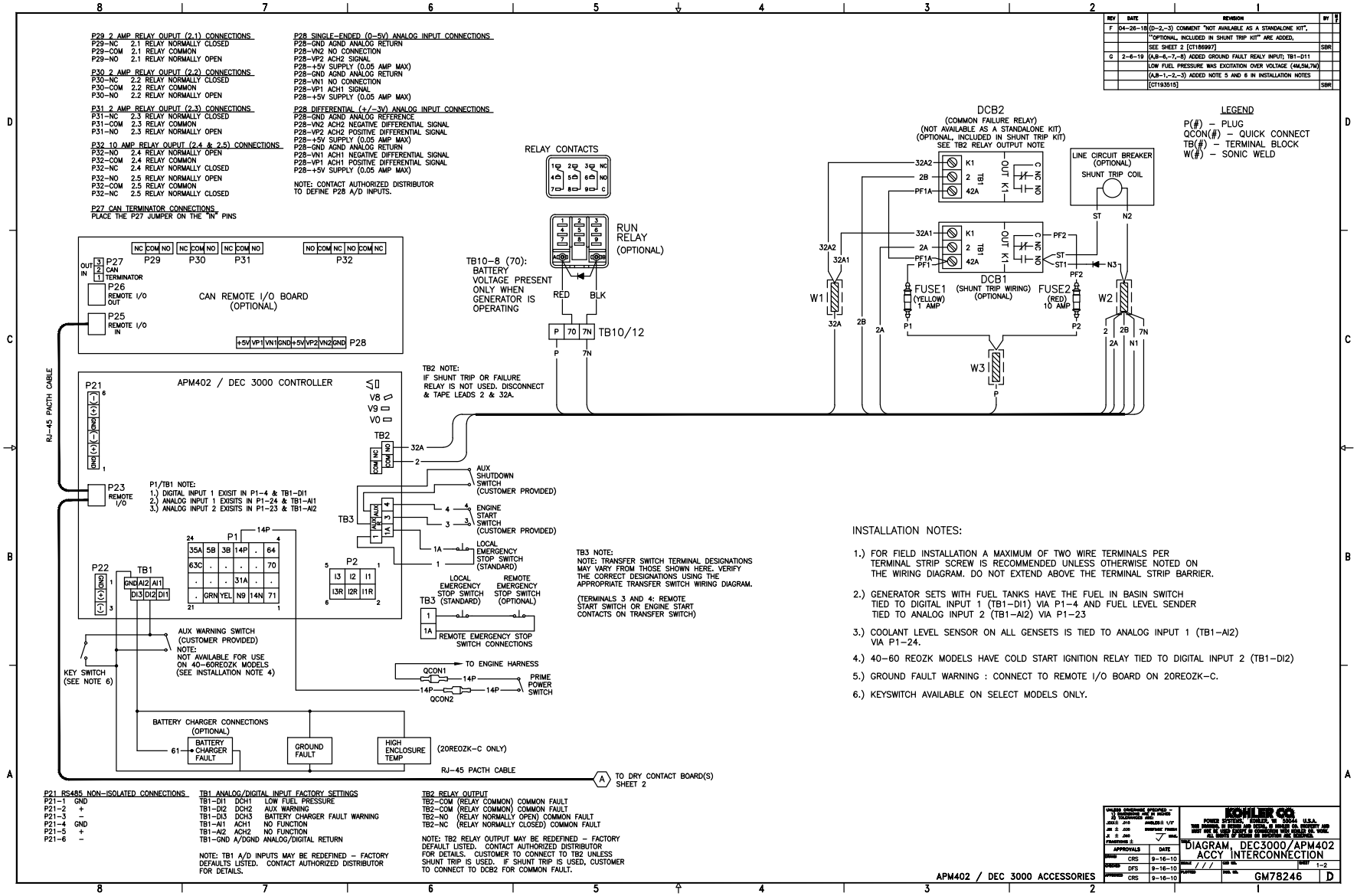
150-180 JD TIER III
APM402 / DEC 3000 W/ECM
SPLIT ACTIVATOR 1Ø, 3Ø AND 600V

APPROVALS	DATE
DRAWN CRS	1-17-11
CHECKED DFS	1-17-11
APPROVED CRS	1-17-11

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

TITLE: DIAGRAM, WIRING
150-180 JD TIER III W/ECM
SCALE: NONE | DO NO. | SHEET 1-2
SIZE: D | DWG. NO. GM79693 | D

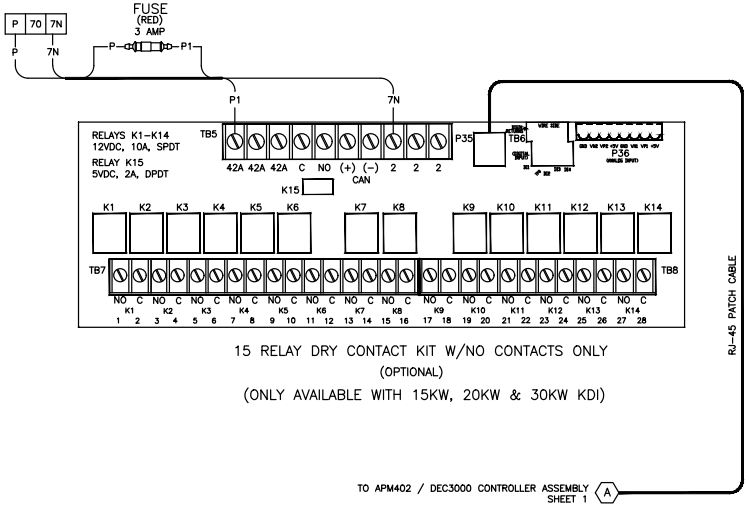

REV | DATE | REVISION | BY
D | 6-11-15 | (D-4) P50-9: WHT (W11) WAS N/C; (C-4,-6) LEAD N20 ADDED BETWEEN W11 & W12 [CT116330] | DFS
E | 4-16-16 | (C-6) P10 WAS P13 & CORRESPONDING PT TO PT CONNECTIONS REVISED; (A-8) P17 WAS P10 & CORRESPONDING PT TO PT CONNECTIONS REVISED; (C-4) N (P4-D2) WAS N (P3-D2) [CT143967] | DFS
F | 9-28-17 | (A-3) APM402 TEXT ADDED; SEE SHEET 1 [CT179572] | ABS
G | 6-4-19 | SEE SHEET 1 [CT196263] | TEV
ENGINE
P1 CONNECTIONS
PIN #1 A3 (P4-A3)
2 C4 (P4-C4)
3 N/C .
4 P3 (SS)
5 N/C .
6 N/C .
7 N/C .
8 N/C .
9 14S (SS)
10 947 (P3-B4)
11 937 (P3-H4)
12 915 (P3-A4)
13 814 (P3-C3)
14 916 (P3-C1)
15 911 (P3-G2)
16 714 (P3-G3)
17 022 (W15)
18 N/C .
19 35A (W1)
20 N9 (NOT USED)
21 N/C .
22 31A (P15-A)
23 70E (W2)
24 N/C .
25 N/C .
26 N/C .
27 N/C .
28 N/C .
29 N/C .
30 N/C .
31 14N1 (EBG)
32 WHT (W11)
33 GRN (W9)
34 YEL (W10)
OPTIONAL 10 AMP BATTERY CHARGER(S)
(FRONT J-BOX PANEL)
(FOR BATTERY CHARGER CONNECTIONS SEE DWG GM94439)
P50
P50 CONNECTIONS
PIN #1 N/C .
2 N/C .
3 N/C .
4 N/C .
5 YEL (W10)
6 N/C .
7 N/C .
8 N/C .
9 WHT (W11)
10 GRN (W9)
P1
35A (P1-19) W1 35A2 (CTS) 35A1
70E (P1-23) W2 70D (D1) 70B (P3-B2)
GRN (P1-33) W9 GRN (P50-10) GRN (P3-B1) ORG (P18-B)
YEL (P1-34) W10 YEL (P50-5) YEL (P18-A) YEL (P3-A1)
WHT (P1-32) W11 WHT (P50-9) WHT (P3-K2) N20 (W12)
022 (P1-17) W15 L1 (P3-L1) M1 (P3-M1) L4 (P3-L4) M4 (P3-M4) P2 (P2-B)
N20 (W11) N12 (P15-B) N11 (EBG) W12 NL2 (P3-L2) NL3 (P3-L3) NM2 (P3-M2)
P2 CONNECTIONS
PIN A P1 (SS)
B P2 (W15)
P2
20A
P18 CONNECTIONS
PIN A YEL (W10)
B ORG (W9)
P18
P5 CONNECTIONS
PIN A N1 (W13)
B 96 (P4-F3)
C 95 (P4-A3)
P5 (OPS)
P9 CONNECTIONS
PIN A 5 (P4-C4)
B N4 (W13)
P9 (CTS)
P16 CONNECTIONS
PIN A GRN (P4-E4)
B BLU (P4-A4)
P16 (CAS)
P10 CONNECTIONS
PIN A 77 (P4-C2)
B N10 (W13)
P10 (MAT)
N2 (P12-B) N10 (P10-B) N1 (P5-A) N4 (P9-B) N7 (P17-2) W13 N (P4-D2)
P3
P4
P6 CONNECTIONS
PIN A YEL (P4-B4)
B ORG (P4-D4)
P12 (WFS)
P6 (CRS)
P11 (FIC)
P12 CONNECTIONS
PIN A 106 (P4-B2)
B N2 (W13)
P8 (RPS)
P8 CONNECTIONS
PIN #1 101 (P4-E2)
2 99 (P4-E3)
3 100 (P4-D3)
P7 (PCV)
P7 CONNECTIONS
PIN #1 N3 (P4-H1)
2 104 (P4-H2)
P3 CONNECTIONS
PIN #A1 YEL (W10)
A2 N/C .
A3 A3 (P1-1)
A4 915 (P1-12)
B1 GRN (W9)
B2 70B (W2)
B3 N/C .
B4 947 (P1-10)
C1 916 (P1-14)
C2 N/C .
C3 814 (P1-13)
C4 C4 (P1-2)
D1 N/C .
D2 N/C .
D3 N/C .
D4 N/C .
E1 N/C .
E2 N/C .
E3 N/C .
E4 N/C .
F1 N/C .
F2 N/C .
F3 N/C .
F4 N/C .
G1 N/C .
G2 911 (P1-15)
G3 714 (P1-16)
G4 N/C .
H1 N/C .
H2 N/C .
H3 N/C .
H4 937 (P1-11)
J1 N/C .
J2 N/C .
J3 N/C .
J4 N/C .
K1 N/C .
K2 WHT (W11)
K3 N/C .
K4 N/C .
L1 L1 (W15)
L2 NL2 (W12)
L3 NL3 (W12)
L4 L4 (W15)
M1 M1 (W15)
M2 NM2 (W12)
M3 N/C .
M4 M4 (W15)
P4 CONNECTIONS
PIN #A1 YEL (P11-4)
A2 N/C .
A3 95 (P5-C)
A4 BLU (P16-B)
B1 ORG (P11-2)
B2 106 (P12-A)
B3 N/C .
B4 YEL (P6-A)
C1 BRN (P11-6)
C2 77 (P10-A)
C3 N/C .
C4 5 (P9-A)
D1 GRN (P11-3)
D2 N (W13)
D3 100 (P8-3)
D4 ORG (P6-B)
E1 RED (P11-1)
E2 101 (P8-1)
E3 99 (P8-2)
E4 GRN (P16-A)
F1 BLU (P11-5)
F2 S8 UNINSULATED (P11)
F3 96 (P5-B)
F4 105 (P17-1)
G1 WHT (P11-7)
G2 BLK (P11-8)
G3 N/C .
G4 N/C .
H1 N3 (P7-1)
H2 104 (P7-2)
H3 N/C .
H4 N/C .
14N1 (P1-31) N11 (W12) EBG
P11 CONNECTIONS
PIN #1 RED (P4-E1)
2 ORG (P4-B1)
3 GRN (P4-D1)
4 YEL (P4-A1)
5 BLU (P4-F1)
6 BRN (P4-C1)
7 WHT (P4-G1)
8 BLK (P4-G2)
P17 (FT)
P17 CONNECTIONS
PIN #1 105 (P4-F4)
2 N7 (W13)
70D (W2) D1 70D1 P13 BCA B+ 10P
P13 CONNECTIONS
PIN #1 70D1 (D1)
NOT USED N9 (P1-20) 35A (W1)
35A2 (W1)
CTS
P1 (P2-A)
P3 (P1-4)
14S (P1-9)
SS SM
BATTERY 12 VDC
BATTERY 12 VDC
P15 CONNECTIONS
PIN A 31A (P1-22)
B N12 (W12)
P15 (CLS)
150-180 JD TIER III
APM402 / DEC 3000 W/ECM
SPLIT ACTIVATOR 1∅, 3∅ AND 600V
KOHLER CO.
POWER SYSTEMS, KOHLER, WI 53044 U.S.A.
DIAGRAM, WIRING
150-180 JD TIER III W/ECM
APPROVALS DATE
CRS 1-17-11
DFS 1-17-11
CRS 1-17-11
SCALE NONE
SHEET 2-2
GM79693 D



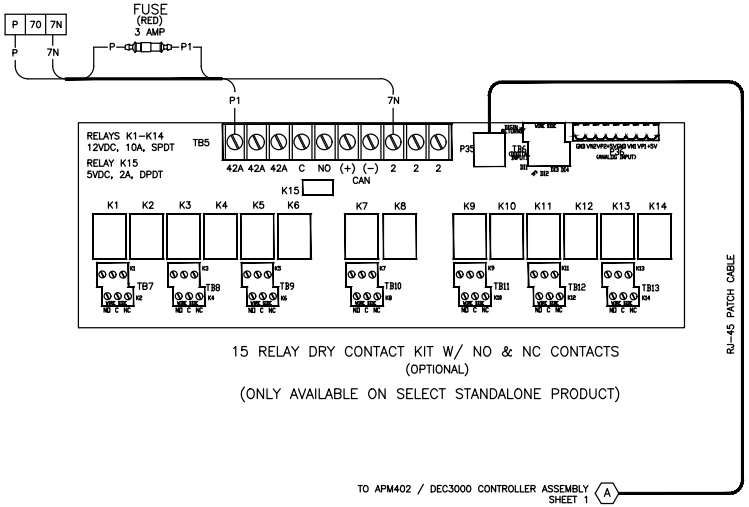
REV	DATE	REVISION	BY
F	04-26-18	(D-2,-3) COMMENT "NOT AVAILABLE AS A STANDALONE KIT",	
		"OPTIONAL, INCLUDED IN SHUNT TRIP KIT" ARE ADDED,	
		SEE SHEET 2 [CT186997]	SBR
G	2-6-19	(AJ-8-,-7,-8) ADDED GROUND FAULT REALY INPUT; TB1-DI1	
		LOW FUEL PRESSURE WAS EXCITATION OVER VOLTAGE (4M,5M,7M)	
		(AJ-8-1,-2,-3) ADDED NOTE 5 AND 6 IN INSTALLATION NOTES	
		[CT193515]	SBR

APPROVALS	DATE
CRS	9-16-10
DFS	9-16-10
CRS	9-16-10

REV	DATE	REVISION	BY	M F
F	04-26-18	(B-6,-2) COMMENT "APM402 / DEC 3000 ACCESSORIES" IS ADDED		
		SEE SHEET 1 [CT186997]	SBR	
G	2-6-19	SEE SHEET 1 [CT193515]	SBR	



15 RELAY DRY CONTACT KIT W/NO CONTACTS ONLY
(OPTIONAL)
(ONLY AVAILABLE WITH 15KW, 20KW & 30KW KDI)



15 RELAY DRY CONTACT KIT W/ NO & NC CONTACTS
(OPTIONAL)
(ONLY AVAILABLE ON SELECT STANDALONE PRODUCT)

APM402 / DEC 3000 ACCESSORIES

APPROVALS	DATE
DFS	9-18-15
CRS	9-18-15
DFS	9-18-15

KOHLER CO.
POWER SYSTEMS, KOHLER, WI 53044 U.S.A.
THIS DRAWING IS DESIGN AND DETAIL IS KOHLER CO. PROPERTY AND MUST NOT BE USED EXCEPT IN CONNECTION WITH KOHLER CO. WORK. ALL RIGHTS OF DESIGN OR INVENTION ARE RESERVED.

TITLE: DIAGRAM, DEC3000/APM402 ACCY INTERCONNECTION
SCALE: /// DWG NO. SHEET 2-2
PLOTTED: DWG. NO. GM78246 D

KOHLER®

Miscellaneous

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.

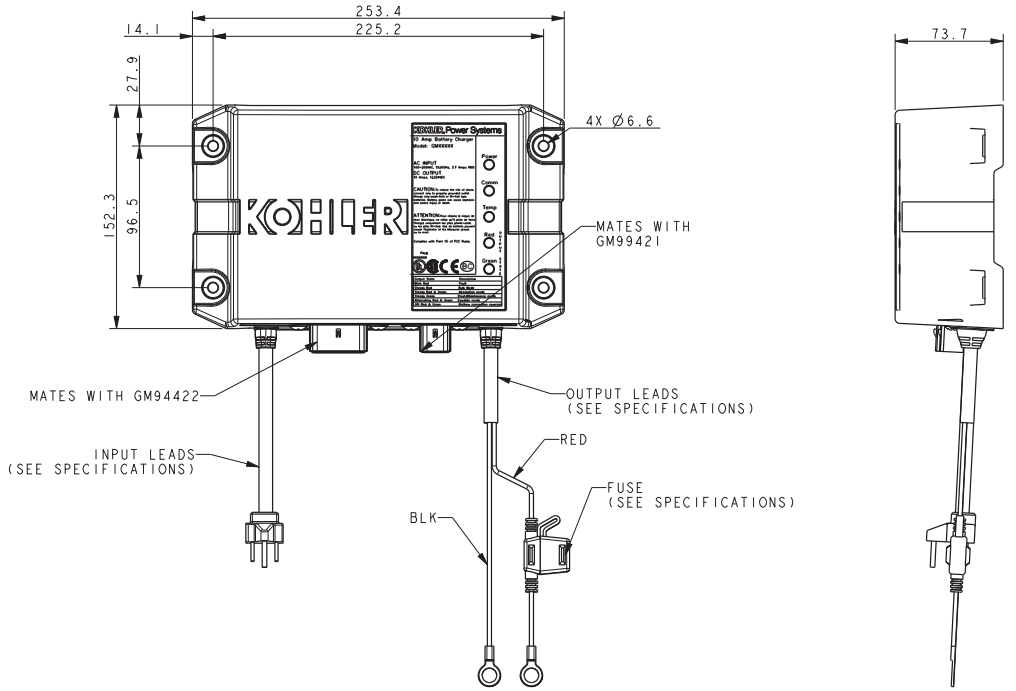
DOCUMENTATION:
THERE SHALL BE AN INSTALLATION / OPERATIONAL MANUAL SUPPLIED WITH EACH CHARGER. PER KOHLER SUPPLIED ARTWORK.

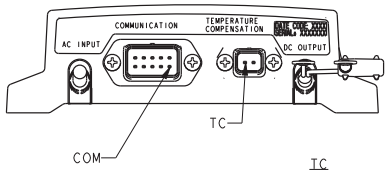
CERTIFICATIONS (US AND CANADA):
- UL1236
- CSA - C22.2 NO 107.2-01
- FCC- TITLE 47, PART 15 CLASS A
- CE
- EN 61000-6-2
- CEC AND DOE
- NFPA-110 LEVEL1 (WHEN SUPPORTED WITH APPLICABLE KOHLER CONTROLLER)
- IBC

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 125 MAX.
THIRD ANGLE PROJECTION

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

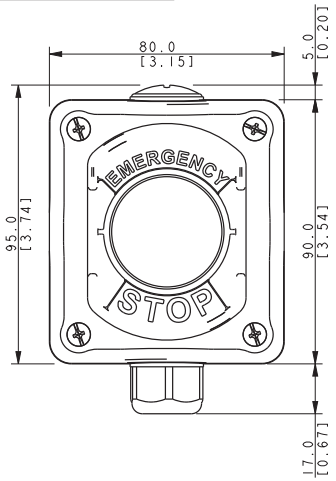
KOHLER CO. METRIC PRO-E
POWER SYSTEMS, KOHLER, WI 53044 U.S.A.

TITLE
CHARGER, BATTERY 10 AMP

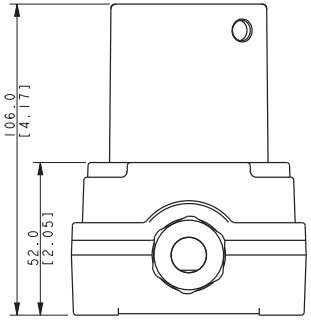
SCALE 0.50 CAD NO. SHEET 1 of 1
DWG NO. GM87448 D

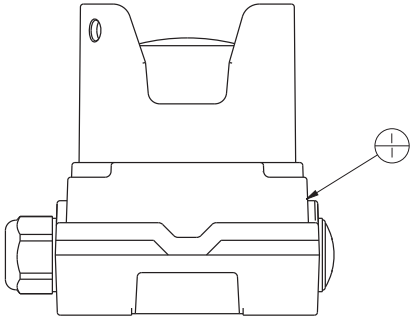
KIT NO.	ITEM	PART NO	QTY	DESCRIPTION
GM103743				E-STOP, NEC REMOTE
	1	GM103743-1	1	E-STOP W/ YELLOW SHROUD, LOTO
	2	GM103743-2	4	#10 X 1.25□ Sheetmetal Screw
	3	GM103743-3	1	TERMINAL, FAST-ON, MALE, 18-22 AWG
	4	GM103743-4	1	TERMINAL, FAST-ON, FEMALE, 18-22 AWG
	5	GM103743-5	2	TERMINAL, SPADE, 22-16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

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



SCALE 1.50





NOTE:

DIMENSIONS IN [ ] ARE IN INCH EQUIVALENTS.

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

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

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

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

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

TITLE: E-STOP, NEC REMOTE

SCALE 1.50 | CAD NO. | SHEET 1 of 1

DWG NO. GM103743 | D

KOHLER®

Warranty

Stationary Standby 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

KOHLER.

Certification

VMC GROUP
THE POWER OF TOGETHER™

KOHLER®

CERTIFICATE OF COMPLIANCE
SEISMIC DESIGN OF NONSTRUCTURAL COMPONENTS AND SYSTEMS

Certification No.

VMA-53731-01C (Revision 1)

Expiration Date: 7/31/2026

Certification Parameters:

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

IBC 2018, 2015, 2012, 2009

The following model designations, options, and accessories are included in this certification. Reference report number VMA-53731-01 as issued by The VMC Group for a complete list of certified models, included accessories/options, and certified installation methods.

Kohler; Diesel Gensets
REOZJx; 80-500 kW

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

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

Certified Seismic Installation Methods	
Rigid Mounting From Fuel Tank To Rigid Structure	Rigid Mounting From Unit Base To Rigid Structure
Rigid Mounting From Unit Base To Fuel Tank	

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

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

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

thevmcgroup.com

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KOHLER®

CERTIFICATE OF COMPLIANCE

SEISMIC DESIGN OF NONSTRUCTURAL COMPONENTS AND SYSTEMS

Certified Product Table:

Model	Max Rating [kW]	Max Length [in.]	Max Width [in.]	Max Height [in.]	Max Weight [lbs.]
80REOZJF	80	142	72	107	12233
100REOZJF	100				12850
125REOZJG	125	175		111	15919
150REOZJF	150				
180REOZJG	180	214		123	18636
200REOZJF	200				19162
230REOZJE	230	210	53	121	16297
250REOZJG	250				16397
275REOZJE	275				16697
300REOZJ	300	220	52	116	18000
350REOZJC	350	272	102	137	37279
350REOZJD					
400REOZJC	400	286			41196
400REOZJD					
500REOZJC	500	327			43800

Maximum available dimensions and weights are shown.
For available Enclosed/Open and On Tank/Off Tank Options/Limits please contact the manufacturer

Type	S_{DS} (z/h=0)	S_{DS} (z/h=1)	A_{Flex-H}	A_{Rig-H}	A_{Flex-V}	A_{Rig-V}	F_p/W_p
AC156	2.00	2.00	3.20	2.40	1.34	0.54	1.50

This certification includes REOZJx Diesel Gensets and included factory supplied options. This certification only covers accessories and options directly mounted to the Gensets. The Genset and applicable options shall be installed per the manufacturer supplied seismic installation instructions. For a list of certified configurations and options please directly contact the manufacturer. This certification excludes all non-factory supplied accessories and options, including but not limited to isolation/restraint devices, other electrical/mechanical components and all connections for electrical, fuel, heating or cooling fluid, or other pipe/conduit connections and configurations not detailed in the above charts. Flexibility in the connections must be maintained as to not transmit load into the equipment. Design specials are outside the scope of this certification.

IBC CERTIFIED
VMC GROUP

VMA-53731-01C (Revision 1)
Issue Date: Friday, August 14, 2020
Revision Date: Tuesday, March 28, 2023
Expiration Date: Friday, July 31, 2026

VMC GROUP
THE POWER OF TOGETHER™

KOHLER®

CERTIFICATE OF COMPLIANCE

SEISMIC DESIGN OF NONSTRUCTURAL COMPONENTS AND SYSTEMS

Notes & Comments:

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

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

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

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

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

6. This certificate applies to units manufactured at:
   Kohler, N7650 Lakeshore Road, Sheboygan, WI 53083

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

John P. Giuliano, PE
President, VMC Group

IAS ACCREDITED Product Certification Agency

VMA-53731-01C (Revision 1)
Issue Date: Friday, August 14, 2020
Revision Date: Tuesday, March 28, 2023
Expiration Date: Friday, July 31, 2026

IBC® CERTIFIED VMC GROUP

Certificate of Registration

QUALITY MANAGEMENT SYSTEM - ISO 9001:2015

This is to certify that:

Kohler Power Systems
N7650 Lakeshore Road
Sheboygan
Wisconsin
53083
USA

Holds Certificate No: **FM 727336**

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

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

For and on behalf of BSI:

Carlos Pitanga, Chief Operating Officer Assurance – Americas

Original Registration Date: 1995-02-28
Effective Date: 2021-11-07
Latest Revision Date: 2021-10-29
Expiry Date: 2024-11-06

...making excellence a habit.™

Certificate No: **FM 727336**

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

Original Registration Date: 1995-02-28

Latest Revision Date: 2021-10-29

Effective Date: 2021-11-07

Expiry Date: 2024-11-06

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

Technical Evaluation Report

DIVISION: 48 10 00–ELECTRICAL POWER GENERATION EQUIPMENT

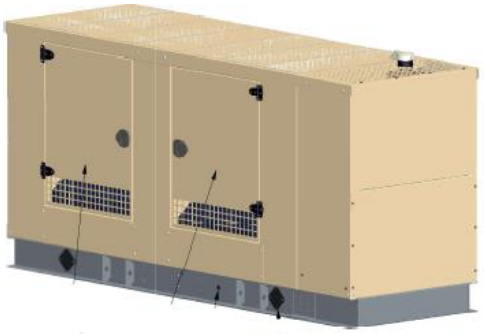
THIS DOCUMENT CONTAINS (4) PAGES: THE FIRST PAGE MUST BEAR AN ORIGINAL SIGNATURE & SEAL OF THE CERTIFYING PE TO BE VALID FOR USE

(Issued April 5, 2019 Subject to Renew January 1, 2021) or next code cycle

EVALUATION SUBJECT: **125REOZJG-150REOZJF Sound Aluminum Enclosure**

TER-18-6258.9

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



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

SCOPE OF EVALUATION (compliance with the following codes):

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

This Product Evaluation Report is being issued in accordance with the requirements of the **Florida Building Code Sixth Edition (2017)** per FBC Section 104.11.1, FMC 301.15, FBC Building Ch. 16, ASCE-7-10, and FBC Residential M1202.1, FS 471.025. The product noted on this report has been tested and/or evaluated as summarized herein.
IN ACCORDANCE WITH THESE CODES EACH OF THESE REPORTS MUST BEAR THE ORIGINAL SIGNATURE & RAISED SEAL OF THE EVALUATING ENGINEER.

SUBSTANTIATING DATA:

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

• Structural Engineering Calculations
Structural engineering calculations have been prepared which evaluate the product based on comparative and/or rational analysis to qualify the following design criteria:

- Maximum allowable unit enclosure wind pressure integrity
- Maximum allowable uplift, sliding, & overturning moment for ground.

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

INSTALLATION:

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

LIMITATIONS & CONDITIONS OF USE:

Use of this product shall be in strict accordance with this TER as noted herein. The supporting host structure shall be designed to resist all superimposed loads as determined by others on a site-specific basis as may be required by the Authority Having Jurisdiction. No evaluation is offered for the host supporting structure by use of this document; Adjustment factors noted herein and the applicable codes must be considered, where applicable. All supporting components which are permanently installed shall be protected against corrosion, contamination, and other such damage at all times. This evaluation does not offer any evaluation to meet large missile impact debris requirements if requires.
Yearly inspections, during equipment maintenance or after named storm, all screws, cabinet components, and anchor bolts are to be verified. All damaged cabinet components, loosen, corroded, broken screws or anchor bolts shall be replaced to ensure structural integrity for hurricane wind forces.

FINISH:

Baked enamel.

UNIT CASING MATERIAL:

1/8" Al 5052-H32 top panel. 1/8" Al 5052-H32 for side panels and 3/16" steel ASTM A1011 for bottom skids, secured with 3/16" pop rivets grade 50, M8 bolts class 8.8 (see dimensional drawing for specific locations).

OPTIONS:

This evaluation is valid for KOHLER 125-150REOZJ Sound Aluminum Enclosure model dimensions shown on the final page of this report. Contact Factory for Engineering Special (ES) orders. Any structural changes outside of the factory would void this certificate.

STRUCTURAL PERFORMANCE:

Models referenced herein are subject to the following design limitations:
ASCE-710 Exposure Category D
Risk Category III / IV
HVHZ Rated* (& NON-HVHZ)
Only for ground installations
Flat terrain only

Maximum Wind Speed:
$V_{(Ultimate)}$ = 186 MPH

ABOUT THIS DOCUMENT:

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VISIT ENGINEERINGEXPRESS.COM/STORE FOR MORE REPORTS

ECALC.IO/186258

ORIGINAL SIGNATURE AND RAISED SEAL
OR DIGITAL SEAL REQUIRED TO BE VALID PER CODE:

P.E. SEAL REQUIRED

April 5, 2019

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

☐ Signed by If Checked:
TROY BISHOP, PE
FL PE #76131

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

*MIAMI DADE AND BROWARD COUNTY

SECTION 2 SUMMARY

Engineering Express has reviewed the design requirements per the Florida Building Code Sixth Edition (2017) and ASCE 7-10 for the structural integrity of the above referenced Kohler sound aluminum housing unit with steel skid to withstand a $V_{ULTIMATE}$ wind speed=186 MPH, Exposure "D" Risk Category III/ IV. Our analysis includes the unit framing and housing only and requires that a permanent near-grade (non-rooftop) attachment to a concrete, metal, or wood host structure as certified/verified by others. Steel skid tie-down anchor locations shall conform to those illustrated on sheet 3 of this TER. Additionally, the unit shall not be installed in a location susceptible to channeling effects from upwind obstacles. It shall be the installer's responsibility to ensure that the criteria for the unit housing integrity, as listed above, is applicable for use at the location of installation and the mounting method meets or exceeds the requirements of the local code and it is approved by the appropriate local authority before installation.

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

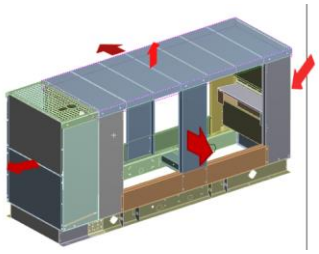
Structural Engineering Calculations

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

1. Maximum ultimate design pressure as a result of the aforementioned design criteria:

Load Case 1

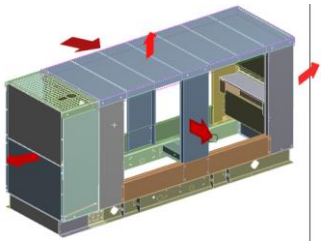
(Wind parallel to long side)



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

Load Case 2

(Wind perpendicular to long side)

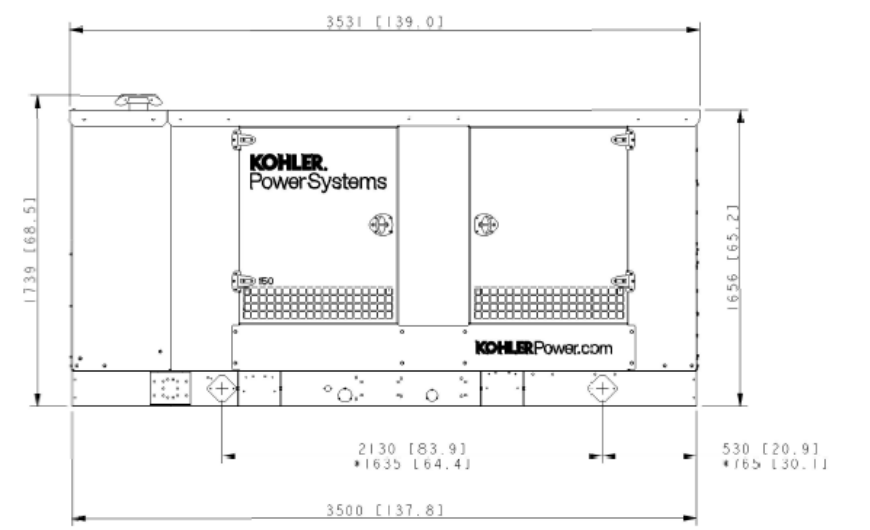


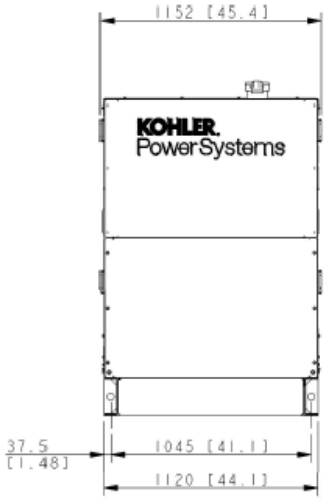
		Pressure, psf (x 10^{-3} MPa)				
Load Case	Wind Direction	Rear Wall	Front Wall	Left Wall	Right Wall	Roof
2		-48.85 (-2.339)	-48.85 (-2.339)	61.26 (2.933)	-47.30 (-2.265)	-96.92 (-4.641)

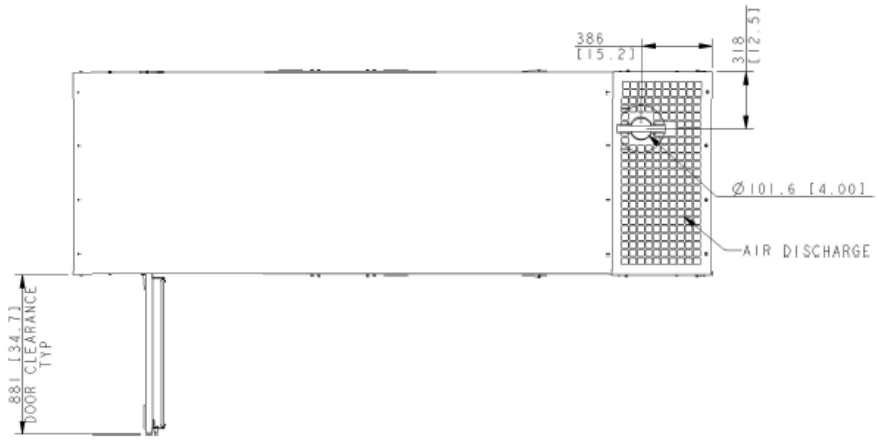
2. Maximum housing unit dimensions: 139.0"L x 45.40"W x 65.20" H.
3. Enclosure materials have been analyzed for yield and ultimate stresses using Von Mises stress criteria in accordance with the 2015 Aluminum Design Manual & AISC Steel Construction Manual 14th Edition. For both load case Von Mises Stress stood below ultimate strength; therefore, the sound aluminum enclosure will provide adequate structural capacity to resist wind pressures shown.
4. All internal connection capacities, including bolted and welded components, have been checked for applicable tension and shear by applying a unity interaction equation where applicable and have been approved by this office.

All installation work shall follow the minimum requirements of the Florida Building Code Sixth Edition (2017) in addition to any additional site-specific requirements for tie-down certification which is not included in this letter. Except as expressly provided herein, no additional affirmations are intended. Thank you for your attention to this matter.

SECTION 3 DIMENSIONS & ELEVATIONS





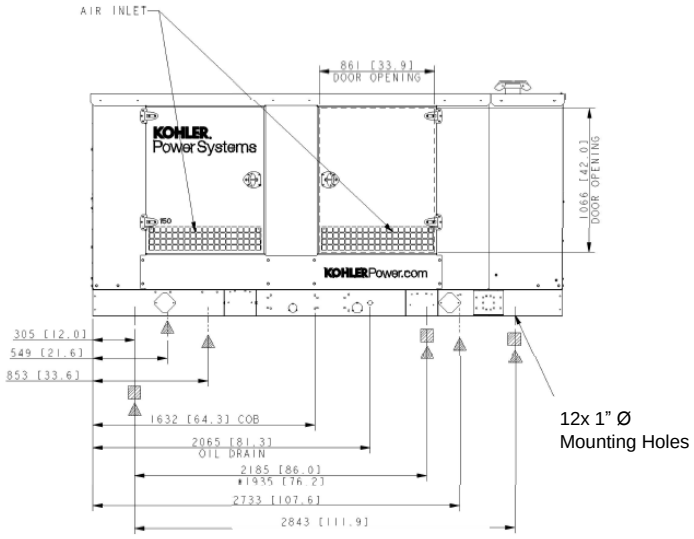


Note:

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

All dimensions are in inches

SECTION 4 ANCHORS LOCATION



Note:

Anchors to be calculated on a site-specific basis. (12) anchors location per manufacturer, (6) per long side. Additionally, holes might be added as needed.

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

SECTION 5 ENCLOSURE MODELS INCLUDED

GENERATOR	ENCLOSURE TYPE	ENCLOSURE DRAWING NUMBER	REVISION & DATE	ADV	REVISION & DATE
125REOZJG	125REOZJG SOUND ALUMINUM ENCLOSURE	GM87408-KA3	Rev B - 06/10/16	ADV-7825	Revision H 09/27/18
150REOZJF	150REOZJF SOUND ALUMINUM ENCLOSURE	GM87409-KA3	Rev B - 06/06/16		

LIMITATIONS & CONDITIONS OF USE (cnt'd):

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

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

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

Survivability**:**
This evaluation report is valid for a newly installed unit and does not include certification of the product beyond a design event if impacted, contact this office for any reevaluation needs as designated by the Authority Having Jurisdiction.

Durability
Components or component assemblies shall not deteriorate, crack, fail, or lose functionality due to galvanic corrosion or weathering.
Each component or component assembly shall be supported and oriented in its intended installation position. All exposed *plastic* components shall be certified to resist sunlight exposure as specified by ASTM B117, or ASTM G155 in Broward or Miami Dade counties.

PROTOTYPE TEST REPORT

KOHLER

Models Covered: **150REOZJF**
Model Tested: **150REOZJE**
Cooling System Tested: **50C**

Alternator Tested: **4S13**
Engine Tested: **6068HF285**
Voltage Tested: **208V**

GENSET

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

Meets Rated Load

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

± 0.25 % Frequency Band

± 0.50 % 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
20.3 % Voltage Dip	**1.70** % Voltage Overshoot
2.40 Seconds of Recovery Time	**1.90** Seconds of Recovery Time
21.5 % Frequency Dip	**4.50** % Frequency Overshoot
2.50 Seconds of Recovery Time	**0.40** Seconds of Recovery Time

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

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

Complies with NFPA 110 Type 10

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

Complies

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

Complies

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

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

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

PROTOTYPE TEST REPORT

KOHLER

Models Covered: **150REOZJF**
Model Tested: **150REOZJE**
Cooling System Tested: **50C**

Alternator Tested: **4S13**
Engine Tested: **6068HF285**
Voltage Tested: **208V**

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