

Model: **400REZCK**

# KOHLER Power Systems

480-600 V

Gas



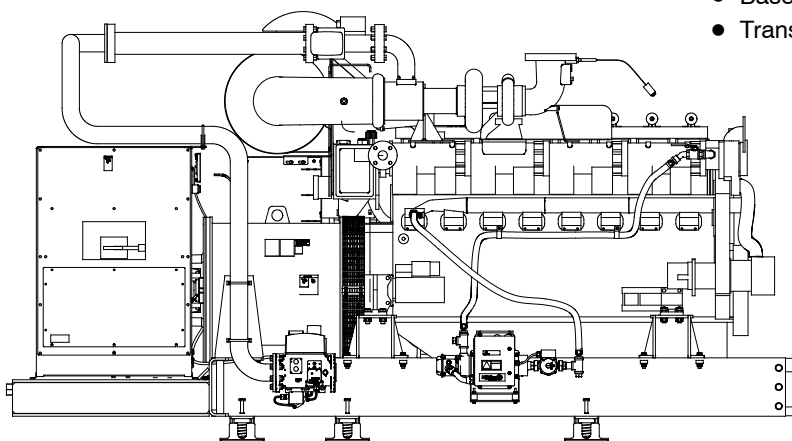
**EPA-Certified for Stationary and Non-Emergency Applications**

## Standard Features

- Kohler Co. provides one-source responsibility for the generating system and accessories.
- The generator set and its components are prototype-tested, factory-built, and production-tested.
- A one-year or 8000 hr limited warranty covers all generator set systems and components. A two-year or 16,000 hr extended limited warranty is also available.
- The pilot-excited, permanent magnet (PM) alternator provides superior short-circuit capability.
- Baseload with the utility applications only.
- Transient load steps without the utility is not authorized.

## Ratings Range

Continuous: kW      60 Hz  
435



## Generator Set Rating

Alternator	Voltage	Ph	Hz	Lean-Burn Natural Gas 80°C Rise Continuous Rating	
				kW	Amps
5M4028	277/480	3	60	435	524
5M4270	347/600	3	60	430	414

RATINGS: All three-phase units are rated at 1.0 power factor without pumps or fans. Ratings are in accordance with ISO-8528-1 and ISO-3046-1. Obtain technical information bulletin (TIB-101) for ratings guidelines, complete ratings definitions, and site condition derates. The generator set manufacturer reserves the right to change the design or specifications without notice and without any obligation or liability whatsoever.

# Alternator Specifications

Specifications	Alternator
Type	4-Pole, Rotating-Field
Exciter type	Brushless, Permanent-Magnet Pilot Exciter
Voltage regulator	Solid State, Volts/Hz
Insulation:	NEMA MG1
Material	Class H, Synthetic, Nonhygroscopic
Temperature rise	80°C
Bearing: quantity, type	1, Sealed
Coupling	Flexible Disc
Amortisseur windings	Full
Voltage regulation, no-load to full-load	DVR2000EC+
Rotor balancing	125%
Unbalanced load capability	100% of Rated Current
Peak motor starting kVA :	(35% dip for voltages below)
480 V	5M4028 (10 lead) 1800 (60Hz)
600 V	5M4270 (4 lead) 1280 (60Hz)

- NEMA MG1, IEEE, and ANSI standards compliance for temperature rise and motor starting.
- Sustained short-circuit current of up to 300% of the rated current for up to 10 seconds.
- Sustained short-circuit current enabling downstream circuit breakers to trip without collapsing the alternator field.
- Self-ventilated and dripproof construction.
- Superior voltage waveform from a two-thirds pitch stator and skewed rotor.
- Digital solid-state, volts-per-hertz voltage regulator with  $\pm 0.25\%$  no-load to full-load regulation.
- Brushless alternator with brushless pilot exciter for excellent load response.

## Application Data

### Engine

Engine Specifications	
Manufacturer	Dresser Rand
Engine model	SFGLD240
Engine type	24 L, 4-Cycle, Lean Burn Turbocharged, Aftercooled
Cylinder arrangement	I-8
Displacement, L (cu. in.)	24.0 (1460)
Bore and stroke, mm (in.)	152 x 165 (5.98 x 6.50)
Compression ratio	11.6:1
Piston speed, m/min. (ft./min.)	594 (1949)
Rated rpm	1800
Max. power at rated rpm, kWm (BHP)	453 (607)
Cylinder head material	Cast Iron
Crankshaft material	Press-Forge Hardened and Tempered Alloy Steel
Governor: type	Electronic
Frequency regulation, no-load to full-load	Isochronous
Frequency regulation, steady state	$\pm 0.5\%$
Frequency	Fixed
Air cleaner type, all models	Dry

### Exhaust

Exhaust System	
Exhaust manifold type	Wet
Exhaust flow at rated kW, kg/hr. (cfm)	2260 (2860) $\pm 10\%$
Exhaust temperature at rated kW, °C (°F)	409 $\pm 20$ °C (768 $\pm 36$ °F)
Maximum allowable back pressure, kPa (in. Hg)	4.5 (1.3)
Engine exhaust outlet size	see ADV drawing
Exhaust emission level at rated kW, mg/Nm <sup>3</sup> (g/bhp-hr)*	500 (1.0)
* 250 mg/Nm <sup>3</sup> (0.5 g/bhp-hr) No <sub>x</sub> exhaust emission level available upon request.	

### Engine Electrical

Engine Electrical System	
Battery charger:	
Ground (negative/positive)	Negative
Volts (DC)	24
Ampere rating	40
Starter motor rated voltage (DC)	24
Battery, recommended cold cranking amps (CCA): Qty., CCA rating each	Two, 1400
Battery voltage (DC)	12

# Application Data

## Fuel

Fuel System - Lean Burn	
Fuel type	Natural Gas
Fuel supply line inlet	DN 80
Natural gas fuel supply pressure, kPa (in. H <sub>2</sub> O)	8-15 (32-60)
Fuel supply pressure, measured at the generator set fuel inlet downstream of any fuel system equipment accessories.	

Fuel Composition Limits	Pipeline Nat. Gas
Methane number	>75.0
C <sub>4</sub> and higher, % by volume	<2.0
Solid particles (dust)	
Size            μm	<5
Concentration mg/m <sub>n</sub> <sup>3</sup>	<10
Gas humidity	<80%
Lower heating value, MJ/m <sub>n</sub> <sup>3</sup> (Btu/ft <sup>3</sup> )	37.5-42 (950-1050)

## Lubrication

Lubricating System	
Type	Full Pressure
Oil pan capacity, L (gal.)	116 (30.6)
Oil filter: quantity, type	3, Cartridge
Oil cooler	Water-Cooled

## Cooling

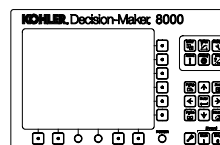
Engine Cooling System	
Ambient temperature, °C (°F)	0 to 40 (32 to 104)
Engine coolant capacity, L (gal.)	
Primary circuit	90 (23.7)
Secondary circuit	25 (6.6)
Rated engine coolant flow, Lpm (gpm)	
Primary circuit	757 (200)
Secondary circuit	454 (120)
Heat rejected to coolant at rated kW, wet exhaust, kW (Btu/min.)	
Primary circuit	326 (18540)±8%
Secondary circuit	131 (7450)±8%
Water pump type	*None
<b>Note:</b> A remote water pump is required for both the primary and secondary cooling circuits and should be sized to meet the above specified cooling system flowrates.	
Engine coolant pressure drop at rated coolant flowrate, kPa (psi)	
Primary circuit	41.4 (6.0)
Secondary circuit	71.0 (10.3)
Engine cooling inlet and outlet connections	
Primary circuit	DN65
Secondary circuit	DN40
Max. engine inlet coolant pressure, kPa (psi)	350 (50.8)
Min. engine inlet coolant pressure, kPa (psi)	200 (29.0)
Primary max. engine outlet coolant temp. °C (°F)	90 (194)
Secondary max. engine inlet coolant temp. °C (°F)	55 (131)

## Operation Requirements

Air Requirements Values at 100% Load	
Combustion air, kg/hr. (cfm)†	2180 (1067)±10%
Heat rejected to ambient air:	
Engine, kW (Btu/min.)	20 (1137)±25%
Alternator, kW (Btu/min.)	16 (911)
† Air density = 1.20 kg/m <sup>3</sup> (0.075 lbm/ft <sup>3</sup> )	

Fuel Consumption	
Natural Gas, kW (Btu/min) at % load	Rating
100%	1208 (70,523)+5%
80%	989 (56,244)+5%
60%	766 (43,563)+5%
40%	548 (31,165)+5%

## Controller



### Decision-Maker® 8000 Controller

Provides advanced control, system monitoring, and system diagnostics with remote monitoring capabilities for paralleling multiple generator sets.

- Large, color display with intuitive local data access
- Communication with serial (RS485) and Ethernet (RJ45)
- Stores up to 4000 records in Event History
- Data logging and trending for easy troubleshooting
- USB flash disk for file storage of data
- Integrated PLC programmable function for advanced input and output configuration
- Supports paralleling up to 32 generator sets (with paralleling option)

### Standard Features

- Alternator Protection
- Battery Charger, Equalize/Float Type
- Closed Crankcase Ventilation
- Local Emergency Stop Switch
- Block Heater
- EPA Certification
- Secondary Gas Solenoid Valve
- Dry Contact Kit (isolated alarm)
- Air Cleaner Restriction Indicator
- Engine Oil Added
- Operation and Installation Literature
- Common Fault Relay
- Run Relay
- Flexible Exhaust Connector, Stainless Steel

### Available Options

#### Exhaust System

- Exhaust Silencer, Critical

#### Fuel System

- Gas Filter

#### Controller

- Remote Emergency Stop
- Paralleling
- Remote Annunciator

#### Cooling System

- Remote Cooling System
- Low Coolant Level Shutdown  
 (available with optional remote cooling system)

### Electrical System

- Alternator Strip Heater (available up to 600 volt)
- Battery
- Battery Rack and Cables
- Battery Heater
- Line Circuit Breaker (NEMA1 enclosure)
- Line Circuit Breaker with Shunt Trip (NEMA1 enclosure)

### Miscellaneous

- Vibration Isolation
- Certified Test Report
- Rated Power Factor Testing

### Literature

- General Maintenance
- Overhaul
- Production

### Warranty

- 2 Year Extended Limited Warranty

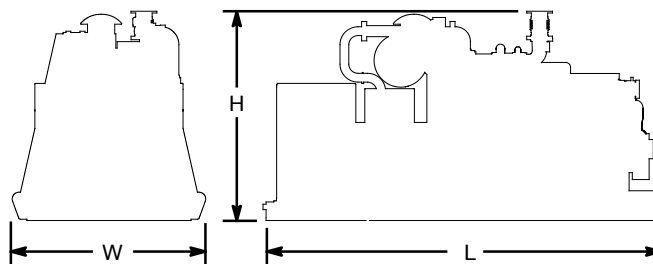
### Other Options

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- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_

### Dimensions and Weights

Overall Size, L x W x H, max., mm (in.): 4126 x 1987 x 2152  
 (162.4 x 78.2 x 84.7)  
 Weight, wet, max., kg (lb.): 6400 (14110)

**Note:** The wet weight shown only includes oil. Coolant is not included.



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

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