

# Model: 1000REOZM

# KOHLER POWER SYSTEMS

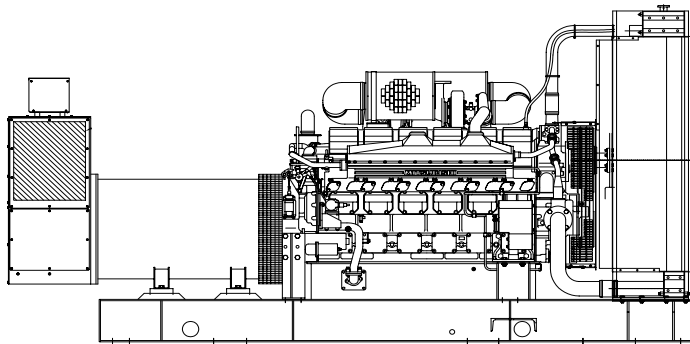
## 380-480 V

## 4-Cycle Diesel



### Ratings Range

		60 Hz	50 Hz
Standby:	kW	1010-1020	844-932
	kVA	1263-1275	1055-1165
Prime:	kW	920-925	768-852
	kVA	1150-1156	960-1065



### 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.
- At 60 Hz the generator set accepts rated load in one step.
- The 60 Hz generator set offers a UL 2200 listing.
- The generator set complies with ISO 8528-5, Class G3 requirements for transient performance.
- The 60 Hz generator set engine is certified by the Environmental Protection Agency (EPA) to conform to Tier 1 nonroad emissions regulations.
- A one-year limited warranty covers all systems and components. Two-, five-, and ten-year extended warranties are also available.
- Generator features:
  - The brushless, rotating-field generator has broadrange reconnectability.
  - The pilot-excited, permanent magnet-excited generator (PMG) provides superior short-circuit capability.
- Other features:
  - Controllers are available for all applications. See controller features inside.
  - The low coolant level shutdown prevents overheating (standard on radiator models only).
  - Integral vibration isolation eliminates the need for under-unit vibration spring isolators.
  - An electronic, isochronous governor delivers precise frequency regulation.
  - 50°C ambient radiators are optional.

### Generator Ratings

Alternator	Voltage	Ph	Hz	150°C Rise Standby Rating		125°C Rise Prime Rating	
				kW/kVA	Amps	kW/kVA	Amps
5M4044	277/480	3	60	1020/1275	1534	925/1156	1391
	220/380	3	50	910/1138	1728	824/1030	1565
	230/400	3	50	912/1140	1645	828/1035	1494
	240/416	3	50	844/1055	1464	768/960	1332
7M4046	220/380	3	50	928/1160	1762	852/1065	1618
	230/400	3	50	928/1160	1674	852/1065	1537
	240/416	3	50	932/1165	1616	852/1065	1478
7M4170	220/380	3	60	1010/1263	1918	920/1150	1747

RATINGS: All three-phase units are rated at 0.8 power factor. Standby Ratings: Standby ratings apply to installations served by a reliable utility source. The standby rating is applicable to varying loads for the duration of a power outage. There is no overload capability for this rating. Ratings are in accordance with ISO-3046/1, BS 5514, AS 2789, and DIN 6271. Prime Power Ratings: Prime power ratings apply to installations where utility power is unavailable or unreliable. 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, overload power in accordance with ISO-3046/1, BS 5514, AS 2789, and DIN 6271. For limited running time and base load ratings, consult the factory. Obtain the technical information bulletin (TIB-101) on ratings guidelines for the complete ratings definitions. The generator set manufacturer reserves the right to change the design or specifications without notice and without any obligation or liability whatsoever. GENERAL GUIDELINES FOR DERATION: Altitude: Derate 1.0% per 100 m (328 ft.) elevation above 1500 m (4921 ft.). Temperature: Derate 5.0% per 10°C (18°F) temperature above 40°C (104°F). 50Hz ratings are applicable on Singapore built models only.

# Alternator Specifications

Specifications	Generator
Type	4-Pole, Rotating-Field
Exciter type	Brushless, Permanent-Magnet Pilot Exciter
Voltage regulator	Solid State, Volts/Hz
Insulation:	NEMAMG1
Material . . . . .	Class H, Synthetic, Nonhygroscopic
Temperature rise . . . . .	125°C Prime, 150°C Standby
Bearing: quantity, type	1, Sealed
Coupling	Flexible Disc
Amortisseur windings	Full
Rotor balancing	125%, 60Hz, 150% 50Hz
Voltage regulation, no-load to full-load (with <0.5% drift due to temp Variation)	3-Phase Sensing, ±0.25%
One-step load acceptance	100% of Rating
Unbalanced load capability	100% of Rated Standby Current
Peak motor starting kVA:	(35% dip for voltages below)
480 V, 416 V    5M4044 (4 bus bar) . .	3900 (60Hz), 3000 (50Hz)
416 V            7M4046 (4 bus bar) . .	3000 (50Hz)
380 V            7M4170 (4 bus bar) . .	2500 (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 generator field.
- Self-ventilated and dripproof construction.
- Superior voltage waveform from two-thirds pitch windings and skewed stator.
- Digital solid-state, volts-per-hertz voltage regulator with ±0.25% no-load to full-load regulation.
- Brushless alternator with brushless pilot exciter for excellent load response.

## Application Data

### Engine

Engine Specifications	60 Hz	50 Hz
Engine model	D1000 37.1A60	D1000 37.1A50
Engine type	4-Cycle, Turbocharged	
Cylinder arrangement	12-V	
Displacement, L (cu. in.)	37.11 (2265)	
Bore and stroke, mm (in.)	150 x 175 (5.91 x 6.89)	
Compression ratio	14.5 : 1	
Piston speed, m/min. (ft./min.)	630 (2067)	528 (1732)
Main bearings: quantity, type	7, Precision Half-Shell	
Rated rpm	1800	1500
Max. power at rated rpm, kWm (BHP)	1140 (1528)	1020 (1367)
Cylinder head material	Cast Iron	
Crankshaft material	Forged Steel	
Governor: type, make/model	Electronic, Woodward PROACT II	
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	60 Hz	50 Hz
Exhaust flow at rated kW, m³/min. (cfm)	266 (9392)	225 (7945)
Exhaust temperature at rated kW, dry exhaust, °C (°F)	546 (1015)	562 (1044)
Maximum allowable back pressure, kPa (in. Hg)	5.9 (1.7)	
Exhaust outlet size at engine hookup, mm (in.)	See ADV drawing	

### Engine Electrical

Engine Electrical System	60 Hz	50 Hz
Battery charging alternator:		
Ground (negative/positive) . . . . .		Negative
Volts (DC) . . . . .		24
Ampere rating . . . . .		30
Starter motor rated voltage (DC)		Dual, 24
Battery, recommended cold cranking amps (CCA):		
Qty., CCA rating above 0°C (32°F)		4, 1000
Battery voltage (DC)		12

### Fuel

Fuel System	60 Hz	50 Hz
Fuel supply line, min. ID, mm (in.)	25 (1.0)	
Fuel return line, min. ID, mm (in.)	25 (1.0)	
Max. lift, engine-driven fuel pump, m (ft.)	1 (3)	
Max. fuel flow, Lph (gph)	1750 (462)	1500 (396)
Max. fuel pump restriction, kPa (in. Hg)	15 (4.3)	
Fuel filter: quantity, type	4, Cartridge	
Recommended fuel	#2 Diesel	

### Lubrication

Lubricating System	60 Hz	50 Hz
Type	Full Pressure	
Oil pan capacity, L (qt.)	180 (190)	
Oil pan capacity with filter, L (qt.)	200 (211)	
Oil filter: quantity, type	5, Cartridge	
Oil Cooler	Water-Cooled	

# Application Data

## Cooling

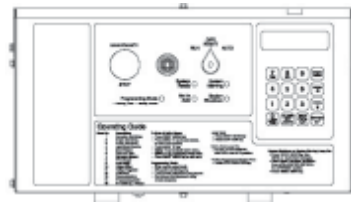
Radiator System	60 Hz	50 Hz
Ambient temperature, °C (°F)	40 (104)	
Engine jacket water capacity, L (gal.)	100 (26.4)	
Radiator system capacity, including engine, L (gal.)	280 (74)	
Engine jacket water flow, Lpm (gpm)	1450 (383)	1200 (317)
Heat rejected to cooling water at rated kW, dry exhaust, kW (Btu/min.)	734 (41752)	620 (35282)
Water pump type	Centrifugal	
Fan diameter, including blades, mm (in.)	1524 (60)	
Fan, kWm (HP)	40 (53.5)	26.3 (32.2)
Max. restriction of cooling air, intake and discharge side of radiator, kPa (in. H <sub>2</sub> O)	0.125 (0.5)	

## Operation Requirements

Air Requirements	60 Hz	50 Hz
Radiator-cooled cooling air, m3/min. (scfm) ~	1980 (69923)	1650 (58269)
Combustion air, m3/min. (cfm)	101 (3566)	85 (3001)
Heat rejected to ambient air:		
Engine, kW(Btu/min.) . . . . .	88 (5010)	74 (4234)
Generator, kW (Btu/min.) . . . . .	54 (3050)	53 (3020)
~ Air density = 1.20 kg/m3 (0.075 lbf/ft3 )		

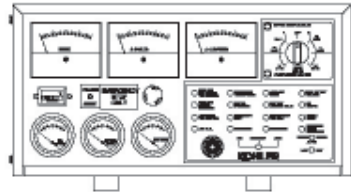
Fuel Consumption	60 Hz	50 Hz
<b>Diesel, Lph (gph) at % load</b>	<b>Standby Rating</b>	
100%	283 (74.8)	239 (63.1)
75%	211 (55.8)	180 (47.6)
50%	147 (38.9)	126 (33.3)
25%	82 (21.7)	68 (18.1)
<b>Diesel, Lph (gph) at % load</b>	<b>Prime Rating</b>	
100%	256 (67.6)	217 (57.3)
75%	194 (51.2)	165 (43.6)
50%	137 (36.2)	116 (30.6)
25%	80 (21.1)	65(17.3)

# Controllers



### Decision-Maker™ 550 Controller

Audiovisual annunciation with NFPA 110 Level 1 capability. Programmable microprocessor logic and digital display features. Generator safeguard circuit protection. 12- or 24-volt engine electrical system capability. Remote start, remote annunciation, and remote communication options. Refer to G6-46 for additional controller features and accessories.



### Decision-Maker™ 3+, 16-Light Controller

Audiovisual annunciation with NFPA 110 Level 1 capability. Microprocessor logic, AC meters, and engine gauge features. 12- or 24-volt engine electrical system capability. Remote start, prime power, and remote annunciation options. Refer to G6-30 for additional controller features and accessories.

## Standard Features and Accessories

### Additional Standard Features

- Alternator Protection (standard with Decision-Maker™ 550)
- Electronic, Isochronous Governor
- Oil Drain Extension
- Operation and Installation Literature
- Pilot-Excited, Permanent Magnet Generator (PMG)

### Accessories

#### Open Unit

- Exhaust Silencer, Hospital
- Exhaust Silencer, Critical
- Flexible Exhaust Connector, Stainless Steel

#### Enclosed Unit

- Sound Enclosure (with roof-mounted hospital silencer)
- Weather Enclosure (with roof-mounted critical silencer)

#### Cooling System

- Block Heater  
[recommended for ambient temperatures below 20°C (68°F)]
- City Water Cooling
- Radiator Duct Flange
- Remote Radiator Cooling

#### Fuel System

- Flexible Fuel Lines
- Fuel/Water Separator
- Fuel Pressure Gauge
- Subbase Fuel Tank with Day Tank

#### Electrical System

- Battery
- Battery Charger, Equalize/Float Type
- Battery Heater
- Battery Rack and Cables

#### Engine and Generator

- Air Cleaner, Heavy Duty
- Air Cleaner Restriction Indicator
- Bus Bar Kits (standard on 7M generators, 380-600 volt only)
- Generator Strip Heater
- Line Circuit Breaker (NEMA1 enclosure)
- Line Circuit Breaker with Shunt Trip (NEMA1 enclosure)
- NFPA 110 Literature
- Rated Power Factor Testing
- Safeguard Breaker (not available with Decision-Maker™ 550)
- Spring Isolators

#### Paralleling System

- Load-Sharing Module
- Reactive Droop Compensator
- Remote Speed Adjusting Control / Electronic Governor
- Voltage Adjustment Control (manual)
- Voltage Regulator Relocation Kit

### Maintenance and Literature

- General Maintenance Literature Kit
- Maintenance Kit (includes air, oil, and fuel filters)
- Overhaul Literature Kit
- Production Literature Kit

### Controller

- Common Failure Relay Kit
- Communications Products and PC Software  
(Decision-Maker™ 550 controller only)
- Customer Connection Kit
- Dry Contact Kit (isolated alarm)
- Engine Prealarm Sender Kit
- Remote Annunciator Panel
- Remote Audiovisual Alarm Panel
- Remote Emergency Stop Kit
- Remote Mounting Cable
- Run Relay Kit

### Miscellaneous Accessories

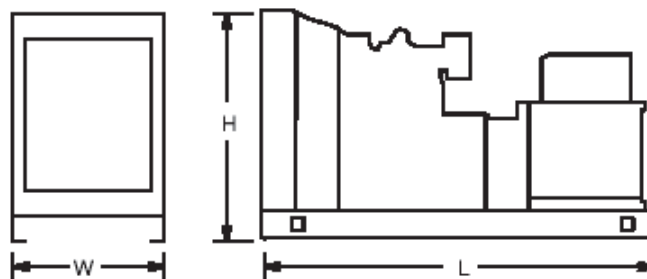
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### Dimensions and Weights

Overall Size, L x W x H, mm (in.):

w/5M4044	4542 x 2047 x 2370 (178.8 x 80.6 x 93.3)
w/7M4046	4595 x 2047 x 2370 (180.9 x 80.6 x 93.3)
w/7M4170	4402 x 2047 x 2370 (173.3 x 80.6 x 93.3)

Weight (radiator model), wet, max., kg (lb.): 8750 (19275)



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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