Model: 400REOZV

KOHLER POWER SYSTEMS

190-600 V

4-Cycle Diesel

ISO 9001 KOHLER POWER SYSTEMS NATIONALLY REGISTERED

Ratings Range

		60 Hz	50 Hz
Standby:	**kW**	350-402	288-352
	kVA	438-503	360-440
Prime:	**kW**	325-365	268-328
	kVA	406-456	335-410

Generator Ratings

				Standby Rating		Prime Rating	
				150°C Rise	130°C Rise	125°C Rise	105°C Rise
Generator	**Voltage**	**Ph**	**Hz**	**kW/kVA**	**kW/kVA**	**kW/kVA**	**kW/kVA**
	120/208	3	60	360/450	350/438	350/438	325/406
	127/220	3	60	375/469	360/450	360/450	350/438
	139/240	3	60	400/500	375/469	360/450	350/438
	240/416	3	60	360/450	350/438	350/436	325/406
	277/480	3	60	400/500	375/469	360/450	350/438
4M4019	110/190	3	50	324/405	300/375	300/375	284/355
	115/200	3	50	324/405	292/365	292/365	272/340
	120/208	3	50	312/390	288/360	288/360	268/335
	220/380	3	50	324/405	300/375	300/375	284/355
	230/400	3	50	324/405	292/365	292/365	272/340
	240/416	3	50	312/390	288/360	288/360	268/335
	120/208	3	60	395/494	370/463	360/450	345/431
	127/220	3	60	400/500	390/488	360/450	360/450
	139/240	3	60	400/500	400/500	360/450	360/450
	240/416	3	60	395/494	370/463	360/450	345/431
	277/480	3	60	400/500	400/500	360/450	360/450
4M4021	110/190	3	50	340/425	320/400	312/390	292/365
	115/200	3	50	340/425	324/405	320/400	300/375
	120/208	3	50	328/410	320/400	312/390	292/365
	220/380	3	50	340/425	320/400	312/390	292/365
	230/400	3	50	340/425	324/405	320/400	300/375
	240/416	3	50	328/410	320/400	312/390	292/365
	120/208	3	60	400/500	400/500	360/450	360/450
	127/220	3	60	400/500	400/500	360/450	360/450
	139/240	3	60	400/500	400/500	360/450	360/450
	220/380	3	60	400/500	400/500	360/450	360/450
	240/416	3	60	400/500	400/500	360/450	360/450
	277/480	3	60	400/500	400/500	360/450	360/450
5M4024	110/190	3	50	352/440	352/440	328/410	328/410
	115/200	3	50	352/440	352/440	328/410	328/410
	120/208	3	50	352/440	352/440	328/410	328/410
	220/380	3	50	352/440	352/440	328/410	328/410
	230/400	3	50	352/440	352/440	328/410	328/410
	240/416	3	50	352/440	352/440	328/410	328/410
	120/208	3	60	400/500	400/500	360/450	360/450
	127/220	3	60	400/500	400/500	360/450	360/450
	139/240	3	60	400/500	400/500	360/450	360/450
	220/380	3	60	400/500	400/500	360/450	360/450
	240/416	3	60	400/500	400/500	360/450	360/450
	277/480	3	60	400/500	400/500	360/450	360/450
5M4027	110/190	3	50	352/440	352/440	328/410	328/410
	115/200	3	50	352/440	352/440	328/410	328/410
	120/208	3	50	352/440	352/440	328/410	328/410
	220/380	3	50	352/440	352/440	328/410	328/410
	230/400	3	50	352/440	352/440	328/410	328/410
	240/416	3	50	352/440	352/440	328/410	328/410
5M4160	220/380	3	60	400/500	400/500	360/450	360/450
5M4162	220/380	3	60	400/500	400/500	360/450	360/450
4M4266	347/600	3	60	400/500	400/500	360/450	360/450
5M4272	347/600	3	60	405/506	405/506	365/456	365/456
	220/380	3	60	385/481	-	355/444	-
4P6220	240/416	3	60	399/499	-	363/454	-
	277/480	3	60	402/503	-	365/456	-

Standard Features

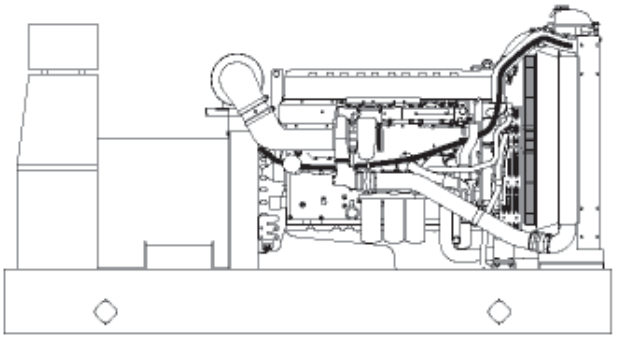
- Kohler Co. provides one-source responsibility for the generating system and accessories.
- The generator set and its components are prototype-tested, factory-built, and production-tested.
- The 60 Hz generator set offers a UL-2200 listing.
- The generator set accepts rated load in one step.
- The generator 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 2 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:

  M Series

  - Kohler's unique Fast-Response™ excitation system delivers the fastest voltage response in the industry.
  - The brushless, rotating-field generator has broadrange reconnectability.
  - Kohler's permanent magnet-excited generator (PMG) provides superior short-circuit capability.

  P Series

  - Brushless alternator with brushless exciter. PMG and digital voltage regulation (optional).
- 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.
  - Electronic engine controls and a generator microprocessor controller combine to deliver one of the most advanced control systems in today's generator market.



Notes: Picture shown with M Series alternator.

Ratings: All ratings are in accordance with ISO 3046, ISO 8528, BS5514, AS 2789, DIN 6271 where applicable. STANDBY RATING: Applies to installations served by a reliable utility source, and to varying loads for the duration of the utility power interruption. There is no overload capability for the rating. PRIME POWER RATING: Applies to installations where utility power is unavailable or unreliable. The prime power rating is applicable to variable loads with an umlimited number of operating hours per year. The average power output shall not exceed 70% of the prime power rating. Loads of less than 30% shall be counted as 30%. ALTITUDE DERATION: Derate 0.8% per 100m (328ft) elevation above 1000m (3280ft) up to an elevation of 3000m (9842ft). TEMPERATURE DERATION: 1.5% per 5°C temperature above 40°C. Fuel consumption is calculated at specific gravity of 0.85 (±5%). Cooling air density taken as 1.20kg/m³.

Alternator Specifications

Specifications	Generator
Type	4-Pole, Rotating-Field
Exciter type	Brushless, Permanent-Magnet, Fast-Response™
Leads: quantity, type	12, Reconnectable
Voltage regulator	Solid State, Volts/Hz
Insulation:	NEMA MG1
Material	Class H
Temperature rise	30°C, Standby
Bearing: quantity, type	1, Sealed
Coupling	Flexible Disc
Amortisseur windings	Full
Voltage regulation, no-load to full-load	
M Series	3-Phase Sensing, ±0.25%
P Series	3-Phase Sensing, ±1%
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, 380 V 4M4019 (12 lead)	1350 (60Hz), 875 (50Hz)
480 V, 380 V 4M4021 (12 lead)	1350 (60Hz), 825 (50Hz
480 V, 380 V 5M4024 (12 lead)	1350 (60Hz), 880 (50Hz)
480 V, 380 V 5M4027 (12 lead)	1575 (60Hz), 1100 (50Hz)
380 V 5M4160 (4 lead)	1175 (60Hz)
380 V 5M4162 (4 lead)	2100 (60Hz)
600 V 4M4266 (4 lead)	1300 (60Hz)
600 V 5M4272 (4 lead)	1750 (60Hz)
480 V 4P6220 (12 lead)	1280 (60Hz)

Common Features

- Superior voltage waveform from a two-thirds pitch stator and skewed rotor.
- Brushless alternator with brushless exciter for excellent load response.

M Series

- 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.
- Digital solid-state, volts-per-hertz voltage regulator with ±0.25% no-load to full-load regulation.

P Series

- Unirotor construction method facilitate parallel operation and distorting loads.
- Compliance to NEMA MG1-22, BS-5000, CSA C22.2 and IEC 34-1 requirements.

Application Data

Engine

Engine Specifications	60 Hz	50 Hz
Engine model	D400 12.1A65	
Engine type	4-Cycle, Turbocharged, Charge Air Cooled	
Cylinder arrangement	6, Inline	
Displacement, L (cu. in.)	12.13 (740)	
Bore and stroke, mm (in.)	131 x 150 (5.16 X 5.91)	
Compression ratio	17.5 : 1	
Piston speed, m/min. (ft./min.)	540 (1772)	450 (1476)
Main bearings: quantity, type	7, Precision Half-Shell	
Rated rpm	1800	1500
Max. power at rated rpm, kWm (BHP)	449 (602)	398 (533)
Cylinder head material	Cast Iron	
Piston: type, material	Swirl Chamber, Graphite-Coated Aluminum	
Crankshaft material	Forged Steel	
Valve material	Nimonic	
Governor: type, make/model	EDC III	
Frequency regulation, no-load to full-load	Isochronous	
Frequency regulation, steady state	±0.25%	
Frequency	Field-Convertible	
Air cleaner type, all models	Dry	

Exhaust

Exhaust System	60 Hz	50 Hz
Exhaust flow at rated kW, m3/min. (cfm)	83.8 (2960)	66.8 (2360)
Exhaust temperature at rated kW, dry exhaust, °C (°F)	560 (1040)	521 (970)
Maximum allowable back pressure, kPa (in. Hg)	10.2 (3.0)	
Engine exhaust outlet size, 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	60	
Starter motor rated voltage (DC)	24	
Battery, recommended cold cranking amps (CCA):		
Qty., CCA rating	2, 950	
Battery voltage (DC)	12	

Fuel

Fuel System	60 Hz	50 Hz
Fuel supply line, min. ID, mm (in.)	10 (0.39)	
Fuel return line, min. ID, mm (in.)	10 (0.39)	
Max. lift, engine-driven fuel pump, m (ft.)	2.0 (6.6)	
Max. fuel flow, Lph (gph)	550 (145.3)	500 (132.1)
Fuel prime pump	Manual	
Fuel filter type	2, Primary, 30 Microns/ Secondary w/Water Separator, 5 Microns	
Recommended fuel	#2 Diesel	

Lubrication

Lubricating System	60 Hz	50 Hz
Type	Full Pressure	
Oil pan capacity, L (qt.)	31 (33)	
Oil pan capacity with filter, L (qt.)	35 (37)	
Oil filter: quantity, type	3, Cartridge	
Oil cooler	Water-Cooled	

Application Data

Cooling

Radiator System	60 Hz	50 Hz
Ambient temperature, °C (°F)	50 (122)	
Engine jacket water capacity, L (gal.)	20 (5.28)	
Radiator system capacity, including engine, L (gal.)	44.0 (11.62)	
Engine jacket water flow, Lpm (gpm)	390 (95)	288 (76)
Heat rejected to cooling water at rated kW, dry exhaust, kW (Btu/min.)	176 (10030)	140 (7960)
Heat rejected to charge air cooler at rated kW, dry exhaust, kW (Btu/min.)	103 (5850)	81 (4590)
Water pump type	Centrifugal	
Fan diameter, including blades, mm (in.)	890 (35)	
Fan, kWm (HP)	19 (26)	11 (15)
Max. restriction of cooling air, intake and discharge side of radiator, kPa (in. H_2O)	0.125 (0.5)	

*** Weather and sound enclosures with internal silencer reduce ambient temperature capability by** 5°C (9°F)

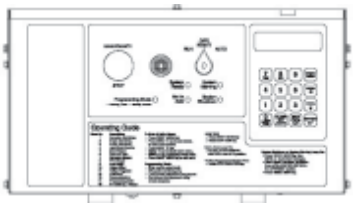
Operation Requirements

Air Requirements	60 Hz	50 Hz
Radiator-cooled cooling air, m^3/min. (scfm)*	515 (18190)	425 (15010)
Combustion air, m^3/min. (cfm)	30.9 (1030)	26.3 (930)
Heat rejected to ambient air:		
Engine, kW(Btu/min.)	89.5 (5090)	73.1 (4160)
Generator, kW (Btu/min.)	25.5 (1450)	24.6 (1400)

* Air density = 1.20 kg/m^3 (0.075 lbm/ft^3)

Fuel Consumption	60 Hz	50 Hz
Diesel, Lph (gph) at % load	**Standby Rating**	
100%	110.6 (29.2)	90.4 (23.9)
75%	79.3 (20.9)	67.1 (17.7)
50%	54.2 (14.3)	45.9 (12.1)
25%	31.8 (8.4)	25.6 (6.8)
Diesel, Lph (gph) at % load	**Prime Rating**	
100%	96.3 (25.4)	78.6 (20.8)
75%	71.8 (19.0)	59.4 (15.7)
50%	49.4 (13.1)	41.9 (11.1)
25%	29.1 (7.7)	23.7 (6.2)

Controllers



Available 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.

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For the nearest sales and service outlet in the
US and Canada, phone 1-800-544-2444
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Standard Features and Accessories

Standard Features

- Battery Rack and Cables
- Electronic, Isochronous Governor
- Oil Drain Extension
- Operation and Installation Literature
- Alternator Protection (standard with Decision-Maker™ 550)

Accessories

Enclosed Unit

- ❑ Sound Enclosure with Internal Silencer
- ❑ Weather Enclosure with Internal Silencer
- ❑ Weather Housing (with skid end caps and roof-mounted silencer)
- ❑ Open Unit
- ❑ Exhaust Silencer, Hospital (kits: PA-365349, PA-365354)
- ❑ Exhaust Silencer, Critical (kits: PA-343618, PA-354809)
- ❑ Flexible Exhaust Connector, Stainless Steel

Cooling System

- ❑ Block Heater; recommended for ambient temperatures below 4°C (40°F)
- ❑ Radiator Duct Flange

Fuel System

- ❑ Flexible Fuel Lines
- ❑ Fuel Pressure Gauge
- ❑ Fuel/Water Separator with Primary Filter
- ❑ Subbase Fuel Tanks
- ❑ Subbase Fuel Tank with Day Tank

Electrical System

- ❑ Battery
- ❑ Battery Charger, Equalize/Float Type
- ❑ Battery Heater

Engine and Generator

- ❑ Air Cleaner, Heavy Duty
- ❑ Air Cleaner Restriction Indicator
- ❑ Bus Bar Kits
- ❑ Crankcase Emission Canister
- ❑ CSA Certification
- ❑ Generator Strip Heater
- ❑ Line Circuit Breaker (NEMA1 enclosure)
- ❑ Line Circuit Breaker with Shunt Trip (NEMA1 enclosure)
- ❑ Optional Generators
- ❑ Rated Power Factor Testing
- ❑ Rodent Guards
- ❑ Safeguard Breaker (not available with Decision-Maker™ 550)
- ❑ Skid End Caps
- ❑ Voltage Regulation, 1%
- ❑ Voltage Regulator Sensing, Three-Phase

Paralleling System

- ❑ Load-Sharing Module
- ❑ Reactive Droop Compensator
- ❑ Remote Speed Adjusting Control
- ❑ Voltage Regulator Relocation Kit

Maintenance and Literature

- ❑ General Maintenance Literature Kit
- ❑ Maintenance Kit (includes air, oil, and fuel filters)
- ❑ NFPA 110 Literature
- ❑ Overhaul Literature Kit
- ❑ Production Literature Kit

Controller

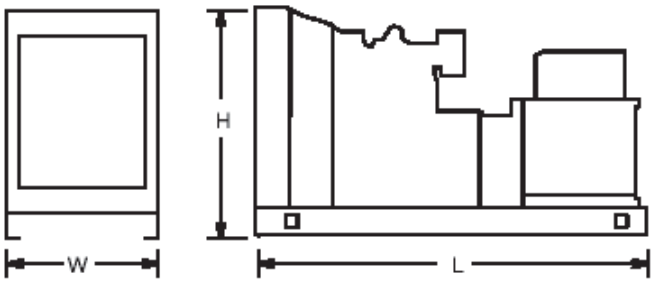
- ❑ Common Failure Relay Kit
- ❑ Communications Products and PC Software (Decision-Maker™ 550 controller only)
- ❑ Customer Connection Kit
- ❑ Dry Contact Kit (isolated alarm)
- ❑ Engine Prealarm Sender Kit
- ❑ Prime Power Switch Kit (Decision-Maker™ 550 controller only)
- ❑ Remote Annunciator Panel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

Miscellaneous Accessories

- ❑ _____
- ❑ _____
- ❑ _____
- ❑ _____
- ❑ _____
- ❑ _____
- ❑ _____

Dimensions and Weights

Overall Size, L x W x H, mm (in.):	3300 x 1250 x 1922 (129.92 x 49.21 x 75.67)
Weight (radiator model), wet, kg (lb.):	3175 (7000)



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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