

Model: 230REOZD

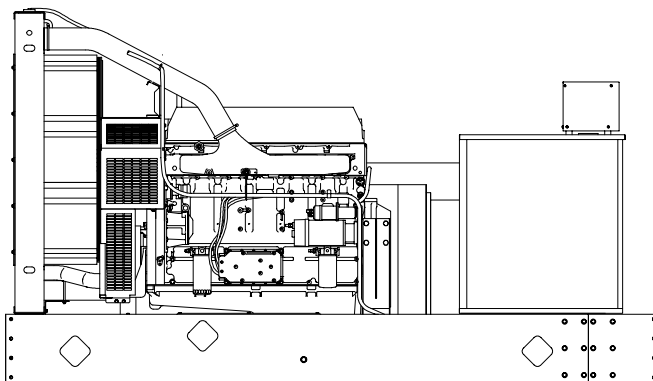
KOHLER POWER SYSTEMS

190-600 V 4-Cycle Diesel

ISO 9001
KOHLER
POWER SYSTEMS
 NATIONALLY REGISTERED

Ratings Range

		60 Hz	50 Hz
Standby:	kW	230-240	196-200
	kVA	288-300	245-250
Prime:	kW	210-215	176-180
	kVA	263-269	220-225



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 complies with ISO 8528-5, Class G2 requirements for transient performance in all generator set configurations. Select the Decision-Maker™ 550 controller for improved voltage regulation and ISO 8528-5, Class G3 compliance.
- The generator set accepts rated load in one step.
- 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:
 - 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.
- 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.

Generator Ratings

Generator	Voltage	Ph	Hz	130°C Rise Standby Rating		105°C Rise Prime Rating	
				kW/kVA	Amps	kW/kVA	Amps
4UA9	120/208	3	60	240/300	833	215/269	746
	120/240	3	60	240/300	722	215/269	647
	127/220	3	60	240/300	787	215/269	705
	139/240	3	60	240/300	722	215/269	647
	220/380	3	60	230/288	437	210/263	399
	240/416	3	60	240/300	416	215/269	373
	277/480	3	60	240/300	361	215/269	323
	347/600	3	60	230/288	277	210/263	253
	110/190	3	50	196/245	744	176/220	669
	110/220	3	50	196/245	643	176/220	577
	115/200	3	50	196/245	707	176/220	635
	120/208	3	50	200/250	694	180/225	625
	220/380	3	50	196/245	372	176/220	334
230/400	3	50	196/245	354	176/220	318	
240/416	3	50	200/250	347	180/225	312	

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. **NOTE:** Order separate generator set specs for 50 or 60 Hz as this model cannot change frequency. **GENERAL GUIDELINES FOR DERATION:** **Altitude:** Derate 1.5% per 305 m (1000 ft.) elevation above 2288 m (7500 ft.) up to a maximum elevation of 3660 m (12000 ft.). **Temperature:** Derate 1.0% per 5.5°C (10°F) temperature above 40°C (104°F). For radiator cooling system capacity, derate 1.4°C (2.5°F) per 305 m (1000 ft.) elevation above 183 m (600 ft.).

Alternator Specifications

Specifications	Generator
Manufacturer	Kohler
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	130°C, Standby
Bearing: quantity, type	1, Sealed
Coupling	Flexible Disc
Amortisseur windings	Full
Voltage regulation, no-load to full-load	
Standard	±2%
Decision-Maker™ 550 controller (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, 380 V 4UA9	700 (60Hz), 420 (50Hz)

- 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.
- 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.
- Solid-state, volts-per-hertz voltage regulator with ±2% no-load to full-load regulation.
- Fast-Response™ brushless alternator with brushless exciter for excellent load response.

Application Data

Engine

Engine Specifications	60 Hz	50 Hz
Manufacturer	Detroit Diesel	
Engine: model, type	S60, 4-Cycle Turbocharged, Aftercooled	
Cylinder arrangement	6, Inline	
Displacement, L (cu. in.)	12.7 (778)	
Bore and stroke, mm (in.)	130 x 160 (5.12 x 6.30)	
Compression ratio	15.0:1	
Piston speed, m/min. (ft./min.)	576 (1890)	480 (1575)
Main bearings: quantity, type	7, Precision Half-Shell	
Rated rpm	1800	1500
Max. power at rated rpm, kWm (BHP)	310 (415)	272 (365)
Cylinder head material	Cast Iron	
Piston: type, material	Crosshead, Malleable Iron	
Crankshaft material	Forged Steel	
Valve material:		
Intake	Iron Based Seat	
Exhaust	Nickel Based Seat	
Governor: type, make/model	DDEC Electronic Control	
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)	57.5 (2030)	48.9 (1725)
Exhaust temperature at rated kW, dry exhaust, °C (°F)	418 (785)	
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		40
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.)	13 (0.50)	
Fuel return line, min. ID, mm (in.)	8 (0.31)	
Max. lift, engine-driven fuel pump, m (ft.)	2.1 (6.8)	
Max. fuel flow, Lph (gph)	329 (86.8)	
Fuel prime pump	N/A	
Fuel filter: quantity, type	2, Primary/Secondary	
Recommended fuel	#2 Diesel	

Lubrication

Lubricating System	60 Hz	50 Hz
Type	Full Pressure	
Oil pan capacity, L (qt.)	30 (32)	
Oil pan capacity with filter, L (qt.)	36 (38)	
Oil filter: quantity, type	2, Cartridge	
Oil cooler	Water-Cooled	

Application Data

Cooling (Standard Radiator)

Cooling System	60 Hz	50 Hz
Ambient temperature, °C (°F)	50 (122)	
Engine jacket water capacity, L (gal.)	22.7 (6.0)	
Radiator system capacity, including engine, L (gal.)	45.4 (12)	
Engine jacket water flow, Lpm (gpm)	363 (96)	300 (80)
Heat rejected to cooling water at rated kW, dry exhaust, kW (Btu/min.)	101 (5747)	98 (5575)
Heat rejected to air charge cooler at rated kW, dry exhaust, kW (Btu/min.)	58.2 (3310)	32.7 (1858)
Water pump type	Centrifugal	
Fan diameter, including blades, mm (in.)	991 (39)	
Fan, kWm (HP)	22 (30)	13 (18)
Max. restriction of cooling air, intake and discharge side of radiator, kPa (in. H ₂ O)	0.125 (0.5)	

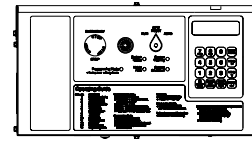
Operation Requirements

Air Requirements	60 Hz	50 Hz
Radiator-cooled cooling air, m ³ /min. (scfm)*	561 (19800)	467 (16500)
Combustion air, m ³ /min. (cfm)	24 (855)	21 (757)
Heat rejected to ambient air:		
Engine, kW (Btu/min.)	41.6 (2368)	31.7 (1806)
Generator, kW (Btu/min.)	25.3 (1440)	23.2 (1320)

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

Fuel Consumption	60 Hz	50 Hz
Diesel, Lph (gph) at % load	Standby Rating	
100%	66 (17.4)	55 (14.4)
75%	50 (13.1)	42 (11.0)
50%	34 (9.0)	29 (7.6)
25%	19 (5.0)	16 (4.2)
Diesel, Lph (gph) at % load	Prime Rating	
100%	60 (15.9)	50 (13.2)
75%	46 (12.2)	38 (10.0)
50%	31 (8.2)	27 (7.1)
25%	18 (4.8)	15 (4.0)

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.

Standard Features and Accessories

Standard Features

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

Accessories

Enclosed Unit

- Exhaust Silencer, Critical (kit: PA-324544)
- Exhaust Silencer, Residential (kit: PA-343529)
- Silencer Mounting Kit for Weather Housing
- Tail Pipe and Rain Cap Kit
- Weather Housing (with skid end caps)

Open Unit

- Exhaust Silencer, Hospital (kits: PA-354903, PA-354905)
- Exhaust Silencer, Critical (kits: PA-343618, PA-354809)
- Exhaust Silencer, Residential (kits: PA-354878, PA-354879)
- Exhaust Silencer, Industrial (kits: PA-343617, PA-354902)
- Flexible Exhaust Connector, Stainless Steel

Cooling System

- Block Heater
- Radiator Duct Flange

Fuel System

- Flexible Fuel Lines
- Fuel Pressure Gauge
- Fuel/Water Separator with Prime Feature
- Hand Primer Pump
- 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
- 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

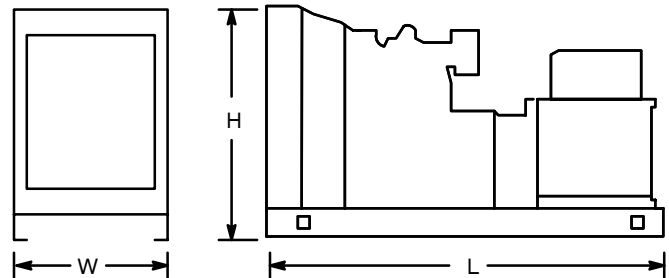
- Common Failure Relay Kit
- Communications Products and PC Software (Decision-Maker™ 550 controller only)
- Customer Connection Kit
- Dry Contact Kit (isolated alarm)
- Engine Prealarm Sender Kit
- Remote Annunciator Panel
- Remote Audiovisual Alarm Panel
- Remote Emergency Stop Kit
- Remote Mounting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

Miscellaneous Accessories

- _____
- _____
- _____
- _____

Dimensions and Weights

Overall Size, L x W x H, mm (in.): 3416 x 1270 x 1953
 (134.5 x 50.0 x 76.9)
 Weight (radiator model), wet, kg (lb.): 2855 (6294)



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

DISTRIBUTED BY: