Modelo: 24RCL

KOHLER. Power Systems

Multi-Fuel
Natural Gas/LPG

ISO 9001 KOHLER POWER SYSTEMS NATIONALLY REGISTERED

The Kohler Advantage

D **High Quality Power**
Kohler home generators provide advanced voltage and frequency regulation along with ultra-low levels of harmonic distortion for excellent generator power quality to protect your valuable electronics.

D **Extraordinary Reliability**
Kohler is known for extraordinary reliability and performance and backs that up with a premium five-year or 2000 hour limited warranty.

D **All-Aluminum Sound Enclosure**
Steel enclosure optional

D **Quiet Operation**
Kohler home generators provide quiet, neighborhood-friendly performance.

Standard Features

D Kohler Co. provides one-source responsibility for the generating system and accessories.

D The generator set and its components are prototype-tested, factory-built, and production-tested.

D The generator set accepts rated load in one step.

D A standard five-year or 2000 hour limited warranty covers all systems and components.

D Quick-ship (QS) models with selected features are available. See your Kohler distributor for details.

D RDC2 Controller
- d One digital controller manages both the generator set and transfer switch functions (with optional Model RXT transfer switch).
- d Designed for today's most sophisticated electronics.
- d Electronic speed control responds quickly to varying household demand.
- d Digital voltage regulation protects your valuable electronics from harmonic distortion and unstable power quality.
- d Two-line, backlit LCD screen is easy to read in all lighting conditions, including direct sunlight and low light.

D Engine Features
- d Powerful and reliable 2.2 L liquid-cooled engine
- d Electronic engine management system.
- d Simple field conversion between natural gas and LPG fuels while maintaining emission certification.

D Innovative Cooling System
- d Electronically controlled fan speeds minimize generator set sound signature.

D Certifications
- d The 60 Hz generator set engine is certified by the Environmental Protection Agency (EPA) to conform to the New Source Performance Standard (NSPS) for stationary spark-ignited emissions.
- d UL 2200 listing is available (60 Hz only).
- d CSA certification is available (60 Hz only).
- d Accepted by the Massachusetts Board of Registration of Plumbers and Gas Fitters.

D Approved for stationary standby applications in locations served by a reliable utility source.

Generator Set Ratings

				Standby Ratings			
				Natural Gas		LPG	
Alternator	Voltage	Ph	Hz	kW/kVA	Amps	kW/kVA	Amps
4E5.0	120/240	1	60	21/21	87	24/24	100
4D5.0	120/208	3	60	21/26	72	23.5/29	81
	127/220	3	60	20.6/25	67	23/28.8	75
	120/240	3	60	21/26	63	23.5/29	70
	277/480	3	60	21/26	31	23.5/29	35
	220/380 *	3	50	16/20	30	18/22.5	34
	230/400	3	50	17/21	30	19/23	34
	240/416 *	3	50	17/21	29	19/23	33

* 50 Hz models are factory-connected as 230/400 volts. Field-adjustable to 220/380 or 240/416 volts by an authorized service technician.

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:* Standby ratings apply to installations served by a reliable utility source. The standby rating is applicable to varying loads with an average load factor of 80% for the duration of a power outage. No overload capacity is specified for this rating. Ratings are in accordance with ISO-3046/1, BS 5514, AS 2789, and DIN 6271. GENERAL GUIDELINES FOR DERATING: *Altitude:* Derate 1.3% per 100 m (328 ft.) elevation above 200 m (656 ft.). *Temperature:* Derate 3.0% per 10_C (18_F) temperature above 25_C (77_F). Availability is subject to change without notice. The generator set manufacturer 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.

Alternator Specifications

Specifications	Alternator
Manufacturer	Kohler
Type	4-Pole, Rotating Field
Exciter type	Brushless, Wound-Field
Leads: quantity, type	
4E5.0	4, 120/240
4D5.0	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
Voltage regulation, no-load to full-load	□1.0% Maximum
Unbalanced load capability	100% of Rated Standby Current
One-step load acceptance	100% of Rating
Peak motor starting kVA:	(35% dip for voltages below)
240 V 4E5.0 (4 lead)	37 (60 Hz)
480 V, 400 V 4D5.0 (12 lead)	59 (60 Hz), 44 (50 Hz)

- D NEMA MG1, IEEE, and ANSI standards compliance for temperature rise and motor starting.
- D Sustained short- circuit current of up to 300% of the rated current for up to 10 seconds.
- D Sustained short-circuit current enabling downstream circuit breakers to trip without collapsing the alternator field.
- D Self-ventilated and drip-proof construction.
- D Windings are vacuum-impregnated with epoxy varnish for dependability and long life.
- D Superior voltage waveform from a two-thirds pitch stator and skewed rotor.
- D Total harmonic distortion (THD) from no load to full load with a linear load is less than 5%.

Application Data

Engine

Engine Specifications	60 Hz	50 Hz
Manufacturer	Kohler	
Engine: model, type	Residential Powertrain KG2204, 2.2 L, 4-Cycle Natural Aspiration	
Cylinder arrangement	In-line 4	
Displacement, L (cu. in.)	2.2 (134.25)	
Bore and stroke, mm (in.)	91 x 86 (3.5 x 3.4)	
Compression ratio	10.5:1	
Piston speed, m/min. (ft./min.)	310 (1016)	258 (847)
Main bearings: quantity, type	5, plain alloy steel	
Rated rpm	1800	1500
Max. power at rated rpm, kW (HP)		
LPG	30 (40)	24 (32)
Natural Gas	27 (36)	22 (30)
Cylinder head material	Cast Iron	
Piston type and material	High Silicon Aluminum	
Crankshaft material	Nodular Iron	
Valve (exhaust) material	Forged Steel	
Governor type	Electronic	
Frequency regulation, no-load to full-load	Isochronous	
Frequency regulation, steady state	□1.0%	
Frequency	Fixed	
Air cleaner type	Dry	

Engine Electrical

Engine Electrical System	
Ignition system	Electronic
Battery charging alternator:	
Ground (negative/positive)	Negative
Volts (DC)	14
Ampere rating	90
Starter motor rated voltage (DC)	12
Battery, recommended cold cranking amps (CCA):	
Qty., rating for - 18_C (0□F)	One, 630
Battery voltage (DC)	12
Battery group size	24

Exhaust

Exhaust System	60 Hz	50 Hz
Exhaust manifold type	Dry	
Exhaust flow at rated kW, m^3/min. (cfm)	1.5 (53)	0.9 (32)
Exhaust temperature at rated kW, dry exhaust, _C (_F)	815 (1500)	
Maximum allowable back pressure, kPa (in. Hg)	50 (14.8)	

Fuel

Fuel System	
Fuel type	Natural Gas or LPG
Fuel supply line inlet	1 in. NPT
Natural gas fuel supply pressure, kPa (in. H_2O)	1.24- 2.74 (5-11)
LPG vapor withdrawal fuel supply pressure, kPa (in. H_2O)	1.24- 2.74 (5-11)

Fuel Composition Limits *	Nat. Gas	LP Gas
Methane, % by volume	90 min.	—
Ethane, % by volume	4.0 max.	—
Propane, % by volume	1.0 max.	85 min.
Propene, % by volume	0.1 max.	5.0 max.
C_4 and higher, % by volume	0.3 max.	2.5 max.
Sulfur, ppm mass	25 max.	
Lower heating value, MJ/m^3 (Btu/ft^3), min.	33.2 (890)	84.2 (2260)

* Fuels with other compositions may be acceptable. If your fuel is outside the listed specifications, contact your local distributor for further analysis and advice.

Lubrication

Lubricating System	
Type	Full Pressure
Oil pan capacity, L (qt.)	4.2 (4.4)
Oil added during oil change (on average), L (qt.)	3.3 (3.5)
Oil filter: quantity, type	1, Cartridge
Oil cooler	Remote

Application Data

Cooling

Radiator System	60 Hz	50 Hz
Ambient temperature, _C (_F)	45 (113)	
Engine jacket water capacity, L (gal.)	2.65 (0.7)	
Radiator system capacity, including engine, L (gal.)	12.4 (3.3)	
Engine jacket water flow, Lpm (gpm)	73.4 (19.4)	59.8 (15.8)
Heat rejected to cooling water at rated kW, dry exhaust, kW (Btu/min.)	25.0 (1425)	21.1 (1201)
Water pump type	Centrifugal	
Fan diameter, mm (in.)	qty. 3 @ 406 (16)	
Fan power requirements (powered by engine battery charging alternator)	12VDC, 18 amps each	

Operation Requirements

Air Requirements	60 Hz	50 Hz
Radiator-cooled cooling air, m^3/min. (scfm)[	51 (1800)	51 (1800)
Combustion air, m^3/min. (cfm)	5.2 (185)	4.3 (154)
Air over engine, m^3/min. (cfm)	25 (900)	25 (900)

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

Fuel Consumption]		
Natural Gas, m^3/hr. (cfh) at % load	**60 Hz**	**50 Hz**
100%	8.5 (301)	7.8 (275)
75%	6.3 (223)	6.4 (225)
50%	5.6 (199)	5.4 (192)
25%	4.0 (140)	3.3 (116)
Exercise	2.8 (97)	2.9 (103)
LP Gas, m^3/hr. (cfh) at % load	**60 Hz**	**50 Hz**
100%	3.2 (113)	2.7 (96)
75%	2.8 (97)	2.3 (81)
50%	2.4 (84)	2.0 (72)
25%	1.8 (63)	1.7 (60)
Exercise	1.4 (51)	1.4 (48)

] Nominal Fuel Rating: Natural gas, 37 MJ/m^3 (1000 Btu/ft^3)
LP Vapor, 93 MJ/m^3 (2500 Btu/ft^3)

LP vapor conversion factors:
8.58 $ft.^3$ = 1 lb.
0.535 m^3 = 1 kg.
36.39 $ft.^3$ = 1 gal.

Sound Enclosure Features

- Sound-attenuating enclosure uses acoustic insulation that meets UL 94 HF1 flammability classification and repels moisture absorption.
- Internally mounted critical silencer.
- Skid-mounted, aluminum construction with two removable access panels.
- Fade-, scratch-, and corrosion-resistant Kohlerr cashmere powder-baked finish.

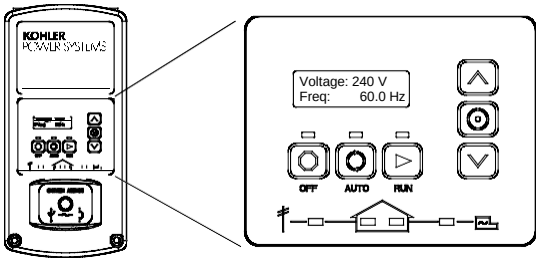
Sound Data

Model 24RCL 8 point logarithmic average sound levels are 55 dB(A) during weekly engine exercise and 61 dB(A) during full-speed generator diagnostics and normal operation. The lowest point sound levels are 53 dB(A) and 60 dB(A) respectively as compared to competitor ratings.*

All sound levels are measured at 7 meters with no load.

* Lowest of 8 points measured around the generator. Sound levels at other points around generator may be higher depending on installation parameters.

RDC2 Controller



The RDC2 controller provides integrated control for the generator set, Kohlerr Model RXT transfer switch, programmable interface module (PIM), and load control module (LCM).

The RDC2 controller's 2-line LCD screen displays status messages and system settings that are clear and easy to read, even in direct sunlight or low light.

RDC2 Controller Features

- Membrane keypad
  - OFF, AUTO, and RUN push buttons
  - Select and arrow buttons for access to system configuration and adjustment menus
- LED indicators for OFF, AUTO, and RUN modes
- LED indicators for utility power and generator set source availability and ATS position (Model RXT transfer switch required)
- LCD screen
  - Two lines x 16 characters per line
  - Backlit display with adjustable contrast for excellent visibility in all lighting conditions
- Scrolling system status display
  - Generator set status
  - Voltage and frequency
  - Engine temperature
  - Oil pressure
  - Battery voltage
  - Engine runtime hours
- Date and time displays
- Smart engine cooldown senses engine temperature
- Digital isochronous governor to maintain steady-state speed at all loads
- Digital voltage regulation: ±1.0% RMS no-load to full-load
- Automatic start with programmed cranking cycle
- Programmable exerciser can be set to start automatically on any future day and time, and to run every week or every two weeks
- Exercise modes
  - Unloaded exercise with complete system diagnostics
  - Unloaded full-speed exercise
  - Loaded full-speed exercise (Model RXT ATS required)
- Front-access mini USB connector for SiteTech™ connection
- Integral Ethernet connector for Kohlerr OnCuer Plus
- Built-in 2.5 amp battery charger
- Remote two-wire start/stop capability for optional connection of Model RDT or RSB transfer switches

See additional controller features on the next page.

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Additional RDC2 Controller Features

D Diagnostic messages
- d Displays diagnostic messages for the engine, generator, Model RXT transfer switch, programmable interface module (PIM), and load control module (LCM)
- d Over 70 diagnostic messages can be displayed

D Maintenance reminders

D System settings
- d System voltage, frequency, and phase
- d Voltage adjustment
- d Measurement system, English or metric

D ATS status (Model RXT ATS required)
- d Source availability
- d ATS position (normal/utility or emergency/generator)
- d Source voltage and frequency

D ATS control (Model RXT ATS required)
- d Source voltage and frequency settings
- d Engine start time delay
- d Transfer time delays
- d Fixed pickup and dropout settings
- d Voltage calibration

D Programmable interface module (PIM) status displays
- d Input status (active/inactive)
- d Output status (active/inactive)

D Load control module (LCM) menus
- d Load status
- d Test function

Generator Set Standard Features

D Aluminum sound enclosure with enclosed silencer

D Battery rack and cables

D Electronic, isochronous governor

D Flexible fuel line

D Gas fuel system (includes fuel mixer, electronic secondary gas regulator, two gas solenoid valves, and flexible fuel line between the engine and the skid-mounted fuel system components)

D Integral vibration isolation

D Oil drain extension

D Line circuit breaker

D Operation and installation literature

D RDC2 controller with built-in battery charger

D Standard five-year or 2000 hour limited warranty

Available Options

Approvals and Listings
- — UL 2200 Listing (60 Hz only)
- — CSA Approval (60 Hz only)

Communication Accessories
- — OnCuer Plus Generator Management System
- — OnCuer Plus Wireless Generator Management System

Electrical System
- — Battery
- — Battery Heater

Starting Aids
- — Oil Pan Heater
  [recommended for ambient temperatures below 0□C (32□F)]

Available Options, Continued

Controller Accessories
- — Programmable Interface Module (PIM)
  (provides 2 digital inputs and 6 relay outputs)
- — Load Control Module (LCM)
  (provides 4 power relays and 2 HVAC relays)

Transfer Switch
- — Model RXT Automatic Transfer Switch (see G11-121)
- — Model RDT Automatic Transfer Switch (see G11-98)
- — Model RSB Automatic Transfer Switch (see G11-101)

Miscellaneous
- — Rated Power Factor Testing

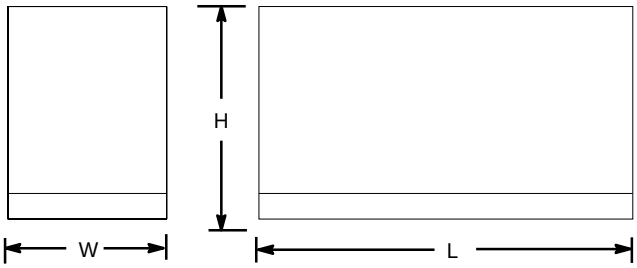
Literature
- — General Maintenance Literature Kit
- — Overhaul Literature Kit
- — Production Literature Kit

Other Options
- — _____
- — _____
- — _____
- — _____

Dimensions and Weights

Overall Size, L x W x H, mm (in.):	1879.6 x 836 x 1146 (74 x 32.9 x 45.1)
Shipping Weight, wet, kg (lb.):	572 (1260)

Weight includes generator set with engine fluids, sound enclosure, silencer, and packaging.



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

DISTRIBUYE:

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