

Models: **8.5/12RES**

# KOHLER POWER SYSTEMS

Multi-Fuel  
LP Vapor/Natural Gas

**ISO 9001**  
KOHLER  
POWER SYSTEMS  
NATIONALLY REGISTERED



## The Kohler® Advantage

- **The Smart Choice**  
Known for its reliability, the Kohler 12 kW generator set was named a “Best Buy” as well as the highest-rated generator in a leading consumer magazine in October, 2006
- **Powerful**  
Exclusive Powerboost™ technology allows the Kohler 12 kW generator to start and run a typical 4 ton (48,000 BTU) central air conditioner, while still running other home appliances and electronics \*
- **Cleaner Power for Sensitive Electronics**  
Protects sophisticated electronics with clean, stable power that exceeds strict utility requirements and IEEE standards for total harmonic distortion (THD)
- **Faster Response**  
Kohler generator sets restore power in as little as 10 seconds
- **Quiet**  
Quiet operation: 65 dB(A) at 7 m maintains neighborhood solitude
- **Premium Five-Year Limited Warranty**

## Standard Features

- **ADC-RES Advanced Digital Control**
  - Designed for today’s most sophisticated electronics
  - Electronic speed control responds quickly to varying household demand
  - Digital voltage regulation protects your sensitive electronics from harmonic distortion and unstable power quality
  - LED display shows system status and setup information
- **Engine Features**
  - Kohler Command PRO® OHV engine with hydraulic valve lifters for reliable performance without routine valve adjustment or lengthy break-in requirements
  - Digital Spark Advance Module (DSAM) optimizes engine performance for natural gas and LP vapor fuels (12RES only)
  - Simple field conversion between natural gas and LP vapor fuels while maintaining emission certification
- **Designed for Easy Installation**
  - Polymer base eliminates the need for a concrete mounting pad, reducing installation time and cost
  - Fuel and electrical connections through the enclosure wall eliminate the need for stub-ups through the bottom
  - Load connection terminal block allows easy field wiring
  - Designed for outdoor installation only
- **Certifications**
  - California Air Resources Board (CARB)-certified for both LP vapor and natural gas (60 Hz models)
  - Meets Environmental Protection Agency (EPA) nonstationary unit requirements (60 Hz models)
  - UL 2200 listed (60 Hz models)
  - Approved for stationary standby applications in locations served by a reliable utility source

## Generator Ratings

Model	Voltage	Phase	Hz	Alternator	Standby Ratings			
					Natural Gas		LP Gas	
					kW/kVA	Amps	kW/kVA	Amps
8.5RES	120/240	1	60	2F4	7.0/7.0	29	8.5/8.5	35
8.5RES	115/230	1	50	2F4	6.3/6.3	27	7.5/7.5	33
12RES	120/240	1	60	2F4	10.4/10.4	43	12.0/12.0	50
12RES	115/230	1	50	2F4	9.3/9.3	40	10.5/10.5	46

RATINGS: Standby ratings apply to installations served by a reliable utility source. All single-phase units are rated at 1.0 power factor. The standby rating is applicable to variable loads with an average load factor of 80% for the duration of the power outage. No overload capacity is specified at this rating. Ratings are in accordance with ISO-3046/1, BS5514, AS2789, and DIN 6271. GENERAL GUIDELINES FOR DERATING: **ALTITUDE:** Derate 4% per 305 m (1000 ft.) elevation above 153 m (500 ft.). **TEMPERATURE:** Derate 1.5% per 5.5°C (10°F) temperature increase above 16°C (60°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 Co. generator distributor for availability.

\* Due to the cycling operation of many electrical appliances, the generator set may not run all appliances simultaneously. Check the appliance manufacturer’s specifications for actual power requirements. Consult a Kohler® Power Systems professional for your exact residential power system requirements.

# Application Data

## Engine

Engine Specifications	60 Hz	50 Hz
Manufacturer	Kohler	
Engine: model, type		
8.5RES	CH20 4-Cycle	
12RES	CH740 4-Cycle	
Cylinder arrangement	V-2	
Displacement, L (cu. in.)		
8.5RES	0.624 (38)	
12RES	0.725 (44)	
Bore and stroke, mm (in.)		
8.5RES	77 x 67 (3.03 x 2.64)	
12RES	83 x 67 (3.27 x 2.64)	
Compression ratio		
8.5RES	8.5:1	
12RES	9.0:1	
Main bearings: quantity, type	2, Parent Material	
Rated rpm	3600	3000
Max. engine power at rated rpm, kW (HP)		
CH20, LP vapor	11.5 (15.4)	10 (14.0)
CH20, natural gas	10.0 (13.4)	9.1 (12.2)
CH740, LP vapor	17.6 (23.6)	15.8 (21.2)
CH740, natural gas	15.3 (20.5)	13.8 (18.5)
Cylinder head material	Aluminum	
Valve material	Steel/Stellite®	
Piston type and material	Aluminum Alloy	
Crankshaft material	Heat Treated, Ductile Iron	
Governor: type	Electronic	
Frequency regulation, no load to full load	Isochronous	
Frequency regulation, steady state	±0.5%	
Air cleaner type	Dry	

## Engine Electrical

Engine Electrical System		
Ignition system	Electronic, DSAM	
Starter motor rated voltage (DC)	12	
Battery charger, ampere rating	6	
Battery (purchased separately):		
Ground	Negative	
Volts (DC)	12	
Battery quantity	1	
Recommended cold cranking amps (CCA) rating for -18°C (0°F)	525	

## Exhaust

Exhaust System	60 Hz	50 Hz
Exhaust flow at rated kW, m <sup>3</sup> /min. (cfm)		
8.5RES	3.3 (115)	2.7 (96)
12RES	3.8 (135)	3.2 (113)
Exhaust temperature at rated kW, dry exhaust, °C (°F)	760 (1400)	

## Lubrication

Lubricating System		
Type	Full Pressure	
Oil capacity (with filter), L (qt.)	1.9 (2.0)	
Oil filter: quantity, type	1, Cartridge	
Oil cooler	Integral	

## Operation Requirements

Cooling Air	8.5ES		12RES	
	60 Hz	50 Hz	60 Hz	50 Hz
Total inlet air, m <sup>3</sup> /min. (cfm)	27.8 (980)	23.2 (820)	28.0 (990)	23.4 (825)
Cooling air, m <sup>3</sup> /min. (cfm)	26.9 (950)	22.4 (790)	26.9 (950)	22.4 (790)
Combustion air, m <sup>3</sup> /min. (cfm)	0.9 (33.4)	0.8 (28.0)	1.1 (39.2)	0.9 (32.6)

## Fuel Requirements

Fuel System			
Fuel types	Natural Gas or LP Vapor		
Fuel supply inlet	1/2 NPT		
Fuel supply pressure, kPa (in. H <sub>2</sub> O):			
Natural gas	1.2-2.7 (5-11)		
LP	1.7-2.7 (7-11)		

## Minimum Gas Pipe Size Recommendation, in. NPT

Pipe Length, m (ft.)	8.5RES		12RES	
	Natural Gas (132,000 Btu/hr.)	LP Vapor (180,000 Btu/hr.)	Natural Gas (193,000 Btu/hr.)	LP Vapor (203,000 Btu/hr.)
8 (25)	3/4	1/2	3/4	3/4
15 (50)	3/4	3/4	1	3/4
30(100)	1	1	1	1
46(150)	1	1	1 1/4	1
61(200)	1	1	1 1/4	1

## Fuel Consumption at % rated load

% Load	8.5RES		12RES	
	60 Hz	50 Hz	60 Hz	50 Hz
Natural Gas, m <sup>3</sup> /hr. (cfh)				
100%	3.7 (132)	3.3 (118)	5.4 (193)	4.8 (173)
75%	3.2 (113)	2.9 (101)	4.7 (163)	4.2 (148)
50%	2.6 (93)	2.3 (83)	3.5 (124)	3.1 (108)
25%	2.2 (77)	1.9 (69)	2.6 (93)	2.4 (84)
LP Vapor, m <sup>3</sup> /hr. (cfh)				
100%	2.0 (72)	1.7 (61)	2.3 (81)	2.1 (74)
75%	1.3 (45)	1.1 (38)	2.1 (75)	1.9 (68)
50%	1.0 (36)	0.9 (31)	1.8 (60)	1.5 (53)
25%	0.8 (29)	0.7 (25)	1.2 (45)	1.1 (40)
LP Vapor, kg/hr. (lb./hr.)				
100%	3.7 (8.4)	3.2 (7.1)	4.3 (9.4)	3.9 (8.6)
75%	2.4 (5.2)	2.1 (4.4)	3.9 (8.7)	3.6 (7.9)
50%	1.9 (4.2)	1.7 (3.6)	3.4 (7.0)	2.8 (6.2)
25%	1.5 (3.4)	1.3 (2.9)	2.2 (5.2)	2.1 (4.7)

## LP vapor conversion factors:

8.58 ft.<sup>3</sup> = 1 lb.  
 0.535 m<sup>3</sup> = 1 kg  
 36.39 ft.<sup>3</sup> = 1 gal.

## Nominal fuel rating:

Natural gas: 37 MJ/m<sup>3</sup> (1000 Btu/ft.<sup>3</sup>)  
 LP vapor: 93 MJ/m<sup>3</sup> (2500 Btu/ft.<sup>3</sup>)

## Alternator

### Alternator Features

- Compliance with NEMA, IEEE, and ANSI standards for temperature rise
- Self-ventilated and dripproof construction
- Vacuum-impregnated windings with fungus-resistant epoxy varnish for dependability and long life
- Superior voltage waveform and minimum harmonic distortion from skewed alternator construction
- Digital voltage regulator with  $\pm 1.5\%$  no-load to full-load RMS regulation
- Rotating-field alternator with static exciter for excellent load response
- Skewed generator construction produces a smooth AC waveform

### Alternator Specifications

Specifications	PowerBoost™ Generator 1-Phase
Manufacturer	Kohler
Output reconnectable	120/240
Type	2-Pole, Rotating Field
Leads, quantity	4
Voltage regulator	Digital
Insulation:	NEMA MG1-1.66
Material	Class H
Temperature rise	Class H
Bearing: quantity, type	1, Sealed Ball
Coupling	Direct
Amortisseur windings	Full
Voltage regulation, no-load to full-load RMS	$\pm 1.5\%$
One-step load acceptance	100% of Rating
Peak motor starting kVA @ 240 V:	
8.5RES	23
12RES	32

## ADC-RES Controller



### Controller Features

- Membrane keypad:
  - Arrow keys step through generator set status displays
  - Password-protected access to system configuration and adjustment menus
  - System voltage/frequency selection and engine configuration
  - Voltage, gain, and engine speed adjustment
- LED display:
  - Engine runtime, hours
  - Output voltage, VAC
  - Output frequency, Hz
  - Battery voltage, VDC
  - Crank cycle status
  - Setup information
  - Software version
  - Faults
- Faults displayed:
  - High battery voltage
  - High engine temperature
  - Low battery voltage
  - Low oil pressure
  - Overcrank
  - Overfrequency
  - Overspeed
  - Overvoltage
  - Underfrequency
  - Undervoltage
- Compact controller integrally mounted to the generator set
- Remote two-wire start/stop capability
- Digital isochronous governor to maintain steady-state speed at all loads
- Digital voltage regulation:  $\pm 1.5\%$  RMS no-load to full-load
- Automatic start with programmed cranking cycle
- Field-upgradeable application software
- Front-access DB9 connector for software upgrade on the junction box
- Generator set master switch (Run/Off-Reset/Auto) on the junction box

## Standard Features

- ADC-RES Advanced Digital Control
- Battery cables
- 6-amp battery charger
- CARB- and EPA-certified fuel system
- Critical silencer
- Designed for outdoor installation only
- Five-year limited warranty
- Fuel solenoid valve and secondary regulator
- Integral vibration isolation
- Line circuit breaker
- Multi-fuel system, LP vapor/natural gas, field-convertible
- Oil drain extension with shutoff valve
- Polymer base
- Rodent-resistant construction
- Sound-deadening, flame-retardant foam per UL 94, class HF-1
- Sound enclosure, quiet 65 dB(A) operation

## Available Accessories

### Electrical System

- Battery
- Battery heater
- Field-connection terminal block
- Relay kit: auxiliary run relay and common fault relay

### Fuel System

- Gas strainer
- Braided stainless steel flexible fuel line

### Maintenance

- Maintenance kit (air and oil filters)
- General maintenance literature kit
- Overhaul literature kit
- Production literature kit

### Starting Aids

- Carburetor heater, 120 VAC (recommended for reliable starting at temperatures below 0°C [32°F])

### Transfer Switch

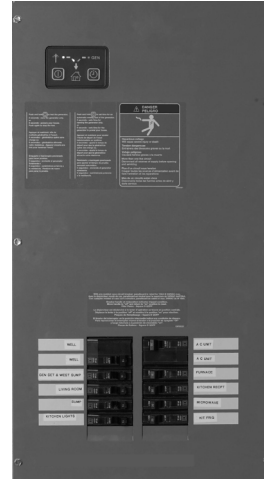
- Kohler automatic transfer switch

### Miscellaneous Accessories

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## Available Accessories

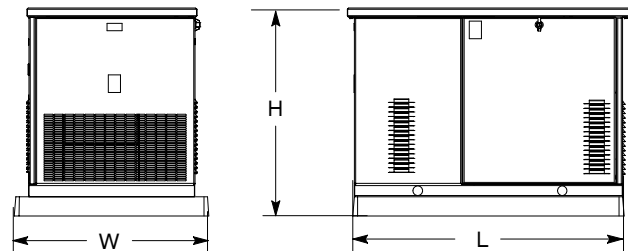
### Model RDT Automatic Transfer Switch



- UL listed
- 100, 200, or 400 amps
- 200 amp service entrance-rated model also available
- 240 VAC/60 Hz or 220 VAC/50 Hz
- Available with or without built-in load center
- Equipped with MPAC™ 500 microprocessor-based controls
- User-friendly controller interface with easy-to-read international symbols
- See specification sheet G11-98 for more information

## Dimensions and Weights

Overall Size, L x W x H: 1123 x 726 x 804 mm  
 (44.2 x 28.6 x 31.6 in.)  
 Weight: 182 kg (400 lb.)  
 Shipping weight: 195 kg (430 lb.)



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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