

Model: **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 Ignition (DSAi) 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)
 - UL listed to Canadian safety standards (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 | CH640 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 ³ /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 | 8.5RES | | 12RES | |
|---|------------|------------|------------|------------|
| | 60 Hz | 50 Hz | 60 Hz | 50 Hz |
| Total inlet air, m ³ /min. (cfm) | 27.8 (980) | 23.2 (820) | 28.0 (990) | 23.4 (825) |
| Cooling air, m ³ /min. (cfm) | 26.9 (950) | 22.4 (790) | 26.9 (950) | 22.4 (790) |
| Combustion air, m ³ /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 ₂ 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 ³ /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 ³ /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.³ = 1 lb.
 0.535 m³ = 1 kg
 36.39 ft.³ = 1 gal.

Nominal fuel rating:

Natural gas: 37 MJ/m³ (1000 Btu/ft.³)
 LP vapor: 93 MJ/m³ (2500 Btu/ft.³)

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

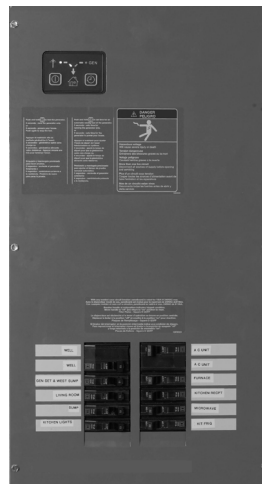
- Kohler automatic transfer switch

Miscellaneous Accessories

- _____
- _____
- _____
- _____
- _____

Available Accessories

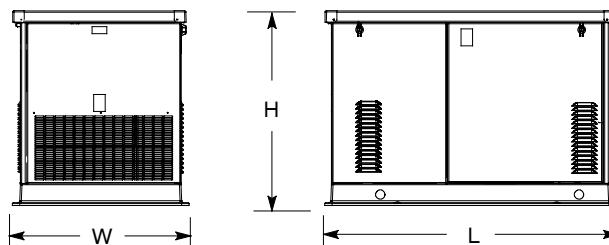
Model RDT Automatic Transfer Switch



- 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: These drawings are provided for reference only and should not be used for planning installation. Contact your local distributor for more detailed information.

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