

Model: **KV450U/KV500**

**KOHLER** POWER SYSTEMS

200–600 V

Diesel



## Ratings Range

|          |     | KV450U<br>60 Hz | KV500<br>50 Hz |
|----------|-----|-----------------|----------------|
| Standby: | kW  | 411–450         | 400            |
|          | kVA | 514–563         | 500            |
| Prime:   | kW  | 374–409         | 364            |
|          | kVA | 467–511         | 455            |

## 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.
- A one-year limited warranty covers all systems and components.
- Volvo engine with 24-volt battery charging alternator.
- Leroy Somer single-bearing alternator with insulation class H.
- Unit-mounted radiator with 50°C (122°F) ambient air capability.
- Skid and vibration isolators.
- Subbase fuel tank, 500 L (132 gal.).
- Dry type air filter.
- Main line circuit breaker.
- Microprocessor controller.
- Battery, battery rack, and cables.
- Industrial 9 dB(A) reduction exhaust silencer (loose).
- Operation and installation literature.

## Generator Set Ratings

| Alternator | Voltage | Ph | Hz | Standby Rating |      | Prime Rating |      |
|------------|---------|----|----|----------------|------|--------------|------|
|            |         |    |    | kW/kVA         | Amps | kW/kVA       | Amps |
| LSA472S5   | 120/208 | 3  | 60 | 429/536        | 1488 | 390/487      | 1353 |
|            | 127/220 | 3  | 60 | 450/563        | 1478 | 409/511      | 1342 |
|            | 115/230 | 3  | 60 | 411/514        | 1290 | 374/467      | 1174 |
|            | 120/240 | 3  | 60 | 429/536        | 1289 | 390/487      | 1173 |
|            | 254/440 | 3  | 60 | 450/563        | 739  | 409/511      | 671  |
|            | 277/480 | 3  | 60 | 450/563        | 677  | 409/511      | 615  |
|            | 347/600 | 3  | 60 | 450/563        | 542  | 409/511      | 492  |
|            | 115/200 | 3  | 50 | 400/500        | 1443 | 364/455      | 1314 |
|            | 110/220 | 3  | 50 | 400/500        | 1312 | 364/455      | 1194 |
|            | 115/230 | 3  | 50 | 400/500        | 1255 | 364/455      | 1142 |
|            | 120/240 | 3  | 50 | 400/500        | 1203 | 364/455      | 1095 |
|            | 220/380 | 3  | 50 | 400/500        | 760  | 364/455      | 691  |
|            | 230/400 | 3  | 50 | 400/500        | 722  | 364/455      | 657  |
|            | 240/415 | 3  | 50 | 400/500        | 696  | 364/455      | 633  |



With Available Enclosure Accessory

**RATINGS:** All three-phase units are rated at 0.8 power factor. See TIB-109 for generator set derate tables.

Obtain the technical information bulletin (TIB-101) on ratings guidelines for the complete ratings definitions.

**PRP:** Prime power is available for an unlimited number of annual operating hours in variable load applications in accordance with ISO-8528/1.

A 10% overload capability is available for a period of 1 hour within a 12-hour period of operating in accordance with ISO-3046/1.

**ESP:** The emergency standby power rating is applicable for supplying emergency power in variable load applications in accordance with ISO-8528/1. Overload is not allowed.

The generator set manufacturer reserves the right to change the design or specifications without notice and without any obligation or liability whatsoever.

# Alternator Specifications

- NEMA-MG21, UTE NF C51.111, VDE 0530, BS 4999, CSA standards compliance for temperature rise and motor starting.
- 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.

| Specifications                           | 60 Hz     | 50 Hz     |
|--|-----------|-----------|
| Ratings voltage                          | 480       | 400       |
| Standby rating @ 27°C, kVA               | 625       | 500       |
| Prime rating @ 40°C, kVA                 | 531       | 455       |
| Efficiency @ full load                   | 93.9%     | 93.8%     |
| Air flow, m <sup>3</sup> /min. (cfm)     | 66 (2331) | 54 (1907) |
| Direct axis subtransient reactance (X"d) | 18%       | 15.4%     |

| Specifications                           | Alternator             |
|--|------------------------|
| Manufacturer                             | Leroy Somer            |
| Type                                     | 4-Pole, Rotating-Field |
| Exciter type                             | Shunt                  |
| Leads: quantity, type                    | 12, Reconnectable      |
| Voltage regulator                        | Solid State, R230      |
| Insulation:                              | NEMA MG1               |
| Material                                 | Class H                |
| Bearing: quantity, type                  | 1, Sealed              |
| Coupling                                 | Direct                 |
| Voltage regulation, no-load to full-load | ±0.5%                  |

## Application Data

### Engine

| Engine Specifications                      | 60 Hz                 | 50 Hz      |
|--|-----------------------|------------|
| Manufacturer                               | Volvo                 |            |
| Engine model                               | TAD1640GE             |            |
| Engine type                                | 4-Cycle, Turbocharged |            |
| Cylinder arrangement                       | 6 Inline              |            |
| Displacement, L (cu. in.)                  | 16.1 (984)            |            |
| Bore and stroke, mm (in.)                  | 144 x 165 (5.7 x 6.5) |            |
| Compression ratio                          | 17.5:1                |            |
| Piston speed, m/min. (ft./min.)            | 594 (1950)            | 495 (1626) |
| Rated rpm                                  | 1800                  | 1500       |
| Max. power at rated rpm, kWm (BHP)         | 479 (642)             | 431 (578)  |
| Governor type                              | Isochronous           |            |
| Frequency regulation, no-load to full-load | ISO 5%                |            |
| Frequency regulation, steady state         | ±0.5%                 |            |
| Air cleaner type, all models               | Dry                   |            |

### Exhaust

| Exhaust System  | 60 Hz       | 50 Hz       |
|---|-------------|-------------|
| Exhaust manifold type                                 | Dry         |             |
| Exhaust flow at rated kW, m <sup>3</sup> /min. (cfm)  | 98.0 (3460) | 85.4 (3015) |
| Exhaust temperature at rated kW, dry exhaust, °C (°F) | 444 (831)   | 456 (853)   |
| Maximum allowable back pressure, kPa (in. Hg)         | 9.7 (2.9)   |             |
| Exhaust outlet size at engine hookup, mm (in.)        | 194 (7.6)   |             |

### Engine Electrical

| Engine Electrical System                       | 60 Hz     | 50 Hz |
|--|-----------|-------|
| Battery charging alternator:                   | 24 Volt   |       |
| Ground (negative/positive)                     | Negative  |       |
| Volts (DC)                                     | 24        |       |
| Starter motor rated voltage (DC)               | 24        |       |
| Battery, recommended cold cranking amps (CCA): |           |       |
| Quantity, CCA rating each                      | Two, 1000 |       |
| Battery voltage (DC)                           | 12        |       |

### Fuel

| Fuel System                  | 60 Hz      | 50 Hz      |
|------------------------------|------------|------------|
| Max. fuel flow, Lph (gph)    | 180 (47.6) | 165 (43.6) |
| Fuel prime pump              | Manual     |            |
| Recommended fuel             | #2 Diesel  |            |
| Fuel tank capacity, L (gal.) | 180 (47.6) |            |
| Fuel tank capacity, L (gal.) | 500 (132)  |            |

### Lubrication

| Lubricating System                    | 60 Hz         | 50 Hz |
|---------------------------------------|---------------|-------|
| Type                                  | Full Pressure |       |
| Oil pan capacity, L (qt.)             | 42 (44.4)     |       |
| Oil pan capacity with filter, L (qt.) | 48 (50.8)     |       |

## Application Data

### Cooling

| Radiator System  | 60 Hz       | 50 Hz      |
|--|-------------|------------|
| Ambient temperature, °C (°F)   | 50 (122)    |            |
| Radiator system capacity, including engine, L (gal.)   | 60 (15.9)   |            |
| Heat rejected to cooling water at rated kW, dry exhaust, kW (Btu/min.)                             | 188 (10690) | 166 (9439) |
| Water pump type  | Centrifugal |            |
| Fan, kWm (HP)  | 15 (20)     | 9 (12)     |
| Max. restriction of cooling air, intake and discharge side of radiator, kPa (in. H <sub>2</sub> O) | 0.25 (1.0)  | 0.3 (1.2)  |

### Operation Requirements

| Air Requirements   | 60 Hz       | 50 Hz       |
|--|-------------|-------------|
| Radiator-cooled cooling air, m <sup>3</sup> /min. (scfm) * | 810 (28608) | 654 (23098) |
| Combustion air, m <sup>3</sup> /min. (cfm)                 | 42.6 (1505) | 36.2 (1278) |

\* Air density = 1.20 kg/m<sup>3</sup> (0.075 lbm/ft<sup>3</sup>)

| Fuel Consumption             | 60 Hz          | 50 Hz        |
|------------------------------|----------------|--------------|
| Diesel, Lph (gph) at % load  | Standby Rating |              |
| 110% (of the standby rating) | 118.3 (31.3)   | 103.4 (27.3) |
| Diesel, Lph (gph) at % load  | Prime Rating   |              |
| 100% (of the prime rating)   | 104.5 (27.6)   | 93.3 (24.6)  |
| 75% (of the prime rating)    | 78.4 (20.7)    | 69.2 (18.3)  |
| 50% (of the prime rating)    | 54.3 (14.4)    | 47.3 (12.5)  |

## Controllers



### Decision-Maker™ 4000

#### Standard Features

- Large LCD display panel
- Unique control wheel for system access
- User buttons for start, stop, menu, and escape
- Emergency stop button
- On/off key switch
- Panel-mounted battery fuse
- Panel-mounted USB ports for PC access and software upgrades
- Password-protected access to control parameters
- Upgradeable software for future enhancements

#### LCD Panel Features

- 600 x 800 resolution
- Multiple lines of text or graphic display
- Icons for quick identification of system status
- Five languages: English, French, German, Portuguese, and Spanish

#### Communication Features

- Engine communication via CANbus
- Modbus communication via RS-485 or ethernet
- PC and flash drive connections via USB

#### Functions

- View and adjust system operation parameters
- View system faults

#### Viewable/Selectable Parameters (may require optional module)

- Voltage: phase-to-neutral, total voltage
- Current
- Frequency
- Power (active/reactive/apparent)
- Power factor
- Engine speed
- Oil pressure
- Coolant temperature
- Battery voltage
- Fuel level (%)
- Time delays

#### Viewable Faults (over 60 individual faults are monitored) including:

- Alternator protection (if equipped)
- Circuit breaker and ground fault protection
- Communication and engine ECM monitoring
- Cooling air monitoring
- Electrical charging system
- Engine cooling system
- Engine lube system
- Fuel system
- Generator set status

## Available Accessories

### Enclosed Unit

- ☐ Sound Enclosure M229, 60 Hz, 73.8 dB(A) @ 7 m (23 ft.), Standby (with enclosed critical silencer)
- ☐ Sound Enclosure M229, 50 Hz, 68 dB(A) @ 7 m (23 ft.), Standby (with enclosed critical silencer)

### Open Unit

- ☐ Exhaust Silencer, Critical 40 dB(A) Reduction
- ☐ Exhaust Silencer, Residential 29 dB(A) Reduction
- ☐ Exhaust Pipe Extension, 40 cm (16 in.)
- ☐ Flexible Exhaust Connector
- ☐ Protection Mesh for Exhaust Parts

### Cooling System

- ☐ Block Heater [recommended for ambient temperatures below 0°C (32°F)]
- ☐ Radiator Core Guard

### Decision-Maker™ 4000 Controller

- ☐ Alternator Protection
- ☐ Audible Alarm Module
- ☐ Five Expandable Modules with Four Inputs/Six Outputs Each
- ☐ Network Modules (RTC and GSM modems and ethernet router)
- ☐ NFPA-110 Module
- ☐ Remote Annunciator
- ☐ Voltage/Speed Adjustment Module
- ☐ WinTelys Software

### Fuel System

- ☐ Automatic Fuel Tank Fill Kit
- ☐ Subbase Fuel Tank with Secondary Containment Basin
- ☐ Subbase Fuel Tank Leak Alarm
- ☐ Water Separator Fuel Filter

### Electrical System

- ☐ Battery Charger, Equalize/Float Type
- ☐ Battery Isolator Switch

### Engine and Alternator

- ☐ Alternator Strip Heater
- ☐ Air Cleaner, Heavy Duty (with air restriction indicator)
- ☐ Droop Kit with 3-Function Voltage Regulator
- ☐ Lube Oil Drain Pump
- ☐ PMG Alternator and Voltage Regulator
- ☐ Tropical Heavy-Duty Alternator Insulation

### Miscellaneous Accessories

- ☐ \_\_\_\_\_
- ☐ \_\_\_\_\_
- ☐ \_\_\_\_\_
- ☐ \_\_\_\_\_
- ☐ \_\_\_\_\_

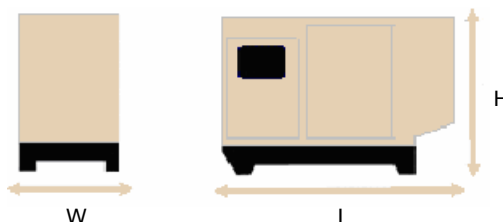
## Dimensions and Weights

### Open Model



Overall Size, L x W x H, mm (in.): 3470 x 1500 x 2043 (137 x 59 x 80)  
 Weight, wet, kg (lb.): 4030 (8882)

### With Available Enclosure Accessory



Overall Size, L x W x H, mm (in.): 5031 x 1560 x 2435 (198 x 61 x 96)  
 Weight, wet, kg (lb.): 5280 (11637)

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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