

H. ACCEPTED MANUFACTURERS

- 1) ONE OF THE FOLLOWING:
  - a) KOHLER
  - b) CUMMINS/ONAN
  - c) DETROIT DIESEL
- 2) KOHLER MODEL NUMBERS SHALL BE USED HERIN TO ESTABLISH EQUIVALENCY STANDARDS FOR WHICH OTHER LISTED MANUFACTURES ARE TO PROVIDE.

I. ENGINE-GENERATOR SET

- 1) THE FACTORY ASSEMBLED AND TESTED ENGINE-GENERATOR SET SHALL BE A TIER-3 SERIES EPA-CERTIFIED FOR STATIONARY EMERGENCY GENERATORS.
- 2) MOUNTING FRAME: MAINTAIN ALIGNMENT OF MOUNTED COMPONENTS WITHOUT DEPENDING ON CONCRETE FOUNDATION AND HAVE LIFTING ATTACHMENTS.
  - a) RIGGING DIAGRAM: INSCRIBED ON METAL PLATE PERMANENTLY ATTACHED TO MOUNTING FRAME TO INDICATE LOCATION AND LIFTING CAPACITY OF EACH LIFTING ATTACHMENT AND GENERATOR-SET CENTER OF GRAVITY.
- 3) CAPACITIES AND CHARACTERISTICS:
  - a) OUTPUT RATING: AS FOLLOWS WITH STANDBY CAPACITY AT 0.8PF TO AS A UNIT EVIDENCED BY RECORDS OF PROTOTYPE TESTING.
    - UNDER BASE BID FOR EMERGENCY POWER TO SUPPORT ONLY THE SERVER/IT ROOM LIGHT, POWER, DATA, COMMUNICATIONS, AND AIR; PROVIDE A NOMINAL 80KW UNIT HAVING ALTERNATOR FOR AN ACTUAL RATING OF 83KW/104KVA AND 288AMPS AS MANUFACTURED BY KOHLER MODEL 80REOZJF WITH ALTERNATOR MODEL 4R9X.
    - UNDER ALTERNATE BID FOR EMERGENCY POWER TO SUPPORT THE ENTIRE BUILDING; PROVIDE A NOMINAL 200KW UNIT HAVING ALTERNATOR FOR AN ACTUAL RATING OF 200KW/250KVA AND 694AMPS MANUFACTURED BY KOHLER MODEL 200REOZJF WITH ALTERNATOR MODEL 4UA13.
  - b) OUTPUT CONNECTIONS: WIRED FOR 120/208 VOLT, THREE-PHASE, FOUR-WIRE, 60 HERTZ.
  - c) ALTERNATOR: OVERSIZED, 4 POLE, REVOLVING FIELD TYPE, CLASS-H INSULATION, 130°C STANDBY TEMP RISE, 12 LEAD RECONNECTABLE, SYNCHRONOUS BRUSHLESS EXCITATION, SINGLE SEALED CARTRIDGE BEARINGS, DIRECT FLEXIBLE DISC COUPLING, 100% LAD CAPACITY STANDBY, AND HIGHEST PEAK MOTOR START KVA AS INDICATED.
  - d) NAMEPLATES: FOR EACH MAJOR SYSTEM COMPONENT TO IDENTIFY MANUFACTURER'S NAME AND ADDRESS, AND MODEL AND SERIAL NUMBER OF COMPONENT.

**TRUMBULL BOARD OF EDUCATION BUILDING  
GENERATOR LOAD SUMMARY**

**01.22.2014**

**SERVER ROOM GENERATOR**

- Lighting 1.5kVA
- Workstation Receptacles 3.0kVA
- Printer/Copiers 3.0kVA (4 units, 1.5kVA each, 50% diversity)
- UPS New 20kVA (~~10 units, 120V each, totaling 30kVA~~)
- Server Room CRAC 33.8kVA (8 ton unit, with heater)
- Server Room CRAC cooler 2 fans at 3/4HP

**WHOLE BUILDING GENERATOR**

- Lighting 29kVA
  - Receptacles 20kVA
  - UPS New 20kVA (~~10 units, 120V each, totaling 30kVA~~)
  - Boiler (1/2HP) 0.8kVA
  - Pump (7.5HP) 9.0kVA
  - Circ (3/4HP) 1.1kVA
  - Electric Heat 21.0kVA (10 units, 30kVA, 70% diversity)
  - Large Area Heat Pump AH1 8.6kVA
  - Large Area Heat Pump HP1 9.5kVA
  - Large Area Heat Pump AH2 9.8kVA
  - Large Area Heat Pump AH3 7.5kVA
  - Large Area Heat Pump HP3 22.3kVA  
57.7kVA, 70% diversity
- Total 40.0kVA
- Room Heat Pumps 18.3kVA (28 units, 26.2kVA, 70% diversity)
  - Server Room CRAC 18.8kVA (8ton unit, 33.8kVA, without heater)
  - Server Room CRAC cooler 2 fans at 3/4HP

# KOHLER POWER SYSTEMS

## Generator Set Sizing

**Project** Trumbull Edu.  
**Customer** AKF  
**Date** 11 / 22 / 2013

### Generator Set

**Model No.** ~~230~~REOZJE      **Gensets** 1  
**Engine** John Deere 6090HF484  
**Alternator** 4UA13

### Performance Summary

**LN/LL Voltage** 120/208 volts      **Phase(s)** 3 phase  
**Frequency** 60 hertz      **Altitude** 500 feet  
**Fuel Type** Diesel      **Ambient Temp.** 70° F

**Genset Rating @ 130C** ~~230~~ kW  
**Genset Derated Rating** 230.0 kW  
**Total Running Power** 172.27 kW  
**Percent of Available kW Used** 74.9 %

200kW to be used based on smaller 20kVA UPS quoted to Trumbull by Vendors

**Alternator Starting kVA** 420.57 kVA @ ~~20.0~~ % dip  
**Peak Starting kVA** 84.8 kVA      ~~25.0~~ %

**Maximum Voltage Dip** 5.04%  
**Maximum Frequency Dip** 2.11% (20% Allowed)  
**Voltage THD** 4.7 %

### Load Profile

| Step #1 -- Load Step #1                                            | Qty | Run   |       |      | Start |       | Volt Dip % | Freq Dip % | Harmonic (L-N) Dip % |
|--------------------------------------------------------------------|-----|-------|-------|------|-------|-------|------------|------------|----------------------|
|                                                                    |     | kW    | kVA   | pF   | kW    | kVA   |            |            |                      |
| <b>Lighting</b><br>Lighting, Fluorescent, High Efficiency Magnetic | 1   | 29.00 | 29.00 | 1.00 | 29.00 | 29.00 |            |            |                      |
| Step Totals:                                                       |     | 29.00 | 29.00 | 1.00 | 29.00 | 29.00 | 1.94       | 1.4        | 2.6/2.6/2.6          |
| Cum. Totals:                                                       |     | 29.00 | 29.00 | 1.00 |       |       |            |            |                      |

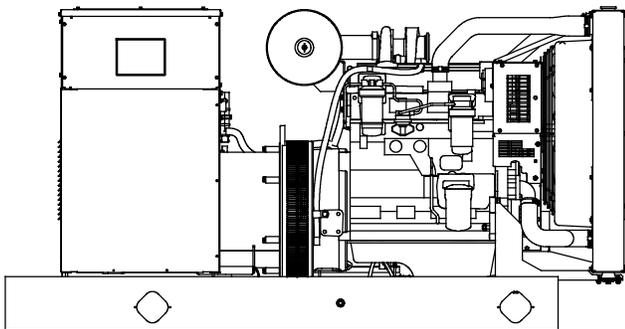
|                         |  |  |  |  |  |  |  |  |  |
|-------------------------|--|--|--|--|--|--|--|--|--|
| Step #2 -- Load Step #2 |  |  |  |  |  |  |  |  |  |
|-------------------------|--|--|--|--|--|--|--|--|--|



**Tier 3 EPA-Certified for Stationary Emergency Applications**

**Ratings Range**

|                 |            |              |
|-----------------|------------|--------------|
|                 |            | <b>60 Hz</b> |
| <b>Standby:</b> | <b>kW</b>  | 63-83        |
|                 | <b>kVA</b> | 63-104       |
| <b>Prime:</b>   | <b>kW</b>  | 58-76        |
|                 | <b>kVA</b> | 58-95        |



**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 accepts rated load in one step.
- The 60 Hz generator set meets NFPA 110, Level 1, when equipped with the necessary accessories and installed per NFPA standards.
- A one-year limited warranty covers all systems and components. Two- and five-year extended warranties are also available.
- Alternator features:
  - The unique Fast-Response™ X excitation system delivers excellent voltage response and short-circuit capability using a rare-earth, permanent magnet (PM)-excited alternator.
  - The brushless, rotating-field alternator has broadrange reconnectability.
- Other features:
  - Kohler designed controllers for guaranteed system integration and remote communication. See Controllers on page 3.
  - The low coolant level shutdown prevents overheating (standard on radiator models only).
  - Integral vibration isolation eliminates the need for under-unit vibration spring isolators.
  - Multiple circuit breaker configurations.

**Generator Set Ratings**

| Alternator | Voltage | Ph | Hz | 130° C Rise Standby Rating |      | 105° C Rise Prime Rating |      |
|------------|---------|----|----|----------------------------|------|--------------------------|------|
|            |         |    |    | kW/kVA                     | Amps | kW/kVA                   | Amps |
| 4P10X      | 120/208 | 3  | 60 | 77/96                      | 267  | 71/89                    | 246  |
|            | 127/220 | 3  | 60 | 80/100                     | 262  | 74/93                    | 243  |
|            | 120/240 | 3  | 60 | 77/96                      | 232  | 71/89                    | 213  |
|            | 120/240 | 1  | 60 | 63/63                      | 263  | 58/58                    | 242  |
|            | 139/240 | 3  | 60 | 81/101                     | 244  | 74/93                    | 223  |
|            | 220/380 | 3  | 60 | 70/88                      | 133  | 65/81                    | 123  |
|            | 277/480 | 3  | 60 | 81/101                     | 122  | 74/93                    | 111  |
|            | 347/600 | 3  | 60 | 81/101                     | 97   | 74/93                    | 89   |
| 4R9X       | 120/208 | 3  | 60 | 83/104                     | 288  | 76/95                    | 264  |
|            | 127/220 | 3  | 60 | 83/104                     | 272  | 76/95                    | 249  |
|            | 120/240 | 3  | 60 | 83/104                     | 250  | 76/95                    | 229  |
|            | 120/240 | 1  | 60 | 76/76                      | 317  | 70/70                    | 292  |
|            | 139/240 | 3  | 60 | 83/104                     | 250  | 76/95                    | 229  |
|            | 220/380 | 3  | 60 | 83/104                     | 158  | 76/95                    | 144  |
|            | 277/480 | 3  | 60 | 83/104                     | 125  | 76/95                    | 114  |
| 4T9X       | 120/240 | 1  | 60 | 81/81                      | 338  | 74/74                    | 308  |

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:* The standby rating is applicable to varying loads for the duration of a power outage. There is no overload capability for this rating. *Prime Power Ratings:* 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 and ISO-3046-1. For limited running time and continuous ratings, consult the factory. Obtain technical information bulletin (TIB-101) for ratings guidelines, complete ratings definitions, and site condition derates. The generator set manufacturer reserves the right to change the design or specifications without notice and without any obligation or liability whatsoever.

# Alternator Specifications

| Specifications                           | Alternator                              |
|------------------------------------------|-----------------------------------------|
| Manufacturer                             | Kohler                                  |
| Type                                     | 4-Pole, Rotating-Field                  |
| Exciter type                             | Brushless, Rare-Earth, Permanent-Magnet |
| Leads: quantity, type                    |                                         |
| 4PX, 4RX                                 | 12, Reconnectable                       |
| 4TX                                      | 4, 120/240                              |
| 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 | Controller Dependent                    |
| One-step load acceptance                 | 100% of Rating                          |
| Unbalanced load capability               | 100% of Rated Standby Current           |

- 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 alternator field.
- Self-ventilated and drip-proof 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           | Alternator                   |
|--------------------------|------------------------------|
| Peak motor starting kVA: | (35% dip for voltages below) |
| 480 V 4P10X (12 lead)    | 275                          |
| 480 V 4R9X (12 lead)     | 385                          |
| 240 V 4T9X (4 lead)      | 237                          |

## Application Data

### Engine

| Engine Specifications                      |                                          |
|--------------------------------------------|------------------------------------------|
| Manufacturer                               | John Deere                               |
| Engine model                               | 4045HF285H                               |
| Engine type                                | 4-Cycle, Turbocharged, Charge Air-Cooled |
| Cylinder arrangement                       | 4 Inline                                 |
| Displacement, L (cu. in.)                  | 4.5 (276)                                |
| Bore and stroke, mm (in.)                  | 106 x 127 (4.19 x 5.00)                  |
| Compression ratio                          | 19:1                                     |
| Piston speed, m/min. (ft./min.)            | 457 (1500)                               |
| Main bearings: quantity, type              | 5, Replaceable Insert                    |
| Rated rpm                                  | 1800                                     |
| Max. power at rated rpm, kWm (BHP)         | 99 (133)                                 |
| Cylinder head material                     | Cast Iron                                |
| Crankshaft material                        | Forged Steel                             |
| Valve material:                            |                                          |
| Intake                                     | Chromium-Silicon Steel                   |
| Exhaust                                    | Stainless Steel                          |
| Governor: type, make/model                 | JDEC Electronic L16<br>Denso HP3         |
| Frequency regulation, no-load to full-load | Isochronous                              |
| Frequency regulation, steady state         | ±0.25%                                   |
| Frequency                                  | Fixed                                    |
| Air cleaner type, all models               | Dry                                      |

### Engine Electrical

| Engine Electrical System                       |          |
|------------------------------------------------|----------|
| Battery charging alternator:                   | 12 Volt  |
| Ground (negative/positive)                     | Negative |
| Volts (DC)                                     | 12       |
| Ampere rating                                  | 65       |
| Starter motor rated voltage (DC)               | 12       |
| Battery, recommended cold cranking amps (CCA): |          |
| Quantity, CCA rating each                      | One, 640 |
| Battery voltage (DC)                           | 12       |

### Fuel

| Fuel System                                |                            |
|--------------------------------------------|----------------------------|
| Fuel supply line, min. ID, mm (in.)        | 11.0 (0.44)                |
| Fuel return line, min. ID, mm (in.)        | 6.0 (0.25)                 |
| Max. lift, fuel pump: type, m (ft.)        | Engine-Driven, 1.8 (6.0)   |
| Max. fuel flow, Lph (gph)                  | 62.5 (16.5)                |
| Max. return line restriction, kPa (in. Hg) | 20 (5.9)                   |
| Fuel prime pump                            | Manual                     |
| Fuel filter                                |                            |
| Primary                                    | 30 Microns                 |
| Secondary                                  | 2 Microns @ 98% Efficiency |
| Water Separator                            | Yes                        |
| Recommended fuel                           | #2 Diesel                  |

### Exhaust

| Exhaust System                                        |            |
|-------------------------------------------------------|------------|
| Exhaust manifold type                                 | Dry        |
| Exhaust flow at rated kW, m <sup>3</sup> /min. (cfm)  | 19.2 (679) |
| Exhaust temperature at rated kW, dry exhaust, °C (°F) | 579 (1074) |
| Maximum allowable back pressure, kPa (in. Hg)         | 7.5 (2.2)  |
| Exhaust outlet size at engine hookup, mm (in.)        | 98 (3.86)  |

### Lubrication

| Lubricating System                    |               |
|---------------------------------------|---------------|
| Type                                  | Full Pressure |
| Oil pan capacity, L (qt.)             | 14.7 (15.5)   |
| Oil pan capacity with filter, L (qt.) | 15.6 (16.5)   |
| Oil filter: quantity, type            | 1, Cartridge  |
| Oil cooler                            | Water-Cooled  |

# Application Data

## Cooling

### Radiator System

|                                                                                                    |             |
|----------------------------------------------------------------------------------------------------|-------------|
| Ambient temperature, °C (°F) *                                                                     | 50 (122)    |
| Engine jacket water capacity, L (gal.)                                                             | 8.5 (2.25)  |
| Radiator system capacity, including engine, L (gal.)                                               | 20.1 (5.3)  |
| Engine jacket water flow, Lpm (gpm)                                                                | 155 (41)    |
| Heat rejected to cooling water at rated kW, dry exhaust, kW (Btu/min.)                             | 54.4 (3096) |
| Heat rejected to air charge cooler at rated kW, dry exhaust, kW (Btu/min.)                         | 13.5 (768)  |
| Water pump type                                                                                    | Centrifugal |
| Fan diameter, including blades, mm (in.)                                                           | 600 (23.6)  |
| Fan, kWm (HP)                                                                                      | 6.6 (8.8)   |
| Max. restriction of cooling air, intake and discharge side of radiator, kPa (in. H <sub>2</sub> O) | 0.125 (0.5) |

\* Enclosure with enclosed silencer reduces ambient temperature capability by 5°C (9°F).

## Operation Requirements

### Air Requirements

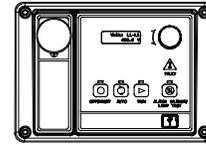
|                                                           |             |
|-----------------------------------------------------------|-------------|
| Radiator-cooled cooling air, m <sup>3</sup> /min. (scfm)‡ | 142 (5000)  |
| Combustion air, m <sup>3</sup> /min. (cfm)                | 6.9 (244)   |
| Heat rejected to ambient air:                             |             |
| Engine, kW (Btu/min.)                                     | 22.9 (1300) |
| Alternator, kW (Btu/min.)                                 | 9.8 (560)   |

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

### Fuel Consumption

| Diesel, Lph (gph) at % load | Standby Rating |       |
|-----------------------------|----------------|-------|
| 100%                        | 26.1           | (6.9) |
| 75%                         | 21.2           | (5.6) |
| 50%                         | 15.5           | (4.1) |
| 25%                         | 8.3            | (2.2) |
| Diesel, Lph (gph) at % load | Prime Rating   |       |
| 100%                        | 23.8           | (6.3) |
| 75%                         | 19.3           | (5.1) |
| 50%                         | 14.4           | (3.8) |
| 25%                         | 7.9            | (2.1) |

## Controllers

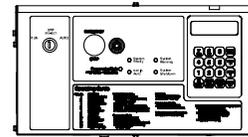


### Decision-Maker® 3000 Controller

Provides advanced control, system monitoring, and system diagnostics for optimum performance and compatibility.

- Digital display and menu control provide easy local data access
- Measurements are selectable in metric or English units
- Remote communication thru a PC via network or serial configuration
- Controller supports Modbus® protocol
- Integrated hybrid voltage regulator with ±0.5% regulation
- Built-in alternator thermal overload protection
- NFPA 110 Level 1 capability

Refer to G6-100 for additional controller features and accessories.



### Decision-Maker® 550 Controller

Provides advanced control, system monitoring, and system diagnostics with remote monitoring capabilities.

- Digital display and keypad provide easy local data access
- Measurements are selectable in metric or English units
- Remote communication thru a PC via network or modem configuration
- Controller supports Modbus® protocol
- Integrated voltage regulator with ±0.25% regulation
- Built-in alternator thermal overload protection
- NFPA 110 Level 1 capability

Refer to G6-46 for additional controller features and accessories.

## Standard Features

- Alternator Protection  
(standard with Decision-Maker® 550 controller only)
- Battery Rack and Cables
- Local Emergency Stop Switch
- Oil Drain Extension
- Operation and Installation Literature

## Available Options

### Approvals and Listings

- California OSHPD Approval
- CSA Approval
- IBC Seismic Certification
- UL 2200 Listing

### Enclosed Unit

- Sound Enclosure (with enclosed critical silencer)
- Weather Enclosure (with enclosed critical silencer)

### Open Unit

- Exhaust Silencer, Critical (kit: PA-354809)
- Flexible Exhaust Connector, Stainless Steel

### Fuel System

- Flexible Fuel Lines
- Fuel Pressure Gauge
- Subbase Fuel Tanks

### Controller

- Common Failure Relay
- Communication Products and PC Software
- Customer Connection (Decision-Maker® 550 controller only)
- Dry Contact (isolated alarm) (Decision-Maker® 550 controller only)
- Input/Output Module (Decision-Maker® 3000 controller only)
- Remote Emergency Stop Switch
- Remote Serial Annunciator Panel
- Run Relay

### Cooling System

- Block Heater, 1500 W, 90–120 V, 1 Ph  
Recommended for ambient temperatures below 0°C (32°F)
- Radiator Duct Flange

### Electrical System

- Alternator Strip Heater
- Battery
- Battery Charger, Equalize/Float Type
- Battery Heater
- Line Circuit Breaker (NEMA type 1 enclosure)
- Line Circuit Breaker with Shunt Trip (NEMA type 1 enclosure)

### Paralleling System

- Manual Speed Adjust

### Miscellaneous

- Air Cleaner, Heavy Duty
- Air Cleaner Restriction Indicator
- Certified Test Report
- Crankcase Emissions Canister
- Engine Fluids Added
- Rated Power Factor Testing
- Rodent Guards

### Literature

- General Maintenance
- NFPA 110
- Overhaul
- Production

### Warranty

- 2-Year Basic
- 5-Year Basic
- 5-Year Comprehensive

### Other Options

- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_

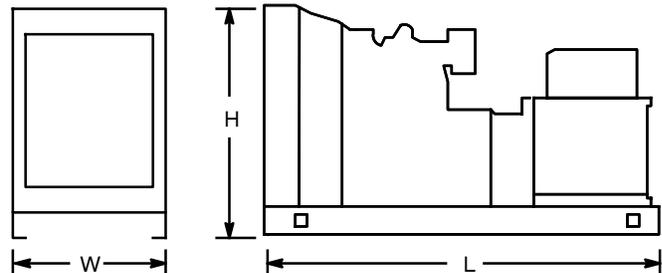
## Dimensions and Weights

Overall Size, L x W x H, mm (in.):

Wide Skid: See Enclosure ADV Drawing

Narrow Skid: 2334 x 864 x 1216 (91.89 x 34.02 x 47.90)

Weight (radiator model), wet, kg (lb.): 1125 (2480)



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:**

# QuickSize Generator Set Sizing

Project TRUMBEL BOARD OF ED - Kohler, Diesel, 2-Step with ~~30kVA~~ UPS  
Customer AKF 20kVA

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## Generator Set

Model No. ~~100REOZJC~~ Gensets 1  
Engine 4045HF275 (Diesel) EPA Certified thru 12/31/2006  
Alternator ~~4S9W~~  
4R9X for 83kW genset rating

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## Performance Summary

|                 |         |       |               |     |      |
|-----------------|---------|-------|---------------|-----|------|
| LN / LL Voltage | 120/208 | volts | Altitude      | 500 | feet |
| Frequency       | 60      | hertz | Ambient Temp. | 70  | F    |
| Phase(s)        | 3       | phase |               |     |      |

|                              |                      |
|------------------------------|----------------------|
| Genset Rating @ 130C Rise    | <del>100.00</del> kW |
| Genset Derated Rating        | 100.00 kW            |
| Total Running Power          | 72.78 kW             |
| Percent of Available kW Used | 72.78 %              |

80kW to be used based on smaller 20kVA UPS quoted to Trumbull by UPS Vendors

|                         |                      |
|-------------------------|----------------------|
| Alternator Starting kVA | 197.86 kVA @ 25% dip |
| Peak Starting kVA       | 122.08 kVA           |

|                       |                        |
|-----------------------|------------------------|
| Maximum Voltage Dip   | 18.39 %                |
| Maximum Frequency Dip | 7.40 % ( 20% allowed ) |
| Voltage THD           | 6.99 % ( 15% allowed ) |

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## Informational

|                    |                           |
|--------------------|---------------------------|
| Program Version    | 8.6.0                     |
| Database Version   | 1.32                      |
| Project Created    | June 7, 2013; 11:53:10 AM |
| Project Last Saved | June 7, 2013; 02:24:18 PM |
| Report Created     | June 7, 2013; 04:06:36 PM |

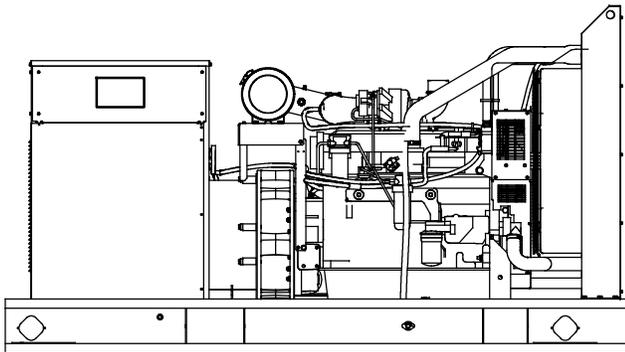
Project Created By



**Tier 3 EPA-Certified for Stationary Emergency Applications**

**Ratings Range**

|          |     | 60 Hz   |
|----------|-----|---------|
| Standby: | kW  | 168-200 |
|          | kVA | 210-250 |
| Prime:   | kW  | 158-180 |
|          | kVA | 198-225 |



**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 accepts rated load in one step.
- The 60 Hz generator set meets NFPA 110, Level 1, when equipped with the necessary accessories and installed per NFPA standards.
- A one-year limited warranty covers all systems and components. Two- and five-year extended warranties are also available.
- Alternator features:
  - The unique Fast-Response™ X excitation system delivers excellent voltage response and short-circuit capability using a rare-earth, permanent magnet (PM)-excited alternator. (4S13X alternator)
  - The unique Fast-Response™ II excitation system delivers excellent voltage response and short-circuit capability using a permanent magnet (PM)-excited alternator. (4UA9 and 4UA13 alternators)
  - The brushless, rotating-field alternator has broadrange reconnectability.
- Other features:
  - Kohler designed controllers for guaranteed system integration and remote communication. See Controllers on page 3.
  - The low coolant level shutdown prevents overheating (standard on radiator models only).
  - Integral vibration isolation eliminates the need for under-unit vibration spring isolators.
  - Multiple circuit breaker configurations.

**Generator Set Ratings**

| Alternator | Voltage | Ph | Hz | 130° C Rise Standby Rating |      | 105° C Rise Prime Rating |      |
|------------|---------|----|----|----------------------------|------|--------------------------|------|
|            |         |    |    | kW/kVA                     | Amps | kW/kVA                   | Amps |
| 4S13X      | 120/208 | 3  | 60 | 184/230                    | 639  | 173/216                  | 600  |
|            | 127/220 | 3  | 60 | 194/243                    | 636  | 180/225                  | 590  |
|            | 120/240 | 3  | 60 | 184/230                    | 553  | 173/216                  | 520  |
|            | 139/240 | 3  | 60 | 200/250                    | 601  | 180/225                  | 541  |
|            | 220/380 | 3  | 60 | 168/210                    | 319  | 158/198                  | 300  |
|            | 277/480 | 3  | 60 | 200/250                    | 301  | 180/225                  | 271  |
| 4UA9       | 120/208 | 3  | 60 | 200/250                    | 694  | 180/225                  | 625  |
|            | 127/220 | 3  | 60 | 200/250                    | 656  | 180/225                  | 590  |
|            | 120/240 | 3  | 60 | 200/250                    | 601  | 180/225                  | 541  |
|            | 139/240 | 3  | 60 | 200/250                    | 601  | 180/225                  | 541  |
|            | 220/380 | 3  | 60 | 200/250                    | 380  | 180/225                  | 342  |
|            | 277/480 | 3  | 60 | 200/250                    | 301  | 180/225                  | 271  |
|            | 347/600 | 3  | 60 | 200/250                    | 241  | 180/225                  | 217  |
| 4UA13      | 120/208 | 3  | 60 | 200/250                    | 694  | 180/225                  | 625  |
|            | 127/220 | 3  | 60 | 200/250                    | 656  | 180/225                  | 590  |
|            | 120/240 | 3  | 60 | 200/250                    | 601  | 180/225                  | 541  |
|            | 139/240 | 3  | 60 | 200/250                    | 601  | 180/225                  | 541  |
|            | 220/380 | 3  | 60 | 200/250                    | 380  | 180/225                  | 342  |
|            | 277/480 | 3  | 60 | 200/250                    | 301  | 180/225                  | 271  |
|            | 347/600 | 3  | 60 | 200/250                    | 241  | 180/225                  | 217  |

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: The standby rating is applicable to varying loads for the duration of a power outage. There is no overload capability for this rating. Prime Power Ratings: 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 and ISO-3046-1. For limited running time and continuous ratings, consult the factory. Obtain technical information bulletin (TIB-101) for ratings guidelines, complete ratings definitions, and site condition derates. The generator set manufacturer reserves the right to change the design or specifications without notice and without any obligation or liability whatsoever.

# Alternator Specifications

| Specifications                           | Alternator                    |
|------------------------------------------|-------------------------------|
| Manufacturer                             | Kohler                        |
| Type                                     | 4-Pole, Rotating-Field        |
| Exciter type                             | Brushless, Permanent-Magnet   |
| Leads: quantity, type<br>4SX, 4UA        | 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 | Controller Dependent          |
| One-step load acceptance                 | 100% of Rating                |
| Unbalanced load capability               | 100% of Rated Standby Current |

- 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 alternator field.
- Self-ventilated and drip-proof 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           | Alternator                   |
|--------------------------|------------------------------|
| Peak motor starting kVA: | (35% dip for voltages below) |
| 480 V 4S13X (12 lead)    | 570                          |
| 480 V 4UA9 (12 lead)     | 700                          |
| 480 V 4UA13 (12 lead)    | 960                          |

## Application Data

### Engine

| Engine Specifications                      |                                          |
|--------------------------------------------|------------------------------------------|
| Manufacturer                               | John Deere                               |
| Engine model                               | 6068HFG85                                |
| Engine type                                | 4-Cycle, Turbocharged, Charge Air-Cooled |
| Cylinder arrangement                       | 6 Inline                                 |
| Displacement, L (cu. in.)                  | 6.8 (415)                                |
| Bore and stroke, mm (in.)                  | 106 x 127 (4.19 x 5.00)                  |
| Compression ratio                          | 17.0:1                                   |
| Piston speed, m/min. (ft./min.)            | 457 (1500)                               |
| Main bearings: quantity, type              | 7, Replaceable Insert                    |
| Rated rpm                                  | 1800                                     |
| Max. power at rated rpm, kWm (BHP)         | 235 (315)                                |
| Cylinder head material                     | Cast Iron                                |
| Crankshaft material                        | Forged Steel                             |
| Valve material:                            |                                          |
| Intake                                     | Chromium-Silicon Steel                   |
| Exhaust                                    | Stainless Steel                          |
| Governor: type, make/model                 | JDEC Electronic L14<br>Denso HP3         |
| Frequency regulation, no-load to full-load | Isochronous                              |
| Frequency regulation, steady state         | ±0.25%                                   |
| Frequency                                  | Fixed                                    |
| Air cleaner type, all models               | Dry                                      |

### Engine Electrical

| Engine Electrical System                       |          |
|------------------------------------------------|----------|
| Battery charging alternator:                   | 24 Volt  |
| Ground (negative/positive)                     | Negative |
| Volts (DC)                                     | 24       |
| Ampere rating                                  | 45       |
| Starter motor rated voltage (DC)               | 24       |
| Battery, recommended cold cranking amps (CCA): |          |
| Quantity, CCA rating each                      | Two, 950 |
| Battery voltage (DC)                           | 12       |

### Fuel

| Fuel System                                |                            |
|--------------------------------------------|----------------------------|
| Fuel supply line, min. ID, mm (in.)        | 11.0 (0.44)                |
| Fuel return line, min. ID, mm (in.)        | 6.0 (0.25)                 |
| Max. lift, fuel pump: type, m (ft.)        | Mechanical, 1.8 (6.0)      |
| Max. fuel flow, Lph (gph)                  | 92.7 (24.5)                |
| Max. return line restriction, kPa (in. Hg) | 20 (5.9)                   |
| Fuel prime pump                            | Manual                     |
| Fuel filter                                |                            |
| Primary                                    | 30 Microns                 |
| Secondary                                  | 2 Microns @ 98% Efficiency |
| Water Separator                            | Yes                        |
| Recommended fuel                           | #2 Diesel                  |

### Exhaust

| Exhaust System                                        |                               |
|-------------------------------------------------------|-------------------------------|
| Exhaust manifold type                                 | Dry                           |
| Exhaust flow at rated kW, m <sup>3</sup> /min. (cfm)  | 42.8 (1510)                   |
| Exhaust temperature at rated kW, dry exhaust, °C (°F) | 527 (980)                     |
| Maximum allowable back pressure, kPa (in. Hg)         | Min. 4 (1.2)<br>Max. 10 (3.0) |
| Exhaust outlet size at engine hookup, mm (in.)        | 98 (3.86)                     |

### Lubrication

| Lubricating System                    |               |
|---------------------------------------|---------------|
| Type                                  | Full Pressure |
| Oil pan capacity, L (qt.)             | 32.5 (34.4)   |
| Oil pan capacity with filter, L (qt.) | 33.4 (35.3)   |
| Oil filter: quantity, type            | 1, Cartridge  |
| Oil cooler                            | Water-Cooled  |

# Application Data

## Cooling

### Radiator System

|                                                                                                    |             |
|----------------------------------------------------------------------------------------------------|-------------|
| Ambient temperature, °C (°F) *                                                                     | 50 (122)    |
| Engine jacket water capacity, L (gal.)                                                             | 11.3 (3.0)  |
| Radiator system capacity, including engine, L (gal.)                                               | 27.6 (7.3)  |
| Engine jacket water flow, Lpm (gpm)                                                                | 230.9 (61)  |
| Heat rejected to cooling water at rated kW, dry exhaust, kW (Btu/min.)                             | 94.2 (5360) |
| Heat rejected to air charge cooler at rated kW, dry exhaust, kW (Btu/min.)                         | 56.1 (3190) |
| Water pump type                                                                                    | Centrifugal |
| Fan diameter, including blades, mm (in.)                                                           | 787 (31)    |
| Fan, kWm (HP)                                                                                      | 8.6 (11.5)  |
| Max. restriction of cooling air, intake and discharge side of radiator, kPa (in. H <sub>2</sub> O) | 0.125 (0.5) |

\* Enclosure with enclosed silencer reduces ambient temperature capability by 5°C (9°F).

## Operation Requirements

### Air Requirements

|                                                           |               |
|-----------------------------------------------------------|---------------|
| Radiator-cooled cooling air, m <sup>3</sup> /min. (scfm)‡ | 368.1 (13000) |
| Combustion air, m <sup>3</sup> /min. (cfm)                | 17.6 (620)    |
| Heat rejected to ambient air:                             |               |
| Engine, kW (Btu/min.)                                     | 46.9 (2670)   |
| Alternator, kW (Btu/min.)                                 | 18.5 (1050)   |

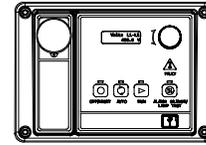
‡ Air density = 1.20 kg/m<sup>3</sup> (0.075 lbm/ft<sup>3</sup>)

### Fuel Consumption

| Diesel, Lph (gph) at % load | Standby Rating |        |
|-----------------------------|----------------|--------|
| 100%                        | 58.0           | (15.3) |
| 75%                         | 43.3           | (11.4) |
| 50%                         | 31.4           | (8.3)  |
| 25%                         | 19.7           | (5.2)  |

| Diesel, Lph (gph) at % load | Prime Rating |        |
|-----------------------------|--------------|--------|
| 100%                        | 50.1         | (13.2) |
| 75%                         | 36.1         | (9.5)  |
| 50%                         | 25.7         | (6.8)  |
| 25%                         | 16.6         | (4.4)  |

## Controllers

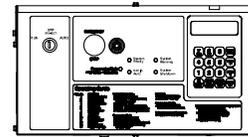


### Decision-Maker<sup>®</sup> 3000 Controller

Provides advanced control, system monitoring, and system diagnostics for optimum performance and compatibility.

- Digital display and menu control provide easy local data access
- Measurements are selectable in metric or English units
- Remote communication thru a PC via network or serial configuration
- Controller supports Modbus<sup>®</sup> protocol
- Integrated hybrid voltage regulator with ±0.5% regulation
- Built-in alternator thermal overload protection
- NFPA 110 Level 1 capability

Refer to G6-100 for additional controller features and accessories.

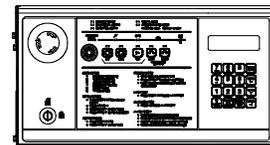


### Decision-Maker<sup>®</sup> 550 Controller

Provides advanced control, system monitoring, and system diagnostics with remote monitoring capabilities.

- Digital display and keypad provide easy local data access
- Measurements are selectable in metric or English units
- Remote communication thru a PC via network or modem configuration
- Controller supports Modbus<sup>®</sup> protocol
- Integrated voltage regulator with ±0.25% regulation
- Built-in alternator thermal overload protection
- NFPA 110 Level 1 capability

Refer to G6-46 for additional controller features and accessories.



### Decision-Maker<sup>®</sup> 6000 Paralleling Controller

Provides advanced control, system monitoring, and system diagnostics with remote monitoring capabilities for paralleling multiple generator sets.

- Paralleling capability with first-on logic, synchronizer, kW and kVAR load sharing, and protective relays
- Digital display and keypad provide easy local data access
- Measurements are selectable in metric or English units
- Remote communication thru a PC via network or modem configuration
- Controller supports Modbus<sup>®</sup> protocol
- Integrated voltage regulator with ±0.25% regulation
- Built-in alternator thermal overload protection
- NFPA 110 Level 1 capability

Refer to G6-107 for additional controller features and accessories.

## Standard Features

- Alternator Protection
- Battery Rack and Cables
- Customer Connection  
 (standard with Decision-Maker® 6000 controller only)
- Local Emergency Stop Switch
- Oil Drain Extension
- Operation and Installation Literature

## Available Options

### Approvals and Listings

- California OSHPD Approval
- CSA Approval
- IBC Seismic Certification
- UL 2200 Listing

### Enclosed Unit

- Sound Enclosure (with enclosed critical silencer)
- Weather Enclosure (with enclosed critical silencer)

### Open Unit

- Exhaust Silencer, Critical (kit: PA-354809)
- Flexible Exhaust Connector, Stainless Steel

### Fuel System

- Flexible Fuel Lines
- Fuel Pressure Gauge
- Subbase Fuel Tanks

### Controller

- Common Failure Relay
- Communication Products and PC Software
- Customer Connection (Decision-Maker® 550 controller only)
- Decision-Maker® Paralleling System (DPS)  
 (Decision-Maker® 6000 controller only)
- Dry Contact (isolated alarm)  
 (Decision-Maker® 550 and 6000 controllers only)
- Input/Output Module (Decision-Maker® 3000 controller only)
- Remote Emergency Stop Switch
- Remote Serial Annunciator Panel
- Run Relay

### Cooling System

- Block Heater, 1800 W, 90-120 V, 1 Ph
- Block Heater, 2000 W, 190-240 V, 1 Ph  
 Recommended for ambient temperatures below 0°C (32°F)
- Radiator Duct Flange

### Electrical System

- Alternator Strip Heater
- Battery
- Battery Charger, Equalize/Float Type
- Battery Heater
- Line Circuit Breaker (NEMA type 1 enclosure)
- Line Circuit Breaker with Shunt Trip (NEMA type 1 enclosure)

### Paralleling System

- Manual Speed Adjust

### Miscellaneous

- Air Cleaner, Heavy Duty
- Air Cleaner Restriction Indicator
- Certified Test Report
- Crankcase Emissions Canister
- Engine Fluids Added
- Rated Power Factor Testing
- Rodent Guards

### Literature

- General Maintenance
- NFPA 110
- Overhaul
- Production

### Warranty

- 2-Year Basic
- 5-Year Basic
- 5-Year Comprehensive

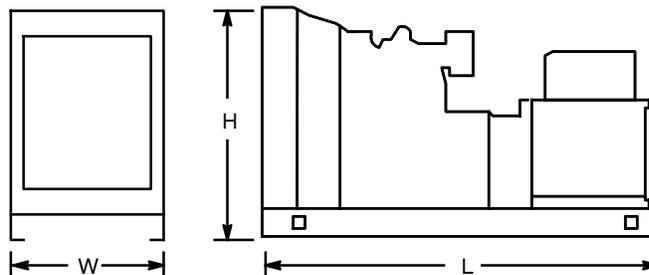
### Other Options

- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_

## Dimensions and Weights

Overall Size, L x W x H, mm (in.): 3000 x 1300 x 1672  
 (118.1 x 51.2 x 65.8)

Weight (radiator model), wet, kg (lb.): 1923 (4240)



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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