



**Ratings Range**

		<b>KD20U 60 Hz</b>	<b>KD22 50 Hz</b>
<b>Standby:</b>	<b>kW</b>	20	18
	<b>kVA</b>	25	22
<b>Prime:</b>	<b>kW</b>	18	16
	<b>kVA</b>	22	20



With Available Enclosure Accessory

**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.
- John Deere engine with 12-volt battery charging alternator.
- Mecc Alte 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, 100 L (26 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
220V	127/220	3	60	20/25	66	18/22	59
	277/480	3	60	20/25	30	18/22	27
230V	127/220	3	50	18/22	59	16/20	52
	230/400	3	50	18/22	32	16/20	29

**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.
- Sustained short-circuit current greater than 300% of the rated current for up to 10 seconds.
- 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 V	400 V
Standby rating @ 27°C, kVA	24.2	20
Prime rating @ 40°C, kVA	—	20
Efficiency @ full load, %	84.2	
Air flow, m <sup>3</sup> /min. (cfm)	5.5 (194)	
Direct axis subtransient reactance (X''d), %	9.4	

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

## Application Data

### Engine

Engine Specifications	60 Hz	50 Hz
Manufacturer	John Deere	
Engine model	3029DF120	
Engine type	4-Cycle, Naturally Aspirated	
Cylinder arrangement	3 Inline	
Displacement, L (cu. in.)	2.9 (179)	
Bore and stroke, mm (in.)	106 x 110 (4.17 x 4.33)	
Compression ratio	17.8:1	
Piston speed, m/min. (ft./min.)	396 (1302)	330 (1083)
Rated rpm	1800	1500
Max. power at rated rpm, kWm (BHP)	33.5 (45)	29.7 (40)
Valve material:		
Intake	Chromium-Silicon Steel	
Exhaust	Stainless Steel	
Governor type	Mechanical	
Frequency regulation, no-load to full-load	ISO 5%	
Frequency regulation, steady state	±2.5%	
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)	6.1 (216)	4.7 (165)
Exhaust temperature at rated kW, dry exhaust, °C (°F)	570 (1058)	555 (1031)
Maximum allowable back pressure, kPa (in. Hg)	6.2 (1.8)	
Exhaust outlet size at engine hookup, mm (in.)	60.5 (2.38)	

### Engine Electrical

Engine Electrical System	60 Hz	50 Hz
Battery charging alternator:	12 Volt	
Ground (negative/positive)	Negative	
Volts (DC)	12	
Starter motor rated voltage (DC)	12	
Battery, recommended cold cranking amps (CCA):		
Quantity, CCA rating each	One, 680	
Battery voltage (DC)	12	

### Fuel

Fuel System	60 Hz	50 Hz
Max. fuel flow, Lph (gph)	108 (28.5)	111 (29.3)
Fuel prime pump	Manual	
Recommended fuel	#2 Diesel	
Fuel tank capacity, L (gal.)	100 (26)	

### Lubrication

Lubricating System	60 Hz	50 Hz
Type	Full Pressure	
Oil pan capacity, L (qt.)	5.3 (5.6)	
Oil pan capacity with filter, L (qt.)	6.0 (6.4)	

### Cooling

Radiator System	60 Hz	50 Hz
Ambient temperature, °C (°F)	50 (122)	
Radiator system capacity, including engine, L (gal.)	16.1 (4.3)	
Heat rejected to cooling water at rated kW, dry exhaust, kW (Btu/min.)	20 (1137)	18 (1023)
Water pump type	Centrifugal	
Fan, kWm (HP)	2 (2.7)	1.5 (2.0)
Max. restriction of cooling air, intake and discharge side of radiator, kPa (in. H <sub>2</sub> O)	0.2 (0.8)	

# Application Data

## Operation Requirements

Air Requirements	60 Hz	50 Hz
Radiator-cooled cooling air, m <sup>3</sup> /min. (scfm) *	133 (4704)	104 (3687)
Combustion air, m <sup>3</sup> /min. (cfm)	6.1 (216)	4.7 (165)

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

Fuel Consumption	60 Hz	50 Hz
<b>Diesel, Lph (gph) at % load</b>	<b>Standby Rating</b>	
110% (of the standby rating)	9.0 (2.4)	8.3 (2.2)
<b>Diesel, Lph (gph) at % load</b>	<b>Prime Rating</b>	
100% (of the prime rating)	7.9 (2.1)	6.8 (1.8)
75% (of the prime rating)	6.3 (1.7)	5.2 (1.4)
50% (of the prime rating)	4.5 (1.2)	3.6 (1.0)

## Controllers



### Decision-Maker™ 1000

#### Automation

- Test LEDs
- Voltage and speed stabilization

#### Engine Parameters

- Engine speed indication (with LCD message)
- Battery voltage indication (with LCD message)
- Elapsed hour meter (with LCD message)
- Fuel solenoid control
- Starter control

#### Measurements

- Frequency, Hz (with LCD message)

#### Operation and/or Safety Lights

- Oil pressure fault
- Water temperature fault
- Fail to start fault
- Overspeed fault ( $\geq 60$  kVA)
- Set ready for load
- Charging alternator fault
- General alarm
- General fault
- Panel lamp
- Emergency stop fault

#### Safety Devices

- Overspeed fault
- Automatic standby

#### Miscellaneous

- Fault reset
- Three-phase with or without neutral, two-phase, or single-phase use



### 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
- Easy upgrade from Decision-Maker™ 1000

#### 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 M127, 60 Hz, 67.6 dB(A) @ 7 m (23 ft.), Standby (with enclosed critical silencer)
- Sound Enclosure M127, 50 Hz, 65 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
- Extension, 40 cm (16 in.)
- Flexible Exhaust Connector
- Protection Mesh

### Cooling System

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

### Decision-Maker™ 1000 Controller

- Alarm Horn
- Analog Indicator
- Differential Protection with Time and Sensitivity Adjustment
- Differential Triggering Fault
- External ATS Position
- External Starting Order
- Line Voltages, Volts Indicator
- Overload or Short-Circuit Fault
- Permanent Insulation Controller
- Phase Currents, Amps Indicator
- Plug Preheating
- Plug Preheating Control
- Remote Start Capability
- Single Voltages, Volts Indicator
- Utility Sensing, 3-Phase
- Water Preheating Control

### 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

- 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

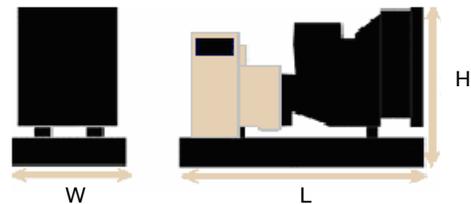
- Air Cleaner, Heavy Duty (with air restriction indicator)
- Lube Oil Drain Pump

### Miscellaneous Accessories

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

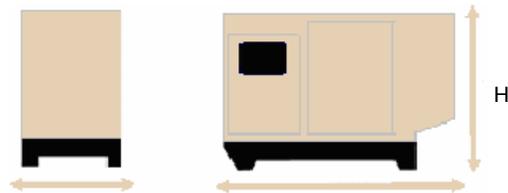
## Dimensions and Weights

### Open Model



Overall Size, L x W x H, mm (in.): 1700 x 896 x 1221 (66.9 x 35.3 x 48.1)  
 Weight, wet, kg (lb.): 830 (1830)

### With Available Enclosure Accessory



Overall Size, L x W x H, mm (in.): 2080 x 960 x 1415 (82 x 38 x 56)  
 Weight, wet, kg (lb.): 1050 (2315)

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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