



**Ratings Range**

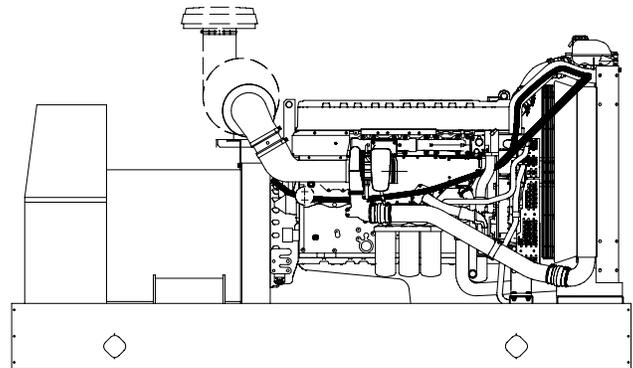
		60 Hz		50 Hz	
		kW	kVA	kW	kVA
Standby:	kW	350-405	288-352		
	kVA	438-506	360-440		
Prime:	kW	325-365	268-328		
	kVA	406-450	335-410		

**Generator Set Ratings**

Alternator	Voltage	Ph	Hz	Standby Rating		Prime Rating	
				150°C Rise	130°C Rise	125°C Rise	105°C Rise
				kW/kVA	kW/kVA	kW/kVA	kW/kVA
4M4019	120/208	3	60	360/450	350/438	350/438	325/406
	127/220	3	60	375/469	360/450	360/450	350/438
	139/240	3	60	400/500	375/469	360/450	350/438
	240/416	3	60	360/450	350/438	350/436	325/406
	277/480	3	60	400/500	375/469	360/450	350/438
	110/190	3	50	324/405	300/375	300/375	284/355
	115/200	3	50	324/405	292/365	292/365	272/340
	120/208	3	50	312/390	288/360	288/360	268/335
	220/380	3	50	324/405	300/375	300/375	284/355
	230/400	3	50	324/405	292/365	292/365	272/340
240/416	3	50	312/390	288/360	288/360	268/335	
4M4021	120/208	3	60	395/494	370/463	360/450	345/431
	127/220	3	60	400/500	390/488	360/450	360/450
	139/240	3	60	400/500	400/500	360/450	360/450
	240/416	3	60	395/494	370/463	360/450	345/431
	277/480	3	60	400/500	400/500	360/450	360/450
	110/190	3	50	340/425	320/400	312/390	292/365
	115/200	3	50	340/425	324/405	320/400	300/375
	120/208	3	50	328/410	320/400	312/390	292/365
	220/380	3	50	340/425	320/400	312/390	292/365
	230/400	3	50	340/425	324/405	320/400	300/375
240/416	3	50	328/410	320/400	312/390	292/365	
5M4024	120/208	3	60	400/500	400/500	360/450	360/450
	127/220	3	60	400/500	400/500	360/450	360/450
	139/240	3	60	400/500	400/500	360/450	360/450
	220/380	3	60	400/500	400/500	360/450	360/450
	240/416	3	60	400/500	400/500	360/450	360/450
	277/480	3	60	400/500	400/500	360/450	360/450
	110/190	3	50	352/440	352/440	328/410	328/410
	115/200	3	50	352/440	352/440	328/410	328/410
	120/208	3	50	352/440	352/440	328/410	328/410
	220/380	3	50	352/440	352/440	328/410	328/410
230/400	3	50	352/440	352/440	328/410	328/410	
240/416	3	50	352/440	352/440	328/410	328/410	
5M4027	120/208	3	60	400/500	400/500	360/450	360/450
	127/220	3	60	400/500	400/500	360/450	360/450
	139/240	3	60	400/500	400/500	360/450	360/450
	220/380	3	60	400/500	400/500	360/450	360/450
	240/416	3	60	400/500	400/500	360/450	360/450
	277/480	3	60	400/500	400/500	360/450	360/450
	110/190	3	50	352/440	352/440	328/410	328/410
	115/200	3	50	352/440	352/440	328/410	328/410
	120/208	3	50	352/440	352/440	328/410	328/410
	220/380	3	50	352/440	352/440	328/410	328/410
230/400	3	50	352/440	352/440	328/410	328/410	
240/416	3	50	352/440	352/440	328/410	328/410	
5M4160	220/380	3	60	400/500	400/500	360/450	360/450
5M4162	220/380	3	60	400/500	400/500	360/450	360/450
4M4266	347/600	3	60	400/500	400/500	360/450	360/450
5M4272	347/600	3	60	405/506	405/506	365/456	365/456

**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.
- The generator set complies with ISO 8528-5, Class G3, requirements for transient performance.
- A one-year limited warranty covers all systems and components. Two-, five-, and ten-year extended warranties are also available.
- Alternator features:
  - The pilot-excited, permanent-magnet (PM) alternator provides superior short-circuit capability.
  - The brushless, rotating-field alternator has broadrange reconnectability.
- Other features:
  - Controllers are available for all applications. See controller features inside.
  - The low coolant level shutdown prevents overheating (standard on radiator models only).
  - Integral vibration isolation eliminates the need for under-unit vibration spring isolators.
  - An electronic, isochronous governor delivers precise frequency regulation.



**RATINGS:** All three-phase units are rated at 0.8 power factor. **Standby Ratings:** Standby ratings apply to installations served by a reliable utility source. The standby rating is applicable to varying loads for the duration of a power outage. There is no overload capability for this rating. Ratings are in accordance with ISO-3046/1, BS 5514, AS 2789, and DIN 6271. **Prime Power Ratings:** Prime power ratings apply to installations where utility power is unavailable or unreliable. 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, overload power in accordance with ISO-3046/1, BS 5514, AS 2789, and DIN 6271. For limited running time and base load ratings, consult the factory. Obtain the technical information bulletin (TIB-101) on ratings guidelines for the complete ratings definitions. The generator set manufacturer reserves the right to change the design or specifications without notice and without any obligation or liability whatsoever. **GENERAL GUIDELINES FOR DERATION:** **Altitude:** Derate 0.8% per 100 m (328 ft.) elevation above 1000 m (3280 ft.). **Temperature:** Derate 5.0% per 10°C (18°F) temperature above 40°C (104°F). For radiator cooling system capacity, derate 0.5°C (0.9°F) per 100 m (328 ft.) elevation above 150 m (492 ft.).

# Alternator Specifications

Specifications	Alternator
Type	4-Pole, Rotating-Field
Exciter type	Brushless, Permanent-Magnet
Leads: quantity, type	10/12, 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 (with < 0.5% drift due to temp. variation)	3-Phase Sensing, 0.25%
One-step load acceptance	100% of Rating
Unbalanced load capability	100% of Rated Standby Current
Peak motor starting kVA:	(35% dip for voltages below)
480 V, 380 V 4M4019 (12 lead)	1325 (60Hz), 865 (50Hz)
480 V, 380 V 4M4021 (12 lead)	1350 (60Hz), 825 (50Hz)
480 V, 380 V 5M4024 (10 lead)	1350 (60Hz), 880 (50Hz)
480 V, 380 V 5M4027 (12 lead)	1550 (60Hz), 1100 (50Hz)
380 V 5M4160 (4 lead)	1175 (60Hz)
380 V 5M4162 (4 lead)	2100 (60Hz)
600 V 4M4266 (4 lead)	1300 (60Hz)
600 V 5M4272 (4 lead)	1750 (60Hz)

- 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 dripproof construction.
- Superior voltage waveform from a two-thirds pitch stator and skewed rotor.
- Digital solid-state, volts-per-hertz voltage regulator with ±0.25% no-load to full-load regulation.
- Brushless alternator with brushless pilot exciter for excellent load response.

## Application Data

### Engine

Engine Specifications	60 Hz	50 Hz
Engine model	D400 12.1A65	
Engine type	4-Cycle, Turbocharged, Charge Air Cooled	
Cylinder arrangement	6, Inline	
Displacement, L (cu. in.)	12.13 (740)	
Bore and stroke, mm (in.)	131 x 150 (5.16 x 5.91)	
Compression ratio	17.5:1	
Piston speed, m/min. (ft./min.)	540 (1772)	450 (1476)
Main bearings: quantity, type	7, Precision Half-Shell	
Rated rpm	1800	1500
Max. power at rated rpm, kWm (BHP)	449 (602)	398 (533)
Cylinder head material	Cast Iron	
Piston: type, material	Swirl Chamber, Graphite-Coated Aluminum	
Crankshaft material	Forged Steel	
Valve material	Nimonic	
Governor: type, make/model	EDC III	
Frequency regulation, no-load to full-load	Isochronous	
Frequency regulation, steady state	±0.25%	
Frequency	Field-Convertible	
Air cleaner type, all models	Dry	

### Engine Electrical

Engine Electrical System	60 Hz	50 Hz
Battery charging alternator:		
Ground (negative/positive)		Negative
Volts (DC)		24
Ampere rating		60
Starter motor rated voltage (DC)		24
Battery, recommended cold cranking amps (CCA):		
Qty., CCA rating each		Two, 950
Battery voltage (DC)		12

### Fuel

Fuel System	60 Hz	50 Hz
Fuel supply line, min. ID, mm (in.)	10 (0.39)	
Fuel return line, min. ID, mm (in.)	10 (0.39)	
Max. lift, engine-driven fuel pump, m (ft.)	2.0 (6.6)	
Max. fuel flow, Lph (gph)	150 (39.6)	130 (34.3)
Fuel prime pump	Manual	
Fuel filter: quantity, type	2, Primary, 30 Microns/ Secondary w/Water Separator, 5 Microns	
Recommended fuel	#2 Diesel	

### Exhaust

Exhaust System	60 Hz	50 Hz
Exhaust flow at rated kW, m <sup>3</sup> /min. (cfm)	83.8 (2960)	66.8 (2360)
Exhaust temperature at rated kW, dry exhaust, °C (°F)	540 (1004)	525 (977)
Maximum allowable back pressure, kPa (in. Hg)	10.2 (3.0)	
Engine exhaust outlet size, mm (in.)	See ADV Drawing	

### Lubrication

Lubricating System	60 Hz	50 Hz
Type	Full Pressure	
Oil pan capacity, L (qt.)	31 (33)	
Oil pan capacity with filter, L (qt.)	35 (37)	
Oil filter: quantity, type	3, Cartridge	
Oil cooler	Water-Cooled	

# Application Data

## Cooling

Radiator System	60 Hz	50 Hz
Ambient temperature, °C (°F)*	50 (122)	
Engine jacket water capacity, L (gal.)	20 (5.28)	
Radiator system capacity, including engine, L (gal.)	44.0 (11.62)	
Engine jacket water flow, Lpm (gpm)	360 (95)	288 (76)
Heat rejected to cooling water at rated kW, dry exhaust, kW (Btu/min.)	176 (10030)	140 (7960)
Heat rejected to charge air cooler at rated kW, dry exhaust, kW (Btu/min.)	103 (5850)	81 (4590)
Water pump type	Centrifugal	
Fan diameter, including blades, mm (in.)	890 (35)	
Fan, kWm (HP)	19 (26)	11 (15)
Max. restriction of cooling air, intake and discharge side of radiator, kPa (in. H <sub>2</sub> O)	0.125 (0.5)	

\* Weather and sound enclosures with internal silencer and weather housing with external silencer reduce ambient temperature capability by 5°C (9°F).

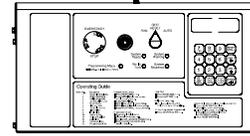
## Operation Requirements

Air Requirements	60 Hz	50 Hz
Radiator-cooled cooling air, m <sup>3</sup> /min. (scfm)†	515 (18190)	425 (15010)
Combustion air, m <sup>3</sup> /min. (cfm)	30.9 (1090)	26.3 (930)
Heat rejected to ambient air:		
Engine, kW (Btu/min.)	89.5 (5090)	73.1 (4160)
Alternator, kW (Btu/min.)	25.5 (1450)	24.6 (1400)

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

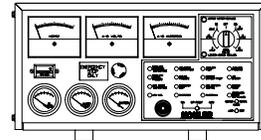
Fuel Consumption	60 Hz	50 Hz
<b>Diesel, Lph (gph) at % load</b>	<b>Standby Rating</b>	
100%	110.6 (29.2)	90.4 (23.9)
75%	79.3 (20.9)	67.1 (17.7)
50%	54.2 (14.3)	45.9 (12.1)
25%	31.8 (8.4)	25.6 (6.8)
<b>Diesel, Lph (gph) at % load</b>	<b>Prime Rating</b>	
100%	96.3 (25.4)	78.6 (20.8)
75%	71.8 (19.0)	59.4 (15.7)
50%	49.4 (13.1)	41.9 (11.1)
25%	29.1 (7.7)	23.7 (6.2)

# Controllers



### Decision-Maker™ 550 Controller

Audiovisual annunciation with NFPA 110 Level 1 capability. Programmable microprocessor logic and digital display features. Alternator safeguard circuit protection. 12- or 24-volt engine electrical system capability. Remote start, remote annunciation, and remote communication options. Refer to G6-46 for additional controller features and accessories.



### Decision-Maker™ 3+, 16-Light Controller

Audiovisual annunciation with NFPA 110 Level 1 capability. Microprocessor logic, AC meters, and engine gauge features. 12- or 24-volt engine electrical system capability. Remote start, prime power, and remote annunciation options. Refer to G6-30 for additional controller features and accessories.

## Standard Features

- Alternator Protection (standard with 550 controller)
- Battery Rack and Cables
- Electronic, Isochronous Governor
- Oil Drain Extension
- Operation and Installation Literature

## Available Accessories

### Enclosed Unit

- Sound Enclosure and Subbase Fuel Tank Packages
- Weather Enclosure and Subbase Fuel Tank Packages
- Weather Housing (with skid end caps and roof-mounted silencer)

### Open Unit

- Exhaust Silencer, Hospital (kits: PA-354903, PA-354905)
- Exhaust Silencer, Critical (kits: PA-354880, PA-354881)
- Flexible Exhaust Connector, Stainless Steel

### Cooling System

- Block Heater; recommended for ambient temperatures below 4 °C (40 °F)
- Radiator Duct Flange

### Fuel System

- Flexible Fuel Lines
- Fuel Pressure Gauge
- Subbase Fuel Tanks
- Subbase Fuel Tank with Day Tank

### Electrical System

- Battery
- Battery Charger, Equalize/Float Type
- Battery Heater

### Engine and Alternator

- Air Cleaner, Heavy Duty
- Air Cleaner Restriction Indicator
- Alternator Strip Heater
- Bus Bar Kits
- Crankcase Emission Canister
- CSA Certification
- Hand Prime Pump
- Line Circuit Breaker (NEMA1 enclosure)
- Line Circuit Breaker with Shunt Trip (NEMA1 enclosure)
- Rated Power Factor Testing
- Rodent Guards
- Safeguard Breaker (not available with 550 controller)
- Skid End Caps

### Paralleling System

- Load-Sharing Module
- Reactive Droop Compensator
- Remote Speed Adjusting Control
- Remote Voltage Adjustment Control
- Voltage Regulator Relocation Kit

## Maintenance and Literature

- General Maintenance Literature Kit
- Maintenance Kit (includes air, oil, and fuel filters)
- NFPA 110 Literature
- Overhaul Literature Kit
- Production Literature Kit

## Controller

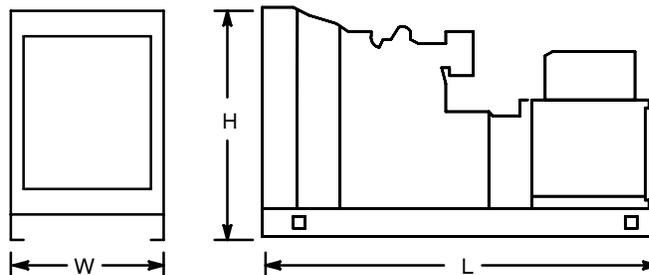
- Common Failure Relay Kit
- Communications Products and PC Software (550 controller only)
- Customer Connection Kit
- Dry Contact Kit (isolated alarm)
- Engine Prealarm Sender Kit
- Prime Power Switch Kit (550 controller only)
- Remote Annunciator Panel
- Remote Audiovisual Alarm Panel
- Remote Emergency Stop Kit
- Remote Mounting Cable
- Run Relay Kit

## Miscellaneous Accessories

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

## Dimensions and Weights

Overall Size, L x W x H, max., mm (in.): 3300 x 1250 x 1922  
 (129.92 x 49.21 x 75.67)  
 Weight (radiator model), wet, max., kg (lb.): 3175 (7000)



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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