

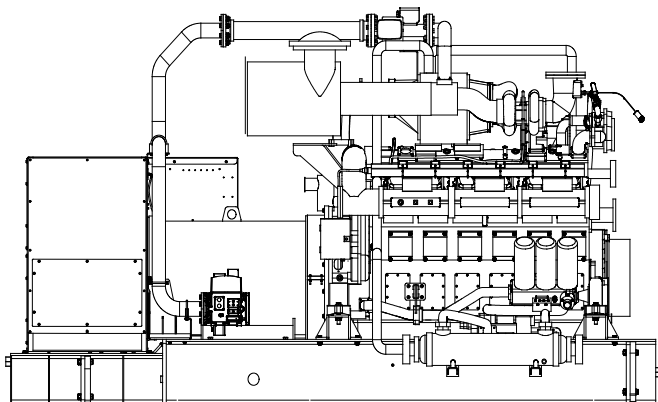


Ratings Range

60 Hz

Continuous: kW

675



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 or 8000 hr limited warranty covers all generator set systems and components. A two-year or 16000 hr extended limited warranty is also available.
- The pilot-excited, permanent magnet (PM) alternator provides superior short-circuit capability.
- Baseload with the utility applications only.
- Transient load steps without the utility is not authorized.

Generator Set Rating

Lean-Burn Natural Gas
80° C Rise
Continuous Rating

Alternator	Voltage	Ph	Hz	kW	Amps
5M4038	277/480	3	60	675	812
5M4278	347/600	3	60	675	650

RATINGS: All three-phase units are rated at 1.0 power factor without pumps or fans. Ratings are in accordance with ISO-8528-1 and ISO-3046-1. 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
Type	4-Pole, Rotating-Field
Exciter type	Brushless, Permanent-Magnet Pilot Exciter
Voltage regulator	Solid State, Volts/Hz
Insulation:	NEMA MG1
Material	Class H, Synthetic, Nonhygroscopic
Temperature rise	80°C
Bearing: quantity, type	1, Sealed
Coupling	Flexible Disc
Amortisseur windings	Full
Voltage regulation, no-load to full-load	DVR2000EC+
Rotor balancing	125%
Unbalanced load capability	100% of Rated Current
Peak motor starting kVA :	(35% dip for voltages below)
480 V	5M4038 (4 lead) 3050 (60Hz)
600 V	5M4278 (4 lead) 3900 (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 $\pm 0.25\%$ no-load to full-load regulation.
- Brushless alternator with brushless pilot exciter for excellent load response.

Application Data

Engine

Engine Specifications	
Manufacturer	Siemens
Engine model	SGE-36SL
Engine type	36 L, 4-Cycle, Lean Burn Turbocharged, Aftercooled
Cylinder arrangement	V-12
Displacement, L (cu. in.)	35.9 (2191)
Bore and stroke, mm (in.)	152 x 165 (5.98 x 6.50)
Compression ratio	11.6:1
Piston speed, m/min. (ft./min.)	594 (1949)
Rated rpm	1800
Max. power at rated rpm, kWm (BHP)	700 (939)
Cylinder head material	Cast Iron
Crankshaft material	Press-Forged Hardened and Tempered Alloy Steel
Governor: type	Electronic
Frequency regulation, no-load to full-load	Isochronous
Frequency regulation, steady state	$\pm 0.5\%$
Frequency	Fixed
Air cleaner type, all models	Dry

Exhaust

Exhaust System	
Exhaust manifold type	Wet
Exhaust flow at rated kW, kg/hr. (cfm)	3720 (4706) $\pm 10\%$
Exhaust temperature at rated kW, °C (°F)	392 ± 20 °C (738 ± 36 °F)
Maximum allowable back pressure, kPa (in. Hg)	4.5 (1.3)
Engine exhaust outlet size	see ADV drawing
Exhaust emission level at rated kW, mg/Nm ³ (g/bhp-hr)*	500 (1.0)
* 250 mg/Nm ³ (0.5 g/bhp-hr) No _x exhaust emission level available upon request.	

Engine Electrical

Engine Electrical System	
Battery charger:	
Ground (negative/positive)	Negative
Volts (DC)	24
Ampere rating	40
Starter motor rated voltage (DC)	24
Battery, recommended cold cranking amps (CCA): Qty., CCA rating each	Two, 1400
Battery voltage (DC)	12

Application Data

Fuel

Fuel System - Lean Burn	
Fuel type	Natural Gas
Fuel supply line inlet	DN80
Natural gas fuel supply pressure, kPa (in. H ₂ O)	8-15 (32-60)
Fuel supply pressure, measured at the generator set fuel inlet downstream of any fuel system equipment accessories.	

Fuel Composition Limits	Pipeline Nat. Gas
Methane number	>75.0
C ₄ and higher, % by volume	<2.0
Solid particles (dust)	
Size μm	<5
Concentration mg/m _n ³	<10
Gas humidity	<80%
Lower heating value, MJ/m _n ³ (Btu/ft ³)	37.5-42 (950-1050)

Lubrication

Lubricating System	
Type	Full Pressure
Oil pan capacity, L (gal.)	174 (46)
Oil filter: quantity, type	3, Cartridge
Oil cooler	Water-Cooled

Cooling

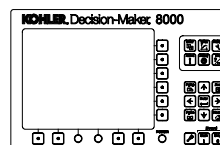
Engine Cooling System	
Ambient temperature, °C (°F)	0 to 40 (32 to 104)
Engine coolant capacity, L (gal.)	
Primary circuit	180 (47.5)
Secondary circuit	40 (10.6)
Rated engine coolant flow, Lpm (gpm)	
Primary circuit	1136 (300)
Secondary circuit	454 (120)
Heat rejected to coolant at rated kW, wet exhaust, kW (Btu/min.)	
Primary circuit	510 (29000)±8%
Secondary circuit	119 (6767)±8%
Water pump type	*None
Note: The generator set is not equipped with an engine-driven water pump and primary/secondary thermostats. Selection, sourcing, and installation of the primary/secondary water pumps and primary/secondary thermostats must be provided by the design engineer based on the application requirements using the generator set spec sheet data and the water pump manufacturer's specifications.	
Engine coolant pressure drop at rated coolant flowrate, kPa (psi)	
Primary circuit	39.3 (5.7)
Secondary circuit	125.5 (18.2)
Engine cooling inlet and outlet connections	
Primary circuit	DN80
Secondary circuit	DN50
Max. engine inlet coolant pressure, kPa (psi)	350 (50.8)
Min. engine inlet coolant pressure, kPa (psi)	200 (29.0)
Primary max. engine outlet coolant temp. °C (°F)	90 (194)
Secondary max. engine inlet coolant temp. °C (°F)	55 (131)

Operation Requirements

Air Requirements Values at 100% Load	
Combustion air, kg/hr. (cfm)†	3593 (1760)±10%
Heat rejected to ambient air:	
Engine, kW (Btu/min.)	30 (1706)±25%
Alternator, kW (Btu/min.)	21 (1195)
† Air density = 1.20 kg/m ³ (0.075 lbm/ft ³)	

Fuel Consumption	
Natural Gas, kW (Btu/min) at % load	Rating
100%	1796 (102,148)+5%
80%	1489 (84,688)+5%
60%	1186 (67,447)+5%
40%	879 (49,988)+5%

Controller



Decision-Maker® 8000 Controller

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

- Large, color display with intuitive local data access
- Communication with serial (RS485) and Ethernet (RJ45)
- Stores up to 4000 records in Event History
- Data logging and trending for easy troubleshooting
- USB flash disk for file storage of data
- Integrated PLC programmable function for advanced input and output configuration
- Supports paralleling up to 32 generator sets (with paralleling option)

Standard Features

- Alternator Protection
- Battery Charger, Equalize/Float Type
- Closed Crankcase Ventilation
- Local Emergency Stop Switch
- Block Heater
- Secondary Gas Solenoid Valve
- Dry Contact Kit (isolated alarm)
- Air Cleaner Restriction Indicator
- Engine Oil Added
- Operation and Installation Literature
- Common Fault Relay
- Run Relay
- Flexible Exhaust Connector, Stainless Steel

Available Options

Exhaust System

- Exhaust Silencer, Critical

Fuel System

- Gas Filter

Controller

- Remote Emergency Stop
- Paralleling
- Remote Serial Annunciator Panel

Cooling System

- Remote Cooling System
- Low Coolant Level Shutdown
(available with optional remote cooling system)

Electrical System

- Alternator Strip Heater (available up to 600 volt)
- Battery
- Battery Rack and Cables
- Battery Heater
- Line Circuit Breaker (NEMA1 enclosure)
- Line Circuit Breaker with Shunt Trip (NEMA1 enclosure)

Miscellaneous

- Vibration Isolation
- Certified Test Report
- Rated Power Factor Testing

Literature

- General Maintenance
- Overhaul
- Production

Warranty

- 2 Year Extended Limited Warranty

Other Options

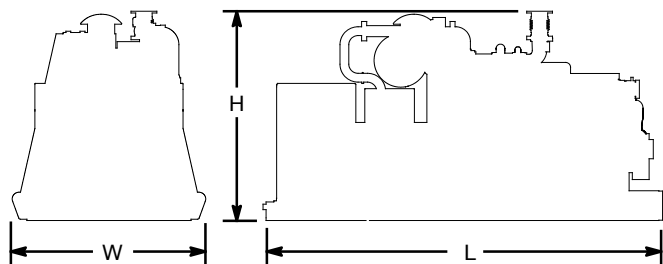
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Dimensions and Weights

Overall Size, L x W x H, max., mm (in.): 4428 x 2033 x 2456
 (174.3 x 80.0 x 96.7)

Weight, wet, max., kg (lb.): 8000 (17637)

Note: The wet weight shown only includes oil. Coolant is not included.



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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