# KOHLER

# Model: 1750REOZMD

**380- 4160 V** **Diesel**

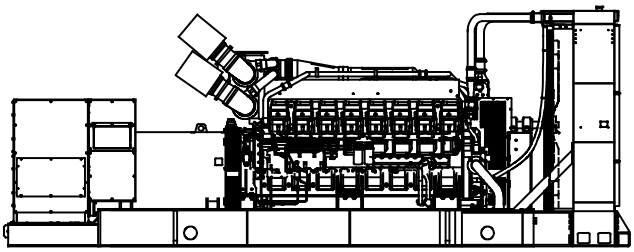
ISO 9001 KOHLER NATIONALLY REGISTERED

***Tier 2 EPA-Certified for Stationary Emergency Applications***

## Ratings Range

| | | 60 Hz |
|---|---|---|
| **Standby:** | **kW** | 1480- 1780 |
| | **kVA** | 1850- 2225 |
| **Prime:** | **kW** | 1350- 1650 |
| | **kVA** | 1688- 2063 |

APPROVED FOR HVO RENEWABLE FUEL



## Standard Features

- Kohler Co. provides one-source responsibility for the generating system and accessories.
- Approved for use with certified renewable Hydrotreated Vegetable Oil (HVO) / Renewable Diesel (RD) fuels compliant with EN15940 / ASTM D975.
- 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 standard one-year limited warranty covers all generator set systems and components. Two-, five-, and ten-year extended limited warranties are also available.
- Alternator features:
  - The pilot-excited, permanent magnet (PM) alternator provides superior short-circuit capability.
  - Additional alternator voltages are available including 12.47 kV, 13.2 kV, and 13.8 kV medium voltages. Contact your local distributor for more detailed information.
  - The brushless, rotating-field alternator has broadrange reconnectability.
- Other features:
  - Kohler designed controllers for one-source system integration and remote communication. See Controllers on page 3.
  - The low coolant level shutdown prevents overheating (standard on radiator models only).
  - An electronic, isochronous governor delivers precise frequency regulation.
  - Multiple circuit breaker configurations.

## Generator Set Ratings

| | | | | 150°C Rise Standby Rating | | 130°C Rise Standby Rating | | 125°C Rise Prime Rating | | 105°C Rise Prime Rating | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Alternator** | **Voltage** | **Ph** | **Hz** | **kW/kVA** | **Amps** | **kW/kVA** | **Amps** | **kW/kVA** | **Amps** | **kW/kVA** | **Amps** |
| 7M4052 | 220/380 | 3 | 60 | 1480/1850 | 2811 | 1480/1850 | 2811 | 1350/1688 | 2564 | 1350/1688 | 2564 |
| | 240/416 | 3 | 60 | 1620/2025 | 2810 | 1610/2013 | 2793 | 1470/1838 | 2550 | 1460/1825 | 2533 |
| | 277/480 | 3 | 60 | 1750/2188 | 2631 | 1750/2188 | 2631 | 1650/2063 | 2481 | 1600/2000 | 2406 |
| 7M4054 | 220/380 | 3 | 60 | 1590/1988 | 3020 | 1590/1988 | 3020 | 1450/1813 | 2754 | 1450/1813 | 2754 |
| | 240/416 | 3 | 60 | 1780/2225 | 3088 | 1780/2225 | 3088 | 1620/2025 | 2810 | 1620/2025 | 2810 |
| | 277/480 | 3 | 60 | 1780/2225 | 2676 | 1780/2225 | 2676 | 1620/2025 | 2436 | 1620/2025 | 2436 |
| 7M4056 | 220/380 | 3 | 60 | 1780/2225 | 3381 | 1780/2225 | 3381 | 1620/2025 | 3077 | 1620/2025 | 3077 |
| | 240/416 | 3 | 60 | 1780/2225 | 3088 | 1780/2225 | 3088 | 1620/2025 | 2810 | 1620/2025 | 2810 |
| | 277/480 | 3 | 60 | 1780/2225 | 2676 | 1780/2225 | 2676 | 1620/2025 | 2436 | 1620/2025 | 2436 |
| 7M4176 | 220/380 | 3 | 60 | 1780/2225 | 3381 | 1780/2225 | 3381 | 1620/2025 | 3077 | 1620/2025 | 3077 |
| 7M4292 | 347/600 | 3 | 60 | 1780/2225 | 2141 | 1780/2225 | 2141 | 1620/2025 | 1949 | 1620/2025 | 1949 |
| 7M4370 | 2400/4160 | 3 | 60 | 1780/2225 | 309 | 1780/2225 | 309 | 1620/2025 | 281 | 1620/2025 | 281 |
| 7M4374 | 2400/4160 | 3 | 60 | 1780/2225 | 309 | 1780/2225 | 309 | 1620/2025 | 281 | 1620/2025 | 281 |

RATINGS: All three-phase units are rated at 0.8 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 |
|---|---|
| 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 | 130°C, 150°C Standby |
| Bearing: quantity, type | 1, Sealed |
| Coupling | Flexible Disc |
| Amortisseur windings | Full |
| Rotor balancing | 125% |
| Voltage regulation, no-load to full-load | Controller Dependent |
| 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 7M4052 (4 bus bar) | 5500 |
| 480 V 7M4054 (4 bus bar) | 7000 |
| 480 V 7M4056 (4 bus bar) | 7200 |
| 380 V 7M4176 (4 bus bar) | 5400 |
| 600 V 7M4292 (4 bus bar) | 4250 |
| 4160 V 7M4370 (6 lead) | 5500 |
| 4160 V 7M4374 (6 lead) | 6200 |

- 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 two-thirds pitch windings and skewed stator.
- 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 | |
|---|---|
| Manufacturer | Mitsubishi |
| Engine model | S16R-Y2PTAW2-1 |
| Engine type | 4-Cycle, Turbocharged |
| Cylinder arrangement | 16 V |
| Displacement, L (cu. in.) | 65.4 (3989) |
| Bore and stroke, mm (in.) | 170 x 180 (6.69 x 7.09) |
| Compression ratio | 14.0:1 |
| Piston speed, m/min. (ft./min.) | 648 (2126) |
| Main bearings: quantity, type | 9, Precision Half-Shell |
| Rated rpm | 1800 |
| Max. power at rated rpm, kWm (BHP) | 2180 (2923) |
| Cylinder head material | Cast Iron |
| Crankshaft material | Forged Steel |
| Governor type | Electronic |
| Frequency regulation, no-load to full-load | Isochronous |
| Frequency regulation, steady state | ±0.25% |
| Frequency | Fixed |
| Air cleaner type, all models | Dry |

## Exhaust

| Exhaust System | |
|---|---|
| Exhaust manifold type | Dry |
| Exhaust flow at rated kW, $m^3$/min. (cfm) | 490 (17302) |
| Exhaust temperature at rated kW, dry exhaust, °C (°F) | 526 (979) |
| Maximum allowable back pressure, kPa (in. Hg) | 5.9 (1.7) |
| Exhaust outlet size at engine hookup, mm (in.) | See ADV drawing |

## Engine Electrical

| Engine Electrical System | |
|---|---|
| Battery charging alternator: | |
| Ground (negative/positive) | Negative |
| Volts (DC) | 24 |
| Ampere rating | 30 |
| Starter motor rated voltage (DC) | Dual, 24 |
| Battery, recommended cold cranking amps (CCA): | |
| Quantity, CCA rating each | Four, 1150 |
| Battery voltage (DC) | 12 |

## Fuel

| Fuel System | |
|---|---|
| Fuel supply line, min. ID, mm (in.) | 19 (0.75) |
| Fuel return line, min. ID, mm (in.) | 19 (0.75) |
| Max. lift, engine-driven fuel pump, m (ft.) | 1.0 (3.0) |
| Max. fuel flow, Lph (gph) | 720 (190) |
| Max. fuel pump restriction, kPa (in. Hg) | 10 (3.0) |
| Max. return line restriction, kPa (in. Hg) | 20 (5.9) |
| Fuel filter: quantity, type | 4, Secondary |
| Recommended fuel | #2 Diesel / HVO / RD |

## Lubrication

| Lubricating System | |
|---|---|
| Type | Full Pressure |
| Oil pan capacity, L (qt.) § | 200 (211) |
| Oil pan capacity with filter, L (qt.) § | 230 (243) |
| Oil filter: quantity, type § | 4, Cartridge |
| Oil cooler | Water-Cooled |

§ Kohler recommends the use of Kohler Genuine oil and filters.

# Application Data

## Cooling

| Radiator System | |
|---|---|
| Ambient temperature, °C (°F) | 40 (104) |
| Engine jacket water capacity, L (gal.) | 170 (44.9) |
| Radiator system capacity, including engine, L (gal.) | 367 (96.9) |
| Engine jacket water flow, Lpm (gpm) | 1850 (489) |
| Charge cooler water flow, Lpm (gpm) | 920 (243) |
| Heat rejected to cooling water at rated kW, dry exhaust, kW (Btu/min.) | 702 (39937) |
| Heat rejected to charge cooler water at rated kW, dry exhaust, kW (Btu/min.) | 702 (39937) |
| Water pump type | Centrifugal |
| Fan diameter, including blades, mm (in.) | 2057 (81) |
| Fan kWm (HP) | 81 (109) |
| Max. restriction of cooling air, intake and discharge side of radiator, kPa (in. $H_2O$) | 0.125 (0.5) |

| High Ambient Radiator System | |
|---|---|
| Ambient temperature, °C (°F) | 50 (122) |
| Engine jacket water capacity, L (gal.) | 170 (44.9) |
| Radiator system capacity, including engine, L (gal.) | 386 (102) |
| Engine jacket water flow, Lpm (gpm) | 1850 (489) |
| Charge cooler water flow, Lpm (gpm) | 920 (243) |
| Heat rejected to cooling water at rated kW, dry exhaust, kW (Btu/min.) | 702 (39937) |
| Heat rejected to charge cooler water at rated kW, dry exhaust, kW (Btu/min.) | 702 (39937) |
| Water pump type | Centrifugal |
| Fan diameter, including blades, mm (in.) | 2362 (93) |
| Fan kWm (HP) | 63 (84) |
| Max. restriction of cooling air, intake and discharge side of radiator, kPa (in. $H_2O$) | 0.125 (0.5) |

| Remote Radiator System† | |
|---|---|
| Exhaust manifold type | Dry |
| Connection sizes: | |
| Jacket water engine inlet, mm (in.) | 95 (3.75) |
| Jacket water engine outlet, mm (in.) | 95 (3.75) |
| Intercooler water engine inlet, mm (in.) | 83 (3.25) |
| Intercooler water engine outlet, mm (in.) | 83 (3.25) |
| Static head allowable above engine, kPa (ft. $H_2O$) | 98 (32.8) |

† Contact your local distributor for cooling system options and specifications based on your specific requirements.

## Operation Requirements

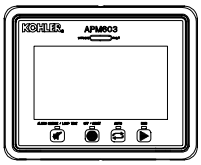
| Air Requirements | |
|---|---|
| Radiator-cooled cooling air, $m^3$/min. (scfm)‡ | 2209 (78000) |
| High ambient radiator-cooled cooling air, $m^3$/min. (scfm)‡ | 2718 (96000) |
| Cooling air required for generator set when equipped with city water cooling or remote radiator, based on 14°C (25°F) rise, $m^3$/min. (scfm)‡ | 898 (31700) |
| Combustion air, $m^3$/min. (cfm) | 206 (7274) |
| Heat rejected to ambient air: | |
| Engine, kW (Btu/min.) | 162 (9216) |
| Alternator, kW (Btu/min.) | 88 (5004) |

‡ Air density = 1.20 kg/$m^3$ (0.075 lbm/$ft^3$ )

| Fuel Consumption** | |
|---|---|
| **Diesel, Lph (gph) at % load** | **Standby Rating** |
| 100% | 536 (141.6) |
| 75% | 403 (106.6) |
| 50% | 271 (71.6) |
| 25% | 154 (40.6) |
| **Diesel, Lph (gph) at % load** | **Prime Rating** |
| 100% | 487 (128.7) |
| 75% | 366 (96.7) |
| 50% | 251 (66.3) |
| 25% | 142 (37.6) |

** Volumetric Fuel consumption is up to 4% higher when using HVO/RD than #2 ULSD.

## Controllers

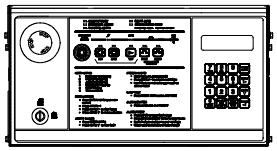



**APM603 Controller**

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

- 7-inch graphic display with touch screen and menu control provides easy local data access
- Measurements are selectable in metric or English units
- Paralleling capability to control up to 8 generators on an isolated bus with first-on logic, synchronizer, kW and kVAR load sharing, and protective relays
  Note: Parallel with other APM603 controllers only
- Generator management to turn paralleled generators off and on as required by load demand
- Load management to connect and disconnect loads as required
- Controller supports Modbus® RTU, Modbus® TCP, SNMP and BACnet®
- Integrated voltage regulator with ±0.25% regulation
- Built-in alternator thermal overload protection
- UL-listed overcurrent protective device
- NFPA 110 Level 1 capability

Refer to G6-162 for additional controller features and accessories.



**Decision-Maker® 6000 Paralleling Controller**

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

- Paralleling capability to control up to 8 generators on an isolated bus with first-on logic, synchronizer, kW and kVAR load sharing, and protective relays
  Note: Parallel with other Decision-Maker® 6000 controllers only
- 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 G6-107 for additional controller features and accessories.

Modbus® is a registered trademark of Schneider Electric.
BACnet® is a registered trademark of ASHRAE.

KOHLER CO., Kohler, Wisconsin 53044 USA
Phone 920-457-4441, Fax 920-459-1646
For the nearest sales and service outlet in the US and Canada, phone 1-800-544-2444
KOHLERPower.com

## Standard Features

- Alternator Protection
- Alternator Strip Heater (standard on 3300 volt and above)
- Customer Connection (Decision-Maker® 6000 controller only)
- Local Emergency Stop Switch
- Oil Drain Extension
- Operation and Installation Literature
- Radiator Core Guard

## Available Options

**Circuit Breakers**

| Type | Rating |
|---|---|
| ❑ Magnetic Trip | ❑ 80% |
| ❑ Thermal Magnetic Trip | ❑ 100% |
| ❑ Electronic Trip (LI) | **Operation** |
| ❑ Electronic Trip with Short Time (LSI) | ❑ Manual |
| | ❑ Electrically Operated (for paralleling) |

**Circuit Breaker Mounting**

❑ Generator Mounted
❑ Remote Mounted
❑ Bus Bar (for remote mounted breakers)

**Approvals and Listings**

❑ California OSHPD Pre- Approval
❑ CSA Certified
❑ HCAI Pre- Approval
❑ IBC Seismic Certification
❑ UL 2200 Listing

**Enclosed Unit**

❑ Sound Enclosure/Fuel Tank Package
❑ Weather Enclosure/Fuel Tank Package

**Open Unit**

❑ Exhaust Silencer, Hospital (kit: PA-361627)
❑ Exhaust Silencer, Critical (kit: PA-361625)
❑ Flexible Exhaust Connector, Stainless Steel

**Fuel System**

❑ Flexible Fuel Lines
❑ Fuel Pressure Gauge
❑ Fuel/Water Separator

**Controller**

❑ Common Failure Relay
❑ Communication Products and PC Software
❑ Dry Contact (isolated alarm) (Decision- Maker® 6000 controllers only)
❑ Input/Output, Digital (APM603 controller only; included with paralleling kit)
❑ Lockable Emergency Stop Switch
❑ Manual Key Switch (APM603 controller only)
❑ Prime Power Switch (Decision- Maker® 6000 controllers only)
❑ Remote Emergency Stop Switch
❑ Remote Mounting Cable
❑ Remote Serial Annunciator Panel
❑ Run Relay (Standard with APM603 controller)

**Cooling System**

❑ Block Heater; 9000 W, 208 V, 1 Ph
❑ Block Heater; 9000 W, 240 V, (Select 1 Ph or 3 Ph)
❑ Block Heater; 9000 W, 380 V, 3 Ph
❑ Block Heater; 9000 W, 480 V, (Select 1 Ph or 3 Ph) Required for Ambient Temperatures Below 0°C (32°F)
❑ High Ambient Radiator
❑ Remote Radiator Cooling Setup

**Electrical System**

❑ Alternator Strip Heater (available up to 600 volt)
❑ Battery
❑ Battery Charger, Equalize/Float Type
❑ Battery Heater
❑ Battery Rack and Cables

**Paralleling System**

❑ Voltage Sensing (Decision-Maker® 6000 controller only)

**Miscellaneous**

❑ Air Cleaner, Heavy Duty
❑ Air Cleaner Restriction Indicator
❑ Crankcase Emission Canister
❑ Engine Fluids (oil and coolant) Added
❑ Oil Temperature Gauge
❑ Rated Power Factor Testing
❑ Spring Isolators

**Literature**

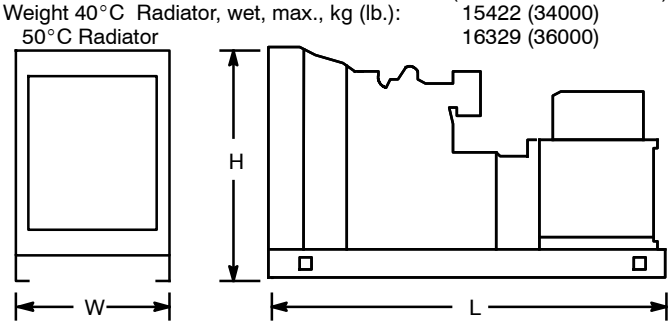
❑ General Maintenance
❑ NFPA 110
❑ Overhaul
❑ Production

**Warranty**

❑ 2-Year Basic Limited Warranty
❑ 2-Year Prime Limited Warranty
❑ 5-Year Basic Limited Warranty
❑ 5-Year Comprehensive Limited Warranty
❑ 10-Year Major Components Limited Warranty

## Dimensions and Weights

Overall Size, L x W x H, max., mm (in.):
40°C Radiator 6724 x 2430 x 2606 (264.7 x 95.7 x 102.6)
50°C Radiator 6774 x 2766 x 3089 (266.7 x 108.9 x 121.6)
Weight 40°C Radiator, wet, max., kg (lb.): 15422 (34000)
50°C Radiator 16329 (36000)




Note: This drawing is provided for reference only and should not be used for planning the installation. Contact your local distributor for more detailed information.

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