



# MITSUBISHI MGS-R SERIES

## DIESEL GENERATOR SET MGS2500R

### MGS2500R / 50Hz

**POWER RATING (0.8 P.F.) / Alternator Model**

**STANDBY : 2500 kVA / L52L9M**

**(ESP) : Emergency Standby Power**

**PRIME (PRP) : 2250 kVA / L52L9M**

**: Prime Power**

#### Voltage Variation

■Standard Voltage 3Phase 4 Wires  
380V

■Voltages Available 3Phase 4 Wires  
400V, 415V and 440V



\*For illustration purpose

**Note:** Outputs for optional voltages may differ from standard output mentioned above.

## CONDITIONS & DEFINITIONS

| SYM           | NAME OF RATING          | DEFINITION   | LOAD/OPERATING HOUR*   |               |                 |
|---------------|-------------------------|--|--|---------------|-----------------|
|               |                         |  | AVE. LOAD FACTOR /24hr   | AVE. LOAD /yr | OPERATING Hr/yr |
| STANDBY (ESP) | Emergency Standby Power | Rated power of an emergency generator as Stand-by that supplies power in case of a failure of main power source or commercial power. | Maximum 80%.<br>(100% in emergency)  | Maximum 70%   | Maximum 500Hr   |
| PRIME (PRP)   | Prime Power             | For generators with variable load and unlimited operating hour.  | Maximum 80%. Overload operation ( $\leq 110\%$ ) is limited to a max. of 1 hour per 12 hours. Over 90% load operation is limited to a max. of 3 hours per 12 hours | Maximum 70%   | Unlimited       |

Engine ratings are based on SAE J1349 standard conditions and also apply at ISO3046/1, DIN6271 & BS5514 standard conditions.

Conditions are consistent with the requirements under ISO 8528-1:2018

Fuel rates: based on ASTM D975, BS2869 and on fuel oil of 35° API (16°C or 60° F) gravity having a LHV of 42,780 kJ/kg (18,390 Btu/lb.) when used at 29°C (85° F) and weighing 838.9 g/liter (7.001lbs./U.S. gal.).

## DIMENSION (Reference Data)

|                    |            |    |       |
|--------------------|------------|----|-------|
| Overall dimensions | L : Length | mm | 5630  |
|                    | W : Width  | mm | 2650  |
|                    | H : Height | mm | 3485  |
| Total Weight (Dry) |            | kg | 16400 |
| Total Weight (Wet) |            | kg | 17340 |

\*Dimension may be smaller





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### **MGS-R SERIES DIESEL ENGINE: MITSUBISHI S16R2-PTA**

V-16, 4 stroke-cycle water-cooled, turbocharged and after-cooled

### **ENGINE SPECIFICATIONS & TECHNICAL DATA**

|   |        |          |
|---|--------|----------|
| Bore  | mm     | 170      |
| Stroke  | mm     | 220      |
| Displacement                                    | L      | 79.9     |
| Piston speed                                    | m/sec. | 11.0     |
| Compression ratio                               |        | 14.0     |
| Lubricating oil capacity                        | L      | 290      |
| Coolant capacity without radiator/with radiator | L      | 188/439  |
| Coolant pump external resistance                | PSI    | 5.0      |
| Coolant pump flow rate                          | L/min  | 1650     |
| Cooling fan airflow rate                        | m3/min | 2622     |
| Cooling fan air flow restriction                | kPa    | 0.1      |
| Ambient air temperature                         | °C     | 40       |
| Allowable exhaust back pressure                 | kPa    | 6.0      |
| Exhaust flange size                             |        | JIS 350A |

### **ENGINE OPERATING DATA**

|  |        | STANDBY(ESP)<br>2500 kVA | PRIME(PRP)<br>2250 kVA |
|--|--------|--------------------------|------------------------|
| Gross Engine Power*                                      | kWm    | 2110                     | 1903                   |
| Brake mean effective pressure                            | MPa    | 2.2                      | 2.0                    |
| Regenerative absorption                                  | kW     | 152                      | 152                    |
| Noise Level at 1 m<br>(excluding: intake, exhaust & fan) | dB(A)  | 115                      | 114                    |
| Fuel consumption load 100%*                              | L/hr.  | 535                      | 481                    |
| Fuel consumption load 75%*                               | L/hr.  | 403                      | 365                    |
| Combustion air inlet flow rate                           | m3/min | 192                      | 171                    |
| Exhaust gas flow rate                                    | m3/min | 509                      | 452                    |
| Exhaust gas temperature                                  | °C     | 530                      | 520                    |
| Heat rejection to coolant                                | kW     | 1404                     | 1246                   |
| Heat rejection to exhaust                                | kW     | 1877                     | 1629                   |
| Heat rejection to atmosphere from engine                 | kW     | 168                      | 150                    |
| Heat rejection to atmosphere from generator              | kW     | 73                       | 65                     |

\*WITH FAN basis



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### ENGINE STANDARD EQUIPMENT

After-cooler  
Structure steel base  
Crankcase breather  
Charging alternator  
Lubricating oil cooler  
Manual shutoff  
Fuel transfer pump, gear driven, plunger type  
Digital Electric Type Governor (Woodward ProAct)  
Jacket water heater  
Jacket water pump, gear driven  
Lubricating oil filter, full flow paper element  
Lubricating oil pump, gear driven  
Exhaust dry manifold  
Radiator, blower fan, fan drive  
24V DC electric starting motor



### MGS-R SERIES 7310 MK II GENERATOR CONTROL PANEL

#### Features

MGS standard 7310 MK II programmable microprocessor generator control panel provides the following functions

- ◆ Start and stop control
- ◆ Engine and generator measurement items on LCD display and LED on the front panel for operation status indication
- ◆ Engine and generator shutdown and warning protection
- ◆ Generator breaker control
- ◆ Expansion module for additional output and input
- ◆ RS485 and RS232C communication for remote monitoring

#### Shutdown and Warning items on LCD display

- Engine and generator measurement items on LCD display and LED on the front panel for operation status indication
- Engine and generator shutdown and warning protection

#### Mounting

Fabricated cubicle mounted on individual bracket with anti-vibration isolator

### Instrument and control accessories

- |                                 |  |
|---------------------------------|--|
| ■ Generator running indicator   | ■ Selector switch (ACTIVE, PANEL LOCK, STOP/RESET) |
| ■ Manual button                 | ■ Mute alarm button                                |
| ■ Auto button                   | ■ Menu navigation button                           |
| ■ CB open button (Manual only)  | ■ Common alarm indicator                           |
| ■ CB close button (Manual only) | ■ Voltage adjuster                                 |
| ■ Manual start button           | ■ Speed adjuster                                   |
| ■ Manual Stop/Reset button      | ■ Emergency stop pushbutton                        |



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### Measured Items on LCD Display

- Generator volts L1-N, L2-N, L3-N
- Generator volts L1-L2, L2-L3, L3-L1
- Generator amps L1, L2, L3
- Generator Frequency Hz
- Engine speed RPM
- Engine oil pressure (PSI & Bar & kPa)
- Engine cooling water temperature (° C & ° F)
- Battery volts
- Engine hours run
- Generator Load kW, kVA, kVar
- Generator Load kWh, kVAh, kVarh
- Power Factor
- Generator Phase Sequence

### Shutdown and Warning items on LCD

- Over-speed : shutdown and warning
- Under-speed : shutdown and warning
- Emergency stop pushbutton
- Loss of speed signal : shutdown
- Fail to stop : warning
- Over voltage (DC) : warning
- Under voltage (DC) : warning
- Lubrication oil filter clogged : warning
- High oil temperature : shutdown and warning \*1
- Oil pressure sender open circuit : shutdown
- Charge fail : warning
- Exhaust gas temperature high : warning \*1
- Coolant level low : warning \*1
- High crankcase internal pressure : shutdown \*1
- Generator high current : shutdown (IDMT) and warning
- Over voltage (AC) : shutdown and warning
- Under voltage (AC) : shutdown and warning
- Over frequency : warning
- Under frequency : warning
- Overload : warning
- Winding temperature high (U, V, W) : warning \*1
- Bearing temperature high : warning \*1
- Electrical trip
- Emergency stop : shutdown
- High coolant temperature : shutdown and warning
- Low oil pressure : shutdown and warning
- Fail to start : shutdown

\*1: As Option

### Operation status indicated by LED

- Remote start present
- Generator ready
- Lubrication oil filter clogged
- Electrical trip

### Gen Set Option Features

- GENERATOR
  - Power Factor Regulator
  - Generator Space Heater
  - Winding / Bearing RTD
- ENGINE
  - Dual starter (24V DC electric starting system)
  - Battery Kit
  - Battery Charger
  - Air Cleaner, paper element dry type
  - Anchor Bolts
- CONTROL PANEL
  - Auxiliary Control Panel
  - Cross Current Compensate Transformer (CCT)
  - 2157 expansion unit (Output signal module)
  - 2130 expansion unit (Input signal module)
  - 2133 expansion unit (RTD/Thermocouple module)
- LUBRICATION
  - Lub. Oil Level Regulator
  - Lube oil Priming Pump
- FUEL
  - Fuel Day Service Tank
- COOLING
  - Heat Exchanger
  - Expansion Tank
- EXHAUST
  - Exhaust Silencer
  - Exhaust Flexible Pipe
- SWITCHGEAR
  - Reverse Power Relay



# MITSUBISHI MGS-R SERIES

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### MGS-R SERIES AC GENERATOR MODEL: MG-L52L9M

#### Features

MGS original design, single bearing, 4 pole, screen protected, self-regulating and brushless with fully connected damper windings, salient pole rotors, A.C. Exciter and rotating rectifier unit. Direct coupled to engine and regreaseable bearing, direct drive centrifugal blower.

Compliance to 100% step load.

Enclosure: Drip-proof IP23

#### Winding System

Standard 6 wire winding provides 3 phase voltage. All windings are impregnated in vacuum pressure impregnated with a special polyester resin.

Over speed capability: 125% for 2 minutes

Insulation: Class 'H'

Temperature rise: Class H Peak (Standby), Class H (Prime(PRP))

#### Voltage Regulator

Fully sealed, three phase RMS sensing DAVR with built-in protection against sustained over-excitation.

Voltage regulation: Less than +/- 0.5% from no load to full load at any power factor between 0.8 lagging and 1.0. Allowing for a 4% engine speed variation.

Voltage adjustment: +/- 6%

Wave form: No load <1.5% Non-distorting balanced linear load <5.0%

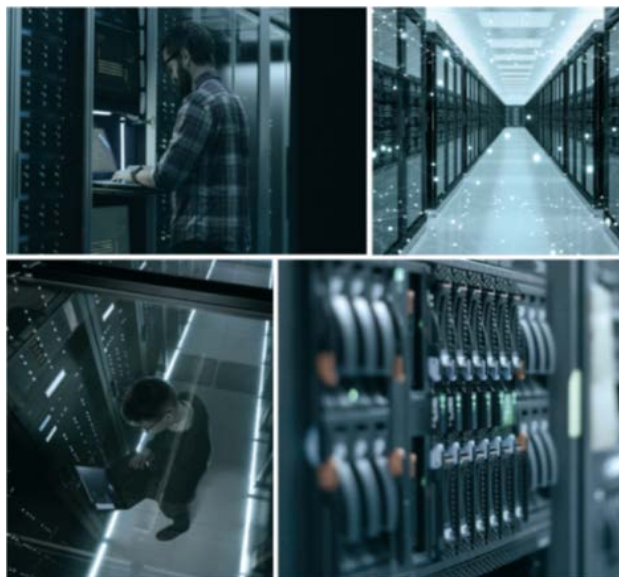
#### AREP and PMI

Self-excited system which provide isolated power supply for the DAVR – sustain short circuit current approximately 250-300% under fault condition.

#### Electrical Design

In accordance with ISO 8528-3, IEC60034-1/BS EN60034-1, BS5000 Part 3, VDE0530, NEMA MG1-32, CSA22-2-100, AS1359 and UL1446.

Telephone Harmonic factor (THF): Less than 2%



**MITSUBISHI HEAVY INDUSTRIES  
ENGINE SYSTEM ASIA**

No. 3, Tuas Avenue 12, Singapore 639024 Republic of Singapore

Phone: 65-6862 2202 Fax: 65-6862 5728

URL: <http://www.mhiesa.com/>

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