

# MITSUBISHI MGS SERIES

DIESEL GENERATOR SET

60Hz/1800 rpm/480V



## MGS0900B

<b>POWER RATING (0.8 P.F.)</b>		<b>MODEL CODE</b>
<b>STAND-BY</b>	<b>870 kW</b>	<b>6S-H6H</b>
<b>PRIME</b>	<b>790 kW</b>	<b>6P-H6H</b>



MGS0900B with typical options

### Voltage Variation

- Standard Voltage 3Phase 4 Wires  
480V
- Voltages Available 3Phase 4 Wires  
480, 460, 450, 440, 416, 240, 230, 220 and 208V

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

### CONDITIONS & DEFINITIONS

#### Stand-by: Code: S

Applicable for supplying emergency power at varying load in the event of the normal utility power interruption.

Fuel stop power in accordance with ISO15550, ISO3046/1, JISB8002-1, DIN6271 and BS5514.

Overload: not allowed

#### Prime: Code: P

Applicable for supplying emergency power at varying load in the event of normal utility power interruption. 10% overload is allowed.

Fuel stop power in accordance with ISO15550, ISO3046/1, JISB8002-1, DIN6271 and BS5514.

Overload: 10% allowed

#### Conditions:

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

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.).

Note: \* For conditions of prime power (P.R.P.) and additional rating requirements, please consult your nearest Mitsubishi MGS dealer.

### DIMENSION (Reference Data)

Overall dimensions	L : Length	mm	4060
	W : Width	mm	1715
	H : Height	mm	2100
Total Weight (Dry)		kg	6600
Total Weight (Wet)		kg	7000

## MGS SERIES DIESEL ENGINE: MITSUBISHI S12A2-PTA2-S

V-12, 4 stroke-cycle water-cooled, turbocharged and aftercooled

### ENGINE SPECIFICATIONS & TECHNICAL DATA

Bore	mm	150
Stroke	mm	160
Displacement	L	33.9
Piston speed	m/sec.	9.6
Compression ratio		15.3
Lubricating oil capacity	L	120
Coolant capacity without radiator	L	100
Coolant pump external resistance	m water	5.0
Coolant pump flow rate	L/min	1100
Cooling fan airflow rate	m <sup>3</sup> /min	1380
Cooling fan air flow restriction	kPa	0.1
Ambient air temperature	°C	40
Allowable exhaust back pressure	kPa	6.0
Exhaust flange size (internal diameter)	mm	200

### ENGINE OPERATING DATA

		STAND-BY 870 kW	PRIME 790 kW
Gross Engine Power*	kWm	920	834
Brake mean effective pressure	MPa	1.9	1.7
Regenerative absorption	kW	93	93
Noise Level at 1 m (excluding: intake, exhaust & fan)	dB(A)	103	103
Fuel consumption load 100%*	L/hr.	246	222
Fuel consumption load 75%*	L/hr.	184	168
Combustion air inlet flow rate	m <sup>3</sup> /min	85	76
Exhaust gas flow rate	m <sup>3</sup> /min	223	201
Exhaust gas temperature	°C	510	500
Heat rejection to coolant	kW	613	553
Heat rejection to exhaust	kW	817	730
Heat rejection to atmosphere from engine	kW	74	66
Heat rejection to atmosphere from generator	kW	47	42

\* WITH FAN basis.

Deration for engine

Note: Please consult with your nearest Mitsubishi MGS dealer

### ENGINE STANDARD EQUIPMENT

Aftercooler  
 Turbocharger filter  
 Structure steel base  
 Crankcase breather  
 Charging alternator  
 Lubricating oil cooler  
 Fuel filters, full flow paper element  
 Fuel transfer pump, gear driven, plunger type  
 Electronic type governor  
 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  
 Manual shutoff  
 24V DC electric starting motor

## MGS SERIES 7310 GENERATOR CONTROL PANEL

### Type & Design

MGS standard 7310 programmable microprocessor control-automatic start/stop panel, generator breaker control, indicating the operational status and fault conditions; automatically shutting down the engine and indicating the engine failure by means of LCD display and LEDs on the front panel.

### Controls & Monitoring

- ◆ Mode selection & start engine button with interlock key switch system
- ◆ Menu navigation button
- ◆ LCD display for: AC amperage-each phase and earth current, AC voltage-each phase and neutral, Frequency Hz, Operation hours run, Lub. Oil pressure, Cooling water temperature, Generator Load kW/kVA/kVar, Generator Load kWh/kVAh/kVarh
- ◆ Operation status LED indicators
- ◆ CB control buttons
- ◆ Mute/Lamp test button
- ◆ Voltage adjuster
- ◆ Speed adjuster
- ◆ Emergency stop pushbutton
- ◆ Provided 5 outputs for status as standard equipment (Programmable 8 outputs available as option)

### Safety Shutdown Protection and LED Indicators

High engine temperature, Low oil pressure, Fail to start, Generator Over Speed/Frequency, Generator Under Speed/Frequency  
 Generator High Voltage, Generator Low Voltage, Oil pressure sender circuit, Loss of Speed signal, Emergency stop, High crankcase internal pressure (MGS-C continuous only)

### Mounting

Fabricated cubicle mounted on individual bracket with anti-vibration isolator

### Electrical Design

In accordance with BS EN 60950 Low Voltage Directive, BS EN 61006-2 and 61006-4 EMC Directive. The optional interface can provide real time diagnostic facilities.

### Generator Control Panel Description

- 3 position operation mode control key switch (ACTIVE, PANEL LOCK, STOP/RESET)
  - Manual button
  - Auto button
  - CB open button (Manual only)
  - CB close button (Manual only)
  - Start engine button (Manual only)
  - Stop/Reset button (Manual only)
  - Mute/Lamp test button (Manual only)
  - Voltage adjusting trimmer
  - Speed adjusting trimmer
  - Emergency stop pushbutton
- LCD display accessed by scroll pushbutton
 

<ul style="list-style-type: none"> <li>Generator volts L1-N, L2-N, L3-N</li> <li>Generator volts L1-L2, L2-L3, L3-L1</li> <li>Generator amps L1, L2, L3</li> <li>Generator Earth Current</li> <li>Generator Frequency Hz</li> <li>Engine speed RPM</li> <li>Engine oil pressure (PSI &amp; Bar)</li> </ul>	<ul style="list-style-type: none"> <li>Engine cooling water temperature (°C &amp; °F)</li> <li>Battery volts</li> <li>Engine hours run</li> <li>Generator Load kW, kVA, kVar</li> <li>Generator Load kWh, kVAh, kVarh</li> <li>Power Factor</li> </ul>
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- Visual indicators on LCD display
 

<ul style="list-style-type: none"> <li>Shutdown alarm</li> <li>Warning alarm</li> <li>High coolant temperature</li> <li>Low oil pressure</li> <li>Charge fail</li> <li>Over-speed</li> <li>Under-speed</li> <li>Electrical trip</li> <li>Fail to stop</li> </ul>	<ul style="list-style-type: none"> <li>Generator high current</li> <li>Over voltage (AC)</li> <li>Under voltage (AC)</li> <li>Over voltage (DC)</li> <li>Under voltage (DC)</li> <li>Auxiliary indication</li> <li>Auxiliary alarm (warning or shutdown)</li> <li>Common alarm</li> <li>Over frequency</li> <li>Under frequency</li> </ul>
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- Visual indication alarm and automatically shutdown
 

<ul style="list-style-type: none"> <li>High engine temperature</li> <li>Low oil pressure</li> <li>Fail to start</li> <li>Over-speed</li> <li>High voltage</li> <li>Low voltage</li> </ul>	<ul style="list-style-type: none"> <li>Over frequency</li> <li>Under frequency</li> <li>Oil pressure sender open circuit</li> <li>Loss of speed signal</li> <li>High Crankcase internal pressure (MGS-C Continuous only)</li> <li>Emergency Stop</li> </ul>
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- Operation status indicated by LED
 

<ul style="list-style-type: none"> <li>Remote start present</li> <li>Generator ready</li> </ul>	<ul style="list-style-type: none"> <li>Lubrication oil filter clogged</li> <li>Electrical trip</li> </ul>
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- Pre-Programmed Starting Unit
  - Automatic start/stop sequence timing and delay systems configured via MS-Windows based software.

# MITSUBISHI MGS SERIES

**DIESEL GENERATOR SET  
MGS0900B**



## MGS SERIES AC GENERATOR MODEL: MG-HC6H

### Type & Design

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

Enclosure: Drip-proof IP23

### Winding System

Standard 12 wire reconnectable winding provides a wide range of 3 phase voltage. All windings are impregnated in vacuum pressure impregnated with a special polyester resin.

Overspeed capability: 125% for 2 minutes

Insulation: Class 'H' of IEC

Temperature rise: Class 'H'

### Voltage Regulator

Fully sealed, 3 phase RMS sensing AVR with built-in protection against sustained over-excitation. This de-excites the generator after a minimum of 5 seconds.

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: Less than 5% deviation

### Permanent Magnet Generator (PMG)

Electrically isolated from the main alternator stator windings powers AVR - sustaining approx. 250~300% of short circuit current at the AC generator output terminals for not more than 10 seconds by means of excitation voltage via AVR

### Electrical Design

In accordance with BS5000 Part 3, VDE0530, UTE51100, NEMA MG1-22, CEMA, IEC34-1, CSA22.2, AS1359 and JEC2100.

Telephone Influence Factor (TIF): Less than 50

Telephone Harmonic factor (THF): Less than 2%

Radio interference: Suppression is in line with the provision of BS800 and VDE Class G and N

## Gen Set Option Features

- ENGINE
  - Air Cleaner, paper element dry type
  - Battery Kit
  - Battery Charger
  - Anchor Bolts
- FUEL
  - Fuel Day Service Tank
- COOLING
  - Oversize radiator
  - Heat Exchanger
  - Expansion Tank
  - Jacket Water Heater
  - Removal STD Radiator, Fan & Fan Drive
- LUBRICATION
  - Lub. Oil Priming Pump
- EXHAUST
  - Exhaust Silencer
  - Exhaust Flexible Pipe
- GENERATOR
  - Space Heater
  - 3 phase Sensing Auto Voltage Regulator
  - Power Factor Regulator
- CONTROL PANEL
  - Diesel Generator Integrated Communication Synthesizer (DGICS-MII)
  - Auxiliary Control Panel
  - Remote Monitor Interface
- SWITCHGEAR
  - Circuit Breaker MCCB & ACB
  - Reverse Power Relay

 **MITSUBISHI HEAVY INDUSTRIES, LTD.**

Power Systems Engine Section, Engine Sales Department  
16-5, KONAN 2-CHOME, MINATO-KU, TOKYO 108-8215 JAPAN  
TEL: 81-3-6716-4771 FAX: 81-3-6716-5854

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Therefore specification and some materials will be changed without notice.

The International System of units (SI) is used in this publication.

