

# MITSUBISHI MGS SERIES

DIESEL GENERATOR SET

50Hz/1500 rpm/380V



## MGS0450B

<b>POWER RATING (0.8 P.F.)</b>		<b>MODEL CODE</b>
<b>STAND-BY</b>	<b>515 kVA</b>	<b>5S-H5D</b>
<b>PRIME</b>	<b>480 kVA</b>	<b>5P-H5D</b>



MGS0450B with typical options

### Voltage Variation

- Standard Voltage 3Phase 4 Wires  
380V
- Voltages Available 3Phase 4 Wires  
380, 400, 415, 440, 190, 200, 208 and 220V

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 in accordance with ISO3046/1. Overload power in accordance with ISO15550, ISO3046/1, JIS8002-1, DIN6271 and BS5514.

#### 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: \* Please contact our MHIESA office to consult in detail.

### DIMENSION (Reference Data)

Overall dimensions	L : Length	mm	3445
	W : Width	mm	1595
	H : Height	mm	1725
Total Weight (Dry)		kg	4000
Total Weight (Wet)		kg	4220

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## MGS SERIES DIESEL ENGINE: MITSUBISHI S6A3-PTA-S

L-6, 4 stroke-cycle water-cooled, turbocharged and aftercooled

### ENGINE SPECIFICATIONS & TECHNICAL DATA

Bore	mm	150
Stroke	mm	175
Displacement	L	18.56
Piston speed	m/sec.	8.8
Compression ratio		14.5
Lubricating oil capacity	L	80
Coolant capacity without/with radiator	L	45/120
Coolant pump external resistance	m water	3.5
Coolant pump flow rate	L/min	580
Cooling fan airflow rate	m <sup>3</sup> /min	540
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	PRIME
		515 kVA	480 kVA
Gross Engine Power*	kWm	452	410
Brake mean effective pressure	MPa	2.0	1.8
Regenerative absorption	kW	40	40
Noise Level at 1 m (excluding: intake, exhaust & fan)	dB(A)	109	107
Fuel consumption load 100%*	L/hr.	112	104
Fuel consumption load 75%*	L/hr.	84	79
Combustion air inlet flow rate	m <sup>3</sup> /min	42	38
Exhaust gas flow rate	m <sup>3</sup> /min	112	99
Exhaust gas temperature	°C	500	490
Heat rejection to coolant	kW	308	274
Heat rejection to exhaust	kW	426	369
Heat rejection to atmosphere from engine	kW	37	33
Heat rejection to atmosphere from generator	kW	26	25

\* WITH FAN basis.

Deration for engine

Note: Please consult with your nearest Mitsubishi MGS dealer

### ENGINE STANDARD EQUIPMENT

Aftercooler  
Turbocharger filter (For MGS-B, HV stand-by and prime)  
Paper element type filter (For MGS-C, HV PRP continuous)  
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 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  
Manual shutoff  
24V DC electric starting motor

\* Depending on the model, it becomes optional setting.

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## MGS 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

### Mounting

Fabricated cubicle mounted on individual bracket with anti-vibration isolator

### Instrument and control accessories

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

### 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 display

- High coolant temperature : shutdown and warning
- Low oil pressure : shutdown and warning
- Fail to start : shutdown
- Over-speed : shutdown and warning
- Under-speed : shutdown and warning
- 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 \*2
- 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

\*1 : MGS-C, HV continuous are applicable as standard. The others are applicable as option.

\*2 : MGS2700 and MGS2800 are applicable as standard. The others are applicable as option.

### Operation status indicated by LED

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

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## MGS SERIES AC GENERATOR MODEL: MG-HC5D

### Features

MGS original design, single bearing, 4 pole, screen protected, self excited, 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.

Compliance to 100% step load.

Quick start option available (less than 10 sec) with lubrication oil pump and jacket water heater.

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'

Temperature rise: 150°C(Stand-by), 125°C(Prime)

### Voltage Regulator

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

Voltage regulation: Less than +/- 1.0% 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)

Separately excited system which provide isolated power supply for the AVR – 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%

## Gen Set Option Features

### ■ ENGINE

Air Cleaner, paper element dry type  
(For MGS-B, HV stand-by and prime only)  
Battery Kit  
Battery Charger  
Anchor Bolts

### ■ FUEL

Fuel Day Service Tank

### ■ COOLING

Oversize radiator  
Heat Exchanger  
Expansion Tank  
Removal STD Radiator, Fan & Fan Drive

### ■ LUBRICATION

Lub. Oil Level Regulator

### ■ EXHAUST

Exhaust Silencer  
Exhaust Flexible Pipe

### ■ GENERATOR

Space Heater  
Power Factor Regulator

### ■ CONTROL PANEL

Diesel Generator Integrated Communication Synthesizer (DGICS-MII)  
Auxiliary Control Panel  
Cross Current Compensate Transformer (CCT)  
Remote Monitor Interface  
2157 expansion unit (Output signal module)  
2130 expansion unit (Input signal module)  
2133 expansion unit (RTD/Thermocouple input module)

### ■ SWITCHGEAR

Circuit Breaker MCCB & ACB  
Reverse Power Relay



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