

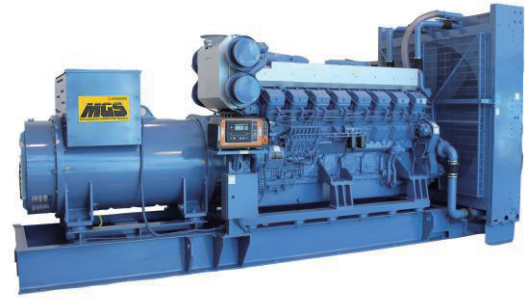
# MITSUBISHI MGS SERIES

DIESEL GENERATOR SET  
50Hz/1500 rpm/380V



## MGS2000B

POWER RATING (0.8 P.F.)	MODEL CODE
STAND-BY 2220 kVA	5S-L51L7
PRIME 2015 kVA	5P-L51L7



MGS2000B with typical options

### Voltage Variation

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

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: \* 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	5550
	W : Width	mm	2200
	H : Height	mm	2829
Total Weight (Dry)		kg	13450
Total Weight (Wet)		kg	14100

# MITSUBISHI MGS SERIES

DIESEL GENERATOR SET  
MGS2000B



## MGS SERIES DIESEL ENGINE: MITSUBISHI S16R-PTA2-S

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

### ENGINE SPECIFICATIONS & TECHNICAL DATA

Bore	mm	170
Stroke	mm	180
Displacement	L	65.4
Piston speed	m/sec.	9.0
Compression ratio		13.5
Lubricating oil capacity	L	230
Coolant capacity without radiator	L	170
Coolant pump external resistance	m water	5.0
Coolant pump flow rate	L/min	1650
Cooling fan airflow rate	m <sup>3</sup> /min	2040
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	350

### ENGINE OPERATING DATA

		STAND-BY	PRIME
		2220 kVA	2015 kVA
Gross Engine Power*	kWm	1850	1679
Brake mean effective pressure	MPa	2.3	2.1
Regenerative absorption	kW	140	140
Noise Level at 1 m (excluding: intake, exhaust & fan)	dB(A)	112	111
Fuel consumption load 100%*	L/hr.	469	426
Fuel consumption load 75%*	L/hr.	355	322
Combustion air inlet flow rate	m <sup>3</sup> /min	161	146
Exhaust gas flow rate	m <sup>3</sup> /min	424	385
Exhaust gas temperature	°C	560	550
Heat rejection to coolant	kW	1168	1061
Heat rejection to exhaust	kW	1486	1348
Heat rejection to atmosphere from engine	kW	140	127
Heat rejection to atmosphere from generator	kW	72	65

\* 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 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

# MITSUBISHI MGS SERIES

DIESEL GENERATOR SET  
MGS2000B



## 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,

### 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)
- LCD display accessed by scroll pushbutton
  - Generator volts L1-N, L2-N, L3-N
  - Generator volts L1-L2, L2-L3, L3-L1
  - Generator amps L1, L2, L3
  - Generator Earth Current
  - Generator Frequency Hz
  - Engine speed RPM
  - Engine oil pressure (PSI & Bar)
  - Stop/Reset button (Manual only)
  - Mute/Lamp test button (Manual only)
  - Voltage adjusting trimmer
  - Speed adjusting trimmer
  - Emergency stop pushbutton
- Visual indicators on LCD display
  - Shutdown alarm
  - Warning alarm
  - High coolant temperature
  - Low oil pressure
  - Charge fail
  - Over-speed
  - Under-speed
  - Electrical trip
  - Fail to stop
  - 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
- Visual indication alarm and automatically shutdown
  - High engine temperature
  - Low oil pressure
  - Fail to start
  - Over-speed
  - High voltage
  - Low voltage
  - Generator high current
  - Over voltage (AC)
  - Under voltage (AC)
  - Over voltage (DC)
  - Under voltage (DC)
  - Auxiliary indication
  - Auxiliary alarm (warning or shutdown)
  - Common alarm
  - Over frequency
  - Under frequency
- Operation status indicated by LED
  - Remote start present
  - Generator ready
  - Lubrication oil filter clogged
  - Electrical trip
- Pre-Programmed Starting Unit
  - Automatic start/stop sequence timing and delay systems configured via MS-Windows based software.

# MITSUBISHI MGS SERIES

DIESEL GENERATOR SET  
MGS2000B



## MGS SERIES AC GENERATOR MODEL: MG-L51L7

### Type & Design

MGS original design, single bearing, 4 pole, screen protected, selfexciting, 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.

Enclosure: Drip-proof IP23

### Winding System

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

### AREP and PMI

Electrically isolated from the main alternator stator windings powers AVR - sustaining approx. 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, NEMA MG1-22, IEC60034-1, CSA, and ISO8528/3.

Telephone Influence Factor (TIF): Less than 50

Telephone Harmonic factor (THF): Less than 2.5%

Radio interference: Suppression is in line with the provision of 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
  - 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

Mitsubishi Heavy Industries, Ltd. serves for the customers with improved products continually.

Therefore specification and some materials will be changed without notice.

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

