

# MITSUBISHI MGS SERIES

DIESEL GENERATOR SET  
50Hz/1500 rpm/380V

 **MITSUBISHI HEAVY INDUSTRIES  
ENGINE SYSTEM ASIA PTE. LTD.**

## MGS2800B,C

<b>POWER RATING (0.8 P.F.)</b>	<b>MODEL CODE</b>
<b>STAND-BY 2750 kVA</b>	<b>5S-P80S2</b>
<b>PRIME 2500 kVA</b>	<b>5P-P80S2</b>
<b>PRIME(PRP) 2375kVA</b>	<b>5CP-P80S2</b>



MGS2700B 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.

#### Prime(PRP) : Code: CP

Applicable for supplying emergency power with varying load instead of the utility for an unlimited time. + 10% overload is allowed in accordance with ISO3046/1. Prime power in accordance with ISO8528.

#### 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.).

### DIMENSION (Reference Data)

			<b>STAND-BY</b>	<b>PRIME</b>	<b>PRIME(PRP)</b>
			<b>2750 kVA</b>	<b>2500 kVA</b>	<b>2375 kVA</b>
Overall dimensions	L : Length	mm	6265	6265	6265
	W : Width	mm	2955	2955	2955
	H : Height	mm	3630	3630	3630
Total Weight (Dry)		kg	18600	18600	19000
Total Weight (Wet)		kg	19500	19500	20000

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## MGS SERIES DIESEL ENGINE: MITSUBISHI S16R2-PTAW2-S

V-16, 4 stroke-cycle water-cooled, turbocharged and two way cooling system

### 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	L	157
Air Cooler Coolant Capacity without radiator	L	33
Coolant pump external resistance	m water	3.5
Coolant pump flow rate	L/min	1650
Air Cooler Coolant flow rate	L/min	920
Cooling fan airflow rate	m <sup>3</sup> /min	3480
Oil flow to external oil cooler	L/min	250
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 2750 kVA	PRIME 2500 kVA	PRIME(PRP) 2350 kVA
Gross Engine Power*	kWm	2330	2109	2008
Brake mean effective pressure	MPa	2.41	2.20	2.10
Regenerative absorption	kW	152	152	152
Noise Level at 1 m (excluding: intake, exhaust & fan)	dB(A)	116	115	115
Fuel consumption load 100%*	L/hr.	586	531	503
Fuel consumption load 75%*	L/hr.	436	397	378
Combustion air inlet flow rate	m <sup>3</sup> /min	200	182	172
Exhaust gas flow rate	m <sup>3</sup> /min	529	480	455
Exhaust gas temperature	°C	510	510	510
Heat rejection to coolant	kW	897	813	770
Heat rejection to air cooler	kW	649	588	557
Heat rejection to external oil cooler	kW	163	148	140
Heat rejection to exhaust	kW	1531	1380	1304
Heat rejection to atmosphere from engine	kW	176	159	151
Heat rejection to atmosphere from generator	kW	109	99	94

\* WITH FAN basis.

Deration for engine

Note: Please consult with your nearest Mitsubishi MGS dealer

### ENGINE STANDARD EQUIPMENT

Air cooler  
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

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## 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.

### 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 AUTO/MANUAL Mode selection switch (PANEL LOCK , ACTIVE, STOP/RESET)
- Manual mode button
- Auto mode button
- Open generator button (Manual mode only)
- Close generator (Manual mode only)
- Start engine button (Manual mode only)
- Stop/Reset mode button (Manual mode only)
- Mute alarm/Lamp test button (Manual mode only)
- Voltage adjusting trimmer
- Speed adjusting trimmer
- Emergency stop pushbutton
- LCD display accessed by scroll pushbuttons
  - Generator volts L1-N, L2-N, L3-N
  - Generator volts L1-L2, L2-L3, L3-L1
  - Generator current L1, L2, L3
  - Generator Earth Current
  - Generator Frequency (Hz)
  - Engine speed (RPM)
  - Oil pressure (PSI & Bar)
  - Coolant temperature (°C & °F)
  - Oil temperature
  - Battery volts
  - Engine Run Time
  - Generator Load (kW, kVA, kVar)
  - Generator Load (kWh, kVAh, kVarh)
  - Generator Power Factor
- Visual indicators on LCD display
  - Shutdown alarm
  - Warning alarm
  - Coolant temperature High
  - Oil temperature High
  - Oil pressure Low
  - Charge failure
  - Over speed
  - Under speed
  - Electrical trip
  - Fail to stop
  - Negative Phase sequence
  - Generator high current
  - Generator Over voltage (AC)
  - Generator Under voltage (AC)
  - Battery Over voltage (DC)
  - Battery Under voltage (DC)
  - Auxiliary indication
  - Auxiliary alarm (warning or shutdown)
  - Common alarm
  - Generator Over frequency
  - Generator Under frequency
  - Generator Power Overload
- Visual indication alarm and automatically shutdown
  - Coolant temperature High
  - Oil temperature High
  - Oil pressure Low
  - Fail to start
  - Over speed
  - Under speed
  - Generator Over voltage
  - Generator Under voltage
  - Generator Over frequency
  - Generator Under frequency
  - Oil pressure sensor open circuit
  - Loss of magnetic pickup
  - Emergency Stop
- Operation status indicated by LED
  - Remote start present
  - Generator ready
  - L.O. filter clogged
  - Electrical trip
- Pre-Programmed Starting Unit
  - Automatic start/stop sequence timing and delay systems configured via MS-Windows based software.

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## MGS SERIES AC GENERATOR MODEL:MG-P80S12

### Type & Design

MGS original design, double 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 greaseable bearing, direct drive centrifugal blower.

With space heater

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.

Overspeed capability: 150% for 1 minute

Insulation: Class 'H' of IEC

Temperature rise: Class H peak (Stand-by)

: Class H (Prime)

: Class F (Prime(PRP))

### Voltage Regulator(Digital AVR)

Fully sealed, 3 phase RMS sensing AVR 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: +/- 15%

Wave form: No load <1.5% Non-distorting balanced liner load <3.0%

### Permanent Magnet Generator (PMG)

Electrically isolated from the main alternator stator windings powers AVR - sustaining approx. 250% 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 BS EN 60034 and relevant section of BS5000,VDE0530,NEMA MG1-32,IEC60034,CSA C22.2 -100,AS1359.

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 0875G and 0895N

### Gen Set Option Features

- |   |  |
|---|--|
| ■ ENGINE<br>Air Cleaner, paper element dry type<br>Battery Kit<br>Battery Charger<br>Anchor Bolts | ■ GENERATOR<br>Stator winding, 2 per each phase, PT100<br>Bearing, 1 per each bearing, PT100   |
| ■ FUEL<br>Fuel Day Service Tank   | ■ CONTROL PANEL<br>Diesel Generator Integrated Communication Synthesizer (DGICS-MII)<br>Auxiliary Control Panel<br>Temperature Meter for Winding & Bearing |
| ■ COOLING<br>Heat Exchanger<br>Expansion Tank<br>Removal STD Radiator, Fan & Fan Drive            | ■ SWITCHGEAR<br>Circuit Breaker MCCB & ACB<br>Reverse Power Relay  |
| ■ LUBRICATION<br>Lub. Oil Priming Pump  |  |
| ■ EXHAUST<br>Exhaust Silencer<br>Exhaust Flexible Pipe  |  |

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MITSUBISHI HEAVY INDUSTRIES ENGINE SYSTEM ASIA PTE.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.

