

# MITSUBISHI MGS SERIES

## DIESEL GENERATOR SET

50Hz/1500 rpm/380V



### MGS2700B

<b>POWER RATING (0.8 P.F.)</b>		<b>MODEL CODE</b>
<b>STAND-BY</b>	<b>2500 kVA</b>	<b>5S-KT84</b>
<b>PRIME</b>	<b>2250 kVA</b>	<b>5P-KT84</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.

#### Prime: Code: P

Applicable for supplying power to a constant electrical load for limited hours.  
Limited-Time Running Power (LTP) 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)

Overall dimensions	L : Length	mm	6420
	W : Width	mm	2825
	H : Height	mm	3365
Total Weight (Dry)		kg	18600
Total Weight (Wet)		kg	19600

## MGS SERIES DIESEL ENGINE: MITSUBISHI S16R2-PTAW

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

### 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	190
Coolant pump external resistance	m water	5.0
Coolant pump flow rate	L/min	1650
Cooling fan airflow rate	m <sup>3</sup> /min	2760
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 2500 kVA	PRIME 2250 kVA
Gross Engine Power*	kWm	2110	1903
Brake mean effective pressure	MPa	2.17	1.96
Regenerative absorption	kW	152	152
Noise Level at 1 m (excluding: intake, exhaust & fan)	dB(A)	130	128
Fuel consumption load 100%*	L/hr.	535	478
Fuel consumption load 75%*	L/hr.	401	362
Combustion air inlet flow rate	m <sup>3</sup> /min	183	164
Exhaust gas flow rate	m <sup>3</sup> /min	483	432
Exhaust gas temperature	°C	530	520
Heat rejection to coolant	kW	826	738
Heat rejection to air cooler	kW	533	476
Heat rejection to exhaust	kW	1474	1299
Heat rejection to atmosphere from engine	kW	160	143
Heat rejection to atmosphere from generator	kW	103	93

\* 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

## 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, Lub. Oil Temperature, DC Battery Voltage, 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

High engine temperature, Low oil pressure, Fail to start, Generator Over Speed/Frequency, Coolant high temperature, 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

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|---|---|
| <ul style="list-style-type: none"> <li>■ 3 position operation mode control key switch (ACTIVE, PANEL LOCK, STOP/RESET)</li> <li>■ Manual button</li> <li>■ Auto button</li> <li>■ CB open button (Manual only)</li> <li>■ CB close button (Manual only)</li> <li>■ Start engine button (Manual only)</li> <li>■ 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> </li> <li>■ 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> </li> <li>■ 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> </li> <li>■ Operation status indicated by LED                             <ul style="list-style-type: none"> <li>Remote start present</li> <li>Generator ready</li> </ul> </li> <li>■ Pre-Programmed Starting Unit                             <ul style="list-style-type: none"> <li>Automatic start/stop sequence timing and delay systems configured via MS-Windows based software.</li> </ul> </li> </ul> | <ul style="list-style-type: none"> <li>■ Stop/Reset button (Manual only)</li> <li>■ Mute/Lamp test button (Manual only)</li> <li>■ Voltage adjusting trimmer</li> <li>■ Speed adjusting trimmer</li> <li>■ Emergency stop pushbutton</li> <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> <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> <li>Over frequency</li> <li>Under frequency</li> <li>Oil pressure sender open circuit</li> <li>Loss of speed signal</li> <li>Emergency Stop</li> <li>Lubrication oil filter clogged</li> <li>Electrical trip</li> </ul> |
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### MGS SERIES AC GENERATOR MODEL: MG-KT84

#### 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 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 special polyester resin.

Overspeed capability: 125% for 2 minutes

Insulation: Class 'H' of IEC

Temperature rise: 150° C (Stand-by)

Temperature rise: 125° C (Prime)

#### 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 2.5%

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
- 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