

# MITSUBISHI MGS SERIES

DIESEL GENERATOR SET

50Hz/1500 rpm/380V



## MG2700C

POWER RATING (0.8 P.F.)		MODEL CODE
PRIME	2250 kVA	5CP- KT84
CONTINUOUS	1900 kVA	5C-KT84



The photograph is MGS2000C

### 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

#### Prime: Code:PRP

Applicable for supplying 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 ISO15550, ISO3046/1, JIS8002-1, DIN6271 and BS5514. Prime power in accordance with ISO8528.

#### Continuous: Code:C

Applicable for supplying power continuously. Continuous power in accordance with ISO8528, ISO15550, ISO3046/1 and BS5514.

#### Conditions:

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

Fuel rates are based 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 (7.001 lbs./U.S. gal.).

Note: Please consult with your nearest Mitsubishi MGS dealers for overload and additional rating requirements.

### DIMENSION (Reference Data)

			PRIME 2250 kVA	CONTINUOUS 1900 kVA
Overall dimensions	L : Length	mm	6415	6415
	W : Width	mm	2850	2850
	H : Height	mm	3485	3485
Total Weight (Dry)		kg	18750	18750
Total Weight (Wet)		kg	19650	19650

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## 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	157
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

		PRIME	CONTINUOUS
		2250 kVA	1900 kVA
Gross Engine Power*	kWm	1903	1623
Brake mean effective pressure	MPa	1.96	1.68
Regenerative absorption	kW	152	152
Noise Level at 1 m (excluding: intake, exhaust & fan)	dB(A)	114	113
Fuel consumption load 100%*	L/hr.	474	413
Fuel consumption load 75%*	L/hr.	355	310
Combustion air inlet flow rate	m <sup>3</sup> /min	168	143
Exhaust gas flow rate	m <sup>3</sup> /min	445	379
Exhaust gas temperature	°C	520	510
Heat rejection to coolant	kW	594	505
Heat rejection to exhaust	kW	1677	1423
Heat rejection to atmosphere from engine	kW	148	126
Heat rejection to atmosphere from generator	kW	85	70

\* WITH FAN basis.

Deration for engine

Altitude: 2.5% per 300m (1000ft) above 1,500m

Temperature: 2% per 5°C (9° F) above 40°C

### ENGINE STANDARD EQUIPMENT

Aftercooler

Air filter, paper element type

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, Lub. Oil temperature, 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)
  - Engine cooling water temperature (°C & °F)
  - Engine Lub. Oil temperature (°C & °F)
  - Battery volts
  - Engine hours run
  - Generator Load kW, kVA, kVar
  - Generator Load kWh, kVAh, kVarh
  - Power Factor
  - Generator Phase Sequence
- Visual indicators on LCD display
  - Shutdown alarm
  - Warning alarm
  - High coolant temperature
  - High Lub. Oil temperature
  - Low oil pressure
  - Charge fail
  - Over-speed
  - Under-speed
  - Electrical trip
  - Fail to stop
  - 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
- Visual indication alarm and automatically shutdown
  - High engine temperature
  - Low oil pressure
  - Fail to start
  - Over-speed
  - High voltage
  - Low voltage
  - Over frequency
  - Under frequency
  - Oil pressure sender open circuit
  - Loss of speed signal
  - High Crankcase internal pressure (MGS-C Continuous only)
  - Emergency Stop
- 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.

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MGS2700C



## MGS SERIES AC GENERATOR MODEL: MG-KT84 (PRIME) MG-KT84 (CONTINUOUS)

### 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 special polyester resin.

Overspeed capability: 125% for 2 minutes

Insulation: Class 'H' of IEC

Temperature rise: Class 'H'(Prime)

Class 'F'(Continuous)

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



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