

# MITSUBISHI MGS SERIES

DIESEL GENERATOR SET

50Hz/1500 rpm/380V



## MGS2500C

POWER RATING (0.8 P.F.)

PRIME

2000 kVA

MODEL CODE

5CP-KT83



MGS2500C 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

**Prime [PRP] : Code:CP**

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.

#### 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 dealer for overload and additional rating requirements.

### DIMENSION (Reference Data)

PRIME 2000 kVA			
Overall dimensions	L : Length	mm	6040
	W : Width	mm	2395
	H : Height	mm	3460
Total Weight (Dry)		kg	15100
Total Weight (Wet)		kg	15800

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## MGS SERIES DIESEL ENGINE: MITSUBISHI S16R-PTAA2

V-16, 4 stroke-cycle water-cooled, turbocharged and air-to-air cooling system

### 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	2500
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 2000 kVA		
Gross Engine Power*	kWm	1684
Brake mean effective pressure	MPa	2.1
Regenerative absorption	kW	140
Noise Level at 1 m (excluding: intake, exhaust & fan)	dB(A)	111
Fuel consumption load 100%*	L/hr.	408
Fuel consumption load 75%*	L/hr.	310
Combustion air inlet flow rate	m <sup>3</sup> /min	140
Exhaust gas flow rate	m <sup>3</sup> /min	369
Exhaust gas temperature	°C	550
Heat rejection to coolant	kW	528
Heat rejection to exhaust	kW	1273
Heat rejection to atmosphere from engine	kW	122
Heat rejection to atmosphere from generator	kW	54

\* WITH FAN basis.

Deration for engine

Note: Please consult with your nearest Mitsubishi MGS dealer

### 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 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, 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, High crankcase internal pressure (MGS-C continuous only)

#### 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 exhaust gas 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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## MGS SERIES AC GENERATOR MODEL: MG- KT83

### 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 'F'

### 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  $\pm 0.5\%$  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:  $\pm 6\%$

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

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| <ul style="list-style-type: none"><li>■ ENGINE<ul style="list-style-type: none"><li>Battery Kit</li><li>Battery Charger</li><li>Anchor Bolts</li></ul></li><li>■ FUEL<ul style="list-style-type: none"><li>Fuel Day Service Tank</li></ul></li><li>■ LUBRICATION<ul style="list-style-type: none"><li>Lub. Oil Priming Pump</li><li>Lub. Oil Level Regulator</li></ul></li><li>■ EXHAUST<ul style="list-style-type: none"><li>Exhaust Silencer</li><li>Exhaust Flexible Pipe</li></ul></li></ul> | <ul style="list-style-type: none"><li>■ GENERATOR<ul style="list-style-type: none"><li>Space Heater</li><li>3 phase Sensing Auto Voltage Regulator</li><li>Power Factor Regulator</li></ul></li><li>■ CONTROL PANEL<ul style="list-style-type: none"><li>Diesel Generator Integrated Communication Synthesizer (DGICS-MII)</li><li>Auxiliary Control Panel</li><li>Remote Monitor Interface</li></ul></li><li>■ SWITCHGEAR<ul style="list-style-type: none"><li>Circuit Breaker MCCB &amp; ACB</li><li>Reverse Power Relay</li></ul></li></ul> |
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Therefore specification and some materials will be changed without notice.

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

