

mitsubishi MGS SERIES

DIESEL GENERATOR SET

50Hz/1500 rpm/380V



MGS2000B

POWER RATING (0.8 P.F.)		MODEL CODE
STAND-BY	2235 kVA	5S-KT83
PRIME	2030 kVA	5P-KT83



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 is allowed.

Fuel stop power in accordance with ISO15550, ISO3046/1, JISB8002-1, DIN6271 and BS5514.

Overload: 10% allowed

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	5675
	W : Width	mm	2200
	H : Height	mm	2835
Total Weight (Dry)		kg	14000
Total Weight (Wet)		kg	14700

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 ³ /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 2235 kVA	PRIME 2030 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.	478	428
Fuel consumption load 75%*	L/hr.	355	322
Combustion air inlet flow rate	m ³ /min	164	147
Exhaust gas flow rate	m ³ /min	432	387
Exhaust gas temperature	°C	560	550
Heat rejection to coolant	kW	1191	1066
Heat rejection to exhaust	kW	1550	1361
Heat rejection to atmosphere from engine	kW	143	128
Heat rejection to atmosphere from generator	kW	60	55

* 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, 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
 - Stop/Reset button (Manual only)
 - Auto button
 - Mute/Lamp test button (Manual only)
 - CB open button (Manual only)
 - Voltage adjusting trimmer
 - CB close button (Manual only)
 - Speed adjusting trimmer
 - Start engine button (Manual only)
 - Emergency stop pushbutton
- LCD display accessed by scroll pushbutton

<ul style="list-style-type: none"> 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) 	<ul style="list-style-type: none"> Engine cooling water temperature (°C & °F) Battery volts Engine hours run Generator Load kW, kVA, kVar Generator Load kWh, kVAh, kVarh Power Factor
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- Visual indicators on LCD display

<ul style="list-style-type: none"> Shutdown alarm Warning alarm High coolant temperature Low oil pressure Charge fail Over-speed Under-speed Electrical trip Fail to stop 	<ul style="list-style-type: none"> 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
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- Visual indication alarm and automatically shutdown

<ul style="list-style-type: none"> High engine temperature Low oil pressure Fail to start Over-speed High voltage Low voltage 	<ul style="list-style-type: none"> Over frequency Under frequency Oil pressure sender open circuit Loss of speed signal High Crankcase internal pressure (MGS-C Continuous only) Emergency Stop
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- Operation status indicated by LED

<ul style="list-style-type: none"> Remote start present Generator ready 	<ul style="list-style-type: none"> Lubrication oil filter clogged Electrical trip
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- Pre-Programmed Starting Unit

Automatic start/stop sequence timing and delay systems configured via MS-Windows based software.

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 '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

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
- 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

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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.

