

MITSUBISHI MGS SERIES

DIESEL GENERATOR SET

50Hz/1500 rpm/6.6kV



MGS1400HV

50Hz/6.6kV

POWER RATING (0.8 P.F.)

STAND-BY 1600 kVA

PRIME 1450 kVA

MODEL CODE

56S-P623

56P-P623



MGS1400HV with typical options

CONDITIONS & DEFINITIONS

Stand-by: Code: S

Applicable for supplying emergency power at varying load in the event of normal utility power interruption.

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

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 (7.001 lbs./U.S. gal.).

DIMENSION (Reference Data)

			STAND-BY 1600 kVA	PRIME 1450 kVA
Overall dimensions	L : Length	mm	5400	5400
	W : Width	mm	2160	2160
	H : Height	mm	2840	2840
Total Weight (Dry)		kg	13000	13000
Total Weight (Wet)		kg	13600	13600

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MGS SERIES DIESEL ENGINE: MITSUBISHI S12R-PTA2-S

V-12, 4 stroke-cycle water-cooled, turbocharged and aftercooled

ENGINE SPECIFICATIONS & TECHNICAL DATA

Bore	mm	170
Stroke	mm	180
Displacement	L	49
Piston speed	m/sec.	9.0
Compression ratio		14
Lubricating oil capacity	L	180
Coolant capacity without radiator	L	125
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	300

ENGINE OPERATING DATA

		STAND-BY	PRIME
		1600 kVA	1450 kVA
Gross Engine Power*	kWm	1351	1225
Brake mean effective pressure	MPa	2.2	2.0
Regenerative absorption	kW	105	105
Noise Level at 1 m (excluding: intake, exhaust & fan)	dB(A)	107	105
Fuel consumption load 100%*	L/hr.	334	299
Fuel consumption load 75%*	L/hr.	249	225
Combustion air inlet flow rate	m ³ /min	115	103
Exhaust gas flow rate	m ³ /min	302	270
Exhaust gas temperature	°C	520	520
Heat rejection to coolant	kW	832	745
Heat rejection to exhaust	kW	1024	900
Heat rejection to atmosphere from engine	kW	100	89
Heat rejection to atmosphere from generator	kW	62	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

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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.

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
- Auto button
- CB open button (Manual only)
- CB close button (Manual only)
- Start engine button (Manual only)
- Stop/Reset button (Manual only)
- Mute/Lamp test button (Manual only)
- Voltage adjusting trimmer
- Speed adjusting trimmer
- Emergency stop pushbutton
- 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)
 - Battery volts
 - Engine hours run
 - Generator Load kW, kVA, kVar
 - Generator Load kWh, kVAh, kVarh
 - Power Factor
- Visual indicators on LCD display
 - Shutdown alarm
 - Warning alarm
 - High coolant 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-KP623

Type & Design

MGS original design, double bearings, 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.

With space heater.

Enclosure: Drip-proof IP22

Terminal box: Totally enclosed IP44

Winding System

Standard 6 wire winding is provided. All windings are formed wound and impregnated in vacuum pressure with a special epoxy resin.

Overspeed capability: 125% for 2 minutes

Insulation: Class 'F' of IEC

Temperature rise: 130°C (Stand-by)

Temperature rise: 105°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% of short circuit current at the AC generator output terminals for not more than 10 seconds by means of excitation voltage via AVR

Sensors

Temperature sensors are provided as follows.

Stator winding, 2 per each phase, PT100

Bearing, 1 per each bearing, PT100

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 VDE Class G and N

Gen Set Option Features

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| <ul style="list-style-type: none">■ ENGINE<ul style="list-style-type: none">Air Cleaner, paper element dry typeBattery KitBattery ChargerAnchor Bolts■ FUEL<ul style="list-style-type: none">Fuel Day Service Tank■ COOLING<ul style="list-style-type: none">Heat ExchangerExpansion TankRemoval STD Radiator, Fan & Fan Drive■ LUBRICATION<ul style="list-style-type: none">Lub. Oil Priming Pump■ EXHAUST<ul style="list-style-type: none">Exhaust SilencerExhaust Flexible Pipe | <ul style="list-style-type: none">■ GENERATOR<ul style="list-style-type: none">Power Factor Regulator■ CONTROL PANEL<ul style="list-style-type: none">Diesel Generator Integrated Communication Synthesizer (DGICS-MII)Auxiliary Control PanelRemote Monitor InterfaceTemperature Meter for Winding & Bearing■ SWITCHGEAR<ul style="list-style-type: none">Circuit Breaker VCBReverse Power Relay |
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 **MITSUBISHI HEAVY INDUSTRIES, LTD.**
Power Systems Engine Section, Engine Sales Department

Mitsubishi Heavy Industries, 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.

