

MITSUBISHI MGS SERIES

DIESEL GENERATOR SET

50Hz/1500 rpm/380V



MGS1500B

| | | |
|--------------------------------|-----------------|-------------------|
| POWER RATING (0.8 P.F.) | | MODEL CODE |
| STAND-BY | 2000 kVA | 5S-7PF |
| PRIME | 1800 kVA | 5P-7PF |



MGS1500B 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 | 5385 |
| | W : Width | mm | 2490 |
| | H : Height | mm | 2935 |
| Total Weight (Dry) | | kg | 12200 |
| Total Weight (Wet) | | kg | 12900 |

MGS SERIES DIESEL ENGINE: MITSUBISHI S16R-PTA-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 | | 14 |
| 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 2000 kVA | PRIME 1800 kVA |
|--|---------------------|-----------------------------|--------------------------|
| Gross Engine Power* | kWm | 1678 | 1523 |
| Brake mean effective pressure | MPa | 2.1 | 1.9 |
| Regenerative absorption | kW | 140 | 140 |
| Noise Level at 1 m (excluding: intake, exhaust & fan) | dB(A) | 111 | 109 |
| Fuel consumption load 100%* | L/hr. | 418 | 369 |
| Fuel consumption load 75%* | L/hr. | 304 | 275 |
| Combustion air inlet flow rate | m ³ /min | 143 | 127 |
| Exhaust gas flow rate | m ³ /min | 378 | 334 |
| Exhaust gas temperature | °C | 530 | 520 |
| Heat rejection to coolant | kW | 1041 | 919 |
| Heat rejection to exhaust | kW | 1293 | 1111 |
| Heat rejection to atmosphere from engine | kW | 125 | 110 |
| Heat rejection to atmosphere from generator | kW | 75 | 66 |

* 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
 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 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
 - 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

| | |
|--|--|
| <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 |
|--|--|
- 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 |
|--|--|
- 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 |
|---|---|
- 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 |
|---|---|
- Pre-Programmed Starting Unit
 - Automatic start/stop sequence timing and delay systems configured via MS-Windows based software.

MITSUBISHI MGS SERIES

DIESEL GENERATOR SET

MGS1500B



MGS SERIES AC GENERATOR MODEL: MG-7PF

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
 - Jacket Water Heater
 - 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.

