MITSUBISHI MGS SERIES

DIESEL GENERATOR SET
50Hz/1500 rpm/6.6kV

MITSUBISHI HEAVY INDUSTRIES
ENGINE SYSTEM ASIA PTE. LTD.

MGS2800HV

50Hz/6.6kV

POWER RATING (0.8 P.F.)		MODEL CODE
STAND-BY	2750 kVA	56S-P80T2
PRIME	2500 kVA	56P-P80T2
PRIME(PRP)	2375 kVA	56CP-P80T2

MGS2700B 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 in accordance with ISO3046/1. Overload power in accordance with ISO15550, ISO3046/1, JIS8002-1, DIN6271 and BS5514.

Prime(PRP): Code: CP
Applicable for supplying emergency 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 ISO8528.

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 2750 kVA	PRIME 2500 kVA	PRIME(PRP) 2375 kVA
Overall dimensions	L : Length	mm	6265	6265	6265
	W : Width	mm	2955	2955	2955
	H : Height	mm	3630	3630	3630
Total Weight (Dry)		kg	18900	18900	19300
Total Weight (Wet)		kg	19900	19900	20300

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MGS SERIES DIESEL ENGINE: MITSUBISHI S16R2-PTAW2-S

V-16, 4 stroke-cycle water-cooled, turbocharged and two way cooling system

ENGINE SPECIFICATIONS & TECHNICAL DATA

Bore	mm	170
Stroke	mm	220
Displacement	L	79.9
Piston speed	m/sec.	11.0
Compression ratio		14
Lubricating oil capacity	L	290
Coolant capacity without radiator	L	157
Air Cooler Coolant Capacity without radiator	L	33
Coolant pump external resistance	m water	3.5
Coolant pump flow rate	L/min	1650
Air Cooler Coolant flow rate	L/min	920
Cooling fan airflow rate	m^3/min	3480
Oil flow to external oil cooler	L/min	250
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 2750 kVA	PRIME 2500 kVA	PRIME(PRP) 2350 kVA
Gross Engine Power*	kWm	2330	2109	2008
Brake mean effective pressure	MPa	2.41	2.20	2.10
Regenerative absorption	kW	152	152	152
Noise Level at 1 m (excluding: intake, exhaust & fan)	dB(A)	116	115	115
Fuel consumption load 100%*	L/hr.	586	531	503
Fuel consumption load 75%*	L/hr.	436	397	378
Combustion air inlet flow rate	m^3/min	200	182	172
Exhaust gas flow rate	m^3/min	529	480	455
Exhaust gas temperature	°C	510	510	510
Heat rejection to coolant	kW	897	813	770
Heat rejection to air cooler	kW	649	588	557
Heat rejection to external oil cooler	kW	163	148	140
Heat rejection to exhaust	kW	1531	1380	1304
Heat rejection to atmosphere from engine	kW	176	159	151
Heat rejection to atmosphere from generator	kW	109	99	94

* WITH FAN basis.

Deration for engine
Please consult with your nearest Mitsubishi MGS dealer

ENGINE STANDARD EQUIPMENT

Air cooler
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 solenoid
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.

Mounting
Fabricated cubicle mounted on individual bracket with anti-vibration isolator

Electrical Design
In accordance with BS EN 60950 safety of information technology equipment, BS EN 61006-2 and 61006-4 EMC Generic Immunity&Emission Standard. The optional interface can provide real time diagnostic facilities.

Generator Control Panel Description

- 3 position AUTO/MANUAL Mode selection switch (PANEL LOCK , ACTIVE, STOP/RESET)
- Manual mode button
- Auto mode button
- Open generator button (Manual mode only)
- Close generator (Manual mode only)
- Start engine button (Manual mode only)
- Stop/Reset mode button (Manual mode only)
- Mute alarm/Lamp test button (Manual mode only)
- Voltage adjusting trimmer
- Speed adjusting trimmer
- Emergency stop pushbutton

- LCD display accessed by scroll pushbuttons
  - Generator volts L1-N, L2-N, L3-N
  - Generator volts L1-L2, L2-L3, L3-L1
  - Generator current L1, L2, L3
  - Generator Earth Current
  - Generator Frequency (Hz)
  - Engine speed (RPM)
  - Oil pressure (PSI & Bar)
  - Coolant temperature (°C & °F)
  - Oil temperature
  - Battery volts
  - Engine Run Time
  - Generator Load (kW, kVA, kVar)
  - Generator Load (kWh, kVAh, kVarh)
  - Generator Power Factor

- Visual indicators on LCD display
  - Shutdown alarm
  - Warning alarm
  - Coolant temperature High
  - Oil temperature High
  - Oil pressure Low
  - Charge failure
  - Over speed
  - Under speed
  - Electrical trip
  - Fail to stop
  - Negative Phase sequence
  - Generator high current
  - Generator Over voltage (AC)
  - Generator Under voltage (AC)
  - Battery Over voltage (DC)
  - Battery Under voltage (DC)
  - Auxiliary indication
  - Auxiliary alarm (warning or shutdown)
  - Common alarm
  - Generator Over frequency
  - Generator Under frequency
  - Generator Power Overload

- Visual indication alarm and automatically shutdown
  - Coolant temperature high
  - Oil temperature High
  - Oil pressure low
  - Fail to start
  - Over speed
  - Under speed
  - Generator Over voltage
  - Generator Under voltage
  - Generator Over frequency
  - Generator Under frequency
  - Oil pressure sensor open circuit
  - Loss of magnetic pickup
  - Emergency Stop

- Operation status indicated by LED
  - Remote start present
  - Generator ready
  - L.O. 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-P80T61

Type & Design

MGS original design, double bearings, 4 pole, screen protected, self-exciting, 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 IP23

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: 150% for 1 minute
Insulation: Class 'F' of IEC
Temperature rise: Class F peak (Stand-by)
: Class F (Prime,Prime(PRP))

Voltage Regulator(Digital AVR)

Fully sealed, 3 phase RMS sensing AVR with built-in protection against sustained over-excitation.

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: +/- 15%
Wave form: No load <1.5% Non-distorting balanced liner load <3.0%

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
*Generator winding and bearing temperature indication Meters are option.

Electrical Design

In accordance with BS EN 60034 and relevant sections of BS5000,VDE0530,NEMA MG1-32,IEC60034,CSA C22.2 -100,AS1359.

Telephone Influence Factor (TIF): Less than 50
Telephone Harmonic factor (THF): Less than 2%
Radio interference: Suppression is in line with the provision of VDE Class 0875G and 0875N

Gen Set Option Features

■ ENGINE
Air Cleaner, paper element dry type
Battery Kit
Battery Charger
Anchor Bolts

■ FUEL
Fuel Day Service Tank

■ COOLING
Heat Exchanger
Expansion Tank
Removal STD Radiator, Fan & Fan Drive

■ LUBRICATION
Lub. Oil Priming Pump

■ EXHAUST
Exhaust Silencer
Exhaust Flexible Pipe

■ CONTROL PANEL
Diesel Generator Integrated Communication Synthesizer (DGICS-MII)
Auxiliary Control Panel
Temperature Meter for Winding & Bearing

■ SWITCHGEAR
Circuit Breaker VCB
Reverse Power Relay

Mitsubishi Heavy Industries Engine System Asia Pte.Ltd.

MITSUBISHI HEAVY INDUSTREIES ENGINE SYSTME ASIA PTE.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.

QUALITY SYSTEM CERTIFICATION DNV·GL ISO 9001