

Soundproof Diesel Generating Sets

MAINTENANCE AND INSTRUCTION



W A R N I N G

- *Read and understand all safety precautions and warnings before operating maintenance on the generator.
- *Failure to follow the instructions, procedures and safety precautions in this manual may increase the possibility of accidents and injuries.
- *Do not alter or adjust any part of the generator set assembled and supplied by us without our approval, as we cannot be help responsible for faults or accidents as caused.
- *It is very important to regularly carry out periodic checks suggested in this manual to maximize the generator set's working life and prevent accidents in advance.
- *Never start the generator set unless the generator set and its components are safe.
- *Do not attempt to operate the generator set when conditions are unsafe.
- *If the generator set is unsafe, fit danger notices and disconnect the battery negative(-)lead so that it cannot be started until the condition is corrected.
- *Made sure to disconnect the negative lead of the battery from the generator set prior to attempting any repair work or cleaning of the inside of the sound-proof or trailer type generator set enclosure structure.
- *Install and operate this generator set only in full compliance with relevant National, Local, or Federal Codes, Standards or other requirement.

1.1 INSTALLATION AND HANDLING

This manual covers procedures for installation and handling of generator set.

That chapter should be read before installing the generator set or moving/lifting the generator set. The following safety precautions should be noted.

W A R N I N G

- *Electrical work, including earth-ground in and insulation should be carried out in compliance with local regulations related to such electrical work.**
- *The fuel storage facility should be built in compliance with relevant local regulations if fuel is supplied from separate fuel storage.**
- *Exhaust fumes from all in door generator sets must be piped out of the building via leak-free and heat-resistant piping work and any installation of equipment related to exhaust local regulations. Standards and other requirements. The pipes and silencer should not use inflammable materials, nor should any inflammable material be placed near the pipes or silencer. Protection equipment capable of meeting safety standards should be installed to prevent accidents in advance. Also ensure that the exhaust gas emitted from the exhaust pipe is within the legal limit.**
- *Never lift the generator set using the engine or alternator lifting lugs. Connect lifting equipment to the hole on the bed frame of the generator set, Refer to the installation section in this manual for further details including lifting of sound-proof generator set.**
- *Ensure the lifting rigging and supporting structure is in good condition and has a capacity suitable for the load.**
- *Keep all personnel away from the generator set when it is suspended.**
- *Make sure all personnel are clear of the generator set, if the type is a sound-proof or a weather-proof one, before closing or latching enclosure doors.**
- *Check the floor that the generator set will be installed on is flat and without a slope. When the floor slopes, the generator set should be arranged horizontally using packing material that is sufficiently strong to support the weight of the generator set.**
- *For trailer type generator sets, install the set on the flat floor if possible and fix all the wheels with props or struts on the both sides of all wheels. Do not move the generator set while it runs.**
- *Do not install or use the generator set in any classification of hazardous**

Environment unless it has been specifically designed.

*Made sure a generator set is not exposed to rain or snow while installing a soundproof, weatherproof or trailer generator set outdoors because running a set in such exposed conditions is very dangerous, also, load line connection parts and the loading equipment should not be exposed to rain or snow.

1.2 FIRE AND EXPLOSION

*Fuels and fumes associated with generator sets can be flammable and potentially explosive. Proper care in handling these materials can dramatically limit the risk of fire or explosion. However safety dictates that fully charged class BC and class ABC fire extinguishers should be kept on hand. Personnel must know how to operate them. Facilities complying with laws relevant to fire and explosion should be constructed where the generator set is installed.

W A R N I N G

*Ensure the generator set room is properly ventilated.

*Keep the room, the floor and the generator set clean.

*When spills of fuel, oil, battery electrolyte or coolant occur, they should be cleaned up immediately.

*Never store flammable liquids near the engine.

*Store oily rags in metal covered containers.

*Do not smoke or allow sparks, flames or other sources of ignition around fuel or batteries. Fuel vapors are explosive...Hydrogen gas generated by charging batteries is also explosive.

*Turn off or disconnect the power to the battery charger before making or breaking connections with the battery.

*Keep ground conductive objects, such as tools, away from exposed live electrical parts, such as terminals, to avoid arcing. Sparks and arcing might ignite fuel or vapors.

*Avoid refilling the fuel tank of the bed frame while the engine is running.

- *Do not attempt to operate the generator set with any known leaks in the fuel system.
- *The excessive build-up of unburned fuel gases in the exhaust system can create a potentially explosive condition. This build - up can occur after repeated failed start attempts, valve testing, or hot engine shutdown. Open exhaust system drain plugs, if equipped, and allow the gases to dissipate before attempting to restart the generator set.
- *Use fuel, oil and cooling water that are appropriate.

1.3 MECHANICAL SAFETY CONSIDERATIONS

The generator set is designed with guards for protection from moving parts. Care must still be take to protect personnel and equipment from other mechanical hazards when working around the generating set.

W A R N I N G

- *Do not attempt to operate the generator set with the safety guards removed. While the generator set is running do not attempt to reach or around the guards to do maintenance or for any other reason.
- *Keep hands, arms, long hair, loose clothing and jeweler away from pullerys, belts and other moving parts.
- *Some moving parts cannot be seen clearly when the set is running.
- *Keep access doors on enclosures, if equipped, closed and locked when not required to be open.
- *Avoid contact with hot oil, hot coolant, hot exhaust gases, hot surfaces and sharp edges and comers.
- *Wear protective clothing including gloves and hat when working around the generator set.
- *Do not remove the radiator filler cap until the coolant has cooled. Then loosen the cap slowly to relieve any excess pressure before removing the cop completely.

1.4 CHEMICAL SAFETY CONSIDERATIONS

*Fuel, oils, coolants, lubricants and battery electrolyte used in this generator set are typical of the industry. However, they can be hazardous to personnel if not treated properly.

W A R N I N G

*Do not swallow or allow skin contact with fuel, oil, coolant, lubricants or battery electrolyte. If swallowed, seek medical treatment immediately. Do not induce vomiting if fuel is swallowed. For skin contact, wash with soap and water.

*Do not wear clothing that has been contaminated by fuel or lube oil.

*Wear an acid resistant apron and face shield or goggles when servicing the battery. If electrolyte is spilled on skin or clothing, flush immediately with large quantities of water.

1.5 NOISE SAFETY CONSIDERATIONS

Generator sets that are not equipped exposure to noise levels above 85 dBA is hazardous to hearing.

*Ear protection must be worn when operating or working around an operating generator set without close the enclosure of the soundproof genset.

1.6 ELECTRICAL SAFETY CONSIDERATIONS

Safe and efficient operation of electrical equipment can be achieved only if the equipment is correctly installed, operated and maintained.

W A R N I N G

*The generator set must be connected to the load only by trained and qualified electricians who are authorized to do so, and in compliance with relevant Electrical Codes, Standards and other regulations. Where required, their work should be inspected and accepted and accepted by the inspection agency prior to operating the generator set.

*Ensure the generator set is effectively grounded/earthed in accordance with all relevant regulations prior to operation.

- *The generator set should be shutdown with the battery negative (-) terminal disconnected prior to attempting to connect or disconnected load connections.
- *Do not attempt to connect or disconnect load connections while standing in water or on wet or soggy ground.
- *Do not touch electrically energized parts of the generator set and/or interconnecting cables or conductors with any part of the body or with any non-insulated conductive object.
- *Replace the generator set terminal box cover as soon as connection or disconnect of the load cables is complete when it is worn or damaged. Do not operate the generator set without the cover securely in place.
- *Make sure the bolt securing the load line to the terminal is not loosened or released. Keep the bolt tight at all times.
- *Connect the generator set only to load and/or electrical systems that are compatible with its electrical characteristics and that are within its rated capacity.
- *Be sure all electrical power is disconnected from electrical equipment being serviced.
- *Keep all electrical equipment clean and dry. Replace any wiring where the insulation is cranked, cut, abraded or otherwise degrade Replace terminals that are worn discolored or corroded. Keep terminals clean and tight.
- *Insulant all connections and disconnected wires.
- *Use only Class BC or Class ABC extinguishers on electrical fires.

1.7 FIRST AID FOR ELECTRIC SHOCKL

W A R N I N G

- *Do not touch the victim's skin with bare hands until the source of electricity has been turned off.
- *Switch off power, if possible.
- *Otherwise pull the plug or pull the cable away from the victim.
- *If this is not possible, stand on dry insulating material and pull the victim clear

Of the conductor, preferably using insulated material such as dry wood. Immediately contact a hospital or a doctor to treat patients who have been injured by the generator set.

2 DIESEL ENGINES

Please see the maintenance for further details.

3 ALTERNATOR

Please see the generator maintenance for further details.

4 TECHNICAL DATA

ITEA		UNTT	
G E N E R A T O R	Rate output	KW/KVA	
	Voltage	V	
	Frequency	HZ	50/60
	Excitation		
	Phase& Wire		
	Power Factor	COS ϕ	
	Insulation		“B” Class
	Protection		IP 21
ENGINE	Model		
	Rated Output	KW/HP	
	Bore(mm)		
DIMENSIONS	Length	mm	
	Width	mm	
	Height	mm	
Net Weight		kg	

5 STATER BATTERIES

Resistance in the starting circuit has a significant effect on the starting (ability of the engine. Therefore, the batteries should be located as close as

Possible to the generator set batteries should be in perfect condition to start the diesel engine).

Maintenance procedures should be carried out rigorously since the batteries have to be in perfect condition to start the diesel engine.

Flames adjacent to batteries.

6. ELECTRICAL CONNECTION

All connections should be carefully checked for integrity. Phase rotation must be checked for compatibility with the installation. This is vitally.

W A R N I N G

The cables connecting the generator set with the distribution system should be protected by means of a circuit breaker, fuses or other means to disconnect the generator set in case of over load or short circuit.

6. 2 LOADING

When planning your distribution system it is important to ensure that a balanced load is presented to your generator set. If loading on once phase is excessive in comparison to the other two phases this will cause overheating in the alternator windings, imbalance in the phase to phase voltage output and possible damage to sensitive 3 phase equipment connected to the system. Ensure that no phase current exceeds that of the current rating of the generator set.

It may be necessary to reorganize the electrical distribution system if a generator set is to be connected to an existing installation.

6.3 POWER FACTOR

The power factor ($\cos \phi$) of connected load should be determined.

Factors below 0.8 will overload the generator. The generator set will provide its kilowatt rating and will operate satisfactorily from 0.8 to unity power factor.

Particular attention must be given to installation with automatic or manual power factor correction equipment to ensure that a leading power factor is not present under any conditions. This will lead to voltage instability on the generator output and may result in damaging over voltages.

NOTE

The load power factor compensator, for use with a commercial electrical power source, should be automatically isolated while the generator set is in operation.

6.4 GROUNDING REQUIREMENTS

Regulations vary advice should be sought from the local supply utility as to their requirements. The factory connects the frame of the alternator to the frame of the generator set therefore the complete mass of the generator set is at the same potential. The connection if required of the generator winding star point/neutral to earth is the responsibility of the installation technicians.

6.5 GENERATOR RECONNECTION

The alternator can be reconnected to suit different voltage ranges. Details of reconnection procedure are given in the alternator section. Be sure to check cables, circuit breakers, current transformers and ammeters are suitable before operation at a different voltage

6.6 PARALLEL RUNNING

When two or more generator are operating in parallel, depending on the type of generator, circulation currents may occur if all neutrals are grounded or otherwise connected together. Refer to the Technical Bulletin for more detailed information.

Extra equipment will be required for the standard engine and alternator

Satisfactory paralleling. Check with your supplier for details.

Extra equipment will be required for the standard engine and alternator to allow satisfactory paralleling. Check with your supplier for details.

WARNING

Never work while the generator set is running. Stop the generator set and opens the circuit breaker on the power cables before working on the alternator or it's connections.

7. START UP

Before starting the generator set, please see the relative chapter of the engine manual, ensure the engine is under normal condition.

7.1 For the first time start, and battery fluid(electrolyte),cooling water, lubricating oil and fuel oil according to the instruction of the engine manual.

7.2 Connect the wires to the output terminals, ensure the circuit breaker is in off position

7.3 Turn the key on, change the start switch on, after the voltage and frequency meter indicate on normal position, the genset can begin to supply the electric power.

7.4 STOP

7.4. 1First turn off the circuit breaker, then push the red stop button continuously till the engine stop.

7.4. 2This button of electric-magnetic switch works under the DC power supply of the battery, once the battery is not effective, open the enclosure door, turn off the fuel supply switch directly.

8. NOISE CONTROL

Your generator set can be supplied with accessories and components to reduce noise emissions. Typically available are residential and critical silencers, acoustic louvers and splitter vents, fan silencers and acoustically treated enclosures.

The requirements for each site vary enormously and for any critical installation we recommend you consult your dealer at an early stage, the information needed to select acoustic equipment is:

- 1)The model and capacity of generator set.
- 2)The location and overall site plan.
- 3)The desired noise level at a fixed distance(normally 1m or 7m).
- 4)Environmental conditions, ambient temperature etc.

Noise emissions from diesel generator sets(without acoustic treatment)ate at sound pressure levels of between 95dB (A) and 105dB(A)at 1m (3').In case of the soundproof type, the attenuation level would be around 75dB(A) at 7m.

Inter mediate levels of treatmetn will prove move economic and are often satisfactory depending only on the nature and type of installation. Hospital Care Areas will require more attention than the normal commercial/industrial

Installation

In addition,anti-vibration devices should be mounted between the generator set and found ations so that vibrations are not transmitted. Shows the sound-proof type low-power generator. When installed indoors. For the high power generator set manufactured, because the exhaust system projects into the exhaust air path and other areas on the system, a rain cap is mounted. Considerations should be given to the joint part when installing the exhaust system so that it is facing outwards.

Soundproof Diesel Generating Sets CERTIFICATE

Type GFS-100

Capacity 100kw ~~KVA~~

Voltage 400 V

Current 180.6 A

Cos ϕ 0.8

Phase 3

Speed 1500 r/min

Frequency 50 Hz

Consult GB/T2820-1997 Standard

Series No. 0712027

Tested by 

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