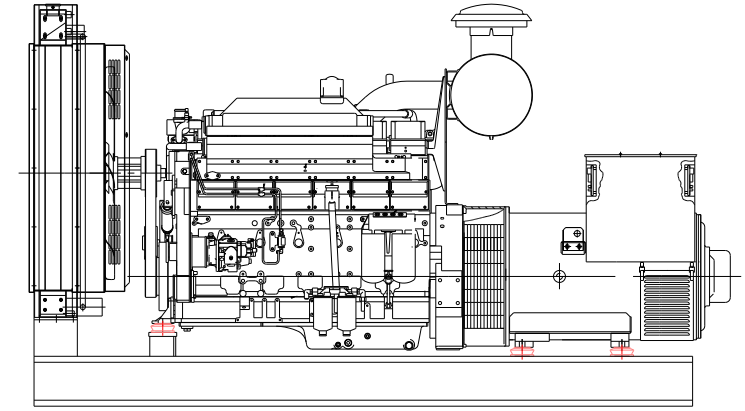
OPERATION MANUAL OF GENERATOR SET



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FOREWORD

This manual contains information for the correct operation and maintenance of Twin Power generator sets. It also includes important safety information, installation instruction and troubleshooting guidelines.

Keep this manual with the equipment. If the equipment is traded or sold, give the manual to the owner.

This manual does not cover diesel engine,alternator maintenance procedures and control panel. Please refer to the engine, alternator and control panel operation and maintenance manuals.

To make certain that your expectations are matched, we ask that you read carefully through the instruction book before starting and operating TwinPower generator sets.

Sincerely

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1. Safety Information

Before operating the generator sets, read the following safety regulations carefully, and find out about the local requirements in safety.

The installation, operation, maintenance and repairs must be carried out only by authorized and competent personnel.

The owner is responsible for maintaining TwinPower generator set in good safety conditions. The parts and accessories must be replaced if they are not in good working conditions.

For ease of reading, the Warning Statements are divided into three categories: Note, Caution and Warning.

1.1 Clarification of Notation

Incorrect operation can lead to injuries and/or property damage. It is therefore important to read through the instruction book very carefully before you install, start or operate Twin Power generator sets and maintenance or service work.

NOTE:	**NOTE** Highlights an essential element of a procedure to ensure correctness.
CAUTION!	**CAUTION** Indicates a procedure or practice which, if not strictly observed, could result in damage or destruction of equipment.
WARNING	**WARNING!** Indicates a procedure or practice, which could result in injury to personnel or loss of life if not followed correctly.

1.2 General Safety Precautions

- Check that all necessary or available guards are correctly fitted. It is forbidden to dismantle or disable any safety devices.
- Check TwinPower generator set is securely mounted.
- Check all mechanical connections are satisfactory.
- Check all electrical connections are correct, safely insulated and suitably earthed.
- Check service and maintenance persons are competent and adequately trained.
- Keep TwinPower generator set clean and generator house tidy.

- Always disconnect starter battery before commencing maintenance operations.
- Do not approach the generator set if you are wearing loose clothes or objects that may be attracted by the airflow or by the mobile parts of the engine.
- It is forbidden to lean on the generator set or to leave objects on it.

For automatic action generator sets:

- Place a red light that switches on when the generator set is working in a visible place.
- Place a warning sign alerting of the possibility that an unexpected automatic start up of the generator set may occur.
- Place an obligation sign stating: "All maintenance operations must be carried out with the generator set in the LOCK position".
- For the emergency stop of the group, press the “emergency stop” button.

1.3 Safety at Transporting

- Always shutdown engine before transporting.

  Never transport Power generator with air intake doors open.

  Tighten fuel tank cap securely.

  Drain fuel when transporting Power generator over long distance or bad roads.

  Always tie-down Power generator during transportation.

  In order to lift and transport the generator set, lifting machines of the appropriate capacity must be used. All loose and pivoting parts must be safely fixed before lifting it.

  When moving Power generator set, and lifting it, it is highly recommendable to use the available points for this purpose.

  It is totally forbidden to use any other lifting points located over the engine, alternator or other components.

  If Power generator set is damaged for any reason during its transportation, storage, and/or mounting, it must not be started up before being verified by specialized personnel.
- If you want to store the generator set until its utilization, it is highly recommendable to have a warehouse properly protected against any chemical that may damage its components.
- Unpacking must be carried out carefully, avoiding causing any damages to the goods during such operation, especially when using levers, saws or any other metallic tools.
- If Power generator is mounted on a trailer, make sure the trailer complies with all local and state safety transportation laws.

1.4 Safety During Installation and Initial Start-up

- Installation and repair procedures require specialized skills with electrical equipment and

engine systems. Any person that installs or performs repairs must have these specialized skills to ensure that Power generator set is safe to operate.

- You must be familiar with the emergency procedures concerning the installation to be followed.
- Always wear a safety helmet,footwear and safety gloves, protective goggles and dry, tight clothes.
- Do not modify the original protections, located on all rotary parts on display, hot surfaces, air intakes, belts and live parts.
- Do not leave any flammable liquids or rags soaked in flammable liquids near Power generator set, electrical devices or any other parts of the electrical installation (including lamps).
- Take extreme caution to avoid risks of fulguration; make sure there is a grounding installation and that it has been fitted according to the regulations.
- Install all the necessary protective measures required for safety in the parts that complete the installation.
- Insulate all connections and wires that are connected. Do not leave any terminals of Power generator sets unprotected.
- Plug all connection points concerning Power generator set and its accessories into the grounding installation.
- Verify and make sure the electrical power connections and the auxiliary services connections are correctly made.
- Check that the cyclical direction of the phases matches the one of the power supply.
- Isolate the position of the emergency stop switches, quick-stop fuel valves, switches and other incidental emergency systems existing in the installation.
- Verify the perfect functionality of the stop devices of the set, especially those in the following devices (in case they are standard supplies): overspeed stop, low oil pressure stop, high water temperature in the engine stop, and the user-installed emergency stop switch, which is usually outside the premises.
- Check the correct ventilation of the premises so that the exhaust gases can be released to the exterior of the premises, and verify that they are in a safe position away from doors, windows and air intakes.
- Check that pipes and silencers are installed in a correct way. They must have expansion joints and be protected against accidental contact.
- Make sure there are no losses or leaks in the oil and fuel pipes.
- Before the starting-up, make sure Power generator set has the right amount of lubricant oil, cooling liquid and fuel.
- Single out the position of the fire extinguishers and other protective and emergency devices, and learn how they work.
- Single out the sources of dangers, such as fuel leaks, lubricant oil, acid solutions, condensed drippings, high pressures and other dangers.
- Check Ground Fault Circuit Interrupt (GFCI) receptacles monthly by using the “Test” and “Reset” buttons.
- Check that the set is clean and the surrounding area and escape routes are clear and free of obstacles. Check that there are no obstructions on grilles, intakes and outlets.

- Incorrect installation of Power generator set could result in property damage, injury or death. Connection of the generator to its fuel source must be done by a qualified professional technician or contractor.
- Never stand under or close to an object that is being hoisted or lift into position.Accidents happen and if the object falls or tips over you or someone else could be crushed by the weight of the object causing severe injury or death to yourself or others. Always remain a safe distance from the object and always wear protective head gear (hard hat).

1.5 Safety During Operation

- Do not allow children or animals to access the operating area of Power generator set.
- Do not touch Power generator set, especially wires and connections to the alternator when the set is operating, since they are live.
- Do not touch any parts in motion until Power generator set has stopped completely.
- When Power generator set is in operation, some parts of the engine, conduit(s) and exhaust reach high temperatures. Avoid touching them until they have cooled down completely.
- Always wear ear protectors when Power generator set is in operation, in order to avoid ear damage.
- Power generator must not be used on or near any forest covered, brush covered, or grass covered land unless the engine’s exhaust system is equipped with a spark arrestor. The spark arrestor must be maintained in effective working order by the operator.
- Never move Power generator set that is running. Loads should be connected and position secure before starting the engine. Hazards are caused by moving a generator set that is running.
- Never connect or disconnect loads during operation. Always connect load circuits before starting the engine and use external branch disconnects etc. to switch loads On/Off.
- The labels concerning safety must be kept clean and on the locations designated by the manufacturer.
- Fuel and lubricant may be flammable, toxic, explosive and corrosive. We recommend keeping them in their original containers and storing them in protected areas.
- For a new trailer, the wheel lug nuts should be tightened to the proper torque specification before use, after 25 miles of operation and every 100 miles of operation thereafter. Failure to check the lug nuts for proper tightness can result in an accident due to a wheel falling from the trailer.
- Never operate the engine when the air cleaner is removed. An engine backfire can cause serious burns.
- Never “jump start” Power generator to start the engine. If the battery charge is insufficient to start the engine, charge or replace the battery and try to restart.Jump starting a battery can cause the battery to explode and cause severe injury or death to anyone in the area.
- High voltage is present whenever the engine is running. Electrical shock can cause serious or fatal injury. Always stop engine before connecting or disconnecting power cords or external devices.

- Do not smoke near Power generator during operation or when close to fuel source. LPG and natural gas fuels are flammable and can cause fire, explosions, injury or death.
- Keep Power generator at least three feet away from buildings and other structures.

1.6 Safety During Maintenance

- Parts of Power generator are extremely hot during and after operation.To prevent severe burns, do not touch any part of the generator until you have first determined if the part is hot. Wear protective clothing and after use allow sufficient time for parts to cool before touching any part of the generator.
- All checks and maintenance of Power generator set must be always carried out by specialized personnel.
- Do not touch the hot exhaust parts. the hand or body part caused by contact with high voltage or a hot surface can result in injury to yourself or others.
- Engine coolant is near the boiling point of water when engine is hot. Do not open the coolant system until the engine has completely cooled. Hot coolant can cause severe burns and other injuries. When engine is cool, coolant level can be checked.
- Maintenance operations must be done when the engine is not working.
- Before operating any components of the electrical installation, disconnect the poles from the battery.
- Before opening the electrical panel, specialized personnel must take the following precautions:
  - Stop Power generator set if it is in operation, and set the electric panel in the LOCK position.
  - Disconnect the battery/batteries from the generator set.
  - Disconnect the power input.
- Periodically check both the tightness and insulation of connections.
- The different operation's and/or maintenance procedures which are not specifically indicated in the user handbooks must be notified to the manufacturer for their approval.
- Do not carry out modifications of the product without having the knowledge and exclusive authorization by our technical department.
- Periodically check if there are any water, oil, fuel and/or acid leaks in the battery/batteries.
- Do not operate the fuel tank or fuel supply conduits when the engine is hot or in operation.
- Wear protective gloves and goggles:
  - When using pressurized air;
  - During battery maintenance;
  - During the supply of inhibitors or antifreeze products;
  - During the replacement or supply of lubricant oil (hot engine oil can cause scalds during emptying). Allow the oil to cool below 60℃.
- Wear protective helmets when operating in an area with suspended loads or equipment at head level.
- Always wear safety footwear and tight clothes.
- When working with parts that may be live, always make sure that your hands and feet are dry.
- Wet clothes must be replaced immediately.

- Keep used rags in containers that are anti-flammable or indicated for such effect.
- Do not leave rags on the engine.
- Always keeps the engine clean, removing eventual oil stains, gas oil and/or other cooling liquids.
- Do not carry out tasks that need the presence of several people if you are alone.

Engine cooling circuit

- Never add coolant to a hot engine; allow the engine to cool down first.
- Periodically check the level of the coolant, and if necessary, add product until the appropriate level is reached. Only use liquids that are recommended in the use and maintenance handbook.
- Periodically check the tightness and level of wearing of pump belts/fan.

Lubrication circuit

- Periodically check the level of the oil in the crankcase, with a cool engine, and add oil whenever necessary, according to the directions found in the use and maintenance handbook.
- Do not smoke or light fires during the oil supply.

Fuel circuit

- Do not smoke or light fires during the fuel supply.
- Do not smoke during the fuel replacement, and be careful not to spill fuel on Power generator set.

Exhaust circuit

- Check the exhaust circuit, and in the event that any eventual gas leaks are detected, repair immediately. These are possible fire sources.
- Warning: very hot surfaces, repair must be wait after the exhaust cooled.

Electric start system

- Disconnect the negative pole from the battery/batteries before operating the engine, in order to prevent the automatic start system of the engine from starting while being operated.
- Keep joints tight and check that the insulation of the wires is satisfactory.

Control panel

- Before operating the control panel, disconnect the power input and set the generator to the position of LOCK.
- Periodically check that the bolts that fix electrical connections are securely screwed.

1.7 Environmental Safety

- Do not start power generator sets in closed premises, where there is no exhaust installation with outlets.
- Exhaust gases are harmful and may be lethal.
- Follow the rules and other regulations concerning acoustic installations.
- Replace the exhaust and/or silencer of the engine if the humming level is louder than the allowed by the respective regulation.
- Maintenance operations(oil replacements,fuel tank cleaning,radiator cleaning, washing, battery
- replacements,etc.),storage and waste disposals will be carried out according to the existing

regulations in the country where they are being used.

2. Working Conditions

2.1 Standard Environmental Conditions for Reference

Diesel engine

Important: The power of diesel engines, for stationary applications, refers to the following environmental conditions, according to the ISO 3046/1 standard:

- Room temperature: 25℃
- Room air pressure: 1000 Mbars (750 mm/ Hg.)
- Relative humidity: 30%

Synchronous generator

The environmental conditions used as a reference for alternators, stationary applications, according to the directives IEC 34-1, ISO 8528-3 and CEI 2-3, are the following:

- Room temperature: 40℃ (30℃ according to NEMA)
- Altitude: 1000m ASL (674 mm/Hg)

2.2 Derating for Operative Environmental Conditions

For environmental conditions of installation and operation different from those above specified, it is necessary to foresee an eventual loss of power, or 'derating', not only in the engine, but also in the generator that is fitted into it, and therefore, in the electric power provided by the generator set.

The user/customer must clearly establish the effective environmental conditions in which power generator set will operate when placing the order. Therefore, the derating and declassification must be fixed at the time of signing the agreement, so that both the engine and the generator are correctly sized.

Particularly, the user/customer must report on the following environmental conditions in which power generator set will operate:

⌘ The upper and lower room temperature limits.

⌘ The altitude above sea level or, preferably the minimum and maximum values of barometric pressure in the installation area.

⌘ The humidity values in relation to the temperature and air pressure within the installation, paying special attention to the humidity value with respect to the maximum temperature.

⌘ The maximum and minimum temperatures of the cooling water, only in those generator sets that are equipped with water-water interchangers (under special request) instead of a radiator.

⌘ Any other environmental conditions that may require special solutions or shorter maintenance cycle, such as:

- Dusty and/or sandy environments
- Maritime environments
- Environments with the possibility of chemical pollution

- Environments with existence of radiations.
- Operating conditions with the presence of great vibration (e.g. earthquake-prone areas, or subject to external vibrations caused by nearby machines).
-

When the effective conditions are not specified in the contractual base, the power of Tpower generator set is interpreted according to the Standard conditions for diesel engines, as established.

If the effective environmental conditions change subsequently, it will be necessary to contact, in order to calculate the new power losses and to carry out the necessary calibrations.

For diesel engines, these deratings are determined by the manufacturers of the respective engine. In order to become familiar with them, contact the technical department at, or ask your regular supplier. The alternator derating is not as important as the one of diesel engines; therefore, the general derating of the generator generator set matches the derating of the engine.
The chart below is a merely indicative way of determining the derating of alternators. For a higher precision, you must refer to the supplier's documentation.

Room temperature ℃	30	35	40	45	50	55	60
Reduction coefficient K1	1,05	1,03	1,00	0,96	0,92	0,88	0,84
Altitude - meters above sea level (m ASL)	1000	1500	2000	2500	3000	3500	4000
Reduction coefficient K2	1,00	0,97	0,95	0,92	0,89	0,86	0,83

3. Generators Introduction

Power generator set is a power plant equipment which provide electric power for oneself , internal-combustion engine providing power,drive alternator to generate electricity.

A standard static set usually consists of:

1. Water tank and radiator
2. Fan protection
3. Engine
4. Dry air filter
5. Bedplate and daily fuel tank
6. Alternator
7. Control panel
8. Air switch
9. Anti vibration-mounting
10. Warning and notes
11. Control panel box
12. Alternator brand and notes
13. Storage battery
14. Battery charger

Along with the parts above described for the standard static set, the following components can be identified in the soundproof static set:

1. Silencer
2. Airflow pipe
3.Radiator
4.Crashworthiness rubber
5. Airflow pipe (output)
6. Heat hand protection
7. Water separator
8.Engine
9. Water filling
10.Forklift
11. Oil pump
12. Back tank
13. Dry air filter
14.AC generator
15.Control system
16. Emergency stop button
17. Wires input
18. Air outlet grille
19.Lifting eye
20.Kickrand

4. Installation

4.1 Important Warnings

Control of material

When power generator set is delivered it is advisable to check that the received material matches the order, and to compare it with the delivery note that is enclosed with the set. Also, check that the material is not damaged.

In case any flaws are detected, you must contact the shipping company immediately in order to report the incident to the insurance company.

During the operations prior to the installation of power automatically-driven generator sets, or when connecting the electrical connections, or in order to avoid unfortunate startups, etc. the following precaution measures must be taken:

Battery/batteries must be disconnected.

The control panel switch must be set to the OFF position.

Safety rules for diesel generator set

The engine room and installations of the set (foundations, air intake, and gas exhaust) must match the "Safety rules" that exist in the country where the generator set will be installed.

Installation

For stationary generator sets, two types of installation can be

considered: Outdoors assembly

Indoors assembly

4.2 Outdoor Installations

Physical Location

The mounting location of the system is important. It should be installed in an area that is protected from direct harmful gases or liquids, dust, metallic particles, shock, vibration and must be as protected against weather conditions.

It should be installed in an outdoor location so the exhaust fumes are vented to the atmosphere.

When the generator is installed outdoors

If the generator is installed outdoors there should not be a cooling problem. The factory installed enclosure is designed to keep out undesirable weather elements while providing cooling and ventilation.

Several other factors should be carefully evaluated when selecting a location for installation:

1. For effective cooling and maintenance, the system should be mounted on a flat, smooth, noncombustible level surface. A concrete pad is ideal and provides a secure installation.
2. Installation should prevent water levels from reaching the generator. Drainage must be adequate to keep concrete pad free from standing water.
3. Installation should prevent obstructions by buildup of leaves, grass, sand, snow, etc. If these items pose a problem, consider building a small fence or other break to protect the unit from accumulation of debris.
4. Installation should place the generator as close as possible to the transfer switch.
5. At least forty-eight (48) inches clearance must be provided on all sides for air flow.
6. Access must be provided to allow the enclosure covers to be opened or removed for service and maintenance.
7. Maximum Ambient temperature is 122°F (50°C).

Hot Exhaust Gas

Exhaust fume /gas are extremely dangerous and can cause severe illness or death. Never breathe exhaust fume produced by a running engine. Only run the engine outdoors where ventilation is plentiful. Exhaust gas contain carbon monoxide, a colorless, odorless and extremely dangerous gas that can cause unconsciousness or death. Symptoms of carbon monoxide poisoning include: dizziness, nausea, headaches, sleepiness, vomiting or incoherence. If you or anyone else experiences these symptoms, get out into fresh air immediately. Stop the engine and do not restart the engine until it has been inspected and if necessary repaired or reinstalled in a well ventilated area.

Hot exhaust gas must never be directed toward anything that may catch fire or explode.

Exhaust must always be directed away from living areas or buildings that are occupied by people

or animals. Never allow exhaust gases to be directed towards any openings or air entry routes (doors, windows, vents, etc...) of an occupied building.
The direction of the discharged hot air and hot exhaust gases is important as they have the potential to create brown spots on the lawn or shrubs. In extreme cases this extremely hot air could cause dried grass, shrubs, trees or other debris to ignite.

It is also recommended that an exhaust rain cap be used whenever it is possible that rain could get into the system. This will help to prevent corrosion and damage to the exhaust system and engine.

Fuel Connections

Fuel connections are not required. A self contained fuel tank is located within the base of the generator set.

Intended Use

The intended purpose of power generator set is to provide emergency power when the main utility power supply is interrupted. Therefore, it is important that all the wiring that connects the generator set with your house, transfer switch, distribution box, battery charger, etc. be properly installed.

4.3 Indoor Installations

4.3.1 Mounting foundation & mounting

Room Size

Open frame generators must be protected from the environment while having good ventilation and cooling. Here are some considerations for planning a generator room or enclosure:

- The room must be large enough to contain the generator set and all the accessories, such as batteries and their charging system, transfer switch and other controls, and elements of the cooling and fuel systems.
- 2 feet minimum (preferably 4 feet), must be allowed on the two sides and the front of the engine for service access. Allow clearance between hot parts of the system (exhaust) and structural members of the building.
- On the generator end of the engine, allow a space equal to the length of the generator (generator length only, not the entire generator set).

Room Location

Often a separate building located on the site away from the main building is the most simple and cost effective. Major considerations when housing the Generator set in a separate building are:

- Maintain the building at a satisfactory temperature year round.
- Assure the Generator set is not located so far from the emergency loads that reliability is compromised.

The floor's load carrying capacity must be checked and must exceed the weight of the generator set and its associated equipment.

5. Operation

The following description details the sequences followed by a module containing the standard 'factory configuration'.

5.1 Starting

The starting system design depends on the engine temperature. For a start in very cold temperatures it is sometimes necessary to use starting aids, such as heating the intake air, heating the fuel, As well as these the engine coolant is heated, and in very cold conditions also the oil is kept warm. power generator sets can be provided with t Electric Starting types of start systems.

- Electric Starting: This is the most widely used system and consists of a 12V or 24V starter motor supplied by one or more lead acid, or in exceptional cases, alkaline batteries.

The starter motor rotates the ring gear of the engine flywheel moving on receiving the signal from an electric contact.
Once the diesel engine has started and the flywheel has run up to its required speed, the starter motor pinion disengages automatically from the ring gear. The batteries are recharged automatically by an alternator or static charger.

Before generator start, please check following thing;

1. Generator normally consume 0.25%-1% of oil wastage lubricating oil.
2. Check lubricating oil and coolant water capacity,

Warning

When putting oil into trunk, do not smoking nearby or using fire.

3. Check oil capacity,
4. Check all ripe, ensure not leaking out,
5. Check battery pole ,ensure no cauterization,
6. Check control panel and generators, please ensure afore said parts clean. This dust may be dangerous, etc, tip-and-run accident.
9. Check air cleaner, if emphraxis please change a new.
10. Ensure surroundings of generators clean, coolant aeration unhindered.
11. Check fuel system ,coolant system and lubricating oil system ,
12. If exhaust system have exhaust water device, please letting termly.
13. Ensure alternator's output switch is off.

5.2 Operation Explain

Operation model: stop manual, automatic, reset(press stop and manual button toreset)

1. Stop mode
   Press the stop mode to cut fuel valve.
   Press the stop mode to stop controller when the generator is on the idle state.
2. Manual mode
   Press the manual mode and the motor start to work immediately, (Preheat start

output effective(optional), Fuel valve and Star motor output function at the same time.

After that, when Power frequency is above the Cut off frequency, cut off the power.

The generator set work effectively; otherwise, make the starting motor in the power, and the delaying time can be 10s(optional) at the most. If you failed to start it, close the start motor and fuel valve, after the range of start gap delay of 0 to 10s(optional), reset it until it comes to 3 times, output the start failure warning. Various protection will be effective only when the generation set is started successfully and reach the idle Time(optional).

3. Auto mode

Press the auto mode, the generator set will start automatically when the remote input signal is effective.(start process is as same as the manual model)

The generator set will automatically execute the cooling stop delay when the remote input signal is ineffective.

When the remote input signal is ineffective (the time to judge it effective or not is remote testing delay(optional), the generation set will stop working, and execute cooling down delay. Various protection will be effective only when the idle delay(optional) reached after the generation set start working, The remote input signal can be considered as failure signal.

4. Reset status

Reset status reset the system and eliminate all warning when press the “stop mode” and “manual mode” at the same time.

5. LED indicator

Power supply: it lights when the controller power was connected.

Running: it lights when the generator set are running.

Remote control: it lights when the remote signal input effective.

Battery voltage: it lights when the battery voltage is low.

Speed failure: it lights when the rotate speed is too low or too high.

Start failure: it lights when start failed.

High water temperature: it lights when the temperature of cooling water is high.

Low oil press: it light when the oil press is too low.

Emergency stop: it lights when the emergency stop input signal is effective.

6. Fault Finding

Generator set is inoperative	Check the battery and wiring to the unit. Check the DC supply. Check the DC fuse. Check DC supply voltage is not below 9 Volts
Generator set locks out on Emergency Stop	If an Emergency Stop Switch is not fitted, ensure that a positive is connected to the Emergency Stop input. Check emergency stop switch is functioning correctly. Check Wiring is not open circuit.
Intermittent Magnetic Pick-up sensor fault	Ensure that Magnetic pick-up screen is only connected at one end, if connected at both ends, this enables the screen to act as an aerial and will pick up random voltages.
Low oil Pressure fault operates after engine has fired	Check engine oil pressure, Check oil pressure switch/sender and wiring. Check configured polarity (if applicable) is correct (i.e. Normally Open or Normally Closed) or that sender is compatible with the Module and is correctly configured.
High engine temperature fault operates after engine has fired	Check engine temperature. Check switch/sender and wiring. Check configured polarity (if applicable) is correct (i.e. Normally Open or Normally Closed).
Shutdown fault operates	Check relevant switch and wiring of fault indicated on LCD display. Check configuration of input
Warning fault operates	Check relevant switch and wiring of fault indicated on LCD display. Check configuration of input.
Fail to Start is activated after preset number of attempts to start	Check wiring of fuel solenoid. Check fuel. Check battery supply. Check artery supply is present on the Fuel output of the module. Check the speed sensing signal is present.
Continuous starting of generator when in AUTO	Check that there is no signal present on the “Remote Start” input. Check configured polarity is correct
Generator fails to start on receipt of Remote Start signal	Check Start Delay timer has timed out. If remote start fault, check signal is on “Remote Start” input. Confirm input is configured to be used as “Remote Start”.
Pre-heat inoperative	Check wiring to engine heater plugs. Check battery supply. Check battery supply is present on the Pre-heat output of module. Check pre-heat has been selected in your configuration.
Starter motor inoperative	Check wiring to starter solenoid. Check battery supply. Check battery supply is present on the Starter output of module. Ensure that the Emergency Stop input is at +Ve.
Engine runs but generator will not take load	Check Warm up timer has timed out. Ensure generator load inhibit signal is not present on the module inputs. Check connections to the switching device.

NOTE: The above fault finding is provided as a guide check-list only. As it is possible for the module to be configured to provide a wide range of different features always refer to the source of your module configuration if in doubt.

7. **Remark**