



Evolving towards a zero-carbon economy

G-VOLUTION

Generic Genset Dual Fuel System

OPERATION MANUAL

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1 Safety Warnings

The instruction and warnings provided within this document refer **ONLY** to the dual fuel system – the Genset manufacturers’ safety warnings and instructions for use remain applicable at all times.

1.1 System Safety

Safe operation and optimum performance can only be achieved when the equipment is correctly operated and maintained. The owners and operators are solely responsible for safe operation of the dual fuel system.

The installation of the dual fuel system falls outside the scope of this document, please contact your dealer for more information.



Natural gas presents a risk of fire and explosion. DO NOT smoke or use naked flames in the vicinity of the dual fuel system.

In the event of a gas leak, turn off the dual fuel system immediately. DO NOT attempt to use the dual fuel system until the leak has been rectified by trained and experienced personnel.

 **DANGER**

Electrical systems present a risk of electric shock.

DO NOT attempt to use the dual fuel system in the event of a fault or damage to the electrical system until the issue has been rectified by trained and experienced personnel.

1.2 Isolation of the Gas Supply

A manual isolation valve should **ALWAYS** be installed upstream of the gas train. Familiarise yourself with the location and operation of the manual valve.

2 Introduction

2.1 Purpose of this document

This document provides instruction for the user to perform the following operations:

- Power up and power down the dual fuel system.
- Enable and disable dual fuel operation.
- Identify the status of the system.
- Access the Telemetry portal.
- Troubleshoot simple issues.
- Contact the supplier for complex issues.
- Isolate the gas supply.

2.2 Identification

This document applies to G-volution's (GV) **Generic Genset Dual Fuel System** for the purpose of converting a Diesel Genset to run on a reduced quantity of diesel and a secondary fuel, such as Natural

gas or LPG . By converting to Dual Fuel, the Genset will have reduced carbon emissions and improved local air quality.

Below is a list of the key components which make up the system:

- Gas Train
- Gas Mixer
- Sensors
- Wiring Harness
- Panel Box
- Remote Monitoring datalogger (optional)

2.3 Reference Information

- Troubleshooting Guide

3 System Operation

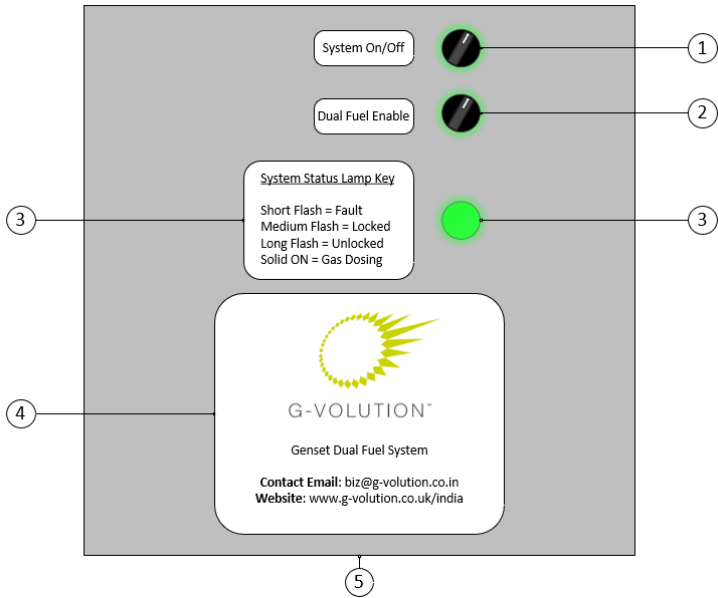
3.1 Standard Operation

The G-volution dual fuel system is fully automated and is intended to be left switched on and enabled.

Under normal circumstances there should be no requirement to switch off or disable the dual fuel system when the Genset is not in use. The system will power down automatically, including closing all automatic gas supply valves.

3.2 Introduction

Control and monitoring of the dual fuel system is provided via the G-volution Operator Panel, as shown in Figure 1. The panel allows the operator to switch the system on and off; enable and disable Dual Fuel operation; and determine the status of the system. The panel also provides contact details if there is a fault in the system. Figure 1 outlines the key features of the Operator Panel.



Number	Part Name
1	System On/Off Switch & Lamp
2	Dual Fuel Enable/Disable Switch & Lamp
3	System Status Key & Lamp
4	Company Label
5	Panel Box

Figure 1 – Genset Dual Fuel System Operator Panel.

3.3 Enabling Dual Fuel Operation

To enable the system for Dual Fuel operation, follow the steps below:

- i. Turn on the Genset ignition.
- ii. Turn on the GV Panel System On/Off Switch (1), the On/Off lamp will illuminate to indicate the system is being powered.
- iii. Turn on the GV Panel Dual Fuel Enable Switch (2), the Enable lamp will illuminate to indicate the system is capable of gas dosing (when all operating conditions are met). Dual Fuel operation is now enabled. The System Status lamp (3) will start flashing to indicate the system state as shown in Table 1. The system will start operating in dual fuel mode once the engine is running and all of the operating conditions such as temperatures and pressures have been met. When the Genset is consuming gas the status lamp will be continuously illuminated.
- iv. For more information on how to troubleshoot any issues, see 5.1

Table 1 – System Status Lamp Flash Patterns

Lamp Mode	Lamp Flash Pattern	System Status
Solid OFF		Disabled
Short Flash	- - - - -	Fault
Medium Flash	— — — — —	Locked
Long Flash	—— — — — —	Unlocked
Solid ON	—————	Gas Dosing

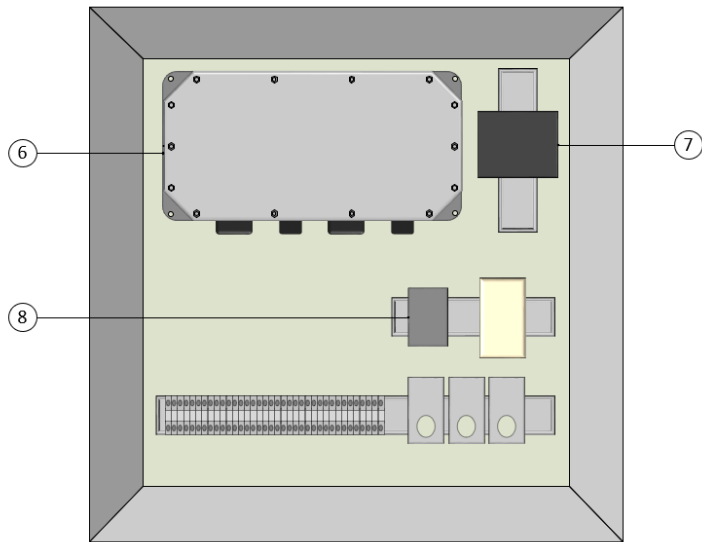
3.4 Disabling Dual Fuel Operation

To disable the system from dual fuel operation, follow the steps below:

- i. Turn off the Dual Fuel Enable switch.
- ii. The Status lamp will turn off indicating that the system is disabled from Dual Fuel operation and will no longer consume any gas.

3.5 Operator Panel Access

To access the contents of the Operator Panel when troubleshooting, use the Panel Key to unlock the Panel Door. The contents of the Operator Panel are shown in Figure 2. Please note that the exact layout may vary.



Number	Part Name
6	Optimiser Control Unit
7	Telemetry
8	Relay

Figure 2 - Internal contents of the Operator Panel.

4 Remote Monitoring

4.1 Login

To be confirmed upon release.

5 Troubleshooting

5.1 Fault diagnosis

For any issues with the equipment, please refer to the troubleshooting trees in Appendix A.

5.2 Point of Contact

If the troubleshooting trees direct you to contact the supplier, please use the contact information below:

Contact Email: biz@g-volution.co.in

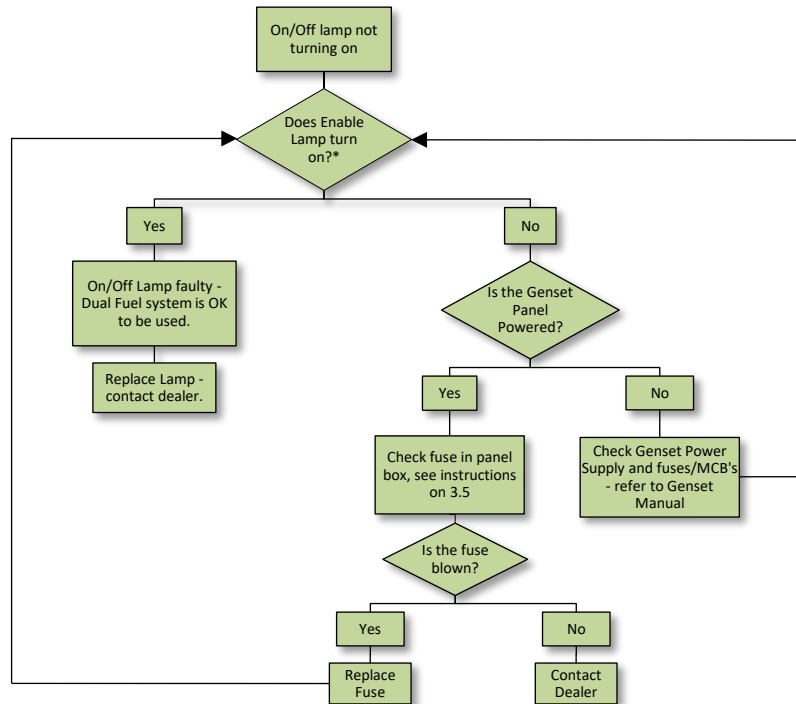
Website: www.g-volution.co.uk/india

Appendices

A. Troubleshooting Trees

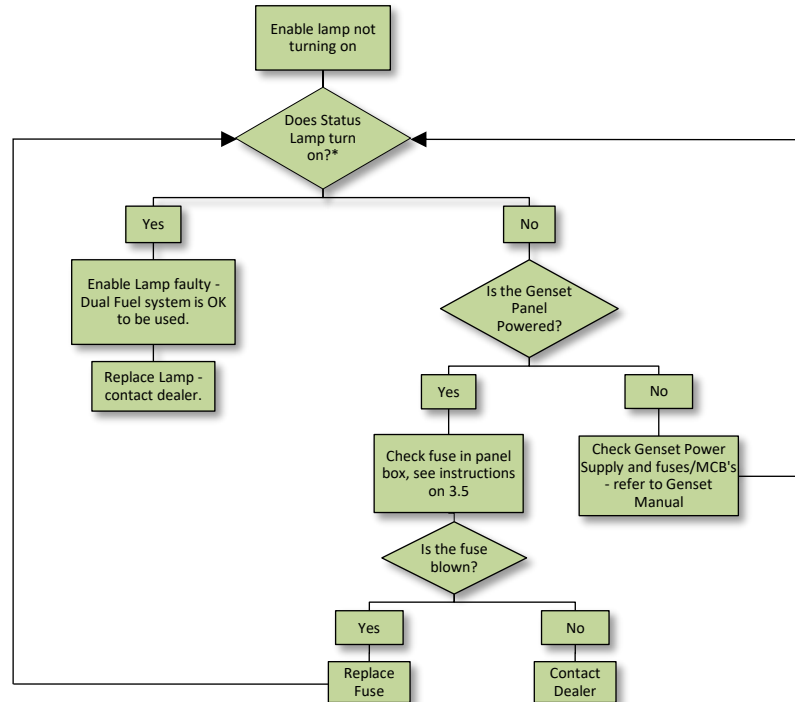
The following troubleshooting trees should be used for basic diagnostics. Please contact your supplier for any issues not covered

A.1 System On/Off Lamp

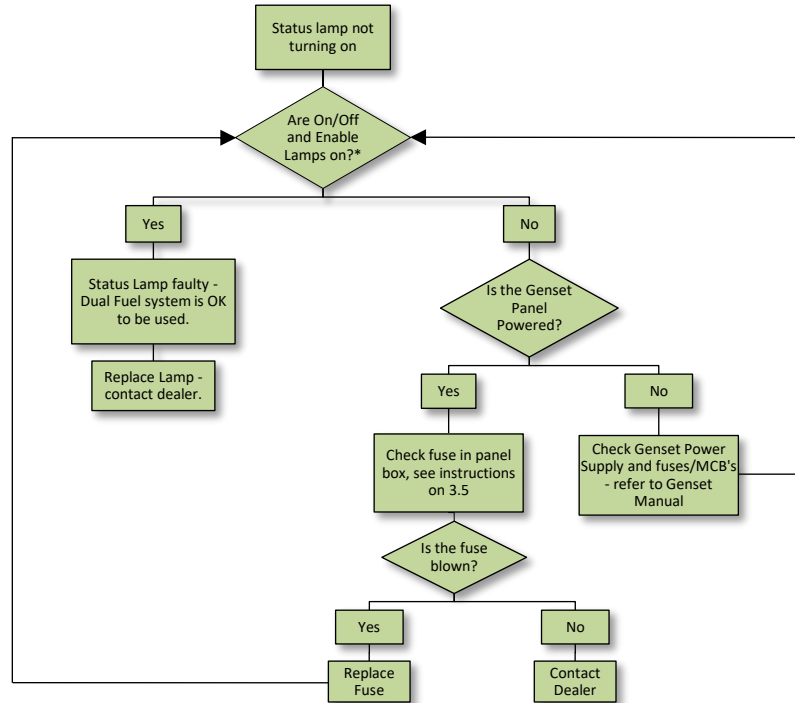


*When the System switch and Enable switch are both in the on position.

A.2 Enable On/Off Lamp

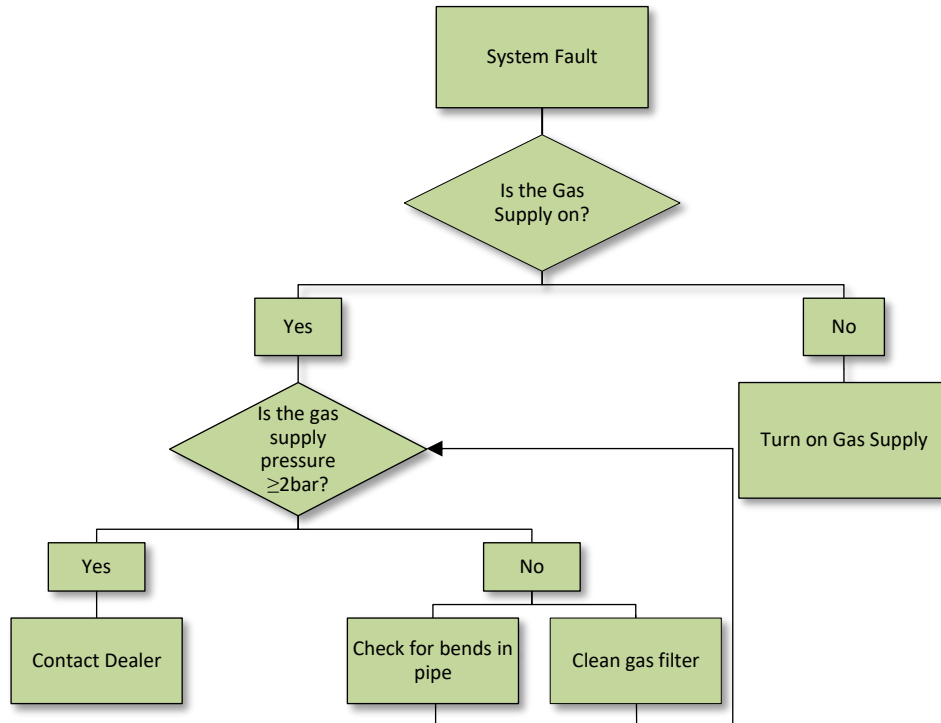


A.3 System Status Lamp

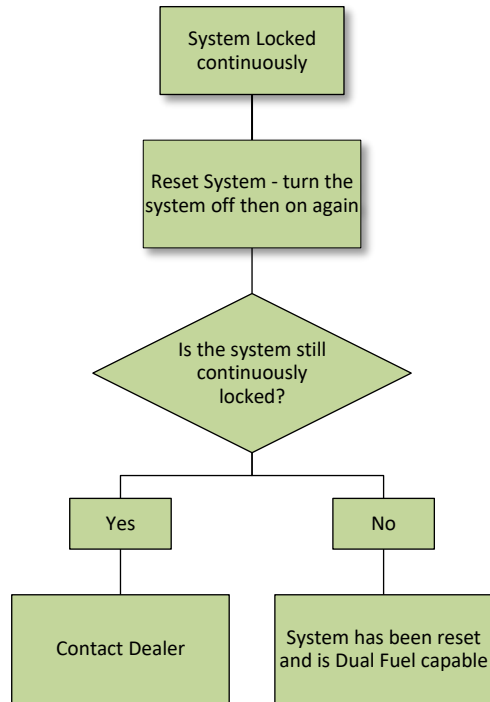


*When the System switch and Enable switch are both in the on position.

A.4 System Fault



A.5 System Continuously Locked



B. Glossary

- **Fault:** There is an issue with the system that has locked the system and disabled Dual Fuel operation. The fault must be rectified in order for gas dosing to occur.
- **Locked:** One or more interlocks are active, the system shall not enable dual fuel operation. The gas supply valves and gas mixer control valve are automatically closed, the gas demand is zero.
- **Unlocked:** All interlocks are deactivated, and the system is ready for dual fuel operation. The gas supply valves are opened, and gas is supplied up to the gas mixer control valve. The gas mixer control valve will remain closed until the system demands a gas flow, at which time the gas mixer control valve will open, and the system begins dual fuel operation.

C. Acronyms and Abbreviations

- **GV:** G-volution
- **LPG:** Liquefied Petroleum Gas