Issue 5



# SSD10000S – SSD10000S/3PH

10.0kVA 3000rpm Generators



# Handbook & Operation Manual





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## Introduction

This document has been produced for the owner/user of a Stephill generator. Inside this manual you will find important safety, operating, maintenance and fault finding information.

The information contained within this manual is based upon the current data available before print. Due to constant improvements on our products some information contained within this manual may change without warning. Therefore Stephill Generators Ltd reserve the right to alter specifications as and when situations demand without warning or obligation.

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## **Warranty Statement**

All equipment supplied by Stephill Generators Ltd carries a warranty of 12 months from date of despatch. During the warranty period, should the plant fail due to faulty design, materials or workmanship by Stephill Generators Ltd or it's sub-contractors, we undertake to rectify the fault. Stephill Generators Ltd will accept no responsibility whatsoever for equipment that has failed due to;

Operation with incorrect fuel, lubricating oil or coolant.

Improper repair or use of parts not supplied or approved by Stephill Generators Ltd.

Lack of, or incorrect maintenance.

Fair wear and tear, misuse, negligence, accidental damage, improper storage and incorrect starting / warmup / run-in or shutdown.

No warranty claim will be considered by Stephill Generators Ltd unless any defective parts are available for inspection by us, or our nominees, to determine the reason or cause of failure, and Stephill Generators Ltd is given the option of repair or replacement.

Stephill Generators Ltd are not responsible for incidental or consequential damages, downtime, or other costs due to warrantable failure, and unauthorised alterations made to any product supplied by Stephill Generators Ltd.

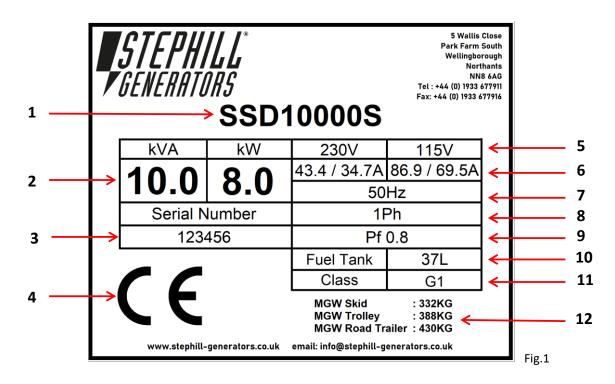
## Amendments

Issue	Amendment	Date	Ву
5	2-wire remote start updated to show panel socket and plug connection.	Jan-24	JD



## Identification

Each Stephill generator will have a Serial/Data plate fitted to the set. In most cases this can be found on the canopy roof of a SSD10000S. Below is an example of the Serial/Data plate.



Item No.	Description
1	Generator model type
2	Rated power, kVA & kW
3	Unique serial number
4	CE mark indicates the generator meets the directives listed on the Declaration of Conformity
5	AC voltage output(s)
6	Relevant maximum Amp ratings
7	Rated output frequency
8	Number of phases
9	Power factor
10	Total fuel tank capacity
11	Generator performance class
12	MGW - Mass Gross Weight(s)



## Specification

•	Model Type	
	SSD10000S	SSD10000S/3PH
kVA (COP)	10.0	10.0
kW (COP)	8.0	8.0
Frequency	50.0 Hz	50.0 Hz
Voltage	115 / 230V AC	400V AC
Phase	1 Ph	3 Ph
LWA	92	92
dBA @ 7M	67	67
Fuel Tank Capacity	37	Litres

**(COP) Continuous Power**: Applicable for supplying power to electrical load for unlimited hours in accordance with ISO 8528-1 under the agreed operating conditions with the maintenance intervals and procedures being carried out as prescribed by the manufacturers.

## AC Output & Protection - SSD10000S

Main alternator 115/230V AC outputs protected by double pole MCB. 115V - Floating Earth - Thermal reset button overload protection for each socket. 230V - Neutral bonded to Earth - RCD protection & thermal reset button overload protection for each socket.

## AC Output & Protection - SSD10000S/3PH

Main outputs 400V/230V protected by an RCBO.

#### Note

MCB = Miniature Circuit Breaker (overcurrent) RCD = Residual Current Device RCBO = Residual Current Device with Overcurrent Protection All are suitably rated for the generator model type.

## **AC Output Earthing Method**

400V 3Ph - Neutral (star point) bonded to earth.

230V 1Ph - Neutral bonded to earth.

115V 1Ph - Floating earth.

#### **Running Hours**

25% Load	41 hours @ 0.9 L/h
50% Load	20 hours @ 1.8 L/h
75% Load	13 hours @ 2.8 L/h
100% Load	10 hours @ 3.7 L/h



## Engine

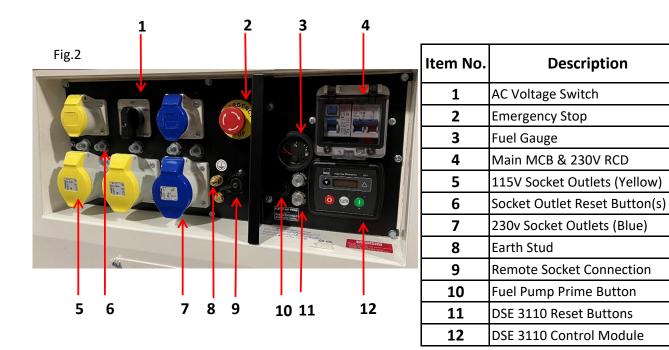
Туре	Kubota D722-E4B
Emissions Certification	EU Stage V
Cylinders	3
Cooling	Water Cooled
Displacement	719cc
Rpm	3000
Not Engine Dower	Net Intermittent
Net Engine Power	Continuous 10.3kWm

AC Alternator	SSD10000S	SSD10000S/3PH
Туре	NSM C112 SB	NSM Z100 LB

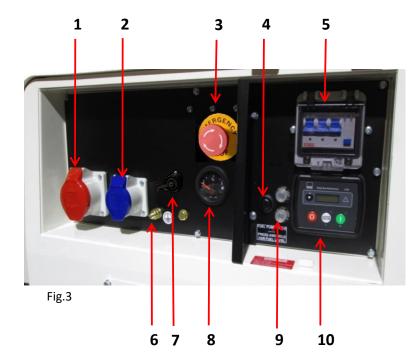
Dimonsions Q Maishta				
Dimensions & Weights	SSD10000S	SSD10000S/3PH		
Skid Mounted	Length 1285mm Width	655mm Height 900mm		
Weight - Dry	301 KG	299 KG		
Weight - Wet	332 KG	330 KG		
Trolley Mounted	Length 1750mm Width 9	Length 1750mm Width 900mm Height 1080mm		
Weight - Dry	357 KG	355 KG		
Weight - Wet	388 KG	386 KG		
Road Trailer Mounted	Length 2360mm Width 1	300mm Height 1220mm		
Weight - Dry	399 KG	397 KG		
Weight - Wet	430 KG	428 KG		

## **Control Panel Identification**

## SSD10000S



## SSD10000S/3PH



Item No.	. Description	
1	400V Socket Outlet (Red)	
2	230V Socket Outlet (Blue)	
3	Emergency Stop	
4	Fuel Pump Prime Button	
5 Main RCBO		
6	Earth Stud	
7	Remote Socket Connection	
8 Fuel Gauge		
<b>9</b> DSE 3110 Reset Buttons		
10	DSE 3110 Control Module	



## **Generator Safety**

Before using this equipment and to avoid personal injury, all warnings shown on the machine should be observed. The warning signage should be checked for legibility and any that have become damaged should be replaced.

Carefully read and understand the instructions provided. If there is anything you do not understand DO NOT attempt to use this generator. Contact your supplier for advice.

## Warning Signage

a)	WARNING	
	BEFORE STARTING	
	READ HANDBOOK AND SAFETY ADVICE	
	CHECK OIL LEVEL	
	DO NOT ADJUST ENGINE SPEED	
	WITHOUT SUITABLE TEST FOUNDMENT	

a) Located behind the control panel cover near the DSE 3110 control module.

## **RISK OF ELECTRIC SHOCK ALWAYS TURN OFF GENERATOR BEFORE OPENING. KEEP** CLOSED AT ALL OTHER TIMES.

EST EQUIPMENT



b) Located on both main canopy doors.

c) Located on the engine end of the canopy near the exhaust outlet.



DANGER

CAUTION HOT ENGINE PARTS

VOI TAGE

d) Located on top of the canopy near the coolant filler flap for the radiator access.

e) Located on the canopy roof near the control panel.



e)

DANGER HARMFUL

EMISSIONS

ENSURE ADEQUATE

VENTILATION

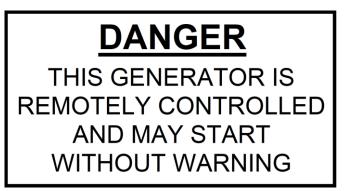
Nerhtory

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b)



g)



g) Located on the canopy roof near the control panel.

f) Located on the control panel door/cover.

## **Personal Safety**

- Do not climb on the generator dents may cause overheating of the acoustic lining.
- Do not cover the generator as this can obstruct air inlet and outlets on the canopy which can cause the generator to overheat and cause permanent damage..
- Keep well clear of any moving parts on the generator at all times.
- Keep children and pets away from the generator and operating area.
- Test safety features often, emergency stop button and RCD (residual current device).
- Keep the generator canopy doors shut while running and locked if possible.

## **Auxiliary Power**

The electricity produced by an engine driven generator is very similar to mains AC electricity and should be treated accordingly.

Do not remove covers and attempt to work on the generator while the engine is running.

Check the rating and electrical safety of the load before connecting the generator.

Equipment should never be connected that in total exceeds the specified rating of the generator.

Installation of the generator as a standby or secondary power source should only be undertaken by a fully qualified electrician using the appropriate means of isolation from the mains supply. Installation must comply with all applicable laws, electrical codes and wiring regulations.

## **Operating Environment**

The generator should always be operated on level ground and be able to bear its weight. Ensure the generator canopy is not obstructed to allow cool air to enter the set and hot expelled air to escape.

## **Temperature Range**

A temperature range between -15°C and +45°C are the normal limits of operation. Operating outside the range will require additional modifications.



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## **Reference Relative Humidity**

The standard reference condition for relative humidity is 30%. Above this value the rated power must be reduced.

## **Reference Barometric Pressure**

The standard reference condition for total barometric pressure is 1 bar. This corresponds to an altitude of approximately 100m. Above 100m the rated power must be reduced.

## **Flammable Environment**

Stephill generators must not be used in a flammable environment.

## **Saline Environment**

Operation of the machine in a saline environment will require additional corrosion protection.

## **Safety Considerations**

## General

All Stephill generators comply with current EEC directives including: 2016/1628/EU Non-Road Mobile Machinery (NRMM). 2014/30/EU The Electromagnetic Compatibility Directive. 2006/42/EC The Machinery Directive. 2000/14/EC Noise emission in the environment by equipment for use outdoors. 2011/65/EU The Restriction of Hazardous Substances Directive. EC 1907/2006 REACH.

## Fuel

Fuels and lubricants are a potential source of fire. Be careful not to spill fuel, clean up any spillages. Inhalation or swallowing of diesel should be avoided. If in doubt seek medical advice. All other forms of contact are an irritant and therefore should also be avoided. If skin contact is made wash with soap and water.

## **Lubricating Oil**

New oil presents no hazard following short term exposure. Lubricants in particular used engine oil, are potentially carcinogenic. Direct contact should always be avoided by wearing suitable rubber gloves when handling them. Used oil should not be allowed to contact the skin. If this does occur, wash off quickly with a proprietary hand cleanser.



## Safe Lifting

Where mechanical assistance is used in lifting machines, ensure the lifting eye is used, and that all components used to lift the machine are within their Safe Working Load (SWL).

The integral lifting beam and associated lifting eye on the generator should be regularly checked for signs of damage or gross corrosion.

All nuts and bolts associated with the lifting beam and eye should be regularly checked for tightness and corrosion.

DO <u>NOT</u> ATTEMPT TO LIFT THE GENERATOR WITHOUT PRIOR CHECKS TO THE LIFTING SYSTEM AS INDICATED ABOVE

Lifting equipment should never be attached directly to the engine and/or alternator to fully lift the generator except only if lifting engine and/or alternator.

## **Earth Connection**

All Stephill products are fitted with an earth stud on the control panel this must be connected to an earthing system or spike. Any earth spike required is dependent on the local conditions of use. The size is determined by reference to current IEE regulations or to a competent electrician.

## Fumes

Make sure that the Generator is at least 2 metres away from any building during operation. Operate in a well ventilated unconfined area, so that fumes can be properly dispersed. Silencer outlet should be facing an open area to prevent fumes being recirculated. There is the danger of asphyxiation due to exhaust gases. Inhalation of poisonous exhaust fumes can lead to serious injury or death. The generator must not be used in a poorly ventilated or enclosed area.

## Noise

Ear protection may be required depending on the combined noise level of the Generator, auxiliary load and the operator's distance from it and the length of exposure. (Noise at Work Regulations 1989)

## **Battery Acid**

This is corrosive and irritant by all forms of exposure. If skin contact is made wash with clean water.

#### Fire

Ensure that suitable fire extinguishers (AFFF or CO2) are kept within close proximity of the generator. Do not cover, enclose, or obstruct the airflow to the generator during or shortly after use, due to fire hazard or damage to the generator from overheating. Allow the generator to cool after use before storing away. Keep all inflammable objects clear of the generator.

## **Hot Parts**

There is the danger of burns as parts of the generator will become very hot during use. No part of the engine, alternator or exhaust must be touched during or shortly after operation. Do not operate the generator unless all guards are in place. There is a risk of burns or serious mechanical injury.



## **Operating Instructions**

## STEPHILL GENERATORS LTD STRESS THAT THE ULTIMATE RESPONSIBILTY FOR THE SAFE USE OF THE GENERATOR RESTS WITH THE USER.

## **Pre-start Checks**

Before any attempt to start the generator please follow these important guidelines.

## **Check Battery Isolator Key - Location**

The 12V battery supply has been fitted with a red "Battery Isolator Key". This is to isolate the 12V battery from the engines 12V DC system when not in use, transportation and when working on repairs/servicing safely.

## Isolator key location

Open the main canopy door on the right when facing the control panel. The RED isolator key can be found next to the in-line fuel filter - **Fig.4** 

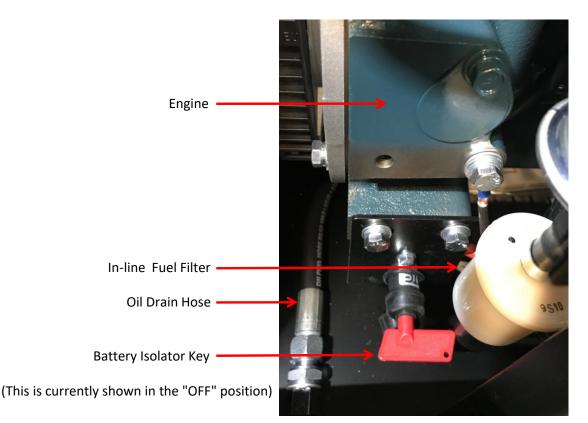


Fig.4

To switch **ON** the 12V battery supply, insert the red key and turn to <u>lock</u> into position.

To switch **OFF** the 12V battery supply, push down and turn the red key counter-clockwise to <u>release</u>.



## **Check Oil Level - How To**

It is recommended to check the oil level BEFORE EVERY START OPERATION - Ref. Fig.5

Ensure the generator (engine) is on level ground to ensure the correct oil quantity is measured.

- Check the engine oil level before starting or more than 5 minutes after stopping the engine.
- Remove the oil level gauge, wipe it clean and reinstall it.
- Take the oil level gauge out again, and check the oil level.

Fig.5 shows the oil fill and oil dipstick locations for the Kubota D722 engine used on the Stephill SSD10000S generators.

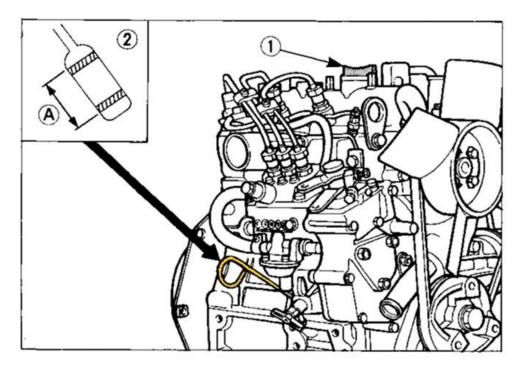


Fig.5

(1) Oil filler plug(2) Oil level gauge

(A) Ensure the engine oil level within this range

## Adding Engine Oil

Add oil If the level is low. Do fill past the high mark on the dipstick (2). **WARNING** - Never overfill the engine with oil. Engine damage can occur.

Refer to engine owners handbook supplied with each generator for oil specification, viscosity and typical capacity. Alternatively navigate to the **Service** section at<u>www.stephill-generators.co.uk</u>

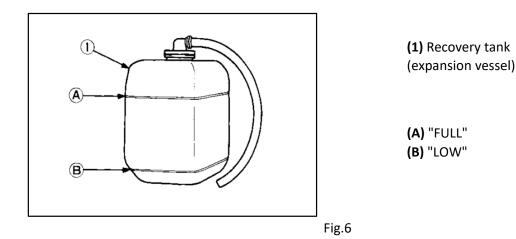


## **Check Coolant Level**

It is recommended to check the water/coolant level of the radiator BEFORE EVERY START OPERATION - Ref. **Fig.6**.

The radiator is provided with a recovery tank (expansion vessel) , check the water/coolant is between the "FULL" and "LOW" marks - Ref. Fig.6.

Refer to engine owners handbook supplied with each generator for further information.



## **Check Fuel Level**

While the generator is at standstill you will notice the fuel gauge on the control panel will be showing empty "no fuel".

To check the fuel level in the generator fuel tank you can *energise* the fuel gauge by **pressing and holding** the *fuel pump prime button* on the control panel - see **Fig.2** & **Fig.3**.

While holding down the fuel pump prime button you should be able to see the gauge needle rise and rest to indicate a level, also you should hear the fuel pump operating.

## **Control Panel Checks**

Ensure the main MCB or RCBO is in the "OFF" position (switch down) - Ref **Fig.2** & **Fig.3**. *WARNING* - Never try to start the generator with load connected.

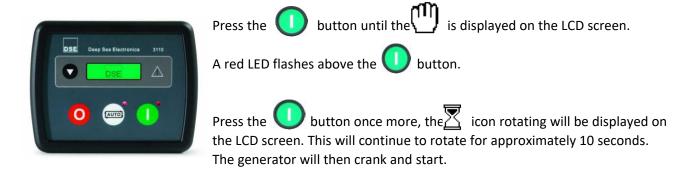


## **Starting the Generator - Quick Start Guide**

This is a *quick start guide*, refer to the **DSE 3110 Control Module** - **Overview** within this handbook for an indepth view/use of the DSE 3110 control module.

Once all the pre-checks have been made you can then start the generator. Follow the procedure below:

## **Manual Start**



## **Applying Load**

Now the generator is ready to receive load. Select the desired AC voltage with the AC voltage switch.

Plug the load into the relevant AC voltage socket on the control panel.

Switch the main MCB to "ON" (switch up) position on the control panel.

## **Stopping the Generator - Manual Stop**

Before stopping the generator it is recommended to *switch off the load* from the generator by switching the main MCB on the control panel to the "OFF" position (switch down).

You can then safely stop the generator.

Press the 🧿 button and the generator will immediately stop.

## **Emergency Stop**

The *Emergency Stop* button is located on the control panel. It must <u>ONLY</u> be used for emergencies only.

<u>Warning</u> Using the Emergency Stop button regularly for a standard stop request can cause the 12V battery to drain. This may effect the starting of the generator.

The ficon will be displayed on the DSE 3110 module when an *Emergency Stop* request is made.



## **Remote Start/Stop - 2-wire**

The DSE 3110 control module has a 2-wire Remote Start/Stop function. This is a volt free connection, closing two contacts will start and allow the generator to run. Open the contacts and the generator will stop and the DSE 3110 module will wait for the next start request.

## 2-Wire Remote and ATS Auto Start/Stop Connection Location

The SSD10000S has two different methods and locations for a remote 2-wire start/stop control. A & B

#### Method A.

This has been in production SSD10000S models from January 2024 and uses a remote socket found on the control panel (reference to the control panel(s) shown in **Fig.2** & **Fig.3**).

Fig.7 shows the remote control socket on





**Fig.8** shows the remote 4-way plug available from Stephill Generators - Part No. **044-0058**. This plug connects directly into the panel mounted socket in **Fig.7**.



Fig.8

#### Connections

It is recommended to use 1.5 to 2.5mm<sup>2</sup> wire. Reference DC wiring diagram and guide below, connect the wires as shown **Fig.9** & **Fig.10**. This can then be operated by a simple open/closed switch or relay. Once the correct connections have been made the DSE 3110 control module will require activating to an **AUTO MODE** - *See DSE 3110 Control Module - Overview*. It will then be ready to accept a remote start request.

#### **Important Note**

Wire No.2 is a generator battery positive and is used for an external DC battery charger normally found on ATS systems.



SSD10000S REMOTE PLUG CONNECTIONS

POS.	WIRE No.	
1	1 (VE-)	
2	2 (VE+)	7
3	13 (Start/Stop)	
<u> </u>	Not Used	

Fig.10

#### Starting

With the DSE 3110 in *AUTO* closing No.1 & No.13 together will start and run the generator. **Stopping** 

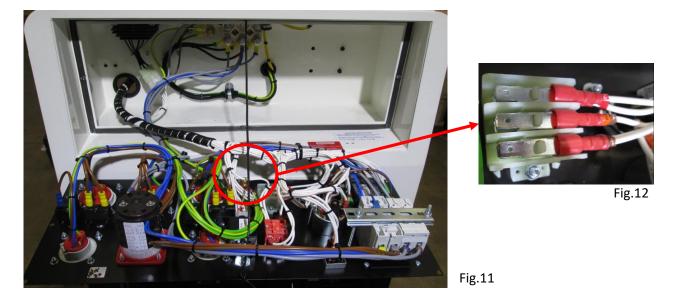
Fig.9

Open this connection and the generator will stop and will be ready for another start request.



#### Method B.

This method is found on models pre the year of manufacture 2024. Behind the control panel there is a small push-on connector block for the remote and auto start/stop connections.



#### Connections

It is recommended to use 1.5 to 2.5mm<sup>2</sup> wire. Refer to the DC wiring diagram in this handbook or corresponding ATS handbook for the relative terminal positions. - **Fig.11** & **Fig.12**. This can then be operated by a simple open/closed switch or relay.

Once the correct connections have been made to the remote start terminals, the DSE 3110 control module will require activating to an **AUTO MODE** - *See DSE 3110 Control Module - Overview*. It will then be ready to accept a remote start request.

#### Important Note

Wire No.2 is a generator battery positive and is used for an external DC battery charger normally found on ATS systems.

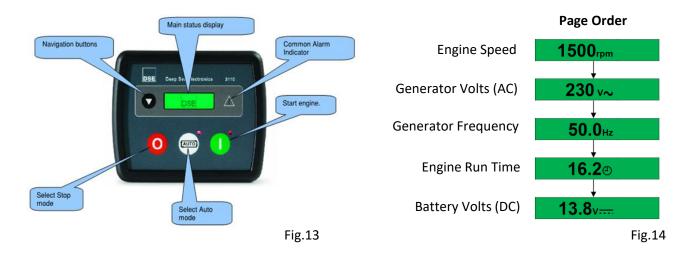
#### Starting

With the DSE 3110 in *AUTO* closing No.1 & No.13 together will start and run the generator.

#### Stopping

Open this connection and the generator will stop and will be ready for another start request.





## **DSE 3110 Control Module - Overview**

## **DSE 3110 Operation**

The DSE 3110 control module is used to start/stop and monitor key elements of the engine and main AC alternator. **Fig.13** show the layout and control buttons.

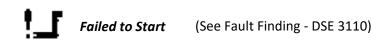
## **Starting Sequence**

Once a start request is made the DSE 3110 will energise the *pre-heat* relay over a period of 10 seconds. Then the DSE 3110 will then attempt to crank the engine by operating the starter motor relay and also the fuel pump relay.

When the engine fires, the starter motor is disengaged. (The DSE 3110 de-energises the starter motor relay once it detects an output frequency (Hz) from the main alternator).

If the engine fails to fire during this cranking attempt then the starter motor is disengaged for the crank rest duration after which the next start attempt is made.

Should this sequence continue beyond 3 attempts, the start sequence will be terminated and the *Failed to Start* icon is displayed on the LCD screen.



## **Timer Icon**

When the module is controlling the engine (starting and stopping) an <u>animated</u> (rotating) timer icon will be displayed in the icon area to indicate that a timer is active, for example cranking time, crank rest, stopping



## **Engine Running**

Once the engine is running and all starting timers have expired, the animated icon is displayed.





## **Viewing the Instruments**

It is possible to scroll to display the different pages of information by repeatedly operating the navigation button.

Fig.14 shows the page order when pressing the navigation button.

Once selected the page will remain on the LCD display until the user selects a different page or after an extended period of inactivity, the module will revert to the status display.

When scrolling manually, the display will automatically return to the Status page if no buttons are pressed for the duration of the LCD Page Timer.

## AUTO MODE - Start/Stop Operation

Activate auto mode by pressing the button. The icon will be displayed on the LCD screen to indicate the DSE 3110 module is in **AUTO MODE** if no alarms are present.

A red LED light will be illuminated above the 📼 button.

The generator is now ready to receive start/stop requests from the remote connections.

## Waiting in AUTO MODE

While the DSE 3110 module is in **AUTO MODE** the LCD screen will be permanently illuminated and it will <u>not</u> go into any power saving or sleep modes.

If the module is left in **AUTO MODE** for extended long periods of time without running the generator it could flatten the generator battery.

It is advised to have a mains 12V battery charger fitted to the generator battery in most cases of occasional use fixed positioned generators or ensure the generator is started and allowed to continuously run for a minimum of 1 hour once a week.



## **Fault Finding**

## STEPHILL GENERATORS LTD STRESS THAT THE ULTIMATE RESPONSIBILTY FOR THE SAFE USE OF THE GENERATOR RESTS WITH THE USER.

## **Monitoring Systems**

All standard Stephill SSD10000S generators use a **DSE 3110** control module to operate/monitor the engine and generator.

Most common faults/issues can be Identified by the fault icon displayed on the **DSE 3110** LCD screen. The table below shows a fault icon and/or the relevant possible causes and checks.

## **Before Fault Finding**

We strongly advise before attempting any fault finding is to check the health of the generator battery. It should measure around 12.4 to 12.6 Volts DC while the generator is at standstill.

Be aware of the service/maintenance schedule of the engine, ensuring the fuel filters are replaced regularly along with the oil topped up and oil filter etc. - See Service and Maintenance

Before carrying out any checks ensure all *Load* is unplugged from the generator and be aware of any potential exposed **Live** terminals while the generator is running! All checks and tests should only be carried out by a competent engineer - Ref. **DC wiring diagram** 

Fault Icon	Possible Cause	Check
	Engine <u>Not</u> Starti	ng/Running - Starter motor not engaging
	Battery	<ul> <li>Check the battery voltage, should be around 12.5V DC - Charge or Replace.</li> <li>Check the condition of the battery leads.</li> </ul>
• -	Negative / Ground Connections	<ul> <li>Check No.1 wires on the control panel and engine DC loom(s) have a sound connection to battery negative.</li> </ul>
!	Emergency Stop Button	<ul> <li>Check the operation of the switches on the back of the emergency stop button.</li> </ul>
Fail to Start Is activated after	Starter Motor Relay	<ul> <li>Check the operation and wiring of the starter motor relay - Replace if necessary.</li> </ul>
three attempts to start	Fuse	<ul> <li>Check the 40A fuse on the engine loom - Ref. wiring diagram.</li> </ul>
	DSE 3110 Control Module	<ul> <li>Check the plugs on the back of DSE 3110.</li> </ul>
		<ul> <li>Check for battery + output at No.4 (starter motor relay feed) after the pre-heat time - Ref. wiring diagram.</li> </ul>
Cont.	Starter Motor	<ul> <li>Check the operation and wiring of the starter motor - Replace if necessary.</li> </ul>

## Fault Finding - DSE 3110



Fault Icon	Possible Cause	Check
	Engine <u>Not</u> Starting/Runn	ing - Starter motor engaging but engine not starting
	Fuel Filter(s)	• Check in-line fuel filter and replace if necessary.
		<ul> <li>Check and/or replace the main fuel filter.</li> </ul>
	Fuel Lift Pump (12V DC)	<ul> <li>Check the fuel pump is receiving 12V DC and is operating - Replace if necessary.</li> </ul>
	Air Filter	<ul> <li>Check the condition of the air filter - Replace if necessary.</li> </ul>
![	Contaminated Fuel	<ul> <li>If possible run the generator from a separate fuel source from the fuel tank.</li> </ul>
Fail to Start	-	specialist if the above fails to rectify the issue.
Is activated after three attempts to		ing/Running Then Stopping - 3 Attempts ot showing Volts or Hz when running?
start	Capacitor	<ul> <li>Check the connections on the capacitor.</li> <li>Test and/or replace the AC alternator capacitor.</li> </ul>
	2A Reset Button	• Check for continuity and wiring on the AC 2A reset button (brown wire from DSE 3110) - Replace if necessary.
	DSE 3110 Control Module	<ul> <li>Check the green plug with a brown &amp; blue wire is not loose.</li> <li>Start and run the generator and measure the AC voltage across the brown &amp; blue wires - this should measure approximately 115V, 230V or 400V AC.</li> </ul>
	Main AC Alternator	• Check main alternator output - AC alternator tests would be advisable.
Î	Emergency Stop Button	<ul> <li>Check if the emergency stop button has been activated.</li> <li>Check the switches function and wiring on the back of the emergency stop.</li> </ul>
Emergency Stop	DSE 3110 Control Module	• Check that all the green plugs are fitted correctly and the wiring.
HzĮ	The no-load frequency/rpm should measure approximately <b>52.5Hz/3150rpm</b> . Low AC Voltage and Low Hz/Frequency could indicate the engine is running too s Warning - It is <u>not</u> recommended to adjust the engine speed unless absolutely necessary.	
Low Hz/Frequency Shutdown	Fuel Filter(s)	<ul> <li>Check in-line fuel filter and replace if necessary.</li> <li>Check water separator filter if necessary.</li> </ul>
	Air Filter	• Check the condition of the air filter - Replace if necessary.
	Fuel Lift Pump (12V DC)	<ul> <li>Check the fuel pump is receiving 12V DC and is operating - Replace if necessary.</li> </ul>
vl	Contaminated Fuel	<ul> <li>If possible run the generator from a separate fuel source from the fuel tank.</li> </ul>
<b>Low AC Voltage</b> Shutdown	Consult an engine specialist if the above fails to rectify the issue.	
		correct no-load frequency (approx. 52.5Hz) but the e <i>Low AC Voltage</i> shutdown icon is displayed only.
	Capacitor	• Test and/or replace the AC alternator capacitor.
	Main AC Alternator	• AC alternator tests would be advisable.

Cont.

Fault Icon	Possible Cause	Check				
vt	Low AC Voltage and Low Hz/Fi	The no-load frequency/rpm should measure approximately <b>52.5Hz/3150rpm</b> Low AC Voltage and Low Hz/Frequency could indicate the engine is running too fast. Warning - It is <u>not</u> recommended to adjust the engine speed unless absolutely necessary.				
High AC Voltage Shutdown		rect no-load frequency (approx. 52.5Hz) but the generator <b>age</b> shutdown icon is displayed only.				
+	Capacitor	<ul> <li>Check the correct size capacitor is fitted to the AC alternator.</li> </ul>				
HZI	Automatic Voltage Regulator (not a standard option)	<ul> <li>Check and test both capacitors - replace if necessary.</li> <li>Check wiring - Replace AVR.</li> </ul>				
High Hz/Frequency Shutdown	Fuel System	<ul> <li>Using the fuel pump prime button, prime the fuel system to expel any trapped air within.</li> </ul>				
	Consult an engine sp	pecialist if the above fails to rectify the issue.				
		tivated once a <b>STOP</b> signal has been issued - manual acy stop fail. The generator continues to run for a few ap.				
		Pre 2022 Models				
	Start the generator - Remove the No.31 wire from the <b>Stop Solenoid</b> on the engine - using a digital multi-meter measure the voltage between wire No.31 and battery negative when a stop signal is issued - This should measure 12V DC for 10 seconds.					
	Stop Solenoid	<ul> <li>If 12V is measured this could indicate the engine Stop</li> <li>Solenoid has failed and would need replacing.</li> </ul>				
Ö	Timer Relay	<ul> <li>If 12V cannot be measured this could indicate the engine</li> <li>Timer Relay has failed and would need replacing - Ref.</li> <li>drawing SW16050</li> </ul>				
Fail To Stop	Run Solenoid Relay	<ul> <li>If 12V cannot be measured this could indicate the Run Solenoid Relay has failed and would need replacing or associated wiring is faulty - Ref. drawing SW16050</li> </ul>				
	Post 2022 Models					
	_	No.31 wire from the <b>Stop Solenoid</b> on the engine - using a oltage between wire No.31 and battery negative when a stop ure 12V DC for 10 seconds.				
	Stop Solenoid	<ul> <li>If 12V is measured this could indicate the engine Stop</li> <li>Solenoid has failed and would need replacing.</li> </ul>				
	Run Solenoid Relay	<ul> <li>If 12V cannot be measured this could indicate the Run</li> <li>Solenoid Relay has failed and would need replacing or associated wiring is faulty - Ref. drawing SW16062</li> </ul>				
	DSE 3110 Output No.6	<ul> <li>Check that 12V can be measured from the DSE 3110 output No.6 when a stop signal is issued - Ref. drawing SW16062</li> </ul>				
		All Models				
	Faulty Wiring	• Check wiring from the oil pressure switch to the DSE 3110 - Ref. wiring diagram.				

Cont.



Fault Icon	Possible Cause	Check			
	A <b>High Engine Temperature</b> shutdown could be for two main reasons, either the engine has overheated or the temperature switch or wiring is faulty.				
	Coolant Level	• Check the level of the water and antifreeze level - fill with a 50/50 mix as indicated by the sticker next to the inspection flap. <b>CAUTION HOT STEAM CAN BURN!</b>			
L	Radiator	<ul> <li>Check the radiator fins are not obstructed/dirty.</li> <li>Check the radiator is not damaged or leaking coolant.</li> </ul>			
≈	Fan Belt	• Check the condition and tension of the fan belt - tighten or replace if necessary.			
High Engine Temperature Fault occurs after	Canopy Obstructions	• Check the generator canopy has no obstructions over any vented areas - Also see <i>Operating Environment</i> in this handbook.			
the engine has fired	Temperature Switch	<ul> <li>Check the temperature switch operation - Ref. wiring diagram - replace if necessary. DO NOT USE THE GENERATOR WITHOUT A TEMPERATURE SWITCH FITTED.</li> </ul>			
	Faulty Wiring	• Check associated wiring from the temperature switch to the DSE 3110 - Ref. wiring diagram.			
	shutting down with all the ab	ows a high temperature (> 100°C) and the generator is pove checked, then the issue could be an engine water pump etc consult an engine specialist.			
	Fuel System	• Check associated fuel system - fuel level, fuel filters etc poor engine performance can cause low oil pressure.			
₽ <b>-</b> -7;	Low Oil Level	• Check oil level and top-up to the correct level if necessary.			
Low Oil Pressure Fault occurs after	Oil Pressure Switch	• Check the oil pressure switch operation - Switch normally closed when engine is at rest and open when engine running - Remove, clean or replace if necessary.			
the engine has fired	Faulty Wiring	<ul> <li>Check wiring from the oil pressure switch to the DSE 3110 - Ref. wiring diagram</li> </ul>			
	Service	• Oil change and oil filter clean recommended.			
	When the engine is running you the battery to between 13.8 a	ou should expect the regulated DC voltage measured on and 14.8V DC			
<b>Charge Fail</b> Battery Flat and/or Not Charging	See BAT	TERY CHARGE FAULT FINDING GUIDE			



## Fault Finding - General

Fault Description	Checks/Causes
	• Check/test the main MCB, RCD & Reset Buttons.
GENERATOR STARTS & RUNS BUT WILL NOT TAKE LOAD	<ul> <li>Check/test the voltage selector switch.</li> </ul>
	<ul> <li>Check the wiring behind the control panel.</li> </ul>
GENERATOR NOT STOPPING	Ō
Generator/Engine fails to stop when the <b>Stop</b> button or the <b>Emergency Stop</b> button is pressed.	See - " <b>Fail To Stop</b> " DSE Fault Finding
	• Check that the battery isolator switch is turned to the
DSE 3110 CONTROL MODULE NOT ILLUMINATING	<ul> <li>ON position.</li> <li>Check the battery lead connections/condition on the battery and to the engine.</li> <li>Check the battery voltage is around 12.5V DC.</li> </ul>
The LCD display is not illuminated and module is not responding.	<ul> <li>Check the connections on the DC plug and socket.</li> <li>Check the 2A reset button next to the DSE 3110 - Ref. wiring diagram. Replace if necessary.</li> <li>Check for 12V DC between wires 1 &amp; 2 on the DSE 3110 - Ref. wiring diagram. Replace the DSE 3110 module if necessary.</li> </ul>
	See - Check Fuel Level in Operating Instructions.
	<ul><li>Gauge shows empty even with a full fuel tank.</li><li>While the <i>Fuel Pump Prime</i> button is pressed and</li></ul>
FUEL GAUGE NOT OPERATING	held down, check 12V DC is present across wires No.33/No.3 & No.1 on the back of the <i>Fuel Gauge.</i> - If 12V DC is measured replace the fuel gauge.
FUEL GAUGE NOT OPERATING	No.33/No.3 & No.1 on the back of the <i>Fuel Gauge.</i> - If 12V DC is measured replace the fuel gauge. - If no 12V DC can be measured check wiring - Ref.
FUEL GAUGE NOT OPERATING Fuel level showing empty or full incorrectly.	No.33/No.3 & No.1 on the back of the <i>Fuel Gauge.</i> - If 12V DC is measured replace the fuel gauge.
	<ul> <li>No.33/No.3 &amp; No.1 on the back of the <i>Fuel Gauge</i>.</li> <li>If 12V DC is measured replace the fuel gauge.</li> <li>If no 12V DC can be measured check wiring - Ref. wiring diagram.</li> <li>Gauge shows full even with no fuel in the tank.</li> <li>Check the connections at the <i>Fuel Level Sender</i> - Ref.</li> </ul>
	<ul> <li>No.33/No.3 &amp; No.1 on the back of the <i>Fuel Gauge</i>.</li> <li>If 12V DC is measured replace the fuel gauge.</li> <li>If no 12V DC can be measured check wiring - Ref. wiring diagram.</li> <li>Gauge shows full even with no fuel in the tank.</li> <li>Check the connections at the <i>Fuel Level Sender</i> - Ref. wiring diagram.</li> <li>Measure the resistance between wires No.1 &amp; No.18 on the <i>back of the gauge</i>, this should measure between 10 and 180Ω. If <u>no</u> Ohms can be measured</li> </ul>

## **Battery Charge Fault Finding Guide**

Reference will be made using the DSE 3110 DC wiring diagram contained within this handbook.

#### Normal Operation

The DC voltage measured directly at the battery while the generator is at standstill should be around 12.6V DC.

Start the generator. Once the engine is up and running the DC voltage at the battery should measure between 14.0 to 15.5V DC in normal operation.

Note : It may take a couple of minutes of the engine running to reach these figures.

#### Fault Finding

Follow the procedure below to help identify a possible fault.

#### Fan Belt

- Check the condition of the fan belt replace if necessary.
- Check the fan belt is not loose tighten if necessary.

#### Battery

• Check the condition of the 12V battery - replace if necessary.

#### **Battery Leads**

• Check the condition of the battery terminals and the connections on the starter motor (positive) and the engine (negative).

• Check the condition of the battery leads - these should be flexible, if they feel stiff or rigid replace.

#### Test the Engine Dynamo System

The engine dynamo can be found to the left of the starter motor and has the fan belt around it. There are two light blue wires -**Fig.15**.

• Check the stator coil of the dynamo - Disconnect the white wires from the main engine loom labelled No.21 & 22 from the two light blue wires at the dynamo.

Check for continuity between the light blue wires, if no continuity is detected replace the dynamo.

• If continuity is present, start the generator/engine and measure the **AC** voltage between the light blue wires. This should be around **34V AC** when the engine is running at the correct no-load speed of **52.5Hz (3150rpm)**.

If no AC volts can be measured replace the dynamo.







#### **Check Charge Regulator Connections**

The Charge Regulator is housed behind the socket/control panel box section - Fig.16 & Fig.17.

Reference the DC wiring diagram for connections.

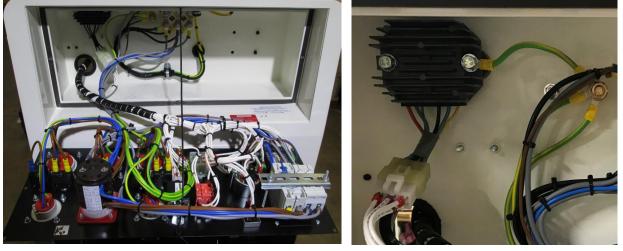




Fig.17

• Ensure there is continuity between the body of the charge regulator and an earth point on the engine.

• Wires No.21 & 22 can be found connected to the charge regulator via a 6-way (white) plug. Remove the 6-way plug from the charge regulator and again run the generator/engine and measure the AC voltage at wires No.21 & 22 on the <u>white plug</u>. You should have the same reading as the last test above, around **34V AC**.

• Check wire No.1 on the regulator white plug has continuity to earth.

• Check for DC voltage between wire No.33 (pre-2022) / No.3 (post-2022) and the <u>brass earth stud</u> when the fuel pump prime button is pressed and held. It should measure around 12 -13V DC when pressed.

• Check for a permanent 12V DC between wire No.19 and the brass earth stud.

• Check for DC volts between wire No.7 and the <u>brass earth bolt</u> – there should be no volts measured. Start the generator – You should now be able to measure a DC voltage (usually around 10.0V DC). If not, check wire No.7 directly at the Deep Sea 3110 module. If no voltage can be found when the generator is running, the Deep Sea 3110 module may need re-programming or replacing.

#### Engine and Control Panel DC Loom Connections.

• Check for any loose connections on the Deep Sea 3110 control module, also the white plug and socket between the engine loom and the control panel loom found inside the generator canopy.

#### **Pre-heat Relay**

• Start the generator - measure the DC voltage directly at the battery and note the voltage. Remove the 70A relay (the largest of the four) from its holder and do the same test again. If the voltage measured is around 14.0V DC or more this could indicate a faulty relay - Replace.

If all the above seem to be ok then this could possibly indicate that the charge regulator has failed and would need replacing.

## Service and Maintenance

## **Pre-service**

**Warning** - Do not attempt to carry out any service or maintenance work on the generator whilst the engine is running. Always isolate/disconnect the battery prior to working on the engine or alternator.

## **Engine Service**

Keeping to the maintenance schedule recommended by the engine manufacture will ensure your generator engine will perform at its optimum efficiency. The benefits of regular servicing will lower the risk of unexpected breakdown considerably and ensure your generator will continue to perform for many years.

Service the engine strictly in accordance with the instructions given in the relevant engine operator manual / handbook. It is recommended that an approved specialist must carry out any maintenance. Any spare parts required should be of genuine manufacturer's origin.

**Note**: Failure to adhere to manufacturer's recommended service schedules may invalidate the warranty. Please consult engine operator's manual for full service intervals

You can find the basic service intervals at <u>www.stephill-generators.co.uk</u> or available on a QR code from the generator canopy for an in-depth overall service.

### **Alternator Service**

Brushless alternators employed on Stephill Generators are maintenance free.

Brushed alternators, like the 3 Phase model, will require maintenance. The alternator handbook supplied with the generator will contain a maintenance chart. Any service must be carried out by competent qualified personnel strictly in accordance with the instructions given in the handbook. Any spare parts required should be of genuine manufacturer's origin.

#### **IMPORTANT WARNING**

After any service on the generator, ensure that all piping and electrical cables are correctly routed and secured away from hot parts. Failure to observe this warning may result in damage to the piping and cables which could result in a fire. Do not service or work on generator whilst the engine is running. Always disconnect battery prior to working on engine or alternator.

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## **Trolley Kit**

The Stephill SSD10000S generator has a two wheel trolley option for easy transportation.

The handles also fold away for storage and protection from damage while in use.



## Wheels

Check the tyre pressure regularly. Incorrect tyre pressure can lead to excessive wear and loss of grip.

COMPLETE WHEEL PART No.	TYRE SIZE	MAX TYRE PRESSURE
027-0012	4.80 / 4.00 - 8	35 - 40 PSI

All trolley parts can be found in the **Spares** section.

## Maintenance

The condition of the wheels and tyres should be checked regularly, particularly for distortion of flanges and the wheel dish.

It is recommended that wheels that are damaged or deformed must not be repaired or used in service these must be replaced.

Each wheel/axle fitting can be lubricated with general purpose grease as and when required with the aid of a grease nipple found on the wheel collar.

The springs on each handle can also benefit with the occasional application of general purpose grease.

## **Road Tow Trailer**

Stephill SSD10000S generators have a road tow trailer option. These road tow trailer have been type approved for use on the public highway and will have a Vehicle Identification Number (VIN) stamped on the side. Each will also be issued with a trailer Certificate Of Conformity to accompany the VIN.



## **Trailer Information**

TRAILER TYPE	TYRE SIZE	MAX TYRE PRESSURE	TYRE PLY	MAX TYRE LOAD	TYRE LOAD RATINGS	WHEEL TORQUE SETTINGS	COUPLER TORQUE SETTINGS	ONE SHOT HUB NUT TORQUE
AL-KO 550KG single axle	145 R10C	4.5 BAR 65 PSI	<b>Tread</b> 2x Steel 1x Polyester <b>Side</b> 1x Polyester	475Kg	84/82N	88Nm	86Nm	700754 Castle Nut M16x1.5 50Nm
	+44 (0) 1933 677911 www.stephill-generators.co.uk ////////////////////////////////////				ATORS			

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## **Safety Precautions**

No welding is permitted on the trailer axle.

It is important that the wheel and hub/brake drum are compatible. This means that the PCD, wheel bolts and inset must all be compatible with both the hub/brake drum and the wheel rim. Particular attention must be paid to the recommended torque settings for the wheel bolts.

The axle type details shown on the axle type plates must not be obstructed or made illegible by application of any additional surface finish.

#### Wheels

Check the tyre pressure regularly. Incorrect tyre pressure can lead to excessive wear and loss of grip.

M12 wheel bolts. These must always only be tightened to the correct torque setting as shown. They should be tightened in sequence, North, South, East, West and never clock or anti-clockwise. Always use a calibrated torque wrench. It is dangerous to overtighten wheel bolts as it is to not tighten them sufficiently.

The wheel torque settings should be re-checked after 50 km.

The condition of the wheels and tyres should be checked regularly, particularly for distortion of flanges and the wheel dish. Wheels that are damaged or distorted, or have wheel bolt seating's cracked or deformed must not be repaired or used in service - these must be replaced.

### **Number Plate**

It is a legal requirement to have a industry standard approved rear number plate fitted and clearly displayed on the trailer with reference to the towing vehicle.

The UK industry standard size number plate is 520 mm  $\times$  111 mm (20½"  $\times$  4¾").

## **Hitch Type**

The SSD10000S generators use a standard ball hitch on the trailers.

## Pre-Towing/Hitch-up

Follow the checks below when hitching the generator to a vehicle and before every journey.

1. Ensure the towing vehicle is able to tow the MGW as indicated on the generator data plate.

2. Turn the battery isolator key to "OFF" on the generator - remove key if you wish.

3. Ensure all electrical cables have been disconnected.

4. Make sure all generator canopy doors and inspection doors are closed and locked. Ensure the fuel cap is secure and locked. All lose items that may be on the roof removed, this would include snow and ice in



## **Hitching Method**

1. Using the jockey wheel adjust the height of the hitch/eye to the desired level of the towing vehicle tow bar.

2. Reverse the towing vehicle so it is in line and under the generator towing hitch or the eye sits inside the tow bar recess.

3. Lower the hitch with the jockey wheel on to the tow ball, lifting the hitch handle while lowering until the handle clicks. The green indicator on the hitch will be visible if the hitch has successfully fitted into position.

4. Raise the jockey wheel by turning the handle and ensure the wheel is inline with the draw bar and is off the ground. Release the jockey wheel clamp and raise the jockey wheel up to the draw bar. Re-clamp the jockey wheel into this position.

5. Connect the breakaway cable to the attachment point on the tow bar. Secure either around the hitch tow ball or through the guide provided on the tow bar assembly.

6. Connect the 13-Pin plug to the towing vehicle socket. In some circumstances the plug may require an adaptor to convert the lighting board standard 13-Pin plug to a 7-Pin plug to fit the towing vehicle socket.

7. Double check that the towing hitch is securely fitted to the towing vehicle tow bar, the breakaway cable is fitted and light socket is secure.

8. Before moving off in the towing vehicle check the operation of the lights.

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## **Spares**

#### Kubota Consumable Service Spares

Basic Kubota engines service kits are available form Stephill Generators, below are the individual parts complete with part numbers.

Description	Part No.
Oil Filter	015-0004
Air Filter	015-0003
Fuel Filter (Water trap - element)	015-0005
Fuel Filter (In-line)	015-0030
Fan Belt	015-0007



## Control Panel - AC Components - SSD10000S

Description	Part No.	Description	Part No.
40A 2 Pole MCB	036-0018	115V Socket 16A	044-0001
40A 2 Pole 30mA RCD	036-0028	230V Socket 16A	044-0002
Reset Button 16A	036-0049	115V Socket 32A	044-0003
Reset Button 30A	036-0052	230V Socket 32A	044-0004
Dust Cover IP23 Reset Button	036-0056	MCB Cover - 4 Module	036-0039
1A Reset Button	036-0043	Voltage Selector Switch	043-0007
Dust Cover (1 -2A Reset)	036-0077		

## Control Panel - AC Components - SSD10000S/3Ph

Description	Part No.	Description	Part No.
16A 4 Pole RCBO		230V Socket 16A	044-0002
400V 16A 3Ph Socket		MCB Cover - 4 Module	036-0039
1A Reset Button	036-0043	Dust Cover (1 -2A Reset)	036-0077

## **Control Panel - DC Components**

Description	Part No.	Description	Part No.
DSE 3110 Control Module	045-0061	40A Maxi blade Fuse (x2 per Pack)	036-0057
DSE 3110 Rubber Gasket	045-0062	60A Maxi blade Fuse (x2 per Pack)	036-0059
Fuel Pump Prime Push Button	045-0006	Fuse Holder	036-0061
Emergency Stop c/w with RED N/C Switch	045-0018	Fuel Gauge	055-0010
RED N/C Switch (only) to Fit E-Stop	045-0032	2A Reset Button	036-0055
Relay 4-Pin 30-40A 12V	056-0002	Dust Cover (1 -2A Reset)	036-0077
Relay 4-Pin 70A 12V (Pre-heat)	056-0003	Control Panel DC Loom	039-0008
Relay Holder 30-40A	056-0005	20A Reset Button	036-0050
Relay Holder 70-100A	056-0004	Bridge Rectifier 25A	045-0026
15-Way Female Connector (Engine)	038-0310	15-Way Male Connector (Panel)	038-0309
Female Crimp (to fit above)	038-0011	Male Crimp (to fit above)	038-0010

## **General Spares**

Description	Part No.	Description	Part No.
Key FT105	045-0004	Door Seal - Rubber Edging	023-1024
Fuel Filler Cap - Lockable c/w Key	048-1004	Radiator Seal - (Sides)	023-1026
Isolator Switch - c/w Red Key - Battery	045-0020	Slam Lock Canopy Doors	023-1014
Hinge M5 - Main Canopy Doors	014-1000	Door Strike/Catch	023-0257
Hinge Plastic - Radiator Flap	023-1029	Handle Flush - Radiator Plate	014-1004
Hinge - Control Panel	024-1018	Battery 12V 055	054-0003
Perspex - Control Panel	024-0118	Battery Adaptor Sleeves	054-0005
Control Panel Lock	024-1002	Terminal Battery Positive	038-0107
Fuel Tank - SSD10000S	024-0129	Terminal Battery Negative	038-0108
Fuel Sender - SSD10000S	024-1006	Battery Terminal Cover - Red	038-0105
Fuel Tank Filler Hose	024-0154	Battery Terminal Cover - Black	038-0106
Mounts - Engine & Alternator	027-0016		STEPHILL.

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## **Engine Accessories Spares**

Description	Part No.	Description	Part No.
Oil Drain Hose Kit - SSD10000S	024-1005	12V Fuel Pump - Kubota	015-0125
Air Hose	024-1007	Kubota Radiator - SSD10000S	015-0047
Oil Pressure Switch - Kubota	015-1003	Engine Loom - DC	039-0007
Temperature Switch - Kubota	015-0013		

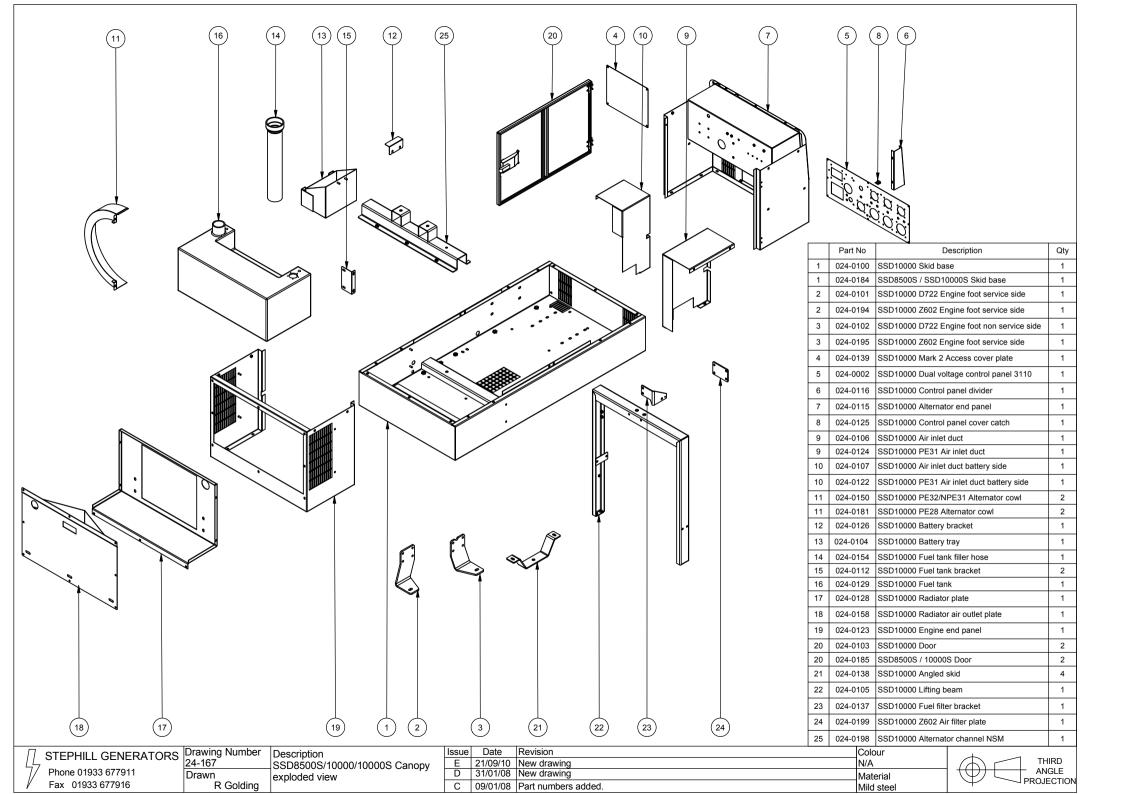
## Exhaust System Spares

Description	Part No.	Description	Part No.
Silencer - SSD10000S	024-0108	Manifold Pipe - SSD10000S	024-0110
Down Pipe - SSD10000S	024-0111	Fiberglass Sleeve	023-1098
U-Clamp 38mm	027-0079		

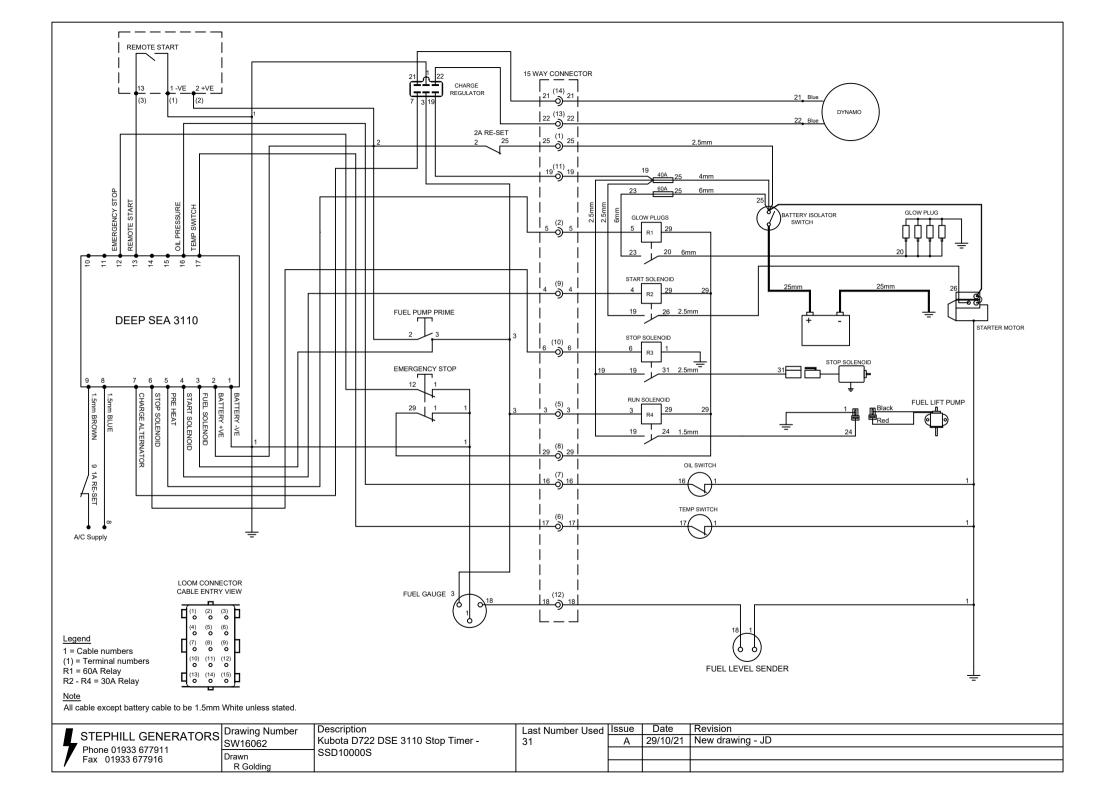
## **Trolley Kit Spares**

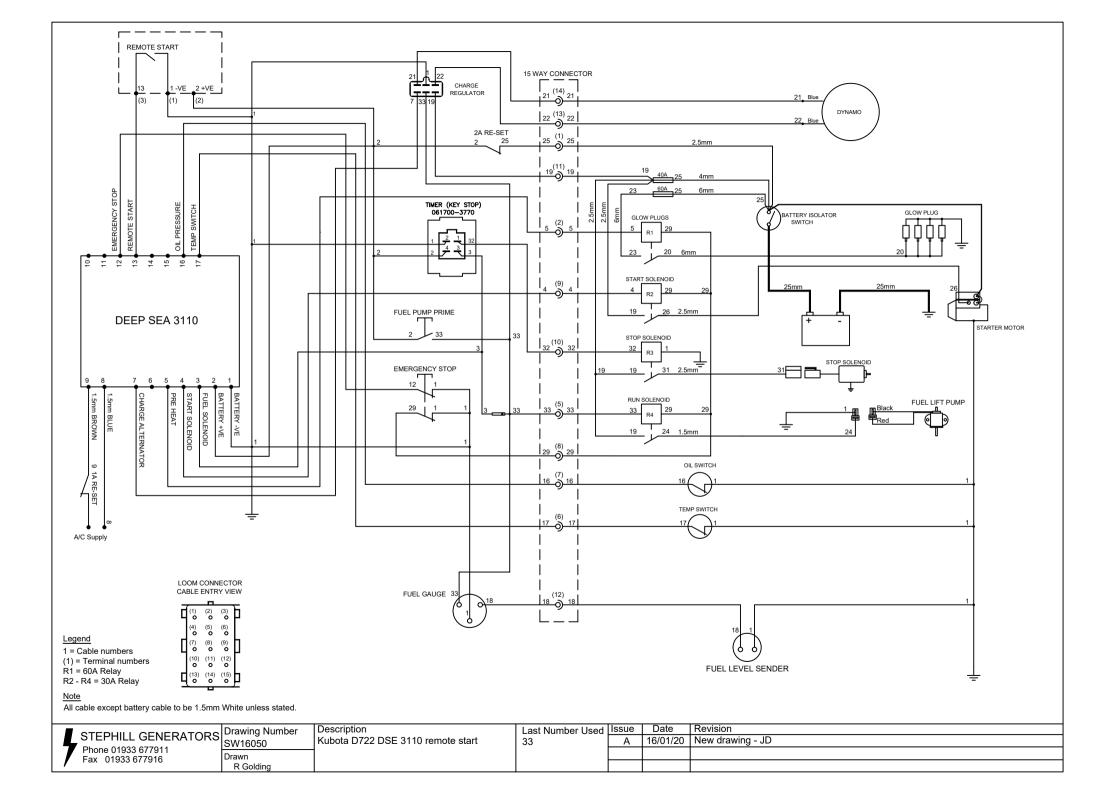
Description	Part No.	Description	Part No.
Axle	024-0130	Compression Spring	024-1020
Handle	024132	Roll Pin	024-1019
Trolley Frame	024-0133	Wheel - 25mm Pneumatic - Complete	027-0012
Handle End Cap	022-1027	Split Pin - M4 x 50	
26mm Plain Washer (5mm T)		M6 x 1 Grease Nipple	

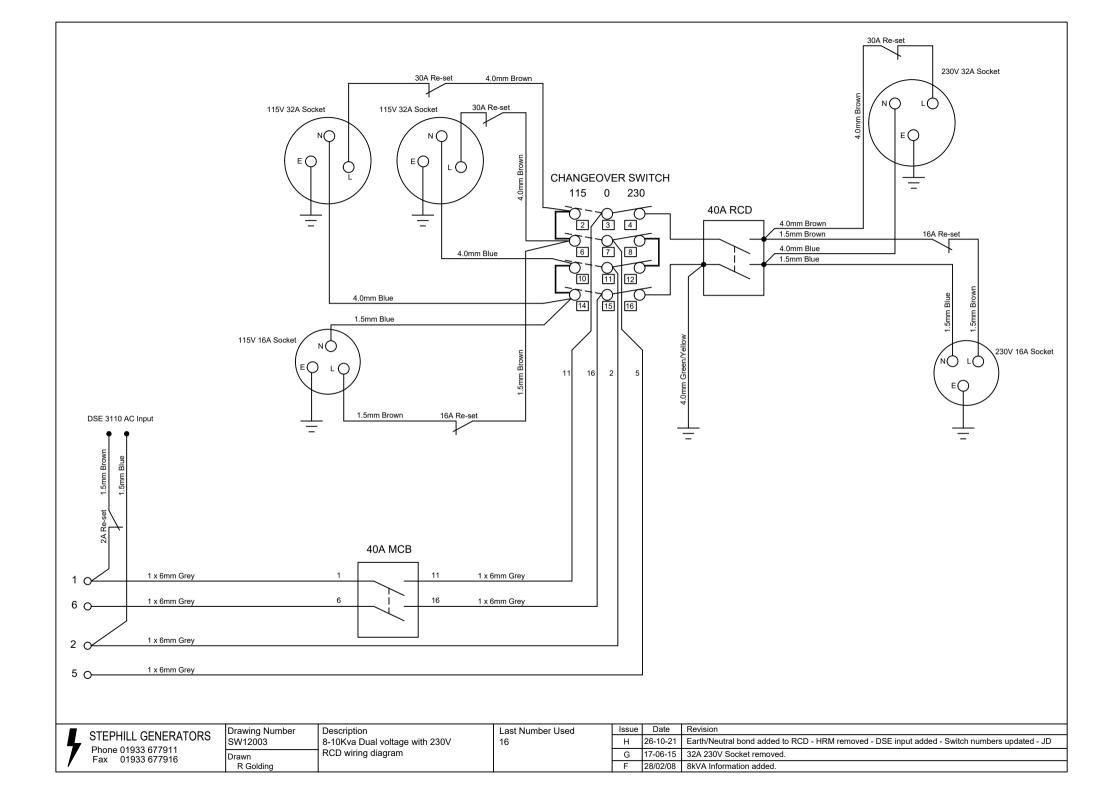




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