



# ***Ground Effect Fire Lighter Operation Manual***



imsheli.com

# ***Ground Effect Fire Lighter Operations Manual***

A product of IMS New Zealand Limited



This manual is applicable to the following models

GE200FL

## **Please Read Before Using**

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# Introduction to the Ground Effect Fire Lighter

The Ground Effect Fire Lighter has been manufactured since 2017 and is manufactured from corrosion-resistant stainless steel designed to withstand the environment and chemicals it will be exposed too. This means each Fire Lighter can be filled from the various fuels for the purpose of lighting fires. Larger volume Fire Lighters can be built should this be required.

## Tough & Durable Fire Lighters

The Ground Effect Fire Lighter is made of tough and durable stainless steel. It's strong, compact and resistant to fire, while also has good flight characteristics.



# Ground Effect Fire Lighter Ownership Record

Company Name  
Contact Name  
Telephone  
Cell Phone  
Address  
Email  
Date of new ownership  
Serial No.

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Company Name .....  
Contact Name .....  
Telephone .....  
Cell Phone .....  
Address .....  
Email .....  
Date of new ownership .....  
Serial No. ....

Please scan and email to [imssales@imsheli.com](mailto:imssales@imsheli.com)

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*Filling this section out and sending to us will enable IMS to notify the Ground Effect Fire Lighter owner of any new information or developments relating to your Fire Lighter that would be of interest to you*

## Operational Warnings

Warnings and cautions appear at appropriate sections throughout this manual

Please read these carefully



Indicates a potentially hazardous situation which, if not avoided, will result in serious injury or death.



Indicates a potentially hazardous situation which, if not avoided, may result in serious injury or death.



Indicates a situation that may result in minor to moderate injury as well as possible equipment damage



Used to draw attention to a specific requirement, action or process.

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## Fire Lighter Component Identification

Electrical  
Supply Cable

Agitator Handle (removable)

Filler Cap

Control  
Enclosure

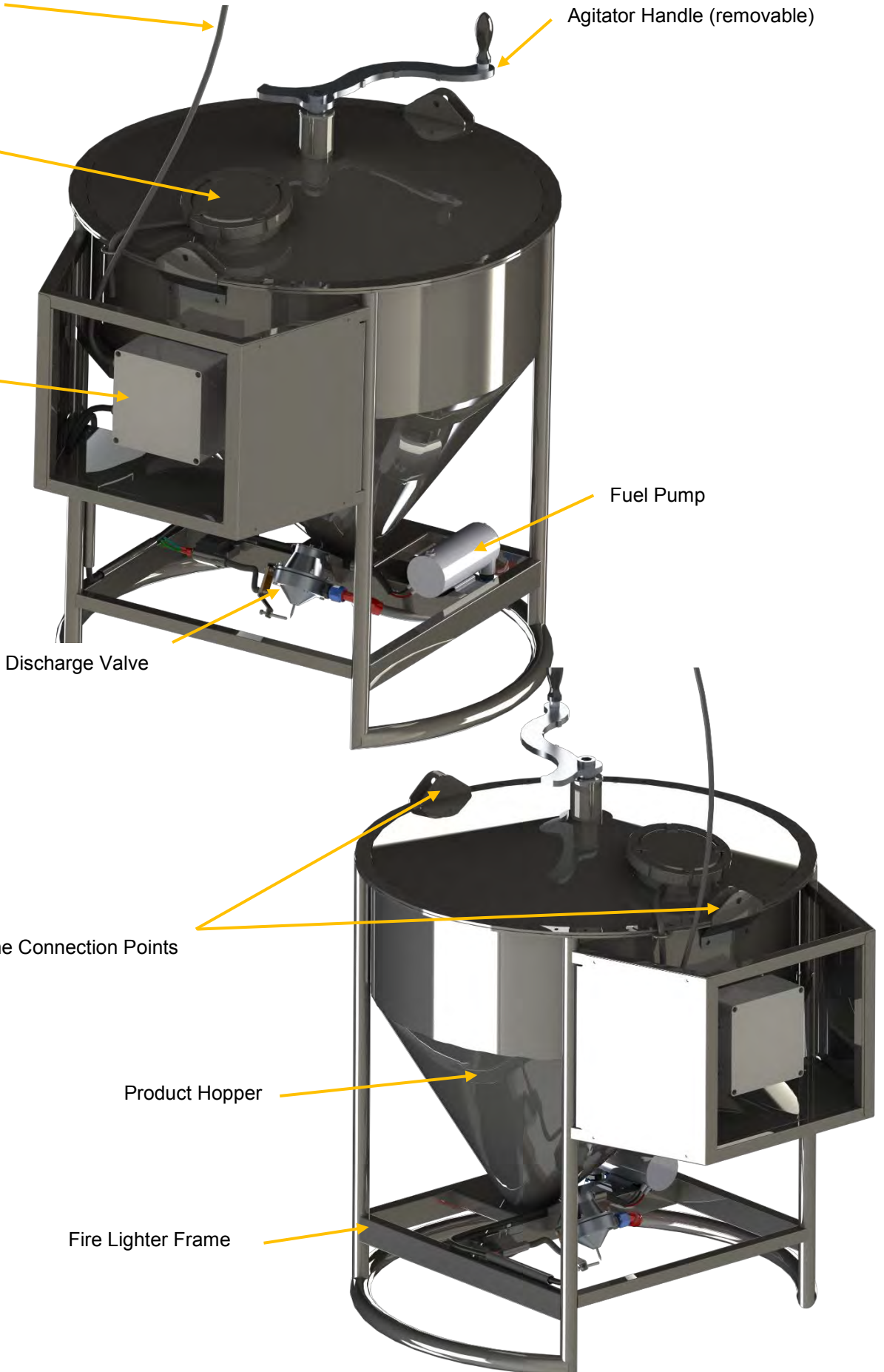
Fuel Pump

Discharge Valve

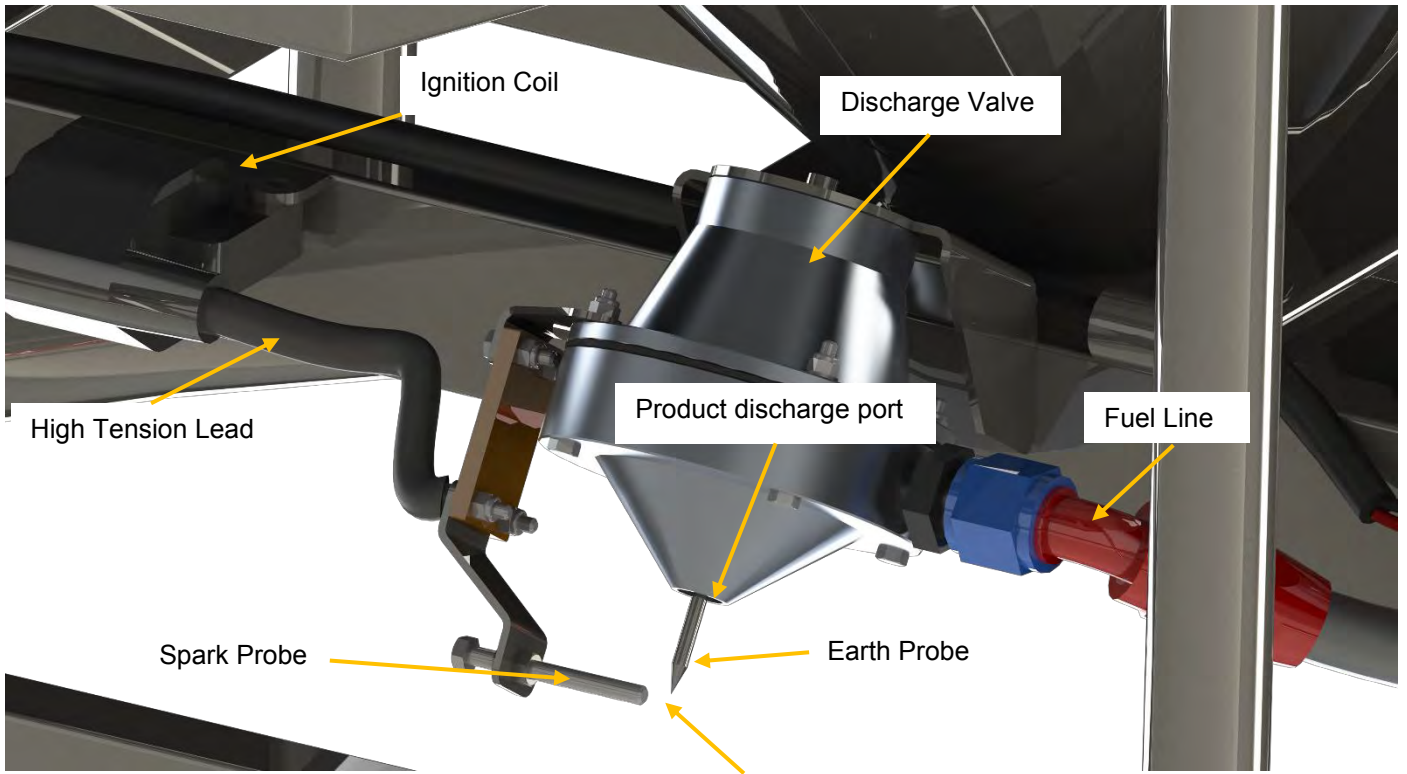
Lift Line Connection Points

Product Hopper

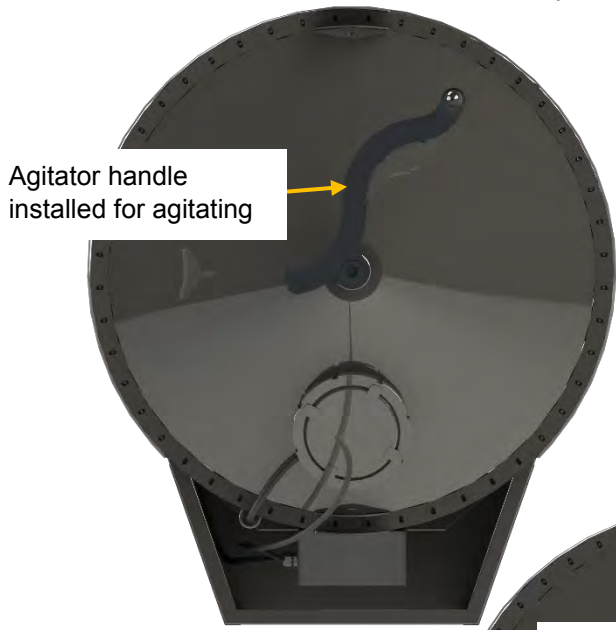
Fire Lighter Frame







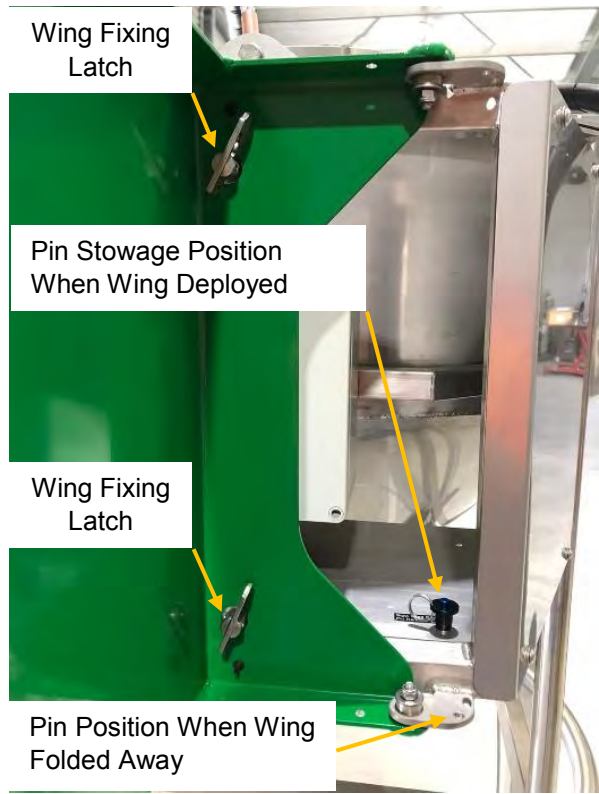
Gap distance 10-16mm (3/8-5/8")



Plan Views of Ground Effect Fire Lighter



Wing Folded Away



Wing Fixing Latch

Pin Stowage Position When Wing Deployed

Wing Fixing Latch

Pin Position When Wing Folded Away



## Pre-flight Safety Check List

Ground Effect Fire Lighters should receive a strict pre-flight inspection on every component according to the checklist below before each flight, to ensure the safety and the quality of the operation.

Prior to testing or operation of the Ground Effect Fire Lighter, conduct a pre-operational briefing with the pilot and all crew members. Safety, communications, responsibilities, operational procedures, hazard identification, and the emergency response plan must be reviewed.

No.	Frame and Hopper	Check	Remarks
1	Check all fastenings on the valve, ensure all are tight.		
2	Check the hopper is in good condition		
3	Check that there are no cracks in the frame		
4	Check Lift Cleats for cracks and any damage		

No.	Fuel Pump and Hoses	Check	Remarks
6	Check hoses and fittings for mechanical damage causing leakage		
7	Ensure all fittings are secure		
8	Check Fuel Pump motor mount fastenings are tight and Fuel Pump is secure to motor		

No.	Wiring	Check	Remarks
9	Inspect the wiring for mechanical damage or lose connections		
10	Check the black plastic cable glands are tight on the Control Enclosure		
11	Check the electrical connector by the spreader bar on Lift Lines.		

No.	Operation	Check	Remarks
13	Ensure that the breather line is clear and has no kinks or obstructions		
14	Check the Filler Cap is secure once filled and the seal is in place.		
15	Inspect Lift Lines, Lift Line connections points and Spreader Bar		
16	Check the Discharge valve is clear and there is a gap between igniter probes		



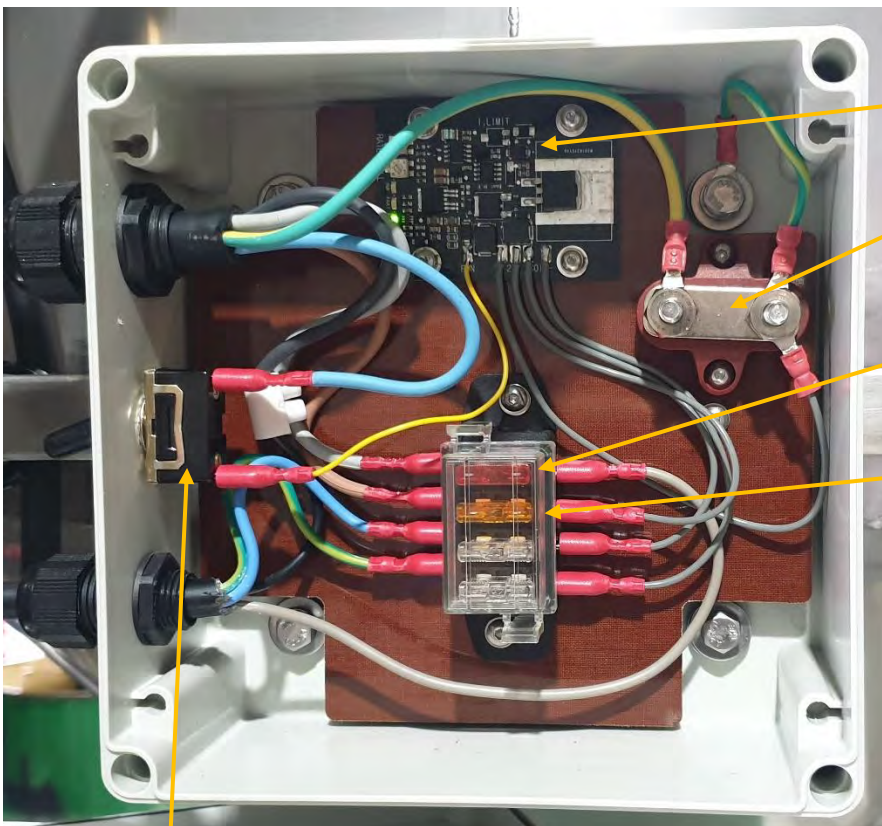
The pilot is responsible for determining the flight speed according to the load, line length and acknowledging the weather conditions



## Electrical



Ignition Coil



Ignition Spark Board

Common Earth Post

10amp Fuse for the Pump

5amp Fuse for the Ignition Spark Board

Ignition Spark Isolator



Enclosure mounted on the rear of the Ground Effect Fire Lighter.

Has a toggle switch on the left hand side to isolate the ignition spark so that the pump can run without an ignition source. Used when discharging unused gel and for cleaning procedures



Pump Speed Control. This enables the pilot to vary the flow of the discharge. This unit can be located within the pilots reach.

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## Safe Operational Procedure when using a Ground Effect Fire Lighter

- Transport Fire Lighter to work location.
- Ensure that the Fire Lighter is in a well ventilated area clear of any other ignition sources
- Testing of the Igniter and the Fuel Pump can only be done prior to flight when there is no product, residue or vapours in or around the Fire Lighter. Test only one item, either the Igniter or the Fuel Pump at a time by ensuring the isolating switch or the other item is in the OFF position.



Only test the Igniter if there is no fuel present

- Make sure there is no electrical or mechanical connection to the helicopter or anything else whilst filling.
- Remove the Filler Cap from the top of the Fire Lighter using the Agitator handle as shown in images on page 9. Be mindful of the seal that is beneath the Filler Cap and not to lose this.
- Fill the Fire Lighter as per the instructions of the product being placed in the Fire Lighter
- Once the Fire Lighter is filled, replace the seal and Filler Cap, tighten the Filler Cap using the Agitator handle.
- Place the Agitator Handle on hex shaft on the centre top of the Fire Lighter and then. Rotate the Agitator to mix the solution in the Hopper



Ensure that the electrical and mechanical connections between the Fire Lighter and the helicopter are disconnected whilst filling

- Remove the Agitator handle and place in a safe location on the ground. **Do not fly with handle engaged**
- The discharge speed of the Fuel Pump is controlled by the pilot from the on board Speed Control
- Connect the Spreader bar to the helicopter cargo hook and connect the electrical power cable. Turn 'ON' the Fuel Pump isolator (on Fuel Pump) and the Ignition isolator (on side of Control Enclosure).
- The Fire Lighter is ready to fly



Do not test the operation of the Fire Lighter on the ground with product in it.



## Pack up Ground Effect Fire Lighter

- Pilot to land the Fire Lighter on the ground in the location that you wish to pack up.
- Pilot to back away from the Fire Lighter as the aircraft is lowering keeping the Fire Lighter in view at all times during the landing process. Do not drag the Fire Lighter on the ground during this process.
- Once the pilot is in agreeance you may approach the helicopter from a safe angle and begin to unplug the electrical connection and remove the Spreader Bar from the cargo hook.
- Now that the Fire Lighter has no connection to the helicopter, it can be carefully handled, always being mindful that there may still be product inside the hopper and even if empty the hopper will still contain explosive vapours.

## Cleaning your Ground Effect Fire Lighter

- Always clean you Fire Lighter after use
- Ensure that the Ignition Isolator is switched 'OFF' during the cleaning process
- Clean should be performed in a well ventilated area
- If the hopper still contains product this should be pumped out into a fuel safe container.
- Soapy water should be used to clean the inside and outside of the hopper. Pump this water through the Fuel Pump and Discharge Valve by powering the Fuel Pump from an independent 24vdc supply. Note; do not run the pump more than 20 seconds with soapy water, just enough to clear the Fuel Lines and Discharge Valve of the flammable product



Do not run the Fuel Pump with just 'water', ensure that you use a soapy water solution to aid with lubricating the Fuel Pump whilst the flammable product is being evacuated from the Fuel Lines and Discharge Valve



Do not hose the Fuel Pump Motor, Ignition Coil or the Control Enclosure during the cleaning process. Use a damp cloth for these areas

## Wire Lift Line inspection guidelines to look for

- Randomly distributed visible broken wires?
- Local groups of broken wires?
- Visible broken wires in the immediate vicinity of the rope termination?
- Localised decrease in the diameter of the Lift Line (core failure) less than 10%
- Uniform decrease in the rope diameter (wear) less than 10%
- Internal corrosion
- External corrosion
- Deformations
- Thermal damage

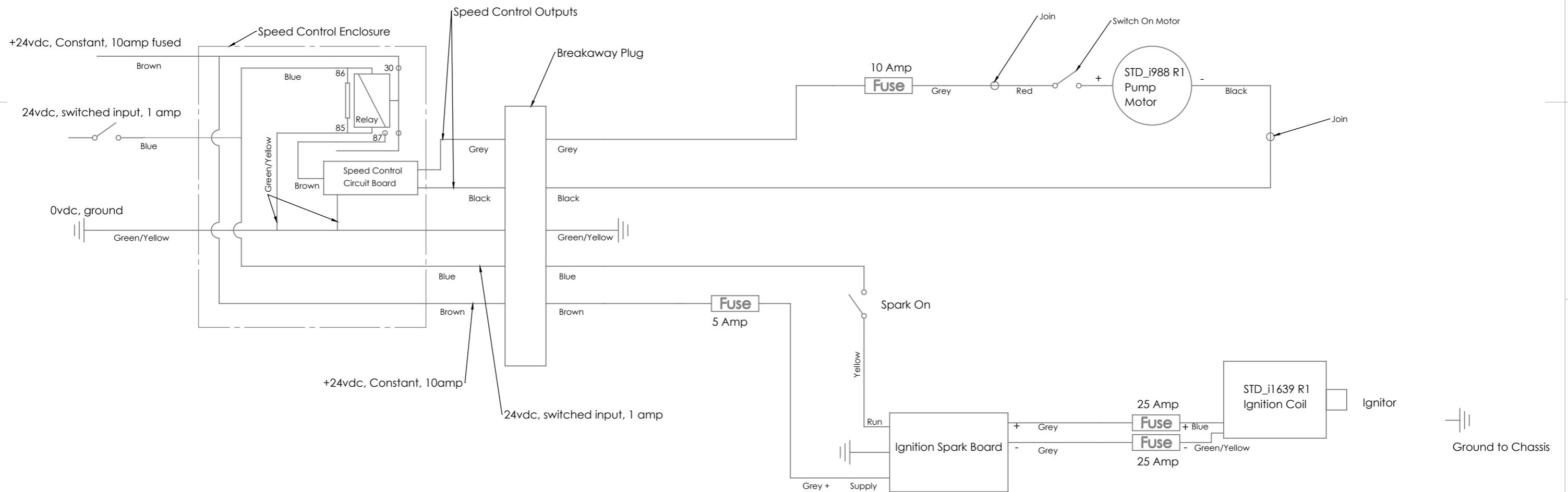
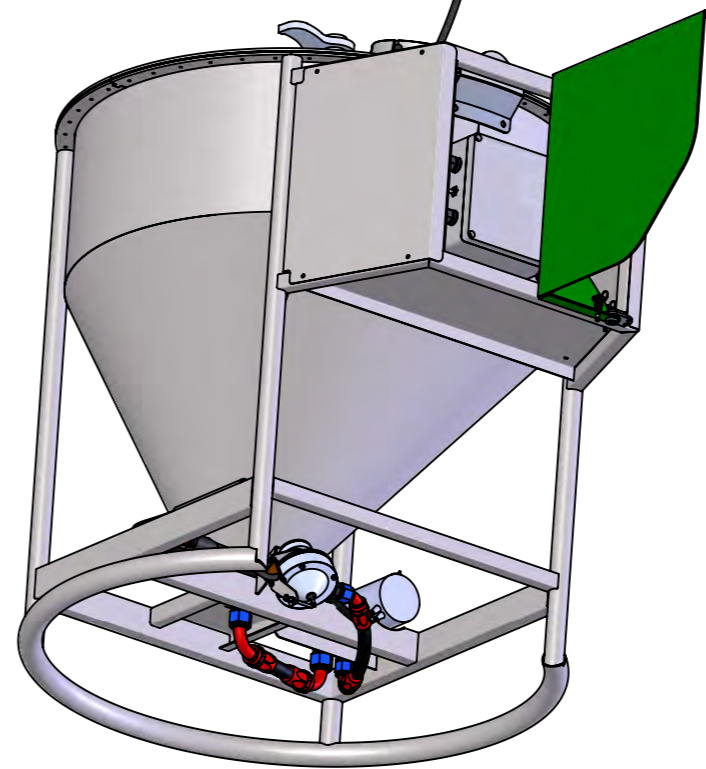
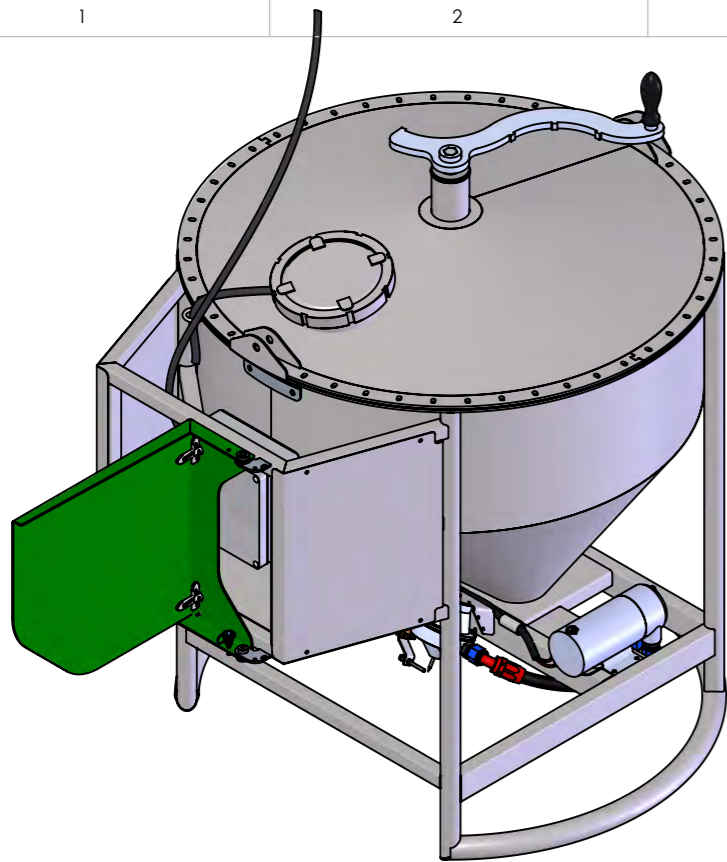


## Storage of your Ground Effect Fire Lighter

- Ground Effect Fire Lighters should always be stored in a well ventilated dry and secure place away from direct sunlight.

## Fault finding with Ground Effect Fire Lighter

- Fire Lighter not pumping?
  - Is the Fuel Pump running
    - ✓ Yes
  - Check the Hopper contains product
  - Check there is no damage to the Fuel Lines
  - There could be a blockage in the Fuel Lines or Discharge Valve
  - Check that the Breather Hose is clear and not obstructed
  
  - Is the Fuel Pump running
    - ✓ No
  - Check the power supply from the helicopter
  - Check the 10amp fuse in the Control Enclosure
  - Check an obstruction within the Fuel Pump
  
- Ignitor not working
  - Evacuate all of the flammable product and vapour from the Fire Lighter
  - Ensure that it is safe to work on the fault
  - Isolate the Fuel Pump
  - Check the gap between the Earth and Ignition Probes
  - Check the High Tension Lead connection to the Ignition Coil
  - Check the Earth wire on the Top of the Discharge Valve has a sound connection
  - Check 5amp fuse in the Control Enclosure



REVISION HISTORY		
REV.	DESCRIPTION	DATE
1	Preliminary Drawings	8/09/2020



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Sheet Description: <b>Wiring</b>	Job No. <b>2678</b>
Project Description: <b>Wiring</b>	
UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN MILLIMETERS SURFACE FINISH: Ra 3.2	TOLERANCES: LINEAR: As per AS1100 Part 201 ANGULAR: 0.1°
DWG NO. <b>2678_W102</b>	<b>A3</b>
DO NOT SCALE DRAWING.	IF IN DOUBT ASK
	REVISION:1 SCALE:1:2.5