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**SACKSAFOAM HELI-CASE**  
OPERATIONS MANUAL  
2023A

# **SACKSAFOAM HELI-CASE OPERATIONS MANUAL**

**Version: 2023A  
Part Number: 015382**

**PLEASE READ BEFORE USING**

**This manual is applicable to the following models:**

SFX (# 012743)

Physical copies of this manual (# 015382) are available from SEI.

The manual is available on the SEI website.

Register for manual update notifications at [bambiupdate@sei-ind.com](mailto:bambiupdate@sei-ind.com)

This manual is based on information that was available at the time it was printed and may not be applicable to products received before the issue date and customized items.

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# Revision Summary

Version	Release Date	Revision Description	Pages	App.
2019A	18-Mar-2019	<ul style="list-style-type: none"><li>• General Revision</li></ul>	-	AW
2023A	01-May-2023	<ul style="list-style-type: none"><li>• Corrected error in SF Plus Switch description of operation</li></ul>	6	MDT

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## Section 1: Overview

### Introduction



The Sacksafoam Heli-Case is designed to be used inside helicopters to supply foam concentrate to Bambi buckets. The Sacksafoam Heli-Case will hold up to 25 USG (95 litres) of foam concentrate. The Sacksafoam Heli-Case is compatible with Bambi Bucket models 2024 through HL5000.

The foam concentrate is stored in a 20 gallon tank inside a large plastic case with provision for an extra 5 USG container. The system is self-contained and designed to prevent foam from contacting the helicopter.

The Sacksafoam Heli-Case interfaces with the Sacksafoam Controller to accurately dispense the desired volume of concentrate for various Bambi Bucket models. The Sacksafoam controller can be mounted directly in the Sacksafoam Heli-Case control panel or externally by using the supplied blanking plate and harnesses. Dispensing can be controlled directly from the Sacksafoam controller screen and can also be triggered using the red button on the remote control grip.

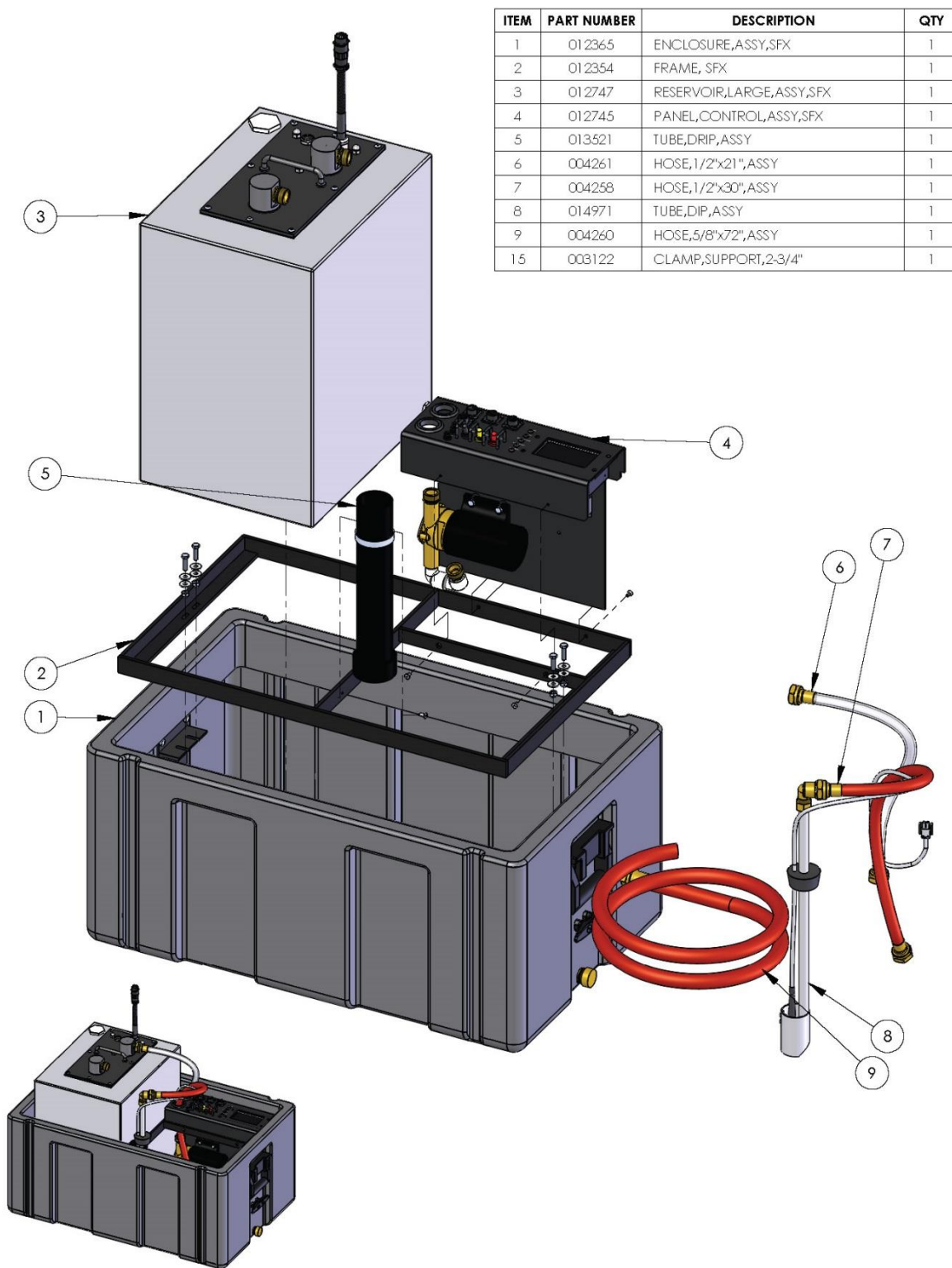
The Sacksafoam Heli-Case can also interface with the standard Bambi Bucket and Bambi Max Bucket. The buckets can be actuated using the trigger on the remote control grip.

## Specifications

<b>Empty Weight</b>	76 lb	35 kg
<b>Empty Weight without Lid</b>	62 lb	28 kg
<b>Gross Weight</b>	267 lb	122 kg
<b>Concentrate Capacity</b>	23 USG	87 L
<b>Dispense Rate</b>	15 GPM	0.93 L/s
<b>Max Current</b>	20A	
<b>Voltage</b>	24-28 VDC	

## Section 1: Overview

### Major Components



ITEM	PART NUMBER	DESCRIPTION	QTY
1	012365	ENCLOSURE, ASSY, SFX	1
2	012354	FRAME, SFX	1
3	012747	RESERVOIR, LARGE, ASSY, SFX	1
4	012745	PANEL, CONTROL, ASSY, SFX	1
5	013521	TUBE, DRIP, ASSY	1
6	004261	HOSE, 1/2"x21", ASSY	1
7	004258	HOSE, 1/2"x30", ASSY	1
8	014971	TUBE, DIP, ASSY	1
9	004260	HOSE, 5/8"x72", ASSY	1
15	003122	CLAMP, SUPPORT, 2-3/4"	1



## Section 1: Overview

### Control Panel Overview



Figure 1-Control Panel

The Sacksafoam control panel houses the Sacksafoam Controller (or a blanking plate with a connector), the connectors for interface harnesses, circuit breakers, switches, and indicators needed to operate the system. The various components are described below:

#### *Circuit Breakers*

**Foam Circuit Breaker:** This 10 amp circuit breaker provides circuit protection for the Sacksafoam Heli-Case system. The breaker must be depressed for the Sacksafoam Heli-Case and a connected Bambi Bucket to operate.

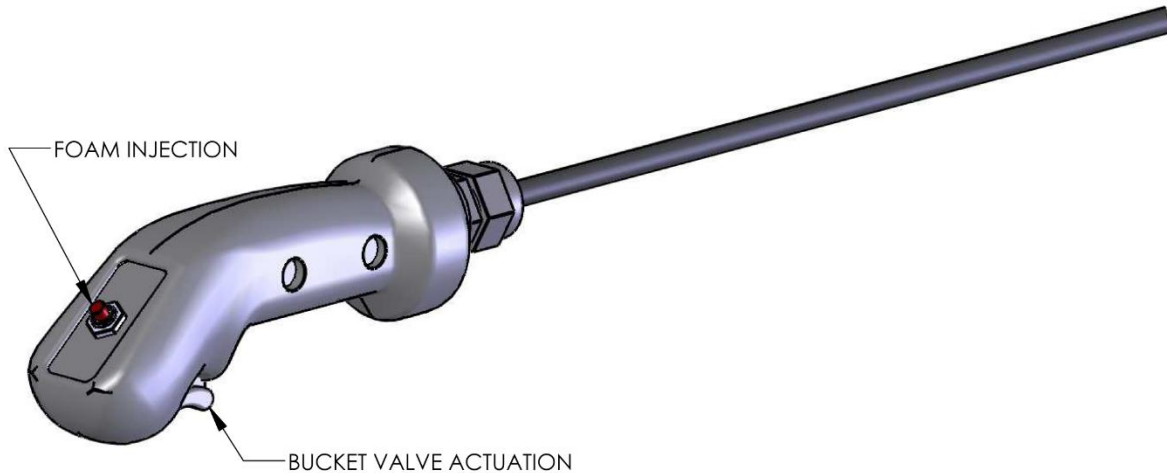
**Bambi Circuit Breaker:** This 5 amp circuit breaker provides circuit protection for a Standard Bambi Bucket or Bambi Max Bucket that is connected to the Sacksafoam Heli-Case system. It must be depressed for a connected Bambi Bucket to operate.

## Section 1: Overview

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### *Interface Connectors*

**Power connector:** This connector interfaces with harness 013509 and supplies power to the Sacksafoam system as well as any Bambi Bucket connected to the Sacksafoam system



*Figure 2-Sacksafoam Heli-Case Remote Control Grip 013510*

**Control Connector:** This connector interfaces with the Remote Control Grip 013510. The remote control grip can be used to initiate foam injection and to actuate the valve on a standard Bambi Bucket or Bambi Max Bucket. Foam Injection is initiated by depressing the red push button switch at the top of the control grip. The bucket valve is actuated by using the trigger switch on the control grip.

**Bambi Connector:** This connector interfaces with the Bambi Bucket harness 013511, which interfaces with a Standard Bambi or Bambi Max control cable or longline cable.

**SF Plus Connector:** This connector interfaces with a Sacksafoam Plus dip tube.

### *LED Indicators*

**Power Indicator:** This LED will illuminate green when the Sacksafoam System has power.

**SF Plus Indicator:** This LED will illuminate green to indicate when the Sacksafoam Plus Dip Tube sensor is being used instead of the Sacksafoam Heli-Case dip tube sensor. This is controlled using the SF Plus toggle switch.

**Transfer Pump Indicator:** This LED will illuminate yellow when the transfer pump is running.

**Dip Tube Low Indicator:** This LED will illuminate red when the selected dip tube (either the Sacksafoam Heli-Case dip tube or the SF Plus dip tube) is below its low fluid level.

**Low Tank Indicator:** This LED will illuminate red when the tank is below its low fluid level.

## Section 1: Overview

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### *Switches*

**SF Plus Switch:** This toggle switch selects which dip tube sensor the system uses to control the transfer pump. When toggled down, the SF Plus light will be illuminated and the system will read the SF plus dip tube signal. If no SF Plus is being used, the Dip Tube Low indicator will always be illuminated in this condition. When toggled up, the system will read the Sacksafoam Heli-Case dip tube signal.

**Override Switch:** This momentary switch can be pressed and held to run the transfer pump at any time regardless of dip tube or tank levels. The transfer pump will stop running when the switch is released.

**Drain Switch:** Pressing and holding this momentary switch for a second will initiate the drain sequence, which will run the dispense pump until the tank reaches the low level.

## Section 2: Installation

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### Section 2: Installation

The Sacksafoam Heli-Case can run on 24-28 VDC. The Sacksafoam Heli-Case should be connected to a circuit capable of handling up to 20 amps. Use the harness 013509 provided with the Sacksafoam Heli-Case to connect it to your Power Supply. The white wire should be connected to 24-28 VDC while the black wire should be connected to aircraft ground. See *Section 6: Drawings* for reference.

The system can be secured to the floor of the helicopter using the two tie down cleats on the outside of the enclosure.



Figure 3-Tie down cleat and enclosure handle

The system includes enough hose to reach the outside of the helicopter. The customer is responsible for providing a 5/8" garden hose that will run from the belly hook to the inside of the bucket. The two hoses should be joined using a barbed connector without clamps. This will allow the hoses to disconnect if the bucket is released from the hook in an emergency. Secure the bucket side hose to the IDS deployment cable using zip ties.



Figure 4-Installing the barbed fitting

## Section 2: Installation

A Standard Bambi Bucket or Bambi Max Bucket can interface with the Sacksafoam Heli-Case using the Bambi Harness 013511 provided with the Sacksafoam Heli-Case. The harness is connected directly to the Sacksafoam Heli-Case control panel, and allows the bucket to be operated using the remote control grip included with the Sacksafoam Heli-Case. The bucket will draw power from the same power supply as the Sacksafoam Heli-Case, but is protected by its own 5 amp circuit breaker on the control panel.



Figure 6-Control Panel

## Section 3: Filling

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### Section 3: Filling

The Sacksafoam Heli-Case has a built-in transfer pump for filling the tank with concentrate. The transfer pump is located under the control panel face and moves fluid through the dip tube and into the tank when activated.

#### Automatic Filling

The standard method of filling the Sacksafoam tank is by using the automated filling function. Follow the steps below to fill the Sacksafoam tank:

1. With the Sacksafoam Heli-Case installed in the helicopter and connected to power, depress the 10 amp circuit breaker. You should see the green “POWER” indicator, the red “DIP TUBE LOW” indicator and the “LOW TANK” indicator all illuminated. If the green “SF PLUS” indicator is also illuminated, toggle the SF PLUS switch.
2. Place a 5 gallon container of concentrate in the enclosure and insert the dip tube. The “DIP TUBE LOW” indicator should turn off and the transfer pump should start automatically. The “TRANSFER PUMP” indicator should be illuminated yellow.
3. The transfer pump will stop and the “DIP TUBE LOW” indicator will illuminate again when the container is emptied or the dip tube is removed from it. Transfer the dip tube to the dip tube holder and replace the container with a new one.
4. Repeat steps 2 and 3 until the tank is full. The transfer pump will stop automatically when the tank is full. The transfer pump will not run automatically again until the tank reaches the low level.
5. The dip tube can be left in the 5 gallon container during operations to increase total capacity.

#### Manual Filling

The override switch can be pressed and held to run the transfer pump at any time regardless of dip tube or tank levels. The transfer pump will stop running when the switch is released. Caution should be taken not to overfill the tank or run the transfer pump dry.

The tank can also be filled manually by pouring in fluid directly through the large port on the top of the tank.

## Section 4: Operations

### Using the Controller

#### *Start-Up, Calibration and Main Screen*

The Sacksafoam Controller (SFC) is operated using a touchscreen display. The injection of foam concentrate can be initiated using the touchscreen or through the use of the remote control grip. After power-up, the SFC displays its start-up screen. You can calibrate the touchscreen by tapping the gear and monitor symbol on the right or you can proceed directly to the SFC main screen by tapping the bucket symbol on the left.



Figure 7-Start-up screen

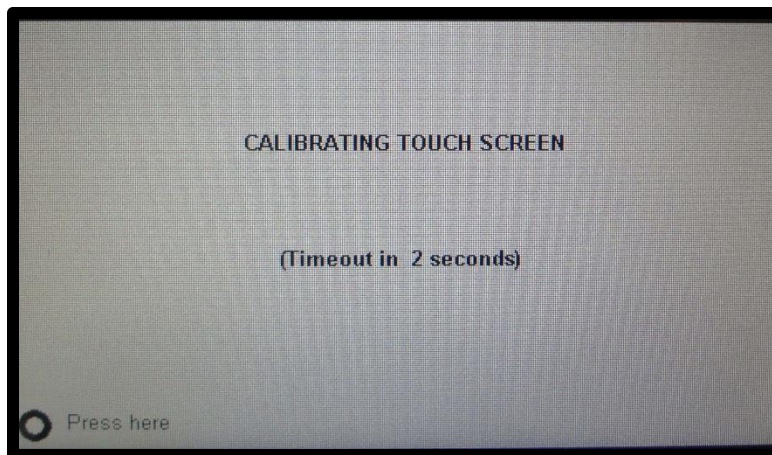


Figure 8-Calibration Screen



## Section 4: Operations

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### Setup

Before using your Sacksafoam Controller, you should ensure that it is properly configured for your bucket and Sacksafoam System. Tap the gear symbol on the left-hand side of the main screen to enter the set-up screen

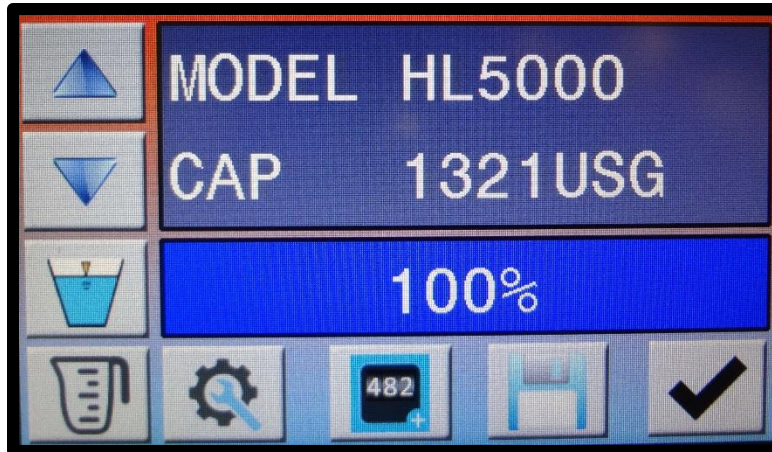


Figure 9-Setup Screen

In the setup screen, select the appropriate bucket model by either using the up and down arrows on the top left-hand side of the screen or by tapping the right or left hand side of the model display window to select larger or smaller bucket models.

If using a cinched bucket or if load shedding to a reduced capacity, tap on the water level symbol directly below the down arrow on the left-hand side of the screen, or tap the left or right hand side of the capacity display window.

Customers using non-SEI buckets may have buckets with unlisted capacities. Customers in this situation can adjust the bucket capacity to match their own in the custom settings window.

Customers using the Sacksafoam Heli-Case with bucket models 2024 to 4453, HL7600, or HL9800 will also need to adjust the flow rate of the Sacksafoam system in the custom settings screen. To do this, tap the gear and wrench symbol at the bottom of the setup screen to enter the custom settings screen. The flow rate settings for customers using 5566 to HL5000 Bambi bucket models do not need to be adjusted.



## Section 4: Operations



Figure 10-Custom Settings Screen

In the custom settings screen, select the flow rate of 0.927 L/s (14.7 US GPM) by either using the up and down arrows on the bottom left-hand side of the screen or by tapping the right or left hand side of the rate display window.

If using a bucket with an unlisted capacity, adjust the capacity by either using the up and down arrows on the bottom left-hand side of the screen or by tapping the right- or left-hand side of the capacity display window.

Tap the disk symbol on the bottom right-hand side of the screen to save your custom configuration or click the check mark symbol beside it to accept the configuration without saving.

If you have successfully entered the appropriate configuration for your setup, you can tap the disk button in the setup screen to permanently save your configuration.

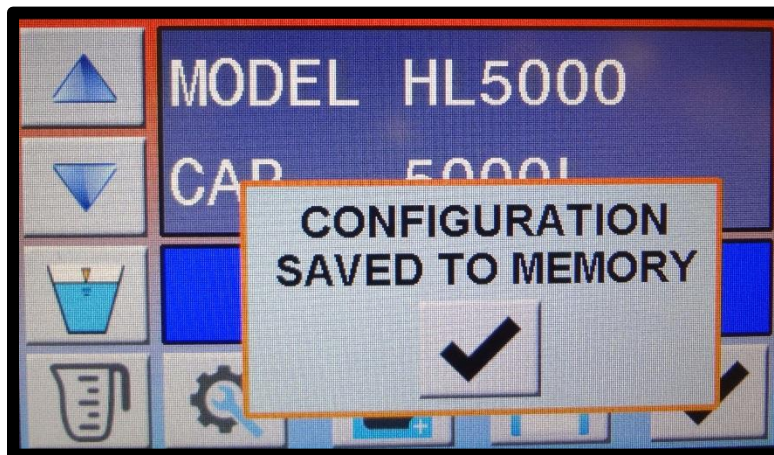


Figure 11-Setup Screen with saved confirmation

## Section 4: Operations

### *Changing the Unit of Measurement*

From the set-up screen, tap on the symbol displaying the measurement cup symbol or tap within the units of measurement (UOM) window. Each tap will cycle through the available units of measurement from liters to US gallons to Imperial gallons.

### *Changing Foam Concentration*

In the main screen, adjust the foam concentration by either using the up and down arrows on the top left-hand side of the screen or by tapping the right or left-hand side of the concentration display window to increase or decrease the foam concentration.

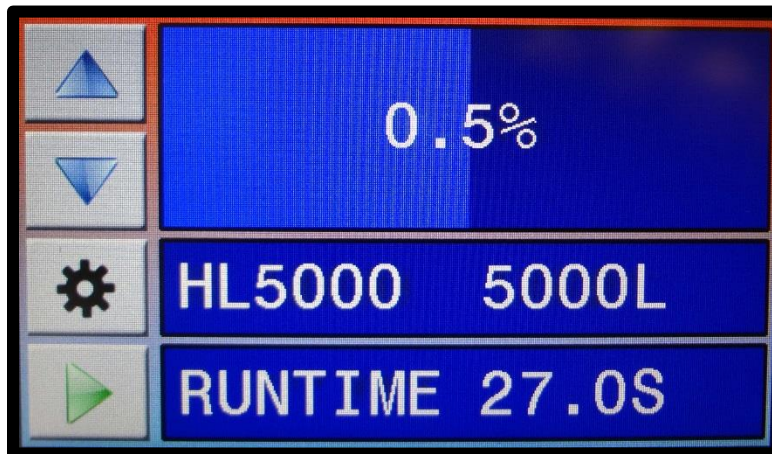


Figure 12-Main Screen

### *Initiating Foam Injection*

To initiate foam injection, tap the green arrow symbol, tap within the runtime window, or press the red push button on the remote control grip. The SFC will display the injection progress.

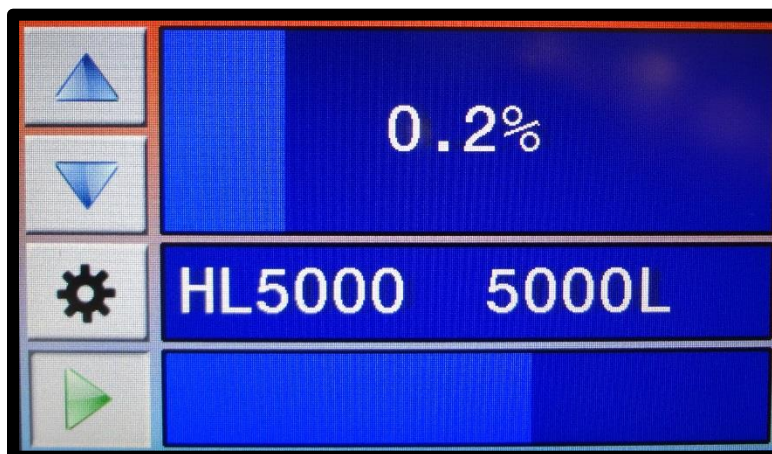


Figure 13-Main Screen with injection pump running

## Section 4: Operations

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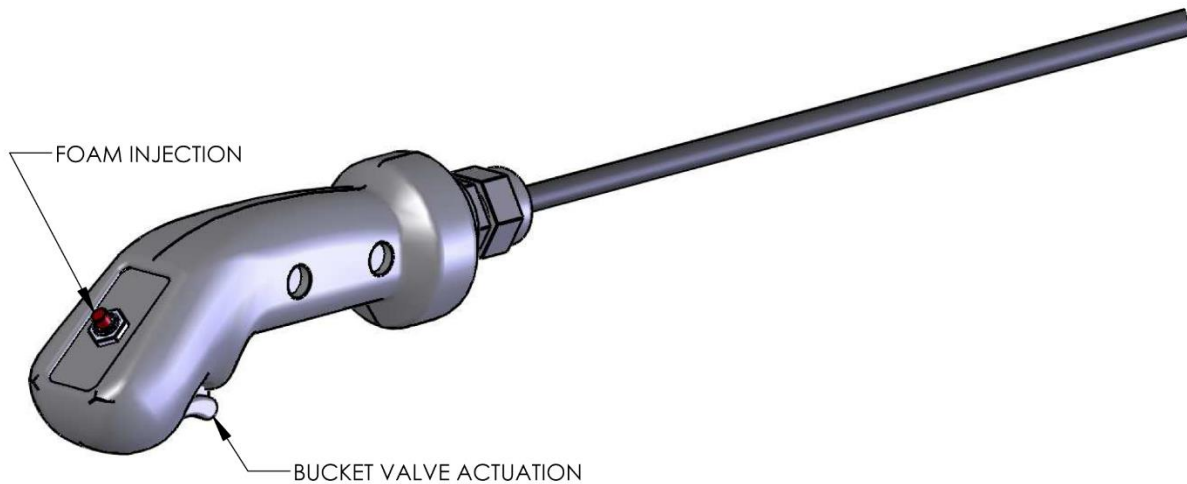


Figure 14-Sacksafoam Heli-Case Remote Control Grip 013510

### Counting Drops

The Sacksafoam controller can be used to count the number of drops with or without foam. To do this, first tap the gear symbol to access the set-up screen, then tap the number symbol to access the count screen.

In the count screen, you can inject foam using the green arrow. Both the ALL and FOAM count increase each time you inject foam. If no foam is used, the ALL count will not increase. To increase the ALL count, manually press the “+” button on the bottom left side of the screen. Tap the number windows to reset the counts. Tap the top bar to return to the main screen.



Figure 15-Count Screen



# Section 5: Clean Up & Storage

## Clean up

The Sacksafoam Heli-Case should be cleared of foam concentrate and rinsed with fresh water at the end of a mission. To drain and rinse the tank follow the procedure below:

1. Remove the dip tube from any source of foam concentrate.
2. Use the red drain switch on the control panel. This will run the dispense pump until tank reaches its low level.
3. Drain any remaining fluid by running the dispense pump with the controller and a concentration setting of 0.1% until the dispense pump can no longer draw fluid.
4. Fill the tank with water using the automatic filling procedure described in the Automatic Filling section on page 9.
5. Remove the dip tube from the water source.
6. Use the drain switch again to rinse the system.
7. Drain any remaining fluid by running the dispense pump with the controller and a concentration setting of 0.1% until the dispense pump can no longer draw fluid.
8. Disconnect the tank electrical harness and inlet hose.
9. Remove the tank from the enclosure.
10. Remove the large PVC cap on the tank and pour out any excess fluid.

## Long term Storage

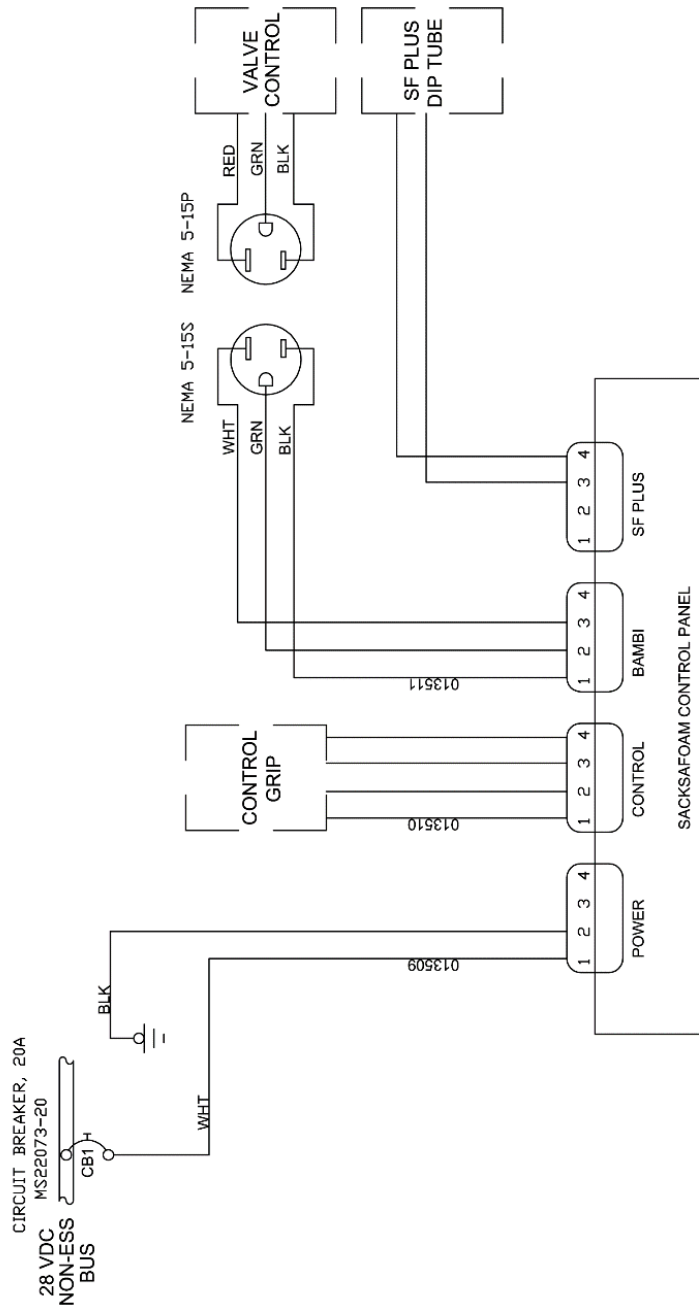
The Sacksafoam Heli-Case should be completely dry before going into storage for more than three weeks. Follow the procedure below to ensure that your Sacksafoam Heli-Case is ready for long term storage:

1. Disconnect the tank inlet hose and tank electrical harness.
2. Remove the eight screws that secure the dispense assembly to the tank.
3. Carefully remove the dispense assembly from the tank. The assembly must be rotated for the base plate to clear the tank opening.
4. Use a rag or towel to dry the inside of the tank.
5. Reinstall the dispense assembly.
6. Remove the large PVC cap on the tank and leave it in the enclosure.
7. Close the enclosure and store the system.

## Section 6: Drawings

# Section 6: Drawings

## Sacksafoam Heli-Case Wiring Diagram



### NOTES

1. THESE ARE RECOMMENDED INSTALLATION INSTRUCTIONS ONLY. ALL INSTALLATIONS TO BE DONE BY QUALIFIED PERSONNEL IN ACCORDANCE WITH APPLICABLE LOCAL REGULATIONS.
2. CONNECTION TO AIRCRAFT POWER SUPPLY DONE IN ACCORDANCE WITH FAA ADVISORY CIRCULAR AC43.13-1B AND AC43.12-2A. DO NOT CONNECT THE BAMBİ SYSTEM TO ANY AIRCRAFT BUS BAR THAT IS USED FOR EMERGENCY OR ESSENTIAL LOADS. AMMEND THE AIRCRAFT ELECTRICAL LOAD ANALYSIS TO ENSURE THAT THE GENERATOR CAPACITY IS ADEQUATE TO OPERATE THE SYSTEM.
3. ALL GROUNDS, SOLDERED TERMINALS, AND CRIMPED TERMINALS DONE IN ACCORDANCE WITH AIRCRAFT MANUFACTURER'S INSTRUCTIONS.

## Section 7: Warranty

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### Section 7: Warranty

SEI Industries Ltd. (the company) agrees to grant a warranty for a period of one year from the date of purchase of Bambi bucket systems on the following conditions:

- a) The company's sole obligation under this warranty is limited to repairing or replacing, at the company's sole discretion, any product shown to be defective.
- b) The company's products are not guaranteed for any specific length of time or measure of service, but are warranted only to be free from defects in workmanship and material for a period of one year to the original purchaser.
- c) To the extent allowable under applicable law, the company's liability for consequential and incidental damages is expressly disclaimed. **The company's liability in all events is limited to and shall not exceed, the purchase price paid.**
- d) This warranty is granted to the original purchaser of Bambi bucket systems and does not extend to a subsequent purchaser or assignee.
- e) The company must receive notification in writing of any claims of warranty from the original purchaser which must give details of the claimed defect in the product.
- f) Where the original purchaser is claiming under warranty, the product must be returned to the company for inspection with all transportation and duty charges prepaid.
- g) The warranty does not extend to any product that has been accidentally damaged, abraded, altered, punctured, abused, misused or used for a purpose which has not been approved by the company.
- h) This warranty does not apply to any accessories used with the product that are not supplied by the company and any warranty on such accessories must be requested from the manufacturer or dealer of the accessories.
- i) In the event the original purchaser does not give notice of a warranty claim, within one year of the original purchase of the product, it is understood that the purchaser has waived the claim for warranty and the purchaser and/or any subsequent purchaser must accept the condition of the product, without warranty.
- j) Any technical information supplied by the company regarding the product is not a condition of warranty but rather is information provided by the company to the best of its knowledge.
- k) There are no implied warranties nor is there any warranty that can be assumed from any representation of any person, except the company itself.

#### **Exclusions**

- l) This warranty is void if the product is not installed, used and/or maintained in accordance with the operations manual supplied by SEI.