SEI INDUSTRIES

Bambi BUCKET®
Driven by Innovation

SACKSAFOAM I OPERATIONS MANUAL

2017 VERSION F

SACKSAFOAM I MANUAL - Version F

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PLEASE READ BEFORE USING.

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Section 1: Sacksafoam Overview

Introduction

This manual provides helicopter operators with important information on the operation and maintenance of the Sacksafoam I dispensing system for use with the Bambi bucket.

Please read this manual prior to flying the bucket, particularly the sections on installation, filling and dispensing. If problems are experienced, please refer to the manual. Section 6 *Troubleshooting* may be especially helpful.

For your own protection and for longer system life, always heed the instructions and warnings. Ignoring them could result in damage to the Sacksafoam I, Bambi bucket, aircraft or personal injury.

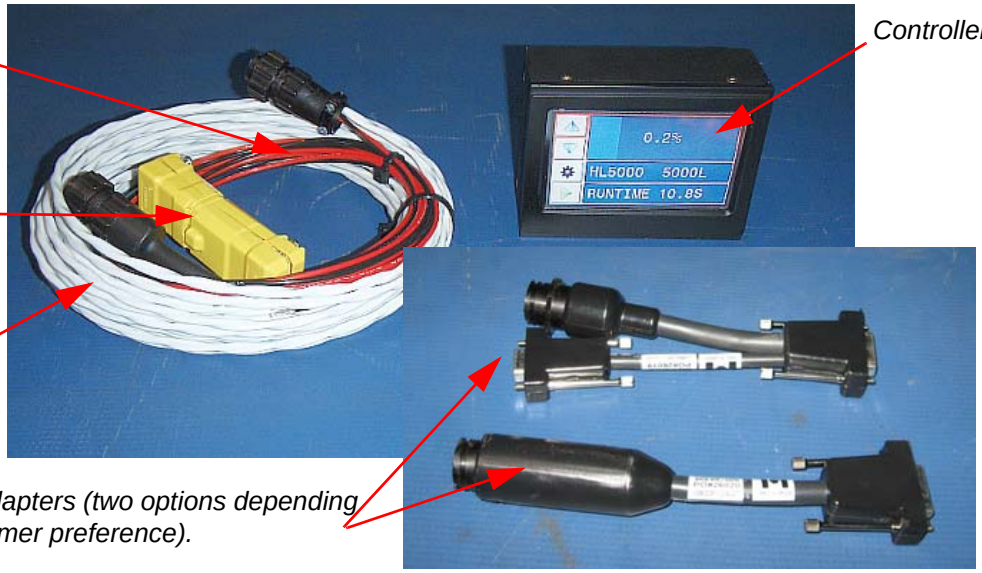
The Sacksafoam I has a number of advanced features to enhance the efficiency of helicopter fire fighting:

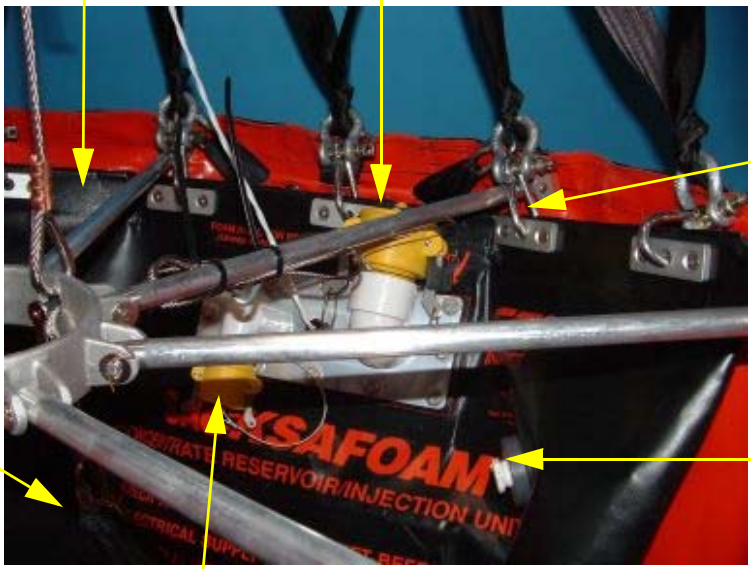
- The sack containing the foam concentrate mounts in the Bambi bucket. This eliminates spillage and possible corrosion damage associated with carrying foam concentrate inside the helicopter. An internal check valve stops water from flowing into the sack and insures that foam is dispensed only while the injection pump is operating. Because the foam in the sack displaces the water in the Bambi bucket, the total payload is always constant.
- An optional foam transfer pump for easily filling the Sacksafoam I is available from SEI Industries. This portable pump greatly facilitates the filling of the Sacksafoam I and is powered by 24 volts DC, either from the aircraft or from an auxiliary power source.
- The operation of the Sacksafoam I can be quickly mastered by users with no prior experience. Several dumps with foam will provide familiarity with the use of the system.

SEI offers complete parts supply and repair facilities for the Sacksafoam I. For maintenance and repair purposes, parts diagrams and descriptions are provided in Section 9 *Parts.* When ordering parts, please provide the model information which is silk-screened on the bladder.

Additional copies of this manual are also available from SEI Industries Ltd. or by visiting our website at www.bambibucket.com for more information on these products. An online version of this manual is also available at this website.

Main Components

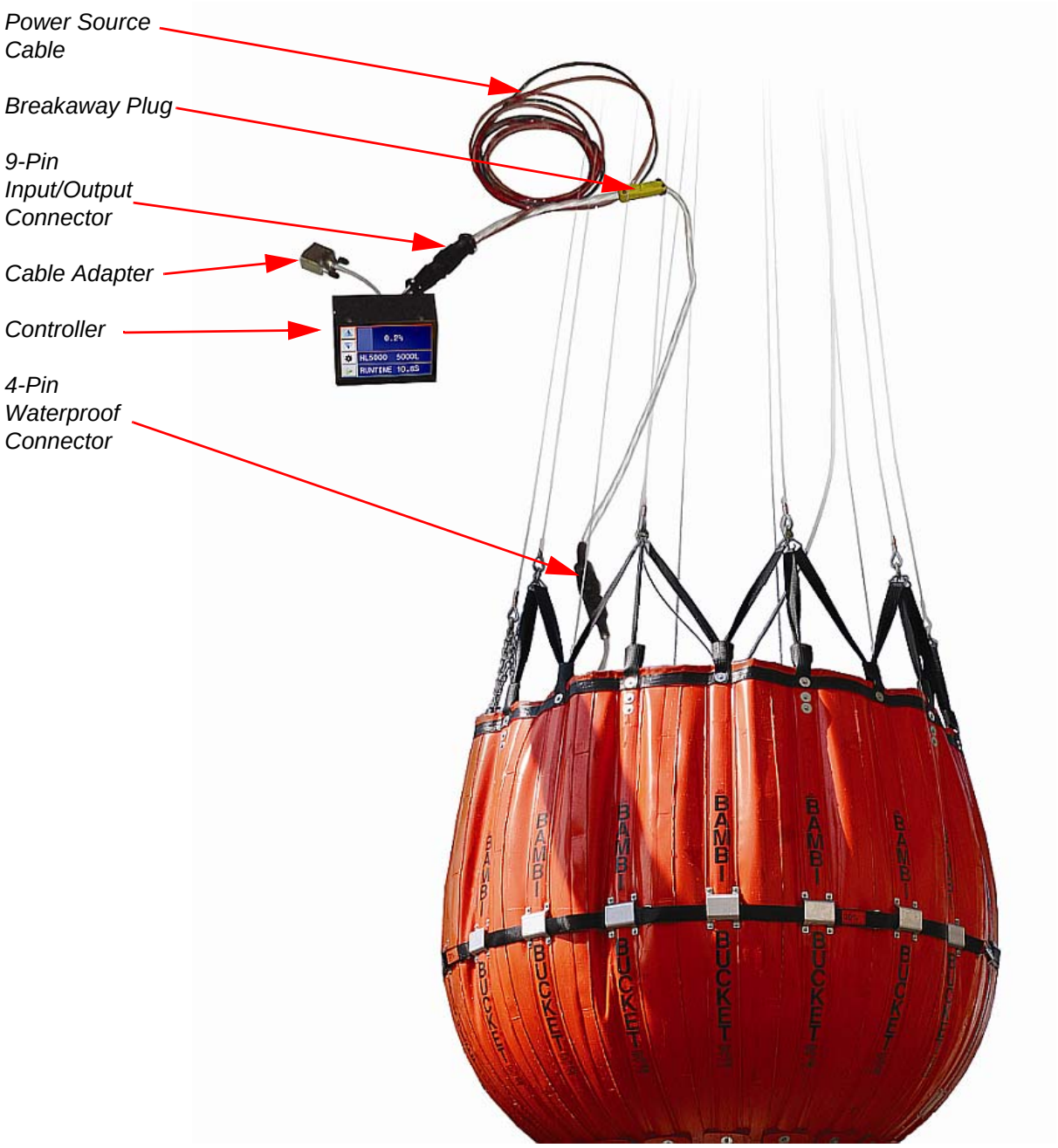




Section 2: Sacksafoam Installation

Installation Instructions

Sacksafoam System



Models 8018, 2044 and 5550

Installation Procedure

Important Note

If the Bambi bucket cinch strap hook is on the ballast side of the bucket, it must be rotated 180 degrees to the opposite side, to allow cinch adjustment once the sack is installed.

To install the sack:

1. Release the bottom end of the ballast side IDS restrainer cable by removing the clevis pin from the restrainer bracket inside the bucket.

Removing the clevis pin

2. Tie the restrainer cable out of the way where it will not interfere with bucket operation. It may be reused to restrain the IDS hub if the sack and IDS restrainer strap are later removed.

3. Attach one end of the chain to the 1/4" shackle and attach the shackle to the IDS hub. Determine the length of chain from the table. Insert the quick link into the determined chain length and insert the quick link into the D-ring at the end of the webbing strap and secure.

Chain Length Specifications

Bucket Size	**Length of Chain** (Inches, quick link to strap)	**Model**
8096	3	8018
9011	3	
1012	3	
1214	3	
1518	12	
1821	12	
2024	15	2044
2226	15	
2732	21	
320C		
3542	22	
420B		
4453		
5566	35	5550
680K	25	
578	33	
7590	32	
HL4000	41	
HL5000		

4. Connect the lower end of the restrainer strap to the restrainer bracket, reinstalling the clevis pin (removed in step 1). Use a new cotter pin to secure the clevis pin to the restrainer bracket.

Connecting the restrainer strap.

The installation should now look like this.

5. Disconnect the bottom end of the IDS restrainer cable, opposite the ballast, by removing the clevis pin from the restrainer bracket. Attach the supplied shackle and length of chain to the IDS restrainer cable and re-connect it to the bracket. If the IDS cable already has a chain fitted, extend it to its longest length.

6. Attach spring clips to the top of sack.

7. Fold up the sack and slide it in between the spokes and into the bucket. For smaller buckets, remove one spoke at the shell end. The sack should be centered on the ballast pouch. The IDS restrainer strap attached, in steps 3 and 4, should pass around the bottom of the sack.

Caution

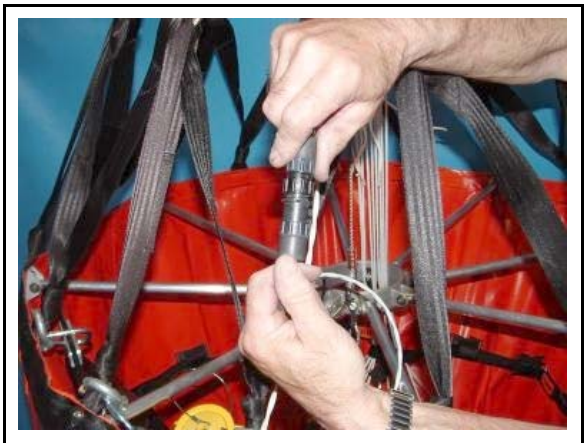
Do not remove the Bambi bucket's ballast pouch when fitting the sack. This could cause unpredictable flight characteristics.

8. Install the shackles onto the webbing suspension straps at the bucket rim to line up with the spring links on the sack. If you find that the shackle and spring links are out of alignment, you may have to insert two chain links between them. The chain links will be found in the accessories kit.

Use chain links only if required.

9. Straighten out the sack so that it sits straight inside the bucket.

10. Connect the control cable to the waterproof connector on the sack. Ensure that the white waterproofing washer is installed inside the receptacle.



11. Install the breakaway connector in the control cable, near the Bambi control head.

Breakaway plug.

12. Secure the control cable to one of the Bambi suspension cables using the tie wraps provided. The connector may be taped together to prevent premature release.

Caution

IDS restrainer cable and strap adjustments are required to keep the IDS hub as flat as possible throughout its vertical range of travel. If improperly adjusted, the IDS hub will not sit level when the bucket is empty.

This is due to the deformation of the Bambi bucket shell, caused by the weight of the Sacksafoam. Improper adjustment may result in fouling of the trip line pulley on the IDS hub (small series) and/ or severe damage to the entire IDS (all models).

Section 3: Control Box

Wiring the Control Box

The Sacksafoam Controller (SFC) is used to accurately control the Sacksafoam pump. It operates on 24 to 28 VDC power and should be connected to a circuit capable of providing at least 10 amps. The SFC interfaces with the bladder harness through the adapter cable which is provided with the controller. The adapter cable is also used to interface with a customer-installed switch.

Standard Sinking Adapter

The adapter harness included with new Sacksafoam systems is designed to allow a customer-installed switch to provide a sinking signal to the controller. One end of the switch must connect to aircraft ground while the other connects to the adapter harness. *Please refer to the sinking adapter wiring diagram on the following pages for more detail.*

Sinking Adapter Part #012913

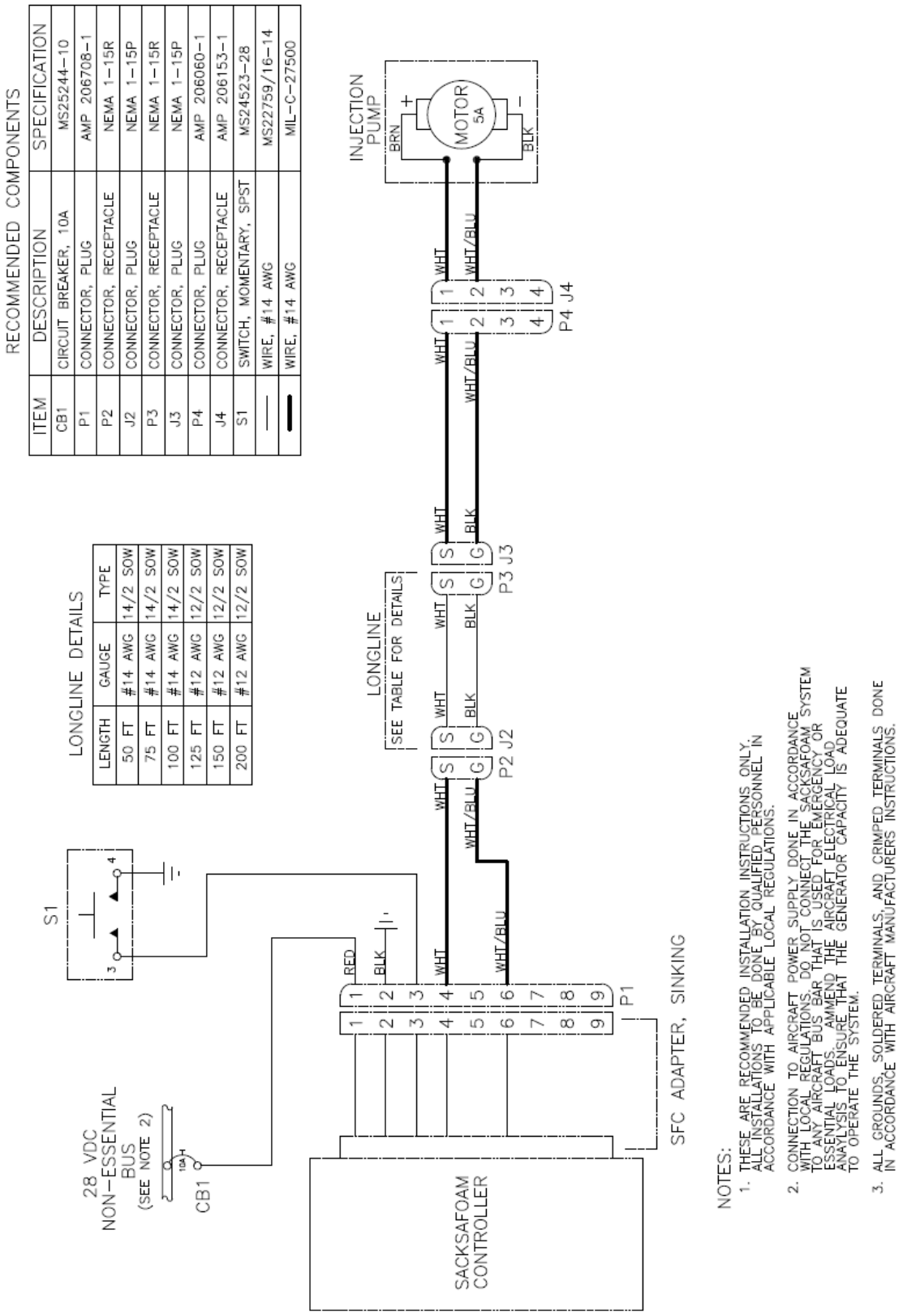
Optional Sourcing Adapter

Some customers may have harnesses which require a sourced signal from a customer-installed switch. The recommended installation for this harness uses two wires connected to the switch and the D-Sub connector on the harness. The sourcing adapter is available as a customer option. *Please refer to the sourcing adapter wiring diagram on the following pages for more detail.*

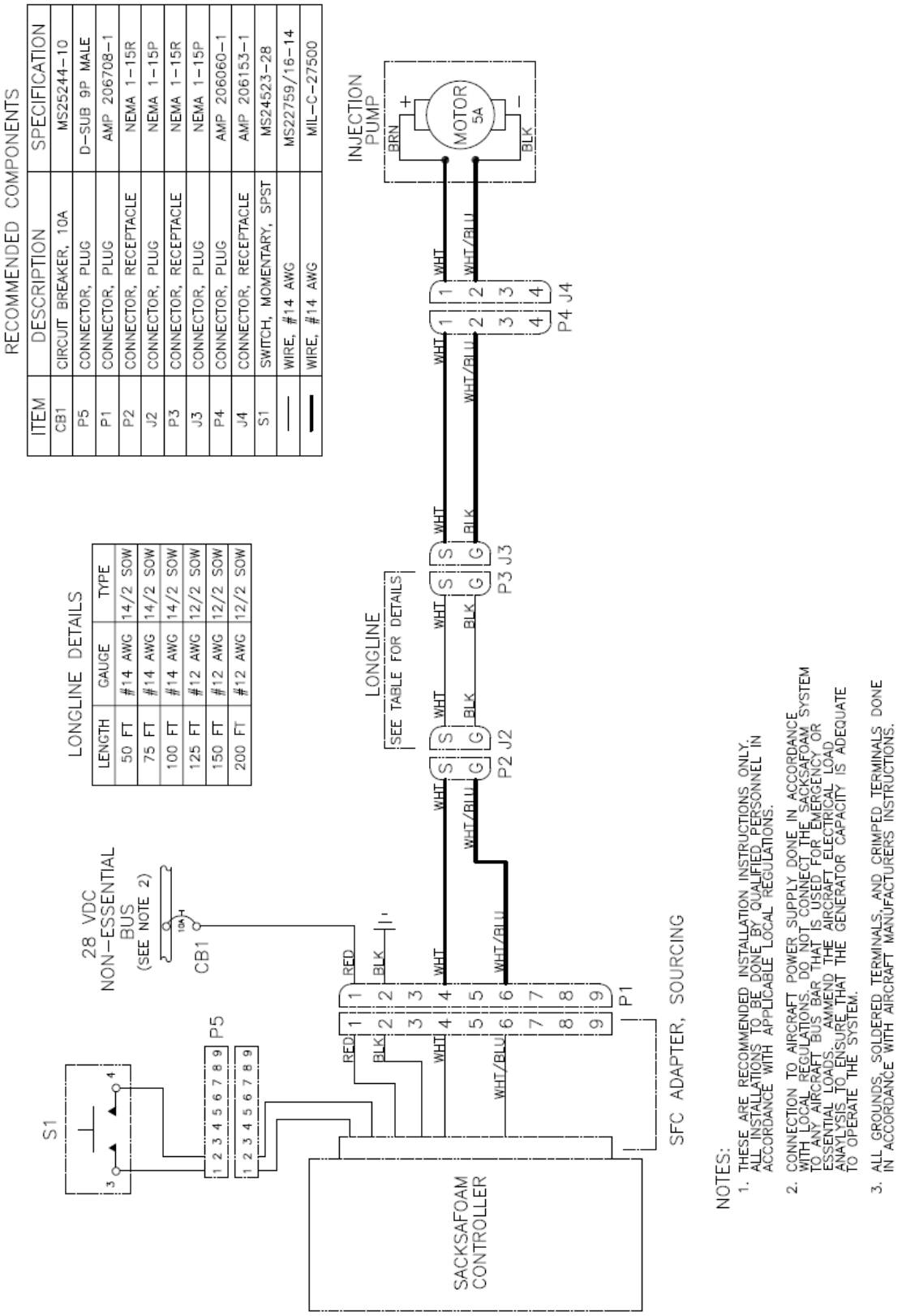
Sourcing Adapter Part #010603

The sinking adapter is standard issue but the sourcing adapter can also be ordered, depending on customer need and preference.

Sinking Adapter Wiring Diagram



Sourcing Adapter Wiring Diagram



Using Long Lines

The supplied control cable (connecting the control box and sack), fits Bambi buckets with standard length suspension lines. The cable is sized to provide 24-volts to the injection pump when 28-volts is supplied to the control box. If the Bambi bucket is suspended from the helicopter with an additional long line, the standard control cable may not be long enough.

If a longer control cable is required, the correct gauge can be determined by the following method (the objective is to provide 24-volts to the injection pump after accounting for the voltage drop along the cable).

Calculating Wire Gauge for Long Lines

The Sacksafoam pump draws the following current:

Small and medium series 4.5-amps

Control cables supplied with the Sacksafoam I unit meet Mil-C-27500 specifications. Individual hook-up wires meet Mil-W-22759/16 specifications. It is recommended that any replacement wire or cable meet these specifications. Extra cable and wire is available from SEI Industries Ltd.

Wire Specifications

With a supply voltage of 28-volts and a requirement of 24-volts at the pump, the voltage can drop four volts.

The current has to flow in both directions, so the wire length used in the calculation will be the distance from the control box to the sack, multiplied by two.

Wire Size (AWG #)	Resistance	
	Ohms/1000 ft	Ohms/1000 m
18	5.74	18.83
16	4.51	14.80
14	2.88	9.45
12	1.82	5.97
10	1.18	3.87

Use this formula, based on Ohms law (V=IR).

Voltage drop, V_D = Amps draw x resistance/1000 x wire length x 2

Example: A 100 ft. long line with a HL-7600 Bambi bucket and a 12 gauge wire, with a length of 160 ft. from the control box to the sack.

$$V_D = 9 \times \frac{1.82}{1000 \text{ ft}} \times 160 \text{ ft.} \times 2 = 5.24 \text{ volts}$$

Therefore, a 12 gauge wire would be satisfactory. It would produce a slightly low voltage at the pump (28 - 5.24 = 22.76 volts), which could be compensated for by adjusted run times shown in Section 5 *Operations: (Variation in Foam Viscosity and Using Non-Standard Voltages).* Wire specifications can be calculated in feet or meters.

Section 4: Safety

Preflight Safety Check

The Bambi bucket and Sacksafoam I system should receive a preflight inspection in the same manner as a pilot preflights the aircraft before use. To preflight the system, start at the bottom and work up.

1. Are all the attachments connecting the sack to the Bambi bucket firmly secured?

2. Is the wiring connector (close to the sack) tightly secured? Does it have the white waterproofing washer installed inside the receptacle?

3. Is the power cable leading to the sack secured to one of the Bambi bucket suspension lines?

4. Is there a breakaway plug installed in the power cable near the cargo hook? Is it taped together to prevent premature release?

5. Is the control box operating properly? (Cap the outlet port on the sack to avoid dispensing foam when testing the control box.)

6. Are the wires in the helicopter secured to avoid tripping and tangling?

7. Prior to takeoff, ensure that the cam lock cap on the foam outlet port is removed.

Refer to the Bambi bucket manual for the preflight check on the Bambi bucket itself.

Section 5: Operations

Operating All Models

Filling the Sack

1. If any adjustment of the Bambi bucket cinch strap is required, it should be made prior to the filling of the sack, if possible. Adjusting the cinch strap is difficult when the sack is full of foam.

Important Note

The volume of the sack should be reduced 20% for every 10% reduction in Bambi bucket volume.

2. Remove the cam lock plug from the fill port.

3. Pour or pump in foam concentrate.

Caution

Overfilling the sack with the Bambi bucket cinched down may cause the dump valve to jam.

4. All air trapped in the sack must be removed, otherwise the Bambi bucket may not sink when dipped in the water. If the sack is lying on the ground, excess air can be removed by opening the vents on each side and pressing down in the centre of the sack. Close the vents tightly after exhausting all of the air.

5. Replace the cam lock filler plug.

6. Remove the cam lock cap from the foam outlet port. An internal check valve ensures foam is dispensed only while the injection pump is operating.

Removing the Sack from the Bucket

1. Reverse installation sequence.
2. If there is any appreciable amount of foam left in the sack, it should be pumped out until the pump runs dry. At this point the sack can be easily removed from the bucket. The remaining foam (approximately four litres with the 8018 sack) can be removed through the drain port.
3. The sack should be flushed with fresh water and pumped out. This will also clean the pump. Drain any residual water through the drain port.
4. Clean off the outside of the sack to remove any foam residue.

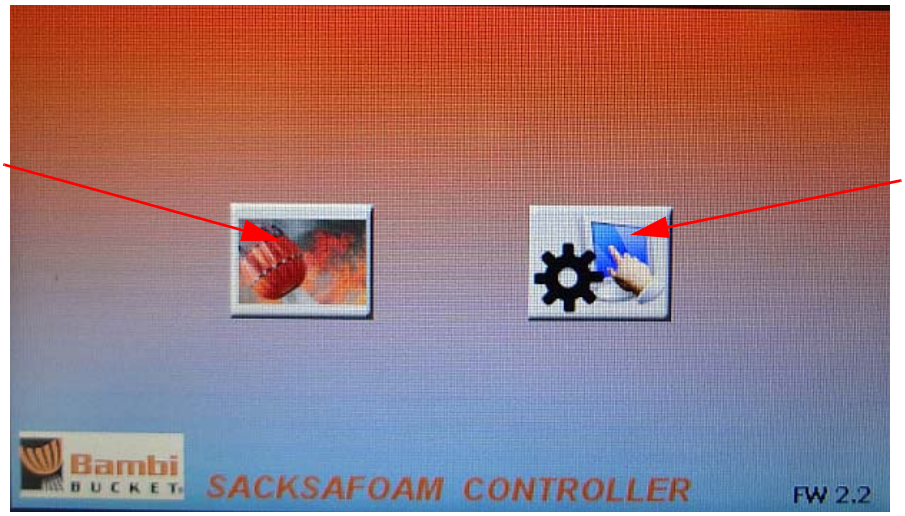
Important Note

Proper cleaning of the sack prior to storage will increase the life span of the unit.

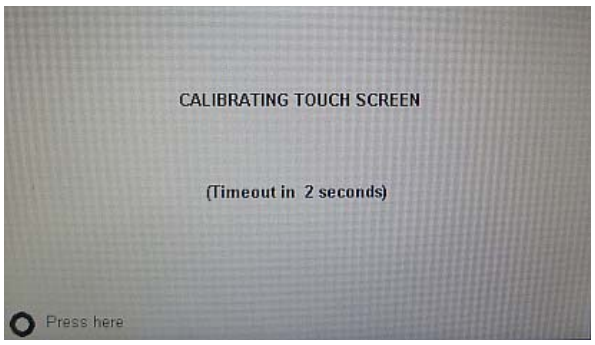
Using the Controller

Start-Up, Calibration and Main Screen

The Sacksafoam controller (SFC) is based on touchscreen technology. All functions are accessible via the tapping of virtual symbols or via the tapping of designated touch areas on the SFC's display screen. The injection of foam concentrate can be initiated by means of the touch screen as well as the use of an external operator switch. After power-up, the SFC displays its start-up screen. If necessary, you can calibrate the touchscreen to your preferences by tapping the symbol on the right or you can proceed directly to the SFC main screen by tapping the symbol on the left.



Start-up Screen



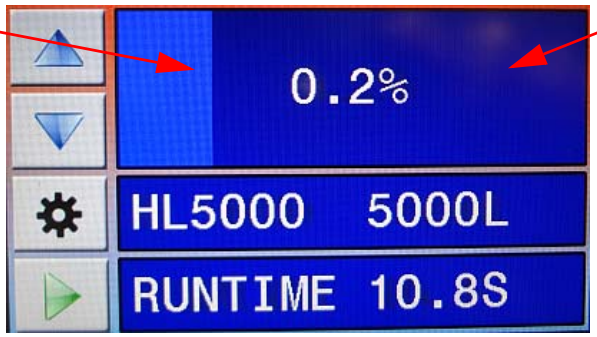
Calibration Screen

Main Screen

Changing Foam Concentrations

Setting display windows are touch-sensitive. In the following example, tapping in the window area to the RIGHT of an imaginary window "center line" INCREASES the setting for the foam concentration while the area to the LEFT of the imaginary window "center line" DECREASES the foam concentration setting.

Tapping on the LEFT side DECREASES the setting for the foam.



Tapping on the RIGHT side INCREASES the setting for the foam.

Main Screen

Left side symbols perform the same operation. Choosing your method is a personal preference.

Tapping on the UP symbol INCREASES the setting while tapping on the DOWN symbol DECREAESES the setting.

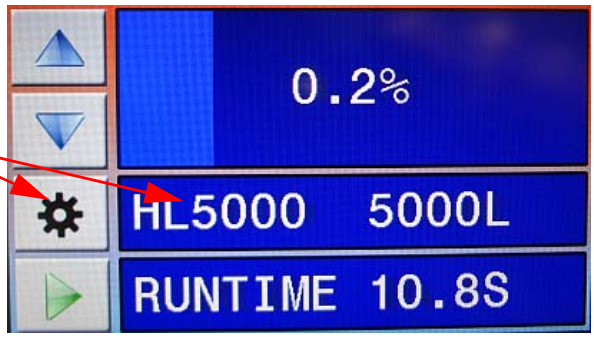
Main Screen

Preparing the SFC for Operation

For a standard Sacksafoam system, preparing the controller is as easy as choosing your bucket model. The SFC retrieves all of the relevant bucket parameters from its internal database. Tap the set-up symbol or tap within the bucket model window until the model you're using is displayed.

Tap the set-up symbol to select your model or tap within the model window.

This brings up the set-up screen (see below).



Main Screen

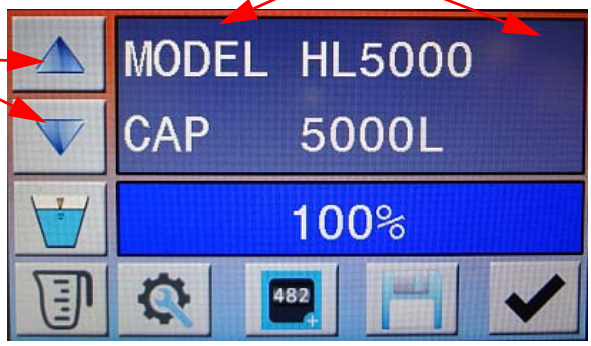
This brings up the set-up screen (photo showing liters).

To select your model size using the touch screen, tap left to decrease size and right to increase size.

Select your model size by using the arrows.

The top arrow increases size while the bottom arrow decreases size.

On the next page, we'll show how to change the unit of measurement.

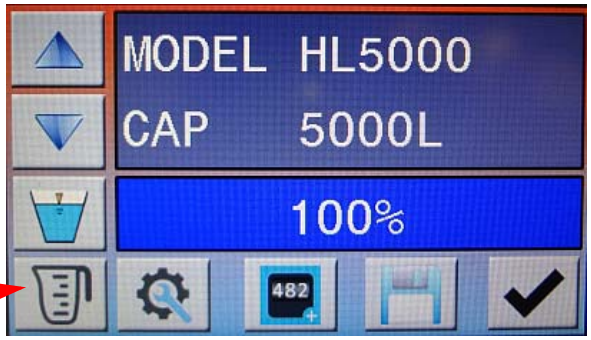


Set-Up Screen

Changing the Unit of Measurement

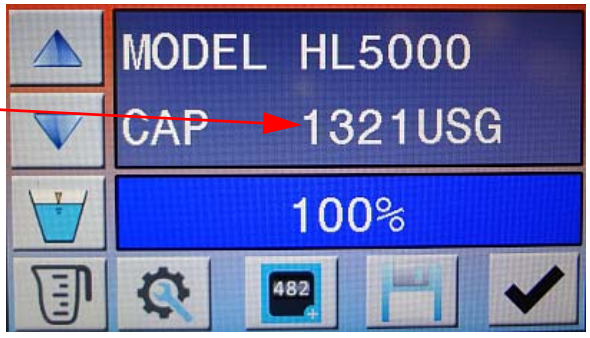
From the set-up screen, tap on the symbol displaying the measurement cup symbol or tap within the units of measurement (UOM) window. Each tap will cycle through the available units of measurement from liters to US gallons to Imperial gallons.

Tap the measuring cup to select either liters, US Gals or Imp. Gals.



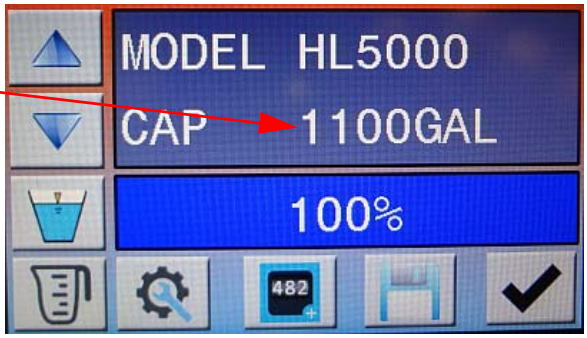
Set-Up Screen

In this photo, note the change from liters to US gallons.



Set-Up Screen

In this photo, note the change from US gallons to Imperial gallons.



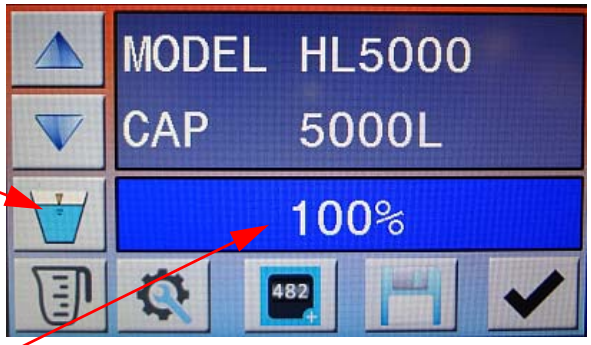
Set-Up Screen

Setting Foam Percentage

If the Bambi Bucket cinch strap is being used, you can adjust the amount of foam to maintain the desired foam percentage by selecting the foam set-up symbol or by tapping the percentage window, left or right.

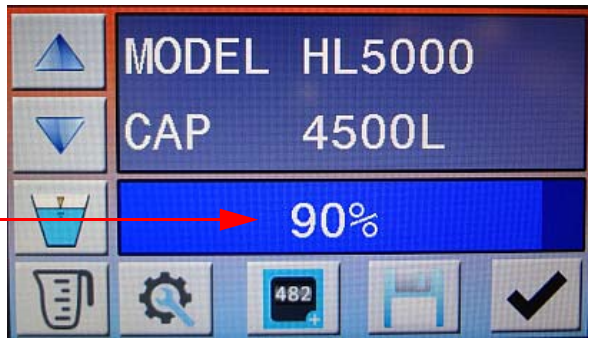
Tap the foam symbol to cycle through percentage options.

Or tap the percentage window, left or right.



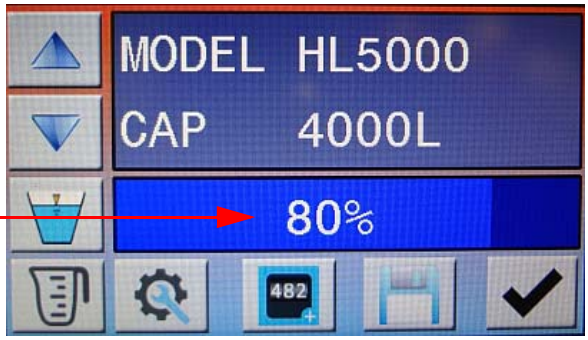
Set-Up Screen

Notice the adjustment in percentage.



Set-Up Screen

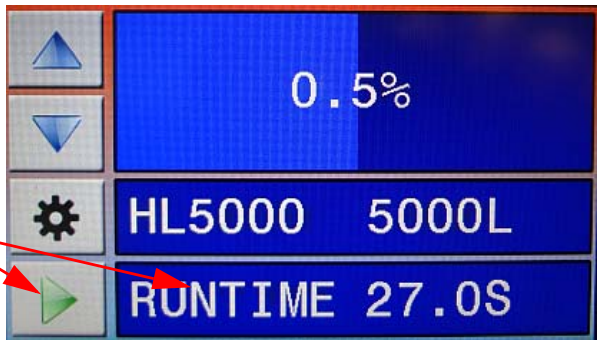
Notice the adjustment in percentage.



Set-Up Screen

Initiating Foam Injection

To initiate foam injection, set the intended foam concentration using the main screen. Tap the green arrow symbol or tap within the runtime window or activate your external operator switch. The SFC will display the injection progress.

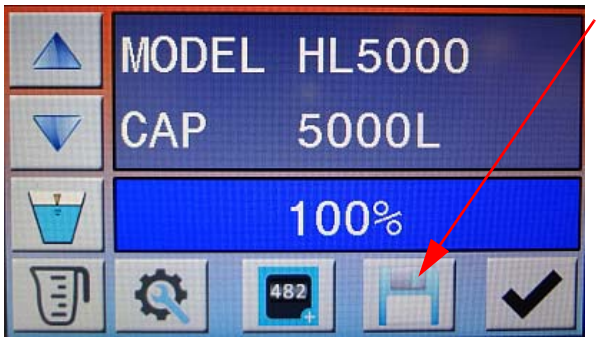


Initiate foam injection by tapping green arrow or tap within the runtime window or use your external switch.

Main Screen

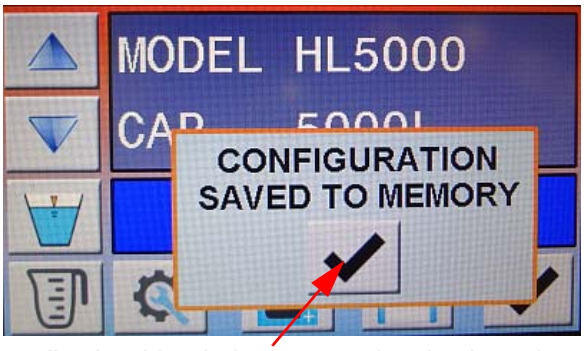
Saving Settings Permanently

Settings can be permanently saved to non-volatile memory. Upon a restart of the SFC, the saved settings are automatically loaded. From the set-up screen, tap the disk symbol to save your settings. A confirmation window will open to inform you of the successful save operation. To dismiss this window, tap on the symbol displaying the check mark symbol.



Set-Up Screen

Tap the disk symbol.



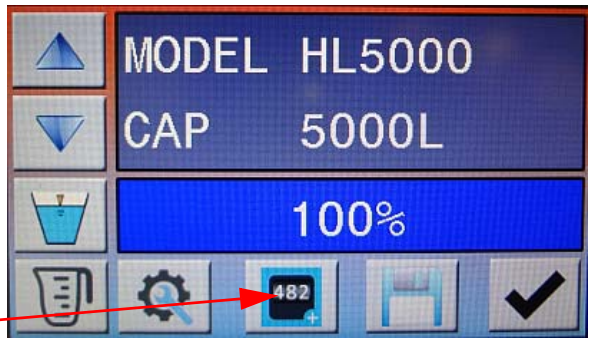
To dismiss this window, tap on the check mark symbol.

Counting Drops

The Sacksafoam controller can be used to count the number of drops with or without foam.

First, tap the gear symbol to access the set-up screen.

Then tap the number symbol to access the count screen.



Main Screen

Once you are at 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 count will not increase in the ALL count area. To increase the ALL count, manually press the plus + sign.

Touch to clear individual numbers.

Touch to return to main screen.

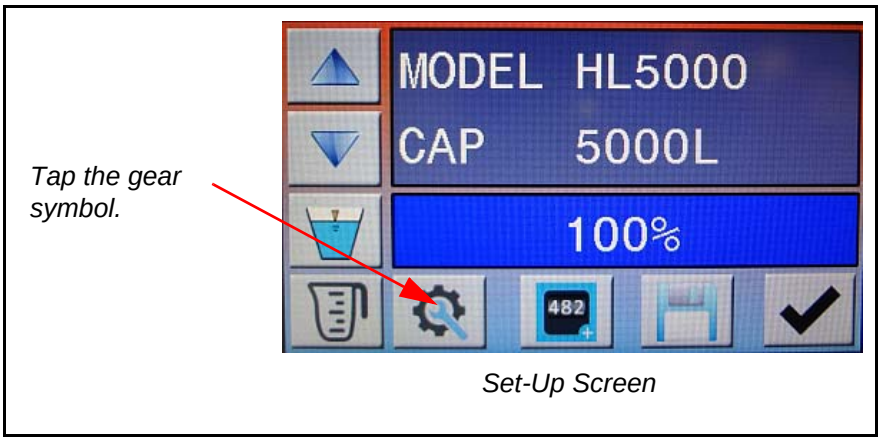
Inject foam using the green arrow.

If no foam used, you can increase count by pressing + sign in ALL.

Count Screen

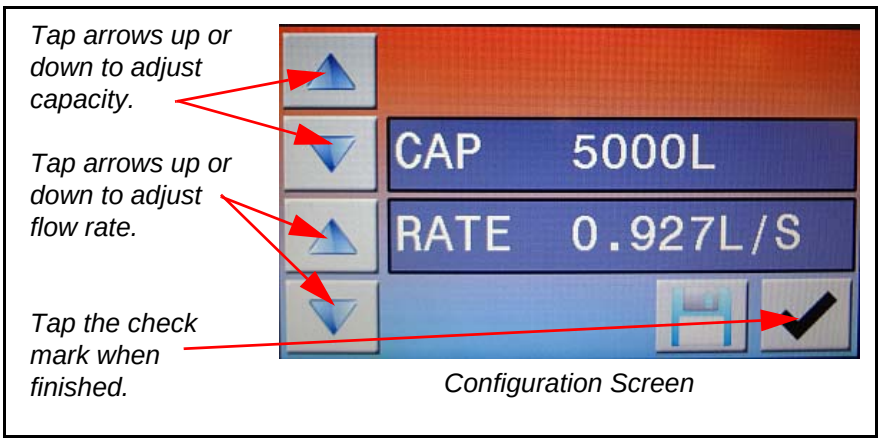
Custom Set-Up

Normally, you would not require this option unless you are using a non-standard bucket or you employ load shedding or cinching. If so, the bucket capacity and, if necessary, the flow rate of the injection system can be configured to suit your particular operational requirements. To begin, from the set-up screen, tap the gear symbol.



Set-Up Screen

Tap the arrows on the configuration screen to adjust capacity or flow rate as desired. When finished, tap the check mark.



Configuration Screen

Section 6: Troubleshooting

Troubleshooting Chart

Problem	Possible Cause	Solution
Pump fails to operate	Blown breaker	Check helicopter breaker and breaker on back of control box.
	Bad connection	Using a multimeter, check that current is reaching control box and sack. Check contacts and waterproof connector.
Incorrect foam concentration	Pump hooked up backwards	Check pump output by pumping into a bucket. Reverse connections to pump and try again. Select connection that gives highest output.
Bambi bucket dump valve not working	Sack fouling valve	Reduce amount of foam in sack until it clears valve.
	IDS hub tipping and fouling trip line	Adjust IDS restrainers so that hub sits level.

Section 7: Maintenance

Maintenance Procedures

The Sacksafoam I unit requires no maintenance other than cleaning. Daily, after use, and prior to storage, the sack should be flushed out with clean water. Clean off the outside of the sack to remove any residual foam.

Important Note

Proper cleaning of the sack prior to storage will increase the life span of the unit.

Flushing Procedure

1. Insert a water hose into the fill port and run the dispenser pump until the water runs clean.
2. Wash out the side of the bladder until clean.
3. Remove the drip tube to drain any residual foam.

Caution

Residual foam will form a waxy substance that can prevent proper operation of the Sacksafoam.

Pump Maintenance

Check wires and connectors periodically to be sure corrosion is not adding additional resistance to the motor circuit and causing a low voltage condition at the motor. Low voltage can inhibit the motor from starting and can cause a fuse to blow. Full voltage should be available to prevent motor damage. At the end of each fire season, the pump should be flushed with clean water as foam will dry out over time causing the impeller to stick. Some water can remain in the pump while in storage. Also, if the pump is idle for long periods of time, the impeller may stick to the pump body, preventing motor rotation and causing blown fuses. To correct, remove the end cover and the impeller, clean the body and impeller, then lubricate with water or a small amount of grease before re-assembly.

If the pump is stored in freezing temperatures, drain it by loosening the end cover screws, allowing any foam or water to drain completely. A service kit or spare impellers should be carried onboard to be assured of pumping capability. Spares kits are supplied with each pump and additional kits can be ordered from SEI (see parts list).

Section 8: Specifications

Sacksafoam Specifications

Sacksafoam Models

(To fit inside the corresponding model of Bambi buckets)

Sacksafoam Model	Bambi Bucket Model	Sacksafoam Volume	Current draw @ 28VDC	Empty Weights	
				LBS	KG
8018	8096 – 1821	10 Imp. Gals 12 U.S. Gals 45 Litres	5 AMPS	14.2	6.4
2044	2024 – 4453	25 Imp. Gals 30 U.S. Gals 114 Litres	5 AMPS	17.4	7.9
5550	5566 – HL5000	60 Imp. Gals 72 U.S. Gals 272 Litres	5 AMPS	22.0	9.9

Control Box Specifications

(Subject to change without notice)

Hardware and controller weight approximately 10 lbs. (4.5 kg)

Standard Controller

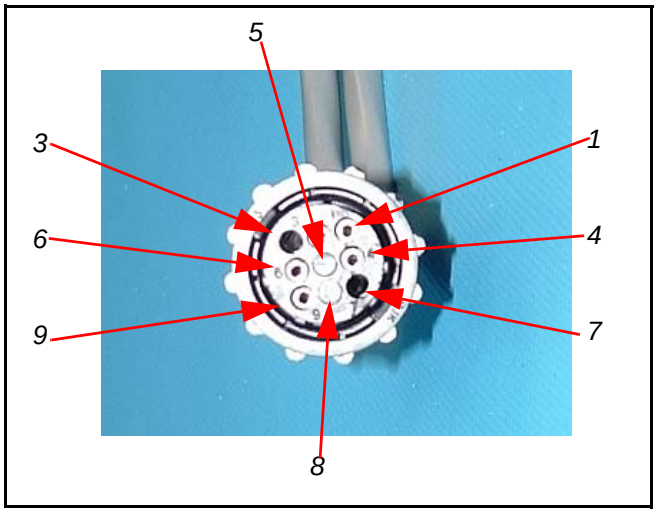
Width 4.58 inches (116 mm)
Height 3.43 inches (87 mm)
Length 2.00 inches (53 mm)

In-Dash Controller

Faceplate (Between Dzus Rails)
Width 5.33 inches (116 mm)
Height 3.43 inches (87mm)

Box
Width 4.58 inches (116 mm)
Height 3.43 inches (87 mm)
Depth 2.00 inches (53 mm)

Control Box 9 Pin Connector Configuration

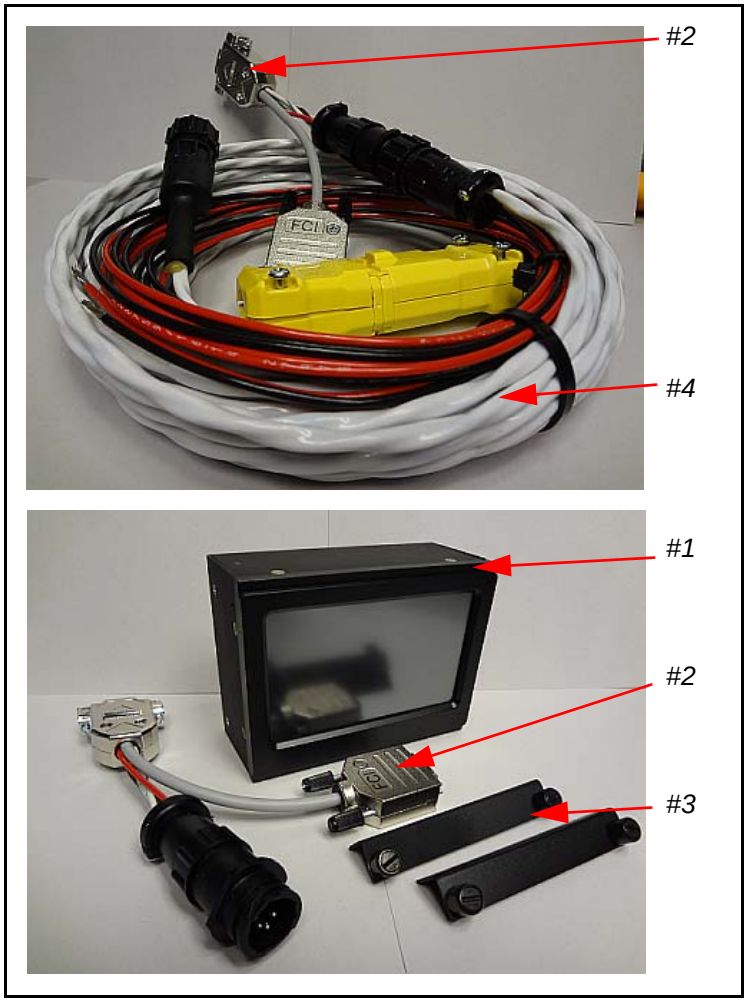


Pin	Description	Wire Color
1	+ 24 VDC supply	red
2	- 24 VDC supply	black
3		
4	+24 VDC to foam dispense pump	white
5	plugged	
6	- 24 VDC to foam dispense pump	white with blue tracer
7		
8	plugged	
9	+ 24 VDC from Bambi dump button	green

Section 9: Sacksafoam Parts Lists

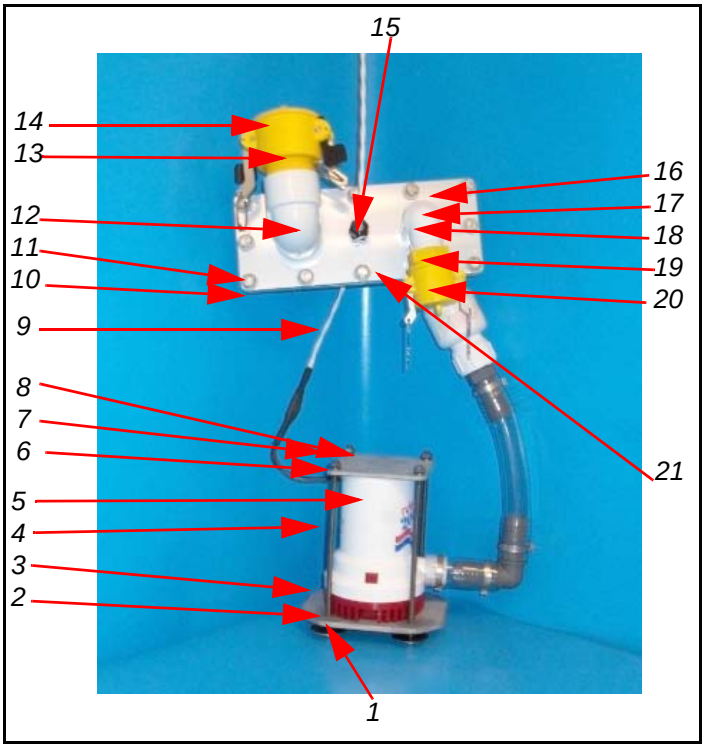
Models 8018, 2044 and 5550

Controller Kit and Cable Adapter Assembly



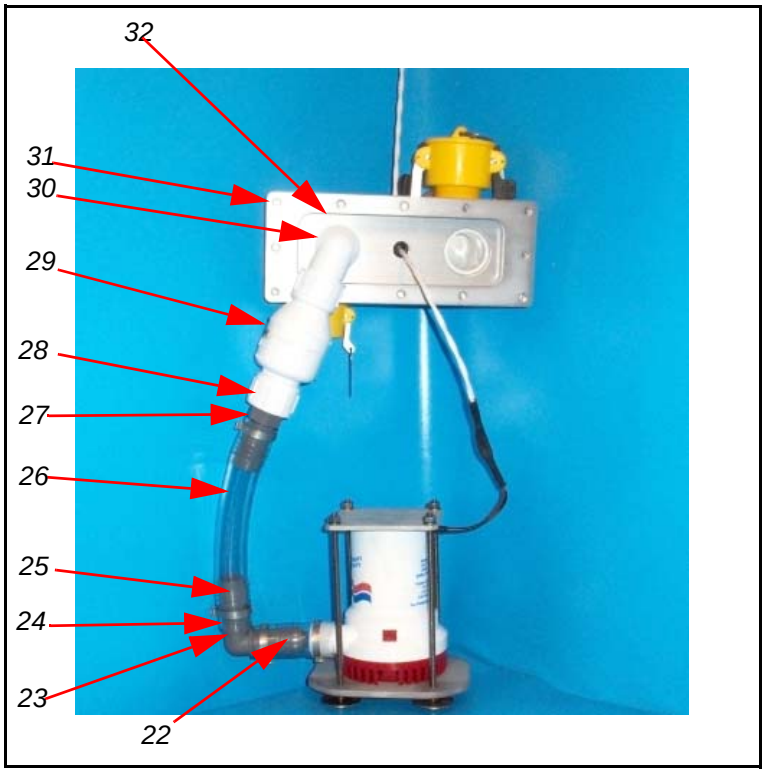
ITEM #	PART #	DESCRIPTION	QTY.
1	010550	KIT, CONTROLLER,SFC, (INCLUDES #1 & 2)	1
2	010603	CABLE, ADAPTER, SFC, ASSEMBLY	1
3	010602	KIT, SFC, DZUS MOUNT, Optional	1
4	004317	HARNESS, WIRE,, POWER/CONTROL	1

Internal Pump Assembly



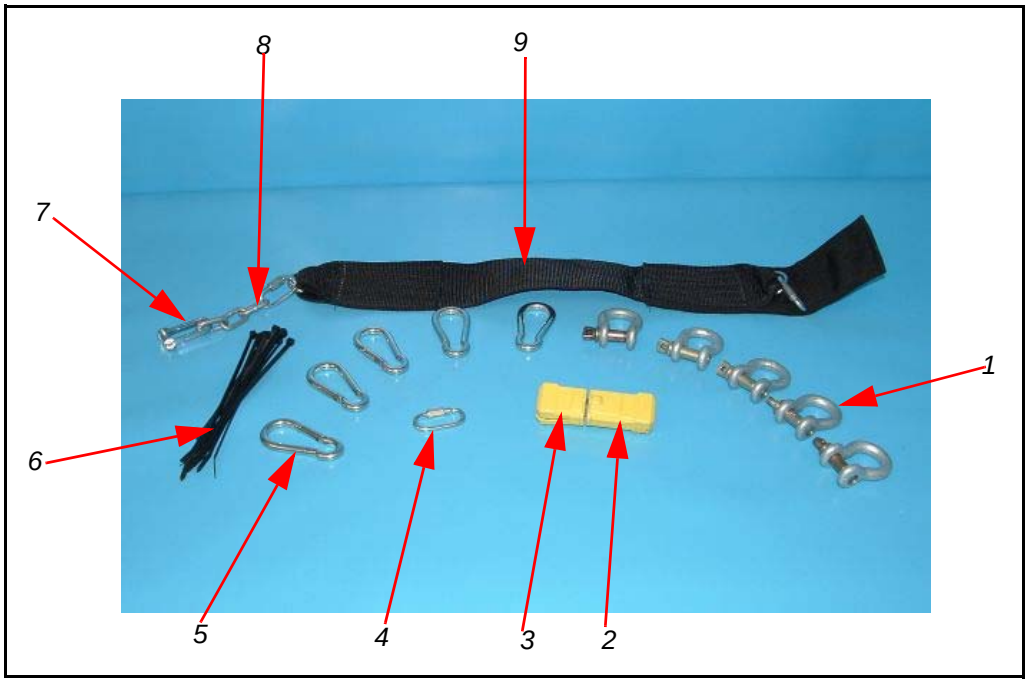
ITEM #	PART #	DESCRIPTION	QTY.
1	001662	NUT, HEX, NYLOCK, 1/4-20, SS	4
2	001857	WASHER, FLAT, 1/4 X 1-1/2, FND, SS	4
3	004292	PLATE, BOTTOM, PUMP, SF	1
4	004293	ROD, MOUNTING, 1/4-20 X 7-1/4” LONG	4
5	004250	PUMP, 33GPM, 24VDC	1
6	001662	NUT, HEX, NYLOCK, 1/4-20, SS	4
7	001655	NUT, HEX, 1/4-20, SS	8
8	004291	PLATE, TOP, PUMP, SF	1
9	004318	HARNES, WIRE, BLADDER SF	1
10	001707	WASHER, 5/16 X 3/4" X 1/16” NYLON	12
11	000389	BOLT, HEX, 5/16-18 X ¾” SS	12
12	002686	ELBOW, STREET, 1.5”MNPT, PVC	1
13	002657	CAMLOCK, B, 1-1/2”, NYLON	1
14	002653	CAMLOCK, DUSTPLUG, 1-1/2” NYLON	1
15	001173	STRAIN RELIEF, 3/8” MNPT, PVC	1
16	004289	FLANGE, OUTER, SF	1
17	001890	O-RING, BUNA N, #124	1
18	002685	ELBOE, STREET, 1”, NPT	1
19	002666	CAMLOCK, D, 1”, NYLON	1
20	002655	CAMLOCK DUSTCAP, 1” NYLON	1
21	004288	FLANGE, INNER, SF	1

Internal Pump Assembly (Back Side)



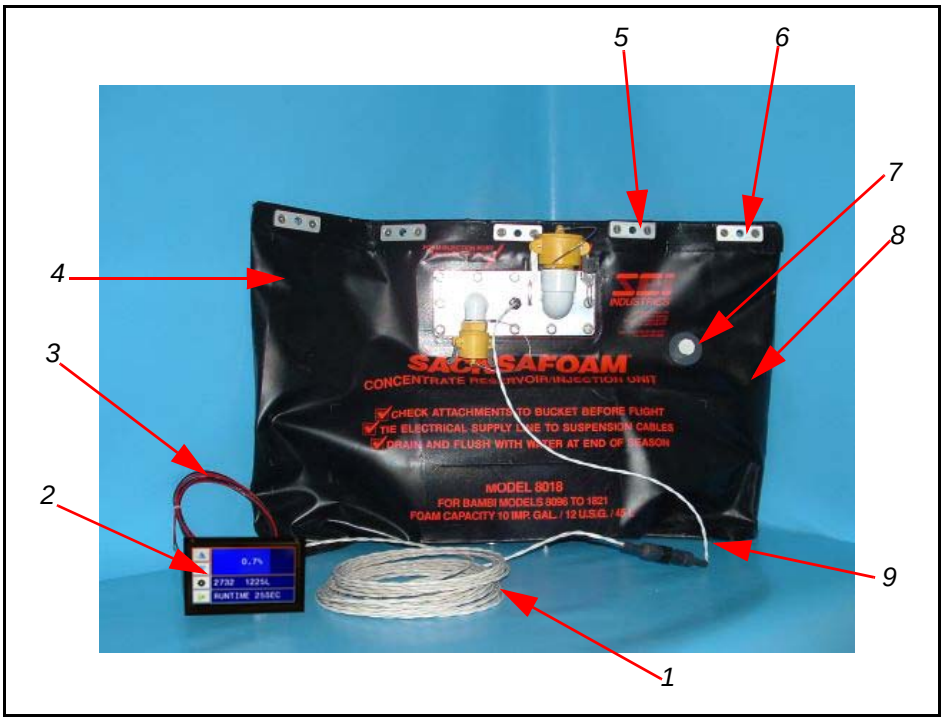
ITEM #	PART #	DESCRIPTION	QTY.
22	002892	TUBE, PVC, 1”	1
23	003049	CLAMP, OETIKER, 1-7/16”, SS	4
24	002684	ELBOW, HOSEBARB, 1” PVC	1
25	002892	TUBE, PVC, 1”	1
26	002683	ADAPTER, 1” HOSEBARB X 1”MNPT, PVC	1
27	005058	ORIFICE, METERING, 3/16”	1
28	005464	ORIFICE, METERING, 5/16”	1
29	002916	VALVE, CHECK, SPRING, 1” FNPT, PVC	1
30	002685	ELBOW, STREET, 1” NPT, PVC	1
31	004288	FLANGE, INNER, SF	1
32	002667	NIPPLE, 1” MNPT X CLOSE, PVC	1

External Parts



ITEM #	PART #	DESCRIPTION	QTY.
1	001794	SHACKLE, ANCHOR,SCREW, 3/8, GLV	1
2	000946	PLUG, 2 PIN, 125V, 15A	1
3	000947	RECEPTACLE, 2 PIN, SOCKET, 125V,15A	1
4	003001	QUICKLINK, ¼", ZC-PLT	1
5	003006	HOOK, SPRING, 5/16", PLT	1
6	002946	TIEWRAP, 3/16" X 7.5"	1
7	001800	SHACKLE, LONG-D, 6MM PIN, SS	1
8	003844	CHAIN, 3/16", GR30, GLV	1 FT.
9	004320	STRAP, RESTRAINER, ASSEMBLY	1

Complete Unit



ITEM #	PART #	DESCRIPTION	QTY.
1	004317	HARNESS, WIRE, POWER/CONTROL	1
2	010550	KIT, CONTROLLER, SFC	1
3	004355	BLADDER, 12USG, ASSEMBLY COMPLETE	1
3	004258	BLADDER, 25USG, ASSEMBLY COMPLETE	1
3	004360	BLADDER, 60USG, ASSEMBLY COMPLETE	1
4	004353	BLADDER, 12USG	1
4	002399	BLADDER, 30USG	1
4	004359	BLADDER, 72USG	1
5	004361	PLATE, REINFORCING, SET	1
6	000458	SCREW, 1/4-20 X 1/2", FHPH, SS	Ea
7	002712	PLUG, 1/2", MNPT, PVC	1
8	002695	FLANGE, BULKHEAD, 1/2" FNPT, PVC	1
9	004318	HARNESS WIRE, BLADDER SF	1

Section 10: Warranty

a) Warranty is limited to repairing or replacing, at the company's sole discretion, any product approved 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, incidental and environmental 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 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 such as pumps, filters, hoses, etc., 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 as it may be, 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

This warranty is void if the product is not assembled, used and/or maintained in accordance with the operator's manual supplied by SEI.