

PRIMA UV SMARTCAFS 50/100/200 VEHICLE MOUNTED FIRE PUMP WITH COMPRESSED AIR FOAM SYSTEM

INSTALLATION & OPERATION MANUAL



GP/373 Issue 1

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2. INTRODUCTION



2.1. INTRODUCTION

This publication provides information relating to the installation, commissioning and operation of the Prima UV Smart-CAFS pumps. This refers to any Godiva Prima pump, single or multi-pressure, when partnered with a Compressed Air Foam System (CAFS). The system can comprise of these main components -

Godiva Prima P1 & P2	Compressor	FoamLogix (foam pump)	UV SmartCAFS
2010	50, 100	2.1A, 3.3	Yes
3010	50, 100	2.1A, 3.3	Yes
4010	100, 200	3.3, 5.0	Yes

ASSOCIATED PUBLICATIONS

Spare Parts Manual TBA

FoamLogix Model 2.1A Description, Installation and Operation Manual (part number 029-0020-74-0)

FoamLogix Model 3.3, 5.0, 6.5 Description, Installation and Operation Manual (part number 029-0021-68-0)

MST Manual Tank Selector Manual (part number 029-0020-48-0)

MDTII Manual Tank Selector Manual (part number 029-0020-40-0)1

3. SAFETY

Please read this manual before operating the machinery.

3.1. SAFETY NOTICES



= Non-compliance could affect safety

IMPORTANT = In case of damage to pump

ATTENTION = In case of personal hazards

3.2. INSTALLATION AND COMMISSIONING

Once packaging has been removed, installer should ensure rotating parts are not accessible.

3.3. IN OPERATION

- Rotating parts must be guarded against accidental contact.
- Do not insert items into the suction tube when pump is running.
- Discharge hoses must not be disconnected when the unit is running.
- No components must be unfastened when the unit is running.
- When installing or removing the pump, suitable lifting equipment must be used.
- Suitable ear protection must be worn when pump is running – if necessary.
- When filling the gearbox - avoid spilling oil onto the floor to prevent the danger of slipping.
- Maximum allowable inlet pressure is 12 bar
- Do not run the pump without water for more than one minute as dry running will damage the seal

3.4. TRAINING

Godiva pumps must only be operated by trained personnel.

3.5. MAINTENANCE

The user must maintain the equipment in an operational condition, as per regulation 5 in the *Provision and Use of Work Equipment Regulations 1998* or appropriate local requirements.

3.6. ENVIRONMENTAL PROTECTION

Used oil from the pump must be disposed of in accordance with your local regulations *End of Life disposal recommendation*.

When the product has reached the end of its working life, please dispose of it in an environmentally friendly manner.

Most parts can be recycled through a local recycling facility, please consider this option when disposing of the product.

3.7. CLUTCH ENGAGEMENT

When the clutch is first engaged it is possible to observe some sparking occurring around the clutch assembly. This small amount of sparking is quite normal and nothing to be concerned about. The lower the engagement speed the less sparking will occur.

3.8. RISK ASSESSMENT

It is the duty of the pump installer to make a method statement and risk assessment of their operations when installing the pump, please contact Godiva Ltd. if assistance is required.

3.9. TRANSPORTATION AND STORAGE

The pump is supplied mounted on a wooden pallet and covered with a wooden box. This protection is suitable for standard methods of freight handling using forklift trucks. No more than one pump should be stacked on top of another. The box is not suitable for storage outside, or when open to the elements. The pump is sprayed internally with a moisture inhibitor when leaving the factory, this treatment may be required if the pump is in long term storage (6 months or more) before use. On receipt of the pump a full inspection must be carried out, if any damage has occurred please contact Godiva Ltd.

3. SAFETY

3.10. POST-PRODUCTION CLEANING FLUID

Immediately after production a special cleaning solution is used to clear the pump of any oil or grease that may be remaining inside the pump. Occasionally this cleaning solution leaves a deposit. This deposit has no effect on the performance and will be flushed away when the pump is first used.



3.11. WARRANTY

For all issues relating to warranty claims please contact Godiva Ltd. Please be prepared to quote the six figure pump serial number located on the pump volute

3.12. PUMP SPECIFICATION NUMBERING

P	C	1	A	2010
= pump series	= compressed air foam	1 = Single pressure	A = Aluminium	20 = nominal flow in litres per minute
		2 = Multi-pressure	B = Bronze	10 = pressure in bars

Serial numbering - 616123 = typical serial number, located on the side of the volute body and on a plate on the Instrument panel.

4. IMPORTANT NOTES

IMPORTANT

Please read this manual before operating the pump

Critical: The pump bearing housing, Gearbox and Compressor are not filled with oil ex works. Refer to section on oil filling points before operation. Correct lubrication and maintenance is essential if satisfactory performance is to be maintained

4.1. SPARES

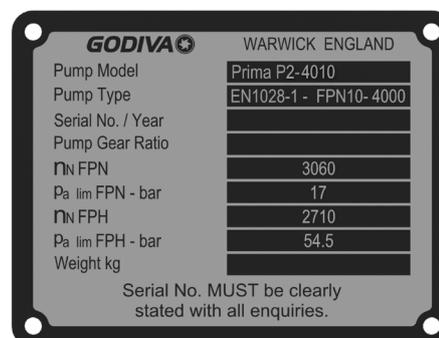
Use only approved replacement parts as recommended by Godiva Ltd. Use of non-approved parts or unauthorised modification of the Godiva Fire Pump may result in death or injury and invalidate any product warranty.

Spare parts for the Prima SmartCAFS are supplied in kit form for the various parts of the pump. Please refer to the Spare Parts List.

4.2. ORDERING

When ordering replacement parts please state:

- Model – e.g PC1A2010, where -
 - P = Godiva Prima Series
 - 1 = Single pressure, 2 = Twin pressure
 - A = Aluminium, B = Bronze
 - 2010 = Main pump output - 2010 = 2000 l/min, 3010 = 3000 l/min, 4010 = 4000 l/min,
- Serial number - stamped on the side of the volute or on a plate on the instrument panel.
- Year of manufacture
- All the above details are also provided on a plate which will be attached to the pump panel or the side of the pump bay by the vehicle builder.



4.3. PUMP

Godiva products may only be repaired or serviced by persons trained in said procedures by either Godiva Ltd., or their approved agents.

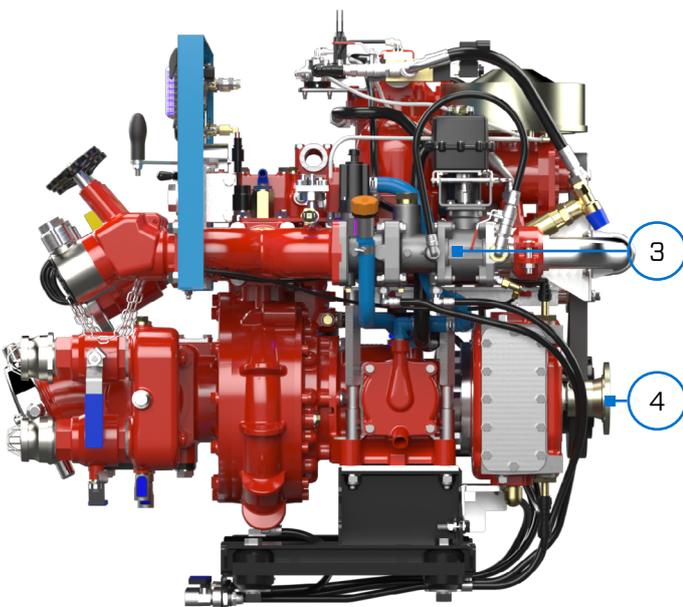
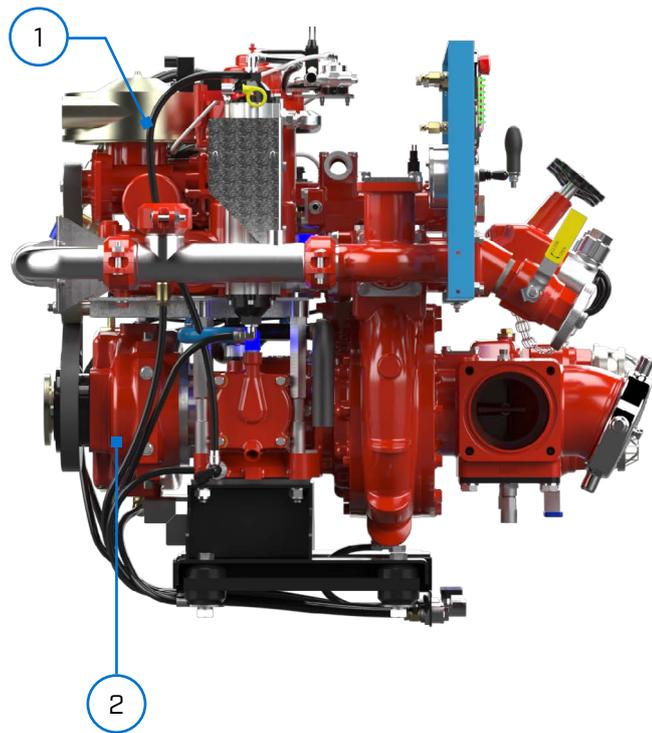
4.4. ELECTRICAL GROUNDING REQUIREMENTS

Ground Point Installation:

- It is recommended that the ground point shall be taken directly from the battery ground to an earth stud on or near the pump. (OEM supplied)
- This stud shall then be used as the main ground point for the Prima Pump Electrical Components.
- The recommended gauge for the ground cable from the battery ground to the earth stud, is 4 AWG / 25 mm².

5. KEY COMPONENTS

5.1. MAJOR COMPONENTS AND CONTROLS - PRIMA UV SMARTCAFS50/100



1. Rotary twin screw compressor with integral air receiver/separators, heat exchanger and lubrication system.
2. Integral gearbox oil cooler
3. Water/foam/air mixing manifold
4. PTO driven gearbox with compressor drive via an electromagnetic clutch.
5. UltraView SmartCAFS control unit
6. Intelli-tank water and foam tank level indicators
7. Mounting platform incorporates forklift points, anti-vibration mountings and fluid drain points

5. KEY COMPONENTS

5.2. MAJOR COMPONENTS AND CONTROLS - PRIMA UV SMARTCAFS200



These components are mounted separately from the pump to suit the vehicle builders installation



Mixing manifold



Heat Exchanger



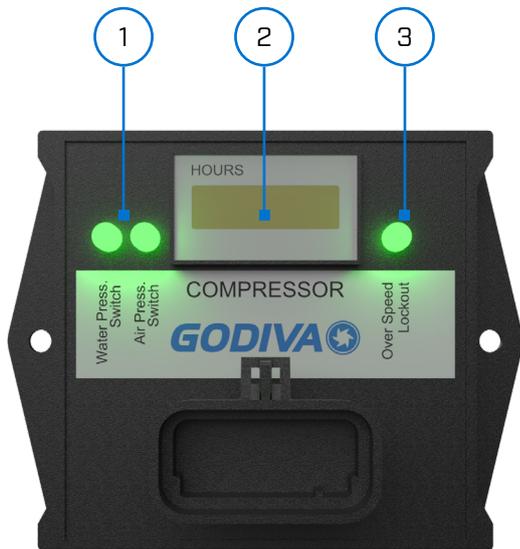
Oil/Water separator

1. Rotary twin screw compressor

5. KEY COMPONENTS

5.3. INTERLOCK FOR COMPRESSOR CLUTCH CONTROL - PRIMA SMARTCAFS50, 100 AND 200 MODELS

Solid state device complete with pressure switch indicating LEDs and compressor hours run meter. This unit is primarily of interest to service technicians for CAFS fault diagnosis. The device is located on the left side of the pump.

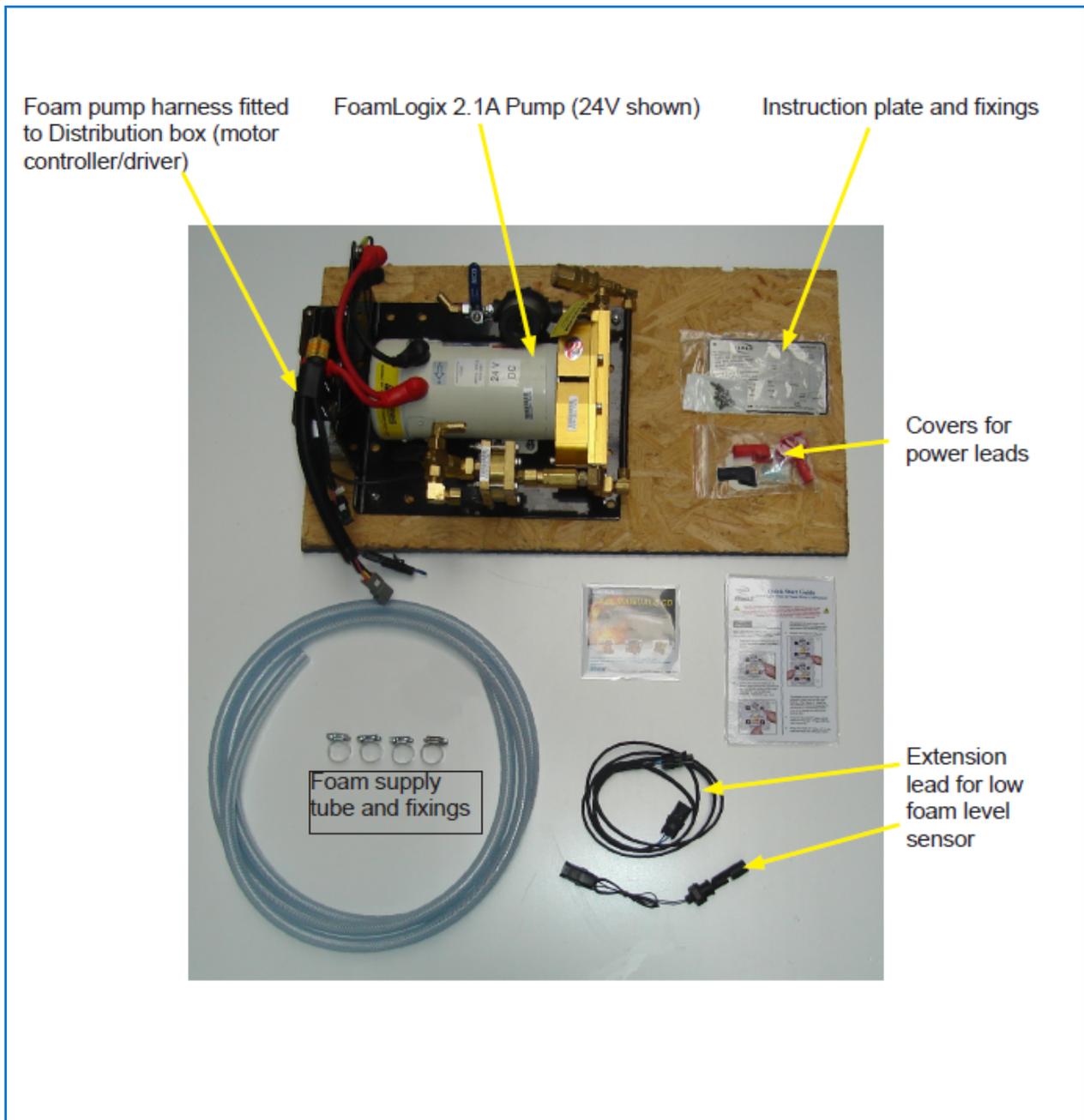


1. LEDs for water pressure switch and air pressure switch - will be alight when circuit is closed (no pressure).
2. Compressor hours run
3. LED - replicates the Air Enabled Indicator on the main panel (see page 17, item 11)

5. KEY COMPONENTS

5.4.FOAMLOGIX 2.1A FOAM PUMP COMPONENT GROUP

Showing parts supplied loose with standard pump.



5. KEY COMPONENTS

5.5.FOAMLOGIX 3.3 OR 5.0 FOAM PUMP COMPONENT GROUP

Showing parts supplied loose with standard pump. FoamLogix 3.3, 5.0 or 6.5 Pump (3.3 shown).

1. MDT Foam Tank Selector can be -

- MST – Manual Single Tank. Select one foam tank or flush option (not shown)
- MDT – Manual Dual Tank. Select one of two foam tanks or flush option (shown)
- ADT – Air Dual Tank. Air operated valve, select one of two foam tanks or flush option (not shown)

(2) High pressure switches only supplied loose when blue water panel is not fitted



5. KEY COMPONENTS

5.6. TYPICAL CONTROL PANEL -

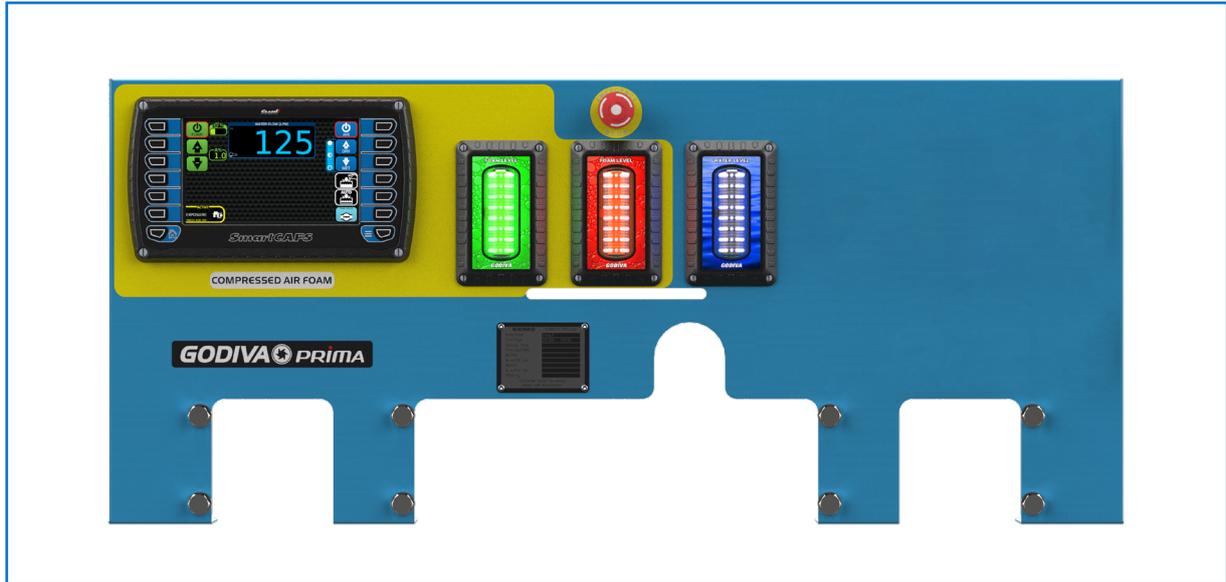
5.6.1. SMARTCAFS CONTROL UNIT WITH ANALOGUE GAUGES AND MANUAL CONTROL OF PUMP SPEED



1. Pump low pressure gauge
2. Emergency Stop
3. Pump high pressure gauge
4. Compound gauge
5. Pump tachometer & hour counter
6. Engine speed control Up=increase, Down=decrease, Left or right=preset speeds
7. Vehicle status lamps - Engine high coolant temperature. Engine low oil pressure.
8. Low battery charge. Low fuel.
9. Foam tank level gauge
10. UltraView SmartCAFS controller
11. Water tank level gauge
12. Spare switch locations, can be used for electro-pneumatic control of High/Low pressure selection, and high pressure discharge valve if fitted.
13. High/Low pressure manual selector
14. 14-High pressure stage strainer.

5. KEY COMPONENTS

5.6.2. - SMARTCAFS - COMPLETE ELECTRONIC CONTROL OF CAFS



5.6.3. SMARTCAFS CONTROL UNIT SUPPLIED TO FIT WITHIN THE VEHICLE BUILDER PANEL DESIGN



6. SYSTEM OVERVIEW

The PC1_ or PC2_ is a Compressed Air Foam System comprising of three major components (in addition to the main water pump) – Air compressor, FoamLogix (foam proportioning unit) and Manifold (foam mixing and control system).

The FoamLogix components (foam pump and motor assembly) are mounted separately from the water pump and are designed to be remotely mounted according to the vehicle builders requirements.

A metered amount of foam concentrate is introduced into the Manifold and mixed with water from the pump discharge manifold to produce a solution. The foam and water blend is then fed to a control valve (ARC) where wet or dry foam may be selected (air ratio control section of manifold).

Compressed air is then injected and the resulting foam / water / air combination is completely mixed by the X-mixers during discharge.

Safety interlocks are provided to ensure that:

1. Foam concentrate cannot be introduced unless water is flowing through the unit. Compressed air cannot be introduced unless foam concentrate is flowing.
2. 'Slugging' (unmixed air and water) in the discharge line is prevented. Air cannot be injected in the absence of foam and water.
3. Air injection when the foam tank is empty is prevented. Foam tank low level switches are provided and MUST be fitted.

6.1. COMPRESSOR

There are three levels of compressor used –

For Prima SmartCAFS50 systems

- The rotary twin-screw compressor is rated at 50 scfm @ 7 bar

For Prima SmartCAFS100 systems

- The rotary twin-screw compressor is rated at 100 scfm @ 7 bar

For Prima SmartCAFS200 systems

- The rotary twin-screw compressor is rated at 200 scfm @ 7 bar

All compressors are driven by a belt drive. The compressor is engaged, or disengaged from the pump drive, via an electro-magnetic clutch, which is activated by the CAFS selector switch.

Compressor lubricating oil is cooled by water taken from the main pump, via the water supply line; cooling water being supplied from pump delivery and returned to pump suction. The compressor will reject approx. 8.0 kW (CAFS50), 15.0 kW (CAFS100), 32kW (CAFS200) of heat energy to cooling.

The installer must consider this additional thermal load. When the compressor is stationary, residual system pressure is vented by a blow-down valve.



Warning: The compressor should not be run without cooling water.

6.2. MANIFOLD

The manifold incorporates an air ratio control valve through which varying degrees of wet or dry foam mixture can be selected. Compressed air is then injected and the resulting foam / water / air combination is thoroughly mixed by the X-mixers during discharge.

A By-pass valve is fitted to help obtain the required dry foam flow rate, this valve is adjusted and set during the installation stage, it is not required to be adjusted during normal operation.

CAFS units are best suited for use with Fresh Water.

For salt water compatible foams, seek advice from the foam agent manufacturers.

6.3. FOAMLOGIX - FOAM PROPORTIONING SYSTEM

The FoamLogix system consists of three main components:

1. Foam Pump / Motor Assembly.
2. UltraView Controller (integral with main pump control panel).
3. Flow measurement and injection manifold.

6. SYSTEM OVERVIEW

All three elements combine to provide accurate foam proportioning. From the control panel the operator can initiate the system, adjust the foam ratio, monitor 'real time' water flow rate and record total water and foam concentrate usage.

The FoamLogix system should be powered up when the PTO is engaged. Foam concentrate is only injected when the RED ON control button is operated.

The Foam ON light will illuminate when the FoamLogix is turned on, and flash when injecting foam.

The Hale FoamLogix 2.1A foam proportioning system provides consistent foam concentrate injection for Class A foam operations and is capable of delivering a ratio of 0.1% to 10.0% foam concentrate directly into the water discharge stream.

Further information is available in the FoamLogix Model 2.1A Description, Installation and Operation manual, part number 029-0020-74-0

Hale 3.3, 5.0, 6.5 FoamLogix systems may be used for Class A or B foams,

Further information is available in the FoamLogix Model 3.3/5.0/6.0 Description, Installation and Operation manual, part number 029-0021-68-0.

7. INSTALLATION AND INITIAL SET-UP

PRIMA SmartCAFS50

- Using FoamLogix 2.1A, 3.3

PRIMA SmartCAFS100

- Using FoamLogix 3.3, 5.0 or 6.5

The following connection points should be considered when installing the PC1_ or PC2_ assembly into a vehicle.

Lifting Points – Prima SmartCAFS50 and Prima SmartCAFS100

Secure handling of the unit for installation and maintenance is vital. Use only the lifting points provided on the unit.



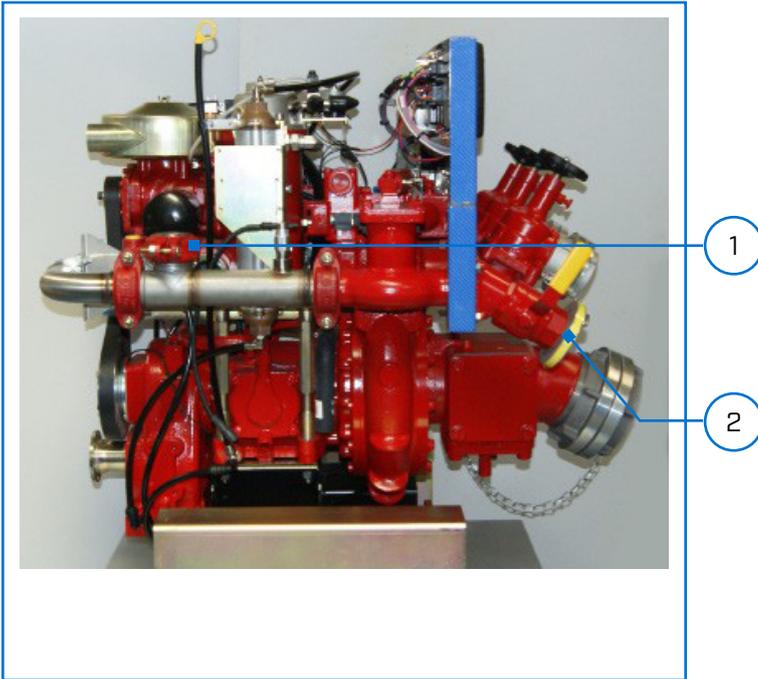
Forklift points

7. INSTALLATION AND INITIAL SET-UP

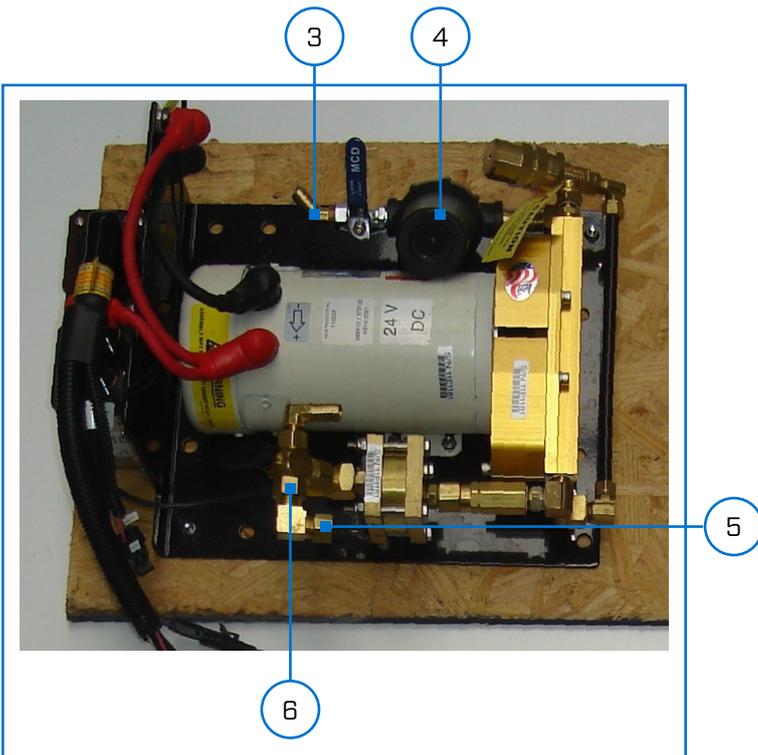
7.1. PRIMA SMARTCAFS50 SYSTEM

CAFS Discharge ports (see installation drawing for dimensions)

1. Hose-reel outlet
2. Low pressure delivery hose outlet for CAFS
3. Inlet from foam tank, Ø 13mm ID pipe, airtight connection required.
4. FoamLogix filter
5. To foam injection point on manifold. Tubing suitable for 22.5 Bar pressure
6. By-pass valve and connection point



FoamLogix 2,1A System - Remote Mounted



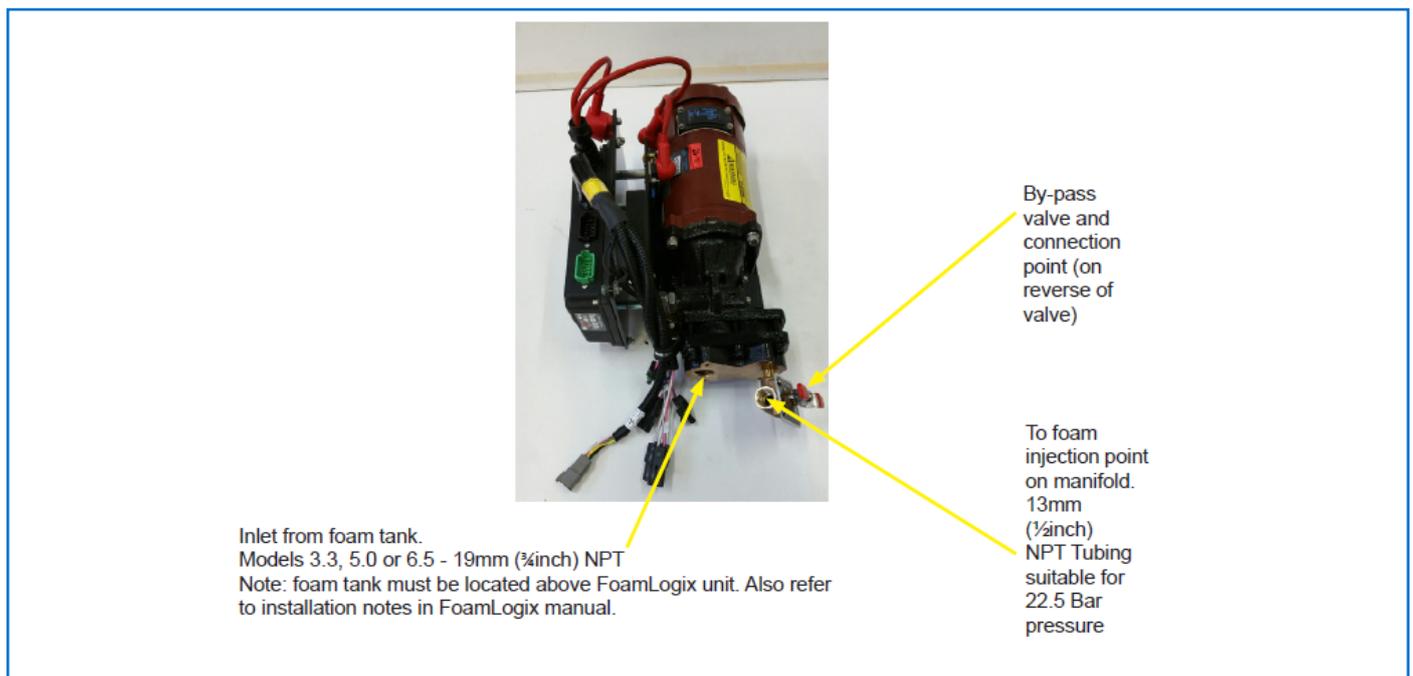
7. INSTALLATION AND INITIAL SET-UP

7.2. PRIMA SMARTCAFS100 SYSTEM

CAFS Discharge ports (see installation drawing for dimensions)



FoamLogix 3.3, 5.0 or 6.5 System - Remote Mounted



7. INSTALLATION AND INITIAL SET-UP

7.3. FLUID DRAIN POINTS

Prima SmartCAFS50 / 100 / 200 Systems
Compressor, Bearing housing, and Gearbox oil drain
points are located at the lower left side of the pump
(viewed from the suction tube end).

ATTENTION
IMPORTANT



**Warning: Oil should only be drained from the gear-
box/compressor/bearing housing when it has cooled
to a reasonable temperature to avoid accidental or
inadvertent injury through contact with hot oil.**

**The oil can be slightly warm to assist in flowing from
the unit.**



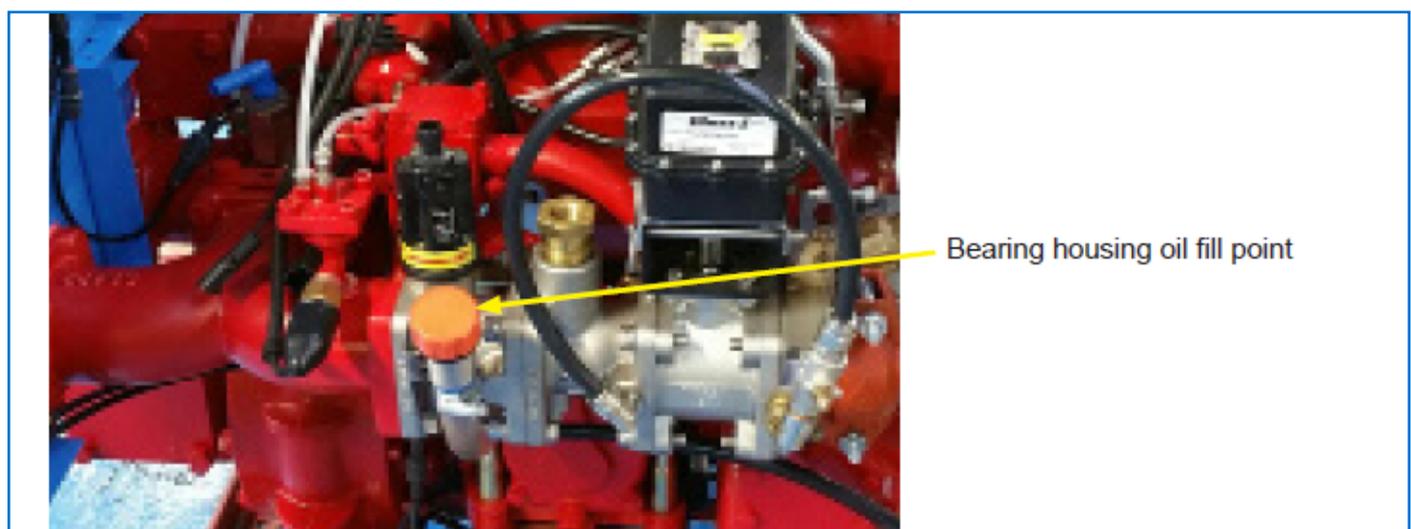
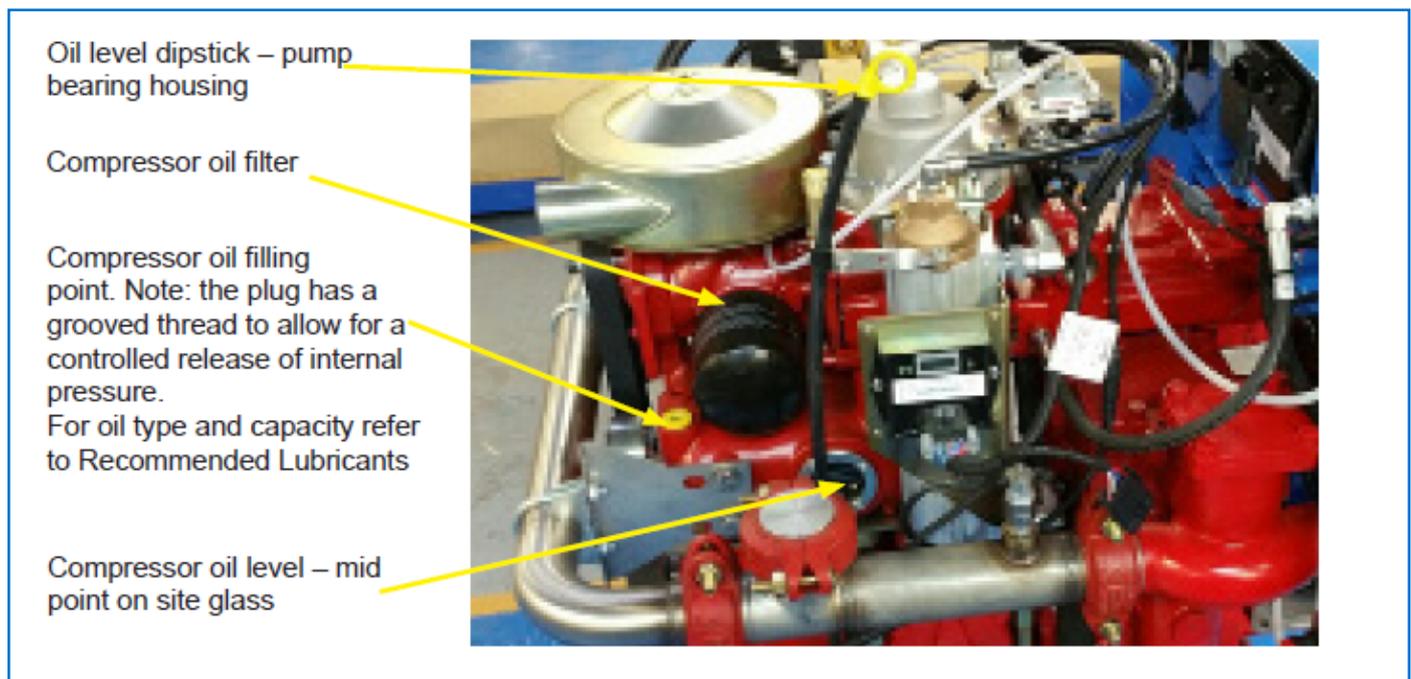
Gearbox/heat exchanger coolant and the CAFS manifold
drain points are located at the lower right hand side of
the pump. Please note that both manifold drains must be
utilised.

7. INSTALLATION AND INITIAL SET-UP

7.4. OIL FILLING POINTS - PRIMA SMARTCAFS50 / CAFS100

Prima SmartCAFS100 is very similar to the CAFS50 arrangement. The unit is supplied without oil and must be filled with the correct quantity and specification before starting the pump.

The oil filling points for the compressor is located at the left side of the pump (viewed from suction tube).
The oil filling points for the bearing housing is located on the right side of the pump (viewed from suction tube).

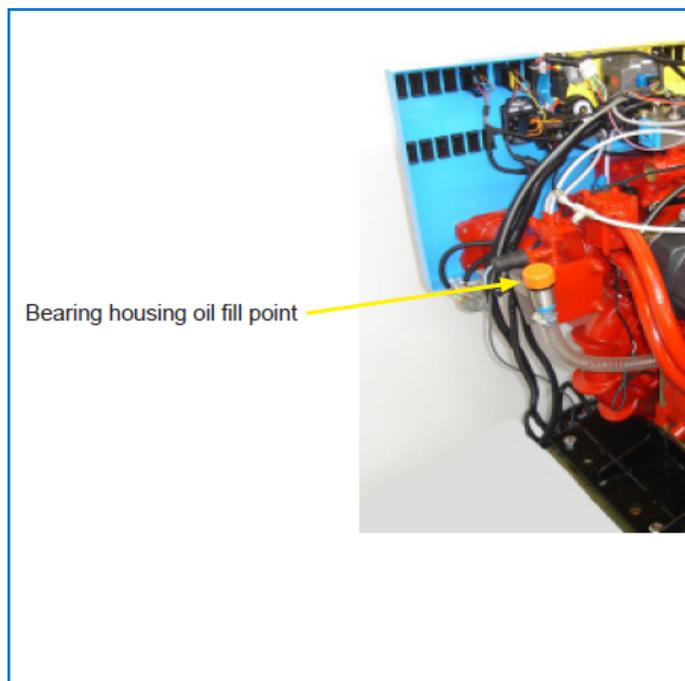


7. INSTALLATION AND INITIAL SET-UP

7.5. OIL FILLING POINTS - PRIMA SMARTCAFS200

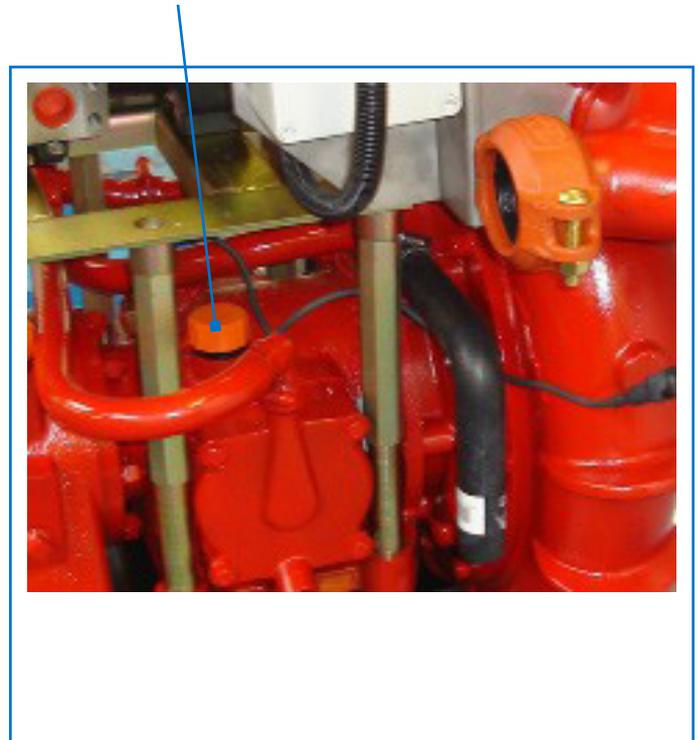
The unit is supplied without oil and must be filled with the correct quantity and specification before starting the pump.

The oil filling points for the pump bearing housing are located at the right side of the pump (viewed from suction tube).

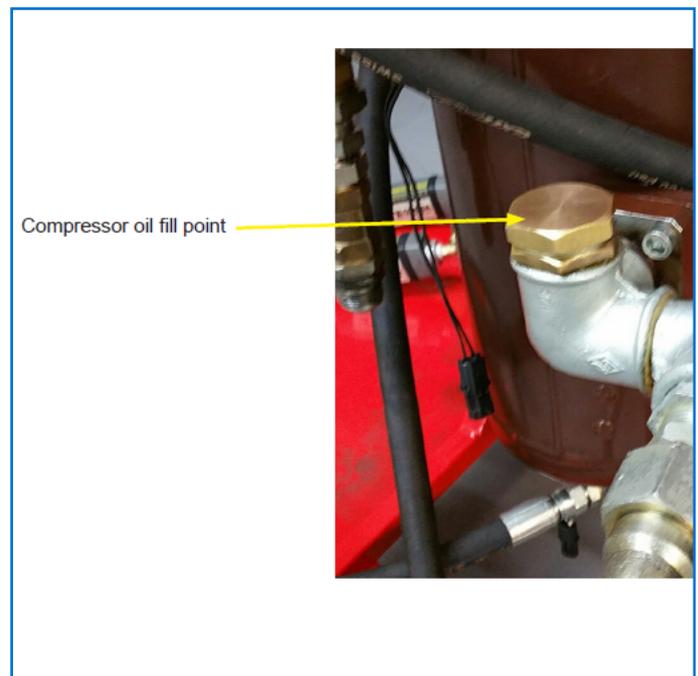


The bearing housing is fitted with a breather cap that allow the escape of air when being filled with oil.

Dipstick - access from left side of pump. The correct level is when the oil is between the upper and lower marks.



The oil filling point for the compressor system is on the oil / water separator tank. Remove the plug on the elbow to pour in 12 litres of oil. For specification see the Lubricants section on page 85

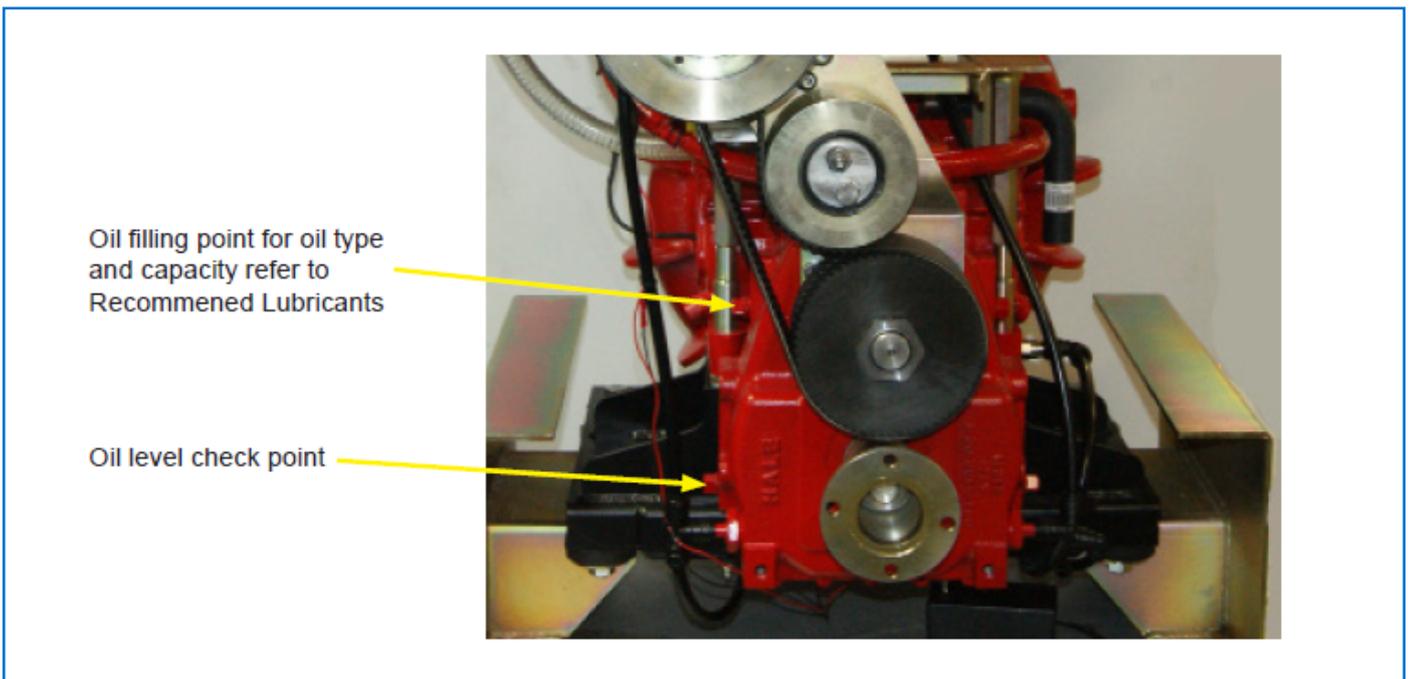


7. INSTALLATION AND INITIAL SET-UP

7.6. GEARBOX FILLING POINTS - PRIMA SMARTCAFS50 / 100 /200

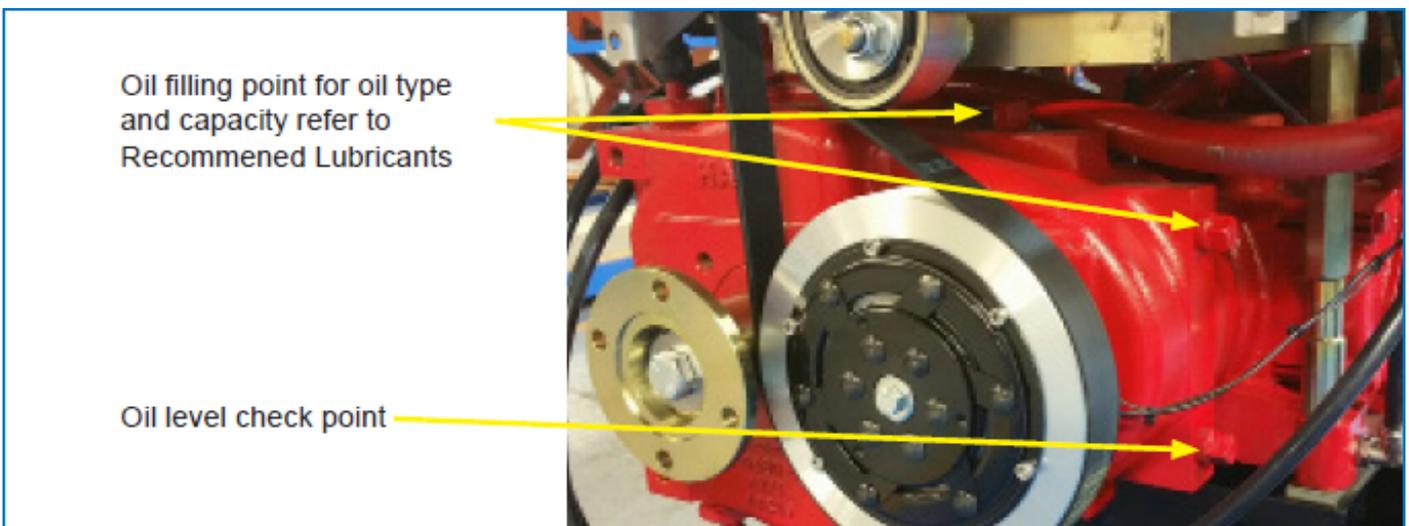
The pump gearbox filling point depends on the gearbox position in relation to the pump.

Gearbox in down position



Gearbox in down position

The oil filling point is on the side of the casing (LH gearbox shown) and is symmetrically opposite for RH gearbox. The oil level check point is lower on the side. Oil capacity and type as Down position detail.



7. INSTALLATION AND INITIAL SET-UP

The oil drain points (pump bearing housing, gearbox and compressor) are located at the front of the mounting platform.

Fill the gearbox until the oil flows from the oil level check point. This is the only accurate method of checking that the correct amount of oil has been added to the gearbox, as it allows for different sizes of gear ratios. Approximate capacity is 1.2 litres.

7.7. FOAM INJECTION POINT

Prima SmartCAFS50 / 100. See separate section for Prima SmartCAFS200



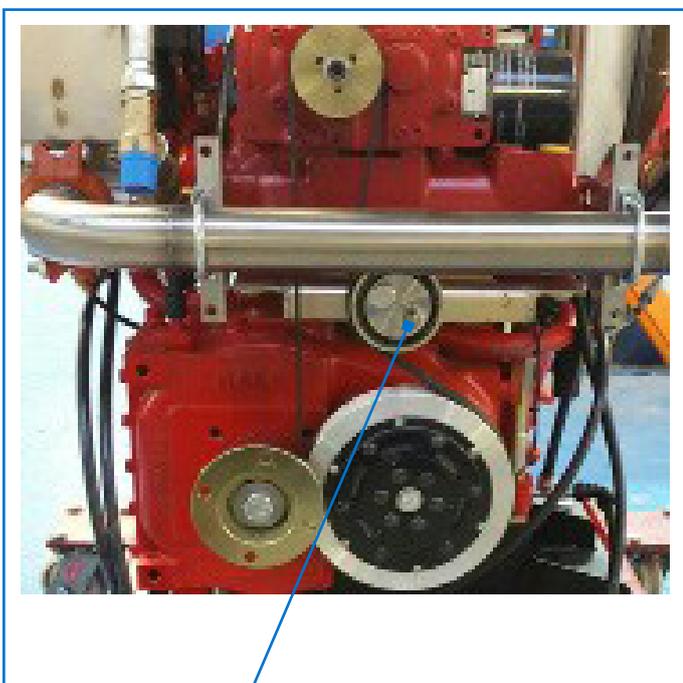
Foam injection point -
connect tubing suitable for
22.5 Bar pressure.
Connection thread
is ½ NPT

7. INSTALLATION AND INITIAL SET-UP

7.8. COMPRESSOR DRIVE BELT - PRIMA SMARTCAFS50

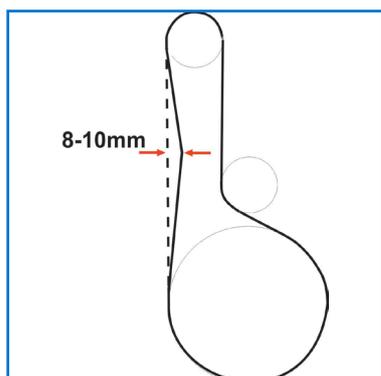
The compressor is driven by a Polydrive ribbed belt, specification 12PJ 1200.

The installer must allow for access to adjust the jockey pulley belt tensioner. Tension the belt to achieve an 8-10mm deflection with a 10kg load applied at mid span, see diagram below.



Slacken bolt, rotate tensioner to achieve specified deflection and secure

PTO drive flange connection various specifications available.



Optical Belt Tension Meter

If an optical belt tension meter is available, e.g. the Clavis Optical Belt Tensioner, then the belt can be tightened correctly by measuring the vibration frequency. Follow these steps –

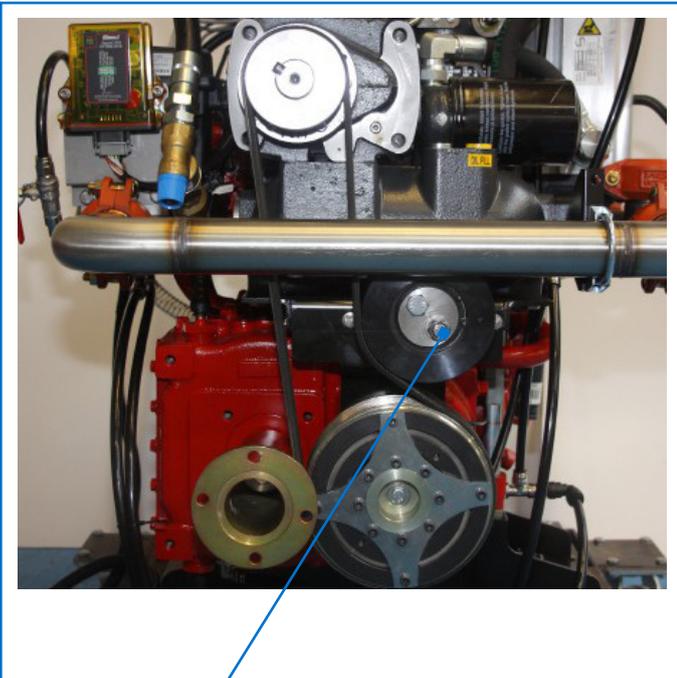
1. Tighten the belt so it is reasonably taut.
2. Operate the optical belt tensioner according to the manufacturer's instructions.
3. The device will register a frequency reading when the belt has been tapped. It is recommended several readings are taken to obtain a representative figure.
4. For the Prima SmartCAFS50 belt the frequency setting must be 79 Hz.
5. If the measured frequency is too low, tighten the belt via the tensioner.
6. If the measured frequency is too high, loosen the belt via the tensioner.
7. Take another reading to confirm the frequency is 79 Hz.

7. INSTALLATION AND INITIAL SET-UP

7.9. COMPRESSOR DRIVE BELT PRIMA SMARTCAFS100

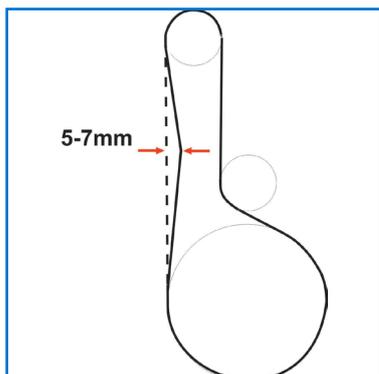
The compressor is driven by a Poly V drive belt, specification 9 PL 1270.

The installer must allow for access to adjust the jockey pulley belt tensioner. Tension the belt to achieve an 5-7mm deflection with a 10kg load applied at mid span, see diagram below.



Slacken bolt, rotate tensioner to achieve specified deflection and secure

PTO drive flange connection various specifications available.



Optical Belt Tension Meter

If an optical belt tension meter is available, e.g. the Clavis Optical Belt Tensioner, then the belt can be tightened correctly by measuring the vibration frequency. Follow these steps –

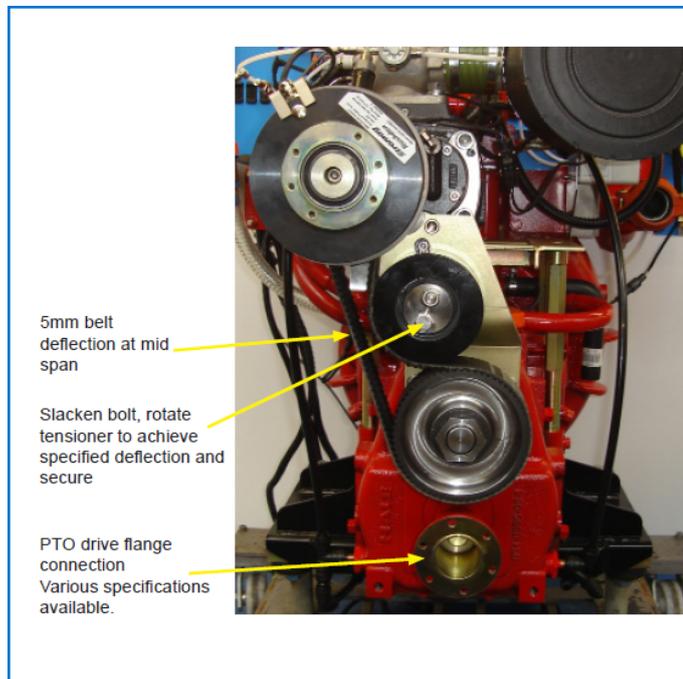
1. Tighten the belt so it is reasonably taut.
2. Operate the optical belt tensioner according to the manufacturer's instructions.
3. The device will register a frequency reading when the belt has been tapped. It is recommended several readings are taken to obtain a representative figure.
4. For the Prima SmartCAFS100 belt the frequency setting must be 65 Hz.
5. If the measured frequency is too low, tighten the belt via the tensioner.
6. If the measured frequency is too high, loosen the belt via the tensioner.
7. Take another reading to confirm the frequency is 65 Hz.

7. INSTALLATION AND INITIAL SET-UP

7.10. COMPRESSOR DRIVE BELT PRIMA SMARTCAFS200

The compressor is driven by a Goodyear Eagle PD synchronous drive belt.

The installer must allow for access to adjust the belt tensioner. Tension the belt to achieve a 5mm deflection with a load of 145N (new belt) or 108N (used belt) applied at mid span, see photograph below.



Optical Belt Tension Meter

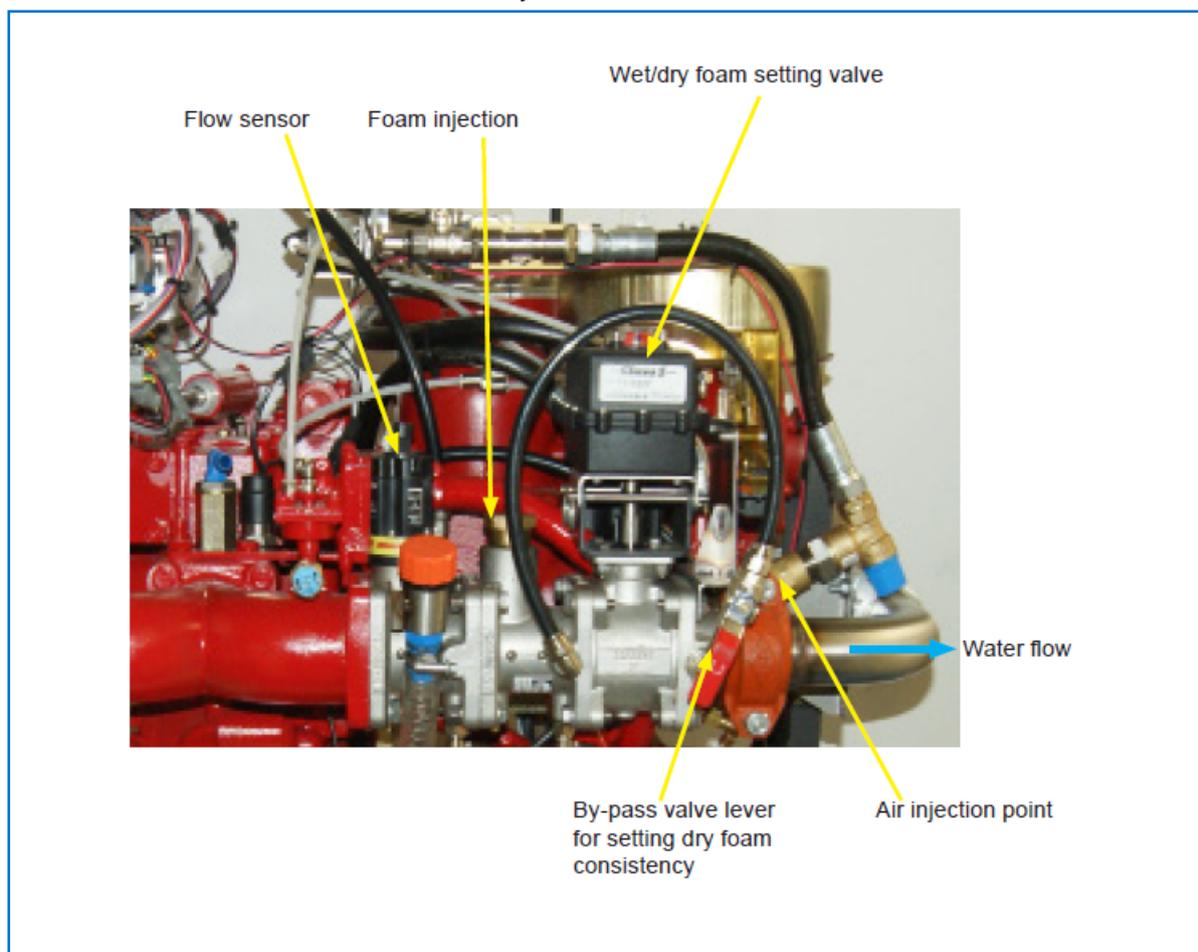
If an optical belt tension meter is available, e.g. the Clavis Optical Belt Tensioner, then the belt can be tightened correctly by measuring the vibration frequency. Follow these steps –

1. Tighten the belt so it is reasonably taut.
2. Operate the optical belt tensioner according to the manufacturer's instructions.
3. The device will register a frequency reading when the belt has been tapped. It is recommended several readings are taken to obtain a representative figure.
4. For the Prima SmartCAFS200 belt the frequency setting must be 128 Hz.
5. If the measured frequency is too low, tighten the belt via the tensioner.
6. If the measured frequency is too high, loosen the belt via the tensioner.
7. Take another reading to confirm the frequency is the recommended Hz.

7. INSTALLATION AND INITIAL SET-UP

7.13. PRIMA SMARTCAFS 50/100 - MIXING MANIFOLD

Installation information relevant to these models only



By-Pass Valve

This valve is adjusted to give the required dry foam flow-rate - typically 70 litres/minute @ 7 Bar.

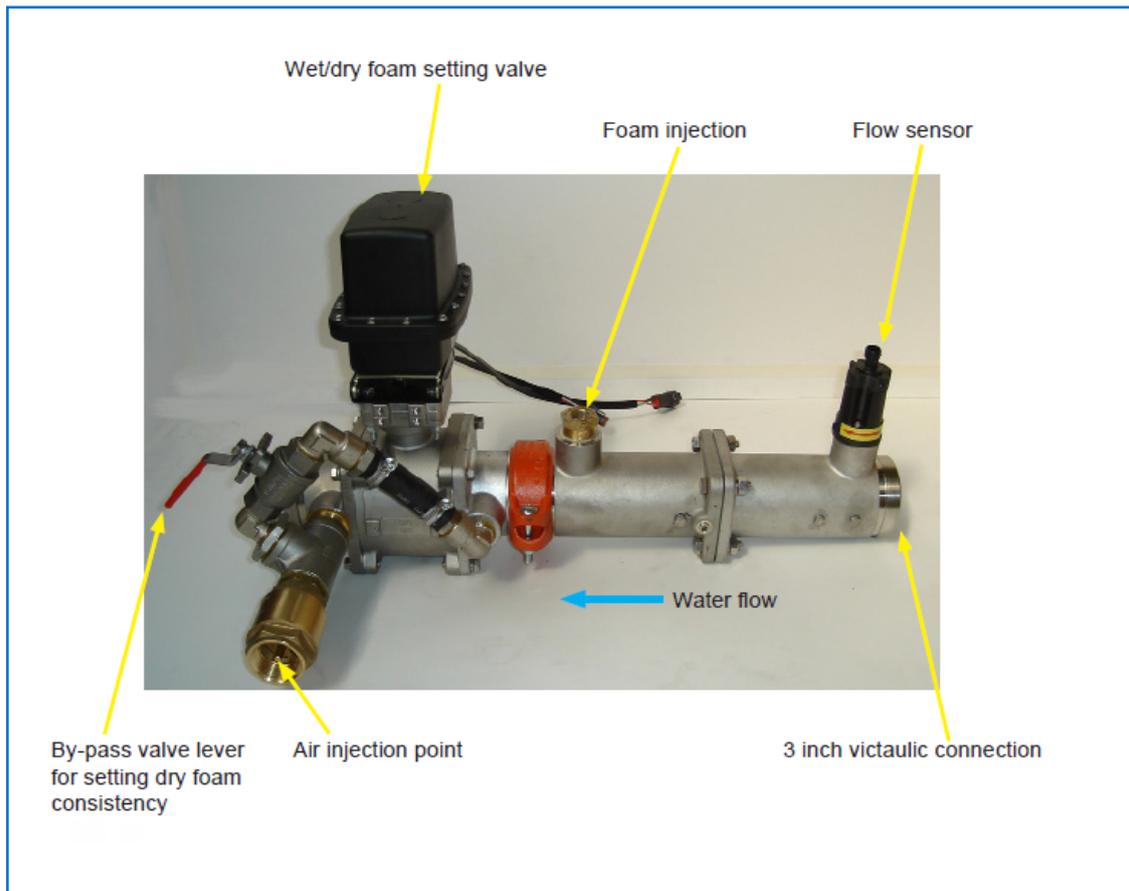
To set the required dry foam constituency –

1. Install the system as directed
2. Run the system at normal operating pressure, discharge compressed air foam through the most restrictive line, typically a Hose-reel.
3. Set the SmartCAFS ARC control to the full dry position.
4. Open or close the By-pass valve (as shown in photograph above) until the required dry foam flow rate is achieved.
5. Remove the By-pass valve lever so this setting cannot be changed in operation.

7. INSTALLATION AND INITIAL SET-UP

7.14. PRIMA SMARTCAFS 50/100 - MIXING MANIFOLD

Installation information relevant to these models only. SmartCAFS mixing manifold. Manifold should be mounted with provision for drainage. Foam and air injection points identified as below



By-Pass Valve

This valve is adjusted to give the required dry foam flow-rate - typically 100 litres/minute @ 7 Bar.

To set the required dry foam constituency –

1. Install the system as directed
2. Run the system at normal operating pressure, discharge compressed air foam through the most restrictive line, typically a Hose-reel.
3. Set the SmartCAFS ARC control to the full dry position.
4. Open or close the By-pass valve (as shown in photograph above) until the required dry foam flow rate is achieved.
5. Remove the By-pass valve lever so this setting cannot be changed in operation.

7. INSTALLATION AND INITIAL SET-UP

7.15. PRIMA SMARTCAFS 200

Additional installation information relevant to this model only



Separator tank for compressor oil



Compressor oil cooling unit



Separator tank - oil level indicator

7. INSTALLATION AND INITIAL SET-UP

7.16. FOAM TANK LOW LEVEL SENSOR

The unit is supplied with a connector for a low-foam-level sensor. The sensor is supplied with the unit ready for installation (instructions supplied with the sensor).

The low-foam-level sensor is part of the Safety Interlock system and must be installed.

There are two types of sensor. In both types the arrow or ridge must point up for correct installation.

TYPE 1 - BLUE SENSOR

- In this type, the float will fall down to the sensor body to register low foam level.
- The sensor has a raised ridge on the outer casing, which must be installed pointing upwards.

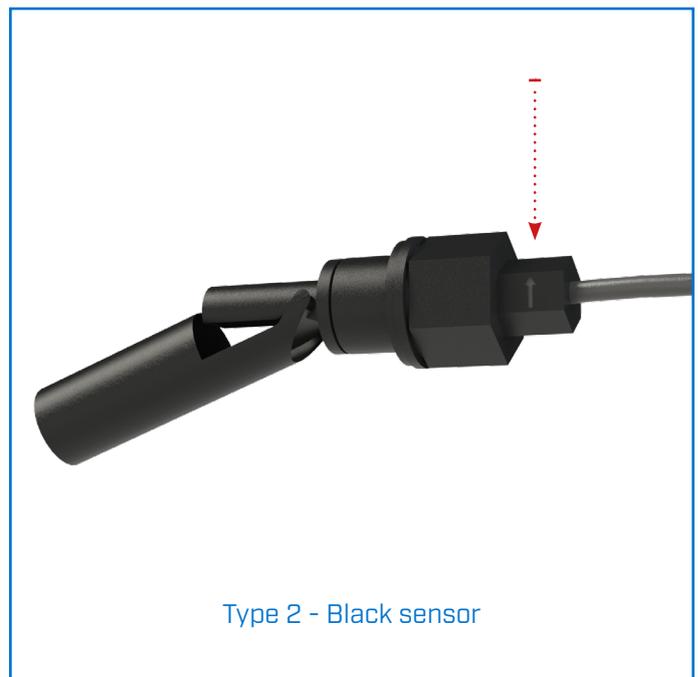
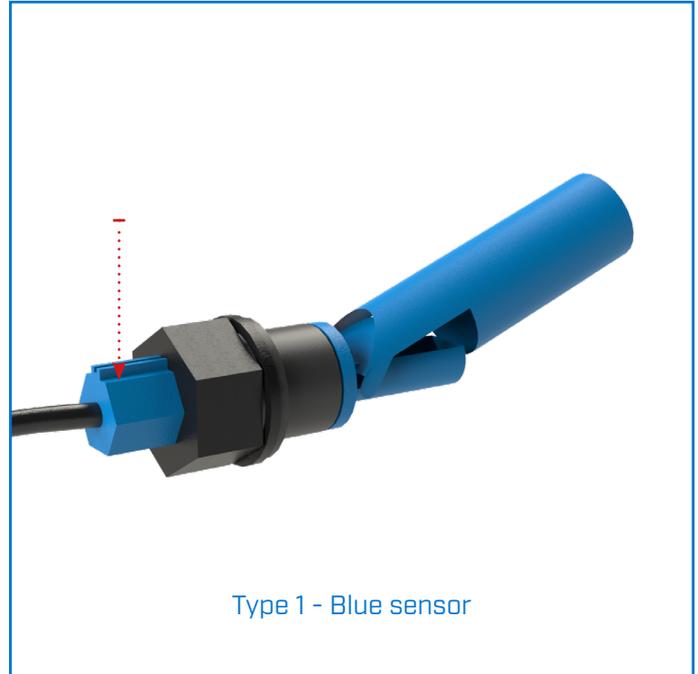
TYPE 2 - BLACK SENSOR

- In this type, the float will fall away from the sensor body to register low foam level.
- The sensor has an arrow on the casing, which must be installed pointing upwards.

Note: The low-foam-level sensor must be installed in the tank in the correct orientation. In both types, the arrow or ridge must point up.

The foam tank requires a 23mm hole for secure fitting of the switch device and the maximum allowable thickness of the tank wall material is 4mm.

The centre of the level switch should be located a minimum of 40mm above the foam concentrate outflow to the foam pump.



7. INSTALLATION AND INITIAL SET-UP

7.17. ADDITIONAL INSTALLATION POINTS

Foam Tank to Foam Pump

The foam feed line must not at any point be lower than the foam pump and be fitted with an isolating tap for maintenance purposes. The isolating tap should be located as close to the tank as possible.

A flushing point should be fitted close to the isolating tap to ensure that the maximum length of hose line can be flushed out. The flushing line should also be fitted with an isolating valve.

Foam supply line I.D.

- Class A 19mm minimum
- Class B 25.4mm minimum

The foam tank must be located to provide a positive head of foam concentrate to the FoamLogix unit, and the supply hose should be arranged to fall gradually from the tank to the foam pump inlet to avoid air pockets. A tank drain valve must also be fitted.

To prevent over-pressurisation ensure the foam tank is adequately vented.

The foam tank should be made of plastic or stainless steel, with a volume greater than the vehicle main tank by a factor of 0.005. Alternatively, a volume of at least 25 litres may be preferred to allow an entire drum of foam agent to be contained.

Note: To ensure correct operation of the FoamLogix pump, all connections must be secure and pressure tight.

7.18. VEHICLE DESIGN CONSIDERATIONS

The following information is included to assist the vehicle builder to achieve a successful installation.

The in line foam strainer / valve assembly is a low-pressure device, rated at 3 bar and will NOT withstand high flushing water pressure.

Seal all electrical power and ground connections with silicone sealant to prevent corrosion.

The system will not operate correctly with poor electrical connections. Verify all electrical connections prior to start up.

Each Hale FoamLogix system is tested at the factory using the wiring harness provided. Improper handling and abuse of connections will cause harm and may result in other system damage.

Use fixings which are compatible with those foam concentrates used. Brass or 300 series stainless steel are suitable.

The areas containing the PC2_ or PC1_ components must be adequately shielded from the ingress of road spray / debris and chassis and vehicle power train lubricant. Exposure to dirt, water and grease will have a detrimental effect on the working life of the drive belt and electronics. Full access to the bearing housing, compressor and gearbox oil fill points and level checkpoints must be considered as well as access for general unit maintenance. The use of removable side panels is advisable.

If the compressed air foam is to discharge through one or both of the side lockers and the vehicle builder is fitting the necessary pipe work and isolating ball valves, those components must have a consistent bore of 38mm up to the hose connector.

To prevent compressed air from being trapped in the pipe work, sealed blank caps MUST NOT be used on CAFS discharges.

Direction of rotation of the input drive flange is clockwise, when viewed on the gearbox.

7.19. INSTALLATION AND INITIAL SET-UP FOAMLOGIX 2.1A

For foam pump installation, please refer to the FoamLogix Model 2.1A Description, Installation and

Operation manual, part number 029-0020-74-0, supplied separately.

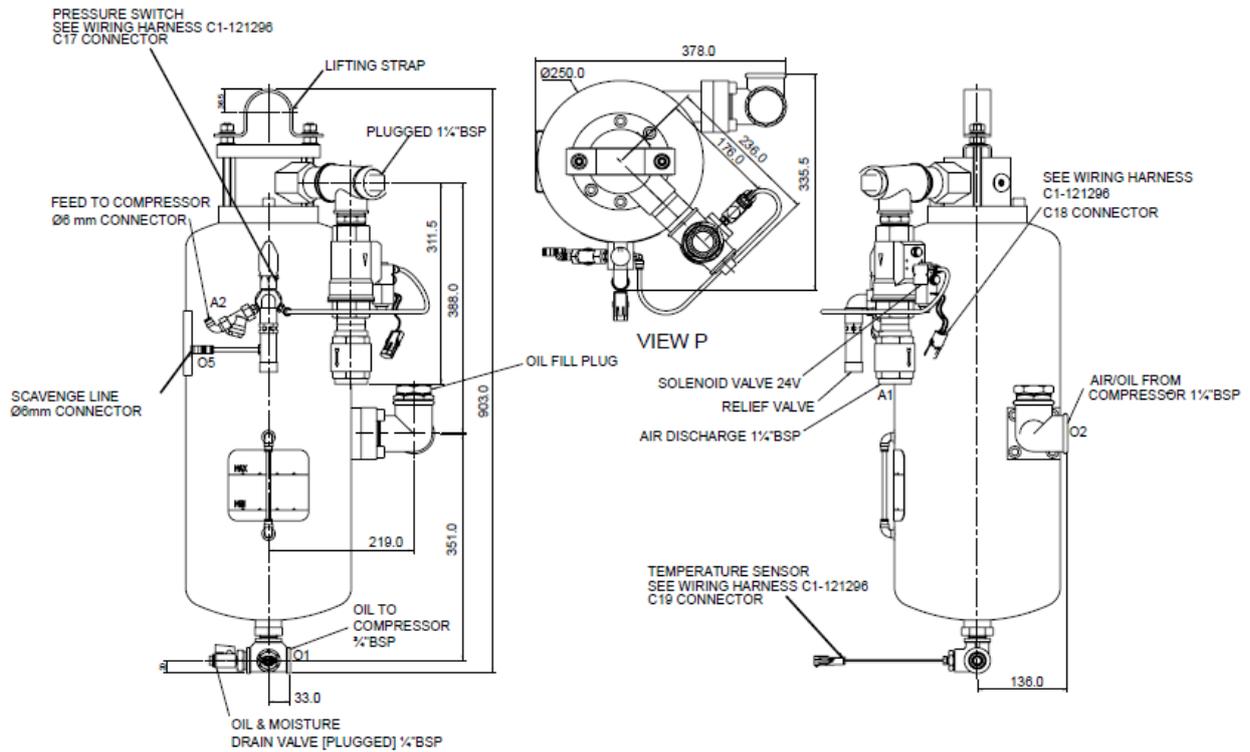
7.20. INSTALLATION AND INITIAL SET-UP FOAMLOGIX 3.3, 5.0, 6.5

For foam pump installation, please refer to the FoamLogix Model 3.3, 5.0, 6.5 Description, Installation and Operation manual, part number 029-0021-68-0, supplied separately.

For further information on the MDTII Manual Tank Selector, please see the separate manual supplied, part number 029-0020-40-0.

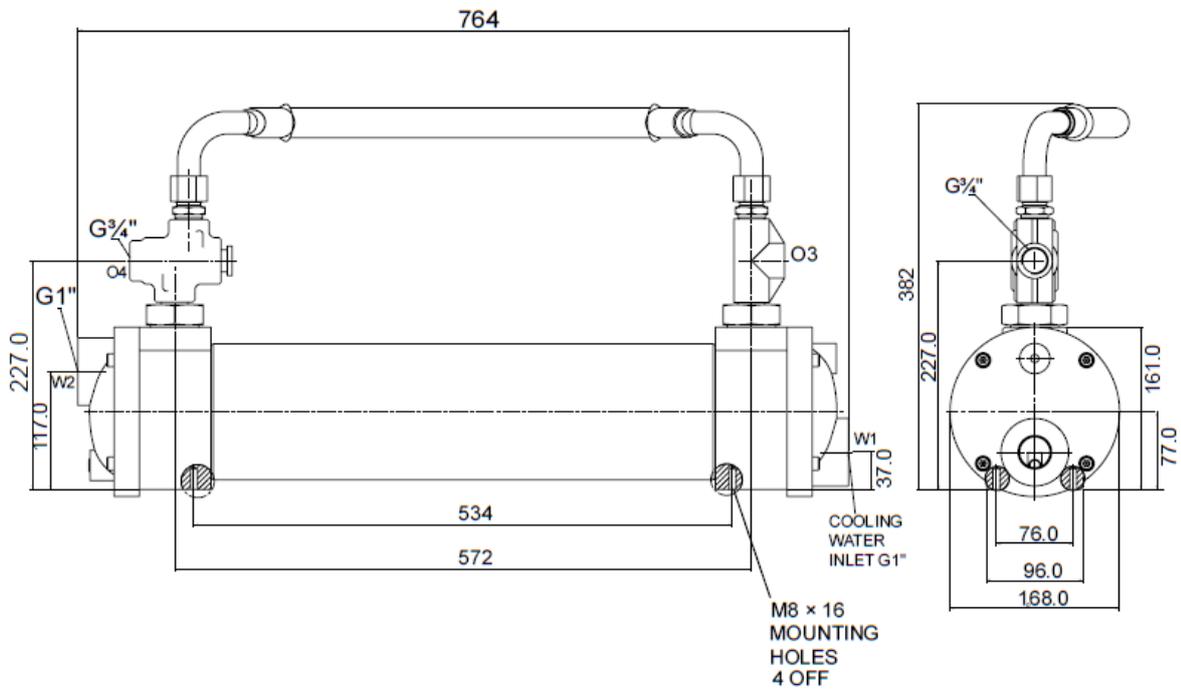
8. PRIMA SMARTCAFS 200 - INSTALLATION DRAWINGS

8.1. OIL / WATER SEPARATOR TANK (VERTICAL TYPE)



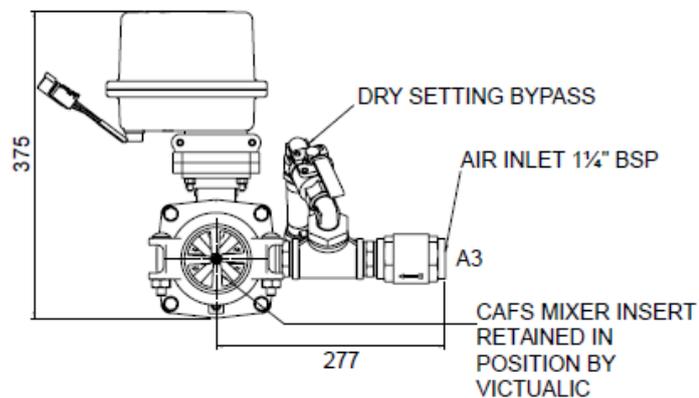
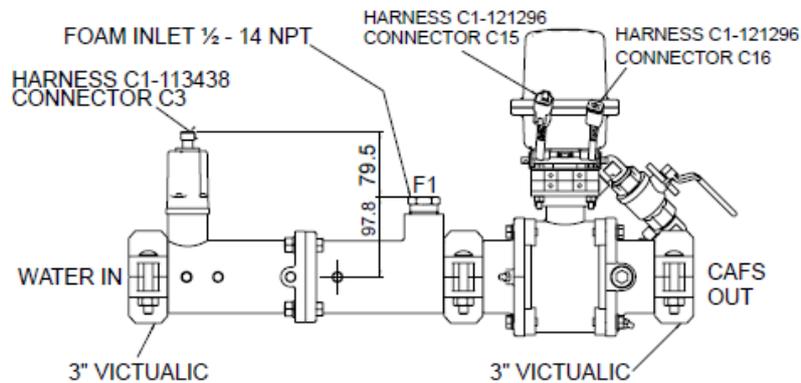
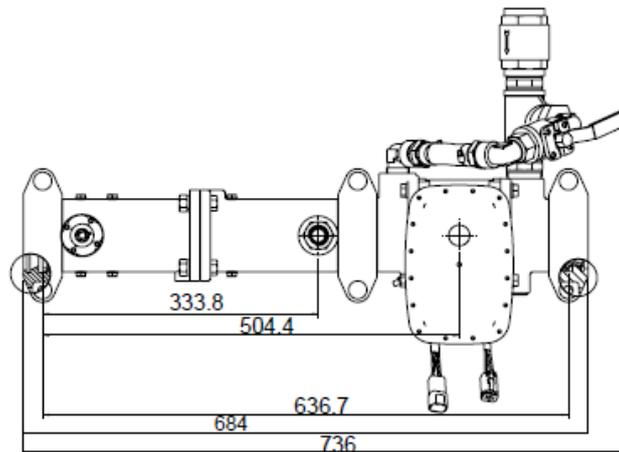
8. PRIMA SMARTCAFS 200 - INSTALLATION DRAWINGS

8.2. COOLING UNIT



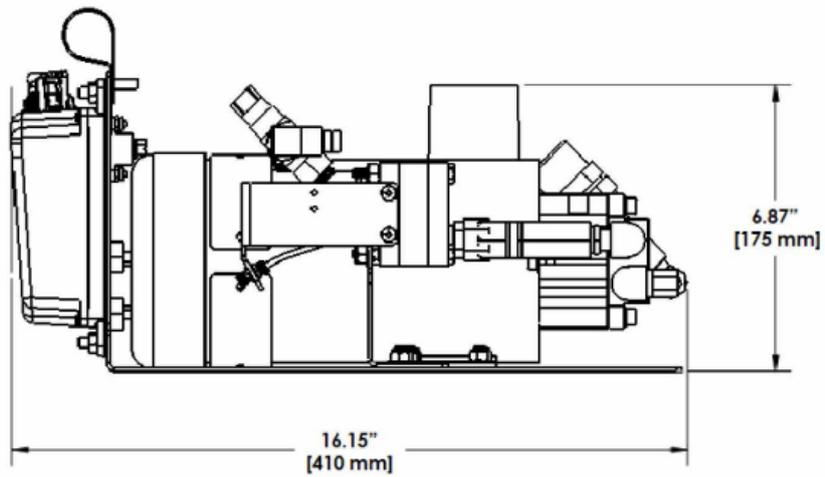
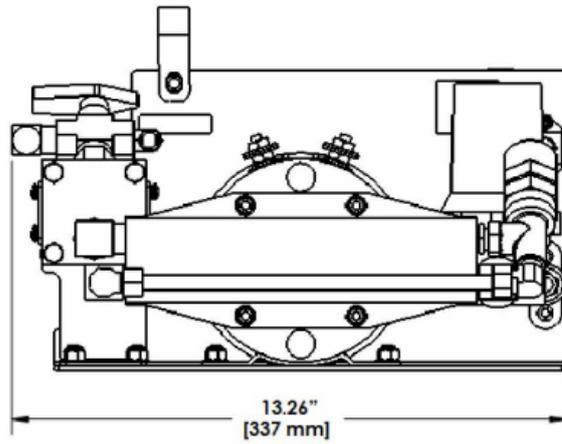
8. PRIMA SMARTCAFS 200 - INSTALLATION DRAWINGS

8.3. MIXING MANIFOLD



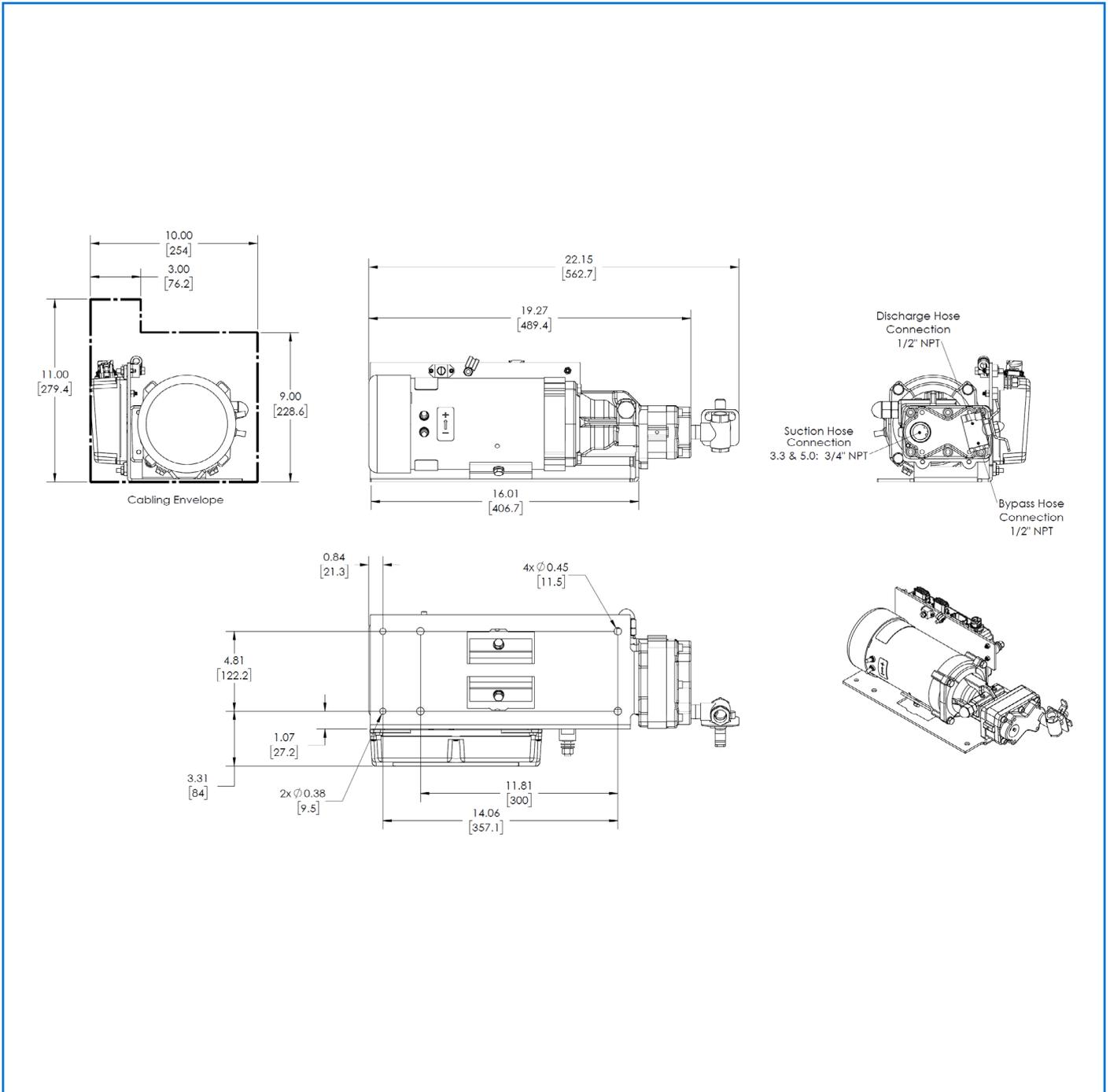
8. PRIMA SMARTCAFS 200 - INSTALLATION DRAWINGS

8.4.FOAMLOGIX 2.1



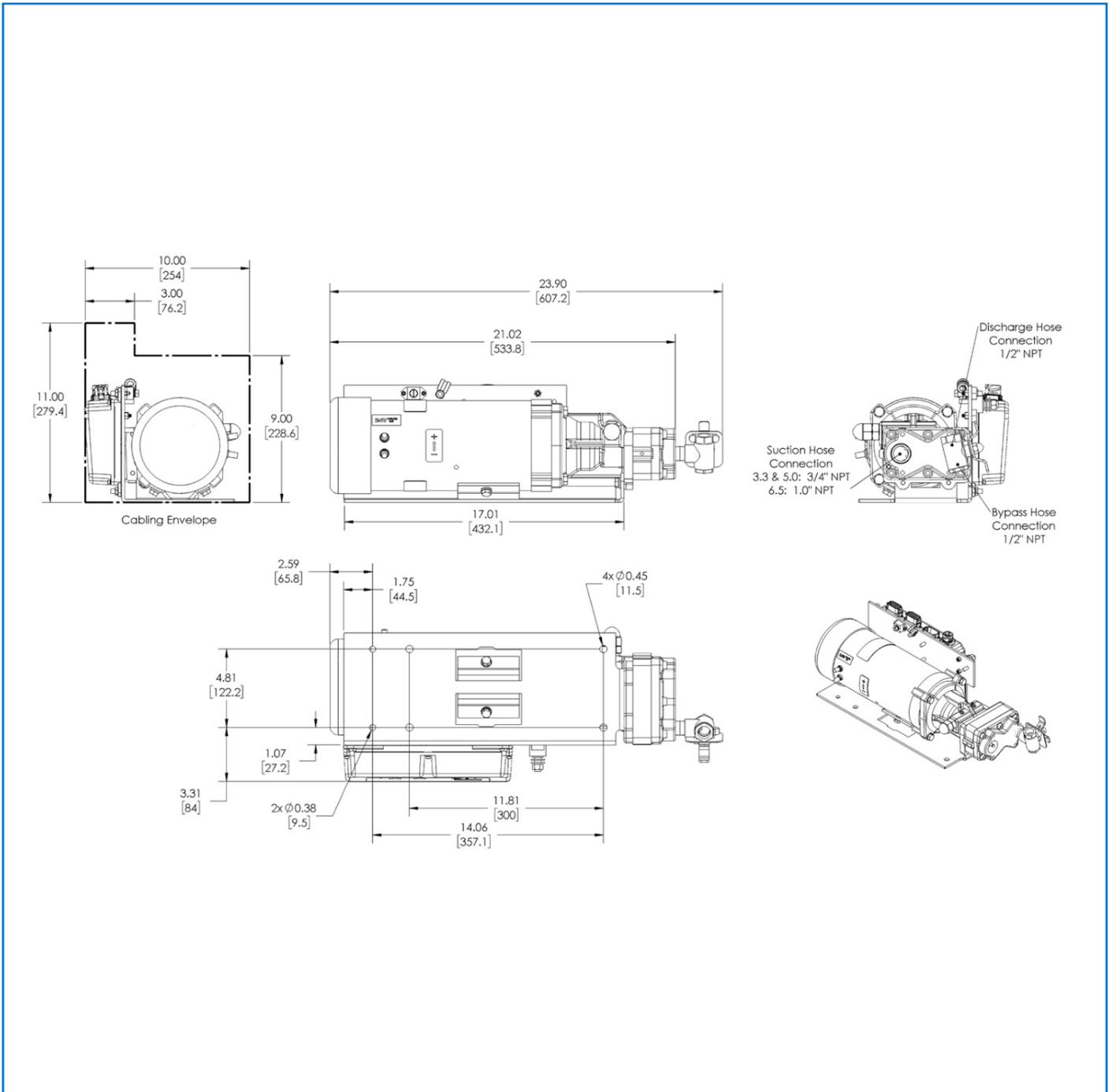
8. PRIMA SMARTCAFS 200 - INSTALLATION DRAWINGS

8.5. FOAM LOGIX 3.3/5 DIMENSIONS



8. PRIMA SMARTCAFS 200 - INSTALLATION DRAWINGS

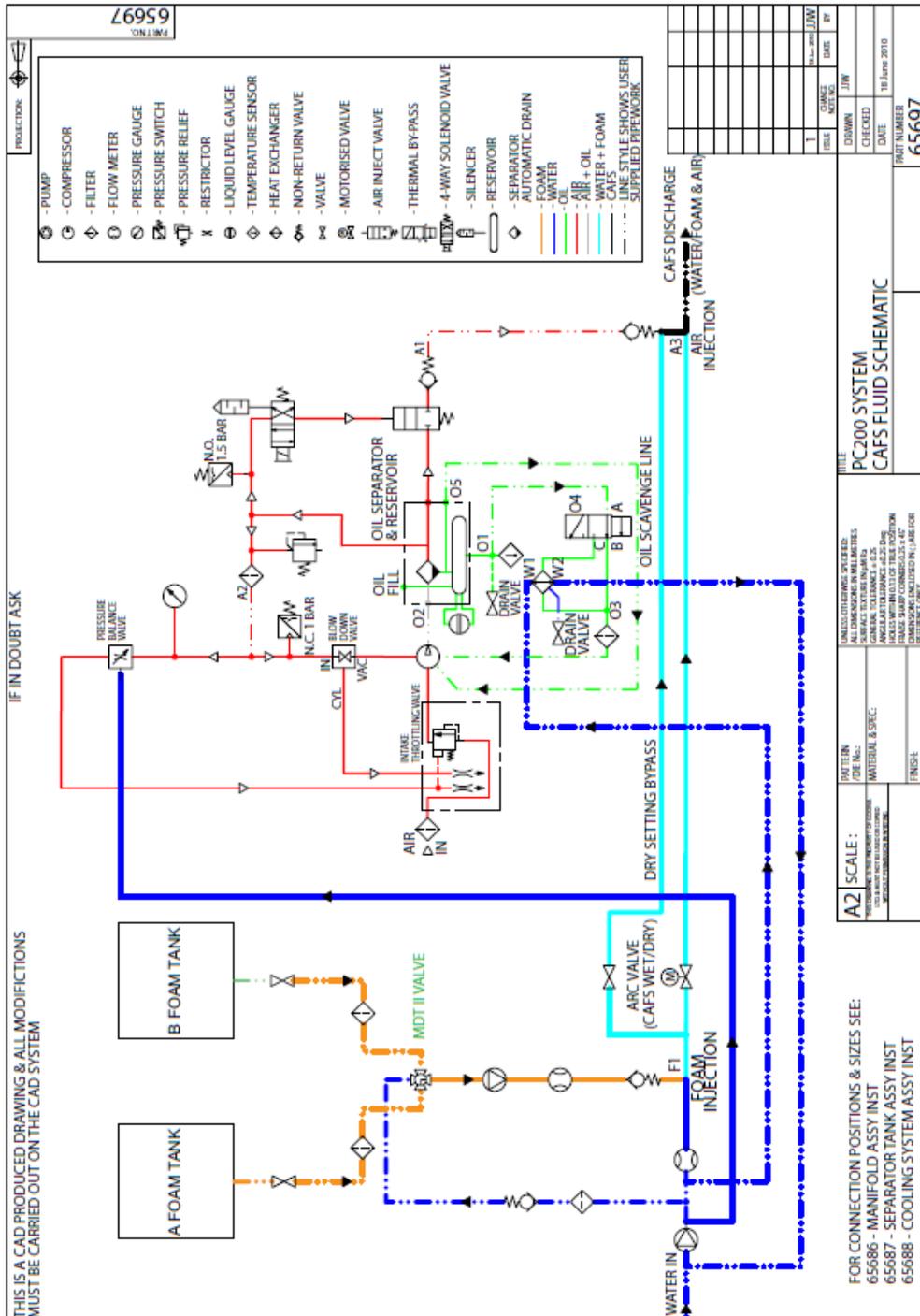
8.6. FOAM LOGIX 6.5 DIMENSIONS



9. PRIMA SMARTCAFS 200 - SCHEMATIC

9.1. PRIMA SMARTCAFS 200 - SCHEMATIC CAFS FLUID

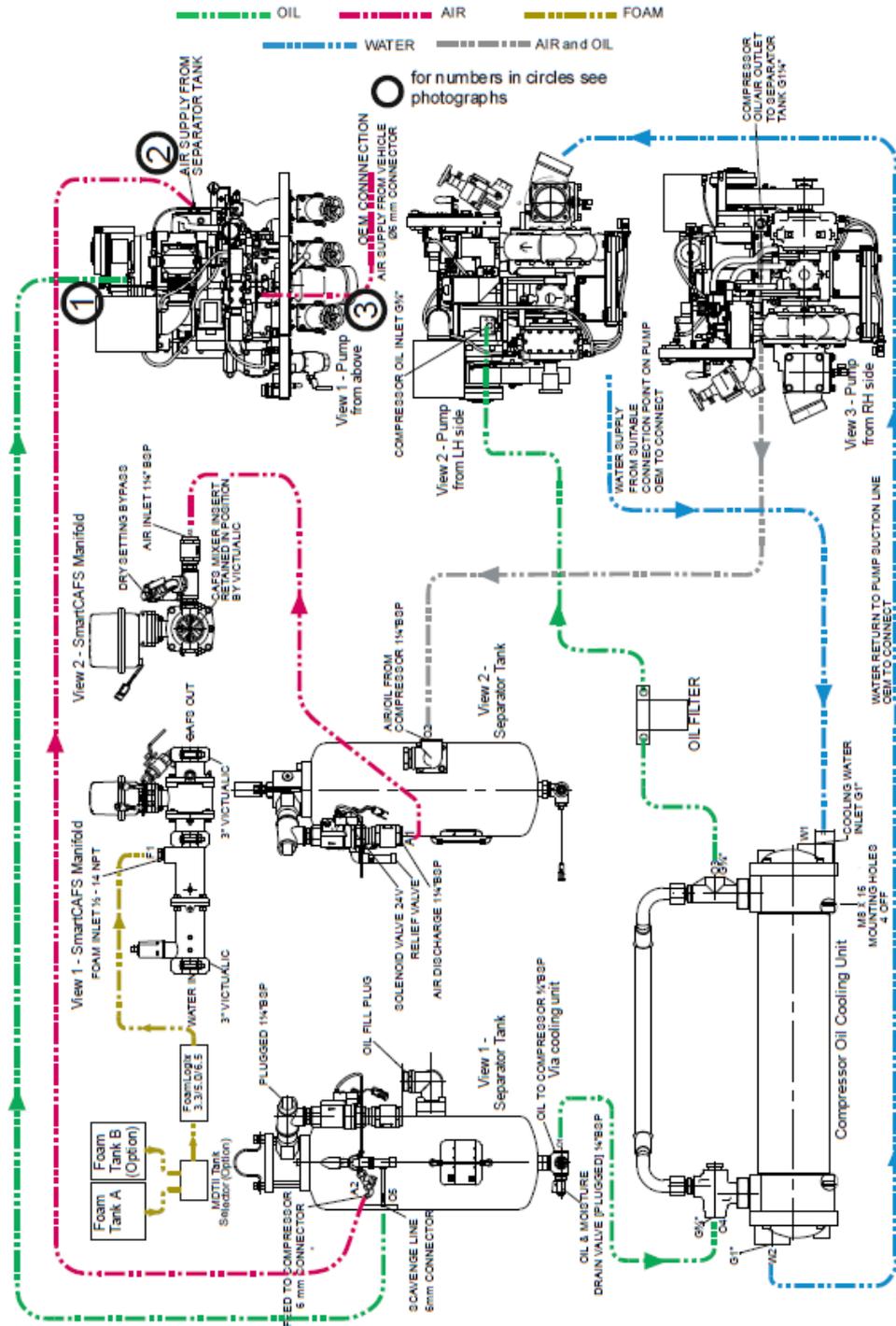
Additional installation information relevant to this model only



10. PRIMA SMARTCAFS 200 - PLUMBING

10.1. PRIMA SMARTCAFS 200 - PLUMBING CONNECTIONS - PART 1

Additional installation information relevant to this model only

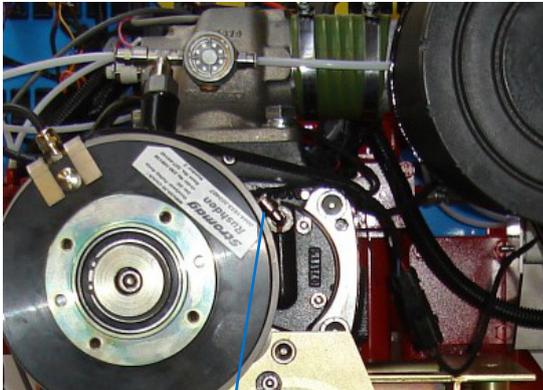


10. PRIMA SMARTCAFS 200 - PLUMBING

10.2. PRIMA SMARTCAFS 200 PLUMBING CONNECTIONS - PART 2

Additional installation information relevant to this model only

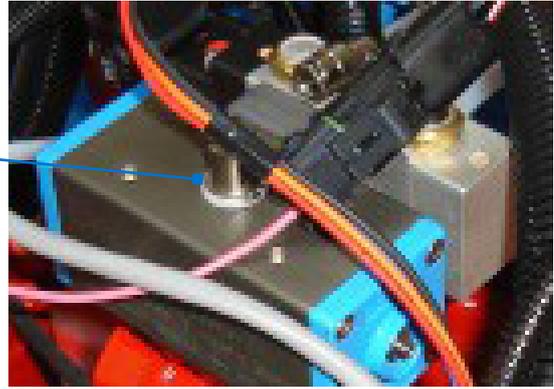
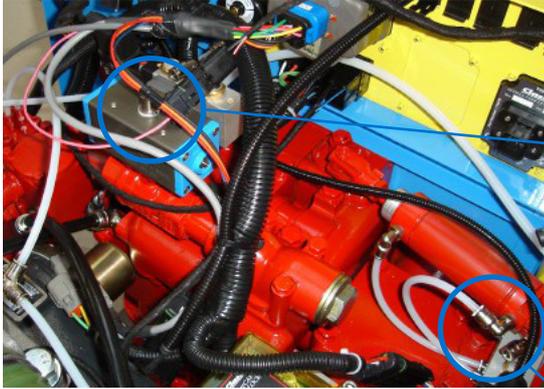
1. Oil scavenge line from separator tank to 6mm connection on rear of compressor



2. Air supply from separator tank to compressor, 6mm tubing/connector.



10. PRIMA SMARTCAFS 200 - PLUMBING



3.1

3. Air pressure for pump functions, connect from vehicle supply with 6mm tubing -

3.1 - High Pressure discharge, pneumatic operation of valve - if option fitted.

Note this model features one HP discharge valve. Two discharge valves will be supplied from a T piece.

3.2 - High/Low pressure selector valve (pneumatic operation) – if option fitted.

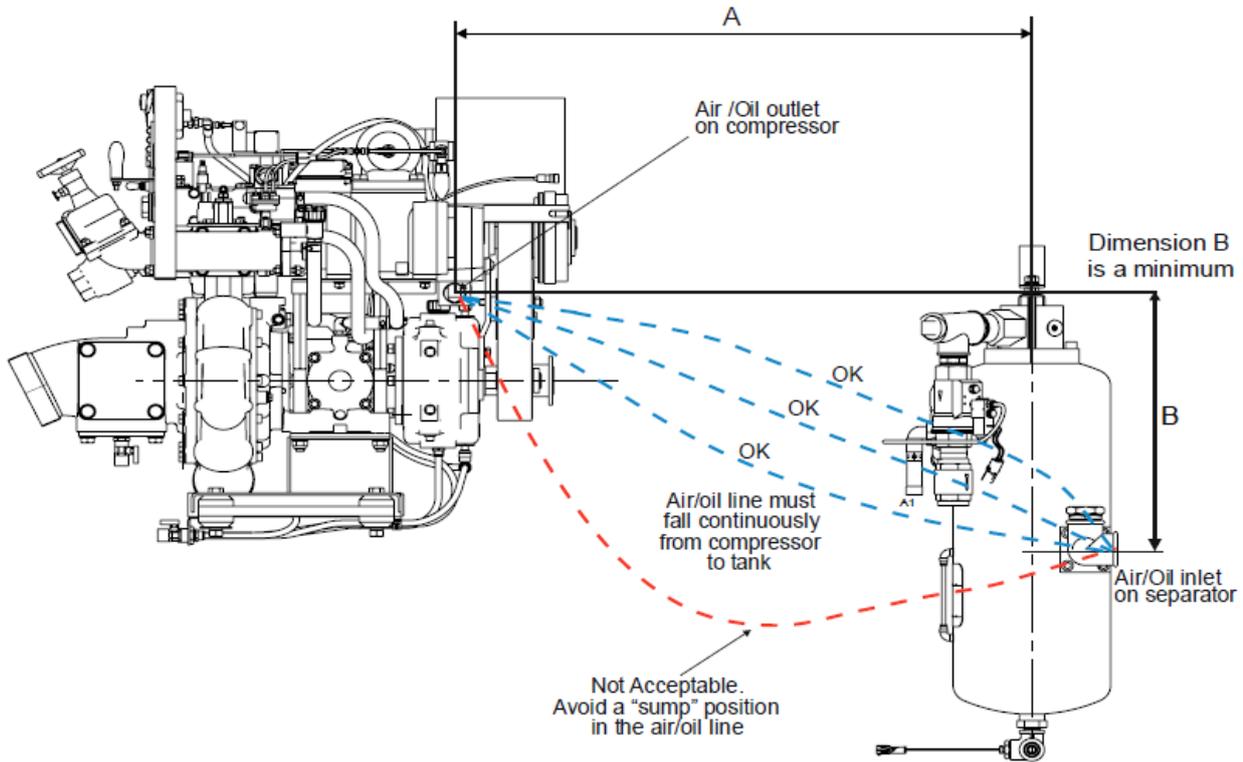


3.2

10. PRIMA SMARTCAFS 200 - PLUMBING

10.3. PRIMA SMARTCAFS 200 - COMPRESSOR AND SEPARATOR TANK - RELATIVE POSITIONS IN INSTALLATION

Additional installation information relevant to this model only

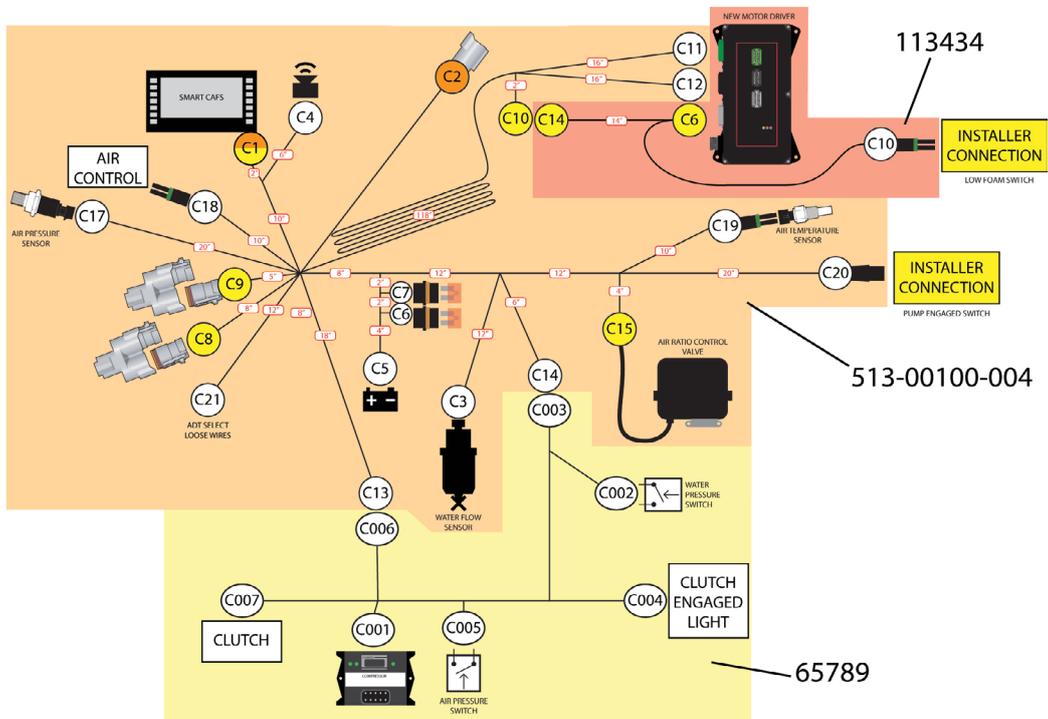


A	B		A	B
300	50		950	212.5
350	62.5		1000	225
400	75		1050	237.5
450	87.5		1100	250
500	100		1150	262.5
550	112.5		1200	275
600	125		1250	287.5
650	137.5		1300	300
700	150		1350	312.5
750	162.5		1400	325
800	175		1450	337.5
850	187.5		1500	350
900	200			

11. SMARTCAFS HARNESS

11.1. PRIMA UV SMARTCAFS - OVERVIEW OF RELATIONSHIP BETWEEN HARNESSES

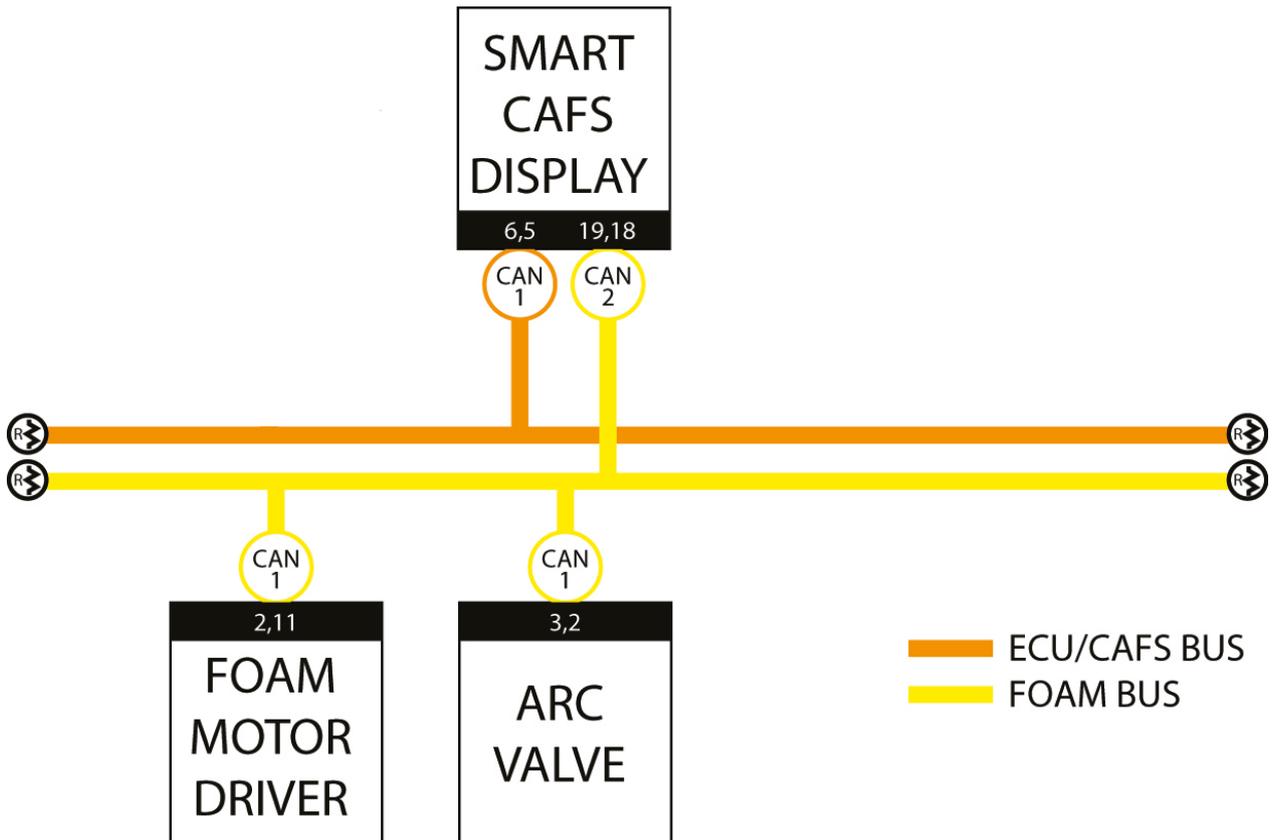
Additional installation information relevant to this model only



11. SMART CAFS HARNESS

11.2. PRIMA UV SMARTCAFS, TWISTER BLOCK DIAGRAM.

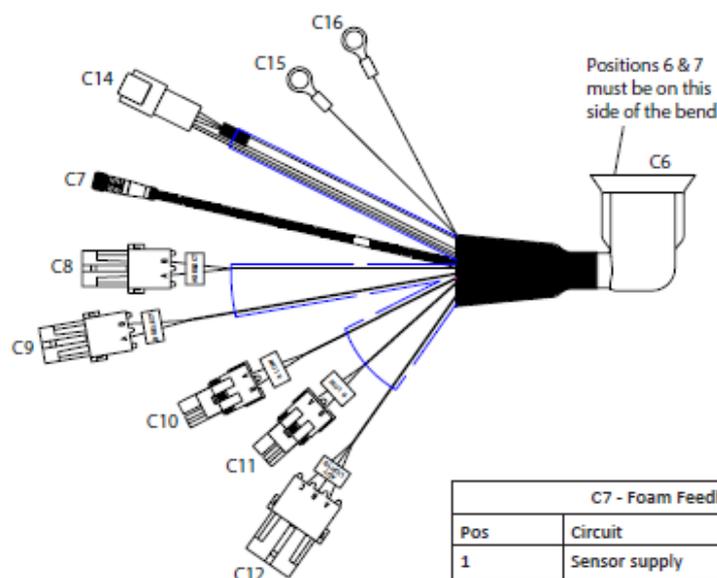
Additional installation information relevant to this model only



11. SMART CAFS HARNESS

11.3. PRIMA SMARTCAFS 200 - FOAM PUMP HARNESS DIAGRAM

Additional installation information relevant to this model only



C6			
Pos	Circuit	Colour	GA
1	Power	Pink	18
2	Can high	Yellow	18
3	Can Shld	Black	18
4	Tank A Select	Blue	18
5	Tank B Select	White	18
6	Tank A Low	Violet	18
7	Tank B Low	Gray	18
8	Sensor supply	Brown	18
9	Ind sensor signal	Black	18
10	Sensor GND	Blue	18
11	Can Low	Green	18
12	Ground 2	Black	16

Note: ground is pre-installed

C14			
Pos	Circuit	Colour	GA
1	Power	Pink	18
2	Can high	Yellow	18
3	Can Shld	Black	18
4	Ground 1	Black	16
5	Can Low	Green	18
6	Plug 114017	-	-

C7 - Foam Feedback Sensor			
Pos	Circuit	Colour	GA
1	Sensor supply	Brown	18
2	Ind sensor signal	Black	-
3	Sensor GND	Blue	-

C8 - A Tank Select - MDT or ADT			
Pos	Circuit	Colour	GA
1	Power	Pink	18
2	Tank A Select	Blue	18

C9 - B Tank Select - MDT or ADT			
Pos	Circuit	Colour	GA
1	Power	Pink	18
2	Tank B Select	White	18

C10 - A Tank low level switch			
Pos	Circuit	Colour	GA
1	Power	Pink	18
2	Tank A Low	Violet	18

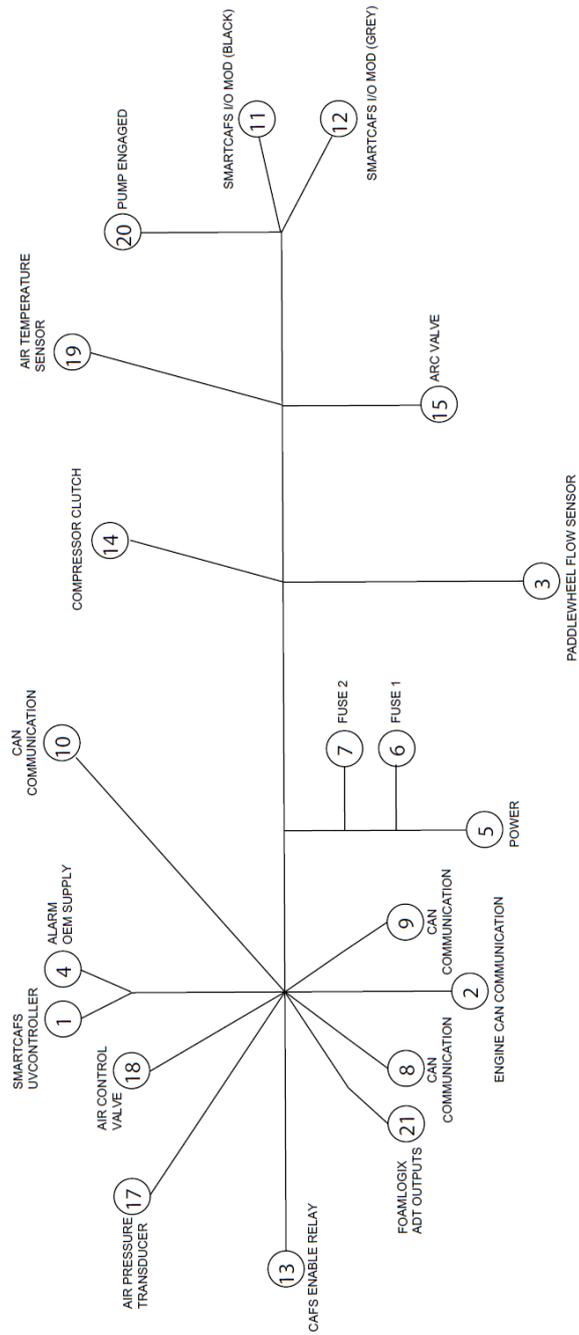
C11 - B Tank low level switch			
Pos	Circuit	Colour	GA
1	Power	Pink	18
2	Tank B Low	Gray	18

C12 - ADT Switch			
Pos	Circuit	Colour	GA
A	Tank A select light	Blue	18
B	Ground 2	Black	16
C	Tank B select light	White	18

11. SMART CAFS HARNESS

11.4. HARNESS FOR PRIMA UV SMARTCAFS 50/100 WITH OLD MOTOR DRIVER

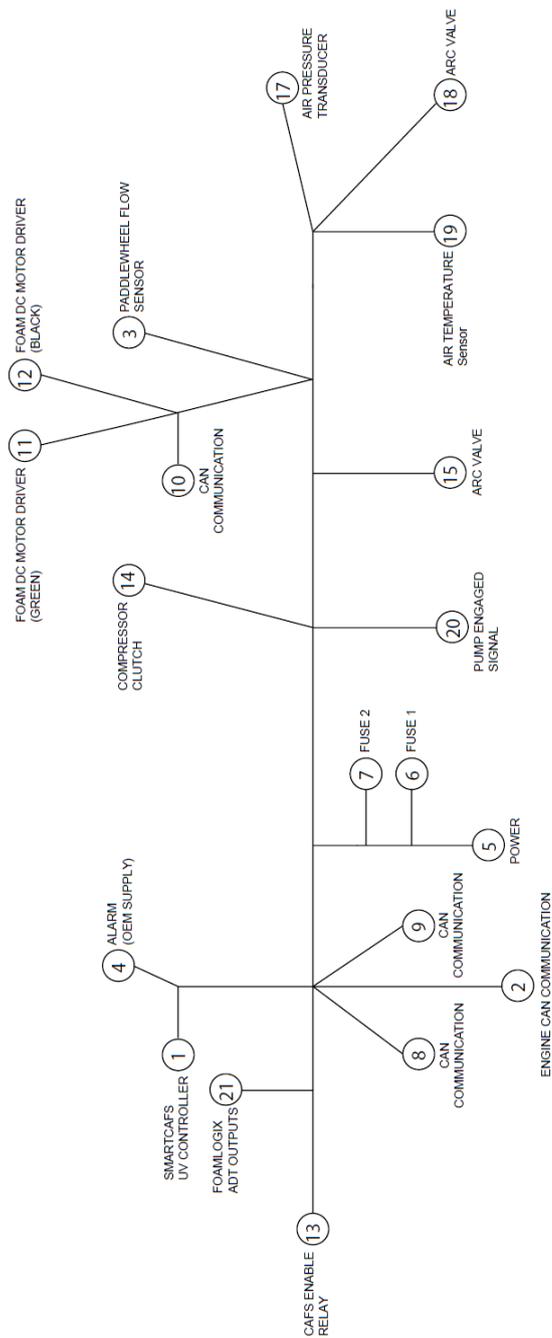
The numbers refer to the connectors on the harness Drawing - 513-00100-00 Rev C



11. SMART CAFS HARNESS

11.5. HARNESS FOR PRIMA UV SMARTCAFS 200 WITH OLD MOTOR DRIVER

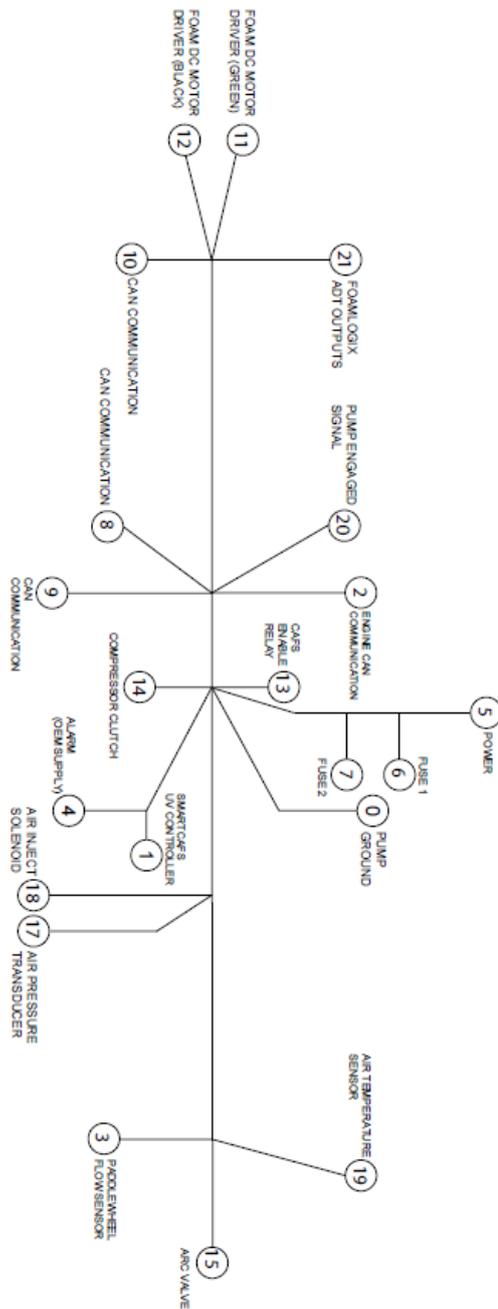
The numbers refer to the connectors on the harness Drawing -513-00100-000 Rev B



11. SMART CAFS HARNESS

11.6. HARNESS FOR PRIMA UV SMARTCAFS 50/100 WITH NEW MOTOR DRIVER

The numbers refer to the connectors on the harness Drawing -513-00100-004 Rev B



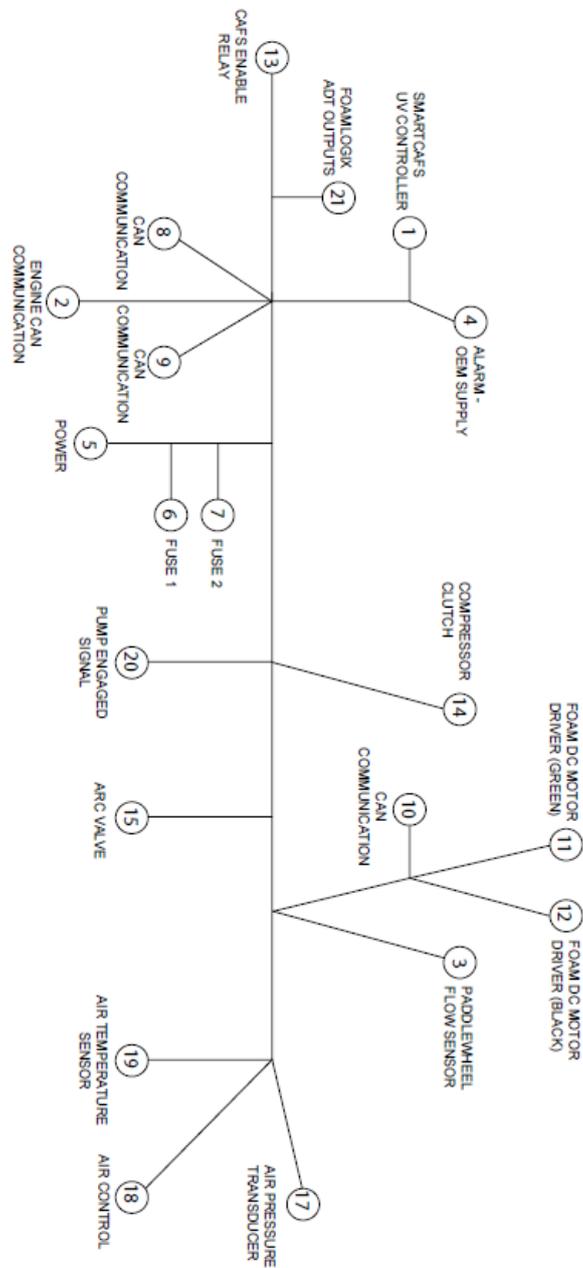
Harness for Prima UV SmartCAFS 50/100 with new motor Driver

The numbers refer to the connectors on the harness
Drawing -513-00100-004 Rev B

11. SMART CAFS HARNESS

11.7. HARNESS FOR PRIMA UV SMARTCAFS 200 WITH NEW MOTOR DRIVER

The numbers refer to the connectors on the harness Drawing -513-00100-003 Rev A



12. SMARTCAFS OPERATION

12.1. FOAM INJECTION

The Foam unit system consists of [3] main components:

1. Foam pump/motor assembly
2. Control panel (integral with main pump control panel)
3. Flow measurement and injection manifold

All three elements combine to provide accurate foam proportioning. From the control panel the operator can initiate the system, adjust the foam ratio, monitor 'real time' water flow rate and record total water and foam concentrate usage.

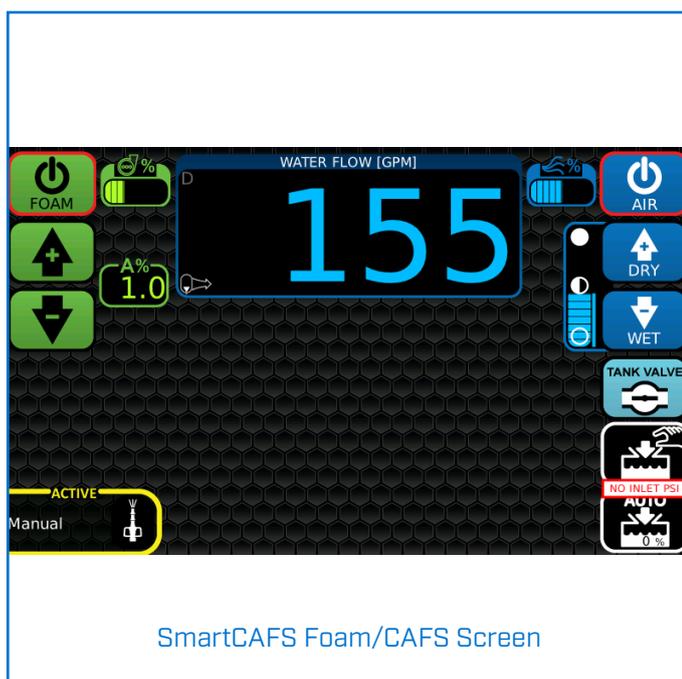
12.2. STARTING FOAM INJECTION

Press the Foam control button to start foam injection.

Foam concentrate is only injected when the foam button has the **RED** selector around the control button



Foam concentrate is only injected when the foam button has the **RED** selector around the control button



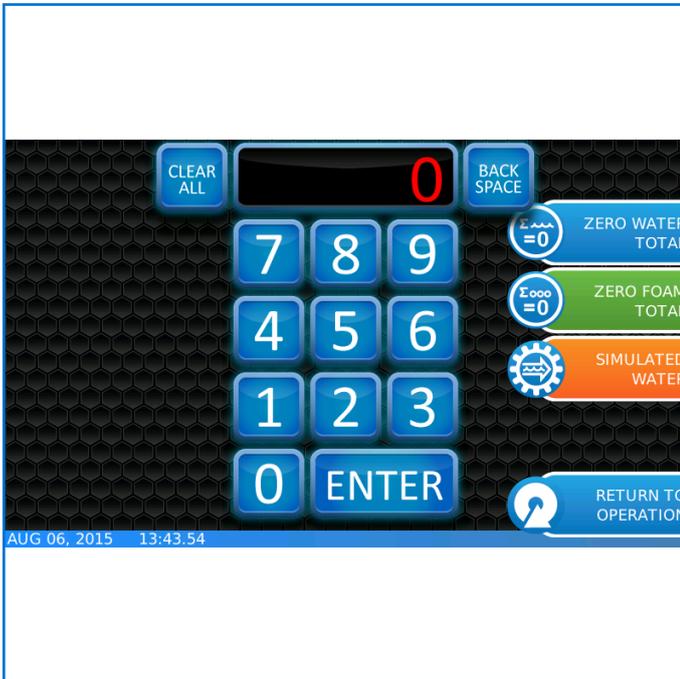
The FoamLogix 2.1A system is for Class A foam and will inject foam in the range of 0.1% to 1.0%. Further information is available in the FoamLogix Model 2.1A Description, Installation and Operation Manual.

The FoamLogix 3.3/5.0/6.5 system for Class A or B foams will inject foam in the range of 0.1% to 10.0%. Further information is available in the FoamLogix Model 3.3, 5.0, 6.5 Description, Installation and Operation Manual.

12.3. COMMISSIONING/START-UP PROCEDURE

1. Check that all the necessary connections have been correctly made.
2. Ensure that the compressed air/oil separator tank and pump gearbox are filled with the correct oil type and quantity.
3. Prime and run the water pump at 8.5 bar (0.86MPa/125 PSI) with compressor engaged.
4. Run the compressor for 30 seconds to allow oil to circulate.
5. Stop unit and check compressor oil level – top up if necessary.
6. Turn the bypass valve on the foam unit pump to 'bypass' and provide a suitable receptacle to collect the foam agent.
7. Ensure that there is sufficient foam agent in the tanks. For Foam unit 3.3/5.0/6.5 select tank A.
8. Select simulated flow on the UV display by pressing the Menu button then pressing the Simulated Water button on the screen or button. Then return to the operating screen by selecting the Return to Operation button.

12. SMARTCAFS OPERATION



9. Press the Foam Power button, and the Foam unit pump will prime itself. The pump will run for 30 seconds or until prime is achieved. If no prime is made, the display will show a plain test warning. Repeat this step once more to attempt to prime the pump.
10. If priming is not achieved after several attempts, ensure the foam supply is connected and available to the pump.
11. For 3.3/5.0/6.5 foam unit, flush then select tank B, and repeat the priming procedure for that tank.
12. When prime is achieved, deselect simulated flow by returning to the menu and turning off simulated flow.
13. Return the bypass valve to the inject position.
14. The unit is now ready to run.

12.4. WARNING



Never use CAFS with a pressure feed into the eye of the pump. SmartCAFS pumps should only be used when working from open water or a tank feed.

Problems will occur with the water/air pressure ratio should pressurised (hydrant) water supply be applied directly to the suction tube.

Hydrant supply may only be used to maintain the water level in the vehicle tank.

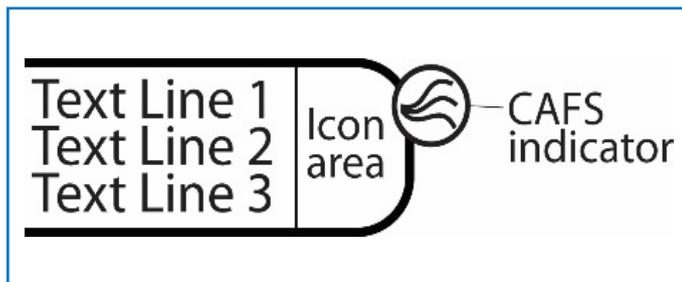


12. SMARTCAFS OPERATION



12.5. PRESET SCREEN [START SCREEN]

The SmartCAFS Controller shows the start screen after a power cycle. This screen allows the operator to select one of 10 preset operating modes (configurable) or manual operating mode.



12.6. PRESET BUTTONS

There are 10 configurable preset buttons. The text, icon, bar colour and CAFS indicator are configurable by the user through a password protected configuration screen. The preset configuration screen allows the user to select the operating foam tank (A/B), foam percentage, CAFS mode and ARC valve position.

The operating screen is entered when a preset button is pressed and held for 0.5 seconds. The operating mode of the foam and CAFS will be set to the configured preset settings.

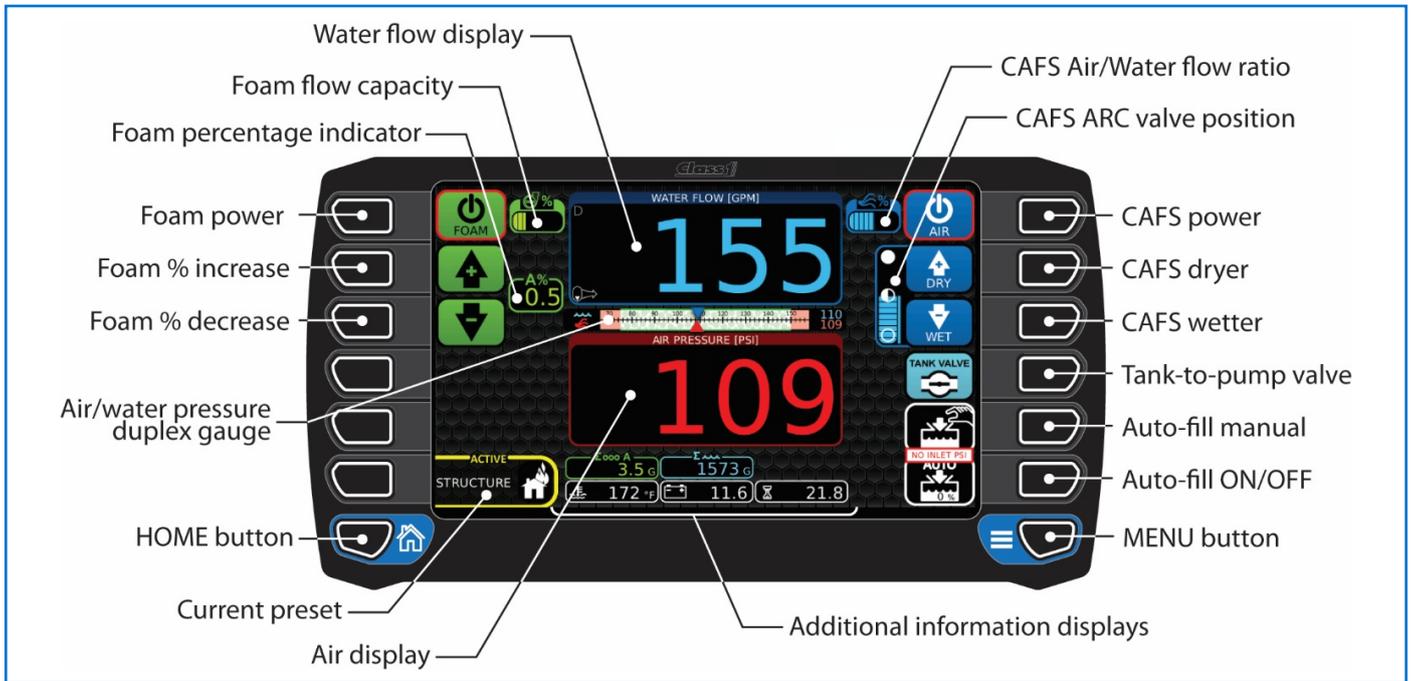
12.7. WATER FLOW DISPLAY

The water flow display is always visible and shows the current water flow rate through the Foam/CAFS discharge manifold.

Home button: This button toggles the display between the Preset Screen and the Operating Screen.

Menu button: This button shows/hides the additional information displays. When this button is pressed and held for 3 seconds the menu will be displayed.

12. SMARTCAFS OPERATION



12.8. OPERATING SCREEN

The operating screen allows control over the foam and CAFS and, if configured, the tank valve. The water flow display is always active but the air flow display is only shown when the CAFS power is ON.

12.9. WATER FLOW DISPLAY

The water flow display is always visible and shows the current water flow rate through the Foam/CAFS discharge manifold.

12.10. FOAM FLOW CAPACITY

The foam flow capacity is a bar graph that shows how hard the foam pump is working (0% to 100%).

12.11. FOAM PERCENTAGE INDICATOR

The foam percentage indicator shows the foam proportioning rate for the currently selected tank.

12.12. FOAM POWER BUTTON

The foam power button turns the foam system OFF or ON. The foam power button's colour indicates the currently selected foam tank (A green, B red, FLUSH or orange). The border of the power button is black when OFF and red when ON.



OFF



ON

12. SMARTCAFS OPERATION

12.13. FOAM INCREASE AND DECREASE BUTTONS

The increase and decrease foam buttons change the foam percentage for the currently selected foam tank. The colour of these buttons indicates the tank selected and foam system power state:

Green: Foam system ON, tank A selected

Red: Foam system ON, tank B selected

Grey: Foam system OFF

These buttons will modify the foam percentage value even when the foam power button is OFF

12.14. HOME BUTTON

Return to the preset screen.

12.15. CURRENT PRESET

This display shows the currently selected preset name and icon (or 'manual' if manual was selected).

12.16. AIR DISPLAY

This display shows the current air pressure, CAFS ratio or current air flow rate based on the 'CAFS air display' selection configured in the user menu. The air flow rate and CAFS ratio displays are only shown when CAFS is turned ON.

12.17. CAFS AIR/WATER FLOW RATIO

The CAFS air/water flow ratio is a bar graph that shows the relationship between the air flow and water flow rates (0% to 100%). This display is only available when equipped with the Hale air flow sensing valve.

12.18. CAFS ARC VALVE POSITION

The ARC valve position indicator is a bar graph that shows the gating of the valve (0% [full wet] to 100% [full dry]). The border colour indicates the state of air injection:

Red: Not injecting air

Blue: Injecting air

12.19. CAFS POWER BUTTON

The CAFS power button activates the CAF System (it will start the foam system if it is not already active). CAFS will be turned OFF when the foam power button is turned OFF. The CAF System will also evaluate the air pressure, compressor temperature, water flow, and foam flow before activating the air injection. The border of the power button is black when OFF and red when ON. The power button's colour is grey when the clutch has been disengaged.



CAFS OFF clutch disengaged



CAFS OFF clutch engaged



CAFS ON

12. SMARTCAFS OPERATION

12.20. CAFS WET AND DRY BUTTONS

The wet and dry buttons open/close the ARC valve. These buttons are only active when CAFS power is active. These buttons are active when they are blue and inactive when they are grey.

12.21. TANK-TO-PUMP VALVE BUTTON

OPTIONAL FEATURE

The tank valve button opens or closes the tank valve. The icon on the button indicates the current position of the valve (open or closed). The tank-to-pump valve can be configured (in the user menu) to open automatically when the pump engaged signal is detected. Even when set to automatic mode this button can be utilized to manually open/close the tank-to-pump valve.

12.22. AUTO-FILL MANUAL BUTTON

OPTIONAL FEATURE

(When an auto-fill system is installed.) The auto-fill manual button opens the KZCO valve connected to the inlet in order to fill the water tank. This button is a momentary button and the valve will only be open as long as the button is held. The on-screen icon changes to green to indicate that the valve is being forced open.

12.23. AUTO-FILL ON/OFF BUTTON

OPTIONAL FEATURE

(When an auto-fill system is installed.) The auto-fill ON/OFF button turns ON or OFF the automatic water refill system. The on-screen icon shows the status of auto-fill:

White: Auto-fill ON

White with red / : Auto-fill is OFF

The auto-fill system will only operate if there is sufficient inlet pressure (7+ PSI). If there is not enough inlet pressure the 'NO INLET PSI' warning will be shown between the buttons.

12.24. MENU BUTTON

Toggle button shows/hides the additional information displays. When this button is pressed and held for 3 seconds it shows the password enter screen.

12.25. ADDITIONAL INFORMATION DISPLAY

The additional information displays show the total water flowed, total foam flowed, battery voltage, pump engaged operating hours and compressor oil temperature. This display is toggle ON/OFF with the menu button.

NOTE: Total water flowed and total foam flowed are erased when the system is repowered. These values may also be zeroed during operation when desired in the system menu.

12. SMARTCAFS OPERATION

12.26. OPERATING THE SYSTEM



Do not apply hydrant pressure to pump suction when operating CAFS. CAFS may be operated from open water or a tank feed only.

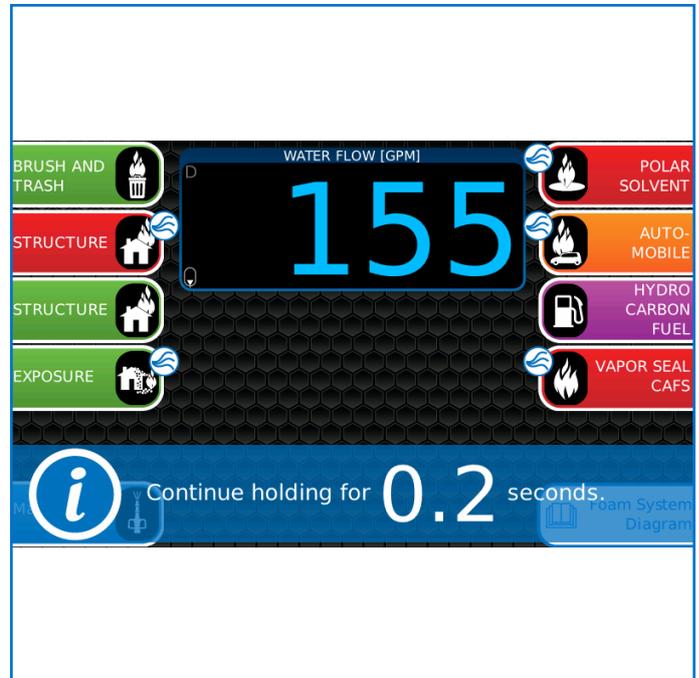
NOTE: The automatic tank-to-pump open function is a menu selectable item and must be set for 'automatic' for this operation to occur (this is the default). The Smart-CAFS Controller will automatically open the tank-to-pump valve (see note) when the pump engaged signal is recognized.

NOTE: The SmartCAFS Controller will automatically engage the compressor clutch when the pump engaged signal is recognized OR when a CAFS preset button is first pressed. This operation is a menu selectable item. If pump input speed is >900rpm the compressor will not engage and a plain text error message will appear. Reduce speed below 900 RPM then the CAFS compressor can be engaged.

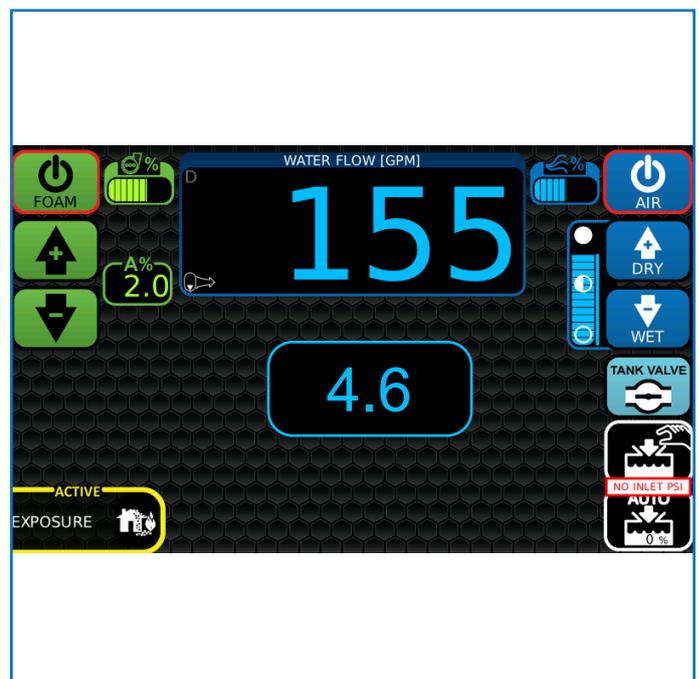
NOTE: When discharging dry foam at low pump pressure, the possibility of hose kinking is increased and should be considered when deploying hoses.

12.27. START FOAM/CAFS OPERATION BY SELECTING A PRESET [OR MANUAL]

Press and hold the desired preset button for 0.5 seconds. The display will show an information bar to indicate to keep holding the button for the required time.



The display will then show the operation screen. The SmartCAFS Controller is now ready to manage the foam/CAF System as the preset dictates when water flow is detected. Water flow is the driving factor for system operation in both 'foam only' or 'foam and air' (CAFS).



The bottom left corner of the screen shows the currently active preset.

12. SMARTCAFS OPERATION

12.28. INCREASE ENGINE SPEED FOR DESIRED WATER PRESSURE

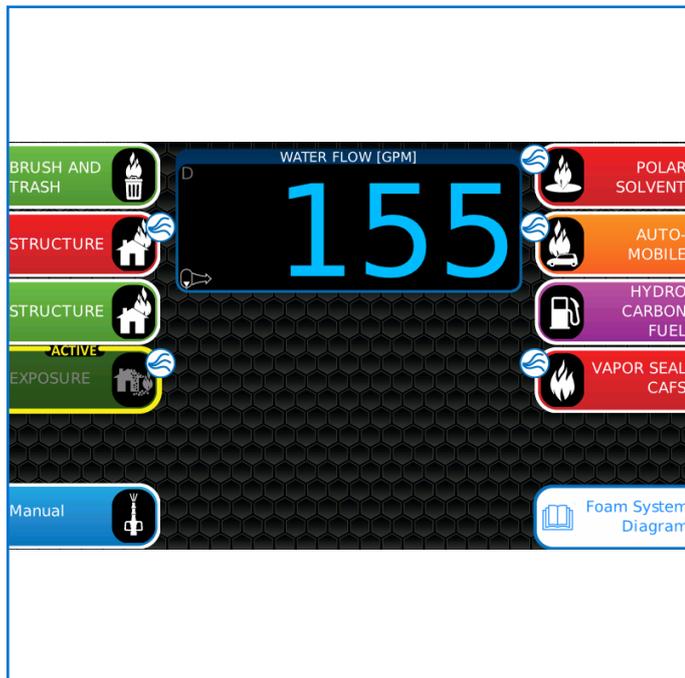
(With SmartGOV fitted) The SmartCAFS Controller automatically communicates with the SmartGOV governor to set the governing system to RPM mode and ramp to its preset 1 engine speed.

(Without SmartGOV) Manually adjust the engine speed to set the water/air pressure to the desired value. CAFS operating range is 4 to 10 bar (58 psi to 145 psi). When using a governor other than the SmartGOV make sure the governing mode is set to RPM.

12.29. SELECTING A NEW PRESET

If a new preset is desired, press the HOME button to move back to the preset screen.

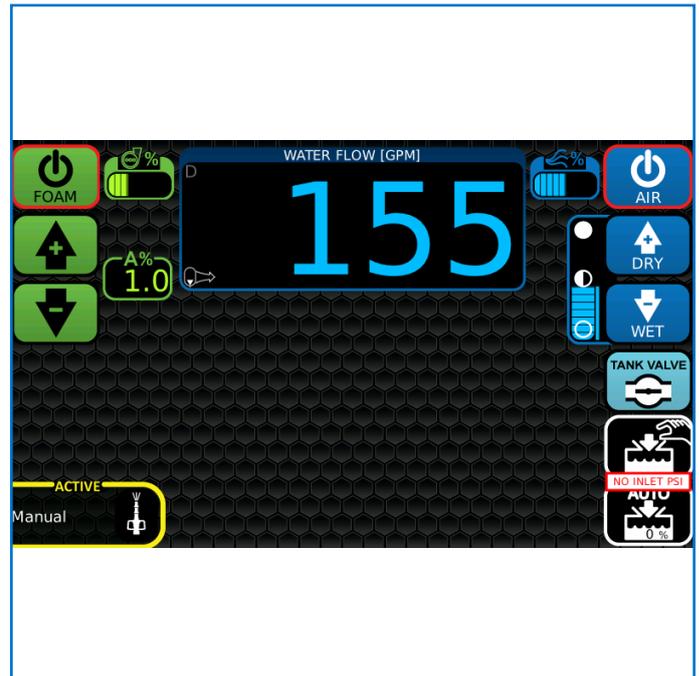
NOTE: The system continues to operate using the current foam/CAFS setting when going back to the preset screen.



The currently active preset will be indicated by the flashing 'ACTIVE' border. Press a new preset button (or manual). Simply press the HOME button again if a new preset is not desired. The operation screen will again be shown.

12.30. MODIFY THE CURRENT OPERATING PARAMETERS

At any time the operating parameters can be modified by pressing the foam percentage (increase/decrease) buttons or by pressing the CAFS wet/dry buttons.



The bottom left corner of the screen will now show 'manual' because the settings have been changed from the original preset values.

The foam and/or CAFS power buttons can be pressed to enable/disable the foam/CAF Systems:

- When foam and CAFS are ON, pressing the foam power button will turn OFF foam and CAFS.
- When foam and CAFS are ON, pressing the CAFS power button turns OFF only CAFS.
- When foam and CAFS are OFF, pressing the foam power button will turn ON only foam.
- When foam and CAFS are OFF, pressing the CAFS power button turns ON foam and CAFS.

12. SMARTCAFS OPERATION

12.31. OVERHEAT SHUT DOWN

1. Should the compressor oil temperature reach 105°C (220°F) a control panel warning indicator will appear on the screen. The compressor can sustain 105°C (220°F) for short periods without damage.
2. If the compressor oil temperature reaches 110°C (230°F), the drive clutch will automatically disengage. This will stop the compressed air supply and only foam/water solution will be discharged. The compressor cannot be re-engaged until the unit has been cooled and the pump input speed is returned to below 900 RPM.
3. The most probable cause of compressor overheating is insufficient cooling water flow.

12.32. FLUSHING

When returning the apparatus to ready condition after using class B foam, the Hale Foam unit foam pump must be flushed. This is because some Class B foam concentrates deteriorate rapidly. It is recommended to flush for the preset time in the SmartCAFS.

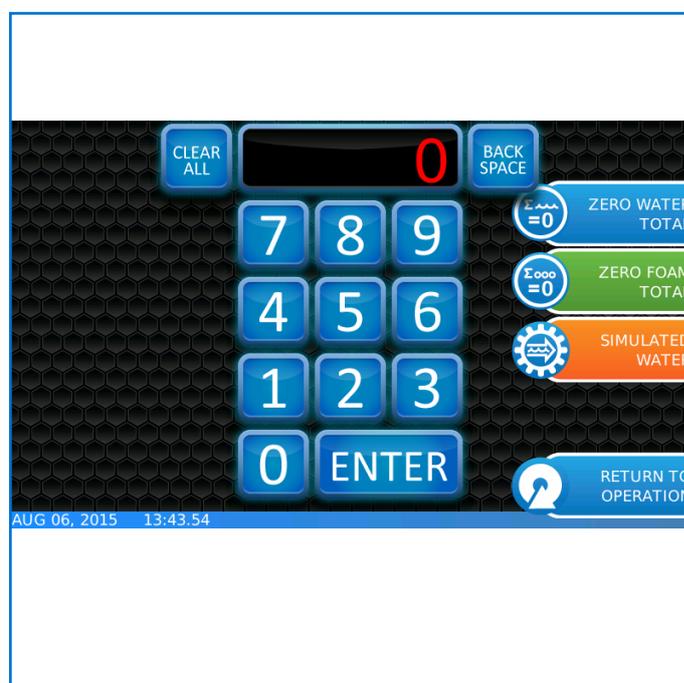
NOTE: Approved class A foam concentrates do not deteriorate at the rate of class B foam concentrates. Provided that an approved class A foam concentrate is used and the system is used within 30 days, flushing is not required. After class B foam concentrate has been used, flush the system then select class A.

For detailed flushing instructions, please refer to the FoamLogix Model 3.3, 5.0, 6.5 Description, Installation and Operation Manual.

12.33. SYSTEM MENU

Press and hold the MENU button for 3 seconds until the system menu is shown. The system menu allows the clearing (zero) of the total water and total foam display, setting the simulated water flow (for diagnostics), and entering passwords for other menus (user and OEM), for calibrations (water and foam) and for configuration (presets).

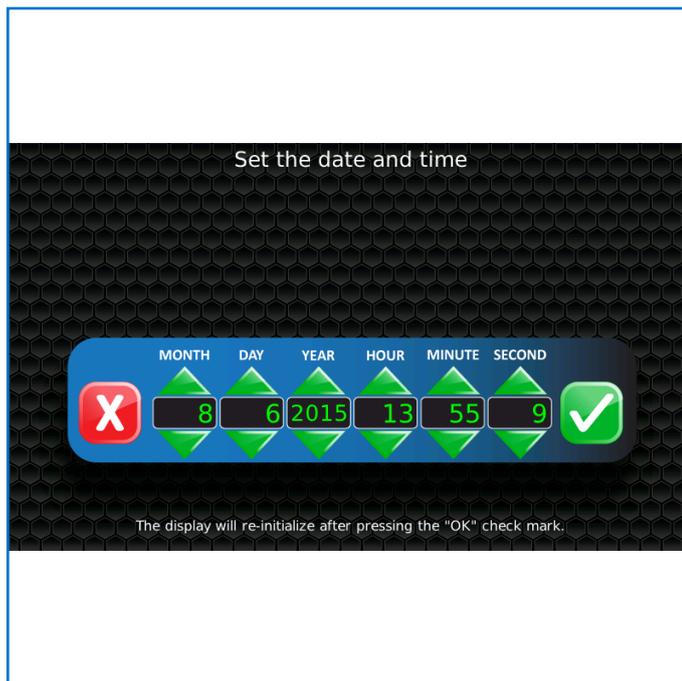
NOTE: The password keyboard greyed out if the foam and/or CAFS power buttons are ON.



12. SMARTCAFS OPERATION

12.34. SETTING THE SYSTEM TIME

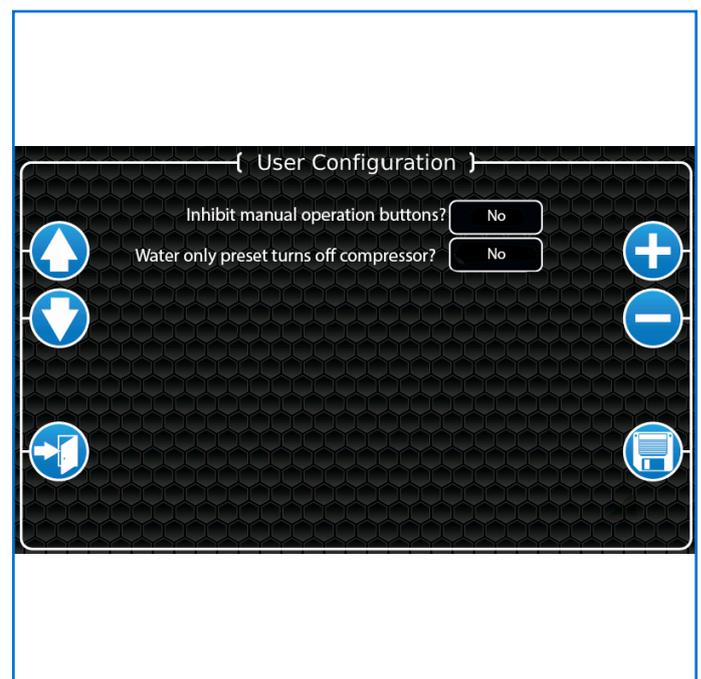
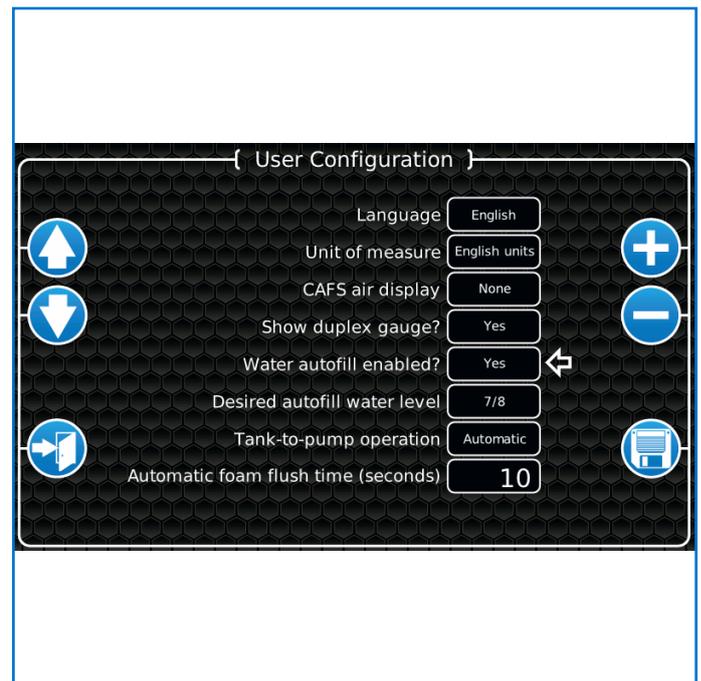
Press the blue bar in the bottom right corner of the system menu screen (over the month and day) and the 'set the date and time' screen will appear. Enter the new date/time and press the green tick to save.



NOTE: The display will re-boot after pressing the green tick.

12.35. USER MENU

Enter the password 1849 in the system menu's keyboard to open the user menu. The user menu allows setting of user configurable items.



12. SMARTCAFS OPERATION

12.36. TABLE FOR THE EXPLANATION OF THE USER MENU SETTINGS

Language	Select the desired language to show within the SmartCAFS Controller. Default: English
Unit of measure	Select the desired unit of measure for the system (English or metric). Default: English units
CAFS air display	Select the desired display to be shown for the air. This display is shown beneath the water flow display (none, air pressure). Default: None – Set Yes
CAFS air display shown	Select to show the CAFS air display. Default: Always
Show duplex gauge	Select whether to show the duplex gauge when additional information is toggled. Default: No
Water autofill enabled	Select whether to use auto-fill. Default: No
Desired autofill water level	Select the level to maintain in auto-fill (fill, 7/8, 3/4, 5/8, 1/2, 3/8, 1/4, 1/8, empty). Default: 7/8
Tank-to-pump operation	select whether the tank-to-pump valve is operated manually or automatically (or none if an air actuated tank-to-pump valve is not installed). Default: Set none
Automatic foam flush time	Number of seconds that the foam system must be flushed (2 to 60 seconds). Default: 10 seconds
Inhibit manual operation button	Default: No
Water only preset turns off compressor	Default: No



UP/DOWN arrow buttons

Move the arrow to select the menu item. The white arrow points to the currently selected menu item.



Exit button – Exit the menu menu item.



'+' and '-' buttons:

Change the value of the currently selected menu item.

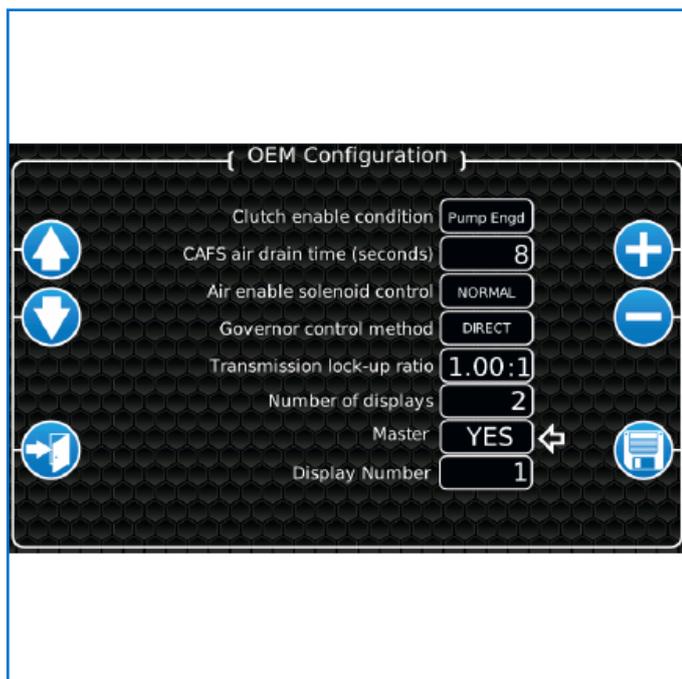
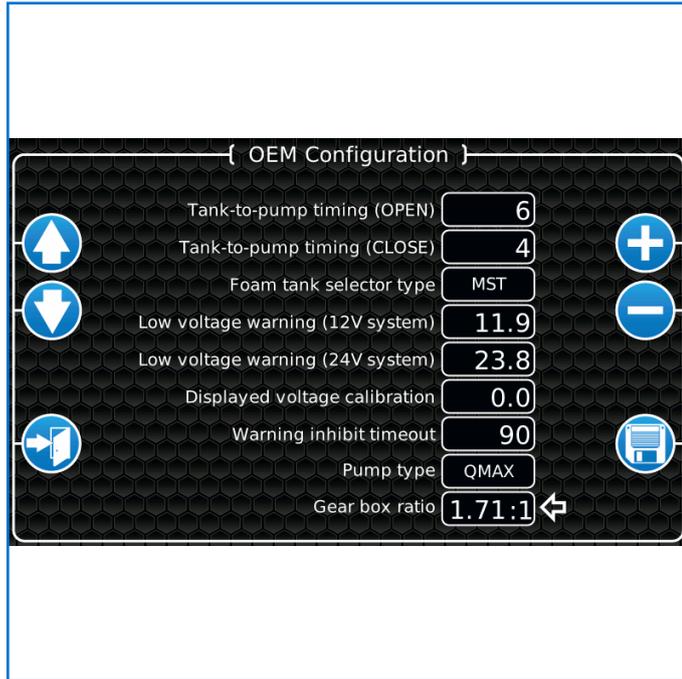


Save button: Save all items in the menu

12. SMARTCAFS OPERATION

12.37. OEM MENU

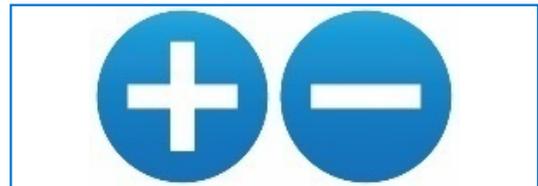
Enter the password 2314 in the system menu's keyboard to open the OEM menu. The user menu allows setting of user configurable items.



UP/DOWN arrow buttons
Move the arrow to select the menu item. The white arrow points to the currently selected menu item.



'+' and '-' buttons:
Change the value of the currently selected menu item.



Save button: Save all items in the menu



Exit button - Exit the menu menu item.



12. SMARTCAFS OPERATION

12.38. TABLE FOR THE EXPLANATION OF THE OEM MENU SETTINGS

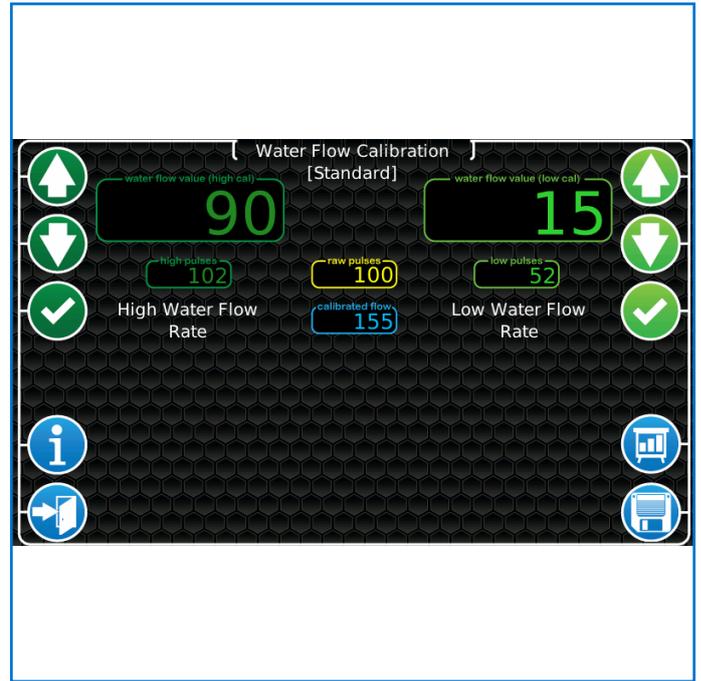
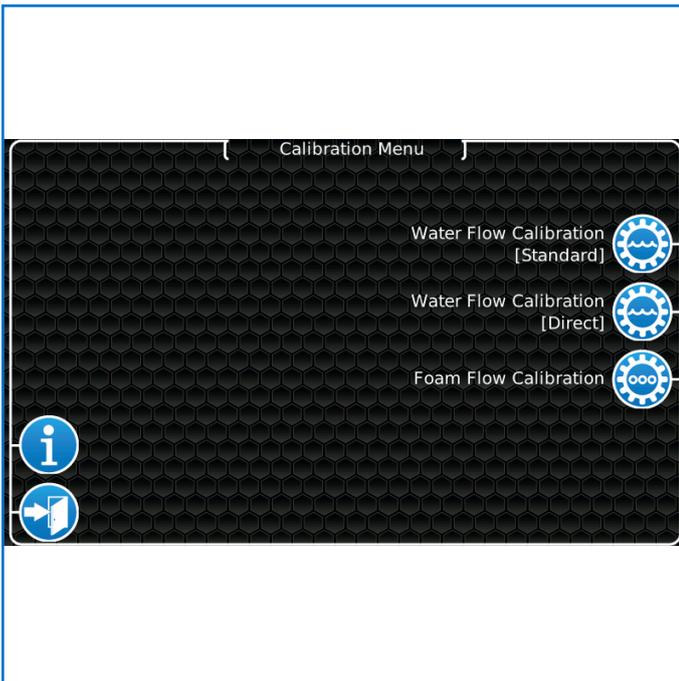
Tank-to-pump timing OPEN	Select the amount of time the “open” air solenoid is activated. The tank-to-pump valve is controlled via an linear air cylinder so this setting allows for fine tuning of the amount of time it actually takes to fully stroke the cylinder. Default: 6 seconds
Tank-to-pump timing CLOSE	Select the amount of time the “close” air solenoid is activated. The tank-to-pump valve is controlled via an linear air cylinder so this setting allows for fine tuning of the amount of time it actually takes to fully stroke the cylinder. Default: 4 seconds
Foam tank selector type	Select the foam tank selector type. Single tank systems (none or MST), dual tank systems (MDT or ADT). Default: MST
Low voltage warning (12V)	Select the low voltage warning level for 12V systems. Default: 11.9 volts
Low voltage warning (24V)	Select the low voltage warning level for 24V systems. Default: 23.8 volts
Displayed voltage calibration	If the displayed voltage in the additional information displays does not match the actual system voltage this value can be adjusted to calibrate (offset) the voltage (-1.5 to +1.5 volts). Default: 0.0 volts
Warning inhibit timeout	Sets the amount of time (30 to 300 seconds) that a warning, which was inhibited (cleared) by the operator, will stay hidden until it shown again (if the warning is still active). Default: 90 seconds
Pump type	Select the pump type (PC1, PC2, QMAX-XS, QMAX, QTWO, or DSD). Default: Prima
Clutch enable condition	Select when the compressor clutch will be enabled (Pump Engd = clutch engaged when the pump engaged signal is activated, Preset = clutch engaged when a CAFS preset is first pressed). Default: Pump Engd
CAFS air drain time	Select how long the air drain solenoid is open when the pump engage signal is deactivated (0 to 10 seconds). This allows the residual air to be bled off after system usage. Default: 8 seconds
Air enable solenoid control	Sets how the air enable solenoid is controlled. Inverted = air IS NOT blown into the air valve assembly to activate air injection. Normal = air IS blown into the air valve assembly to activate air injection. Note: when using the Hale air sensing valve this value should be set to “inverted”. Default: INVERTED
Governor control method	Imitate or direct
Transmission lock-up ratio	1.01 : 1
Pump engaged input	voltage or Pressure
Engine CAN baud rate	125 / 250 / 500 KBPS

12. SMARTCAFS OPERATION

12.39. CALIBRATIONS

Enter the password 6679 in the system menu's keyboard to open the calibration menu. The calibration menu allows the foam and water calibrations to be performed.

1. Establish flow through a foam/CAFS capable discharge at either the high or low rate. Use the yellow "raw pulses" display window to verify that the paddlewheel sensor is detecting the waterflow.



NOTE: Anytime the i button is shown it can be pressed to pop-up a tutorial about the current screen.

The tutorial can be cancelled at any time by pressing the i button again.

12.40. WATER FLOW CALIBRATION [STANDARD]

The standard water flow calibration requires plain water to be flowed through a foam/CAFS capable discharge. The water flow calibration requires flows at a high rate and a low rate. The high and low rate is determined by the person calibrating the system. This two-point calibration yields a very precise water flow calibration across the entire range.

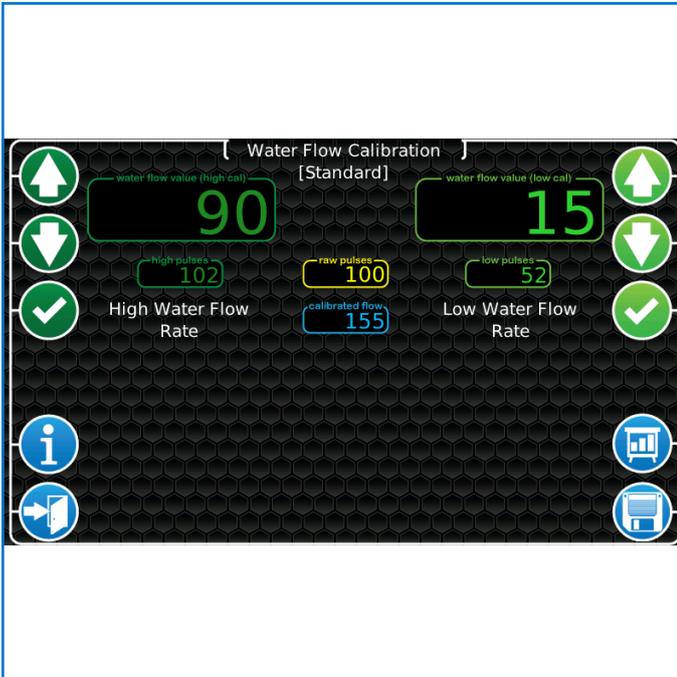
NOTE: An accurate flow measuring device must be used to measure the water flow when calibrating the flow sensor. Use a suitable size, smooth bore nozzle or an accurate in-line flow sensor.

System	Low-l/min	High - l/min
CAFS50	70	400
CAFS100	70	800

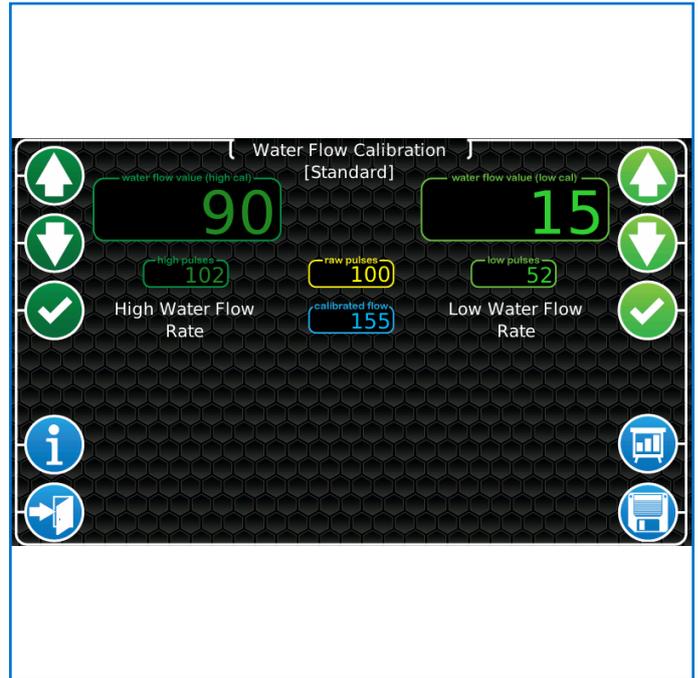
2. The display will ask you to enter the flow value. Press the display where you want the value to be placed. Use the UP and DOWN arrows to set the flow rate to a known value.

12. SMARTCAFS OPERATION

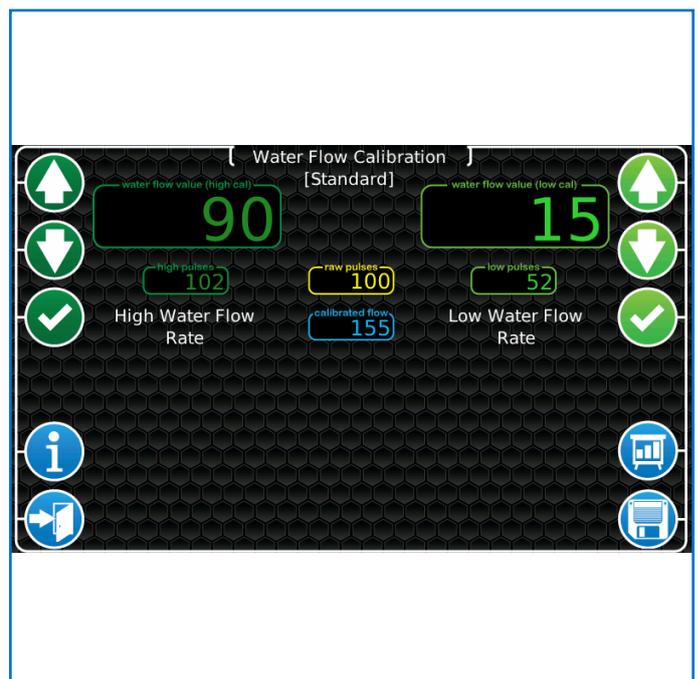
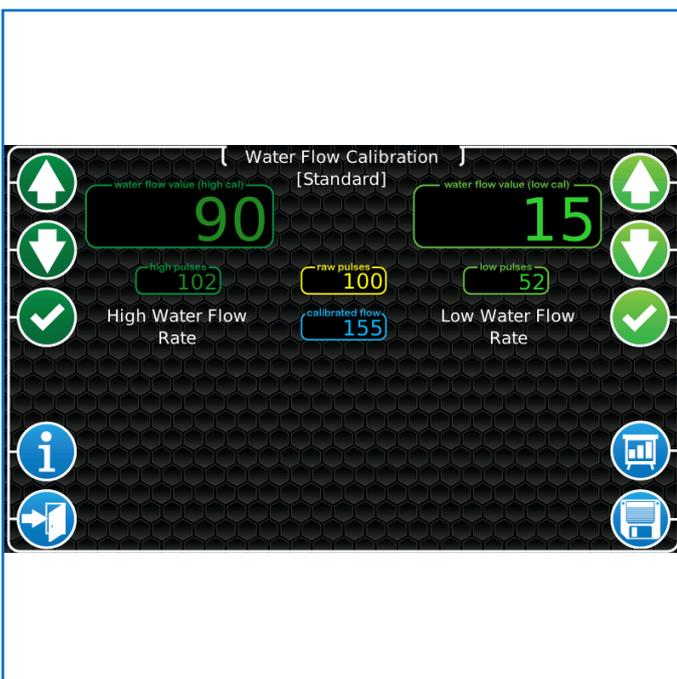
- Perform these same steps for the other flow rate.
- Press the “save” button to complete the calibration. Decrease the throttle and stop water flow



- Press the “check mark” button on the desired side (high or low). Make sure that the value in the yellow “raw pulses” display window is now in the green “high pulses” (or “low pulses”) display window.



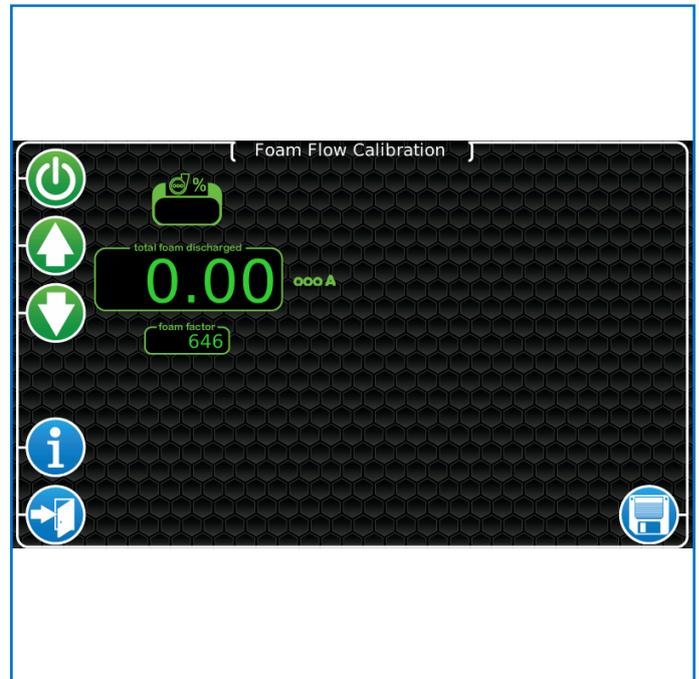
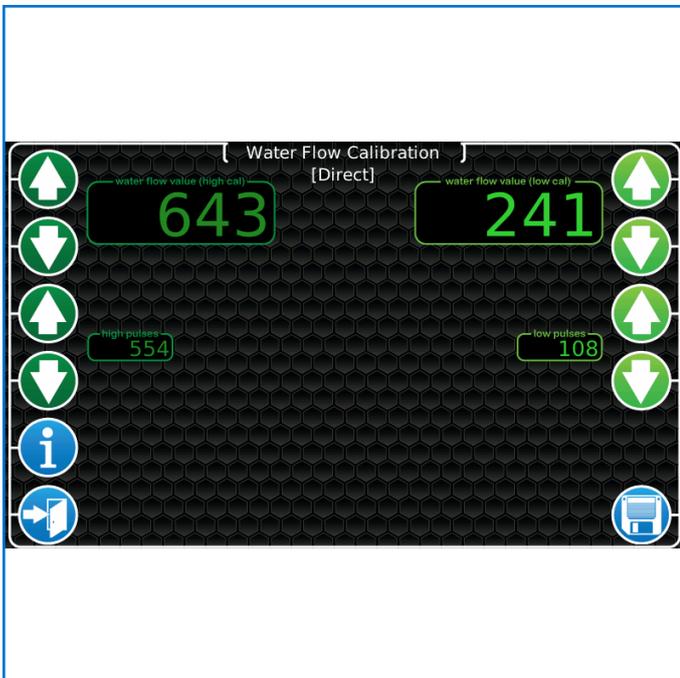
- Press the “exit” button to return to the calibration menu.



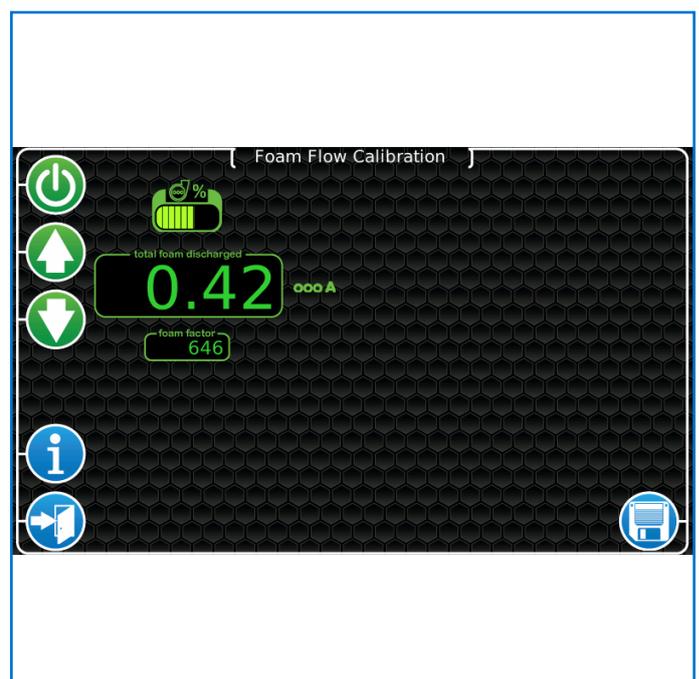
12. SMARTCAFS OPERATION

12.41. WATER FLOW CALIBRATION [DIRECT]

The direct water flow calibration is simply a means of entering the values from a previous water flow calibration without the need to actually flow water. The direct water flow calibration requires the known values for the water flow value and its related water flow pulses (high and low) from a previously completed calibration. This is typically used when having to replace the SmartCAFS Controller or when another vehicle is determined to be exactly the same as a previous vehicle.



- The bar graph will increase to indicate that the foam pump is running and the system will begin discharging foam concentrate. The “total foam discharged” display will begin incrementing.



12.42. FOAM FLOW CALIBRATION

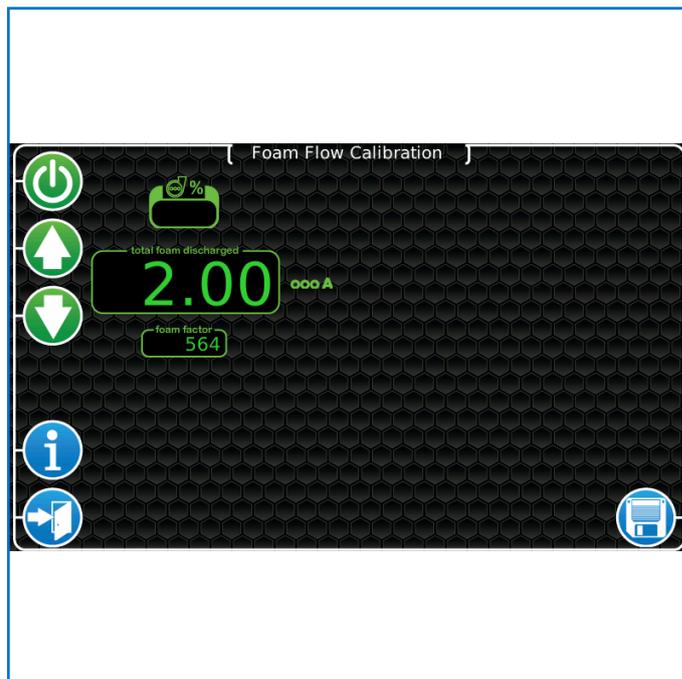
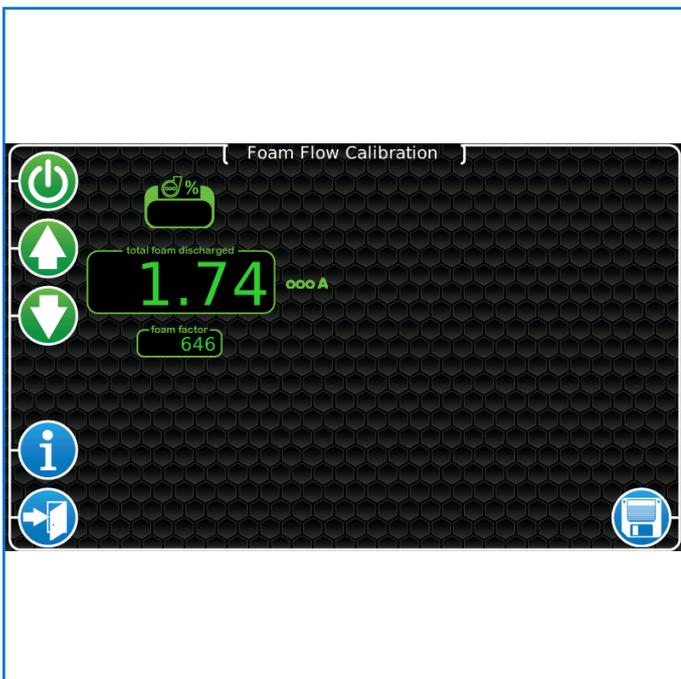
The foam flow calibration requires the discharge of a known quantity of foam concentrate into a calibrated container.

NOTE: Be sure to set the foam bypass handle into the “bypass” position so that the discharged foam concentrate may be collected.

- Place the foam bypass handle into the “bypass” position. Select the appropriate foam tank, A or B.
- Place the calibrated container so that it will be filled with foam concentrate as it is discharged through the bypass hose.
- Press the power button.

12. SMARTCAFS OPERATION

- When the foam concentrate has filled the container to a known level press the power button again to stop the foam system.



- Use the UP/DOWN arrow buttons to change the value shown in the “total foam discharged” window to reflect the value actually collected in the container (the “foam factor” value will be changing, but in the inverse direction).

- Press the “save” button. Repeat for the second foam tank.



- Press the “exit” button to return to the calibration menu.



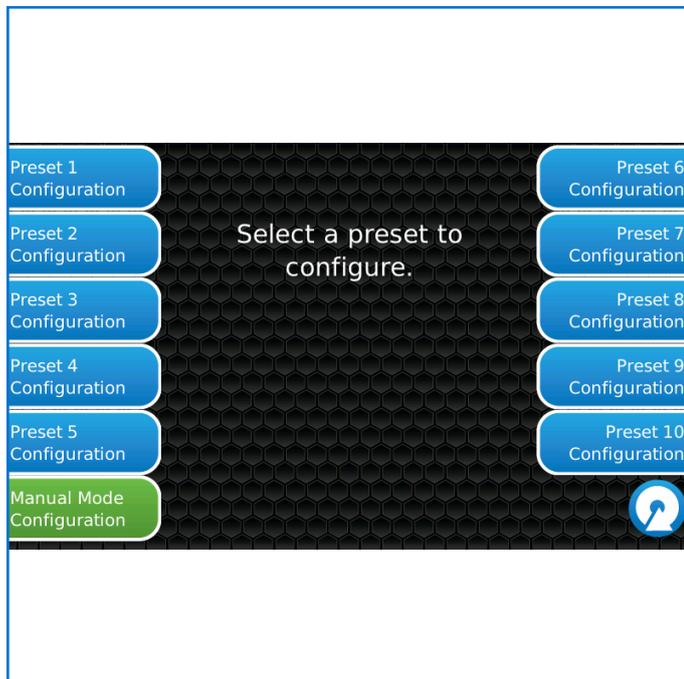
- Place the bypass handle back to the “inject” position.

12. SMARTCAFS OPERATION

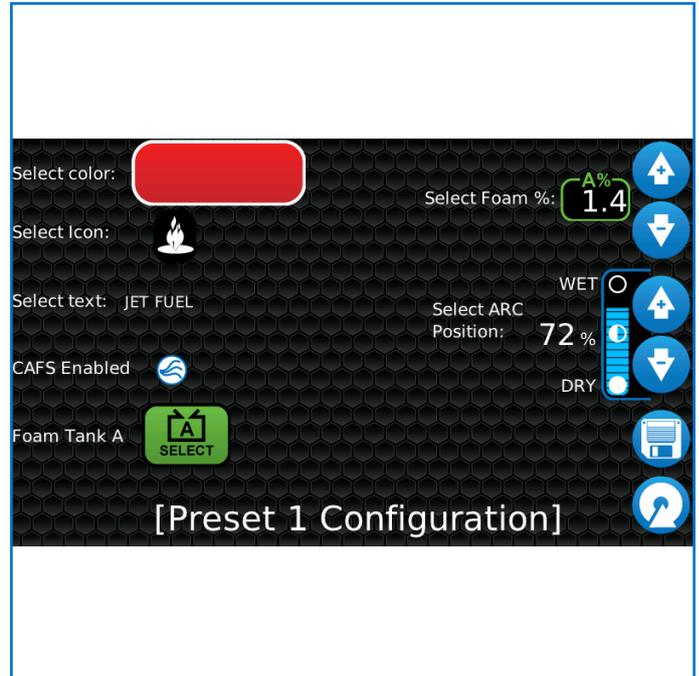
12.43. PRESET CONFIGURATION [STANDARD]

The SmartCAFS Controller allows up to 10 presets to be configured. These presets can be set for foam only or foam and air (CAFS).

Enter the password 1023 in the system menu's keyboard to open the preset configuration menu



Select the preset to configure and that preset's configuration screen will be shown.



12. SMARTCAFS OPERATION

12.44. PRESET CONFIGURATIONS

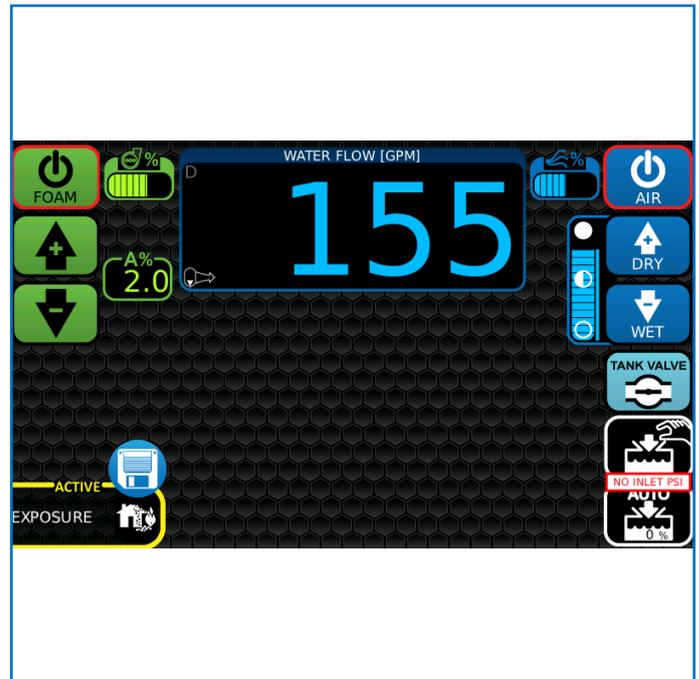
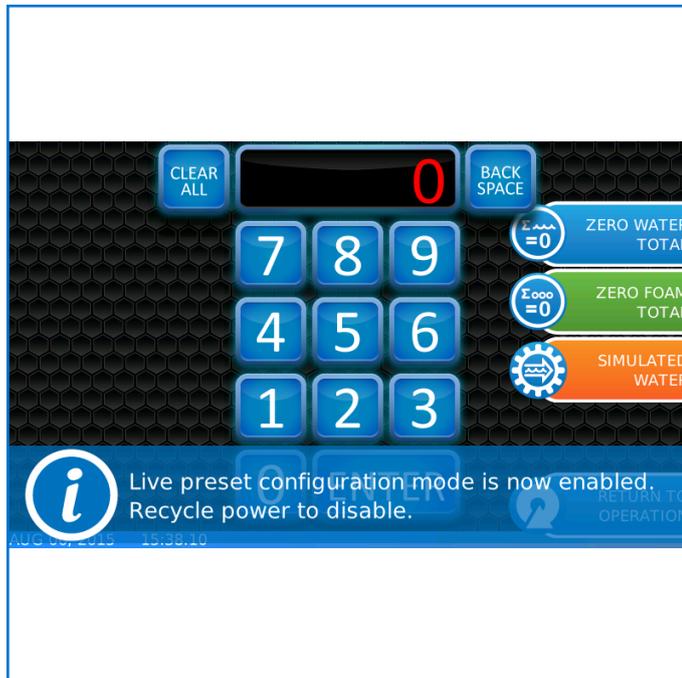
Select colour	Select the color for the preset's bar (green, red, orange, purple, blue, disabled). If "disabled" is selected then the preset is turned OFF.
Select icon	Select the icon to use for this preset.
Select text	Pops-up a keyboard so that text can be set for this preset (9 characters per line, up to 3 lines).
CAFS enabled/disabled	Select whether this preset will be using CAFS or foam only.
Foam tank	Select which foam tank is used with this preset. If the foam selector is not set for the correct tank the SmartCAFS Controller will pop-up a warning to inform the operator to switch to the correct tank.
Select foam %	Set the foam concentrate percentage required for this preset (this option is only visible if CAFS is enabled for this preset).
Select ARC position	Set the consistency of the CAFS by setting the Air Ratio Control valve between WET and DRY (this option is only visible if CAFS is enabled for this preset).
"Save" button	Save this preset to memory.
"Return" button	Return to the "select a preset" configuration menu.

12. SMARTCAFS OPERATION

12.45. PRESET CONFIGURATION [LIVE]

Once a preset has been configured via the standard configuration it may not have produced the CAFS consistency desired. The “live” preset configuration allows the operator to flow CAFS while adjusting the consistency and then re-save that new value to the desired preset.

Enter the password 40692 in the system menu’s keyboard to open the user menu. This enables the “live” preset ability. Information banners will pop-up to indicate that the “live” preset ability has been activated. Touch the banner to dismiss the message.



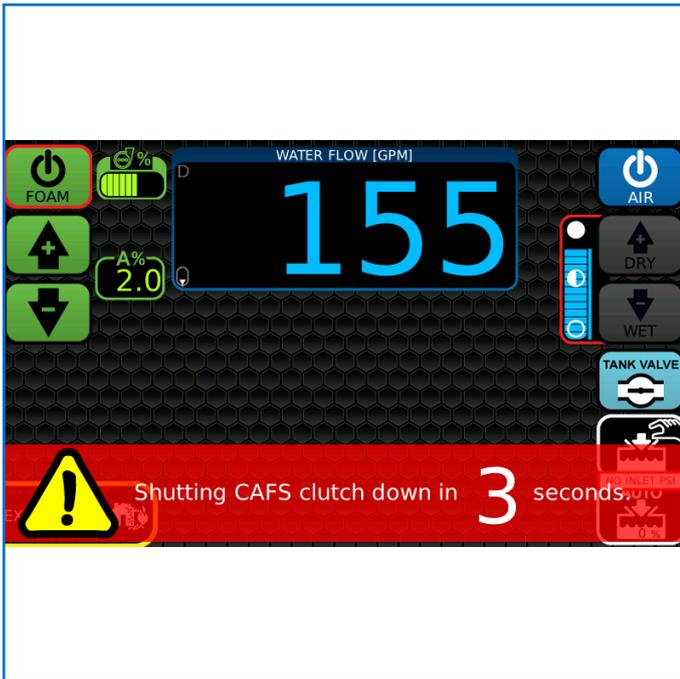
NOTE: You must recycle the SmartCAFS Controller’s power to disable the live preset configuration.

1. Select the desired preset from the preset page. You will notice a “save” icon above the currently selected preset (bottom left corner of the screen).
2. Run the CAFS and adjust the CAFS consistency as desired (WET/DRY buttons).
3. Press the button next to the currently selected preset indicator. The “saving” indicator will appear momentarily indicating that the new consistency has been saved.

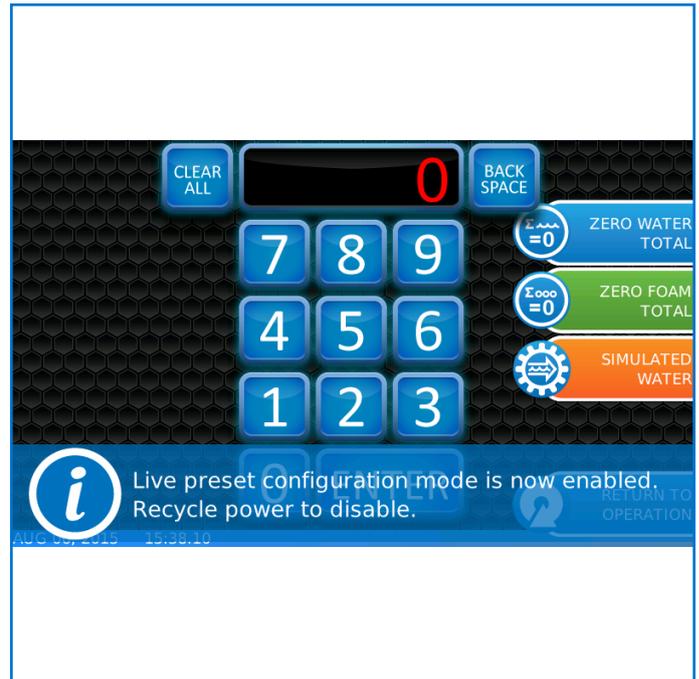
12. SMARTCAFS OPERATION

12.46. ON-SCREEN WARNINGS AND INFORMATION

The SmartCAFS Controller uses on-screen pop-up warnings and information to indicate system status to the operator.



Warnings use a red background



Information uses a blue background

Touch the warning/information to dismiss it (inhibited). The warning will be hidden for the number of seconds set in the OEM menu's "warning inhibit timeout". If the condition that caused the warning still exists the warning will pop-up again.

13. MAINTENANCE

13.1. MAINTENANCE SCHEDULE PC2_/PC1_

Note: The Godiva Compressor service intervals replace those in the Gardner Denver Compressor manuals.

IMPORTANT

Godiva products may only be repaired or serviced by persons trained in these procedures by either Godiva Ltd. or their approved agents.

Correct lubrication and maintenance is essential if satisfactory performance is to be maintained.

Frequency	Equipment	Action
Every 3 months	Pump, PC1 or PC2	Check the pump and gearbox oil levels
		Do a vacuum test to test for leaks
	Pump, PC2 only	Clean the high pressure filter
	Compressor	Check the oil level and top up if necessary. Run compressor for 15 minutes
		Check the drive belt tension and condition.
	Mixing manifold	Grease air ratio control valve
FoamLogix 2.1A, 3.3, 5.0, 6.5 Compressor	Check that foam pipe connections are tight	
	Operate the system in bypass to move the concentrate and prevent gelling (if concentrate is left in the system without use for three months)	

IMPORTANT

In high usage or abnormal operating conditions, the above procedures may need to be more frequent.

The best practise is to flush the system after each use.

13. MAINTENANCE

Frequency	Equipment	Action
Every 12 months	Pump, PC1 or PC2	Change the bearing housing oil
	Compressor	Change the air filter
		Change the oil and filter
	Gearbox	Change the gearbox oil
	FoamLogix 2.1A, 3.3, 5.0, 6.5	Inspect wiring/connections, hoses/connections
		Clean the foam strainer
		Verify water flow calibration
Verify foam feedback calibration		
Every 24 months	Pump, PC1 or PC2	Replace the primer seals
		Replace the priming valve seals and diaphragm
		Test the thermal relief valve
	Compressor	Replace the oil separator element
Every 5 years	Compressor	Replace the compressor drive belt

IMPORTANT

In high usage or abnormal operating conditions, the above procedures may need to be more frequent.

The best practise is to flush the system after each use.

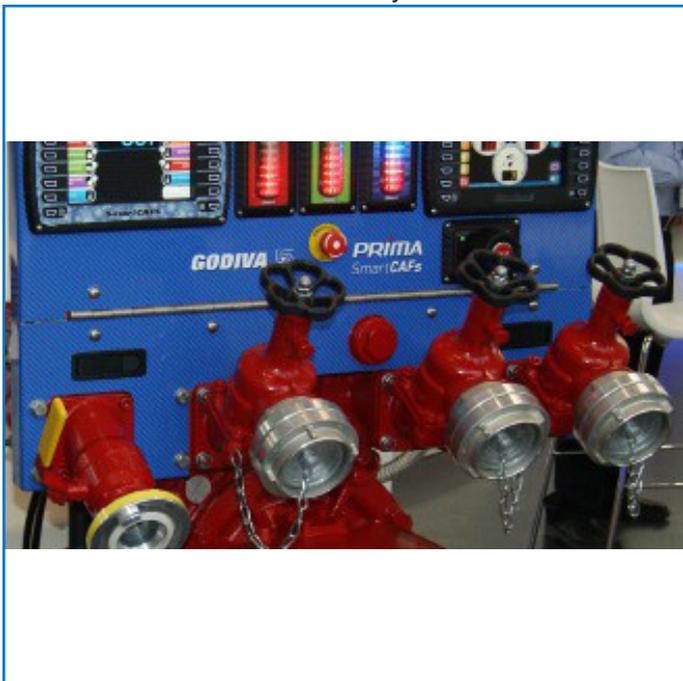
13. MAINTENANCE

13.2. MAINTENANCE OPERATIONS

13.2.1. PC2 PUMPS

Strainer - High Pressure

1. Remove strainer / Cap assembly
2. With care, remove debris from the strainer by washing.
3. The Dowty seal may be reused if free from damage or cuts.
4. Re-fit the strainer assembly and secure.



Gauges

Do not clean the glass surfaces of the gauges with abrasive or solvent cleaners. These will cloud the glass surface. Use a mild detergent and water.

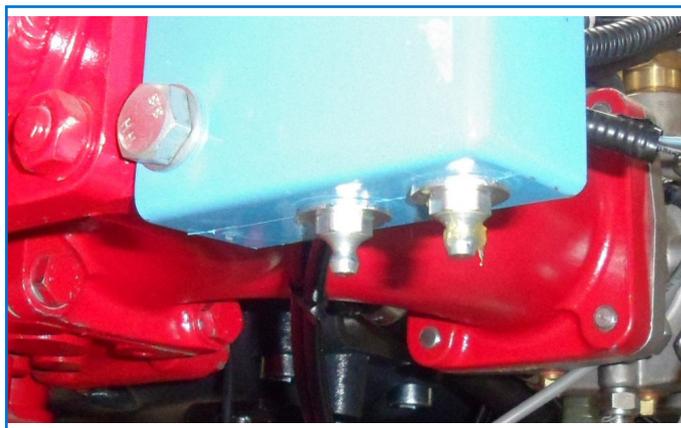
13.3. CAFS MIXING MANIFOLD GREASING BALL VALVE

13.3.1. PRIMA SMARTCAFS50 / 100

The CAFS Mixing Manifold contains a ball valve as part of the air ratio control system. This ball valve must be maintained by inserting lubricating grease at three monthly intervals to ensure smooth and efficient operation.

Use a marine waterproof grease, e.g “Aquaslip” (supplied by Tetrosyl Ltd., Bury, Lancashire, BL9 6RE. www.tetrosyl.com)

The CAFS mixing manifold is fitted with two grease lines, these allow grease to be inserted from the front panel.



13.3.2. PRIMA SMARTCAFS200

On the SmartCAFS200 model the mixing manifold is located at the OEM vehicle builders discretion. There are no grease lines fitted.

The grease is inserted through one or two grease nipples. The first nipple is located on the side of the valve facing the discharge end of the manifold. If a second nipple is fitted, it will be on the other side of the manifold. Connect a suitable grease gun to the nipple and insert grease until a resistance is felt, this indicates that sufficient grease has been inserted.

13. MAINTENANCE

13.4. VACUUM TEST

Place the blanking cap(s) in position on the inlet(s) of the pump and close the delivery valves. Run the pump at 1300-1500 rpm and observe the vacuum/compound needle. When a vacuum of 0.81bar is obtained, stop the pump. This vacuum should be maintained for at least 15 seconds or drop no more than 0.07bar in a minute.

If the pump will not hold the vacuum with the blanking caps in position, a leak is present in the pump, and the pressure test detailed below must be carried out to trace it. Should the pump not reach a vacuum of 0.81bar but will hold a lower pressure, a fault in the priming system is indicated.

13.5. PRESSURE TEST

Pressure test is carried out without pump running

This test is to be carried out if the pump will not hold a vacuum with blanking cap(s) in position, and is intended to trace the leaks responsible for the loss of vacuum.

Apply a water pressure of 3.5 - 7.0 bar to the pump and check for leaks. The area causing the leak should be visible, and can be dismantled and rectified. Check each primer drain hole for water leakage. If leakage is found, replace the primer seals and O rings as described in the Maintenance Manual Procedures.

If the pump will not achieve 0.81 bar vacuum, and will not hold what it does achieve, there is a leak, and possibly also a fault, in the priming system.

If no leaks are apparent, the leakage must lie between the priming valve and the primer. Points to be checked are:

- The inlet seal in the primer end cap
- The priming valve diaphragm

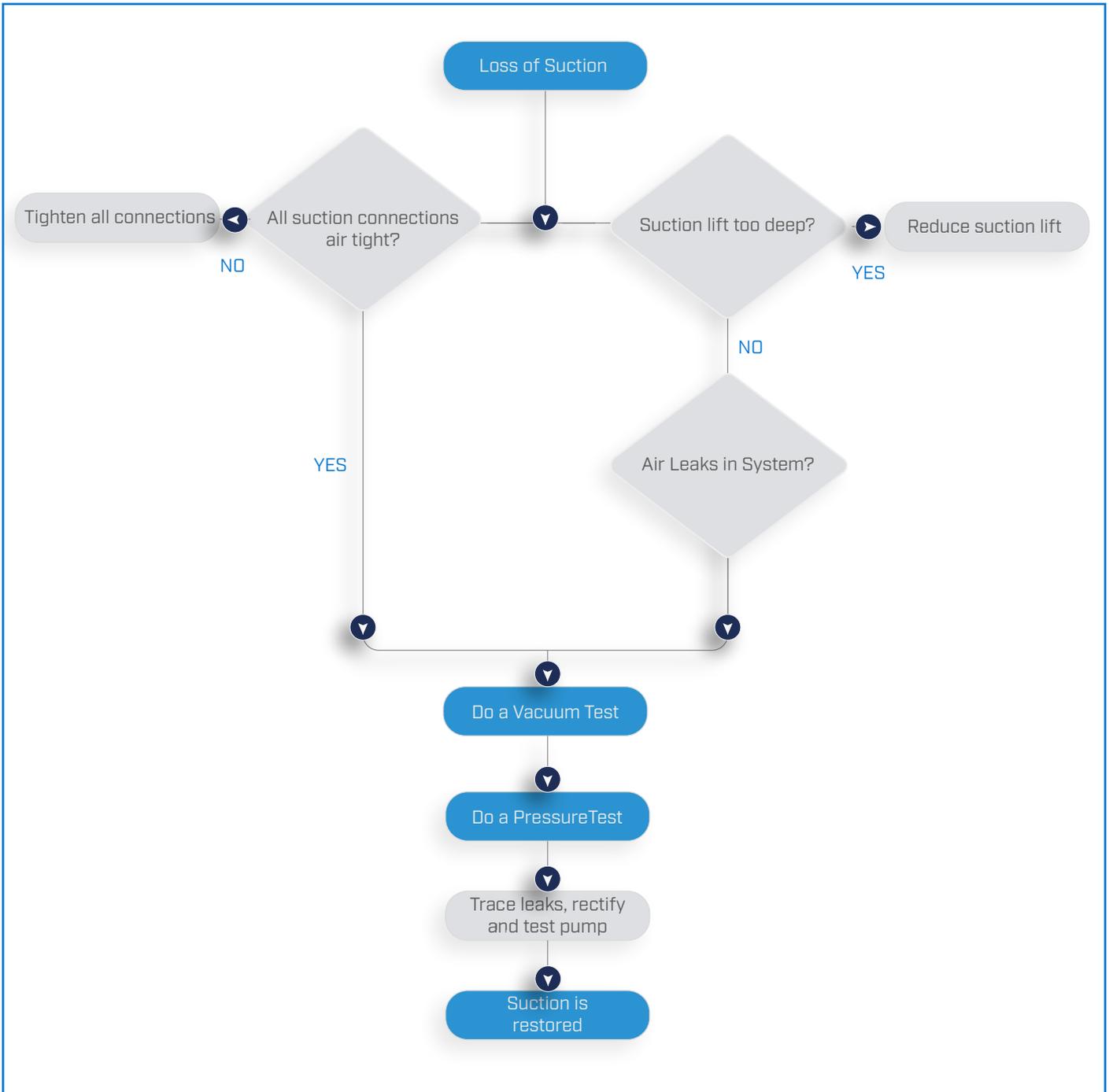
13.6. THERMAL RELIEF VALVE (TRV) TEST

With the pump primed, close all discharges. Run the pump, with high pressure selected, at approximately 2800rpm to permit it to heat up. The TRV should open and discharge water when the pump temperature is in the order of 45 - 55°C with the standard temperature option and 70-75oC with the high temperature option. Observe the valve discharge, if it is open to atmosphere, or feel the discharge pipe become warm if it returns to the vehicle tank. Open a pump discharge valve to permit cool water to enter the pump. The flow from the TRV should now cease.

14. FAULT FINDING

14.1. PUMP OPERATING FAULTS – LOSS OF SUCTION OR EXCESSIVE PUMP NOISE

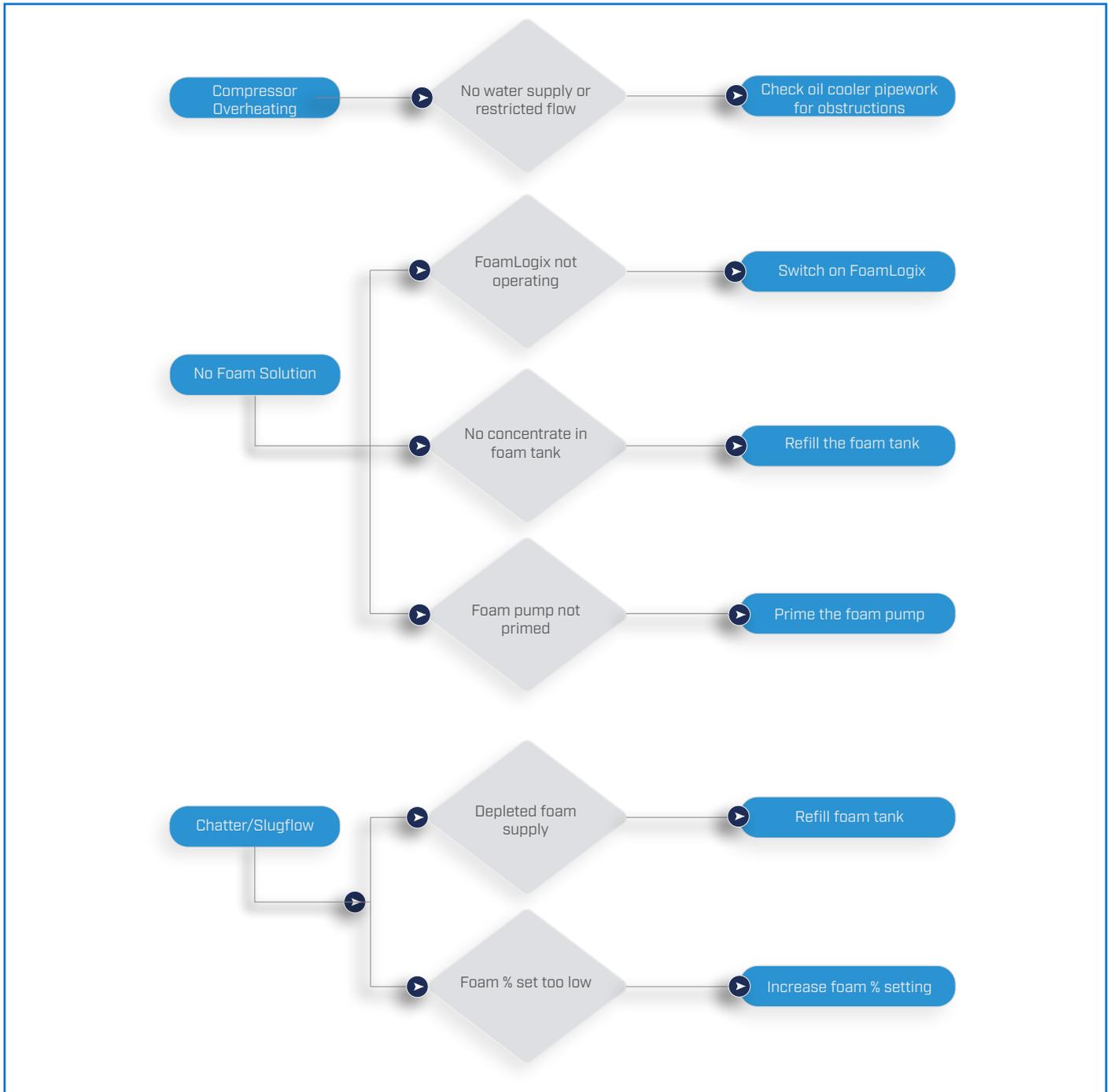
NOTE: For specific FoamLogix model troubleshooting, please refer to the relevant FoamLogix Installation and Operation Manual.



14. FAULT FINDING

14.2. GENERAL OPERATING FAULTS – CAFS

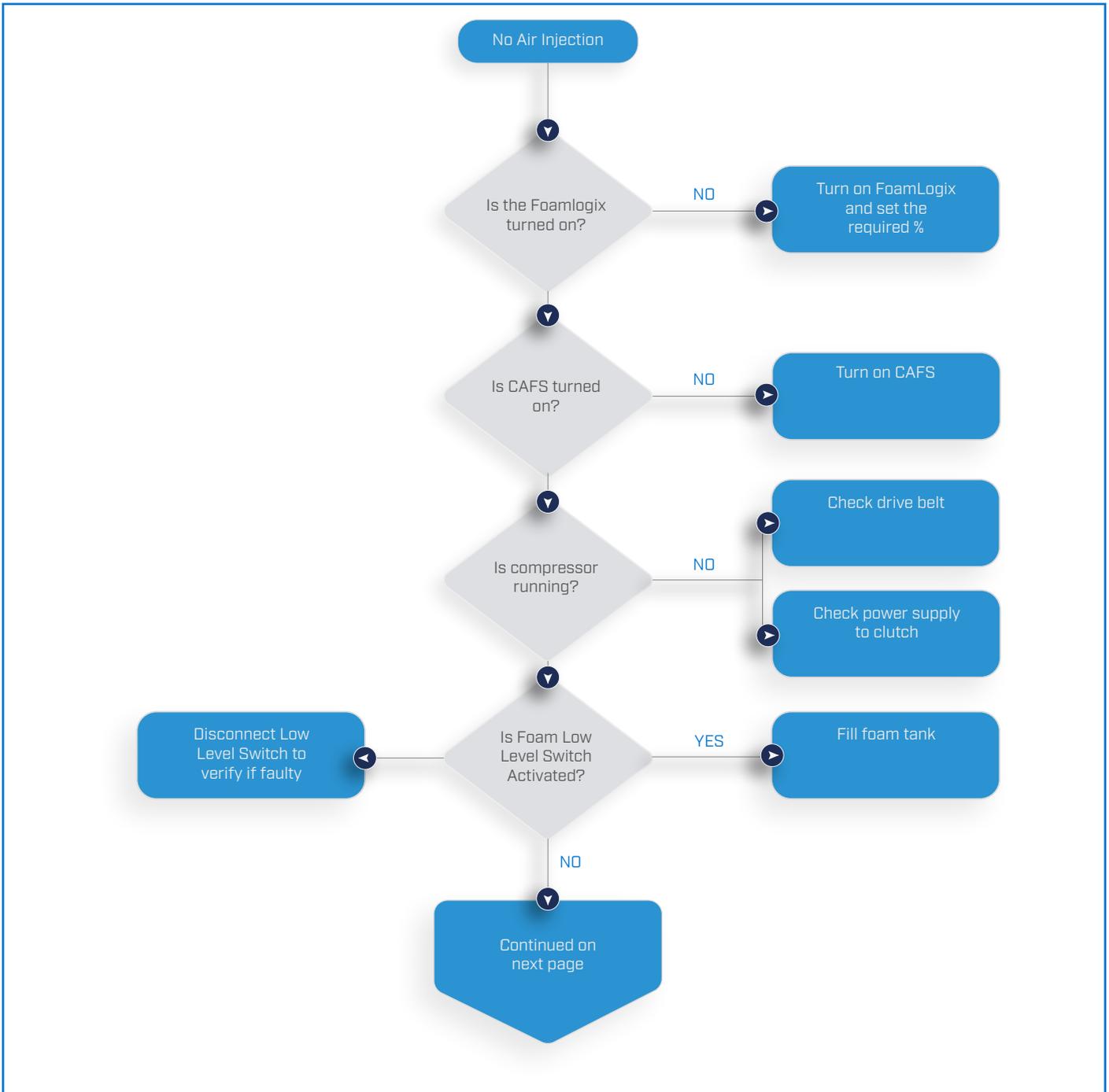
NOTE: For specific FoamLogix model troubleshooting, please refer to the relevant FoamLogix Installation and Operation Manual.



14. FAULT FINDING

14.3. AIR INJECTION FAULTS

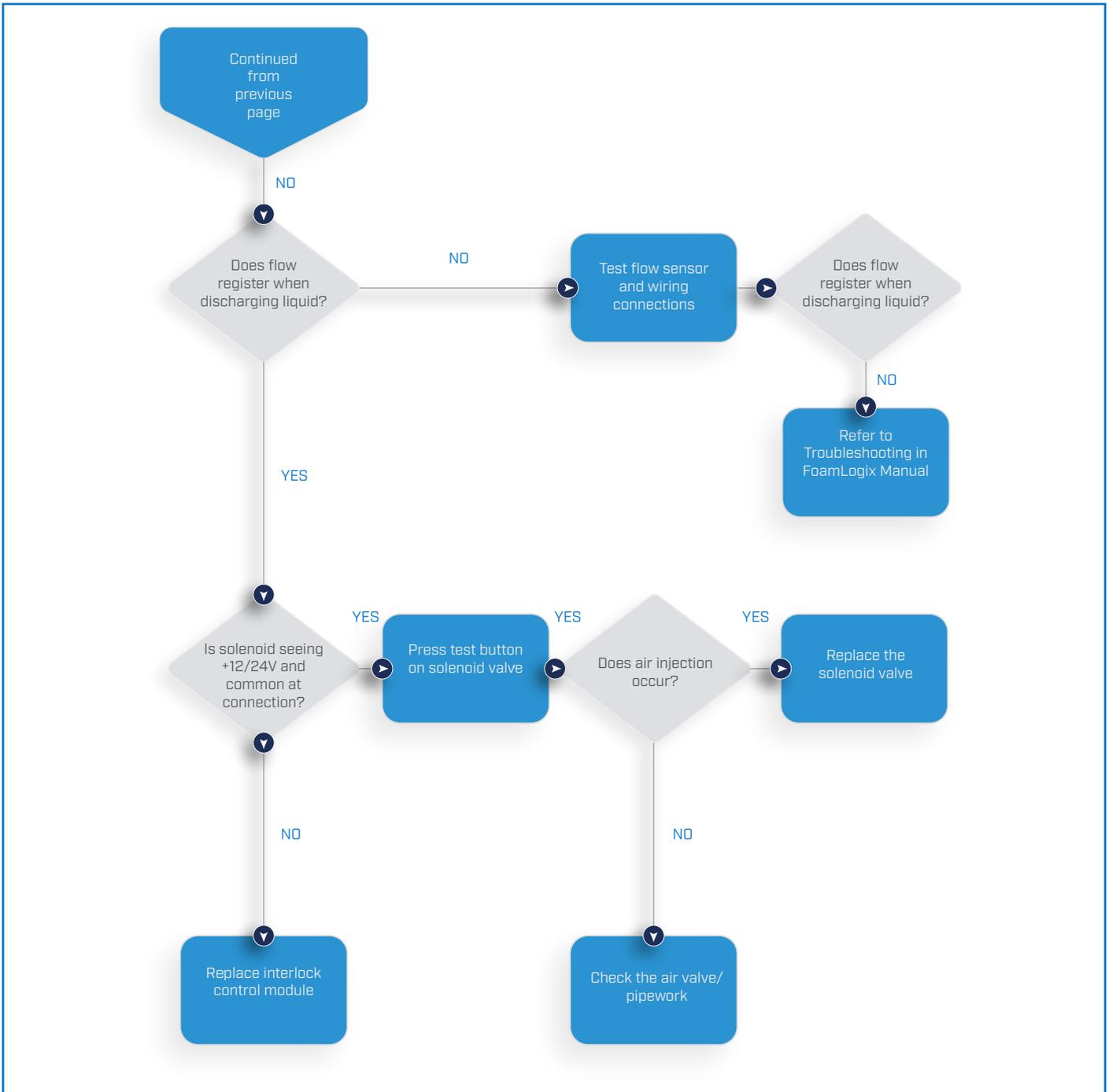
NOTE: For specific FoamLogix model troubleshooting, please refer to the relevant FoamLogix Installation and Operation Manual.



14. FAULT FINDING

14.4. AIR INJECTION FAULTS CONTINUED

NOTE: For specific FoamLogix model troubleshooting, please refer to the relevant FoamLogix Installation and Operation Manual.



15. PARTS LISTS

15.1. PARTS LISTS

Godiva Prima pump illustrated parts list
Please refer to Godiva Ltd.

Compressor illustrated parts list
Please refer to:

- Prima SmartCAFS50 - Gardener Denver Tamrotor Tempest 3 manual.
- Prima SmartCAFS100 - Gardener Denver Tamrotor Tempest 6 manual.
- Prima SmartCAFS200 - Gardener Denver Enduro 12 manual.

Foamlogix illustrated parts list

Please refer to:

- FoamLogix Model 2.1A Description, Installation and Operation manual, part number 029-0020-74-0.
- FoamLogix Model 3.3/5.0/6.5 Description, Installation and Operation manual, part number 029-0021-68-0-A

15. PARTS LISTS

15.2. RECOMMENDED SPARES KIT FOR BI-ANNUAL SERVICE

Qty	Description	Part Number	Comment
Prima SmartCAFS50 / 100			
Compressor Tamrotor 3			
1	Separator element	59271/02	
4	Filter - Oil	59271/01	
2	Filter - Air	59271	
1	Belt - Drive	60578/01	
As required	Tensioner - Belt drive	60579	
Compressor Tamrotor 6			
1	Separator element	TAM-03498328	
4	Filter - Oil	TAM-89675429	
2	Filter - Air	TAM-81166609	
1	Belt - Drive	60578/03	
As required	Tensioner - Belt drive	65447	
Prima Pump			
As required	Strainer - Hi Pressure	60051	Not PC1_ series
4	Washer - Dowty - Oil drain	UFP 2303/08	
2	Washer - Dowty - High Pressure strainer	UFP 2303/15	Common part
2	Washer - Dowty - NRV Inlet	UFP 2303/10	Common part
Prima SmartCAFS200			
Compressor Enduro 12			
4	Filter - Oil	70025	
2	Filter - Air	010-0690-00-0	
1	Belt - Drive	61291	
As required	Tensioner assembly - Belt drive	61198/002	
Prima Pump			
As required	Strainer - Hi Pressure	60051	Not PC1_ series
4	Washer - Dowty - Oil drain	UFP 2303/08	Common part
2	Washer - Dowty - High Pressure strainer	UFP 2303/15	
2	Washer - Dowty - NRV Inlet	UFP 2303/10	Common part

16. TECHNICAL DATA

16.1. CAPACITY AND POWER AGAINST MAIN ROTOR SPEED

Pump type P1	One stage - centrifugal	
Pump type P2	Two stage. 1st stage centrifugal, 2nd stage regenerative	
Shaft	Stainless steel	
Seal	Self-adjusting mechanical type	
Material	Aluminium or gunmetal (applies to main castings) See Materials of Construction list for details	
Direction of rotation	Clockwise (viewed from drive flange), Counter clockwise available	
Priming system	Reciprocating, positive displacement pistons (standard)	
Temperature range	-15°C to +40° ambient (ref: EN1028-1)	
Lubrication - bearing housing	SAE 10W/40 or 15W/40.	1.0 litre
Lubrication - gearbox, if fitted	BP Energol GR XP68,	1.2 litre capacity approximate
Compressor - 50scfm	Screw compressor type oil in compliance with ISO viscosity grade 32 to 46. Alternative - SAE 10W/40 automotive multi-grade oil	3.5 [4.0 with filter change]
Compressor - 50scfm		4.5 [6.0 with filter change]
Compressor - 200scfm		12.0
Safety devices	42°C Thermal relief valve [74°C option]. Fitted as standard on P2, optional on P1	
	P2 only - Suction pressure relief valve opens at 13 Bar	
Angle of inclination	15° in any plane	
Maximum inlet pressure	12 bar	
Pump minimum idle speed	900-1000 rpm	
Pump maximum Pump maximum recommended speed	3600 rpm	

16.2. PRIMA UV SMARTCAFS / FOAMLOGIX SYSTEM / COMPRESSOR - COMPATIBILITY CHART

Pump model	FoamLogix				Compressor
	2.1A	3.3	5.0	6.5	
Prima Smart-CAFS50	2.1A	3.3			Tamrotor Tempest 3
Prima Smart-CAFS100	2.1A	3.3	5.0		Tamrotor Tempest 6
Prima Smart-CAFS200		3.3	5.0	6.5	Enduro 12

16. TECHNICAL DATA

16.3. LUBRICANTS

Pump Gearbox	
Capacity	1.2 litres approximately
Recommended specification	BP Energol GR XP 68 or similar
Pump Bearing Housing	
Capacity	1.0 litres approximately
Recommended specification	10W/40 or 15W/40 Multi-grade engine oil

16.4. EN DESIGNATION [EN 1028:-1:2002]

Godiva Description and specification	European standard	Classification	Limit pressure pa lim bar
Fire fighting centrifugal pump 2010, low pressure	EN 1028-1	FPN 10 – 2 000	17
Fire fighting centrifugal pump 3010, low pressure		FPN 10 – 3 000	17
Fire fighting centrifugal pump 4010, low pressure		FPN 10 – 4 000	17
Fire fighting centrifugal pump 6010, low pressure		FPN 10 – 6000	17
Fire fighting centrifugal pump – 2010, 3010, 4010, 6010, high pressure		FPH 40-250	54.5

16. TECHNICAL DATA

16.5. MATERIALS OF CONSTRUCTION

	Material	Material
Component	Aluminium alloy pump	Gunmetal pump
Volute casing	Aluminium Alloy	Gunmetal
Pump head	Stainless steel	Stainless steel
Suction cover	Aluminium Alloy	Gunmetal
L.P. Impeller	Aluminium Alloy	Gunmetal
Front wear ring	Delrin Polymer	Delrin Polymer
Rear wear wing	Delrin Polymer	Delrin Polymer
Bearing housing	Iron	Iron
Shaft	Stainless steel	Stainless steel
Mechanical seal	Silicon carbide / Carbon	Silicon carbide / Carbon
Other mechanical seal components	Stainless steel	Stainless steel
H.P. Impeller – P2 only	Stainless steel	Stainless steel
Cover Plate – P2 only	Stainless steel	Stainless steel

16. TECHNICAL DATA

16.6. TECHNICAL DATA - FOAMLOGIX

Foam Proportioning System	FoamLogix 2.1A - Class A Foam Compatible
Type	Electronic foam proportioning system
Operating voltage	12V and 24V systems available
Fuse rating 12V / 24V	50 / 40 amp
Current draw (operating) 12V / 24V	25 / 13 amp
Current draw (Maximum) 12V / 24V	40 / 20 amp
Wire size 12V / 24V	Minimum 6.0mm ² (10 AWG)
Maximum Foam Agent Flow Rate	8.0 l/min (2.1 US Gallons)

Foam Proportioning System	FoamLogix 3.3 - Class A and B Foam Compatible
Type	Electronic foam proportioning system
Operating voltage	12V and 24V systems available
Fuse rating 12V / 24V	60 / 40 amp
Current draw (operating) 12V / 24V	30 / 24 amp
Current draw (Maximum) 12V / 24V	60 / 30 amp
Wire size 12V / 24V	Minimum 8.5mm ² (8 AWG)
Maximum Foam Agent Flow Rate	12.0 l/min (3.2 US Gallons)

Foam Proportioning System	FoamLogix 5.0 - Class A and B Foam Compatible
Type	Electronic foam proportioning system
Operating voltage	12V and 24V systems available
Fuse rating 12V / 24V	70 / 40 amp
Current draw (operating) 12V / 24V	30 / 15 amp
Current draw (Maximum) 12V / 24V	60 / 30 amp
Wire size 12V / 24V	Minimum 8.5mm ² (8 AWG)
Maximum Foam Agent Flow Rate	19.0 l/min (5.0 US Gallons)

Foam Proportioning System	FoamLogix 6.5 - Class A and B Foam Compatible
Type	Electronic foam proportioning system
Operating voltage	12V and 24V systems available
Fuse rating 12V / 24V	70 / 40 amp
Current draw (operating) 12V / 24V	30 / 15 amp
Current draw (Maximum) 12V / 24V	60 / 30 amp
Wire size 12V / 24V	Minimum 8.5mm ² (8 AWG)
Maximum Foam Agent Flow Rate	25.0 l/min (6.6 US Gallons)

16. TECHNICAL DATA

16.7. COMPRESSOR DATA

Compressor rating	50scfm
Model	Tempest 3
Maximum operating speed	10000 rpm
Nominal speed of operation	6250 rpm
Nominal power draw	12 kW
Direction of rotation	Anti-clockwise (viewed on pulley)
Volume output	1420 l/min
Oil capacity	3.5 litres
Oil capacity with filter change	4.0 litres
Operational pressure range	4-10 bar
Cooling System	
Type	Oil/water shell & tube type
Cooling water flow rate	10/15 l/min at 7 bar

Compressor rating	100scfm
Model	Tempest 6
Maximum operating speed	8000 rpm
Nominal speed of operation	5350 rpm
Nominal power draw	28 kW
Direction of rotation	Anti-clockwise (viewed on pulley)
Volume output	2830 l/min
Oil capacity	4.5 litres
Oil capacity with filter change	6.0 litres
Operational pressure range	4-10 bar
Cooling System	
Type	Oil/water shell & tube type
Cooling water flow rate	20/30 l/min at 7 bar

Compressor rating	200scfm
Model	Enduro 12
Maximum operating speed	6500 rpm
Nominal speed of operation	5000 rpm
Nominal power draw	40 kW
Direction of rotation	Anti-clockwise (viewed on pulley)
Volume output	5650 l/min
Operational pressure range	4-10 bar

16. TECHNICAL DATA

16.8. TECHNICAL DATA - FOAMLOGIX

Class A Foam	Manufacturer	Brand name
US Forestry Service Approved	Ansul	Silvex Class A Foam Concentrate
	Angus	Forexpan S (0.1% - 1.0%)
		Hi-Combat Class A (1st Defense Class A Cold WaterFoam)
	Kerr Fire	Kerr Forest Foam (0.1%-1.0%)
	Chubb National Foam	1st Defense Class A Coldwater Foam
		Knock-Down
	Solberg	Fire-Brake Class A Foam (3150A)
	ICL Performance Products	Phoscheck WD881
		First Response
	Chemonics	Fire-Trol Fire Foam 103
Fire-Trol Fire Foam 104		
3M	Light Water FT-1150	
Chemguard	First Class - Class A Foam P/N 5100-307	
Non U.S. Forestry Service Approved	Chemguard	Class A Plus
	Unifoam Co Ltd.	UniA 1%
	3M	Light Water SFFF
	National Foam	Responder
	Angus Fire	FirePower Class A
	Fire Response Systems Inc.	Class A - Fire Stop-R CCR# GOLD7386
	Dr. Stahamer	Sthamex-Class-A Synthetic Class A Foam

16. TECHNICAL DATA

16.9. TECHNICAL DATA - FOAMLOGIX

Class B Foam	Manufacturer	Brand name
AFFF-Alcohol Resistant Concentrates	3M	3% Alcohol Type AFFF Concentrate [P/N 98-0211-6573-7]
	Ansul	3x3 Low Viscosity Alcohol Resistant Concentrate
		T'storm ATC AR-AFFF 1% or 3%
	Chemguard	AR 3%-6% Part # CAR36P
		AR-AFFF, 3%x3%, Part # C333
		Ultraguard 1%-3% Part # C133
		3%-6% AR-AFFF Product # C361
	National Foam	3%-6% AR-AFFF Product # C363
		Universal Gold 3% AR-AFFF
	US Foam	Universal Gold 1% - 3% AR-AFFF
		1-3% Alcohol Resistant AFFF [P/N US- AR13]
	Angus Fire	3-6% Alcohol Resistant AFFF [P/N US-FCAR36]
Niagara 3-3 - AR-FFFP [Class B]		
Solberg	Arctic Foam RF 3x6 ATC - Synthetic AR Foam Concentrate [Class B]	
Williams Fire	ThunderStorm® ATC AR-AFFF 1% or 3% F-601B	
AFFF	National Foam	1% Aero-Water
Specialty Foam Concentrates		
Protein	National Foam	Terra Foam 3% CF
	Chemonics	Durra Foam 3%
Fire Fighting Water Additive		
	Hazard Control Tech.	F-500 [1%, 3%, 6%]
	SPL Control LLC	Pyrosolv [FF Agent - 6% Solution] P/N-720328 [MSDS#]
	Novacool	UEF 4%
	Fire Blockade	Fire Extinguishing Agent, 0.4 - 6.0% No. 3000-1003
	FireAde 2000	Fire Fighting Emulsifier 0.25-6% P/N FA2000-5

16. TECHNICAL DATA

16.10. TECHNICAL DATA - FOAMLOGIX

Class B Foam Fire Fighting Water Additive	Manufacturer	Brand name
	FIRE CAP Fire Suppression Products, Inc	Fire Cap 0.25%-6%
	Verde Environmental Inc.	Micro-Blaze Out 2-3%
	Bio Ex S.A.S Fire Blockade	Bio for N – FSFF (Fluoro Surfactant Free Foam) Wetting Agent. (Class A)
	Enforcer	Ecopol AR-FFF (Fluoro com- pound-Free Foam) [Class B] Firebull F3 Fluorine Free Foam

16.11. RECOMMENDED FOAM AGENTS

Hale FoamLogix Models 3.3, 5.0 or 6.5 can be used with the foam concentrates specified on the Hale Foam Proportioning System Foam Concentrate Compatibility List provided below, Hale Bulletin #650. The latest list is also available on www.haleproducts.com.

The foam concentrates in the list have been tested by Hale Products to ensure compatibility with FoamLogix models 2.1A, 3.3 or 5.0. This information is intended to assist the end user in selecting compatible foam concentrate(s) but is not a determination of firefighting efficiency. Always consult local application and environmental regulations before selecting a foam concentrate and refer to the FoamLogix user manual for additional information.

Please contact your Hale representative if your foam is not listed.

17. CUSTOMER SUPPORT DOCUMENTS



[Contact Customer Service](http://www.godiva.co.uk/customer-support/)
www.godiva.co.uk/customer-support/



[Warranty Statement](http://www.godiva.co.uk/warranty_statement/)
www.godiva.co.uk/warranty_statement/



[Warranty Claim Form](http://www.godiva.co.uk/customer-support-warranty-claim/)
www.godiva.co.uk/customer-support-warranty-claim/



[Godiva Terms and Conditions of sale](http://www.godiva.co.uk/customer-support-terms-conditions/)
www.godiva.co.uk/customer-support-terms-conditions/

To access the Godiva customer support documents,
click the web page link or scan the QR code.



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