HV SDP Module

Forage Additive Applicator

User Guide

High Volume

2 - 14 (litres per minute

Supplied:

In-cab speed control box
Pump Module with Mounting bracket and fixings
Inline Filter
Tubing and fittings (to be cut to required lengths)
Cable set (Power cable, control box to hitch, hitch to pump)
Twin Jet pack with a selection of nozzle
3 way valve

Before turning the control box on:

Always make sure the 12 volt supply and the applicator are connected to the correct side of the control box and that the RED terminal is connected to plus (+) and the BLACK terminal is connected to negative (-) and that the bare wires of the cables do not touch the case of the control box

Please read the instructions in full and always follow the guidelines set out by the additive manufacturer with regard to safety, mixing and application rates. Do not use with sulphuric acid or diesel

Always use with a filter in line on the inlet side of the pump

Always flush with clean water after use

Any damage caused by failure to follow the above instructions could void the warranty

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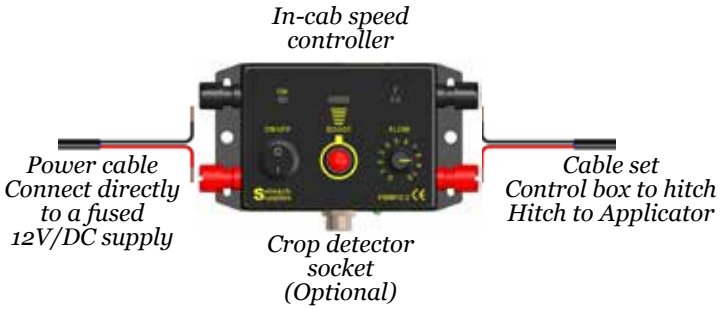
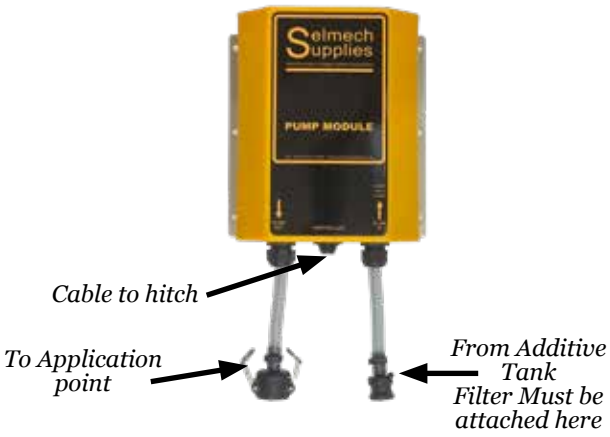
Setting up the SDP Module

The PWM Module applicator has a diaphragm pump to apply liquid preservative to treat forage lifted with a self propelled or trailed forage harvester, forage wagon or baler. Depending on the machine it is being installed on the additive is applied either open flow or through fan jet spray nozzles. The application rate is controlled by the in-cab speed controller this is used to adjust the speed of the pump to regulate the output. The controller has an option to be supplied with a thru beam crop detector. (*This would be determined at point of order*)

The pump module cover is manufactured from high density plastic and the pump mounting bracket from Aluminium. The PWM Module should be powered by a fused 12 volt DC supply. It is important to ensure that all electrical connections are the correct polarity, clean and secure. Poor connections and long cables can reduce output and make it inconsistent.





Mounting the SDP Module

The additive is applied either open flow or through fan jet spray nozzles.

1. Mount the pump unit in a secure location close to the additive container using the fixing points on the bracket
2. Mount the pump unit with the filter and outlets downward.
3. Use the tubing and Camlock fitting with filter attached to attach the outlet of your tank to the inlet Camlock fitting on the pump module. Note This should be no longer than 8ft (2.5M) If drawing from the top of the tank use the support tube to stop the tubing from curling up. !A filter must be in place here or the warranty on the pump will be void.

Flowmeter

If fitting a Flowmeter this should be positioned in view of the cab between the output of the pump and the spray nozzles. Flow in at the bottom, flow out at the top. A calibration chart can be found on the back of the Flowmeter.

Application point

The application point will depend on the machine you are fitting to. Typically for a forage harvester this would be the base of the chute behind the accelerator or over the feed rollers. Delivery of the additive can be open flow, or through a fan jet. Please note that if the application point is at the back of the blower of a self propelled harvester NO spray jet should be used as it would block easily - application should be open flow)

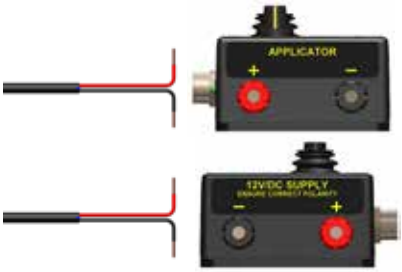
If fitting to forage wagon or baler the application is normally delivered through 2, 3 or 4 jets either over the transfer rotor or over the pick-up reel.

Route the tubing from pump housing to the application point. Avoid sharp edges and hot spots and leave enough slack around and pivot points for turning.

Connecting to the in-cab speed controller (control box)

1. Mount the control box in an accessible location in the vehicle cab.
2. Using the applicator to hitch cable (Long cable with 4 pin plug and 4 pin socket) connect the socket end to the pump module. Route to the hitch avoiding hot spots and pinch points.
3. Take the hitch to control box cable (Short cable with 4 pin socket) connect to the applicator cable and route to the control box avoiding hot spots and pinch points.

When making connections to the control box:-



!Make sure of correct polarity as damage to the control box and or applicator will occur if this is not correct,
Make sure that the bare wires of the cable do not touch the case of the control box.

4. Connect the bare ends RED + and BLACK - to the "APPLICATOR" terminals on the control box.
5. Using the short cable with both ends stripped back, connect one end to the "12V/DC SUPPLY" terminals of the control box. RED + and BLACK -
6. Connect the other end of this cable to your fused 12 volt DC supply RED + and BLACK -. !If using a connector check the polarity is correct in this RED + and BLACK -.

!The connection to your supply should be secure and clean and the correct polarity.

DO NOT connect the two negative terminals together. DO NOT connect the pump negative to the ground of the tractor as this will prevent the applicator operating correctly

Finally - Check all connections for correct polarity before turning the control box on.

Operating the SDP Module

In-cab speed controller (control box) If using a thru beam crop detector refer to the additional instructions.

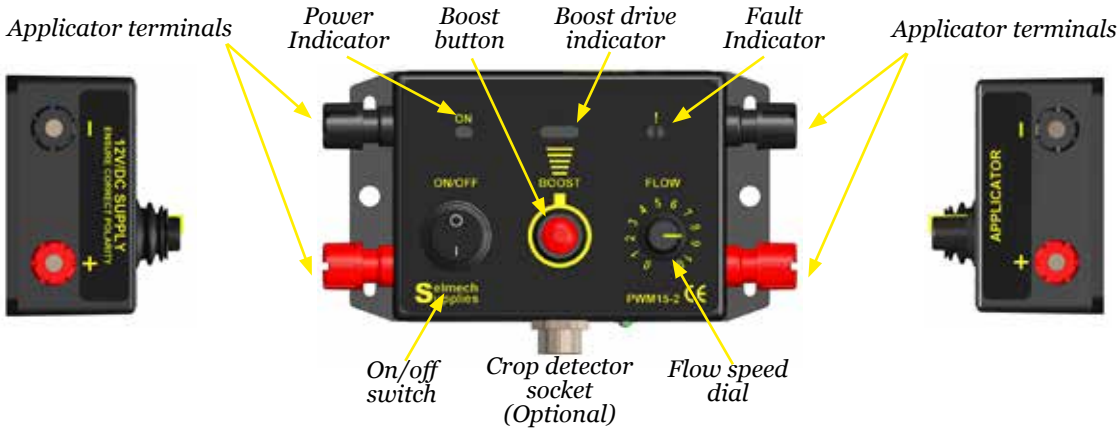
Use the flow speed dial to adjust and set the application rate. If there is extra heavy crop or an area of crop that has a higher moisture content the boost button can be pressed and released to run the motor at full speed for 10 seconds. The Boost indicator will illuminate when in this mode. To stop boost sooner press the button again. This can be repeated as often as required.

The "!" fault indicator warns of a power supply problem (refer to Fault Diagnosis).

Connect the control box directly to a fused 12-volt DC supply via the red and black terminals marked "12V/DC SUPPLY".

Connect the applicator directly using the cables supplied to the terminals marked "APPLICATOR". ! Always ensure correct polarity before turning the control box on.

DO NOT connect the two negative terminals together. DO NOT connect the applicator negative to the ground of the tractor



Calculate your application rate (This guide can be used for forage harvesters, forage wagons and balers.)

It is important to know how much of your additive should be applied per ton of forage (Application rate). Consult the supplier of your additive.

1. Work out how many tons per hour (t/hr) of forage is being treated. (example: - 120 t/hr)
2. Multiply that by the ounces per tonne (oz/t) of additive to be applied. (example: - 70 oz/t x 120 t/hr = 8400 oz/hr)
3. Divide that by 60 to give you the application rate in oz per minute (oz/m). (example: - 8400 oz/t / 60 = 140 oz/m)
4. Refer to the calibration chart and use this figure to set the flow speed dial on the control box or if using a Flowmeter refer it's calibration chart and set the dial to match that.

For Your Figures

Tons of forage to be treated per hour	X	Additive application rate per ton	=	Ounces (oz) of additive per hour	/	Divide by 60 to convert to minutes	=	Ounces of additive to be applied per minute
120		70 oz		8400 oz		140 oz		140 oz/m

Jet Selection

Jet selection is important for the performance of the applicator. Each jet provides a 110 degree spray pattern but it is important to use the correct jet for the output required to achieve the optimum spray pattern. Also an anti siphon check valve is fitted to the jet body that requires pressure from the pump to open correctly. Use the same size jet in each jet body do not mix as this will provide an uneven output across the application point.

All nozzles should spray evenly. If one nozzle is being favoured over another fit smaller jets to increase the pressure to even up the output between each.

If the output is pulsing on and off the pressure is probably too high causing the pumps pressure switch to cut in. Fit a lager jets or add another jet body to reduce the pressure. If the jets are too small for the required output will not be achieved.

Setting the application rate

Refer to the calibration guide and set the flow speed dial on the control box to the number relating to your calculated application rate.

If using a Flowmeter refer to the calibration chart supplied with that.

Adjust the flow speed dial to align the top of the weight to the number on the scale that relates to you calculated application rate.

Calibration guide in Ounces per Minute

Single Jet		
Control Box Setting	Grey	Black
3	-	-
4	71	186
5	-	-
6	75	237
7	-	-
8	-	254
9	-	-
10	-	271

Twin Jet			
Red	Grey	Light Blue	Black
82	109	149	-
109	176	197	271
-	-	-	
-	190	230	312
-	-	-	-
-	-	271	339
-	-	-	-
-	-	285	365

The calibration guide assumes that the electrical supply is adequate. Poor connections and long cables can reduce the drive voltage to the motor.

! ALWAYS do your own calibration check with the additive your are using.

Monitor the flow - Make adjustments if necessary

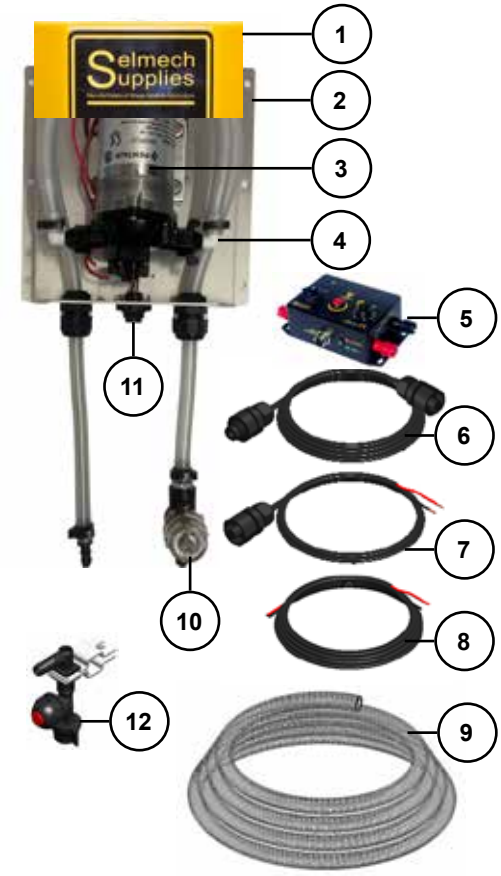
Safety

1. Read and follow any warnings or guidance supplied with the additive.
2. Wear protective clothing when handling additive or any pump that is being used with additive.
3. Switch off the pump before removing tubing, nozzles or filters.
4. Do not contaminate skin, clothing, ponds or waterways with additive.
5. Do not allow the tubing to become kinked or blocked.
6. Never use a higher rated fuse than the one fitted.
7. Make sure all electrical connections are clean, secure and of the correct polarity before turning on the control box.
8. This pump SHOULD ONLY be used for spraying liquids recommended by the suppliers. DO NOT use with SULPHURIC ACID or DIESEL.
9. Always use with a filter in line on the inlet side of the pump
10.

Maintenance

11. Always flush out the system with clean water after use.
12. Store in a clean dry place with the motor end upright. Never allow the pump to stand for long periods while filled with additive.

Parts Diagram



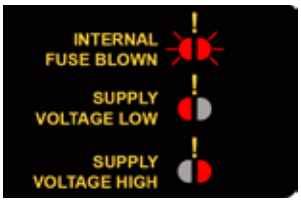
No.	Description	Qty
1	Module Cover	1
2	Module Bracket	1
3	Pump HV up to 14 litres (3.6 Gallons) per minute	1
4	Hose Tail	2
5	Control Box	1
6	Module to Hitch Cable	1
7	Hitch to Control Box Cable	1
8	Power to Control Box Cable	1
9	Tubing	10m
10	Filter	1
11	Module 4 Pin Plug	1
12	Jet Body and Jets	2

Internal fuse

15 AMP fuse Mini Blade type

Fault Diagnosis Lable

The control box fault indicator will alert you if there is a problem with the supply or if the internal fuse is blown.



If the internal fuse has blown check for reasons why this may have happened before replacing and turning the control box on. ! Never use a higher rated fuse than 15 Amps.

If the supply voltage is low check your supply and all connections. ! This could be caused by inadequate cable or poor connections.

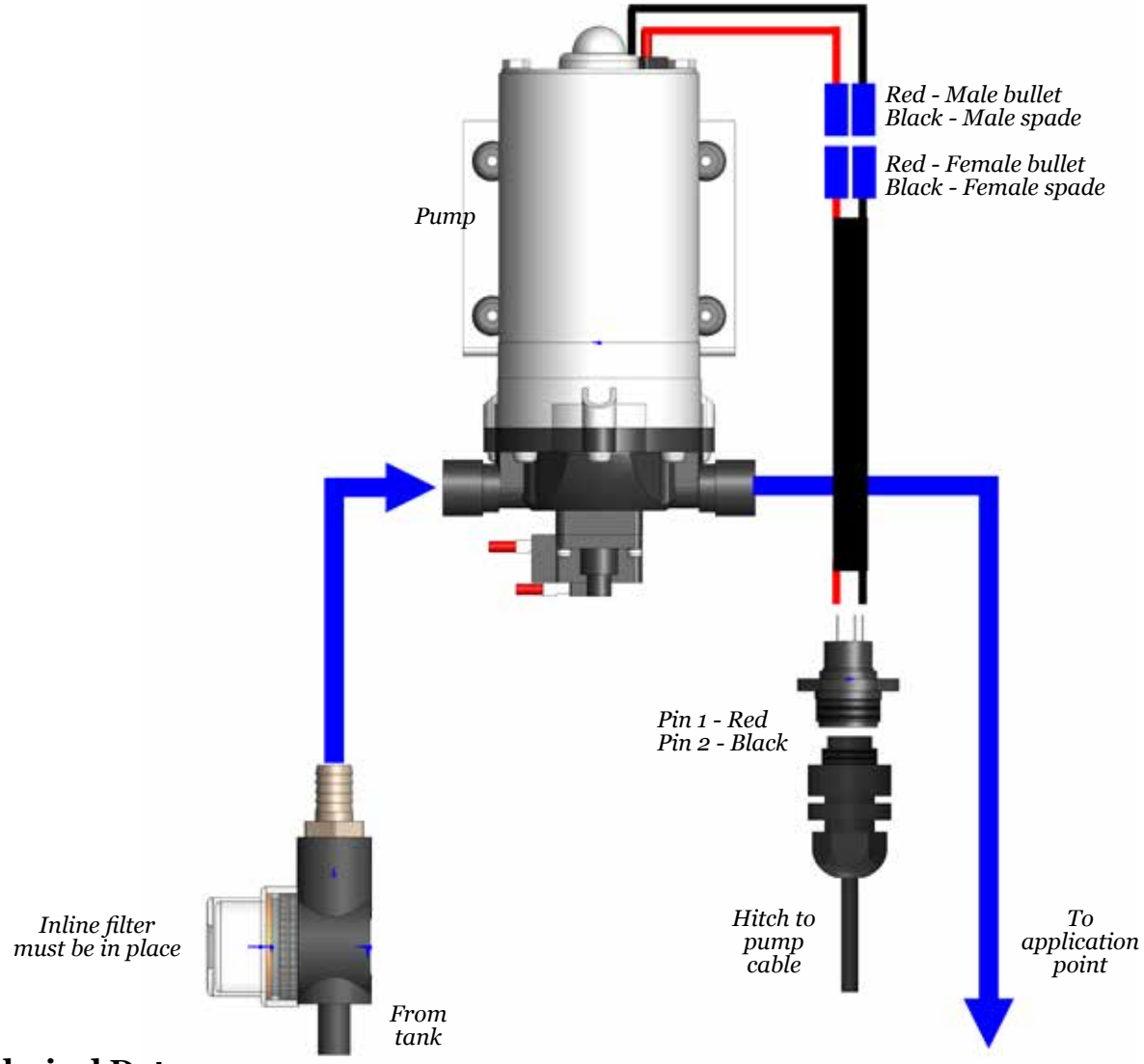
If the supply voltage is high. ! This could be caused by faulty tractor regulator or unregulated power supply.

Cleaning the Strainer

The strainer should be cleaned at the end of each season or if a blockage is suspected.

1. Unscrewing the clear bowl and removed the filter gauss.
2. Clean the gauss, body and bowl in clean water
3. Re-assemble and re-fit.
4. Make sure the filter bowl is tightly screwed on.

Connection schematic diagram



Technical Data

Supply Voltage	12V/DC (10.6v DC to 16.4 V DC)
Current Consumption	15 Amps
Fuse Rating	15 Amps
Output Range	2 - 14 Litres (3.6 Gallons) per minute open flow

Fault	Diagnosis	Remedy
Pump will not run	Fuse blown	Check the internal control box fuse and for reasons why it has blown before replacing.
	Supply Low voltage indicator illuminated	Check supply and wiring connections
	Wires incorrectly connected or damaged	Check the wiring is connected correctly
	Seized or damaged pump motor	Contact your agent or Selmech Supplies
Pump runs but poor or no output. Pump will not prime.	Air getting in the system	Check all pipe clips are secure and the filter bowl is tight and there are no splits in the pipe work.
	Filter Blocked	Clean Filter
	Tubing kinked or split	Check tubing/remove kink and re-route tubing
	Jet blocked or wrong size jet	Clean jet or fit bigger jet
	Pump diaphragms worn out	Contact your agent or Selmech Supplies
	Tank level low or empty	Refill tank
Incorrect application rate	Incorrect calibration setting	Refer to calibration chart
	Spray jet too small	Fit larger spray jet

Warranty

Provided installation is carried according to these instructions a warranty of 1 year from date of delivery applies. This covers faulty parts/manufacture only and does not cover wear and tear through normal use or mechanical or chemical damage that has occurred to parts through misuse or unauthorised attempts to repair the unit. In the case of faulty manufacture, claims are limited to repair of the unit and its return to the customer.

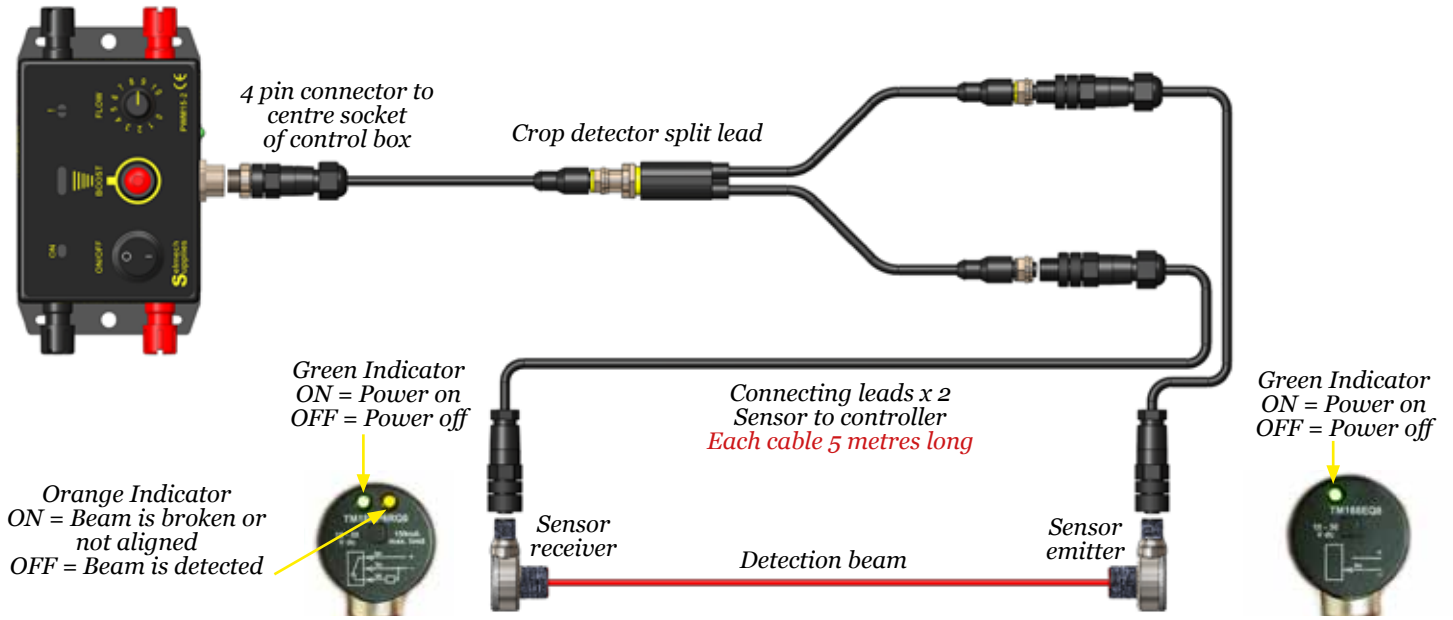
The thru beam crop detector (Optional extra)

The thru beam detector kit is designed to be used in conjunction with a Selmech Supplies in cab speed controller that is fitted with a 4 pin socket between the supply and applicator connectors.

When connected it will automatically turn the applicator on when crop is detected by breaking the beam at the point of pick-up. When there is no crop (beam not broken) the applicator will be turned off.

There is an LED lamp, that displays green, or red this will show if there is crop or no crop. If there is no crop detector kit plugged in the lamp will not be illuminated and the control box will work normally.

Crop Detector connections



The mounting position of the sensors will vary depending on the make and model of the baler.

In some cases an adaptor bracket may need to be fabricated by the end user.

Crop detector status LED lamp

When the LED lamp is RED - NO CROP is being detected and the applicator will not dispense additive.

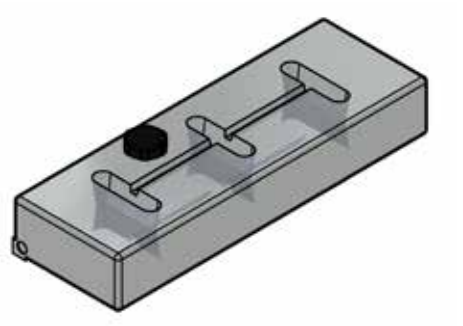
When the LED lamp is GREEN - CROP is being detected and the applicator will dispense additive.

If no crop detector kit is plugged the LED lamp will not be illuminated and the control box will work normally.

If crop is present but the LED lamp is RED check all connections and for any damage to cables or the sensors.

Setup guide for using your own tank

Connecting to the tank



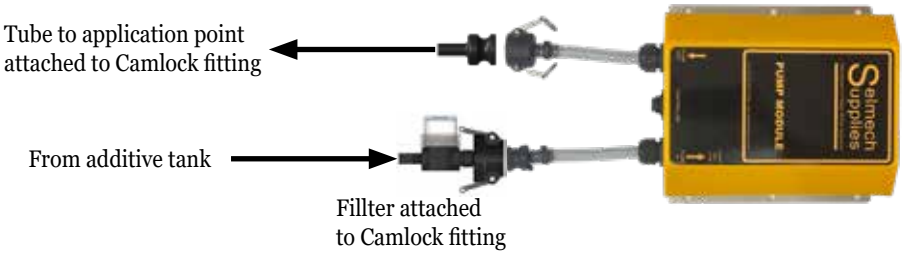
The installation of the tank will depend on the tank you are using and the machine it is being fitted to. A suitable frame will need to be manufacture. This should offer substantial support to the tank bearing in mind that when full the tank will be the kilogram equivalent to the litre capacity of the tank.

It is recommended to fit a 3 way valve to the output of the tank so you can have a drain hose if there is not a drain plug on the tag.

The Pump Module

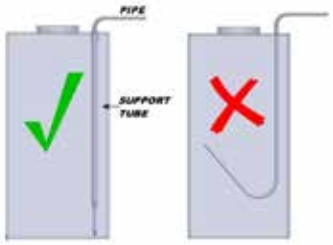
The pump module should be mounted within 2.5 metres of the tank with the filter and outlets downward. Try to keep the run of tubing between the pump and application point as short as possible to help priming from empty when the pump has to overcome the air build up in the tubing.

if this is not possible an air bleed valve can be located in an accessible place as near to the application point as possible. When first turning the pump on from empty open the valve to allow air to escape. Once the fluid is coming through turn the tap in the direction of the application point and the fluid should start to spray from the nozzles.



Support Tube

When drawing the additive out from the top of a tank a support tube should be used to hold the feed tube into the bottom of the tank and stop the tube from curling up.



!It is important that all pipe connection are secured tightly with pipe/jubilee clips and the filter bowl is tight. If air can enter the system priming will be inhibited.

Cable Conection