



Adjust your flow settings carefully. Repeated false dead end detection indicates that the Cal value should be increased (less sensitive).

For absolute safety always wire through the pump pressure switch. (The pressure switch can be bypassed if absolutely necessary - the unit will protect itself under normal conditions.)

This is a WATER PUMP controller: it will not work with AIR in the system. Always prime the system before starting work. If air in the system causes false dead end detection, increase Cal value (less sensitive).

Do not set the Cal value too high. Setting it higher than necessary places extra strain on both the pump and the controller in a dead end situation. This can result in damage to both the pump and your controller.

Specification	Value
Supply Voltage	11 - 15 VDC
Maximum Current	10A
Typical Drive Current	4-5A
Voltmeter Accuracy*	+/- 200mV
Enclosure Material	ABS
Water Resistance	IP65
Dimensions	171 x 160 x 60 (mm)
Working Temperature	0 to 40 Deg C

* Accuracy of voltmeter depends on the length of the cable from the battery, and the drive current. A long length of cable and/or a high drive current will decrease the accuracy.

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Thank you for buying a V3 pump controller. This is an advanced pump controller solution for your system and should give you complete control over both water production and water delivery.

Follow this manual carefully. It explains in detail how to connect and operate the pump controller. Most connections are shown on the system diagram. However, further details are provided throughout the rest of the manual. Complete ALL wiring connections BEFORE fitting the main fuse. Ensure the controller, sensors and cables are firmly fixed in place before using your controller.

NOTE: It is recommended that power wires from the battery to the controller (RED + BLACK) and power wires to the pump (BROWN + BLUE) are run through flexible conduit.

The V3 controls both the filling side of your water tank (inlet and pure water production) and the delivery side (outlet to reel and pole). The controller also has a number of other advanced features.

Filling

The controller opens the solenoid valve to fill the water tank up to the high level switch. This is a one time operation until the tank is full. The controller will automatically flush the RO membrane on a regular basis to keep it at optimum performance and increase its service life.

The controller can be configured to stop the fill if the TDS becomes too high, either after the RO membrane (due to an RO failure) or after the DI vessel (if resin is spent). It will also stop the fill if the mains water pressure is too low.

The controller has a flow meter to measure the amount of water used, which will indicate the filter life.

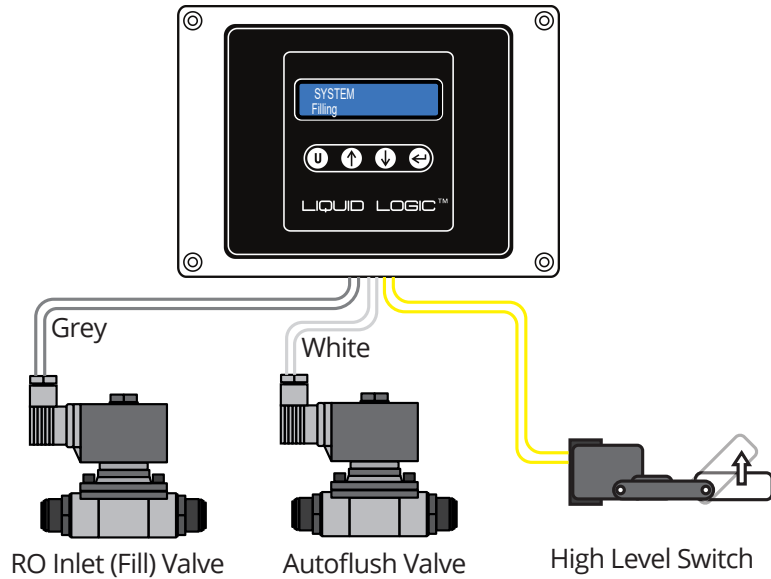
Delivery

The controller can control the flow rate. It can also be calibrated to shut down when the pump flow encounters a dead end or stop.

The controller has a built-in split charger that will charge your leisure battery as soon as the vehicle alternator starts.

The controller can also operate a diesel heater (such as a Webasto) if a hot water system is fitted. It also allows the user to set the frost stat activation temperature (which can be disabled in summer) and the rate of water recirculation.

Finally the controller can be operated by radio control. With the radio fob the user can turn the pump on or off. They can also adjust the flow rate with the up or down button.



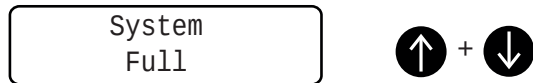
Connect the pump controller following this diagram. Only use the wires from the middle gland. NOTE: only fit the fuse once all connections are made.

To start filling the tank simply press and hold the up and down buttons briefly. This will activate the RO inlet solenoid valve, allowing water to fill the tank until the float switch detects that the tank is full.



Once filling is started, the system will open the Autoflush valve for five minutes every hour to clean the RO.

The Autoflush valve will then close when flushing has finished and filling will resume via the RO inlet valve.



When the tank water level rises sufficiently to activate the level switch, filling is stopped. All valves are closed.

To manually stop the tank filling, press and briefly hold the up and down buttons again. 'Filling' will no longer be displayed.

NOTE 1: The solenoid valve will be turned off if the controller detects a dead battery situation (below 10.5V).

NOTE 2: The tank can be filled when the controller is on and pumping, or off.



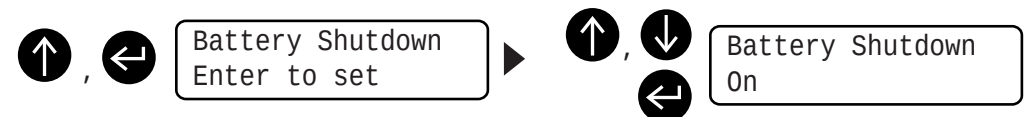
Press up to display the next Settings menu item, 'TDS DI Limit'. If this value is exceeded a warning will be displayed, and if shut down function is enabled filling will be stopped. Press enter to change this value.

Use the up or down button to set. 'Off' disables TDS control. Set from 1-10. Press enter to go back to the Settings menu.



Press up to display the next Settings menu item, 'TDS DI Shutdown'. 'On' will stop the fill if the TDS level is above the limit. 'Off' disables this function. Press enter to change this setting.

Use the up or down button to change between on or off. Press enter to go back to the Settings menu.



Press up to display the next Settings menu item, 'Battery Shutdown'. This function shuts down the battery if the battery voltage drops below 10.5V. Press enter to change.

Use the up or down button to set. 'Off' disables battery shutdown. 'On' enables battery shutdown. Press enter to save.

PRESS AND HOLD ENTER TO EXIT SETTINGS MENU.

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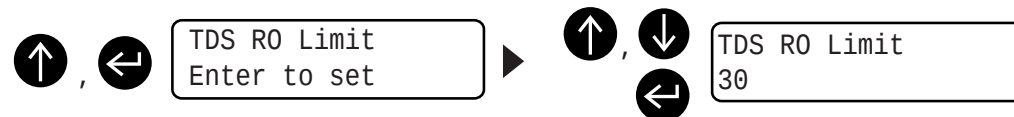
Press up to display the next Settings menu item, 'Pressure Threshold'. Press enter to change this item. Use the up or down button to change between Off and Cal. 'Off' disables pressure sensor warnings.

'Cal' calibrates for a new filter. Press enter to start calibration. To provide accurate carbon filter warnings, 'Cal' must be set every time a new filter is installed. 'Cal' can also be set manually using the up and down buttons. Press enter again to go back to the Settings menu.



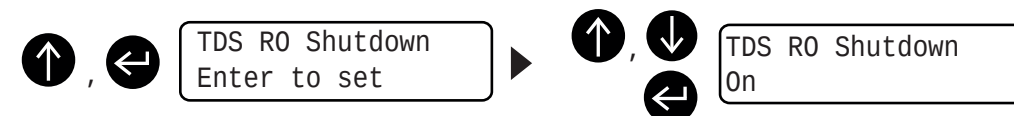
Press up to display the next Settings menu item, 'Total Flow Threshold'. This sets the water life warning for the RO. Press enter to set this value, eg 600KL.

Use up or down button to set the total water use. A warning will be displayed when this is reached. Press enter again to go back to the Settings menu.



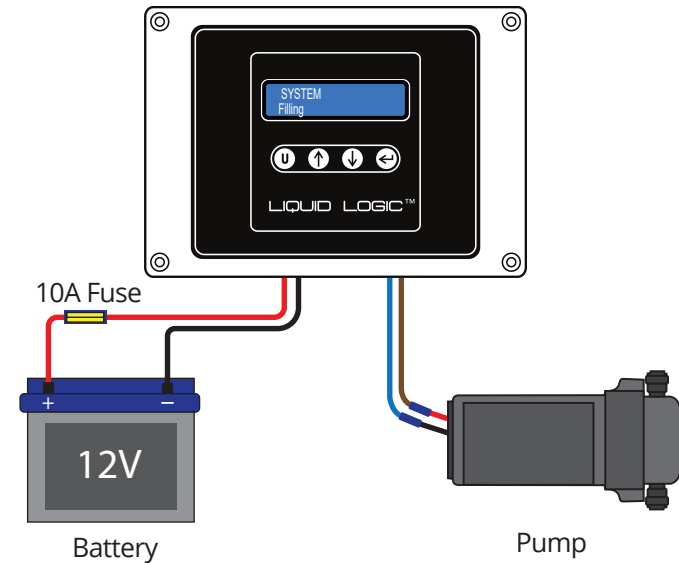
Press up to display the next Settings menu item, 'TDS RO Limit'. If this value is exceeded, a warning will be displayed, and if shut down function is enabled filling will be stopped. Press enter to change this value.

Use the up or down button to set the value. 'Off' disables TDS control. Set from 1-50 TDS. Press enter to go back to the Settings menu.



Press up to display the next Settings menu item, 'TDS RO Shutdown'. 'On' will stop the fill if the TDS level is above the limit. 'Off' disables this function. Press enter to change this setting.

Use the up or down button to change between on or off. Press enter to go back to the Settings menu.



Connect the pump controller following this diagram. NOTE: only fit the fuse once all connections are made.

Make sure correct fuse is fitted inline. Failure to do so will result in damage to the unit. Observe correct battery polarity. Failure to do so will result in damage to the unit.

Connect the hose and brush to the pump.

Turn on the controller by pressing either the user, or up, or down button. Keep the button held until the display lights up.



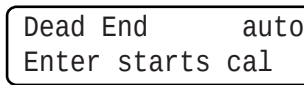
Press up until the display shows 50.

Press and hold up and enter to go into 'Dead End' calibration.



Press down to select AutoCal, then enter to start.

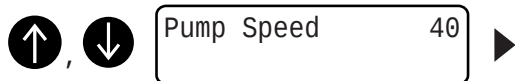
The controller indicates it is calibrating.



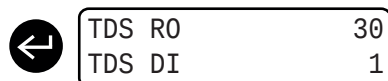
After several moments the calculated dead end value is shown. Press enter to save.

To adjust dead end value manually, follow these steps and then use the up and down keys to change the value.

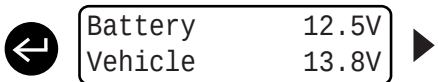
The controller is ready to deliver water to the pole to start cleaning.



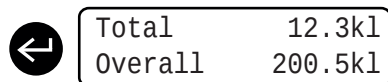
Press up or down to set a suitable flow rate.



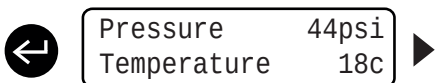
Press enter to display current TDS values after the RO and after the DI.



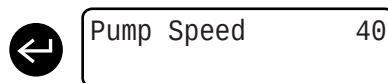
Press enter again to display the battery (leisure) and vehicle battery voltage. Both batteries should run above 11V. The battery (leisure) voltage should increase when the engine is running.



Press enter again to display the amount of water used since last pre-filter change and zeroing of counter; and the overall amount of water used since install.

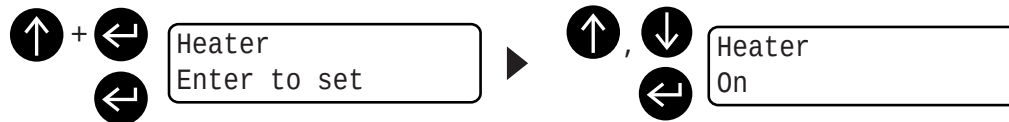


Press enter again to display the mains water pressure in PSI, and the temperature of water to the hose (degrees C)



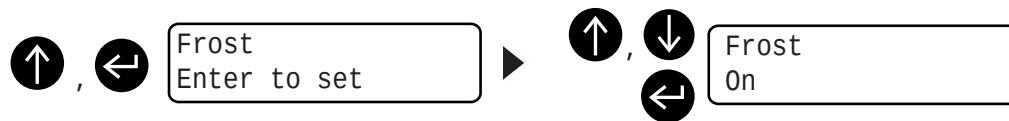
Press enter again to go back to pump speed (in percentage 0-99%).

The Settings menu is used to change all the settings not associated with pump control, such as turning the heater on or off or disabling battery shut down.



To enter the Settings menu, press and hold down and enter until you see this display. Press enter to change this item.

Use the up or down button to turn the heater on or off. Then press enter again to go back to the Settings menu.



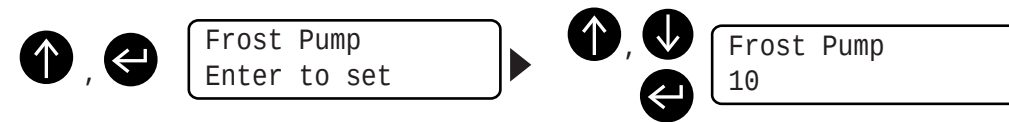
Press up to display the next Settings menu item, 'Frost'. This either enables or disables the frost protection function. Press enter to change this item.

Use the up or down button to turn the frost protection function on or off. Then press enter again to go back to the Settings menu.



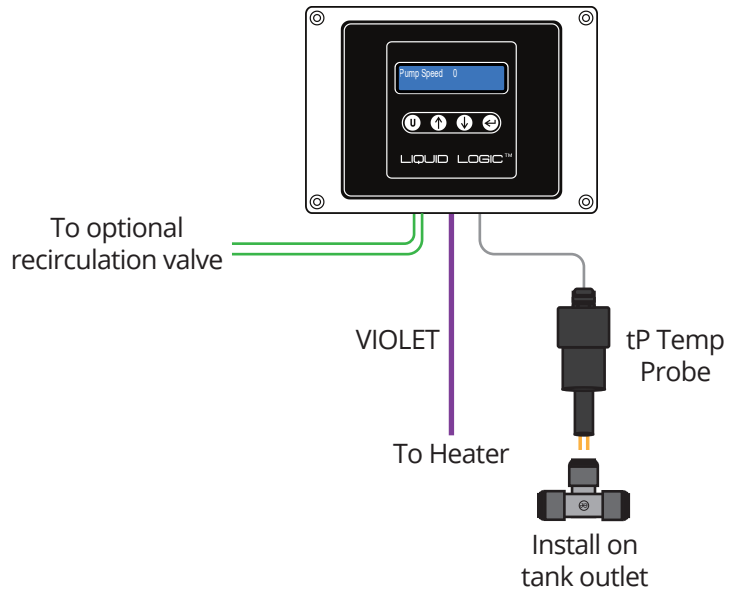
Press up to display the next Settings menu item, 'Frost Threshold'. This sets the temperature at which frost protection starts. Press enter to change this item.

Use the up or down button to set the temperature at which frost protection turns on (0-5 degrees C). Then press enter again to go back to the Settings menu.



Press up to display the next Settings menu item, 'Frost Pump'. This sets the rate at which the pump runs in frost protection mode. Press enter to change this item.

Use the up or down button to set the pump speed 0 - 99 (or 10 for a Webasto system). Then press enter again to go back to the Settings menu.



Connect the probe and the heater control output as shown.

If a heater (such as a Webasto based hot box) is fitted, the controller can prevent freezing of the system by enabling the 'Frost Protection' function. This works by heating and circulating the water through the system for a short period if the temperature of the water drops below a certain threshold.

WARNING
Frost Protection

When 'Frost Protection' is enabled and the temperature of the water drops below the pre-set value, the heater and pump are turned on for 10 minutes. The controller will display the 'Frost Protection' message while activated.

This cycle is repeated every time the water reaches the frost threshold. Dead end and battery low protection are constantly being monitored while in frost protection mode to protect the system.



Pressure 44 PSI
Temperature 18 C

To monitor water temperature (in degrees C) press enter repeatedly until the display shows the temperature.

NOTE 1: The hose must be connected back into the tank to allow the warm water to recirculate or a recirculation valve must be fitted.

NOTE 2: The 'Frost Protection' function is only active when the V3 is switched off. Ensure the system has been shut down before leaving overnight.

The V3 Controller has a number of warning messages for when something goes wrong with the system. These are designed to help with trouble shooting.

WARNING
Pressure Switch

OR

Pump Speed 40
Pressure Switch

Pressure in the system is too high. The pump pressure switch has activated or there is a break in wiring to the pump.

WARNING
Dead End

OR

Pump Speed 40
Dead End

There is a blockage in the hose line, water flow is being prevented, or the 'Dead End' value has been set too low.

WARNING
Low Voltage

This message is displayed if the battery voltage falls below 11.0V.

WARNING
Batt Dead

When 'Battery Shutdown' is enabled (see Settings), the controller turns off the pump if the battery voltage falls below 10.5V.

WARNING
Mains Disconnectd

If this message appears during filling, it suggests that the mains water has been disconnected.

Dead End ERROR

An error has occurred while using AutoCal. The pump is not connected or the enter button has been pressed to cancel it.

WARNING
Pressure Error

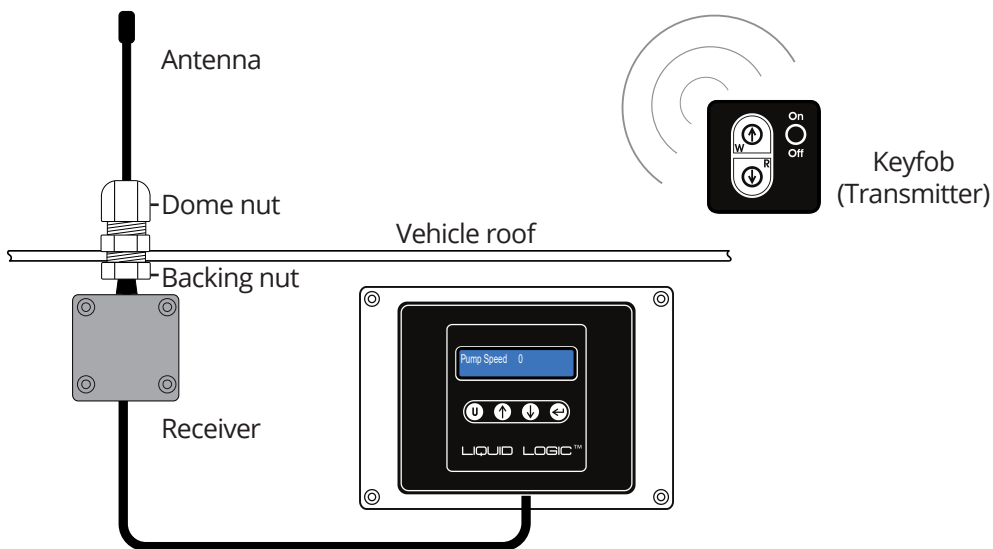
This message indicates that the pressure sensor has been disconnected or has failed.

WARNING
Carbon Filter

The pressure has dropped below the value set in 'Pressure Threshold', indicating a blocked carbon or sediment filter.

WARNING
Chk RO Membrane

This message is displayed when the total amount of water used goes over the total flow threshold. Check the RO membrane.



The radio remote receiver works on line of sight, so if it is fitted inside a van or vehicle the aerial will need to be mounted through the van roof for best results.*

Fitting

To fit the receiver in a van, follow the above diagram. A 16mm hole is required to fit the gland through the van roof. Fit the gland as shown, tightening the backing nut. Push the aerial through the gland and tighten the dome nut by hand.

Take care to fit the unit following the diagram and these instructions.**

Operation

To turn the pump on, press the fob ON/OFF button once. The pump will start and the controller will indicate a normal running operation.

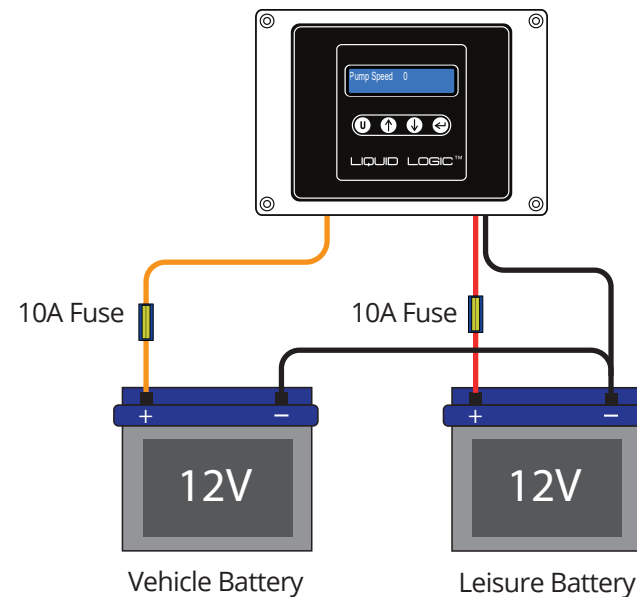
To stop the pump, press the fob ON/OFF button once. The controller will display the message 'Pump stopped RF'.

To increase or decrease the pump flow rate, press the fob UP or DOWN button accordingly.

The controller will display the current flow rate setting.

* All range distances are line of site and approximate. Working distances may vary depending on obstacles, environmental conditions and individual installation.

** Unit must be installed by a competent electrician or electrical engineer. Failure to comply with these instructions could invalidate the warranty.



Make sure correct fuse is fitted inline. Failure to do so will result in damage to the unit.
Observe correct battery polarity. Failure to do so will result in damage to the unit.

The charging function requires no additional set up. When the vehicle engine is running, the alternator turns over, raising the voltage at the car battery to above 13.2V. At this voltage the vehicle battery automatically charges the leisure battery.

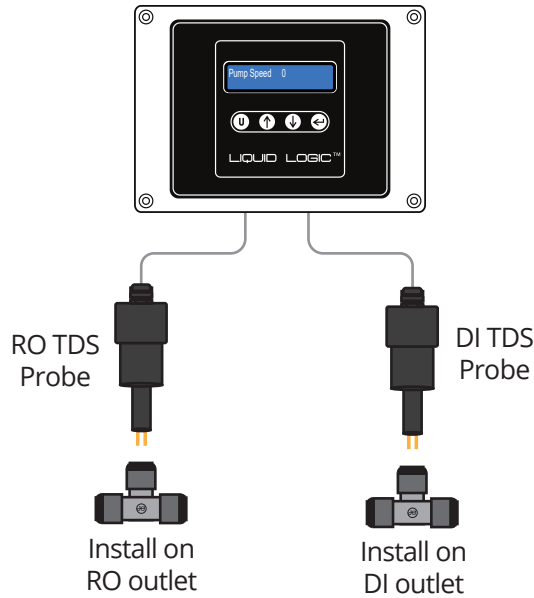
When the vehicle engine is switched off and the alternator is not running, the leisure battery is not being charged.

The charging function is active whether or not the V3 is switched on. When it is activated the pump controller display will flash 'system charging'.

SYSTEM
Charging

In addition to monitoring the main battery voltage, the unit monitors the battery (leisure) and vehicle battery voltage. Press enter repeatedly until the display shows the current battery and vehicle voltages.

←	Battery	12.5V
	Vehicle	13.8V



Take care when handling TDS probes. Do not damage gold plated contacts as this will affect TDS accuracy. Ensure gold plated contacts are clean before use. Clean with ISOPROPANOL alcohol (IPA) and a soft cloth. Dirty contacts will affect TDS accuracy. Clean with IPA if readings appear to deviate over time.

Fit the TDS probes in John Guest 1/2" equal tee pieces (not supplied) as shown on the diagram.

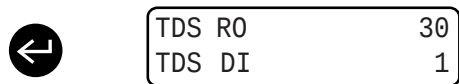
It is recommend the RO TDS probe be fitted after the RO (reverse osmosis) filter. Then check the RO is working correctly. If these values rise over time it could indicate a problem with the RO.

It is recommend the DI TDS probe be fitted after the DI (de-ionising) vessels. This will check the DI vessel is working and that the resin is not depleted.

For good cleaning, a TDS value below 5ppm after the DI is recommended.

The TDS function provides an indication of the water purity. The TDS values displayed are in ppm (parts per million). The TDS meter has a maxium reading of 50ppm.

To monitor the current TDS reading, press enter repeatedly until it displays the TDS screen.



The User menus allow set up of the dead end calibration and flow rate for two different settings . This will allow one user to swap between a short and a long pole for example.

To save the settings, set the unit pump speed and dead end calibration as normal (see Quick Start Guide). Press and hold the user button 'U'.



Press and hold the user button ('U').

Press up or down to select 'User 1' or 'User 2' storage locations.



Press enter to save the pump speed and dead end calibration to either user location. Display will return to the pump speed.

To apply the saved settings to the pump controller, make sure the controller is not in any user, dead end calibration or settings menu. For this example we will recall the User 2 settings. Press the user button ('U'). The display will show the current user setting.

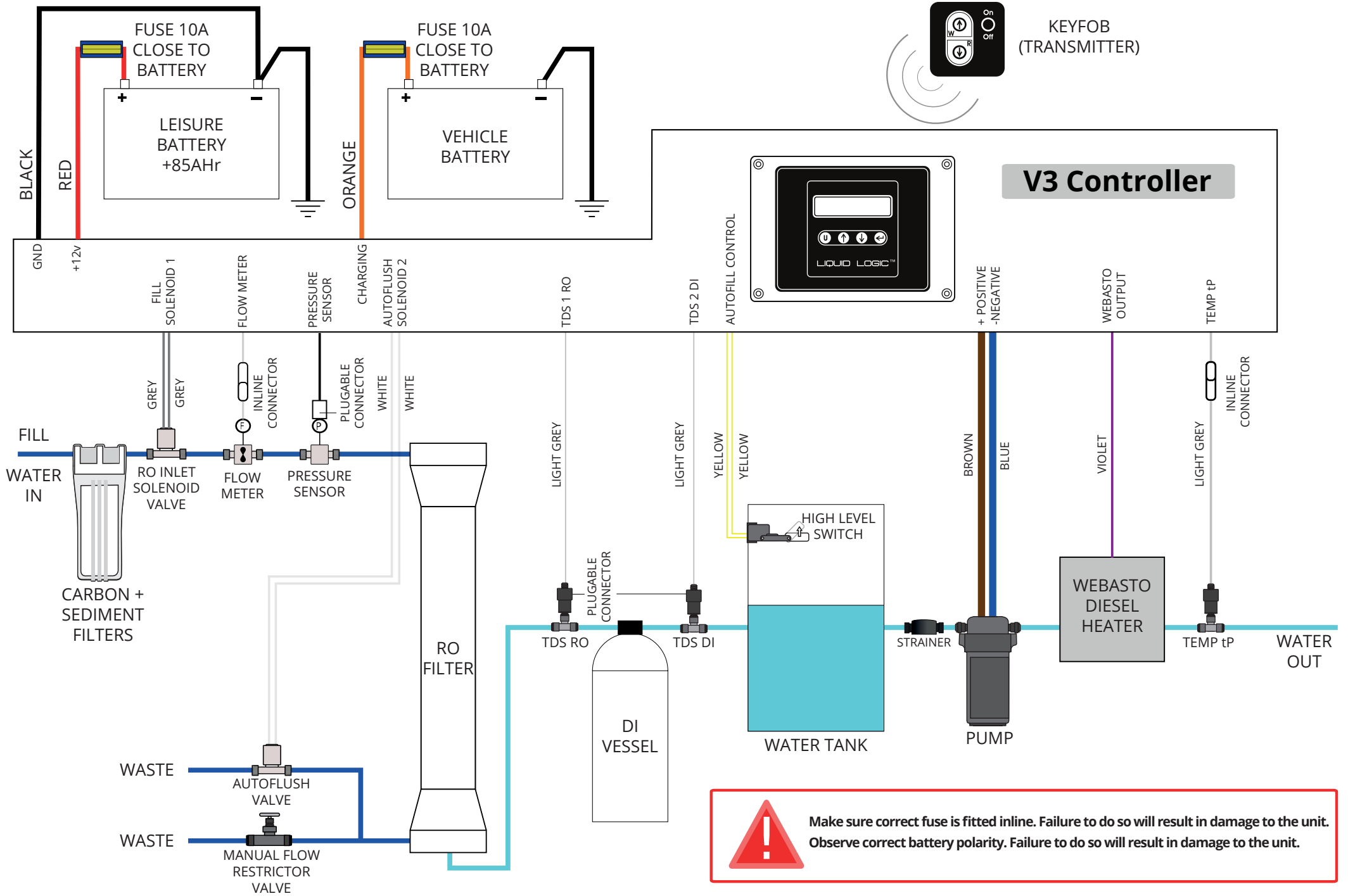


Press and release the user button ('U') quickly.

Press up or down to select 'User 2'.



Press enter to load the pump speed and dead end calibration for the 'User 2' setting. Display will return to the pump speed.



⚠ Make sure correct fuse is fitted inline. Failure to do so will result in damage to the unit. Observe correct battery polarity. Failure to do so will result in damage to the unit.