

## Testing procedure for cFlow & cF8VS

29 July 2002

### Setup

1. Press Menu for 2 seconds then 1 and make sure that CM mode is set to 0. Then press down button to make sure that IO is set to 0. Down again TH 10, SE 0, BP 1.
2. If possible check the output of the power supply. It should be 18V.

### Testing cFlow

1. Test **cFlow** controller initially without using sensors. Press Menu briefly so display shows Fn, then press 3. Press channel buttons so that they all show 0 and then press Flow off. This sets all channels to switching mode where IR sensors are not used.
2. **You must place a piece of 1/32"ID 3/32"OD tubing in each valve.** With **cF8VS** valve assembly connected press the channel buttons. The valves should open and the LED above the button should go on when pressed. The display will show Ch1 S etc where the S indicates that it is in switching mode.

### Testing sensors

0. Press Menu till Menu shows then press 2. F1..F8 should be 60, FD should be 100.
1. Press Menu briefly. Display should show Fn. Then press 3 and the Ch buttons till they all show 1. Then press Flow off. Press Menu briefly. Display should show Fn. Then press 2 and the Ch buttons till they all show 0. Then press Flow off. Setting the values to 1 activates the flow sensors. **Turn the controller off (this is important).** Remove the sensors from the dripsets. Make sure there are no obstructions in the sensor area (eg. if you have them on a bench make sure that there isn't a piece of paper within the sensor area). This is important because when the **cFlow** powers up it examines each sensor and sets the threshold for each one. If there is something in the way then the threshold will not be set correctly). Now turn on the **cFlow**.
2. With **cF8VS** valve assembly connected press the channel buttons. A simple test is to put your finger inside the sensor. The LED should go off and come back on when you take it out (this assumes that Fn 2 is set to 0 for each channel). Repeat for each channel.

### Testing valve assembly

If there is a problem with an individual valve or all valves in the tests above (eg. valve doesn't open properly or stays open) perform the following tests.  
Disconnect the cable from the cF8VS valve assembly. With a suitable diameter wire make two pins that will go in holes in the DB9 connector on the cF8VS. The pins on the connector are numbered 1 through 9. Put one pin in the hole marked 9. This is the common lead. Keep one pin in this hole. Measure the resistance between the common and each of the other pins. The resistance should be about 60ohms. This is the coil resistance of the solenoid. It should be almost the same in each solenoid (within a few ohms). If there is a larger resistance (eg. 80ohms) in one solenoid there is a problem.

### Testing valve assembly-disassembly

If you are able, unscrew the 6 Phillips screws on the front of the valve assembly. Be careful not to strain the leads in the box. Using a pin in hole 9 on the DB9 connector measure the resistance to the red lead on Valve 1. The resistance should be very low (about 0.05 to 0.1ohms-make sure when the meter probes are touched together the resistance is zero or use the Relative button to set to zero). Then move the lead to Valve 8 and the resistance should be low (0.05 to 0.1ohms). This tests the common bus for the valves.  
Now put the pin in hole 1 and the other lead of the meter on Valve 1 connector with the colored lead from the ribbon cable (eg. brown for valve 1). The resistance should be very low (0.05 to 0.1ohms) Then move to hole 2 and Valve 2 connector with the orange lead. Continue on with hole 3 through 8 and the connector on Valve 3 through 8. Make sure all the resistances are low.