Water Tool Back Flush Two Wire Controller

Two Wire Back Flush Controller

Installation and Operating Instructions

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Specifications

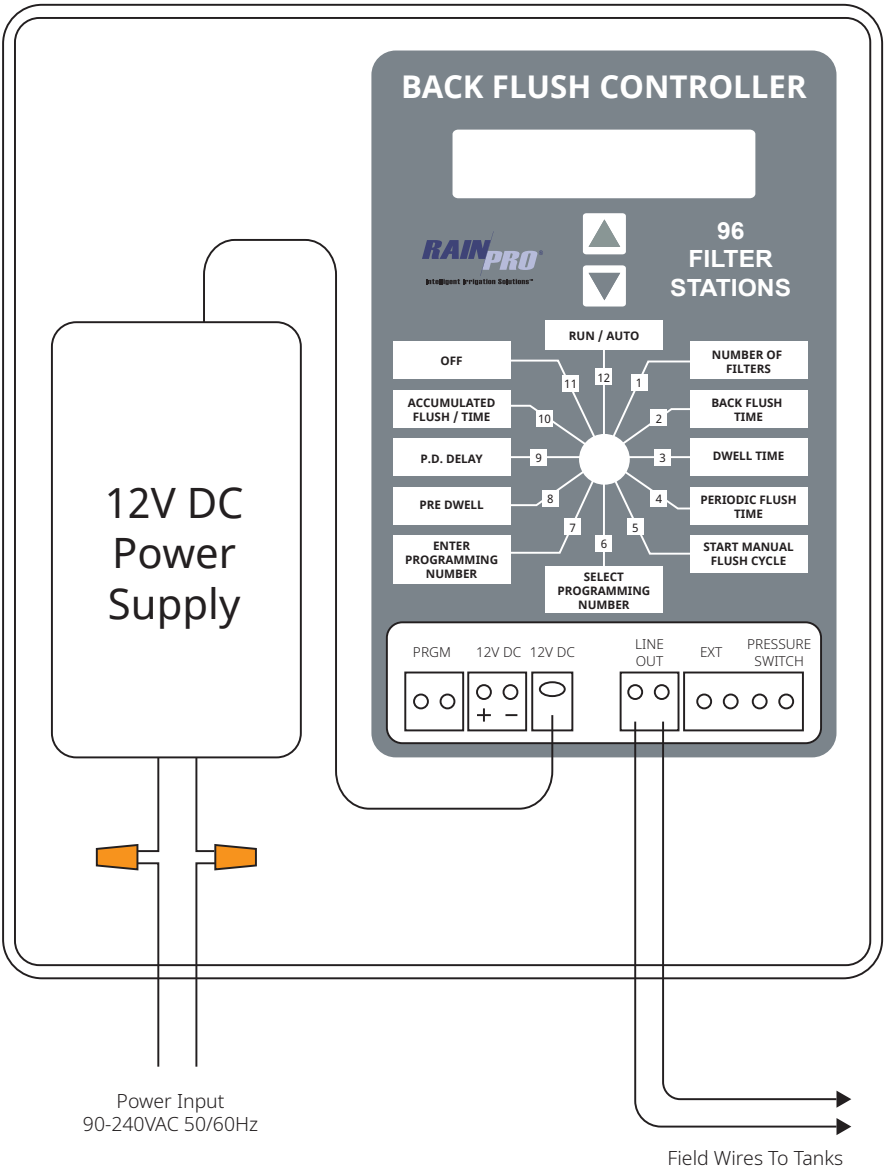
Filters Available	1-96
Back Flush Time	15 seconds to 300 seconds in preset increments
Dwell Time	15 seconds to 180 seconds in preset increments
Perios Flush Time	1 hour to 168 hours in preset increments
Manual Flush Time	Yes
Accumulated Flush Time	Yes
Flush Valves Per Decoder	1
Pressure Differential Switch Capable	Yes
Field Wire Outputs	Two Wire path may include branches and tees as necessary
Minimum Wire Size	18 gauge
Maximum Wire Run	500 Feet
Maximum Number of Decoders on System	96
Decoders Programmable and Re-Programmable to desire valve number	Yes
On Board Decoder Programming Capability at Contoller	Yes
Master Valve Capable	Yes

Wire Type: Outdoor rated single or stranded copper connector
Wire Size: Minumum 18 gauge
Wire Runs: Maximum 500 feet
Branching and Teeing: Yes

Do *NOT* "Loop" the control wires back to the controller **OR** back onto themselves.
Do *NOT* splice and direct bury wire connections / splices. All wire connections / splices should be made in valve boxes.

Wire Connectors: Use the supplied LT-10 connectors, for Two Wire to Decoder Connection.
Input Power: 100VAC-240VAC 50/60Hz

Wiring Connections



Water Tool Back Flush
Getting Started

1. With the power applied, turn the dial to position 1 (Number of Filters). Use the arrow buttons to select the number of tanks in the system 1-96.

2. Turn the dial to position 2 (Back Flush Time). Use the arrow buttons to select the Back Flush duration of each individual tank in 15 second increments from 15 to 180 seconds and 30 second increments from 180 to 300 seconds.

3. Turn the dial to position 3 (Dwell Time). Use the arrow buttons to select the Dwell Time, between one individual tanks flushing cycle to end and the next tank to begin Back Flushing. In present increments from 15 to 180 seconds.

4. Turn the dial to position 4 (Periodic Flush Time). Use the Arrow Buttons to select the Periodic Flush Time in one hour increments from 1 hour to 16 hours and 2 hours increments from 16 hours to 24 hours or P.D. Switch Only. This is for setting the frequency that the controller will initiate a complete Back Flush Cycle of all the tanks in the system.

5. To start a complete Back Flush Cycle manually turn the dial to position 5 (Start Manual Flush Cycle) and press either arrow button. To allow the controller to run automatically turn the dial to position 12 RUN / AUTO. The time remaining until the next cycle will be displayed.

6. Position 10 (Accumulated Flush / Time)will show how many Back Flush Cycles accumulated during the time shown on the right side of the display. To reset, press the up Arrow Button.

7. Set the Pre Dwell and Pressure Differential Delay Time if needed.

Programming the Controller

POSITION 1 : Number of Filters
Use the arrow buttons to select the number of fi lters 1 thru 96.

POSITION 2 : Back Flush Time
Use the arrow buttons to select the Back Flush Time of 15, 30, 45, 60, 75, 90, 105, 120, 135, 150, 165, 180, 210, 240, 270 or 300 seconds.

POSITION 3 : Dwell Time
Use the arrow buttons to select Dwell Time of 15, 30, 45, 60, 75, 90, 105, 120, 135, 150, 165 or 180 seconds.

POSITION 4 : Periodic Flush Time
Use the arrow buttons to select the Periodic Flush Time of 1, 2, 3, 4, 5, 6, 8, 10, 12, 14, 16, 18, 20, 22, 24, 30, 36, 42, 48, 60, 72, 84, 96, 108, 120, 132, 144, 156, or 168 hours, or P.D. Switch Only.
NOTE: No Timed Back Flushes will occur when P.D. Switch Only is selected. When a Timed Back Flush is selected the P.D. Switch, if connected, will initiate a Back Flush.

POSITION 5 : Start Manual Flush Cycle
Use the UP arrow button to start a Manual Flush Cycle using the programmed information in Dial Positions 1, 2 and 3. To stop a Back Flush turn the Dial to Position
11 and press the UP arrow button.

POSITION 6 AND 7 : Programming Decoders
These positions are used to program the decoders for each filter. In Position 6 select
the number of the decoder that will be programmed. Turn the Dial to Position 7
and press the UP arrow button to program the decoder. Have the decoder red wires
connected to PRGM terminals and the field wires disconnected.
NOTE: See Programming Instructions on page 11.

Programming the Controller

POSITION 8 : Pre Dwell
Pre Dwell is the time between the Master Valve being activated and the start of a back flush cycle. Use the arrow buttons to select a Pre Dwell setting from 0-360 seconds in 10 second increments. The Master Valve will stay activated during the Dwell Time selected in Dial Position 3. If no Master Valve is used set the Pre Dwell time to 0.

POSITION 9 : Pressure Differential Switch Delay
Use the arrow buttons to select Pressure Differential Switch Delay of 0 to 360 seconds in 10 second increments. This delay is the time the Pressure Differential Switch must remain closed before a Back Flush is initiated. If a Pressure Differential Switch is not used no delay is required. Set the Pressure Differential Delay to 0.

POSITION 10 : Accumulated Flush / Times
This position displays the accumulated fl ushes and time.
NOTE: Use arrow buttons to clear the accumulated flushes and times.

POSITION 11 : OFF
Use the UP arrow buttons to turn the controller OFF and leave the Dial in Position 11 after the controller turns OFF.

NOTE: Rotating the Dial out of Position 11 will turn on the controller.

NOTE: The information selected in Dial Positions 1, 2, 3 and 4 will not be lost when the controller is turned OFF or during a power outage.

NOTE: A controller with a connected Pressure Differential Switch will activate a Back Flush Cycle when the controller is OFF. No “Periodic” Back Flush Cycles will be initiated.

NOTE: Disconnect power to completely turn controller OFF.

Programming the Controller

POSITION 12 : Run / Auto
This position displays the time remaining before the next Back Flush Cycle or P.D.
Switch Only and will display the tank number and the Flush/Dwell times during a
Back Flush Cycle.

Master Clear: Press the DOWN arrow button to access this feature. A Master
Clear restores the information in Dial Positions 1, 2, 3 and 4 to the de-fault values.

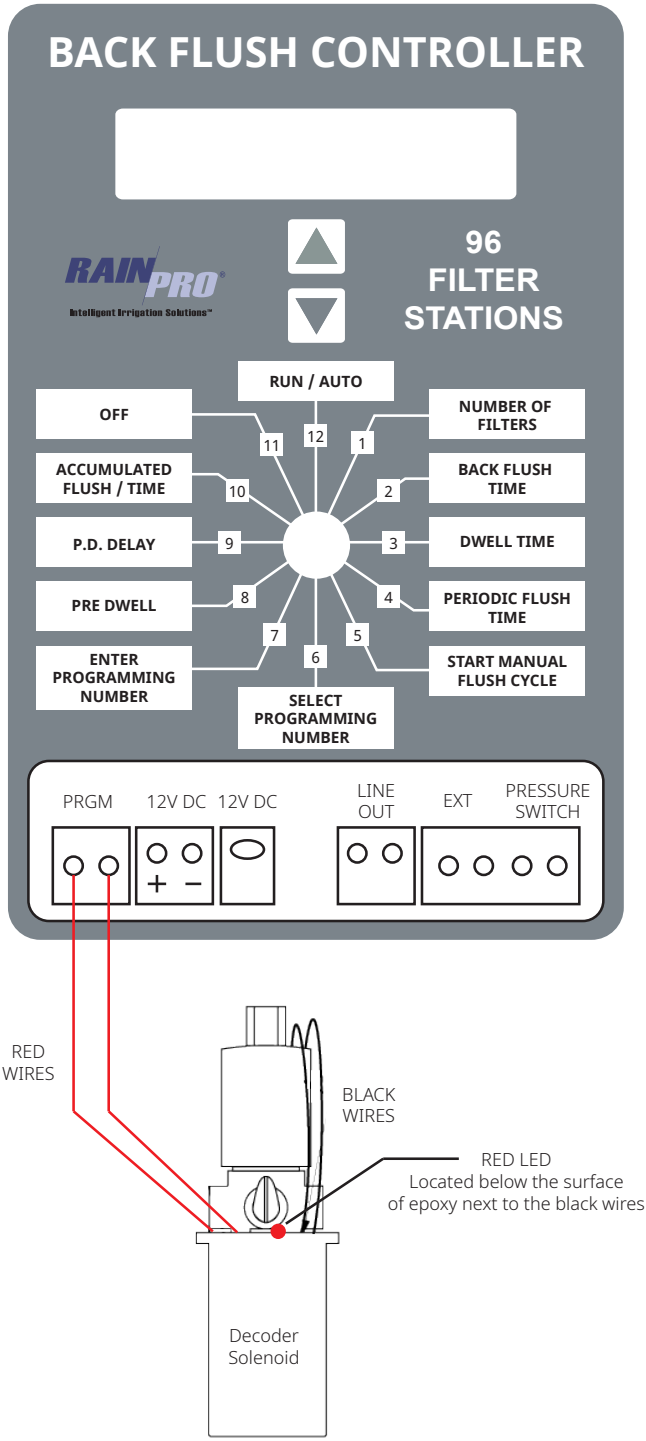
NOTE: A fl ashing "*" will be displayed if the controller has encountered a loss of power. Rotating the Dial to the OFF position and back will clear "*". There is no need to press the arrow button at this time.

NOTE: The controller will run automatically if the dial is left in any other position than Run/Auto Dial Position 12. The dial can be turned to Run/Auto to view the status of a Back Flush without interrupting a Back Flush Cycle.

NOTE: To stop a Back Flush Cycle in progress. Turn the dial to "OFF" dial position 11 and press the up arrow.

NOTE: A fl ashing "C" will be displayed if the controller initiates 3 or more continuous backfl ushes. Rotating the Dial to the OFF position and back will clear "C".

Decoder Programming



Controller Decoder Programming Instructions

1. Turn the Dial to Position 11, press the UP arrow button.
This will turn the controller OFF.

2. Disconnect field wires from “Line Out” terminal.

3. Connect the red wires of the decoder to the “Program” terminal.
The supplied alligator leads maybe used to assist in programming multiple decoders.

4. Turn the Dial to Position 6 (Select Programming Number).

5. Use the arrow buttons to select the number of the connected decoder or MSTR if a Master Valve is required.

6. Turn the Dial to Position 7 “Enter Programming Number” to be programmed.

7. Use the UP arrow button to start the programming process. The display shows “Programming Station” and then, “Programming Complete”. Also the red LED in the decoder will flash 3 times.

8. Remove the red wires from the “Program” terminal.

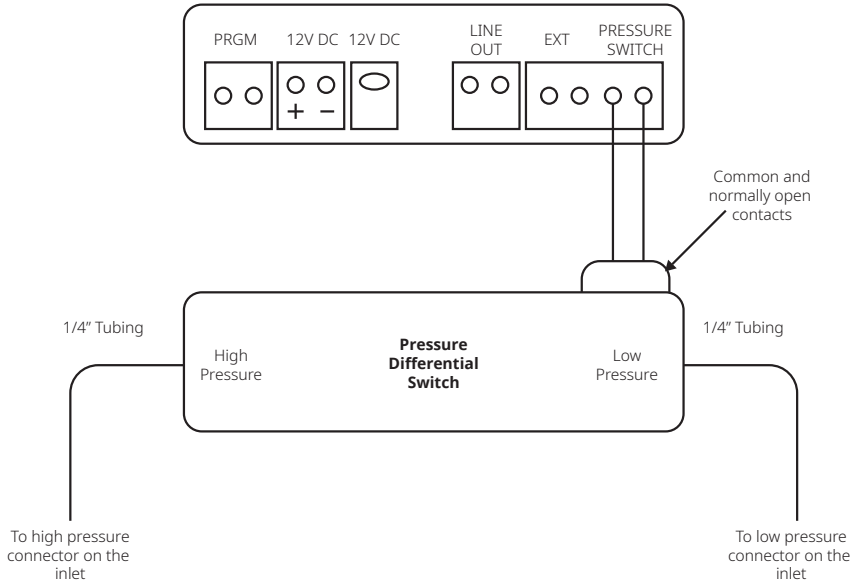
9. Install a “Decoder Number Identifi cation Tag” on one of the red wires.

10. Repeat steps 3-7 to program another decoder.

11. Reconnect the field wires in Line Out when completed.

NOTE: If a Back Flush Cycle was interrupted to program a Decoder, when the Dial is returned to the “Run/Auto” position the “Periodic Flush Time” scheduled Back Flush will start from the beginning.

Pressure Differential Switch

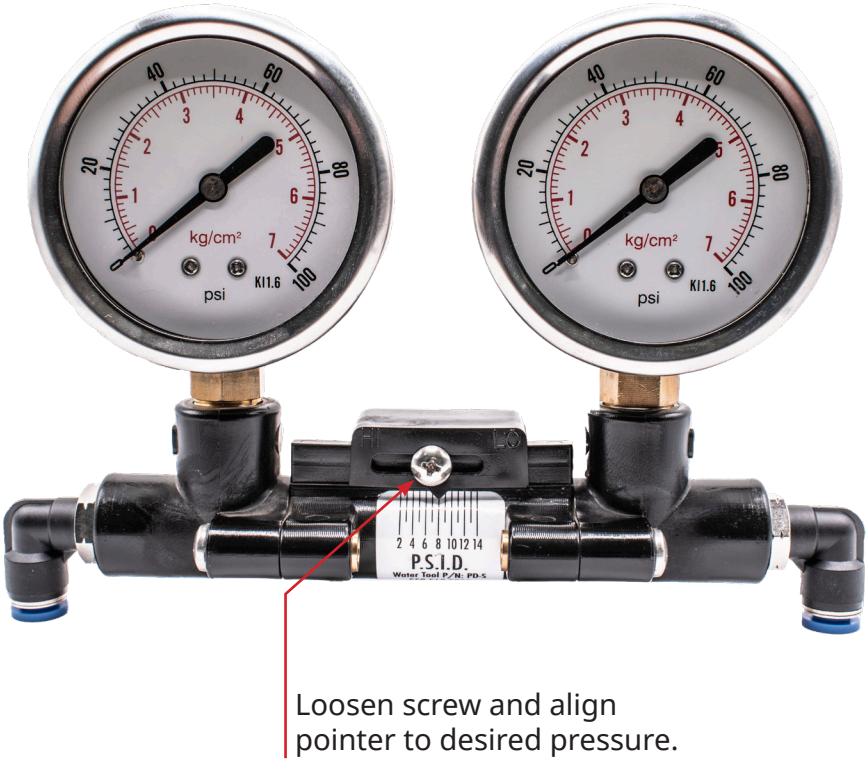


Pressure Differential Switch
The Pressure Diff erential Switch terminal is located on the bottom right of the Controller board labeled Pressure Switch. A Pressure Differential Switch can be used to initiate a complete Back Flush cycle. When a Pressure Differential Switch is installed and a preset Pressure Differential is reached a Back Flush Cycle will start.
For adjustment see page 13.

NOTE: A connected P.D. Switch will initiate a Back Flush when:
A) A Periodic Flush time is selected. Dial Position 4.
B) P.D. Switch only is selected. Dial Position 4.
C) The Controller has been turned OFF in Dial Position 11.

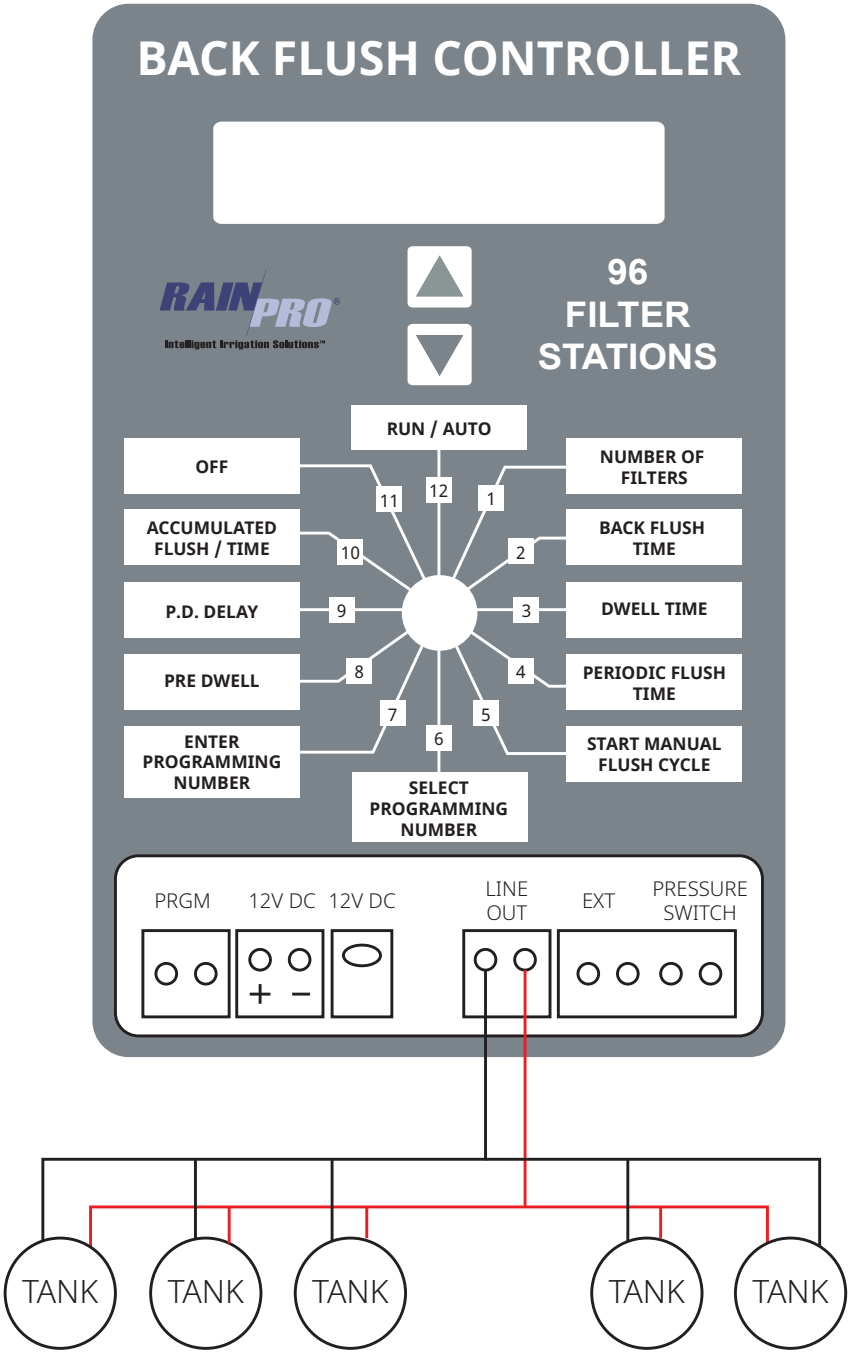
NOTE: Pressure Differential Dwell Time. Dial Position 9.

Pressure Differential Switch Adjustment

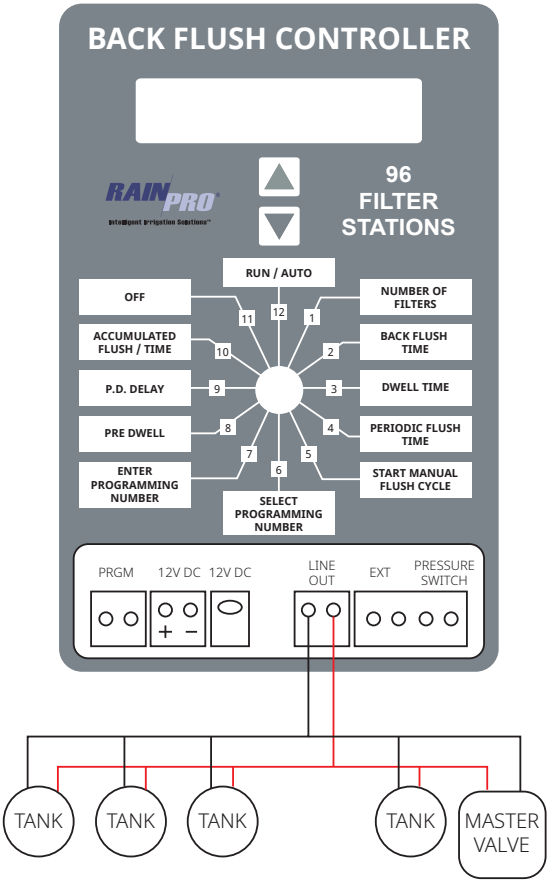


Loosen screw and align pointer to desired pressure.

Field Wiring



Master Valve

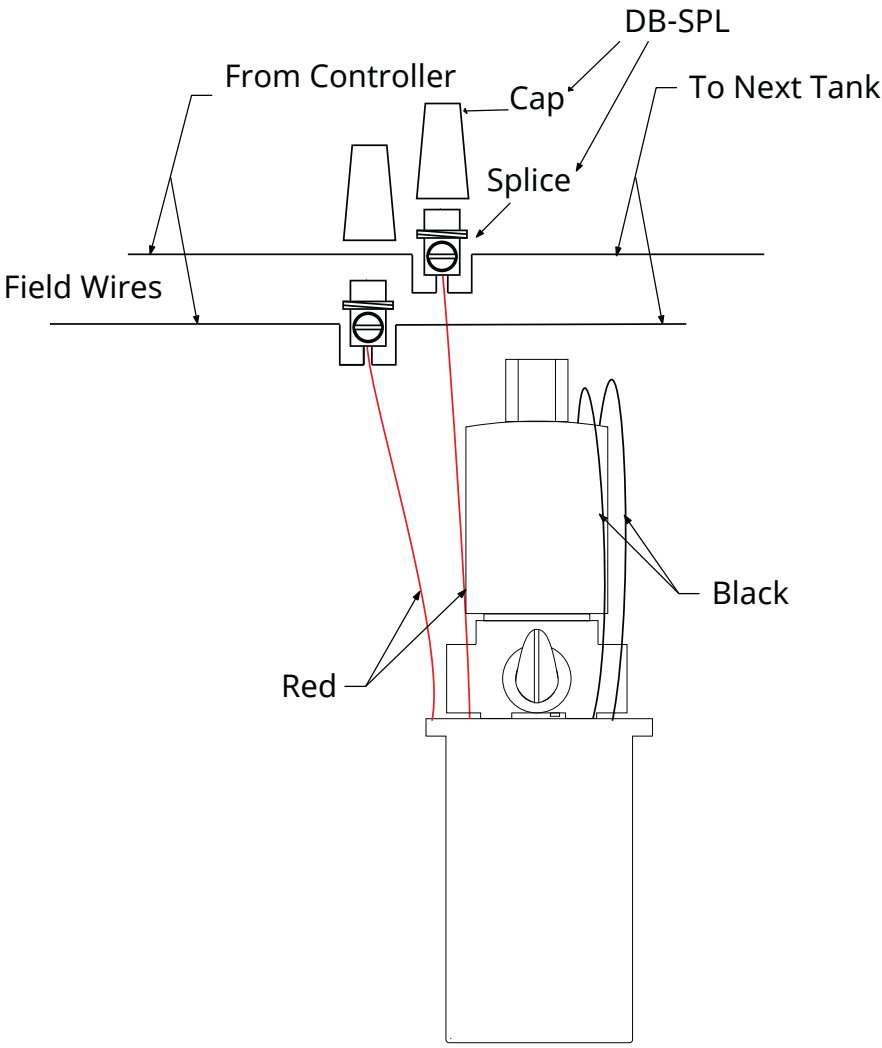


A Master Valve or a Pressure Sustaining Valve can be added to the Two Wire path if required. Program the WTA-150 D as a Master.

Pre Dwell is the selected Time between the activation of the Master Valve and the start of Tank 1 in a Back Flush Cycle. This will allow sufficient pressure and flow for efficient Back Flushing of the media filter.

See Decoder Programming **page 9**.

Decoder Field Wiring



Manual Flush Lever Operation

The Manual/Auto Lever is used to activate the Back Flush Valve manually on each individual tank.

Figure A shows the lever in the closed position. This is the position the lever must be in for the controller to start a Black Flush. It is also the position for normal fi ltration and when no active Manual Back Flushing is desired.

Figure A

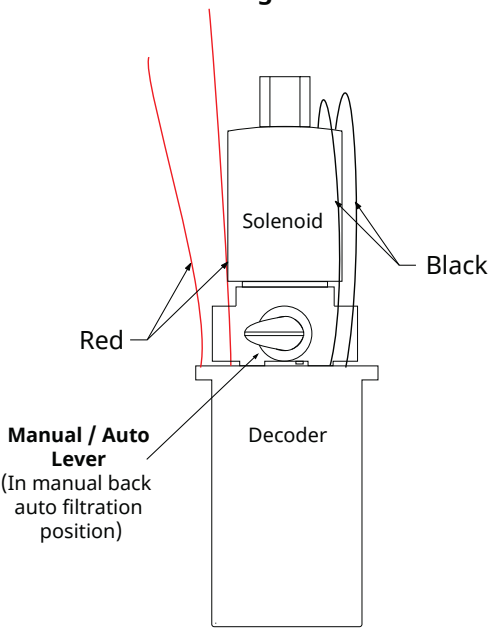


Figure B

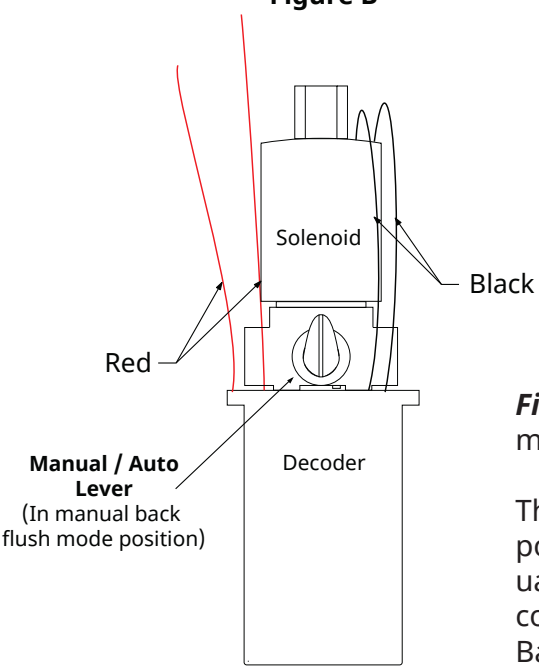


Figure B shows the lever in the manual Back Flush position.

This lever must be returned to the position in Figure A to stop a Manual Back Flush and/or allow the controller to electrically initiate a Back Flush.

Two Wire Operation

Controller Operation
When the controller is activated by either “Auto” programming or a “Manual” Input, the encoded signal is supplied to the Line Out Terminals.

Decoder Operations
The Decoder operates as an electronically controlled switch. When the decoder recognizes the encoded signal that matches its programmed number, it then allows or “switches” power to the solenoid on the valve Back Flushing the tanks.

Line Short/Valve Short Codes
The controller, through its current monitoring ability, can display two fault conditions: One being “Short Line” the second being “Valve Short.” These faults are triggered when current draw has exceeded a pre-set level.

Note: No Output is sent to the fi eld during the following conditions:

“Short Line” will retry at the next fl ush time. Turning the Dial out of “Run” and back will clear the display. If the short has not been corrected the controller will go back into “Line Short.” This fault can be caused by shorted field wires or bad decoder.

“Short Valve” will stay displayed during that specifi c tanks run time. The controller will monitor the program status and standard operation will resume when the next valve is activated. If the problem has not been corrected by the time the controller is scheduled to Run again the “Short Valve” will repeat for that specifi c valve until the short is repaired. No Back Flush will occur for that specifi c tanks run time but all valves that do not have a “short” condition will continue to fl ush as programmed. This fault can be caused by a bad solenoid.

Installation Do’s & Dont’s

For Warranty To Be Valid, Installation Must Comply To All Instructions Below:

Controller Installation / Wire Connections

1. Use only Hit Back Flush Decoders (WTA-150D) and Solenoids (WTA-179).

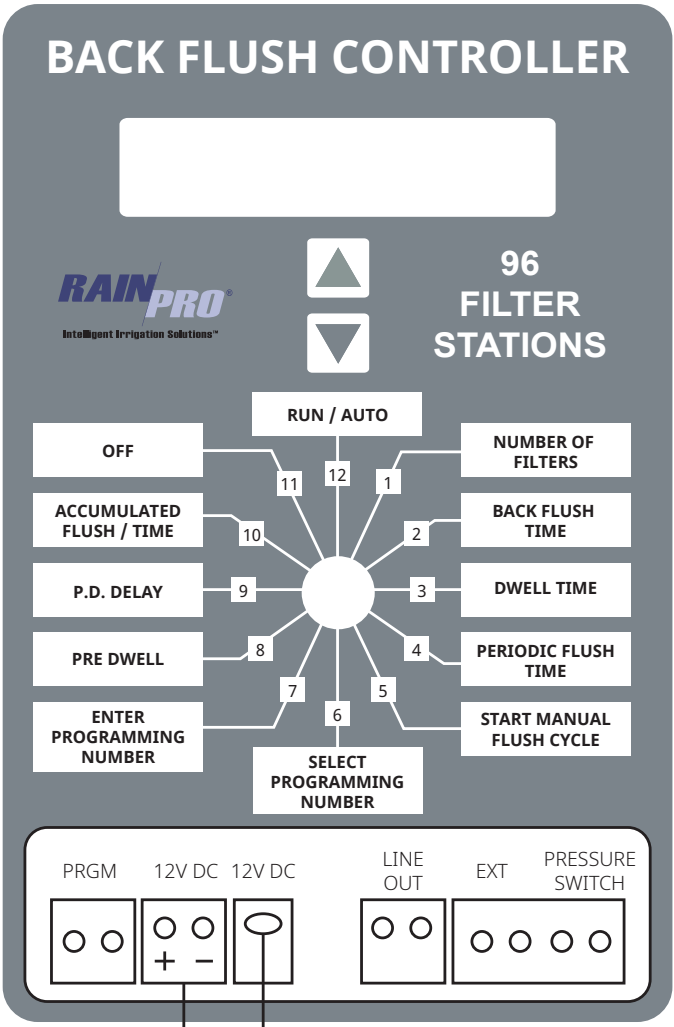
2. Branching and Teeing of the Two Wire path is permitted with the Water Tool Back Flush Controller System. Wire splices should be well planned and minimized using only the DB-SPL splice kits. (Included with all Decoders).

3. **DO NOT** install the Water Tool Back Flush Controller, its Decoders or any Water Tool Back Flush Controller Field Wire within 15 feet of any high voltage electrical panels, meters, pumps, equipment or controls.

4. On multiple controller Installations **DO NOT** connect any control wires of one controller with those of a diff erent Controller.

5. **DO NOT** “loop” field wiring. Terminate the fi eld wires at the last tank on that Two Wire path.

Battery / Solar Panel Power

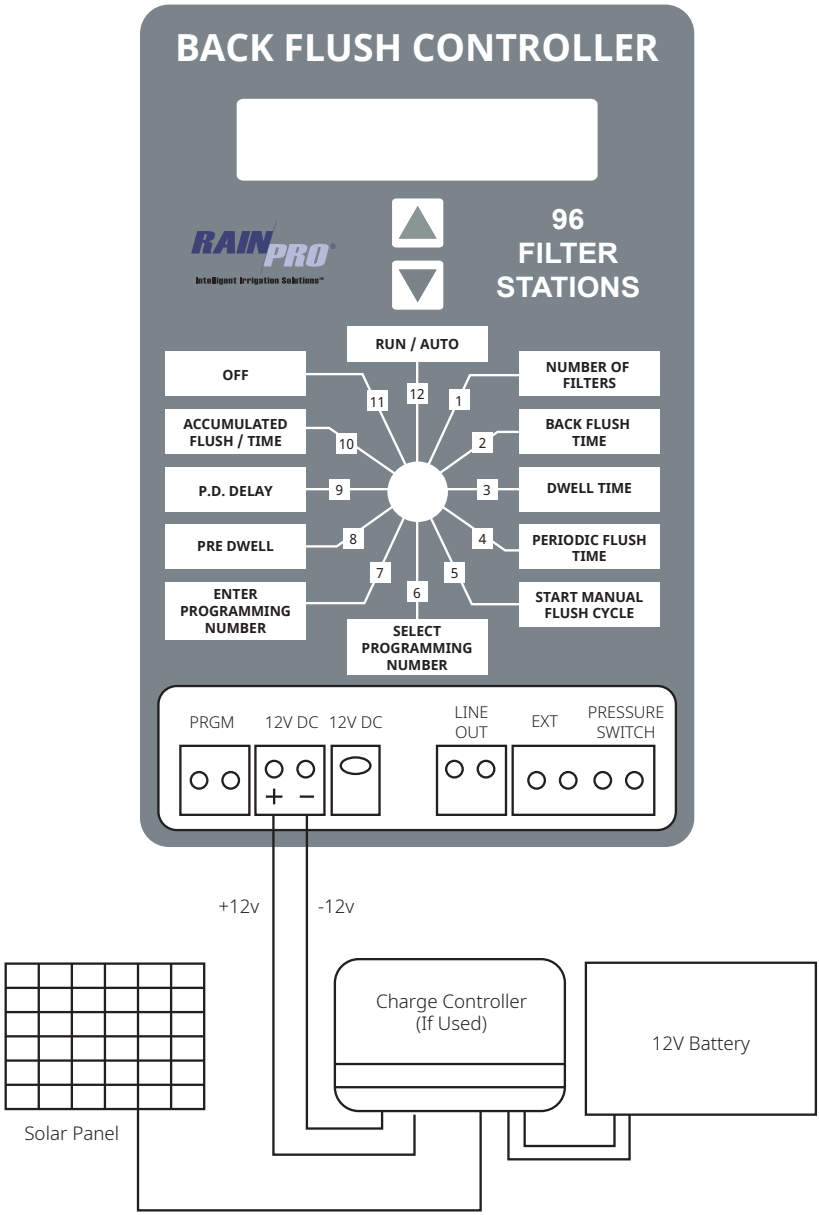


1. Disconnect power supply from plug-in terminal.

2.Connect wire from 12V DC battery or Solar Panel / Charge Controller to Terminal Block

Note: Be sure to observe polarity.
Note: 12V DC Only

Battery / Solar Panel Power



TROUBLESHOOTING HINTS FOR WATER TOOL BACK FLUSH CONTROLLER TWO WIRE SYSTEMS

Problems		Solutions
Display Blank	No Power.	1) Check: 110v or 220v supply and connections. Correct as needed. 2) Check: 12V Power at the output of the Power Supply.
Controller Displaying "Short Line" or Turning ON/OFF and "Clicking".	High Current Draw 1) Short field wires. 2) Field wires of one controller connected to field wires of a second controller.	1) Possible failed Decoder. 2) Field wires shorted.
No Valves Activating	1) Controller not activating. 2) Field Wire Connection.	1) Check the "Line Out" wire connections at the Controller. 2) Failed Controller Replace Panel.
Single Valve not Activating.	1) Bad wire connection. 2) Failed Decoder.	1) Check Decoder Wire Connection. 2) See Decoder Operation.
Multiple Valves not Activating.	1) Field wiring or connections.	1) Check wiring and connections between the last valve working and the first valve not working.
Controller displaying reads "Valve Short" with a valve number	High current draw during valve run time.	1) Possible bad solenoid. 2) Possible bad decoders.
Display frozen, does not respond to rotating valve.	Micro is locked.	1) Turn power off for a minute, then back on.
Valves Turning ON/OFF during run time.	Possible EMF interference.	Check: Controller, Decoder and Field Wiring location in respect to any high voltage.
Display shows flashing *****		Indicates loss of Power see Dial Position 12, page 9.
Display shows flash "**C**"		Indicates multiple flushes Dial Position 12, page 9.

Notes

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