

WTC Series Residential Filters

Installation and Operation Manual

March 2015

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Installation and Operating Instructions for
WTC CONTROL
Top Mount Water Filter with Vortech

Model #:

_____	WTC10ANX	Neutralizer
_____	WTC15ANX	Neutralizer
_____	WTC20ANX	Neutralizer
_____	WTC25ANX	Neutralizer
_____	WTC15AC	Carbon Filter
_____	WTC20AC	Carbon Filter
_____	WTC25AC	Carbon Filter
_____	WTC15AG	Sediment Filter
_____	WTC15BM	Birm Filter
_____	WTC744SULF	Sulfur Removal
_____	WTC948SULF	Sulfur Removal
_____	WTC15FE	Greensand Plus Filter

Shipping Carton Description / unit:

# of cartons	Contents	Description
1	Mineral tank	Distributor pipe installed
1	WTC control valve	WTC timer and backwash flow control and bypass with 1" copper or pvc connection
1	Potassium Permanganate Tank (WTC15FE Only)	With plastic grid assembly, shut-off valve assembly and spare air check tube

Filter Media is Shipped as Follows:

Model #	Gravel*	Media
WTC-15AC	N/A	1.5 CF Carbon
WTC-20AC	N/A	2.0 CF Carbon
WTC-25AC	N/A	2.5 CF Carbon
WTC-15AG	N/A	1.5 CF Filter Ag Plus
WTC-20AG	N/A	2.0 CF Filter Ag Plus
WTC-25AG	N/A	2.5 CF Filter Ag Plus
WTC-15ANX	N/A	1.5 CF Calcite
WTC-20ANX	N/A	2.0 CF Calcite
WTC-25ANX	N/A	2.5 CF Calcite
WTC-15BM	N/A	1.5 CF Birm
WTC-20BM	N/A	2.0 CF Birm

WTC-25BM	N/A	2.5 CF Birm
WTC-15MM	N/A	1.5 CF Multi Media
WTC-25MM	N/A	2.5 CF Multi Media
WTC-15FE	N/A	1.5 CF Greensand Plus

NOTE: THIS FILTER IS NOT INTENDED TO BE USED FOR TREATING WATER THAT IS MICROBIOLOGICALLY UNSAFE OR OF UNKNOWN QUALITY WITHOUT ADEQUATE DISINFECTION WHETHER BEFORE OR AFTER THE SYSTEM.

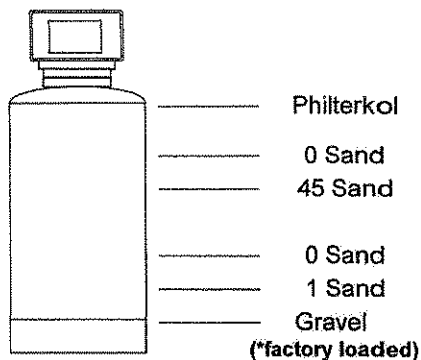
WTC Filter Positioning:

1. Place water filter in desired position, far enough from walls and other obstructions to allow for servicing the unit.
2. Place the water filter within reasonable access to a grounded 115V/60 HZ circuit and a legal drain line connection.

WTC Filter Tank Loading:

1. Remove yellow caplug from top of tank. **DO NOT CUT** white riser tube. Tube was prefitted at the factory.
2. Center the distributor and make sure it is resting on the bottom of the tank for **the WTC-20ANX and 25ANX**. For all other units, the distributor is permantly attached to the vortech----centering is not necessary. The top of the distributor will be 5/8" above the top of the tank (this was prefitted at the factory).
3. Cover the top opening of the distributor pipe before filling the tank with media.
4. Pour the appropriate media provided with the unit into the top of the tank. See page one for your specific model number unit to determine the amount of media to load into the mineral tank.**NOTE: SEE CHART AND FIGURE BELOW IF INSTALLING A WTC-15MM and 25MM.**

Model #	Gravel*	1 Sand	0 Sand	45 Sand	0 Sand	Philterkol
WTC-15MM	N/A	20 lbs.	12 lbs.	37 lbs.	25 lbs.	19 lbs.
WTC-25MM	N/A	25 lbs.	16 lbs.	50 lbs.	35 lbs.	25 lbs.

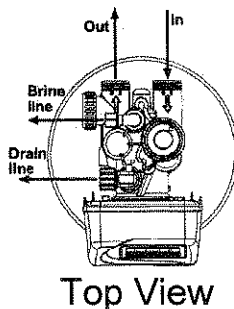


5. Remove the material used to cover the top opening of the distributor pipe.

WTC Control Valve:

1. When facing the front of the WTC timer, the inlet connection is located on the right and the outlet connection is on the left. The control valve's inlet and outlet connections are either 1" copper or PVC equipped with o'ring seal and nut.

Control Valve



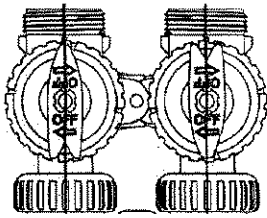
Turn the control valve upside down and ensure that the control valve distributor o'ring is in place. Use silicone lubricant on the o'ring.

****DO NOT USE PETROLEUM!****

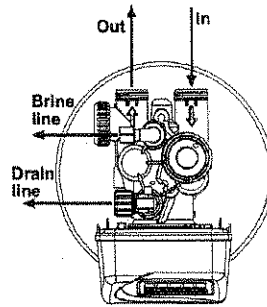
****USE ONLY SILICONE ****

2. Place the control valve onto the distributor pipe and into the tank opening.
3. Thread the control valve hand tight . Do not overtighten.
4. Locate the bypass valve assembly that is packaged with the control valve. The bypass valve has two red handles that indicate flow direction, two threaded connections for the tail piece kit and two o'ring seal connections with nuts for the control valve. Align the insert connection ends with o'ring seals and

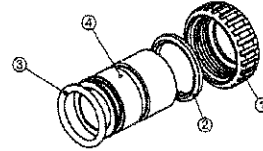
nuts to the inlet and outlet connections of the control valve.
Hand tighten the nuts. **DO NOT OVERTIGHTEN THE NUT!**



Bypass Valve



Control Valve



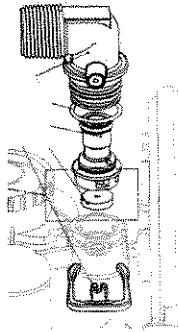
Tail piece assembly

5. Locate the tail piece kit that is packaged with the control valve. The standard tail piece kit is 1" copper with optional 1" PVC or 3/4" copper kits available as a special order. Each tail piece, o'ring, split ring and nut is presassembled at the factory. Align a tail piece assembly to the bypass valve threaded inlet and insert until the nut can be tightened. Hand tighten the nut because excessive tightening will damage the assembly. **REPEAT THE PROCEDURE FOR THE OUTLET CONNECTION.**

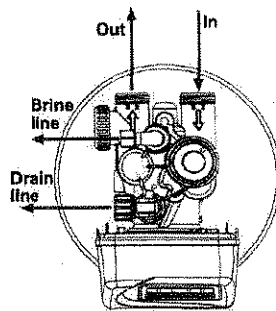
Service and Drain Piping:

1. Pipe water filter into the service lines .The inlet and outlet connections of the control valve are 1" copper or PVC and are located on the back of the valve body. As you face the timer the inlet is on the right and the outlet is on the left. Always follow local plumbing codes when installing our water treatment equipment.
2. If sweat fittings are used, be sure soldering is done in such a manner as not to allow heat to reach the control valve or bypass. (If Schedule 80 PVC is used make sure to follow the proper primer and solvent instructions.)
3. The drain line connection is 3/4" npt or (optional) 5/8 OD and is located on the top left of the valve as you face the timer. It is recommended you install a 3/4" union on the drain line for servicing if not using 5/8 OD. The drain line must be of adequate size to allow for full regeneration flow.

Drain Line Connection



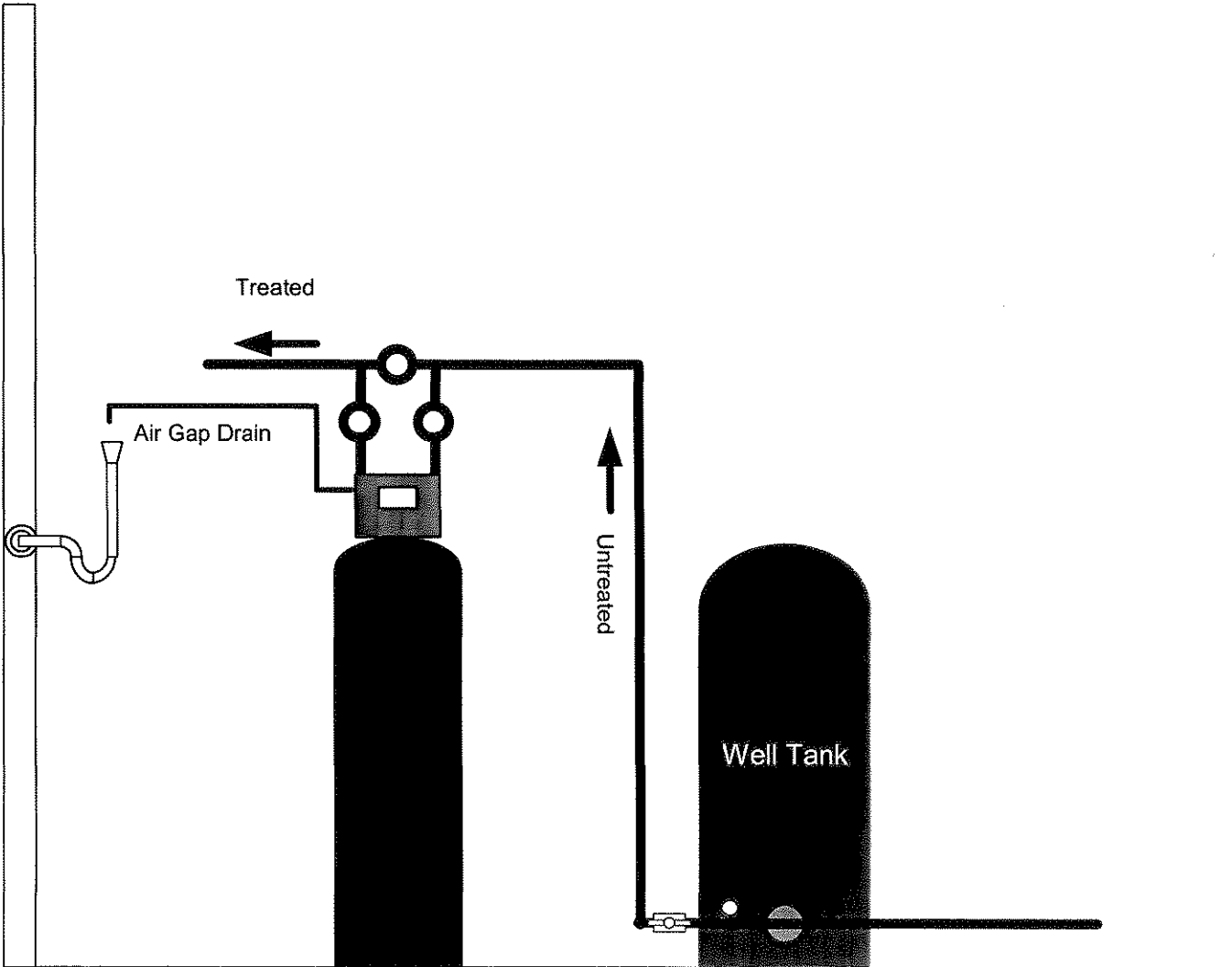
Control Valve



- The control valve drain connection is 3/4" npt.
- Never decrease the drain piping size to below the drain connection size.
- Maximum drain line length is 30 feet with slope the entire length.
- Maximum drain line height is 6 feet above the control valve.
- The drain line must be piped to an open air gap (See Figure above)
- Always follow local plumbing codes.

UNDER NO CIRCUMSTANCES SHOULD THERE BE A DIRECT CONNECTION WITH SANITARY SEWAGE FACILITIES.

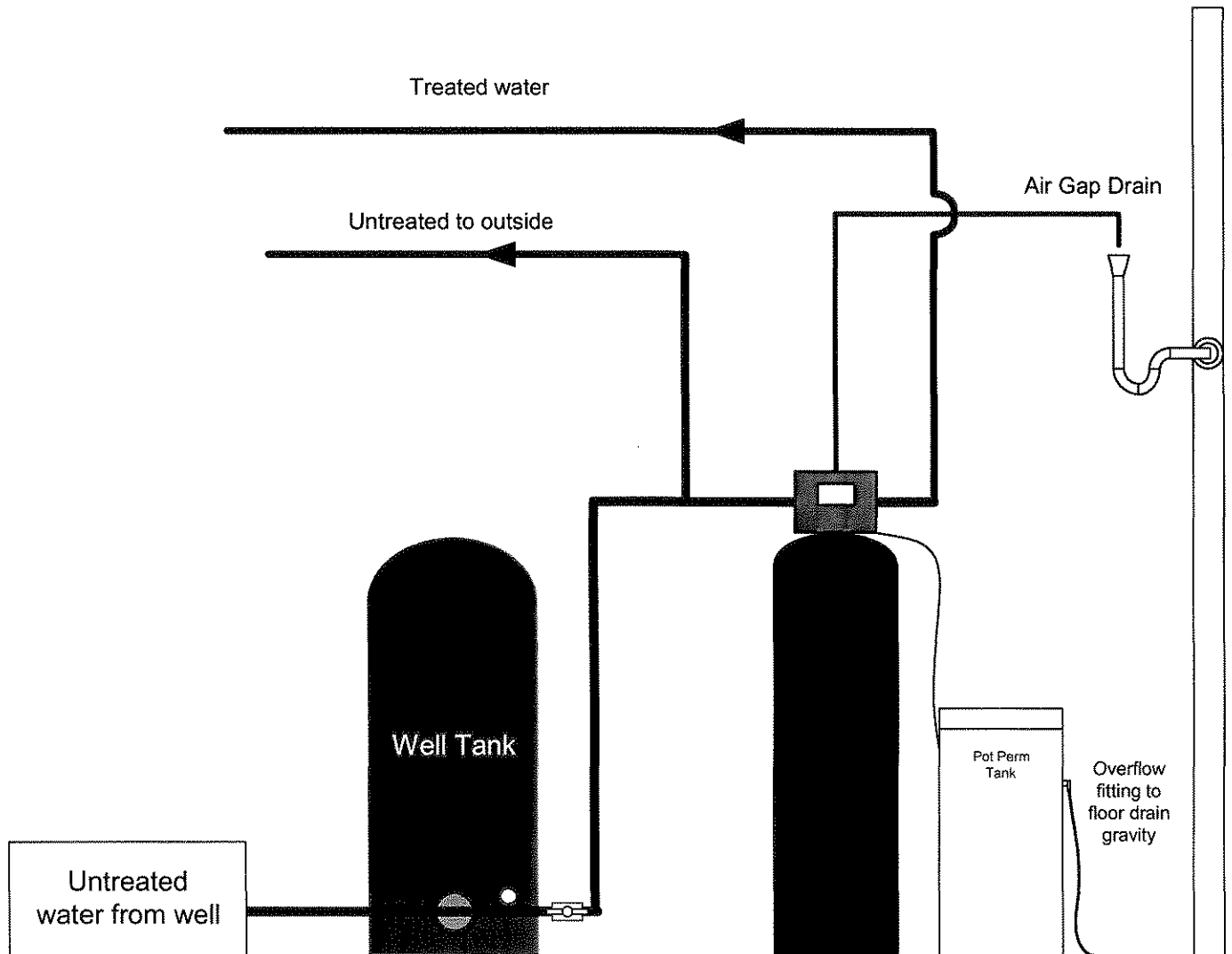
PIPING SCHEMATIC



NOTE: All Conditioners must be installed after the well tank or water meter if its public water supply.

For WTC15FE Only

Typical Piping Layout



NOTE: All conditioners must be installed after the well tank or water meter if its public water supply.

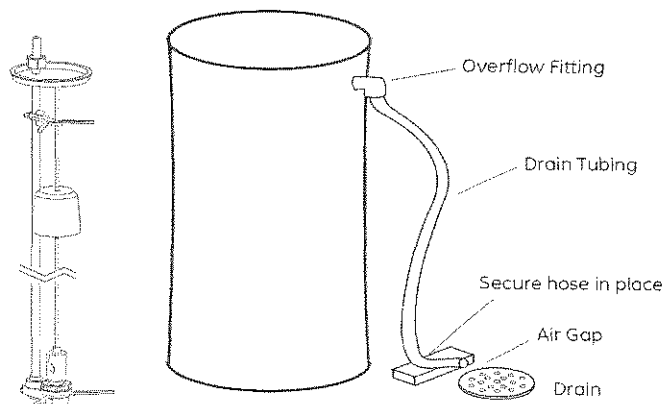
Electrical Requirements:

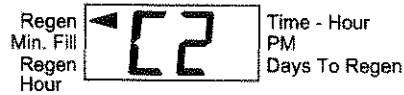
Always follow all local electrical codes when installing our water treatment equipment.

1. Provide an 115v/60Hz properly grounded dedicated electrical Outlet. (It's very important that the polarity be correct)
Avoid using outlets that are switch controlled.
2. Maximum amperage required is 5 amps.
3. Make sure the electrical service provides power 24 hours per day. We recommend installing a **surge protector** to protect unit from power surges, which are not covered by warranty.

Potassium Permanganate Tank (For WTC15FE Only):

1. The KMnO_4 tank should be located directly beside the water filter mineral tank.
2. Measure, cut, and connect one end of the 3/8" poly tubing to the compression fitting on the top of the shutoff valve located in the KMnO_4 tank and the other end to the brine fitting at the top of the control valve.
3. Make sure the plastic gripper assembly is properly positioned on each end of the tubing.
4. The shutoff valve contains a float that controls the water level in the KMnO_4 tank. The float height was preset at the factory.





Filling Filter with Water:

1. Connect the WTC control valve transformer into the electrical outlet provided.
2. Press and hold the Up and Down arrows simultaneously for three seconds until the drive motor starts. When the drive motor stops, the display will read "C1" backwash position.
3. Open the inlet ball valve a ¼ turn of its full open position to allow water to enter the water softener mineral tank slowly. The water is going to enter the tank from the bottom of the distributor pipe and leave the tank from the top. This will slowly purge all the air from the tank.

IF WATER ENTERS THE TANK TOO FAST, ALL THE FILTER MEDIA WILL BE FLUSHED TO DRAIN DURING START UP.

4. When only water is running to the drain, open the inlet and outlet ball valves fully.
5. Press the Up button to advance the control valve to the fast/rinse position. The display will read "C4".
6. Once the drive motor stops, press the Up button to advance the control valve to the service position. The display will read "C0".

NOTE: THE TIMER WILL AUTOMATICALLY ADVANCE TO THE SERVICE POSITION AND THE DISPLAY WILL READ TIME OF DAY.

Filling Filter with Water (WTC15FE Only):

1. Connect the WTC control valve transformer into the electrical outlet provided.
2. Press and hold the Up and Down arrows simultaneously for three seconds until the drive motor starts. When the drive motor stops, the display will read "C1" backwash position.
3. Open the inlet ball valve a ¼ turn of its full open position to allow water to enter the water softener mineral tank slowly. The water is going to enter the tank from the bottom of the distributor pipe and leave the tank from the top. This will slowly purge all the air from the tank.

IF WATER ENTERS THE TANK TOO FAST, ALL THE FILTER MEDIA WILL BE FLUSHED TO DRAIN DURING START UP.

4. When only water is running to the drain, open the inlet and outlet ball valves fully.
5. Press the Up button to advance the control valve to the brine/rinse position. The display will read "C2".
6. Once the drive motor stops, press the Up button to advance the control valve to the fast rinse position. The display will read "C4". The fast rinse position will rinse the softener tank.
7. The control valve will automatically advance to the brine refill position where the pot perm tank will fill with the proper amount of water. The display will read "C5".

NOTE: THE TIMER WILL AUTOMATICALLY ADVANCE TO THE SERVICE POSITION AND THE DISPLAY WILL READ TIME OF DAY.

WTC Control Valve Timer Settings:

NOTE: When system is operating one of two displays will be shown: time of day or days until the next regeneration. Pressing the UP or DOWN buttons will toggle between the two choices.

Time of Day Setting

- 1) Press and hold the CLOCK button. The screen will display "Set Time" and the hour will be blinking.
- 2) Press the UP or DOWN arrows to adjust the hour —check for correct am or pm mode.
- 3) Press the CLOCK button.
- 4) Press the UP or DOWN arrows to adjust the minutes.
- 5) Press the CLOCK button.

Time of Regeneration Setting (the factory default is 1 AM)

Simultaneously press the CLOCK and the UP arrow for 3 seconds: The screen will display "Set Time Regen" and the hour will be blinking.

- 1) Use the UP or DOWN arrows to adjust hour.
- 2) Press the CLOCK button.
- 3) Press the UP or DOWN arrows to adjust the minutes.
- 4) Press the CLOCK button.

Regeneration Frequency Setting (the factory default is every 7 days)

The screen will display "Set Regen Day" and the days of

regeneration frequency will be blinking.

- 1) To change the number, use the UP or DOWN arrows.
- 2) Press the CLOCK button.
- 3) Set up is complete and the screen will now show the time.

Manual Regeneration

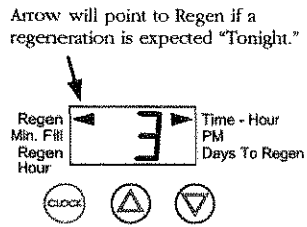
- 1) For Immediate Regeneration: Press and hold the UP and DOWN buttons simultaneously until valve motor starts (typically 3 seconds).
- 2) For Regeneration Tonight: Press and release the UP and DOWN buttons simultaneously (notice that arrow points to Regen).

NOTE: For softeners, if brine tank does not contain salt, fill with salt and wait at least 2 hours before regeneration.

NOTE: If the display shows “E1,” “E2” or “E3” (for error), call a service technician.

Final Check:

1. Make sure the drain line connection meets all plumbing codes and that the drain line size can handle the backwash flow rate of the softener.
2. Make sure the Inlet and Outlet on bypass valves are open.
3. Make sure the control valve timer is plugged into an dedicated electrical outlet with power 24 hours per day.
4. Check all piping for leaks.

<p>MANUAL REGENERATION</p> <p>NOTE: For softeners, if brine tank does not contain salt, fill with salt and wait at least 2 hours before regeneration.</p> <p>If you need to initiate a manual regeneration, either immediately, or tonight at the preprogrammed time (typically 2 a.m.), complete the following steps.</p> <p>For Immediate Regeneration: Press and hold Δ and ∇ simultaneously until valve motor starts (typically 3 seconds).</p>	<p>Arrow will point to Regen if a regeneration is expected "Tonight."</p>  <p>For Regeneration Tonight: Press and release Δ and ∇ simultaneously (notice that arrow points to Regen).</p>
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BYPASS VALVE OPERATION

Figure 1

NORMAL OPERATION

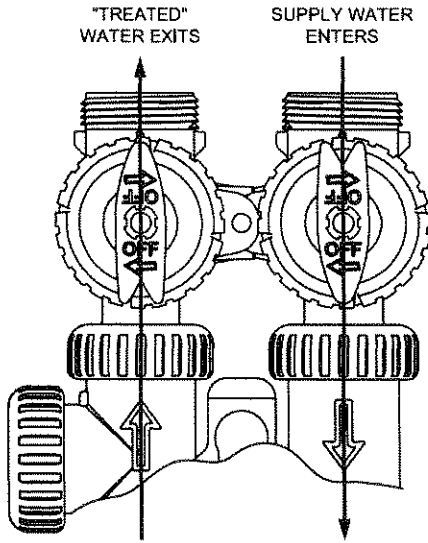


Figure 2

BYPASS OPERATION

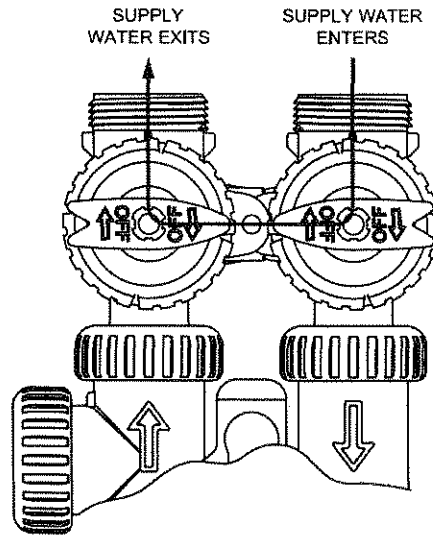


Figure 3

DIAGNOSTIC MODE

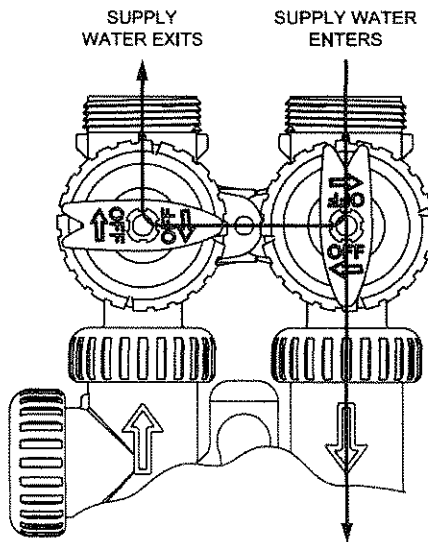
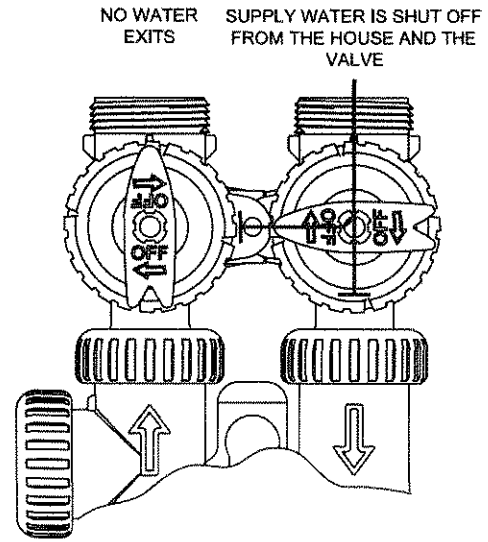


Figure 4

SHUT OFF MODE



Troubleshooting

Problem: Unit Fails to Regenerate

Cause	Solution
Faulty electrical supply	Verify that electrical power is getting to the outlet
Low inlet water pressure	Verify a minimum 30 psi inlet water pressure
Drain line is restricted	Insure that the drain line is free of blockage
Defective timer motor	Replace the timer motor
Plugged backwash flow control	Clean or replace the backwash flow control
Incorrect P Value Programming	Reprogram with proper P Value

Problem: Poor Water Quality When Unit is in Service Position

Cause	Solution
The bypass valve is open or defective	Insure that the bypass valve is in the service position
Excessive water usage	Set the timer to regenerate more often
Loss of filter media	See symptom: Loss of filter media
Change in raw water quality	Test the raw water quality and adjust regeneration frequency
Leak at the distributor tube	Verify that the distributor is flush with the top of the tank

Problem: Loss of Filter Media

Cause	Solution
Backwash flow control is missing or is the incorrect size	Verify that the proper backwash flow control is installed
Air in the system	Verify that the well system is operating properly

Problem: Continuous Flow to Drain

Cause	Solution
Defective or damaged piston stack assembly	Replace the piston stack assembly
Piston rod assembly is damaged	Replace piston rod assembly
Drive motor failure	Replace the drive motor

Problem: Loss of Water Pressure

Cause	Solution
Dirt build-up in filter tank	Clean or replace the Filter media
Dirt build-up in the inlet piping to the Filter Unit	Clean or replace the inlet piping
Distributor pipe is plugged	Clean or replace the distributor pipe

Problem: Control Valve Cycles Continuously

Cause	Solution
Defective timer circuit board	Replace the circuit board

Problem: Timer does not display time of day

Possible Cause	Solution
AC Adapter unplugged	Connect power
No electric power at outlet	Repair outlet or use working outlet
Defective AC Adapter	Replace AC Adapter
Defective PC Board	Replace PC Board

Problem: Timer does not display correct time of day

Possible Cause	Solution
Switched outlet	Use uninterrupted outlet
Power Outage	Reset time of day
Defective PC Board	Replace PC Board

Problem: Control Valve regenerates at wrong time of day

Possible Cause	Solution
Power Outages	Reset control valve to correct time of day
Time of day not set correctly	Reset to correct time of day
Time of regeneration incorrect	Reset regeneration time

Problem: Control valve stalled in regeneration

Possible Cause	Solution
Motor not operating	Replace motor
No electric power at outlet	Repair outlet or use working outlet
Defective AC adapter	Replace AC adapter
Defective PC board	Replace PC board
Broken drive gear or drive cap assembly	Replace drive gear or drive cap assembly
Broken piston retainer	Replace piston retainer
Broken main or regenerate piston	Replace main or regenerate piston

Problem: Control valve does not regenerate automatically when UP and DOWN buttons are held and depressed

Possible Cause	Solution
AC adapter unplugged	Connect AC adapter
No electric power at outlet	Repair outlet or use working outlet
Broken drive gear or drive cap assembly	Replace drive gear assembly
Defective PC board	Replace PC board

Problem: Control valve does not regenerate automatically but does when UP and DOWN buttons are depressed and held

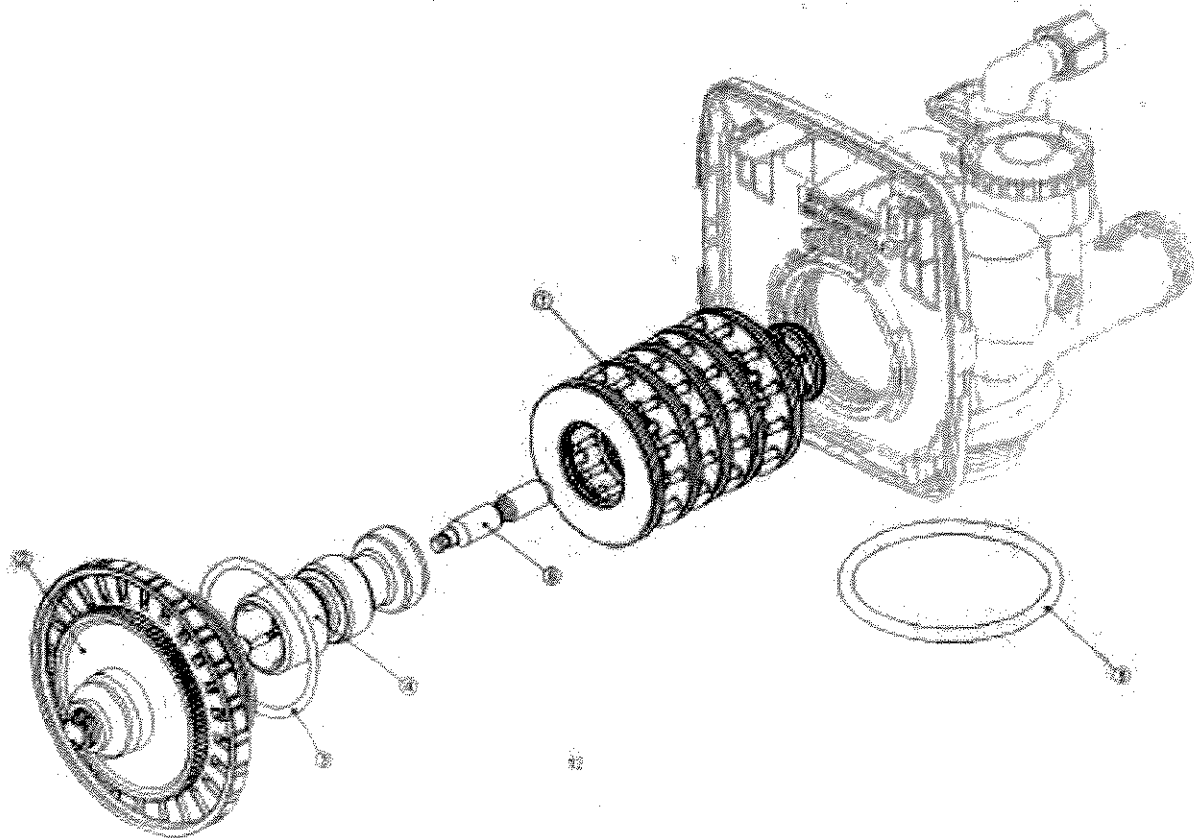
Possible Cause	Solution
Defective PC board	Replace PC board
Set-up error	Check control valve set-up procedure

ERROR CODES

Display	Description	Cause
E1 (1001)	Unable to recognize start of regeneration	Defective motor, damaged wiring, or poor wire connection.
E2 (1002)	Unexpected electrical or mechanical stall	Defective motor, damaged wiring, poor wire connection, or mechanical component failure.
E3 (1003)	Motor running too long or timeout during piston relocating	Damaged wiring, poor wire connection, or mechanical component failure.
E4 (1004)	Motor timeout when piston is relocating to service position	Damaged wiring, poor wire connection, or mechanical component failure.
(1006)	MAV-No Hard Water Bypass motor ran too long, piston can't find proper position	Unplug transformer from electrical outlet. After 1 minute, connect transformer to electrical outlet. The MAV will synchronize to the proper position.
(1007)	MAV-No Hard Water Bypass motor ran too short, piston can't find proper position and movement is stalled	Unplug transformer from electrical outlet. After 1 minute, connect transformer to electrical outlet. The MAV will synchronize to the proper position.
(1009)	Internal software error generated by detection of an invalid motor start	Replace circuit board.

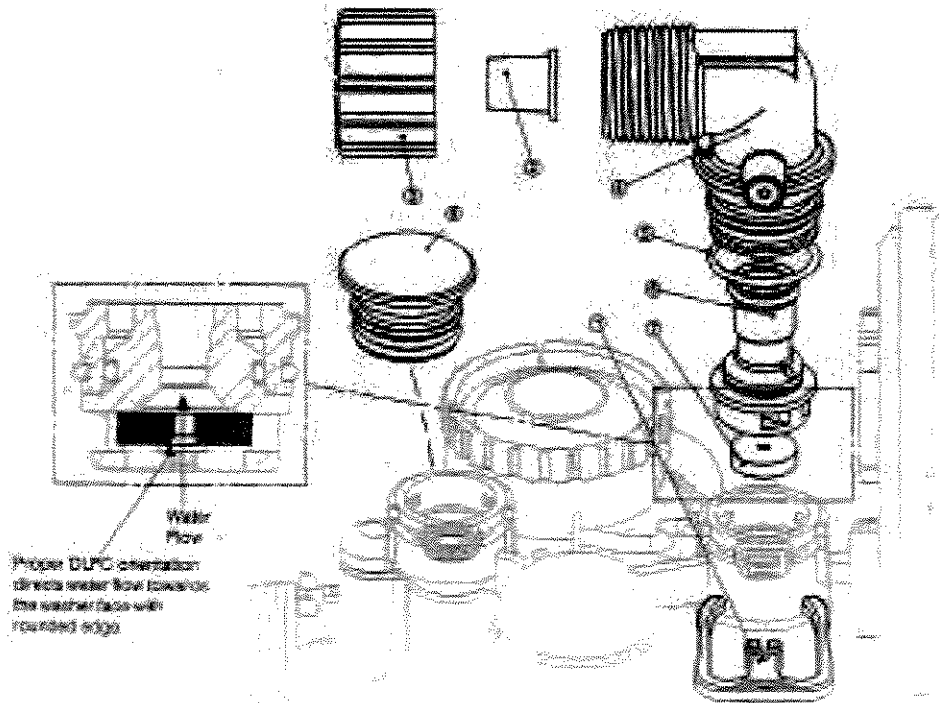
WSTC Control Valve and Parts

Part Number	Item number	Description
WSTC control valve	n/a	WSTC Filter Valve with 7 day timer
V3005	1	Spacer Stack Assembly
V3004	2	Drive Cap Assembly
V3135	3	O'ring 228
V3011	4	Piston Downflow Assembly
V3174	5	Regenerant Piston
V3180	6	O'ring 337



WSTC Control Valve and Parts

Part Number	Item number	Description
H4615	1	Elbow Locking Clip
PKP10TS8	2	Polytube Insert 5/8
V3192	3	3/4 Elbow Drain Nut
V3158-01	4	3/4 Drain Elbow Assembly
V3163	5	O'ring 019
V3159-01	6	DLFC Retainer Assembly
V3162-053 (1054) V3162-075 (1248) V3162-100 (1354)	7	Drain Flow Control
V3195-01	8	WSTC Refill port plug



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