Installation Instructions and Owner's Manual

IBX & IMBX Series

Backwashing Filter System

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Pre-installation Instructions

Description of the backwashing filter

The IBX/IMBX system includes a filtration tank (with gravel and distributor) and a backwashing control valve with bypass. Filtration media for use with the IBX/IMBX system is purchased separately and selected from the following types:

PART NUMBER	MEDIA TYPE / APPLICATION	VOLUME (CU. FT.)	PACKAGE	SHIP. WT. (LBS.)
A10	ACTIVATED CARBON TASTE & ODOR REDUCTION	1.00	BAG	29
A05P		0.50	PAIL	14
ACC10	CATALYTIC CARBON CHLORAMINE REDUCTION	1.00	BAG	29
ACC05P		0.50	PAIL	14
B10	BIRM REDUCTION OF IRON AND MANGANESE	1.00	BAG	41
B05P		0.50	PAIL	20
C05P	CALCITE SELF LIMITING ACID NEUTRALIZER	0.50	PAIL	45
FA10	FILTER – AG SUSPENDED SOLIDS REDUCTION	1.00	BAG	24
FA05P		0.50	PAIL	12
N05	NEUTRALIZER ACID NEUTRALIZER	0.50	PAIL	43
QFS05P	QUARTZ FILTER SAND (.45mm x .55mm) SEDIMENT REDUCTION	0.50	PAIL	51
Z05P	Zeolite SUSPENDED SOLIDS & SEDIMENT REDUCTION	0.50	PAIL	25

Successful Application

Any filter media may have specific limitations and/or requirements for successful application. A water sample should be submitted to First Sales for analysis and recommendation by customer service.

Time of Backwash

Periodically the control valve will go through a backwash cycle. This cycle is factory preset to 12:00 A.M. flushing the accumulated sediment and/or precipitant to the drain. After the backwashing process the unit is now prepared for the next period of service.

Pre-installation Instructions (cont.)

Water Supply

This filter will function properly when the water supply is furnished by a jet pump, submersible pump, variable speed (constant pressure) pump or community water supply. As with all other filter systems, however, it is imperative that the well pump provides enough flow rate for the filter to adequately backwash. In order to ensure sufficient backwash flow rate the following pumping rate test should be performed prior to installing the IBX/IMBX.

1. Make certain no water is being drawn in the house.
2. Open spigot nearest pressure tank.
3. When well pump starts, close spigot and measure time (in seconds) to refill pressure tank (well pump turns back off). This is **Cycle Time**.
4. Using a container of known volume, draw water from pressure tank and measure how many gallons until the pump turns back on again. This is **Draw Down**.
5. Calculate pumping rate by dividing draw down by cycle time and multiplying by 60.

$$\frac{\textbf{Draw Down}\ \text{(gallons)}}{\textbf{Cycle Time}\ \text{(seconds)}} \times 60 = \text{Pumping Rate (gallons per minute)}$$

Example: Draw down is 8 gallons
Cycle time is 65 seconds

$$\frac{8\ \text{gallons}}{65\ \text{seconds}} \times 60 = \textbf{7.4}\ \text{gpm (gallons per minute)}$$

Location Considerations

The proper location to install the IBX/IMBX will ensure optimum filter performance and satisfactory water quality. The following factors should be considered in selecting the location of this system.

1. The IBX/IMBX must be installed after the pressure tank (private well system only).
2. The system should be installed as close as possible (preferably within 15') to an adequate floor or laundry drain capable of handling the backwash cycle volume and flow rate (refer to unit specifications). An air gap should be provided between the IBX/IMBX drain line and plumbing drain.
3. All water conditioning equipment should be installed at least 10' prior to the water heater. Water temperatures exceeding 100°F can damage the internal components of the control valve and filter tank. An expansion tank may need to be installed in the line to the water heater in order to allow for thermal expansion and comply with local plumbing codes.
4. Water pressure must not exceed the range of 25 - 100 psi.
5. The system must not be subject to freezing temperatures.
6. The control valve requires 115/120 V, 60 Hz electricity from an outlet that is not wired to a switch.
7. Never install a cartridge type filter prior to the IBX/IMBX. Any cartridge or in-line filter (if desired) may be installed after the IBX/IMBX system. This will prevent restricting the water flow and pressure available for backwash.
8. Appliances requiring extended periods of continuous or high flow water use (i.e. geothermal heat pumps, swimming pools, lawn irrigation, outside hose bibs, etc.) should bypass the filter.

General Installation

GENERAL INSTALLATION & SERVICE WARNINGS

The water conditioner is not designed to support the weight of plumbing.

Do not use Vaseline, oils, other hydrocarbon lubricants or spray silicone anywhere. A silicone lubricant may be used on black "O" Rings. This will allow ease of installation and decrease chance of rolling from the bypass and tank connections. *Avoid any type of lubricants, including silicone, on red or clear lip seals.*

Do not use pipe dope or other sealants on threads. Teflon® tape must be used on the threads of the drain line connection. Teflon® tape is not used on any connection where "O" Ring seals are used

The nuts and caps are designed to be unscrewed or tightened by hand or with the special plastic Service Wrench, (CV3193, not included). If necessary pliers can be used to unscrew the nut or cap. Do not use a pipe wrench to tighten nuts or caps. *Do not place screwdriver in slots on caps and/or tap with a hammer.*

NOTE: If the plumbing system is used as the ground leg of the electric supply, continuity should be maintained by installing ground straps around any non-conductive plastic piping or bypass used in the installation.

Make sure the filter is not installed backwards. The filter will not function properly if installed backwards and filter media may be forced into the water lines. Arrows molded into the valve body and red handles of the bypass indicate the direction of flow.

Typical Installation

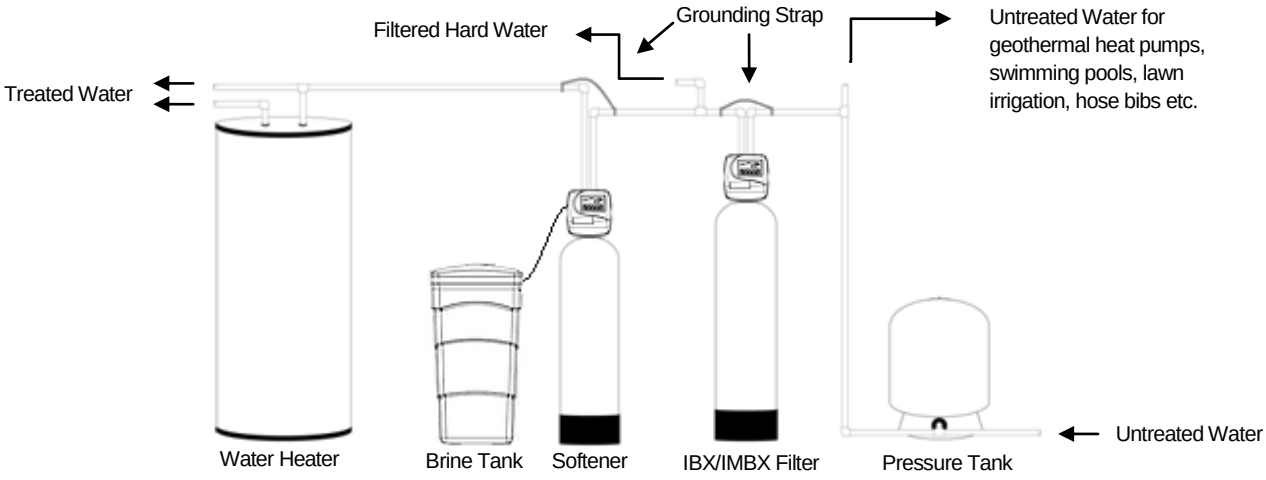


FIGURE 1: Typical Installation

Bypass Valve

The bypass valve is used to isolate the control valve from the plumbing system's water pressure in order to perform control valve repairs or maintenance. The 1" full flow bypass valve incorporates four positions including a diagnostic position that allows a service technician to have pressure to test a system while providing untreated bypass water to the building. Be sure to install bypass valve onto main control valve, before beginning plumbing or make provisions in the plumbing system for a bypass. The bypass body and rotors are glass filled Noryl® and the nuts and caps are glass filled polypropylene. All seals are self-lubricating EPDM to help prevent valve seizing after long periods of non-use. Internal "O" Rings can easily be replaced if service is required. The bypass consists of two interchangeable plug valves that are operated independently by red arrow shaped handles. The handles identify the direction of flow. The plug valves enable the bypass valve to operate in four positions.

1. **Normal Operation Position:** The inlet and outlet handles point in the direction of flow indicated by the engraved arrows on the control valve. Water flows through the control valve for normal operation of a water softener or filter. During the regeneration cycle this position provides regeneration water to the unit, while also providing untreated water to the distribution system **(Fig. 2).**

2. **Bypass Position:** The inlet and outlet handles point to the center of the bypass. The system is isolated from the water pressure in the plumbing system. Untreated water is supplied to the building **(Fig. 3).**

3. **Diagnostic Position:** The inlet handle points toward the control valve and the outlet handle points to the center of bypass valve. Untreated supply water is allowed to flow to the system and to the building, while not allowing water to exit from the system to the building **(Fig. 4) .** This allows the service technician to draw brine and perform other tests without the test water going to the building.

   NOTE: The system must be run through a rinse cycle before returning the bypass valve to the normal position.

4. **Shut Off Position:** The inlet handle points to the center of the bypass valve and the outlet handle points away from the control valve. The water is shut off to the building. The water treatment system will depressurize upon opening a tap in the building. A negative pressure in the building combined with the softener being in regeneration could cause a siphoning of brine into the building. If water is available on the outlet side of the softener it is an indication of water bypassing the system **(Fig. 5)**

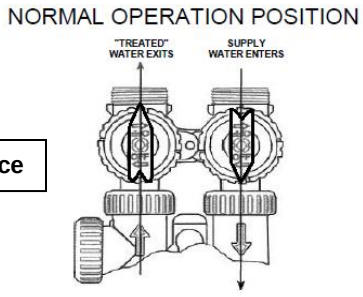


Figure 2 - Service

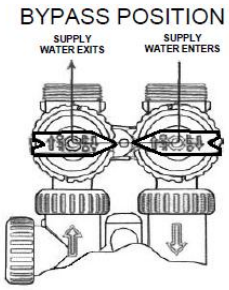


Figure 3 - Bypass

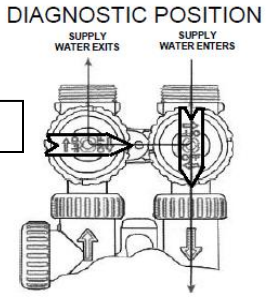


Figure 4 - Diagnostic

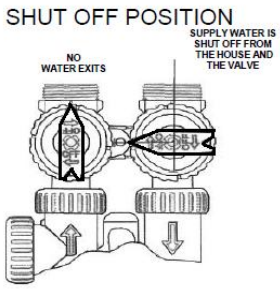


Figure 5 – Shut Off

Installation Instructions

STEP 1: **Unpack filter unit**, making sure to remove entire contents of the shipping container prior to disposal.

STEP 2: With the filter unit in the upright position, **remove the control valve** from the mineral tank being careful to not pull the distributor out of the gravel at the bottom of the tank.

STEP 3: Cover the top of the distributor tube with the included red cap and, using the included blue media funnel, **pour filter media(s) (purchased separately) into the mineral tank**. If using multiple filter media types, load in the order of heaviest (most dense) to lightest (least dense). 12" – 14" of space MUST be left empty at the top of the mineral tank to allow for media bed expansion during backwash and to prevent filter media from being discharged through the drain line.

STEP 4: Use a garden hose or bucket to **fill the media tank with water**.

IMPORTANT: Carbon, Filter Ag, Zeolite and Birm must be soaked for at least 2 hours prior to submitting it to full backwash flow rate to prevent loss of media to drain.

STEP 5: Clean mineral tank threads to remove any filter media. Remove red cap from distributor tube and **reinstall control valve** by threading it securely onto the mineral tank. (O-ring seal: HAND TIGHTEN ONLY!)

STEP 6: **Shut off all water at main supply**. On private well system, turn off power to pump and drain pressure tank. Make certain pressure is relieved from complete system by opening nearest faucet to drain system. SHUT OFF FUEL / ELECTRICAL SUPPLY TO WATER HEATER.

STEP 7: **Plumb the water supply line** to the unit's bypass valve inlet, located at the right rear as you face the unit. There are a variety of installation fittings available. They are listed under Installation Fitting Assemblies, pages 21-23. When assembling the installation fitting package (inlet and outlet), connect the fitting to the plumbing system first and then attach the nut, split ring, and "O" Ring. Heat from soldering or solvent cements may damage the nut, split ring, or "O" Ring. Solder joints should be cool and solvent cements should be set before installing the nut, split ring, and "O" Ring. Avoid getting solder flux, primer, and solvent cement on any part of the "O" Rings, split rings, bypass valve, or control valve. If the building's electrical system is grounded to the plumbing, install a copper grounding strap from the inlet to the outlet pipe. Plumbing must be done in accordance with all applicable local codes. **MAKE CERTAIN WATER ENTERS THROUGH INLET AND DISCHARGES THROUGH OUTLET.**

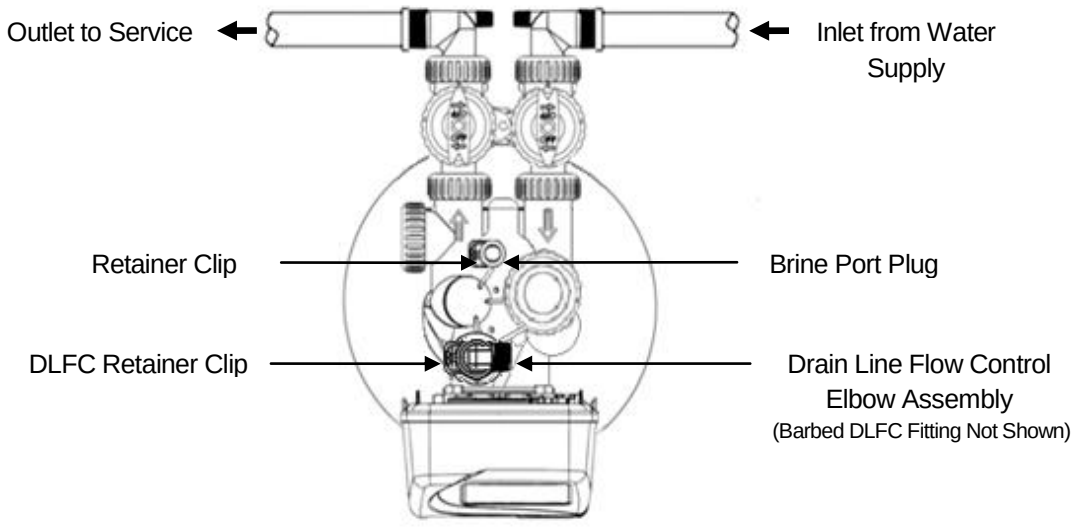


FIGURE 6: Top View of Control Valve with Bypass Installed

Installation Instructions (cont.)

STEP 8: **Apply thread tape to DLFC Assembly.** Remove drain line flow control (DLFC) retainer clip (Figure 6, Page 6) and remove the DLFC assembly from the valve body, (Figure 6, Page 6). Unscrew drain line elbow from DLFC. Apply thread tape to threads and re-attach the barbed drain line elbow (not shown). Reinsert DLFC assembly into the valve body, making certain it is FULLY inserted before replacing the retaining clip.

STEP 9: **Install drain line (included).** Use polyethylene tubing provided **(NO VINLY TUBING)** to run drain line from control valve to floor drain, laundry drain or sump pit capable of handling the backwash rate of the filter (refer to specifications and flow rate on page 16) or discard the barbed fitting and use ¾" NPT fitting to connect a rigid pipe drain line (recommended). If backwash flow rate is greater than 7 gpm or drain line length exceeds 15', use ¾" rigid pipe for drain line. There must be an air gap at the end of the drain line to prevent siphoning of waste water. AVOID OVERHEAD DRAINS AND DRAIN LINE LONGER THAN 15'.

STEP 10: **MAKE SURE THE BYPASS VALVE IS IN THE "BYPASS" POSITION** (Figure3, Page 5) NOTE: the INLET and OUTLET knobs turn *clockwise* to close the port to the softener and *counter-clockwise* to open the port to the softener. **Open the main supply valve or turn on power to the pump on private well systems.** Check for leaks and correct as needed

STEP 11: **Program control valve.** Plug the transformer of the control valve into an uninterrupted electrical outlet (not wired to a switch) and use the buttons on the front of the control valve to adjust the initial settings:

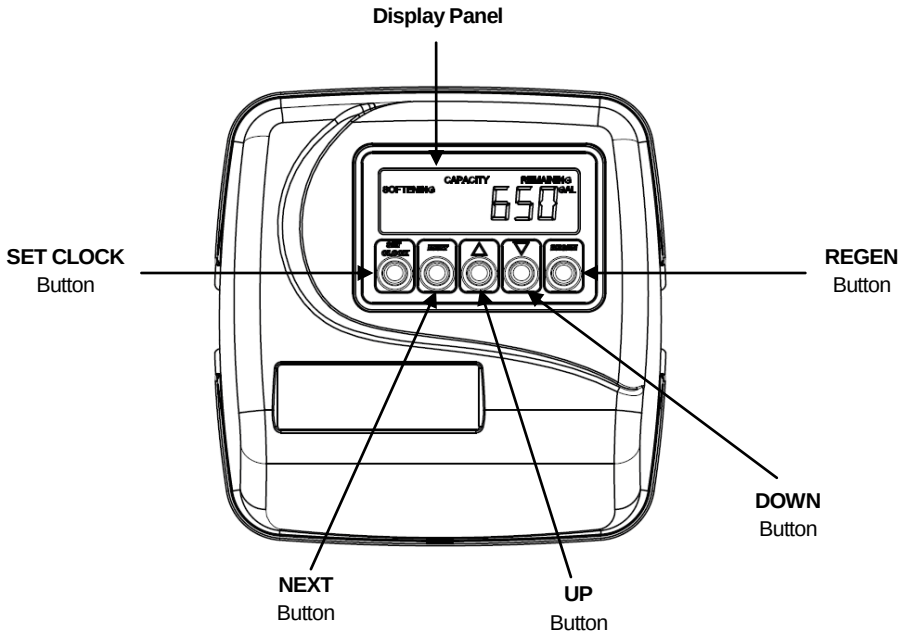


FIGURE 7: Control Valve Front Panel

Installation Instructions (cont.)

A) SET THE TIME OF DAY

1. Press the "SET CLOCK" button
    a. The upper left of the display will show "SET TIME"
    b. The hour will flash

2. Press the "UP" or "DOWN" buttons (triangle pointing up or down) until the correct combination of hour and "AM" or "P M" is reached to match the current time.

3. Press the "NEXT" button
    a. The upper left of the display will show "SET TIME"
    b. The minutes will flash

4. Press the "UP" or "DOWN" buttons until the minutes match the current time.

5. Press the "NEXT" button
    a. The upper left of the display will show "TIME"
    b. The current time of day will be shown on the right side of the display
    c. Only the colon between the hour and minutes will be flashing.

B) Enter Programming: Press "NEXT" and "UP" (triangle pointing up) buttons simultaneously for 3 seconds. Then press "NEXT" at the "SET HARDNESS –nA-" screen.

1. **Regeneration Days:**
    a. The upper left of the display will show "SET"
    b. The lower left of the display will show "REGEN" above and "DAY" below.
    c. A number will flash (default 3)

2. Using the "UP" or "DOWN" (triangle pointing up or down) buttons, set the number of days (default 3, recommended) between regenerations.

3. **Regeneration Time:** Press the "NEXT" button
    a. The upper left of the display will show "SET TIME"
    b. The middle left of the display will show "REGEN"
    c. The hour will flash

4. Regeneration Hour: Using the "UP" or "DOWN" buttons, set the combination of hour of day and "AM" or "P M" (NOTE: letter spacing as shown on the display) that the BACKWASH cycle of regeneration should occur. Make sure the filter is not regenerating at the same time with any other water treatment equipment.

5. Press the "NEXT" button
    a. The upper left of the display will show "SET TIME"
    b. The middle left of the display will show "REGEN"
    c. The minutes will flash

6. Regeneration Minutes: Using the "UP" or "DOWN" buttons, set the minutes portion of the time when regeneration should occur.

Installation Instructions (cont.)

7. **Exit Programming:** Press the "NEXT" button
    a. The upper left of the display will show "TIME"
    b. The current time of day will be shown on the right side of the display
    c. Only the colon between the hour and minutes will be flashing
    d. and minutes will be flashing.

STEP 12: **Initiate Manual Regeneration (Backwash Cycle):** With the bypass valve in the bypass position, press and hold the "REGEN" button 3 seconds or until the word "BACKWASH" appears in the lower right of the display and "REGEN" appears at the middle left of the display. The drive motor will run briefly and count-down timer will appear in the time-of-day position on the display.

IMPORTANT: Carbon, Filter Ag, Zeolite and Birm must be soaked for at least 2 hours prior to submitting it to full backwash flow rate to prevent loss of media to drain.

STEP 13: **Unplug the transformer from the electrical outlet** to keep the IBX/IMBX in backwash for an extended time to purge any air and remove media "fines" (very small particles of media).

STEP 14: Gradually turn the INLET side knob of the bypass valve counter-clockwise not more than ½ way (45 degrees) to the "Service" position (Figure 2, Page 5) allowing the unit to slowly fill with water and purge the air until only a steady stream of water flows to the drain.

STEP 15: Once the air is purged, gradually turn the INLET knob of the bypass valve counter-clockwise until it is fully in "Service" position (Figure 2, Page 5). Then turn the OUTLET knob of the bypass valve counter-clockwise until it is fully in the "Service" position (Figure 2, Page 5). and **leave the control valve in "Backwash" position for at least 10 minutes or until water flowing from the drain line runs clear; whichever is longer.**

STEP 16: **Rinse Cycle: Plug the transformer into the electrical outlet.** Press the "REGEN" button to advance the control valve to the "RINSE" cycle. Another count-down timer will appear in the time-of-day position, "RINSE" will be shown in the lower middle of the display and "REGEN" appears in the middle left of the display.

STEP 17: **Exit Manual Regeneration:** Allow the rinse cycle to complete and the filter will return to service mode automatically.

STEP 18: **TURN ON FUEL / ELECTRICAL SUPPLY TO WATER HEATER.**

RECOMMENDED: Retain the red distributor cap and blue media funnel for future replenishment of filter media.

NOTE: If the IBX/IMBX filter is loaded with any self-sacrificing media like Calcite or Neutralizer, mark the media level on the side of the tank by shining a bright light through the tank to see its level. Replenish the media in the mineral tank when the level drops by more than three inches.

Control Valve Operating Displays

1. General Operation:

When the system is operating, one of two displays may be shown. Pressing *next* will alternate between displays. One of the displays is always the current time of day. The other display shows the current volume remaining in Gallons. Capacity remaining is the gallons that will be treated before the system goes through a regeneration cycle.

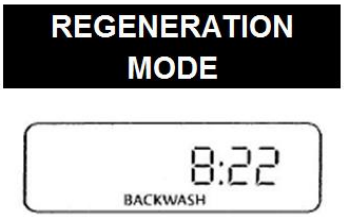
The user can switch between the displays as desired.

If the system has called for a regeneration that will occur at the preset time of regeneration, the words *REGEN TODAY* will appear on the display.

The softener has an installed water meter, the word "Softening" flashes on the display when water is being treated (i.e. water is flowing though the system).

2. Regeneration Mode:

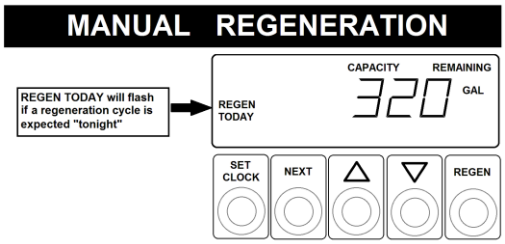
Typically a system is set to regenerate at a time of no water use. If there is a demand for water when the system is regenerating, untreated water will be delivered. When the system begins to regenerate, the display will change to include information about the step of the regeneration process and the time remaining for that step to be completed. The system runs through the steps automatically and will reset itself to provide treated water when the regeneration has been completed.



3. Manual Regeneration:

Sometimes there is a need to regenerate before the control valve calls for it. This may be needed if a period of heavy water use is anticipated or when the system has been operated without salt.

- To initiate a manual regeneration at the preset delayed regeneration time, press and release *regen*. The words "*REGEN TODAY*" will flash on the display to indicate that the system will regenerate at the preset delayed regeneration time.
- If you pressed the *regen* button in error, pressing the button again will cancel the command.

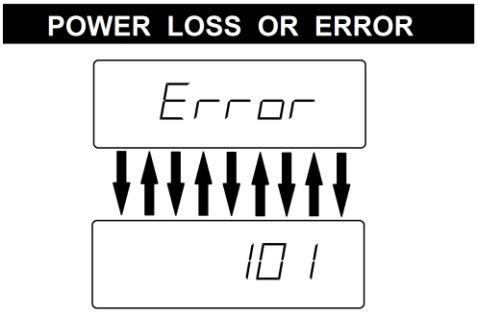


- To initiate an immediate manual regeneration, press and hold the *regen* button for three seconds. The system will begin to regenerate immediately. This command cannot be cancelled.

4. Power Loss:

If the power goes out for less than two hours, the system will automatically reset itself. If an extended power outage occurs, the time of day will flash on and off which indicated the time of day should be reset. The system will remember all other settings.

Error Message: If the word "ERROR" and a number are alternately flashing on the display, record the number and contract the dealer for help. This indicates that the control valve was not able to function properly.



Maintenance

1) If your unit contains activated carbon, you should replace the carbon and gravel underbed at least every three years. Replacement may be required sooner if the taste and odor being removed begins to reappear in the treated water or you experience increasing pressure drop that is not resolved by increasing the frequency of backwashing.

2) Filter Ag and Filter Sand will last indefinitely. It may be necessary to replace them if you experience increasing pressure drop that is not resolved by increasing the frequency of backwashing or if water quality diminishes due to contaminant bleed through.

3) Neutralizer media or calcite must be replenished at least annually. Mark the side of the mineral tank at installation so the drop in media level may be monitored by shining a bright light behind the mineral tank. Add media if the level has dropped by more than three inches.

4) Birm should be replaced when iron reappears in the treated water and backwashing does not improve the water quality.

TO REPLENISH OR REBED MEDIA:

1) Pressure must be relieved on the system by placing the Bypass Valve in the "Bypass" position (Figure 3, Page 5) and initiating a manual regeneration (section 3, page 10).

2) Unplug the Control Valve from the electrical outlet to prevent it from advancing automatically.

3) Disconnect the Control Valve from the Bypass Valve

4) Disconnect the Drain Line from the Control Valve

5) Unscrew Control Valve from Mineral Tank **(IF REBEDDING ONLY! Remove the distributor)**.

6) Siphon water from Mineral Tank **(IF REBEDDING ONLY! Remove existing media and gravel)**.

7) (IF REBEDDING ONLY! Rinse Mineral Tank and replace distributor, making certain that the distributor basket sits in the center of the tank bottom.)

8) Cover the top of the distributor tube to prevent media entering the tube during filling. Using a funnel, pour filter media(s) into the mineral tank. **(IF REBEDDING ONLY! Begin loading the tank with the gravel underbed. Filling the Mineral Tank 1/3 with water before loading gravel will cushion the fall and ensure even distribution of the gravel and media. If using multiple filter media types, load in the order of heaviest {most dense} to lightest {least dense}.)** 12" – 14" of space MUST be left empty at the top of the mineral tank to allow for media bed expansion during backwash and to prevent filter media from being discharged through the drain line.

9) (IF REBEDDING ONLY! Use a garden hose or bucket to fill the media tank with water.)

10) Clean mineral tank threads to remove any filter media. Uncover distributor tube and reinstall control valve by threading it securely onto the mineral tank. (O-ring seal; HAND TIGHTEN ONLY!)

Maintenance (cont.)

11) Attach bypass valve (Figure 6, Page 6) to control valve body.

12) Reattach Drain Line to Control Valve (Figure 6, Page 6).

13) **IMPORTANT! Activated Carbon, Filter Ag, Zeolite and Birm must be soaked for at least 2 hours prior to submitting it to full backwash flow rate to prevent loss of media to drain.**

14) Gradually turn the INLET side knob of the bypass valve counter-clockwise ONLY ½ way (45 degrees) to the "Service" position (Figure 2, Page 5) allowing unit to pressurize slowly. Check for leaks and correct as needed Any air trapped in the media bed should begin purging to the drain and water should begin flowing to the drain.

15) Once the air is purged, gradually turn the INLET knob of the bypass valve counter-clockwise until it is fully in "Service" position (Figure 2, Page 5). Then turn the OUTLET knob of the bypass valve counter-clockwise until it is fully in the "Service" position (Figure 2, Page 5). and **leave the control valve in "Backwash" position for at least 10 minutes or until water flowing from the drain line runs clear; whichever is longer.**

16) Plug the transformer into the electrical outlet. Press the "REGEN" button to advance the control valve to the "RINSE" cycle. Another count-down timer will appear in the time-of-day position, "RINSE" will be shown in the lower middle of the display and "REGEN" appears in the middle left of the display. Allow the rinse cycle to complete and the filter will return to service mode automatically.

Troubleshooting

PROBLEM	CAUSES	SOLUTIONS
Excessive pressure drop through filter	A) Filter not backwashing B) Filter not backwashing frequently enough for water condition C) Filter bed loaded with sand D) "Cementing" or "Channeling" E) Drain Line restricted F) Top Screen Fouled G) Control Valve plugged with debris	1) Check if display is blank, see "Blank Display" section of Page 14. 2) Check if display has an error message, see "Error Code" section of Page 15. 3) Verify drive motor is connected to circuit board connector J1 (labeled "MOTOR") and is not faulty 4) Ensure uninterrupted power supply 5) Increase Backwash frequency 6) Verify sediment being removed is less dense than the filter media and install a "Spin-Down" type sediment filter ahead of the IBX/IMBX to remove well sand 7) Verify adequate pumping rate for backwash 8) Probe media bed to check for "Cementing" 9) Check drain line for restriction: frozen, plugged, kinked, exceeds 15', overhead installation, flexible drain line, drain line diameter too small 10) Clean top screen 11) Disassemble and clean control valve
Contaminant not being properly removed	A) Leaking bypass valve B) Internal valve leak C) Distributor tube not seated properly in control valve D) Water usage flow rate exceeds filter specifications	1) Verify bypass valve is in service position 2) Replace piston and seal assemblies 3) Verify distributor tube seated securely in control valve body 4) Verify actual water usage flow rates against system specifications 5) Increase length of backwash and rinse cycles
Neutralizer media raises pH too high	A) Filter is brand new B) Wrong media used	1) Turn bypass valve very slightly to the "Bypass" position allowing a small amount of untreated water to bleed into the treated water (only if iron < 0.3 ppm, otherwise staining will occur) 2) Rebed the unit with a less aggressive media
Neutralizer media fails to raise pH sufficiently	A) Water usage flow rate is too high to provide adequate contact time B) Media bed is "Cemented" or "Channeled"	1) Verify actual water usage flow rates against system specifications 2) Verify adequate pumping rate for backwash 3) Check drain line for restriction: frozen, plugged, kinked, exceeds 15', overhead installation, flexible drain line, drain line diameter too small
Birm Filter fails to remove iron	A) pH too low B) Dissolved oxygen level too low	1) pH of untreated water must be 6.8 or higher – adjust with proper equipment such as soda ash injection system 2) Aerator may be installed prior to the filter

Troubleshooting (cont.)

PROBLEM	CAUSES	SOLUTIONS
Loss of media to drain	A) Air in system B) Insufficient soak time before first backwash after installing media	1) Ensure well system has proper air elimination control 2) Check media level and adjust if necessary
Media in service lines	A) Unit is installed backwards B) Distributor basket is broken C) Insufficient gravel under bed	1) Re-plumb the water lines so that the supply side of the line is connected to the inlet of the bypass and the service side is connected to the outlet. 2) Replace distributor. 3) Add gravel to tank, manually backwash
Howling or whistling noise during regeneration	A) Inadequate drain line diameter or drain line restricted	1) Reconfigure or replace drain line
Continuous flow of water to drain	A) Loss of electrical power during regeneration B) Debris in control valve C) Internal leak in control valve	1) Ensure electrical outlet is functioning 2) Disassemble and clean control valve 3) Replace seals and/or piston
Filter backwashes at wrong time of day	A) Clock is not set properly B) Power outage C) Incorrect control valve programming	1) Reset the clock (page 8) 2) Verify control valve programming (page 8)
Display is blank	A) Control valve circuit board needs reset B) Transformer is unpowered, unplugged or defective C) Defective circuit board	1) Hold “NEXT” and “REGEN” buttons for 3 seconds 2) Remove battery, unplug power for 5 seconds, plug back in, replace dead battery. 3) Verify transformer is plugged into an electrical outlet that has power and transformer cable (black, 4 pins) is plugged into control valve connector J4 (labeled “POWER”) 4) With transformer plugged into electrical outlet, use a volt meter to test the 2 outer pins (furthest left and furthest right) of connector J4 on the control valve circuit board. Should be approximately 15 volts DC. Replace transformer if defective. 5) Replace circuit board if needed

Troubleshooting (cont.)

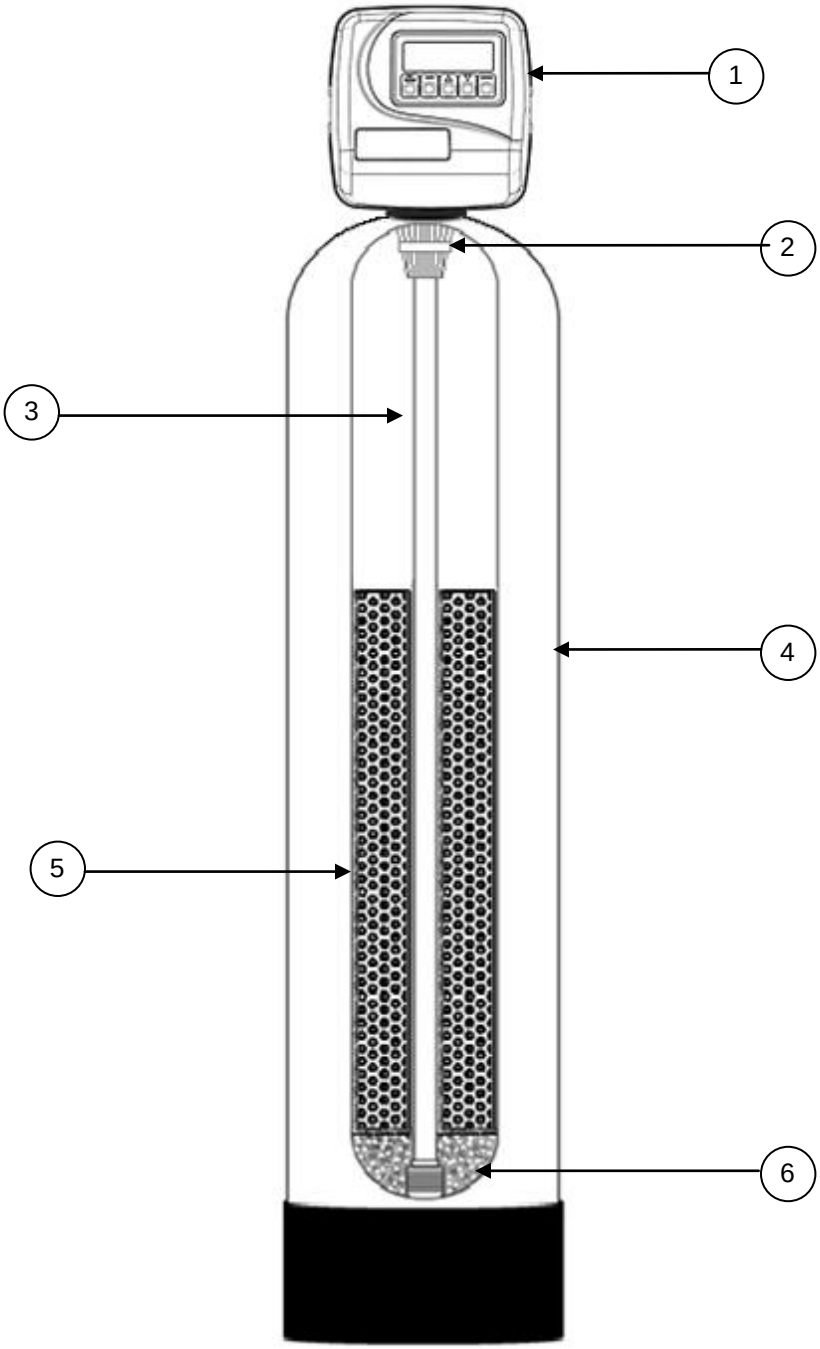
ERROR CODE:	CAUSES	SOLUTIONS
1001 – unable to sense motor movement	A) Drive motor not inserted fully to engage pinion or is defective B) Circuit board not properly snapped into drive bracket C) Center reduction gear reflector dirty	1) Re-insert motor, check for broken wires, verify motor plugged into connector J1 (labeled "MOTOR") on control valve circuit board and reset control valve (hold "NEXT" and "REGEN" buttons for 3 seconds) 2) Re-seat circuit board into drive bracket and reset control valve 3) Clean reduction gear reflectors (page 19)
1002 – unexpected motor stall	A) Obstruction in control valve B) Main drive gear too tight C) Improper voltage delivered to circuit board	1) Remove piston and seal assemblies for inspection and repair or replacement and reset control valve (hold "NEXT" and "REGEN" buttons for 3 seconds) 2) Loosen main drive gear and reset control valve 3) Verify proper voltage is being supplied to circuit board (see Solution 4 under "Display is Blank" section, page 14)
1003 – motor ran too long, cannot find next cycle position	A) Motor failure during regeneration B) Obstruction in control valve C) Drive bracket not snapped in place properly	1) Re-insert motor, check for broken wires, verify motor plugged into connector J1 (labeled "MOTOR") on control valve circuit board and reset control valve (hold "NEXT" and "REGEN" buttons for 3 seconds) 2) Remove piston and seal assemblies for inspection and repair or replacement and reset control valve 3) Re-seat drive bracket assembly and reset control valve
1004 – motor ran too long, timed out trying to reach home position	A) Drive bracket not snapped in place properly B) Center reduction gear reflector dirty	1) Re-seat drive bracket assembly and reset control valve (hold "NEXT" and "REGEN" buttons for 3 seconds) 2) Clean reduction gear reflectors (page 19)
1006 – MAV/SEPS/ NHBP/AUX MAV motor ran too long,looking for park position	A) Control valve not programmed for ALT oFF B) Obstruction in control valve	1) Enter cycle programming level and verify second parameter is set to ALT oFF 2) Remove piston and seal assemblies for inspection and repair or replacement and reset control valve (hold "NEXT" and "REGEN" buttons for 3 seconds)
1007 – MAV/SEPS/ NHBP/AUX MAV motor ran too short looking for park position	A) Control valve not programmed for ALT oFF B) Obstruction in control valve	1) Enter cycle programming level and verify second parameter is set to ALT oFF 2) Remove piston and seal assemblies for inspection and repair or replacement and reset control valve (hold "NEXT" and "REGEN" buttons for 3 seconds)

SPECIFICATIONS

Description	IBX1044-1 IMBX1044-1	IBX1054-1 IMBX1054-1	IBX1248-1 IMBX1248-1	IBX1354-1 IMBX1354-1
Filter Media Volume, cu. ft.	1.0	1.5	2.0	2.5
Gravel Underbed, lbs.	20	20	25	25
Operating Flow Rate, gpm				
Continuous @ 5 gpm/ft^2 of media surface area	3	3	4	5
Service @ 10 gpm/ft^2 of media surface area	5	5	8	9
Peak @ 18 gpm/ft^2 of media surface area	10	10	14	17
Backwash @ 10 gpm/ft^2 of media surface area *NOTE: some medias may require a higher backwash rate*	5.3	5.3	7.5	9
Service Pipe Size, in.				
Standard	1	1	1	1
Tank Diameter x Height, in.	10 x 44	10 x 54	12 x 48	13 x 54
Minimum Space Required, in.				
Width	12	12	13	14
Depth	18	18	18	18
Height	56	66	60	66
Approximate Ship Wt., lbs. (Media Not Included)	62	68	68	73

Factory default settings: Single 14 minute backwash, single 8 minute rinse, 3 days between regenerations (3 days or 1,000 gallons {whichever comes first} with delayed regeneration for IMBX models).

Component Parts Breakdown

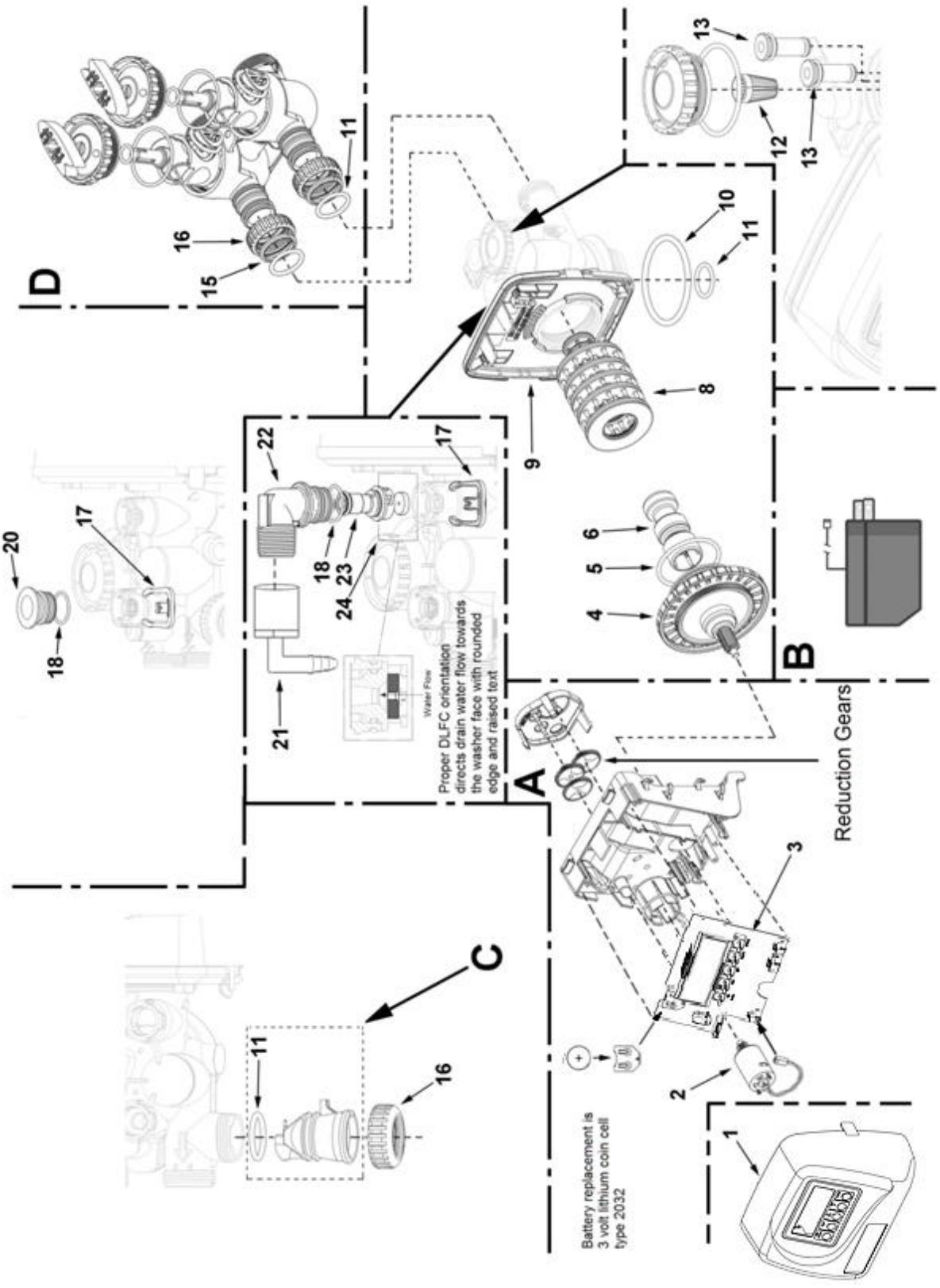


Component Parts List

Ref #	Part Number	Description
1	IBX1044 Vlv Assy L/BP	Control Valve, Cover, 5.3 GPM DLFC, less bypass for models IBX1044 & IBX1054
	IBX1248 Vlv Assy L/BP	Control Valve, Cover, 7.5 GPM DLFC, less bypass for model IBX1248
	IBX1354 Vlv Assy L/BP	Control Valve, Cover, 9.0 GPM DLFC, less bypass for model IBX1354
	IMBX1044 Vlv Assy L/BP	Control Valve, Cover, 5.3 GPM DLFC, less bypass for models IMBX1044 & IMBX1054
	IMBX1248 Vlv Assy L/BP	Control Valve, Cover, 7.5 GPM DLFC, less bypass for model IMBX1248
	IMBX1354 Vlv Assy L/BP	Control Valve, Cover, 9.0 GPM DLFC, less bypass for model IMBX1354
2	18280-02	Top Screen
3	D100S-48	Distributor Tube, 1" x 48" for models IBX1044, IBX1248, IMBX1044, & IMBX1248
	D100S-54	Distributor Tube, 1" x 54" for model IBX1054, IBX1354, IMBX1054, & IMBX1354
4	MTP1044N	10 x 44 Mineral Tank, Nat, Base, 2.5" Top Opening For model IBX1044 & IMBX1044
	MTP1054N	10 x 54 Mineral Tank, Nat, Base, 2.5" Top Opening For model IBX1054 & IMBX1054
	MTP1248N	12 x 48 Mineral Tank, Nat, Base, 2.5" Top Opening For model IBX1248 & IMBX1248
	MTP1354N	13 x 54 Mineral Tank, Nat, Base, 2.5" Top Opening For model IBX1354 & IMBX1354
5*	A10	Activated Carbon, 1.00 cu. ft. bag
	A05P	Activated Carbon, 0.50 cu. ft. pail
	ACC10	Catalytic Carbon, 1.00 cu. ft. bag
	ACC05P	Catalytic Carbon, 0.50 cu. ft. pail
	B10	Birm, 1.00 cu. ft. bag
	B05P	Birm, 0.50 cu. ft. pail
	C05P	Calcite, 0.50 cu. ft. pail
	FA10	Filter Ag, 1.00 cu. ft. bag
	FA05P	Filter Ag, 0.50 cu. ft. pail
	N05	Neutralizer, 0.50 cu. ft. pail
	Z05P	Zeolite, 0.50 cu. ft. pail
	QFS05P	Quartz Filter Sand, 0.50 cu. ft. pail
6	QC20	1/4" x 1/8" Gravel, 20 lb Pail for models IBX1044, IBX1054, IMBWX10, & IMBX1054
	QC25	1/4" x 1/8" Gravel, 25 lb Pail For models IBX1248, IBX1354, IMBX1248, & IMBX1354

*** Filter media sold seperately. Select appropriate media for water condition (page 2).**

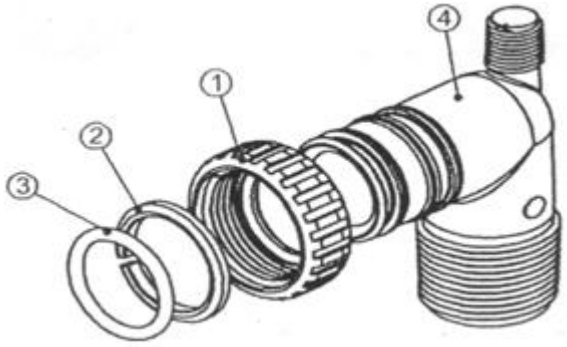
Control Valve Breakdown

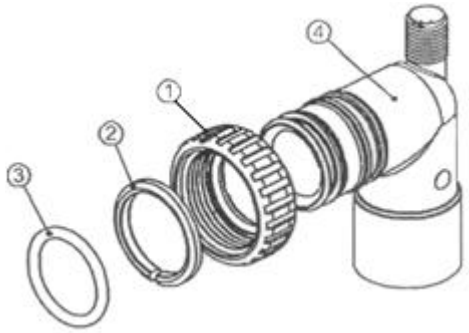


Control Valve Parts List

REF #	Part Number	Description
A	CV3002	Drive Assembly, IBX/IMBX Series
B	CV3186	Power Cord with Transformer
C	CV3003-01	Meter Plug Assembly, IBWX Series
	CV3003	Meter and Cable Assembly, IMBWX Series
D	CV3006	Bypass Valve, Less Fittings
1	CV3175-01	Front Cover, Black, IBX/IMBX Series
2	CV3107-01	Drive Motor
3	CV3108-11BOARD	Circuit Board, IBX/IMBX Series
4	CV3004	Drive Cap Assembly
5	CV3135	O-ring, -228
6	CV3011	Piston Assembly
8	CV3005	Seal Cartridge Assembly
9	CV3178	Back Plate
10	CV3180	Base O-ring, -337
11	CV3105	O-ring, -215
12	CV3177-01	Injector Screen
13	CV3010-1Z	Plug, Injector Assembly
15	CV3150	Retainer, Split Ring
16	CV3151	Nut, 1" Quick Connect
17	CH4615	Clip, Elbow Locking
18	CV3163	O-ring, -019
20	CV3195-01	Plug, Brine Refill
21	GL463412	Elbow, Drain Line, ½" Barbed x ¾" Female
22	CV3158-02	Elbow, Drain, ¾" Male
23	CV3159-01	Retainer, Drain Line Flow Control
24		**Drain Line Flow Control Button:**
	CV3162-053	Flow Control Washer, 5.3 GPM (IBX1044, IBX1054, IMBX1044, IMBX1054)
	CV3162-075	Flow Control Washer, 7.5 GPM (IBX1248, IMBX1248)
	CV3162-090	Flow Control Washer, 9.0 GPM (IBX1354, IMBX1354)

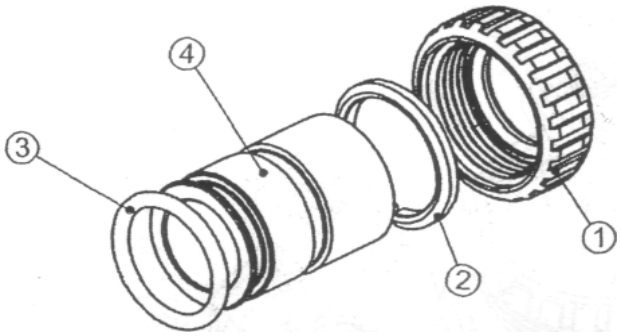
Installation Fitting Assemblies

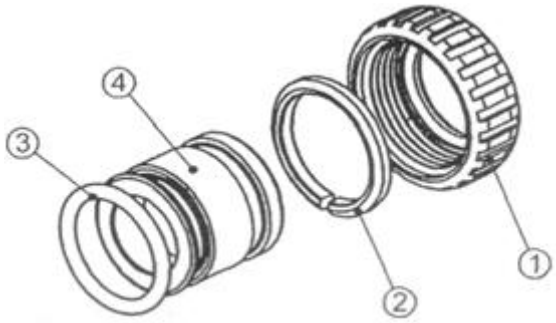




1" PVC MALE NPT ELBOW			
Ref	**Part #**	**Description**	**Qty**
	CV3007	1" PVC male NPT elbow assy	2
1	CV3151	Nut, 1" quick connect	2
2	CV3150	Split ring	2
3	CV3105	O-ring 215	2
4	CV3149	Fitting	2

3/4" & 1" PVC SOLVENT ELBOW			
Ref	**Part #**	**Description**	**Qty**
	CV3007-01	3/4" & 1" PVC solvent elbow assy	2
1	CV3151	Nut, 1" quick connect	2
2	CV3150	Split ring	2
3	CV3105	O-ring 215	2
4	CV3189	Fitting	2

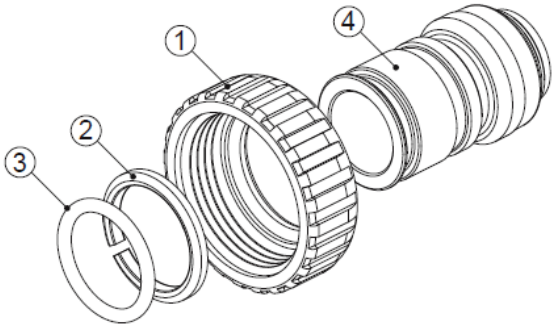




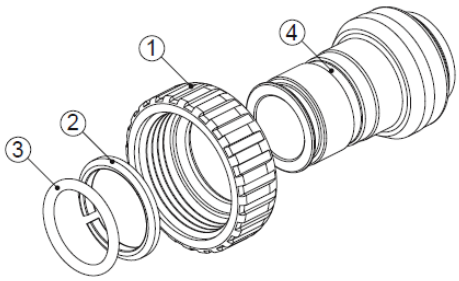
1" BRASS SWEAT			
Ref	**Part #**	**Description**	**Qty**
	CV3007-02	1" brass sweat assembly	2
1	CV3151	Nut, 1" quick connect	2
2	CV3150	Split ring	2
3	CV3105	O-ring 215	2
4	CV3188	Fitting	2

3/4" BRASS SWEAT			
Ref	**Part #**	**Description**	**Qty**
	CV3007-03	3/4" brass sweat assembly	2
1	CV3151	Nut, 1" quick connect	2
2	CV3150	Split ring	2
3	CV3105	O-ring 215	2
4	CV3188-01	Fitting	2

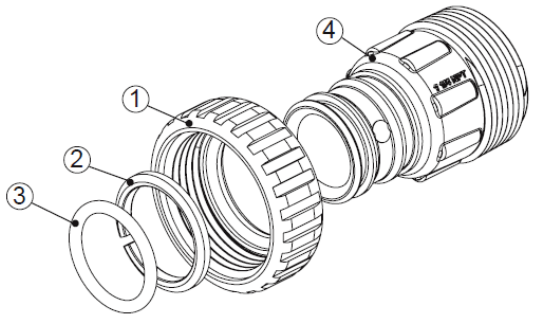
Installation Fitting Assemblies (cont.)



3/4" BRASS SHARK BITE			
Ref	**Part #**	**Description**	**Qty**
	CV3007-12	3/4" brass shark bite assembly	2
1	CV3151	Nut, 1" quick connect	2
2	CV3150	Split ring	2
3	CV3105	O-ring 215	2
4	CV3628	Fitting	2



1" BRASS SHARK BITE			
Ref	**Part #**	**Description**	**Qty**
	CV3007-13	1" brass shark bite assembly	2
1	CV3151	Nut, 1" quick connect	2
2	CV3150	Split ring	2
3	CV3105	O-ring 215	2
4	CV3629	Fitting	2



1-1/4" PLASTIC MALE NPT			
Ref	**Part #**	**Description**	**Qty**
	CV3007-04	1-1/4" plastic male NPT assembly	2
1	CV3151	Nut, 1" quick connect	2
2	CV3150	Split ring	2
3	CV3105	O-ring 215	2
4	CV3317	Fitting	2

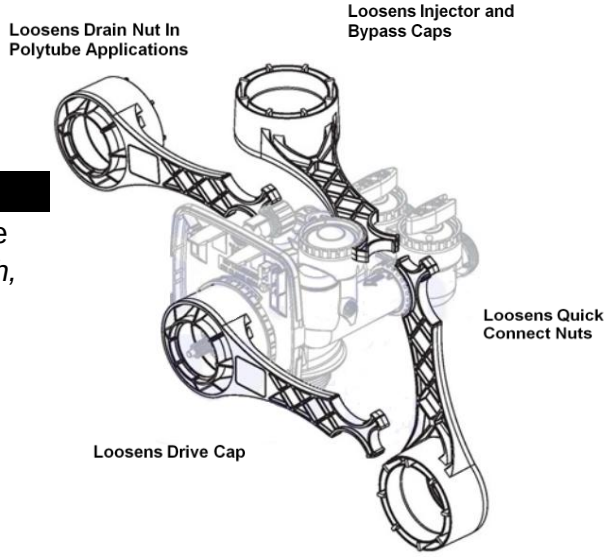
Installation Fitting Assemblies

3/4" QUICK CONNECT			
Ref	**Part #**	**Description**	**Qty**
K	QFNCR4	3/4" QUICK CONNECT	1*

(*2 required)

SERVICE WRENCH - CV3193

Although no tools are necessary to assemble or disassemble the valve, the *Service Wrench,* (shown in various positions on the valve) is available to aid in assembly or disassembly.



TEN YEAR LIMITED WARRANTY

WARRANTY — First Sales, LLC warrants this water conditioner against any defects that are due to faulty material or workmanship during the warranty period. This warranty does not include damage to the product resulting from accident, neglect, misuse, misapplication, alteration, installation or operation contrary to printed instructions, or damage caused by freezing, fire, flood, or Acts of God. From the original date of consumer purchase, we will repair or replace, at our discretion, any part found to be defective within the warranty period described below. Purchaser is responsible for any shipping cost to our facility and any local labor charges.

- One year on the entire water conditioner
- Five years on the control valve
- Five years on the salt storage tank
- Ten years on the mineral tank

GENERAL CONDITIONS — Should a defect or malfunction occur, contact the dealer that you purchased the product from. If you are unable to contact the dealer, contact First Sales, LLC at (260) 693-1972. We will require a full description of the problem, model number, serial number, date of purchase, and selling dealer's business name and address.

We assume no warranty liability in connection with this water conditioner other than specified herein. This warranty is in lieu of all other warranties, expressed or implied, including warranties of fitness for a particular purpose. We do not authorize any person or representative to assume for us any other obligations on the sale of this water conditioner.

FILL IN AND KEEP FOR YOUR RECORDS

Original Purchaser	Date of Purchase	Model #	Serial #
Address of Original Installation		City	State
Dealer Purchased From	Dealer Address	City	State

First Sales, LLC
12630 U.S. 33 North, Churubusco, IN 46723