Programming, Installation & Operation Manual

Intelligent Controller

Control Valves

Water Softening and Backwashing Systems

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Start-Up Procedure

After the inlet, outlet, drain, and electrical connections are complete a proper start-up procedure is critical to minimize the potential for damage to the system. Follow the instructions below.

1: Plug in the power to the system, set the bypass to the **Bypass Mode** and cycle the valve to the **Backwash** cycle.

2: Slowly crack open the inlet of the bypass valve until you hear air going to the drain line. **Do not open fully!**

3: Allow the system to fill in the backwash position **very slowly!** If this is a softener, add 4 gallons of water and a packet of Sani System Softener Sanitizing Solution to the brine tank at this time.

4: As soon as water is coming out the drain, cycle the valve to the **Fast Rinse** Cycle and slowly open the inlet of the bypass valve to the full open position.

5: Unplug the power cord from the wall and carefully inspect the system for leaks. Allow the system to **Fast Rinse** for an extended period of time, typically no less than 30 minutes. If the water stops running to the drain during this time, check that the well can handle the systems regeneration cycle flow demands or cycle the system through a short backwash cycle to clear the bottom screen.

6: Plug the power back in and cycle the valve to the **Backwash** position. Allow the system to complete the regeneration process on its own.

7: Once the regeneration process is complete, run the system through a second regeneration process.

It is normal for the water to have variances in pH, taste, odor and color, along with air for the first couple weeks of operation. This start-up procedure helps to minimize this potential problem. Running the system through additional automated regeneration cycles can also lessen this common issue associated with the installation of new water quality improvement equipment. Media start-up procedures differ, but these general guidelines should satisfy most requirements. Some medias require up to 72 hours of soaking time, the extended **Fast Rinse** cycle helps to satisfy this. Older plumbing systems may suffer from excessive debris in the plumbing due to the pipes and plumbing components being cleaned. This cleaning process can take many months and may result in clogged aerators, excessively dirty water especially after the water has been sitting in the plumbing for extended lengths of time. The picture below shows the possible results of a new water quality improvement installation and the excessive cleaning of the plumbing that can take place. This will usually subside in time.



Setting Time of Day

Press the button. The HOUR and AM/PM will blink. Press the or button to change the hour and AM/PM to the correct time. Press the button and the minutes will blink. Set the minutes with the or buttons to the correct time and press the button to complete setting the time of day.

Typical Installer Programming "Softener"

1) Press the and button simultaneously for 1 second.
2) Use the or buttons to set the **"WATER HARDNESS"** to the proper hardness then press
3) Use the or buttons to set **"DAYS BETWEEN REGEN"** to **28** or desired alternate then press
4) Use the or buttons to set the **"REGENERATION TIME"** to **2:00 AM** or desired alternate then press
5) Use the button to set **"ENERGY SAVER"** to OFF. This will leave the backlight on, then press to exit installer programing or press the and simultaneously for 1 second to edit the name and phone number.

Typical Installer Programming "Filter"

1) Press the and button simultaneously for 1 second.
2) Use the or buttons to set the **"DAYS BETWEEN REGEN"** to the desired amount, then press
3) Use the or buttons to set **"REGENERATION TIME"** to **12:00 A.M.** or desired alternate then press
4) Use the button to set **"ENERGY SAVER"** to OFF. This will leave the backlight on, then press to exit installer programing or press the and simultaneously for 1 second to edit the name and phone number.

Adjusting the Salt Level on a Softener (adding salt to the brine tank)

If your valve has the Salt Level Alarm set to **"ON"** in the OEM programming mode, you can adjust the amount of salt by pressing the button repeatedly until "**SALT LEVEL**" appears on the screen, then push the button to enter the setting screen. Press the button once for every 10 pounds of salt you add to the brine tank. Press the button to lock the setting.

General Backwashing Filter Guidelines

Backwashing systems should be programmed to backwash at a different time than other water treatment equipment to lessen the potential for over running the drainage system. Backwash lengths and frequencies vary by the application. Below are typical settings for common medias.

Municipal Water Applications

Carbon: Every 14-28 days.
Sediment Reduction Medias: Every 7-28 days.

Well Water Applications

Carbon used for iron/chlorine reduction: Every 1-7 days.
Sediment Reduction Medias: Every 2-7 days.
Arsenic Reduction Medias: Every 28 days.
Iron Reduction Medias: Every 1-3 days.
Neutralizing Medias: Every 3-7 days.
Potassium permanganate, hydrogen peroxide or chlorine tablet regeneration, every 1-3 days.

Connector Set_____ Capacity_____

Injector Size _____ Salt #_____

DLFC GPM_____ Bypass_____

Assembler_____

These are general use guidelines only. Regular testing should be done to determine proper frequency and duration.

Typical OEM Programming Standard "Softener"

1) Press the NEXT and ↓ button simultaneously for ~5 seconds.
2) Use the ↑ or ↓ buttons and set **"TYPE"** to **"SOFTENING DN POST"** then press NEXT
3) Use the ↑ or ↓ buttons to set **"BACKWASH TIME"** to **"8:00 MIN"** or desired alternate then press NEXT
4) Use the ↑ or ↓ buttons to set **"DRAW DN TIME"** to **"60:00 MIN"** or desired alternate then press NEXT
5) Use the ↑ or ↓ button to set **"BACKWASH TIME"** to **"4:00 MIN"** or desired alternate then press NEXT
6) Use the ↑ or ↓ button to set **"RINSE TIME"** to **"4:00 MIN"** or desired alternate then press NEXT
7) Use the ↑ or ↓ button to set **"FILL"** to **"8.0 LBS"** per cubic foot of resin or desired alternate then press NEXT
8) Use the ↑ or ↓ button to set **"GRAINS OF CAPACIY"** to **"24.0"**x1K per ft^3 of resin or desired alternate then press NEXT
9) Use the ↑ or ↓ button to set **"GALLONS CAPACITY"** to **"AUTO"** then press NEXT
10) Use the ↑ or ↓ button to set **"DELAYED REGENERATION"** then press NEXT
11) Use the ↑ or ↓ button to set **"RELAY 1"** to **"OFF"** then press NEXT
12) Use the ↑ or ↓ button to set **"RELAY 2"** to **"OFF"** then press NEXT
13) Use the ↑ or ↓ button to set **"SERVICE ALARM"** to either **"OFF"**, **"TIME"**, **"GALLONS"** or **"BOTH"**, it is typically recommended to set this to **"BOTH"** and to set the service to **"1.00 YR"** and **"100,000 GAL".** Most water treatment equipment should be inspected, tested and maintained annually. Press the NEXT button to review the Schedule for service
14) Use the ↑ or ↓ buttons to set **"SALT LEVEL ALARM"** to **"OFF"** or your desired amount. Most common is **"50 LBS"** then press NEXT this will exit the OEM programming mode.

Typical OEM Programming Standard "Filter Backwash"

1) Press the NEXT and ↓ button simultaneously for ~5 seconds.
2) Use the ↑ or ↓ buttons and set **"TYPE"** to **"FILTERING DN POST"** then press NEXT
3) Use the ↑ or ↓ buttons to set **"BACKWASH TIME"** to **"8:00 MIN"** or desired alternate then press NEXT
4) Use the ↑ or ↓ buttons to set **"DRAW TIME"** to **"OFF"** or desired alternate then press NEXT
5) Use the ↑ or ↓ button to set **"BACKWASH TIME"** to **"OFF"** or desired alternate then press NEXT
6) Use the ↑ or ↓ button to set **"RINSE TIME"** to **"4:00 MIN"** or desired alternate then press NEXT
7) Use the ↑ or ↓ button to set **"FILL"** to **"OFF" or** desired alternate then press NEXT
8) Use the ↑ or ↓ button to set **"GALLONS CAPACITY"** to **"OFF"** or desired gallons if you have installed the optional meter then press NEXT
9) If you set the system to a set gallon amount instead of **"OFF"**, you will set the valve to **"DELAYED REGENERATION"** using the ↑ or ↓ button to then press NEXT
10) Use the ↑ or ↓ button to set **"RELAY 1"** to **"OFF"** then press NEXT
11) Use the ↑ or ↓ button to set **"RELAY 2"** to **"OFF"** then press NEXT
12) Use the ↑ or ↓ button to set **"SERVICE ALARM"** to either **"OFF"**, **"TIME"**, **"GALLONS"** or **"BOTH"**, it is typically recommended to set this to **"BOTH"** and to set the service to **"1.00 YR"** and **"100,000 GAL".** Most water treatment equipment should be inspected, tested and maintained annually. Press the NEXT button to review the service schedule and to exit the OEM programming mode

General Operation

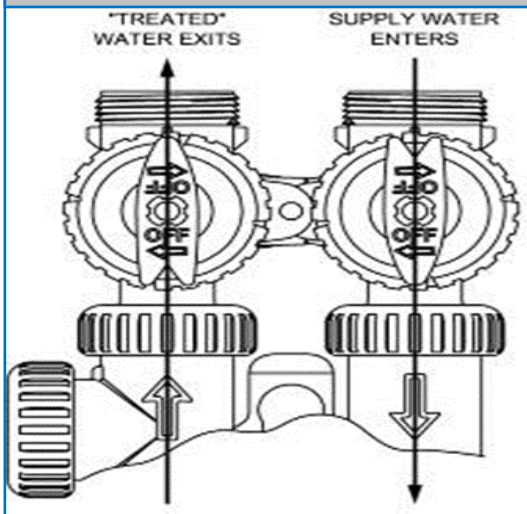
When the system is operating several displays may be shown including the contact information, time of day, gallons remaining before the next regeneration, days remaining between backwashes, current flow rate salt amount and more. To manually cycle through these screens push the NEXT button.

Manual Regeneration

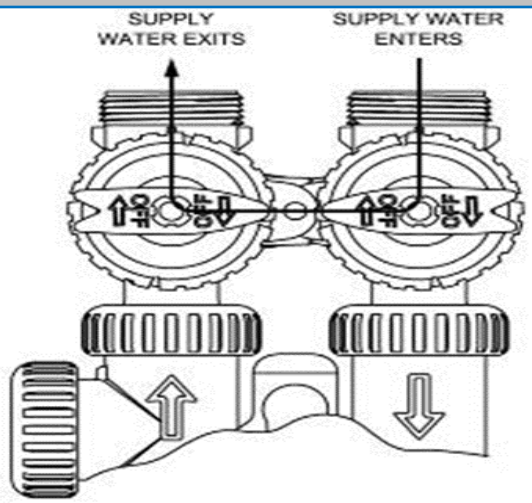
Press and release the button, the system will regenerate tonight. Press and hold the button for 5 seconds to start an immediate regeneration. Press and release the button to advance the valve to the next cycle.

Bypass Valve Operation

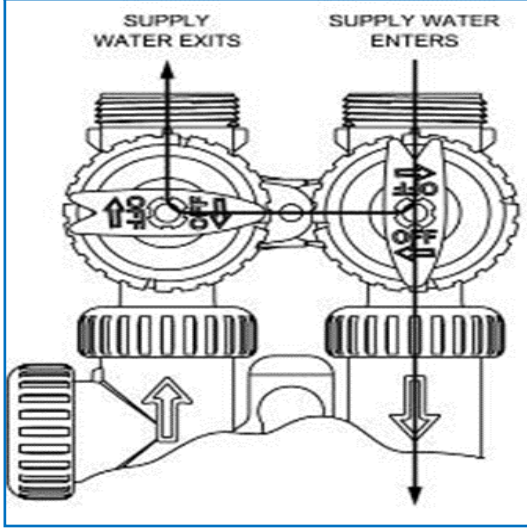
Service Mode



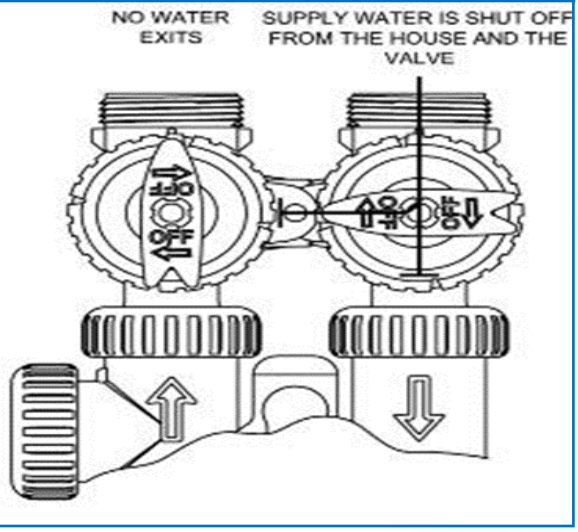
Bypass Mode



Diagnostic Mode



Shut Off Mode



General Warnings

Plastic control valves, fittings and/or bypass are designed to accommodate minor plumbing misalignments but are not designed to support the weight of a system or the plumbing. HYDROCARBONS SUCH AS KEROSENE, BENZENE, GASOLINE, ETC., MAY DAMAGE PRODUCTS THAT CONTAIN O-RINGS OR PLASTIC COMPONENTS. EXPOSURE TO SUCH HYDROCARBONS MAY CAUSE THE PRODUCTS TO LEAK. DO NOT USE THE PRODUCT(S) CONTAINED IN THIS DOCUMENT ON WATER SUPPLIES THAT CONTAIN HYDROCARBONS SUCH AS KEROSENE, BENZENE, GASOLINE, ETC. THIS WATER METER SHOULD NOT BE USED AS THE PRIMARY MONITORING DEVICE FOR CRITICAL OR HEALTH EFFECT APPLICATIONS.

Do not use Vaseline, oils, other hydrocarbon lubricants or spray silicone for the unit. A silicone lubricant may be used on black O-rings but is not necessary.

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

Do not use pipe dope or other sealants on threads. Use Teflon tape on the threaded inlet, outlet and drain fittings. Teflon tape is not necessary on the nut connections or caps with O-ring seals.

After completing any valve maintenance involving the drive/piston assembly, unplug power source jack from the printed circuit board (black wire), wait 3 seconds and plug back in. This resets the electronics and establishes the service piston position. The display should flash all of the available LCD's, then flash the software version and then reset the valve to the service position.

All plumbing should be done in accordance with local plumbing codes. The pipe size for the drain line should be a minimum of ½". Backwash flow rates in excess of 7 gpm (26.5 lpm) or length in excess of 20' (6.1m) require ¾" drain line.

Solder joints near the drain must be done prior to connecting the drain line flow control fitting. Leave at least 6" between the drain line control fitting and solder joints when soldering pipes that are connected on the drain line control fitting. Failure to do this could cause interior damage to the drain line flow control fitting.

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 primer and solvent cement on any part of the O-rings, split rings, bypass valve or control valve.

Plug into an electrical outlet. Note: All electrical connections must be connected according to local codes. (Be certain the outlet is uninterrupted.)

Install grounding strap on metal pipes in accordance with local plumbing codes.

The control valve can be set so that a softener can meet the Water Quality Association (WQA) Standard S100 or NSF/ANSI Standard 44 efficiency rating.

The use of flexible connectors are recommended on all systems and is required on all Brass valves.

The use of a vacuum break is require on installations where a vacuum condition may occur. This includes vacuum breakers on the drain line if the drain will be run lower than the 5 feet below the unit.

Systems must never be installed in locations where water damage can occur to the surrounding areas. Liability mitigation techniques must be used including redundant leak detection and automatic shut off devices.

Units must be protected from freezing, hot water damage, excessive pressure, vacuum and any other common water condition that can cause damage to the equipment. Appropriate installation of check valves, thermal expansion tanks, pressure reducing valves, backflow preventers and other common plumbing components need to be considered by a licensed plumber or water treatment specialist prior to installing the equipment.

The control valve is compatible with a variety of regenerants and resin cleaners. The control valve is capable of routing the flow of water in the necessary paths to regenerate or backwash water treatment systems. The injector regulates the flow of brine or other regenerants. The control valve regulates the flow rates for backwashing, rinsing, and the replenishing of treated water into a regenerant tank, when applicable.

The control valve uses no traditional fasteners (e.g. screws); instead clips, threaded caps, nuts and snap type latches are used. Caps and nuts only need to be firmly hand tightened because radial seals are used. Tools required to service the valve include one small blade screw driver, one large blade screw driver, pliers and a pair of hands. A plastic wrench is available which eliminates the need for screwdrivers and pliers. Disassembly for servicing takes much less time than comparable products currently on the market. Control valve installation is simplified as the distributor tube can be cut ½" above to ½" below the top of tank thread. The distributor tube is held in place by an O-ring seal and the control valve also has a bayonet lock feature for upper distributor baskets.

The AC adapter comes with a 15 foot power cord and is designed for use with the control valve. The AC adapter is for dry location use only. If the power goes out, the control valve remembers all settings until the battery power is depleted. After the battery power is depleted, the only item that needs to be reset is the time of day; other values are permanently stored in the nonvolatile memory. The control valve battery is not rechargeable but is replaceable.

A vacuum break is required any time a vacuum situation may occur. This is common on wells, systems with booster pumps after the unit, or when the system is installed in areas of varying altitudes. No warranty is considered if the system has been subjected to a vacuum. A vacuum break should be installed between the softener and the potential cause of a vacuum.

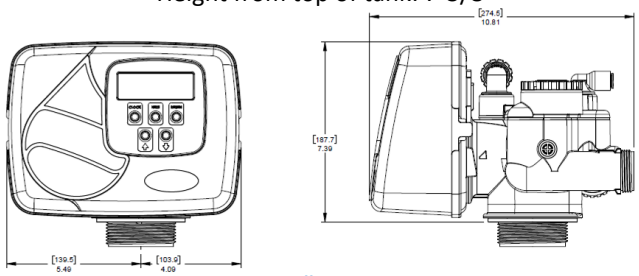
Typical multiple tank installation with pre and post filtration with UV. Special notes, a simple air gap is shown with a minimum of 2" of space between the drain tube and the P-Trap. A vacuum break must be installed on systems where a vacuum condition could occur. Install the vacuum break between the systems and the potential vacuum source. A well, booster pump, or even a drain pipe running down a few feet can cause a vacuum condition that will damage the system. The brine tank has a small barbed fitting that can be run to a gravity drain but this is typically not necessary.

Valve Specifications

Minimum/Maximum Operating Pressures: 20 psi (138 kPa or 1.4 bar) to 125 psi (862 kPa or 8.6 bar)
Minimum/Maximum Operating Temperatures: 40°F (4°C) - 110°F (43°C)
Power Adapter: Supply Voltage 120 VAC/60 Hz
Output Voltage: 15 VDC, Output Current: 500 mA

39i-10 1” Control Valve

Valve flow rate @ 15 PSI drop: 27 GPM
Valve maximum backwash rate @ 25 PSI drop: 27 GPM
Valve distributor pilot: 1.05” (3/4” PVC)
Tank Mounting 2-1/2” - 8 UN
Height from top of tank: 7-3/8”

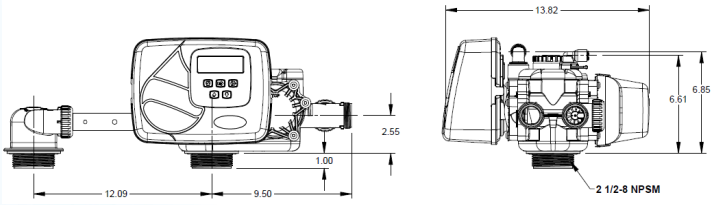


39i-12 1.25” Control Valve

Valve flow rate @ 15 PSI drop: 34 GPM
Valve maximum backwash rate @ 25 PSI drop: 32 GPM
Valve distributor pilot: 1.32” (1” PVC)
Drain Line Connection: 3/4” or 1” MNPT
Tank Mounting 2-1/2” - 8 UN
Height from top of tank: 7-3/8”

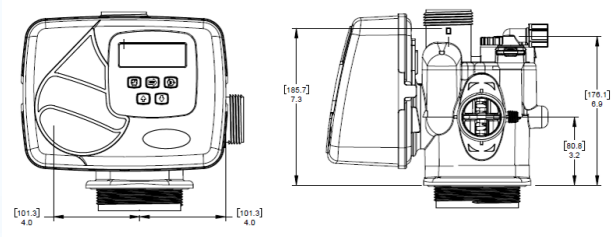
39i-10T 1” Twin Control Valve

Valve flow rate @ 15 PSI drop: 28 GPM
Valve maximum backwash rate @ 25 PSI drop: 15 GPM
Valve distributor pilot: 1.05” (3/4” PVC)
Drain Line Connection: 3/4” or 1” MNPT
Tank Mounting 2-1/2” - 8 UN
Height from top of tank: 7-3/8”



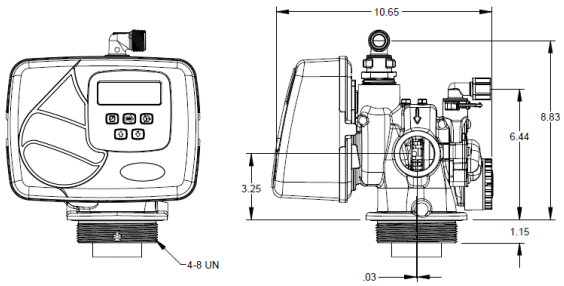
39i-15-P 1.5” Plastic Control Valve

Valve flow rate @ 15 PSI drop: 60 GPM
Valve maximum backwash rate @ 25 PSI drop: 43 GPM
Valve distributor pilot: 1.9” (1.5” PVC)
Drain Line Connection: 1” MNPT
Tank Mounting 4” - 8 UN
Height from top of tank: 10.75”



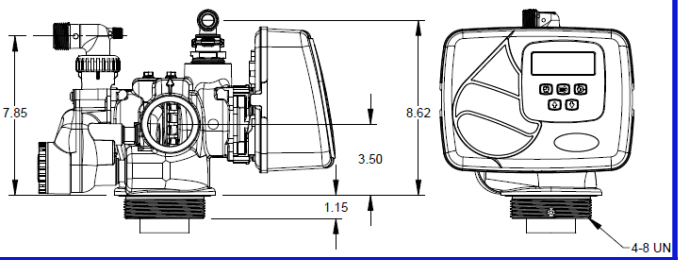
39i-15 1.5” Brass Control Valve

Valve flow rate @ 15 PSI drop: 70 GPM
Valve maximum backwash rate @ 25 PSI drop: 52 GPM
Valve distributor pilot: 1.9” (1.5” PVC)
Drain Line Connection: 1.25” FNPT
Tank Mounting 4” - 8 UN
Height from top of tank: 7.75”



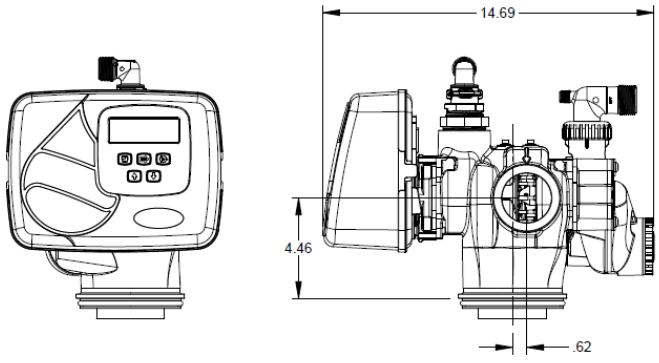
39i-2 2” Brass Control Valve Quick Connect

Valve flow rate @ 15 PSI drop: 115 GPM
Valve maximum backwash rate @ 25 PSI drop: 80 GPM
Valve distributor pilot: 1.9” (1.5” PVC)
Drain Line Connection: 1.5” FNPT
Tank Mounting 4” - 8 UN
Height from top of tank: 8.5”



39i-2Q 2” Brass Control Valve Quick Connect

Valve flow rate @ 15 PSI drop: 125 GPM
Valve maximum backwash rate @ 25 PSI drop: 85 GPM
Valve distributor pilot: 2.375” (2” PVC)
Drain Line Connection: 1.5” FNPT
Tank Mounting 4” - 8 UN, 6” Flange or Side Mount
Height from top of tank: 4” QC 11.2”, 6” QC 11.3”



Error Codes

101: Unable to start, motor output is energized but the board does not sense motion.
102: Motor stalled, valve is unable to find the next position.
103: Motor ran too long, valve was unable to find the next position.
104: Valve was unable to find the "Home" position.
106: ALT MAV ran too long
107: ALT MAV stalled, motor ran too short.
109: Invalid motor state, the control can no longer operate properly due to the detection of an invalid motor state.
116: AUX MAV ran too long
117: AUX MAV stalled, motor ran too short.
201: Invalid regeneration step, control can no longer operate properly due to the detection of an invalid regeneration cycle step, internal software error.
202: Unexpected stall, motor encountered an unexpected stall which it was able to recover from and proceed normally.
402, 403, 404, 405, 406: Control can no longer operate due to E^2PROM memory error, reset or replace board.
406, 407, 408: RAM memory error, Control can no longer operate due to RAM memory error, reset or replace board.
410: Configuration download error, the configuration file and the valve have different software revisions.

Relay and MAV Operation while in Error Modes

1) The regeneration valve itself will complete regeneration only if already in regeneration and the current Error Code is not 101/102/103/104.
2) The regeneration valve itself will not enter regeneration if the control is already in Error Mode regardless of the error code.
3) All relays will deactivate immediately and remain deactivated when any error code is generated until the control is reset.
4) Error 101/102/103/104 will cancel any regeneration and all MAV valves are then either kept in the Service Position or returned sequentially to Service and will remain there until the control is reset. This excludes the ALT MAV in Alternator Systems which will remain in their current position and System Controller applications whenever an ALT MAV has already transitioned to By-pass during the regeneration and an error code was then generated sometime later on that same control. The ALT MAV will remain in bypass until the valve is reset. generates an error 10/107 during a non regeneration transition, the ALT MAV valve in this case should remain in its current position until the control is reset.
5) Any MAV error (106/107/116/117) before regeneration is entered will cause any regeneration to be canceled and all MAV's will remain or cycle sequentially to the Service Position until the control is reset. This excludes the ALT MAV in alternator systems which should remain in their current position and System Controller applications whenever an ALT MAV generates an error (106/107) during a non regeneration transition. The ALT MAV in this case should remain in its current position until the control is reset. In this state, service flow will still be monitored by the same control.
6) Any MAV error (106/107/116/117) during regeneration will allow the valve to complete the regeneration normally however all remaining scheduled MAV drives will be immediately canceled and all remaining functional MAVs will be sequentially returned to the Service position and will remain there until the control is reset. This excludes ALT MAVS in alternator systems which should remain in their current position.

Soft Reset

Unplug the power from the board, wait 5 seconds, plug the power back into the board. This will reset the board.

Soft Reset Level 2

Press the NEXT and R buttons for ~3 seconds to sequentially activate/test the LCD display, display software version, re-homes valve and all active MAV valves, resets manual regeneration request. All other settings are saved.

Hard Reset

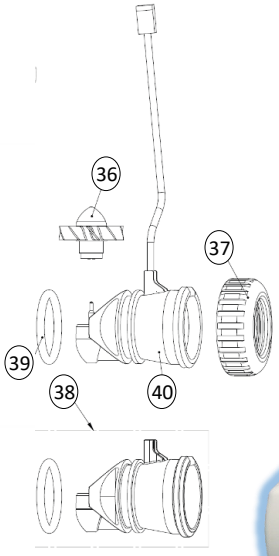
To reset the valve back to factory defaults, press and hold the NEXT and ↓ buttons to enter programming mode. Next press the ↑ and ↓ buttons for ~3 seconds to initiate a complete factory reset. This will retain the current history level displays.

i10, i Twin and i125 Service and Repair Parts

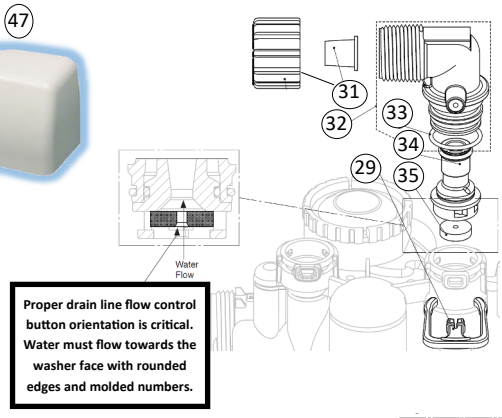
Item #	Valve Rebuild Kits*
39V-CK10-K	i10 Softener Valve Rebuild Specify Injector Size.
39V-CK10-KF	i10 Filter Valve Rebuild
39V-WS125-K	i125 Softener Valve Rebuild Specify Injector Size
39V-WS125-KF	i125Filter Valve Rebuild

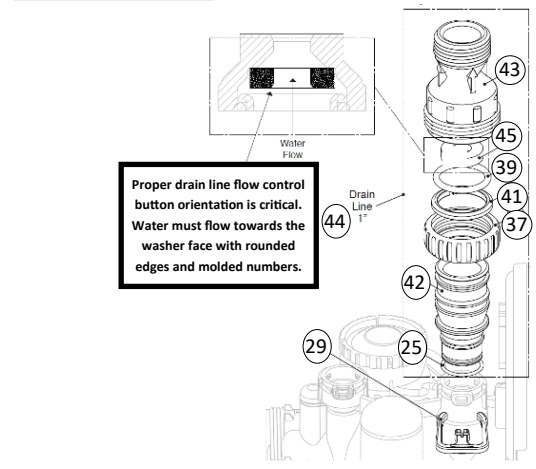
***Rebuild kit includes the most recommended replacement parts including piston, seal/spacer stack, Drive cap/gear assembly, several O-rings and the brine piston and injector assembly for softener valves.**

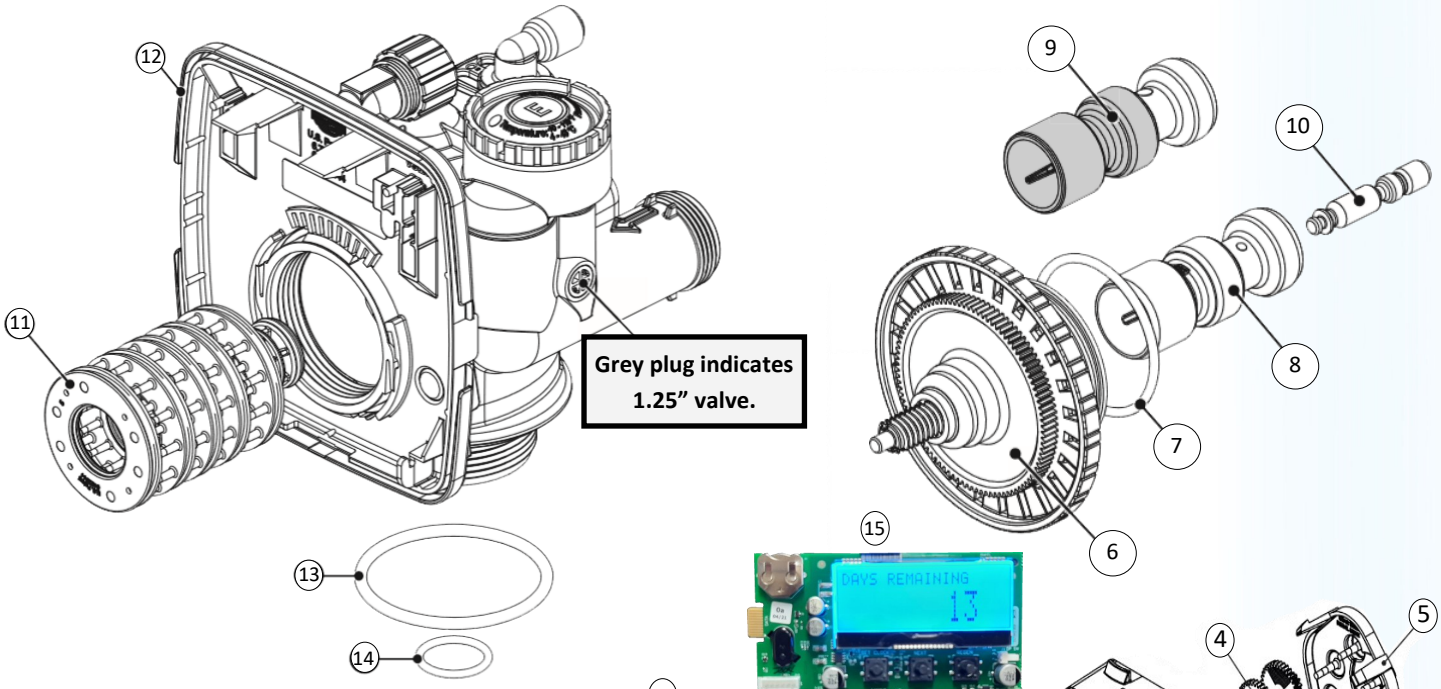
Item #	Description
	(1) “i5” Cover
39V-V3107-01	(2) 12V Motor
39V-V3106-01	(3) Drive Bracket & Spring Clip
39V-V3110	(4) Reducing Gear, order 3 pieces
39V-V3109	(5) Drive Gear Cover
39V-V3004	(6) Drive Cap Assy.
39V-V3135	(7) Tank Neck O-ring 228
39V-V3011	(8) Piston Downflow CK10
39V-V3407	(8) Piston Downflow WS125
39V-V3011-01	(9) Piston Upflow i10 /Twin
39V-V4042	(9) Piston Upflow WS125 (Black)
39V-V3174	(10) Regenerant piston
39V-V3005	(11) i10/Twin Seal Spacer Stack
39V-V3430	(11) i125 Seal/Spacer Stack
40-V4423	(12) “i5” Drive Plate
39V-V3180	(13) O-ring 337 Tank/Valve
39V-V3105	(14) i10/Twin Riser O-ring
39V-V3357	(14) CK125 Riser O-ring
40-V4445	(15) Electronic Board
39V-V3176	(16) Injector Cap
39V-V3152	(17) Injector Cap O-ring
39V-V3177-01	(18) Injector Screen
39V-V3010-Z	(20) Injector Plug
39V-V3330-01	(21) Brine Elbow Assy. ⅜”
39V-V3552	(21) Brine Elbow Assy. ½”
39V-V3195-01	(24) Refill Plug
39V-V3163	(25) O-ring
39V-V4144-01	(26) RFC Assy. w/.5 GPM button
39V-V3182	(27) RFC Button .5 GPM
39V-H4628	(28) Brine Elbow Legris Liquifit

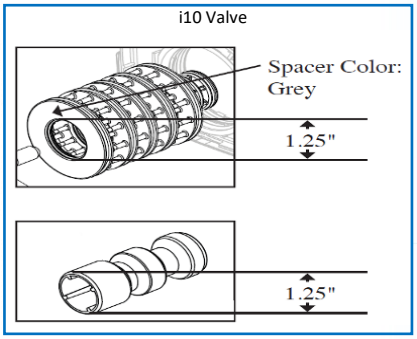


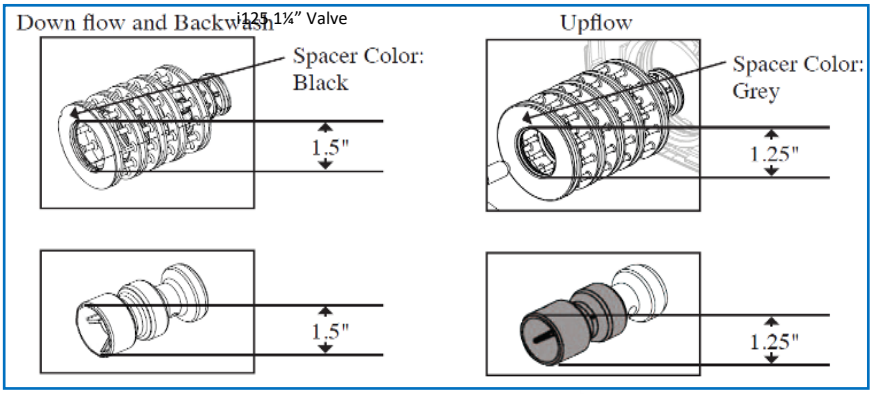
Item #	Description
39V-H4615	(29) Red RFC/Drain Clip
39V-V3192K	(31) ¾” x ⅝” Drain Nut & Tube Insert
39V-V3158-02	(32) Drain Elbow
39V-V3962	(32-34) Drain Elbow Assy. (No Silencer)
39V-V3163	(33) O-ring
39V-V3159-01	(34) DLFC Retainer
39V-V3162-...	(35) Small Button, See DLFC Page
39V-V3118-01	(36) Turbine Assembly
39V-V3151	(37) QC Nut
39V-V3003-01	(38) Meter Plug Assembly
39V-V3104	(39) QC O-ring
39V-V3003	(40) Meter includes 36, 39
39V-3150	(41) Split Ring
39V-V3167	(42) 1” Drain Fitting Adapter
39V-V3166	(43) Drain Fitting Body 1” MNPT
39V-V3008-04	(44) 1” Drain Assembly
39V-V3193-02	(46) Service Wrench
40-V3666W	(47) “i5” Weather Cover







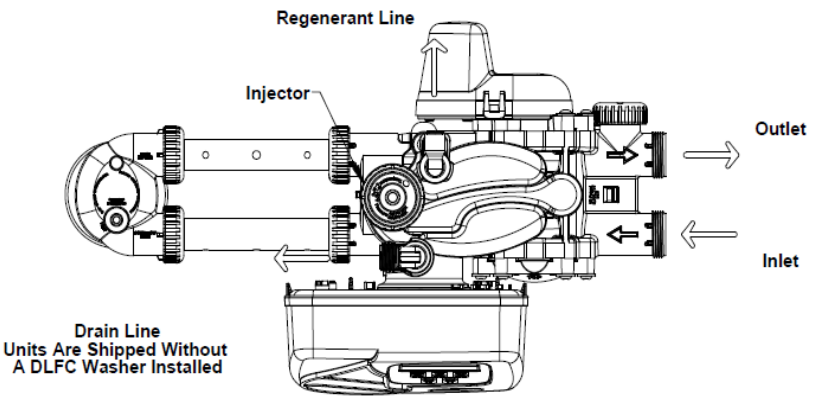


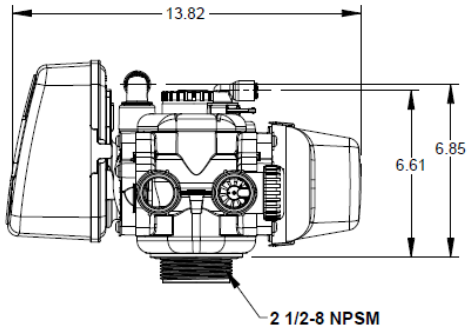


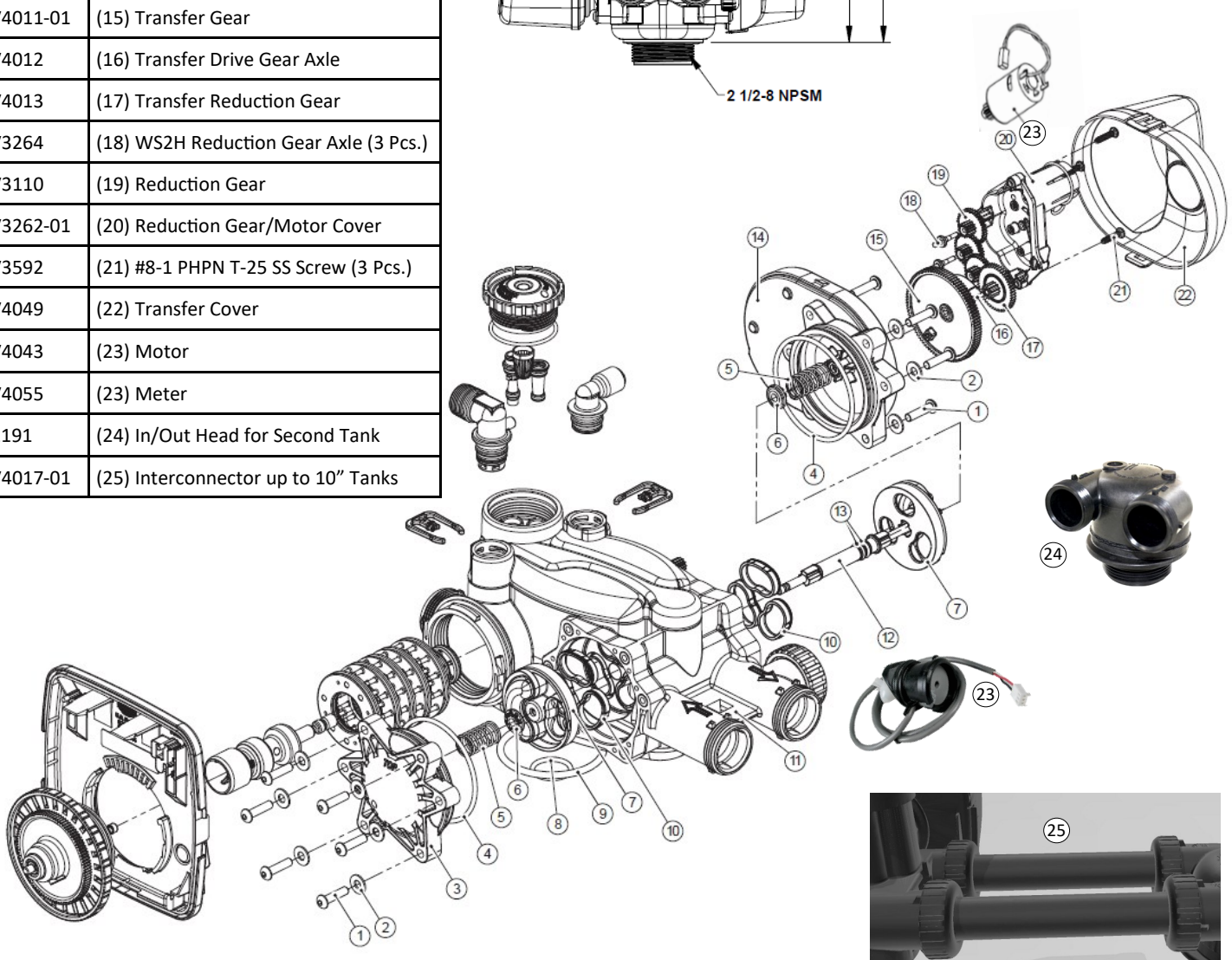
Downflow Piston is Amber. Upflow Piston is Amber/Black

“i” Twin Transfer Repair Parts

Item #	Description “i” Twin Transfer
39V-V3470	(1) BHCS 1/4”x20 x 1” SS (12 Pcs.)
39V-V3724	(2) Flat Washer 1/4” SS (12 Pcs.)
39V-V4005-01	(3) Transfer Cap
39V-V4029	(4) O-Ring 236 (2 Pcs.)
39V-V4015	(5) Transfer Spring (2 Pcs.)
39V-V4014	(6) Transfer Spring Support (2 Pcs.)
39V-V4036	(7) Rotor Disk (2 Pcs.)
39V-V3105	(8) 1.05” Riser O-Ring
39V-V3180	(9) Tank Neck O-Ring
39V-V4016	(10) Transfer Seal (6 Pcs.)
39V-V3031	(11) Valve body
39V-V4023	(12) Transfer Drive Shaft
39V-V3287	(13) Transfer Drive Shaft O-Ring (2 Pcs.)
39V-V4006-01	(14) Transfer Drive Cap
39V-V4011-01	(15) Transfer Gear
39V-V4012	(16) Transfer Drive Gear Axle
39V-V4013	(17) Transfer Reduction Gear
39V-V3264	(18) WS2H Reduction Gear Axle (3 Pcs.)
39V-V3110	(19) Reduction Gear
39V-V3262-01	(20) Reduction Gear/Motor Cover
39V-V3592	(21) #8-1 PHPN T-25 SS Screw (3 Pcs.)
39V-V4049	(22) Transfer Cover
39V-V4043	(23) Motor
39V-V4055	(23) Meter
26-D1191	(24) In/Out Head for Second Tank
39V-V4017-01	(25) Interconnector up to 10” Tanks







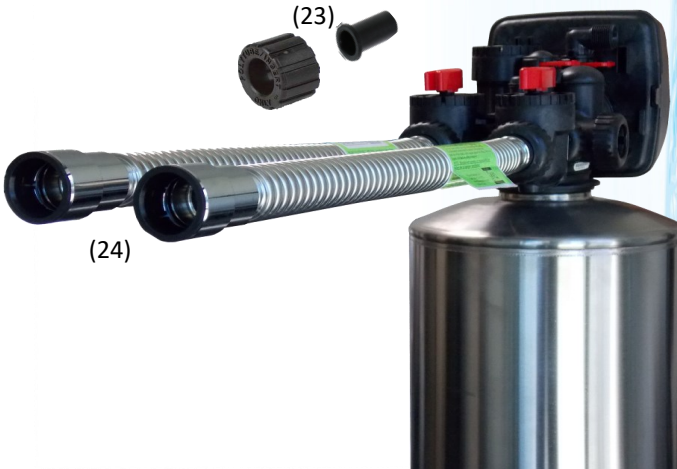
Drain Line Flow Control Buttons and Injectors

Small DLFC Button	DLFC GPM
39V-V3162-007	0.7
39V-V3162-100	1.0
39V-V3162-013	1.3
39V-V3162-017	1.7
39V-V3162-022	2.2
39V-V3162-027	2.7
39V-V3162-032	3.2
39V-V3162-042	4.2
39V-V3162-053	5.3
39V-V3162-065	6.5
39V-V3162-075	7.5
39V-V3162-090	9.0
39V-V3162-100	10
Large DLFC Button	**DLFC GPM**
39V-V3190-065	6.5
39V-V3190-075	7.5
39V-V3190-090	9.0
39V-V3190-110	11
39V-V3190-130	13
39V-V3190-170	17
39V-V3190-200	20
39V-V3190-250	25

i1.0, i1.25, iTwin Installation Parts and Accessories

Item #	Description
39V-V3008-18 (1)	3/4" Plastic Male NPT
39V-V3007-04 (2)	1" Plastic Male NPT
39V-V3007-05 (3)	1.25" Plastic Male NPT
IWP-V3007-07T (4)	1.5" Plastic Male NPT
39V-V3007 (5)	1" PVC Male NPT Elbow
39V-V3007-01 (6)	3/4" x 1" PVC Solvent Elbow
39V-V3007-07 (7)	1.25" & 1.5" PVC Solvent
39V-V3007-03LF (8)	3/4" Brass Sweat (Lead Free)
39V-V3007-02LF (9)	1" Brass Sweat (Lead Free)
39V-V3007-09LF (10)	1.25" x 1.5" Brass Sweat (Lead Free)
39V-V3007-15 (11)	3/4" John Guest Elbow
39V-V3007-20 (12)	1" John Guest Elbow
IC-V3007-101 (13)	1.05" Inter-Connector for 8"-10" Tanks
IWP-V3007-GHT (14)	3/4" Garden Hose Thread x Clack Purge Kit
39V-V3191-01 (15)	Vertical 90˚Adapter
39V-V3006 (16)	Bypass Assembly
39V-V4099 (17)	External In-line Mixing Valve
39V-V3014 (18)	Micro switch Kit w/ Wire
39V-V3193-02 (19)	i5 Service Tool
39V-V3022 (20)	1" Stack Puller
39V-V3022-15 (21)	1.25"/WS1.5 Stack Puller
40V-3666W (22)	i5 White Weather Cover
39V-V3192K (23)	5/8" Nut (1/2" PEX) and Insert
51-331	Flex 304 SS Clack QC x 3/4" FNPT x 18"
51-449	Flex 304 SS Clack QC x 1" FNPT x 18"
51-451	Flex 304 SS Clack QC x 1" FNPT x 24"
51-333	Flex 3/4"John Guest x 3/4" Clack QC x 18"
51-453 (24)	Flex 1"John Guest x 1" Clack QC x 18"
51-457	Flex 304 SS Clack QC x Clack QC x 18"
51-459	Flex 304 SS Clack QC x Clack QC x 24"
39V-V4017-01	Twin Interconnect (Used for MAV)

i1.0, i1.25, iTwin Injector Chart	Color	Typical Use	Draw/Rinse Rate @ 60 PSI
39V-V3010-1A	Black	6" Down/8" Up	.06/.17
39V-V3010-1B	Brown	7" Down/9" Up	.14/.21
39V-V3010-1C	Violet	8" Down/10" Up	.18/.29
39V-V3010-1D	Red	9" Down/12" Up	.22/.34
39V-V3010-1E	White	10" Down/13" Up	.27/.39
39V-V3010-1F	Blue	12 Down/14" Up	.37/.55
39V-V3010-1G	Yellow	13" Down/16" Up	.45/.68
39V-V3010-1H	Green	14" Down/18" Up	.46/.77
39V-V3010-1I	Orange	16" Down/22" Up	.62/1.1
39V-V3010-1J	Light Blue	18" Down	.70/1.4
39V-V3010-1K	Light Green	22" Down	.78/1.9



AIO3 Ozonated Air Draw Systems

1) Press the NEXT and ↓ button simultaneously for ~5 second. Use the ↓ button and set the valve to **"Filtering DN Post"**
2) Press the NEXT button to display **"Backwash Time"**, use the ↑ or ↓ buttons to set the time to **10** minutes.
3) Press the NEXT button to display the **"Draw Time"**, use the ↑ or ↓ buttons to set the time to **45** minutes.
4) Press the NEXT button to display **"Backwash Time"**, use the ↑ or ↓ buttons to set the time to **OFF**.
5) Press the NEXT button to display **"RINSE TIME"** use the ↑ or ↓ buttons to set the time to **OFF**.
6) Press the NEXT button to display **"FILL"** use the ↑ or ↓ buttons to set the time to **OFF**.
7) Press the NEXT button to display **"GALLON CAPACITY"** use the ↑ or ↓ buttons to set the Capacity to **OFF**. If your system has the optional meter, program accordingly. You will need to set the regeneration capacity and the re-generation type, "delayed, immediate, or both.
8) Press the NEXT button to display **"RELAY 1"** use the ↑ or ↓ buttons to set RELAY 1 to **"REGEN TIME"**. If this is for an **Air Regeneration** system without the **Ozone Generator** then the Relay can be left **"OFF"**.
9) Press the NEXT button to display **"RELAY 1 SETPOINT"** use the ↑ or ↓ buttons to set RELAY 1 to **"11 MIN"**.
10) Press the NEXT button to display **"RELAY 1 DURATION"**, use the ↑ or ↓ buttons to set the duration to **"43:00 MIN"**.
11) Press the NEXT button to display **"RELAY 2"** use the ↑ or ↓ buttons to set RELAY 2 to **"OFF"**.
12) Press the NEXT button to display **"SERVICE ALARM"** use the ↑ or ↓ buttons to set SERVICE ALARM to **"TIME"**.
13) Press the NEXT button to display **"SCHEDULED SERVICE"** use the ↑ or ↓ buttons to set SCHEDULED SER-VICE to **"1.00 YR"**.
14) Press the NEXT button to display **"SCHEDULE SERVICE"** the screen will display **"364 DAYS"**.
15) Press the NEXT button to exit programming.
16) Press the NEXT and ↑ buttons simultaneously for 1 second. Use the ↑ or ↓ button to set **"DAYS BE-TWEEN REGEN"** to **1**. This will set the unit to regenerate daily. Changing the regeneration frequency to less than daily in most applications is not recommended.
17) Press the NEXT button to display **"REGENERATION TIME"**. Set the time to your desired regeneration time. Typical is 12:00 A.M. The system should be set so that it does not regenerate when water is being used in the application or when other water filtration components are regenerating.
18) Press the NEXT button to display **"ENERGY SAVER"**. Set to **ON** if you want the backlight to stay on, **OFF** if you want the backlight to turn off after 5 minutes.

The ozone generator is mounted as shown. Connect the red wire into **RLY1** and the black wire into the **+COM**. Plug in the supplied transformer to the back of the ozone generator. The ozone generator will now be controlled by the control valve. The LED light on the ozone generator indicates the following.

Green Light Slow Blinking: Standby Mode

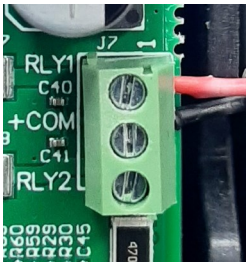
Green Light Quick Blinking: High voltage startup (up to 3 seconds)

Red Light Solid: Unstable, Clean CD Cell

Green/Red Alternating: Clean CD Cell

Red Light Flashing: NO/NC contacts are shorted, correct wiring

Orange Light: 1 year timer has expired. Clean the CD cell and replace the check valve. Reset the timer by pushing the "ALARM RESET" button once.



Upflow and Variable/Proportional Upflow Brining

Variable upflow brining (proportional fill) can be advantageous in a multitude of applications. 1" and 1.25" valves can not be modified in the field as the valve bodies are different. Twin, 1.5" and 2" valves can be modified for upflow regeneration. With variable brining, the controller determines how much reserve capacity has been used when the regeneration time is reached. Based on that remaining capacity, the system adjusts the salt dose used for that regeneration. This salt dose adjustment avoids using salt for resin that is still regenerated. Fill time is varied to allow the salt dose to be matched to the actual amount of resin that is exhausted. The most common application for variable brining is residential and commercial applications where the system is undersized.

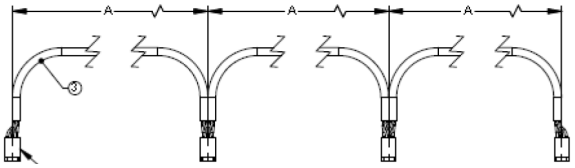
1) Press the NEXT and ↓ button for ≈5 seconds and use the ↑ button to set **"TYPE"** to **SOFTENING UP PRE**
2) Press the NEXT button to display the **"FILL SET,** use the ↑ or ↓ buttons to set salt amount to your desired amount.
3) Press the NEXT button to display **"SOFTENING TIME"**, use the ↑ or ↓ buttons to set the time to **120:00 MIN**. This is the time between the brine fill and the system starts to regenerate.
4) Press the NEXT button to display **"DRAW UP TIME"**, use the ↑ or ↓ buttons to set the time to **100 MIN**. Upflow brining uses smaller injectors to prevent the resin bed from expanding so longer draw times are needed.
5) Press the NEXT button to display **"BACKWASH TIME"**, use the ↑ or ↓ buttons to set the time to **6:00 MIN**.
6) Press the NEXT button to display **"RINSE TIME"**, use the ↑ or ↓ buttons to set the time to **4:00 MIN**.
7) Press the NEXT button to display **"GRAINS OF CAPACITY"** based on the system size and salt setting**.**
8) Press the NEXT button to display **"TYPE"**, use the ↑ or ↓ buttons to set the valve to **PROPORTIONAL FILL or NORMAL FILL**. Proportional fill is more common and highly recommended if the system is undersized.
9) Press the NEXT button to display **"GALLONS CAPACITY"**, set to **AUTO**.
10) Press the NEXT button to display **"TYPE"** use the ↑ or ↓ buttons to set the regeneration type to **DELAYED REGENERATION.**
11) Press the NEXT button to display **"RELAY 1"**, use the ↑ or ↓ buttons to set the relay to **OFF**.
12) Press the NEXT button to display **"RELAY 2"**, use the ↑ or ↓ buttons to set the relay to **OFF**.
13) Press the NEXT button to display **"SERVICE ALARM"** use the ↑ or ↓ buttons to set SCHEDULED SERVICE to either **OFF**, **TIME**, **GALLONS**, or **BOTH**. Set the service alarm gallon and frequency as desired.
14) Press the NEXT button to display **"SALT LEVEL ALARM"** to either OFF or your desired amount of salt left in the brine tank before the salt level alarm is triggered.
15) Press the NEXT button to exit programming.

Progressive Flow

The “i5” valve is capable of progressive flow applications for 2-4 systems with meters. This requires a NHWBP valve on the outlet connected to the MAV Driver. All units must be connected prior to programming.

1) Press the NEXT and ▲ button simultaneously for ~5 seconds to get into OEM Programming.
2) Press the NEXT and ▲ button simultaneously again for ~5 seconds to get into Factory Programming.
3) Valve Type: Use the ▲ button to set the valve to the correct type. 1.0 IN., 1.25 IN, 1.5 IN or 2.0 IN
4) Press the NEXT button to display SET “ALT MAV”, use the ▲ button to set the valve to “PROGRESSIVE FLOW”.
5) Press the NEXT button to display SET “VALVE”, use the ▲ button to change the “UNIT NAME” to 1-4 with the first unit being 1, the second unit being 2, and so on up to 4 units.
6) Press the NEXT button to display SET “ADD ANOTHER UNIT”, use the ▲ or ▼ button to change to the desired flow rate you would like another unit to come online. Typical is half the service flow rate. This will only appear on unit #1.
7) Press the NEXT button to display SET “AUX MAV” to OFF unless you will be using the AUX MAV for another function.
8) Press the NEXT button to exit programming mode. Repeat for all successive valves.

Item #	Cable
39V-V3475-12	2 Units
39V-V4244-12	3 Units
39V-V4245-12	4 Units



1.5” and 2” Valves Using Non Standard Meters, Different Sized Standard Meters

The “i5” 1.5” and 2” valves can use almost any “Hall Effect” meter as long as you know the “K” factor in pulses per gallon (PPG) ranging from .1-150 PPG. You can access the meter setting in the “FACTORY PROGRAMMING MODE”.

1) Press the NEXT and ▲ button simultaneously for ~5 seconds to get into OEM Programming.
2) Press the NEXT and ▲ button simultaneously again for ~5 seconds to get into Factory Programming.
3) Valve Type: Use the ▲ button to set the valve to the correct size1.5 IN or 2.0 IN
4) Press the NEXT button to display SET **“METER SIZE”** use the ▲ or ▼ button to set the meter size to the desired meter type. Options are 1.0r (Clack 1” remote meter), 3.0” IN (Clack 3” meter), 2.0” (Clack 2” Meter), 1.5” (Clack 1.5” Meter), or ”VARIABLE METER“. In the “VARIABLE METER” setting screen you can set the K-Factor (PPG) from 0.1 to 150.

Continue programming the valve.

MAV's, NHWBP Valves

The "i5" valve is capable of driving two MAV valves. Separate source regeneration, No Hard Water Bypass (NHWBP) and twin alternating systems are common applications for this feature.

1) Press the NEXT and ▲ button simultaneously for ~5 seconds to get into OEM Programming.
2) Press the NEXT and ▲ button simultaneously again for ~5 seconds to get into Factory Programming.
3) Valve Type: Use the ▲ button to set the valve to the correct type. 1.0 IN., 1.0T, 1.25 IN, 1.5 IN or 2.0 IN. You may be prompted to set the meter size, pre-rinse etc. Set as desired.
4) Press the NEXT button to display SET **"ALT MAV"**, use the ▲ button to set the valve to the correct setting.
5) Press the NEXT button to display SET **"AUX MAV",** use the ▲ button to set the valve to the correct setting.

ALT A and ALT B are for twin alternating systems using a 3 way MAV. The MAV will have an "A" and "B" port molded into the valve. Each valve must be programmed as either A or B and the Valve programmed as "ALT A" needs to be installed to the "A" port and the valve programmed as "ALT B" needs to be installed to the "B" port.

SYSTEM CONTROLLER is used when the system will be used with a system controller with up to 6 valves. These will typically be connected to a NHWBP valve on the outlet of each unit.

PROGRESSIVE FLOW is used when multiple metered systems will be installed and units will turn on and off (NHWBP) as dictated by flow. See the progressive flow instructions for more details.

SEPARATE SOURCE is commonly used when a clean water regeneration is desired. A 3 way MAV is installed on the inlet and alternates water supplies when the system goes into regeneration.

NO HARD BYPASS is used when you want to stop water flow from exiting the system during the regeneration process.

TIME is available on the **AUX MAV** setting. You can program the MAV to alternate at a set time during the regeneration and to cycle back to the original position after a certain number of minutes.

Diagnostics

1) Press the and button simultaneously for ~5 second. **"DAYS SINCE LAST REGEN"** will be displayed.
2) Press the button to display **"GALLONS SINCE LAST REGEN"**
3) Press the button to display the current days **"RESERVE HISTORY" (0)** which is the average water used on that day of the week based on the previous 4-6 weeks.
4) Press the button to see the previous days **"RESERVE HISTORY" (1)**, keep pressing the Button to see all 7 days of the weeks average usage history. This is only displayed if the reserve capacity is determined by the control
5) Press the button to see todays water **"USAGE HISTORY" (0),** press the button to see the previous days water usage for up to 63 days.
6) Press the button to display **"MAX FLOW" (0),** the maximum sustained water flow the system registered today. Press the button to view the maximum sustained flow for the past 6 days.
7) Press the button to exit diagnostics.

"iTwin"Diagnostics

If the valve is an **"iTwin"** the diagnostics will continue to show the tank transfer history. Press the button to review the past 10 tank transfers.

"1" = Transfer number (10 transfers max)

A or B = Tank Transferring

"3" = How many days ago the tank transferred (99 days max)

0 = Gallons used at time of transfer

Auxiliary Driver Diagnostics

If the control valve has a Motorized Alternating Valves or No Hard Water Bypass Valves attached to the either or both of the auxiliary drivers, the diagnostics mode will continue. Press the button to review the MAV drive history.

ALT= Main Auxiliary Drive, AUX= 2nd Auxiliary drive

- = Indicates Piston drive into the MAV valve.

+ = Indicates Piston drive out of the MAV valve.

First = Average of the first 3 drive times measured for that MAV in that direction

Last = Last drive time measured for that MAV in that direction since last reset.

Avg = Current average drive time calculated for that MAV in that direction.

TTT = Voltage compensated MAV drive time (in 1/100th sec) measured (First/Last/Avg)

CCC = Total number of cycles in/out for the MAV

VVV = Relative MAV drive voltage measured (First/Last/Avg)

Factory Level Programming

1) Press the NEXT and ↑ button simultaneously for ~5 seconds to get into OEM Programming.
2) Press the NEXT and ↑ button simultaneously again for ~5 seconds to get into Factory Programming.

Several settings are available inside of the Factory Programming settings.

Valve Type and size must match the actual valve.

Meter must match the actual meter size. For generic meters the K Factor can be programmed. See the meter programing instruction on page **16**

MAV and Auxiliary MAV can be programmed as seen on page **17**

AUXILIARY INPUT is labeled on the board as "DP SW" and is used to initiate or to prevent a regeneration by connecting a switched line to the connector. NOTE: In a twin alternating system each control must have a separate DP signal or DP switch. One DP signal or one DP switch cannot be used for both controls.

1) **OFF** has no affect, the input is not used and any input will be ignored.
2) **IMMED REG:** If the auxiliary input switch is closed for a cumulative total of 2 minutes, an immediate regeneration will be initiated. Commonly used with differential pressure switches. In a twin alternating system the MAV will transition first to switch units so that the signaled unit can start the regeneration. After the mAV has fully transistioned the regeneration begins immediately.
3) **DELAY REG:** If the auxiliary input switch is closed for a cumulative total of 2 minutes, a regeneration will occur at the scheduled delayed regeneration time.
4) **HOLD:** If the switch is closed, a regeneration will not be allowed even if the scheduled time of regen occurs or the meter capacity reaches zero.

FILL UNITS: For 1" to 1.5" valves. These can be set to either **LBS** or **MIN** (minutes). This should be left at LBS for most applications unless your application requires that you change the refill flow control size. The 2" valve typically has a 2.2 GPM Brine Line Flow Control (BLFC) installed and each minute of refill is approximately 6.6 pounds. The BLFC can be changed as needed.

Backwash Rates & Water Temperature

Water temperature plays a critical role in properly installing a water treatment system. Water temperature affects flow rates, backwash rates, and even systems capacities. The most critical of these is the backwash rate. Colder water is more dense and requires considerably less water to properly backwash a system. Hot water requires much more. The chart below shows standard cation water softening resin backwash expansion at varying temperatures. A 50% bed expansion is achieved with only 2.5 gpm/ft² at 40°F. At 86°F, it requires 7 gpm/ft² or nearly three times more water to achieve the same bed expansion. Common backwash rate charts assume a water temperature of 68°F. It is important to consult with each media manufacturers temperature charts to ensure your system is properly applied.

Softening Efficiency, Capacity, Hardness Leakage

Softener efficiency, capacity, and hardness leakage are all linked. A highly efficient softener will produce a lower quality of softened water. Lower quality softened water is adequate for most residential and commercial applications and is important for minimizing the negative environmental impact of softeners. Some applications may require very high quality softened water and efficiency will be sacrificed. For most applications, softeners should be set to use 8 pounds or less per cubic foot to ensure highly efficient operation and 10 pounds or more for the lowest hardness leakage.

Lbs. per Ft³	3	4	6	8	10	15
≈Capacity (gr/cu ft)	12,800	15,200	20,000	24,000	27,000	30,000
≈Efficiency (gr/lb salt)	4267	3800	3333	3000	2700	2000
Soft Water Quality	Fair	Fair	Good	Very Good	High	Highest

Common Service Parts

Item #	Drive Caps
39V-V3004	i1.0” - i1.5”
39V-V3728	i2.0”
Item #	**Pistons**
39V-V3011	i1.0”, iTwin Downflow
39V-V3011-01	i1.0”, iTwin Upflow
39V-V3407	i1.25”, i1.5” Downflow
39V-V4042	i1.25”, i1.5” Upflow
39V-3725	i2.0” Downflow
39V-V4059	i2.0” Upflow
Item #	**Brine Piston**
39V-V3174	i1o” to i1.5”
39V-V3174	I2.0”
Item #	**Seal/Spacer**
39V-V3005-02	i1.0”, iTwin
39V-V3430-01	i1.25” and i1.5”
39V-V3729	i2.0” Downflow
39V-V3729-01	i2.0” Upflow
Item #	**Meter Rebuild**
39V-V3003	i1.0”, i1.25”
39V-V4055	iTwin
39V-V3003-02	i1.5” - i2.0”
Item #	**Motor**
39V-V3107-01	All Except iTwin Transfer
39V-V4055	iTwin Transfer
Item #	**Injectors i1.5”**
39V-V3010-15B	12” Tank
39V-V3010-15C	13” Tank
39V-V3010-15D	14” Tank or 12” Upflow
39V-V3010-15E	16” Tank or 13” Upflow
39V-V3010-15F	18” Tank or 14” Upflow
39V-V3010-15G	21” Tank or 16” Upflow
39V-V3010-15H	24” Tank or 18” Upflow
39V-V3010-15Z	Plug for 1.5” Brass Valve
39V-V4350-15Z	Plug for 1.5” Plastic Valve

Item #	Injectors i2.0”
39V-V3010-2R-15B	12” Tank
39V-V3010-2R-15C	13” Tank
39V-V3010-2R-15D	14” Tank or 12” Upflow
39V-V3010-2R-15E	16” Tank or 13” Upflow
39V-V3010-2A	18” Tank or 14” Upflow
39V-V3010-2B	21” Tank or 16” Upflow
39V-V3010-2C	24” Tank or 18” Upflow
39V-V3010-2D	30” Tank or 21” Upflow
39V-V3010-2E	36” Tank or 24” Upflow
39V-V3010-2F	42” Tank or 30” Upflow
39V-V3010-2G	48” Tank or 36” Upflow

i1.5” Plastic Install/Service Parts

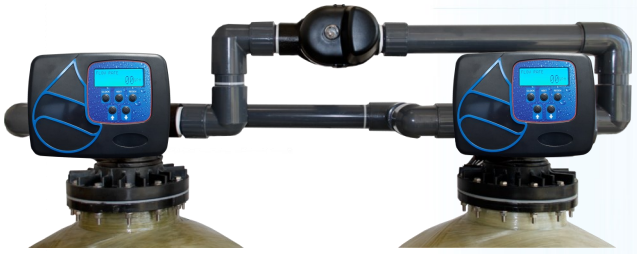
Item #	Description
39V-V3045QC	1.5” Meter with QC Coupler
39V-V4430-01	1.5” MNPT QC Straight Fitting (2 Pieces)
39V-V4430-07	1.5” MNPT QC Elbow Fitting (2 Pieces)
39V-V4430-03	1.5” QC to QC Coupler Straight
39V-V4430-09	1.5” QC to QC Coupler Elbow
39V-V3151	QC Nut
39V-V3104	QC O-ring
39V-3150	QC Split Ring
39V-V3008-04	1” Drain Assembly
39V-V3035	No Hard Water Bypass
39V-V3034	Motorized Alternating Valve

MAV, NHWBP, Separate Source Valves

Item #	No Hard Water Bypass
39V-V3070FF	1” & 1.25” NHWBP FxF Clack QC
39V-V3070FM	1” & 1.25” NHWBP FxM Clack QC
39V-V3097	1.5” NHWBP
39V-V3098	2” NHWBP
Item#	Motorized Alternating Valve
39V-V3069FF-01	1” &1.25” NHWBP FxF Clack QC
39V-V3069MM-01	1” &1.25” NHWBP MxM Clack QC
39V-V3071	1.5” MAV FxFxF
39V-V076	2” MAV FxFxF

MAV, NHWBP Repair Parts

Item #	NHWBP/MAV Piston
39V-V3506-01	1”, 1.25”, & 1.5”
39V-V3634-01	2”
Item#	MAV Seal/Spacer
39V-V3074	1”, 1.25”, & 1.5”
39V-V3077	2”
Item#	NHWBP Seal/Spacer
39V-V3074	1”, 1.25” 1.5 Plastic
39V-V3886	1.5” (Not for Plastic Valve)
39V-V3887	2”



MAV, NHWBP Rebuild Kits

Item #	NHWBP/MAV Piston
39V-V3506-01	1”, 1.25”, & 1.5”
39V-V3634-01	2”
Item#	MAV Seal/Spacer
39V-V3074	1”, 1.25”, & 1.5”
39-WS2-KV	2” Rebuild Kit
Item#	NHWBP Seal/Spacer

We developed our POE product line using a less traveled path. Rather than using the **lowest cost** as a key motive, our systems feature only **quality** components with price being an important, yet secondary factor. We literally examined every component looking for the best quality while still maintaining a relatively competitive price. We also looked to buy **USA** made components wherever reasonable and if not, to source them from respected USA companies. Here is a list of some of the reasons our systems are a notch above…

1. USA labor by well trained, closely supervised, caring, permanent employees.
2. USA made NSF Certified mineral tanks whenever possible. The exceptions include unusual tank sizes that are not available by our US manufacturers.
3. USA made brine tank. High quality safety float assemblies in every system to act as a secondary shut off to prevent water damage.
4. Certified medias, even our quartz under-bedding is NSF listed!
5. Top of the line riser assemblies provide the highest flow and the best durability.
6. Optional high quality stainless steel, aluminum, or HDPE jackets. No thin plastic decorative wraps, our jackets perform!
7. Custom programmed to our customers needs ensuring excellent efficiency and water quality!
8. USA made heavy duty boxing. Note that our box does not make ambiguous implications by having “Made in the USA” printed on the box. Most of our components are USA made, but great care must be taken when making a “Made in the USA” claim.

It is our intention to build and sell truly high quality systems, using only components made in the USA, sourced from USA companies or the very best of the overseas offerings. Our company philosophy is not just a motto, but a way of life.

“WE WILL NOT COMPETE IN THE RACE TO THE BOTTOM.”

The inlet and outlet diameter of the water softener must match the diameter of the water supply piping at the location where the softener will be installed. UPC 610.2

Compensated Hardness Chart

Water Hardness	Multiply by
1 - 20 GPG	1.1
21 - 40 GPG	1.2
41 - 70 GPG	1.3
71 - 100 GPG	1.4
100+ GPG	1.5