AQT-910XT / AQT-950XT

ELECTRONIC VALVES SERIES

PROGRAMMING MANUAL

TABLE OF CONTENTS

WARNINGS	**DO NOT EXCEED 120 PSI WATER PRESSURE**
	DO NOT EXCEED 100°F WATER TEMPERATURE
	DO NOT SUBJECT UNIT TO FREEZING CONDITIONS
	CALIFORNIA PROPOSITION 65 WARNING THIS PRODUCT CONTAINS CHEMICALS KNOWN TO THE STATE OF CALIFORNIA TO CAUSE CANCER OR BIRTH DEFECTS OR OTHER REPRODUCTIVE HARM.

PLEASE READ THIS MANUAL IN ITS ENTIRETY AND FOLLOW ALL THE INSTRUCTIONS BEFORE INSTALLATION AND OPERATION.

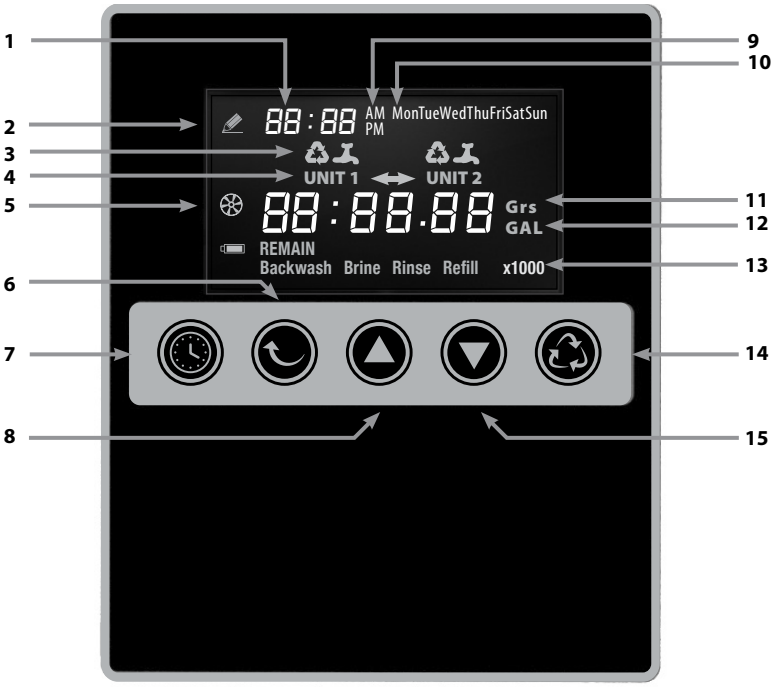
Water Pressure	Minimum 20 - 25 PSI
Electrical Supply	Input: 100-240 VAC 50/60 Hz, Output: 12V DC/1A
Existing Piping	Free of any deposits or build-ups inside pipes (iron, scale, etc...)
Softener Placement	Locate close to drain and connect according to plumbing codes
Bypass Valves	Always provide for bypass valve if unit is not equipped with one

Installation Instructions

1. Place the softener tank where you want to install the unit making sure the unit is level and on a firm base. *Maximum 4 feet apart for twin units*.
2. All plumbing should be done in accordance with local plumbing codes. The pipe size for the drain line should be the same size as the drain line flow control female connection. Water meters are to be installed on soft water outlets. Twin units with (1) one meter shall be installed on common soft water outlets of units.
3. Lubricate the distributor O-ring seal and tank O-ring seal. Place the main control valve on tank. (*Only use silicone lubricant).*
4. Solder joints near the drain must be done prior to connecting the Drain Line Flow Control fitting. Leave at least 6" between the DLFC and solder joints when soldering when the pipes are connected on the DLFC. Failure to do this could cause interior damage to the DLFC.
5. Teflon tape is the only sealant to be used on the drain fitting. The drain from twin units may be run through a common line.
6. Make sure that the floor is clean beneath the salt storage tank and that it is level
7. Place approximately 1" of water above the grid plate (*if used*) in your salt tank. Salt may be place in the unit at this time.
8. On units with by-pass, place in by-pass position. Turn on main water supply. Open a cold soft water tap nearby and let run a few minutes or until the system is free from foreign material (*usually solder*) that may have resulted from the installation.
9. Place the by-pass in service position.
10. Manually index the softener control into "service" position and let water flow into the mineral tank. When water flow stops, open a cold water tap nearby and let run until air pressure is relieved.
11. Electrical: All electrical connections must be connected according to codes. Use electrical conduit if applicable. *(See Wiring Diagram section for more information)*.
12. Plug into power supply.

WARNINGS

- The information, specifications and illustrations in this manual are based on the latest information available at the time of release. The manufacturer reserves the right to make changes at any time without notice.
- This manual is intended as a guide for service of the valve only. System installation requires information from a number of suppliers not known at the time of manufacture. This product should be installed by a plumbing professional.
- This unit is designed to be installed on potable water system only.
- This product must be installed in compliance with all state and municipal plumbing and electrical codes. Permits may be required at the time of installation.
- It is established that when daytime water pressure exceeds 80 psi (5.5 bar), the maximum pressure rating of 125 psi (8.6 bar) can be exceeded. A pressure regulator must be installed on this system or warranty is voided.
- Do not install the unit where temperatures may drop below 32 °F (0 °C) or above 125 °F (52 °C).
- Do not place the unit in direct sunlight. Black units will absorb radiant heat increasing internal temperatures.
- Do not strike the valve or any of the components.
- Warranty of this product extends to manufacturing defects. Misapplication of this product may result in failure to properly condition water, or damage to product.
- A prefilter should be used on installations in which free solids are present.
- In some applications local municipalities treat water with Chloramines. High Chloramine levels may damage valve components.
- Correct and constant voltage must be supplied to the controller to maintain proper function.
- An interrupted alternating current *(120 VAC)* supply is required.
- The system is not designed to withstand extreme humidity or water spray from below.
- Always provide for the installation of a bypass valve if unit is not equipped with one.



1. Current Time
2. Edit
   - When control valve in data setting
3. Unit Status
   - ♺ Regeneration
   - Service
4. Unit
   - UNIT 1: valve head
   - UNIT 2: in/out head
5. Flow Meter
6. Enter
7. Basic Setup
8. Up Button
9. Time Of Day
   - AM or PM
10. Day of Week
11. Grain Unit
    - Grs = Total Resin Exchange Capacity
12. Gallon Unit
    - GAL = Flowrate
13. Hardness unit
    - Grs&GAL = Water Hardness
14. Cycle Button
15. Down Button

Basic Set Up Button

Enter Button

- Confirm and save the current setting
- Basic information query

Up Button

- Increase or cycle

Down Button

- Decrease or cycle

Cycle

- Previous step / Manual regeneration

To Enter Advanced Settings

- Press and hold simultaneously for 3 seconds the ENTER and UP buttons.

To Enter Historic Information

- Press and hold simultaneously for 3 seconds the UP and DOWN buttons.

1. Enter Basic Settings

Press BASIC SET UP Button
to enter Basic Settings.

2. Set Hour

Press UP or DOWN to edit,

then press ENTER to save.

Flashing

Default: 12

Range: 00 - 12

3. Set Minutes

Press UP or DOWN to edit,

then press ENTER to save.

Flashing

Default: 00

Range: 00 - 59

4. Set Time of Day

Press UP or DOWN to edit,

then press ENTER to save.

Flashing

Default: AM

Range: AM/PM

5. Set Day of Week

Press UP or DOWN to edit,

then press ENTER to save.

Flashing

Default: AM

Range: Mon - Sun
Mon = Monday
Tue = Tuesday
Wed = Wednesday
Thu = Thursday
Fri = Friday
Sat = Saturday
Sun = Sunday

6. Set Feed Water Hardness

Press UP or DOWN to edit,

then press ENTERto save.

Flashing

Default: 20 Grains/gallon

Range: 1 - 999 Grains/gallon

⚠ *The treated water capacity is automatically calculated. Then the display will only be shown for SOF3 or SOF4.*

Done

1. Password Setup

In service position, press
UP for 3 seconds to enter.

Default Password: 0000

2. Input Password

Press UP or DOWN
to edit a new password

then press ENTER to save.

Flashing

Done

Default: 0000

Range: 0000 - 9999

1. Enter

Simultaneously press and hold
ENTER & UP for 3 seconds to enter,

then press ENTER to input password.

Default: **N/A**

Range: **N/A**

2. Input Password

Press UP or DOWN
to edit a new password

then press ENTER to save.

Flashing

Default: **0000**

Range: **0000 - 9999**

Original password: 0000

3. Wrong Password

Error is displayed
and an alarm will go off.

⚠ *If an invalid password is entered an error alarm will go off for one second, then the screen will display an Error message and will return to service position.*

4. Set Treated Water Capacity

Press UP or DOWN to edit,

then press ENTER to save.

Flashing

Default: **N**

Range: **N**
Y

If "N" was chosen - Manually set the treated water capacity.

If "Y" was chosen - Automatically calculate the treated water capacity by controller.

4.a. Set the Treated Water Capacity (If "N" was chosen in step 4)

Press UP or DOWN to edit,

then press ENTER to save.

Flashing

Default: **5400**

Range: **1 - 99999 Gallons**

4.b.1 Set the Feed Water Hardness (If "Y" was chosen in step 4)

Press UP or DOWN to edit,

then press ENTERto save.

Flashing

Default: 20 Grains/gallon

Range: 1 - 999 Grains/gallon

4.b.2 Set the Total Resin Exchange Capacity

Press UP or DOWN to edit,

then press ENTER to save.

Flashing

Default: 106 x 1000 Grains

Range: 1 - 9999 x 1000 Grains

4.b.3 Auto-Calculated Value Display

This screen is not editable.

5. Set Backwash Time

Press UP or DOWN to edit,

then press ENTER to save.

Flashing

Default: 15 min

Range: 0 - 999 min

6. Set Brine Draw Time

Press UP or DOWN to edit,

then press ENTER to save.

Flashing

Default: 60

Range: 0 - 999 min

7. Set 2nd-Backwash Time

Press UP or DOWN to edit,

then press ENTER to save.

Flashing

Default: 0

Range: 0 - 999 min

8. Set Rinse Time

Press UP or DOWN to edit,

then press ENTER to save.

Flashing

Default: 10 min

Range: 0 - 999 min

9. Set Auto-Refill

Press UP or DOWN to edit,

then press ENTER to save.

Flashing

Default: N

Range: N
Y

If "N" was chosen -
It means refill time is manually input and then continue with step 9.a.

If "Y" was chosen -
It indicates the refill time is automatically calculated by the controller and then continue with step 10.b.1.

9.a. Set Refill Time (If "N" was chosen in step 9)

Press UP or DOWN to edit,

then press ENTER to save.

Then return to service position.

Flashing

Default: 12
Range: 0 - 999 min

9. b.1. Set Salt Consumption per cu.ft Resin (If "Y" was chosen in step 9)

Press UP or DOWN to edit,

then press ENTER to save.

Flashing

Default: 10
Range: 0.1 - 99.9 min

9. b.2. Set Total Resin Amount (ft^3)

Press UP or DOWN to edit,

then press ENTER to save.

Flashing

Default: 1.76
Range: 0 - 99. 99

9.b.3. Set BLFC (gpm)

Press UP or DOWN to edit,

then press ENTER to save.

Flashing

Model:	**910XT**	**950XT**
Default:	**0.25**	**3.0**
Range:	**0.25**	**1.0**
	0.5	**2.0**
	1.0	**3.0**
		4.0
		5.0

9.b.4. Display the Auto Refill Time

This data is calculated by the control valve and it is not editable.

Press ENTER to return to service position.

10. Set Maintenance Time (Week)

Press UP or DOWN to edit,

then press ENTER to save and return to service position.

Flashing

Default: 78

Range: 0, 26, 52, 78

"0" indicates this function is off.

⚠ *When the valve reaches the set weeks for maintenance, valve must be serviced by a certified professional.*

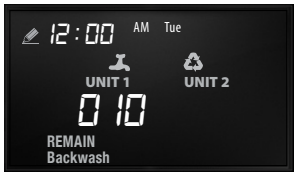
Done

1. Regeneration Information

Only while system is in regeneration, press ENTER to check remaining time of the cycle step in process.

Valve #1 in service, while valve #2 in regeneration.

Remaining time of cycle step in process will be shown.



Same information for the next cycle steps.

1. View Historical Information

In Service Position, press UP and DOWN for 3 seconds to enter and query.

then press ENTER to check the next Item.

1.a. Check the Current Flow (GAL/min)

Press ENTER to check the Current flow.

Units: GAL = Gallons/min

1.b. Check the Peak Flow (GAL/min)

Then press ENTER again to check the Peak flow.

Units: GAL = Gallons/min

1.c. Check the Total Flow After Installation

Press ENTER again to check the Total Flow after installation.

Units: Gallons

1.d. Check the Total Use Time After Installation

Press ENTER again to check the Total Use Time after installation.

Units: h = hours

1.e. Check the Total Regeneration Times After Installation

Press ENTER again to check the total regeneration times after installation

Units: Regeneration times

1.f. Remaining Days for Next Maintenance

Press BASIC SET UP Button to reset maintenance days period.

Units: d = days

Return to service position.

1. Backup Battery

Remove the front cover and connect the battery with connectors.

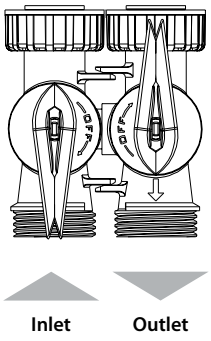
Battey Model: 6LR619V

⚠ *It is suggested that the battery be connected after the valve has been installed to protect the battery.*

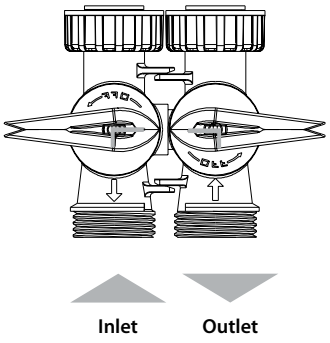
2. Bypass (Only AQT-910XT)

Rotate the handles to adjust the bypass position.

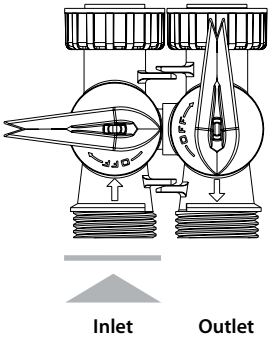
SERVICE POSITION



BYPASS POSITION



SHUT-OFF POSITION



3. Power Outage

3.1 When a power outage happens while valve is in service position, the control valve will keep in the same position when the power is restored.

3.2 If a power outage happens in any regeneration cycles, once the power is restored, the control valve will automatically look for the target position when the power outage happened. Then it will continue to complete the regeneration steps.

3.3 If the power outage happens when the control valve is moving from one position to the other, once the power restored, it will look for the target position when the power outage happened. Then it will continue to complete the regeneration steps.

4. Optional DP Switch Signal Input

The valve has reserved one interface for DP input for receiving a remote signal. If DP switch is closed for more than 30 seconds, a regeneration will occur immediately. See Controller Wiring Diagram **on page 24** to connect DP.

1. Maintenance Reminder

When it is time for maintenance, the display will automatically remind the user to call for maintanence.

Alternating Screen

Press UP

to cancel and return to Service Position

2. Manual Immediate Regeneration

While in Service Position, press and hold CYCLE Button for 5 seconds. The control valve will initiate an immediate regeneration.

Press the CYCLE Button to jump to the next cycle step. A system queued regeneration can only be cleared by stepping through the regeneration process step by step.

3. System Errors

The control valve will automatically display and alarm any detected system errors. The detailed information is as follows:

UPPER PISTON ERRORS:

1. **Upper piston can not locate the service postion.**

Flashing

2. **Upper piston optical sensor no signal.**

Flashing

3. **Upper piston electric motor stalled or locked.**

Flashing

4. **Upper piston wrong service position.**

Flashing

LOWER PISTON ERRORS:

1. **Lower piston can not locate the service postion.**

Flashing

2. **Lower piston optical sensor no signal.**

Flashing

3. **Lower piston electric motor stalled or locked.**

Flashing

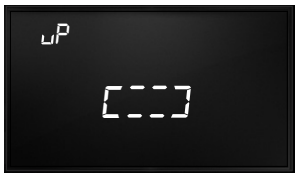
4. **Lower piston wrong service position.**

Flashing

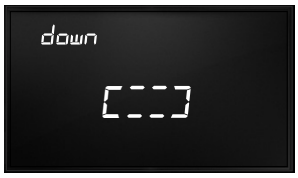
4. Reset

If any Error alarm occurs on the screen.

Simultaneously press the
UP and CYCLE Buttons
and hold for 3 seconds to reset.



Upper piston reseting

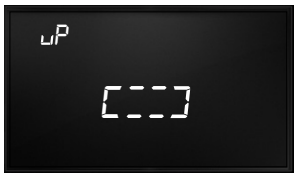


Lower piston reseting

⚠ *If reset is successful the error alarm will disappear and it will return to the position where the error occurred. Otherswise, call a professional for more help.*

8. Restore Factory Settings

While the valve is unplugged,
press and hold the
BASIC SET UP Button,
then plug in the valve.

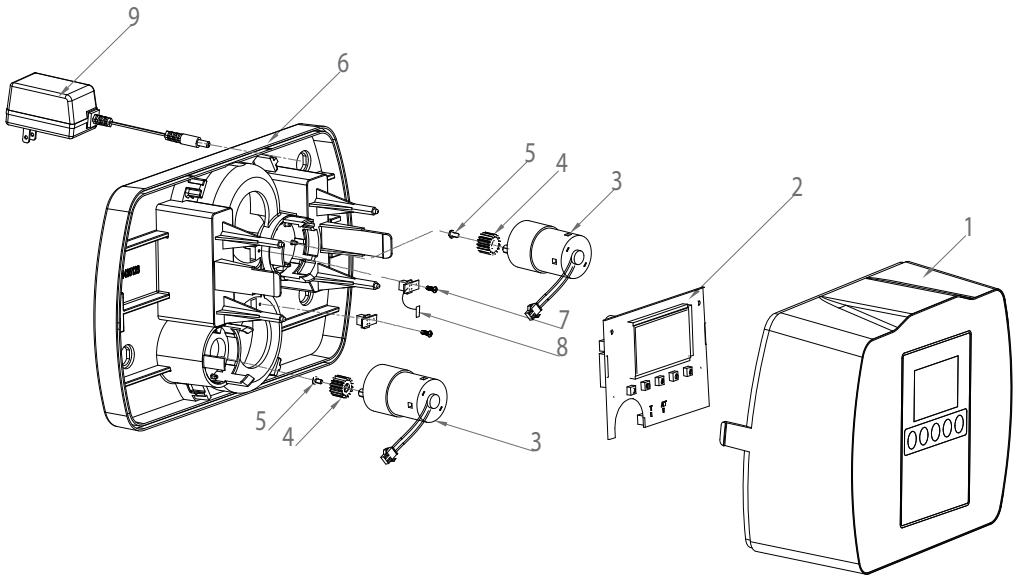


Upper piston reseting

Lower piston reseting

Release the BASIC SET UP Button,

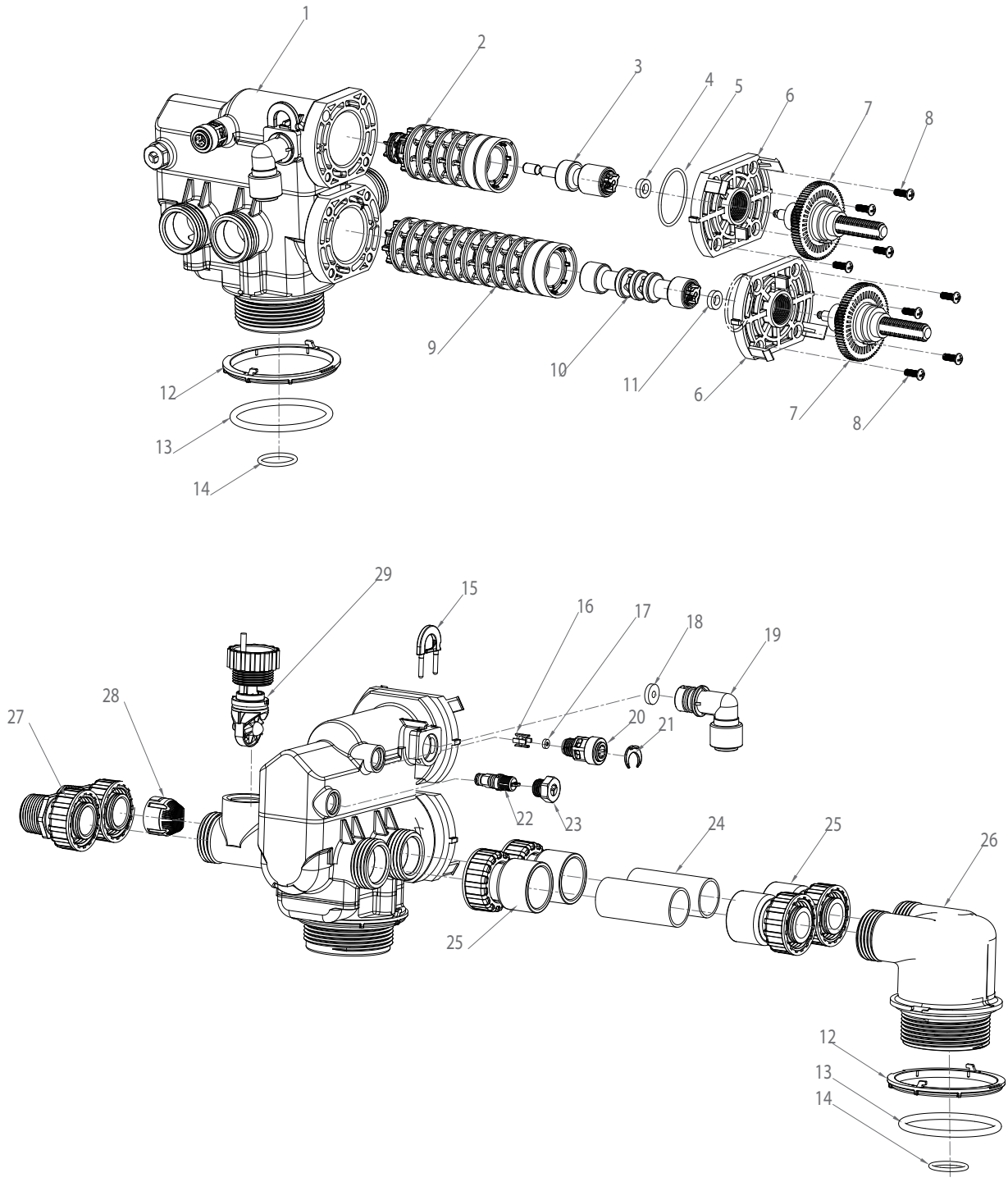
The parameters of the valve will be
restored back to factory default settings.
Valve #1 (upper piston) will return to SERVICE position and
Valve #2 (lower piston) will return to STAND-BY position.



Item No.	Quantity	Part No.	Description
1	1	A-90014	Valve Cover, 910/950
2	1	A-90018-910	Electronic Board, AQT-910XT
		A-90018-950	Electronic Board, AQT-950XT
3	1	A-90017	Motor for XT, 12V, AQT-910/950
4	1	A-70016	Pinion Gear
5	1	A-70015	Screw
6	4	A-90025	Backplate, 910/950
7	1	A-70013	Screw
8	1	A-90012	Optical Sensor, AQT-910/950
9	1	A-70024	Transformer, 12V, AQT-580/581/910/950

AQT-910XT Body

Assembly

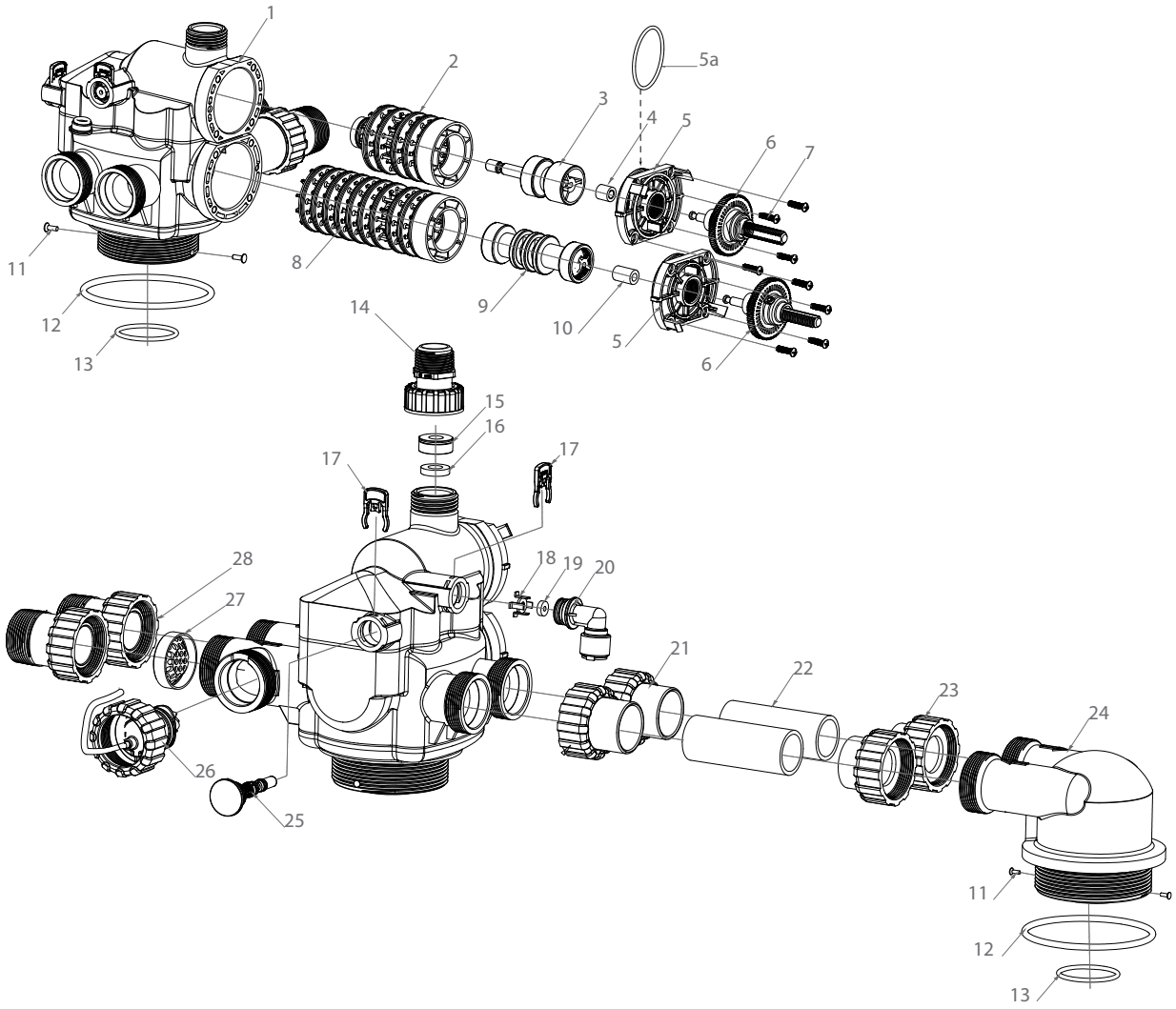


Item No.	Quantity	Part No.	Description
1	1	A-91001-100	Body, AQT-910XT, 2.5" base
2	1	A-91002-01	Seals and Spacers Stack, AQT-910XT, Upper
3	1	A-91003-01	Piston Assy, AQT-910XT, Upper
4	1	A-91004-01	Piston Sleeve, AQT-910XT, Upper
5	2	A-91005	Oring, End Plug, AQT-910XT (2 pieces kit)
6	2	A-91006	Gear Bracket, Upper & Lower
7	2	A-91007	Control Gear, Upper & Lower
8	8	A-91008	Screw, Gear Bracket
9	1	A-91002-02	Seals and Spacers Stack, AQT-910XT Lower
10	1	A-91003-02	Piston Assy, AQT-910XT, Lower
11	1	A-91004-02	Piston Sleeve, AQT-910XT, Lower
12	2	A-91009	Seal Ring, 2.5" Base
13	2	A-91010	O-ring, Valve Base (2.5" Base)
14	2	A-91011	O-ring, Riser Pipe (2.5" Base)
15	1	A-50011	Locking clip, Drain QC
16	1	A-91013	BLFC Retainer
17	1	*	BLFC (must see BLFC Table)
18	1	**	DLFC (must see DLFC table)
19	1	A-56247	Drain, QC, 1/2" Tubing
20 & 21	1	A-13244	Brine Line, QC, 3/8" Tubing
22	1	***	Injector Assy (Must See Injector Table)
23	1	A-91014	Injector Plug
24	2	A-91015	1" PVC Tube (2 pieces)
25	4	A-91016	Quick Adapters, Straight, 1" (4 pcs kit), AQT-910
26	1	A-91017	In/Out 2nd Tank Head
27	2	A-91018	In/Out 1" Straight Connector, Main Valve (2 pieces kit)
28	1	A-91019	Flow Screen
29	1	A-91020	Turbine Meter Assy, AQT-910XT Valves

*** BLFC Button Options**	
A-12094	BLFC Button - 0.25 gpm
A-12095	BLFC Button - 0.5 gpm
A-12097	BLFC Button - 1.0 gpm
**** DLFC Button/Washer Options**	
A-12085	DLFC Button - 1.2 gpm
A-12084	DLFC Button - 1.5 gpm
A-12087	DLFC Button - 2.0 gpm
A-12088	DLFC Button - 2.4 gpm
A-12089	DLFC Button - 3.0 gpm
A-12090	DLFC Button - 3.5 gpm
A-12091	DLFC Button - 4.0 gpm
A-12092	DLFC Button - 5.0 gpm
A-12098	DLFC Button - 7.0 gpm
***** Injector Options**	
A-10225-0-N	Injector Assy, #0, Red
A-10225-1-N	Injector Assy, #1, White
A-10225-2-N	Injector Assy, #2, Blue
A-10225-3-N	Injector Assy, #3, Yellow

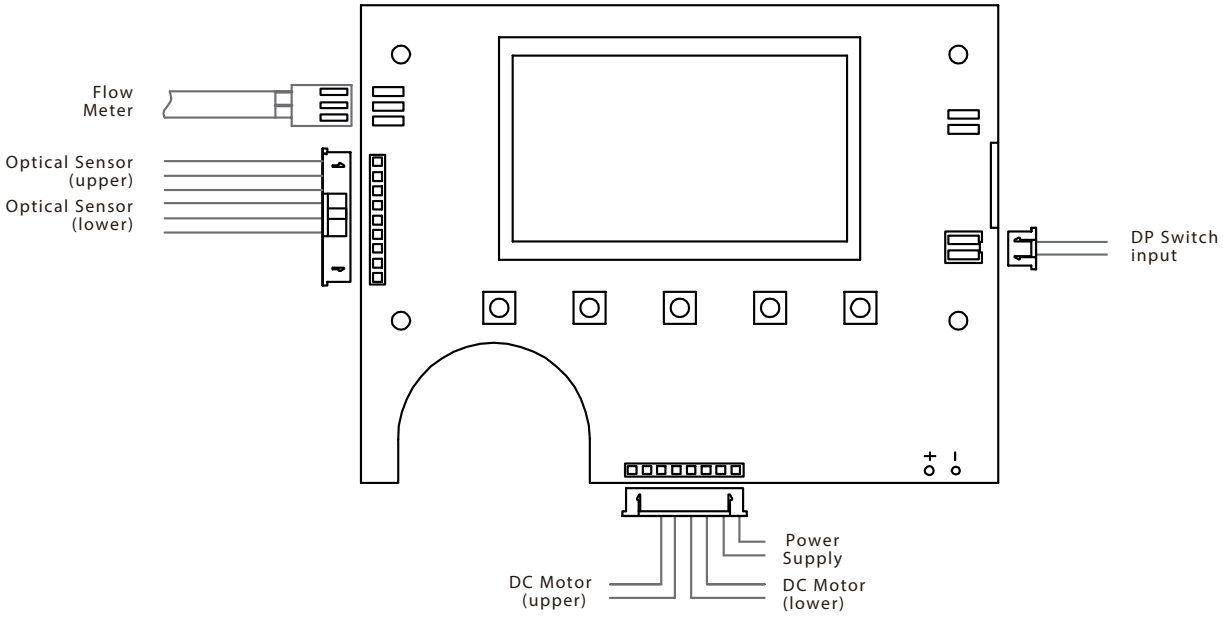
AQT-950XT Body

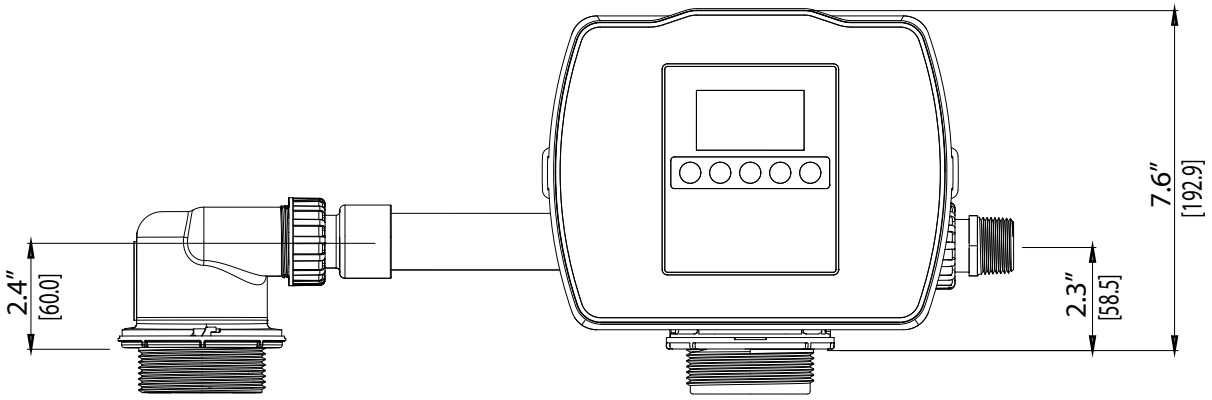
Assembly



Item No.	Quantity	Part No.	Description
1	1	A-95001-150	Body, AQT-950XT, 4" base
2	1	A-95002-01	Seals and Spacers Stack, AQT-950XT, Upper
3	1	A-95003-01	Piston Assy, AQT-950XT, Upper
4	1	A-95004-01	Piston Sleeve, AQT-950XT, Upper
5a	2	A-95005	Oring, End Plug, AQT-950XT (2 pieces kit)
5	2	A-95006	Gear Bracket, Upper & Lower
6	2	A-91007	Control Gear, Upper & Lower
7	8	A-95008	Screw, Gear Bracket
8	1	A-95002-02	Seals and Spacers Stack, AQT-950XT Lower
9	1	A-95003-02	Piston Assy, AQT-950XT, Lower
10	1	A-95004-02	Piston Sleeve, AQT-950XT, Lower
11	4	A-95009	Base, Screw
12	2	A-95010	O-ring, Valve Base (4.0" Base)
13	2	A-95011	O-ring, Riser Pipe (4.0" Base)
14	1	A-90247	Drain Connector, 1", Straight
15	1	A-71019	DLFC Retainer
16	1	**	DLFC (must see DLFC table)
17	1	A-71014	U Clip, Red, Brine and Injector
18	1	A-71016	BLFC Retainer
19	1	*	BLFC (must see BLFC Table)
20	1	A-71013-12	Brine Connector, 1/2", Elbow
21	2	A-95016	Quick Adapters, Male, Body, 1.5" (2 pcs kit)
22	2	A-95015	1" PVC Tube (2 pieces)
23	2	A-95016-M	Quick Adapters, Plain, 2nd Head, 1.5" (2 pcs kit)
24	1	A-95017	In/Out 2nd Tank Head, 1.5"
25	1	***	Injector Assy (Must See Injector Table)
26	1	A-95020	Turbine Meter Assy, AQT-950XT Valves
27	1	A-95019	Flow Screen
28	2	A-95018	In/Out 1.5" Straight Connector, Main Valve (2 pieces kit)

*** BLFC Button Options**	
A-71015-01	BLFC Button, 1.00 gpm
A-71015-02	BLFC Button, 2.00 gpm
A-71015-03	BLFC Button, 3.00 gpm
A-71015-04	BLFC Button, 4.00 gpm
A-71015-05	BLFC Button, 5.00 gpm
**** DLFC Button/Washer Options**	
A-17938	DLFC Washer Flow 2.4 gpm
A-17939	DLFC Washer Flow 3.2 gpm
A-17940	DLFC Washer Flow 3.5 gpm
A-17941	DLFC Washer Flow 4 gpm
A-17942	DLFC Washer Flow 5 gpm
A-17943	DLFC Washer Flow 8 gpm
A-17944	DLFC Washer Flow 9 gpm
A-16529	DLFC Washer Flow 10 gpm
A-16735	DLFC Washer Flow 12 gpm
A-16736	DLFC Washer Flow 15 gpm
A-16528	DLFC Washer Flow 20 pm
A-16737	DLFC Washer Flow 25 gpm
A-16738	DLFC Washer Flow 32 gpm
***** Injector Options**	
A-12540-3	Injector, #3, White
A-12540-4	Injector, #4, Green
A-12540-5	Injector, #5, Blue


Flow
Meter
Optical Sensor
(upper)
Optical Sensor
(lower)
DP Switch
input
Power
Supply
DC Motor
(upper)
DC Motor
(lower)


2.4″
[60.0]
7.6″
[192.9]
2.3″
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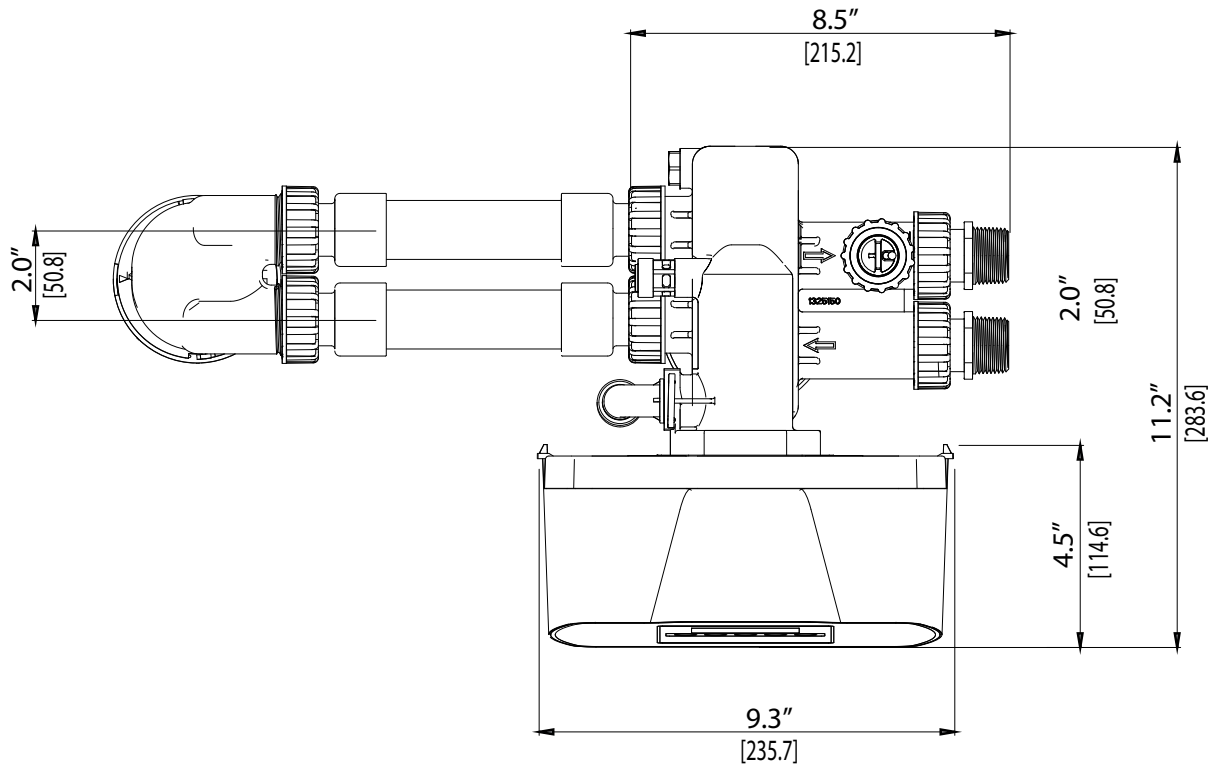
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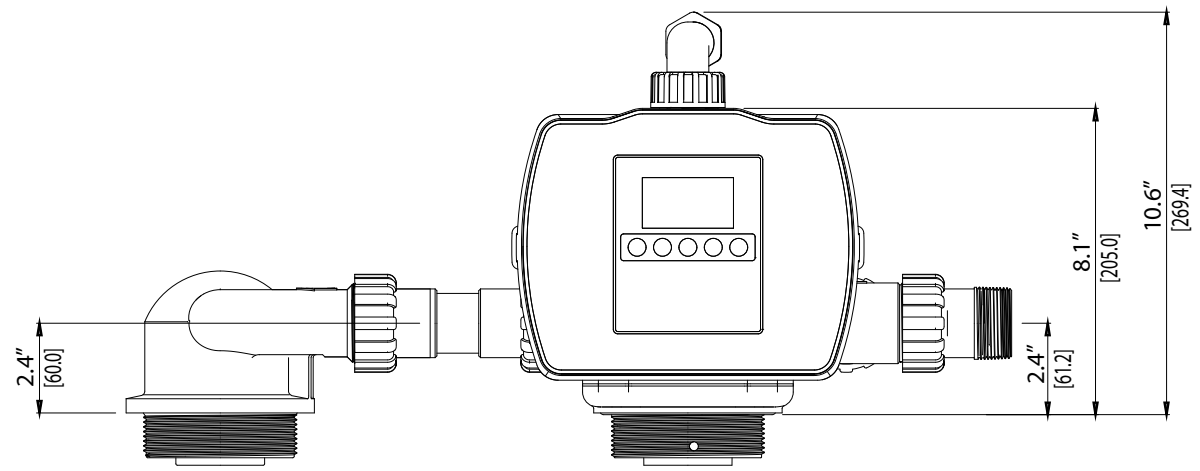
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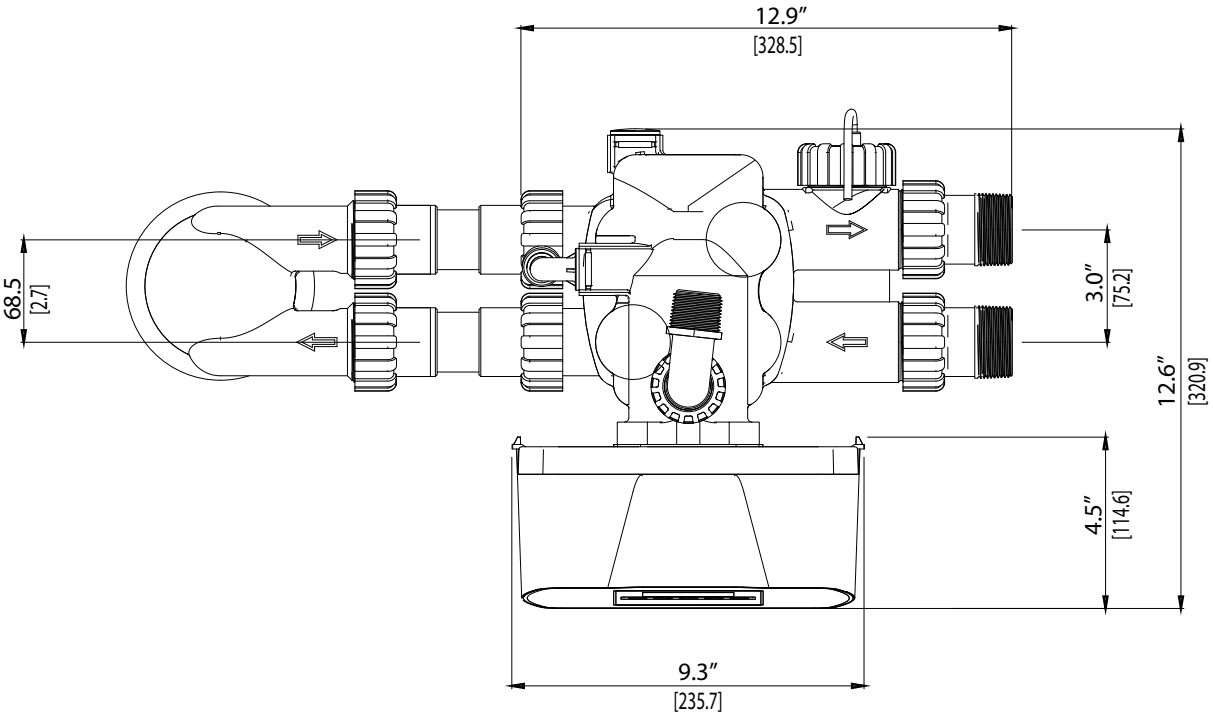
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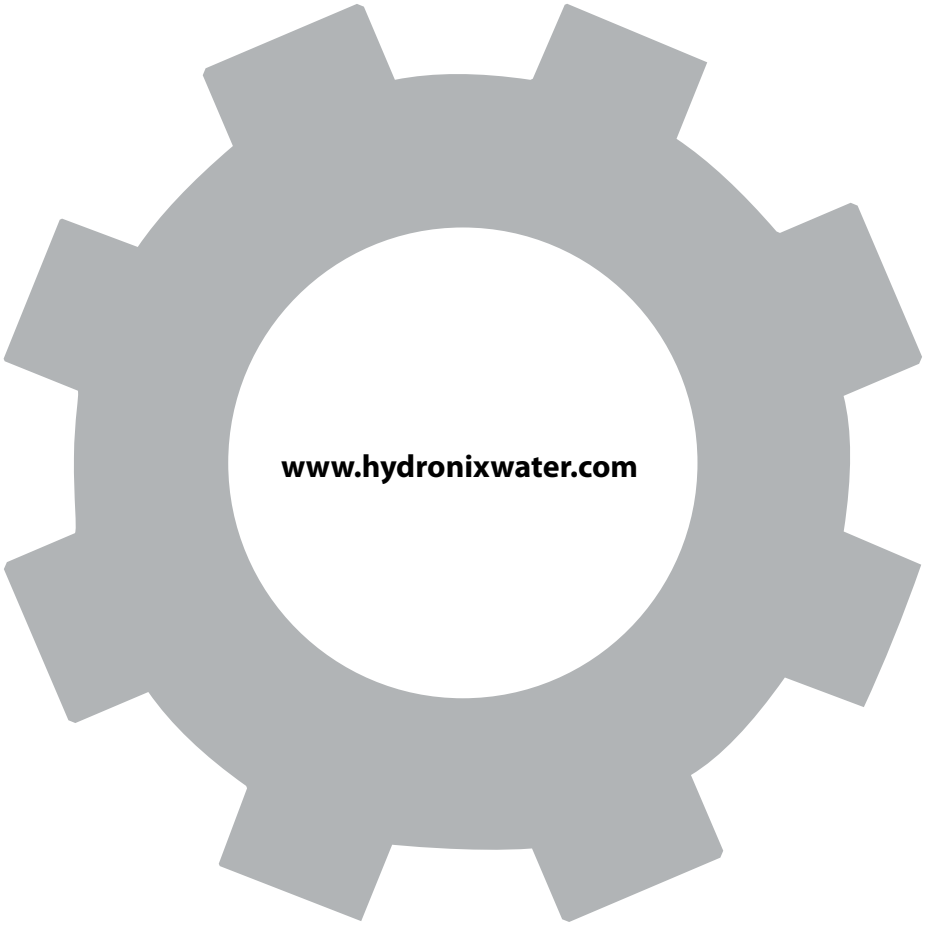
9.3″
[235.7]

Problem	Cause		Correction	
1) The control fails to regenerate automatically.	A)	Disconnected meter cable.	A)	Reconnect the meter cable.
	B)	Transformer damaged.	B)	Replace the transformer.
	C)	Electronic controller or sensor damaged.	C)	Replace or repair.
2) The treated water hardness is higher than setting.	A)	Bypass valve is not in service position.	A)	Adjust the bypass valve to service position.
	B)	The inlet and outlet water pipe are installed in reverse.	B)	Install the water inlet and water outlet pipe correctly.
	C)	The raw water hardness is higher than setting.	C)	Reset the inlet hardness.
	D)	Resin is polluted and invalid.	D)	Contact a professional to change the resin.
	E)	Brine concentration or quantity.	E)	Keep brine tank full of salt at all times. Clean it yearly. If using a salt grid plate, insure refill water is above the grid plate.
3) Softener fails to brine draw.	A)	Plugged drain line or BLFC.	A)	Clean drain line and flow control.
	B)	Plugged injector.	B)	Clean or replace the injector and screen.
	C)	No water in the brine tank.	C)	Check for blockage in BLFC. Ensure Safety float is not stuck.
4) Salty taste for treated water.	A)	Low pressure for inlet water.	A)	Install booster pump to increase pressure of inlet water.
	B)	Drainage pipeline is blocked.	B)	Clean up the blockage.
5) Continuous flow to drain.	A)	Internal control leak.	A)	Contact a professional to repair.
	B)	Piston jammed with brine.	B)	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