

HAGUE
Twin Intermediate Line
TIL



INSTALLATION AND SERVICE MANUAL VERSION 1.0

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PREFACE

Congratulations on your decision to place your confidence in a superior Hague water treatment appliance.

Recognized nationwide for built-in quality, dependability, and ease of service, these appliances represent state-of-the-art in home water treatment.

While your appliance should be installed and serviced by a professional Hague dealer, important information is contained in this manual which will help you attain the maximum benefit and enjoyment from your particular model.

We urge you to read this information carefully and review it again at any time a malfunction may occur. In most cases, this review will uncover minor problems that you can correct yourself, thereby saving you time and the expense of an unnecessary service call.

HOW TO GET THE MAXIMUM EFFICIENCY FROM YOUR TIL[®] APPLIANCE

1. Maintain salt level at least one-third full; use solar salt or pellets and purchase a clean grade of salt. Use one or the other; do not mix pellets and solar salt.
2. Should your electricity be turned off for any reason for more than 16 hours, reset the time of day according to instructions.
3. Allow the appliance to regenerate at a time when the water is not being used. If you have more than one appliance, allow two hours between each regeneration.
4. Protect your **TIL[®]** appliance, including the drain line, from freezing.
5. Should dirt, sand or large particles be present in your water supply, it is important that you consult your Hague dealer to determine the appropriate treatment method that will eliminate this problem.
6. Bypass the appliance if well, plumbing, or pump work is required, and turn on outside tap until water runs clear before putting the appliance back into service.

Your **TIL[®]** appliance may be disinfected with 5.25% sodium hypochlorite, which is the active ingredient in household bleach. To disinfect your appliance, use the chart below to find the suggested amount to use for your specific model. Add it to the brine well of the brine tank. (The brine tank should have water in it to permit the solution to be carried into the softener.) Initiate a manual regeneration.

EXAMPLE:

T-48 = 1.0 oz. Chlorine	T-48CX = 1.2 oz. Chlorine
T-60 = 1.2 oz. Chlorine	T-60CX = 1.5 oz. Chlorine
T-80 = 1.5 oz. Chlorine	T-80CX = 1.7 oz. Chlorine
T-96 = 1.8 oz. Chlorine	T-96CX = 2.0 oz. Chlorine
T-128 = 2.5 oz. Chlorine	T-128CX = 3.0 oz. Chlorine
T-210 = 4.0 oz. Chlorine	T-210CX = 4.5 oz. Chlorine

OPERATIONAL, MAINTENANCE AND REPLACEMENT REQUIREMENTS ARE ESSENTIAL FOR THE PRODUCT TO PERFORM TO SPECIFICATIONS.

PRE-INSTALLATION CHECK LIST

1. Water Pressure - Not less than 20 PSI, 30 PSI for T-128, T-128CX, T-210 and T-210CX.
2. Service Flow Rate - 5 G.P.M. recommended as minimum.
3. Drain - Drain the appliance to the floor drain or washer drain. To prevent back-siphoning, the installer must provide an adequate air gap or a siphon break.

4. Electricity - Use standard 110 volt A.C. (optional 220 volt available).
5. Water Quality - If water supply contains sulfur, bacteria, iron bacteria, tannins, sand, algae, oil, acid, salt or other unusual substances, special equipment must be installed ahead of the TIL[®] appliance.

SOME DO'S

1. Do install after the pressure tank and not between the well pump and pressure tank.
2. Do comply with all local plumbing and electrical codes.
3. Do install pressure reducing valve if inlet pressure exceeds 90 PSI.
4. Do examine the inlet line from the pressure tank to appliance on well water with iron (recommended minimum inlet pipe size 3/4" I.D.). On municipal water, recommended minimum inlet pipe size is 1/2" I.D.
5. Do install gravity drain on salt storage tank.
6. Do secure drain lines on appliance and at drain outlet.
7. A minimum of 10 feet of 3/4" pipe from the outlet of the TIL[®] manifold to the inlet of the hot water heater is recommended.
8. Do install the drain lines so that there is a 2" air gap between the drain lines and the drain receptacle.
9. Do maintain 9" between the valves for drive end cap clearance.

SOME DON'TS

1. Do not install if previous items are not satisfactory.
2. Do not install if incoming or outlet piping water temperature exceeds 120 °F.
3. Do not allow soldering torch heat to be transferred to valve components or plastic parts.

INSTALLATION and START UP

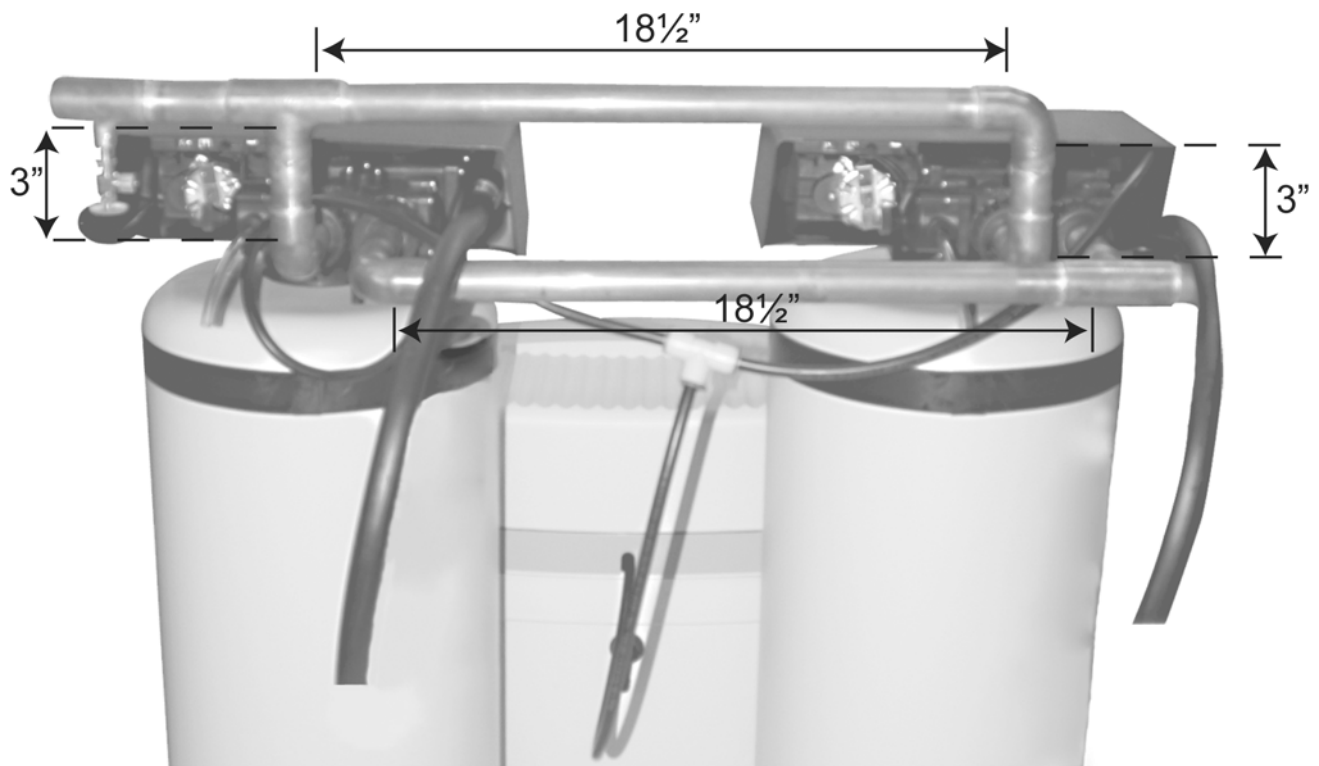
The TIL[®] consists of two media tanks and a single brine tank. Each media tank includes a control valve with an integrated bypass and an electronic controller.

Set the media tanks on a flat, hard surface and use a level to ensure that the tanks are plumb with the floor. Leave a minimum of 9 inches between the control valves to allow for future serviceability of the drive end assembly. Use a 24" carpenter level or a suitable length of straight pipe to square up the control valves by placing the level on the bypass connector bosses of both valves to line them up perfectly straight.

Installation Tip

To prepare our recommended "Equa-Flow" balanced piping manifold design for the TIL[®], follow these recommendations.

- A. Cut 1-1/4" off of two of the 1" copper adapters P/N 90258. This will provide clearance for the outlet manifold fittings.
- B. Cut two lengths of 1" copper pipe to 18-1/2".
- C. Cut two lengths of 1" copper pipe to 3".
- D. You will need four 1" copper elbow fittings and two 1" tee fittings.



INSTALLATION and START UP

Place the appliance in the desired location. Turn off the electricity and/or water supply to the water heater. For gas water heaters, turn the gas cock to "Pilot." Make sure the inlet, outlet and drain connections meet the applicable local codes. Check the arrows on the bypass valves to be sure the water flows in proper direction. Caution: Do not plumb the appliance in backwards.

The drain lines must be a minimum of 1/2" I.D. tubing and should make the shortest run to a suitable drain. Maintain a minimum of 2" (50 mm) air gap to prevent back siphoning.

Connect the brine tank to the valve heads with the flexible 3/8" plastic tube and tee fitting included with the appliance. Be sure to insert the plastic insert in the end of the tube.

Connect the Overflow Line to the brine tank. If the brine tank is filled with too much water, or if there is a malfunction, an overflow line will direct excess water to drain.

The overflow line must end at a drain that is at least 3" lower than the bottom of the overflow fitting.

Attach the drain lines. Route the drain lines to a floor drain, laundry tub or other suitable waste receptor. Maintain a minimum of 2" (50 mm) air gap between the drain line and the flood level rim of the waste receptor to prevent back siphoning.

Place the valves in the bypass position and turn on the main water supply. Open the nearest cold water faucet to flush the plumbing of any excess soldering flux, air, or any other foreign material.

Close the faucet and check for leaks. If leaks are found, turn off the main water supply and open the nearest cold water faucet to depressurize the water line.

Close the faucet to eliminate siphoning action. Repair leaks. Place the bypasses in the "service" position. Slowly open the main water supply valve and fill the appliance. Then open the nearest cold water faucet to purge air out of the appliance. Close faucet.

Connect transformer power cords to the back of the controllers.

Plug in transformers.

Program the Appliance Controllers as outlined on pages 12 - 15.

Add water to the brine tank. Fill to a minimum of 2" above the grid plate. Make sure that the salt dosage is set as recommended for the application. After the first regeneration, the appliance will automatically refill the correct amount of water into the brine tank.

Put the lead valve into a manual regeneration and inspect for proper operation. Allow the appliance to draw all the water out of the brine cabinet until the air check sets. Then advance to the brine refill position by using the Change & Select buttons simultaneously. Allow the controller to complete the brine refill sequence of the program and advance to home position. This will replace the necessary volume of water relative to the salt setting. Repeat the procedure with the lag valve.

Fill the brine tank with salt.* Note: Do not mix pellet with solar salt!

* When using potassium chloride as an alternative to sodium chloride, select the potassium option during programming. Note: We do not recommend using potassium chloride when iron is present in the raw water supply.

Open the inlet valve and turn on the electricity to the water heater. For gas heaters, return gas cock to "ON." To complete the installation, open a cold water tap and allow the appliance to flush for 20 minutes. Verify flow rate on controllers, indicating water flow. Make sure the bypass valves are left in the "service" position.

Replace covers.

ENGINEERING SPECIFICATIONS

HAGUE TWIN INTERMEDIATE LINE DUAL MODE 5-BUTTON CONTROLLER

	T-48	T-60	T-80	T-96	T-128	T-210
Iron in solution-clear water (ppm)	4 ¹	6 ¹	6 ¹	8 ¹	10 ¹	10 ¹
Maximum compensated hardness (grains)	60	70	90	110	120	130
Minimum pH	7	7	7	7	7	7
Maximum allowable chlorine (ppm) ²	1	1	1	1	1	1
#1 Setting: Capacity (grains) @ 2.5 lbs salt/cu.ft.	10,100	--	16,200	20,100	26,800	44,300
#2 Setting: Capacity (grains) @ 3.8 lbs salt/cu.ft.	13,700	18,600	23,000	27,500	36,700	60,600
#3 Setting: Capacity (grains) @ 5.0 lbs salt/cu.ft.	16,900	22,200	28,000	33,500	44,600	73,700
#4 Setting: Capacity (grains) @ 7.0 lbs salt/cu.ft.	21,000	27,700	34,800	41,600	55,400	91,500
#5 Setting: Capacity (grains) @ 15 lbs salt/cu.ft.	24,100	32,000	40,100	48,000	64,000	105,000
Brine line flow control refill (gpm)	.5	.5	.5	.5	.5	.5
Media tank size (inches) Dia. x Ht.	8 x 44	9 x 48	10 x 47	10 x 54	12 x 52	14 x 65
High Capacity Resin amount (cu.ft.)	.75	1.00	1.25	1.5	2.0	3.3
Media type	HCR	HCR	HCR	HCR	HCR	HCR
Bed depth	28	32	33	35	34	43
Freeboard (inches)	16	16	16	19	18	22
Water pressure (min.-max. psi)	20-120	20-120	20-120	20-120	30-120	30-120
Water temperature (min.-max. degrees F)	33-120	33-120	33-120	33-120	33-120	33-120
Minimum water volume for backwash	1.5	2.0	2.4	2.4	4.0	5.0
Flow rate gpm @ 15 psi drop, 1 tank/2 tank	9.25/18.5	10.5/21	12.5/25	12/24	16/32	18.5/37
Pipe size (inches)	1"	1"	1"	1"	1"	1"
Height (inches)	48"	52"	51"	58"	56"	69"
Floor space (inches)	15" x 23"	18" x 28"	18" x 29"	18" x 29"	26" x 36"	30" x 38"
Brine or solution tank size (inches)	15" x 38"	18" x 33"	18" x 33"	18" x 33"	24" x 50"	24" x 50"
Brine or solution tank capacity (lbs.)	200	325	325	325	640	640
Water per regen(lowest available salt setting, gal.)	19.5	28.5	31	32	54	73
Time per regen (lowest available salt setting, min.)	21	31	27	30	21	28
Shipping weight (approx. lbs.)	195	256	280	320	380	550
Washed Quartz Underbed (lbs.) per tank	10	12	14	14	20	30

STANDARD FEATURES

Metered or timed valve. TIL[®] distributor. High capacity resin. Brine tank with safety shutoff and grid plate. Bypass valve with test port and blending valve.

LEGEND:

¹ When iron is present in the raw water supply, regeneration frequency cannot exceed 96 hours. A #4 salt setting is required.

² If iron and chlorine are detected in the same water supply, pretreatment is necessary to remove the iron.

NA: No Application.

ENGINEERING SPECIFICATIONS

HAGUE TWIN CX INTERMEDIATE LINE

DUAL MODE 5-BUTTON CONTROLLER

	T-48CX ¹	T-60CX ¹	T-80CX ¹	T-96CX ¹	T-128CX ¹	T-210CX ¹
Iron in solution-clear water (ppm)	NA	NA	NA	NA	NA	NA
Maximum compensated hardness (grains)	60	70	90	110	120	130
Minimum pH	7	7	7	7	7	7
Maximum allowable chlorine (ppm)	3	3	3	3	3	3
#1 Setting: Capacity (grains) @ 2.5 lbs salt/cu.ft.	10,100	--	16,200	20,100	26,800	44,300
#2 Setting: Capacity (grains) @ 3.8 lbs salt/cu.ft.	13,700	18,600	23,000	27,500	36,700	60,600
#3 Setting: Capacity (grains) @ 5.0 lbs salt/cu.ft.	16,900	22,200	28,000	33,500	44,600	73,700
#4 Setting: Capacity (grains) @ 7.0 lbs salt/cu.ft.	21,000	27,700	34,800	41,600	55,400	91,500
#5 Setting: Capacity (grains) @ 15 lbs salt/cu.ft.	24,100	32,000	40,100	48,000	64,000	105,000
Brine line flow control refill (gpm)	.5	.5	.5	.5	.5	.5
Media tank size (inches) Dia. x Ht.	8 x 44	9 x 48	10 x 47	10 x 54	12 x 52	14 x 65
High Capacity Resin amount (cu.ft.)	.9	1.2	1.5	1.8	2.4	4.0
Media type	HCR/HCM	HCR/HCM	HCR/HCM	HCR/HCM	HCR/HCM	HCR/HCM
Bed depth	33	37	36	42	40	51
Freeboard (inches)	11	11	11	12	12	14
Water pressure (min.-max. psi)	20-120	20-120	20-120	20-120	30-120	30-120
Water temperature (min.-max. degrees F)	33-120	33-120	33-120	33-120	33-120	33-120
Minimum water volume for backwash	1.5	2.0	2.4	2.4	4.0	5.0
Flow rate gpm @ 15 psi drop, 1 tank/2 tank	9/18	10.25/20.5	12.25/24.5	11.75/23.5	15.5/31	18/36
Pipe size (inches)	1"	1"	1"	1"	1"	1"
Height (inches)	48"	52"	51"	58"	56"	69"
Floor space (inches)	15" x 23"	18" x 28"	18" x 29"	18" x 29"	26" x 36"	30" x 38"
Brine or solution tank size (inches)	15" x 38"	18" x 33"	18" x 33"	18" x 33"	24" x 50"	24" x 50"
Brine or solution tank capacity (lbs.)	200	325	325	325	640	640
Water per regen(lowest available salt setting, gal.)	19.5	28.5	31	32	54	73
Time per regen (lowest available salt setting, min.)	21	31	27	30	21	28
Shipping weight (approx. lbs.)	203	266	292	336	400	590
Washed Quartz Underbed (lbs.) per tank	10	12	14	14	20	30

STANDARD FEATURES

Metered or timed valve. TIL[®] distributor. High capacity resin and hydrochar media for chlorine taste and odor reduction. Brine tank with safety shutoff and grid plate. Bypass valve with test port and blending valve.

LEGEND:

¹ This model is intended for municipally supplied, chlorinated water only.

NA: No Application.

TIL[®] SETTING CHART

HAGUE TWIN INTERMEDIATE LINE MODE 1 & 2 SETTINGS

Dual mode five button controller

SALT SETTING #1

	T-48*	T-60*	T-80*	T-96*	T-128*	T-210*
Backwash 1 (minutes)	0	—	0	0	0	0
Brine and slow rinse	11	—	17	20	11	18
Backwash 2 (minutes)	10	—	10	10	10	10
Salt (lbs) / Capacity	1.9/10,100	—	3.1/16,200	3.8/20,100	5.0/26,800	8.3/44,300

SALT SETTING #2

Backwash 1 (minutes)	0	0	0	0	0	0
Brine and slow rinse	16	21	27	30	17	28
Backwash 2 (minutes)	10	10	10	10	10	10
Salt (lbs) / Capacity	2.8/13,700	3.8/18,600	4.8/23,000	5.7/27,500	7.6/36,700	12.5/60,600

SALT SETTING #3

Backwash 1 (minutes)	0	0	0	0	0	0
Brine and slow rinse	21	26	34	40	22	37
Backwash 2 (minutes)	10	10	10	10	10	10
Salt (lbs) / Capacity	3.8/16,900	5/22,200	6.3/28,000	7.5/33,500	10/44,600	16.5/73,700

SALT SETTING #4

Backwash 1 (minutes)	0	0	0	0	0	0
Brine and slow rinse	28	37	47	56	31	51
Backwash 2 (minutes)	10	10	10	10	10	10
Salt (lbs) / Capacity	5.3/21,000	7/27,700	8.8/34,800	10.5/41,600	14/55,400	23.1/91,500

SALT SETTING #5

Backwash 1 (minutes)	0	0	0	0	0	0
Brine and slow rinse	61	80	99	99	67	99
Backwash 2 (minutes)	10	10	10	10	10	10
Salt (lbs) / Capacity	11.3/24,100	15/32,000	18.8/40,100	22.5/48,000	30/64,000	49.5/105,000

* When iron is present in the water supply, regeneration frequency cannot exceed 96 hours. A #4 salt setting is required.

TIL[®] SETTING CHART

HAGUE TWIN CX INTERMEDIATE LINE MODE 1 & 2 SETTINGS

Dual mode five button controller

SALT SETTING #1

	T-48CX ¹	T-60CX ¹	T-80CX ¹	T-96CX ¹	T-128CX ¹	T-210CX ¹
Backwash 1 (minutes)	0	—	0	0	0	0
Brine and slow rinse	11	—	17	20	11	18
Backwash 2 (minutes)	10	—	10	10	10	10
Salt (lbs) / Capacity	1.9/10,100	—	3.1/16,200	3.8/20,100	5.0/26,800	8.3/44,300

SALT SETTING #2

Backwash 1 (minutes)	0	0	0	0	0	0
Brine and slow rinse	16	21	27	30	17	28
Backwash 2 (minutes)	10	10	10	10	10	10
Salt (lbs) / Capacity	2.8/13,700	3.8/18,600	4.8/23,000	5.7/27,500	7.6/36,700	12.5/60,600

SALT SETTING #3

Backwash 1 (minutes)	0	0	0	0	0	0
Brine and slow rinse	21	26	34	40	22	37
Backwash 2 (minutes)	10	10	10	10	10	10
Salt (lbs) / Capacity	3.8/16,900	5/22,200	6.3/28,000	7.5/33,500	10/44,600	16.5/73,700

SALT SETTING #4

Backwash 1 (minutes)	0	0	0	0	0	0
Brine and slow rinse	28	37	47	56	31	51
Backwash 2 (minutes)	10	10	10	10	10	10
Salt (lbs) / Capacity	5.3/21,000	7/27,700	8.8/34,800	10.5/41,600	14/55,400	23.1/91,500

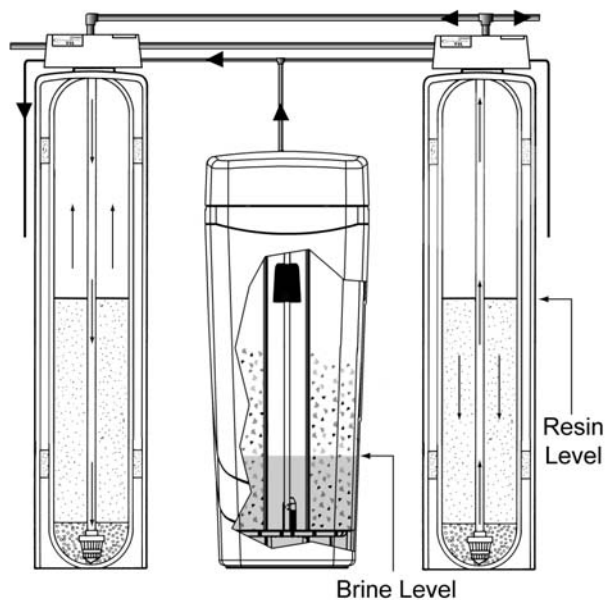
SALT SETTING #5

Backwash 1 (minutes)	0	0	0	0	0	0
Brine and slow rinse	61	80	99	99	67	99
Backwash 2 (minutes)	10	10	10	10	10	10
Salt (lbs) / Capacity	11.3/24,100	15/32,000	18.8/40,100	22.5/48,000	30/64,000	49.5/105,000

¹ This model is designed for use on chlorinated, municipal water supplies only. Reduces chlorine tastes and odors and most man-made pollutants.

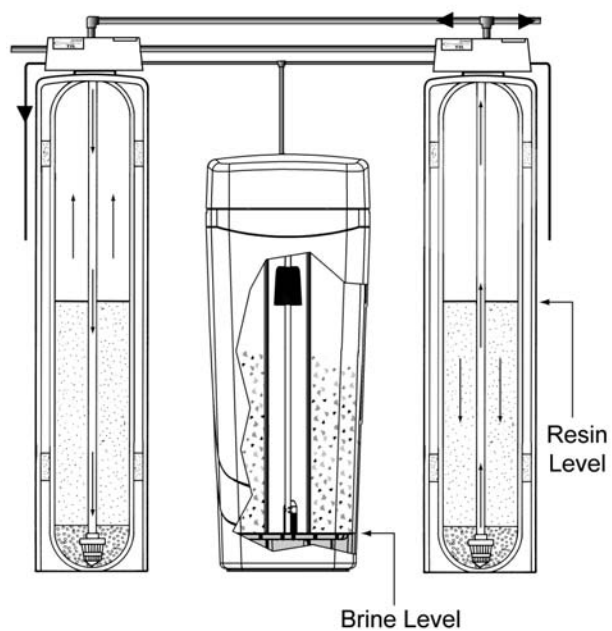
CYCLES

Cycle 1



1. **Brine.** Brine is drawn out of the brine cabinet and up through the media tank, cleaning the resin bed and releasing accumulated hardness and iron.

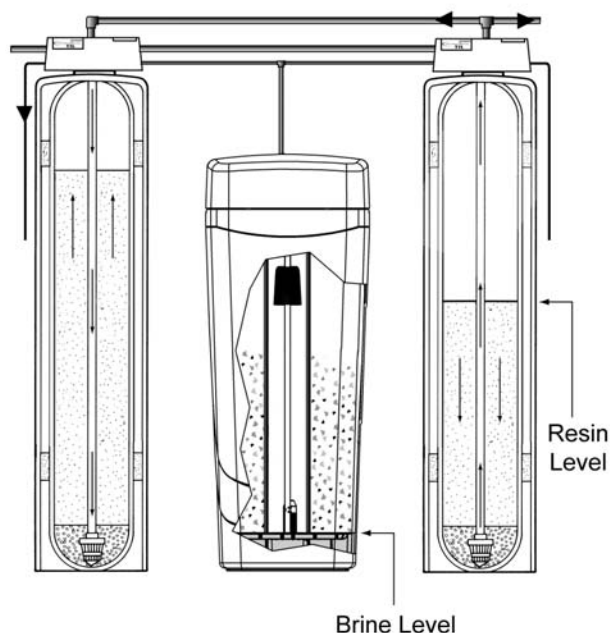
Cycle 2



2. **Slow rinse.** A slow up-flow rinse process then flushes out the brine, hardness and iron.

CYCLES

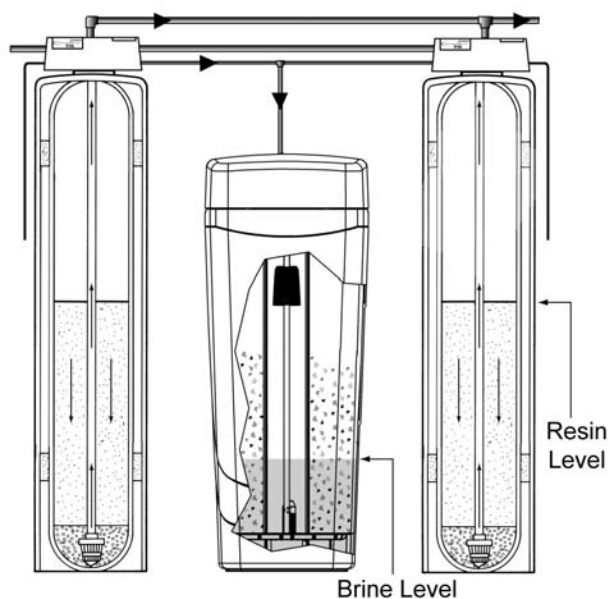
Cycle 3



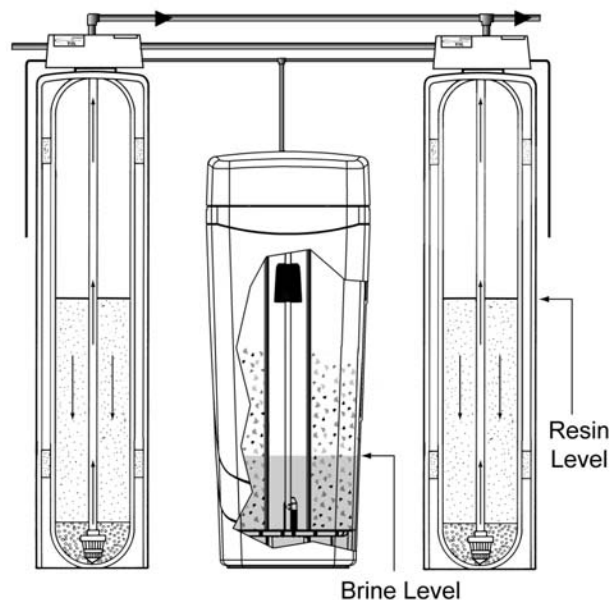
3. **Up-flow backwash.** This up-flow backwash flushes out any remaining brine solution and sediment from cycle 2.

4. **Downflow soft water brine refill.** Soft water is directed to the brine cabinet to prepare the brine for the next regeneration sequence.

Cycle 4



Cycle 5



5. **Return to service.** Regeneration is complete and the appliance is returned to normal operation.

SETTING & USING THE TIL[®] CONTROLLERS

SERVICE SETTINGS

This section is recommended for qualified service personnel only. The appliance control must be set correctly for proper performance.

REGENERATE

FUNCTION: Multi-purpose. 1.) Used to put the appliance into an immediate regeneration. Press and hold (approximately 5 seconds) until display changes to "Going to 1". The appliance is now in regeneration and will return to "Gal. Remain" after completion of all cycles. 2.) Used to "speed up" or toggle through all the regeneration cycles.

CUSTOMER SETTINGS

This section is recommended for qualified service personnel only. Must be set correctly for proper performance.

CHANGE

FUNCTION: Used to change values of parameters that can be set. Used in conjunction with SELECT button. Press and release the Select Digit button to move cursor one digit to the right of parameter that can be set. When cursor is at extreme right position, press again to reset cursor to extreme left position.

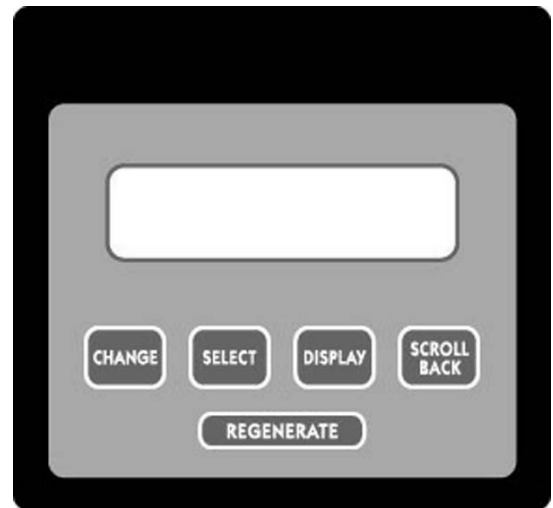


figure 1

SELECT

FUNCTION: Used to control cursor movement when in CUSTOMER & SERVICE SETTINGS modes. Used in conjunction with CHANGE button. Press and release the Select Digit button to move cursor one digit to the right of parameter that can be set. When cursor is at extreme right position, press again to reset cursor to extreme left position.

DISPLAY

FUNCTION: When pressed and held, "CUSTOMER SETTINGS" is displayed. Hold for 5 seconds and the customer programming mode is entered. Used simultaneously with the SELECT button to enter service settings program mode, press and hold both buttons for 5 seconds until "SERVICE SETTINGS" is displayed. (Note: both buttons must be pressed.)

SCROLL BACK

FUNCTION: Used to toggle back to the previous parameter setting in the event of a mistake in programming. This feature eliminates the need to toggle through the entire program to correct an input error.

CONTROL PANEL DISPLAY:

LCD DISPLAY

FUNCTION: Shows status of control; NORMAL OPERATING mode, SERVICE SETTINGS mode or CUSTOMER SETTINGS mode. It is very important to know which mode the control is in for proper operation.

WATER FLOWING INDICATOR

FUNCTION: Shown in the LCD display, it indicates that water is flowing through the TIL[®]. Flow rate is displayed in gallons per minute. This is useful for checking for proper plumbing and leaks.

SETTING & USING THE TIL[®] CONTROLLERS

Description Of The Two TIL[®] Operating Modes

CAUTION: Be sure the controller is firmly "locked" onto the drive end cap assembly. The four tabs on top of the drive end cap will allow the clips on the bottom of the controller case to lock onto the end cap tabs. See page 19.

MODE 1

TIMER MODE: Will regenerate based on frequency. Example: every 2 days or as specified up to 12 days. Time of regeneration can be set.

MODE 2

PATENTED SAVEMATIC - DEMAND DELAYED: Is based on actual water usage and total capacity of the appliance. Time of regeneration can be set. If total capacity is depleted before set regeneration time, a forced regeneration will occur.

Note: Mode 1 and 2 are equipped with capacity Gard. This ensures that you do not run out of conditioned water due to excess water usage.

THE FOLLOWING EXAMPLE takes you through the steps involved for setting the TIL[®] APPLIANCE CONTROL. If you follow these steps, you will set TIL[®]-48 for OPERATING MODE 2, DEMAND DELAYED operation. Mode 1 uses a similar procedure. It is necessary to enter the "SERVICE SETTINGS" first, followed by the "CUSTOMER SETTINGS". Press and hold the SELECT and DISPLAY buttons simultaneously for 5 seconds. The display will show, "Soft Vers. 01.0 Release both buttons.

Caution: To ensure that the two controllers do not initiate regeneration simultaneously, set the regeneration times 12 hours apart.

Example: Controller #1 - 2:00am
Controller #2 - 2:00pm

Set both controllers at the correct time of day.

- 1.00 Push the CHANGE DIGIT button until the correct language is displayed. In this example, set to: Set Language ENG.
- 2.00 Push the DISPLAY button to step to the next parameter. The display will show: **Units ENG**
- 2.00a Push the CHANGE button to toggle English/metric units of measure. For this example, set to: Units ENG.
- 3.00 Push the DISPLAY button to step to the next parameter. The display will show: **Mode 2** The "Mode #" is the number of the OPERATING MODE for which the systems control is set. For this example, leave at: Mode 2.
- 4.00 Push the DISPLAY button to step to the next parameter. The display will show: **Hard. Gr. 040** The 040 is the hardness number of the water tested. This number is to be the actual hardness reading and is not compensated for iron.
- 4.00a Push and release the SELECT button until the cursor (_) is positioned in the display as follows: **Hard. Gr. 040**. The cursor is now under the "ten" position.
- 4.00b Continue pushing the SELECT and CHANGE buttons until the desired hardness number is displayed. Example: **Hard. Gr. 025**
- 5.00 Push the DISPLAY button to step to the next parameter. The display will show: **Iron ppm 00**
This parameter is used to calculate a compensated hardness automatically.
- 5.00a Push the SELECT and CHANGE buttons until the desired iron number is displayed. Example: **Iron ppm 00**
- 6.00 Push the DISPLAY button to step to the next parameter. The display will show: **Mang. ppm 00**
- 6.00a Push the SELECT and CHANGE buttons until the desired manganese number is displayed. Example: **Mang. ppm 00**
- 6.00b Push the DISPLAY button to step to the next parameter. The display will show: **SALT = Sodium.**
WARNING! When iron and/or manganese is present in the water supply, do not use potassium chloride as a regenerant. Iron and/or manganese bacteria may develop and foul the conditioning media and may void the warranty.
- 6.00c Push the SELECT and CHANGE buttons until the desired regenerant is selected. EXAMPLE: Salt = Sodium.

SETTING & USING THE TIL[®] CONTROLLERS

- 7.00 Push the DISPLAY button to step to the next parameter. The display will show: **Comp. Hard. 00033**
This parameter is the calculated compensated hardness using the hardness, iron and manganese settings. The formula is (4 x each ppm iron) + (4 x each ppm manganese) + hardness = compensated hardness. This is not a parameter that can be set. The display should now read: **Comp. Hard. 00033**
- 8.00 Push the DISPLAY button to step to the next parameter. The display will show: **Capty. Gr. 28730**
This parameter is used to set the softening capacity of the appliance. (See WaterMax Engineering Specifications or setting charts for capacities based on salt usage.)
- 8.00a Push the SELECT and CHANGE buttons until the desired capacity number is displayed.
In this example, set to: **Capac. Gr. 21000**
- 9.00 Push the DISPLAY button to step to the next parameter. The display will show: **72-96hr Regen Yes**
This parameter, if set to "Yes", is used to force the appliance to regenerate every 96 hours if regularly scheduled regenerations based on water usage do not occur in 96 hours or less intervals. This should always be "yes" if iron is present in the water.
- 9.00a Push CHANGE button to toggle parameter value from "No" to "Yes". In this example, set to: **96hr Regen Yes**
- 10.00 Push the DISPLAY button to step to the next parameter. The display will show: **Backwash 1 01.0**
(See Mode 1 & 2 setting chart.) The "01.0" is the time, in minutes to the nearest tenth, for which the first backwash cycle can be set.
- 10.00a Push the SELECT and CHANGE buttons until the desired backwash time is displayed.
In this example, set to: **Backwash 1 00.0**
- 11.00 Push the DISPLAY button to step to the next parameter. The display will show: **Brine/Rinse 30.0**
The "30.0" is the time, in minutes to the nearest tenth, for which the first brine and slow rinse cycles can be set.
- 11.00a Push the SELECT and CHANGE buttons until the desired combined brine and slow rinse cycle time is displayed. In this example, set to: **Brine/Rinse 28.0**
- 12.00 Push the DISPLAY button to step to the next parameter. The display will show: **Backwash 2 05.0**
The "05.0" is the time, in minutes to the nearest tenth, for which the second backwash can be set.
- 12.00a Push the SELECT and CHANGE buttons until the desired backwash time is displayed.
In this example, set to: **Backwash 2 10.0**
- 13.00 Push the DISPLAY button to step to the next parameter. The display will show: **Salt lbs. 06.2**
This parameter sets the amount of salt to be used to achieve the capacity setting.
- 13.00a Push the SELECT and CHANGE buttons until the desired salt setting is displayed.
In this example, set to: **Salt lbs 05.3**
- 14.00 Push the DISPLAY button to step to the next parameter. The display will show: **Turbine Test NO**
This feature should only be used by qualified service personnel. It is intended to be used for diagnostic purposes only. **WARNING! Do not engage this feature.**
- 14.00a Push the SELECT and CHANGE buttons until the correct value is displayed.
In this example, set to: **Turbine Test NO**
- 15.00 Push the DISPLAY button to step to the next parameter. The display will show: **Reg. Tonight NO**
This parameter, if set to YES, will force a regeneration at the next set regeneration time (i.e. 02.00 AM.) After the regeneration, the parameter will automatically reset to "No."
- 15.00a Push the CHANGE button to toggle between Yes or No. In this example, set to: **Reg. Tonight YES**
(lead valve only) **Note:** Set #1 valve for **Reg. Tonight only**. Do not set valve #2 for **Reg. Tonight**. This will offset the regeneration of the valves to ensure adequate time for complete brine concentration in the brine tank.
- 16.00 Push the DISPLAY button to step to the next parameter. The display will show: **Filter? NO.**
This parameter, if set to YES, is for model selection only and has no effect on the function of the appliance. In this example, set to: **Filter? NO.**
- 17.00 Push the DISPLAY button to step to the next parameter. The display will show:
Gal. Remain 00840

SETTING & USING THE TIL[®] CONTROLLERS

This is the normal operation display for OPERATING MODE 2. The 00840 represents the number of gallons of softening capacity between regenerations. This completes the SERVICE SETTINGS mode.

Even though the SERVICE SETTINGS mode has been completed, the TIL[®] is not ready for service until the CUSTOMER SETTINGS mode is completed. The following example takes you through the steps required for setting the parameters of the CUSTOMER SETTINGS mode for OPERATING MODE 2.

- 1.00 Push and hold the DISPLAY to enter CUSTOMER SETTINGS mode. The display will show: **Set Time 00:00 AM** This parameter is to be set to the current time of day.
- 1.00a Push the SELECT and CHANGE buttons until the desired time is displayed.
In this example, set time to: Example: 11:00 AM or 05:00 PM.
- 2.00 Push the DISPLAY button to step to the next parameter. The display will show: **Reg Time 02:00 AM**
This parameter is to be set for the desired time a normally scheduled regeneration is to occur.
- 2.00a Push the SELECT and CHANGE buttons until the desired time is displayed.
In this example, set to: Reg. Time 02:00. (02:00 is 2:00am)
- 3.00 Push the DISPLAY button to step to the next parameter. The display will show: **# People 04**
- 3.00a Push the CHANGE button until the correct number of people in the household is displayed.
In this example, set to: **# People 02**
- 4.00 Push the DISPLAY button to save the parameter settings and exit the CUSTOMER SETTINGS mode.
The display will show: **Gal Remain 00840**

If you followed the above directions correctly, your TIL[®] Appliance Control lead valve is ready for OPERATING MODE 2 service.

- 5.00 Repeat steps 1:00 - 3:00a for valve #2. For step 2.00a, set the **Reg Time 02:00 PM**

To complete the programming, repeat the same programming for the lag valve service settings, but do not set the lag valve to regenerate tonight.

For the customer settings on the **lag valve only**, set the **Reg Time 02:00 PM** (or 12 hours difference from the lead valve).

CARE AND MAINTENANCE

PROBLEM	CAUSE	ACTION
No soft water after regeneration.	No salt in brine tank.	Add salt.
	Sediment in brine tank has plugged the brine line and/or air check.	Remove the brine line and flush clean. Clean air check. Clean brine tank.
	Refill flow control is plugged.	Remove brine piston housing and clear debris from the flow control.
	Drain line is pinched, frozen or restricted.	Straighten, thaw or unclog the drain line.
	Clogged injector assembly.	Remove injector cap and clean nozzle and throat with a wooden toothpick. Replace throat if removed.
	Salt bridge has formed.	High humidity or the wrong kind of salt can create a salt bridge. This is a crust that forms an empty space between the water and salt. To test, use a blunt object like a broom handle. Push the handle into the salt to dislodge the salt bridge.
No soft water.	The plumbing bypass valve is in the bypass position.	Place bypass valve in the service position.
	Appliance is plumbed in backwards.	Check that appliance is plumbed correctly.
	Extended power outage.	Reset hardness.
	Water hardness has increased.	Retest water and reset hardness.
	Not metering water.	Flow should be indicated with water usage. If no flow, see below.
	Blending dial open.	Make sure blending dial is closed.
No flow is indicated when water is flowing.	The bypass valve is in the bypass position.	Place bypass in the service position.
	Appliance plumbed in backwards.	Check that appliance is plumbed properly.
	Sensor not receiving signal from magnet.	Remove sensor from I/O housing. Test with magnet on each flat side of sensor. One side should indicate flow, the other will not. If flow is indicated, check turbine. If no flow, replace sensor.
	Turbine is jammed.	Remove bypass valve and clear debris from turbine.
Flow is indicated when water is not being used.	There is a leak in your household plumbing system.	Repair the leak.
No read-out in display.	Electric cord is unplugged.	Plug in transformer.

CARE AND MAINTENANCE

PROBLEM	CAUSE	ACTION
No read-out in display.	No electric power at outlet.	Check power source. Make sure outlet is not controlled by a switch.
	Defective transformer.	Test with volt meter for 12VAC at controller. If less than 10VAC or greater than 14VAC, replace transformer.
	Defective circuit board.	With 12VAC present at controller, replace computer controller.
	High ambient temperature. If temperature exceeds 120° F, display will blank out. This does not affect the operation of the controller.	
Appliance stays in regeneration. Cycle display remains "going to _?_".	Controller not snapped into place.	Snap controller into place.
	Defective magnet disk.	Replace magnet disk.
	Foreign object in valve body.	Remove foreign objects from valve body.
	Broken valve assembly. Motor running. Magnet disk not turning.	Repair drive end cap.
Excess water in brine tank.	Restricted, frozen or pinched drain line.	Remove restriction, thaw or straighten drain line.
	Plugged brine line, brine line flow control or air check.	Clean flow control, air check and brine line.
	Plugged injector assembly.	Clean or replace injector. Replace throat if removed.
	Sticking brine refill valve.	Remove valve. Lubricate piston with silicone grease and reassemble.
Not regenerating in proper sequence.	Defective magnet disc.	Replace magnet disc.
	Defective controller.	Replace controller.
Salty water.	Plugged Injector.	Clean injector screen, nozzle and throat See page 24.
	Low water pressure.	Maintain min. pressure of 30 psi.
	Brine line restricted or crimped.	Remove restrictions, replace if crimped.
	Excessive amount of water in brine cabinet.	Verify correct water level relative to salt setting. Check lines for loose connections.
	Insufficient rinse time.	See mode settings (page 8-9). Adjust time if necessary.

Assembly and Parts

Valve Assembly

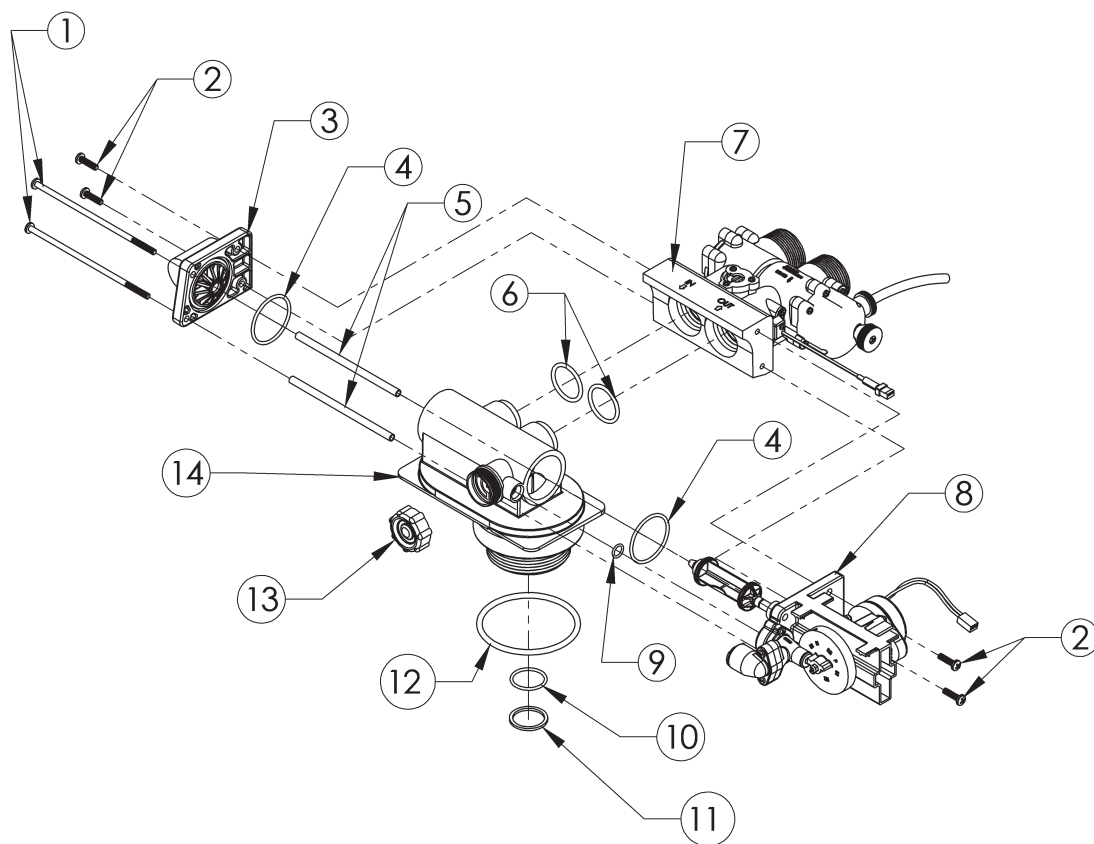


Figure 3: Valve Assembly

	Part #	Description	Quantity
1	93809	End Cap Screw	2
2	93870	End Cap Screw	4
3	90614	Drain End Cap Assembly	1
4	90819	End Cap O-Ring	2
5	93835	Spacer Tube	2
6	93838	I/O Adapter O-Ring	2
7	90615	Bypass Valve Assembly	1
8	95301T-JG*	Drive End Cap Assembly	1
	95302T-BWO*	Drive End Cap Assembly-Backwash Only	
9	90828	Small End Cap O-Ring	1
10	53201	Pilot O-Ring	1
11	53004	Pilot O-Ring Retainer	1
12	53202	Tank O-Ring	1
13	93504	Injector Assembly	1
	93504-Red	Injector Assembly-HC3 64, 105, and 21F	
14	53501	Valve Housing	1

* This assembly does not include a magnet disc or drive motor, and must be ordered separately.

Assembly and Parts, Cont.

Hook-Up/Cover Assembly

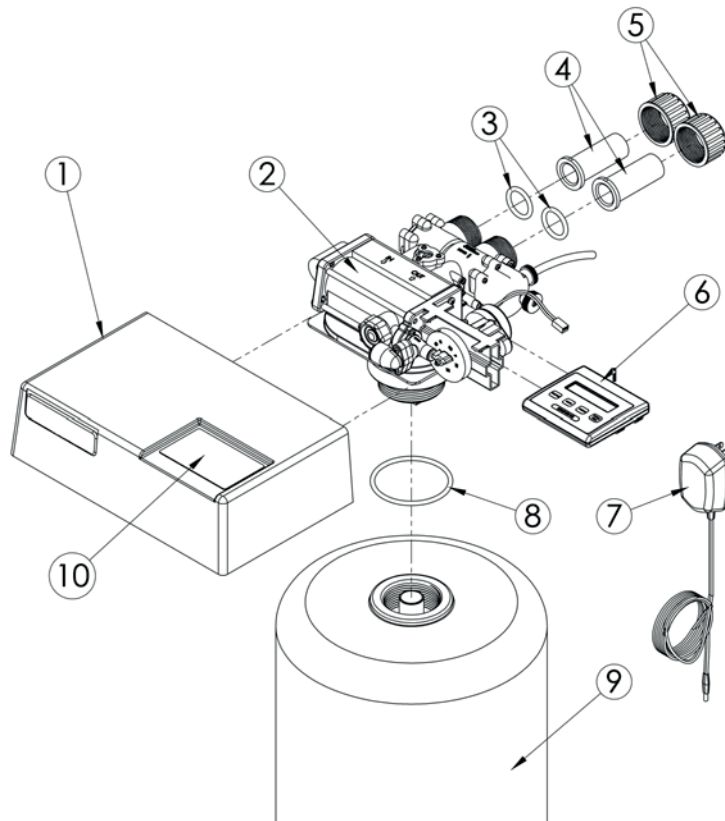


Figure 4: Hook-Up/Cover Assembly

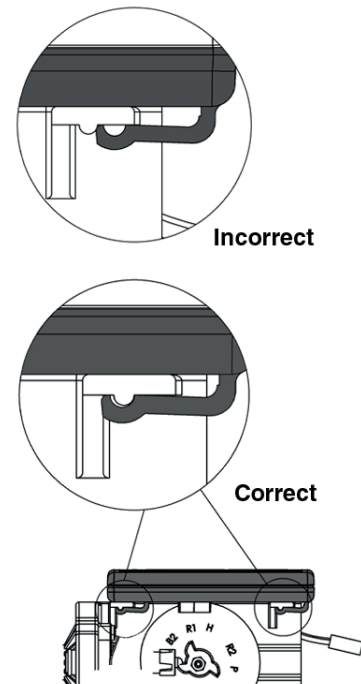


Figure 5: Controller Tab Lock Detail

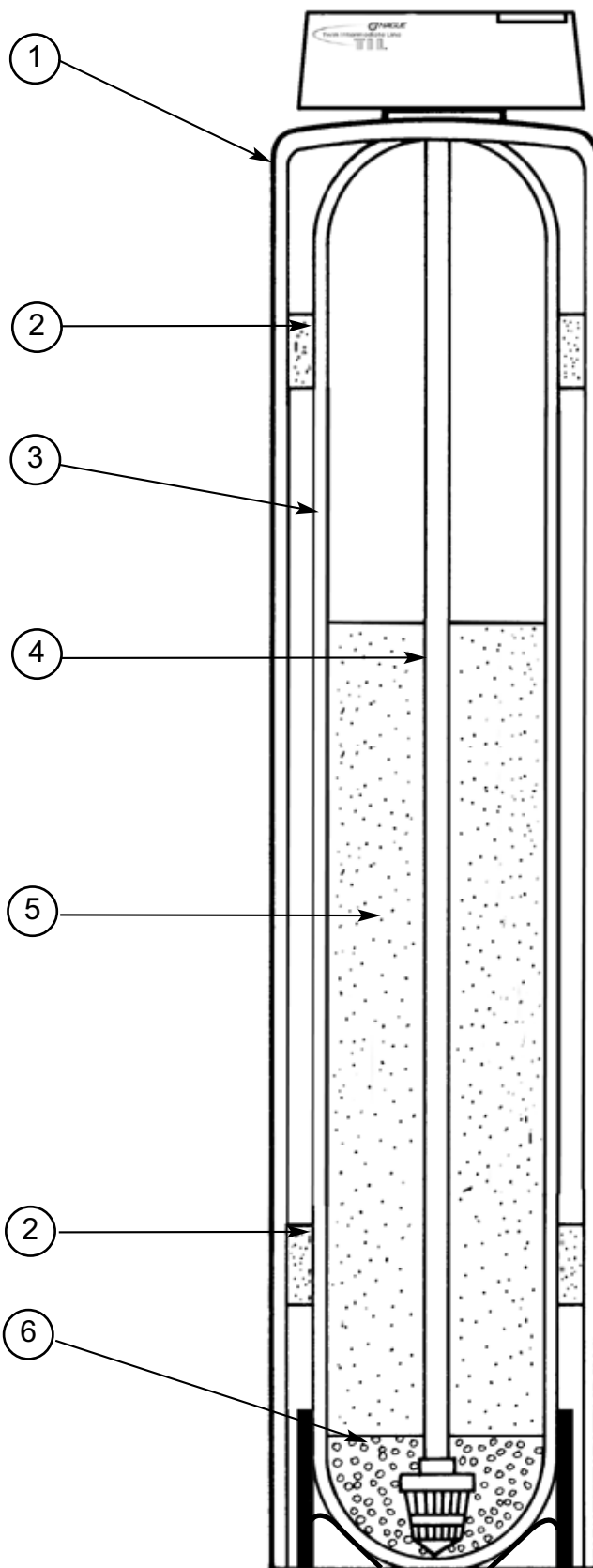
	Part #	Description	Quantity
1	53008	Valve Cover (Rain Resistant) without Label (optional)	1
	53500	Valve Cover (Rain Resistant) with Label (standard)	
	53505	Valve Cover Assembly with Window (optional on Custom Valves)	
2	53501	Valve Assembly w/O-Ring	1
3	90837	Hook Up O-Ring*	2
4	90259	1" CTS CPVC Adapter*	2
	90254	3/4"/1" Copper Adapter* (optional)	
	90258	1" Copper Adapter* (optional)	
	90256	3/4" PVC Adapter* (optional)	
5	90251	Bypass Nut*	2
6	54550	5 Button Controller	1
7	93245	Transformer	1
8	53202	Tank O-Ring	1
9	BT844	Resin Tank Jacket (Not included with Model 25 Valve)	1
	BT948	Resin Tank Jacket (Not included with Model 25 Valve)	
	BT1047	Resin Tank Jacket (Not included with Model 25 Valve)	
	BT1054	Resin Tank Jacket (Not included with Model 25 Valve)	
10	95209	Clear Viewing Panel (on 53505 Custom Valve Cover Only)	1

* Parts 3, 4, and 5 make up the hook-up kit. Part numbers for kits are, respectively, 90513, 90509, 90512, and 90511.

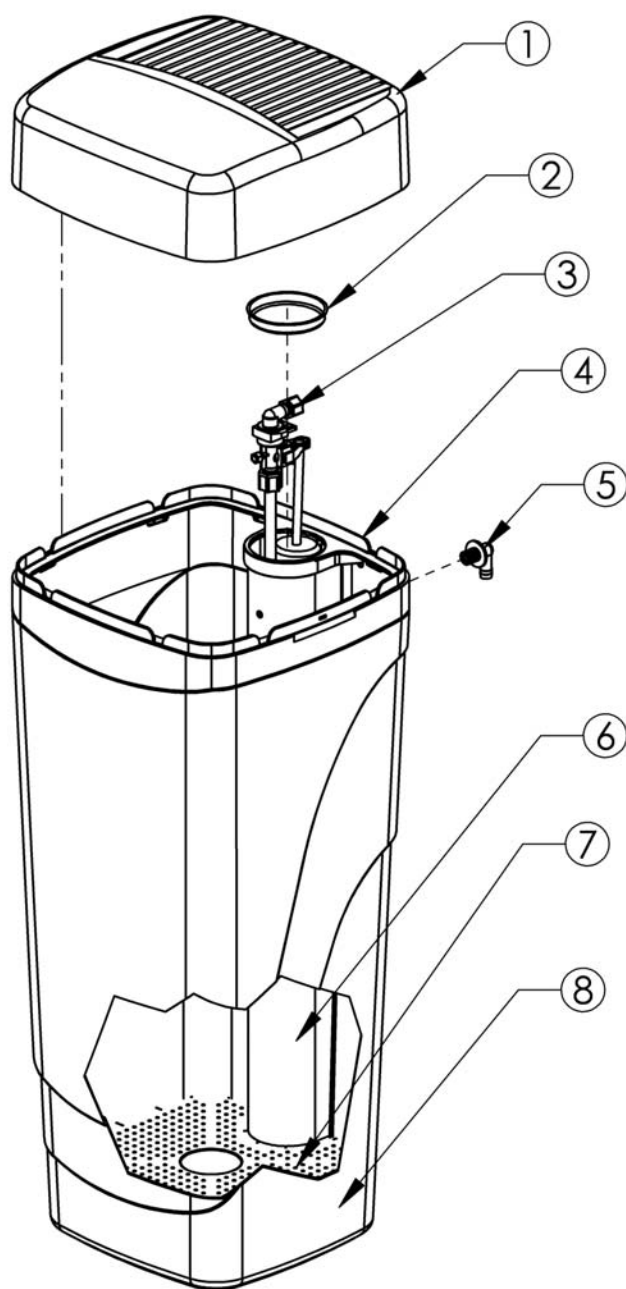
PARTS ... RESIN TANK ASSEMBLY

PART#	DESCRIPTION
1* BT 844	Thermo Jacket - 44
BT 1047	Thermo Jacket - 47
BT 948	Thermo Jacket - 48
BT 1054	Thermo Jacket - 54
2* C1400	Thermo Foam - 8"
C1430	Thermo Foam - 9"
C1480	Thermo Foam - 10"
3 MT844	Thermo Tank - 8"X44"
MT948	Thermo Tank - 9"X48"
MT1047	Thermo Tank - 10"X47"
MT1054	Thermo Tank - 10"X54"
MT1252	Thermo Tank - 12"X52"
MT1465	Thermo Tank - 14"X65"
4 CAS-820	1" Riser TIL® T-80
CAS-822	1" Riser TIL® T-48
CAS-823	1" Riser TIL® T-60
CAS-824	1" Riser TIL® T-96
CAS-827	1" Riser TIL® T-128
CAS-828	1" Riser TIL® T-210
5 M010	Resin - C249
M048	Activated Carbon
6 M035	Quartz Gravel

* Optional

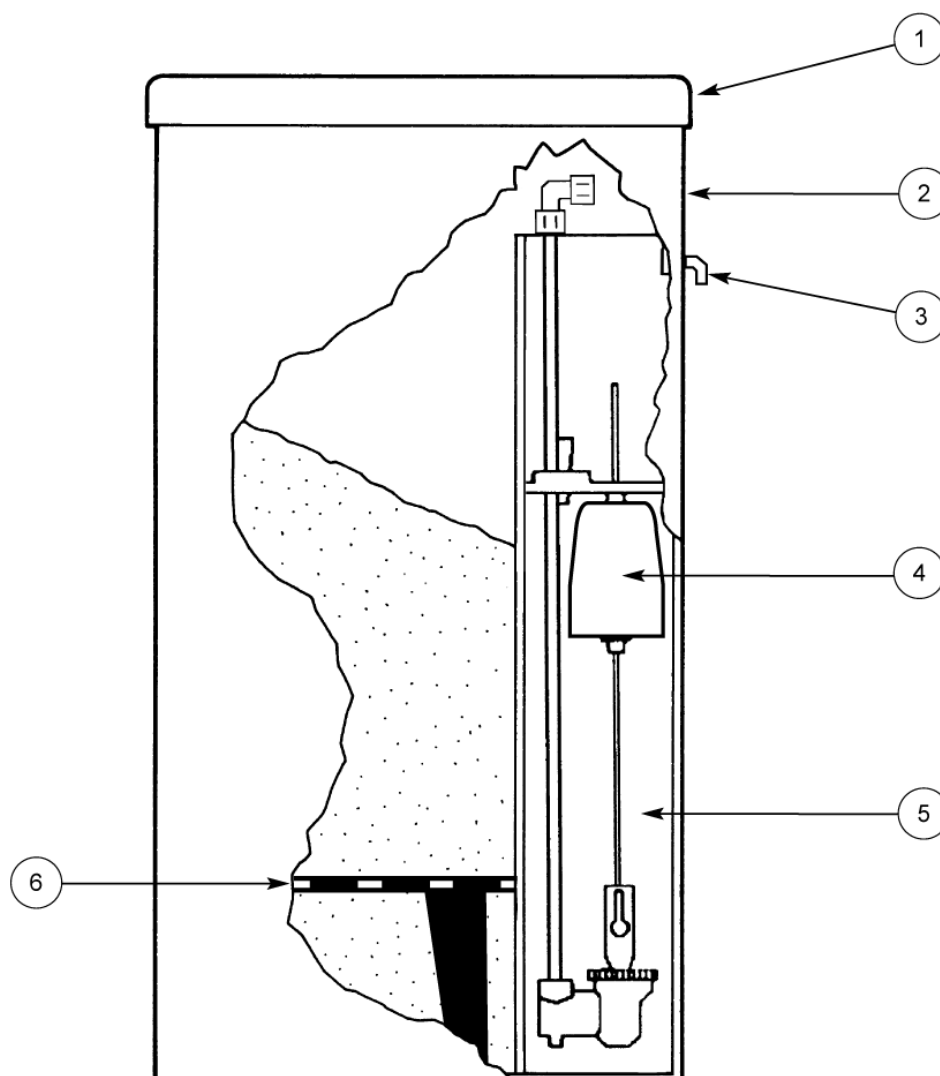


PARTS ... BRINE TANK ASSEMBLY FOR T-48 AND T-48CX



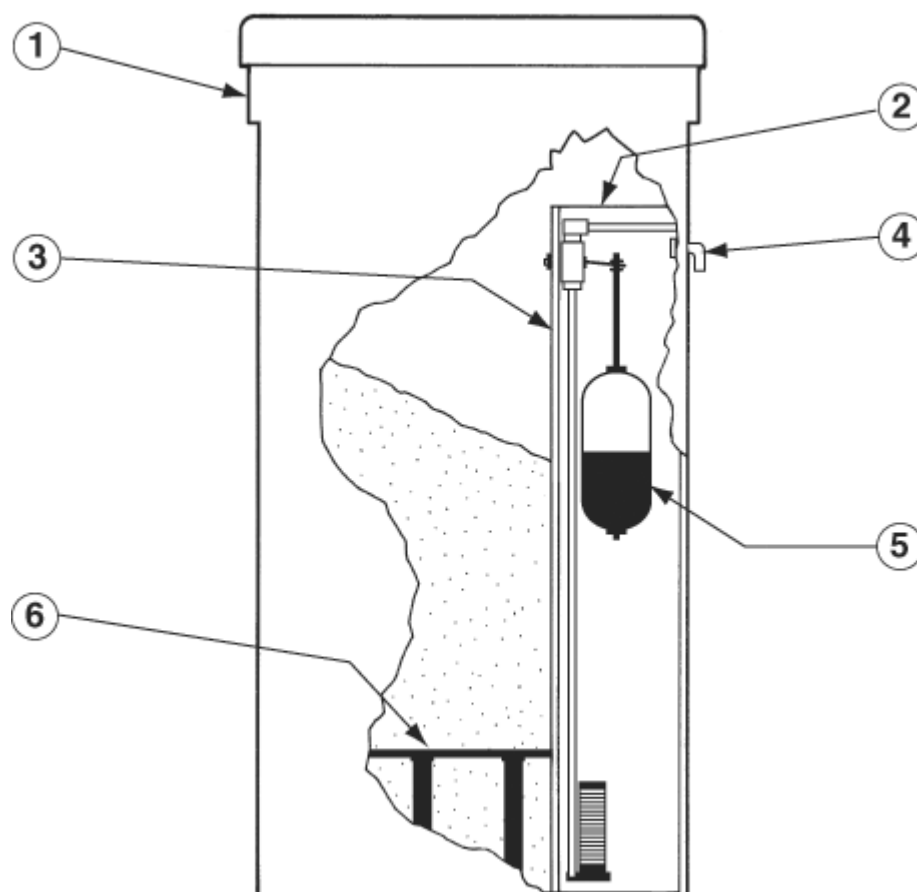
PART#	DESCRIPTION	QUANTITY
1 54006	Brine Tank Cover	1
2 90103	Brine Well Cap	1
3 54525	Safety Shutoff Assembly	1
4 54007	Support Panel (BT)	1
5 C0700A	Cabinet Overflow	1
6 54008	Brine Well	1
7 54009	Grid Plate	1
8 54003	Cabinet	1
54509	Entire Assembly (all of the above parts)	

PARTS ... BRINE TANK ASSEMBLY FOR T-60, T-80, T-96, T-60CX, T-80CX, AND T-96CX



PART#	DESCRIPTION	QUANTITY
1 BT055	Brine Tank Cover	1
2 BT1833-HWC	Brine Tank	1
3 C0700	Overflow Fitting	1
4 93811-26.5	Air Check Assembly	1
5 C0800	Brine Well	1
6 C0650	Grid Plate	1
7 93848	3/8" x 5' Brine Line (not shown)	
53560	Brine Tank Assembly (contains items 1-7)	

PARTS ... COMMERCIAL BRINE TANK ASSEMBLY FOR T-128, T-210, T-128CX, AND T-210CX



PART#	DESCRIPTION	QUANTITY
1 BT2450	24" x 50" Brine Tank and Lid	1
2 CO600	Brine Well Cap	1
3 CO850	Brine Well	1
4 CO700A and CO700B	Overflow Elbow and Nut	1
5 H5300	Safety Shut-off Assembly w/ Float and Aircheck	1
6 CO670	Grid Plate	1
7 93848	3/8" x 10' Brine Line (not shown)	

Assembly and Parts, Cont.

Injector Assembly

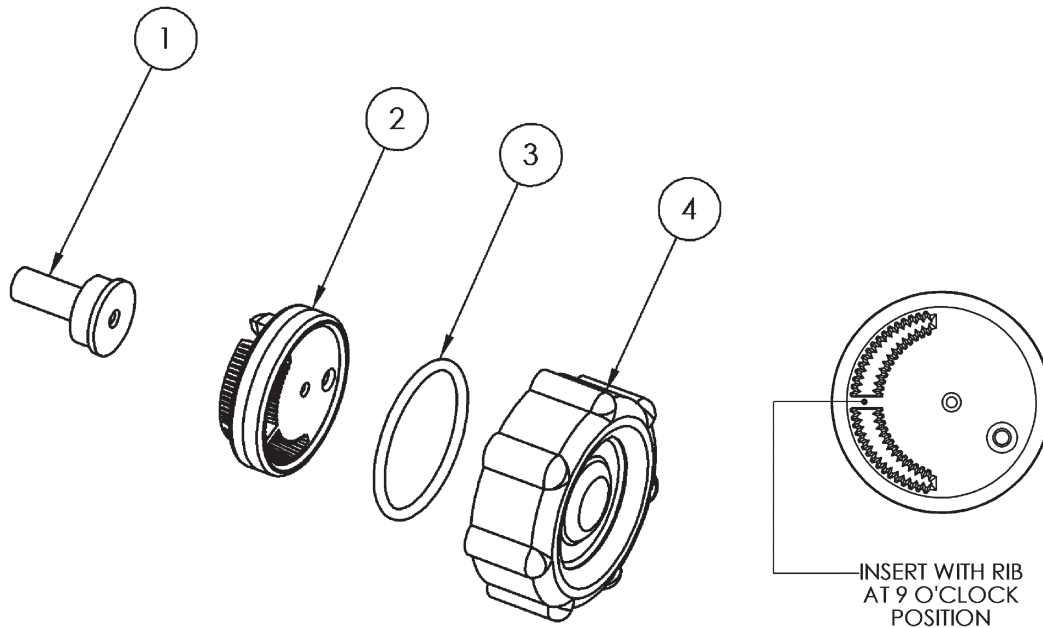


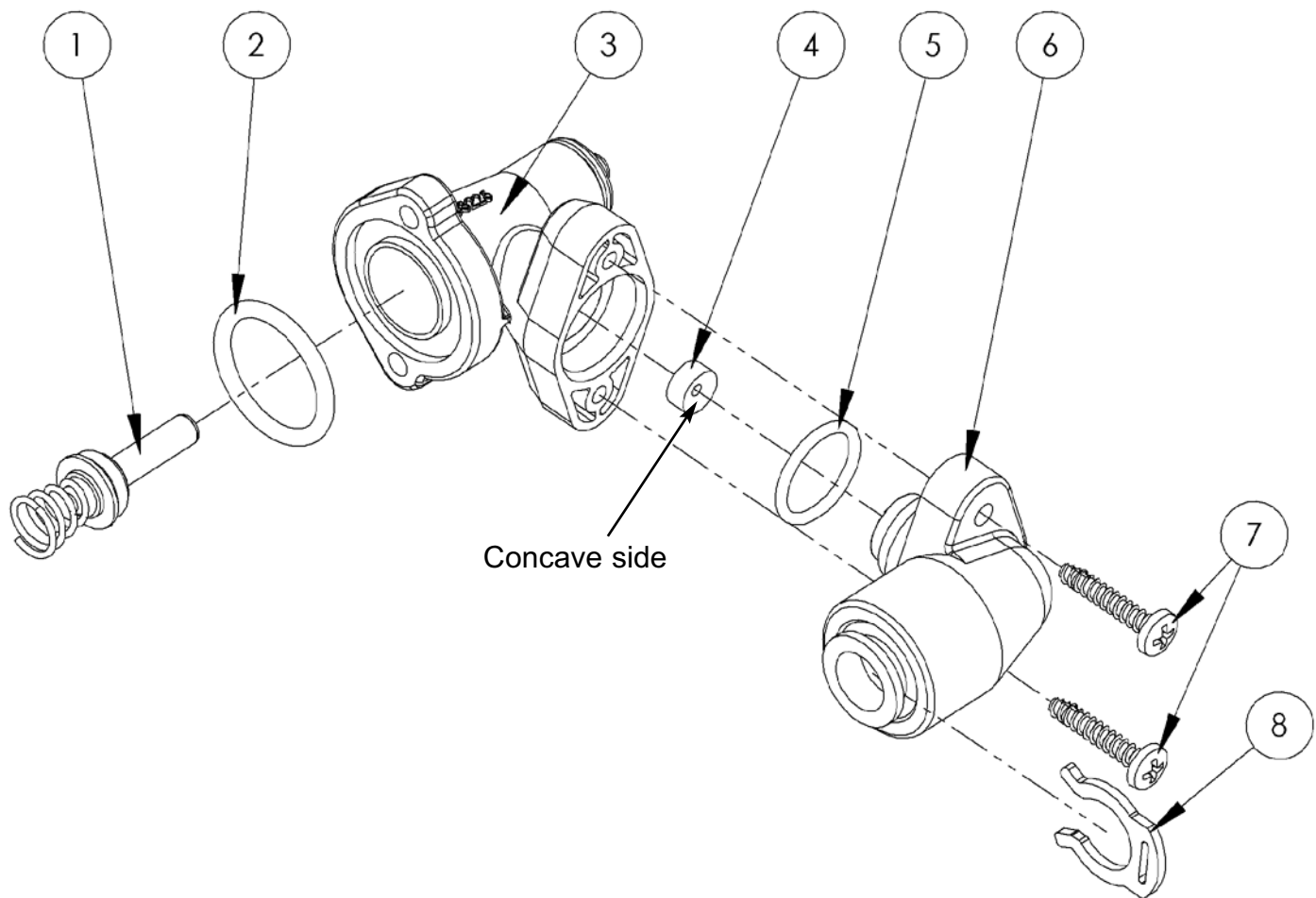
Figure 6: Injector Assembly

	Part #	Description	Quantity
1	93223	Injector Throat	1
	93223-Red*	Injector Throat	
2	53224	Injector Nozzle with Over-Mold Gasket	1
	53224-Red*	Injector Nozzle with Over-Mold Gasket	
3	93806	O-Ring	1
4	53235	Injector Cap	1
	93504	Entire Assembly (all of the above parts)	
	93504-Red*	Entire Assembly (all of the above parts)	

* For use on 12" through 16" diameter softener tanks and greensand filters only.

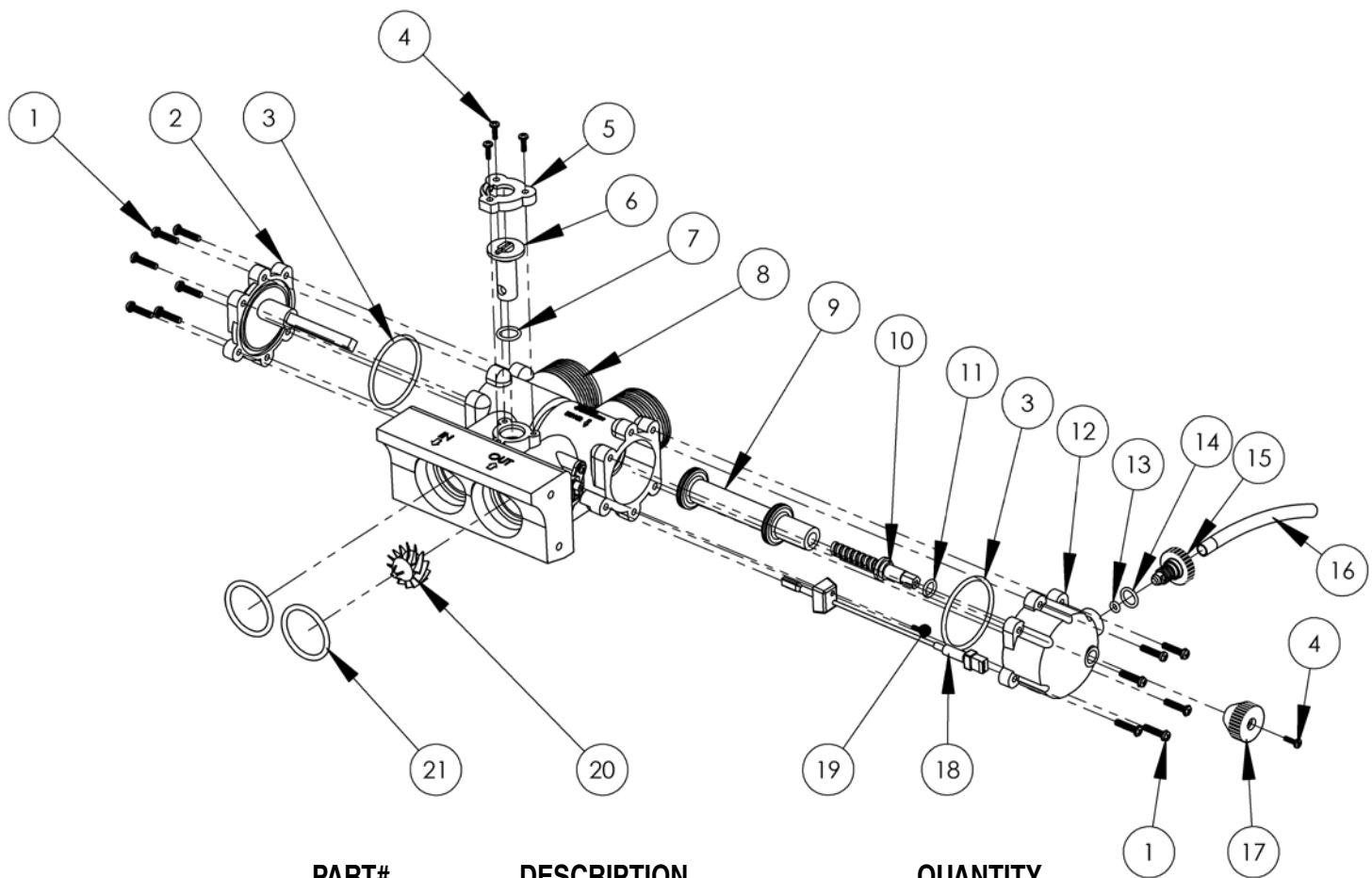
93223 Injector Throat	In conjunction with the Injector Nozzle (53224) it creates the vacuum that draws the brine solution from the brine tank. The center hole should be clear of debris, round, and undamaged. The Throat should be pressed flush into the opening in the valve. If the Throat is removed, it must be replaced with a new one.
53224 Injector Nozzle with Over-Mold Gasket	Together with the Throat (93223) creates the vacuum that draws the brine solution from the brine tank. The small hole in the Injector Nozzle (53224) is the one that creates the "injection-stream" that enters the Throat. It is important that this hole is round, undamaged, and clear of debris. If this hole becomes "clogged," do not use anything (such as metal objects) to clear this opening. Damage may occur. Use a clean cloth and flush with water. If necessary, a wooden toothpick may be used. When assembling to the Valve, the Nozzle hole should line up with the Throat. Flush screen with water to clean. The over-mold gasket seals between the Injector Nozzle and the Injector Cap.
53235 Injector Cap	Holds the injector assembly together and seals the assembly to the Main Valve Body.

PARTS ... BRINE VALVE HOUSING ASSEMBLY



PART#	DESCRIPTION	QUANTITY
1 93620	Piston Assembly (includes O-ring & Spring)	1
2 90821	O-ring	1
3 93260	Housing	1
4 90843	.5 gpm Flow Control	1
5 93805	O-ring	1
6 93243-JG	Housing Cap Assembly (John Guest)	1
7 90818	Screw	2
8 200199	3/8" Locking Clip	1

PARTS ... BYPASS ASSEMBLY



	PART#	DESCRIPTION	QUANTITY
1	90807	Screw	12
2	90262	Bypass Endcap-Left	1
3	93808	O-ring	2
4	90802	Screw	4
5	90252	Cap-Blending Dial	1
6	90222	Blending Dial	1
7	90827	O-ring	1
8	90246	Bypass Housing	1
9	90616	Bypass Piston Assembly	1
10	90218	Bypass Piston Drive Shaft	1
11	90803	O-ring	1
12	90263	Bypass Endcap-Right	1
13	90264	O-ring	1
14	90828	O-ring	1
15	90226	Test Port Valve	1
16	90812	Tubing 4.0"	1
17	90221	Bypass Piston Knob, blue	1
18	90232	Turbine Sensor Cap	1
19	90809	Screw	1
20	90522	Turbine Assembly	1
21	93838	O-ring	2
	90615-94	Entire Assembly (all of the above parts)	

PARTS ... BYPASS ASSEMBLY

90246 Bypass Housing: Makes the connection between the plumbing and Main Valve Body. Also, contains the "Hard Water" Blending Valve and Bypass Piston. The recommended seal for the 1-1/4" male inlet-outlet threads is the plastic Hook-up Nut (90251), O-ring (90837), and Copper Adapter (90254). Make sure the O-ring is between the Housing and Copper Adapter. The O-ring seal areas at the Main Valve Body inlet and outlet must be smooth and free of defects and debris, and lubricated with silicone grease before assembling. When attaching to the Main Valve Body, put the O-rings on the male bosses on the Valve Body and push the Bypass into place. A "snap" can be heard when the Bypass slides into place. When released, the Bypass should stay in place; if not, the O-rings may be "pinched." If the O-rings are pinched, replace with new ones. The Bypass comes pre-assembled with the Sensor housing and turbine axle. These are not field serviceable and if damaged, must be replaced with a new assembly. The Bypass Piston bore is to be smooth and, at the recessed areas, have a smooth transition (no sharp corners) to the seat areas.

90262 Bypass End Cap- Left: Seals the left Piston opening on the Housing (90246). The opening is sealed with an O-ring used as an axial or "face" seal. The O-ring sits in a groove in the End Cap. This groove must be free of defects such as pits or scratches and also free of debris. When assembling the End Cap to the Housing, care should be taken to make sure that the O-ring stays in the groove in the End Cap. If misaligned, the O-ring can become pinched and leak. Also, on the End Cap is the Piston Axle, a 1/4" square shaft that acts as a guide/slide and anti-turning mechanism for the Bypass Piston.

90263 Bypass End Cap- Right: Seals the right Piston opening on the Housing (90246). The opening is sealed with an O-ring used as an axial or "face" seal. The O-ring sits in a groove in the End Cap. This groove must be free of defects such as pits or scratches and also free of debris. When assembling the End Cap to the Housing, care should be taken to make sure that the O-ring stays in the groove in the End Cap. If misaligned, the O-ring can become pinched and leak. Also, on the End Cap is the guide/bushing for the Bypass Piston Drive Shaft. There is an O-ring seal at the opening for the Drive Shaft. This seal area must be free of defects such as pits or scratches and also free of debris.

90218 Bypass Piston Drive Shaft: The Drive Shaft has an acme thread which is used to move the Piston from "bypass" to "service" position. When operating the Bypass, to achieve either "service" or "bypass", it is only necessary to turn the Handle (90221) until the Piston (90616) stops. Additional

pressure (torque) will not improve the seal. Once the Piston reaches the stop at either position, it can be backed off up to one half turn of the handle and still achieve a seal.

90616 Bypass Piston Assembly: The white teflon Hydro-slide O-ring covers should be free of defects such as indentations and cuts. The Piston should move freely into and out of the Bypass Housing without damaging the Hydro-slides. If the Hydro-slides catch, tear or crimp, the Housing should be replaced. Note: Some compression will occur when the Hydro-slides pass through the seal areas.

93858 Turbine Sensor Assembly: Picks up the magnetic field from the Turbine and relays it to the Controller. The three wire assembly connecting the "black wafer" Hall Effect Sensor to the Controller board must not be severely bent (folded over), cut, or broken. Care should be taken when putting the Sensor into the Sensor Housing. The "spring" flap below the Sensor must be gently bent over (on top of) the Sensor, and then the Sensor slides all the way into the Sensor Housing. The round hole of the Sensor mounting tab is then placed down over the mounting screw boss. The cap is then put in place and the mounting screw is installed. A slot is provided in the cap for the wire to exit. The three-wire socket connector must be properly installed in the controller. Stops on the connector prevent improper (upside down) assembly. Do not force the connector past the stops.

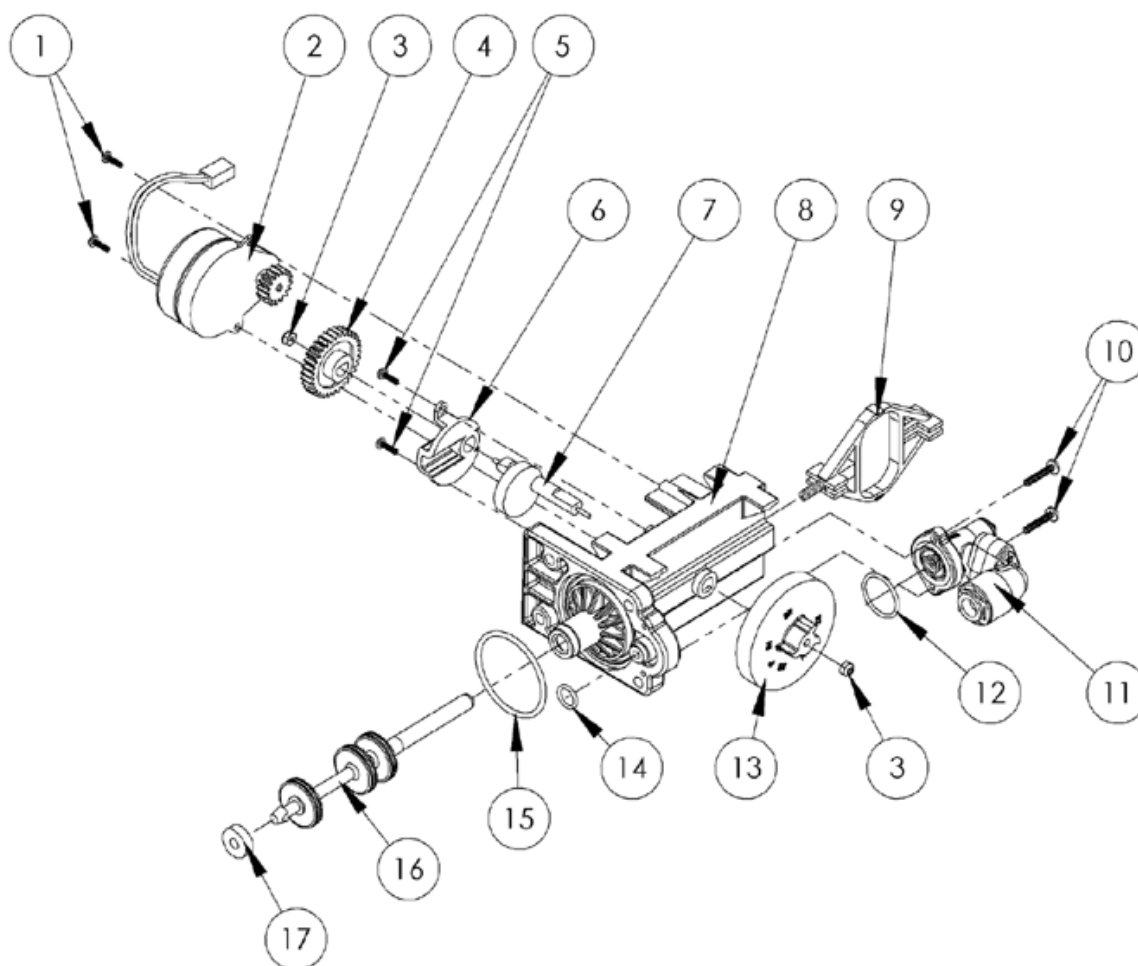
90522 Turbine Assembly: The Turbine must have a 1/8" diameter Rare Earth magnet pressed into place adjacent to the axle opening. When assembled to the axle, the Turbine should spin freely. Do not use any lubricants. If the Turbine should become jammed, clean and flush the Turbine and Bypass Valve.

90252 Blending Dial Cap: The Cap should be held in place by the three 1/2" screws and be in the proper orientation.

90222 Blending Valve: The valve permits the addition of "hard water" into the soft water outlet. It is closed when pointing toward the Main Valve Body and open when pointing toward the inlet side.

90226 Test Port Valve: The Test Port Valve is used to draw water samples for testing of treated water. Note: The Bypass must be in the "service" position to get an accurate sample. There are two types of seals on the Test Port. One seal is an O-ring which seals off the threaded area when the Valve is opened. The other seal is a compression seal between the Test Port Valve material and the Right End Cap material. If this seal is "overtightened", it can damage the sealing area on the End Cap causing a permanent leak.

PARTS ... DRIVE END CAP ASSEMBLY



	PART#	DESCRIPTION	QUANTITY
1	90802	Screw	2
2	90217	Drive Motor	1
3	93891	1/4" Hex Nut	2
4	93238	Drive Gear	1
5	90809	Screw	2
6	93219	Piston Slide Cam Cover	1
7	93217	Piston Slide Cam	1
8	93583	Drive End Cap	1
9	54202	Piston Slide	1
10	90818	Screw	2
11	93601-JG	Brine Valve Housing Assembly	1
12	90821	O-ring	1
13	54502	Magnet Disk Assembly	1
14	90828	O-ring	1
15	93808	O-ring	1
16	53527	Drive Piston Assembly (3 lobe)	1
17	93839	Drain Gasket	1

PARTS ... DRIVE END CAP ASSEMBLY

95301T-JG Drive End Cap: Seals the two openings on the Main Valve Body. The larger diameter opening is sealed with an O-ring used as an axial or “face” seal. The O-ring sits in a groove in the End Cap. This groove must be free of defects such as pits or scratches and also free of debris. The smaller diameter seal is accomplished with an O-ring used as a radial seal. The O-ring should be placed on the male boss on the End Cap. When assembling the End Cap to the Valve Body, care should be taken to make sure the small O-ring is aligned with the opening in the Valve Body and that the large O-ring stays in the groove in the End Cap. If misaligned, the O-rings can become pinched and leak.

90217 Drive Motor: The Motor is held in place by two 1/2" screws. The screws should be “snug.” The brass pinion gear on the Motor should engage the plastic Drive Gear. The wires should be securely fastened to the Control.

93216 Piston Slide: The Slide should move freely inside the End Cap Housing. The stainless steel threaded stud should be pointing toward the Valve Body.

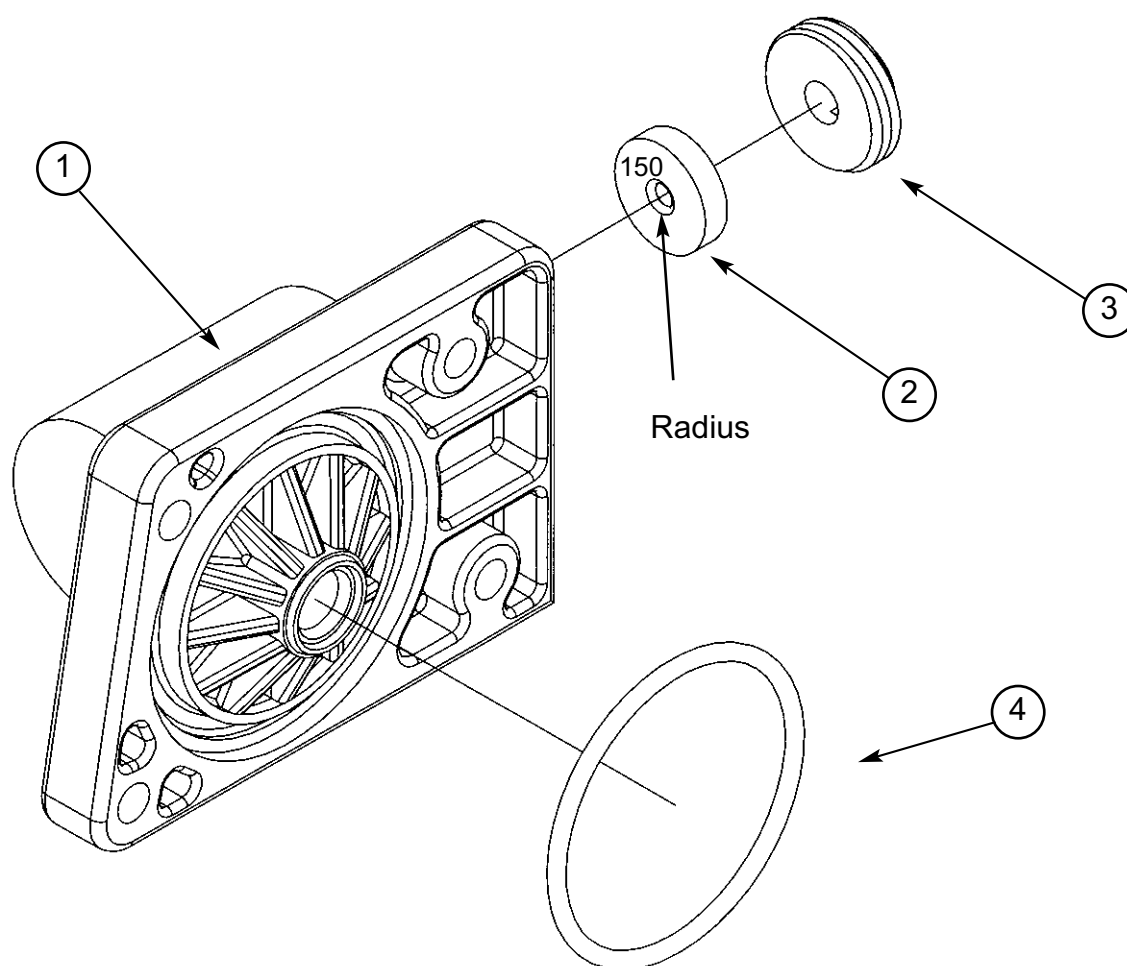
93217 Piston Slide Cam: This is the “heart” of the drive system. There is a threaded stainless steel shaft that runs through the main drive axle. The Drive Gear is attached at the short end and the Magnet Disk at the other end. The Slide Cam is assembled inside of the Piston Slide (93216). This Cam Shaft should turn freely before the Motor is assembled.

93219 Piston Slide Cam Cover: The cover secures the Piston Slide Cam (93217) in place and acts as a bushing for the Cam Shaft.

93238 Drive Gear: The Drive Gear is assembled to the Slide Cam by means of a “keyed” opening which transfers the “torque” generated by the Motor to the rest of the drive system. If the drive system becomes jammed, this opening can become “rounded,” causing the gear to turn, but not the Piston Slide Cam. If this occurs, clear the jam and replace the Drive Gear and Piston Slide Cam (93217).

93601-JG Brine Valve Assembly: Attaches to the Drive End Cap with two 3/4" thread cutting screws and has one O-ring seal. The O-ring is used as a axial or face seal. The O-ring sits in a groove in the brine valve housing. The groove and the face seal must be free of defects such as pits and scratches or debris.

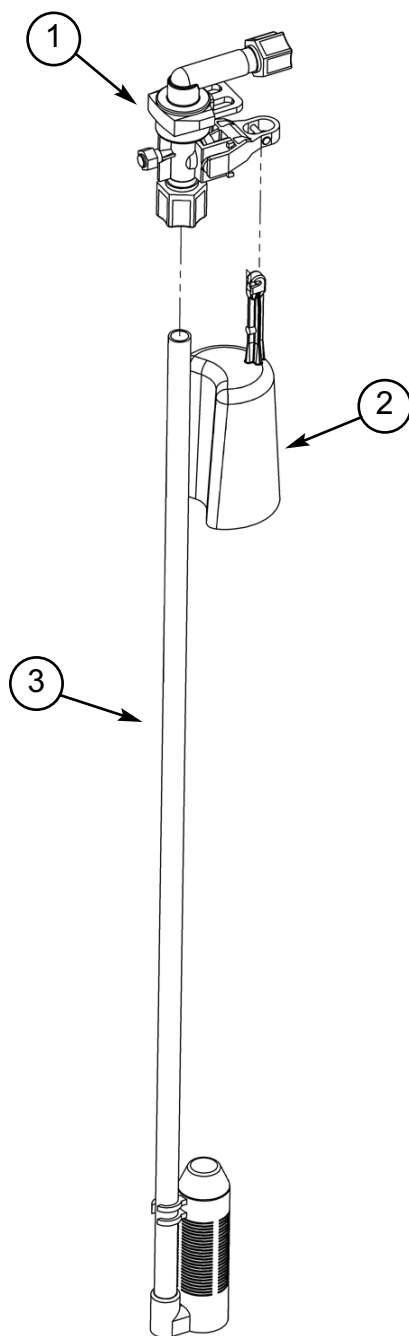
PARTS ... DRAIN END CAP ASSEMBLY



PART#	DESCRIPTION	QUANTITY
1 90268	Drain End Cap	1
2 H2086 - 1.5	Drain Line Flow Control	1
H2086 - 2.0*		
H2086 - 2.4*		
H2086 - 4.0*		
H2086 - 5.0*		
3 90267	Retainer	1
4 93808	End Cap O-ring	1
90614	Drain End Cap Assembly	

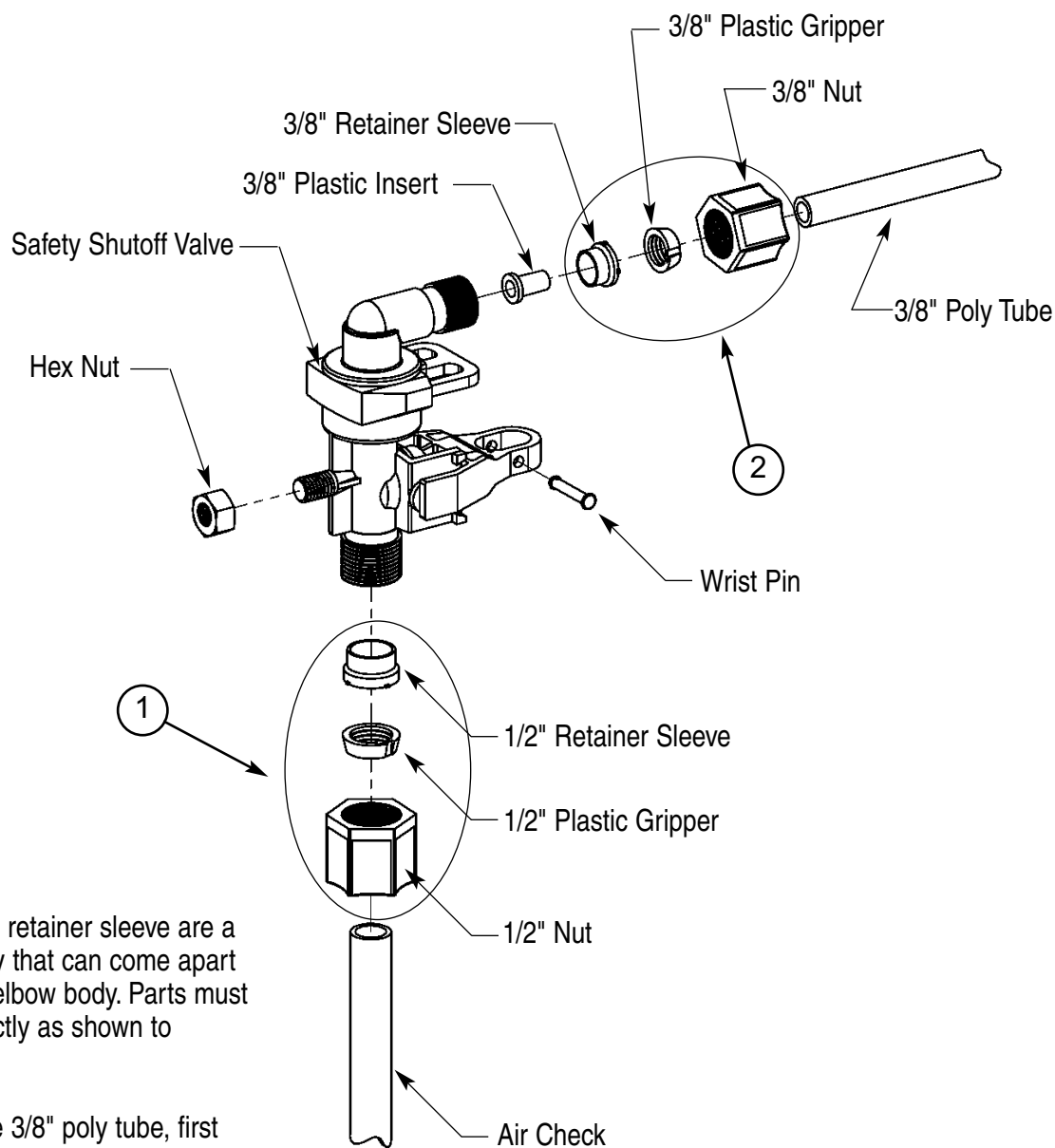
*The number shown after the Drain Line Flow Control part number indicates the back wash flow rate in gpm.

PARTS ... SAFETY SHUTOFF ASSEMBLY



	PARTS#	DESCRIPTION	QUANTITY
1	54226	Safety Shutoff	1
2	56018	Float	1
3	54225	Air Check	1
	54525	Entire Assembly (all of the above parts)	

PARTS ... SAFETY SHUTOFF VALVE ELBOW INSTALLATION



The nut, gripper, and retainer sleeve are a three-piece assembly that can come apart if removed from the elbow body. Parts must be reassembled exactly as shown to function properly.

When connecting the 3/8" poly tube, first assemble the nut, gripper, and retainer sleeve on the tubing. Then insert the plastic insert. Screw the nut on the elbow body. With a wrench, tighten the nut securely to create a water-tight connection.

	PART#	DESCRIPTION	QUANTITY
1	54112	1/2" Compression Assembly	1
2	54138	3/8" Compression Assembly	1

Warranty

HAGUE TIL® 10 Year Limited Residential Warranty

This warranty is issued to the original owner only and is not transferable to subsequent owners.

TO PLACE THE EQUIPMENT UNDER WARRANTY, THE WARRANTY REGISTRATION CARD MUST BE COMPLETED AND RETURNED BY THE OWNER TO HAGUE QUALITY WATER, INC. WITHIN 30 DAYS OF INSTALLATION.

Coverage

This warranty covers the Hague Equipment delivered to the original owner, when the system is purchased for personal, family or household use. It is intended to cover defects occurring in workmanship or materials or both.

Warrantor's Performance and Length of Warranty

Hague Quality Water, Inc. warrants that upon receipt from the original owner of The Hague Equipment Mineral Tank, Brine Tank, found to be defective in material or workmanship, Hague will replace said part(s) at no charge for those parts for 5 YEARS from date of installation. And thereafter, will replace said parts upon payment of the following percentages of the then current list price: 6th through 10th year - 50% of current price list.

Hague Quality Water, Inc. further warrants that upon receipt from the original owner of The Hague Equipment Valve and/or Power System Components (i.e. complete valve controller) found to be defective in material or workmanship, Hague will replace said part(s), at no charge for those parts, for 3 YEARS from date of installation.

Defective parts to be replaced must be returned, along with the equipment serial number and date of original installation, to Hague Quality Water, Inc. PREPAID and will be returned to the original owner FREIGHT COLLECT.

THERE ARE NO WARRANTIES OTHER THAN THOSE DESCRIBED IN THIS WARRANTY INSTRUMENT. THIS WARRANTY DOES NOT COVER INCIDENTAL, CONSEQUENTIAL OR SECONDARY DAMAGES.

ANY IMPLIED WARRANTIES ON THE PRODUCT DESCRIBED IN THIS WARRANTY WILL NOT BE EFFECTIVE AFTER THE EXPIRATION OF THIS WARRANTY.

This warranty does not cover any labor or service call costs incurred with respect to the removal and replacement of any defective part(s). Hague Quality Water, Inc. will not be liable for, nor will it pay any labor or service call charges incurred or expended with respect to this warranty.

In the event the water supply being processed through this product contains bacterial iron, algae, sulphur, tan-

nins, organic matter or other unusual substances, then unless the system is represented as being capable of handling these substances in the system specifications, other special treatment of the water supply must be used to remove these substances before they enter this product. Otherwise, Hague Quality Water, Inc. shall have no obligation to supply replacement parts under this warranty.

This warranty does not cover damage to a part(s) of the system from causes such as fire, accidents, freezing, or unreasonable use, abuse or neglect by the original owner.

This warranty does not cover damage to part(s) of the system resulting from improper installation. All plumbing and electrical connections should be made in accordance with the installation instructions provided with the system. The warranty does not cover damage resulting from use with inadequate or defective plumbing, inadequate or defective water supply or pressure; inadequate or defective house wiring; improper voltage, electrical service or electrical connections; or violation of applicable building, plumbing, or electrical codes, ordinances or regulations.

This warranty is null and void unless the Hague TIL® System was purchased at retail from an independent authorized Hague dealer and installed by same.

Some states do not allow limitations on how long an implied warranty lasts or the exclusion or limitation of incidental or consequential damages, so the above limitations or exclusion may not apply to you. This warranty gives you specific legal rights and you may also have other rights which vary from state to state.

For Owner's Reference

Equipment Serial No.

Installation Date

Independent Dealer Name

Installer's Signature

