# Model 7000

# Service Manual






**IMPORTANT: Fill in pertinent information on *page 3* for future reference.**

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# Model 7000

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**IMPORTANT: The information, specifications and illustrations in this manual are based on the latest information available at the time of printing. The manufacturer reserves the right to make changes at any time without notice.**


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# Model 7000

## *Job Specifications Sheet*

Job Number _____

Model Number _____

Serial Number _____

Water Test _____

Capacity Of Unit _____ Max. _____ Per Regeneration

Brine Tank Size _____

Salt Setting Per Regeneration _____

## Valve Programming

Treated Water Capacity _____ (Gallons / Liters)

Regeneration Day Override _____ (Max. Days between Regen.)

Regeneration Time _____ (A.M.) (P.M.)

Type of Timer _____ (with meter) (without meter)

## Notes



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### Water Pressure

A minimum of 25 psi inlet water pressure is required for regeneration valve to operate effectively.

### Electrical Facilities

An uninterrupted alternating current (A/C) supply is required. Make sure:

- •Voltage supply is compatible with unit before installation.
- •Current supply is always hot and cannot be turned off with another switch.

### Existing Plumbing

Condition of existing plumbing should be free from lime and iron buildup. Replace piping that has heavy lime and/or iron build-up. If piping is clogged with iron, install a separate iron filter unit ahead of the water softener.

### Location of Softener and Drain

Locate the softener close to a clean working drain and connect according to local plumbing codes.

### Bypass Valves

Always provide for the installation of a bypass valve if unit is not equipped with one.

**CAUTION**

- **Minimum water pressure 20 psig.**
- **Maximum water pressure 125 psig.**
- **Minimum water temperature 34° F.**
- **Maximum water temperature 110° F.**
- **Ambient temperature 34° to 122° F (1° to 50° C)**
- **Disconnect all power sources before servicing.**
- **Always operate with cover in place.**

***NOTE:*** This product should be installed by qualified personnel.
Comply with all plumbing codes when installing this product.
Comply with all electrical codes when installing this product.

**WARNING**

**The controller MUST be depressurized before removing any quick connection clips for servicing. The connector should be pushed toward the control while removing clips.**

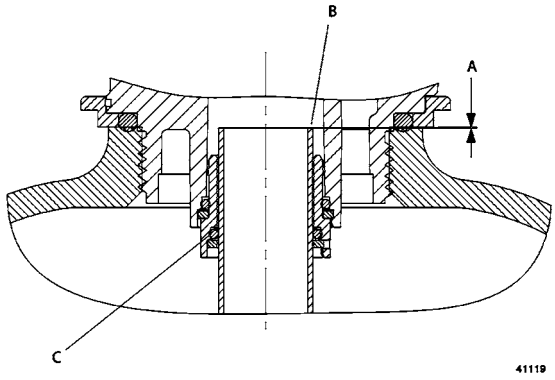


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# Model 7000

## *Valve Installation and Start-up Procedures*

**Installation Instructions**




1. Place the softener tank where you want to install the unit.

   ***NOTE:*** Be sure the tank is level and on a firm, clean base.

2. Perform all plumbing according to local plumbing codes.
3. Cut the 1.05" (32mm) distributor tube flush with the top of the tank (A).
   - — Deburr the outside of the tube (B) after cutting.
   - — Lubricate the o-ring (C) with non-petroleum based oil.
4. Lubricate the distributor 0-ring seal and tank 0-ring seal. Use only non-aerosol silicone lubricant.
5. Load media and place the control valve on the tank.
6. All soldering **MUST** be done on any connections requiring soldering prior to connecting the main control valve. The main control valve will by damaged if it is connected at the time of soldering.
7. Apply ***Teflon*** tape to all threaded fittings.
8. On units with a bypass, place in **Bypass** position.
   - — Turn on the main water supply.
   - — Open a cold soft water tap nearby and let water run a few minutes or until the system is free of foreign material (usually solder) resulting from the installation. Close the water tap when water runs clean.
9. Make plumbing connections to valve.
10. Plug the valve into an approved power source.

    ***NOTE:*** Make all electrical connections according to codes.

11. Place the bypass **In Service** position. Cycle the valve to the Backwash position, and let the water flow slowly into the mineral tank until the air is purged from the unit.
12. Add water to the brine tank until the top of the air check is covered. Manually step the valve to the Brine Draw Position, and allow the valve to draw water from the brine tank until it stops.

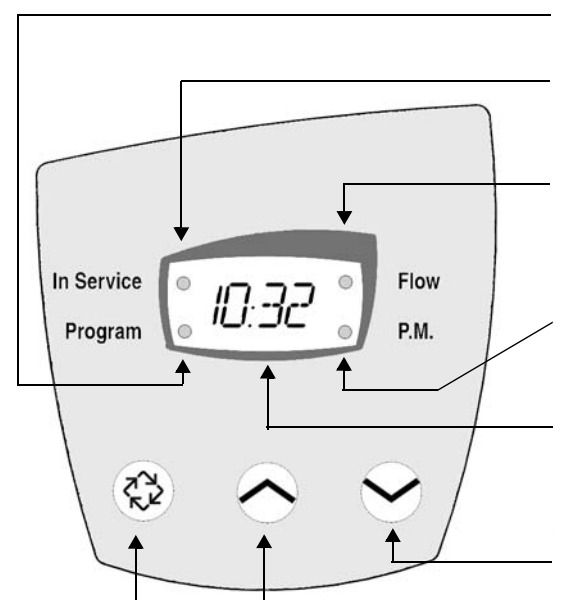
    ***NOTE:*** The air check will check at approximately the midpoint of the screened intake area.

13. Manually step the valve to the Brine Refill Position, and allow the valve to return to **In Service** automatically.
14. With the valve **In Service**, check that there is at least 1" of water above the grid in the brine tank, if used.
15. Fill the brine tank with salt.
16. Allow the control to run automatically. Setup is now complete.



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## Display




**Program Indicator**
*Programming Mode Active, Light On*

**In Service Indicator**
*Valve In Service, Light On*
*Manual Regeneration Qued, Flashing Light*

**Flow Indicator**
*Water Flow, Light Flashing*

**P.M. Indicator/Valve Moving Light Flashing**
*P.M., Light On*
*A.M., Light Off*

**Display Screen**
*Time of Day alternates with Process Display (for example, Volume Remaining, Time Remaining, programming information), Error Codes*

**Set Down Button**
*Adjust Values Down*

**Set Up Button**
*Adjust Values Up*

**Extra Cycle Button**
*User-Initiated and Program Step Advance Regeneration*

*Figure 1*: Control Panel and Display

### Time Clock Regeneration Valves

In normal operation the Time of Day Display may be viewed at all times. The control operates for a preset number of days between **Regeneration** cycles. When the number of days since the last **Regeneration** reaches the preset number of days, a **Regeneration** cycle initiates at the preset **Regeneration Time**.

***NOTE:*** Program the number of days between **Regeneration** cycles and the **Regeneration** time using the *7000 Control Start-Up Procedures, page 8*.

### Flow Meter Equipped Valves – General

Flow meter equipped valves calculate the volume of water that the system can treat between **Regeneration** cycles based on the system capacity which is preset by the system manufacturer in a Master Programming Mode and the feed water hardness which is programmed in the Start-Up procedure safety factor (Master Mode only).

The remaining system capacity displays in gallons or liters. The display has a range of 0 to 9999 (gallons or liters). If the remaining capacity exceeds 9999 liters when in the Metric Mode, then the display changes to millions of liters and a letter t is displayed as the first digit. The display then has a range of t1.0 (1,000,000) to t1.9 (1,900,000).

### Flow Meter Equipped Valves – Immediate Regeneration Mode

The **Time Of Day** display alternates with the **Volume Remaining** display in gallons or liters. The Meter dot flashes in direct relation to the water flow rate through the unit. As treated water is used, the **Volume Remaining** display counts down from a maximum value to zero and initiates a **Regeneration** cycle.



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## Flow Meter Equipped Valves – Delayed Regeneration Mode

In Normal operation the **Time Of Day** display alternates with the **Volume Remaining** display. The flow dot flashes in direct relation to the water flow rate through the unit. As treated water is used, the **Volume Remaining** display counts down from a maximum value to zero. If the reserve is reached, a **Regeneration** queues. The display shows all dashes if the entire volume is depleted before the scheduled **Regeneration** time. At the preset **Regeneration Time**, a **Regeneration** cycle initiates.

## Control Operation During Regeneration

In **Regeneration** the display shows the **Regeneration** status two ways:

- When the valve advances to the next position, the display flashes the number of that next position followed by three dashes.
- Once the valve reaches a position the display shows that position and number of minutes left in that **Regeneration** step.

  ***NOTE:*** If the step time exceeds 100, the leading digit flashes.
- Once all **Regeneration** steps are complete, the valve returns to **In Service** and resumes normal operation.

  ***NOTE:*** Pressing the Extra Cycle Button during a **Regeneration** cycle immediately advances the valve to the next cycle step position and resumes normal step timing.

## Control Operation During Programming

The control enters Program Mode with the valve **In Service**. While in Program Mode the control continues to operate normally, monitoring water usage and keeping all displays up to date. Control programming is stored in memory permanently. There is no need for battery backup power.

## Control Operation During a Power Failure

During a power failure all control displays and programming are stored for use upon power re-application. An inaccurate or flashing **Time of Day** display indicates that a power outage has occurred. During power failure the control:

- Is fully inoperative and any calls for **Regeneration** are delayed.
- Upon power re-application, resumes normal operation from the point that it was interrupted.
- Does not monitor the volume of water used during a power outage.
- In Delay Regeneration types, the reserve capacity is set to 1/3 the capacity.

## Manually Initiating a Regeneration

A **Regeneration** cycle may be initiated manually (referred to as an Extra Regeneration Cycle). There are two options when starting an Extra Regeneration Cycle:

- Press and release the Extra Cycle Button:
  - — Flow Meter - Immediate Regeneration controls immediately go into a **Regeneration** cycle.
  - — For Time Clock and Flow Meter - Delayed Regeneration controls, the **In Service** dot begins to flash immediately and a **Regeneration** occurs at the pre-programmed **Regeneration** time.




*Figure 2*: Manually Initiated Regeneration

- Press and hold the Extra Cycle Button for five (5) seconds:
  - — For Time Clock and Flow Meter - Delayed Regeneration controls, the control immediately begins the **Regeneration** cycle.



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# 7000 Control Start-Up Procedures

## Set Time of Day

Press the **Set Up** and **Set Down** buttons to set time of day.

- Metric = 24 hour clock
- US = 12 hour clock with PM indicator light




*Figure 3*: Set Time of Day

## Enter Control Programming Mode

- Press and hold both the **Set Up** and **Set Down** buttons for five (5) seconds to enter Programming Mode. When the program mode is entered, the program dot turns on.




*Figure 4*: Enter Control Programming Mode

**CAUTION**

**Do not set the time of day to 12:01 PM when entering the Start-Up programming mode. Doing so causes the control to enter the Master Programming Mode and alter the factory settings, resulting in a system malfunction.**

The ***7000*** controller performs four (4) basic types of **Regeneration** systems. The type of system is selected by the system manufacturer and set in the Master Programming Mode. Basic systems are:

- **Time Clock**
  - The control operates for a preset number of days between **Regeneration** cycles. On the day that a **Regeneration** cycle is required the system regenerates at the preset Regeneration Time.
- **Meter Immediate**
  - The control regenerates immediately when the remaining capacity (volume of water that can be treated before a **Regeneration** is required) drops to zero (0).
- **Meter Delayed**
  - The control regenerates on the day that the remaining capacity drops to less than the reserve volume. **Regeneration** starts at the preset Regeneration Time.



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## Programming a Meter Delayed Regenerated System

1. **Feed water hardness (Display Code H).**

   ***NOTE:*** The feed water hardness setting only displays when the system is set to operate as a Meter Immediate or Meter Delayed system type.

   — Press the **Set Up** or **Set Down** buttons to set the amount of feed water hardness in grains/gallon (U.S.) or degrees (metric). The system automatically calculates treated water capacity based on the feed water hardness and the system capacity preset in the Master Programming mode. "Calc" is displayed during calculations.

   ***Example:***

   **Range: 4 – 199 U.S. and metric**

   — To program 9 grains / gallon (U.S.) or 9 degrees (metric) **[ H - 9]**

   — Press the **Set Up** and **Set Down** buttons to adjust this value.

   — Press the **Extra Cycle** button once to advance to the next step.

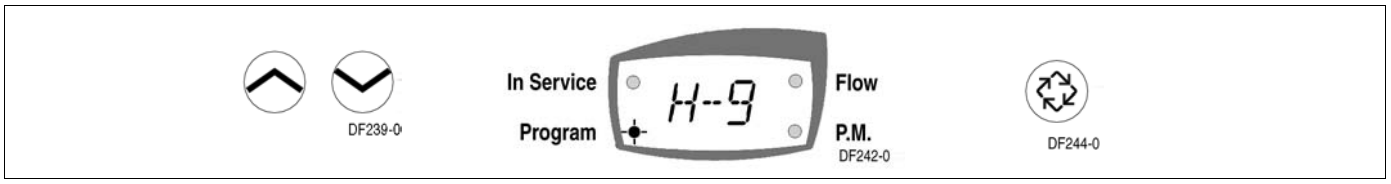



*Figure 5*: Feed Water Hardness

2. **Regeneration Time (No display Code)**

   ***NOTE:*** The Regeneration Time setting does not display in Meter Immediate Regeneration Mode since the system regenerates immediately when the available capacity reaches zero (0).

   Identify the Regeneration Time display by observing a non-flashing colon between two sets of numbers. Set the desired time of day for **Regeneration** to occur.

   ***Example:***

   **2 o'clock A.M. regeneration time: [ 2:00 ] (P.M. Indicator Dot Off)**

   — Press the **Set Up** and **Set Down** buttons to adjust this value.

   — Press the **Extra Cycle** button to exit the programming mode or press and hold the **Set Up** and **Set Down** buttons simultaneously for five (5) seconds to enter the Extended Setup Programming Mode.




*Figure 6*: Regeneration Time



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**3. EXTENDED Programming Mode**

**Regeneration Cycle Step Programming (Display Code 1 to 6)**

Use this feature to program the Regeneration Cycle step times. The Regeneration Cycle Step being programmed appears in the first digit of the display. Each display is used to set the duration time in minutes of that specific step in the regeneration cycle.

***Example:***

| Cycle Step | dF | dFFF | FLtr |
|---|---|---|---|
| **1** | **10** = Backwash | **12** = Refill | **10** = Backwash |
| **2** | **60** = Brine Draw | **60** = Brine Making | **10** = Rapid Rinse |
| **3** | **5** = 2nd Backwash | **10** = Backwash | |
| **4** | **10** = Rapid Rinse | **60** = Brine Draw | |
| **5** | **12** = Refill | **5** = 2nd Backwash | |
| **6** | | **10** = Rapid Rinse | |

— Use the **Set Up** and **Set Down** buttons to adjust this value.

— Press the **Extra Cycle** button to advance to the extended diagnostics.

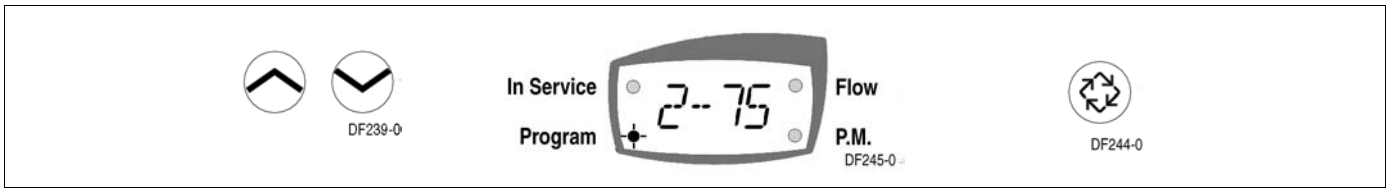



*Figure 7*: Extended Programming Mode

**4. Extended Diagnostics Mode (Viewable Only)**

**(Dy xx) Display Code** xx = days since last **Regeneration**

— Press the **Extra Cycle** button once to advance to the next diagnostics.

**(xxxx) No Display code xxxx =** volume used since the last **Regeneration**. (yyyy) No Display code yyyy Reserve Volume.

— Press the **Extra Cycle** button once to Exit Extended Setup Programming Mode.

**Control Programming Complete**

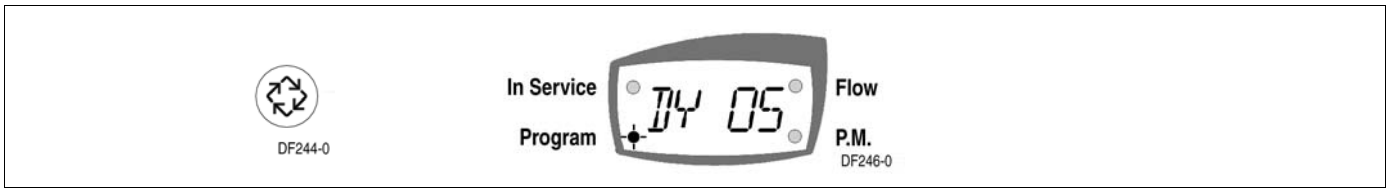



*Figure 8*: Extended Diagnostics Mode



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## Programming a Meter Immediate Regenerated System

1. **Feed water hardness (Display Code H).**

   The feed water hardness setting displays only if the system is set to operate as a Meter Immediate or Meter Delayed system type.

   — Press the **Set Up** and **Set Down** buttons to set the amount of feed water hardness (grains/gallon or degrees). The system automatically calculates treated water capacity based on the feed water hardness and the system capacity preset in the Master Programming mode.

   ***Example:***

   **Range: 4 – 199 US and Metric**

   — To program 9 grains / gallon (US) or 9 degrees (Metric) **[H – 9]**

   — Press the **Set Up** and **Set Down** buttons to adjust this value.

   — Press the **Extra Cycle** button once to Exit Setup Programming Mode or press and hold the Up and Down buttons simultaneously for five (5) seconds to enter the Extended Setup Programming Mode.

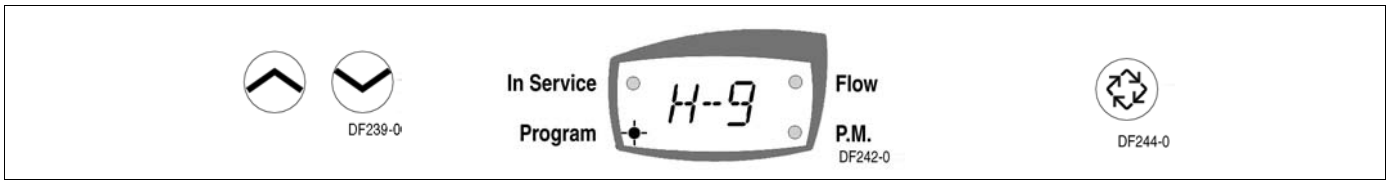



*Figure 9*: Feed Water Hardness

2. **EXTENDED Programming Mode**

   **Regeneration Cycle Step Programming (Display Code 1 – 6)**

   This Program Step is used to program the Regeneration Cycle step times. The Regeneration Cycle Step being programmed is displayed in the first digit of the display. Each display is used to set the duration time in minutes of that specific step in the **Regeneration** cycle.

   ***Example:***

| Cycle Step | dF | dFFF | FLtr |
|---|---|---|---|
| **1** | **10** = Backwash | **12** = Refill | **10** = Backwash |
| **2** | **60** = Brine Draw | **60** = Brine Making | **10** = Rapid Rinse |
| **3** | **5** = 2nd Backwash | **10** = Backwash | |
| **4** | **10** = Rapid Rinse | **60** = Brine Draw | |
| **5** | **12** = Refill | **5** = 2nd Backwash | |
| **6** | | **10** = Rapid Rinse | |

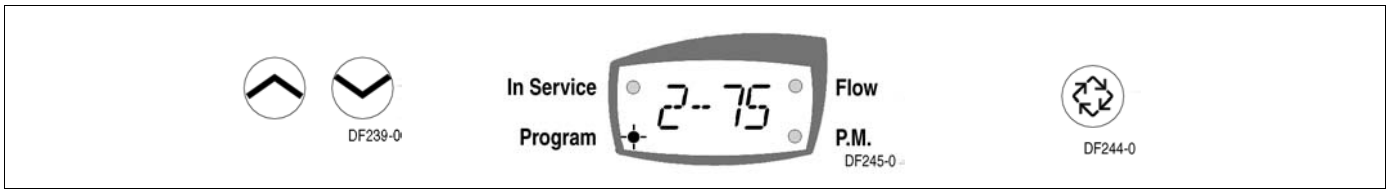



*Figure 10*: Extended Programming Mode



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3. **Extended Diagnostics Mode (Viewable Only)**

   **(Dy xx) Display Code** xx = days since last **Regeneration**

   — Press the **Extra Cycle** button once to advance to the next diagnostics.

   **(xxxx) No Display code xxxx =** the volume used since the last **Regeneration**

   — Press the **Extra Cycle** button once to Exit Extended Setup Programming Mode.

   **Control Programming Complete**

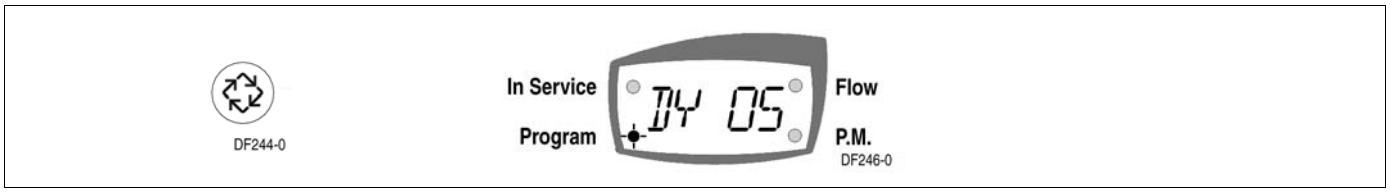



*Figure 11*: Extended Diagnostics Mode

## Programming a Time Clock Regenerated System

1. **Regeneration Time (No Display Code)**

   The Regeneration Time display can be identified by observing a non-flashing colon between two sets of numbers. Set the desired time of day that you want **Regeneration** to occur.

   ***Example:***

   **2 o'clock A.M. regeneration time: [ 2:00 ] (P.M. Indicator Dot Off)**

   — Use the **Set Up** and **Set Down** buttons to adjust this value.

   — Press the **Extra Cycle** button to proceed to the next step.




*Figure 12*: Regeneration Time

2. **Regeneration Day (Display code A)**

   Use this display to set the number of days between **Regeneration** cycles. This setting is identified by observing the letter "A" in the first digit. In the Time Clock regeneration mode, the system regenerates at the time set in Step 1 on the programmed number of days.

   ***Example:***

   Regeneration every 7 days **[A -- 7]**

   — Use the **Set Up** and **Set Down** buttons to adjust this value.

   — Press the **Extra Cycle** button once to Exit Setup Programming Mode or press and hold the **Set Up** and **Set Down** buttons simultaneously for five (5) seconds to enter the extended setup programming mode.

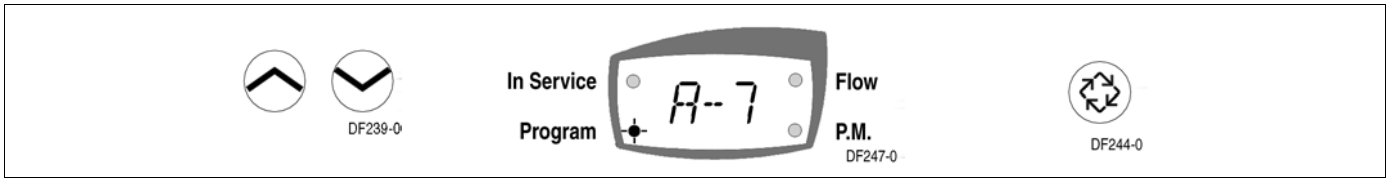



*Figure 13*: Regeneration Day



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### 3. Extended Programming Mode

**Regeneration Cycle Step Programming (Display Code 1 – 6)**

This Program Step is used to program the Regeneration Cycle step times. The Regeneration Cycle Step being programmed is displayed in the first digit of the display. Each display is used to set the duration time in minutes of that specific step in the **Regeneration** cycle.

***Example:***

| Cycle Step | dF | dFFF | FLtr |
|---|---|---|---|
| **1** | **10** = Backwash | **12** = Refill | **10** = Backwash |
| **2** | **60** = Brine Draw | **60** = Brine Making | **10** = Rapid Rinse |
| **3** | **5** = 2nd Backwash | **10** = Backwash | |
| **4** | **10** = Rapid Rinse | **60** = Brine Draw | |
| **5** | **12** = Refill | **5** = 2nd Backwash | |
| **6** | | **10** = Rapid Rinse | |

— Use the **Set Up** and **Set Down** buttons to adjust this value.

— Press the **Extra Cycle** button once to proceed to the diagnostics.

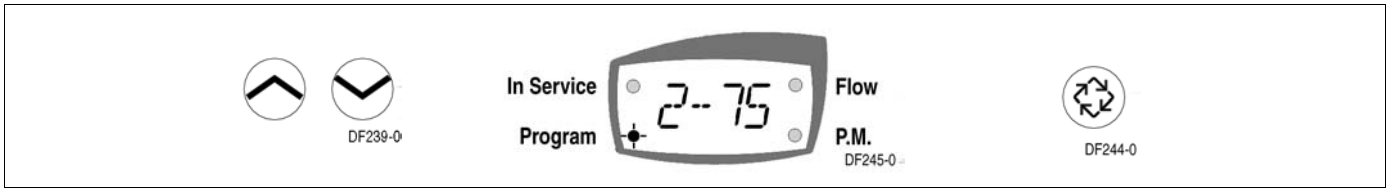



*Figure 14*: Extended Programming Mode

### 4. Extended Diagnostics Mode (Viewable Only)

**(Dy xx) Display Code** xx = days since last **Regeneration**

— Press the **Extra Cycle** button once to advance to the next diagnostics.

— Press the **Extra Cycle** button once to Exit Extended Setup Programming Mode.

**Control Programming Complete**

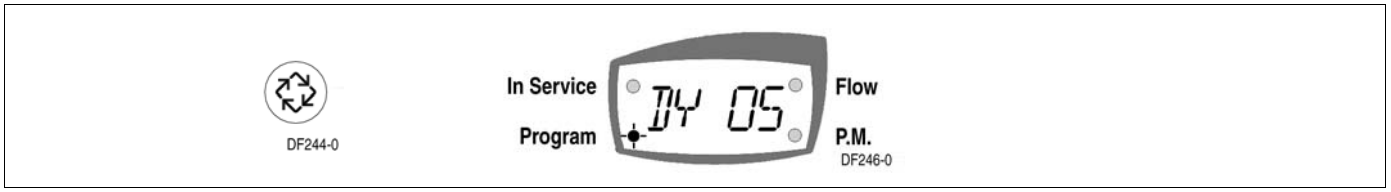


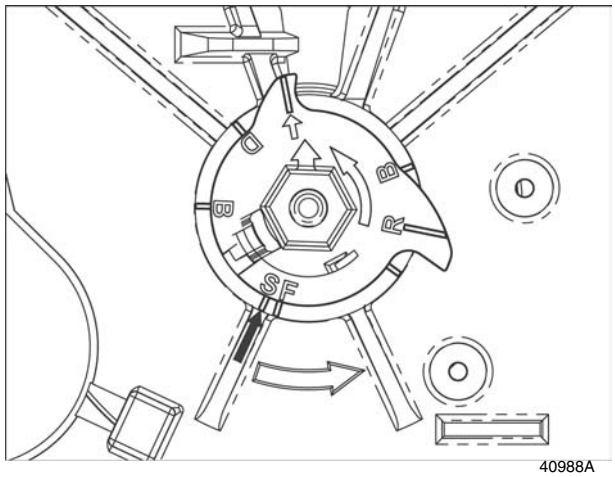

*Figure 15*: Extended Diagnostics Mode



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## *Water Conditioner Flow Diagrams*

### In Service Position



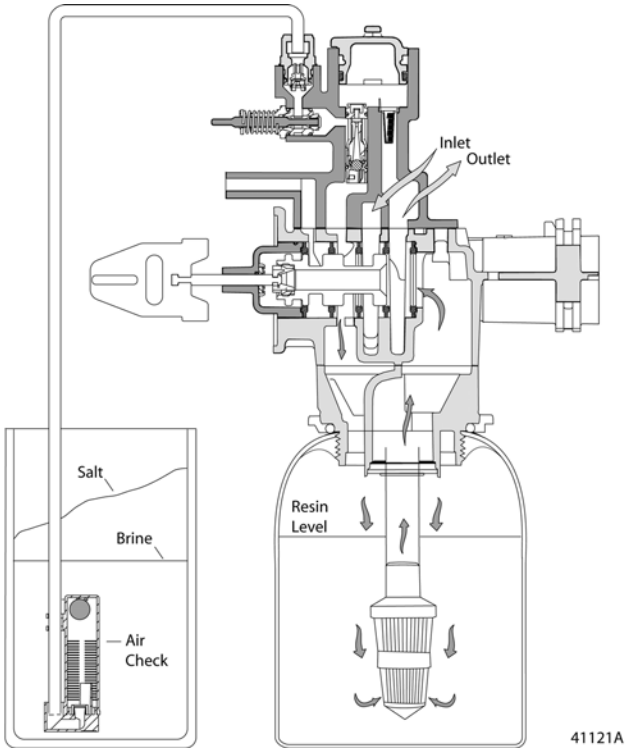
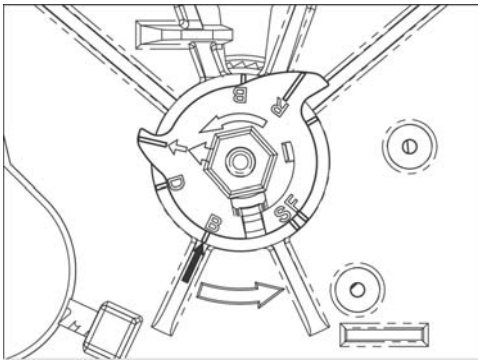
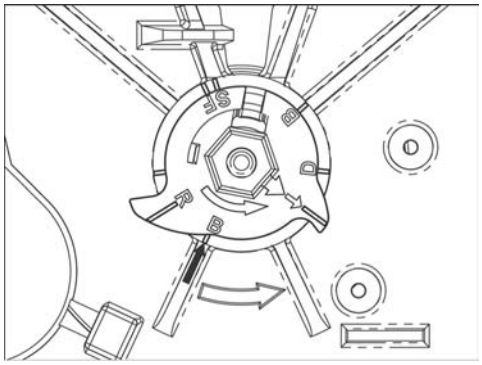




*Figure 16*: In Service Position

### Backwash Position




1st
Backwash
Cycle




2nd
Backwash
Cycle

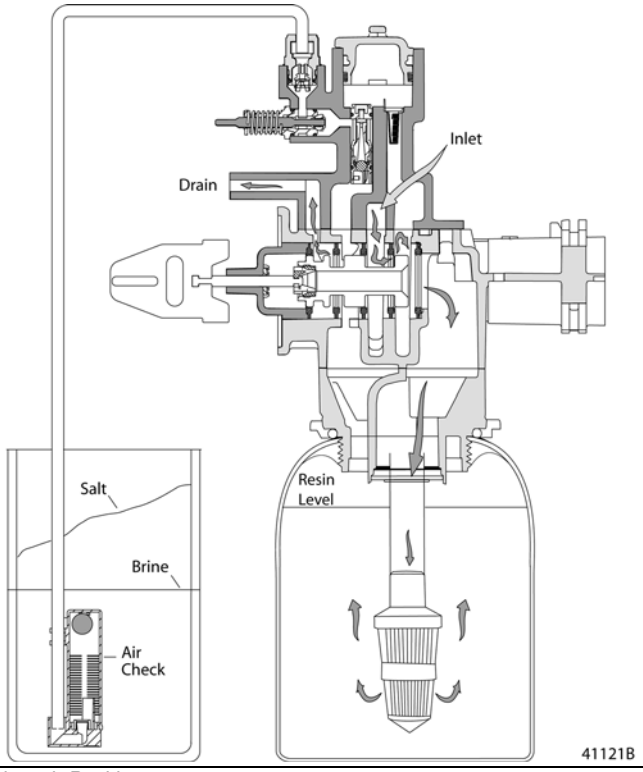



*Figure 17*: Backwash Position



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# *Water Conditioner Flow Diagrams*

## Brine Position

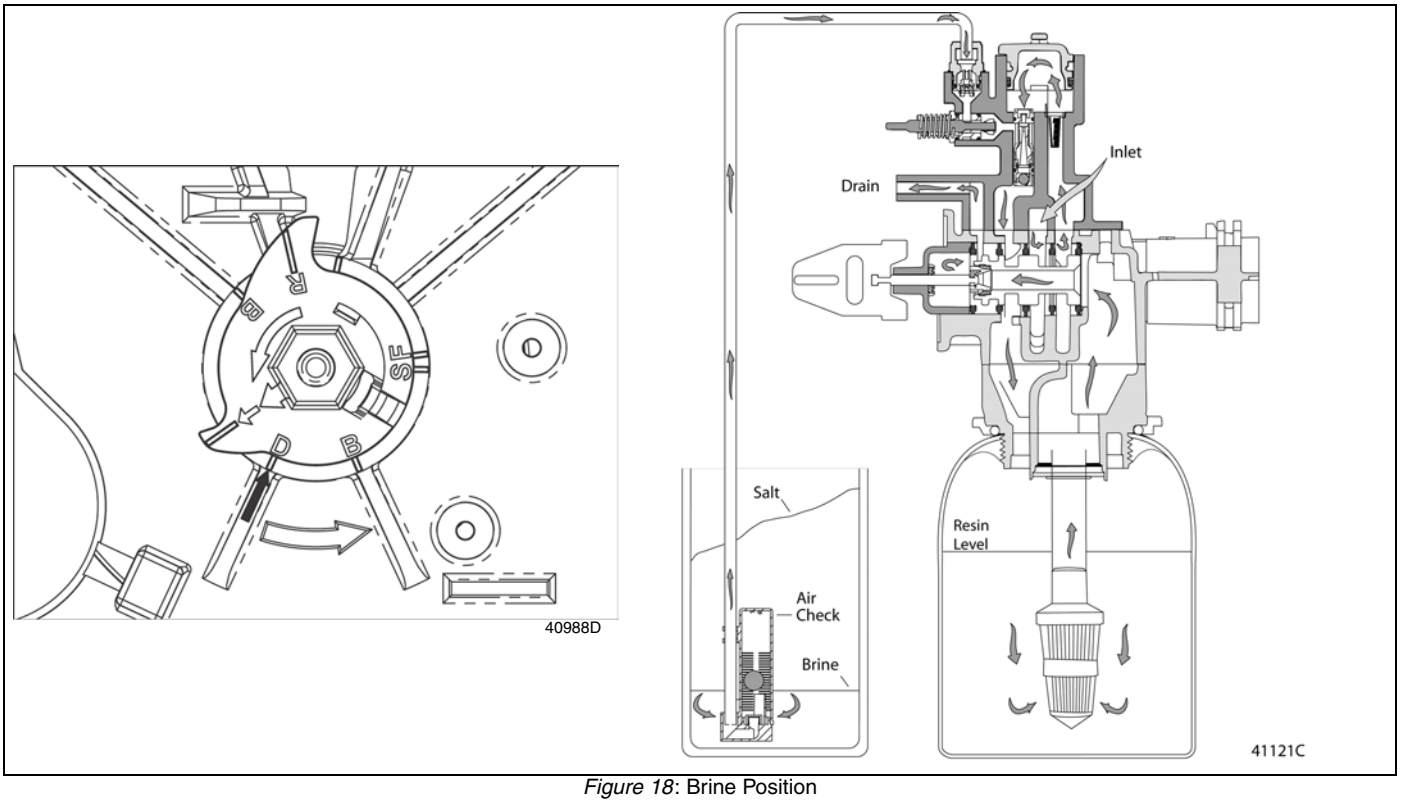



*Figure 18*: Brine Position

## Slow Rinse Position

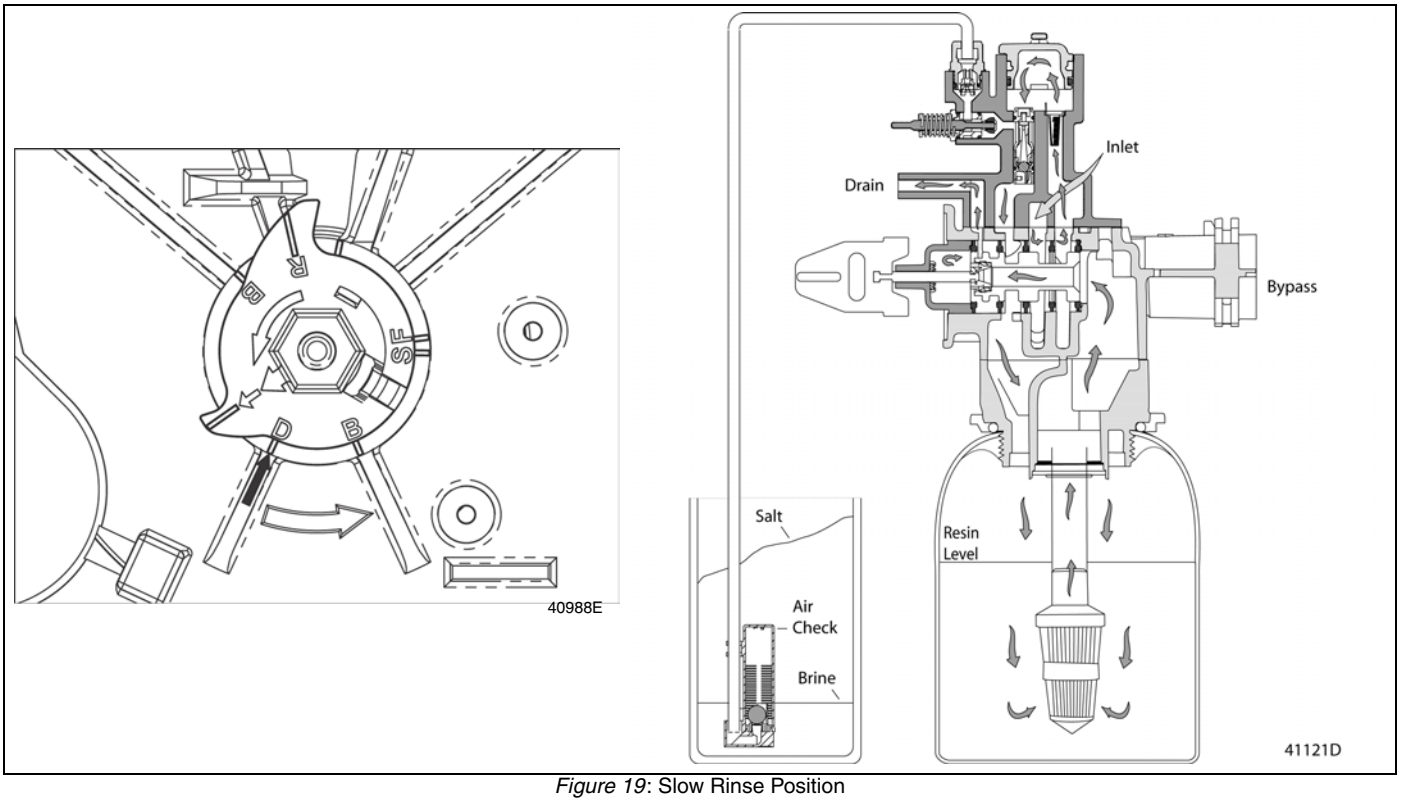



*Figure 19*: Slow Rinse Position



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# *Water Conditioner Flow Diagrams*

## Rapid Rinse Position

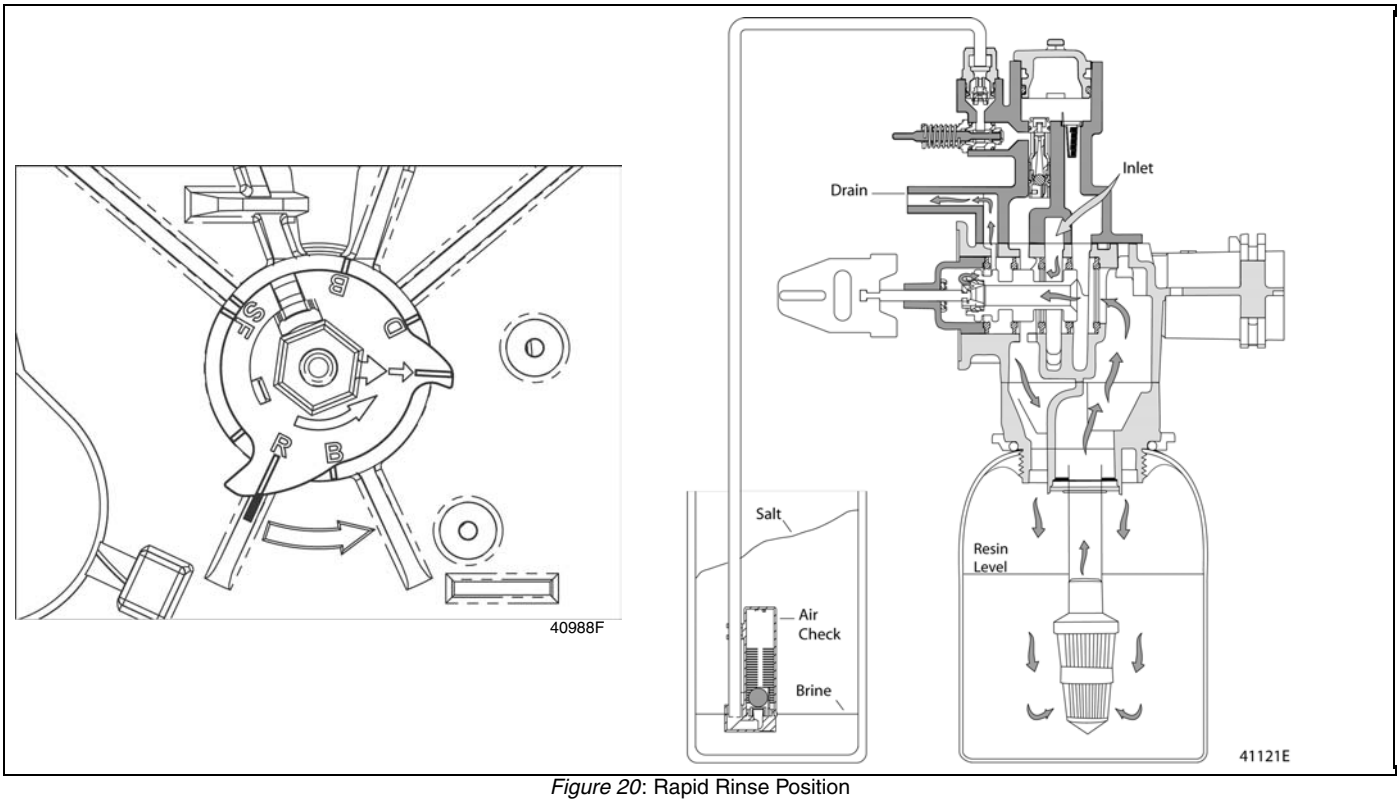



*Figure 20*: Rapid Rinse Position

## Brine Tank Refill Position

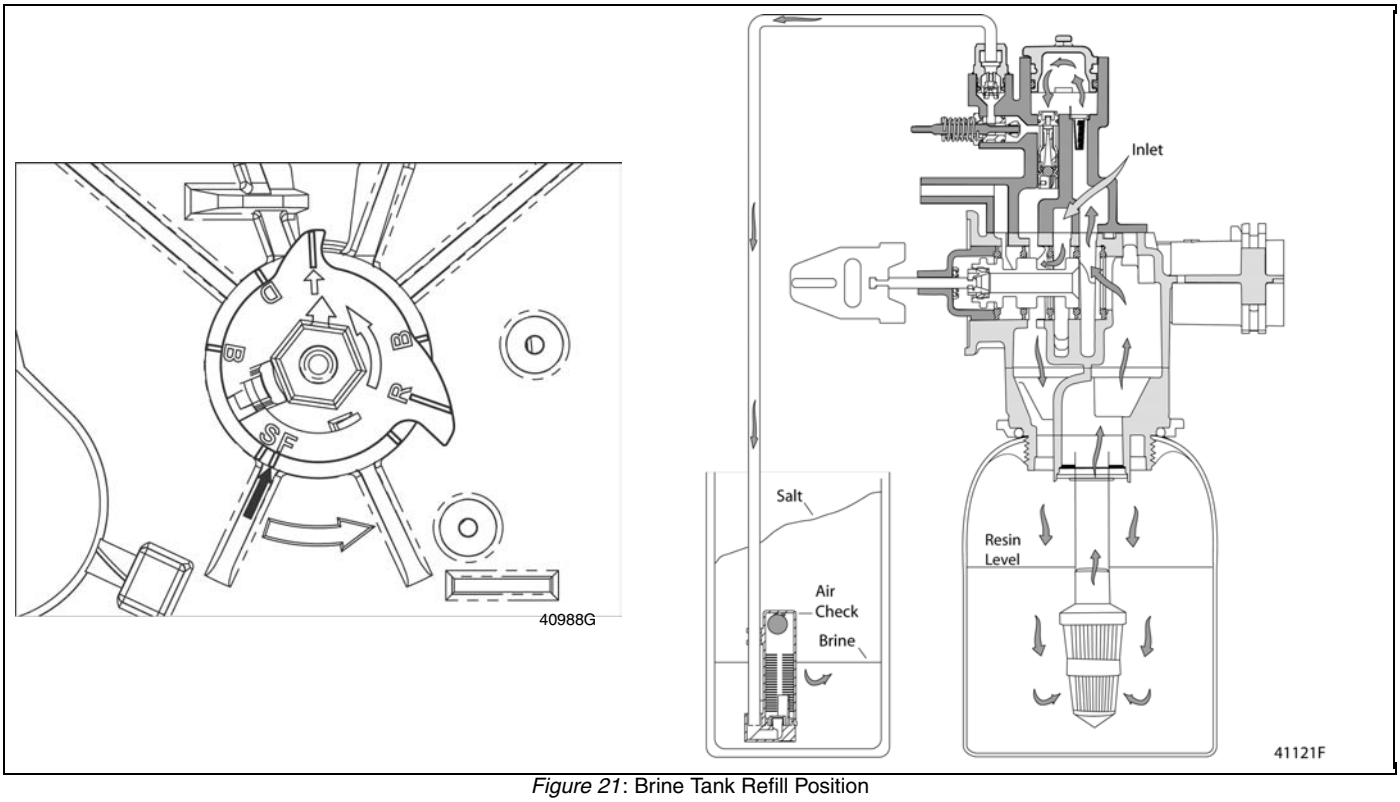



*Figure 21*: Brine Tank Refill Position



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## *Notes:*



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## *Power Head*

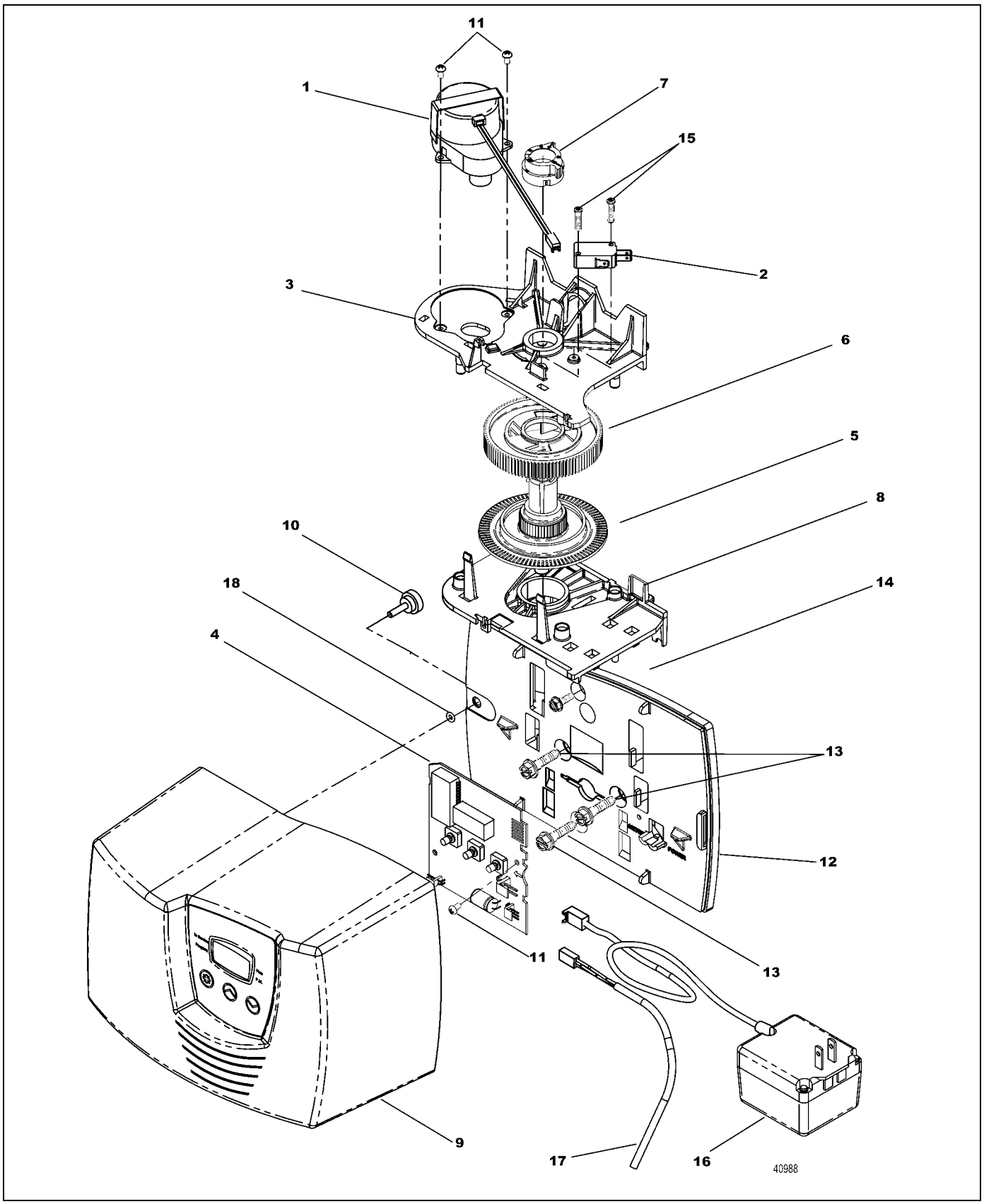



*Figure 22*: Power Head




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# Model 7000

## *Power Head Parts List*

| *Item Number* | *No. Req'd* | *Part Number* | *Description* |
|---|---|---|---|
| 1 | 1 | 40968 | motor |
| 2 | 1 | 10218 | optional auxiliary switch |
| 3 | 1 | 40978 | plate, upper support |
| 4 | 1 | 61460 | circuit board |
| 5 | 1 | 40702 | shaft, encoder |
| 6 | 1 | 40703 | gear, main drive |
| 7 | 1 | 40704 | cam, brine, down flow |
| | | 40977 | cam, aux. switch/filter |
| 8 | 1 | 40979 | plate, lower support |
| 9 | 1 | 61430 | cover asm |
| 10 | 1 | 19367 | screw, thumb |
| 11 | 3 | 13602 | screw, 6-32x.312" |
| 12 | 1 | 40980 | backplate |
| 13 | 3 | 40967 | screw, 1/4-20x1.0" |
| 14 | 1 | 15727 | screw, 10-24x1/2" |
| 15 | 2 | 11805 | screw, 4-40x5/8" |
| 16 | 1 | 40981 | transformer, US 24V, 9.6VA |
| 17 | 1 | 19791-01 | meter cable assembly, turbine |
| 18 | 1 | 41122 | o-ring |



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## *Valve Assembly*

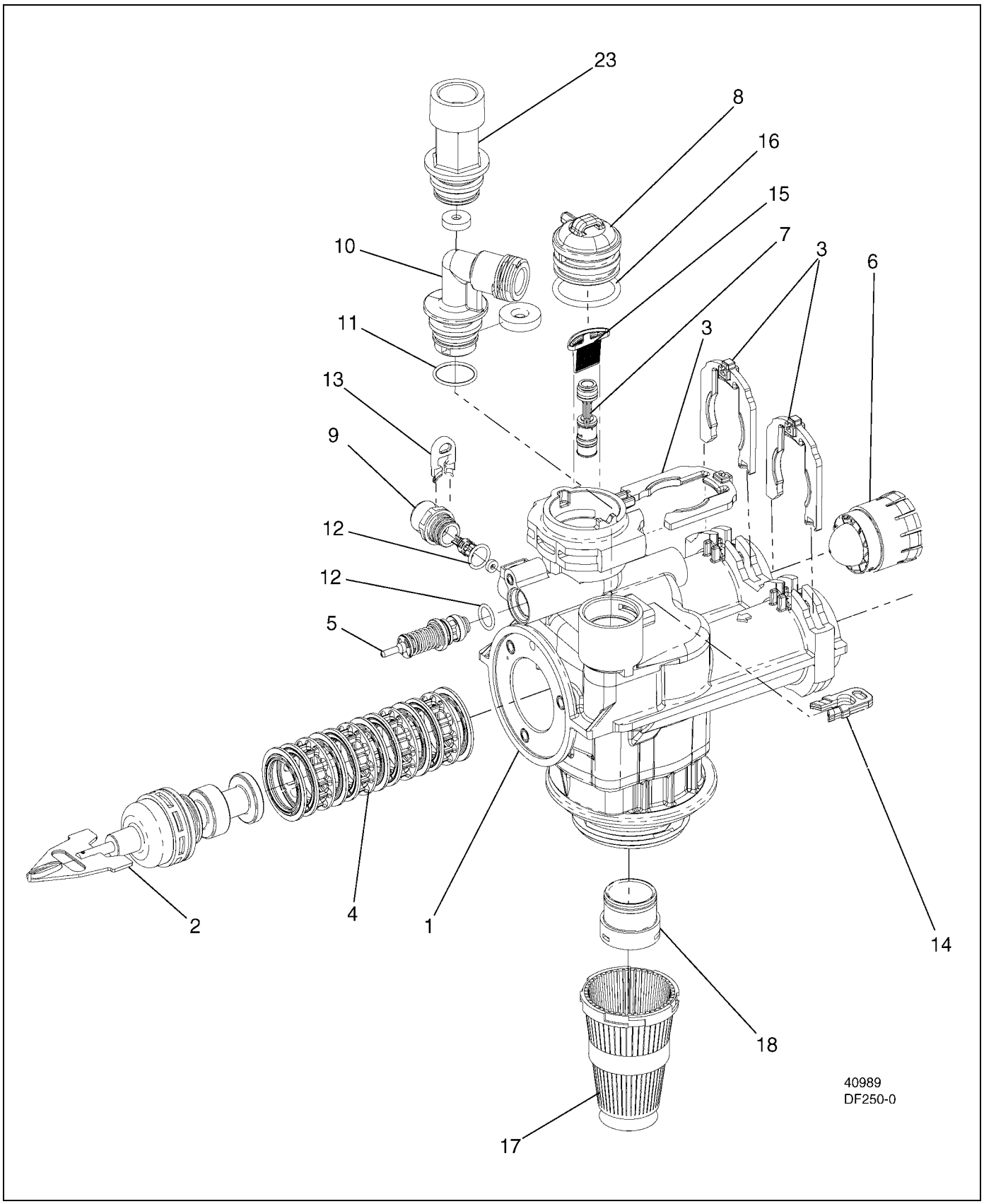



*Figure 23*: Valve Assembly




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# Model 7000

## *Valve Assembly Parts List*

| *Item Number* | *No. Req'd* | *Part Number* | *Description* | | | |
|---|---|---|---|---|---|---|
| 1 | 1 | 61050 | valve body assembly | | | |
| 2 | 1 | 61452-10 | piston assembly, ***7000*** softener, D/F 35 GPM | | | |
| | | 61453-10 | piston assembly, ***7000*** softener, D/F 28 GPM | | | |
| | | 61452-20 | piston assembly, ***7000***, filter | | | |
| 3 | 3 | 40576 | clip, H, plastic | | | |
| 4 | 1 | 61438 | seal and spacer kit | | | |
| 5 | 1 | 60016-01 | brine valve, ***7000*** | | | |
| 6 | 1 | 40577 | turbine meter assembly | | | |
| 7 | 1 | **61XXX** | injector assemblies | | | |
| | | | | ***Part Number*** | ***Injector Number*** | |
| | | | | 61454-000 | #000 | |
| | | | | 61454-00 | #00 | |
| | | | | 61454-0 | #0 | |
| | | | | 61454-1 | #1 | |
| | | | | 61454-2 | #2 | |
| | | | | 61454-3 | #3 | |
| | | | | 61454-4 | #4 | |
| | | | | 61454-5 | #5 | |
| 8 | 1 | 40556 | cap, injector | | | |
| 9 | 1 | **61XXX** | BLFC assemblies | | | |
| | | | | ***Part Number*** | ***BLFC Size*** | ***GPM*** |
| | | | | 61450-12 | 3/8" | 0.125 |
| | | | | 61450-25 | 3/8" | 0.25 |
| | | | | 61450-50 | 3/8" | 0.50 |
| | | | | 61450-100 | 3/8" | 1.0 |
| | | | | 61451-12 | 1/2" | 0.125 |
| | | | | 61451-25 | 1/2" | 0.25 |
| | | | | 61451-50 | 1/2" | 0.50 |
| | | | | 61451-100 | 1/2" | 1.0 |
| 10 | 1 | **61XXX** | DLFC assemblies | | | |
| | | | | ***Part Number*** | ***DLFC Size*** | ***GPM*** |
| | | | | 61455-17 | 3/4" | 1.7 |
| | | | | 61455-20 | 3/4" | 2.0 |
| | | | | 61455-24 | 3/4" | 2.4 |
| | | | | 61455-30 | 3/4" | 3.0 |
| | | | | 61455-35 | 3/4" | 3.5 |
| | | | | 61455-40 | 3/4" | 4.0 |
| | | | | 61455-45 | 3/4" | 4.5 |
| | | | | 61455-50 | 3/4" | 5.0 |
| | | | | 61455-60 | 3/4" | 6.0 |
| | | | | 61455-70 | 3/4" | 7.0 |
| 11 | 1 | 13303-01 | o-ring, -021 | | | |
| 12 | 2 | 13302-01 | o-ring, 014 | | | |
| 13 | 1 | 40946 | clip, brine retaining | | | |
| 14 | 1 | 40945 | clip, drain retaining | | | |
| 15 | 1 | 40950 | screen, injector | | | |
| 16 | 1 | 40951 | o-ring, -220 | | | |
| 17 | 1 | 18280 | collector, top, 1"x.011, gray | | | |
| 18 | 1 | 61419 | kit, 1.05" dist. adapter | | | |
| 23 | 1 | **61xxx** | DLFC kits | | | |
| | | | | ***Part Number*** | ***DLFC Size*** | ***GPM*** |
| | | | | 61456-8.0 | 1" | 8.0 |
| | | | | 61456-9.0 | 1" | 9.0 |
| | | | | 61456-10 | 1" | 10.0 |
| | | | | 61456-12 | 1" | 12.0 |
| | | | | 61456-15 | 1" | 15.0 |
| | | | | 61456-20 | 1" | 20.0 |
| | | | | 61456-25 | 1" | 25.0 |
| | | | | 61456-30 | 1" | 30.0 |
| *Not Shown* | | | | | | |
| | | 12763-10 | stuffer tool assembly | | | |



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## *Bypass Assembly*

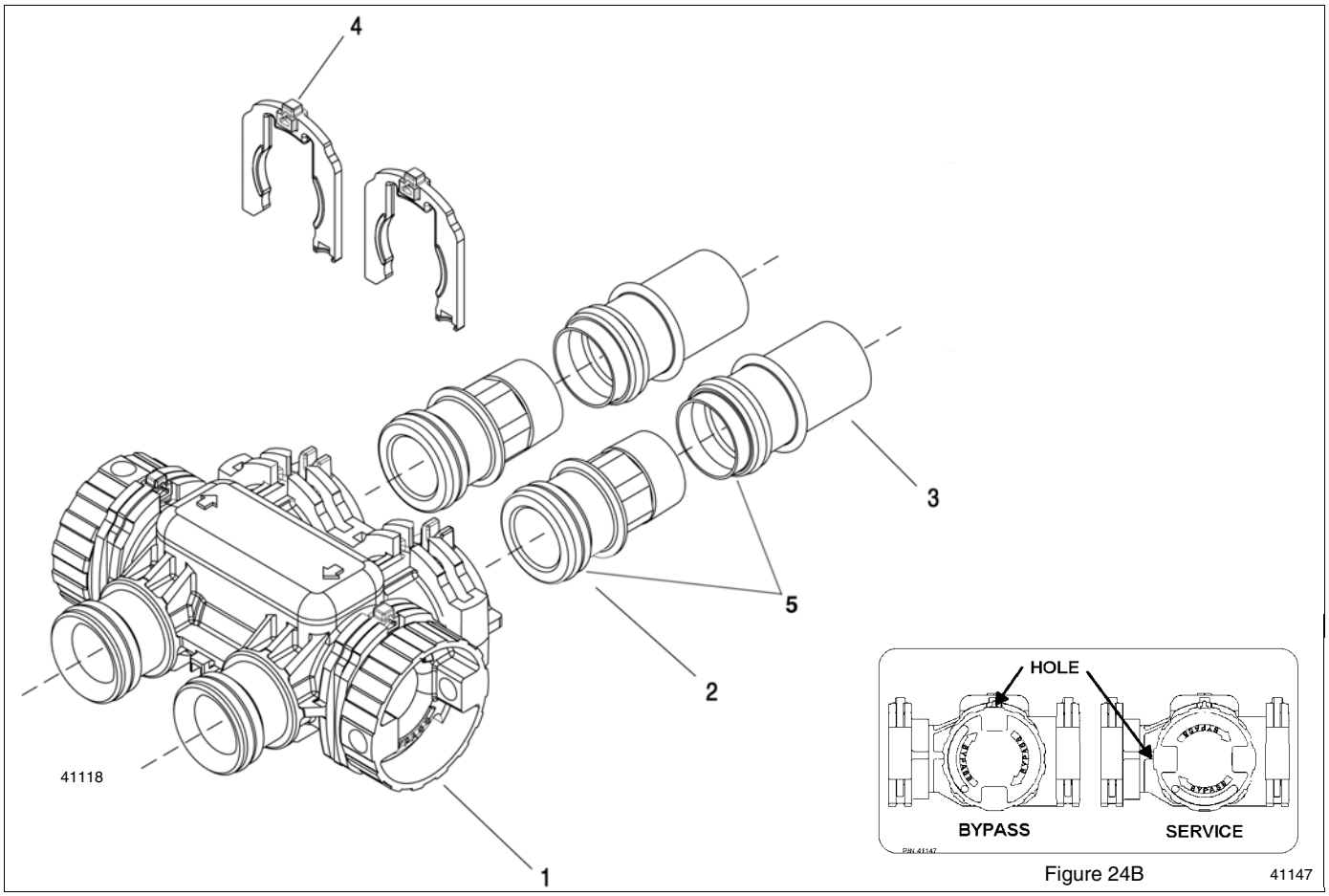



*Figure 24*: ***7000*** Bypass Assembly

**IMPORTANT**

**To bypass the valve, turn bypass knob on both sides of the valve to bypass position. (See *Figure 24*B.)**

**When returning to service, put the inlet into service before the outlet.**

| *Item Number* | *No. Req'd* | *Part Number* | *Description* |
|---|---|---|---|
| 1 | 1 | 40569 | ***7000*** bypass assembly |
| 2 | 1 | 40563 | connector, 1" NPT |
| | | 40563-10 | connector, 1" BSP |
| | | 40565 | connector, 1-1/4" NPT |
| | | 40565-10 | connector, 1-1/4" BSP |
| 3 | 1 | 40953 | connector, 1-1/4" sweat, copper |
| 4 | 2 | 40576 | clip, H, plastic |
| 5 | 1 | 40951 | o-ring |
| *Not Shown* | | | |
| | 1 | 61462 | ***7000*** valve bypass service kit<br>*(includes all internal parts for **7000** bypass assembly– bypass body not included)* |




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## *2310 Safety Brine Valve*

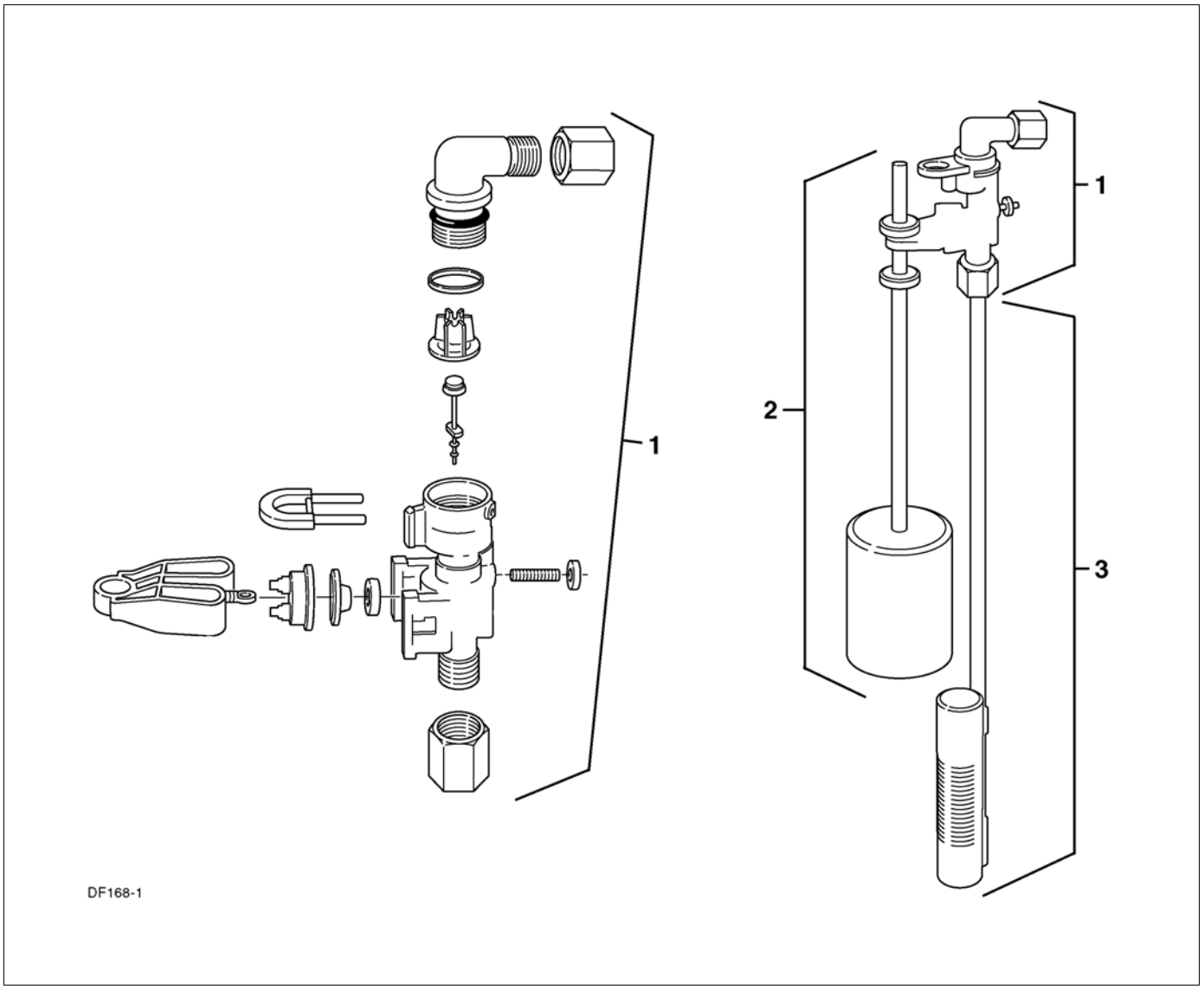



*Figure 25*: ***2310*** Safety Brine Valve

| *Item Number* | *No. Req'd* | *Part Number* | *Description* |
|---|---|---|---|
| 1 | 1 | 60014 | ***2310*** safety brine valve |
| 2 | 1 | 60068 | ***2310*** float assembly |
| | | 60026-30 | float assembly red/white (float fill) |
| 3 | 1 | 60002 | #500 air check |




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# *Troubleshooting*

## Error Codes

***NOTE:*** Error Codes appear on the **In Service** display.

There are three possible error codes.:

| Error Code | Probable Cause | Recover and Resetting |
|---|---|---|
| **( Err 0 )** | Drive motor is stalled | Unplug the unit from the power source. When power is restored to the unit, the **Err** _ display code clears. If the condition causing the error has not been resolved the **Err** _ code reappears in the four digit display. Do not attempt to troubleshoot this problem any further. Contact the installer for service. |
| **( Err 1 )** | Drive motor is running continuously | |
| **( Err 2 )** | There have been more than 99 days since the last **Regeneration** | **Regeneration** must occur for the unit to recover, the display to clear and the valve to function normally. Contact the installer for service. |

**WARNING**

**The controller MUST be depressurized before removing any quick connection clips for servicing. The connector should be pushed toward the control while removing clips.**

## General Troubleshooting

| PROBLEM | CAUSE | CORRECTION |
|---|---|---|
| 1. Softener fails to regenerate. | A. Electrical service to unit has been interrupted. | A. Assure permanent electrical service (check fuse, plug, pull chain or switch). |
| | B. Timer is defective. | B. Replace timer. |
| 2. Hard water. | A. Bypass valve is open. | A. Close bypass valve. |
| | B. No salt in brine tank. | B. Add Salt to brine tank and maintain salt level above water level. |
| | C. Injector screen plugged. | C. Clean injector screen. |
| | D. Insufficient water flowing into brine tank. | D. Check brine tank fill time and clean brine line flow control if plugged. |
| | E. Hot water tank hardness. | E. Repeated flushing of the hot water tank is required. |
| | F. Leak at distributor tube. | F. Make sure distributor tube is not cracked. Check O-Ring and tube pilot. |
| | G. Internal valve leak. | B. Replace seals and spacers and/or piston. |



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| | | |
|---|---|---|
| 3. Unit used too much salt. | A. Improper salt setting. | A. Check salt usage and salt setting. |
| | B. Excessive water in brine tank. | B. See Problem No. 7. |
| 4. Loss of water pressure. | A. Iron buildup in line to water conditioner. | A. Clean line to water conditioner. |
| | B. Iron buildup in water conditioner. | B. Clean control and add mineral cleaner to mineral bed. Increase frequency of regeneration and/or backwash time. |
| | C. Inlet of control plugged due to foreign material broken loose from pipe by recent work done on plumbing system. | C. Remove pistons and clean control. |
| 5. Loss of mineral through drain line. | A. Air in water system. | A. Assure that well system has proper air eliminator control. Check for dry well condition. |
| | B. Drain line flow control too large. | B. Check to ensure drain line flow control is sized properly for your mineral tank. |
| 6. Iron in treated water. | A. Fouled mineral bed. | A. Check backwash, brine draw and brine tank fill. Increase frequency of regeneration. |
| 7. Excessive water in brine tank. | A. Plugged drain line flow control. | A. Check flow control. |
| | B. Plugged injector system. | B. Clean injector and screen. |
| | C. Timer not cycling. | C. Replace timer. |
| | D. Foreign material in brine valve. | D. Replace brine valve seat and clean valve. |
| | E. Foreign material in brine line flow control. | E. Clean brine line flow control. |
| | F. Power loss during brine fill. | F. Check power source. |



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## *Removing Gear Box Assembly*

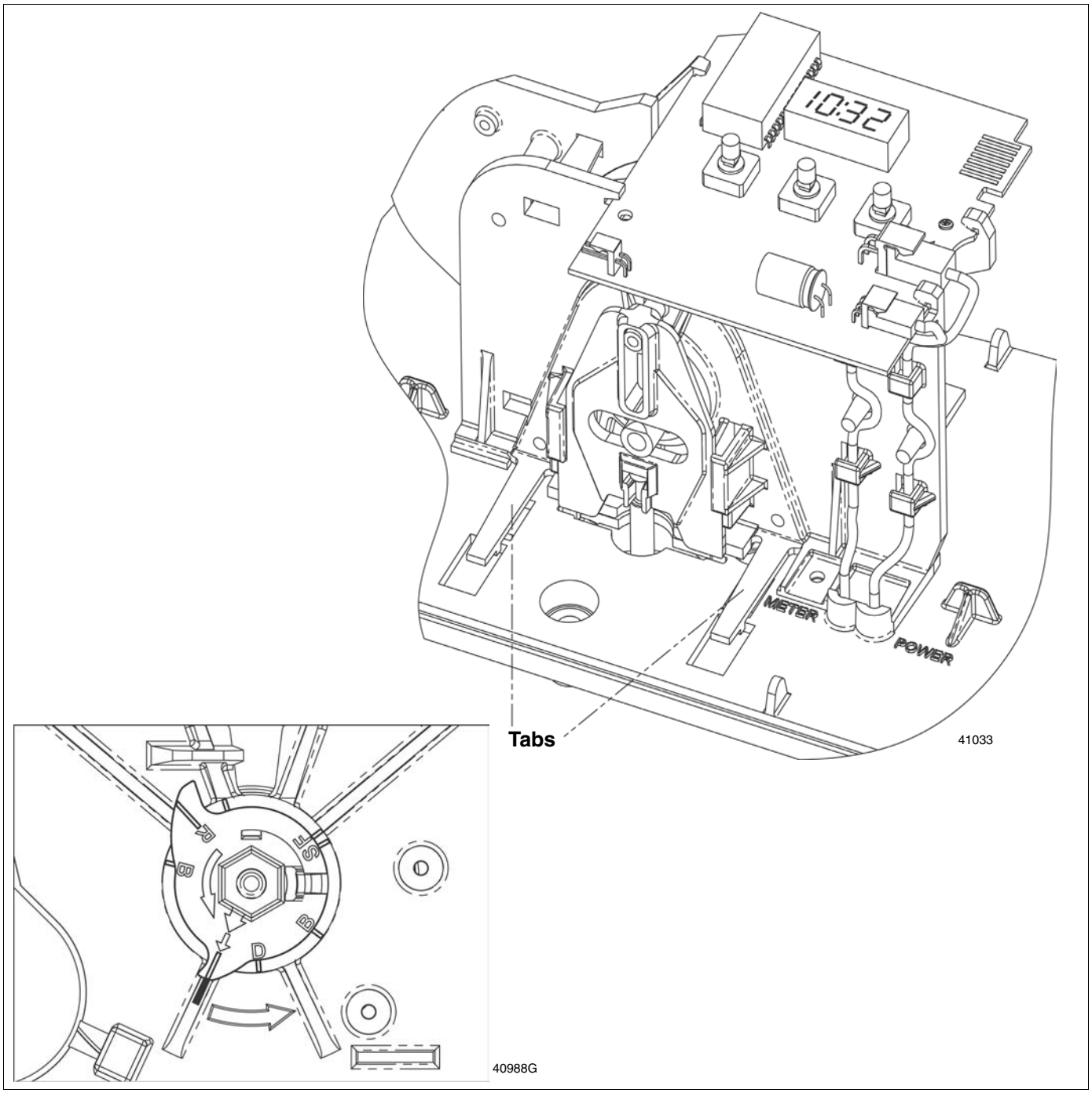



*Figure 26*: Removing the Gear Box Assembly

1. Unplug the power source.
2. With 3/8" nut driver, turn the cycle cam counter-clockwise to the position shown in *Figure 26* above.
3. Slightly pull the two tabs outward and push the gearbox slightly upward to remove.
4. When returning valve to service after powerhead dissassembly, manually step valve through regeneration using the extra cycle button until valve is in service.



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## *Inserting Circuit Board*

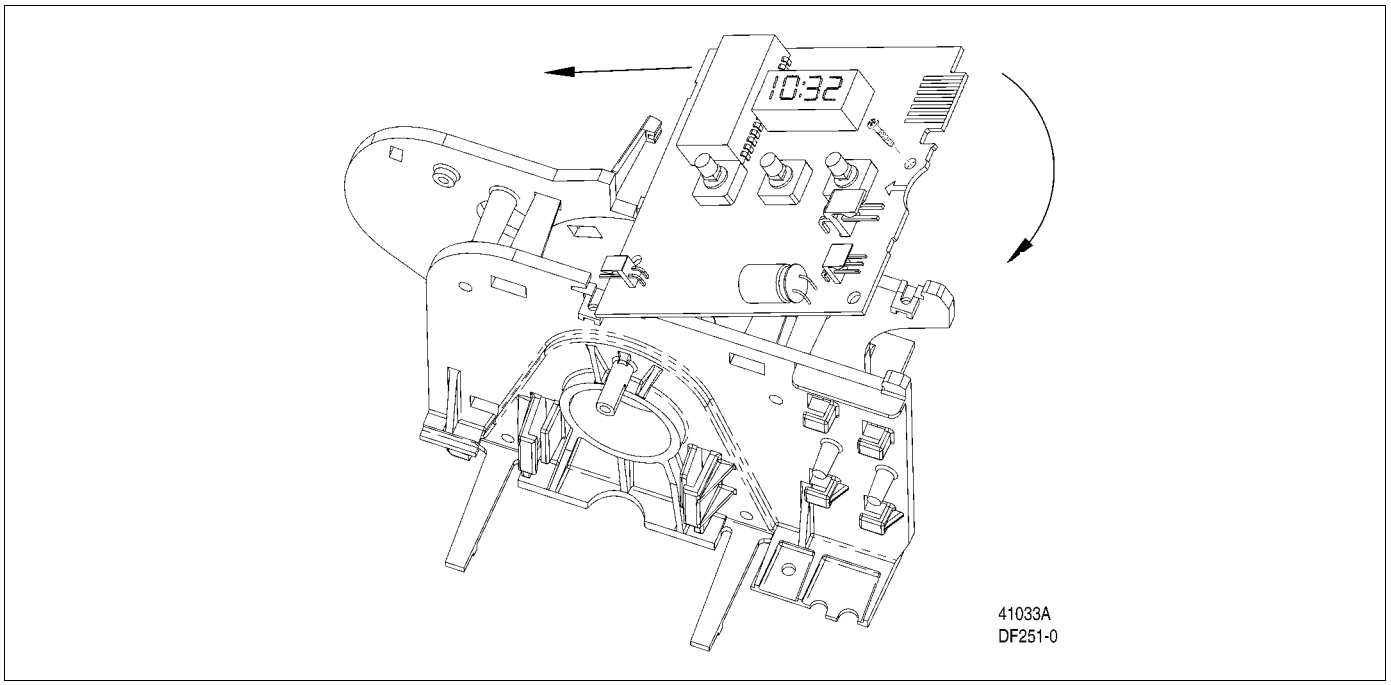



*Figure 27*: Aligning Circuit Board Notches

1. To insert the circuit board, align the notches on the left side of the board with the flexible finger on the power head. Apply pressure to the left while rotating the board back.

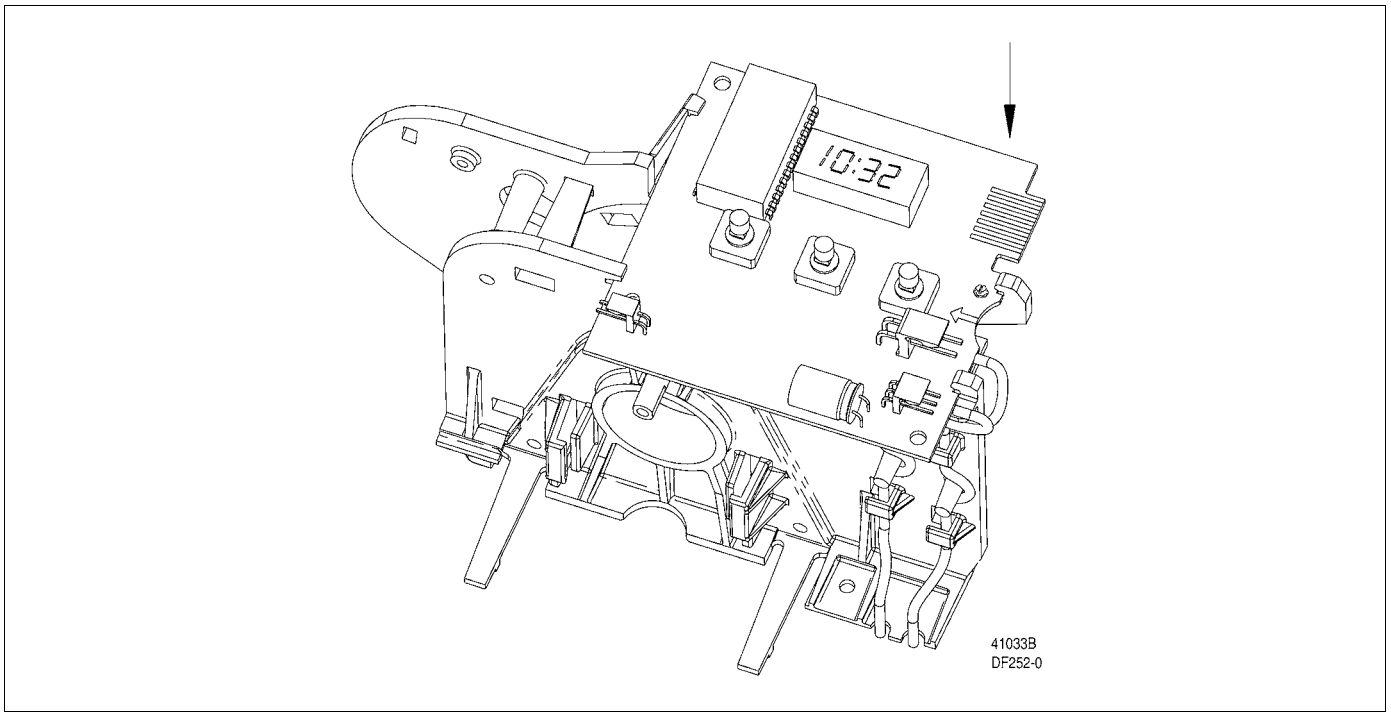



*Figure 28*: Snapping Circuit Board Into Place

2. When all the way down, snap the circuit board into place under the notches on the right.



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## *Connecting Circuit Board*

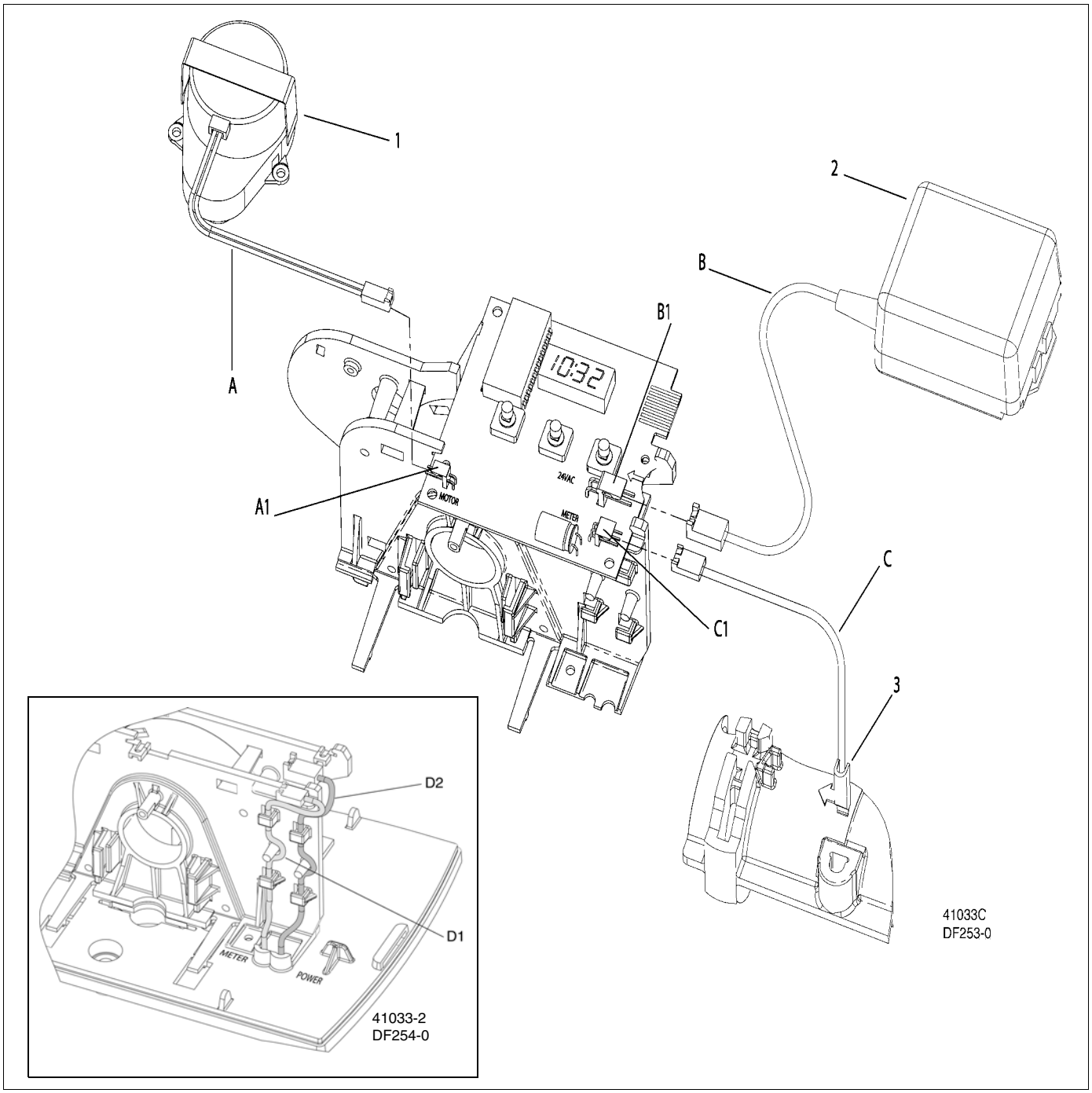



*Figure 29*: Connecting the Circuit Board

After the circuit board is installed:

1. Connect the motor wires (A) to the motor connector (A1) on board.
2. Connect the transformer cable (B) to the transformer connector (B1) on board.
3. Connect the meter cable (C) to the meter cable connector (C1) on board.
4. Connect the valve end to the opening on the valve body.
5. Thread meter cable (D1) and power wire (D2) along path shown in *Figure 29*.




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## *Dimensions*

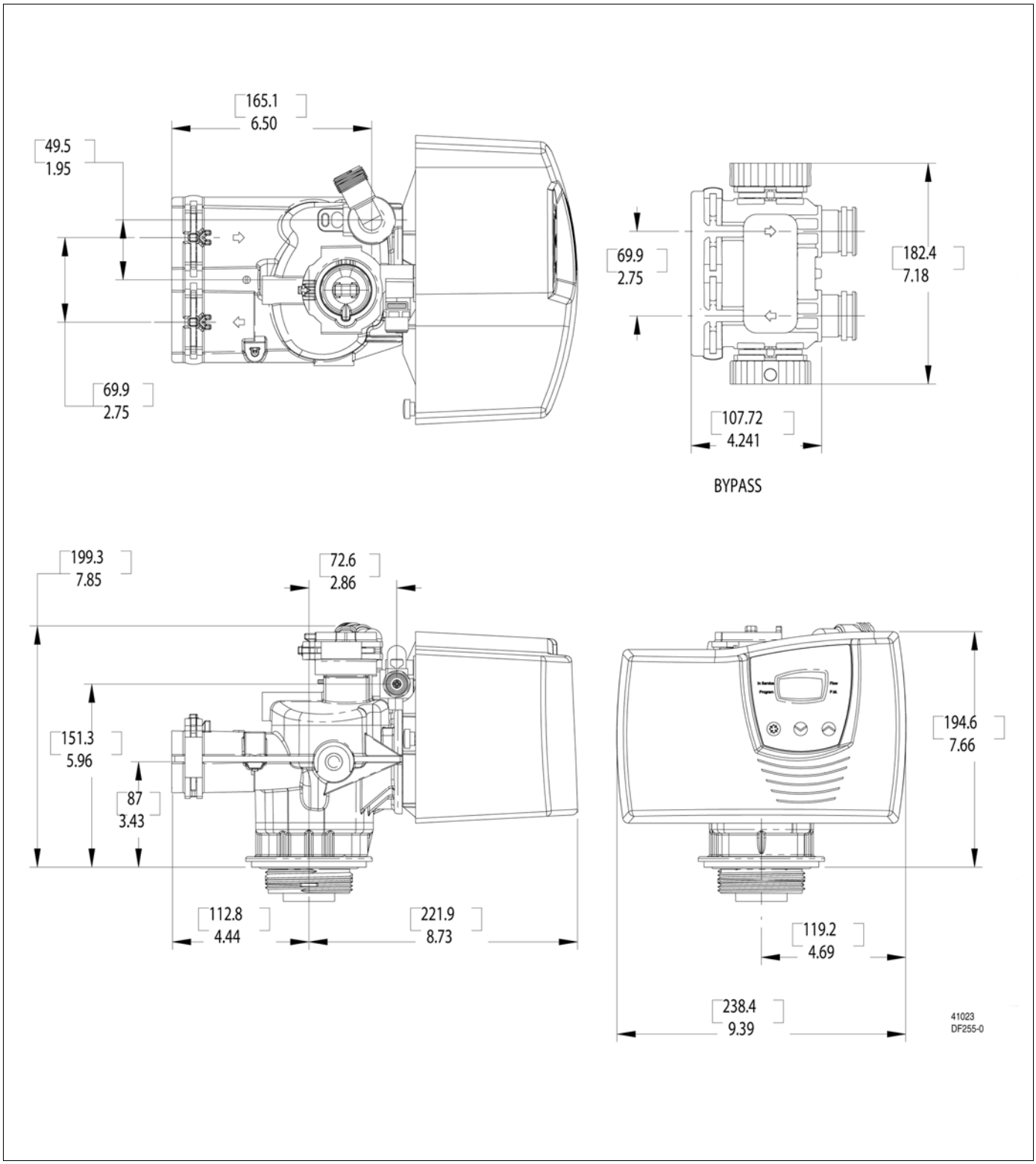



*Figure 30*: Dimensions



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# *Meter Flow Data*

## *7000*

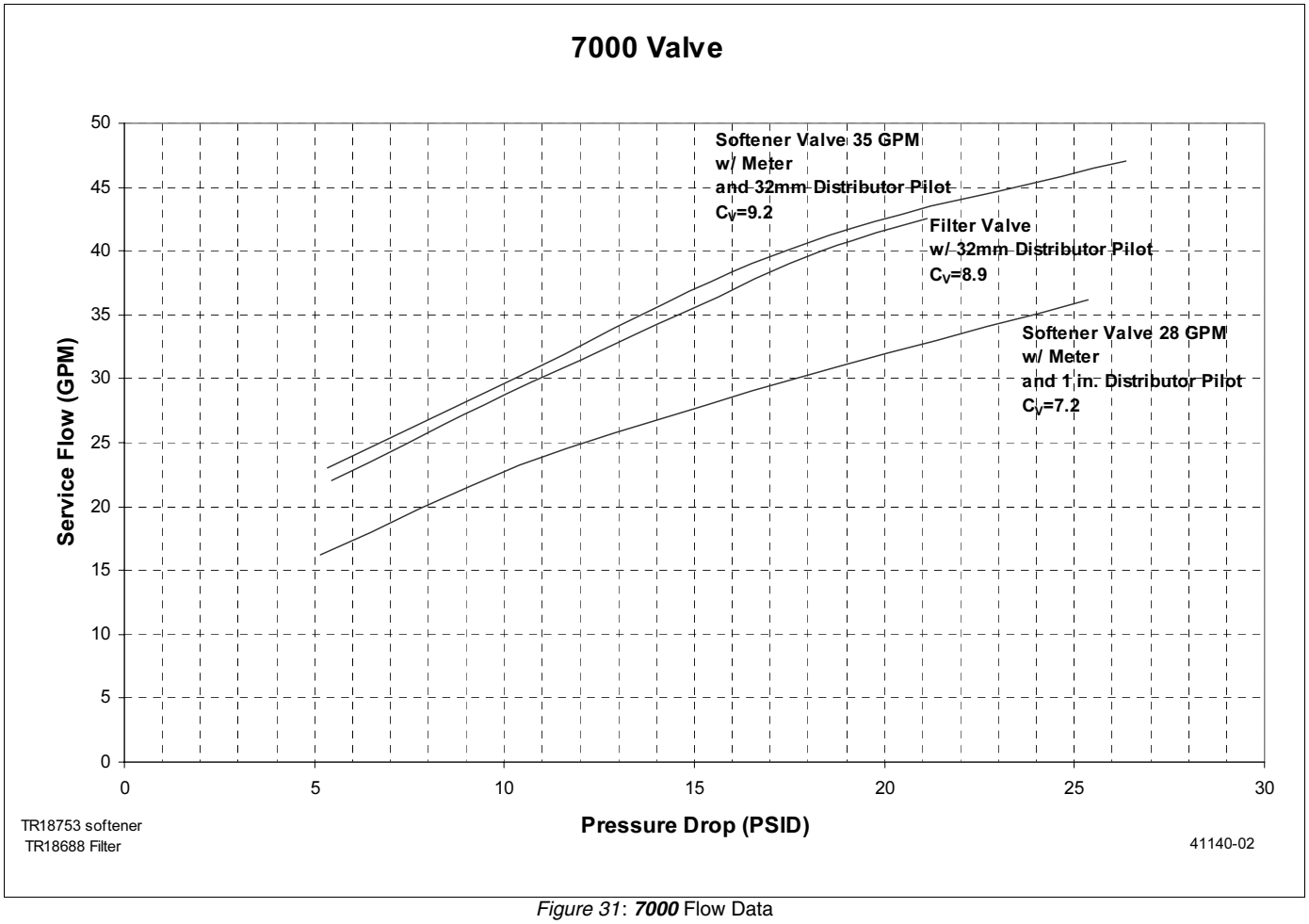


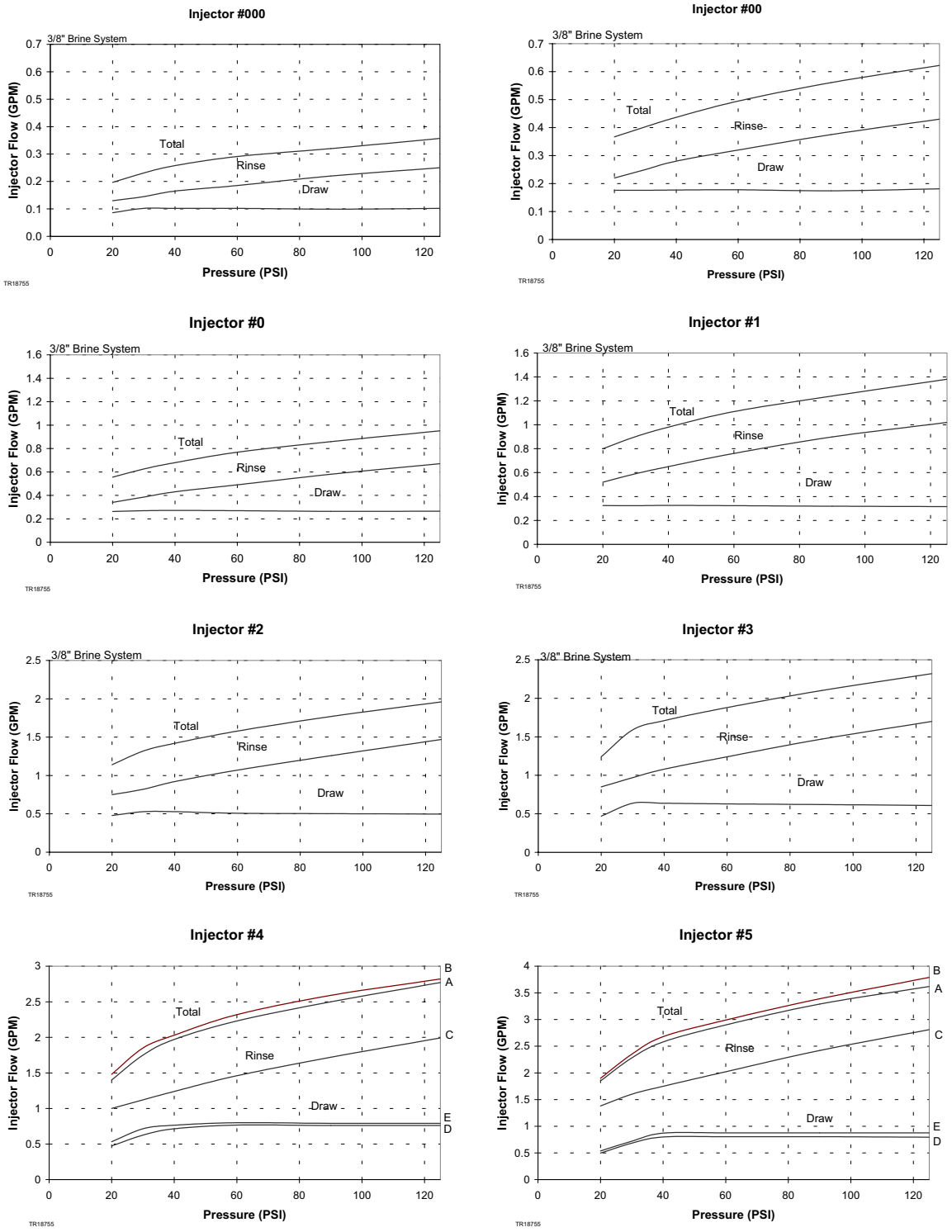

*Figure 31*: ***7000*** Flow Data



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# *Injector Flow Data*

## *7000*




A) Total Flow, 3/8" Brine System
B) Total Flow, 1/2" Brine Line
C) Rinse
D) Brine Draw, 3/8" Brine System
E) Brine Draw, 1/2" Brine Line

Note: All data taken with 2310 Safety Brine Valve and 500 Air Check

*Figure 32*: ***7000*** *Injectors*



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