MODEL 6700 Downflow - V2.0

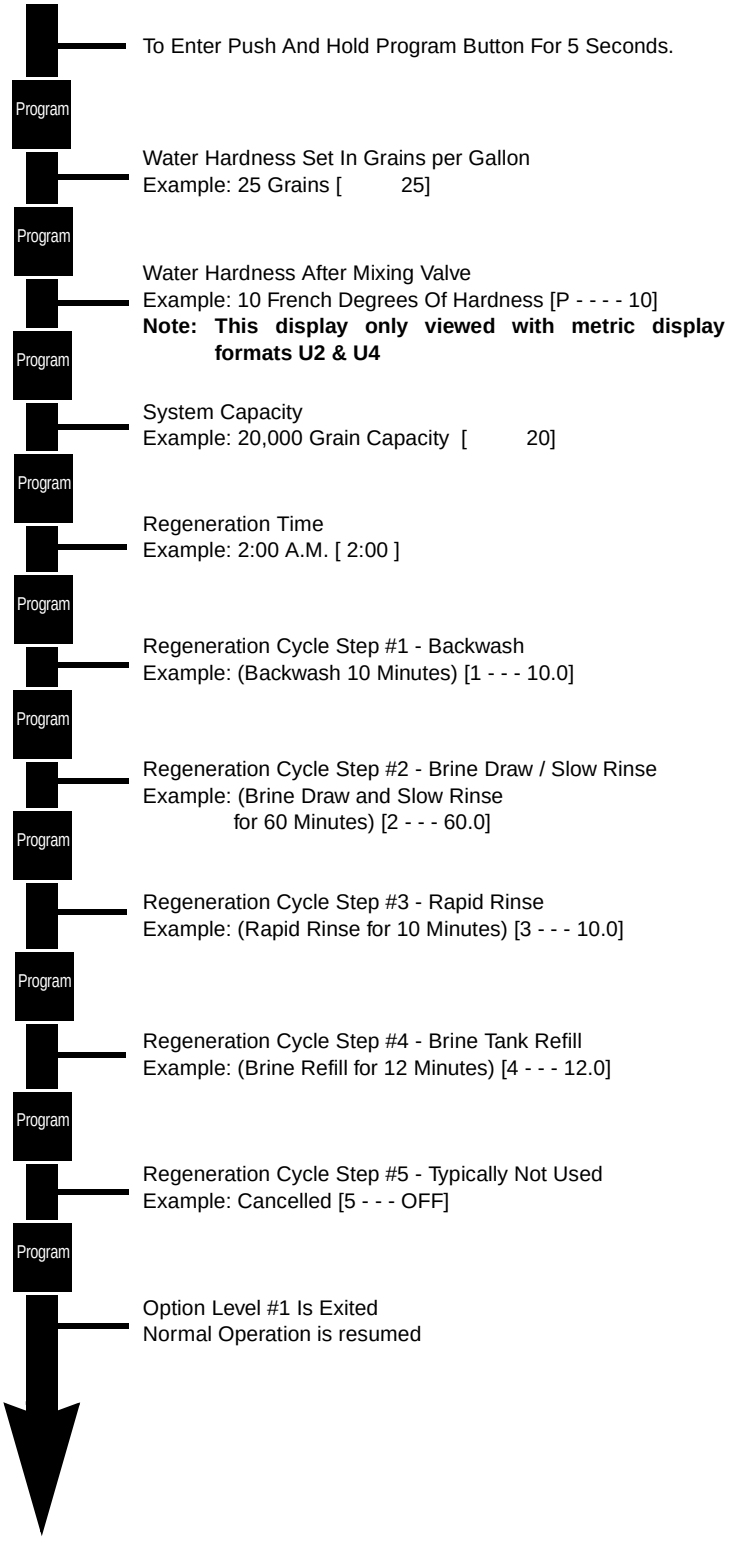
Option Setting Level #1

Programming Chart

Level #1

NOTE:

1. Push Program Button Once Per Display.
2. Option settings may be changed by pushing either the Up or Down Arrow Button.
3. Depending on current valve programming certain displays will not be able to be viewed or set.



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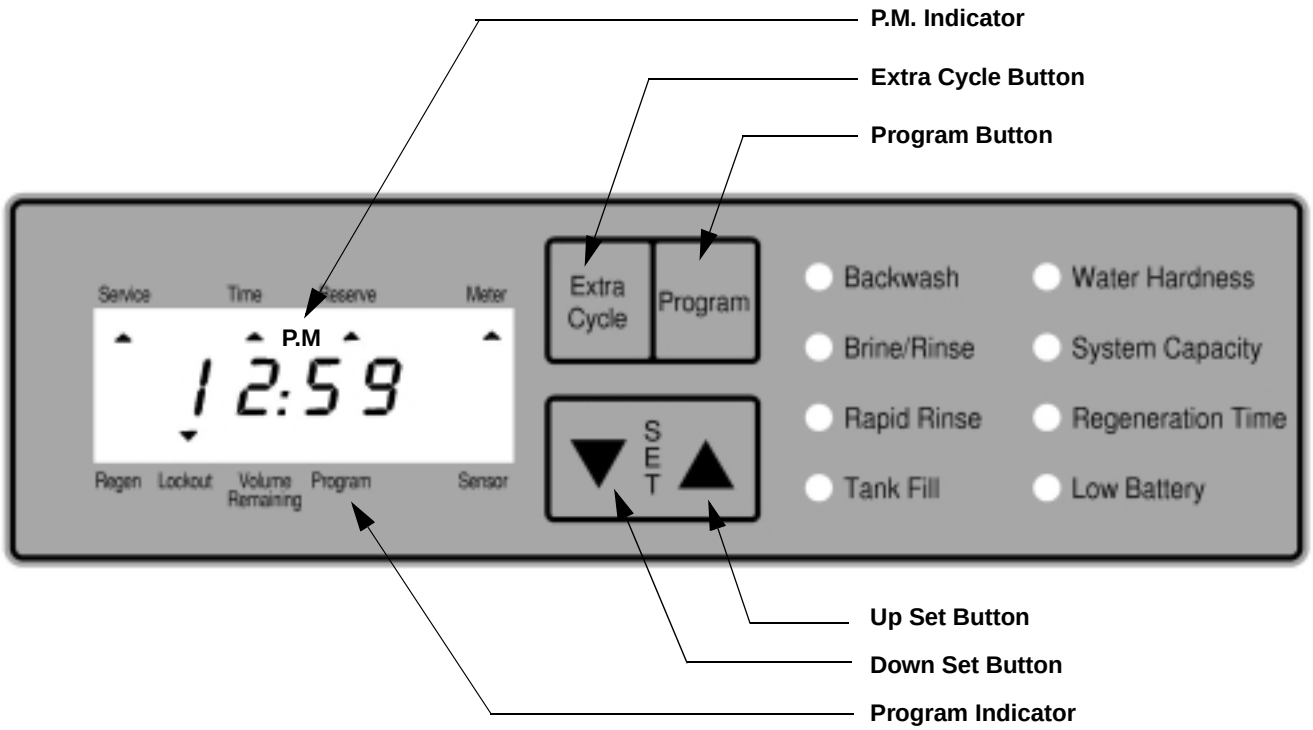
MODEL 6700 Downflow - V2.0

Option Setting Level #1

Installer Programming



Setting up the valve during installation requires access to the first level of option programming.

Entering Option Level #1

Depress the Program Button for 5 seconds. The Program Arrow will turn on and the first display viewed is used to set the Inlet Water Hardness. Depending on current programming, certain displays or option settings will not be viewed.

1. Water Hardness

The unit of measure used for this setting is grains/ French degrees/P.P.M./German degrees. This option setting is identified by the red LED next to the Water Hardness label.

Example: 25 grains **[25]**

The **UP** and **DOWN Set Buttons** will adjust this value.

2. Water Hardness After Mixing Valve (P)

Depress the Program Button. The next display viewed is the option setting for water hardness after mixing valve. This option setting is identified by the letter P only. The unit of measure used for this setting is French degrees or P.P.M. This display will only be able to be viewed with U.S./metric Display Format set to either metric formats. This option setting is used with inlet water mixing valve equipped unit only.

Example: 10 French degrees of Hardness **[P - - - - 10]**

The **UP** and **DOWN SET Buttons** will adjust this value.

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Option Setting Level #1

Installer Programming (Cont'd.)

3. System Capacity

Depress the Program Button. The next display viewed is the option setting for Capacity. This option setting is identified by the red LED on next to the label System Capacity. The unit of measurement used for this setting is kilograms/French degree x m^3/grams/ German degree x m^3. The total capacity of the softener is set with this display. If required, the control will calculate a reserve automatically.

Example: 20,000 grain capacity - **[20]**

The **UP** and **DOWN Set Buttons** will adjust this value.

4. Regeneration Cycle Step Programming (1) (2) (3) (4) (5) (6)

Depress the Program Button. The next 2 to 6 displays viewed are used to program the Regeneration Cycle. Up to 6 steps can be programmed. Each display is used to set the duration time in minutes of that specific step in a regeneration cycle. A red LED will turn on for the regeneration cycle step being programmed (except steps #5 & #6).

Examples: Regeneration Cycle Step #1 - 8.0 minutes - **[1 - - - - 8.0]**
Regeneration Cycle Step #5 - 8 1/2 minutes -**[5 - - - - 8.5]**

Depress the Program Button once per display to advance through Regeneration Cycle Step Programming. Steps are cancelled by setting the display to 0. Remaining regeneration cycle is cancelled by setting display to OFF. The 6700 control has a separate brine tank fill cycle. Your desired salt setting must be calculated, using the blue (.25 gpm) or black (.5 gpm) rate of refill (in gpm) times your timer setting. Then using one gallon of fresh water dissolving approximately 3 lbs. of salt, calculate your refill time. Valves equipped for Variable Brining will not require a Brine Tank Refill setting. Brine Making time is typically set for 15 minutes for a gridless brine tank.

Example: lbs. salt ÷ 3 ÷ B.L.F.C. Size = refill time in minutes, 10 lbs. salt ÷ 3 ÷ .25 = 13.3 minute refill time

The **UP** and **DOWN SET Buttons** will adjust these settings.

5. Regeneration Time

Depress the Program Button. The next display viewed is the option setting for Regeneration Time. It is identified by a red LED next to the Regeneration Time label as well as a non-flashing colon.

Example: 2 o'clock A.M. regeneration time **[2:00]**

The **UP** and **DOWN Set Buttons** will adjust this value.

Exiting This Option Setting Level

Depress the Program Button once per display until all option setting displays have been viewed.

Installer Notes:

1. Control Calculations - With Delayed Regeneration Valves, the control is designed to automatically calculate its reserve capacity based on daily water usage. There is no need to program in a reserve capacity.
2. The System Capacity Option Setting should always be set to the resin bed manufacturers capacity recommendations for a given amount of salt to be used during regeneration.
3. System Capacity and Water Hardness displays will not be able to be viewed or set with non-metered systems.
4. Regeneration Time will not be able to be viewed or set with immediate regeneration valves.
5. Acceptable Voltage Ranges For Reliable Control Operation:
   24 Vac Valves + or -10% 50/60Hz

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MODEL 6700 Downflow - V2.0

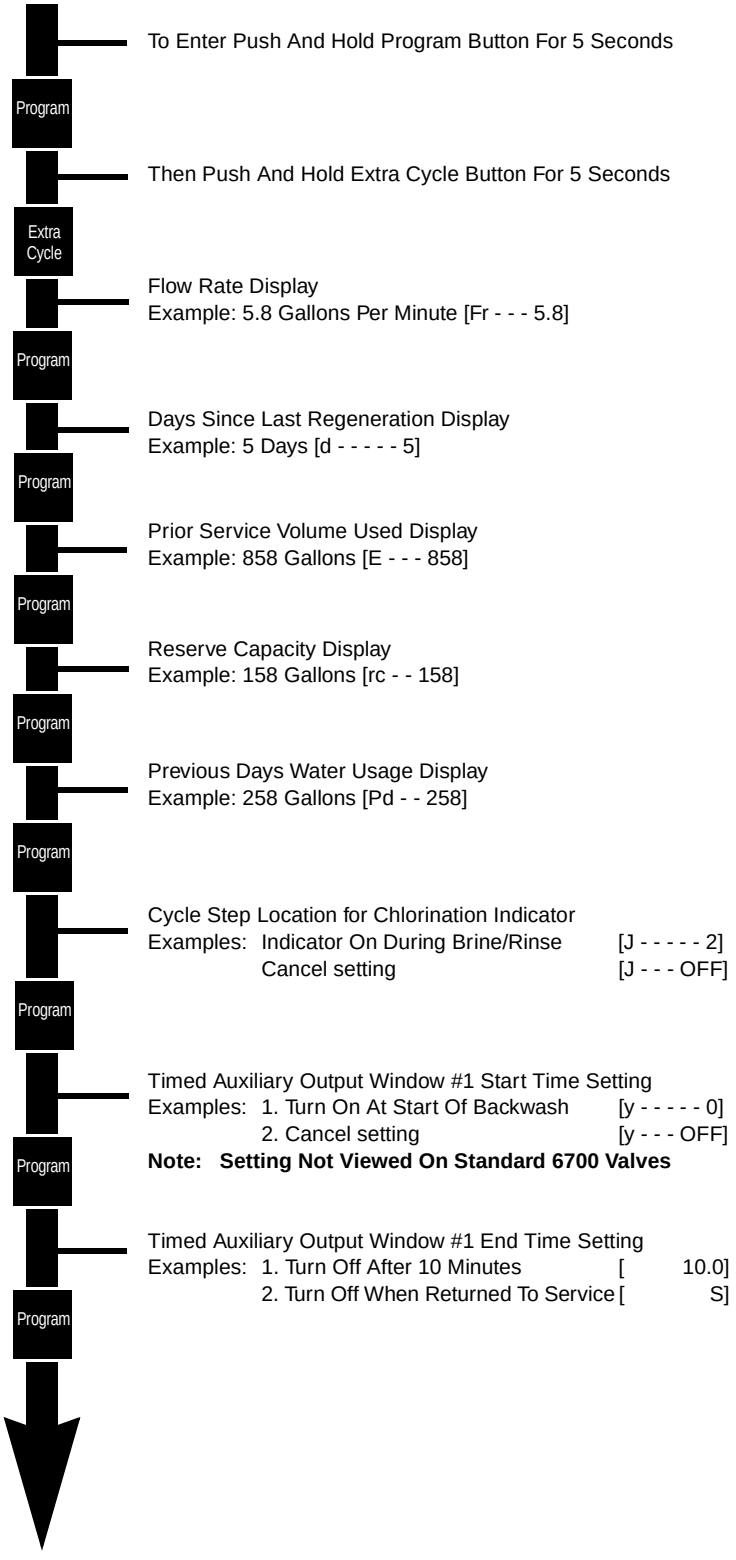
Option Setting Level #2

Programming Chart

Level #2

NOTE:

1. Push Program Button Once Per Display.
2. Option settings may be changed by pushing either the Up or Down Arrow Button.
3. Depending on current valve programming certain displays will not be able to be viewed or set.



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MODEL 6700 Downflow - V2.0

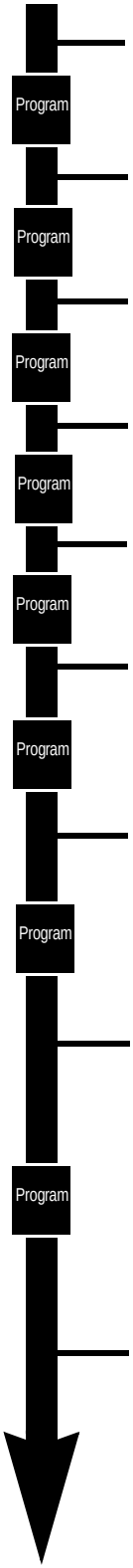
Option Setting Level #2

Programming Chart (Cont'd.)

Level #2 - Continued

NOTE:

1. Push Program Button Once Per Display.
2. Option settings may be changed by pushing either the Up or Down Arrow Button.
3. Depending on current valve programming certain displays will not be able to be viewed or set.



Timed Auxiliary Output Window #2 Start Time Setting
Examples: 1. Turn On At Start Of Brine/Rinse [r - - - 10.0]
2. Cancel setting [r - - - OFF]
Note: Setting Not Viewed On Standard 6700 Or If Window #1 is Cancelled

Timed Auxiliary Output Window #2 End Time Setting
Examples: 1. Turn Off After 60 Minutes [70.0]
2. Turn Off When Returned To Service [S]

Chemical Pump Output On Time Setting
Examples: 1. Turn On In Service For 1 Minute [n - - - - 1.0]
2. Cancel setting [n - - - OFF]
Note: Setting Not Viewed On Standard 6700 Or Valves Without Meters

Chemical Pump Output Volume Count Setting
Example: Turn On In Service Every 100 Gallons [100]

Regeneration Day Override
Example: Override Every 7 Days [A - - - - - 7]

Volume Override
Example: Regenerate Every 850 Gallons [b - - - 850]
Note: Water Hardness And System Capacity Settings Not Used Or Viewed

US/metric Display Format
Examples: U.S. Format [U - - - - - 1]
European Metric [U - - - - - 2]
Standard Metric [U - - - - - 3]
Cubic Meter Metric [U - - - - - 4]
Japanese Metric [U - - - - - 5]

Valve Type
Examples: Option Typically Not Used [o - - - - - 1]
6700 Valve [o - - - - - 2]
Option Typically Not Used [o - - - - - 3]
Option Typically Not Used [o - - - - - 4]

Regeneration Type
Examples: Time Clock Regeneration [7 - - - - - 1]
Meter Immediate Regeneration [7 - - - - - 2]
Meter Delayed Regeneration
(Standard Setting) [7 - - - - - 3]
Option Not Typically Used [7 - - - - - 4]
Sensor Immediate Regeneration [7 - - - - - 5]
Minimum Signal On Time Setting:
5 Minutes [7-5 - - 5.0]
Sensor Delayed Regeneration [7 - - - - - 6]
Minimum Signal On Time Setting:
8 Minutes [7-6 - - 8.0]
Option Not Typically Used [7 - - - - - 7]

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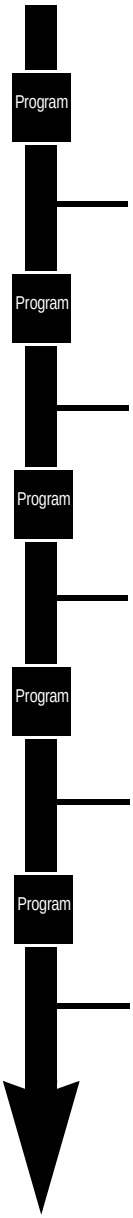
Level #2 - Continued

NOTE:

1. Push Program Button Once Per Display.
2. Option settings may be changed by pushing either the Up or Down Arrow Button.
3. Depending on current valve programming certain displays will not be able to be viewed or set.



Flow Meter Size

Examples:	Option Not Typically Used	[F - - - - - 0]
	Standard 3/4" Flow Meter	[F - - - - - 1]
	Option Not Typically Used	[F - - - - - 2]
	Option Not Typically Used	[F - - - - - 3]
	Option Not Typically Used	[F - - - - - 4]
	Option Not Typically Used	[F - - - - - 5]
	Option Not Typically Used	[F - - - - - 6]

Mixing Valve Location

Examples:	No Mixing Valve	[8 - - - - - 1]
	Mixing Valve Before Flow Meter	[8 - - - - - 2]
	Mixing Valve After Flow Meter	[8 - - - - - 3]

Note: This Display Only Viewed With Metric Display Formats U2 & U4

System Type

Examples:	Single Valve System #4 Operation	[9 - - - - - 4]
	Option Not Currently Offered	[9 - - - - - 5]
	Option Not Currently Offered	[9 - - - - - 6]
	Option Not Currently Offered	[9 - - - - - 7]
	Option Not Currently Offered	[9 - - - - - 8]
	Option Not Currently Offered	[9 - - - - - 9]

Program Lock

Examples:	Lock Cancelled	[PL - - OFF]
	Lock Active	[PL - - - On]

Option Level # 2 is Exited
Normal Operation is Resumed

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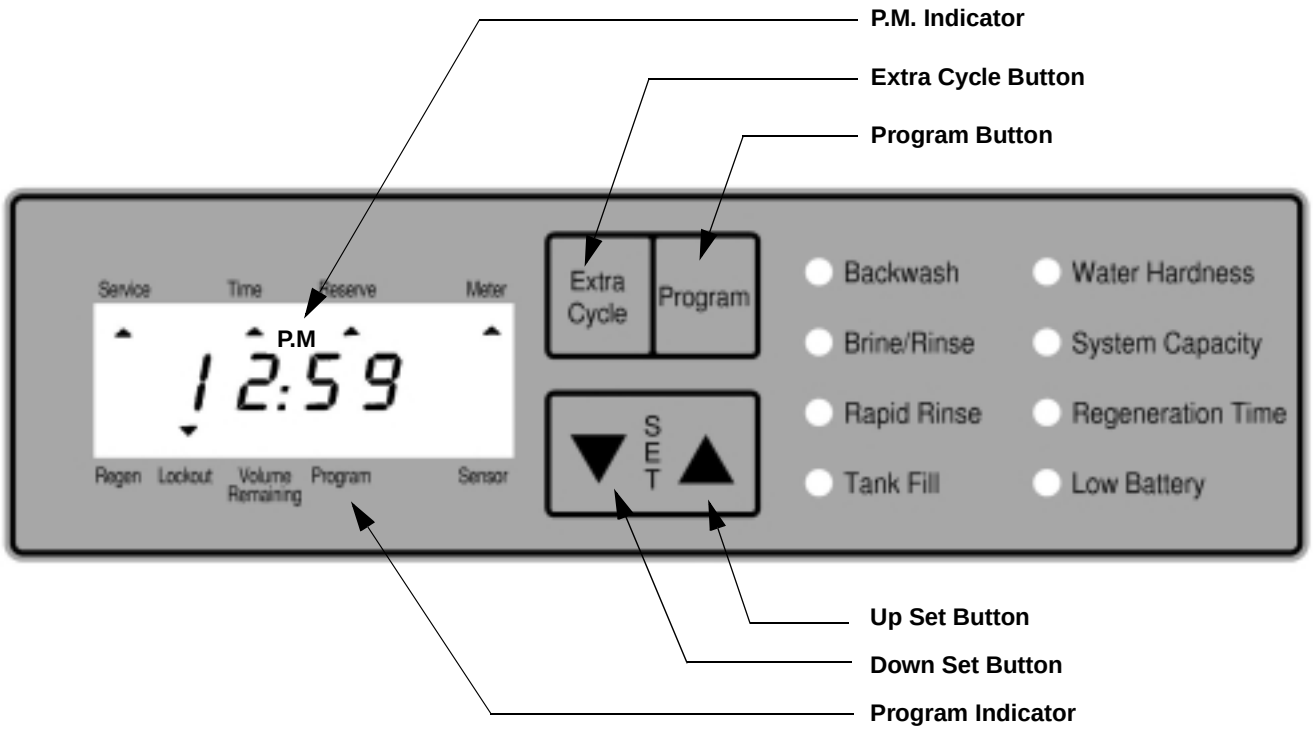
MODEL 6700 Downflow - V2.0

Option Setting Level #2

Softener Manufacturer Programming



Manufacturing of the softener requires access to the second level of option programming.

This level includes the functioning parameters of the softener, related to actual system configuration.

Entering Option Level #2

Depress the Program Button for 5 seconds. The Program Arrow will turn on and the first display viewed is used to set the Inlet Water Hardness. Next, depress the Extra Cycle Button for 5 seconds. Depending on current programming, certain displays or option settings will not be viewed.

1. Flow Rate Display (Fr)

The first display viewed is the current flow rate of treated water through the softener.

The unit of measurement used is gallons/liters per minute.

Example: 8.5 gallons per minute - **[F - - - 8.5]**

2. Days Since Last Regeneration Display (d)

Depress the Program Button. The next display viewed is not an option setting. This display is used as an aid to the service person in diagnosing a valve malfunction. The number of days since the last regeneration is recorded by the control in this display.

Example: 4 days - **[d - - - - - 4]**

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3. Prior Service Volume Used Display (E)

Depress the Program Button. The next display viewed is not an option setting. This display is used as an aid to the service person in diagnosing a valve malfunction. The amount of water used the last time the softener was in service is recorded in this display by the control. The unit of measurement used is gallons/liters/cubic meters.

Example: 850 Gallons - **[E - - - 850]**

4. Reserve Capacity Display (rc)

Depress the Program Button. The next display viewed is not an option setting. This display is used as an aid to the service person in diagnosing a valve malfunction. The calculated reserve capacity (in gallons/liters/cubic meters) for the present day is recorded in this display by the control.

Example: 277 gallons - **[rc - - 277]**

5. Previous Days Water Usage Display (Pd)

Depress the Program Button. The next display viewed is not an option setting. This display is used as an aid to the service person in diagnosing a valve malfunction. The previous day's water usage (in gallons/liters/cubic meters) is recorded in this display by the control.

Example: 200 gallons - **[Pd - - 200]**

6. Cycle Step Location For Chlorination Indicator (J)

Depress the Program Button. The next display viewed is an option setting. This display is used to set the desired regeneration cycle step where the chlorinator indicator (C) will turn on in the regeneration display. Actual control of power to a chlorinator is handled independently of this setting using a microswitch or Timed Auxiliary Output.

Examples: No Chlorinator Installed -**[J - - - OFF]**
Chlorinator to turn on during Step #2 - **[J - - - - 2]**

The **UP** and **DOWN Set Buttons** will adjust this value.

7. Time Auxiliary Output Programming (y) (r) (n)

Depress the Program Button. The next 3 displays viewed are part of a series of option settings used to program the optional relay output. These displays will not be viewed if the optional relay output is not installed. The first two settings (**y** and **r**) turn the output on / off during Regeneration only. The third (**n**) turns the output on during Service only, when a set volume of water used has accumulated. This setting will not be viewed on non-metered systems.

Note:
When more than one of these settings is used, it will be up to the operator to supply the switching logic necessary to operate two or three separate pieces of equipment at a time from a single relay output.

8. Time Auxiliary Output Window #1 Setting (y)

This option setting consists of two displays. The first display is used to set the turn on time of the output, referenced to the start of Backwash. The second display is used to set the output turn off time, referenced again to the start of Backwash. An OFF setting cancels this setting. A set on time with a set off time of S will turn the output off at the start of Service. All settings are in minutes and output timing is synchronized with regeneration cycle timing.

Examples: Activate output at start of Step #1/ Deactivate after 10 minutes -**[y - - - - - 0]** (Start Time Display)
[10.0] (Stop Time Display)
Cancel setting - **[y - - -OFF]**

The **UP** and **DOWN Set Buttons** will adjust this value.

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9. Timed Auxiliary Output Window #2 Setting (r)

Depress the Program Button. This option setting consists of two displays. The first display is used to set the turn on time of the output, referenced to the start of Backwash. The second display is used to set the output turn off time, referenced again to the start of Backwash. An OFF setting cancels this setting. A set on time with a set off time of S will turn the output off at the start of Service. All settings are in minutes and output timing is synchronized with regeneration cycle timing.

Examples: Activate output 15 min. after the start of Step #1/Deactivate when in Service -**[r - - - 15.0]**
[- - - - - - S]
Cancel setting - **[r - - -OFF]**

The **UP** and **DOWN Set Buttons** will adjust this value.

10. Chemical Pump Output (n)

Depress the Program Button. This option setting consists of two displays. The first display is used to set the turn on time (in minutes) of the output. The second display is used to set the volume of water flow at which the output will turn on.

Examples: Activate output 1.0 min. after every 200 gallons -**[n - - - - 1.0]**
[200]

Activate output 1 second after every 200 gallons -**[n - - - - - P]** (Pulse Mode)
[500]
Cancel setting -**[n - - - OFF]**

The **UP** and **DOWN Set Buttons** will adjust these settings.

11. Regeneration Day Override (A)

Depress the Program Button. The next display is used to set the Regeneration Day Override Option Setting. The Regeneration Day Override Option Setting sets the maximum amount of days that the conditioner can be in service without a regeneration, regardless of water usage or the lack of a sensor signal. Regeneration begins at the set regeneration time or at the previous regen time. An OFF setting will cancel this option with all regeneration types except Time Clock Regeneration. A day override setting is required for time clock regeneration valves.

Examples: Override every 7 days - **[A - - - - - 7]**
Cancel Setting - **[A - - - OFF]**

The **UP** and **DOWN Set Buttons** will adjust this value.

12. Volume Override (b)

Depress the Program Button. The next display viewed is used to set the maximum amount of water that can be used before a regeneration cycle is called for. When this feature is used with delayed regeneration systems, it will be up to the programmer to determine a reserve capacity. The control will no longer keep track of the reserve capacity. This option is typically used to bypass standard reserve or capacity calculations made by the control.

Examples: Override every 700 gallons - **[b - - - 700]**
Override cancelled - **[b - - - OFF]**

The **UP** and **DOWN Set Buttons** adjust this value.

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13. US/Metric Display Format (U)

Depress the Program Button. The display is used to set the desired display format for the timer to use. There are five possible settings:

The US Format uses gallons for volume and gallons per minute for flow rate related data / displays with a 12 hour timekeeping format. Water Hardness units will be grains per gallon and Capacity in kilograins. Option settings P and 8 as well as Regeneration Types #7 and #8 will not be displayed.

Example: **[U - - - - - 1]**

The European Metric Format uses liters for volume and liters per minute for flow rate related data / displays with a 24 hour timekeeping format. Water Hardness units will be French Degrees and Capacity in French Degree x m^3.

Example: **[U - - - - - 2]**

The Standard Metric Format uses liters for volume and liters per minute for flow rate related data / displays with a 24 hour timekeeping format. Water Hardness units will be French Degrees and Capacity in French Degree x m^3. Option settings P and 8 as well as Regeneration Types #7-8 will not be displayed.

Example: **[U - - - - - 3]**

The Cubic Meter Metric Format uses m^3 for volume and liters per minute for flow rate related data / displays with a 24 hour timekeeping format. Water Hardness units will be P.P.M. (mg/liter or g/m^3) and Capacity in grams. Regeneration Types #7 and #8 will not be displayed.

Example: **[U - - - - - 4]**

The Japanese Metric Format uses liters for volume and liters per minute for flow rate related data / displays with a 24 hour timekeeping format. Water Hardness units will be German Degrees and Capacity in German Degree x m^3. Option settings P and 8 as well as Regeneration Types #7-8 will not be displayed.

Example: **[U - - - - - 5]**

The **UP** and **DOWN Set Buttons** will adjust this value.

14. Valve Type (o)

Depress the Program Button. The next display viewed is an option setting. This display is used to set the type of valve used with the control. There are four possible selections with #2 being the required setting:

Example: **[o - - - - - 1]** Option Typically Not Used.

6700 Valve. When #2 is selected the control will operate properly with all LEDs. The Volume Remaining Display will not be able to count down until the regeneration cycle is complete.

Example: **[o - - - - - 2]** 6700 Operation

The **UP** and **DOWN Set Buttons** will adjust this value.

15. Regeneration Type (7)

Depress the Program Button. This display is used to set the type of regeneration initiation. There are eight possible settings:

Time Clock Delayed. The timer will determine that regeneration is required based on the set regeneration time and regeneration day override settings.

Example: **[7 - - - - - 1]**

Meter Immediate. The timer will determine that regeneration is required based on when the available volume of treated water drops to or below zero. Regeneration to begin immediately.

Example: **[7 - - - - - 2]**

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Meter Delayed. The control will determine that a regeneration is required based on when the available volume of treated water drops to or below the reserve capacity. Regeneration is to begin immediately at the set Regeneration Time only when service flow has not been detected. Regeneration is to be to delayed, in two 10 minute sections, for up to an additional 20 minutes, with service flow. Regeneration then to begin immediately. There will not be a delay if the Volume Remaining is zero.

Example: **[7 - - - - - 3]**

Regeneration Type #4

Example: **[7 - - - - - 4]** This option setting is not typically used with downflow regeneration valves.

Sensor Immediate. The control will monitor conditioner status by means of a sensor. Regeneration will begin immediately after a signal from the sensor is received. When this regeneration type is selected, one additional display will follow. Depress the program button once more to view the second display. This display selects the amount of time required for a sensor input signal to be present before the signal is considered to be valid. This second display will only be able to be viewed when this option selected.

Example: **[7 - - - - - 5]** Initial Display
Sensor Input Signal Minimum On Time - **[7 - 5 - - 5.0]** 5.0 Minutes

Sensor Delayed. The control will monitor conditioner status by means of a sensor. Regeneration will begin at the set Regeneration Time after a signal from the sensor is received. When this regeneration type is selected, one additional display will follow. Depress the program button once more to view the second display. This display selects the amount of time required for a sensor input signal to be present before the signal is considered to be valid. This second display will only be able to be viewed when this option selected.

Example: **[7 - - - - - 6]** Initial Display
Sensor Input Signal Minimum On Time - **[7 - 6 - - 5.0]** 5 Minutes

Regeneration Type #7

Example: **[7 - - - - - 7]** This option setting is not typically used.

Regeneration Type #8

Example: **[7 - - - - - 8]** This option setting is not currently used.

The **UP** and **DOWN Set Buttons** adjust this value.

16. Flow Meter Size (F)

Depress the Program Button. The display is used to set the size of the valve flow meter. This setting will not be viewed on non-metered valves.

Examples: **[F - - - - - 0]** Option Not Typically Used
[F - - - - - 1] Standard 3/4" Flow Meter
[F - - - - - 2] Option Not Typically Used
[F - - - - - 3] Option Not Typically Used
[F - - - - - 4] Option Not Typically Used
[F - - - - - 5] Option Not Typically Used
[F - - - - - 6] Option Not Typically Used

The **UP** and **DOWN Set Buttons** will adjust this value.

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17. Mixing Valve Location (8)

Depress the Program Button. The next display is used to set where the mixing valve is located, if any. It is viewed only with the U.S./Metric Display Format set to U-2 or U-4. There are three possible settings:

Examples: **[8 - - - - - 1]** No Mixing Valve
[8 - - - - - 2] Mixing Valve Before Flow Meter
[8 - - - - - 3] Mixing Valve After Flow Meter

The **UP** and **DOWN Set Buttons** will adjust this value.

18. System Type (9)

Depress the Program Button. The next display viewed is an option setting. This display is used to set the type of system the valve is operating in. There are six possible selections with #4 the desired setting:

Single Valve Meter or Sensor Regeneration - When this option is selected, the control will operate as a stand alone unit. The control can initiate a regeneration whenever needed.

Example: **[9 - - - - - 4]** Single Valve Meter or Sensor Regeneration (System #4) Operation
[9 - - - - - 5] Option Not Typically Used
[9 - - - - - 7] Option Not Typically Used
[9 - - - - - 9] Option Not Typically Used

The **UP** and **DOWN Set Buttons** will adjust this value.

19. Program Lock (PL)

Depress the Program Button. The display is used to prevent certain displays from being viewed or set.

There are two possible settings:

Examples: **[PL - - - OFF]** Lock Cancelled
[PL - - - - ON] Lock Active

Settings Able To Be Reset With Protection Active -Displays Able To Be Viewed With Protection Active -

Water HardnessFlow Rate Display
Water Hardness After Mixing ValveDays Since Regeneration Display
Regeneration TimePrior Service Volume Used Display
Time of DayReserve Capacity Display
Previous Days Water Usage Display

Unlocking Programming -

The only way to deactivate this feature is to push and hold the Program Button for 25 seconds. This procedure will unlock the control and permit all valid program settings to be viewed and reset as needed.

The **UP** and **DOWN Set Buttons** will adjust this value.

Exiting This Option Setting Level

Push the Program Button once per display until all have been viewed.

Resetting Permanent Programming Memory -

Push and hold the Program Button for 50 seconds. This procedure will erase this and **all** previous display settings and reset them to default values. Control programming will then have to be reset as necessary.

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