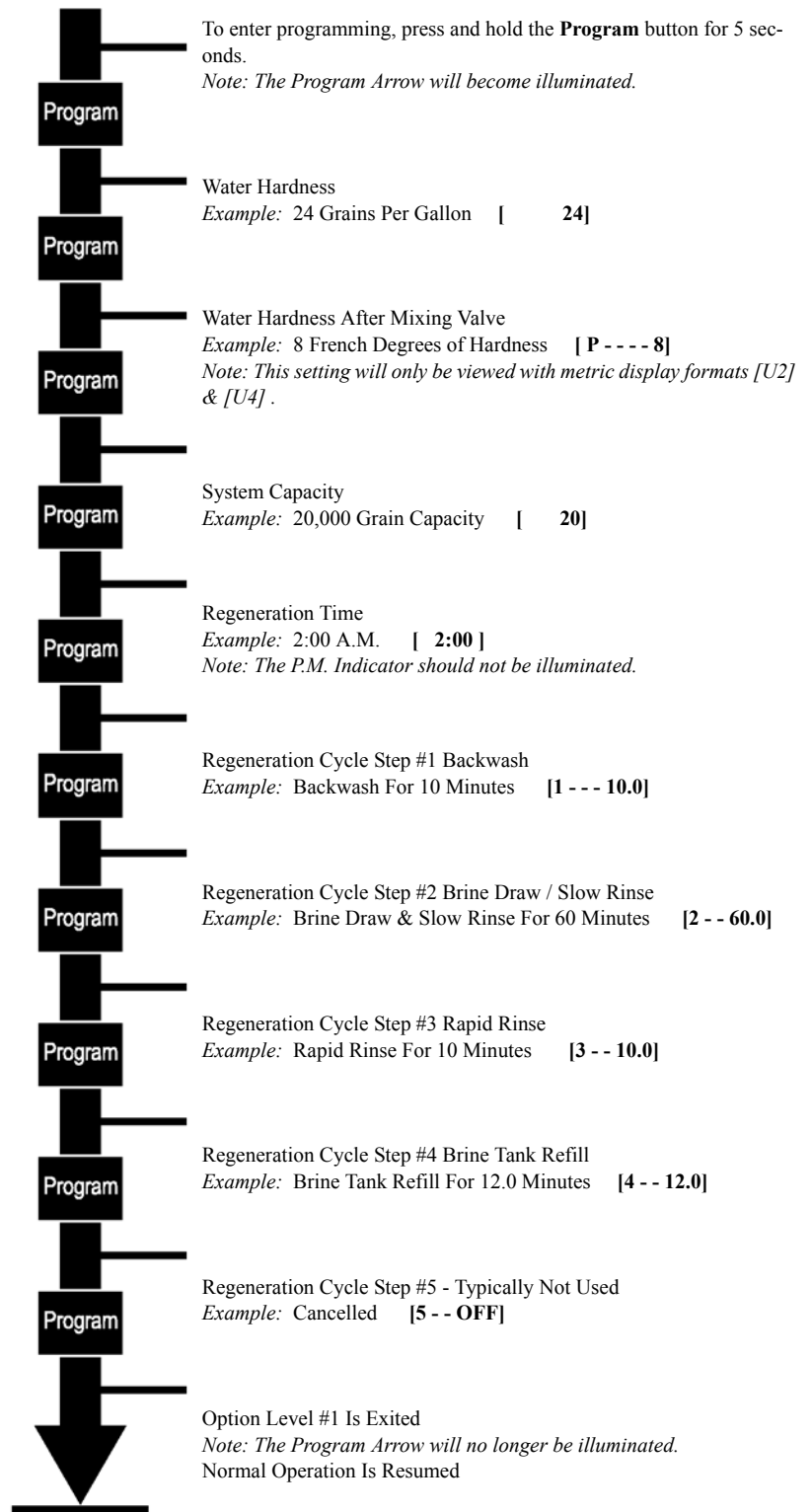


Programming Chart Level #1 - Single Backwash Valves

NOTE:

1. Push **Program** button once per display.
2. Option settings may be changed by pushing either the **Set Up** or **Set Down** button.
3. Depending on current valve programming, certain displays will not be able to be viewed or set.



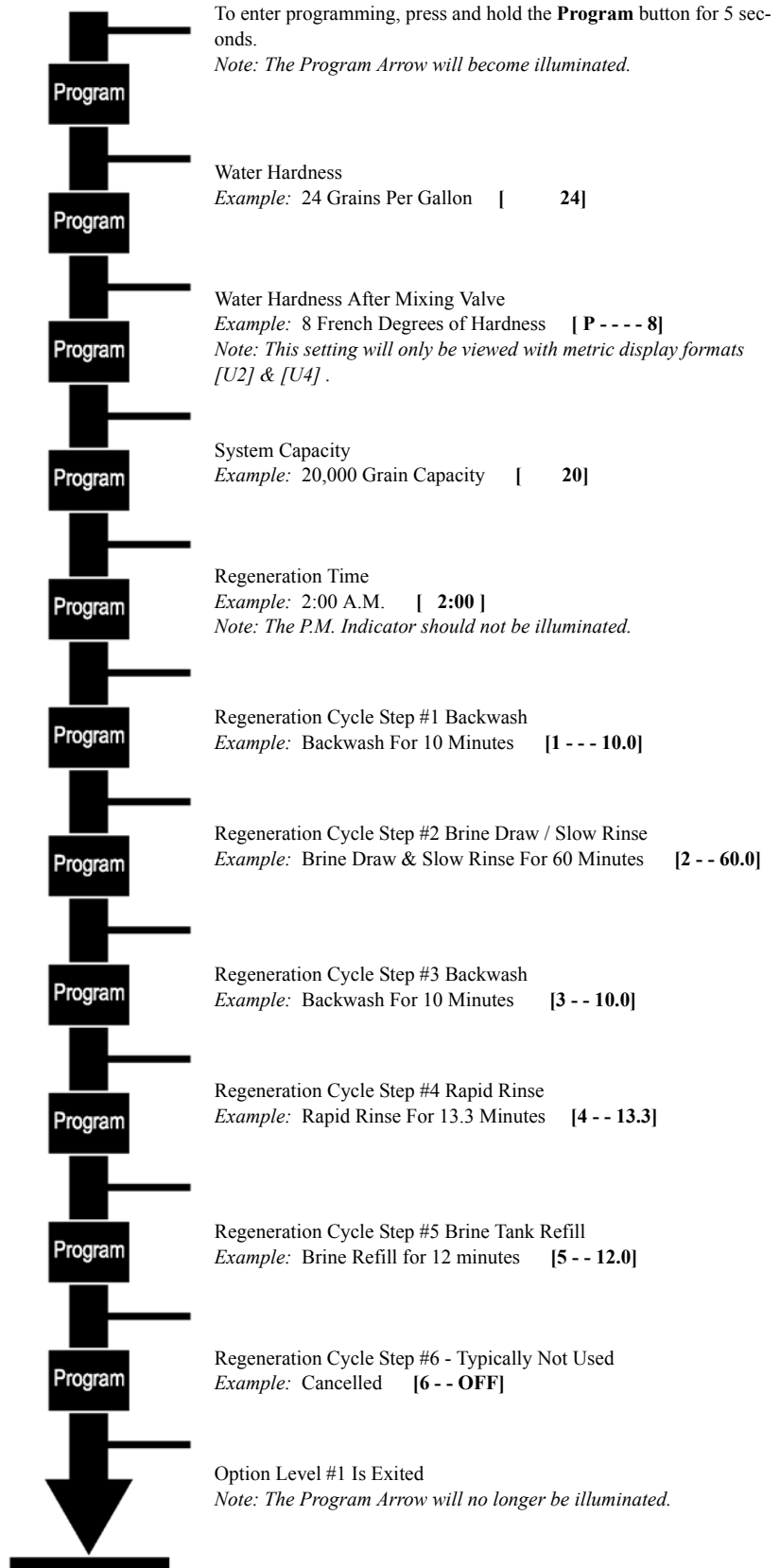
DF162-0

6700 Downflow - V2.0

Programming Chart Level #1 - Double Backwash Valves

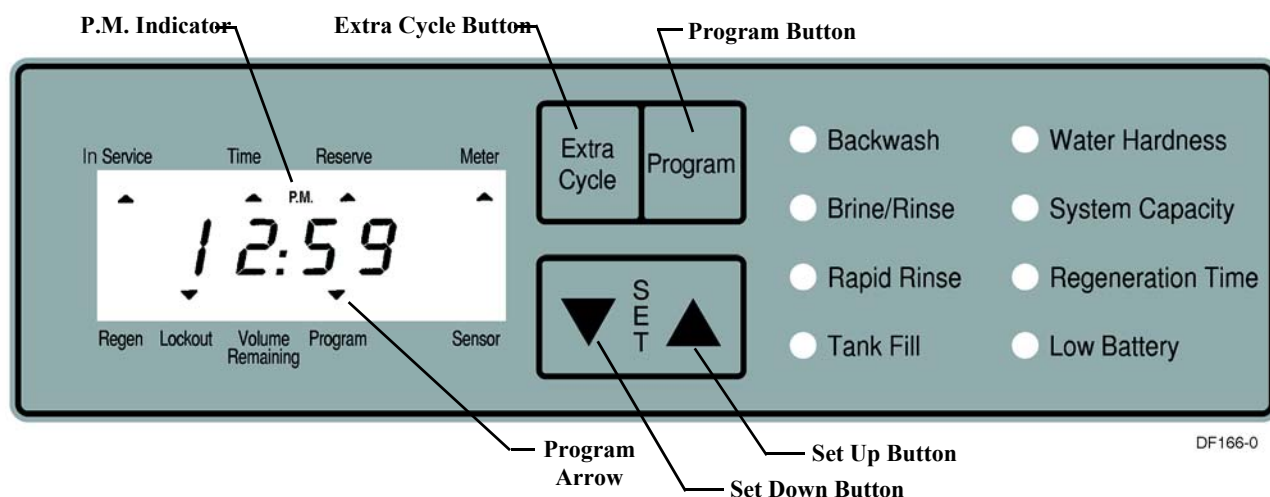
NOTE:

1. Push **Program** button once per display.
2. Option settings may be changed by pushing either the **Set Up** or **Set Down** button.
3. Depending on current valve programming, certain displays will not be able to be viewed or set.



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Programming Level #1 - Single & Double Backwash Valves



1. Entering Level #1 Programming Mode

Push and hold the **Program** button until the Program Arrow becomes illuminated (about 5 seconds).

NOTE:

Depending on current option settings, some displays cannot be viewed or set.

2. Set Inlet Water Hardness

Push the **Program** button. The first display setting is used to set the **Inlet Water Hardness**. The Water Hardness LED will also become illuminated. Using the **Set Up** and **Set Down** buttons, set the value.

Example: 24 Grains [- - - - 24]

3. Set Water Hardness After Mixing Valve (P)

Push the **Program** button. The next display is used to set the **Water Hardness After Mixing Valve**. This option setting is used with Inlet Water Mixing Valve equipped units only. Using the **Set Up** and **Set Down** buttons, set the value.

Example: 8 French Degrees of Hardness [P - - - 8]

NOTE:

This display will only be viewable with U.S./Metric display format set to either metric formats.

4. Set System Capacity

Push the **Program** button. The next display is used to set the **System Capacity**. The System Capacity LED will also become illuminated. Using the **Set Up** and **Set Down** buttons, set the softeners total capacity. If required, the control will calculate a reserve automatically.

Example: 20,000 Grain System Capacity [20]

6700 Downflow - V2.0

Programming Level #1 - Single & Double Backwash Valves (Con't.)

5. Set Regeneration Time

Push the **Program** button. The next display is the **Regeneration Time**. It displays the time the softener will regenerate on a daily basis. The **Regeneration Time** LED will also become illuminated. Using the **Set Up** and **Set Down** buttons, set the time for a regeneration to occur.

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

Press the **Program** button to set the system capacity and continue to the next display.

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

Push the **Program** button. The next two to six displays are optional settings used to program the amount of time (in minutes) that a particular regeneration cycle step takes. A LED will illuminate the cycle step being programmed (except steps 5 & 6). Using the **Set Up** and **Set Down** buttons to set values and press the **Program** button once per display to advance through the Regeneration Cycle Steps.

Example: Regeneration Cycle Step #1 (Backwash) 10 minutes [**1 - - 10.0**]

Example: Regeneration Cycle Step #2 (Brine Draw/Slow Rinse) 60 minutes [**2 - - 60.0**]

Example: Regeneration Cycle Step #3 (Single Backwash-Rapid Rinse) 10 minutes [**3 - - 10.0**]

Example: Regeneration Cycle Step #3 (Double Backwash-Backwash) 10 minutes [**3 - - 10.0**]

NOTE:

The **6700** has a separate Brine Tank Refill cycle. The desired salt setting must be calculated. Using the blue (.25 gpm) or black (.50 gpm) rate of refill (in gpm) times the timer setting. Then, using one gallon of fresh water dissolving approximately 3 lbs of salt, calculate the refill time.

lbs salt ÷ 3 BLFC size = refill time in minutes (10 lbs salt ÷ 3 ÷ .25 = 13.3 minute refill)

NOTE: *Example:* Regen. Cycle Step #4 (Single Backwash- Brine Tank Refill) 12.0 minutes [**4 - - 12.0**]

Example: Regen. Cycle Step #4 (Double Backwash- Rapid Rinse) 10.0 minutes [**4 - - 10.0**]

Example: Regen. Cycle Step #5 (Single Backwash- Not Used) [**5 - - OFF**]

Example: Regen. Cycle Step #5 (Double Backwash-Brine Tank Refill) 12.0 minutes [**5 - - 12.0**]

Example: Regen. Cycle Step #6 (Single Backwash) NO STEP #6 with Single Backwash Units

Example: Regen. Cycle Step #6 (Double Backwash-Not Used) [**6 - - OFF**]

7. Exiting Level #1 Programming Mode

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

NOTE:

The Program Arrow will no longer be illuminated after exiting. Normal operation is resumed.

Programming Level #1 - Single & Double Backwash Valves (Con't.)

Installer Notes

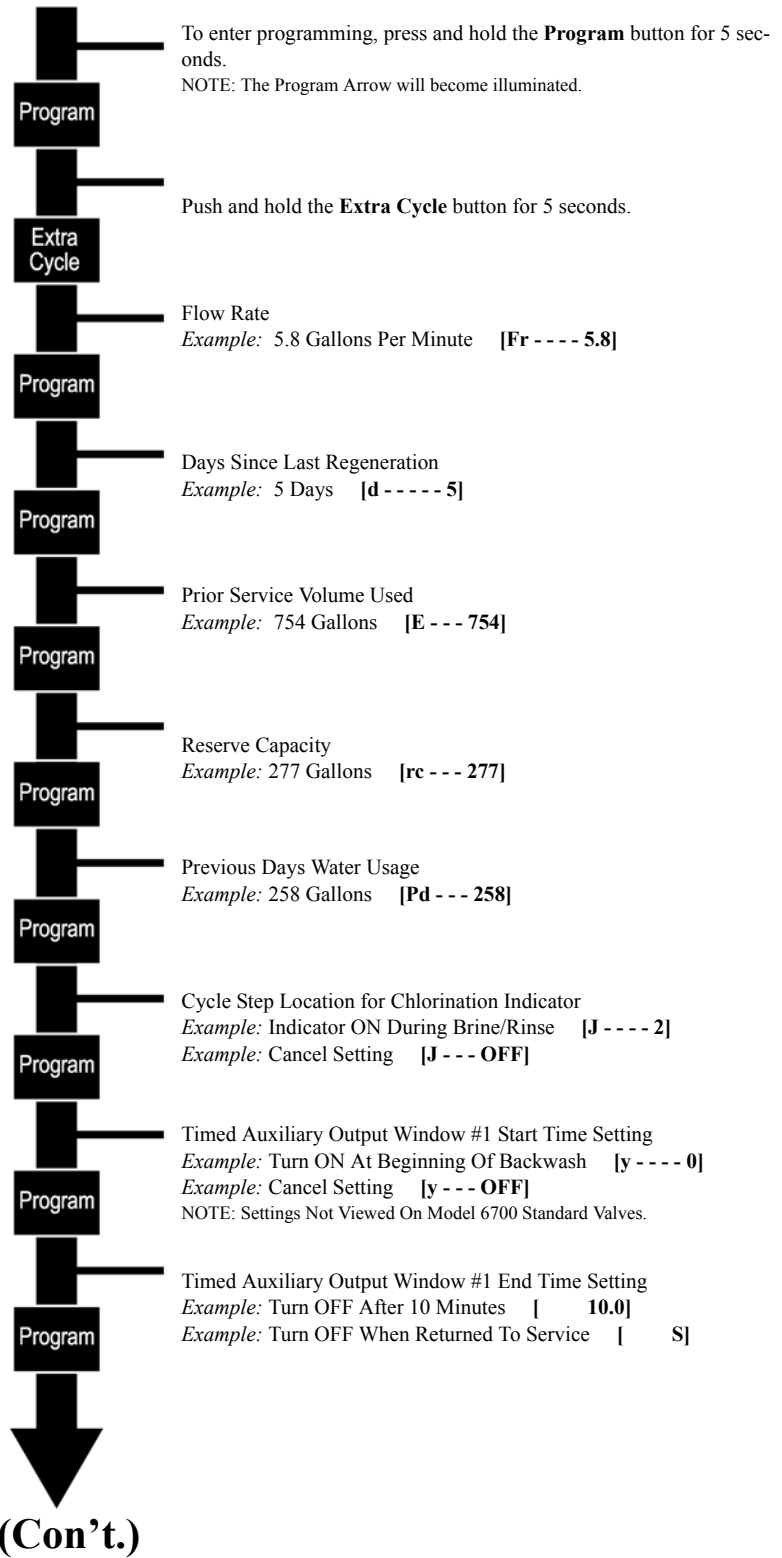
1. Control Calculations - With Delayed Regeneration Valves, the control is designed to automatically calculate its reserve capacity based on daily water usage. There is no need to program in a reserve capacity.
2. The System Capacity Option Setting should be set to the resin tank manufacturers capacity recommendation 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 range for reliable operation is 24 Vac Valves $\pm 10\%$ 50/60 Hz.

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Programming Chart Level #2

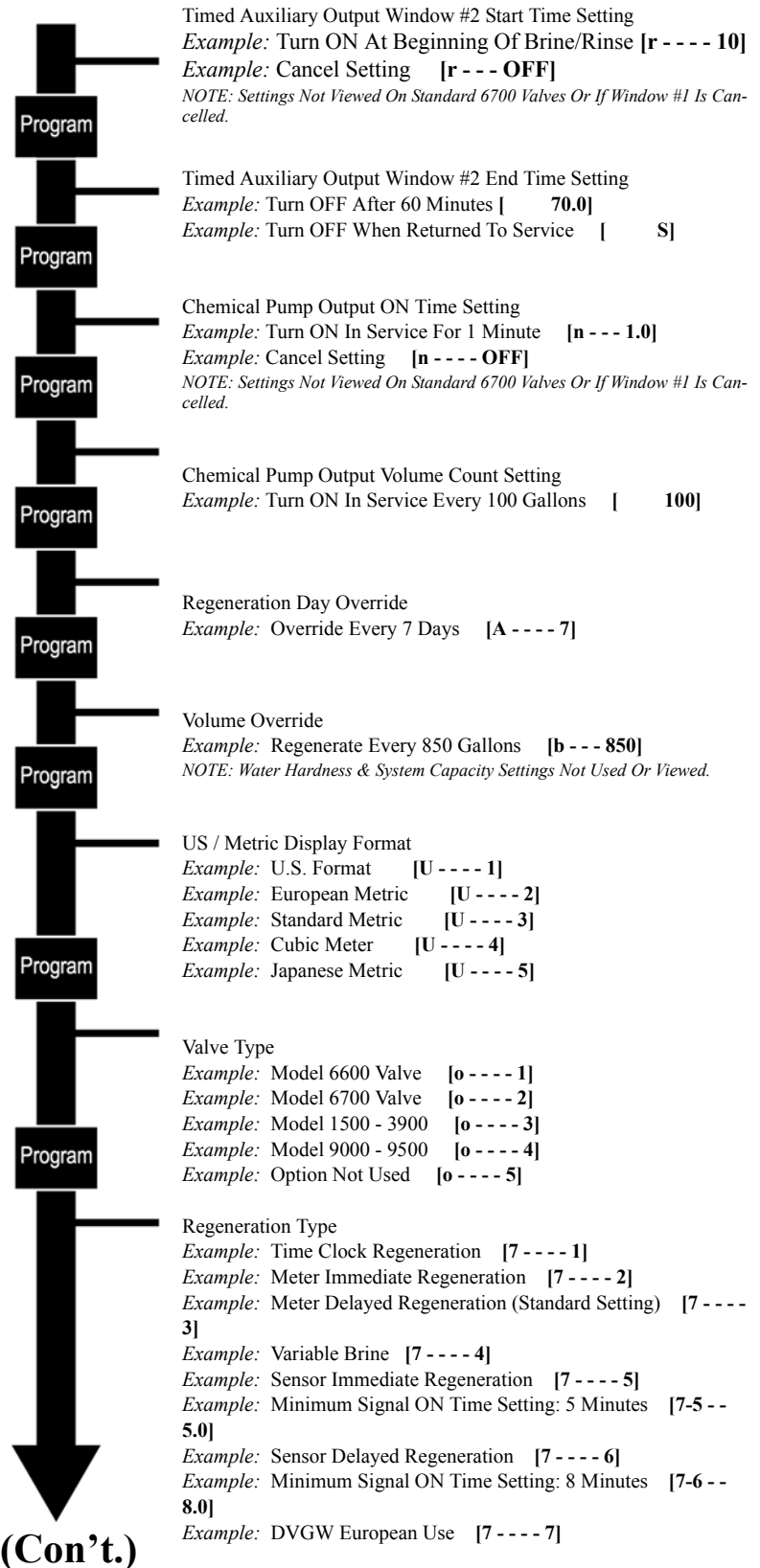
NOTE:

1. Push **Program** Button once per display.
2. Option settings may be changed by pushing either the **Set Up** or **Set Down** button.
3. Depending on current valve programming, certain displays will not be able to be viewed or set.



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Programming Chart Level #2 (Con't.)

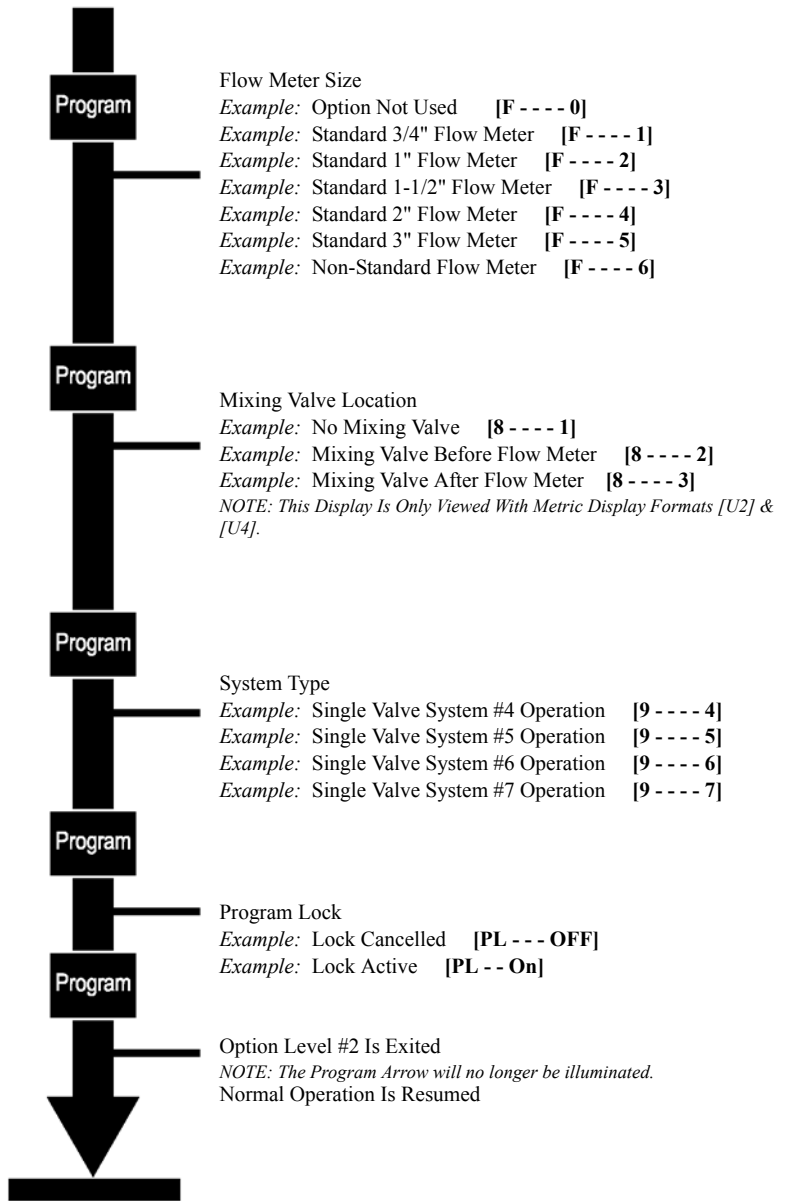


DF164-0

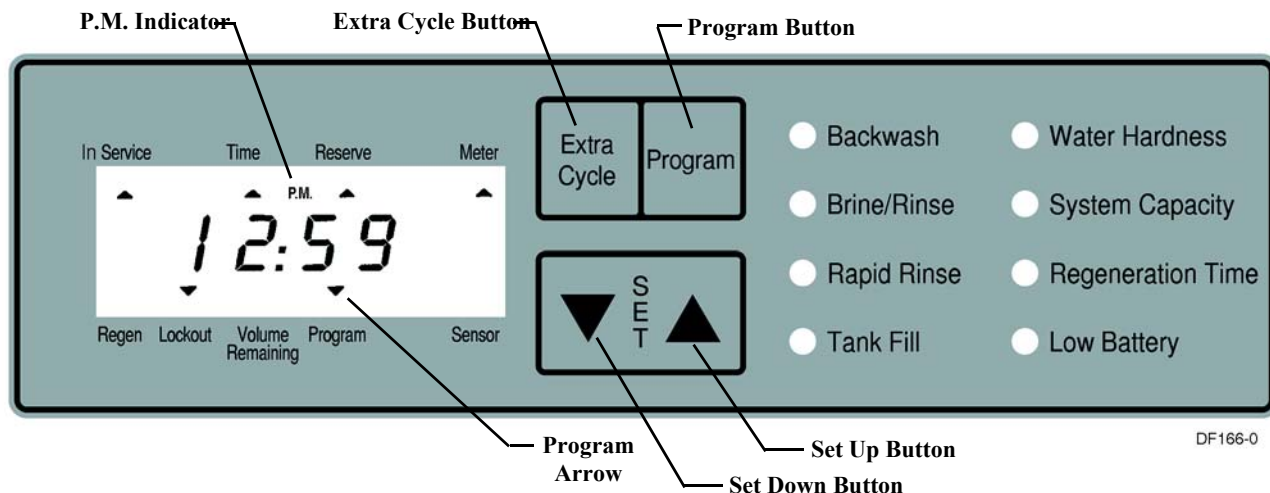
(Con't.)

6700 Downflow - V2.0

Programming Chart Level #2 (Con't.)



Programming Level #2



1. Entering Level #2 Programming Mode

Level #2 Programming is more extensive and allows setting the functioning parameters of the softener related to the actual system configuration.

To enter Level #2 Programming Mode, push and hold the **Program** button until the Program Arrow becomes illuminated (about 5 seconds).

NOTE:

Depending on current option settings, some displays cannot be viewed or set. The first one of five displays are diagnostic displays used in troubleshooting the operation of the control valve.

The first display to be viewed is the **Inlet Water Hardness**.

Press the **Extra Cycle** button for 5 seconds and continue to the next display.

2. Flow Rate (Fr)

The first display viewed is the **Flow Rate**. It displays the current rate of treated water flow through the control valve. *This diagnostic display is used to help diagnose and troubleshoot valve malfunction.

Press the **Program** button and continue to the next display.

3. Days Since Last Regeneration (d)

Push the **Program** button. The next display is the number of **Days Since Last Regeneration**.

**This diagnostic display is used to help diagnose and troubleshoot valve malfunction.

Example: 5 Days [d - - - 5]

4. Prior Service Volume Used (E)

Push the **Program** button. The next display is the **Prior Service Volume Used**. It displays the volume of water used (in gallons/liters) the last time the softener was in service.

*This diagnostic display is used to help diagnose and troubleshoot valve malfunction.

Example: 754 Gallons [E - - - 754]

* Metered Units Only

** Metered & Timeclock Units Only

6700 Downflow - V2.0

Programming Level #2 (Con't.)

5. Reserve Capacity (rc)

Push the **Program** button. The next display is the calculated **Reserve Capacity**. It displays the volume of water (in gallons/liters) in reserve for the present days use.

*This diagnostic display is used to help diagnose and troubleshoot valve malfunction.

Example: 277 Gallons [rc - - - 277]

6. Previous Days Water Usage (Pd)

Push the **Program** button. The next display is the **Previous Days Water Usage**. It displays the volume of water used in the previous day (in gallons/liters).

*This diagnostic display is used to help diagnose and troubleshoot valve malfunction.

Example: 200 Gallons [Pd - - - 200]

7. Set Cycle Step Location For Chlorination Indicator (J)

The next display is the **Cycle Step Location For Chlorination**. It displays the desired Regeneration Step number where a chlorinator will be activated. Using the **Set Up** and **Set Down** buttons, set the desired step number.

Example: No Chlorinator Installed [J - - OFF]

Example: Chlorinator To Turn On in Step #2 [J - - - - 2]

NOTE:

The actual control of power to the chlorinator is handled independently using a microswitch or timed auxiliary output.

8. Set Time Auxiliary Output Programming (y) (r) (n)

Push the **Program** button. The next three displays are optional settings used to program the optional relay output.

These displays will not be viewable if the option relay output is not installed.

The first two settings (y) and (r) turn the output ON/OFF during **Regeneration** only.

The third setting (n) turns the output ON when the softener is **In Service** only, when a set volume of water used has accumulated. This setting will no be viewed on non-metered systems.

NOTE:

When more than one of these settings is used, the operator is responsible for supplying the switching logic necessary to operate separate units simultaneously from a single relay output.

9. Set Time Auxiliary Output Window #1 Setting (y)

Push the **Program** button. The next two displays are optional settings. All settings are in minutes and output timing is synchronized with regeneration cycle timing.

The first display is used to set the Activation Time of the output, referenced to the start of **Backwash**.

The second display is used to set output Deactivation time also referenced to the start of **Backwash**. Use the **Set Up** and **Set Down** buttons to adjust these times.

NOTE:

A set Deactivation Time of S will turn the output OFF at the beginning of service.

Example: Activate the output at the start of Step #1 [y - - - - 0] (Activation Time)

Example: De-activate the output after 10 minutes [10.0] (Deactivation Time)

NOTE:

To cancel the setting [y - - - OFF]

Programming Level #2 (Con't.)

10. Set Time Auxiliary Output Window #2 Setting (r)

Push the **Program** button. The next two displays are optional settings. Use the **Set Up** and **Set Down** buttons to adjust these times. All settings are in minutes and output timing is synchronized with regeneration cycle timing.

The first display setting is used to set the Activation Time of the output, referenced to the start of **Backwash**.

The second display setting is used to set output Deactivation Time also referenced to the start of **Backwash**.

NOTE:

A set Deactivation Time of **S** will turn the output OFF at the beginning of service.

Example: Activate the output 15 minutes after the start of Step #1 [r - - - 15.0] (Activation Time)

Example: De-activate the output at the beginning of service [- - - - S] (Deactivation Time)

NOTE:

To cancel the setting [r - - - OFF]

11. Set Chemical Pump Output (n)

Push the **Program** button. The next two displays are optional settings. Use the **Set Up** and **Set Down** buttons to adjust these values.

The first display is used to set the Activation Time (in minutes) of the output.

The second display is used to set the volume of water flow (in gallons/liters) at which the output is turned ON.

Example: Activate the output 1.0 minute after every 200 gallons [n - - - - 1.0]

Example: Activate the output 1.0 minute after every 200 gallons [200]

Example: Activate the output 1 second after every 200 gallons [n - - - - P] (Pulse Mode)

Example: Activate the output 1 second after every 200 gallons [200]

NOTE:

To cancel the setting [n - - - OFF]

12. Set Regeneration Day Override (A)

Push the **Program** button. The next display is used to set the **Regeneration Day Override**. It displays the maximum number of days the softener can operate without regenerating, regardless of the volume of water used or the lack of a sensor signal. Regeneration will begin at the set regeneration time. Use the **Set Up** and **Set Down** buttons to adjust these values.

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

Example: Cancel Setting [A - - - OFF]

NOTE:

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.

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Programming Level #2 (Con't.)

13. Set Volume Override (b)

Push the **Program** button. The next display is used to set the **Volume Override**. It displays the maximum volume of water (in gallons) the softener can use before a regeneration will occur. Regeneration will begin at the set regeneration time. Using the **Set Up** and **Set Down** buttons, set the number of gallons/liters desired.

Example: Override Every 700 Gallons [b - - - 700]

Example: Override Cancelled [b - - - OFF]

NOTE:

When using **Volume Override** with delayed regeneration systems:

It will be up to the service person to determine a reserve capacity. The control valve will no longer keep track of the reserve capacity. This feature may be more suitable in applications with very large variations in daily water consumption.

14. Set Display Format (U)

Push the **Program** button. This display is used to set the desired display format. Use the **Set Up** and **Set Down** buttons to adjust the format. There are five possible formats:

***U.S. Format** uses gallons for volume and gallons per minute for flow rate. A 12-hour timekeeping format is displayed. Hardness is measured in Grains Per Gallon and Capacity is measured in Kilograins.

Example: U.S. Format [U - - - - 1]

European Metric Format uses liters for volume and liters per minute for flow rate. A 24-hour timekeeping format is displayed. Hardness is measured in French Degrees and Capacity is measured in French Degrees x m³.

Example: European Metric Format [U - - - - 2]

***Standard Metric Format** uses liters for volume and liters per minute for flow rate. A 24-hour timekeeping format. Hardness is measured in French Degrees and Capacity is measured in French Degrees x m³.

Example: Standard Metric Format [U - - - - 3]

****Cubic Meter Metric Format** uses cubic meters for volume and liters per minute for flow rate. A 24-hour timekeeping format. Hardness is measured in P.P.M. and Capacity is measured in Grams.

Example: Cubic Meter Format [U - - - - 4]

***Japanese Metric Format** uses liters for volume and liters per minute for flow rate A 24-hour timekeeping format. Hardness is measured in German Degrees and Capacity is measured in German Degrees x m³.

Example: Japanese Metric Format [U - - - - 5]

* Option settings P & 8 as well as Regeneration Types 7-8 will not be displayed.

** Regeneration Types 7-8 will not be displayed.

15. Set Valve Type (o)

Push the **Program** button. Use this display to set the Valve Type used with the control timer. Use the **Set Up** and **Set Down** buttons to adjust the Valve Type.

Example: 6700 Valve Operation (required setting) [o - - - - 2]

Example: Options Not Used [o - - - - 1] [o - - - - 3] [o - - - - 4]

NOTE:

Select [o - - - - 2] setting so 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.

Programming Level #2 (Con't.)

16. Set Regeneration Type (7)

Push the **Program** button. Use this display to set the method used to initiate regeneration. Use the **Set Up** and **Set Down** buttons to set the Regeneration Type. There are eight possible settings:

Time Clock Delayed

The timer determines the day that a regeneration is required based on the **Regeneration Time** and **Regeneration Day Override** settings. Once this day is reached, a regeneration cycle starts at the set **Regeneration Time**.

Example: Timeclock Delayed Regeneration [7 - - - - 1]

Meter Immediate

The timer determines that regeneration is required when the volume of treated water drops to (or below) zero. Regeneration begins immediately.

Example: Meter Immediate Regeneration [7 - - - - 2]

Meter Delayed

The control determines that a regeneration is required when the volume of treated water drops to (or below) the reserve capacity. Regeneration begins immediately at the set **Regeneration Time** only when service flow has not been detected. Regeneration is to be delayed, in two 10 minute sections, for up to an additional 20 minutes, with service flow. Regeneration will then begin immediately. There will not be a delay if the Volume Remaining is zero. Use the **Set Up** and **Set Down** buttons to adjust this value.

Example: Meter Delayed Regeneration [7 - - - - 3]

Regeneration Type #4

This setting is not used.

Example: Option Not Used [7 - - - - 4]

Sensor Immediate

The control will monitor status with a sensor. Regeneration will begin immediately after a signal is received from the sensor. When this regeneration type is selected, one additional display will follow. Press the **Program** button. This display is used to set the time required for a sensor signal to be present before it is considered valid. The second display will only be viewable when this option is selected.

Example: Initial Display [7 - - - - 5]

Example: Sensor Signal ON Time of 5 Minutes [7 - 5 - - 5.0]

Sensor Delayed

The control will monitor status with a sensor. Regeneration will begin at the set Regeneration Time after a signal is received. When this regeneration type is selected, one additional display will follow. Press the **Program** button. This display is used to set the time required for a sensor signal to be present before it is considered valid. The second display will only be viewable when this option is selected.

Example: Initial Display [7 - - - - 6]

Example: Sensor Signal ON Time of 5 Minutes [7 - 6 - - 5.0]

Regeneration Type #7 and Type #8

These settings are not used.

Example: Options Not Used [7 - - - - 7] [7 - - - - 8]

6700 Downflow - V2.0

Programming Level #2 (Con't.)

17. Set Flow Meter Size (F)

Push the **Program** button. Use this display to set the Flow Meter Size. There is only one proper setting [F - - - - 1]. settings. Use the **Set Up** and **Set Down** buttons to adjust this value.

Example: Option Not Used [F - - - - 0]

Example: Standard 3/4" Flow Meter [F - - - - 1]

Example: Options Not Used [F - - - - 2] [F - - - - 3] [F - - - - 4] [F - - - - 5] [F - - - - 6]

NOTE:

This setting will not be viewed on non-metered valves.

18. Set Mixing Valve Location (8)

Push the **Program** button. Use this display to set the Mixing Valve Location, if any. It will only be viewable with U.S./Metric display formats [U-2] and [U-4]. Use the **Set Up** and **Set Down** buttons to adjust this value. There are three possible settings:

Example: No Mixing Valve [8 - - - - 1]

Example: Mixing Valve Before Flow Meter [8 - - - - 2]

Example: Mixing Valve After Flow Meter [8 - - - - 3]

19. Set System Type (9)

Push the **Program** button. Use this display to set the System Type. Use the **Set Up** and **Set Down** buttons to adjust this value. There are six possible settings. Select [9 - - - - 4], when this option is selected the control will operate as a stand alone unit. The control can initiate a regeneration whenever needed.

Example: Single Valve Meter [9 - - - - 4]

Example: Options Not Used [9 - - - - 5] [9 - - - - 6] [9 - - - - 7]

20. Set Program Lock (PL)

Push the **Program** button. Use this display to either activate or de-activate the Program Lock. Use the **Set Up** and **Set Down** buttons to adjust this value.

Example: Lock Cancelled [PL - - - - OFF]

Example: Lock Active [PL - - - - On]

NOTE:

With the Program Lock activated, various displays cannot be viewed or set.

Settings Able To Be Reset With Lock Active	Displays Able To Be Viewed With Lock Active
Water Hardness Setting	Flow Rate Display
Water Hardness After Mixing Valve	Days Since Regeneration
Regeneration Time	Prior Service Volume Used
Time Of Day	Reserve Capacity
	Previous Days Water Usage

21. Exiting Level #2 Programming Mode

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

NOTE:

The Program Arrow will no longer be illuminated after exiting. Normal operation is resumed.

Programming Level #2 (Con't.)

Unlocking The Program Lock

To deactivate the **Program Lock**, press and hold the **Program** Button for 25 seconds. This will permit all valid program settings to be viewed and reset as needed.

Resetting Permanent Program Memory

To reset the Permanent Program Memory, press and hold the **Program** Button for 50 seconds. This will erase all previous settings and displays and will reset them to default values. Programming values will have to be reset as necessary.

Notes:
