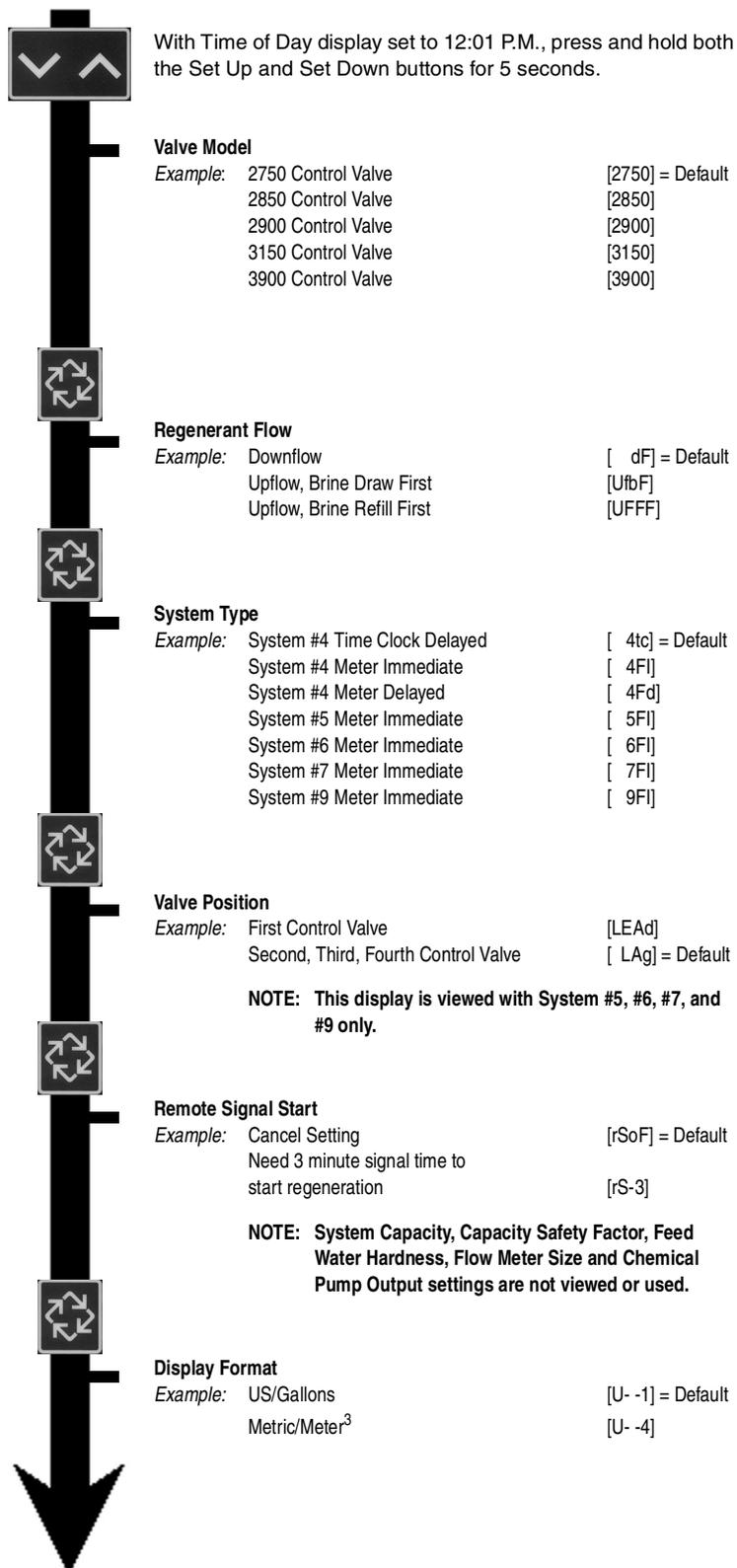


Master Programming Mode Flow Chart

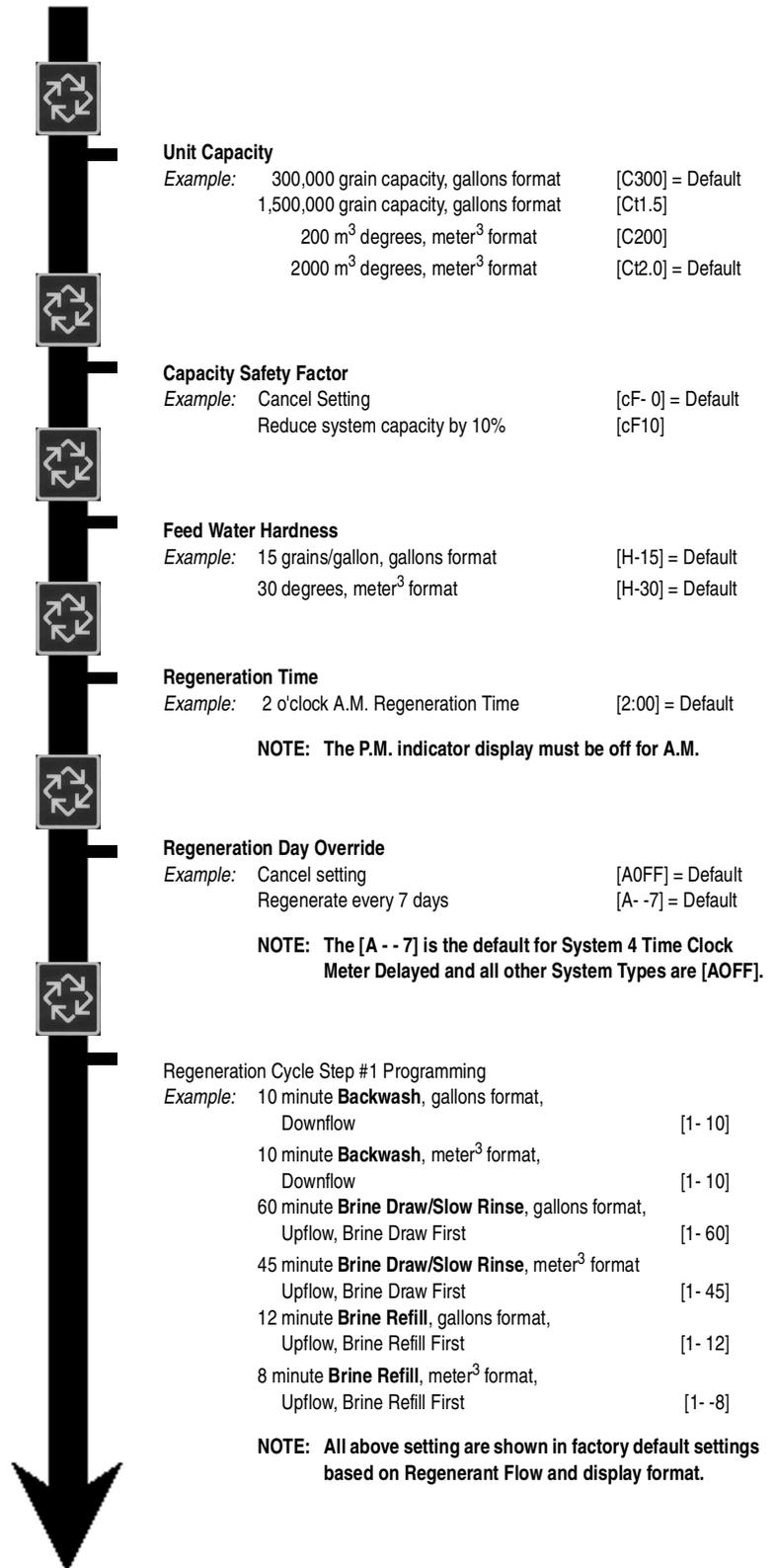


NOTE:

1. Set Time of Day display to 12:01 P.M.
2. Press and hold both the Set Up and Set Down buttons for 5 seconds.
3. Press Extra Cycle button once per display until all displays are viewed and Normal Display is resumed.
4. Option setting displays may be changed as required by pressing either the Set Up or Set Down button.
5. Depending on current valve programming, certain displays may not be viewed or set.

3200NT Timer

Master Programming Mode Flow Chart



Master Programming Mode Flow Chart



Regeneration Cycle Step #2 Programming

Example:

60 minute Brine Draw/Slow Rinse , gallons format, Downflow	[2- 60]
45 minute Brine Draw/Slow Rinse , meter ³ format, Downflow	[2- 45]
10 minute Backwash , gallons format, Upflow, Brine Draw First	[2- 10]
10 minute Backwash , meter ³ format, Upflow, Brine Draw First	[2- 10]
15 minute Pause , gallons format, Upflow, Brine Refill First	[2- 15]
15 minute Pause , meter ³ format, Upflow, Brine Refill First	[2- 15]

NOTE: All above setting are shown in factory default settings based on Regenerant Flow and display format.

Regeneration Cycle Step #3 Programming

Example:

10 minute Rapid Rinse , gallons format, Downflow	[3- 10]
10 minute Rapid Rinse , meter ³ format, Downflow	[3- 10]
10 minute Rapid Rinse , gallons format, Upflow, Brine Draw First	[3- 10]
10 minute Rapid Rinse , meter ³ format, Upflow, Brine Draw First	[3- 10]
60 minute Brine Draw/Slow Rinse , gallons format, Upflow, Brine Refill First	[3- 60]
45 minute Brine Draw/Slow Rinse , meter ³ format, Upflow, Brine Refill First	[3- 45]

NOTE: All above setting are shown in factory default settings based on Regenerant Flow and display format.

Regeneration Cycle Step #4 Programming

Example:

12 minute Brine Tank Refill , gallons format, Downflow	[4- 12]
8 minute Brine Tank Refill , meter ³ format, Downflow	[4- -8]
12 minute Brine Tank Refill , gallons format, Upflow, Brine Draw First	[4- 12]
8 minute Brine Tank Refill , meter ³ format, Upflow, Brine Draw First	[4- -8]
10 minute Backwash , gallons format, Upflow, Brine Refill First	[4- 10]
10 minute Backwash , meter ³ format, Upflow, Brine Refill First	[4- 10]

NOTE: All above setting are shown in factory default settings based on Regenerant Flow and display format.

Regeneration Cycle Step #5 Programming

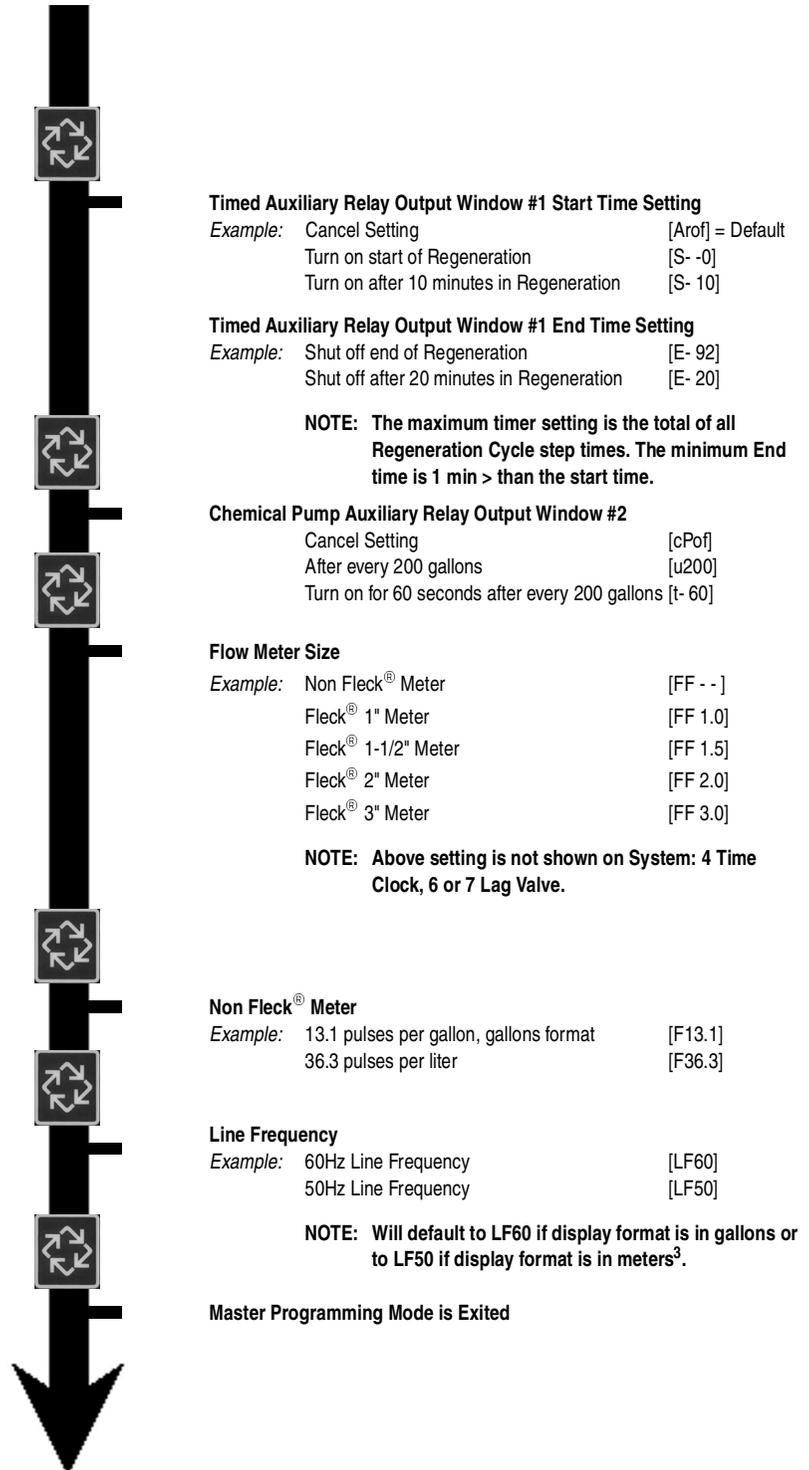
Example:

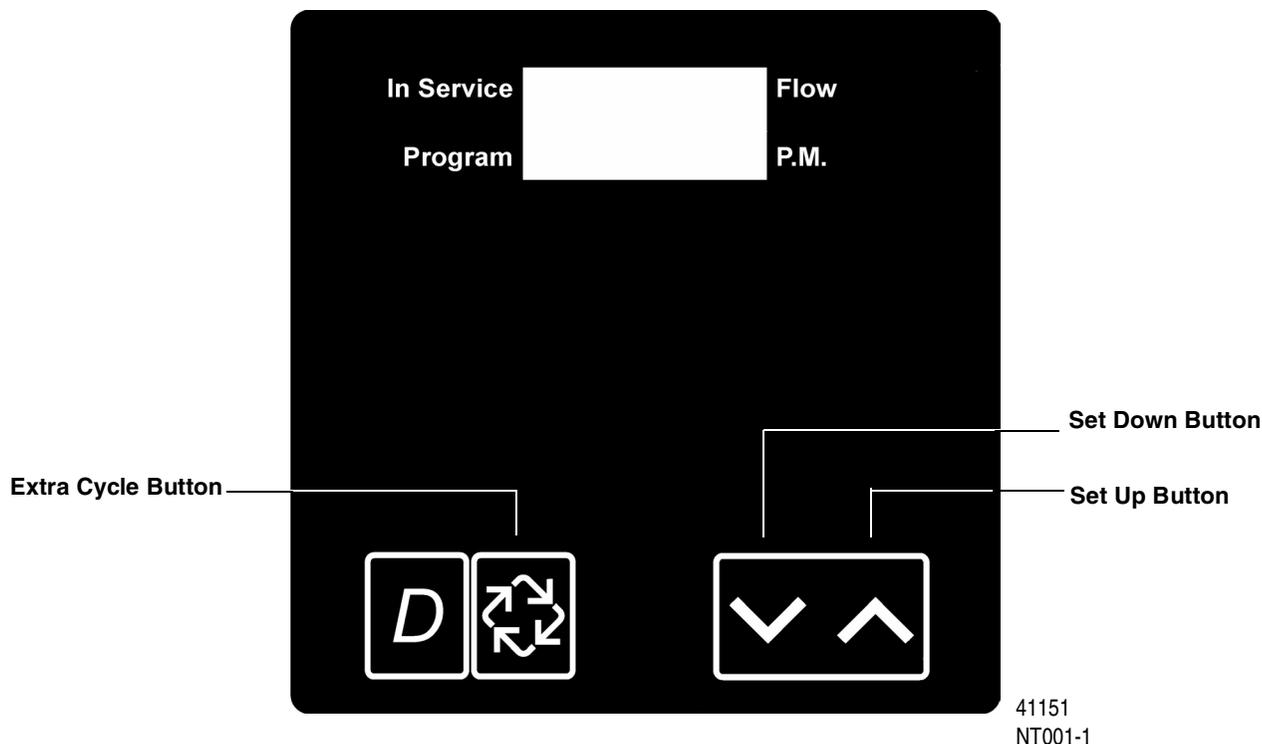
Cancel Setting	[50FF]
10 minute Rapid Rinse , gallons format, Upflow, Brine Refill First	[4- 10]
10 minute Rapid Rinse , meter ³ format, Upflow, Brine Refill First	[4- 10]

NOTE: All above setting are shown in factory default settings based on Regenerant Flow and display format.

3200NT Timer

Master Programming Mode Flow Chart





When the Master Programming Mode is entered, all available option setting displays may be viewed and set as needed. Depending on current option settings, some displays cannot be viewed or set.

Entering Master Programming Mode

Set the **Time Of Day** display to 12:01 P.M. Press and hold the **Set Up** and **Set Down** buttons together until the Program indicator turns on (about 5 seconds). Depending on current option settings, some displays cannot be viewed or set.

Exiting Master Programming Mode

Press the **Extra Cycle** button once per display until all are viewed. The Program Mode is exited and normal display resumes.

Resetting Permanent Programming Memory

Press and hold the **Set Up** and **Set Down** buttons (for about 25 seconds) until the **Time Of Day** display resets to 12:00 P.M. All option settings reset to default values. Control programming must be reset as necessary.

1. Valve Model (No Display Code)

This program step selects valve models: **2750, 2850, 2900, 3150, and 3900**

- Use **Set Up** or **Set Down** buttons to adjust this value.
- Press the **Extra Cycle** button.

2. Regenerant Flow (No Display Code)

This program step is used to set the Regeneration Type. Availability is dependent on valve model chosen.

DownflowSetting: [**dF**]

Upflow, Brine FirstSetting: [**UFbF**]

Upflow, Fill FirstSetting: [**UFFF**]

- Use **Set Up** or **Set Down** buttons to adjust this value.
- Press the **Extra Cycle** button.

3200NT Timer

Master Programming Guide

3. System Type

Use this program step to set the System Type. Possible settings are:

System Type 4 Time Clock Delayed Setting: [**4tc**]

The control regenerates on the days set in Regeneration Day Override, at the Regeneration Time set in Regeneration Time.

System Type 4 Meter Immediate Setting: [**4FI**]

The control regenerates immediately when the available volume of treated water drops to zero (0).

System Type 4 Meter Delayed Setting: [**4Fd**]

The control regenerates on the day the available volume of treated water drops to less than the reserve volume. Regeneration starts at the Regeneration Time.

System Type 5 Meter Immediate (Interlock) Setting: [**5 FI**]

This is a 2 to 4 unit system, each unit having a meter, and all in service. Only one unit is allowed in regeneration at a time. A unit regenerates immediately when the available volume of treated water drops to zero (0) and no other unit is in regeneration.

System Type 6 Meter Immediate (Series) Setting: [**6 FI**]

This is a 2 to 4 unit system, all in service, with one meter for the entire system. When the entire system volume of treated water drops to zero (0), it requests the first unit to go into regeneration. Then, when the first unit is done regenerating, the second follows, and so on.

System Type 7 Meter Immediate (Alternating) Setting: [**7 FI**]

This is a 2 unit system, with only one unit having a meter and only one unit in service. When the volume of treated water drops to zero (0) in the unit in service, it requests regeneration. This causes the unit in standby to move to service. Then the unit requesting regeneration moves to standby and begins regeneration.

System Type 9 Meter Immediate (Alternating) Setting: [**9 FI**]

This is a 3 or 4 unit system, each unit having a meter, one unit in standby and all other units in service. Only one unit is allowed in regeneration at a time. When the volume of treated water drops to zero (0) in the unit in service, it requests regeneration. This causes the unit in standby to move to service. Then the unit requesting regeneration moves to standby and begins regeneration.

- Use **Set Up** or **Set Down** buttons to adjust this value.
- Press the **Extra Cycle** button.

4. Valve Position (No Display Code)

This program step is for two or more control valves in a system. Enter **Lead** on the first Control valve in a system and the remaining enter **Lag**. For systems that use 1 meter, the flow meter cable must be connected to the lead control valve. This program step is skipped for System Types 4tc, 4FI and 4Fd.

First Control Valve Setting: [**LEAd**]

Second, Third, Fourth Control Valve Setting: [**LAg**]

- Use **Set Up** or **Set Down** buttons to adjust this value.
- Press the **Extra Cycle** button.

5. Remote Signal Start (Display Code rS)

The control valve is monitored other than a meter. Regeneration begins immediately after a contact closure is received for the number of minutes programmed. The amount of time is required for a contact closure to be presented before the signal is considered to be valid.

Range = 1 – 99 minutes

Cancel Setting

Setting: [rSoF]

3-Minute Signal Time To Start Regeneration

Setting: [rS-3]

- Use **Set Up** or **Set Down** buttons to adjust this value.
- Press the **Extra Cycle** button.

6. Gallons / Meter³ Display Format (Display Code U)

This program step sets the desired display format. The letter U in the first digit of the display identifies this program step. The possible settings include:

Gallons of water, 12 hour timekeeping, and grains of hardness

Setting: [U - - 1]

M³ of water, 24 hour timekeeping, and degrees of hardness

Setting: [U - - 4]

- Use **Set Up** or **Set Down** buttons to adjust this value.
- Press the **Extra Cycle** button.

7. Unit Capacity (Display Code C)

This program step sets the capacity of the system in kilograins (or m³ X degrees for metric systems). The letter C in the first digit of the display identifies this program step. System Capacity calculates the amount of treated water (gallons or liters) that can be treated by the unit before a regeneration cycle is required.

Range = C--9 – C999 kilograins (US [U - -1])

Range = Ct1.0 – Ct2.9 thousands of kilograins or millions of grains (US [U - -1])

Range = C199 – C999 m³ X degrees (metric [U - - 4])

Range = Ct1.0 – Ct19 kilo m³ X degrees (metric [U - - 4])

450,000 grain system capacity, US display

Setting: [C 450]

- Use **Set Up** or **Set Down** buttons to adjust this value.
- Press the **Extra Cycle** button.

8. Capacity Safety Factor (Display Code cF)

This program step adjusts system capacity. The setting is a percentage by which the unit's capacity is reduced.

Range = 0 – 50%.

Reduce system capacity by 10%

Setting: [cF10]

- Use **Set Up** or **Set Down** buttons to adjust this value.
- Press the **Extra Cycle** button.

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Master Programming Guide

9. Feed Water Hardness (Display Code H)

This program step sets the feed water hardness. The letter H in the first digit of the display identifies this program step. The system automatically calculates treated water capacity based on the feed water hardness entered in this program step and the system capacity entered in program step #3.

Range = 1 – 199 grains/gallon (US [**U - -1**])

Range = 2 – 199 degrees (metric [**U - - 4**])

20 grains/gallon

Setting: [**H - 20**]

- Use **Set Up** or **Set Down** buttons to adjust this value.
- Press the **Extra Cycle** button.

10. Regeneration Time (No Display Code)

This program step sets time of day for the regeneration to occur. A non-flashing colon between two sets of numbers identifies the Regeneration Time display.

Range = Anytime

2 o'clock A.M. regeneration time

Setting: [**2:00**] (P.M. Indicator Off)

- Use **Set Up** or **Set Down** buttons to adjust this value.
- Press the **Extra Cycle** button.

11. Regeneration Day Override (Display Code A)

This program step sets the maximum amount of time (in days) the unit can be in service without a regeneration. The letter A in the first digit of the display identifies this program step. For System Type Time Clock Delayed [**4tc**] the system regenerates at the time set in program step #5 after the number of days programmed in this step. For any Meter System Types, the system regenerates after the number of days programmed in this step at the same time of day that the previous regeneration occurred unless the meter initiates a regeneration cycle earlier.

Range = 1 – 99 (Time Clock Delayed [**4tc**])

Range = OFF, 1 – 99 (All Meter Regeneration Types)

Override every 14 days

Setting: [**A -14**]

Option turned off

Setting: [**AOFF**]

- Use **Set Up** or **Set Down** buttons to adjust this value.
- Press the **Extra Cycle** button.

12. Regeneration Cycle Step Programming (Display Code 1 – 6)

This program step programs the Regeneration Cycle step times. Up to 6 Regeneration Cycle steps can be programmed. The Regeneration Cycle Step being programmed is shown in the first digit of the display. Each display sets the duration time in minutes of that specific step in the regeneration cycle. For regeneration programs with less than 6 regeneration cycle steps, the time for the step # after the last active step must be set to OFF. To skip a regeneration cycle step and go to the next cycle, the setting should be at 0. If regeneration cycle step setting is OFF, the remaining cycle steps will not appear to set.

Range = OFF, 0 – 99 minutes (US [**U - -1**])

Range = OFF, 0 – 99 minutes (metric [**U - - 4**])

Regeneration Cycle Step #1 (10 minutes)

Setting: [**1- 10**]

Regeneration Cycle Step #4 (Cancel)

Setting: [**4OFF**]

- Use **Set Up** or **Set Down** buttons to adjust this value.
- Press the **Extra Cycle** button.

13. Auxiliary Relay Output (Display Codes AroF, cPoF)

The next two displays viewed are part of a series of settings used to program the optional relay output. The first setting turns the output on / off during Regeneration only. The second turns the output on during Service only, when a set volume of water used has accumulated. This second is not viewed on non-metered systems. When more than one of these settings is used, the relay must be wired to the auxiliary brine cam switch output to operate two separate pieces of equipment at one time.

NOTE: When auxiliary outputs are in the OFF (default) setting, use the Set Up or Set Down buttons to set the first setting. Then press the Extra Cycle button to advance to the second setting.

a. Timed Auxiliary Relay Output (Display Codes S-Start Time, E-End Time)

This option setting consists of two displays. The first display sets the turn-on time of the output, referenced to the start of the first Regeneration Cycle. The second display sets the output turn-off time, referenced again to the start of first Regeneration Cycle. An OFF setting cancels this setting. All settings are in minutes and output timing is synchronized with regeneration cycle timing.

Range = Total time of Regeneration

Cancel Setting

[AroF]

Turn on Start of Regeneration

[S- - 0]

Shut off End of Regeneration

[E- 92]

Turn on after 10 minutes in Regeneration

[S- 10]

Shut off after 20 minutes in Regeneration

[E- 20]

NOTE: The end of Regeneration is the total of all Regeneration Cycle steps times.

b. Chemical Pump Output (Display Codes u-Volume, t-Seconds)

This option setting consists of two displays. The first display sets the volume of water flow at which the output turns on. The second display sets the turn-on time (in seconds) of the output.

Range = 1 – 999 gallons

Range = 1 – 999 seconds

Cancel Setting

[cPoF]

Activate output after every 200 gallons

[u200]

Turn on for 60 seconds after every 200 gallons

[t- 60]

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

— Press the **Extra Cycle** button.

14. Fleck® Flow Meter Size (Display Code FF)

This program step sets the size of the Fleck® flow meter. The letters FF in the first two digits of the display identifies this program step. The last two digits of the display indicate the meter's size. If [**FF- -**] generic is chosen, the next step is **Generic Flow Meter Size**. If any other selection is chosen, the next step is **Line Frequency**.

Range = 1" – 3" Fleck® Meter

2" Fleck® Meter

Setting: [FF2.0]

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

— Press the **Extra Cycle** button.

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Master Programming Guide

15. Generic Flow Meter Size (Display Code F)

This program step sets the proper number of pulses generated by the flow meter for each gallon or liter of water flow.

Range = 0.1 – 99.9 pulses per gallon 100 – 199 pulses per gallon

Range = 0.1 – 99.9 pulses per liter 100 – 199 pulses per liter

- Use **Set Up** or **Set Down** buttons to adjust this value.
- Press the **Extra Cycle** button.

16. Line Frequency (Display Code LF)

This program step sets the frequency of the power supply. When the line frequency is properly set, all timekeeping functions remain accurate. The letters LF in the first digit of the display identify this program step. The possible settings are:

60Hz Line Frequency

Setting: [LF60]

50Hz Line Frequency

Setting: [LF50]

- Use **Set Up** or **Set Down** buttons to adjust this value.
- Press the **Extra Cycle** button.

Exiting the Master Programming Mode

Press the **Extra Cycle** button once more to exit Master Program Mode.

After leaving Master Programming mode the abbreviation **CALc** appears on the display indicating that volume is being calculated (initial communication is taking place if the System Type is 7 or 9).

NOTE: The length of time CALc displays is dependent on the calculated volume and could be a minute or more.

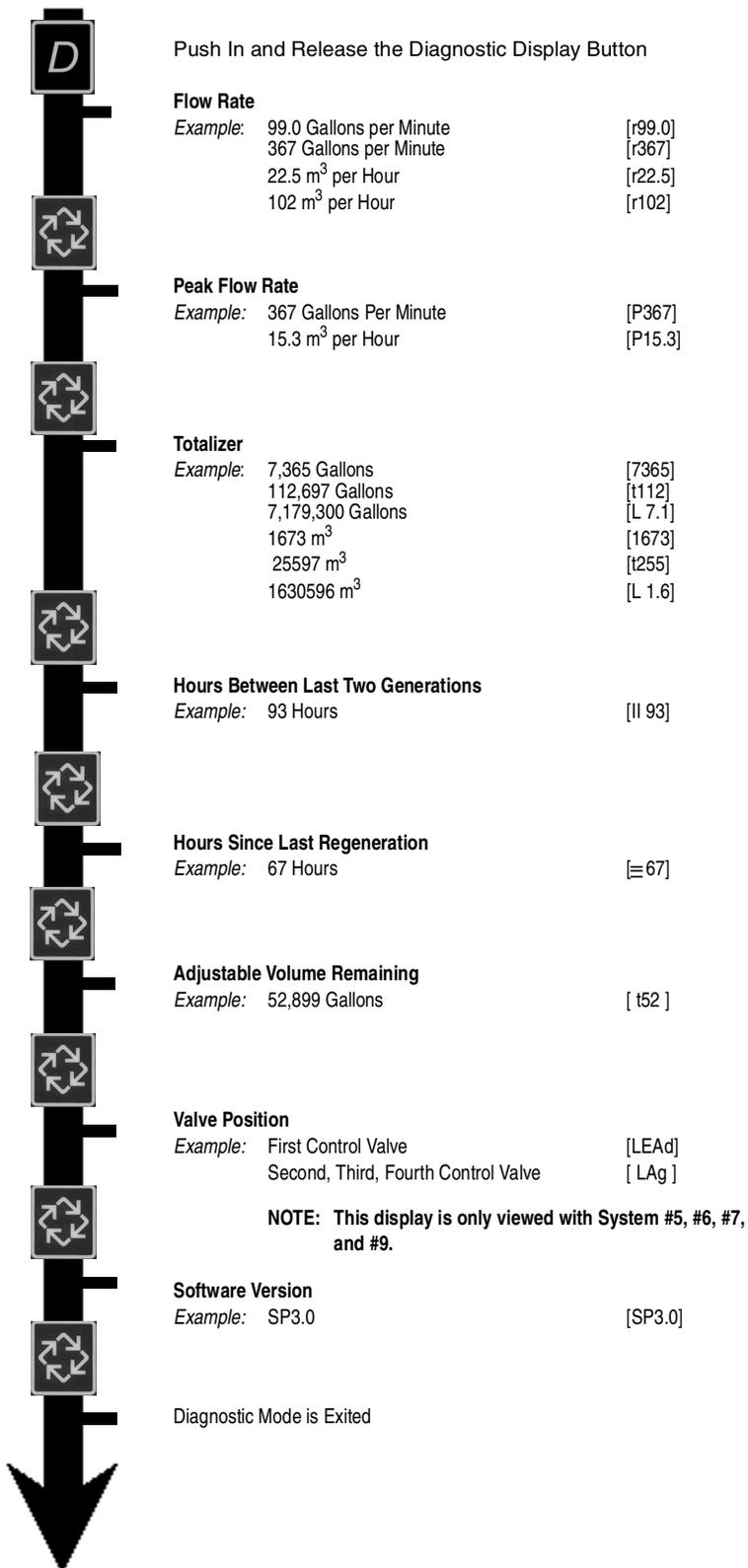
Time of Day

Finish the control programming by setting the time of day. With the controller in Normal Operating Mode (not in Master Programming Mode or User Programming Mode), set the time by pressing **Set Up** or **Set Down** buttons.

NOTE: Do NOT press the Extra Cycle button after setting the time or a regeneration cycle may be initiated.

Verify the following menu structure for each System Type. An “X” indicates that parameter is available. (Note parameters before System Type are not included here.)

Parameter	4tc	4FI	4Fd	5FI	6 & 7	6 & 7	9FI
Valve Position (Lead or Lag)				Lead/Lag	Lead	Lag	Lead/Lag
Remote Start (Set to rSoF)		X		X	X		X
Display Format (U--x)	X	X	X	X	X	X	X
System Capacity (Cxxx)		X	X	X	X	X	X
Capacity Safety Factor (cFxx)		X	X	X	X	X	X
Feed Water Hardness (H-xx)		X	X	X	X		X
Regeneration Time (xx:xx)	X	X	X	X	X	X	X
Regeneration Day Override (Axxx)	X	X	X	X	X	X	X
Regeneration Cycle Step Times (1-xx, 2-xx, etc.)	X	X	X	X	X	X	X
Auxiliary Relay (AroF)	X	X	X	X	X	X	X
Chemical Pump Output (cPOF)		X	X	X	X		X
Flow Meter Size (FFxx)		X	X	X	X		X
Line Frequency (LFxx)	X	X	X	X	X	X	X

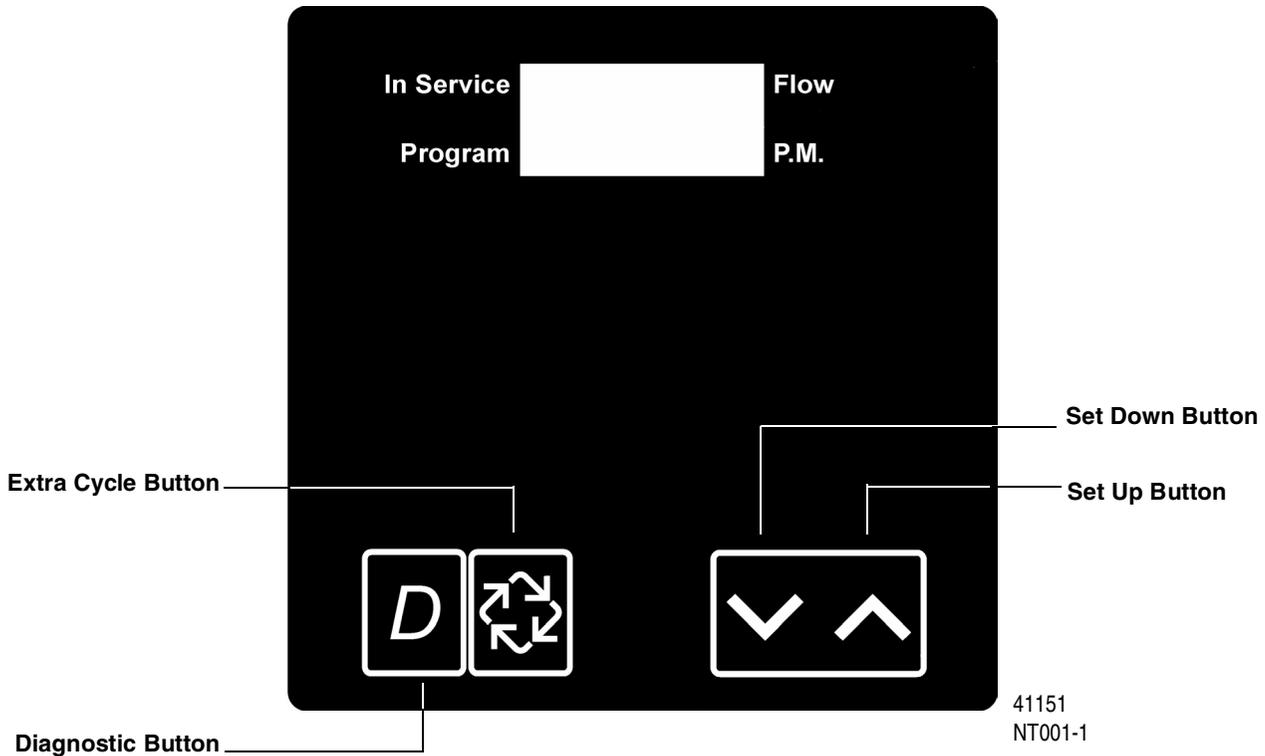


NOTE:

1. Push and release the "D" button.
2. Press Extra Cycle button once per display until all displays are viewed and Normal Display is resumed.
3. Push and release the "D" button at anytime during diagnostic mode and the timer will exit the mode.
4. Depending on current valve programming, certain displays may not be able to be viewed or set.

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Diagnostic Display Guide



When the Diagnostics Mode is entered, all available displays are viewed as needed. Depending on current option settings, some displays cannot be viewed.

Overview Diagnostic Mode

The current diagnostic will be displayed until Extra Cycle key is pressed. There is no time limit on each display. The timer will display local information, not system information. In the event of regeneration occurring while displaying diagnostics, the regeneration step and time remaining will be displayed. When regeneration has been completed, the display will return to diagnostic display.

Entering and Exiting Diagnostic Mode

Push and Release the "D" button to enter. Pressing the Extra Cycle button will move to the next diagnostic to be displayed. Push the Extra Cycle button once per display until all are viewed. The Diagnostic Mode is exited and normal operation resumes. Pressing the Diagnostic button, while in the Diagnostic Mode, will cause the unit to leave the Diagnostic Mode and return to the normal time of day display.

1. Flow Rate (Display Code r)

Flow Rate for this particular Timer will be calculated and displayed. Flow rates will be calculated over the time between pulses up to 20 seconds. Times between pulses longer than 20 seconds will be ignored. If the display is flashing, the flow rate has exceeded the range and will not calculate. The display updates once per second.

Display example: r100

Range = 0.0 – 99.9 gpm, 100 – 500gpm

Range = 0.0 – 99.9 m³/h, 100 – 113 m³/h

Depress the **Extra Cycle** button.

2. Peak Flow Rate (Display Code P)

The Peak Flow Rate since the last regeneration will be captured. Reset to zero by holding up and down keys for 5 seconds during the Peak Flow Rate display.

Display example: P100

Range = 0.0 – 99.9 gpm, 100 – 500gpm

Range = 0.0 – 99.9 m³/h, 100 – 113 m³/h

Depress the **Extra Cycle** button.

3. Totalizer (Display Code t = x 1000, L = x 1,000,000)

The total volume of treated water that passes through a meter will be counted to a maximum limit of 99,999,999 gallons or m³. Reset to zero by holding up and down keys for 5 seconds during the Totalizer display.

Ranges = No Display Code	0 to 9999	=	0 – 9,999
Display Code (t)	t-10 to t999	=	10,000 – 999,999
Display Code (L)	L-1.0 to L99.9	=	1,000,000 – 99,999,999

Depress the **Extra Cycle** button.

4. Hours Between Last Two Regenerations (Display Code II)

The hours between the last two regenerations will be saved and displayed.

Display example: II 93

Range = 0 to 999 Hours

Depress the **Extra Cycle** button.

5. Hours Since Last Regeneration (Display Code ≡)

The hours since the last regeneration will be saved and displayed.

Display example: 67

Range = 0 to 999 hours.

Depress the **Extra Cycle** button.

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Diagnostic Display Guide

6. Volume Remaining

Volume remaining will be adjustable when displayed in this mode. Regeneration will occur if set to zero for more than 10 seconds.

Ranges = No Display Code	0 to 9999	=	0 – 9,999
Display Code (t)	t-10 to t999	=	10,000 – 999,999
Display Code (L)	L-1.0 to L 2.9	=	1,000,000 – 2,900,000

Use **Set UP** or **Set DOWN** buttons is used to adjust this value.

Depress the **Extra Cycle** button

7. Valve Position (No Display Code)

This diagnostic display is for 2 control valves or more in a system. This will allow you to see which timer is programmed for the Lead or **Lag**. This Diagnostic display is skipped for System Types 4tc, 4FI and 4Fd.

First Control Valve	Setting: [LEAd]
Second, Third, Fourth Control Valve	Setting: [LAg]

Depress the **Extra Cycle** button.

8. Software Version (Display Code SP)

The electronic timer's software program version number will be displayed.

Display example: **SP3.0**

Depress the **Extra Cycle** button to exit.