3200NT Timer

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 Operation 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.

With Time of Day display set to 12:01 P.M., press and hold both the Set Up and Set Down buttons for 5 seconds.

Valve Model

Example:	2750 Control Valve	[2750] = Default
	2850 Control Valve	[2850]
	2900 Control Valve	[2900]
	2930 Control Valve	[2930]
	3130 Control Valve	[3130]
	3150 Control Valve	[3150]
	3900 Control Valve	[3900]

Regenerant Flow

Example:	Downflow	[dF] = Default
	Upflow, Brine Draw First	[UfbF]
	Upflow, Brine Refill First	[UFFF]

System Type

Example:	System #4 Time Clock Delayed	[4tc] = Default
	System #4 Meter Immediate	[4FI]
	System #4 Meter Delayed	[4Fd]
	System #5 Meter Immediate	[5FI]
	System #6 Meter Immediate	[6FI]
	System #7 Meter Immediate	[7FI]
	System #9 Meter Immediate	[9FI]

Valve Position

Example:	First Control Valve	[LEAd]
	Second, Third, Fourth Control Valve	[LAg] = Default

NOTE: This display is viewed with System #5, #6, #7, and #9 only.

Remote Signal Start

Example:	Cancel Setting	[RSoF] = Default
	Need 3 minute signal time to start regeneration	[RS-3]

NOTE: System Capacity, Capacity Safety Factor, Feed Water Hardness, Flow Meter Size and Chemical Pump Output settings are not viewed or used.

Display Format

Example:	Gallons	[U- -1] = Default
	Meters^3	[U- -4]

3200NT Timer

Master Programming Mode Flow Chart

System Capacity

Example:	300,000 grain capacity, US format	[C300] = Default
	1,500,000 grain capacity, US format	[Ct1.5]
	200 m^3 degrees, metric format	[C200]
	200,000 m^3 degrees, metric format	[Ct2.0] = Default

Capacity Safety Factor

Example:	Cancel Setting	[cF- 0] = Default
	Reduce system capacity by 10%	[cF10]

Feed Water Hardness

Example:	15 grains/gallon, US format	[H-15] = Default
	30 degrees, metric format	[H-30] = Default

Regeneration Time

Example:	2 o'clock A.M. Regeneration Time	[2:00] = Default

NOTE: The P.M. indicator display must be off for A.M.

Regeneration Day Override

Example:	Cancel setting	[A0FF] = Default
	Regenerate every 7 days	[A- -7] = Default

NOTE: The [AOFF] is the default for System 4 Time Clock Meter Delayed and all other System Types are [A - - 7].

Regeneration Cycle Step #1 Programming

Example:	10 minute **Backwash**, US format, Downflow	[1- 10]
	10 minute **Backwash**, metric format, Downflow	[1- 10]
	60 minute **Brine Draw/Slow Rinse**, US format, Upflow, Brine Draw First	[1- 60]
	45 minute **Brine Draw/Slow Rinse**, metric format Upflow, Brine Draw First	[1- 45]
	12 minute **Brine Refill**, US format, Upflow, Brine Refill First	[1- 12]
	8 minute **Brine Refill**, metric format, Upflow, Brine Refill First	[1- -8]

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

Regeneration Cycle Step #2 Programming

Example: 60 minute **Brine Draw/Slow Rinse**, US format, Downflow [2- 60]
45 minute **Brine Draw/Slow Rinse**, metric format, Downflow [2- 45]
10 minute **Backwash**, US format, Upflow, Brine Draw First [2- 10]
10 minute **Backwash**, metric format, Upflow, Brine Draw First [2- 10]
15 minute **Pause**, US format, Upflow, Brine Refill First [2- 15]
15 minute **Pause**, metric format, Upflow, Brine Refill First [2- 15]

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

Regeneration Cycle Step #3 Programming

Example: 10 minute **Rapid Rinse**, US format, Downflow [3- 10]
10 minute **Rapid Rinse**, metric format, Downflow [3- 10]
10 minute **Rapid Rinse**, US format, Upflow, Brine Draw First [3-10]
10 minute **Rapid Rinse**, metric format, Upflow, Brine Draw First [3- 10]
60 minute **Brine Draw/Slow Rinse**, US format, Upflow, Brine Refill First [3- 60]
45 minute **Brine Draw/Slow Rinse**, metric format, Upflow, Brine Refill First [3- 45]

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

Regeneration Cycle Step #4 Programming

Example: 12 minute **Brine Tank Refill**, US format, Downflow [4- 12]
8 minute **Brine Tank Refill**, metric format, Downflow [4- -8]
12 minute **Brine Tank Refill**, US format, Upflow, Brine Draw First [4- 12]
8 minute **Brine Tank Refill**, metric format, Upflow, Brine Draw First [4- -8]
10 minute **Backwash**, US format, Upflow, Brine Refill First [4- 10]
10 minute **Backwash**, metric format, Upflow, Brine Refill First [4- 10]

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

Regeneration Cycle Step #5 Programming

Example: Cancel Setting [50FF]
10 minute **Rapid Rinse**, US format, Upflow, Brine Refill First [4- 10]
10 minute **Rapid Rinse**, metric format, Upflow, Brine Refill First [4- 10]

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

3200NT Timer

Master Programming Mode Flow Chart

Regeneration Cycle Step #6 Programming

Example: Cancel Setting [60FF]

NOTE: The above setting appears only if Regeneration Cycle Step 5 is used.

Timed Auxiliary Relay Output Window #1 Start Time Setting

Example: Cancel Setting [Arof] = Default
Turn on start of Regeneration [S- -0]
Turn on after 10 minutes in Regeneration [S- 10]

Timed Auxiliary Relay Output Window #1 End Time Setting

Example: Shut off end of Regeneration [E- 92]
Shut off after 20 in Regeneration [E- 20]

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

Chemical Pump Auxiliary Relay Output Window #2

Cancel Setting [cPof]
After every 200 gallons [u200]
Turn on for 60 seconds after every 200 gallons [t- 60]

Flow Meter Size

Example: Non Fleck® Meter [FF - -]
Fleck® 1" Meter [FF 1.0]
Fleck® 1-1/4" Meter [FF 1.2]
Fleck® 1-1/2" Meter [FF 1.5]
Fleck® 2" Meter [FF 2.0]
Fleck® 3" Meter [FF 3.0]

NOTE: Above setting is not shown if System 4 Time Clock 6 or 7 Lag Valve.

Non Fleck® Meter

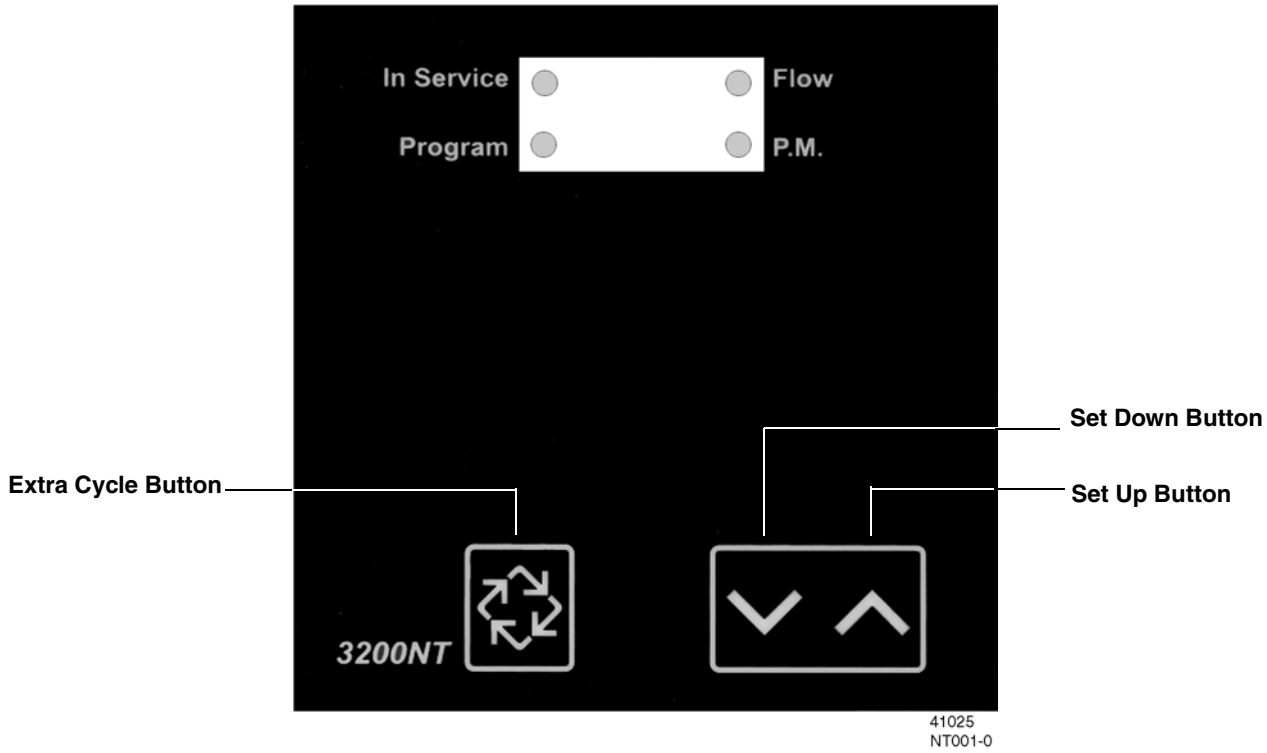
Example: 13.1 pulses per gallon, US format [F13.1]
36.3 pulses per m^3, metric format [F36.3]

Line Frequency

Example: 60Hz Line Frequency [LF60]
50Hz Line Frequency [LF50]

NOTE: Will default to LF60 if display format is in gallons or to LF50 if display format is in meters^3.

Master Programming Mode is Exited



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 operation resumes.

Resetting Permanent Programming Memory

Press and hold the **Set Up** and **Set Down** buttons for 25 seconds or 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***, ***2930***, ***3130***, ***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.

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. US / Metric 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:

US Display gallons of water, 12 hour timekeeping, and grains of hardness — Setting: **[U - - 1]**

Metric Display m^3 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. System Capacity (Display Code C)

This program step sets the capacity of the system in kilograins (or m^3 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 m^3 X degrees (metric **[U - - 4]**)

Range = Ct1.0 – Ct19 kilo m^3 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.

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 the second setting.

14. 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. A set on-time with a set off-time of S turns the output off at the start of Service. 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.

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.

15. 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.

16. 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

Range = 0.1 – 99.9 pulses per m^3

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

— Press the **Extra Cycle** button.

17. 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.