G-Star/L

(A pre-wired system)

Installation & Operation Manual

Retain this manual for installation, operation, programming and servicing information.

Mechanical Installation

Overview

This chapter describes the hardware installation of the G-Star/L. In this chapter, you will:

• Wall-mount the G-Star/L

• Install Probe (if applicable)

• Install Rinse Injection Fitting

• Install Detergent Bulkhead Fitting

• Install Rinse and Detergent Supply and Discharge Tubes

Wall Mounting

Choose an installation location that is:
• Close to the product containers and at a reasonable height for easy service access.
• Away from any direct sources of steam, water spray, and high temperatures.
• Close enough to the dish machine electrical control panel to allow dispenser wiring without use of an external junction box (not provided) wherever possible.

Figure 1-2 Mounting Dispenser

Hang unit from this lip onto Mounting Bracket

1. Using mounting bracket as a template, mark holes to drill into mounting surface. For sheet metal mounting with screws and nuts, drill 1/4" (6 mm) holes. For wall anchors, drill holes to fit anchors.
2. Attach mounting bracket to mounting surface with hardware provided.
3. Hang dispenser on bracket.
4. If desired, drill hole and attach lower mounting hole to mounting surface.

Probe Mounting

The probe senses detergent concentration. Correct probe placement is critical for accurate detergent concentration control. Always use the new probe provided with the dispenser.

1. Mount the probe in a location that is always immersed in the wash tank solution, has good flow of solution, and is close to the product entry point. Many dish machines have knockouts provided for probe installation and/or existing probes. Previously punched probe holes may be suitable, but always confirm that the probe will be immersed in the wash tank solution before installing.

2. If probe hole is present, skip to Step 4.

3. Drill a 3/8" hole in the center of the probe location. Use a Greenlee (or similar) 7/8" hole punch to cut the final hole.

4. Remove the probe retaining nut and, from inside the dish machine tank, insert probe with rubber gasket into hole.

5. Install rubber gasket, plastic washer and probe retaining nut. Tighten finger-tight *plus* 1/4 turn.

Rinse Injection Fitting

The injection fitting threads into 1/4" NPT female threads. If the dish machine rinse plumbing is thin wall pipe, use a saddle clamp with a 1/4" NPT threaded hole. If using an optional pressure switch, thread the injection fitting into one side of the pressure switch water source fitting pipe tee. Install the rinse injection fitting in a location that is:

- At least 6 inches (15.25 cm) below the dish machine rinse plumbing vacuum breaker or solenoid valve (to conform to plumbing codes).
- On continuous rack, flight, or conveyor machines: Be sure that this location is downstream from any rinse makeup water .The dish machine may already have a tapped hole present to accommodate the fitting; in this case, skip to Step 3.
1. Drill a 7/32" hole in the rinse plumbing injection location.
2. Tap the hole drilled in Step 1 with an 1/4" NPT tap.
3. Install the injection fitting. Use thread sealant to ensure a leak-free assembly.

Detergent Bulkhead Fitting

If using solid, powder, or slurry feed system, follow your system's instructions. Use the following instructions for liquid detergent applications only.

Correct detergent bulkhead fitting placement is critical for accurate detergent concentration control (probe mode only). Choose a mounting location for the detergent bulkhead fitting that is:

- Above the water line in the tank.
- Close to the probe location (when possible).
- Discharging detergent directly into the wash tank and not on top of any shelf areas or other obstacles that could prevent detergent from falling directly into the wash tank.

Previously punched holes may be suitable, but always confirm that the fitting is above the water line before installing. If a hole is present, skip to Step 2.

1. Drill a 3/8" hole in the center of the detergent inlet location. Use a Greenlee (or similar) 7/8" hole punch to cut the final hole.
2. Remove the detergent bulkhead fitting retaining nut and insert into hole with rubber gasket from inside the dish machine tank.
3. Install rubber gasket, plastic washer and plastic retaining nut. Tighten finger-tight *plus* 1/4 turn.

Rinse and Detergent Supply and Discharge Tubes

Rinse Pump Supply Tube Connection

Detergent Pump Supply Tube Connection

Detergent Pump Discharge Tube Connection

Rinse Pump Discharge Tube Connection

Electrical Installation

Overview

This chapter describes the electrical connections of the G-Star/L. In this chapter, you will connect:

• Probe Wiring
• Lid Switch Wiring
• Detergent Signal Wiring (Probe and Probe-less modes)
• Rinse Signal Wiring

Basically all above wires are ***pre-wired*** from dispenser, what you have to do is connect the appropriate wires to suitable signal supply points.

Probe Wiring

1. Route the probe wire to the probe location and cut to fit. If you need to extend the probe wire, use high quality, corrosion resistant or waterproof butt splices and a quality crimping tool.

2. Strip wire ends and crimp on the ring lugs provided.

3. Connect the ring lugs to the probe with nuts and split washers provided. Be sure that connections are tight and secure.

Detergent Signal Wiring

Probe Mode

The detergent signal input is an optically isolated signal input that draws no more than 20 mA. It is a universal input that accepts any voltage between 24 and 240 VAC nominal (+/- 10% fluctuation), or 24 VDC nominal (+/- 20% fluctuation). Typical wiring locations are the dispenser detergent power source or the wash motor contacts in the dish machine control panel. This power source is on when the dishwasher is running the wash pump.

• Connect yellow (DC +) and white/yellow (DC -) colored wires to detergent power source.

Probe-less Mode

For conveyor type dishwashers

the detergent signal must occur only once per dish machine fill/drain
occurrence–beginning when the dish machine fills. Typical wiring locations are an "on light" or an
electrical tank heat circuit between the tank heater switch and the thermostat. Each time this
power source comes on, the dispenser feeds the detergent initial charge amount (with probe-
less and automatic initial charge modes set).

For door-type dishwashers

Connect this signal input to the dispenser detergent power source or the
wash motor contacts in the machine control panel. This power source is on when the
dishwasher is running the wash pump.

• Connect yellow (DC +) and white/yellow (DC -) colored wires to initial charge power
source.

Rinse Signal Wiring

The rinse signal input is an optically isolated signal input that draws no more than 20 ma.

The rinse signal input is a universal input that accepts any voltage between 24 and 240
VAC nominal (+/- 10% fluctuation), or 24 VDC (+/- 20% fluctuation). Typical wiring
locations are dispenser rinse power source or the rinse solenoid valve circuit in the dish
machine control panel. This power source must be live whenever the dishwasher is
rinsing. When no suitable rinse signal connection is available, an optional pressure switch
may be used instead.

• Connect violet (DC +) and white/violet (DC -) colored wires to rinse power source (or
constant power for pressure switch installations).

230 VAC Main Power Electrical Connections

Wire Colors	Circuit Voltage	Function
Blue	200-249 VAC 50/60 Hz	Main AC Power
Brown	200-249 VAC 50/60 Hz	Main AC Power
Yellow	24-249 VAC, +24 VDC	Detergent Signal
Yellow/White	24-249 VAC, -24 VDC	Detergent Signal
Violet	24-249 VAC, +24 VDC	Rinse Signal
White/Violet	24-249 VAC, -24 VDC	Rinse Signal
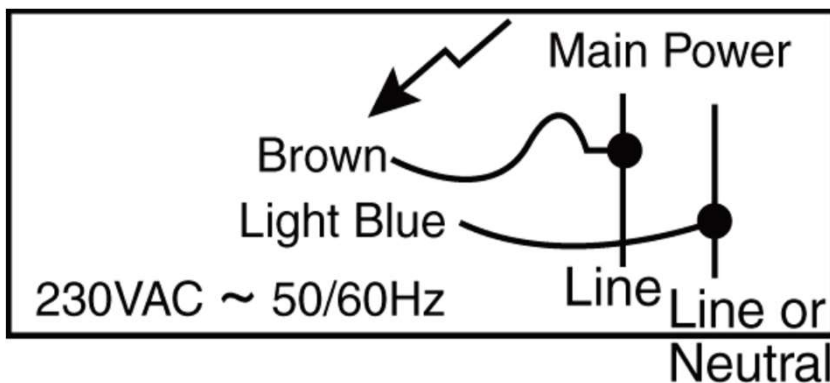
Control Keys

The G-Star/L makes use of only 3 buttons and a 3-digit LED display for all dispenser operation and programming. In this section, you will learn to use the:

• **NEXT** Key

• **SCROLL** Key

• **ENTER** Key

NEXT Key

Press the **NEXT** key to move to the next item or task. Pressing the **NEXT** key performs the following:

• User Mode - moves through User Mode screens.
• Program Mode - moves through the Program Mode menus.
• Input Screens - moves blinking digit to the right.

SCROLL Key

Press the **SCROLL** key to change the value of the blinking digit. Pressing the **SCROLL** key performs the following:

• User Mode - Changes the values of blinking digits; enters Password. Activates Probe-less Manual Initial Detergent Charge. *See "Initial Charge – Probe-less Only (Menu 26)" on page 5-5.*

• Program Mode - changes the value of blinking digits.
• Input Screens - changes the value of blinking digits.

ENTER Key

Press the **ENTER** key to perform a task or set a value. Pressing the **ENTER** key performs the following:

• User Mode - starts and stops rinse pump and detergent prime; accesses Password input screen
  (press and hold for two seconds); performs actions as prompted in User Mode menu screens.

• Program Mode - accesses all input screens from main menu loop screens (via Next key).

• Input Screens - sets the displayed value in all input screens (via Scroll key). Exits back to main menu loop.

User Mode Menus

Press **NEXT** to access and move through the User Mode menu loop. All menu screens are numeric only, without text. This wrap-around menu loop allows you to return to all screens. User Mode automatically returns to the home screen after 60 seconds of inactivity

Idle Home Screen

11: RackCounter

12: Detergent Prime

13: Rinse Prime

14: De-Lime
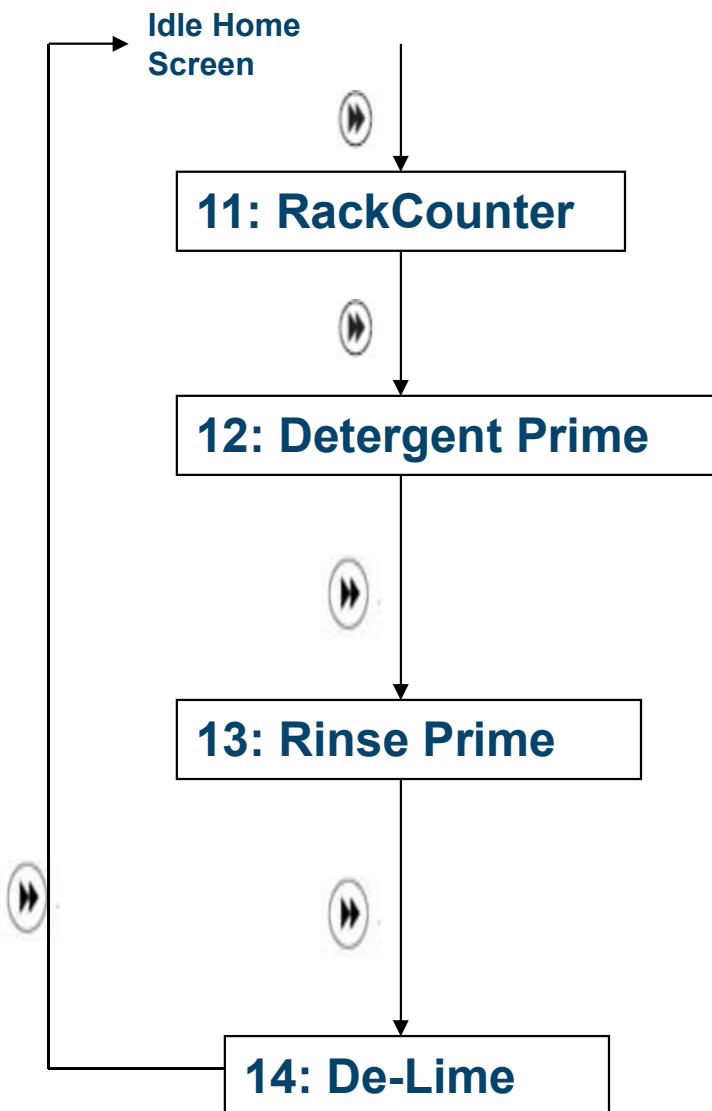
User Mode Menus

Press **NEXT** to access and move through the User Mode menu loop. All menu screens are numeric only, without text. This wrap-around menu loop allows you to return to all screens. User Mode automatically returns to the home screen after 60 seconds of inactivity.

Rack Counter (Screen 11)

1. Press **NEXT** to display Screen **11**.

2. Press **ENTER** to display racks washed (the rack counter counts by tens).
From the Rack Counter screen, you may also access the system RAM check and "Max Det Time" screens by pressing **NEXT:**

• At the RAM check screen, press **ENTER**. A **1** will display if the RAM check is okay.
• At the "Max Det Time" screen, press **ENTER** to display the longest amount of time the detergent feed has run to satisfy the set point (probe mode only). It is a good idea to make note of this time after a new installation.

3. Press **ENTER** to return to the main menu loop, or wait 60 seconds for the display to automatical return to the home screen.

Detergent Prime (Screen 12)

1. Press **NEXT** to display Screen **12**.

2. Press **ENTER** to start detergent feed. Press **ENTER** again to stop detergent feed and return to the main menu loop.

Rinse Prime (Screen 13)

1. Press **NEXT** to display Screen **13**.

2. Press **ENTER** to start (or stop) the selected pump.

De-Lime (Screen 14)

1. Press **NEXT** to display Screen **14**.

2. Press **ENTER** to start the De-Lime Cycle (cycle lasts for 15 minutes then automatically ends). During this time, all dispenser operation is stopped.

3. Press **ENTER** to stop the De-Lime Cycle early, and return to the main menu loop.

Program Mode Operation

Overview

This chapter describes the features of Program Mode operation. In this chapter, you will learn:

- •Password Access to Program Mode

- • Configuration Settings

- • Adjustments - Probe Mode

- • Adjustments – Probe-less Mode

  Program Mode consists of three circular main menu loops. Configuration Settings (Menu 2) is always available. There are two Adjustment Menu loops, probe (Menu 3) and probe-less

  (Menu 4). To simplify programming, only one Adjustment Menu is accessible – Probe or Probe-less (as set in the Configuration Settings, Detergent Control (Menu 21).

Password Access to Program Mode

To prevent unauthorized access to Programming, a password is needed to enter Program Mode from User Mode. The factory-set password is described below. This password can be changed by the installer for further security. However, if the password is changed and then lost, access to Program Mode is denied until the dispenser is returned to the factory for reprogramming.

1. From the User Mode Home Screen, press and hold **ENTER** for 2 seconds to access the Password input screen. Enter the factory set password, **000**, using the following steps:

2. Press **SCROLL** to change the blinking digit to the desired value.

3. Press **NEXT** to move the blinking digit.

4. Press **ENTER** to set all numbers and enter Program Mode. An incorrect password entry returns you to the home screen.
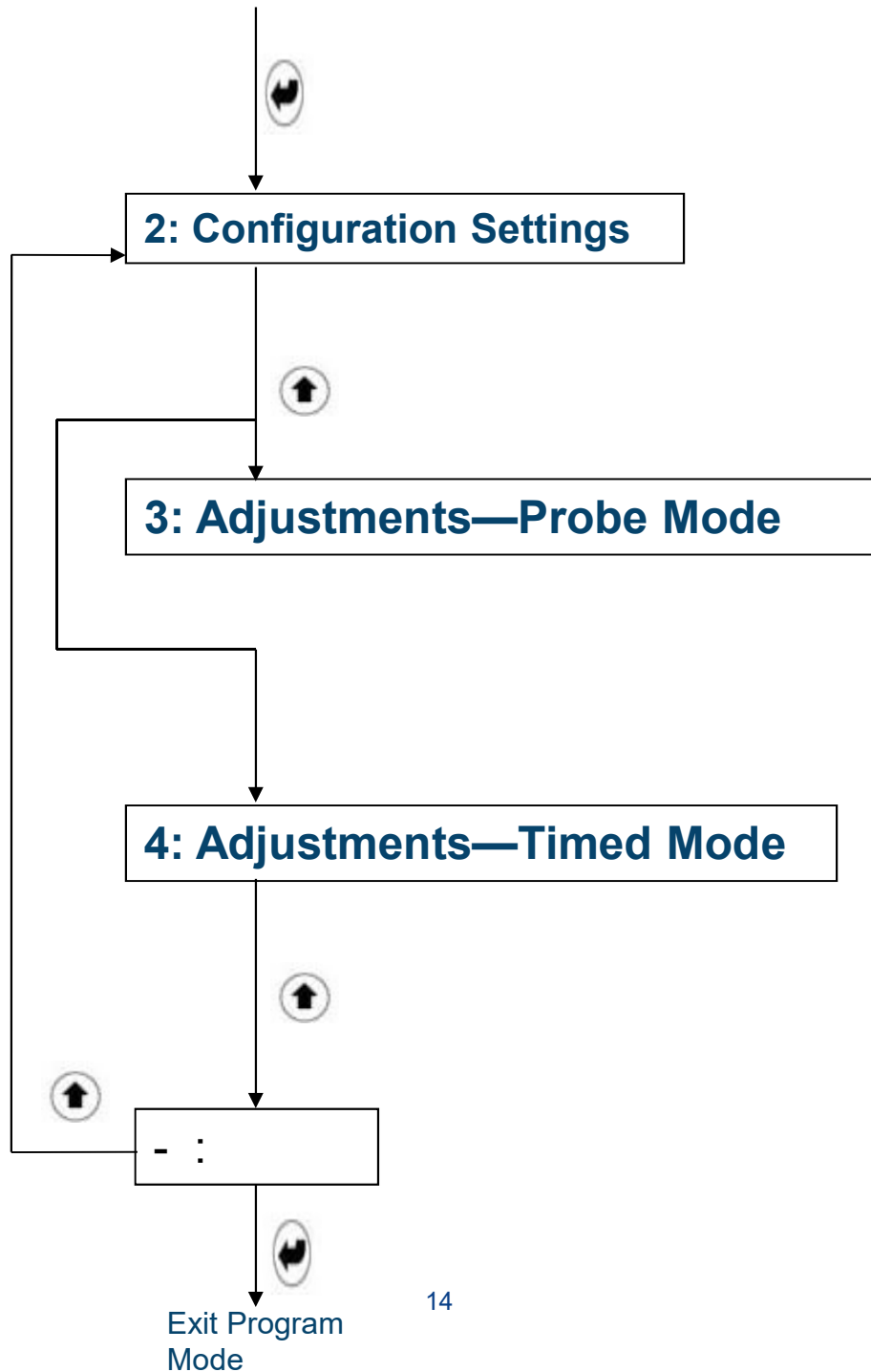
Programming

1. Select the Menu to program by pressing **SCROLL** to change the blinking digit value from **2** (Configuration Settings), or **3** (Adjustments–Probe), or **4** (Adjustments–Probe-less), or ▬ (blinking dash) from which to exit Program Mode.

2. Press **NEXT** to move through each Menu loop (**2**, **3** or **4**). Press **ENTER** to exit Program Mode at the blinking dash. Program Mode is automatically exited after 5 minutes of inactivity.

Note

When programming the dispenser for a new installation, always set the Configuration Settings first. Next, set up the dispenser adjustments in the available Adjustment Menu loop (probe or probe-less). Later, maintenance adjustments will typically be performed in the same Adjustment Menu.

Program Mode Menus

1:Enter Default Password (000)

2: Configuration Settings

3: Adjustments—Probe Mode

4: Adjustments—Timed Mode

_ :

14

Exit Program
Mode

2: Configuration Settings

21: Detergent Control

1= Probe
2 =Timed

22: Machine Type

1 = Door
2 = Conveyor

23: Detergent Type

1 = Liquid
2 = Dry

24: Alarm Volume

0 = Off 1 = Low
2 = Med. 3 = High

25: Conveyor Rack Time

Seconds For 1 Rack

26: Change Installer Password
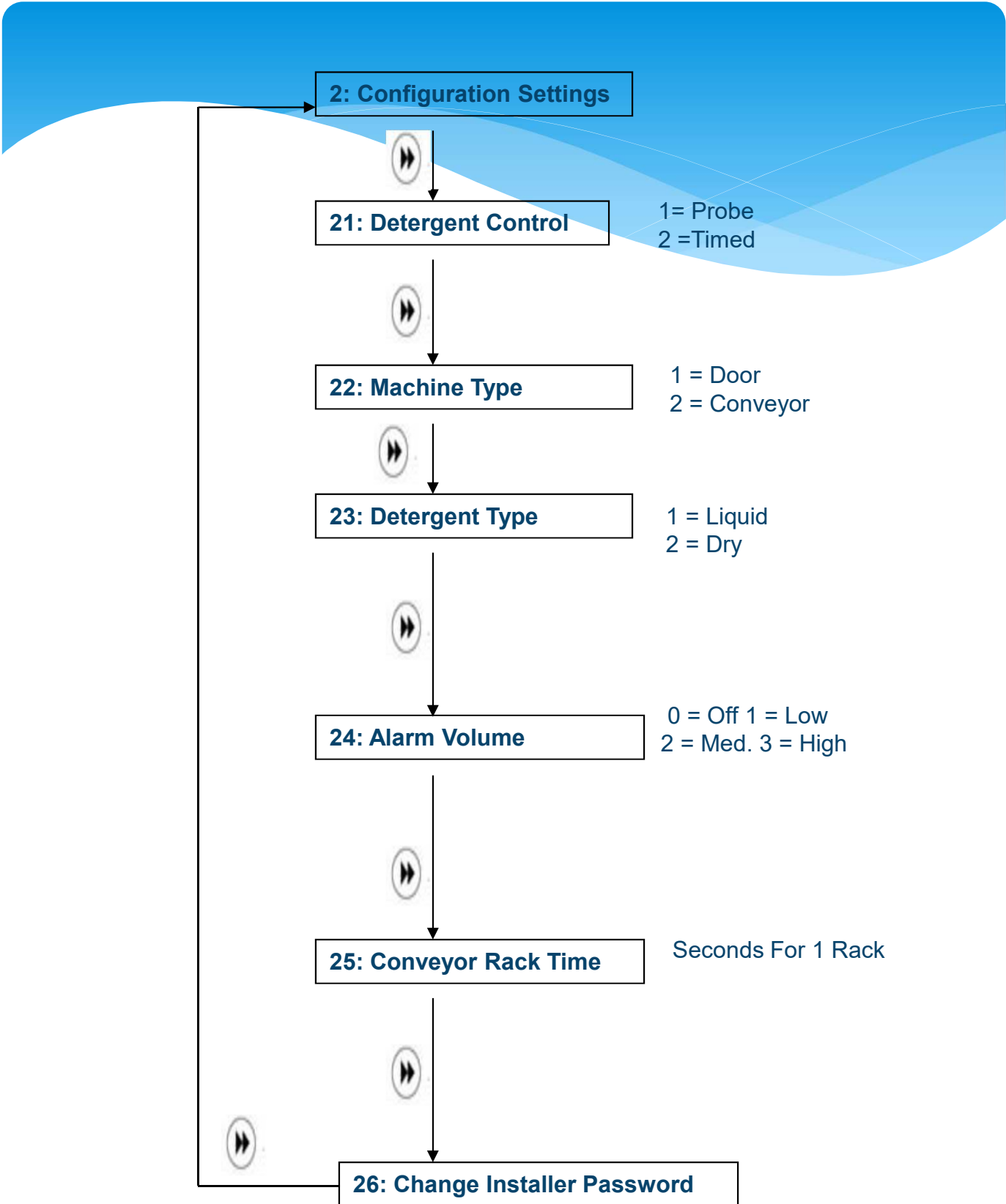
Detergent Control (Menu 21)

1. Press **ENTER** to view/change this setting.
2. Press **SCROLL** to select between **1** (Probe) and **2** (Probe-less) detergent control.
3. Press **ENTER** to set the value and return to the main menu loop.

Note
   This selection determines which adjustment main menu screen is available for use (probe or probe-less).

Machine Type (Menu 22)

1. Press **ENTER** to view/change this setting.
2. Press **SCROLL** to select between **1** (Door) or **2** (Conveyor) machine type.
3. Press **ENTER** to set the value and return to the main menu loop.

Detergent Type (Menu 23)

1. Press **ENTER** key to view/change this setting.
2. Press **SCROLL** to select between **1** (Liquid) or **2** (Solid) detergent. This sets the system to power either the DC voltage pump motor (**1**) for liquid detergents or the DC voltage solenoid valves (**2**) for solid detergents.
3. Press **ENTER** to set the value and return to the main menu.

Alarm Volume (Menu 24)

1. Press **ENTER** to view/change this setting.
2. Press **SCROLL** to select between **0** (Off), **1** (Low), **2** (Medium), or **3** (High) alarm volume. A half-second beep will sound for each level as the Scroll key is pressed.
3. Press **ENTER** to set the value and return to the main menu loop.

Conveyor Rack Time (Menu 25)

1. Press **ENTER** to view/change this setting.
2. Press **SCROLL** to change the value of the blinking center (tens) digit. The range is 0 - 29 seconds.
3. Press **NEXT** to move the blinking digit to the right (ones).
4. Press **SCROLL** to change the value of the blinking right (ones) digit.
5. Press **ENTER** to set the value and return to the main menu loop.

Change Installer Password (Menu 26)

1. Press **ENTER** to view/change this setting. Any three-digit number may be input.
2. Press **SCROLL** to change the blinking digit to the desired value.
3. Press **NEXT** to move the blinking digit. Repeat for all digits.
4. Press **ENTER** to set the value and return to the main menu loop.

```
                    ┌──────────────────────┐
                    │  3: Probe Mode       │
                    └──────────────────────┘
                              │
                            (▶▶)
                              │
                    ┌──────────────────────┐
                    │ 31: Detergent Tank Reading │
                    └──────────────────────┘
                              │
                            (▶▶)
                              │
                    ┌──────────────────────┐
                    │ 32: Detergent Set Point │
                    └──────────────────────┘
                              │
                            (▶▶)
                              │
                    ┌──────────────────────────┐
                    │ 33: Low Detergent Alarm Delay │
                    └──────────────────────────┘
                              │
                            (▶▶)
                              │
                    ┌──────────────────────────┐
                    │ 34: Detergent Overfeed Alarm │
                    └──────────────────────────┘
                              │
                            (▶▶)
                              │
                    ┌──────────────────────┐
                    │ 36: Rinse Pump Speed │
                    └──────────────────────┘
                              │
                            (▶▶)
                              │
                    ┌──────────────────────┐
                    │ 37: Rinse Delay Time │
                    └──────────────────────┘
                              │
              (▶▶)         (▶▶)
                              │
                    ┌──────────────────────┐
                    │ 38: Rinse Feed Option │
                    └──────────────────────┘
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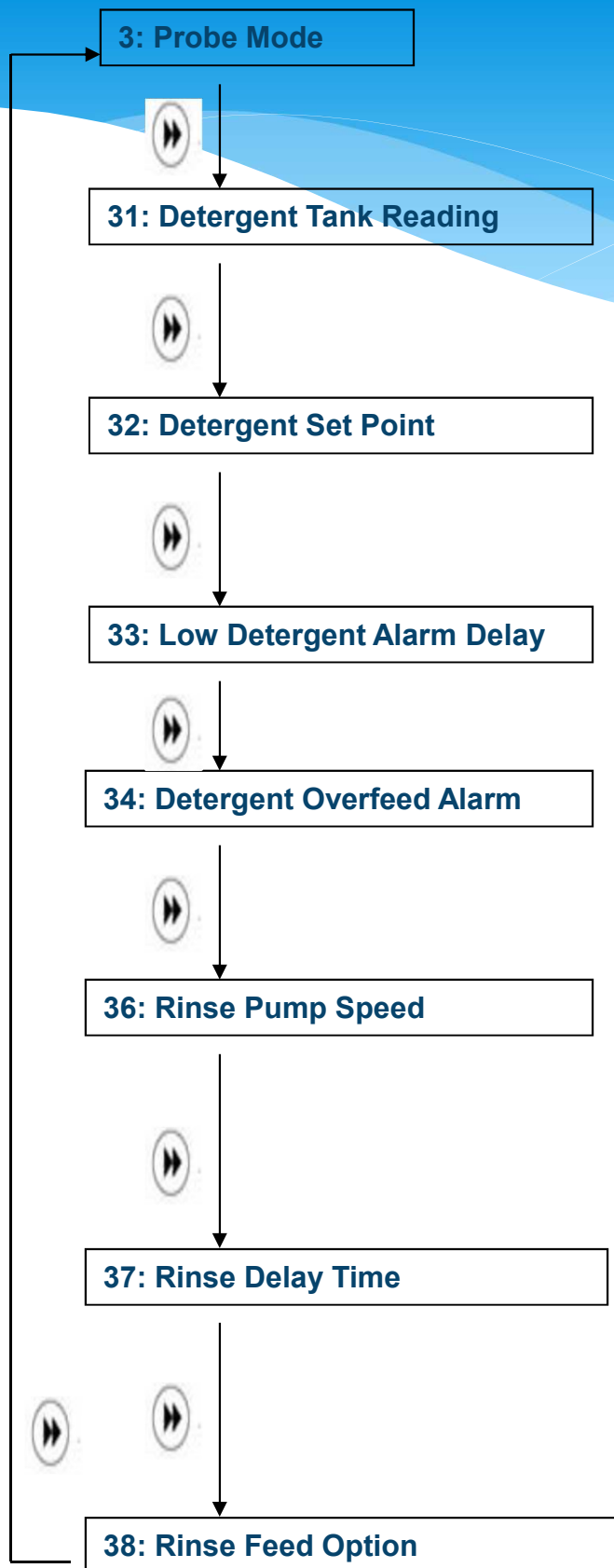
Detergent Tank Reading (Menu 31)

The number displayed is an averaged number that is updated every 0.8 seconds. Press **ENTER** to view this screen. Make note of the tank reading displayed. This is your set point.

Note

Prepare for this reading by manually adding product to proper concentration, then test via titration or measured volume. The dishwasher tank solution must be well mixed (wash pump running) and at operating temperature.

Detergent Set Point (Menu 32)

1. Press **ENTER** to view/change this setting. Input the number noted in *"Detergent Tank Reading (Menu 31)"* .
2. Press **SCROLL** to change the value of the blinking digit. The range of this adjustment is 0 - 999.
3. Press **NEXT** to move the blinking digit. Repeat for all three digits.
4. Press **ENTER** to set the value and return to the main menu.

Note

  Adjust the rinse pump speed to dispense the appropriate amount of product needed to produce desired sheeting action

Low Detergent Alarm Delay (Menu 33)

1. Press **ENTER** to view/change this setting.
2. Press **SCROLL** to select the number of (0-249) seconds allowed to run with a low detergent concentration**.**
3. Press **ENTER** to set the value and return to the main menu loop.

Detergent Overfeed Alarm (Menu 34)

If a low detergent alarm condition continues for twice the preset number of racks washed (as set in Menu 33), the detergent feed stops, an audible alarm sounds and visual alarm displays when the Detergent Overfeed Alarm is set to "on."

1. Press **ENTER** to view/change this setting.
2. Press **SCROLL** to select between **1** (Detergent Overfeed Alarm On) or **2** (Detergent Overfeed Alarm Off). The default is **2** (Off).
3. Press **ENTER** to set the value and return to the main menu loop.

Rinse Pump Speed (Menu 36)

To determine this adjustment, note the amount of rinse product per unit of water (check the dish machine specifications for rinse water flow rate per minute), or observe the sheeting action of the product on wares. With the standard rise pump tube, the EcoStar420 will dispense 0.5 ml per revolution. To test run or view the rinse pump speed:

1. Press and hold **NEXT**, followed by **ENTER**, and the pump will run at the current speed setting.
2. Press **ENTER** to view/change this setting.
3. Press **SCROLL** to change the blinking digit to the desired value.
4. Press **NEXT** to move the blinking digit. Repeat for all digits. The range of this adjustment is from 10 to 99.5 RPM in 0.5 RPM steps.
5. Press **ENTER** to set the value and return to the main menu loop.
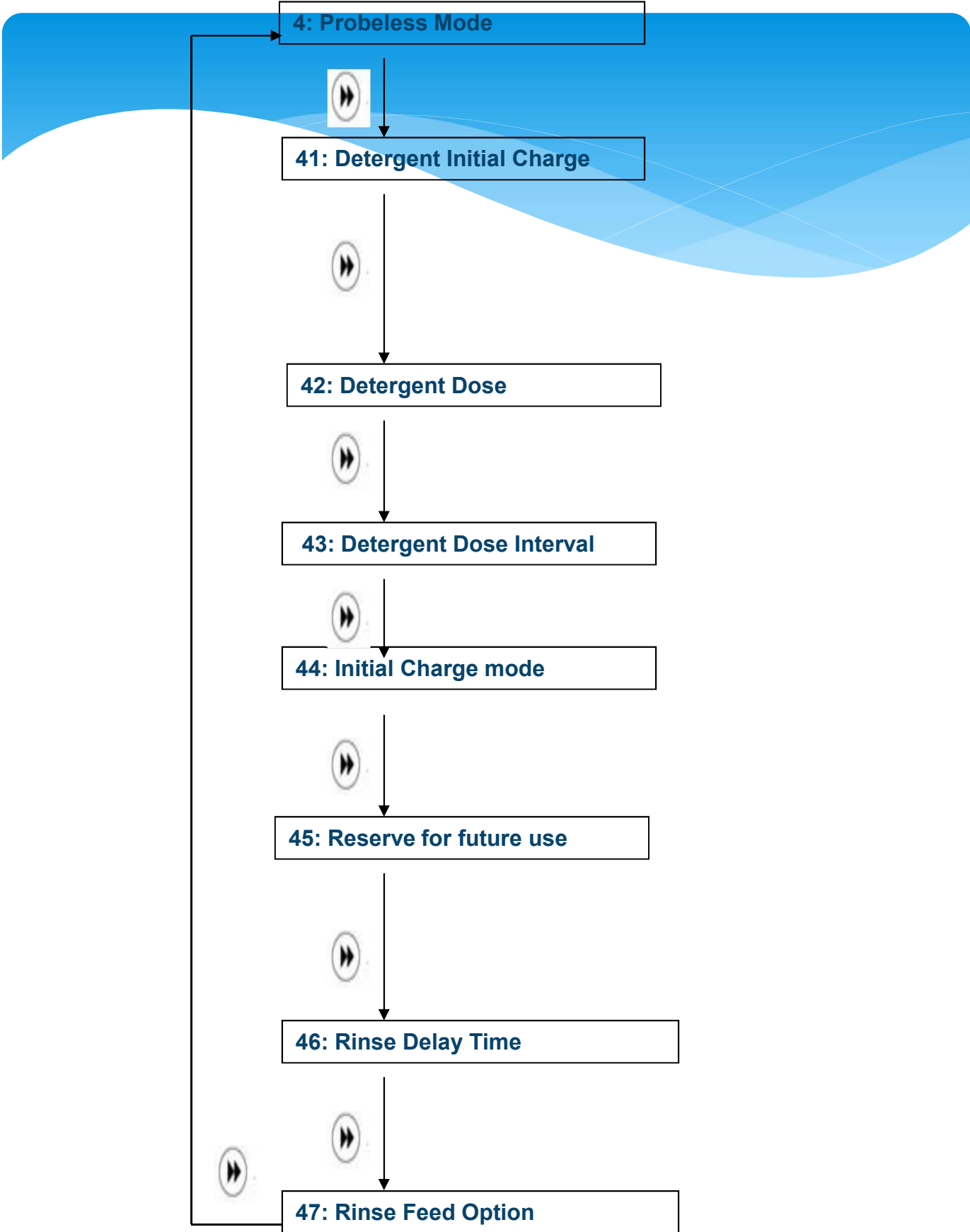

Rinse Delay Time – Door Only (Menu 37)

Rinse Delay minimizes waste by injecting rinse product only during the last few seconds of each rack.

1. Press **ENTER** to view/change this setting.
2. Press **SCROLL** to change the blinking digit to the desired time, in seconds. The range is 0-19 seconds.
3. Press **NEXT** to move the blinking digit. Repeat for both digits.
4. Press **ENTER** to set the value and return to the main menu loop.

Rinse Feed Option (Menu 38)

1. Press **ENTER** to view/change this setting.
2. Press **SCROLL** to select rinse feed option (1 or 2 or 3). Select **option 1** to run rinse pump each time the rinse signal activates (for the duration of time the signal is present). Select option 2 Rinse Saver allows the rinse pump to run only after washing to eliminate rinse product wastage during the initial fill of the dishwasher. Select **option 3 (Door Only**) to run the rinse pump for a fixed time of 12 seconds each time the detergent signal activates,.
3.Press **ENTER** to set the value and return to the main menu loop.

4: Probeless Mode

41: Detergent Initial Charge

42: Detergent Dose

43: Detergent Dose Interval

44: Initial Charge mode

45: Reserve for future use

46: Rinse Delay Time

47: Rinse Feed Option

21

Detergent Initial Charge (Menu 41)

1. Press **ENTER** to view/change this setting. Input the initial charge detergent feed time.
2. Press **SCROLL** to change the blinking digit to the desired value.
3. Press **NEXT** to move the blinking digit. Repeat for all three digits. The range is 0 – 199 seconds.
4. Press **ENTER** to set the value and return to the main menu loop.

Detergent Dose (Menu 42)

1. Press **ENTER** to view/change this setting. Input the detergent recharge dose feed time.
2. Press **SCROLL** to change the blinking digit to the desired value.
3. Press **NEXT** to move the blinking digit. Repeat for all three digits. The range is 0 – 19 seconds.
4. Press **ENTER** to set the value and return to the main menu loop.

Detergent Dose Interval (Menu 43)

1. Press **ENTER** to view/change this setting.
2. Press **SCROLL** to change the blinking digit to the desired value.
3. Press **ENTER** to set the value and return to the main menu loop.

In a **door-type dishwasher**, a detergent dose will occur at the beginning of each cycle.

In a **conveyor-type dishwasher**, press **SCROLL** to change the blinking digit to select the rack interval between detergent doses (1, 2 or 3 racks). A detergent dose occurs when the accumulated Rinse On time (whether the time accrues continuously or with interruptions) is equal to the rack time multiplied by the detergent dose interval selected by the user.

Initial Charge Mode - Probeless Only (Menu 44)

1. Press **ENTER** to view/change this setting.
2. Press **SCROLL** to select between **1** (Automatic) and **2** (Manual) initial detergent charge.
3. Press **ENTER** to set the value and return to the main menu loop.

Rinse Pump Speed (Menu 46)

To determine this adjustment, note the amount of rinse product per unit of water (check the dish machine specifications for rinse water flow rate per minute), or observe the sheeting action of the product on wares. With the standard size rinse pump tube, the EcoStar420 will dispense 0.5 ml per revolution. To test run/view the rinse pump speed:

1. Press and hold **Next**, followed by **ENTER**, and the pump will run at the current speed setting.
2. Press **ENTER** to view/change this setting.
3. Press **SCROLL** to change the blinking digit to the desired value.
4. Press **NEXT** to move the blinking digit. Repeat for all digits. The range is 10 – 99.5RPM in 0.5 RPM steps.
5. Press **ENTER** to set the value and return to the main menu loop.

Rinse Delay Time – Door Only (Menu 47)

Set Rinse Delay to minimize waste by injecting product only during the last few seconds of each rack.

1. Press **ENTER** to view/change this setting.
2. Press **SCROLL** to change the blinking digit to the desired time in seconds.
3. Press **NEXT** to move the blinking digit. Repeat for both digits. The range is 0 – 19 seconds.
4. Press **ENTER** to set the value and return to the main menu loop.

Rinse Feed Option (Menu 48)

1. Press **ENTER** to view/change this setting.
2. Press **SCROLL** to select rinse feed option (1 or 2 or 3). Select **option 1** to run rinse pump each time the rinse signal activates (for the duration of time the signal is present). Select option 2 Rinse Saver allows the rinse pump to run only after washing to eliminate rinse product wastage during the initial fill of the dishwasher. Select **option 3 (Door Only**) to run the rinse pump for a fixed time of 12 seconds each time the detergent signal activates,.
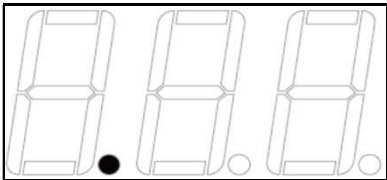3. Press **ENTER** to set the value and return to the main menu loop.

Indicators
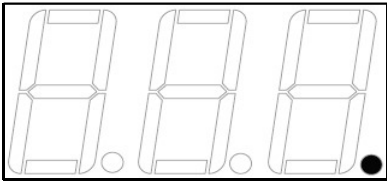
Detergent Signal On
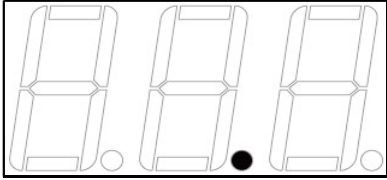
Probe Mode Active

Rinse Signal On