

user manual

DMx

Warewash Dispenser

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1.00 overview

For an electronic copy of this document go to www.hydrosystemsco.com.

Safety Precautions



WARNING: Please read precautions thoroughly before operation. Meet all applicable local codes and regulations.

THANK YOU FOR YOUR INTEREST IN OUR PRODUCTS

Please use this equipment carefully and observe all warnings and cautions.

WEAR

protective clothing and eyewear when dispensing chemicals or other materials or when working in the vicinity of all chemicals, filling or emptying equipment, or performing maintenance.

observe safety and handling instructions of the chemical manufacturer.

direct discharge away from you or other persons or into approved containers.

ALWAYS

dispense cleaners and chemicals in accordance with manufacturer's instructions. Exercise CAUTION when maintaining your equipment.

reassemble equipment according to instruction procedures. Be sure all components are firmly screwed or latched into position.

KEEP

equipment clean to maintain proper operation.

ATTACH

only to water tap outlets (25 PSI Minimum, 85 PSI Maximum and Maximum water temperature 120° F).

if the unit is used to fill a sink, or the discharge hose can be placed into a sink, the unit must be mounted so the bottom of the cabinet is above the overflow rim of the sink.

NOTE

if the supply cord is damaged, it must be replaced by the manufacturer, its service agent or similarly qualified persons in order to avoid a hazard.

1.01 Package Contents

DMx Warewash Dispenser

(P/N varies by model, see table on page 7)

Product Options:

- Rinse Temperature Sensor Kit
- Temperature Compensated Conductivity Probe Kit
- Inductive Probe Kit (Temperature Compensated)
- Pump tubing Kit (Chemical pick-up tubing, with stiffeners)

Mounting Kit (HYD13-06647-00)

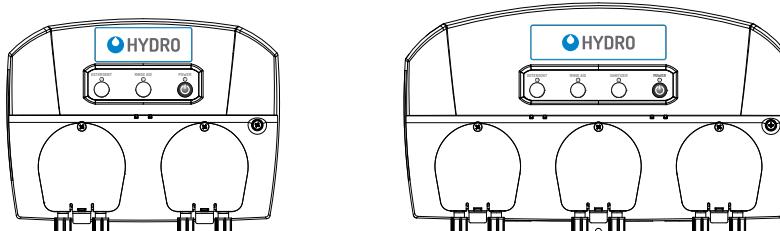
(Mounting Bracket, Wall Anchors and Screws)

Accessory Kit:

2-Product (HYD9009996) Detergent and Rinse Injection Fittings. and Basic Conductivity Probe

3-Product (HYD9009997) Detergent, Rinse and Sanitizer Injection Fittings. and Basic Conductivity Probe

DMx 2-Product & 3-Product
Warewash Dispensers



1.02 Description

The DMx is a versatile, scalable warewash dispenser, designed to accurately and reliably dispense solid or liquid detergents, rinse aid or sanitizer in commercial kitchens. It functions with most styles of dish machines and is available with numerous optional upgrades to enhance its functionality. The DMx is compatible with Hydro Connect (Hydro's IoT platform) and features intuitive configuration and comprehensive reporting through the Hydro Connect Mobile Application.

1.03 Product Features

- The DMx is versatile to work anywhere in the world on most high or low temperature door, conveyor, and flight-style machines. The unit has multiple pump and sensor options and can support solid chemical formulations as well as liquids
- Save installation time with intuitive configuration using the Hydro Connect Mobile Application
- Reduce install labor with pre-wired power, signal, and conductivity cabling
- The most reliable motor-driven warewash dispenser on the market
- Improve kitchen performance with detailed reporting on productivity (racks), chemical usage, cost, and alarms through Hydro Connect (option of manual or real-time data transfers)
- Prevent challenges associated with conductivity probe scaling using the optional inductive probe
- Ensure each rack meets food safety standards with optional tank temperature, rinse temperature, and chemical depletion sensors

1.00 overview (continued)

1.04 Model Numbers and Features

Dispenser Build Options:

Cabinet Size: 2 = 2 Product
3 = 3 Product

Liquid Pump Style: PE = Peristaltic

Number of Liquid Pumps: 1, 2 or 3

Number of Solenoids: 0 or 1

Conductivity Probe Style:
BC = Basic Conductivity Probe
CT = Conductivity/Temp. Compensated
IT = Inductive Conductivity/Temp. Comp.

Data Transfer:
BA = Batch Transfer (Manual)
RT = Real-Time Transfer (Automatic)

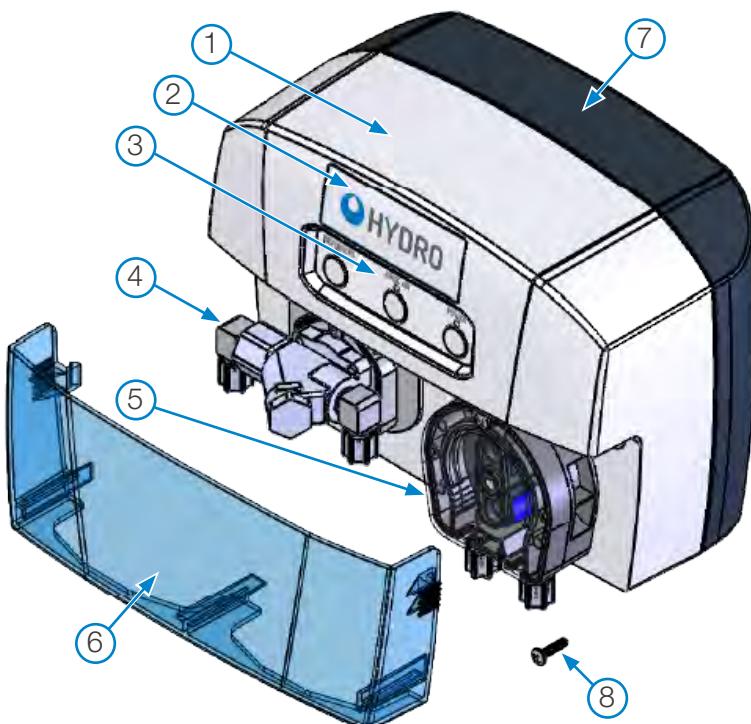
Rinse Temp Probe:
R = Rinse Temperature Probe Included
X = No Rinse Temperature Probe

Optional Pump Tubing Kit:
PK = Pump Tubing Kit Included
(blank) = No Pump Tubing Kit

Model Builder:	Hydro Prefix	Base Model	Cabinet Size	Liquid Pump Style	Number of Liquid Pumps	Number of Solenoids	Conductivity Probe Style	Data Transfer	Rinse Temp Probe	Optional Pump Tubing Kit
Popular Basic Models (Basic Conductivity Probe, Batch Data Transfer, No Rinse Temp Probe, No Tubing Kit)										
HYDDMX-2PE20BCBAX DMx 2-pump Cabinet, 2 Liquid Pumps	HYD	DMX-	2	PE	2	0	BC	BA	X	
HYDDMX-2PE11BCBAX DMx 2-pump Cabinet, 1 Pump, 1 Solenoid	HYD	DMX-	2	PE	1	1	BC	BA	X	
HYDDMX-3PE21BCBAX DMx 3-pump Cabinet, 2 Pumps, 1 Solenoid	HYD	DMX-	3	PE	2	1	BC	BA	X	
HYDDMX-3PE30BCBAX DMx 3-pump Cabinet, 3 Liquid Pumps	HYD	DMX-	3	PE	3	0	BC	BA	X	

1.05 Product Diagram

1. Main Cabinet - Front
2. Branding Label Area
3. Dispenser Control Pad
4. Solids Solenoid
5. Peristaltic Liquid Pump
6. Main Cabinet Cover
7. Main Cabinet - Rear
8. Locking Screw



1.00 overview (continued)

1.06 General Specifications

Category	Specification				
Electrical					
Input Voltage		100-230 VAC at 50/60 Hz up to 1.0 Amps maximum (Class I)			
Power Usage		24W maximum			
Detergent Signal Input		24-250VAC at 50/60Hz up to 20mA or 24VDC up to 20mA			
Rinse Signal Input		24-250VAC at 50/60Hz up to 20mA or 24VDC up to 20mA			
Weights and Dimensions		2-Product Models	3-Product Models		
Weight:	Unboxed	Nominal: 1.8 Kg (4.0 lbs)	Nominal: 2.5 Kg (5.5 lbs)		
	Boxed	Nominal: 5 Kg (11 lbs)	Nominal: 5.9 Kg (13 lbs)		
Dimensions:	Unboxed	247 mm Wide x 185 mm High x 134 mm Deep 9.7 in Wide x 7.3 in High x 5.3 in Deep	361 mm Wide x 201 mm High x 134 mm Deep 14.2 in Wide x 7.9 in High x 5.3 in Deep		
	Boxed	558.8 mm Wide x 279.4 mm High x 279.4 mm Deep 22 in Wide x 11 in High x 11 in Deep	558.8 mm Wide x 279.4 mm High x 279.4 mm Deep 22 in Wide x 11 in High x 11 in Deep		
Operating Environment					
Ambient Temperature		10°C minimum to 50°C maximum (50°F minimum to 120°F maximum)			
Humidity		95% relative humidity maximum			
Indoor Installation		Indoor Use Only. Must not be installed outdoors.			
Pump Performance *	Peristaltic Pumps (Flow rates indicated below are nominal.)				
* Always test with actual chemical, at installation, for accurate flow rate.	Detergent Pump: 355 ml/min (12 oz/min) Rinse/Sanitizer Pump: 15 ml/min (0.5 oz/min) Maximum (Adjustable)				
Inlet Water *	Water Temperature	Water Pressure			
* For Solenoid equipped models only.	5°C minimum to 60°C maximum (40°F minimum to 140°F maximum)	Min: 2 Bar / 0.2 MPa / 30 PSI Max: 6 Bar / 0.6 MPa / 90 PSI			
Regulatory Approvals	UL 60730-1:2016Ed.5,CSA E60730-1:2015 Ed.5, IEC 60730-1:2013Ed.5+C1 Automatic Electrical Controls - Part 1: General Requirements CENELEC EN 61326-1*CEI 2013/01/01 Electrical Equipment for Measurement, Control and Laboratory Use – EMC Requirements - Part 1: General Requirements IEC61000-4-3 Radiated RF Susceptibility IEC61000-4-6 Conducted RF Susceptibility				
Part 15 - Class B digital device or peripheral	This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense. Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.				

1.07 Intended Use

- The DMx Warewash Dispenser is intended for use in industrial applications and is not suitable for household use.
- The product must only be used for dispensing warewash detergents, rinse aids, and sanitizers.
- The dispenser has been tested using these typical chemicals, but to ensure compatibility with your formula contact us.
- The manufacturer waives any responsibility arising from incorrect usage or transportation.

2.00 installation

Safety Precautions



CAUTION: Before an installation takes place it is advisable to complete a site survey to ensure the DMx Warewash Dispenser can be installed in a position that meets all the requirements below.



CAUTION: Do not install unit in potentially explosive environment where flammable gas, steam, fog or dust can form an explosive combination with air.



WARNING: Electrical installation should be completed by a qualified electrician. All local and national electrical regulations are to be observed.

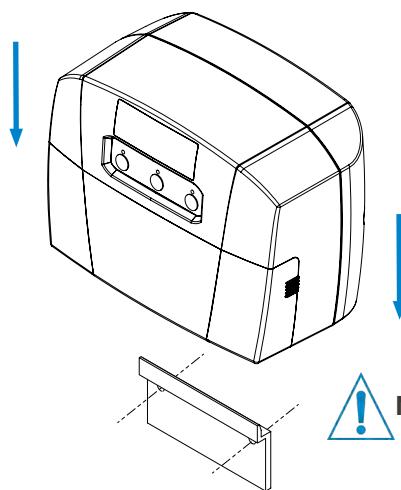
2.01 Site Survey and Installation Requirements

- Unit is to be installed by a trained technician; all local and national water regulations are to be observed.
- Unit must be installed indoors, in an area that does not expose the unit to excessive temperature changes, direct sunlight, frost or precipitation of any kind.
- The area must be free of high levels of Electromagnetic Interference (EMI).
- Ensure the unit will be mounted in an accessible location, above the height of the dishwasher's detergent inlet.
- The dispenser should be mounted close to the product containers--ideally, within 2 meters (6.6 feet).
- The dispenser should be mounted close enough to the dish machine electrical control panel to allow dispenser wiring without use of an external junction box (not provided) wherever possible. Wire harness is 3.5 meters (11.5 feet).
- Installer must ensure the suitability of the wall or mounting substrate, which should be flat and perpendicular to the floor.
- Unit location should be well lit for any maintenance, and should be free of high levels of dust particulates.
- Scheduled maintenance should be carried out on the unit at least once per year.
- It is a legal requirement that all water supply hose sets must be compliant with IEC 61770.
- Ensure the chemicals being used are compatible with supplied tubing.

2.10 Mechanical Installation

2.11 Mounting Bracket

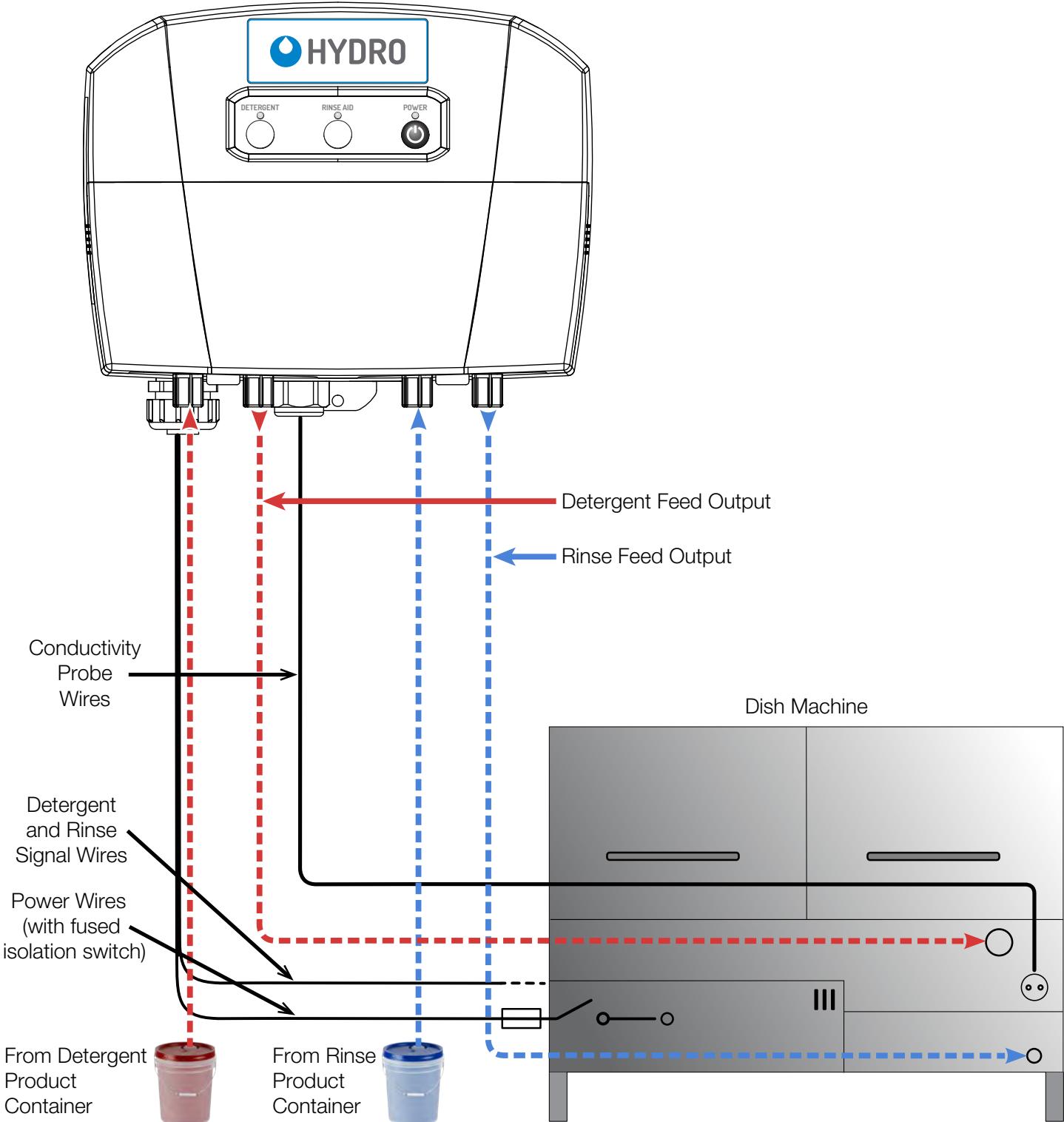
1. Using the mounting bracket as a template, mark holes to drill into mounting surface. For sheet metal mounting with screws and nuts, drill 6 mm (1/4") holes. For wall anchors, drill 8 mm (5/16 inch) holes.
2. Insert the two wall anchors into the drilled holes, pushing them flush to the wall.
3. Secure the bracket to the wall with the two screws and washers, using a #2 Phillips screwdriver or equivalent.
4. Hang unit on bracket.



NOTE: Ensure the wall anchors are suitable for the wall being mounted to.

2.00 installation (continued)

2.12 Installation Diagram



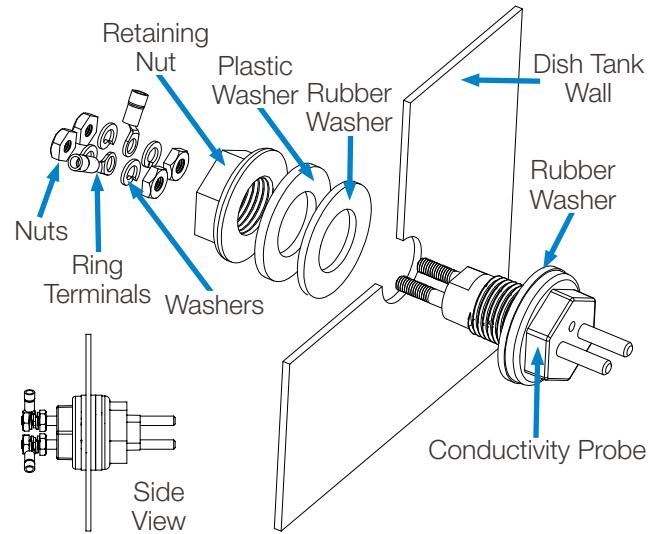
2.00 installation (continued)

2.13 Conductivity Probe

The Conductivity probe senses the detergent concentration and measures the tank temperature if the optional temperature compensated probe has been ordered. Correct probe placement is critical for accurate detergent concentration control. Always use the new probe provided with the dispenser. When choosing a mounting location, make sure that the probe will be completely immersed in wash tank solution, in an area that has a good flow of solution and close to the product entry point.

Many dish machines will have knockouts provided for probe installation and/or will have existing probes. Previously punched holes may be suitable, but always confirm that the probe will be immersed in the wash tank solution before installing. The following steps describe probe installation.

- 1) Cut a 22mm or 7/8" hole using a suitable hole punch or cutter and ensure that all sharp edges, cutting debris and burrs are removed.
- 2) Remove probe retaining nut, plastic washer and one of the rubber washers.
- 3) Insert the probe into the hole and re-assemble the rubber washer, plastic washer and retaining nut back onto the probe from inside the dish tank. Tighten the retaining nut by hand, enough to prevent leaking.

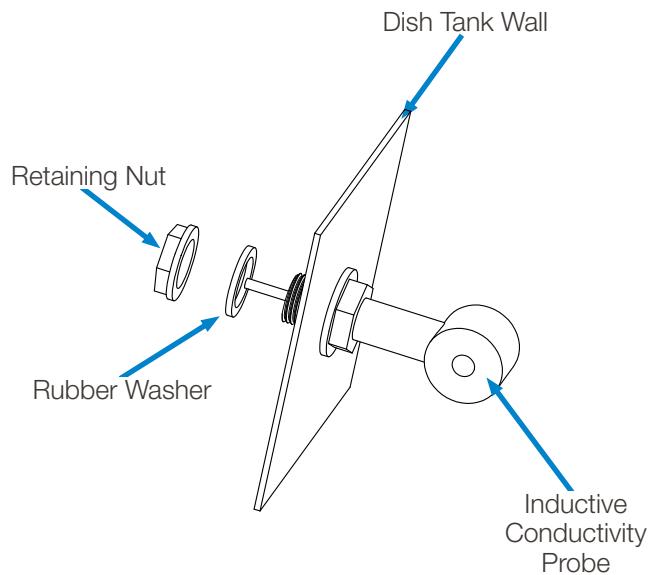


2.14 Inductive Probe (Optional)

Inductive probes are an option for scenarios where a contacting conductivity probe will not be effective, such installations with hard water or other contaminants. The inductive probe also includes an integral temperature sensor for temperature compensation/accuracy and to detect low temperatures in the tank.

Installing an inductive probe requires the same mounting hole size in the wash tank as the standard conductivity probe. Similarly, always confirm that the probe will be immersed in the wash tank solution and will not interfere with the wash operation before installing. The following steps describe the inductive probe installation.

- 1) Cut a 22mm or 7/8" hole using a suitable hole punch or cutter and ensure that all sharp edges, cutting debris and burrs are removed.
- 2) Remove probe retaining nut from the assembly and ensure that the rubber washer is against the back of the hex head of the sensor at the base of the threads.
- 3) From inside the dish machine, route the end of the probe with cabling through the hole with the rubber washer against the inside wall of the tank.
- 4) Assemble the retaining nut back onto the probe from outside the dish tank. It is critical that the hole in the inductive probe is facing upwards, towards the water's surface inside the tank. Tighten the retaining nut by hand, and snug with a wrench to prevent leaks.



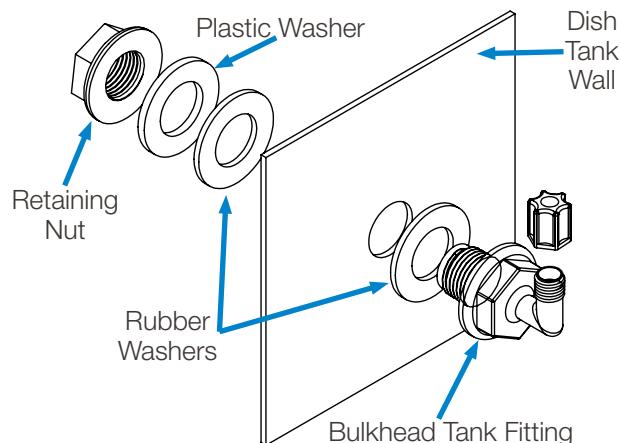
2.00 installation (continued)

2.15 Detergent Bulkhead Fitting

Correct placement of the detergent bulkhead fitting is critical for accurate detergent concentration control. Ensure that the detergent bulkhead fitting is:

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

- 1) If no suitable hole is available, cut a 22mm or 7/8" hole using a suitable hole punch or cutter and ensure that all sharp edges, cutting debris and burrs are removed.
- 2) Remove the detergent bulkhead fitting retaining nut
- 3) From outside the machine, insert the detergent bulkhead fitting (with rubber gasket) into hole.
- 4) From inside the machine, install the second rubber gasket, plastic washer and plastic retaining nut. Tighten finger-tight, then snug using wrench.



2.16 Rinse Pump Injection Fitting



NOTE: You must install the rinse injection fitting downstream of any rinse solenoid.



CAUTION: Ensure there are no kinks or sharp bends in the tubing between the pump and the rinse injection fitting, to ensure free flow of rinse chemical into the rinse water.



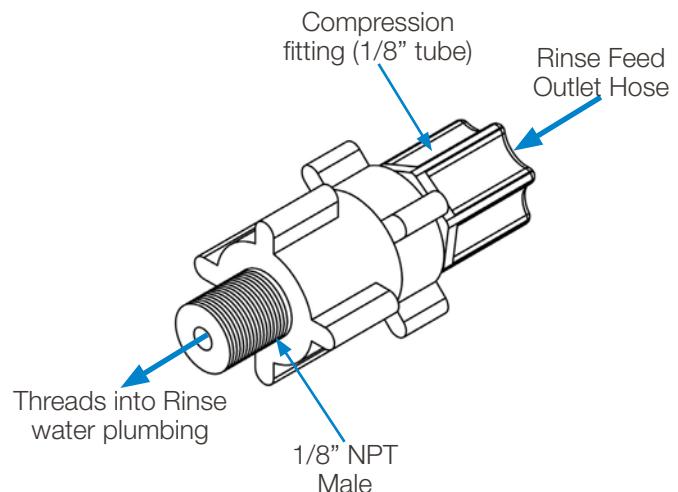
CAUTION: Choose a location for the rinse injection fitting that allows the installation to comply with local and national plumbing regulations, ensuring there is no backflow of rinse chemicals into a potable or municipal water supply.

Installation Method 1:

- 1) Most machines will have a 1/8" NPT inlet blanked off on the rinse water manifold
- 2) Remove the blanking cover and install the rinse pump injection fitting. Use thread sealant to ensure a leak free assembly.

Installation Method 2:

- 1) Drill a 5.5mm (7/32") hole in the location at which you have decided to install the rinse pump injection fitting.
- 2) Cut threads into the hole using a 1/8" NPT tap, ensuring that all sharp edges, cutting debris and burrs are removed.
- 3) Install the rinse pump injection fitting. Use thread sealant to ensure a leak free assembly.



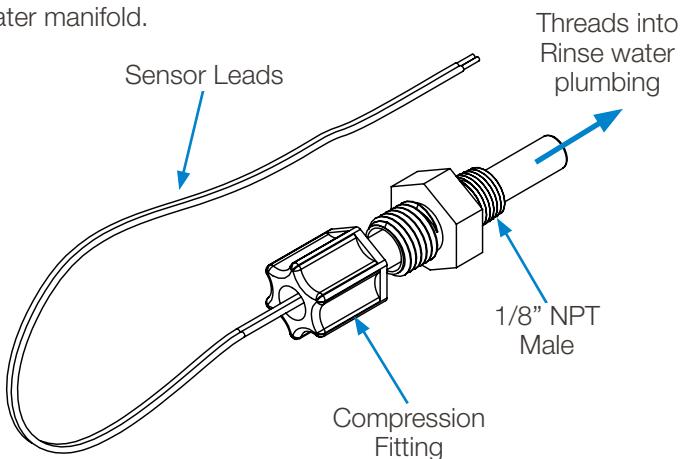
2.00 installation (continued)

2.17 Optional Rinse Temperature Sensor Kit

The optional rinse temperature sensor kit is a thermistor that allows monitoring of the rinse water in a high-temperature dish machine to ensure that each rack meets the sanitation requirement of the food code.

Installation Method 1:

- 1) Most machines will have a 1/8" NPT inlet blanked off on the rinse water manifold.
- 2) Remove the blanking cover or threaded plug from the rinse water manifold.
- 3) Remove the compression nut from the included Jaco fitting and route the head of the sensor through the fitting with the sensor towards the 1/8" NPT side and the sensor wires through the side with the compression nut (7/16"—UNF 20 Thread).
- 4) Using thread sealant on the 1/8" NPT thread, insert the sensor into the water manifold and tighten the fitting finger tight. Snug with a wrench.
- 5) Route the leads from the sensor through the compression nut and tighten the compression nut to form a seal around the back side of the sensor.



Installation Method 2:

- 1) Drill a 5.5mm (7/32") hole in the location at which you have decided to install the rinse temperature sensor.
- 2) Cut threads into the hole using a 1/8" NPT tap, ensuring that all sharp edges, cutting debris and burrs are removed.
- 3) Install the fitting and sensor as described above. Use thread sealant to ensure a leak free assembly.

2.18 Chemical Supply and Discharge Tubing

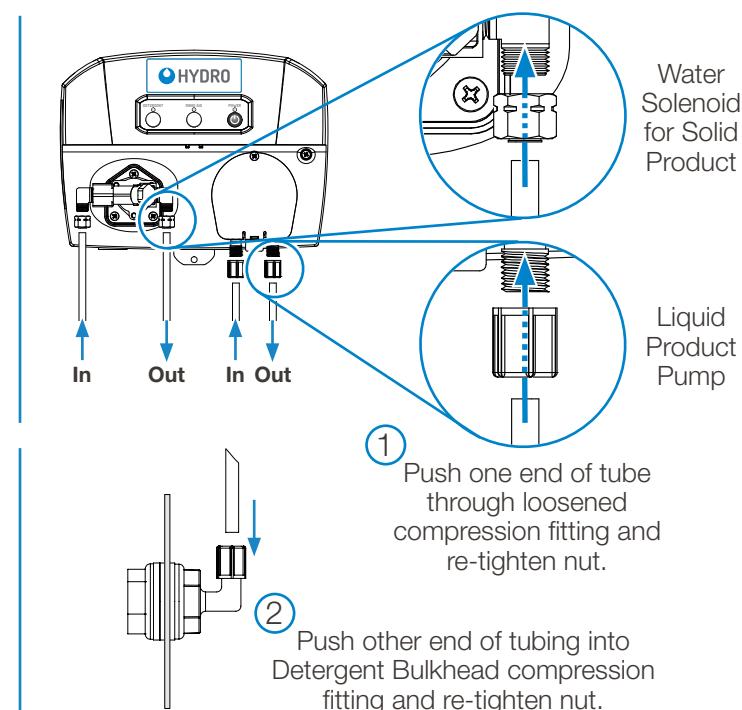


NOTE: Ensure there are no kinks or sharp bends in the discharge hose, between the unit and the discharge fitting, to ensure free flow of each product to its intended location.

NOTE: The installation below is described using Hydro's optional pump tubing kit.

Inlet Tubing

- 1) Using the 1/4" tubing, cut the tube to the correct length (keeping enough for the outlet tubing). Route the tubing through the tube stiffener and connect the strainer onto the end of the tube that will be placed into the chemical container.
- 2) Install the tubing with the strainer and tube stiffener into the chemical container, ensuring that any entry hole produced in the container is suitable as not to allow particulates or any contamination to enter the container.
- 3) Connect the inlet tubing to the inlet on the corresponding pump. Loosen the compression fitting by one turn, then push the tube into the fitting and tighten.



Outlet Tubing

- 1) Before cutting, measure the length needed to reach the location where you will be dispensing product, including extra length for routing the tubing out of the way.
- 2) Install tubing into the outlet of the pump and the bulkhead fitting by loosening the compression nuts by one turn, then push the tube into the fittings and tighten.

2.00 installation (continued)

2.20 Electrical Installation



WARNING: Electrical installation and maintenance should be completed by a qualified electrician. All local and national electrical regulations are to be observed.



CAUTION: All electrical connections (excluding the conductivity probe) are to be made either in the dish machine control circuit panel or in a suitable, external junction box.

Where applicable, all cable entries into new equipment must be made with a water tight conduit fitting or gland, meeting the appropriate local and national regulations.

Ensure all wiring is routed neatly and safely between appliances, as not to create any trip hazards that could result in injury, or damage to the equipment or wiring.

2.21 Electrical Connections

NOTE: Two-pump system shown, with Basic Conductivity Probe.

Main Power and Machine Signals

Main Power Input

Brown - Line / Hot (100-230V AC at 50/60 Hz)

Blue - Neutral

Detergent Signal

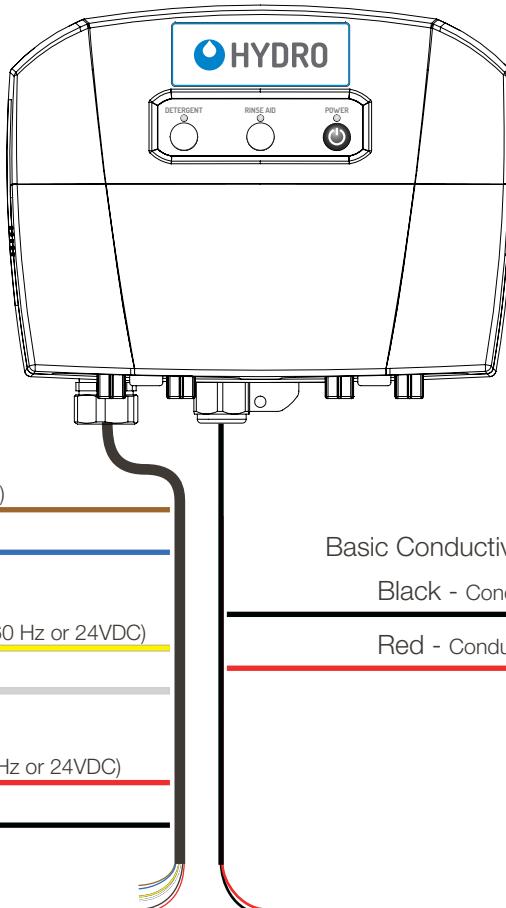
Yellow - Live or DC+ (24V to 250V AC at 50-60 Hz or 24VDC)

White - Neutral or DC -

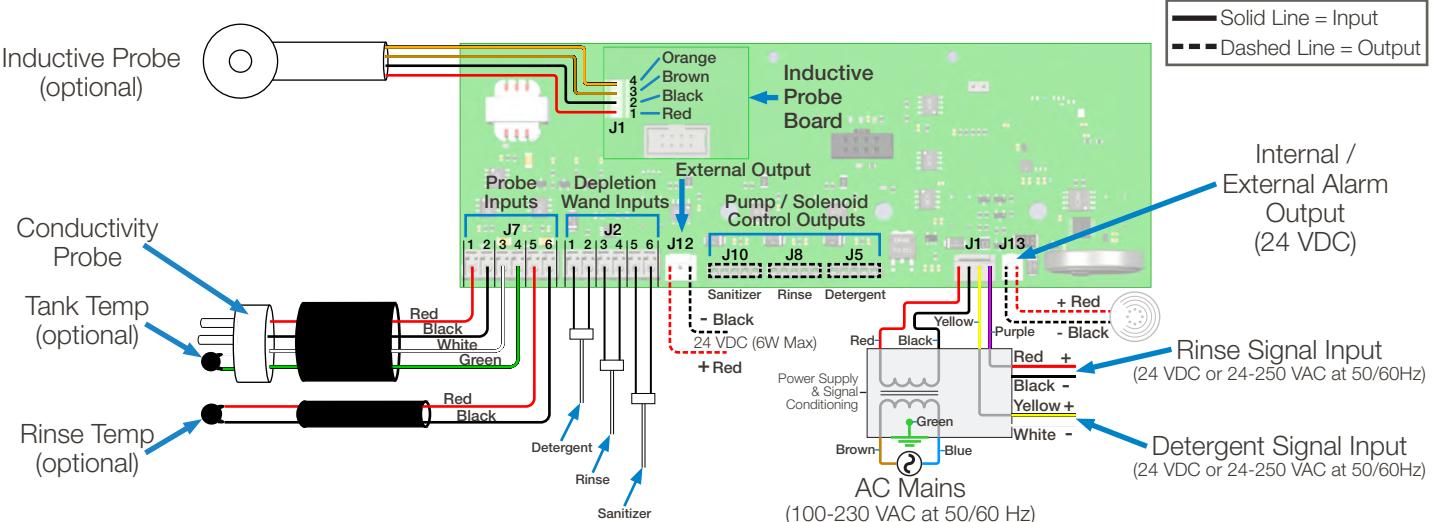
Rinse Signal

Red - Live or DC + (24V to 250V AC at 50-60 Hz or 24VDC)

Black - Neutral or DC -



2.22 Main Board Connections

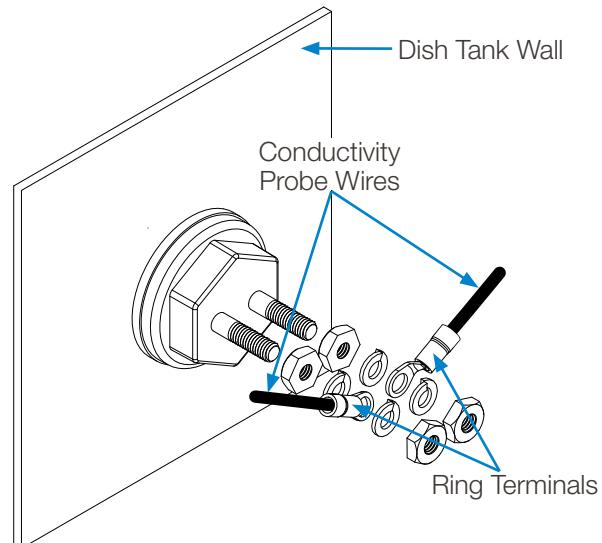


2.00 installation (continued)

2.23 Basic Conductivity Probe Wiring

Although the basic conductivity probe wiring is pre-wired to the controller, you must make the connection to the probe installed on the washer.

- 1) Route the probe wires to the conductivity probe location and cut to fit if required.
- 2) Strip the wire ends and crimp on the ring terminals provided.
- 3) Connect the ring terminals to each of the probe connections, sandwiching each ring terminal onto the probe between the nuts and washers provided (see diagram at right). Ensure that connections are tight and secure.



2.24 Optional Temperature-Compensated Conductivity Probe Wiring

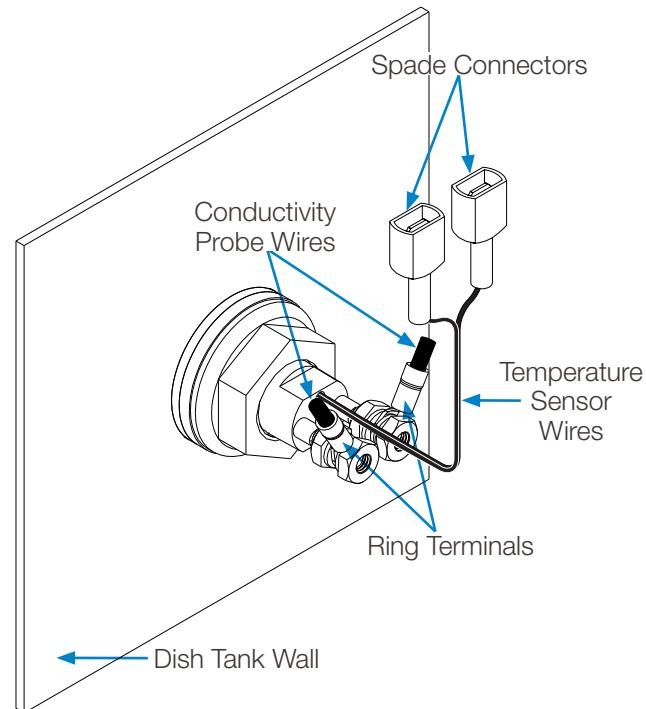
In addition to the two wires on the basic conductivity probe, the optional temperature-compensated conductivity probe has two wires connected to a thermistor. This thermistor enables more accurate conductivity readings and allows the wash temperature to be monitored to ensure optimal cleaning results.

To install the optional temperature-compensated conductivity probe, follow these steps:

- 1) Disconnect all power to the unit.
- 2) Units that come with this option will be pre-wired to the DMx Control Board with a 4-conductor cable instead of the standard 2-wire setup (see wiring diagram on page 14). The 4-conductor cable is routed from the board through the bottom of the DMx housing. Wire colors on the 4-conductor cable are as shown below:
 - Red** - Conductivity Probe
 - Black** - Conductivity Probe
 - Green** - Tank Temperature Sensor
 - White** - Tank Temperature Sensor
- 3) Route the 4-conductor cable to the conductivity probe location on the dish machine and cut to fit if required.
- 4) Connect the red and black wires on the cable to the threaded terminals on the temperature-compensated conductivity probe assembly using the crimp-on ring terminals included in the kit. Sandwich each ring terminal onto the probe between the nuts and washers provided (see diagram). Ensure that connections are tight and secure.
- 5) Crimp the two smaller spade connectors included in the kit to the two thermistor wires on the temperature-compensated probe, and the two larger connectors to the green and white wires of the 4-conductor cable.
- 6) Connect the spade connectors (polarity is not important) on the thermistor to the green and white wires.



WARNING: Electrical installation should be completed by a qualified electrician. All local and national electrical regulations are to be observed.



2.00 installation (continued)

2.25 Optional Inductive Probe Wiring

The optional Inductive Conductivity Probe includes a separate Inductive Interface Board and the probe with 4-conductor cable to power the probe and communicate the tank temperature and conductivity readings to the dispenser. To install the optional Inductive Conductivity Probe, follow these steps:

Important: Install the Inductive Conductivity Probe into the wash tank before proceeding per diagram.

- 1) Disconnect power to unit before opening the front cover.
- 2) Open the front cover: remove the dust cover and loosen the screw on the right front of the dispenser
- 3) Route the end of the 4-conductor cable from the inductive probe through the conduit fitting in the bottom of the unit
- 4) On the Inductive Interface Board, insert each wire **Red**, **Black**, **Brown** and **Orange** into the green connector and tighten each set screw per the pinout:
Pin 1 = **Red** - Power +
Pin 2 = **Black** - Power -
Pin 3 = **Brown** - Serial Rx
Pin 4 = **Orange** - Serial Tx
- 5) Insert the Inductive Interface Board black connector into the Main Board black connector – Refer to Main Board Connections in Section 2.22 on page 14.
- 6) Close the front cover, secure with the screw, and replace the dust cover.
- 7) Restore power.
- 8) In the Hydro Connect App ensure the unit is set to Probe mode. See Section 5.02 on page 25.

2.26 Optional Rinse Temperature Sensor Kit

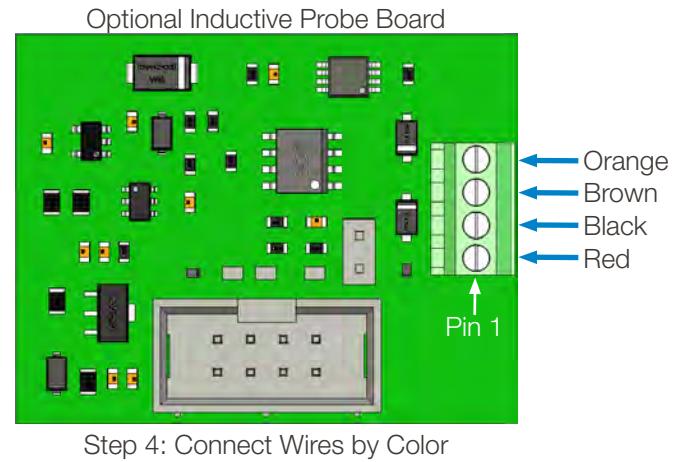
The optional rinse temperature sensor communicates the rinse temperature readings back to the dispenser. Dispensers that come with this option will be pre-wired to the Main Board with a 2-conductor cable with **Red** and **Black** wires. (See Main Board Connections on page 14).

Red - Rinse Temperature Sensor

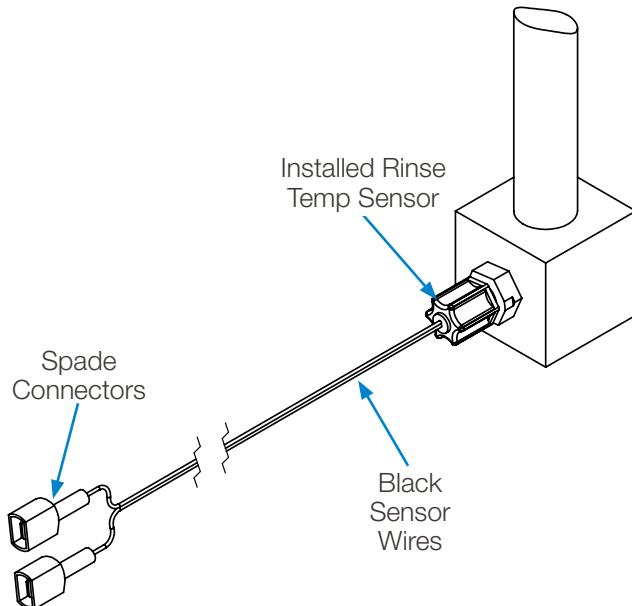
Black - Rinse Temperature Sensor

To install the optional rinse temperature sensor kit, follow these steps:

- 1) Disconnect all power to the unit before making any connections.
- 2) Install the rinse temperature sensor per the dish machine manufacturer's instructions, or refer to section 2.17 on page 13.
- 3) Route the sensor wires to the temperature sensor wires coming from the dish machine and cut to fit if needed.
- 4) Crimp the two smaller spade connectors included in the kit to the two temperature sensor black wires and the two larger spade connectors to the red and black wires of the 2-conductor cable.
- 5) Plug in the mating spade connectors to connect the red and black wires on the 2-conductor cable to the spade terminals on the temperature sensor (polarity is not important). Ensure that connections are tight and secure.
- 6) Restore power.



WARNING: Electrical installation should be completed by a qualified electrician. All local and national electrical regulations are to be observed.



2.00 installation (continued)

2.27 Main Power Input Wiring

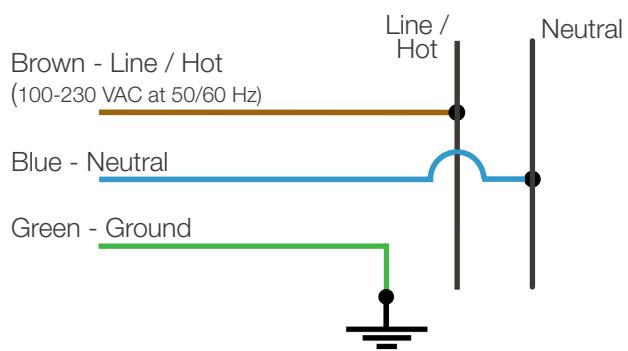
Power input to the DMx can be any voltage from 100-230 VAC at 50/60 Hz. For single phase systems, the brown wire of the seven-wire harness is connected to the Hot source and the blue wire is connected to the Neutral source, as shown to the right.

With a three phase supply, the DMx is a single-phase load. Line voltage is applied using just two wires (Brown and Blue). Avoid interconnection to power systems that are not ground-referenced. Choose a connection between a line (phase) and neutral, connecting the **brown wire to the line** and the **blue wire to the neutral**, following the illustrations below.



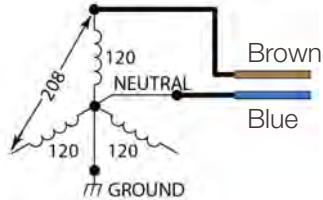
Main Power Input Wiring: Single Phase AC Power

Main Power Input Wiring: Single Phase AC Power

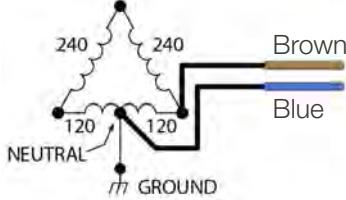


Main Power Input Wiring: Three Phase AC Power

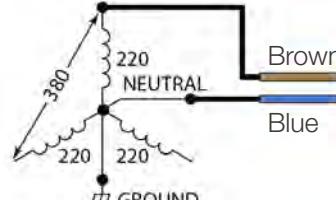
1. 120/208 VAC WYE (includes Neutral)



2. 120/240 VAC Delta with High Leg



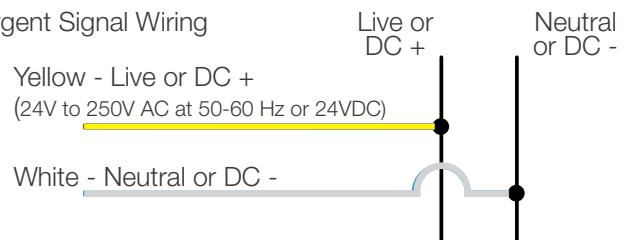
3. 220/380VAC or 240/415VAC WYE (includes Neutral)



2.28 Detergent Signal Wiring

- Detergent signal input is optically isolated and draws no more than 20mA.
- It is a universal voltage input that accepts voltage between 24-250VAC nominal ($\pm 10\%$ fluctuation), or 24VDC nominal ($\pm 20\%$ fluctuation).
- Typical wiring locations are 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 (DC-)** colored wires to detergent signal power source.

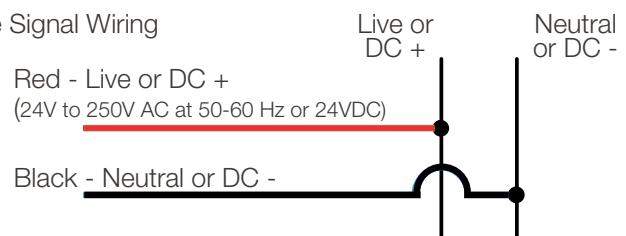
Detergent Signal Wiring



2.29 Rinse Signal Wiring

- Rinse signal input is optically isolated and draws no more than 20mA.
- It is a universal voltage input that accepts voltage between 24-250VAC nominal ($\pm 10\%$ fluctuation), or 24VDC nominal ($\pm 20\%$ fluctuation).
- Typical wiring locations are dispenser rinse power source or the rinse solenoid valve circuit in the dish machine control panel. This power source is live whenever the dishwasher is rinsing.
- Connect **red (DC+)** and **black (DC-)** colored wires to rinse signal power source.

Rinse Signal Wiring

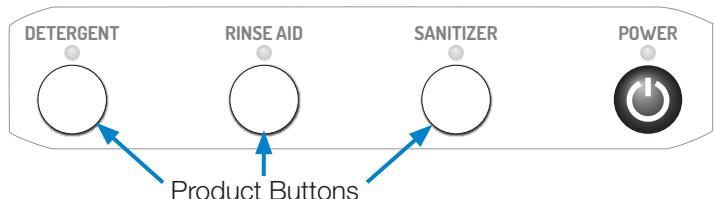


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3.00 operation

3.01 Dispenser Control Pad

There are three or four buttons and corresponding LEDs on the DMx depending on whether a 2-product or 3-product system is in use. These buttons and LEDs allow for local interaction by the user.



3.02 Product Buttons

There is one button each for Detergent, Rinse, and Sanitizer. (Sanitizer used only on a 3-product system.) These buttons are intended to be used for the following purposes:

Priming

Only one pump can be primed at a time. To begin priming press any product button while the dispenser is idle. Attempts to prime while a detergent or rinse signal is active will be ignored. While the pump is priming, the green LED will flash once per second. Prime limits are configurable using the Hydro Connect Mobile Application within Bluetooth range, but the default prime limit is 30 seconds every hour. If the button is pushed a second time before the limit has expired, the priming operation will stop, and the LED will turn off. The priming operation can be repeated multiple times until the limit is reached. After the limit is reached, further attempts to prime will result in the product LED flashing orange once, indicating that the user must wait until the configurable lock-out period has elapsed.

Silencing the Buzzer

Critical alarms on the DMx will result in the sounding of an audible buzzer along with a solid or flashing red LED. Solid red indicates that the local kitchen staff can address the issue and flashing red indicates that a technician is needed. The buzzer can be muted for 10-minutes by pressing any button on the dispenser for a duration of one second. If the alarm is not cleared in 10-minutes, the buzzer will sound again.

Clearing Alarms

Most alarms can be cleared by pressing and holding the button on the affected product for a duration of 2 seconds. Alternatively, these alarms can be cleared with instruction from the "Manage Dispenser" screen in the Hydro Connect Mobile Application. The "Manage Dispenser" screens are described in more detail in Section 4.06 on page 23.

3.03 Product LEDs

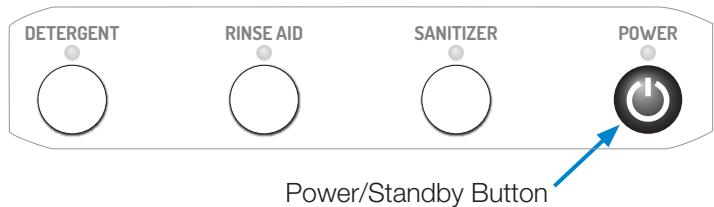
There is one LED for each product button; Detergent, Rinse and Sanitizer (if present). The LED is used to convey pump status, maintenance alarms or critical alarms. Critical and maintenance alarms details are in Section 5.05 "Configure Alarms".

LED Color	Fixed or Flashing	Buzzer	Indication
Green	Flashing	Off	Pump is operating normally as part of a rack or is priming with no maintenance alarms or critical alarms.
	Fixed	Off	There is an active detergent or rinse signal present and the pump is not dosing.
Red	Fixed	On	This indicates that there is an out of product condition that the local staff can manage. This can be triggered for detergent if the dispenser is being run in probe mode and there are a configured number of racks run below the setpoint. Alternatively, this can be triggered on Detergent, Rinse or Sanitizer by using a depletion wand accessory
	Flashing	On	This indicates that there is a critical alarm on one of the pumps that requires intervention by a technician. Depending on the product LED that is flashing, the following conditions are causes: <ul style="list-style-type: none">Detergent probe faulty (probe mode only)Rinse temperature is low (requires optional rinse temperature sensor kit)Detergent, Rinse, or Sanitizer pump jam
Orange	Fixed	Off	This indicates that there is a non-critical maintenance alarm that the local staff can manage. The conditions that produce this type of alarm are: <ul style="list-style-type: none">If the detergent LED is illuminated, the Detergent tank temperature is low (requires optional temperature compensated probe)All 3 LEDs are illuminated the Change Tank Water Alarm has been triggered based on the number of racks run since the last change.
	Flashing	Off	This indicates that there is a non-critical maintenance alarm that requires intervention by a technician. The conditions that produce this type of alarm are: <ul style="list-style-type: none">If all product LEDs are flashing once per second, the dish machine needs to be delimed based on the number of days since the last delime.If Detergent, Rinse, or Sanitizer are flashing twice per second, the corresponding pump is due to have a squeeze tube change according to the number of days of operation since the last change.

3.00 operation (continued)

3.04 Power/Standy Button

There is one button and LED labeled Power, on the DMx. This button can be pressed at any time to stop the DMx from priming, running, or receiving detergent or rinse signals from the dish machine. This button is especially useful when performing maintenance, such as changing squeeze tubes or deliming the detergent tank.



Please note that pressing the Power button **does not isolate the dispenser from line voltage** and therefore, precautions still must be taken to avoid shock when working inside the cabinet.

LED Color	Fixed or Flashing	Buzzer	Indication
Green	Fixed		Off The dispenser is operating normally , meaning it is ready to receive detergent or rinse signals to begin dosing.
Red	Fixed		Off This indicates that the dispenser is currently in Standby mode and will not dose product when detergent or rinse signals are activated. Additionally, the prime feature will not operate.
	Flashing		Off The Power/Standby LED flashing red once per second indicates that the dispenser's hardware (e.g. real-time clock, flash memory, or pump configuration) is malfunctioning . Please refer to the Troubleshooting Section 8.00 on page 55 for more information.
Orange	Flashing		Off 1) Maintenance Alarm - Dispenser has switched from Probe to Probeless Mode due to a faulty probe. (Probeless Autoswitch) 2) After clearing a critical alarm.
Blue	Fixed		Off This indicates that the dispenser is connected to a mobile device via Bluetooth and the Hydro Connect Mobile Application.

4.00 programming

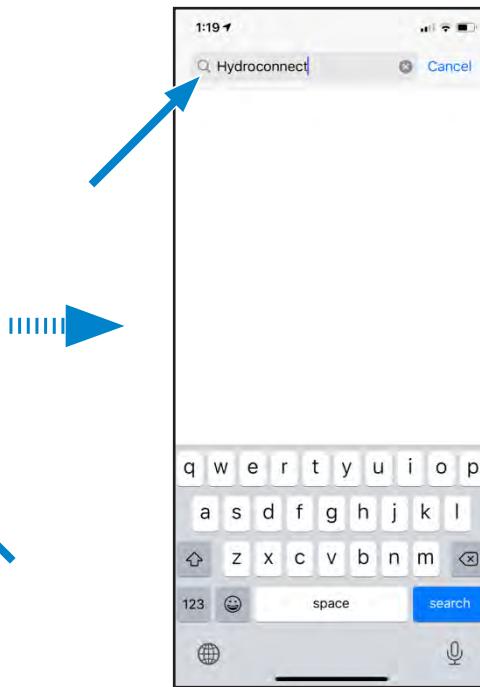
4.01 Programming Overview

The DMx dispenser is programmed and controlled using the Hydro Connect Mobile application that is available through app stores for either iOS or Android. The mobile application is compatible with iPhones (6S and beyond), iPads, and Android Devices (API 23 - Android 6.0 and beyond).

Please note that portions of the Hydro Connect Mobile application may not be available to all user types. For example, a Kitchen Manager may not have the ability to access the SETUP DISPENSER menu because that responsibility is reserved for Chemical Company technicians.

4.02 Downloading the Hydro Connect Mobile Application

To download the app, use your mobile device to navigate to the app store and search for Hydro Connect. The first time you download, open, and log-in to the application, you may be prompted to accept the terms and conditions and privacy policy.



4.03 Logging into the Hydro Connect Mobile App

To access your dispenser via the Hydro Connect Mobile App, you must be set up as a user within your company hierarchy.

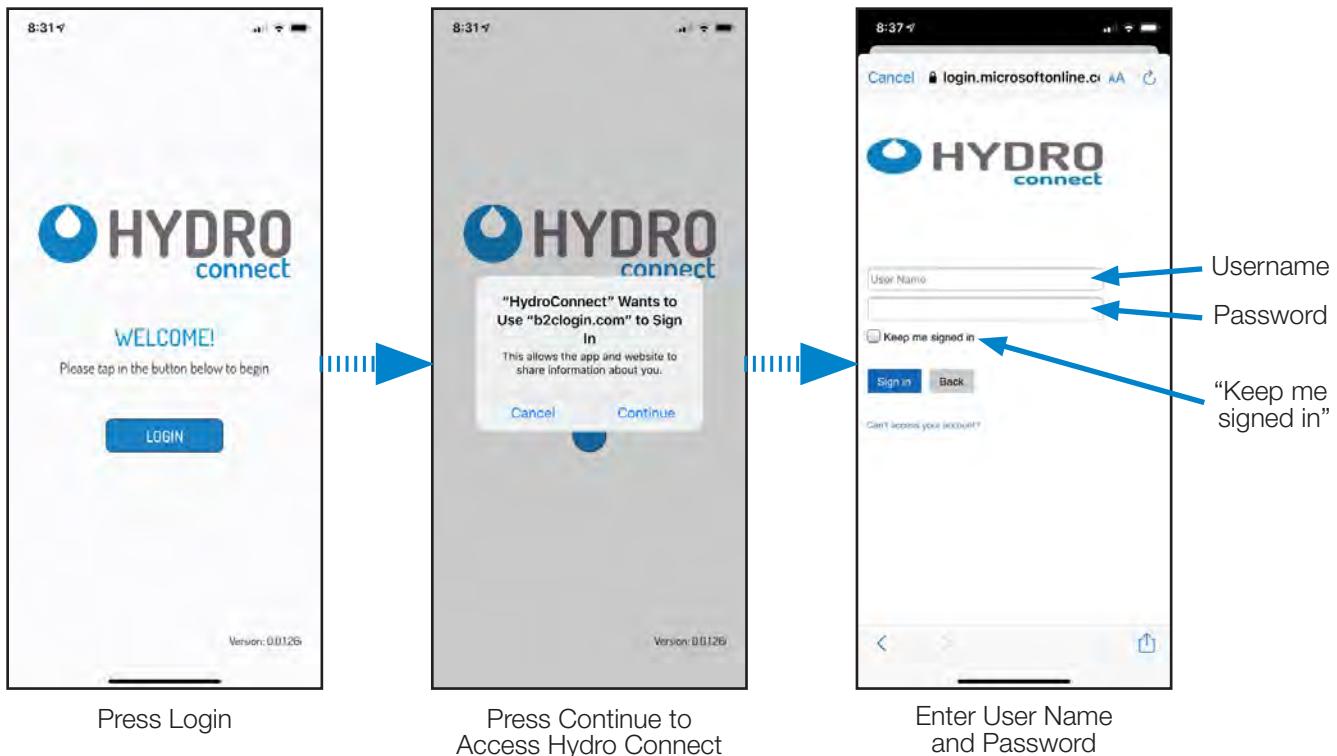
If you are not yet set up, you may:

- 1) Contact your Company Admin who manages all the Hydro Connect users.
- 2) Contact Hydro via 800-543-7184 or contact-hydro@hydrosystemsco.com
- 3) Fill out and submit a new user request form.

Once you are set up with an account, you can open the Hydro Connect Mobile app and fill in your username and password.

If you choose, you may check the box stating "Remember my login information" to simplify and speed-up future access.

4.00 programming (continued)



4.04 Home Screen Overview

After logging in, you will land on the HOME screen. From this screen you will be able to connect to any device that is within your user responsibilities that is within Bluetooth range.

You also will be able to use the Toolbar Ribbon at the bottom of the mobile application to do common tasks like:

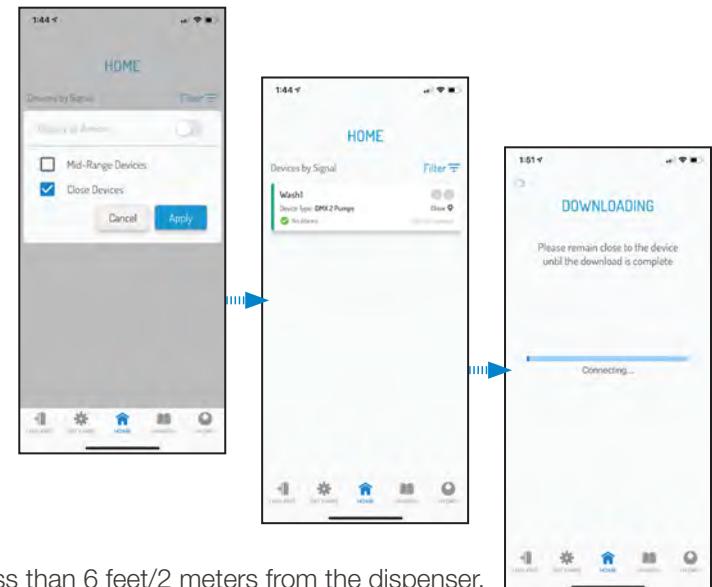
- **Log-out:** Logs out the user and returns to the Log-In screen
- **Settings:** Allows the user to set up common App settings like language, units of measurement, connectivity/data transmission preferences, and date format.
- **Home:** Returns to the Home screen
- **Guides:** Provides quick access to Hydro's product literature and instruction manuals
- **Hydro:** Provides quick access to Hydro's contact information and website

4.05 Connecting to a Dispenser from the HOME Screen

From the HOME screen, you will automatically be able to view information on all the dispensers that are within Bluetooth range (typically around 30 feet/ 9 meters).

When multiple dispensers are present, one can select the Filter icon to simplify selection of the desired dispenser. This allows the user to limit the dispensers that are visible on the Home screen to those that are Close (within 5 feet/1.5 meters) and/or those that are Mid-Range (further than 5 feet/1.5 meters away). Additionally, the user can view the dispenser name, Power LED status, and the presence of any alarms prior to connecting.

Selecting one of the available dispensers will automatically initiate the connection process. While this occurs, the dispenser will transfer some of its records to the mobile application. This may take a few seconds.



NOTE: For best results, it is recommended to connect when less than 6 feet/2 meters from the dispenser.

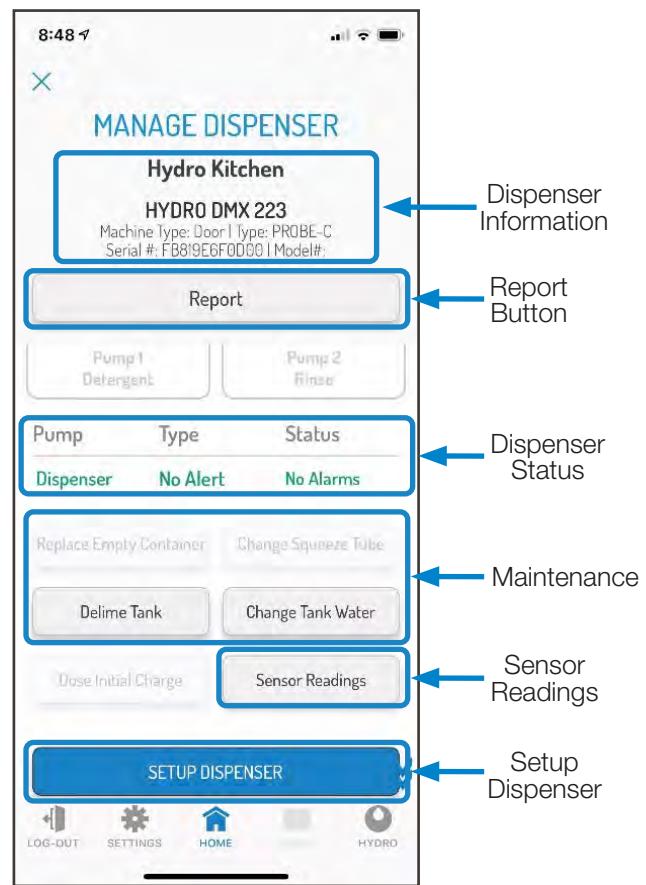
4.00 programming (continued)

4.06 MANAGE DISPENSER Screen Overview

The MANAGE DISPENSER screen is a dashboard that allows users to quickly see all the pertinent information about the dispenser the Hydro Connect Mobile app is connected to. The various sections of this screen are described in detail below:

- Dispenser Information:** This section contains information about the Dispenser Name (e.g. Hydro Kitchen), the dispenser model#, and dispenser serial#, plus the basic configuration in terms of Probe vs Probeless and Machine Type (Door, Conveyor, or Alt. Door)
- Report Button:** Pressing this button will lead the user to a menu where summary/local reporting on productivity (racks), chemical usage, and alarms can be generated for various time horizons.
- Dispenser Status:** This section contains real-time information regarding the status of each chemical and its associated pump/solenoid. At a glance, the user can see if there are any maintenance alarms or critical alarms, whether the pump is running, or if it is idle.
- Maintenance:** This section assists the user in knowing when and how to complete common maintenance items when there is an associated alarm. Completing maintenance items using this section will automatically clear the alarm and reset the timer for the next alarm.

Maintenance Step:	Most Often Completed By:
Replace Empty Container	Kitchen Manager
Change Dirty Tank Water	Kitchen Manager
Dose Initial Charge Manually	Kitchen Manager
Change a Worn Squeeze Tube	Technician
Delime Tank	Technician

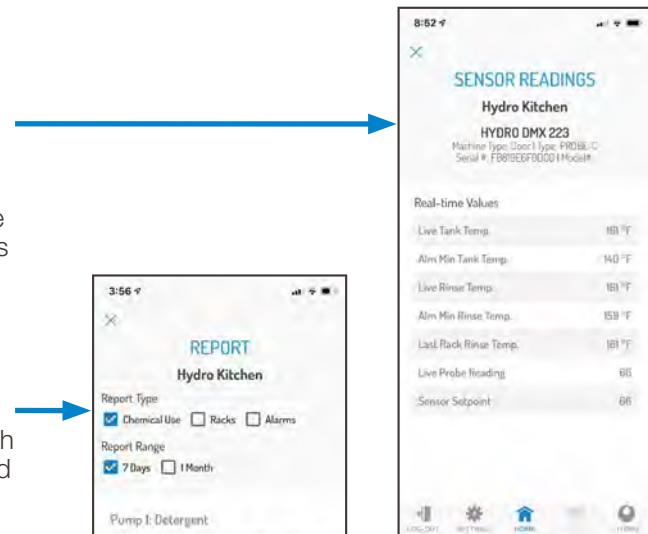


- Sensor Readings:** This maintenance selection allows the user to see the live readings of any connected sensors, such as conductivity, tank temperature, or rinse temperature. It also displays the corresponding setpoint or alarm settings for each sensor.
- Setup Dispenser:** Pressing this button will advance to the next menu that allows a Technician to program the device's dosing parameters

4.07 REPORT Screen Overview

The REPORT menu allows a Kitchen Manager or Technician to view summary information locally. More detailed historical reports and professional graphical reports are available through the Hydro Connect web portal. The types of reporting included in the Hydro Connect Mobile app are:

- Chemical Usage:** presents a tabular display of the fluid volume (oz or ml) or solid weight (lb or kg) of detergent, rinse aid, or sanitizer used in the current week or month. Note that this functionality requires each product to have been calibrated by a Technician.
- Productivity/Racks:** presents a tabular display of the number of racks that have been run by the dispenser in the current week or month.
- Alarms:** presents a tabular display of the number of racks that were completed with each type of alarm in the current week or month.



Reports Screen



Sensor Readings

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5.00 setup

5.01 SETUP Screen Overview

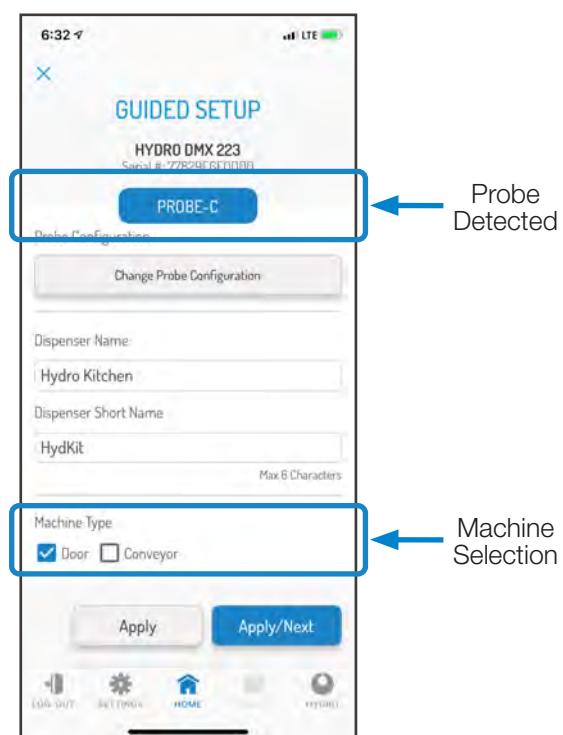
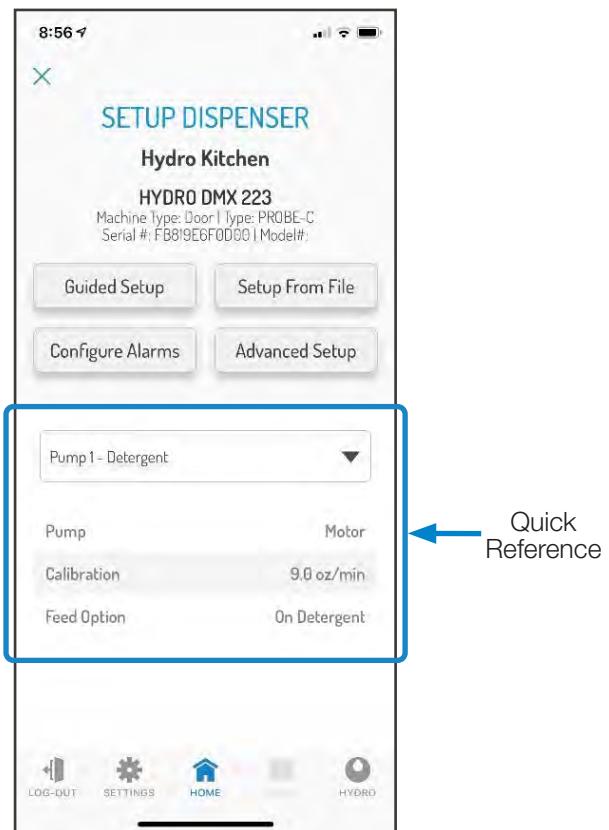
From the SETUP DISPENSER menu, there are multiple ways for a Technician to program all the dosing parameters. These include:

- **Guided Setup:** This section will walk the user through all the required settings to operate the DMx at a basic level. It will not cover non-essential settings, like costs, alarms, or Asset Management, which are covered in the Configure Alarms or Advanced Setup menus.
- **Setup from File:** Intended to save the user valuable installation time, this allows for a pre-configured setup file to be applied to the DMx vs. configuring it directly.
- **NOTE:** Calibration values for each product and the dispenser names will **not** be transferred as part of the Setup File.
- **Configure Alarms:** This section allows each alarm to be enabled/disabled and for key settings for each alarm, such as the "Remind After" periods, to be customized.
- **Advanced Setup:** This section allows the user to configure several non-essential, value added features, such as:
 - **User prime limits:** Limits the number of seconds that prime can be operated over a set duration in hours (e.g. 60 seconds every 8-hour shift)
 - **Costs:** Allows costs for each product to be entered in currency per unit volume. This is useful for creating cost per rack reports in Hydro Connect.
 - **24V Output:** The DMx can power external devices with a 24 VDC output that can be made operational through the mobile application.
 - **Download data:** The mobile application can extract the records stored in the dispenser's memory onto the mobile device to be uploaded later into the Hydro Connect Cloud.
 - **Asset Management:** Allows the device installation date and location to be tracked by serial number through Hydro Connect.
- **Quick Reference:** This section allows for a quick check to key parameters on each product pump and for some values like dispensing speed to be adjusted quickly.

5.02 GUIDED SETUP - Probe Mode

GUIDED SETUP will walk the user through all the required settings to operate the DMx at a basic level. The fields required for this process depend on the whether the dispenser is using a probe for dispensing detergent and the type of dish machine that it is connected to. In general, there are 5 possibilities including:

- Probe Mode, Door Machine
- Probe Mode, Conveyor Machine
- Probeless Mode, Door Machine
- Probeless Mode, Conveyor Machine
- Probeless Mode, Alternate Door Machine



5.00 setup (continued)

Probe Mode on a Door Machine

5.02 GUIDED SETUP (continued)

From the first screen, the user can change the Name of the dispenser and the Short Name which is broadcast via Bluetooth from the HOME screen.

To ensure that the right settings are configured, the user must then indicate whether a probe is being used or not and then select the Machine Type.

NOTE: Once Probe mode is selected, the DMx will automatically determine the type of probe in use.

The options are:

- Basic Conductivity: “**PROBE-C**”
- Conductivity/Temp Compensated: “**PROBE-CT**”
- Inductive Probe: “**PROBE-I**”

Probe Mode on a Door Machine

To configure a DMx unit that utilizes a conductivity probe on a Door Machine, start with the detergent pump first.

Detergent

Since the detergent is controlled by the reading of the probe, there are several settings that must be configured to help the dispenser operate accurately.

NOTE: The pump style (Motor or Solenoid) will automatically be determined by the DMx controller.

Probeless Autoswitch (Door)

Probeless Autoswitch is a feature that, when enabled, automatically switches the unit into Probeless mode if problems are detected with the probe readings. More specifically, if the probe reading is zero (0) or greater than ninety (90) for a configured number of racks; it will trigger the unit to switch to Probeless mode without interrupting the operation. (When this occurs the Power and Detergent LEDs will flash Yellow indicating the probe requires maintenance.)

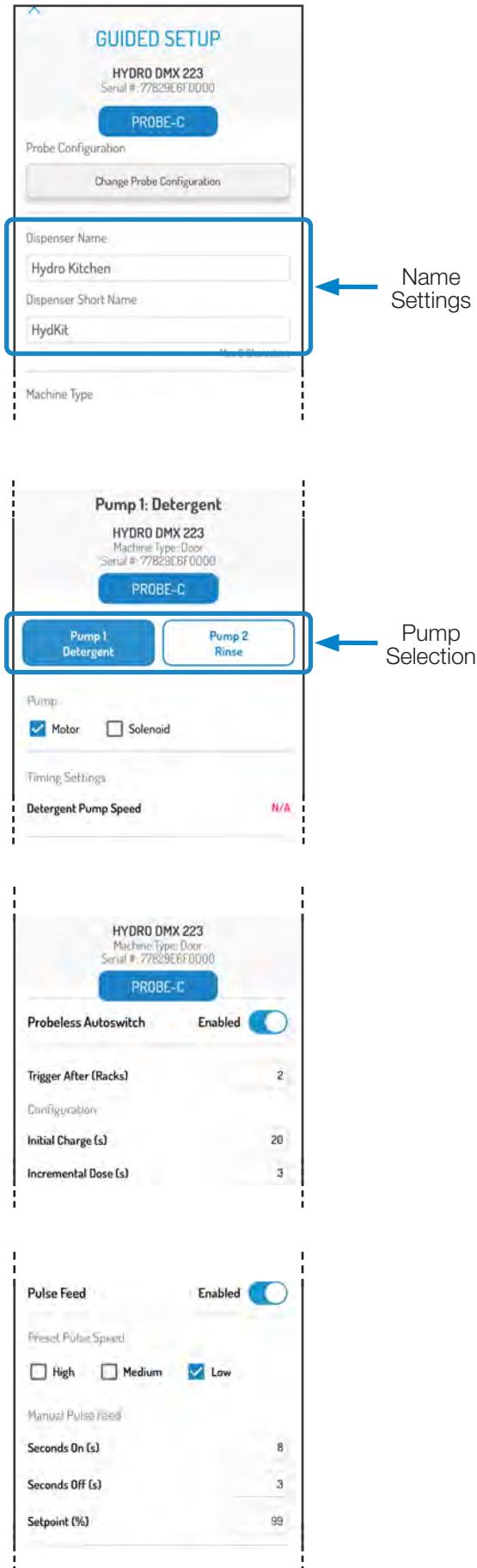
If enabled in the Guided Setup, the user will be prompted to establish the Probeless Dosing parameters for detergent, in case a switch takes place.

For a door machine, this includes the initial charge time (0-200 sec) and the incremental dose time (1-20 sec).

Pulse Feeding

Pulse feeding is a feature for dosing in Probe Mode whereby the detergent motor stops running continuously and begins pulsing at a configured % of the setpoint. This allows the dosing to be more precise and avoid overshooting the setpoint if there is a time delay in between the detergent entering the tank and its detection via the probe.

If enabled, there are multiple ways to configure when pulse feeding will begin and the frequency of the pulses, as shown on the next page.



5.00 setup (continued)

Probe Mode on a Door Machine

5.02 GUIDED SETUP (continued)

Pulse Feeding (continued)

Preset High / Medium / Low Pulsing

If the user is uncertain about how to set up their pulse feeding, Hydro has provided some preset common pulse feeding settings. They are defined as:

- High:** The pump will begin pulsing at 90% of the setpoint value. It will run for 6 seconds and then will be off for 1 second and repeat until a value at or above the setpoint is reached.
- Medium:** The pump will begin pulsing at 80% of the setpoint value. It will run for 2 seconds and then will be off for 6 second and repeat until a value at or above the setpoint is reached.
- Low:** The pump will begin pulsing at 70% of the setpoint value. It will run for 1 second and then will be off for 6 seconds and repeat until a value at or above the setpoint is reached.

Customizable Values: If the user does not prefer the presets, they can manually define specific values for Seconds On (1-10 sec), Seconds Off (1-10 sec) and Setpoint % (10-95%).

Establishing Probe Setpoint

To dose detergent in probe mode, the user must properly titrate the wash tank and establish this as the setpoint for the conductivity probe. When the conductivity probe reads a value below the setpoint and the detergent signal is on, the dispenser will dose detergent until the probe reaches the setpoint.

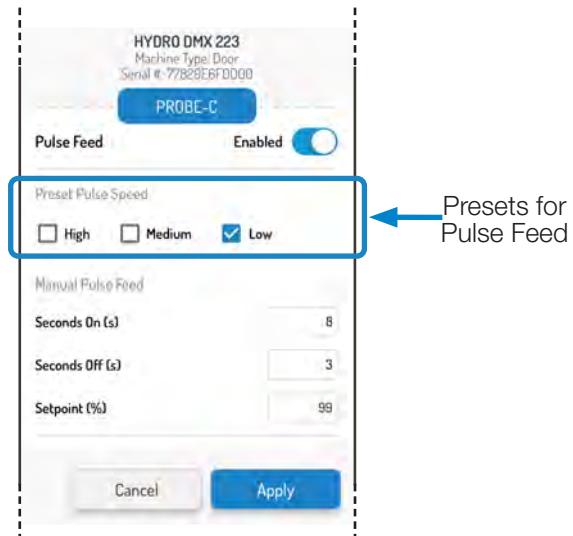
The process to do this is:

- 1) If you already know the appropriate setpoint, you can enter it manually at any time.
- 2) Otherwise, fill the wash tank with fresh water and properly titrate the tank with detergent.
- 3) When the tank is properly titrated, press the Get Reading button to read the live conductivity reading in the tank.
- 4) Once the live reading is satisfactory, press Set Setpoint to establish the probe setpoint.

Liquid Pump Calibration

In order to properly track chemical usage, each liquid pump must be calibrated to establish a relationship between product volume (ounces or milliliters) and time.

Pressing the Calibrate Pump button will begin the process of calibration by prompting the user to prepare to safely dispense product. Please wear appropriate PPE, follow your company guidelines, and prepare a container with at least 12 oz (355 ml) of volume to catch any dispensed product.



5.00 setup (continued)

Probe Mode on a Door Machine

5.02 GUIDED SETUP (continued)

Liquid Pump Calibration (continued)

Liquid pumps can be calibrated using a fixed Time or fixed Volume. Regardless of the method chosen, before beginning, ensure that the pump is completely primed with the inlet and outlet tubing filled with product.

NOTE: Liquid pumps are always calibrated at full speed. If the speed for the rinse pump is then adjusted below the maximum speed, the usage information will be scaled proportionally.

Calibration by Time

When calibrating by time, the pump will run for a fixed time of 20 seconds. To begin the process:

- 1) With your container in position, press Start. The pump will begin running and a countdown from 20 will begin. You can cancel the process at any time by pressing Cancel.
- 2) Once the pump stops, enter the volume that was dispensed in 20 seconds.
- 3) Check that the values are correct, and press Apply.

Calibration by Volume

Alternatively, users may opt to perform a calibration by volume.

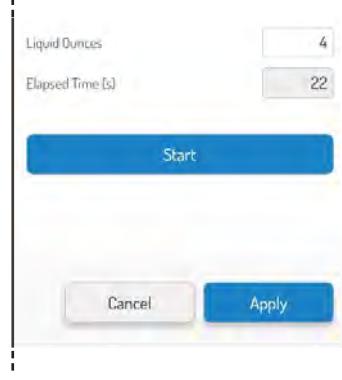
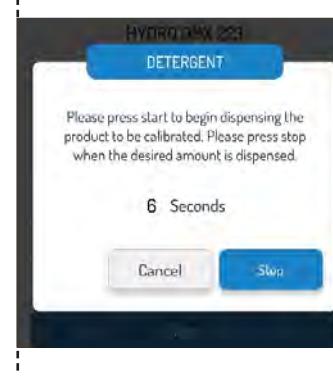
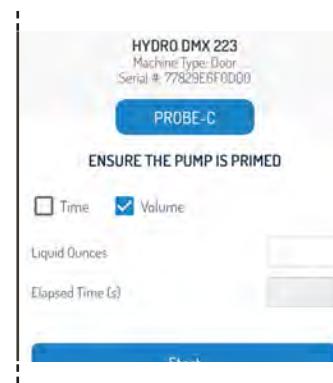
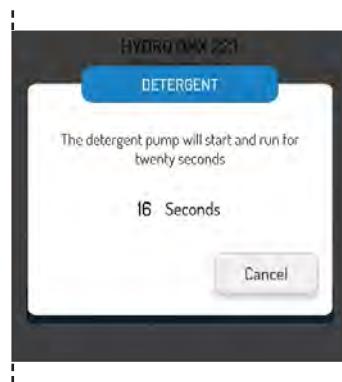
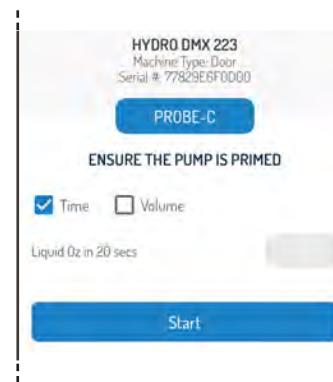
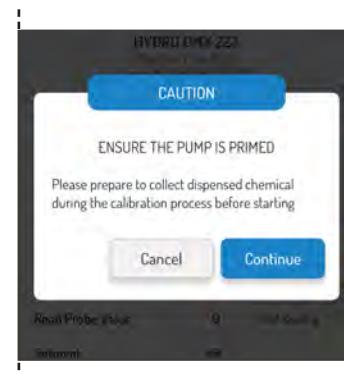
Using this method, the pump must be started/stopped by the user when it has dosed a set volume of product. To begin the process:

- 1) The user must enter the volume they wish to dispense. Hydro recommends that at least 4 oz (120 ml) be used for volumetric calibrations.
- 2) With your container in position, press Start to begin the process. The pump will begin running and counting from zero. When the desired volume is dispensed press Stop.
- 3) Check that the values are correct, and press Apply.

Solenoid (Solids) Calibration

Calibrating a solenoid for solid chemical dispensing can only be done using a fixed Time and measuring the grams of product dispensed.

It is important to measure the mass (**always in grams**) of the solid chemical container using a scale prior to beginning the calibration process.



5.00 setup (continued)

Probe Mode on a Door Machine

5.02 GUIDED SETUP (continued)

Solenoid (Solids) Calibration (continued)

Calibration by Time

When calibrating by time, the solenoid will open for a fixed time of 20 seconds, allowing water to spray and dissolve the solid product. To begin the process:

1) With outlet of the dissolver bowl routed to a drain or the dish machine, press Start. The solenoid will open and a countdown from 20 will begin. You can cancel the process at any time by pressing Cancel.

2) Once the solenoid stops, weigh the solid chemical container a second time and enter the mass (grams) dispensed over the 20 seconds by taking the difference between the two mass measurements.

3) Check that the value for the weight of solid product consumed (**in grams**) is correct (see example at right), and press Apply (not shown).

Rinse

1) To set up the rinse dispensing parameters for a unit operating in **Probe Mode** on a **Door Machine**, scroll to the top and select the **Rinse Pump**.

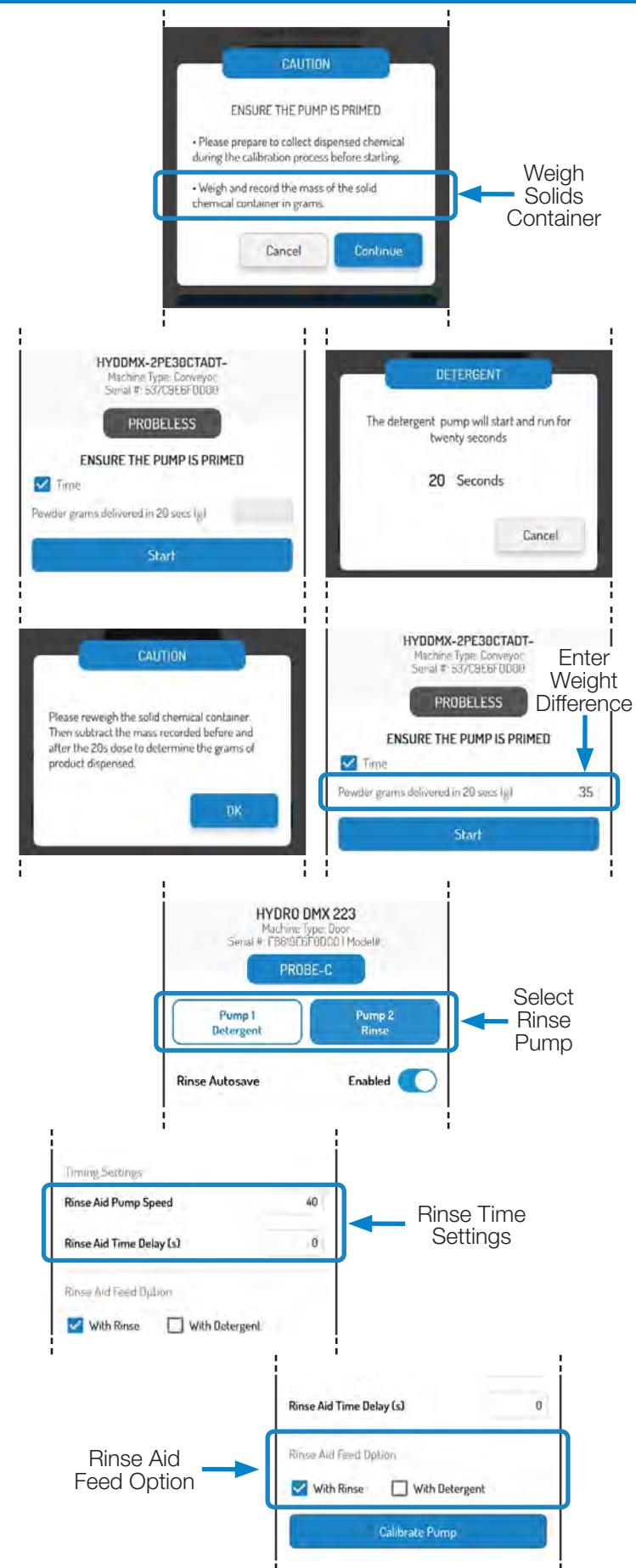
2) Next, enter the following:

- **Rinse Aid Pump Speed (5-55 RPM):** This is the speed that the pump will run at whenever the rinse signal is active.
- **Rinse Aid Time Delay (0-30s):** This is the amount of time that the rinse signal needs to be active before the rinse pump will begin dispensing.

NOTE: Door machine setups utilize the Rinse Saver feature that prevents the rinse pump from running more than 20 seconds per rack.

3) Set Rinse Aid Feed Option:

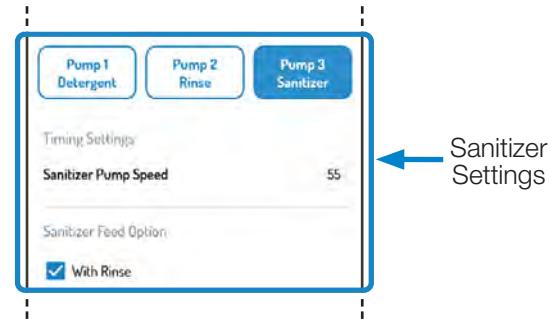
- **Rinse on Rinse:** The rinse pump will run whenever the rinse signal is active as per the above configuration parameters.
- **Rinse on Detergent:** The rinse pump will run whenever the detergent signal is received active as per the above configuration parameters for a set duration that is entered by the user (seconds). This option is not commonly used but may be appropriate on machines without a separate rinse signal.



5.02 GUIDED SETUP (continued)

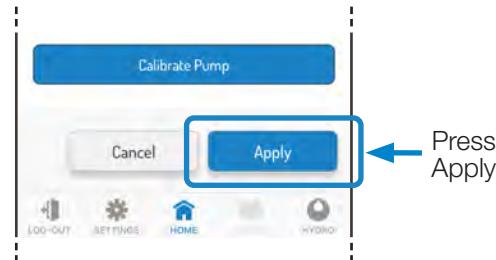
Sanitizer (3-Product Models Only)

- 1) To set up the sanitizer dispensing parameters for a unit operating in **Probe Mode** on a **Door Machine**, scroll to the top and select the **Sanitizer Pump**.
- 2) Next, enter the following:
Sanitizer Pump Speed (5-55 RPM): This is the speed that the pump will run at whenever the rinse signal is active.



Accepting the Guided Setup

To complete the Guided Setup or complete changes made to a prior setup, scroll to the bottom and press **Apply**.



Probe Mode on a Conveyor Machine

To configure a DMx unit that utilizes a conductivity probe on a Conveyor Machine, start on the Guided Setup Screen.

- 1) Confirm that the blue button is set to Probe and select Conveyor as the Machine Type.
- 2) When this is done, the user will be prompted to enter the Conveyor Rack Time (in seconds). This setting helps the dispenser count racks in Conveyor Mode.
 - The field can be set from 0-90 seconds.
 - Whereas Door Mode counts a rack every time the detergent and rinse signals are cycled, in Conveyor Mode, a rack is counted when the rinse signal is on continuously for the configured Conveyor Rack Time.
 - If you are unsure about what to enter as the Conveyor Rack Time, you can measure the amount of time it takes for a rack of dishes to pass through the rinse portion of the conveyor.



Detergent

Probeless Autoswitch (Conveyor)

Probeless Autoswitch is a feature that, when enabled, automatically switches the unit into Probeless mode if problems are detected with the probe readings.

More specifically, if the probe reading is zero (0) or greater than ninety (90) for a configured number of racks (enter in the field titled "Trigger After") it will trigger the unit to switch to Probeless mode without interrupting the operation.

5.00 setup (continued)

Probe Mode on a Conveyor Machine

5.02 GUIDED SETUP (continued)

Probeless Autoswitch (Conveyor) (continued)

When this occurs the Power and Detergent LEDs will flash Yellow indicating the probe requires maintenance.

If enabled in the Guided Setup, the user will be prompted to establish the Probeless Dosing parameters for detergent, in case a switch to Probeless Mode does take place.

For a Conveyor machine, this includes:

- Initial charge time (0-200 sec)
- Incremental dose time (1-20 sec)
- Dose Interval (1-3 Racks).

These fields are described in greater detail on page 32 on Probeless Mode.

NOTE: All other detergent settings for Probe Mode on a Conveyor Machine are programmed identically to those on a Door Machine (see page 28).

Rinse

- 1) To set up the rinse dispensing parameters for a unit operating in **Probe Mode** on a **Conveyor Machine**, scroll to the top and select the **Rinse Pump**.
- 2) Next, enter the following:

- **Rinse Aid Pump Speed (5-55 RPM):** This is the speed that the pump will run at whenever the rinse signal is active.
- **Rinse Aid Feed Option:**
 - Rinse on Rinse- The rinse pump will run whenever the rinse signal is active as per the above configuration parameters.

NOTE: There is no Rinse Pump Delay in Conveyor Mode.

NOTE: There is no Rinse on Detergent setting in Conveyor Mode.

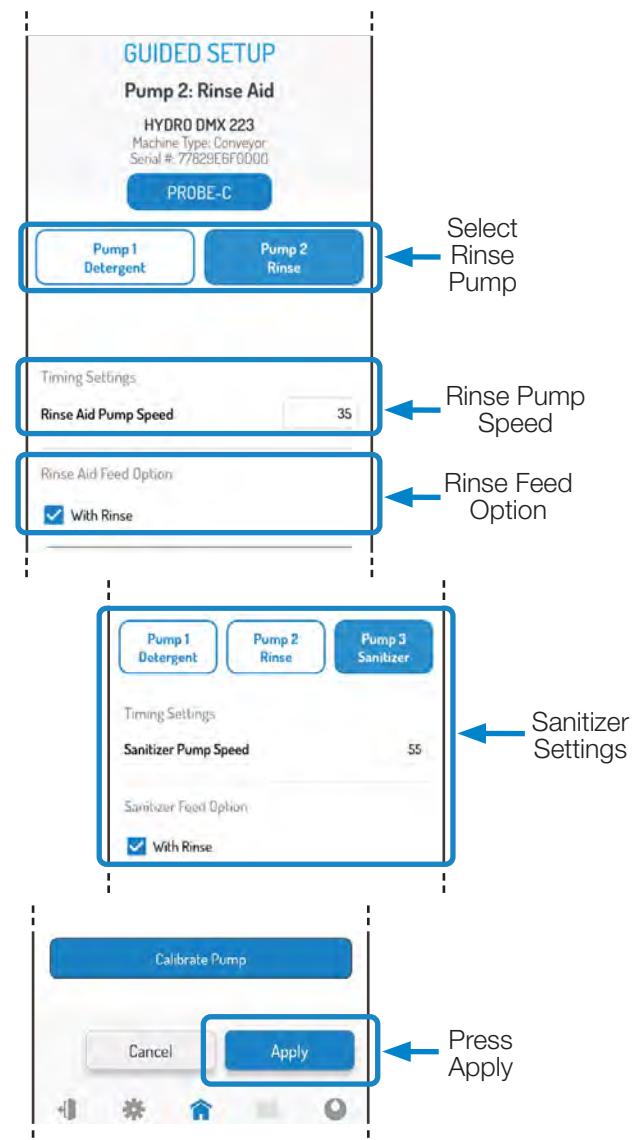
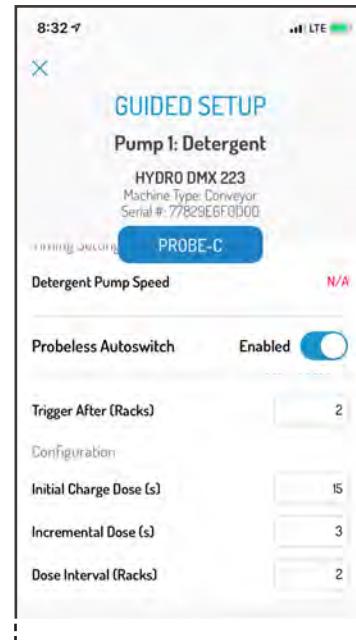
Sanitizer (3-Product Models Only)

- 1) To set up the sanitizer dispensing parameters for a unit operating in **Probe Mode** on a **Conveyor Machine**, scroll to the top and select the **Sanitizer Pump**.
- 2) Next, enter the following:
Sanitizer Pump Speed (5-55 RPM): This is the speed that the pump will run at whenever the rinse signal is active.

Calibrate Pump / Solenoid

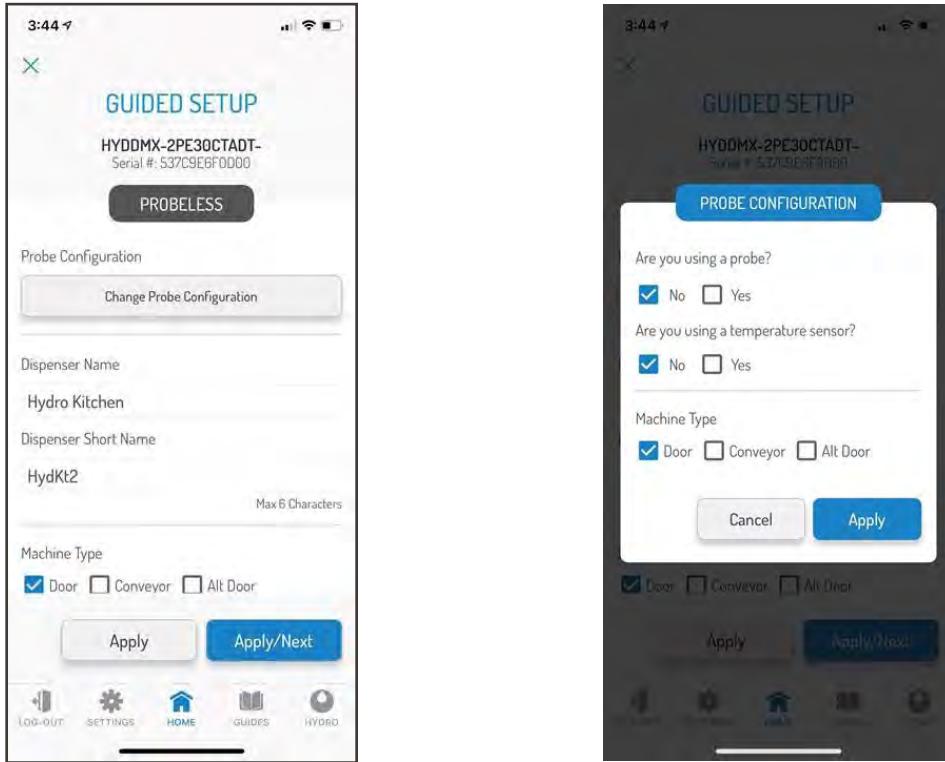
Pump or solenoid calibration for Probe, Conveyor Mode is done identically to the process described starting on page 27.

When all settings for Detergent and Rinse have been set, press **Apply** to complete the Guided Setup.



5.03 GUIDED SETUP - Probeless Mode

From the first Guided Setup screen, the user can change the dispenser into Probeless Mode by pressing the gray button labeled "Change Probe Configuration" and selecting "No". The user can also select whether a temperature sensor is being used in the wash tank and the machine type at this time.



If a user is operating in Probeless or Time Mode to dispense detergent, there are three possibilities for machine type that will be explained in greater detail:

- Probeless Mode, Door Machine
- Probeless Mode, Conveyor Machine
- Probeless Mode, Alternate (Alt) Door Machine

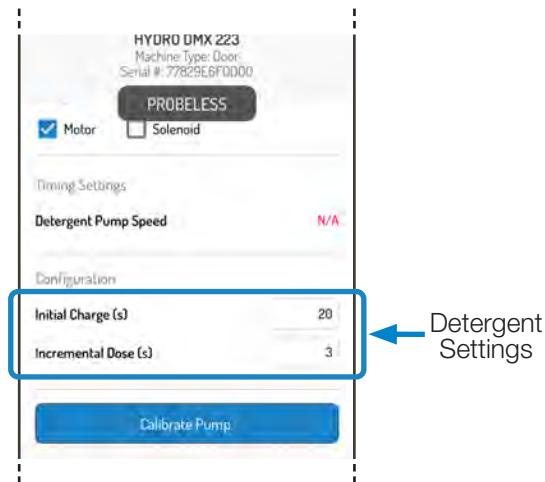
Probeless Mode on a Door Machine

Detergent

In Probeless mode for a door machine, the dispensing of detergent is configured for set amounts of time depending on whether an initial charge or incremental dose is triggered.

Initial Charge (0-200s): An initial charge is meant to be dispensed every time the tank is drained and refilled with fresh water. In Probeless, Door Mode, it is triggered when a Rinse signal is received that is not preceded by a Detergent signal within 90 seconds.

Incremental Dose (0-20s): An incremental dose in Probeless, Door Mode is dispensed each rack when the detergent signal is triggered on for the 3 second signal acceptance time. When this occurs, the incremental dose will dispense and the pump will stop. To trigger another incremental dose, the rinse signal needs to cycle on/off to count the current rack and then a new detergent signal would need to be received.



5.00 setup (continued)

Probeless Mode on a Door Machine

5.03 GUIDED SETUP - Probeless Mode (continued)

Detergent (continued)

Calibrate Pump / Solenoid

Pump or solenoid calibration for Probeless, Door Mode is done identically to the process described starting on page 27.

Rinse

- 1) To set up the rinse dispensing parameters for a unit operating in **Probeless Mode** on a **Door Machine**, scroll to the top and select the **Rinse Pump**.
- 2) Next, enter the following:
 - **Rinse Aid Pump Speed (5-55 RPM):** This is the speed that the pump will run at whenever the rinse signal is active.
 - **Rinse Aid Time Delay (0-30s):** This is the amount of time that the rinse signal needs to be active before the rinse pump will begin dispensing.

NOTE: Door machine setups utilize the Rinse Saver feature that prevents the rinse pump from running more than 20 seconds per rack.

- 3) Set Rinse Aid Feed Option:

- **Rinse on Rinse:** The rinse pump will run whenever the rinse signal is active as per the above configuration parameters.
- **Rinse on Detergent:** The rinse pump will run whenever the detergent signal is active as per the above configuration parameters for a set duration that is entered by the user (seconds). This option is commonly used on the Door machines seen in Europe.

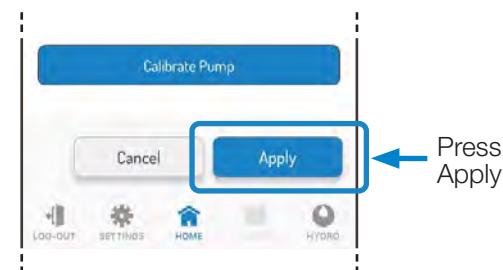
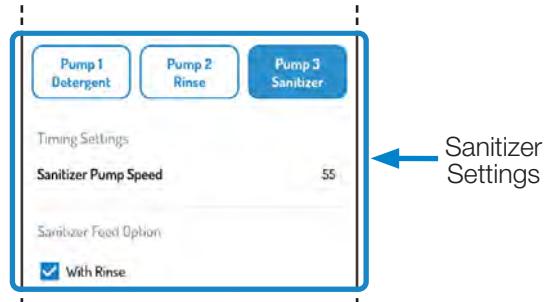
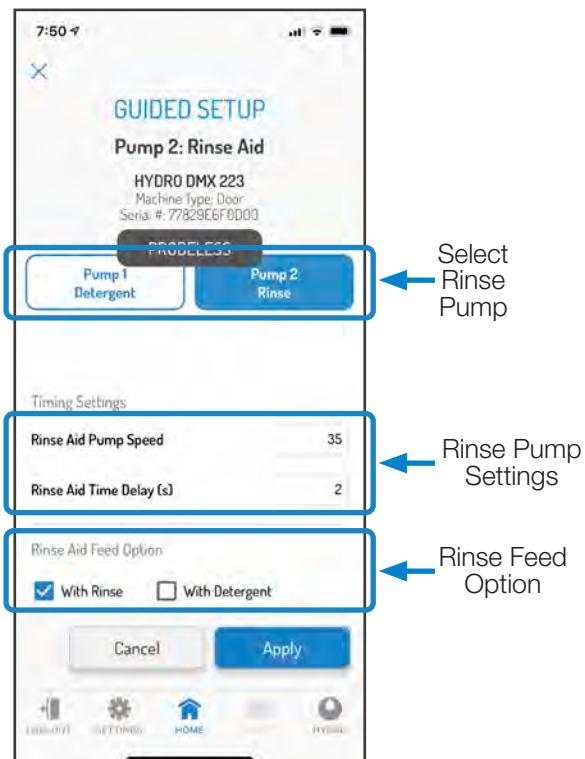
Sanitizer (3-Product Models Only)

- 1) To set up the sanitizer dispensing parameters for a unit operating in **Probeless Mode** on a **Door Machine**, scroll to the top and select the **Sanitizer Pump**.
- 2) Next, enter the following:
 - **Sanitizer Pump Speed (5-55 RPM):** This is the speed that the pump will run at whenever the rinse signal is active.

Calibrate Pump / Solenoid

Pump or solenoid calibration for Probeless, Door Mode is done identically to the process described starting on page 27.

When all settings for Detergent and Rinse have been set, press **Apply** to complete the Guided Setup.



5.03 GUIDED SETUP - Probeless Mode (continued)

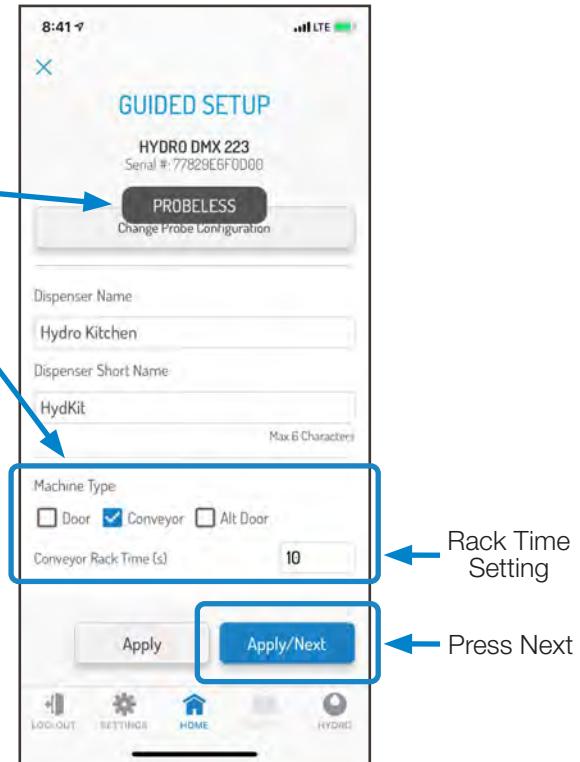
Probeless Mode on a Conveyor Machine

To configure a DMx unit that utilizes Probeless/Time mode on a Conveyor Machine, start on the Guided Setup Screen.

- 1) Confirm that the gray button is set to Probeless and select Conveyor as the Machine Type.
- 2) When this is done, enter the Conveyor Rack Time (in seconds). This setting helps the dispenser count racks in Conveyor mode.

- Whereas Door Mode counts a rack every time the detergent and rinse signals are cycled, in Conveyor mode, a rack is counted when the rinse signal is on continuously for a set amount of time.
- The field can be set from 0-90 seconds.
- If you are unsure about what to enter as the Conveyor Rack Time, you can measure the amount of time it takes for a rack of dishes to pass through the rinse portion of the conveyor.

When complete, press Apply/Next to continue setting up the dosing parameters for Detergent and Rinse.



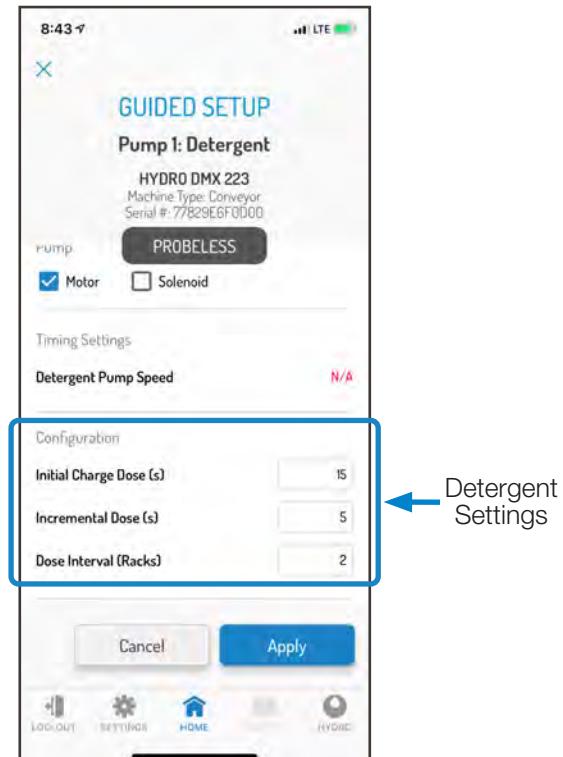
Detergent

Detergent settings for Probeless Mode on a Conveyor Machine require the following fields to be set:

Initial Charge (0-200s): An initial charge is meant to be dispensed every time the tank is drained and refilled with fresh water. In Probeless, Conveyor Mode, it is triggered when the detergent signal is received and stays on for 10 seconds. The detergent signal in this case should be wired to a signal that is on once per drain/fill cycle such as an "on light," the on/off switch on the dish machine, or if present, or an electrical tank heat circuit between the tank heater switch and the thermostat. If the dish machine does not have the appropriate signals, please contact Hydro Technical Support.

Incremental Dose (0-20s): An incremental dose is dispensed in Probeless, Conveyor Mode after racks complete and are counted (per the Conveyor Rack Time). The incremental dose will dispense for the time setting, and the pump will stop. To trigger another incremental dose, the proper number of racks must be completed.

Dose Interval (Every 1-3 Racks): In some cases on conveyor machines, the user may not want to inject detergent on every rack. If that is the case, the Dose Interval can be increased to dispense every 2 or 3 racks instead.



Calibrate Pump / Solenoid

Pump or solenoid calibration for Probeless Conveyor Mode is done identically to the process described starting on page 27.

5.03 GUIDED SETUP - Probeless Mode (continued)

Probeless Mode on a Conveyor Machine (continued)

Rinse

1) To set up the rinse dispensing parameters for a unit operating in **Probeless Mode** on a **Conveyor Machine**, scroll to the top and select the **Rinse Pump**.

2) Next, enter the following:

- **Rinse Aid Pump Speed (5-55 RPM):** This is the speed that the pump will run at whenever the rinse signal is active.
- **Rinse Aid Feed Option:**
 - Rinse on Rinse- The rinse pump will run whenever the rinse signal is active as per the above configuration parameters.

NOTE: There is no Rinse Pump Delay in Conveyor Mode.

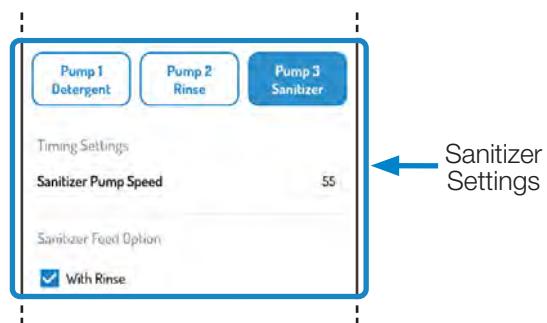
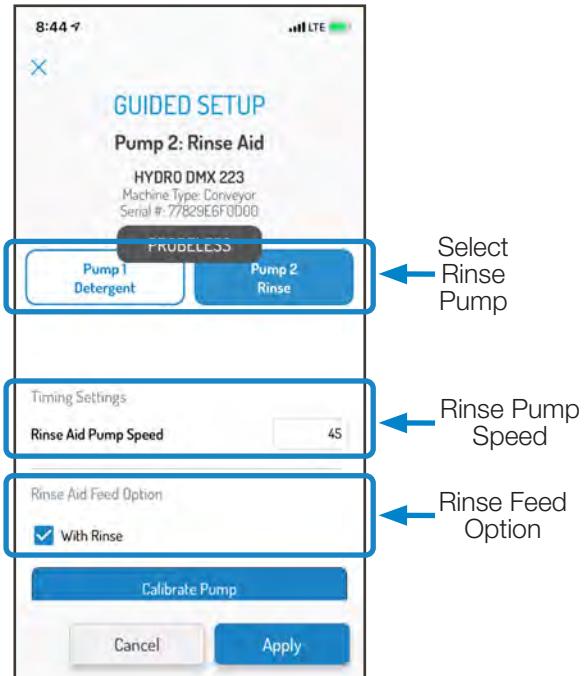
NOTE: There is no Rinse on Detergent setting in Conveyor Mode.

Sanitizer (3-Product Models Only)

1) To set up the sanitizer dispensing parameters for a unit operating in **Probeless Mode** on a **Conveyor Machine**, scroll to the top and select the **Sanitizer Pump**.

2) Next, enter the following:

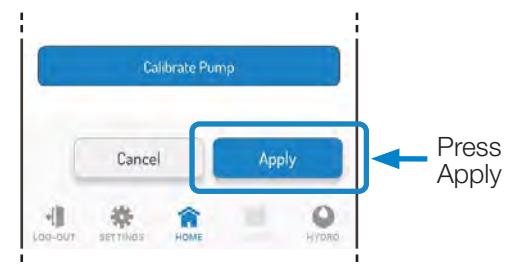
Sanitizer Pump Speed (5-55 RPM): This is the speed that the pump will run at whenever the rinse signal is active.



Calibrate Pump / Solenoid

Pump or solenoid calibration for Probeless Conveyor Mode is done identically to the process described starting on page 27.

When all settings for Detergent and Rinse have been set, press **Apply** to complete the Guided Setup.



5.00 setup (continued)

Probeless Mode on a Alt Door Machine

5.03 GUIDED SETUP - Probeless Mode (continued)

Probeless Mode on an Alternate (Alt) Door Machine

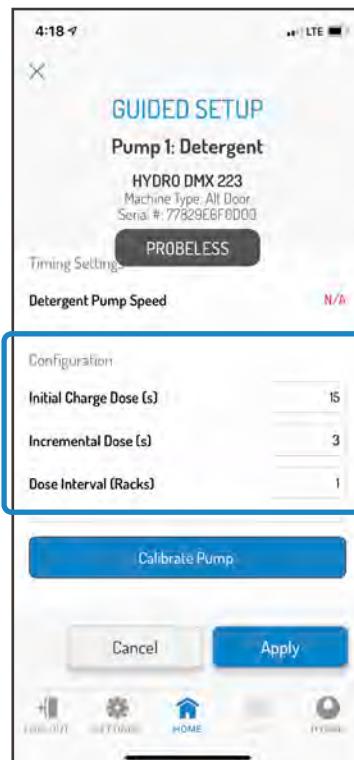
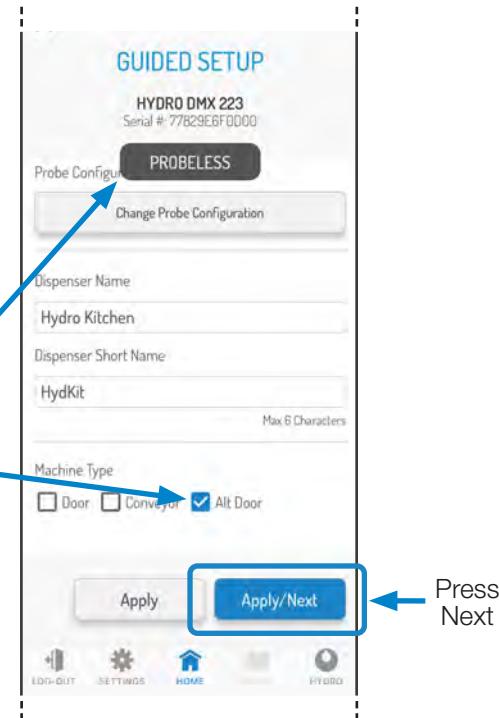
An Alternate Door Machine is a Door Machine that has two independent solenoids for the fill and for the rinse process.

This means that there is no rinse signal active when the system is filling, therefore the logic for dosing detergent initial charges is different for an Alternate Door.

To configure a DMx unit that utilizes Probeless/Time mode on an Alternate (Alt) Door Machine, start on the Guided Setup Screen.

Confirm that the gray button is set to Probeless and select Alt Door as the Machine Type.

When complete, press Next to continue setting up the dosing parameters for Detergent and Rinse.



Detergent

Detergent settings for Probeless Mode on an Alternate (Alt) Door Machine require the following fields to be set:

Initial Charge (0-200s): An initial charge is meant to be dispensed every time the tank is drained and refilled with fresh water. In Probeless, Alternate (Alt) Door Mode, it is triggered when the detergent signal is received and stays on for 10 seconds. The detergent signal in this case should be wired to a signal that is on once per drain/fill cycle such as an "on light," the on/off switch on the dish machine, or if present, or an electrical tank heat circuit between the tank heater switch and the thermostat. If the dish machine does not have the appropriate signals, please contact Hydro Technical Support.

Incremental Dose (0-20s): An incremental dose is dispensed in Probeless, Alt Door Mode after racks complete and are counted (per the Rinse signal cycling on/off). The incremental dose will dispense for the time setting, and the pump will stop. To trigger another incremental dose, the proper number of racks must be completed.

Dose Interval (Every 1-3 Racks): In some cases on Alternate Door machine, the user may not want to inject detergent on every rack. If that is the case, the Dose Interval can be increased to dispense every 2 or 3 racks instead.

Calibrate Pump / Solenoid

Pump or solenoid calibration for Probeless Alternate (Alt) Door Mode is done identically to the process described starting on page 27.

5.00 setup (continued)

Probeless Mode on a Alt Door Machine

5.03 GUIDED SETUP - Probeless Mode (continued)

Probeless Mode on an Alternate (Alt) Door Machine (continued)

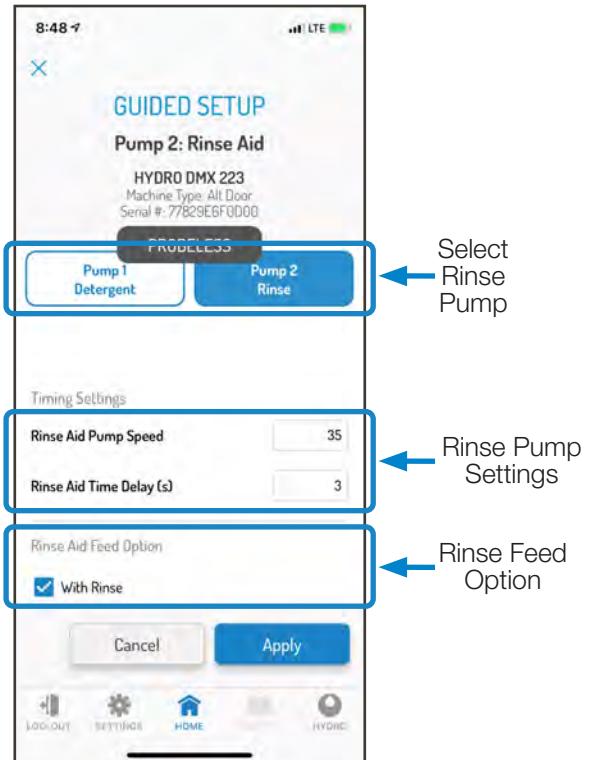
Rinse

1) To set up the rinse dispensing parameters for a unit operating in **Probeless Mode** on an **Alternate (Alt) Door Machine**, scroll to the top and select the **Rinse Pump**.

2) Next, enter the following:

- **Rinse Aid Pump Speed (5-55 RPM):** This is the speed that the pump will run at whenever the rinse signal is active.
- **Rinse Aid Time Delay (0-30s):** This is the amount of time that the rinse signal needs to be active before the rinse pump will begin dispensing.
- **Rinse Aid Feed Option:**
 - Rinse on Rinse- The rinse pump will run whenever the rinse signal is active as per the above configuration parameters.

NOTE: Alternate Door machine setups utilize the Rinse Saver feature that prevents the rinse pump from running more than 20 seconds per rack.

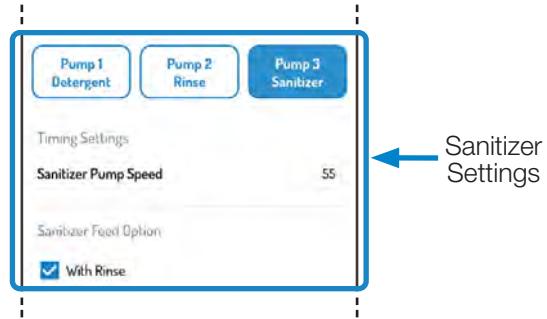


Sanitizer (3-Product Models Only)

1) To set up the sanitizer dispensing parameters for a unit operating in **Probeless Mode** on a **Alternate Door Machine**, scroll to the top and select the **Sanitizer Pump**.

2) Next, enter the following:

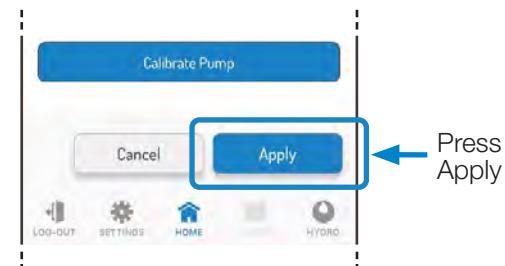
Sanitizer Pump Speed (5-55 RPM): This is the speed that the pump will run at whenever the rinse signal is active.



Calibrate Pump / Solenoid

Pump or solenoid calibration for Probeless, Door Mode is done identically to the process described starting on page 27.

When all settings for Detergent and Rinse have been set, press **Apply** to complete the Guided Setup.



5.00 setup (continued)

5.04 SETUP FROM FILE

Setup From File allows the user to quickly configure a DMx dispenser without manually configuring using the Guided Setup. This saves time and installation cost, taking the process from minutes to seconds. Setup files can be written using the Hydro Connect Mobile Application and saved in the Hydro Connect Cloud to offer a standard library that also prevents user errors related to setup.

To access this menu from the first SETUP DISPENSER screen, press the Setup From File button.

NOTE: Calibration values for each pump, App Settings, and the site assignment from Asset Management are not transferred as part of the Setup From File process and must be configured separately.

Configuring the Dispenser Using an Existing Setup File

After clicking on the Setup From File button, a list of the applicable setup files will be pulled from the Hydro Connect Cloud using the user's credentials and the dispenser serial number (e.g. for a 2-product system, only 2-product configurations will be returned).

If there are many files listed, clicking the Activate Filters will allow filtering by Probe Type (Probe-I, Probe-C, or Probeless) and/or Machine Type (Door, Conveyor, or Alternate Door) so that the list can be shortened and the correct file can be chosen.

Once the desired setup file is chosen, the file will highlight blue and the user can advance by selecting the blue **Next** button.

Final Edits

Before applying the selected configuration file, the user has the opportunity to make any **final edits** to the applied configuration by selecting one or more of the boxes noted below.

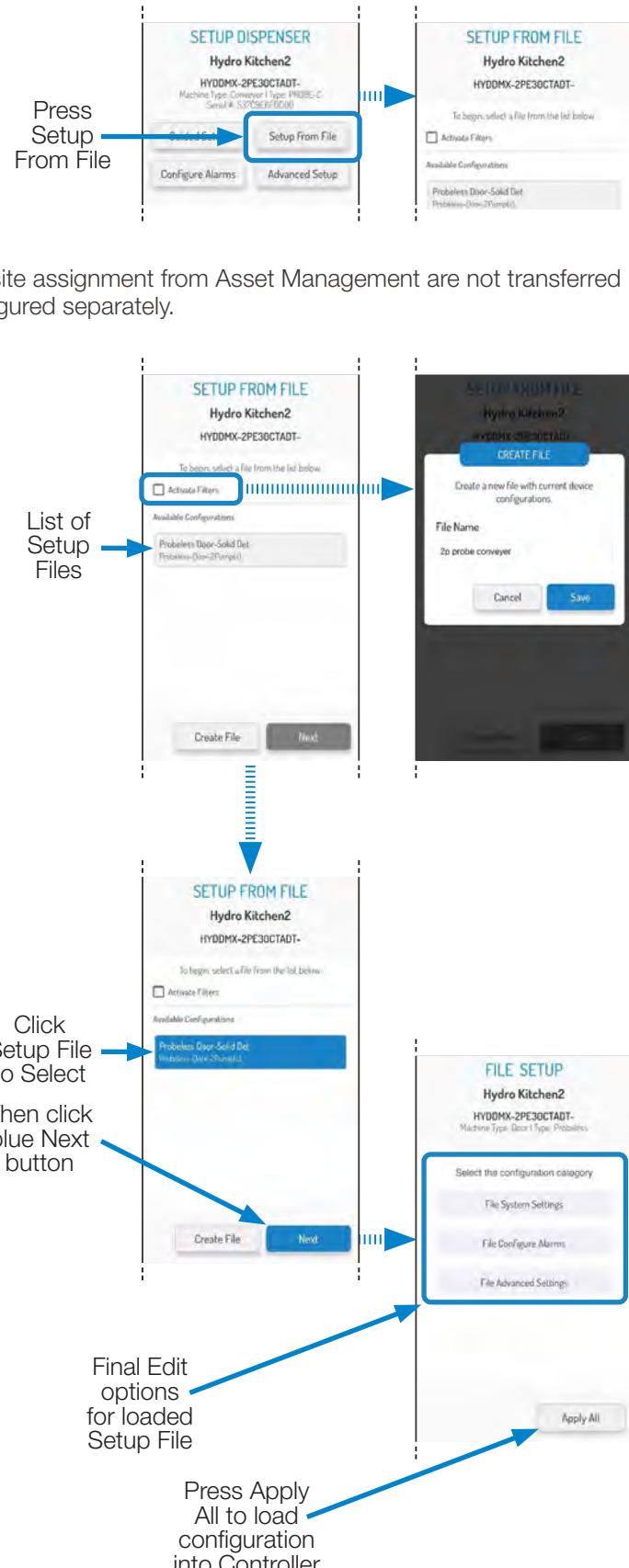
NOTE: Making a change at this step, will not overwrite the saved configuration file stored in the cloud and will apply only to the device being configured.

File System Settings: Allows the user to modify the system settings, such as the initial charge time or rinse pump speed.

File Configure Alarms: Allows the user to modify which alarms are enabled and the corresponding settings.

File Advanced Settings: Allows the user to modify the Advanced Settings like Priming Permission, Cost Information, or the 24VDC output.

When all settings have been confirmed, press **Apply All** to apply the loaded Setup configuration to the DMx dispenser.



5.00 setup (continued)

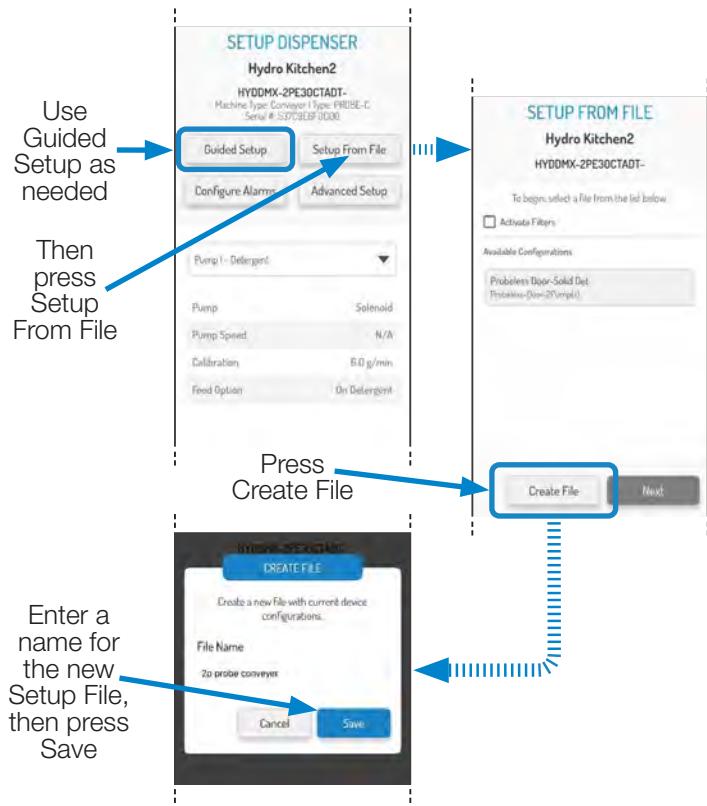
5.04 SETUP FROM FILE (continued)

Creating a New Setup File

To create and save a new setup file to the Hydro Connect Cloud for wider use, navigate to the Guided Setup section outlined in section 5.03 and configure the unit as desired.

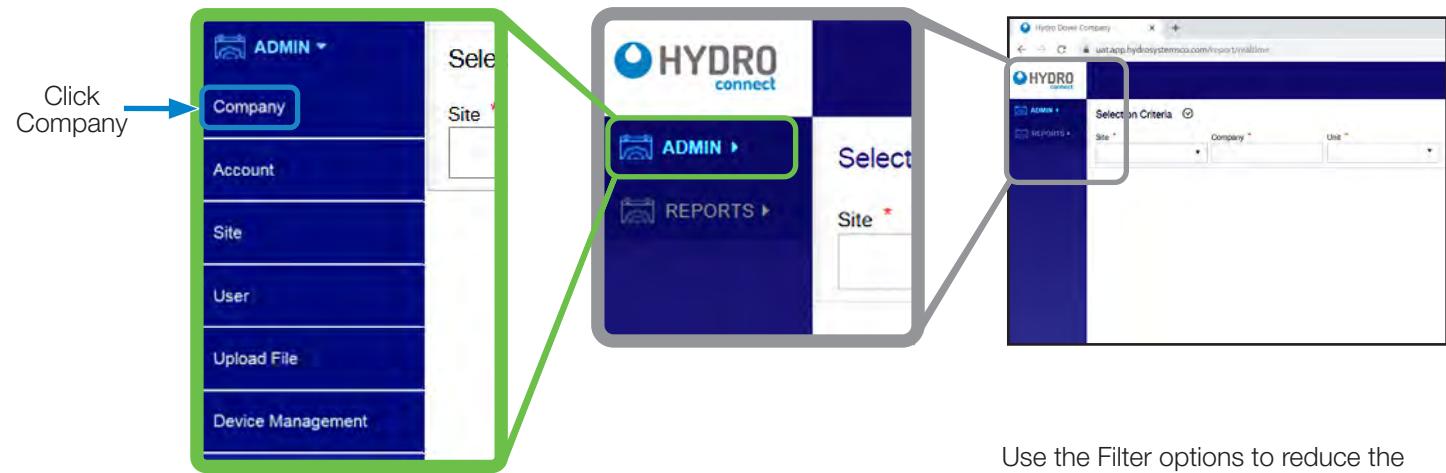
When the configuration of the controller is as desired for the new Setup File, go to Setup From File and select **Create File**, as shown to the right.

In the Create File window name the file with a unique identifier and press **Save**.



Viewing Company Setup File Library

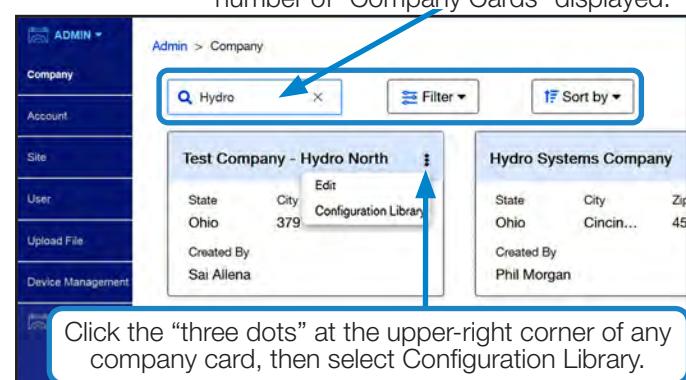
The library of Setup Files for a given company can be viewed and managed in the Hydro Connect Cloud by logging into Hydro Connect, navigating to the Admin Section and selecting Company.



When the Company sub-section is selected, a grid of "company cards" will be displayed automatically, for all the companies that the user can view or edit, as shown.

If multiple company cards are shown, a search bar and filter (country, city, state, zip code) can be used to narrow down those listed and speed up the selection process.

To access the library of configuration files, click the "three dots" in the upper-right corner of any company card and then select **Configuration Library** to view all the setup files that exist in the library for that company.

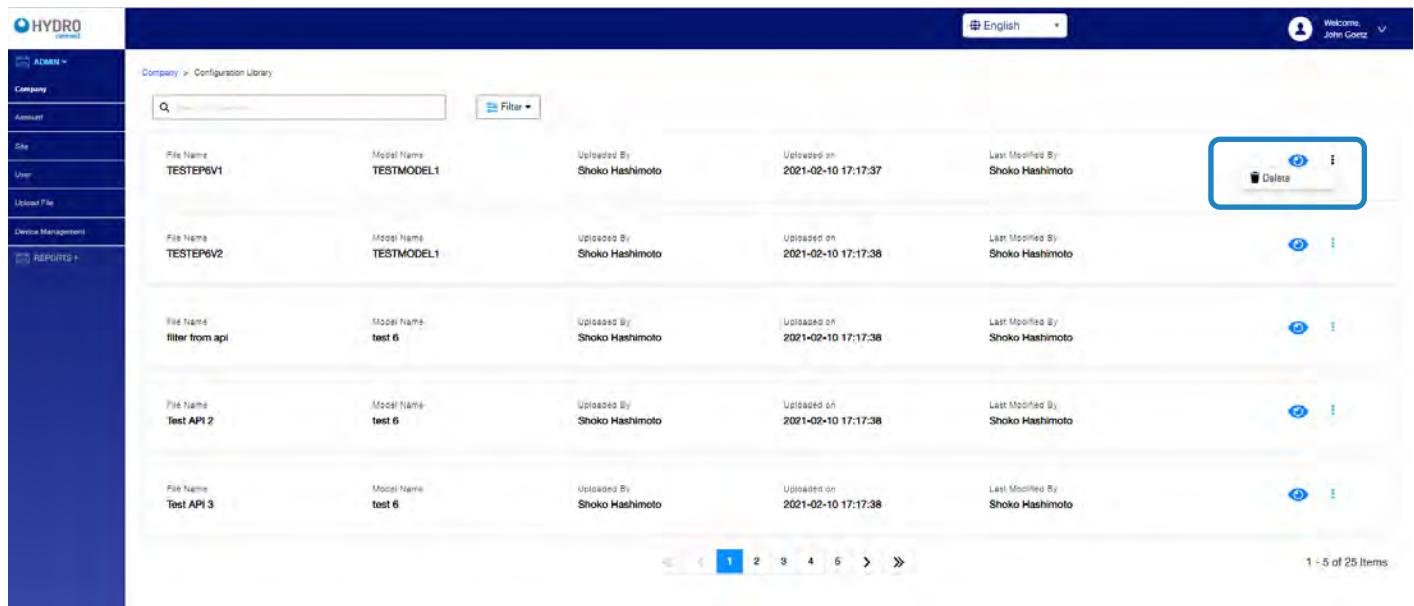


5.00 setup (continued)

5.04 SETUP FROM FILE (continued)

Viewing Company Setup File Library (continued)

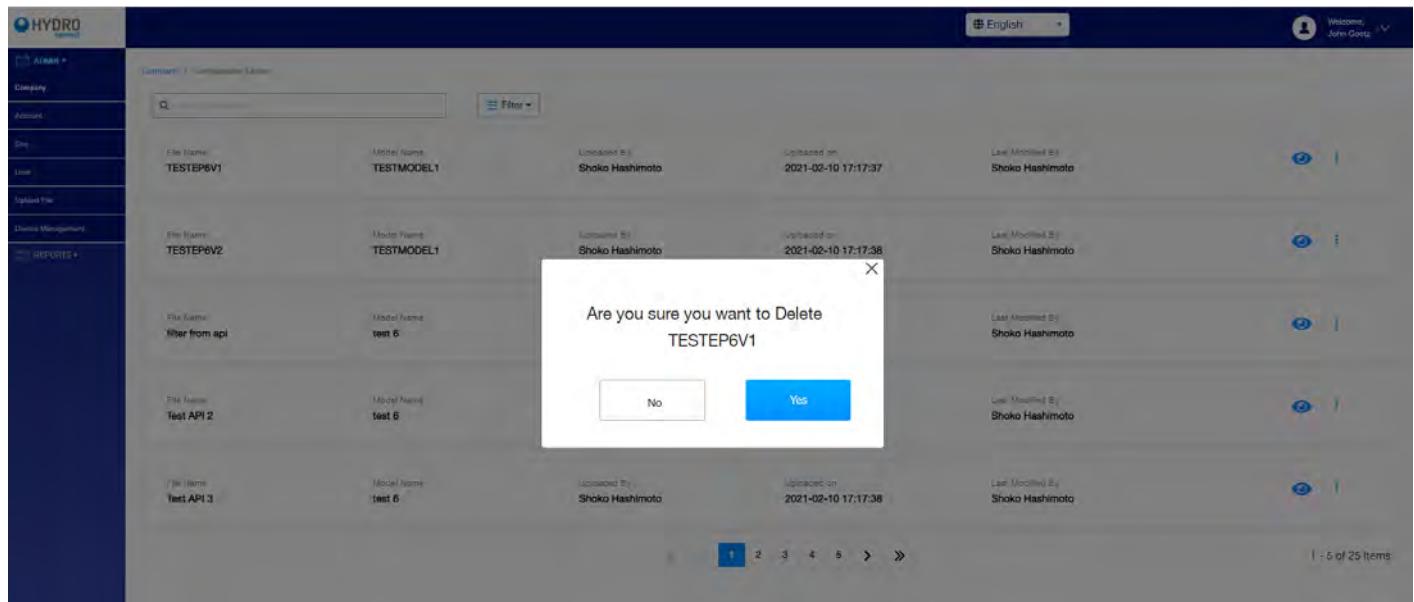
From the configuration library, as shown below, depending on the user account type, the configuration file can be viewed by clicking on the "Eye" icon at the far right of the listing.



The screenshot shows a list of configuration files in the Configuration Library. The columns include File Name, Model Name, Uploaded By, Uploaded on, and Last Modified By. The first file, TESTEP6V1, has a 'Delete' icon highlighted with a blue box. The page also includes a search bar, a filter button, and a navigation bar at the bottom.

File Name	Model Name	Uploaded By	Uploaded on	Last Modified By
TESTEP6V1	TESTMODEL1	Shoko Hashimoto	2021-02-10 17:17:37	Shoko Hashimoto
TESTEP6V2	TESTMODEL1	Shoko Hashimoto	2021-02-10 17:17:38	Shoko Hashimoto
filter from api	test 6	Shoko Hashimoto	2021-02-10 17:17:38	Shoko Hashimoto
Test API 2	test 6	Shoko Hashimoto	2021-02-10 17:17:38	Shoko Hashimoto
Test API 3	test 6	Shoko Hashimoto	2021-02-10 17:17:38	Shoko Hashimoto

A configuration may also be deleted from the library by clicking the "three dots" at the far right and selecting **Delete** as shown above. A confirmation dialog will be displayed before the configuration is deleted.



The screenshot shows the same Configuration Library page as above, but with a confirmation dialog box overlaid. The dialog asks "Are you sure you want to Delete TESTEP6V1" with "No" and "Yes" buttons. The 'Yes' button is highlighted with a blue box. The rest of the page, including the file list and navigation, is dimmed.

File Name	Model Name	Uploaded By	Uploaded on	Last Modified By
TESTEP6V1	TESTMODEL1	Shoko Hashimoto	2021-02-10 17:17:37	Shoko Hashimoto
TESTEP6V2	TESTMODEL1	Shoko Hashimoto	2021-02-10 17:17:38	Shoko Hashimoto
filter from api	test 6	Shoko Hashimoto	2021-02-10 17:17:38	Shoko Hashimoto
Test API 2	test 6	Shoko Hashimoto	2021-02-10 17:17:38	Shoko Hashimoto
Test API 3	test 6	Shoko Hashimoto	2021-02-10 17:17:38	Shoko Hashimoto

5.00 setup (continued)

5.05 CONFIGURE ALARMS

The Configure Alarms menu allows each alarm to be enabled or disabled, and for key settings for each alarm to be customized.

To access this menu from the first SETUP DISPENSER screen, press the Configure Alarms button.

The various states of operation are described below, along with images showing the corresponding settings in the application for the alarms described.

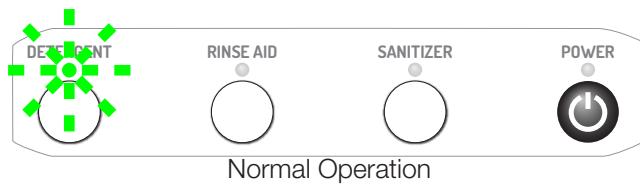
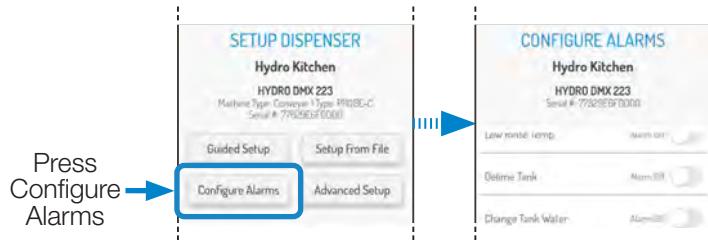
Condition: Normal Operation

LED color: **Green - Flashing: Product LED**

Buzzer State: **Off**

Description:

- This condition can be seen on any product LED that is operating normally as part of a rack or while priming with no maintenance or critical alarms.



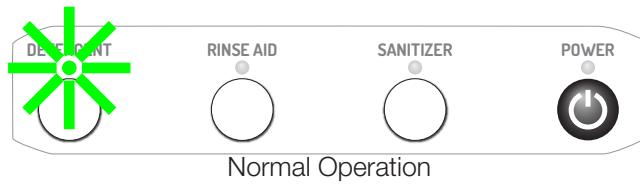
Condition: Normal Operation

LED color: **Green - Fixed: Product LED**

Buzzer State: **Off**

Description:

- There is a detergent or rinse signal present and the pump is not dosing



Condition: Out of Product Alarm

LED color: **Red - Fixed: Product LED**

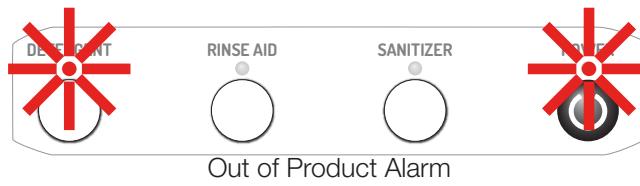
Red - Fixed: Power LED

Buzzer State: **On: 3 Short Beeps**

(Press any Product button to mute buzzer.)

Description:

- This alarm is caused when a depletion wand is being used on detergent, rinse, or sanitizer when the drum reads empty.
- When this critical alarm occurs, the system will enter standby mode with the Power LED turning red and at least one product LED also turning fixed red. This indicates that there is an out of product condition that the local staff can manage.
- The alarm can be cleared by replacing the empty container and changing the state of the depletion wand float switch. If the power button is pressed to take the system out of standby mode, the alarm state will be checked again and will be retriggered if the container is still out.



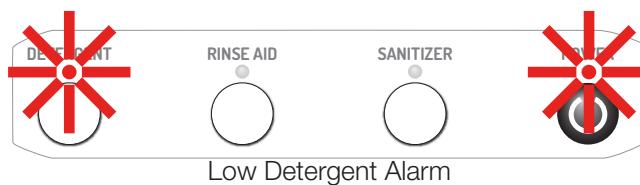
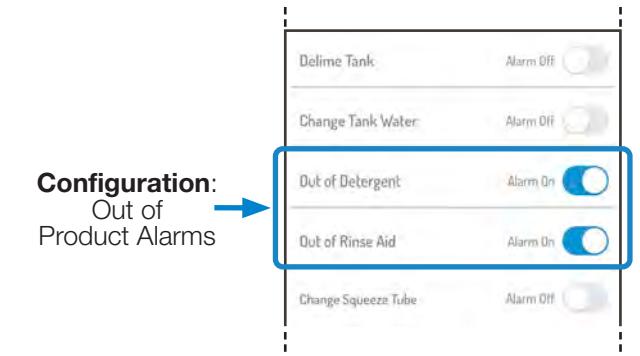
Condition: Low Detergent Alarm (Probe Mode Only)

LED color: **Red - Fixed: Detergent LED**

Red - Fixed: Power LED

Buzzer State: **On: 3 Short Beeps**

(Press any Product button to mute buzzer.)



(continued)

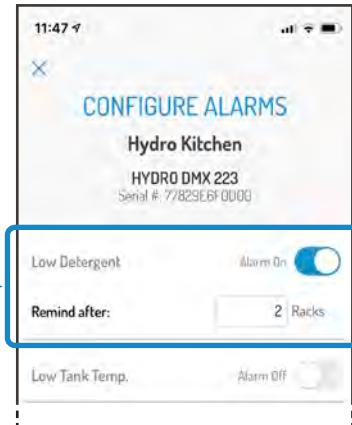
5.00 setup (continued)

5.05 CONFIGURE ALARMS (continued)

Condition: **Low Detergent Alarm** (Probe Mode Only)

Description:

- This alarm is caused if the conductivity probe reads below the setpoint and has not increased by 10% for the number of racks designated by the user.
- When this critical alarm occurs, the system will enter standby mode with the Power LED turning red and the Detergent LED also turning fixed red. This indicates that there is an out of product condition that the local staff can manage.
- The alarm can be cleared by pressing and holding the Detergent button for at least 2 seconds. Alternatively, if the power button is pressed to take the system out of standby mode, the alarm state will be cleared.



Configuration:
Low Detergent
Alarm

Condition: **Faulty Probe** (Probe Mode Only)

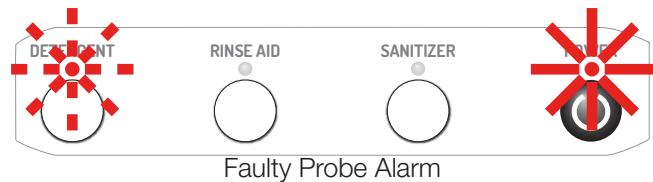
LED color: **Red - Flashing: Detergent LED** (1 / second)
Red - Fixed: Power LED

Buzzer State: **On: 3 Short Beeps**

(Press any Product button to mute buzzer.)

Description:

- This alarm is automatically enabled when the dispenser is in Probe Mode and cannot be disabled in the Configure Alarms menu.
- It indicates that there is a critical alarm on the detergent pump and that the conductivity probe has read abnormally low or high for a fixed number of 3 racks.
- The alarm can be cleared by pressing and holding the Detergent button for 2 seconds or by taking the system out of standby mode by pressing the Power button.
- If Auto-Switch is enabled, the system will perform as noted in the Configure Alarms section on Faulty Probe with Auto-Switch Enabled, immediately below.



Faulty Probe Alarm

Condition: **Faulty Probe with Auto-Switch Enabled**

LED color: **Orange - Flashing: Detergent LED** (1 / second)
Orange - Flashing: Power LED (1 / second)

Buzzer State: **Off**

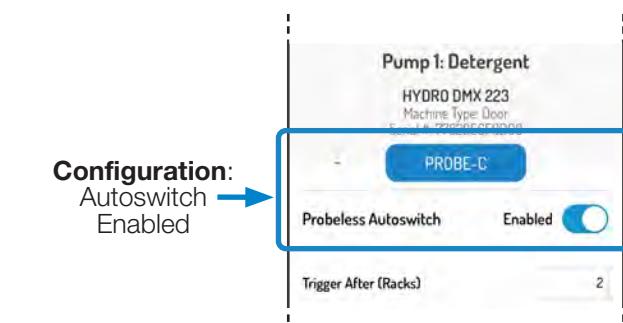
Description:

- This indicates that the conductivity probe controlling the detergent pump has read abnormally low or high for a number of racks that exceeds the value set for Probeless Autoswitch menu (1-5 racks). This means the probe is likely faulty, or damaged. With Autoswitch enabled in the Guided Setup, the unit will automatically revert to Probeless mode.
- To clear the alarm, the user can press and hold the Detergent button for 2 seconds.
- To return to Probe mode, the probe should be serviced, and the dispenser reconfigured for Probe mode in the Guided Setup section of the Hydro Connect Mobile Application.



Faulty Probe with Autoswitch Alarm

Configuration:
Autoswitch
Enabled



5.00 setup (continued)

5.05 CONFIGURE ALARMS (continued)

Condition: Pump Jam

LED color: Red - Flashing: Product LED (2x / second)

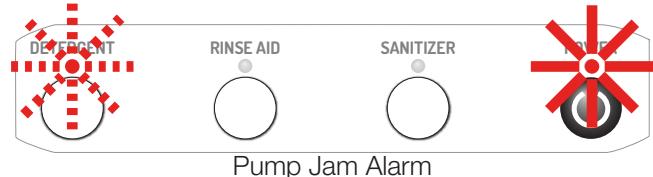
Red - Fixed: Power LED

Buzzer State: On: Continuously

(Press any Product button to mute buzzer.)

Description:

- This alarm is automatically enabled for any liquid/motor pump and cannot be disabled in the Configure Alarms menu.
- It indicates that there is a critical alarm on one of the product pumps whereby the pump is jammed and drawing too much current.
- The alarm can be cleared by pressing and holding the affected product button for 2 seconds or by taking the system out of standby mode by pressing the Power button.



Pump Jam Alarm

Condition: Low Rinse Temperature

LED color: Red - Flashing: Rinse LED (1 / second)

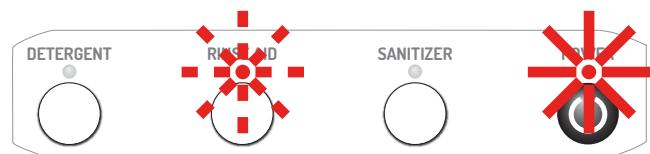
Red - Fixed: Power LED

Buzzer State: On: 3 Short Beeps

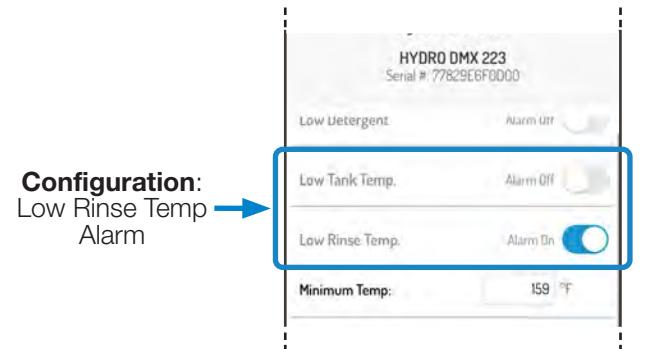
(Press any Product button to mute buzzer.)

Description:

- This indicates that the optional rinse temperature sensor has detected that the maximum temperature recorded while the rinse pump is running (measured once per second) is below the configured Minimum Temperature set in degrees Fahrenheit (150-212°F) or Celsius (66-100°C)
- The alarm can be cleared by pressing and holding the Rinse button for 2 seconds or by taking the system out of standby mode by pressing the Power button.



Low Rinse Temperature Alarm



Configuration:
Low Rinse Temp.
Alarm

Condition: Low Tank Temperature

LED color: Orange - Fixed: Product LED

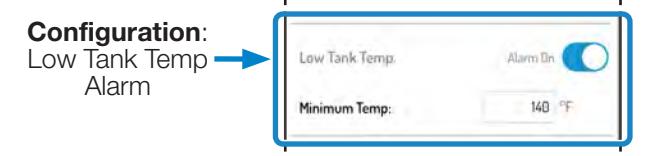
Buzzer State: Off

Description:

- This indicates that the optional temperature compensated probe is reading a temperature value in the tank that is below the setpoint that is set in degrees Fahrenheit (120-212°F) or Celsius (49-100°C) in the Configure Alarms menu.
- The alarm does not require immediate intervention and will be reset when the temperature reading rises above the setpoint again.



Low Tank Temperature Alarm



Configuration:
Low Tank Temp.
Alarm

5.00 setup (continued)

5.05 CONFIGURE ALARMS (continued)

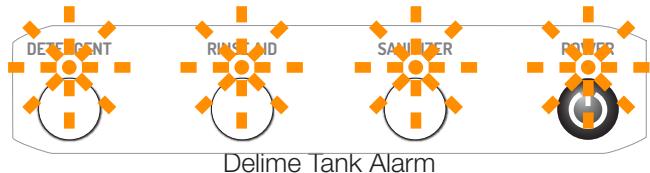
Condition: Delime Tank

LED color: Orange - Flashing: All Product LEDs (1 / second)

Buzzer State: Off

Description:

- This indicates that the established number of days set in the Configure Alarms menu (1-365 days) has elapsed and that a routine delime is needed to maintain the dish machine.
- The alarm does not require immediate intervention and can be reset by pressing any button for 2 seconds or through the Hydro Connect Mobile Application.



Configuration:

Delime Tank Alarm

Delime Tank	Alarm On <input checked="" type="checkbox"/>
Remind after:	30 Days

Condition: Change Squeeze Tube

LED color: Orange - Flashing: Product LED (2x / second)

Buzzer State: Off

Description:

- This indicates that the established number of days set in the Configure Alarms menu (1-365 days) has elapsed and that a routine squeeze tube change is needed to continue producing clean dishes.
- The alarm does not require immediate intervention and can be reset by pressing the any button for 2 seconds, through the Hydro Connect Mobile Application, or by successfully dosing an initial charge in Probeless mode.



Configuration:

Change Squeeze Tube Alarm

Change Squeeze Tube	Alarm On <input checked="" type="checkbox"/>
Configure alarm for:	<input type="checkbox"/> All Pumps <input checked="" type="checkbox"/> Each Pump
Pump	Remind After
Pump 1: Detergent	60 Days
Pump 2: Rinse Aid	60 Days

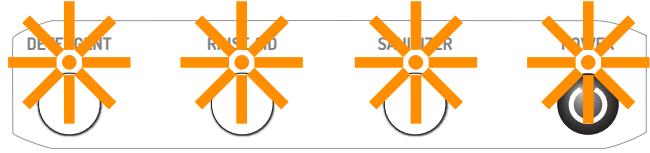
Condition: Change Tank Water

LED color: Orange - Fixed: All Product LEDs

Buzzer State: Off

Description:

- This indicates that the established number of hours set in the Configure Alarms menu (1-24 hours) has elapsed and that a routine water change is needed to continue producing clean dishes.
- The alarm does not require immediate intervention and can be reset by pressing the any button for 2 seconds, through the Hydro Connect Mobile Application, or by successfully dosing an initial charge in Probeless mode.



Configuration:

Change Tank Water Water Alarm

Delime Tank	Alarm Off <input type="checkbox"/>
Change Tank Water	Alarm On <input checked="" type="checkbox"/>
Remind after:	8 Hours
Out of Detergent	Alarm Off <input type="checkbox"/>

5.00 setup (continued)

5.06 ADVANCED SETUP

The Advanced Setup menu allows the operator to set up features that reside outside of the basic dispenser functions, such as User Prime Limits, Costs, and Asset Management.

To access this menu from the first SETUP DISPENSER screen, press the Advanced Setup button.

Permission to Prime

Some sites may opt to disable or restrict the kitchen staff's ability to prime the pumps without intervention through the Hydro Connect Mobile Application. In the Advanced Settings Menu, Permission to Prime can be toggled from Enable to Disable. When Enabled, it is possible to set limits that would only allow the user to prime for a set number of seconds (30-90 sec) over a configurable number of hours (1-24 hours).

NOTE: Setting both the Prime For and Every time settings = 0s will allow the user to prime indefinitely. If the pump is left running for 5 minutes, it will time out and stop automatically.

For example, per the provided image, the user would only be able to prime each pump for 30 seconds in any 8-hour period before the prime buttons would lock out.

After the limit is reached, further attempts to prime will result in the product LED flashing orange once, indicating that the user must wait until the configurable lock-out period of 8-hours has elapsed.

Cost Summary

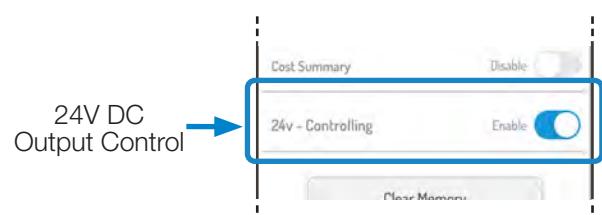
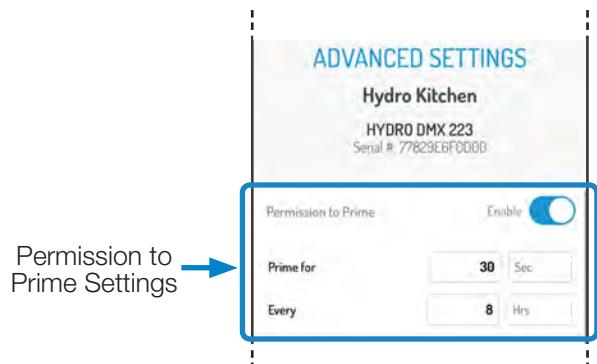
This feature allows the chemical company to track the cost of the chemical being consumed in the Hydro Connect Cloud.

The Cost Summary settings allow the chemical company to enter the cost (USD, Euro, GBP, JPY, CAD, AUD, COP, MXN) of their chemicals per Gallon, Ounce, or Liter (or Kg if using Solid chemical formulations).

If the user wants to change the currency or volume units, pressing the **Change Units** button will allow any of the above options to be selected.

24V Output Control

There is a 24V DC output available on the DMx control board that can be used to power an external alarm or other accessory. This output is normally Disabled but can be Enabled in the Advanced Settings Menu.



5.00 setup (continued)

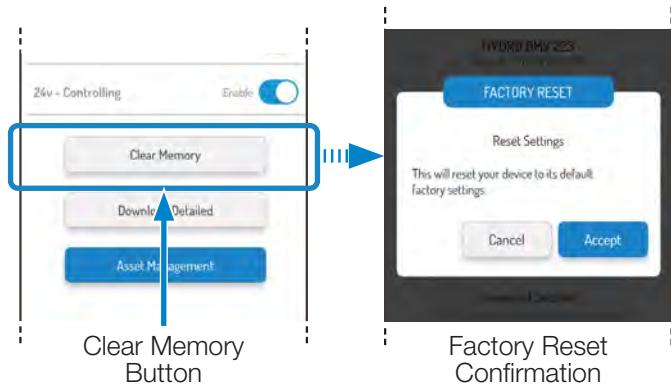
5.06 ADVANCED SETUP (continued)

Clear Memory

The DMx is designed to store approximately 6 months of activity data to reduce unnecessary site visits just to retrieve data.

If this memory capacity is exceeded on the DMx, the oldest records will be overwritten, to make room for the new data.

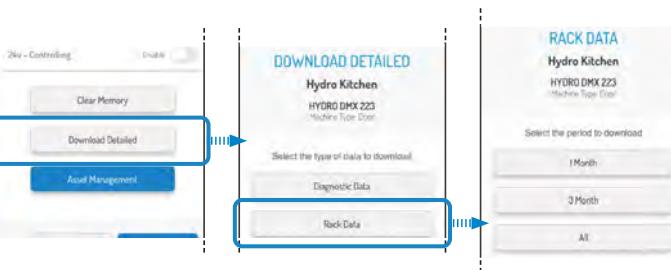
Alternatively, the user can clear the memory on the dispenser by pressing the Clear Memory button and then pressing Accept.



Download Detailed

Data from the DMx dispenser is automatically transmitted to Hydro Connect each time that the app connects/disconnects using the mobile device's cellular or Wi-Fi service.

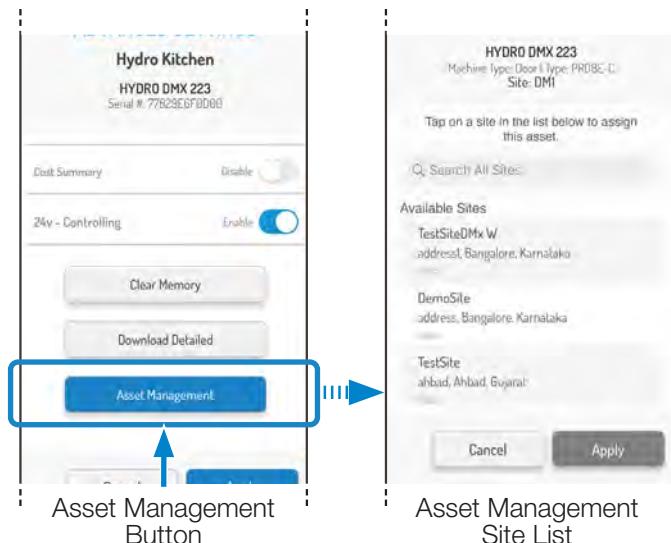
But, If the mobile device does not have a cellular or Wi-Fi connection, either the Diagnostic Data or the Rack Data (last 1 month, last 3 months, or all) can also be manually transmitted using the Download Detailed feature.



Asset Management

For purposes of reporting to Hydro Connect, it is critical that the DMx dispenser gets linked to a valid site that is set up within Hydro Connect. This will allow the data to stream to Hydro Connect but will also provide valuable information regarding where the dispenser is physically located and when it was installed.

To make this link, press the Asset Management button to produce a list of all the valid sites that are setup within the user's Chemical Company hierarchy in Hydro Connect. Search using the search bar for the site in which the DMx is being installed and press Apply.



6.00 Hydro Connect reporting

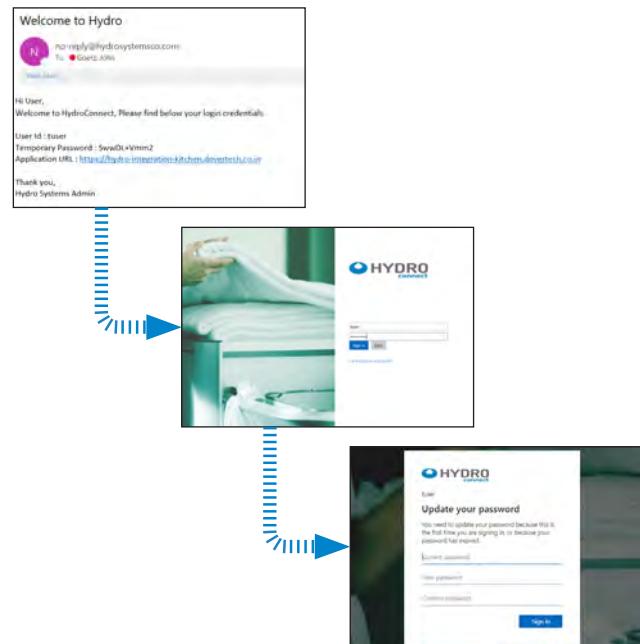
Data from the DMx dispenser is transmitted to the Hydro Connect Cloud for more detailed historical or optional real-time reporting. This can be accessed through www.HydroConnect.com.

6.01 Account Creation and Log-in

To log into the Hydro Connect Cloud, you must have an active username and password. If you do not, please reach out to your Company Admin or Hydro Technical Support to get set up.

Once this occurs, an automatic e-mail to activate the account and reset the password will be sent. Please check your e-mail and junk/spam folder for the e-mail from no-reply@hydrosystemsco.com.

Follow the link to navigate to www.HydroConnect.com, enter the username and temporary password, and then follow steps to reset the password.



6.02 Historical Reports

Once logged in, detailed historical reports can be accessed by following the below links on the left-hand side of the page:

- REPORTS
 - Historical

Once Historical has been selected, input the Site, Company, Application (Warewash), Type of Report (Daily, Date Range, or Monthly), the Unit, and the Shift. Click View.

The screenshot shows the 'Selection Criteria' page. It includes dropdown menus for Site (DM1), Company (HydroTestSite), Application (Warewash), View By (Monthly), Month (October), Year (2020), Unit (Hydro Kitchen), and Shift (Full Day). A large green box highlights the 'View' button at the bottom right of the criteria section. Below the criteria, a message says 'Please fill the selection criteria and click on View button to generate report'.

A tab for each Historical Report for Alarms, Production Summary, Chemical Usage, and Costs will then be populated based on the data that has streamed from the dispenser to the Hydro Connect Cloud. From this screen, the user may:

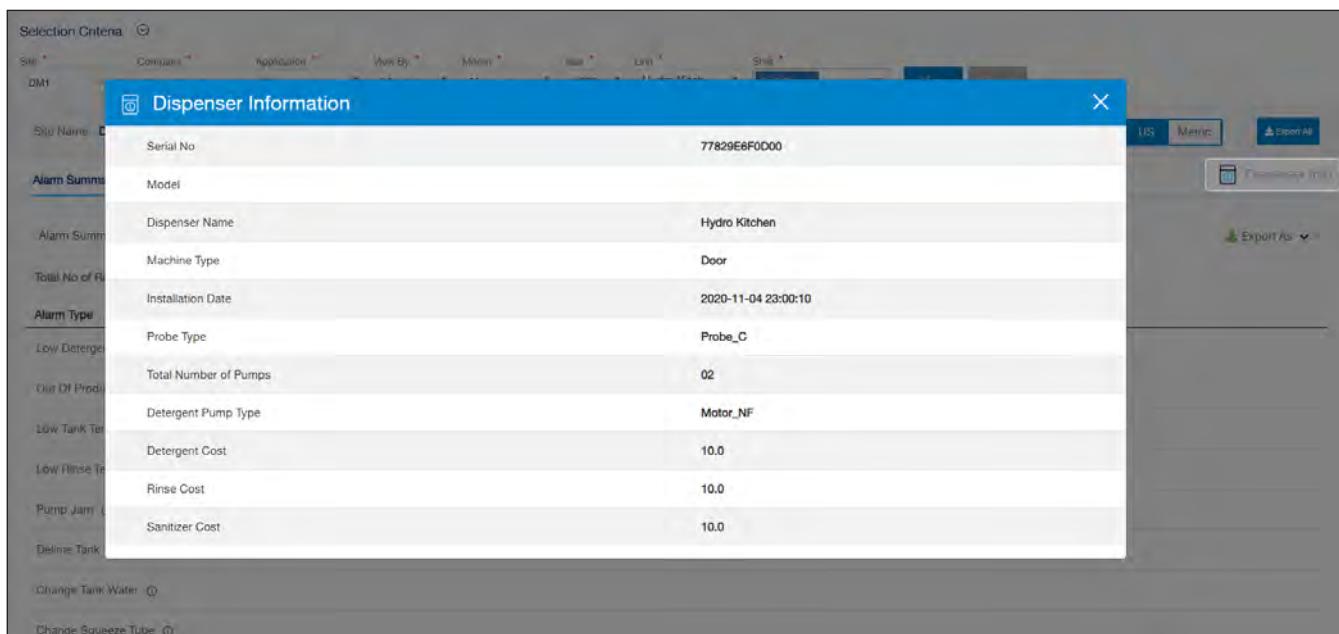
- Cycle between each report by clicking on the tabs.
- Export PDF copies of all the reports by clicking Export All
- Change the units of measurement from US to Metric

Additionally, the Dispenser Information settings can be referenced by clicking on Dispenser Info (also see next page).

The screenshot shows the 'Dispenser Information' settings page. It includes dropdown menus for Site (DM1), Company (HydroTestSite), Application (Warewash), View By (Monthly), Month (November), Year (2020), Unit (Hydro Kitchen), and Shift (Full Day). Below these, it shows Site Name (DM1), Company (HydroTestSite), Unit (Hydro Kitchen), Application (Warewash), and Measurement By (US). A green box highlights the 'Dispenser Info' button at the bottom right. At the very bottom, there are tabs for 'Alarm Summary', 'Production Summary', 'Chemical Usage', 'Cost Summary', 'Observations And Recommendations', and 'Dispenser Info'.

6.00 Hydro Connect reporting (continued)

6.02 Historical Reports (continued)



Serial No	77829E6F0000
Model	
Dispenser Name	Hydro Kitchen
Machine Type	Door
Installation Date	2020-11-04 23:00:10
Probe Type	Probe_C
Total Number of Pumps	02
Detergent Pump Type	Motor_NF
Detergent Cost	10.0
Rinse Cost	10.0
Sanitizer Cost	10.0

6.03 Historical Reports- Alarm Summary

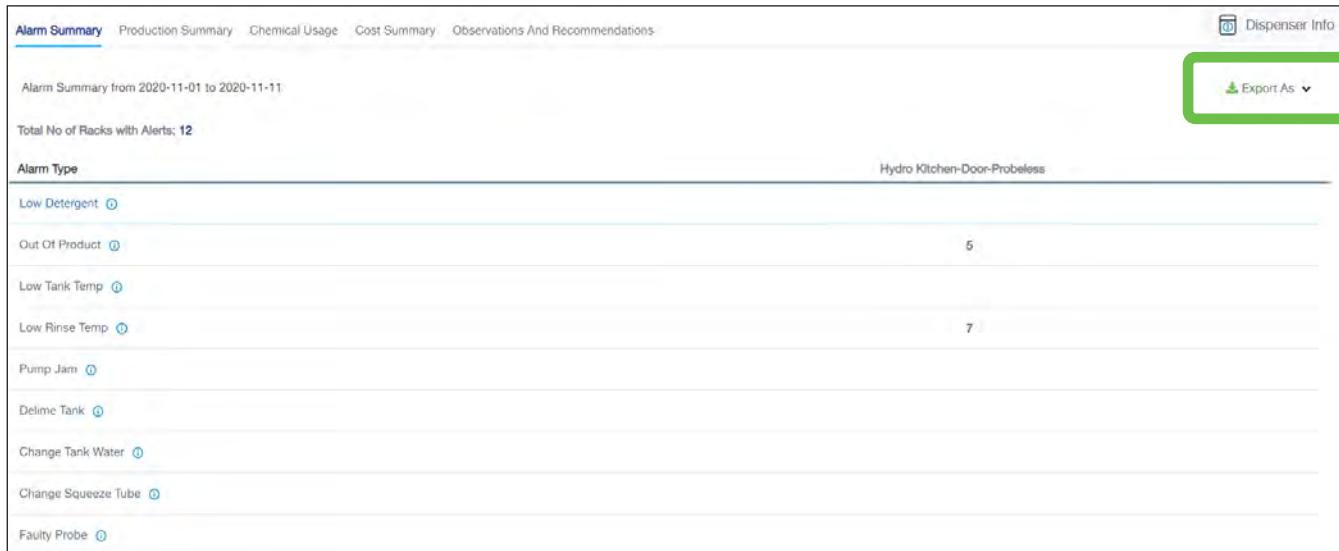
The Alarm Summary report tab shows the number of occurrences of each of the nine alarm types.

If the customer has the Real-Time hardware and service enabled, clicking the number of occurrences will allow the exact time, date, and key parameters for each alarm occurrence to be displayed.

This information allows remote users to do more detailed troubleshooting without making a site visit.

NOTE: To add the Real-Time capability to an installed unit, contact your Hydro Sales Representative.

By clicking **Export As**, a professional report in PDF format can be generated and downloaded (also see next page).



Alarm Type	Occurrences
Low Detergent	1
Out Of Product	5
Low Tank Temp	7
Low Rinse Temp	1
Pump Jam	1
Delime Tank	1
Change Tank Water	1
Change Squeeze Tube	1
Faulty Probe	1

6.00 Hydro Connect reporting (continued)

6.03 Historical Reports- Alarm Summary (continued)



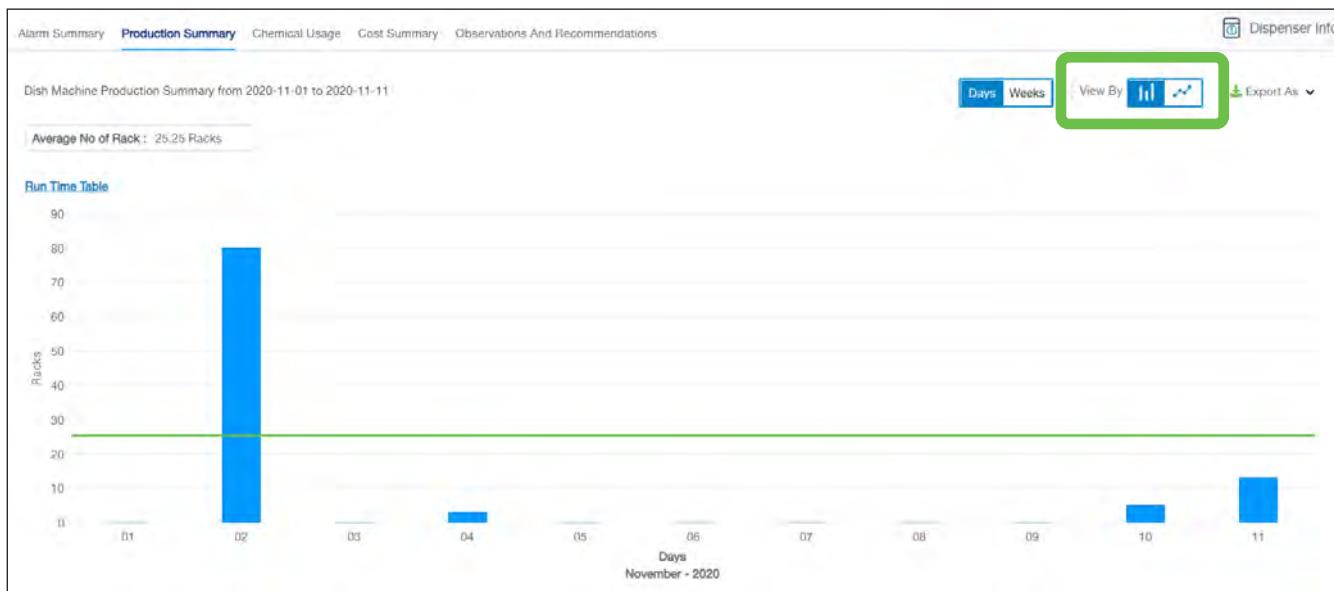
6.04 Historical Reports- Production Summary

The Production Summary report tab shows the number of racks that have been run over a set period.

The report can be toggled to show each day in the given time period or consolidate the figures into weekly totals.

Either way, a green line on the chart shows the average, which is numerically displayed in the top left corner of the chart.

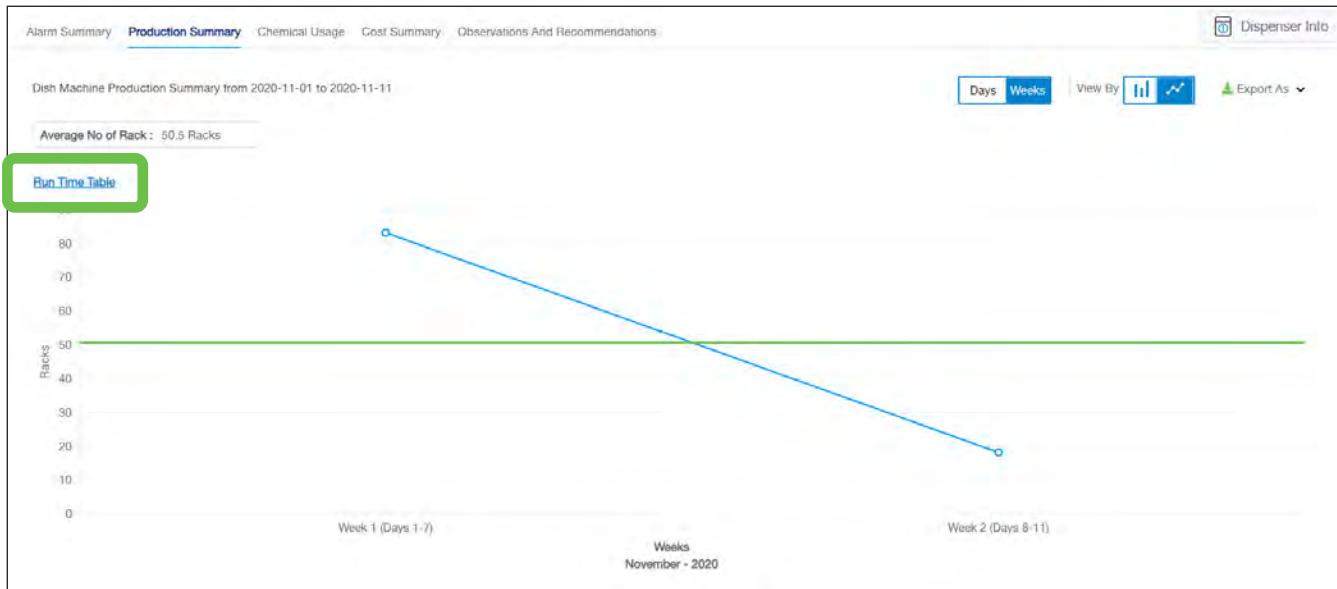
The chart style can be changed from a **bar chart** to a **line chart** by selecting the user preference on the **View By** button in the top right corner of the chart. (Also see line chart illustration on the next page.)



6.00 Hydro Connect reporting (continued)

6.04 Historical Reports- Production Summary (continued)

Clicking **Run Time Table** will show in a tabular format the number of racks run and the total number of seconds (broken into production and priming) that each pump has run for.



Dish Machine Production Summary from 2020-11-01 to 2020-11-11

← Back

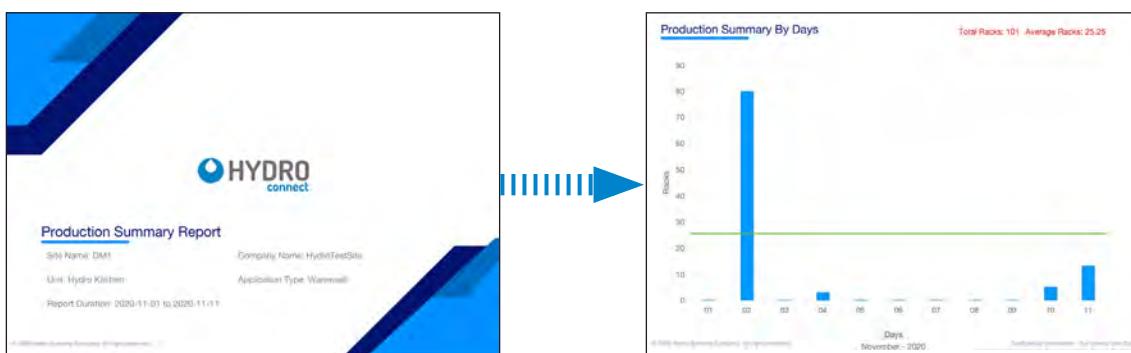
Shifts	Racks (Total - 101)	Description	Detergent (Total - 511s)	Rinse (Total - 540s)	Sanitizer (Total - 0s)
Full Day	101	Production	439s	464s	0s
		Priming	72s	76s	0s

Run Time

If the customer has the Real-Time hardware and service enabled, this report can show additional detail, with the same information displayed by shift.

NOTE: To add the Real-Time capability to an installed unit, contact Hydro Sales.

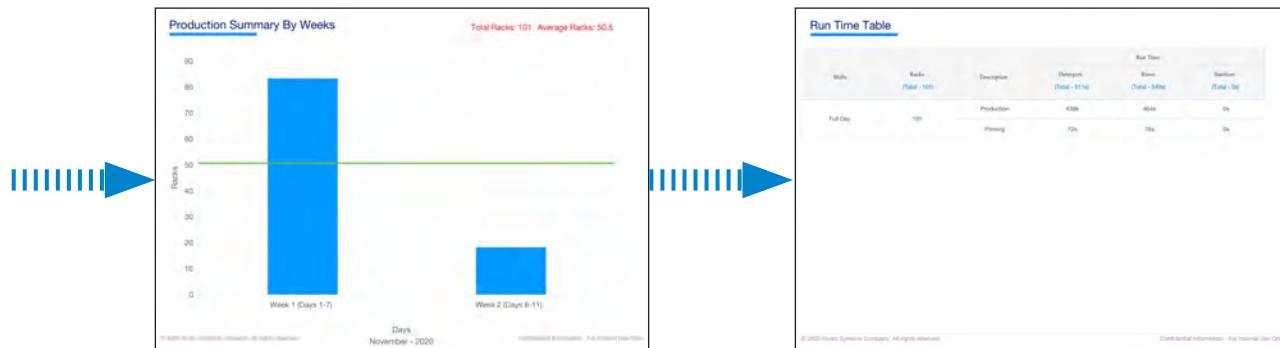
By clicking **Export As**, a professional report in PDF format can be generated and downloaded, showing the Daily Production Summary (bar or line style), the Monthly Production Summary (bar or line style), and the Run Time Table.



(continued)

6.00 Hydro Connect reporting (continued)

6.04 Historical Reports- Production Summary (continued)



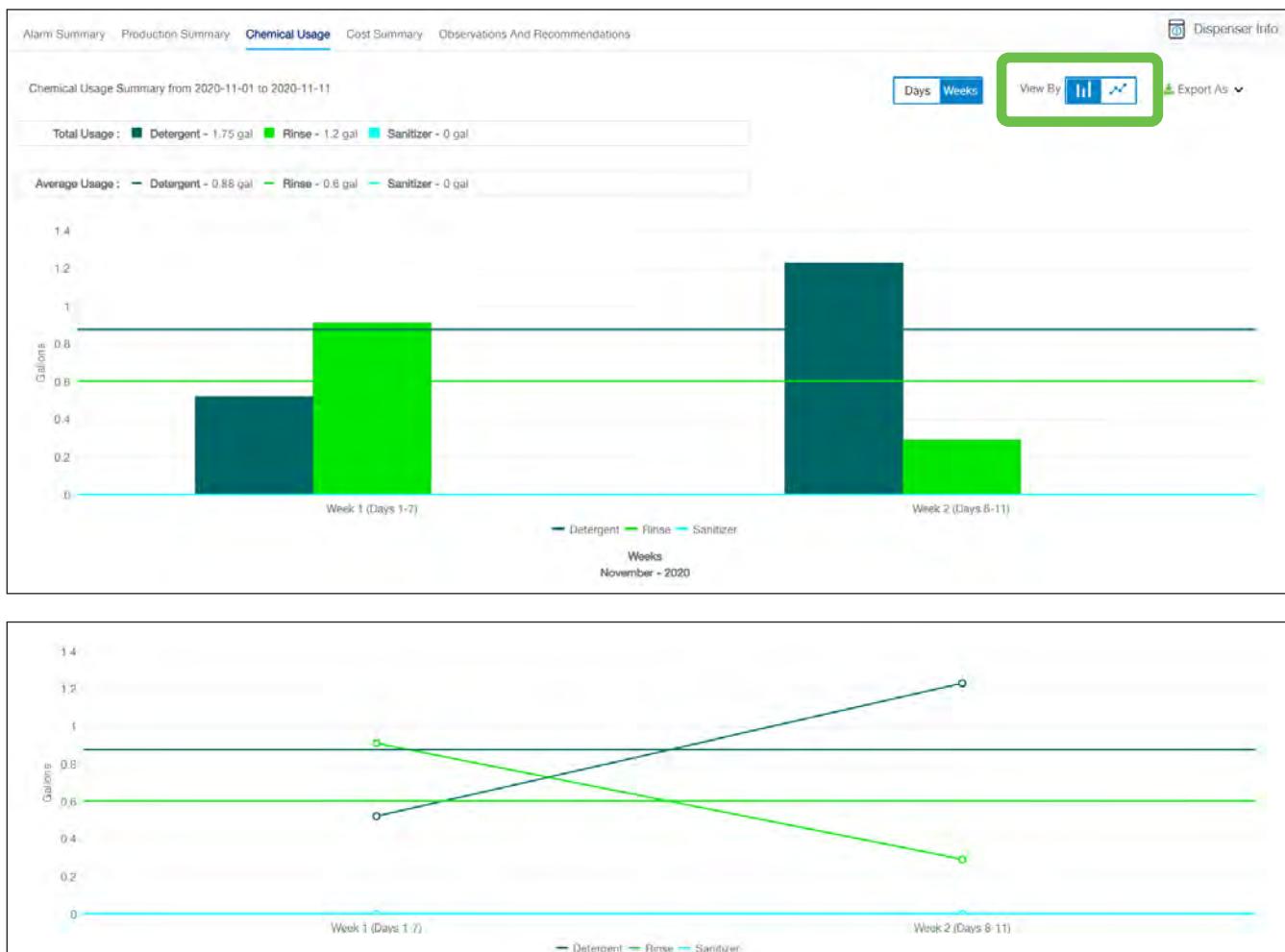
6.05 Historical Reports- Chemical Usage

The Chemical Usage report tab shows the liquid volume (gallons/liters) or solid weight (lbs/kilograms) of each chemical product that has been used over a set period.

The data is calculated by using the run time whenever a pump runs with the latest stored calibration (volume/time).

The report can be toggled to show each day in the given time period or consolidate the figures into weekly totals. Either way, a line corresponding to each chemical shows the average usage over the time horizon.

The chart style can be changed from a **bar chart** to a **line chart** by selecting the user preference on the **View By** button in the top right corner of the chart.



6.00 Hydro Connect reporting (continued)

6.05 Historical Reports- Chemical Usage (continued)

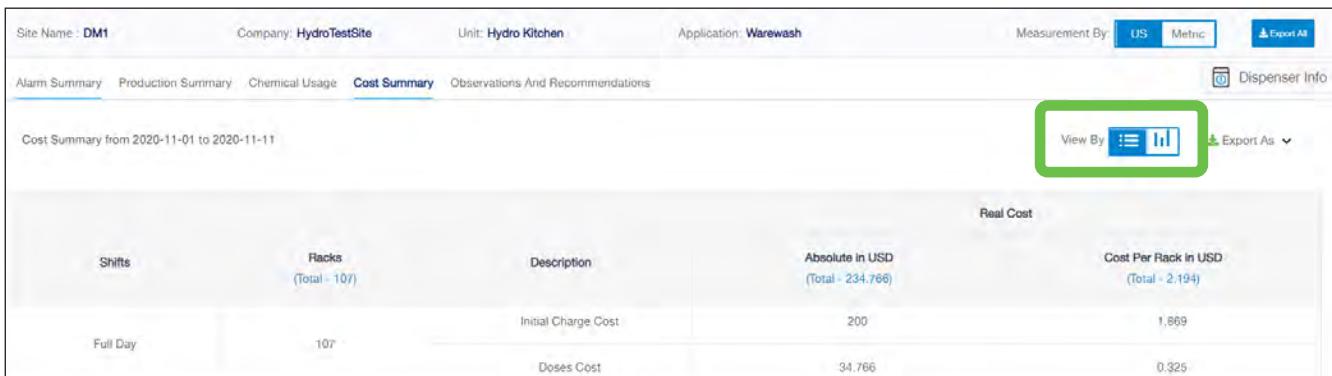
By clicking **Export As**, a professional report in PDF format can be generated and downloaded, showing the Daily Chemical Usage Summary (bar or line style) and the Monthly Chemical Usage Summary (bar or line style).



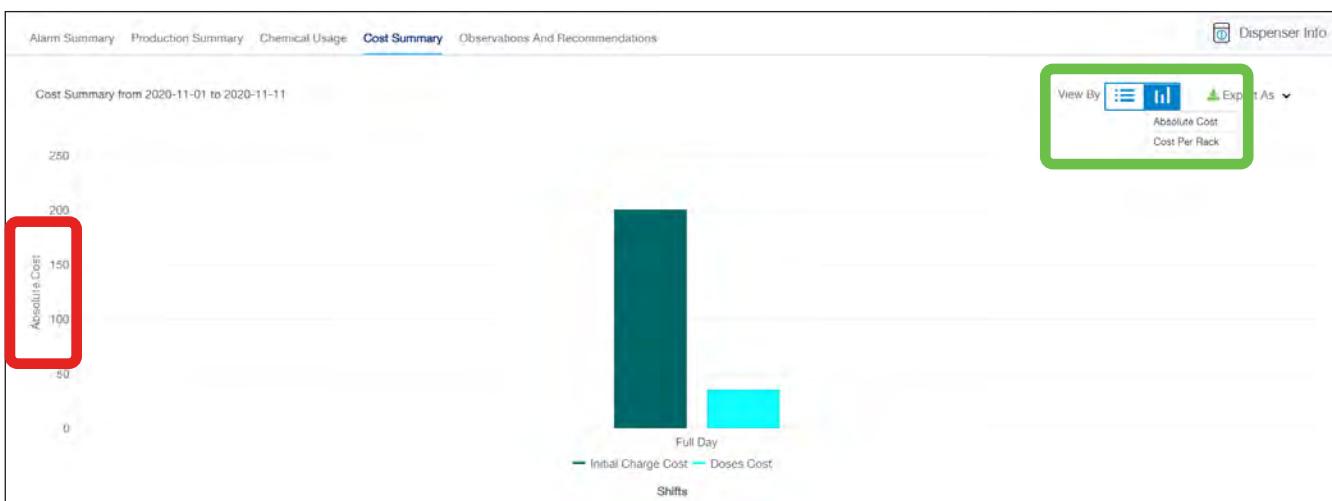
6.06 Historical Reports- Cost Summary

The Cost Summary report tab shows the cost associated with the chemical usage at a site. The data can be displayed as a table or a bar chart by toggling the **View By** selector on the upper right-hand side of the table/chart.

When displayed as a **table**, the Cost Summary report shows the total number of racks run over the period, the absolute cost of the chemical used, and the cost per rack. The cost totals are further broken down into Initial Charge Costs and Dosing Costs to allow the user to see what activities are contributing most to the overall chemical cost.

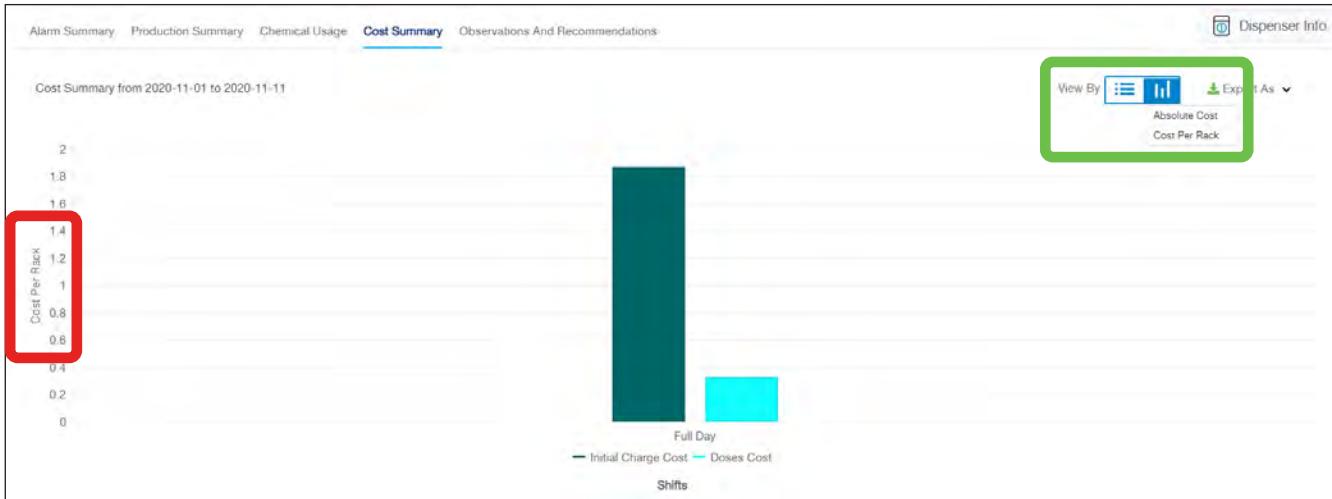


When displayed as a **bar chart**, the Cost Summary graphically displays the Initial Charge and Dosing Costs incurred during the period. The bar chart can be toggled between **Absolute Cost** or **Cost Per Rack**.

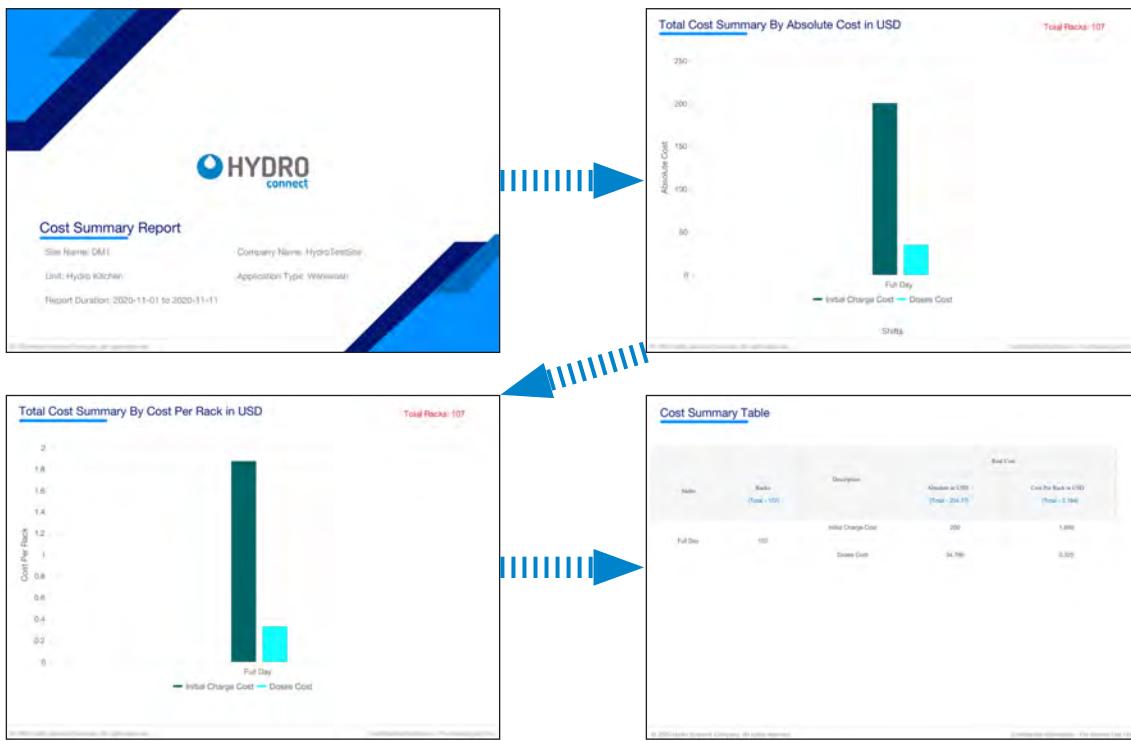


6.00 Hydro Connect reporting (continued)

6.06 Historical Reports- Cost Summary (continued)



By clicking **Export As**, a professional report in PDF format can be generated and downloaded, showing the Total Cost Summary Bar Charts (absolute and per rack) as well as the Cost Summary Table.



6.07 Historical Reports- Observations and Recommendations

For an additional fee, a Hydro Analyst will review all the data monthly, download and e-mail all the reports to the customer, and populate an executive summary of key observations and recommendations drawn from the data.

For more information about this service, please contact your Hydro Sales Representative.

7.00 maintenance



WARNING: Before you perform the below maintenance, disconnect the incoming power source or press the Power/Standby button to prevent the dispenser from running.

7.01 Routine Maintenance

- If installed, check the conductivity probe, tank temperature sensor, and rinse temperature sensor for scale or other deposit build up. Clean as necessary.
- Titrate the wash tank solution to verify that the unit is holding accurate concentration.
- If using solid chemistry, keep the solenoid connections free from scale and other deposit build up.
- Check squeeze tube condition and replace, if needed. (Only applicable to peristaltic models).
- Check all connections between the chemical drums, the dispenser, and the dish machine for leaks.
- Check all cables and electrical connections for damaged wires. Repair or replace as needed.
- Keep the unit cabinet clean. Wipe with a damp cloth as necessary.
- Check the dispenser LEDs to see if there are any alarms present. Address any alarm conditions as indicated in section 5.05 on page 41. Common maintenance alarms are:
 - Change a squeeze tube
 - Change tank water
 - Delime the tank on the dish machine

7.02 Squeeze Tube Replacement



WARNING: Before you change squeeze tubes, disconnect the incoming power source!

Replace the pump squeeze tubes at regular maintenance intervals to avoid the negative impacts of tube wear. These include, chemical delivery volume decline or in extreme cases, tube rupture. If the tube does rupture, clean all product from the pump with a damp cloth.

- 1) Remove the main cabinet cover.
- 2) Loosen the pump front captive screw and remove the pump front cover.
- 3) Remove the old tube with the compression-style fittings.
- 4) Install the new tube, oriented with flat sides facing towards the front.
- 5) Do not lubricate the squeeze tube or spinner roller. Maximum delivery volume and accuracy requires clean, dry surfaces.
- 6) Insert new tube from left side of pump, with pump spinner oriented between an 11 to 1 o'clock position.
- 7) Slowly turn the spinner clockwise, using your hand as you position the tube into place, midway on the roller. The tube must also be evenly distributed on either side of the spinner.

7.03 Change Tank Water

- 1) Press the Power/Standby button to prevent the dispenser from running while performing maintenance.
- 2) Follow the dish machine manufacturer's procedure for draining and refilling the detergent tank.

7.04 Delime the Tank

- 1) Press the Power/Standby button to prevent the dispenser from running while performing maintenance.
- 2) Follow the dish machine manufacturer's procedure for deliming the dish machine.

8.00 troubleshooting

8.01 Troubleshooting Table



WARNING: Electrical installation and maintenance should be completed by a qualified electrician. All local and national electrical regulations are to be observed.

Problem	Cause	Solution
1. Dead Unit - Power LED not illuminated	a. No incoming main electrical power b. Disconnected cable between DMx main board and power supply c. Damaged power supply or DMx main board	<ul style="list-style-type: none">Check wiring from dish machineCheck for power at dish machine connection <ul style="list-style-type: none">Have a qualified technician open the cabinet and restore the connection <ul style="list-style-type: none">Replace faulty components or units as needed
2. No detergent feed	a. Unit is in Standby mode b. No detergent signal is being received c. An incorrect signal d. Conductivity reading above setpoint value (when in probe mode) e. Disconnected cable between DMx main board and power supply f. Product drum is depleted g. Damaged power supply or DMx main board	<ul style="list-style-type: none">Ensure the unit is not in Standby mode (see page 20) <ul style="list-style-type: none">Check signal wiring to the dish machine.Check that the dish machine is sending a signal <ul style="list-style-type: none">Check DMx settings <ul style="list-style-type: none">Check conductivity probe setpoint valueClean or replace conductivity probe <ul style="list-style-type: none">Have a qualified technician open the cabinet and restore the connection <ul style="list-style-type: none">Check the system for Out of Product or Low Detergent AlarmsPhysically check and replenish empty containers <ul style="list-style-type: none">Replace faulty components or units as needed
3. Excessive detergent usage	a. Deposits on Conductivity probe (when in probe mode) or faulty probe b. Wash tank drain stuck open c. Wash tank, tubing, or fittings are leaking	<ul style="list-style-type: none">Check signal wiring to the dish machineCheck that the dish machine is sending a signal <ul style="list-style-type: none">Clear wash tank drain obstruction <ul style="list-style-type: none">Eliminate leaks in wash tank or delivery tubing/fittings
4. No rinse or sanitizer feed	a. Unit is in Standby mode b. No rinse signal is being received c. Detergent signal did not occur within 90 seconds before rinse signal (when in Door mode) d. Disconnected cable between DMx main board and power supply e. Product drum is depleted f. Faulty DMx main board	<ul style="list-style-type: none">Ensure the unit is not in Standby mode (see page 20) <ul style="list-style-type: none">Check signal wiring to the dish machineCheck that the dish machine is sending a signal <ul style="list-style-type: none">Check detergent signal wiringCheck DMx settings (e.g. Door Mode and Rinse on Rinse) <ul style="list-style-type: none">Have a qualified technician open the cabinet and restore the connection <ul style="list-style-type: none">Check the system for Out of Product or Low Detergent AlarmsPhysically check and replenish empty containers <ul style="list-style-type: none">Replace DMx Main board
5. Insufficient product usage/delivery	a. Squeeze tube is worn and needs replacement b. Product drum is depleted	<ul style="list-style-type: none">Replace squeeze tubes as needed <ul style="list-style-type: none">Check the system for Out of Product or Low Detergent AlarmsPhysically check and replenish empty containers
6. DMx mobile application cannot login	a. User credentials are invalid or not set up correctly g. User is in an area without a connection AND does not have a valid token to work offline	<ul style="list-style-type: none">Check user login and password and retryContact your Chemical Company Admin or Hydro Technical Support to set up the user correctly <ul style="list-style-type: none">Go to an area with a cellular or Wi-Fi connection and log in to get a validated token that allows you to work offline

8.00 troubleshooting (continued)

8.01 Troubleshooting Table (continued)

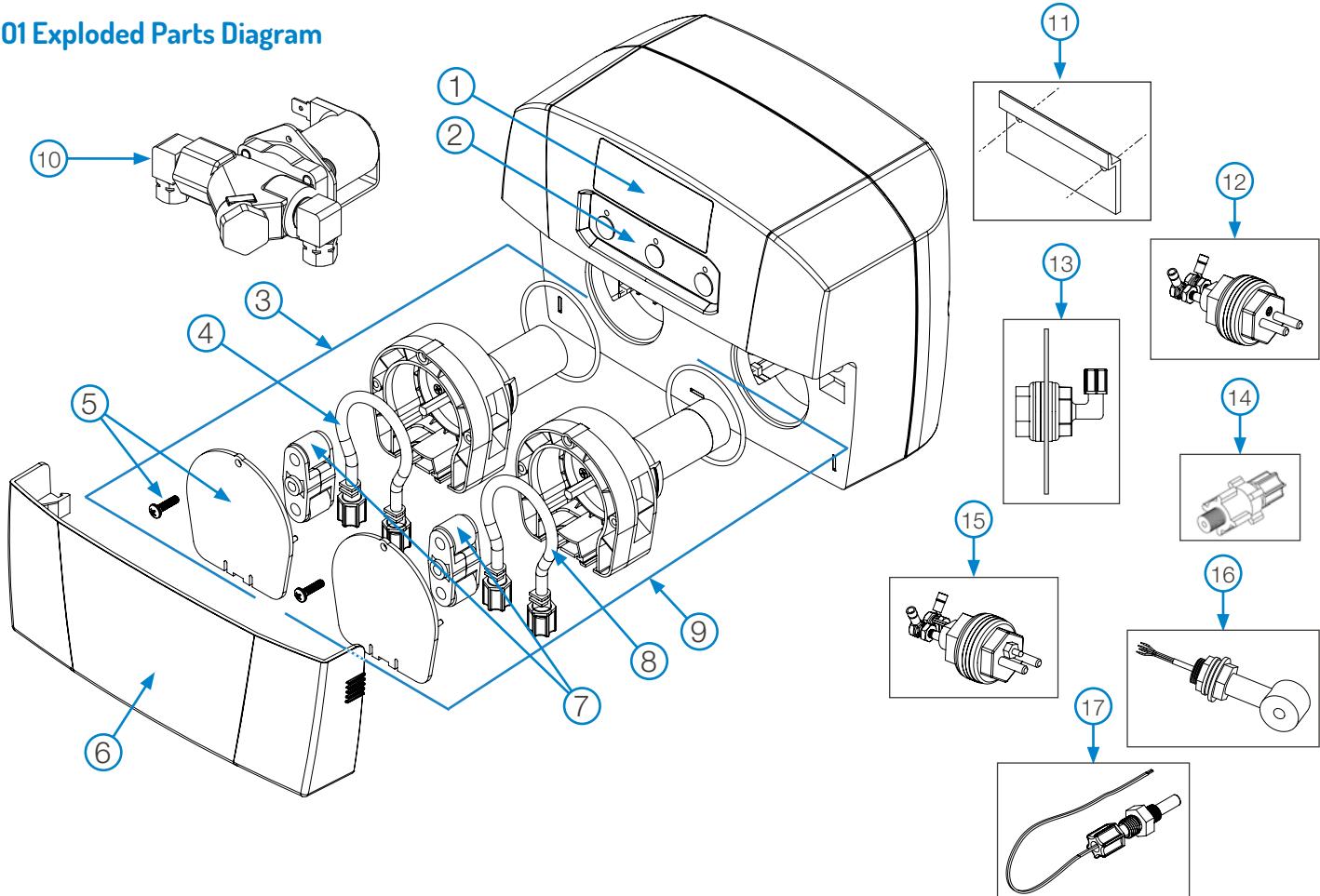


WARNING: Electrical installation and maintenance should be completed by a qualified electrician. All local and national electrical regulations are to be observed.

Problem	Cause	Solution
7. The dispenser you are trying to connect to does not appear in the HOME screen	a. The dispenser is assigned to a site that is outside of your user responsibilities b. Weak or no Bluetooth connection	<ul style="list-style-type: none">• Contact your Chemical Company Admin or Hydro Technical Support to check your user settings.• Move closer to the dispenser (Bluetooth range is 0-30 ft/10 m).• Check that your mobile device has its Bluetooth turned on. If on already, turn off and power cycle your mobile device. When power is restored, turn the Bluetooth back on.• Replace DMx Main board.
8. The site you are installing in does not appear in the list when mapping the dispenser to the site (Asset Management)	a. The site has not been set up correctly in Hydro Connect	<ul style="list-style-type: none">• Contact your Chemical Company Admin or Hydro Technical Support to set up the site correctly and to check your user settings.
9. Data is not being populated into Hydro Connect	a. The DMx has been assigned to the wrong site (Asset Management) b. Insufficient connectivity on the mobile device to send data	<ul style="list-style-type: none">• Use the DMx mobile application to reassign the device to the proper site.• In order to send the data via the mobile device, the user must connect, disconnect and then go to an area with a stable Wi-Fi or cellular connection for transmission.
10. Power/Standby LED is flashing red once per second and the Hydro Connect Mobile App displays "RTC Error" or "Hardware Error". (Pressing the Power/Standby button changes the Power/Standby LED to flashing orange once per second.)	a. DMx main board hardware failure. Rack data may not be recorded correctly, but the dispenser is still functional	<ul style="list-style-type: none">• Replace DMx Main board.
11. The meaning of an orange or red alarm code displaying on the dispenser control pad is unknown	a. The user is not familiar with DMx alarm codes	<ul style="list-style-type: none">• Refer to the Alarm section of this manual (page 41) or contact Hydro Technical Support.• In general, if the LEDs are flashing, contact the technician, if it is solid, the Kitchen staff can address the alarm.

9.00 service parts

9.01 Exploded Parts Diagram



9.02 Service Parts

Key	Part No.	Description
1	HYD10099820	Replacement 2-Product Branded Label (10-Pack)
	HYD10099821	Replacement 3-Product Branded Label (10-Pack)
2	HYD10099818	Replacement 2-Product Overlay Kit (10-Pack)
	HYD10099819	Replacement 3-Product Overlay Kit (10-Pack)
3	HYD10099822	Pump Motor Kit - Detergent
4	HYD13-06399-10	Pump Tube Detergent EPDM (1/4" Fittings) (10-Pack)
	HYD13-06399-30	Pump Tube Detergent EPDM (1/8" Fittings) (10-Pack)
5	HYD10099827	Peristaltic Pump Cover with Screw - Clear (Detergent or Rinse Pump)
6	HYD10099828	2-Pump Aesthetic Pump Cover Kit - Blue
	HYD10099829	2-Pump Aesthetic Pump Cover Kit - Red
	HYD10099830	2-Pump Aesthetic Pump Cover Kit - Smoke
	HYD10099831	2-Pump Aesthetic Pump Cover Kit - Orange
	HYD10099832	2-Pump Aesthetic Pump Cover Kit - Yellow
	HYD10099833	3-Pump Aesthetic Pump Cover Kit - Blue
	HYD10099834	3-Pump Aesthetic Pump Cover Kit - Red
	HYD10099835	3-Pump Aesthetic Pump Cover Kit - Smoke
	HYD10099836	3-Pump Aesthetic Pump Cover Kit - Orange
	HYD10099837	3-Pump Aesthetic Pump Cover Kit - Yellow
7	HYD10099815	Pump Spinner Kit (1 Red, 1 Blue , for Detergent and Rinse Pumps)

(continued)

9.00 service parts (continued)

9.02 Service Parts (continued)

Key	Part No.	Description
8	HYD13-06395-10	Pump Tube Rinse EPDM (1/4" Fittings) (10-Pack)
	HYD13-06395-20	Pump Tube Rinse EPDM (1/4" and 1/8" Fittings) (10-Pack)
	HYD13-06395-30	Pump Tube Rinse EPDM (1/8" Fittings) (10-Pack)
	HYD13-06928-10	Pump Tube Rinse Silicone (1/4" Fittings) (10-Pack)
	HYD13-06928-20	Pump Tube Rinse Silicone (1/4" and 1/8" Fittings) (10-Pack)
	HYD13-06928-30	Pump Tube Rinse Silicone (1/8" Fittings) (10-Pack)
9	HYD10099823	Pump Motor Kit - Rinse
10	HYD10099826	Solenoid Valve Kit, 1/4" Fittings
11	HYD13-06647-00	Wall Bracket and Mounting Hardware Kit
12	HYD15-03361-00	Conductivity Probe Kit
13	HYD13-03585-00	Detergent Injection Bulkhead Fitting Kit
14	HYD13-06529-00	Rinse Injection Fitting Kit - 1/4" Tubing
	HYD13-06529-01	Rinse Injection Fitting Kit - 1/8" Tubing
	HYD13-06529-02	Rinse Injection Fitting Kit - 6mm Tubing
	HYD13-06531-02	Rinse Injection Fitting Kit - 6mm Tubing (90 degree elbow)
15	HYD10096824	Optional Temperature Compensated Conductivity Probe Kit
16	HYD10099838	Optional Inductive Conductivity Probe and PCB Kit
17	HYD10096829	Optional Rinse Temperature Kit
Not Shown	HYD10099462	2-Product Pump Tubing Kit for DMx
Not Shown	HYD10099463	3-Product Pump Tubing Kit for DMx
Not Shown	HYD13-06563-00	Pump Tube Compression Kit - 1/4" Fittings (10-Pack)
	HYD13-06563-02	Pump Tube Compression Kit - 1/8" Fittings (10-Pack)
	HYD13-06563-01	Pump Tube Compression Kit - 6mm Fittings (10-Pack)
Not Shown	HYD10099816	Power Supply Kit
Not Shown	HYD10099817	PCB Control Board Kit
Not Shown	HYD10099825	Optional Depletion Wand Connector (Only one required to use Depletion Wands below)
Not Shown	HYDDW10L380380D3EPF	Product Depletion Wand (38mm Diameter, 380mm Long, EPDM, for 10 liter / 2.5 gal Drum)*
	HYDDW20L380500D3EPF	Product Depletion Wand (38mm Diameter, 500mm Long , EPDM, for 20 liter / 5 gal Drum)*
	HYDDW20L0500D3EPF	Product Depletion Wand (48mm Diameter , 500mm Long, EPDM, for 20 liter / 5 gal Drum)*

* These are the most commonly used depletion wands. Contact your Hydro Systems representative or visit www.hydrosyemsc.com for more options.

10.00 decommissioning & disposal



WARNING: Before decommissioning the unit, disconnect the incoming power source!

NOTE: This section is intended for the markets that use the Global models of the DMx dispenser.

- All contents (including liquids and chemicals) have been removed and disposed of appropriately.
- Any hazard warning signs have been removed from surfaces and internally, or totally defaced.
- Unit has been completely and adequately cleaned and disinfected.
- "Safe for disposal" sign / appended to each piece of listed equipment.
- Equipment has been left in a condition such that it is safe for lay personnel or contractor to remove it without need for precautions against exposure to any chemical, biological, radioactive or other agents.

11.00 WEEE - Waste Electrical and Electronic Equipment

NOTE: WEEE Regulations apply to companies who Manufacture & Distribute electrical or electronic equipment in the markets that use our Global DMx dispenser models.

WEEE Classification – 10. Automatic dispensers.

The WEEE Regulations apply to importers, producers, retailers and users of EEE, and to businesses that treat or recover WEEE. The DMx unit is a product placed onto market POST 13.08.05, therefore called 'future WEEE'.

As a producer Hydro Systems Company have the option to take responsibility for the EEE placed on the market. If Hydro Systems Company chooses to receive WEEE they must make sure that it is disposed of in an environmentally sound way, including the treatment, reuse, recovery and recycling of the components where appropriate.

Responsibility as a producer of EEE

Hydro Systems Company as a producer of EEE are registered with a producer compliance scheme who register them with the relevant environmental regulator. Through the regulator they become part of an approved producer compliance scheme (PCS). The PCS supply a unique and permanent producer registration number. If disposal is outsourced it (the product) must be taken to an appropriately licensed site (approved authorized treatment facility - AATF) where it can be treated safely.

The environmental impacts of the substances in EEE and waste electrical and electronic equipment (WEEE)

The main environmental concerns stem from soil and water contamination, resource depletion, energy use and waste.

At the production stage, obtaining raw material for EEE production consumes a large amount of energy, especially the process of extracting resources, which can also lead to degradation of the surrounding environment. For instance, when raw material is shipped to a plant, it goes through a complex, high energy-consuming process as it is converted into a finished product. Moreover, as demand for fuel and raw materials increases with the increase in exports, the environmental impact of these factors is also likely to increase.

The reasons for separating WEEE from other waste

Failing to separate waste properly can be very expensive as the majority of discarded products are shredded into small pieces of material and re-sold as raw material – much of which ends up in the Far East and goes back into manufacturing. If the hazardous components were not separated first the entire batch could be contaminated. This significantly increases the risk of environmental damage and could lead to legal action under hazardous waste regulations.

The meaning of the crossed out wheeled bin symbol

The crossed out wheeled bin symbol is not intended to indicate to you that WEEE is banned from being disposed of as general waste. Moreover, the intention behind the symbol is that, when coupled with information supplied by distributors as to the availability of recycling facilities, you will be reminded that these facilities exist.

How they can safely dispose of WEEE for proper treatment?

When the product is at its end of life, either contact the Local Authority in charge of electrical disposal, or contact Hydro Systems Company who will either take the item back from yourself or supply you with relevant information for a local WEEE treatment facility. If asked, Hydro Systems Company must provide your business with:

- Contact information for the EEE producer within Hydro Systems Company. The producer's compliance scheme is responsible for the end-of-life handling of EEE.
- Records that will help producers to supply their producer compliance scheme with accurate information, for example numbers of sales of EEE to non-household users.

As a distributor Hydro Systems Company have no legal obligation to take back WEEE from business users.

12.00 warranty

12.01 Limited Warranty

Seller warrants solely to **Buyer** the Products will be free from defects in material and workmanship under normal use and service for a period of one year from the date of completion of manufacture. This limited warranty does not apply to (a) hoses; (b) and products that have a normal life shorter than one year; or (c) failure in performance or damage caused by chemicals, abrasive materials, corrosion, lightning, improper voltage supply, physical abuse, mishandling or misapplication. In the event the Products are altered or repaired by **Buyer** without **Seller's** prior written approval, all warranties will be void.

No other warranty, oral, express or implied, including any warranty of merchantability or fitness for any particular purpose, is made for these products, and all other warranties are hereby expressly excluded.

Seller's sole obligation under this warranty will be, at **Seller's** option, to repair or replace F.O.B. **Seller's** facility in Cincinnati, Ohio any Products found to be other than as warranted.

12.02 Limitation of Liability

Seller's warranty obligations and **Buyer's** remedies are solely and exclusively as stated herein. **Seller** shall have no other liability, direct or indirect, of any kind, including liability for special, incidental, or consequential damages or for any other claims for damage or loss resulting from any cause whatsoever, whether based on negligence, strict liability, breach of contract or breach of warranty.



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