HYDRIM M2
WASHER-DISINFECTOR

- **Service Manual**

HYDRIM M2 Service Manual 96-111286 Rev 1.0

SciCan
A HIGHER STANDARD

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Manufactured by:
SciCan Ltd
1440 Don Mills Road
Toronto ON M3B 3P9
Canada
Local: 416.445.1600
Toll Free: 1.800.667.7733
Fax: 416.445.2727

CE 0123

For all Service and repair inquiries:

Germany:	+49 821 567456 0
Canada:	1-800-870-7777
USA:	1-800-572-1211
International:	1-416-445-1600
Email:	custserv.de@scican.com
	techservice.ca@scican.com

SciCan Ltd.
1440 Don Mills Road
Toronto ON M3B 3P9
CANADA
Phone: (416) 445-1600
Fax: (416) 445-2727
Toll free: 1-800-667-7733

EU Representative
SciCan GmbH
Kurzes Geländ 10
86156 Augsburg
Germany
Tel.: +49 821 567456 0
Fax: +49 821 567456 15
E-Mail: custserv.de@scican.com
www.scican.com

1. Cycle Description

	P1 - Regular Wash cycle	P2 - Wash Disinfect 80ºC	P3 - Wash Disinfect 90ºC
Description	Use for instruments and cassettes when disinfection is not required	Use for instruments and cassettes when disinfection (minimum A_0 of 600) is required	Use for instruments and cassettes when disinfection (minimum A_0 of 3000) is required
Cold Prewash	<30ºC	<30ºC	<30ºC
Wash	50ºC 9 minutes	50ºC 9 minutes	50ºC 9 minutes
Rinse/Disinfect	60ºC	80ºC for 10 minutes	90ºC for 5 minutes
Dry*	20 min. standard 30 min. intensive	15 min. standard 20 min. intensive	15 min. standard 20 min. intensive
Total Time without Drying**	31 minutes	50 minutes	51 minutes
Water Consumption	40 L with or without drying	40 L without drying 70-80L with drying	40 L without drying 70-80L with drying

* Cassettes may be of a complex design that does not permit full dryness of the cassette inner surfaces
** Cycle times depend on the temperature of incoming water, mass of the load and mains voltage.

Specifications:

Height, freestanding:	850 mm
Height, built-in:	830 mm
Width:	600 mm
Depth:	600 mm
Depth with door open:	1200 mm
Weight:	80 kg
Running Noise:	60 dB(A)
Hot and cold water connections:	G ¾”
Inlet water pressure:	2-5 bar
Incoming hot water temperature:	max. 60-84°C
Drain:	G ¾”
Water softener:	1 kg salt capacity
Drying System:	Blower
Electrical Connection:	230-240 V 50 Hz 13 A
Equipment pollution degree:	Pollution Degree 2
Equipment installation category:	Installation category II
Maximum relative humidity:	80% for temp up to 31°C 50% for temp up to 40°C
Operating temperature range:	+5°C to 40°C
Max. Altitude:	2000m

2. Safety Information

Pay close attention to the following symbols that appear in this book

Caution, a potential
Hazard to the operator

Safe operation

The following applies to both operators and service technicians:

Exercise caution and seek assistance when lifting or carrying the unit.
Cleaning solutions may irritate. Avoid contact with eyes and mouth.
Never lean on the open door. The unit may tip forward causing injury.
Always turn the unit **OFF** before adding softener salt or solutions. Before performing routine maintenance or servicing the unit, turn the unit **OFF** and unplug the power cord from the power source.
The operator should never remove the cover of the unit or insert objects through holes or openings in the cabinetry. Doing so may damage the unit and/or pose a hazard to the operator.
If the unit is used in a manner other than that specified, the protection provided by the equipment may be impaired.

Safe servicing

The Hydrim M2 Instrument Washer – Disinfector should only be installed and serviced by a qualified contractor, as it is an Installation Category 2 device. SciCan shall not be liable for incidental, special or consequential damages caused by any maintenance or service performed on the Hydrim M2 by a third party or for the use of equipment or parts manufactured by a third party, including lost profits, any commercial loss, economic loss, or loss arising from personal injury.
All local, regional, state and national regulations regarding the servicing of this class of device and safety requirements must be observed.

When the cover is removed:

Hazardous voltages are accessible. Disconnect the power cord before removing the covers.
Sharp metal edges are exposed. Be careful, and wear long sleeves and gloves.

Power main

A dielectric strength test (hi-pot) must be performed on the unit if parts associated with the power main are serviced or replaced.

Ground

A protective bonding impedance test (grounding continuity) must be performed on the unit if components of the protective earthing system are changed or if connections are broken and remade.

If the cover is removed, a dielectric strength test (Hi-Pot) must be performed once the cover has been returned to the unit.

If the cover is removed, a protective bonding impedance test (ground continuity) must be performed once the cover has been returned to the unit.

Reporting

It is vital for SciCan to learn of any problems in the field. This information will help SciCan solve the problem quickly and improve product reliability in new units.

Biological Waste

Wastewater in the unit may contain biological contaminants; use a mechanical means to siphon the contents. Wear disposable gloves. Dispose of absorbent material according to biological waste disposal regulations.

2. Tools & Hardware for Installation & Servicing

DESCRIPTION	DESCRIPTION
Needle Nose pliers	Allen key 3.0 mm
Screwdriver PH 1	Adjustable wrench
Screwdriver PH 2	
Screwdriver Slot	
Wire cutters	
Small Slot screwdriver	
Nut driver 8 mm	

Shipping Instructions

The unit should be serviced on site. If it is necessary to send the unit back to the dealer, follow these instructions. Before shipping the unit, run the drain pump to remove most of the water from the system. If there is standing water in the chamber, siphon or ladle as much as possible and use an absorbent cloth to remove the rest.

Disconnect and remove the cleaning solution container. Completely screw in the levelling legs. Strap the unit to a pallet in a proper box and specify heated and insured shipping.

4. Pre-Installation

The machine must be installed and levelled correctly for the unit to function as described. All electrical work must be carried out by a qualified electrician and in compliance with all local and national electrical codes.

Voltage:	230-240V ± 10%
Frequency:	50 Hz
Rated load:	2.7 kW
Circuit breaker:	13A

The outlet needs to be accessible after the unit is installed.

The appliance must be correctly grounded! The manufacturer cannot be held responsible for damage or injury caused by incorrect or missing grounding.

The Hydrim unit is heavy (80 Kg). Exercise caution and obtain assistance when lifting unit.
The Hydrim is equipped with an air gap/anti-suction device to prevent backflow of dirty water into the water supply. No other air gap device is necessary.
If you need to extend the water inlet and drain hoses, ensure that you use commercial grade plumbing hose. The maximum length of the drain hose is 3.3 m.

Installation Instructions

The Hydrim M2 should only be installed and service by a qualified SciCan contractor, as it is an installation Category 2 device. The contractor should be experienced in installing equipment that requires electrical hook-up as well as plumbing.

The machine must be installed and levelled (see below) correctly for the unit to function as described. All electrical work must be carried out by a qualified electrician and in compliance with all local and national electrical codes.

Levelling the Hydrim:
The unit is standing on three supports: rollers (wheels) at the back and two legs at the front.

1. Remove the front kickplate. Push the Hydrim into place while lifting the strap at the front to allow the unit to roll on the rollers.
2. Adjust the front legs as required until the Hydrim is level.
3. The rear two legs are used only if the floor is uneven or cannot provide support to the rollers.
4. Tuck the strap under the machine before replacing the kickplate, so as not to interfere with the exhaust air vents.

5. Electrical Connection

This appliance must be correctly grounded! The manufacturer cannot be held responsible for damage or injury caused by incorrect or missing grounding. Before making any connections check that the voltage shown on the serial number label corresponds to your power supply. The machine is supplied as standard for connection to 230-240V 50 Hz single-phase power supply and is fitted with a power supply cord 2.5m long. It should be connected to the main power supply according to the information below.

Voltage:	230-240V
Frequency:	50 Hz
Rated load:	2.7 kW
Circuit breaker:	13 A

If you need to extend the mains connecting lead, do not cut off the plug. Replace the whole cable, which can be disconnected inside the unit.

Connection to the Water Intake

The unit must be connected to the water supply in accordance with all local and national plumbing codes. SciCan recommends a hard plumbing installation within 1.5m/5ft. of the unit. If additional distance is necessary, commercial grade plumbing hose must be used to minimize leaks.

Connect inlet hoses to hot and cold water taps using the hoses connected to the unit and in accordance with the installation instructions.

Water Connection	
Water Pressure:	2-5 bar
Water Temperature:	Cold water less than 30ºC Hot water up to 60-84ºC
Water inlet hoses (provided):	¾”; 2m

Optional installation is with cold water and de-ionized water. In this case, connect the cold water to the cold water inlet and the DI water to the hot water inlet. Cycle times will be longer.

Drainage

The unit is supplied with a 1.5m flexible drain hose with a 2cm barb inlet. The hose should not be shortened or attached to any fittings that would cause a reduction in water flow. The drain system is equipped with a non-return valve that prevents dirty water from flowing back into the unit.

The drain hose should not be more than 1.5m from a hard plumbing drain. If this is not possible, then commercial grade plumbing hose must be used to minimize leaks.

The hose can be attached to an existing drain through the use of a 3.5cm or larger stand pipe/ P-trap combination. Alternatively, the hose can be connected directly to the existing drain lines, provided the fittings or adapters used do not reduce the water flow. The drain hose should not exceed 3.3m/13ft. in length, or be attached to the main drain at a point higher the 35cm above the floor.

6. Disconnecting the Unit

To disconnect the unit, follow these steps:
Unplug the unit from the mains supply.
Turn off the water supply.
Disconnect the drain and water intake hoses.
Pull out unit using the moving strap. Carefully withdraw hoses at the same time.

Setting the Water Softener

Water quality and water hardness are very important to proper Hydrim operation. Please check your water quality before proceeding with the machine installation.

Your Hydrim is equipped with a built-in water softening system. The Water Test Kit (available from SciCan) will help you properly adjust the water softening system, and determine if you need additional water treatment.

The Hydrim Water Test Kit includes three water hardness test strips. Use them as described on the individual strip packages. Take the water sample from the location where the machine will be installed. Once you have determined the water hardness level, find the recommended setting for your Hydrim M2 in the water hardness setup table. If your water hardness falls between two settings, select the higher setting (see page 17 & 18 for changing the setting). Water softening salt (available in most supermarkets and hardware stores) should be added regularly. If your water hardness is outside the unit adjustment range, you will need to get an additional water treatment system. Otherwise you could experience reduced washing quality, spotting, or discolouration.

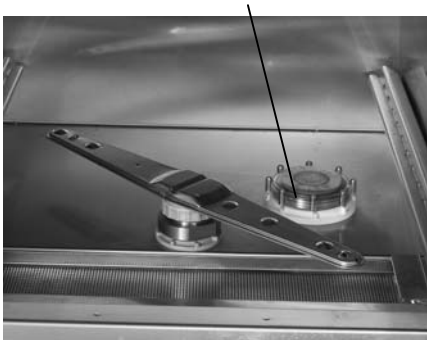
Water Hardness Setup Table

Hardness – °dH	Hardness – ppm*	Hydrim M2 setting
0-6	0-110	0
6.7 – 7.8	120-140	1
8.4 – 10	150-180	2
10.6 – 11.8	190-210	3
12.3 – 16.2	220-290	4
16.8 – 20.7	300-370	5
21.3 - 30.3	380-540	6
30.8 . 49.9**	550-890**	7
> 49.9	>890	Additional water treatment required

*Not all steps are available on the test strip. Round up to higher value if necessary.
**Consider using additional treatment system even at this level.

7. Adding Water Softening Salts

If you have to set the water softener to any setting above 0, the message “Salt Level Low” will appear on the display.



To add water softening salts follow these steps:

1. Unscrew the salt container lid.
2. Upon first use of the Hydrim M2, pour approximately 1 litre of water into the salt container, or until it is full with water. It is not necessary to add water during subsequent refills of the salt container.
3. Replace the salt container lid.

After salt has been added to the unit, the softening salt indicator will initially indicate salt needed. The indicator will turn off when the salt solution has become sufficiently concentrated.

Installation Test

Turn on the shut-off valves. Run a test cycle, checking for leaks. (See Operating Instructions)

8. Routine Maintenance

<u>Daily</u>

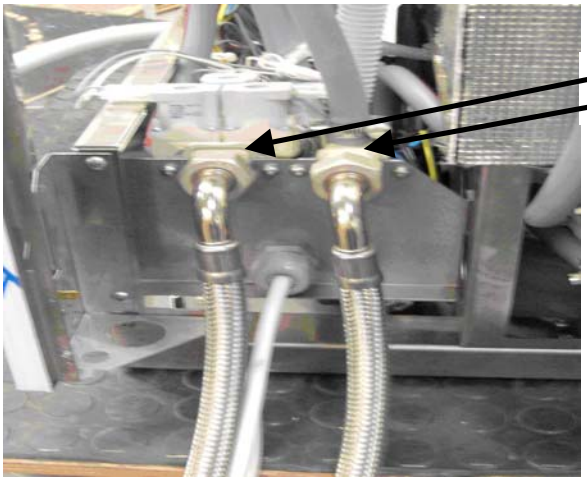
Filter
Inspect the filter inside the chamber.
To remove filter, lift filter and turn 90 degrees.

Weekly

Wash Arms
Inspect wash arms in chamber
To remove the wash arms, unscrew the collar (Upper/middle arm are counterclockwise & lower is clockwise) and remove the arm.
Inspect the nozzles for debris. Rinse under a tap and reassemble.

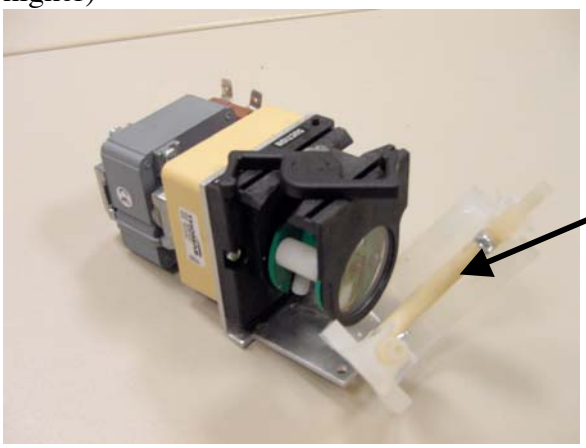
Yearly

Water Inlet Hoses
Disconnect the hot and cold water inlet hoses.
Make sure the hoses are clean and free of debris.
Make sure the inlet valves are free of debris.



Air filter
Change the air filter (P/N 01-111780S) and reset the drying counter

Dosing Pump Tubing
Replace the internal tubing on the Dosing Pump and then calibrate the pump by completing the instructions in found Appendix A (for softare R318 and lower) or appendix B (for software R320 and higher)



9. Operating Instructions

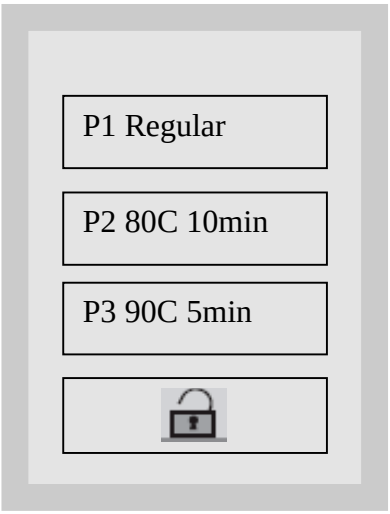
Power up screen

When the Power Switch is turned ON this screen appears.

Pressing the “i” will allow you to enter the User, Technician or Setup menus.

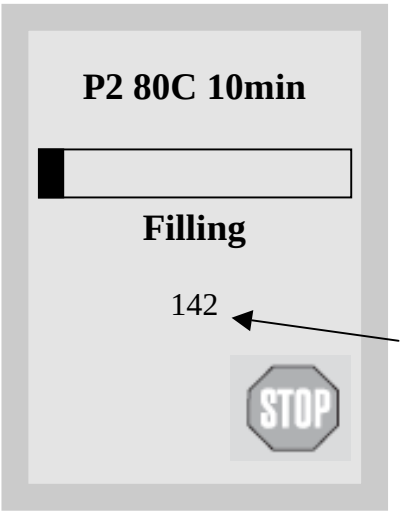
The “i” symbol disappears after 10 seconds.

Touch the screen anywhere to change to the Main menu screen.



Main menu screen

Press the lock symbol to unlock the door or select the desired cycle and then press start.



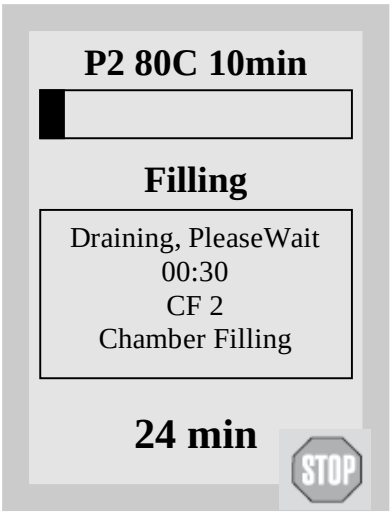
Cycle screen
The cycle name appears at the top of the screen.

The progress bar shows the progress of the cycle as a percentage of remaining time vs. remaining time at the beginning of the cycle.

The stage within the cycle is shown beneath the bar (eg. Draining, Filling, Rinsing).

The cycle count or cycle time remaining is displayed depending on the countdown setting. See section 13, Cycle Settings, Countdown.

Press “Stop” to abort the cycle.



Cycle aborted screen

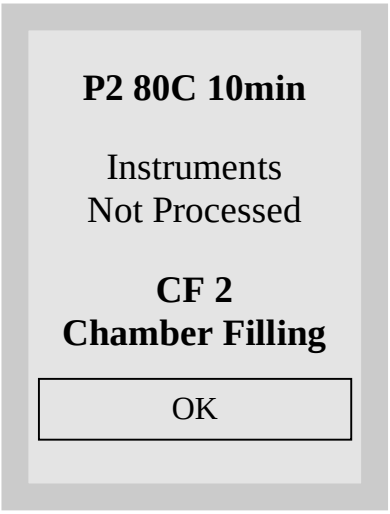
The touch screen is not active.

The machine drains for 30 seconds.

An error code appears on the display.

The stop button will be shaded at this time.

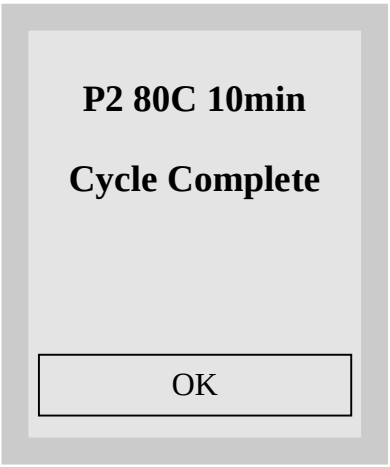
After the draining timeout is complete, the screen switches to the cycle aborted acknowledge screen.



Cycle aborted acknowledge screen

If the cycle aborted due to cycle fault or door opening, the display will indicate the problem.

Press the OK button to return to the main menu screen.

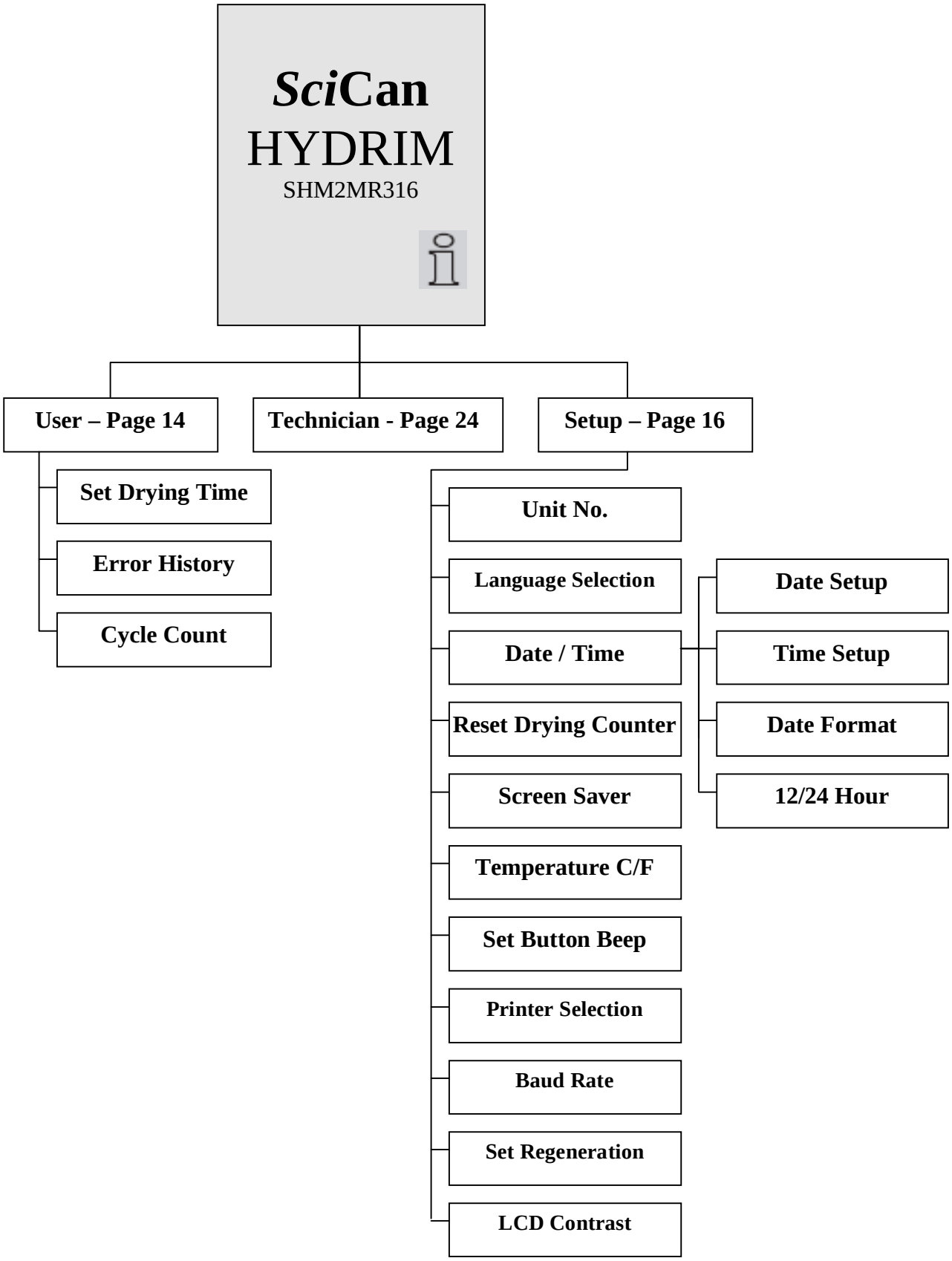


Cycle complete screen

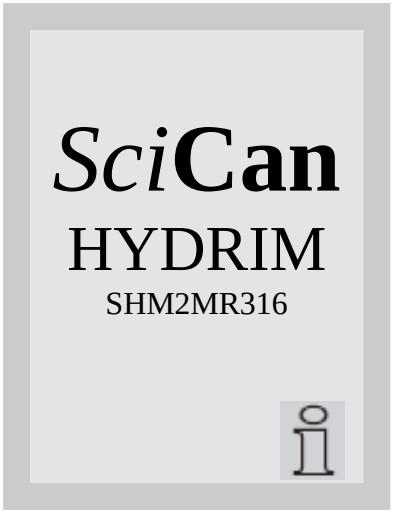
When the cycle is complete, the program name and “Cycle Complete” is displayed.

Press the OK button to return to the main menu screen.

10. Overview of Menus



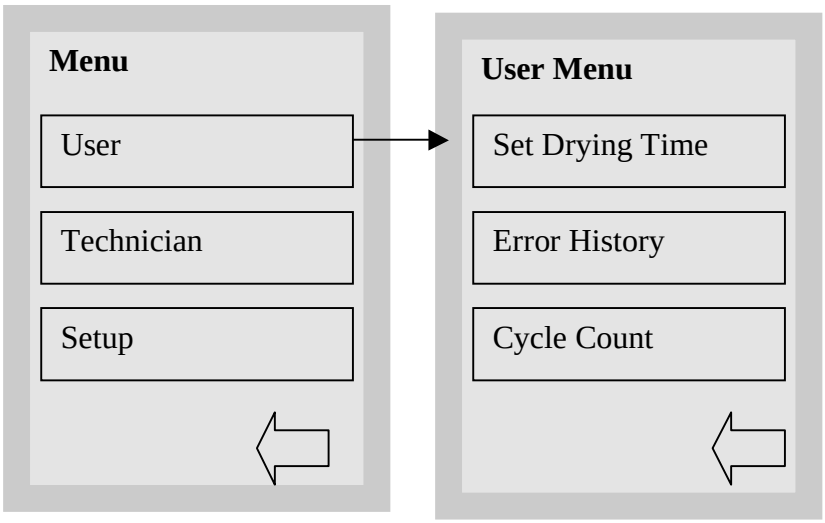
11.User Menu



To access the user menu, follow these steps:

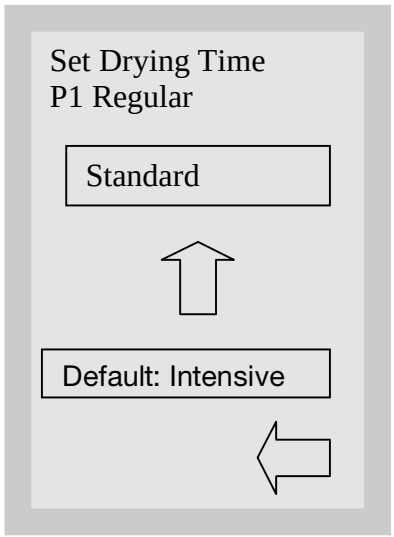
Turn the Hydrim OFF and then ON. An **"i"** (information) will appear for about 10 seconds at the bottom right hand corner.

Touch the **"i"** to move to the Menu screen.



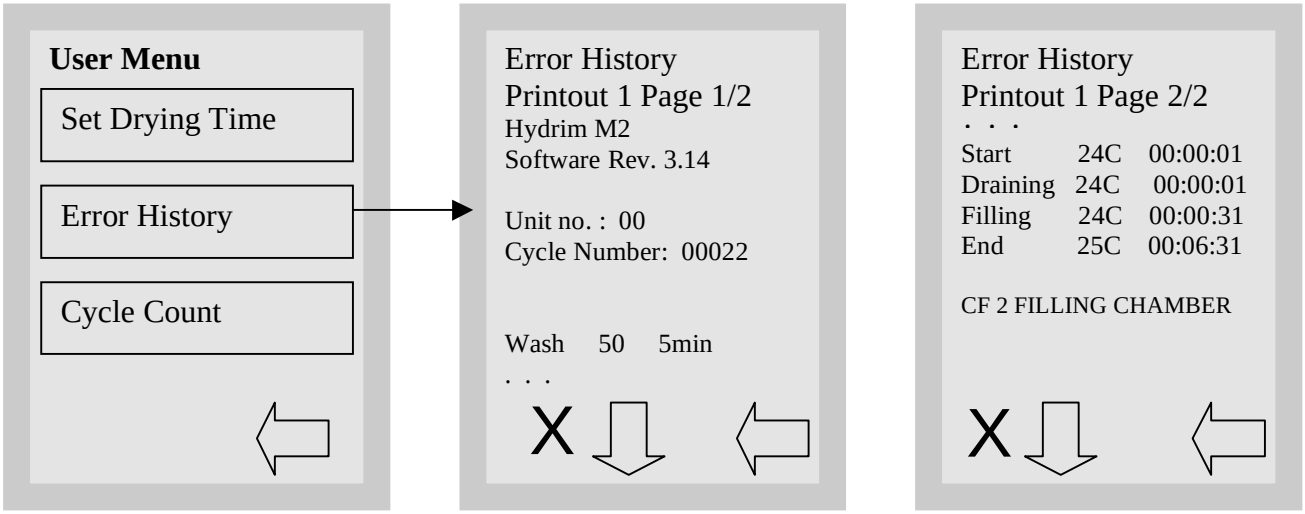
Select User.

The User Menu consists of three choices

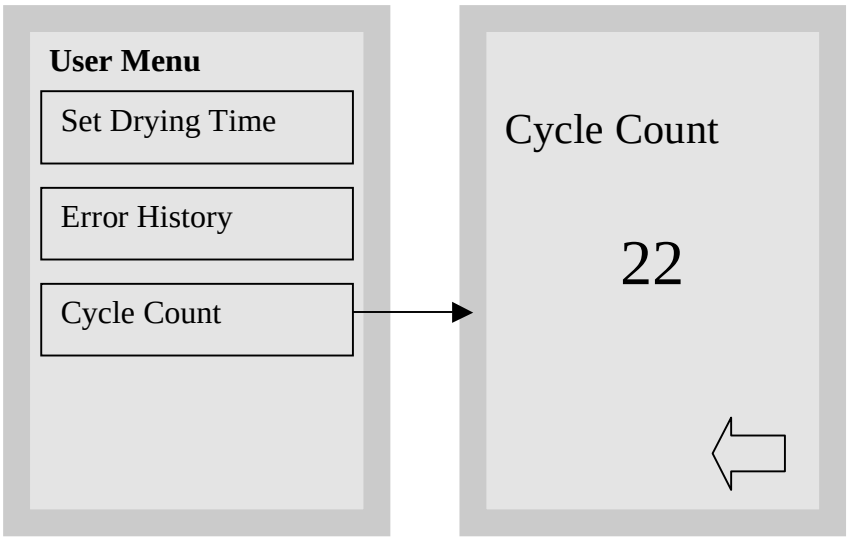


Set Drying Time

The drying time can be set to standard, for small loads, or intensive, for larger loads. Standard drying time is 20 minutes for P1, and 15 minutes for P2 and P3. Intensive drying time is 30 minutes for P1, and 20 minutes for P2 and P3. Touch the up arrow to select standard or intensive. The default is "intensive". Touch *default* if you wish to return to the factory default. Use the back arrow to return to the previous screen.



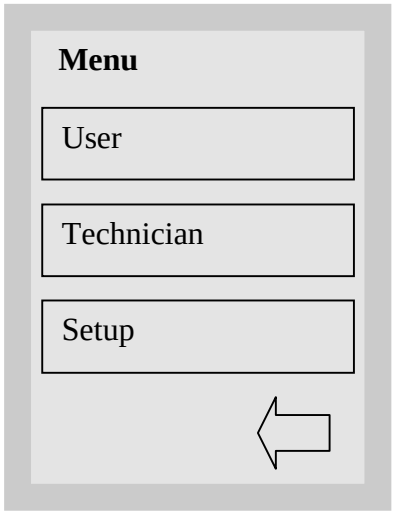
The error history screen allows the user to see the last three errors and the last cycle.
Press the down arrow to move to the next page/error.
Press the X in the lower left hand corner to clear the error history. The last cycle will remain.
Press the back arrow to return to the previous menu.



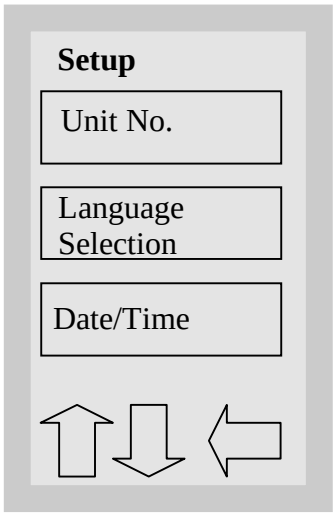
This allows the user to see how many cycles have been run on the Hydrim. Touch cycle count and the number of cycles (completed and aborted) will be displayed. This cannot be reset. Touch the back arrow to return to the previous menu.

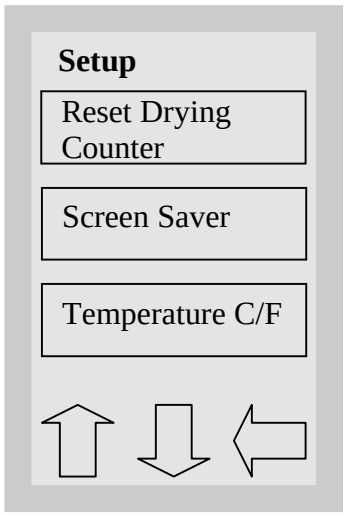
12. Setup Menu

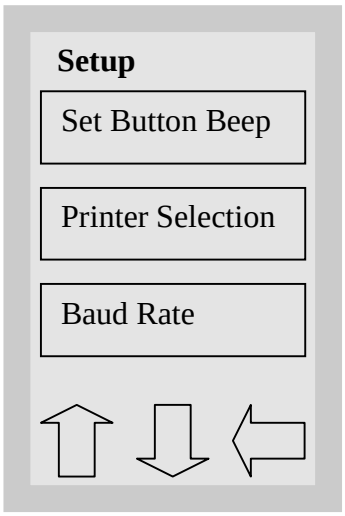
To access the Setup Menu, proceed to the menu screen by turning the Hydrim OFF and then ON. An **"i"** (information) will appear for about 10 seconds at the bottom right hand corner.

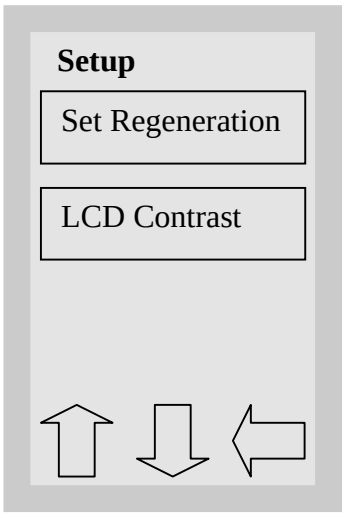


Touch the i to move to the Menu screen and select Setup.

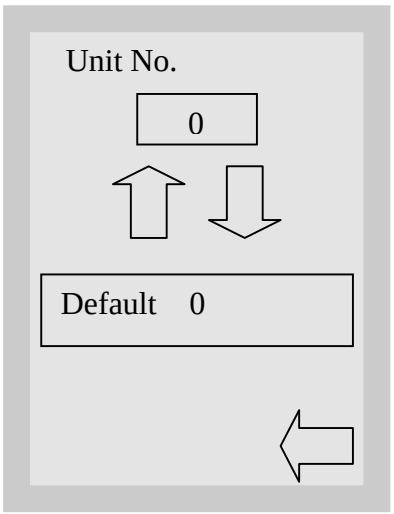






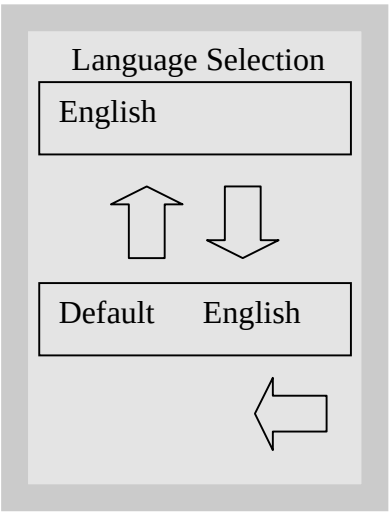


The Setup Menu consists of eleven choices as shown above. Use the up and down arrows to move through the choices. Touch the desired option to select it. For more detail on each Setup Menu option, refer to the following sections.



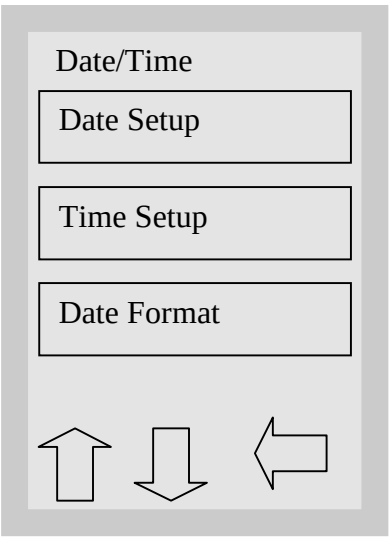
Unit Number

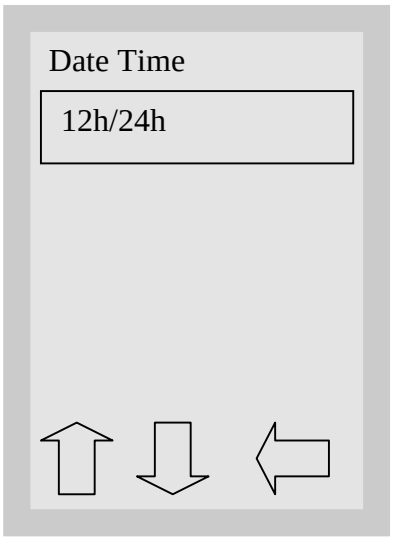
If you have more than one Hydrim in your office, you can designate them Unit #1, Unit #2, etc. Use the up and down arrows to select the unit number. The default is 0. It is important to set this Unit Number if the M2 has a Data Logger attached to it because the file name of the printout is based on this number. Touch the back arrow to return to the previous menu.



Language Selection

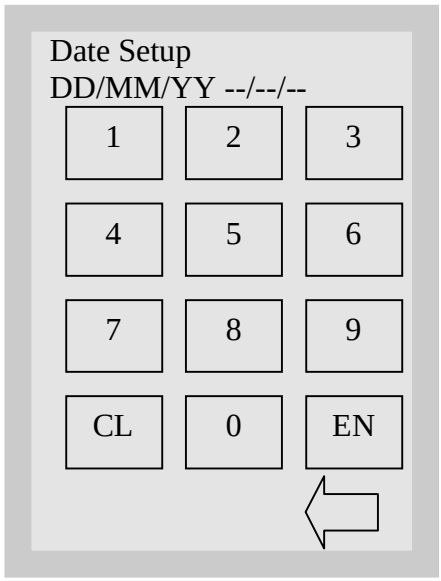
This allows the user to select among available languages for the Hydrim. Use the up and down arrows to select the desired language. The default language is English. Touch the back arrow to return to the previous menu.





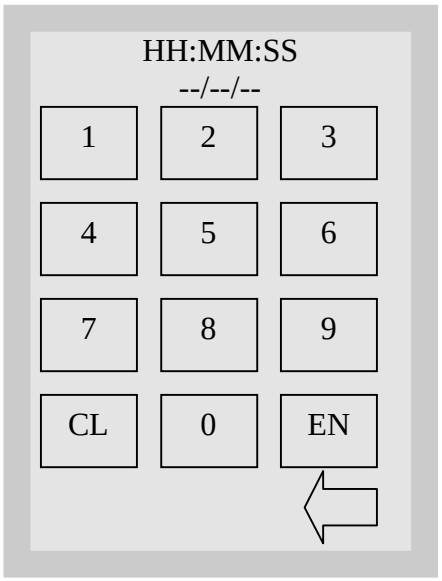
Setup Menu – Date / Time

The Date/Time menu consists of four options as shown. Use the up and down arrows to move from screen. The user can set the current date and time, set the date format and the time format. Touch the desired option and follow the directions below.



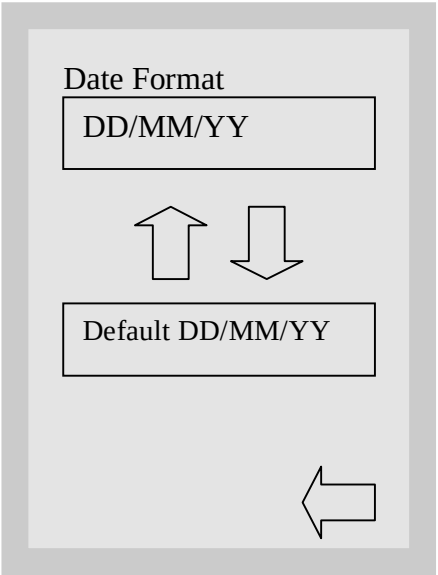
Date Setup

Enter the day, month and year and touch EN to save. Touch CL to clear the last number entered.



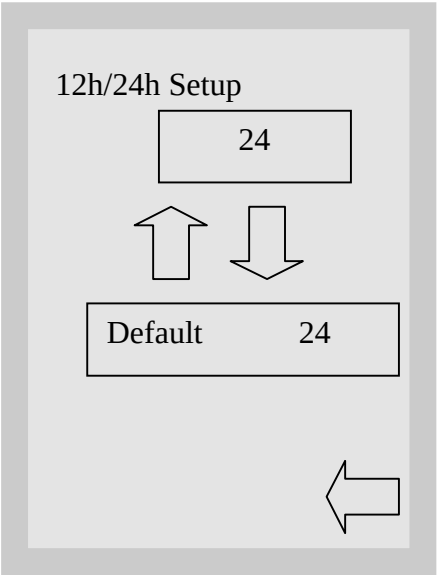
Time Setup

Enter the time in hours, minutes and seconds and press EN to save. Touch CL to clear the last number entered.



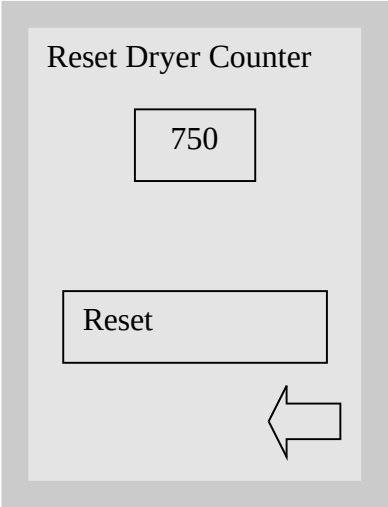
Date Format

Use the up and down arrows to change the date format from DD/MM/YY to MM/DD/YY. The default is DD/MM/YY



12h/24h

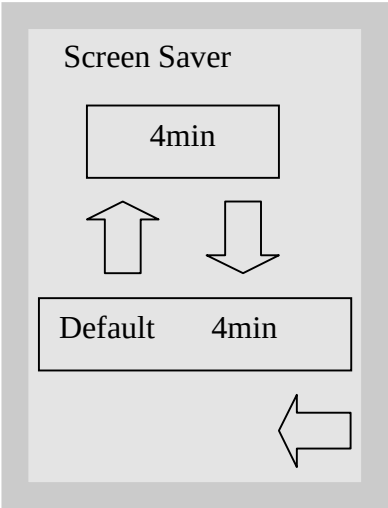
Use the up and down arrows to switch from 12-hour to 24-hour clock. The default is 24-hour clock.



Reset Drying Counter

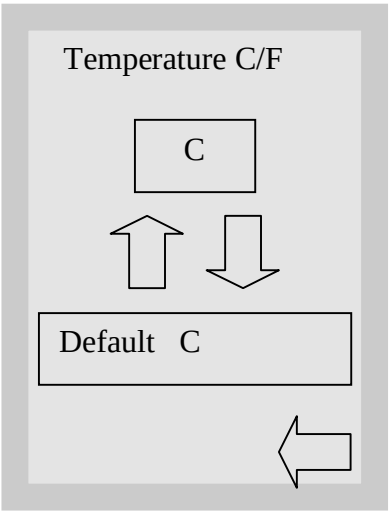
When the “change air filter” message appears, the air filter must be changed and the drying cycle counter reset. This should be done by an authorised service technician.

To reset the drying counter, touch *Reset*.
Use the back arrow to return to the previous screen.



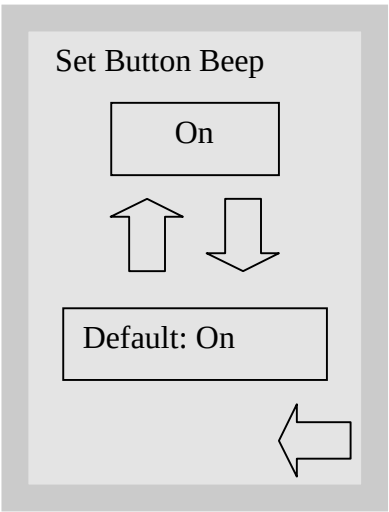
Screen Saver

The user can adjust the time that elapses before the screen goes into screen saver mode. Touch the up and down arrows to select the desired screen saver setting. The default is 4 minutes. Touch the back arrow to return to the previous menu.



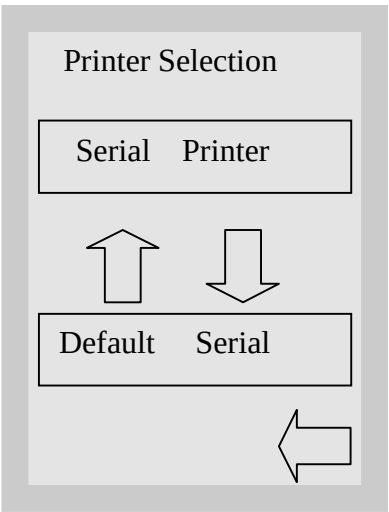
Temperature C/F

The user can choose to have information displayed in degrees Celsius or degrees Fahrenheit. Touch the up and down arrows to select the desired choice. The default is degrees Celsius. Touch the back arrow to return to the previous menu.



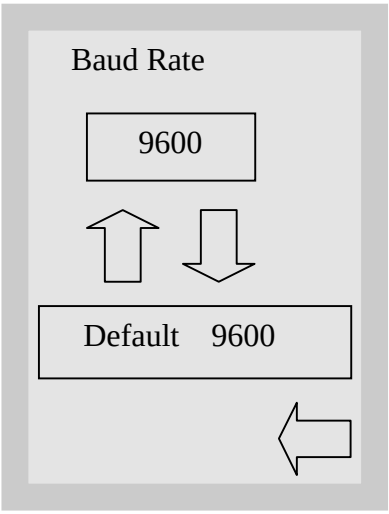
Set Button Beep

The user can select between having the unit beep or not beep whenever a screen button is touched. Turn the beep ON or OFF by using the up and down arrows. The default setting is ON. Touch the back arrow to return to the previous menu.



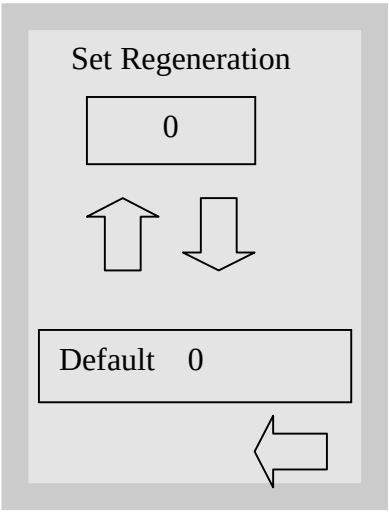
Setup Menu – Printer / Data Logger Selection

Printer selection allows the user to select either a default serial printer or the SciCan Data Logger as the recording medium for cycle information. See section 5.11 (operator manual) for more information.



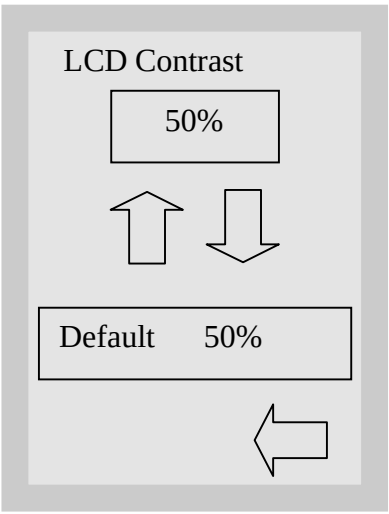
Setup Menu – Baud Rate

The Baud Rate is a setting used in conjunction with the printer selection. Baud Rate is a measure of how fast data is moving through the serial connection. See section 5.11 (Operator's manual) for more information.



Set Regeneration

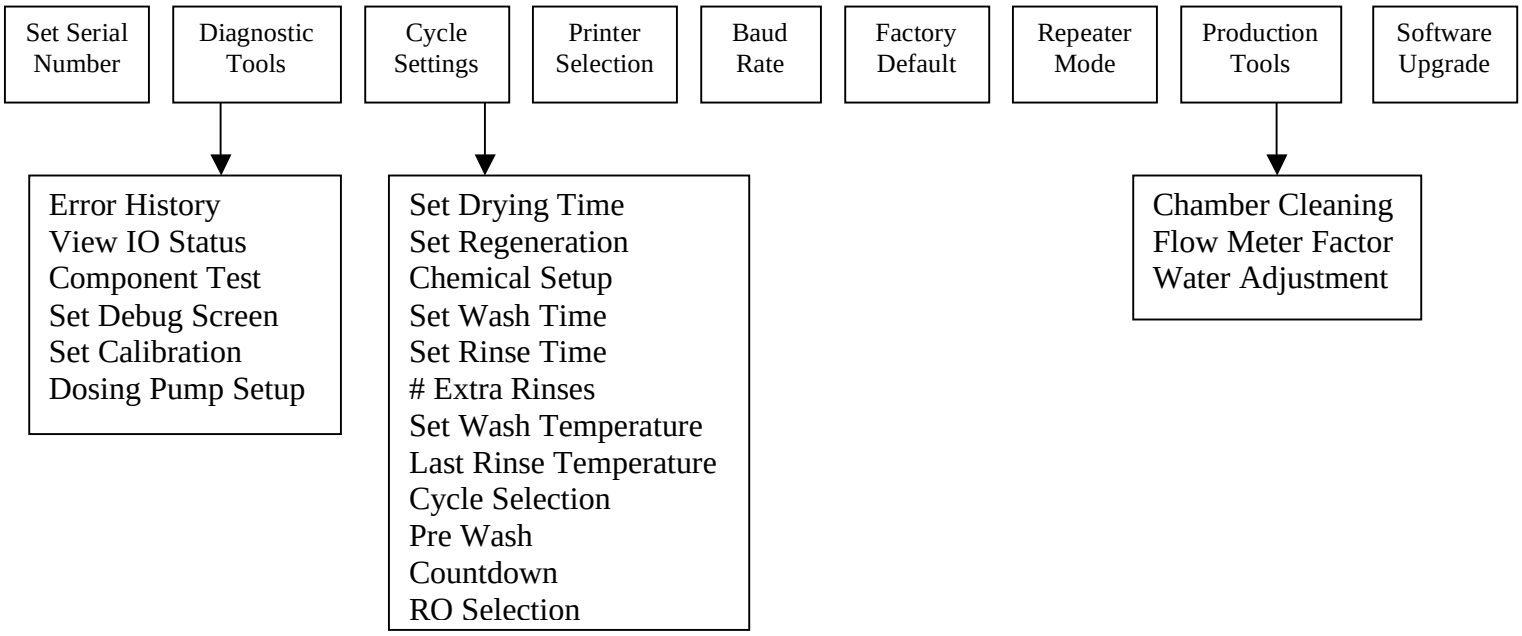
Set the salt regeneration according to the local water hardness. Use the up and down arrows to change the value. The default setting is 0. See installation instructions for further information. Touch the back arrow to return to the previous menu.



LCD Contrast

The user can change the contrast on the display. Touch the up and down arrows to select more or less contrast on the display. The default is 50%. Touch the back arrow to return to the previous menu.

13. Technical Service Menu Overview



To access this menu, turn the unit OFF and ON. There is an **"i"** in the lower right hand corner of the screen for about 10 seconds. Touch the **"i"** to get to the menu screen. Touch Technician.

Enter the password 7919 and press EN.

Within the main Technician menu there are nine options.

Set Serial No: Allows the technician to input the Serial Number of the Hydrim M2.

Diagnostic Tools: Offers a submenu of six tools.

Error History: Allows access to the last three errors and the last cycle.

View IO Status: Shows the status of each component in the unit.

Chamber Full Switch – ON/OFF
Salt Switch – OK/No Salt
Rinse aid – ON/OFF (not used with HIP Solution)
Chemical Sensor – ON/OFF
Chamber Overflow – ON/OFF
Chamber Pressure – ON/OFF
Door SW – ON/OFF
Chamber Temperature Celsius
Validation Temperature Celsius
CTS (Clear to Send) – ON/OFF
Detergent Level Switch – ON/OFF

Component Test: Allows individual testing of the following components.

Circulation Pump M1 - ON/OFF
All Devices - ON/OFF
RO Valve Y5 – ON/OFF
Dryer Motor High – ON/OFF
Condenser Valve – ON/OFF
Chamber Heater R1 – ON/OFF
Latch L1 (Door) – ON/OFF
Salt Valve Y2 – ON/OFF
Dosing Pump M4 – ON/OFF
Dryer Motor Low – ON/OFF
Hot Water Valve Y7 – ON/OFF
Cold Water Valve Y1 – ON/OFF
Rinse Aid Valve – ON/OFF (not used with HIP Solution)
Waste Pump M2 – ON/OFF

Set debug screen: Shows IO status when cycle is running.

Set Calibration: Allows technician to calibrate the temperature sensors.

Dosing Pump Setup: Allows technician to calibrate the Dosing Pump.

Cycle Settings: Offers a submenu of eight settings.

Set Drying Time:
The dryer can operate at standard or intensive drying, and can be set independently for P1, P2, and P3.

Set Regeneration: Sets water softener setting.
0 (choose from 0 to 7)

Chemical Setup:

Revision 318 and Lower Software	Revision 320 and Higher Software
Prewash	Prewash
4 sec. ↑↓ (choose from 0 to 7 sec.)	0 sec. (choose from 0 to 7 sec.)
Wash	Wash
14 sec. ↑↓ (choose from 0 to 50 sec.)	0 sec. ↑↓ (choose from 0 to 20 sec.)
High Temp. Wash	High Temp. Wash
14 sec. ↑↓ (choose from 0 to 50 sec.)	32 sec. ↑↓ (choose from 0 to 50 sec.)
Rinse	Rinse
9 sec ↑↓ (choose from 0 to 12 sec.)	9 sec ↑↓ (choose from 0 to 12 sec.)

Set Wash Time:

P1 Regular

9 min ↑↓ (choose from 5 to 15 min)

P2 80°C 10min

9 min ↑↓ (choose from 5 to 15 min)

P3 90°C 5min

9 min ↑↓ (choose from 5 to 15 min)

Set Rinse Time:

P1 Regular

1 min ↑↓ (choose from 1 to 5 min)

P2 80°C 10min

10 min (not adjustable)

P3 90°C 5min

5 min (not adjustable)

Extra Rinses:

P1 Regular

0 ↑↓ (choose from 0 to 4)

P2 80°C 10min

0 ↑↓ (choose from 0 to 4)

P3 90°C 5min

0 ↑↓ (choose from 0 to 4)

Set Wash Temperature:

P1 Regular

50ºC ↑↓ (choose from 45 to 60ºC)

P2 80°C 10min

50ºC ↑↓ (choose from 45 to 60ºC)

P3 90°C 5min

50ºC ↑↓ (choose from 45 to 60ºC)

Last Rinse Temperature:

P1 Regular

60ºC ↑↓ (choose from 30 to 90ºC)

P2 80°C 10min

80ºC (not adjustable)

P3 90°C 5min

90ºC (not adjustable)

Cycle Selection: Allows technician to deactivate cycles that are not required by the user.

P1 Regular - ON (choose OFF or ON)

P2 80°C 10min - ON (choose OFF or ON)

P3 90°C 5min - ON (choose OFF or ON)

Note: At any time only two cycles can be turned OFF. At least one cycle must be available to the user.

Pre Wash: Allows the technician to set Prewash times for each individual cycle and temperature for all three cycles.

Time:
P1 Regular – 3min (choose 3 – 10 min)
P2 80°C 10min - 3min (choose 3 – 10 min)
P3 90°C 5min - 3min (choose 3 – 10 min)

Temperature:
P1, P2 & P3 – 28°C (choose 5-40 °C) One common setting for all programs

Countdown: This allows the technician to select between display of the estimated time remaining in the cycle (countdown ON) and the cycle count (countdown OFF).

RO Selection: For customers with an RO water supply, this allows the technician to select between two set-ups.

Case 1: Feed RO water into the hot water valve and potable water into the cold water valve.

Case 2: Feeds RO water into a third valve (future development).

Printer Selection

Serial Printer (default)
USB Flash/MSD

Baud Rate: The Baud rate is a setting used in conjunction with the Printer Selection. Baud Rate is a measure of how fast data is moving through the serial connection.

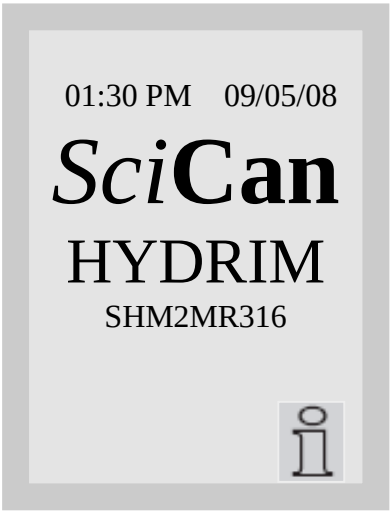
Repeater Mode: In the ON position, the unit will continuously run the selected cycle.

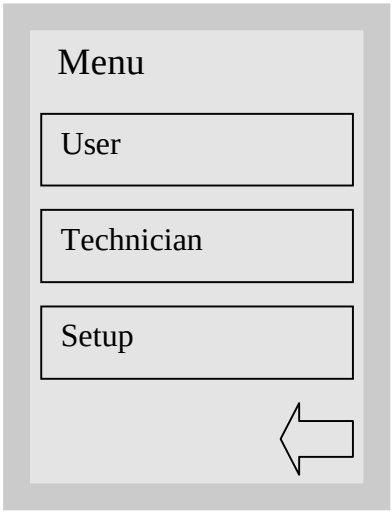
Factory Default: Resets all values to factory default except Water Adjustment value.

Software Upgrade: To upgrade software via the SciCan Data Logger.

14. Technical Service Menu

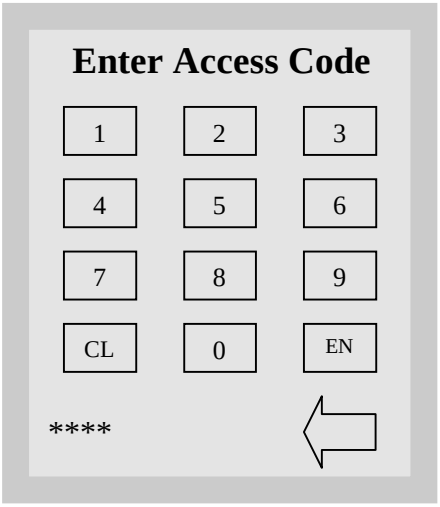
To access the Technician Menu, proceed to the menu screen by turning the Hydrim OFF and then ON. An "i" (information) will appear for about 10 seconds at the bottom right hand corner.





Touch the **"i"** to move to the Menu screen and select Technician.

Press the back arrow to return to the previous screen.

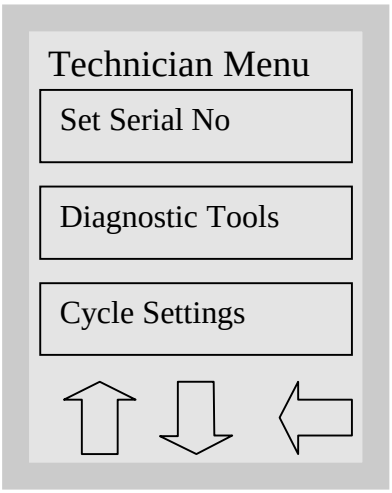


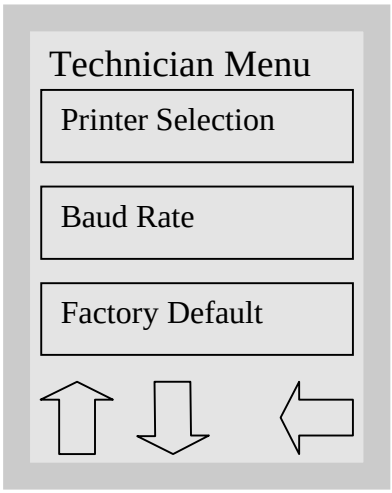
To enter the Technician Menu touch 7919 and press EN.

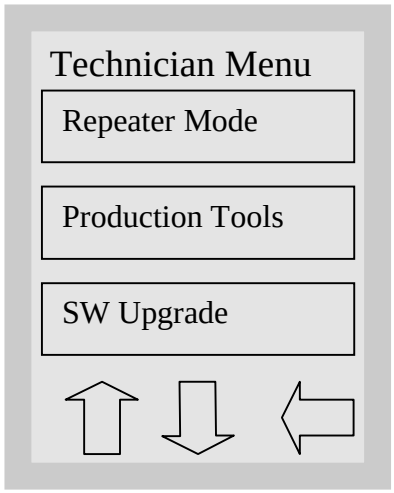
Password is shown as "*" characters.

Touch CL to clear the last number entered.

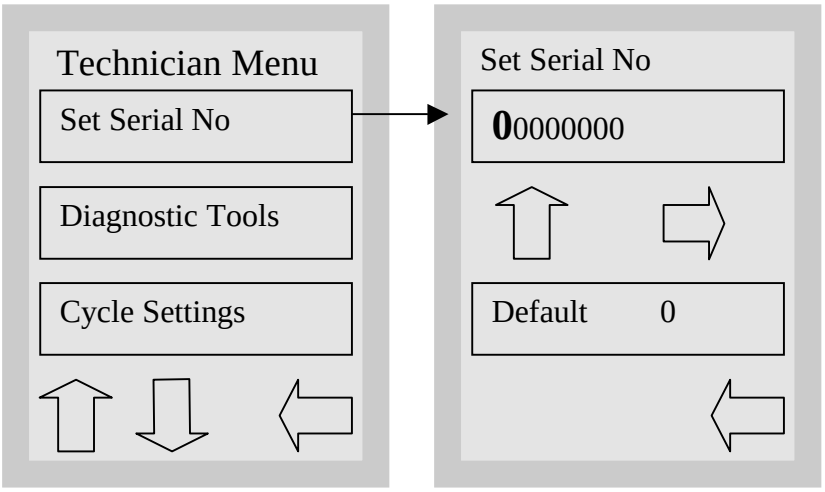
Press the back arrow to return to the previous menu.







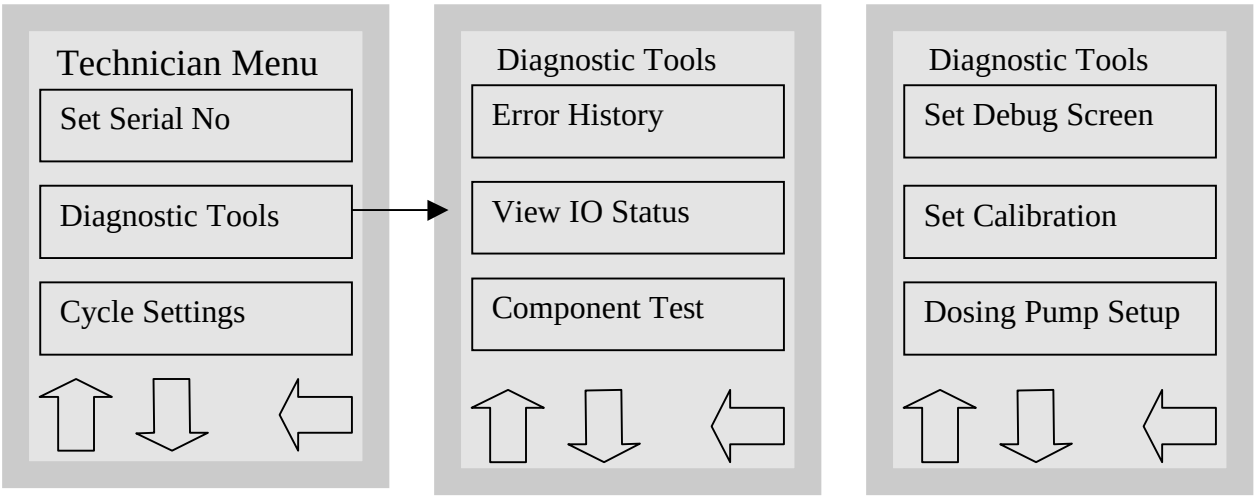
The Technician Menu consists of nine choices as shown above. Use the up and down arrows to move through the choices. Touch the desired option to select it.



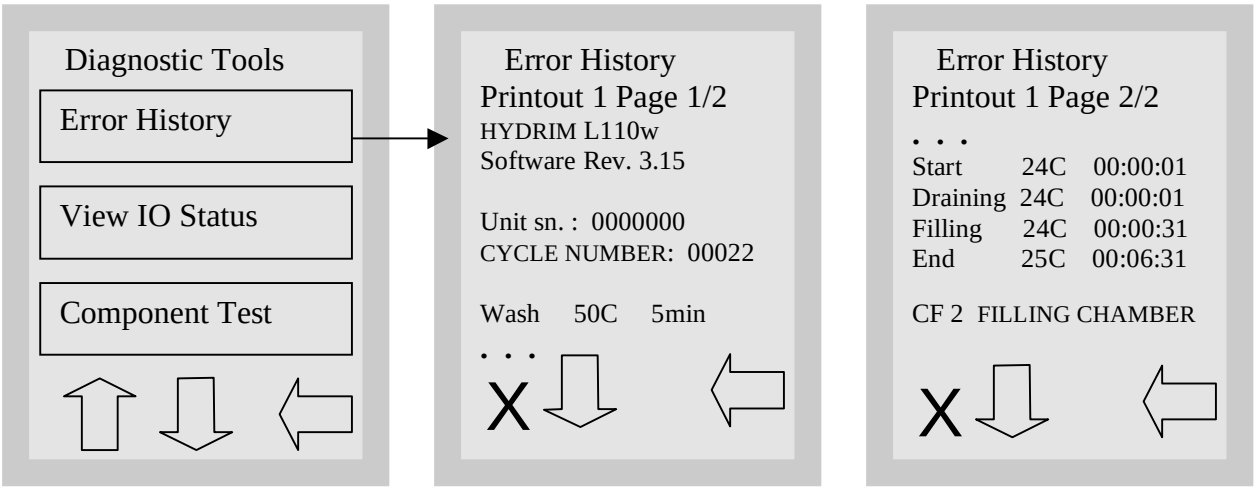
The Set Serial No screen allows the technician to enter the Hydrim serial number into the software.

Touch the up arrow to increase the highlighted number. Touch the right arrow to select next number.

Press the back arrow to return to the previous menu.

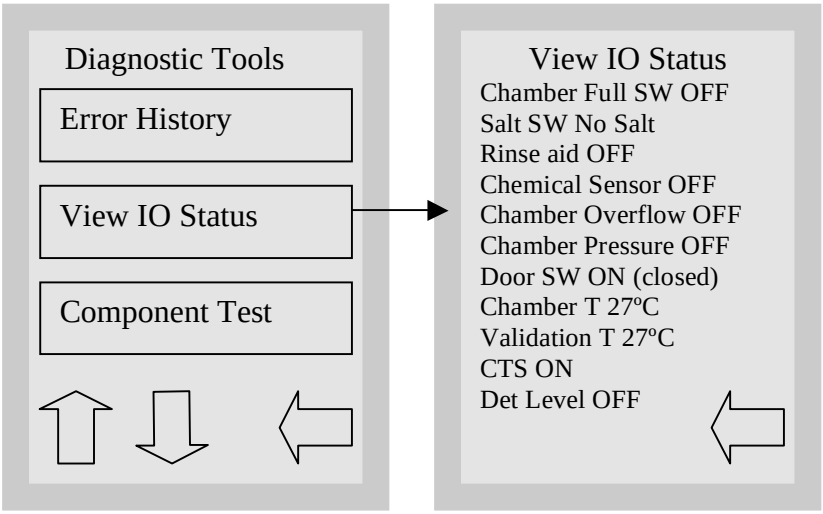


The Diagnostic Tools menu consists of six choices. Use the up arrow to change to the previous Diagnostic Tools screen. Use the down arrow to change to next Diagnostic Tools screen. Press the back arrow to return to the previous menu.

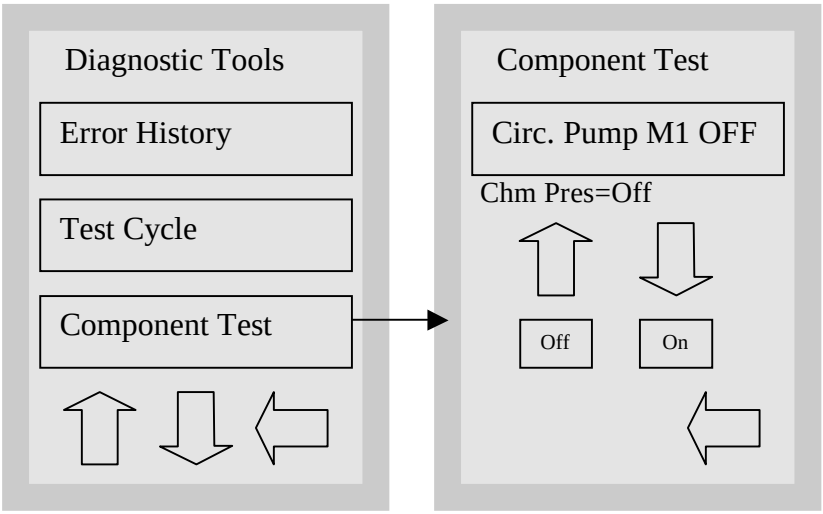


The Error History screen allows the user to see the last three errors and the last cycle.
Press the down arrow to move to the next page / error. Press the X in the lower left hand corner to clear the error history. The last cycle will remain.
Press the back arrow to return to the previous menu.

View IO Status shows the status of each component in the unit:

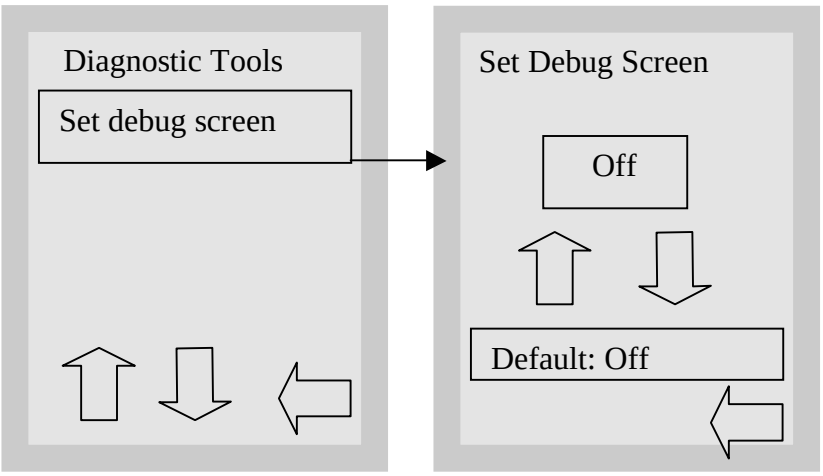


Chamber Full SW – ON/OFF
Salt (Regeneration) SW – OK/No Salt
Rinse Aid SW – ON/OFF (No Rinse Aid on software 318 and up)
Chemical Sensor - ON/OFF
Chamber Overflow SW – ON/OFF
Chamber Pressure SW – ON/OFF
Door SW – ON/OFF
Chamber Temperature - XXºC
Validation Temperature - XX°C
CTS (clear to send) – ON/OFF
(To Printer or Data logger)
Det Level SW – ON/OFF
Press the back arrow to return to the previous menu.



Press the up arrow to move to the next device.
Press the down arrow to move to the previous device.
Press the On button to turn the device ON.
Press the Off button to turn the device OFF.
Press the back arrow to return to the previous menu.

Component Test allows individual testing of the following components:
Circ. Pump M1 – ON/OFF
All Devices – ON/OFF
RO Valve Y5 – ON/OFF
Dryer Motor High – ON/OFF
Cond. Valve – ON/OFF
Ch. Heater R1 – ON/OFF
Latch L1 – ON/OFF
Salt Valve Y2 – ON/OFF
Dosing Pump 1 M4 – ON/OFF
Dryer Motor Low – ON/OFF
Hot W. Valve Y7 – ON/OFF
Cold W. Valve Y1 – ON/OFF
Rinse Aid Valve – ON/OFF
Waste Pump M2 – ON/OFF



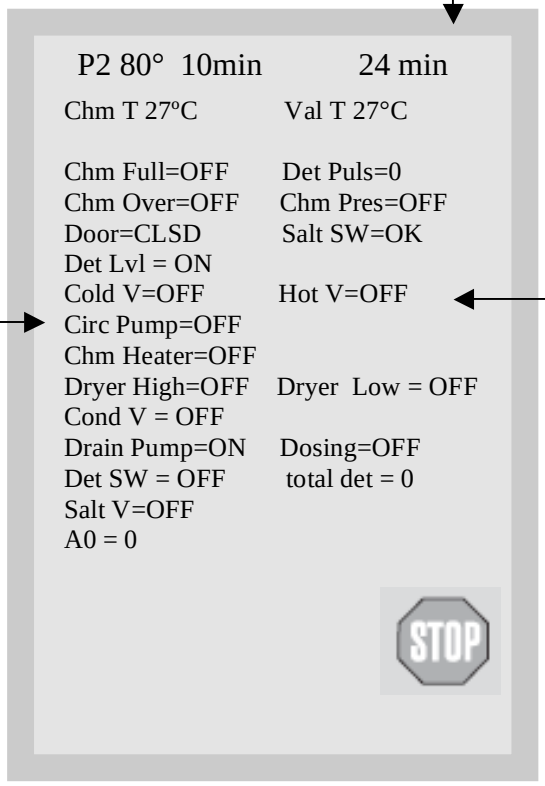
Press the up arrow to turn on the debug screen.

Press the down arrow to turn off the debug screen.

Press the default button to set the value to default.

Press the back arrow to return to the previous menu.

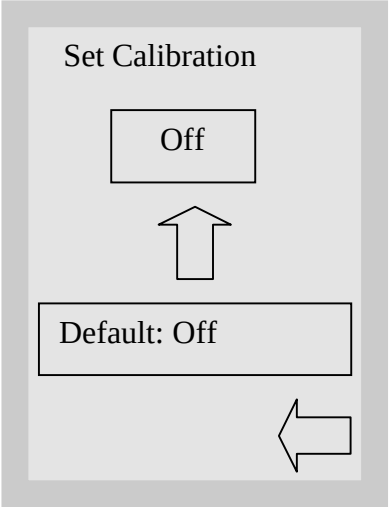
Time remaining in cycle

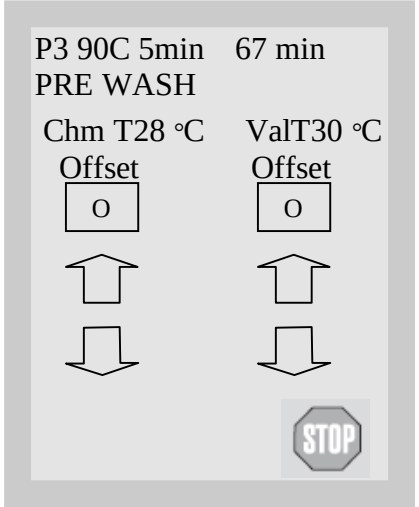


Chamber Temperature is 27°C
Chamber Full Switch is OFF
Chamber Overflow Switch is OFF
Door latch is CLOSED
Detergent Level Switch is ON
Cold water valve is OFF (closed)
Circulation pump is OFF
Chamber heater is OFF
Dryer motor high is OFF
Condenser valve is OFF
Drain pump is ON
Det SW (Flow meter) is OFF (inactive)
Salt valve is OFF
A0 = shows A0 value for cycle

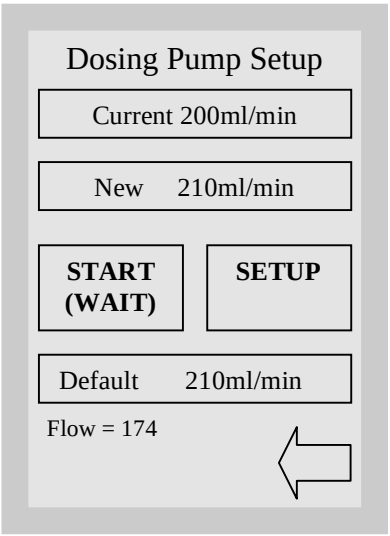
Chamber Validation Temp is 27°C
Det Puls shows the # of pulses during each detergent delivery
Chamber Pressure Switch is OFF
Salt Switch is OK
Hot water valve is OFF (closed)
Dryer motor low is OFF
Dosing is OFF
Total det = total detergent delivered in mL x 10
(e.g. 100.2 mL = 1002)

The Debug cycle should be used when troubleshooting to view the IO status of components.



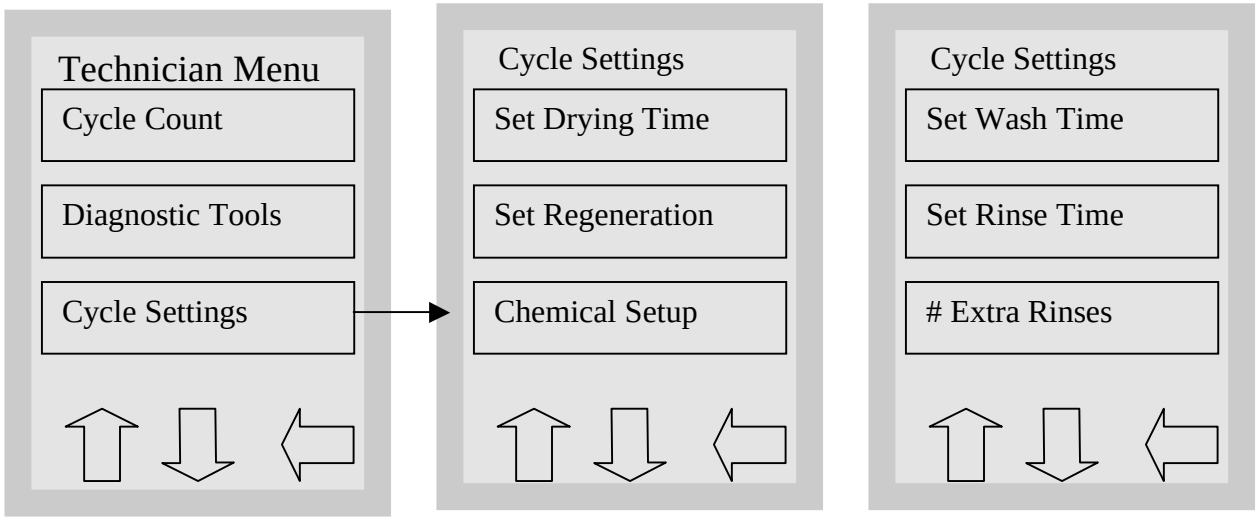


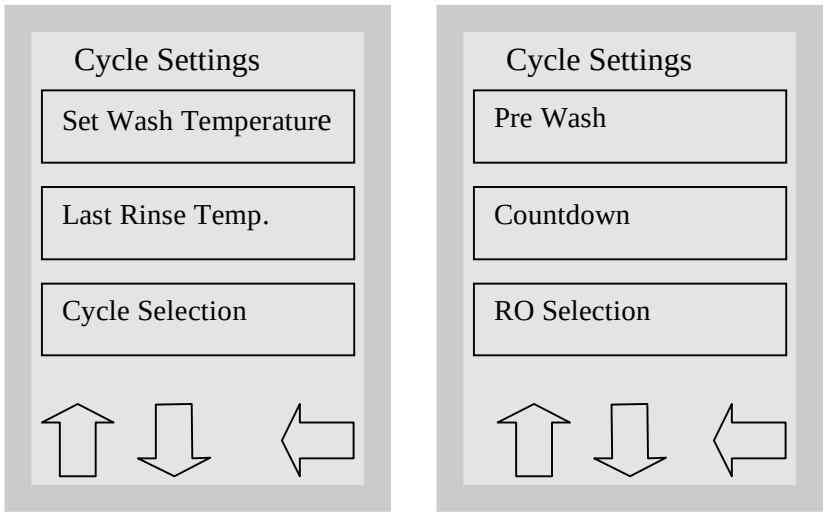
This allows the technician to calibrate the temperature sensors. Place a calibration sensor into the wash chamber and close the door. In the “Set Calibration” screen, select “ON”. Exit from this menu using the back arrow and run a P3 cycle as usual. You will see the screen shown above. When the chamber temperature sensor (ChmT) and the validation temperature sensor (ValT) reach 90ºC, use the arrows to adjust the offset value of each sensor to match the reading on the calibration sensor in the chamber. Press stop. Adjustment of +/- 5ºC can be made. Turn the unit OFF and back ON to exit the calibration mode.



This allows the technician to calibrate the dosing pump. Refer to Appendix B for details.

For units with software revision 318 and lower software, this must be done in conjunction with the set up of the Flow Meter Factor as described in Appendix A.

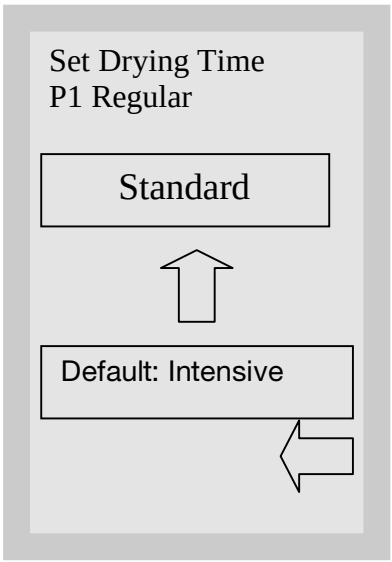




The Cycle Settings menu consists of twelve choices.

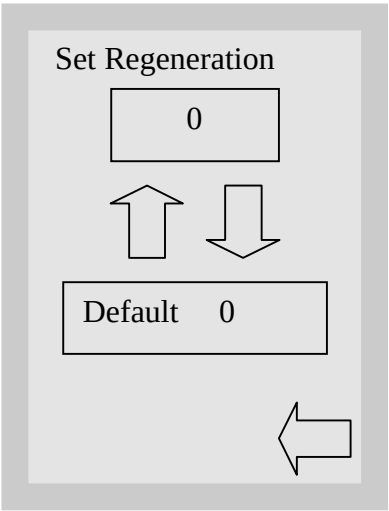
Use the up and down arrows to change to different Cycle Settings screens.

Press the back arrow to return to the Technician menu.



Set Drying Time

The drying time can be set to standard, for small loads, or intensive, for larger loads. Standard drying time is 20 minutes for P1, and 15 minutes for P2 and P3. Intensive drying time is 30 minutes for P1, and 20 minutes for P2 and P3. Touch the up arrow to select standard or intensive. The default is "intensive". Touch *default* if you wish to return to the factory default. Use the back arrow to return to the previous screen.

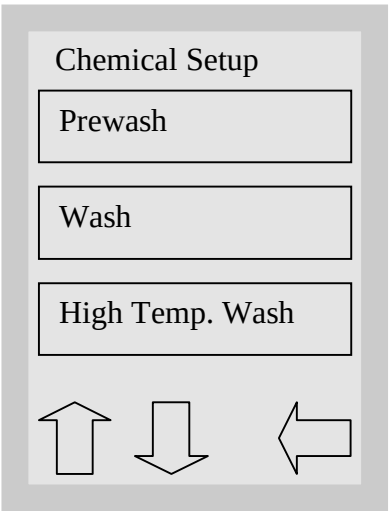


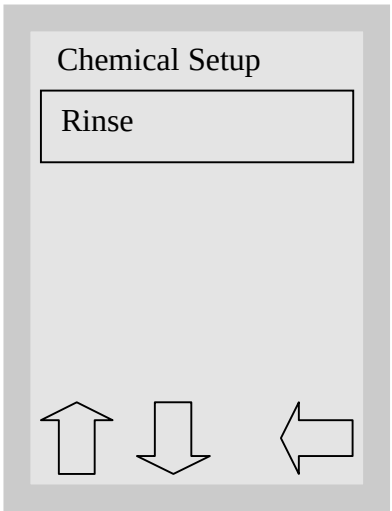
Use a Water Test Kit part #01-108305S to determine if salt is required.

Use the up and down arrows to select the desired salt regeneration setting.

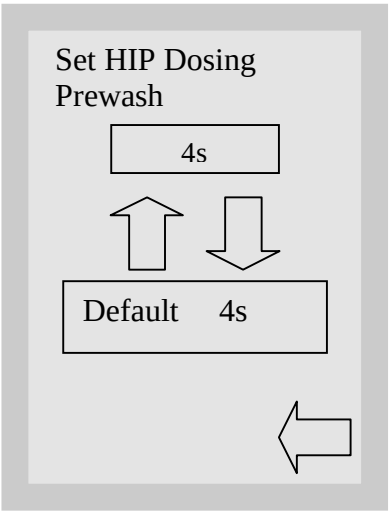
Press **default** to return to the factory default.

Press the back arrow to return to the Technician Menu.





Select the cycle for which you wish to change the dosing setting.



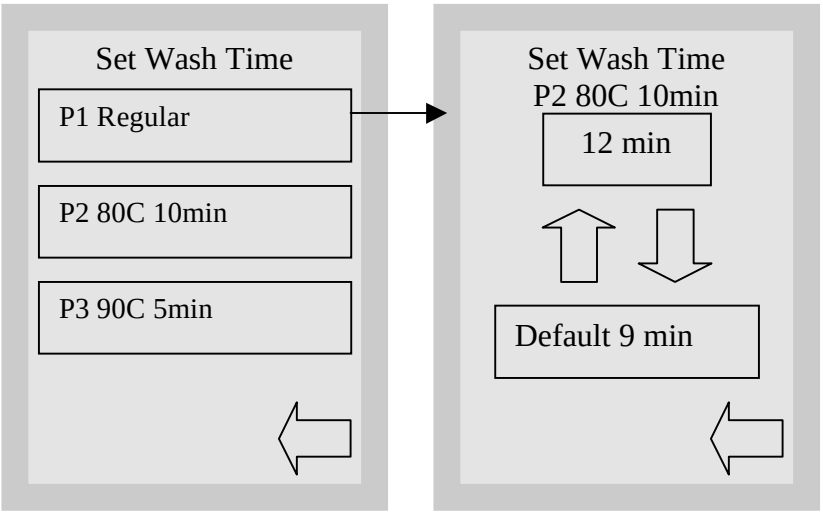
Use the up and down arrows to select the desired dosing setting for the cycle selected. (Do not change default setting unless directed by SciCan)

Press **default** to return to factory default.

Press the back arrow to return to the Technician Menu.

Settings for software below revision 318
Prewash dosing Min Value 0 – Max Valve 7s, Default Value 4s
Wash dosing Min Value 0 – Max Value 50s, Default Value 14s
HD Wash dosing Min Value 0 – Max Valve 50s Default 14s
Final rinse dosing Min Value 0 – Max Value 12s, Default Value 9s

Settings for software revision 320 and higher
Prewash dosing Min Value 0 – Max Value 7s Default Value 0s
Wash dosing Min Value 0 – Max Value 20s Default Value 0s
HD Wash dosing Min Value 0 – Max Value 50s Default Value 32s
Final rinse dosing Min Value 0 – Max Value 12s Default Value 9s



Select the cycle for which you wish to change the wash time.

Use the up and down arrows to select the desired wash time for the cycle selected. (Do not change default setting unless directed by SciCan)

Press **default** to return to factory default.

Press the back arrow to return to the Technician Menu.

P1, P2 & P3 Default value 9 minutes, minimum value 5 minutes, maximum value 15 minutes

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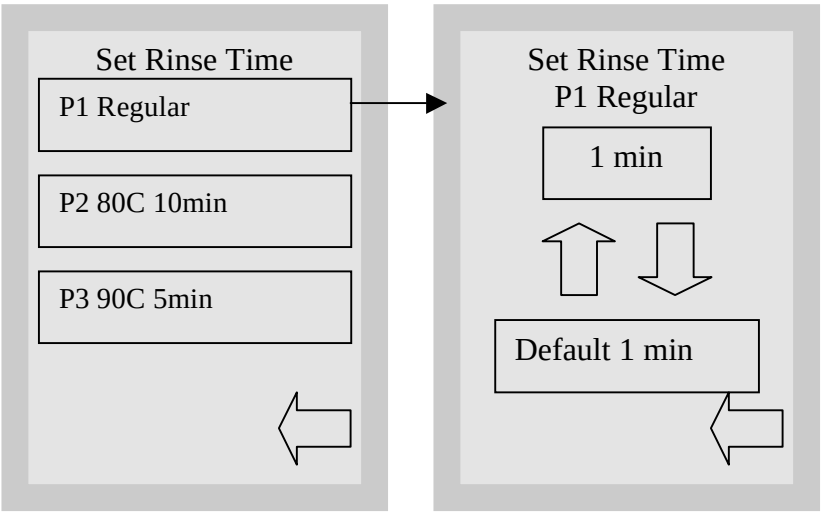

Select cycle for rinse time you wish to change.

Use the up and down arrows to select the desired rinse time for the cycle selected. (Do not change default setting unless directed by SciCan)

Press **default** to return to factory default.

Press the back arrow to return to the Technician Menu.

P1 Default value 1 minute, minimum value 1 minute, maximum value 5 minutes
P2 Default value 10 minutes, minimum value 10 minutes, maximum value 10 minutes
P3 Default value 5 minutes, minimum value 5 minutes, maximum value 5 minutes

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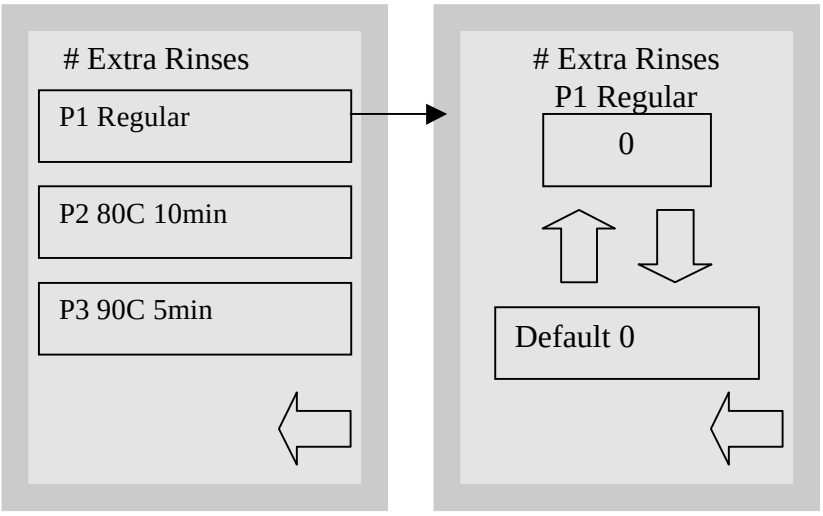


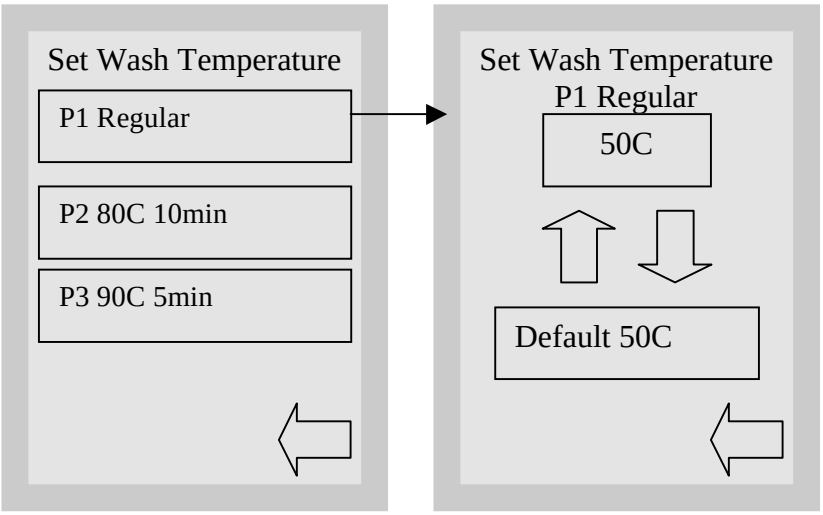
Select the cycle for which you wish to set the # of extra rinses.

Use the up and down arrows to select the desired # of extra rinses for the cycle selected. (Do not change default setting unless directed by SciCan)

Press **default** to return to factory default.

Press the back arrow to return to the Technician Menu.

P1, P2 & P3 Default value 0, minimum value 0, maximum value 4



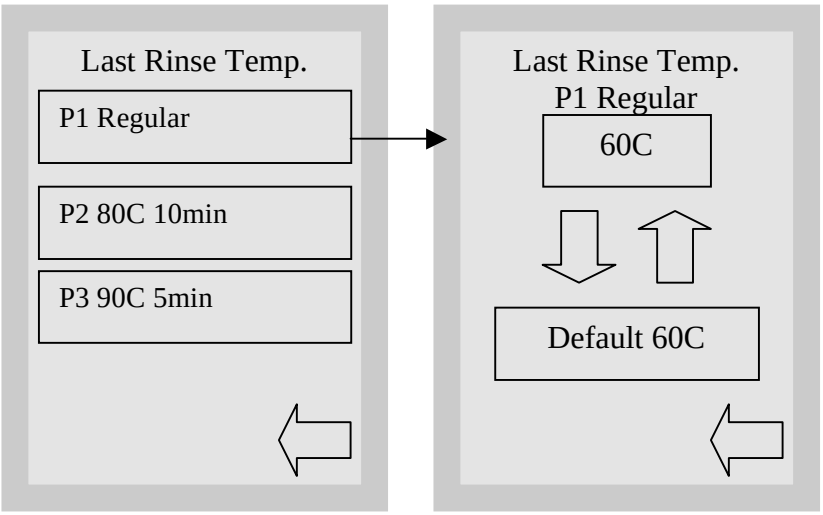
Select the cycle for which you wish to change the wash temperature.

Use the up and down arrows to select the desired wash temperature for the cycle selected. (Do not change default setting unless directed by SciCan)

Press **default** to return to factory default.

Press the back arrow to return to the Technician Menu.

P1, 2 & 3 Default value 50°C, minimum value 45ºC, maximum value 60ºC



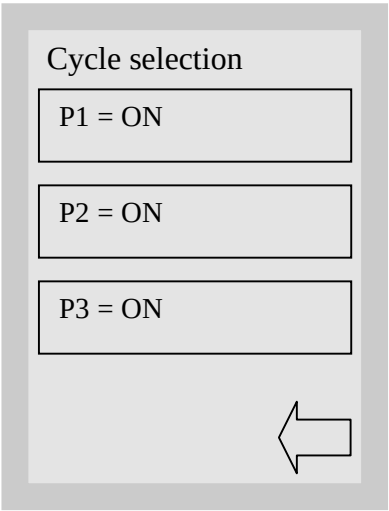
Select the cycle for which you wish to change the last rinse temperature.

Use the up and down arrows to select the desired last rinse temperature for the cycle selected. (Do not change default setting unless directed by SciCan)

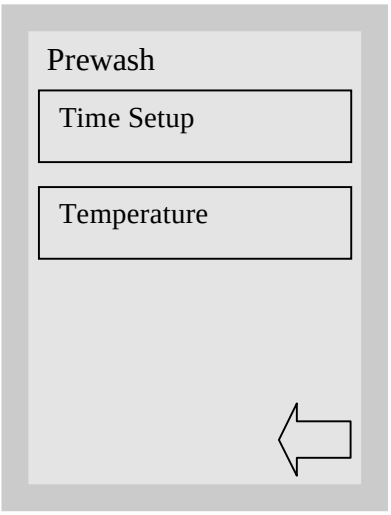
Press **default** to return to factory default.

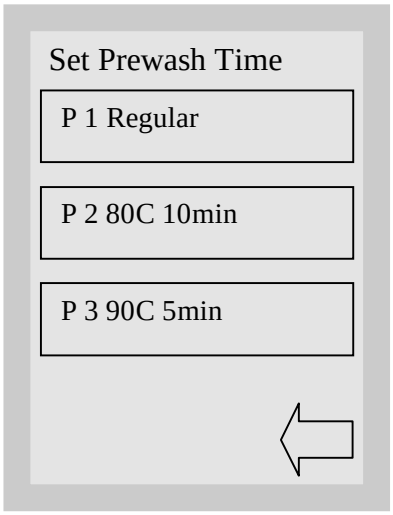
Press the back arrow to return to the Technician Menu.

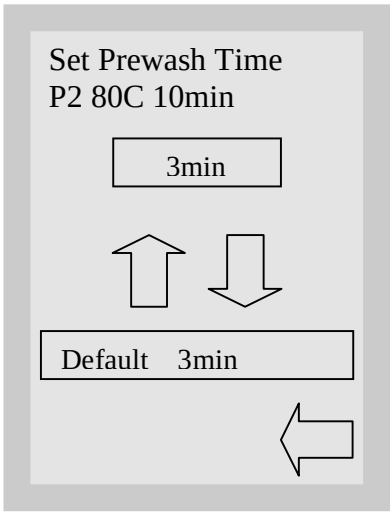
P1 Default value 60°C, minimum value 30°C, maximum value 90°C
P2 Default value 80°C, not adjustable
P3 Default value 90°C, not adjustable

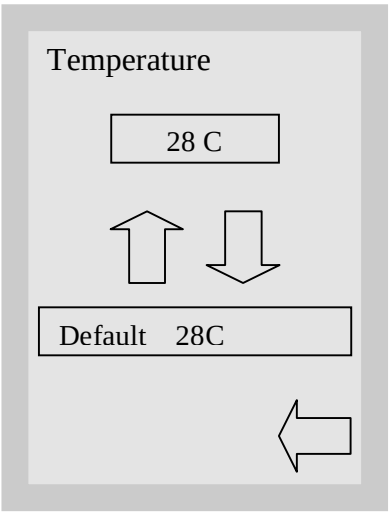


Cycle selection allows the technician to deactivate cycles that are not required by the user. If a cycle is deactivated it will not appear on the cycle selection menu. At least one cycle must be selected.









This allows the technician to set the Prewash time and temperature.

Time:
P1 Regular – 3 min (choose 3-10 min)
P2 80ºC 10min - 3 min (choose 3-10 min)
P3 90ºC 5min - 3 min (choose 3-10 min)

Temperature:
P1, P2 & P3 – 28 ºC (choose 5-40 ºC) One common setting for all programs

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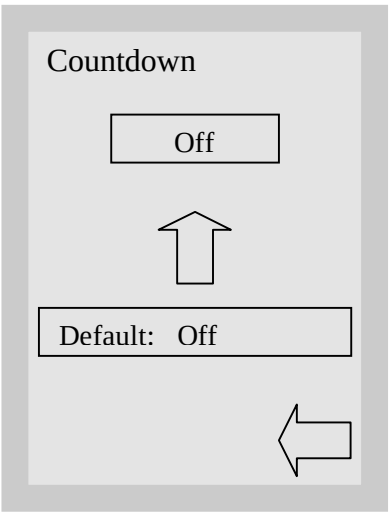
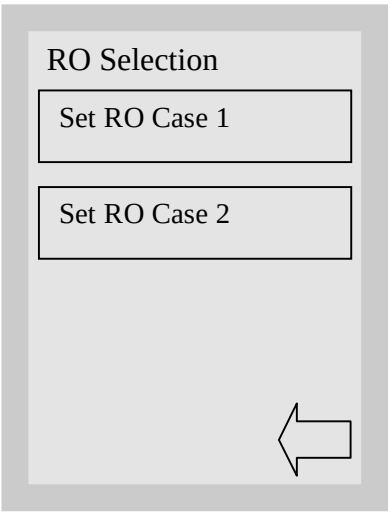
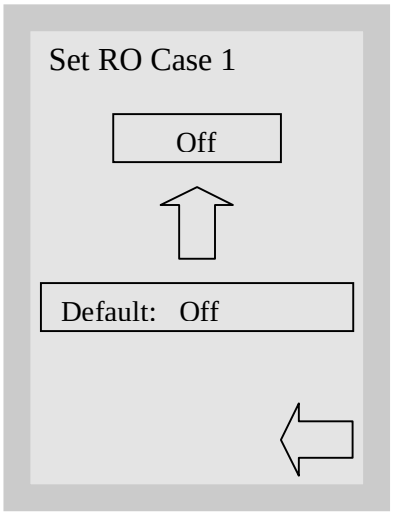
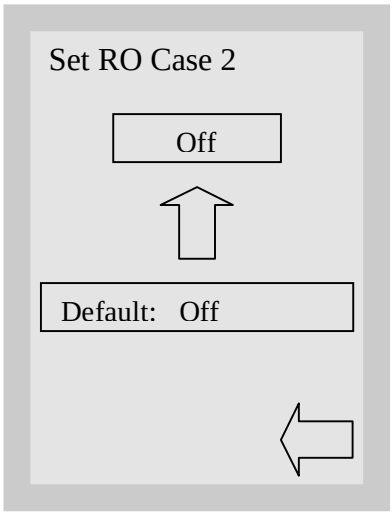


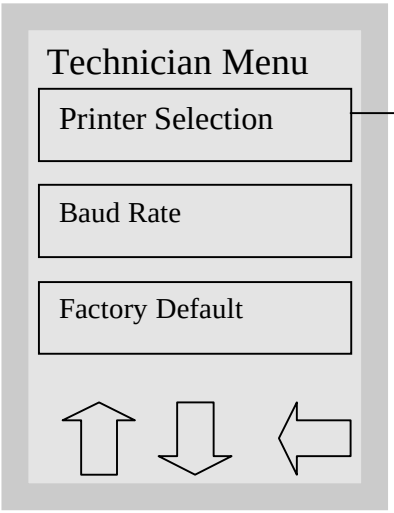
This allows the technician to select between display of the estimated time remaining in the cycle (countdown ON) and the cycle count (countdown OFF).

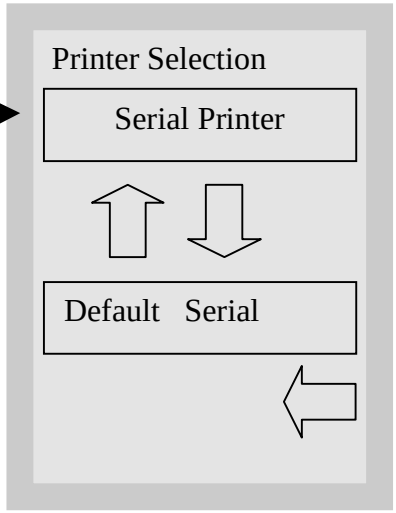






RO Selection: Allows the technician to select an RO water set-up, if connected to an RO water supply.
Case 1: Feed RO water into the hot water valve and potable water into the cold water valve.
Case 2: Feed RO water into a third valve (future development)
When either RO case is selected the detergent delivery for the Rinse stage is automatically set to 0.

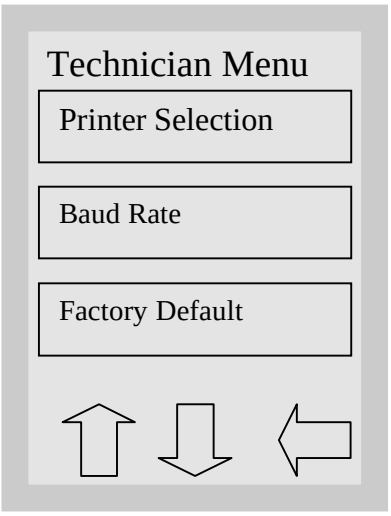


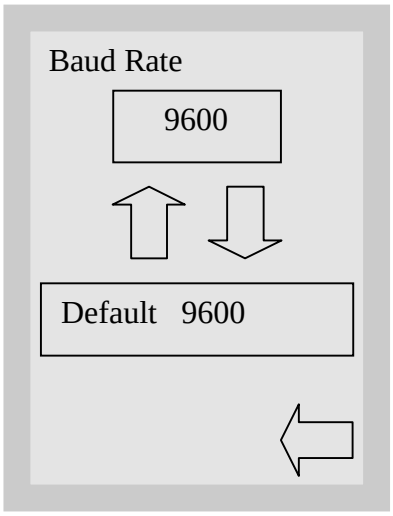


Printer Selection allows the technician to select either a default serial printer or the SciCan Data Logger as the recording medium for cycle information.

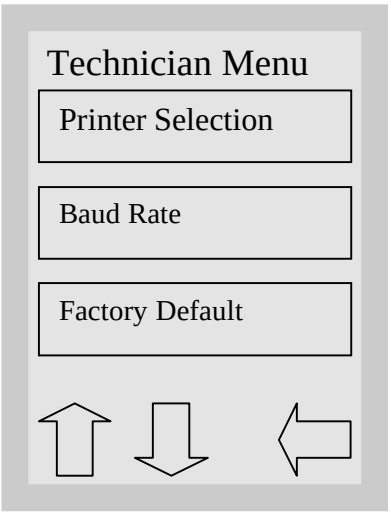
Press the up or down arrow to change between “Serial Printer” and “USB Flash/MSD”.

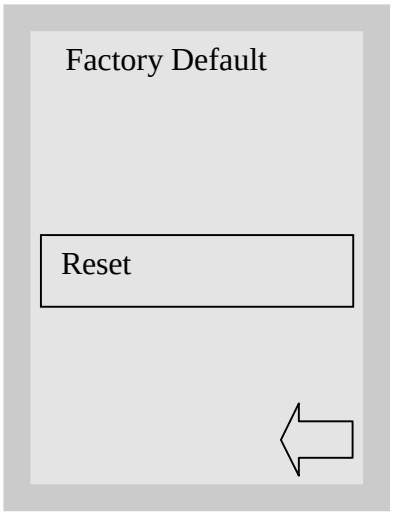
Press the back arrow to return to the previous menu.





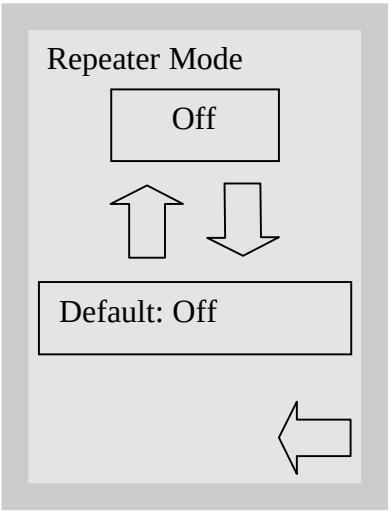
The Baud rate is a setting used in conjunction with the Printer Selection. Baud Rate is a measure of how fast data is moving through the serial connection.





Press the Reset button to return to factory default values, except the Water Adjustment value.

Press the back arrow to return to the previous menu.



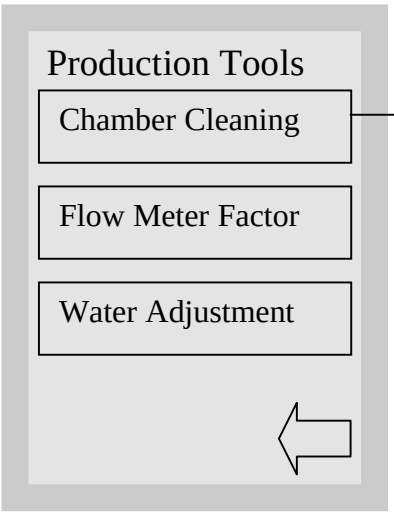
Press the Up arrow to turn on repeater mode.

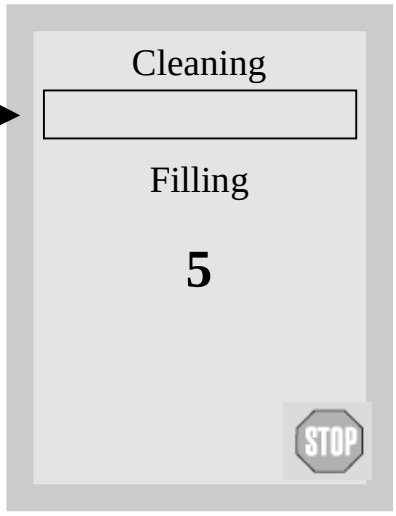
Press the Down arrow to turn off repeater mode.

Press the Default button to return to default values.

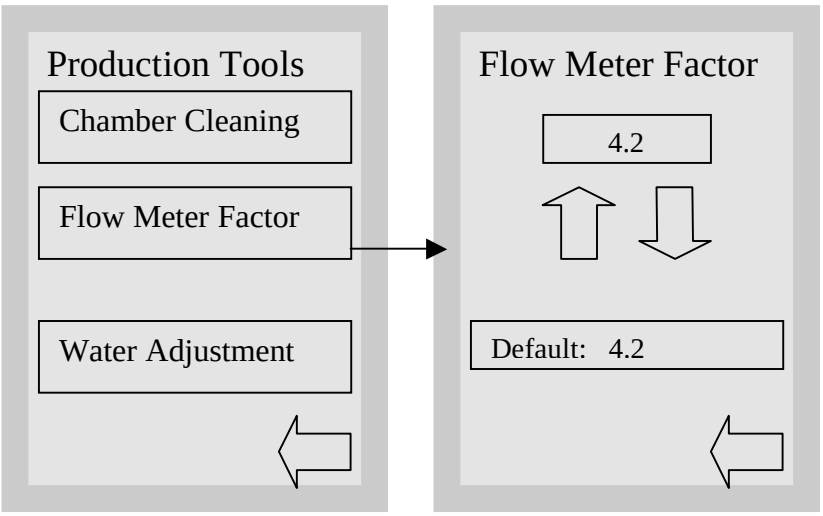
Press the back arrow to return to the previous menu.

Repeater mode will reset to OFF when Power Switch is turned OFF or it can be set to OFF from this screen. When the wash cycle is aborted by pressing the stop button, the repeater mode will stay ON.

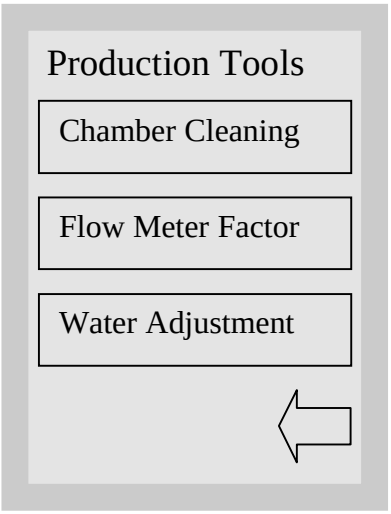




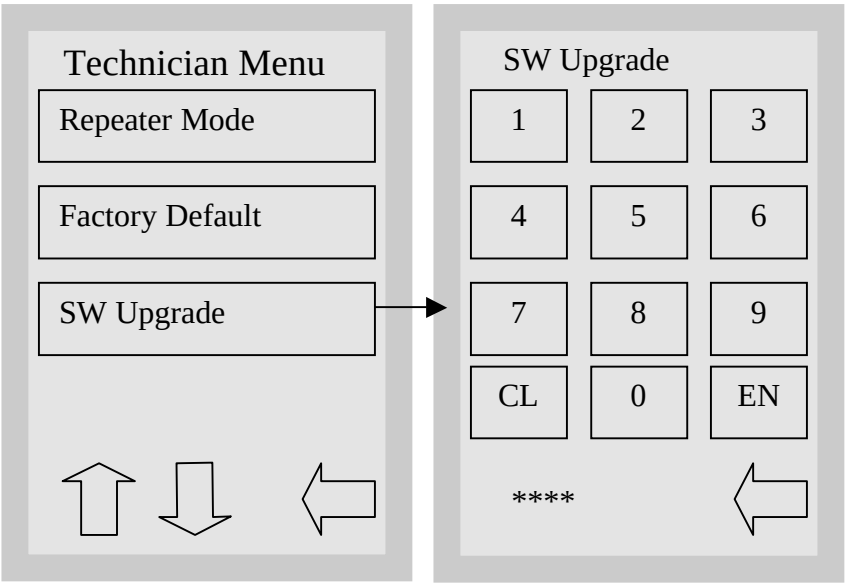
Chamber Cleaning is used to clean hard water residue from the chamber walls. Place 500 ml of vinegar in the bottom of the chamber prior to beginning the cycle.



The Flow Meter Factor is used to adjust the flow meter factor in production or following the installation of a new flow meter. Machines with a flow switch do not require this adjustment.



Water Adjustment (used in production only) does not reset when the Factory Default button is pressed.



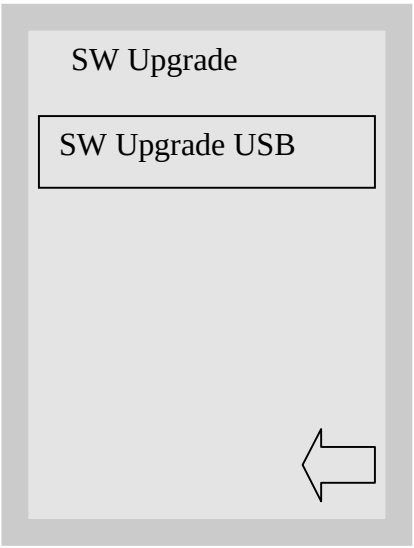
Software Upgrade

A Data Logger is required to upgrade software.

To enter the Software Upgrade screen, select 5849 and press EN.

Touch CL to clear the last number entered.

Press the back arrow to return to the previous menu.



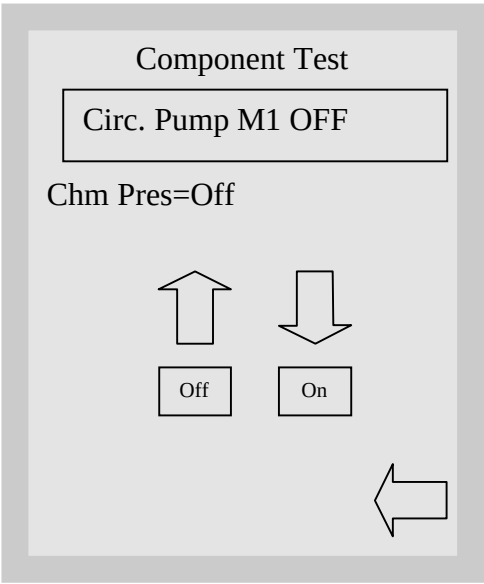
See Appendix C for Software Upgrade Instructions

Press SW Upgrade USB to start the SW upgrade procedure. This option allows the technician to upgrade software by using a USB Data Logger and files stored on a USB Memory Stick.

Press the back arrow to return to the previous menu.

When the SW upgrade is complete, the display will return to the “Power Up” screen.

15. Component Test Menu Revision 316 & Higher Software

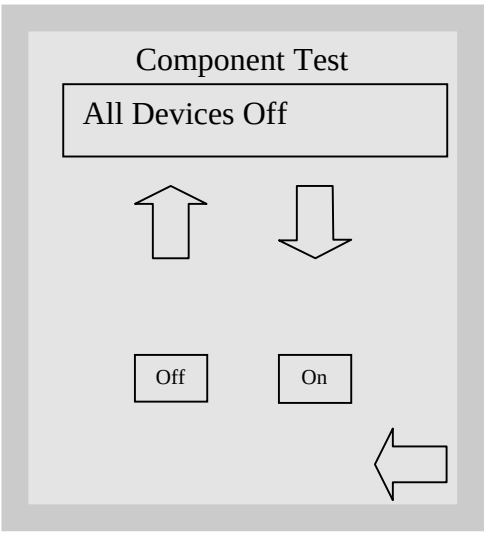


The Circulation Pump M1 screen is the first component test screen to appear. The Chamber Pressure Switch status appears below Circulation Pump information. Touch the ON button to start the Circulation Pump. If the chamber is full of water the Chamber Pressure Switch should turn ON when the Circulation Pump is running.

If the pump is left on for 2 minutes it will automatically turn OFF for 2 minutes and then back ON and so forth. While in this mode, the status line on the LCD will show “Circ. Pump M1 ON” (this feature is used for demonstration, when there is no water and drain connection).

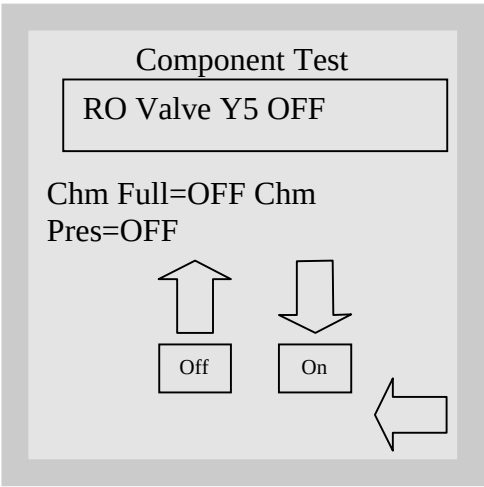
Touch the down arrow to select the next component test screen, All Devices.

When you exit a screen the component will automatically turn OFF.



The All Devices test is used to turn all the components OFF. The devices can only be turned OFF from this screen.

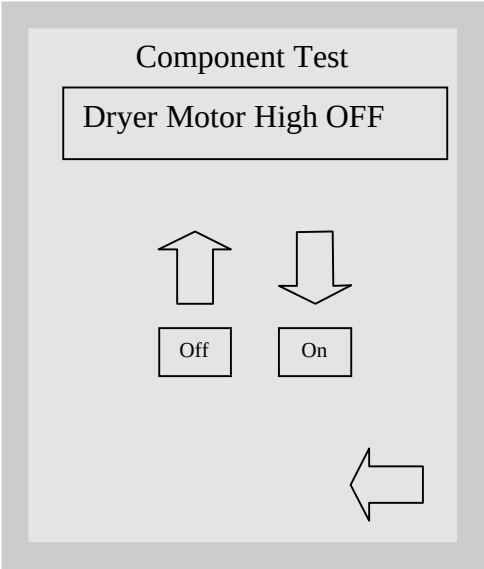
To select the next component, RO Valve Y5, touch the down arrow.
When you exit a screen the component will automatically turn OFF.



Touch the ON button to activate the RO Valve Y5. (This valve is only available in units using RO water).

Touch the down arrow to select next component test screen, Dryer Motor High.

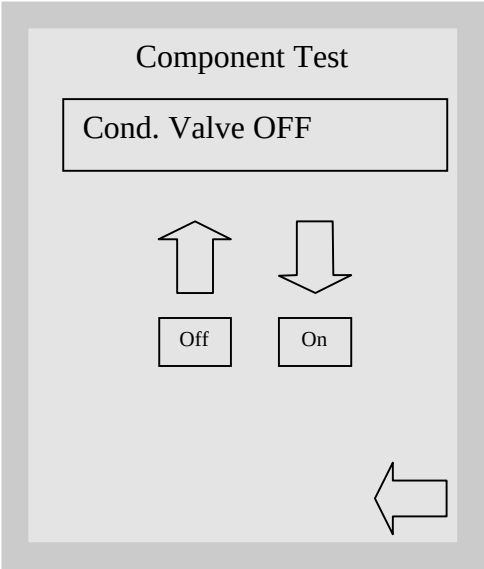
When you exit a screen, the component will automatically turn OFF.



Touch the ON button to activate the Dryer Motor High.
This will test the Air Turbine running at high speed.

Touch the down arrow to select the next component test screen, Cond. Valve.

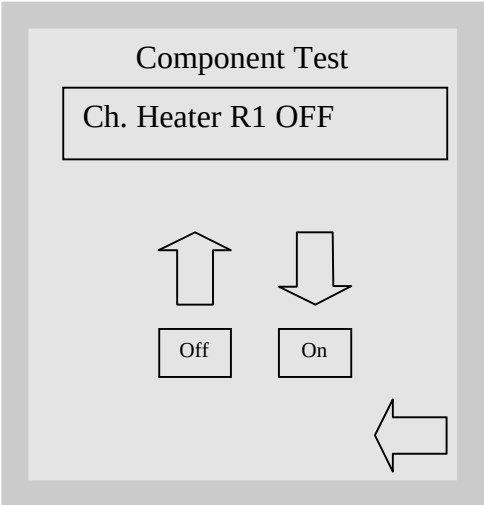
When you exit a screen, the component will automatically turn OFF.



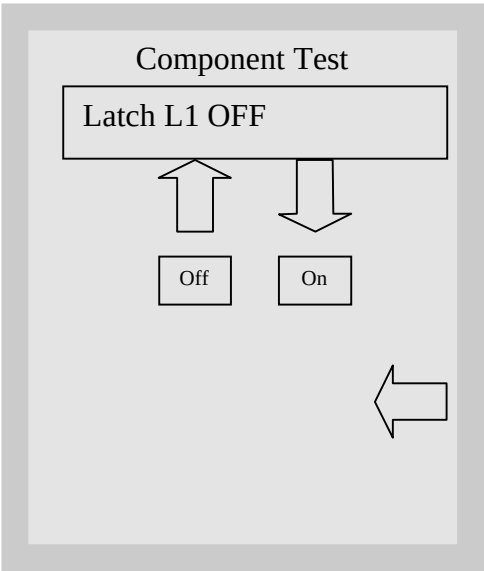
Touch the ON button to activate the Condenser Valve.

Touch the down arrow to select the next component test screen, Ch. Heater R1.

When you exit a screen, the component will automatically turn OFF.



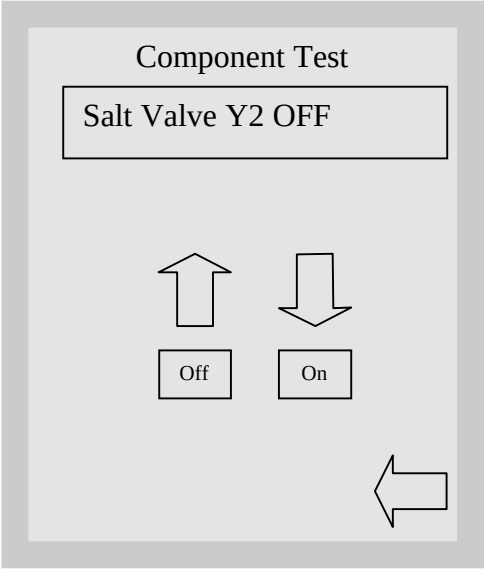
Touch the ON button to activate the Chamber Heater R1. After pressing the ON button the LCD will change to a regular cycle screen and the unit will fill with water and run the pump and heater until the temperature protection mechanism is activated and shows CF 13.



Touch the ON button to activate Latch L1. The door will open when the latch is ON.

Touch the down arrow to select the next component test screen, Salt Valve Y2.

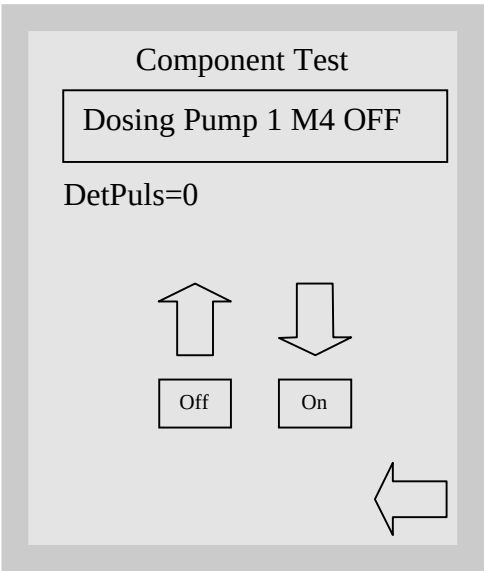
When you exit a screen, the component will automatically turn OFF.



Be sure that the door is closed before activating the Salt Valve Y2. Touch the ON button to activate the Salt Valve. Water will enter the chamber from the back right.

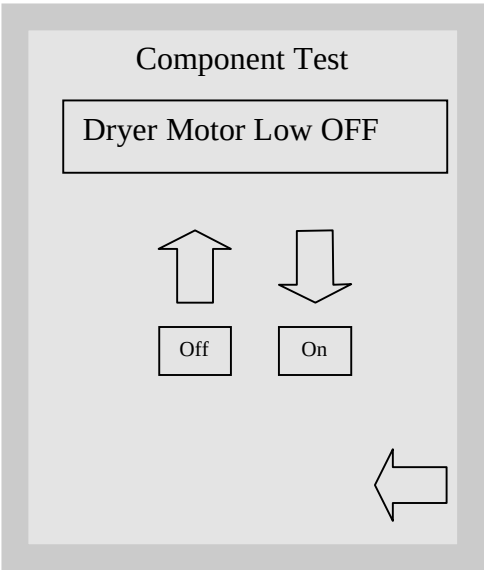
Touch the down arrow to select the next component test screen, Dosing Pump 1 M4.

When you exit a screen, the component will automatically turn OFF.



Touch the ON button to activate Dosing Pump 1 M4. For software revision 318 and lower the Flow Meter detergent pulses will be displayed. For software revision 320 and higher the Detergent Switch (Flow Switch) status appears below the Dosing Pump information. If there is cleaning solution in the unit, the Detergent Switch (Flow Switch) should turn ON when the Dosing Pump is ON.

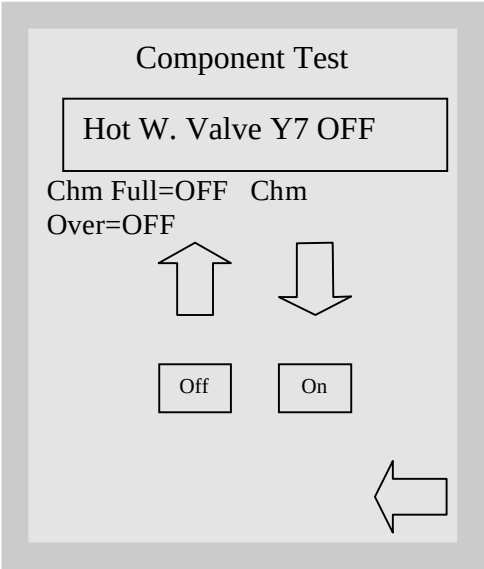
Touch the down arrow to select the next component test screen, Dryer Motor Low.
When you exit a screen, the component will automatically turn OFF.



Touch the ON button to activate the Dryer Motor Low. This will test the motor running at low speed.

Touch the down arrow to select the next component test screen, Hot W. Valve Y7.

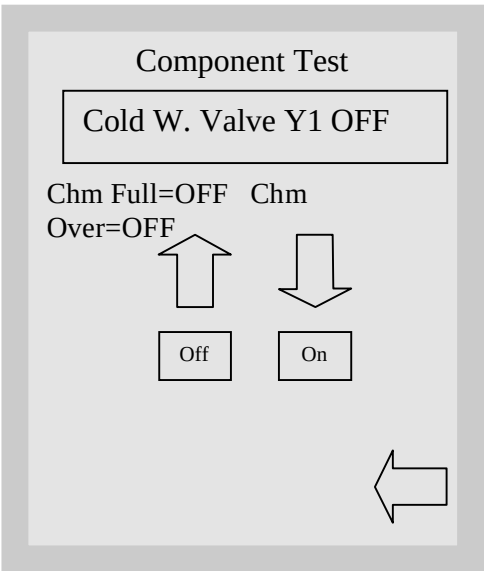
When you exit a screen, the component will automatically turn OFF.



Be sure that the door is closed before activating the Hot Water Valve Y7. Touch the ON button to activate the Hot Water Valve. Water will enter the chamber from the back right. The Chamber Full Switch and Chamber Overflow Switch status appears below the Hot Water Valve info. As the chamber fills with water, the Chamber Full Switch should turn ON. Then the Chamber Overflow Switch will turn ON. When the Chamber Overflow Switch turns ON, the valve will automatically turn OFF.

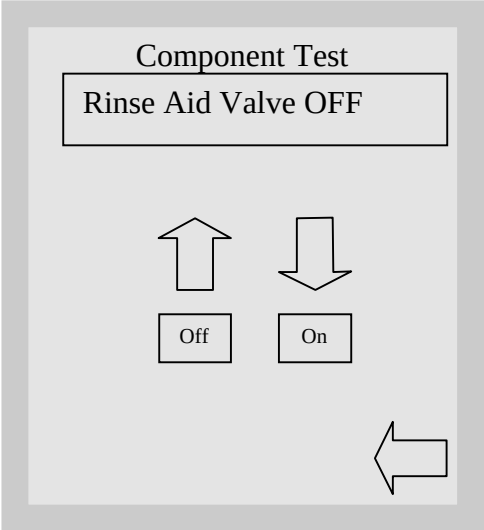
Touch the down arrow to select the next component test screen, Cold Water Valve Y1.

When you exit a screen, the component will automatically turn OFF.



Be sure that the door is closed before activating the Cold Water Valve Y1. Touch the ON button to activate the Cold Water Valve. Water will enter the chamber from the back right. The Chamber Full Switch and Chamber Overflow Switch status appears below Cold Water Valve information. As the chamber fills with water, the Chamber Full Switch should turn ON. Then the Chamber Overflow Switch will turn ON. When the Chamber Overflow Switch turns ON the valve will automatically turn OFF.

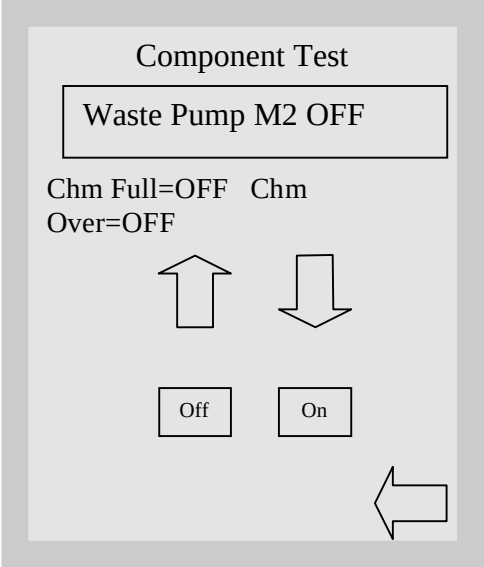
Touch the down arrow to select the next component test screen, Rinse Aid Valve. When you exit a screen the component will automatically turn OFF.



The Rinse Aid Valve is not used at this time as Rinse Aid is not required with HIP Solution. Touching the ON button would activate the Rinse Aid Valve if required.

Touch the down arrow to select the next component test screen, Waste Pump M2.

When you exit a screen, the component will automatically turn OFF.



Touch the ON button to activate the Waste Pump M2. The Chamber Full Switch and Chamber Overflow Switch status appears below the Waste Pump information. If the chamber is full of water the Chamber Full Switch and/or the Chamber Overflow Switch may be turned ON. As the Waste Pump removes the water from the chamber, the Chamber Full and Overflow Switches should turn OFF.

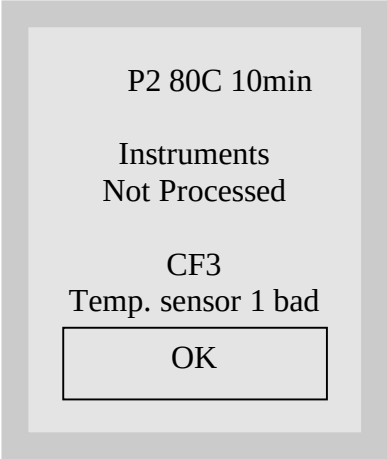
Touch the down arrow to select the next component test screen, Circulation Pump M1.

When you exit a screen the component will automatically turn OFF.

16. Cycle Faults

Always run the unit in Debug Mode when troubleshooting.

If the software detects an error, an error message will appear on the screen showing one of the following codes.



CF 1 Heating Failure

1. Detection

   Water temperature does not increase by 1ºC over a 2 minute period after the first 4 minutes of heating or, it doesn't reach the target temperature in 40 minutes.

2. Cause

   Pressure switch not activating due to low water level or defective pressure switch.
   Defective heating element.

CF 2 Chamber Filling Failure

1. Detection

   Chamber full switch not activated in the first 6 minutes of filling – circulation pump not running yet (if hot water missing or at low pressure, the unit will switch to cold water after 4 minutes if the Chamber Full switch is not activated).
   Pressure switch not activated in 4 minutes of filling after the circulation pump was turned ON (after full switch was activated).

2. Cause

   No water supplied at the unit (hot or cold).
   Defective water valve (hot and/or cold).
   Defective chamber full switch
   Defective pressure switch
   Defective circulation pump

CF 3 Chamber Temperature Sensor Failure (Control)

1. Detection

   Temperature sensor readings are out of limits (either too low or too high).

2. Cause

   Broken temperature sensor wire
   Bad temperature sensor connection to PCB

CF 4 Water Evacuation Failure

1. Detection
   Chamber full switch did not open in 1 minute after drain pump turned ON.

2. Cause
   Defective chamber full switch
   Clogged drain
   Defective drain pump
   Defective check valve

CF 5 Disinfection Failure

1. Detection
   Temperature is below target temperature during disinfection
2. Cause
   Pressure switch failure
   Water leak
   Defective control or validation temperature sensor
   Bad connection between the temperature sensor and the logic board

CF 6 Serial Communication Failure

1. Detection
   Failure to read second temperature sensor within 10 seconds
2. Cause
   Logic board failure

CF 8 Secondary Chamber Temperature Sensor Failure

1. Detection
   Temperature sensor readings are out of limits (either too low or too high).

2. Cause
   Broken temperature sensor wire,
   Bad temperature sensor connection to PCB

CF 9 Software or PCB Failure

1. Detection
   The unit is running a cycle for more than 3 hours
2. Cause
   Defective PCB and/or software failure

CF 10 Pressure Switch Failure

1. Detection
   The Pressure Switch is closed (show pressure) when the circulation pump is not running. Detected when the unit is idle or during the first stage of the water filling phase when the pump is not ON.

2. Cause
   Defective Pressure Switch

CF 11 No Detergent Flow (for Units with Software Revision 318 and Lower)

1. Detection
   The flow meter did not detect detergent flowing during the cycle.

2. Cause
   No detergent or defective detergent level sensor
   Defective dosing pump
   Clogged detergent tubing
   Defective Flow Meter

CF 11 No Detergent Flow (for Units with Software Revision 320 and Higher)

1. Detection
   The Flow Switch did not detect detergent flowing. CF11 will not be displayed if the Flow Switch doesn't detect detergent during the rinse phase of the cycle.

2. Cause
   No detergent
   Kinked detergent tubing
   Defective dosing pump
   Clogged detergent tubing
   Defective Flow Switch

CF 13 Temperature Validation Error

1. Detection
   During the washing phase of the cycle if either the control or validation temperature are more than +/-5°C away from the target temperature.
   Chamber Temperature Sensor or Validation Temperature Sensor > 96ºC
   During the disinfection phase of cycle, control and validation temperature are more than +/-2ºC apart

2. Cause
   Temperature sensors need calibrating
   Defective temperature sensor(s)
   Bad contact between the temperature sensor(s) and the logic board

CF 14 Flow Meter Error (for Units with Software Revision 318 and Lower)

1. Detection
   Delivery of chemical over the complete cycle is greater than +/- 20% of intended value.

2. Cause
   Dosing Pump tubing needs replaced (then calibrate Dosing Pump)
   Flow Meter factor needs to be adjusted (See Appendix A)
   Flow Meter defective

CF 14 Bad Flow Switch (for Units with Software Revision 320 and Higher)

1. Detection
   Flow Switch did not turn OFF after a 15 second timeout

2. Cause
   Flow Switch stuck ON

CF 15 Chamber Overflow

1. Detection
   The overflow switch did not turn OFF after 30 seconds of the drain pump running.

2. Cause
   Defective overflow switch
   Clogged drain

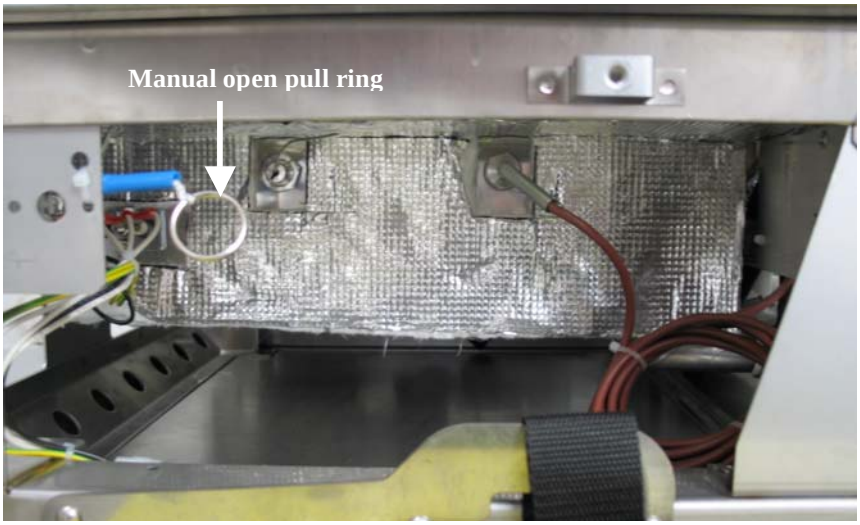
CF 16 No Pressure

1. Detection
   Water pressure drops during wash or disinfection.

2. Cause
   Defective Pressure Switch
   Defective Circulation Pump
   No water due to leak

17. Opening the Door in Case of Power Failure

If there is a power failure, remove the kickplate below the door. Locate the ring to the left and pull it to open the door. Exercise caution! There may be fluid remaining in the unit and the instruments may be hot. Instruments that have not completed the cycle should not be used and should be reprocessed.



Cover Removal

Top Cover

Open the front door and remove the two screws under front of the top cover. The top cover needs to be pulled forward first to disengage tabs at the rear prior to lifting it off. Lift up the top cover to remove it.

Kickplate (Lower Front Cover)

To remove the kickplate below the door, remove the screw in top centre of the cover.

Side and Rear Covers

To remove the side and rear covers, remove the top cover first. Then lift the side or rear covers and remove them.

Note: When replacing/re-attaching the covers, ensure that the ground wires are re-attached

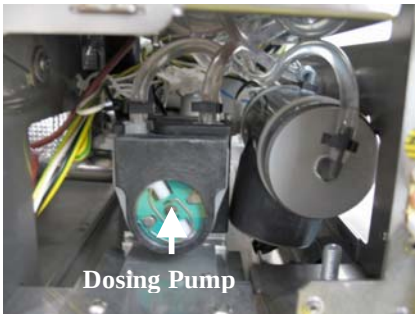
18. Component Replacement

Flow Meter

The flow meter is located behind the chemical solution box. Remove the top cover and the right side panel to access it. Replace with flow switch repair kit (part number 01-111688S).

Flow Switch Kit # 01-111688S

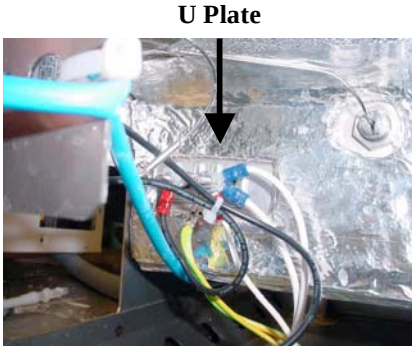
Dosing Pump

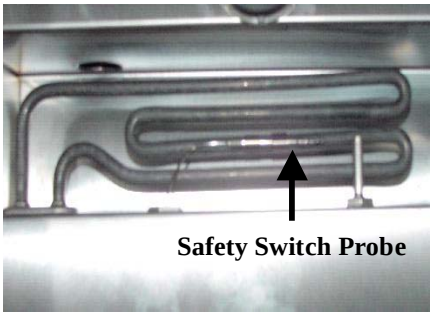


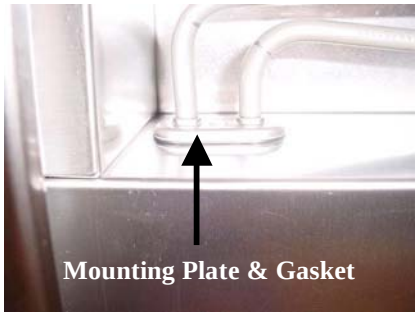
The Dosing Pump is located behind the cover below the front door. Remove the screw from top center of the kickplate and locate the Dosing Pump on the right side. Remove the two mount screws to access the Dosing Pump.

Dosing Pump Part # 01-111777S
Dosing Pump Tubing Part # 01-111831S

Water Heater



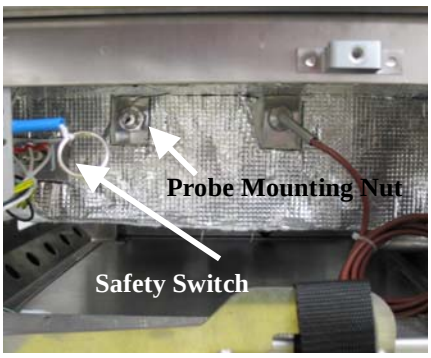




The Water Heater connections are located behind the kickplate below the front door. The heater is located in the chamber and locked in place with the double U plate from outside. After removing the mounting nuts and the U plate, the Water Heater is removed from inside the chamber underneath the filter screen. Remove the safety switch probe before removing the heating element.

Water Heater Part kit (01-111475S)

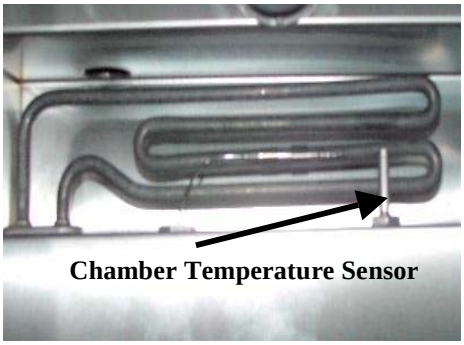
Safety Switch & Probe

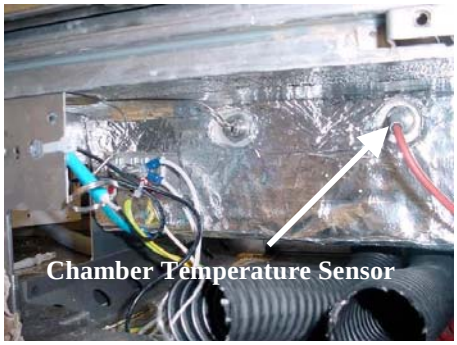


Remove the filter screen from inside the chamber and unclip the Safety Switch Probe from the Heating Element.
Behind the kickplate below the front door, remove the nut that holds the probe to the chamber. The Safety Switch is located behind the plate.

Safety Switch Part # 01-111482S

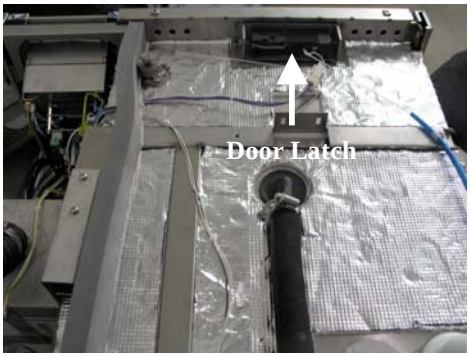
Chamber Temperature Sensor





Remove the mounting nut from the sensor located underneath the filter inside the chamber. Behind the kickplate below the front door, remove the sensor from the chamber and unplug the red wiring. **Chamber Temp. Sensor Part # 01-111778S**

Door Latch

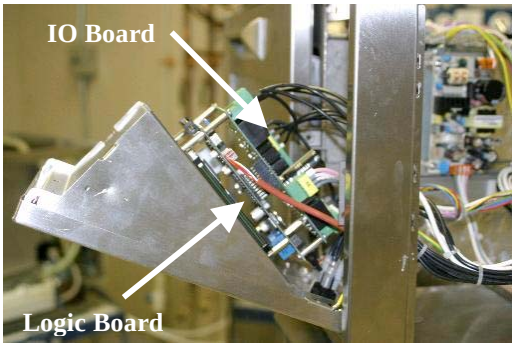


Remove top cover. Disconnect the Door Latch in front of the unit and replace. **Door Latch Assembly Part # 01-111783S**

Touch Screen

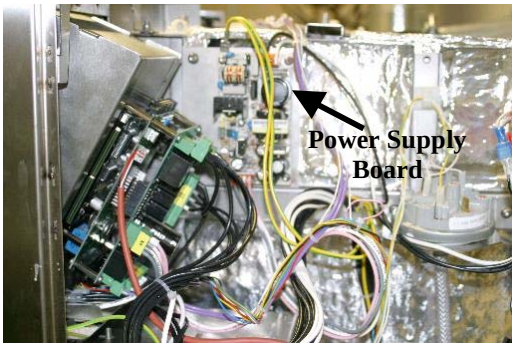
Remove the screw above the touch screen and open the door. Disconnect the I/O Board and Logic board from Touch screen. Replace the touch screen and re-connect the boards in reverse order. Close the door and re-insert the screw above the touch screen.
Touch Screen Part # 01-109785S

Controller Assembly



Remove the screw above the touch screen and pull out the door to access the IO Board and Logic Board. Replace as needed.
IO Board Part # 01-109783S
Logic Board Part # 01-110378S

Power Supply Board



Remove the top cover and right side panel to access the Power Supply Board.
Power Supply Board Part # 01-109782S

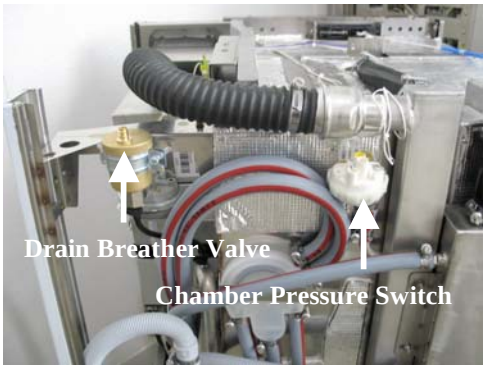
Dryer Motor and Filter

Remove the top cover and right side panel to access the Dryer Motor and Filter Assembly.
Dryer Motor # 01-111779S
Dryer Filter # 01-111780S

Chamber Level and Overflow Switch

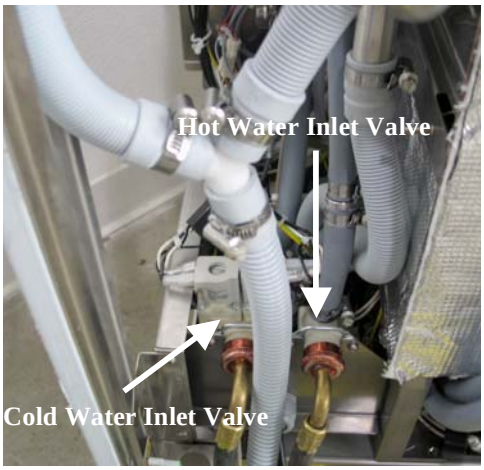
Remove the top cover and right side panel to access the Chamber Level and Overflow Switch.
Chamber Level & Overflow Switch part # 01-111408S

Chamber Pressure Switch & Drain Bleed Valve



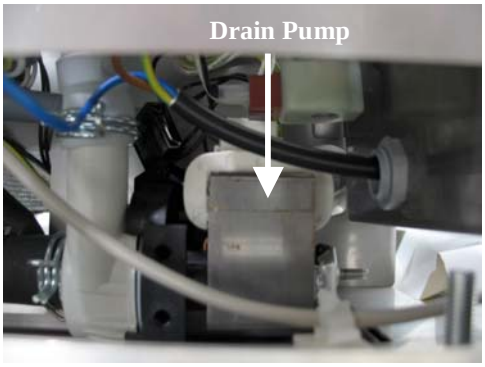
Remove the top and rear covers to access the Chamber Pressure Switch and Breather.
Chamber Pressure Switch Part # 01-111409S
Breather Part # 01-111585S

Cold & Hot Water Inlet Valves



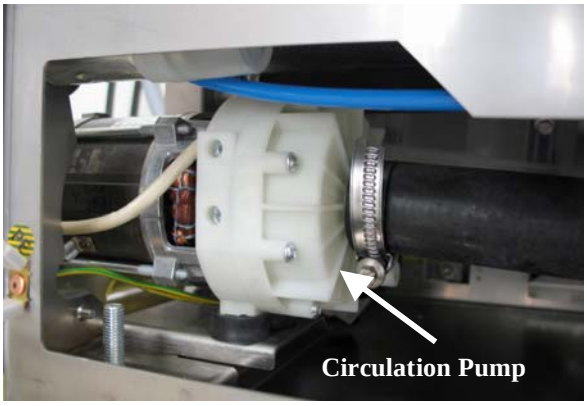
Remove the top and rear covers to access the Cold & Hot Water Inlet Valves. The 2-fold valve is for cold water and the single valve is for hot water.
Cold Water Inlet Valve Part # 01-111782S
Hot Water Inlet Valve Part # 01-111494S

Drain Pump



Remove the top cover and right side panel to access the Drain Pump.
Drain Pump Part # 01-111412S

Circulation Pump



Remove the top cover, rear and left side panels to access the Circulation Pump.
Circulation Pump Part # 01-111782S

19. Appendix A – Flow Meter Factor Setup

(for units with software revision R318 and lower)

Background

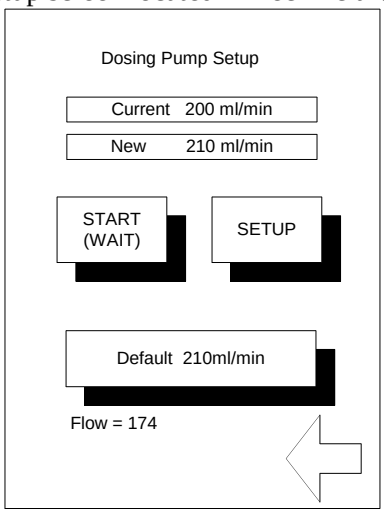
For units with software revision R318 and lower, the M2 detergent dosing system consists of a Dosing Pump and a Flow Meter. The Flow Meter validates that the proper amount of chemical was delivered by the Dosing Pump during a washing/disinfecting cycle.

For proper operation the Dosing Pump Flow and Flow Meter Factor have to be adjusted at initial factory setup and at regular maintenance intervals.

Procedure

For this operation a small cup (around 40ml) and a measuring tube (minimum 40ml) are needed.

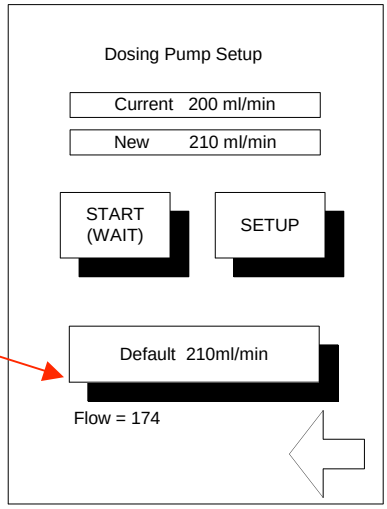
To start go to the Dosing Pump Setup screen located in Technician/ Diagnostic Tools (2), see below:



Before pressing the Start button please read the following instructions. By pressing the Start button a dosing sequence starts and the message WAIT is displayed above the button until all the calculations are done. First the dosing pump is turned on for 8 seconds for priming the internal dosing system (flow meter, internal tubing). After that the dosing pump is paused for 4 seconds and turned on again for 10 seconds. During the 4s pause get ready to collect the detergent delivered to the washing chamber in the next 10 seconds, see picture below:

19. Appendix A – Flow Meter Factor Setup

(for units with software revision R318 and lower)

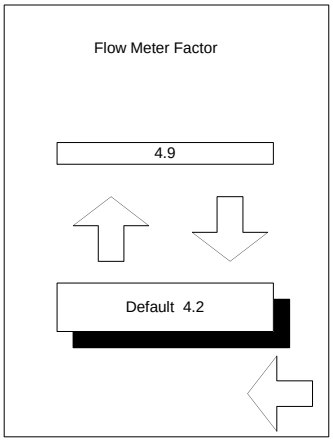


When the detergent delivery ends transfer the liquid collected from the small cup into the measuring tube and read the volume = D [ml].

Now check the LCD screen and write down the number of pulses (Flow = N) that the flow meter counted during the 10 seconds dosing. Please note that this count has to be a number between 100 and 200. If this is a small number please exit the Dosing Pump Setup and restart this process.

Then calculate the Flow Meter Factor = N/D.
For example for D = 35ml and N = 172 pulses => Flow Meter Factor = 172/35 = 4.9

You can now adjust The Flow Meter Factor in the Technician/Production Tools/Flow Meter Factor menu (default is 4.2 - see below).



After setting up the Flow Meter Factor go back to the Dosing Pump Setup screen and press the Start button again. We need this step for calculating the proper dosing pump flow value. The unit is using the Flow Meter Factor for the calculation of the Dosing Pump Flow so it is important to redo this calibration with the new Flow Meter Factor value.

19. Appendix A – Flow Meter Factor Setup

(for units with software revision R318 and lower)

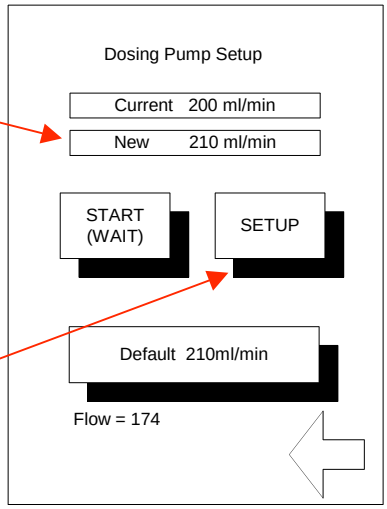
After pressing START the message WAIT is displayed above the button until all the calculations are done. When the message START comes back, please make sure that the number of pulses (Flow) has a value that is very close to the one measured before (N).

Now the unit has calculated the Dosing Pump Flow value which is displayed in the "New" text box.

This value is restricted to be between a minimum of 130ml/min and a maximum of 260ml/min, the default value is 210ml/min.

When the number in the "New" box is the minimum or maximum value there is either a wrong calculation (Flow value too low, wrong Flow Meter Factor) or the dosing pump tubing has to be changed.

If the number in the "New" box is between the minimum and maximum values press the SETUP button and the "New" number will be saved as "Current" value.



Exit the Dosing Pump Setup screen.

This ends the Flow Meter Factor and Dosing Pump Flow setup process.

20. Appendix B – Dosing Pump Setup

(for units with software revision R320 and higher)

Background

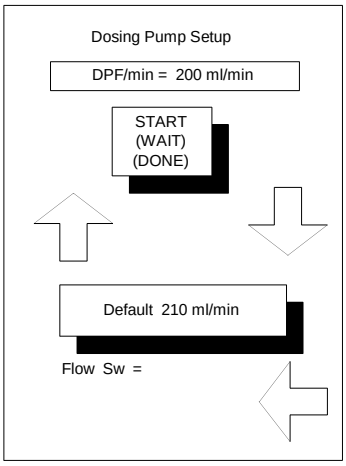
For units with software revision R320 and higher, the M2 detergent dosing system consists of a Dosing Pump and a Flow Switch. The Flow Switch validates that the proper amount of chemical was delivered by the Dosing Pump during the washing phase of the cycle.

For proper operation the Dosing Pump Flow has to be adjusted at initial factory setup and at regular maintenance intervals.

Procedure

For this operation a small cup (around 40ml) and a measuring tube (minimum 40ml) are needed.

To start go to the Dosing Pump Setup screen located in Technician/ Diagnostic Tools (2), see below:



Before pressing the Start button please read the following instructions:

20. Appendix B – Dosing Pump Setup

(for units with software revision R320 and higher)

By pressing the Start button the dosing pump is turned on and the message WAIT is displayed. When the Flow Switch turns ON (Flow Sw = 1) the dosing pump will run for 10 more seconds and the message DONE is displayed shortly. Run this sequence once for priming the internal dosing system (flow switch, internal tubing). After that get ready to collect the detergent delivered to the washing chamber, see picture below, and press the START button. The dosing pump will turn on again for 10 seconds (assuming that the Flow Switch is primed with detergent).

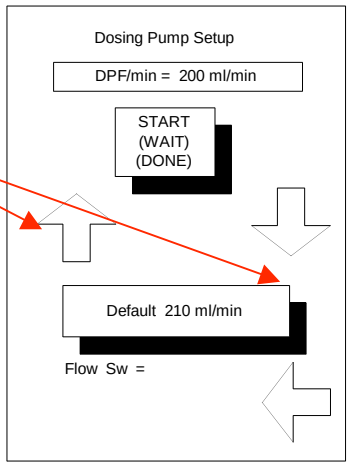
When the detergent delivery ends transfer the liquid collected from the small cup into the measuring tube and read the volume = D [ml].

Now multiply volume D by 6 to find the Dosing Pump Flow (DPF) in ml/min.

For example for D = 35ml => Dosing Pump Flow = 35 * 6 = 210 ml/min

Please note that this DPF has to be a number between 190 and 242. If this is a number outside these values please exit the Dosing Pump Setup, check if the dosing pump is running properly and restart this process.

You can now adjust The Dosing Pump Flow by pressing the Up or Down buttons (default is 210ml/min - see below).



Exit the Dosing Pump Setup screen by pressing the left arrow.

This ends the Dosing Pump Flow setup process.

21. Appendix C – Hydrim M2 Software Upgrade Instructions

! The Software Upgrade process is a lengthy process (takes about 10 minutes). Do not power down the unit after the upgrade process has started!

! If the upgrade process gets interrupted due to a power loss or for any other reason, restart the upgrade by following the instructions below:

1. **If LCD screen remains blank after Power ON, power off and back on the Data Logger and the upgrade process will restart automatically.**
2. **If the screen shows the normal boot up icons follow the normal upgrade instructions, see below.**

<u>Hydrim M2 software upgrade instructions</u>:

- Copy firmware files to USB flash drive
  - Attach the USB flash drive to a PC
  - Format USB flash drive, to make sure that the file system is not corrupted
    - Double click on the My computer icon to open it
    - Right click on the USB Flash drive letter
    - Select Format
    - In the "Format Removable Disk" Window make sure that the selected File System is Fat32
    - Do not select Quick format
    - Press Start to Start the Format process
    - Wait until finished
    - Close the "Format Removable Disk" window
  - Extract the following 3 files from the software upgrade ZIP achieve onto the **<u>root directory</u>** of the USB flash drive:
    - firmware.311 (311 **<u>is not</u>** the software revision it means that this file is used for upgrading a unit with software R311 and up)
    - firmware.sci (used when upgrading a unit with software between R300 to R310)
    - flashldr.sci (used when upgrading a unit with software between R300 to R310)
  - **Make sure that the files are located in the root directory of the Flash drive; otherwise the upgrade process will not work.**
  - When disconnecting the USB Flash drive, make sure to use the Safely remove option (icon from the Windows tray)

- Attach Data logger to unit
  - Power down both Hydrim unit and Data Logger.
  - Attach Data Logger to the Hydrim unit by using the provided serial cable
  - Insert USB Flash drive into the Data logger
  - Power up Data logger
  - Power up Hydrim unit
- Check serial communication Baud Rate
  - Select i icon to enter Menu screen
  - Select Setup
  - Press down arrow until "Baud Rate" is displayed
  - Select "Baud Rate"

    - Make sure that 9600 is currently selected. If not, adjust baud rate to read 9600 (default value)
    - Press Back arrow until the Cycle selection screen has been reached
    - Power off unit.
- Start software upgrade process
    - Power up unit
    - Select i icon to enter Menu screen
    - Select “Technician”
    - Enter Technician password 7919 followed by EN to access the Technician options
    - Press Down arrow until “SW Upgrade” is displayed
    - Select “SW Upgrade”
    - Enter SW upgrade password 5849 followed by EN
    - Select “SW Upgrade USB”
    - During a valid upgrade process, the light on the USB stick will flash.
    - Wait until software upgrade finishes

The Software Upgrade process takes about 10 minutes. During a valid upgrade process, the light on the USB stick will flash. The unit will automatically restart after finishing the upgrade process.
Verify software revision on the main screen, it should be SHM2MR3xx*
***For xx value check the name of the zip file containing the software upgrade.**

! Important: after upgrade, follow the next steps to reset the unit settings to factory defaults

- Reset to defaults
    - Power off unit.
    - Power up unit
    - Select i icon to enter Menu screen
    - Select “Technician”
    - Enter Technician password 7919 followed by EN to access the Technician options
    - Press Down arrow until “Factory Default” is displayed
    - Select “Factory Default“
    - Select “Reset” and wait 2 to 3 seconds for a beep
    - Press return arrow until the Cycle selection screen is displayed.
    - Power off unit
    - Congratulations, you successfully upgraded the software on your Hydrim unit