HYDRIM® C51wd

• Service Manual

SciCan

www.scican.com

HYDR*IM* C51wd Service Manual 95-109724 Rev. 3.0

Table of Contents

For all service and repair inquiries:
Canada: 1-800-870-7777
EU: +49 (0) 821 56 74 56-0
International: 1-416-445-1600
United States: 1-800-572-1211
Email: techservice.ca@scican.com

SciCan Medtech
Alpenstrasse 16,
6300 Zug
SWITZERLAND
Phone: (41-41) 727-70-27
Fax: (41-41) 727-70-29

SciCan GmbH
Kurzes Geländ 10
D-86156 Augsburg
GERMANY
Phone: +49 (0) 821 56 74 56-0
Fax: +49 (0) 821 56 74 56-99

Manufactured by:
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
CE 0123

1. Introduction

1.1 Overview

This guide provides instructions for the servicing and repair of the Hydrim® C51wd Instrument Washer-Disinfector. Every attempt has been made to provide accurate, detailed instructions.

All servicing of the Hydrim C51wd should be done by certified personnel only. All local, provincial, state and national regulations regarding the servicing of the class of device and safety requirements must be observed.

Do not permit any person other than certified personnel to supply parts for, service, or maintain a Hydrim C51wd. SciCan shall not be liable for incidental, special or consequential damages caused by any maintenance or services performed on the Hydrim C51wd by a third party, including lost profits, any commercial loss, economic loss, or loss arising from personal injury.

The Hydrim C51wd Instrument Washer-Disinfector should only be installed and serviced by a qualified 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.

Hydrim C51wd Cycle Description Chart

	Regular Cycle	Heavy Duty Cycle	Heavy Duty Cycle with Disinfection
Description	Use for moderately soiled loose instruments	Use for heavily soiled instruments and cassette loads	Use for heavily soiled instruments and cassette loads
Cold Prewash	<45°C	<45°C	<45°C
Wash	50°C 5 minutes	50°C 9 minutes	50°C 9 minutes
Rinse/Disinfect	60°C	60°C	80°C for 10 minutes
Dry	0-15 min.	0-15 min.	0-15 min.
Total Time without drying**	19 minutes	23 minutes	45 minutes
Water Consumption	13 L	13L	13L

** Cycle times depend on the temperature of incoming water.

1. Introduction

1.2 Specifications

Height:	475 mm
Width:	600 mm
Depth:	460 mm
Depth with door open:	780 mm
Weight:	35 kg
Running Noise:	60 dB(A)
Hot water connection:	50-70˚C
Water softener:	0.5 kg salt capacity
Filling system:	3.5 L safety maximum
Dryer Heater	1kW
Wash temperature:	50˚C +/- 5˚C
Electrical Rating:	220 - 240V 50 Hz 10 A
Equipment pollution degree:	Pollution Degree 2
Equipment Installation Category:	Installation Category II
Maximum relative humidity:	80% for temperatures up to 31˚C 50% for temperatures up to 40˚C
Operating temperature range:	- 5˚C to 40˚C
Maximum altitude:	2000 m
Mains supply:	+/- 10% of nominal

Pay close attention to the following symbols that appear on the unit:

Caution, a potential hazard to the operator

Caution, hot surface

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

Caution, a potential hazard to the operator

Important information

A situation which may lead to a mechanical failure

1. Introduction

1.3 Safety Information

Safe operation

The following apply 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, skin, 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 C51wd 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 services performed on the Hydrim C51wd 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 cover.
- 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 (ground continuity) must be performed on the unit if components of the protective earthing system are changed or if connections are broken and remade.

1. Introduction

Reporting

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

Biological waste

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

1.4 Tools & Hardware

DESCRIPTION	DESCRIPTION	DESCRIPTION
1. Nose pliers 2. Screwdriver PH1 3. Screwdriver PH2 4. Screwdriver Slot 5. T20 Torxdriver 6. Dental Wedge 7. Wire stripper	8. Wire cutter 9. Small screwdriver 10. Nut driver 1/4" 11. Nut driver 5.5 mm 12. Nut driver 7 mm 13. Nut driver 8 mm 14. Nut driver 13 mm	15. Wrench 7/16" 16. Wrench 1/4" 17. 11/16" socket 18. Allen key 2.5 mm 19. Mallet 20. Tension Gun

The unit contains the following types of hardware:

- **Phillips pan head self-tapping metal screws**
- **Phillips flat head stainless steel machine screws**
- **Torx pan head machine screws**
- **Torx pan head plastite screws**

1.5 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 water as possible and use an absorbent cloth to remove the rest.

Disconnect and remove the cleaning solution container and then drain the dosing reservoir. Completely screw in the levelling legs. Specify upright, heated, and insured shipping.

2. Installation

2.1 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:	220 - 240 V
Frequency:	50 Hz
Rated load:	2 kW
Circuit breaker:	10 A per phase

! The electrical outlet should not be located directly behind the unit. The outlet needs to be accessible after the unit is installed. The power cord must be routed away from the back panel and hot water inlet hose.

This 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 (35 kg). Exercise caution and obtain assistance when moving it.
- 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.

2.2 Tools and Supplies Required to Install the Hydrim

• Slot screwdriver • Channellocks

Ensure that HIP Cleaning Solution (instrument wash chemical) is available. All other supplies are included with the Hydrim unit.

2. Installation

2.3 Installation Options

Ensure that there is a 75mm space at the top, rear and both sides of the Hydrim. This will facilitate installation, levelling, service access and air exhaust from the rear of the unit. Do not locate the electrical outlet directly behind the Hydrim, as this is where warm, moist air from the chamber is exhausted. Do not move the Hydrim into place by maneuvering the open wash chamber door. This may cause to door to become misaligned and leak.

Installation Option #1 Cabinet / Steri-Centre

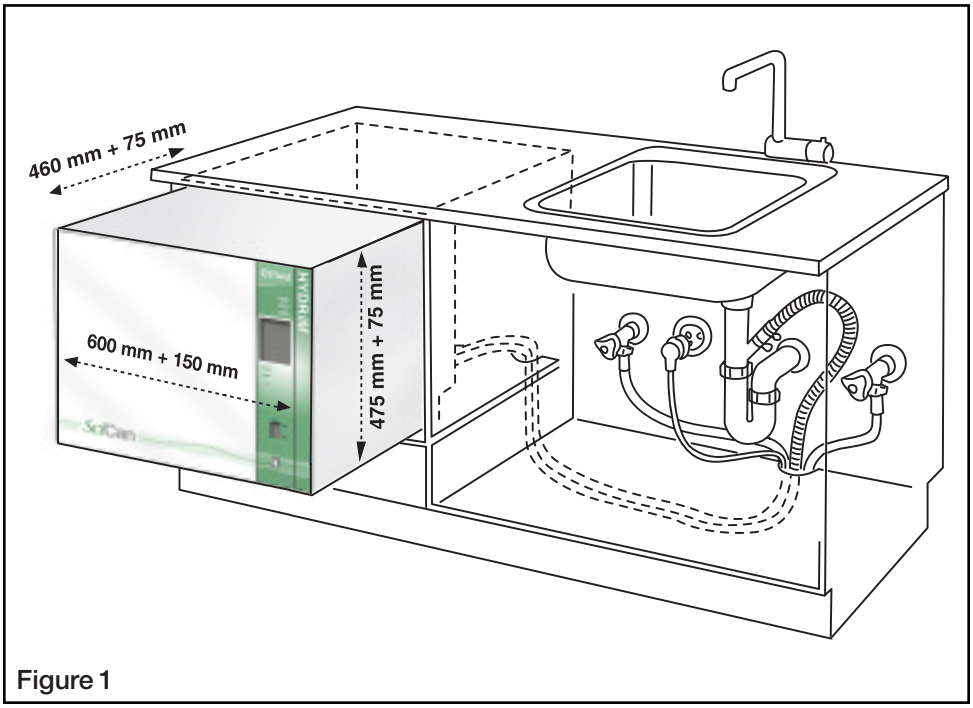


Figure 1

Installation Option #2 Sliding Shelf

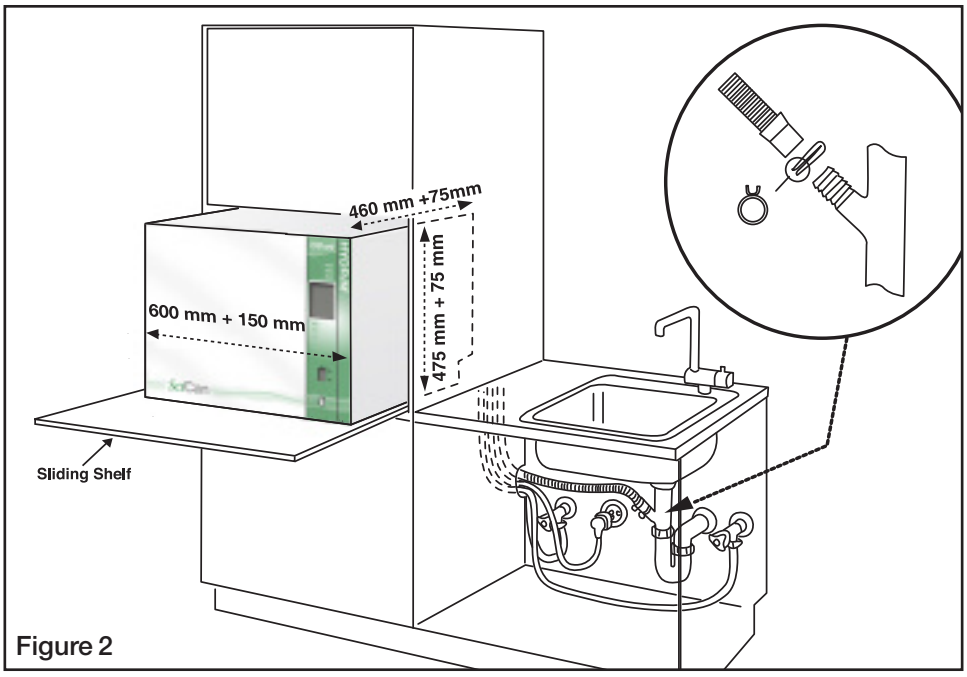
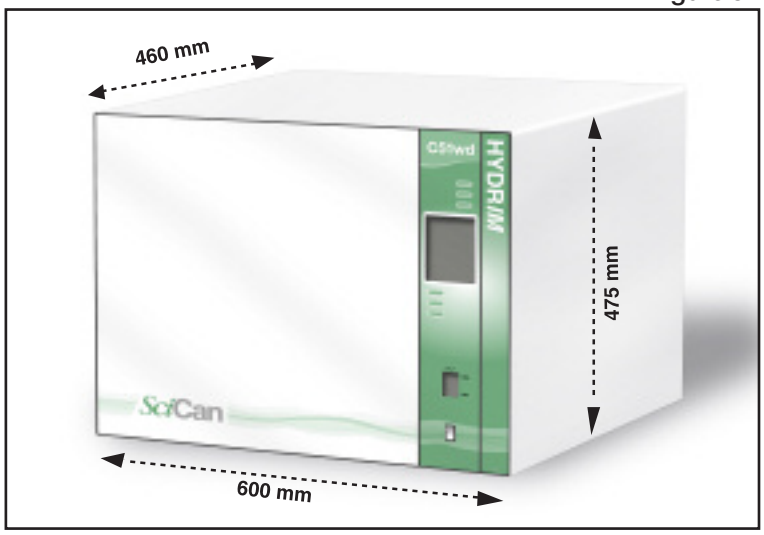


Figure 2

2. Installation

Installation Option #3
Counter Top

Figure 3



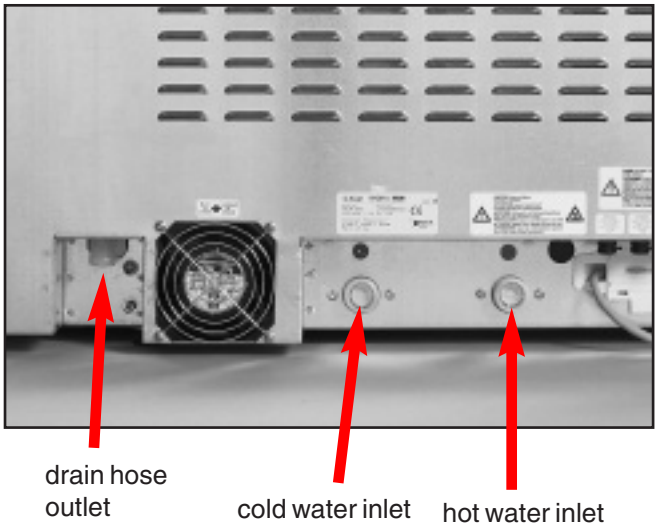
2.4 Connecting The Water Inlet Hoses

Connect the hot water hose (red) to the hot inlet valve on the Hydrim (indicated by a red dot) and the cold water hose (blue) to the cold water inlet valve on the Hydrim (indicated by a blue dot).

The connector with the elbow should be attached to the back of the Hydrim unit.

The washer with the screen goes to the water supply connector. Make sure that the inlet valves are free of debris.

Figure 4



Hose / Cord	Length / Diameter	Max. Distance from inlet / drain	Water Pressure (optimal)*	Shut-Off Valve
Hot Inlet	1.9 m / G3/4"	1.5 m	1-10 bar	Yes
Cold Inlet	1.9 m / G3/4"	1.5 m	1-10 bar	Yes
Drain	1.5 m / 3/4"	3.3m	—	—
Electrical	1.8 m AWG 18-3	—	—	—

*unit will function with water pressure down to 0.5 bar.

2. Installation

2.5 Drain Requirements

Connect the drain hose to the drain outlet. The drain hose can be attached to existing drain lines using a 3.5 cm or larger standpipe / P-trap combination. If the hose is connected directly to the drain line, fittings and adapters should not reduce water flow.

The drain hose should be attached to the main drain at a point no more than 1 metre. above the base of the Hydrim. A floor drain is acceptable (check local codes).

2.6 Levelling the Hydrim

For the unit to function properly, it will need to be correctly levelled. To level the unit, follow these steps:

1. Adjust the legs underneath the unit.
2. Use the levelling bubble on the top right hand side as a guide.
3. When the bubble is in the centre, the unit is correctly levelled.

Figure 5

2.7 Installing Cleaning Solution

Ensure that the quick-disconnect cap on the HIP Hydrim Cleaning Solution bottle is tight. Install the bottle, and loosen the screw cap slightly (see Step 4) to prevent formation of a vacuum in the bottle.

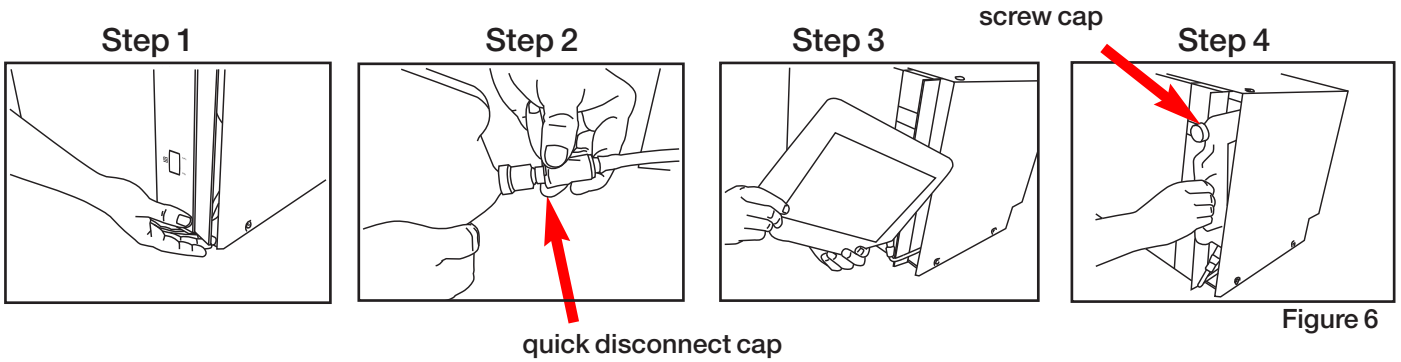


Figure 6

2. Installation

2.8 Setting the Water Softener (salt):

Hydrim is equipped with a built-in water softening system which needs to be adjusted according to the local water hardness. The Hydrim water test kit includes three water hardness test strips in bags. Take a water sample from the location where the machine will be installed. Open one of the bags and remove the test strip. Dip the strip in the water. Compare the color of the strip with the chart on the back of the bag. Determine the water hardness according to the chart on the water test kit envelope. Power the unit on. Touch the “i” in the lower right hand corner of the sceen. Select “Technician”. Enter 7919 and touch EN. Select “Cycle Settings" and then "Set Regeneration”. Using the up and down arrows, set the water softener regeneration level according to the following table:

Hardness – ppm	Hydrim setting
0 - 110	0
120 - 360	1
370 - 510	2
520 - 890*	3
> 890	Additional water treatment required

* consider using an additional water treatment

Pour 0.5 litre of water into the water softener by pouring it into the salt container and inserting it into the chamber wall. Add 0.5 kg of water softening salt in the same manner. Screw the salt container tightly into the wall of the chamber.

Figure 7

2.9 Installation Test

Turn on the shut-off valves. Run a test cycle, checking for leaks.

2. Installation

2.10 Printer / USB Setup

The Hydrim C51wd has an RS-232 port at the back, and can be used with an external printer or the SciCan Data Logger. The printers in the chart below have been tested with the Hydrim. To add or change a printer or SciCan Data Logger, follow these steps:

Turn off the Hydrim and the printer or Data Logger before connecting these devices to the unit.

1. With the printer or Data Logger connected, turn on the Hydrim and press the ***i*** to move to the Menu screen.
2. In the Setup menu, select Printer Selection.
3. Select Serial Printer if connecting a printer, or USB Flash/MSD if connecting the SciCan Data Logger. Press the back arrow to return to the Setup Menu.
4. In the Setup Menu, select Baud rate.
5. Select the rate required (refer to chart below for recommended Baud rates). Use the back arrow to return to the Start screen.
6. Now the Hydrim will write its cycle information to the device chosen.

Printer Model	**Serial Port Baud Rate**
Epson TM-U220D (C31C515603)	9600
Citizen IDP-3110-40 RF 230B	9600
Star Micro SP212FD42-230	9600
Star Micro SP216FD41-230	9600
Star Micro SP512MD42-R	9600

SciCan Data Logger	**Serial Port Baud Rate**
For Mass Storage Device	9600

3. Routine Maintenance

3.1 Filter Maintenance

Inspect the coarse and fine filters daily for debris and clean if necessary.

1. Grasp the handle in the centre of the coarse filter and turn it 90˚ counter-clockwise. (To re-insert the coarse filter, turn the handle clockwise.)
2. Remove the coarse filter.
3. Remove the fine filter.
4. Clean both filters by rinsing them with tap water.
5. Re-assemble, ensuring that the coarse filter is locked in place.

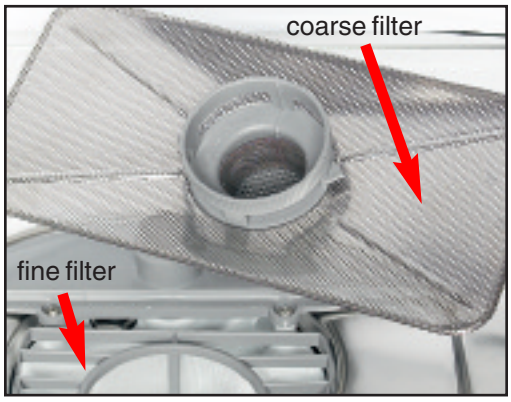


Figure 8

3.2 Wash Arm Maintenance

Inspect the wash arms weekly for debris and clean if necessary.

1. Open the unit door and remove the wash rack from the unit.
2. Unscrew the upper wash arm plug by turning the fitting at the hub (note: fitting is left threaded).
3. Remove the upper wash arm.
4. Using two hands, grasp both ends of the lower wash arm on the underside.
5. Pull the lower wash arm upwards.
6. Inspect both sides of the wash arms for debris in the nozzles. Remove the debris where necessary.
7. Rinse both wash arms with tap water and re-assemble the wash arms.

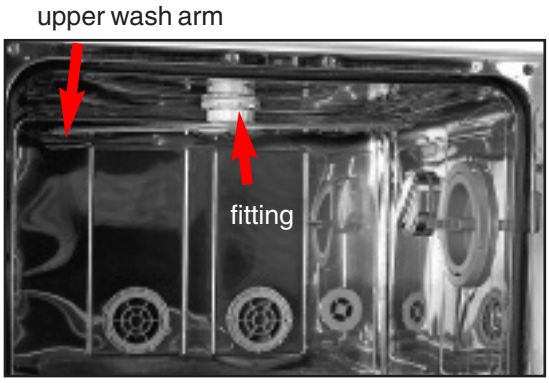


Figure 9

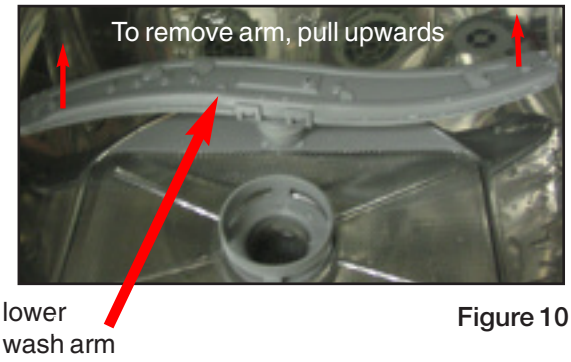


Figure 10

3.3 Test Probe Port

A technician or authorised person can use the test port to insert temperature probes into the chamber to record the actual temperature at various places in the chamber during the cycle.

To access the temperature probe port, remove the front fascia (see section 4.6).

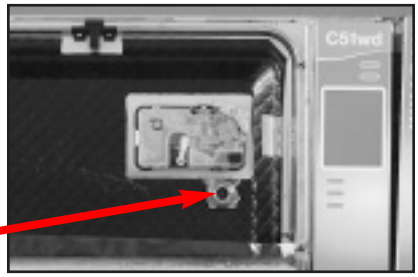


Figure 11

4. Unit Overview

4.1 The Unit At A Glance

Right Side

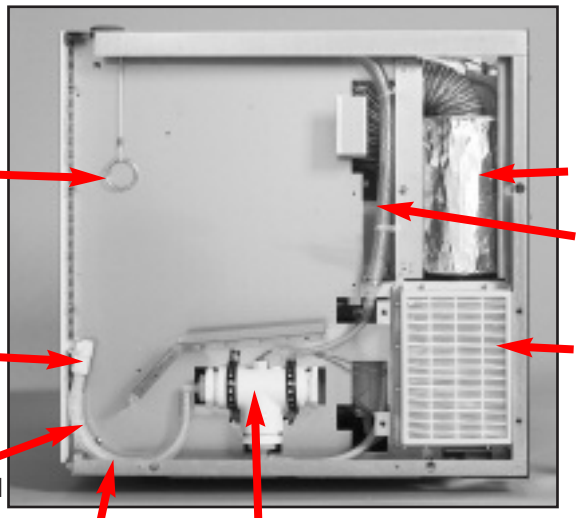


Figure 12

Left Side

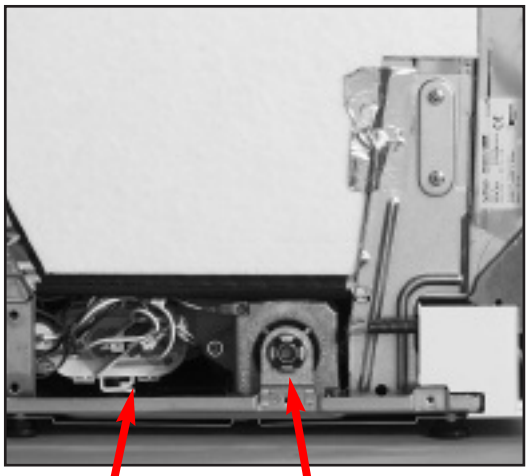


Figure 13

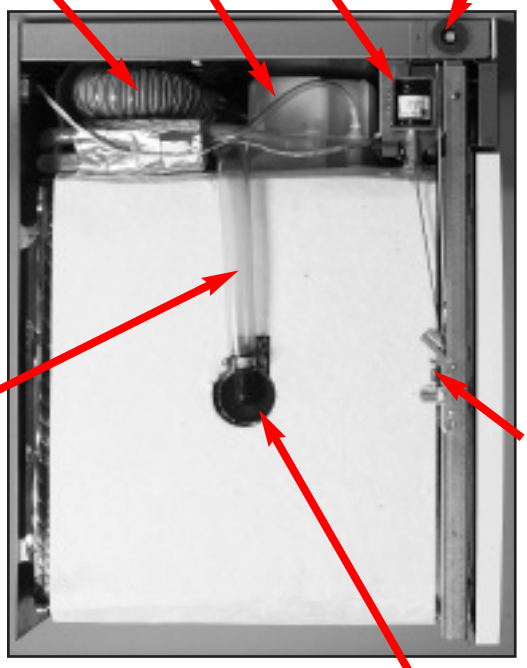
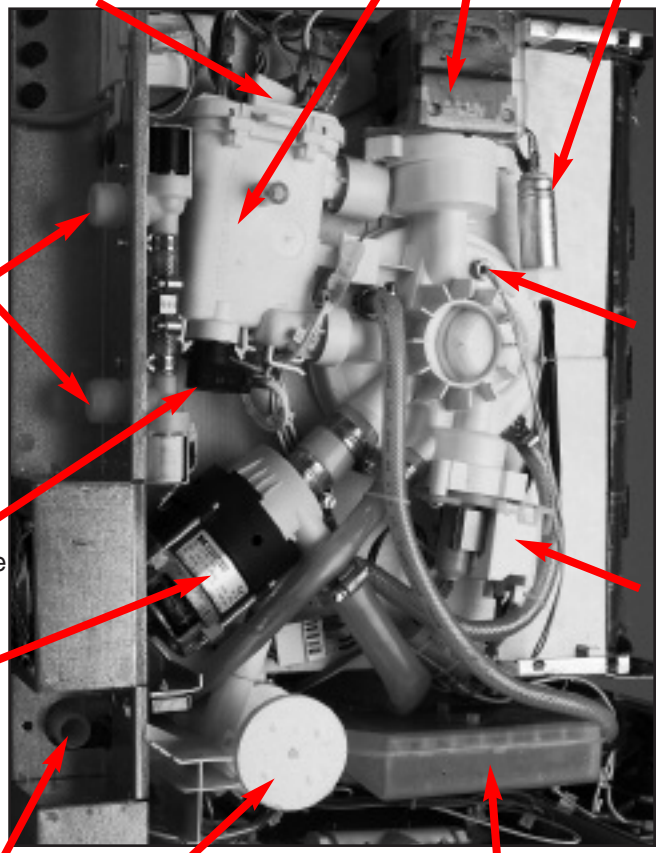


Figure 14 Top View



Bottom View Figure 15

4. Unit Overview

4.2 Removing The Top Cover

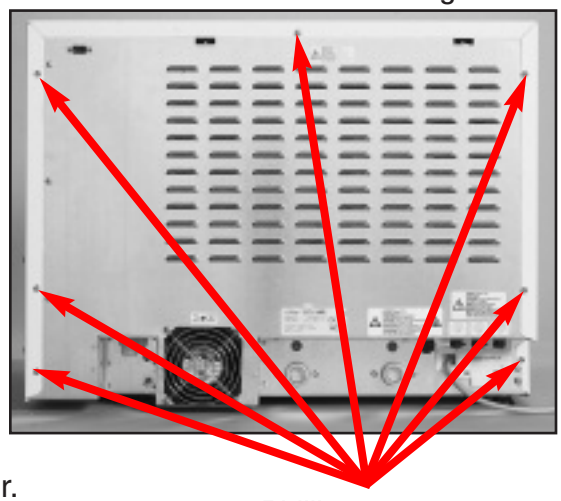
To remove the top cover, follow these steps:

1. Power OFF the unit, and unplug.
2. Remove the 4 Phillips screws that hold the filter cover in place (Figure 16a).
3. Remove the screws that secure the top cover:

- 2 screws and white caps on the right side of the cover (Figure 16a).
- 2 screws and white caps on the left of the cover (not shown).
- 7 Phillips washer screws on the back of the cover: (1 on the top, 3 on the right, 3 on the left.) (Figure 16b)
- 6 Phillips flat head machine screws on the inside front of the unit (4 on the top, 2 on the left) (Figure 16c). The two screws on the right side do not secure the top cover and do not need to be removed.

Figure 16a

Rear Of The Unit Figure 16b



4. Grasp the left and right sides of the cover. Pull sides slighty outward and lift straight up.
5. Remove the insulation on the top and sides.
6. When replacing the cover, ensure that the orange cap for the screw under the drip tray is replaced (Figure 16d).

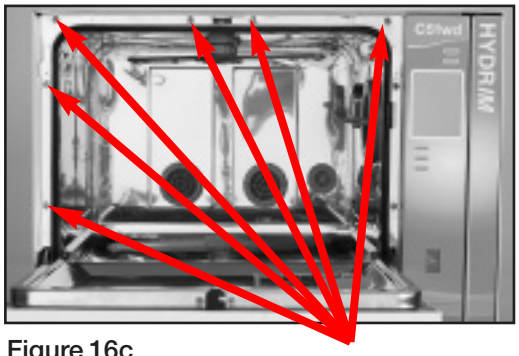


Figure 16c

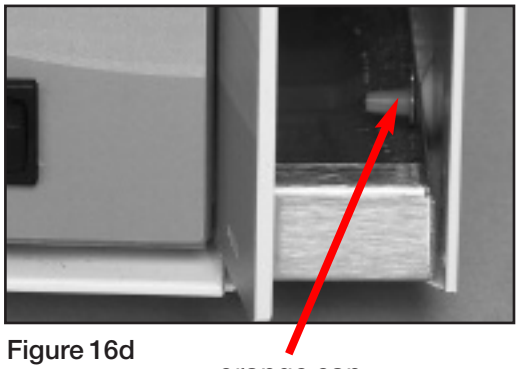


Figure 16d

4. Unit Overview

4.3 Removing the Bottom Pan and Kickplate

1. Completely open the front door.
2. Remove the two Torx screws from the kick plate and pull the kick plate forward to remove (Figure 17a).
3. Drain water from the unit and drain the chemical from the reservoir.
4. Turn the unit upside down. Please note that some liquid will remain.
5. Remove one Phillips and one Torx screw from the bottom of the chemical bracket (Figure 17b).
6. Remove the two Phillips screws connecting the back panel to the bottom pan (not shown).
7. Remove four Torx screws keeping the bottom pan in place (not shown).
8. Remove the bottom pan. Caution! Edges are sharp.
9. Be careful not to damage the bottom pan overflow float and make sure it is in place before reinstalling bottom pan.

Figure 17a

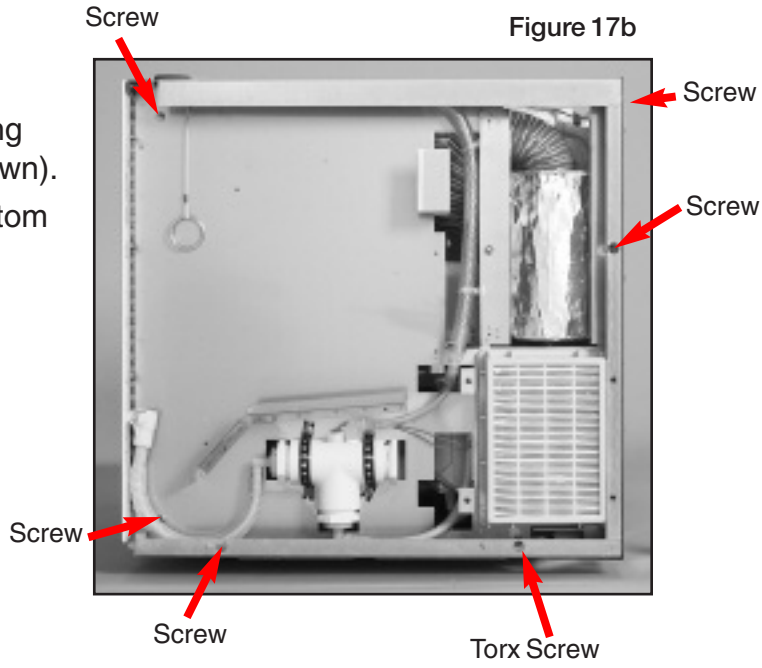


Figure 17b

4.4 Removing the Chemical Bracket

1. Power the unit OFF.
2. Remove the top cover.
3. Remove the Phillips screws as shown (Figure 17b).
4. Remove the three screws in the backpanel holding the chemical bracket.
5. Remove the screw on top of the door bracket (Figure 17c).
6. Pull chemical bracket away from the machine, loosen clip and disconnect the dryer hose.
7. This provides access to the pressure switch for the upper arm, chamber full switch (black) and the overflow switch (clear) (Figure 17d).

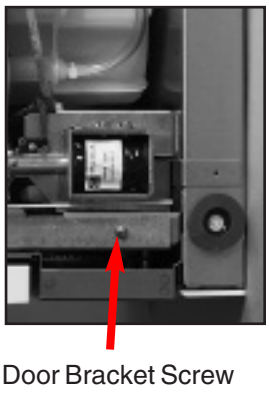


Figure 17c

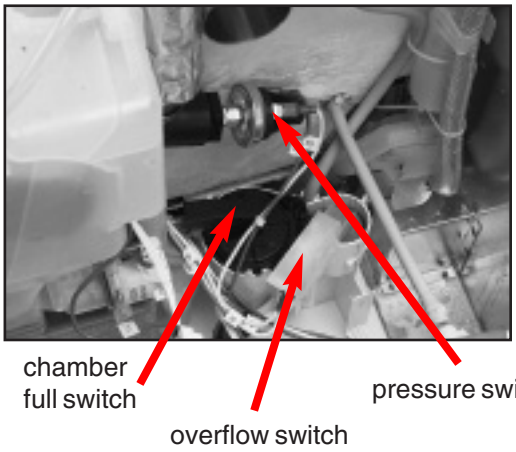


Figure 17d

4.5 Removing the Controller Assembly

1. Remove the top cover.
2. Remove the two screws on the left of the chemical bracket and the screw on top that holds the bracket to the door latch bar (Figure 18a and b).
3. Remove the two screws that hold the fascia to the chamber (Figure 18c).
4. Pull chemical bracket away and swing fasica out as shown (Figure 18d).
5. Access the controller assembly and disconnect the following connectors from the i/o board:

   J6 – one 4-pin connector

   J3 and J5 – two 6-pin connectors

   J2 and J1 – two 2-pin connectors

   J7 – one 2-pin connector

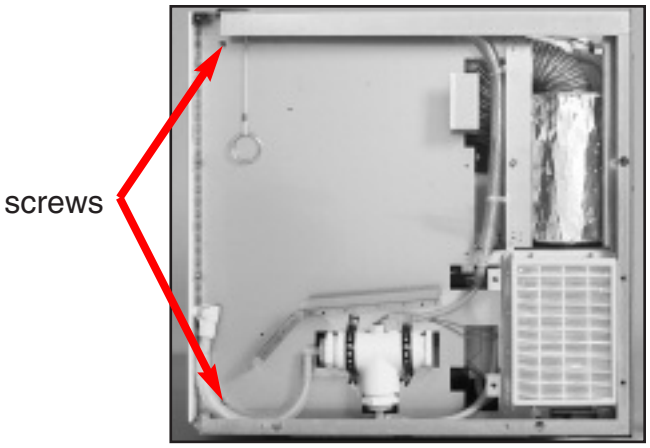


Figure 18a

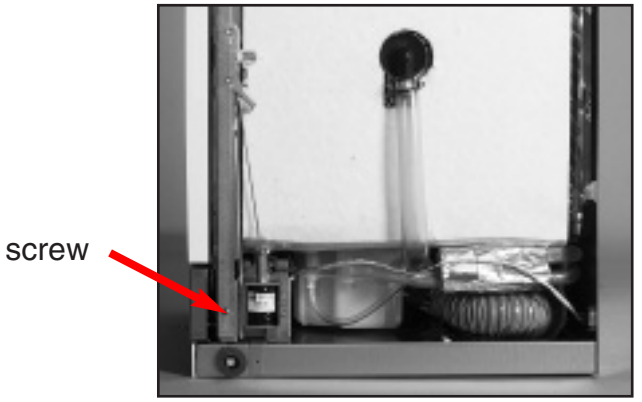


Figure 18b

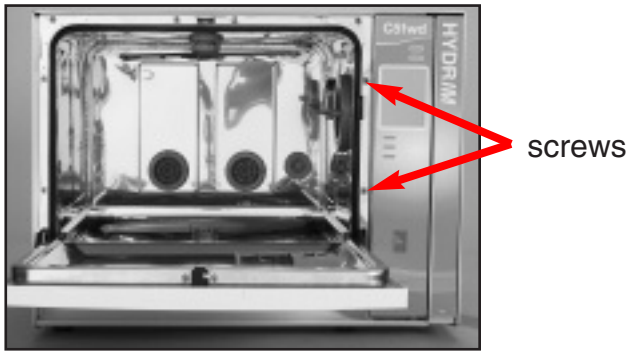


Figure 18c

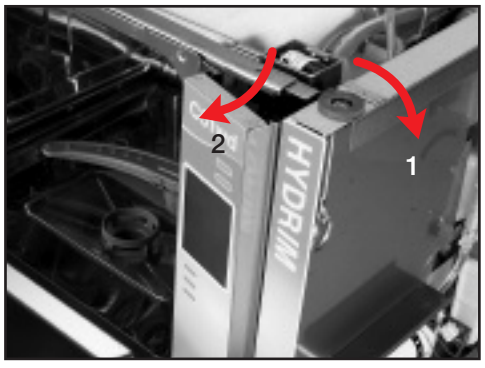


Figure 18d

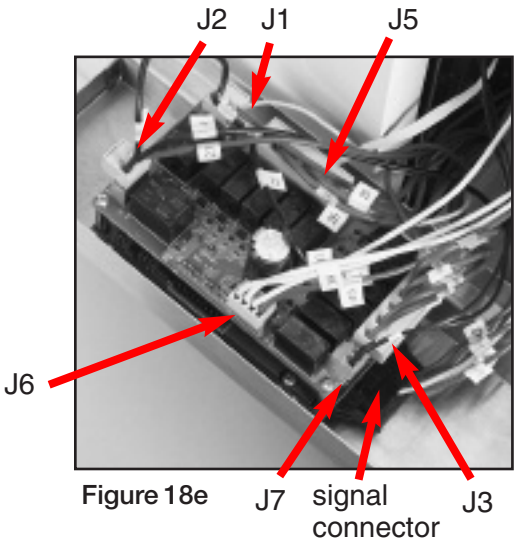


Figure 18e

6. Disconnect the signal connector from the bottom of the logic board (Figure 18e).
7. Unclip the temperature sensor junction block (not shown).
8. Remove four screws (Figure 18f) and lift I/O board off.
9. Disconnect the printer cable from the side of the logic board (Figure 18g).
10. To remove logic board, remove upper standoffs and two screws (Figure 18g).
11. Reassemble in reverse order.

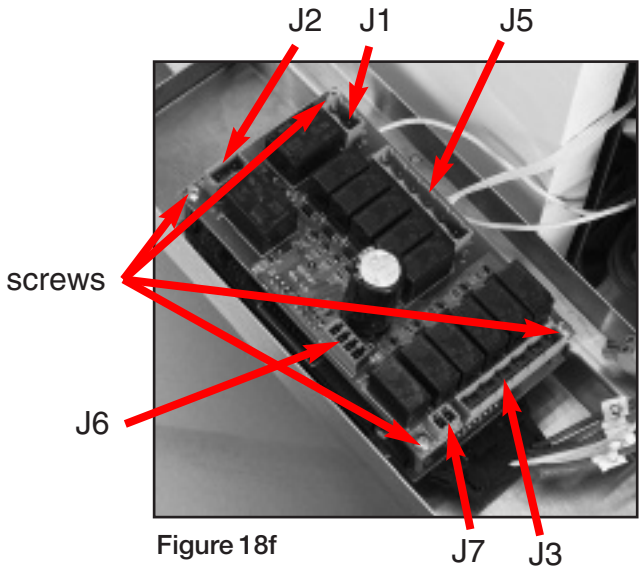


Figure 18f

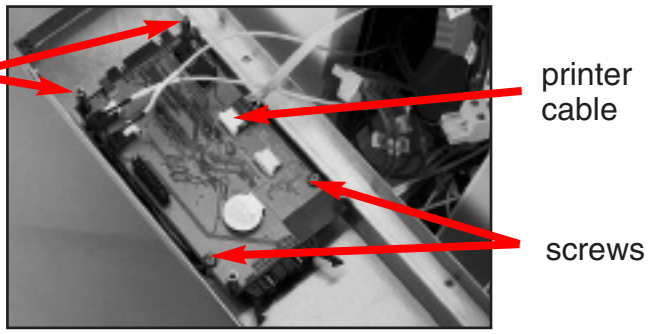


Figure 18g

4.6 Removing The Door Fascia

To remove the door fascia, follow these steps:

1. Power OFF the unit and unplug.
2. Open the door and remove the 4 Phillips screws on the perimeter of the door's inside face.
3. Pull the door fascia towards you and lift up.

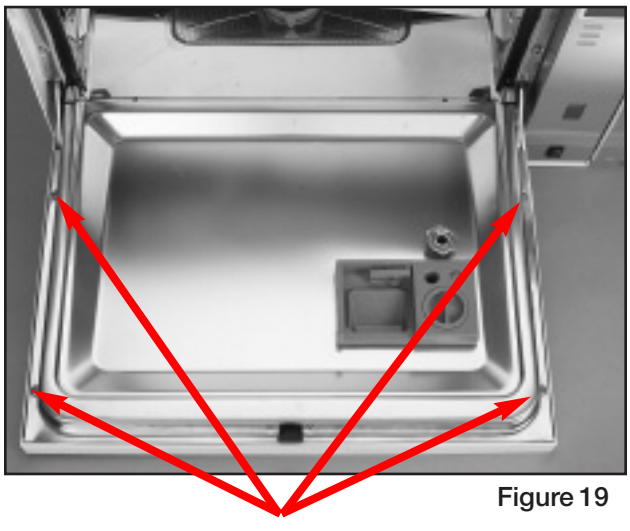
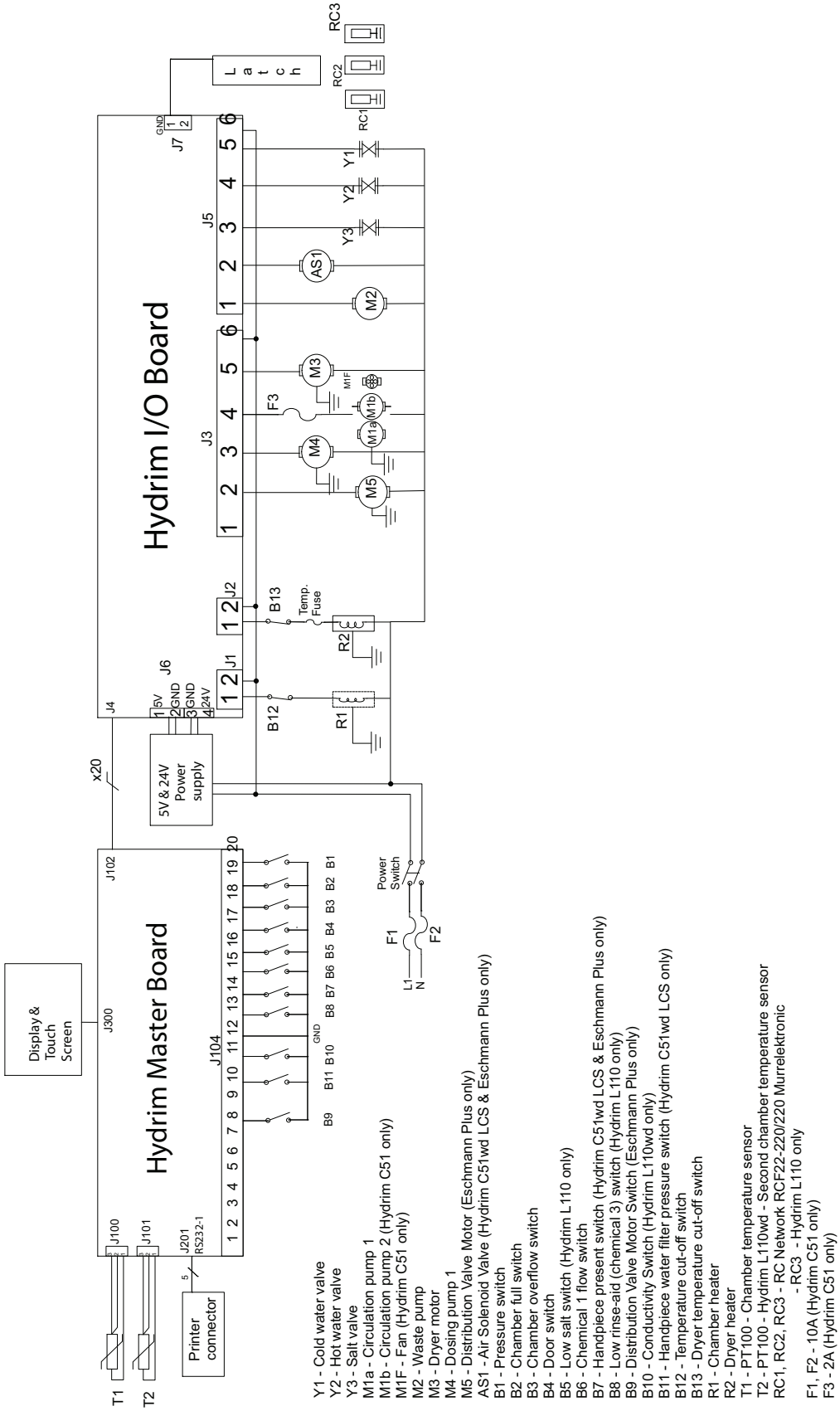


Figure 19

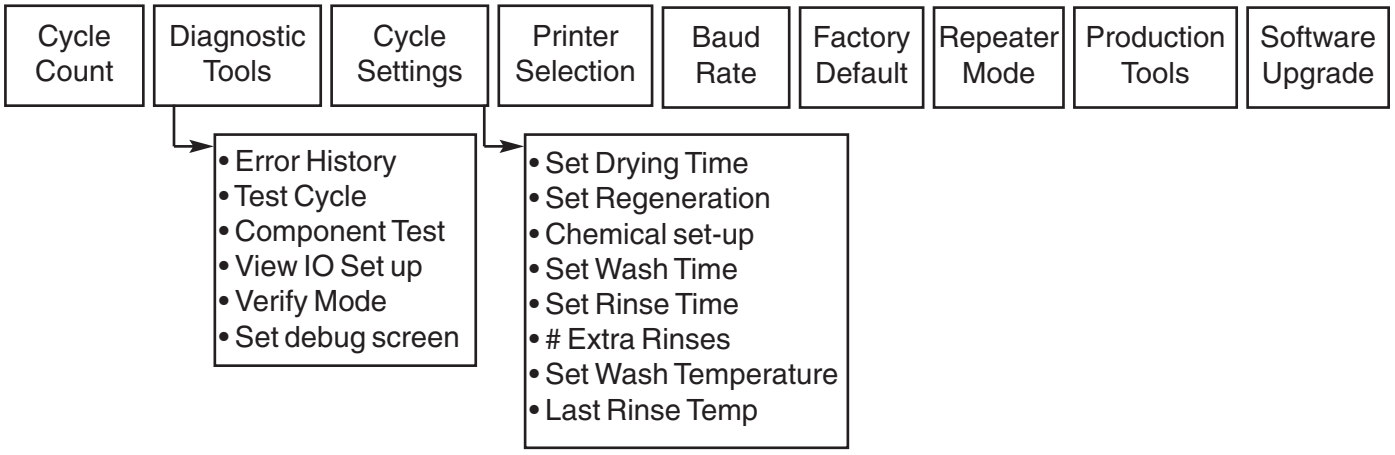
5. Electrical Schematic



Y1 - Cold water valve
Y2 - Hot water valve
Y3 - Salt valve
M1a - Circulation pump 1
M1b - Circulation pump 2 (Hydrim C51 only)
M1F - Fan (Hydrim C51 only)
M2 - Waste pump
M3 - Dryer motor
M4 - Dosing pump 1
M5 - Distribution Valve Motor (Eschmann Plus only)
AS1 - Air Solenoid Valve (Hydrim C51wd LCS & Eschmann Plus only)
B1 - Pressure switch
B2 - Chamber full switch
B3 - Chamber overflow switch
B4 - Door switch
B5 - Low salt switch (Hydrim L110 only)
B6 - Chemical 1 flow switch
B7 - Handpiece present switch (Hydrim C51wd LCS & Eschmann Plus only)
B8 - Low rinse-aid (chemical 3) switch (Hydrim L110 only)
B9 - Distribution Valve Motor Switch (Eschmann Plus only)
B10 - Conductivity Switch (Hydrim L110wd only)
B11 - Handpiece water filter pressure switch (Hydrim C51wd LCS only)
B12 - Temperature cut-off switch
B13 - Dryer temperature cut-off switch
R1 - Chamber heater
R2 - Dryer heater
T1 - PT100 - Chamber temperature sensor
T2 - PT100 - Hydrim L110wd - Second chamber temperature sensor
RC1, RC2, RC3 - RC Network RCF22-220/220 Murrelektronic
- RC3 - Hydrim L110 only
F1, F2 - 10A (Hydrim C51 only)
F3 - 2A (Hydrim C51 only)

6. Technical Service Menu

Service Menu Overview



To access this menu, turn the unit on. There is an "i" in the lower right hand corner of the screen for about 10 seonds. Touch the "i" to get to the menu screen. Touch Service.

Key in the password 7919 and press EN.

Within main service menu, there are eight options.

Cycle Count: Displays the number of cycles that have been run (complete and incomplete).

Diagnostic Tools: Offers a submenu of five tools.

- Error History: Allows access to the last three errors.
- Test Cycle: An abbreviated cycle that uses all pumps and valves. Cannot be used to process instruments.
- Component Test: Allows individual testing of the following components.
  - Circ. Pump M1 - ON/OFF
  - All Devices - ON/OFF
  - Latch L1 - ON/OFF
  - Salt Valve Y2 - ON/OFF
  - Dosing Pump 1 M4 - ON/OFF
  - Dryer Motor + Heater - ON/OFF
  - Hot W. Valve Y7- ON/OFF
  - Cold W. Valve Y1 - ON/OFF
  - Rinse Aid Valve ON/OFF (not used)
  - Waste Pump M2 - ON/OFF

6. Technical Service Menu

- View IO Status: Shows the status of the each component in the unit
  - Chamber Full SW - ON/OFF (chamber full switch)
  - Salt SW - ON/OFF (salt switch)
  - Rinse Aid - ON/OFF (not used)
  - Chemical Sensor - ON/OFF
  - Chamber Overflow ON/OFF
  - Chamber Pressure - ON/OFF
  - Door SW ON/OFF (Door switch)
  - Chamber T - XX C (chamber temperature)
  - Validation T - XX C (validation temperature)
  - CTS - ON/OFF (clear to send to printer/ datalogger)
- Verify Mode: Automatically checks all components in sequence.
- Set debug screen: Shows I/O status when cycle is running

Cycle Settings

- Set Drying Time
  - P1 Regular
    - 10 min ▲▼ (choose from 1 to 15 min)
  - P2 Heavy Duty
    - 10 min ▲▼ (choose from 1 to 15 min)
  - P3 HD Disinfection
    - 10 min ▲▼ (only value accepted is 10)
- Set Regeneration – Sets water softener setting
  - 0 ▲▼ (choose from 0 to 3)
- Chemical Set-up
  - Prewash
    - 4s ▲▼ (choose from 0 to 15s)
  - Wash
    - 13s ▲▼ (choose from 0 to 30s)
  - High Temp. Wash (second part of wash phase)
    - 13s ▲▼ (choose from 0 to 30s)
  - Rinse / Disinfect
    - 13s ▲▼ (choose from 0 to 15s)
- Set Wash Time
  - P1 Regular
    - 5 min ▲▼ (choose from 5 to 15 min)
  - P2 Heavy Duty
    - 9 min ▲▼ (choose from 5 to 15 min)
  - P3 HD Disinfection
    - 9 min ▲▼ (choose from 5 to 15 min)

6. Technical Service Menu

- Set Rinse Time
  - P1 Regular
    - 1 min ▲▼ (choose from 1 to 5 min)
  - P2 Heavy Duty
    - 1 min ▲▼ (choose from 1 to 5 min)
  - P3 HD Disinfection
    - 10 min ▲▼ (only value accepted is 10 min.)
- # Extra Rinses
  - P1 Regular
    - 0 ▲▼ (choose from 0 to 4)
  - P2 Heavy Duty
    - 0 ▲▼ (choose from 0 to 4)
  - P3 HD Disinfection
    - 0 ▲▼ (choose from 0 to 4)
- Set Wash Temperature
  - P1 Regular
    - 50˚C ▲▼ (choose from 45 to 60˚C)
  - P2 Heavy Duty
    - 50˚C ▲▼ (choose from 45 to 60˚C)
  - P3 HD Disinfection
    - 50˚C ▲▼ (choose from 45 to 60˚C)
- Last Rinse Temp.
  - P1 Regular
    - 60˚C ▲▼ (choose from 30 to 80˚C)
  - P2 Heavy Duty
    - 60˚C ▲▼ (choose from 30 to 80˚C)
  - P3 HD Disinfection
    - 80˚C ▲▼ (only value accepted is 80)
- Printer Selection
  - Serial Printer (default)
  - USB Flash/MSD
- Baud Rate
  - 1200 → 2400 → 4800 → 9600 (default)
- Factory Default (resets all values to factory default)
  - Reset
- Repeater Mode (in the ON position, the unit will continuously run the selected cycle)
  - ON/OFF
- Production Tools (used in production)
- **Software Upgrade:** to upgrade software via the Datalogger

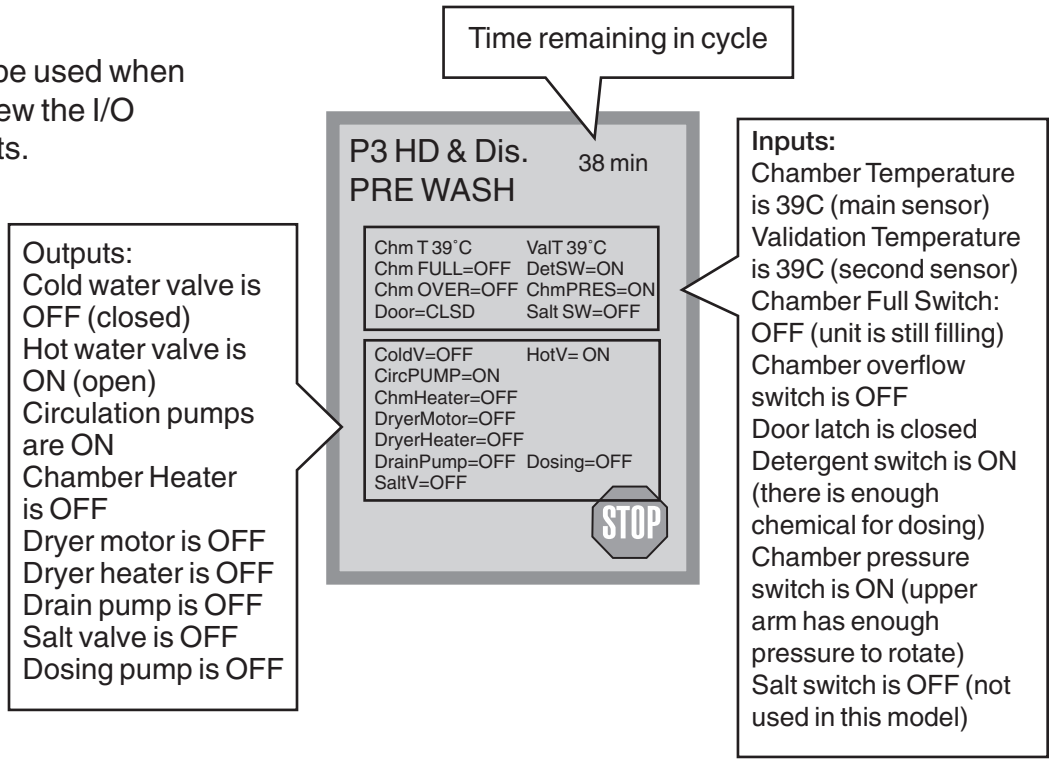
7. Troubleshooting

7.1 Troubleshooting Tools

Within the technical service menu, there are several useful tools for troubleshooting.

Debug screen:

This screen should be used when running a cycle to view the I/O status of components.



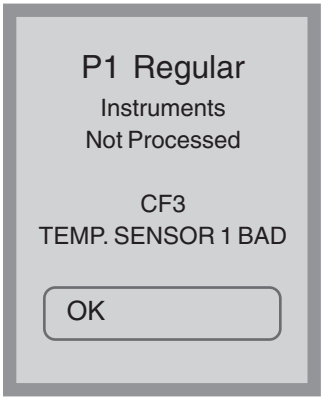
View I/O status

This screen should be used when testing components and wires for functionality without the cycle running.

7. Troubleshooting

7.2 Cycle Faults

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



7.2.1 CF1 Heating Failure

Detection: The water is not reaching the required temperature in the specified time.

Remedy:

1. Possible Cause is overheating of the circulation pump. Indication of this cause is if the machine gives CF1 error code during a cycle, but runs normally if the machine is allowed to cool down. Check if the cooling fan is running when the circulation pump is running. If not, replace the fan (Figure 20). If the fan is OK, proceed to step 2.
2. Using the debug screen check if the pressure switch for the upper arm turns ON when the circulation pump is ON. If not, replace the upper arm pressure switch (Figure 22). If OK, proceed to step 3.
3. Using the debug screen, monitor the pressure switch during disinfection (P3 only). If the switch turns OFF, the pump is overheating. Check and replace the cooling fan and/or the upper circulation pump (Figure 20). If OK, proceed to step 4.
4. Check the fuses. If OK, proceed to step 5.
5. With the troubleshooting window in place, start a cycle. After filling, the water level should be approximately 10-15mm below the lower wash arm. If the water level is not correct, replace the level sensor (Figure 21). If the water level is OK, proceed to step 6.

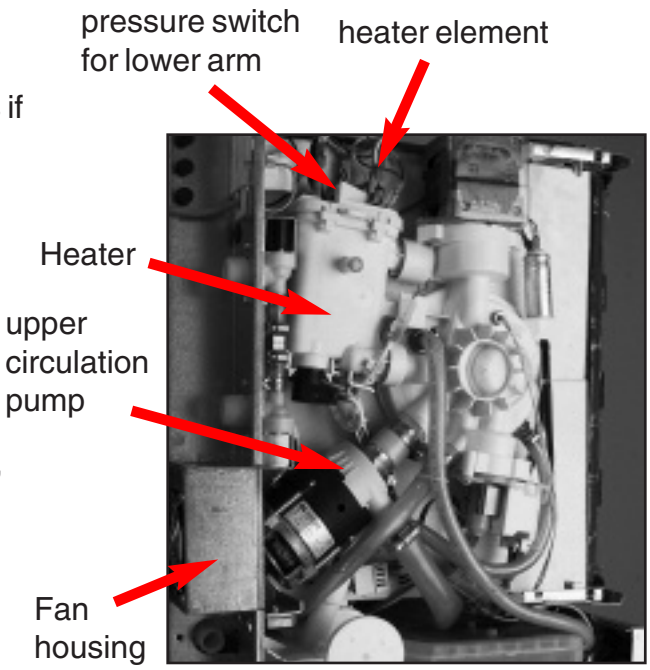


Figure 20

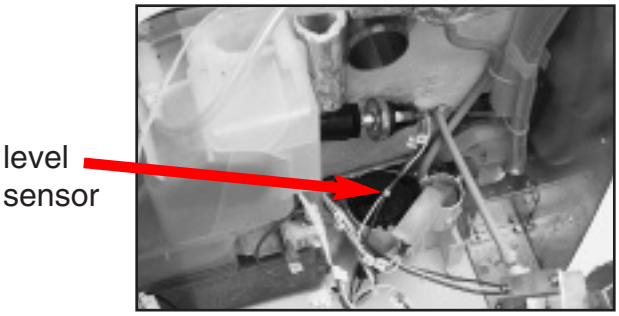


Figure 21

6. Using the debug screen and with the troubleshooting window in place, count the rpm's when the temperature is at 50˚C. Upper and lower arm rpm's should be >= 25. If rpm's are low, this indicates circulation pump failure. Replace the appropriate circulation pump (upper or lower). If rpm's are OK, proceed to step 7.
7. There is a failure in one of the following
   - thermostat
   - pressure switch (lower wash arm)
   - heater element
   - pressure switch (upper wash arm)

   Remove the top cover and the bottom cover. Check the heater element, lower arm pressure switch and thermostat (in series) and the upper arm pressure switch. Replace as required.

7.2.2 CF2 Chamber Filling Failure

Detection:

- Chamber full switch not activated in the first 4 min of filling (circulation pump not running yet). If hot water unavailable or at low pressure, the unit will switch to cold water after 2.5 min if the chamber full switch is not activated.
- Chamber full switch not activated in 4 min of filling with circulation pump running.

Remedy:

1. Check if the water supply valves are turned on and the water pressure is normal.
2. Check for blockages in the water inlet hose filters.
3. Check for kinks in the water inlet hoses.
4. Possible cause is a malfunction of the chamber level switch. Using the debug screen, monitor if the chamber full switch turns ON after filling. If not, remove the top cover and the chemical bracket. Check the level diaphragm / switch assembly and repair or replace. If OK, proceed to step 5.
5. Possible cause is a leak. Remove the kick plate and look for fluid in the pan. Isolate and repair the source of the leak.

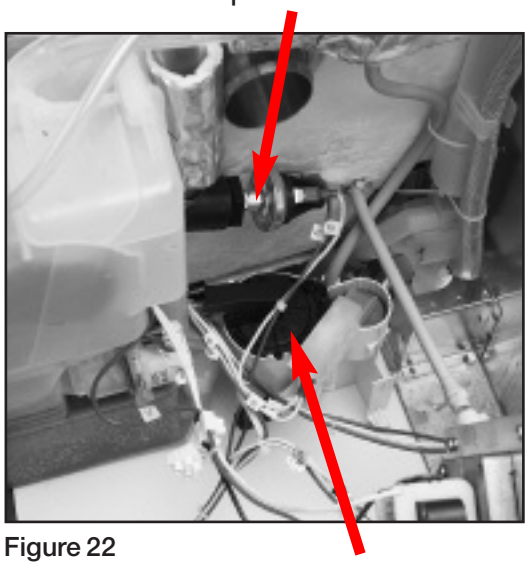


Figure 22

7. Troubleshooting

7.2.3 CF3 Chamber temperature sensor reading failure

Detection:
Main temperature sensor readings are outside limits (too high or too low)

Remedy:
1. Possible cause is disconnection of the temperature sensor. Check the connection of the sensor to the logic board (see section 4.5 Removing the Controller Assembly). If OK proceed to step 2.
2. Possible cause is malfunction of the temperature sensor. Remove the kick plate. Replace the temperature sensor as required.

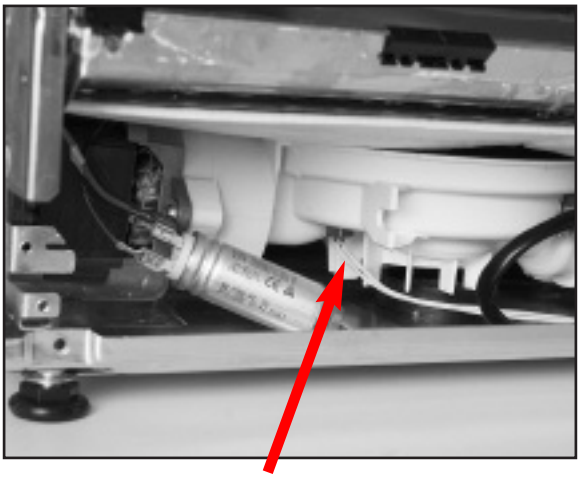


Figure 23

7.2.4 CF 4 Water evacuation failure

Detection:
Chamber full switch did not open in 1 minute after turning the drain pump on.

Remedy:
1. Check for a kink or blockage in the drain hose.
2. Possible cause is drain pump failure. Manually load 3 litres of water into the chamber. With the troubleshooting window in place, go into the service menu and activate the drain pump. The water should drain within 20 seconds. If it does not, remove the top and bottom covers and replace the drain pump (Figure 24a). If the water drains ok, proceed to step 3.
3. Possible cause is chamber full switch failure. Using the debug screen, check if the chamber full switch is OFF when water had drained from the chamber. If not, remove the top cover and the chemical bracket. Check the level diaphragm / switch assembly and replace as necessary (Figure 24a).

Figure 24a

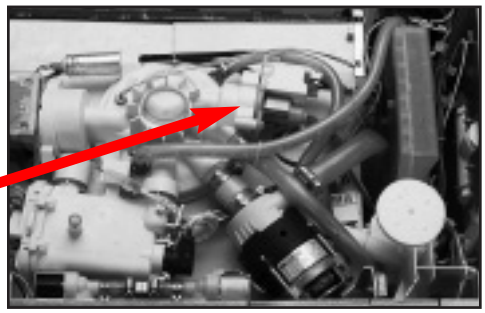
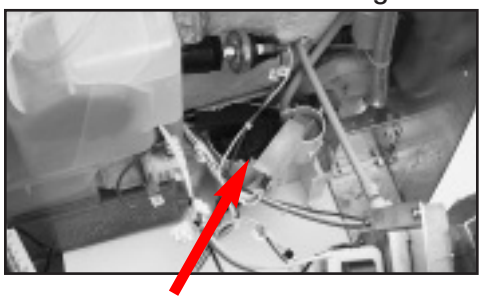


Figure 24b



7. Troubleshooting

7.2.5 CF 5 Disinfection Phase Failure

Detection: Chamber temperature dropped below 80˚C during the disinfection phase of the cycle
Remedy: Possible cause is a water heating problem. Follow the procedure in CF1.

7.2.6 CF 6 Serial Communication Failure

Detection: Failure to read second temperature sensor within 10 seconds.
Remedy: Possible causes are a corrupted program or flash memory, or a defective logic board. Replace logic board.

7.2.7 CF 7 Cycle Aborted or Interrupted(C51WD only)

Detection: Second temperature sensor readings are out of limits (either too low temperature or too high temperature).
Cause: Broken second temperature sensor wire, bad second temperature sensor connection to PCB

7.2.8 CF 8 Secondary Chamber Temperature Sensor Failure

Detection: Second temperature sensor readings are outside limits (too high or too low).
Remedy: Possible causes are disconnection or failure of the temperature sensor. Remove the kick plate. Check the connectors or replace the temperature sensor as required.

7. Troubleshooting

7.2.9 CF 9 Program Timeout

Detection: The unit is running a cycle for more than 2hrs and 30 min.
Remedy: Possible cause is a defective PCB and/or software failure. Replace the logic board.

7.2.10 CF 10 No water pressure in the upper arm (C51WD only)

Detection: Water heating failure due to low water pressure in the upper arm. Chamber temperature less than a set point after a timeout, or a temperature increase rate of 1ºC per 2 seconds is not achieve during “Circulation and heating” phase and the pressure switch for the upper wash arm is OFF.
Cause: Defective upper arm pressure switch

7.2.11 CF 12 Handpiece washing failure (C51WD only)

Detection: Water Filter Pressure Switch failed to show pressure during a Handpiece washing phase of a cycle started with a Water Filter Expired message. The “Water Filter Expired message shows up at the next cycle selection after 10 cycles ran with a clogged water filter (clogged water filter = water filter pressure sensor did not turn on during the handpiece wash phase when the ASV was off - actually last 15 sec of ASV off).
Cause: More than 10 cycles ran with a clogged water filter.

7. Troubleshooting

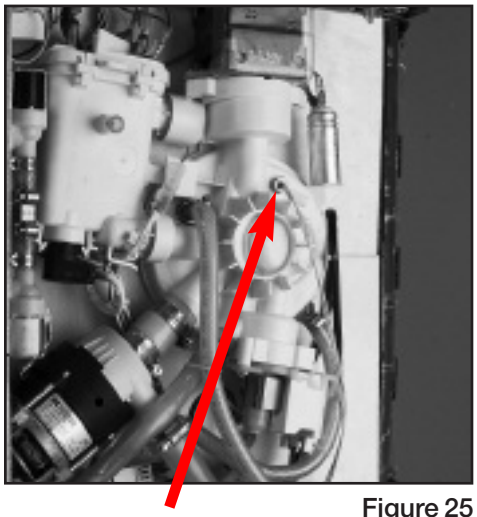
7.2.12 CF 13 Temperature Validation Error

Detection:

The difference between the control temperature sensor (1) and validation temperature sensor (2) is greater than +5°C during the wash phase of the cycle or the validation temperature is outside the disinfection band (-0°C/+5°C) during the disinfection phase of the cycle.

Remedy:

1. Possible cause if a water heating problem. Follow the procedure for CF1.
2. Possible cause is disconnection or failure of the temperature sensor. Remove the kick plate. Check the connectors or replace the temperature sensor as required.



temperature sensor

Figure 25

7.2.13 CF 15 Chamber Overflow

Detection:

The overflow switch did not turn off after 30sec of running the drain pump.

Remedy:

1. Check for a kink or blockage in the drain hose.
2. Possible cause is a defective overflow switch. Follow the procedure for CF2.
3. Possible cause is the water inlet valves not closing. This can be detected if water continues to fill the chamber even when the power to the machine is off. Replace the inlet valves.
4. Possible cause is a leak. Remove the top cover and kick plate and look for fluid in the pan. Isolate and repair the source of the leak.

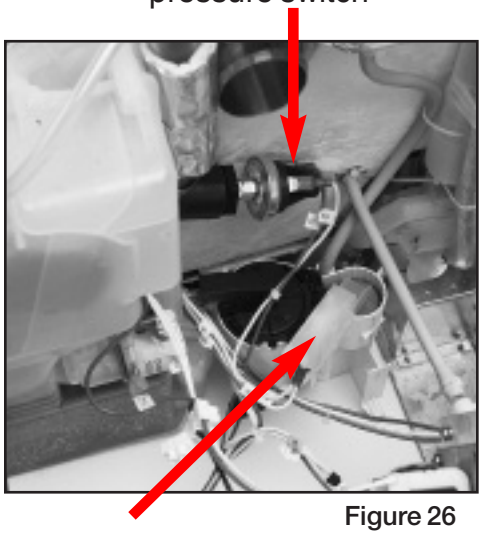


Figure 26

chamber overflow switch

7. Troubleshooting

7.2.14 CF 16 Pressure failure

Detection: Pressure switch turned off during washing or disinfection phase.
Cause: Circulation pump failure (no upper washing arm rotation) Defective pressure switch

7.2.15 CF 17 Circulation Pressure Sensor stuck

Detection: Circulation Pressure sensor stuck on high pressure at Idle or during first phase of the filling stage.
Cause: Circulation Pressure sensor stuck

7.2.16 CF 18 Water Filter Pressure Sensor stuck

Detection: Water Filter Pressure sensor stuck on high pressure at Idle or during first phase of the filling stage.
Cause: Water Filter Pressure sensor stuck

7. Troubleshooting

7.3 Additional Troubleshooting

Problem: “No detergent” message

Remedy

1. Check if the cleaning solution bottle is empty.
   Replace if required.
2. Loosen the white cap on the cleaning solution bottle to prevent formation of a vacuum (Figure 27).
3. Possible cause is a dosing reservoir malfunction.
   Remove the top cover.
   Remove two small, red wires from the connector block and connect them together (Figure 28).
   If the “no detergent” message disappears and the machine runs, the dosing reservoir is defective and must be replaced (Figure 29). If the error message remains, proceed to step 4.
4. Check the connections to the controller. If the wires are OK, replace the controller logic board.

Figure 27

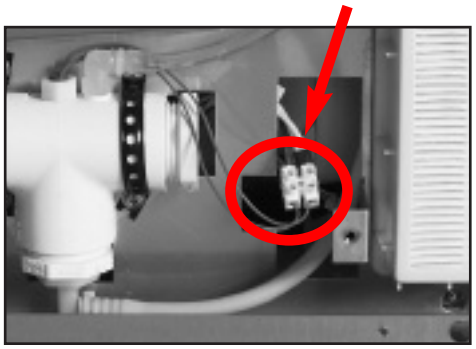


Figure 28

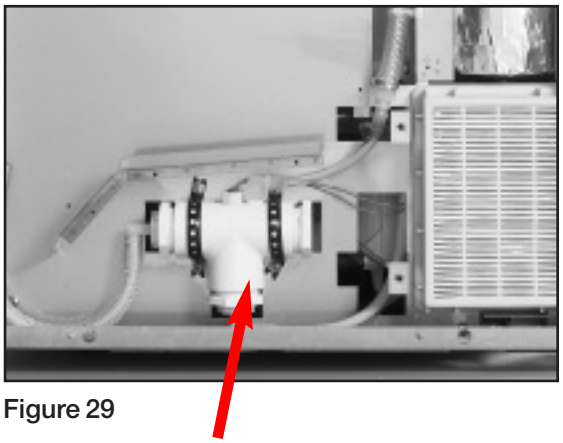


Figure 29

7. Troubleshooting

Problem: Cleaning solution leakage

Remedy

1. Ensure that the male outlet on the cleaning solution bottle is tightly closed.
2. Ensure that the male and female connectors have mated.
3. Check the cleaning solution tubing for cracks and leaks. Replace if necessary.

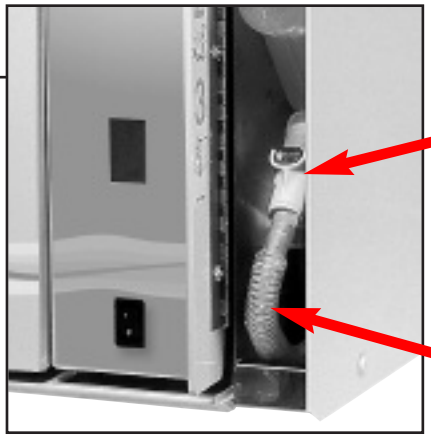


Figure 30

Problem: Water leaking from the door (front of the unit)

Remedy:

1. Make sure unit is level.
2. Check adjustment on the door latch. Loosen two screws and then slide door latch in or out to adjust.

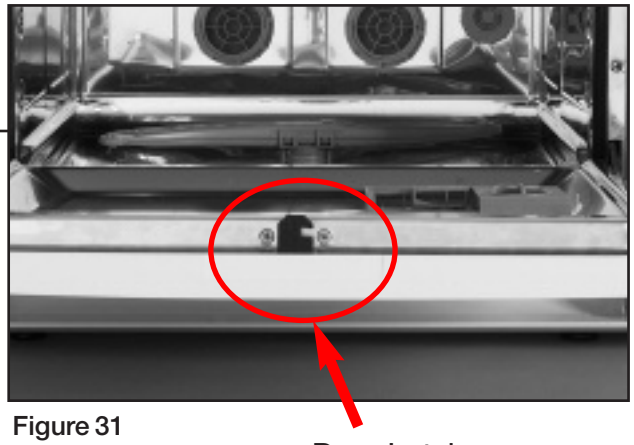


Figure 31

Problem: Instruments not dry

Remedy:

1. Increase drying time
2. Replace Air filter
3. Replace dryer.

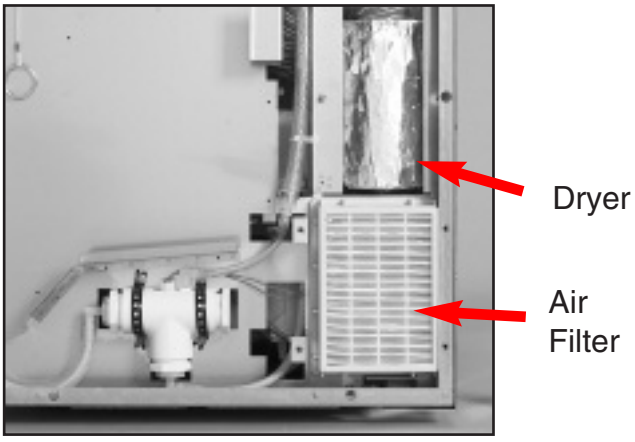


Figure 32

7. Troubleshooting

Problem: Screen doesn't turn on

Remedy:

1. Check that the machine is plugged in.
2. Check the power supply (5V and 24V) according to schematic
3. Replace LCD
4. Replace logic board

Problem: Door doesn't open

Remedy:

1. Check the connector from the I/O board to the latch
2. Check the solenoid and replace if necessary.
3. Check the 24V power supply
4. Check if mechanical link is broken
5. Replace the I/O board

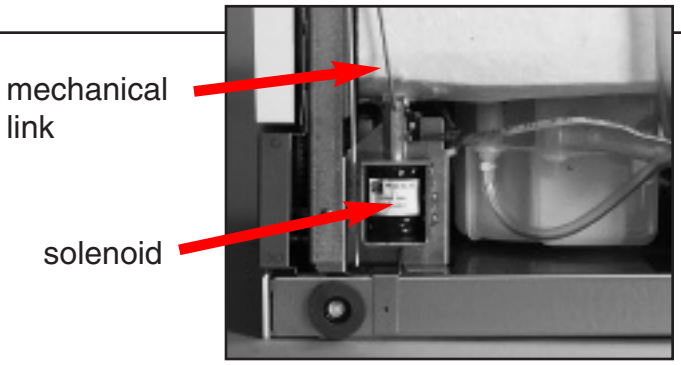


Figure 33

Problem: Printer will not print

Remedy:

1. Ensure that serial printer is selected (set-up menu)
2. Ensure that baud rate is correct

8. Spare Parts

For an updated parts list, please refer to myscican.com

Item	SCICAN #	KIT DESCRIPTION	NOTE
1	01-107786S	Seal Door, J	
2	01-107787S	Inlet Hose Europe, J	one hose / kit
3	01-107789S	Drain Hose, J	one hose / kit
4	01-107790S	Dosing Pump, J	
5	01-107791S	Valve Salt Regeneration, J	
6	01-107792S	Thermoactuator, J	
7	01-107794S	Pump Recirculation Lower Arm, J	
8	01-109779S	Pump Top Arm Recirc, S	
9	01-107796S	Drain Pump Europe 230V, 50Hz, J	
10	01-107799S	2A Fuse, J	five fuses / kit
11	01-107800S	10A Fuse, J	ten fuses / kit
12	01-107801S	Inlet Valve Cold Water, J	
13	01-107802S	Switch Full Chamber, J	
14	01-107803S	Switch Overflow Chamber, J	
15	01-107804S	Lower Wash Arm, J	
16	01-107806S	Screen Drain, J	with mesh
17	01-107807S	Filter Drain, J	
18	01-107808S	Water Heater, J	
19	01-107810S	Switch Pressure Heater, J	
20	01-107811S	Door Spring Kit, J	
21	01-107812S	Clip Door, J	
22	01-107815S	Inlet Valve Hot Water, J	
23	01-107938S	Switch Pressure Assy, J	
24	01-107975S	Adjustable Feet, J	
25	01-108030S	Quick Connect Female, J	
26	01-108121S	Cap Quick Disconnect, J	ten caps / kit
27	01-108122S	Drip Tray, J	
28	01-108253S	Reservoir	
28	01-108305S	Hydrim Water Test Kit, J/K	
30	01-108309S	Kickplate, J	
31	01-108310S	Mesh Drain, J	only mesh
32	01-108351S	Float Dosing Reservoir, J	
33	01-108699S	Tube Chem.	
34	01-108700S	Fuse Holder, J	three parts / kit
35	01-108795S	Plastic Trim Edge, J	
36	01-108797S	Support Bracket 1-st Pump, J	
37	01-108924S	Screw Kit Hydrim C51wd, J	
38	01-109143S	Dryer Tubing, J	
39	01-109144S	Dryer Fitting, J	

8. Spare Parts

Item	SCICAN #	KIT DESCRIPTION	NOTE
40	01-109145S	Dryer Vent Assy, J	
41	01-109836S	Operator's Manual, Hydrim C51WD, S	
42	01-109835S	Dryer Assy Hydrim, S	
43	01-109834S	Seals, Door Bottom Hydrim, S	
44	01-109833S	Packaging Hydrim C51WD, S	
45	01-109832S	Cover Top and Filter C51WD, S	
46	01-109831S	Thermostat Heater C51WD, S	
47	01-109795S	HEPA Filter C51WD, S	
48	01-109794S	Detergent Door w. Label C51WD, S	
49	01-109793S	Fascia Door w. Label, C51WD, S	
50	01-109792S	Cooling Fan Hydrim, S	
51	01-109791S	Door Curtain Hydrim, S	
52	01-109790S	Upper Spray Arm Hydrim, S	
53	01-109789S	Rope, Door Latch, C51WD, S	
54	01-109788S	Dual Temperature Sensor C51WD, S	
55	01-109787S	Plug, Test Port C51WD, S	
56	01-109786S	Test Port C51WD, S	
57	01-109785S	Touch Display Hydrim, S	
58	01-109784S	Logic Board Hydrim, S	
59	01-109783S	I/O Board Hydrim, S	
60	01-109782S	Power Supply Board, S	
61	01-109781S	Fascia w. Label C51WD, S	
62	01-109780S	Door Solenoid C51WD, S	
63	01-109778S	Water Pressure Switch C51WD, S	
64	01-109777S	Tubing, Top Arm Fitting Hydrim, S	
65	01-109776S	Top Arm Fitting Hydrim, S	

8. Spare Parts

01-107786S
Seal Door, J

01-107787S
Inlet Hose Europe, J

01-107789S
Drain Hose, J

01-107790S
Dosing Pump, J

01-107791S
Valve Salt Regeneration, J

01-107794S
Pump Recirculation Lower Arm, J

01-109779S
Pump Top Arm Recirc, S

01-107796S
Drain Pump Europe 230V, 50Hz, J

01-107799S
2A Fuse, J

01-107800S
10A Fuse, J

01-107801S
Inlet Valve Cold Water, J

01-107803S
Switch Overflow Chamber, J

01-107804S
Lower Wash Arm, J

01-107806S
Screen Drain, J

01-107807S
Filter Drain, J

01-107808S
Water Heater, J

01-107810S
Switch Pressure Heater, J

01-107812S
Clip Door, J

01-107815S
Inlet Valve Hot Water, J

01-107938S
Switch, Pressure Assembly
(Chamber Full Switch Assembly)

8. Spare Parts

01-107802S
Switch Full Chamber, J

01-107975S
Adjustable Feet, J

01-108030S
Quick Connect Female, J

01-108699S
Tube, chemical

01-108121S
Cap Quick Disconnect, J

01-108122S
Drip Tray, J

01-108253S
Reservoir

01-108309S
Kickplate, J

01-108310S
Mesh Drain, J

01-108351S
Float Dosing
Reservoir, J

01-108700S
Fuse Holder, J

01-108795S
Plastic Trim Edge, J

01-108797S
Support Bracket 1-st Pump, J

01-109143S
Dryer Tubing, J

01-109144S
Dryer Fitting, J

01-109145S
Dryer Vent Assy, J

01-109776S
Top Arm Fitting Hydrim, S

01-109777S
Tubing, Top Arm Fitting Hydrim, S

01-109778S
Water Pressure Switch C51WD, S

8. Spare Parts

01-109780S
Door Solenoid C51WD, S

01-109781S
Fascia w. Label
C51WD, S

01-109782S
Power Supply Board, S

01-109784S
Logic Board Hydrim, S

01-109783S
I/O Board Hydrim, S

01-109785S
Touch Display Hydrim, S

01-109786S
Test Port C51WD, S

01-109787S
Plug, Test Port C51WD, S

01-109788S
Dual Temperature
Sensor C51WD, S

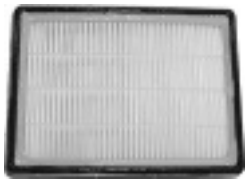
01-109789S
Rope, Door Latch, C51WD, S

01-109790S
Upper Spray Arm
Hydrim, S

01-109792S
Cooling Fan Hydrim, S

01-109793S
Fascia Door w. Label,
C51WD, S

01-109794S
Detergent Door w. Label
C51WD, S

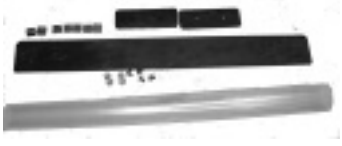


01-109795S
HEPA Filter C51WD, S

01-109831S
Thermostat Heater
C51WD, S

01-109832S
Cover Top and Filter
C51WD, S

01-109833S
Packaging Hydrim
C51WD, S



01-109834S
Seals, Door Bottom Hydrim, S

01-109835S
Dryer Assy Hydrim, S

8. Spare Parts

01-110888S

01-110855S

tubes

white_clear_wheel_thing

01-110842S

MAM-005

01-110853S

01-110814S

01-110850S

01-110848S

01-110849S

01-110837S

01-110839S

01-110854S

11. Appendix

11.1 Appendix - Additional Information For The C51wd-LCS Model

This Appendix provides the additional information required for the C51wd-LCS model which comes equipped with a Lumen Cleaning System (LCS).

Intended Use

The Lumen Cleaning System is intended for cleaning and drying of instruments with internal channels (e.g. dental handpieces). The system is not intended to disinfect the channels. The handpieces are attached via adaptors to the door of the C51wd-LCS and are cleaned and dried during the normal cycle.

Installation Instructions

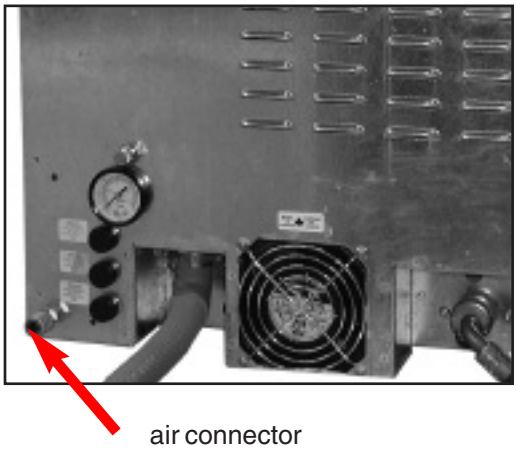
The C51wd-LCS, equipped with the Lumen Cleaning System, is installed in the same way as the C51wd but with the following additional step:

Compressed Air upply

A compressed air feed must be connected to the air connection socket.

Note: Maximum air supply pressure 1.0 BAR. The air supply regulator should be adjusted to 0.75 - 0.85 Bar.

The compressed air supply is required for validated handpiece cleaning and drying.



air connector socket

Instructions for Use

The unit is used and cycles operate in the same way as the C51wd. ONLY use P2 or P3 cycles when handpieces are attached.

11.2 Attaching Handpieces To The LCS

The C51wd-LCS comes equipped with six universal couplings and can process up to six dental handpieces per cycle, in addition to standard instruments. Adaptors that are specific to handpieces should be fitted to each universal coupling being used.

CAUTION: When adaptors or handpieces are fitted to the LCS, the trolley cannot be fully withdrawn. Take care not to damage adaptors or handpieces when withdrawing the trolley.

11. Appendix

Fitting Adaptors

Before fitting adaptors to the LCS, check that the adaptor's O-ring seal(s) are in place and in good condition or cleaning may be impaired. To attach adaptors to the couplings, insert the adaptor noting correct orientation, lift and turn screw collar counter-clockwise until tight.

Fitting Handpieces

To attach the dental handpieces to the adaptors, simply push the handpiece onto the adaptor until it clicks. See the following for a list of the available adaptors (examples of these are shown on the previous page; 1 is a Multiflex and 2 is an E-type coupling. If there are fewer than six handpieces being cleaned during a cycle, it is not necessary to cover or plug the unused adaptors or couplers.

Remove the handpieces from the LCS promptly at the end of the cycle and proceed with sterilization. Do not leave the handpieces in the unit overnight or for any extended length of time.

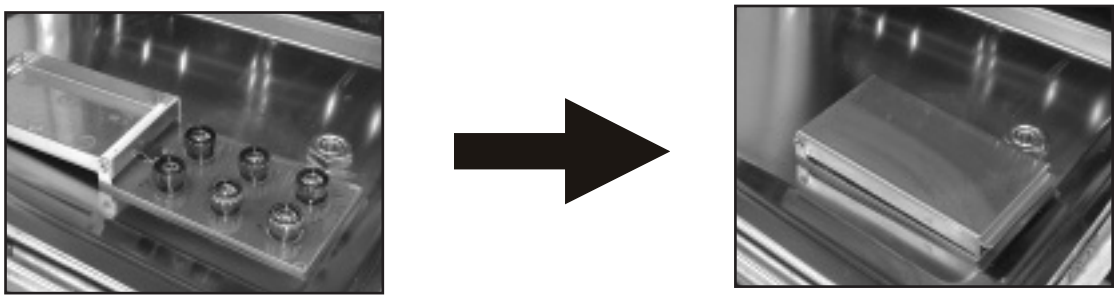
Using The LCS With Other Accessories

The handpieces occupy the upper right quadrant of the wash chamber when the door is closed. For ease of loading, place other instruments in the C51wd-LCS baskets and racks, ensuring that the upper right quadrant is left free for the handpieces. Ensure that the top basket's load does not restrict closing the door with adaptors or handpieces fitted to the LCS. If in doubt do not use the top basket.

Disabling The LCS

When operating the C51wd-LCS without handpieces attached to the LCS, the Lumen Cleaning System can be disabled as follows.

Remove all the adaptors and store carefully. The cover can now be closed, which will disable the LCS. This will help prevent the adaptors from being damaged and also prevent the unnecessary use of the air solenoid.



Note: cycles are approximately 4 minutes longer when the LCS is being used or it is activated with the cover open.

11.3 Changing the LCS Water Filter

The water filter (Part No. 01-110731S) should be changed every 90 days, or as required. The frequency of filter change will depend on the number of cycles run with handpieces and the amount of debris in the wash chamber water.

CAUTION: The water filter housing may be hot if a cycle has recently been run.

When the water filter has to be replaced the unit will display the following screen after selecting the cycle:

If the water filter is not replaced when the warning is posted, after a number of cycles the unit will display the screen below after selecting the cycle:

By pressing OK the unit moves to the “Start” screen.

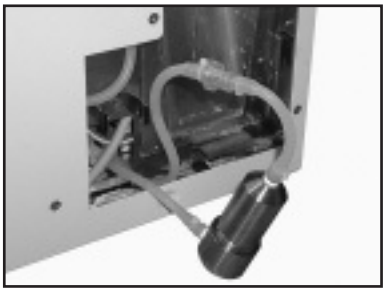
By pressing “Yes” the unit will proceed with the selected cycle but will display a cycle fault (CF12) if the water filter was not replaced. By pressing “No” the unit will go back to the cycle selection screen.

To change the LCS water filter, follow these steps:

Step 1

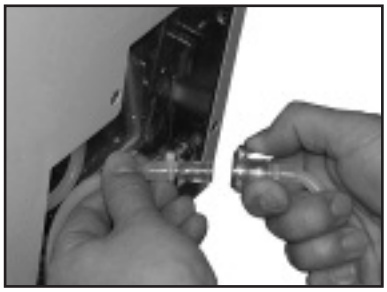
Using a Phillips screwdriver, open the panel on the right hand side of the machine. Remove the air filter.

Step 2



Pull the water filter housing out of the unit, taking care not to detach or damage the two water tubes.

Step 3



Disconnect the quick connect.

Step 4

Unscrew the cap from the base and rinse with water to remove an debris. Unscrew the old filter from the base and discard. Remove any visible debris.

Step 5

Insert a new filter and hand tighten. Replace the cap and re-insert the filter housing, taking care not to pinch the water tubing. Replace the air filter. Replace the panel and screws.

11. Appendix

Available Adaptors		
1. E Type adaptor	4. Sirona E Type adaptor	7. W&H Turbine adaptor
2. Kavo E Type adaptor	5. Sirona Turbine adaptor	8. Midwest E Type adaptor
3. Multiflex/Connex Turbine adaptor	6. NSK Turbine adaptor	9. Bien Air Turbine adaptor

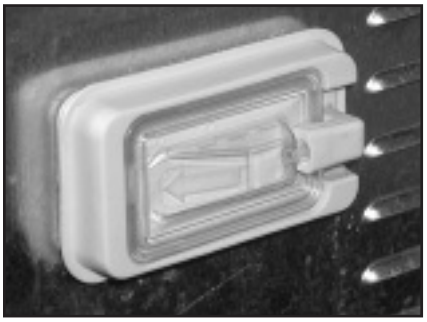
Although available for the majority of handpieces it is not possible to provide adaptors for every type of handpiece. Please contact the manufacturer of your handpiece if a specific adaptor is not listed above.

11.4 Changing the LCS Air Supply Filter (Biological)

The air supply filter (biological) (order no. 01-102119S) should be changed when the message “Replace Air Filter” appears (note that this message also applies to the HEPA filter). The frequency of air supply filter change may need to be monitored as it is also dependant on the quality of the compressor air output.

The air supply filter fits into a flexible filter nest as shown. Both items have an arrow indicating flow direction. Looking from the rear of the machine both arrows should point to the left.

Before fitting or changing an air supply filter (biological), it is recommended that the air supply is disconnected. If an old filter is in place disconnect from the supply side. Gently bend the nest’s flexible port to the right and gently pull the old filter away at the right hand side. Then pull to the right, remove and discard.



The flexible port on the right of the filter nest is also displaced to the right to provide clearance to install the new air supply filter. Orient the air supply filter as shown above. The left port of the air supply filter is inserted into the left port of the filter nest and the right port of the air supply filter is inserted into the right port of the filter nest. Check that the air supply filter has been connected correctly. Connect the air supply (check the air supply pressure is correctly adjusted) and check again that the air supply filter connections are secure.

Note: If the air supply pressure is too high, the right port of the filter nest may disconnect as the air pressure regulator adjusts. If this occurs, re-attach the right side filter nest port.

When correctly installed and the air supply is connected and adjusted to the correct pressure the air supply filter should be situated in its housing.

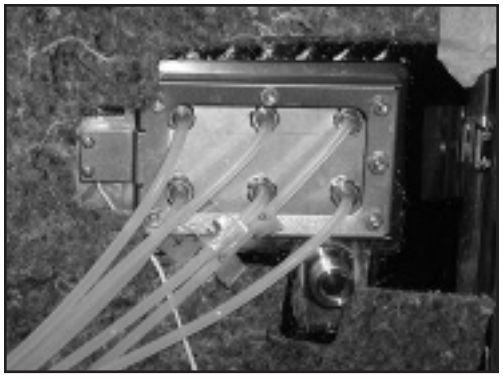
11. Appendix

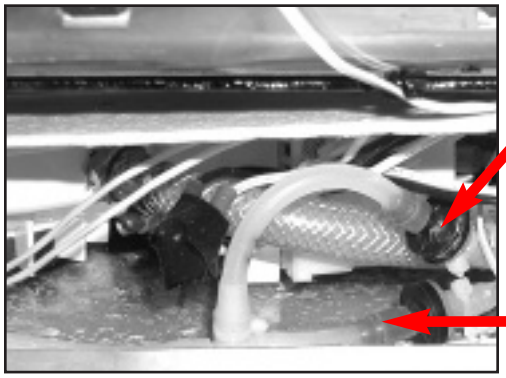
11.5 Changing the Air / Water Feed Lines

If for some reason there is an air or water reduction to the LCS, the individual tubes can be removed and replaced. To remove the individual tubes, you will need to first remove the door fascia. (See Unit Overview for instructions on removing the door fascia.)Once the door fascia has been removed, remove the individual tie-wrap connecting the tube onto the LCS. Then follow the tube down through the bottom pan and kickplate until it reaches the manifold (p/n 74-111612)

If you need to remove the entire LCS feed line assembly, then unscrew the 7 screws connecting the LCS to the Hydrim door. Then follow the tubes down through the kickplate and bottom pan to the manifold. Disconnect the air check valve and also the water filter check valve.

Then uncrew the two screws connecting the manifold to the backet.





11.6 Removing the Solenoid

If the LCS solenoid needs to be replaced, the top cover must first be removed. (See Unit Overview for instructions on removing the top cover.)

After the top cover has been removed, disconnect the two tie-wraps connecting the tubes to the solenoid.

Once the tubes have been disconnected remove the two screws connecting the solenoid to the bracket. Replace by following the same instructions in reverse.