Acct # 100805

MEDIVATORS®
REPROCESSING SYSTEMS

DSD™-201

Endoscope Reprocessor

Service Manual

Software Version 3.xx

CE 0050

ETL LISTED

MM03-0047 Revision D

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INTRODUCTION

1

Using this Manual

This manual describes the Medivators Reprocessing Systems DSD™-201 endoscope reprocessor. It also describes the features of the reprocessor, how to setup and operate the reprocessor, and maintenance and troubleshooting procedures to keep the reprocessor in good operating order.

Throughout the manual are notes, service notes, cautions, and warnings. These provide additional important information. An example of each is illustrated below.

Note: A note refers to relevant information not covered in the main body of the text.

Service: A service note refers to operations or repairs only a trained service technician may perform.

Caution! A caution describes actions and conditions that may cause damage to or destruction of the equipment.

Warning! A warning describes actions and conditions that may cause severe personal injury or death to the operator or patient.

Safety

This section outlines general safety guidelines for proper operation and service of the reprocessor. Failure to follow these guidelines may result in severe injury or death to the patient and/or operator. Read and understand all operating and service procedures before attempting to operate the reprocessor.

Intended Use

Only properly trained individuals may operate or service the reprocessor. Never use the reprocessor for any purpose other than the manufacturer's specific intended purpose.

Operator Safety

Avoid biological contamination and chemical burns–always wear appropriate personal protective equipment when handling endoscopes or disinfectant solutions. Never open the reprocessor lid or remove the floating basin lid during operation.

For disinfectant handling guidelines, refer to the American National Standard recommended practice titled *"Safe Use and Handling of Glutaraldehyde-based Products in Health Care Facilities"* (AAMI/FDS ST58, 1996-03-26). The document is available from the Association for the Advancement of Medical Instrumentation.

Guidelines

1

Guidelines are established to ensure patient safety, operator safety, and to maintain reliable reprocessor operation.

Installation and Maintenance

Proper maintenance will ensure effective disinfection and prolong the life of the reprocessor.

- The reprocessor must be protectively grounded.
- The system default is factory-set for a 20 minute disinfectant immersion period. This period may be changed in the custom program setting. Verify the program is appropriate for the disinfectant used.
- All pressure regulators are factory-preset. Do not adjust the settings. Contact your Technical Support representative for assistance.
- Do not allow the sanitizing solution to contact metal components.
- Do not use alcohol or alcohol-based products to clean the reprocessor cabinet as this may cause crazing.
- The hook-ups are not autoclavable and must be reprocessed by low temperature disinfection only.
- Replacement parts must be ordered from the manufacturer to maintain the warranty.

Water Quality

Potable water is the minimum standard. Incoming water must be pre-filtered to minimum of 0.45-microns.

- The high performance 0.2-micron water filter included with the reprocessor is a sterilizing grade bioretentive filter. The filter removes all microorganisms and particles greater than 0.2-microns.
- The routine maintenance schedule recommends replacing the 0.2-micron water filter every 6 months or sooner, depending on the pre-filtration system and the quality of the incoming water.

Detergent Solution

Medivators recommends the use of a detergent solution that has bacteriostatic properties to inhibit bacterial growth in the detergent reservoir and detergent line.

Caution! Never use household detergent in the reprocessor.

Disinfectant Solution

Select a low-foaming, high level disinfectant specifically manufactured for high-level medical instrument disinfection. The product must be capable of destroying *M. tuberculosis*.

- Consult the product label for appropriate contact time and temperature when programming the disinfection cycle.

Monitoring Disinfectant Potency

The efficacy of a disinfection procedure is directly related to the disinfectant solution used and the amount of time the endoscope is exposed to that solution.

- Disinfectants must be monitored for potency on a daily basis. Consult the disinfectant manufacturer recommendations for monitoring guidelines.
- Use the manufacturer's test strips to test the potency of the solution on a daily basis. If the potency of the solution is below its minimum recommended concentration (MRC), discard and replace it with fresh solution.
- Never use disinfectant beyond the manufacturer's recommended reuse life, even if the potency levels are acceptable.
- Never use disinfectant with unacceptable potency levels, even if the reuse date is unexpired.

Endoscope Precleaning and Testing

All endoscopes must be precleaned prior to disinfection. Follow the endoscope manufacturer instructions and established professional guidelines to properly preclean the endoscope.

- Endoscopes with elevator wire channels require additional manual cleaning and disinfection steps.
- Leak test endoscopes prior to disinfection procedures.

Cleaning and Disinfection

Always follow established professional guidelines while cleaning and disinfecting endoscopes. The following organizations have published recommended guidelines.

Society of Gastroenterology
Nurses and Associates
401 North Michigan Ave.
Chicago, IL 60611-4267
TEL: (800) 245-7462
FAX: (312) 321-5194
http://www.sgna.org/

Association for Professionals in
Infection Control and Epidemiology, Inc.
1275 K Street, NW, Suite 1000
Washington, DC 20005-4006
TEL: (202) 789-1890
FAX: (202) 789-1899
http://www.APICinfo@apic.org

American Society for
Gastrointestinal Endoscopy
13 Elm Street
P. O. Box 1565
Manchester, MA 09144-1314
TEL: (978) 526-8330
FAX: (978) 526-4018
http://www.asge.org/

American Society for
Testing and Materials
100 Bar Harbor Drive
West Conshohocken, PA 19428-2959
TEL: (610) 832-9585
FAX: (610) 832-9555
http://www.astm.org/

Association of Operating
Room Nurses
2170 So. Parker Rd., Suite 300
Denver, CO 80231-5711
TEL: (303) 755-6304
FAX: (303) 750-3462
http://www.aorn.org/

Canadian Society of Gastroenterology
Nurses & Associates
P.O. Box 366
36 Adelaide Street East
Toronto, Ontario M5C 2J5
http://www.webray.com/csgna

British Society of Gastroenterology
3 St. Andrews Place
Regents Park, London NW1 4LB
01144-171-387-3534
BSG@mailbox.u2cc.ac.uk.

INSTALLATION

2

General

Move the reprocessor to the installation location before removing the protective packaging material. If this is not possible, use a hand truck or moving dolly and ensure the reprocessor is not damaged.

During installation, be sure the lower reservoir cover is in place, to prevent drill shavings and chips or other debris from entering the reservoir.

The reprocessor must be installed on a level surface, or adjusted to level. See the Leveling procedure in the Maintenance chapter.

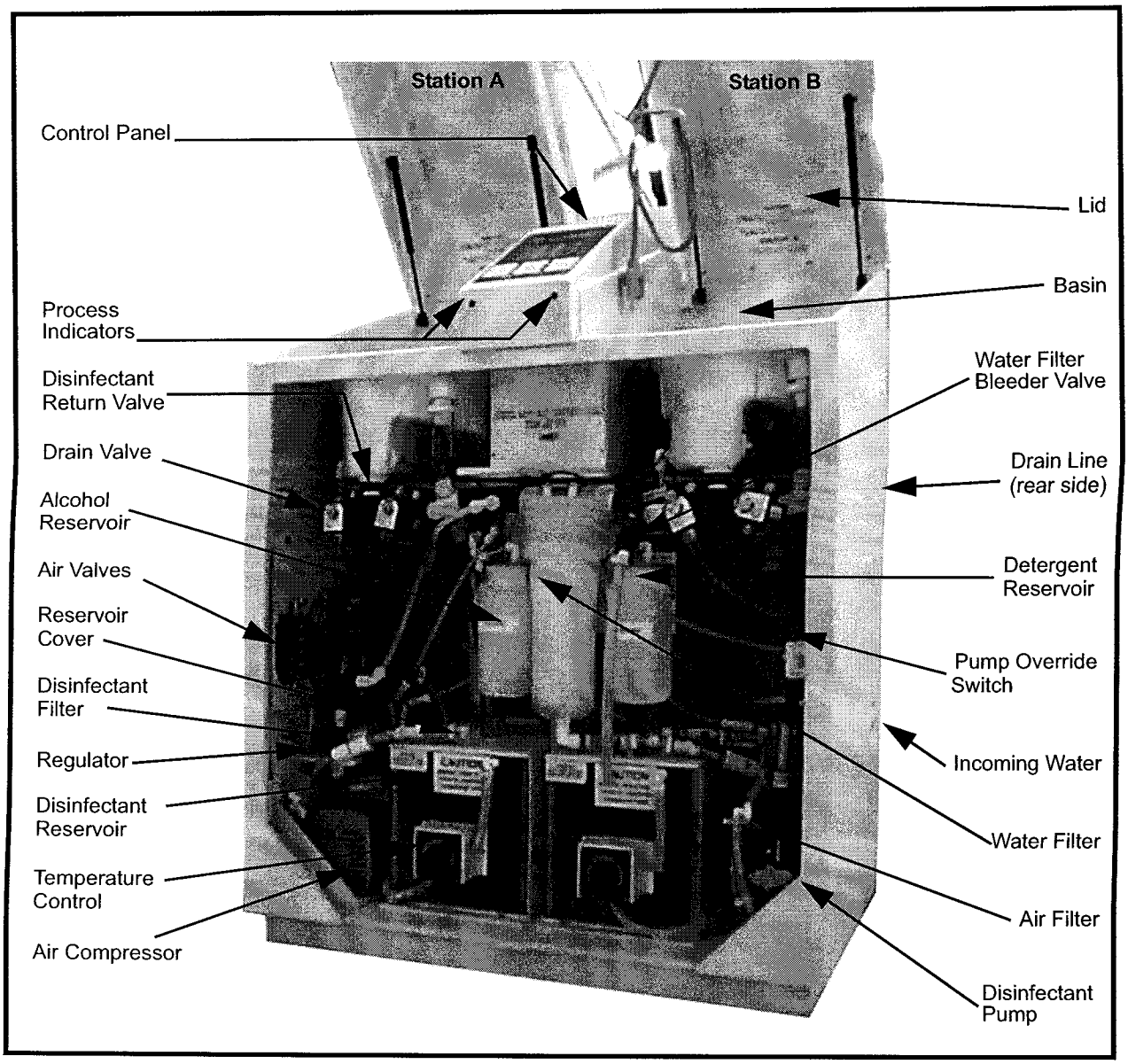


Fig. 1. DSD-201 Internal components

System Supply

Water Supply

For optimum cycle performance, the water supplied to the reprocessor must provide a flow rate of 3.2 gal/min (12 liters/min), at 35-40 psi (2.4-2.75 bar). The incoming water line must be a minimum 1/2-inch (13 mm). Use a cold water supply with a maximum temperature of 110° F (43° C).

1. Install an incoming water shut-off valve before the pre-filter system.
2. Install the incoming water prefilter, supplied with the reprocessor.
   - Mount the incoming water filter on the wall where it can be periodically checked for particle saturation.

Note: The filter is provided with the outlet on the right side. If the filter installation requires the outlet to be on the left side, remove the filtration brackets and reinstall on the opposite side, then loosen and rotate the gauges 180°.

3. Install the supplied water regulator between the pre-filter and the reprocessor water connection.
   - Incoming water pressure to the regulator must be less than 100 psi (6.8 bar).
   - Set the outgoing water pressure between 35-40 psi (2.4-2.75 bar).

Electrical Supply

Domestic reprocessors are supplied with a hospital grade, grounding plug that can be connected to any standard 110-130VAC outlet. International reprocessors are supplied with a standard grounding European plug that connects to 220-240VAC outlets.

We recommend surge protectors be used for protection against power spikes and surges. The reprocessor must be plugged into or connected to a fused branched circuit.

Caution! The reprocessor does not have an on/off switch. Be sure the reprocessor is positioned so that the power cord or main circuit breaker is accessible at all times.

Warning! The reprocessor must be protectively grounded.

Air Supply

Compressed air is required (30 - 60 psi/2.1 - 4.1 bar). If you did not purchase the air compressor option with the reprocessor, be sure to make the compressed air connection to the labeled fitting on the side of the cabinet.

Warning! This air must be supplied from an oil free air source.

System Drain

The drain tube provided with the reprocessor consists of 36 inches of 1-inch diameter clear tubing. The drain tube must have 3 inches of drop (7.5 cm) or greater over the 36-inch length. Consult your maintenance department for multiple reprocessor installation.

Caution! The reprocessor drain relies on gravity flow. There must be no low spots in the drain line. Fluid trapped in the drain line will interfere with free drainage and reprocessor function.

Installation Verification

To be sure that the system is ready to operate, perform a trial run with water as outlined below. Use scope hook-up to simulate an endoscope.

Caution! Operating the 120VAC reprocessor without a hook-up fitting might blow the 8-amp slow blow fuse. Operating the 230VAC reprocessor without a hook-up fitting might blow the 4-amp slow blow fuse.

1. Load the lower reservoir with water. Use the procedure described in the Operator Controls Chapter for loading disinfectant.
2. Fill the alcohol and detergent reservoirs, then prime the tubing.
   - Enter the Custom Programs menu.
   - Set the alcohol and detergent inject time to 15 seconds.
3. Close the lid, then press the START button.
4. Check the flow through the tubing during the disinfect, air, and rinse cycles.
5. Check the water regulator in the incoming water line.
   - Pressure must be 35 - 40 psi (2.4 – 2.75 bar).
6. Verify the cycle completes with no errors.
7. Verify there are no leaks in the reprocessor.
8. Press DISINFECT DUMP and START on the control panel to run a dump cycle. Refer to the "Disinfection Dump" procedure in the Operation Chapter of this manual
9. After the disinfectant dump cycle is complete, program the disinfectant soak, etc., times as needed.
10. Load fresh disinfectant and begin to operate the reprocessor.

Service: If the reprocessor cannot be verified, contact Medivators Technical Support at: 1-800-444-4729 or 1-763-553-3300.

OPERATOR CONTROLS

General

This chapter describes the operator controls, and how to set up and program the reprocessor.

Control Panel

The control panel allows the operator to specify settings, view system messages, errors and warnings, and operate the reprocessor. This section describes each function of the control panel.

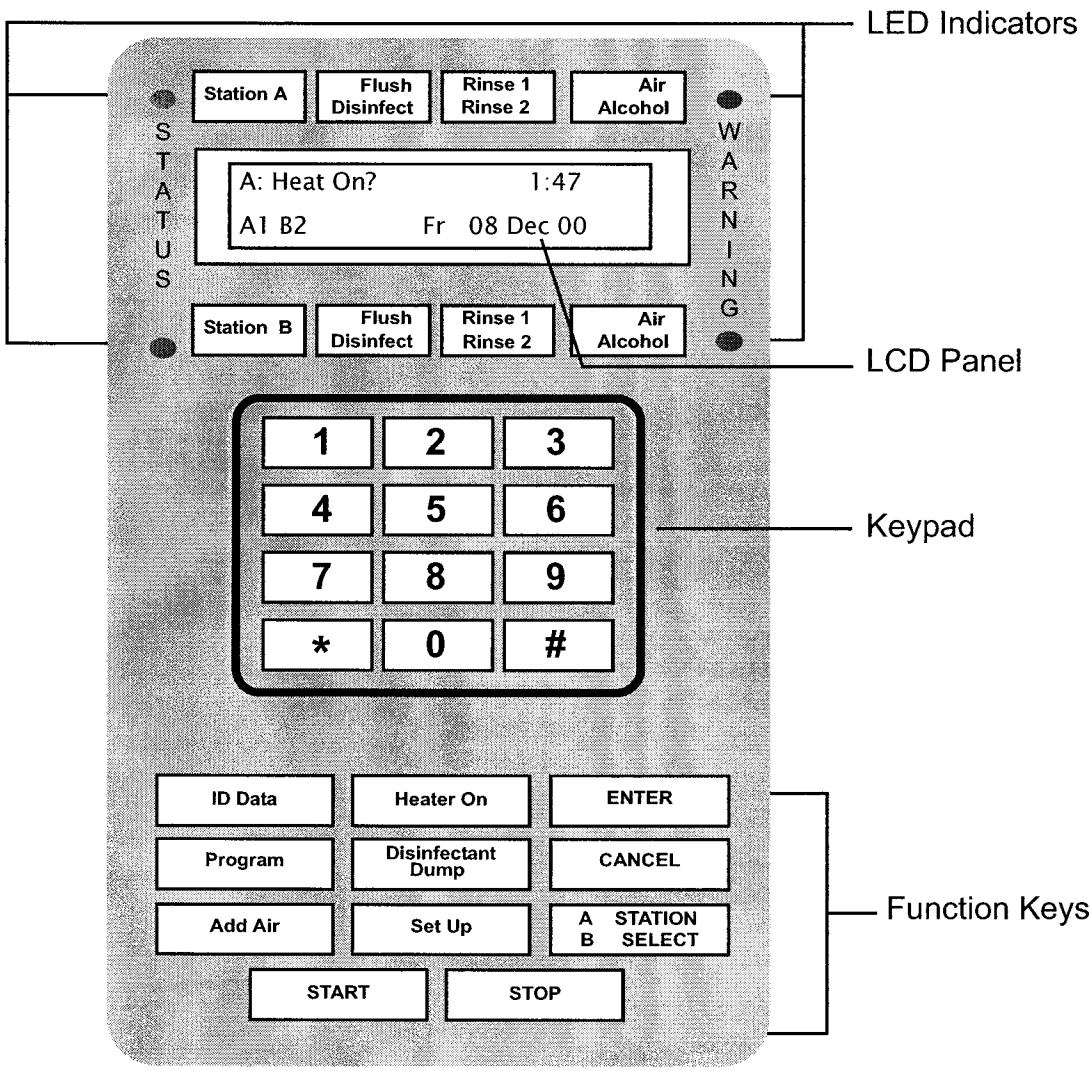


Fig. 1: Control Panel

LED Indicators

The LED indicators alert the operator to system functions and errors. There are four types of indicators used on the reprocessor control panel.

- Status Indicators
  The status indicators blink if an error occurs, or if the STOP button is pressed. The upper indicator identifies station A. The lower indicator identifies station B.
- Station Indicator
  The station indicator identifies that the disinfection station is in use. The LED illuminates when the station is in use.
- Cycle Phase Indicators
  The phase indicators identify which cycle phase the system is performing. The LED illuminates (or blinks) to indicate the present cycle phase.
- Warning Indicators
  The warning indicators alert the operator to system errors, or other conditions requiring immediate attention. The upper indicator identifies station A. The lower indicator identifies station B.

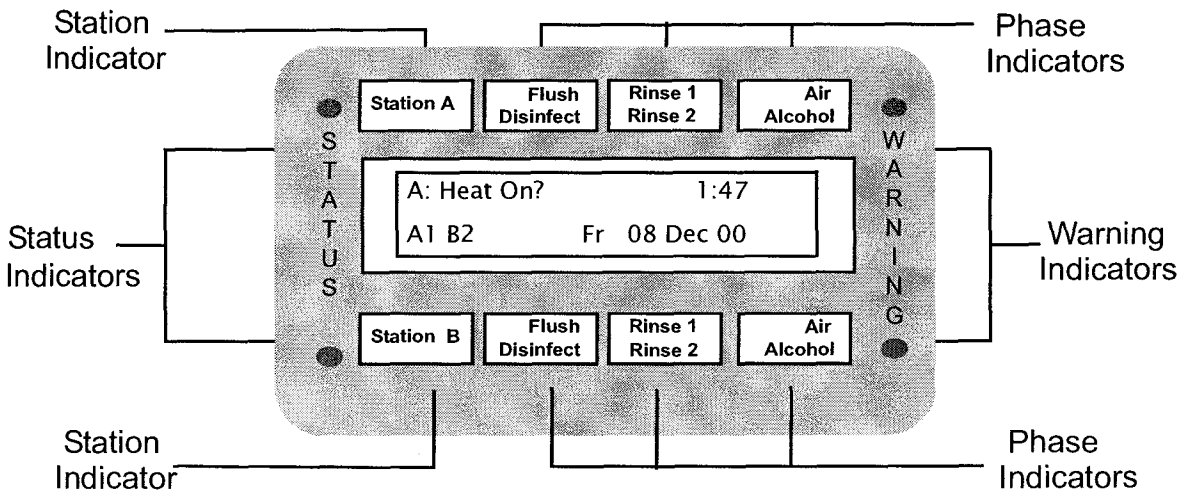
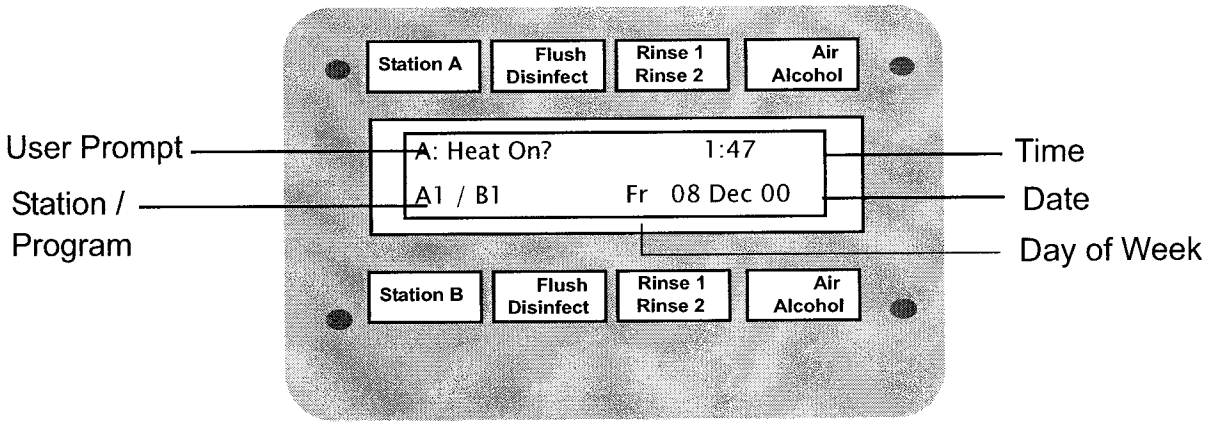


Fig. 2: Indicators

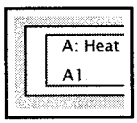
LCD Screen

The LCD screen displays system messages and prompts the operator during system setup.

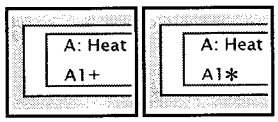
- User Prompt displays messages and queries. "A:" represents station A, "B:" represents station B.
- Station/Program displays the current operating program.
- Program status indicators identify a station as "idle", "stopped", "resetting" or "running".
  - Station stopped is indicated by alternating + and *.
  - Station running is indicated by alternating : and |.
  - Station resetting is indicated by alternating R and r.
  - Station idle has no indicator.



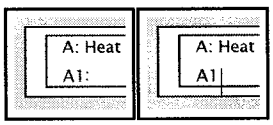
Program status indicators



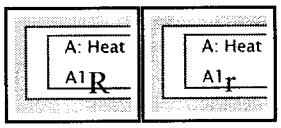
Station idle



Station stopped



Station running



Station resetting

Fig. 3: LCD Screen

Numeric Keypad

The numeric keypad allows the operator to enter numeric information.

- The * key can also be used as a "Cancel" or a "Backspace" button.
- The # key can also be used as an "Enter" button.

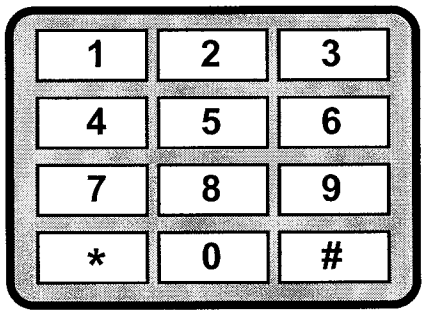


Fig. 4: Numeric Keypad

Function Keys

The function keys control the operation of the reprocessor.

- ID Data
  Press this button to enter the endoscope identification or serial number, operator ID number, patient ID number, and physician ID number into the log. Each ID entry can contain up to ten digits. This function is only active when the station is idle.
- Program
  Press this button to select a disinfection program. Enter the program number on the keypad. This function is only active when the station is idle.
- Add Air
  When the station is idle press this button, then the START button to air purge the scope. Otherwise, this function will append an add air cycle to the end of the currently running cycle. Pressing the button again will remove the add air cycle.
- Heater On
  Press this button to toggle the reservoir heater on or off. The LED illuminates when the heater is ON.
- Disinfect Dump
  Press this button, then the START button to dump the disinfectant. This function is only active when the station is idle.
- Set Up
  Press this button to access system functions.
- Enter
  Press this button to accept settings, or to start some system functions.
- Cancel
  Press this button to reject settings, reset an alarm, or abort a disinfection cycle.
  - Reject an incorrect user entry by pressing the CANCEL button. The previous value is restored, or the previous screen is displayed.
  - Abort the currently running cycle by pressing the CANCEL button, then the ENTER button.
  - Reset an alarm by pressing the CANCEL button, then the ENTER button.
- Station Select
  Press this button to select Station A or Station B.
- Start
  Press this button to start a disinfection cycle or resume an interrupted cycle, or to start some system functions.
- Stop
  Press this button to pause a disinfection cycle, acknowledge a warning message, or stop a system function.

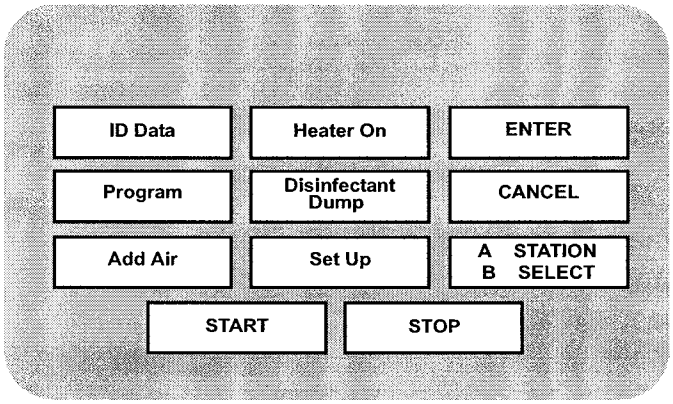


Fig. 5: Function Keys

Setting Up the Reprocessor

▼ LOAD DISINFECTANT FROM BASIN

Use this function to load fresh disinfectant into the reprocessor.

1. Connect the restrictor adapter to the reprocessor basin connection.
2. Replace the disinfectant filter.
3. Press the STATION SELECT button to choose station A or station B.
4. Press the SETUP button.
   - Enter 1 on the keypad, then press the ENTER button.
5. Press the START button
   - The LCD displays a reminder message to "Attach Restrictor". Press the START button again after verifying the restrictor is connected.
   - For Optional Leak Tester: There is a 40 second delay as the leak tester activates.
6. Pour 4 gallons (15 liters) of disinfectant into the basin. Allow the disinfectant to transfer to the reservoir.
   - All disinfectant must be loaded into the basin within the first 28 minutes.
7. Press the CANCEL button when all the disinfectant has transferred to advance to the rinse cycle. An "Aborted" message is displayed on the screen—this is normal.

   --or--

8. Allow the reprocessor to load for 30 minutes, then perform a rinse cycle. A "Completed" message is displayed on the screen after the load cycle.

Warning! **Avoid possible chemical burns. Always wear personal protective equipment (gloves, goggles) when handling disinfectant.**

Warning! **Avoid possible slip injuries. Clean up any spills immediately.**

Caution! If the reprocessor uses heated disinfectant reservoirs, verify the heaters are ON. Allow the reservoir to pre-heat for a minimum of 2 hours before processing an endoscope.

Note: After a complete disinfectant change, perform a Setup 16 to verify the cycle count has reset to zero. Perform a Setup 11 to clear the cycle count if it did not reset.

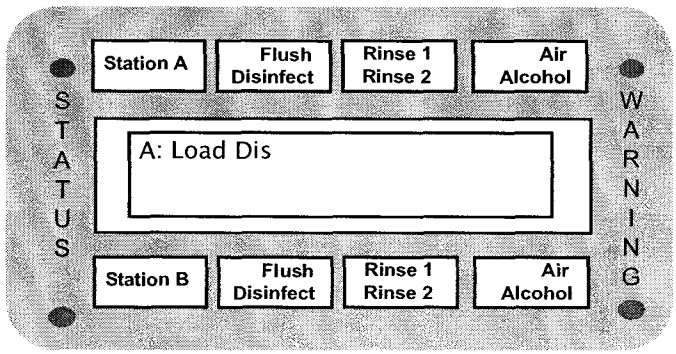


Fig. 6: Load Disinfectant Screen

LOAD DISINFECTANT WITH INTERNAL PUMP

1. Disconnect the disinfectant filter tube from the top of the reservoir.
2. Replace the disinfectant filter.
3. Connect the filter tube to the rigid adapter tube.
4. Place the rigid end of the adapter into the disinfectant container.
5. Connect the flexible adapter tube between the 3-way valve tube and the top of the reservoir to be filled.
6. Rotate the 3-way valve until it points out from the cabinet wall.
7. Locate the manual pump switch on the upper right side of the cabinet wall. Press and hold the switch until 4 gallons (15 liters) of disinfectant is pumped into the reservoir.
8. Rotate the 3-way valve back to the original position.
9. Reconnect the disinfectant filler tube.

Warning! Avoid possible chemical burns. Always wear personal protective equipment (gloves, goggles) when handling disinfectant.

Warning! Avoid possible slip injuries. Clean up any spills immediately.

Note: Perform a Setup 16 to verify the cycle count is "zero".

▼ AUTOMATIC DISINFECTANT DUMP

Caution! Internal pump disinfectant dump must be used where local regulations prohibit dumping into the sanitary sewer.

1. Connect the restrictor adapter to the reprocessor basin connection.
2. Press the STATION SELECT button to choose station A or station B.
3. Press the DISINFECTANT DUMP button on the control panel. The screen displays: *Dump Dis*
4. Press the START button.
   - The LCD displays a reminder message to "Attach Restrictor". Press the START button again after verifying the restrictor is connected.
   - Optional Leak Tester: There is a 40 second delay as the leak tester activates.
   - The disinfectant is pumped into the basin and out of the drain.
5. The reprocessor performs a rinse cycle to clean the basin.
6. The process indicator illuminates when the cycle is complete and the cycle counter resets to zero.

Note: The cycle count will not reset to zero if the dump procedure is canceled, or if the internal pump is used. Perform a Setup 16 to verify the cycle count has reset to zero. Perform a Setup 11 to clear the cycle count if it did not reset.

7. Remove the 1-inch diameter basin return tube from the lower reservoir.
8. Slide the reservoir forward and wipe out with a damp lint-free cloth. Do not use paper towels.

Warning! Avoid possible chemical burns. Always wear personal protective equipment (gloves, goggles) when handling disinfectant.

Warning! Avoid possible burns. The disinfectant heaters may be hot.

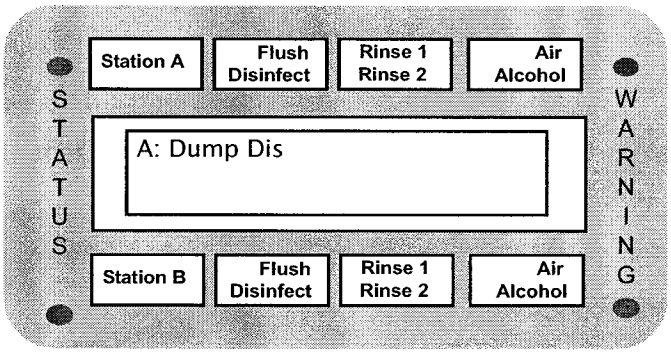


Fig. 7: Dump Disinfectant Screen

▼ DUMP DISINFECTANT WITH INTERNAL PUMP

Caution! The internal disinfectant pump must be used manually where local regulations prohibit dumping into the sanitary sewer.

1. Connect the rigid adapter hose to the 3-way disinfectant valve.
2. Rotate the valve handle until it points out from the wall of the cabinet.
3. Place the free end of the adapter hose into an appropriate container.
4. Connect the pump inlet to the reservoir (use the flex adapter, if necessary).
5. Locate the manual pump switch on the upper right side of the cabinet wall. Press and hold the switch until all the disinfectant is pumped from the reservoir.
6. Disconnect the rigid adapter hose and rotate the 3-way valve back to the original position.
7. Remove the 1-inch diameter basin return tube from the lower reservoir. Slide the reservoir forward and wipe out with a damp lint-free cloth. Do not use paper towels.
8. Reconnect the pump inlet hoses to the appropriate reservoirs. Perform a Setup 11 to clear the cycle count. Perform a Setup 16 to verify that the cycle count resets to zero.

9. Add neutralizer to the container of used disinfectant according to the neutralizer manufacturer's instructions. Properly dispose of the disinfectant according to local regulations.

Warning! **Avoid possible chemical burns. Always wear personal protective equipment (gloves, goggles) when handling disinfectant.**

Warning! **Avoid possible slip injuries. Clean up any spills immediately.**

Caution! Never add neutralizer to the reprocessor as this may damage internal components.

SET THE DATE

Use this function to set the system date. This setting changes both the control panel display and the internal system clock.

1. Press the SETUP button.
2. Enter 2 on the keypad, then press the ENTER button.
3. Change the day setting.
   - Enter the correct two-digit day (01-31).
   - Press the ENTER button.
4. Change the month setting.
   - Enter the correct two-digit month (01-12).
   - Press the ENTER button.
   - The month is displayed as three alpha characters (Jan, Feb, etc.) in Run mode.
5. Change the year setting.
   - Enter the correct two-digit year (00-99).
   - Press the ENTER button.
6. Change the day of the week setting.
   - Enter the correct day (1-7, Sunday is 1).
   - Press the ENTER button.
   - The day of the week is displayed as two alpha characters (Su, Mo, etc.) in Run mode.

Note: Press the SETUP button at any time to exit the function.

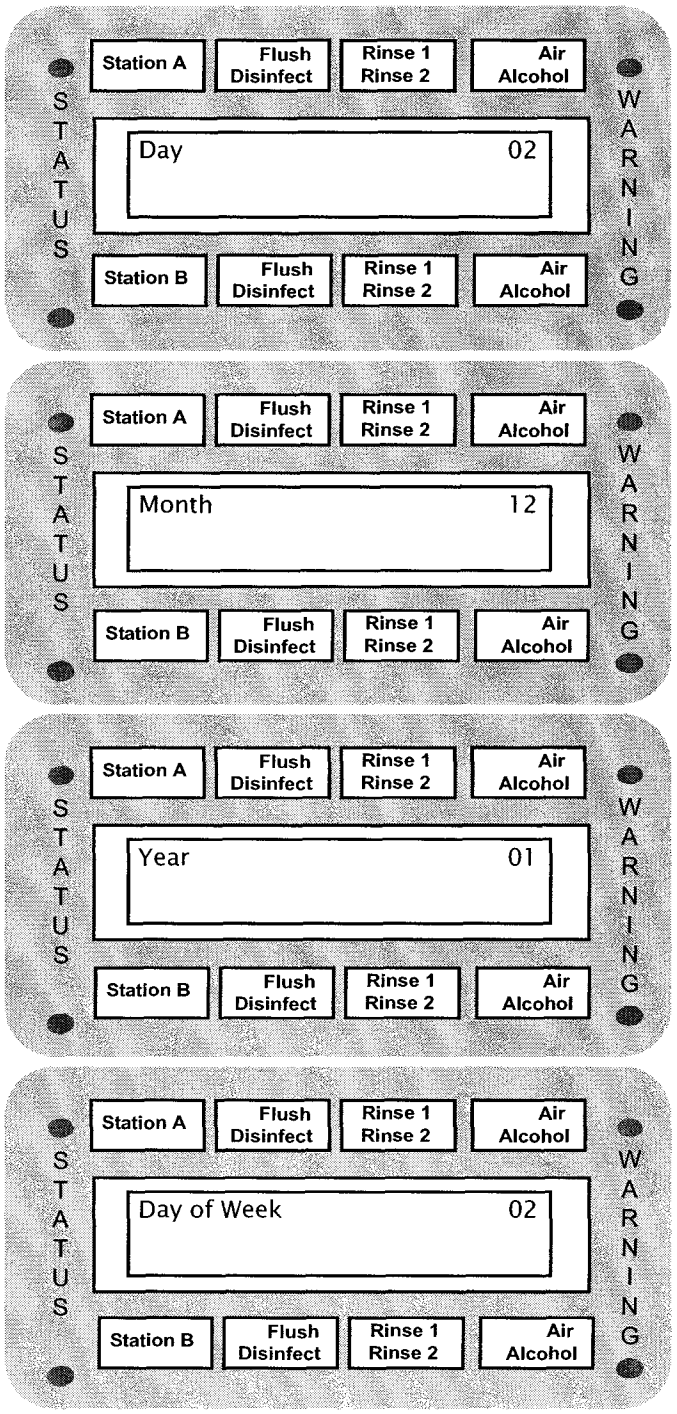


Fig. 8: Set Date Screens

SET THE TIME

Use this function to set the system time. This setting changes the display and the internal system clock. Verify the clock setting daily to ensure accuracy.

1. Press the SETUP button.
2. Enter 3 on the keypad, then press the ENTER button.
3. Change the hour setting.
   - Enter the correct two-digit hour (00-23, midnight is 00).
   - Press the ENTER button.
4. Change the minute setting.
   - Enter the correct two-digit minute (00-59).
   - Press the ENTER button.

Note: Press the SETUP button at any time to exit the function.

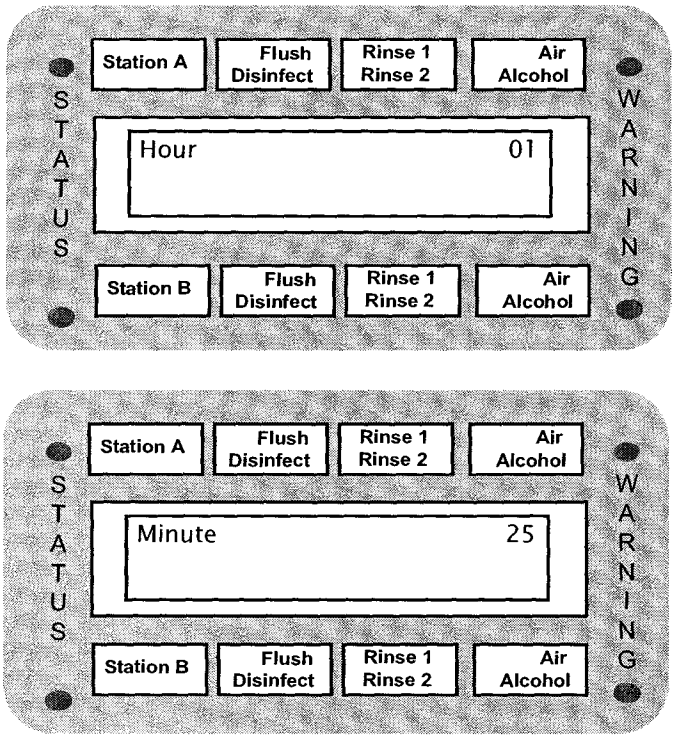


Fig. 9: Set Time Screens

▼ DISPLAY SOFTWARE VERSION

Use the following procedure to view the current version of software installed in the reprocessor.

1. Press the SETUP button.
2. Enter 4 on the keypad, then press the ENTER button.
3. The current software and version is displayed.
4. Press the SETUP button to exit the display.

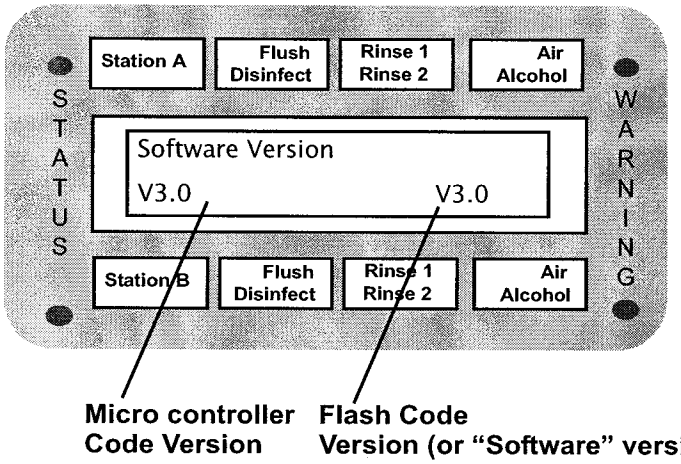


Fig. 10: Software Version Screen

▼ WATER LINE SANITIZE

This function sanitizes the water lines in the reprocessor. This procedure must be performed after each water filter change and after any service is performed on the water supply system.

Caution! Ensure the restrictor adapter provided with the installation kit is connected in the basin before performing this procedure.

1. Verify both stations are idle before performing this procedure. The default sanitization time is one (1) hour.

Caution! High level disinfectants and sterilants with high level disinfectant contact times exceeding 3 hours or sterilant claims exceeding 10 hours must not be used for water line and filter high level disinfection or sterilization

Caution! Station B reservoir must be filled with fresh disinfectant prior to performing this procedure. See the "Load Disinfectant with Internal Pump" procedure in this chapter.

2. Press the SETUP button.
   - Enter 6 on the keypad, then press the ENTER button.
3. Press the START button.
   - The LCD displays a reminder message to "Attach Restrictor". Press the START button again after verifying the restrictor is connected.
   - The disinfectant will remain in the lines for the pre-programmed water line sanitization time.

Note: Use Diagnostics 69 to change the amount of time the disinfectant remains in the water lines.

4. After the sanitizing procedure is complete, add approximately 1 gallon (4 liters) of fresh disinfectant to fill the station B reservoir to the proper level.

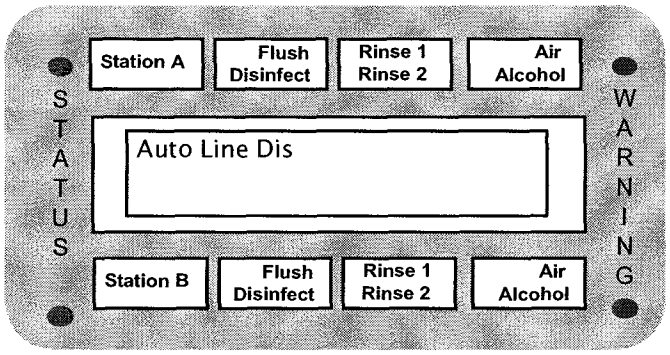


Fig. 11: Water Line Sanitize Screen

▼ DISPLAY LOG

This function allows review of the status log on the display. The entire log can be displayed one entry at a time, starting with the most recent entry.

1. Press the SETUP button.
   - Enter 8 on the keypad, then press the ENTER button.
2. The most recent log entry is displayed.
3. Press the ENTER button to scroll through the entries.
4. Press the SETUP button to exit the display.

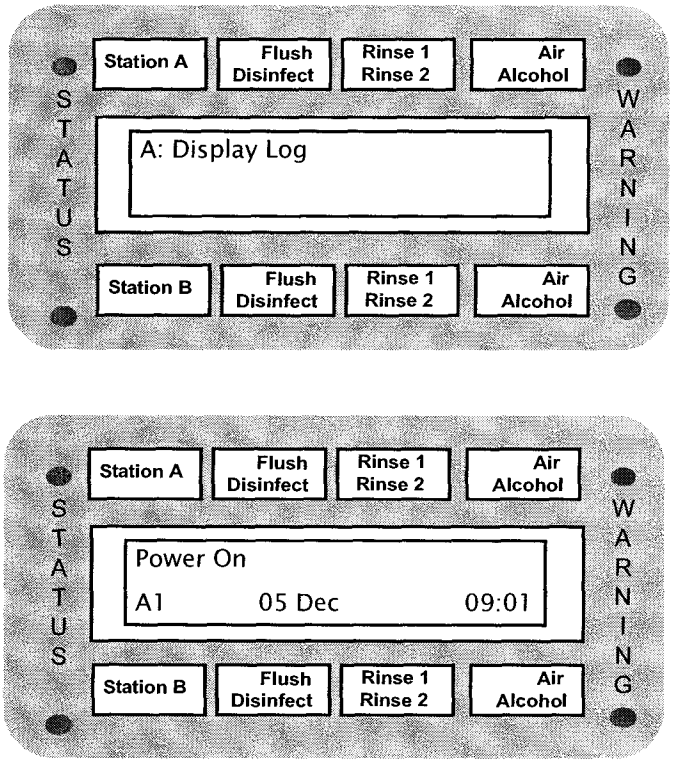


Fig. 12: Display Log Screen and sample entry

▼ DISABLE LOG

This function allows disabling of the data logging function so that no additional entries are made.

1. Press the SETUP button.
   - Enter 9 on the keypad, then press the ENTER button.
2. The message "Log Inhibit" is displayed.
   - Press 0 on the keypad, then the ENTER button to enable data logging.
   - Press 1 on the keypad, then the ENTER button to disable data logging.

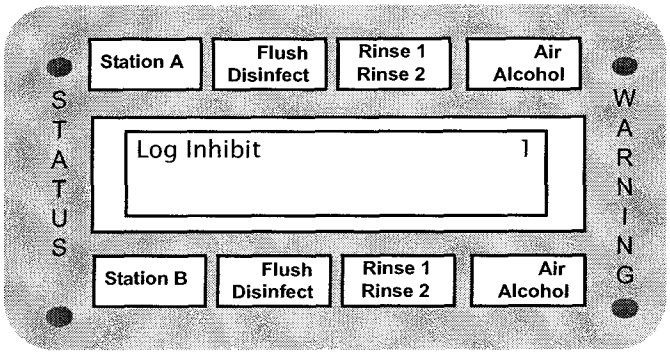


Fig. 13: Disable Log Screen

CLEAR LOG

The log stores 1463 records per station. Once the log is full, additional records will overwrite the oldest entries. Print a copy of the log and clear the log at regular intervals.

1. Press the STATION SELECT button to choose station A or station B. The selected station must be idle to perform this function.
2. Press the SETUP button.
   - Enter 10 on the keypad, then press the ENTER button.
3. The message "Clear Log?" is displayed.
   - Press the SETUP button to retain the log.
   - Press the ENTER button to clear the log.

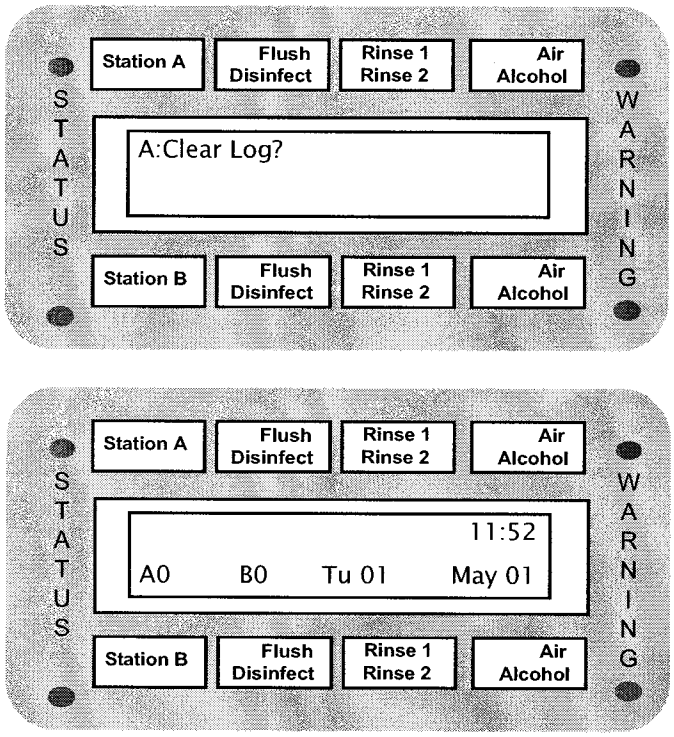


Fig. 14: Clear Log Screen

CLEAR DISINFECTANT CYCLE COUNT

Use the following procedure to clear the disinfectant cycle counts after a disinfectant change.

1. Press the STATION SELECT button to choose station A or station B.
2. Press the SETUP button.
   - Enter 11 on the keypad, then press the ENTER button.
3. Press the ENTER button to clear the count.
4. Press the SETUP button to exit the display.

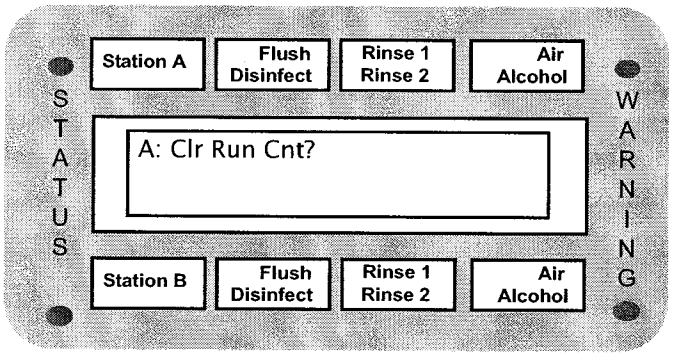


Fig. 15: Clear Disinfectant Cycle Count Screen

Programming the Reprocessor

▼ INPUT PROGRAM

Custom programs allow the operator to change the cycle parameter settings to accommodate various disinfectant solutions, or to setup custom reprocessing protocols. A maximum of nine custom programs can be pre-set. Refer to the disinfection cycle chart in the appendix for range settings.

Note: Depending on selections, some of the following screens will not be displayed.

Note: To deactivate a cycle, enter "0" for the time setting, then press the ENTER button.

1. Press the SETUP button.
   - Enter 5 on the keypad, then press the ENTER button.
2. The "Program 1" screen is displayed. Enter the program digit (1-9) on the numeric keypad, then press the ENTER button.
3. The "Soak" screen is displayed. Enter the desired soak time.
   - Enter two digits for the minutes, then press ENTER.
   - Enter two digits for the seconds, then press ENTER.
4. The "Soak Rinse" screen is displayed. Enter the desired soak rinse time.
   - Enter two digits for the minutes, then press ENTER.
   - Enter two digits for the seconds, then press ENTER.
5. The "Flush" screen is displayed. Enter the desired detergent flush time.
   - Enter two digits for the minutes, then press ENTER.
   - Enter two digits for the seconds, then press ENTER.

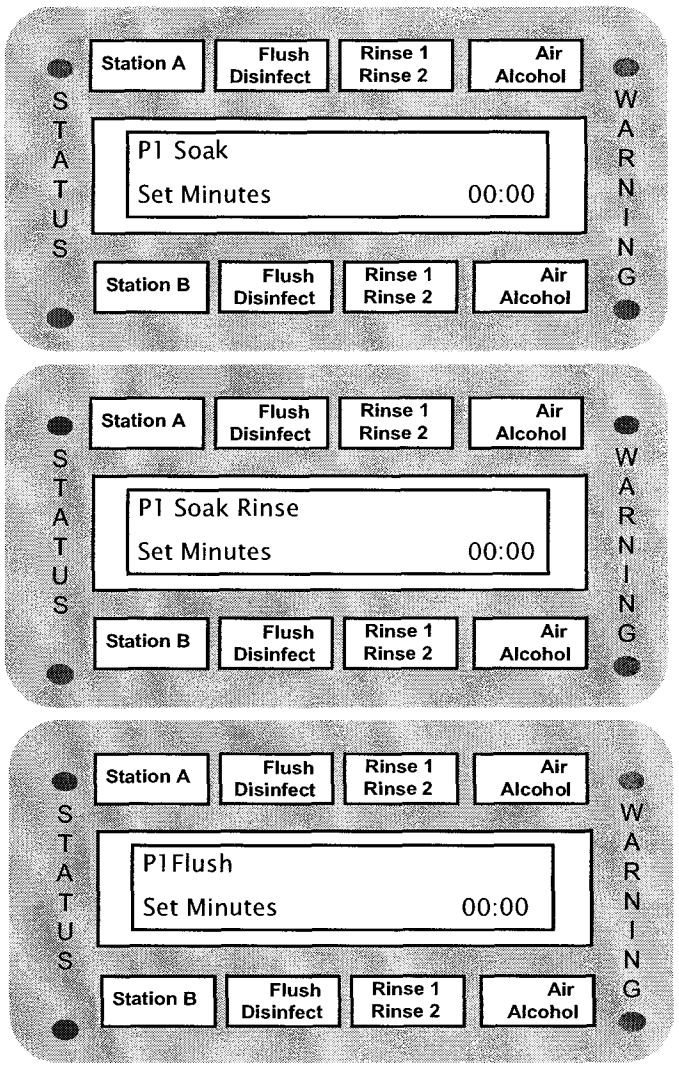


Fig. 16: Custom Program Setup Screens

6. The "Detergent Inject" screen is displayed. Enter the desired detergent inject time. The volume of detergent is controlled by the number of seconds entered on the screen, up to a maximum of 59 seconds.

1 second	= 3mL detergent solution	= 0.033 oz/gal. = 0.26 mL/litre

   - Enter two digits for the seconds, then press ENTER.

7. The "Dis Soak" screen is displayed. Enter the desired disinfectant soak time.
   - Enter two digits for the minutes, then press ENTER.
   - Enter two digits for the seconds, then press ENTER.

8. The "Rinse 1" screen is displayed. Enter the desired primary rinse time.
   - Enter two digits for the minutes, then press ENTER.
   - Enter two digits for the seconds, then press ENTER.

9. The "Rinse 2" screen is displayed. Enter the desired secondary rinse time.
   - Enter two digits for the minutes, then press ENTER.
   - Enter two digits for the seconds, then press ENTER.

10. The "Rinse 3" screen is displayed. Enter the desired rinse time.
   - Enter two digits for the minutes, then press ENTER.
   - Enter two digits for the seconds, then press ENTER.

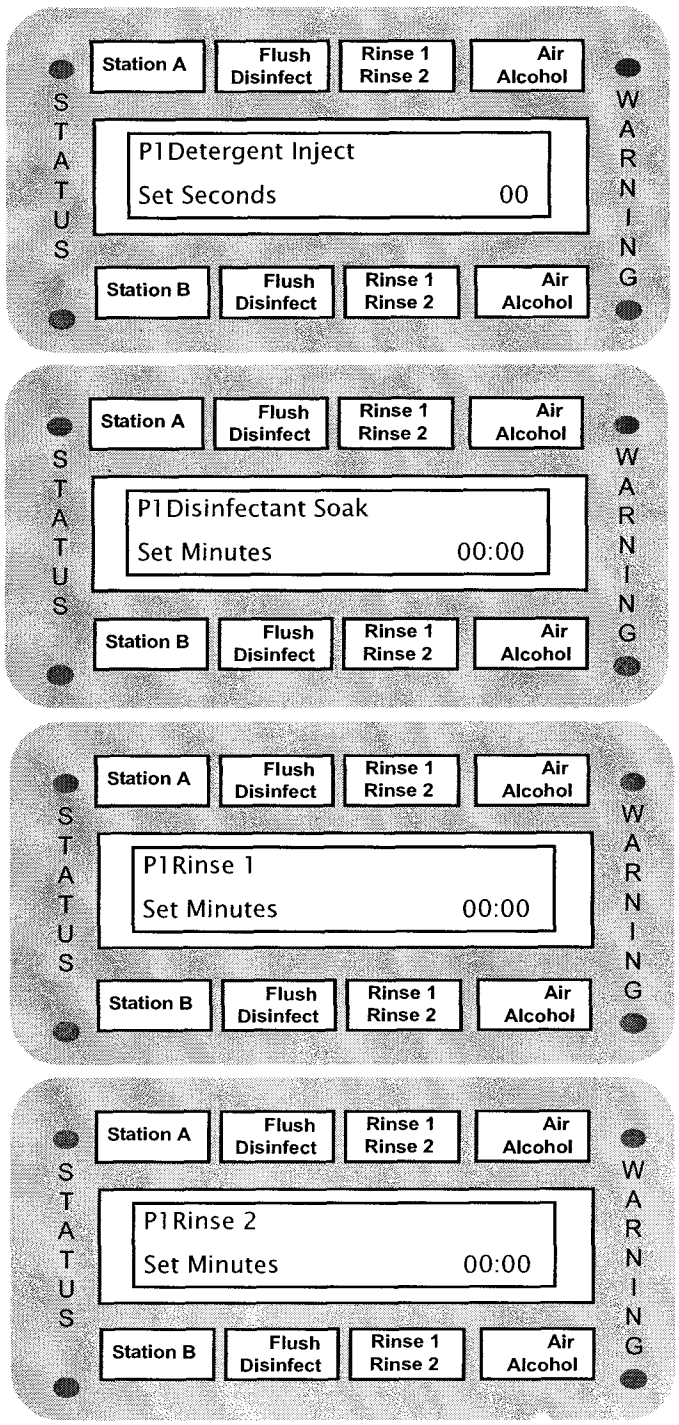


Fig. 17: Custom Program Setup Screens

11. The "Alcohol" screen is displayed. Enter the alcohol purge time.

- Enter two digits for the minutes, then press ENTER.
- Enter two digits for the seconds, then press ENTER.

12. The "Alcohol Inject" screen is displayed. Enter the alcohol inject time.The volume of alcohol is controlled by the number of seconds entered on the screen, up to a maximum of 59 seconds.

1 second injection	= 3cc alcohol

13. The "Air" screen is displayed. Enter the desired air cycle time.

- Enter two digits for the minutes, then press ENTER.
- Enter two digits for the seconds, then press ENTER.

14. The custom program setting is complete. Record the settings in the appendix for future reference (see the Custom Program Reference Chart).

Note: Press the STOP button at any time to exit the Custom Disinfection Program setup function.

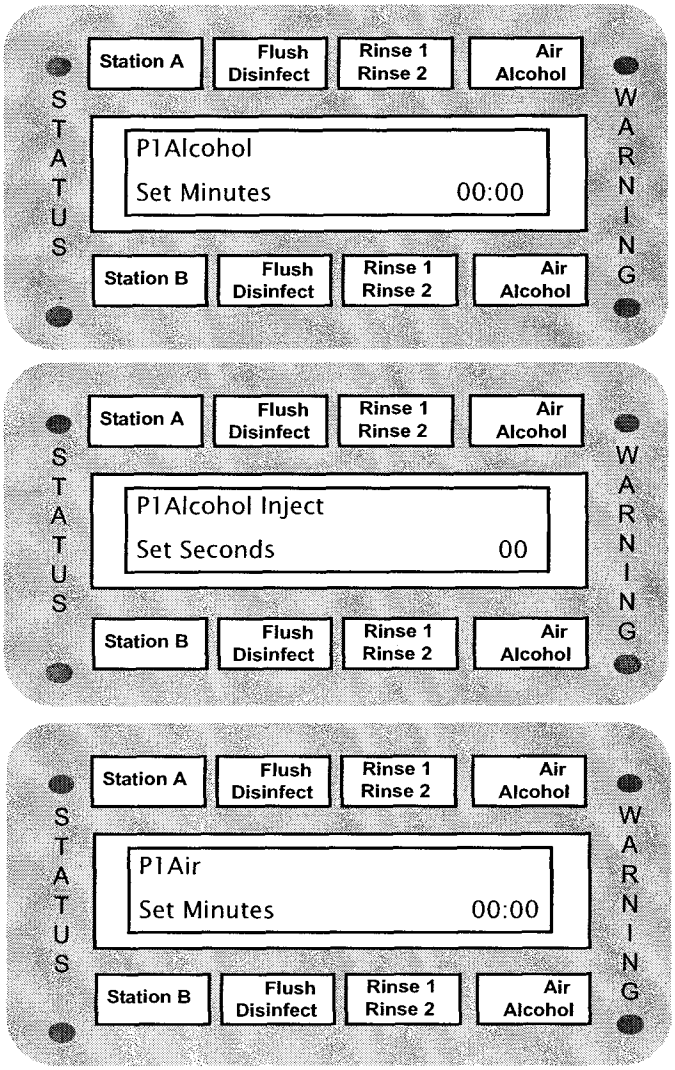


Fig. 18: Custom Program Setup Screens

▼ DISINFECTANT WARNING INHIBIT

This function enables/disables the disinfectant warning inhibit. When enabled, the disinfectant warning will warn the operator when the cycle count is ten less than the preset maximum cycle count.

1. Press the STATION SELECT button to choose station A or station B.
2. Press the SETUP button.
   - Enter 7 on the keypad, then press the ENTER button.
3. The message "Dis Warn Ack" is displayed.
   - Enter "0" to allow the reprocessor to run until the maximum disinfectant cycle count.
   - Enter "1" to activate the warning at 10< of the maximum cycle.

Note: Refer to the Diagnostics Menu chapter for instructions on how to set the maximum disinfectant cycle count.

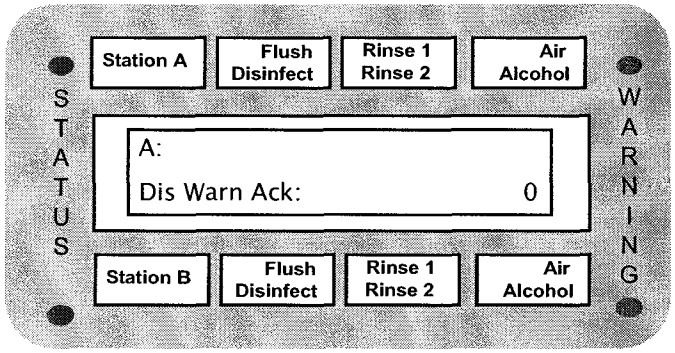


Fig. 19: Disinfectant Warning Inhibit Screen

DISPLAY TEMPERATURES

Use the following procedure to view the temperatures.

1. Press the SETUP button.
   - Enter 13 on the keypad, then press the ENTER button.
2. The temperatures are displayed in Celsius.
3. Press the SETUP button to exit the display.

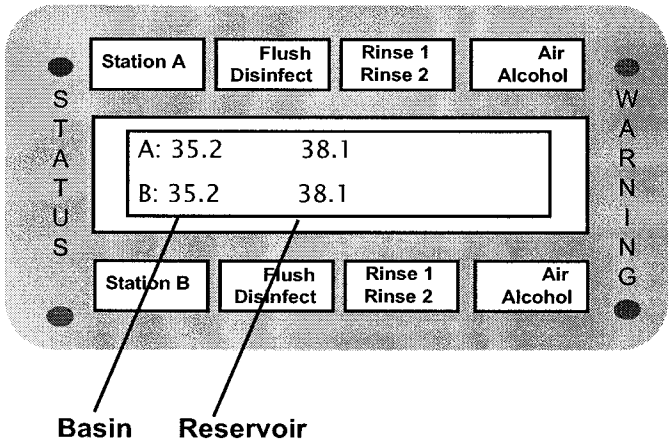


Fig. 20: Display Temperatures Screen

SET HEATER-ON TIME

Use the following procedure to set the heater time to turn on automatically.

1. Press the STATION SELECT button to choose station A or station B.
2. Press the SETUP button.
   - Enter 14 on the keypad, then press the ENTER button.
3. Change the heater-ON hour setting.
   - Enter the correct two-digit hour (00-23, midnight is 00).
   - Press the ENTER button.
4. Change the heater-ON minute setting.
   - Enter the correct two-digit minute (00-59).
   - Press the ENTER button.

Warning! Always check the reservoir temperature before running the first disinfection cycle of the day.

Note: Set both the heater-ON time and the heater-OFF time to "00" to manually control the heater. The heater runs continuously until manually shut off.

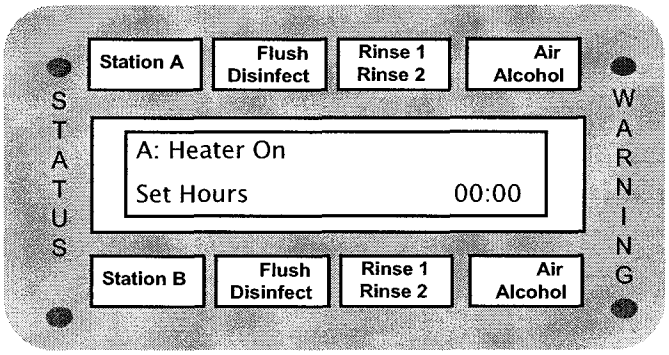


Fig. 21: Set Heater-On Time Screen

SET HEATER-OFF TIME

Use the following procedure to set the heater time to turn off automatically.

1. Press the STATION SELECT button to choose station A or station B.
2. Press the SETUP button.
   - Enter 15 on the keypad, then press the ENTER button.
3. Change the heater-OFF hour setting.
   - Enter the correct two-digit hour (00-23, midnight is 00).
   - Press the ENTER button.
4. Change the heater-OFF minute setting.
   - Enter the correct two-digit minute (00-59).
   - Press the ENTER button.

Note: Set both the heater-ON time and the heater-OFF time to "00" to manually control the heater. The heater runs continuously until manually shut off.

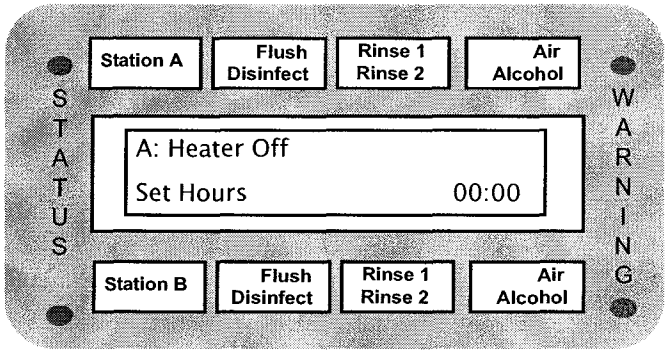


Fig. 22: Set Heater-Off Time Screen

3

DISPLAY DISINFECTANT CYCLE COUNT

Use the following procedure to view the disinfectant cycle counts for both stations.

1. Press the SETUP button.
   - Enter 16 on the keypad, then press the ENTER button.
2. The disinfectant cycle count for each station is displayed
3. Press the SETUP button to exit the display.

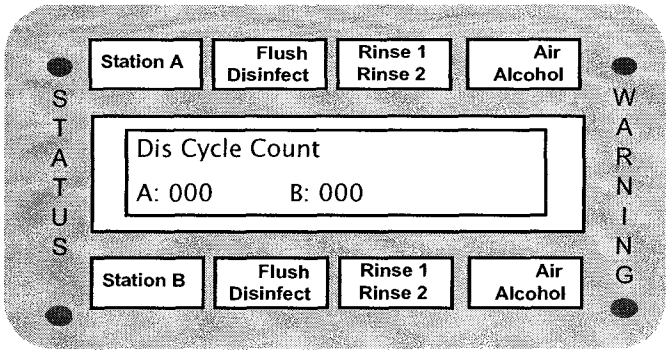


Fig. 23: Disinfectant Cycle Count Screen

▼ DISPLAY TIME REMAINING

Use the following procedure to view the cycle time remaining for both stations.

1. Press the SETUP button.
   - Enter 17 on the keypad, then press the ENTER button.
2. The typical cycle time remaining for each station is displayed, actual time may vary depending on the rate of incoming water.
3. Press the SETUP button to exit the display.

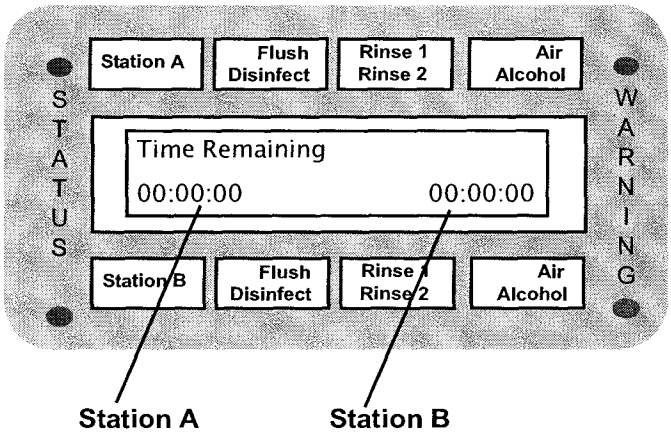


Fig. 24: Time Remaining Screen

DISPLAY STATE TIME

A cycle is comprised of a number of states. Use the following procedure to view the state time for both stations.

1. Press the SETUP button.
   - Enter 18 on the keypad, then press the ENTER button.
2. The current state number and time remaining for each station is displayed
3. Press the SETUP button to exit the display.

Note: Refer to the Disinfection Cycle Chart in the Appendix for state times.

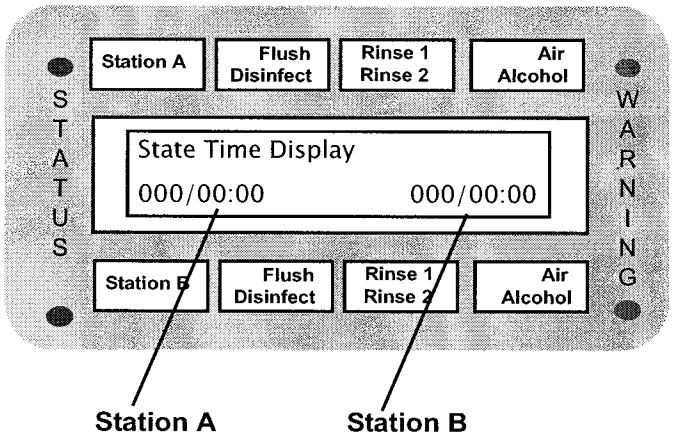


Fig. 25: State Time Screen

▼ PRINT ENTIRE LOG

This function prints a copy of the disinfection cycle log. Only the information saved since the last time the log was cleared is printed. Verify the printer is ON before printing.

1. Press the STATION SELECT button to choose station A or station B.
2. Press the SETUP button.
   - Enter 21 on the keypad, then press the ENTER button.
3. Press the START button to print the log.
4. Use Setup 10 to clear the log.

Note: The printing cannot be stopped once it is started.

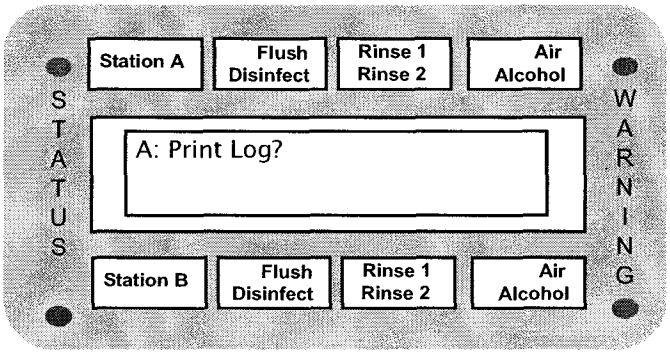


Fig. 26: Print Entire Log Screen

▼ PRINT LAST RUN

This function allows printing of a paper copy of the last disinfection cycle run. Verify the printer is ON before printing.

1. Press the STATION SELECT button to choose station A or station B.
2. Press the SETUP button.
   - Enter 25 on the keypad, then press the ENTER button.
3. Press the START button to print the log.

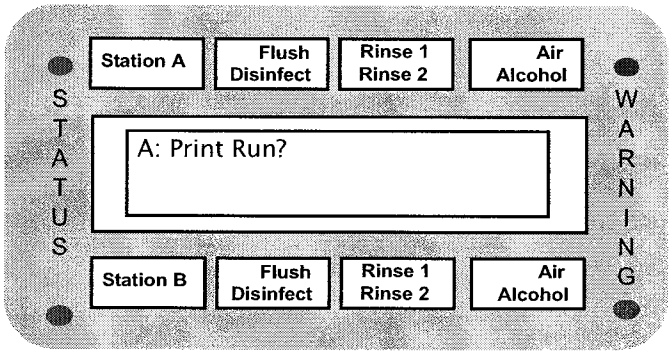


Fig. 27: Print Last Run Screen

3

SET AUTOMATIC PRINTING ENABLE

This function prints the log after every disinfection cycle. The default factory setting is "enabled". Verify the printer is ON before printing.

1. Press the STATION SELECT button to choose station A or station B.
2. Press the SETUP button.
   - Enter 33 on the keypad, then press the ENTER button.
3. Enter 1 to enable automatic printing, then press the ENTER button.
4. Enter 0 to disable automatic printing, then press the ENTER button.

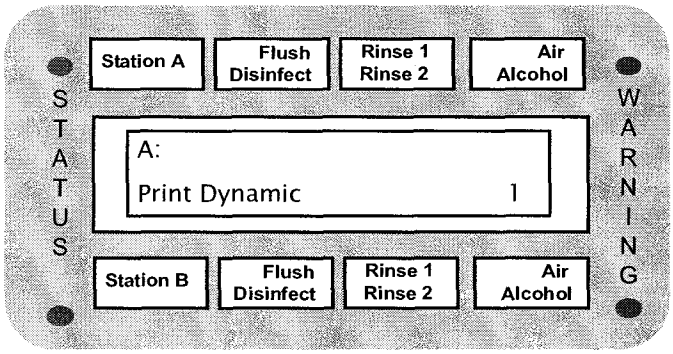


Fig. 28: Automatic Printing Enable Screen

SET DELAYED START DATE/TIME

Use the following procedure to program the delayed startup time.

1. Press the STATION SELECT button to choose station A or station B.
2. Press the SETUP button.
   - Enter 28 on the keypad, then press the ENTER button.
3. Set the day setting.
   - Enter the correct two-digit day (01-31).
   - Press the ENTER button.
4. Set the month setting.
   - Enter the correct two-digit month (01-12).
   - Press the ENTER button.
5. Set the hour setting.
   - Enter the correct two-digit hour (00-23, midnight is 00).
   - Press the ENTER button.
6. Set the minute setting.
   - Enter the correct two-digit minute (00-59).
   - Press the ENTER button.
7. Enable the reprocessor (Setup 29) to perform the selected program at the time specified.

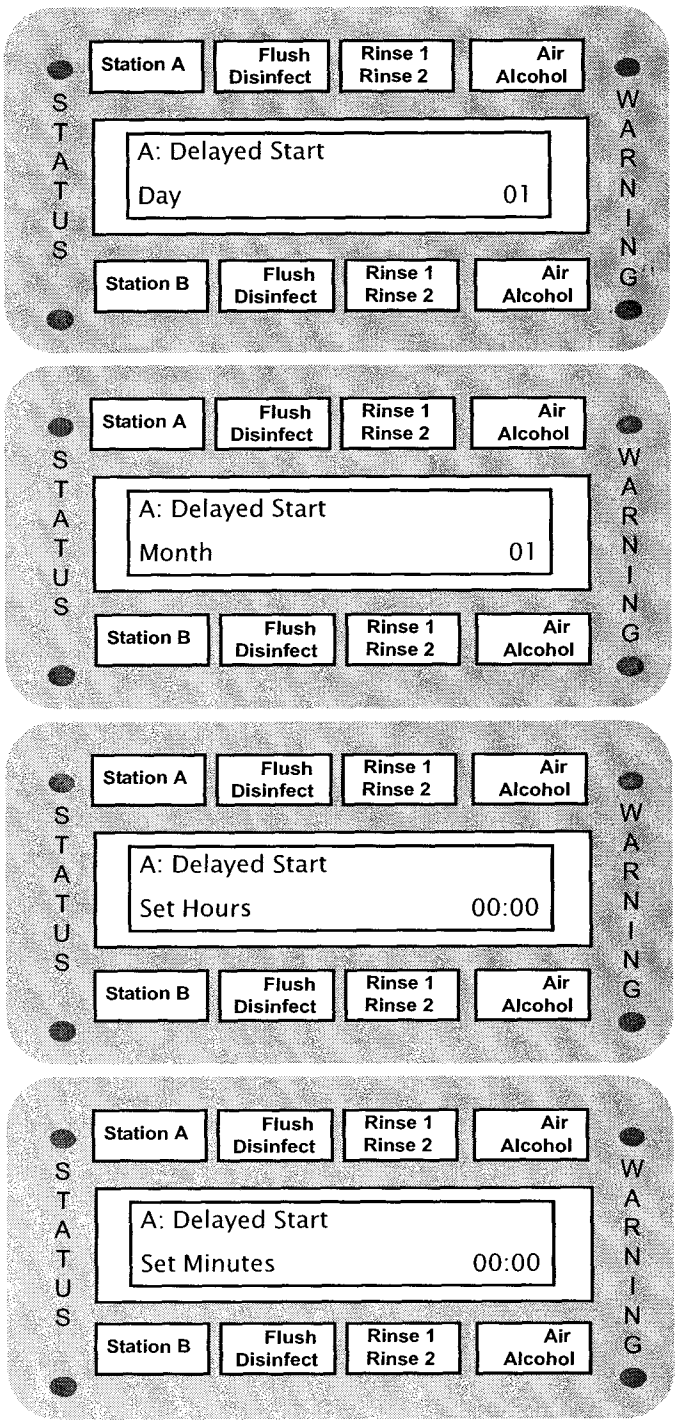


Fig. 29: Set Delayed Startup Screens

SET DELAYED START ENABLE

Use the following procedure to enable the delayed startup option.

1. Press the STATION SELECT button to choose station A or station B.
2. Press the SETUP button.
   - Enter 29 on the keypad, then press the ENTER button.
3. Select the startup option.
   - Press 1 on the keypad, then press the ENTER button to enable the delayed startup.
   - Press 0 on the keypad, then press the ENTER button to disable the delayed startup.

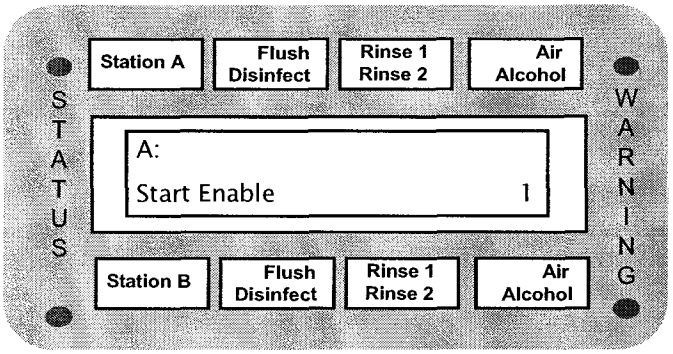


Fig. 30: Enable Delayed Startup Screen

3

ENTER DIAGNOSTICS

1. Press the SETUP button.
   - Enter 88 on the keypad, then press the ENTER button.
2. Enter the input code 135 on the keypad, then press the ENTER button.

Caution! Only properly trained personnel should attempt to perform the functions in the Diagnostics Menu.

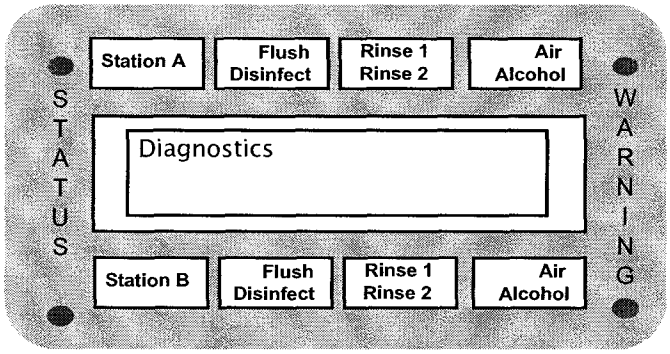


Fig. 31: Enter Diagnostics Screen

3

DIAGNOSTICS MENU

Introduction

Use the diagnostics functions to verify proper component operation when troubleshooting the reprocessor, to reset the reprocessor to default settings, to enable or disable sensors, to upgrade software, and to set up the reprocessor options.

Precautions

Always refer to the Safety section in the Introduction chapter before attempting to service the reprocessor. Verify a scope hook-up is connected in the basin and the floating lid in place before operating the reprocessor. Always activate Function 0 before exiting the Diagnostics Functions menu.

4

Note: Refer to the flow diagram for proper component identification when using the diagnostics functions for troubleshooting.

Note: Use the STATION SELECT button to select stations while in the Diagnostics Menu.

Warning! Endoscope reprocessing may be compromised while preforming Diagnostics functions during a disinfectant cycle.

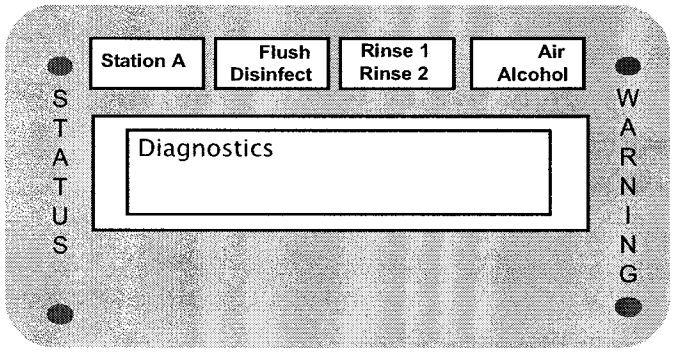
Diagnostics Functions

To enter diagnostics functions:

1. Press the SETUP button.
2. Enter 88 on the keypad, then press the ENTER button.
3. Enter the code: 135, then press the ENTER button.
4. Press the STATION SELECT button to choose station A or station B
5. Enter the function number on the keypad, then press the ENTER button.

Note: Before exiting the Diagnostics Menu, always choose Function 0 to deactivate all devices, then choose Function 14 on Station B to open the water valve.

Caution! Verify all sensors are enabled before exiting the Diagnostics Menu.



Function 0–Close All Valves and Turn All Pumps Off

This function closes all valves and turns all pumps OFF. This function also cancels Function 18. Always use Function 0 before exiting the Diagnostics Function menu.

Note: To select multiple components, activate Function 18, then choose the components.

Note: Before exiting the Diagnostics Menu, always choose Function 0 to deactivate all devices, then choose Function 14 on Station B to open the water valve.

Function 1–Activate Detergent Valve

This function activates the detergent valve for the selected station.

Function 2– Activate Water Valve

This function activates the water valve on the main manifold for the selected station.

Function 3–Activate Alcohol Pump

This function activates the alcohol pump for the selected station.

Caution! Do not activate the alcohol pump unless the alcohol valve is open. Perform Functions 18, 12, 3 to activate.

Function 4–Activate Air System

This function activates the air system (compressor and air valve) for the selected station.

Caution! Ensure the scope hook-up is connected in the basin before performing this procedure.

Function 5–Activate Air Valve

This function activates the air valve for the selected station.

Function 6–Activate Chamber Valve

This function activates the chamber valve for the selected station.

Function 7–Activate Disinfectant Pump

This function activates the disinfectant pump for the selected station.

Caution! Ensure the scope hook-up is connected in the basin before performing this procedure.

Function 8–Activate Disinfectant Supply Valve

This function activates the disinfectant supply valve for the selected station.

Function 9–Activate Disinfectant Overflow Valve

This function activates the disinfectant overflow valve for the selected station.

Note: To transfer fluid from the basin to the reservoir, activate Functions 18, 9, 10.

Function 10–Activate Disinfectant Return Valve

This function activates the disinfectant return valve for the selected station.

Function 11–Activate Drain Valve

This function activates the drain valve for the selected station.

Note: To transfer fluid from the basin to the waste drain, activate Functions 18, 10, 11.

Function 12–Activate Alcohol Valve

This function activates the alcohol valve for the selected station.

Function 13–Activate Recirculation Pump

This function activates the recirculation pump for the selected station (only on reprocessors with recirculation option).

Function 14–Activate Water Inlet Valve

This function activates the water inlet valve for the entire reprocessor. This function is activated from station B diagnostics only.

Note: Before exiting the Diagnostics Menu, always choose Function 0 to deactivate all devices, then choose Function 14 on Station B to open the water valve.

Function 15–Activate Disinfectant Inlet Valve

This function activates the disinfectant inlet valve. The disinfectant inlet valve is used to supply the 0.2 micron filter during automatic water line disinfection procedures.

Function 16–Activate Recirculation Inlet Valve

This function activates the recirculation inlet valve for the selected station. This function is only on reprocessors with a recirculation option.

Function 17–Activate Recirculation Chamber Valve

This function activates the recirculation chamber valve for the selected station. This function is only on reprocessors with a recirculation option.

Function 18–Activate Valves Incrementally

This function allows multiple components to be activated at the same time. Function 0 cancels this function.

Function 19–Activate Detergent Pump

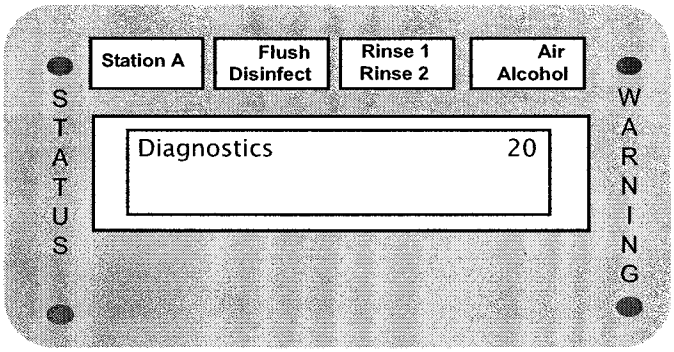
This function activates the detergent pump for the selected station.

Caution! Do not activate the detergent pump unless the detergent valve is open. Perform Functions 18, 1, 19 to activate.

Function 20–Activate Station A LED

This function activates the "Station A" LEDs sequentially, in the following order:

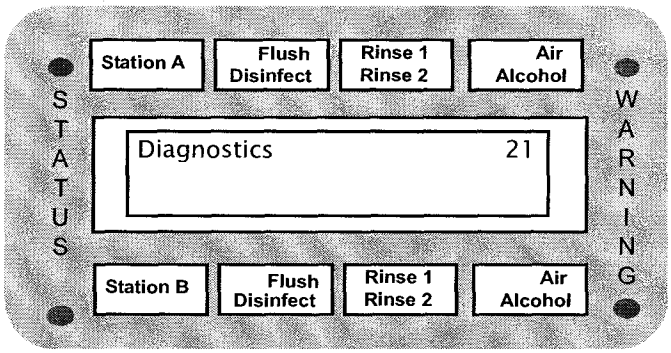
- Station A
- Flush
- Disinfect
- Alcohol
- Rinse 1
- Rinse 2
- Air
- Status



Function 21–Activate Station B LED

This function activates the "Station B" LEDs sequentially, in the following order:

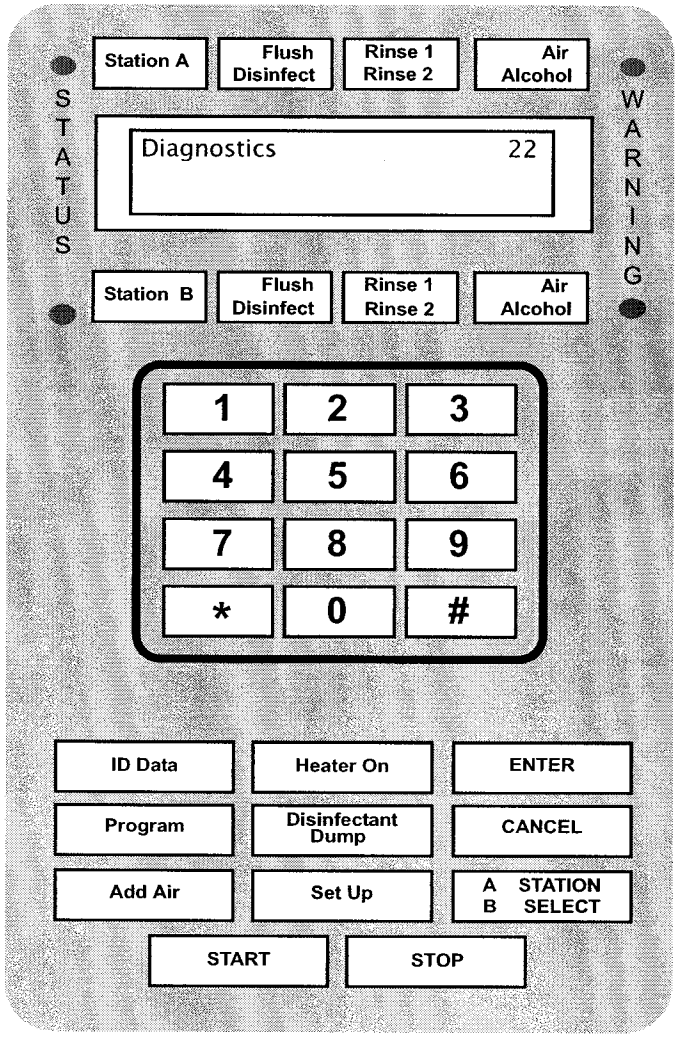
- Station B
- Flush
- Disinfect
- Alcohol
- Rinse 1
- Rinse 2
- Air
- Status



Function 22–Activate System LEDs

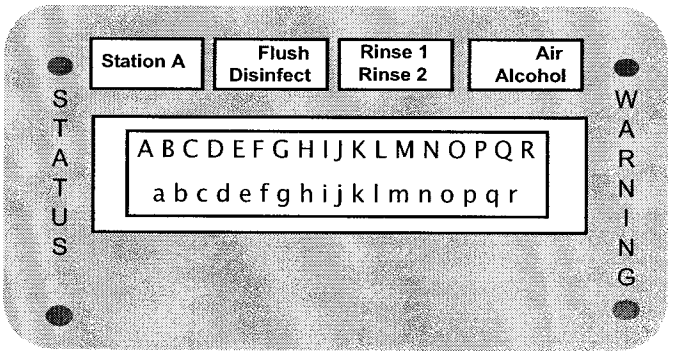
This function activates the system LEDs sequentially, in the following order:

- Heater On
- Disinfectant Dump
- Setup
- A: Warning
- B: Warning
- A: Station Select
- B: Station Select



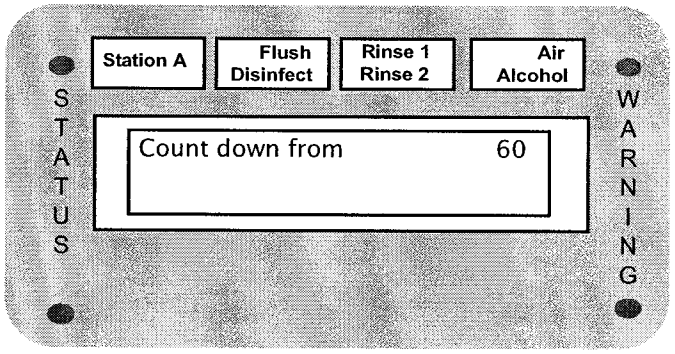
Function 23–Write LCD Test Pattern

This function writes a test pattern to the LCD.



Function 24–Write Counter to Display

This function writes a 60 second counter to the display. The timer counts down from 60.



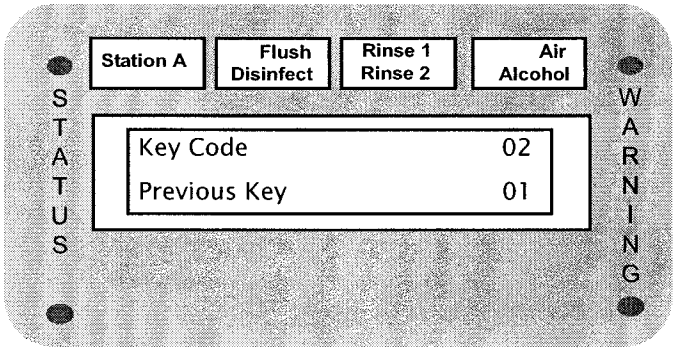
Function 25–Test Keypad

Use this function to perform a keypad test.

- Press each key to verify the correct key code displays.
- Press and hold the "*", then press the "#" key to stop the test

Key	Code
1	01
2	02
3	03
4	04
5	05
6	06
7	07
8	08
9	09
0	00
*	21
#	22

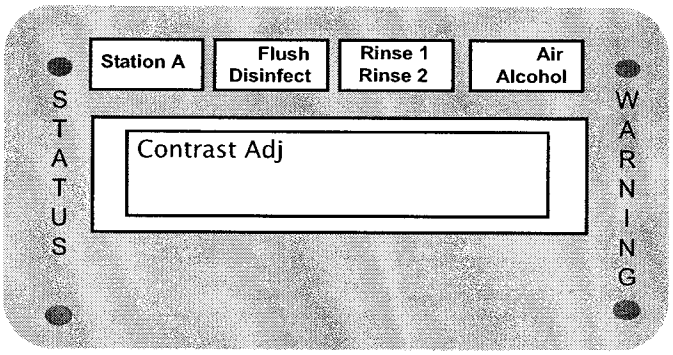
Key	Code
ID Data	18
Heater On	15
Enter	10
Program	19
Disinfectant Dump	16
Cancel	11
Add Air	20
Set Up	17
Station Select	14
Start	12
Stop	13



Function 26–Adjust LCD Contrast

Use this function to adjust the LCD contrast.

- Press and hold the "#" key or ENTER key. The contrast slowly changes.
- Release the key, then press ENTER again to change the direction of contrast (example: bright to dim, or dim to bright).
- Press the "*" key or the CANCEL key to exit.

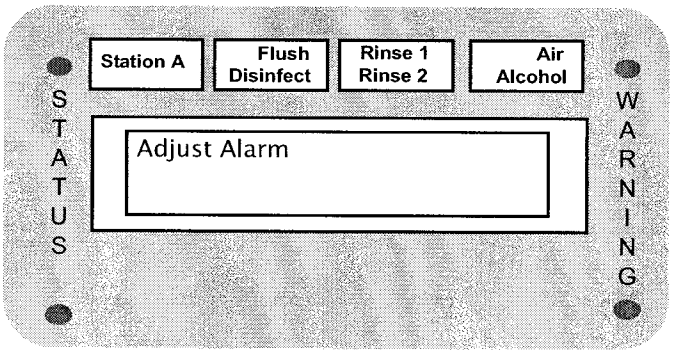


4

Function 27–Adjust Alarm Volume

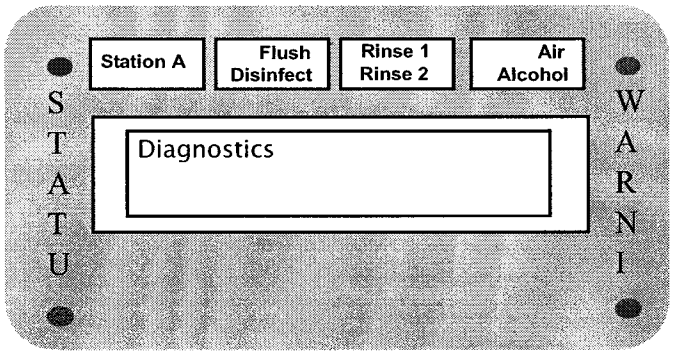
This function adjusts the alarm volume.

- Press and hold the "0" key to decrease the volume.
- Press and hold the "2" key to increase the volume.
- Press the "*" key or the CANCEL key to exit.



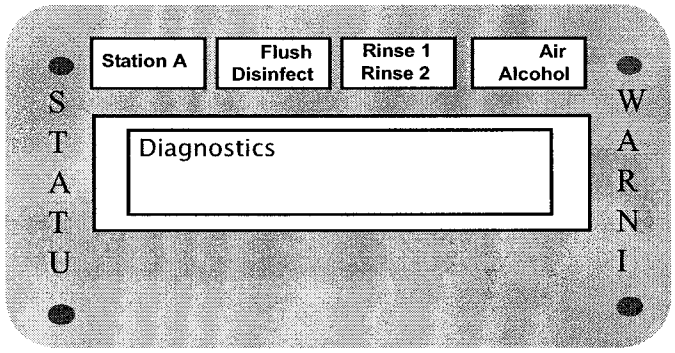
Function 28–Lock Cover (Optional)

This function activates the lidlock for the selected station.



Function 29–Unlock Cover (Optional)

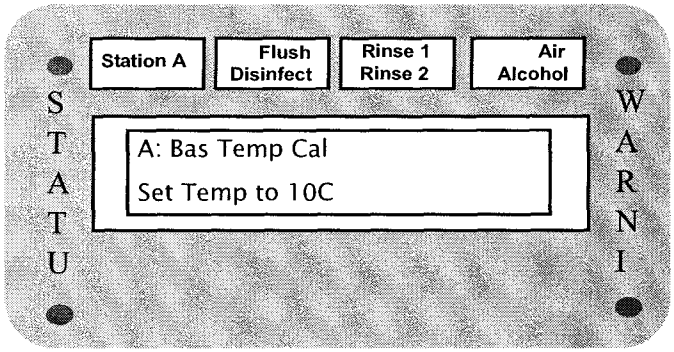
This function deactivates the lidlock for the selected station.



Function 31–Calibrate Basin Thermistor

This function calibrates the basin thermistor for the selected station.

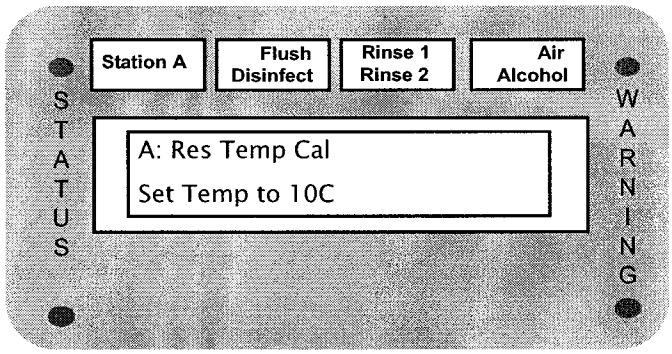
Caution! DO NOT attempt to calibrate the thermistor. Call Medivators Technical Support for detailed instructions before proceeding.



Function 32–Calibrate Reservoir Thermistor

This function calibrates the reservoir thermistor for the selected station.

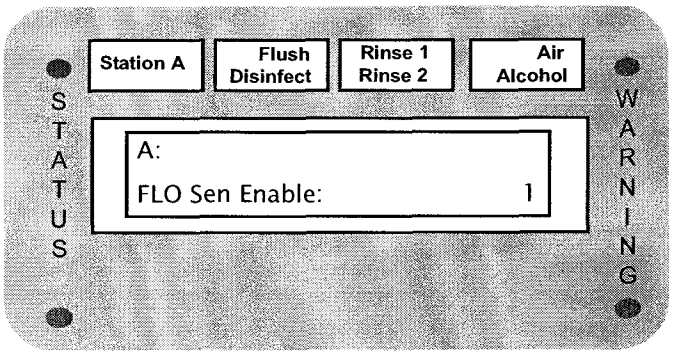
Caution! DO NOT attempt to calibrate the thermistor. Call Medivators Technical Support for detailed instructions before proceeding



Function 40–Flow Sense Inhibit

This function enables/disables both the fluid and air flow sense inhibit. Set the fluid sense enable, then the air sense enable for the selected station.

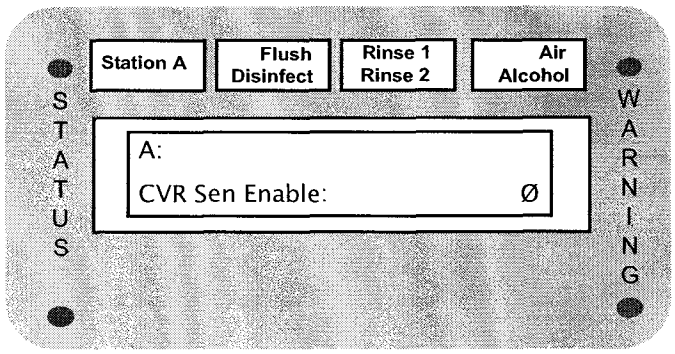
- Enter "0" to disable the sensor.
- Enter "1" to enable the sensor.



Function 41–Cover Sense Inhibit

This function enables/disables the cover sense inhibit for the selected station.

- Enter "0" to disable sensor.
- Enter "1" to enable sensor.

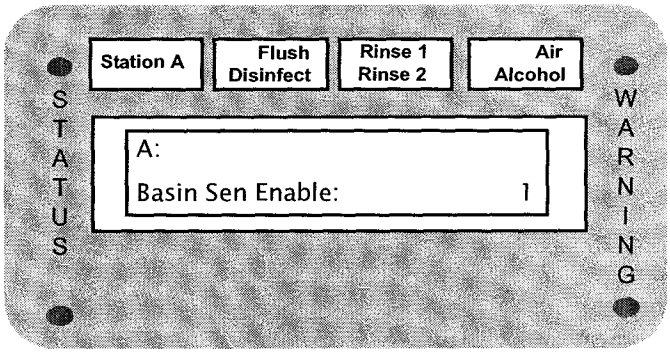


Function 42–Basin Level Sense Inhibit

This function sets the basin level sense inhibit for the selected station.

- Enter "0" to disable sensor.
- Enter "1" to enable sensor.

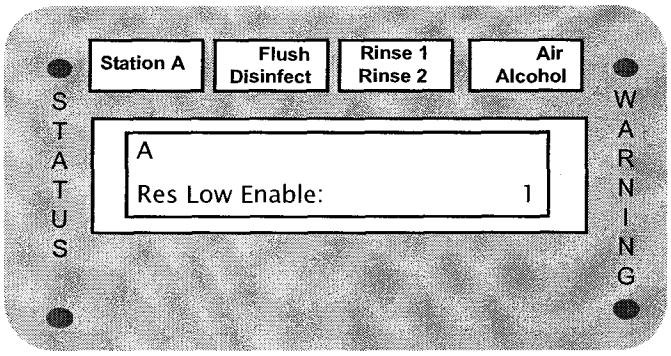
Caution! Do NOT disable this sensor during a disinfection cycle.



Function 43–Reservoir Low Level Sense Inhibit

This function sets the reservoir low level sense inhibit for the selected station.

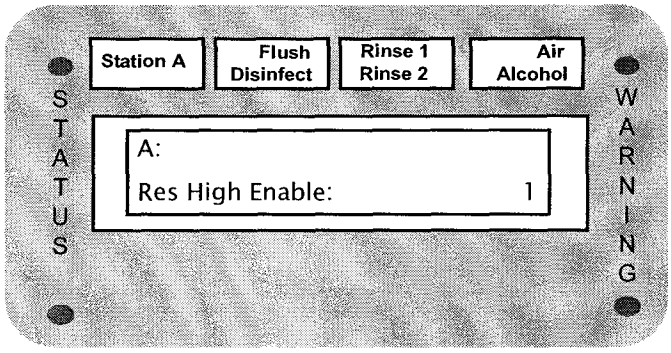
- Enter "0" to disable sensor.
- Enter "1" to enable sensor.



Function 44–Reservoir High Level Sense Inhibit

This function sets the reservoir high level sense inhibit for the selected station.

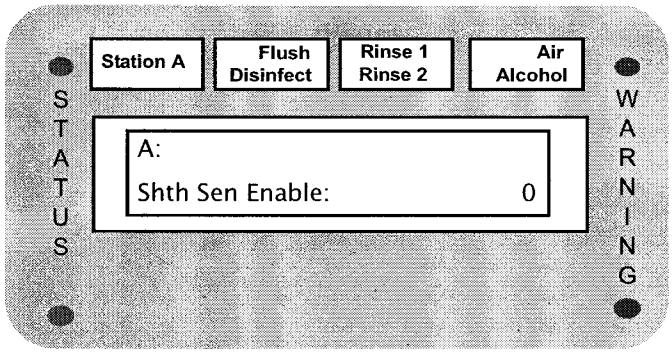
- Enter "0" to disable sensor.
- Enter "1" to enable sensor.



Function 45–Sheath Sense Inhibit

This function sets the sheath sense inhibit for the selected station. This sensor must be disabled if the leak tester option is not present.

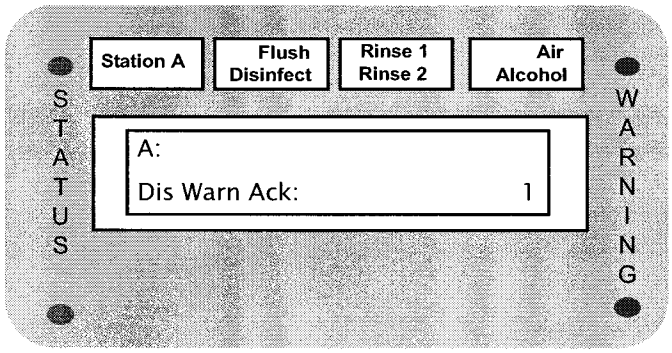
- Enter "0" to disable sensor.
- Enter "1" to enable sensor.



Function 46–Disinfectant Warning Acknowledge

This function sets the disinfectant warning acknowledge for the selected station.

- Enter "0" to allow the reprocessor to run until the maximum disinfectant cycle count.
- Enter "1" to activate the warning at 10 less than the maximum cycle limit.

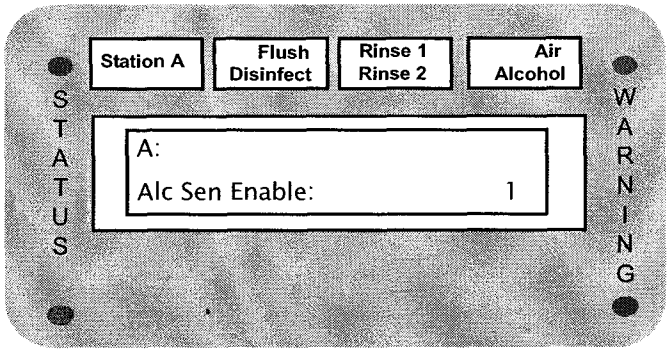


Function 47–Enable Alcohol Level Sensor

This function enables/disables the alcohol level sensor for the selected station.

- Enter "0" to disable sensor.
- Enter "1" to enable sensor.

> Note: Disable both Station A and B alcohol sensors to disable alcohol sensing.



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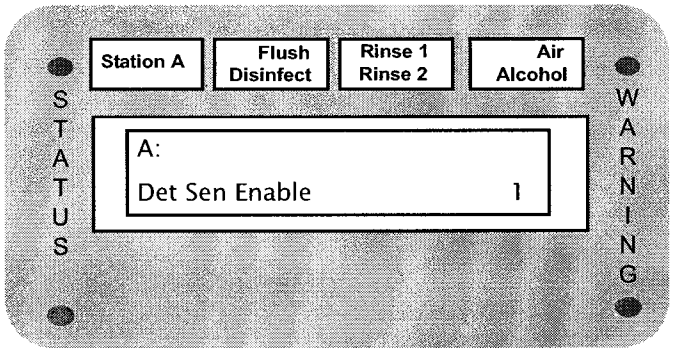
Function 48–Enable Detergent Sensor

This function enables/disables the detergent sensor for the selected station.

- Enter "0" to disable sensor.
- Enter "1" to enable sensor.

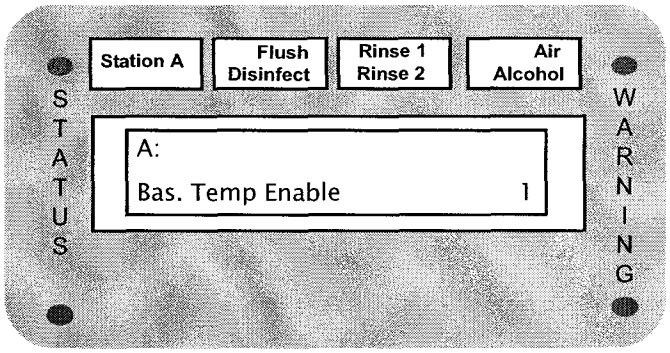
> Note: Disable both Station A and B detergent sensors to disable detergent sensing.



Function 49–Temperature Monitoring Enable

This function sets the temperature monitoring enable for the selected station. Set the basin temperature monitoring enable, then set the reservoir high temperature monitoring enable, then set the reservoir low temperature monitoring enable.

- Enter "0" to disable monitor.
- Enter "1" to enable monitor.



Note: This funtion is not accessible if the temperature monitoring is disabled in Diagnostic 88.

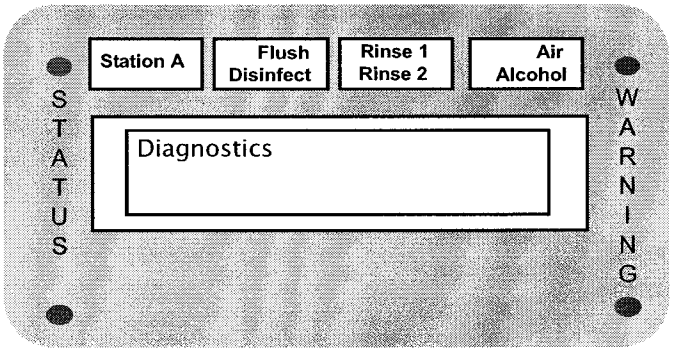
Note: Functions 50 - 57 are for the optional Leak Tester. Refer to the section on Leak Testing in the Maintenance Chapter.

Function 50–Turn Sheath Test Off

This function will stop a sheath test that is in progress.

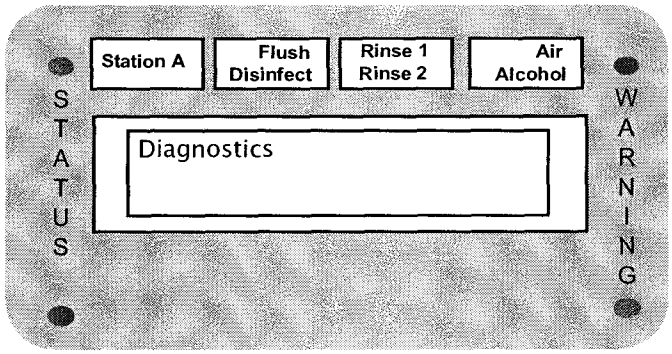
Function 51–Activate Sheath Valve

This function activates the sheath valve.



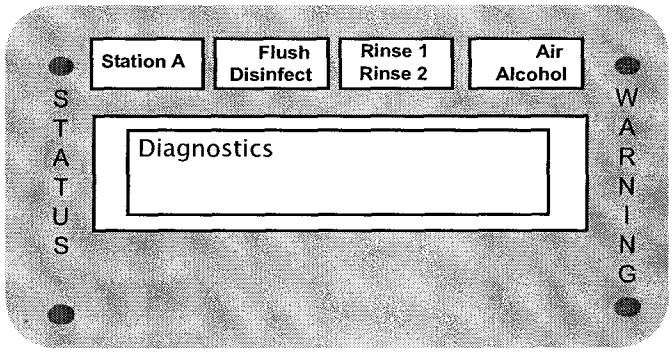
Function 52–Activate Sheath Test Compressor Valve

This function activates the sheath test compressor valve.



Function 53–Activate Sheath Test Compressor

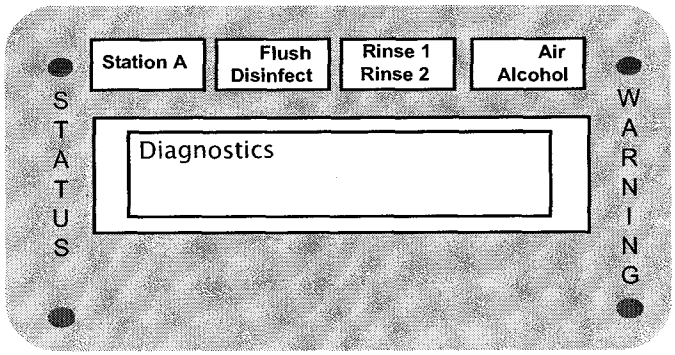
This functions activates the sheath test compressor.



4

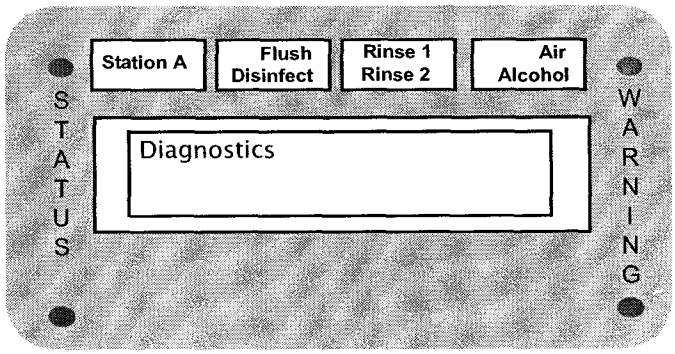
Function 54–Turn Off All Valves and Reset Latches

This function turns off all valves, turns off the compressor, and resets the latches for the sheath tester.



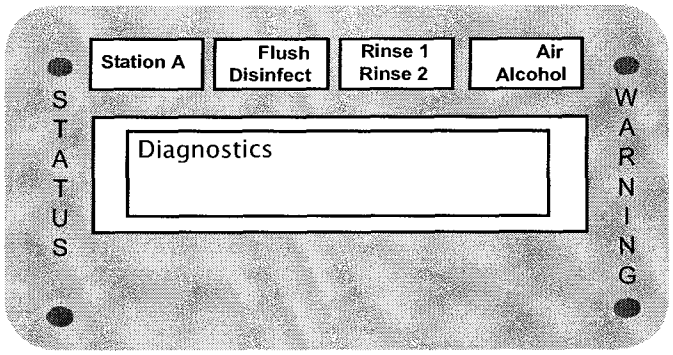
Function 55–Turn Off Sheath Test Compressor

This function turns off the sheath test compressor.



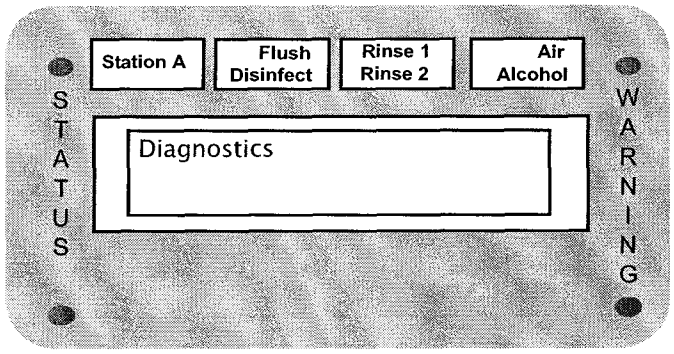
Function 56–Activate Sheath Test

This function activates the sheath test.



Function 57–Activate Sheath Hold

This function activates the sheath hold.

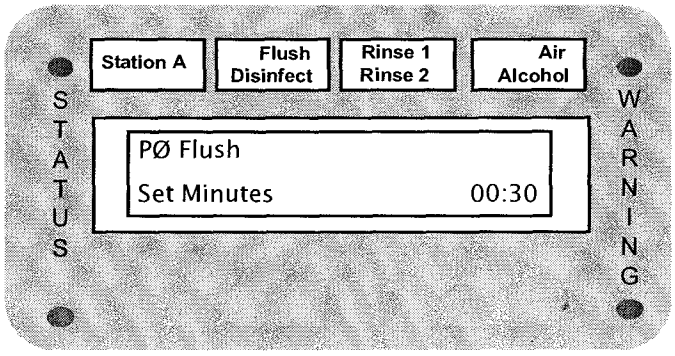


4

Function 60–Set Default Program

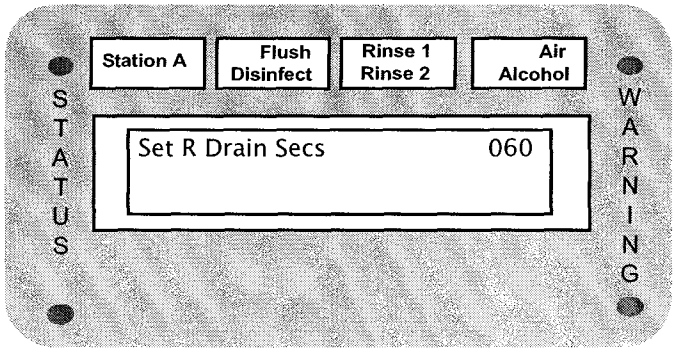
Use this function to modify program 0.

- Follow the "Custom Disinfection Program" procedure in Chapter Three to set the default program.



Function 61–Set Rinse Drain Time and Disinfectant Drain Time

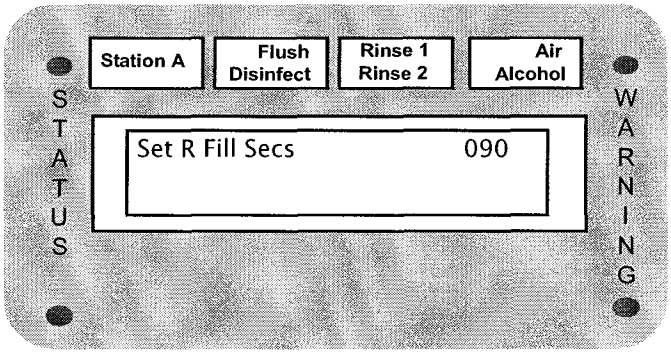
Use this function to set the rinse drain time and disinfectant drain time. The rinse drain time is the portion of the drain time during which the scope is purged with rinse water. If this is set below 60 seconds, an incomplete drain may occur.



Note: It is not recommended to set the disinfectant drain time below 90 seconds, otherwise disinfectant may be lost.

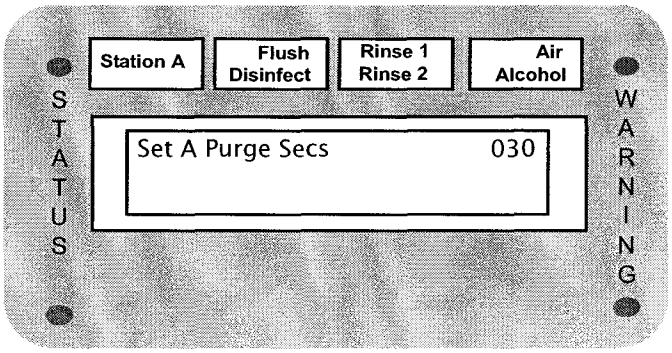
Function 62–Set Rinse and Disinfectant Fill Times

Use this function to set the rinse and disinfectant fill times. These are the required minimum times prior to checking the level sensor.



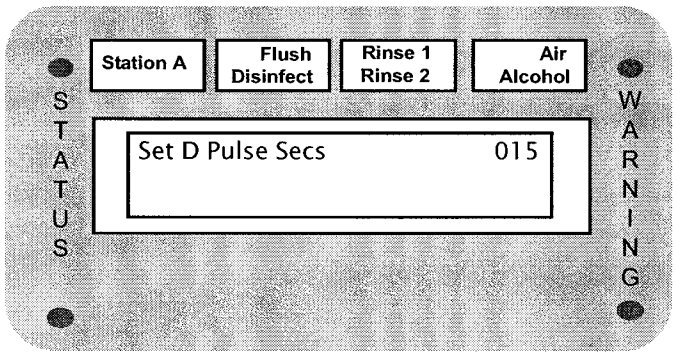
Function 63–Set Fluid and Air Purge Times

Use this function to set the fluid and air purge times. The fluid purge time is used at the start of each rinse to flush the scope channels with water. The air purge time is used at the end of each fluid phase.



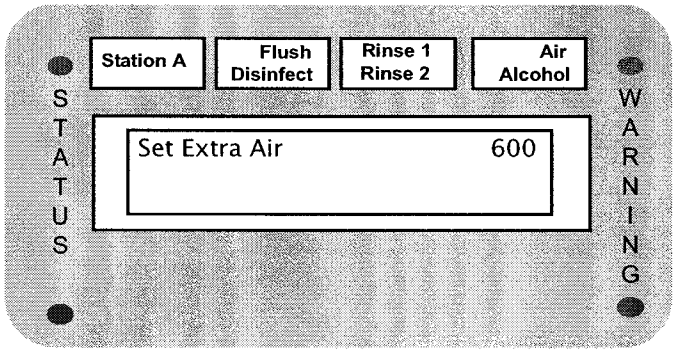
Function 64–Set Disinfectant Pulse Time

Use this function to set the disinfectant pulse time. The disinfectant pulse occurs at the end of the disinfectant fill stage. The chamber valve is pulsed open and closed to reduce the risk of losing disinfectant down the overflow valve.



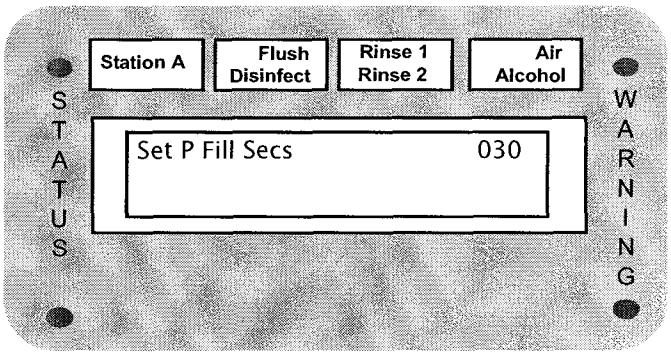
Function 65–Set Add Air Time

Use this function to set the add air time.



Function 66–Set Partial Rinse Fill and Drain Times

Use this function to set the partial rinse fill and drain times. Set the fill time, then set the drain time.



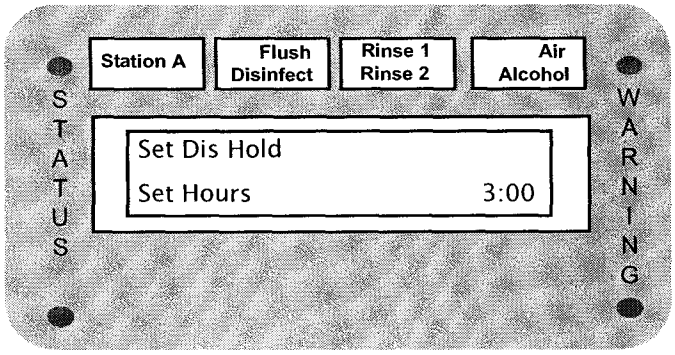
Function 67–Set Rinse/Disinfectant Top-Off Times

The basin fills until the monitor is activated, then the top-off fills for a pre-programmed time to ensure the scope is totally immersed in the basin. Use this function to set the rinse and disinfectant top-off times. Set the rinse top-off time first, then set the disinfectant top-off time.

Warning! Total immersion of the scope may be compromised if the Top-off time is set too low. Disinfectant may be lost down the overflow drain if Top-off time is set too high.

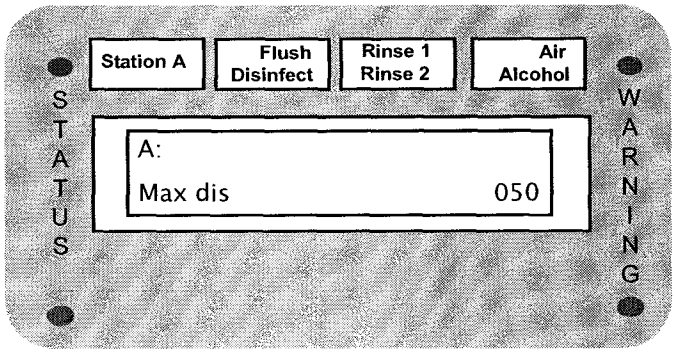
Function 69–Set Water Line Disinfect Hold Time

Use this function to set the water line disinfect hold time. Refer to the Water Line Disinfect procedure in the Operator Controls chapter.



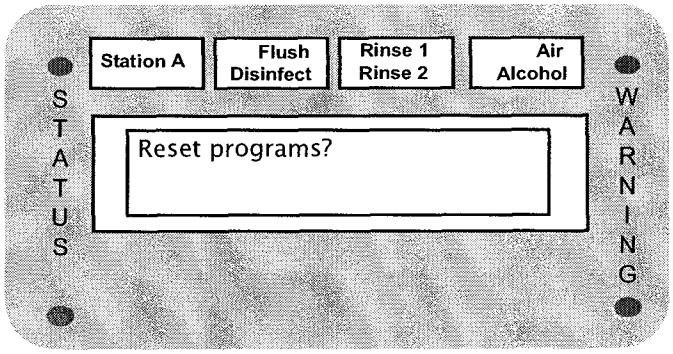
Function 71–Set Maximum Disinfectant Cycle Count

Use this function to set the maximum disinfectant cycle count (1-255) for the selected station.



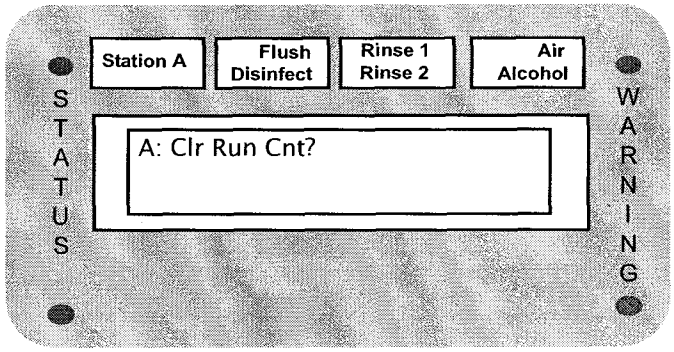
Function 72–Reset Programs

Use this function to reset the nine custom and one default programs.



Function 73–Clear Disinfectant Counter

Use this function to clear the disinfectant cycle counter for the selected station.



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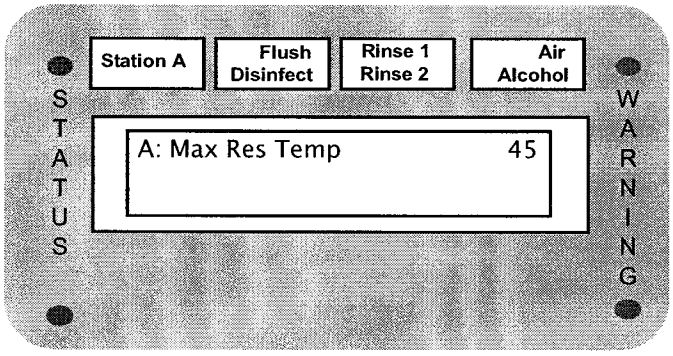
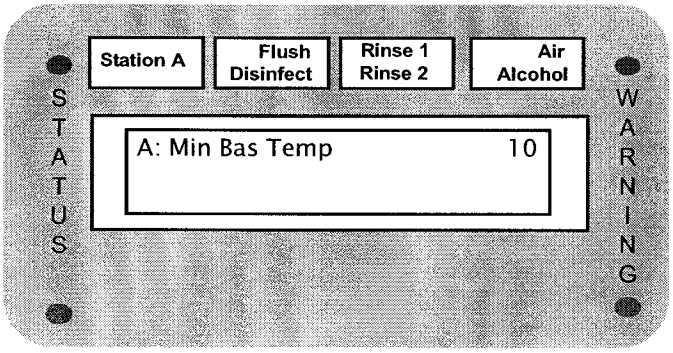
Function 74–Set Maximum Reservoir Temperature

Use this function to set the maximum reservoir temperature for the selected station. The temperatures are displayed in Celsius.



Function 75–Set Minimum Basin Temperature

Use this function to set the minimum basin temperature for the selected station. The temperatures are displayed in Celsius.



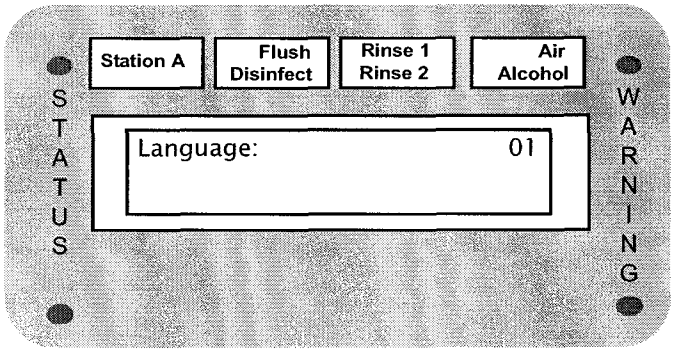
Function 79–Enable All Sensors

Use this function to enable all sensors for both stations.

Function 80–Set Language

Use this function to set the desired language.

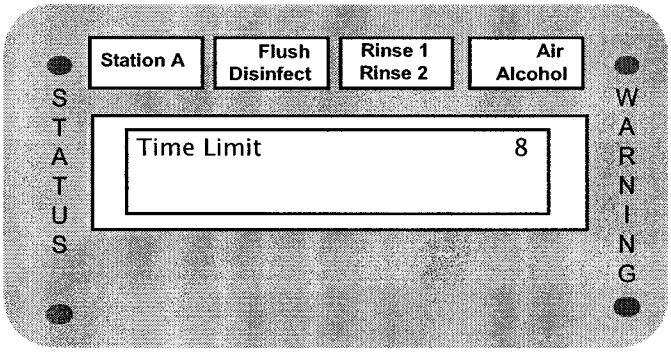
- 01: English
- 02: German (not currently available)
- 03: French (not currently available)
- 04: Spanish (not currently available)
- 05: Japanese (not currently available)
- 06: Italian (not currently available)
- 07: Anglo-English
- 08: Polish (not currently available)



Function 81–Set Time Limit

Use this function to set the time limit (0-8). These will set the minimum times that a user can select for a program.

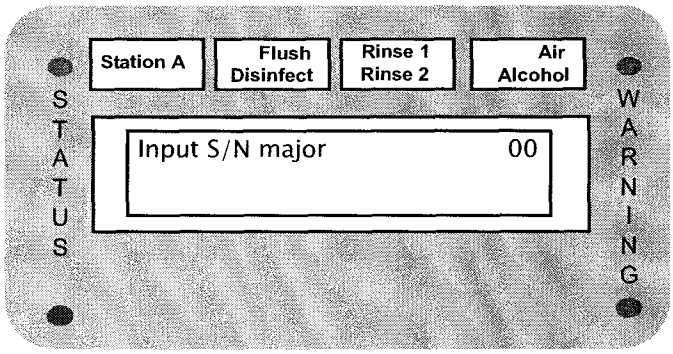
- 1 -Rapicide: 5 minute minimum disinfection cycle time, 1 second miniumn rinse 1 time.
- 2 - Glutaraldehyde: 20 minute minimum disinfect cycle time, 1 second minimum rinse 1 time.
- 3 - OPA: 12 minute minimum disinfect cycle time, 1 second minimum rinse 1 time.
- 4 - Other: 1 second minimum disinfect cycle time, 1 second minimu rinse 1 time.
- 5 - Spare: 5 minute minimum disinfect cycle time, 1 second minimun rinse 1 time.
- 6 - Spare: 5 minute minimum disinfect cycle time, 1 second minimun rinse 1 time.
- 7 - Spare: 5 minute minimum disinfect cycle time, 1 second minimun rinse 1 time.
- 8 - Unlimited: No time limits.

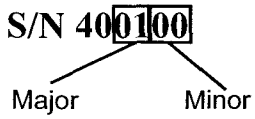


Function 82–Set Serial Number

Use this function to set the reprocessor serial number. The serial number can be found inside the cabinet, on the left panel.

- Enter the middle two digits (major) of the serial number, then press the ENTER key.
- Enter the last two digits (minor) of the serial number, then press the ENTER key.





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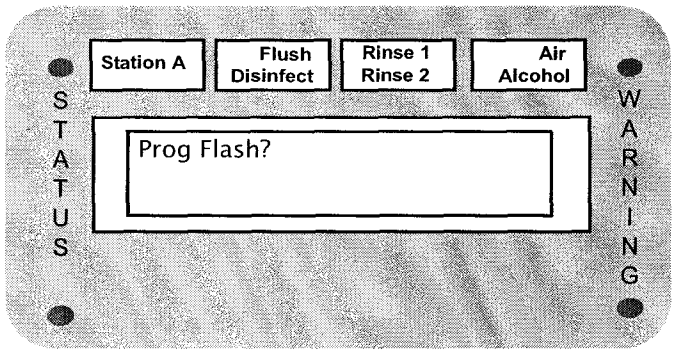
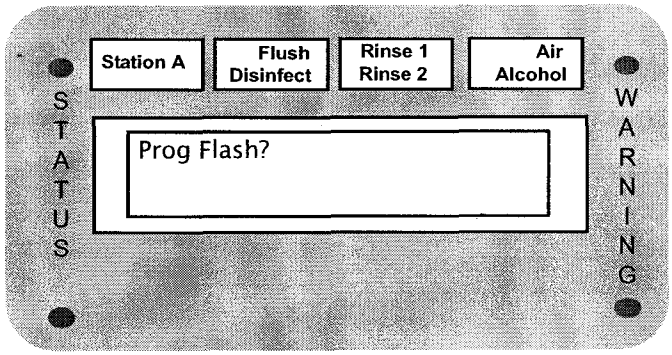
Function 83–Program Low Flash

Use this function to perform a program low flash. See the software update instructions for more information.



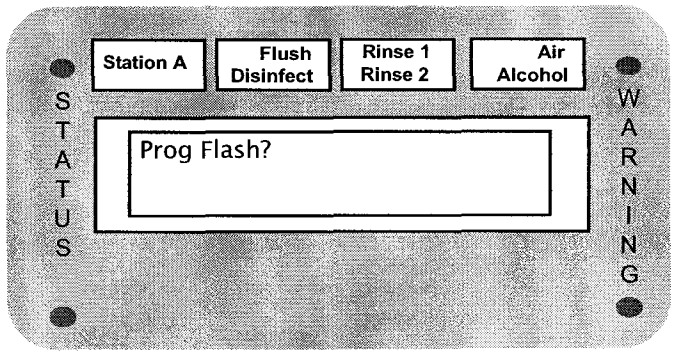
Function 84–Program High Flash

Use this function to perform a program high flash. See the software update instructions for more information.



Function 85–Program Entire Flash

Use this function to perform a program all flash. See the software update instructions for more information.



Function 86–Initialize NVRAM

Use this function to initialize the NVRAM

> **Caution!** Initializing the NVRAM will set all sensors and programs to default. Be sure to record all custom settings and programs before performing this function.

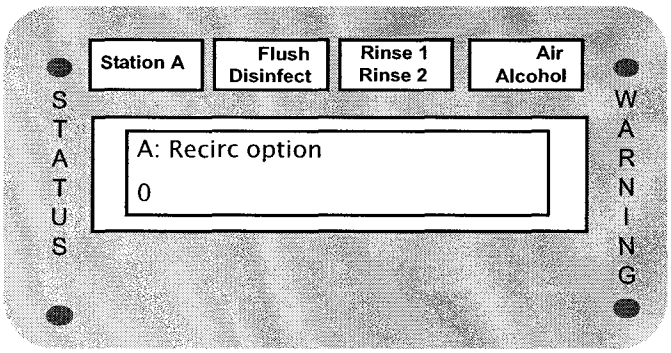
Function 87–Disable All Sensors

Use this function to disable all sensors.

Function 88–Set Options

Use this function to set the options. Options include recirculation, water line disinfect, heated reservoirs, and temperature sensing for the selected station.

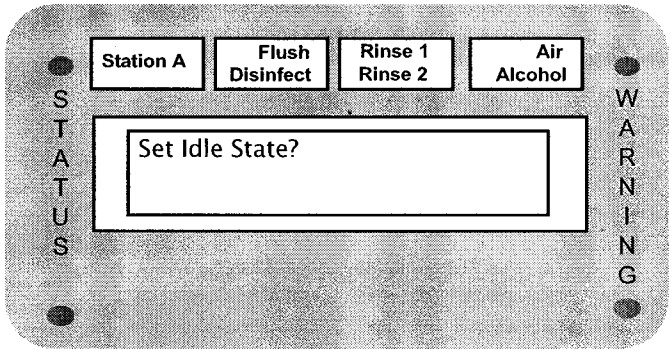
- Enter "0" if the reprocessor does not have this option.
- Enter "1" if the reprocessor has this option.



Function 89-Set Station to Idle State

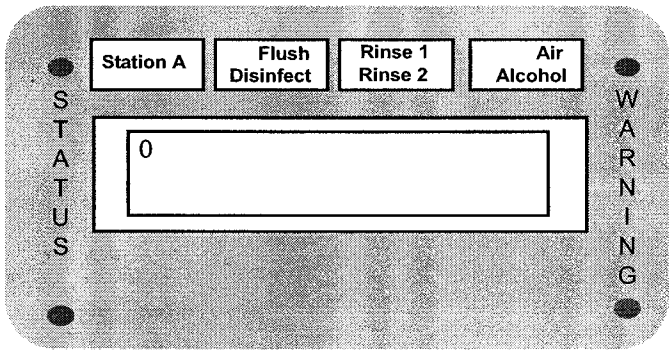
Use this function to force the reprocessor into an immediate cycle cancellation.

- Press ENTER to acknowledge.
- Press CANCEL to exit.



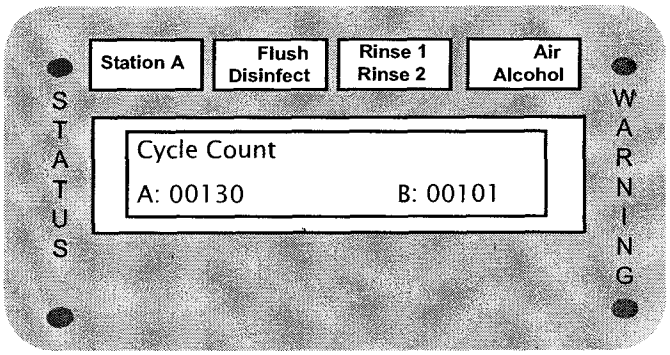
Function 90–Display Inputs

This function displays the inputs (used for factory testing).



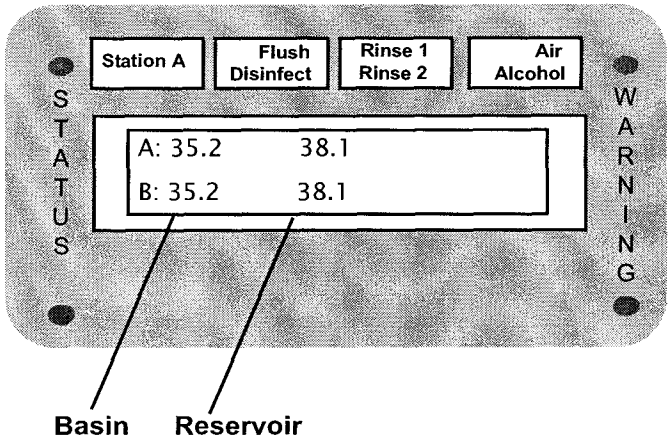
Function 91-Display Cycle Count

Use this function to display the cumulative cycle count.



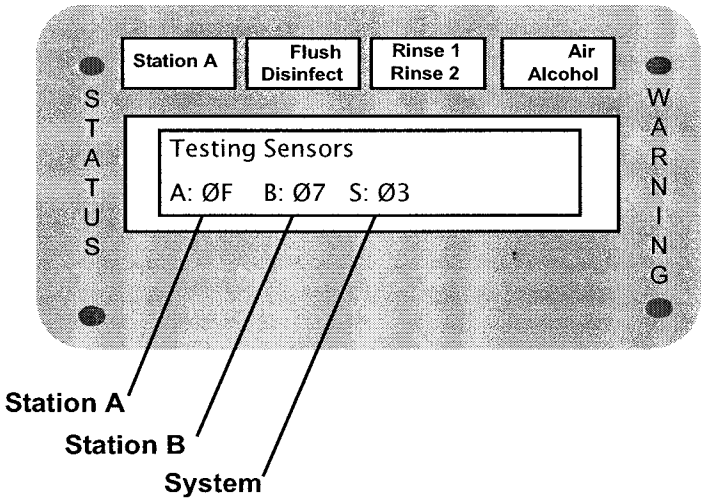
Function 93–Display Temperatures

Use this function to display the basin and reservoir temperatures. See Setup 13 for more information.



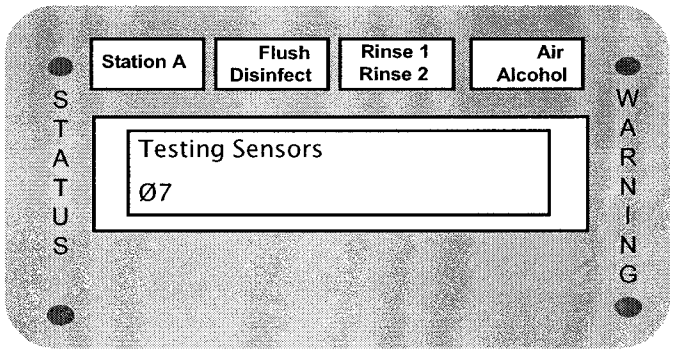
Function 94–Test Sensors

This function displays the output of all sensors.



Function 95-Test Sheath Tester

Use this function to test the sheath tester board. See the Maintenance section for more information.



OPERATION

Introduction

This chapter explains how to startup and shut down the reprocessor, how to program the reprocessor for a delayed start sequence, how to leak test endoscopes and how to prepare and disinfect an endoscope.

5

Cycle Operation

Startup Phase

During start-up phase, the software monitors certain sensors. If any of the monitored sensors are not satisfied during start-up, an error message is displayed and the process is halted. To cancel the start-up phase, press the STOP key. To resume, resolve the error according to the error message displayed, press the STOP key, and then press the Start key. Please refer to the maintenance and troubleshooting section for appropriate instructions to resolve error messages.

If the leak tester option is installed and enabled, a 40 second sheath test is activated during the start-up phase. During that test the scope is pressurized to 160mmhg for 20 seconds then the pressure is monitored for the remaining 20 seconds. If the pressure drops below 50mmhg, a "Sheath Fail" error message is displayed and the process is halted. To cancel the start-up phase, press the STOP key. To resume, resolve the issue according to the error message displayed, press the STOP key, and then press the Start key.

Wash Phase

The wash phase consists of either a Soak segment or a Flush segment. The operator has the choice to run either one of the segments or neither, but never both during the same cycle programme. Setting the Soak time above zero using Setup 5, disables the second segment. To run the Flush segment during a programmed cycle the operator must set the Soak time to zero and the Flush to the desired time.

During Soak, the detergent is injected into the basin according to the programmed detergent injection time. The default detergent injection time is 3 seconds (~9ml). Please refer to the table in the *Programming the Reprocessor* section for the appropriate dilution and timing settings. After injection, water fills the basin. If the re-circulation option is included and enabled, the basin fluid is then flushed through the scope channels. Otherwise the scope is soaked in the basin for the programmed soak time. The basin is then drained while the scope channels are flushed with fresh water. A Rinse Soak period then follows which is identical to the soak period. However, no detergent is injected during this time.

During flush, the scope channels are injected with detergent for the programmed injection time and then flushed with water for the desired flush time. During this segment all of the fluid exiting the scope is flushed down the drain.

Disinfectant Phase

During the disinfectant phase, scope channels are purged with disinfectant. Subsequently, the basin is filled with disinfectant through the chamber valve. Once the basin is filled and the temperature is stabilized inside the basin, the scope is soaked for the desired disinfectant soak time. During the soak period, if the re-circulation option is included and enabled, the scope channels are purged via the re-circ pump. Otherwise the disinfectant is pumped through the channels and returned to the reservoir through the overflow valve. After soak, the disinfectant is returned to the reservoir by gravity.

The temperature stabilization process only applies for reprocessors with an installed and enabled heat option.

Rinse 1 Phase

During rinse 1, the basin is partially filled with water and then drained to eliminate the foam residue from inside the scope and from the basin. Then, the basin is filled with fresh water while the scope channels are flushed. Once the basin fills up, fluid is purged through the scope channels if the re-circulation option is included. Otherwise the scope channels are flushed with fresh water. The basin is then drained while the channels are purged with fresh water.

Rinse 2 Phase

Rinse 2 phase is identical to rinse 1 phase excluding the partial rinse period.

Rinse 3 Phase

Rinse 3 phase is identical to rinse 2 phase.

Alcohol Phase

During the alcohol phase, alcohol is injected through scope channels then followed by an air purge for the Alcohol time programmed in Setup 5. The alcohol injection time is also programmed using Setup 5.

Air Phase

The air phase is simply a programmed time during which air is purged through the scope channels.

Note: Please refer to the Disinfection Cycle Chart for user programmable time settings, default state times, and time limitations.

Note: Every drain transaction is followed by an air purge where air is flushed through the scope channels and internal fluid lines. The Air LED on the control panel blinks during air purge.

Note: During each phase of the cycle, an LED illuminates to indicate the present phase. The Flush LED indicates that one of the wash phase segments is running.

Pre-start Inspection

Use the following procedure to inspect the reprocessor before startup.

1. Check the external pre-filters on the incoming water source. Replace any dirty cartridges. Cartridges must be replaced every 30 to 45 days.
2. Check the disinfectant filter cartridge record. Replace the cartridges at every disinfectant change, or more often during high usage.
3. Check the detergent reservoir for proper detergent level. Add detergent, if necessary.
4. Check the alcohol reservoir (if utilized) for proper alcohol level. Add alcohol, if necessary.

Note: Allow 1 inch of space at the top of the detergent and alcohol reservoirs to accommodate the reservoir sensors.

5. Check the disinfectant reuse life expiration date for both reservoirs. Replace expired disinfectant.
6. Test the disinfectant in both reservoirs for potency. Replace any disinfectant that has less than acceptable potency levels.

Warning! Never use disinfectant beyond the manufacturer's recommended reuse life, even if the potency levels are acceptable.

Warning! Never use disinfectant with unacceptable potency levels, even if the reuse date is unexpired.

7. Check the time on the reprocessor display screen for accuracy. Reset the time, if necessary.

Startup

Use the following procedure to start the reprocessor.

1. Verify that the reprocessor main power source is ON.
2. Open the shutoff valve to the incoming water line. Verify the static water pressure is between 35-40psi (2.4-2.75 bar).
3. Turn the external air source to ON (if applicable).
4. For Heated Reservoirs: allow 2 hours for the reservoirs to reach proper operating temperature.
   - Check the disinfectant temperature before running the first disinfection cycle. Reservoir operating temperature must be at least 3° C higher than the disinfectant manufacturer's recommendations.

Caution! When using heated disinfectants, the reservoir heaters must remain ON at all times.

Checking the Potency Level

Disinfectant potency must be monitored for each station in accordance with the disinfectant manufacturer's instructions. Disinfectant that is below the minimum recommended concentration (MRC), or disinfectant with an expired reuse life date must be replaced.

1. Follow the test strip manufacturer's instructions to check disinfectant potency levels.
2. Repeat the potency test for each reservoir.

Warning! Never use disinfectant beyond the manufacturer's recommended reuse life, even if the MRC level is acceptable.

Warning! Never use disinfectant that is below acceptable MRC level, even if the reuse date is unexpired.

5

Overriding the Disinfectant Warning

The Maximum Disinfectant Cycle Count is preset in the Diagnostics menu. After the disinfectant reaches 10 cycles before the maximum number of cycles, the warning indicator illuminates and the "Dis Warning" message displays on the LCD screen. The warning indicator remains illuminated until either the disinfectant is changed or the disinfectant warning override (Setup 7) is initiated.

Use the procedure below to override the Disinfectant Warning.

1. Press the STATION SELECT button to choose station A or station B.
2. Press the SETUP button on the reprocessor control panel.
3. Enter 7 on the keypad, then press the ENTER button.
4. The message "Dis Warn Ack" is displayed on the screen.
5. Set the "Dis Warn Ack" to zero.
   - This overrides the disinfectant warning for another 10 cycles.
   - The "Dis Expired" message is displayed when the maximum cycle count is reached.

Warning! **Never use disinfectant beyond the manufacturer's recommended reuse life, even if the MRC level is acceptable.**

Warning! **Never use disinfectant that is below acceptable MRC level, even if the reuse date is unexpired.**

Disinfecting Endoscopes

Use the following procedure to prepare an endoscope for disinfecting, to run the disinfection process, and to complete the disinfection process.

Preparing the Endoscope

1. Preclean the endoscope to remove any organic debris. Follow the manufacturer's instructions for precleaning, or refer to established professional guidelines. See "Endoscope Precleaning and Testing" in this chapter.
2. Remove all channel valves from the endoscope and connect the ports with appropriate hook-up. Refer to the appropriate Medivators Hook-up Guide for specific scope installation.
3. Position the endoscope in the reprocessor basin.
   - Position the control section of the endoscope in the right rear of the basin.
   - Position the light guide in the left front of the basin.
4. The distal end must not point upwards toward the floating lid.
   - The endoscope must be completely submerged when the basin is filled.
   - The endoscope must not contact the basin lid.
5. Attach the endoscope hook-up connection to the basin connection. Verify there are no kinks in the hook-up.

Warning! **Periodically test the hook-ups to ensure there are no blockages and that the connections are secure.**

Caution! Use only Medivators supplied hook-ups with the DSD-201 reprocessor.

Caution! The hook-ups are not autoclavable and must be reprocessed by low temperature disinfection only.

Leak Testing (Optional)

Use the following procedure to leak test an endoscope. Leak test adaptors are available for Pentax, Olympus, and Fujinon endoscopes.

Note: This automated test is not a substitute for the endoscope manufacturer's manual leak test. Follow the manufacturer's instructions when performing a manual test.

1. Install the waterproof caps and leak tester adaptors on the endoscope following the endoscope manufacturer's instructions.
2. Load the endoscope into the reprocessor.
   - Connect the leak tester hook-up between the endoscope and the basin outlet.
3. Select the desired disinfection cycle. Press the START button on the reprocessor control panel.
4. The endoscope inflates for 20 seconds to 160mmHg (3psi). Endoscope pressure is monitored for another 20 seconds.
   - If the pressure decreases below the 50mmHg (1psi) reading within this period, the warning LED on the reprocessor control panel blinks, the system activates an alarm and the message "Sheath Fail" is displayed. Press the STOP button to end the cycle. The cycle is aborted.
   - If no leak is detected, the disinfection cycle starts as normal. No indication is shown.
5. Pressure is maintained during the disinfection cycle to detect small leaks and prevent fluid ingression. If a small leak is detected, the reprocessor will continue the cycle then alert the operator of any detected leaks at the end of the cycle.
   - Press the STOP button to acknowledge the warning.
6. The endoscope automatically deflates at the end of the cycle.
7. The log printout indicates if the leak tester option is disabled, or indicates any leak test failure.

Caution! The leak test adaptor must be disconnected and removed from the basin when not in use to avoid potential fluid ingression.

Running the Disinfection Process

1. Place the floating lid on the basin. Verify the endoscope or hook-up does not protrude from the basin or contact the floating basin lid.
2. Close the reprocessor lid.
3. Press the STATION SELECT button to choose station A or station B.
4. Press the ID DATA button, then enter the ID Data (if required for printed log).
   - Enter up to ten digits for the endoscope serial number, then press the ENTER button.
   - Enter up to ten digits for the operator ID number, then press the ENTER button.
   - Enter up to ten digits for the patient ID number, then press the ENTER button.
   - Enter up to ten digits for the physician ID number, then press the ENTER button.
5. Select the desired disinfection program on the reprocessor control panel.
   - Select 0 for the default program.
   - Select 1-9 for a custom program.
6. Press the START button.
   - The lid locks engage (optional) and the disinfection program starts.
   - If the leak tester option is enabled, there is a 40 second delay at the beginning of the cycle.
7. During the detergent flush cycle, verify the endoscope connections and plugs are properly connected.
   - Verify fluid flows through the channels.
   - Verify fluid flows from the distal end of the endoscope.
   - Verify there are no leaks at the channel fittings and adaptors.
8. Indicators on the control panel display status information while the reprocessor processes the endoscope.

Note: To interrupt the process at any time, or to clear errors, refer to the Process Interruption procedure in Chapter 5 of this manual.

Completing the Disinfection Process

1. When the disinfection process is complete, the process indicator light illuminates and the message "Completed" displays on the LCD screen.
   - If automatic log printing is enabled, the log is printed.
2. For optional lid locks: press the STOP button to unlatch the lid.
3. Open the reprocessor lid.
4. Remove the basin floating lid.
5. Verify the hook-ups are securely connected to the scope.
   - If the connections are loose, reconnect the hook-ups and repeat the cycle to ensure the scope is properly disinfected and rinsed.
6. Disconnect the hook-up connectors from the endoscope.
7. Remove the endoscope from the basin.

Process Interruption

A process interruption may occur due to a system interruption, or initiated by the operator.

System Interruption

A system interruption may be caused by loss of water or air, loss of power, or loss of disinfectant.

Note: During an operating cycle, reprocessors with optional lid locks cannot be opened except by means of a service code.

1. Correct the error, then press the START button.
   - The reprocessor continues the cycle from the point of interruption.
   - If the interruption is caused by a power outage, the reprocessor automatically restarts the cycle when power is restored. A "Power On" message will be indicated in the log.

Operator Initiated Interruption

1. Press the STATION SELECT button to choose station A or station B.
2. Terminate Cycle: Press the CANCEL button, then the ENTER button. The present cycle is aborted. The reprocessor fails to a safe mode and the scope must be reprocessed.
   - If the cycle is terminated, an "Aborted" message will be displayed. The endoscope should not be used unless a "Cycle Completed" message is displayed.

Service: If the error recurs, or cannot be corrected, refer to the Troubleshooting chapter.

3. Interrupt Cycle: Press the STATION SELECT button, then the STOP button.
   - To resume the cycle press the START button. The cycle proceeds as normal.

5

Shutdown

Use the following process to shutdown the reprocessor at the end of the day.

1. Turn the external air source to OFF (if applicable).
2. Close the incoming water line shutoff valve.
3. Sanitize the reprocessor upper basins and basin lids with an EPA-registered sanitizer, such as properly diluted Actril® Cold Sterilant. Follow the sanitizer manufacturer's recommendations for proper use.

Warning! **Avoid possible chemical burns. Always wear personal protective equipment (gloves, goggles) when handling sanitizer.**

Caution! Avoid damage to the reprocessor. Do not allow sanitizer to contact any metal components.

4. Check the detergent reservoirs and alcohol reservoirs for proper level.
5. Refill the alcohol reservoir, if necessary.
6. Clean and refill the detergent reservoir, if necessary.
   - Clean the reservoir cap, bracket and detergent reservoir.
   - Flush the reservoir thoroughly with hot water.
   - Refill the reservoir with detergent.

MAINTENANCE

General

This chapter contains basic maintenance procedures. Always refer to the Safety section in the Introduction chapter before attempting to service the reprocessor.

6

LEVELING

The reprocessor must be installed on a level surface or be adjusted to level. Adjust the leveling pads after unpacking the reprocessor.

1. Loosen the disinfectant reservoirs.
   - On older models, remove the 2 bolts securing the reservoir.
   - On newer models, remove the 2 pins securing the reservoir.
2. Slide the reservoirs forward far enough to access the rear leveling pads (bolts).
3. Place a bubble level on the basin surface in position "A".
4. Adjust the rear leveling pads until the bubble is centered in the level glass.
5. Move the bubble level to position "B".
6. Adjust the front leveling pads (flathead screws) until the bubble is centered in the level glass.
7. Verify the reprocessor is level.
8. Slide the reservoirs back to the original position and secure.

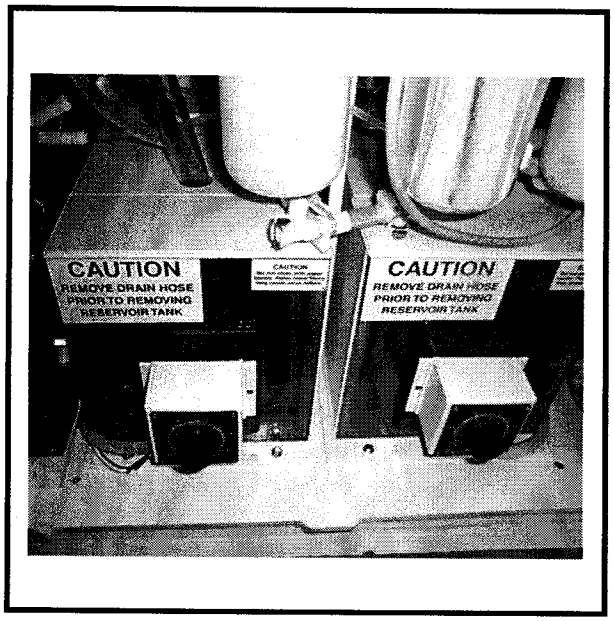


Fig. 1: Remove the pins (bolts) to access the rear leveling pads

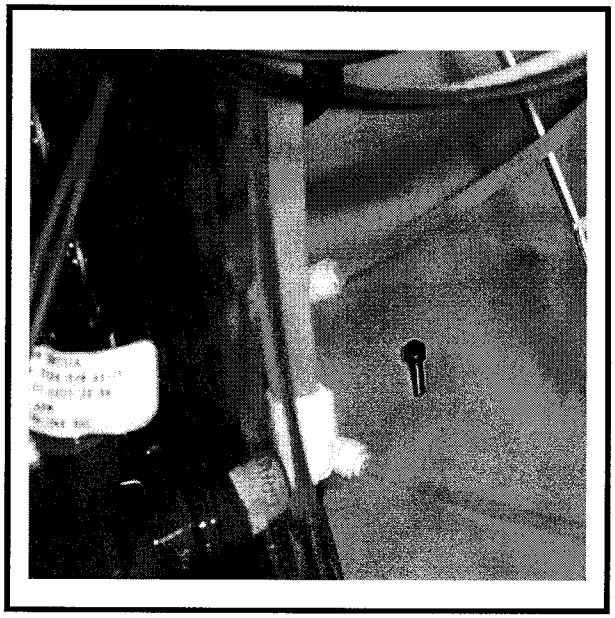


Fig. 2: Locate the rear leveling pads behind the reservoirs

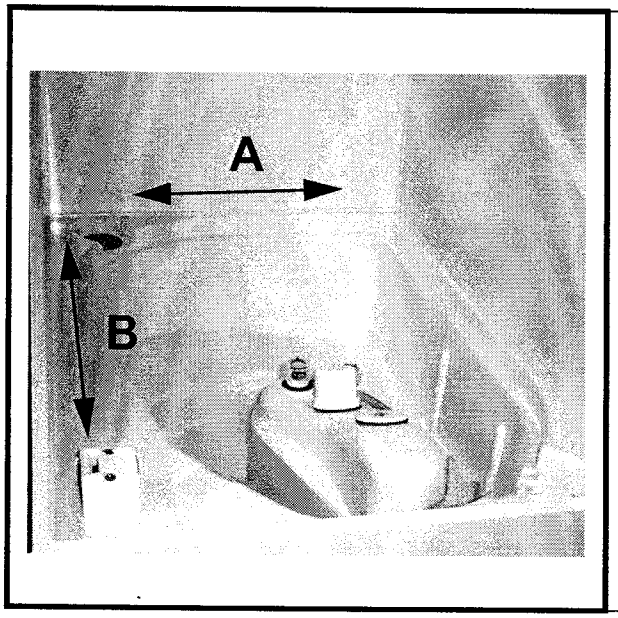


Fig. 3: Place the bubble level in position

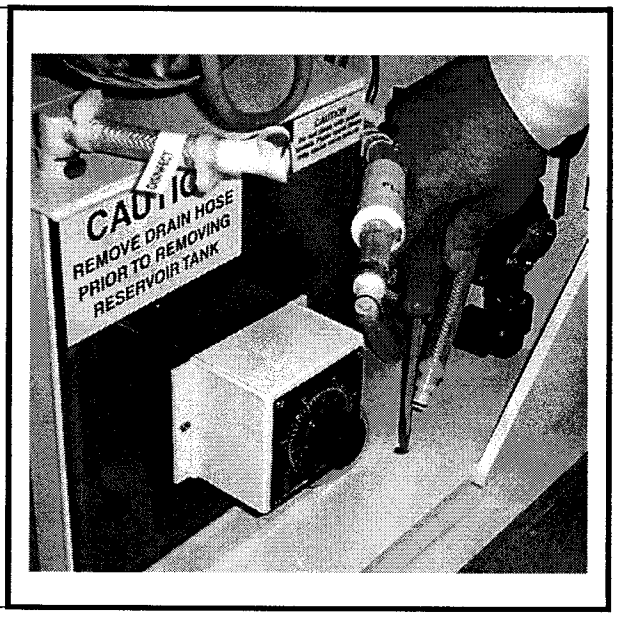


Fig. 4: Adjust the leveling pads

6

▼ COLLET COUPLING DISCONNECTION/CONNECTION

These instructions apply to all collet couplings used throughout the machine.

1. Depress locking ring toward fitting and pull tubing out of connector.
   - Release tool will aid in cases of fittings in close proximity to one another.
2. To reconnect tubing into collet end, insert and apply pressure to tube until tube slides past O-ring and "bottoms out."
3. Pull on tubing to ensure that collet has engaged.
4. Check for leaking after pressure has been reapplied.
5. If tubing is replaced, ensure that the tube is square-cut and not crushed or distorted.

Fig. 5: Depress locking ring

Fig. 6: Insert tube

Fig. 7: Locking ring out

6

▼ DISINFECTANT FILTER CARTRIDGE–REPLACE

The disinfectant filter must be changed at every disinfectant dump/load procedure.

1. Place a container under the filter to catch any excess liquid.
2. Disconnect the quick-connect fitting from the reservoir side of the filter.

Note: Check for lint/debris build up at the filter connections. Clean the filter connections before installing new filter.

3. Disconnect the quick-connect fitting from the pump side of the filter.
4. Remove the filter cartridge and replace with a new Medivators cartridge.
   - Position the filter with the arrows in the direction of flow, away from the reservoir.
5. Re-connect the quick-connect fitting to the pump side of the filter.
6. Re-connect the quick-connect fitting to the reservoir side of the filter.
7. Record the date of the filter change in the log book.

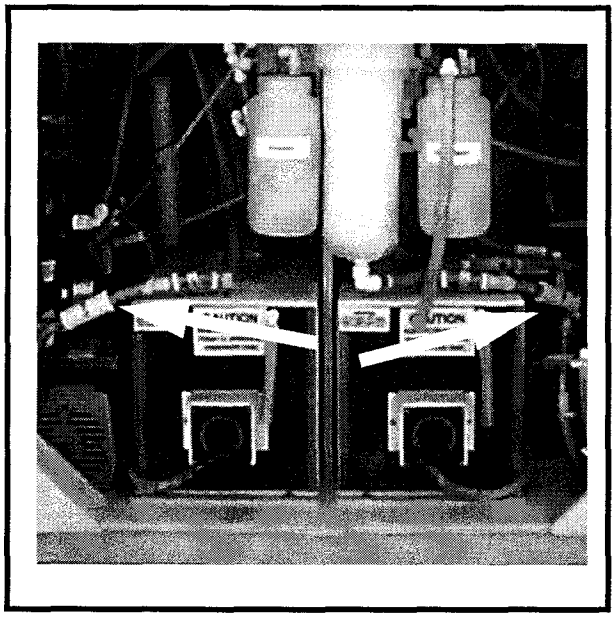


Fig. 8: Filter location

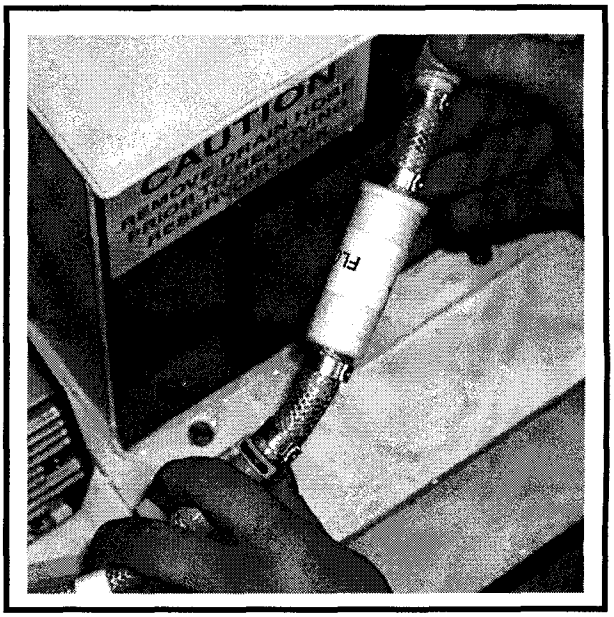


Fig. 9: Disconnect the fittings

Fig. 10: Check for debris

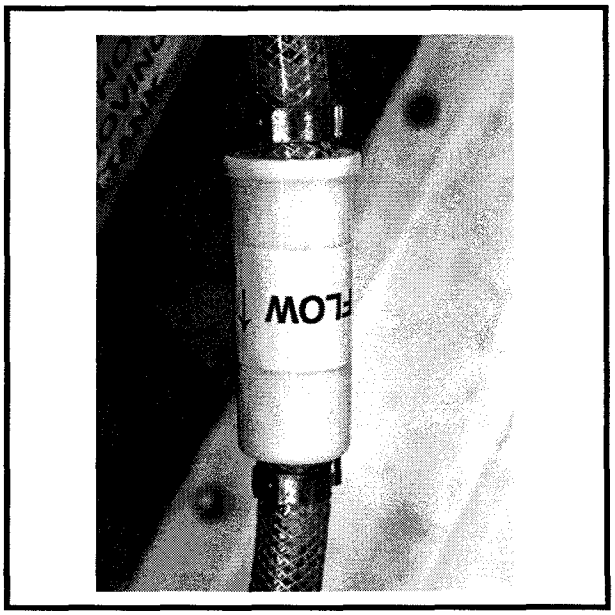


Fig. 11: Install, check direction

6

▼ INTERNAL WATER FILTER–REMOVE

The disinfector must be in idle state to perform this procedure.

1. Close the incoming water supply valve to the disinfector.
2. Drain excess water from the filter housing.
   - Place a container under the water filter inlet tube.
   - Disconnect the water filter inlet quick-connect from incoming water supply line.
   - Connect the accessory hose to the water filter inlet tube.
   - Open the filter bleeder valve and drain the water from the filter canister.
3. Remove the water filter cartridge.

Warning! Always wear gloves when handling the filter cartridge.

   - Loosen the internal filter and remove the water filter housing.
   - Rotate the filter counterclockwise to unlock the filter cartridge.
   - Remove the filter and discard in accordance with institution guidelines.

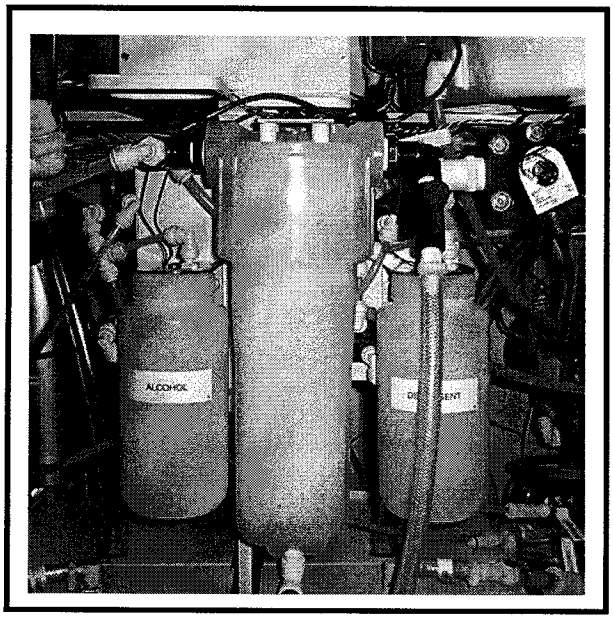


Fig. 12: Disconnect the water inlet

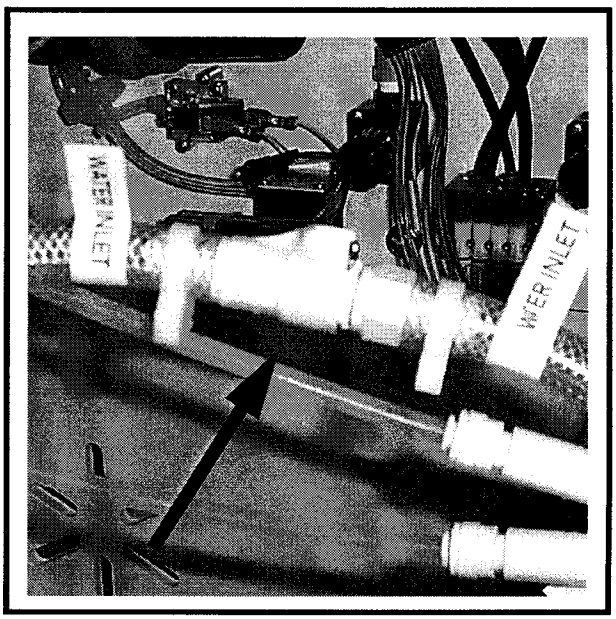


Fig. 13: Connect the accessory hose

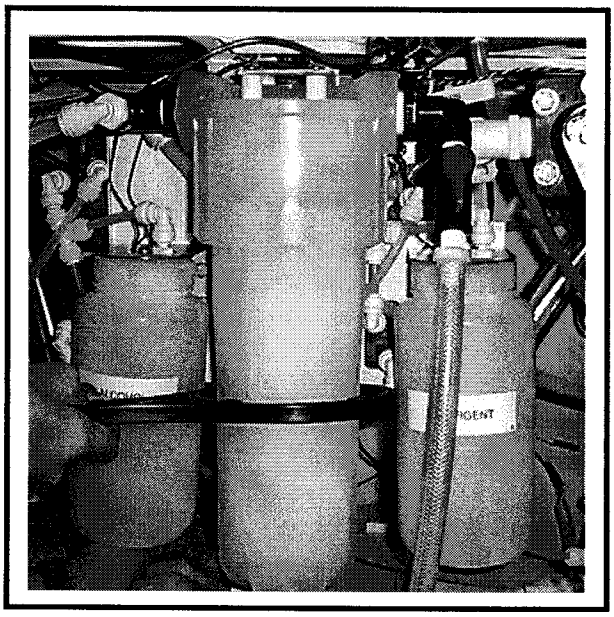


Fig. 14: Loosen the housing

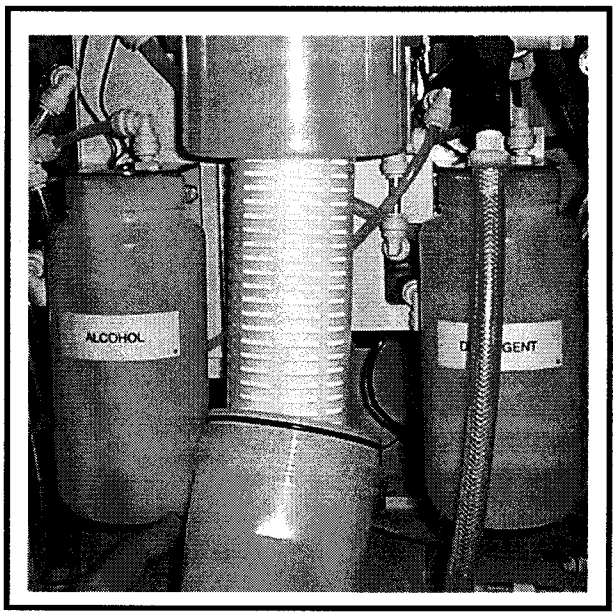


Fig. 15: Remove the housing

6

▼ INTERNAL WATER FILTER–REPLACE

1. Install the new water filter cartridge.

Warning! Always wear gloves when handling the filter cartridge.

- Insert the filter cartridge into the housing cap.
- Turn the filter cartridge clockwise until the tabs locks into the cap.

2. Wipe the filter housing clean with a lint-free cloth.
3. Install the filter housing onto the housing cap.
   - Apply an NSF-approved silicone lubricant to the housing o-ring to aid assembly and sealing.
   - Tighten the housing into the cap by hand. Do not overtighten.
4. Reconnect the water inlet line.
5. Close the bleeder valve on the filter housing.
6. Turn on the water supply and check for leaks.
7. Bleed any air from the housing using the bleeder valve.
8. Perform the Water Line Disinfect procedure as described in the Operator Controls chapter.

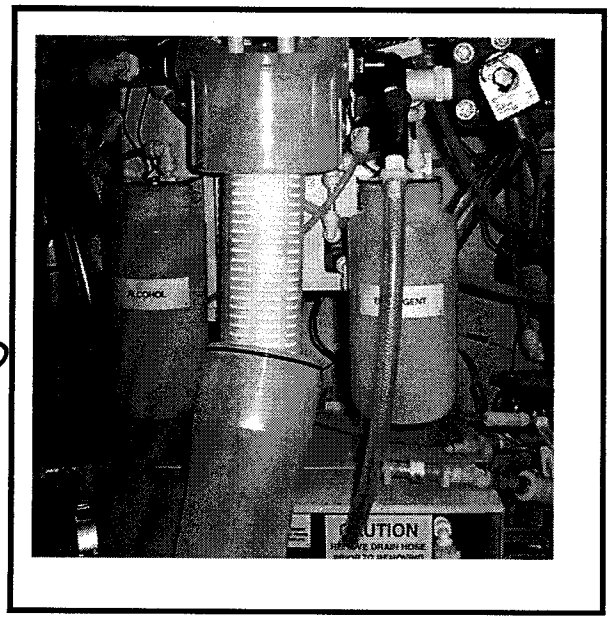


Fig. 16: Install the internal cartridge

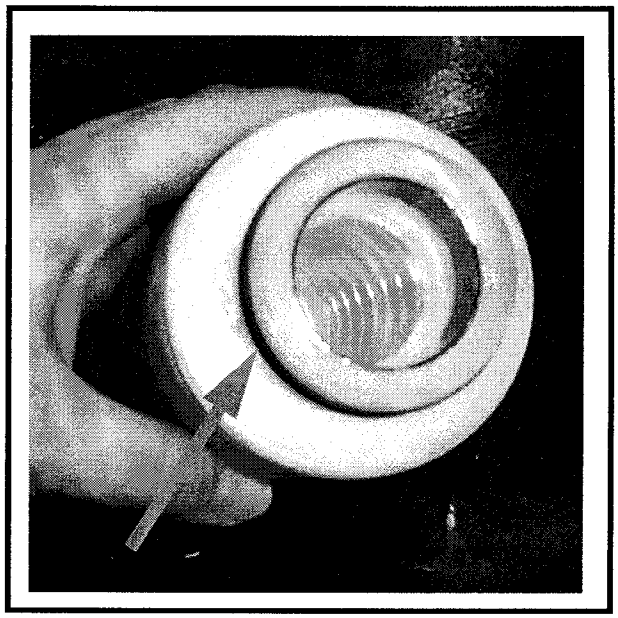


Fig. 17: Verify o-ring is in place and lubricated.

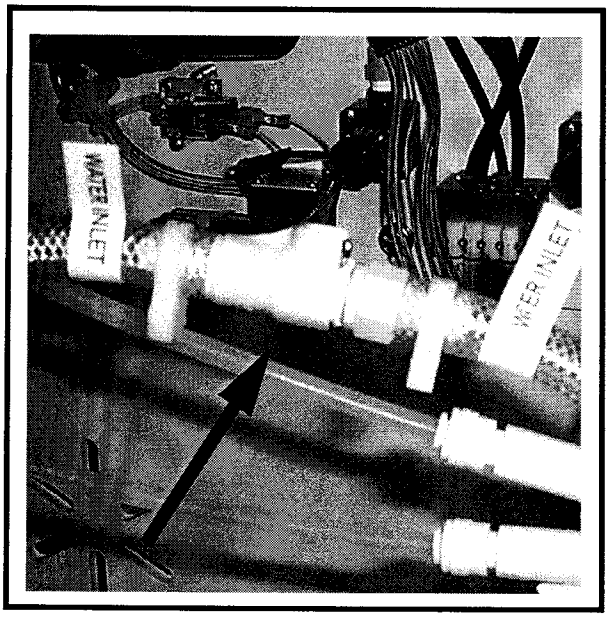


Fig. 18: Reconnect the water inlet

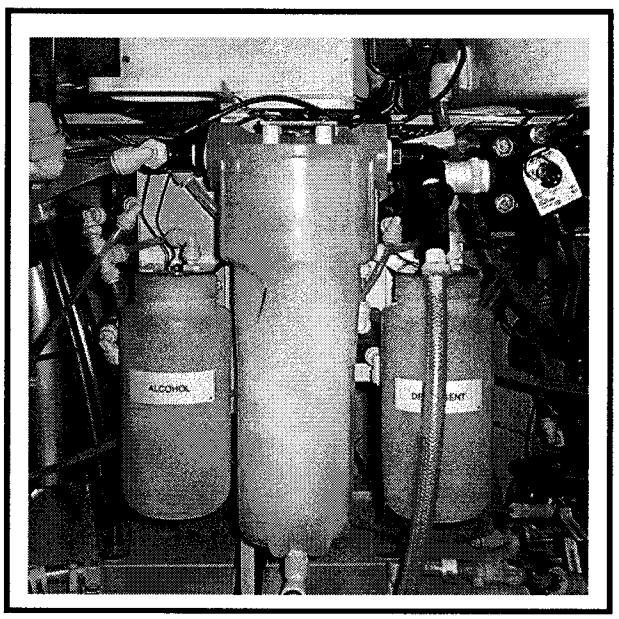


Fig. 19: Filter installed

6

▼ PRINTER PAPER–REPLACE

Use the following procedure to replace the printer paper. Only use Medivators supplied paper.

1. Raise the printer compartment cover on the reprocessor and remove the printer from the compartment.
2. Remove the used paper roll.
   - Press the paper feed switch to advance the paper beyond the cutting blade.
   - Cut any remaining paper on the roll from the printer.
   - Pull the remaining paper toward the paper cutter, through the printer mechanism.

Caution! Avoid damaging the printer mechanism. Never pull paper from the back of the printer. Always pull forward, towards the cutting blade.

3. Install the new paper roll.
   - Unroll several inches of paper from the new roll and trim the leading edge even.
   - Feed the paper through the printer feed slot.
   - Press and hold the paper feed switch until the paper exits the top of the printer.
   - Release the switch after several inches are exposed.
4. Insert the spindle through the paper roll and position the roll in the slots.
   - Verify the roll turns freely. Paper jams could damage the printer mechanism.
5. Pull the exposed paper through the slot in the printer cover and lower the cover.
6. Replace the printer in the printer compartment. The printer is ready for normal use.

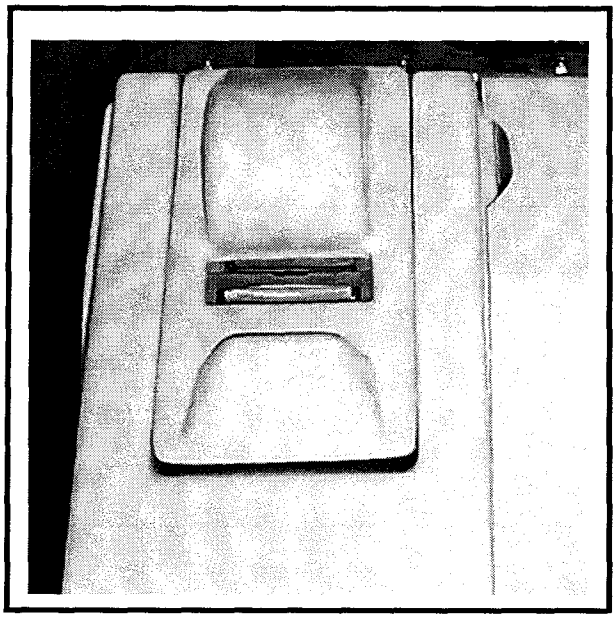


Fig. 20: Printer compartment

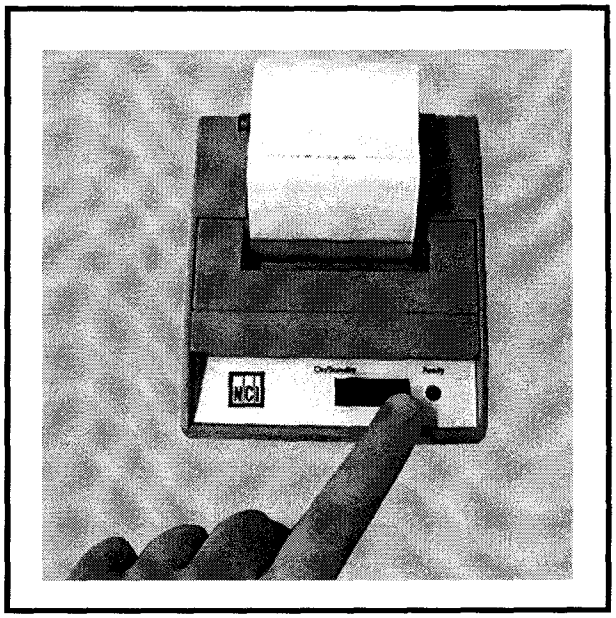


Fig. 21: Advance paper

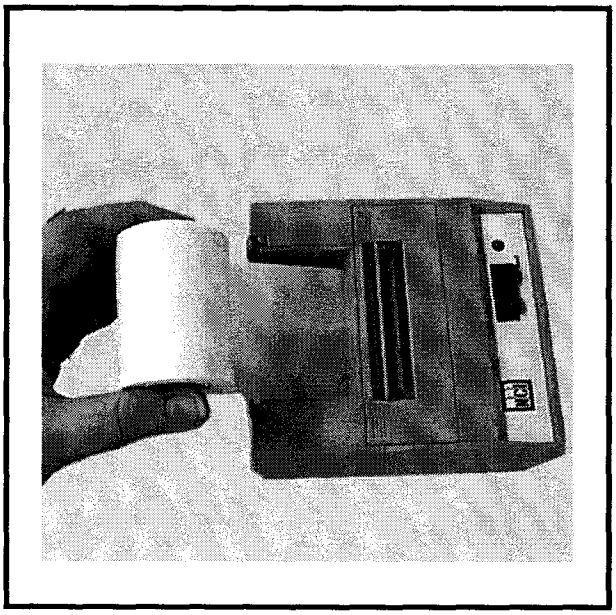


Fig. 22: Feed paper through slot

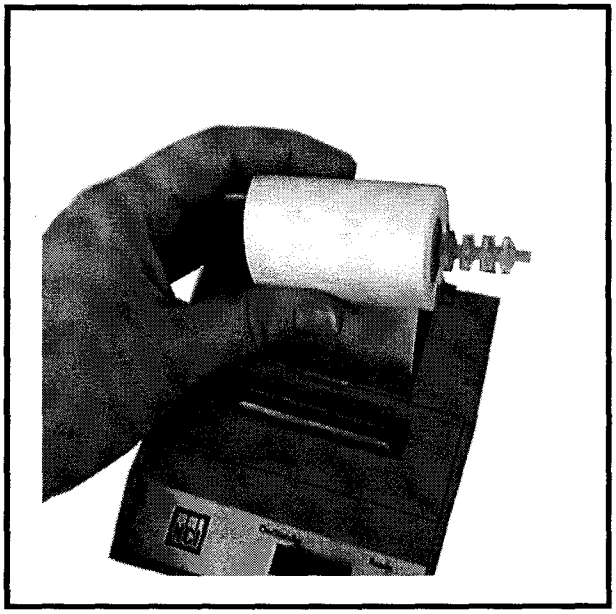


Fig. 23: Install new roll

6

▼ PRINTER RIBBON–REPLACE

Replace the ribbon before the printing becomes difficult to read. Use the following procedure to replace the printer ribbon.

1. Raise the printer compartment cover on the reprocessor and remove the printer from the compartment.
2. Unplug the printer power cable.
3. Remove the printer cover.
   - Press down on grooved corners until the cover rotates upward.
   - Lift the printer cover off the printer case.
4. Replace the cartridge.
   - Push down on the ribbon cartridge, marked PUSH.
   - Remove the cartridge and discard.
5. Install the new Medivators approved ribbon cartridge.
   - Align the cartridge in the slot and press down until firmly seated.
   - If there is paper in the printer, slide the paper between the cartridge and the ink ribbon before seating the cartridge in place.
   - Turn the small knob clockwise to adjust the ribbon tension.

Caution! Prevent ink stains. Do not allow the ribbon to contact the printer case. Wipe any ink from the case immediately to prevent stains.

6. Reinstall the printer cover.
7. Replace the printer in the printer compartment.
8. Turn on the printer. The printer is ready for normal use.

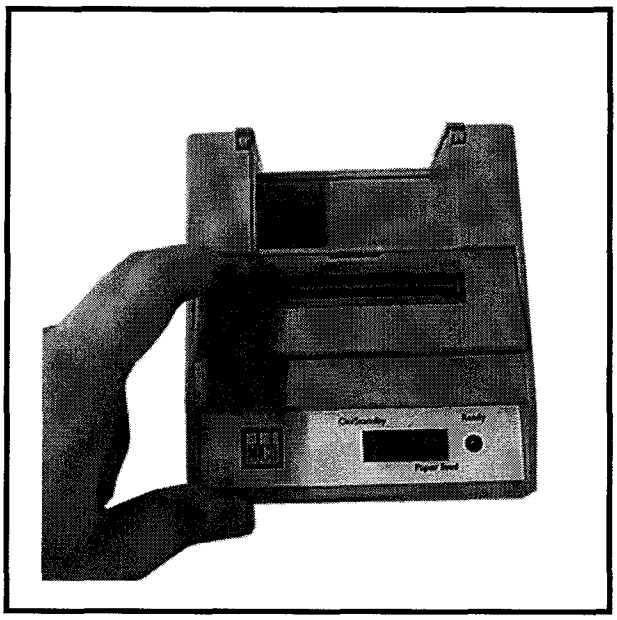


Fig. 24: Remove the printer cover

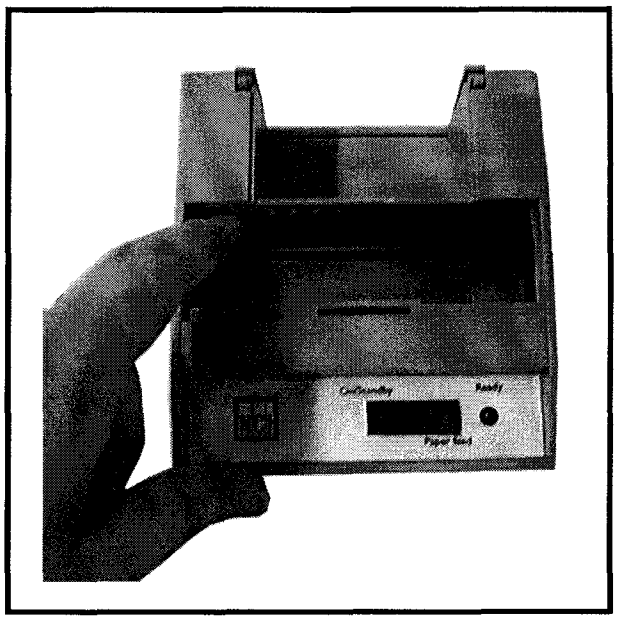


Fig. 25: Remove the cartridge

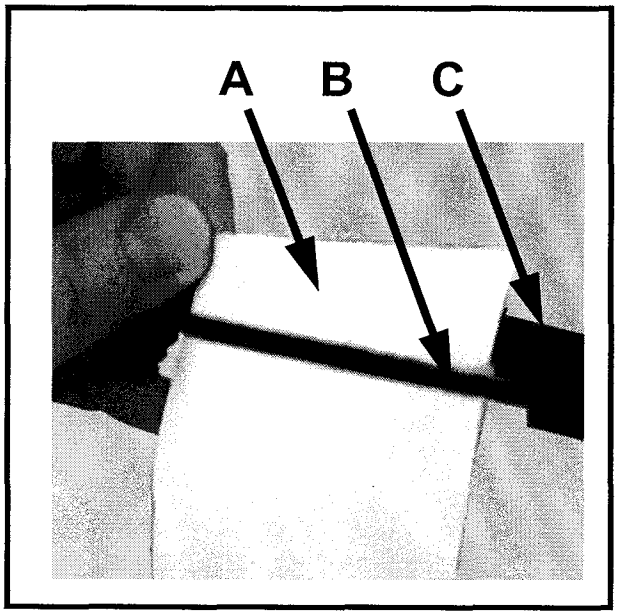


Fig. 26: Feed paper (A) between the ribbon (B) and cartridge (C)

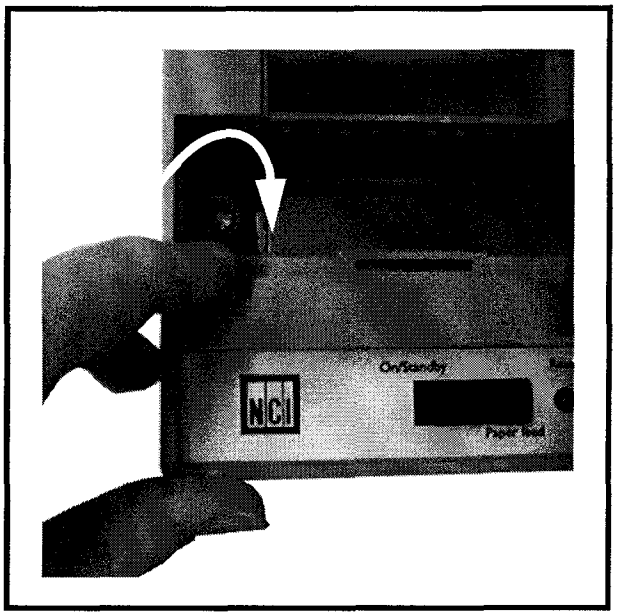


Fig. 27: Adjust the tension

▼ AIR FILTER–REPLACE

1. Locate the air filters.
2. Disconnect the quick-connect fittings.
3. Replace the old filter with a new filter.
   - Verify that the inlet of the filter faces the compressor.
4. Discard the old filters.
5. Record the date of change in the log.

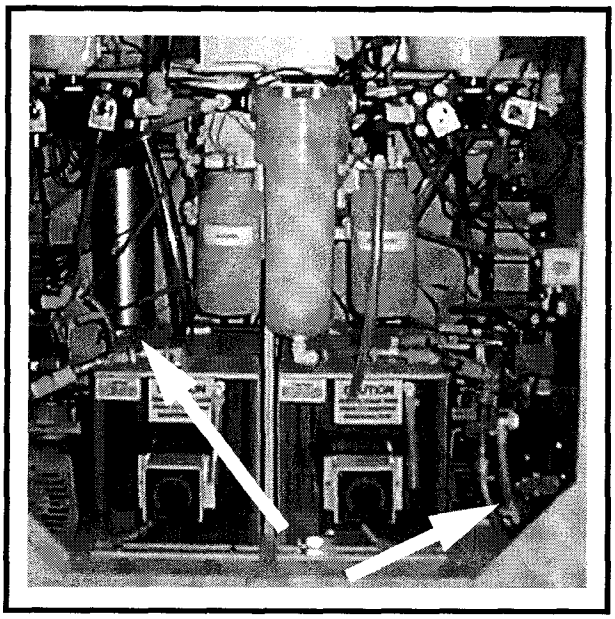


Fig. 28: Filter locations

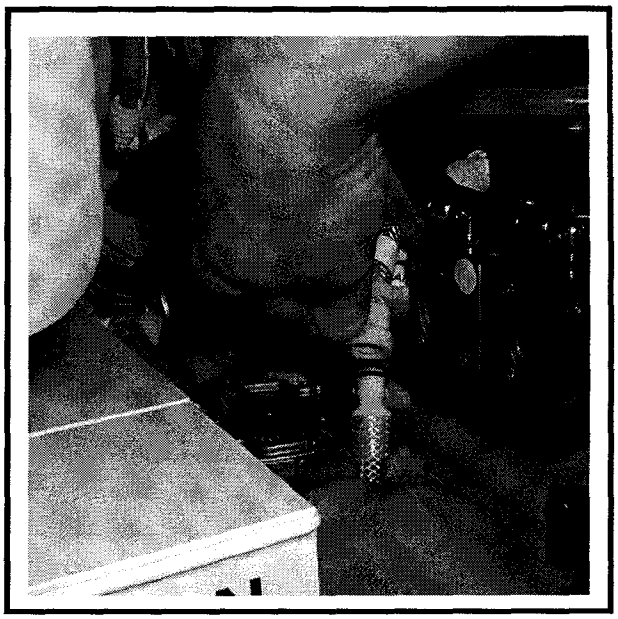


Fig. 29: Disconnect the filter

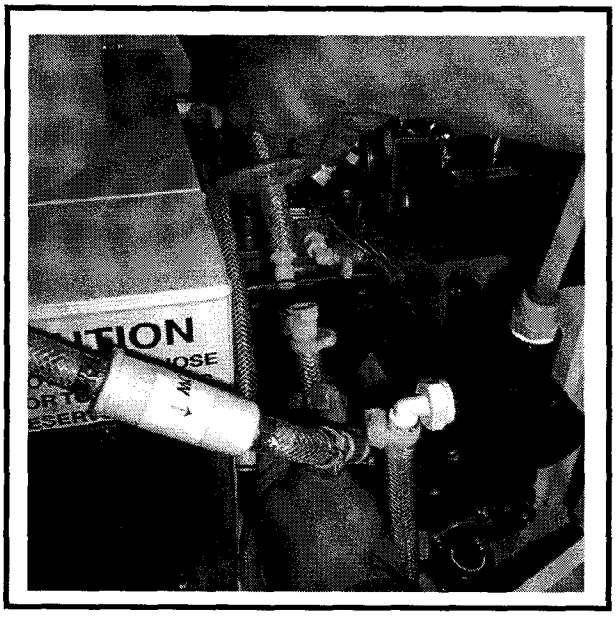


Fig. 30: Replace filter

Fig. 31: Verify inlet side

6

3/4-INCH SOLENOID VALVE–CLEAN/SEAL REPLACEMENT

Solenoid valves should only need to be cleaned when they are not functioning properly. If cleaning fails to correct the valve problem, replace the entire valve assembly.

1. Locate the solenoid valve.
2. Remove the clip and solenoid coil to access the four bolts securing the assembly.
3. Remove the four bolts from the valve assembly.
4. Remove the internal components.
   - Remove the plunger, seal, and spring.
   - Note the orientation of the spring as you remove it.
5. Clean or replace the plunger and the seal.
6. Reinstall the plunger, seal, and spring.
7. Reassemble the valve housing in reverse order.
8. Install valve housing.
   - Hand tighten all bolts, then tighten alternating corner bolts to 38 in/lbs.
9. Install the solenoid coil and replace clip.
   - Ensure that the anti-chatter spring is in place.

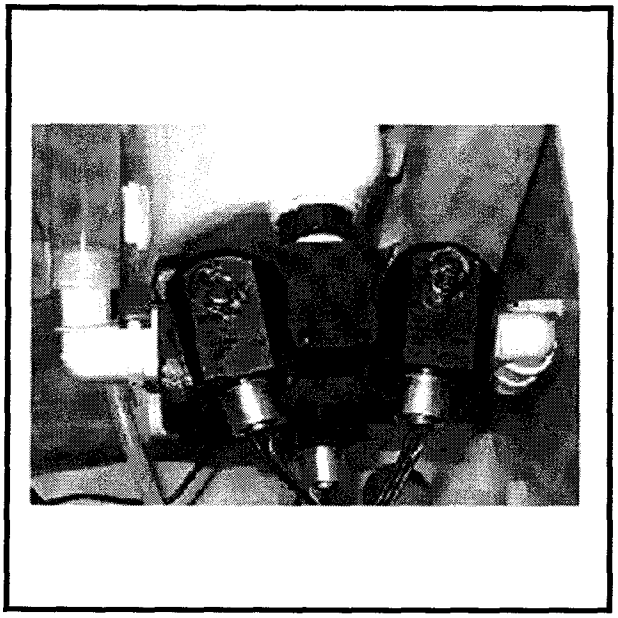


Fig. 32: Valve location

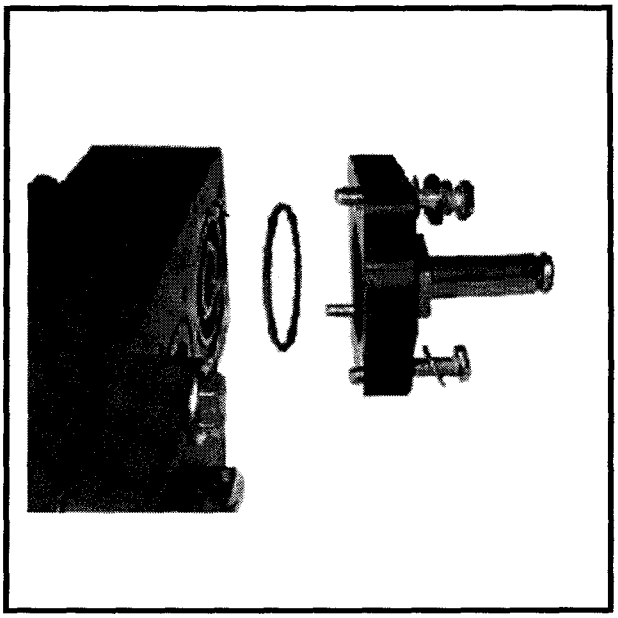


Fig. 33: Loosen bolts, inspect O-ring

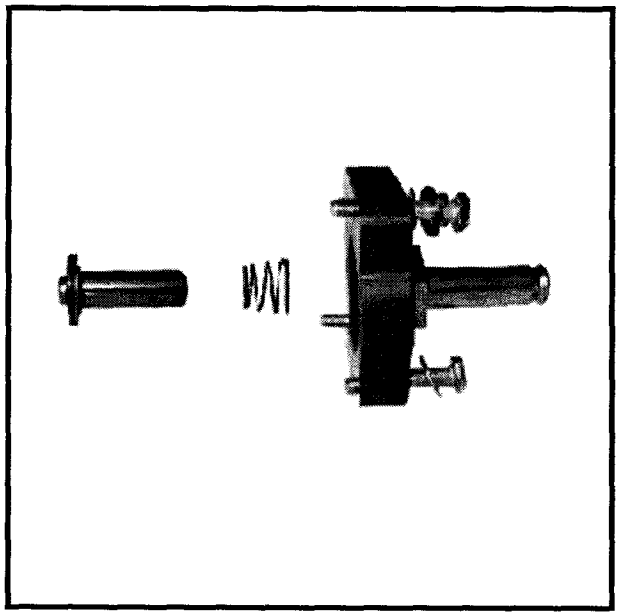


Fig. 34: Internal components

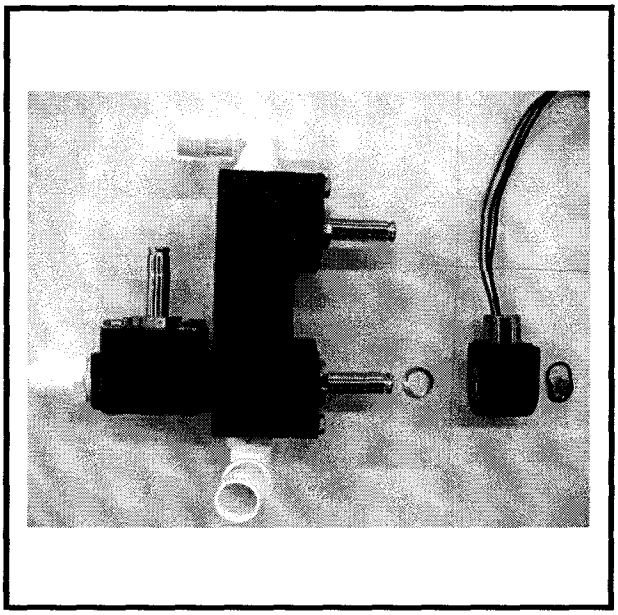


Fig. 35: Solenoid coil removed

FLOW SENSOR–CLEAN

1. Locate the flow sensors.
2. Remove the flow sensor and disassemble.
   - Disconnect the sensor cable from the sensor board.
   - Release the CPC fitting at the bottom of the flow sensor.
   - Remove the flow sensor assembly by releasing the tube coupling.
   - Remove the plug from the flow sensor assembly.
   - Remove the plunger from inside the flow sensor assembly.
3. Clean the flow sensor.
   - Wipe the plunger using a clean cloth.
   - Push a clean cloth through the barrel of the flow sensor.
4. Re-assemble the flow sensor.
   - Replace the plunger into the flow sensor with the flat end in first.
   - Inspect the O-rings of the plug, side coupling and bottom coupling for damage.
   - Apply silicon grease to each O-ring and reassemble.
5. Reinstall flow sensor.

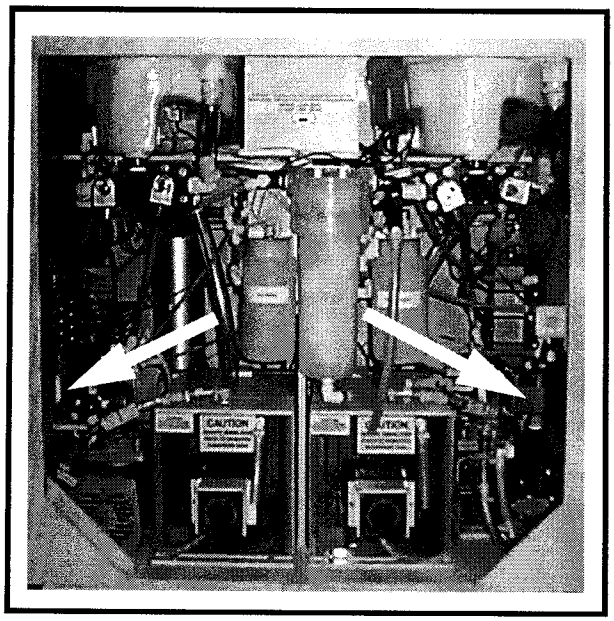


Fig. 36: Flow sensor locations

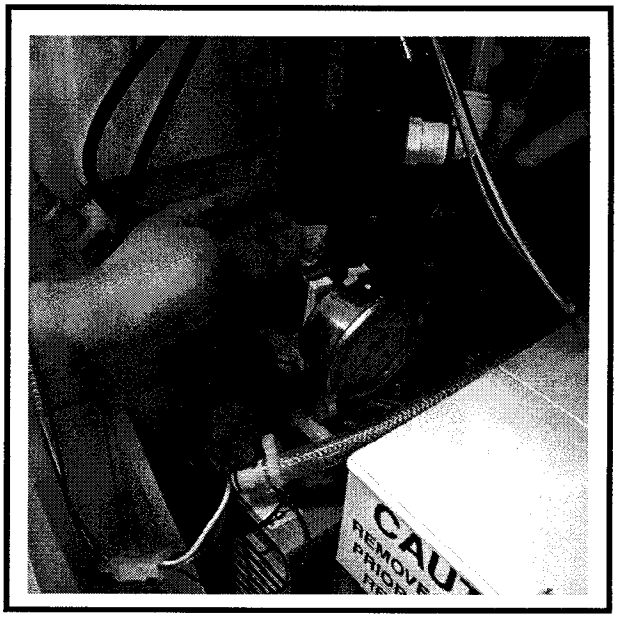


Fig. 37: Remove flow sensor

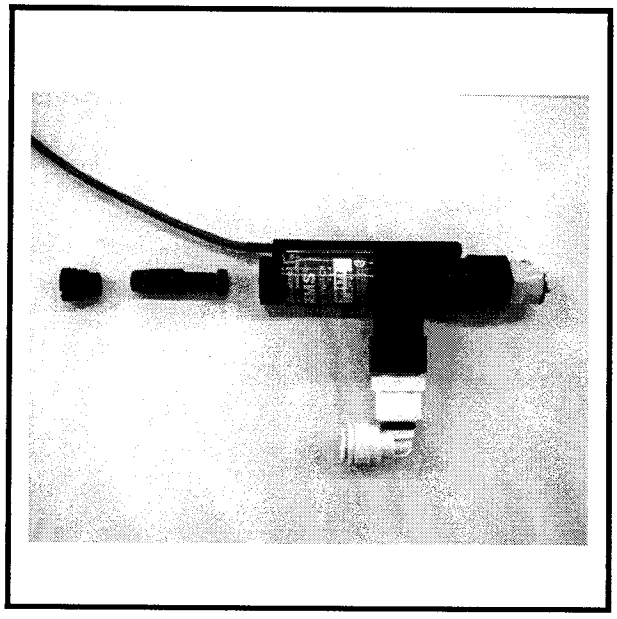


Fig. 38: Flow sensor

6

REMOVING THE DISINFECTANT RESERVOIR

The following procedure must be performed when both stations are idle.

1. Remove the pins securing the reservoir.
2. Disconnect the float sensor harness.
3. Disconnect the red and white heater assembly wires (Feature Option).
4. Disconnect the thermistor harness (Feature Option).
5. Disconnect the disinfectant filter adaptor.
6. Pull the disinfectant return hose out of the reservoir
7. Carefully slide the reservoir out.

Fig. 39: Reservoir location

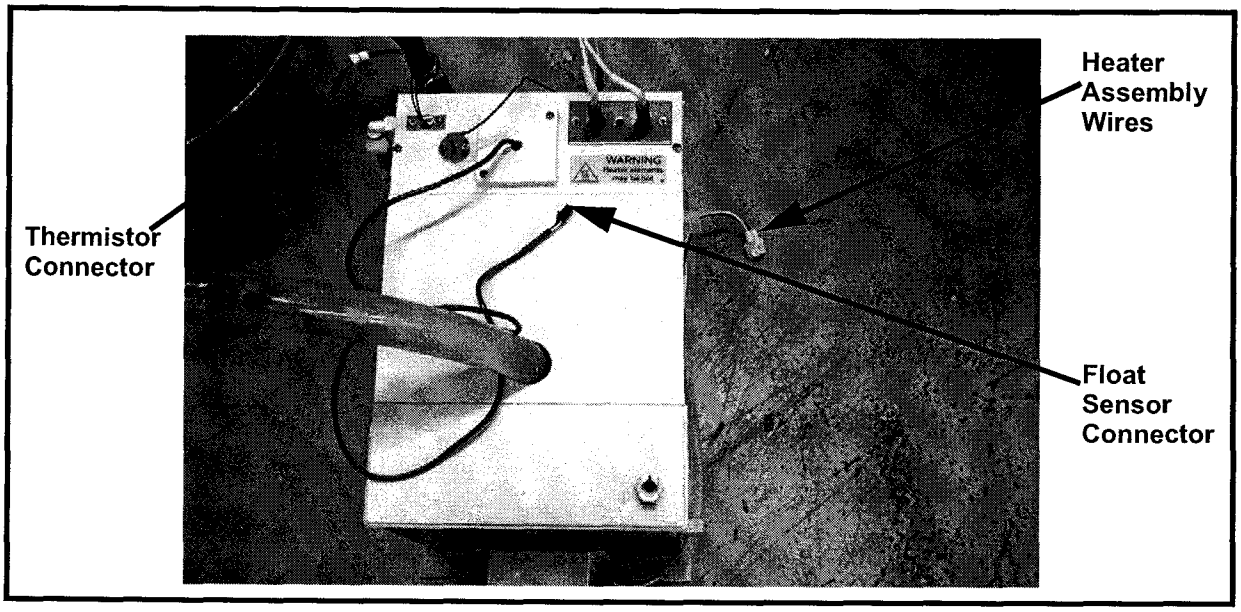


Fig. 40: Reservoir connections

REPLACING THE FUSES

1. Unplug the reprocessor from the AC power receptacle.
2. Remove the access screw from the front underside of the control panel console.
3. Open control panel cover to access the electronics.
4. Inspect visually or electrically to determine if fuse is damaged.
5. Replace defective or blown fuses.
6. Close control panel cover.
7. Replace the access screw.
8. Plug the power cord into the power receptacle.

Note: All fuses are slow blow. Do not use any other type.

Key	120V	240V	Size
F1	3.15 A	3.15 A	5 x 20 mm
F2	8.0 A	4.0 A	5 x 20 mm
F3	3.15 A	2.0 A	5 x 20 mm
Power Supply	1.5 A	1.5 A	3AG

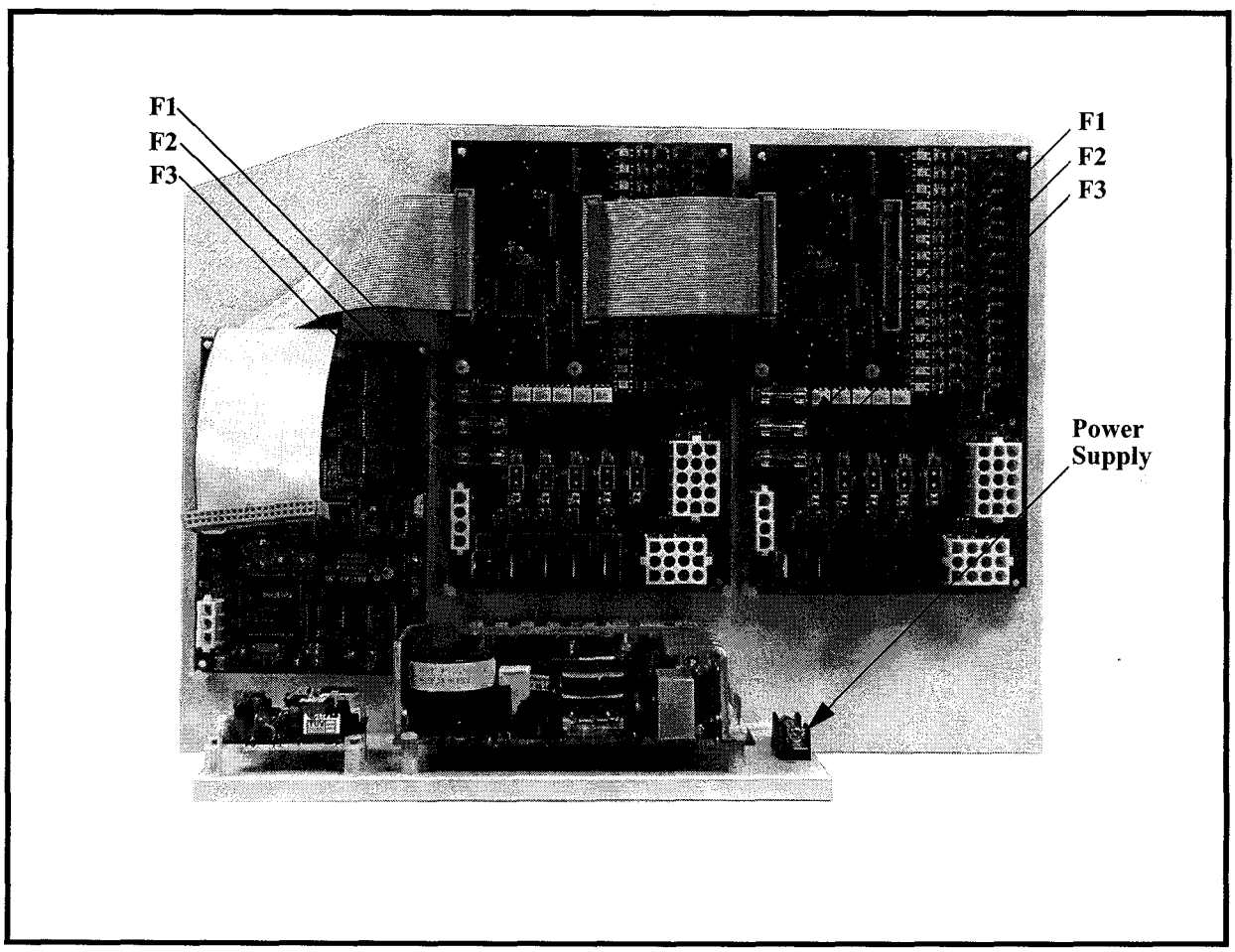


Fig. 41: Fuse locations

6

▼ LEAK TESTER OPTION–CHECK

1. Connect pressure gauge to leak test outlet in "A" upper chamber.
2. Test the Leak Test Board.
   - Select side "A", SETUP 88,code 135
   - 51 ENTER, 54 ENTER to setup test
   - 95 ENTER. Display will show number 3C.
   - Gradually increase the pressure using the inflator. As the pressure increases, the display will read:
     - 34 if pressure is greater than 1 psi
     - 31 if pressure is greater than 3 psi
   - Gradually decrease the pressure using the toggle on the back of the inflator. As the pressure decreases, the display will read:
     - 35 if pressure is less than 3 psi
     - 3F if pressure is less than 1 psi
   - Press CANCEL.
3. Test Leak Tester system.
   - Press 56 ENTER to verify 3 psi control pressure.
   - Press 57 ENTER to verify 1 psi hold pressure.
   - Bleed some air out of the system using the toggle and ensure that the tester maintains 1 psi.
   - Press 50 ENTER to vent the system.
4. Internal Leak Test.
   - Press 56 ENTER.
   - Allow the pressure to stabilize.
   - Press 57 ENTER.
   - Monitor pressure for a minimum of 5 minutes. The pressure must not increase or decrease more than 4 mmHg.
   - Record the pressure and time on the test report.
   - Press 50 ENTER to vent the system
5. Repeat for Station "B".
   - During the test of the Leak Test Board for Station "B", the display will show the following readings:
     - As the pressure increases, the display will read:
       1C if pressure is greater than 1 psi,
       8C if pressure is greater than 3 psi.
     - As the pressure decreases, the display will read:
       9C if pressure is less than 3 psi,
       FC if pressure is less than 1 psi.

Fig. 42: Connect pressure gauge

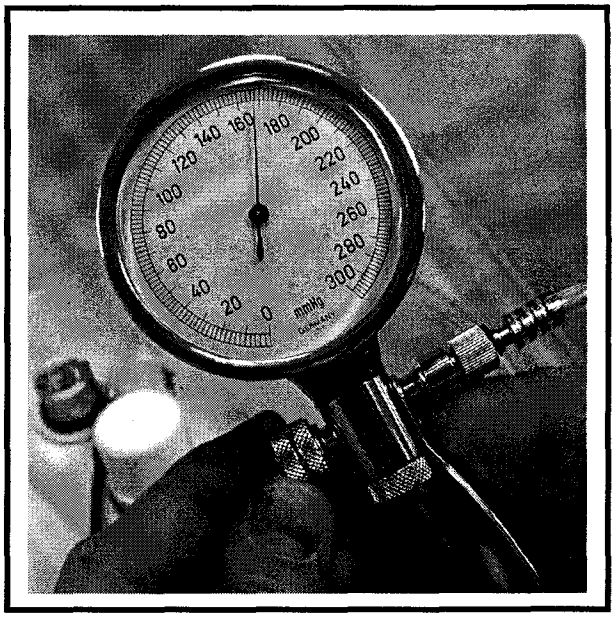


Fig. 43: Bleed some air

6

DRAINING CONDENSATION FROM AIR CHAMBER

Condensation will accumulate inside the air chamber. It is recommended that the air chamber be drained periodically. Perform the following procedure when both stations are idle.

1. Locate the air chamber on the back panel inside the cabinet between the reservoir and Side A main module.
2. Pull the ring attached to the relief valve located at the bottom of the air chamber.
3. Ensure that the purged air is free of condensation.
4. Release the ring.

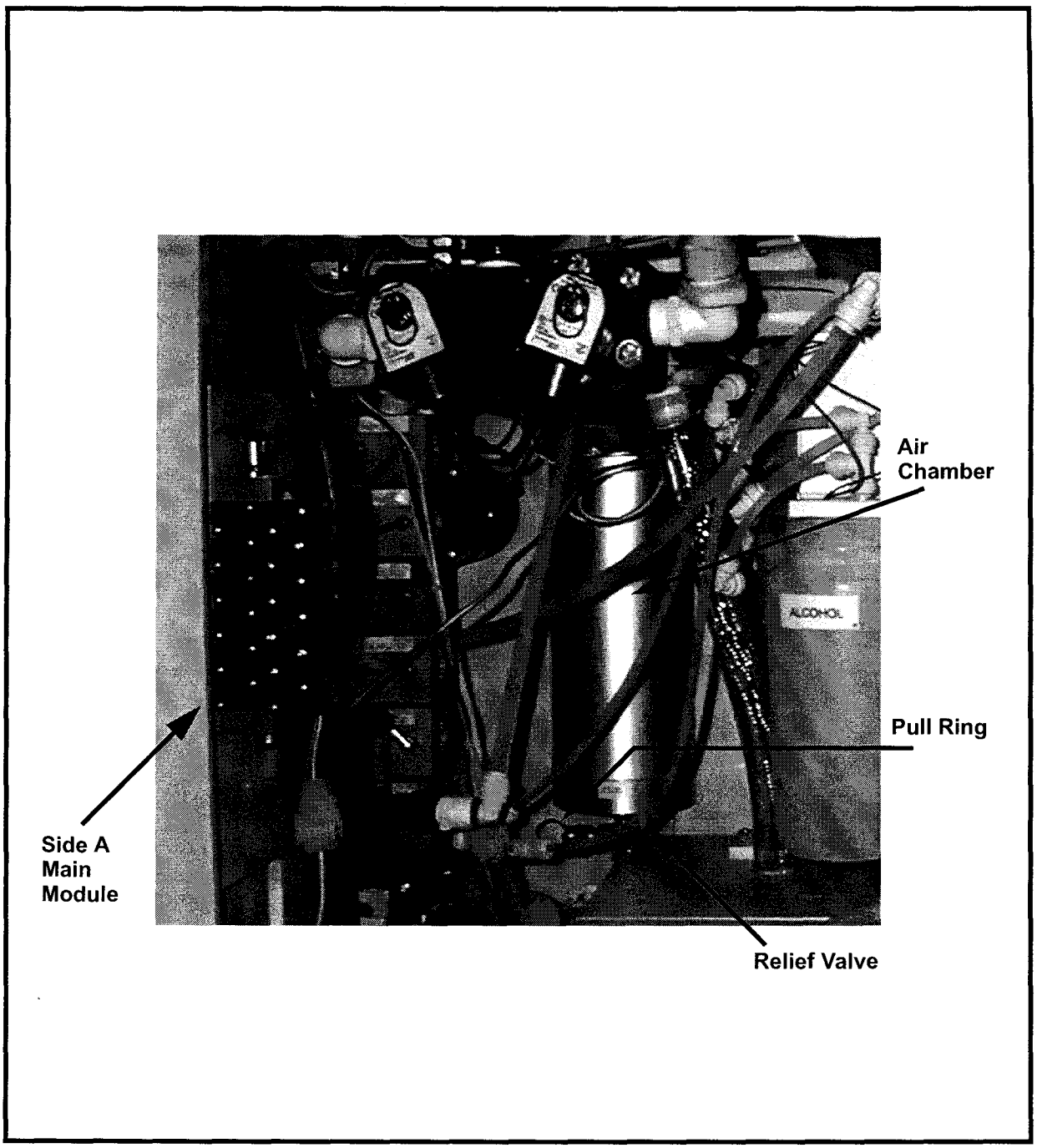


Fig. 44: Air chamber location

MANUALLY UNLOCKING THE LID (FEATURE OPTION)

1. Locate the lidlock inside the cabinet.
2. Loosen the screw that holds the dial, using a small Phillips screwdriver.
3. Rotate the dial of the lidlock 180° clockwise.
4. Open the lid of the reprocessor.
5. Rotate the dial back in place and tighten screw.

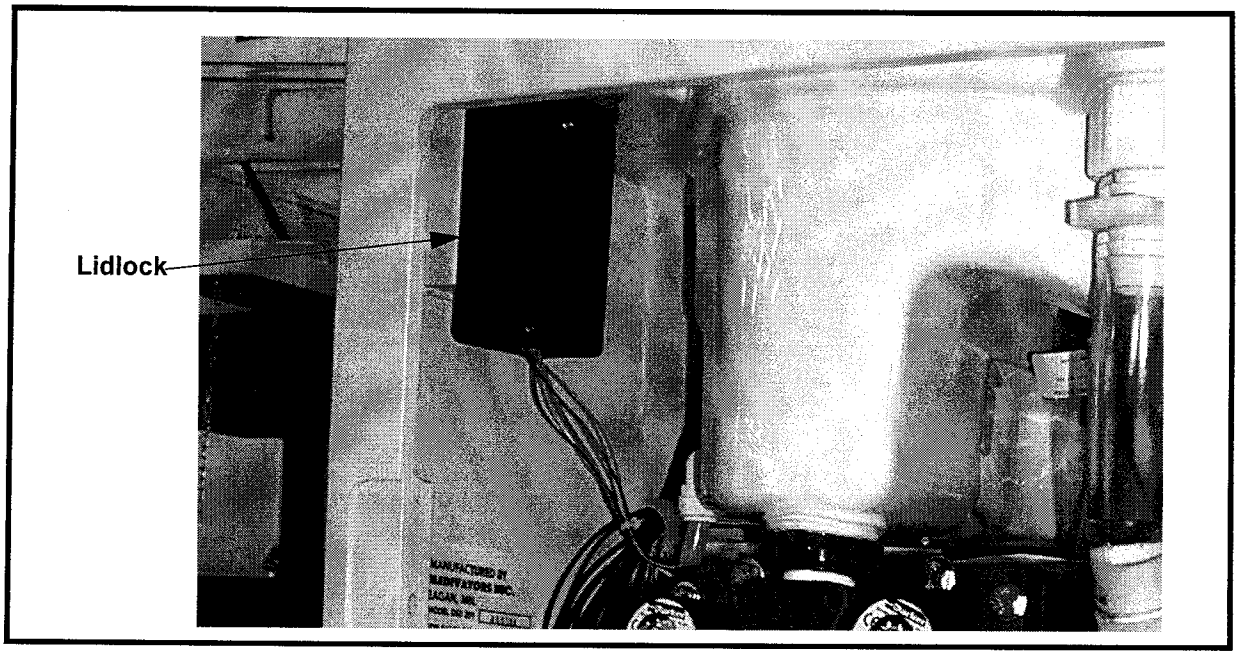


Fig. 45: Lidlock location

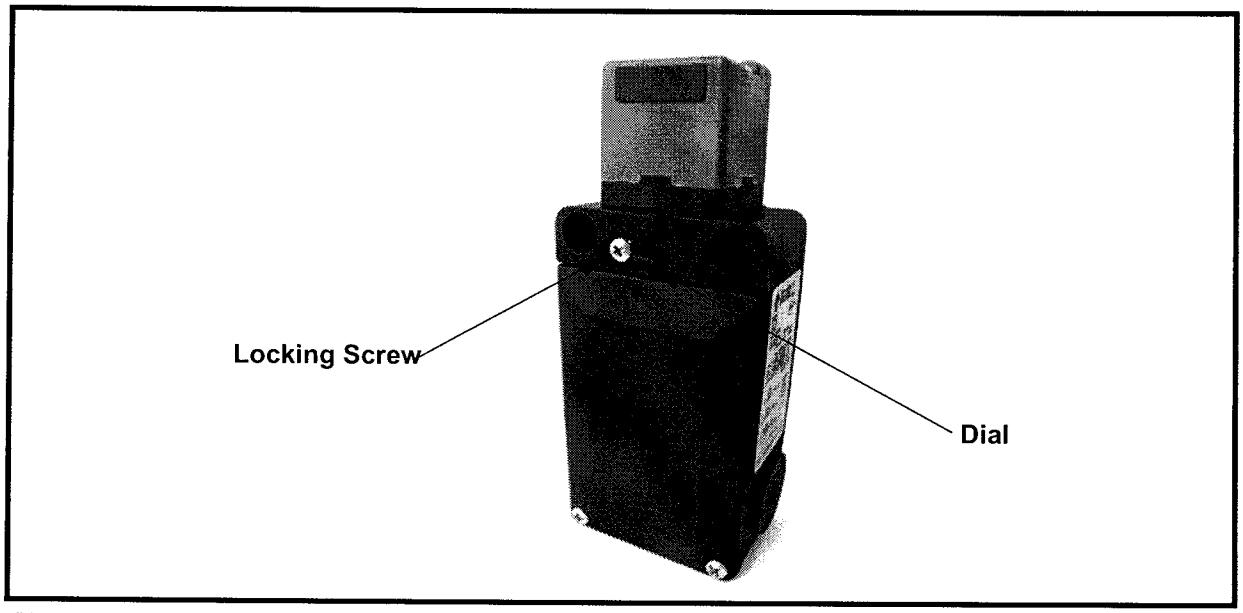


Fig. 46: Lidlock

6

TROUBLESHOOTING

General

This chapter contains basic troubleshooting procedures. Always refer to the Safety section in the Introduction chapter before attempting to service the reprocessor.

Reprocessor does not start.

No power to the reprocessor.	Check the main power connection for proper line voltage.
GFCI is tripped	Press the reset button to reset the GFCI. If the GFCI cannot be reset, disconnect components to isolate the problem. Replace any defective components.
Main circuit breaker is tripped	Reset the circuit breaker. If the circuit breaker cannot be reset, isolate the problem to the reprocessor. Disconnect components to isolate the problem. Replace any defective components.
Defective connection to reprocessor	Unplug the reprocessor from wall socket. Check the power cable for damage.
Defective connection to motherboard	Check connections between the control panel and the motherboard. Replace defective components, if necessary.
Blown power supply fuse	Check the power supply fuse, replace if necessary.

Note: During a leak test, there is a 40 second delay at the start of the cycle. The disinfection cycle will not start until the leak test is complete. This is normal operation and is not considered an "error".

7

Disinfection cycle does not start.

Software/hardware locked	Disconnect then reconnect the main power to reset the system.
Keypad not responding	Check the keypad connection. Replace the ribbon cable, if necessary.
Control panel defective	Replace the control panel.

Slow water fill into basin.

Air pressure insufficient to open valves	Verify the compressor is working correctly. Check the external air regulator on non-compressor reprocessors. Contact your Facility Maintenance representative.
Insufficient water supply pressure, flow rate	Contact your Facility Maintenance representative.
External water pre-filter plugged	Replace the filter cartridges.
Internal water filter is plugged	Replace the water filter.
Incoming water regulator setting is incorrect	Check the regulator setting. The setting must be 35 to 40psi. Do not adjust the regulator if the setting is correct—check for a plugged filter.
Air pressure switch harness disconnected	Check the harness for proper connection. Also, check for damage, loose wires.
Water line valve not opening	Repair or replace the component.
Chamber valve not opening	Repair or replace the component.
Air manifold not operating	Repair or replace the component.
Valve drive board defective	Check the valve drive board. Replace if necessary.
Harness disconnected	Check the harness connections. Replace defective harness.
Air trapped in filter housing	Bleed air from the housing.

Slow disinfectant fill into basin.

Air pressure insufficient to open valves	Verify the compressor is working correctly. Check the external air regulator on non-compressor reprocessors. Contact your Facility Maintenance representative.
Disinfectant filter plugged	Replace the filter.
Air pressure switch harness disconnected	Check the harness for proper connection. Also, check for damage, loose wires.
Disinfectant supply valve not opening	Repair or replace the component.
Chamber valve not opening	Repair or replace the component.
Air manifold not operating	Repair or replace the component.
Valve drive board defective	Check the valve drive board. Replace if necessary.
Harness disconnected	Check the harness connections. Replace defective harness.

Disinfectant does not drain to lower reservoir.

Basin drain screen plugged	Clean the basin screen drain.
Disinfection return line kinked	Check the line for kinks. Reposition, if necessary.
Disinfectant return valve defective	Repair or replace return valve.
Disinfectant overflow valves defective	Repair or replace the component.

Water flows constantly from hook-ups.

Water valve on main manifold defective	Shut off the water supply. Replace the water valve, or the valve seal.

7

Water does not drain from basin during flush or rinse.

External drain line kinked	Repair the drain line.
Drain line plugged	Clean the drain line or replace the line, if necessary.
Basin drain screen plugged	Clean the basin screen drain.
Drain valve is defective	Repair or replace the drain valve.

Scopes still wet at end of cycle.

Insufficient air flow	Check the compressor for proper operation.
Air valve not opening	Repair or replace the component.
Compressor vent valve open/leaking	Repair or replace the vent valve.
Chamber valves leaking	Repair or replace the component.

Reprocessor lid does not open on units with optional lidlocks.

Lidlock remains activated	Press the "STOP" button and enter the service code to deactivate the lidlocks.
Lidlock defective	Replace the lidlock.
Harness disconnected/defective	Check the connection. Replace a defective harness.
Digital I/O board defective	Replace the I/O board.
24/28V power supply defective	Replace the power supply.

No air phase at end of cycle.

Incorrect air program setting	Check the air setting in the diagnostics menu (Setup 5).

LCD screen unreadable.

Contrast out of adjustment	Use the Diagnostic function 26 to adjust contrast.
Ribbon cable disconnected, damaged	Check the ribbon cable between the LCD screen and the control panel. Reconnect a loose cable, or replace a damaged cable.
LCD screen failure	Replace the control panel.

Printer does not operate.

No power to reprocessor	See "Reprocessor does not start".
Power supply unplugged	Check the power supply connection is plugged into the outlet in the reprocessor.
Printer ribbon is jammed	Check the printer ribbon. Open the printer and re-align the jammed ribbon. Rotate the knob to adjust the ribbon tension.
Printer paper is jammed	Check the printer paper. Open the printer and remove the paper jam. Press the paper feed switch to feed paper through the printer cover.
Printer connection is disconnected	Check the printer cable connection. Verify the connector is plugged in and seated tightly. Replace a damaged cable.
Printer damaged or defective	Replace the printer.
Defective motherboard	Replace the motherboard.

Printing unreadable.

Printer ribbon is infrequently used	Press the paper feed switch to advance the printer ribbon to a new section.
Printer ribbon worn	Replace the printer ribbon.

Error and Warning Messages

Error messages are displayed on the LCD screen to alert the operator to operational malfuntions and/or operational warnings (see the Appendix for message definitions).

"Bas Sen Err" is displayed.

See "Fluid did not drain from basin".

Fluids on basin sensor ..... Clean fluid droplets off sensor.

Defective basin sensor ..... Replace basin sensor.

Defective sensor harness ..... Replace basin sensor harness.

Defective sensor board ..... Replace basin sensor board.

Water trapped in sensor cover ..... Rotate the cover so that the floating lid will not block the vent.

"Dis Expired" is displayed during initial start.

Maximum disinfection cycle count reached ..... Press the STOP button to cancel the error. Check the disinfectant MRC. Dump and reload fresh disinfectant, if necessary.

Disinfection cycle count setting incorrect ..... Change the default setting. Use Diagnostics 71 for setting the Maximum Disinfectant Cycle Count procedure.

"Dis Warn" is displayed during initial start.

Cycle count is 10 less than maximum ..... Use Setup 7 to acknowledge the warning. Verify disinfectant concentration before continuing.

"Flow Sen Err" is displayed during initial start.

Flow sensor stuck in the "on" position	Press the STOP button to clear the error. Press the ADD AIR button to free the sensor.
Sensor harness defective	Replace a defective harness.
Sensor board defective	Replace the sensor board.

"Lid Ajar" is displayed during initial start.

Reprocessor lid is open	Close the reprocessor lid. Verify there are no obstructions preventing the lid from completely closing. Press the START button to resume the cycle.
Sensor harness disconnected/defective	Check the sensor harness connection. Replace a defective harness.
Sensor board defective	Replace the sensor board.
Sensor misaligned/defective	Adjust the sensor alignment. Replace a defective sensor.

"Low Chamber" is displayed.

See *Slow disinfectant fill into basin/Slow water fill into basin.*

"Low Dis Res" is displayed.

Low disinfectant level	Cancel the cycle. Add disinfectant to the proper level in the lower reservoir. Press START to reprocess the scope.
Defective float sensor	Replace the float sensor.
Sensor harness disconnected/defective	Check the sensor harness connection. Replace a defective harness.
Sensor board defective	Replace the sensor board.

"High Dis Res" is displayed.

High disinfectant level	Dump disinfectant to proper level.
Water entering reservoir	Check the disinfectant MRC. If dilution is below MRC, check the disinfectant return valve and the overflow valve for proper operation. Repair or replace if necessary.
Sensor harness defective	Replace a defective harness.
Sensor board defective	Replace the sensor board.

"No Air Flow" is displayed.

Air compressor is not working	Check the compressor for operation. Replace the compressor, if necessary.
Valve harness disconnected/defective	Check the valve harness connection. Replace a defective harness.
Valve board defective	Replace the valve drive board.
Air filter is blocked	Replace the filter.
Hook-up is disconnected or kinked	Verify the hook-up is not kinked and reconnect.
Air filter is disconnected	Verify the air filter is connected.
Insufficient external air pressure	Contact your Facility Maintenance representative.

"No Fluid Flow" is displayed during disinfect phase.

Disinfectant filter is clogged	Replace the disinfectant filter.
Disinfectant supply valve defective	Repair or replace the component.
Scope to basin connection disconnected	Reconnect and restart the cycle.
Hook-up is pinched or kinked	Check for pinched or kinked hook-up. Cancel the cycle, then reposition the hook-up. Restart the cycle.
Pump does not operate	Check that the disinfectant filter is connected and that pump is primed. Replace if necessary.

Disinfectant filter is disconnected	Reconnect the disinfectant filter.
Scope channel is blocked	Remove scope and send for repair.
Sensor harness disconnected/defective	Check the sensor harness connection. Replace a defective harness.
Sensor board defective	Replace the sensor board.
Sensor defective	Verify proper fluid flow. Replace the sensor.

"No Fluid Flow" is displayed during flush or rinse phase.

Scope to basin connection disconnected	Reconnect and restart the cycle.
Water pressure too low	Pressure must be between 35-40psi (2.4 - 2.75bar).
Prefilter/internal filter clogged	Change the filter.
Air lock in the water filter	Open the bleeder valve on the filter to purge air.
Water filter is clogged	Check the water pressure at inlet and outlet regulators. Lower than normal pressure may indicate a clogged filter. Replace the filter.
Air pressure switch harness disconnected	Check the harness for proper connection. Also, check for damage, loose wires.
Sensor harness disconnected/defective	Check the sensor harness connection. Replace a defective harness.
Sensor board defective	Replace the sensor board.
Sensor defective	Verify proper fluid flow. Replace the sensor.

"Res T High" is displayed.

Incorrect reservoir controller temperature	Adjust to correct temperature.
Incorrect program temperature setting	Use Diagnostics 74 to enter value.
Thermistor defective	Repair or replace the component.

"Res T Low" is displayed.

Incorrect reservoir controller temperature	Adjust to correct temperature.
Incorrect program temperature setting	Use Diagnostics 74 to enter value.
Thermistor defective	Repair or replace the component.
Heater turned off or defective	Turn heater on or replace. Check harness connection.

"Sheath Fail" is displayed (for optional leak tester only).

Large leak detected at beginning of cycle	Leak in scope. Allow the scope to reprocess, then remove scope and send for repair. Leak between connectors. Press STOP to cancel the cycle and open the lid locks. Check connection and reprocess scope.
Small leak detected during cycle	Leak in scope. Allow the scope to reprocess, then remove and manually leak test the scope.
Leak test adapter not connected	Press STOP to cancel the cycle and open the lid locks. Connect correct leak test adapter and reprocess scope.
Leak tester harness disconnected/defective	Check the leak tester harness connection. Replace a defective harness.
Leak tester board defective	Replace the leak tester board.
Leak tester assembly defective	Replace the leak tester assembly.

"Shth Sen Err" is displayed during initial start (for optional leak tester only).

Scope is pressurized during startup	Press STOP to cancel the cycle and open the lid locks. Disconnect the leak tester hook-up to release the pressure. Reconnect the hook-up.
Leak tester enabled, but option not present	Use Diagnostic 45 to disable leak tester option.
Leak tester board defective	Replace the leak tester board.
Leak tester defective	Replace the leak tester.

APPENDIX

Error Messages

Aborted .....Indicates a cycle was manually aborted and not complete

Air Disabled.....Indicates that the air flow sensor was disabled

Bas Disabled .....Indicates that the basin level sensor was disabled

Bas Sen Err .....Indicates that the basin level sensor is reporting a full basin at the start of a cycle (basin should be empty)

Basin Temp .....Indicates that the basin temperature has not reached the programmed minimum

Cancel?.....Prompts the user to press the enter button to cancel a cycle

Clear Sys Alarm? .....Diagnostic 70: prompts the user to press the enter button to clear a system alarm (such as a NVRAM error)

Dis Disabled.....Indicates that the disinfectant count "10 cycles remaining" warning was acknowledged

Dis Expired .....Indicates that the maximum disinfectant count has been reached, no more cycles can be performed before changing disinfectant

Dis Warning .....Indicates that the disinfectant count "10 cycles remaining" warning has been reached

Flash High Error .....Indicates that the high code flash CRC test did not pass

Flash Low Error.....Indicates that the low code flash CRC test did not pass

Flo Disabled.....Indicates that the fluid flow sensor was disabled

Flow Sen Err .....Indicates that the flow sensor is reporting flow at the start of a cycle (no flow should be occurring)

Hi Disabled .....Indicates that the high reservoir level sensor was disabled

High Dis Res.....Indicates that the reservoir level is too high and should be reduced

Lid ajar .....Indicates that the cover (lid) is open during a cycle

Lid Disabled.....Indicates that the cover (lid) opened sensor was disabled

Low Alcohol .....Indicates that the alcohol level is low

Low Chamber .....Indicates that the basin level did not reach the level sensor in time

Low Det. .....Indicates that the detergent level is low

Low Dis Res .....Indicates that the reservoir level is too low and that more should be added

Low Disabled ..... Indicates that the low reservoir level sensor was disabled

Low Res Err ..... Indicates that the reservoir level sensor did not indicate low in time during a disinfectant dump

No Air Flow ..... Indicates that no air flow was detected

No Fluid Flo ..... Indicates that no fluid flow was detected

NVRAM Err ..... Non-Volatile RAM error, can only be cleared in Diagnostics 70

Power on..... Indicates that the device lost power during a cycle

RAM Error ..... RAM error, can only be cleared in Diagnostics 70

Res T High ..... Indicates that the temperature of the reservoir has exceeded the maximum

Res T Low ..... Indicates that the temperature of the reservoir is below the minimum for safe disinfection

Reset Alarms? ..... Prompts the user to press the enter button to cancel an alarm

Sheath Fail ..... Indicates that the sheath test failed

Shth Sen Err ..... Indicates that the sheet tester measured pressure at the start of a cycle

SNVRAM Err..... Short Non-Volatile RAM error, can only be cleared in Diagnostics 70

Sta Not Idle..... Indicates that the selected operation can not be performed because the station is not currently idle

Sth Disabled ..... Indicates that the sheath (leak) tester was disabled

Time Err ..... Timebase error, can only be cleared in Diagnostics 70

Diagnostic Messages

Adjust Alarm.....Diagnostic 27: prompts the user to adjust the alarm volume.

Air Sen Enable:.....Diagnostic 40: prompts the user to enable / disable the air flow sensor.

Alc. Sen Enable.....Diagnostic 47: prompts the user to enable / disabled the alcohol level sensor.

Auto Dis. Option.....Diagnostic 88: prompts the user to enable / disable the waterline disinfect option.

Bas. Temp Enable .....Diagnostic 49: prompts the user to enable / disable the basin temperature sensor.

Basin Sen Enable: .....Diagnostic 42: prompts the user to enable / disable the basin level sensor.

Basin Temp. Cal.....Diagnostic 31: indicates that the DSD is in basin calibration mode.

Contrast adj .....Diagnostic 26: prompts the user to press the enter button to adjust the LCD contrast.

Count down from .....Diagnostic 24: indicates that the DSD is performing a counter test.

CVR Sen Enable: .....Diagnostic 41: prompts the user to enable / disable the cover (lid) open sensor.

Cycle Count .....Diagnostic 91: indicates that the DSD total cycle counts are being displayed.

Det. Sen Enable.....Diagnostic 48: prompts the user to enable / disable the detergent level sensor.

Diagnostics.....Indicates that the DSD is in diagnostic mode.

FLO Sen Enable:.....Diagnostic 40: prompts the user to enable / disable the fluid flow sensor.

Heat Option.....Diagnostic 88: prompts the user to enable / disable the heated reservoir option.

Input Code: .....Prompts the user to enter the diagnostic entry password.

Input S/N major .....Diagnostic 82: prompts the user to enter the most significant two digits of the serial number.

Input S/N minor .....Diagnostic 82: prompts the user to enter the least significant two digits of the serial number.

Key Code..... Diagnostic 25: indicates that the following number is the ID number of the key just pressed.

Language:..... Diagnostic 80: prompts the user to select a user language.

Max dis..... Diagnostic 71: Prompts the user to enter the maximum number of disinfectant cycles allowed.

Max. Res. Temp ..... Diagnostic 74: Prompts the user to enter the maximum temperature the reservoir is allowed to be to minimize vapors.

Min. Bas. Temp ..... Diagnostic 74: Prompts the user to enter the minimum temperature the basin has to be for disinfection.

Previous Key ..... Diagnostic 25: indicates that the following number is the ID number of the key pressed before.

Prog. Flash?..... Diagnostic 85: prompts the user to press the enter button to start programming.

Programming..... Diagnostic 85: indicates that the program update is in progress.

Recirc Option ..... Diagnostic 88: prompts the user to enable / disable the recirculation option.

Res High Enable:..... Diagnostic 44: prompts the user to enable /disable the high reservoir sensor.

Res High Temp En ..... Diagnostic 49: prompts the user to enable / disable the reservoir high temperature monitor.

Res Low Enable: ..... Diagnostic 43: prompts the user to enable / disable the low reservoir sensor.

Res Low Temp En..... Diagnostic 49: prompts the user to enable / disable the reservoir low temperature monitor.

Res. Temp. Cal. ..... Diagnostic 32: indicates that the DSD is in reservoir calibration mode.

Reset programs?..... Diagnostic 72: prompts the user to press the enter button to clear all user programs.

Set A purge Secs ..... Diagnostic 63: prompts the user to enter the air purge time in seconds.

Set D Drain Secs ..... Diagnostic 61: prompts the user to enter the disinfectant drain time in seconds.

Set D Fill Secs:..... Diagnostic 62: prompts the user to enter the disinfectant fill time in seconds.

Set D Pulse Secs .....Diagnostic 64: prompts the user to enter the disinfectant pulse time in seconds.

Set D Top Secs.....Diagnostic 67: prompts the user to enter the disinfectant top-off time in seconds.

Set Dis. Hold.....Diagnostic 69: prompts the user to enter the water line disinfectant hold time in hours and minutes.

Set Extra Air .....Diagnostic 65: prompts the user to enter the add extra air time in seconds.

Set F purge Secs.....Diagnostic 63: prompts the user to enter the fluid purge time in seconds.

Set Idle State? .....Diagnostic 89: prompts the user to press the enter button to jump to the idle state.

Set P Drain Secs.....Diagnostic 66: prompts the user to enter the short rinse partial drain time in seconds.

Set P Fill Secs .....Diagnostic 66: prompts the user to enter the short rinse partial fill time in seconds.

Set R Drain Secs .....Diagnostic 61: prompts the user to enter the rinse drain time in seconds.

Set R Fill Secs:.....Diagnostic 62: prompts the user to enter the rinse fill time in seconds.

Set R Rinse Secs .....Diagnostic 68: prompts the user to enter the short rinse recirc time in seconds.

Set R Top Secs .....Diagnostic 67: prompts the user to enter the rinse top-off time in seconds.

Set Temp. to 10C.....Diagnostic 31 and 32: prompts the user to set the thermistor to 10C.

Set Temp. to 30C.....Diagnostic 31: prompts the user to set the thermistor to 30C.

Shth Sen Enable:.....Diagnostic 45: prompts the user to enable / disable the sheath (leak) tester option.

Temp Option .....Diagnostic 88: prompts the user to enable / disable the temperature monitoring option.

Testing Sensors .....Diagnostic 94: indicates that the current sensor values are being displayed.

Time Limit: .....Diagnostic 81: prompts the user to enter the programmable time limits.

Log Messages

Add Air..... Indicates that an add air cycle was run.

Add Air On..... Indicates that as Add Air cycle will be added at the end of the current cycle.

Add Air Off..... Indicates that as Add Air cycle will not be added at the end of the current cycle.

Air ..... Notes when the air portion of a cycle occurred.

Attach Restrictor ..... Prompts the user to attach the restrictor adapter.

Auto Dis. ..... Indicates that an auto water line disinfectant cycle was run.

Disinfect ..... Notes when the disinfectant portion of a cycle occurred.

Dump Dis. ..... Indicates that a dump disinfectant cycle was run.

Load Dis. ..... Indicates that a load disinfectant cycle was run.

Low Alcohol ..... Indicates that the alcohol level is low.

Machine ID..... The serial number of the DSD-201.

No Air Flow ..... Indicates that no air flow was detected.

No Fluid Flo ..... Indicates that no fluid flow was detected.

Operator ..... Enter the operator ID number.

Patient ..... Enter the patient ID number.

Physician ..... Enter the physician ID number.

Power on..... Indicates that the device lost power during a cycle.

Res T High ..... Indicates that the temperature of the reservoir has exceeded the maxi.mum

Res T Low ..... Indicates that the temperature of the reservoir is below the minimum for save disinfection.

Resume ..... Indicates when a cycle was resumed.

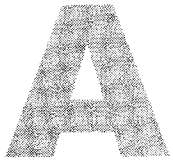
Rinse 1 ..... Notes when the Rinse 1 portion of a cycle occurred.

Rinse 2 ..... Notes when the Rinse 2 portion of a cycle occurred.

Rinse 3 ..... Notes when the Rinse 3 portion of a cycle occurred.

S/N..... Indicates the machine serial number.

Scope ..... Enter the scope ID number.



Sheath Fail .....Indicates that the sheet test failed.

Sheath Test.....Notes when the sheath test portion of a cycle occurred.

Shth Sen Err.....Indicates that the sheet tester measured pressure at the start of a cycle.

Start.....Indicates when a cycle was started.

Sth Disabled.....Indicates that the sheath (leak) tester was disabled.

Stop .....Indicates when a cycle was manually stopped.

Temp = ...Indicates the basin temperature at the beginning and end of the disinfect phase.

Glossary of Terms

basin ..... chamber into which the endoscope is placed for disinfection.

cleaning ..... physical removal of organic debris from an endoscope.

control panel..... operator interface used to program and operate the reprocessor.

custom program..... disinfection program other than the default program.

cycle ..... sequence of phases in the disinfection process: detergent flush, basin fill, disinfection, rinse, alcohol purge, and air purge.

default program ..... disinfection cycle program supplied with the reprocessor.

disinfection procedure..... pre-programmed series of phases that collectively constitute a specified disinfection protocol.

function ..... any operation other than a disinfection program, example: disinfectant dump function.

high-level disinfection..... process defined by the CDC that destroys all vegetative bacteria, viruses, and fungi, but not necessarily all bacterial endospores.

idle state ..... standby operating state during which no program cycles or other functions are in progress.

MRC..... Minimum Recommended Concentration.

phase..... specific portion of a disinfection cycle.

reservoir..... container that holds disinfectant, alcohol, or detergent.

restrictor adapter..... used to simulate a scope during certain operations. This part is supplied with the reprocessor installation kit.

running state ..... operating state during which a program is in progress, or some other function is occurring (i.e., any state other than idle or stop).

station ..... part of the system used to disinfect a single endoscope. The station includes the basin, fluid reservoir, valves, hoses, pump, and compressor.

status indicator ..... blinking symbol on the control panel display indicating the current operating state.

status log..... stored record of recent disinfection cycles containing usage history, error status, and processed endoscope serial numbers.

stop state..... operating state during which a disinfection protocol is in progress, but the current cycle is suspended.

Specifications

Chassis Dimensions (height x width x depth) Height with lid open	46x36x21 inches (117x91x53 cm) 64 inches (162.5 cm)
Weight (approx.)	400 lbs. (181 kg)
Power Cord	Hospital grade – 8 feet (2.5m)
Altitude	<15,000 feet (4,572m)
Humidity	20% to 80%, non-condensing
Temperature	80°F ± 20° (27°C ± 10°)
Mains Supply Voltage Fluctuations	Not to exceed ±10% of the nominal voltage
Installation Over Voltage Category	II
Classification	I, Ordinary Protection
Electrical Requirements	230 VAC 50/60 Hz, 6 amp, 1ϕ 120 VAC 60 Hz, 12 amp, 1ϕ
Water Requirements	Potable water from building (cold water supply). 35-40psi (2.4 - 2.75bar) at regulator. Water temperature maximum: 110°F (43°C)
Rinse Water Consumption	Approx. 10 gallons (39 liters) per cycle
Designed for Use	Indoor
Environmental Rating	Standard
Pollution Degree	2
Mode of Operation	Continuous
Degree of Mobility	Stationary
Waste Drain	The reprocessors drain is 25 inches (60cm) above the floor. Because the reprocessor uses a gravity system there must be at least a 3 inch (25mm) drop from the reprocessor over 36 inches (30cm) for proper draining.
Capacities	Disinfectant reservoir: 15 liters Basin: 11 liters. Alcohol and detergent reservoirs: 800ml each
Disinfectant Compatibilities	Contact your local distributor for compatible reprocessing chemicals.
Internal Heater	Ambient temperature to 125°F (52°C)

Disinfection Cycle Chart

Legend

Factory Set: These settings can be changed by accessing the Diagnostics Menu.

Hard Coded: These setting cannot be changed.

User Programmable: These setting can be changed by the user without accessing the Diagnostics Menu.

Phase	Option	Description	Default	Typical	Min. Limit	Max. Limit	Setting	State #	Function #
Start-Up	Leak	Inflate scope with air	20 sec	20 sec	----	----	Hard Coded	3	
		Test for major air leak in the scope	20 sec	20 sec	----	----	Hard Coded	4	

Wash Soak		Detergent injection	3 sec	3 sec	0 sec	59 sec	User Programmable	5	Setup 5 Detergent Inject
		Endoscope channel flush with detergent and water	30 sec	30 sec	----	----	Hard Coded	6	
		Basin fill minimum (level sensor ignored)	90 sec	90 sec	0	999	Factory Set	7	Diag 62
		Basin fill balance (sensor monitored)	5 min	10 sec	---	---	Hard Coded	8	
		Top off	30 sec	30 sec	0 sec	999 sec	Factory Set	9	Diag. 67
	Re-circ	Scope soaks in the basin. Basin fluid circulates through channels	60 sec	60 sec	0 sec	99m:59 s	User Programmable	10 or 11	Setup 5 Soak
		Drains the basin while flushing the scope channels	60 sec	60 sec	0 sec	999 sec	Factory Set	12	Diag 61
		Drains the rest of the fluid	30 sec	30 sec	----	----	Hard Coded	13	
		Air purge through chamber line	5 sec	5 sec	----	----	Hard Coded	14	
	Re-circ	Air purge through recirculation lines	10 sec	10 sec	---	---	Hard Coded	15	
		Endoscope channel air purge	30 sec	30sec	0 sec	999 sec	Factory Set	16	Diag 63
		Clear air lines	5 sec	5 sec	----	----	Hard Coded	17	

Phase	Option	Description	Default	Typical	Min. Limit	Max. Limit	Setting	State #	Function #
Rinse Soak		Endoscope channel flush	30 sec	30 sec	----	----	Hard Coded	18	
		Basin fill minimum (level sensor ignored)	90 sec	90 sec	0	999	Factory Set	19	Diag 62
		Basin fill balance (sensor monitored)	5 min	10 sec	---	---	Hard Coded	20	
		Top off	30 sec	30 sec	0 sec	999 sec	Factory Set	21	Diag. 67
	Re-circ	Water flows through scope channel or recirculation is active.	60 sec	60 sec	0 sec	99m:59 s	User Programmable	22 or 23	Setup 5 Soak Rinse
		Drains the basin while flushing the scope channels	60 sec	60 sec	0 sec	999 sec	Factory Set	24	Diag. 61
		Drains the rest of the fluid	30 sec	30 sec	----	----	Hard Coded	25	
		Air purge through chamber line	5 sec	5 sec	----	----	Hard Coded	26	
	Re-circ	Air purge through recirculation lines	10 sec	10 sec	---	---	Hard Coded	27	
		Endoscope channel air purge	30 sec	30sec	0 sec	999 sec	Factory Set	28	Diag 63
		Clear air lines	5 sec	5 sec	----	----	Hard Coded	29	
Flush		Detergent injection	3 sec	3 sec	0 sec	59 sec	User Programmable	30	Setup 5 Detergent Inject
		Endoscope channel flush with detergent and water	30 sec	30 sec	0 sec	99m:59 s	User Programmable	31	Setup 5 Flush
		Air purge through chamber line	5 sec	5 sec	----	----	Hard Coded	32	
	Re-circ	Air purge through recirculation lines	10 sec	10 sec	---	---	Hard Coded	33	
		Endoscope channel air purge	30 sec	30sec	0 sec	999 sec	Factory Set	34	Diag. 63
		Clear air lines	5 sec	5 sec	----	----	Hard Coded	35	

Phase	Option	Description	Default	Typical	Min. Limit	Max. Limit	Setting	State #	Function #
Disinfect		Endoscope channel flush with disinfectant	30 sec	30 sec	----	----	Hard Coded	36	
		Basin fill minimum (level sensor ignored)	70 sec	70 sec	0	999 sec	Factory Set	37	Diag 62
		Basin fill balance (sensor monitored)	2 min	10 sec	---	---	Hard Coded	38	
	Re-circ	Finishing the disinfectant fill (D Top off)	15 sec	15 sec	0 sec	999 sec	Factory Set	39	Diag 67
		Stabilize the temperature and the level in the basin. Pulse the chamber valve open/closed	15 sec	15 sec	0 sec	999 sec	Factory Set	40	Diag 64
	Re-circ	Disinfectant soak while scope channels are flushed with disinfectant	20 min	20 min	0 min	99m:59 s	User Programmable	41 or 42	Setup 5 Disinfectant Soak
		Disinfectant drain	90 sec	90 sec	0 sec	999 sec	Factory Set	43	Diag. 61
		Air purge through chamber line	5 sec	5 sec	----	----	Hard Coded	44	
		Air purge through re-circulation lines	10 sec	10 sec	----	----	Hard Coded	45	
		Endoscope channel air purge	30 sec	30sec	0 sec	999 sec	Factory Set	46	Diag. 63
		Clear air lines	5 sec	5 sec	----	----	Hard Coded	47	
Rinse 1		Flush endoscope channels while draining	30 sec	30 sec	0 sec	999 sec	Factory Set	57	Diag. 63
		Partially fill the basin with water	30 sec	30 sec	0 sec	999 sec	Factory Set	58	Diag. 66
	Re-circ	Re-circulation time	15 sec	15 sec	0 sec	999 sec	Factory Set	59	Diag. 68

Phase	Option	Description	Default	Typical	Min. Limit	Max. Limit	Setting	State #	Function #
Rinse 1 (cont'd)		Partial Drain time	30 sec	30 sec	0 sec	999 sec	Factory Set	60	Diag. 66
		Basin fill minimum (level sensor ignored)	90 sec	90 sec	0	999	Factory Set	61	Diag 62
		Basin fill balance (sensor monitored)	5 min	10 sec *	---	---	Hard Coded	62	
		Top off	30 sec	30 sec	0 sec	999 sec	Factory Set	63	Diag. 67
	Re-circ	Replenish with fresh water, or re-circulation is active.	4 min	4 min	0 min	99m:59 s	User Programmable	64 or 65	Setup 5 Rinse 1
		Drain the basin while flushing the scope channels	60 sec	60 sec	0 sec	999 sec	Factory Set	66	Diag. 61
		Drain	30 sec	30 sec	----	----	Hard Coded	67	
		Air purge through chamber line	5 sec	5 sec	----	----	Hard Coded	68	
	Re-circ	Air purge through re-circulation lines	10 sec	10 sec	---	---	Hard Coded	69	
		Endoscope channel air purge	30 sec	30sec	0 sec	999 sec	Factory Set	70	Diag. 63
		Clear air lines	5 sec	5 sec	----	----	Hard Coded	71	

Rinse 2		Endoscope channel flush with water	30 sec	30 sec	0 sec	999 sec	Factory Set	72	Diag. 63
		Basin fill minimum (level sensor not monitored)	90 sec	90 sec*	0 sec	999 sec	Factory Set	73	Diag. 62
		Basin fill balance (sensor monitored)	5 min	10 sec *	---	---	Hard Coded	74	
		Top off	30 sec	30 sec	0 sec	999 sec	Factory Set	75	Diag. 67
	Re-circ	Replenish with fresh water, or re-circulation is active.	4 min	4 min	0 min	99m:59 s	User Set	76 or 77	Setup 5 Rinse 2
		Drain the basin while flushing the scope channels	60 sec	60 sec	0 sec	999 sec	Factory Set	78	Diag. 61
		Drain	30 sec	30 sec	----	----	Hard Coded	79	
		Air purge through chamber line	5 sec	5 sec	----	----	Hard Coded	80	
	Re-circ	Air purge through re-circulation lines	10 sec	10 sec	---	---	Hard Coded	81	
		Endoscope channel air purge	30 sec	30sec	0 sec	999 sec	Factory Set	82	Diag. 63
		Clear air lines	5 sec	5 sec	----	----	Hard Coded	83	

Rinse 3		Endoscope channel flush with water	30 sec	30 sec	0 sec	999 sec	Factory Set	84	Diag. 63
		Basin fill minimum (level sensor not monitored)	90 sec	90 sec*	0 sec	999 sec	Factory Set	85	Diag. 62
		Basin fill balance (sensor monitored)	5 min	10 sec *	---	---	Hard Coded	86	
		Top off	30 sec	30 sec	0 sec	999 sec	Factory Set	87	Diag. 67
	Re-circ	Replenish with fresh water, or re-circulation is active.	4 min	4 min	0 min	99m:59 s	User Set	88 or 89	Setup 5 Rinse 3
		Drain the basin while flushing the scope channels	60 sec	60 sec	0 sec	999 sec	Factory Set	90	Diag. 61
		Drain	30 sec	30 sec	----	----	Hard Coded	91	
		Air purge through chamber line	5 sec	5 sec	----	----	Hard Coded	92	
	Re-circ	Air purge through re-circulation lines	10 sec	10 sec	---	---	Hard Coded	93	
		Endoscope channel air purge	30 sec	30sec	0 sec	999 sec	Factory Set	94	Diag. 63
		Clear air lines	5 sec	5 sec	----	----	Hard Coded	95	

Phase	Option	Description	Default	Typical	Min. Limit	Max. Limit	Setting	State #	Function #
Alcohol		Alcohol dispensing into manifold	10 sec	10 sec	0 sec	59 sec	User Set	96	Setup 5 Alcohol Inject
		Endoscope channel alcohol purge	0 sec	0 sec	0 sec	99m:59 s	User Set	96	Setup 5 Alcohol
		Clear air lines	5 sec	5 sec	----	----	Hard Coded	98	
Air		Air purge through chamber line	5 sec	5 sec	----	----	Hard Coded	99	
	Re-circ	Air purge through re-circulation lines	10 sec	10 sec	---	---	Hard Coded	100	
		Endoscope channel air purge	3 min	3 min	0 sec	99m:59 s	User Set	101	Setup 5 Air
		Clear air lines	5 sec	5 sec	----	----	Hard Coded	102	

1- The minimum Disinfectant Soak time (state 41 or 42) is dependant on the "time limit" set in the diagnostics mode
2- The time in the Typical column where an * symbol is indicated, is subject to how fast the basin fills. An alarm will occur is default time is reached.
3- Selecting zero time during Setup 5 will cancel all accompanying states in the phase.
4- The "flush" message is displayed in the Phase column indicates that the state is only active when the Soak time is set to zero.
5- States with a leak test option are active if the unit is provided with the Leak Tester and the sheath sensor is enabled in the diagnostics mode.
6- States with a recirc message displayed in the option column indicates that the recirculating pump is active during the state if the DSD has the recirculation option.

Custom Program Reference Chart

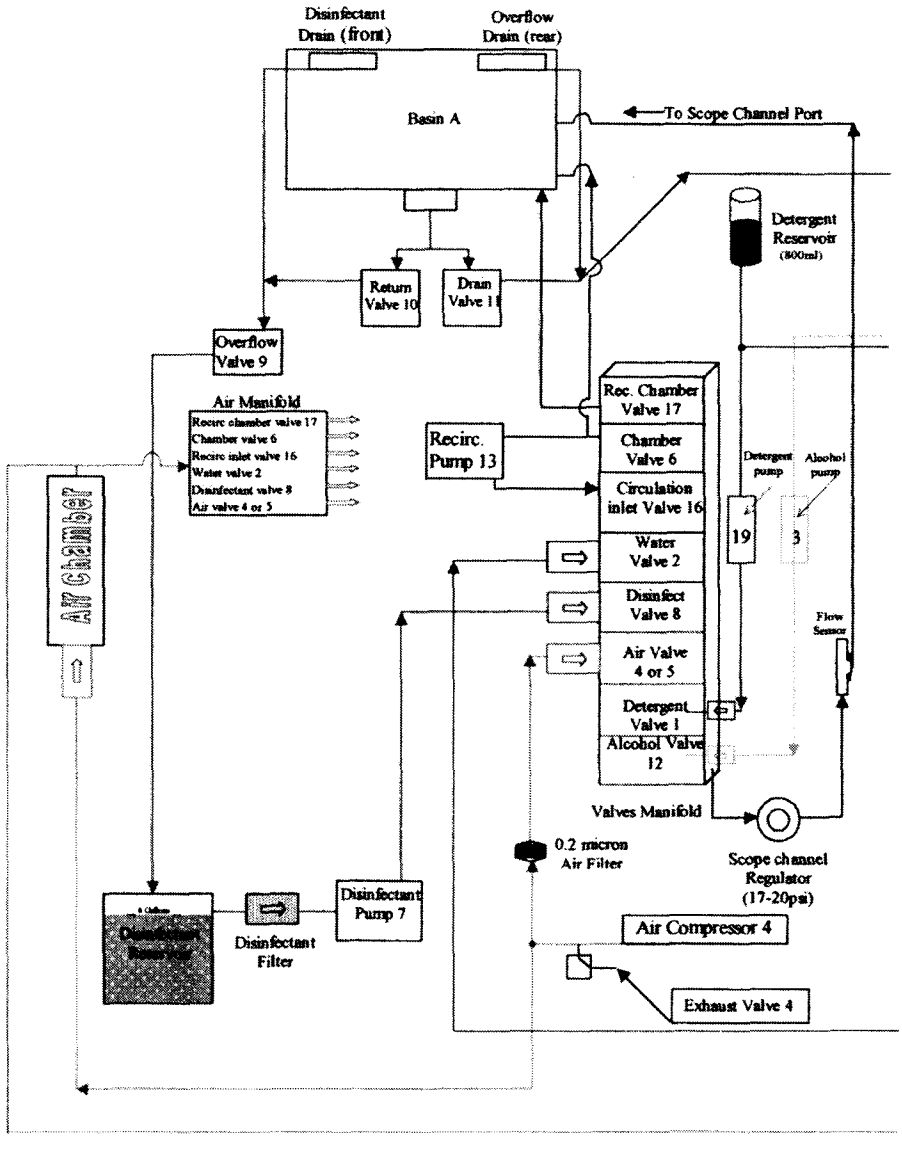
Complete the chart as a reference for custom program settings.

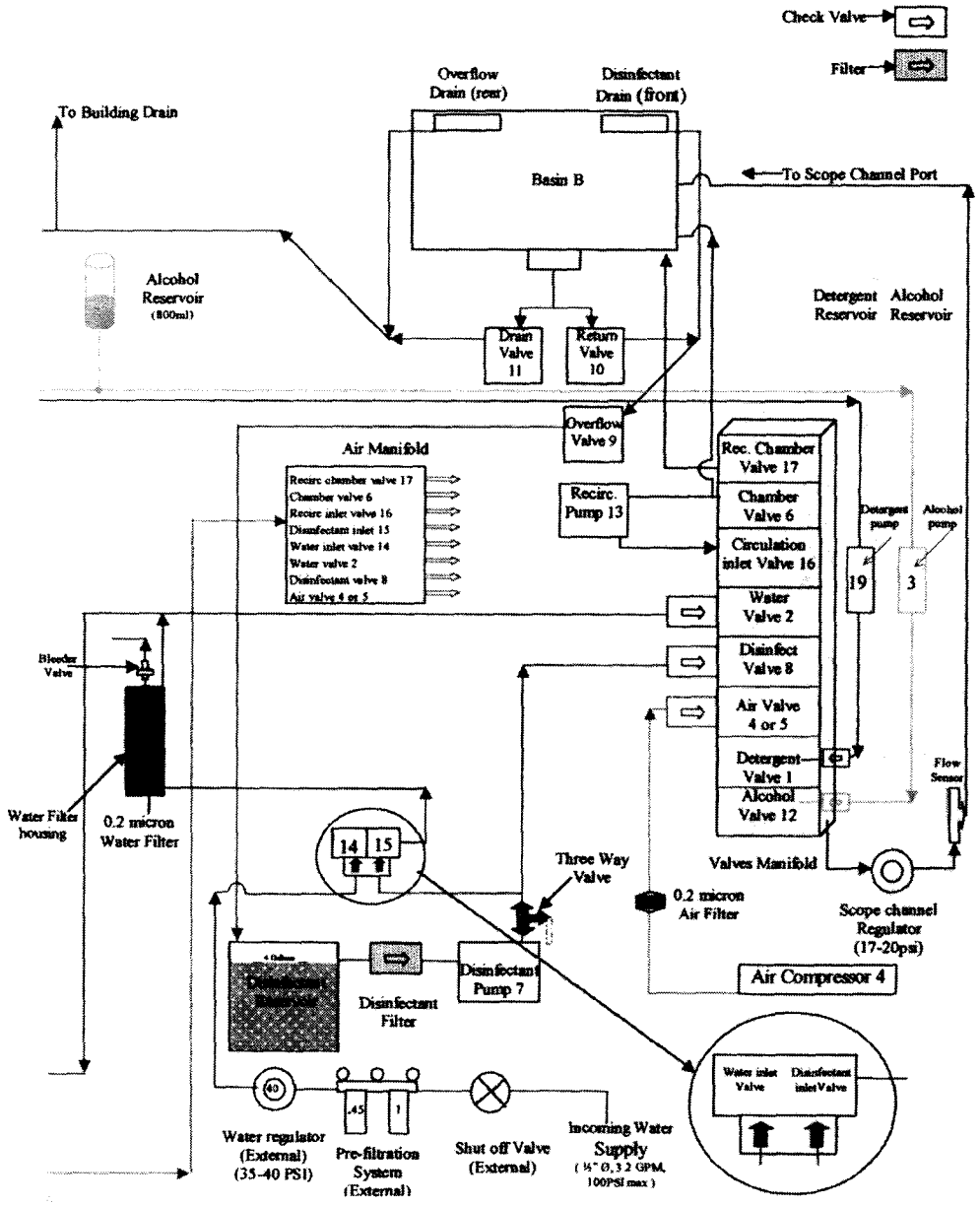
Phase	Program 0 (default)	Program 1	Program 2	Program 3	Program 4
Soak	00:00				
Soak Rinse	00:00				
Flush	00:30				
Detergent Inject	00:03				
Disinfect Soak	20:00				
Rinse 1	00:30				
Rinse 2	00:30				
Rinse 3	00:00				
Alcohol	00:00				
Alcohol Inject	00:10				
Air Dry	01:00				

Phase	Program 5	Program 6	Program 7	Program 8	Program 9
Soak					
Soak Rinse					
Flush					
Detergent Inject					
Disinfect Soak					
Rinse 1					
Rinse 2					
Rinse 3					
Alcohol					
Alcohol Inject					
Air Dry					

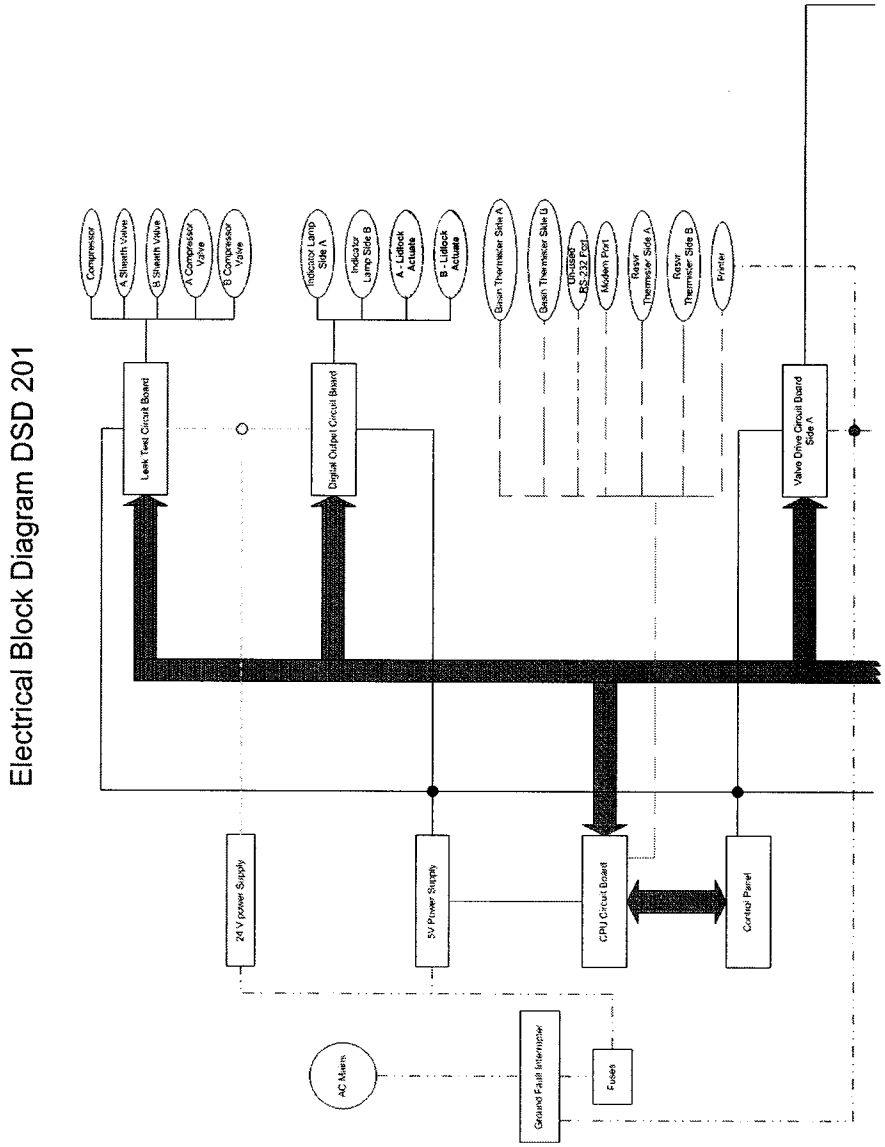
A

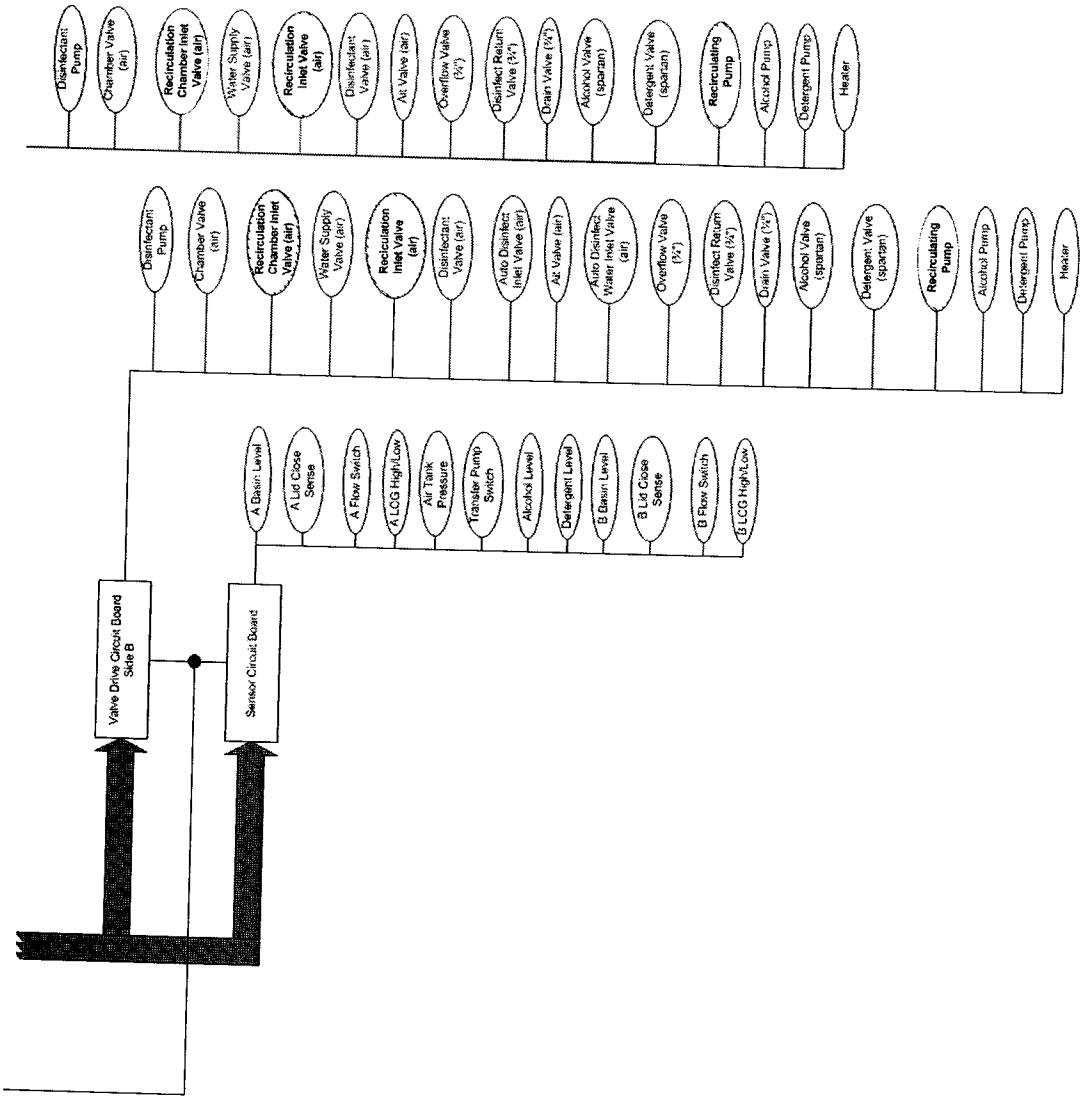
Flow Diagram




Check Valve
Filter
Overflow Drain (rear)
Disinfectant Drain (front)
To Building Drain
Basin B
To Scope Channel Port
Alcohol Reservoir (800ml)
Detergent Reservoir
Alcohol Reservoir
Drain Valve 11
Return Valve 10
Overflow Valve 9
Air Manifold
Recirc chamber valve 17
Chamber valve 6
Recirc inlet valve 16
Disinfectant inlet 15
Water inlet valve 14
Water valve 2
Disinfectant valve 8
Air valve 4 or 5
Rec. Chamber Valve 17
Recirc. Pump 13
Chamber Valve 6
Circulation inlet Valve 16
Detergent pump
Alcohol pump
19
3
Water Valve 2
Disinfect Valve 8
Air Valve 4 or 5
Detergent Valve 1
Alcohol Valve 12
Flow Sensor
Bleeder Valve
Water Filter housing
0.2 micron Water Filter
14
15
Three Way Valve
Valves Manifold
0.2 micron Air Filter
Scope channel Regulator (17-20psi)
Air Compressor 4
Disinfectant Pump 7
Disinfectant Filter
40
45
1
Water regulator (External) (35-40 PSI)
Pre-filtration System (External)
Shut off Valve (External)
Incoming Water Supply
Water inlet Valve
Disinfectant inlet Valve

Electrical Block Diagram





Setups

DSD-201 Endoscope Reprocessor Setup	
1	Load Disinfectant from Basin
2	Set Date
3	Set Time
4	Display Software Version
5	Input Program
6	Water Line Disinfect
7	Disinfectant Warning Inhibit
8	Display Log Information
9	Disable Logging
10	Clear Log
11	Clear Disinfectant Cycle Count
13	Display Temperatures
14	Set Heater On Time
15	Set Heater Off Time
16	Display Disinfectant Cycle Count
17	Display Time Remaining
18	Display State Time
21	Print Entire Log
25	Print Last Run
28	Set Delayed Start Time
29	Set Delayed Start Enable
33	Set Automatic Printing Enable
88	Enter Diagnostics Menu: input code 135

Diagnostic Menu

DSD-201 Endoscope Reprocessor Diagnostic Functions			
0	Close all valves. All motors OFF.	26	Adjust LCD contrast
1	Activate detergent valve.	27	Adjust alarm volume
2	Activate water valve.	28	Lock cover (optional)
3	Activate alcohol pump.	29	Unlock cover (optional)
4	Activate air system (compressor and valve).	30	-- not used--
5	Activate air valve.	31	Adjust basin temp
6	Activate chamber valve	32	Adjust reservoir temp
7	Activate disinfectant pump.	33	-- not used--
8	Activate disinfect supply valve.	34	-- not used--
9	Activate disinfect overflow valve.	35	-- not used--
10	Activate disinfect return valve.	36	-- not used--
11	Activate drain valve.	37	-- not used--
12	Activate alcohol valve	38	-- not used--
13	Activate re-circulation pump (optional)	39	-- not used--
14	Activate water inlet valve	40	Fluid flow sense inhibit
15	Activate disinfectant inlet valve	41	Cover sense inhibit
16	Activate re-circulation inlet valve	42	Basin level sense inhibit
17	Activate re-circulation chamber valve (optional)	43	Reservoir low level sense inhibit
18	Activate valves incrementally.	44	Reservoir high level sense inhibit
19	Activate detergent pump	45	Sheath sense inhibit
20	Activate station A LED's	46	Disinfectant warning inhibit
21	Activate station B LED's	47	Set alcohol sense enable
22	Activate system LED's	48	Set detergent sense enable
23	LCD test pattern	49	Set temperature monitor enable
24	Write counter to display	50	Turn leak tester off
25	Test keypad		

DSD-201 Endoscope Reprocessor Diagnostic Functions			
51	Activate sheath valve	76	--not used--
52	Activate leak test compressor valve	77	--not used--
53	Activate leak test compressor	78	--not used--
54	Turn off all valves and reset latches	79	Enable All Sensors
55	Turn off sheath compressor	80	Set language
56	Activate sheath test	81	Set time limit
57	Activate sheath hold	82	Set serial number
58	--not used--	83	Program low flash
59	--not used--	84	Program high flash
60	Set default program	85	Program entire flash
61	Set rinse and disinfectant drain times	86	Initialize NVRAM
62	Set rinse and disinfectant fill times	87	Disable all sensors
63	Set fluid and air purge timse	88	Set options
64	Set disinfectant pulse time	89	Set station idle
65	Set add air time	90	Display inputs
66	Set partial rinse fill and drain times	91	Display cycle count
67	Set rinse and disinfectant top-off times	92	--not used--
68	Set re-circulation rinse time	93	Display temps
69	Set automatic disinfect hold time	94	Test sensors
70	Reset system alarm	95	Test sheath tester
71	Set maximum disinfectant cycle count	96	--not used--
72	Reset programs	97	--not used--
73	Clear disinfectant counter	98	--not used--
74	Set maximum reservoir temp	99	--not used--
75	Set minimum basin temp		

I. LIMITED WARRANTY.

A. **WARRANTY.** Medivators Reprocessing Systems warrants to the distributor (and to no other person) that the products (as such term is defined in the distributor agreement), with the exclusion of accessories as defined in b below, and the component parts thereof, distributed or manufactured by Medivators Reprocessing Systems, shall be free from defects in workmanship and materials (the "warranty") for a period of fifteen (15) months after the date of shipment of the product by Medivators Reprocessing Systems to distributor (the "warranty period").

B. **ACCESSORIES.** Accessories including, but not limited to, printer and hook-ups have a 90 day warranty.

II. LIMITATIONS OF LIABILITIES AND DISCLAIMER OF WARRANTIES.

A. **MEDIVATORS REPROCESSING SYSTEMS OBLIGATION.** Medivators Reprocessing Systems sole obligation in the case of any breach of the warranty, shall be, at Medivators Reprocessing Systems option, to repair or replace the product without charge to distributor or to refund the distributor's purchase price of the product. In order to recover under the warranty, distributor must send Medivators Reprocessing Systems written notice of the defect (describing the problem in reasonable detail) prior to the expiration of the warranty period and within thirty (30) days of discovery of the defect.

B. **RETURN PROCEDURE.** Upon receiving Medivators Reprocessing Systems official "return goods authorization" (RGA), distributor shall return the product to Medivators Reprocessing Systems, freight and insurance prepaid, for inspection. In the case of international shipment, contact Medivators Reprocessing Systems international customer service representative for shipping and customs broker instructions. Medivators Reprocessing Systems will not be responsible for damage due to improper packaging or shipment.

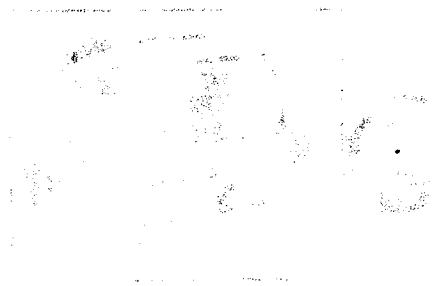
C. **REFUND, REPAIR OR REPLACEMENT.** If Medivators Reprocessing Systems determines in its sole reasonable discretion that the product contains defective workmanship or materials, Medivators Reprocessing Systems will refund to distributor the purchase price for the defective product or return the repaired product or a replacement product to distributor, freight and insurance prepaid, as soon as reasonably possible following receipt and inspection of the product by Medivators Reprocessing Systems. If Medivators Reprocessing Systems determines in its sole reasonable discretion that the product does not contain defective workmanship or materials, Medivators Reprocessing Systems will return the product to distributor, freight and insurance billed to distributor.

D. **VOIDING WARRANTY.** This warranty is voided immediately as to any product which has been repaired or modified by any person other than authorized employees or agents of Medivators Reprocessing Systems or which has been subjected to misuse, abuse, negligence, damage in transit, accident or neglect. Any and all modifications must be approved by the company.

E. **DISCLAIMER OF WARRANTY.** Except as provided in paragraph i(a), all products and accessories are being sold to distributor on an "as is" basis. The warranty provided in paragraph i(a) is intended solely for the benefit of distributor and Medivators Reprocessing Systems disclaims all other warranties, express or implied, including, but not limited to, any implied warranties of merchantability, fitness for a particular purpose and warranties arising from course of dealing and usage of trade. Notwithstanding the foregoing sentence, in the event an implied warranty is determined to exist, the period of performance by Medivators Reprocessing Systems thereunder shall be limited to one (1) year after the date of shipment of the product to distributor. No employee, representative or agent of Medivators Reprocessing Systems has any authority to bind Medivators Reprocessing Systems to any affirmation, representation or warranty except as stated in this written warranty policy.

F. **LIMITATION OF REMEDY.** Medivators Reprocessing Systems shall not be liable to any person for any indirect, special, incidental, or consequential damages, including, without limitation, lost profits or medical expenses, caused by the use or sale of the products, whether arising under warranty or other contract, negligence or other tort or other theory, the remedy provided in paragraph ii(a) hereof shall constitute distributor's sole remedy for breach of warranty.

Medivators Reprocessing Systems reprocessors were tested and validated with approved Medivators Reprocessing Systems filters. Medivators Reprocessing Systems is not responsible for cost of repairs associated with use of non-Medivators Reprocessing Systems approved filters.



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