Cavitron[®] 300 Series Ultrasonic Scaling System



Service Manual

Please read carefully and completely before operating unit.



THE DENTAL SOLUTIONS COMPANY™

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For the Cavitron 300 Series Ultrasonic Scaling System Instructions for Use (Form No. 82493), please visit: *www.dentsplysirona.com/ifu*

This section is meant for use by qualified Cavitron Service Technicians.

Symptom/Cause	Corrective Measures		
Cavitron [®] 300 Series scaler does not power up: touch screen does not illuminate:			
1. Faulty wall outlet.	1. Check wall outlet and if faulty take necessary corrective measures.		
2. Power cord not fully inserted into unit or wall outlet.	2. Ensure power cord is fully engaged.		
3. Damaged power cord.	3. Replace the power cord.		
4. Fuse F3 and/or F4 blown.	4. Replace internal fuses F3 and F4 with specified fuses.		
5. Damaged On/Off switch.	5. Replace the On/Off switch.		
Slo-Blo Fuses good. No power to circuitry:			
1. Unit is installed in a confined area (such as a cabinet), or is too close to a heat source to insure proper air circulation around unit.	1. Power Off scaler to allow the internal temperature to lower. Then provide adequate air circulation around unit.		
2. Power Supply malfunction.	2. Replace Power Supply assembly.		
Slo-Blo Fuse F3 and/or F4 Failed:			
1. Short in Power Supply assembly.	1. Replace the Power Supply assembly.		
2. Short in Power PC Board assembly.	2. Replace the Power PC Board assembly.		
Low insert scaling power or insert stops vibrating when contacting tooth surface:			
1. Insert malfunction.	1. Test with another Cavitron® insert. If test insert works properly, discard the original insert.		
2. Ultrasonic PC board(s) malfunction.	2. a. Return scaler to Dentsply Sirona Preventive SBU Product Service for factory certified service.		
	b. Refer to Dentsply Sirona Preventive SBU – Product Service SOP PS-00211.		

Symptom/Cause	Corrective Measures	
Intermittent scaling power or no scaling power:		
1. Insert malfunction.	1. Test with another Cavitron® insert. If test insert works properly, discard the original insert.	
2. Malfunction in Steri-Mate™ (360) Handpiece.	2. Replace Steri-Mate™ (360) Handpiece.	
3. Handpiece cable not seated in Scaler receptacle.	3. Handpiece cable plug must be fully inserted and seated in the receptacle.	
4. Bent or missing electrical pin in Steri-Mate™ (360) Handpiece.	4. Replace Steri-Mate™ (360) Handpiece.	
5. Open or intermittent wires in handpiece cable assembly.	 5. Install a working Steri-Mate[™] (360) Handpiece on the cable. Unplug the Handpiece cable plug at the scaler and check the continuity of the wires. a. Connect the ohmmeter between RED-GRN wire terminals. Flex the handpiece cable and check for intermittent readings. If the ohmmeter reading is not consistent or it is indicating an open circuit, the handpiece cable assembly is likely to be damaged and should be replaced. 	
6. Loose wiring or defective solder joint in the unit wiring	6. Troubleshoot the unit wiring and connectors.	
7. Foot Control batteries are weak.	7. a. Check display for Low Battery indication. Charge batteries if needed.	
	b. Connect an Auxiliary Foot Control cable between the Foot Control and the unit. The unit can be operated with the cable while the batteries charge. Full charge takes 4 hours.	
8. Foot Control not synchronized to the unit.	8. a. Follow the Cavitron [®] 300 Series scaler Directions for Use and Service Manual instructions for Foot Control synchronizing.	
	b. Connect the Auxiliary Foot Control cable between the Foot Control and scaler. Scaler can be operated with the cable until the Foot Control is synchronized.	
9. Foot Control powered Off. Low battery indicated on display.	9. Press and hold red Power button on Foot Control for 4 seconds.	
10. Foot Control malfunction.	10. Connect the Auxiliary Foot Control cable between the Foot Control and the unit. If the unit will not operate with the auxiliary cable connected, replace the Foot Control. Follow the Cavitron® 300 Series scaler Directions for Use and Service Manual instructions for Foot Control synchronizing.	

Symptom/Cause	Corrective Measures	
Handpiece heats up:		
1. Insufficient water to cool handpiece.	1. Increase the setting on the handpiece lavage control until handpiece runs cool.	
2. Air trapped in the handpiece.	2. When the inserts are installed in the handpiece, hold the handpiece in an upright position until the trapped air is removed and the water flows properly.	
3. Water filter is clogged with debris.	3. Replace the water filter.	
4. Insert water passageway clogged.	4. Replace the Cavitron® insert and check operation.	
5. Handpiece cable not supported during procedure.	5. Loop handpiece cable around arm or support with finger to prevent water restriction.	
6. Worn insert being used.	6. Replace with a new Cavitron [®] insert. Worn inserts require higher power settings producing more heat.	
7. Operatory water supply temperature is high.	7. Flush water system before use or use a DualSelect Dispenser as a water source.	
Insert vibrates but no water or insufficient water flows from the handpiece:		
1. Low incoming dental office water pressure.	1. Measure water pressure at dental office. Adjust incoming source water pressure to specification. Water pressure should be 20-40 psi.	
2. Water filter clogged. (Is Water Filter Icon lit?)	2. Replace the water filter when discolored or restriction occurs.	
3. Handpiece cable water tubing and wires twisted.	3. Remove restriction if possible or replace handpiece cable assembly.	
4. Damaged handpiece cable flow control.	4. Replace handpiece cable assembly.	
5. Obstruction or mineral deposits in the water system	5. a. Remove the insert and turn the handpiece flow control fully open. Observe the water flow. If the flow is good then the obstruction is in the insert.	
in the unit.	b. If the obstruction is not in the insert, then remove the handpiece water line at solenoid and check the water flow. If flow is good, then the obstruction is in handpiece tubing.	
6. Water Regulator / Solenoid out of adjustment.	6. Adjust water regulator pressure according to Dentsply Sirona Preventive SBU – Product Service SOP PS-00211.	
No water flow from handpiece without insert installed:		
1. High dental office water pressure.	1. Install a water pressure regulator on the main water supply line and reduce the pressure to 20-40 psi.	

Symptom/Cause	Corrective Measures		
Water spray from insert is not properly covering the operating area of the activated tip:			
1. Improper water flow adjustment.	1. Refer to "Cavitron® 300 Series Directions for Use" for instructions on water flow adjustment.		
2. Insert is partially clogged.	2. Replace the insert.		
Water drips from the handpiece when not operating:			
1. Water Regulator / Solenoid valve leaking due to trapped debris.	1. Try plugging the water supply hose into an air source to blow out the dirt. If the leak persists, replace the Water Regulator/Solenoid assembly. Be sure the external hose filter is installed.		
Water leak from the handpiece while in operation:			
1. O-ring worn on insert.	1. Replace the O-ring with genuine Cavitron® O-rings. O-rings are available in packs of 12. Green O-Rings P/N 62605, Black O-Rings P/N 62351.		
 Water leak in handpiece water tubing at handpiece or inside the Steri-Mate™ (360) Handpiece. 	 2. a. Unplug the Steri-Mate[™] (360) handpiece from the cable and replace the small O-ring on the connector. Part No. 79357 (12-Pack) b. Replace the Steri-Mate[™] (360) handpiece and/or cable assembly. 		
Water flow not controllable by turning the handpiece flow control knob:			
1. Handpiece flow control malfunction.	1. Replace Handpiece cable assembly.		
2. Malfunction of Water Regulator / Solenoid assembly.	2. Replace the Water Regulator / Solenoid valve assembly. Adjust the water regulator to specifications.		

Symptom/Cause	Corrective Measures	
Intermittent activation or no activation when stepping on the Foot Control:		
1. Foot Control batteries are	1. a. Check Foot Control battery condition as indicated by the battery display.	
weak.	b. Connect the Auxiliary Foot Control cable between the Foot Control and unit. The unit can be operated with the cable until the batteries are fully charged. Full charge will take two hours.	
2. Foot Control too far from Cavitron® 300 Series scaler unit.	2. The distance between the Foot Control and Scaler should be within 10 feet. Relocate Cavitron® 300 Series scaler unit.	
3. Foot control is not synchronized to the scaler.	3. a. Follow the Cavitron [®] 300 Series scaler Directions for Use and Service Manual instructions for Foot Control synchronization.	
	b. Connect the Auxiliary Foot Control cable between the Foot Control and the Scaler. The Scaler can be operated with the cable until the Foot Control is synchronized.	
	c. Replace the Foot Control. Follow the Cavitron® 300 Series scaler Directions for Use and Service Manual instructions for Foot Control Synchronization.	
Boost Power mode does not activate. Diagnostic Display does not indicate "Boost" mode:		
1. Foot Control not fully depressed.	1. Depress the Foot Control fully. The "Boost" indication should be displayed.	
2. The Foot Control is defective.	2. Replace the Foot Control. Follow the Cavitron® 300 Series Directions for Use and Service Manual instructions for Foot Control synchronization.	
Inserts cannot be installed in the handpiece properly:		
1. O-ring on the insert is dry.	1. Lubricate the O-ring with water. If the O-ring is swollen, worn or frayed replace it.	
2. Incorrect or damaged O-ring installed on the insert.	2. Replace the insert O-ring with Cavitron® O-rings. O-rings are available in packs of 12. Green O-Rings P/N 62605, Black O-Rings P/N 62351.	
3. Metal P-Style inserts cannot be used with Steri-Mate™ (360) handpieces.	3. Use Cavitron inserts with plastic or soft grips or use regular Steri-Mate™ handpieces.	
Inserts slide out of Steri- Mate™ (360) when scaling:		
1. Water Regulator / Solenoid set too high.	1. Adjust Water Regulator / Solenoid to specifications.	
2. Handpiece water flow set too high.	2. Set Handpiece water flow control to approximate 35 cc/min.	
3. Insert O-ring worn.	3. Replace O-rings.	

Symptom/Cause	Corrective Measures	
Purge mode does not activate:		
1. The Steri-Mate™ (360) is not installed on the handpiece cable assembly.	1. Install a Steri-Mate™ (360) on the handpiece cable assembly. Press the Purge icon.	
2. Open coil or connection on the Steri-Mate™ (360) handpiece.	2. Replace the Steri-Mate™ (360) with a known good handpiece. Press the Purge icon.	
3. Open connection on the handpiece cable assembly.	3. Replace the handpiece cable assembly. Press the Purge icon.	
4. Problem in the PC board(s).	4. Return the Cavitron® 300 Series scaler to Dentsply Sirona Preventive SBU Product Service for factory certified service.	
Service Indicator 1 is displayed in the upper left of the main screen:		
1. The Steri-Mate™ (360) is not installed on the end of the handpiece cable assembly.	1. Install the Steri-Mate™ (360) on the handpiece cable and activate the Foot Control.	
2. Open coil or connection on the Steri-Mate™ (360) handpiece.	2. Replace the Steri-Mate™ (360) with a known good one. Activate the Foot Control.	
3. Open connection on the handpiece cable assembly.	3. Replace handpiece cable assembly.	
4. Problem in the PC board(s).	4. Return Cavitron [®] 300 Series scaler to Dentsply Sirona Preventive SBU Product Service for factory certified service.	
Service Indicator 2 is displayed in the upper left corner of the main screen:		
1. Unit is installed in a confined area (such as a cabinet), or is too close to a heat source to insure proper air circulation around unit.	1. Provide adequate air circulation around unit. Service light will turn off when the unit returns to normal operating temperature.	
2. Problem on the PC board(s).	2. Return Cavitron [®] 300 Series scaler to Dentsply Sirona Preventive Product Service for factory certified service.	
Tap-On Technology is not working:		
1. The Foot Control was not tapped quickly.	1. If the Foot Control is not tapped quickly, the Tap-On Technology will not operate. It will operate in the conventional manner.	
2. Tap-On Technology is disabled.	2. Press and hold the Settings Icon for approximately two (2) seconds. On the Settings screen, press the Tap-On icon. Ensure icon indicates activation.	
3. The handpiece is in the handpiece holder.	3. A sensor in the handpiece holder prevents the Tap-On Technology from operating when the handpiece is in the holder.	
4. Insert is not secured in the handpiece.	4. Fully seat the insert.	

Symptom/Cause	Corrective Measures		
Ultrasonic power level cannot be changed by sliding finger along the touch screen:			
1. If the screen is dimmed, it may be locked.	1. Depress padlock icon at the lower left of the main screen to unlock.		
Ultrasonic Preset Power modes cannot be accessed:			
1. Preset Power icon not pressed properly.	1. Press center of Preset Power icon for positive activation.		
Ultrasonic Preset Power Modes cannot be changed:			
1. Power preset icons were not programmed properly.	1. Set desired power level by sliding the power level icon along the scale or tapping the scale where desired.		
	2. Press and hold the selected memory icon.		
	3. Wait for the audible signal. The power level should be indicated in the memory location icon.		
Purge mode cannot be activated:			
1. Purge Icon not depressed properly.	1. Be sure Purge Icon is depressed until activation. Screen will indicate the remaining Purge time and return to Main screen when completed.		
2. Foot Control is depressed.	2. Foot Control must be released to activate Purge function.		
3. Handpiece Lavage Control set too low.	3. Turn Lavage Control to maximum setting for better purge water flow. Inserts should also be removed.		
Rinse mode cannot be activated:			
1. Foot Control not depressed.	1. Foot Control must be depressed to begin the Rinse mode. The screen will indicate when Rinse mode is in operation.		

Symptom/Cause	Corrective Measures		
Sync cannot be activated:			
1. Synchronization sequence not performed correctly. Red	1. Follow Synchronization steps carefully. a. Press and hold Setting Icon.		
was not pressed for at least 3	b. Press Synchronization Icon.		
seconds.	c. Circular arrows will rotate in the lower left of the display.		
	d. Using a small object (ball point pen) press the red Sync button on the bottom of the Foot Control for at least 3 seconds.		
	e. An audible signal will be heard indicating successfully synchronization of the Foot Control and the scaler.		
2. Foot Control powered off.	 The Foot Control is packaged with the power OFF. The Foot Control must be turned ON prior to use. (The Foot Control will not charge in the OFF state.) a. The Power button must be pressed and held for 4 seconds to power ON the Foot Control. 		
	b. If the Foot Control power is OFF, pressing the Sync button or trying to Sync with the Scaler will not turn the Foot Control ON.		
Lock Icon cannot be activated:			
1. Icon not depressed correctly.	1. Lock / Unlock Icon must be pressed and held to activate. Screen should dim when it is locked.		
Cannot adjust display brightness:			
 Display brightness can only be adjusted in the Settings screen. 	1. Slide Brightness Icon up and down the scale to adjust. The brightness level percentage should be indicated on the screen.		
When not using the scaler for a while, the screen turned dark:			
1. Unit went into "Sleep Mode."	1. Unit will enter "Sleep Mode" when it is not used for 1 hour. Press anywhere on the display to resume operation.		
Water Filter Icon did not accurately indicate the condition of the filter:			
1. Water Filter Icon illuminates after 120 hours of actual scaling operation.	1. The Water Filter Icon's purpose is to remind the dental practitioner to replace the filter on a periodic basis.		

2. G310 Cavitron® 300 Series Scaler

DISASSEMBLY AND SERVICE PROCEDURES

This section is meant for use by qualified Cavitron Service Technicians.



CAUTION: THIS UNIT CONTAINS COMPONENTS WHICH ARE SUBJECT TO ELECTROSTATIC DAMAGE (ESD). THE WORKSTATION SURFACE AND REPAIR TECHNICIAN MUST BE PROPERLY GROUNDED PRIOR TO REMOVAL OF THE COVER.

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A. Top Cover and Touch Screen Removal:

- 1. Power OFF the Cavitron® 300 Series Scaler using the back panel rocker switch.
- 2. Unplug the power cord from the power entry module.
- 3. Disconnect the blue water hose by unplugging the quick disconnect at the supply. Depress the tip of the quick disconnect in a suitable container to relieve the water pressure. Then press in on the gray ring surrounding the blue water hose at the scaler and pull out the water hose.
- 4. If the Auxiliary Foot Control cable is being used, unplug it from the front of the unit.
- 5. Place the unit on a clean non-abrasive surface to prevent damage to the cabinet.
- Use a screwdriver and remove the two (2) #6 x 1/2" Hi-Lo Torx screws located at the lower corners of the back panel of the unit.
- 7. Turn the unit over. Use a screwdriver and remove the two (2) $\#6 \times 1/2"$ Hi-Lo Torx screws located on the bottom front edge of the unit. Place the unit upright.

8. On the back of the cover assembly, unplug the two-wire connector from J1 and the 5-wire connector from J2 from the FPGA PC board.



9. Place the front panel on an ESD protected surface and safeguard it against physical and cosmetic damage.

B. Fuse Testing Procedure:

- 1. Follow the steps above in Section A for "Top Cover Removal."
- 2. Be sure power cord is disconnected from the back of the unit.
- 3. Use a DVM in the Resistance " Ω " setting to measure the continuity.
- 4. Connect the meter probes across each fuse separately.



Check continuity on each fuse

5. A blown fuse will measure maximum resistance or no continuity.

C. Fuse Replacement:

- 1. Follow the steps above in Section A for "Top Cover Removal."
- 2. Ensure that the power cord has been unplugged from the rear power entry module.
- 3. Use the Fuse Testing Procedure above to determine if either of the two (2) fuses are open (blown).

- 4. Use an appropriate tool and carefully remove the blown fuse.
- Replace the fuse(s) with the specified current rating and voltage as indicated on the fuse label. Be sure the fuse(s) are securely retained by the clips.
- 6. On the back of the cover assembly, plug the twowire connector into J1 and the 5-wire connector into J2 from the FPGA PC board. Ensure the two wire harnesses are tied together with a nylon cable tie.
- 7. Align and place cover assembly on the scaler unit.
- 8. Plug the power cord into the power entry module.
- 9. Reconnect the blue water hose to the push-lock water fitting.
- 10. Power up the unit using the power rocker switch and test unit operation.
- 11. Calibrate and final test the Cavitron® 300 Series Scaler using the Dentsply Sirona Preventive -Product Service Standard Operating Procedure, PS-00211.
- 12. Align the Cover on the Bottom Housing and securely fasten the four (4) #6 x 1/2" Hi-Lo Torx screws using a screwdriver.

D. Power Switch Replacement:



- 1. Follow the steps above in Section A for "Top Cover Removal."
- 2. Ensure that the power cord has been unplugged from the rear power entry module.
- 3. Unplug the four (4) wire terminals from either side of the power switch.
- 4. Press the tabs on both sides of the switch to allow it to slide out of the back support panel.
- 5. Install the replacement switch in the opening. The "OFF" (0) side of the switch must be on the left side as you face the back of the scaler. Ensure the switch is fully seated in the opening.



- 6. Reconnect the terminal wires. The two black wires should be on the top terminals and the two white wires should be on the bottom terminals. The wires with the Toroid should be connected on the right side. The terminals must be fully seated.
- 7. On the back of the cover assembly, plug the twowire connector into J1 and the 5-wire connector into J2 from the FPGA PC board. Ensure the two wire harnesses are tied together with a nylon cable tie.
- 8. Align and place cover assembly on the scaler unit.
- 9. Plug the power cord into the power entry module.
- 10. Reconnect the blue water hose to the push-lock water fitting.
- 11. Power up the unit using the power rocker switch and test unit operation.
- 12. Calibrate and final test the Cavitron® 300 Series Scaler using the Dentsply Sirona Preventive -Product Service Standard Operating Procedure, PS-00211.
- 13. Align the Cover on the Bottom Housing and securely fasten the four (4) #6 x 1/2" Hi-Lo Torx screws using a screwdriver.

E. Power Entry Module Replacement:



- 1. Follow the steps above in Section A for "Top Cover Removal."
- 2. Ensure that the power cord has been unplugged from the rear power entry module.
- 3. The power switch must be removed to gain access to the Power Entry module.
- 4. Unplug the four (4) wire terminals from either side of the power switch.
- 5. Press the tabs on both sides of the switch to allow it to slide out of the back support panel.
- 6. The chassis assembly must also be removed to gain access to the Power Entry module.
- 7. Unscrew the three (3) #6 x 1/2" Hi-Lo Torx screws on the Mounting Plate Sub-assembly at the front corners and back left corner.
- 8. Unscrew the #6 x 1/2" Hi-Lo Torx ground wire screw on the water regulator/solenoid bracket.
- 9. Unplug the four (2-red & 2-black) wire connector on the front of the power supply PC board assembly.
- Unplug the eight (4-white, 2-red, green & black) wire connector from the front of the lower PSOC PC board assembly.

- Carefully cut the nylon cable tie and unplug the four (yellow, blue, red & black) wire connector (for the USB connector) from the rear of the upper PSOC PC board assembly.
- 12. Unplug the white w/blue strip and white wire connector 2-wire connector from the Burkert water regulator/solenoid.
- 13. Carefully disconnect the clear water tubing from the plastic barbed fitting on the Burkert water regulator/solenoid.
- 14. Carefully cut the flat nylon cable tie at the front of the Mounting Plate Sub-assembly.
- 15. Slide the Mounting Plate Sub-assembly forward and remove it from cabinet housing.
- 16. Unplug the black and white wires on the Power Entry Module. Unplug the ground wire from the center tab on the Power Entry Module.
- 17. Press the tabs on the four (4) sides of the Power Entry module to allow it to slide out of the cabinet housing.
- Install the replacement Power Entry module in the opening. The ground prong must face downward. Ensure the power entry module is fully seated in the opening.
- 19. Return chassis assembly to the cabinet housing. Be sure wires and tubing are not trapped under the chassis. No wires should be routed under the Mounting Plate Sub-assembly. The clear water tube must route directly from the handpiece receptacle straight back between the raised ridges on the cabinet housing. Refer to photo.



Clear Water Tubing Routing Location

- 20. Use three (3) #6 x 1/2" Hi-Lo Torx screws to fasten the Mounting Plate Sub-assembly to the cabinet housing and one (1) #6 x 1/2" Hi-Lo Torx screw and star washer for the ground wire at the water regulator/solenoid bracket.
- 21. Attach the clear water tubing from the handpiece connector to the plastic barb fitting on the Burkhart water regulator/solenoid. Be sure tubing is fully seated.
- 22. Plug the black and white wire terminals with the toroid coil to the Power Entry Module. The Black wire goes on the left terminal and the white wire goes on the right terminal adjacent to the water regulator/solenoid. The terminals must be fully seated.

- 23. Plug the ground wire terminal on the center tab of the Power Entry Module. The terminal must be fully seated.
- 24. Install the Power Switch in the cabinet housing. The OFF (0) side of the switch must be on the left side as you face the back of the scaler. Ensure the switch is fully seated in the opening.
- 25. Reconnect the terminal wires. The two black wires should be on the top terminals and the two white wires should be on the bottom terminals. The wires with the Toroid should be connected on the right side. The terminals must be fully seated.



Power Switch and Power Entry Module Wire Positions

- 26. Plug the four (yellow, blue, red & black) wire connector (for the USB connector) from the rear of the upper PSOC PC board assembly. Use nylon cable tie to secure wires to corner of PSOC PC board.
- 27. Plug the eight (4-white, 2-red, green & black) wire connector into the front of the lower PSOC PC board assembly.
- 28. Plug the four (2-red & 2-black) wire connector into the front of the power supply PC board assembly.
- 29. Neatly place the wire harnesses in front of the tab on the Mounting Plate Sub assembly. Secure the harnesses with a flat nylon cable tie.



Secure wire harnesses with flat nylon cable tie

- 30. On the back of the cover assembly, plug the twowire connector into J1 and the 5-wire connector into J2 from the FPGA PC board. Ensure the two wire harnesses are tied together with a nylon cable tie.
- 31. Align and place cover assembly on the scaler unit.

- 32. Plug the power cord into the power entry module.
- 33. Reconnect the blue water hose to the push-lock water fitting.
- 34. Power up the unit using the power rocker switch and test unit operation.
- 35. Calibrate and final test the Cavitron® 300 Series Scaler using the Dentsply Sirona Preventive -Product Service Standard Operating Procedure, PS-00211.
- 36. Align the Cover on the Bottom Housing and securely fasten the four (4) #6 x 1/2" Hi-Lo Torx screws using a screwdriver.

F. Power Supply Assembly Replacement:



Power Supply Assembly

- 1. Follow the steps above in Section A for "Top Cover Removal."
- 2. Ensure that the power cord has been unplugged from the rear power entry module.
- 3. Unplug the Black-White wire connector from the back of the power supply assembly.
- 4. Unplug the Red-Black wire connector from the front of the power supply assembly.
- 5. Use a #1 Phillips screwdriver and remove the four (4) #4-40 x 1/4" machine screws at the four corners of the power supply assembly.
- Install the replacement power supply on the metal studs. Apply Loctite 242 Threadlocker to the four (4) #4-40 x 1/4" machine screws. Torque them to 2 ± 0.5 in.-lbs.
- 7. Install the Black-White wire connector and the Red-Black wire connector to the power supply assembly. Ensure the connectors are fully seated.



- 8. On the back of the cover assembly, plug the twowire connector into J1 and the 5-wire connector into J2 from the FPGA PC board. Ensure the two wire harnesses are tied together with a nylon cable tie.
- 9. Align and place cover assembly on the scaler unit.
- 10. Plug the power cord into the power entry module.
- 11. Reconnect the blue water hose to the push-lock water fitting.
- 12. Power up the unit using the power rocker switch and test unit operation.
- 13. Calibrate and final test the Cavitron® 300 Series Scaler using the Dentsply Sirona Preventive -Product Service Standard Operating Procedure, PS-00211.
- 14. Align the Cover on the Bottom Housing and securely fasten the four (4) #6 x 1/2" Hi-Lo Torx screws using a screwdriver.

G. PSOC PC Board Replacement: (Upper PC Board Assembly)



PSOC PC Board Assembly (Upper)

- 1. Follow the steps above in Section A for "Top Cover Removal."
- 2. Ensure that the power cord has been unplugged from the rear power entry module.
- 3. Unplug the 5-wire connector (front-right) from J13 on the PSOC PC Board.

4. Carefully cut the nylon cable tie and unplug the 4-wire connector (back-left) from J104 on the PSOC PC Board.



- 5. Carefully lift off the PSOC PC board. Keep the PC board level as it is raised to prevent bending the pins on the connectors. Handle the PC board by the edges only.
- Carefully align the pins on the replacement PSOC PC board with the connectors on the power board. Keep the board level and slowly insert the pins until they are fully seated.
- 7. Re-connect the 5-wire and 4-wire connectors onto the PSOC PC board.
- 8. Be sure the (back left) 4-wire harness to the USB PC board is fastened with a nylon cable tie. See photo above.
- 9. On the back of the cover assembly, plug the twowire connector into J1 and the 5-wire connector into J2 from the FPGA PC board. Ensure the two wire harnesses are tied together with a nylon cable tie.
- 10. Align and place cover assembly on the scaler unit.
- 11. Plug the power cord into the power entry module.
- 12. Reconnect the blue water hose to the push-lock water fitting.
- 13. Power up the unit using the power rocker switch and test unit operation.
- 14. Calibrate and final test the Cavitron® 300 Series Scaler using the Dentsply Sirona Preventive -Product Service Standard Operating Procedure, PS-00211.
- 15. Align the Cover on the Bottom Housing and securely fasten the four (4) #6 x 1/2" Hi-Lo Torx screws using a screwdriver.

H. Power PC Board Replacement: (Lower PC Board Assembly)



- 1. Follow the steps above in Section A for "Top Cover Removal."
- 2. Ensure that the power cord has been unplugged from the rear power entry module.
- 3. Unplug the 5-wire connector (front-right) from J13 on the PSOC PC Board.
- Carefully cut the nylon cable tie and unplug the 4-wire connector (back-left) from J4 on the PSOC PC Board.
- 5. Unplug the white 8-wire connector from the front of the Power PC board.
- 6. Carefully lift off the PSOC PC board. Keep the PC board level as it is raised to prevent bending the pins on the connectors.
- Use a #1 Phillips screwdriver and remove the two (2) #4-40 x 1/2" machine screws on the Power PC board.
- 8. Replace the Power PC board. The large white connector should be in the front.
- 9. Install the replacement Power PC board on the metal studs. Apply Loctite 242 Threadlocker to the two (2) $#4-40 \times 1/2"$ machine screws. Install screws on the upper-right and lower-left holes. Torque them to 2 \pm 0.5 in.-lbs.
- 10. Carefully align the pins on the PSOC PC board with the connectors on the power board. Keep the board level and slow insert the pins until they are fully seated.
- 11. Re-connect the 5-wire and 4-wire connectors onto the PSOC PC board. Use a nylon cable tie to fasten the 4-wire harness to hole in the PSOC PC board.
- 12. Plug the white 8-wire connector in the front of the Power PC board.
- 13. On the back of the cover assembly, plug the twowire connector into J1 and the 5-wire connector into J2 from the FPGA PC board. Ensure the two wire harnesses are tied together with a nylon cable tie.

- 14. Align and place cover assembly on the scaler unit.
- 15. Plug the power cord into the power entry module.
- 16. Reconnect the blue water hose to the push-lock water fitting.
- 17. Power up the unit using the power rocker switch and test unit operation.
- 18. Calibrate and final test the Cavitron[®] 300 Series Scaler using the Dentsply Sirona Preventive -Product Service Standard Operating Procedure, PS-00211.
- 19. Align the Cover on the Bottom Housing and securely fasten the four (4) $\#6 \times 1/2''$ Hi-Lo Torx screws using a screwdriver.

Water Regulator / Solenoid Replacement: Ι.



Regulator /

- 1 Follow the steps above in Section A for "Top Cover Removal."
- 2. Ensure that the power cord has been unplugged from the rear power entry.
- 3. Unplug the white w/blue strip and white wire connector 2-wire connector from the Burkert water regulator/solenoid.
- 4. Use paper towels as a barrier to prevent wetting the electronics. Unplug the clear water tubing from the regulator/solenoid.
- 5. Remove the two (2) $\#6 \times 1/2''$ Hi-Lo Torx screws securing the water regulator/solenoid.



6. To remove the Burkert water regulator/solenoid from the scaler the Mounting Plate Sub-assembly must be slightly raised. Remove the three (3) #6 $\times 1/2$ " Hi-Lo Torx screws from the Mounting Plate Sub-assembly. Also remove the ground wire screw at the top of the metal bracket.

- 7. Replace the Burkert water regulator/solenoid assembly. Align the edge of the water regulator/ solenoid to the inner base bracket and fasten with the two (2) $\#6 \times 1/2$ " Torx screws.
- 8. Plug the clear water tubing onto the replacement regulator/solenoid. Be sure clear tubing is fully seated.





9. Plug the two (2) wire connector onto the regulator/solenoid connector. Be sure the wires are routed in front of the metal bracket.



Water Regulator / Solenoid Connector & Wire Routing

10. Lower the Mounting Plate Sub-assembly to the cabinet housing. Be sure wires and tubing are not trapped under the chassis. Use three (3) $\#6 \times 1/2$ " Hi-Lo Torx screws to fasten the Mounting Plate Sub-assembly to the cabinet housing and one (1) #6 x 1/2" Hi-Lo Torx screw and star washer for the ground wire at the water regulator/solenoid bracket.

 Verify no wires are pinches between the Mounting Plate Sub-assembly and the cabinet housing. The clear water tube should be routed directly from the handpiece receptacle straight back between the raised ridges of the cabinet housing.



- 12. On the back of the cover assembly, plug the twowire connector into J1 and the 5-wire connector into J2 from the FPGA PC board. Ensure the two wire harnesses are tied together with a nylon cable tie.
- 13. Align and place cover assembly on the scaler unit.
- 14. Plug the power cord into the power entry module.
- 15. Reconnect the blue water hose to the push-lock water fitting.
- 16. Power up the unit using the power rocker switch and test unit operation.
- 17. Calibrate and final test the Cavitron® 300 Series Scaler using the Dentsply Sirona Preventive -Product Service Standard Operating Procedure, PS-00211.
- Align the Cover on the Bottom Housing and securely fasten the four (4) #6 x 1/2" Hi-Lo Torx screws using a screwdriver.

J. USB Connector Replacement:



- 1. Follow the steps above in Section A for "Top Cover Removal."
- 2. Ensure that the power cord has been unplugged from the rear power entry module.
- Use a #9 Torx screwdriver and unfasten the two (2) #4-24 x 5/16" Hi-Lo Torx screws on the USB PC board assembly. Raise the USB PC board assembly, unplug the 4-wire connector from J2.
- Plug the 4-wire connector into J2 on the replacement USB PC board assembly and fasten it with the two (2) #4-24 x 5/16" Hi-Lo Torx screws.

USB PCB Assembly mounted to Lower Housing



- 5. On the back of the cover assembly, plug the twowire connector into J1 and the 5-wire connector into J2 from the FPGA PC board. Ensure the two wire harnesses are tied together with a nylon cable tie.
- 6. Plug the power cord into the power entry module.
- 7. Reconnect the blue water hose to the push-lock water fitting.
- 8. Power up the unit using the power rocker switch and test unit operation.
- 9. Calibrate and final test the Cavitron 300 Series Scaler using the Dentsply Sirona Preventive -Product Service Standard Operating Procedure, PS-00211.
- 10. Align the Cover on the Bottom Housing and securely fasten the four (4) #6 x 1/2" Hi-Lo Torx screws using a screwdriver.

K. Handpiece Receptacle Replacement:



- 1. Follow the steps above in Section A for "Top Cover Removal."
- 2. Ensure that the power cord has been unplugged from the rear power entry module.
- Unscrew the three (3) #6 x 1/2" Hi-Lo Torx on the Mounting Plate Sub-assembly at the front corners and back left corner. Unscrew the #6 x Đ" Hi-Lo Torx ground wire screw on the metal bracket.
- 4. Cut the flat nylon cable tie at the front tab of the Mounting Plate Sub-Assembly.
- 5. Unplug the two (2) wire (red and white) connector from the two (2) wire (red and green) connector.
- 6. Lift up the front of the Mounting Plate Subassembly. Slide off the handpiece connector from the inner base bracket. Disconnect the clear tubing from the handpiece receptacle.
- 7. Install the clear water tubing onto the replacement handpiece receptacle. Install the clear tube onto the barbed fitting next to the white wire. Ensure it is fully seated on the barbed fitting.

8. Align the handpiece receptacle with the water tube on the left side and snap the handpiece receptacle onto the inner base bracket. Refer to photo.



- Reconnect the two (2) wire (red and white) 9 connector to the two (2) wire (red and green) connector.
- 10. Lower the Mounting Plate Sub-assembly and check for proper alignment. Ensure that wires and tubing are not pinched. The clear water tube should route straight back to the water regulator/ solenoid between the two raised ridges on the cabinet housing. Refer to photo.



Clear Water Tubing Routing Location

- 11. Fasten the Mounting Plate Sub-assembly with three (3) #6 x 1/2" Hi-Lo Torx screws.
- 12. Fasten the ground wire with a $#6 \times 1/2$ " Hi-Lo Torx screw and star washer at the back of the metal chassis.
- 13. Neatly arrange the wire harnesses at the front tab of the Mounting Plate Sub-assembly tab and secure with a flat nylon cable tie.



Secure wire harnesses with flat nylon cable tie

14. On the back of the cover assembly, plug the twowire connector into J1 and the 5-wire connector into J2 from the FPGA PC board. Ensure the two wire harnesses are tied together with a nylon cable tie.

- 15. Plug the power cord into the power entry module.
- 16. Reconnect the blue water hose to the push-lock water fitting.
- 17. Power up the unit using the power rocker switch and test unit operation.
- 18. Calibrate and final test the Cavitron[®] 300 Series Scaler using the Dentsply Sirona Preventive -Product Service Standard Operating Procedure, PS-00211.
- 19. Align the Cover on the Bottom Housing and securely fasten the four (4) $\#6 \times 1/2$ " Hi-Lo Torx screws using a screwdriver.

FPGA Board Replacement L. (Back of Touch Screen):



- Follow the steps above in Section A for "Top Cover 1. Removal."
- 2. Ensure that the power cord has been unplugged from the rear power entry module.
- 3. Lay the touch screen panel on a soft surface to prevent scratches.
- 4. Carefully use the tip of your index finger to lift up on the black tab securing the white ribbon cable on the FPGA PC board. The white ribbon cable will release.



Carefully lift left edge of black tab to release white ribbon cable

 Carefully and gently use the tip of your index finger to lift up on the black tab securing the orange ribbon cable at J3 on the FPGA PC board. The orange ribbon cable will release.



Carefully lift left edge of black tab to release orange ribbon cable

- 6. Unplug the red and white wire connector from J4 on the FPGA board.
- 7. Remove the four (4) #6 x 1/2" screws on the FGPA PC board.
- 8. Carefully lift off the FPGA PC board. The ribbon cables on the Display Sub-Assembly are fragile and must be handled with care.
- Replace the FPGA PC board. The speaker should be located at the bottom of the touch screen assembly
- 10. Fasten the FPGA PC board with the four (4) #6 x 1/2'' Torx screws.
- 11. Plug in the red and white wire connector at J4.
- 12. Carefully and fully insert the white ribbon cable in the connector and press the black tab to lock it in place.



Insert white ribbon cable then depress left edge of black tab to secure

13. Carefully and fully insert the orange ribbon cable in the connector J3 and press the black tab to lock it in place.



Insert orange ribbon cable then depress left edge of black tab to secure

- 14. On the back of the cover assembly, plug the twowire connector into J1 and the 5-wire connector into J2 from the FPGA PC board. Ensure the two wire harnesses are tied together with a nylon cable tie.
- 15. Align and place cover assembly on the scaler unit.
- 16. Plug the power cord into the power entry module.
- 17. Reconnect the blue water hose to the push-lock water fitting.
- 18. Power up the unit using the power rocker switch and test unit operation.
- 19. Calibrate and final test the Cavitron® 300 Series Scaler using the Dentsply Sirona Preventive -Product Service Standard Operating Procedure, PS-00211.
- 20. Align the Cover on the Bottom Housing and securely fasten the four (4) #6 x 1/2" Hi-Lo Torx screws using a screwdriver.

M. Display Sub Assembly Replacement:



- 1. Follow the steps above in Section A for "Top Cover Removal."
- 2. Ensure that the power cord has been unplugged from the rear power entry module.
- 3. Lay the touch screen panel on a soft surface to prevent scratches.
- 4. Carefully use the tip of your index finger to lift up on the black tab securing the white ribbon cable on the FPGA PC board. The white ribbon cable will release.



Carefully lift left edge of black tab to release white ribbon cable

5. Gently use the tip of you index finger to lift up on the black tab securing the orange ribbon cable at J3 on the FPGA PC board. The orange ribbon cable will release.



Carefully lift left edge of black tab to release orange ribbon cable

- 6. Unplug the red and white wire connector from J4 on the FPGA board.
- 7. Remove the four (4) #6 x 1/2" screws on the FGPA board. Lift off the FPGA board.
- 8. Remove the four (4) #6 x 1/2" Torx screws on the touch screen panel. Lift off the molded bezel housing.
- 9. Install the replacement Display Sub Assembly screen. The ribbon cables on the Display Sub-Assembly are fragile and must be handled with care. The red and white wire connector should face upward.
- 10. Fasten the touch screen to the molded bezel housing with the four (4) $#6 \times 1/2"$ Torx screws.
- 11. Replace the FPGA board. The speaker should be located at the bottom of the touch screen assembly
- 12. Fasten the FPGA board with the four (4) $\#6 \times 1/2''$ Torx screws.
- 13. Plug in the red and white wire connector at J4.
- 14. Carefully and fully insert the white ribbon cable in the connector and press the black tab to lock it in place.



Insert white ribbon cable then depress left edge of black tab to secure

15. Carefully and fully insert the orange ribbon cable in the connector J3 and press the black tab to lock it in place.



Insert orange ribbon cable then depress left edge of black tab to secure

- 16. On the back of the cover assembly, plug the twowire connector into J1 and the 5-wire connector into J2 from the FPGA PC board. Ensure the two wire harnesses are tied together with a nylon cable tie.
- 17. Align and place cover assembly on the scaler unit.
- 18. Plug the power cord into the power entry module.
- 19. Reconnect the blue water hose to the push-lock water fitting.
- 20. Power up the unit using the power rocker switch and test unit operation.
- 21. Calibrate and final test the Cavitron® 300 Series Scaler using the Dentsply Sirona Preventive -Product Service Standard Operating Procedure, PS-00211.
- 22. Align the Cover on the Bottom Housing and securely fasten the four (4) #6 x 1/2" Hi-Lo Torx screws using a screwdriver.

NOTES

3. Cavitron 300 Series Scaler Service Parts Section

TITLE	PAGE	
Generator Assembly		
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Mounting Plate Sub-Assembly	25	
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Display / FPGA PC Board Assembly		
Power Supply Module		
Water Regulator / Solenoid		
Master Ultrasonic PC Board Wire Harness		
Inlet Harness with Toroid and Wire Harness Ground		
HP Cable Bulkhead Harness, USB Wire Harness & FPGA with PSOC Wire Harness		
Foot Pedal Assembly		
Miscellaneous Parts		



G310 CAVITRON 300 SERIES SCALER - GENERATOR ASSEMBLY			
ITEM	QUANTITY	PART NO.	DESCRIPTION
1	1		Base Assembly, G310
2	1		Bezel Sub-Assembly, G310
3	1	81749	Water and Power Label, G310
4	1	81834-1	Steri-Mate 360 Handpiece
5	1	82507-1	Handpiece Cable Assembly, Black
6	4	586172005	#6 x 1/2" Hi-Lo Pan Head Torx Screws



G310 CAVITRON 300 SERIES SCALER - BEZEL SUB-ASSEMBLY			
ITEM	QUANTITY	PART NO.	DESCRIPTION
1	1	81746	Bezel Housing, G310
2	1	81747-2	Handpiece Holder, G310
3	1	81748	Rear Housing, G310
4	1	82517	Display Sub-Assembly
5	8	586172005	#6 x 1/2" Hi-Lo Pan Head Torx Screws



G310 CAVITRON 300 SERIES SCALER - MOUNTING PLATE SUB-ASSEMBLY				
ITEM	QUANTITY	PART NO.	DESCRIPTION	
1	1	81741	Mounting Plate, G310	
2	1	629205005	Water Regulator/Solenoid, Burkert	
3	1	82529-1	Power Supply Assembly, Protek Power	
4	1	82530	Drive PC Board Stack	
5	2	586172005	#6 x 1/2" Hi Lo Pan Head Torx Screws	
6	1	81662	Fuse Label	
7	6	62336	#4-40 x 1/4" Machine Screw	
8		77773	Anaerobic Thread Locking Material	



G310 CAVITRON 300 SERIES SCALER - BASE ASSEMBLY			
ITEM	QUANTITY	PART NO.	DESCRIPTION
1	1		Mounting Plate Sub-Assembly, G310
2	1	81742	Lower Housing
3	1	82522	USB Connector PC Board Assembly
4	1	82520	Handpiece Cable Harness, Bulkhead
5	1	565179001	Power Rocker Switch, Snap-In
6	1	568270002	Power Entry Module, Snap-In
7	4	592061001	Rubber Feet, Self Adhesive
8	4	586172005	#6 x 1/2" Hi-Lo Pan Head Torx Screws
9	2	586172001	#4 x 5/16" Hi-Lo Pan Head Torx Screws
10	1	82533	Main Harness Assembly
11	2	60366	Nylon Cable Ties, Beaded
12	2	555049001	Cable Tie, Flat 3-7/8" Long
13	1	82536	Wire Harness, Ground
14	1	82534	Inlet Harness with Toroid
15	1	81648-2	Wire Harness, Switch to Power Supply
16	1	82516	Wire Harness, FPGA to PSOC
17	2	557034018	Fuse, 1.25A, 250V Slow Blow
18	1	82525-1	USB Cable
19	1	62968	Star Washer, #6



G310 CAVITRON 300 SERIES SCALER - DISPLAY / FPGA PC BOARD ASSEMBLY				
ITEM	QUANTITY	PART NO.	DESCRIPTION	
1	1	82517	Display / FPGA PC Board Assembly (Includes Display, FPGA PC Board, Ribbon Cable & Screws)	

3. Cavitron 300 Series Scaler Service Parts Section

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G310 CAVITRON 300 SERIES SCALER - POWER SUPPLY MODULE				
ITEM	QUANTITY	PART NO.	DESCRIPTION	
1	1	82529-1	Power Supply Module	



G310 CAVITRON 300 SERIES SCALER - WATER REGULATOR / SOLENOID				
ITEM	QUANTITY	PART NO.	DESCRIPTION	
1	1	629205005	Water Regulator / Solenoid Assembly	

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G310 CAVITRON 300 SERIES SCALER - MASTER ULTRASONIC PC BOARD WIRE HARNESS			
ITEM	QUANTITY	PART NO.	DESCRIPTION
1	1	82533	Master Ultrasonic PC Board Wire Harness





G310 CAVITRON 300 SERIES SCALER - INLET HARNESS WITH TOROID AND WIRE HARNESS GROUND				
ITEM	QUANTITY	PART NO.	DESCRIPTION	
1	1	82534	Inlet Harness with Toroid	
2	1	82536	Wire Harness Ground	

3. Cavitron 300 Series Scaler Service Parts Section



G310 CAVITRON 300 SERIES SCALER – HP CABLE BULKHEAD HARNESS, USB WIRE HARNESS & FPGA TO PSOC WIRE HARNESS				
ITEM QUANTITY PART NO. DESCRIPTION				
1	1	82520	Handpiece Cable Bulkhead Harness	
2	1	82525-1	USB Wire Harness, 6.5" (4 Wires)	
3	1	82516	Wire Harness, FPGA to PSOC (5 Wires)	

3. Cavitron 300 Series Scaler Service Parts Section



G310 CAVITRON 300 SERIES SCALER - FOOT PEDAL ASSEMBLY			
ITEM QUANTITY PART NO. DESCRIPTION			
1	1	82565	Tap-On Foot Pedal Packed - G1000 (Includes box with Foot Pedal & Instructions)

G310 CAVITRON 300 SERIES SCALER - MISCELLANEOUS PARTS

ITEM	QUANTITY	PART NO.	DESCRIPTION
	1	8183201	Steri-Mate [®] 360 Handpiece, Black (1-Pack)
	1	8183203	Steri-Mate [®] 360 Handpiece, Black (3-Pack)
	1	78688	Steri-Mate [®] Handpiece, Black (1-Pack)
	1	78703	Steri-Mate® Handpiece, Black (3-Pack)
	1	90125	Water Hose Assembly with Filter
		90158	Water Filters - 10 Pack
	1	554102003	Power Cord, 115/100 Volt
	1	78118	Power Cord, 200 to 240 Volt
	1	554109001	Power Cord, 240/230 Volt – UK
	1	82493	Instruction Manual, (DFU) G310
	1	81760	Service Manual, G310

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