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RPI Field Service Smart Kit® (RPI Part #SCK028)

A Guide to Maintaining The SciCan STATIM® Cassette Autoclave

Replacement Parts Industries, Inc. is pleased to present this valuable work tool that can help save you and your customers time and money. Included in this booklet you will find Instructions on how to use each of the tools in this Kit, plus diagrams, exploded views, PM check lists, error code listings with troubleshooting service tips and a complete list of RPI parts to fit the SciCan STATIM Cassette Autoclaves.

For use with these models only:

STATIM 2000, model 101102 (with S/N ending in "A")

STATIM 2000, model 121101

STATIM 5000, model 01-201103

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1.0 - THEORY OF OPERATION

The STATIM® uses a steam generator (also known as a boiler) to create steam, which is then injected into the cassette, which serves the same purpose as a traditional autoclave chamber. The temperature is then monitored via thermocouples. One thermocouple monitors the steam generator/boiler temperature and the other monitors the cassette temperature, not unlike the traditional steam sensor mounted in the chamber. The autoclave does not monitor the pressure with a device such as a transducer or gauge. Instead, the pressure reading is a value calculated by the microprocessor.

Instruments are loaded into the cassette and the cassette is placed into the cassette bay. Inserting the cassette will close the microswitch that activates the vent solenoid valve. The user selects a cycle and depresses the start button. The steam generator/boiler then heats up to the proper temperature. The distilled water is then pumped into the







steam generator/boiler and converted into steam. The steam is injected into the cassette. As the steam enters the cassette, the air is purged out through the vent solenoid valve. The air is continuously expelled into the waste water bottle's condensation coil. This allows steam to run through the cassette to maintain proper steam temperature.

Most autoclaves reuse the same water over and over, but the STATIM uses fresh distilled water each time. Never use deionized, demineralized or specialty filtered water. Tap water must never be used.

Once the sterilization stage has finished, the vent solenoid valve will open and remain open. The venting stage will expel the steam pressure through the exhaust tubing into the condenser waste bottle. The steam condenses back into water in the condensation coil. The compressor will run until the drying stage is complete.

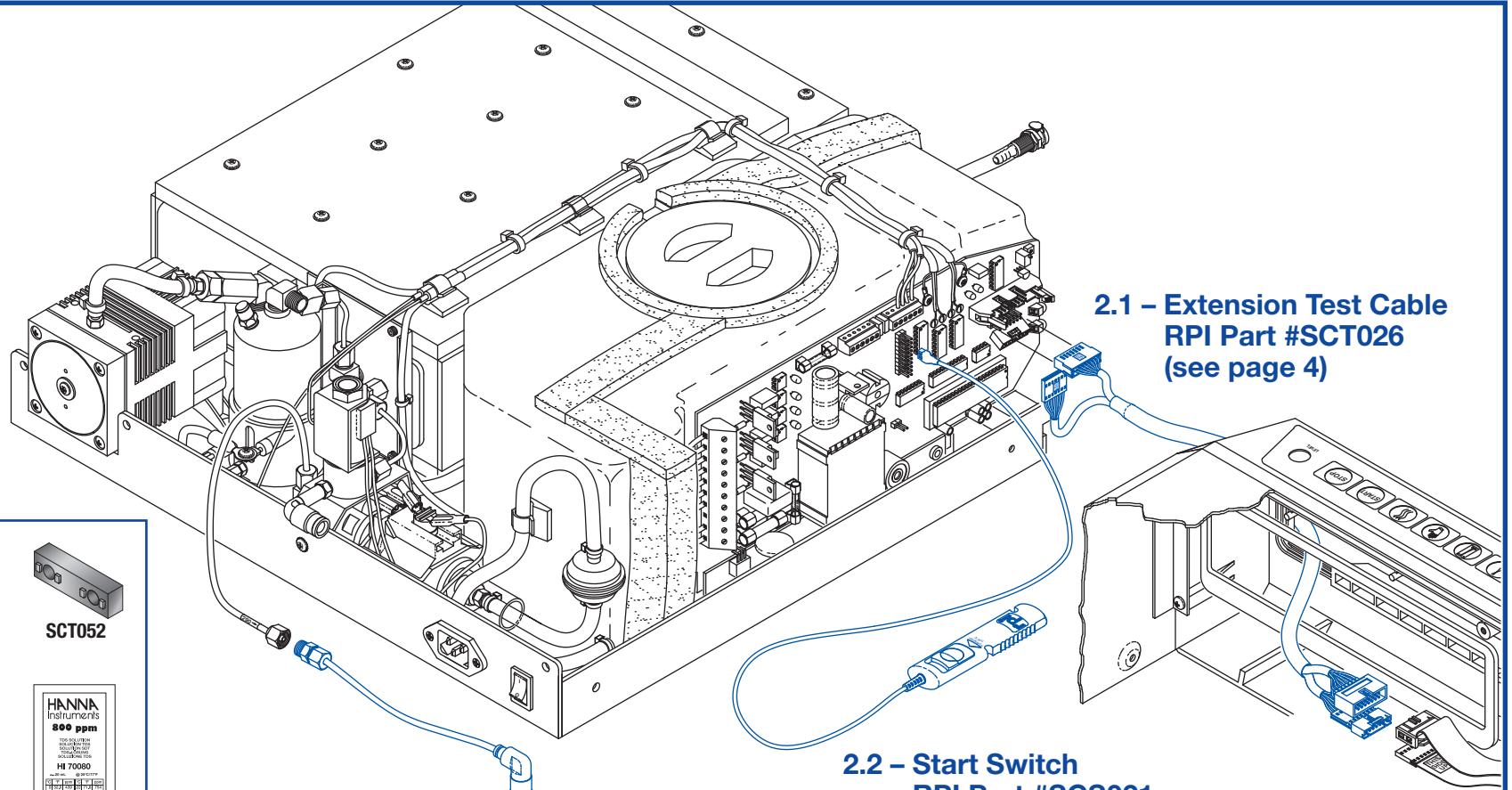
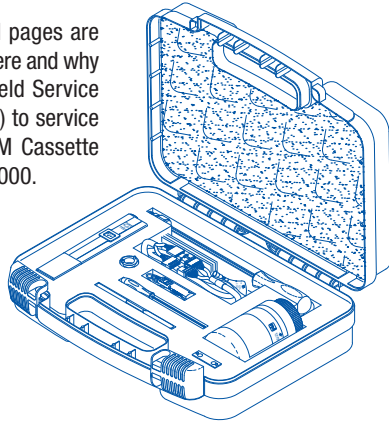
STATIM 2000 CYCLE TIME, TEMPERATURE & MODEL LISTING							
Model #	Unwrapped		Wrapped		Rubber & Plastics		Air Dry
	Temp	Time	Temp	Time	Temp	Time	Time
101102	135°C	3.5	135°C	10	121°C	15	60
121101	275°F	minutes	275°F	minutes	250°F	minutes	minutes
01-122328	135°C	4.0	135°C	10	121°C	20	60
	275°F	minutes	275°F	minutes	250°F	minutes	minutes

STATIM 5000 CYCLE TIME, TEMPERATURE & MODEL LISTING									
Country	Model #	Unwrapped		Wrapped		Rubber & Plastics		Heavy Duty Unwrapped	
		Temp	Time	Temp	Time	Temp	Time	Temp	Time
USA	01-201103(-R)	132°C	3.5	132°C	6	121°C	35	132°C	6
	01-201104(-R)	270°F	minutes	270°F	minutes	250°F	minutes	270°F	minutes
Canada <small>(And all other countries except Czech Republic)</small>	All other models	135°C	3.5	135°C	6	121°C	15	135°C	60
		275°F	minutes	275°F	minutes	250°F	minutes	275°F	minutes

FIGURE 1 – STATIM 2000 & 5000 KEYPAD SYMBOLS CHART						
						
Model 2000	Unwrapped	Wrapped	Rubber & Plastics	Air Dry	Start	Stop
Model 5000	Unwrapped	Wrapped	Rubber & Plastics	Heavy Duty Unwrapped	Start	Stop

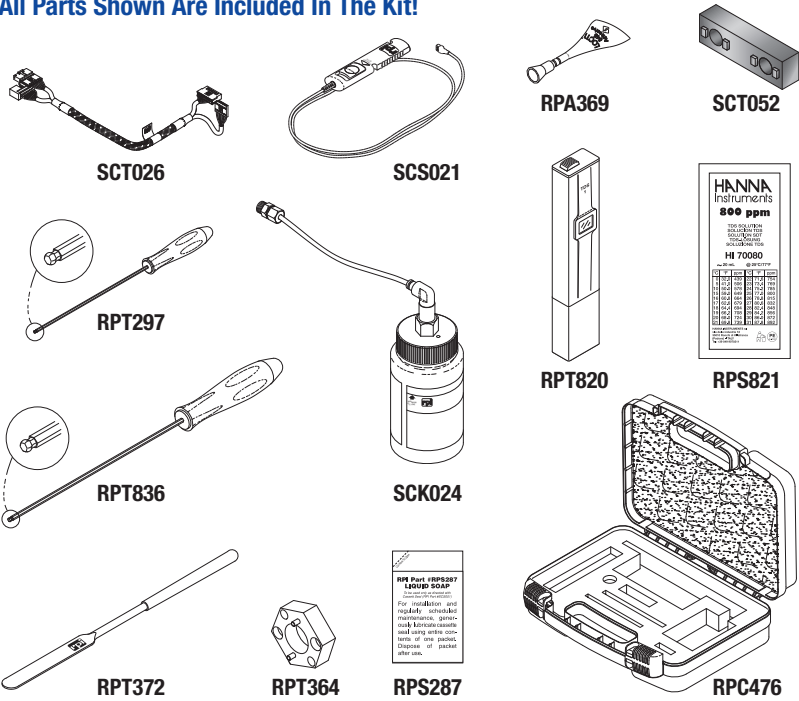
2.0 - RPI FIELD SERVICE SMART KIT® (RPI PART #SCK028)

Contained in the next several pages are instructions on how, when, where and why to use the parts in the RPI Field Service Smart Kit® (RPI Part #SCK028) to service and repair the SciCan STATIM Cassette Autoclave models 2000 and 5000.



2.1 – Extension Test Cable
RPI Part #SCT026
(see page 4)

All Parts Shown Are Included In The Kit!



2.2 – Start Switch
RPI Part #SCS021
(see page 5)

2.3 – Pump Tester Bottle
RPI Part #SCK024
(see pages 6 & 7)

2.1 - EXTENSION TEST CABLE (RPI PART #SCT026)

When testing, troubleshooting or repairing the STATIM autoclave, install the RPI Extension Test Cable. By attaching the Extension Test Cable to the cover and main PC board as instructed below, you will be able to extend the distance between the autoclave and the cover thus allowing you to place the cover in a horizontal (not vertical) position for easier viewing of the LCD display and easier access to the keypad.

INSTRUCTIONS

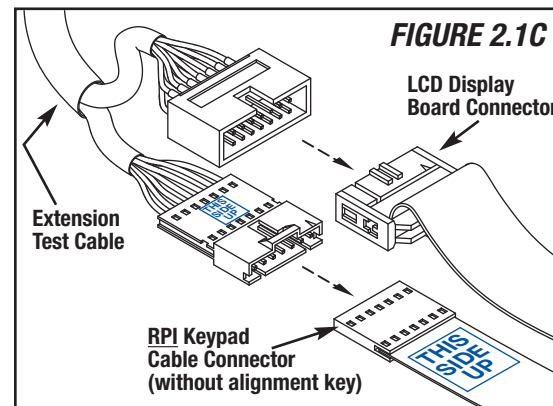
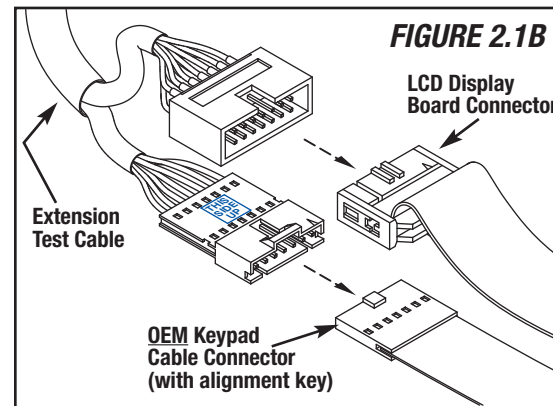
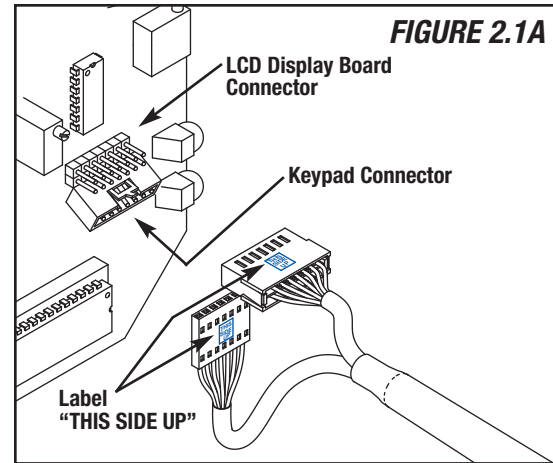
STEP #1 - Disconnect the power to the autoclave. Remove the cover. Disconnect the two cables from the main PC board - one cable from the LCD display board and the other from the keypad. Leave the cover in the horizontal position (see Figure 2.1A).

STEP #2 - Connect the Extension Test Cable mating connector to the LCD display board cable.

STEP #3 - If the OEM keypad is installed, connect the Extension Test Cable mating connector to the keypad cable connector (see Figure 2.1B).

If the RPI keypad is installed, connect the Extension Test Cable mating connector to the RPI keypad cable connector - making sure that both connectors have the "This Side Up" label facing in the upward direction (see Figure 2.1C). (Note: The RPI keypad cable connector does not have an alignment key, so it is very important to connect as per instructions and Figure 2.1C).

STEP #4 - Connect the Extension Test Cable mating connectors to the main PC board - making sure that the Extension Test Cable connector has the "This Side Up" label facing in the upward direction (see Figure 2.1A). (Caution: If the Extension Test Cable is connected incorrectly, severe damage may occur to the autoclave.)

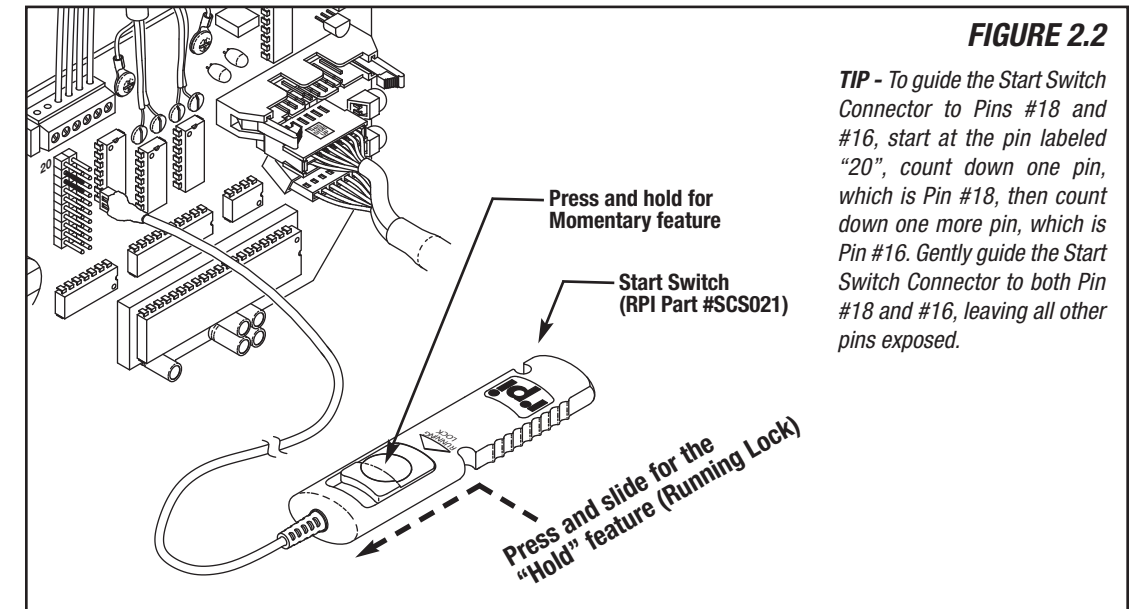


2.2 - START SWITCH (RPI PART #SCS021)

When testing the pump or decontaminating the steam generator/boiler, it is suggested by the OEM to activate the pump by shorting Pins #18 and #16 together. However, the RPI Start Switch offers an easier and safer method. By connecting the RPI Start Switch to the main PC board connector (P1), you control the activation of the pump via a hand-held switch. In addition, the RPI Start Switch has a "hold feature" (i.e. running lock) for longer test periods.

INSTRUCTIONS

STEP #1 - Connect the RPI Start Switch connector to Pins #18 and #16 on the "20 Pin Connector" (P1) located on the main PC board. (See Figure 2.2 and note the following: To guide the Start Switch connector to Pins #18 and #16, start at the pin labeled "20", count down one pin, which is Pin #18, then count down one more pin, which is Pin #16. Gently guide the Start Switch connector to both Pins #18 and #16, leaving all other pins exposed.) (Caution: If the Start Switch is connected to any other pins except #18 and #16, severe damage may occur to the autoclave.) See "Device Activation Chart", page 47.



TIP - To guide the Start Switch Connector to Pins #18 and #16, start at the pin labeled "20", count down one pin, which is Pin #18, then count down one more pin, which is Pin #16. Gently guide the Start Switch Connector to both Pin #18 and #16, leaving all other pins exposed.

2.3 - PUMP TESTER BOTTLE (RPI PART #SCK024)

The RPI bottle has a “swivel fitting” on the lid that allows you to control the position and balance of the bottle. In addition, RPI includes 8” of tubing already connected to the swivel fitting which allows you to move the bottle a safe distance away from the autoclave during testing.

The OEM now recommends the use of the Reservoir Cap & Filter (RPI Part #SCK059) along with the In-Line Water Filter (RPI Part #SCF034) on all units. The mesh filters should be removed and the autoclave should be upgraded to the In-Line Water Filter (Drain Kit with Pump Filter RPI Part #SCK037).

INSTRUCTIONS

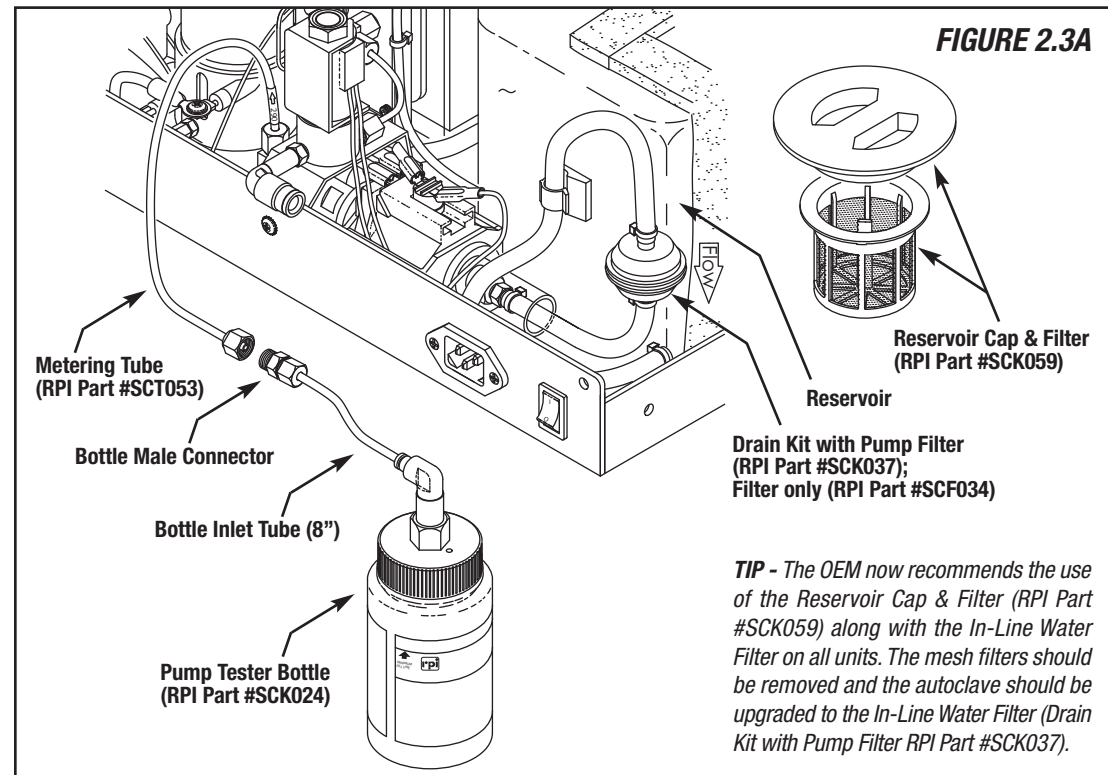
STEP #1 - TO BEGIN: Disconnect the pump outlet metering tube (see Figure 2.3A) from the steam generator/boiler by using a 3/8” wrench on the compression nut while supporting the steam generator/boiler fitting with a

7/16” wrench. Connect the metering tube to the Pump Tester Bottle male connector and tighten.

STEP #2 - PRIME PUMP: Fill reservoir with distilled water only and activate the pump for 2-3 seconds to purge any trapped air from the tubing (until water passes through the pump) (see page 5, 2.2 - Start Switch). Empty the bottle of any water that may have entered it during the purge cycle. The bottle must be completely empty before proceeding with the test.

STEP #3 - TEST CYCLE: Before activating the pump for the Test Cycle, have a stopwatch or another timing device available for use during the Test Cycle. Activate the pump and note the amount of time that it takes for the water level in the bottle to reach the MINIMUM FILL LINE.

- If the water level reaches the MINIMUM FILL LINE within 25 seconds, pump testing is complete and no further steps are required.
- If the water level does not reach the MINIMUM FILL LINE within the specified time, proceed to the next step.



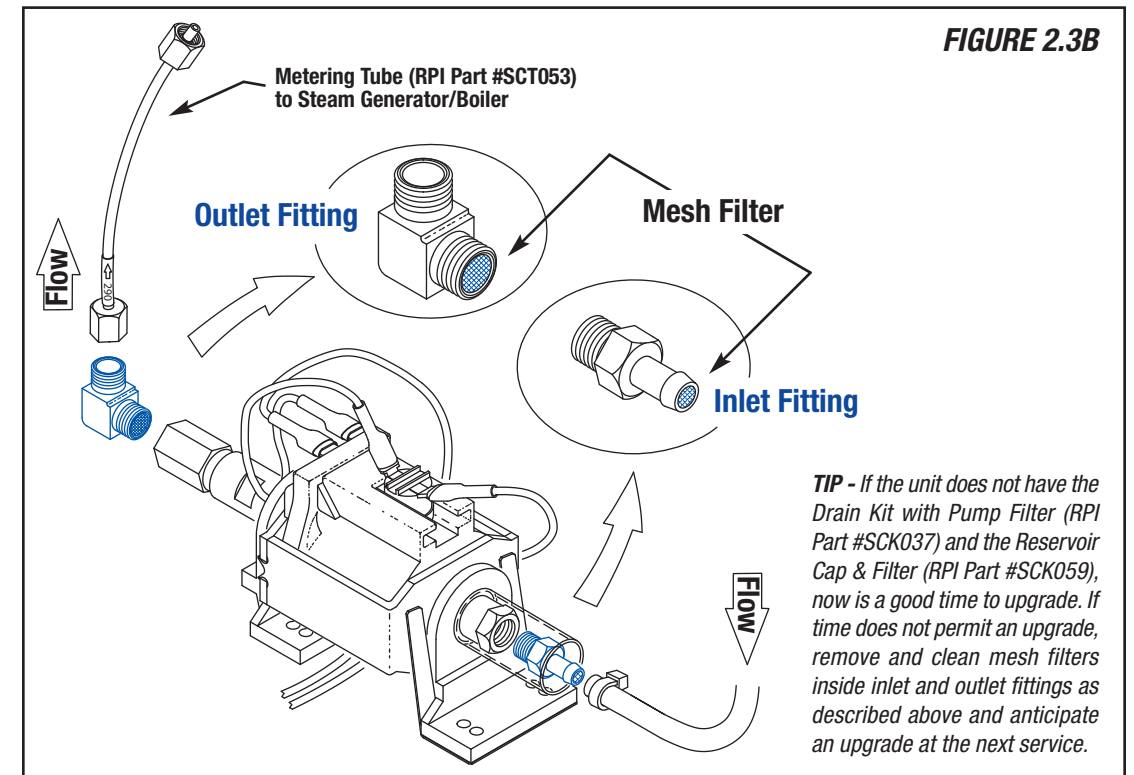
STEP #4 - FILTERS:

- **If the autoclave has been upgraded with Drain Kit with Pump Filter (RPI Part #SCK037),** be sure to remove the mesh filter from both the inlet and outlet fittings (if they have not already been removed). The ULKA brand pump does not have the mesh filters. Replace the Water Filter (In-Line) (RPI Part #SCF034). Repeat Step #2 - Prime Pump, then if the water level still does not reach the MINIMUM FILL LINE within 25 seconds, replace the pump.
- **If the unit does not have the Drain Kit with Pump Filter (RPI Part #SCK037) installed,** then clamp off the pump inlet tubing from the reservoir using hemostats or a tubing clamp (Note: It is important to clamp the tubing so that the reservoir does not drain). Disconnect the metering tube from the pump. Remove the filtered elbow outlet fitting and the filtered barb inlet fitting from the pump. (**Caution:** Use a wrench on the pump body while

removing filtered fittings). Clean the mesh filter of both the inlet and the outlet fittings by placing the fittings under running water, then blow both ends out with an air hose. Reinstall the filtered fittings using Teflon® tape (see Figure 2.3B). Be sure to prime the pump in order to purge trapped air before running a complete cycle. If the water level still does not reach the MINIMUM FILL LINE within 25 seconds, replace the pump (see Tip in Figure 2.3B). For additional information regarding the pump see page 43 - Figure 9.6.

RELATED RPI PARTS:

- Drain Kit with Pump Filter (RPI Part #SCK037)
- Metering Tube (RPI Part #SCT053)
- Reservoir Cap & Filter (RPI Part #SCK059)
- Teflon® Tape (RPI Part #RPT579)
- Water Filter (In-Line) (RPI Part #SCF034)



2.4 - SPANNER NUT (RPI PART #RPT364)

When removing the solenoid flute/bonnet, it is suggested by the OEM to use a pair of pliers on the welded area of the flute/bonnet. If done incorrectly, the pliers could collapse the hollow area of the flute/bonnet, thus preventing the plunger from moving freely.

However, using the Spanner Nut (RPI Part #RPT364) offers an easier and safer way to remove and install the flute/bonnet.

INSTRUCTIONS

STEP #1 - Disconnect the power to the autoclave. Remove the nut, coil bracket, and coil.

STEP #2 - Place the Spanner Nut over the flute/bonnet and align the Spanner Nut pins with the holes in the base of the flute/bonnet (**see Figure 2.4**).

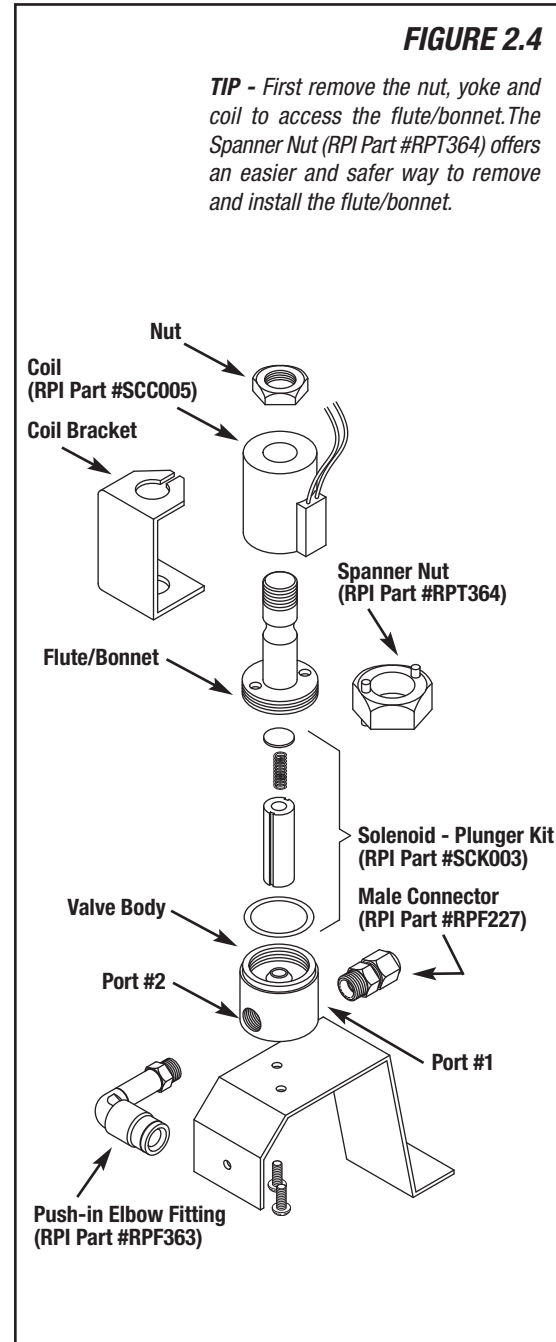
STEP #3 - Using a wrench on the Spanner Nut; loosen the flute/bonnet to access the internal parts of the solenoid valve.

STEP #4 - Service as needed.

RELATED RPI PARTS:

- Double Ended Spanner Wrench (RPI Part #RPT501)
- Male Connector (RPI Part #RPF227)
- Push-In Elbow Fitting (RPI Part #RPF363)
- Solenoid Valve Repair Kit (RPI Part #SCK003)
- Solenoid Coil (RPI Part #SCC005)
- Teflon® Tape (RPI Part #RPT579)

For additional information and tips **see page 41 - Figure 9.4**.



2.5 - HEX BALLDRIVER (5/64") (RPI PART #RPT297) - FOR USE WHEN REPLACING THE MICROSWITCH

The OEM microswitch is held in place with two small slotted pan head screws which are difficult to access. The compressor must be removed in order to remove these screws. The RPI microswitch comes with two socket head cap screws which are easy to install or remove when using the Hex Balldriver. The Hex Balldriver is designed to reach far into the autoclave to easily remove the screws, even at an angle, and without having to remove the compressor (**see Figure 2.5**). *Caution: Disconnect the power to the autoclave before servicing and be sure the steam generator/boiler has completely cooled.*

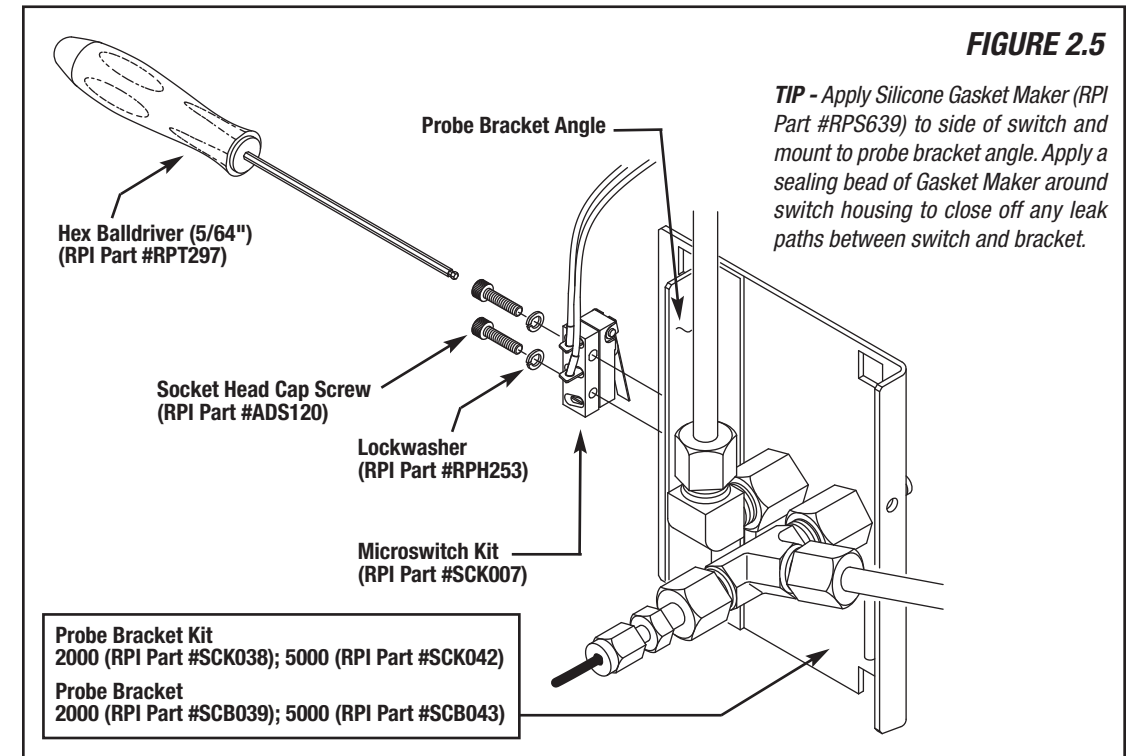
NOTE - Microswitch (RPI Part #SCK007) includes (2) #2-56 x 1/2" Ig. Socket Head Cap Screws (RPI Part #ADS120)

and (2) #2 Split Lockwashers (RPI Part #RPH253). The screws and lockwashers are also available separately and can be used with the OEM switch.

Apply Silicone Gasket Maker (RPI Part #RPS639) to side of switch and mount to probe bracket angle. Apply a sealing bead of gasket maker around switch housing to close off any leak paths between the switch and bracket. Watch for steam leaks from the cassette bay as they can cause damage to the microswitch and other internal components. Verify integrity of cassette seal steam ports and probe bracket alignment (**see page 12, 2.10 - Alignment Tool (RPI Part #SCT052)**).

RELATED RPI PARTS:

- Microswitch Kit (RPI Part #SCK007)
- Silicone Gasket Maker (RPI Part #RPS639)
- Socket Head Cap Screw (RPI Part #ADS120)
- Lockwasher (RPI Part #RPH253)



2.6 - CASSETTE SEAL REMOVAL TOOL (RPI PART #RPT372)

The Cassette Seal Removal Tool was designed to help remove the cassette seal for either maintenance or replacement without scratching the cassette lid or damaging the seal.

INSTRUCTIONS

Slip the tip of the tool behind the seal at one of the corners of the cassette and pry the seal loose (see Figure 2.6). Once the first corner is free, take hold of the cassette seal and pull down and out in order to remove it from the cassette groove. The cassette seal and groove can now be inspected and cleaned. For additional information and tips, see "Installation and Monthly Maintenance Guide" that is supplied with RPI's Cassette Seals (RPI Part #'s SCS001 & SCS029) or see page 22.

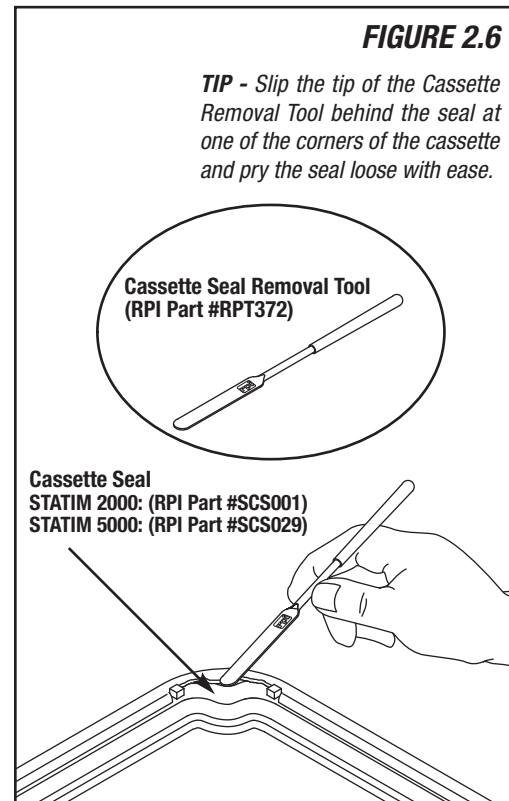


FIGURE 2.6

TIP - Slip the tip of the Cassette Removal Tool behind the seal at one of the corners of the cassette and pry the seal loose with ease.

2.7 - LIQUID SOAP (4/PKG) (RPI PART #RPS287)

The Liquid Soap comes in a convenient single-use foil pouch that's easy to store and use. It is recommended to use the soap on the cassette seal for installation and regularly scheduled maintenance every 30 days.

INSTRUCTIONS

Open one package of Liquid Soap and lightly lubricate the cassette seal using entire contents (see Figure 2.7). Dispose of packet after use. The SDS is available on the RPI website (www.rpiparts.com).

RELATED RPI PARTS:

- Cassette Seal 2000 (RPI Part #SCS001)
- Cassette Seal 5000 (RPI Part #SCS029)
- Sci-Dry™ (2 oz. Spray Bottle) (RPI Part #SCA054)

For additional information and tips, see "Installation and Monthly Maintenance Guide" that is supplied with RPI's Cassette Seals (RPI Part #'s SCS001 & SCS029) or see page 22.

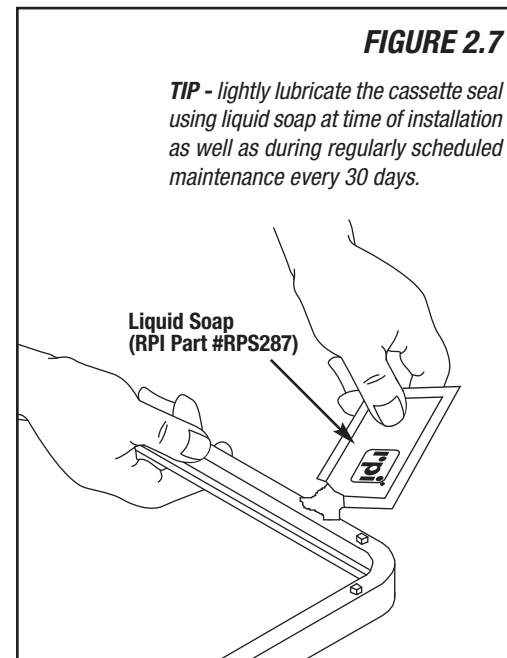


FIGURE 2.7

TIP - lightly lubricate the cassette seal using liquid soap at time of installation as well as during regularly scheduled maintenance every 30 days.

2.8 - THREADLOCKER 545 (RPI PART #RPA369)

Threadlocker 545 comes in a tube with a slender neck allowing it to reach difficult areas, and the tube has a reusable lid. It is for use on all pneumatic and hydraulic fittings requiring a high temperature sealant and threadlocker.

INSTRUCTIONS

Clean threads, shake well and use 2-3 drops on the threaded portion of a fitting to lock and seal. (Note: Accommodates operating pressures up to 10,000 PSI and temperatures ranging from -65°F to 300°F.) The SDS is available on the RPI website (www.rpiparts.com).

USE WITH RPI PARTS:

- Check Valve (RPI Part #SCK011)
- Male Connector (RPI Part #RPF227)
- Push-in Elbow Fitting (RPI Part #RPF363)
- Push-in Elbow Fitting (RPI Part #RPF377)
- Safety Valve (38 PSI) (RPI Part #SCV027)
- Safety Valve (70 PSI) (RPI Part #SCV004)

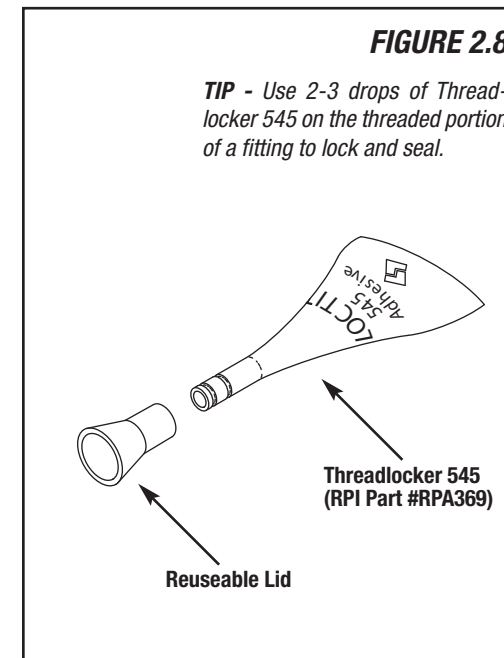


FIGURE 2.8

TIP - Use 2-3 drops of Threadlocker 545 on the threaded portion of a fitting to lock and seal.

2.9 - HEX BALLDRIVER (9/64") (RPI PART #RPT836)

The Hex Balldriver is designed to reach far into the autoclave to easily access the probe bracket mounting screws for alignment or replacement without removing other components. This job, without this long reach Balldriver, may have required removal of the pump, steam generator/boiler, and/or solenoid valve. This Balldriver will fit the OEM or RPI probe bracket mounting hardware. See Figure 2.9. **Caution: Disconnect the power to the autoclave before servicing and be sure the steam generator/boiler has completely cooled.**

RELATED RPI PARTS:

- Probe Bracket Kit 2000 (RPI Part #SCK038)
- Probe Bracket Kit 5000 (RPI Part #SCK042)
- Probe Bracket 2000 (RPI Part #SCB039)
- Probe Bracket 5000 (RPI Part #SCB043)
- Probe Bracket Gasket (RPI Part #SCG010)

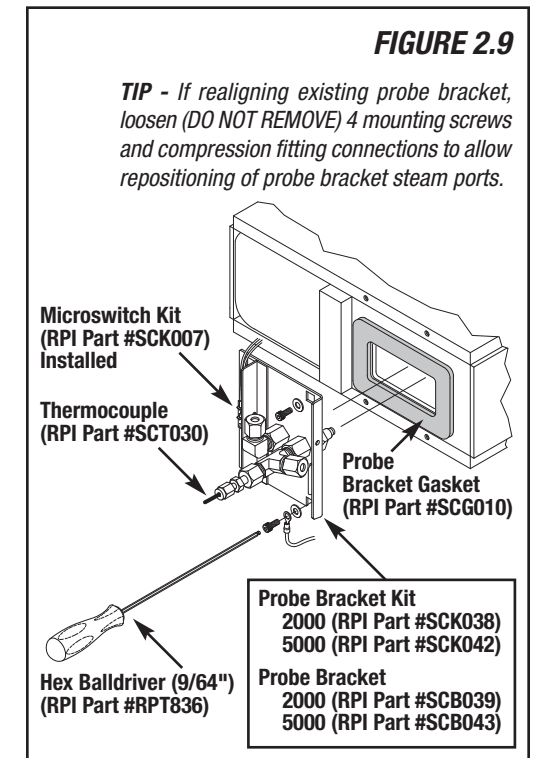


FIGURE 2.9

TIP - If realigning existing probe bracket, loosen (DO NOT REMOVE) 4 mounting screws and compression fitting connections to allow repositioning of probe bracket steam ports.

2.10 – ALIGNMENT TOOL (RPI PART #SCT052)

When removing or replacing the probe bracket assembly, the steam ports must be properly aligned. Use this Alignment Tool to easily and accurately set the position of the steam ports to the cassette.

INSTRUCTIONS

Separate the cassette tray from the cassette lid. Place the lid on counter top and remove the cassette seal. The cassette seal must be removed before continuing with Alignment Tool installation (see page 10 - Figure 2.6).

STEP #1 - Tilt the cassette lid and install Alignment Tool into steam ports from the inside of the cassette lid as shown. The square tabs on the tool must engage the square notches in the cassette lid, and the tool must lay flat within the cassette seal groove. The Alignment Tool must be seated correctly to avoid damaging the tray when

latched and closed. See Figure 2.10A.

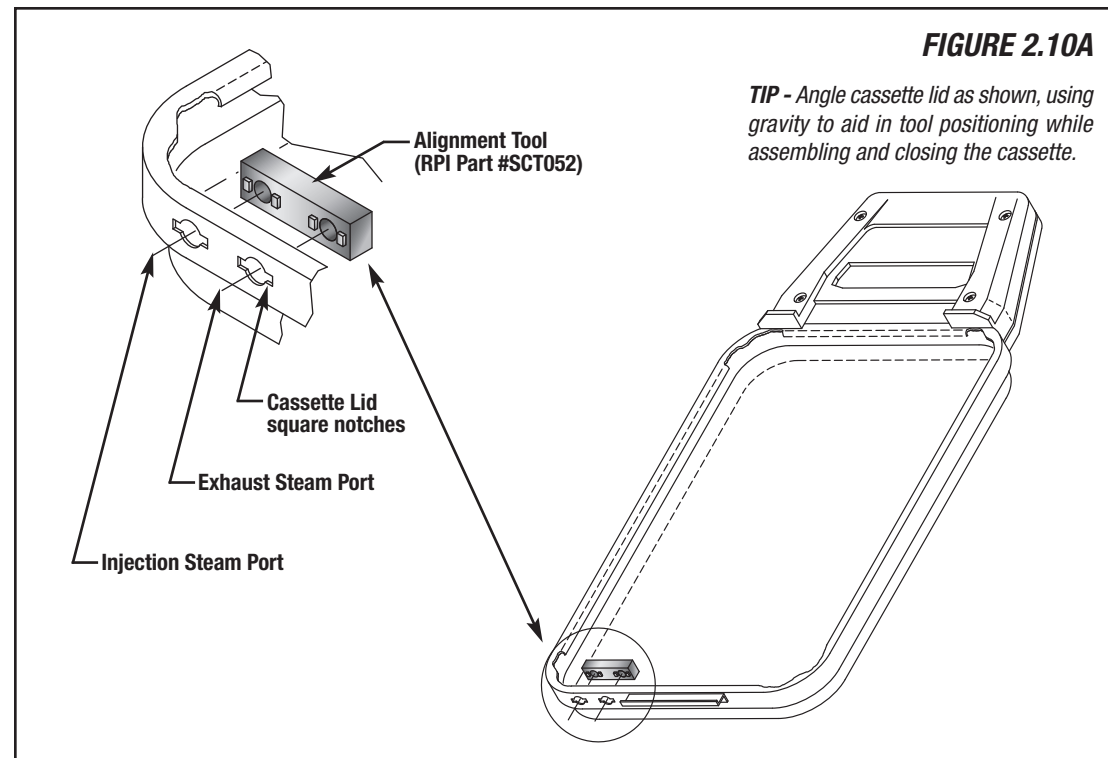
(Caution - Ensure that the Alignment Tool is properly installed before closing the cassette lid or damage can occur.)

STEP #2 - Carefully attach the bottom tray to the cassette lid and close to properly retain the Alignment Tool. The cassette lid should close normally and retain the Alignment Tool. **DO NOT FORCE IT CLOSED!**

STEP #3 - The cassette is now ready to be used to align probe bracket steam ports.

STEP #4 - If realigning an existing probe bracket, loosen (DO NOT REMOVE) 4 mounting screws (using 9/64" Hex Balldriver - RPI Part #RPT836) and compression fitting connections to allow repositioning of probe bracket steam ports.

STEP #5 - Slowly insert the cassette into the cassette bay (armature). As the cassette approaches the probe bracket (still loosely installed), position bracket assembly up and down and sideways until probe bracket steam ports and cassette engage easily. Once properly inserted, the spring bar should engage and lock the cassette into position. A "click" will be heard and felt. See Figure 2.10B.



STEP #6 - Lightly snug the probe bracket mounting screws. Move the cassette in and out several times to ensure proper alignment. Leave the cassette in the engaged position. Now tighten mounting screws to retain bracket position. The probe bracket assembly is now aligned and ready for use.

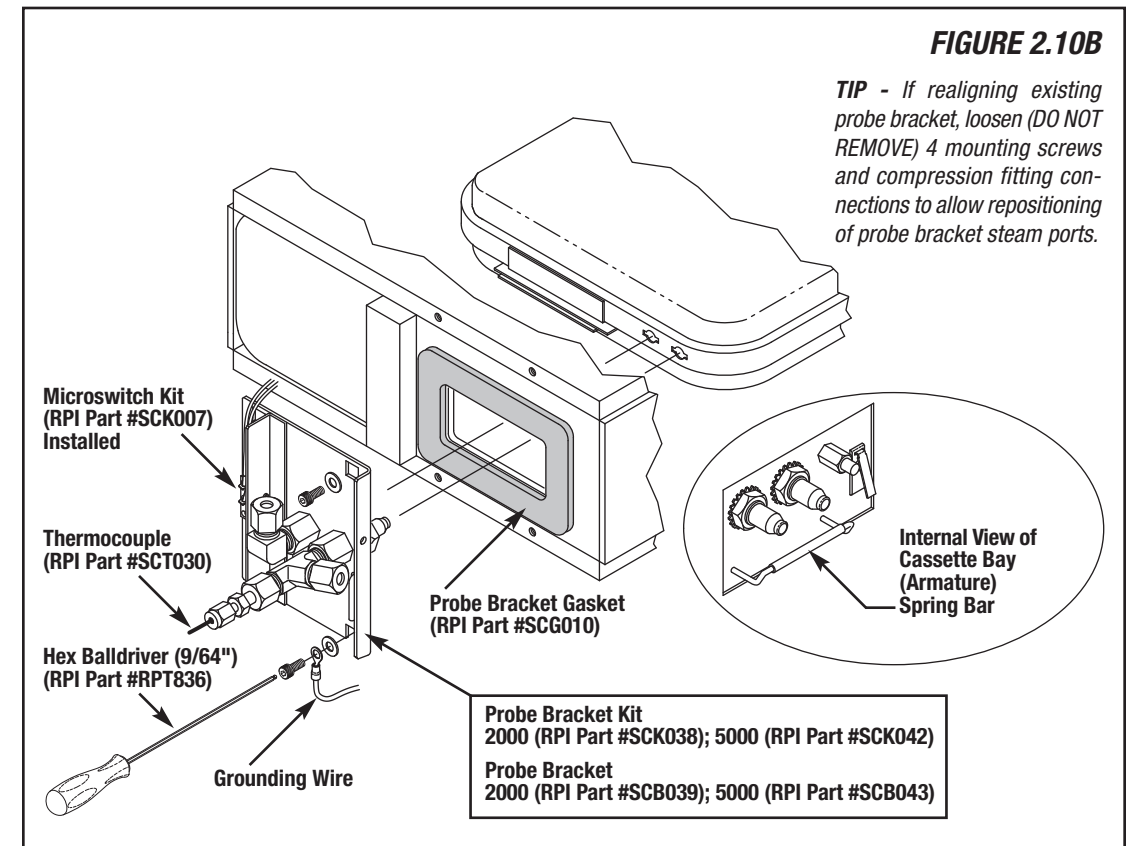
STEP #7 - Remove Alignment Tool. Reinstall or replace Cassette Seal (RPI Part #SCS001 fits STATIM 2000 & RPI Part #SCS029 fits STATIM 5000) using Liquid Soap (RPI Part #RPS287) included with the probe brackets. See page 10 - Figure 2.7. For additional information regarding the care and maintenance of the cassette seal, see "Installation and Monthly Maintenance Guide" that is supplied with RPI's Cassette Seals (RPI Part #'s SCS001 & SCS029) or see page 22.

STEP #8 - After successful installation or realignment of probe bracket, install or realign thermocouple. See RPI Part #SCT030 Installation Instructions that are available on the RPI website (www.rpiparts.com).

STEP #9 - Coat entire inside of cassette with Sci-Dry™ (RPI Part #SCA054).

RELATED RPI PARTS:

- Probe Bracket Kit 2000 (RPI Part #SCK038)
- Probe Bracket Kit 5000 (RPI Part #SCK042)
- Probe Bracket 2000 (RPI Part #SCB039)
- Probe Bracket 5000 (RPI Part #SCB043)
- Probe Bracket Gasket (RPI Part #SCG010)
- Cassette Seal 2000 (RPI Part #SCS001)
- Cassette Seal 5000 (RPI Part #SCS029)
- Microswitch Kit (RPI Part #SCK007)
- Thermocouple (RPI Part #SCT030)
- Liquid Soap (RPI Part #RPS287)
- Hex Balldriver (9/64") (RPI Part #RPT836)



2.11 – WATER QUALITY TESTER (RPI PART #RPT820)

The Water Quality Tester (RPI Part #RPT820) is a meter designed to measure water quality. This meter determines the total amount of dissolved solids (TDS) present in the water being used for sterilization. SciCan states the total dissolved solids (TDS) allowable in the water reservoir to be a maximum of 5 Parts Per Million (ppm) or a conductivity of less than 10 Micro Siemens ($\mu\text{s}/\text{cm}$). RPI's Water Quality Tester displays its readings in "Parts Per Million" (ppm) and will automatically compensate for temperature variations.

INSTRUCTIONS

STEP #1 - Remove cap.

STEP #2 - Turn Water Quality Tester on (slide switch on top of meter to the "ON" position). See Figure 2.11.

STEP #3 - Rinse sensing probes (see Figure 2.11) in distilled water by submersing and stirring gently.

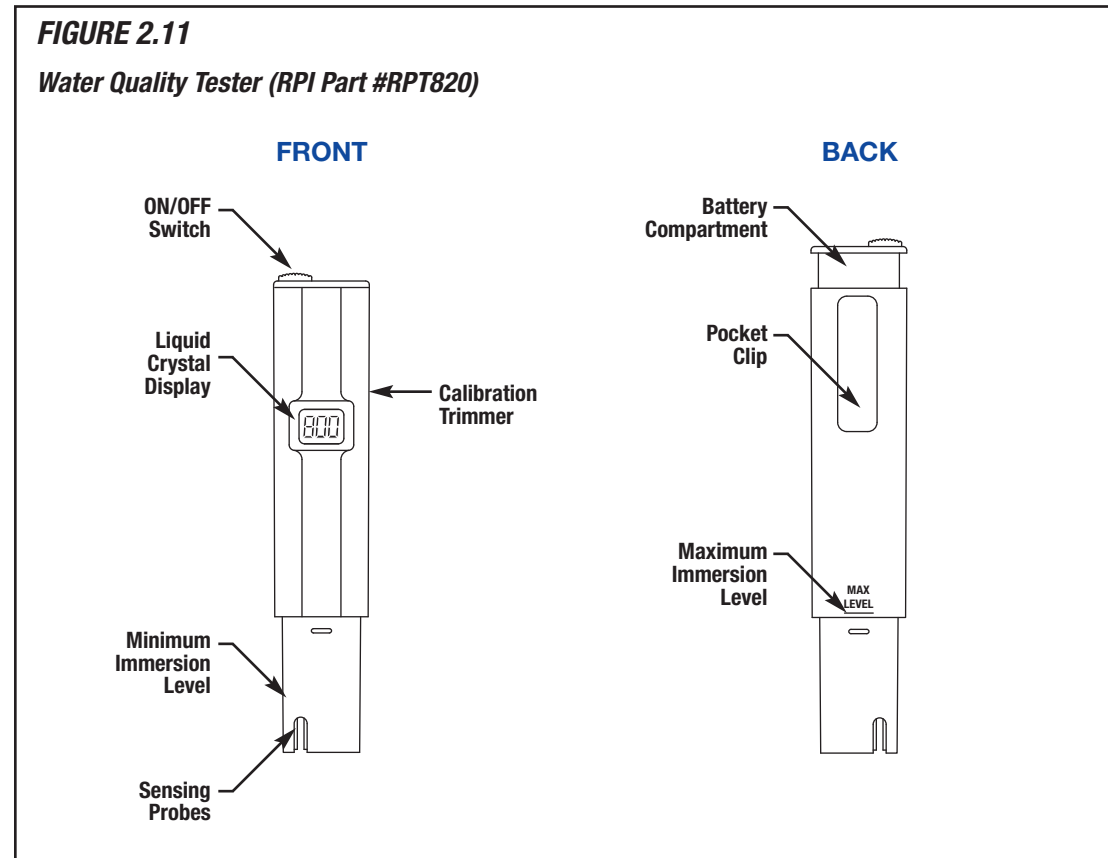
STEP #4 - Immerse Tester in a water sample without exceeding the max level line and without bottoming out the meter. Stir gently and wait for the reading to stabilize.

STEP #5 - The reading should be ≤ 5 ppm.

BATTERIES - Expected battery life should be approximately 150 hours. Batteries should be replaced when the display will not turn on or fades. The Tester uses (4) 1.5V coin cells (Type LR44 or 357).

FIGURE 2.11

Water Quality Tester (RPI Part #RPT820)



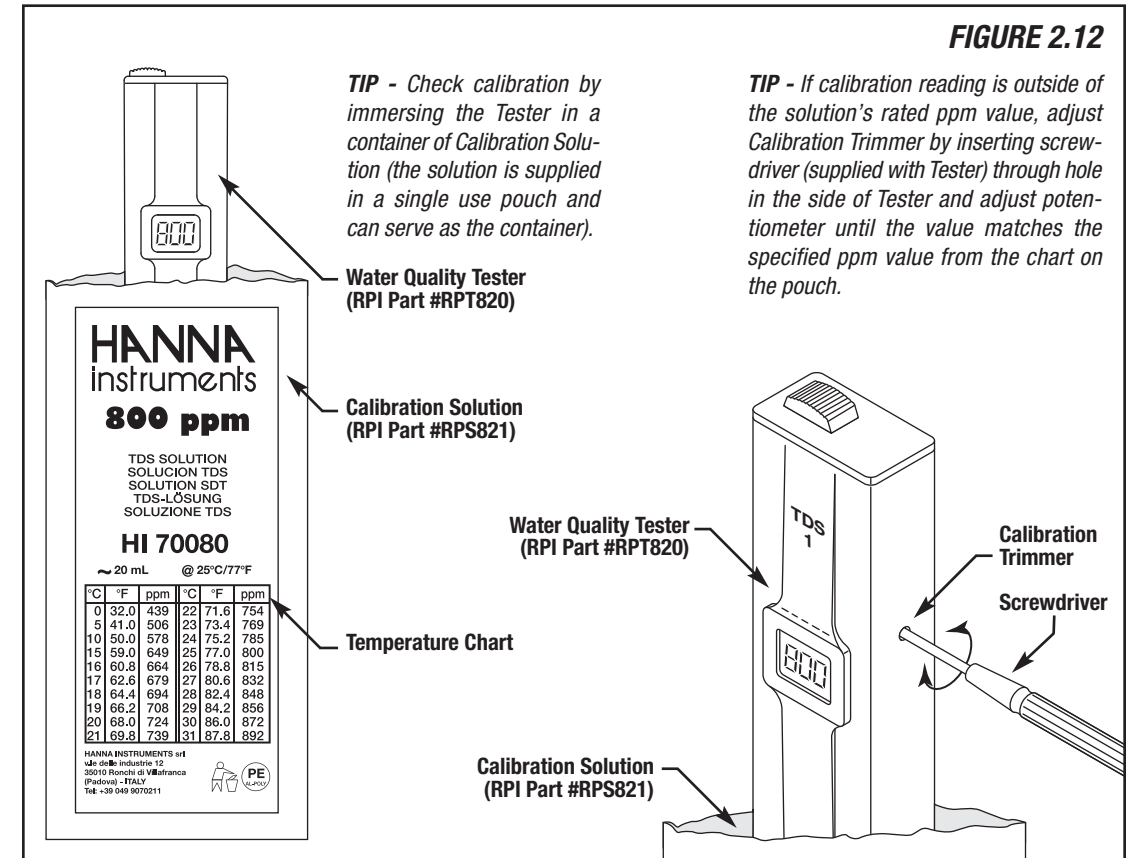
2.12 – CALIBRATION SOLUTION (RPI PART #RPS821)

CALIBRATION – Check calibration of the Water Quality Tester (RPI Part #RPT820) approximately every 4 months using Calibration Solution (RPI Part #RPS821). Check calibration by immersing the Tester in a container of Calibration Solution (the solution is supplied in a single use pouch and can serve as the container - see Figure 2.12) without exceeding the max level line and without bottoming out the meter. Stir gently and wait for the reading to stabilize.

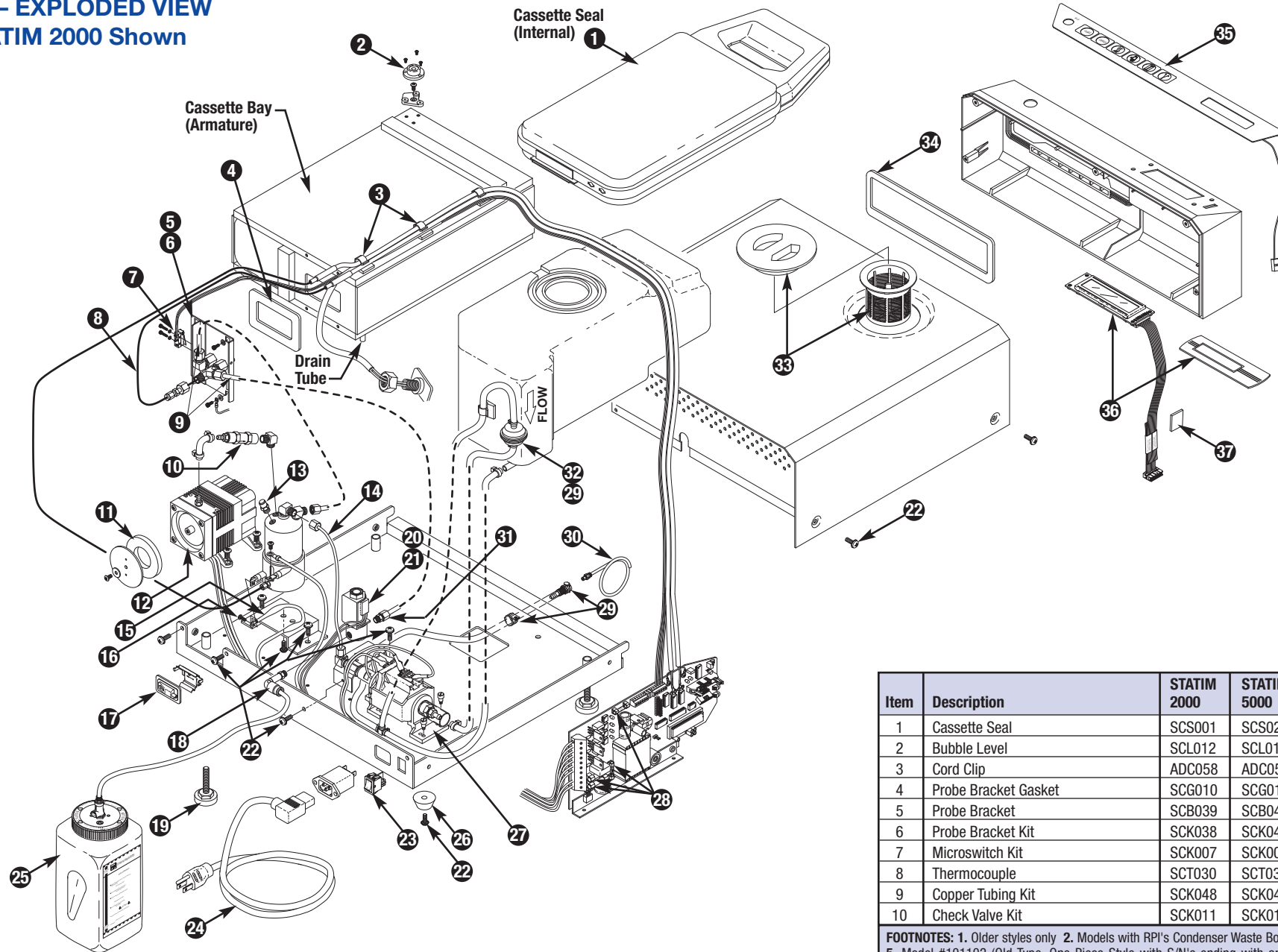
The Calibration Solution is certified traceable to NIST Standard Reference Material Potassium Chloride (7447-40-7) and will provide a reading on the Tester of 800 ppm when tested at room temperature (77°F). Consult temperature chart on Calibration Solution pouch for ppm values vs. temperature condition. SDS sheet available on the RPI website (www.rpiparts.com).

If calibration reading is outside of the solution's rated ppm value, adjust Calibration Trimmer by inserting screwdriver (supplied with Tester) through hole in the side of Tester and adjust potentiometer until the value matches the specified ppm value from the chart on the pouch (see Figure 2.12).

FIGURE 2.12



3.0 – EXPLODED VIEW STATIM 2000 Shown



Item	Description	STATIM 2000	STATIM 5000
11	Compressor Filter	SCF002	
12	Air Compressor Kit	SKC020	
13	Safety Valve (70 PSI)	SCV004	SCV004
14	Metering Tube (290)	SCT053	SCT053
15	Double Thermal Fuse Assembly	SCF006	SCF006
16	Screw (#6-32 X 1/4)	ADS054	ADS054
17	Biological Filter	SCF032 ⁴	SCF032 ⁴
18	Push-In Elbow Fitting	RPF363	RPF363
19	Leveler Leg	RPF362	RPF362
20	Solenoid - Coil	SCC005	SCC005
21	Solenoid - Plunger Kit	SCK003	SCK003
22	Screw (#8-32 X 1/2 - SEMS)	RPH817	RPH817
23	Power Switch	SCS023	SCS023
24	Power Cord Replacement	SKC025 ⁸	
	Power Cord	RPC291	RPC291
25	Condenser Waste Bottle Kit	SCK016	SCK016
	Condenser Waste Bottle with Lid	SCB018 ²	SCB018 ²
26	Rubber Foot	CAF011	CAF011
27	Pump Kit (INVENSYS)	SCP050	SCP050
	Pump Kit (ULKA)	SCP051	SCP051
	Fuse (1.5A, 250V) - Time Delay	RPF071 ¹	
	Fuse (2A, 250V)	RPF367	RPF367
	Fuse (1/4A, 250V) - Time Delay	RPF368	RPF368
	Fuse (1/2A, 250V) - Time Delay	RPF060	
	Fuse (1A, 250V) - Time Delay	RPF061 ¹	
29	Drain Kit with Pump Filter	SCK037	
	Cable Holder	RPC702	RPC702
	Female Quick Connect Fitting (White)	RPF428	RPF428
30	Drain Tube Assembly Kit	RPK432	RPK432
	Male Quick Connect Fitting (White)	RPF429	RPF429
31	Male Connector	RPF227	RPF227
32	Water Filter (In-Line)	SCF034	SCF034
	Reservoir Cap & Filter	SCK059	SCK059
33	Reservoir Cap	SCC060	SCC060
	Reservoir Filter	SCF061	SCF061
34	Fascia Gasket	SCG009	SCG044
35	Keypad (Old Style)	SCK015 ⁵	
	Keypad		SCK040 ⁶
	Keypad (New Style)	SCK041 ⁷	
	LCD Kit	SCK062 ³	SCK062 ³
36	LCD Decal	SCD063 ³	SCD063 ³
	Display Assembly	SCA022	SCA022
37	Mounting Pad	RPP819	RPP819

Item	Description	STATIM 2000	STATIM 5000
1	Cassette Seal	SCS001	SCS029
2	Bubble Level	SCL012	SCL012
3	Cord Clip	ADC058	ADC058
4	Probe Bracket Gasket	SCG010	SCG010
5	Probe Bracket	SCB039	SCB042
6	Probe Bracket Kit	SCK038	SCK043
7	Microswitch Kit	SCK007	SCK007
8	Thermocouple	SCT030	SCT030
9	Copper Tubing Kit	SCK048	SCK049
10	Check Valve Kit	SCK011	SCK011

FOOTNOTES: 1. Older styles only 2. Models with RPI's Condenser Waste Bottle Kit (RPI Part #SCK016) 3. Model #01-121101 4. Serial #2101DK0274 and above 5. Model #101102 (Old Type, One Piece Style with S/N's ending with an 'A') 6. Model #01-201103 7. Model #01-121101 (New Style, Two Piece Style) 8. Includes 90° Liquid Tight Strain Relief with Locking Nut (RPI Part #RPB365).

4.0 - PLANNED MAINTENANCE (PM) CHECKLIST

Sterilizer PM Kit (RPI Part #SCK035)

For parts to fit the SciCan STATIM 2000



PART	RPI PART #	STERILIZER PM TIP
<input type="checkbox"/> Cassette Seal	SCS001	<p>Refer to the “<i>Installation and Monthly Maintenance Guide</i>” included with the Cassette Seal, or see page 22.</p> <p>Remove the old Cassette Seal. Clean the cassette groove and inspect the cassette tray and lid for damage. Lubricate and install the new Cassette Seal.</p> <p>The OEM recommends lubrication of Cassette Seal every 30 days and replacement every 6 months or 500 cycles – whichever comes first. Clean the outer edge of cassette tray and the exposed area of the Cassette Seal weekly. Apply Sci-Dry™ (RPI Part #SCA054) every 10 cycles and after cleaning.</p>
<input type="checkbox"/> Compressor Filter	SCF002	<p>Remove the pump filter cover. Remove filter and clean out any dust or debris. Replace filter and cover. If you find that the old Air Compressor Filter is wet or shows signs of water staining, then the check valve is leaking and must be replaced to protect the air compressor from damage. RPI offers a Check Valve Kit (RPI Part #SCK011) which includes translucent tubing making it easy to see a leaky check valve.</p> <p>The OEM recommends replacing the Air Compressor Filter every 6 months or 500 cycles – whichever comes first.</p>
<input type="checkbox"/> Biological Filter	SCF032	<p>This Biological Filter fits STATIM 2000 models with serial numbers 2101DK0274 and up, or if the autoclave has been upgraded. (Note: If your autoclave is not equipped with this filter set-up, then you will not need this filter).</p> <p>Note the flow arrow direction on the filter body (flow direction is from the air compressor to the check valve). If you find that the old Biological Filter is wet or shows signs of water staining, then the check valve is leaking and must be replaced to protect the air compressor from damage. RPI offers a Check Valve Kit (RPI Part #SCK011) which includes translucent tubing making it easy to see a leaky check valve.</p> <p>The OEM recommends replacing the Biological Filter every 6 months or 500 cycles – whichever comes first.</p>

Sterilizer PM Kit (RPI Part #SCK035)

For parts to fit the SciCan STATIM 2000 - continued



PART	RPI PART #	STERILIZER PM TIP
<input type="checkbox"/> Water Filter (In-Line) or Pump Mesh Filters	SCF034	<p>Debris is the #1 reason for pump failure, so before replacing this filter, be sure to check the reservoir for dirt and debris. Inspect and clean or replace the Reservoir Cap & Filter (RPI Part #SCK059). Drain, clean and flush the reservoir. Refill reservoir with distilled water after filter replacement.</p> <p>If your autoclave comes equipped with an In-Line Water Filter, cut the cable ties and remove the old filter. Note the flow arrow direction on the filter body (flow direction is from the reservoir to the pump). Install the new filter using the new cable ties included. Be sure to prime the pump in order to purge trapped air before running a complete cycle. If your machine does not have an In-Line Water Filter, then be sure to clean the pump mesh filters (located inside the pump’s input and output port fittings). See page 6 and 7 - Figure 2.3 A and B.</p> <p>The OEM recommends replacing the Water Filter (In-Line) every 6 months or 500 cycles – whichever comes first.</p> <p>If the autoclave you’re working on has the mesh filters, we recommend you upgrade to the Drain Kit with Pump Filter (RPI Part #SCK037), making future service much easier and providing a much better filtering system to protect the pump (along with providing a quick & easy way to drain the reservoir through the front of the autoclave).</p>
<input type="checkbox"/> Other Routine Maintenance	–	<p>Apply Sci-Dry™ (RPI Part #SCA054) every 10 cycles and after cleaning. Coat all internal surfaces of cassette. Sci-Dry™ minimizes spotting and allows instruments to dry more efficiently.</p> <p>The OEM recommends the replacement of the Check Valve Kit (RPI Part #SCK011) and the steam generator/boiler’s Safety Valve (70PSI) (RPI Part #SCV004) every 2 years, and the use of the Reservoir Cap & Filter (RPI Part #SCK059) on all versions of the STATIM autoclave.</p> <p>To aid in proper cleaning and maintenance of autoclaves, RPI also offers a Cleaning Kit (RPI Part #RPK791) which includes a variety of brushes, sponges and cleaning pads assembled in a convenient carrying case.</p>

4.0 - PLANNED MAINTENANCE (PM) CHECKLIST

Sterilizer PM Kit (RPI Part #SCK036)

For parts to fit the SciCan STATIM 5000



PART	RPI PART #	STERILIZER PM TIP
<input type="checkbox"/> Cassette Seal	SCS029	<p>Refer to the "Installation and Monthly Maintenance Guide" included with the cassette seal, or see page 22.</p> <p>Remove the old Cassette Seal. Clean the cassette groove and inspect the cassette tray and lid for damage. Lubricate and install the new Cassette Seal.</p> <p>The OEM recommends lubrication of Cassette Seal every 30 days and replacement every 6 months or 500 cycles – whichever comes first. Clean the outer edge of cassette tray and the exposed area of the Cassette Seal weekly. Apply Sci-Dry™ (RPI Part #SCA054) every 10 cycles and after cleaning.</p>
<input type="checkbox"/> Air Compressor Filter	SCF031	<p>The Air Compressor Filter is used with the Medo air compressor only. (Note: If your autoclave is not equipped with this type of air compressor, then you will not need this filter).</p> <p>If you find that the old Air Compressor Filter is wet or shows signs of water staining, then the check valve is leaking and must be replaced to protect the air compressor from damage. RPI offers a Check Valve Kit (RPI Part #SCK011) which includes translucent tubing making it easy to see a leaky check valve.</p> <p>The OEM recommends replacing the Air Compressor Filter every 6 months or 500 cycles – whichever comes first.</p>
<input type="checkbox"/> Biological Filter	SCF032	<p>Note the flow arrow direction on the filter body (flow direction is from the air compressor to the check valve). If you find that the old Biological Filter is wet or shows signs of water staining, then the check valve is leaking and must be replaced to protect the air compressor from damage. RPI offers a Check Valve Kit (RPI Part #SCK011) which includes translucent tubing making it easy to see a leaky check valve.</p> <p>The OEM recommends replacing the Biological Filter every 6 months or 500 cycles – whichever comes first.</p>

Sterilizer PM Kit (RPI Part #SCK036)

For parts to fit the SciCan STATIM 5000 - continued



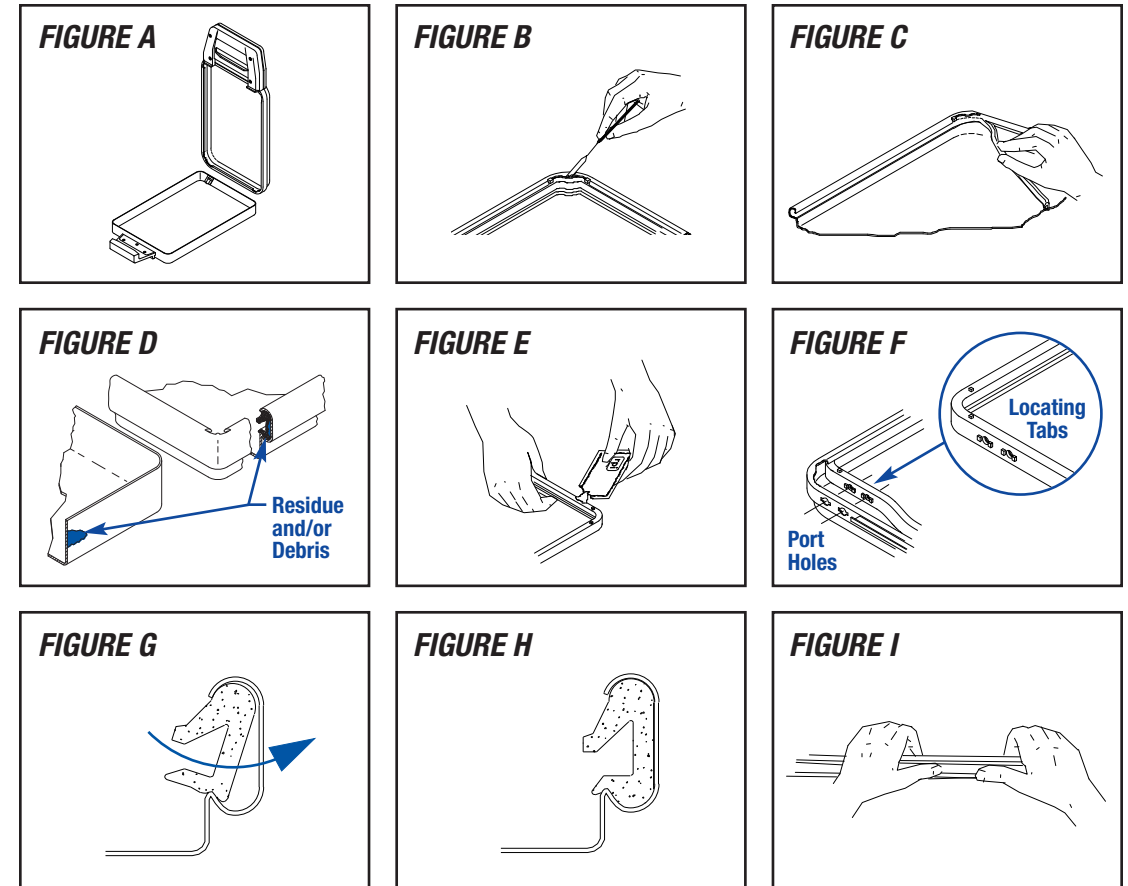
PART	RPI PART #	STERILIZER PM TIP
<input type="checkbox"/> Water Filter (In-Line) or Pump Filters	SCF034	<p>Debris is the #1 reason for pump failure, so before replacing this filter, be sure to check the reservoir for dirt and debris. Inspect and clean or replace the Reservoir Cap & Filter (RPI Part #SCK059). Drain, clean and flush the reservoir. Refill reservoir with distilled water after filter replacement.</p> <p>If your autoclave comes equipped with an In-Line Water Filter, cut the cable ties and remove the old filter. Note the flow arrow direction on the filter body (flow direction is from the reservoir to the pump). Install the new filter using the new cable ties included. Be sure to prime the pump in order to purge trapped air before running a complete cycle. If your machine does not have an In-Line Water Filter, then be sure to clean the pump mesh filters (located inside the pump's input and output port fittings). See page 6 and 7 - Figure 2.3 A and B.</p> <p>The OEM recommends replacing the Water Filter (In-Line) every 6 months or 500 cycles – whichever comes first.</p> <p>If the autoclave you're working on has the mesh filters, we recommend you upgrade to the Drain Kit with Pump Filter (RPI Part #SCK037), making future service much easier and providing a much better filtering system to protect the pump (along with providing a quick & easy way to drain the reservoir through the front of the autoclave).</p>
<input type="checkbox"/> Other Routine Maintenance	–	<p>Apply Sci-Dry™ (RPI Part #SCA054) every 10 cycles and after cleaning. Coat all internal surfaces of cassette. Sci-Dry™ minimizes spotting and allows instruments to dry more efficiently.</p> <p>The OEM recommends the replacement of the Check Valve Kit (RPI Part #SCK011) and the steam generator/boiler's Safety Valve (70PSI) (RPI Part #SCV004) every 2 years, and the use of the Reservoir Cap & Filter (RPI Part #SCK059) on all versions of the STATIM autoclave.</p> <p>To aid in proper cleaning and maintenance of autoclaves, RPI also offers a Cleaning Kit (RPI Part #RPK791) which includes a variety of brushes, sponges and cleaning pads assembled in a convenient carrying case.</p>

4.0 - INSTALLATION AND MONTHLY MAINTENANCE FOR CASSETTE SEAL

Cassette Seal (RPI Part #SCS001) to fit the SciCan STATIM 2000

Cassette Seal (RPI Part #SCS029) to fit the SciCan STATIM 5000

- STEP #1** - The cassette must be opened and cooled before removing the cassette seal. *See Figure A.*
- STEP #2** - Start with any of the (4) corners and begin prying the cassette seal loose using the RPI Cassette Seal Removal Tool (RPI Part #RPT372) and by pulling down and out at the same time. *See Figures B and C.*
- STEP #3** - Once the first corner is free, take hold of the cassette seal and pull down and out in order to remove it from the cassette groove. Be careful not to tear the (2) locating tabs in each corner of the cassette seal. *See Figures B and C.*
- STEP #4** - Once the cassette seal has been removed, it is important to inspect, clean and remove any residue and/or debris from the cassette groove and outer edge. Check for dings and dents on both halves of the cassette; if present, a proper seal may not occur. *See Figure D.*
- STEP #5** - Using (1) package of RPI Liquid Soap (RPI Part #RPS287), lube the cassette seal completely. *Note: It is not necessary to lube the inside of the cassette seal.* *See Figure E.*
- STEP #6** - Now you are ready to install the cassette seal.
- STEP #7** - When installing the cassette seal, it is best to start in the back corner, nearest the port holes of the cassette. Slip the cassette seal under and into the corner, placing the locating tabs at the edge of the open corner. Now align the port holes and their locating tabs with the cassette. The locating tabs must protrude through the square notches of the cassette lid. *See Figure F.*
- STEP #8** - Install the other corners in the same manner. Now insert the cassette seal into the groove of the cassette – one side at a time. *See Figures G and H.*
- STEP #9** - As you move along installing the cassette seal, check the corners to ensure that the locating tabs stay in place. *Note: The sides should be inserted until smooth – without waves or bumps.* *See Figure I.*
- STEP #10** - After you have completely installed the cassette seal, make a final inspection of all corners and all locating tabs. Remove excess soap from the port holes as the soap can cause a build up on the steam ports and in turn cause a bad seal.
- STEP #11** - Run a few test cycles to check for steam leaks, then apply Sci-Dry™ (RPI Part #SCA054). *Note: During the test cycles, it is normal to hear a hissing sound at first. The sound is from the excess liquid soap expelling and the cassette seal seating in place.*
- STEP #12** - After running the test cycles, if steam still leaks, reinstall the cassette seal and run additional test cycles. If steam leaks still occur, it is possible that the problem was not a faulty cassette seal, but something else, so refer to the operator's manual or contact your service professional.



USAGE TIPS

- ✓ Always note the position of the cassette when inserting it into the unit – if the cassette is installed upside down, the thermocouple will bend and the sterilizer will become inoperative.
- ✓ The OEM recommends lubrication of Cassette Seal every 30 days and replacement every 6 months or 500 cycles – whichever comes first. Clean the outer edge of cassette tray and the exposed area of the Cassette Seal with RPI Liquid Soap (RPI Part #RPS287) weekly. Apply Sci-Dry™ (RPI Part #SCA054) every 10 cycles and after cleaning.
- ✓ Always keep the inside of the cassette clean. Remove residue and/or debris from the metal edge of the lower half of the cassette on a regular basis.
- ✓ Sci-Dry™ (RPI Part #SCA054) should be applied after every 10 cycles and after cassette cleaning. Coat all internal surfaces of cassette. Sci-Dry™ minimizes spotting and allows instruments to dry more efficiently.
- ✓ Watch for steam leaks from the cassette bay as they can cause damage to the microswitch and other internal components, thus rendering the sterilizer inoperative.
- ✓ Refill the reservoir with distilled water only. At the same time that the reservoir is refilled, the condenser waste bottle should be emptied and refilled. Refill the condenser waste bottle with tap water to the Minimum Fill Level as shown on the bottle. *(Note: Never operate sterilizer when water level is above the Maximum Fill Line or below the Minimum Fill Line.)*

6.0 – LCD ERROR CODES

(Note: Error Codes that are not currently used by Sci-Can are listed as "Not Currently In Use" or not listed in this booklet.)

The key to STATIM error codes is to first identify which model you are servicing because the terms used in the error codes and operation messages may differ between the earlier and later models.

Earlier Models	STATIM 2000	Model 101102 <i>Serial Number ends with an "A"</i>
Later Models	STATIM 2000	Model 121101
	STATIM 5000	Model 01-201103

It is important to know the software revision your STATIM is running in order to properly troubleshoot and use these error codes.

At power ON, the display will read:
STATIM 2000 S201R501

This display will report whether you have a model 2000 or 5000 and shows the autoclave software revision level. The revision level in this example shows REV. "501". This will only be displayed for 5 seconds. Then it will switch to "select a cycle".

- STATIM autoclaves manufactured from 1990 to 1994 may display "select a program" and the software revision may not be shown.

At the start up of the sterilization process, the earlier models display the operation message "Select Program" in the LCD display panel, while the later models display "Select A Cycle". Both messages, while different, actually mean the same thing – the user is being asked to select which of the three cycles to begin.

Error codes and operation messages indicated on the LCD panel differ on the earlier models versus the later models. The earlier models display the phrase "Check Cassette" followed by a number 1-8, while the later models display "Cycle Fault" followed by a number 1-27. With both the earlier and later models, each number represents a different type of error. (Note: Not all numbers are used, so only those numbers that are used will be addressed in this booklet.) In addition to error codes, an operation message may also appear on the LCD display for both the earlier and later models. Error codes and messages help to troubleshoot the exact cause of the problem. In addition, the system on both the earlier and later models is designed to abort when an error occurs.

During the sterilization process, there are six stages that the machine goes through from start to finish and the LCD displays each stage number as it occurs during the process. The following sections describe each LCD error code or message that might appear during any of the six sterilization stages. In addition, this booklet includes troubleshooting tips and "Things to Check" for each error code and message.

6.0 – LCD ERROR CODES *(continued)*

STAGE #1 – WARMING UP

During this stage, the distilled water heats up from room temperature to 95°C in the steam generator/ boiler. The water is actually pumped from the reservoir and then heated in the steam generator/boiler.

LCD MESSAGE

CHECK CASSETTE #1 (CYCLE FAULT #1)

The steam generator/boiler did not heat up. The cassette temperature (~95-102°C) was not reached within ~3 minutes (or within the time out period).

THINGS TO CHECK

- Check thermal fuse for continuity. Replace if necessary – Thermal Fuse (RPI Part #SCF006) – **see page 38, Figure 9.1 - Steam Generator/Boiler.**
- Large steam leak is present.
- Over-loaded cassette tray.
- Clean and lubricate cassette seal – **see page 10, 2.7 - Liquid Soap (RPI Part #RPS287).** Replace the Cassette Seal if necessary (RPI Part #SCS001 fits model 2000) or (RPI Part #SCS029 fits model 5000).
- Inspect and clean steam ports on probe bracket.
- Check pump for proper operation – **see page 6, 2.3 - Pump Tester Bottle (RPI Part #SCK024).**
- Check steam generator/boiler – **see page 38, Figure 9.1 - Steam Generator/Boiler.**

LCD MESSAGE

CHECK CASSETTE #2 (CYCLE FAULT #2)

Cassette temperature (~95-100°C) was not reached within ~1 minute and 20 seconds (or within the time out period).

THINGS TO CHECK

- Large steam leak is present.
- Over-loaded cassette tray.
- Clean and lubricate cassette seal – **see page 10, 2.7 - Liquid Soap (RPI Part #RPS287).** Replace the Cassette Seal if necessary (RPI Part #SCS001 fits model 2000), and (RPI Part #SCS029 fits model 5000).
- Inspect and clean steam ports on probe bracket.

STAGE #2 – CONDITIONING

After initial warming stage, the steam is injected into the cassette; the steam temperature continues to rise from 95°C. The vent solenoid will open and close several times to maintain proper cassette steam temperature, expelling steam/air into the condenser waste bottle.

For LCD Messages and Things to Check, refer to Stage #1 - Warming Up: Check Cassette #1 (Cycle Fault #1) and Check Cassette #2 (Cycle Fault #2).

6.0 – LCD ERROR CODES *(continued)*

STAGE #3 – PRESSURIZING

The pressure increases as the cassette temperature rises to the factory set temperatures for the “Unwrapped”, “Wrapped” and “Rubber & Plastic” cycles. The vent solenoid will open and close several times to maintain proper cassette steam temperature, expelling steam/air into the condenser waste bottle.

LCD MESSAGE *(For Model 2000 only)* CHECK CASSETTE #3 (CYCLE FAULT #3)

The cassette fails to pressurize or reach temperature (~95° - 110°C) within ~70 seconds (or within the time out period).

THINGS TO CHECK

- Clean and lubricate the cassette seal – **see page 10, 2.7 - Liquid Soap (RPI Part #RPS287)**. Replace the Cassette Seal if necessary (RPI Part #SCS001 fits model 2000), and (RPI Part #SCS029 fits model 5000).
- Inspect and clean steam ports on probe bracket.
- Solenoid valve plunger may be compromised by debris or may be worn. Check the plunger inside the flute/bonnet for proper movement. Replace Solenoid Plunger Kit (RPI Part #SCK003) if necessary. **See page 41, Figure 9.4 - Solenoid Valve.**

LCD MESSAGE

CHECK CASSETTE #4 (CYCLE FAULT #4)

The “Sterilization Stage” fails to begin within specified time noted in the chart below.

STATIM	Model #	Should begin “Sterilization Stage”
2000	101102 S/N “A”	Within ~ 10 minutes of reaching temperature (~ 95°-110°C)
2000	121101	Within ~ 6 minutes of reaching temperature (~ 95°-110°C)
5000	01-201103	Within ~ 6 minutes of reaching temperature (~ 95°-110°C)

THINGS TO CHECK

- Refer to Stage #3 - Pressurizing: “Check Cassette #3 (Cycle Fault #3)”.
- Check Safety Valve (70 PSI) (RPI Part #SCV004) for leaks and replace if necessary.
- Leaky check valve – **see page 24, Service Tip #2**. Inspect the compressor air filter. If it is wet, replace the Check Valve Kit (RPI Part #SCK011), the Air Filter (RPI Part #SCF002) and/or the Biological Filter (RPI Part #SCF032).

LCD MESSAGE *(For Model 2000 only)* CHECK CASSETTE #5

The steam generator/boiler may not be getting enough water or steam generator/boiler is suspect.

THINGS TO CHECK

- A weak pump due to dirty mesh filters in the pump fittings or dirty Water Filter (RPI Part #SCF034). Check pump’s operation by using the Pump Tester Bottle Kit (RPI Part #SCK024) – **see pages 6 and 7, 2.3 - Pump Tester Bottle (RPI Part #SCK024)**. If pump passes test, boiler must be replaced.
- Clean or calibrate steam generator/boiler **see page 39 Figure 9.2 or page 40 Figure 9.3.**

6.0 – LCD ERROR CODES *(continued)*

STAGE #4 – STERILIZATION

The temperature and pressure is maintained for the chosen cycle. Air/steam is being purged from the cassette as the vent solenoid valve opens and closes several times to maintain optimum temperature. The pump continues to pump distilled water into the steam generator/boiler which in turn pumps saturated steam into the cassette. The condenser waste bottle collects and allows the steam to cool down safely.

LCD MESSAGE CHECK CASSETTE #6

Applies to the STATIM 2000, Model 101102 only (with serial number that end with an “A” – without a water quality sensor).

The steam generator/boiler may be contaminated. The steam generator/boiler’s temperature should be at least 5°C higher than the cassette’s temperature during the Sterilization Stage.

THINGS TO CHECK

For earlier models only: The steam generator/boiler may be contaminated by mineral deposits, calcium, etc., that have accumulated over time. These deposits are caused by using low quality water.

Drain the reservoir. Clean the steam generator/boiler using Jelmar CLR® Cleaner (removes mineral deposits, calcium, etc). Refill the reservoir using high quality distilled water. **See page 14, 2.11 - Water Quality Tester and page 39, Figure 9.2 - Cleaning the Steam Generator/Boiler.**

For later models only: Calibrate the steam generator/boiler – **see page 40, Figure 9.3 - Steam Generator/Boiler Calibration Procedure.**

Important Note: The later STATIM models have a built-in water quality sensor. Do not try to clean the later STATIMs’ steam generator/boiler. If you use a lesser quality water, the LCD on the later STATIM will display “Water Quality is not Acceptable” or “Distilled H2O only”. The sensor detects unacceptable levels of dissolved solids in the reservoir water. **See page 14, 2.11 - Water Quality Tester.**

LCD MESSAGE CYCLE FAULT #6

Applies to STATIM 2000, model 121101, and STATIM 5000, model 01-201103

This “Cycle Fault #6” will appear only with a water quality sensor installed.

Steam generator/boiler calibration is needed – **see page 40, Figure 9.3 - Steam Generator/Boiler Calibration Procedure.** If problem (Error code) repeats, replace steam generator/boiler.

THINGS TO CHECK

- Water level in the waste bottle may be full, or the exhaust path may have a restriction or blockage.
- Check exhaust tubing for kinks or pinch points. Note: RPI offers an Exhaust Tubing Kit (RPI Part #SCK017) or Exhaust Tubing sold by the foot (RPI Part #RPT380).
- Check the cassette tray venturi plate for blockage - **see page 42, Figure 9.5.**
- Check for steam leaks.
- Solenoid valve plunger may be compromised by debris or may be worn. Check the plunger inside the flute/bonnet for proper movement. Replace Solenoid-Plunger Kit (RPI Part #SCK003) if necessary **see page 41, Figure 9.4 - Solenoid Valve.**

6.0 – LCD ERROR CODES *(continued)*

STAGE #4 – STERILIZATION *(continued)*

LCD MESSAGE

CHECK CASSETTE #7 (CYCLE FAULT #7)

The steam generator/boiler or cassette temperature has dropped below its set point due to a steam leak.

THINGS TO CHECK

- Clean and lubricate the cassette seal – **see page 10, Figure 2.7 - Liquid Soap (RPI Part #RPS287)**. Replace the Cassette Seal if necessary, (RPI Part #SCS001 fits model 2000), and (RPI Part #SCS029 fits model 5000).
- Inspect and clean steam ports on probe bracket.
- If the cassette is hard to remove after venting takes place: Solenoid valve plunger may be compromised by debris or may be worn. Check the plunger inside the flute/bonnet for proper movement. Replace Solenoid-Plunger Kit (RPI Part #SCK003), if necessary. **See page 41, Figure 9.4 - Solenoid Valve.**
- Water level in the waste bottle may be full, or the exhaust path may have a restriction or blockage.
- Check exhaust tubing for kinks or pinch points. Note: RPI offers an Exhaust Tubing Kit (RPI Part #SCK017) or Exhaust Tubing sold by the foot (RPI Part #RPT380).
- Check the cassette tray venturi plate for blockage – **see page 42, Figure 9.5 - Cassette.**
- Check steam generator/boiler – **see page 38, Figure 9.1 - Steam Generator/Boiler.**

LCD MESSAGE

CHECK CASSETTE #8 (CYCLE FAULT #8)

There is a 5°C temperature difference between the steam generator/boiler and the cassette.

THINGS TO CHECK

- Water level in the waste bottle may be full, or the exhaust path may have a restriction or blockage.
- Check exhaust tubing for kinks or pinch points. Note: RPI offers an Exhaust Tubing Kit (RPI Part #SCK017) or Exhaust Tubing sold by the foot (RPI Part #RPT380).
- Check the cassette tray venturi plate for blockage – **see page 42, Figure 9.5 - Cassette.**
- Check the solenoid valve coil's electrical performance – **see page 41, Figure 9.4 - Solenoid Valve.**
- Check for debris in the orifice and port holes of the solenoid valve.

CHECK CASSETTE #8 (CYCLE FAULT #8) *(continued)*

THINGS TO CHECK *(continued)*

- Solenoid valve plunger may be compromised by debris or may be worn. Check the plunger inside the flute/bonnet for proper movement. Replace Solenoid-Plunger Kit (RPI Part #SCK003) if necessary. **See page 41, Figure 9.4 - Solenoid Valve.**
- If problem repeats, clean or calibrate steam generator/boiler – **see page 39, Figure 9.2 or page 40, Figure 9.3.**

LCD MESSAGE

CYCLE FAULT #9.....*Not Currently In Use*

LCD MESSAGE

CYCLE FAULT #10

Temperature and pressure failing to decrease.

THINGS TO CHECK

- Water level in the bottle may be full, or the exhaust path may have a restriction or blockage.
- Check exhaust tubing for kinks or pinch points. Note: RPI offers an Exhaust Tubing Kit (RPI Part #SCK017) or Exhaust Tubing sold by the foot (RPI Part #RPT380).
- Check the cassette tray venturi plate for blockage – **see page 42, Figure 9.5 - Cassette.**
- Check the solenoid valve coil's electrical performance – **see page 41, Figure 9.4 - Solenoid Valve.**
- Check for debris in the orifice and port holes of the solenoid valve.
- Solenoid valve plunger may be compromised by debris or may be worn. Check the plunger inside the flute/bonnet for proper movement. Replace Solenoid-Plunger Kit (RPI Part #SCK003) if necessary. **See page 41, Figure 9.4 - Solenoid Valve.**

For older units with an aluminum steam generator/boiler, run a new cycle and view the LCD display. After completion of the "Pressurization Stage", The "Sterilization Stage" should begin within 10 seconds. If it takes longer than 10 seconds, the steam generator/boiler needs cleaning – **see page 39 - Figure 9.2 "Cleaning the Steam Generator/Boiler"**.

6.0 – LCD ERROR CODES *(continued)*

STAGE #5 – VENTING

The sterilization cycle is completed and the vent solenoid valve opens to: 1) allow the pressure in the cassette to depressurize via the exhaust path into the condenser waste bottle; and, 2) allow the steam to cool down safely.

LCD MESSAGE

CYCLE FAULT #11

Cassette temperature failed to drop within 60 seconds of the end of a cycle during venting.

THINGS TO CHECK

- Check exhaust tubing for kinks or pinch points. Note: RPI offers an Exhaust Tubing Kit (RPI Part #SCK017) or Exhaust Tubing sold by the foot (RPI Part #RPT380).
- Check the cassette tray venturi plate for blockage – **see page 42, Figure 9.5 - Cassette.**
- Check the solenoid valve coil's electrical performance – **see page 41, Figure 9.4 - Solenoid Valve.**
- Check for debris in the orifice and ports holes of the solenoid valve.
- Solenoid valve plunger may be compromised by debris or may be worn. Check the plunger inside the flute/bonnet for proper movement. Replace Solenoid-Plunger Kit (RPI Part #SCK003) if necessary. **See page 41, Figure 9.4 - Solenoid Valve.**

LCD MESSAGE

CYCLE FAULT #12

Failure to measure temperature. NOTE: This can happen at any stage.

THINGS TO CHECK

- Check for open thermocouple(s). At room temperature, it should read ~10 Ω. Replace if necessary – Thermocouple (RPI Part #SCT030).

LCD MESSAGE

CYCLE FAULT #13.....*Not Currently In Use*

LCD MESSAGE

CYCLE FAULT #14

Applies to STATIM 2xx software only.

Steam generator/boiler temperature "ran away" (above 171°C) in the Sterilization Stage.

THINGS TO CHECK

- A weak pump due to dirty mesh filters in the pump fittings or dirty Water Filter (RPI Part #SCF034). Check pump's operation – **see pages 6 and 7, 2.3 - Pump Tester Bottle (RPI Part #SCK024)**. If pump passes test, boiler must be replaced.
- Steam generator/boiler calibration is needed – **see page 40, Figure 9.3 - Steam Generator/Boiler Calibration Procedure.**

LCD MESSAGE

CYCLE FAULT #15

The cassette temperature climbed ~3°C above the set point limit in the Sterilization Stage.

THINGS TO CHECK

- Water level in the waste bottle may be full, or the exhaust path may have a restriction or blockage.
- Check exhaust tubing for kinks or pinch points. Note: RPI offers an Exhaust Tubing Kit (RPI Part #SCK017) or Exhaust Tubing sold by the foot (RPI Part #RPT380).
- Check the cassette tray venturi plate for blockage – **see page 42, Figure 9.5 - Cassette.**
- Check for debris in the orifice and port holes of the solenoid valve.
- Solenoid valve plunger may be compromised by debris or may be worn. Check the plunger inside the flute/bonnet for proper movement. Replace Solenoid-Plunger Kit (RPI Part #SCK003) if necessary. **See page 41, Figure 9.4 - Solenoid Valve.**
- Steam generator/boiler calibration is needed – **see page 40, Figure 9.3 - Steam Generator/Boiler Calibration Procedure.**

6.0 – LCD ERROR CODES *(continued)*

STAGE #5 – VENTING *(continued)*

LCD MESSAGE

CYCLE FAULT #16

Steam generator/boiler temperature "ran away" (above 171°C) in the autoclave.

THINGS TO CHECK

- A weak pump due to dirty mesh filters in the pump fittings or dirty Water Filter (RPI Part #SCF034). Check pump's operation – **see pages 6 and 7, 2.3 - Pump Tester Bottle (RPI Part #SCK024)**. If pump passes test, boiler must be replaced.
- Check for continuous power (non-pulsing) to steam generator/boiler. If continuous power is observed, replace main PC board.
- Steam generator/boiler calibration is needed – **see page 40, Figure 9.3 - Steam Generator/Boiler Calibration Procedure**.

LCD MESSAGE

CYCLE FAULT #17 and #18.....*Not Currently In Use*

LCD MESSAGE

CYCLE FAULT #19

Steam generator/boiler calibration invalid.

THINGS TO CHECK

- Steam generator/boiler calibration is needed – **see page 40, Figure 9.3 - Steam Generator/Boiler Calibration Procedure**.
- If problem repeats, replace the microprocessor/eprom (matched set) or main PC board, then recalibrate the steam generator/boiler – **see page 40, Figure 9.3 - Steam Generator/Boiler Calibration Procedure**.

LCD MESSAGE

CYCLE FAULT #20

Pump failure.

THINGS TO CHECK

- A weak pump due to dirty mesh filters in the pump fittings or dirty Water Filter (RPI Part #SCF034). Check pump's operation – **see pages 6 and 7, 2.3 - Pump Tester Bottle (RPI Part #SCK024)**. If pump passes test, boiler must be replaced.

CYCLE FAULT #20 *(continued)*

THINGS TO CHECK *(continued)*

- Steam generator/boiler calibration is needed – **see page 40, Figure 9.3 - Steam Generator/Boiler Calibration Procedure**.

LCD MESSAGE

CYCLE FAULT #21 thru #24.....*Not Currently In Use*

LCD MESSAGE

CYCLE FAULT #25

Unable to power up the steam generator/boiler.

THINGS TO CHECK

- Check thermal fuse for continuity. If needed, replace the Thermal Fuse (RPI Part #SCF006) – **see page 38, Figure 9.1 - Steam generator/boiler**.
- A weak pump due to dirty mesh filters in the pump fittings or dirty Water Filter (RPI Part #SCF034). Check pump's operation – **see pages 6 and 7, 2.3 - Pump Tester Bottle (RPI Part #SCK024)**. If pump passes test, boiler must be replaced.
- Steam generator/boiler calibration is needed – **see page 40, Figure 9.3 - Steam Generator/Boiler Calibration Procedure**.

LCD MESSAGE

CYCLE FAULT #26

The sterilization stage has failed ~3 minutes after the cassette reaching the sterilization temperature.

For 4xx and up software only: "Cycle Interrupted" is displayed 2 times, and "Cycle Fault #26" is displayed upon the 3rd failure.

THINGS TO CHECK

- Check for steam leaks.
- Solenoid valve plunger may be compromised by debris or may be worn. Check the plunger inside the flute/bonnet for proper movement. Replace Solenoid-Plunger Kit (RPI Part #SCK003) if necessary. **See page 41, Figure 9.4 - Solenoid Valve**.
- Steam generator/boiler calibration is needed – **see page 40, Figure 9.3 - Steam Generator/Boiler Calibration Procedure**.

6.0 – LCD ERROR CODES *(continued)*

STAGE #5 – VENTING *(continued)*

LCD MESSAGE

CYCLE FAULT #27

The steam generator/boiler temperature has exceeded 150°C for 25 seconds (or a time out period).

THINGS TO CHECK

- A weak pump due to dirty mesh filters in the pump fittings or dirty Water Filter (RPI Part #SCF034). Check pump's operation – **see pages 6 and 7, 2.3 - Pump Tester Bottle (RPI Part #SCK024)**. If pump passes test, boiler must be replaced.
- Steam generator/boiler calibration is needed – **see page 40, Figure 9.3 - Steam Generator/Boiler Calibration Procedure**.

LCD MESSAGE

CYCLE FAULT #72 and 98

Communication error between the microprocessor and the temperature adapter board.

If your autoclave is equipped with the temperature adapter board (Alex Upgrade), the following two Cycle Faults may apply – **see page 25, Service Tip #9**.

THINGS TO CHECK

- Check connection between the "square" microprocessor and the main PC board. Also check the connection between the temperature adapter board and the main PC board. Ensure there are no bent or shorted pins.
- Validation thermocouple supplied with this "Alex Boiler Kit" may require calibration, which is not covered in this booklet. Consult OEM for this calibration procedure.

STAGE #6 – DRYING

The air compressor forces air through the heated steam generator/boiler into the cassette, therefore drying the instruments. The drying cycle will run for 60 minutes or until interrupted by pressing the Stop button. Keep in mind that when the Stop button is pressed, the following message is displayed: "Please Wait - Cycle Complete". Remove cassette only when the message displays: "Remove Cassette Cycle Complete".

There are no error codes applicable to this stage.

7.0 – LCD MESSAGES

APPLIES TO ANY STAGE

LCD MESSAGE GARBLED OR NO READ-OUT ON THE LCD

THINGS TO CHECK

- Make sure that the cable from the LCD board (RPI Part #SCA022 or Kit #SCK062) is properly seated at the main PC board connector.
- If using the Extension Cable (RPI Part #SCT026), make sure that the cables are connected properly – **see page 4, 2.1 - Extension Test Cable.**
- The microprocessor may need to be reseated in its socket. **CAUTION:** Disconnect power to the autoclave and discharge the static electricity from your body before touching the microprocessor (by touching the autoclave's metal chassis with both hands). Failure to properly discharge static electricity can damage the microprocessor and make it unusable. Press firmly on the microprocessor and retest.

NOTE: If none of the above solves the problem, replace either the LCD PC Board (RPI Part #SCA022 or Kit #SCK062) or the main PC board.

LCD MESSAGE SERVICE NEEDED

Applies to the original STATIM 2000 model 101102 only.

Steam generator/boiler has exceeded 171°C or cassette temperature has exceeded 147°C.

THINGS TO CHECK

- If this message appears BEFORE depressing the Start button, then check continuity of thermocouples. Thermocouples should read ~ 10 Ω at room temperature or main PC board may be faulty.
- If this message appears AFTER depressing the Start button, check pump's operation – **see pages 6 and 7, 2.3 - Pump Tester Bottle (RPI Part #SCK024).** If pump passes test, boiler must be replaced.
- Water level in the waste bottle may be full, or the exhaust path may have a restriction or blockage.
- Check exhaust tubing for kinks or pinch points. Note: RPI offers an Exhaust Tubing Kit (RPI Part #SCK017) or Exhaust Tubing sold by the foot (RPI Part #RPT380).

SERVICE NEEDED (continued)

THINGS TO CHECK (continued)

- Check the cassette tray venturi plate for blockage – **see page 42, Figure 9.5 – Cassette.**
- Check for debris in the orifice and port holes of the solenoid valve.
- Solenoid valve plunger may be compromised by debris or may be worn. Check the plunger inside the flute/bonnet for proper movement. Replace Solenoid-Plunger Kit (RPI Part #SCK003) if necessary. **See page 41, Figure 9.4 - Solenoid Valve.**
- The steam generator/boiler may need to be cleaned – **see page 39, Figure 9.2.**
- Steam generator/boiler calibration is needed – **see page 40, Figure 9.3.**

LCD MESSAGE CHECK CASSETTE

(DOES NOT DISPLAY NUMBER ON LCD)

Applies to the original STATIM 2000 model 101102 only.

The temperature in the cassette has not dropped below 103°C after the venting cycle.

THINGS TO CHECK

- Water level in the bottle may be full, or the exhaust path may have a restriction or blockage.
- Check exhaust tubing for kinks or pinch points. Note: RPI offers an Exhaust Tubing Kit (RPI Part #SCK017) or Exhaust Tubing sold by the foot (RPI Part #RPT380).
- Check the cassette tray venturi plate for blockage – **see page 42, Figure 9.5 - Cassette.**
- Check the solenoid valve coil's electrical performance – **see page 41, Figure 9.4 - Solenoid Valve.**
- Check for debris in the orifice and port holes of the solenoid valve.
- Solenoid valve plunger may be compromised by debris or may be worn. Check the plunger inside the flute/bonnet for proper movement. Replace Solenoid-Plunger Kit (RPI Part #SCK003) if necessary. **See page 41, Figure 9.4 - Solenoid Valve.**

7.0 – LCD MESSAGES (continued)

APPLIES TO ANY STAGE (continued)

LCD MESSAGE SELECT A CYCLE/PROGRAM OR INSERT CASSETTE

This can be displayed at any time before or during a cycle/program.

THINGS TO CHECK

- The cassette thermocouple may be bent and stopping the cassette from fully engaging the microswitch. For additional information see the "Installation instructions" for RPI Part #SCT030 available on RPI's website, www.rpiparts.com.
- The microswitch may have failed. The microswitch is a N.O. type switch. Replace the Microswitch Kit (RPI Part #SCK007) if necessary. **See page 9, Figure 2.5.**

LCD MESSAGE PRESS STOP TO RESET

Applies to all later STATIMs.

THINGS TO CHECK

- After an error fault occurs, the error must be cleared before shutting down by pressing the Stop button.

LCD MESSAGE WATER QUALITY IS NOT ACCEPTABLE OR DISTILLED H2O ONLY

The water placed in the reservoir is of low quality and has been detected by reservoir's water quality sensor. Applies to the STATIM models with water quality sensor only.

THINGS TO CHECK

- Test the quality of the water being used, **See page 14, 2.11 - Water Quality Tester.**
- **DO NOT TRY TO CLEAN THE STEAM GENERATOR/BOILER WITH ANY TYPE OF CLEANERS.**
- Simply drain the reservoir and refill using distilled water only. Do not use deionized, demineralized, or specialty filtered water. Tap water must never be used.
- **See page 36, 8.0 Troubleshooting Tips - "Water Quality Sensor Troubleshooting".**

LCD MESSAGE REFILL RESERVOIR EMPTY WASTE BOTTLE

Reservoir water level may be below minimum level. Cycle will not start.

THINGS TO CHECK

- Check reservoir water level and refill if necessary.
- Check condenser waste bottle water level and empty if necessary.
- **See page 36, 8.0 Troubleshooting Tips - "Water Quality Sensor Troubleshooting".**

LCD MESSAGE CYCLE INTERRUPTED/NOT STERILE

Applies to all later STATIMs.

THINGS TO CHECK

A power failure or a time out condition occurred during a cycle. The error must be cleared by pressing the Stop button.

NOTE: If this message appears in three consecutive cycle failures, Cycle Fault #26 will appear on the display. **See page 32 – Cycle Fault #26.**

8.0 – TROUBLESHOOTING TIPS

CONDITION: WATER QUALITY SENSOR TROUBLESHOOTING

Applies to the STATIM models with water quality sensor only.

THINGS TO CHECK

Troubleshooting Procedure:

STEP #1 - Verify that the main PC board is operational. Measure the voltage between P1-1 and P1-3. The reading must be between – 8.4 and – 9.7 VDC. If not, the main PC board is bad, see pages 46 and 47, Figure 9.8 - Electrical Diagram.

STEP #2 - Remove power from autoclave, disconnect the water quality sensor from J4-3 and J4-4. Restore power and begin an “unwrapped” cycle. If cycle starts with sensor disconnected, then the main PC board is bad. If “RE-FILL RESERVOIR EMPTY WASTE BOTTLE” error appears on LCD proceed to the next step.

STEP #3 - Short probe terminals J4-3 and J4-4 together and start a cycle. If “WATER QUALITY NOT ACCEPTABLE” displays on LCD proceed to Step #4; if not the main PC board is bad.

STEP #4 - Remove the short from J4-3 and J4-4. Short the float terminals together on the main PC board (J4-5 & J4-6). If the cycle starts, the main PC board is good and the water quality sensor is bad. If the LCD reads “WATER QUALITY NOT ACCEPTABLE”, the main PC board is bad.

STEP #5 - To verify the water quality sensor, short the two pins coming from the front of the sensor together. The sensor should read less than 1 Ω.

Upon verification or replacement of water quality sensor, test the reservoir’s water quality using the Water Quality Tester (RPI Part #RPT820). See page 14, Figure 2.11 - Water Quality Tester.

CONDITION: WILL NOT POWER UP

THINGS TO CHECK

- Check power source to power cord, AC receptacle to power switch, and wiring to the main PCB.
- Check 15 amp ceramic fuse.
- Inspect, clean and adjust contacts of fuse holder if necessary.
- Main PC board is bad and must be replaced.

For all of the above see pages 46 and 47, Figure 9.8 - Electrical Diagram.

CONDITION: WILL NOT PRINT

After an error fault occurs, the error must be cleared before shutting down by pressing the Stop button.

THINGS TO CHECK

- If the time and date are not displayed on the printer's LCD, check power cable connections.
- Check the loading of printer paper, paper must roll out from the top. Verify that the paper is not jammed.
- Replace printer if necessary.

CONDITION: LEAKING STEAM: PRV (PRESSURE RELIEF VALVE) (Also known as Safety Valve)

THINGS TO CHECK

- Check cassette seal port holes and steam ports on probe bracket (look for obstruction). Clean and lubricate the cassette seal – see page 10, Figure 2.7 - Liquid Soap (RPI Part #RPS287). Replace the Cassette Seal (RPI Part #SCS001 fits model 2000) or (RPI Part #SCS029 fits model 5000) if necessary.
- Check the plumbing from the steam generator/boiler to the probe bracket fittings (look for obstruction). See page 38, Figure 9.1 - Steam Generator/Boiler.
- If the problem repeats, replace the Safety Valve (70 psi) (RPI Part #SCV004).

8.0 – TROUBLESHOOTING TIPS (continued)

CONDITION: WRAPS/INSTRUMENTS REMAIN WET AFTER DRYING

THINGS TO CHECK

- Check air filters, and replace if necessary (RPI Part #SCF002, SCF031 and SCF032).
- Check leveling of the STATIM – Note the position of the bubble in the Bull’s-Eye Level (RPI Part #SCL012) that is located on the top right of the autoclave. A properly leveled autoclave would show the bubble in the 4 to 5 o’clock position. If leveling is improper, adjust the feet until proper level is achieved.
- Water level in the waste bottle may be full, or the exhaust path may have a restriction or blockage.
- Check exhaust tubing for kinks or pinch points. Note: RPI offers an Exhaust Tubing Kit (RPI Part #SCK017) or Exhaust Tubing sold by the foot (RPI Part #RPT380).
- Check the cassette tray venturi plate for blockage - see page 42, Figure 9.5 - Cassette.
- Check air compressor for proper operation - see pages 44 and 45, Figure 9.7 - Air Compressor.
- Check solenoid valve for proper operation - see page 41, Figure 9.4 - Solenoid Valve.

CONDITION: IF "CLICKING NOISES" ARE HEARD

Sounds like the solenoid valve is being activated without the cassette inserted or at improper times during a cycle.

THINGS TO CHECK

- The microswitch may have failed. One cause for this failure could be a cassette steam leak. Repair leak and retest. If condition persists, replace the Microswitch Kit (RPI Part #SCK007). See page 9, 2.5 - Hex Balldriver (5/64") (RPI Part #RPT297), For Use When Replacing the Microswitch.

NOTE: This can also happen with the cassette installed before or just after starting a cycle. The steam works its way past the switch’s seal into the switch causing the N.O. contacts to short out and become closed (or possibly an intermittent signal). The autoclave would then proceed as if the microswitch had been activated.

CONDITION: IF "BUZZING NOISES" ARE HEARD

Sounds like the solenoid valve is buzzing with the cassette inserted or at improper times during a cycle.

THINGS TO CHECK

- Solenoid valve plunger may be compromised by debris or may be worn. Check operation of plunger inside the flute/bonnet for proper movement. Replace Solenoid-Plunger Kit (RPI Part #SCK003) if necessary. See page 41, Figure 9.4 - Solenoid Valve.

CONDITION: IF "RATTLING NOISES" CAN BE HEARD

Sounds coming from air compressor during the drying cycle or at improper times during a cycle.

THINGS TO CHECK

- Check the air compressor filter. If stains or moisture are present, replace the Air Compressor Filter (RPI Part #SCF002) and the Check Valve (RPI Part #SCK011).

Note: Once the air compressor filter shows signs of moisture, the check valve has failed and must be replaced. Damage will occur with the air compressor if unattended. This can lead to a costly repair.

CONDITION: IF MAJOR COMPONENT CONTINUOUSLY RUNS

Air compressor, solenoid valve, pump or steam generator/boiler activates and does not turn off at it’s appropriate time.

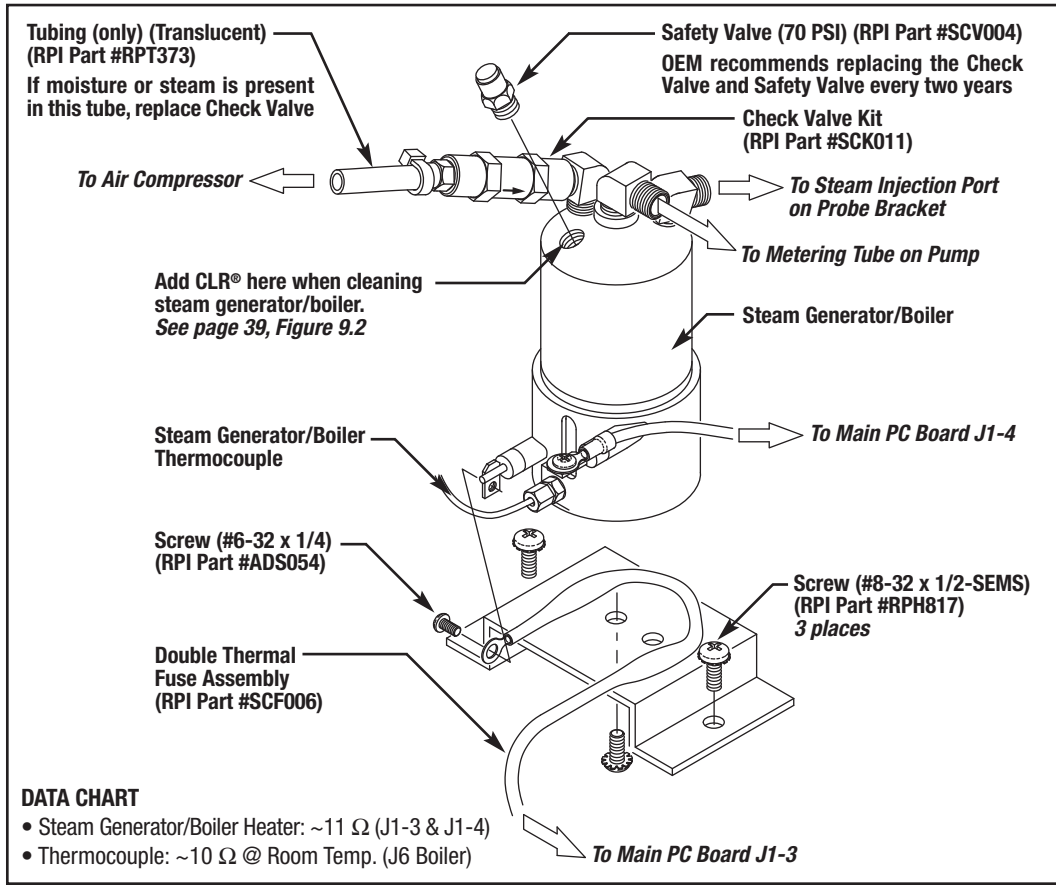
THINGS TO CHECK

- Main PCB board is bad and must be replaced.

9.0 – REFERENCE BLOCKS

FIGURE 9.1 - STEAM GENERATOR/BOILER

- To check the thermal fuse continuity, disconnect fuse assembly at main PC board J1-3. Measure resistance of thermal fuse assembly. An “open” reading signifies the fuse is bad and must be replaced. Reconnect wire at main PC board J1-3. **IMPORTANT NOTE:** To avoid damaging the new thermal fuse assembly try to identify the cause of the failure. There are a number of causes for thermal fuse failure which include a weak water pump, steam leaks, faulty thermocouple, and/or malfunctioning steam generator/boiler (which may require cleaning or calibration).
- To check steam generator/boiler heater, disconnect fuse assembly at main PC board J1-3. Measure resistance between the two steam generator/boiler terminals, resistance should read 11 Ω . If not, replace boiler. Reconnect wire at main PC board J1-3.
- Check line voltage at main PC board J1-3 and J1-4 during warm up cycle. If reading is correct, verify voltage at steam generator/boiler terminals.
- Steam generator/boiler thermocouple should read ~ 10 Ω at main PC board screw terminals (J6 Boiler).



9.0 – REFERENCE BLOCKS (continued)

FIGURE 9.2 - CLEANING THE STEAM GENERATOR/BOILER

For **later models only:** Calibrate the steam generator/boiler – see page 40, Figure 9.3 – Steam Generator/Boiler Calibration Procedure. **IMPORTANT NOTE:** The later STATIM models have a built-in water quality sensor. Do not try to clean the later STATIM’s steam generator/boiler. If you use a lesser quality water, the LCD on the later STATIM will display “Water Quality is not Acceptable” or “Distilled H2O only.” The sensor detects unacceptable dissolved solids over the limits in the water. Verify water quality, See page 14, 2.11 - Water Quality Tester.

For **earlier models only:** The steam generator/boiler may be contaminated by mineral deposits, calcium, etc., that have accumulated over time. These deposits are caused by using low quality water. Verify water quality, See page 14, 2.11 - Water Quality Tester.

The cleaning steps below apply to the STATIM 2000, Model 101102 only (with serial number that ends with an “A”), without a water quality sensor.

STEP #1 - Allow the steam generator/boiler to cool down, then remove the safety valve from the top of the steam generator/boiler, See page 38, Figure 9.1.

STEP #2 - Measure ~1 oz. of CLR® cleaner and pour it into the steam generator. Clean up any spills or drips from the steam generator/boiler immediately.

STEP #3 - Reinstall the safety valve into the steam generator/boiler (use a thread sealer on the threads of the safety valve).

STEP #4 - Now start an “Unwrapped Cycle”. As soon as you hear the pump begin running, quit the cycle by pressing the Stop button. This step is to add water to the steam generator/boiler and warm up the solution inside the steam generator/boiler. Let the cleaner go to work for about 15 minutes.

STEP #5 - Using the RPI Start Switch (RPI Part #SCS021). Connect the smart switch to pin #’s 16 and 18 on the 20 pin connector (P1) on the main PC board. See page 5, Figure 2.2.

STEP #6 - Be sure the water reservoir is full and the condenser waste bottle is at its minimum fill level. Select a new “unwrapped cycle” then press and lock the RPI Start Switch (RPI Part #SCS021). This will manually run the pump. Continue running the pump for ~3 minutes (to purge/flush all debris from the steam generator/boiler).

STEP #7 - Remove the start switch, drain the condenser waste bottle, refill the reservoir, and thoroughly clean the cassette (removing debris purged/flushed from steam generator/boiler cleaning). Run a new “unwrapped cycle” and view the LCD display. After completion of the “Pressurization Stage”, The “Sterilization Stage” should begin within 10 seconds. If it takes longer than 10 seconds, repeat the cleaning procedure.

NOTE: If cleaning the steam generator/boiler repeatedly does not eliminate the problem, replace the steam generator/boiler.

9.0 – REFERENCE BLOCKS *(continued)*

FIGURE 9.3 - STEAM GENERATOR/BOILER CALIBRATION PROCEDURE

Applies to STATIM 2000 and 5000

STEP #1 - Turn the autoclave off and remove the power cord from the AC outlet. Remove the cover, refill the reservoir (with distilled water) and install the RPI Extension Test Cable (RPI Part #SCT026). See page 4, Figure 2.1.

STEP #2 - Connect your RPI Start Switch (RPI Part #SCS021) to the pins marked W1 on the main PC board. See pages 46 and 47, Figure 9.8 - Electrical Diagram.

STEP #3 - Push and slide the button on the Start Switch to lock the switch in the "ON" position.

STEP #4 - Plug in the power cord and turn the power switch to "ON".

STEP #5 - The LCD display should appear similar to Figure 1 below.

STEP #6 - Insert cassette.

STEP #7 - Begin calibration procedure by holding down the "unwrapped" button and simultaneously pressing the start button. The display should appear similar to Figure 2 below.

STEP #8 - The calibration continues and it takes different paths depending on whether it is a new style or old style main PC board.

Old Style: Calibration will take ~ 5 min's. A long beep will be heard upon completion. The "00" on the display will change similar to Figure 3 below.

Now press the "STOP" button allowing the system to vent. Display will read "PRESS STOP TO RESET" when the venting is complete. Pressing the "STOP" button again will reset the autoclave and the display will now read 'SELECT A CYCLE' (SELECT A PROGRAM). Calibration is complete and the autoclave is ready for normal use.

New Style: When cycle reaches "STERILIZATION PHASE" unit will beep twice. Autoclave will automatically vent after 3-1/2 minutes. The boiler calibration is now complete and the LCD display should change similar to Figure 3 below.

After venting, press the "STOP" button to end calibration cycle. Autoclave is now ready for normal use.

FIGURE 1

OLD STYLE

F9>	CALIBRATION	<C8
+32.00°C		65.00°C

NEW STYLE

25.5 C8	24.1 F9
	1.4

FIGURE 2

OLD STYLE

00>	CALIBRATION*	<C8
+32.00°C		65.00°C

Old Style: Upper Left corner will change to "00" and an asterisk will appear after CALIBRATION*

NEW STYLE

25.5 00*	24.1 F9
	1.4

New Style: Unit will beep 3 times. C8 will change to 00*

FIGURE 3

OLD STYLE

F6>	CALIBRATION	<C8
+2.00°C		135.00°C

NEW STYLE

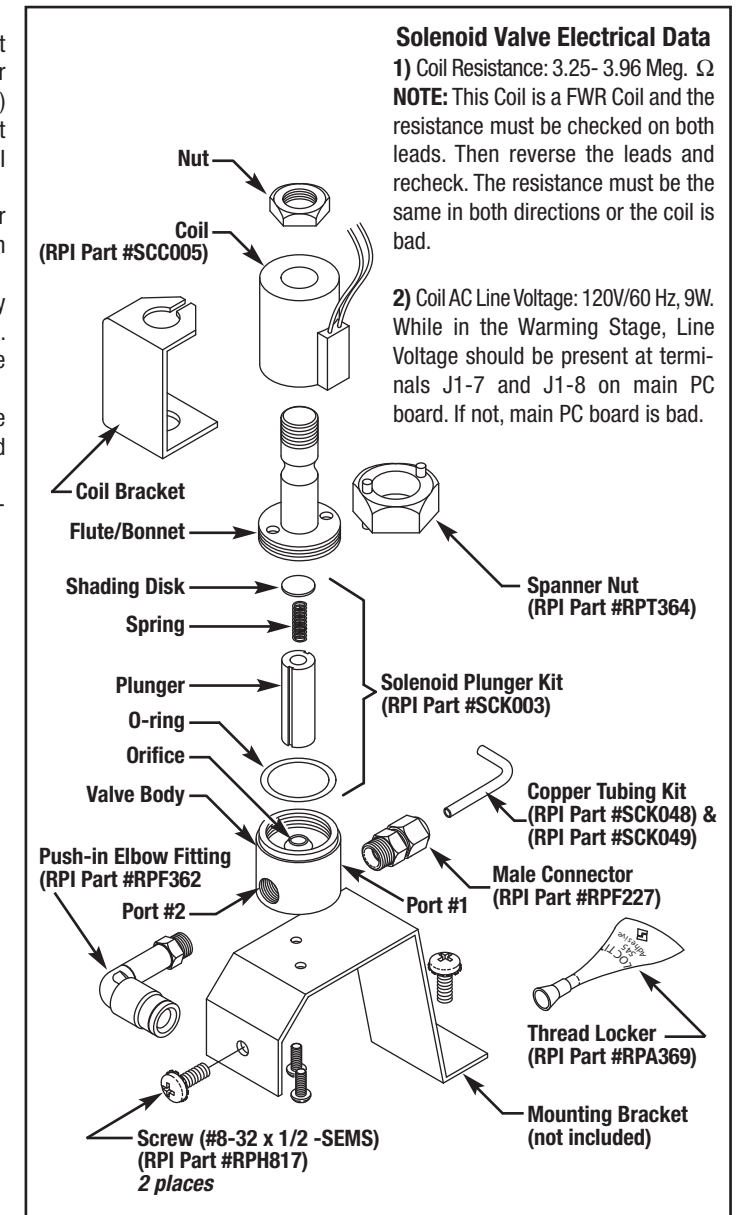
145.5 F3*	135.9 F9
	9.6

9.0 – REFERENCE BLOCKS *(continued)*

FIGURE 9.4 - SOLENOID VALVE

SERVICE TIP

- Avoid crushing the flute/bonnet (which would prevent the plunger from moving up and down freely) by using a Spanner Nut (RPI Part #RPT364) or Spanner Wrench (RPI Part #RPT501).
- Inspect and clean plunger rubber seat, replace if necessary. Uneven wear could indicate a problem.
- Lubricate the plunger (metal body only) with a drop of 3-IN-ONE® oil. This can also help reduce valve noise.
- Inspect and clean valve body orifice and ports, looking for damage and debris.
- Check that the coil has been reinstalled in the proper orientation.



9.0 – REFERENCE BLOCKS *(continued)*

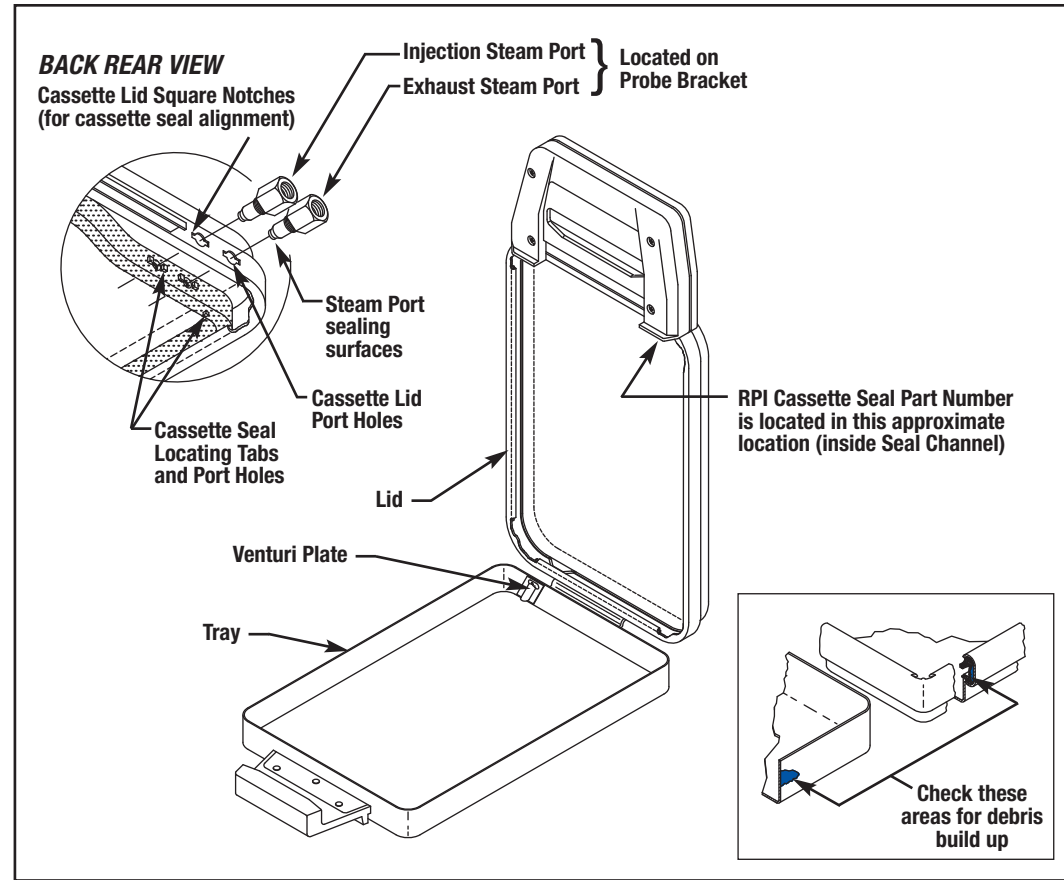
FIGURE 9.5 - CASSETTE

CASSETTE DIAGNOSTICS:

If water is leaking at the drain from the cassette bay (underside of sterilizer), then do the following:

- Remove and clean cassette seal and groove. Reinstall cassette seal. Run a cycle and reinspect for leakage. **See page 10, Figure 2.6.**
- Confirm that the cassette seal port holes are not damaged and that they are properly aligned within the cassette groove.
- Ensure that there is no debris or residue on outer edges of cassette tray.

- Verify that outer edges of cassette tray are straight (not nicked, dented, or damaged).
- Check the integrity of the hinge.
- Check the cassette tray and lid for warpage. Straighten or replace as necessary.
- Inspect and clean steam ports on probe bracket. If you observe excess debris that is not easily removed, or if the steam ports appear to be worn or damaged, remove probe bracket for proper evaluation. Replace probe bracket if necessary. **See page 13, Figure 2.10B.**



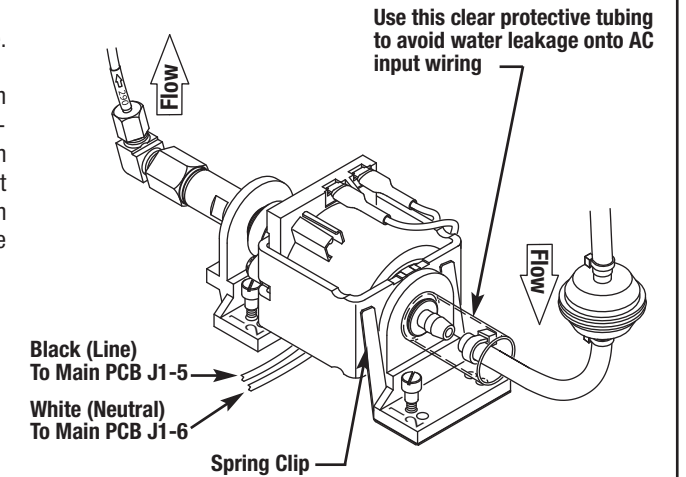
9.0 – REFERENCE BLOCKS *(continued)*

FIGURE 9.6 - PUMP

ULKA VERSION PUMP

with Autoclave Software R604 and above.

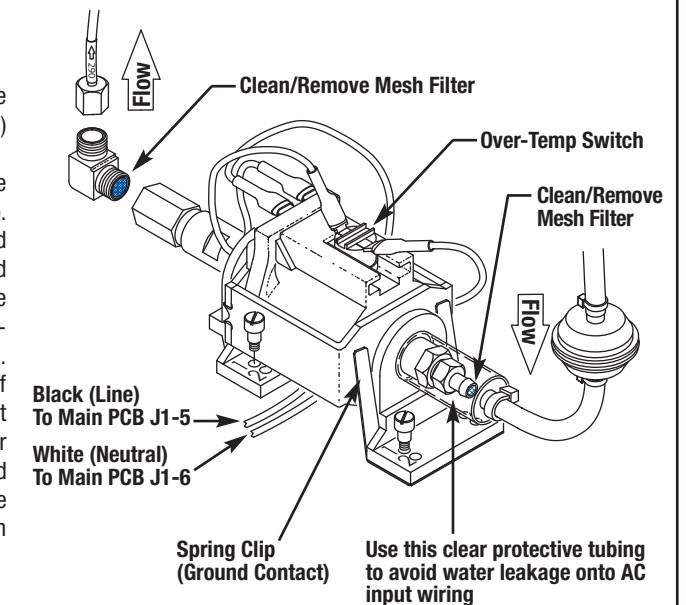
ULKA Pump was introduced in conjunction with Main PC Board Rev. 7 (Software version R604) and was never supplied with mesh filter installed into inlet and outlet fittings. NOTE: Ulka Pump can be used on Main PCB Rev. 6.4 with upgraded software to Rev. R604 and above.



INVENSYS VERSION PUMP

with Autoclave Software R603 and older.

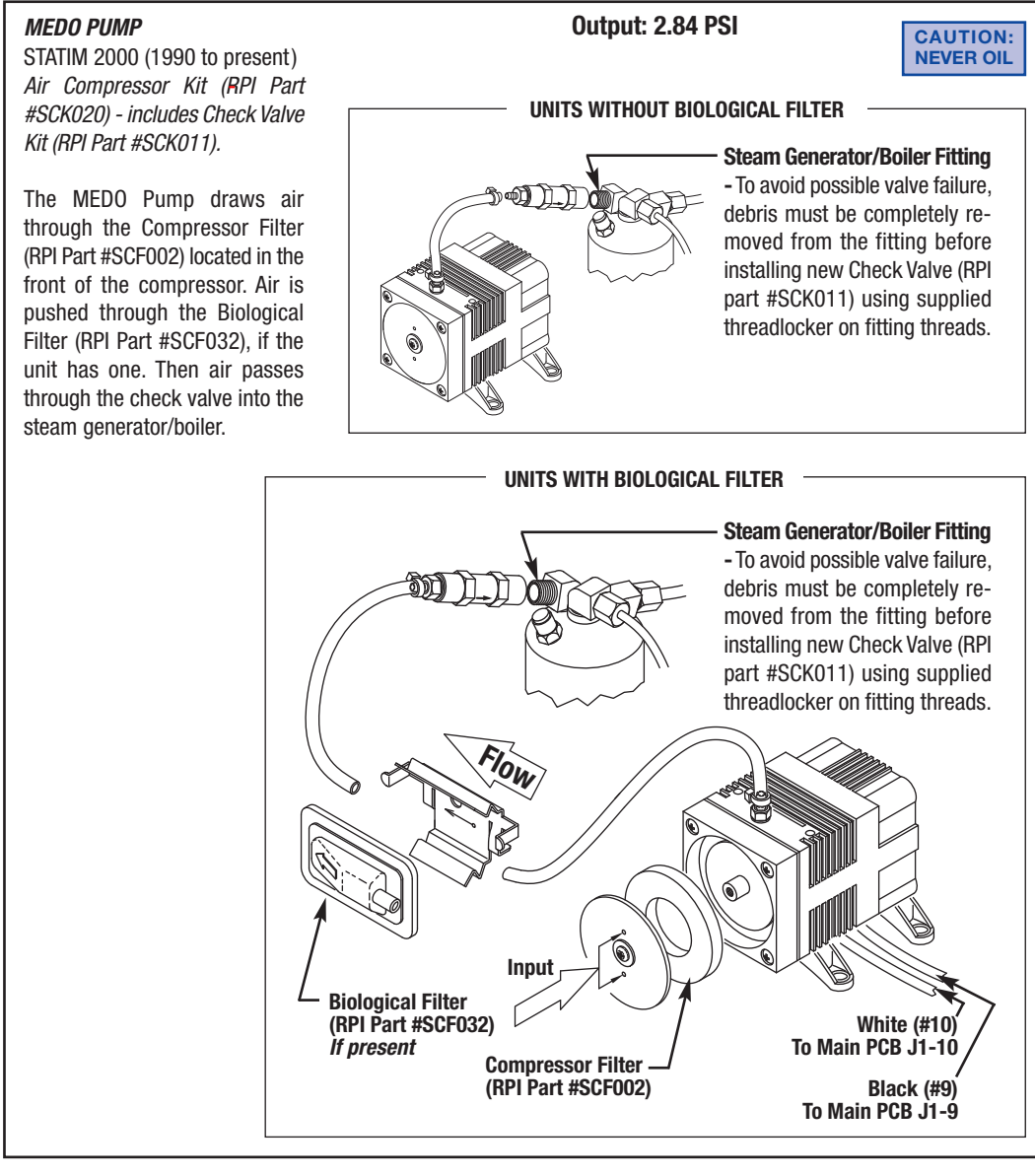
- Effective March 2006, all pumps were supplied with the spring clip (grounding) to improve water conductivity circuitry.
- In early 2006, the OEM introduced the Reservoir Cap & Filter (RPI Part #SCK059).
- Effective June 2007, the OEM stopped using the mesh filter (installed inlet and outlet fittings) and offered the In-Line Water Filter (RPI Part #SCF034) to be installed between the reservoir and pump.
- The OEM now recommends the use of the Reservoir Cap & Filter (RPI Part #SCK059) along with the In-Line Water Filter on all units. The mesh filters should be removed and the autoclave should be upgraded to the In-Line Water Filter (Drain Kit with Pump Filter RPI Part #SCK037).



9.0 – REFERENCE BLOCKS *(continued)*

FIGURE 9.7 - AIR COMPRESSOR

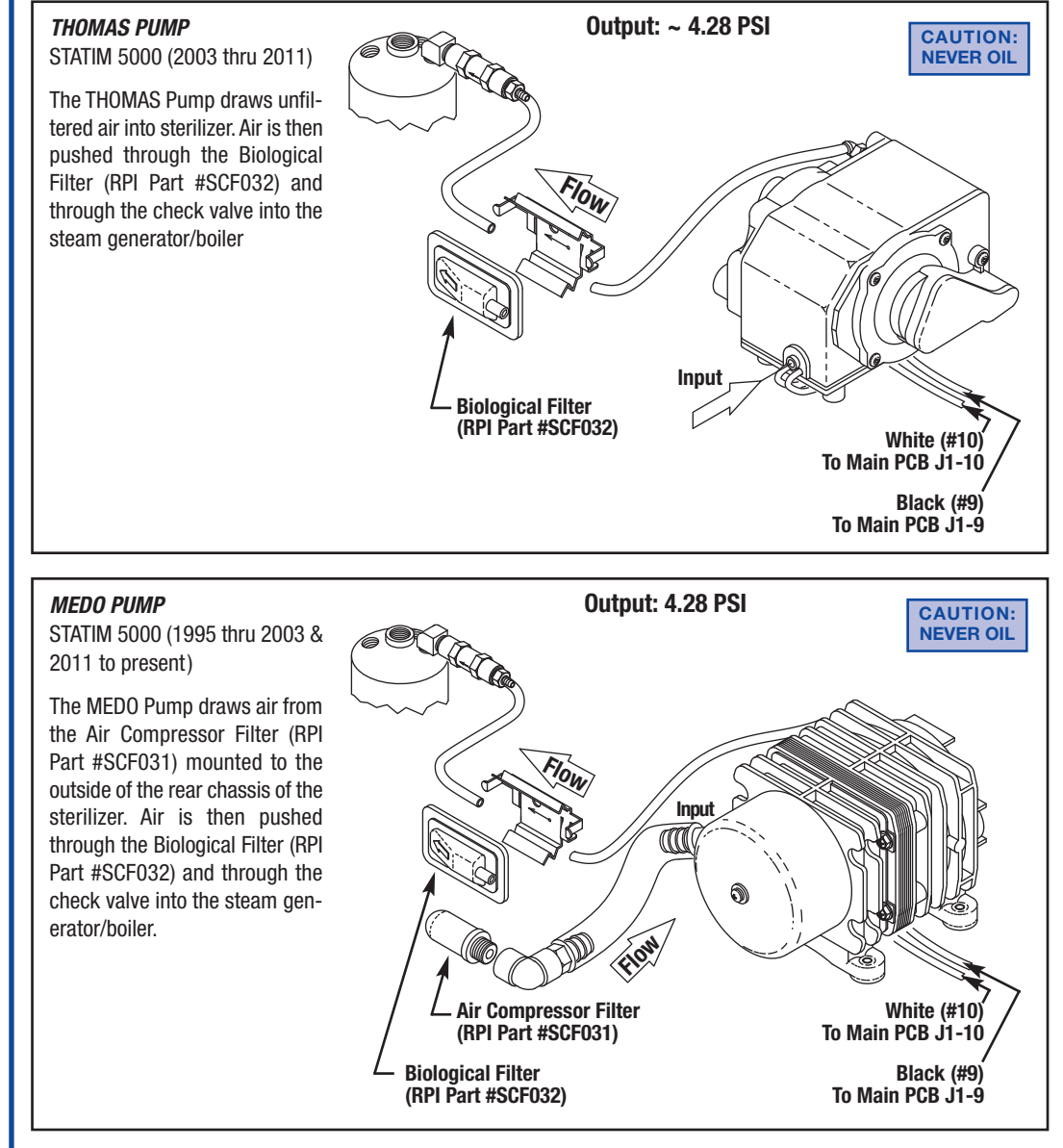
The OEM recommends replacing the compressor filters every 6 months or every 500 cycles (whichever comes first).



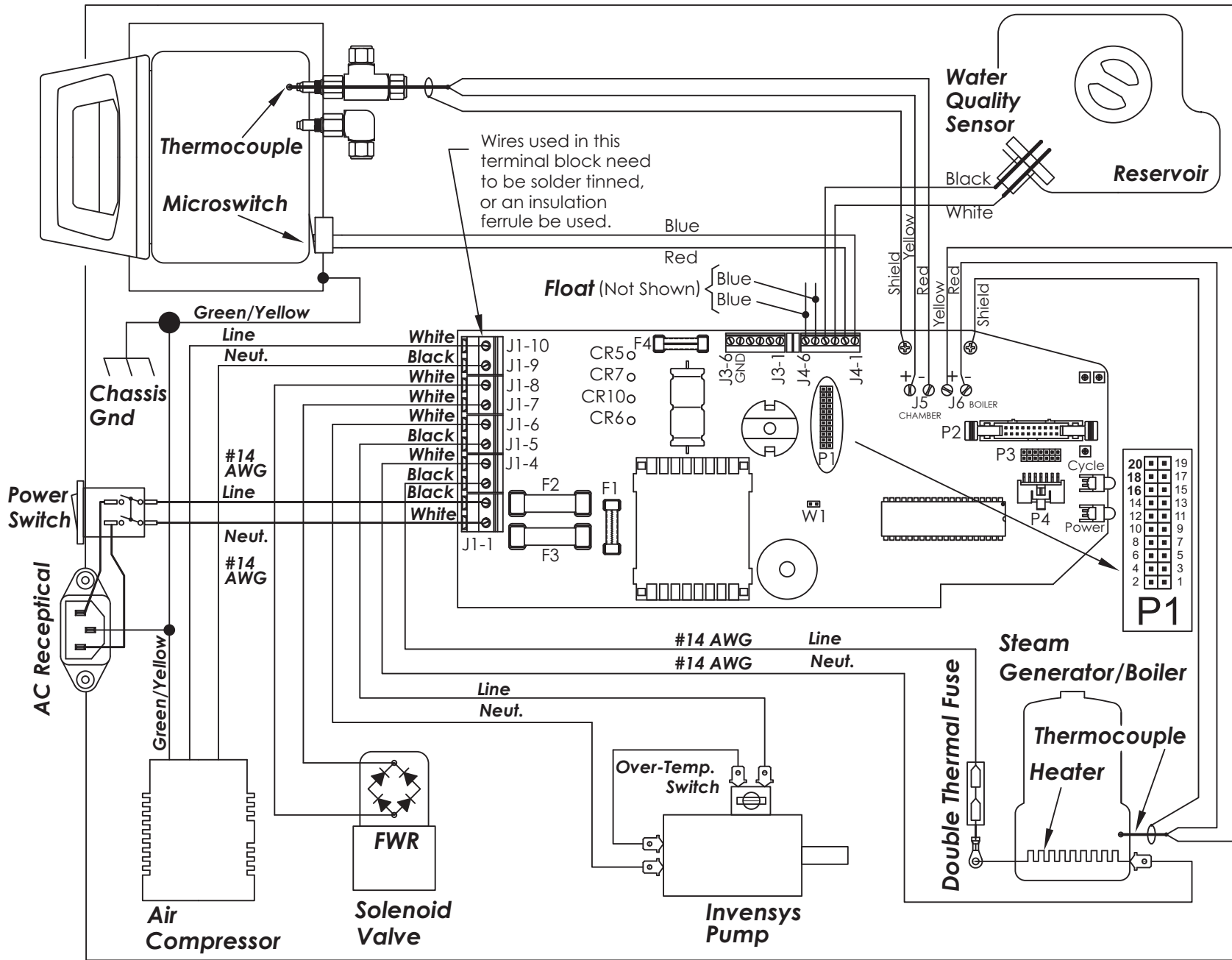
9.0 – REFERENCE BLOCKS *(continued)*

FIGURE 9.7 - AIR COMPRESSOR *(continued)*

The OEM recommends replacing the compressor filters every 6 months or every 500 cycles (whichever comes first).



9.0 – REFERENCE BLOCKS (continued) FIGURE 9.8 - ELECTRICAL DIAGRAM



Unmarked wires are #22 AWG

Data Chart

Steam Generator/Boiler Heater:	-11 Ω (J1-3 & J1-4)
Solenoid Coil (FWR):	3.25 - 3.96 Meg Ω
Thermocouples:	~10 Ω @ Room Temp. J5 Cassette; J6 Boiler
Thermal Fuses:	Open @ 216°C

Diagnostic LED Reference

Diagnostic LED's will be illuminated when their corresponding device is switched ON	CR5	Steam Generator/Boiler
	CR6	Air Compressor
	CR7	Solenoid Valve
	CR10	Pump

If the Air Compressor, Solenoid Valve, Pump or Steam Generator/Boiler activates, but does not turn off at the appropriate time, the Main PCB Board is bad and must be replaced.

Fuse Chart

Replacement Fuse	Earlier Style 2000 & 5000	Later Style 2000 & 5000
RPI Part #RPF060 (1/2A) 1/4" x 1-1/4" Glass 2000 Only	F3 & F4	
RPI Part #RPF061 (1A) 1/4" x 1-1/4" Glass 2000 Only	In-Line Pump (Not Shown)	
RPI Part #RPF071 (15A) 1/4" x 1-1/4" Ceramic	F1 & F2 Line Voltage	F2 & F3 Line Voltage
RPI Part #RPF367 (2A) 5mm x 20mm Glass		F1
RPI Part #RPF368 5mm x 20mm Glass		F2

Device Activation Chart (Jumpering)

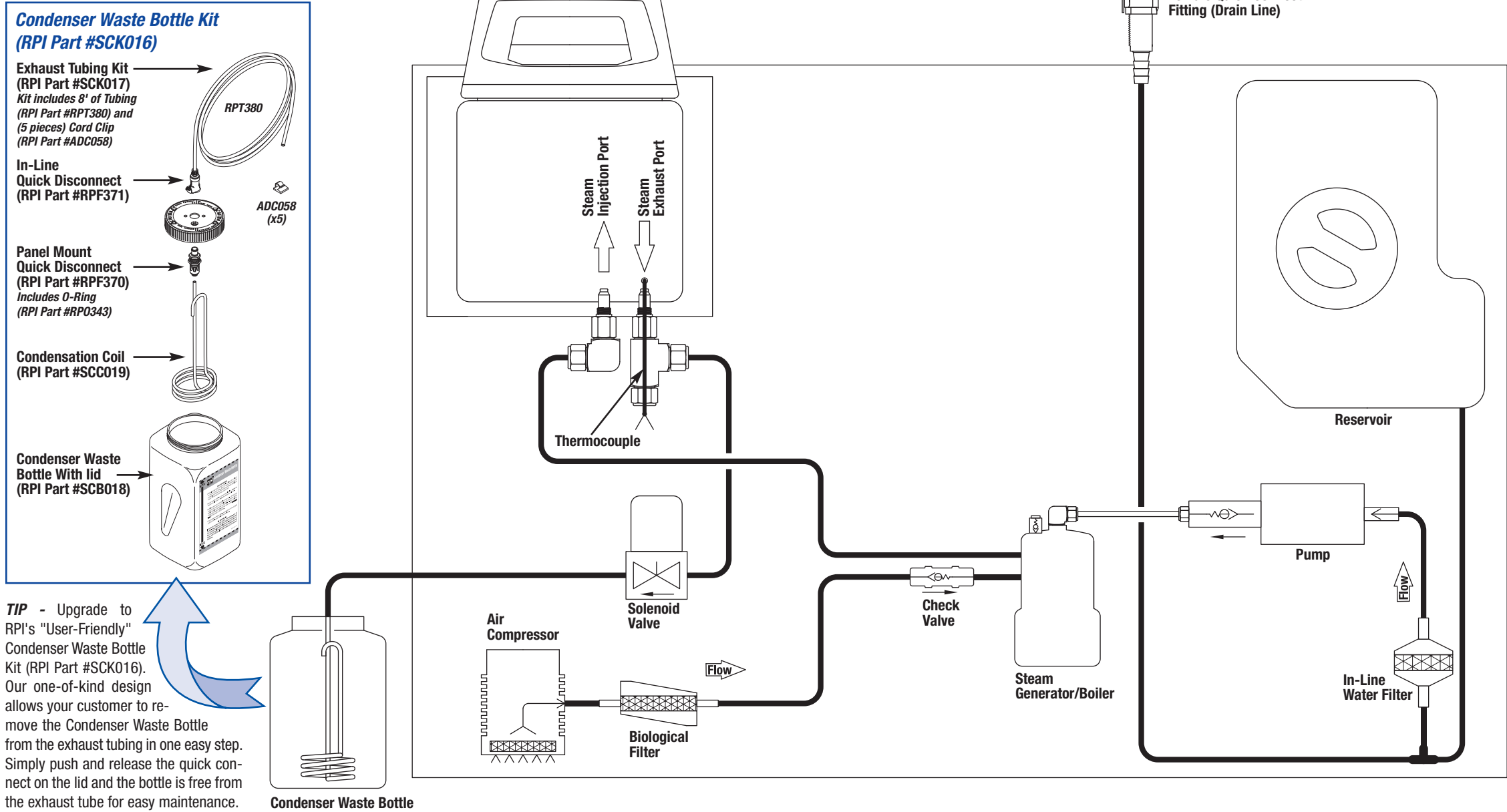
Pump	P1-16 to J3-5 (GND)
Solenoid	P1-18 to J3-5 (GND)
Air Compressor	P1-20 to J3-5 (GND)

Keypad Chart Connect to P4

Pin #	1	2	3	4	5	6	7
Function	Stop	Start	Hemostat	Hand	Closed Scissors	Open Scissors	Common

9.0 – REFERENCE BLOCKS *(continued)*

FIGURE 9.9 - PLUMBING DIAGRAM



**10.0 - RPI PARTS LIST
(FOR PARTS TO FIT STATIM 2000 & 5000)**

RPI Part #	OEM Part #	Description		
			STATIM 2000	STATIM 5000
ADC058	No OEM Part # Available	CORD CLIP - 10/PKG	•	•
CAF011	No OEM Part # Available	RUBBER FOOT - 4/PKG	•	•
RPB365	53-100518A	90° LIQUID TIGHT STRAIN RELIEF WITH LOCKING NUT	•	
RPB703	01-108152S (Kit)	BARB TEE - 5/PKG	•	
RPC288	No OEM Part # Available	POWER CORD	•	
RPC291	01-101647S	POWER CORD	•	•
RPC701	01-108152S (Kit)	CABLE CLAMP - 5/PKG	•	
RPC702	01-108152S (Kit)	CABLE HOLDER - 5/PKG	•	
RPF060	No OEM Part # Available	FUSE (1/2A, 250V) - TIME DELAY - 5/PKG	•	
RPF061	No OEM Part # Available	FUSE (1A, 250V) - TIME DELAY - 5/PKG	1	
RPF071	01-103472S	FUSE (15A, 250V) - TIME DELAY - 5/PKG	1	•
RPF362	01-101553S	LEVELER LEG - 4/PKG	•	•
RPF363	01-100782S	PUSH-IN ELBOW FITTING	•	•
RPF367	01-103498S	FUSE (2A, 250V) - 5/PKG	•	•
RPF368	01-103497S	FUSE (1/4A, 250V) - TIME DELAY - 5/PKG	•	•
RPF370	No OEM Part # Available	PANEL MOUNT QUICK DISCONNECT	2	2
RPF371	No OEM Part # Available	IN-LINE QUICK DISCONNECT	2	2
RPF377	No OEM Part # Available	PUSH-IN ELBOW FITTING	•	•
RPF379	No OEM Part # Available	UNION FITTING (COMPRESS-ALIGN 1/8")	•	•
RPF428	No OEM Part # Available	FEMALE QUICK CONNECT FITTING (WHITE)	•	•
RPF429	No OEM Part # Available	MALE QUICK CONNECT FITTING (WHITE)	•	•
RPH111	No OEM Part # Available	HEX NUT (#8-32) - 50/PKG	•	•
RPH817	No OEM Part # Available	SCREW (#8-32 x .500" - SEMS) - 25/PKG	•	•
RPK432	No OEM Part # Available	DRAIN TUBE ASSEMBLY KIT (SMALL)	•	•
RPO244	No OEM Part # Available	O-RING - 6/PKG	•	•
RPO385	No OEM Part # Available	O-RING - 12/PKG	2	2
SCA022	01-104382S / 01-104381S (Display only) 01-109494S (Display only)	DISPLAY ASSEMBLY	•	•
SCB018	01-100724S	CONDENSER WASTE BOTTLE WITH LID	2	2
SCB039	01-100570S (Complete Assy.)	PROBE BRACKET	•	
SCB043	01-101618S (Complete Assy.)	PROBE BRACKET		•
SCC005	01-104303S	SOLENOID - COIL	•	•
SCC019	No OEM Part # Available	CONDENSATION COIL	•	•
SCC060	01-101783S (Reservoir Cap & Filter)	RESERVOIR CAP	•	•
SCD063	01-106950S	LCD DECAL	3	
SCF002	01-100207S	COMPRESSOR FILTER	•	
SCF006	01-104461S / 10-106462S	DOUBLE THERMAL FUSE ASSEMBLY	•	•
SCF031	01-101652S	AIR COMPRESSOR FILTER		•
SCF032	01-102119S	BIOLOGICAL FILTER	4	•
SCF034	01-106637S	WATER FILTER (IN-LINE)	•	•
SCF061	01-109300S	FILTER	•	•
SCG009	01-100842S	FACIA GASKET	•	
SCG010	01-100865S	PROBE BRACKET GASKET	•	•
SCG044	01-101650S	FACIA GASKET		•

FOOTNOTES: 1. Older styles only 2. Models with RPI's Condenser Waste Bottle Kit (RPI Part #SCK016) 3. Model #01-121101
4. Serial #2101DK0274 and above 5. Model #101102 (Old Type, One Piece Style with S/N's ending with an 'A') 6. Model #01-201103
7. Model #01-121101 (New Style, Two Piece Style)

continued on next page

**10.0 - RPI PARTS LIST
(FOR PARTS TO FIT STATIM 2000 & 5000) (continued)**

RPI Part #	OEM Part #	Description		
			STATIM 2000	STATIM 5000
SCK003	01-100998S	SOLENOID-PLUNGER KIT	•	•
SCK007	01-100571S (2000) / 01-101621S (5000)	MICROSWITCH KIT	•	•
SCK011	01-100574S / 01-101627S	CHECK VALVE KIT	•	•
SCK015	01-101707S	KEYPAD	5	
SCK016	01-100812S	CONDENSER WASTE BOTTLE KIT	•	•
SCK017	01-100204S	EXHAUST TUBING KIT	•	•
SCK020	01-100560S	AIR COMPRESSOR KIT	•	
SCK025	01-100572S	POWER CORD REPLACEMENT	•	
SCK035	01-100028S (Gasket only)	STERILIZER PM KIT	•	
SCK036	01-101649S (Gasket only)	STERILIZER PM KIT		•
SCK037	01-108152S (kit) & 01-106637S (kit)	DRAIN KIT WITH PUMP FILTER	•	
SCK038	01-100570S	PROBE BRACKET KIT	•	
SCK040	01-109671	KEYPAD		6
SCK041	01-109680S	KEYPAD	7	
SCK042	01-101618S	PROBE BRACKET KIT		•
SCK048	01-109128S	COPPER TUBING KIT	•	
SCK049	01-109129S	COPPER TUBING KIT		•
SCK059	01-101783S / 01-109300S (Filter Only)	RESERVOIR CAP & FILTER	•	•
SCK062	01-104381S / 01-109494S	LCD KIT	3	
SCL012	01-100684S (Kit)	BUBBLE LEVEL	•	•
SCP050	01-100568S (2000) / 01-101761S (5000)	PUMP KIT (INVENSYS PUMP)	•	•
SCP051	01-110445S (2000) / 01-110446S (5000)	PUMP KIT (ULKA PUMP)	•	•
SCS001	01-100028S	CASSETTE SEAL	•	
SCS023	01-100573S	POWER SWITCH	•	•
SCS029	01-101649S	CASSETTE SEAL		•
SCT030	No OEM Part # Available	THERMOCOUPLE	•	•
SCT053	01-108816S	METERING TUBE (290)	•	•
SCV004	01-106787S / 74-100294A	SAFETY VALVE (70 PSI)	•	•
SCV027	No OEM Part # Available	SAFETY VALVE (38 PSI)	•	•

FOOTNOTES: 1. Older styles only 2. Models with RPI's Condenser Waste Bottle Kit (RPI Part #SCK016) 3. Model #01-121101
4. Serial #2101DK0274 and above 5. Model #101102 (Old Type, One Piece Style with S/N's ending with an 'A') 6. Model #01-201103
7. Model #01-121101 (New Style, Two Piece Style)



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