

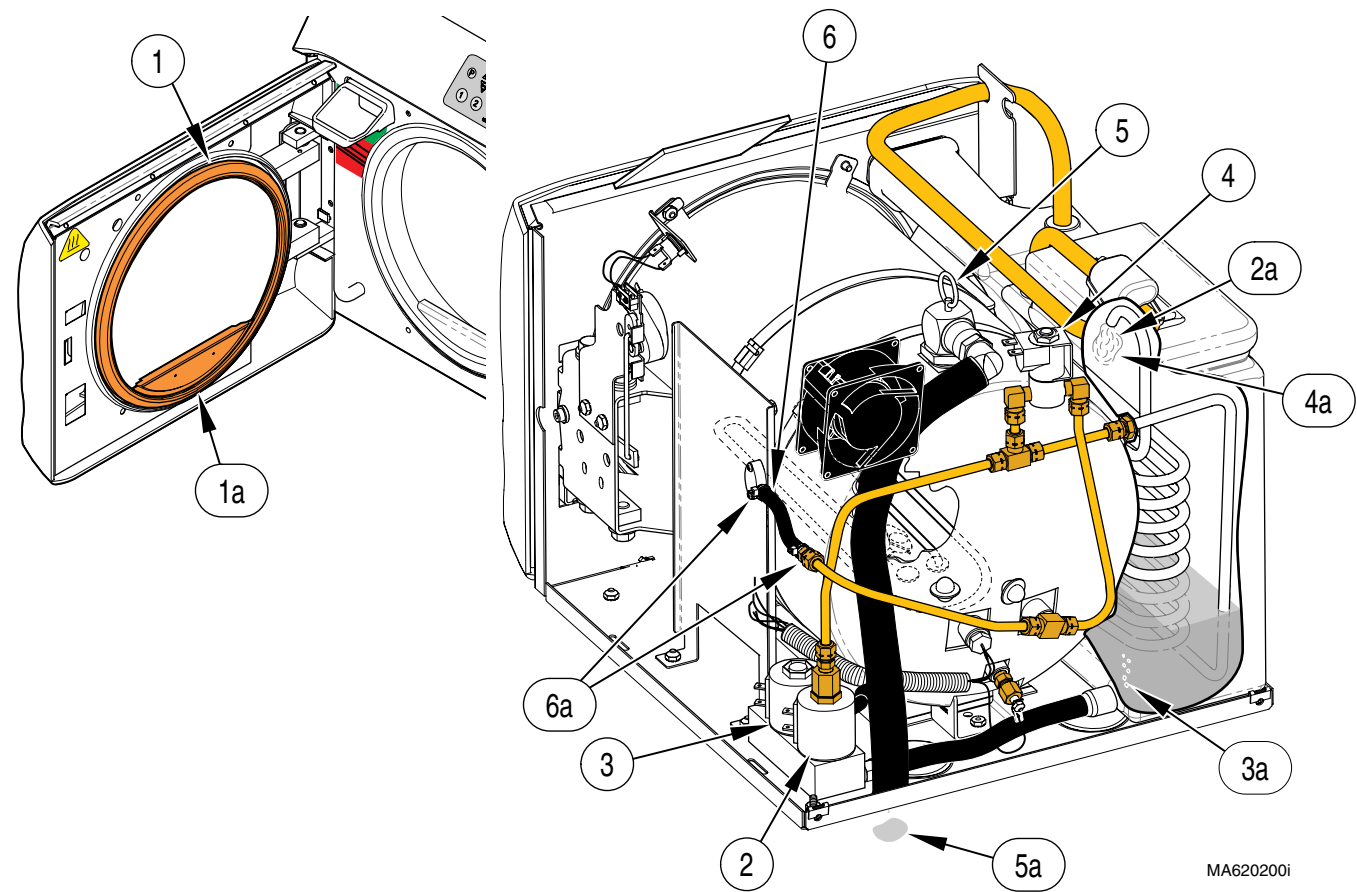


**M9, M9D, M11, M11D
Sterilizer Quick Reference Sheet**

**Serial Number Prefixes
(RN, RP, RR, RS, RT, RV, RW, RX, RY, RZ, V)**

Note
Refer to your Service manual for complete instructions.

Leakage Check Chart



Component	Check	Correction
Door / Dam Gaskets	Check for water leaking around door (1a).	Inspect / clean gaskets. Replace gasket(s) if necessary.
Vent Valve	Check for water leaking from condensing coil spout (2a).	Clean / replace vent valve.
Fill Valve	Check for water leaking back into reservoir thru the fill line (3a). Look for bubbles coming from bottom of reservoir.	Clean / replace fill valve.
Air Valve	Check for excessive steam coming thru condensing coil spout (4a). NOTE: During the HEAT & VENT modes, it is normal for steam to be exhausted thru the spout.	Clean / replace air valve.
Pressure Relief Valve	Check for water / steam leakage from beneath the rear (5a) of the sterilizer.	Refer to: Pressure Relief Valve Test. Replace valve if necessary.
Pressure Sensor Hose	Check for steam leakage at pressure sensor hose connections (6a).	Secure pressure sensor hose connection with high temperature cable ties.

- High Limit Codes (C900 Series)**
- Skip fill cycle.
 - Condensing coil outlet beneath reservoir water level.
 - High Limit Switch(es) malfunctioning (normally closed).
 - Wire connections broken or loose on High Limit(s).
 - Temperature surpassing 450°F (232°C). Run Service Diagnostics to determine probable cause.
 - Water Level Sensor shorted because:
 - Tray rack in backwards
 - Dirty sensor
 - Wet sensor
- C980 to C987 Hi limit open**
- Make sure water level sensor is clean and dry
 - Check for internal and external leaks. (See leakage chart)

Troubleshooting Chart

- No Power**
- Is unit plugged in to wall and back of unit?
 - Is there supply voltage to unit (check outlet)?
 - Check F1, F2 fuses (Main PCB).
- Has Power, No Display or Touchpad**
- Check harness (J13 Main PCB to J3 Display PCB).
 - Display PCB is malfunctioning
 - Check adjustment on display board.
- Has Power, No Display**
- Check J2 harness & plug (Display PCB).
 - Check adjustment on display board.
- Instruments Not Drying**
- Sterilizer overloaded?
 - Door fully open before completion of Dry Cycle?
 - Pouches placed paper side up?
 - Sterilizer not level?
 - Filter screen(s) in chamber clogged?
- Biological Strips Show Unsterile**
- Sterilizer overloaded?
 - Improper operation by end user?
 - Instrument trays not made for sterilizer or operation?
 - Wrong type of biological strips being used? Must use strips for *Gravity Displacement Steam Sterilizers?*
 - Chemical indicator has been in contact with water?
 - Strips stored in damp / hot environment?
- Printer Does Not Print**
- Printer out of paper?
 - Cartridge ribbon dry?
 - Printer wire harness disconnected?

- Water Fill Codes (C200 Series)**
- Reservoir water low.
 - Filter screen in chamber clogged.
 - Water Fill Level Sensor dirty.
 - Fill Valve restricted, open coil or harness.
 - Check J8 (Water Level Sensor) harness and plug connection.
- Door Latch Codes (C300 Series)**
- Door remains closed after door opening motor has operated.
 - Check door springs and possibly add another for more opening force.
 - Door interlock switch malfunctioning.
 - Door open during specific mode of operation.
- Steam Temperature Codes (C500 Series)**
- Unit not level.
 - C533 - C534 – C544 Steam temperature low/high**
 - Check for internal and external steam and water leaks (see leakage chart).
 - Check resistance on heater (see schematics).
 - Check for resistance on steam temp probe (see schematics).
 - Check for 5.0VDC between TP2 & TP4 test points on the board.
 - Remove J12 and check for voltage on the 1st & 2nd pin. Should be 4.5 VDC.
 - C560 to C567 Steam temp hardware**
 - Check J12 plug & conditions of wires. Ensure solid connection.
 - Check for resistance on steam temp probe (see schematics).
 - Check for 5.0VDC between TP2 & TP4 test points on the board.
 - Remove J12 and check for voltage on the 1st & 2nd pin. Should be 4.5 VDC.
 - Allow sterilizer to reach room temperature before operating.
 - C570 to C577 Steam temp over limit**
 - Check for internal and external steam and water leaks (see leakage chart)
 - Check for resistance on steam temp probe (see schematics).
 - Check for 5.0VDC between TP2 & TP4 test points on the board.
 - Remove J12 and check for voltage on the 1st & 2nd pin. Should be 4.5 VDC.
 - Check for restriction in tubing and chamber access hole for pressure transducer.
- Pressure Codes (C600 Series)**
- Door not fully opening.
 - Air or Vent Valve malfunctioning or lines restricted.
- 500 Series**
- C633 Pressure low**
- Check for internal and external steam and water leaks (see leakage chart).
 - Check for resistance on heating element (see schematics).
 - Check for 5.0VDC between TP2 & TP4 test points on the board.
 - Check water sensor to be clean and dry.

Error Codes Chart (Abbreviated List)

Caution
Service diagnostics requires power to be connected to the unit with panels removed. Use caution when performing this procedure.

NOTES
Always run Service Diagnostics (Switch 1 must be ON). Check and record last five Error Codes when in Service Diagnostics. If a C099 code is displayed in the Error Codes, ignore it - was generated at the factory, so nothing is wrong.

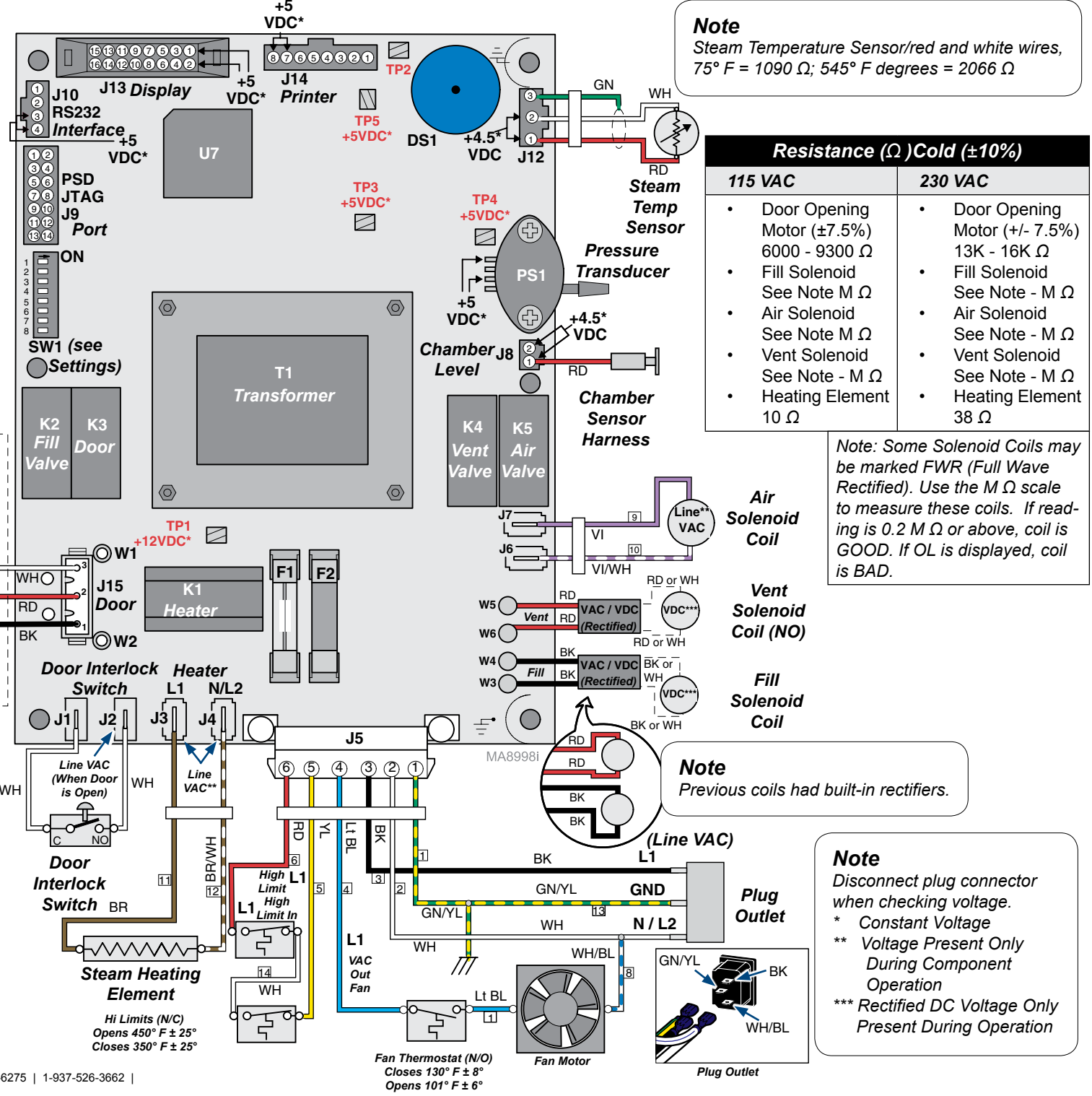
The chart below cross-references the numeric error code with the Component, Problem, & Mode.

First Digit (Component) where problem occurred	Second Digit (Problem) what was detected	Third Digit (Mode) when detected
0 = General System	0 (not used)	0 = Power-Up Mode
1 = Stop Button	1 = Power Loss	1 = Select Cycle
2 = Water Level Sensor	2 = Closed	2 = Fill Mode
3 = Door Switch	3 = Low	3 = Heat-Up Mode
4 (not used)	4 = High	4 = Sterilizing Mode
5 = Temperature Sensor	5 (not used)	5 = Vent
6 = Pressure Sensor	6 = Hardware	6 = Door To Open
7 (not used)	7 = Over Limit	7 = Dry
8 (not used)	8 = Open	8 (not used)
9 = High Limit Thermostat	9 (not used)	9 (not used)

- General Codes (C010, C060)**
- Supply power interrupted due to storm, etc.
 - Check all connections between outlet to PC board.
 - Unplug for 60 seconds to reset unit.

- Stop Button Codes (C100 Series)**
- Operator pressed Stop button.

Test Points (TP)	
TP2 - TP1	12 VDC supply to K1 - K5 relay coils.
TP2 - TP3	5 VDC supply to low voltage circuit components.
TP2 - TP4	5 VDC supply to Temp. & Pressure Sensors.
TP2 - TP5	5 VDC supply to Printer.



Normal Sterilizer Operation		
Unit Plugged Into Outlet		
Audible	Display	Action / Notes
Beeps	INITIALIZING SYSTEM	<i>Note: The fan may run if the temperature inside cabinet is 130°F [54°C] (±8°F [4.4°C]) or greater.</i> Total number of cycles that have been run on Sterilizer. Model Number* system is set up, Software version number. (*System can be set for M9, M11 or M9D, M11D using SW1 [switch2]). • Fill Valve - Closed / • Vent Valve - Open / • Heater - Off • Air Valve - Energized [Open for 10 minutes or until Cycle started]
	TOTAL CYCLES XXXX M9*, vX.XX	
	SELECT CYCLE	
Press Cycle Key (i.e. UNWRAPPED)		
Audible	Display	Action / Notes
	UNWRAPPED 270° F 3:00 MINUTES FAST VENT 30 MINUTE DRY	Sterilization program, temperature, time per., venting type & dr cycle time is displayed. • Fill Valve - Closed / • Vent Valve - Open / • Heater - Off • Air Valve - Energized [Open for 10 minutes or until Cycle started]
Press Start Key		
Audible	Display	Action / Notes
Beeps	FILLING CHAMBER	• Fill Valve - Energized [Open] / • Vent Valve - Energized [Closed] • Air Valve - Energized [Open] / • Heater - Off
	CHAMBER IS FULL	Water reaches level of Water Level Sensor sending signal back to main P.C. Board. • Fill Valve - De-energized [Closed] / • Vent Valve - Energized [Closed] • Air Valve - Energized [Open] / • Heater - Off
	HEATING - UNWRAPPED XXX° F XX.X PSI (temp) (pressure)*	• Fill Valve - De-energized [Closed] / • Vent Valve - Energized [Closed] • Air Valve - Energized (*) [Open] / • Heater - On (* The air valve will open 3 times at approximately one half of the operating (sterilization) pressure and closes between 38 & 72 seconds {dependent on selected cycle and model of unit [M9 / M11]}.)
	STERILIZING 03:00 270° F 27.1 PSI	Displayed sterilization time begins to count down. • Fill Valve - De-energized [Closed] / • Vent Valve - Energized [Closed] • Air Valve - De-energized [Closed] / • Heater - Cycles On & Off
	READY TO VENT 00:10 270° F 27.1 PSI	In final 10 seconds of Sterilization Mode "READY TO VENT" blinks on & off in display. • Fill Valve - De-energized [Closed] / • Vent Valve - Energized [Closed] • Air Valve - De-energized [Closed] / • Heater - Cycles On & Off
	FAST VENT XXX° F XX.X PSI (temp) (pressure)	Chamber vents into reservoir. • Fill Valve - De-energized [Closed] / • Vent Valve - De-energized [Open] • Air Valve - De-energized [Closed] / • Heater - Off
Beeps (Occurs 5 seconds before Door opens.)	DOOR TO OPEN XXX° F XX.X PSI (temp) (pressure)	Chamber pressure reaches 0.7 PSIG [5 kPa] "DOOR TO OPEN" blinks on & off in display • Fill Valve - De-energized [Closed] / • Vent Valve - De-energized [Open] • Air Valve - Energized [Open] / • Heater - Off • Door Opening Motor - Energizes, rotating the motor lever arm, unlatching the door. Door opens to partial open position then motor automatically reverses back to original position. Displayed drying time begins to count down.
	DRYING 30:00 (time)	• Fill Valve - De-energized [Closed] / • Vent Valve - De-energized [Open] • Air Valve - De-energized [Closed] / • Heater - Cycles On & Off
Beeps (10 s)	DRYING CYCLE COMPLETE	• Fill Valve - De-energized [Closed] / • Vent Valve - De-energized [Open] • Air Valve - De-energized [Closed] / • Heater - Off
	SELECT CYCLE	• Unit is ready for another operation.

SW1 Settings	
1	On for Service Diagnostics
2	On for Model Designation
3, 4, 5	Not Used, leave Off
6	On for Communication Port hook-up to computer.
7	Off-English, On-Metric
8	Not Used, Leave Off

Specifications	
Electrical Rating:	
NOTE A separate (dedicated) circuit is required for this sterilizer. Sterilizer should not be connected into an electrical circuit with other appliances or equipment unless circuit is rated for the additional load.	
115 VAC Unit	104-127 VAC, 50/60 Hz, alternating current 50/60 Hz, single phase, Dedicated PS, 15 A
230 VAC Unit	207-250 VAC, 50/60 Hz, alternating current 50/60 Hz, single phase, Dedicated PS, 10 A
Power Consumption:	
115 VAC Unit	Max. 1425 Watts, 12 Amp @ 120 VAC
230 VAC Unit	Max. 1500 Watts, 6.5 Amp @ 230 VAC
Fuse Ratings:	
115 VAC	F1 0.25 Amp, 250 V, Slo-blo, 1/4" x 1 1/4" F2 15 Amp, 250 V, Fast Acting, 1/4" x 1 1/4"
230 VAC	F1 0.125 Amp, 250 V, Slo-blo, 5 x 20 mm F2 8 Amp, 250 V, Fast Acting, 5 x 20 mm
Important Cleaning Instructions:	
Weekly	Drain water and refill with new distilled water.
Monthly	Run Speed-Clean solution through sterilizer.
Chamber Pressures:	
Operating	27-31 PSI (186-215 kPag)
Max. Pressure @ Door Release	0.7 PSIG (5 kPag)
Max. Pressure [Safety Valve opens]	40 PSIG (276 kPag)
Specific Chamber Operating Temperature / Time:	
Unwrapped	270-275°F (132-135°C) / 3 Min
Pouches	270-275°F (132-135°C) / 5 Min
Handpieces	270-275°F (132-135°C) / 6 Min
Packs	250-255°F (121-124°C) / 30 Min
O/L Temp. settings	Opens 450°F, (232°C) ± 25°F Closes 350°F, (177°C) ± 25°F