

UltraClave® Automatic Sterilizers



Model Numbers:

M9 -020 thru -022

M9D -020 & -022

M11 -020 thru -022

M11D -020 & -022

Serial Number Prefixes:

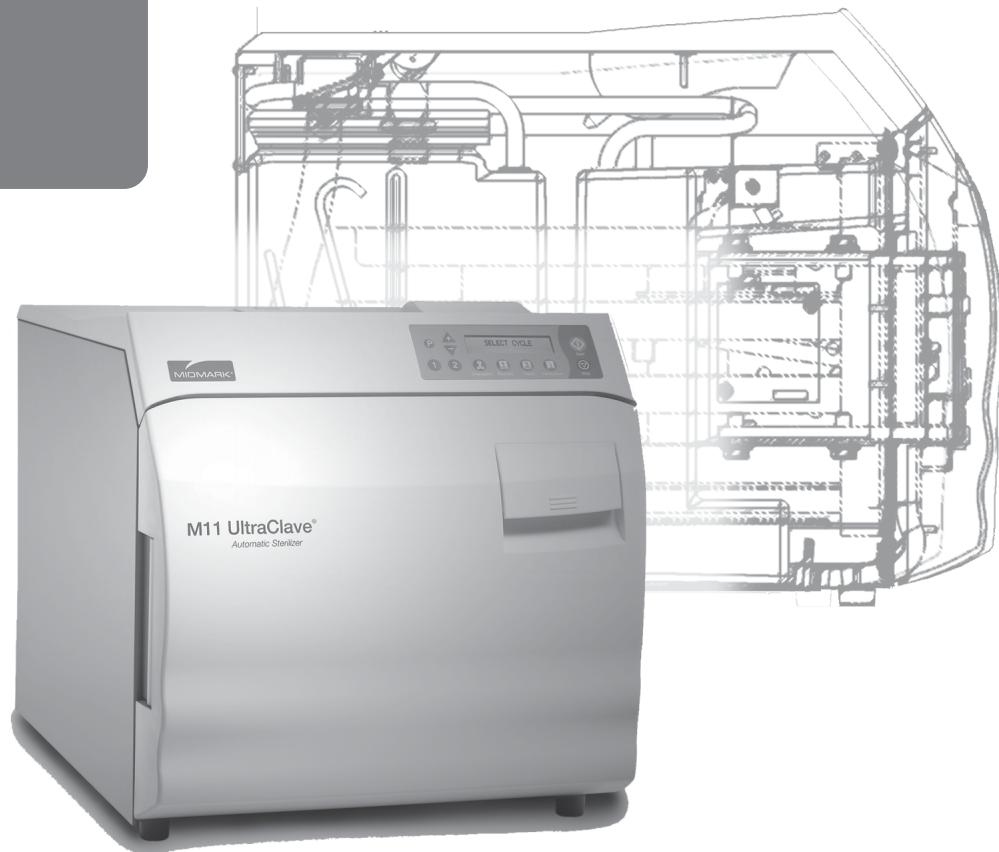
RN, RP, RR, V

RW, RX, V

RS, RT, RV, V

RY, RZ, V

Service and Parts Manual



CE

FOR USE BY MIDMARK TRAINED TECHNICIANS ONLY

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General Information

Symbols



Caution

Indicates a potentially hazardous situation which could result in injury if not avoided.



Equipment Alert

Indicates a potentially hazardous situation which could result in equipment damage if not avoided.

Note

Amplifies a procedure, practice, or condition.



Indicates that the component the check mark appears beside should be tested before replacing it.
In Section A, test the components in the order indicated.
(ex. **1st ✓** then, **2nd ✓**)

Refer to Section B for component testing procedures.

These symbols are used throughout this manual to represent the operational status of functions and components.



Indicates the function / component is working properly.
No action required.



Indicates the function / component is working,
but a problem exists.



Indicates the function / component is not working at all.

Ordering Parts

The following information is required when ordering parts:

- Serial number & model number
- Part number for desired part.

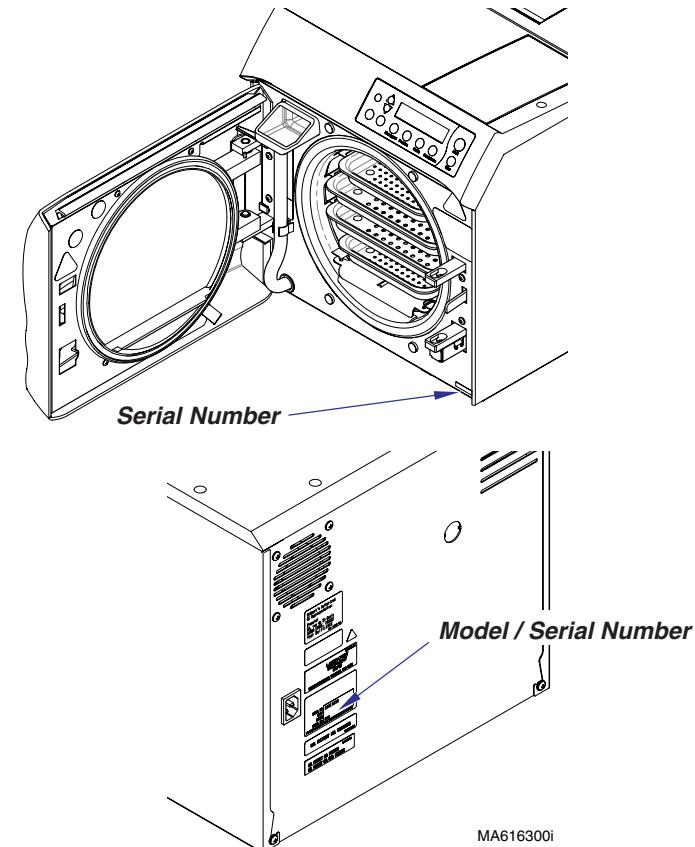
[Refer to Section E: Exploded Views / Parts Lists]

Non-warranty parts orders may be faxed to Midmark using the Fax Order Form in the back of this manual.

For warranty parts orders, call Midmark's Technical Service Department with the required information.

Hours: 8:00 am until 5:00 pm EST [Monday - Friday]
Phone: 1-(800)-Midmark

Model / Serial Number Location



General Information

Weights, Dimensions, Electrical Specifications

ATTENTION

A separate (dedicated) electrical circuit is recommended for all models (M9/D & M11/D). Do not connect to a circuit with other devices, unless the circuit is rated for the additional load.

M9 / M9D Model Information

Dimensions [Refer to illustration]:

Front Height (A)	15.8 in. (40.1 cm)
Width (B)	15.3 in. (38.9 cm)
Depth w/plug (C)	20.1 in. (51 cm)
Back Height (D)	15.3 in. (38.9 cm)

Standard Tray Dimensions

M9 / M9D (Large)	7 5/16 in. x 12 in. x 7/8 in. (18.6 cm x 30.5 cm x 2.2 cm)
M9 / M9D (Small)	5 5/8 in. x 12 in. x 7/8 in. (14.3 cm x 30.5 cm x 2.2 cm)

Chamber Size:	Diameter: 9 in. (22.9 cm) Depth: 15 in. (38.1 cm)
---------------------	--

Shipping Carton:

(Length x Width x Height)	24.2 in. x 20.5 in. x 21 in. (61.4 cm x 52 cm x 53.3 cm)
---------------------------------	---

Weight:

Shipping Weight	81 lbs (36.7 kg)
w/reservoir empty	73 lbs (33.1 kg)
w/reservoir full	82 lbs (37 kg)

Reservoir Capacity:	Approx. 1.1 gallon (4.1 liters) at FULL mark
---------------------------	---

Pressure Relief Valve:

opens at approximately:	40 psi (275kPa)
-------------------------------	-----------------

Electrical Requirements:	[See Model Identification / Compliance Chart]
--------------------------------	--

Fuses (on main PC board):

115 VAC model

F1	0.250 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 models:

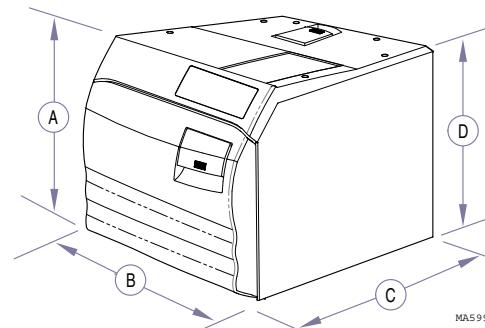
F1	0.125 amp, 250 V, Slo-Blo, 5mm x 20mm
F2	8 amp, 250 V, Fast-Acting, 5mm x 20mm

Power Consumption:

115 VAC models	1425 watts, 12 amps @ 120 VAC
230 VAC models	1500 watts, 7 amps @ 240 VAC

Heat Emission:

M9 / M9D	5000 BTU/Hr during operation
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M11 / M11D Model Information

Dimensions [Refer to illustration]:

Front Height (A)	17.8 in. (45.2 cm)
Width (B)	17.75 in. (45.2 cm)
Depth w/plug (C)	22.75 in. (57.8 cm)
Back Height (D)	17.0 in. (44.2 cm)

Standard Tray Dimensions

M11 / M11D (Large)	9 in. x 15 in. x 1 1/8 in. (22.9 cm x 38 cm x 2.9 cm)
M11 / M11D (Small)	6 5/8 in. x 15 in. x 1 1/8 in. (14.3 cm x 38 cm x 2.9 cm)

Chamber Size:	Diameter: 11 in. (27.9 cm) Depth: 18 in. (45.7 cm)
---------------------	---

Shipping Carton:

(Length x Width x Height)	26.2 in. x 21.5 in. x 21 in. (66 cm x 54.6 cm x 53.3 cm)
---------------------------------	---

Weight:

Shipping Weight	131 lbs (59.4 kg)
w/reservoir empty	99 lbs (44.9 kg)
w/reservoir full	111 lbs (50.4 kg)

Reservoir Capacity:	Approx. 1.4 gallon (5.3 liters) at FULL mark
---------------------------	---

Pressure Relief Valve:

opens at approximately:	40 psi (275kPa)
-------------------------------	-----------------

Electrical Requirements:	[See Model Identification / Compliance Chart]
--------------------------------	--

Fuses (on main PC board):

115 VAC models	
F1	0.250 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 models:

F1	0.125 amp, 250 V, Slo-Blo, 5mm x 20mm
F2	8 amp, 250 V, Fast-Acting, 5mm x 20mm

Power Consumption:

115 VAC models	1425 watts, 12 amps @ 120 VAC
230 VAC models	1500 watts, 7 amps @ 240 VAC

Heat Emission:

M11 / M11D	5000 BTU/Hr during operation
------------------	------------------------------

General Information

Model Identification / Compliance Chart - M9/D & M11/D

Model	Description	Serial Number Prefixes	Complies To:						Electrical Ratings:		
			UL 61010A-1	UL 61010-2-041	CAN/CSA C22.2, #1010	CAN/CSA C22.2, #1010.2-041-96	ASME Boiler & Pressure Vessel Code	VAC +/- 10%	Amps	Cycles (Hz)	
M9-020	Midmark M9 Ultraclave (115 VAC)	RN & V	X	X	X	X	X	115	12	50/60	
M9-021	Midmark M9 Ultraclave (230 VAC)	RP & V	X	X	X	X	X	230	6.4	50/60	
M9-022	Ritter M9 Ultraclave (115 VAC)	RR & V	X	X	X	X	X	115	12	50/60	
M9D-020	Midmark M9D Ultraclave (115 VAC)	RW & V	X	X	X	X	X	115	12	50/60	
M9D-022	Ritter M9D Ultraclave (115 VAC)	RX & V	X	X	X	X	X	230	12	50/60	
M11-020	Midmark M11 Ultraclave (115 VAC)	RS & V	X	X	X	X	X	115	12	50/60	
M11-021	Midmark M11 Ultraclave (230 VAC)	RT & V	X	X	X	X	X	230	6.4	50/60	
M11-022	Ritter M11 Ultraclave (115 VAC)	RV & V	X	X	X	X	X	115	12	50/60	
M11D-020	Midmark M11D Ultraclave (115 VAC)	RY & V	X	X	X	X	X	115	12	50/60	
M11D-022	Ritter M11D Ultraclave (115 VAC)	RZ & V	X	X	X	X	X	230	12	50/60	



General Information

Cycle Parameters

This table shows the temperature / pressure / time parameters for the pre-set cycles.

Cycle	Chamber Temperature (minimum)	Chamber Pressure (minimum)	Sterilization Mode Time	Dry Mode Time*
 Unwrapped	270°F (132°C)	27.1 psi (186 kPa)	3 minutes	30 minutes*
 Pouches	270°F (132°C)	27.1 psi (186 kPa)	5 minutes	30 minutes*
 Packs	250°F (121°C)	15 psi (104 kPa)	30 minutes	30 minutes*
 Handpieces	270°F (132°C)	27.1 psi (186 kPa)	6 minutes	30 minutes*

* Dry Mode Time can be adjusted from 0 to 60 minutes

Special Tools

This table lists all special tools needed to diagnose and repair the sterilizer.

Special Tool	Manufacturer	Part Number	Purpose of Tool
Digital Multimeter	Commercially available	any type	To perform continuity / voltage checks
Digital Thermometer	Commercially available	any type	To verify chamber temperature
Pressure Gauge Test Harness	Midmark Corporation	002-0372-00	To check chamber pressure during cycle

General Information

Warranty Information

SCOPE OF WARRANTY

Midmark Corporation ("Midmark") warrants to the original purchaser its new Alternate Care products and components (except for components not warranted under "Exclusions") manufactured by Midmark to be free from defects in material and workmanship under normal use and service. Midmark's obligation under this warranty is limited to the repair or replacement, at Midmark's option, of the parts or the products the defects of which are reported to Midmark within the applicable warranty period and which, upon examination by Midmark, prove to be defective.

APPLICABLE WARRANTY PERIOD

The applicable warranty period, measured from the date of delivery to the original user, shall be one (1) year for all warranted products and components.

EXCLUSIONS

This warranty does not cover and Midmark shall not be liable for the following: (1) repairs and replacements because of misuse, abuse, negligence, alteration, accident, freight damage, or tampering; (2) products which are not installed, used, and properly cleaned as required in the Midmark "Installation" and or "Installation / Operation Manual for this applicable product. (3) products considered to be of a consumable nature; (4) accessories or parts not manufactured by Midmark; (5) charges by anyone for adjustments, repairs, replacement parts, installation, or other work performed upon or in connection with such products which is not expressly authorized in writing in advance by Midmark.

EXCLUSIVE REMEDY

Midmark's only obligation under this warranty is the repair or replacement of defective parts. Midmark shall not be liable for any direct, special, indirect, incidental, exemplary, or consequential damages or delay, including, but not limited to, damages for loss of profits or loss of use.

NO AUTHORIZATION

No person or firm is authorized to create for Midmark any other obligation or liability in connection with the products.

THIS WARRANTY IS MIDMARK'S ONLY WARRANTY AND IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED. MIDMARK MAKES NO IMPLIED WARRANTIES OF ANY KIND INCLUDING ANY WARRANTIES OF MERCHANTABILITY OR FITNESS FOR ANY PARTICULAR PURPOSE. THIS WARRANTY IS LIMITED TO THE REPAIR OR REPLACEMENT OF DEFECTIVE PARTS.

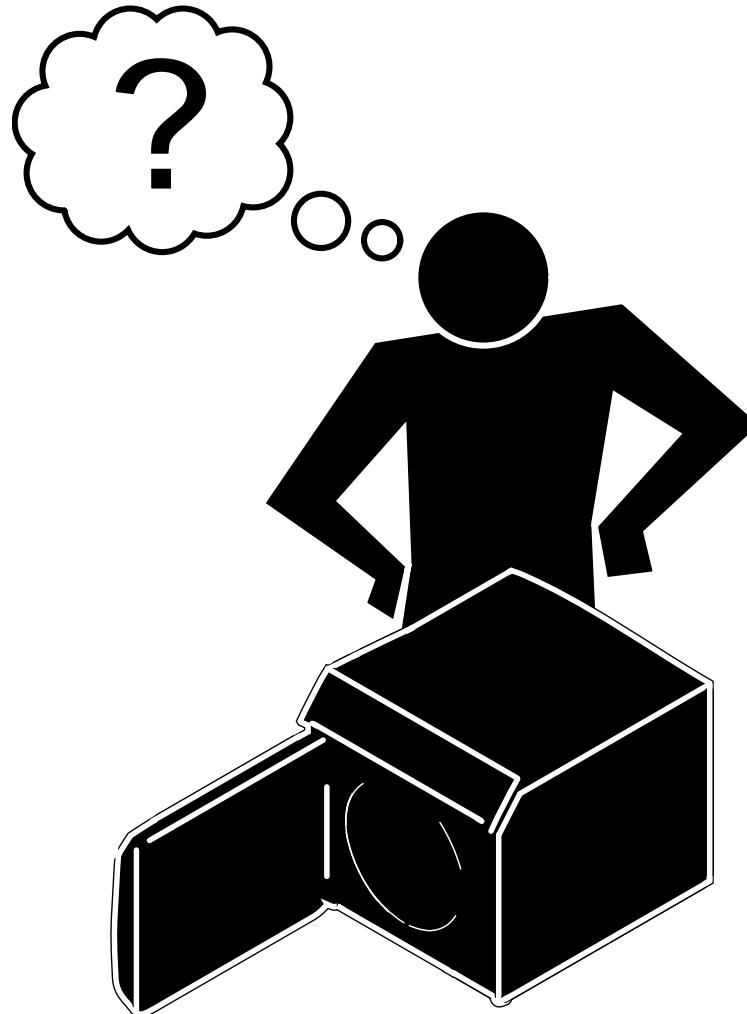
Additional Information

Failure to follow the guidelines listed below will void the warranty and/or render the sterilizer unsafe for use.

- If a malfunction is detected, do not use the sterilizer until necessary repairs are made.
- Do not attempt to disassemble sterilizer, replace components, or perform adjustments unless you are a Midmark authorized service technician.
- Do not use another manufacturer's parts to replace malfunctioning components. Use only Midmark replacement parts

Section A

Operation & Troubleshooting



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Operation & Troubleshooting

Error Codes

If an electronic malfunction is detected during a cycle, a numeric error code will appear on the display panel. Each digit in the error code provides information about the problem that occurred.

Example:



First Digit = Where?

The first digit indicates the component or system where the problem occurred.
(example: 3 = Door Switch)

Second Digit = What?

The second digit indicates what problem or symptom was detected.
(example: 8 = Open)

Third Digit = When?

The third digit indicates when the problem was detected.
(example: 2 = Fill Mode)

Troubleshooting

[Error Codes]

Error Codes

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C900 Series: (Hi-Limit Thermostat Codes)	A-10

The table below cross-references the numeric error code with the Component, Problem, and Mode.

First Digit (Component)	Second Digit (Problem)	Third Digit (Mode)
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)

Error Codes

Models:
Serial Numbers:

ALL

Error Codes: C010 / C060

Problem: Power interruption

C010

- Press stop to restart.
- 1st ✓ Check power cord connections at wall outlet and on back of sterilizer..
- 2nd ✓ Check if sterilizer is plugged into a dedicated 15 amp circuit.

C060

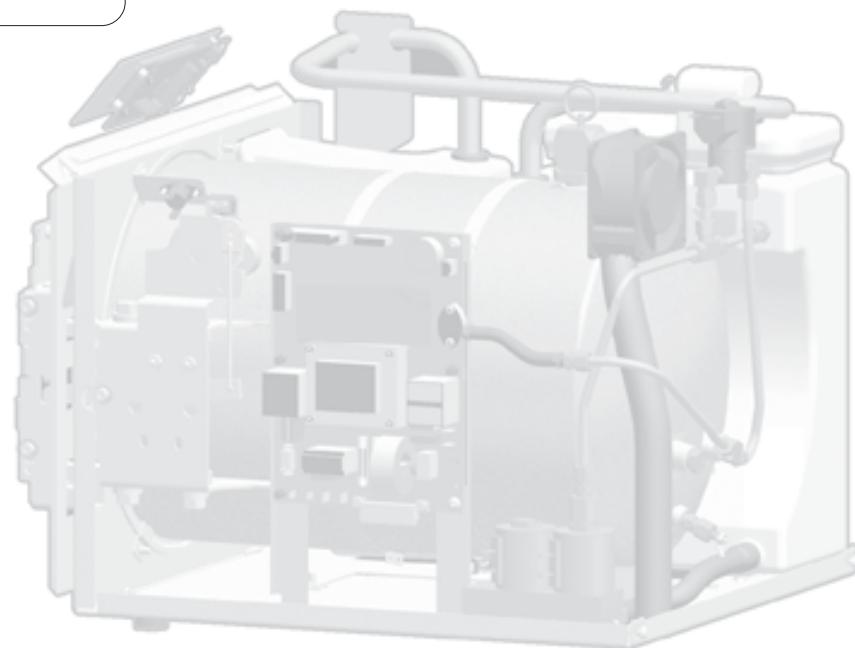
- Unplug and re-plug unit.
(Unplug sterilizer for a full 60 seconds.)
- 1st ✓ Check power cord connections at wall outlet and on back of sterilizer.
- 2nd ✓ Check if sterilizer is plugged into a dedicated 15 amp circuit.

Operation & Troubleshooting



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Models:
Serial Numbers:

ALL

Error Codes

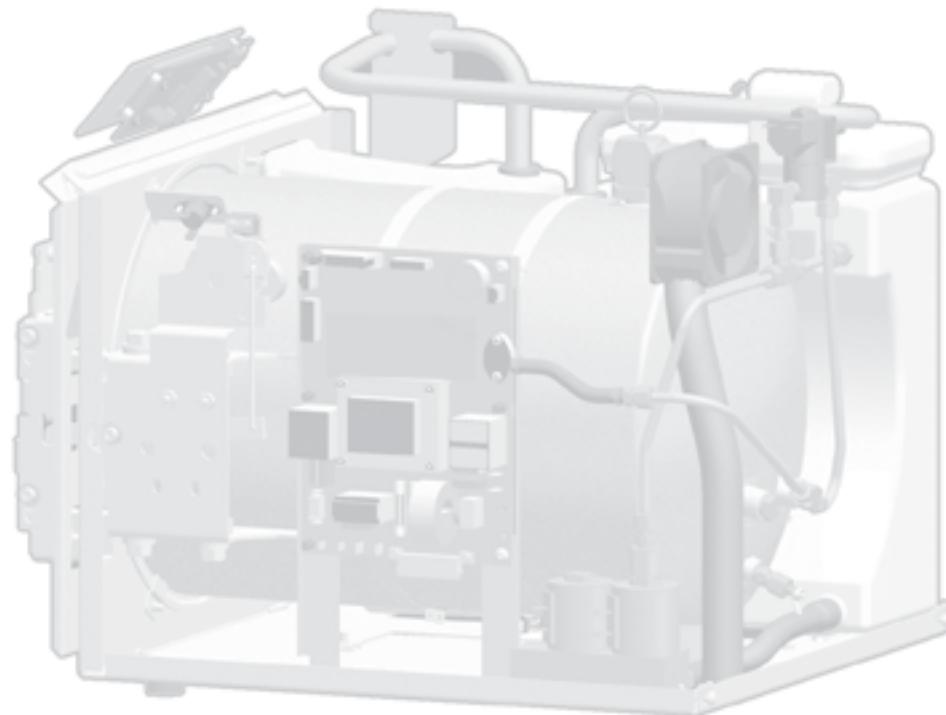
Operation & Troubleshooting

Error Code: C099

Problem: None. [This code was generated during testing at the factory]

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Ignore this error code.
(Push STOP to restart)



Error Codes

Models:
Serial Numbers:

ALL

Error Codes: C100 Series (all)

Problem: STOP button was pressed during a cycle.

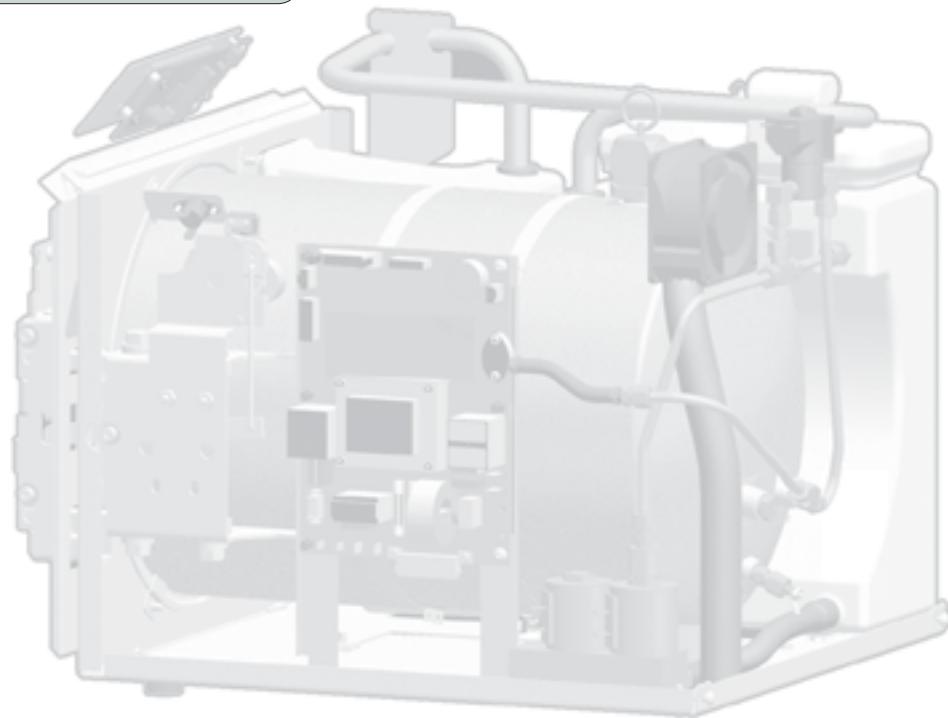
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Explain proper operation to users.

1st ✓

(Push STOP button to restart)



Models:
Serial Numbers:

ALL

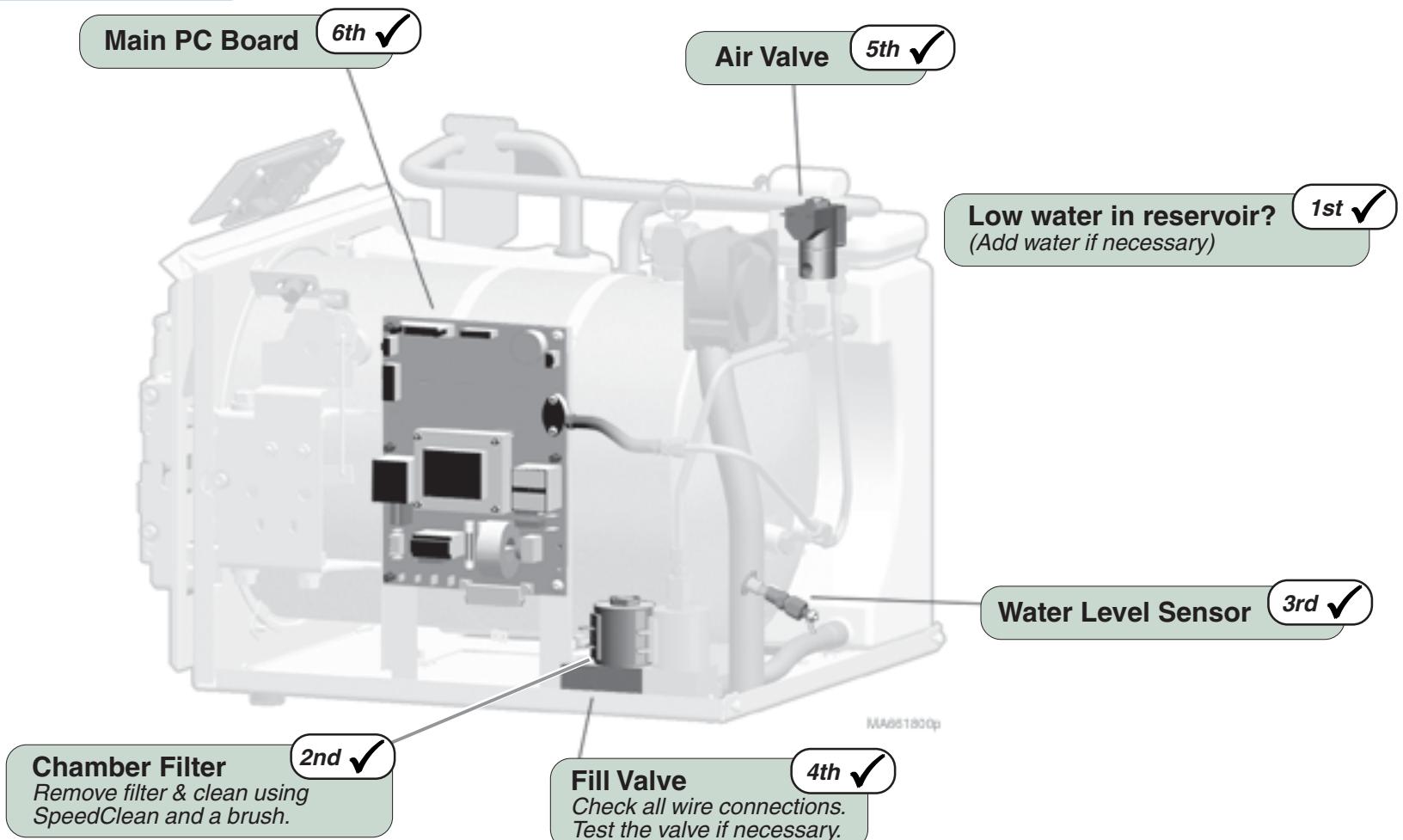
Error Codes

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Error Codes: C200 Series (all)

Problem: Water level sensor did not detect a full chamber within 5 minutes of starting the cycle.



Error Codes

Models:
Serial Numbers:

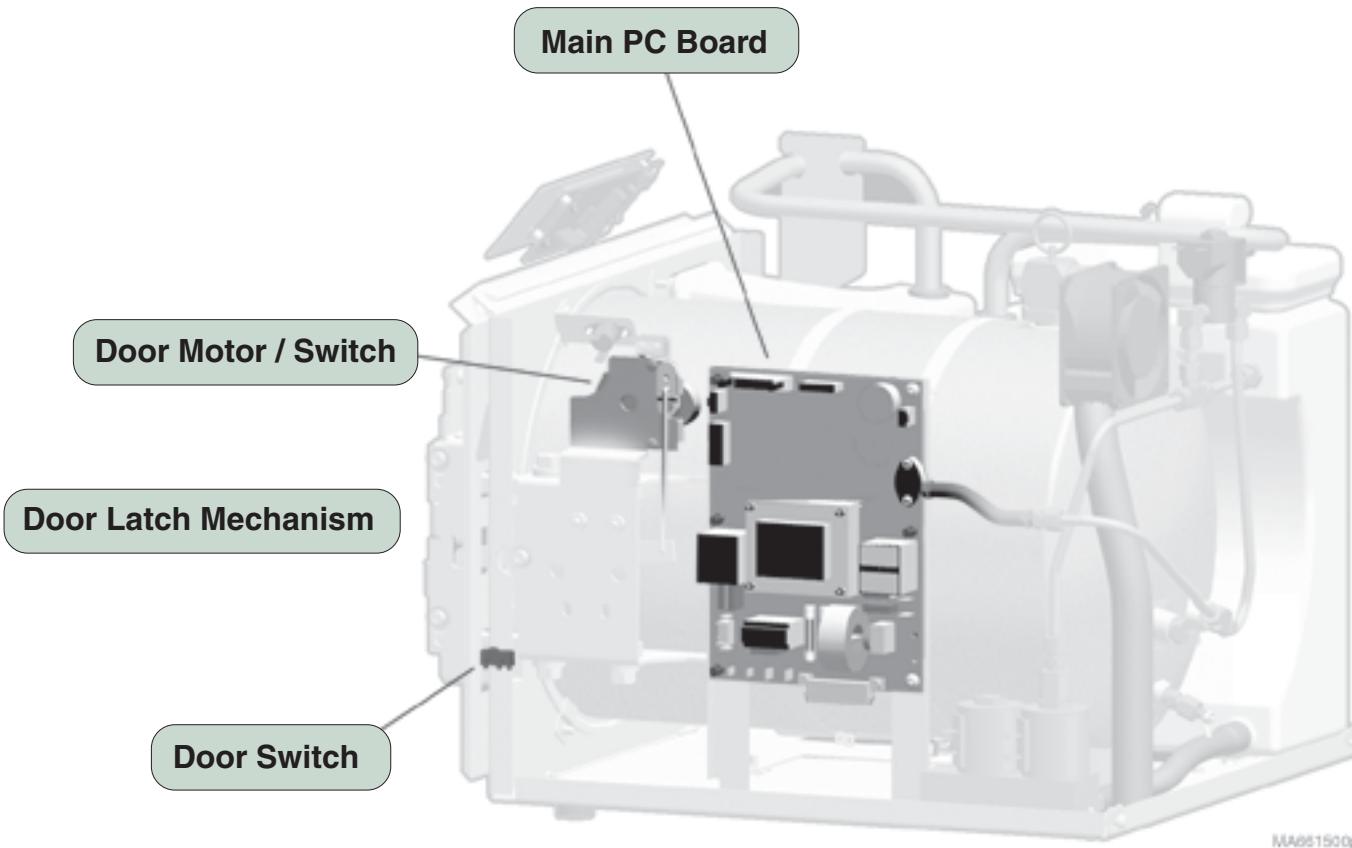
ALL

Error Codes: C300 Series (all)

Problem: PC board detected open door switch contacts during a cycle. -or-
Door switch contacts remained closed after door motor shut off.

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C326

- If door is open...
1st ✓ Door Switch
2nd ✓ Main PC Board
- If door is closed...
1st ✓ Door Latch Mechanism
2nd ✓ Door Motor / Switch

C382 / C383 / C384

- If door is open...
1st ✓ Improper operation.
(Do not open door during cycle)
- If door is closed...
1st ✓ Door Switch

Models:
Serial Numbers:

ALL

Error Codes

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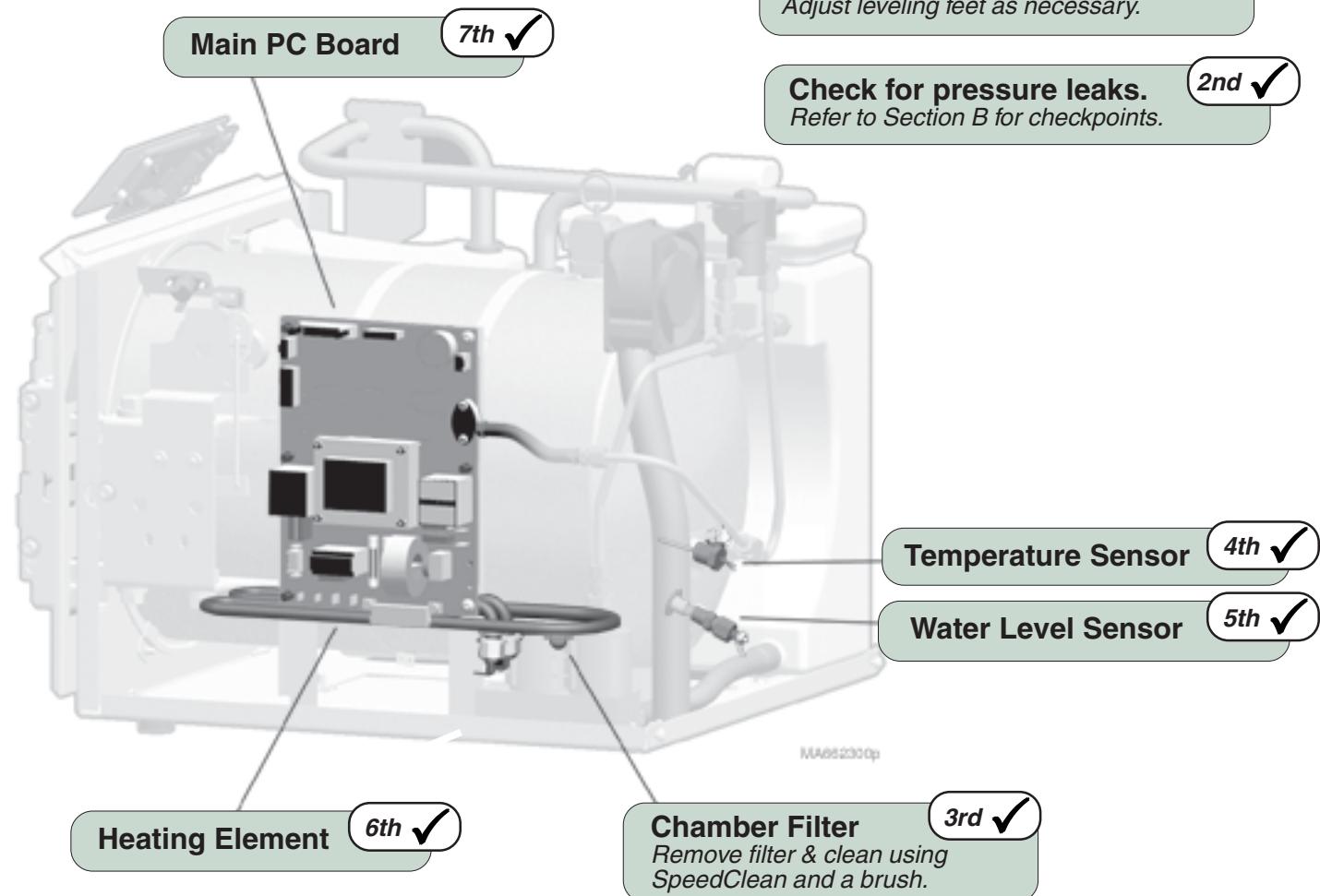
Attention:

C560 & C570 indicate a power interruption occurred after an error code was displayed.

When these errors appear, always check the five previous error codes.
[Refer to Section B: Service Diagnostics]

Error Codes: C500 Series (all)

Problem: Chamber temperature reading was not within the acceptable range for the current cycle.



Error Codes

Models:
Serial Numbers:

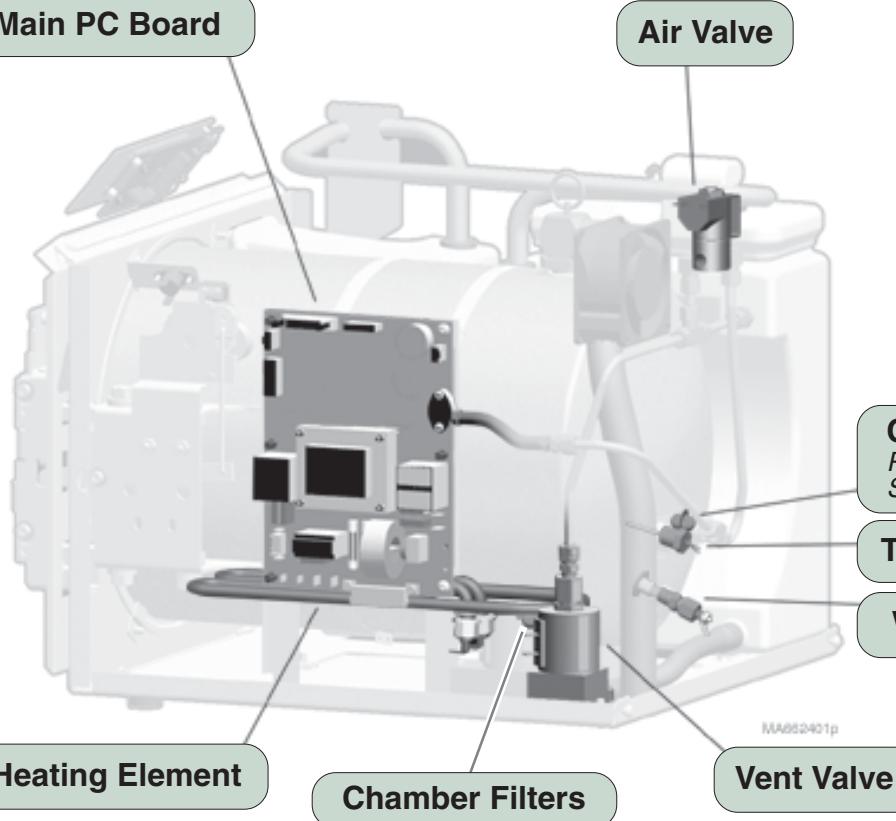
ALL

Error Codes: C600 Series (all)

Problem: Chamber pressure reading was not within the acceptable range for the current cycle.

Check for pressure leaks.

Refer to Section B for checkpoints.



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Low Pressure Error (C633)

- 1st ✓ Pressure Leaks
- 2nd ✓ Water Level Sensor
- 3rd ✓ Heating Element
- 4th ✓ Main PC Board

High Pressure Errors (C645 / C647 / C671 / C675 / C677)

- 1st ✓ Vent Valve
- 2nd ✓ Chamber Filters
- 3rd ✓ Main PC Board

(C672 / C673 / C674)

- 1st ✓ Air Valve
- 2nd ✓ Main PC Board

Hardware Errors

(C661 / C662 / C663 / C664 / C665 / C667)

- 1st ✓ Main PC Board

Attention:

C660 & C670 indicate a power interruption occurred after an error code was displayed.

When these errors appear, always check the five previous error codes.

[Refer to Section B: Service Diagnostics]

Models:
Serial Numbers:

ALL

Error Codes

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Attention:

C980 indicates a power interruption occurred after an error code was displayed.

When this error appears, always check the five previous error codes.

[Refer to Section B: Service Diagnostics]

Error Codes: C900 Series (all)

Problem: High-limit thermostat contacts opened during cycle.

Is the sterilizer overloaded?

1st ✓

Reduce load size.

Check for pressure leaks.

Refer to Section B for checkpoints.

4th ✓

Check if unit skips Fill Cycle .

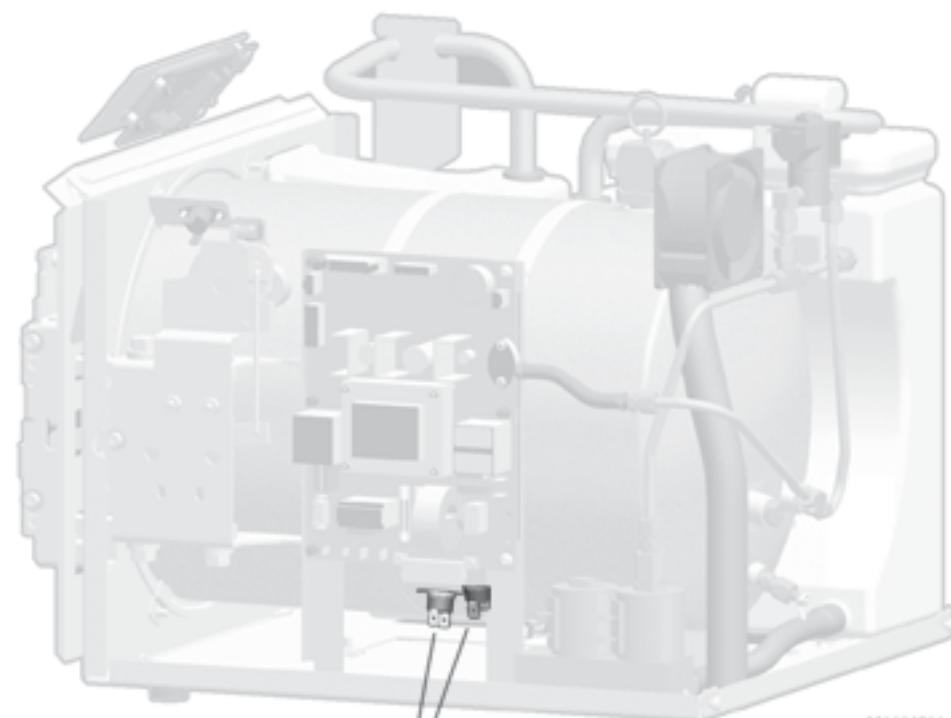
2nd ✓

Dry and test water level sensor.

Is sterilizer level?

3rd ✓

Adjust leveling feet as necessary.



High-Limit Thermostats

5th ✓

Error Codes

Models:
Serial Numbers:

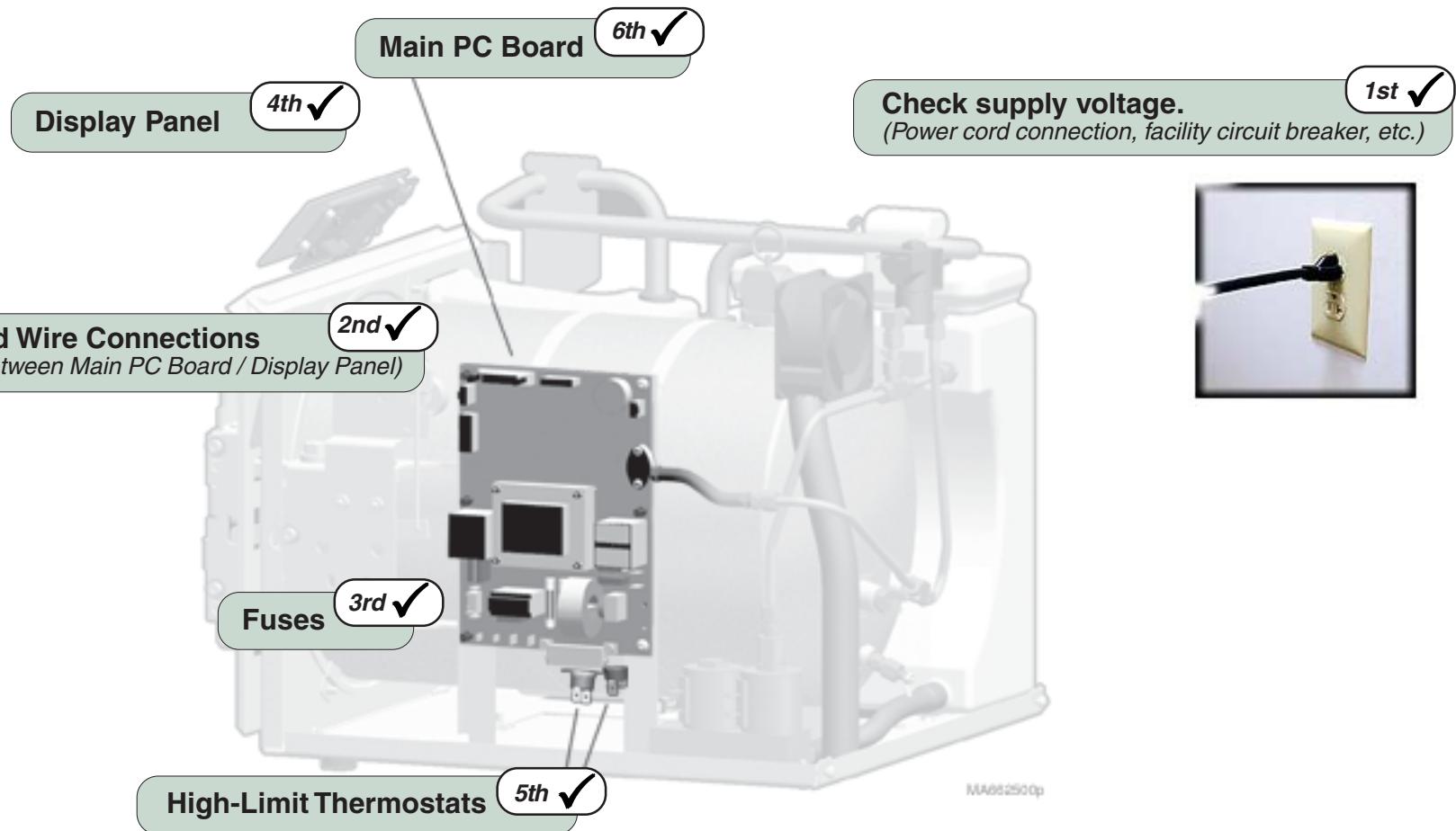
ALL

Power-Up Mode

Problem: Display panel is blank.
Touch pad does not work.

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Models:
Serial Numbers:

ALL

Troubleshooting

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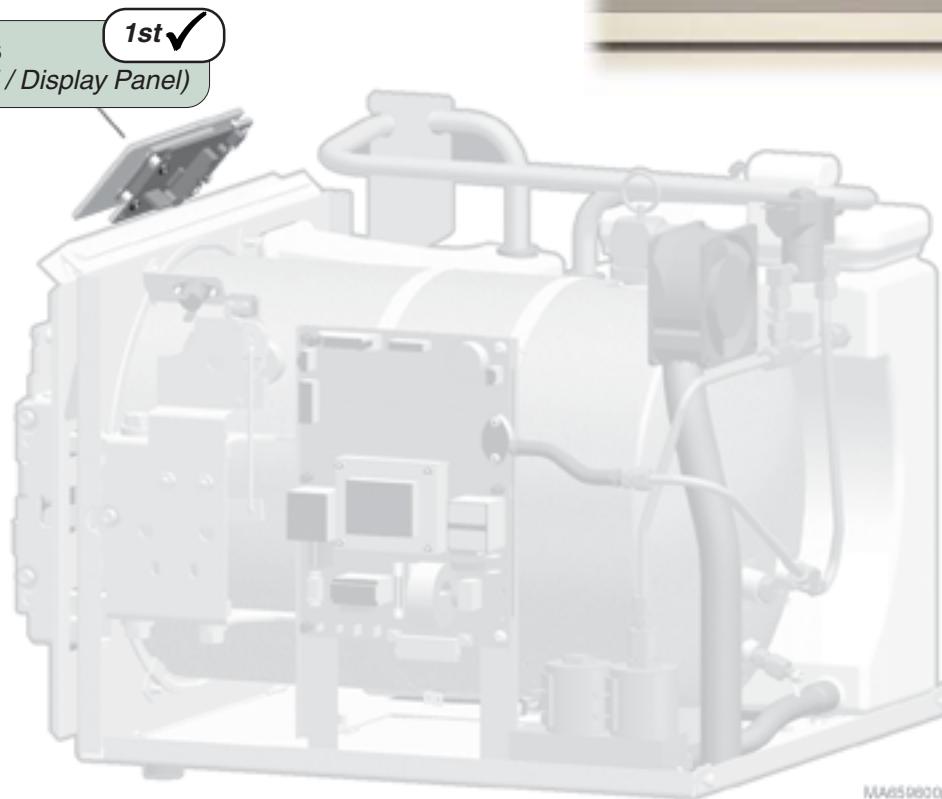
Power-Up Mode

Problem: "Foreign" characters appear on the display panel.
Touch pad works properly. ["Beeps" continuously]



Loose / Damaged Wire Connections

(Ribbon connector between Display PC Board / Display Panel)



Troubleshooting

Models:
Serial Numbers:

ALL

Sterilization Mode

Problem: Biological test strips indicate items are not sterile.
[No error code appears on display]

Type / condition of indicator strips

This unit requires test strips rated for:
Gravity Displacement Steam Sterilizers

Test strips must be stored in a cool, dry location.
Failure to do so will result in faulty readings.

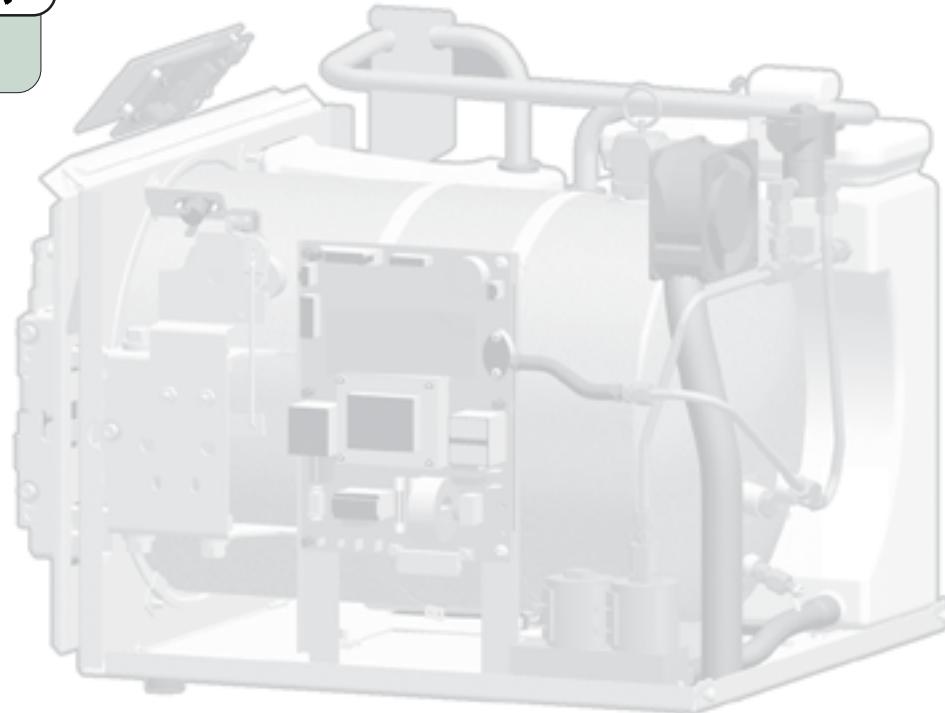
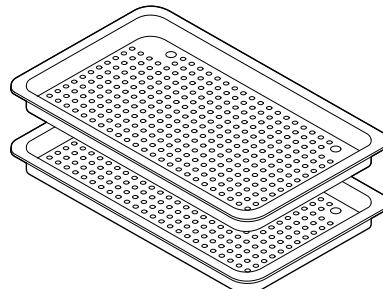
(Follow all instructions provided with test strips)

1st ✓

Are the correct trays being used?

Some trays may prevent proper air flow.
Be sure trays are designed for this sterilizer.

3rd ✓



Operation & Troubleshooting

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Drying Mode

Problem: Instruments are still wet after Drying Mode. -or- Packs are burning during Dry Mode.

Improper Operation

Sterilizer may be overloaded.
Door must remain partially open during Dry Mode.
(If door is closed, or fully opened, items may not dry properly)

1st ✓

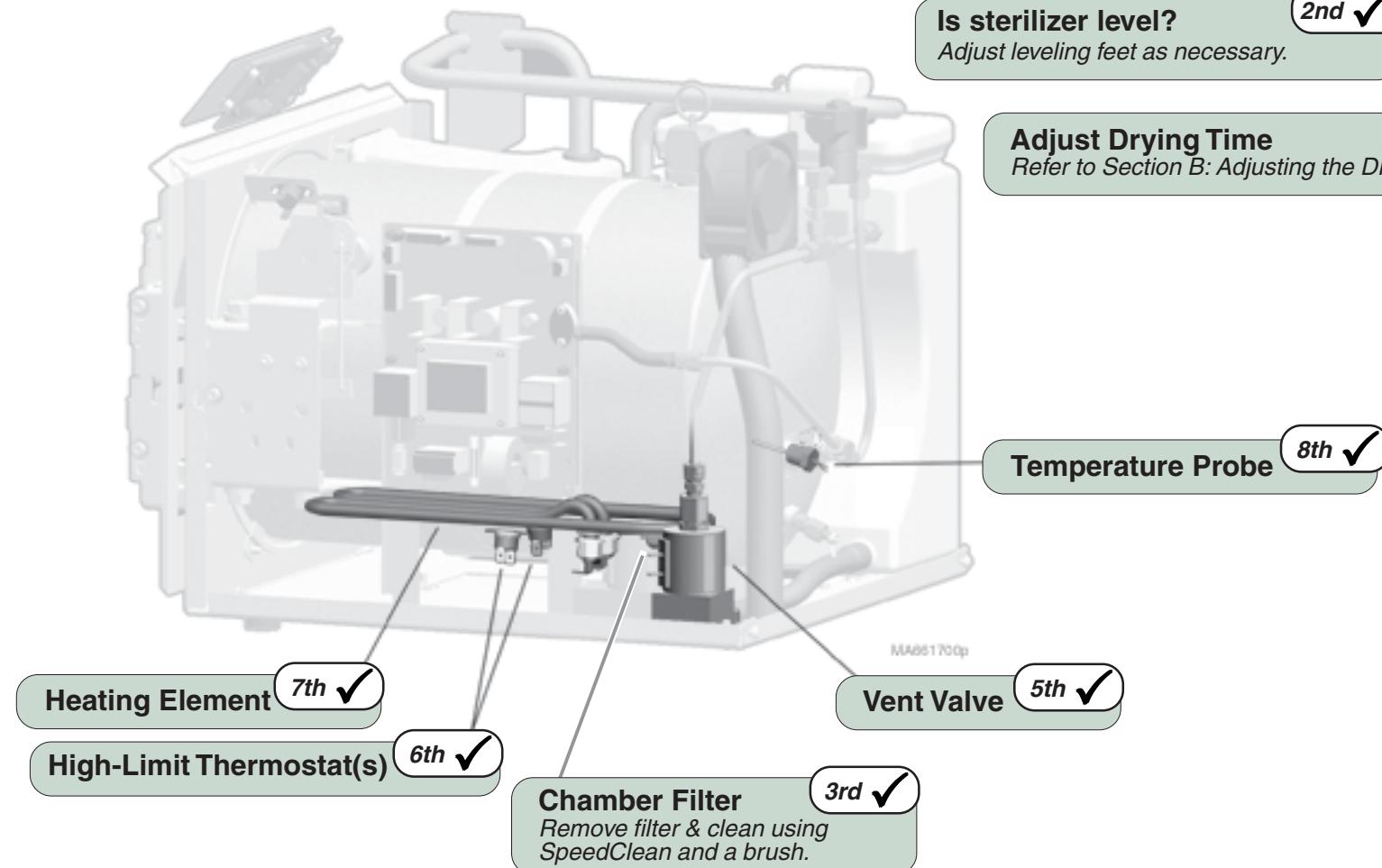
2nd ✓

Is sterilizer level?
Adjust leveling feet as necessary.

4th ✓

Adjust Drying Time
Refer to Section B: Adjusting the Dry Time

Temperature Probe 8th ✓



Heating Element

7th ✓

High-Limit Thermostat(s)

6th ✓

Chamber Filter

Remove filter & clean using
SpeedClean and a brush.

Vent Valve

5th ✓

ALL

Troubleshooting

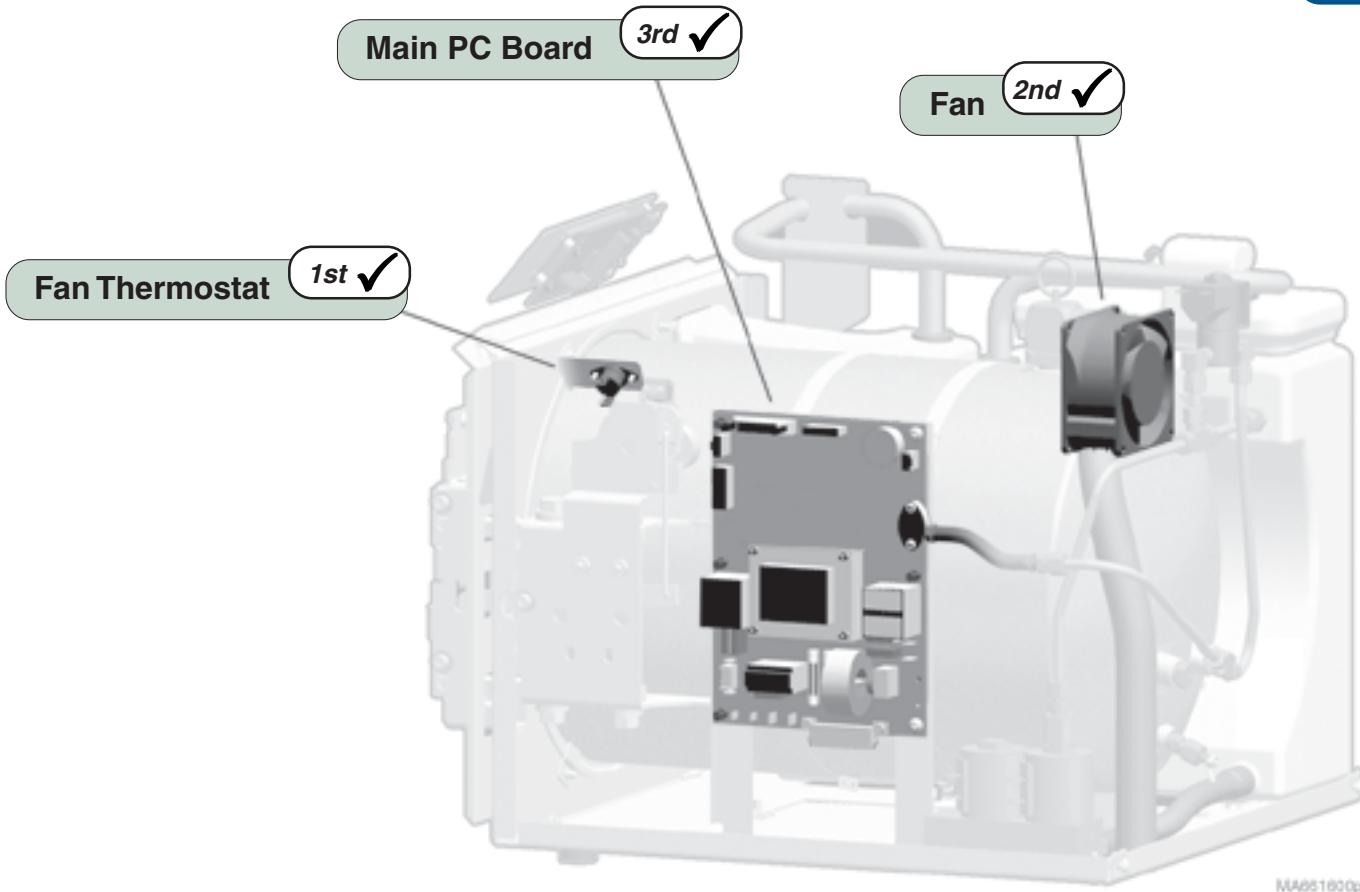
Models:
Serial Numbers:

Fan System

Problem: Fan does not run when temperature exceeds 130°F. -or-
Fan continues to run after temperature drops below 100°F.

Operation & Troubleshooting

Refer To:	Page
Operation & Troubleshooting	A-1
Component Testing / Repair	B-1
Access Procedures	C-1
Wiring Diagrams	D-1
Exploded Views / Part Numbers	E-1



NAB61800p

Models:
Serial Numbers:

ALL

Troubleshooting

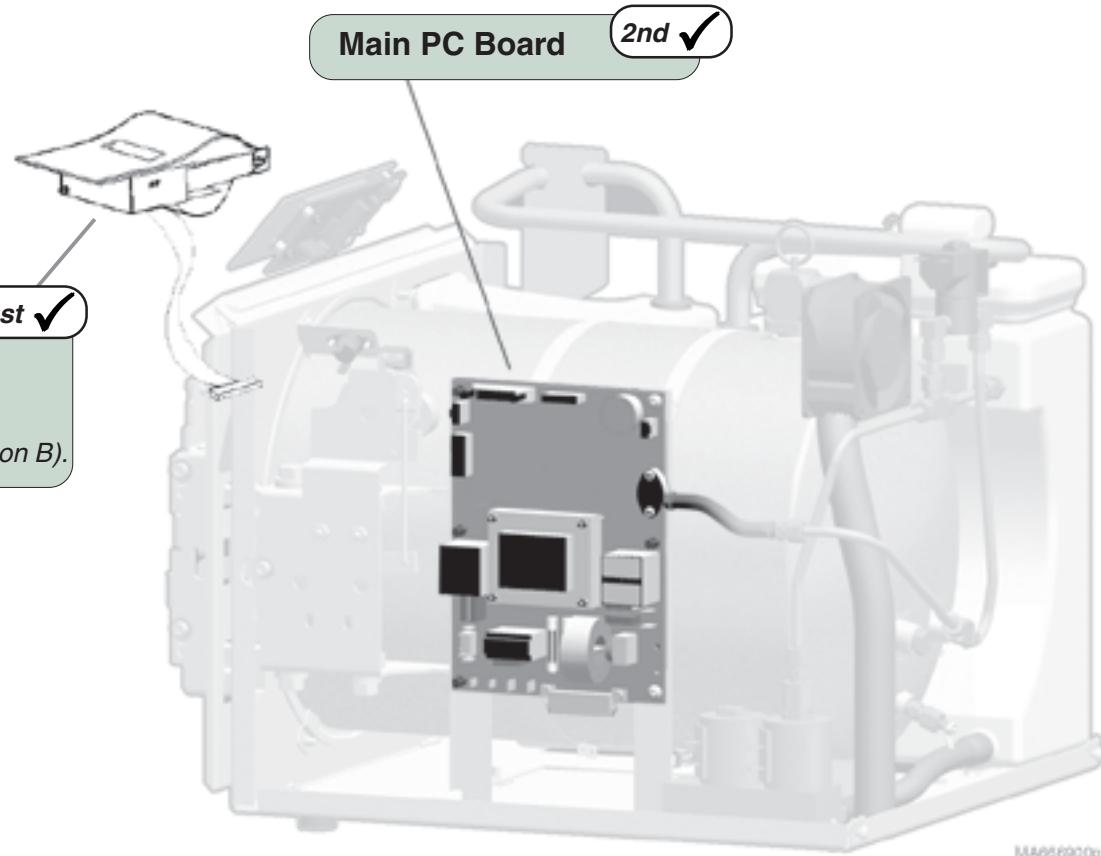
Operation & Troubleshooting

Refer To:	Page
Operation & Troubleshooting	A-1
Component Testing / Repair	B-1
Access Procedures	C-1
Wiring Diagrams	D-1
Exploded Views / Part Numbers	E-1

Printer (optional)

Problem: Printer does not generate a print-out.

Printer
Check the following:
• Printer paper
• Ink cartridge
• Ribbon harness connections
If necessary, perform Printer Test (Section B).



MA656900p

Troubleshooting

Models:
Serial Numbers:

Optional on all models

Operation & Troubleshooting

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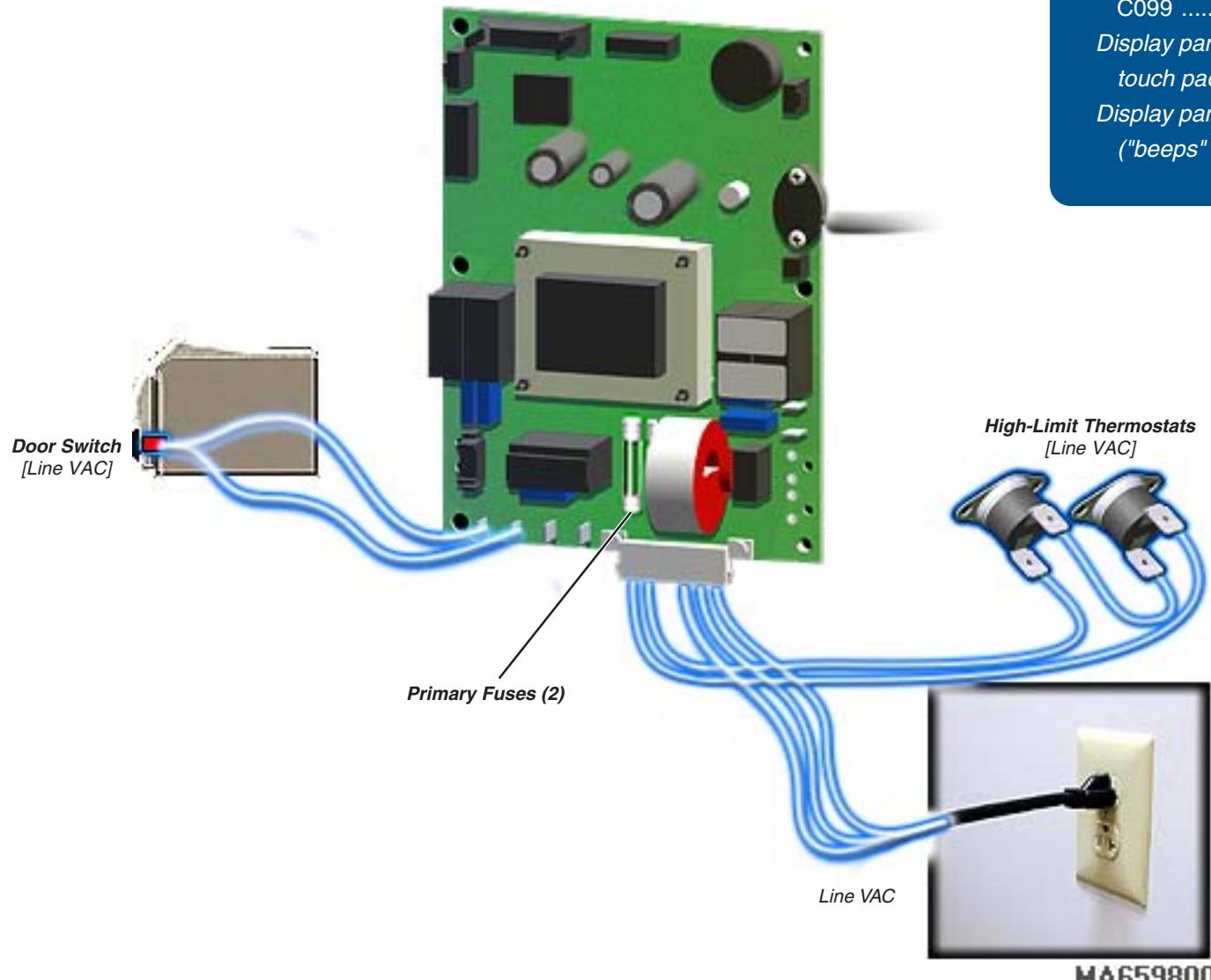
Models:
Serial Numbers:

Troubleshooting

Operation & Troubleshooting

Power-Up Mode

This illustration shows the components that affect, or are monitored during all cycle modes. Refer to the following page for a detailed description of the Power-Up Mode.



Troubleshooting [Power-Up Mode]

<u>Problem:</u>	<u>Page</u>
<i>Error Codes:</i>	
C010	A-3
C060	A-3
C099	A-4
<i>Display panel is blank, & touch pad does not work</i>	A-11
<i>Display panel shows foreign characters ("beeps" continuously)</i>	A-12

Operation & Troubleshooting

Power-Up Mode

Primary Fuses

With the sterilizer's power cord properly connected, facility supply voltage is supplied to the Main PC Board thru the two primary fuses.

If either fuse is faulty, the sterilizer will have no power.

High-Limit Thermostats

When power is supplied to the Main PC Board, current continuously flows thru the two (*normally closed*) High-Limit Thermostats. This circuit powers all line voltage components (*except Fan System*).

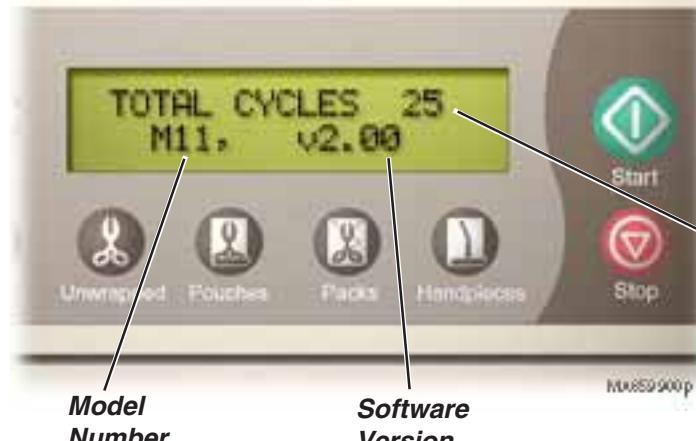
If either thermostat opens for any reason (*overheat or malfunction*), the sterilizer will shut down until unit cools, or thermostat is replaced.

Door Switch

Once a cycle is initiated, the Main PC Board continuously monitors the status of the Door Switch.

If an open door is detected, the cycle will not start. If the door switch opens during a cycle, the cycle will be terminated and the corresponding error code will appear in the display.

Each time power is reconnected, the display panel will show:

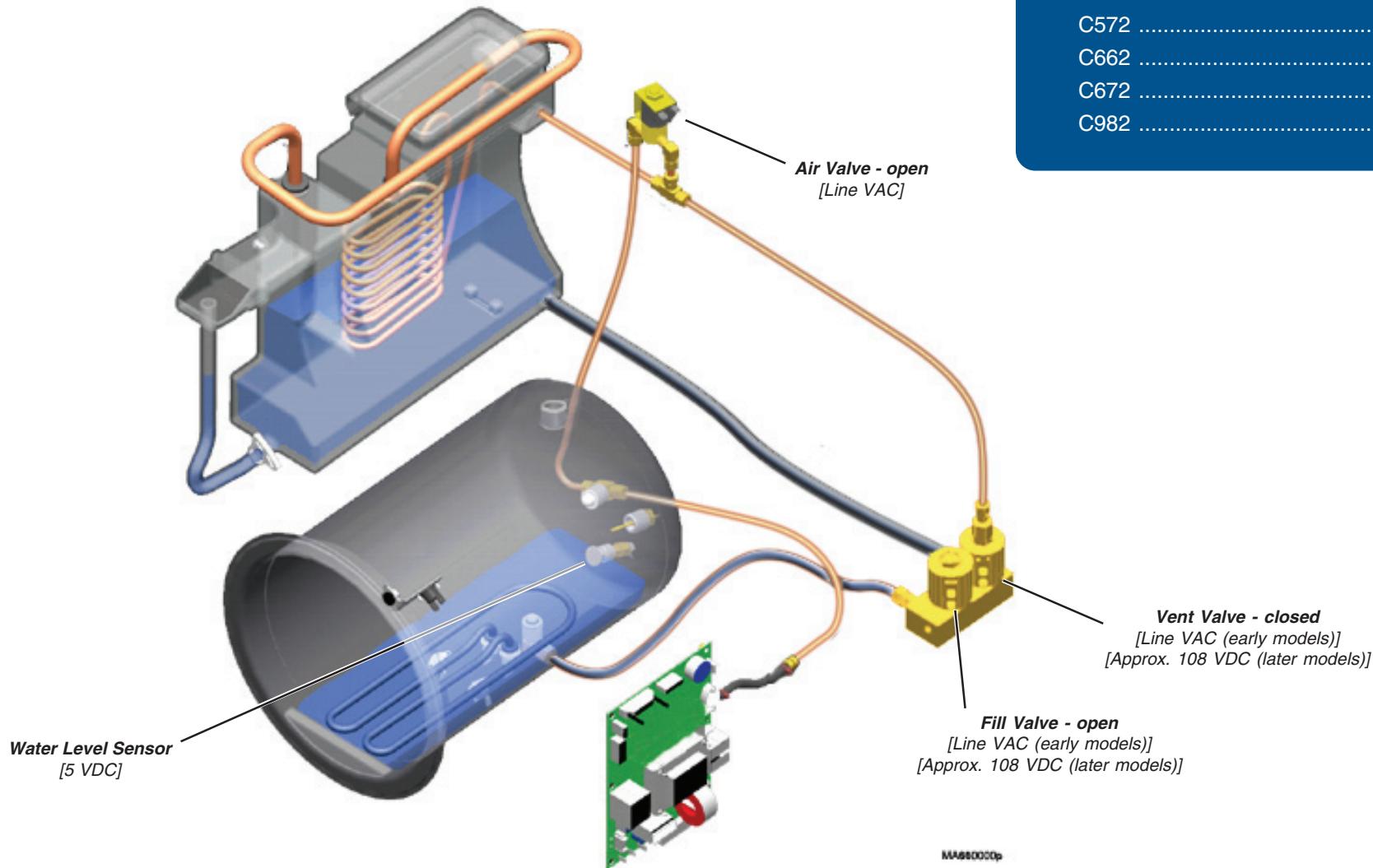


Operation & Troubleshooting

Fill Mode

This illustration calls out the components that are energized / monitored during the Fill Mode. Refer to the following page for a detailed description of the Fill Mode.

[Refer to the **Main Power System** for components that are continually monitored during all modes]



Troubleshooting [Fill Mode]

Error Codes

Error Codes	Page
C102	A-5
C232	A-6
C382	A-7
C562	A-8
C572	A-8
C662	A-9
C672	A-9
C982	A-10

Operation & Troubleshooting

Fill Mode

During the Fill Mode, water flows from the reservoir, thru the fill valve into the chamber.

[All electrical current is supplied thru the two high-limit thermostats (on bottom of chamber). Refer to '**Power-Up Mode**', for further detail].

Air Valve

Throughout the Fill Mode, line voltage is supplied to the (*normally closed*) air valve. When energized, the air valve opens.

[This allows air to pass thru the valve so that water can flow from the reservoir].

Vent Valve

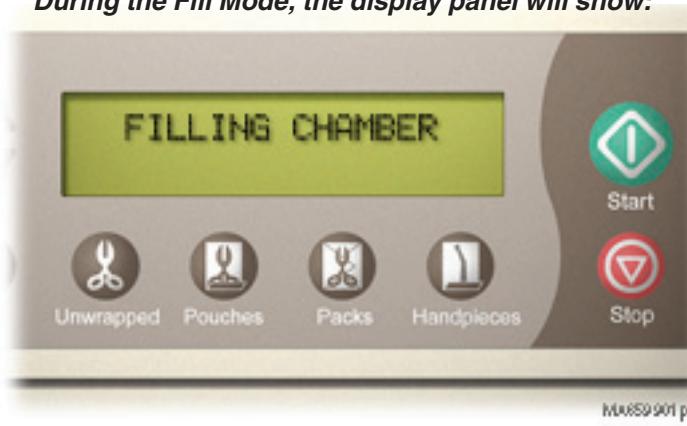
Throughout the Fill Mode, voltage is supplied to the (*normally open*) vent valve. When energized, the vent valve closes. [This prevents water from flowing back into the reservoir thru the vent valve].

Fill Valve

During the Fill Mode, voltage is supplied to the (*normally closed*) fill valve. When energized, the fill valve opens allowing water to flow into the chamber.

When the water level in the chamber reaches the water level sensor, the PC Board stops the current flow to the fill valve. This allows the valve to close, stopping the flow of water into the chamber.

During the Fill Mode, the display panel will show:



Water Level Sensor

Throughout the Fill Mode, 5 VDC is supplied to the water level sensor. When the water level in the chamber reaches the sensor, a circuit is completed and current flows back to the PC Board.

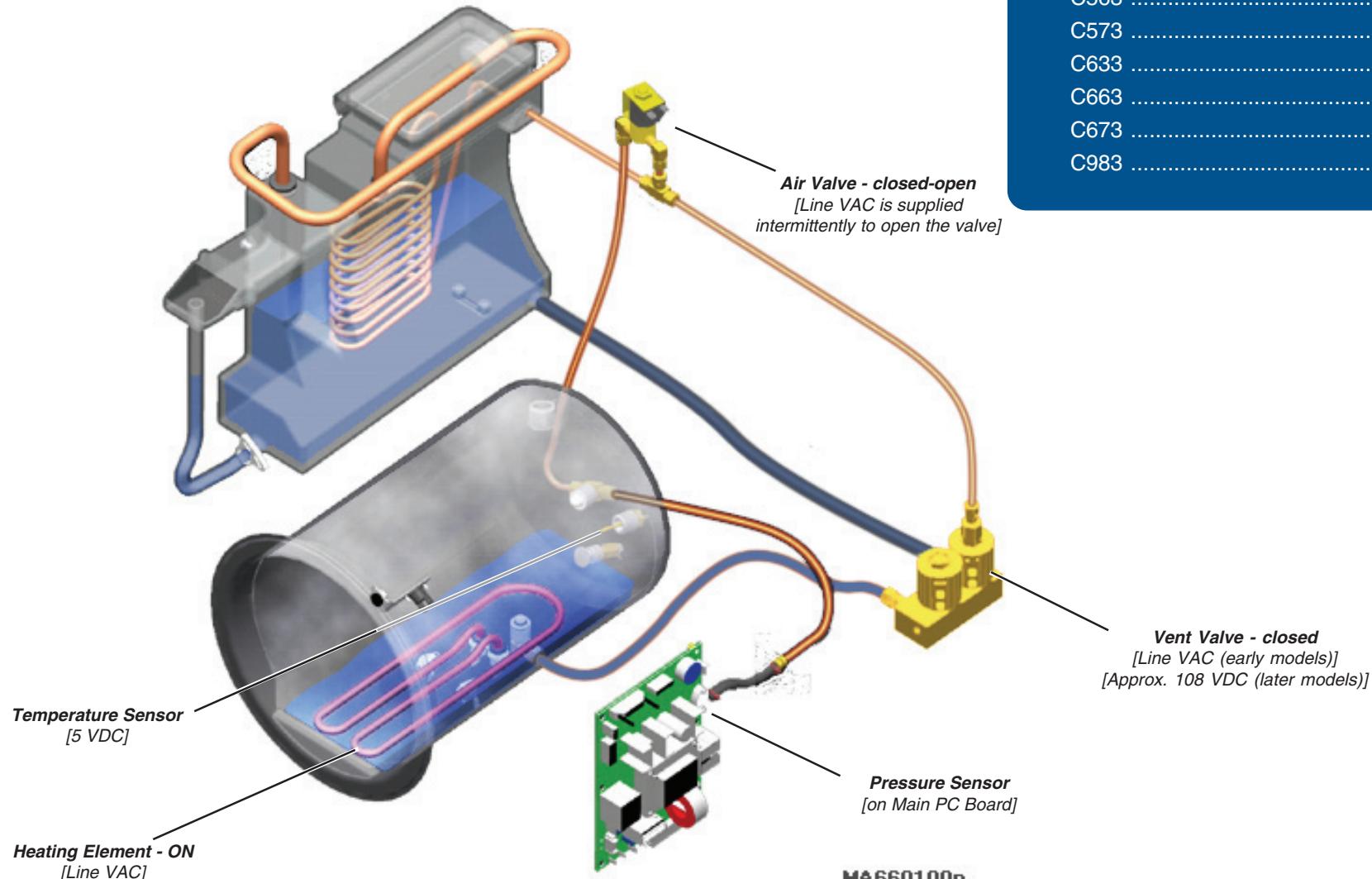
When the 5 VDC from the water level sensor is detected, the PC Board stops the current flow to the fill valve.

Operation & Troubleshooting

Heat-Up Mode

This illustration calls out the components that are energized / monitored during the Heat-Up Mode. Refer to the following page for a detailed description of the Heat-Up Mode.

[Refer to to **Main Power System** for components that are continually monitored during all modes]



Troubleshooting [Heat-Up Mode]

Error Codes	Page
C103	A-5
C383	A-7
C533	A-8
C563	A-8
C573	A-8
C633	A-9
C663	A-9
C673	A-9
C983	A-10

Operation & Troubleshooting

Heat-Up Mode

During the Heat-Up Mode, the water in the chamber is heated to achieve the proper temperature for sterilization.

[All electrical current is supplied thru the two high-limit thermostats (on bottom of chamber). Refer to '**Power-Up Mode**', for further detail].

Heating Element

Throughout the Heat-Up Mode, line voltage is continually supplied to the heating element. The heating element heats the water in the chamber until sterilization temperature is achieved.

Vent Valve

Throughout the Heat-Up Mode, voltage is supplied to the (*normally open*) vent valve. When energized, the vent valve closes. [This prevents water from flowing back into the reservoir thru the vent valve].

Air Valve

Periodically during the Heat-Up Mode, line voltage is supplied to the (*normally closed*) air valve. When energized, the air valve opens. [This occurs three times during this mode to expel air from the chamber.]

During the Heat-Up Mode, the display panel will show:



Temperature Sensor & Pressure Sensor

The temperature sensor (*inside chamber*) & pressure sensor (*on Main PC Board*) monitor the temperature & pressure conditions inside the chamber.

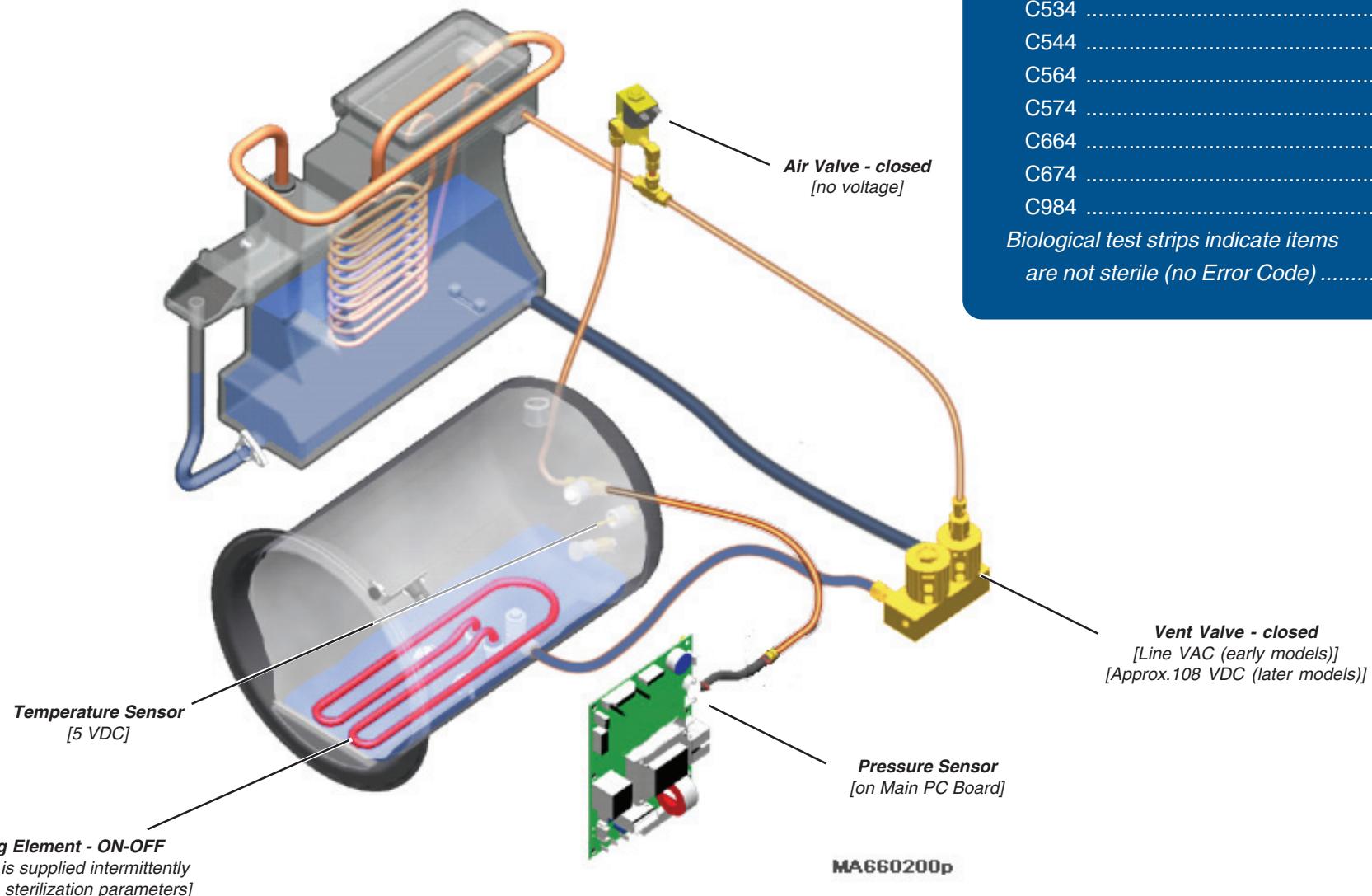
When the pre-set sterilization conditions are met, the Heat-Up Mode is complete & the unit goes into the Sterilization Mode.

Operation & Troubleshooting

Sterilization Mode

This illustration calls out the components that affect the Sterilization Mode.
Refer to the following page for a detailed description of the Sterilization Mode.

[Refer to to **Power-Up Mode** for components that are continually monitored during all modes]



Troubleshooting [Sterilization Mode]

Problem:	Page
Error Codes:	
C104	A-5
C384	A-7
C534	A-8
C544	A-8
C564	A-8
C574	A-8
C664	A-9
C674	A-9
C984	A-10
Biological test strips indicate items are not sterile (no Error Code)	A-13

Operation & Troubleshooting

Sterilization Mode

During the Sterilization Mode, the temperature and pressure parameters for the selected cycle are maintained for the required time.

[All electrical current is supplied thru the two high-limit thermostats (on bottom of chamber). Refer to 'Power-Up Mode', for further detail].

Temperature Sensor & Pressure Sensor

The temperature sensor (*inside chamber*) & pressure sensor (*on Main PC Board*) monitor the temperature & pressure conditions inside the chamber throughout the Sterilization Mode.

Heating Element

Based on readings from the temperature sensor & pressure sensor, the heating element is cycled ON / OFF to maintain the required temperature and pressure for the selected cycle.

Vent Valve

Throughout the Sterilization Mode, voltage is supplied to the (*normally open*) vent valve. When energized, the vent valve closes.

[*This prevents water from flowing back into the reservoir thru the vent valve*].

Air Valve

The air valve is closed (*no voltage*) throughout the entire Sterilization Mode.

[*This prevents pressure from escaping the chamber*].

During the Sterilization Mode, the display panel will show:



Sterilization time counts down

Chamber Temperature

Chamber Pressure

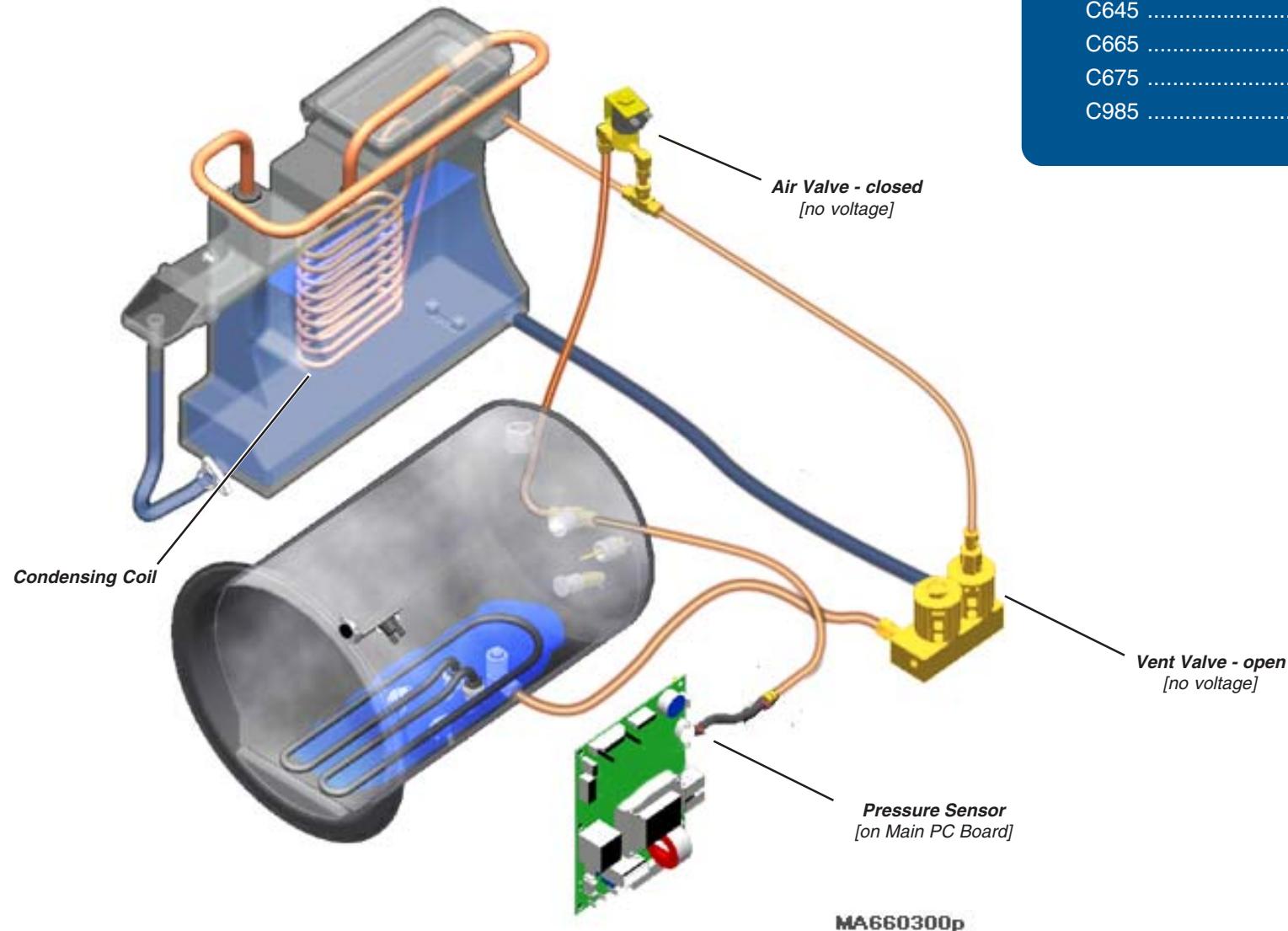
Operation & Troubleshooting

Vent Mode

This illustration calls out the components that affect the Vent Mode.

Refer to the following page for a detailed description of the Vent Mode.

[Refer to **Power-Up Mode** for components that are continually monitored during all modes]



Troubleshooting [Vent Mode]

Error Codes

	Page
C105	A-5
C565	A-8
C575	A-8
C645	A-9
C665	A-9
C675	A-9
C985	A-10

Operation & Troubleshooting

Vent Mode

During the Vent Mode, pressure is released from the chamber. The steam cools as it passes thru the condensing coil and the water is returned to the reservoir.

[All electrical current is supplied thru the two high-limit thermostats (on bottom of chamber). Refer to 'Power-Up Mode', for further detail].

Vent Valve

During the Vent Mode, the PC Board stops the current flow to the (*normally open*) vent valve. This allow the valve to open, and the pressure (*steam*) is released from the chamber.

Condensing Coil

When the steam is released from the chamber, it passes thru the condensing coil. The coil cools the steam and returns the water back to the reservoir.

Air Valve

The air valve is closed (*no voltage*) throughout the entire Vent Mode.

Pressure Sensor

The pressure sensor (*on Main PC Board*) monitors the chamber pressure as it is released. When the pressure reaches 0.7 psi (5kPa), you will hear several "*beeps*". This indicates the door will open in approximately 5 seconds.

During the Vent Mode, the display panel will show:



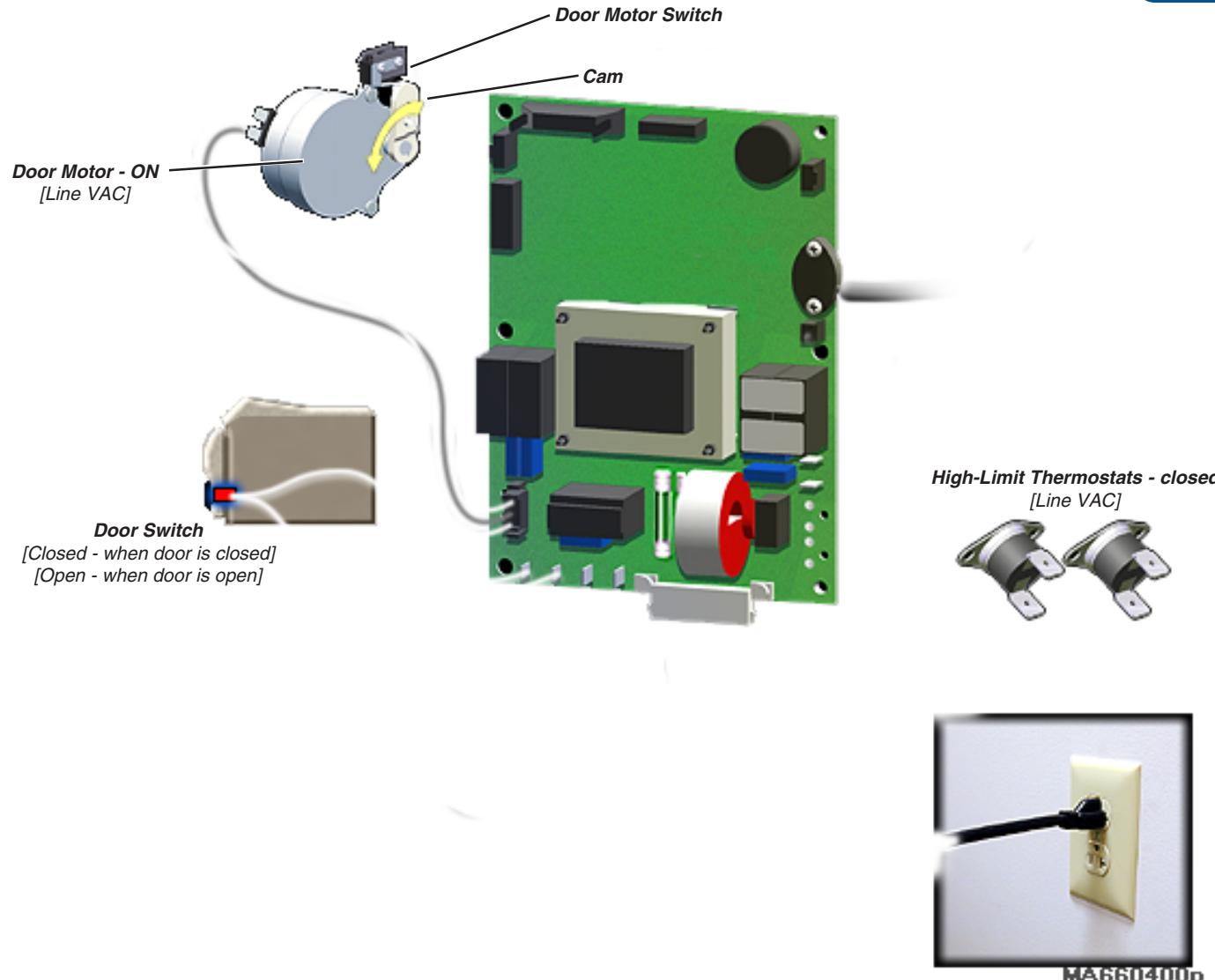
Operation & Troubleshooting

Door Motor System

This illustration shows only the components that affect the Door Motor System.
Refer to the following page for a detailed description of the Door Motor System.

Troubleshooting [Door Motor System]

<u>Error Codes</u>	<u>Page</u>
C106	A-5
C326	A-7



Door Motor System

Models: M9 (-020 thru -022)
Serial Numbers: all

M11 (-020 thru -022)
all

Operation & Troubleshooting

Door Motor System

The Door Motor System automatically opens the sterilizer door when the Vent Mode is complete.

[All electrical current is supplied thru the two high-limit thermostats (on bottom of chamber). Refer to 'Power-Up Mode', for further detail].

Door Motor / Door Motor Switch

For the first 15 seconds, line voltage is supplied directly to the door motor. This causes the motor to run, rotating the cam and linkage downward.

As the cam mechanism rotates, the motor switch closes. After 15 seconds, the current to the door motor flows thru the closed door switch. The cam continues to rotate, causing the linkage to lift the door latch mechanism and open the door.

When the cam reaches the bottom of its travel, the door motor reverses direction. When the mechanism reaches its original position, the motor switch is opened. This stops current flow to the motor, and the motor stops.

When the Door Motor System is activated, the display panel will show:



Door Switch

The status of the (*normally open*) door switch reflects the position of the door. (ex. *Door open= switch open*)

Models: M9 (-020 thru -022)
Serial Numbers: all

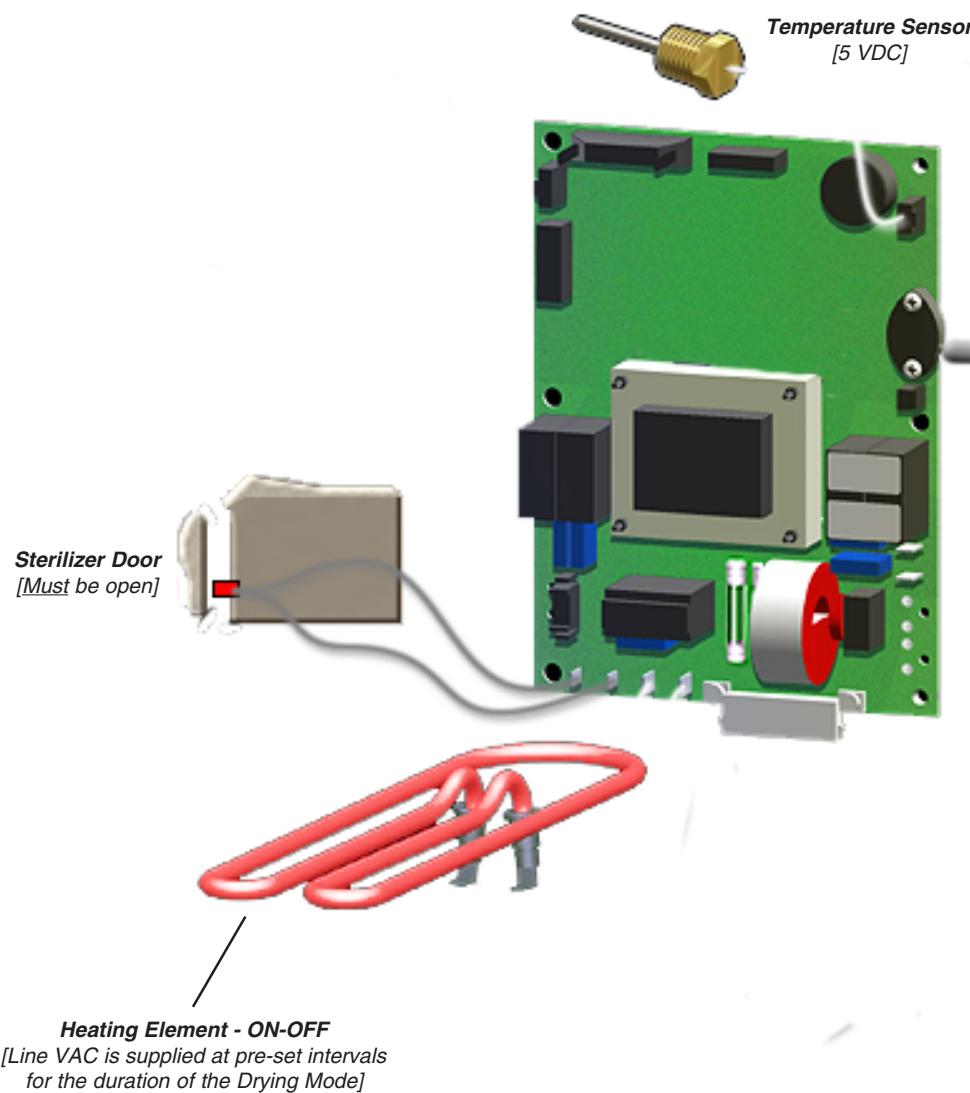
M11 (-020 thru -022)
all

Door Motor System

Operation & Troubleshooting

Drying Mode

This illustration shows only the components that affect the Drying Mode.
Refer to the following page for a detailed description of the Drying Mode.



Troubleshooting [Drying Mode]

Problem:	Page
Error Codes:	
C567	A-8
C577	A-8
C647	A-9
C667	A-9
C677	A-9
C987	A-10
Instruments still wet after Dry Mode.....	A-14
Packs are burning during Dry Mode	A-14

High-Limit Thermostats - closed
[Line VAC]



Max800 600p

Operation & Troubleshooting

Drying Mode

During the Drying Mode, the heating element is energized to dry the instruments in the chamber.

[All electrical current is supplied thru the two high-limit thermostats (on bottom of chamber). Refer to 'Power-Up Mode', for further detail].

Heating Element

During the Drying Mode, line voltage is supplied to the heating element at pre-set intervals to turn it ON / OFF. This continues for the duration of the Drying Mode.

When the drying time expires, voltage is removed from the high-limit thermostats and the heating element.

Temperature Sensor

The temperature sensor (*inside chamber*) monitors the temperature throughout the Drying Mode. In general the temperature range will be approximately 170°F (77°C) to 200°F (93°C).

If the temperature exceeds 240°F (115°C), the PC board stops the current flow to the heating element until the temperature drops.

Sterilizer Door

The sterilizer door must remain open throughout the Drying Mode. If the door is closed, pressure may build up in the chamber resulting in an error code.

During the Drying Mode, the display panel will show:

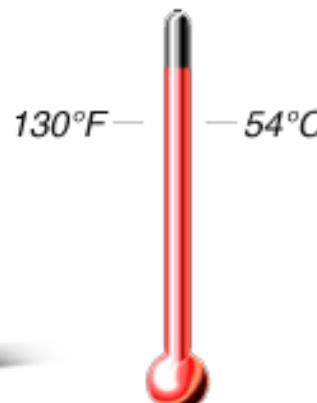
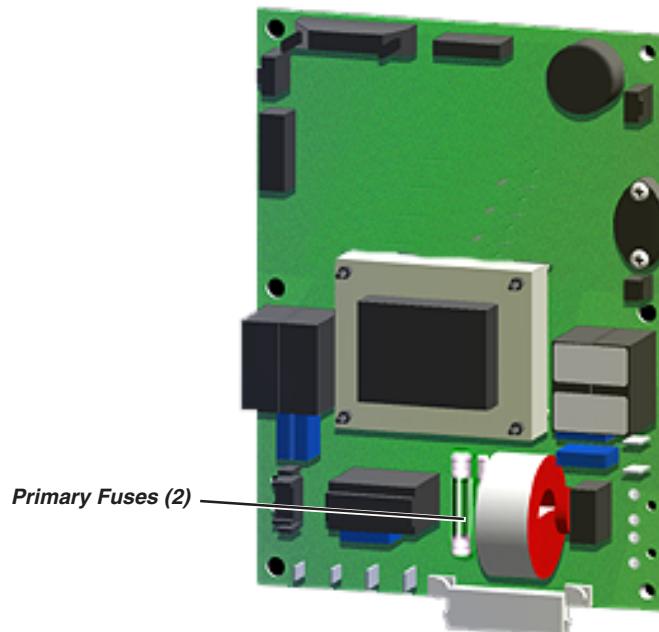


*Drying time
counts down*

Operation & Troubleshooting

Fan System

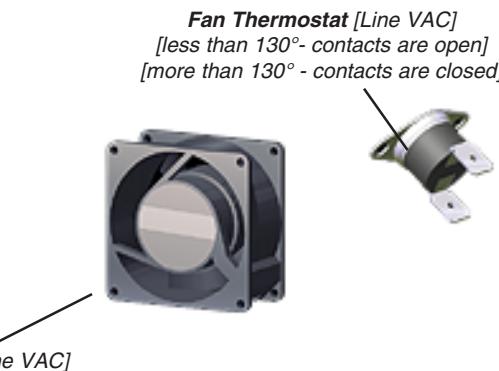
This illustration shows only the components that affect the Fan System.
Refer to the following page for a detailed description of the Fan System.



Temperature at Fan Thermostat

Troubleshooting [Fan System]

Problem	Page
<i>Fan does not run when temperature exceeds 130°</i>	A-15
<i>Fan continues to run after temperature drops below 100°</i>	A-15



*[OFF when fan thermostat contacts are open]
[ON when fan thermostat contacts are closed]*



Operation & Troubleshooting

Fan System

The Fan System reduces heat inside the enclosure by circulating air between the chamber and the covers.

[*The electrical current to the fan system does not pass thru the high-limit thermostats (on bottom of chamber).*]

Primary Fuses

With the table's power cord properly connected, facility supply voltage is supplied to the Main PC Board thru the two primary fuses.

If either fuse is faulty, the sterilizer will have no power.

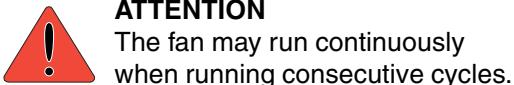
Fan Thermostat

When power is supplied to the Main PC Board, current continuously flows to the fan thermostat.

The fan thermostat controls the ON/OFF function of the fan. When the temperature (*at the thermostat*) is less than 130°, the fan thermostat contacts are open (*no current to the fan*). When the temperature reaches 130°, the fan thermostat contacts close (*current flow to the fan*).

When the temperature drops to approx. 100°, the contacts of the fan thermostat open and the fan stops running.

ATTENTION



The fan may run continuously when running consecutive cycles.

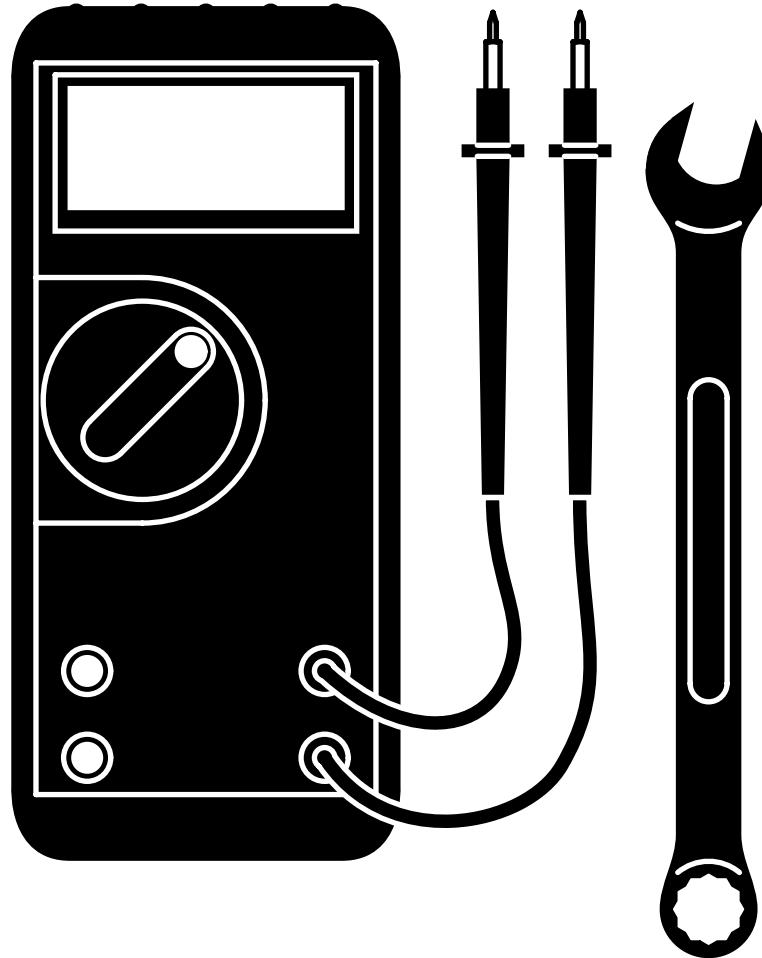
Fan

When the contacts of the fan thermostat are closed, line voltage is applied to the fan causing the fan to run. When the contacts of the thermostat open, current is removed, and the fan stops.

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Section B

Testing & Repair



Component / Procedure	Page
Checking For Pressure Leaks	B-2
Using a Pressure Gauge	B-3
Fuses	B-4
Service Diagnostics	B-5
Air Valve	B-12
Fill / Vent Valves	B-15
Pressure Relief Valve	B-18
Heating Element	B-20
Temperature Sensor	B-23
Water Level Sensor	B-27
High-Limit Thermostats	B-31
Door Switch	B-34
Touch Pad / Display Panel	B-37
Door Motor System	B-39
Fan / Fan Thermostat	B-42
Main PC Board	B-46
Printer (<i>optional</i>)	B-50
Adjusting the Drying Mode	B-53

Component Testing & Repair

Checking for Pressure Leaks

This illustration shows the areas to check for pressure leaks.

Components

Components	Page
Air Valve	B-12
Fill Valve	B-15
Vent Valve	B-15
Pressure Relief Valve	B-18

All Fittings

Tighten / replace fittings if necessary.



WARNING

Do not attempt to adjust, modify, or alter in any manner, any part of the pressure vessel. Serious injury and/or damage to the unit could result.

Pressure Relief Valve

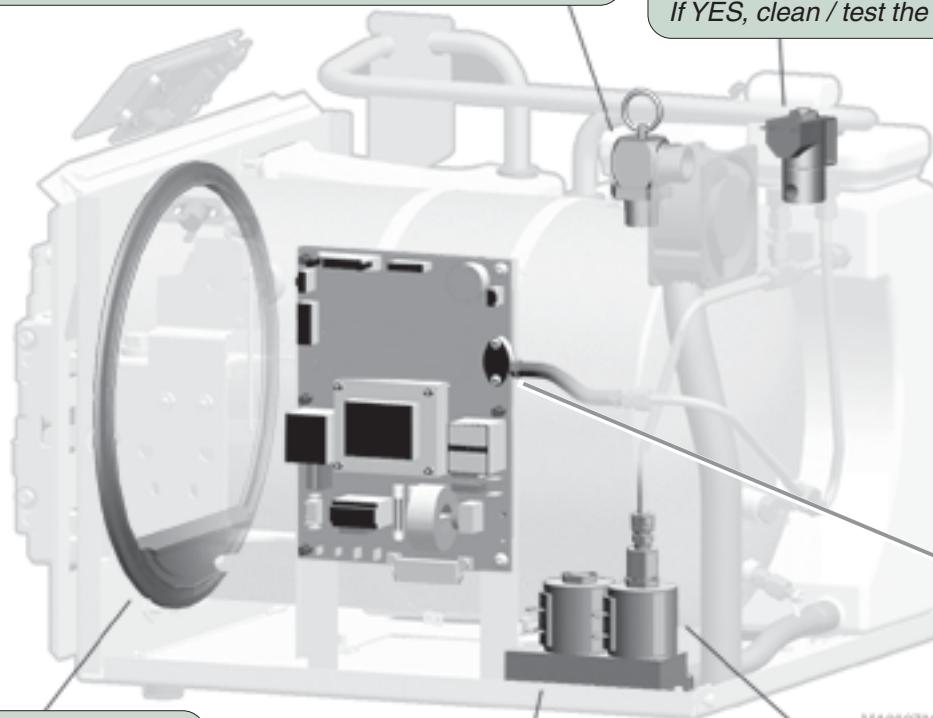
Is there water or steam leakage under back of sterilizer?

If YES, test the pressure relief valve.

Air Valve

Is there steam exhausting from condensing coil* during the Sterilization Mode?

If YES, clean / test the air valve.



Door Gaskets

Is there water leaking around door?

If YES, replace gasket(s).

Fill Valve

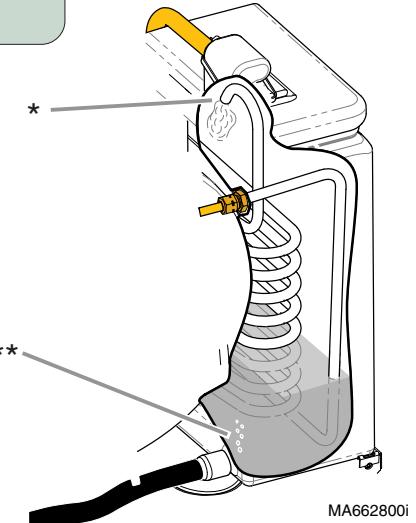
Are there bubbles coming from the bottom of the reservoir**?

If YES, clean / test the fill valve.

Vent Valve

Is there water leaking from the condensing coil*?

If YES, clean / test the vent valve.



MA662800i

Component Testing & Repair

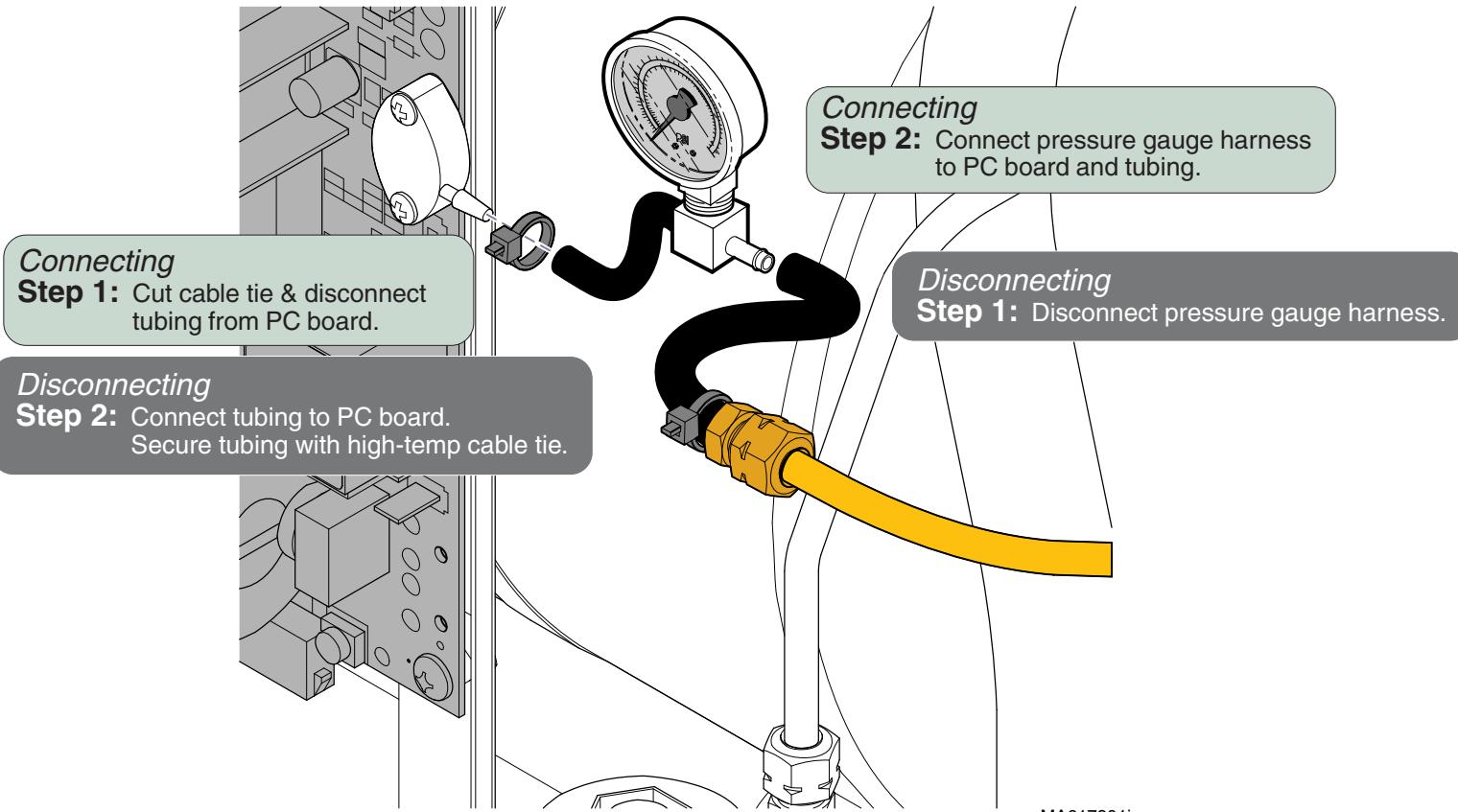
Using a Pressure Gauge

Note

To test chamber pressure, a Pressure Gauge Harness is available (002-0372-00).

Refer To:

Cover Removal C-2



Models:
Serial Numbers:

ALL

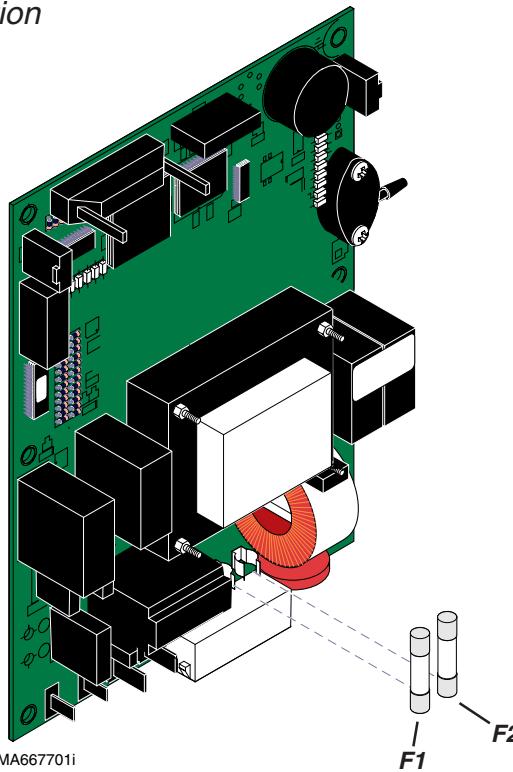
Using a
Pressure Gauge

B-3

Component Testing & Repair

Fuses

Location



Fuse Ratings:

115 VAC models:

- F1 0.250 amp, 250 V, Slo-Blo, 1/4" x 1-1/4"
F2 15 amp, 250 V, Fast-Acting, 1/4" x 1-1/4"

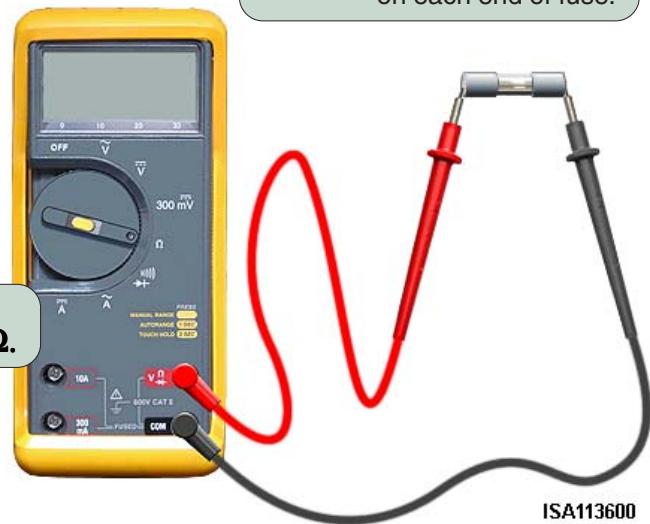
230 VAC models:

- F1 0.125 amp, 250 V, Slo-Blo, 5mm x 20mm
F2 8 amp, 250 V, Fast-Acting, 5mm x 20mm

Fuse Test

Fuses	Page
Location	B-4
Fuse Test	B-4
Cover Removal	C-2
Wiring Diagrams	D-1
Part Numbers	E-16

Fuse Test
Step 2: Place meter probes on each end of fuse.



Fuse Test
Step 1: Set meter to 200Ω .

Meter Reading	Status	Required Action
OL		Replace both fuses.
less than 5 Ω		Fuse - OK

Component Testing & Repair

Service Diagnostics

The Service Diagnostics feature allows you to view recent error codes and test the sterilizer's major components without running a complete cycle. The Service Diagnostics tests should always be done before replacing any major component.



CAUTION

This operation requires power to be connected to the unit with the panels removed.
Use caution when performing this procedure.

Activating Service Diagnostics

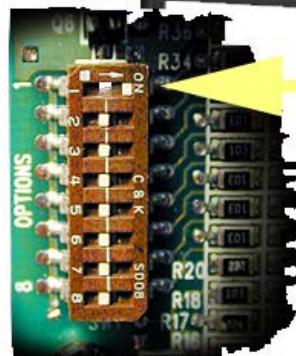
Service Diagnostics

Step 1: Disconnect power cord.



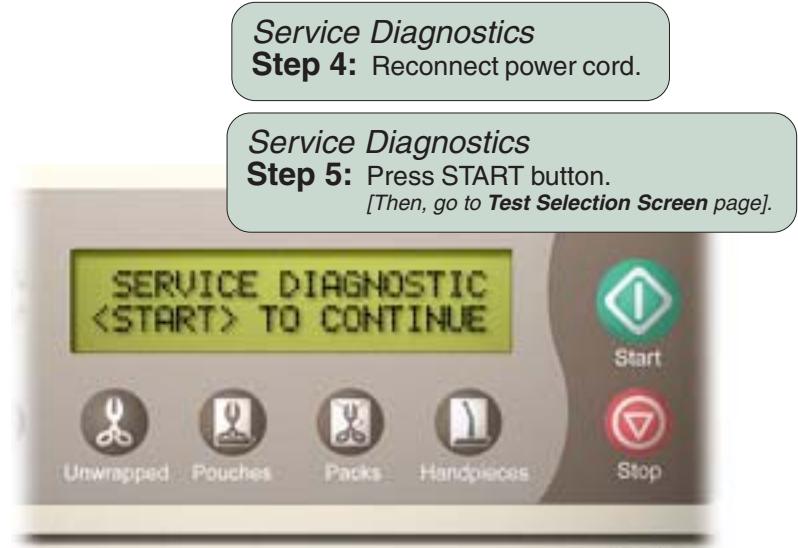
Service Diagnostics

Step 2: Remove right side panel.



Service Diagnostics

Step 3: Move switch #1 on the SW1 block to ON.



Attention

To return to normal operating mode...
A. Disconnect power cord.
B. Move #1 switch (SW1 block) to OFF.
C. Reconnect power cord.

Models:
Serial Numbers:

ALL

Service Diagnostics

Service Diagnostics

Page

Activating Service Diagnostics B-5

Test Selection Screen:

(I/O Test , Recall Errors, Keytest) B-6

Component Testing & Repair

Service Diagnostics

Test Selection Screen

Service Diagnostics	Page
Test Selection:	
I/O Test	B-7
Recall Errors	B-10
Keytest	B-11



Press the **START** button to initiate the *I/O Test*. This test allows you to energize the air valve, vent valve, fill valve, door motor, and heating element independently without running a cycle.

This test also displays the temperature & pressure inside the chamber, and the status of the high-limit thermostats, door switch, and the water level sensor



Press the **HANDPIECES** button to initiate the Keytest. This test allows you to check the functionality of the buttons on the touch pad.

Component Testing & Repair

Service Diagnostics

I/O Test



I/O Test Press the START button.

This energizes the Air Valve, causing it to open. Pressing the START button again, closes the valve.

[You should hear a "click" when the valve opens / closes. This indicates the PC Board and valve are functioning properly].

Press the STOP button for the next test.

Refer to:	Page
Air Valve	B-12
Vent Valve	B-15
Fill Valve	B-15
Main PC Board	B-46

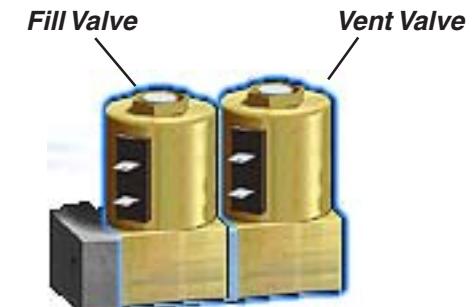


I/O Test Press the START button.

This energizes the Vent Valve, causing it to close. Pressing the START button again, opens the valve.

[You should hear a "click" when the valve opens / closes. This indicates the PC Board and valve are functioning properly].

Press the STOP button for the next test.



Attention

The door switch must be tripped when testing the Fill Valve. Close the door or manually trip the switch. The water level sensor does not function during this test. The chamber will overflow if the valve is left open too long.



I/O Test Press the START button.

This energizes the Fill Valve, causing it to open. Pressing the START button again, closes the valve.

[Water will flow into the chamber when the valve opens. This indicates the PC Board and valve are functioning properly].

Press the STOP button for the next test.

Component Testing & Repair

Service Diagnostics

I/O Test - continued

Attention

This test should be done with the door closed.



I/O Test
Press the START button.

This energizes the Door Motor System.

[The door should open after approx. 15 seconds. This indicates the PC Board and door motor are functioning properly].

Press the STOP button for the next test.

Refer to:	Page
Door Motor System	B-39
Heating Element	B-20
Main PC Board	B-46



Door Motor System

Attention

Do not run this test more than twice without allowing the unit to cool.

Doing so may cause the sterilizer to overheat.



I/O Test
Press the START button.

This energizes the Heating Element.

[The heating element should heat up for approx. 15 seconds, then shut off. This indicates the PC Board and heating element are functioning properly].

Press the STOP button for the next test.



Heating Element

Component Testing & Repair

Service Diagnostics

I/O Test - continued

High-Limit Thermostats

Status should always be: *CLOSED*. *OPEN*, indicates malfunctioning thermostat(s), or that the unit has overheated.

Door Switch

Status should correctly reflect the position of the door. (*OPEN* or *CLOSED*)

Water Level Sensor

Status should reflect the amount of water in the chamber. If water is contacting the sensor, status should be: *FULL*. If not: *EMPTY*



I/O Test

The display shows the status of the High-Limit Thermostats, the Door Switch, and the Water Level Sensor.

[If the display reading shows a malfunction, test the corresponding component].

Press the STOP button for the next test.



Chamber Temperature
[verify w/ thermometer]

Chamber Pressure
With the door open, display should show: 0.0 PSI (0.0 kPa)

I/O Test

The display shows the chamber temperature & pressure.

Press the STOP button to return to the Test Selection Screen.

Models:
Serial Numbers:

ALL

Service Diagnostics

Refer to:	Page
High-Limit Thermostats	B-31
Door Switch	B-34
Water Level Sensor	B-27

Component Testing & Repair

Service Diagnostics

Recall Errors

Refer to: Error Codes Page A-2



Mx659914p

Recall Errors

The display shows the last five error codes displayed on the unit.
[NOTE: 1: is the most recent error code, 5: is the oldest]



Recall Errors

To erase all five error codes from memory...
Press the START button.

To retain the error codes...

Press the STOP button.

Component Testing & Repair

Service Diagnostics

Keytest

Refer to:

Page

Touch Pad / Display Panel B-37



Keytest
Press the START button.

[When the designated button is pressed, you will hear single "beep", and the test will advance to the next button. This indicates the button is functioning properly].



Keytest
Press the STOP button.



Keytest
Press the HANDPIECES button.

[Continue for all remaining buttons].

Models:
Serial Numbers:

ALL

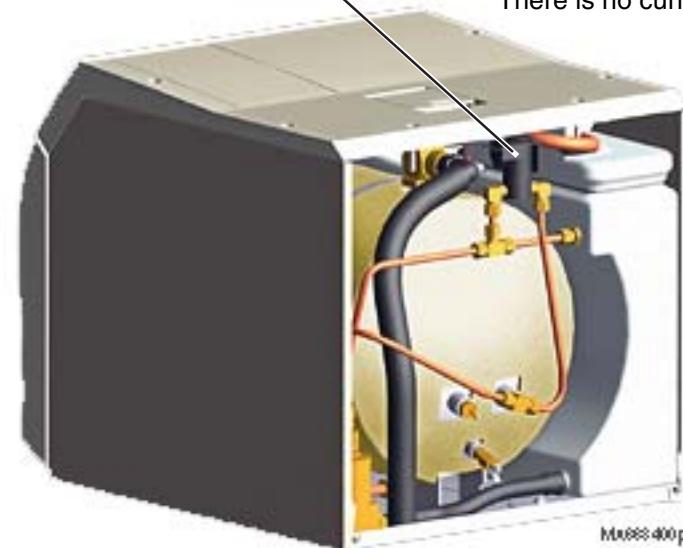
Service Diagnostics

B-11

Component Testing & Repair

Air Valve

Location & Function



Air Valve	Page
Location & Function	B-12
Electrical Testing	B-13
Replacement	B-14
Wiring Diagrams	D-1
Exploded View / Part Numbers	E-9

During the Fill Mode...

Line voltage is supplied to the air valve. This causes the valve to open so that water can flow into the chamber.

During the Heat-Up Mode...

When the Heat-Up Mode begins, the PC board stops the current flow to the air valve. This allows the valve to close. The PC board opens the air valve three times during the Heat-Up Mode to release air from the chamber (*this prevents vacuum-effect*).

During the Sterilization, Vent, & Drying Modes...

There is no current flow to the air valve - the valve is closed.

Component Testing & Repair

Air Valve

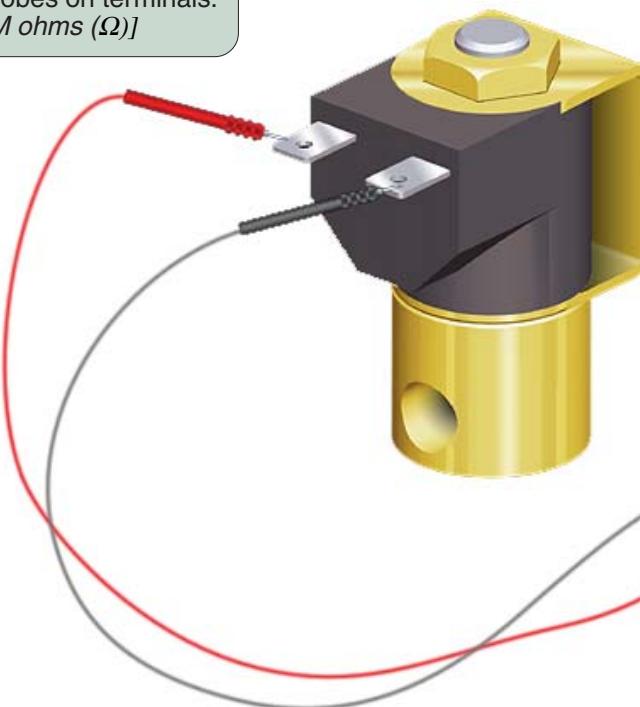
Electrical Testing

Air Valve Test

Step 1: Disconnect wires from air valve.

Air Valve Test

Step 2: Place meter probes on terminals.
[Set meter to M ohms (Ω)]



Refer to:

PC Board Relay Test B-48
Cover Removal C-2

Note:

For Solenoid coils marked with FWR (Full Wave Rectified) use the M ohms Scale to check the coil. An OL or Open reading indicates a bad or open coil. Always use the Service Diagnostic function to check valve operation.

Acceptable Range:



Air Valve Test

If reading is out of acceptable range...
Replace air valve.

If reading is within acceptable range...
Perform PC Board Relay Test.

Models:
Serial Numbers:

ALL

Air Valve

B-13

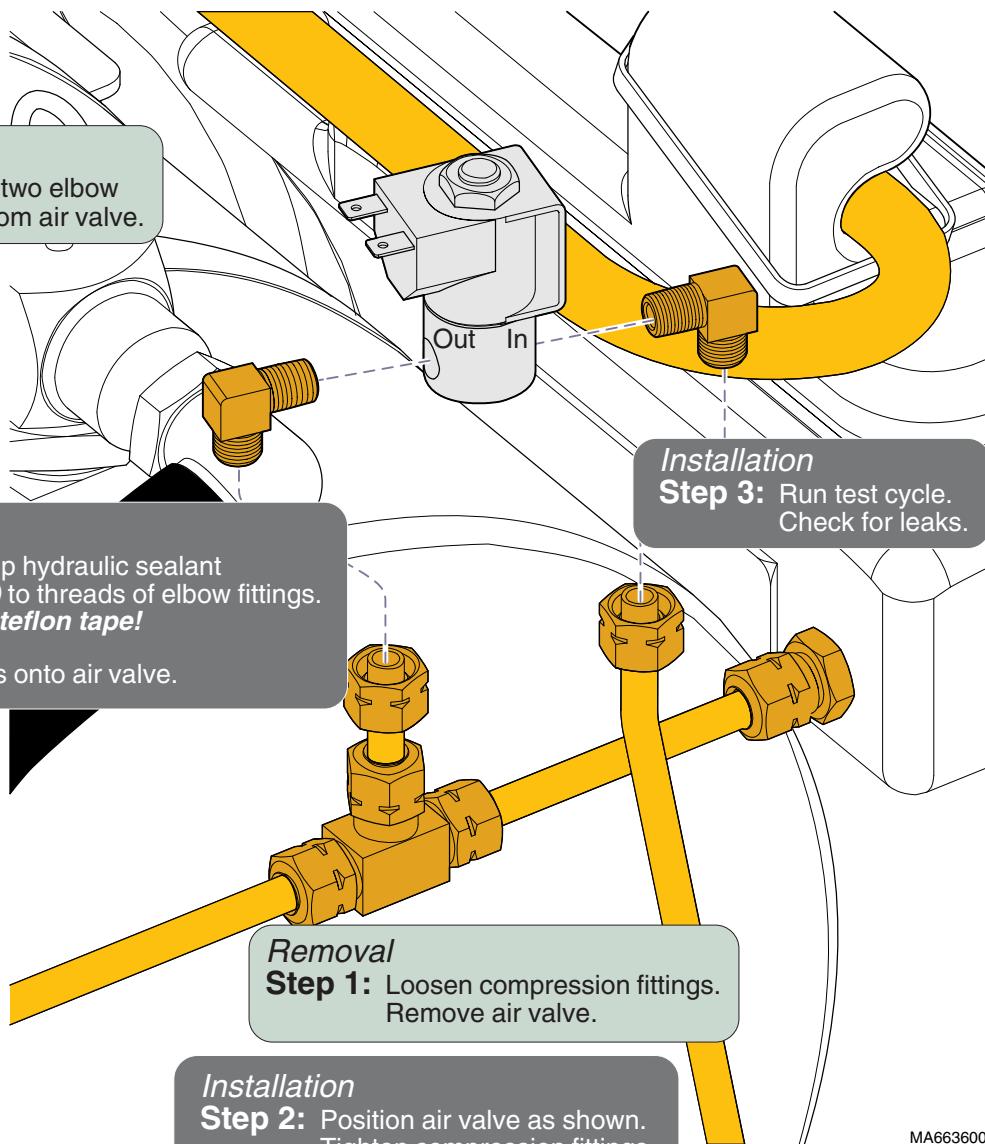
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SF-1854 (Rev. 2/05)

Component Testing & Repair

Air Valve

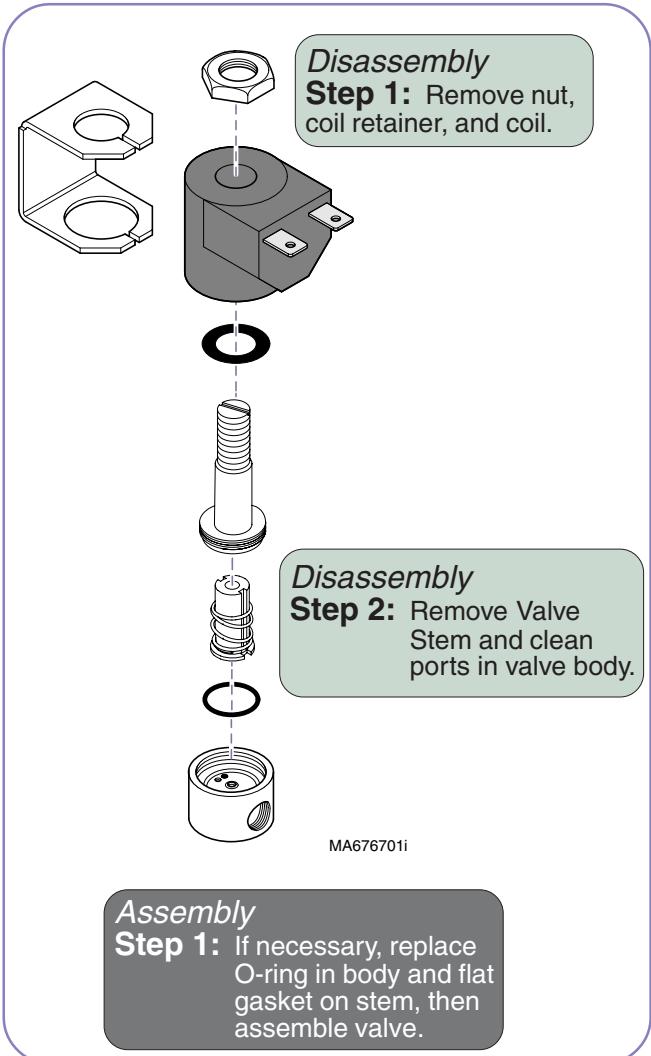
Replacement / Cleaning



Refer to:

Cover Removal C-2

Page



Air Valve

Models:
Serial Numbers:

ALL

Component Testing & Repair

Fill / Vent Valves

Location & Function

Fill Valve

During the Fill Mode...

Voltage is supplied to the fill valve. This causes the valve to open, allowing water to flow into the chamber.

When the water in the chamber reaches the water level sensor, the PC board stops the current flow to the fill valve. This allows the valve to close, stopping the flow of water into the chamber.

During the Heat-Up, Sterilization, Vent, & Drying Modes...

There is no current flow to the fill valve. The valve is closed.

Vent Valve

During the Fill, Heat-Up, & Sterilization Modes...

Voltage is supplied to the vent valve. This causes the valve to close so that pressure can build in the chamber.

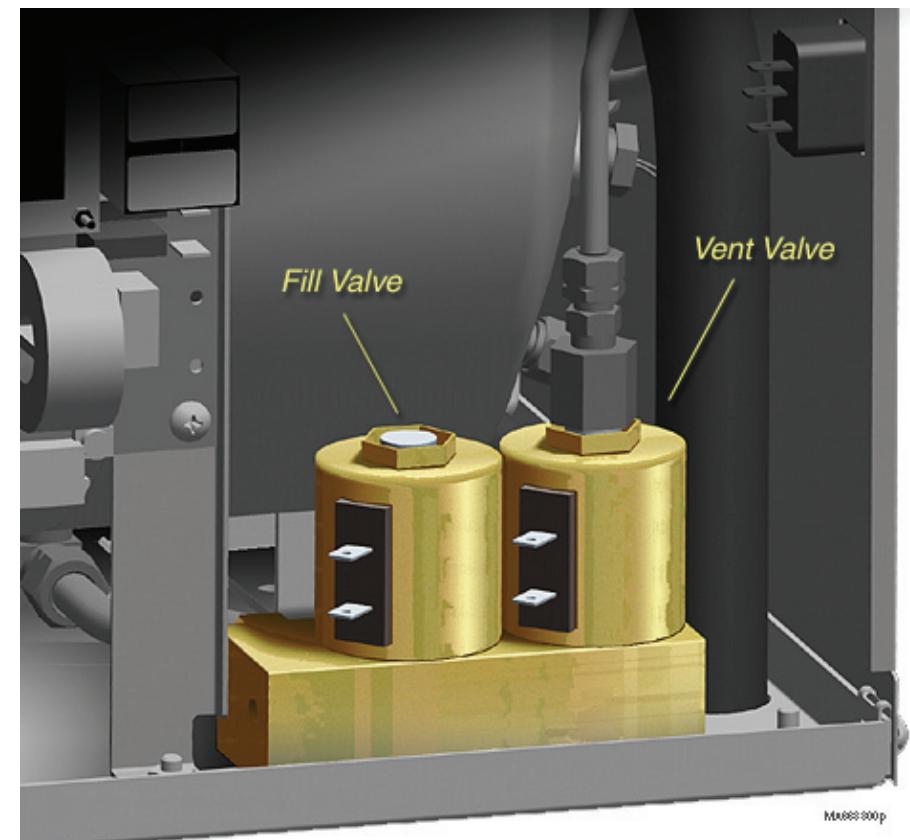
During the Vent Mode...

The PC board stops the current flow to the vent valve. This allows the valve to open, releasing pressure from the chamber.

During the Drying Mode...

There is no current flow to the vent valve. The valve is open.

Fill / Vent Valves	Page
Location & Function	B-15
Electrical Testing	B-16
Cleaning / Replacement	B-17
Wiring Diagrams	D-1
Exploded View / Part Numbers	E-10



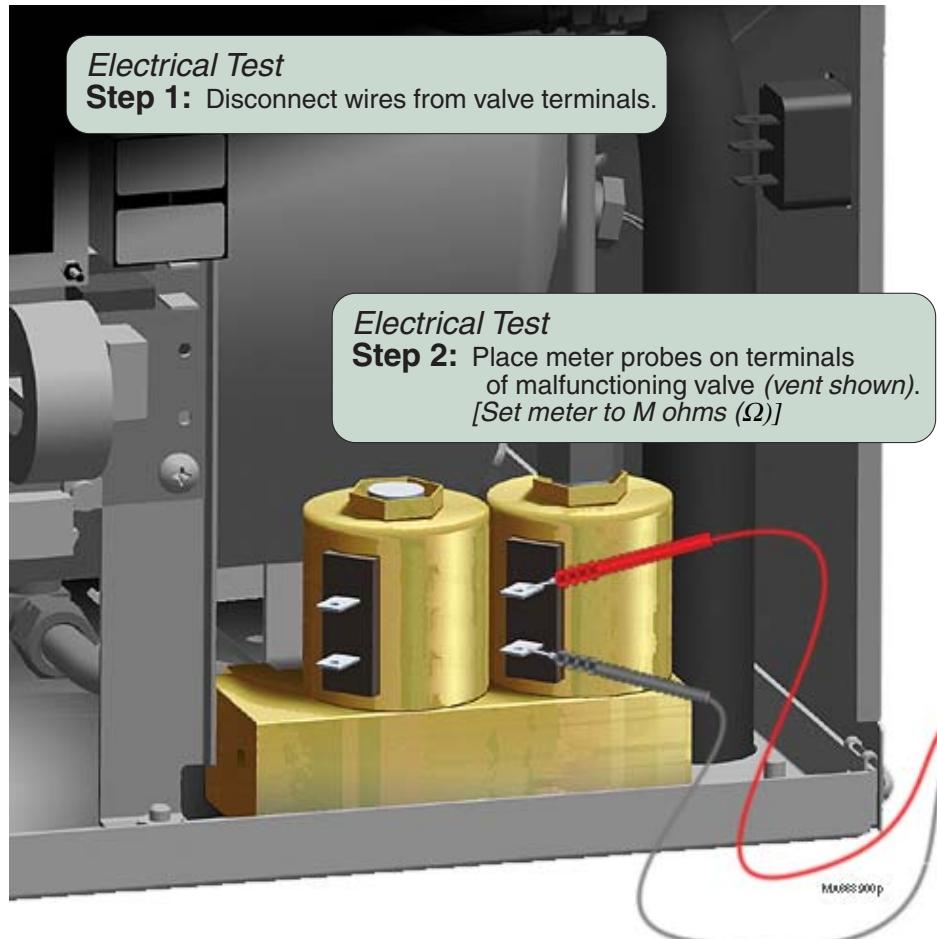
Component Testing & Repair

Fill / Vent Valves

Electrical Testing

[The testing procedure is the same for the fill valve and the vent valve].

Refer To:	Page
PC Board Relay Test	B-48
Cover Removal	C-2



Note:

For Solenoid coils marked with FWR (Full Wave Rectified) use the M ohms Scale to check the coil. An OL or Open reading indicates a bad or open coil.
Always use the Service Diagnostic function to check valve operation.

Acceptable Range (115 VAC Units):



Electrical Test
If reading is displayed OL...
Replace faulty valve.

If reading is within acceptable range...
Perform PC Board Relay Test.

Acceptable Range (230 VAC Units):

Fill Valve Any reading other than OL
Vent Valve Any reading other than OL

Component Testing & Repair

Fill / Vent Valves

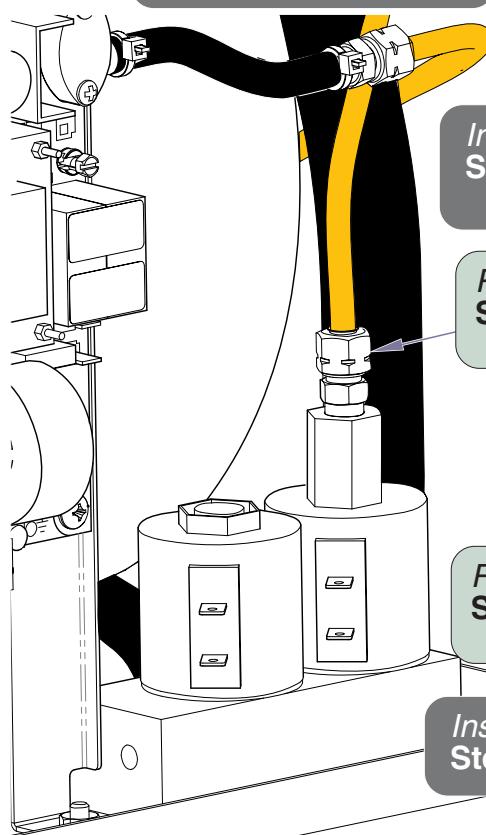
Cleaning / Replacement

Removal (Fill / Vent)

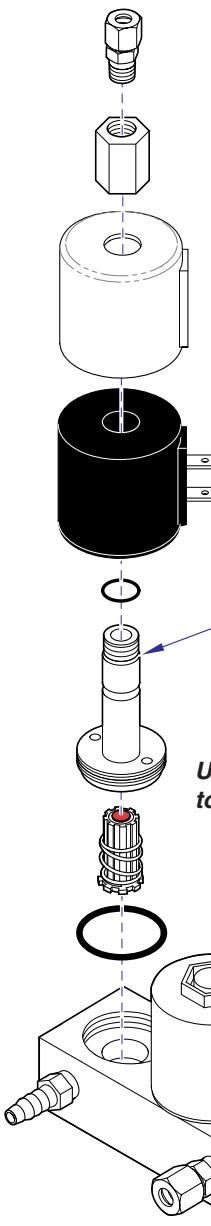
Step 1: Drain water from reservoir.

Installation (Fill / Vent)

Step 4: Refill reservoir.
Run test cycle.
Check for leaks.



MA664000i



MA664101i

Refer to:

Draining the Reservoir C-4

Cover Removal C-2

Fill / Vent Valve

Models:
Serial Numbers:

ALL

B-17

Component Testing & Repair

Pressure Relief Valve

Location & Function

The pressure relief valve opens if the pressure inside the chamber reaches 40 psi (275 kPa). When the valve opens, pressurized steam is released from the bottom of the sterilizer thru the relief valve tubing.

The valve can be opened manually by pulling the pressure relief handle.

Testing

Note: This test should be performed whenever the unit is serviced.

Pressure Relief Valve Test

Step 1: Start an Unwrapped cycle.

Pressure Relief Valve Test

Caution

To prevent burns, place a towel around bottom of sterilizer.

Step 2: When chamber pressure reaches 25 psi, pull pressure relief handle briefly, then release.

[Steam should discharge when handle is pulled, and completely stop when handle is released].

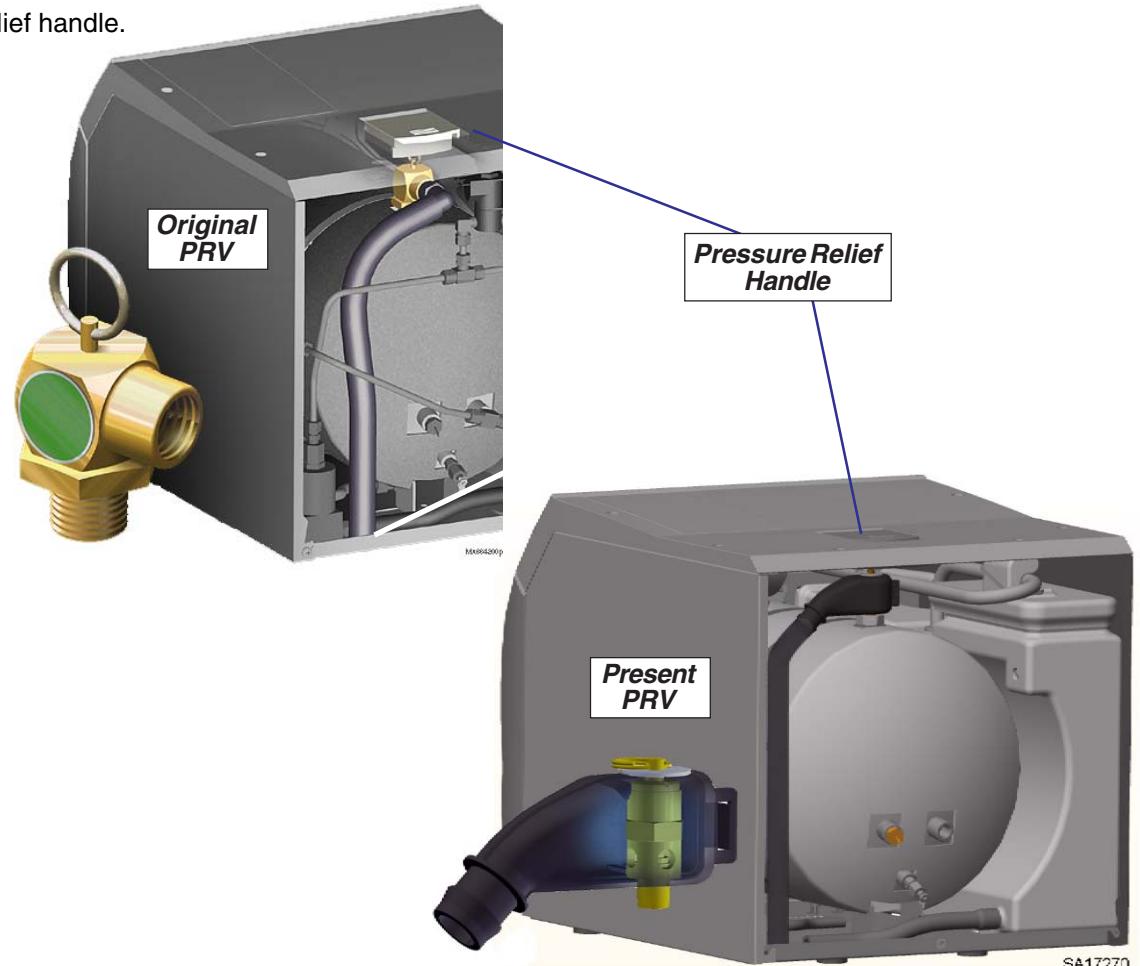
Pressure Relief Valve Test

If steam continues to discharge when handle is released...

Pull handle, then quickly release until valve "snaps" closed.

If valve will not close, replace valve.

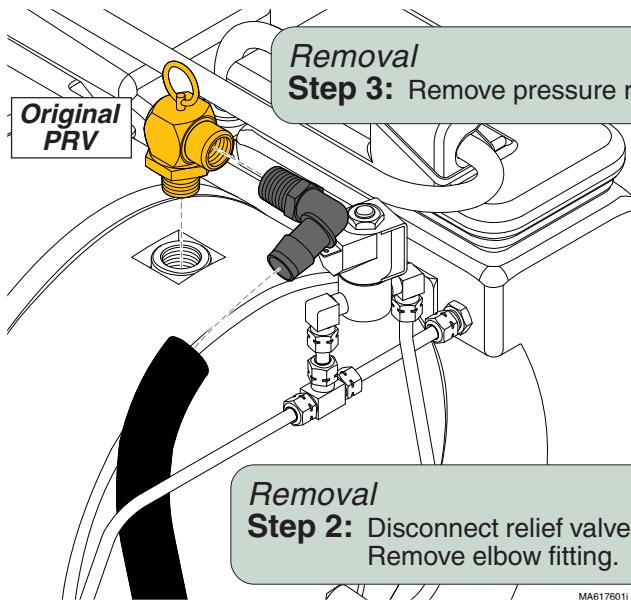
<u>Pressure Relief Valve</u>	<u>Page</u>
Location & Function	B-18
Testing	B-18
Replacement	B-19
Exploded View / Part Numbers	E-9



Component Testing & Repair

Pressure Relief Valve

Replacement



Removal
Step 1: Pull pressure relief handle to purge pressure from chamber.

Refer to:
 Cover Removal C-2

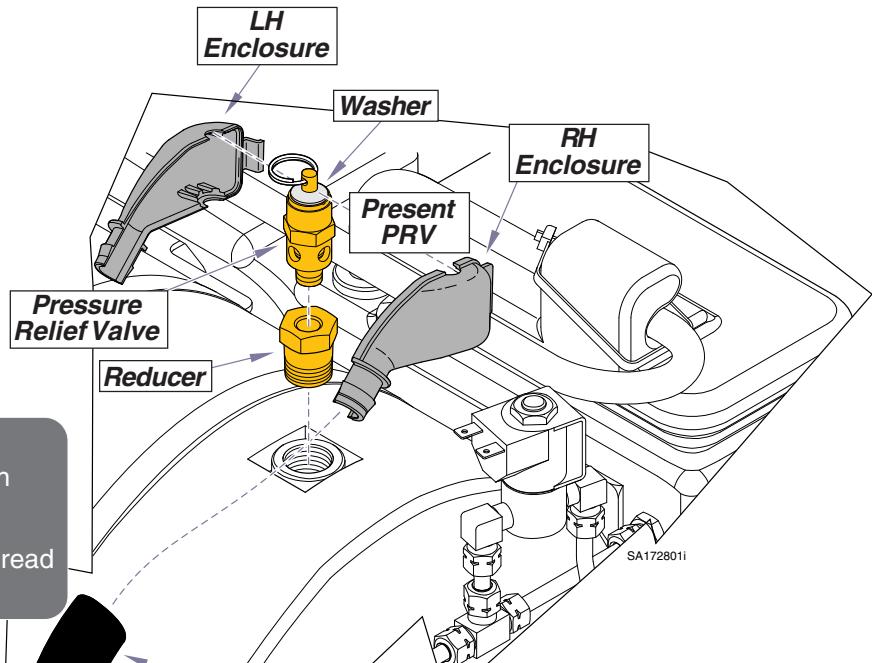
Removal
Step 2: Disconnect relief valve tubing.
 Remove elbow fitting.

Installation
Step 1: Install the Reducer and then the Pressure Relief Valve.

Note: The PRV and Reducer have a thread sealant on them to prevent leakage.

Installation
Step 2: Install the LH & RH Enclosures.

Note: Locate the Washer between the top of the Enclosure and the ring on the PRV.



Installation
Step 3: Install the PRV hose.

Note: If necessary, trim the PRV Hose to prevent it from touching the counter top.

M9....13 3/4" (35 cm)
 M11..16 1/4" (41.25 cm)

Models:
 Serial Numbers:

ALL

Pressure Relief Valve

B-19

Component Testing & Repair

Heating Element

Location & Function



<u>Heating Element</u>	<u>Page</u>
Location & Function	B-20
Testing	B-21
Replacement	B-22
Wiring Diagrams	D-1
Exploded View / Part Numbers	E-12

During the Fill & Vent Modes...

There is no current flow to the heating element.
Heating element is OFF.

During the Heat-Up Mode...

Line voltage is continually supplied to the heating element.
The heating element heats the water in the chamber until sterilization temperature is achieved.

During the Sterilization Mode...

Based on readings from the temperature and pressure sensors, the heating element is cycled ON and OFF to maintain the required parameters for the selected cycle.

During the Drying Mode...

Line voltage is supplied to the heating element at pre-set intervals to turn it ON / OFF. This continues for the duration of the Drying Mode.

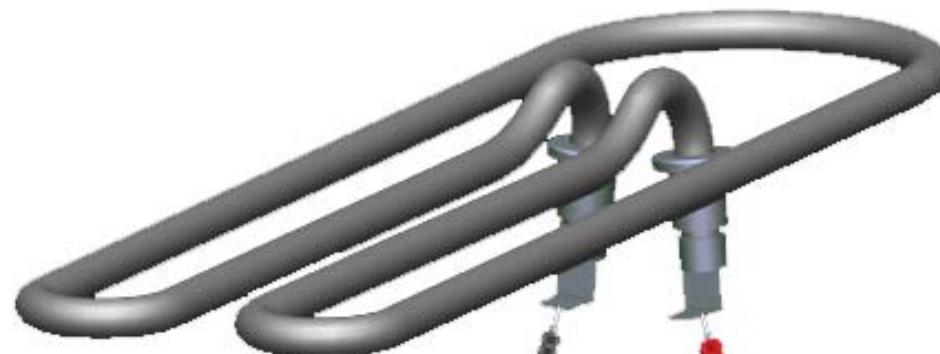
Component Testing & Repair

Heating Element

Testing

Heating Element Test

- Step 1:** Remove bottom cover.
Disconnect wires from heating element.



Heating Element Test

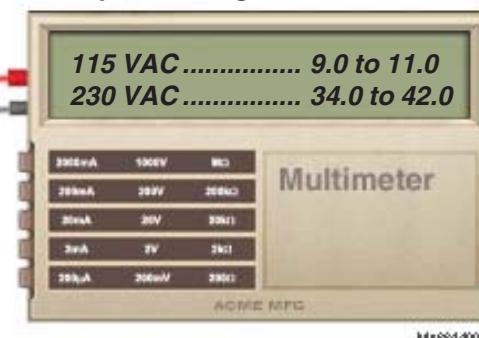
- Step 2:** Place meter probes on heating element terminals.
[Set meter to 200 ohms (Ω)]

Refer To:	Page
Cover Removal	C-2
PC Board Relay Test	B-48

Heating Element Test
If reading is out of acceptable range...
Replace heating element.

If reading is within acceptable range...
Perform PC Board Relay Test.

Acceptable Range:



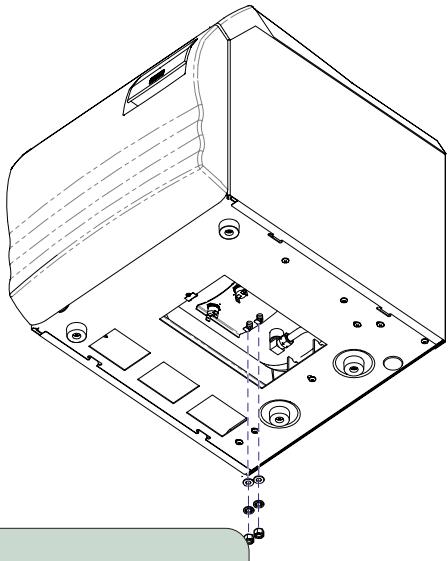
Component Testing & Repair

Heating Element

Replacement

Removal

Step 1: Drain water from reservoir.



Removal

Step 2: Disconnect wires from heating element.
Remove nuts, lockwashers, & brass washers.

Installation



Equipment Alert

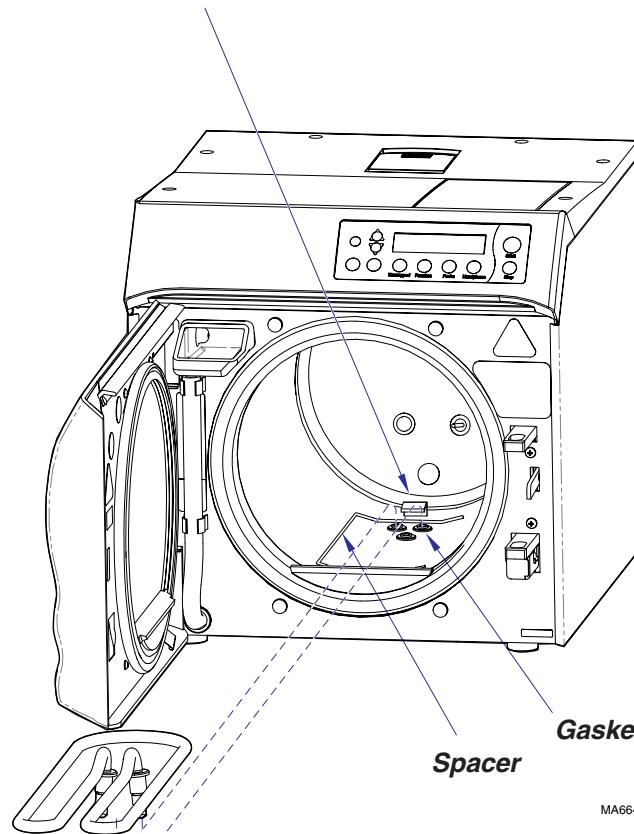
1. Do not overtighten nuts!
Torque must not exceed 25 ft/lbs (34N•M).
2. Make sure when replacing the element in a M11,
that the element coil is placed under the element clip.
(see diagram)

Step 2: Install brass washers, lockwashers, & nuts.
Connect wires to heating element.

Refer to:

	Page
Draining the Reservoir	C-4
Cover Removal	C-2

Element Clip



Removal

Step 3: Remove heating element and spacer.

Installation

Step 1: Install gaskets onto heating element.
Install spacer and heating element.

Heating Element

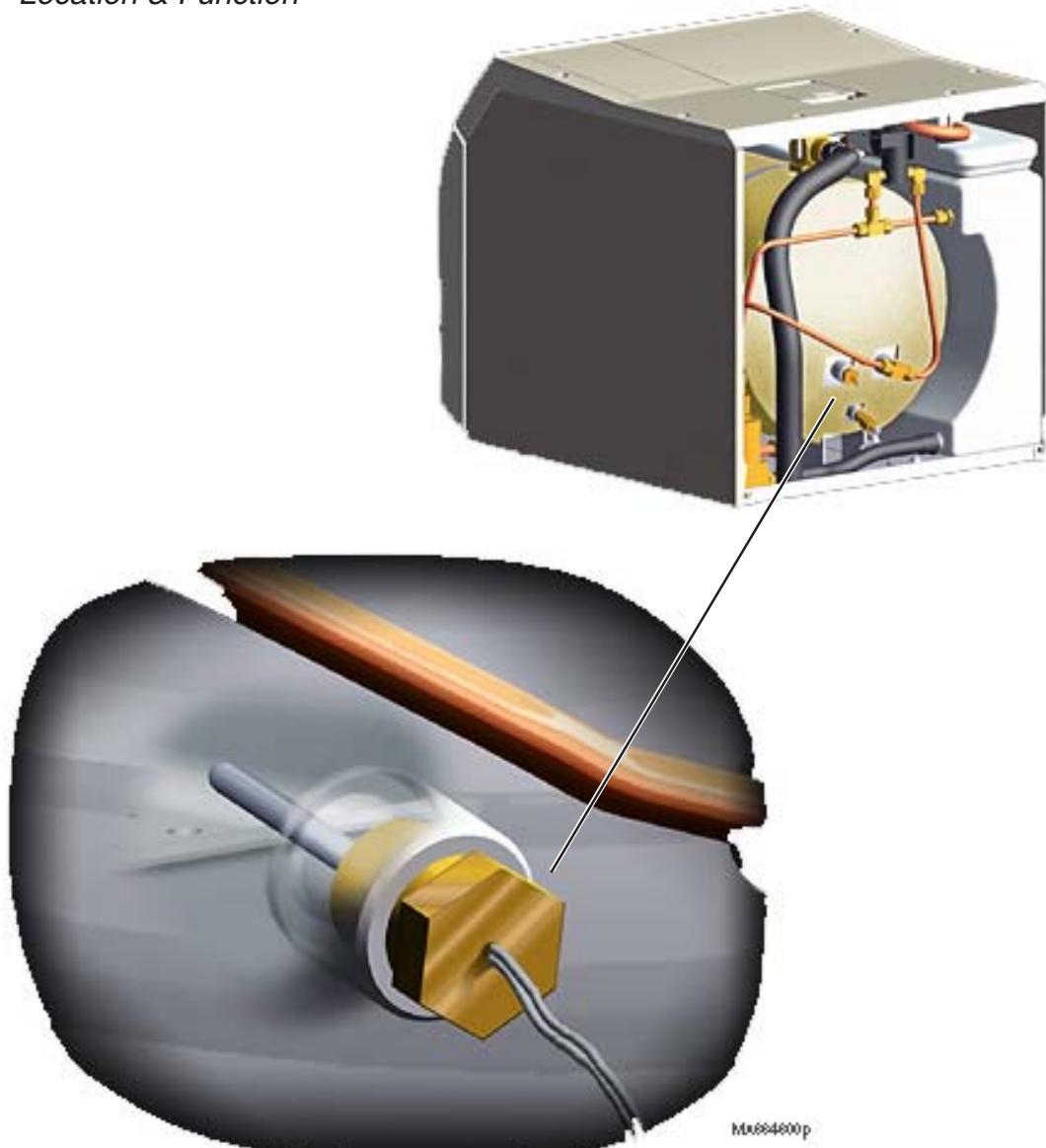
Models:
Serial Numbers:

ALL

Component Testing & Repair

Temperature Sensor

Location & Function



<u>Temperature Sensor</u>	<u>Page</u>
Location & Function	B-23
Testing	B-24
Replacement	B-26
Exploded View / Part Numbers	E-9

During the Fill Mode...

The temperature sensor is not monitored.

During the Heat-Up & Sterilization Modes...

The temperature sensor continually monitors the chamber temperature and transmits this information to the PC board.

The PC board turns the heating element ON / OFF based on the readings from the temperature sensor.

During the Vent Mode...

The temperature sensor continually monitors the chamber temperature and transmits this information to the PC board.

During the Drying Mode...

The temperature sensor continually monitors the chamber temperature and transmits this information to the PC board.

If the temperature exceeds 240°F (115°C), the PC board stops the current flow to the heating element until the temperature drops.

Component Testing & Repair

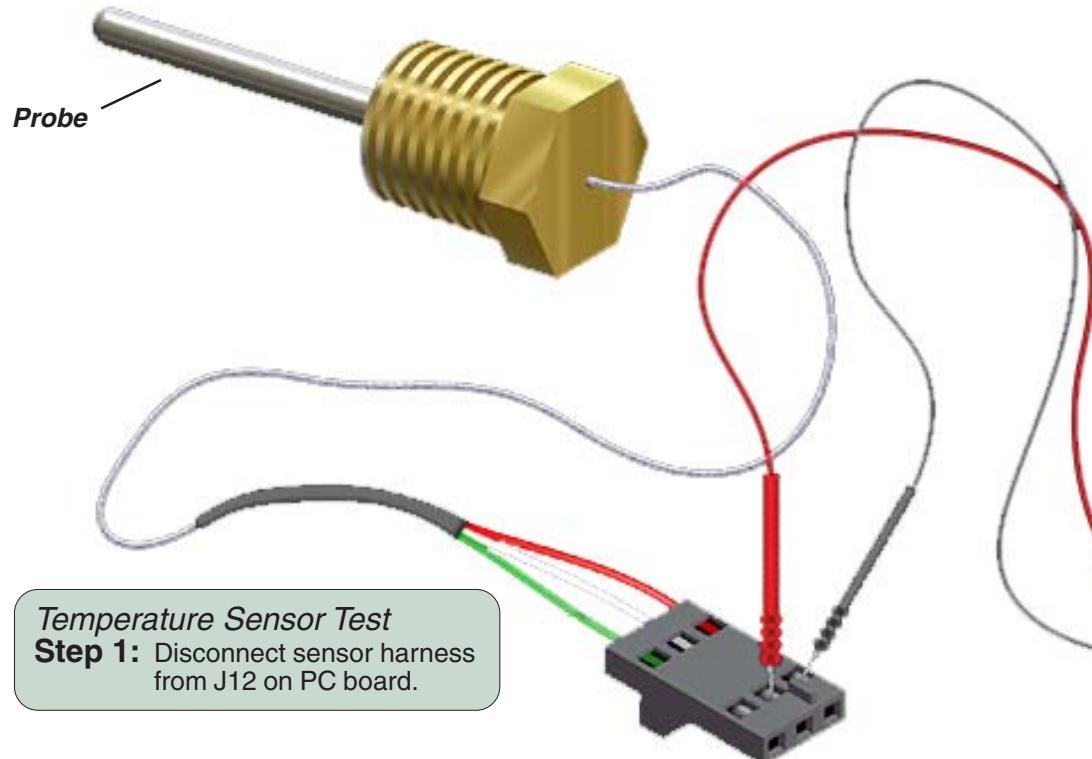
Temperature Sensor

Testing

Service Tip

Residue can build up on the sensor probe causing inaccurate temperature readings.

Clean the probe with SpeedClean and an abrasive pad.



Refer To:

	Page
Supply Voltage Test	B-25
Cover Removal	C-2

Temperature Sensor Test

If reading is out of acceptable range... Replace temperature sensor.

If reading is within acceptable range... Perform Supply Voltage Test.

Acceptable Range:



Temperature Sensor

Models:
Serial Numbers:

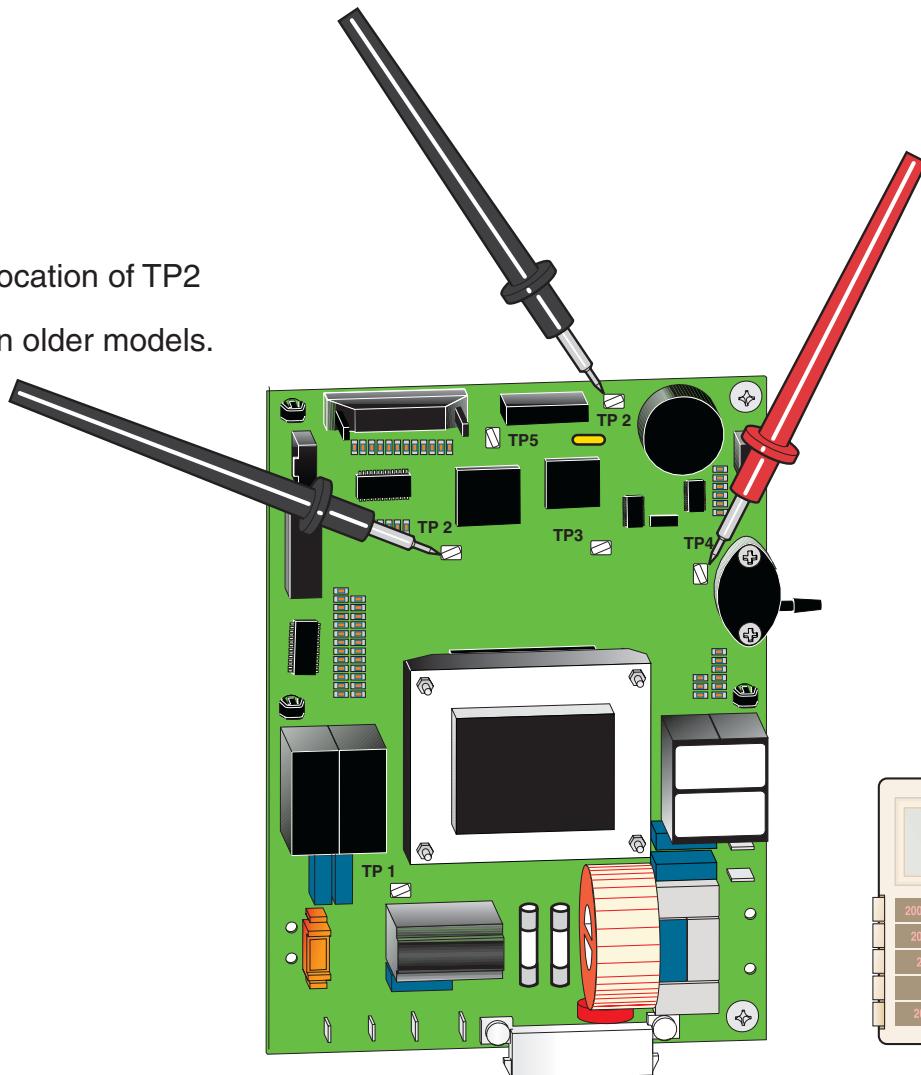
ALL

Component Testing & Repair

Temperature Sensor

Supply Voltage Test

Location of TP2
on older models.



Refer To:

Cover Removal..... C-2

Supply Voltage Test

Step 1: Place meter probes on test points:

Black probe: TP2
Red probe: TP4

[Set meter to 20 VDC]

Supply Voltage Test

If reading is out of acceptable range...

Replace main PC board.

If reading is within acceptable range...

Main PC board is functioning properly

Acceptable Range:



SA110600

Models:
Serial Numbers:

ALL

Temperature Sensor

B-25

Component Testing & Repair

Temperature Sensor

Replacement

Refer To:

Cover Removal

Page

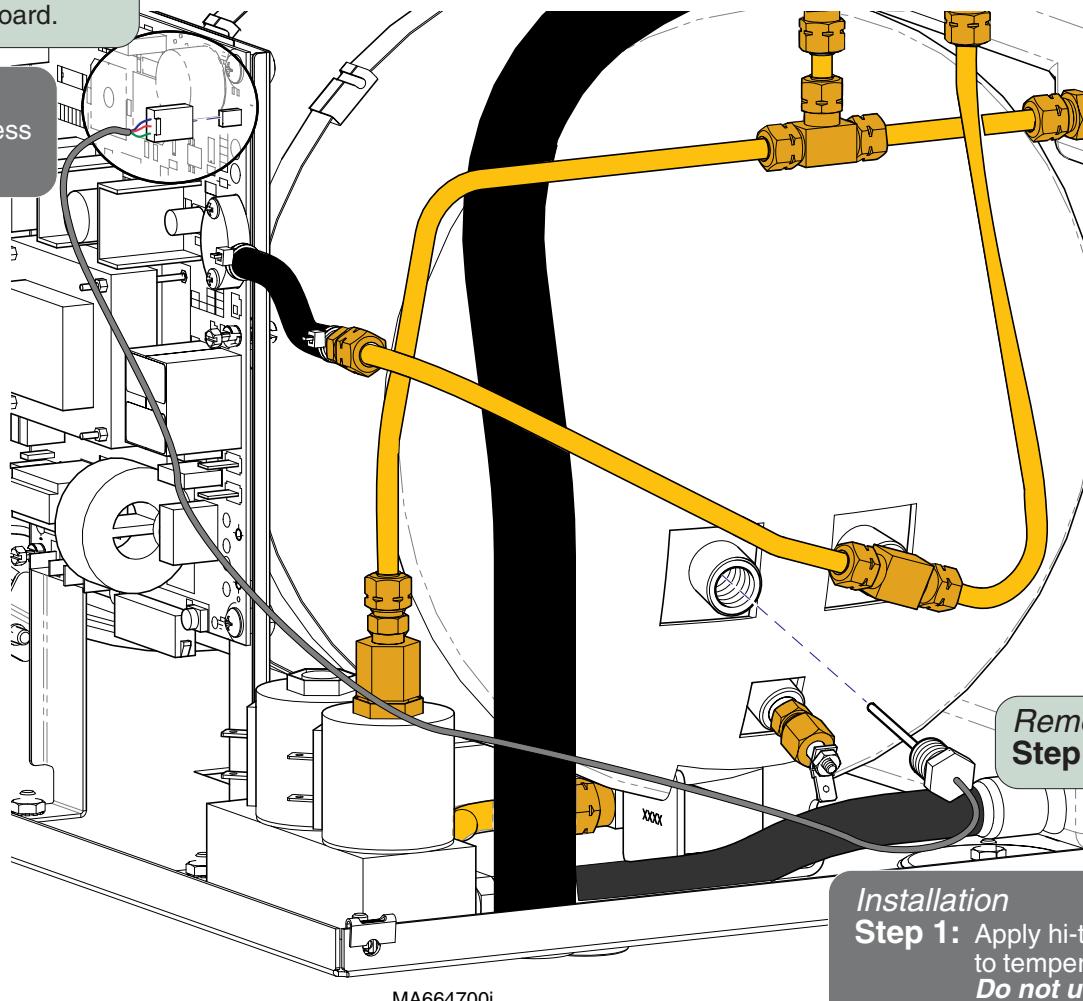
C-2

Removal

- Step 1:** Disconnect sensor harness from J12 on PC board.

Installation

- Step 2:** Connect sensor harness to J12 on PC board.



Removal

- Step 2:** Remove temperature sensor.

Installation

- Step 1:** Apply hi-temp hydraulic sealant (*Loctite 565*) to temperature sensor threads.
Do not use teflon tape!

Install temperature sensor.

Temperature Sensor

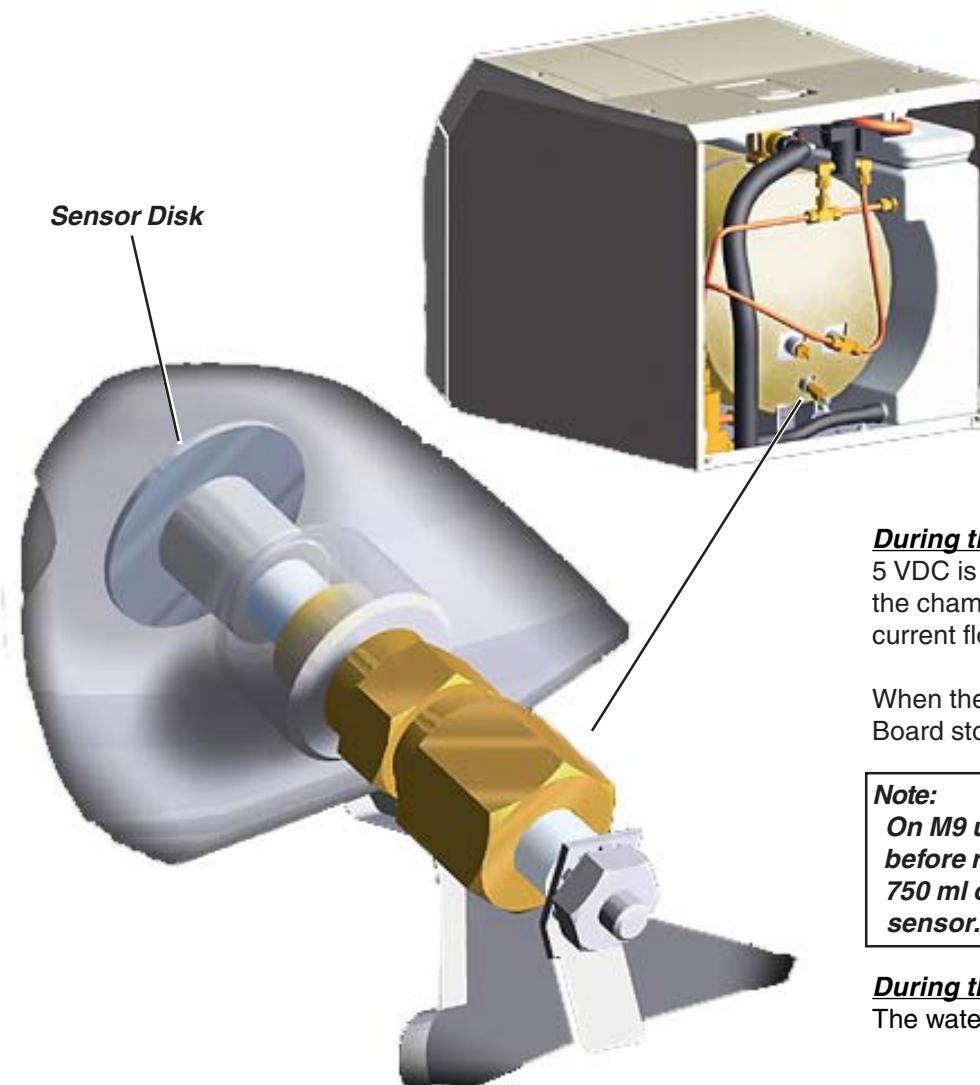
Models:
Serial Numbers:

ALL

Component Testing & Repair

Water Level Sensor

Location & Function



During the Fill Mode...

5 VDC is supplied to the water level sensor. When the water level in the chamber reaches the sensor disk, a circuit is completed and current flows back to the PC Board.

When the 5 VDC from the water level sensor is detected, the PC Board stops the current flow to the fill valve.

Note:

On M9 units, approximately 650 ml of water will enter chamber before reaching the water sensor. On M11 units, approximately 750 ml of water will enter chamber before reaching the water sensor.

During the Heat-Up, Sterilization, Vent, & Drying Modes...

The water level sensor is not monitored.

MU884300P

Models:
Serial Numbers:

ALL

Water Level Sensor

B-27

Component Testing & Repair

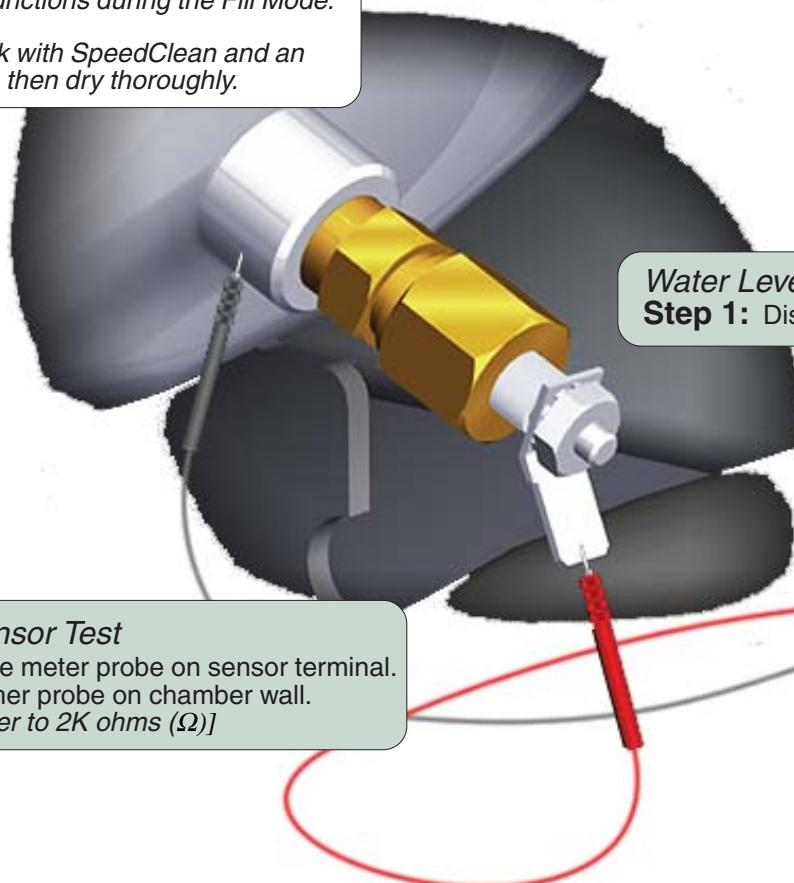
Water Level Sensor

Testing

Service Tip

Residue can build up on the sensor disk causing malfunctions during the Fill Mode.

Clean the disk with SpeedClean and an abrasive pad, then dry thoroughly.



Water Level Sensor Test

Step 2: Place one meter probe on sensor terminal.
Place other probe on chamber wall.
[Set meter to 2K ohms (Ω)]

Water Level Sensor Test

Step 1: Disconnect wire from sensor terminal.

Acceptable Reading:



Water Level Sensor Test
If reading is anything other than OL...
Replace water level sensor.

If reading is OL...
Perform Supply Voltage Test.

Water Level Sensor

Models:
Serial Numbers:

ALL

Refer To:

Supply Voltage Test

Page

B-29

Cover Removal

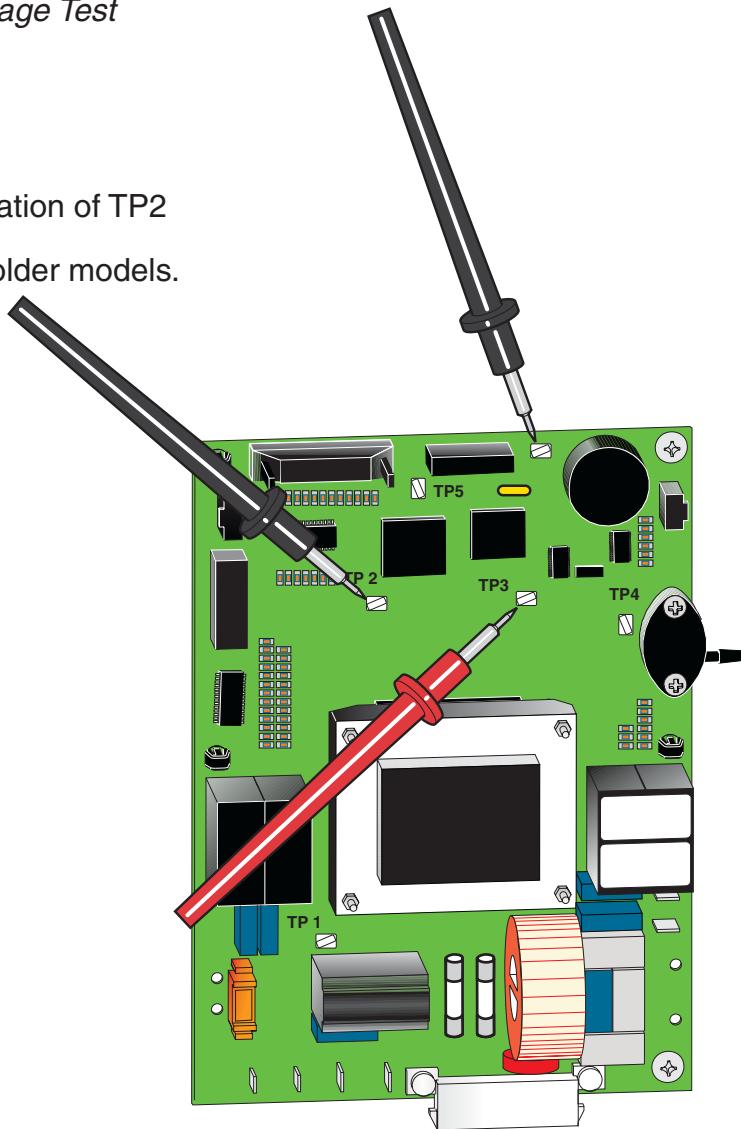
C-2

Component Testing & Repair

Water Level Sensor

Supply Voltage Test

Location of TP2
on older models.



Supply Voltage Test

Step 1: Place meter probes on test points:
Black probe: TP2
Red probe: TP3

[Set meter to 20 VDC]

Supply Voltage Test

If reading is out of acceptable range...
Replace main PC board.

If reading is within acceptable range...
Main PC board is functioning properly

Acceptable Range:



SA110500

Models:
Serial Numbers:

ALL

Water Level Sensor

B-29

Component Testing & Repair

Water Level Sensor

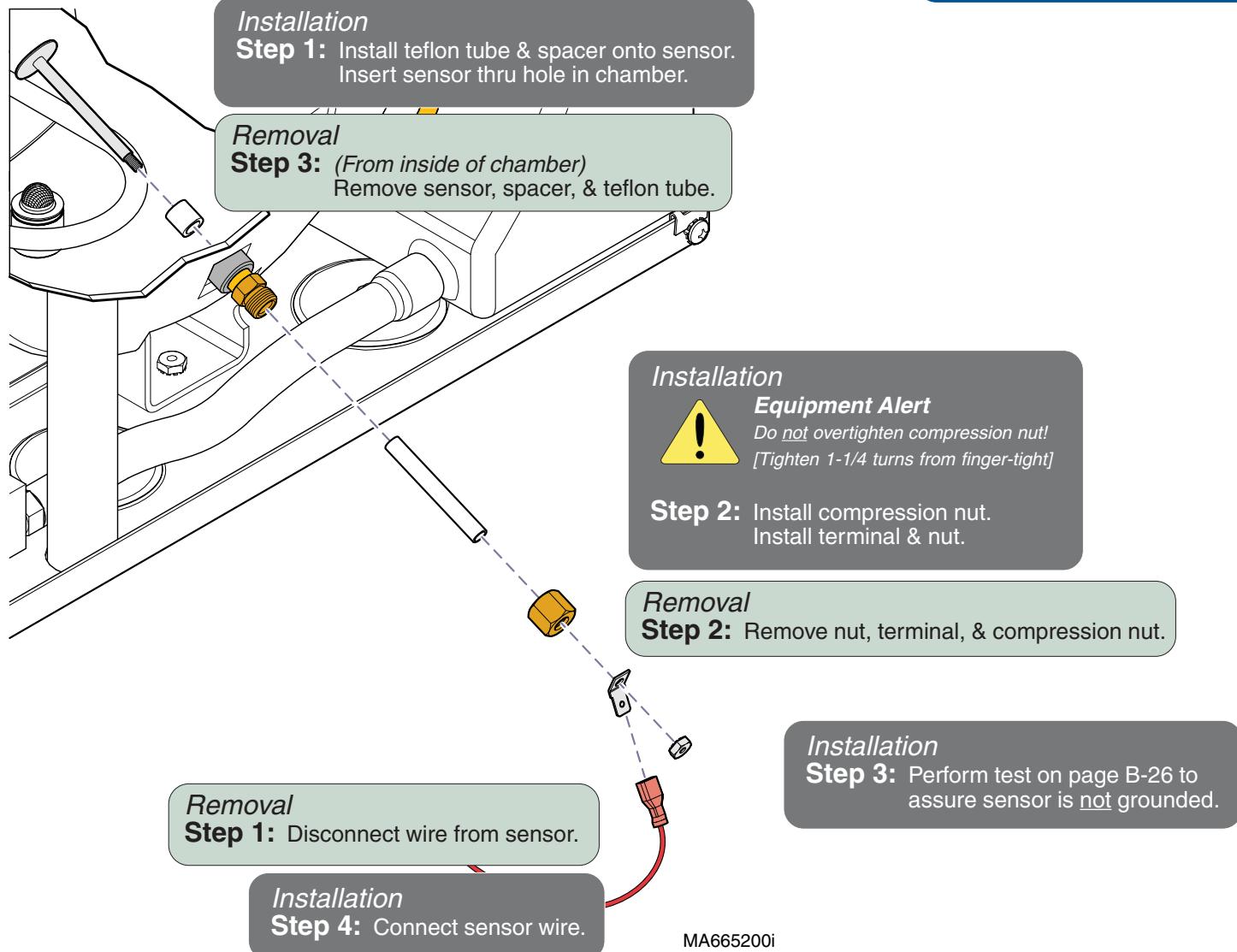
Replacement

Refer To:

Cover Removal

Page

C-2



Water Level Sensor

Models:
Serial Numbers:

ALL

Component Testing & Repair

High Limit Thermostats

Location & Function

During all modes...

Line voltage continually flows thru the normally closed contacts of the two high-limit thermostats. This circuit powers all of the line voltage components, except for the Fan System.

If the temperature at either of the thermostats exceeds 450°F ($\pm 25^\circ$) / 232°C ($+14^\circ$), the thermostat contacts open. This interrupts power, and terminates the cycle.
[An error code will appear on the display].

The thermostat contacts reset to the closed position at approximately 325°F / 163°C.

<u>High-Limit Thermostats</u>	<u>Page</u>
Location & Function	B-31
Testing	B-32
Replacement	B-33
Exploded View / Part Numbers	E-12



M685-800p

Component Testing & Repair

High Limit Thermostats

Testing

Note

High-limit thermostats must be tested at room temperature.



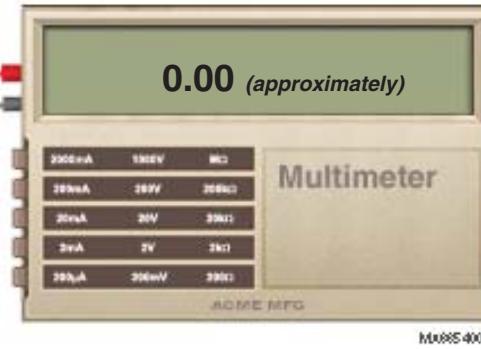
High-Limit Thermostat Test

Step 1: Disconnect wires from thermostat.

High-Limit Thermostat Test

Step 2: Place meter probes on thermostat terminals.
[Set meter to 200 ohms (Ω)]

Acceptable Range:



0.00 (approximately)

Multimeter

2000nA	100mV	10Ω
200nA	10V	20kΩ
20mA	2V	30kΩ
2A	2V	2kΩ
200µA	300mV	300Ω

High-Limit Thermostat Test
If reading is (approximately) 0.00 ...
High-limit thermostat is good.

If reading is OL...
Replace high-limit thermostat.

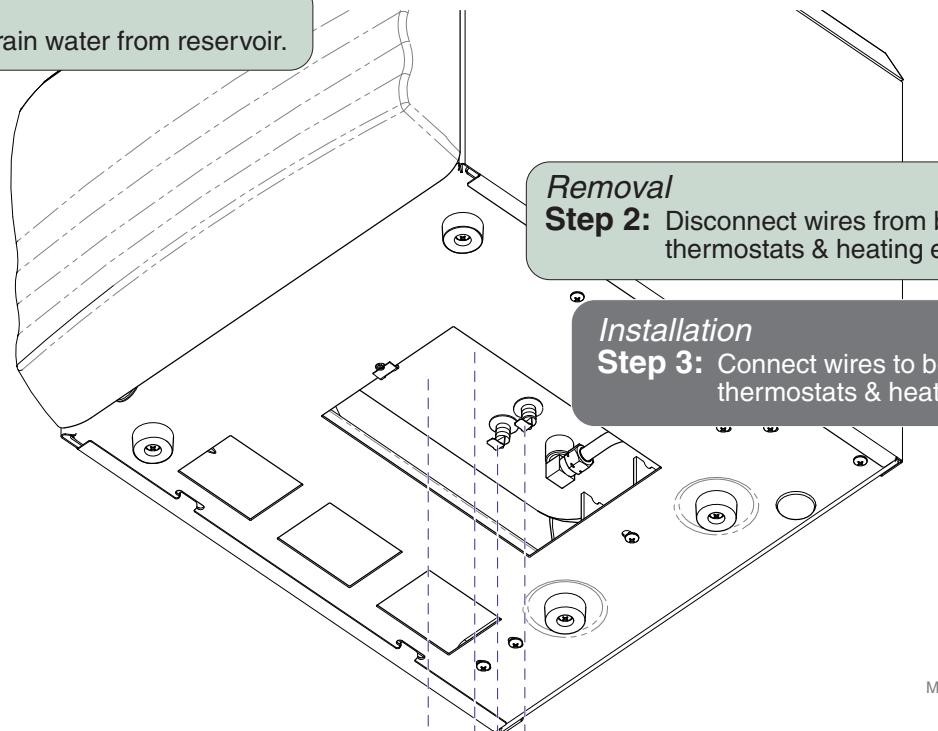
Component Testing & Repair

High Limit Thermostats

Replacement

Removal

Step 1: Drain water from reservoir.

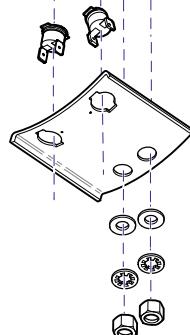


Removal

Step 4: Remove bracket & thermostats.

Installation

Step 1: Place the thermostats & bracket in position.



Installation

Equipment Alert

Inspect heating element gaskets & wire spacer (inside chamber) before tightening nuts.

Step 2: Install brass washers, lockwashers, & nuts onto heating element.

Removal

Step 3: Remove nuts, lockwashers, & brass washers from heating element.

Refer to:

Draining the Reservoir C-4

Cover Removal C-2

Page

Models:
Serial Numbers:

ALL

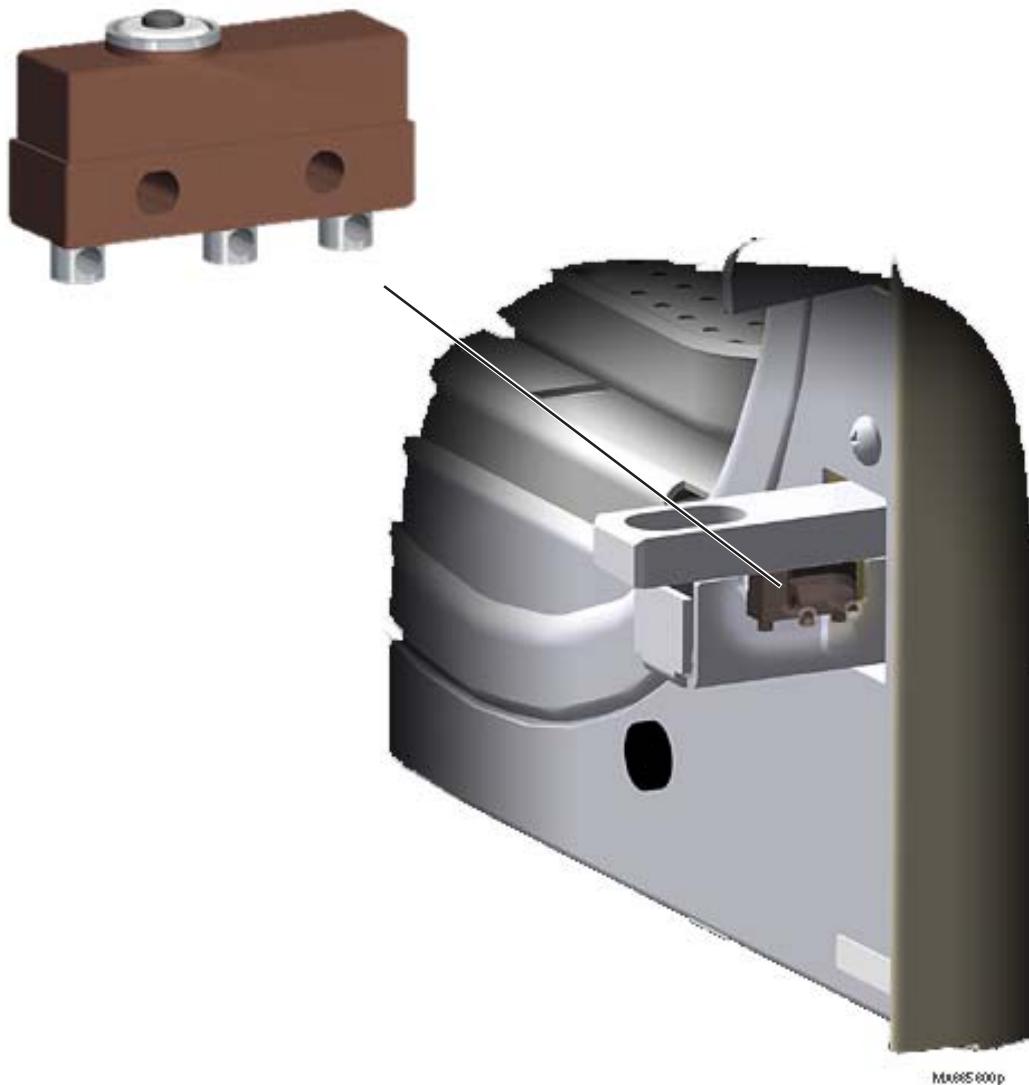
High-Limit Thermostats

B-33

Component Testing & Repair

Door Switch

Location & Function



Door Switch	Page
Location & Function	B-34
Testing	B-35
Replacement	B-36
Wiring Diagrams	D-1
Exploded View / Part Numbers	E-7

Note

*When the door is open, the door switch is untripped / open.
When the door is closed, the door switch is tripped / closed.*

During the Fill, Heat-Up, & Sterilization Modes...

When a cycle is initiated, the PC board monitors the status of the door switch.

If an open door is detected, the cycle will not start.

If the door switch opens during a cycle, the cycle will be terminated and the corresponding error code will appear in the display.

During the Vent, & Drying Modes...

The door switch is not monitored.

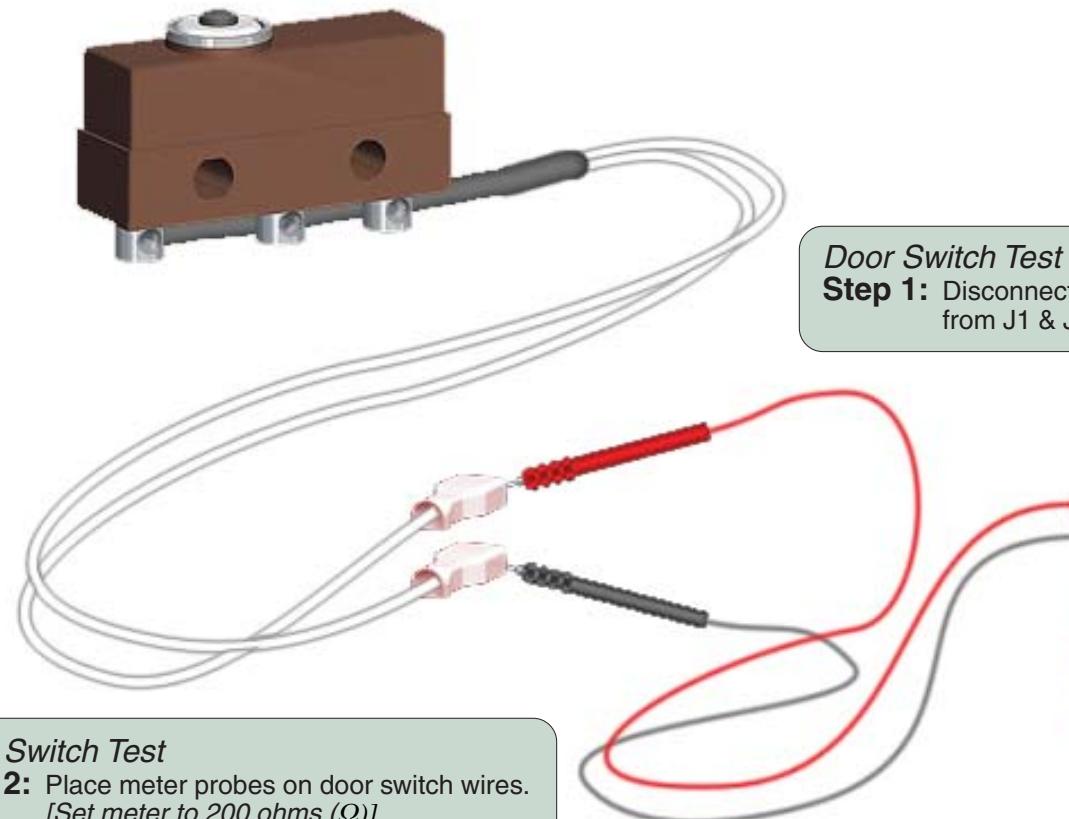
Component Testing & Repair

Door Switch

Testing

Note

The door switch must be tested with the door OPEN and CLOSED.

**Door Switch Test**

Step 2: Place meter probes on door switch wires.
[Set meter to 200 ohms (Ω)]
Open and close the door.

Door Switch Test

Step 1: Disconnect two door switch wires
from J1 & J2 of main PC board

Acceptable Reading:

M4685700P

Door Switch Test

If reading is out of acceptable range...
Replace door switch.

If reading is within acceptable range...
Door Switch is functioning properly.

Models:
Serial Numbers:

ALL

Door Switch

B-35

Component Testing & Repair

Door Switch

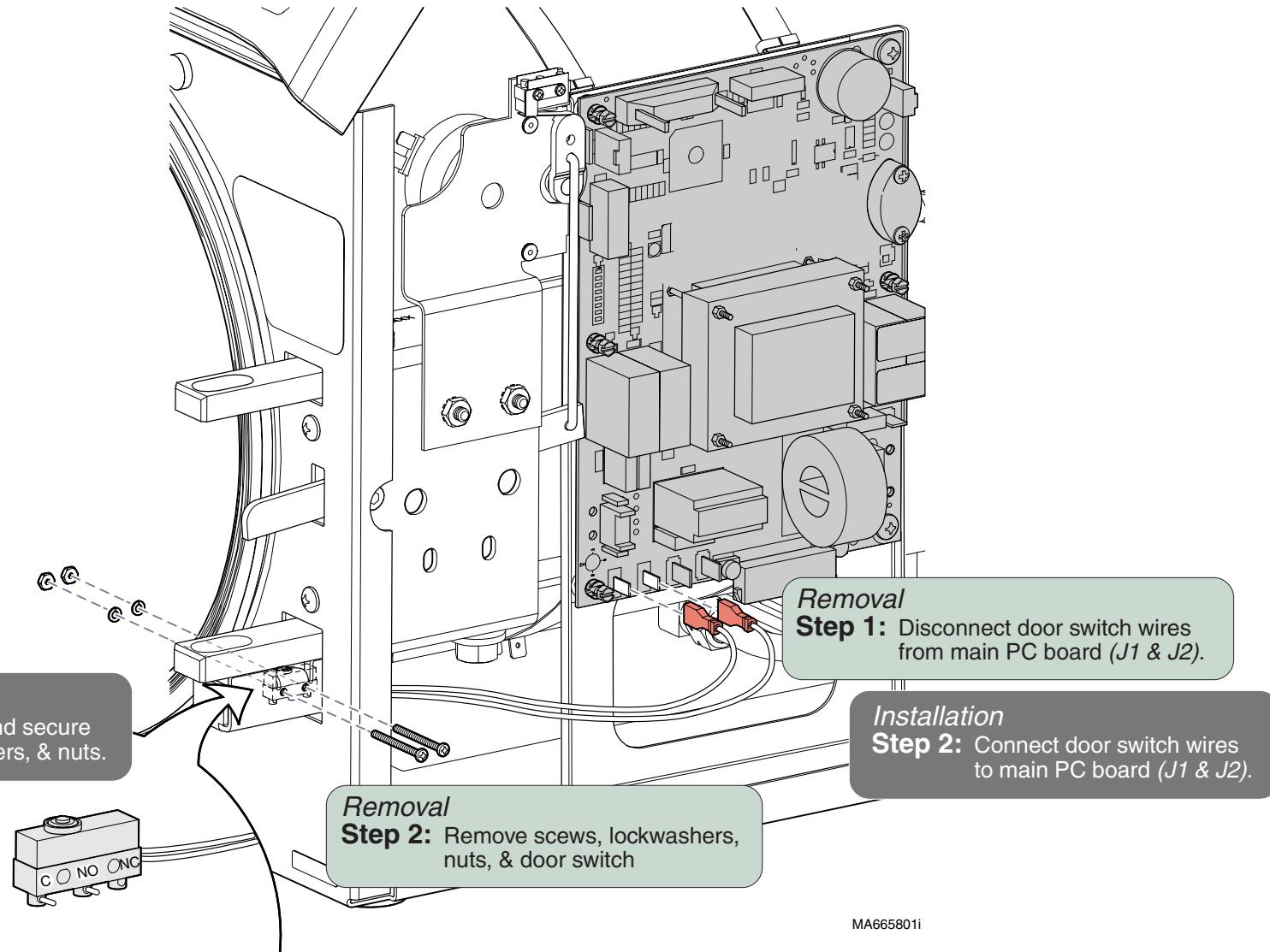
Replacement

Refer To:

Cover Removal

Page

C-2



Door Switch

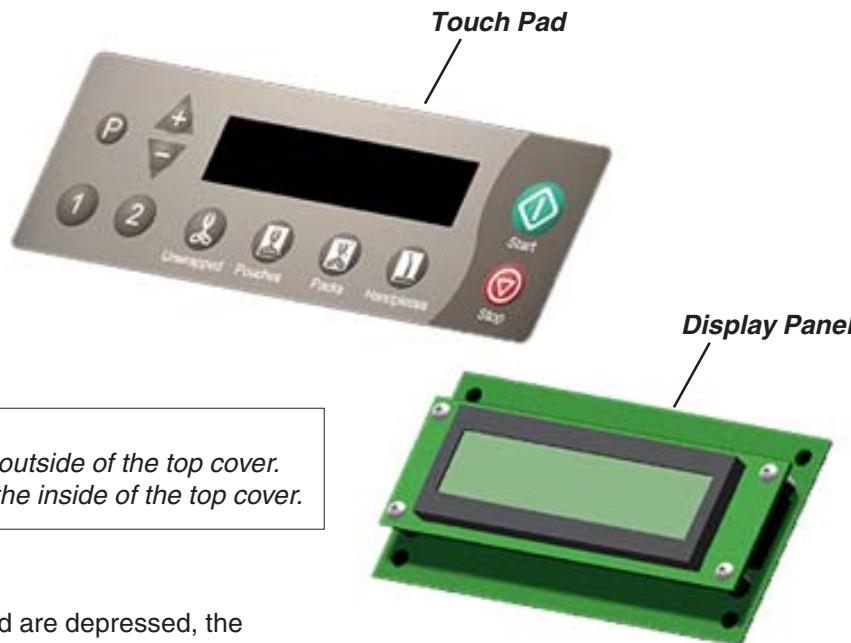
Models:
Serial Numbers:

ALL

Component Testing & Repair

Touch Pad / Display Panel

Location & Function



Note

The touch pad is attached to the outside of the top cover.
The display panel is attached to the inside of the top cover.

During all Modes...

When the buttons on the touch pad are depressed, the selection is transmitted to the main PC board through the display panel.

As the main PC board initiates the selected function, informational messages (time & temp., error codes, etc.) appear on the display panel.



Midmark 900p

Touch Pad / Display Panel

Page

Location & Function	B-37
Testing (Service Diagnostics: Keytest) ...	B- 5
Replacement	B-38
Wiring Diagrams	D-1
Exploded View / Part Numbers	E-15

Component Testing & Repair

Touch Pad / Display Panel

Replacement

Refer To:

Cover Removal

Page

C-2

Removal

Step 1: Remove top cover.

Installation

Equipment Alert

Be sure the arrow on the display panel points UP when installing panel.

Step 2: Slide display panel under tab.
Install two screws

Installation

Step 3: Connect ribbon harnesses to display panel (J2 & J3).

Removal

Step 2: Disconnect ribbon harnesses from display panel (J2 & J3).

Tab

Removal

Step 3: Remove two screws.
Slide display panel out from under tab.

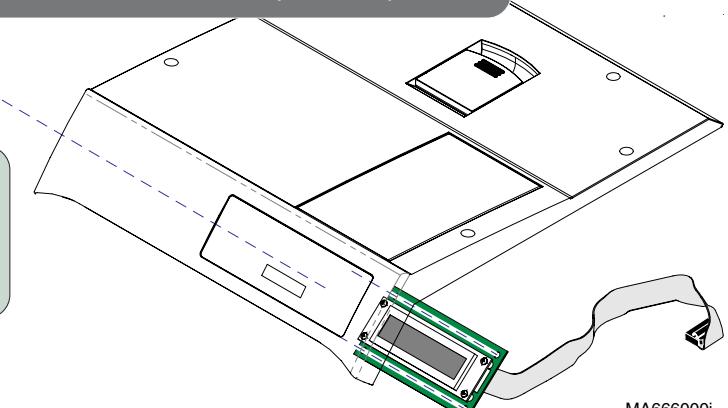
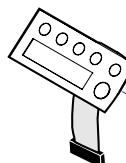
Installation

Step 1: Peel backing from touch pad.
Feed ribbon harness thru slot.
Position touch pad on top cover.

Removal

Step 4: Peel touch pad off of top cover.

[Remove adhesive residue w/ a citrus-based solvent that is safe for use on plastics]



MA66600i

Touch Pad /
Display Panel

Models:
Serial Numbers:

ALL

Component Testing & Repair

Door Motor System

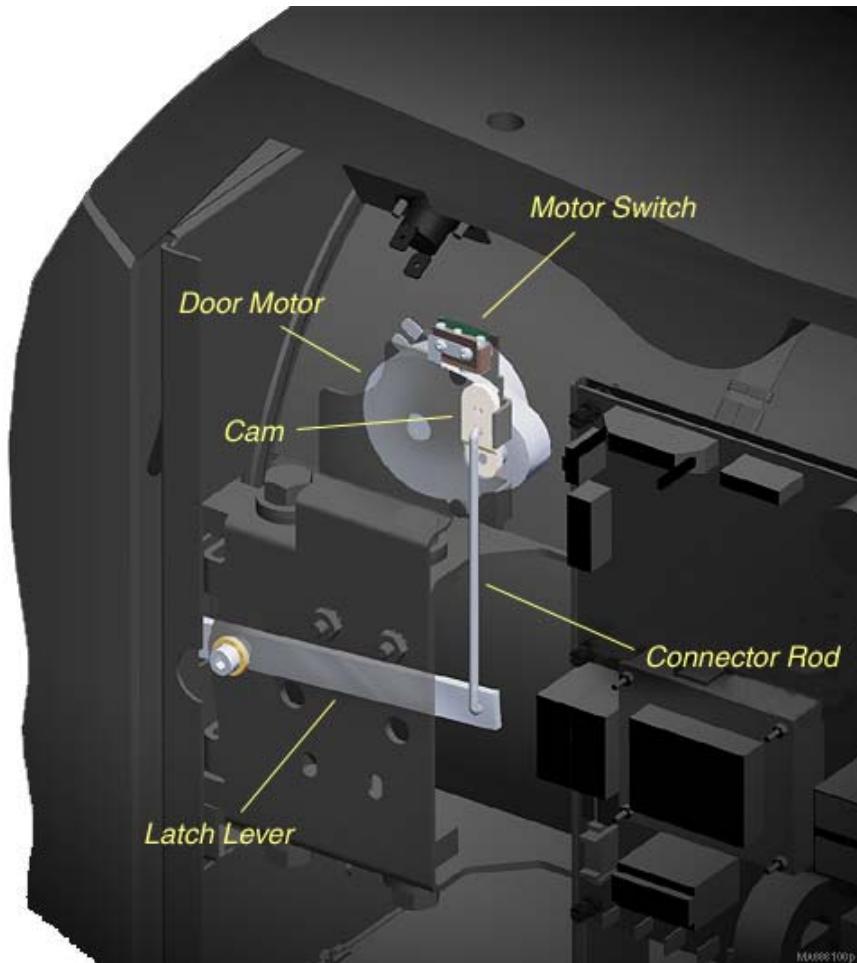
Location & Function

At the end of the Sterilizing Mode...

When the pressure in the chamber drops to 0.7 psi (5 kPa), the PC board bypasses the motor switch and supplies line voltage to the door motor. The door motor rotates the cam causing the motor switch to close. Now, the current to the door motor flows thru the motor switch. As the cam rotates, the connector rod causes the latch lever to open the door.

When the cam reaches the bottom of its travel, the motor reverses direction. When the cam reaches its starting position, the motor switch opens, stopping the current flow to the door motor.

<u>Door Motor System</u>	<u>Page</u>
Location & Function	B-39
Testing	B-40
Replacement	B-41
Wiring Diagrams	D-1
Exploded View / Part Numbers	E-14*



Models:
Serial Numbers:

M9 (-020 thru -022)
all

M11 (-020 thru -022)
all

Door Motor System

B-39

Component Testing & Repair

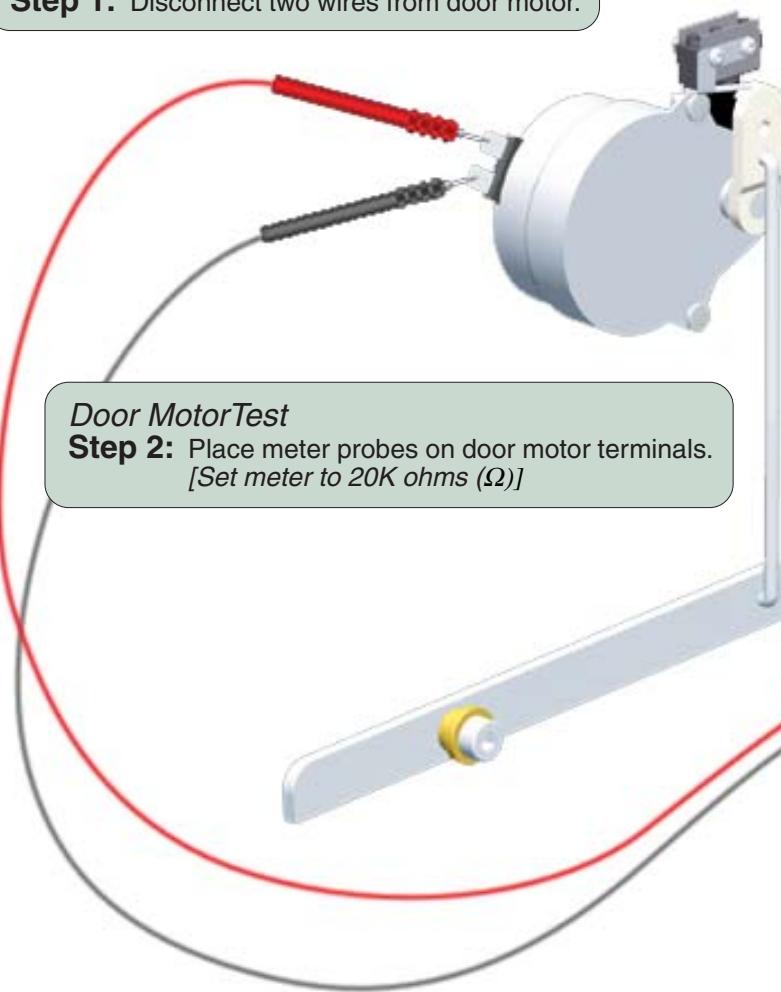
Door Motor System

Testing

Refer To:	Page
Cover Removal	C-2
PC Board Relay Test	B-48

Door Motor Test

Step 1: Disconnect two wires from door motor.



Door Motor Test

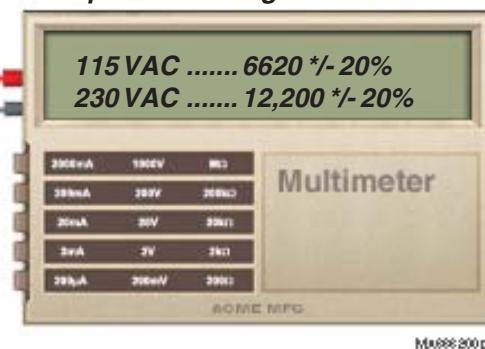
Step 2: Place meter probes on door motor terminals.
[Set meter to 20K ohms (Ω)]

Door Motor Test

If reading is out of acceptable range...
Replace door motor.

If reading is within acceptable range...
Perform PC Board Relay Test.

Acceptable Reading:



Door Motor System

Models: M9 (-020 thru -022)
Serial Numbers: all

M11 (-020 thru -022)
all

Component Testing & Repair

Door Motor System

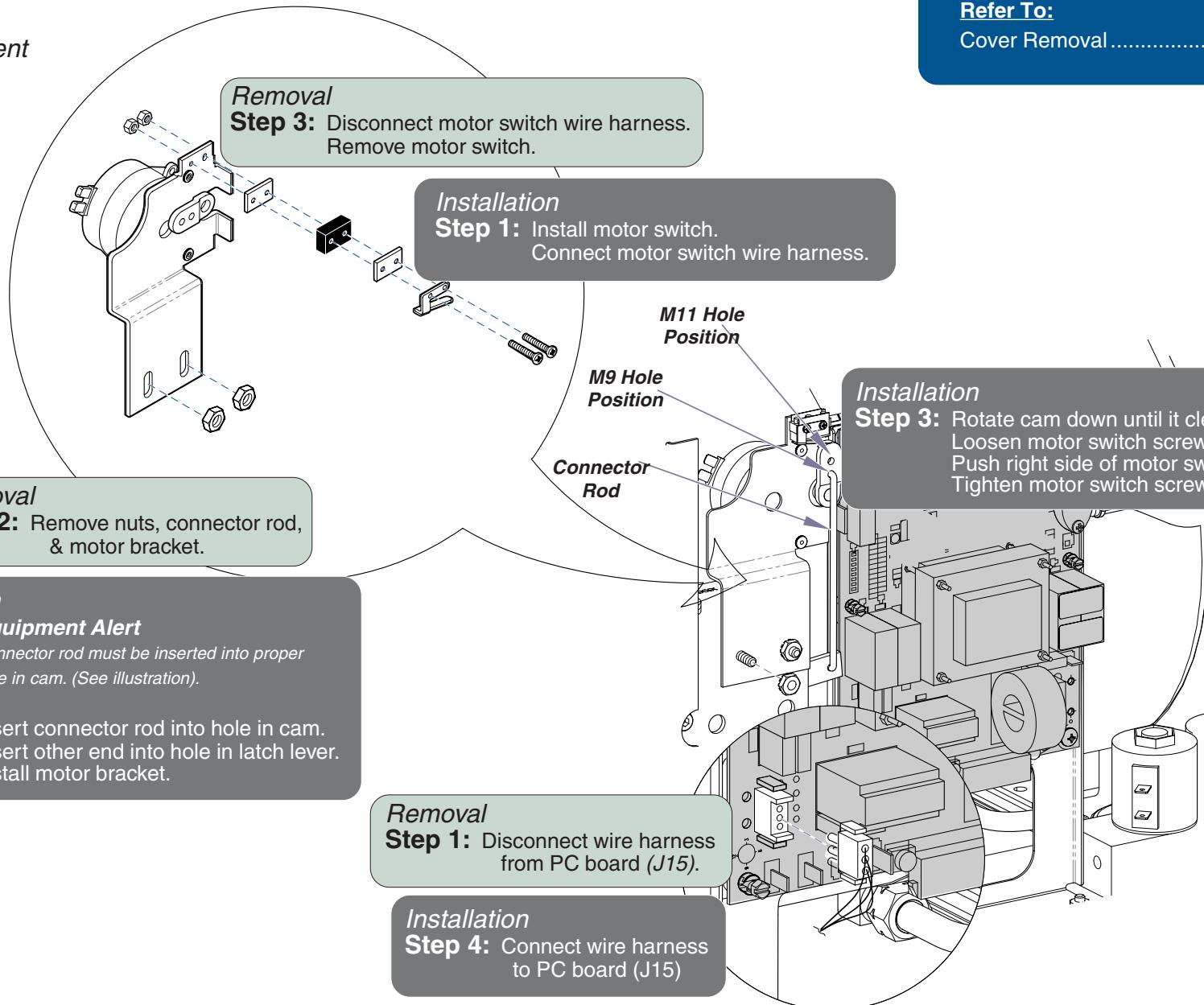
Replacement

Refer To:

Cover Removal.....

Page

C-2



Models:
Serial Numbers:

M9 (-020 thru -022)
all

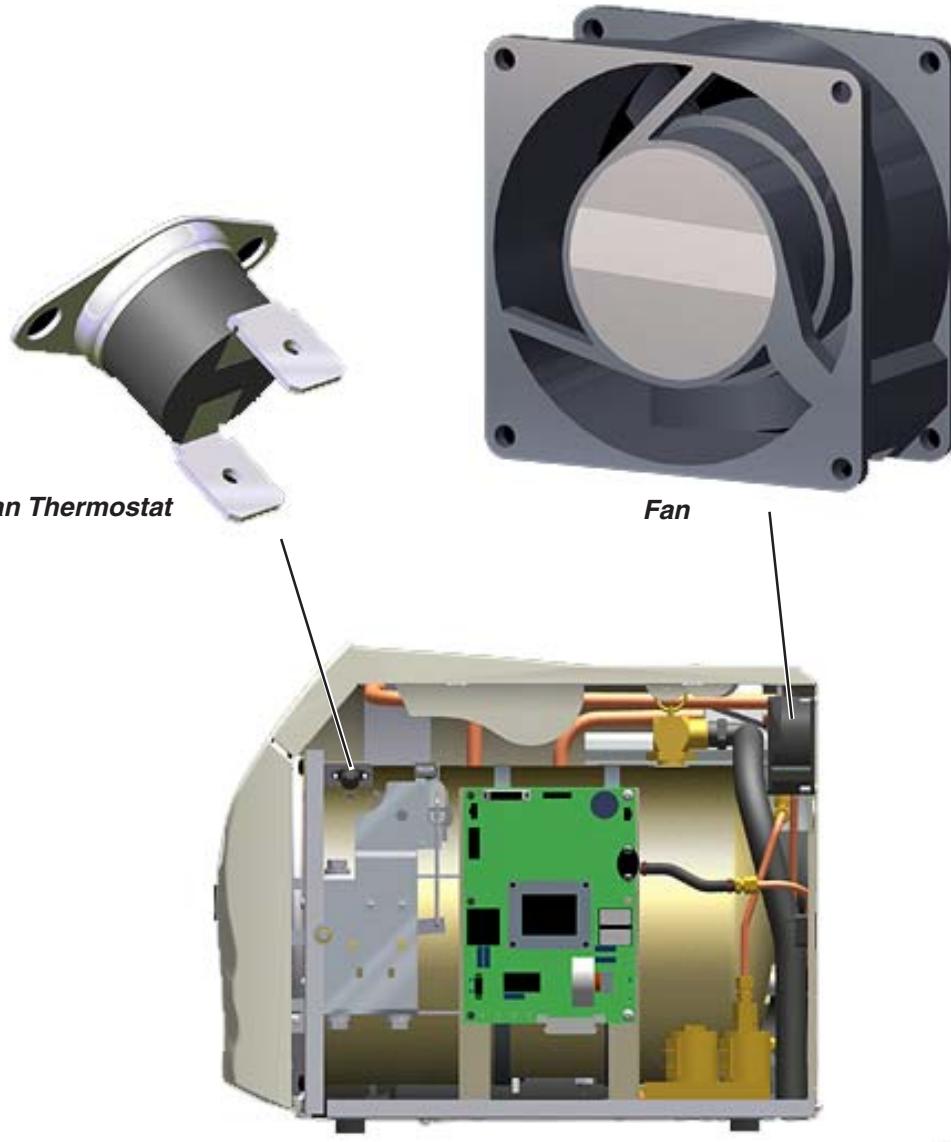
M11 (-020 thru -022)
all

Door Motor System

Component Testing & Repair

Fan / Fan Thermostat

Location & Function



Ma688400p

Fan System	Page
Location & Function	B-42
Testing:	
Fan	B-43
Fan Thermostat	B-44
Replacement	B-45
Wiring Diagrams	D-1
Exploded View / Part Numbers	E-13

Note

The fan may run continuously when running consecutive cycles.

During all Modes...

When power is supplied to the main PC board, line voltage continuously flows to the fan thermostat.

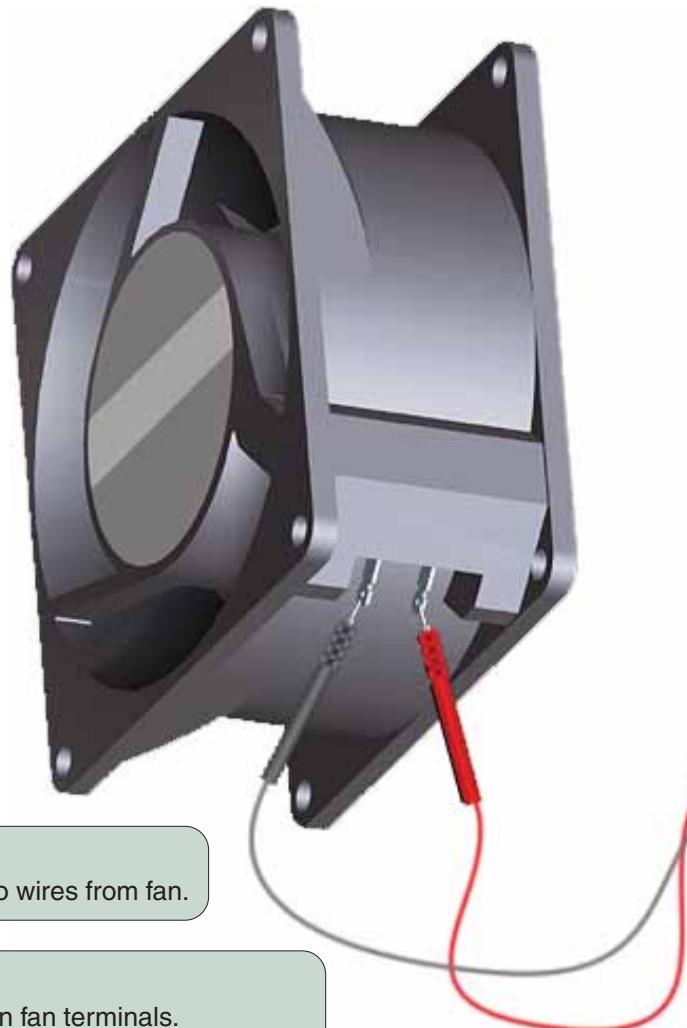
The fan thermostat controls the ON/OFF function of the fan. When the temperature (*at the thermostat*) is below 130°F (54°C), the fan thermostat contacts are open (*no current to the fan - fan is OFF*). When the temperature reaches 130°F (54°C), the fan thermostat contacts close (*current flows to the fan - fan is ON*).

When the temperature drops to approx. 100°F (38°C), the contacts of the fan thermostat open and the fan stops running.

Component Testing & Repair

Fan / Fan Thermostat

Testing: Fan



Fan Test

Step 1: Disconnect two wires from fan.

Fan Test

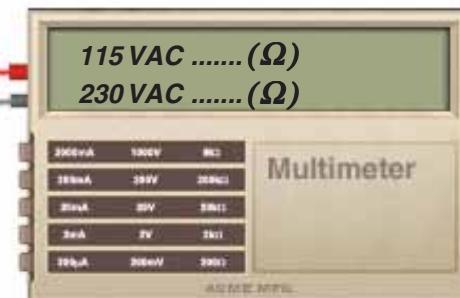
Step 2: Place meter probes on fan terminals.

[115 VAC Models: Set meter to ohms (Ω)]
[230 VAC Models: Set meter to ohms (Ω)]

Refer To:

Cover Removal C-2

Acceptable Reading:



Fan Test

If reading show 0 or no reading...
Replace fan.

If reading shows continuity (Ω)..
Fan is functioning properly.

Models:
Serial Numbers:

ALL

Fan / Fan Thermostat

B-43

Component Testing & Repair

Fan / Fan Thermostat

Testing: Fan Thermostat

Refer To:

Cover Removal C-2



Fan Thermostat Test
If reading is anything other than OL...
Replace fan thermostat.

If reading is OL...
Fan thermostat is functioning properly.

Acceptable Reading:



Component Testing & Repair

Fan / Fan Thermostat

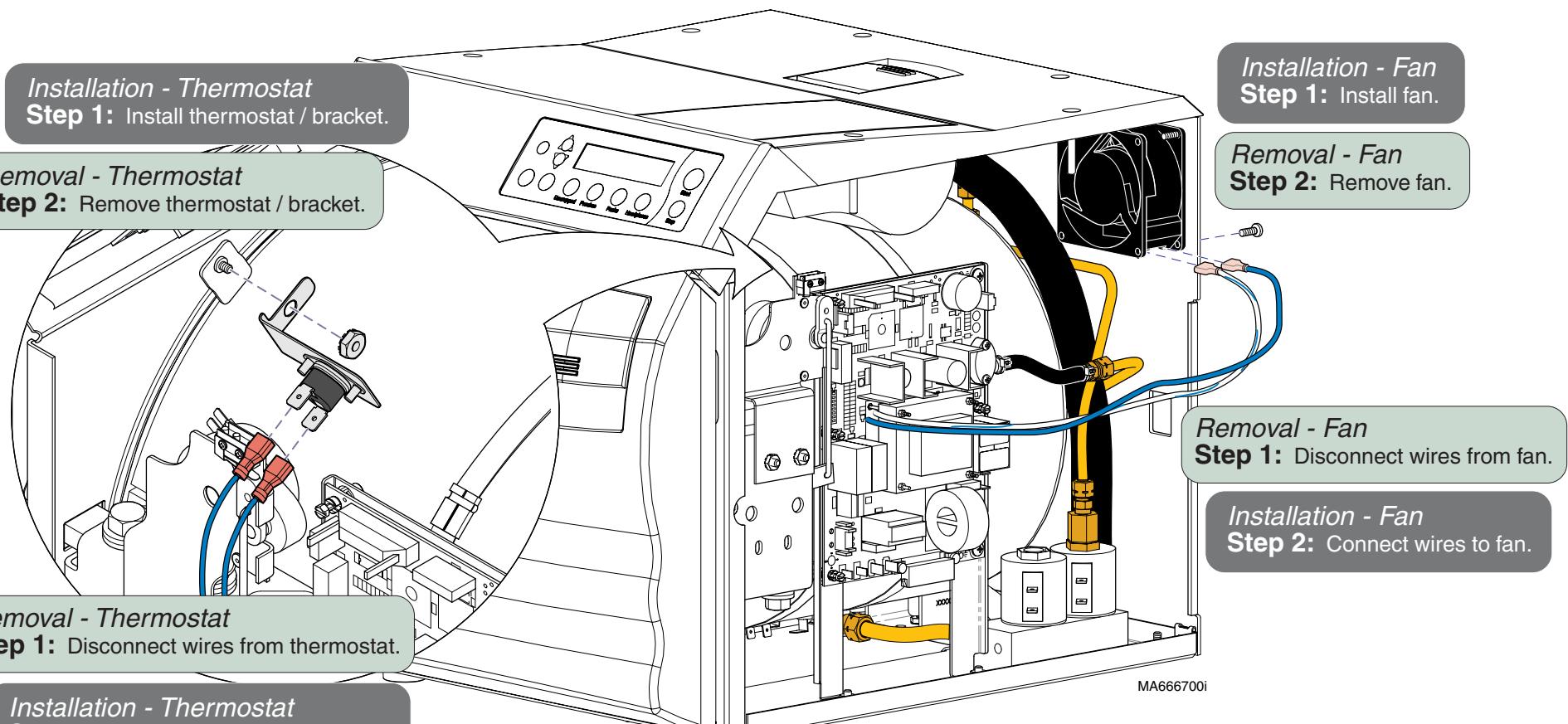
Replacement

Refer To:

Cover Removal

Page

C-2



Models:
Serial Numbers:

ALL

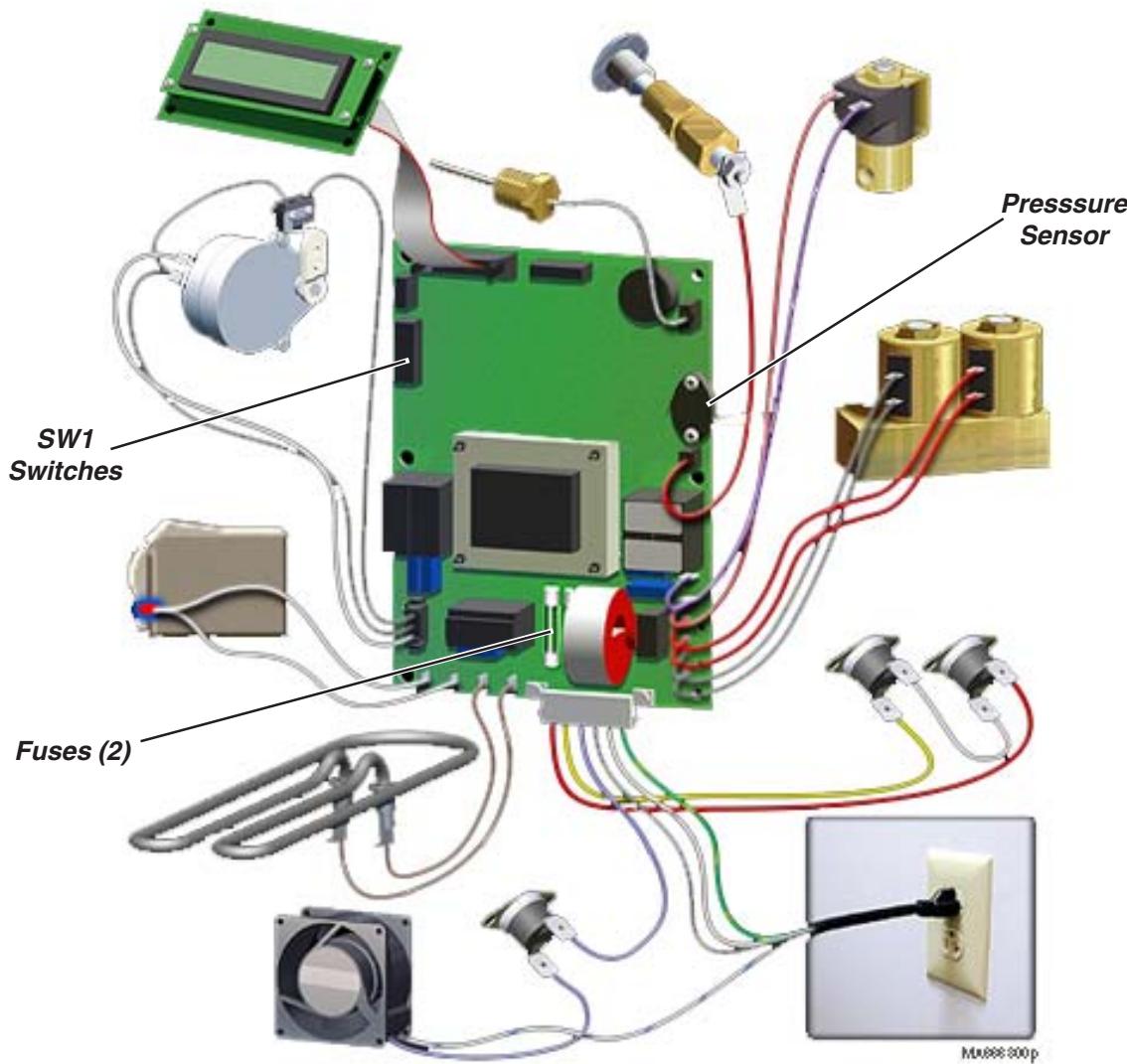
Fan / Fan Thermostat

B-45

Component Testing & Repair

Main PC Board

Function



<u>Main PC Board</u>	<u>Page</u>
Function	B-46
SW1 Switch Settings	B-47
Testing:	
Temperature Sensor Voltage	B-25
Water Level Sensor Voltage	B-29
PC Board Relay Test	B-48
Printer Voltage	B-51
Replacement	B-49
Wiring Diagrams	D-1
Exploded View / Part Numbers	E-16

During all Modes...

The Main PC Board controls all of the electronic components of the sterilizer. During operation, the pressure sensor monitors the chamber conditions to maintain the parameters for the selected cycle.

The two fuses (F1 & F2) protect the circuitry from excessive current draw. If either fuse is faulty, the unit will not operate.

The SW1 switches are used for *Service Diagnostics* and to adjust the display to metric units.

Component Testing & Repair

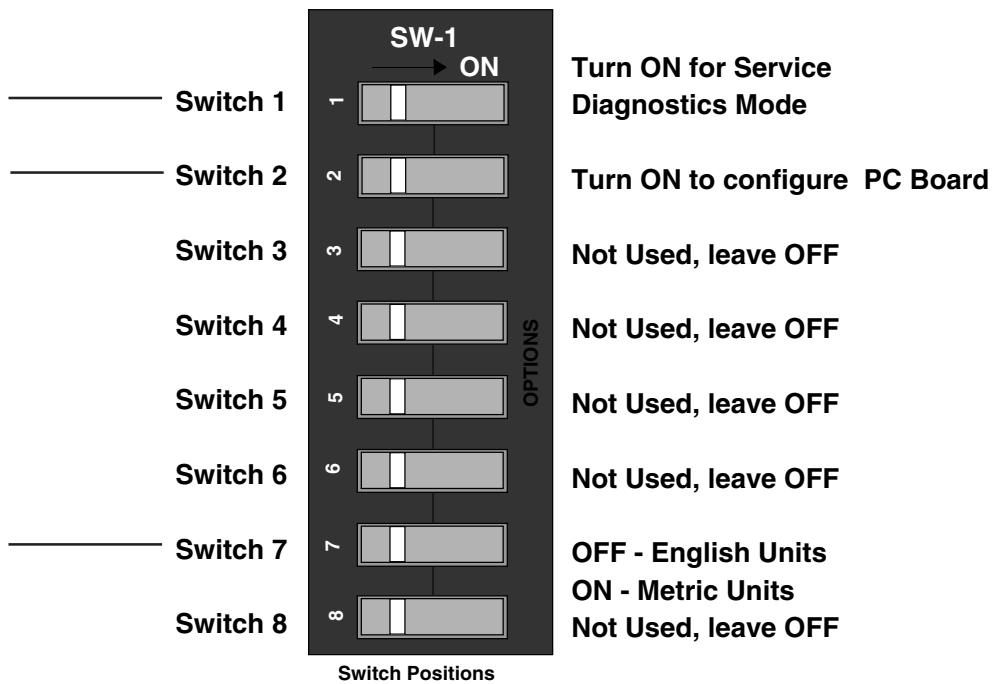
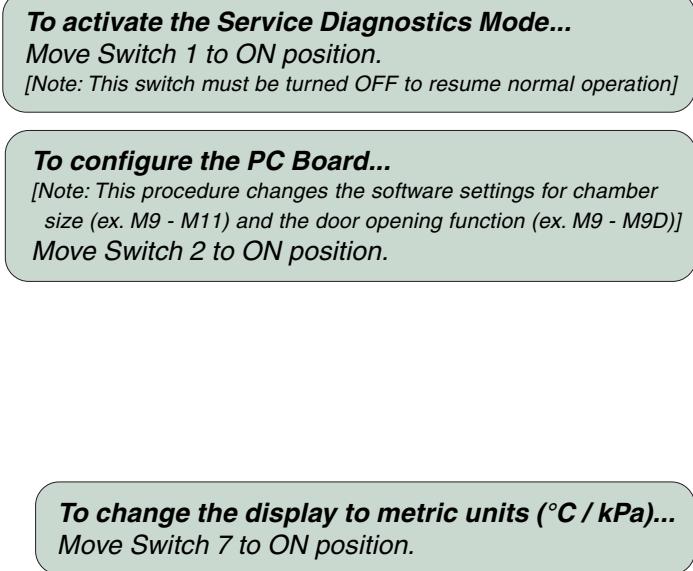
Main PC Board

SW1 Switch Settings

The eight SW1 switches are set to the OFF position when shipped from the factory.

These switches are used when:

- Activating the *Service Diagnostics Mode*.
- Configuring the PC Board (*required when board is replaced*).
- Changing the display to metric units (*Celcius / kPa*)



ISA102401i

Models:
Serial Numbers:

ALL

Main PC Board

B-47

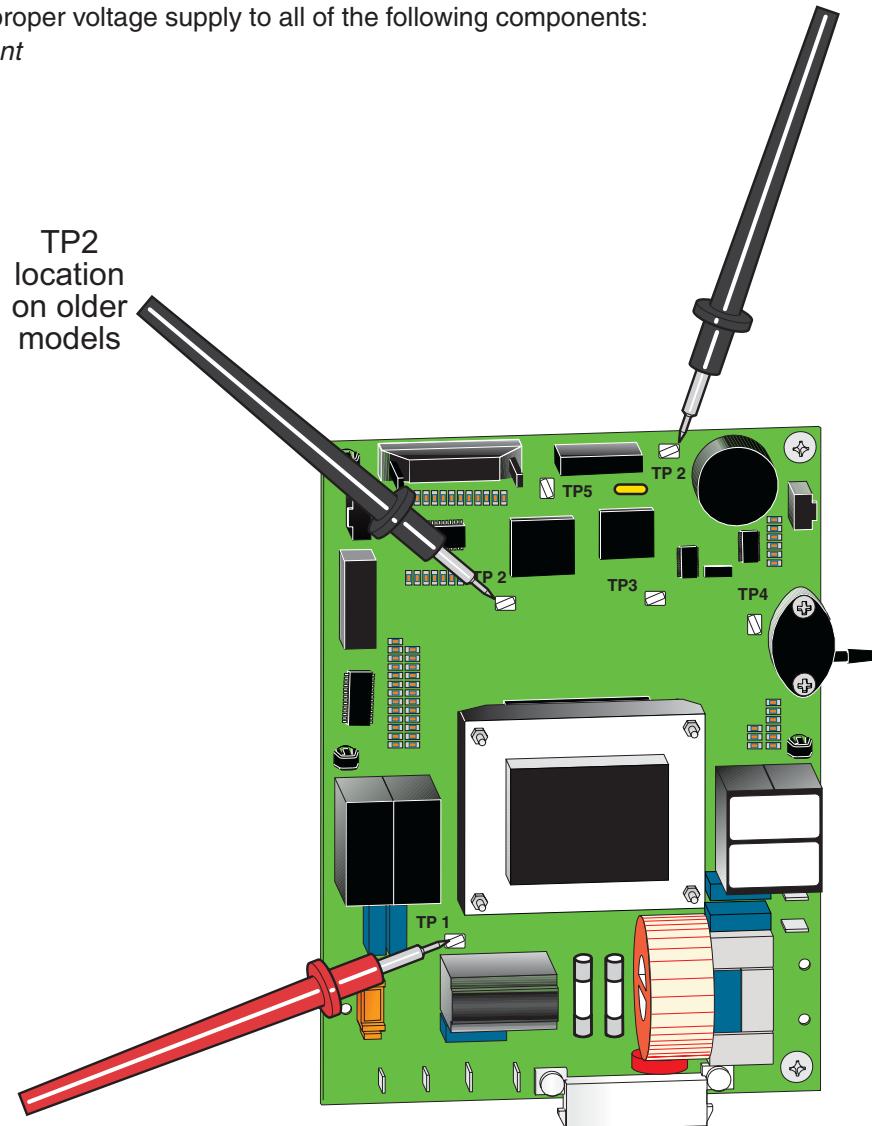
Component Testing & Repair

Main PC Board

PC Board Relay Test

This test checks for proper voltage supply to all of the following components:

- Heating Element
- Door Motor
- Fill Valve
- Vent Valve
- Air Valve



Refer To:

Cover Removal C-2

PC Board Relay Test

Step 1: Place meter probes on test points:
Black probe: TP2
Red probe: TP1

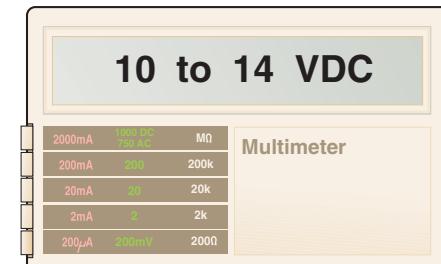
[Set meter to 20 VDC]

PC Board Relay Test

If reading is out of acceptable range...
Replace main PC board.

If reading is within acceptable range...
Main PC board is functioning properly

Acceptable Range:



SA110301

Main PC Board

Models:
Serial Numbers:

ALL

Component Testing & Repair

Main PC Board

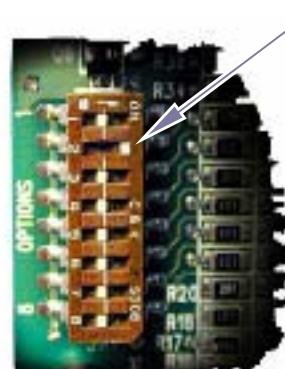
Replacement

Removal

Step 1: Tag and disconnect all wire harnesses from PC board.

Installation

Step 3: Connect all wire harnesses to PC board.



Installation

Step 4: Unplug power cord.
Move switch #2 to ON.
Reconnect power cord.

Installation

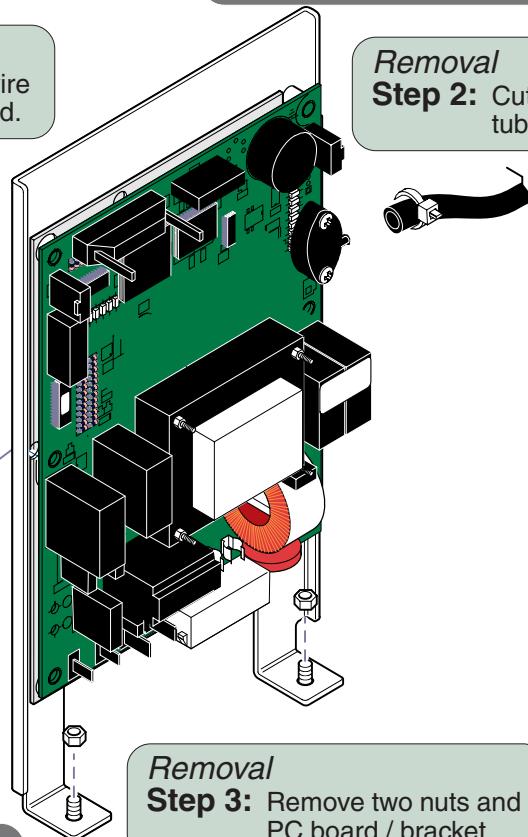
Step 6: Unplug power cord.
Move switch #2 to OFF.
Reconnect power cord.

Installation

Step 2: Connect tubing to pressure sensor.
Secure with a high temp. cable tie.

Removal

Step 2: Cut cable tie, then disconnect tubing from pressure sensor.



Removal

Step 3: Remove two nuts and
PC board / bracket.

Installation

Step 1: Install PC board / bracket.
Secure with two nuts

Refer To:

Cover Removal C-2

Installation

Step 5: Adjust the PC Board configuration by
following the prompts on the display panel.

Use the <+> <-> buttons to adjust settings.
Press the <P> button when finished.

CHAMBER SIZE:

M9/M9D 9 INCH
M11/M11D 11INCH

FEATURE SET:

M9/M11 FULLY FEATURED
M9D/M11D DEFEATURED



CHAMBER DIAMETER
9 INCH

FEATURE SET:
FULLY FEATURED

Models:
Serial Numbers:

ALL

Main PC Board

B-49

Component Testing & Repair

Printer (optional)

Paper Roll / Ink Cartridge Replacement

Replacement - Ink Cartridge

Step 4: Install printer cover.
Place printer into position.

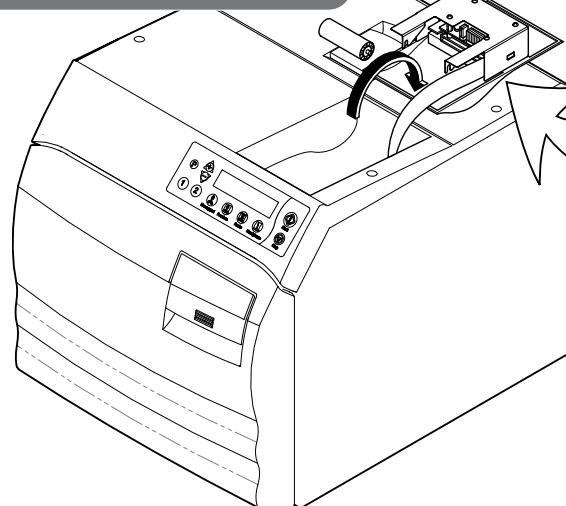
Replacement - Ink Cartridge

Step 3: Turn knob on cartridge
clockwise until ribbon is tight.

**Paper Feed
Button**

Replacement - Paper Roll

Step 2: Press Paper Feed button until 2-3 inches
of paper emerges from top of printer.



MA667100I

Models:
Serial Numbers:

Optional on all models

Printer

Paper Roll / Ink Cartridge

Replacement B-50

Printer Voltage Test B-51

Printer Replacement B-52

Printer Reset Procedure B-53

Wiring Diagrams D-1

Exploded View / Part Numbers E-18

Replacement - Ink Cartridge

Step 1: Remove printer cover.
Press down on side of cartridge marked **Eject**.

Replacement - Ink Cartridge

Step 2: Install new cartridge.

Note: The ribbon must be in front of the paper.
Be sure ribbon is flat against paper.

Slot

Replacement - Paper Roll
Step 3: Position spindle in notches.
Rotate roll to reduce slack.
Place printer into position.

Replacement - Paper Roll

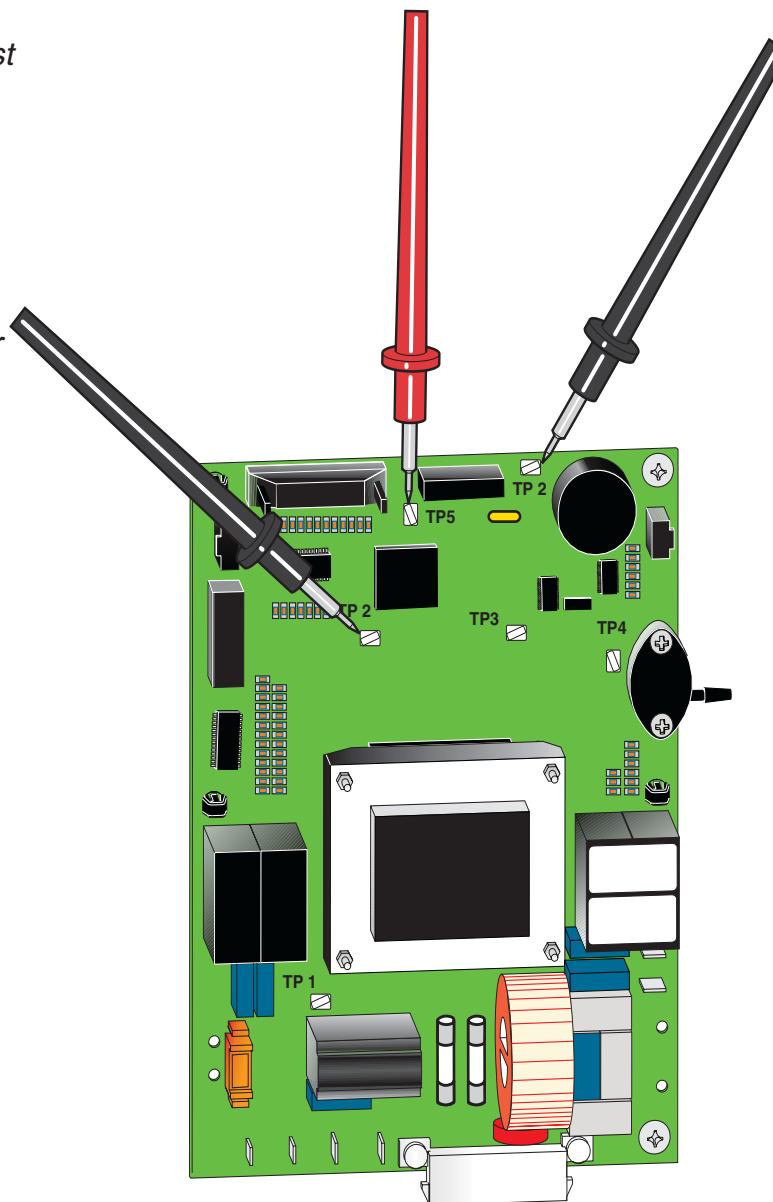
Step 1: Insert spindle thru new paper roll.
Unroll 2-3 in. of paper. (*Edge must be straight*)
Insert paper into slot until it stops.

Component Testing & Repair

Printer (optional)

Printer Voltage Test

TP2
location
on older
models



Printer Voltage Test

Step 1: Place meter probes on test points:
Black probe: TP2
Red probe: TP5

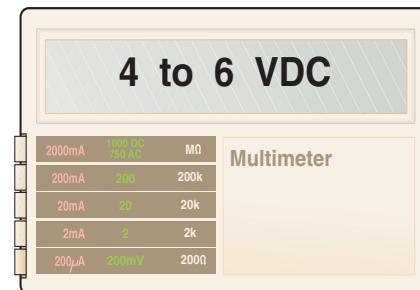
[Set meter to 20 VDC]

Printer Voltage Test

If reading is out of acceptable range...
Replace main PC board.

If reading is within acceptable range...
Replace printer and/or printer harness.

Acceptable Range:



SA110401

Models:
Optional on all models

Serial Numbers:

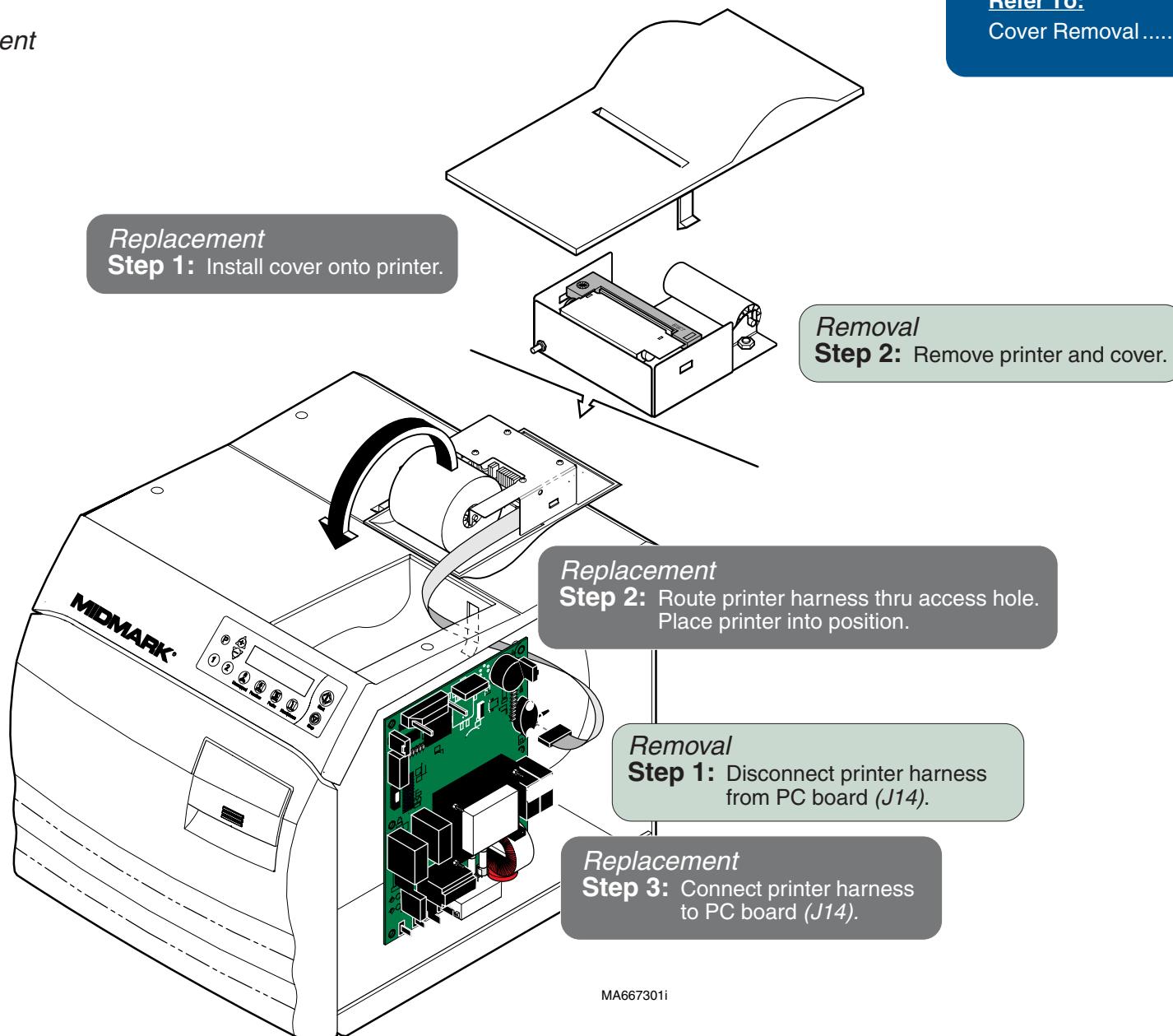
Printer

B-51

Component Testing & Repair

Printer (optional)

Replacement



Refer To:

Cover Removal

Page

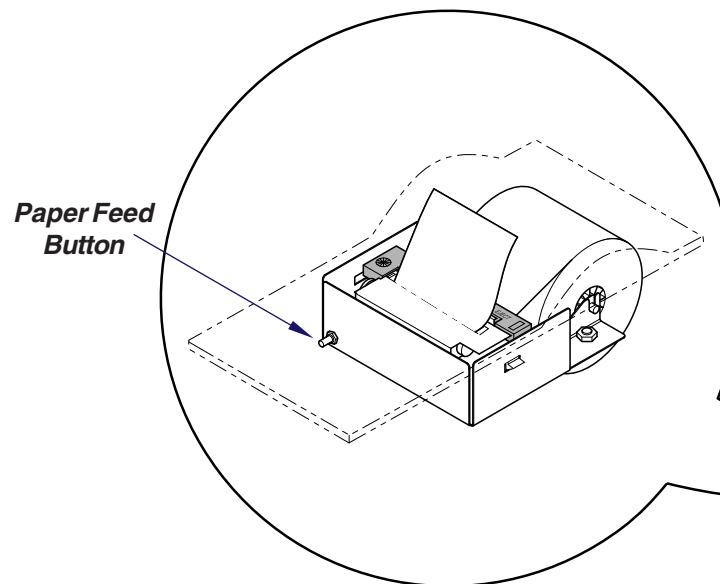
C-2

Component Testing & Repair

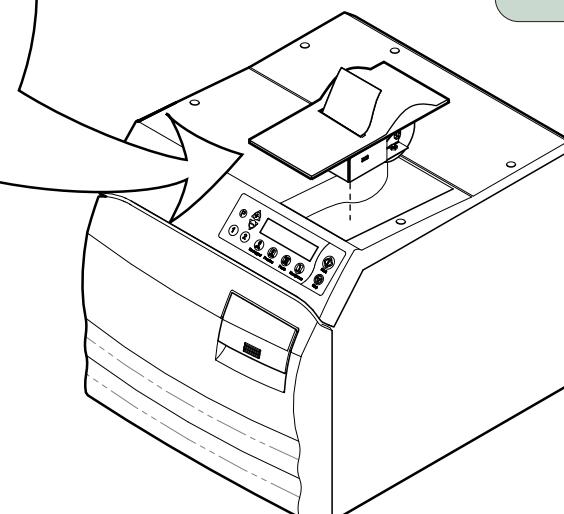
Printer (optional)

Printer Reset Procedure

Step 1: Unplug sterilizer from wall outlet.



Step 2: Press and hold paper feed button while plugging sterilizer into wall outlet.



Step 3: When test script begins to print, release paper feed button.



SA1771i

Models:
Serial Numbers:

Optional on all models

Printer

Adjusting the Dry Time

Adjusting the Dry Time

Step 2: Press the <P> button.



Adjusting the Dry Time

Step 1: Select the desired cycle.
(Unwrapped, Pouches, etc.)

Adjusting the Dry Time

Step 3: Press <+> or <-> button to adjust Dry Time.



ALL

Adjusting Dry Time

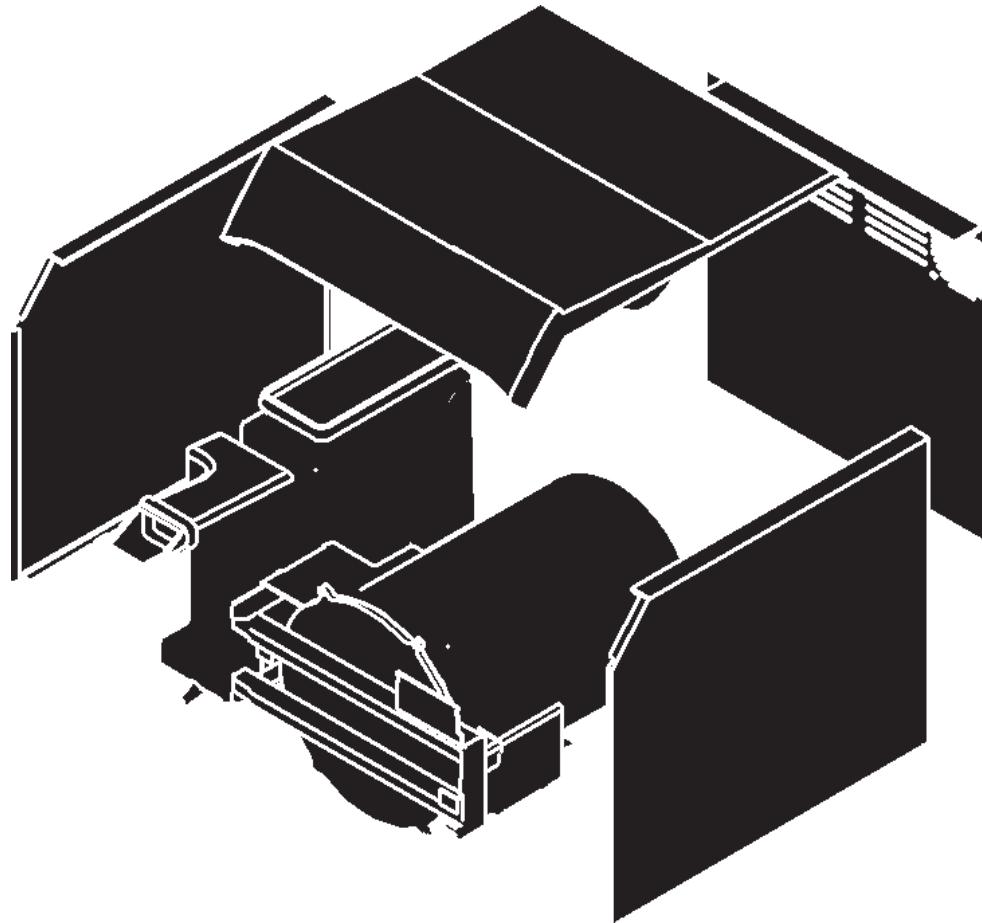
Refer To:

	Page
Operation & Troubleshooting	A-1
Component Testing / Repair	B-1
Access Procedures	C-1
Wiring Diagrams	D-1
Exploded Views / Part Numbers	E-1

Section C

Access Procedures

Removing & Installing:	Page
Covers / Panels	C-2
Tray Plate / Rack	C-3
Draining / Filling the Reservoir	C-4



Access Procedures

Covers / Panels

Removal / Installation

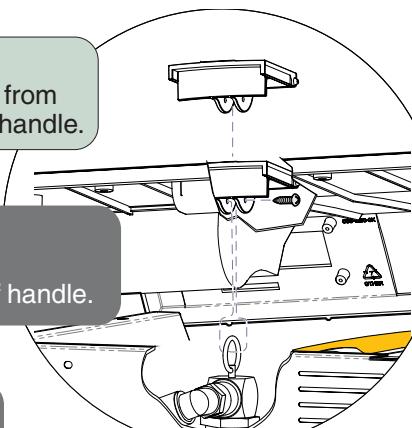


Caution

Always unplug power cord before removing any covers / panels.

Removal

Step 1: Remove screw from pressure relief handle.



Refer To:

	Page
Operation & Troubleshooting	A-1
Component Testing / Repair	B-1
Access Procedures	C-1
Wiring Diagrams	D-1
Exploded Views / Part Numbers	E-1

Installation

Step 1: Position top cover.
Connect pressure relief handle.

Installation

Step 3: Connect display panel harness to PC board (J3).
(If applicable) Install printer.

Removal

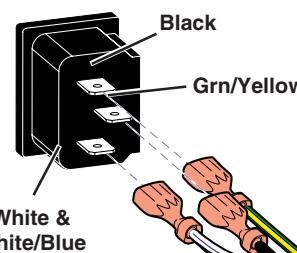
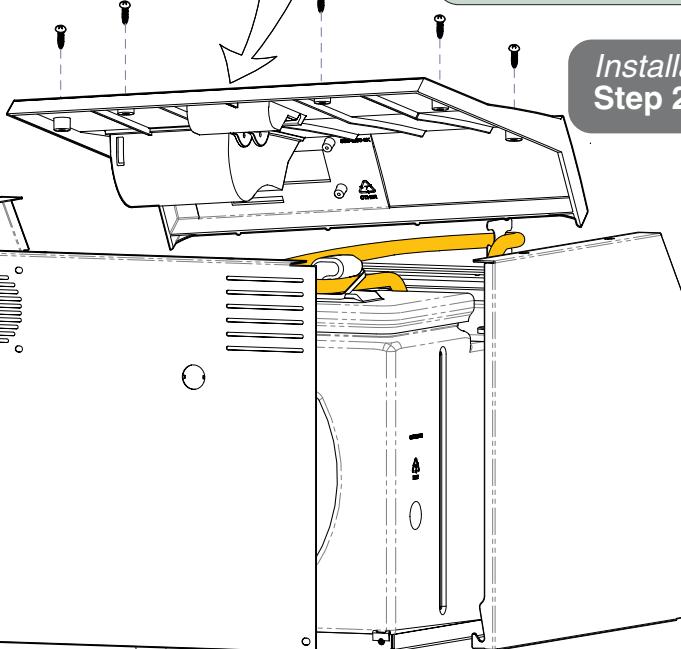
Step 2: Remove right side panel.
Disconnect display panel harness from PC board (J3).
(If applicable) Remove printer.

Removal

Step 3: Remove remaining screws from top cover.
Remove top cover left side panel.

Installation

Step 2: Install left and back panels.



Removal

Step 4: Disconnect wires from the receptacle and the fan motor.
Remove back panel.

Installation

Step 4: Connect wires to receptacle & fan.
Install right side panel

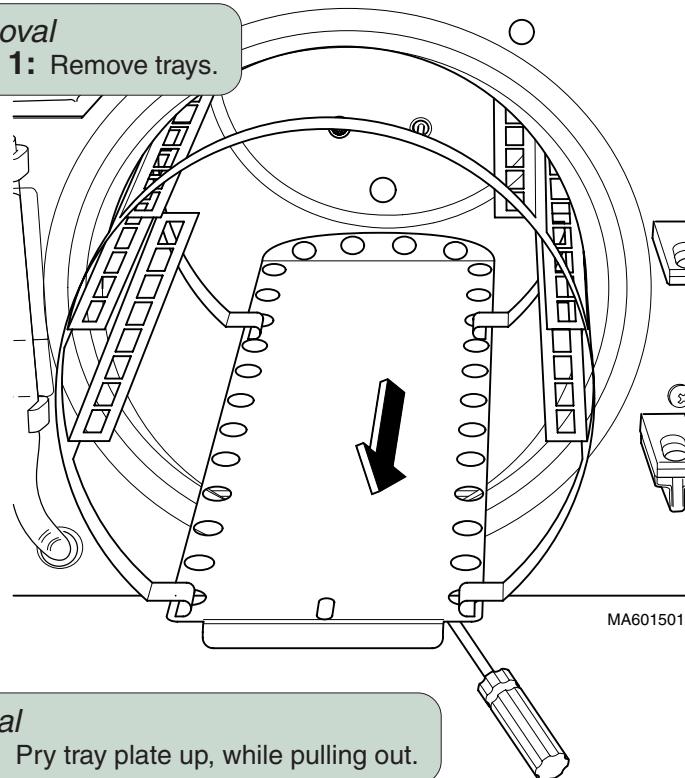
Access Procedures

Tray Plate / Rack

Removal / Installation

**Caution**

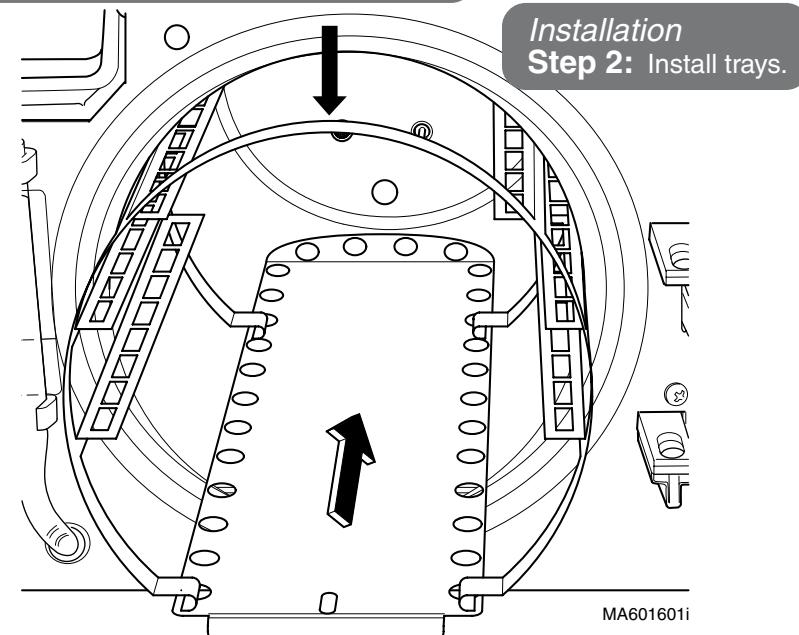
Always allow unit to cool before removing trays or rack.

**Removal
Step 1:** Remove trays.**Removal
Step 2:** Pry tray plate up, while pulling out.**Refer To:****Page**

Operation & Troubleshooting	A-1
Component Testing / Repair	B-1
Access Procedures	C-1
Wiring Diagrams	D-1
Exploded Views / Part Numbers	E-1

**Equipment Alert**

Install tray plate with the angled end toward the back. Do **not** allow the tray plate to contact the water level sensor.

Installation**Step 1:** Place back edge of tray in chamber. Press down on top of rack while sliding into chamber.**Installation
Step 2:** Install trays.

Models:
Serial Numbers:

ALL

Tray Plate / Rack

Access Procedures

Draining / Filling the Reservoir

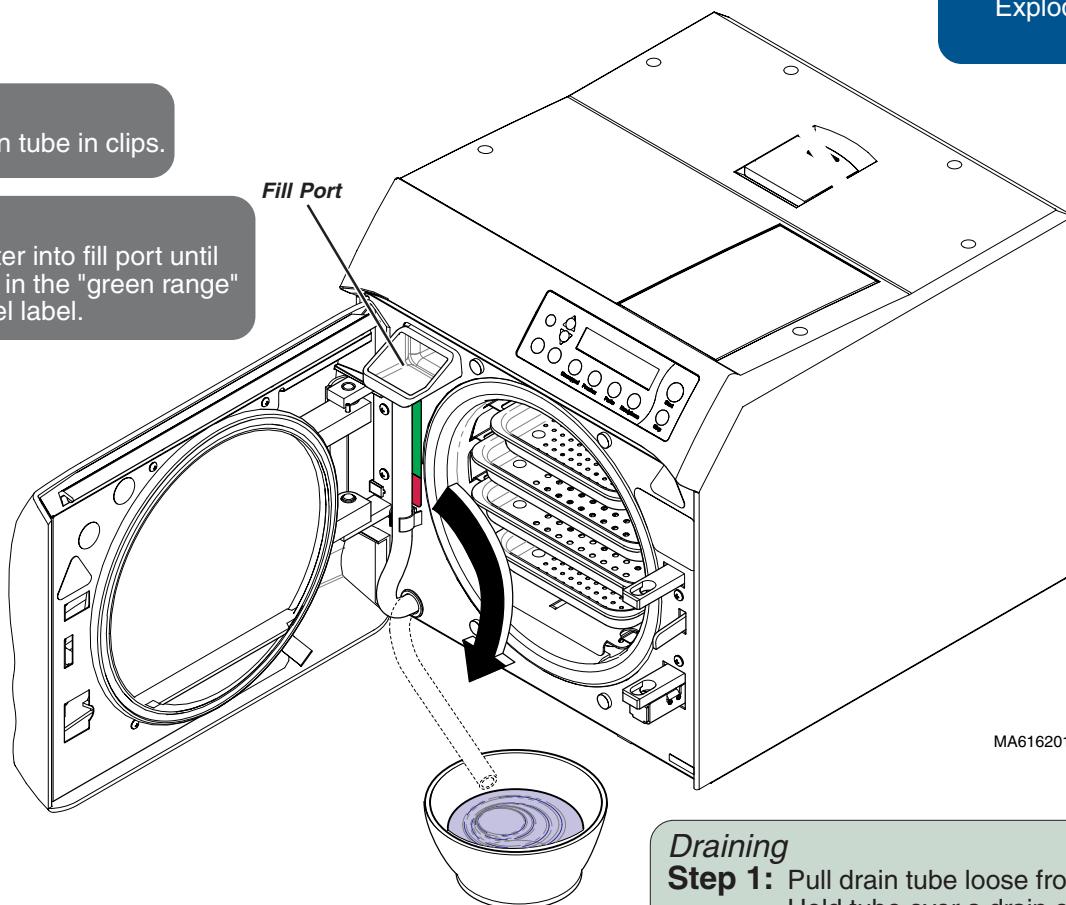
Refer To:	Page
Operation & Troubleshooting	A-1
Component Testing / Repair	B-1
Access Procedures	C-1
Wiring Diagrams	D-1
Exploded Views / Part Numbers	E-1

Filling

Step 1: Secure drain tube in clips.

Filling

Step 2: Pour distilled water into fill port until the water level is in the "green range" on the the fill level label.



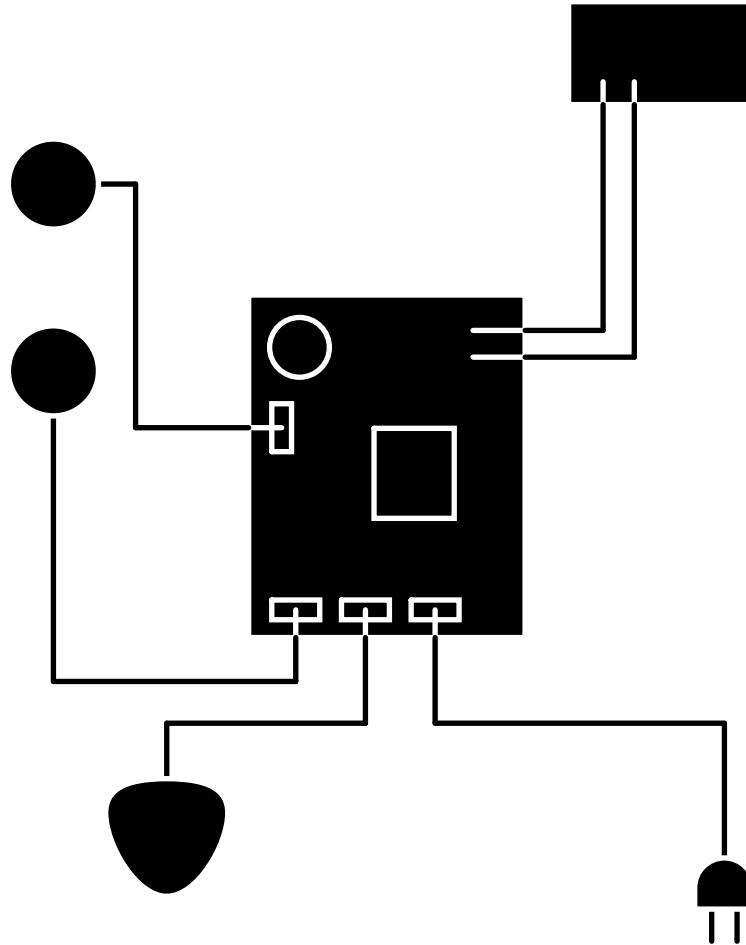
Draining

Step 1: Pull drain tube loose from clips. Hold tube over a drain or suitable container to empty resrevoir.

Note: The max. reservoir capacity is:
M9: 1.1 gallon (4.1 liters)
M11: 1.4 gallon (5.3 liters)

Section D

Wiring & Flow Diagrams



<u>Model</u>	<u>Page</u>
M9 (-020 / -021 / -022):	
<i>Wiring Diagram</i>	D-2
<i>Flow Diagram</i>	D-4
M9D (-020 / -022):	
<i>Wiring Diagram</i>	D-3
<i>Flow Diagram</i>	D-4
M11 (-020 / -021 / -022):	
<i>Wiring Diagram</i>	D-2
<i>Flow Diagram</i>	D-4
M11D (-020 / -022):	
<i>Wiring Diagram</i>	D-3
<i>Flow Diagram</i>	D-4

Wiring Diagrams

Refer To:	Page
Operation & Troubleshooting	A-1
Component Testing / Repair	B-1
Access Procedures	C-1
Wiring Diagrams	D-1
Exploded Views / Part Numbers	E-1



Equipment Alert

Line voltage is present between Ground and Heater terminals L1 and L/N2 PCB connections at all times.

Fuses:

115 VAC models:

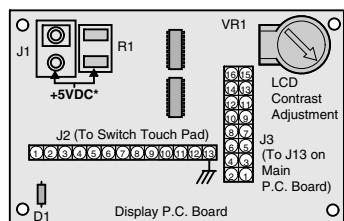
- F1 0.250 amp, 250 V, Slo-Blo, 1/4" x 1-1/4"
- F2 15 amp, 250 V, Fast-Acting, 1/4" x 1-1/4"

230 VAC models:

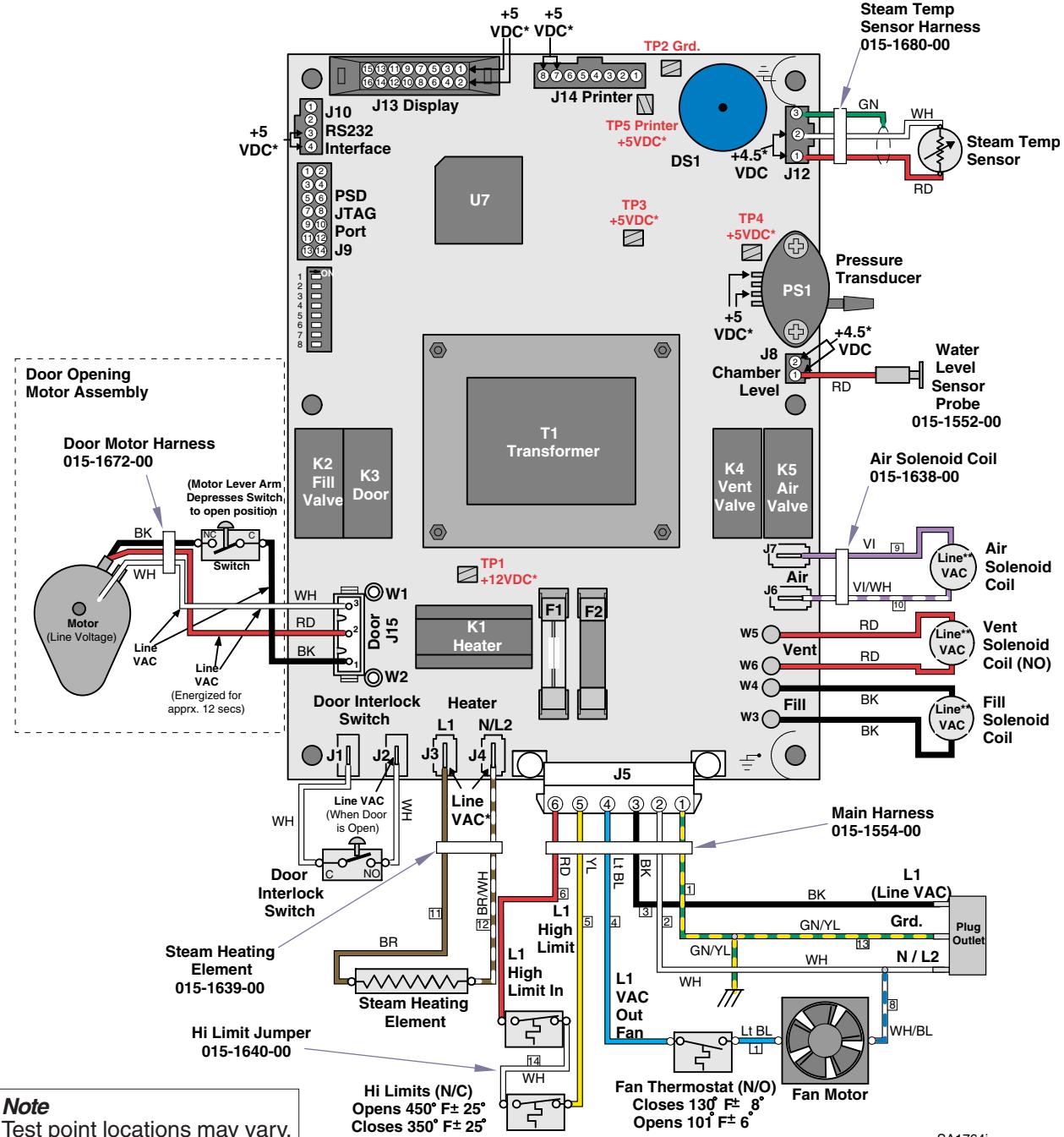
- F1 0.125 amp, 250 V, Slo-Blo, 5mm x 20mm
- F2 8 amp, 250 V, Fast-Acting, 5mm x 20mm

* Constant Voltage
** Voltage Present Only During Component Operation
*** Rectified DC Voltage Only Present During Operation

Note: Disconnect plug connector when checking voltage.



Note
Test point locations may vary.



SA1764i

Wiring Diagrams

Refer To:	Page
Operation & Troubleshooting	A-1
Component Testing / Repair	B-1
Access Procedures	C-1
Wiring Diagrams	D-1
Exploded Views / Part Numbers	E-1



Equipment Alert

Line voltage is present between Ground and Heater terminals L1 and L/N2 PCB connections at all times.

Fuses:

115 VAC models:

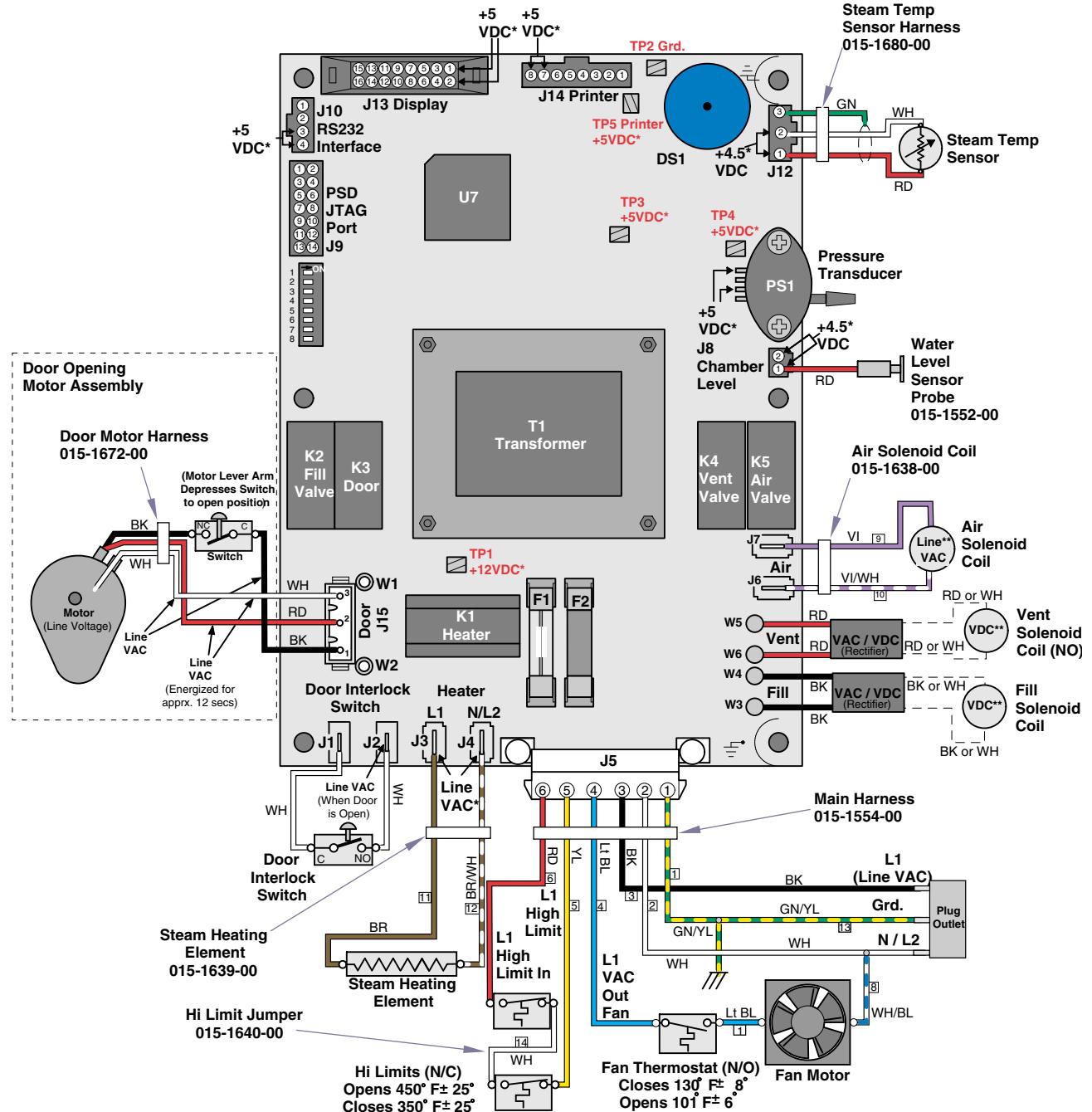
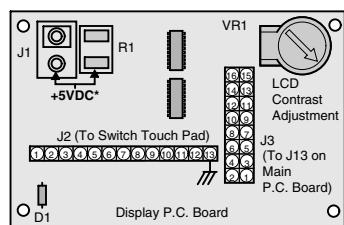
- F1 0.250 amp, 250 V, Slo-Blo, 1/4" x 1-1/4"
- F2 15 amp, 250 V, Fast-Acting, 1/4" x 1-1/4"

230 VAC models:

- F1 0.125 amp, 250 V, Slo-Blo, 5mm x 20mm
- F2 8 amp, 250 V, Fast-Acting, 5mm x 20mm

* Constant Voltage
** Voltage Present Only
During Component Operation
*** Rectified DC Voltage Only
Present During Operation

Note: Disconnect plug connector when checking voltage.



SA1762i

Models:
Serial Numbers:

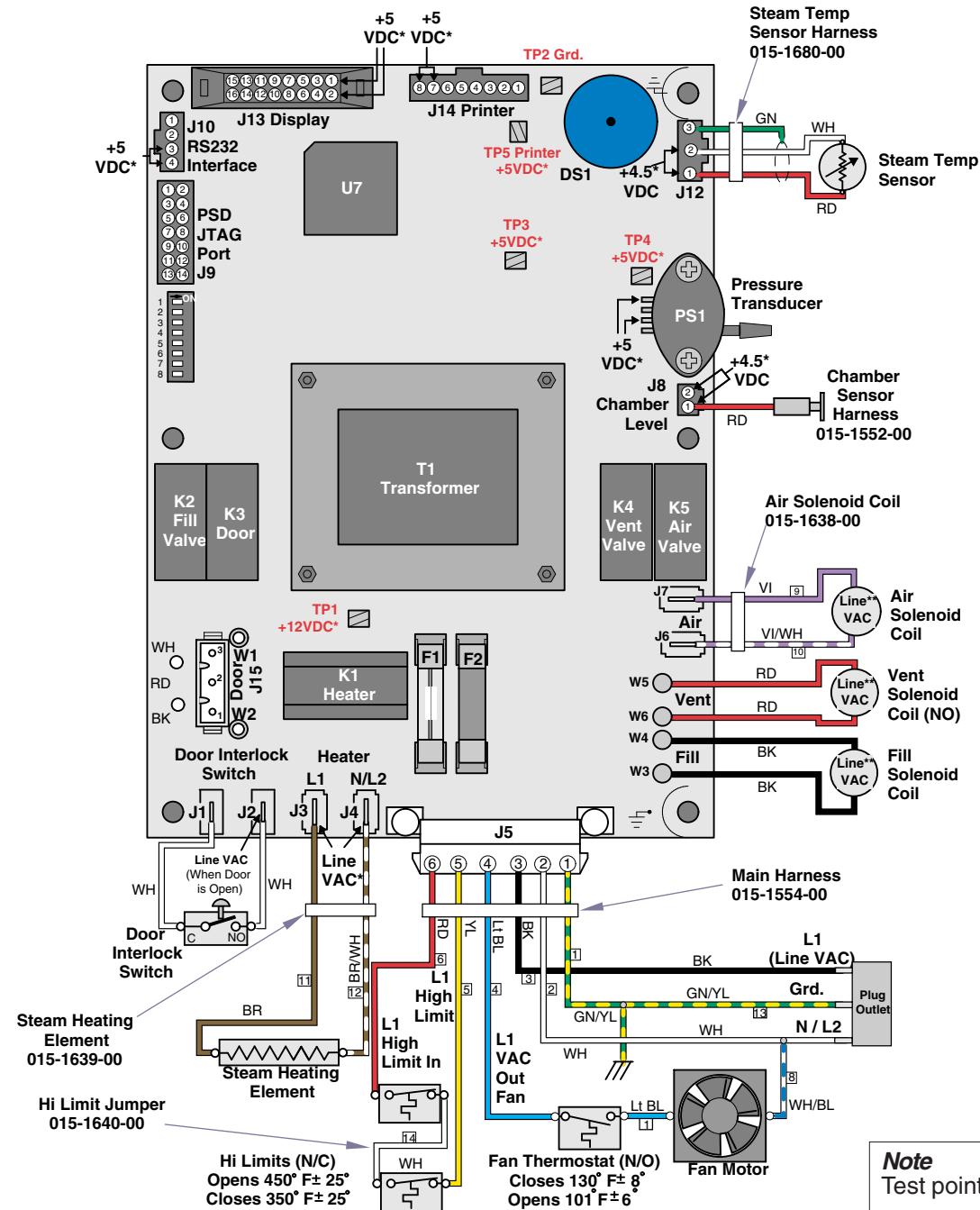
M9 (-020/-021/-022)
Later Models

M11 (-020/-021/-022)
Later Models

Wiring Diagrams

D-3

Wiring Diagrams



Refer To:	Page
Operation & Troubleshooting	A-1
Component Testing / Repair	B-1
Access Procedures	C-1
Wiring Diagrams	D-1
Exploded Views / Part Numbers	E-1



Equipment Alert

Line voltage is present between Ground and Heater terminals L1 and L/N2 PCB connections at all times.

Fuses:

115 VAC models:

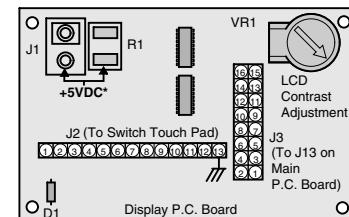
- F1 0.250 amp, 250 V, Slo-Blo, 1/4" x 1-1/4"
F2 15 amp, 250 V, Fast-Acting, 1/4" x 1-1/4"

230 VAC models:

- F1 0.125 amp, 250 V, Slo-Blo, 5mm x 20mm
F2 8 amp, 250 V, Fast-Acting, 5mm x 20mm

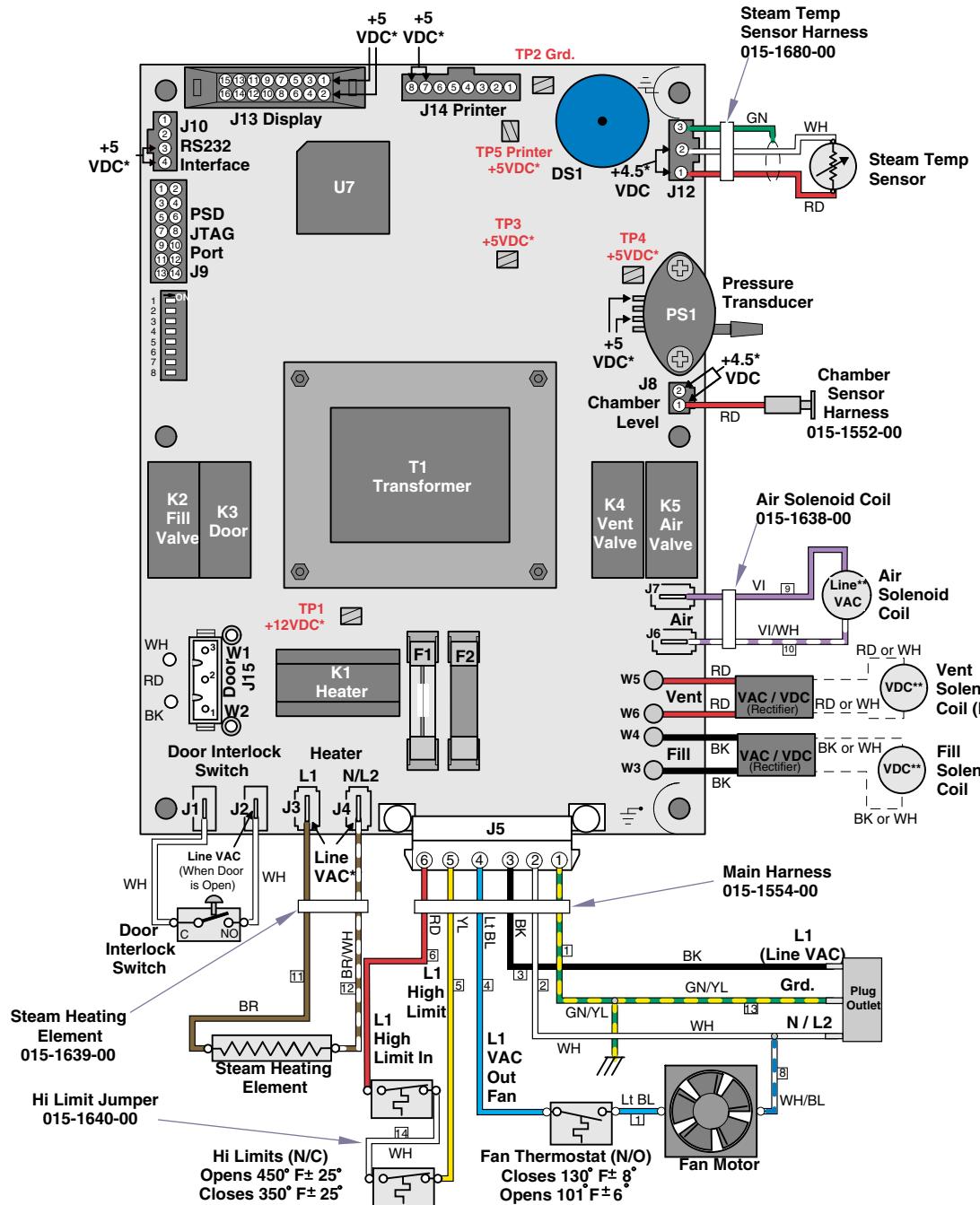
* Constant Voltage
** Voltage Present Only During Component Operation
*** Rectified DC Voltage Only Present During Operation

Note: Disconnect plug connector when checking voltage.



SA1765i

Wiring Diagrams



Refer To:	Page
Operation & Troubleshooting	A-1
Component Testing / Repair	B-1
Access Procedures	C-1
Wiring Diagrams	D-1
Exploded Views / Part Numbers	E-1

Equipment Alert
Line voltage is present between
Ground and Heater terminals
L1 and L/N2 PCB connections at all times.

Fuses:

115 VAC models:

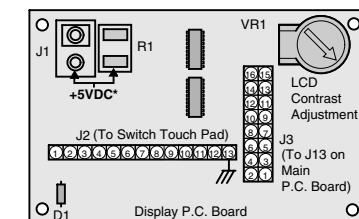
- F1 0.250 amp, 250 V, Slo-Blo, 1/4" x 1-1/4"
F2 15 amp, 250 V, Fast-Acting, 1/4" x 1-1/4"

230 VAC models:

- F1 0.125 amp, 250 V, Slo-Blo, 5mm x 20mm
F2 8 amp, 250 V, Fast-Acting, 5mm x 20mm

* Constant Voltage
** Voltage Present Only
*** Rectified DC Voltage Only
Present During Operation

Note: Disconnect plug connector
when checking voltage.



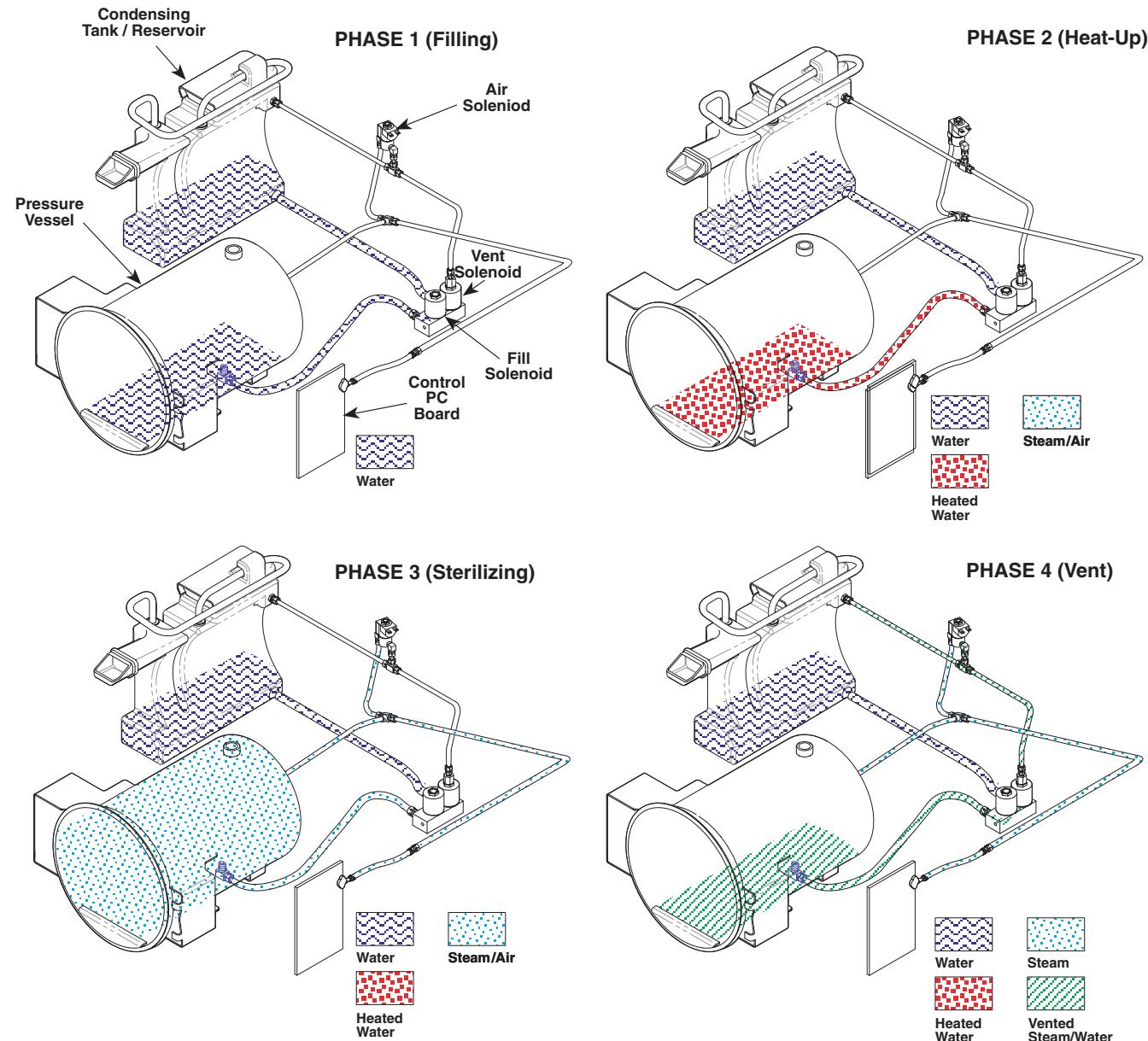
SA1763i

Wiring Diagrams

Flow Diagrams

Refer To:	Page
Operation & Troubleshooting	A-1
Component Testing / Repair	B-1
Access Procedures	C-1
Wiring Diagrams	D-1
Exploded Views / Part Numbers	E-1

This diagram illustrates the flow of water, heated water, steam, and vented steam thru the sterilizer during each phase of a cycle.



MA618600

Flow Diagrams

Models:
Serial Numbers:

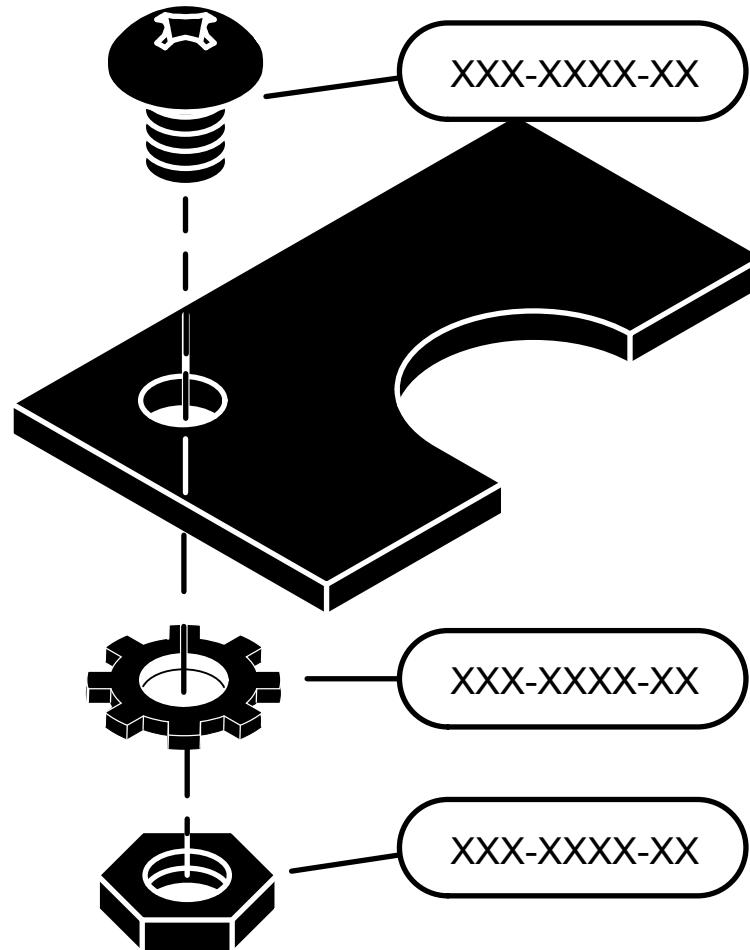
ALL

Section E

U

Exploded Views & Parts Lists

Model	Page
M9 (-020 / -021 / -022)	E-2
M9D (-020 / -022)	E-3
M11 (-020 / -021 / -022)	E-2
M11D (-020 / -022)	E-3



M9(-020/-021/-022) / M11(-020/-021/-022)

Main Enclosure

M9 E-4
M11 E-5

*includes:
panels (top / side / back / bottom)*

Touch Pad & Display Panel

..... E-15

Door Components

*includes:
door cover & gaskets*

Door Motor System

.... E-14*

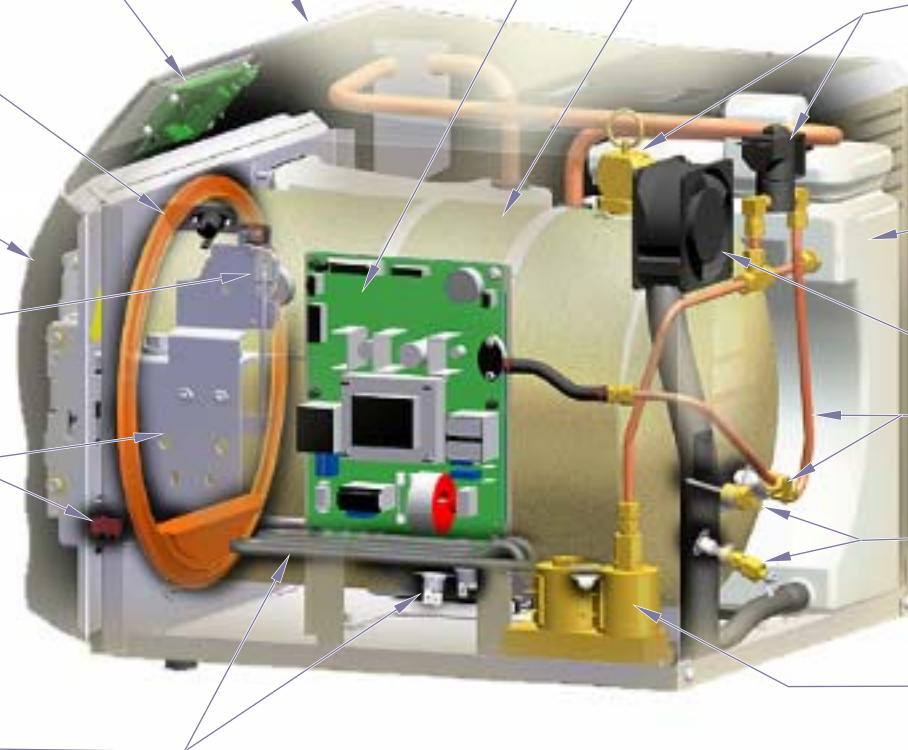
Chamber & Door Latch

..... E-7

*includes:
door switch & filter screens*

Heating Element & Hi-Limit Thermostats

..... E-12



Main PC Board

..... E-16

*includes:
fuses & mounting bracket*

Chamber & Door Latch

..... E-7

*includes:
door switch & filter screens*

Sensors & Valves

..... E-9

*includes:
temp probe, water level sensor,
air valve, & pressure relief valve*

Reservoir Tank

..... E-8

*includes:
condensing coil & drain tube*

Fan System

..... E-13

*includes:
Power Cord*

Tubing & Fittings

..... E-11

Sensors & Valves

..... E-9

*includes:
temp probe, water level sensor,
air valve, & pressure relief valve*

Fill / Vent Valve

..... E-10

Printer (optional)

..... E-18

Trays & Racks

..... E-17

Packaging:

M9 E-20

M11 E-21

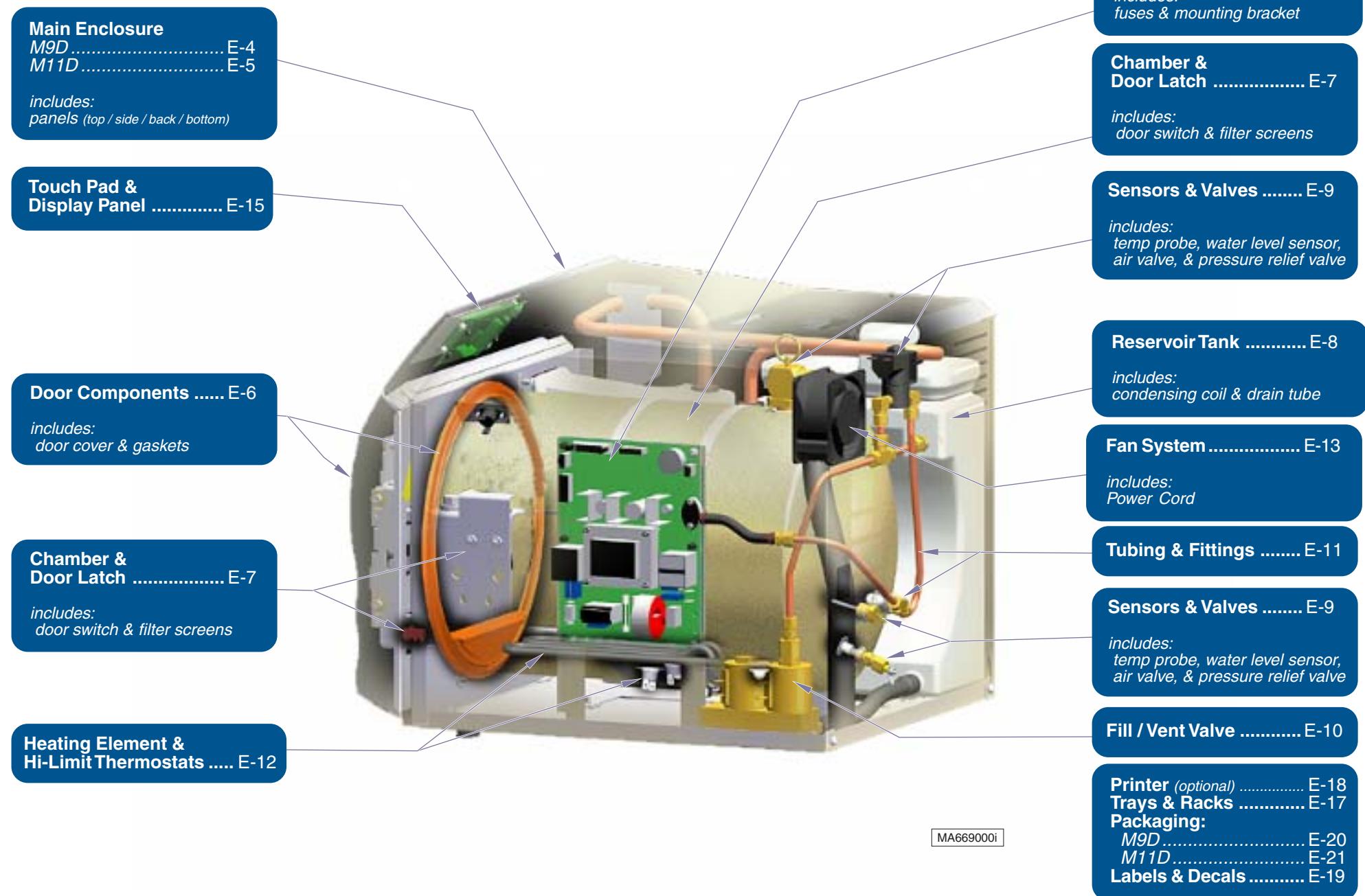
Labels & Decals

..... E-19

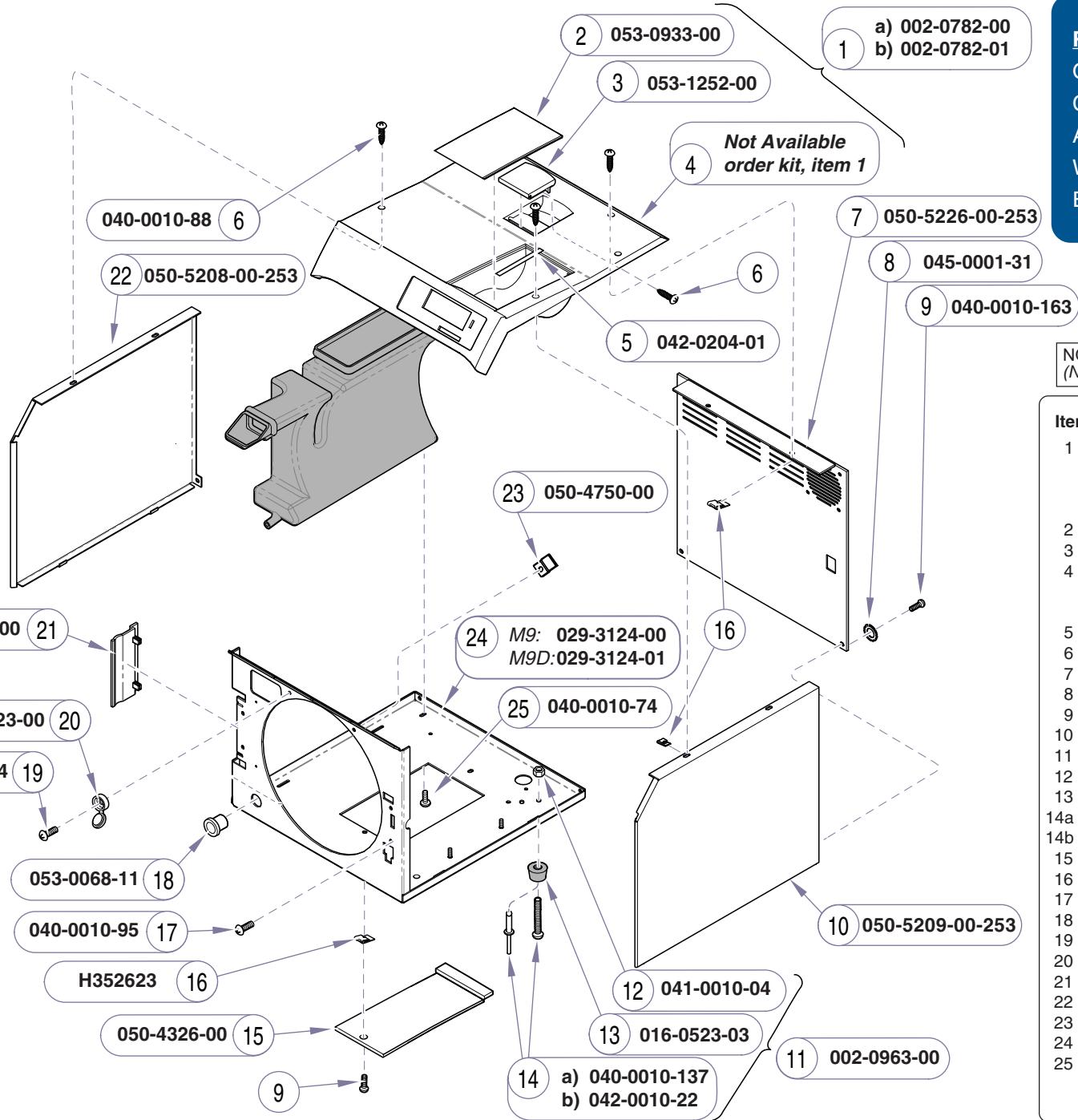
MA668900i

* Indicates multiple pages due to a serial number break for the parts illustration

M9D(-020/-022) / M11D(-020/-022)



* Indicates multiple pages due to a serial number break for the parts illustration



Refer To:

- | | |
|-----------------------------------|-----|
| Operation & Troubleshooting | A-1 |
| Component Testing / Repair | B-1 |
| Access Procedures | C-1 |
| Wiring Diagrams | D-1 |
| Exploded Views / Part Numbers .. | E-1 |

NOTE: All smooth panels are No Longer Available (N.L.A.) and are replaced by textured panels.

Item	Description	Qty.
1	Top Cover Assy. (includes items 2 thru 5 and touch pad, located on page E-15, item #1)	
a)	Midmark	1
b)	Ritter	1
2	• Cover Plate	1
3	• Pressure Relief Handle	1
4	• Top Cover: a) Midmark (order item 1), b) Ritter (order item 1)	
5	• Adhesive Strip	3
6	Screw (#10 x 1 -1/4")	7
7	Back Panel	1
8	Lockwasher	3
9	Screw (#10 x 1/2", self-tapping)	3
10	Side Panel (right)	1
11	Leveling Foot Kit (incl. items 12 thru 14a) ..	1
12	• Nut (#10-24 [early units only])	10
13	• Leveling Foot	4
14a	• Leveling Screw (early units only)	4
14b	Rivet	4
15	Inspection Cover	1
16	Tinnerman Clip	9
17	Screw (#10-24 x 5/8")	4
18	Bushing	1
19	Screw (#24 x 3/8")	2
20	Screw Cover (early units only)	2
21	Hinge Cover	1
22	Side Panel (left)	1
23	Flange Clamp	4
24	Base Panel	1
25	Screw (#10-32 x 3/8")	4

Always Specify Model & Serial Number

Main Enclosure
(M9/M9D)

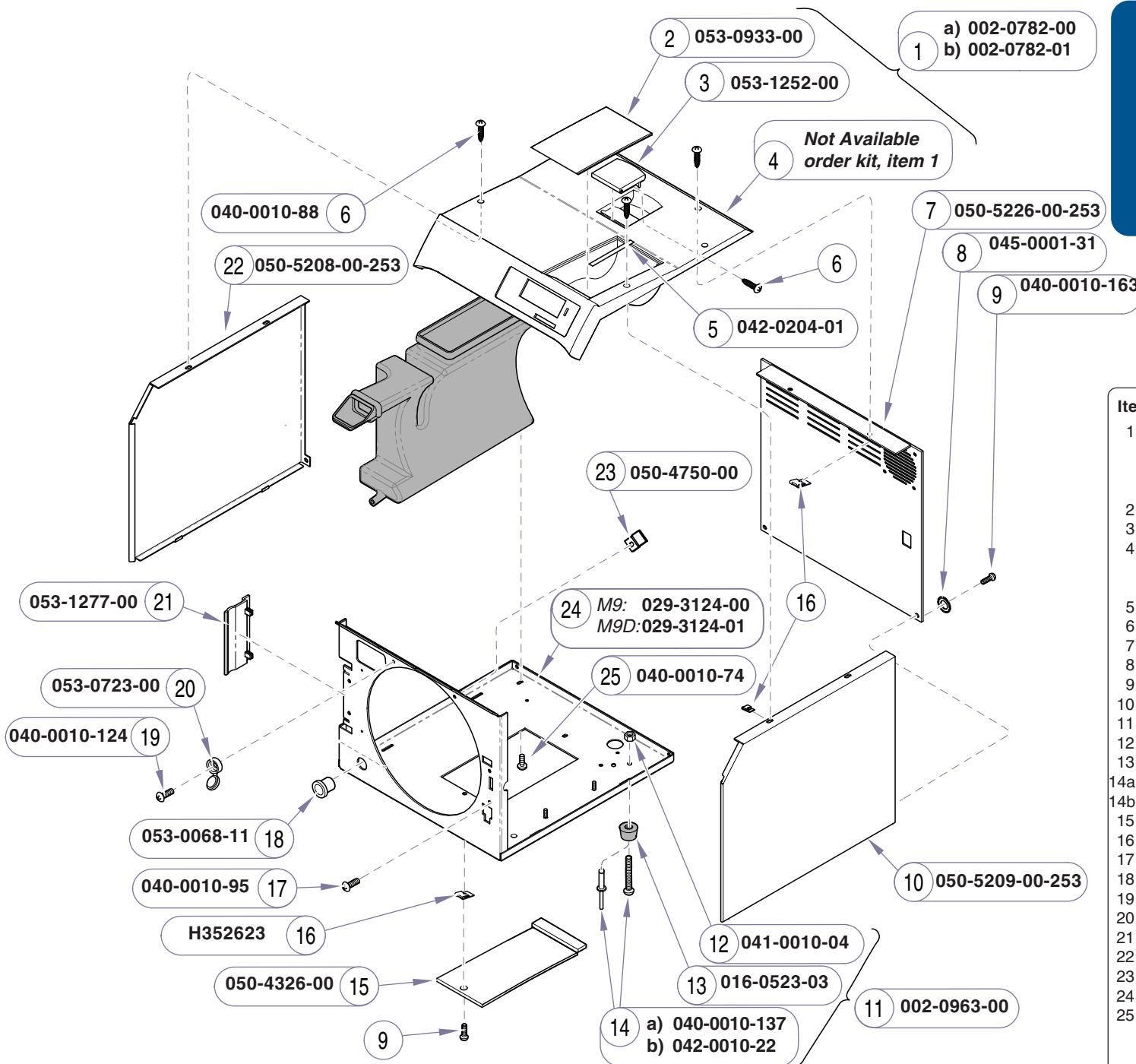
Models:
Serial Numbers:

M9 (-020 thru -022)
RN, RP, RR All

M9D (-020 & -022)
RW, RX All

M9 (-020 thru -022)
V1000 to V659209

M9D (-020 & -022)
V1000 to V659209



<u>Refer To:</u>	<u>Page</u>
Operation & Troubleshooting	A-1
Component Testing / Repair	B-1
Access Procedures	C-1
Wiring Diagrams	D-1
Exploded Views / Part Numbers ..	E-1

Item	Description	Qty.
1	Top Cover Assy. (includes items 2 thru 5 and touch pad, located on page E-15, item #1)	
a) Midmark	1	
b) Ritter	1	
2	• Cover Plate	1
3	• Pressure Relief Handle	1
4	• Top Cover: a) Midmark (Order item 1)	NA
	b) Ritter (Order item 1)	NA
5	• Adhesive Strip	3
6	Screw (#10 x 1 -1/4")	7
7	Back Panel	1
8	Lockwasher	3
9	Screw (#10 x 1/2", self-tapping)	3
10	Side Panel (right)	1
11	Leveling Foot Kit (incl. items 12 thru 14a) ..	1
12	• Nut (#10-24 [early units only])	10
13	• Leveling Foot	4
14a	• Leveling Screw (early units only)	4
14b	Rivet	4
15	Inspection Cover	1
16	Tinnerman Clip	9
17	Screw (#10-24 x 5/8")	4
18	Bushing	1
19	Screw (#24 x 3/8")	2
20	Screw Cover (early units only)	2
21	Hinge Cover	1
22	Side Panel (left)	1
23	Flange Clamp	4
24	Base Panel	1
25	Screw (#10-32 x 3/8")	4

Always Specify Model & Serial Number

MA593407I

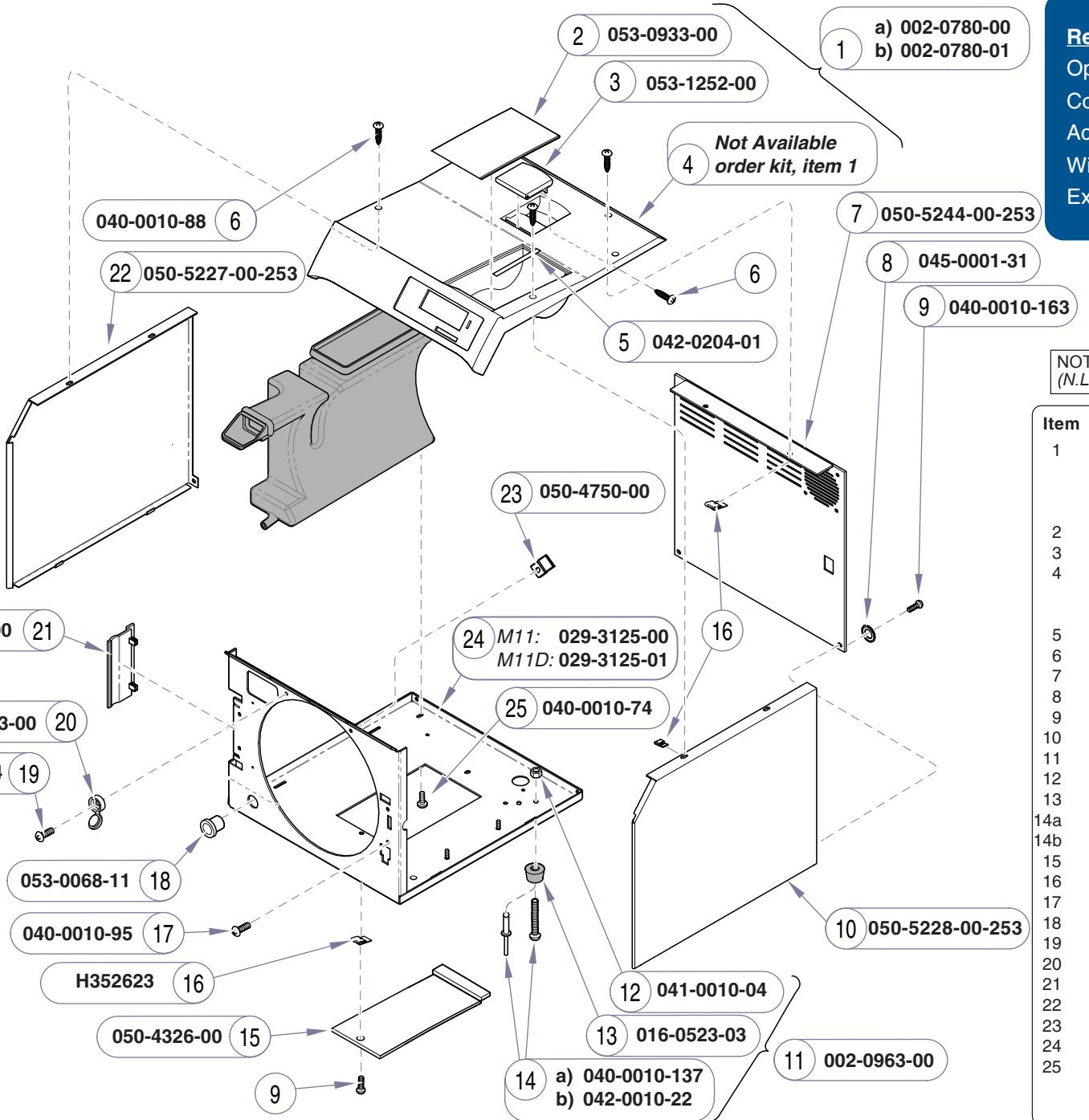
Models:
Serial Numbers:

M9 (-020 thru -022)
V659210 to Present

M9D (-020 thru -022)
V659210 to Present

Main Enclosure
(M9/M9D)

E-4.1



Refer To:	Page
Operation & Troubleshooting	A-1
Component Testing / Repair	B-1
Access Procedures	C-1
Wiring Diagrams	D-1
Exploded Views / Part Numbers ..	E-1

Item	Description	Qty.
1	Top Cover Assy. (includes items 2 thru 5 and touch pad, located on page E-15, item #1)	1
a)	Midmark	1
b)	Ritter	1
2	• Cover Plate	1
3	• Pressure Relief Handle	1
4	• Top Cover: a) Midmark (Order item 1)	NA
	b) Ritter (Order item 1)	NA
5	• Adhesive Strip	3
6	Screw (#10 x 1 -1/4")	7
7	Back Panel	1
8	Lockwasher	3
9	Screw (#10 x 1/2", self-tapping)	3
10	Side Panel (right)	1
11	Leveling Foot Kit (incl. items 12 thru 14a) ..	1
12	• Nut (#10-24 [early units only])	10
13	• Leveling Foot	4
14a	• Leveling Screw (early units only)	4
14b	Rivet	4
15	Inspection Cover	1
16	Tinnerman Clip	9
17	Screw (#10-24 x 5/8")	4
18	Bushing	1
19	Screw (#24 x 3/8")	2
20	Screw Cover (early units only)	2
21	Hinge Cover	1
22	Side Panel (left)	1
23	Flange Clamp	4
24	Base Panel	1
25	Screw (#10-32 x 3/8")	4

Always Specify Model & Serial Number

MA593406i

Main Enclosure
(M11/M11D)

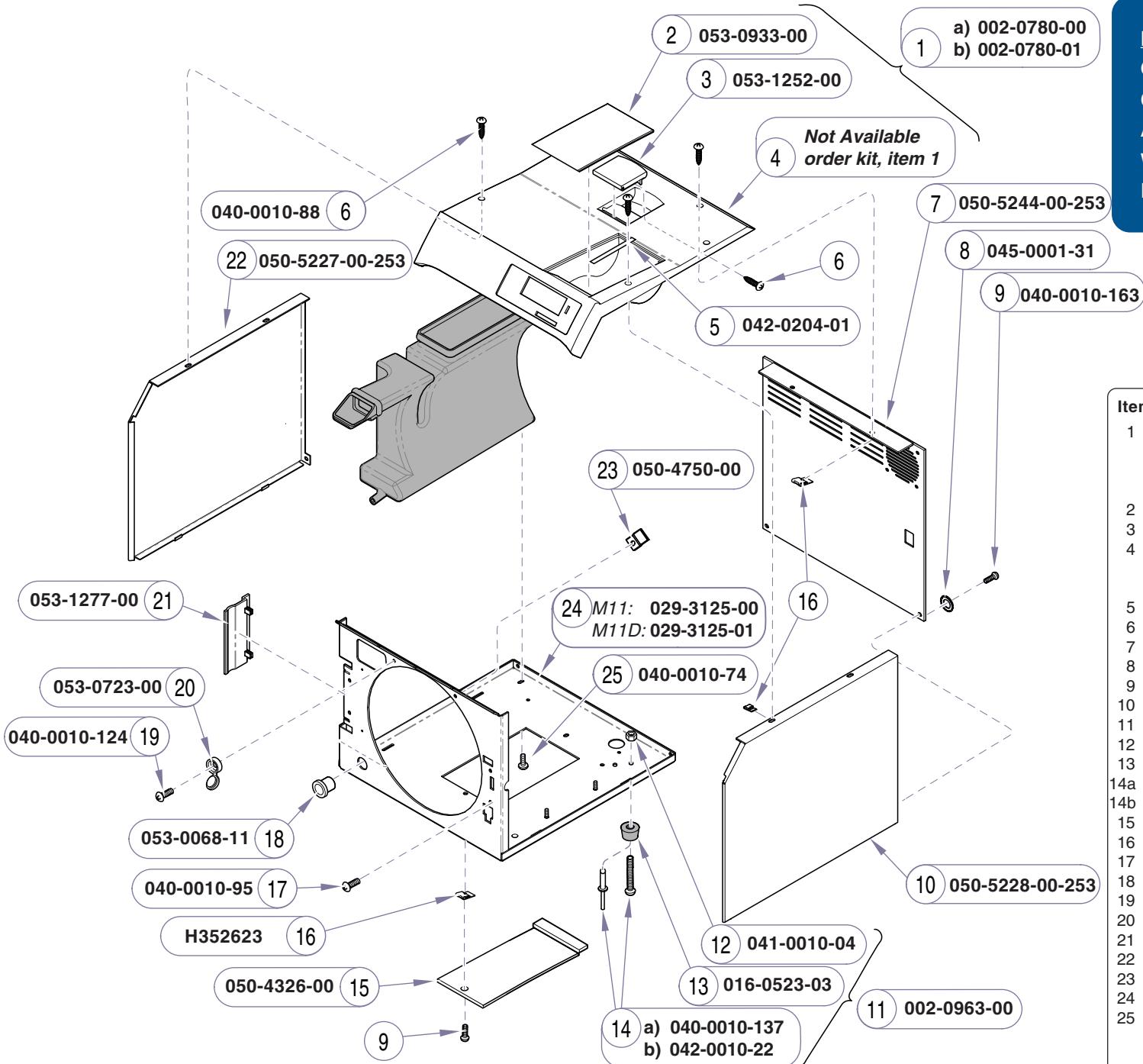
Models:
Serial Numbers:

M11 (-020 thru -022)
RS, RT, RV All

M11D (-020 thru -022)
RY, RZ, All

M11 (-020 thru -022)
V1000 to V655564

M11D (-020 thru -022)
V1000 to V655564



Item	Description	Qty.
1	Top Cover Assy. (includes items 2 thru 5 and touch pad, located on page E-15, item #1)	
2	a) Midmark	1
	b) Ritter	1
3	• Cover Plate	1
4	• Pressure Relief Handle	1
5	• Top Cover:	
	a) Midmark (Order item 1)	NA
	b) Ritter (Order item 1)	NA
6	• Adhesive Strip	3
6	Screw (#10 x 1 -1/4")	7
7	Back Panel	1
8	Lockwasher	3
9	Screw (#10 x 1/2", self-tapping)	3
10	Side Panel (right)	1
11	Leveling Foot Kit (incl. items 12 thru 14a) ..	1
12	• Nut (#10-24 [early units only])	10
13	• Leveling Foot	4
14a	• Leveling Screw (early units only)	4
14b	Rivet	4
15	Inspection Cover	1
16	Tinnerman Clip	9
17	Screw (#10-24 x 5/8")	4
18	Bushing	1
19	Screw (#24 x 3/8")	2
20	Screw Cover (early units only)	2
21	Hinge Cover	1
22	Side Panel (left)	1
23	Flange Clamp	4
24	Base Panel	1
25	Screw (#10-32 x 3/8")	4

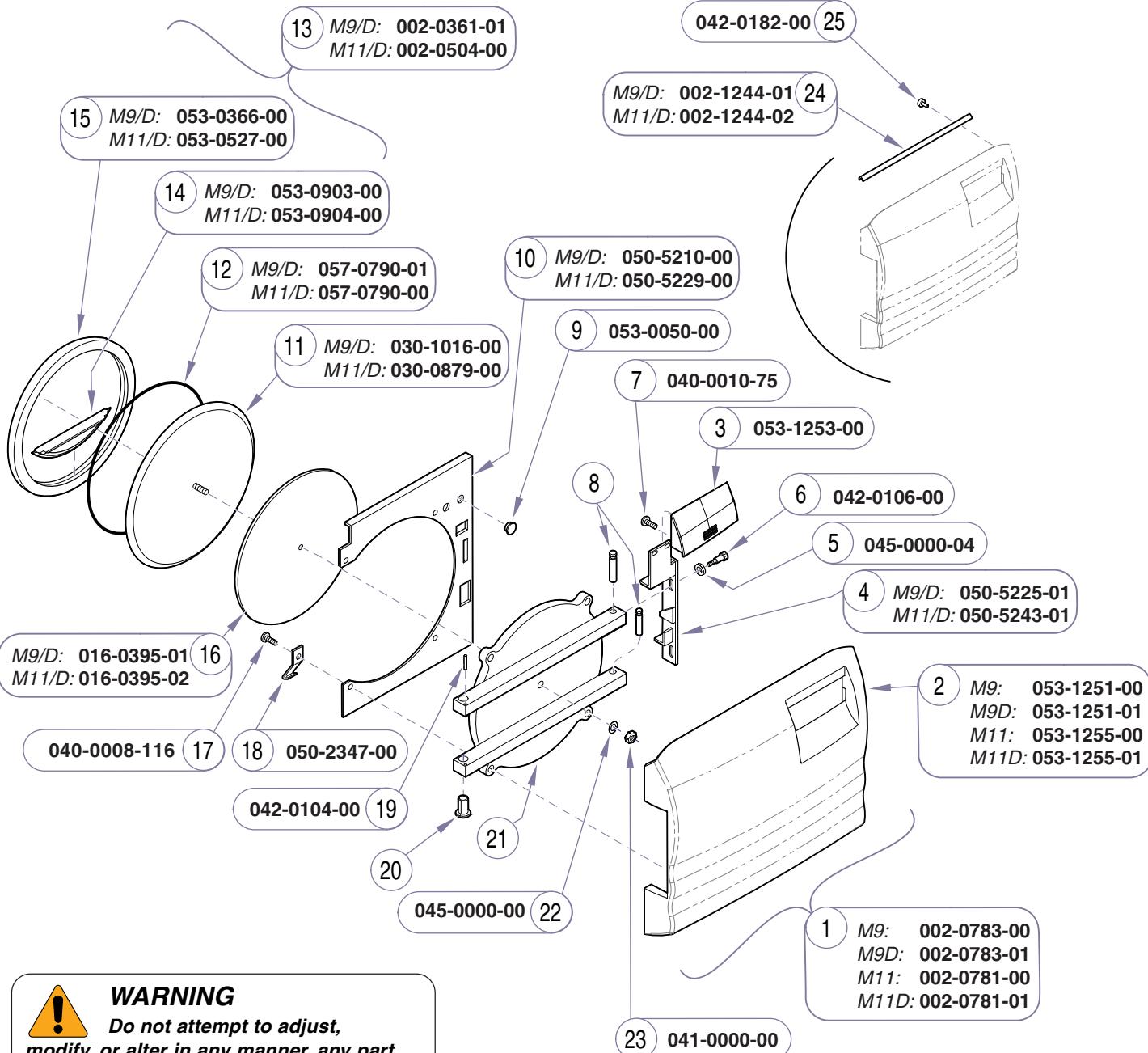
Always Specify Model & Serial Number

Models: M11 (-020 thru -022)
Serial Numbers: V655565 to Present

M11D (-020 thru -022)
V655565 to Present

Main Enclosure
(M11/M11D)

MA593406i



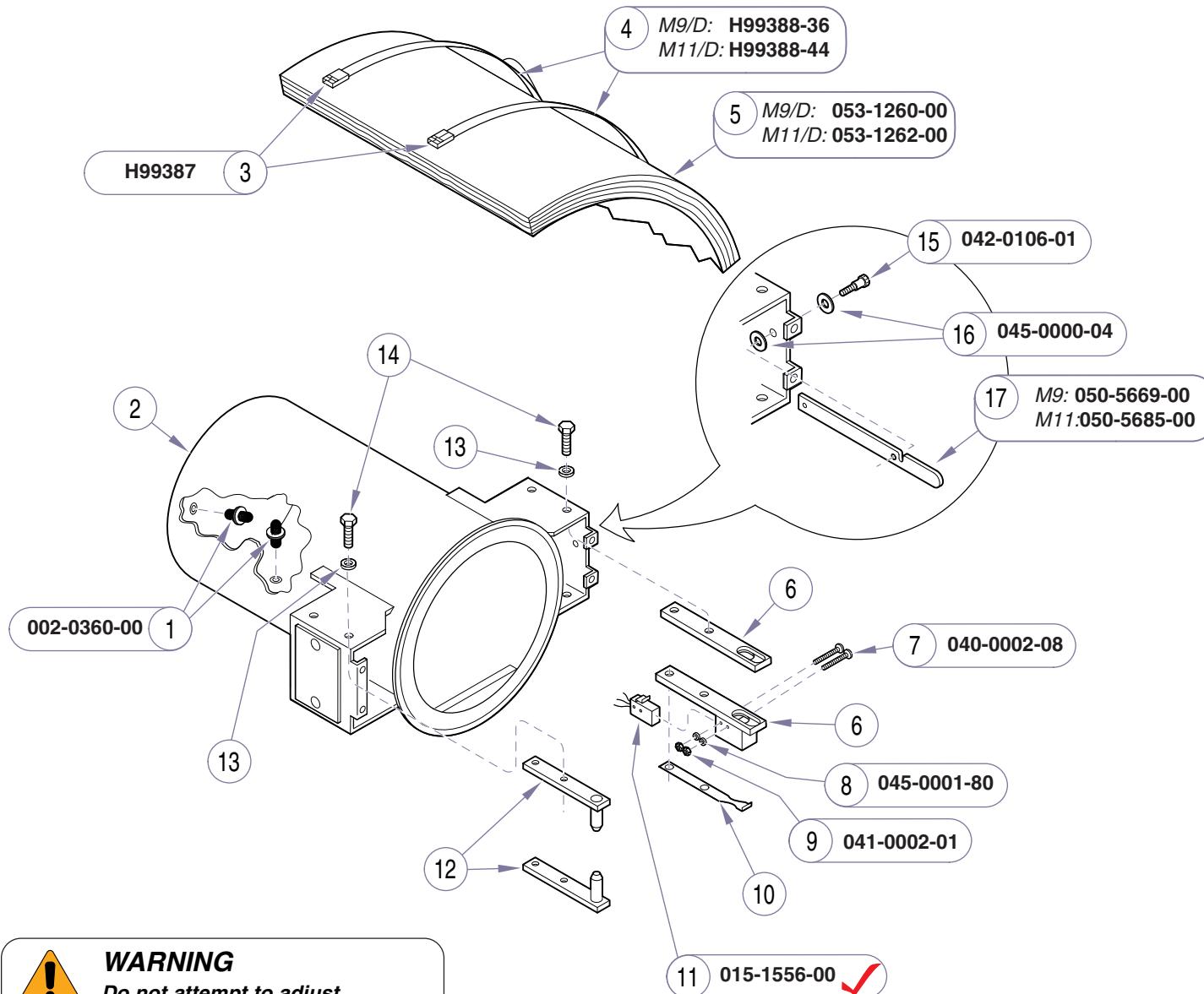
Refer To:

Operation & Troubleshooting	A-1
Component Testing / Repair	B-1
Access Procedures	C-1
Wiring Diagrams	D-1
Exploded Views / Part Numbers ..	E-1

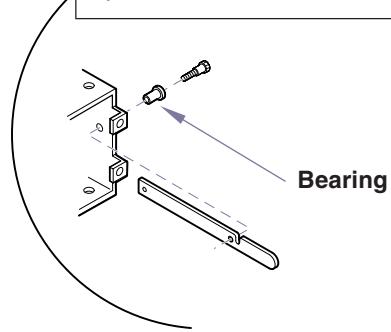
Item	Description	Qty.
1	Door Cover Kit (includes items 2 & 3)	1
2	• Door Cover	1
3	• Door Handle	1
4	Latch Bracket	2
5	Washer	2
6	Shoulder Screw	2
7	Screw (#10-24 x 3/8")	2
8	Door Bolt (n/a)	2
9	Hole Plug	2
10	Inside Door Cover	1
11	Housing	1
12	Gasket Ring	1
13	Gasket Kit (includes items 12, 14 & 15)	1
14	• Dam Gasket	1
15	• Door Gasket	1
16	Door Insulation Pad	1
17	Screw	4
18	Door Spring	1
19	Roll Pin	1
20	Flange Bearing (see warning)	2
21	Door (see warning)	1
22	Lockwasher	1
23	Nut (1/4-20)	1
24	Steam Block Kit (includes item 25)	1
25	• Snap Clip	4

Always Specify Model & Serial Number

<u>Refer To:</u>	<u>Page</u>
Operation & Troubleshooting	A-1
Component Testing / Repair	B-1
Access Procedures	C-1
Wiring Diagrams	D-1
Exploded Views / Part Numbers ..	E-1



***NOTE**
The bearing on early models is replaced with two washers. (Item 16)



Item	Description	Qty.
1	Chamber Filter	2
2	Chamber (see warning)	1
3	Strap Fastener	2
4	Insulation Strap	2
5	Insulation Wrapper	1
6	Latch Brackets (see warning)	2
7	Screws (#2-56 x 1")	2
8	Lockwasher (#2)	2
9	Nut (#2-56)	2
10	Switch Spring Arm (see warning)	1
11	Door Switch	1
12	Hinge Brackets (see warning)	2
13	Washer (see warning)	8
14	Bolt (see warning)	8
15	Items 15 thru 17 apply to M9 & M11 units only Shoulder Screw (apply valve lubricant)	2
16	Flat Washer, Brass	2
17	Latch Lever	1

Always Specify Model & Serial Number

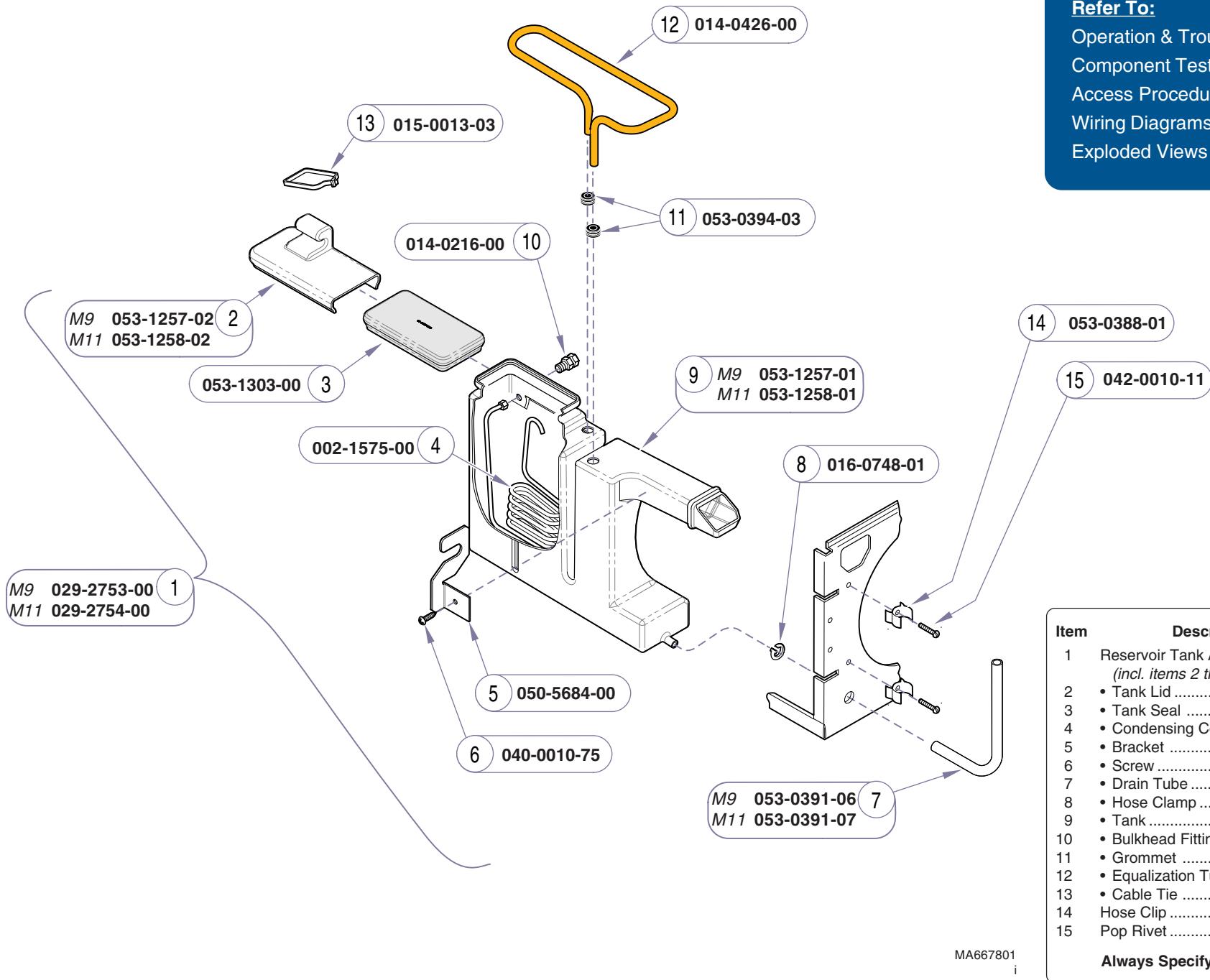
Models:
Serial Numbers:

ALL

Chamber & Door Latch

E-7

<u>Refer To:</u>	<u>Page</u>
Operation & Troubleshooting	A-1
Component Testing / Repair	B-1
Access Procedures	C-1
Wiring Diagrams	D-1
Exploded Views / Part Numbers ..	E-1



Item	Description	Qty.
1	Reservoir Tank Assembly (incl. items 2 thru 13)	1
2	• Tank Lid	1
3	• Tank Seal	1
4	• Condensing Coil	1
5	• Bracket	1
6	• Screw	1
7	• Drain Tube	1
8	• Hose Clamp	1
9	• Tank	1
10	• Bulkhead Fitting	1
11	• Grommet	2
12	• Equalization Tube	1
13	• Cable Tie	1
14	Hose Clip	2
15	Pop Rivet	2

Always Specify Model & Serial Number

MA667801
i

Reservoir Tank

Models:
Serial Numbers:

M9 (-020 thru -022)
M11 (-020 thru -022)
RN, RP, RR All

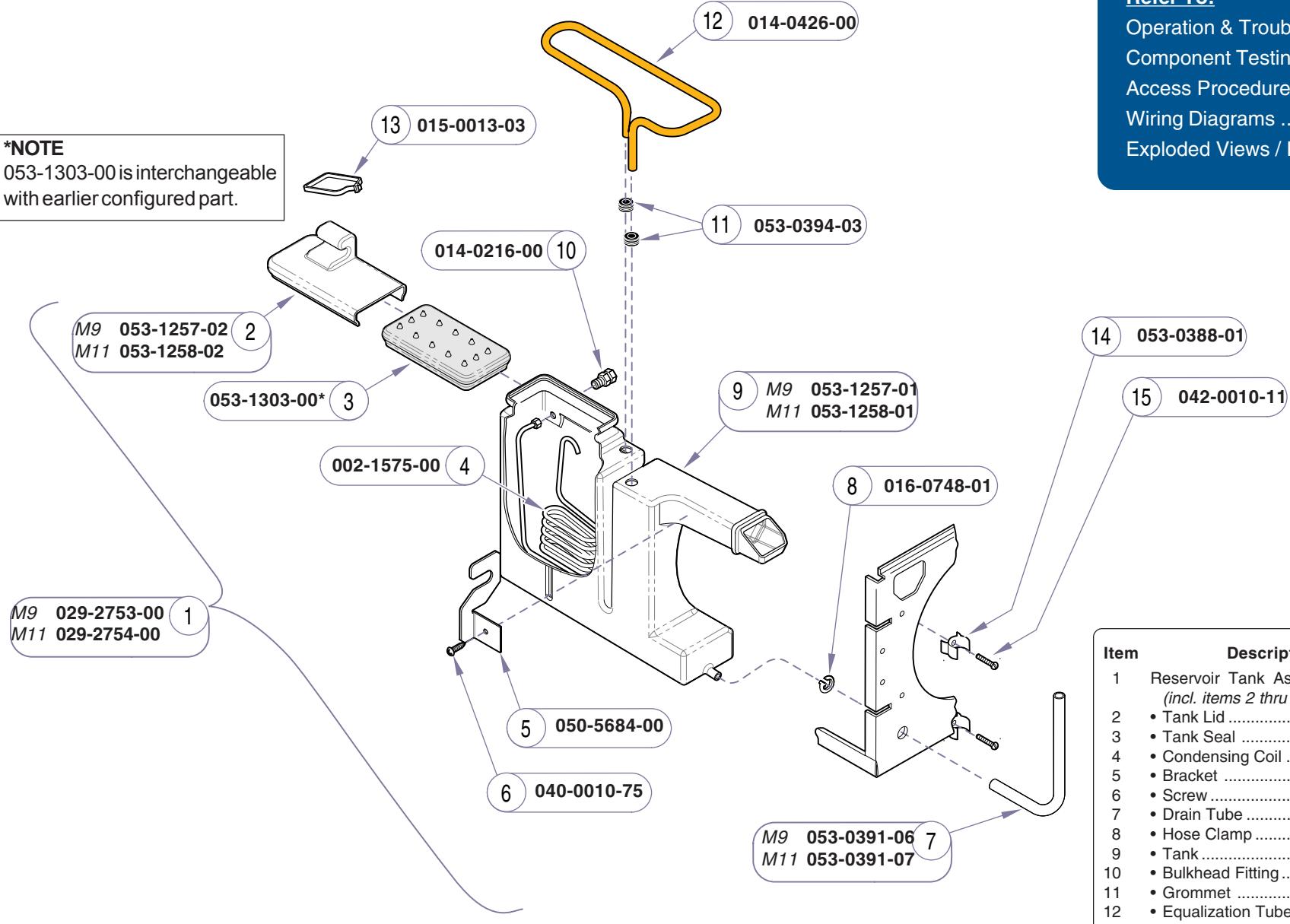
M9D (-020 thru -022)
M11D (-020 & -022)
RW, RX All

M9 (-020 thru -022)
M11 (-020 thru -022)
V1000 to V400876

M9D (-020 & -022)
M11D (-020 & -022)
V1000 to V400876

<u>Refer To:</u>	<u>Page</u>
Operation & Troubleshooting	A-1
Component Testing / Repair	B-1
Access Procedures	C-1
Wiring Diagrams	D-1
Exploded Views / Part Numbers ..	E-1

***NOTE**
053-1303-00 is interchangeable
with earlier configured part.



MA667801i

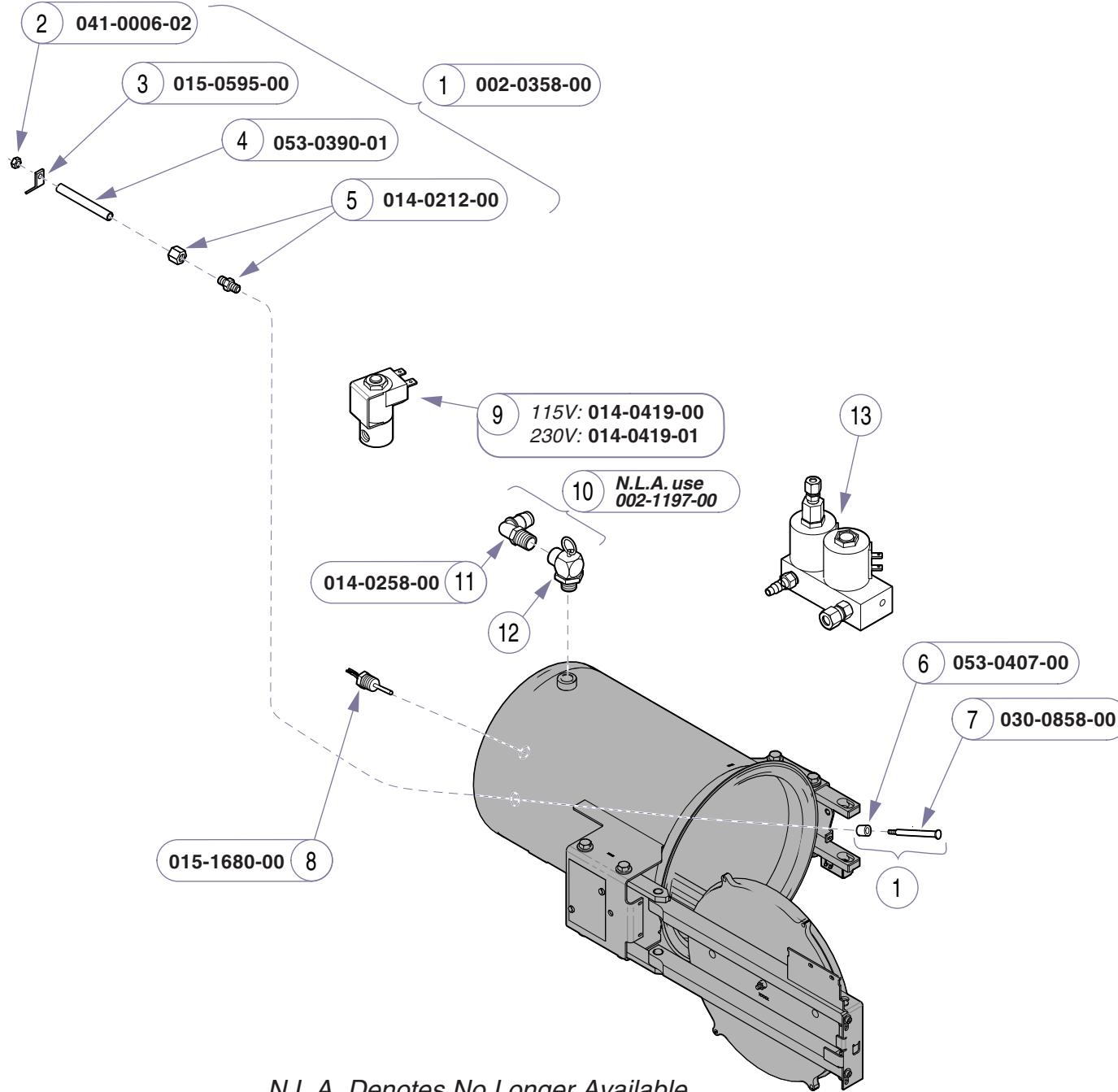
Item	Description	Qty.
1	Reservoir Tank Assembly (incl. items 2 thru 13).....	1
2	• Tank Lid	1
3	• Tank Seal	1
4	• Condensing Coil	1
5	• Bracket	1
6	• Screw	1
7	• Drain Tube	1
8	• Hose Clamp	1
9	• Tank	1
10	• Bulkhead Fitting	1
11	• Grommet	2
12	• Equalization Tube	1
13	• Cable Tie	1
14	Hose Clip	2
15	Pop Rivet	2

Always Specify Model & Serial Number

Models: M9 (-020 thru -022) M11 (-020 thru -022)	M9D (-020 & -022) M11D (-020 & -022)
Serial Numbers: V400877 thru Present	V400877 thru Present

Reservoir Tank

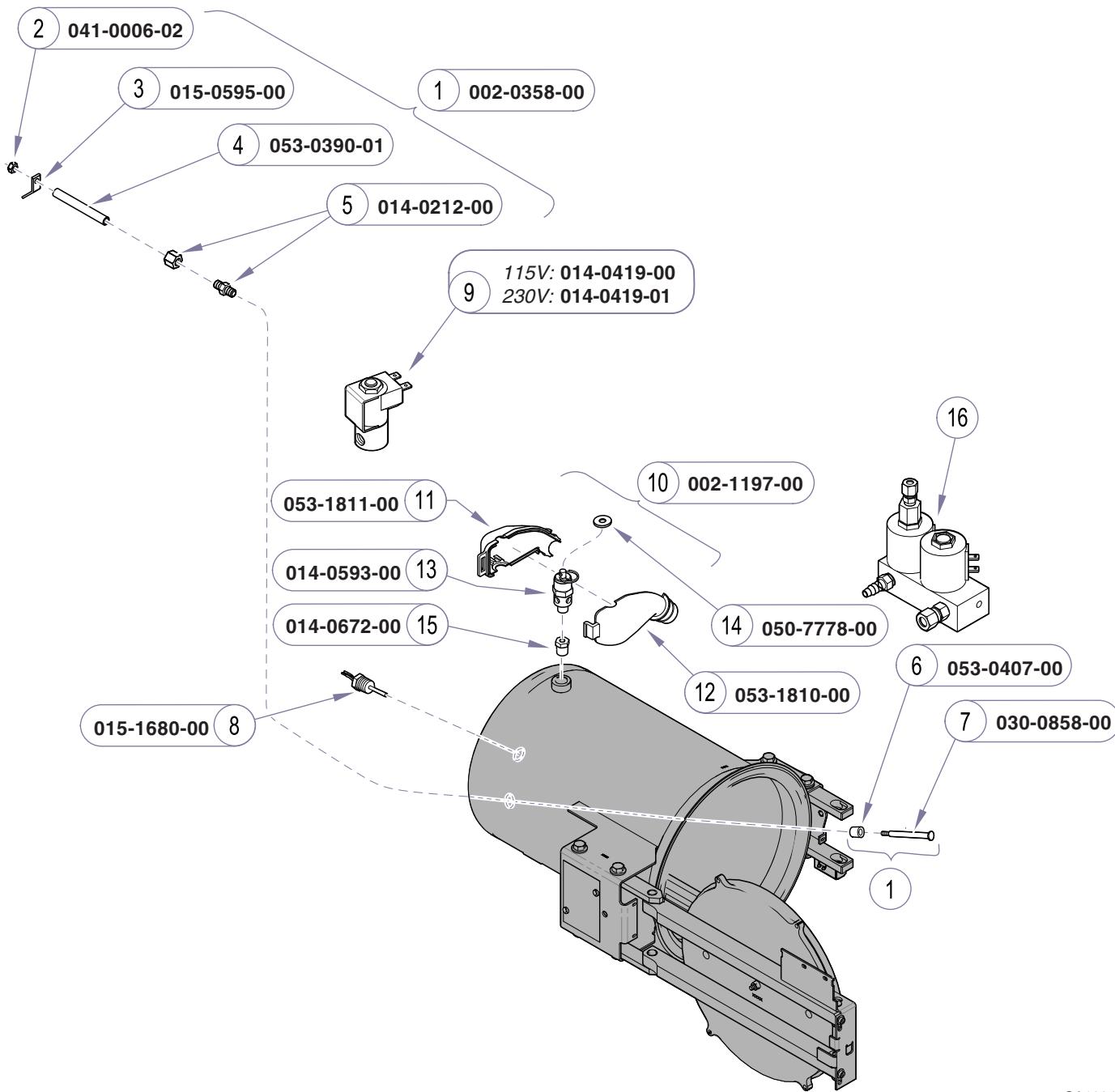
E-8.1



<u>Refer To:</u>	<u>Page</u>
Operation & Troubleshooting	A-1
Component Testing / Repair	B-1
Access Procedures	C-1
Wiring Diagrams	D-1
Exploded Views / Part Numbers ..	E-1

Item	Description	Qty.
1	Water Level Sensor (incl. items 2 thru 7) ...	1
2	• Nut	1
3	• Terminal	1
4	• Teflon Tube	1
5	• Compression Fitting	1
6	• Spacer	1
7	• Water Level Sensor Probe	1
8	Temperature Sensor Assembly	1
9	Air Valve	1
10	Pressure Relief Valve Kit (includes items 11 & 12)	(N.L.A.)
11	• Elbow Fitting	1
12	• Pressure Relief Valve	(N.L.A.)
13	Refer to Fill / Vent Valve page	1

Always Specify Model & Serial Number



Refer To:	Page
Operation & Troubleshooting	A-1
Component Testing / Repair	B-1
Access Procedures	C-1
Wiring Diagrams	D-1
Exploded Views / Part Numbers ..	E-1

Item	Description	Qty.
1	Water Level Sensor (incl. items 2 thru 7)	1
2	• Nut	1
3	• Terminal	1
4	• Teflon Tube	1
5	• Compression Fitting	1
6	• Spacer	1
7	• Water Level Sensor Probe	1
8	Temperature Sensor Assembly	1
9	Air Valve	1
10	Pressure Relief Valve Kit (includes items 11 & 15)	1
11	• LH Enclosure (PRV)	1
12	• RH Enclosure (PRV)	1
13	• Pressure Relief Valve	1
14	• Washer	1
15	• Reducer	1
16	Refer to <i>Fill / Vent Valve</i> page	1

Always Specify Model & Serial Number

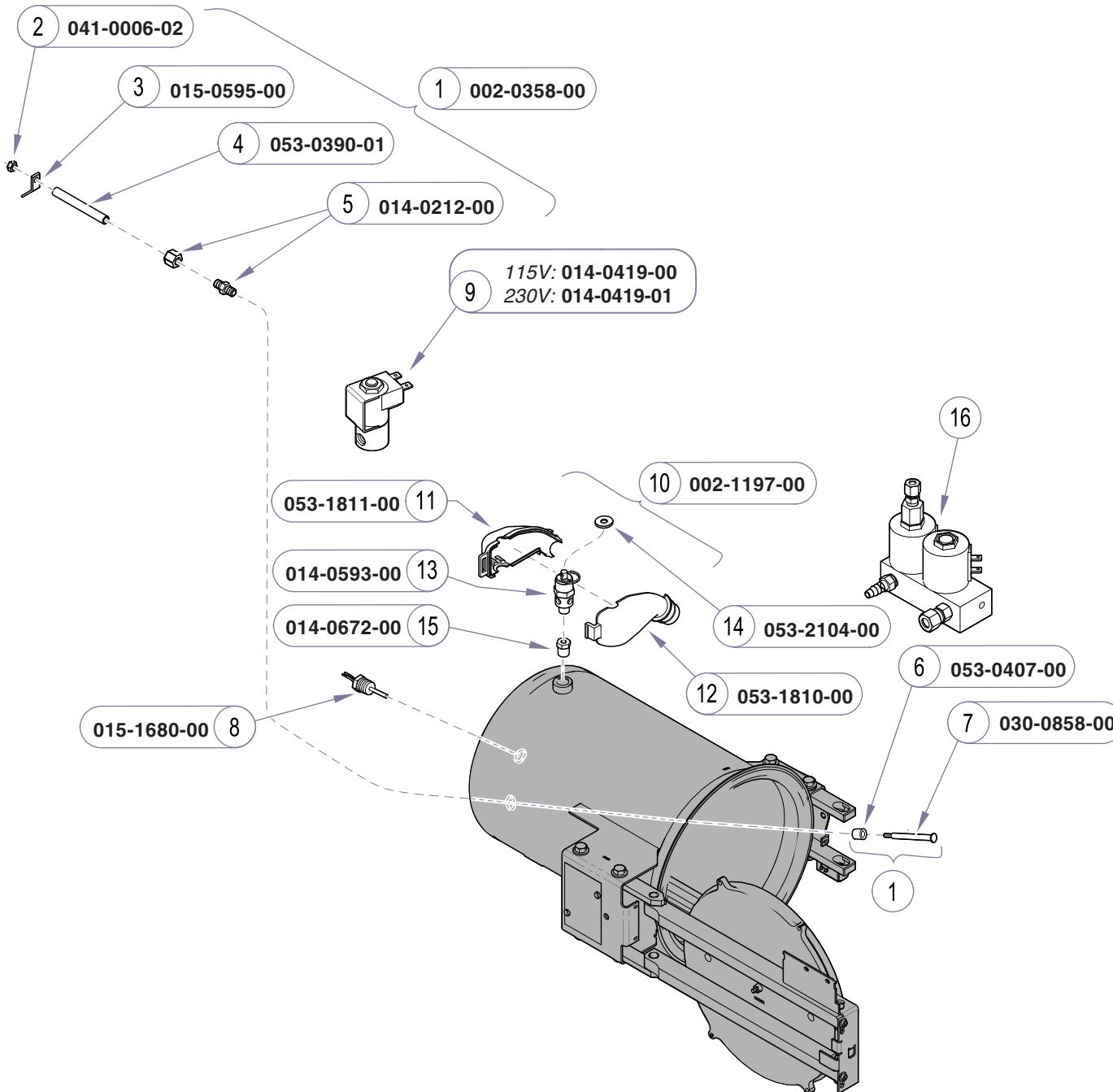
SA1294i

Models: M9 (-020 thru -022)
Serial Numbers: M11 (-020 thru -022)
V721881 thru V759602

M9D (-020 & -022)
M11D (-020 & -022)
V721881 thru V759602

Sensors & Valves

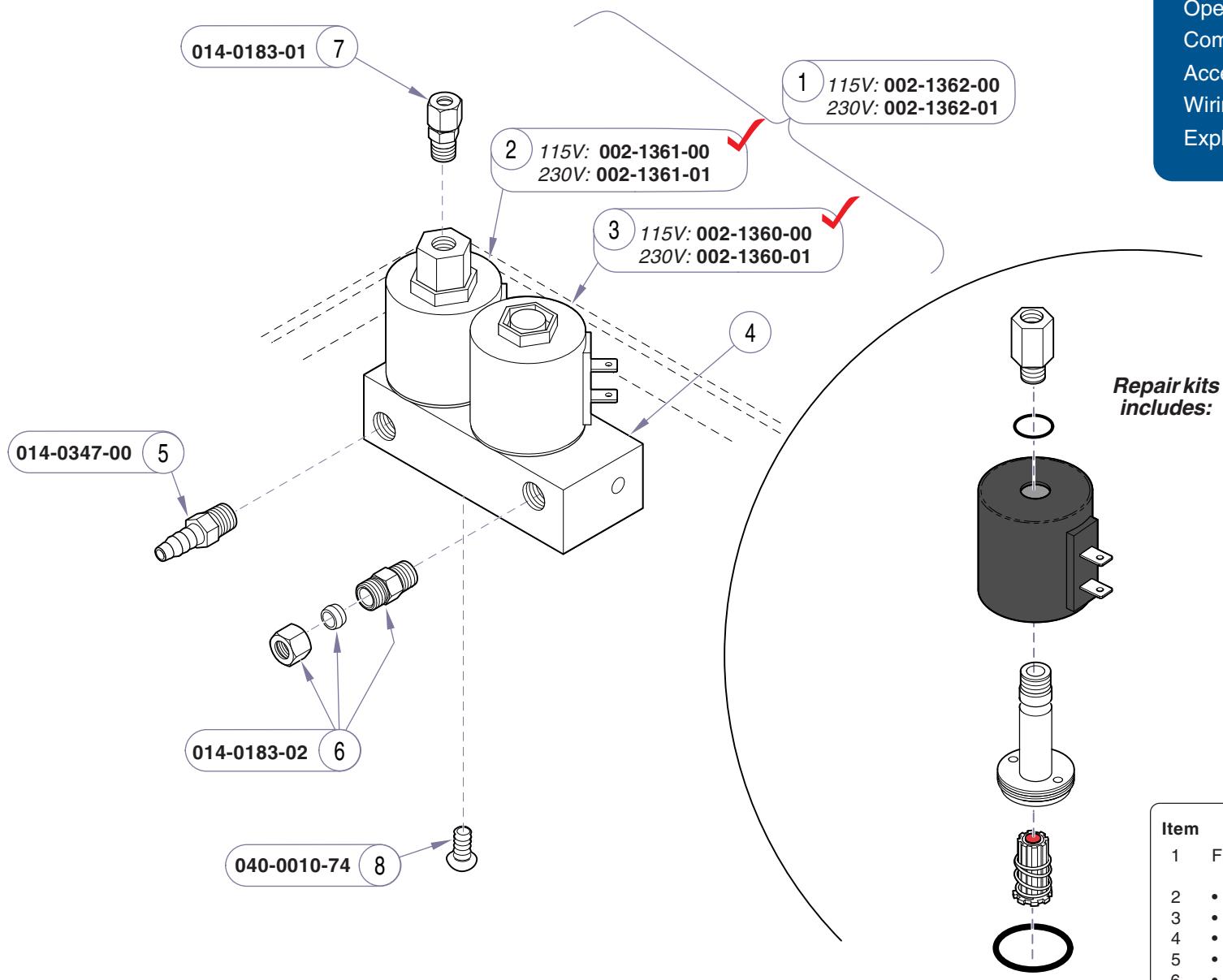
E-9.1



<u>Refer To:</u>	<u>Page</u>
Operation & Troubleshooting	A-1
Component Testing / Repair	B-1
Access Procedures	C-1
Wiring Diagrams	D-1
Exploded Views / Part Numbers ..	E-1

SA1294i

<u>Refer To:</u>	<u>Page</u>
Operation & Troubleshooting	A-1
Component Testing / Repair	B-1
Access Procedures	C-1
Wiring Diagrams	D-1
Exploded Views / Part Numbers ..	E-1



Item	Description	Qty.
1	Fill / Vent Valve Assembly (incl. items 2 thru 7).....	1
2	• Vent Valve Repair Kit	1
3	• Fill Valve Repair Kit	1
4	• Manifold Block (n/a)	1
5	• Barb Fitting	1
6	• 3/8" Fitting	1
7	• 1/4" Fitting	1
8	Screw (#10-32 x 3/8")	1

Always Specify Model & Serial Number

MA606004i

Models:
Serial Numbers:

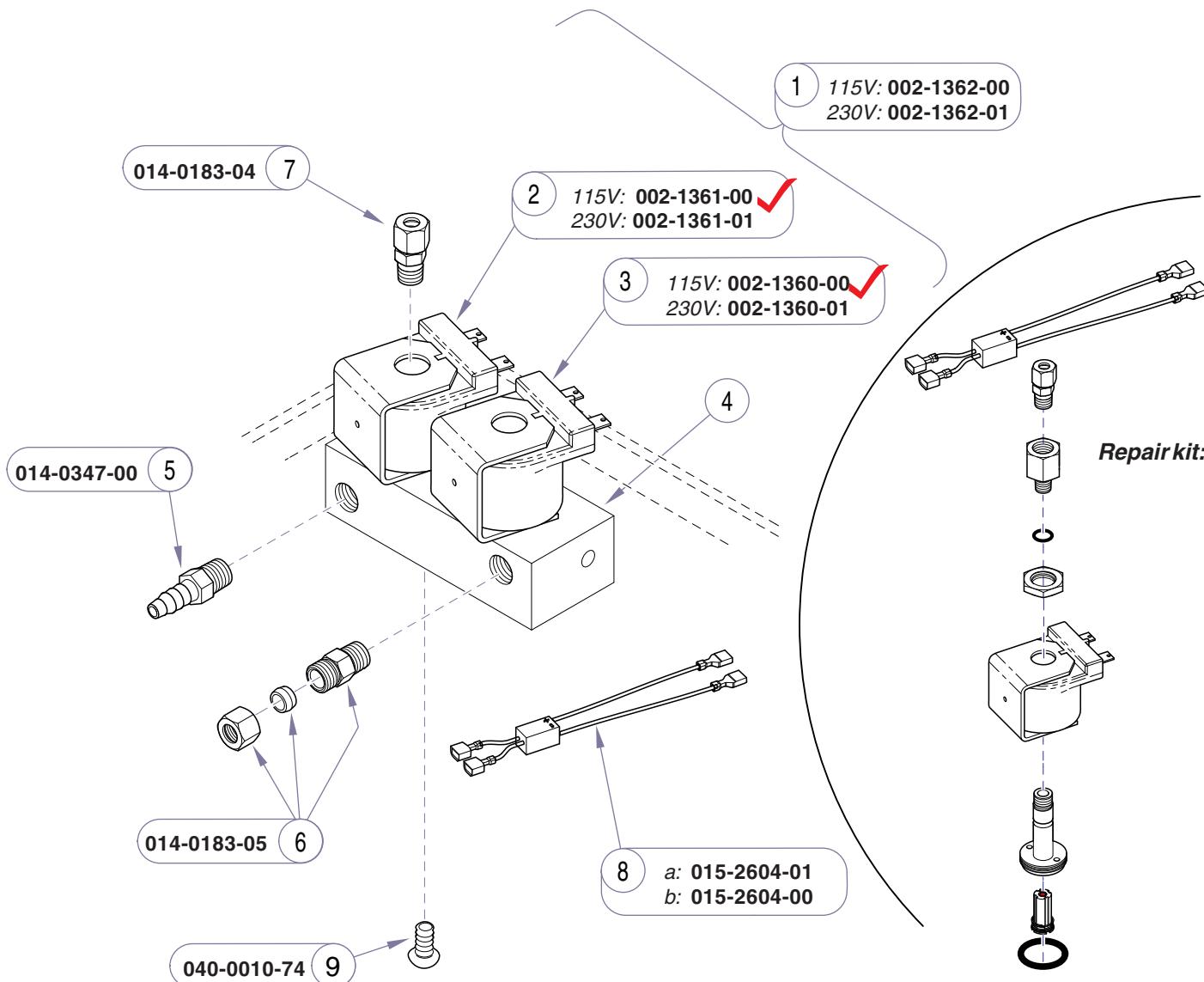
ALL
RS, RT, RV, RN, RP, RR, RW, RX, RY, RZ,
V1000 thru V933375

Fill / Vent Valve

E-10

Refer To:**Page**

Operation & Troubleshooting	A-1
Component Testing / Repair	B-1
Access Procedures	C-1
Wiring Diagrams	D-1
Exploded Views / Part Numbers ..	E-1

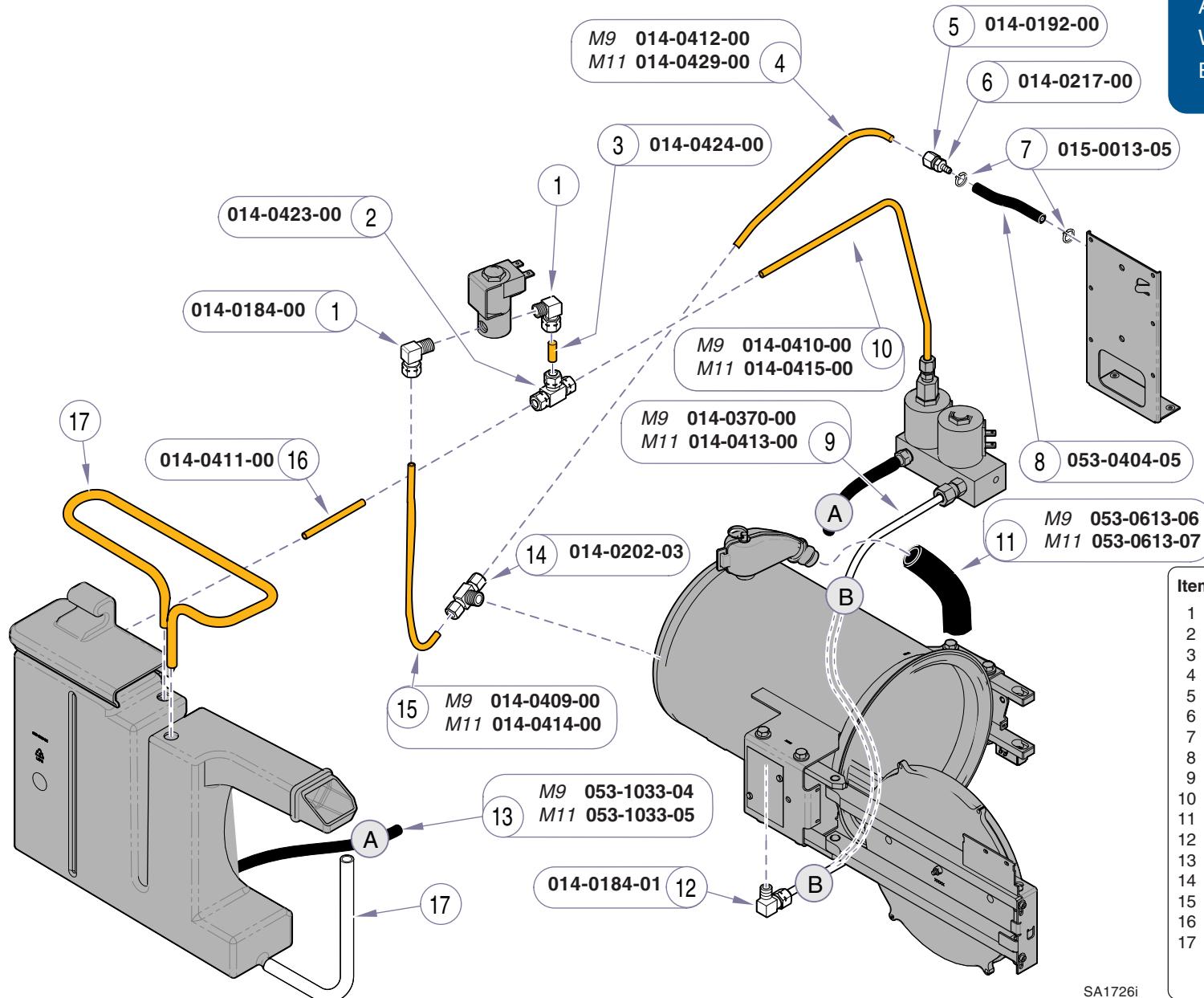


SA1760-01i

Item	Description	Qty.
1	Fill / Vent Valve Assembly (incl. items 2 thru 8)	1
2	• Vent Valve Repair Kit	1
3	• Fill Valve Repair Kit	1
4	• Manifold Block (<i>not serviceable</i>)	1
5	• Barb Fitting	1
6	• 3/8" Fitting	1
7	• 1/4" Fitting	1
8	• a: Vent Valve Wiring Harness (<i>Red</i>)	1
	• b: Fill Valve Wiring Harness (<i>Black</i>)	1
9	Screw (#10-32 x 3/8")	1

Always Specify Model & Serial Number**Fill / Vent Valve****Models:**
Serial Numbers:**ALL**
V933375 to Present**E-10.1**

Refer To:	Page
Operation & Troubleshooting	A-1
Component Testing / Repair	B-1
Access Procedures	C-1
Wiring Diagrams	D-1
Exploded Views / Part Numbers ..	E-1



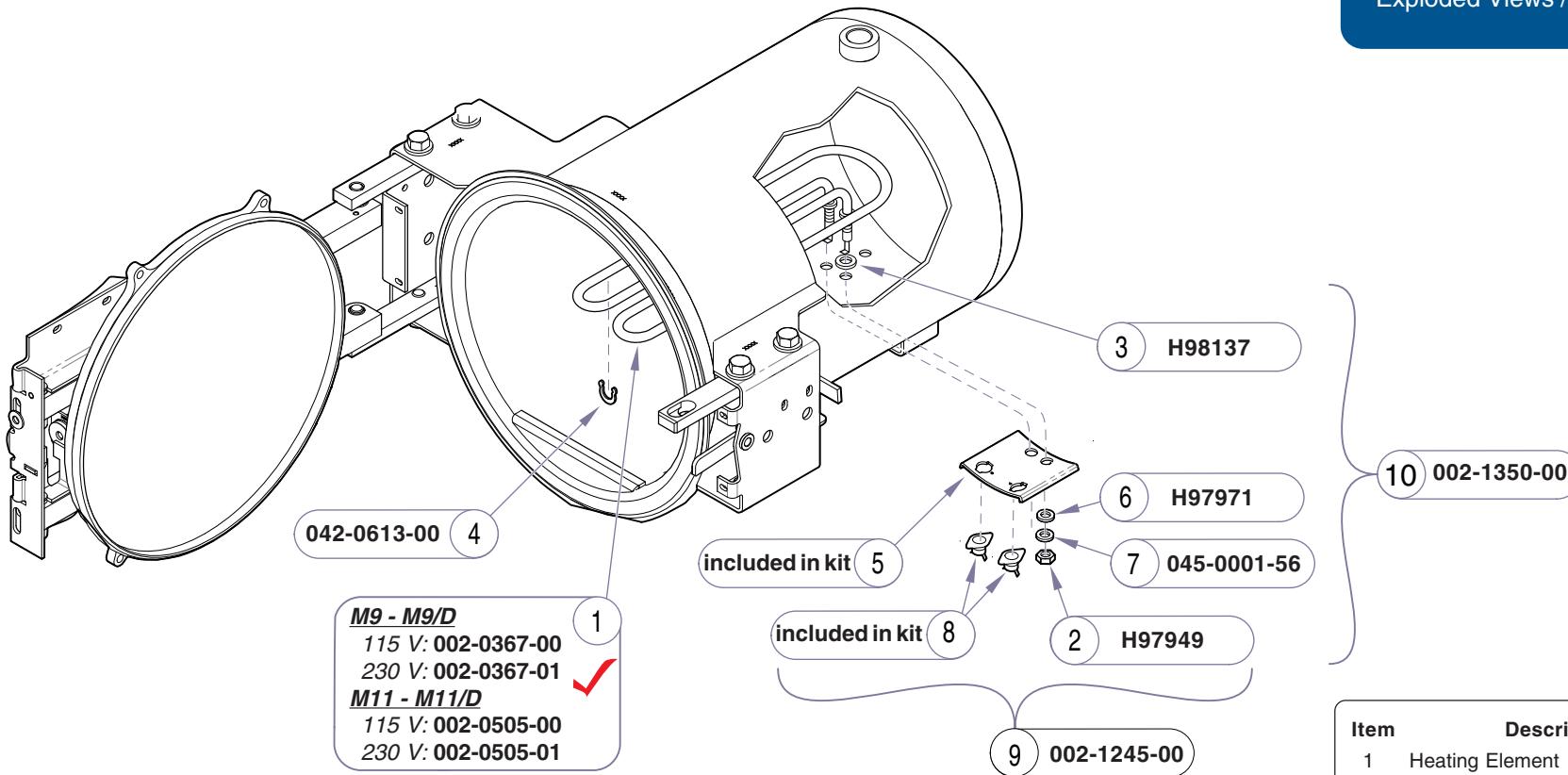
Item	Description	Qty.
1	Elbow Fitting	2
2	Tee Fitting	1
3	Tubing	1
4	Tubing	1
5	Compression Nut	1
6	Compression Connector	1
7	Hi-Temp Cable Tie	2
8	Tubing	1
9	Tubing	1
10	Tubing	1
11	Pressure Relief Tubing	1
12	Elbow Fitting	1
13	Reservoir Tubing	1
14	Tee Fitting	1
15	Tubing	1
16	Tubing	1
17	Refer to Reservoir Tank page	Ref

Always Specify Model & Serial Number

Models:
Serial Numbers:

Tubing & Fittings

Refer To:	Page
Operation & Troubleshooting	A-1
Component Testing / Repair	B-1
Access Procedures	C-1
Wiring Diagrams	D-1
Exploded Views / Part Numbers ..	E-1



MA668702i

Item	Description	Qty.
1	Heating Element (<i>includes items 2 thru 4</i>) ..	1
2	• Nut	2
3	• Gasket	2
4	• Radial Gripping	4
5	Thermostat Bracket	1
6	Washer	2
7	Lockwasher (7/16", internal tooth)	2
8	High-Limit Thermostat	2
9	Thermostat Kit (incl. items 2, 3, 5, & 8) ..	1
10	Gasket Kit (incl. items 2, 3, 6, & 7) ..	1

Always Specify Model & Serial Number

Heating Element &
Hi-Limit Thermostats

Models:
Serial Numbers:

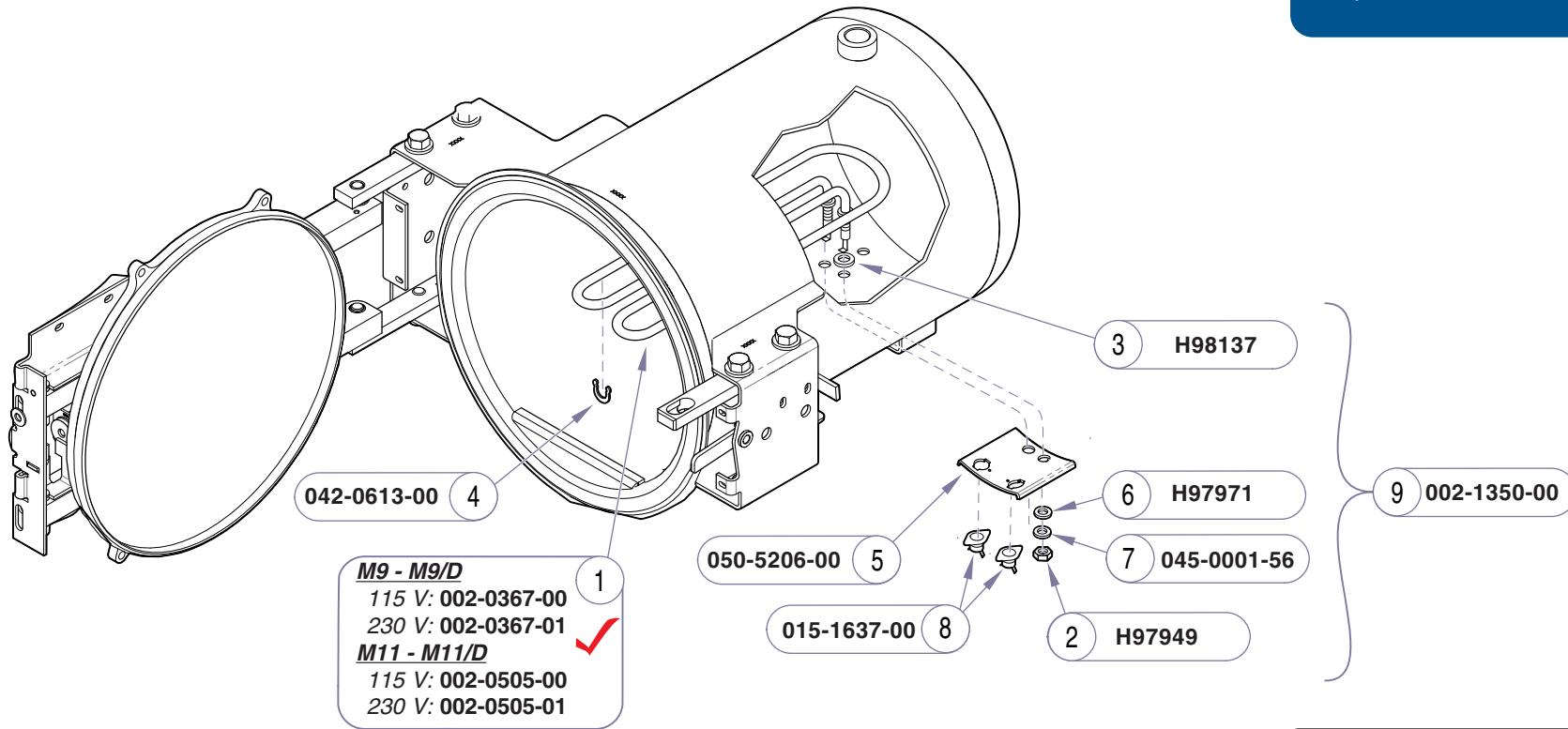
M9 (-020 thru -022)
M11 (-020 thru -022)
RN, RP, RR All

M9D (-020 thru -022)
M11D (-020 & -022)
RW, RX All

M9 (-020 thru -022)
M11 (-020 thru -022)
V1000 to V400876

M9D (-020 & -022)
M11D (-020 & -022)
V1000 to V400876

Refer To:	Page
Operation & Troubleshooting	A-1
Component Testing / Repair	B-1
Access Procedures	C-1
Wiring Diagrams	D-1
Exploded Views / Part Numbers ..	E-1



MA668703i

Item	Description	Qty.
1	Heating Element (includes items 2 thru 4) ..	1
2	• Nut	2
3	• Gasket	2
4	• Radial Gripring	4
5	Thermostat Bracket	1
6	Washer	2
7	Lockwasher (7/16", internal tooth)	2
8	High-Limit Thermostat	2
9	Gasket Kit (incl. items 2, 3, 6, & 7)	1

Always Specify Model & Serial Number

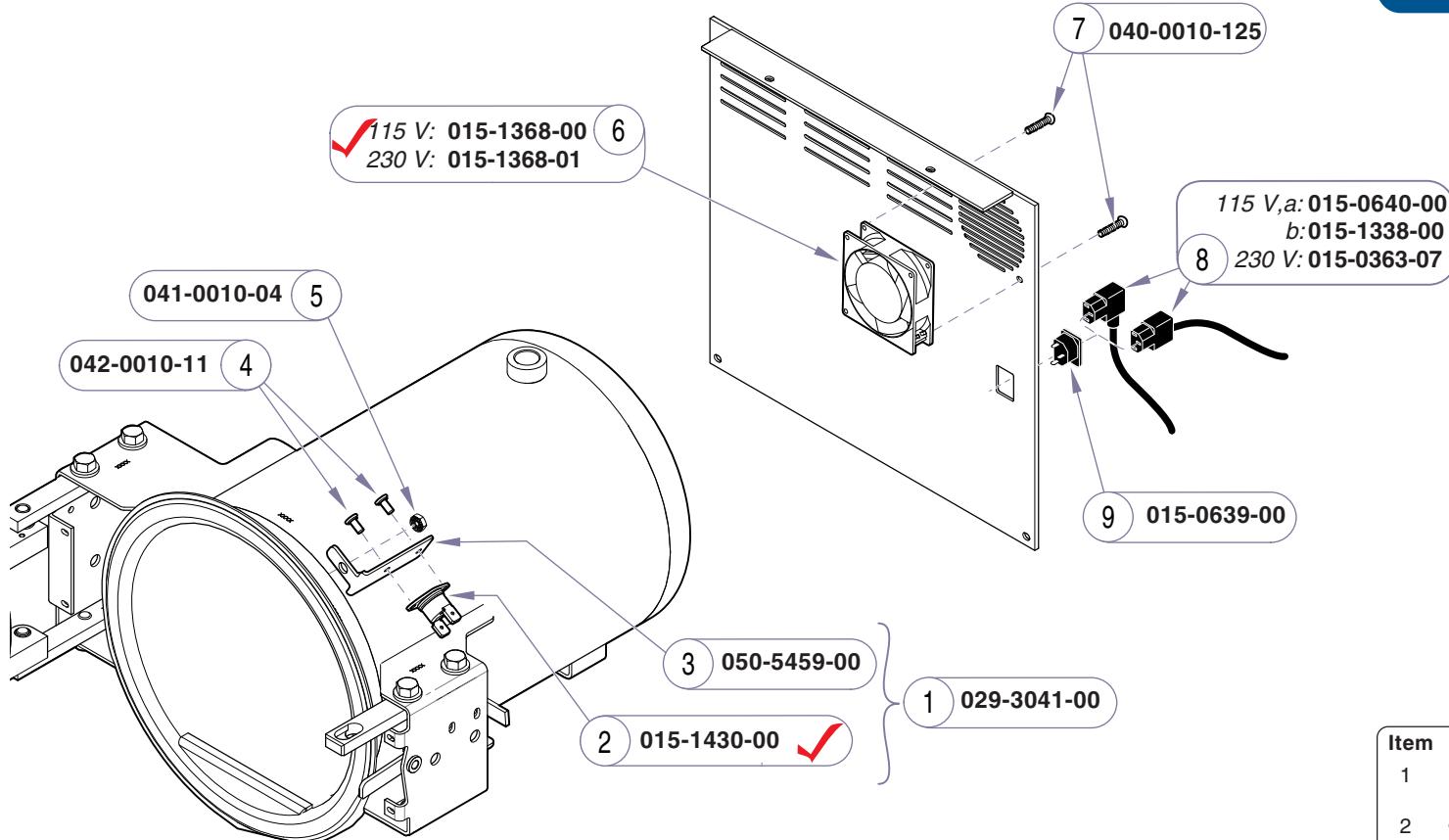
Models: M9 (-020 thru -022)
Serial Numbers: M11 (-020 thru -022)
V400877 thru Present

M9D (-020 & -022)
M11D (-020 & -022)
V400877 thru Present

**Heating Element &
Hi-Limit Thermostats**

E-12.1

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MA668602i

Item	Description	Qty.
1	Fan Thermostat Assembly (includes items 2 thru 4).....	1
2	• Thermostat	1
3	• Bracket	1
4	• Pop Rivet	2
5	Nut (#10-24)	1
6	Fan	1
7	Screw(#10 x 1/2", self-tapping)	2
8	Power Cord (a)- 90 degree plug	1
	(b)- straight plug	1
9	Power Cord Receptacle	1

Always Specify Model & Serial Number

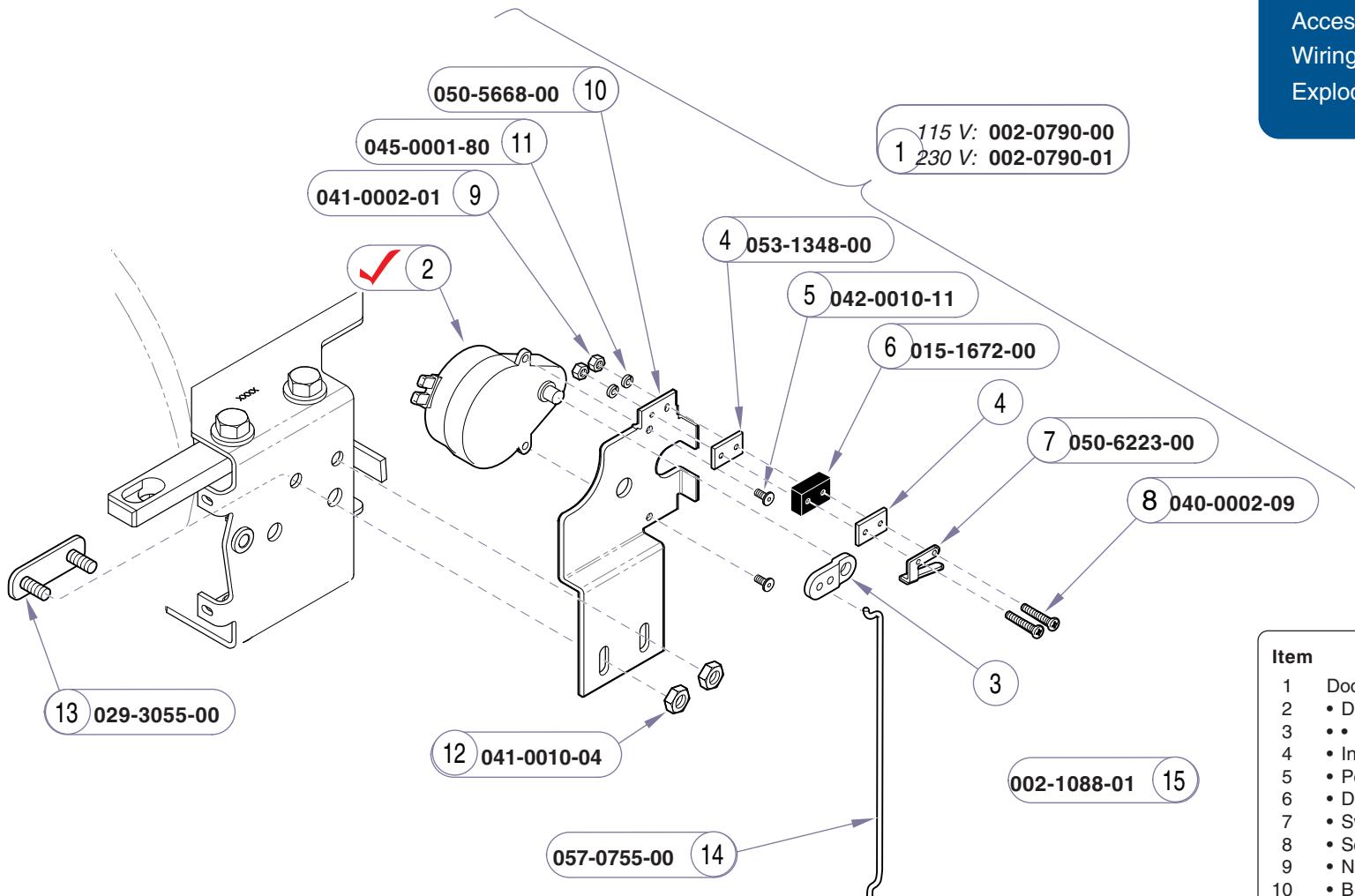
Fan System

Models:
Serial Numbers:

ALL

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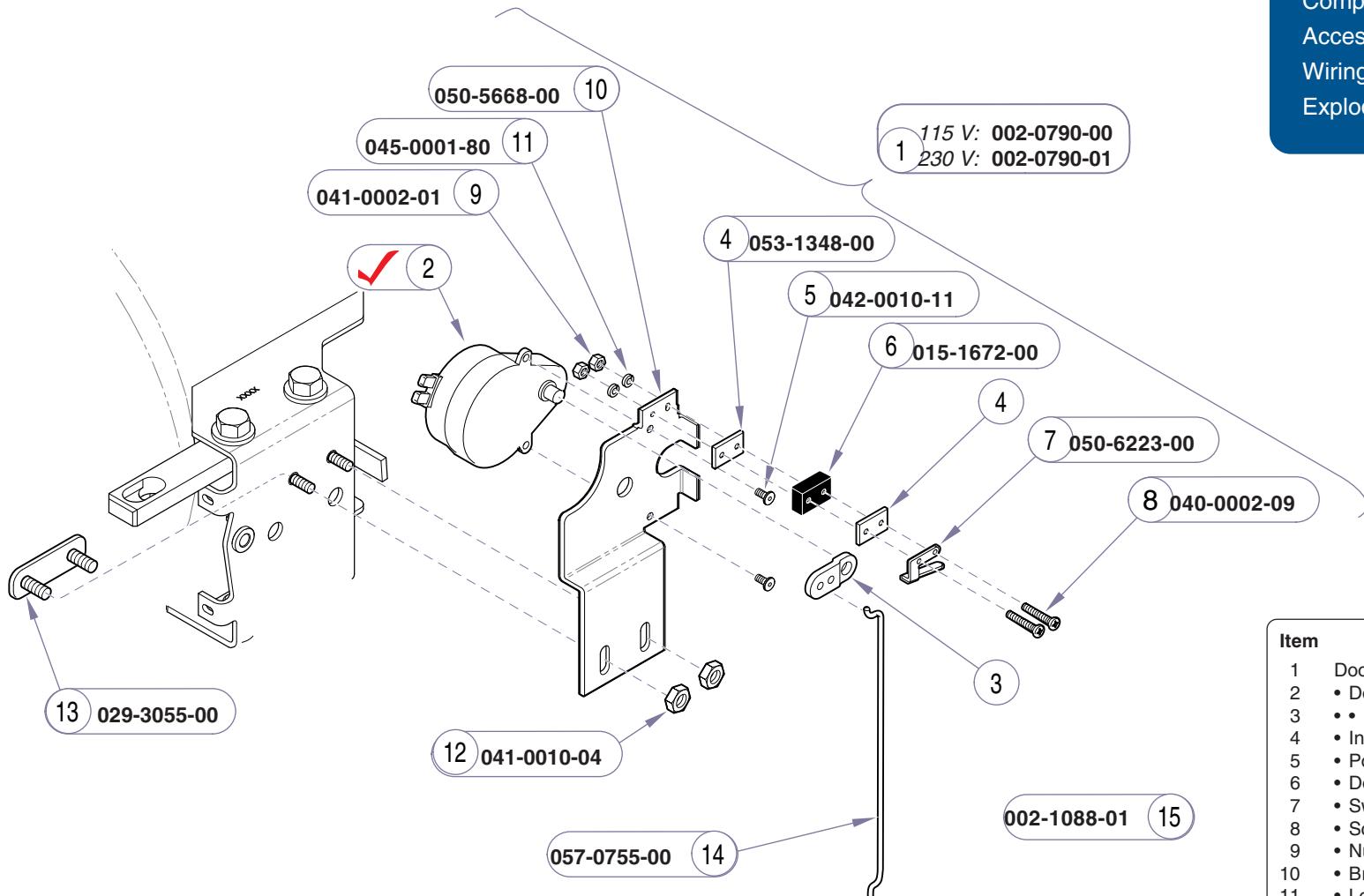
Item	Description	Qty.
1	Door Motor Kit (includes items 2 thru 11) ...	1
2	• Door Motor (includes item 3).....	1
3	• • Cam	1
4	• Insulation	1
5	• Pop Rivet.....	4
6	• Door Motor Switch	1
7	• Switch Actuator	1
8	• Screw (#10-24 x 3/8")	2
9	• Nut (#2-56)	2
10	• Bracket	1
11	• Lock Washer (#2)	2
12	Nut (#10-24)	2
13	Stud Plate (used on earlier models w/o studs)	1
14	Connecting Rod	1
15	M9/M11 Switch Mounting/Insulator Kit (includes items 4, 7, 8, 9 and 11)	1

Always Specify Model & Serial Number

Models: Serial Numbers:	M9 (-020) RN1000 thru RN1184 RN1236 thru RN1240	M9 (-021 / -022) RP1000 thru RP1368 RR1000 thru RR1368	M11 (-020/-021/-022) RS1000 thru RS1299 RT1000 thru RT1025 RV1000 thru RV1179	
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Door Motor System

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Item	Description	Qty.
1	Door Motor Kit (includes items 2 thru 11)	1
2	• Door Motor (includes item 3)	1
3	• • Cam	1
4	• Insulation	1
5	• Pop Rivet	4
6	• Door Motor Switch	1
7	• Switch Actuator	1
8	• Screw (#10-24 x 3/8")	2
9	• Nut (#2-56)	2
10	• Bracket	1
11	• Lock Washer (#2)	2
12	Nut (#10-24)	2
13	Stud Plate <i>(used on earlier models w/o studs)</i>	1
14	Connecting Rod	1
15	M9/M11 Switch Mounting/Insulator Kit <i>(includes items 4, 7, 8, 9 and 11)</i>	1

Always Specify Model & Serial Number

MA668508i

E-14.1

Door Motor System

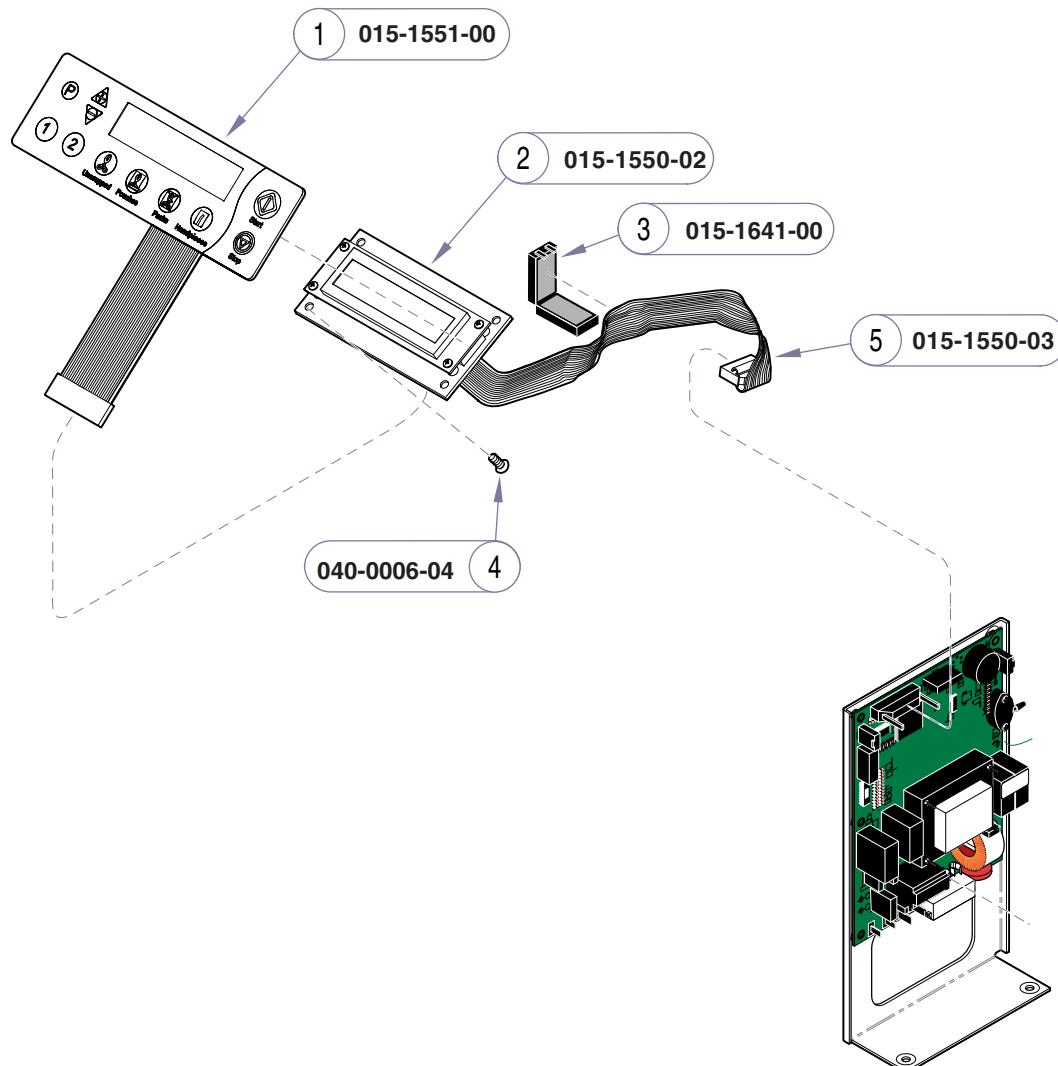
Models:
Serial Numbers:

M9 (-020)
RN1185 thru RN1235
RN1241 thru present
V1000 thru present

M9 (-021 / -022)
RP1005 thru present
RR1369 thru present
V1000 thru present

M11 (-020/-021/-022)
RS1300 thru present
RT1026 thru present
RV1180 thru present
V1000 thru present

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MA668801i

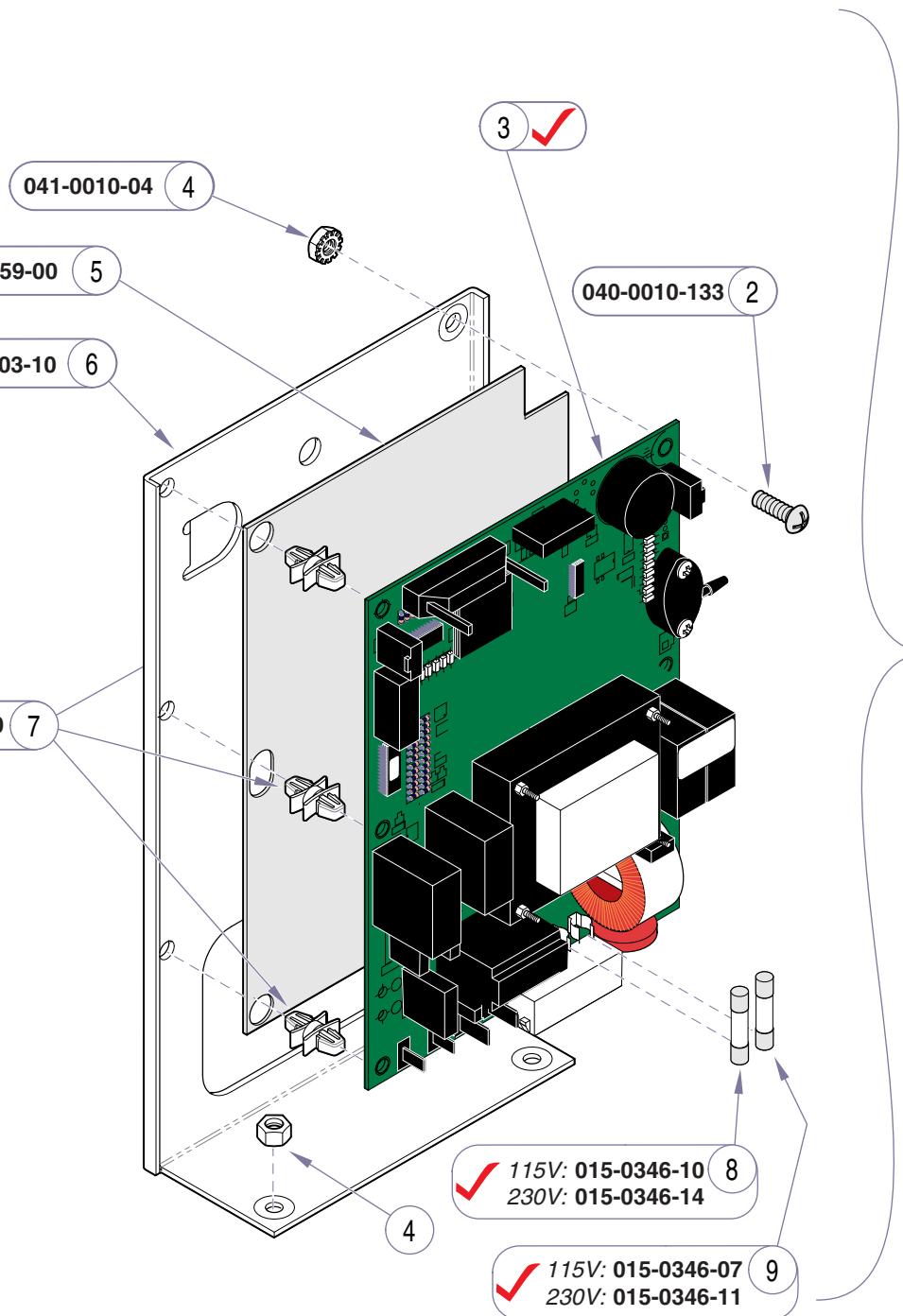
Item	Description	Qty.
1	Touch Pad	1
2	Display Panel (<i>includes item 5</i>)	1
3	Suppression Coil	1
4	Screw (#6 x 3/8")	2
5	Ribbon cable	1

Always Specify Model & Serial Number

Models:
Serial Numbers:

ALL

**Touch Pad &
Display Panel**



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1 M9 / M11
 115 V: 002-0762-00
 230 V: 002-0762-01
M9D / M11D
 115 V: 002-0762-02

Item	Description	Qty.
1	PC Board Kit (includes items 2 thru 9)	1
2	• Screw (#10-24 x 5/8").	2
3	• PC Board	1
4	• Nut (#10-24)	2
5	• Insulator	1
6	• Mounting Bracket	1
7	• Standoff	4
8	• F1 Fuse 115 VAC (0.250 amp 250 volt Slo Blo) 230 VAC (0.125 amp 250 volt Slo Blo)	1
9	• F2 Fuse .. 115 VAC (15 amp, 250 volt, Fast-Acting) 230 VAC (8 amp, 250 volt, Fast-Acting) ..	1

Always Specify Model & Serial Number

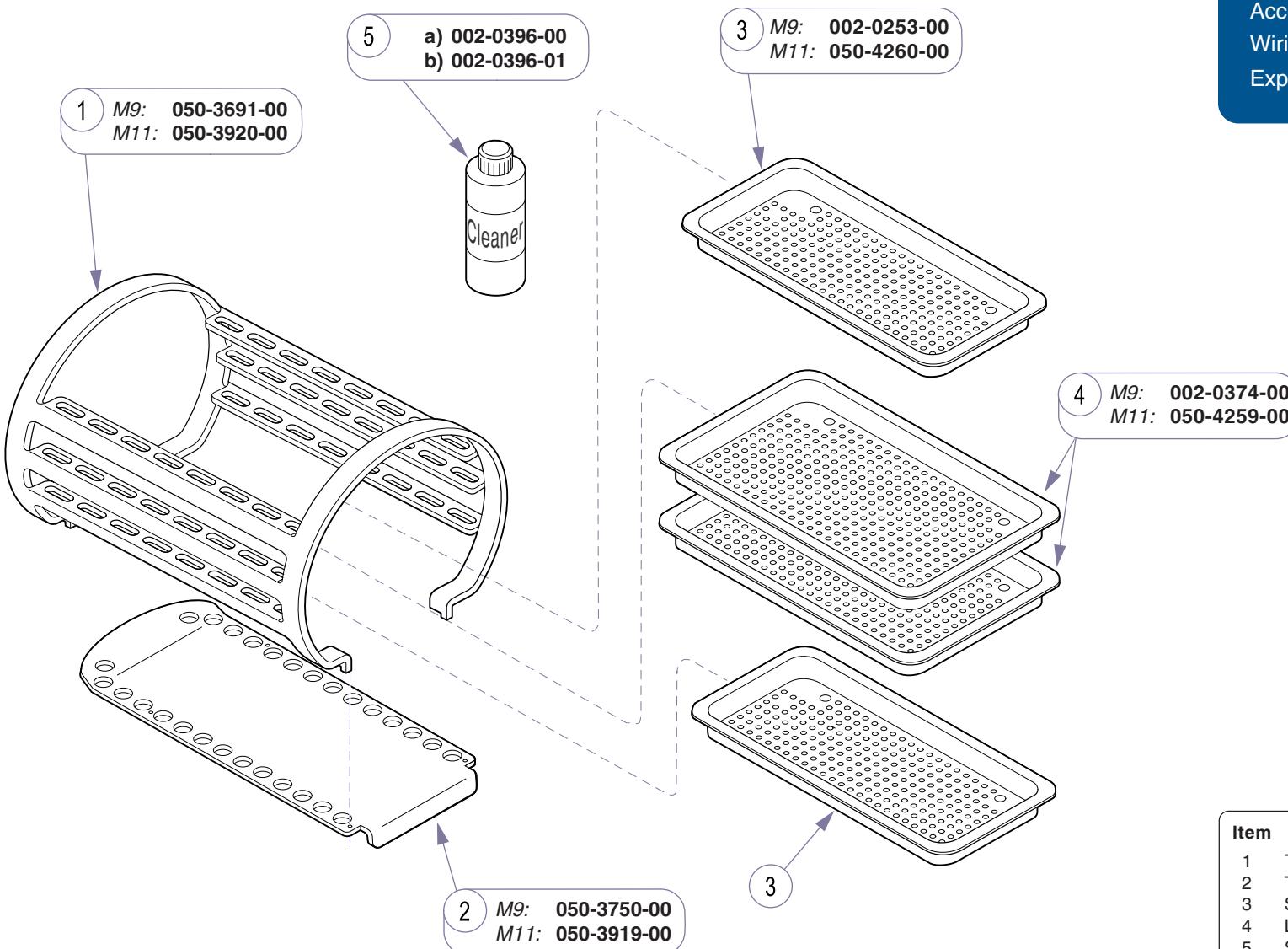
MA594503i

Main PC Board

Models:
Serial Numbers:

ALL

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MA604902i

Item	Description	Qty.
1	Tray Rack	1
2	Tray Plate	1
3	Small Tray	2
4	Large Tray	2
5	SpeedClean (w/MSDS): a) One Bottle - Midmark	AR
	b) One Case - Midmark (12 bottles)	AR

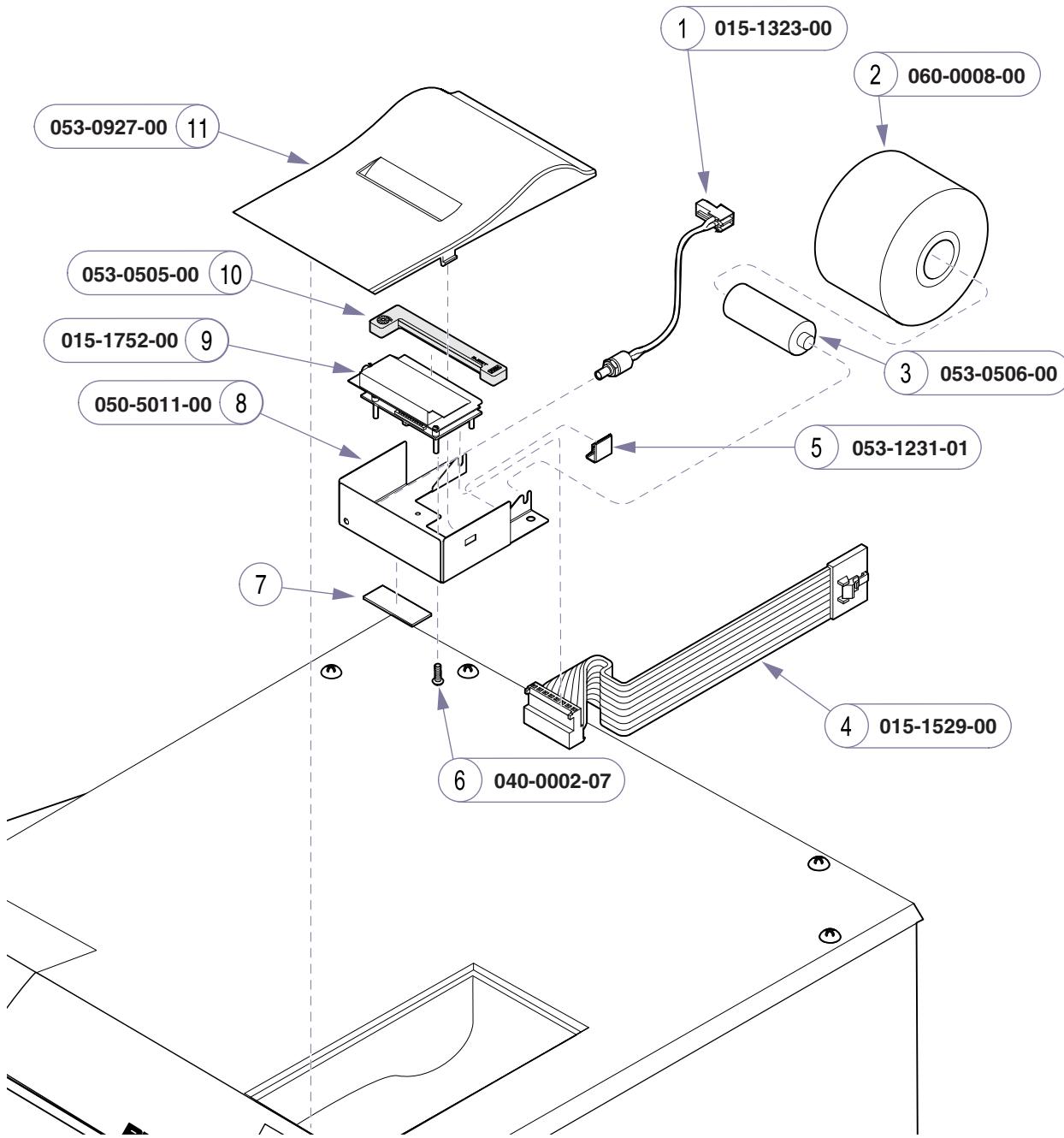
Always Specify Model & Serial Number

Models:
Serial Numbers:

ALL

Trays / Rack / Cleaner

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Refer To:

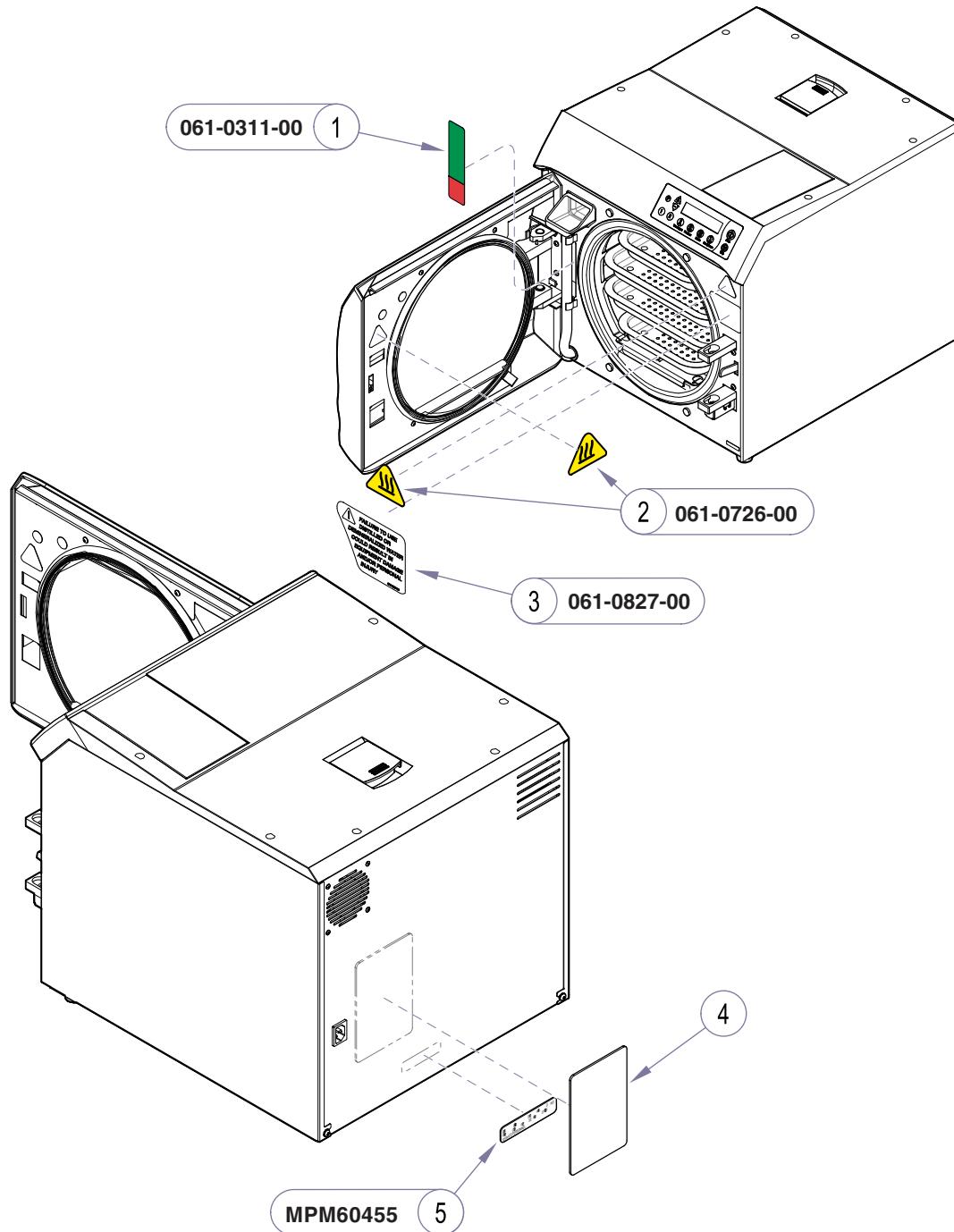
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Item	Description	Qty.
1	Feed Cable	1
2	Paper Roll	1
3	Spindle	1
4	Ribbon Harness	1
5	Cable Clamp	1
6	Screw (#2-56 x 1/4")	4
7	Serial Number Label (n/a)	1
8	Bracket	1
9	Printer Module	1
10	Ribbon Cartridge	1
11	Cover	1

Always Specify Model & Serial Number

MA598601i

9A259001 Printer
(optional)



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MA606103i

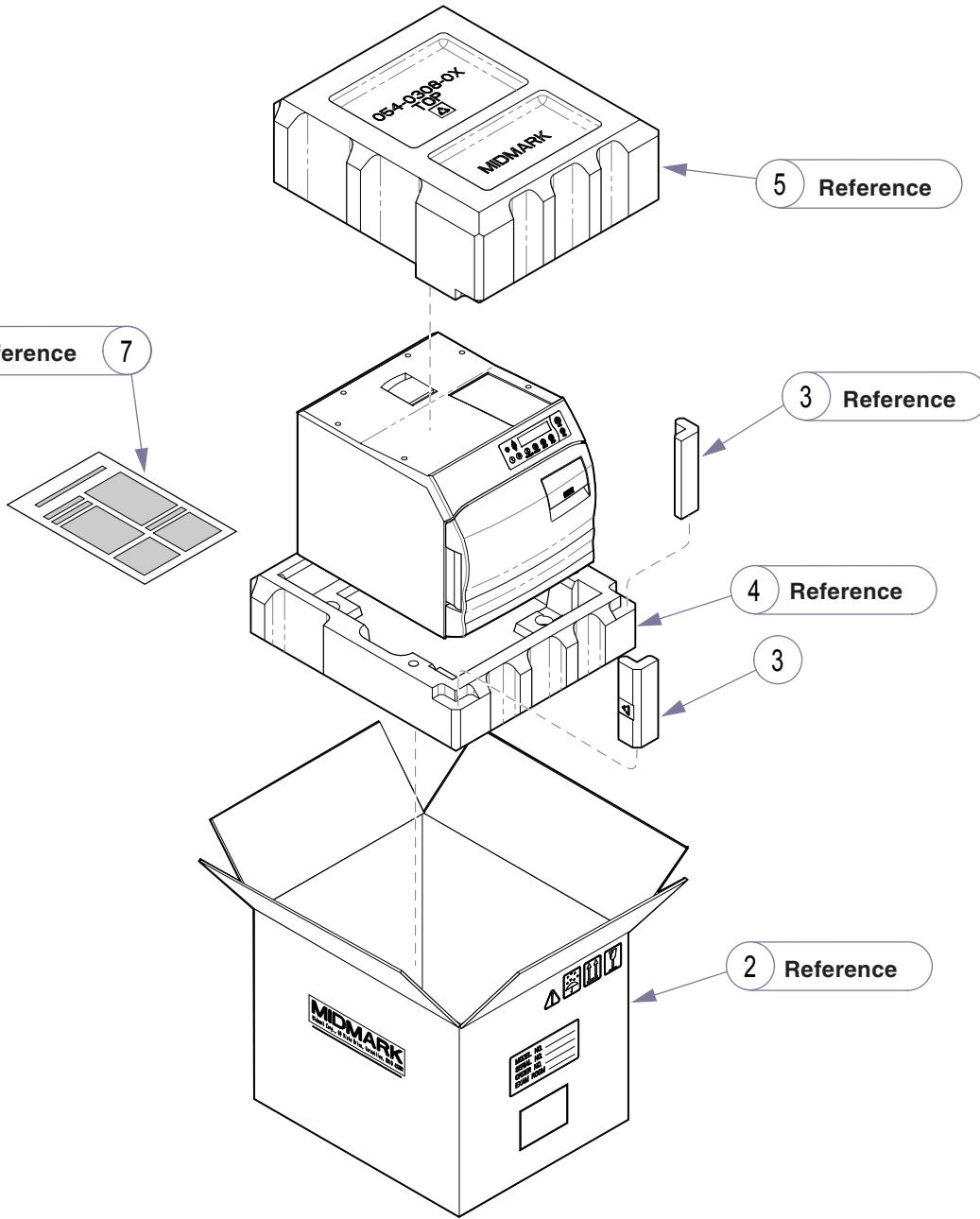
Item	Description	Qty.
1	Water Level Label	1
2	Hot Surface Label	2
3	Distilled Water Label	1
4	Serial Number Label (n/a)	1
5	Caution Label	1

Always Specify Model & Serial Number

Models:
Serial Numbers:

ALL

Labels & Decals



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1 002-0785-00

Item	Description	Qty.
1	M9/M9D Packaging (includes items 2 thru 6)	1
2	• Carton	1
3	• Corners	1
4	• Bottom Pad	1
5	• Top Pad	1
6	• Plastic Bag	1
7	Material Safety Data Sheet	1

Always Specify Model & Serial Number

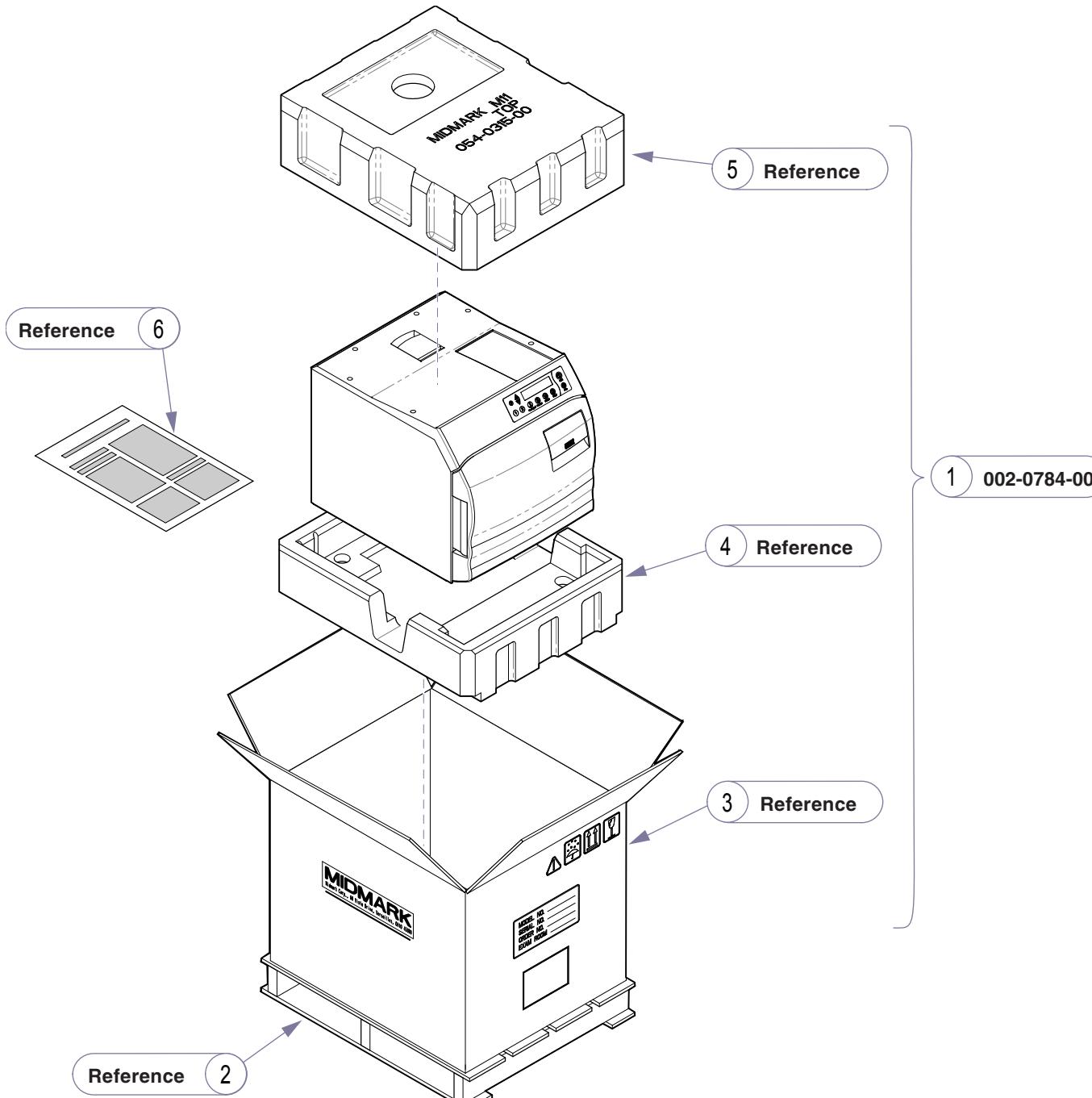
MA594604i

Packaging
(M9/D)

Models:
Serial Numbers:

M9 (-020 /-021/-022)
ALL

M9D (-020 / -022)
ALL



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Item	Description	Qty.
1	M11/M11D Packaging (includes items 2 thru 8)	1
2	• Skid	1
3	• Carton	1
4	• Bottom Pad	1
5	• Top Pad	1
6	• Plastic Bag	1
7	Material Safety Data Sheet	1

Always Specify Model & Serial Number

MA598505i

Models:
Serial Numbers:

M11 (-020 /-021/-022)
ALL

M11D (-020 /-020/-022)
ALL

Packaging
(M11/D)

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	<input type="checkbox"/> EMERGENCY ORDER {to ship within 24 hours if part(s) are in stock. [see note 3]}			
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ADDRESS:				
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FAX #: _____				
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