The attached manual is for your records. Go to the below web site to look for parts

SpeedClave®
Steam Sterilizers

Model Numbers:
M7 -011 thru -016
M7 -020 thru -022

Serial Number Prefixes:
MH, MJ, MK, ML, MM, MN, V

FOR USE BY MIDMARK TRAINED TECHNICIANS ONLY

Service and Parts Manual
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</tr>
<tr>
<td></td>
<td>M7 (-020 thru -022) .......... E-3</td>
</tr>
</tbody>
</table>
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.

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
### General Information

#### Weights, Dimensions, Electrical Specifications

**ATTENTION**

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

#### M7 (-011 thru -016)

<table>
<thead>
<tr>
<th>Dimensions [Refer to illustration]:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Height (A) ........................................... 12.8 in. (32.5 cm)</td>
</tr>
<tr>
<td>Width (B) ............................................ 13.5 in. (34.3 cm)</td>
</tr>
<tr>
<td>Depth (C) ........................................... 18.1 in. (46 cm)</td>
</tr>
</tbody>
</table>

| Chamber Size: ..................................... Diameter: 7.5 in. (19 cm) |
| Shipping Carton:  |
| (Length x Width x Height) ............... 24 in. x 16 in. x 16 in.  |
| Weight:  |
| Shipping Weight ................................ 39 lbs (17.7 kg) |
| w/reservoir empty ......................... 30 lbs (13.6 kg) |
| w/reservoir full ......................... 41.8 lbs (19 kg) |

| Reservoir Capacity: Approx. 1.3 gallon (4.9 liters) at FULL mark |
| Pressure Relief Valve:  |
| opens at approximately: ............... 34 psi (234 kPa) |

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

| Power Consumption:  |
| 100 VAC models ....................... 1150 watts, 12 amps @ 100 VAC |
| 115 VAC models ....................... 1150 watts, 10 amps @ 120 VAC |
| 230 VAC models ....................... 1150 watts, 5 amps @ 240 VAC |

#### M7 (-020 thru -022)

<table>
<thead>
<tr>
<th>Dimensions [Refer to illustration]:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Height (A) ........................................... 13 in. (33 cm)</td>
</tr>
<tr>
<td>Width (B) ............................................ 14 in. (35.6 cm)</td>
</tr>
<tr>
<td>Depth (C) ........................................... 19 in. (48.3 cm)</td>
</tr>
</tbody>
</table>

| Chamber Size: ..................................... Diameter: 7.5 in. (19 cm) |
| Shipping Carton:  |
| (Length x Width x Height) ............... 24 in. x 16 in. x 16 in.  |
| Weight:  |
| Shipping Weight ................................ 39 lbs (17.7 kg) |
| w/reservoir empty ......................... 30 lbs (13.6 kg) |
| w/reservoir full ......................... 41.8 lbs (19 kg) |

| Reservoir Capacity: Approx. 1.3 gallon (4.9 liters) at FULL mark |
| Pressure Relief Valve:  |
| opens at approximately: ............... 34 psi (234 kPa) |

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

| Power Consumption:  |
| 115 VAC models ....................... 1300 watts, 10 amps @ 115 VAC |
| 230 VAC models ....................... 1300 watts, 5 amps @ 230 VAC |

| Fuse (back of unit):  |
| 115 VAC models ....................... 12 amp, 250 V, Fast-Acting, 1/4" x 1-1/4" |
| 230 VAC models ....................... 8 amp, 250 V, Fast-Acting, 5 x 20 mm |
# General Information

## Model Identification / Compliance Chart

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
<th>Serial Number Prefixes</th>
<th>Complies To:</th>
<th>Electrical Ratings:</th>
</tr>
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<tr>
<td></td>
<td></td>
<td></td>
<td>UL 544</td>
<td>VAC</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>UL 61010A-1</td>
<td>115</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>61010-2-041</td>
<td>220 / 240</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>CAN/CSA C22.2, #151</td>
<td>100</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>CAN/CSA C22.2, #1010</td>
<td>115</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>#1010.2-041-96</td>
<td>230</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>115</td>
</tr>
<tr>
<td>M7-011</td>
<td>Ritter M7 Sterilizer</td>
<td>MH &amp; V</td>
<td>X</td>
<td>115</td>
</tr>
<tr>
<td></td>
<td>(115 VAC)</td>
<td></td>
<td>X</td>
<td>220 / 240</td>
</tr>
<tr>
<td>M7-012</td>
<td>Midmark M7 Sterilizer</td>
<td>MJ &amp; V</td>
<td>X</td>
<td>100</td>
</tr>
<tr>
<td></td>
<td>(230 VAC)</td>
<td></td>
<td>X</td>
<td>115</td>
</tr>
<tr>
<td>M7-013</td>
<td>Midmark M7 Sterilizer</td>
<td>MK &amp; V</td>
<td>X</td>
<td>230</td>
</tr>
<tr>
<td></td>
<td>(100 VAC)</td>
<td></td>
<td>X</td>
<td>115</td>
</tr>
<tr>
<td>M7-014</td>
<td>Midmark M7 Sterilizer</td>
<td>ML &amp; V</td>
<td>X</td>
<td>115</td>
</tr>
<tr>
<td></td>
<td>(115 VAC)</td>
<td></td>
<td>X</td>
<td>220 / 240</td>
</tr>
<tr>
<td>M7-015</td>
<td>Dabi Alante M7 Sterilizer</td>
<td>MM &amp; V</td>
<td>X</td>
<td>115</td>
</tr>
<tr>
<td></td>
<td>(115 VAC)</td>
<td></td>
<td>X</td>
<td>230</td>
</tr>
<tr>
<td>M7-016</td>
<td>Dabi Alante M7 Sterilizer</td>
<td>MN &amp; V</td>
<td>X</td>
<td>115</td>
</tr>
<tr>
<td></td>
<td>(230 VAC)</td>
<td></td>
<td>X</td>
<td>220 / 240</td>
</tr>
<tr>
<td>M7-020</td>
<td>Midmark M7 Sterilizer</td>
<td>V</td>
<td>X</td>
<td>115</td>
</tr>
<tr>
<td></td>
<td>(115 VAC)</td>
<td></td>
<td>X</td>
<td>220 / 240</td>
</tr>
<tr>
<td>M7-021</td>
<td>Midmark M7 Sterilizer</td>
<td>V</td>
<td>X</td>
<td>230</td>
</tr>
<tr>
<td></td>
<td>(230 VAC)</td>
<td></td>
<td>X</td>
<td>115</td>
</tr>
<tr>
<td>M7-022</td>
<td>Ritter M7 Sterilizer</td>
<td>V</td>
<td>X</td>
<td>115</td>
</tr>
</tbody>
</table>
General Information

Special Tools

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

<table>
<thead>
<tr>
<th>Special Tool</th>
<th>Manufacturer</th>
<th>Part Number</th>
<th>Purpose of Tool</th>
</tr>
</thead>
<tbody>
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<td>Digital Multimeter</td>
<td>Commercially available</td>
<td>any type</td>
<td>To perform continuity / voltage checks</td>
</tr>
<tr>
<td>Digital Thermometer</td>
<td>Commercially available</td>
<td>any type</td>
<td>To verify chamber temperature</td>
</tr>
</tbody>
</table>

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.

ADDITIONAL INFORMATION

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

- If a malfunction is detected, do not use the table until necessary repairs are made.
- Do not attempt to disassemble table, 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.

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.
Operation & Troubleshooting

Mode
- Electrical System:
  - M7 (-011 thru -016) .................. A-2
  - M7 (-020 thru -022) .................. A-4
- Filling the Chamber .................. A-8
- Heat Up / Sterilization .............. A-14
- Venting the Chamber ................. A-20
Operation & Troubleshooting

Electrical System - [M7 (-011 thru -016)]

The illustration shows all of the electrical components of the sterilizer.
Refer to the following page for a detailed description of current flow.

Troubleshooting
[Electrical System]

Problem: Heating element does not turn ON:
- Heater light is OFF ......................... A-6
- Heater light is ON .......................... A-7

Sterilizer shuts down before timer setting expires .................. A-17
Timer buzzer does not function .......... A-19
Electrical System - [M7 (-011 thru -016)]

With the power cord properly connected...

**Overheat Thermostats**
Current (115 / 230 VAC) continuously flows thru the two (normally closed) overheat thermostats. This current supplies power to the timer.

If either thermostat opens (overheat or malfunction), voltage is removed from the timer until the thermostat is reset or replaced.

**NOTE**
The Manual-Reset Thermostat contacts open at approximately 285°F (140°C). To reset, allow unit to cool, then press RESET button on front of unit.
The Auto-Reset Thermostat contacts open at approximately 295°F (146°C). This thermostat automatically resets when the unit cools to approx. 265°F (129°C).

**Timer**
Current is supplied to the timer thru the two overheat thermostats.

When the timer is turned ON...

**Timer**
The (normally open) timer contacts close, and voltage is supplied to the timer motor and the temperature regulator relay. The timer motor runs, and begins to count down the time it was set for.
(The contacts to the timer buzzer remain open).

**Temperature Regulator Relay**
Current is supplied to the temperature regulator relay thru the timer. If the chamber temperature is lower than the temperature knob setting*, the relay contacts are closed. When these contacts are closed, current flows thru the relay to the heating element and the heater light.

The diaphragm cup of the relay expands as the temperature & pressure inside the chamber increase. When the chamber temperature reaches the temperature knob setting, the relay contacts open, and voltage is removed from the heating element & heater light.

[* The minimum temperature knob setting is approx. 220°F (104°C)]

When the timer is turned ON (continued)...

**Heater Light & Heating Element**
When the contacts of the temperature regulator relay are closed, current is supplied to the heater light and the heating element.

As the relay contacts open and close, the heating element cycles ON / OFF. This continues until the timer setting expires.

The heater light is illuminated whenever the heating element is ON.

When the timer setting expires...

**Timer & Timer Buzzer**
The contacts to the temperature regulator relay open, stopping the current flow to the heater light & heating element.

The contacts to the timer buzzer close and current flows to the timer buzzer. When voltage is applied, the buzzer emits an audible signal.

The contacts to the timer motor remain closed for one minute. After one minute the contacts to the timer motor & the timer buzzer open, stopping the current flow to these two components.
**Electrical System - [M7 (-020 thru -022)]**

The illustration shows all of the electrical components of the sterilizer. Refer to the following page for a detailed description of current flow.

**Troubleshooting**

**[Electrical System]**

**Problem:**

**Page**

When Fill/Vent Switch is pressed:
- Chamber does not FILL ....................... A-11
- Chamber does not VENT ..................... A-23

Heating element does not turn ON:
- Heater light is OFF ............................... A-6
- Heater light is ON ................................. A-7

Sterilizer shuts down before timer setting expires ................................ A-17

Timer buzzer does not function ............ A-19
**Electrical System - [M7 (-020 thru -022)]**

**With the power cord properly connected...**

**Fuse**
Current (115 / 230 VAC) continuously flows thru the fuse located in the back of the unit. This current supplies power to the fill / vent switch and the overheat thermostats.

**Fill / Vent Switch**
Current is supplied to the fill / vent switch thru the fuse.

**Overheat Thermostats & Timer**
Current is supplied to the two overheat thermostats thru the fuse. Current continuously flows thru the thermostats to the timer.

If either thermostat opens (*overheat or malfunction*), voltage is removed from the timer until the thermostat is reset or replaced.

**NOTE**
The Manual-Reset Thermostat contacts open at approximately 285°F (140°C). To reset, allow unit to cool, then press RESET button on front of unit.

The Auto-Reset Thermostat contacts open at approximately 295°F (146°C). This thermostat automatically resets when the unit cools to approx. 265°F (129°C).

**When filling the chamber (pressing the fill/vent switch)...**

**Fill / Vent Switch**
The contacts of the (*normally open*) switch close. When the contacts of the switch are closed, current is supplied to the fill / vent valve.

**Fill / Vent Valve**
When current is applied to the (*normally closed*) valve, the valve opens. When the valve is open, water flows into the chamber.

**When the Timer is turned ON...**

**Timer**
The (*normally open*) timer contacts close, and voltage is supplied to the timer motor and the temperature regulator relay. The timer motor runs, and begins to count down the time it was set for. (*The contacts to the timer buzzer remain open*).

**When the timer is turned ON (continued)...**

**Temperature Regulator Relay**
Current is supplied to the temperature regulator relay thru the timer. If the chamber temperature is lower than the temperature knob setting*, the relay contacts are closed. When these contacts are closed, current flows thru the relay to the heating element and the heater light. [*The minimum temperature knob setting is approx. 220°F (104°C)]

The diaphragm cup of the relay expands as the temperature & pressure inside the chamber increase. When the chamber temperature reaches the temperature knob setting, the relay contacts open, and voltage is removed from the heating element & heater light.

**Heater Light & Heating Element**
When the contacts of the temperature regulator relay are closed, current is supplied to the heater light and the heating element. As the relay contacts open and close, the heating element cycles ON / OFF. This continues until the timer setting expires. The heater light is illuminated whenever the heating element is ON.

**When the timer setting expires...**

**Timer & Timer Buzzer**
The contacts to the temperature regulator relay open, stopping the current flow to the heater light & heating element.

The contacts to the timer buzzer close and current flows to the timer buzzer. When voltage is applied, the buzzer emits an audible signal.

The contacts to the timer motor remain closed for one minute. After one minute the contacts to the timer motor & the timer buzzer open, stopping the current flow to these two components.

**When pressing the Fill / Vent Switch (to VENT the chamber)...**

**Fill / Vent Switch**
The contacts of the (*normally open*) switch close. When the contacts of the switch are closed, current is supplied to the fill / vent valve.

**Fill / Vent Valve**
When current is applied to the (*normally closed*) valve, the valve opens. When the valve is open, steam is released thru the condensing coil & the water is returned to the reservoir.
Problem: Heating element does not turn ON.
[Heater light is OFF]

**Operation & Troubleshooting**

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

- **Check supply voltage**  
  (A dedicated circuit is recommended)  
  (2nd ✓)

- **Press RESET button**  
  Allow unit to cool for 15-20 minutes before pressing RESET button.  
  (1st ✓)

- **Overheat Thermostats**  
  (5th ✓)

- **Temperature Regulator Assy.**  
  (6th ✓)

- **M7 (-020 thru -022) only**  
  Fuse  
  (3rd ✓)

- **Loose / Damaged Wire Connections**  
  Check all wiring connections.  
  (Power cord, overheat thermostats, etc.)  
  (4th ✓)

- **Timer**  
  (7th ✓)

**Models:**  
M7 (-011 thru -016) all  
M7 (-020 thru -022) all
Problem: Heating element does not turn ON. [Heater light is ON]
Operation & Troubleshooting

Filling the Chamber

The illustrations show the water flow when filling the chamber. Refer to the following page for a detailed description of this process.

M7 (-011 thru -016)

M7 (-020 thru -022)

Troubleshooting
[Filling the Chamber]

Problem: Chamber does not fill:
- M7 (-011 thru -016) ......................................... A-10
- M7 (-020 thru -022) ......................................... A-11

Problem: Water continuously flows into chamber:
- M7 (-011 thru -016) ......................................... A-12
- M7 (-020 thru -022) ......................................... A-13

Filling the Chamber
Models: M7 (-011 thru -016) M7 (-020 thru -022)
Serial Numbers: all all

© Midmark Corporation 2004  SF-1854
Filling the Chamber

**M7 (-011 thru -016)**

*When the Fill / Vent Lever is pressed and held...*

**Fill Vent Valve**

The *(normally closed - manual)* valve opens. When the valve is open, water from the reservoir flows thru the fill / vent valve into the chamber.

*When the Fill / Vent Lever is released...*

**Fill / Vent Valve**

The valve closes, and stops the flow of water into the chamber.

**M7 (-020 thru -022)**

*When the Fill / Vent Switch is pressed and held...*

**Fill / Vent Switch & Valve**

Current *(line voltage)* flows thru the fill/vent switch to the fill/vent valve. When voltage is applied, the *(normally closed)* fill / vent valve opens. When the valve is open, water from the reservoir flows into the chamber thru the valve and filter screen.

*When the Fill / Vent Switch is released...*

**Fill / Vent Switch & Valve**

The fill/vent switch opens, stopping the current flow to the fill/vent valve. When voltage is removed, the valve closes. When the valve closes, water stops flowing into the chamber.
Filling the Chamber

Problem: Chamber does not fill.

1st
Low water in reservoir?  
Add distilled water if necessary.

2nd
Fill / Vent Valve & Tubing  
Clean / adjust / replace as necessary.

Models: M7 (-011 thru -016)  
Serial Numbers: all
Problem: Chamber does not fill.

Check supply voltage (A dedicated circuit is recommended)

3rd ✓

Fill / Vent Valve & Tubing Clean / adjust / replace as necessary.

5th ✓

Filter Screen Clean / replace as necessary.

2nd ✓

Low water in reservoir? Add distilled water if necessary.

1st ✓

Fuse

4th ✓

Fill / Vent Switch

6th ✓

Models: M7 (-020 thru -022) all

Serial Numbers: all
Problem: Water continuously flows into chamber.

Filling the Chamber

Fill / Vent Valve & Tubing
Clean / adjust / replace as necessary.

MA672400i
Problem: Water continuously flows into chamber.

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

Models: M7 (-020 thru -022) all
Serial Numbers: MA672600i

Fill / Vent Valve & Tubing
Clean / adjust / replace as necessary.

Fill / Vent Switch
1st
2nd

MA672600i

Filling the Chamber
Heat Up / Sterilization

The illustrations show the water / steam flow during heat up & sterilization. Refer to the following page for a detailed description of this process.

**Heat-Up**

- Temperature Regulator Relay (closed)
- Fill / Vent Valve (closed)
- Note: Electronic valve is shown. Manual valve is also closed.

**Sterilization**

- Temperature Regulator Relay (closed / open)
- Pressure Relief Valve (closed)
- Bellows (closed)
- Fill / Vent Valve (closed)
- Note: Electronic valve is shown. Manual valve is also closed.

### Troubleshooting [Heat-Up / Sterilization]

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**Heat-Up / Sterilization**

- Water
- Heated Water
- Steam
**Heat-Up / Sterilization**

When the timer is turned ON...

**Timer**
The *(normally open)* timer contacts close, and voltage is supplied to the timer motor and the temperature regulator relay. The timer motor runs, and begins to count down the time it was set for. *(The contacts to the timer buzzer remain open).*

**Temperature Regulator Relay**
Current is supplied to the temperature regulator relay thru the timer. If the chamber temperature is lower than the temperature knob setting*, the relay contacts are closed. When these contacts are closed, current flows thru the relay to the heating element and the heater light.

[* The minimum temperature knob setting is approx. 220°F (104°C)]

The diaphragm cup of the relay expands as the temperature & pressure inside the chamber increase. When the chamber temperature reaches the temperature knob setting, the relay contacts open, and voltage is removed from the heating element & heater light.

**Heater Light & Heating Element**
When the contacts of the temperature regulator relay are closed, current is supplied to the heater light and the heating element.

As the relay contacts open and close, the heating element cycles ON / OFF. This continues until the timer setting expires.

The heater light is illuminated whenever the heating element is ON.

**Bellows & Pressure Relief Valve**
**Heat-Up:**
As the water in the chamber begins to boil, air is forced out of the chamber. This air passes thru the bellows into the reservoir.

**Sterilization:**
When pure steam begins to flow thru the bellows, the bellows closes allowing pressure to build in the chamber. If the pressure in the chamber exceeds 34 psi (234 kPa), the pressure relief valve opens to prevent unsafe conditions.

When the timer setting expires...

**Timer & Timer Buzzer**
The contacts to the temperature regulator relay open, stopping the current flow to the heater light & heating element.

The contacts to the timer buzzer close and current flows to the timer buzzer. When voltage is applied, the buzzer emits an audible signal.

The contacts to the timer motor remain closed for one minute. After one minute the contacts to the timer motor & the timer buzzer open, stopping the current flow to these two components.
**Problem:** Heating element turns ON, but does not reach required temperature. [Heater light is ON]

- **Check for pressure leaks.**
  - **1st ✓** Refer to Section B for checkpoints.

- **2nd ✓** Temperature Regulator Assy.

- **3rd ✓** Heating Element

---

**Models:**
- **M7 (-011 thru -016)**
  - Serial Numbers: all
- **M7 (-020 thru -022)**
  - Serial Numbers: all
Problem: Sterilizer shuts down before timer setting expires.

1st
Check for pressure leaks.
Refer to Section B for checkpoints.

2nd
Press RESET button
Allow unit to cool for 15-20 minutes before pressing RESET button.

3rd
Overheat Thermostats

4th
Temperature Regulator Assy.

5th
Timer

Models: M7 (-011 thru -016) all  M7 (-020 thru -022) all

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

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Operation & Troubleshooting

**Problem:** Biological test strips indicate items are not sterile.

Is the sterilizer overloaded?  
Large loads or heavy linen packs may prevent strips from changing.

Are the correct trays being used?  
Some trays may prevent proper air flow. Be sure trays are designed for this sterilizer.

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)

Check for pressure leaks.  
Refer to Section B for checkpoints.

Temperature Regulator Assy.
Problem: Timer buzzer does not function.
Operation & Troubleshooting

Venting the Chamber
The illustrations show the steam / water flow when venting the chamber. Refer to the following page for a detailed description of this process.

Troubleshooting
[Venting the Chamber]

Problem: Chamber will not vent:
- M7 (-011 thru -016) ......................... A-22
- M7 (-020 thru -022) ......................... A-23

Models: | M7 (-011 thru -016) | M7 (-020 thru -022) |
---------|-------------------|-------------------|
Serial Numbers: | all | all |
Venting the Chamber

Attention
The door handle must be moved to the VENT position before pressing the Fill / Vent Lever or Switch.

M7 (-011 thru -016)

When the Fill / Vent Lever is pressed and held...
Fill / Vent Valve
The (normally closed - manual) valve opens. Pressure forces water and steam back into the reservoir thru the valve and the condensing coil. When all of the pressure has been vented, the door will "pop".

Note: Release the lever when the door "pops". If the lever is held too long, the chamber will begin to fill.

When the Fill / Vent Lever is released...
Fill / Vent Valve
The valve closes.

M7 (-020 thru -022)

When the Fill / Vent Switch is pressed and held...
Fill / Vent Switch & Valve
Current (line voltage) flows thru the fill/vent switch to the fill/vent valve. When voltage is applied, the (normally closed) fill / vent valve opens. Pressure forces water and steam back into the reservoir thru the valve and the condensing coil. When all of the pressure has been vented, the door will "pop".

Note: Release the lever when the door "pops". If the lever is held too long, the chamber will begin to fill.

When the Fill / Vent Switch is released...
Fill / Vent Switch & Valve
The fill/vent switch opens, stopping the current flow to the fill/vent valve. When voltage is removed, the valve closes.
Problem: Chamber will not vent.

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

Operation & Troubleshooting

Venting the Chamber

Model: M7 (-011 thru -016)

Serial Numbers: all

Fill / Vent Valve & Tubing

1st

Clean / adjust / replace as necessary.

MA672400i
Problem: Chamber will not vent.

Filter Screen
Clean / replace as necessary.

Fill / Vent Switch
3rd

.fill / Vent Valve & Tubing
Clean / adjust / replace as necessary.

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

Models: M7 (-020 thru -022) all
Serial Numbers: MA673000i
Testing & Repair

Section B

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Checking for Pressure Leaks

This illustration shows the areas to check for pressure leaks.

- **Water leaking from fitting(s)?**
  - Tighten / replace fittings if necessary.

- **Steam from pressure relief valve?**
  - If YES, replace the pressure relief valve.

- **Steam from bellows tubing?**
  - If YES, replace the bellows.
  - Note: The bellows should close at approx. 215°F (101°C). Periodic “hissing” or “spitting” is normal.

- **Water leaking from door?**
  - If YES, replace door gasket.

- **Bubbles from condensing coil?**
  - If YES, clean or replace the fill / vent valve.

---

Components

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**Fuse**

**Location**

![Fuse Holder]

**Fuse Ratings:**
- **115V models**: 12 amp, 250 V, Fast-Acting, 1/4" x 1-1/4"
- **230V models**: 8 amp, 250 V, Fast-Acting, 5mm x 20mm

**Fuse Test**

**Acceptable Range**

*Step 1:* Place meter probes on ends of fuse. [Set meter to 200 ohms (Ω)]

*If reading is OL...*
Replace fuse.

*If reading is within acceptable range...*
Fuse is OK.

**Models:**
- **M7 (-020 thru -022)**
- **all**

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**Bellows**

Location & Function

As the water in the chamber begins to boil...
Air & steam are forced out of the chamber, thru the open bellows, and back into the reservoir.

When pure steam begins flowing thru bellows...
The bellows closes allowing pressure to build in the chamber. [Note: The bellows will periodically "hiss" or "spit", this is normal.]
Bellows - continued

Replacement

Removal
Step 1: Loosen two compression nuts. Remove bellows.

Installation
(See NOTE for proper orientation of bellows)
Step 1: Install bellows. Tighten compression nuts.

NOTE:
The arrow on the bellows indicates the direction of flow toward the reservoir. The bellows must be oriented correctly to ensure proper operation.

Arrow must point toward the reservoir as shown
**Fill / Vent Valve (manual)**

**Location & Function**

*When the fill / vent lever is pressed (no pressure in chamber)...*

The *(normally closed)* fill / vent valve opens.
Water from the reservoir flows thru the open valve into the chamber.
The valve closes when the lever is released.

*When the fill / vent lever is pressed (chamber is pressurized)...*

The *(normally closed)* fill / vent valve opens.
Water and steam from the chamber are forced thru the open valve back into the reservoir. When all of the pressure has been released, the door will "pop".
The valve closes when the lever is released.
Fill / Vent Valve (manual) - continued

Removal / Installation / Adjustment

Removal
Step 1: Drain water from reservoir.
Step 2: Loosen two compression nuts.
Step 3: Disengage lever bracket from lever. Remove valve.

Installation
Step 1: Engage lever bracket with lever. Press valve into mtg. brackets.
Step 2: Align tubing with valve. Tighten two compression nuts. Adjust lever bracket. (See Adjustment)

Adjustment
Adjust lever bracket so that Distance “A” is approx. 1/4” (0.63 cm). To secure position, tighten nut against lever bracket.

Models: M7 (-011 thru -016) all
Component Testing & Repair

Fill / Vent Valve (electronic)

Location & Function

When the fill / vent switch is pressed (no pressure in chamber)...
Current (line voltage) flows thru the fill/vent switch to the fill / vent valve. When voltage is applied, the (normally closed) fill/vent valve opens. Water from the reservoir flows thru the open valve into the chamber. The valve closes when the switch is released.

When the fill / vent lever is pressed (chamber is pressurized)...
Current (line voltage) flows thru the fill/vent switch to the fill/vent valve. When voltage is applied, the (normally closed) fill / vent valve opens. Water and steam from the chamber are forced thru the open valve back into the reservoir. When all of the pressure has been released, the door will "pop". The valve closes when the lever is released.
Fill / Vent Valve (electronic) - continued

Electrical Test

**Electrical Test**

**Step 1:** Disconnect wires from valve terminals.

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

**Acceptable Range**

- **115 VAC models:** 3.24 to 3.96
- **230 VAC models:** 3.24 to 3.96

**Electrical Test**

- *If reading is out of acceptable range...* Replace valve.
- *If reading is within acceptable range...* Electrical component of valve is OK.

**Models:** M7 (-020 thru -022) all

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**Fill / Vent Valve (electronic) - continued**

**Replacement**

**Removal**
- **Step 1:** Tag and disconnect wires from valve terminals.
- **Step 2:** Disconnect compression fittings.
- **Step 3:** Connect compression fittings.
- **Step 4:** Remove valve from bracket.

**Installation**
- **Step 1:** Install valve onto bracket. Locate “IN” port and direct flow into the reservoir as shown.
- **Step 2:** Secure bracket / valve to base plate.
- **Step 3:** Remove bracket / valve from base plate.
- **Step 4:** Connect wires to valve terminals.

**Models:**  
- **M7 (-020 thru -022)**  
  - **Serial Numbers:** all

**Rev. 7/07**
Fill / Vent Valve (electronic) - continued

Disassembly / Cleaning

Disassembly / Cleaning

**Step 1:** Remove nut. Disassemble valve.

Disassembly / Cleaning

**Step 2:** Remove any debris. Inspect components for damage.

Models: M7 (-020 thru -022)  Serial Numbers: all
Temperature Regulator Assembly

Location & Function

When the Temperature Control knob is adjusted...
The flexible shaft rotates, increasing or decreasing the distance between the relay contacts. This adjusts the point (i.e. temperature) at which the relay contacts will open & close*.

As the temperature & pressure inside the chamber increase...
The diaphragm cup expands, pushing the relay contacts apart. When the relay contacts are open, the heating element is de-energized.

As the temperature & pressure inside the chamber decrease...
The diaphragm cup contracts, allowing the relay contacts to close. When the relay contacts are closed, the heating element is energized.
Temperature Regulator Assembly - continued

Troubleshooting

**Sterilizer shuts down before timer setting expires...**

Required action:

- Inspect relay.
  (If contacts are corroded or "fused" together - replace relay)

- Inspect diaphragm cup.
  (If water / steam is leaking from this area, replace diaphragm cup)

**Sterilizer does not reach desired temperature...**

Required action:

- Perform Relay Adjustment.
  Replace relay if necessary.

---

Models:  
**M7 (-011 thru -016)**  
**M7 (-020 thru -022)**

Serial Numbers:  
**all**
**Temperature Regulator Assembly - continued**

**Relay Adjustment**

**Step 1:** Fill chamber with water. Close & latch door. Set Timer knob to 30 minutes.

**Step 2:** Turn Temperature knob to max.

**Step 3:** Loosen setscrew 2-3 turns.

**Step 4:** Allow chamber to reach its max. temperature [>270°F (132°C)].

**Step 5:** Adjust screw until temperature gauge reads slightly above 270°F (132°C).

**Step 6:** Adjust setscrew until temperature gauge reads 270-271°F (131-132°C).
Temperature Regulator Assembly - continued

Relay Removal

Removal Step 1: Remove setscrew from flexible shaft.

Removal Step 2: Rotate Temperature knob until flexible shaft unscrews from relay.

Removal Step 3: Disconnect two relay wires. (one from heating element & one from timer - not shown)

Removal Step 4: Remove timer buzzer. Remove relay & spacer.

Models: M7 (-011 thru -016) all M7 (-020 thru -022) all
Temperature Regulator Assembly - continued

Relay Installation

Installation

Step 1: Install relay & spacer. Install timer buzzer.

Note: Do not tighten Adjustment Screw. Fine Adjustment Setscrew should be flush with bracket.

Step 2: Connect two relay wires. (one to heating element & one to timer - not shown)

Step 3: Turn the Temperature knob until flexible shaft screws all the way into relay. Rotate knob back (counter-clockwise) 1 1/2 turns, then install Shaft Setscrew.

Step 4: Turn the Temperature knob counter-clockwise until it hits the stop. Hold knob in place, then loosen Knob Setscrew. Rotate knob so that white mark is at 3:00 position, then tighten knob setscrew.

Step 5: Perform Relay Adjustment.

Refer to:
Relay Removal ..................................... B-15
Relay Adjustment ................................. B-14

Models:
M7 (-011 thru -016) all
M7 (-020 thru -022) all
Diaphragm Cup Replacement

**Removal**
- **Step 1:** Remove relay.
- **Step 2:** Remove nut & lockwasher.
- **Step 3:** Install relay.

**Installation**
- **Step 1:** Install gasket onto diaphragm cup. Install diaphragm cup.
- **Step 2:** Install lockwasher & nut.
- **Step 3:** Remove diaphragm cup. Remove gasket from diaphragm cup.

---

**Models:**
- **M7 (-011 thru -016) all**
- **M7 (-020 thru -022) all**
Heating Element

Location & Function

When the timer is turned ON...
The timer supplies current to the temperature relay. If the chamber temperature is lower than the temperature knob setting*, the relay contacts are closed. When these contacts are closed, current flows thru the relay to energize the heating element and the heater light.

When the chamber temperature reaches the temperature knob setting, the relay contacts open, and voltage is removed from the heating element & heater light.

[* The minimum temperature knob setting is approx. 220°F (104°C)]

When the timer is OFF...
Timer contacts to the temperature relay open, stopping the current flow to the heater light & heating element.
Heating Element - continued

Resistance Test

Step 1: Disconnect wires from heating element terminals.

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

Acceptable Range

100 VAC models ........ 8 to 10
115 VAC models: ....... 11 to 13
230 VAC models: ....... 45 to 51

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

If reading is within acceptable range...
Heating element is OK.

Model Numbers:
- M7 (-011 thru -016)
- M7 (-020 thru -022)
Component Testing & Repair

Heating Element - continued

Replacement

Removal
Step 1: Disconnect power to sterilizer. Drain all water from reservoir.

Removal
Step 2: Remove inspection cover.

Removal
Step 3: Tag & disconnect wires from heating element terminals.

Removal
Step 4: Remove two nuts, lockwashers & flat washers.

Installation
Step 2: Install two flat washers, lockwashers, & nuts.
Note: Hold heating element in place when tightening nuts.

Installation
Step 4: Install inspection cover.

Installation
Step 3: Connect wires to heating element terminals. (Refer to Section D for wiring diagrams)

Removal
Step 3: Tag & disconnect wires from heating element terminals.

Models:
Serial Numbers: M7 (-011 thru -016) all, M7 (-020 thru -022) all

Refer to:
Cover Removal ........................................... C-2
Wiring Diagrams ........................................ D-1
Heating Element - continued

Replacement - continued

Removal
Step 5: Remove heating element. Remove gaskets from terminal posts.

Installation
Step 1: Install gaskets onto terminal posts. Install spacers or spacer bracket*. Insert terminal posts thru chamber & thermostat bracket.

* Spacer Bracket must be installed above gaskets to prevent leaking.
With the power cord properly connected...

Overheat Thermostats

Current (115 / 230 VAC) continuously flows thru the two (normally closed) overheat thermostats. This current supplies power to the timer.

If either thermostat opens (overheat or malfunction), voltage is removed from the timer until the thermostat is reset or replaced.

**NOTE**

The Manual-Reset Thermostat contacts open at approximately 285°F (140°C). To reset, allow unit to cool, then press RESET button on front of unit.

The Auto-Reset Thermostat contacts open at approximately 295°F (146°C). This thermostat automatically resets when the unit cools to approx. 265°F (129°C).
Overheat Thermostats - continued

Resistance Test

Attention!
Inspect thermostat for physical damage (ex. cracked plastic).
If damage is apparent, replace thermostat

Resistance Test
Step 1: Disconnect wires from thermostat terminals.

Acceptable Reading

Resistance Test
If reading is (approximately) 0.00 ...
Thermostat is good.

If reading is OL...
Replace thermostat.
**Overheat Thermostats - continued**

**Replacement**

**Removal**
- **Step 1:** Disconnect power to sterilizer. Drain all water from reservoir.
- **Step 4:** Disconnect wires. Remove thermostat.

**Installation**
- **Step 1:** Install thermostat.
- **Step 3:** Connect wires.
- **Step 2:** Tighten two nuts.
- **Step 4:** Install inspection cover.

**Models:**
- M7 (-011 thru -016) all
- M7 (-020 thru -022) all

Refer to:
- Wiring Diagrams ......................................... D-1

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Pressure Relief Valve

Location & Function

*If the pressure in the chamber exceeds 34 psi (234kPa)*...
The pressure relief valve opens to prevent unsafe conditions.

**Installation**

*Step 1:* Apply hi-temp sealant to valve threads. Install valve.

**Removal**

*Step 1:* Unscrew pressure relief valve.

---

**Models:**
- **M7 (011 thru 016)** all
- **M7 (020 thru 022)** all

**Serial Numbers:**

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Timer

Location & Function

NOTE
Current is supplied to the timer thru the two overheat thermostats.

When the timer is turned ON...
The timer contacts to the timer motor & the temperature relay close, and voltage is supplied to these components. When voltage is applied to the timer motor, the time setting counts down. (The contacts to the timer buzzer remain open).

When the timer setting expires...
The timer contacts to the temperature relay open, stopping the current flow to the relay.

The timer contacts to the buzzer close for one minute. Current flows to the buzzer, resulting in a audible signal. After one minute, the contacts to the timer motor & the buzzer open, stopping the current flow to these two components.
Timer - continued

Supply Voltage Test

Caution
This test must be performed with the power cord connected.

Supply Voltage Test

Step 1: Place meter probes on terminals as shown. [Set meter to VAC]

Acceptable Range

line voltage (115 / 230 VAC ±10%)

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

If reading is out of range...
Check voltage supply.
(overheat thermostats, fuse, etc.)

Models: M7 (-011 thru -016) all | M7 (-020 thru -022) all
Serial Numbers: M7 (-011 thru -016) all | M7 (-020 thru -022) all

Refer to:
Cover Removal ..................................... C-2
Output Voltage Test .............................. B-28
**Timer - continued**

Output Voltage Test *(perform Supply Voltage Test first)*

**Caution**

This test must be performed with the power cord connected.

**Voltage to Temp. Relay**

**Step 1:** Turn timer knob to 10 minutes. 
Place meter probes on terminals as shown. 
[Set meter to VAC]

**Voltage to Timer Motor**

**Step 1:** Turn timer knob to 10 minutes. 
Place meter probes on terminals as shown. 
[Set meter to VAC]

**Voltage to Timer Buzzer**

**Step 1:** Turn timer knob to 1 minute *(or less).* 
Place meter probes on terminals as shown. 
[Set meter to VAC]

**Acceptable Range**

Line voltage *(115 / 230 VAC ±10%)*

**Output Voltage Test**

*If reading is within range...* 
Timer is functioning properly.

*If reading is out of range...* 
Replace timer.

Refer to:

- Cover Removal .................................. C-2
- Supply Voltage Test ............................. B-27
Timer - continued

Replacement

Refer to:
- Cover Removal ........................................ C-2
- Wiring Diagrams ...................................... D-1

Installation
Step 1: Install timer.
Install two screws.

Step 2: Connect wires.
(refer to Wiring Diagrams)

Step 3: Install timer knob.
Tighten set screw.

Removal
Step 1: Loosen set screw.
Remove timer knob.

Step 2: Tag and disconnect wires.

Step 3: Remove two screws.
Remove timer.

Models:  
- M7 (-011 thru -016)  
- M7 (-020 thru -022)  
Serial Numbers:  
- all

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**Timer Buzzer**

**Location & Function**

*When the timer setting expires...*
Timer contacts to the buzzer close for one minute. Current flows to the buzzer, causing an audible signal.

**Replacement & Volume Adjustment**

- **Volume Adjustment**
  - To increase volume... Loosen adjustment screw.
  - To decrease volume... Tighten adjustment screw.

**Installation**

- **Step 1:** Install buzzer.
- **Step 2:** Connect buzzer wires.

**Removal**

- **Step 1:** Disconnect buzzer wires.
- **Step 2:** Remove buzzer.

**Adjustment Screw**
(present on new-style buzzers only)
Temperature Gauge

Replacement

**Installation**

**Step 1:** Install retainer bracket, nut, compression nut, & rubber sleeve onto temperature gauge.

**Step 2:** Orient gauge face properly. Tighten nut.

**Step 3:** Slide rubber sleeve back against fitting. Tighten compression nut. *(Do not overtighten).*

**Removal**

**Step 1:** Loosen nut. Slide retainer bracket back.

**Step 2:** Unscrew compression nut. Remove temperature gauge.

---

**Models:**

| Serial Numbers: | M7 (-011 thru -016) all | M7 (-020 thru -022) all |

---

**Temperature Gauge**

- Replacement ........................................ B-31
- Exploded View / Part Numbers .......... E-5
Door Assembly

Door Replacement

Door Removal
Step 1: Move door handle to unlatched position.

Door Installation
Step 1: Install door stop & screw.

Door Removal
Step 2: Remove nut, screw, & door stop.

Door Installation
Step 1: Install nut* (Do not overtighten)
*apply removeable threadlocking adhesive

Door Installation
Step 2: Lubricate gasket w/soapy water. Insert gasket into gasket channel.

Gasket Replacement

Gasket Installation
Step 1: Using a brush, clean all debris from gasket channel.

Gasket Installation
Step 2: Lubricate gasket w/soapy water. Insert gasket into gasket channel.

Door Assembly

Testing - refer to:
- Checking for Pressure Leaks .......... B-2
- Door Replacement........................ B-32
- Gasket Replacement ..................... B-32
- Disassembly / Assembly .............. B-33
- Exploded View / Part Numbers ........ E-6

Models:
- M7 (-011 thru -016) all
- M7 (-020 thru -022) all

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Door Assembly - continued

Disassembly / Assembly

**Assembly**

**Step 1:** Install T-bolt into U-bracket.

**Step 2:** Install long spring & short spring. Install door w/bowed edges at top & bottom.

**Step 3:** Apply removable threadlocking adhesive to T-bolt threads & face of washer. Install washer & cap nut.

**Step 4:** Install cross arm & handle. Secure with pin & push nut.

**Disassembly**

**Step 1:** Remove cap nut, washer, & door. Remove short spring & long spring.

**Step 2:** Remove push nut, pin, handle, & cross arm.

**Step 3:** Remove T-bolt from U-bracket.

**Door Assembly**

Models: M7 (-011 thru -016) all M7 (-020 thru -022) all

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Reservoir Tank

Removal

Step 1: Drain all water from reservoir.

Step 2: Loosen nut.

Step 3: Remove bulkhead fitting & washer.

Step 4: Remove clamp & drain hose.

Step 5: Loosen nut.

Step 6: Remove condensing coil, & washer.

Step 7: Pull bellows tube out of tank.

Step 8: Remove four screws & tank.
**Reservoir Tank**

**Installation**

**Step 1:** Install condensing coil & washer. Secure with nut.

**Step 2:** Reconnect plumbing. Secure with nut.

**Step 3:** Insert bellows tubing into tank.

**Step 4:** Install four screws.

**Step 5:** Install bulkhead fitting & washer. Partially install nut.

**Step 6:** Reconnect plumbing. Tighten nut.

**Step 7:** Install drain tube & clamp.

**Step 8:** Tighten all fittings before filling reservoir.

**Note**
When reconnecting plumbing, apply teflon tape or sealant to threads - except where compression fittings are used.
Chamber Assembly

Removal

**Removal Step 1:** Drain all water from reservoir.

**Removal Step 2:** Remove the following components:
- Covers
- Tray Plate / Rack
- Door Assembly & Gasket
- Temperature Regulator Assy.
- Heating Element
- Overheat Thermostats

**Removal Step 3:** Disconnect compression fitting from top of chamber.

**Removal Step 4:** Disconnect compression fitting from bottom of chamber.

**Removal Step 5:** Remove screw(s) securing bracket* to base. Remove chamber.

*Bracket design may vary.

---

**Models:**
- **M7 (-011 thru -016)**
- **M7 (-020 thru -022)**

---

**Chamber Assembly**
- Removal ........................................... B-36
- Disassembly / Assembly ...................... B-37
- Installation ........................................ B-38
- Exploded View / Part Numbers ............. E-10

**Refer to (Removing):**
- Covers ............................................ C-2
- Tray Plate / Rack ................................. C-3
- Door Assembly / Gasket ..................... B-32
- Temperature Regulator Assembly ........ B-15
- Heating Element ................................. B-20
- Overheat Thermostats ....................... B-24
Chamber Assembly - continued

Disassembly / Assembly

**Disassembly**

**Step 1:** Remove banding & insulation.

**Step 2:** Remove bracket from chamber.

*Note:* On later models, the bracket is welded to the chamber - skip this step.

**Step 3:** Remove two fittings from chamber.

**Step 4:** Install insulation & banding.

**Assembly**

**Step 1:** Position door hinge & washer. Install screw & nut*. Connect spring.

*apply removeable threadlocking adhesive

**Step 2:** Install two fittings* into chamber. *apply teflon tape / hi-temp sealant

**Step 3:** (If applicable) Install bracket.

**Step 4:** Install insulation & banding.

**Models:**

<table>
<thead>
<tr>
<th>Models</th>
<th>Serial Numbers</th>
</tr>
</thead>
<tbody>
<tr>
<td>M7 (-011 thru -016)</td>
<td>all</td>
</tr>
<tr>
<td>M7 (-020 thru -022)</td>
<td>all</td>
</tr>
</tbody>
</table>

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Installation

Note
Replace compression fittings if damage is apparent.

Assembly
Step 3: Connect compression fitting / plumbing to fitting on top of chamber.

Assembly
Step 4: Install the following components:
- Overheat Thermostats
- Heating Element
- Temperature Regulator Assy.
- Door Assembly & Gasket
- Tray Plate / Rack
- Covers

Installation
Step 1: Secure bracket* to base.
*Bracket design may vary.

Assembly
Step 2: Connect compression fitting / plumbing to fitting on bottom of chamber.

Refer to (Installing):
- Overheat Thermostats ......................... B-24
- Heating Element ............................. B-20
- Temperature Regulator Assembly ....... B-16
- Door Assembly / Gasket ................... B-32
- Tray Plate / Rack ............................ C-3
- Covers ........................................ C-2
Access Procedures

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

Section C
Access Procedures

Covers / Panels

Removal / Installation

Caution
Always unplug power cord before removing any covers / panels.

Removal
Step 1: Remove six screws.
Step 2: Remove cover.

Installation: M7 (-011 thru -016)
Step 1: Slide cover down over edge of front panel.

Installation: M7 (-020 thru -022)
Step 1: Slide cover down over edge of front panel & back panel (not shown).

Installation: M7 (all)
Step 2: Install six screws.
**Tray Plate / Rack**

**Removal / Installation**

**Caution**
Always allow unit to cool before removing trays or rack.

**Removal Step 1:** Lift up on left side of tray plate until it “pops” free of rack. Remove tray plate.

**Installation Step 1:** Position rack w/ offset ends to the left. Squeeze bottom of rack together. Push rack into chamber.

**Installation Step 2:** Insert the right side of tray plate under bottom wire of rack.

**Installation Step 3:** Push left side of plate down until it engages w/ offset ends of rack.

**Removal Step 2:** Squeeze bottom of rack together. Pull rack out of chamber.

**Offset Ends** (left)  
**Straight Ends** (right)

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
**Draining / Filling the Reservoir**

**Draining**

**Step 1:** Hold hose over a drain or suitable container. Insert drain hose into coupling on front of unit.

*Note:* The max. reservoir capacity is: 1.3 gallon (4.9 liters)

**Filling**

**Step 1:** Pour distilled water into reservoir until the water level reaches the "full mark". Do not overfill!
Wiring Diagrams & Schematics

Model | Page
--- | ---
115 VAC models: M7 (-011 / -013 / -014 / -015) | D-2
M7 (-020 / -022) | D-3
230 VAC models: M7 (-012 / -016) | D-4
M7 (-021) | D-5
Wiring Diagrams

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

Models:
Serial Numbers:  
M7 (-020) all  
M7 (-022) all

Wiring Diagrams (115 VAC Models)
**Wiring Diagrams**

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

**Models:**
- M7 (-021)
  - all

**Serial Numbers:**
- all

---

**Wiring Diagrams (230 VAC Models)**

- **F1 Fuse:**
  - 230 V Unit: 8A 250V Fast Acting

- **Wiring Harness:**
  - 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

---
Exploded Views & Parts Lists

Model M7 (-011 thru -016) ...................... E-2
Model M7 (-020 thru -022) ...................... E-3

Section E
**M7 (-011 thru -016)**

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

- **Covers** .......... E-4
  - includes: main cover, base plate, leveling feet, fill cap, etc.

- **Chamber Components** .......... E-10
  - includes: fittings & mounting bracket

- **Door Components** ...... E-6
  - includes: hinge, & door gasket

- **Front Panel Components** .......... E-5
  - includes: heater light, thermometer, knobs, & drain coupling

- **Temperature Regulator Components** .......... E-7
  - includes: temp. relay & diaphragm cup

- **Reservoir** .............. E-8
  - includes: condensing coil & drain tube

- **Bellows & Plumbing** ... E-11*

- **Timer / Buzzer** ............ E-12

- **Fill / Vent Valve & Plumbing** .......... E-9*

- **Labels & Decals** .......... E-17

- **Heating Element & Thermostats** .......... E-13

- **Power Cord** .......... E-14

- **Rack & Trays** .......... E-15

- **Packaging** .......... E-16

* Items not shown: Heating Element & Thermostats .......... E-13
  Power Cord .......... E-14
  Rack & Trays .......... E-15
  Packaging .......... E-16
**M7 (-020 thru -022)**

* Indicates multiple pages due to a serial number break for the parts illustration
Item | Description | Qty.
--- | --- | ---
1 | Cover Kit (includes items 2 thru 4) | 1
2 | Cooling Rail | 2
3 | Main Cover | 1
4 | Push Nut | 1
5 | Fill Cap | 1
6 | Rubber Seal | 1
7 | Lockwasher | 6
8 | Screw (#10 x 1/2", self-tapping) | 6
9 | Keps Nut | 4
10 | Rubber Foot Kit (includes nut) | 4
11 | Base Plate | 1
12 | Inspection Cover | 1

Always Specify Model & Serial Number
Item | Description | Qty.
--- | --- | ---
1 | Front Panel (w/o label) | 1
2 | Label | 1
3 | Alignment Pin | 1
4 | Lockwasher | 1
5 | Screw | 1
6 | Thermometer Bracket (used only on units built prior to 4/1/2007) | 1
7 | Jam Nut | 1
8 | Refer to: Temp. Regulator Components E-7
9 | Shut-Off Coupling | 1
10 | Refer to: Fill / Vent Valve E-9
11 | Timer Knob (includes setscrew) | 1
12 | Temperature Knob (includes setscrew) | 1
13 | Refer to: Heating Element / Overheat Thermostats E-13
14 | Heater Light | 1
15 | Thermometer Kit (incl. items 20 thru 22) | 1
16 | • Compression Nut | 1
17 | • Rubber Sleeve | 1
18 | • Male Connector | 1

Always Specify Model & Serial Number

Models: M7 (-020 thru -022)
Serial Numbers: all

Front Panel Components

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<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>Qty.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Temperature Relay Kit</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(incl. items 2 &amp; 3)</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>• Spacer</td>
<td>1</td>
</tr>
<tr>
<td>3</td>
<td>• Screw (#6-32 x 7/16&quot;)</td>
<td>3</td>
</tr>
<tr>
<td>4</td>
<td>Flexible Shaft Assembly</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Set Screw</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Diaphragm Cup</td>
<td>1</td>
</tr>
<tr>
<td>7</td>
<td>Gasket</td>
<td>1</td>
</tr>
<tr>
<td>8</td>
<td>Nut</td>
<td>1</td>
</tr>
<tr>
<td>9</td>
<td>Lockwasher</td>
<td>1</td>
</tr>
</tbody>
</table>

Always Specify Model & Serial Number

Models: ALL

Serial Numbers: ALL

Temperature Regulator Components

© Midmark Corporation 2004 SF-1854 Rev 1/08
Item | Description | Qty.
--- | --- | ---
1 | Reservoir Assembly (incl. items 2 thru 12) | 1
2 | Tank | 1
3 | Tank Lid | 1
4 | Pressure Relief Valve | 1
5 | Bulkhead Fitting (includes nut) | 1
6 | Washer | 2
7 | Condensing Coil | 1
8 | Compression Fitting | 1
9 | Bulkhead Fitting (includes nut) | 1
10 | Neoprene Washer | 1
11 | Hose Clamp | 2
12 | Tank Drain Tube | 1
13 | Refer to: Front Panel Components | Ref
14 | Drain Hose Kit (incl. items 14 thru 16) | 1
15 | Barbed Fitting | 1
16 | Removable Drain Tube | 1
17 | Screw | 2

Always Specify Model & Serial Number

Models: M7 (-020 thru -022)
Serial Numbers: all
The chamber bracket (item #6) on some models may be attached to the base plate w/ pop rivets. When installing a new bracket, replace rivets w/ screws (item #7).

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>Qty.</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>Chamber Assembly - complete</td>
<td>1</td>
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<tr>
<td></td>
<td>includes items 2 &amp; 3 and the following:</td>
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</tr>
<tr>
<td></td>
<td>• Heating Element &amp; Thermostats (2)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Temperature Regulator Assembly</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Door Hinge &amp; Door Gasket</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Compression Fitting</td>
<td>1</td>
</tr>
<tr>
<td>3</td>
<td>Chamber Shell only</td>
<td>2</td>
</tr>
<tr>
<td>4</td>
<td>Banding Strap (end)</td>
<td>1</td>
</tr>
<tr>
<td>5</td>
<td>Chamber Bracket</td>
<td>1</td>
</tr>
<tr>
<td>6</td>
<td>Screw</td>
<td>1</td>
</tr>
<tr>
<td>7</td>
<td>Screw</td>
<td>2</td>
</tr>
<tr>
<td>8</td>
<td>Elbow Fitting</td>
<td>1</td>
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<tr>
<td>9</td>
<td>Nut</td>
<td>1</td>
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<tr>
<td>10</td>
<td>Insulation</td>
<td>1</td>
</tr>
<tr>
<td>11</td>
<td>Banding Strap</td>
<td>2</td>
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<tr>
<td>12</td>
<td>Banding Clip</td>
<td>2</td>
</tr>
</tbody>
</table>

Always Specify Model & Serial Number

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Note: Item #2 will reconfigure Bellows plumbing to match current models.
Old-style rocker assembly is not available. Replace with item #11.

Item | Description                        | Qty.
--- | ----------------------------------- | ----
1   | Heating Element (includes items 2 & 3) | 1
2   | Nut                                 | 2
3   | Gasket                              | 2
4   | Overheat Thermostat (manual-reset)  | 1
5   | Overheat Thermostat (auto-reset)    | 1
6   | Bracket                             | 1
7   | Washer                              | 2
8   | Lockwasher                          | 2
9   | Heater Spacer                       | 1
10  | Nut                                 | 1
11  | Rocker Assembly                     | 1
12  | Spacer                              | 1
13  | Screw                               | 1
14  | Bracket                             | 1
15  | Reset Button                        | 1
16  | Reset Rod                           | 1

Always Specify Model & Serial Number

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Attention
These models do not have a fuse.

Item | Description | Qty.
--- | --- | ---
1 | Power Cord | 1
2 | Strain Relief | 1
3 | Screw (#10-32 x 3/8") | 1
4 | Keps Nut | 1

Always Specify Model & Serial Number

MA6772001

Power Cord
Models: M7 (-011 thru -016)
Serial Numbers: all
Rack & Trays

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>Qty.</th>
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<tbody>
<tr>
<td>1</td>
<td>Tray Rack</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>4 inch Tray</td>
<td>1</td>
</tr>
<tr>
<td>3</td>
<td>5 inch Tray</td>
<td>2</td>
</tr>
</tbody>
</table>

Always Specify Model & Serial Number
Models: M7 (-020 thru -022)
Serial Numbers: all

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           Operating Instructions Plate ........ 1
2           Wiring Diagram Label ................ 1
3           Warning Label ........................ 1
4           Caution Label ........................ 1
5           Serial Number Label (large - n/a) .......... 1
6           Caution HOT Label ................... 1
7           Serial Number Label (small - n/a) .......... 1

Always Specify Model & Serial Number

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If an error is found, please list the page and paragraph/figure in which the error was found along with a brief description of what the error is. If the correction to the error is known, please include that information also. If a change, addition, or deletion is being requested, please list the page and paragraph/figure needing the change, along with a brief description of how you feel the paragraph/figure should be changed.

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Versailles, Ohio 45380
Fax: (937) 526-5542

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<thead>
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</table>
**SERVICE PARTS FAX ORDERING FORM**

(Do not tear out this page. Photo copy this page for use only.)

**IMPORTANT NOTES:**

1) **Use this form for all non-warranty orders only.** Warranty orders must be telephoned in (1-800-643-6275).

2) **FAX number to send order to:**
   877-249-1793

3) **All emergency orders must be received @ Midmark by 1:00 pm EST.**

4) **All underlined headings should be filled in prior to submittal.**

---

**ATTENTION: CUSTOMER SERVICE DEPARTMENT**

---

**ADDITIONAL COMMENTS:**

---

**NAME:**

**SHIP TO:**

**ADDRESS:**

**CITY:**

**STATE:**

**ZIP:**

**CONTACT:**

**PHONE:**

**FAX #:**

**MODEL #:**

**SERIAL #:**

**SALES ORDER #**

(if applicable)

**LINE #**

**PART NUMBER**

**QTY.**

**DESCRIPTION**

**COLOR**

(if applicable)

---

**DATE: **__/__/____  **TIME:** __am__  **pm**

**METHOD OF SHIPMENT:**

- [ ] NON-EMERGENCY ORDER  (to ship within 72 hours if part(s) are in stock.)
- [ ] EMERGENCY ORDER (to ship within 24 hours if part(s) are in stock.)

[see note 3]

---

**DEALER P.O. #:**

**ACCOUNT #:**

---

**CREDIT CARD INFORMATION**

**CARD TYPE**

**CARD #**

**EXP. DATE**

**NAME ON CARD**

**SIGNATURE**

---

**METHOD OF SHIPMENT:**

**PRIORITY:**

**NON-EMERGENCY ORDER**

(to ship within 72 hours if part(s) are in stock.)

**EMERGENCY ORDER**

(to ship within 24 hours if part(s) are in stock.)

[see note 3]

---

**METHOD OF SHIPMENT:**

**PRIORITY:**

**NON-EMERGENCY ORDER**  (to ship within 72 hours if part(s) are in stock.)

**EMERGENCY ORDER**  (to ship within 24 hours if part(s) are in stock.)

[see note 3]

---

**METHOD OF SHIPMENT:**

**PRIORITY:**

**NON-EMERGENCY ORDER**  (to ship within 72 hours if part(s) are in stock.)

**EMERGENCY ORDER**  (to ship within 24 hours if part(s) are in stock.)

[see note 3]

---

**METHOD OF SHIPMENT:**

**PRIORITY:**

**NON-EMERGENCY ORDER**  (to ship within 72 hours if part(s) are in stock.)

**EMERGENCY ORDER**  (to ship within 24 hours if part(s) are in stock.)

[see note 3]

---

**METHOD OF SHIPMENT:**

**PRIORITY:**

**NON-EMERGENCY ORDER**  (to ship within 72 hours if part(s) are in stock.)

**EMERGENCY ORDER**  (to ship within 24 hours if part(s) are in stock.)

[see note 3]

---

**METHOD OF SHIPMENT:**

**PRIORITY:**

**NON-EMERGENCY ORDER**  (to ship within 72 hours if part(s) are in stock.)

**EMERGENCY ORDER**  (to ship within 24 hours if part(s) are in stock.)

[see note 3]