INSTRUCTION MANUAL

mac MEDICAL

D-Series Warming Cabinets

Installation - Operation - Maintenance

c(UL)us   (SP)®   OSHPD Pre-Approved   CE

⚠CAUTION | Read and understand all of the instructions and safety information in this manual before operating this product.

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Summary

DESCRIPTION OF PRODUCT

This manual covers the D-Series (Data Logging) blanket and fluid warming cabinets, manufactured for commercial use only. These include the single, dual and triple chamber units.

PURPOSE OF THIS MANUAL

This manual is to provide the user instructions in the installation, operation and maintenance of the D-Series warming cabinets.

This manual also contains general specifications, warnings and cautions.

Regulatory and Compliance Information

Safety Compliance
Main Standard(s):
UL 61010-1, 3rd Edition, May 11, 2012, Revised July 15 2015, CAN/CSA-C22.2 No. 61010-1- 12, 3rd Edition, Revision dated July 2015

From Country Differences:
- USA / Canada: UL 61010-1, 3rd Edition, 2012-05-11 / CAN/CSA-C22.2 No. 61010-1, 3rd Edition, 2012-05
- Switzerland: SN EN 61010-1:2010
- Japan: -
- Austria: EN 61010-1:2010
- Denmark: DS/EN 61010-1:2010
- Korea, Republic Of: K 61010-1
- Slovenia: SIST EN 61010-1
- Sweden: SS-EN 61010-1:2010
- United Kingdom: BS EN61010-1:2010

Additional compliances IEC IEC 61010-2-010 Safety requirements for electrical equipment for measurement, control, and laboratory use – Part 2-010: Particular requirements for laboratory equipment for the heating of materials.

Pollution degree rating: Pollution Degree 2 (UL 61010-1, 3rd edition). Rated for indoor, dry location use only.

Safety Class
Class I (PE connected)

Indications for Use:

MAC Medical, Inc. Blanket and Solution Warming Cabinets are designed to store and warm blankets, hospital linens, irrigation fluids and/or injection fluids in accordance with recommended warming temperatures and storage time guidelines provided by the manufacturers of such products. Rated for indoor, dry location use only.
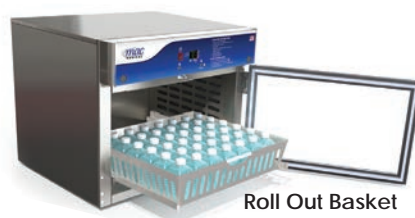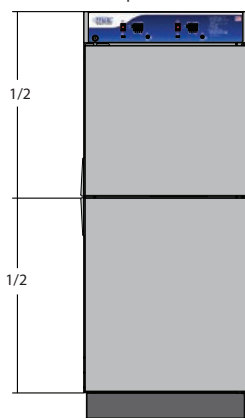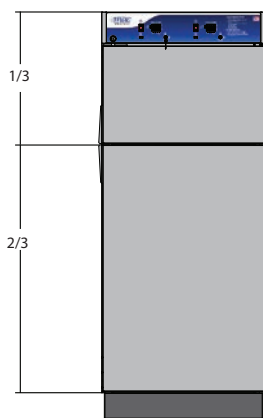
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D-Series Warming Cabinet Models

Model #	Overall Size	Chambers	Door Type	Door Hinge	Base Style	Other Options
SWC151822	17.25"D x 18"W x 22"H	Single	G=Glass Door	LH=Left Hinge	2B = 2" Base	220 = 220/240V Power Supply
SWC182424	20.5"D x 24"W x 24.5"H	Single		Blank = Right Hinge (Standard)	4B = 4" Base	C = Celsius
SWC242424	26.5"D x 24"W x 24.5"H	Single	Blank=Stainless Steel Door (Standard)		6B = 6" Base	R1 = Recessed Unit with Insulation Wrap, no Top Panel, no Side Panels and no Trim Kit.
SWC183024	20.5"D x 30"W x 24.5"H	Single			NB = No Base	
SWC243024	26.5"D x 30"W x 24.5"H	Single			MB = Mobile Base	
SWC182436	20.5"D x 24"W x 36"H	Single				R2 = Recessed Unit with Top Panel, Side Panels and Trim Kit.
SWC183036	20.5"D x 30"W x 36"H	Single				
SWC242436	26.5"D x 24"W x 36"H	Single				
SWC243036	26.5"D x 30"W x 36"H	Single				SB = Seismic Braces
SWC182464	20.5"D x 24"W x 64.75"H	Single				WB = Roll Out Basket
SWC242464	26.5"D x 24"W x 64.75"H	Single				
SWC183064	20.5"D x 30"W x 64.75"H	Single				P = Pass Through Chamber
SWC243064	26.5"D x 30"W x 64.75"H	Single				IV = IV/Injection Fluids
SWC182474	20.5"D x 24"W x 74.5"H	Single				
SWC183074	20.5"D x 30"W x 74.5"H	Single				ST = Sloped Top
SWC242474	26.5"D x 24"W x 74.5"H	Single				EL = Electronic Keypad lock
SWC243074	26.5"D x 30"W x 74.5"H	Single				
DWC182464T*	20.5"D x 24"W x 64.75"H	Dual				† DL = Intermediate Chamber Door Lock (triple chamber units)
DWC242464T*	26.5"D x 24"W x 64.75"H	Dual				
DWC183064T*	20.5"D x 30"W x 64.75"H	Dual				
DWC243064T*	26.5"D x 30"W x 64.75"H	Dual				
DWC182474T*	20.5"D x 24"W x 74.5"H	Dual	† Only available for Triple Chamber Unit			†† LDL = Lower Chamber Door Lock (dual/triple chamber units)
DWC242474T*	26.5"D x 24"W x 74.5"H	Dual	†† Only available for Dual and Triple Chamber Units			
DWC183074T*	20.5"D x 30"W x 74.5"H	Dual				
DWC243074T*	26.5"D x 30"W x 74.5"H	Dual				
DWC182474E**	20.5"D x 24"W x 74.5"H	Dual				
DWC183074E**	20.5"D x 30"W x 74.5"H	Dual				
DWC242474E**	26.5"D x 24"W x 74.5"H	Dual				
DWC243074E**	26.5"D x 30"W x 74.5"H	Dual				
TWC183078	20.5"D x 30"W x 78.75"H	Triple				
TWC243078	26.5"D x 30"W x 78.75"H	Triple				

* = Chambers in Thirds   ** = Equal Chambers

Roll Out Basket

Sloped Top

Interior Dimensions, Cubic Foot Capacity, Approximate Capacity

Model #	Upper or Single Chamber (h x w x d) in inches	Middle Chamber (h x w x d) in inches	Lower Chamber (h x w x d) in inches	Cubic Foot Capacity Upper or Single Chamber	Cubic Foot Capacity Middle Chamber	Cubic Foot Capacity Lower Chamber	Approximate Capacity (blankets or 1 Liter solution bottles)
SWC151822	14.0 x 14.0 x 11.63	n/a	n/a/	1.30	n/a	n/a	5 - 6 blankets, 8 bottles
SWC182424	15.25 x 20.0 x 17.0	n/a	n/a	3.0	n/a	n/a	9 blankets, 8 bottles
SWC242424	15.25 x 20.0 x 23.0	n/a	n/a	4.06	n/a	n/a	9 blankets, 12 bottles
SWC183024	15.25 x 26.0 x 17.0	n/a	n/a	3.9	n/a	n/a	18 blankets, 8 bottles
SWC243024	15.25 x 26.0 x 23.0	n/a	n/a	5.27	n/a	n/a	18 blankets, 20 bottles
SWC242436	36.0 x 20.0 x 23.0	n/a	n/a	6.7	n/a	n/a	16 blankets, 25 bottles
SWC182436	25.0 x 20.0 x 17.0	n/a	n/a	5.0	n/a	n/a	16 blankets, 20 bottles
SWC183036	25.0 x 26.0 x17.0	n/a	n/a	6.39	n/a	n/a	32 blankets, 36 bottles
SWC243036	25.0 x 26.0 x 23.0	n/a	n/a	8.65	n/a	n/a	32 blankets, 40 bottles
SWC182464	49.5 x 20.0 x 17.0	n/a	n/a	9.74	n/a	n/a	32 blankets, 48 bottles
SWC242464	51.0 x 20.0 x 23.0	n/a	n/a	13.60	n/a	n/a	80 blankets, 120 bottles
SWC183064	51.0 x 26.0 x 17.0	n/a	n/a	13.05	n/a	n/a	66 blankets, 72 bottles
SWC243064	51.0 x 26.0 x 23.0	n/a	n/a	17.65	n/a	n/a	80 blankets, 120 bottles
SWC182474	61.0 x 20.0 x 17.0	n/a	n/a	12.00	n/a	n/a	32 blankets, 60 bottles
SWC183074	61.0 x 26.0 x 17.0	n/a	n/a	15.60	n/a	n/a	80 blankets, 72 bottles
SWC242474	61.0 x 20.0 x 23.0	n/a	n/a	16.24	n/a	n/a	80 blankets, 120 bottles
SWC243074	61.0 x 26.0 x 23.0	n/a	n/a	21.1	n/a	n/a	80 blankets, 120 bottles
DWC182464T*	13.5 x 20.0 x 17.0	n/a	24.5 x 20.0 x 17.0	2.65	n/a	4.82	26 blankets, 36 bottles
DWC242464T*	13.5 x 20.0 x 23.0	n/a	24.5 x 20.0 x 23.0	3.59	n/a	6.52	52 blankets, 80 bottles
DWC183064T*	13.5 x 26.0 x 17.0	n/a	24.5 x 26.0 x17.0	3.45	n/a	6.27	50 blankets, 54 bottles
DWC243064T*	13.5 x 26.0 x 23.0	n/a	24.5 x 26.0 x 23.0	4.67	n/a	8.48	52 blankets, 96 bottles
DWC182474T*	15.25 x 20.0 x 17.0	n/a	34.5 x 20.0 x 17.0	2.65	n/a	6.79	32 blankets, 48 bottles
DWC242474T*	15.25 x 20.0 x 23.0	n/a	34.5 x 20.0 x 23.0	4.06	n/a	9.18	52 blankets, 80 bottles
DWC183074T*	15.25 x 26.0 x 17.0	n/a	34.5 x 26.0 x 17.0	3.45	n/a	8.82	52 blankets, 72 bottles
DWC243074T*	15.25 x 26.0 x 23.0	n/a	34.5 x 26.0 x 23.0	5.28	n/a	11.93	52 blankets, 120 bottles
DWC182474E**	25.0 x 20.0 x 17.0	n/a	26.0 x 20.0 x 17.0	4.97	n/a	5.24	44 blankets, 48 bottles
DWC183074E**	25.0 x 26.0 x 17.0	n/a	26.0 x 26.0 x 17.0	6.39	n/a	6.65	64 blankets, 72 bottles
DWC242474E**	25.0 x 20.0 x 23.0	n/a	26.0 x 20.0 x 23.0	6.65	n/a	6.99	64 blankets, 80 bottles
DWC243074E**	25.0 x 26.0 x 23.0	n/a	26.0 x 26.0 x 23.0	8.65	n/a	8.99	64 blankets, 120 bottles
TWC183078	11.25 x 26.0 x 17.0	10.75 x 26.0 x 17.0	18.5 x 26.0 x 17	2.88	2.75	4.73	62 blankets, 54 bottles
TWC243078	11.25 x 26.0 x 23.0	10.75 x 26.0 x 23.0	18.5 x 26.0 x 23.0	3.89	3.72	6.4	62 blankets, 90 bottles

Usable Chamber Space

The usable chamber space of the single, dual and triple cabinets is slightly different from the height, width and depth interior dimensions in the table on the previous page.

Note that the usable chamber inner height is measured from the bottom of the air box to the bottom of the chamber.

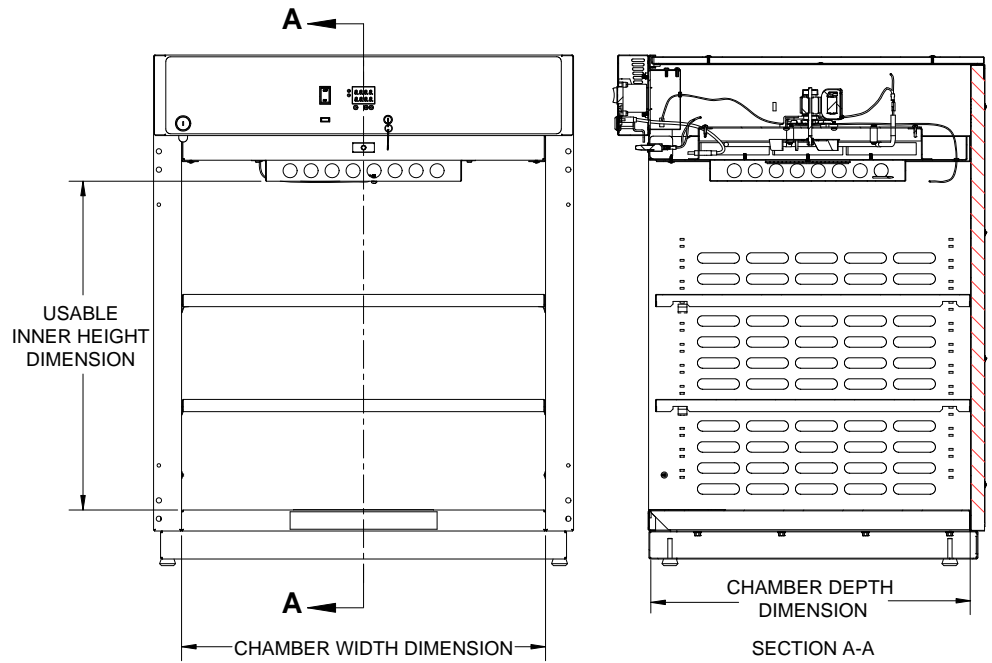(In these views, the doors were removed for clarity.)
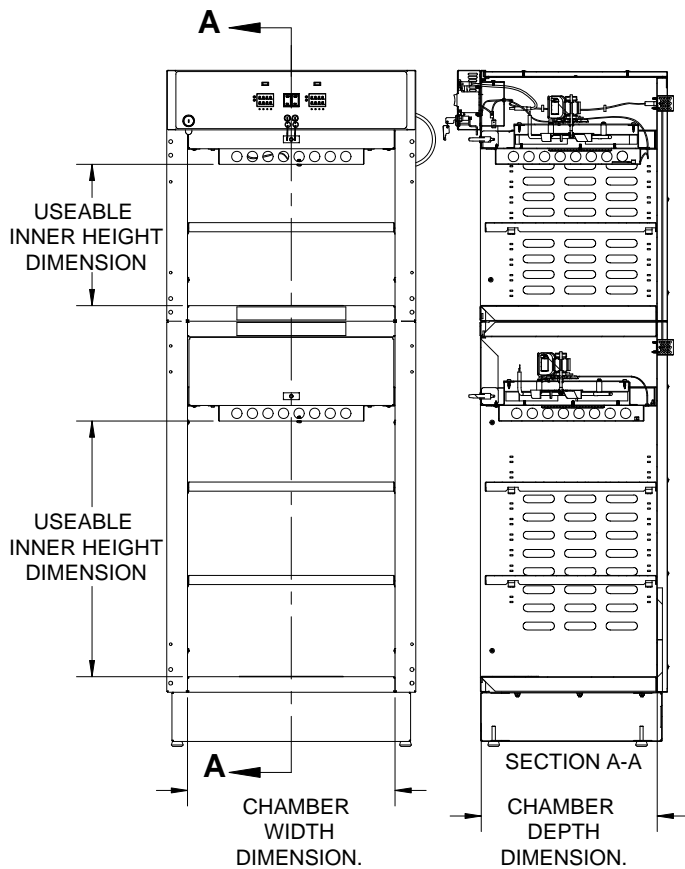
Fig. 1: Single Chamber Unit Usable Space
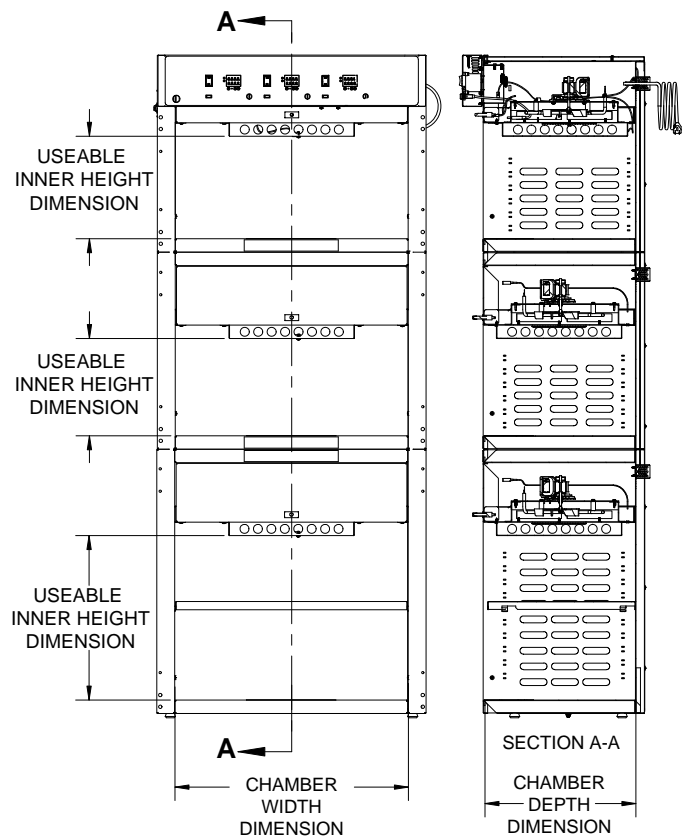
Fig. 2: Dual Chamber Unit Usable Space

Fig. 3: Triple Chamber Unit Usable Space

General Specifications

Cabinet Construction and Material

- 300 Stainless Steel (all panels, header and doors) double walled construction with insulation. Doors are double-pane stainless steel.

- Fully insulated to provide uniform heating

- Optional Glass doors are double-paned, tempered glass framed with aluminum.

- Doors are fully gasketed and hinged on right side or optionally on the left side.

Factory Presets

- All units are preset to measure temperature in Fahrenheit (unless the unit was specifically ordered to be preset for Celsius.)

Power Requirements

- 120VAC, 60Hz, Single Phase, 15 AMP, Ground Fault Interrupter Circuit (GFIC) protected electrical outlet, or 220 VAC, 60Hz, Single Phase, 7 AMP, GFIC protected electrical outlet (by others) installed per local building codes and provides protective grounding.

- Cabinets are supplied with a 7 foot (2.3 m) long, 14-3 SJT power cord with a 120V (NEMA 15P) hospital grade plug. For multi-chambered units, ON/OFF switches are supplied for each chamber.

- All individual electronic components are Underwriter's Laboratory (UL) approved and recognized.

Power Specifications are located on the unit identification rating tag (see Fig. 4), which is permanently attached on the inside of the door or on the back of the upper chamber.
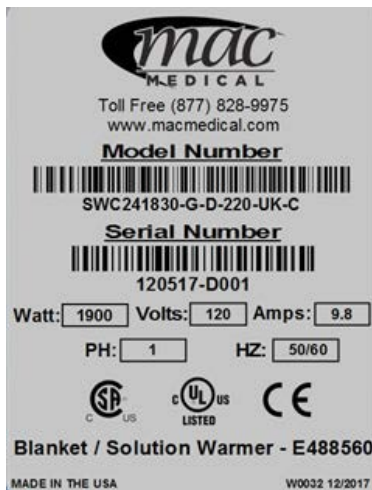
Fig. 4: Power Specification Label

Electrical Specifications by Model	
Model #	Description
SWC151822	120V, 2.08 Amp, 50/60Hz, .25 kWh (Avg.), 853 BTU/hr (Avg.)
SWC182424	120V, 2.9 Amp, 50/60 Hz, .23 kWh (Avg.), 785 BTU/hr (Avg.)
SWC182436	
SWC242424	120V, 6.3 Amp, 50/60 Hz, .45 kWh (Avg.), 1535 BTU/hr (Avg.)
SWC242436	
SWC243024	
SWC243036	
SWC183024	120V, 5.7 Amp, 50/60 Hz, .45 kWh (Avg.), 1535 BTU/hr (Avg.)
SWC183036	
SWC182464	120V, 6.5 Amp, 50/60 Hz, .47 kWh (Avg.), 1604 BTU/hr (Avg.)
SWC182474	
SWC183074	
SWC242474	
SWC243074	
SWC242464	120V, 6.5 Amp, 50/60 Hz, .41 kWh (Avg.), 1604 BTU/hr (Avg.)
SWC243064	
SWC183064	120V, 6.3 Amp, 50/60 Hz, .41 kWh (Avg.), 1400 BTU/hr (Avg.)
DWC183064T	120V, 8.3 Amp, 50/60 Hz, .60 kWh (Avg.), 2047 BTU/hr (Avg.)
DWC242464T	
DWC182464T	120V, 8.9 Amp, 50/60 Hz, .65 kWh (Avg.), 2218 BTU/hr (Avg.)
DWC182474E	
DWC182474T	
DWC243064T	
DWC242474E	
DWC242474T	
DWC183074T	120V, 8.3 Amp, 50/60 Hz, .82 kWh (Avg.), 2047 BTU/hr (Avg.)
DWC243074T	120V, 12.5 Amp, 50/60 Hz, .90 kWh (Avg.), 3071 BTU/hr (Avg.)
DWC183074E	120V, 11.4 Amp, 50/60 Hz, .82 kWh (Avg.), 2798 BTU/hr (Avg.)
DWC243074E	120V, 12.9 Amp, 50/60 Hz, .90 kWh (Avg.), 3071 BTU/hr (Avg.)
TWC183078	
TWC243078	

MAC Medical Warming Cabinet handles are equipped with CuVerro® bactericidal copper surfaces.

CUVERRO®
BACTERICIDAL COPPER SURFACES

° This product is made from a copper surface that continuously kills bacteria* left behind by dirty hands, killing more than 99.9% of bacteria* within 2 hours.

Laboratory testing has shown that when cleaned regularly this surface:

° Kills more than 99.9% of bacteria* within 2 hours, and continues to kill 99% of bacteria* even after repeated contamination.

° Delivers continuous and ongoing antibacterial* action, remaining effective in killing greater than 99.9% of bacteria* within 2 hours.

° Helps inhibit buildup and growth of bacteria* within 2 hours of exposure between routine cleaning and sanitizing steps.

° Kills greater than 99.9% of Gram-negative and Gram-positive bacteria* within 2 hours of exposure.

° Continuously reduces bacterial* contamination, achieving 99.9% reduction within 2 hours of exposure.

* Laboratory testing shows that, when cleaned regularly, CuVerro surfaces kill greater than 99.9% of the following bacteria within 2 hours of exposure: Methicillin-Resistant *Staphylococcus aureus, Staphylococcus aureus, Enterobacter aerogenes, Pseudomonas aeruginosa, E. coli* O157:H7, and Vancomycin-Resistant *Enterococcus faecalis* (VRE).

The use of CuVerro® bactericidal copper products is a supplement to and not a substitute for standard infection control practices; users must continue to follow all current infection control practices, including those practices related to cleaning and disinfection of environmental surfaces. This surface has been shown to reduce microbial contamination, but it does not necessarily prevent cross-contamination.

CuVerro® is a registered trademark of GBC Metals, LLC and is used with permission.

EPA Company No. 92702-IL-1   EPA Registration No. 92701

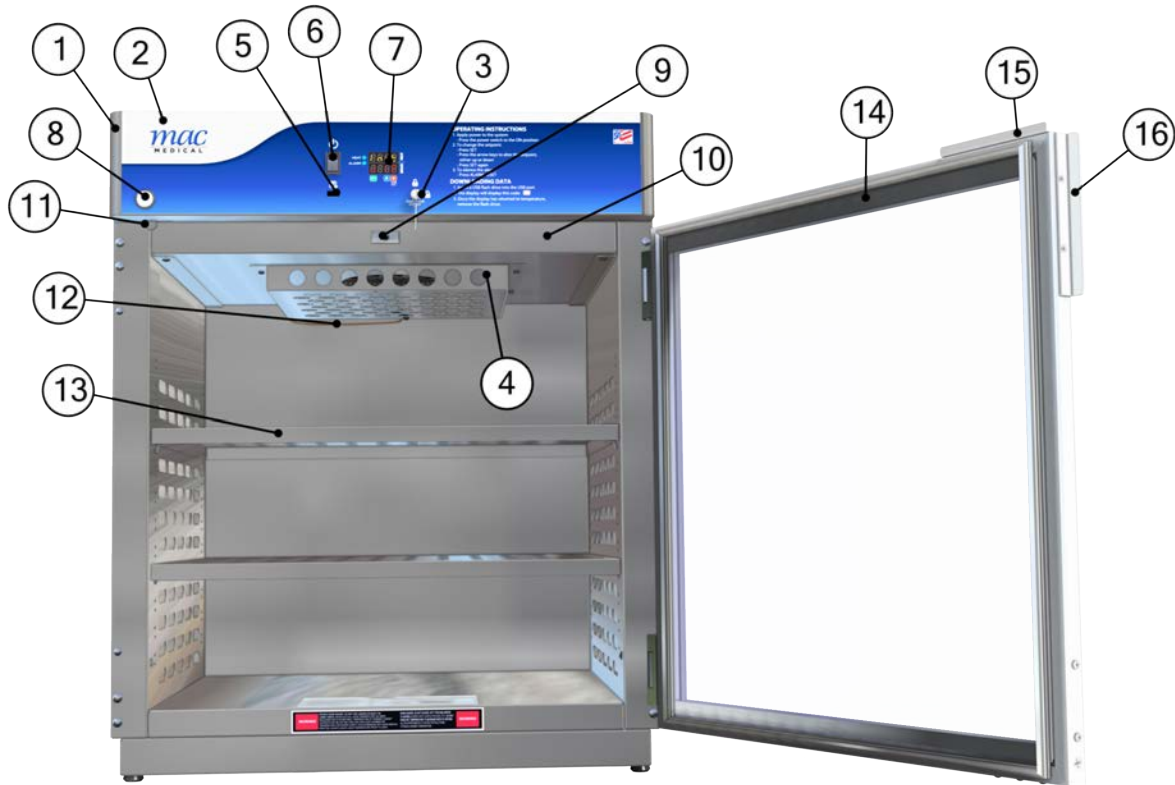# Main Features of a Typical Warming Cabinet

(Single Chamber Cabinet shown here)

Fig. 5: Main Elements of a Warming Cabinet

This list shows the main elements of a warming cabinet. For a list of replacement parts with their part numbers and quantities, see "Replacement Parts - General" on page 25 and "Replacement Parts - Header Assembly and Electrical Drawer" on page 26.

Item #	Description	Qty
1	Header Assembly (24" and 30")	1
2	Overlay (24" and 30") D-Series	1
3	Key Housing	1 per chamber
4	Air Box	
5	USB Cable Plug	
6	On/Off Switch	
7	Display Board - Data (1 for each chamber)	
8	Key Lock	
9	Door Switch	
10	Drawer Assembly (1 for each chamber)	
11	Cam Lock Latch	1 per door
12	Probe J Type Thermocouple	1 per chamber
13	Adjustable Perforated Shelf	As Required
14	Door (glass or steel)	As Required
15	Cam Lock Plate	1 per door
16	Handle	1 per door

Warnings and Cautions

The following is a list identifying the various warning and caution icons used in this manual.

Icon Type	Icon	Description
Warnings		(Red triangle with an exclamation point) indicates the potential for minor to severe injuries up to and including death to personnel.
Cautions		(Yellow triangle with an exclamation point) indicates the potential for minor injury to personnel and damage to equipment. Note: The exclamation point will not be visible where only equipment damage is present.
Burn Hazard Warnings		(Yellow triangle with radiating lines) indicates a potential burn injury to personnel.
Electrical Warnings		(Yellow triangle with a lightning bolt) indicates a possible shock hazard is present. Severe shock hazards shall be a lightning bolt in a red triangle.
Explosion Hazard		(Yellow triangle with the explosion icon) indicates the equipment should not be operated in areas where explosions could occur.
Fire Hazard		(Yellow triangle with the fire icon) indicates the warning cabinet should not be loaded with materials or liquids that are flammable or used in the presence of flammable anesthetics or solvents.

The following is a list of safety precautions that must be observed when operating this equipment.

Warning - Injury Hazard

REPAIRS AND ADJUSTMENTS should be attempted only by experienced service representatives. Use of unqualified persons to work on this equipment could result in personal injury or costly damage.

Warning - Burn Hazard

- Do NOT use in the presence of flammable anesthetics.
- Do NOT heat liquids in the presence of flammable solvents.
- Failure to observe this Warning can result in severe personal injury and even death.

Warning - Burn Hazard

- Do NOT exceed 150°F (65.56°C) for non-vented closures (screw caps, crimp seals, plastic pouches, etc.). Do not exceed pre-sterile solution manufacturer's temperature requirements.
- Do NOT raise set temperature to increase rate of heating. Allow approximately 4-6 hours for solutions to reach desired temperature.

- Do NOT use liquids on or inject into living tissue, unless actual liquid temperature has been measured and is acceptable. Temperature of the warming cabinet's contents may be hotter than the displayed air temperature. For patient safety, in accordance with good medical practice, always check liquid temperature prior to using.

⚡ *Warning - Electric Shock Hazard*

Do NOT remove control tray. Contact a qualified service representative. Some of the troubleshooting procedures can require access to live electrical circuitry. Dangerous accidental contact with line voltage is possible. Only qualified service personnel should be allowed to perform these procedures.

💥 *Warning - Explosion Hazard or* 🔥 *Fire Hazard*

- Do NOT warm flammable materials or liquids.
- Do NOT use in the presence of flammable anesthetics.
- Do NOT heat liquids in the presence of flammable solvents.

⚠ *Caution - Possible Equipment Damage*

Some items are not acceptable in these warming cabinets. If in doubt as to whether an item can be safely processed, have the facility supervisor contact the manufacturer of the item.

⚠ *Caution: Repairs and Adjustments* should only be attempted by experienced service personnel who are fully acquainted with this equipment. Use of unqualified or inexperienced personnel to work on the equipment, or the installation of unauthorized parts, could result in serious personal injury, or result in costly damage. Always unplug power cord from power source before attempting any repairs or servicing of this equipment.

Special User Attention

Prior to use, all personnel who will operate the Warming Cabinet must be instructed in the correct usage and operation. All personnel who will use the Warming Cabinet should be aware that sensible care must be exercised to maintain patient safety and to keep the Warming Cabinet performing at peak efficiency.

Intended Use Notice

The MAC Medical, Inc. Blanket and Solution Warming Cabinets are designed to store and warm blankets, hospital linens, irrigation fluids and/or injection fluids in accordance with recommended warming temperatures and storage time guidelines provided by the manufacturers of such products.

Unpacking Instructions

Receiving Requirements

The customer is responsible for making sure the loading dock at their facility can accommodate a shipping carton approximately 70 inches (1.778 m) long and 40 inches (1.016 m) wide.

The customer must also provide transportation equipment (forklift, etc.) for a carton weighing approximately 500 lb (227 kg).

Inspection

1. Receiving area must meet all State and Local regulations prior to unpacking.

2. Customer must inspect carton both before and after unpacking to determine if any items were damaged during shipping.

   A. All damaged items must be listed on the Bill of Lading.

   B. The serial number and model number shown on the carton label must match the numbers on the Bill of Lading and the Invoice.

3. Customer is responsible for the proper disposal of all packing materials. The disposal of these items must meet all State and Local regulations.

Unpacking the Warming Cabinet

Retain all shipping materials until warming cabinet is completely unpacked and inspected for damage.

1. Remove metal bands holding the bottom and top of the shipping carton together.

2. Remove all metal staples holding the top and bottom of the carton to its sides.

3. Remove the top of the carton.

4. Remove metal staples making the flaps around the top edge of the carton.

5. Remove metal staples attaching the sides of the carton to the bottom of the carton.

6. Remove the sides of the carton by lifting them straight up from the bottom tray.

7. Lift Warmer straight up from bottom tray of the shipping carton and remove it.

8. Remove all protective packing material.

   A. ⚠️ *Caution:* DO NOT use a box cutter or any other cutting utensil to remove the plastic protective wrapping around the Warming Cabinet. These items can scratch the protective coating on the stainless steel, allowing the surface to rust.

9. The Warming Cabinet is now ready for use.

10. Discard shipping and packing materials in compliance with local and state regulations.

11. Warmers, when not in use, must NOT be double-stacked while in storage. Warmers, while still in shipping cartons, must NOT be double-stacked when not in use.

Fig. 6: Warming Cabinet in Shipping Container

Installing D-Series Warming Cabinets

Environmental Conditions

This unit is intended for use in a stable ambient environment, with an ideal temperature of 72°F (22.22°C) or less. The unit should never be used directly next to any appliance that may produce heat, such as an autoclave.

During Transport and Storage (in original packaging materials)

- Ambient Temperature: -40° - 159°F (-40° - 70°C)
- Relative Air Pressure: 10% - 100%, including condensation
- Air Pressure: 500 hPa (14 inHg - 31.3 inHg)

During Use - for Dry Locations

- Ambient Temperature: 60° - 85°F (15° - 30°C)
- Relative Air Moisture: 30% - 60% non-condensing
- Air Pressure: 700 hPa - 1060 hPa (20.7 inHg - 31.3 inHg)

Installation

Before starting the installation, review the local electric codes including the Occupational Health and Safety Act for any requirements pertaining to the proper installation of this equipment.

Contact your MAC Medical representative for seismic calculations and tie-down hardware, if applicable.

1. Carefully uncrate the D-Series Warming Cabinet.
2. Inspect for any damage. If there is damage, please contact MAC Medical, Inc. at 1-877-828-9975.
3. Check your 120V, 60 Hz, Single Phase 15 AMP GFIC Protected electrical outlet or 220V, 60 Hz, Single Phase, 7 AMP GFIC Protected electrical outlet. Be sure the outlet is safely accessible and in proper working condition.
4. Plug the 3-prong electrical plug into the 120VAC, 60Hz, 15 AMP, GFIC Protected Outlet or a 220 VAC, 60Hz, Single Phase, 7 AMP GFIC protected electrical outlet. Make sure the electrical outlet is safely accessible and in proper working condition.
5. Place Warming Cabinet on a solid, level platform where external movement will not interfere with loose contents used by the warmer.

6. Make sure the shelving is correctly located as desired and level. If not, adjust their height (see "Adjusting the Shelves" on page 19).
7. Before use, remove any items that have been stored in the cabinet.

Testing before Using

All warming cabinets have been calibrated and tested before leaving the factory. There is no need for the user to do additional testing after installation prior to use.

After six months of use, it is recommended that the user test the warming cabinet for temperature accuracy. See "Semi-Annual Checklist" on page 24.

Installing Warming Cabinet Leg Levelers

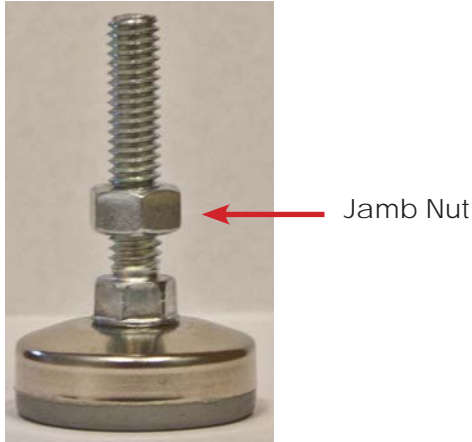Warming Cabinets are shipped with four Leg Levelers that must installed by the customer (Fig. 7).

Fig. 7:   Leg Leveler

Jamb Nut

The Warming Cabinet base has four holes into which the Leg Levelers can be installed (Fig. 8).

Holes for
Leg Levelers

Fig. 8:   Holes in Cabinet base

Working with at least two people, carefully tilt the Warming Cabinet back slightly and insert the four Leg Levelers up into the four provided holes (Fig. 9). **IMPORTANT**: The Jamb Nut must go on the outside of the Cabinet Base, not the inside. Figure 10 shows a Leg Leveler correctly installed with the Jamb Nut outside the base. Figure 11 shows the Leg Leveler incorrectly installed with the Jamb Nut inside the base.

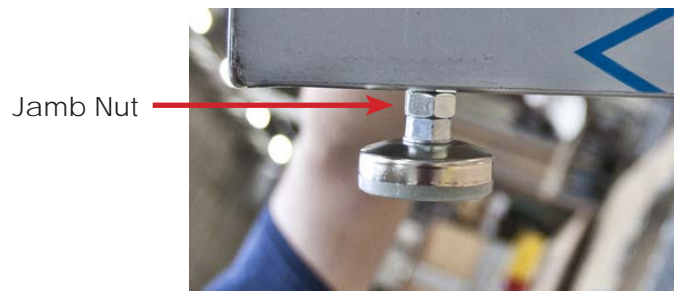Fig. 9:   Insert Leg Leveler into base

Jamb Nut
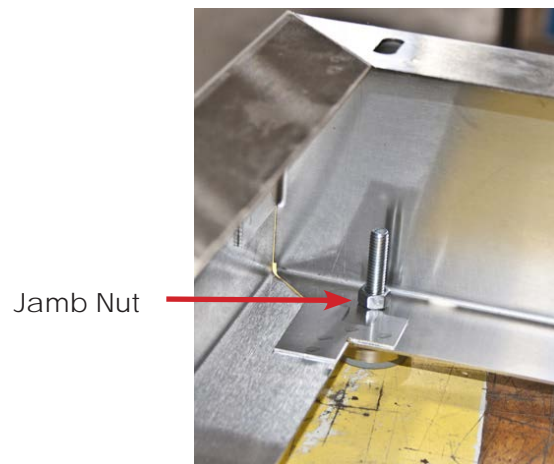
Fig. 10:   Leg Leveler - Correct installation

Jamb Nut

Fig. 11:   Leg Leveler - Incorrect installation

Optional Direct Wiring Using Facility Power Supply

⚠️ NOTE: The following procedure must be performed by a qualified electrical technician to avoid personal injury or damage to the unit.

Warming Cabinets can be wired directly into the facility's wiring by following these steps:

1. Remove four 8 X 1-5/8″ self tapping screws and lift off the Top Outer Panel (Fig. 12).

2. Remove two 8 X 1/2″ self tapping screws and lift off the Top Inner Panel (Fig. 12).

3. Loosen the 3/8″ straight-through connector (Fig. 12, Item 1) and disconnect wiring from terminal board (Fig. 12, Item 5 and Fig. 13, Items 2, 3, 4).

4. Remove existing power cable (Fig. 12, Items 2, 3, 4) from terminal block and pull out of Warming Cabinet through 3/8″ connector (Fig. 13, Item 1).

5. Feed facility wiring cable back through the 3/8″ connector (Fig. 13, Item 1) in the back of the cabinet and wire onto terminal board as shown in Figure 13. Tighten the 3/8″ to securely hold the facility wiring in place.

6. On the terminal board, the green wire (Item 4) connects with the green ground wire.

7. The white wire (Item 3) connects opposite with the white wire, or neutral wire, on the terminal board.

8. The black wire (Item 2) connects opposite of the black or positive wire on the terminal board.

9. Reinstall the Inside Top Panel using two 8 X 1/2″ self-tapping screws (Fig. 12).

10. Reinstall the Outside Top Panel using four 8 X 1-5/8″ self-tapping screws (Fig. 12).

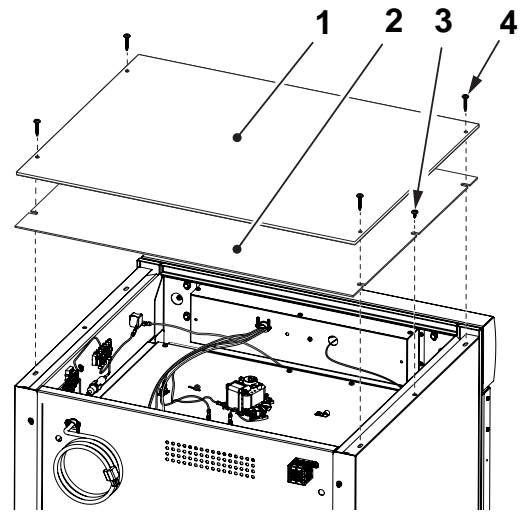11. Carefully slide the unit into its permanent location.

Fig. 12: Remove Top Covers

Item	P/N	Description	Qty
1	SMW0027	Outside Top Panel	1
2	SMW0028	Inside Top Panel	1
3	H0012-01	Screw, Self-Tapping, 8 X 1/2″	2
4	H0012-02	Screw, Self-Tapping, 8 X 1-5/8″	4
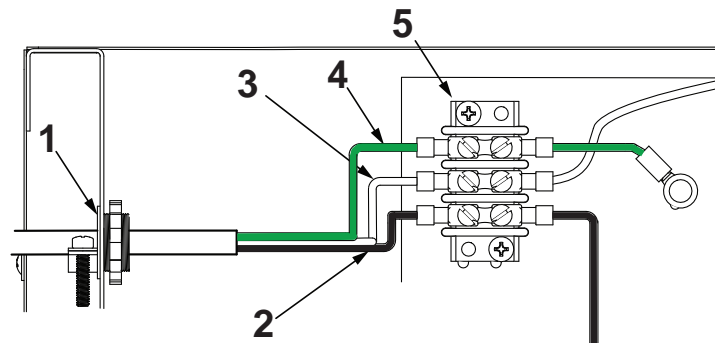
Fig. 13: Unwiring Terminal Block

Item	P/N	Description	Qty
1	W0140	Connector, Straight, 3/8″	1
2	W0077	Wire, Black, Positive	1
3	W0077	Wire, White, Neutral	1
4	W0077	Wire, Green, Ground	1
5	W0005	Terminal Strip, 3-Position	1

Basic Operation

This cabinet has been designed to heat:

*   Liquids in vented containers
*   Liquids in non-vented containers to a temperature of 150°F maximum (65.6°C)
*   Metal objects
*   Muslin or 100% cotton sheets and wool blankets
*   Glass containers - annealed borosilicate glass (Pyrex type) only
*   Plastic Containers - rated *Thermal* and capable of withstanding temperatures in excess of 300°F (149°C) only

⚠️ *DO NOT WARM -*

*   Synthetic blend fabrics
*   Flammable liquids
*   Items containing non-thermal plastic, rubber, metal snaps, studs, hooks, etc.

Recommended Settings

MAC Medical, Inc. does not recommend chamber set points for any items that are to be warmed. For appropriate heating temperatures, please contact the item manufacturers. For more information, please contact MAC Medical, Inc.

For blankets, follow blanket manufacturer's instructions for the set point.

For intravenous and irrigation fluids, follow temperature guidelines printed on the container or contact your supplier for temperature and expiration periods.

Loading Contents in Cabinet

Load contents into the chamber with a minimum of 1 inch of space between all walls and fan to allow for evenly distributed circulation (Fig. 14).

Allow 1 inch of space between fluid containers for evenly distributed heating (Fig. 14). Avoid stacking fluid bags as this increases the heating time required to achieve set temperatures.

Blankets must be folded and stacked to allow a 1 inch minimum space from the sides, back and top of the compartment or the shelf above. Do not let blanket protrude past the front edge of the shelf.
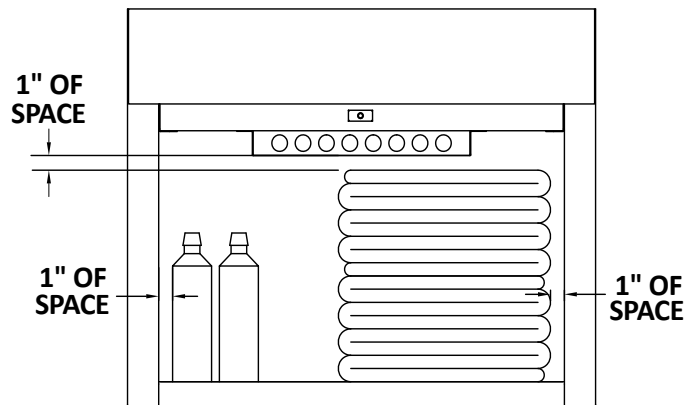
DO NOT OVERLOAD.

Fig. 14: Content Spacing

Once a set temperature is selected and obtained it will be controlled throughout the operations within ± 1°F to 3°F (-1.7°C to -1.6°C) of the selected temperature.

From a cold start, each compartment's loaded contents will be evenly heated to a set point within 2 to 6 hours (depending on the load). In the event of power loss, the warmer will resume normal function once power is restored.

For multi-chambered units, each chamber can be loaded with different goods and set at different temperature settings.

In Case of Power Failure

In case of power failure, the unit will resume normal operation when power is restored.

Follow the fluid manufacturer's guidelines for unused solutions that have cooled or have been removed from heated storage.

Explanation of the Controls

Fig. 15: Controller Display

The Controls are located on the upper panel (Fig. 15) on the front of the cabinet. For multi-chamber cabinets, there are sets of controls for each individual chamber. Each control set is clearly labeled UPPER CHAMBER and LOWER CHAMBER for dual chamber cabinets and UPPER CHAMBER, MIDDLE CHAMBER and LOWER CHAMBER for triple chamber cabinets.

Item	Control Components	Function
1	ON/OFF Switch/ Circuit Breaker	Provides power to the warming compartment and control
2	HEAT light	Visual indicator that the heating system is active
3	ALARM light	Visual indicator of an overheat condition
4	Display Panel	Shows the current chamber temperature (Actual) and the set point temperature in Fahrenheit (F) or Celsius (C). The upper readout row indicates what mode will be defined/ changed (i.e. top/bottom chamber, date, etc). It also continually indicates the actual temperature. The lower readout row indicates the settings for the mode. It also continually indicates the setting temperature. The display also provides Loss of Power and Overheat (Alarm). The overheat alarm is an audible and visual display "HI". Numbers/letters are entered in reverse order, working from right to left across the controller.
5	UP Arrow	Adjusts the set point of the chamber and silences the audible overheat alarm
6	DOWN Arrow	Adjusts the set point of the chamber
7	SET Button	Press to change the set point temperature. Press again to save a set point temperature. SET is also used to move to the next setting parameter/mode.
8	DATA Port	USB port used to retrieve temperature values for a set period of time
9	Key Switch	Used to lock out any changes to the control, such as adjusting the set point temperature

Operation of Display Panel

Start

Press the power switch to the "ON" position. (For multi-chamber units, each chamber has its own power switch). The upper readout display will show the actual chamber temperature.

Set Processing Temperature

1. Press "SET" and release.
2. Press the UP ▲ arrow key to raise the set point or the down ▼ arrow key to lower the set point. The set point is indicated in the lower row of the display.
3. Press "SET" again to complete the change (for dual or triple chamber units, steps must be completed for all chambers). The set point temperature will change and the last digit will flash.
4. To prevent adjustment to the set point temperature, the control may be locked with the Key Switch (Fig. 15, #9).

NOTE: See the Maximum/Minimum Limits Temperature Set Points table below for various warming cabinets and chambers.

NOTE: The temperature setting may be changed at any time. However, if the set point is changed more than 10° below the actual temperature, the HI temperature alarm will activate.

If alarm is activated and the control panel reads "HI", complete the following steps:

1. Press "ALARM RESET" (UP ▲ arrow) until the alarm stops.
2. Open door(s) to release heated air.
3. If the display reads "HI" and alarm remains, open door(s) and allow more cooling time.

NOTE: If the alarm is activated under normal operating conditions, turn off power to specific chamber and call your Mac Medical representative at 1-877-828-9975.

Caution **Burn Hazard:** DO NOT raise the set point temperature to increase the rate of heating. This could overheat the contents leading to possible patient burns.

Warning **Explosion Hazard:** DO NOT exceed 150°F for non-vented closures (screw caps, crimp seals, plastic pouches, etc.). DO NOT exceed pre-sterile solution manufacturer's temperature requirements.

Minimum/Maximum Limits Temperature Set Points and Temperature Tolerances on Warming Cabinet Units						
Warmer Cabinet Model	Minimum Temperature Set Point	Maximum Temperature Set Point	Blankets	Irrigation Fluids	Injection Fluids	Temperature Tolerance
SWC151822		135°F (57°C)				±1°F
Single Chamber Units SWC182424, SWC182436, SWC183024, SWC182464, SWC242436, SWC243024, SWC242424						±1°F
Single Chamber Units SWC183036, SWC243036						±2°F
Single Chamber Units SWC182474, SWC183064, SWC183074, SWC242464, SWC242474, SWC243064, SWC243074						±3°F
Dual Chamber Units (Upper Chamber) DWC182464T, DWC183064T, DWC182474T, DWC183074T, DWC242474T, DWC243074T	90°F (32°C)	160°F (71°C)	30°C to 71°C (86°F to 160°F)	30°C to 66°C (86°F to 150°F)	30°C to 40°C (86°F to 104°F)	±1°F
Dual Chamber Units (Upper Chamber) DWC182474E, DWC183064T, DWC183074E, DWC242464T, DWC242474E, DWC243064T, DWC243074E						±2°F
Dual Chamber Units (Lower Chamber) DWC182464T, DWC182474E, DWC183064T, DWC182474T, DWC183074T, DWC183074E, DWC242464T, DWC242474E, DWC243064T, DWC243074E						±2°F
Dual Chamber Units (Lower Chamber) DWC242474T, DWC243074T						±3°F
Triple Chamber Models		110°F (43°C) top chamber				±1°F
		135°F (57°C) middle chamber				±1°F
		160°F (71°C) bottom chamber				±1°F

Installing the Shelves

Where applicable, turn the power OFF to the heating chamber that needs a shelf installed in it.

    A. Allow the heating chamber to cool then unload any contents.

4. Install the four shelf support clips into the desired location by inserting the top tab into the upper wall slot of that position (Fig. 17 - Fig. 18). Push up slightly on the inserted top tab and push the bottom half of the clip in until the bottom tab snaps into the lower slot.

5. Count the mounting locations at each corner of the chamber to be sure that the shelf will be level and install the remaining support clips.

6. Install the shelf with the notches on the bottom of the shelf aligned with the shelf supports (Fig. 18 - 19).

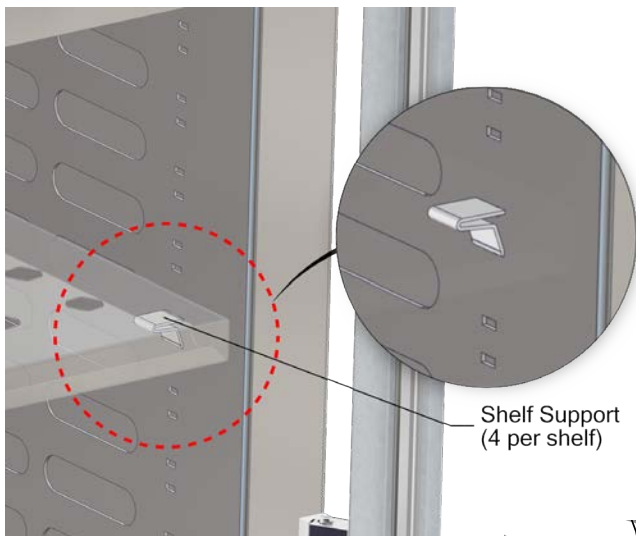7. Pull outward on the shelf to ensure it is locked properly on the supports.

Adjusting the Shelves
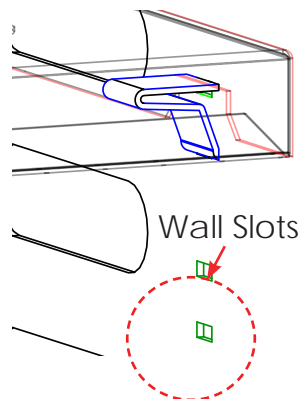
1. Turn the power OFF to the heating chamber that needs its shelf adjusted.

    A. Allow the chamber to cool. Then unload the contents.

2. Remove the shelf and determine its new position.

3. Remove the four (per shelf) shelf supports clips by tilting the clip upward and lifting out.

4. Install the shelf support into the new location by inserting the top tab into the upper slot of the new position. Push up slightly on the inserted top tab and push the bottom half of the clip in until the bottom tab snaps into the lower slot.

5. Count the mounting locations at each corner of the chamber to be sure that the shelf will be level and install the remaining supports.

6. Reinstall the shelf with the notches on the bottom of the shelf aligned with the shelf supports.

7. Pull outward on the shelf to insure it is locked properly on the supports.

Shelf Support
(4 per shelf)

Fig. 16: Shelf Support

Wall Slots

Fig. 18: Support Clip Fitted in Notch

Fig. 17: Shelf Support showing tabs

NOTE: Shelves are notched at each corner to rest on four shelf support clips that are inserted into the cabinet wall slots (Fig. 19).
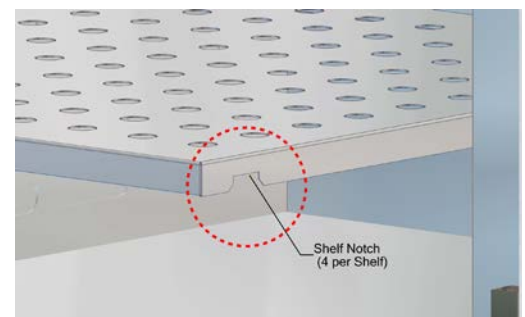
Shelf Notch
(4 per Shelf)

Fig. 19: Shelf Notch

Installing and Adjusting Optional Roller Basket Shelves

Install the roller basket shelf by first attaching the two roller channels to the cabinet walls.

1. First, insert the top tab of one end of the roller channel into a slot (the roller channel width spans four slots) (Fig. 20 - 21).

2. After inserting the top tab, push up slightly on it while snapping in the bottom tab into a slot located three slots below the top slot (Fig. 22).

3. Snap in the other end, making sure it is level with the first end. Attach the other roller channel to the opposite side in the same manner. Be sure both channels are level with each other.

4. Set the two sets of rollers of the roller basket into the channel tracks on both sides and slide the shelf in (Fig. 23 - 24).

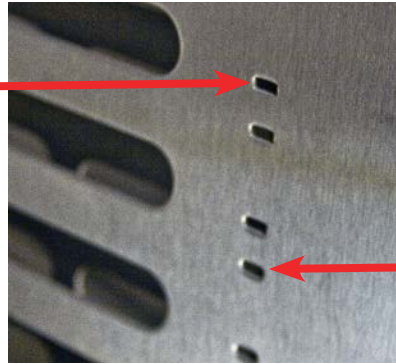Fig. 20: Inserting Top Channel Tab
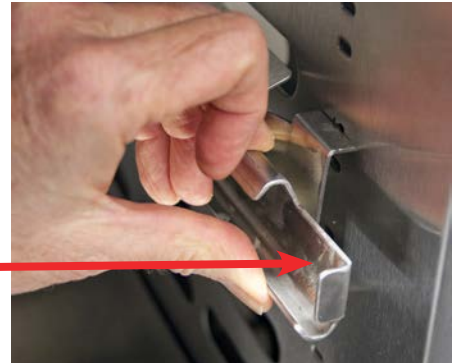
Fig. 21: Cabinet Wall Slots

Fig. 22: Inserting Bottom Channel Tab

Fig. 23: Rollers in Channel Track

Fig. 24:   Roller Basket Shelf Installed

Adjust the Roller Basket Shelf

1. To adjust the roller basket shelf, slide the shelf out and lift up to clear the rollers from the roller channel track. Set the shelf aside.

2. Remove the roller channels by pushing up slightly on the top tab of the channel and pull out the channel from the bottom.

3. Reinstall the roller channels in another location using the same installation process described above.

4. After reinstalling the roller channels, reinstall the shelf by aligning its rollers in the roller channel track and sliding the shelf in.

Note: For information on basket dimensions and part numbers pertaining to warmer cabinet models, see page 28.

Unloading the Warming Cabinet

Caution ⚠️ *Injury and Burn Hazard:* Avoid injury by using proper personal protective equipment when loading or unloading the Warming Cabinet. Internal surfaces are hot: glass may shatter when cooled suddenly and solution bags or bottles may burst when picked up. Rotate warmed contents on a first-in, first-out basis. Failure to do so may present cold or discolored contents.

Warning ⚠️ *Injury or Burn Hazard:* **DO NOT** use heated liquids on, or inject in, living tissue unless actual liquid temperature has been measure and found acceptable. The temperature of the Warming Cabinet contents may be hotter than the displayed temperature. For patient safety (in accordance with optimal medical practice), always verify liquid temperature with a thermometer at the point of use.

Important: See Maximum Warming Temperature Limit for Patient Safety table below

Maximum Warming Temperature Limit for Patient Safety (as recommended by ECRI)	
Items to be Warmed	Maximum Temperature Limit
Liquid Solutions for use on living tissue	110°F (43°C)
Blankets	130°F (54°C)

Retrieval of Recorded Temperatures

AORN recommends the cabinet temperature should be routinely monitored and documented on a temperature log or on a record provided by an electronic recording system, according to facility policy.

All MAC Medical D-series warming cabinets are equipped with a temperature monitoring program that stores actual chamber temperatures in 30 minute intervals. The information recorded may be downloaded to a USB flash drive at any time. To retrieve the stored data:

1. Insert the MAC Medical flash drive (W0600-S) or equivalent into the USB port marked DATA (located on the front face of the control panel). For multi-chambered units, insert a flash drive into the USB port marked DATA for each chamber.

2. The digital display will change from displaying the actual temperature to displaying the code shown in Fig. 25.

Fig. 25: Data Download Code

3. Once the transfer is complete, the digital display will show the temperature again.

4. Remove the flash drive. The data is saved on the flash drive as a .CSV file for import into most Windows-based spreadsheet programs. The example below shows the Fahrenheit temperature variation within a certain date and time period (Fig. 26).

42	01/06/2016 06:32:54	106 F
43	01/06/2016 06:32:30	106 F
44	01/06/2016 07:02:30	106 F
45	01/06/2016 07:32:30	114 F
46	01/06/2016 08:02:30	160 F
47	01/06/2016 08:32:30	160 F
48	01/06/2016 09:02:30	160 F

Fig. 26: Data Extracted

Turning Off the Warming Cabinet

Switch the ON/OFF Switch to the OFF position for each chamber to be shut down.

Troubleshooting

The following alert messages and operating conditions will occur when the warming cabinet is operating outside of acceptable conditions.

Troubleshooting Guide	
Alerts & Description	**Action Required**
HI with audible alarm	Cabinet temperature is 10°F (or 5°C) higher than set point. Silence the alarm by pressing ALARM RESET (Up ▲ arrow) and open door(s) to allow the chamber(s) to cool.
LLLL	Input temperature is lower than input range. Check temperature probe and connections. See below for additional troubleshooting.
HHHH with audible alarm	Input temperature is higher than input range. Check temperature probe and connections. See below for additional troubleshooting.
OPEn with audible alarm	Temperature probe is at fault. Check connection, then replace and calibrate.
JIC continuous or flashing	Control failure. Check connection first, then replace and calibrate.
Unit will not power up	1. Check outlet for power. 2. Check if warmer is plugged in. 3. Check if the ON/OFF switch/circuit breaker is turned on. 4. Check the fuse on the incoming supply. 5. Check for power at the junction box in the control panel. 6. Contact your MAC Medical authorized service representative.
Chamber does not heat	1. Is the power turned on? 2. Is the temperature set above chamber ambient temperature? 3. Is the circulation fan operational? Open the door and press in on the door switch. 4. Is there voltage on the output terminal of the controller? 5. Is the door(s) closed? 6. Contact your MAC Medical authorized service representative.
Over temperature alarm **HI** is activated	1. Is the circulating fan operational? 2. Are the contents loaded properly? 3. Has the chamber set temperature been lowered? 4. Temperature of the lower chamber cannot be in excess of +30°F (+1.1°C) above the upper chamber. 5. Contact your MAC Medical authorized service representative.

Overheat Alarm (HI) Condition

When the cabinet temperature exceeds the set point by 10°F (or by 5°C) or the set temperature is lowered by more than 10°F (or by 5°C), the display will read HI and the audible alarm will sound. Silence the alarm by pressing ALARM RESET (Up ▲ arrow) until the alarm quits.

Turn off the Warming Cabinet chamber and wait for the contents to cool adequately. Then unload the contents using personal protective equipment to avoid injury. Reload the contents using the proper loading guidelines as previously mentioned in this manual.

Turn on the chamber and monitor performance. If the chamber continues to overheat into an alarm (HI) condition, turn off the chamber and contact your MAC Medical authorized service personnel.

Audible alarm and HI message alert (Upper Chamber Only)

• Possible heat transfer from lower unit.

• The temperature of the lower unit can be no more than 30°F greater than the temperature of the upper unit.

• This problem can be prevented by lowering the temperature of the lower unit or by reversing the contents of the two compartments.

Cleaning Stainless Steel Warming Cabinets

Stainless steel Warming Cabinets must be cleaned on a regular basis to prevent any unnecessary damage to the stainless steel surfaces. Spilled liquids and standing water should be cleaned up immediately.

When cleaning stainless steel Warming Cabinets, make sure to use the proper approved cleaning agents and cleaning materials to protect the surface and prevent damage or corrosion.

⚠ *CAUTION:* DO NOT USE these Cleaning Materials	⚠ *CAUTION:* DO NOT USE these Cleaning Agents
Abrasive Pads	Hard Water (water with a pH reading above 7.0)
Scrapers (metal or plastic)	Hydrochloric Acid
Steel Wool	Steam or high pressure water
Wire Brushes	Bleach or any compounds containing chlorine or Sodium hypochlorate, or ammonium chloride salts

Approved cleaning materials and agents		
Soft, clean lint-free cloth	Non-abrasive cleaning pads	Soft bristle brush
Mild detergents	Sodium Bicarbonate (baking soda)	Distilled water (pH rating 7) alone or with a mild detergent
White vinegar (in a spray bottle)	Isopropyl Alcohol	Hospital-grade non-bleach disinfectants
Cleaners approved for use on stainless steel		

Cleaning Stainless Steel Surfaces

- Using a damp, lint-free cloth and approved cleaner, wipe down the entire exterior surface of the stainless steel warming cabinet. Using a damp, lint-free cloth with distilled water and a mild detergent, wipe down the entire exterior surface of the stainless steel warming cabinet.

- Clean the Warming Cabinet with the stainless steel surface grain as shown here.

- Let cleaned Warming Cabinet air dry.

Cleaning Decals or Printed Labels

- Use only distilled water and a mild detergent applied with a clean, dry lint-free cloth to clean decals or printed labels.

- Cleaning agents can remove or smear any printing from decals and print labels.

- Cleaning agents can damage plastic materials used in manufacturing covers for electronic items such as touch-screen pads.

Disinfecting Stainless Steel

- Use a hospital grade non-bleach disinfectant. Always follow the manufacturer's instructions for proper use of these products.

Cleaning the Warming Cabinet Interior:

- Unplug and remove the Warming Cabinet from its power supply.

- ⚠ CAUTION: Turn OFF Circuit Breaker if Warming Cabinet is hard wired into the facility's electrical supply.

- Open the door and remove all adjustable shelves and shelf clips.

- Clean the adjustable shelves and shelf clips separately.

- Using a damp, lint-free cloth and approved cleaner, wipe down the interior of the cabinet.

- Use a lint-free dry cloth to dry the cabinet's interior or let air dry. If air drying, ALWAYS leave the cabinet door open.

Cleaning Glass Doors (if applicable):

Use a commercially prepared ammonia-free glass cleaner or use distilled water and a mild detergent applied with a lint-free cloth.

Preventative Maintenance Checklist

Operator Maintenance

Users are responsible for the thorough inspection of the equipment before and after each use. Should any problems or deficiencies arise, the results must be reported to the facilities maintenance personnel. The safety of personnel and patients relies on the proper and routine maintenance of this equipment.

Daily Checklist

1. Ensure that the correct operation and maintenance manual is available to all users.

2. Ensure that all personnel using this appliance have been properly trained in the warmer cabinet operation and safety instructions.

3. DO NOT overload cabinet. Load contents (blankets or fluids) into the chamber with a minimum of 1 inch of space between walls and fan to allow for circulation (as seen below).
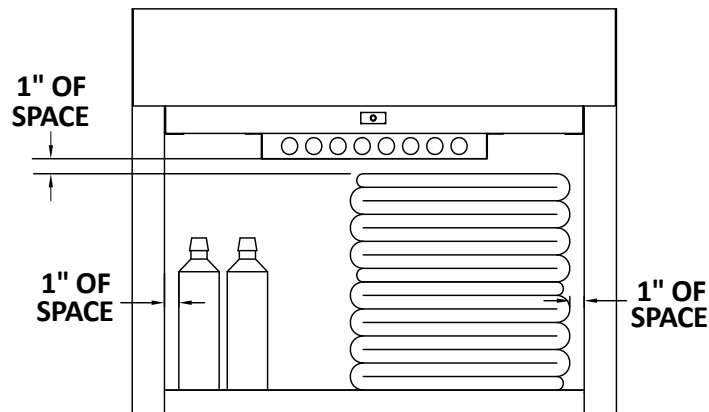
Weekly Checklist

1. Inspect condition of plug and cord. Replace if damaged.

2. Clean dust from back and side vents.

3. If any of the chamber shelves are unstable when setting objects on them, check the shelf clips that the shelves sit upon. Make sure these are not loose. If any are loose, snap back into place.

4. Check basket shelves (if applicable) and side rail condition. Do the baskets move smoothly and freely?

5. Check that all control indicators (heat and alarm) and LED display light up. LED Display panel must show lighted top and bottom displays. Heat light will stay on solid while the unit is heating up to its Set Point Temperature. Once the Set Point temp is reached, the light will begin to pulsate, and will continue to pulsate to maintain the Set Point temp.

6. Periodically check the alarm by setting the temperature ±15° from set point to test the alarm. If the temperature rises or drops 15° below its set point, the alarm should buzz and its light goes on. (Note: 90°F is the lowest temperature point. To test alarm from this point, heat the unit up 15° beyond its lowest temperature, then bring the set point down to test the alarm.)

Monthly Checklist

1. Check condition of casters or feet. Ensure components are secure and tightly threaded.

2. Check control panel overlay condition. Are there any tears or excessive wear on the graphic? Does the control work properly when buttons are pushed?

3. Is the set temperature comparable to the actual temperature displayed? Check chamber air temperature with a quality thermocouple placed 1 inch (25 mm) from the chamber. Do not allow the sensor to touch any surface. Monitor for approximately one hour in an empty chamber.

Semi-Annual Checklist

1. Check the temperature accuracy on a semi-annual basis by placing an IR Temp probe or thermocouple on calibrated meter near the fan inlet. In general, air temperature should be ±1°F for upper chamber and countertop units and ±3°F for lower chambers and large single cabinet units. See table column "Temperature Tolerance" on page 18 for details. If the cabinet is not within these guidelines, contact MAC Medical for further assistance.

2. Inspect the Fan Blades for buildup of lint and other debris. Clean as necessary. **NOTE**: MAC Medical recommends replacing the Fan Motor with Fan Blade (Part # - W0036 (120V)/ W0106 (220V)) every 2 years to ensure uninterrupted service.

Replacement Parts - General

D-Series Warming Cabinet replacement parts listed on this page have been identified by MAC Medical as serviceable by facility personnel and are available for purchase. To obtain MAC Medical certified parts and authorized services, contact your MAC Medical representative.

Item	Part #	Description	QTY
1	W0102 - Key	Key only - Key Lockout (2 keys per set) Single Chamber (1 set), Dual Chamber (2 sets), Triple Chamber (3 sets)	As Required
2	SWW0055	Adjustable Shelf	As Required
3	W0050	Handle, Stainless Steel Door, LH Upper, RH Lower (Dual/Triple Upper Chamber)	1
	W0051	Handle, Stainless Steel Door, LH Lower, RH Upper (Dual Lower Chamber, Triple Middle Chamber)	1
	W0052	Handle, Stainless Steel Door Single Chamber & Triple Lower Chamber	1
	W0053	Handle, Glass Door	1
4	H0006-1	8-32 X 1/2" Undercut Flat Head Screw (used with W0050, W0052, W0052)	3 per handle
	H0008-1	8-32 X 1/2" Screw (used with W0053)	2 per handle
5	W0043	Clip, Shelf	4 per shelf
6	W0135	Leg Leveler	4
7	W0600-S	USB Drive, Data Retrieval (1 per chamber)	As Required

Replacement Parts - Header Assembly and Electrical Drawer

Fig. 27: Replacement parts in header assembly
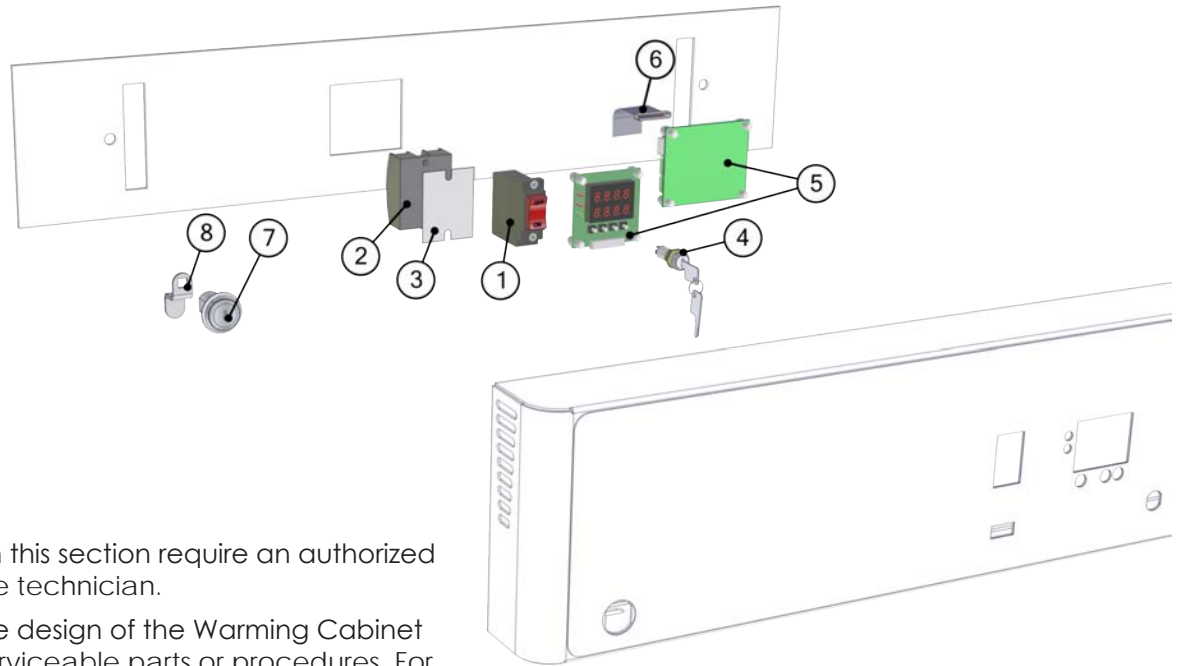
The Parts identified in this section require an authorized MAC Medical service technician.

⚠ Injury Hazard: The design of the Warming Cabinet allows limited user serviceable parts or procedures. For optimal usage, safety and durability of the product, service must be performed by a MAC Medical authorized service technician using MAC Medical authorized replacement parts and service techniques.

Fig. 28: Replacement Parts in drawer assembly

		Table 1			
Item #	Part #	Header Assembly and Electrical Drawer Parts Description	Item #	Part #	Header Assembly and Electrical Drawer Parts Description
1	W0011	Power Switch	10	See table 2	Heating Element
2	W0083	Solid State Relay	11	W0010	Ceramics
3	W0137	Heat Sink Pad	12	W0037	Thermocouple
4	W0102	Key Lock Housing	13	W0042	Overtemp Thermostat
5	W0084-D	Control W/Data Display Logger	14	See Table 3	Fuses
6	W0108	10" Data Cable	15	W0110-02 W0110-02-220 W0188	Fuse Holder Fuse Holder Fuse Holder (for 1518 models with external fuse access)
7	H0141	Cam Lock	16	W0013 W0013-220	Buzzer 110V Buzzer 220V
8	H0708-07	Cam Lock Latch	17	W0012 W0012-01	Door Switch Door Switch w/long stem (bottom glass doors on dual chamber units, all stainless steel doors)
9	W0036 W0106	Fan Motor with Fan Blade (120V) Fan Motor with Fan Blade (220V)	18	W0525-04	USB Plug to Panel Receipt 12"

			Table 2 (Heating Element - Item 10)
Part #	Size	Volt/Watt	Where Used
W0131	8"	110V/350W	SWC151822
W0313-220	8"	220V/350W	SWC151822-220
W0069	9"	110V/350W	SWC182424, SWC242424, SWC183024, DWC182464T, DWC242464T, DWC183064T, DWC182474T, DWC183074T, TWC243078, TWC183078
W0069-220	9"	220V/350W	SWC182424-220, SWC242424-220, SWC183024-220, DWC182464T-220, DWC242464T-220, DWC183064T-220, DWC182474T-220, DWC183074T-220, TWC243078-220, TWC183078-220
W0069-01	9"	110V/750W	SWC182464, SWC242464, SWC183064, SWC243064, SWC182474, SWC242474, SWC183074, DWC242464T, DWC242474T
W0069-01-220	9"	220V/750W	SWC182464-220, SWC242464-220, SWC183064-220, SWC243064-220, SWC182474-220, SWC242474-220, SWC183074-220, DWC242464T-220, DWC242474T-220
W0302	9"	110V/650W	SWC182436, SWC242436, SWC183036, DWC183074E, DWC182464T, DWC183064T, DWC182474T, DWC183074T, DWC182474E, DWC242474E, TWC243078, TWC183078
W302-220	9"	220V/650W	SWC182436-220, SWC242436-220, SWC183036-220, DWC183074E-220, DWC182464T-220, DWC183064T-220, DWC182474T-220, DWC183074T-220, DWC182474E-220, DWC242474E-220, TWC243078-220, TWC183078-220
W0003	12"	110V/750W	SWC243024, SWC243036, SWC243074, SWC243064, DWC243074T, DWC243064T, DWC243074E, DWC242464T
W0107	12"	220V/750W	SWC243024-220, SWC243036-220, SWC243074-220, SWC243064-220, DWC243074T-220, DWC243064T-220, DWC243074E-220, DWC242464T-220

		Table 3 (Fuses - Item 14)
Part #	Description	Where Used
W0395 (220V)	Fuse 7A (2 needed)	All 220V Single Chamber Cabinets
W0396 (220V)	Fuse 10A (2 needed)	All 220V Dual/Triple Chamber Cabinets
W0124 (110V)	Fuse 15A	All 110V Single Chamber Cabinets
W0125 (110V)	Fuse 20A	All 110V Dual and Triple Chamber Cabinets

Optional Cabinet Bases, Mobile Bases and Mobile Stands

All warming cabinets are shipped with a standard 4 inch base unless otherwise specified. The table on the right lists the base part number and sizes for various sized cabinets.

The two tables below list the mobile bases/stand part numbers for the single, dual and triple cabinets.

SWM0307-02 shown here

Part #	Base
SMW0307-02	4″ base for 18 x 24 cabinets
SMW0359-02-WM	2″ base for 18 x 24 cabinets
SMW0359-03-WM	6″ base for 18 x 24 cabinets
SMW0062-02	4″ base for 18 x 30 cabinets
SMW0047-08	2″ base for 18 x 30 cabinets
SMW0062-03	6″ base for 18 x 30 cabinets
SMW0308-01	4″ base for 24 x 24 cabinets
SMW0308-05	2″ base for 24 x 24 cabinets
SMW0308-04	6″ base for 24 x 24 cabinets
SMW0047-03	4″ base for 24 x 30 cabinets
SMW0047-10	2″ base for 24 x 30 cabinets
SMW0047-09	6″ base for 24 x 30 cabinets

Single Cabinet Model #	Mobile Stand/ Base Part #	Overall Dimensions
SWC151822	MS1518	18″D x 21″W x 34″H
SWC182424, SWC182436	MS1824	20″D x 28″W x 34″H
SWC183024, SWC183036	MS1830	20″D x 34″W x 34″H
SWC242424, SWC242436,	MS2424	26″D x 26″W x 34″H
SWC243024, SWC243036	MS2430	26″D x 34″W x 34″H
SWC182464, SWC182474	MB1824	21″D x 25″W x 6.75″H
SWC183064, SWC183074	MB1830	21″D x 31″W x 6.75″H
SWC242464, SWC242474	MB2424	27″D x 25″W x 6.75″H
SWC243064, SWC243074	MB2430	27″D x 31″W x 6.75″H

Dual/Triple Cabinet Model #	Mobile Base Part #	Overall Dimensions
DWC182474E, DWC182464T, DWC182474T	MB1824	21″D x 25″W x 6.75″H
DWC183064T, DWC183074T, DWC183074E, TWC183078	MB1830	21″D x 31″W x 6.75″H
DWC242474E, DWC242464T, DWC242474T	MB2424	27″D x 25″W x 6.75″H
DWC243064T, DWC243074E, DWC243074T, TWC243078	MB2430	27″D x 31″W x 6.75″H

MS1518 & MS1824

MS1830 & MS2430

MS2424

WB1518, WB1824, WB1830, WB2424, WB2430
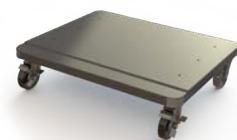
MB1824
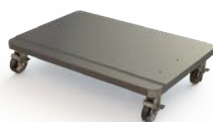
MB1830
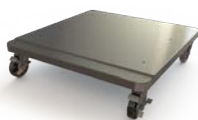
MB2424
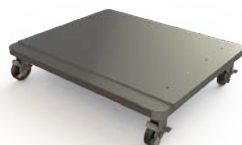
MB2430

Roll Out Basket Part #	Warming Cabinet Model #	Basket Overall Dimensions
WB1518	SWC151822	11.5″D x 8.5″W x 2.5″H
WB1824	SWC182424, SWC182436, SWC182464, SWC182474, DWC182464T, DWC182474T, DWC182474E	16″D x 16.92″W x 5″H
WB1830	SWC183024, SWC183036, SWC183064, SWC183074, DWC183064T, DWC183074T, DWC183074E, TWC183078	15.88″D x 22.98″W x 5″H
WB2424	SWC242424, SWC242436, SWC242464, SWC242474, DWC242464T, DWC242474T, DWC242474E	21.75″D x 16.98″W x 5″H
WB2430	SWC243024, SWC243064, SWC243074, DWC243036, DWC243064T, DDWC243074T, DWC243074E, TWC243078	21.75″D x 23.10″W x 5″H

Steel or Glass Door Hinge Reversal

⚠️ Before the Door Hinges can be reversed, the top and side panels of the cabinet must be removed, and the Cam Lock must be relocated.

Remove Panels

The following steps for panel removal apply to cabinets with either steel or glass doors.

1. For both glass and stainless steel doors, remove the outside top panel by unscrewing the four top panel screws and lifting the panel out. Remove the inside top panel by unscrewing the two screws and lifting the panel out (Fig. 29).

Fig. 29: Remove Top Panels

2. Remove the two screws located inside the cabinet (one on each side) near the bottom (Fig. 30 - Fig. 31. Door removed for clarity in these illustrations).

Fig. 30: Remove Interior Cabinet Screws - Glass Door Unit

Fig. 31: Remove Interior Cabinet Screws - Steel Door Unit

3. Remove the screws at the back of the cabinet and slide out both side panels (Fig, 32).
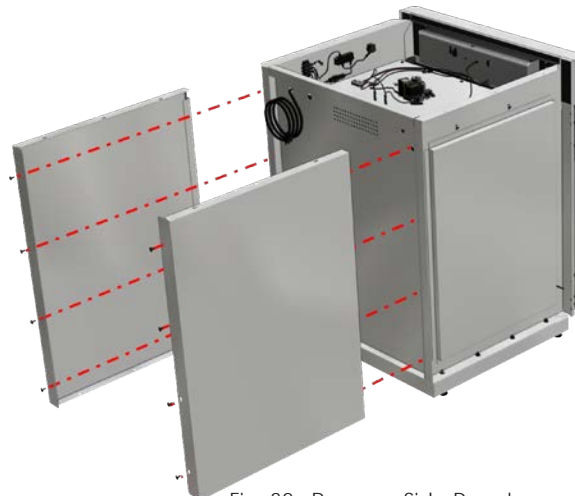
Fig. 32: Remove Side Panels

Remove Header Assembly Box & Relocate Cam Lock

Purchase Parts Needed for Cam Lock Reversal

• Felt Strip ST0014

• Plug W0098

The following steps apply to cabinets with steel or glass doors.

Cabinets are equipped with a cam lock in the header assembly. This must be moved to the other side of the header assembly box when the door hinges are reversed. The door itself has a cam lock plate that must also be moved near the new location of the cam lock. (Note: Only top doors on multi-chambered cabinets have a cam lock plate.)

4. To remove the Header Assembly Box, unscrew four hex locking bolts from the header assembly box mounting plates and remove the header assembly box (Fig. 33).

Fig. 33: Remove Header Assembly Box

5. To access the cam lock and its new location, cut an area out of the gasket cover in the location shown by the red rectangles (Fig. 34).
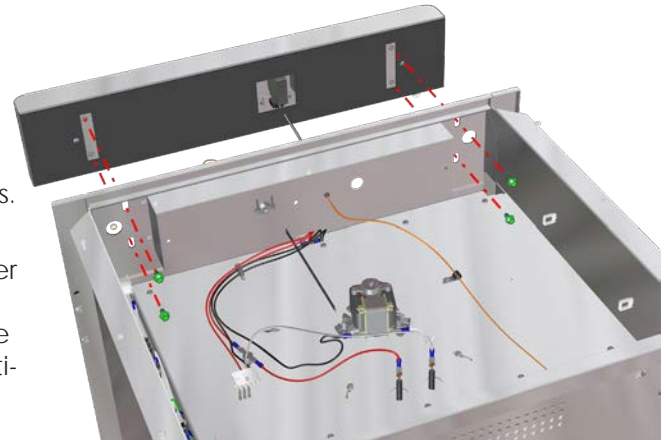
Fig. 34: Cut Out Rectangular Sections from Gasket

Fig. 35 shows the header assembly interior (gasket removed for clarity). The cam lock (in red rectangle) will be moved to the two oblong knock-out areas circled in red and highlighted in blue (Fig. 36).
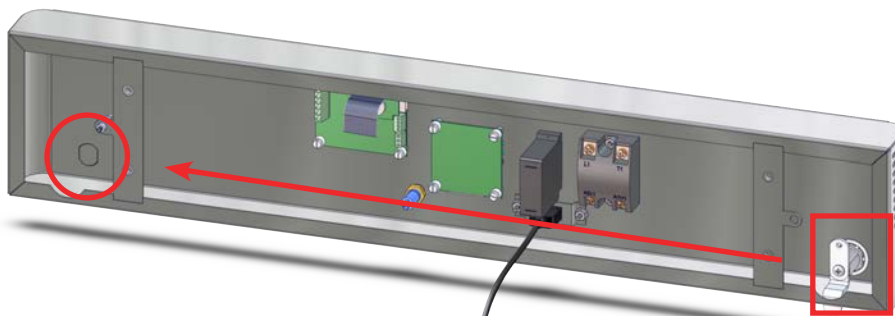
Fig. 35: Cam Lock to be Moved to New Location
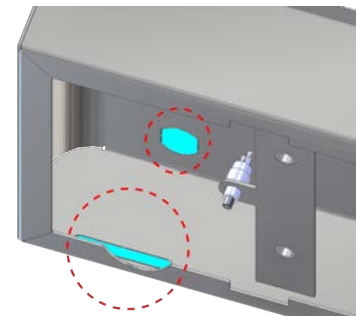
Fig. 36: Knock out areas

6. At the new cam lock location, remove the two oblong knock-out areas. Cut an oblong shape in the plastic overlay covering the short-wide oblong knock-out area to accommodate the cam lock when it is reinstalled (Figs. 37 - 38). The narrow-long oblong knock-out area will be the slot the cam lock latch fits in.

Fig. 37: Overlay - Cam Lock Location - Right Hinged Door

Fig. 38: Overlay-Cam Lock Location - Left Hinged Door

7. To detach the Cam Lock assembly, unscrew the Phillips head screw from the Cam Lock Latch (Fig. 39).

8. Unscrew the Hex Nut and remove the Lock Washer.

9. Pull the Cam Lock body out from the face of the Header Assembly.

10. Insert purchased Plug (W0098) into the hole originally occupied by the lock.

11. To reinstall at the new position, slide the Trim ring onto the barrel of the Cam Lock, insert Cam Lock body through the oblong hole at the new position in the face of the header (Fig. 40).
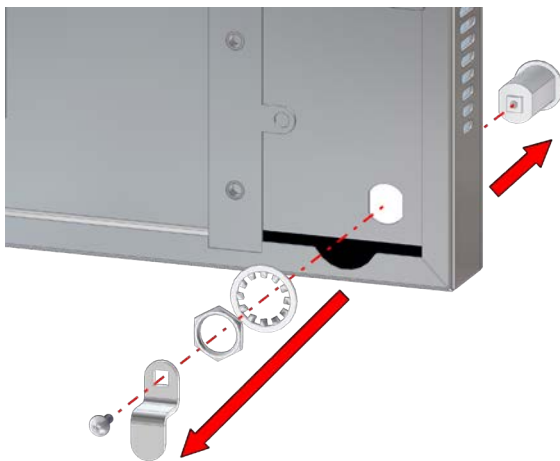
Fig. 39: Detach Cam Lock Assembly
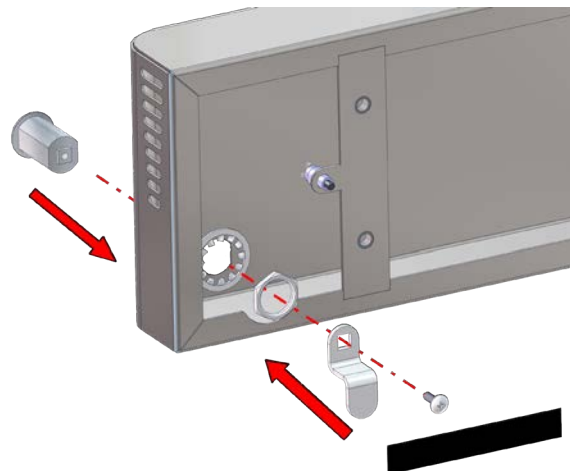
Fig. 40: Re-assemble and Re-install Cam Lock

Fig. 41: Assembled Cam Lock

12. Secure the Cam Lock body to the header by attaching the Lock Washer, then the Hex Nut.

13. Affix the Cam Lock Latch to the Cam Lock body and secure it with an 8-32 Phillips head screw.

14. Insert the purchased Felt Adhesive Strip (ST0014) between the Cam Lock Latch and the header. Position it to keep the Cam Lock Latch from falling down when the key is in the lock (Fig. 42). When activating the lock, the latch will rub the felt strip.

15. Use a piece of Felt Adhesive Strip to cover up the old oblong hole where the Cam Lock Latch passed through the bottom of the header.

16. Reinstall the Header Assembly and secure to the cabinet with its four screws.
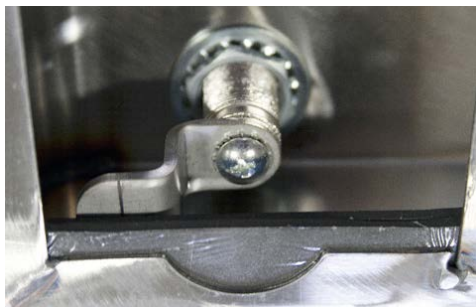
Fig. 42: Assembled Cam Lock with Felt Adhesive Strip
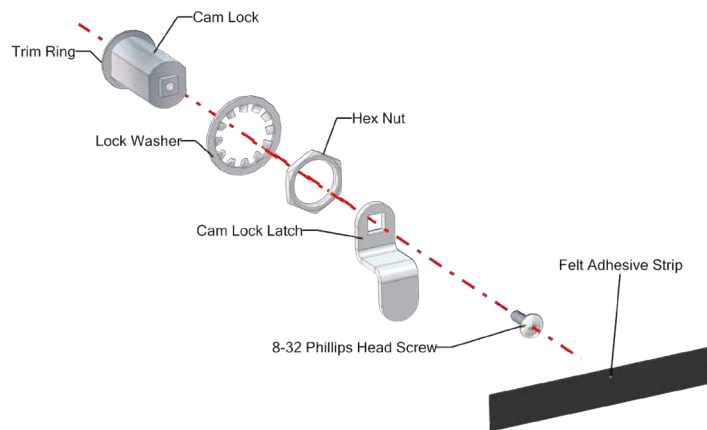
Fig. 43: Cam Lock Assembly Parts

Glass Door Hinge Reversal and Reinstallation

Following are instructions for the removal, hinge reversal and reinstallation of Glass Doors.

Note: No additional parts are required to perform Glass Door hinge reversal. However, it may be necessary to drill holes in the bottom of the Glass Door to enable relocation of the Cam Lock Plate to its new position. The following tools will be necessary for this procedure:

- *1/8" Drill Bit*
- *8/32 Tap*
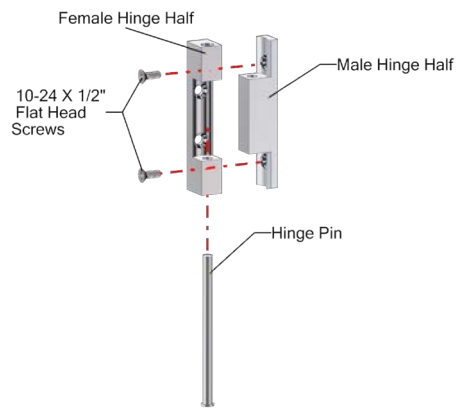
Fig. 44: Glass Door Hinge Parts

Fig. 45: Remove Door Hinge Pins

1. Using a drift pin (or a small headed screwdriver) and a hammer, detach the glass door from the unit by tapping lightly on the hinge pins, driving them through the two halves of the hinges. Then pull the door away from the unit to remove it (Fig. 45).

2. Detach the male halves of the glass door hinge by unscrewing them from the warming cabinet. The hinge halves on the door should remain in place (Fig. 46).

Fig. 46: Detach Glass Door Hinge - Male Half

3. Unscrew the Door Handle and Cam Lock Plate from their present position and move them to the other side of the door. Make sure to "mirror" the Cam Lock Plate so that its top flange will be flush against the warming cabinet when the door is reinstalled in its new position (Fig. 47).
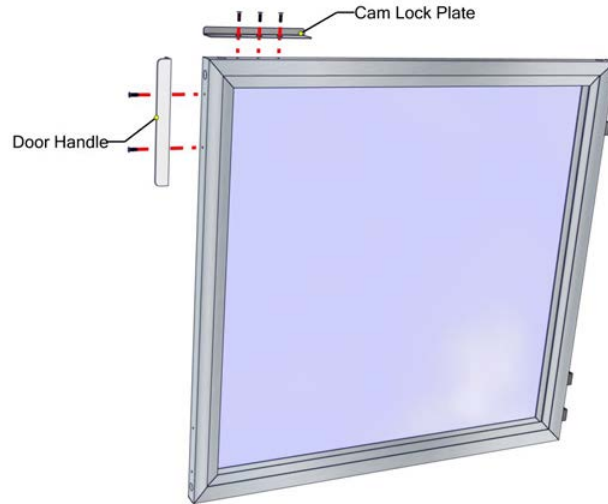
Fig. 47:   Remove Cam Lock and Handle

4. If it is necessary to drill holes for the relocation of the Cam Lock Plate on the other side of the door, use the Cam Lock plate as a guide to mark the proper location of the holes to be drilled (Fig. 48). The Cam Lock Plate should be positioned 1/8" from the outer edge of the door (Fig. 49).
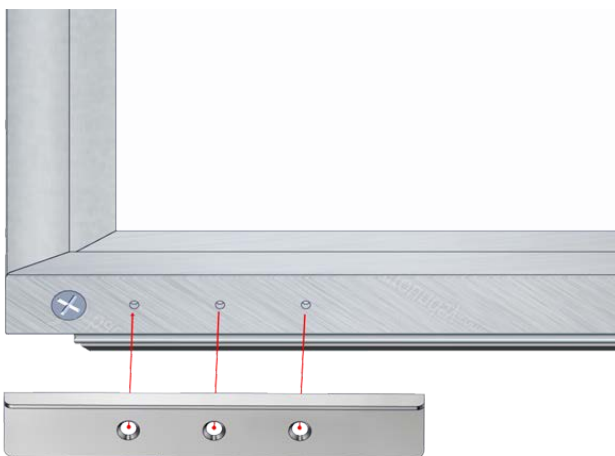
Fig. 48:   Use Cam Lock for hole guide

Door Inner Face

Fig. 49:   Proper position of Cam Lock

Cam Lock Plate set back 1/8" from outer face of door

5. Once the holes are drilled for the Cam Lock Plate, move both the Cam Lock Plate and the Door Handle to their new positions (Fig. 50). When installed, there should be at least a 1/4″ gap between the Cam Lock Plate and the face of the Cabinet (Fig. 51).
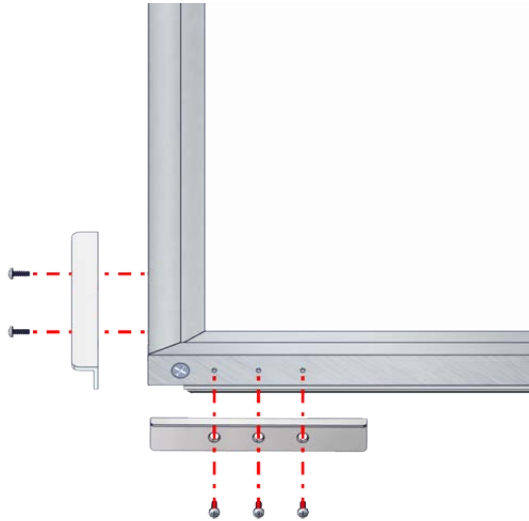
Fig. 50:   Attach Cam Lock Plate and Door Handle

Fig. 51:   Cam Lock Plate door gap

6. With the door handle and the Cam Lock Plate in their new positions, rotate the door 180° (Fig. 52). Figure 53 shows its orientation when reinstalling the door on its new hinge position.
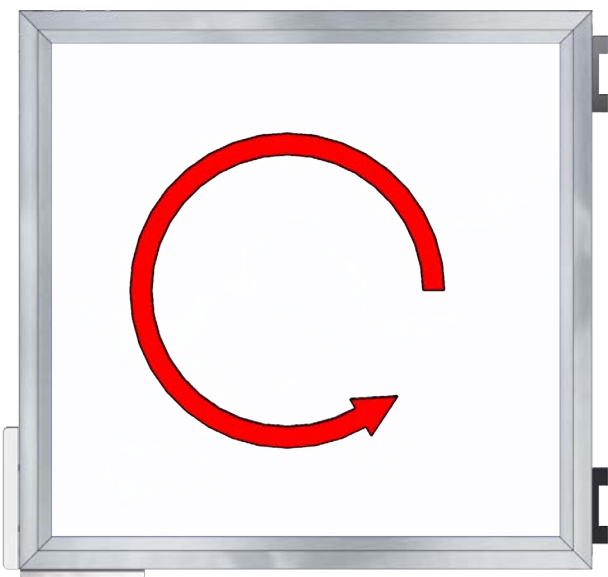
Fig. 52:   Rotate Modified Door
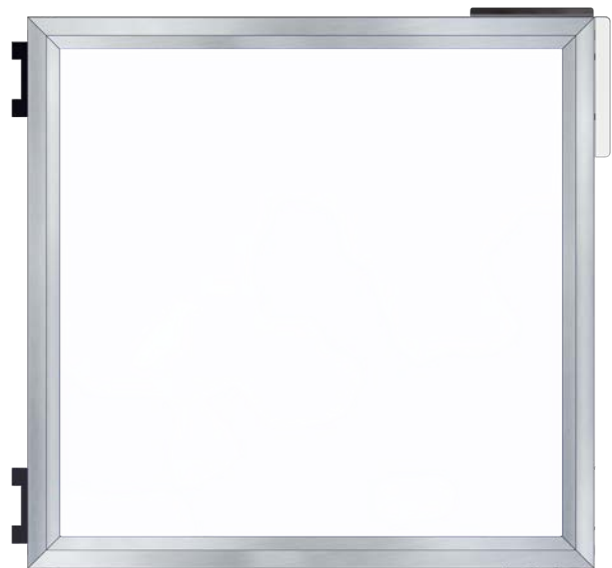
Fig. 53:   Door Rotated to New Installation Position

7. Use a flathead screwdriver to remove the two smaller satin plugs (circled in red) from the top and bottom of the opposite side of the cabinet. These are the new hinge positions (Fig. 54).

8. Reinsert the two satin plugs (that were removed from the new hinge positions) in the old hinge positions.

Fig. 54:   Remove Satin Plugs from New Hinge Position

9. Reinstall the male halves of the door hinges in these positions. Do not tighten the screws at this point (Fig. 55).

10. Attach the glass door to the unit by fitting the two halves of the glass door hinges together. Before securing the door to its hinges, square the door by checking the door's alignment with the header assembly box. Then tighten the hinge screws (Fig. 56).

Fig. 55:   Install Male Hinge Halves in New Position

Fig. 56:   Check Alignment - Square Door

11. To secure the door to its hinges, drive the hinge pins through the two halves of the hinges. Both pins should be driven into the hinges from the inside to the outside as shown in Fig. 57.

12. Reattach and secure the side panels to the warming cabinet with its screws.

13. Reinsert the two interior cabinet screws near the bottom of the cabinet chamber.

14. Reinstall the inner and outer top panels and secure with its screws.

Fig. 57:   Insert Hinge Pins

Steel Door Hinge Reversal and Reinstallation

Purchase Parts Needed for Door Hinge Reversal

- Intermediate Hinge (for multiple door units only) W0015 (Right Hand) or W0016 (Left Hand). Obtain the intermediate hinge opposite of the currently installed hinge.

1. Loosen the nuts on the bolts that hold the top door hinge onto the unit. Hold the door as you remove the nuts so the door does not fall on you. Once the nuts are removed, the door can be leaned away from the unit and lifted off the bottom hinge (Fig. 58).

Fig. 58: Remove Steel Door

2. Remove the nuts that fasten the bottom hinge to the unit and remove the screws and bottom hinge (Fig. 59).
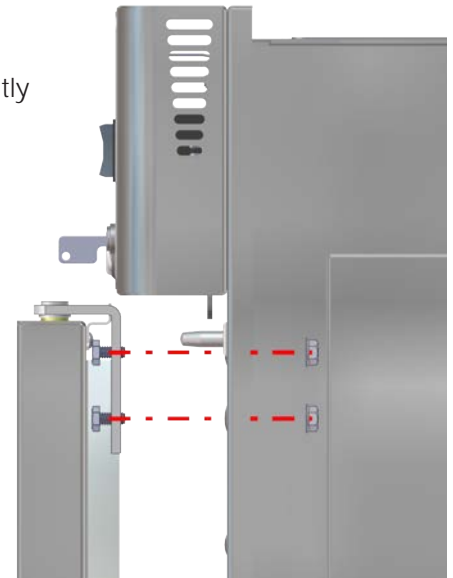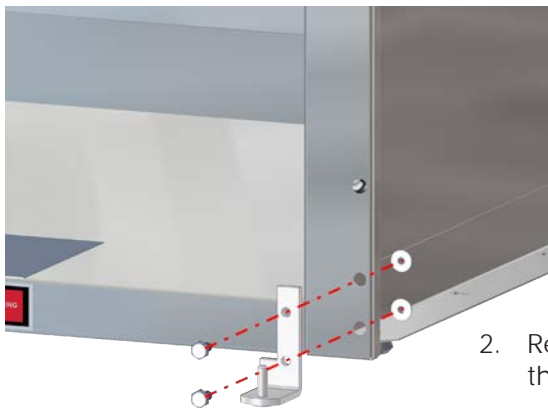
Fig. 59: Remove Bottom Hinge

W0016
Left hand

W0015
Right hand
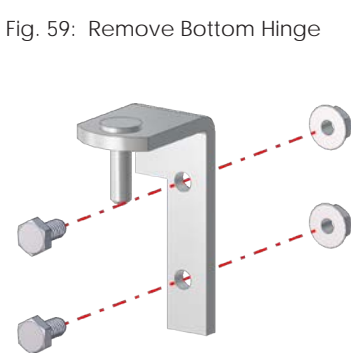
Fig. 60: Steel Door Hinge Parts

Fig. 61: Intermediate Door Hinge

Note: For warming cabinets with more than one door, an intermediate hinge (Fig. 61) fits between the bottom of the top door and the top of the bottom door of the dual chambered warming cabinet (shown in blue in Fig. 62). (Middle doors on Triple chamber warming cabinets use only intermediate hinges for both top and bottom.)
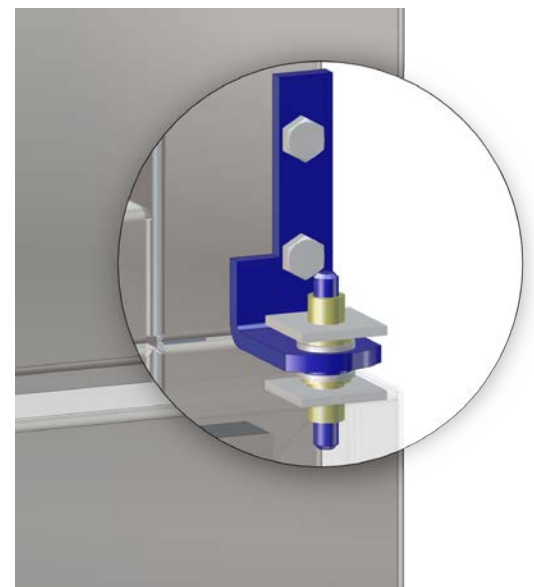
Fig. 62: Intermediate Door Hinge in Place

Intermediate hinges come as either right hand (part #W0015) or left hand (part #W0016) hinges. Purchase the intermediate hinge that is the opposite of the current one on your warming cabinet.

If the unit has multiple doors, remove the intermediate hinges by unscrewing them from the cabinet.

3. After the door is removed, unscrew the Door Handle and Cam Lock Plate from their present position and move them to the bottom of the door. Be sure to "mirror" the Cam Lock Plate so that its top flange will be flush against the warming cabinet when the door is reinstalled in its new position (Fig. 63).

4. With the door handle and the cam lock plate transferred to their new positions, rotate the door 180°. This will be its orientation when reinstalling the door on its new hinge position.
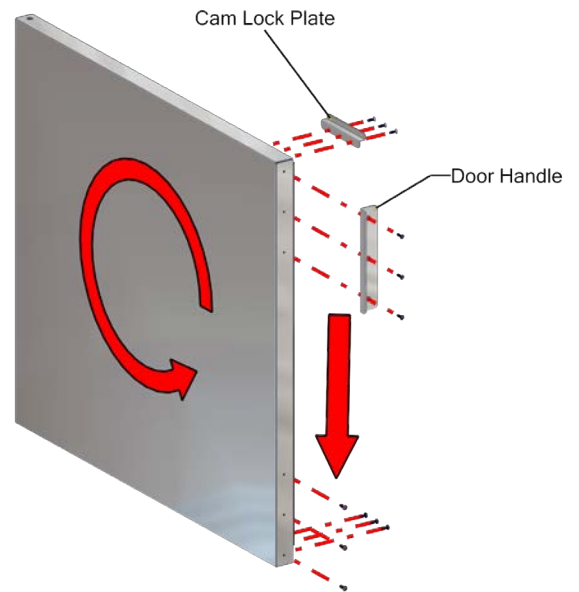
Fig. 63: Move Door Handle and Cam Lock Plate

5. From the opposite side of the cabinet, use a flathead screwdriver to remove the two top satin plugs (Fig. 64) from the top and the two lowest bottom satin plugs. These are the new hinge positions.

6. Reinsert the two satin plugs (that were removed from the new hinge positions) in the old hinge positions.
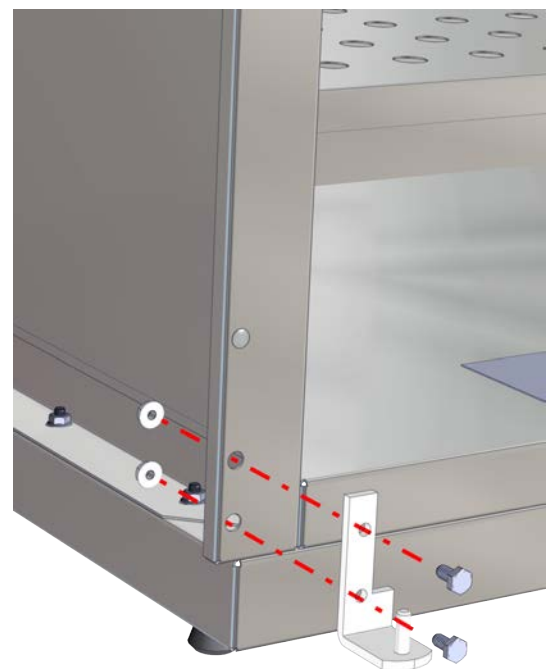
Fig. 64: Remove Satin Plugs

7. Attach the bottom hinge in the new position to the bottom of the unit using the hardware provided (Fig. 65).

Fig. 65: Install Bottom Hinge in New Position

Fig. 66: Door Hinge Socket

8. Look at the socket located on both the top and bottom of the door (circled in red in Fig. 66). The pins of the door hinges will insert into these. Fit the bottom socket of the door onto the bottom hinge pin. Support the door on its bottom hinge while you prepare to affix the door to the top hinge.

9. Insert the screws into the top hinge (or intermediate hinge, if applicable). Then insert the hinge pin into the top socket of the door, aligning the hinge screws with the top (or intermediate) hinge holes on the unit as shown in Fig. 67.

10. From the side of the unit, secure the door and top hinge with the hinge nuts shown circled in red in Fig. 67.
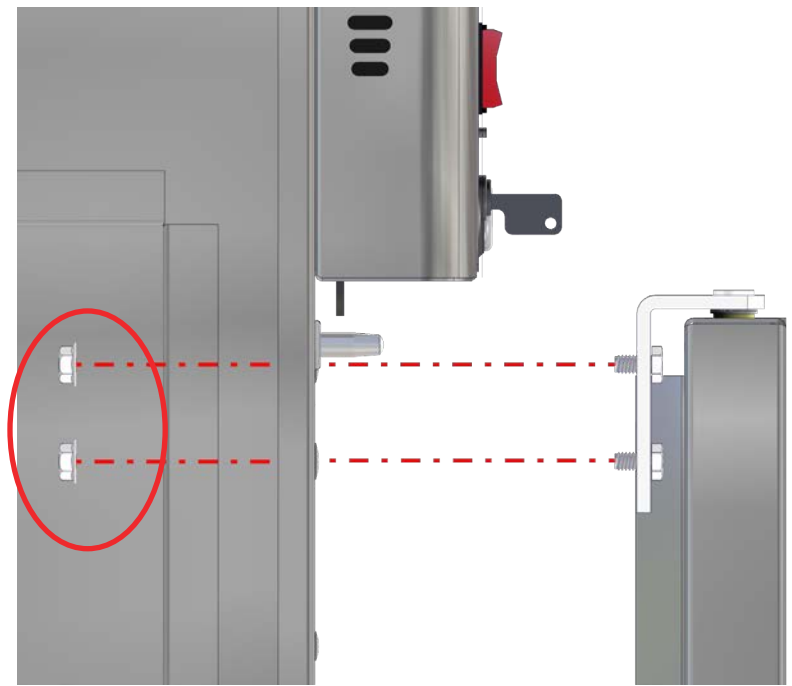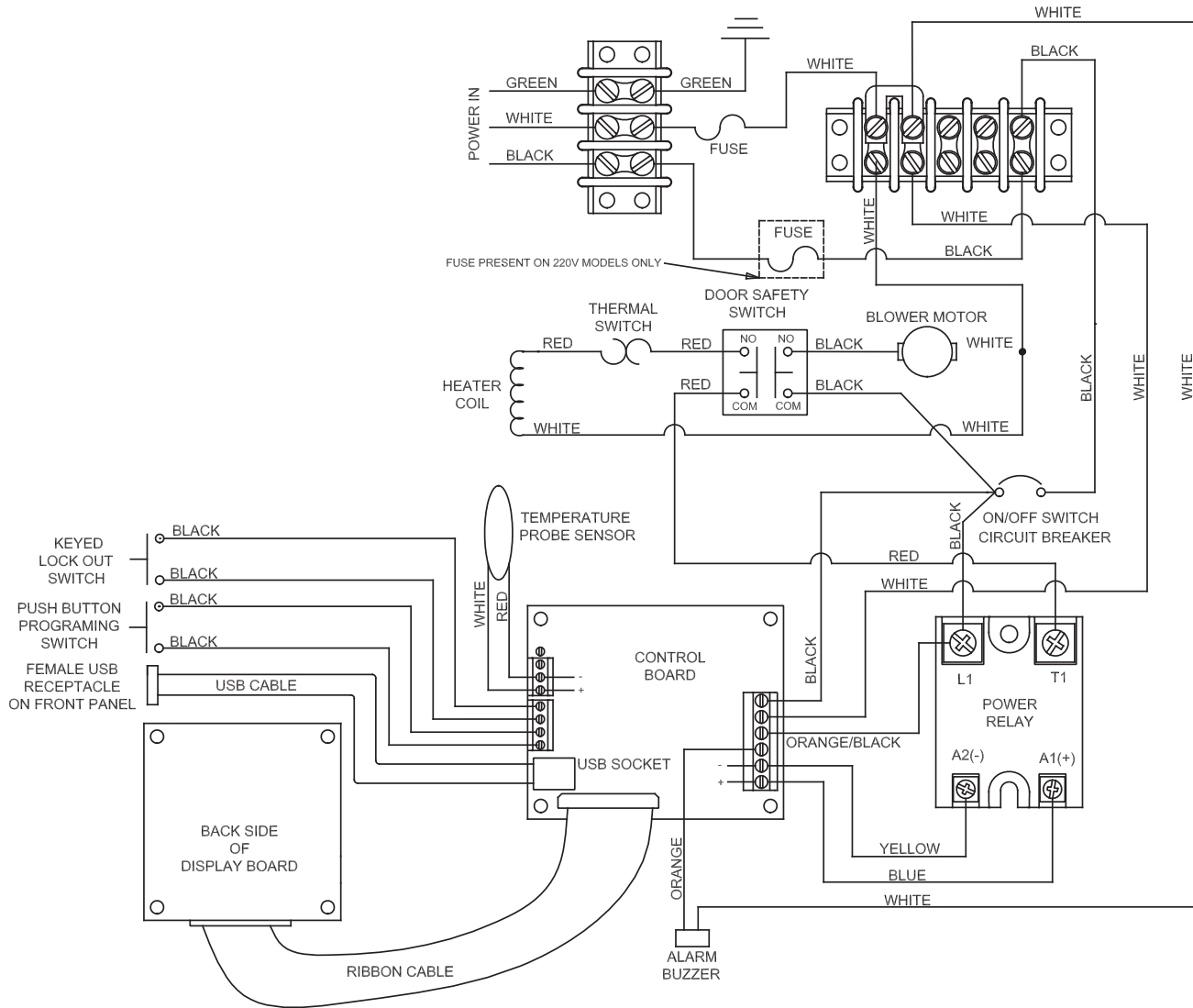

Fig. 67: Install Top Hinge and Secure Door

11. Square the door by checking its alignment with the header (Fig. 68 shows a glass door, but the same applies for the steel door). Then tighten the hinge nuts.

12. Reattach both side cabinet panels with its screws

13. Reinsert the two interior cabinet screws near the bottom of the cabinet chamber.

14. Reattach the inner and outer top cabinet plates.

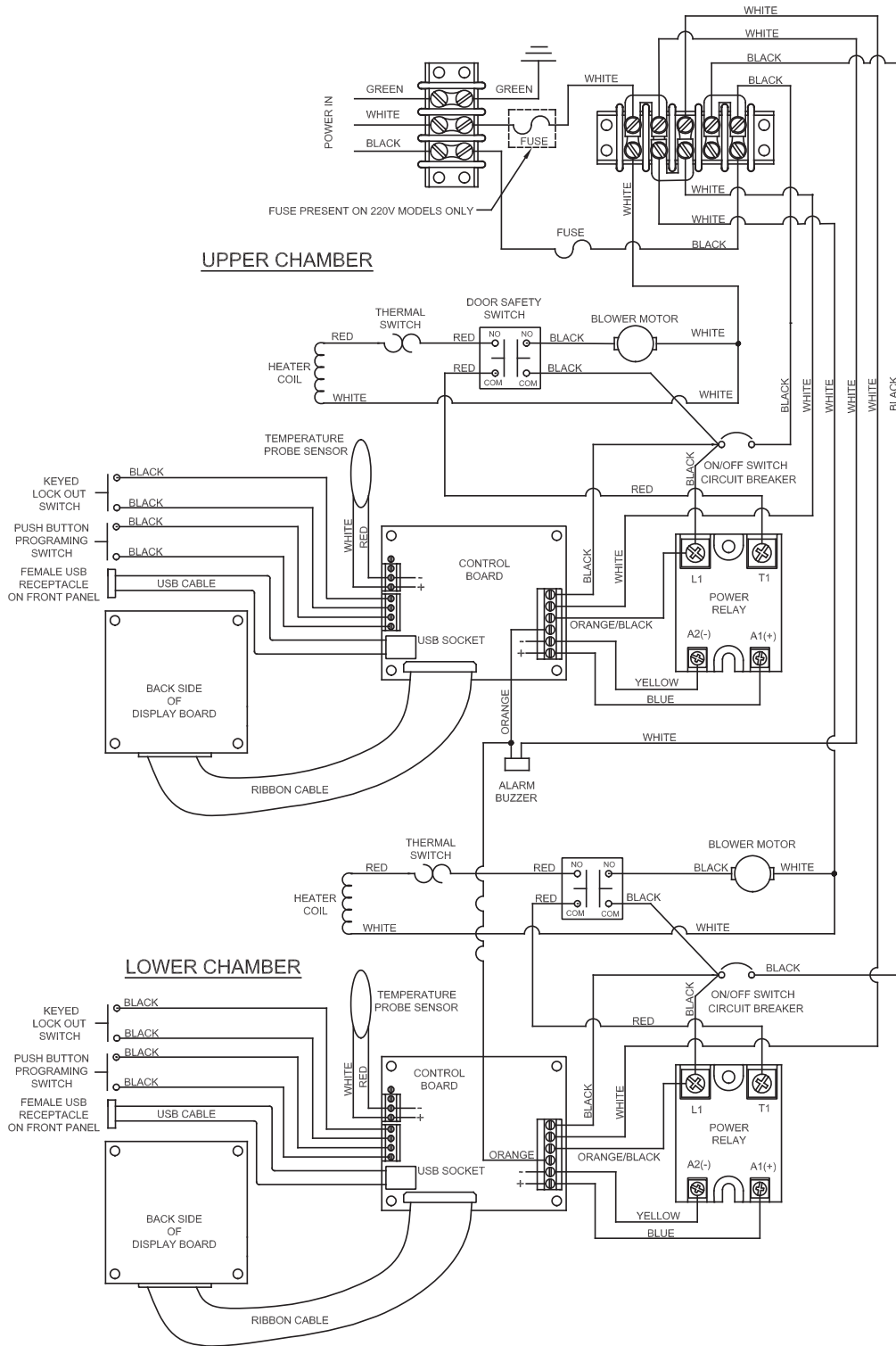Fig. 68: Check Alignment - Square Door
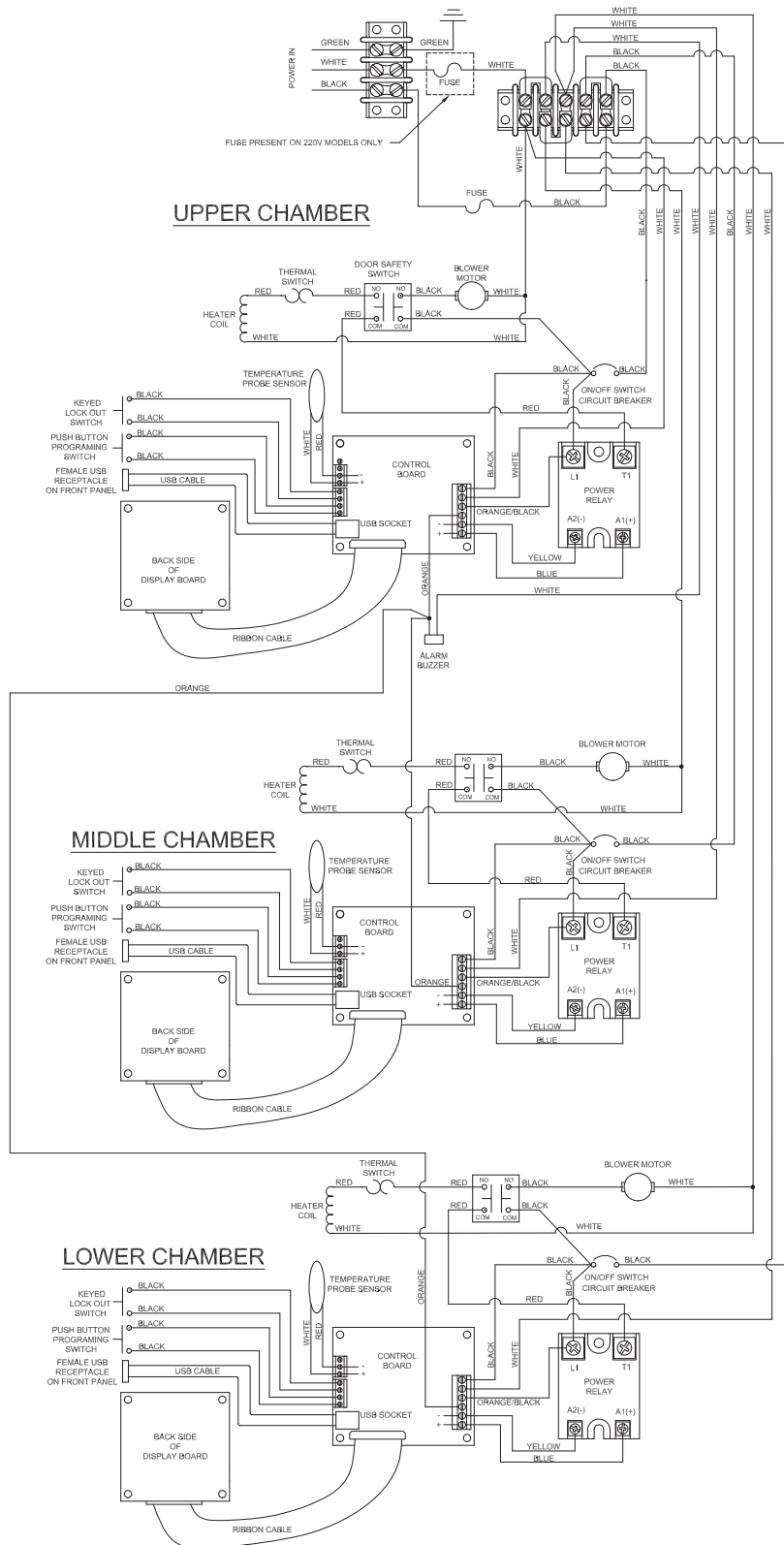
40

Wiring Diagram - Single Chamber Warmers

WHITE

BLACK

WHITE

GREEN   GREEN

POWER IN

WHITE

FUSE

BLACK

WHITE

BLACK

FUSE

FUSE PRESENT ON 220V MODELS ONLY

DOOR SAFETY
SWITCH

WHITE

BLACK

BLOWER MOTOR

THERMAL
SWITCH

RED   RED   NO   NO   BLACK   WHITE

RED   RED   BLACK

HEATER
COIL   COM   COM

WHITE   WHITE

BLACK

WHITE

WHITE

KEYED
LOCK OUT
SWITCH   BLACK

TEMPERATURE
PROBE SENSOR

ON/OFF SWITCH
CIRCUIT BREAKER

BLACK

BLACK

RED

PUSH BUTTON
PROGRAMING
SWITCH   BLACK

BLACK

WHITE

WHITE
RED

FEMALE USB
RECEPTACLE
ON FRONT PANEL   USB CABLE

BLACK

CONTROL
BOARD

L1   T1

POWER
RELAY

USB SOCKET   ORANGE/BLACK

A2(-)   A1(+)

BACK SIDE
OF
DISPLAY BOARD

ORANGE   YELLOW

BLUE

WHITE

ALARM
BUZZER

RIBBON CABLE

CONNECTIONS FOR SINGLE USB WARMING CABINETS

Wiring Diagram - Dual Chamber Warmers

CONNECTIONS FOR DOUBLE USB WARMING CABINETS

Wiring Diagram - Triple Chamber Warmers

WIRING CONNECTIONS FOR TRIPLE USB WARMING CABINET

Index

Preventative Maintenance Record

For your convenience, here is a simple chart to use to note which personnel have been trained to safely use and maintain the warming cabinet.

Personnel Trained	Daily Operation	Safety Instruction	Cleaning Procedures

This chart refers to the procedures on the "Preventative Maintenance Checklist" on page 24.

Date of Weekly Inspection	Date of Monthly Inspection	Date of Semi-Annual Testing

Notes

Notes

Limited Lifetime Warranty

MAC Medical warrants to the original purchaser that its Proprietary Products will be free from defects in workmanship or materials under normal use and service for the life of the product, so long as owned by the original purchaser, according to the limitations set forth below.

Defective products shall be repaired or replaced at MAC Medical's option at no cost to the original purchaser provided:

1. The customer must obtain a written return authorization supplied by MAC Medical's customer service department. The product must be returned, properly packaged, with a copy of the original sales receipt and copy of the RMA authorization.
   Please call (877) 828-9975 or (618) 476-3550 to receive a return authorization.
2. The customer must pre-pay freight charges to and from MAC Medical and must ship merchandise properly packaged, in a way the product will not be damaged during transit to the factory. MAC Medical does not warranty any freight damage to or from the factory. It is the customer's responsibility to inspect the product for packaging damage before signing the BOL.

This warranty does not apply to products, which have been subject to abuse, misuse, accident, modification, alteration, tampering, negligence, lack of routine maintenance or misapplication; or products that have been repaired by other than MAC Medical or its authorized representatives.

This warranty does not apply to glass, fabrics, vinyl, seat coverings, cushions, padding or their stitching, gluing or installation. Component parts not manufactured by MAC Medical, such as casters, caster inserts, any components made from rubber or plastic, circuit boards, fan heaters, plumbing parts, electrical switches and other components are also excluded. For these component parts, MAC Medical will pass on the original manufacturer's warranty to MAC Medical equipment original purchasers. Please consult factory for questions regarding the warranties of these component parts. This warranty does not apply to custom fabricated products. Consult factory.

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Liability of MAC Medical under this warranty is limited to the repair and/or replacement of any products. MAC Medical specifically excludes and disclaims any responsibility for any incidental or consequential damages claimed to have arisen from any defect in workmanship or materials. No representative has any authority to change or enlarge the above warranty or MAC Medical liability. This document supersedes all previous warranty provisions.

To place an order, contact our customer service department at **618-476-3550** or **877-828-9975** or by email at **sales@macmedical.com**

MADE IN THE USA

Customer needs are our first priority.

INSPIRED TO BE BETTER

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