WarmAir®

Operation & Technical Manual

Model 135 Warming Unit

GENTHERM

Gentherm Medical, LLC • 12011 Mosteller Road • Cincinnati, Ohio 45241, U.S.A.

www.gentherm.com

Part No. 56398

56398 Rev. AB

How to get Technical Help

How To Contact Gentherm

Gentherm Medical, LLC
12011 Mosteller Road
Cincinnati, OH 45241

Telephone	1-800-989-7373
(U.S) 24hr Clinical Support	1-513-460-2038
Med Tech Support	1-888-437-5608
Fax	1-513-772-9119
Website	www.gentherm.com

Before You Call for Service...

To help us better serve you, please have the serial number of your WarmAir® 135 unit ready when you call for parts or service. The serial number is located on the back plate of the WarmAir®135 unit.

In-Warranty Repair and Parts

WarmAir®135 units are covered by a one-year warranty. To return defective parts or units, obtain a Returned Materials Authorization (RMA) number from our Medical Technical Service department. A WarmAir® Model 135 shipping carton will be sent to you, if needed. Extended Warranty Available.

Receiving Inspection

After unpacking the WarmAir®135 unit, inspect the system for concealed damage. Retain all packing material and carefully record or photograph any damage. Notify the carrier at once and ask for an inspection (in writing). Failure to do this within 15 days may result in loss of claim. Do not return the equipment to Gentherm Medical. Call our Medical Technical Service department for further instructions.

Important Safety Information

Refer to this manual for instructions and caregiver information. Read and understand all precautionary information before using, prescribing, or servicing the WarmAir®135 unit.

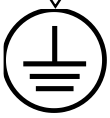
Contents

Illustrations

Symbols


Voltage, Alternating Current


Potential Equalization Connection (Grounding)


Protective Earth (Ground)


Type BF Equipment (per IEC-601-1)
(Patient Applied)


Consult instructions for use and/or manual before operating


Over-Temperature Safety Limit


Under-Temperature Safety Limit


Hour Meter


Power On/Off Indicator


Fan Only Selection


Temperature Selection Switches

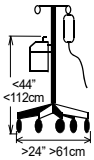

Low setting: 32.2°C


Medium setting: 37.8°C

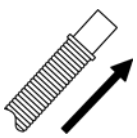

High setting: 43.3°C


Separate collection for electrical and Electronic equipment


NO FREE HOSING: Hose Nozzle MUST be connected to a compatible Forced Air Blanket or thermal injury may occur.



WARNING: To prevent tipping when mounting the Model 135 unit to an IV pole, clamp the unit no higher than 44 inches (112 cm) on an IV pole with a minimum 24 inch (61 cm) diameter base. Failure to heed these restrictions may result in IV pole instability, catheter site trauma, and patient/user injury.


Insert Hose

Section 1: Safety Precautions

General Description of the WarmAir® 135

The WarmAir® 135 unit is a small and compact warming unit designed to supply air at temperatures of ambient, 90°F, 100°F or 110°F to a patient-applied air-distribution device. The settings are termed "Fan Only", "Low", "Medium" and "High", respectively.

Indications

The WarmAir® 135 patient warming system is intended to prevent hypothermia and/or reduce cold discomfort before, during, and after surgical procedures. The thermal regulating system is used to raise a patient's temperature and/or maintain a desired patient temperature through convective heat transfer from the controller to a warm-air-heated blanket. The single-patient use blankets transfer the thermal energy to adult, pediatric or neonate patients to obtain/maintain normal body temperature. It is intended for use by appropriately trained healthcare professionals in clinical environments.

Contraindications

High temperature settings to be used with close patient observation when treating patients with the following conditions:

- Significant peripheral vascular disease, occlusive or diabetic in nature.
- Low cardiac output.
- Marginal cutaneous perfusion.

Do not apply heat to lower extremities during arterial cross-clamping. Thermal injury may occur if heat is applied to ischemic limbs.

Warnings

- A Licensed Healthcare Practitioner's order is required for setting temperature and use of equipment. At least every 20 minutes, or as directed by a Licensed Healthcare Practitioner, check the patient's temperature and skin condition of areas in contact with the disposable blanket. Pediatric and temperature-sensitive patients should be checked more frequently. **Notify the Licensed Healthcare Practitioner promptly of any change in order to avoid serious injury.**
- Patient temperature depends on ambient temperature and additional sheets or blankets. Reduce or discontinue therapy when therapeutic goal is reached or if vital signs instability occurs. **Thermal injury may result. Notify Licensed Healthcare Practitioner immediately of vital signs instability.**
- Do not use the WarmAir®135 unit distal to arterial cross clamping. **Thermal injury may result.**
- Do not use the WarmAir®135 unit along with High Frequency surgical instruments or endocardial catheters. **Electrical shock, thermal injury or electromagnetic interference may result.**

Notify the Licensed Healthcare Practitioner promptly if any of the following occur:

- If the patient's temperature is not responding properly,
- If the patient's temperature does not reach the prescribed temperature in the prescribed time, or
- If there is a change in the prescribed temperature range. **Failure to inform the Licensed Healthcare Practitioner of the deviation may result in injury to the patient.**

- The warming of transdermal medications (patches) **can increase drug delivery, resulting in possible injury to the patient.**
- Do not use the WarmAir® 135 unit with any blanket or warming cover other than Gentherm FilteredFlo® Blankets or the Warming Tube™. **Thermal injury may result.**
- Do not attempt to warm patient without a blanket, i.e. with the hose only. **Thermal injury may result.**
- Unapproved modifications **may cause patient/caregiver injury and/or equipment damage.**
- Do not continue therapy if either the Over-Temperature or Under-Temperature warning light activates or the audible alarm sounds. Do not continue therapy if power cannot be maintained to the unit. **Thermal injury may result.** Turn the unit off and remove from service.
- Do not initiate therapy unless the WarmAir®135 unit is securely mounted or **injury may result.**
- Always unplug the unit before accessing internal components during service. **Failure to unplug the unit could result in electric shock.**
- Do not by-pass ground lug. **Electrical Hazards may result.**
- The use of materials of good thermal conductivity, such as water, gel and similar substances, with the WarmAir®135 unit not switched on, **can decrease the body temperature of a patient.**
- **Thermal injury may occur** if heating therapy is applied to ischemic limbs.
- Do not use the WarmAir®135 unit in the presence of flammable anesthetics. **Risk of explosion may result.**
- The WarmAir®135 unit disposables (FilteredFlo® Blankets, Warming Tube™) are not sterile and are intended for single patient use only. DO NOT sterilize or reprocess these disposables. **Thermal injury and/or cross-contamination may result.**
- Do not allow the hose to contact the patient. **Thermal injury may result.**
- Do not return the WarmAir®135 unit to service without the filter present. **Thermal injury may result.**
- Do not use the WarmAir® 135 unit without the designated filter in place. **Thermal injury or airborne contamination may result.**
- **Electrical shock hazard.** To avoid risk of electrical shock, disconnect power before servicing.
- To avoid the **risk of electric shock**, this equipment must only be connected to a supply mains with protective earth.

Precautions
• CAUTION: Federal law (U.S.A.) restricts this device to sale by or on the order of a licensed healthcare practitioner.
• Read all instructions provided with Gentherm FilteredFlo® Blankets or the Warming Tube™ prior to use.
• The surface of the WarmAir®135 unit and Gentherm FilteredFlo® Blanket or Warming Tube™ should be checked for freedom from mechanical damage prior to each application.
• The WarmAir®135 unit is not intended for use in ambient temperatures above 30°C. Maximum contact surface temperature, during normal operation, is 48°C.
• Do not hipot or dielectric test the WarmAir®135 unit. Only apply the rated voltage to the unit. Subjecting the unit to voltages other than the rated voltage may cause damage to the unit. These tests are done only by Gentherm.
• Power interruption will cause the WarmAir®135 unit to shut down, resulting in no therapy to the patient. Follow instructions listed under the "Operation Fundamentals" section of this manual to resume therapy.
• All temperature settings represent temperatures at the end of the hose outlet, not blanket surface temperature.
• Medical electrical equipment needs special precautions regarding EMC and needs to be installed and put into service according to the EMC table information provided in this manual.
• Portable and mobile RF communications equipment can affect medical electrical equipment
• Other cables and accessories may affect EMC performance
• Avoid stacking or locating close to other equipment according to the EMC tables.
• If a means is needed in retaining a patient either on or under a Gentherm FilteredFlo® Blanket or the Warming Tube™, the means should not block the fluid pathways of the WarmAir®135 unit.

Gentherm Medical, LLC, reserves the right to make changes to the device, which may not be reflected in this manual.

Important Information

All temperature settings represent temperatures at the end of the hose outlet, not blanket surface temperature.

Read Before Servicing Equipment

The repair, calibration and servicing of the WarmAir®135 unit must be performed by qualified Medical Equipment Service Technicians, Certified Biomedical Electronics Technicians, or Certified Clinical Engineers familiar with good repair practices for servicing medical devices in accordance with the instructions contained in this manual. Improper repair can result in patient or user injury and damage to the WarmAir®135 unit. Do not hipot unit. Improper repair may also void the warranty.

Maintenance and service activities will sometimes overlap. In general, maintenance refers to any activity that does not require a certified technician. Maintenance may be performed by healthcare personnel or by other trained persons.

The following actions are considered maintenance:

1. Inspecting, cleaning, and disinfecting the exterior
2. Replacing hoses
3. Cleaning hoses, blankets

Service refers to any activity that requires a Medical Equipment Service Technician, Certified Biomedical Electronics Technician, or a Certified Clinical Engineer.

The following actions are considered service:

1. Equipment or parts replacement
2. Repairs
3. System testing
4. Replacing hoses, cords, and other accessories

Section 2: Specifications

Physical

Dimensions:	8.75"W x 8.75"D x 13.5"H (22.2 cm x 22.2 cm x 34.3 cm)
Hose Outlet:	6' (1.8m) flexible hose
Weight:	13.5 lbs. (6.1 kg)
Filtration:	0.2 microns, High Efficiency
Construction:	Impact-resistant plastic case with aluminum sub-structure. None of the WarmAir® 135 System components contain latex.

Electrical

WarmAir®135 unit is available in 100V, 110-120V or 220-240V:

100V, 50/60 Hz and 110-120V, 50/60Hz units:
1200 VA
15 Amp Circuit Breaker
15' (4.6m) Power Cord (14/3 SJT with Hospital-Grade plug)

220-240V, 50/60Hz units:
1200 VA
7 Amp Circuit Breaker
15’ (4.6m) Harmonized Power Cord (H05VV-F 3x1.5mm^2 cord with CEE 7/7 plug)

220-240V, 50/60Hz units:
1200VA
13 Amp Circuit Breaker
15’ (4.6m) British Standard Power Cord (HO5VVF3G1.5mm molded-on BS1363 fused male plug)

For all units:
Under 300 μA earth leakage current
Ground resistance 0.2Ω or less
Mains Supply Isolation: Two-Pole Mains Switch

Temperature Control System

Control System:	Microprocessor and thermistor-based.
Temperature Settings as measured at the hose outlet of the device:	No Heat (ambient temperature) 32.2°C +4.0°C/ -2.0°C (90°F +7.2°F/ -3.6°F) 37.8°C +4.0°C/ -2.0°C (100°F +7.2°F/ -3.6°F) 43.3°C +4.0°C/ -2.0°C (110°F +7.2°F/ -3.6°F)

Operating Environment:
Temperature: 15°C to 30°C (59°F to 86°F)
Relative Humidity: 20% - 60%

Maximum Contact Surface Temperature (during normal operation): 48°C (118.4°F)

Time to reach 37°C from 23 ± 2°C: Approximately 3 minutes

Safety System

Maximum Temperature Setting:	43.3°C + 4.0°C (110°F + 8.0°F)
Independent Primary Over-Temperature Limit:	52.0°C ± 3.0°C as measured at the hose outlet of the device (i.e. where the hose connects to the blanket). Audible and visible alarms. Heater and blower shutdown. Note: Based on testing, the maximum contact surface temperature of the blanket, when the primary over-temperature limit activates is 45°C ± 3.0°C.
Independent Secondary Over-Temperature Limit:	64°C or less as measured at the hose outlet of the device (i.e. where the hose connects to the blanket). Power shutdown. Note: Based on testing, the maximum contact surface temperature of the blanket, when the secondary over-temperature limit activates is 45°C ± 3.0°C.
Independent Under-Temperature Limit:	29.4°C (85°F) or less as measured at the hose outlet of the device (i.e. where the hose connects to the blanket). Audible and visible alarms. Heater and blower shutdown. (Heat settings only).
Open/Shorted Sensor Safety:	Audible and visible alarms.

Service Life

The expected service life / lifetime of the WarmAir®135 unit is **seven (7) years** from the date of manufacture provided the product is not subject to misuse, negligence, accident or abuse and under the conditions that the device is properly used as intended, and serviced and maintained according to the Operation / Technical Manual provided with the device.

Approvals

Electrical

16HV

MODEL 135, MEDICAL ELECTRICAL EQUIPMENT IN ACCORDANCE WITH UL60601-1, IEC60601-1 AND ASTM F2196-02.

ALSO CLASSIFIED WITH RESPECT TO ELECTRICAL SHOCK, FIRE AND MECHANICAL HAZARDS ONLY IN ACCORDANCE WITH CSA 22.2 NO. 601.1

EMC COMPATIBILITY TABLES ACCORDING TO IEC 60601-1-2

Guidance and Manufacturer's Declaration – electromagnetic emissions		
The WarmAir®, Model 135 is intended for use in the electromagnetic environment specified below. The customer or the user of this unit should assure that it is used in such an environment.		
Emissions tests	**Compliance**	**Electromagnetic environment – guidance**
RF emissions CISPR 11	Group 1	The WarmAir®, Model 135 uses RF energy only for its internal function. Therefore, its RF emissions are very low and are not likely to cause any interference in nearby electronic equipment.
RF emissions CISPR 11	Class A	The WarmAir®, Model 135 is suitable for use in all establishments other than domestic and those directly connected to the public low-voltage power supply network that supplies buildings used for domestic purposes.
Harmonic emissions IEC 61000-3-2	Class A	
Voltage fluctuations/ flicker emissions IEC 61000-3-3	Complies	Fluctuations and Flicker emissions testing is not required or 120 or 100 Volt units

Guidance and Manufacturer's Declaration – electromagnetic immunity			
The WarmAir®, Model 135 is intended for use in the electromagnetic environment specified below. The customer or the user of the WarmAir®, Model 135 should assure that it is used in such an environment.			
Immunity test	**IEC 60601 test level**	**Compliance level**	**Electromagnetic environment - guidance**
Electrostatic discharge (ESD) IEC 61000-4-2	±6 kV contact ±8 kV air	±6 kV contact ±8 kV air	Floors should be wood, concrete or ceramic tile. If floors are covered with synthetic material, the relative humidity should be at least 30%.
Electrical fast transient/burst IEC 61000-4-4	±2 kV for power supply lines ±1 kV for input/output lines	±2 kV for power supply lines ±1 kV for input/output lines	Mains power quality should be that of a typical commercial or hospital environment.
Surge IEC 61000-4-5	±1 kV differential mode ±2 kV common mode	±1 kV differential mode ±2 kV common mode	Mains power quality should be that of a typical commercial or hospital environment.
Voltage dips, short interruptions and voltage variations on power supply input lines IEC 61000-4-11	<5% U_T (>95% dip in U_T) for 0,5 cycle 40% U_T (60% dip in U_T) for 5 cycles 70% U_T (30% dip in U_T) for 25 cycles <5% U_T (>95% dip in U_T) for 5 s	<5% U_T (>95% dip in U_T) for 0.5 cycle 40% U_T (60% dip in U_T) for 5 cycles 70% U_T (30% dip in U_T) for 25 cycles <5% U_T (>95% dip in U_T) for 5 s	Mains power quality should be that of a typical commercial or hospital environment. If the user of the WarmAir®, Model 135 requires continued operation during power mains interruptions, it is recommended that the WarmAir®, Model 135 be powered from an uninterruptible power supply or a battery.
Power frequency (50/60 Hz) magnetic field IEC 61000-4-8	3 A/m	3 A/m	Power frequency magnetic fields should be at levels characteristic of a typical location in a typical commercial or hospital environment.
Note: U_T is the a. c. mains voltage prior to application of the test level.			

Guidance and manufacturer's declaration – electromagnetic immunity

The WarmAir®, Model 135 is intended for use in the electromagnetic environment specified below. The customer or the user of the WarmAir®, Model 135 should assure that it is used in such an environment.

Immunity test	IEC 60601 test level	Compliance level	Electromagnetic environment - guidance
Conducted RF IEC 61000-4-6	3 Vrms 150 kHz to 80 MHz	3 Vrms	Portable and mobile RF communications equipment should be used no closer to any part of the WarmAir®, Model 135, including cables, than the recommended separation distance calculated from the equation applicable to the frequency of the transmitter. **Recommended separation distance** $d = 1,2\sqrt{P}$
Radiated RF IEC 61000-4-3	3 V/m 80 MHz to 2,5 GHz	3 V/m	$d = 1,2\sqrt{P}$ 80 MHz to 800 MHz $d = 2,3\sqrt{P}$ 800 MHz to 2,5 GHz where *P* is the maximum output power rating of the transmitter in watts (W) according to the transmitter manufacturer and *d* is the recommended separation distance in meters (m). Field strengths from fixed RF transmitters, as determined by an electromagnetic site survey, [a] should be less than the compliance level in each frequency range. [b] Interference may occur in the vicinity of equipment marked with the following symbol: 

NOTE 1: At 80 MHz and 800 MHz, the higher frequency range applies.

NOTE 2: These guidelines may not apply in all situations. Electromagnetic propagation is affected by absorption and reflection from structures, objects and people.

[a] Field strengths from fixed transmitters, such as base stations for radio (cellular/cordless) telephones and land mobile radios, amateur radio, AM and FM radio broadcast and TV broadcast cannot be predicated theoretically with accuracy. To assess the electromagnetic environment due to fixed RF transmitters, an electromagnetic site survey should be considered. If the measure field strength in the location in which the WarmAir®, Model 135 is used exceeds the applicable RF compliance level above, the WarmAir®, Model 135 should be observed to verify normal operation. If abnormal performance is observed, additional measures may be necessary, such as re-orienting or relocating the WarmAir®, Model 135.

[b] Over the frequency range 150 kHz to 80 MHz, field strengths should be less than 3 V/m.

Recommended separation distances between portable and mobile RF communications equipment and the WarmAir®, Model 135

The WarmAir®, Model 135 is intended for use in an electromagnetic environment in which radiated RF disturbances are controlled. The customer or the user of the WarmAir®, Model 135 can help prevent electromagnetic interference by maintaining a minimum distance between portable and mobile RF communications equipment (transmitters) and the WarmAir®, Model 135 as recommended below, according to the maximum output power of the communications equipment.

Rated maximum output power of transmitter W	**Separation distance according to frequency of transmitter** m		
	150 kHz to 80 MHz $d = 1,2\sqrt{P}$	**80 MHz to 800 MHz** $d = 1,2\sqrt{P}$	**800 MHz to 2,5 GHz** $d = 2,3\sqrt{P}$
0,01	0,12	0,12	0,23
0,1	0,38	0,38	0,73
1	1,2	1,2	2,3
10	3,8	3,8	7,3
100	12	12	23

For transmitters rated at a maximum output power not listed above, the recommended separation distance *d* in meters (m) can be estimated using the equation applicable to the frequency of the transmitter, where *P* is the maximum output power rating of the transmitter in watts (W) according to the transmitter manufacturer.

Note 1: At 80 MHz and 800 MHz, the separation distance for the higher frequency range applies.

Note 2: These guidelines may not apply in all situations. Electromagnetic propagation is affected by absorption and reflection from structures, objects and people.

Supplemental certification or EMC information available on request.

For Use with Patient-Applied Parts

FilteredFlo® Blankets and Warming Tube™

All Gentherm disposables are:
1. Made from non-woven polypropylene or polyethylene.
2. Transparent to X-ray and imaging systems.
3. For single-patient use only, not sterile unless otherwise indicated on product.

Note: Do not sterilize or reprocess Gentherm disposables

Accessories

CAT LOG #	DESCRIPTION
UNV LPS	**WarmAir®** Stand
145	**Warming Tube™**
243	WarmAir® FilteredFlo® PACU Blanket – Adult Size
244	WarmAir® FilteredFlo® PACU Blanket – Pediatric Size
246	WarmAir® FilteredFlo® Neonate/Pediatric Blanket
247	WarmAir® FilteredFlo® Pediatric Underbody Blanket
248	WarmAir® FilteredFlo® Underbody Blanket
344	WarmAir® FilteredFlo® Torso Blanket
442	WarmAir® FilteredFlo® OR Blanket – Lower Body
443	WarmAir® FilteredFlo® OR Blanket – Upper Body
460	WarmAir® FilteredFlo® OR Blanket – Lower Body
461	WarmAir® FilteredFlo® OR Blanket – Upper Body
462	WarmAir® FilteredFlo® PACU Blanket – Adult Size

Shipping and Storage Conditions

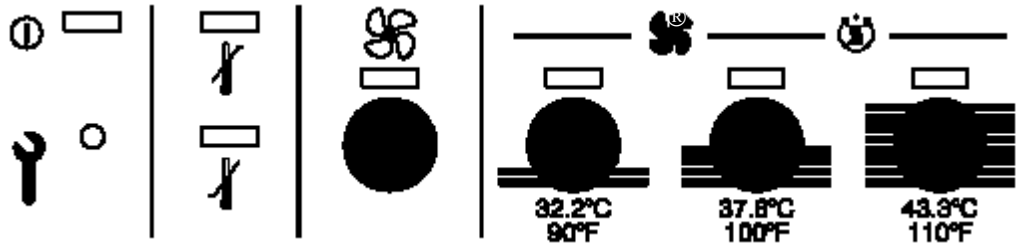
The WarmAir®135 unit can be transported through normal shipping methods via ground, air, or water when packaged in its approved packaging material. During transportation and storage, packaging should not be exposed to conditions that
fall out of the ranges below:

1.1.1 Temperature: -40°C to 50°C (–40°F to 122°F)
1.1.2 Humidity: 20% to 95%

Operating Instructions

Control Panel and Operation Label

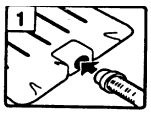
The control panel and operation label for the WarmAir®135 unit are located on the top of the unit.



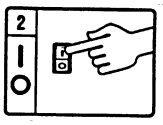
Operation Fundamentals

The lower portion of the control panel gives a brief description of operating the WarmAir®135 unit. Read all instructions and safety precautions included with the FilteredFlo® Blanket or Warming Tube™.

For all WarmAir® units

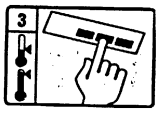


Insert hose. Insert the free end of the flexible hose into the air inlet port of the FilteredFlo® Blanket or Warming Tube™. Make sure the hose is pushed in beyond the raised areas on the fitting.



Power Unit On. Using the rocker switch on the side of the unit, depress the "I" side to activate power to the unit. Depressing the "O" side deactivates power.

The blower and heater will not activate until a temperature setting has been selected.



Select Temperature. Activate the desired temperature setting using the four touch-sensitive buttons, applying the following instructions.

Selecting Temperature and Using the Control Panel

The control panel is located on top of the unit and is composed of four pressure sensitive touch switches, each having a LED display. The external features on the control panel of the WarmAir® 135 unit are described as follows:

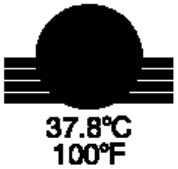
For all WarmAir® units

Power On/Off Indicator. This LED light will indicate that the unit is on. A temperature selection can now be made. Power is toggled at the rocker switch on the side of the unit.

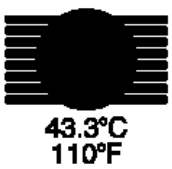
Temperature Selection Switches. Four temperature selection switches on the control panel allow the caregiver to select a temperature setting for the patient.

Fan Only. Depressing this switch will activate the unit to draw in ambient room temperature air and deliver it to the patient via the disposable blanket. The heater will not be activated. The temperature delivered to the patient will depend on the current room temperature during operation of the unit. (Air temperature delivered may be up to three degrees higher than the ambient temperature due to heat from the blower motor.) The LED will be activated to indicate that the unit is in the ambient temperature mode.

Low Temperature. Depressing this switch will activate the unit to draw in room air, heat the air to 32.2°C +4.0°C/ -2.0°C (90°F +7.2°F/-3.6°F) and deliver it to the patient via the disposable blanket. The LED will be activated to indicate that the unit is in the low temperature mode. The low temperature setting can be used for long term therapy for temperature maintenance.



Medium Temperature. Depressing this switch will activate the unit to draw in room air, heat the air to 37.8°C +4.0°C/ -2.0°C (100°F +7.2°F/-3.6°F) and deliver it to the patient via the disposable blanket. The LED will be activated to indicate that the unit is in the medium temperature mode. The medium temperature setting can be used for immobile patients or for those patients with poor circulation.



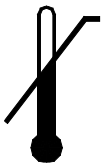
High Temperature. Depressing this switch will activate the unit to draw in room air, heat the air to 43.3°C +4.0°C/-2.0°C (110°F +7.2°F/-3.6°F) and deliver it to the patient via the disposable blanket. The LED will be activated to indicate that the unit is in the high temperature mode. The high temperature setting is to be used with close patient observation.

WARNING! High temperature setting to be used with close patient observation when treating patients with the following conditions:

a. Significant peripheral vascular disease, occlusive or diabetic in nature.
b. Low cardiac output.
c. Marginal cutaneous perfusion.

Do not apply heat to lower extremities during arterial cross-clamping. Thermal injury may occur if heat is applied to ischemic limbs.

WARNING! Do not attempt to warm patient without a blanket, i.e. with the hose only. **Thermal injury may result.**



Over-Temperature Safety Limit. This LED indicator light will indicate an over-temperature condition (an audible alarm will also sound). Immediately discontinue use and remove from service if activated.

Under-Temperature Safety Limit. This LED indicator light will indicate an under-temperature condition (an audible alarm will also sound). Immediately discontinue use and remove from service if activated.

Hour Meter. This LED indicator will alert the caregiver that 500 hours of service has transpired and the unit is due for its regular preventive maintenance, including changing the filter.

Mounting the WarmAir® Unit

The WarmAir®135 unit must be mounted securely before it is used. There are three ways to mount the unit:

1. **IV Pole Clamp** — The unit may hook onto a secure, vertical IV pole of no less than 3/4" (2.2 cm) and no more than 11/8" (2.86 cm) in diameter.

2. **Mounting Bracket** — The unit may hook onto a secure bed rail or footboard up to 1 3/4" (3.8 cm) thick.

3. **Anti-slip Feet** — The unit may be placed on a table or stand near the patient. Do not place the unit in bed with the patient.

WARNING!

To prevent tipping when mounting the WarmAir®135 unit to an IV pole, do not clamp the unit higher than 44 inches (112 cm) on an IV pole with a minimum 24 inchs (61 cm) diameter base.
When hooking the unit on a rail, make sure the unit cannot tip to a point where it may fall off the rail.

When placing the unit on a table or stand near a patient, make sure the unit is not located in an area where it can be knocked off by caregivers or passing traffic.

Failure to heed these restrictions may result in IV pole instability, catheter site trauma, and patient or user injury.

Section 3: Preventive Maintenance

Cleaning the Unit

Maintenance and service activities will sometimes overlap. In general, maintenance refers to any activity that does not require a certified technician. Maintenance may be performed by healthcare personnel or by other trained persons.

The following actions are considered maintenance:

1. Inspecting, cleaning, and disinfecting the exterior
2. Replacing hoses
3. Cleaning hoses, blankets

Service refers to any activity that requires a Medical Equipment Service Technician, Certified Biomedical Electronics Technician, or a Certified Clinical Engineer.

The following actions are considered service:

5. Equipment or parts replacement
6. Repairs
7. System testing
8. Replacing hoses, cords, and other accessories

For cleaning and disinfecting always use conventional hospital-approved topical equipment cleaners, and disinfectants. Thoroughly wipe down device with a damp cloth to remove any residue from cleaning solutions.

⚠	**CAUTION!**	Disconnect from power when cleaning the Warming Unit. Allow to air dry thoroughly. Do not use dripping wet cloth or otherwise allow water to seep into electrical areas of the unit.

Replacing the Air Filter

The accumulation of dirt in the air filter can reduce the efficiency of the WarmAir®135 unit. The filter should be replaced as alerted by the hour meter indicator or as indicated by visual inspection. Only use parts provided by Gentherm.

1. Turn the unit off and remove from power.
2. Lay the unit on its back.
3. Unscrew and remove the four rubber feet.
4. Remove the plastic baffle plate.
5. At the bottom of the unit, remove the nut (7mm) and washer that hold the filter in place.
6. Remove the old filter and discard.
7. Insert the new filter, replace the washer and tighten nut.
8. Install the plastic baffle plate.
9. Install and tighten the four rubber feet.
10. Set the unit upright. The unit is ready for use.

⚠	**WARNING!**	Do not return unit to service without the filter present. Thermal injury may result.

Hour Meter

The WarmAir®135 unit is equipped with a built-in timer that will activate the "Hour Meter" light after 500 hours of use. This is an indication that routine maintenance, including replacement of the filter, is needed. After the maintenance has been performed, the timer may be reset by the following steps.

1. Turn the unit off.
2. Hold down the "Fan Only" and "High" buttons simultaneously.
3. Turn the power switch on.

Functional & Safety Inspection

A full examination of the unit must be performed regularly to assure proper functionality, performance, safety and reliability. Major functionality and safety checks should be done every 6 months. Refer to the Inspection form for details.

⚠	**CAUTION!**	Do not hipot or dielectric test the unit. Only apply the rated voltage to the unit. Subjecting the unit to voltages other than rated voltage may cause damage to the unit. These tests are done only at Gentherm

All testing must be done with proper input power and in ambient conditions of 15-30°C (59-86°F). The following tools are required:

- Digital air thermometer (400 Series thermistor) with a range of 15.6-70.0°C (60-160°F) and accuracy of ±0.6°C (±1°F).
- Phillips screwdriver
- Current Leakage Tester
- Ground Resistance Meter
- Stopwatch

Refer to Appendix 1 on page 43 for Test setup and parameters.

Note: All temperature settings represent temperatures at the end of the hose outlet, not blanket surface temperature. The maximum contact surface temperature of the blanket during normal operation is 48°C. The maximum contact surface temperature of the blanket during over-temperature limit conditions is 50°C.

Inspection Form For Routine Maintenance

An inspection form is provided on the following two pages to guide and document the routine maintenance.

Inspection Form

MAKE COPIES FOR PREVENTATIVE MAINTENANCE PROGRAM

WarmAir® System - Model 135 Unit
Functional & Safety Inspection and Preventative Maintenance

Location:	Performed by:	Date:
Unit Serial Number:	Hospital Control Number:	

Every 6 mo.		**1. Damage Inspection - *Unplug Power Cord! Risk of Electrical Shock!***	**Pass**	**Fail**
X	1.1	External cabinet is free of damage and secure		
X	1.2	Control panel is free of damage and legible		
X	1.3	All labels are legible and secure		
X	1.4	I.V. Pole Clamp and knob are functional and secure		
X	1.5	Bed Hook is functional and secure		
X	1.6	Power cord plug is free of damage and secure		
X	1.7	Power cord and strain relief are free of damage and secure		
X	1.8	Power switch is functional and secure		
X	1.9	Hose is free of cuts or punctures		
X	1.10	Rubber feet are free of damage and secure		
X	1.11	Heater screen is free of damage, unobstructed, and secure		
X	1.12	Air filter is free of damage, debris, and is secure		

		2. Functional Verification	**Pass**	**Fail**
X	2.1	Plug unit into proper voltage outlet and turn the power switch to the on position, all LEDs should blink twice and the audible beeper sounds		
X	2.2	Press all four setting buttons sequentially, the corresponding LED and audible signal activate		
X	2.3	The blower activates when 'FAN ONLY' is selected		
X	2.4	The blower and the heater activate when selecting a heat setting		

		3. Temperature Setting Verification	**Pass**	**Fail**
X	3.1	Ensure hose is extended. Place temperature sensor in center of airstream, flush with the hose fitting. (see Appendix 1 on page 45)		
X	3.2	Turn unit on. Set unit on "Low". Run for 5 minutes. Record temperature here. _____ Acceptable temperature range defined in Appendix 1 on page 45.		
X	3.3	Set unit on "Medium". Run for 5 minutes. Record temperature here. _____ Acceptable temperature range defined in Appendix 1 on page 45.		
X	3.4	Set unit on "High". Run for 5 minutes. Record temperature here. _____ Acceptable temperature range defined in Appendix 1 on page 45.		

Inspection Form

MAKE COPIES FOR PREVENTATIVE MAINTENANCE PROGRAM

WarmAir® System - Model 135 Unit
Functional & Safety Inspection and Preventative Maintenance

Location:	Performed by:	Date:
Unit Serial Number:	Hospital Control Number:	

Every 6 mo.		**4. Temperature Limit Testing**	**Pass**	**Fail**
X	4.1	Remove test port cover. Use a 1/8" diameter non-conductive rod to activate micro switches (start with top hole). Active switches sequentially to perform tests listed below.		
X	4.2	Run on "Fan Only" for approximately 2 minutes.		
X	4.3	Under-Temperature Limit. Press/Release micro switch #1. At hose outlet temperature of less than 29.4°C (85°F) measured using a thermistor, the Under-temperature visual and audible alarms should activate in less than 1 minute and the unit should shut down. When alarm activates, Record Temperature here. _____		
X	4.4	Turn unit off and on. Run on "High" for approximately 1 minute.		
X	4.5	Primary Over-Temperature Limit. Press/Release micro switch #2. At hose outlet temperature of 52.0°C ± 3.0°C measured using a thermistor, the Over-temperature visual and audible alarms should activate in less than 1 minute and the unit should shut down. When alarm activates, Record Temperature here. _____		
X	4.6	Turn unit off and on. Run on "High" for approximately 1 minute.		
X	4.7	Secondary Over-Temperature Limit. Depress/Release micro switch #3. In less than 3 minutes and at a hose outlet temperature no more than 64°C measured using a thermistor, the unit should shut down completely. When unit shuts down, Record Temperature here. _____		
X	4.8	Turn the power switch to the off position and unplug unit. Re-secure test port cover.		

MAKE COPIES FOR PREVENTATIVE MAINTENANCE PROGRAM

WarmAir® System - Model 135 Unit
Functional & Safety Inspection and Preventative Maintenance

Location:	Performed by:	Date:
Unit Serial Number:	Hospital Control Number:	

5. Electrical Safety Tests

						Pass	Fail
X	5.1	Perform current leakage tests per table below. All measurements should be less than 300 μA.					
		Unit Mode	**Ground Condition**	**Polarity** Normal	**Polarity** Reverse		
		Unit is Off.	Ground Normal.	μA	μA		
			Ground Open.	μA	μA		
		Unit is On and in "High" mode.	Ground Normal.	μA	μA		
			Ground Open.	μA	μA		
X	5.2	Measure ground resistance. With electrical resistance meter, verify the resistance from the metal back plate to the ground pin on the plug is less than 0.2Ω (ohms). Record measurement here. _____					

Comments:

Troubleshooting

Call Gentherm Medical Technical Support for Replacement Parts. If you wish to return the unit to Gentherm for examination and repair, please refer to the following section.

Problem	Possible Cause	Action
The Warming Unit does not turn on.	Unplugged or damaged power cord.	Make sure power cord is plugged in and is undamaged. Replace cord if necessary.
	No power to outlet.	Confirm power to outlet.
	Check circuit breaker power switch.	Reset power switch (turn power switch to off position then back to the on position).
	Poor or loose wire connections.	Ensure all connectors and terminals are secure. Ensure power cord and the base wire harness are properly attached to terminal block.
	Safety Thermostat(s) open.	Allow unit to cool from possible over-heat condition. If condition persists, check continuity of each thermostat. Replace if necessary.
The Warming Unit blows air but does not heat.	Faulty Thermistor.	Check resistance value of each leg (White/Gray & Red/Green) at room temperature. 18°C/65°F ⇨ 3081Ω 21°C/70°F ⇨ 2690Ω 24°C/75°F ⇨ 2354Ω Replace sensor if necessary.
	Loose heater connection.	Verify heater header/terminals are secure on the control board (J4) as well as the main connector (J10/P10).
	Faulty Heater.	Check the heater wires resistance (approx. 12Ω). If open, replace heater.
	Faulty control board.	Consult with authorized Gentherm representative or replace board.

Problem	Possible Cause	Action
The Warming Unit heats up but then shuts off before reaching temperature.	Thermostat (heater/blower housing) maybe out of calibration.	Allow unit to cool from possible over-heat condition. If condition persists, check continuity of each thermostat. Replace if necessary.
	Faulty Control Board	Consult with authorized Gentherm representative or replace board.
	Faulty Thermistor.	Check resistance value of each leg (White/Gray & Red/Green) at room temperature. 18°C/65°F ⇨ 3081Ω 21°C/70°F ⇨ 2690Ω 24°C/75°F ⇨ 2354Ω Replace sensor if necessary.
	Obstructed Filter or Blower wheel.	Verify unit has adequate air flow. Replace filter if necessary. Remove top cover and thermistor. Remove hose and verify that blower wheel spins freely.
The Warming Unit alarms at too low or too high a temperature.	Faulty Thermistor.	Check resistance value of each leg (White/Gray & Red/Green) at room temperature. 18°C/65°F ⇨ 3081Ω 21°C/70°F ⇨ 2690Ω 24°C/75°F ⇨ 2354Ω Replace sensor if necessary.
	Faulty Control Board.	Confirm unit is being used in ambient between 15°C/59°F and 30°C/86°F. Consult with authorized Gentherm representative or replace board.

Problem	Possible Cause	Action
The Warming Unit turns on, but does not blow air. Unit may automatically trip off.	Air inlet obstructed.	Remove filter and inspect for obstructions. Inspect screen area around heater for obstructions. Clean out debris and replace filter as necessary.
	Loose blower connection.	Remove top cover. Inspect connectors and associated wire harness connecting the motor to the power supply as well as incoming line voltage to power supply. Look for loose crimps, broken wires, or terminals that may have pushed out of the connector housings. Repair using appropriate terminals and crimping tool.
	Blower wheel is obstructed.	Remove top cover and thermistor. Remove hose and verify that blower spins freely.
	Faulty Power Supply board.	Verify connectors and terminals are properly secured. Verify that power supply board has supplied line voltage and approximately 24V DC output. Consult with authorized Gentherm representative or replace board.
	Faulty Control board.	Consult with authorized Gentherm representative or replace board.

Problem	Possible Cause	Action
The Warming Unit turns on, but does not blow air. Unit may automatically trip off. (cont.)	Faulty Voltage Divider Board or Blower	Remove the top cover. With the unit on and in the Fan Only mode, measure the voltage across the blue and yellow fan wires. 0V DC ⇨ Measure the voltage across the blue and red fan wires. ⇨ If the red and blue are 0V DC then investigate the Power Supply Board. ⇨ If the red and blue are 24V DC then it is a faulty Voltage Divider Board. 7V-9V DC ⇨ Faulty Blower. Other ⇨ Consult with authorized Gentherm representative.
The Warming Unit's sound level significantly increased during operation.	Faulty Voltage Divider Board	Consult with authorized Gentherm representative. Remove the top cover. With the unit on and in the Fan Only mode, measure the voltage across the blue and yellow fan wires. 24V DC ⇨ Faulty Voltage Divider Board.
Warming Unit turns on, but temperature settings cannot be selected.	Faulty or loose membrane switch (switch contacts or header).	Remove top cover and inspect the membrane connection to the control board. If work has recently been performed on unit, confirm pin to receptacle alignment. Verify continuity between appropriate pin locations.
	Faulty control board.	Consult with authorized Gentherm representative or replace board.
The Hour Meter light is activated.	Hour meter needs to be reset.	Check filter conditions and replace if necessary. Reset hour meter by holding "Fan Only" and "High" while turning unit on.

Repair Procedures

Maintenance and service activities will sometimes overlap. In general, maintenance refers to any activity that does not require a certified technician. Maintenance may be performed by healthcare personnel or by other trained persons.

The following actions are considered maintenance:

4. Inspecting, cleaning, and disinfecting the exterior
5. Replacing hoses
6. Cleaning hoses, blankets

Service refers to any activity that requires a Medical Equipment Service Technician, Certified Biomedical Electronics Technician, or a Certified Clinical Engineer.

The following actions are considered service:

9. Equipment or parts replacement
10. Repairs
11. System testing
12. Replacing hoses, cords, and other accessories

The repair procedures contained herein allow qualified Medical Equipment persons to repair the WarmAir® 135 unit. Service training is available for this WarmAir® 135 unit and other Gentherm equipment. For further information, contact Gentherm Medical Technical Service Department.

The WarmAir®135 unit must be turned OFF and the power cord must be unplugged before replacing any parts. The WarmAir®135 unit is isolated from the mains power supply by unplugging the power cord at the WarmAir®135 unit or at the outlet.

The exploded views of the WarmAir®135 unit below can be used to replace parts. Replacement parts should be installed in the reverse order of removal unless instructions specify otherwise.

⚠	**CAUTION!**	When installing the electrical components below, follow the accompanying instructions. **Failure to follow instructions could result in electric shock.**

<u>Replacing the Hose</u>

1. Request Gentherm repair part.
2. Unplug the unit.
3. Remove the top exterior cover and thermistor.
4. Unscrew (left hand threads) the hose from the blower housing.
5. Secure new hose.
6. Use an Exacto® knife or equivalent to create an “X” cut in the hose through the thermistor hole.
7. Replace the thermistor and top exterior cover.

Replacing the Circuit Breaker Power Switch

1. Request Gentherm repair part.
2. Unplug the unit.
3. Remove exterior top cover and exterior wrap (optional).
4. Squeeze the snap tabs on the sides of the switch to allow the switch to slide out of the cutout in the cabinet.
5. Unfasten the four slide-on connectors from the power switch.
6. Secure the Faston connectors to the new switch, ensuring proper orientation of switch.
7. Push the power switch back into the cabinet until it snaps into place.
8. Perform all leakage current and grounding integrity tests.

Replacing the Blower Motor or Heater

NOTE: Due to the technical complexity associated with replacing the blower motor or the heater, ***the unit must be returned*** to the manufacturer or manufacturer's authorized service centers for service.

Replacing the Control Board

IMPORTANT

Important: Static sensitive components! Use proper electro-static discharge protection when replacing the control board.

1. Request Gentherm repair part.
2. Unplug the unit.
3. Remove top cover and unplug all associated wire harness headers.
4. Remove the ground screw and associated wires.
5. Remove the two nylon nuts at the top of the board.
6. Remove the board by pulling the top upward and then slide the control board downward to disengage the keyhole PCB mounts. Do not bend the board.
7. Remove the board from the exterior top cover.
8. Place the board in a static-protective bag and container and return it to Gentherm.
9. Using proper electrostatic procedures, reinstall the board by reversing the above steps.

Replacing the Power Cord

1. Request Gentherm repair part.
2. Unplug the unit.
3. Remove exterior top cover and outer wrap from unit.
4. Remove the strain relief from the rear of the back plate using the manufacturer's recommended tool.
5. Remove the 3/8" nylon clamp, the ground wire, and the terminal block from the back plate. Loosen the screws that secure the power cord to the terminal block.
6. Remove the power cord from the assembly.
7. Insert the new power cord through the back plate and secure the power cord wires to the appropriate terminal block (brown – L1 and blue – N) locations.
8. Check the quality of each connection by measuring the resistance from the plug to each of the lines. Resistance should be approximately zero.
9. Complete installation by reversing the above steps.
10. Perform all leakage current and grounding integrity tests.

Replacing the Temperature Sensor

1. Request Gentherm repair part.
2. Unplug the unit.
3. Remove exterior top cover and exterior wrap (optional).
4. Remove the header from the control board.
5. Unscrew the locknut to release and remove the sensor fixture.
6. Unscrew the thermistor and remove from unit.
7. Carefully tighten the new sensor back into the blower housing make sure the diamond is oriented toward the front of the unit and re-secure the header to the control board. Make sure it is properly secured.
8. Re-secure the sensor fixture around the thermistor using the locknut.
9. Complete installation by reversing above steps.
10. Perform a complete functional test of the unit.

Replacing the IV Pole Clamp

1. Request Gentherm repair part.
2. Unplug the unit.
3. Remove the knob.
4. Remove the exterior top cover, the exterior wrap, the thermistor and the internal top.
5. Remove the motor mount to ease access to the I.V. pole screws.
6. Remove the three M4 screws that secure the I.V. pole mount to the back plate.
7. Complete the installation by reversing the above steps.

Replacing the Bed Hook

1. Request Gentherm repair part.
2. Unplug the unit.
3. Remove the old hook by loosening the two M4 mounting screws from the back side of the unit.
4. Complete the installation by reversing the above steps

Section 4: Repair Service and Parts Ordering

Warranty and Repair Policy

The WarmAir®135 unit is warranted against defects in material and workmanship under normal use and operation for a period of one year. Any parts found to be defective due to improper or lack of maintenance will be repaired or replaced at service and part rates in effect at that time. To qualify for credit, the warranty parts or unit should be tagged with the following information and returned to Gentherm or our authorized dealer:

1. Serial number of the unit,
2. Return Materials Authorization (RMA) number (see below),
3. Cause or nature of failure, if known,
4. Date of installation or purchase, and
5. Invoice number under which the unit or part was purchased.

Obtaining Return Authorization

Before returning any parts or units to Gentherm, first obtain an RMA number from our Medical Technical Service Department (1-888-437-5608). A WarmAir®135 shipping carton will be sent to you, if needed.

Please carefully package all parts returned to the factory. ***Please use non-static shielded foam or bubble-pack to return the microprocessor control board***. Shipping damage will be the responsibility of the shipper. Insure if necessary.

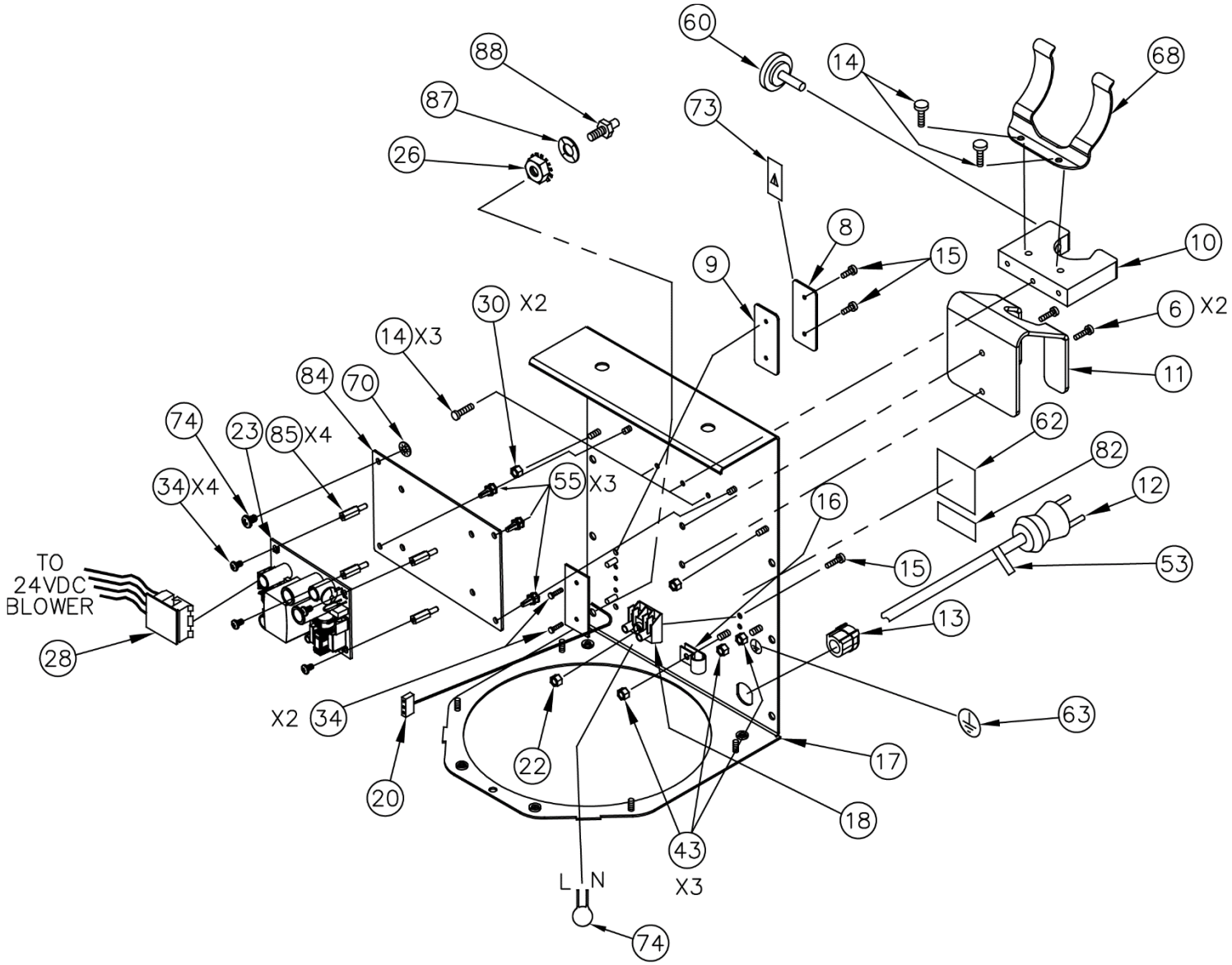
Obtaining Replacement Parts

Replacement parts are available directly from Gentherm or through our authorized dealers. When ordering parts, specify the replacement part number and indicate the serial number of the WarmAir® unit. There is not a minimum order requirement for replacement parts. Parts are shipped F.O.B. (Cincinnati, Ohio, USA), generally within twenty-four hours. Parts under warranty are shipped at no charge. Special handling may be extra.

Disposal of the WarmAir® 135 Unit

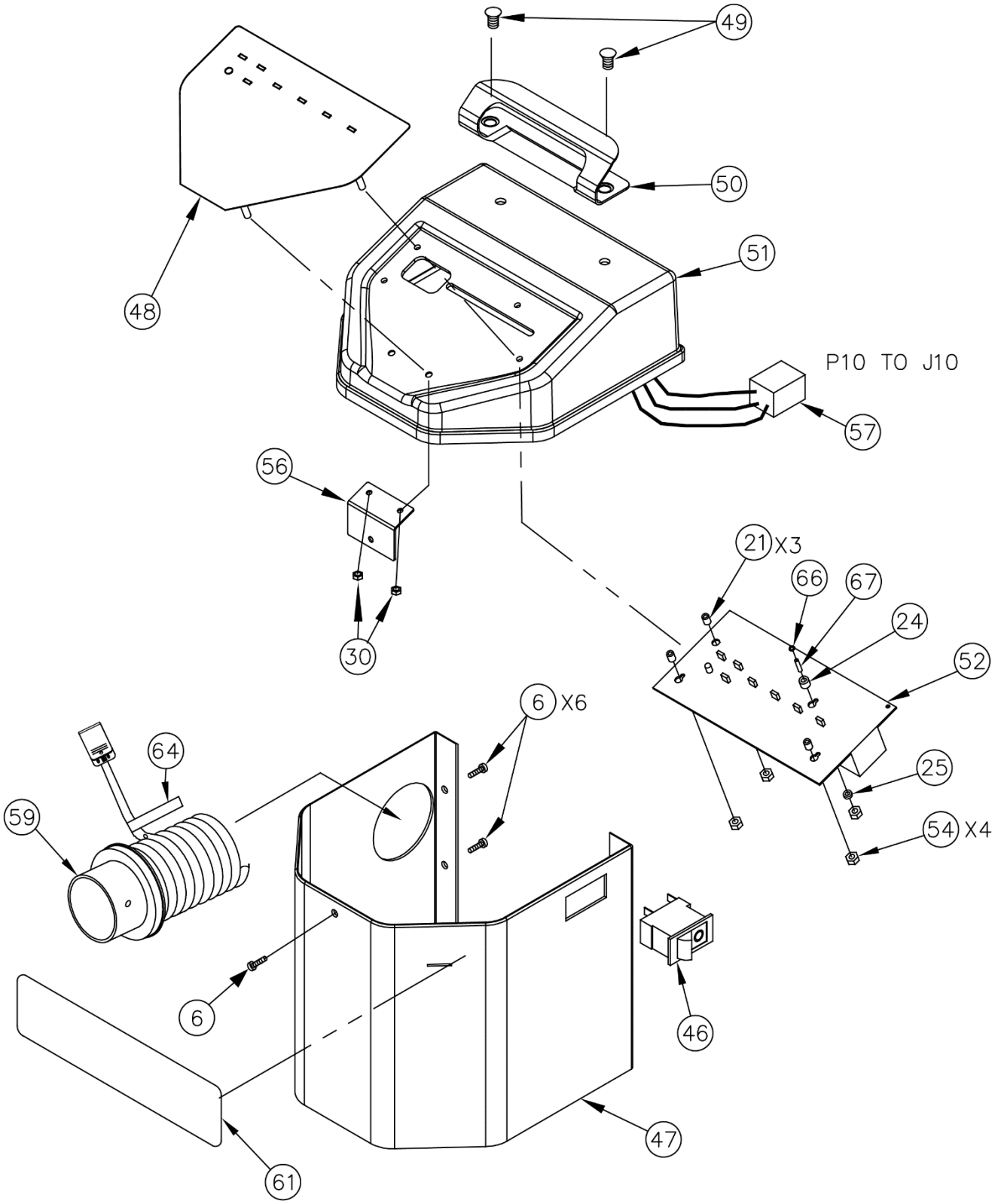
Medical devices that have come in contact with patients contain the risk of bio-contamination. This device generates no waste products or residues under normal use and normal cleaning routines. Follow local State and Hospital guidelines regarding disposal of medical devices at the end of their useful lives.

Back Plate Assembly

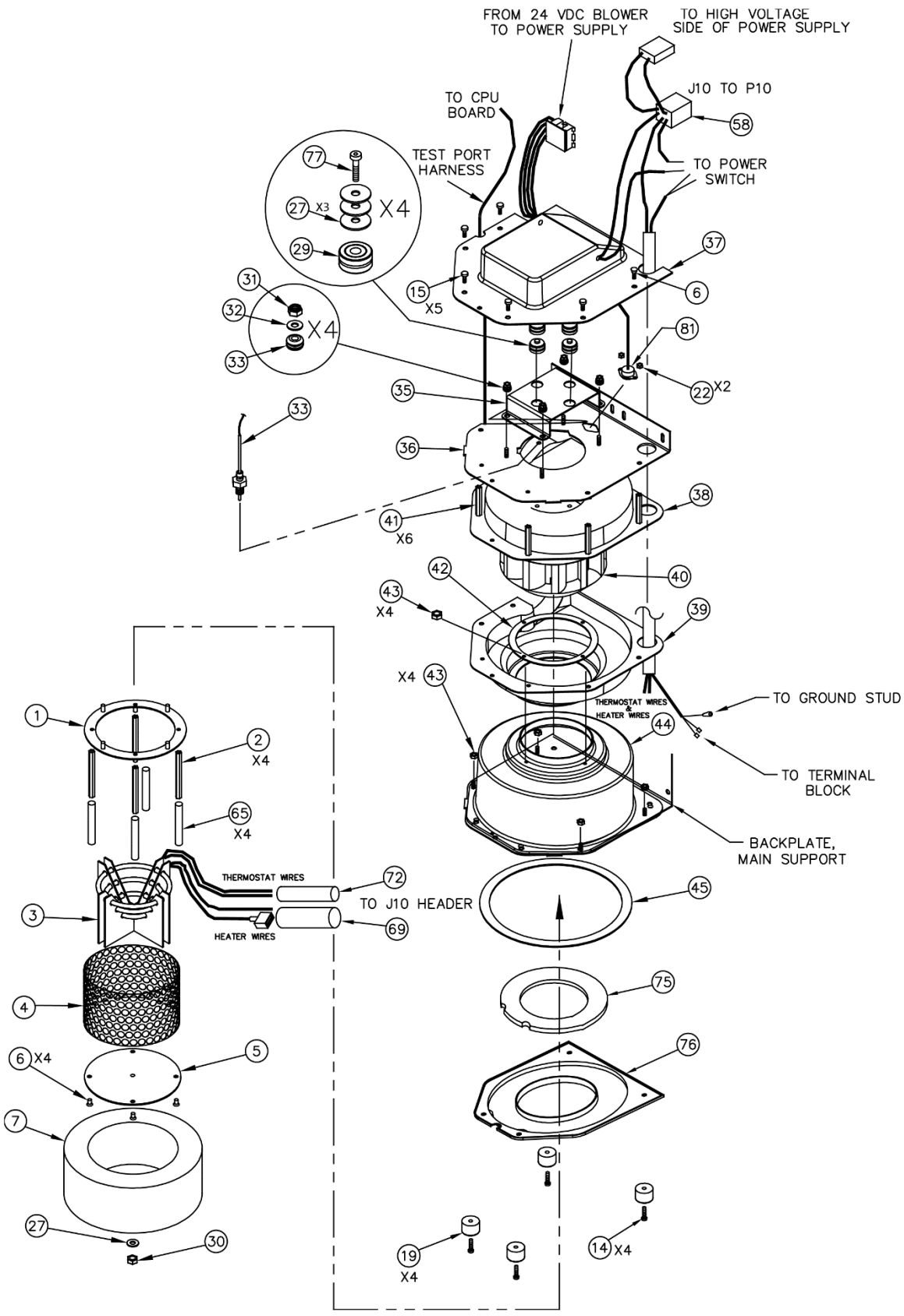


*Item 34, 84 & 85 is used only with 40056 power supply (Item 23)
*Item 70 is used only with 39937 power supply (Item 23)

Exterior Assembly



Main Assembly



Parts List

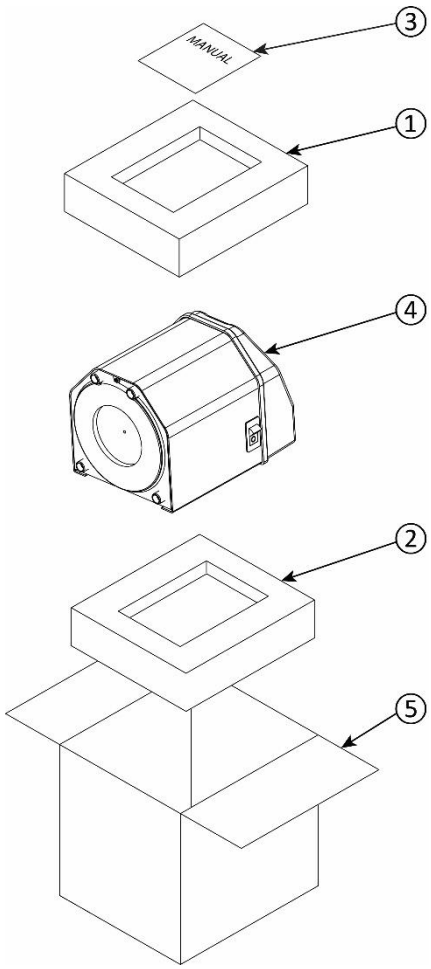
ⓐ	Qty/Unit	Description
1	1	Mounting Plate, #1
2	4	Standoff, Hex, M4 x 73mm Long
3	1	Heater, 100V Heater, 115V Heater, 230V
4	1	Screen, Stainless Steel
5	1	Cover Plate, Heater
6	14	Screw, M4 x 14 mm, S.S. CSK
7	1	Filter, .2 Microns
8	1	Test Port Cover, Aluminum
9	1	Gasket, Test Port
10	1	IV Pole Mount, Plastic Coated
11	1	Bed Bracket, Hanging
12	1	Power Cord, 15 Feet, 100/115V Power Cord, 15 Feet, 230V Power Cord, British Std, 15 Feet, 230V
13	1	Strain Relief
14	12	Screw, M4 x 16mm
15	3	Screw, M3 x 10mm
16	1	Nylon Clamp, 3/8
17	1	Back Plate, Main Support
18	1	Terminal Block, 2 Position
19	4	Bumper, Recessed with Washer
20	1	Test Port Harness
21	3	Nylon Spacer, .312 X .156 X .256
22	3	Kepnut, M3
23	1	Power Supply Board, 24 VDC
24	1	Black Nylon Spacer, .194IDX0.25LG
25	1	Nylon Washer, 1/8"LG, .192"
26	1	Plug, ¼" Black Plastic (100/115V only) Kepnut, M6 (230V only)
27	13	Washer, Flat, M6, Stainless Steel
28	1	Voltage Divider Board
29	4	Grommet, TPR
30	7	Locknut, M4 x .7 Threads
31	8	Washer, M4, Stainless Steel
32	4	Grommet, Ribbed
33	1	Thermistor, Dual
34	4	Screw, M3 x 5 mm
35	1	Bracket, Motor Mount
36	1	Blower Support Bracket
37	1	Blower Housing, Top Cover
38	1	Center Blower Housing, Top
39	1	Center Blower Housing, Bottom
40	1	Fan, 24VDC
41	6	Standoff, M4 Thread, 27 mm Long
42	1	Mounting Plate #2

ⓐ	Qty/Unit	Description
43	13	Kepnut, M4
44	1	Filter Housing
45	1	Gasket, Filter
46	1	Power Switch, Circuit Breaker, 15A, 100/115V Power Switch, Circuit Breaker, 7A, 230V
47	1	Exterior Wrap
48	1	Membrane Switch Panel
49	2	Screw, M8 x 12 mm Stainless Steel
50	1	Handle, Plastic Coated
51	1	Top Exterior Cover
52	1	CPU Printed Circuit Board
53	1	Label, Ground Integrity (115V)
54	4	Nut, Flange, M4 Plastic
55	3	P.C. Board Standoff
56	1	Bracket, Lock
57	1	Wiring Harness, Top 100/115V Wiring Harness, Top 230V
58	1	Wiring Harness, Base
59	1	6 Foot Hose Assembly
60	1	Knob, Clamping
61	1	Label, WarmAir® 135, Decorative
62	1	Label, Specification, 100V Label, Specification, 115V Label, Specification, 230V
63	1	Label, Grounding
64	1	Label, No Free Hosing
65	11”	Tubing, Shrinkable, Black, 1/4"
66	1	F/W Nylon Washer, 9/64X5/16X.025
67	1	Non-shrink Tubing, .158ID, .423LG
68	1	Hose/Power Cord Holder
69	7”	Fiberglass Sleeving 1/2"
70	1	Washer, #8 Internal Tooth, S/S
71	1	Screw, M4 x 6mm
72	7”	Fiberglass Sleeving, 3/8”
73	1	Label, Test Port, 100V & 115V Label, Test Port, 230V
74	1	Capacitor, 6800MF
75	1	Bottom Foam Gasket
76	1	Intake Baffle
77	4	Shoulder Screw
78	1	Sensor Fixture, WarmAir® (Not Shown)
79	1	6MM Hex, Female-Female Standoff, M4 (Not Shown)
80	1	O-Ring, Buna N, 1.5MM x 3MM ID (Not Shown)
81	1	Thermal Safety Switch, 135°F, Open
82	3	EXP, GTIN and S/N Barcode Label
83	2	EXP., Label, Serial Number (Not Shown)
84	1	Plate, Adapter, Recom Power Supply
85	4	EXP, Standoff, M3 x 12MM, M/F, Nylon
86	2	Screw, M3 X 10MM
87	1	Washer, Grounding Lug, Green/Yellow (230V only)
88	1	Grounding Lug (230V only)

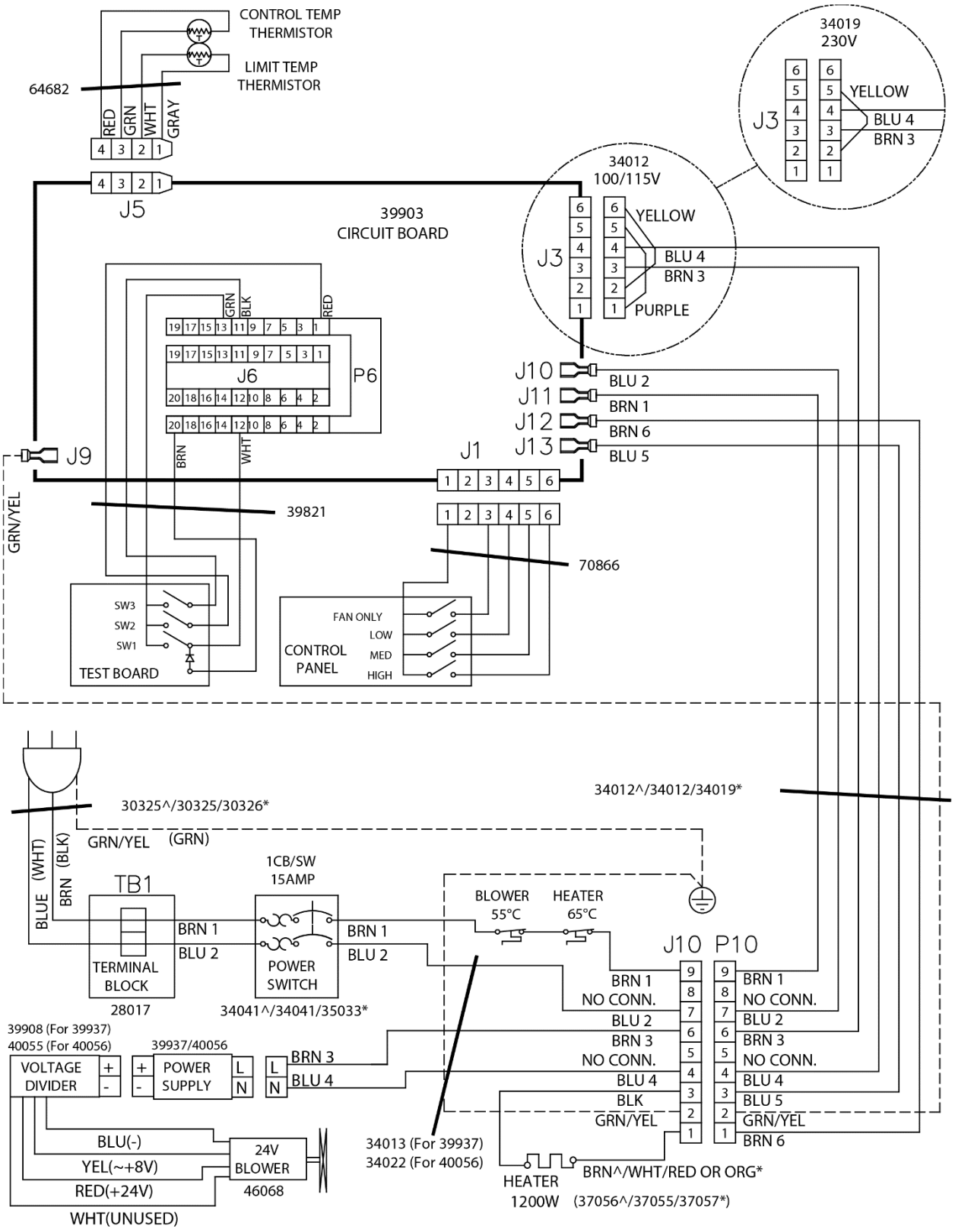
WarmAir® Packaging Parts List

#	Qty/Unit	Description
1	1	Foam Insert, Top (Part of Carton Assembly)
2	1	Foam Insert, Bottom (Part of Carton Assembly)
3	1	Operation and Technical Manual
4	1	WarmAir® 135, 100V Unit WarmAir® 135, 110-120V Unit WarmAir® 135, 220-240V Unit (Eur. Cord) WarmAir® 135, 220-240V Unit (British Cord)
5	1	Carton Carton Assembly (for return units only)

Packaging Assembly Drawing



Wiring Diagram, ALL VOLTAGES, 50/60HZ



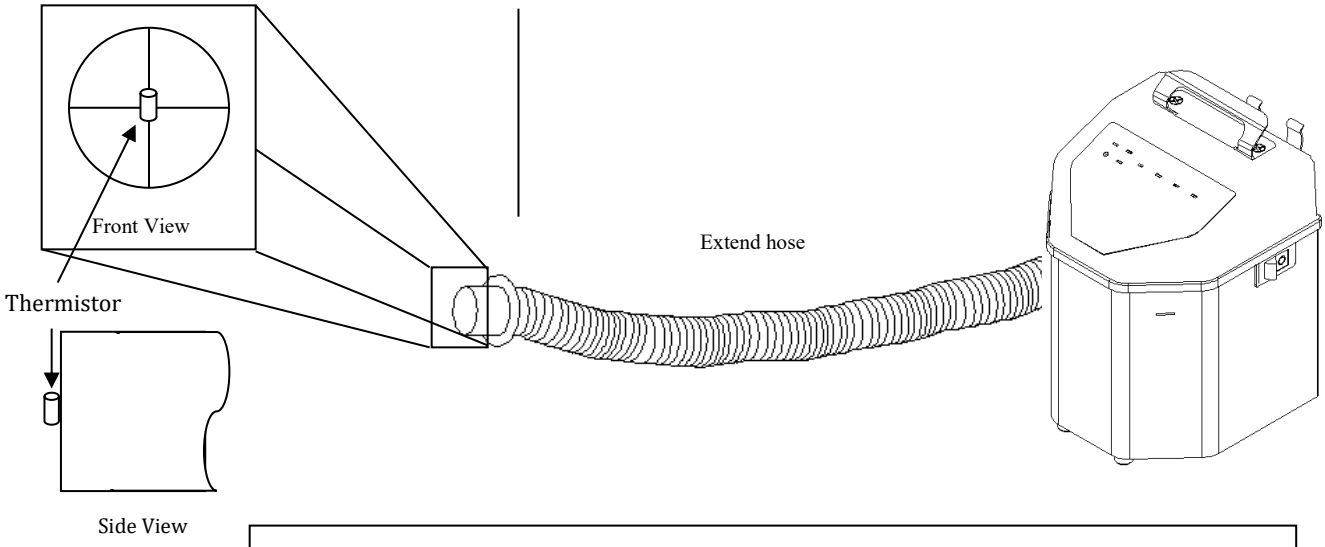
LEGEND:

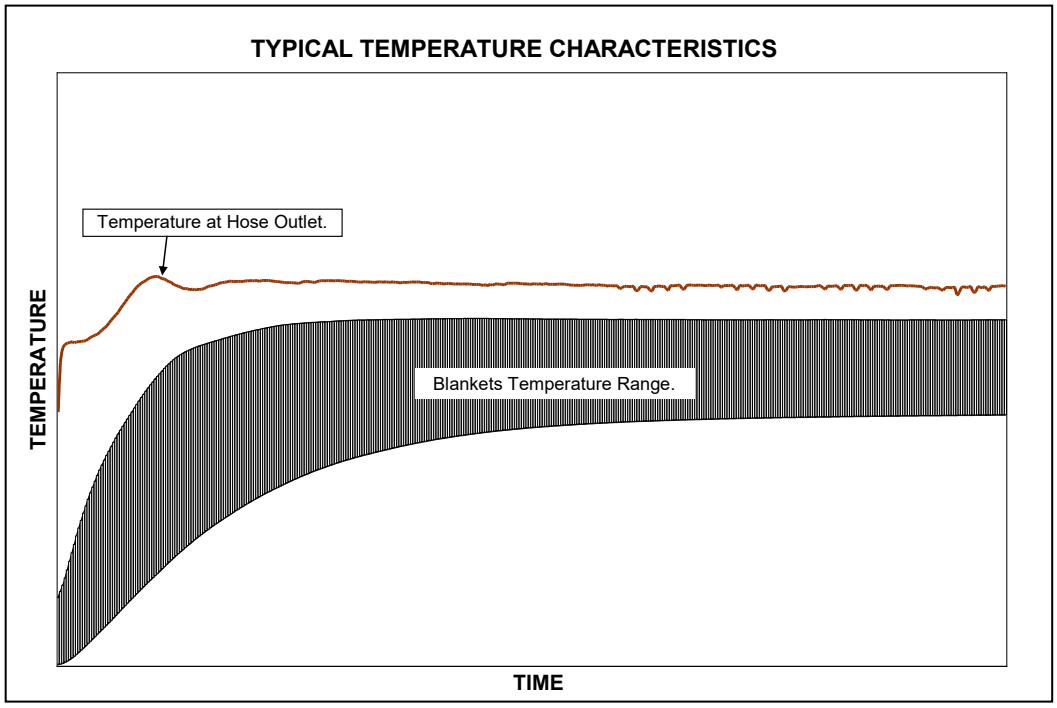
^ 100V COUNTERPART
* 230V COUNTERPART
WIRE ASSY NUMBERS
WIRE CONDUCTOR
GROUND WIRE
6 WIRE NUMBER
CONNECTORS

Appendix 1

Thermistor Setup:

1. Position 400 series thermistor center and flush with hose outlet. See diagram below.





Note: Acceptable temperature parameters at hose outlet are as follows:

- **Low temperature setting: 32.2°C +4.0°C/ -2.0°C (90°F +7.2°F/ -3.6°F)**
- **Medium temperature setting: 37.8°C +4.0°C/ -2.0°C (100°F +7.2°F/ -3.6°F)**
- **High temperature setting: 43.3°C +4.0°C/ -2.0°C (110°F +7.2°F/ -3.6°F)**

WarmAir®135 has approval in accordance with ASTM F2196-02 Standards. These standards are based on contact surface temperature of the blanket being 48°C or less. Temperatures referenced at the hose outlet do not represent contact surface temperatures of the blanket due to temperature loss through the hose and dispersion through the blanket.

Worldwide Order Placement

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