

HM14

HOT MELT SYSTEM

OPERATING MANUAL



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READ BEFORE OPERATING



WARNING

Use caution when using as some surfaces may become extremely hot and can cause personal injury.



CAUTION

Always wear protective eyewear and clothing when working with or around Hot Melt equipment.

1) Heating Practice

- Material should be capable of melting well within the specification of the machine.
- Tank temperature should be less than hoses and hose temperature should be less than the applicator. (e.g. tank 275F, Hose 300F, Applicator 315F)
- Tanks should be at a temperature where fluid is molten on the base at the heater and gel consistency at the top for protective skin to avoid oxidization and degradation

2) Handling Hoses

- All hoses should have 16" (406mm) or greater diameter bends.
- Do not bend the hose at any time before the system and hoses have been brought up to dispensing temperature. Bending while cold will break critical wired circuits in the hose; this is further impacted if the hose is loaded with material.
- Hoses should not be routed on the floor or around sharp corners. They should instead be routed overhead using a Fisnar hanging cradle (P/N HC001) ensuring that the 16" (406mm) diameter bend rule is observed.
- Do not use cable ties to secure hoses or any other method that could compromise the integrity of the hose.

3) Testing of Hoses

- Always test hoses filled with materials.
- Maximum temperature test for hoses filled with material is 395F.
- Normal test for hoses filled with material is 250F to check hoses are ramping correctly.

4) Shipping and Receiving of a Hose

- Do not disconnect the hose from the tank for packing or shipping when cold. Hoses should be removed from the system while hot and then placed gently into a shipping container. Be sure to wear protective gloves when handling.
- Upon receiving a hose do not straighten it before the system and hose has been brought to dispensing temperature. First connect the hose to the tank and the system brought to dispensing temperature then the hose can be carefully un-coiled. Once uncoiled the hose can be mounted and secured to valve or gun – the system and hose can be cooled for this operation.

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5) Applicators

- HE11524, HE22024, HE115, HE220 series suitable for 500 – 1000 cps only. For higher viscosities always use Air Valve HA115, HA220
- Do not activate the applicator if it and the system are not at dispensing temperature, activating when cold will damage the applicator.
- Do not depress the trigger on Hand Gun before the gun, system and hoses have been brought up to dispensing temperature. Operating the Hand Gun while cold will damage the valve and/or internal components.

6) Hot Melt Tank Controls

- Do not rotate (adjust) the pressure regulator valve in any direction if the hot melt tank and system has not reached dispensing temperature. Only adjust the regulator when hot.

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Safety Precautions For Hot Melt Applicator Equipment:

This manual contains important safety information and instructions. Failure to comply with the following procedures could result in death, injury, or permanent damage to this equipment and will void the warranty.

Intended Use

This equipment is designed for use with standard adhesive and sealant such as EVA's and PVA's with flash points above 232° C (450° F). It is not designed for use with polyamides. Do not use flammable material or material not compatible with the specifications of this equipment. Failure to follow this instruction can cause injury to operators and damage to equipment.

Fisnar Inc., has designed this equipment for safe operation. However, heated thermoplastics and other hot melt materials are dangerous and care must be exercised to ensure operational safety. Handling must be in accordance with hot melt manufacturer specifications.

Do not mix hot melt formulations in the melt tank. To change formulations, purge and clean tank with materials recommended by the adhesive manufacturer at the recommended temperature.

Dispose of hot melt properly. Refer to the Materials Safety Data Sheet (MSDS) of the hot melt for recommended disposal methods.

Personal Safety

Wear the following protection when working on or around this equipment:

Always wear heat resistant gloves rated to 205° C (400° F). Then using heat resistant gloves, allow all system temperatures to stabilize at 193° C (380° F) or below before attempting operation or maintenance.

Properly ventilate equipment according to appropriate MSDS of the hot melt material used.

Do not store combustible materials in the vicinity of equipment.

Trained operators may perform only external equipment adjustments. Trained maintenance technicians must perform internal adjustments and service.

Emergency Power Disconnect

In the event of a malfunction, turn off power to the equipment at the main circuit breaker of the melt unit and remove source power to the unit at the nearest main disconnect.

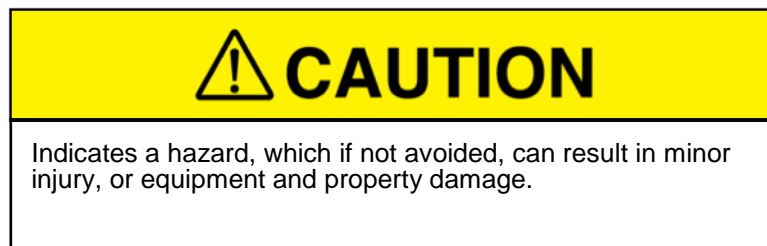
Follow Directions

Read the equipment manual thoroughly before installation, operation or maintenance.

Fisnar Inc. will not be held liable for injuries or damages caused by misuse of this equipment.

Safety Labels and Signal Words

The following safety words are used throughout this manual and in product labels to alert the reader and operator to personal safety hazards or to identify conditions that may result in equipment or property damage.



Chapter 1

General Description

The Fisnar HM14 Hot Melt Gluing System is used for melting and pumping hot melt thermoplastic adhesives. The system consists of the melt unit, heated supply hose(s), and applicators. System operation is further enhanced by the use of pattern controllers, timers, foot switches, or other such devices. All temperatures in the Fisnar system are controlled by closed loop electronics using thermistor-based sensors.

1.1 Melt Unit

The Fisnar melt unit is able to pump a variety of thermoplastic materials, such as packaging or product assembly adhesives, wax, and various potting materials. The melt unit consists of a heated melt tank with a motor-driven, positive-displacement gear pump. The tank has a 14 pound capacity with an integral melt grid. The unit is completely electric; it does not require the use of compressed air for operation. The wide-mouth design of the tank lid allows use of virtually any form of adhesive, including granules, flakes, pillows, and blocks. The tank's integral melt grid transfers heat efficiently from the heaters to the thermo-plastic material. Temperatures are selected using a membrane pushbutton switch located on the front panel of the unit. A pressure regulator valve provides fluid pressure regulation by controlling flow through a bypass mechanism. The HM14 provides additional flow control regulation through adjustment of motor speed.

1.2 Supply Hoses

The HM14 melt unit supports two hot melt supply hoses. The gear pump has two outlets to channel adhesive flow to the supply hoses. Temperatures for each hose are individually selected using the membrane pushbutton switches on the front panel of the melt unit. Both hoses are electrically and mechanically attached to the melt unit via easy access connectors on the front of the melt unit.

1.3 Applicator Heads

Applicators used with the HM14 melt unit are connected electrically and mechanically to the supply hoses. Temperatures for each applicator are individually selected using membrane pushbutton switches on the front panel of the melt unit.

Automatic applicator heads will typically be used in conjunction with a pattern controller, timer, or other switching device attached to the auxiliary connectors on the melt unit; pump motor switching is also accomplished automatically via this connection. Handgun applicators are generally used in manual application systems and possess an integral reed relay switch on the pistol grip to control the melt unit pump motor.

1.4 Electrical Considerations

Electrical power to the HM14 melt unit is controlled by a circuit breaker located at the left, rear side of the melt unit. The system is designed to be energized from a 20 amp power source. Hoses, applicator heads, and pattern control devices (timers, foot switches, etc.) are designed with multi-pin plugs to easily connect to the melt unit for simplicity of installation. All connections are located at the front of the melt unit to allow for ease of assembly and disassembly.

1.5 Safety Considerations

The following safety features are included in each melt unit:

- The tank, hose, and applicator head, are monitored for over temperature conditions. The affected zone is shut down if an error condition is detected. The circuit breaker is automatically tripped when the tank is sensed to be over temperature. An audible alarm is sounded until the error condition is corrected when the supply hose or applicator is sensed to be over temperature.
- A passive over temperature sensor trips the melt unit circuit breaker before irreparable damage occurs to the unit in the unlikely event that the closed loop electronics should malfunction, allowing a runaway heating condition in the melt unit.
- Operation of the pump/motor is inhibited until the melt tank reaches approximately 90% of the selected temperature. This prevents damage to the pump/motor by attempting to operate while the adhesive is too viscous to be pumped.
- The pump motor is protected by a fuse that blows if a stall or overload condition occurs.

1.6 Maintenance Considerations

HM14 hot melt system is designed with simplicity and reliability in mind. Troubleshooting, maintenance and service are quite easy. Front panel diagnostics isolate specific zones which may be experiencing fault conditions. All electrical components are designed for easy access using ordinary hand tools. Modular design minimizes down time in the event of sub-assembly failures.

Chapter 2

Controls and Indicators

This section covers the operating controls and indicators found on the HM14 hot melt unit. Please read carefully before attempting to operate the machine.

2.1 On/Off Power Switch and Circuit Breaker

The On/Off power switch is located at the left rear side of the melt unit. It is a manual circuit breaker and also a magnetic breaker, which opens the circuit when current exceeds 20 amps (at 115VAC or 230VAC) or when over-temperature conditions are sensed at the melt tank.

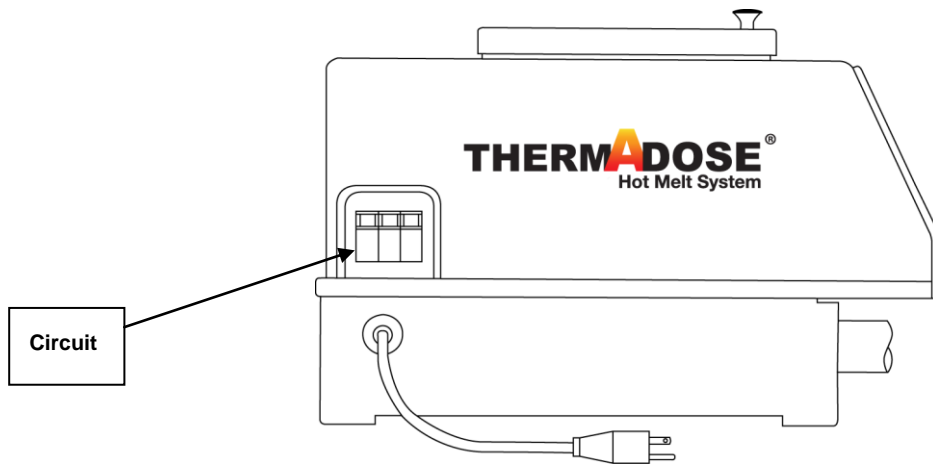
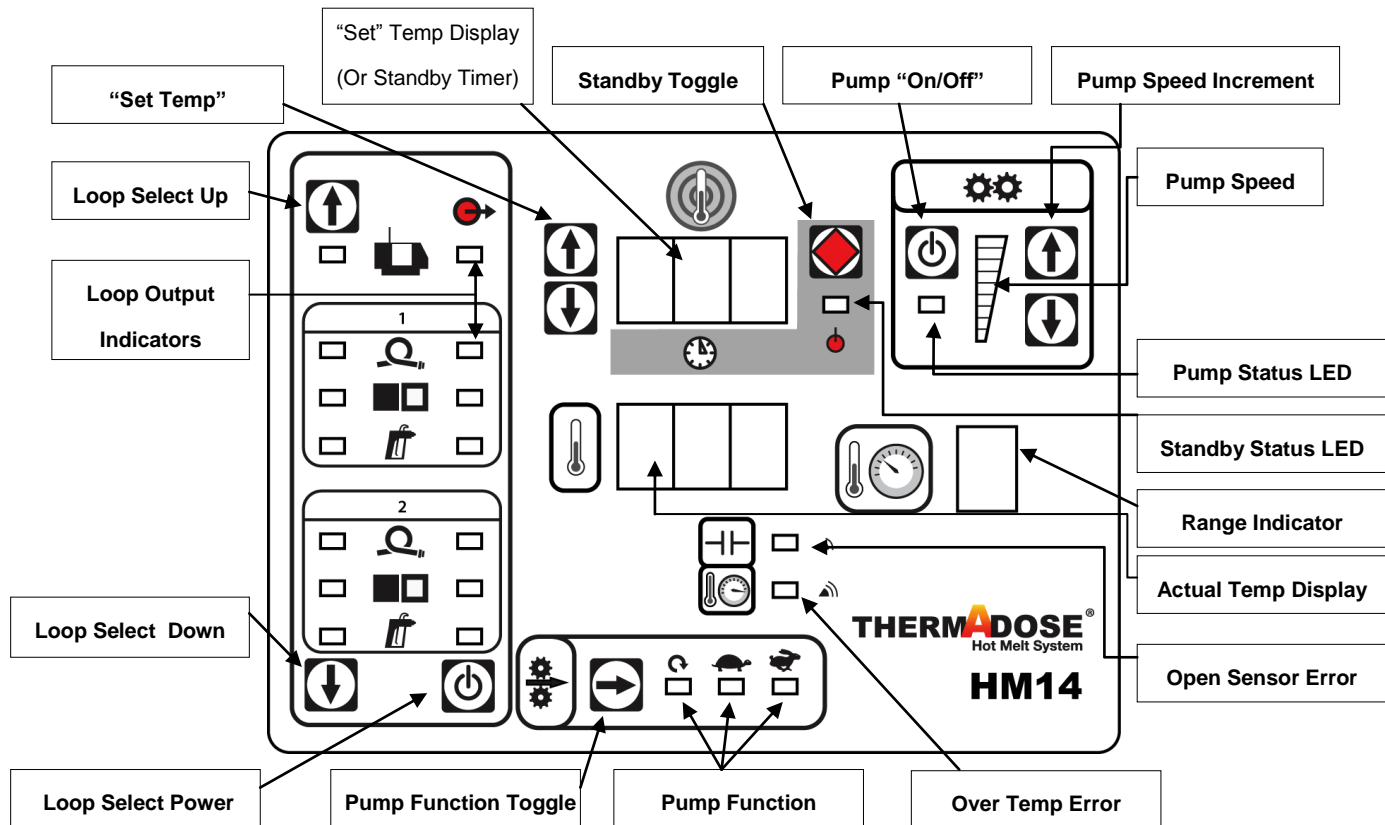


FIGURE 2.1 View of HM14 showing circuit breaker

2.2 Front Panel

Control and trouble shooting for the entire melt system is accomplished from the melt unit front panel. A brief overview of these controls and indicators are shown on the following pages:



2.2.1 Temperature Range Indicator

The temperature range indicator is a single 7 segment LED display showing the range currently set for the tank, hose, and head temperatures. The HM14 is set to a Fahrenheit temperature setting by default but can be easily changed to Celsius by following the below instructions.

1. Press the *loop select up* button 4 times. You will then see the range indicator blinking.
2. Press the *loop select on/off* button one time. This will have changed the temperature range to Celsius.

A chart indicating the settings for each temperature range is listed as follows:

Range	Tank Temperatures	Hose and Head Temperatures
1	120 to 195 °F 49 to 91 °C	150 to 225 °F 66 to 107 °C
2	160 to 235 °F 71 to 113 °C	190 to 265 °F 88 to 129 °C
3	200 to 275 °F 93 to 135 °C	230 to 305 °F 116 to 152 °C
4	240 to 315 °F 116 to 157 °C	270 to 345 °F 132 to 174 °C
5	280 to 355 °F 138 to 179 °C	310 to 385 °F 154 to 196 °C
6	320 to 395 °F 160 to 202 °C	350 to 425 °F 177 to 218 °C

2.2.2 Loop Select and Control

Use the “Up” and “Down” arrow buttons above and below the loop indicators to select the desired zone. Use the “On/Off” button below the loop output indicators to turn the selected zone on or off. (Note: the On/Off button will not affect the tank zone).

Set the desired range based on the chart in 2.2.1 and select the “Set” temperature for the tank as follows:

1. Select the tank as the device you wish to set. This is accomplished by pressing the “Loop Select Up” button until the green LED to the left of the “TANK” label is illuminated.
2. Repeatedly press the “Loop Select Up” button four times. This will change the “Range Indicator Digit” from a solid state to a blinking state.
3. Using either the “Set Temp Increment” or the “Set Temp Decrement” button will either increment or decrement the Range Indicator Digit.
4. After the Range Indicator Digit has been incremented/decremented, you can now use the “Set Temp Increment/Decrement” buttons to change the desired temperature. If the Range that you selected in the first part of this procedure is not the range that you desire, you must repeat step #2 until you are at the range you want.

Select the “Set” temperatures for the hoses and heads as follows:

1. Select Hose 1(2) as the device you wish to set. This is accomplished by either pressing the “Loop Select Up” or the “Loop Select Down” buttons until the green LED to the left of the “HOSE 1(2)” label is illuminated.
2. Use either the “Set Temp Increment” or “Set Temp Decrement” buttons to increment/decrement the desired temperature.
3. Select Head 1(2) as the device you wish to set. This is accomplished by either pressing the “Loop Select Up” or the “Loop Select Down” buttons until the green LED to the left of the “HEAD 1(2)” label is illuminated.
4. Use either the “Set Temp Increment” or the “Set Temp Decrement” buttons to increment/decrement the desired temperature.

The series of Loop Output indicators refer to the tank, hose(s), and head(s). The LED’s will flash amber while warming up. Once the desired temperature has been reached, each LED loop Indicator output will turn to a green color. Note that all three LED’s should be a flashing green color.

2.2.3 Pump Function Selector and LED Indicators

These three LED's indicate pump Cycle, Crawl, or Run, and are controlled by the Pump Function Toggle button.

- Cycle: The pump is cycled on/off when the pump switch on a handgun or foot switch is activated. The same condition happens when an automatic pattern control device is used.
- Crawl: The pump is normally on, but at a very slow turning velocity. The crawl function keeps a constant pressure from the pump, through the hose, and to the head of the applicator or handgun. This ensures that when the handgun/footswitch/automatic device is activated, that there will be no lag time, and that adhesive will be dispensed immediately.
- Run: The pump is always on.
- The pump function indicator(s) will illuminate "RED" if the tank is not "READY", or the pump control is "OFF". The indication will be "GREEN" otherwise.

2.2.4 Pump Speed Selector and Control

When selecting cycle, crawl, or run, and the pump is indicated by the green "bar graph" LED display located in the upper right portion of the front panel. The speed of the pump is adjusted by using the "Pump Speed Increment" or "Pump Speed Decrement" buttons. There is also an "On/Off" switch control which is above the pump status indicator. This indicator illuminates "RED" if the control is switched "off".

2.2.5 Melt Unit Ready Lights (Safety Feature)

When the Melt Unit is ready to operate, all three LED indicators as observed on the Loop Output Indicator row of LED's will flash green. Note that the pump will not operate until the Tank is at temperature. The tank is at temperature when the associated LED is flashing green. The pump WILL operate even if the HOSE or HEAD is NOT at temperature. It is therefore recommended that adhesive only be dispensed after all of the LED's have changed from a flashing amber color to a flashing green color.

2.2.6 Open Sensor Error LED (Safety Feature)

This LED will be illuminated amber in color when an open circuit condition is sensed. It could happen due to a faulty applicator, a main melt unit malfunction, or even a hose that has failed. The affected zone is automatically de-energized and the green LED loop indicator for that zone will indicate flashing RED. This provides a very accurate, simple, and fast turn-around time when there is a system problem. For example, if the failure occurred in the HEAD area, a new applicator could easily be replaced, and you would be back in business, up and running!

2.2.7 Over-Temp LED (Safety Feature)

This LED will flash RED when any over temperature condition is detected in a hose or head. (Note: tank over-temp will trip the circuit breaker). The affected zone will be de-energized and the loop indicator for that zone will blink "RED".

2.2.8 Auxiliary Input Connection and Selection *(Used on all automatic systems, air control kit both manual and automatic or for any device plugged into the Auxiliary Input Connection).*

One auxiliary connection is available for each hose/applicator employed in the system. Different examples of an auxiliary device might be: foot switches, a timer or pattern controller, or an air-saver kit that would allow you to apply adhesive in different patterns and pressures (such as a swirl pattern when using a swirl tip).

Auxiliary input selection is accomplished on a per channel basis and can only be accessed when the control is in a **Standby Mode**. First press the **Standby Toggle** (see page 4 chapter 2) at the top center of the control panel. The system will go into standby and allow the changes to the auxiliary mode. Next, using the **Loop Selection** up or down button, select the channel to which you chose to activate or de-activate. When the channel is selected, just press the **Loop Select on/off** button and make the desired selection. After the selection is completed, just press the **Standby Toggle** button again and the change is complete.

2.3 Significant Reduction of the “Set” Temperatures

Reductions in temperature of the tank could cause the unit circuit breaker to trip. This is a safety feature to protect the unit from damage. This condition can occur if the operator tries to lower the selected “range” or significantly lowers the desired “SET” temperature after the tank has reached the currently selected temperature. If this function is invoked, the system thinks that there is an over-temp condition. To prevent this “thermal runaway” condition from doing damage, the breaker trips, and all power is cut off. This situation may be easily remedied by quickly increasing the desired TANK temperature after turning the circuit breaker to the ON position. Significantly lowering hose and head settings could result in an “over-temp” condition being detected. See 2.2.7 for indications.

2.4 “Cold Temperature” Start-Ups

The HM14 Melt Unit should not be operated at ambient temperatures below freezing (32 degrees F or 0 degrees C). At very cold temperatures (near 0 degrees C), it is potentially possible for the unit to improperly detect an “open sensor” condition if the selected “Set” temperatures are above 350 degrees F (175 degrees C).

Although this scenario is unlikely, if a cold environment is unavoidable, this condition is remedied by adjusting the temperature for the “open” zone to a lower setting. This setting may be adjusted back up to the desired higher setting once the tank, hose, and head have warmed to a temperature above 6 degrees C.

Chapter 3

Installation Instructions

3.1 Shipping and Handling

The Fisnar hot melt system is shipped with the melt unit, supply hoses, and applicator heads disconnected. The supply hoses and applicator heads are typically packed in separate boxes from the melt unit. The melt unit is shipped on a plywood board placed on a foam pad inside a corrugated box. Padding is also placed around the sides and top of the melt unit to protect it during shipment.

A 10-mm hex key for the flow control valve, a system manual, and warranty card is shipped with each melt unit.

The supply hoses will be loosely coiled in a box separate from the melt unit with the handgun applicators placed in separate packaging within the supply hose box. Automatic applicator heads will be packed in a box separate from the hoses as well as other system accessories.


NOTE: Extreme care must be taken when shipping the HM14 hot melt unit due to its size and weight, otherwise it may become damaged. It is strongly recommended that the original packaging materials be kept for later use. It is also recommended that the melt unit be placed on a pallet for shipment via common carrier rather than via parcel post.

3.2 Positioning the Melt Unit

Remove the melt unit from the shipping materials. Position it so servicing is convenient and the control panel is easily accessible. Select a surface that is flat and level to avoid warping the frame and misaligning the pump and motor shaft.

 CAUTION
The Melt unit should be properly bolted to its supporting surface using the base mounting holes to prevent accidental upset and possibly injury.

3.3 Component Installation

 WARNING
Be certain the melt unit circuit breaker is turned off and the power cord is disconnected prior to installing hoses and or applicator heads to the melt unit to avoid accidental system pressurization or electrical shock. Read controls and indicators before installing any components.

Tools Used for Installation:

- One 5/16" Open End Wrench
- One 7/16" Open End Wrench
- Two 1/2" Open End Wrench
- One 13/16" Open End Wrench
- Two 11/16" Open End Wrench
- One 10-mm Hex Wrench
- One 3/16" Hex Wrench
- One 7/64" Hex Wrench

3.4 Hot Melt Supply Hoses

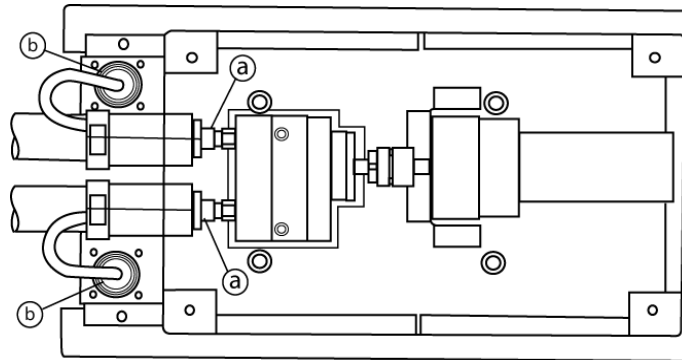
The following points should be kept in mind concerning hot melt supply hoses:

The hose should not be flexed when cold to avoid damage. The hoses have a minimum bend radius of eight inches when hot, further flexure will cause permanent damage.

Hot melt fittings must be heated before loosening or tightening to prevent damage. New and clean supply hose fittings do not need to be heated.

Support the hose during gluing operations to prevent excessive flexure. Failure to properly support the hose will result in premature failure.

Figure 3-1:
Hot Melt to Supply Hose



Raise or tilt the melt unit backward far enough to access the glue manifold fittings and electrical connectors being careful not to tilt it so far that adhesives spill from the melt tank. Never turn the melt unit upside down.

- a) Loosely connect the JIC swivel fitting on the hose to the manifold fitting, then tighten the JIC swivel fitting using an 11/16" open end wrench. Be certain the JIC fitting is securely seated on the manifold fitting otherwise glue will leak once the unit reaches operating temperature.
- b) Properly align the keys of the hose electrical connector to the melt unit connector and securely screw these parts together.

3.5 Handgun Applicators

WARNING

The handgun nozzle should never be pointed towards people. Pressures can develop within the hot melt system causing the glue to be projected significant distances.

CAUTION

The trigger mechanism of the handgun should never be pulled until the entire system is up to operating temperature. Attempts to retract the trigger before glue in the handgun has adequately softened will result in damage to the needle assembly. This damage is not covered under warranty.

The backside of the handgun grip contains a yellow lever to control pump motor operation. It is recommended that the front panel of the melt unit be set for cycle operation with pump motor control from the handgun switch. This will prevent unnecessary wear on the motor and pump mechanisms.

Hot melt fittings must be heated before loosening or tightening to prevent damage. New and clean supply hose fittings do not need to be heated.

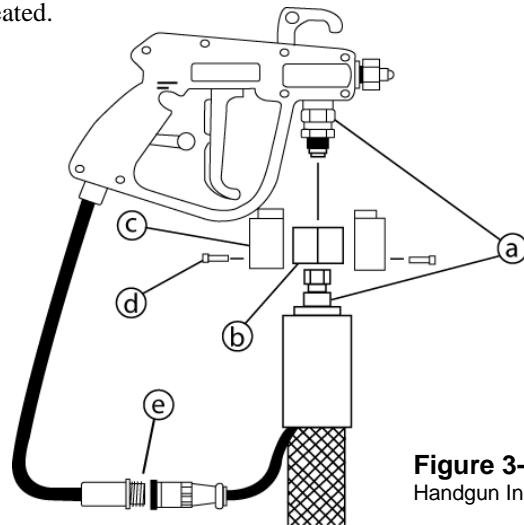


Figure 3-2:
Handgun Installation to Supply Hose

- a) Loosely connect the JIC fitting on the supply hose to the handgun, then tighten the JIC fitting using two 11/16" open end wrenches, one on the handgun and one on the hose. A 13/16" open end wrench is required for the handgun swivel.
- b) Install the heat shield insulation over the handgun/hose connectors.
- c) Assemble the two pieces of the handgun swivel shield over the insulation assuring the top collar of the shield fits into the groove machined in the JIC male handgun fitting.
- d) Insert the two hex head screws into the handgun swivel shield and tighten using a 7/64" hex wrench.
- e) Properly align the keys of the hose electrical connector to the handgun connector and securely screw these parts together.

3.6 Automatic Applicator Heads

The following points should be kept in mind concerning automatic applicator heads:

- Automatic heads are mounted to appropriate brackets using supplied hardware.
- Insulation spacers must be used between the applicator head and the mounting bracket and between the mounting bracket and mounting bolt to assure minimum heat loss and allow the applicator to efficiently reach the desired temperature.
- Fittings connecting the applicator head to the hose should be kept as short as possible and insulation should be applied over the hose/head fitting connections to further minimize heat loss since this connection is unheated.

Hot melt fittings must be heated before loosening or tightening to prevent damage. New and clean supply hose fittings do not need to be heated.

3.7 Electric Applicator Heads

EG electric applicator heads require only electricity to actuate the needle. Both applicator head heating and actuating power is supplied through the melt unit through the supply hose, therefore no external connections are required making installation very simple. This applicator is ideal for installation sites where no compressed air is available. Pattern control is accomplished via the auxiliary connector on the melt unit.

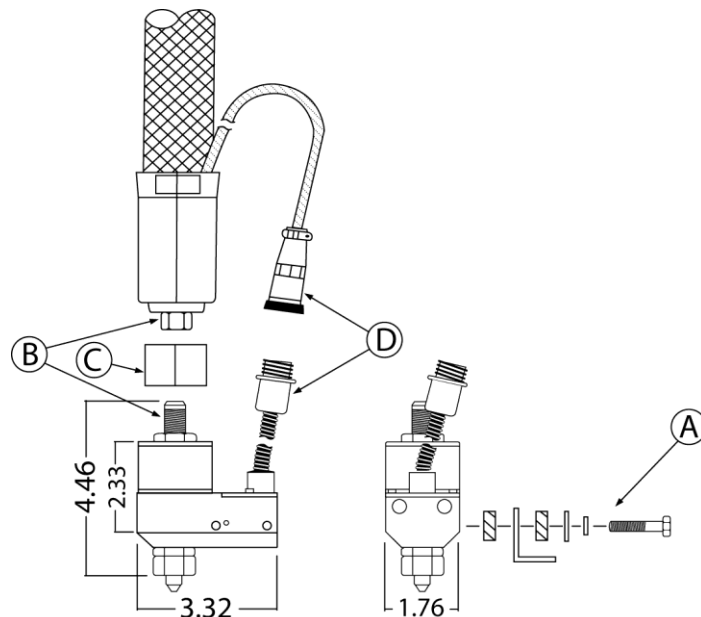


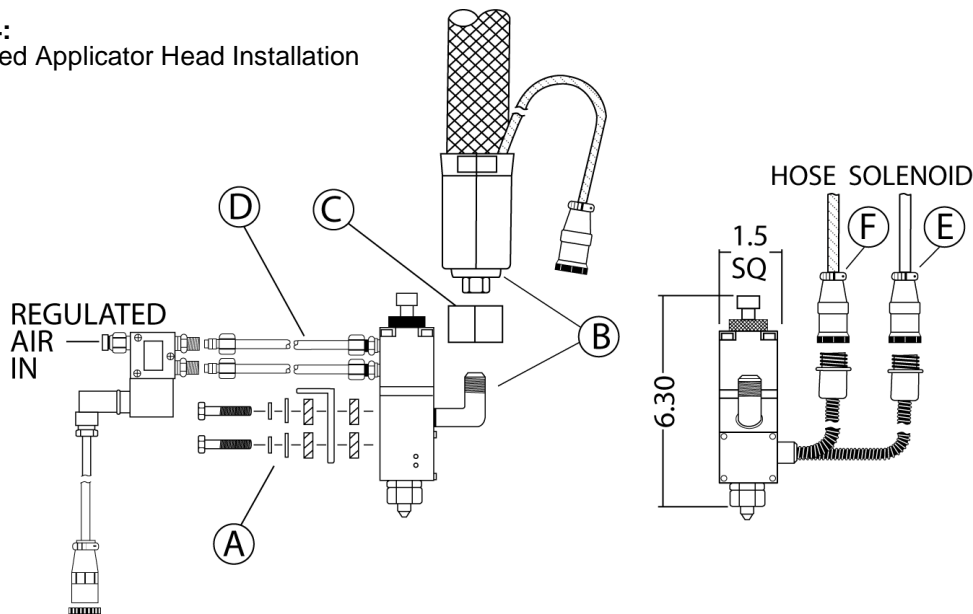
Figure 3-3:
Electric Applicator Head Installation

- a) Loosely connect the mounting bolts through the insulation washers and mounting bracket into the applicator head as shown in the above illustration. Tighten the bolts using a 7/16" open end wrench.
- b) Loosely connect the JIC fitting on the supply hose to the applicator head, then tighten the JIC fitting using an 11/16" open end wrench.
- c) Install the heat shield insulation over the applicator/hose connectors
- d) Properly align the keys of the hose electrical connector to the applicator connector and securely screw these parts together.

3.8 Air-Operated Applicator Heads

AG or Com-Pak series applicator heads require the supply of compressed air to actuate the needle(s). The supply of this compressed air is regulated via a solenoid valve attached to the applicator head. Both applicator head heating and solenoid actuating power is supplied through the melt unit/supply hose, therefore no external connections are required making installation very simple. Pattern control is accomplished via the auxiliary connector on the melt unit.

Figure 3-4:
Air-Operated Applicator Head Installation

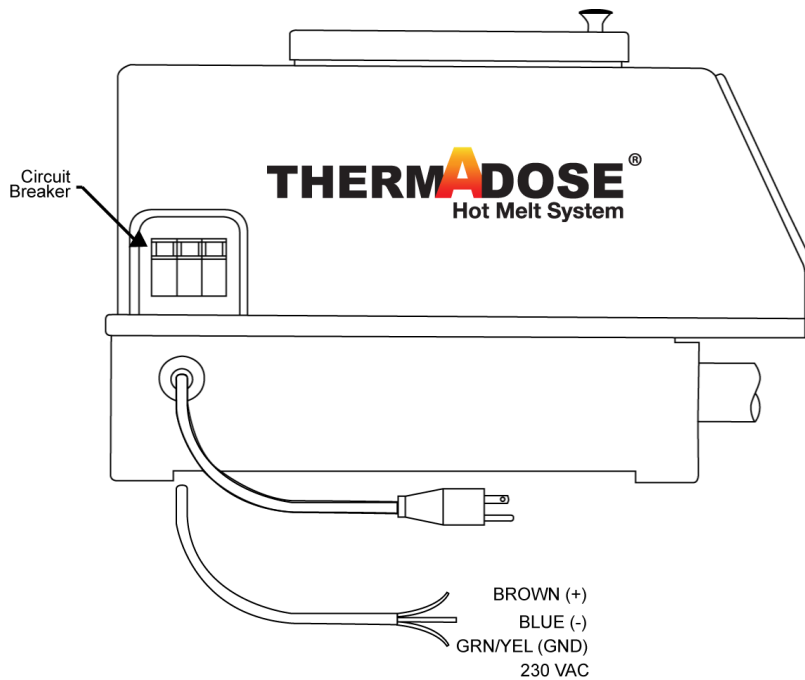


- a) Loosely connect the mounting bolts through the insulation washers and mounting bracket into the applicator head as shown in the above illustration. Tighten the bolts using a 7/16" open end wrench (AG applicator) or 3/16" hex wrench (Com-Pak).
- b) Loosely connect the JIC fitting on the supply hose to the applicator head, then tighten the JIC fitting using an 11/16" open end wrench.
- c) Install the heat shield insulation over the applicator/hose connectors, secure it with tie wraps.
- d) Place the compression nuts and sleeves over the two aluminum tubes (one tube for com-pak series) and insert between the applicator head and the air solenoid valve. Tighten the compression nuts using two 1/2" open end wrenches until snug.
- e) Properly align the keys of the four-pin solenoid connector with its mating connector on the applicator head and securely screw these parts together.
- f) Properly align the keys of the nine-pin hose electrical connector to its mating applicator connector and securely screw these parts together.

3.9 Electrical Wiring

The HM14 series hot melt units use single phase, 100 to 130 VAC or 200 to 240 VAC, 50 to 60 Hz power sources, each with earth ground for safety. The 115 VAC melt units come equipped with a 15 amp molded plug for convenient connection to a 115 VAC, 15 amp receptacle. The 220 VAC melt units come with three bare wire leads for connection to an electrical circuit box.

Figure 3-5 Melt Unit Electrical Connections



3.10 Supply Hose Electrical Connections

Electrical power to heat supply hoses is provided via the melt unit. Supply hoses are equipped with a multi-pin, molded connector that is attached to the bottom plate of the control panel for ease of installation.

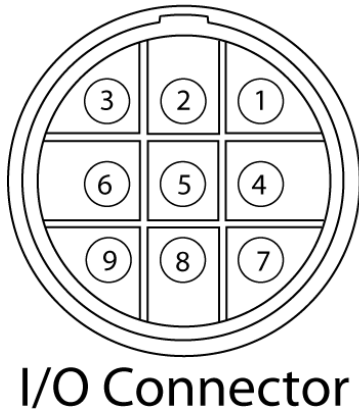
3.11 Applicator Head Electrical Connections

Electrical power to heat all handgun and automatic applicator heads is supplied by the melt unit via the supply hoses. The applicators are equipped with multi-pin, molded connectors designed to mate to hose connectors for ease of installation.

3.12 Auxiliary Input Connections

The auxiliary input connection is used in systems employing automatic applicators and/or for controlling the flow of atomizing air in spray applications. Below is a diagram showing the pin designations for the auxiliary connector.


Figure 3-6:
Auxiliary Connector Pin Designator



- 1- Pump start contacts #1
- 2- Pump start contacts #2
- 3- H/G switch out #1
- 4- H/G switch out #2
- 5- Earth ground
- 6- L2 out
- 7- L1 out
- 8- Solenoid control #2 in
- 9- Solenoid control #1 in

Pattern controllers supplied by Fisnar Inc. are available with terminated cables to simplify connection to the melt system. A cable with one end unterminated (PN 997-100-044 or 997-100-037) is available to allow connection of a customer-supplied controller into the melt system.

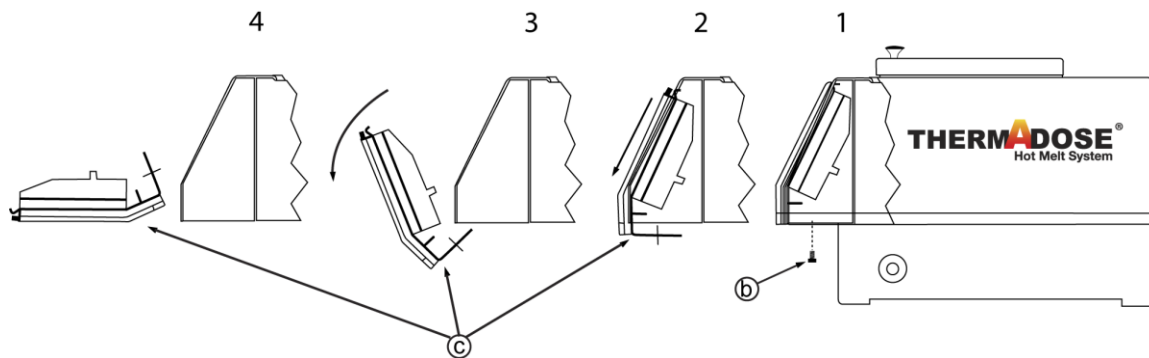
3.13 Front Panel Removal

**WARNING**

Be certain the melt unit circuit breaker is turned off and the power cable is disconnected to avoid possible serious injury. Extreme care should be exercised at all times.


The HM14 hot melt unit is designed for ease of use and reliability. Under normal circumstances, the front panel should not need to be removed. If a new version of software is released, the following procedure can be used to remove the front panel.

Figure 3.7:
Front Panel Removal From Melt Unit



- a) Slide the front end of the melt unit towards the edge of the work table far enough to access the supply hose electrical connectors being careful not to tilt it so far that adhesives spill from the melt tank. Never turn the melt unit upside down.
- b) Disconnect the supply hose electrical connector panel from the melt unit.
- c) [1] Remove the two hex head screws (*b*) to the left and right of the hose electrical connectors using a 5/16" wrench, supporting the panel in position to prevent its movement.
- d) [2-4] Slowly slide the control panel (*c*) down and away from the melt unit taking care not to strain the cables interconnecting the melt unit and the control panel. The control panel can be laid on a flat surface in front of the melt unit or held in a horizontal position .
- e) At this point, the front panel is accessible for replacement or updates.
- f) To reinstall, rotate the control panel (*c*) until it rests against the melt unit, with the top of the control panel approximately 1/2" below the top of the melt unit opening. Make sure that no cables are obstructing the control panel from seating properly.
- g) Slide the control panel (*c*) up so that it seats properly into the melt unit.
- h) Insert and tighten the two hex head screws (*b*) using a 5/16" wrench.
- i) Reconnect the supply hose electrical connector into the melt unit and reposition the melt unit to its proper position.

3.14 Start-Up Instructions

**WARNING**

Fire, explosion, personal injury, property, and equipment damage can result if the materials used in or around any hot melt supply equipment do not meet all the following requirements:

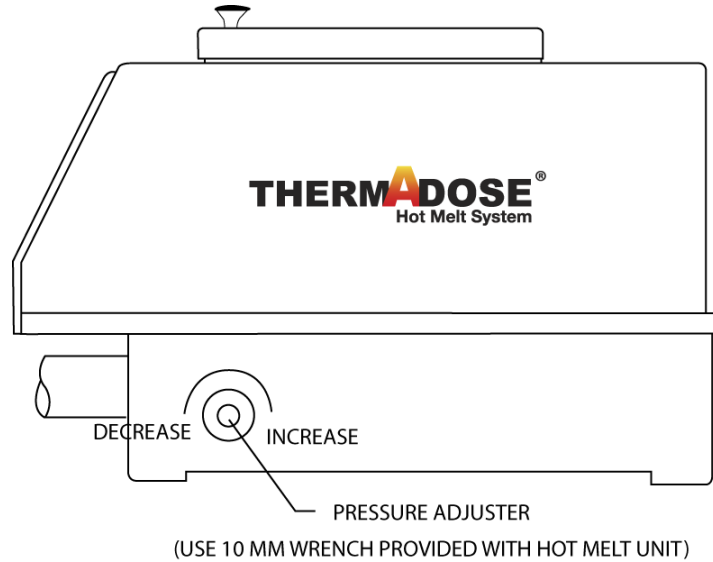
- Minimum flash point of the material should be at least 50°F (28°C) above the highest operating temperature of the melt system.
- Liquid and vapors should be non-toxic and non-flammable at operating temperatures of the melt system.
- Any materials mixed in the melt system (i.e. purging compounds and adhesives or different adhesives) should not react violently to produce heat, flames, toxic gases, cross linking or disabling of the adhesive's ability to melt at its designed temperature.
- Materials used in the melt system must not corrode, abrade or otherwise detrimentally affect the system.

1. Become familiar with all melt unit controls by reading Chapter 2 (Controls & Indicators) of this manual.
2. Install the HM14 hot melt system as specified in this section.
3. Fill the melt tank with adhesive material to a level no higher than 1.5 inches (4 cm) from the top. Certain product assembly materials will degrade over time due to oxidation. It is best not to put more material in the tank than will be used in one day. Set the tank temperature as low as feasible for each specific application.
4. Turn the melt unit on, selecting the desired temperature setting for the melt tank, supply hose(s), and applicator head(s). Refer to the temperature chart in Chapter 2 of this manual for guidance of setting desired temperatures. Lower temperature settings will increase the material's pot life. The HM14 hot melt system employs staged heating upon start-up to reduce current loads and prevent glue degradation in the hose and applicator head as the melt unit achieves its desired temperature. The melt unit heats to approximately 80% of desired temperature before heating the supply hose(s) and applicator(s). All three elements of the melt system achieve desired temperature at approximately the same time utilizing this method of heating.
5. Select the desired operating mode using the pump function selector. The normal mode of operation is the cycle mode.
6. Select the desired pump operating speed. Set the pump speed for DC motor units to the lowest necessary speed to reduce the potential for glue degradation due to shearing in the pump. Glue pressure can be increased via the pressure regulator valve described below.

3.15 Glue Pressure Adjustment

The melt unit glue pressure regulator valve is located on the right side of the pump and is accessed using a 10-mm hex wrench via a hole in the chassis frame. Pressure adjustments should be attempted only when the melt unit is at operating temperature.

Figure 3.8:
Pressure Adjustment



Turn the pressure regulator valve clockwise to increase and counter-clockwise to decrease glue pressure output from the pump.

3.16 Temperature Setting Example

Most manufacturers of hot melt adhesives offer advice for setting the temperatures of the delivery system. In order to reduce degradation of the adhesive, the delivery hose should be at a lower temperature than the applicator and melting tank at a lower temperature than the delivery hose. When volume requirements vary, the temperature settings for the melting tank and delivery hose may also vary. The applicator will always be set to the recommended delivery temperature, however certain conditions may require adjustment of this setting. For the purpose of this example however, we will assume that conditions are ideal.

In this example, the adhesive will have a recommended delivery temperature of 350° F.

Volume Requirement:	Low	Medium	High
Tank Setting	300	315	325
Hose Setting	315	330	330
Applicator Setting	350	350	350

Chapter 4

Maintenance

All electrical and mechanical components of the HM14 hot melt system should be visually inspected for damage/wear prior to powering up the system each day. This inspection should include, but may not be limited to, the following areas event of sub-assembly failures:

- Inspect the melt tank for foreign materials and/or charring of the adhesive. Wipe off all excess adhesives from all surfaces with purging compound.
- Check the hoses, applicator heads, and nozzles for wear and assure integrity of all electrical connections.
- Verify the hose is being properly supported so it is not over-stressed during use. The minimum bend radius is 8 inches (21 cm) when hot.
- Look for leaks under the melt unit and at all mechanical connections.

Problems noted should be remedied prior to powering up the unit. The system should be purged with a flushing agent when char build-up occurs or if the hot melt formulation is changed.



WARNING

Hot Melt materials can cause severe burns resulting in disfigurement or blindness. Take the following precautions before beginning any maintenance action.

- Wear eye protection goggles, gloves, and protective clothing.
- De-pressurize the supply hoses and applicator heads by shutting off the pump motor and firing the applicator head either manually or automatically into a disposal receptacle until no more glue is expelled through the applicator.
- Allow the melt unit to cool down before beginning any maintenance.
- Always disconnect hose/applicator electrical connectors before disconnecting mechanical fittings.



CAUTION

The part of the system being serviced should be heated to a temperature high enough to soften the glue prior to dismantling, assembly or adjustments to prevent damage to mechanical components (i.e. hose/head fittings, pressure adjusters, tank lid, etc.).

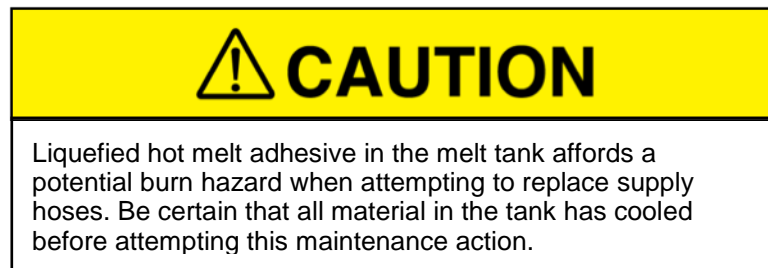
Assure that power to the melt system is turned off prior to attaching any electrical connector to avoid arcing or possible component failure.

4.1 Tank Screen Inspection

A “U” shaped screen is located in the bottom of the melt tank to prevent contaminants from damaging the glue pump assembly. This screen should be inspected and cleaned on a regular basis. It is easiest to do this when the melt tank is at operating temperature and close to being empty of glue.

1. Grasp the screen from the bottom of the melt tank using needle nose pliers. Be very careful not to let any contaminants on the screen fall back into the melt tank.
2. Clean all debris from the screen using purging compound.
3. Inspect the screen for damage and replace if necessary.
4. Reposition the screen into the bottom of the melt tank assuring it fits snugly between the grids and over the top of the sump hole outlet to the gear pump.

4.2 Hose Replacement



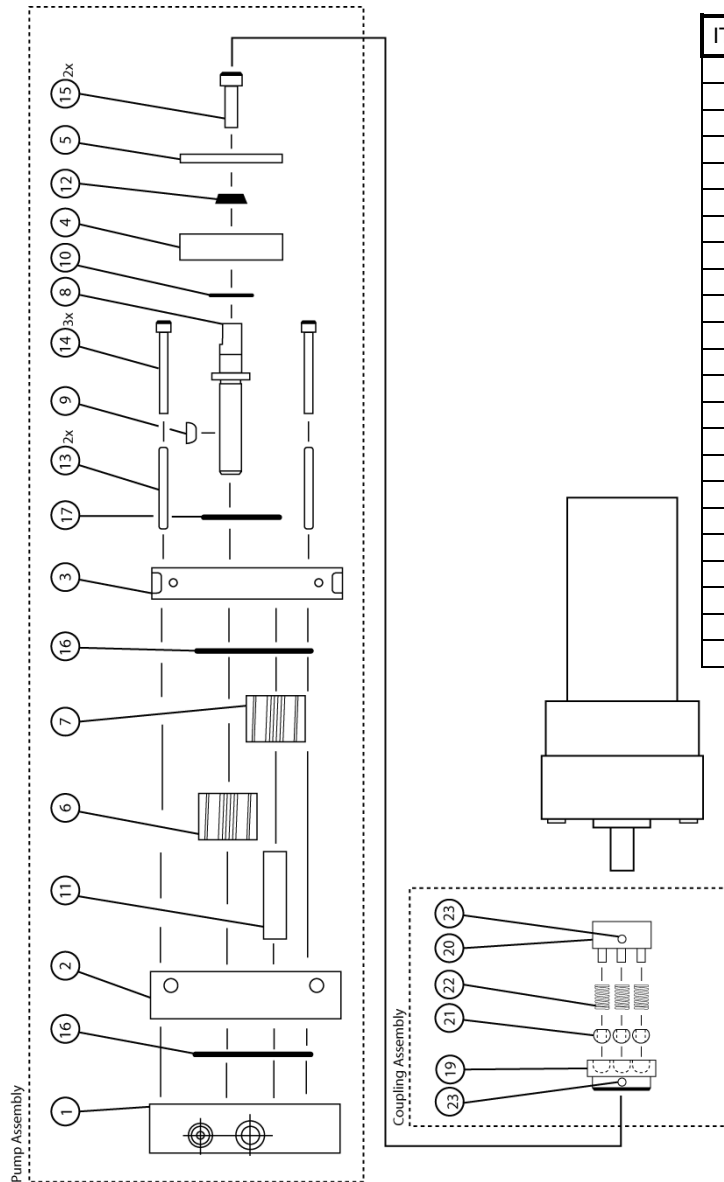
1. Turn off the melt unit circuit breaker and allow the adhesive in the tank to completely solidify.
2. Turn on the melt unit circuit breaker for several minutes to allow fittings to warm or heat fittings with a hot air gun.
3. Turn off the melt unit circuit breaker and disconnect the melt unit's electrical power.
4. Disconnect the supply hose electrical connector.
5. Tilt the melt unit backward far enough to access the glue manifold fittings. Loosen the supply hose JIC fitting and remove the hose from the melt unit.
6. Install a new hose as specified in Section 3.4.

Chapter 5

Technical Drawings and Parts

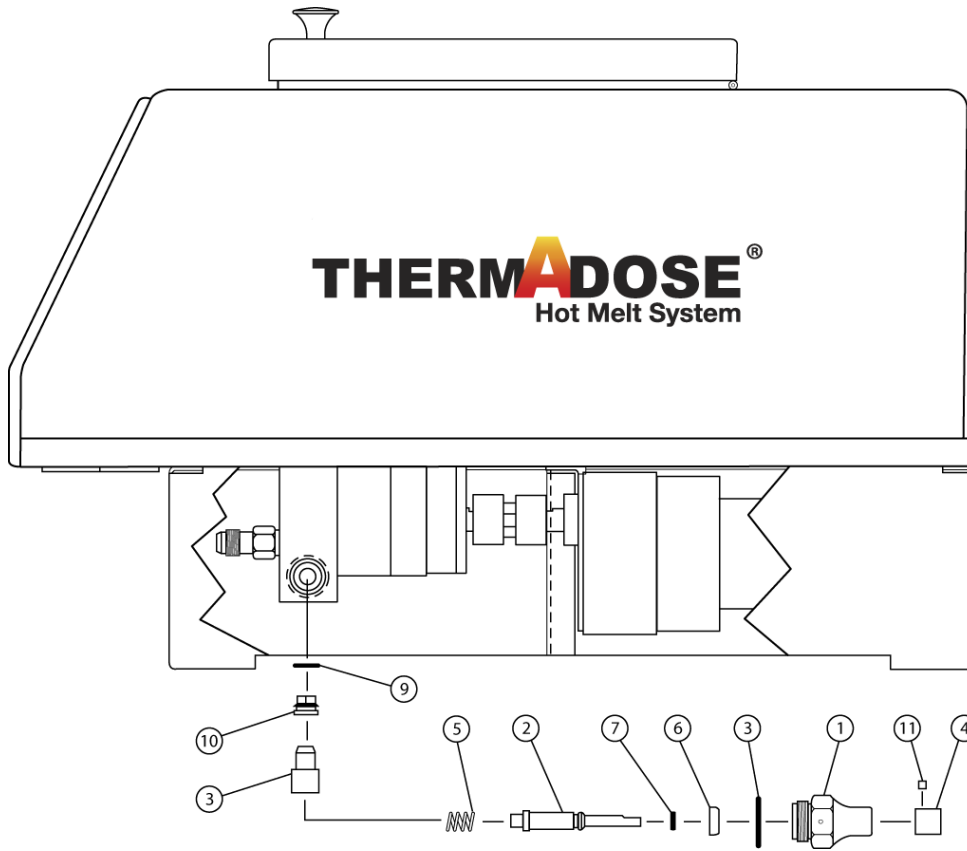
This chapter provides parts lists, assembly drawings, and electrical schematics for the various components of the HM14 Melt System including the melt unit, supply hose, and applicator heads.

5.1 Pump/Coupler/Motor



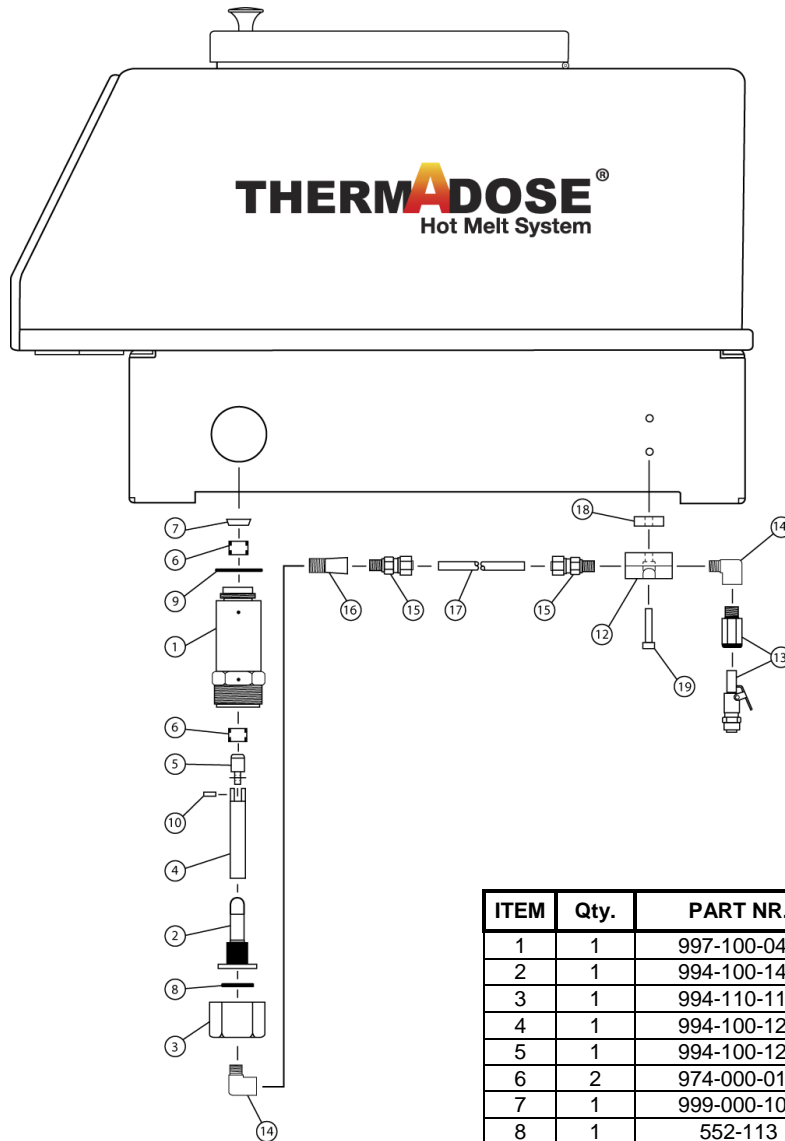
ITEM	Qty.	PART NR.	DESCRIPTION
1	1	996-100-029	PLATE, PUMP SIDE ASSY.
2	1	996-100-015	PLATE, CENTER SECTION
3	1	996-100-030	PLATE, DRIVE SIDE ASSY.
4	1	996-100-017	HOUSING, PUMP SEAL
5	1	996-100-018	RETAINER, SEAL HOUSING
6	1	994-100-024	GEAR, DRIVE
7	1	994-100-087	GEAR, SLAVE ASSY.
8	1	994-100-069	SHAFT, PUMP
9	1	999-999-064	KEY, SHAFT
10	1	974-000-018	WASHER, THRUST
11	1	999-999-057	SHAFT, IDLER
12	1	999-000-101	SEAL, SHAFT
13	2	999-999-058	PIN, ALIGNMENT
14	3	427-403	SCREW, 1/4-20 X 2.00
15	2	427-068	SCREW, 5/16-18 X 1.00
16	1	552-121	O RING
17	1	552-144	O RING
18	A/R	999-000-763	LUBRICANT
19	1	997-100-032	HUB, PUMP SIDE
20	1	997-100-033	HUB, MOTOR SIDE
21	3	996-100-048	BEARING, COUPLER
22	3	999-000-518	SPRING
23	2	427-112	SCREW, 1/4-20 X 38 SET

5.2 Manual Pressure Adjustment Assembly



ITEM	Qty.	PART NR.	DESCRIPTION
1	1	996-100-019	BODY, PRESSURE ADJUSTER
2	1	994-100-041	ADJUSTER, PRESSURE
3	1	994-100-043	NEEDLE, PRESSURE ADJ.
4	1	994-100-044	KNOB, PRESSURE ADJ.
5	1	999-000-505	SPRING
6	1	999-000-024	SEAL
7	1	552-127	"O" RING
8	1	552-113	"O" RING
9	1	552-118	"O" RING
10	1	996-100-043	SEAT, PRESSURE ADJ.
11	1	427-417	SCREW, M5 X 0.8 SET

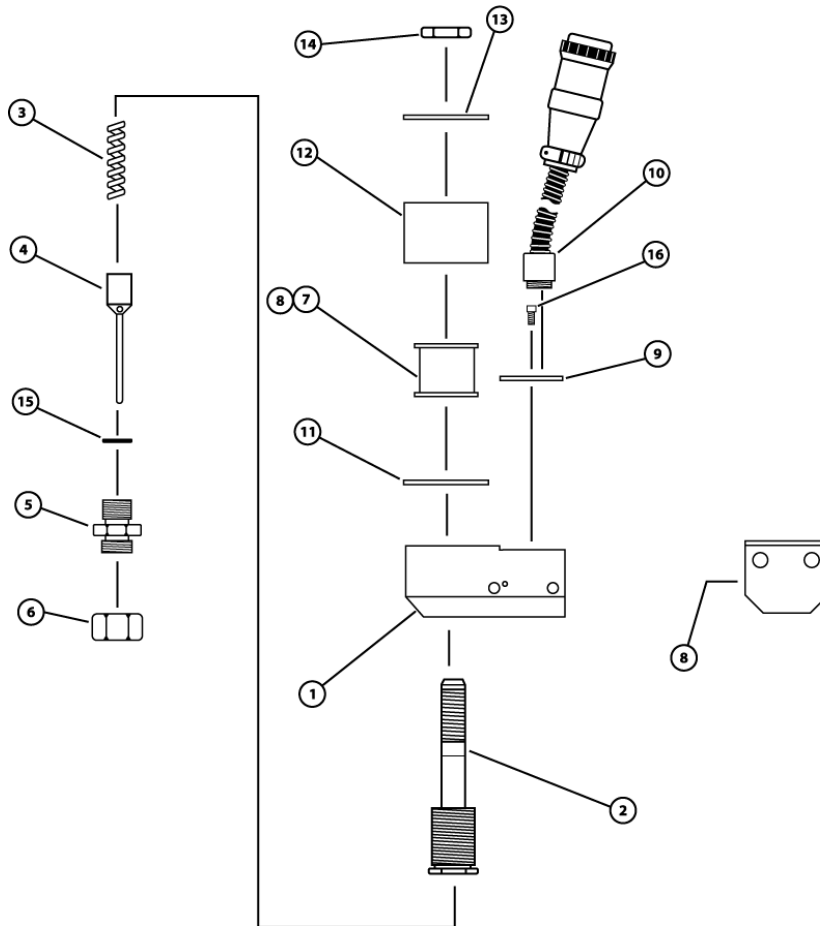
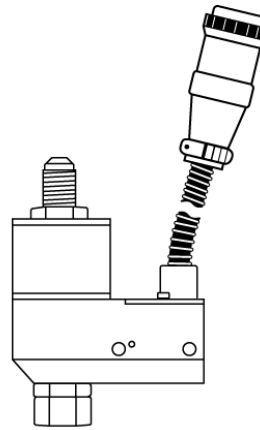
5.3 Automatic Pressure Modulator



ITEM	Qty.	PART NR.	DESCRIPTION
1	1	997-100-045	BODY, PRESSURE MODULE
2	1	994-100-147	BELLOW SHAFT ASSEMBLY
3	1	994-110-115	CAP, PRESSURE ADJUSTMENT
4	1	994-100-125	SHAFT, PRESSURE MODULE
5	1	994-100-126	TIP, PRESSURE MODULE
6	2	974-000-015	BUSHING
7	1	999-000-102	SEAL
8	1	552-113	"O" RING
9	1	552-141	"O" RING
10	1	999-999-081	PIN, SPRING
11	A/R	999-000-779	KRYTOX
12	1	973-850-001	BLOCK, AIR MOUNTING
13	1	999-999-052	FITTING QUICK DISK
14	2	9501-003	ELBOW, STREET
15	2	999-999-010	FITTING, COMPRESSION
16	1	999-000-025	INSULATOR
17	1	999-000-021	TUBING, ¼ O.D.
18	2	977-100-103	WASHER INSULATING
19	2	427-062	SCREW,, #10-32 X 1 SHCS

5.4 EG Applicator

ITEM	Qty.	PART NR.	DESCRIPTION
1	1	980-200-008	BODY
2	1	980-200-018	TUBE NEEDLE ASSEMBLY
3	1	999-000-508	SPRING
4	1	980-200-013	POPPET, ELECT. HEAD
5	1	980-200-007	ADAPTOR NOOZLE TIP
6	1	980-200-011	NUT NOZZLE
7	1	980-000-017	24 VAC, COIL
8	1	427-374	SCREW, SET #6-32 X 1/8
9	1	980-200-009	COVER ELECT. HEAD
10	1	980-200-035	WIRING ASSEMBLY
11	1	980-200-002	RETAINER, COIL BOTTOM
12	1	980-200-003	CAN COIL
13	1	980-200-001	RETAINER COIL TOP
14	1	980-200-004	NUT RETAINER
15	1	552-122-013	O-RING
16	2	427-002	SCREW, #4-40 X .25 LG



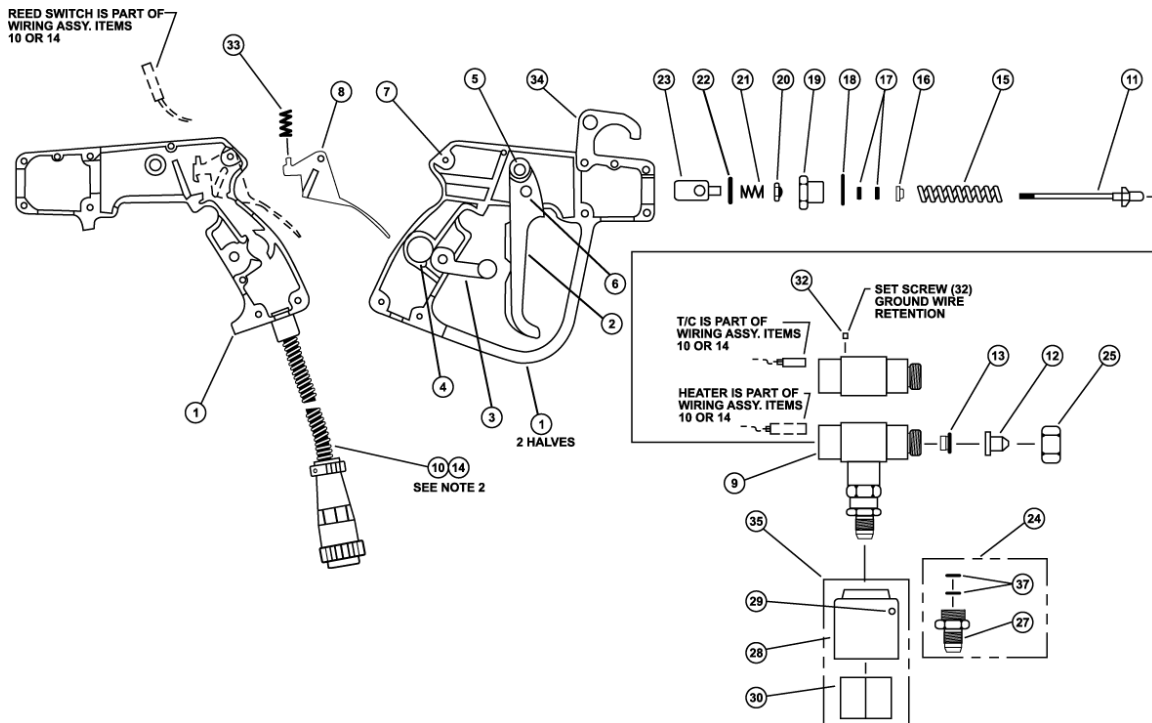
5.5 Handgun

ITEM	Qty.	PART NR.	DESCRIPTION
1	1	982-000-045	HANDLE, HANDGUN
2	1	982-000-036	TRIGGER, HANDGUN
3	1	982-000-012	LOCK, TRIGGER HANDGUN
4	1	982-000-013	SPRING, RING LOCK
5	1	427-350	PIN, 1/4 X 1 LG. ROLL
6	1	427-347	PIN, 3/16 X 3/4 ROLL
7	7	427-249	SCREW #8 X 3/4 TAP
8	1	997-100-026	TRIGGER, MOTOR SWITCH
9	1	982-000-030	BODY/SWIVEL ASSEMBLY
10	1	982-100-023	WIRING ASSY. (115 VAC)
11	1	982-100-003	NEEDLE, HANDGUN
12	1	980-201-040	NOZZLE
13	1	982-000-007	SEAT, NEEDLE HANDGUN
14	1	982-100-024	WIRING ASSY. (230 VAC)
15	1	999-000-509	SPRING, NEEDLE H.G.
16	1	982-000-005	GUIDE, NEEDLE H.G.
17	2	552-140	O-RING
18	1	552-111	O-RING
19	1	982-000-003	SEAL, HOUSING H.G.
20	1	980-199-006	NUT, HANDLE RETAINER
21	1	999-000-510	SPRING, TRIGGER STOP
22	1	427-105	WASHER, #10 FLAT
23	1	980-199-017	ROCKER, HANDLE
24	X	100-982-001	KIT, SWIVEL
25	1	980-200-011	NUT, NOZZLE

ITEM	Qty.	PART NR.	DESCRIPTION
26	X	100-982-000	KIT, REBUILD
27	X	982-000-009	END, SWIVEL MALE JIC
28	1	982-000-014	SHIELD, H.G. SWIVEL
29	2	427-365	SCREW, #6-32X1/2 SHCS
30	1	981-200-024	INSULATION, HEAT SHIELD
31	1	982-000-038	NAMEPLATE, HG MOD. H.G.
32	1	427-374	SCREW, #6-32 X 1/8 SET
33	1	999-000-520	SPRING, MOTOR TRIGGER
34	1	982-100-008	HOOK, H.G. HANGER
35	1	982-100-018	KIT, SWIVEL INSULATION
36	A/R	434-100	ADHESIVE, SILICONE
37	X	552-127	O-RING

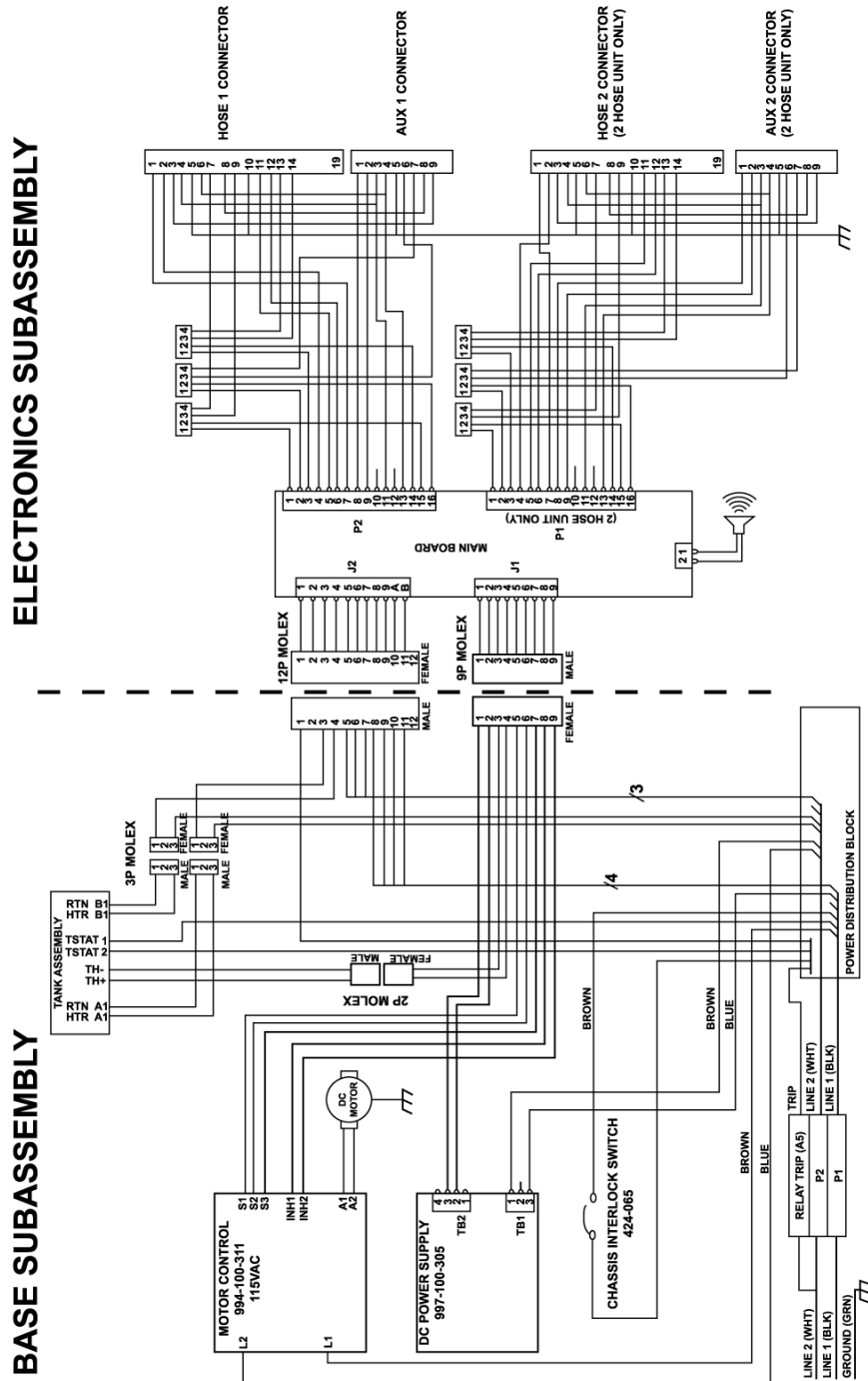
Notes:

Body/Swivel (item 9) is only available as an assembly. Swivel repair kit (item 24) contains O-Ring (item 37) and swivel end (item 27) as shown.

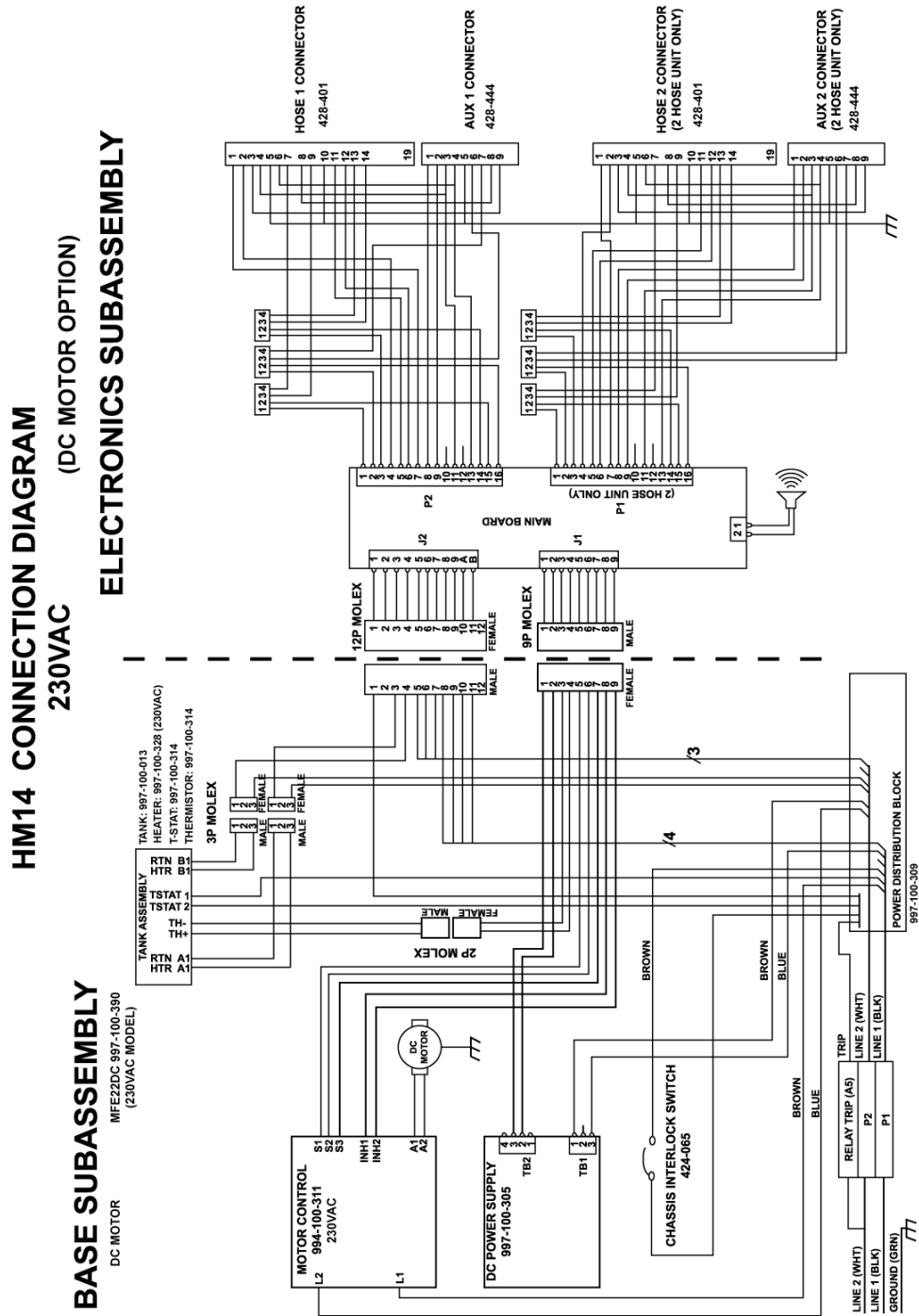


5.6 Melt Unit Base/Electronics 115 VAC

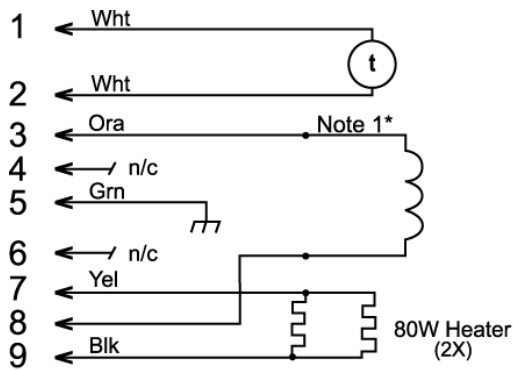
HM14 CONNECTION DIAGRAM
 115VAC



5.7 Melt Unit Base/Electronics 230 VAC



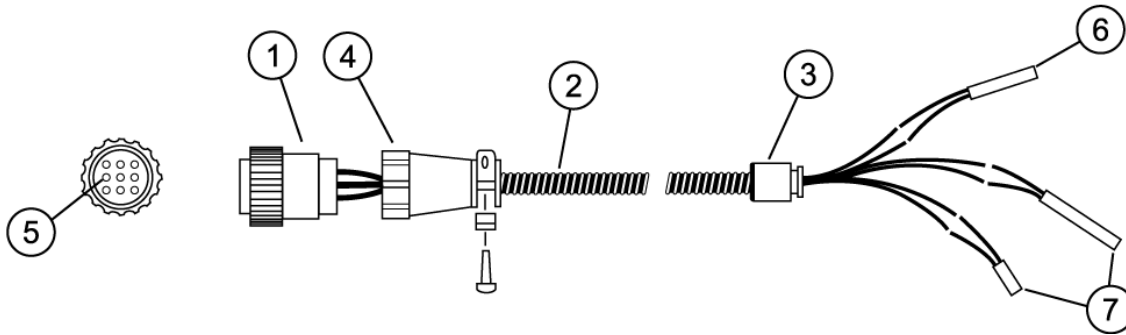
5.10 EG Applicator Electrical



Note 1: Wire color on solenoid coil depends on voltage and freq.

ITEM	Qty.	PART NR.	DESCRIPTION
1	1	428-445	CONNECTOR, 9 PIN MALE
2	1	428-323	HOUSING ARMORED WIRE
3	1	990-000-024	COLLAR, WIRE
4	1	990-000-020	STRAIN RELIEF
5	8	973-500-029	PIN, MALE
6	1	428-304	SENSOR
7	2	428-309	HEATER

Part No.	VOLTAGE	HEATER (ITEM 7)
980-200-035	115 VAC	999-000-303
980-200-036	230 VAC	999-000-337



Warranty

Fisnar Incorporated warrants that products manufactured by it shall be free of defects in material and workmanship when operated in accordance with Fisnar's operating and maintenance procedures for the following period from the date of shipment and in accordance with caution warnings in the front of this manual.

Product	Warranty Limit
Melt Units, Timers, Temperature Controls	6 months or 1,500 hours of use, whichever occurs first
Mobile Hoses, Handguns, Automatic Applicators, Nozzles, and Mechanical Assemblies	3 months or 750 hours of use, whichever occurs first
Hoses used with Fisnar robots	6 months or 1,500 hours of use, whichever occurs first

Fisnar's liability is limited to the repair or replacement, at Fisnar's option, of any product, which proves to be defective during the warranty period outlined. The product must be returned, prepaid by purchaser, to Fisnar after obtaining a Return Authorization Number from Fisnar. Fisnar shall have the right of final determination as to the existence and cause of any defects.

This warranty shall not cover unauthorized repairs, alterations, modifications, or use by the purchaser of product for which it is not intended without prior written consent from Fisnar.

This warranty shall not cover abuse, neglect, improper operating or maintenance procedures, voluntary or involuntary damages of the product by the purchaser.

Fisnar's liability under this warranty shall in no event exceed the purchase order price and shall not cover any losses caused by delays or for any expenses for labor, supplies, machine rental or loss or damages to other property.

No warranty is made with respect to customer equipment or products manufactured to purchaser's specifications except as specifically stated in writing by Fisnar.

Fisnar assumes no responsibility for the quality or performance of coatings, adhesives, or other customer supplied materials used with Fisnar's equipment.

Fisnar's responsibility for transportation under this warranty is limited to charges for delivery of repaired products via the least expensive transportation available, to the purchaser in the Continental United States only. Payment for shipment of Fisnar parts or products to Fisnar's facilities is the responsibility of the purchaser.

Warranty for items that are repaired or replaced by Fisnar shall continue in effect for the remainder of the original warranty period or for ninety (90) days following the date of shipment by Fisnar, whichever period is longer.

This warranty supersedes any other warranty, expressed or implied, and constitutes all of Fisnar Inc.'s liability with respect to its products.

This warranty is valid for original purchase only and is non-transferable.



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