



Adhesive Application Solutions | ISO 9001 certified

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# DYNAMINI 4-HOSE

## ADHESIVE SUPPLY UNIT

Software Version 1.05 and up

Technical Documentation, No.20-76, Rev.8.16



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ITW Dynatec  
An Illinois Tool Works Company  
[www.itwdynatec.com](http://www.itwdynatec.com)

## Information about this manual



### ***Read all instructions before operating this equipment!***

It is the customer's responsibility to have all operators and service personnel read and understand this information. Contact your ITW Dynatec customer service representative for additional copies.



#### **NOTICE:**

Please be sure to include the serial number of your application system each time you order replacement parts and/or supplies. This will enable us to send you the correct items that you need.

ITW Dynatec Service Parts Direct Dial: 1-800-538-9540

ITW Dynatec Technical Service Direct Dial: 1-800-654-6711

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# Chapter 1

## Declaration of Incorporation / Conformity

### EC declaration of conformity

according to the EU Machinery Directive 2006/42/EC, Annex II 1. A

#### Manufacturer

ITW Dynatec  
31 Volunteer Drive  
TN 37075 Hendersonville

#### Person established in the Community authorised to compile the technical file

Andreas Pahl  
ITW Dynatec GmbH  
Industriestraße 28  
40822 Mettmann

#### Description and identification of the machinery

Product / Article	Adhesive supply unit
Project number	Dynamini 4 hose
Commercial name	Dynamini 4 hose
Function	Melting and delivery of hot melt adhesives

It is expressly declared that the machinery fulfils all relevant provisions of the following EU Directives.

2004/108/EC	(Electromagnetic compatibility) Directive 2004/108/EC of the European Parliament and of the Council of 15 December 2004 on the approximation of the laws of the Member States relating to electromagnetic compatibility and repealing Directive 89/336/EEC
2006/95/EC	(Voltage limits) Directive of the European Parliament and of the Council of 12 December 2006 on the harmonisation of the laws of Member States relating to electrical equipment designed for use within certain voltage limits (codified version)
2006/42/EC	Directive 2006/42/EC of the European Parliament and of the Council of 17 May 2006 on machinery, and amending Directive 95/16/EC (recast) (1)

#### Reference to the harmonised standards used, as referred to in Article 7 (2)

EN ISO 14121-1:2007	Safety of machinery - Risk assessment - Part 1: Principles (ISO 14121-1:2007)
EN 60204-1:2006-06	Safety of machinery - Electrical equipment of machines - Part 1: General requirements
EN 349:1993+A1	Safety of machinery - Minimum gaps to avoid crushing of parts of the human body
EN ISO 12100-1/A1:2009	Safety of machinery - Basic concepts, general principles for design - Part 1: Basic terminology, methodology
EN ISO 12100-2:2003/A1	Safety of machinery - Basic concepts, general principles for design - Part 2: Technical principles
EN ISO 13850:2008	Safety of machinery - Emergency stop - Principles for design (ISO 13850:2006)

Hendersonville, 1/12/2016

Place, Date



Signature  
Gina Powers  
General Manager

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## Chapter 2

# Safety Instructions

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### General Considerations



- **All operators and service personnel must read and understand this manual before operating or servicing equipment.**
- **All maintenance and service on this equipment must be performed by trained technicians.**



### Read and adhere to the manual!

---

1. Read and follow these instructions.  
Failure to do this could result in severe personal injury or death.
2. Keep the binding rules for accident prevention valid for your country and the place of installation. Also keep the approved qualified technical rules for safety-conscious and professional work.
3. Additional safety instructions and/ or symbols are located throughout this manual. They serve to warn maintenance personnel and operators about potentially hazardous situations.
4. Inspect the machine for unsafe conditions daily and replace all worn or defective parts.
5. Keep work area uncluttered and well lit. Remove all material or things not needed for the production from the workspace of the equipment!
6. All covers and guards must be in place before operating this equipment.
7. Subject to technical modifications without notice!
8. To ensure proper operation of the equipment, use specified electrical and/ or air supply sources.
9. Do not attempt to alter the design of the equipment unless written approval is received from ITW Dynatec.
10. Keep all manuals readily accessible at all times and refer to it often for the best performance from your equipment.

### Warning Labels

1. Read and obey all of the warning labels, signs and caution statements on the equipment.
2. Do not remove or deface any of the warning labels, signs and caution statements on the equipment.
3. Replace any warning labels, signs and caution statements which have been removed or defaced. Replacements are available from ITW Dynatec.

## Safety Symbols in this Manual

1. WARNINGS and CAUTIONS are found throughout this manual. WARNINGS mean that failure to observe the specific instructions may cause injury to personnel.
2. CAUTIONS mean that failure to observe the specific instructions may damage the equipment.

## Safe Installation and Operation



### Read and adhere to the manual!

---

1. Read this manual before applying electrical power to the equipment. Equipment may be damaged by incorrect electrical connections.
2. To avoid possible failure of hoses, make sure all hoses are routed to avoid kinking, tight radius turns (8" or less) and abrasive contact. Hot-melt hoses should not have prolonged contact with heat-absorbing surfaces such as cold floors or metal troughs. These heat-absorbing surfaces can alter adhesive flow and cause incorrect calibration. Hoses should never be covered with materials that prevent heat dissipation, such as insulation or sheathing. Hoses should be spaced apart from each other, not making direct contact.
3. Do not use adhesive that is dirty or that may be chemically contaminated. Doing so can cause system clogging and pump damage.
4. When adhesive hand-held applicators or other movable applicators are used, never point them at yourself or at any other person. Never leave a hand-held applicator's trigger unlocked when not actually in use.
5. Do not operate the hopper or other system components without adhesive for more than 15 minutes if the temperature is 150° C (300° F) or more. To do so will cause charring of the residual adhesive.
6. Never activate the heads, hand-held applicators and/ or other application devices until the adhesive's temperature is within the operating range. Severe damage could result to internal parts and seals.
7. Never attempt to lift or move the unit when there is molten adhesive in the system.
8. In case of an emergency or exceptional incident, press the emergency stop button in order to stop the unit quickly.
9. Use the unit only as it is intended to.
10. Never let the unit run unattended.
11. Operate the unit only in a faultless and fully functional condition. Check and make sure that all safety devices work in proper form!

## Explosion/ Fire Hazard

1. Never operate this unit in an explosive environment.
2. Use cleaning compounds recommended by ITW Dynatec or your adhesive supplier only.
3. Flash points of cleaning compounds vary according to their composition, so consult with your supplier to determine the maximum heating temperatures and safety precautions.

## Use of PUR (Polyurethane) Adhesives

1. PUR adhesives emit fumes (MDI and TDI) that can be dangerous to anyone exposed to them. These fumes cannot be detected by the sense of smell. ITW Dynatec strongly recommends that a power-vented exhaust hood or system be installed over any PUR system.
2. Consult with your adhesive manufacturer for specifics about required ventilation.



### CAUTION

Because of the nature of PUR adhesives to strongly bond in the presence of moisture, care must be taken to prevent them from curing inside ITW Dynatec equipment.

If PUR adhesive solidifies in a unit, the unit must be replaced. Always purge old PUR adhesive from the system per your adhesive manufacturer's instructions and time table.

ALLOWING PUR ADHESIVE TO CURE IN A UNIT OR ITS COMPONENTS VOIDS ITW DYNATEC'S WARRANTY.

## Eye Protection & Protective Clothing



### WARNING

#### EYE PROTECTION & PROTECTIVE CLOTHING REQUIRED

1. It is very important that you PROTECT YOUR EYES when working around hot melt adhesive equipment!
2. Wear a face shield conforming to ANSI Z87.1 or safety glasses with side shields which conform to ANSI Z87.1 or EN166.
3. Failure to wear a face shield or safety glasses could result in severe eye injury.
4. It is important to protect yourself from potential burns when working around hot melt adhesive equipment.
5. Wear heat-resistant protective gloves and long sleeved, protective clothing to prevent burns that could result from contact with hot material or hot components.
6. Always wear steel reinforced safety shoes.

## Electrical



### DANGER HIGH VOLTAGE

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1. Dangerous voltages exist at several points in this equipment. To avoid personal injury, do not touch exposed connections and components while input power is on.
2. Disconnect, lockout and tag external electrical power before removing protective panels.
3. A secure connection to a reliable earth ground is essential for safe operation.
4. An electrical disconnect switch with lockout capability must be provided in the line ahead of the unit. Wiring used to supply electrical power should be installed by a qualified electrician.
5. Notify the maintenance personnel immediately, if cables are damaged. Provide for exchanging the defective components immediately.

## Lockout/ Tagout



### Switch the unit voltage-free before working! Main switch OFF!

---

1. Follow OSHA 1910.147 (Lockout/ Tagout Regulation) for equipment's lockout procedures and other important lockout/tagout guidelines.
2. Be familiar with all lockout sources on the equipment.
3. Even after the equipment has been locked out, there may be stored energy in the application system, particularly in the capacitors within the panel box. To ensure that all stored energy is relieved, wait at least one minute after removing power before servicing electrical capacitors.

## High Temperatures



### WARNING HOT SURFACE

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1. Severe burns can occur if unprotected skin comes in contact with molten adhesive or hot application system parts.
2. Face shields (preferred) or safety glasses (for minimum protection), heat-resistant protective gloves and long-sleeved clothing must be worn whenever working with or around adhesive application systems.

## High Pressure

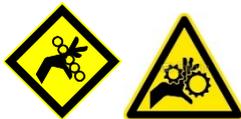


### WARNING HIGH PRESSURE PRESENT

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1. To avoid personal injury, do not operate the equipment without all covers, panels and safety guards properly installed.
2. To prevent serious injury from molten adhesive under pressure when servicing the equipment, disengage the pumps and relieve the adhesive system's hydraulic pressure (i.e. trigger the heads, hand-held applicators, and/or other application devices into a waste container) before opening any hydraulic fittings or connections.
3. IMPORTANT NOTE: Even when a system's pressure gauge reads "0" psi, residual pressure and trapped air can remain within it causing hot adhesive and pressure to escape without warning when a filter cap or a hose or hydraulic connection is loosened or removed. For this reason, always wear eye protection and protective clothing.
4. Either of the two High Pressure symbols shown may be used on ITW Dynatec equipment.
5. Keep the given operating pressure.
6. Notify the maintenance personnel immediately, if hoses or components are damaged. Provide for exchanging the defective components immediately.

## Protective Covers



### WARNING DO NOT OPERATE WITHOUT GUARDS IN PLACE

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1. Keep all guards in place!
2. To avoid personal injury, do not operate the application system without all covers, panels and safety guards properly installed.
3. Never get your extremities and/or objects into the danger area of the unit. Keep your hands away from running parts of the unit (pumps, motors, rolls or others).

**Servicing, maintenance**

1. Only trained and qualified personnel are to operate and service this equipment.
2. Before any service work disconnect the external power supply and the pressure air supply!
3. Never service or clean equipment while it is in motion. Shut off the equipment and lock out all input power at the source before attempting any maintenance.
4. Follow the maintenance and service instructions in the manual.
5. Keep the maintenance rates given in this documentation!
6. Any defects in the equipment that impact safe operation have to be repaired immediately.
7. Check screws that have been loosened during the repair or maintenance, if they are tight again.
8. Replace the air hoses in preventive maintenance regularly, even if they have got no viewable damages! Adhere to the manufacturers` instructions!
9. Never clean control cabinets or other houses of electrical equipment with a jet of water!
10. Adhere to the current safety data sheet of the manufacturer when using hazardous materials (cleaning agents, etc.)!

**Secure transport**

1. Examine the entire unit immediately after receipt, if it has been delivered in perfect condition.
2. Let damages in transit certify by the carrier and announce them immediately to the ITW Dynatec.
3. Use only lifting devices that are suitable for the weight and the dimensions of the equipment (see drawing of the equipment).
4. The unit has to be transported upright and horizontally!
5. The unit has to cool down to room temperature before packaged and transported.

## **Treatment for Burns from Hot Melt Adhesives**

### **Measures after being burned:**

1. Burns caused by hot melt adhesive must be treated at a burn center. Provide the burn center's staff a copy of the adhesive's M.S.D.S. to expedite treatment.
2. Cool burnt parts immediately!
3. Do not remove adhesive forcibly from the skin!
4. Care should be used when working with hot melt adhesives in the molten state. Because they rapidly solidify, they present a unique hazard. Even when first solidified, they are still hot and can cause severe burns.
5. When working near a hot melt application system, always wear safety shoes, heat-resistant protective gloves, safety goggles and protective clothes that cover all vulnerable parts of the body.
6. Always have first-aid information and supplies available.
7. Call a physician and/or an emergency medical technician immediately. Let the burns medicate by a medic immediately.

### **Measures in case of fire**

1. Please heed that not covered hot parts of the engine and molten hot melt may cause heavy burns. Risk of burns!
2. Work very carefully with molten hot melt. Keep in mind, that already jelled hot melt can be very hot, too.
3. When working near a hot melt application system, always wear safety shoes, heat-resistant protective gloves, safety goggles and protective clothes that cover all vulnerable parts of the body!

### **Measures in case of fire:**

Wear safety shoes, heat-resistant protective gloves, safety goggles and protective clothes that cover all vulnerable parts of the body.

### **Firefighting - burning hot melt:**

Please keep attention to the safety data sheet given by the adhesive manufacturer.



## **EXTINGUISH FIRE**

### *Appropriate extinguishing agents:*

Foam extinguisher, Dry powder, Spray, Carbon dioxide (CO<sub>2</sub>), Dry sand.

*For safety reasons not appropriate extinguishing agents: None.*

### **Firefighting - burning electrical equipment:**

### *Appropriate extinguishing agents:*

Carbon dioxide (CO<sub>2</sub>), Dry powder.

**Keep attention to environmental protection standards**

1. When working on or with the unit, the legal obligations for waste avoidance and the duly recycling / disposals have to be fulfilled.
2. Keep attention, that during installations, repairs or maintenance matters hazardous to water, like adhesive / adhesive scrap, lubricating grease or oil, hydraulic oil, coolant and cleaner containing solvent not pollute the ground or get into the canalization!
3. These matters have to be caught, kept, transported and disposed in appropriate reservoirs!
4. Dispose these matters according to the international, national and regional regulations.

# Chapter 3

## Description and Technical Specs

### 3.1 Applicable Safety Regulations

#### Intended Use

The Dynamini Adhesive Supply Unit (ASU) may be used only to melt and supply suitable materials, e.g. adhesives. When in doubt, seek permission from ITW Dynatec.



If the unit is not used in accordance with this regulation, a safe operation cannot be guaranteed.

The operator - and not ITW Dynatec - is liable for all personal injury or property damages resulting from unintended use!



Intended use includes, that you

- read this documentation,
- heed all given warnings and safety instructions, and
- do all maintenance within the given maintenance rates.

Any other use is considered to be unintended.

#### Unintended Use, Examples

**The Dynamini ASU may not be used under the following conditions:**

- In defective condition.
- In a potentially explosive atmosphere.
- With unsuitable operating/processing materials.
- When the values stated under Specifications are not complied with.

**The Dynamini ASU may not be used to process the following materials:**

- Toxic, explosive and easily flammable materials.
- Erosive and corrosive materials.
- Food products.

#### Residual Risks

In the design of the Dynamini ASU, every measure was taken to protect personnel from potential danger. However, some residual risks cannot be avoided.

**Personnel should be aware of the following:**



- Risk of burns from hot material.
- Risk of burns from hot ASU's components.
- Risk of burns when conducting maintenance and repair work for which the system must be heated up.



- Risk of burns when attaching and removing heated hoses.
- Material fumes can be hazardous. Avoid inhalation. If necessary, exhaust material vapors and/or provide sufficient ventilation of the location of the system.
- Risk of pinching parts of the body at running parts of the unit (pumps, motors, rolls or others).
- The safety valves may malfunction due to hardened or charred material.

**Technical changes**

Any kind of technical changes having impact to the security or the operational liability of the system should only be done by written agreement of ITW Dynatec. Suchlike changes made without given a corresponding written agreement will lead to immediate exclusion of liability granted by ITW Dynatec for all direct and indirect subsequent damages.

**Using foreign components**

ITW Dynatec takes no responsibility for consequential damages caused by using foreign components or controllers that have not been provided or installed by ITW Dynatec.

ITW Dynatec does not guarantee that foreign components or controllers used by the operating company are compatible to the ITW Dynatec-system.

**Setting-up operation**

We recommend asking for an ITW Dynatec-service technician for the setting-up operation, to ensure a functioning system. Let yourself and the people working with or working on the system be introduced to the system on this occasion.

ITW Dynatec takes no responsibility for damages or faults caused by any untrained personal.

## 3.2 Description Dynamini 4-Hose

The ITW Dynatec's Dynamini Adhesive Supply Unit (ASU) melts and supplies suitable materials e.g. hot melt adhesives.

The Dynamini's teflon-coated hopper accepts adhesive in all popular forms, including pellets, slugs and blocks. The ASU can accommodate air-actuated automatic applicators (heads), electric applicators, hand-held applicators and/or special applicators.

The ASU is equipped with a 5 kg or a 10 kg hopper. Up to four hoses and applicators can be connected to the unit.

The ASU uses a constant-pressure piston pump. The air-operated pump insures a high pressure adhesive output from a low pressure, compressed air input.

The ASU uses harness inserts in order to switch between DynaControl and Nordson™ capable control.

There are 4 options available:

PN 665001 = 10kg, 240V, DynaControl

PN 665009 = 5kg, 240V, DynaControl

PN 665006 = 10kg, 240V, Nordson™ compatible control

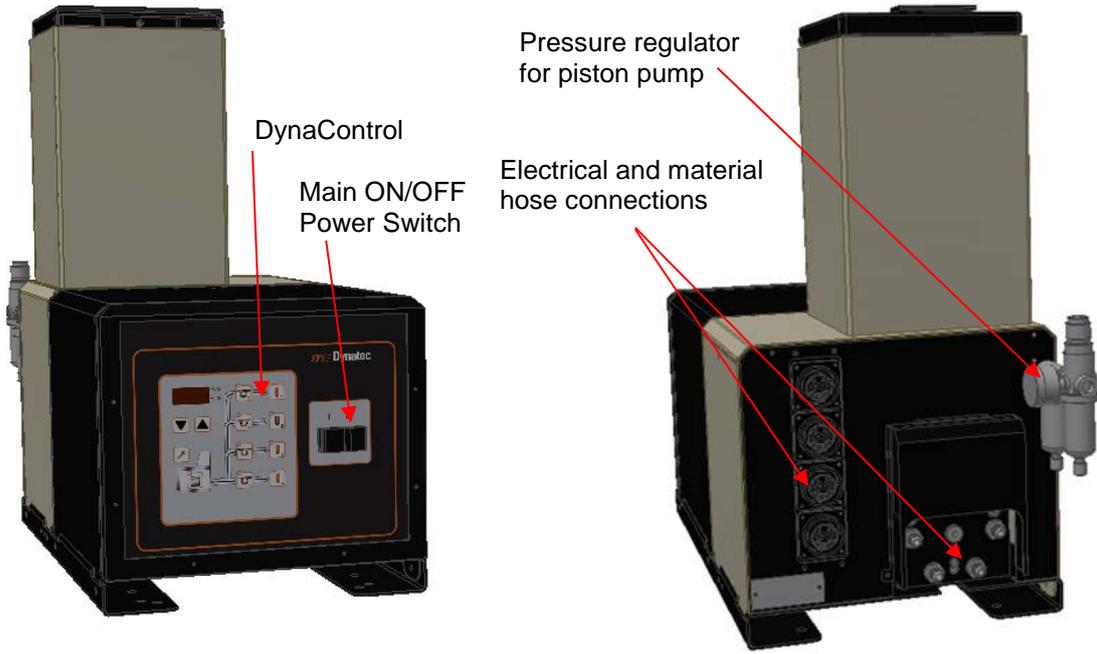
PN 665010 = 5kg, 240V, Nordson™ compatible control

The microprocessor temperature control will be used to closely control the temperature of adhesive for a hopper and up to four hoses and four heads. Temperature setpoints are operator-selected for up to nine zones and the system automatically provides warnings for operator errors and system malfunctions. Sequential heating delays may be programmed for turn-on of the hoses and heads.

A "standby" temperature may be programmed so that the temperature zones can be maintained at a lower temperature when the ASU is not in active use, enabling rapid return to normal operation.

With these flexible temperature programming features, the Dynamini increases adhesive life by eliminating prolonged high adhesive temperatures. It reduces energy consumption and brings the system up to normal operating temperatures in the shortest possible time.

The temperature control can interlock the parent machine with preselected adhesive temperatures so that production automatically begins when adhesive temperatures are correct for the application.



*Dynamini 4-Hose ASU*

## Specifications

### Environmental:

Storage/ shipping temperature .....	-40°C to 70°C (-40°F to 158°F)
Ambient service temperature .....	-7°C to 50°C (20°F to 122°F)

### Physical:

Dimensions .....	see dimensional layouts on following pages
Number of hoses/ applicators .....	4
Number of hopper temperature zones .....	1
Number of piston pump .....	1
Piston pump ratio .....	12:1
Enclosure .....	stayed, durable metal and high temp plastic, dust and splatter resistant
Hose connections .....	Electrical: Universal PT100 Amphenol connectors at ASU (option) Universal Ni120 Rectangular connectors at ASU (option) Mechanical: wrench-secured fluid fittings (#6 JIC)
Hopper (tank) capacity .....	5 kg (11 lbs) or 10 kg (22 lbs)
Hopper construction .....	cast-in heaters, TFE Teflon impregnated
Filtration .....	hopper bottom screen, manifold basket filter

### Electrical:

Power supply .....	240 VAC, 1 PH 230 VAC, 1 PH with neutral 230 VAC, 3 PH, Delta 230/ 400 VAC, 3 PH, Wye
Power consumption, system maximum .....	6.800 Watts
Temperature control .....	Micro Controller
Temperature sensor .....	RTD, PT100 (DynaControl), Ni120 (Nordson™ compatible)

### Air Requirements:

Air pressure supply .....	1.4 to 6.8 bar (20 to 100 psi)
Air consumption at 60 pump cycles per minute .....	90 normal liters/ minute (3.2 SCFM at 6.8 bar/ 100 psi)

### Performance:

Adhesive temperature control range .....	40°C to 218°C (100°F to 425°F)
Adhesive temperature control accuracy .....	±1°C (1°F)
Over-temperature cutoff for hopper .....	232°C (450°F)
Adhesive viscosity .....	500 to 30.000 centipoise
Warm-up time, full hopper .....	approximately 0.5 hour
Adhesive delivery rate .....	0.91 kg/min (2 lbs/min) (12:1 piston pump)
Adhesive melt rate (depends on adhesive used) .....	8 kg/h (17.3 lbs/h)
Adhesive pressure .....	up to 68 bar (1000 psi) maximum
Maximum piston pump speed .....	60 pump cycles per minute

### Temperature Controller DynaControl:

Controller board .....	1
Temperature control zones .....	9
Fuses .....	all fuses are size 5mm x 20mm hose/ applicator head: 6.3 A slow transformer: 1 A hopper: 15 A circuit breaker
Operator interface .....	digital display with all-icon keypad
Temperature stand-by .....	yes
High & low temperature tolerance .....	yes
Ready interlock contact .....	yes
Sensor open alarm .....	yes

### Other

CE approval granted .....	yes
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**Dimensions**

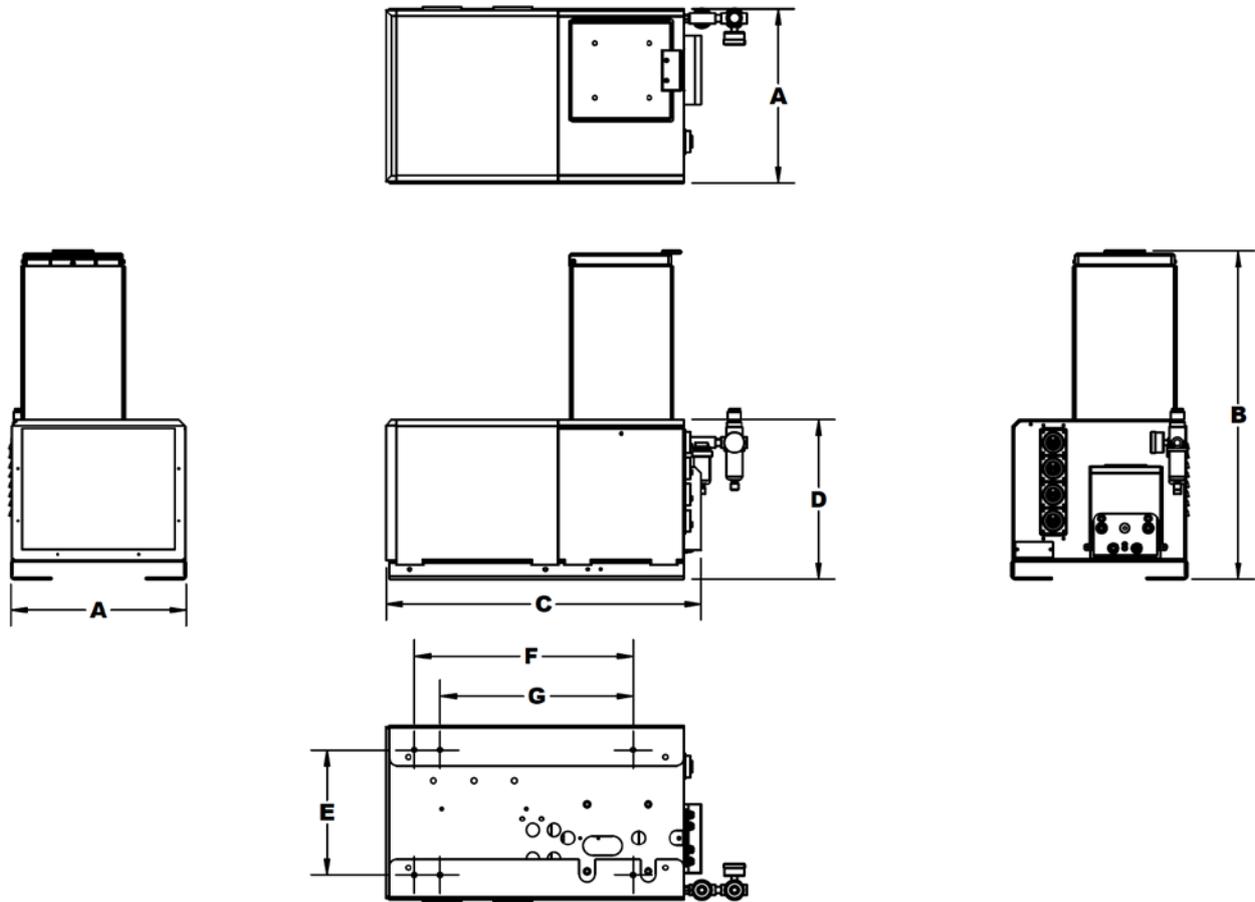


Table								
Dimensions	A	B	Height with lid open	C	D	E*	F*	G*
Model 5 (MM)	346.30	451	B+184	622.56	317.32	249	432	381
Model 5 (IN)	13.63	17.75	B+7.25	24.51	12.49	9.8	17	15
Model 10 (MM)	346.30	654	B+184	622.56	317.32	249	432	381
Model 10 (IN)	13.63	25.75	B+7.25	24.51	12.49	9.8	17	15

\* All mounting holes are 9.5 mm diameter.

## Chapter 4

# Installation & Setting-up Operation

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### CAUTION

- Before setting up, please read this documentation carefully.
- Pay attention to all the installation and connecting advices.
- Heed all safety instructions mentioned in chapter 2.

## 4.1 Conditions for set-up and mounting



### WARNING

**The unit must be lifted by two persons, using proper lifting technique, one person at either end.**

**Securely hold it under its base plate.**

**No belts or hooks should be used.**

**Never allow anyone to stand on the ASU.**

#### Place requirement

Install the Dynamini ASU so that the operator is able to work on it from all sides, for e.g. for adjusting, preparing, maintaining, repairing, cleaning, etc. See drawing of the unit for admeasurements.

#### Mounting and alignment

- The complete unit has to be set up on solid, stable and flat ground.
- The alignment in height of the complete system has to be considered.
- The alignment of the machine has to be considered.

#### Electrical connection

- Necessary electrical connection has to be provided. See electrical schematics.
- Never connect or disconnect plug-and-socket connections under load!

#### Pneumatic connection



- In any case the air has to be clean and dry! See advice in chapter 4.3 "Quality of compressed air".
- Please heed that units with high air demand may not be used at the same time with the same air supply.



#### Advices:

- Check all screw connections at the unit and retighten if necessary.
- Lay the cables and heated hoses so that no risk or least possible risk of stumbling occurs.

## 4.2 Installation



### CAUTION

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- All work on or with this unit is only permitted for skilled personnel!
- Pay attention to the electrical schematics!
- Clean and dry air is required.



### WARNING

---

- Risk of burns and risk of injury!
- While installing the ASU, use an appropriate protection device to avoid unintended contact with heated parts and with spilling out Hotmelt. The protection device has to prevent also the operator against not reaching into the adhesive application and against injuring.

#### Typical installation for Dynamini ASU:

1. Verify that incoming line power to the ASU and the unit's main power switch are turned OFF.



### DANGER HIGH VOLTAGE

---

- **A lockable power disconnect switch with overload protection must be provided by the customer as part of the ASU installation. The power disconnect must isolate the ASU from its power source.**
- **Disconnect and lockout input power to the application system before starting any installation procedures.**
- **Make sure there is no electrical power on the leads you will be connecting.**
- **THE UNIT'S MAIN SWITCH DOES NOT SHUT OFF ALL POWER WITHIN UNIT!**

2. Your power supply should be rated for 30A service and should include an earth ground conductor.  
The information plate on the ASU will indicate the required power supply.



### CAUTION

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**Grounding conductors never carry electrical current. The use of a neutral conducting wire as earth ground is incorrect and may cause damage to the controller.**

3. Make two connections to the printed circuit board:

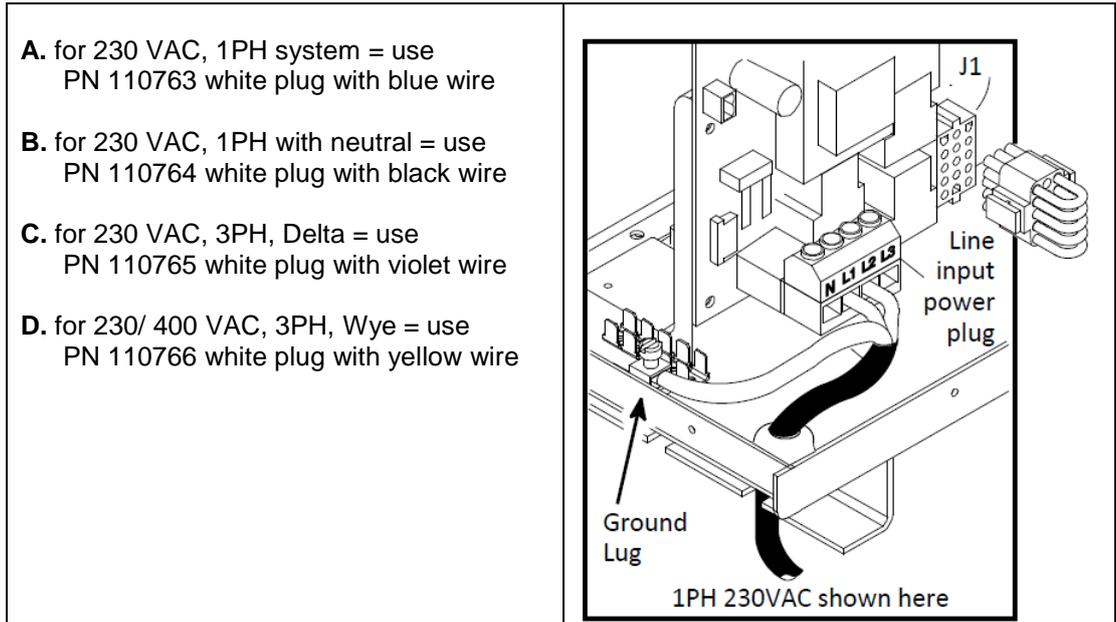
Remove control panel enclosure by loosening the four screws in notched positions on the enclosure, then lifting up the enclosure.

a. Select proper power configuration plug for your system (four plugs are shipped with the unit):



**CAUTION**

Using the incorrect power configuration plug may cause serious damage to the unit.



- A. for 230 VAC, 1PH system = use PN 110763 white plug with blue wire
- B. for 230 VAC, 1PH with neutral = use PN 110764 white plug with black wire
- C. for 230 VAC, 3PH, Delta = use PN 110765 white plug with violet wire
- D. for 230/ 400 VAC, 3PH, Wye = use PN 110766 white plug with yellow wire

b. Insert proper power configuration plug into socket J1 at bottom, center of control printed circuit board located within the control enclosure (see illustration of PCB in Chapter 7 for location).

c. Wire main power into Line Input Power Plug and the ground lug (to the left of board). Main power connections & the ground lug are at the bottom, left of the PCB (X1). Conduit fitting or cable grip not supplied.

A	B	C	D
1 PH 230V AC	1 PH + N 230V AC	3 PH 230V AC DELTA	3 PH 230/400V AC WYE
Art. Nr. 110763	Art. Nr. 110764	Art. Nr. 110765	Art. Nr. 110766

4. Reassemble the pump and electronics cover to the ASU.
5. Install the Air Control/ Filter Unit (containing the air regulator, the coalescing filter and pre-filter). See illustration on next pages. The air control/ filter unit is mounted directly to the ASU via a threaded hole on the rear cover. Wrap Teflon tape around the nipple fitting before installing in the ASU. The unit requires clean, dry air. NEVER use lubricated air.

For operator convenience, the air pressure gauge can be mounted to either side of the air control regulator.

With the air pressure regulator, a clockwise turn increases pressure. A counter-clockwise turn decreases pressure. The recommended pressure is 1.4 to 5.6 bar (20 to 82 psi).

6. Interconnect the ASU and Applicator with the required heated hoses. The adhesive hoses are connected at the rear cover (see illustration on next page).



**Heed the following for the installation of the heated hoses:**

- Heated hoses may be damaged by overheating, if they are laid faulty.
- Make your electrical hose connections at the numbered connects on the left side of the cover.
- Route hoses so that there is at least an 8 inch (20cm) radius at any bend. Do not hang hoses without proper support.
- Do not crimp, clamp, squeeze or tie hoses.
- The hose adhesive ports are located at the bottom of the filter block, to the right of the electrical connections.
- There are 5 ports for the use of up to 4 hoses and for the (optional) adhesive pressure gauge. When making hose connections, use the numbered connections and ports accordingly; i.e. make your hookup for hose/head #1 to electrical connection #1 and adhesive port #1, hose/ head #2 to electrical connection #2 and adhesive port #2, etc.

Refer to the hose and applicator manuals for further details on these items.

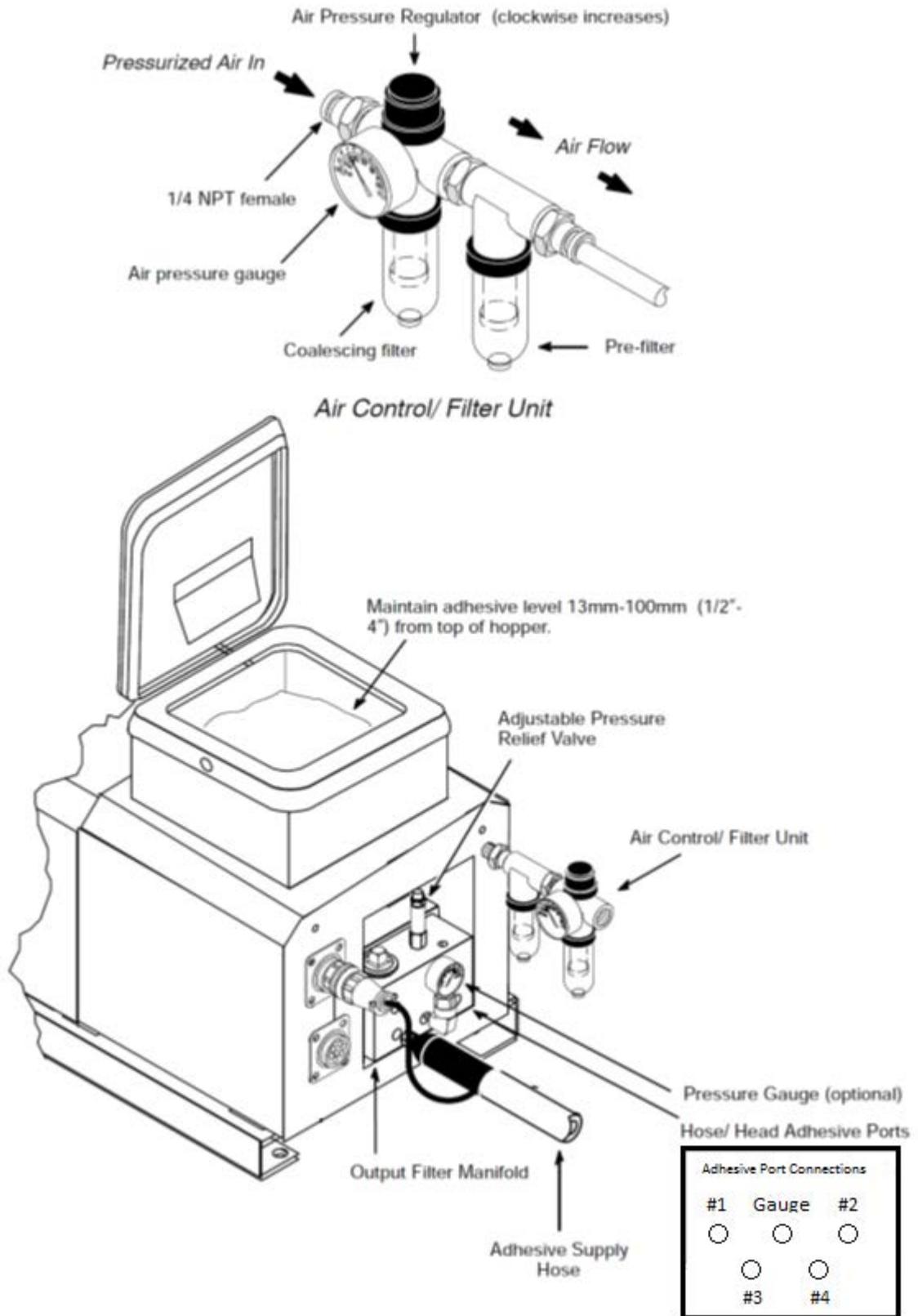
7. Install the hose manifold outlet cover by sliding it into place and attaching with the two M4 screws provided
8. Connect all cables of the equipment components according to the electrical schematics (e.g. ASU, Hoses, Applicators, etc.).

Refer to the Wattage Availability Chart to determine the hose and head power.

*Wattage Availability Chart*

ASU Voltage	Max. System Wattage	Hopper (Tank) Wattage	Wattage Available for All Hoses and Heads
200-240 VAC	6800 W	1200 W	5600 W

9. Interconnect the components with the foreseen Profibus (or EtherNet, etc.) interface cables (if applicable).



Rear Cover: Hose and Head Electrical and Adhesive Connections

### 4.3 Quality of compressed Air

Compressed air quality class according to ISO 8573-1

- We recommend to use a maintenance-unit for compressed-air conditioning with a filter 40µm.
- Keep the **quality class 5.4.2** according to ISO 8573-1.

#### Classification of Quality Classes According to ISO 8573-1:

Class	1. Particulate Material		2. Water Content	3. Oil Content
	max. particle size (µm)	max. particle density (mg/m <sup>3</sup> )	max. pressure dew point (°C)	max. oil concentration (mg/m <sup>3</sup> )
1	0,1	0,1	-70	0,01
2	1	1	-40	<b>0,1</b>
3	5	5	-20	1
4	15	8	<b>+3</b>	5
5	<b>40</b>	<b>10</b>	+7	25
6			+10	
7			not defined	

## 4.4 Advices for the setting-up operation



### WARNING

Start with set-up operation not until

- the functioning of the unit is known, and
- the unit installation for setting-up operation has been done according to the details given in the previous chapter. That means all unit components are operable.

Read the documentation thoroughly to avoid breakdowns caused by faulty handling.

We recommend asking for an ITW Dynatec-service technician for the setting-up operation, to ensure a functioning unit. Let yourself and the people working with or working on the unit be introduced to the unit on this occasion.

ITW Dynatec takes no responsibility for damages or faults caused by any untrained personal.

Allow only skilled expert staff to do the setting-up operation!



Always wear safety shoes, heat-resistant protective gloves, safety goggles and protective clothing when working on or with the unit. Risk of burns and risk of injury!



Risk of electric shocks! Risk of injury, Mortal danger!

The unit components are getting very hot during operation! Risk of burns!



The adhesive is very hot and pressurized! Risk of burns and risk of injury! At working temperature, molten adhesive could cause heavy burns. Let spilled out adhesive cool down first, before removing it!



### CAUTION

**During operating the unit, heed the following:**

- Heed all safety instructions mentioned in chapter 2.
- Install an appropriate protection device to avoid unintended contact with heated parts and with spilling out hot adhesive. The protection device has to prevent also the operator against not reaching into the adhesive application and against injuring.
- Set the working temperatures strictly within the temperature range given by the adhesive manufacturer. Do not exceed this temperature range.
- Switch the unit off during longer production breaks.
- Switch the unit to standby during shorter production breaks.
- Avoid voltage fluctuation.
- The air supply has to be clean and dry.
- In case of an emergency or exceptional incident, press the emergency stop button in order to stop the unit quickly.



### CAUTION

The unit is ready for operation, when

- all temperatures are within the tolerances,
- all motors are switched on.



Risk of stumbling on cables and heated hoses!



Keep your hands away from running parts of the unit (pumps, motors, rolls or others).

## 4.5 Setting-up operation, in general

This is a generic start-up of Dynamini ASU:

1. Check the complete unit and the traverse paths for safety. Fix visible damages immediately.
2. Before switching the unit on, make sure that the starting unit could hurt no one!
3. Remove all material or other things not needed for the production from the workspace of the unit!
4. Check and make sure that all safety devices are working in proper form!
5. Fill the ASU's hopper with clean hot-melt adhesive.



### WARNING HOT ADHESIVE

The adhesive and unit components are getting very hot during operation!  
Risk of burns!



Always wear safety shoes, heat-resistant protective gloves, safety goggles and protective clothing when working on or with the unit. Risk of burns and risk of injury!



### CAUTION

Using adhesive with viscosity over 50.000 centipoise could cause motor stall and/ or pump failure.

#### NOTES:

- Do not overfill the hopper (melt tank) since adhesive generally expands as it melts and a full hopper will overflow.
- The adhesive level should be maintained at 13mm to 100mm (1/2" to 4") from the top of the hopper.
- Where applications demand a high output volume of adhesive, add small amounts of adhesive frequently. Adding large amounts of adhesive to an almost empty hopper will lower the temperature of the adhesive in the hopper and may cause the ASU to fall below its READY setpoint.
- **Changing the Adhesive Formula:**  
If a different adhesive formulation from the one being currently used is needed, the system will have to be flushed if the two formulations are incompatible. See Chapter 6 for the proper flushing procedure. When in doubt about adhesive compatibility, flush your system.

6. Close the hopper lid immediately to prevent contaminants from falling in. (Cover your bulk supply of adhesive to prevent contaminants also.)  
The consequences of dirt would be:
  - breakdowns
  - higher contamination of the adhesive filter,
  - the adhesive application and/or adhesive film formation will be disabled, contain those dirt particles, tend to tear open.
7. At the control panel, turn ON the Main Power Switch.  
The controller will perform its initial calibration cycle.  
The display will read CAL. All of the 9 temperature zone's LEDs will flash as a lamp test.
8. Program your adhesive setpoints (see instructions in Chapter 5) or use the factory settings listed below.  
  
Allow adequate time (approximately 20-30 min.) for the adhesive to melt and the temperatures of the temperature zones to stabilize.



### CAUTION

---

#### The unit is ready for operation, when

- all temperatures are within the tolerances, and
- the adhesive in the ASU hopper is molten completely.

**NOTE:** When the ASU leaves the ITW Dynatec factory, it is programmed with the following factory settings (unless special factory settings were requested):

- Hopper: 150°C (300°F)
- Hose: 177°C (350°F)
- Applicator: 177°C (350°F)
- Sequential Startup: ON

9. Once the ASU has reached temperature, the ASU will automatically begin to pump adhesive.
10. Use the air pressure regulator, located at the rear of the ASU, to regulate pump speed and adhesive output.



---

### CAUTION! RISK OF BURNS AND INJURY!

- The unit operates with very high temperatures and high adhesive pressure.
  - Hot adhesive comes out of the Hose/Applicator!
  - Always wear heat-resistant protective gloves and safety goggles! Molten adhesives at operating temperature could cause heavy burns.
  - Do not touch the hot surfaces or parts without wearing heat-resistant protective gloves!
11. Put a heat-resistant adhesive container (e.g. paperboard) under the Application Head to catch the adhesive.
  12. Start the ASU pump.
  13. Adhesive will be pumped through the hose/head, thereby the hose/head will be filled and flushed with adhesive.
  14. Stop ASU pump.
  15. Clean the Application Head from adhesive residuals.
  16. Remove the heat resistant container.
  17. The equipment is ready for operation.

## 4.6 Shut Down Procedure



### CAUTION! RISK OF BURNS AND INJURY!

- Parts of the unit can be hot long after switching off.
- Always wear heat-resistant protective gloves and safety goggles! Molten adhesives at operating temperature could cause heavy burns.
- Do not touch the hot surfaces or parts without wearing heat-resistant protective gloves!

#### Effect following steps for switching the unit off:

1. Turn OFF the Main Power Switch!

#### Removing dirt:



Remove dirt from all unit components immediately.

Wooden scrapers, lint-free cloth with thinner or cleaner may only be used for cleaning.

Metallic scrapers or other tools made from steel, like knife or blades, may not be used under any circumstances.

## 4.7 Storage and Disposal of the DYNAMINI ASU

### Temporary Storage of the Unit

1. Flush the adhesive application system with flushing fluid (PN L15653), following the instructions detailed in chapter 6 of this manual.
2. Clean or replace both the output filter and the primary filter, following instructions detailed in chapter 6.
3. Shut OFF all pressure and power sources.
4. Release residual air pressure.
5. Remove all residual adhesive and wipe components clean.
6. Remove all air lines and all power supply cables.
7. Pack the unit in a corrosion-proof manner.
8. Store the unit in such a way that it is protected from damage.

### Disposal of the Unit

1. Shut OFF all pressure and power sources.
2. Release residual air pressure.
3. Remove all residual adhesive.
4. Remove all air and adhesive supply hoses and all power supply cables.
5. Dismantle all components and sort into mechanical and electrical components.
6. Arrange for all components to be recycled.

# Chapter 5

## Controller

---

### 5.1 Controller Set-Up

#### *Helpful Tips for the User*

- When the ASU is turned on, all temperature setpoints and other operating parameters will be exactly where they were when the ASU was turned off.
- When the ASU is turned on, all system heaters go on unless they have previously been set below 40°C (100°F).
- When the ASU is turned on, the controller checks all RTDs. If a zone does not have a valid RTD, this zone will be switched off.

#### *Temperature Control Functions in General*

The Dynamini temperature controller provides accurate temperature control for the hopper, hoses and applicators. Setpoints are programmed at the user-friendly, all-icon keypad. The controller will display an error message any time an open or shorted sensor condition occurs.

#### *Defining Temperature Control Terms*

##### **Adhesive Temperature Control Range**

The temperature limits within which the ASU, hoses and applicators may be programmed and maintained.

##### **Alarm Signal**

The controller provides an alarm signal if any zone has a critical situation. This signal is available on a dry contact located at connector X7 on the Control printed circuit board.

##### **CPU Module**

The central processing unit (CPU) of the microprocessor temperature control.

##### **Temperature Controller**

The built-in control system that controls, monitors and displays all system temperature values of the Dynamini ASU.

##### **Control PCB**

The printed circuit board (PCB) of the ASU. It provides control signals to, and monitoring signals from, the hopper, hoses and applicators. It features lighted LEDs to indicate that heater power is ON. The ASU's fuses, circuit breakers & power configuration plug are located on this board.

##### **Keypad Locking**

The controller's keypad may be locked (or unlocked) to restrict (or allow) further programming.

##### **Mechanical High-Temperature Protection**

A mechanical, redundant thermostat located on the hopper that will turn off the system above safe temperatures.

##### **RTD Sensors**

The system uses 120-ohm Nickel or 100-ohm Platinum resistance temperature detector (RTD) sensors for all temperature controls.

**Ready Signal**

The controller provides a ready signal if all temperature zones are within a programmable tolerance and the system is ready for production. This signal is available on a dry contact at connector X8 on the control printed circuit board. The ready signal also controls pump operation.

**Sequential Startup**

This feature allows the temperature zones to come on in sequence (hopper, followed by hoses and heads). When activated, and the ASU is turned ON from a cold start, the hopper heats first. When the hopper is within its setpoint tolerances, the hoses and heads begin to heat.

**Setpoint**

A programmable temperature that has been selected for hopper, hoses and applicators.

**Setpoint Limitation**

This is a universal maximum temperature for all zones (218°C [425°F]). The programmer cannot program a temperature setpoint higher than the setpoint limitation.

**Standby (Setback)**

During breaks or delays in production, it is possible to reduce the temperature of all zones by a specified amount through programming of a standby. The programmed standby (also referred to as “setback”) is the difference in temperature by which all zones will reduce below their setpoints when standby is activated. Standby is always OFF when the ASU is turned ON. In standby mode, the ready signal is OFF and the pump will stop.

**Error Indication Messages**

- **EO1** = A controller display of “EO1” indicates that the selected zone (i.e., a hose, applicator or the hopper) has an open sensor.
- **EO2** = A display of “EO2” indicates a shorted sensor.
- **E03/4** = Internal error, PCB has to be replaced.

If either alarm occurs, first verify that the following three connections are made correctly:

1. The ASU-to-hose connection(s) located at the back of the ASU.
2. The hose-to-applicator connection(s).
3. The RTD Input connections (X4 & X5) located on the Control Printed Circuit Board.

If the problem is not with a connection, check the sensor and replace if necessary.

**Firmware Chip and Checksum**

The firmware chip is on the Control Printed Circuit Board (see Ch. 7). Inscribed on the controller's chip is information that is required if your controller needs service, including the controller's checksum and software revision.

**Chip example:**

### **System Values That Are Permanently Programmed**

- Minimum setpoint value: 40°C (100°F).
- Maximum setpoint value: 218°C (425°F).

### **System Values as Programmed by the Factory**

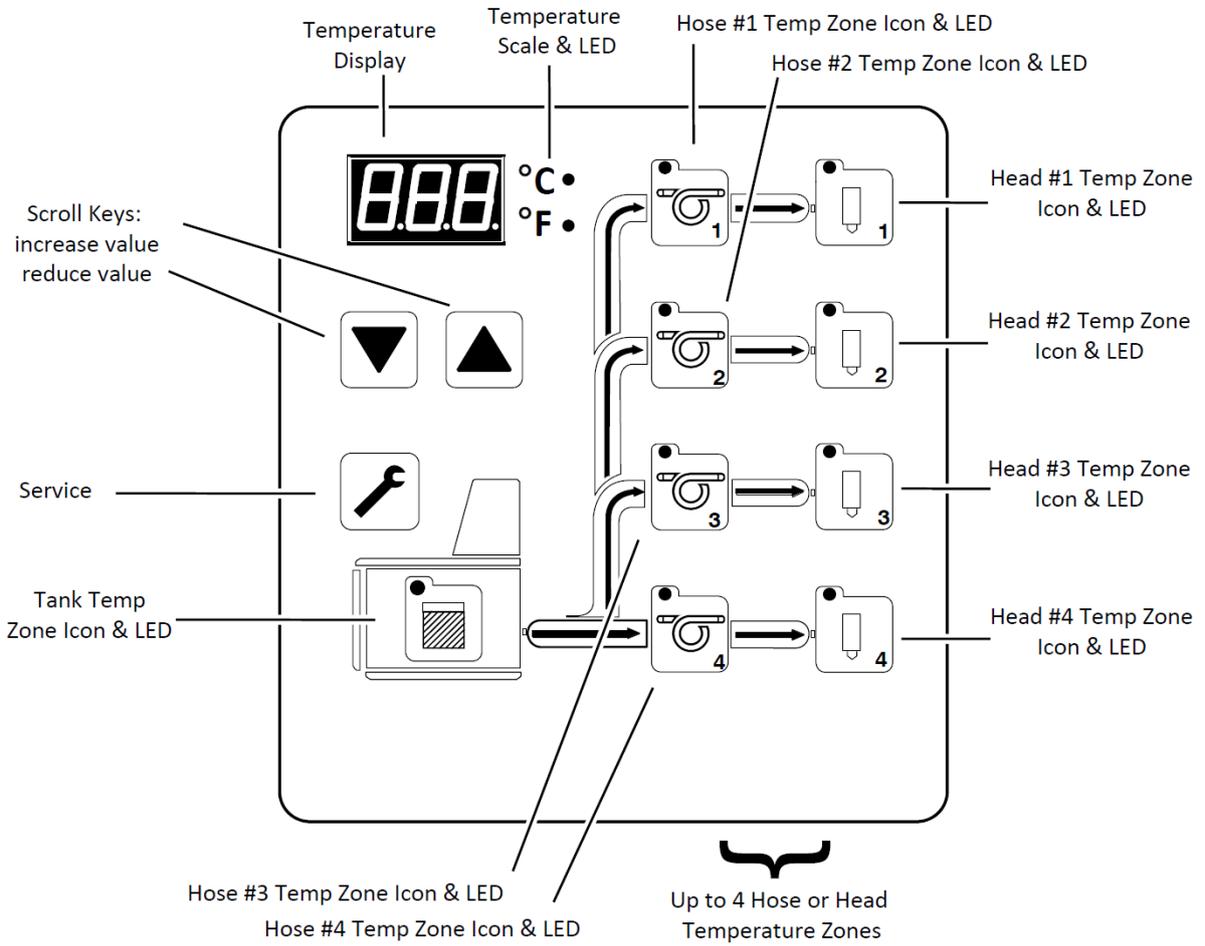
ITW Dynatec can set the controller's system values to customer's specs, if provided.

If customer's specs are not provided, the following values will be entered into the temperature controller at the factory. They may be changed by reprogramming through the keypad.

- Temperature scale: displayed in degrees Fahrenheit.
- Applicator (head) and hose setpoints: OFF
- Hopper setpoint: 177°C (350°F)
- All zones are switched off, except for the hopper
- Access Code: not active
- All programmable time delays: set to zero (0)
- Tolerance range for high & low temperature limits:  $\pm 27^{\circ}\text{C}$  ( $\pm 50^{\circ}\text{F}$ )

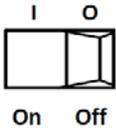
## 5.2 Controller Programming Instructions

### Controller Keypad



## Programming

### Turn Controller ON



- Turn ON the main power switch.

System will go through its self-diagnostics (CAL).  
Controller will display "CAL".  
Temperature zone LEDs will flash.



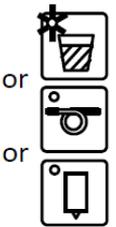
Controller will display "SS 1" (On) or "SS 0" (Off) to indicate status of the Sequential Startup feature (see info on "Sequential Startup" later in this chapter).



or



### Programming Temperature Setpoints



**Note:** For a shortcut method of setting setpoints, see "To Copy & Paste Setpoints" on next pages.

- Choose a temperature zone.

When flashing, the zone's setpoint is displayed, and it can be programmed.

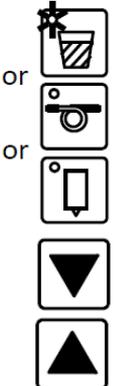


- In order to program the temperature setpoint, scroll up to increase value or down to reduce value.

After two seconds the display will read the actual temperature. The setpoint is stored.



### Turning Temperature Zones ON/ OFF



- Choose a temperature zone.

- Scroll to reduce value until the temperature setpoint shows " - - - ".  
This temperature zone is now turned OFF.

- To turn ON the temperature zone, increase the setpoint.

When programming is complete, wait a few seconds and the controller will return to the ASU's actual temperature.



## Keypad Locking

It is possible to lock or unlock the controller in order to restrict programming changes. To change the code which is necessary to over-ride or unlock the keypad lock, see Service Functions.

Note: the Dynamini is shipped with de-activated keypad lock. If the keypad lock must be used, an access code must be programmed prior to locking the keypad.

### Locking or Unlocking the Keypad

**Important Note:** The controller must be in the Temperature Display mode in order to allow locking or unlocking of the keypad.

#### Locking the Keypad



➤ **Press the Down Scroll key, then hold and press the Service icon key.**

You will see "Loc" to indicate that the Keypad Lock is active.



#### Unlocking the Keypad



➤ **Press the Down Scroll key, then hold and press the Service icon key.**

You will see "Cod" to indicate that the access code is required.



or



Enter your access code by scrolling up or down.  
Default code = " - - -".



Confirm your code input by pressing Hopper key.

#### Notes:

1. Once the keypad lock is active, unauthorized programming is not possible, even after turning the ASU OFF, then back ON again.
2. Once the keypad lock is unlocked, programming is possible until the ASU is turned OFF, then back ON or the keypad is locked again.
3. If the keypad must be unlocked permanently, the access code must be de-activated in the Service Functions.

## Service Functions

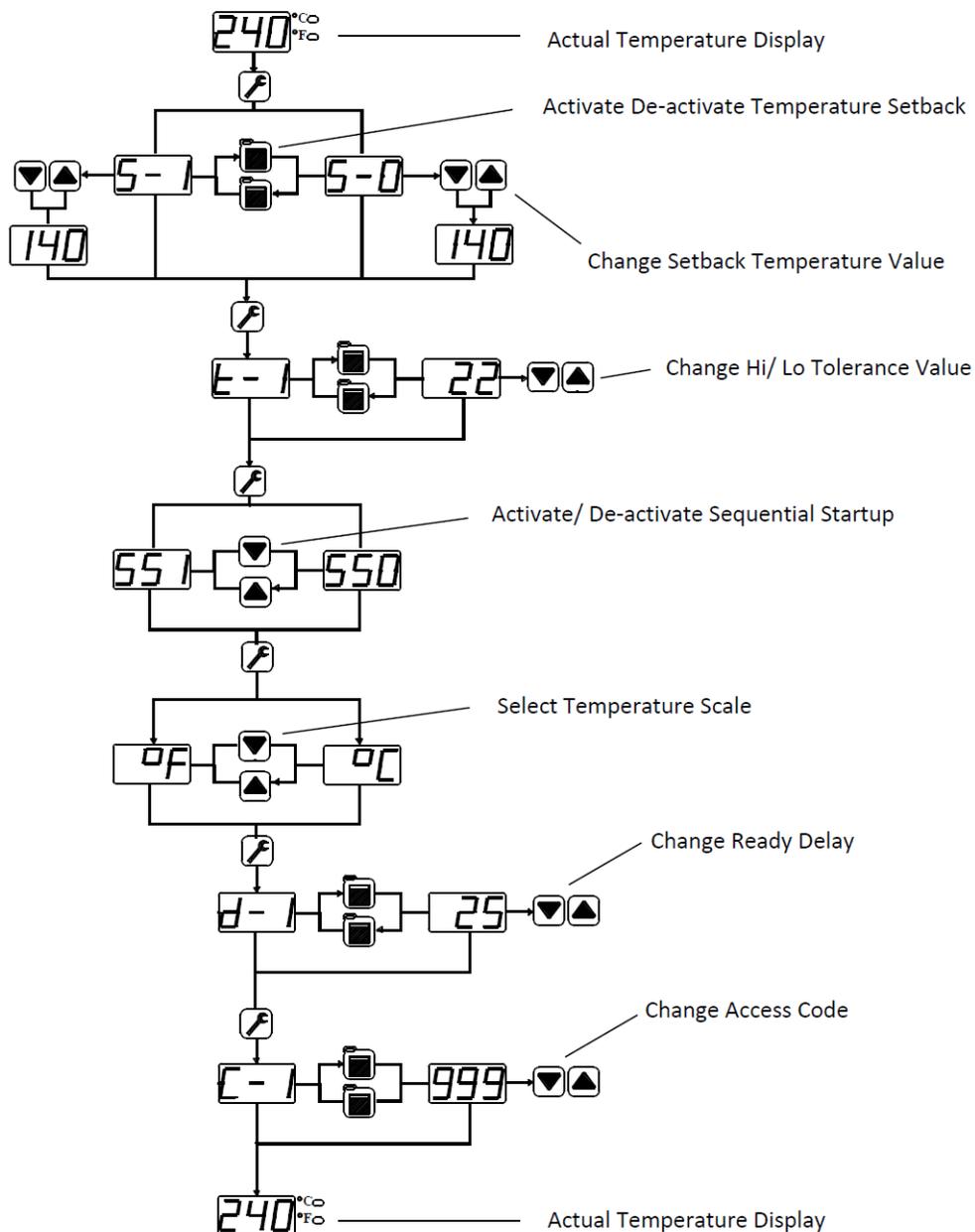
After the basic programming of Temperature Setpoints is complete, the programmer proceeds to programming of the Service Functions, if desired.

The Service Functions are a continuous loop of programming steps ("functions") which the programmer moves through by pressing the "Service" key. These steps are described in this section of the chapter. The Service Functions loop and basic programming is diagrammed below.

There are three ways to exit the Service Functions loop:

1. Just wait (approx. 10 seconds) and the controller will automatically return to the actual temperatures display,
2. Press the Service key until you are back to the actual temperatures display, or
3. Press any Hose or Head key and you will return to the actual temperatures screen.

### Diagram of the Service Functions Loop



Service Functions, continue:

**Standby Programming**

“Standby” is a temperature value by which all temperature zones will lower when Standby mode is activated.

For example, if your temperature setpoints are all 300 degrees, and you program a 100 degree Standby, then the Standby temperature of all zones will be 200 degrees. Similarly, if your temperature zones setpoints vary, and you program a 100 degrees Standby, each zone's Standby temperature will be 100 degrees lower than its setpoint.



- **Press Service icon to enter Service Functions.**

You will see either “S-1” (standby is On) or “S-0” (standby is Off).



- **Press the Hopper icon to activate/ de-activate Standby.**

or



If desired, you may set the Standby temperature by scrolling up or down to desired temperature.



When programming is complete, wait a few seconds and the controller will return to the ASU’s actual temperature.

**Note:**

When Standby is active, the display will alternate between the ASU's actual temperature and S-1.

**To Set Tolerance (Hi & Low Temperature Limits)**

The Tolerance (high/ low alarm) setpoint is a range (+ and - the zone's temperature setpoint) between which your ASU can safely operate. It's lower temperature represents the ASU's ready temperature. It's upper value represents the over-temperature point.

Setting the Tolerance range, for example: if the temperature setpoint is 200 degrees, and the Tolerance setpoint is 10 degrees, then the high alarm (overtemp) equals 210 degrees and the low alarm (ready temp) equals 190 degrees.



- x 2 ➤ **Press the Service icon twice to select the Tolerances of your temperature zones.**

A display of “t-1” indicates the Tolerance function has been selected.



- **Press the Hopper button to display the Tolerance.**

Use the scroll buttons to change the Tolerance range for all zones.

**Note:** your Tolerance range must be a value between 5 and 50 °F (2 and 27 °C).

or



When Tolerance programming is complete, wait a few seconds and the controller will return to the ASU's actual temperature.

Service Functions, continue:

### Turning Sequential Startup ON/OFF

The Sequential Startup feature programs the order in which the temperature zones will come on at startup.

- A Sequential Startup of “**SS1**” (**On**) means the hopper will begin heating first, then, when the hopper is ready, the other zones will begin heating.
- A Sequential Startup of “**SS0**” means Sequential Startup is **Off** and all zones will begin heating immediately.

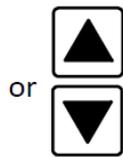


➤ **Press the Service icon three times to set Sequential Startup.**

The display will flash either “SS1” (sequential startup is ON) or “SS0” (sequential startup is OFF).



or



Scroll to choose between ON and OFF. When programming is complete, wait a few seconds and the controller will return to the ASU's actual temperature.

**Note:**

Any time the ASU is switched ON, you will briefly see “SS1” or “SS0” displayed.



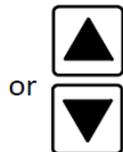
### To Set Temperature Scale

The Temperature Scale may be set to display temperature either in degrees Celsius or Fahrenheit.



➤ **Press the Service icon four times to set the Temperature Scale.**

Scroll to choose between Celsius (“C”) or Fahrenheit (“F”) as indicated by the Temperature Scale LED.



When programming is complete, wait a few seconds and the controller will return to the ASU's actual temperature.

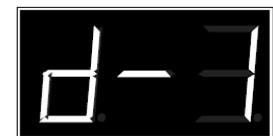
### To Set Ready Delay

When the system is ready (all temperature zones are within tolerance), a ready delay may be programmed to delay the system's ready output signal.



➤ **Press the Service icon five times to set a Ready Delay.**

You will see “d-1” to indicate you are in Ready Delay programming mode.



Press the Hopper icon to display the Ready Delay.

To change a Ready Delay, scroll up or down to the desired length (in minutes) of delay.

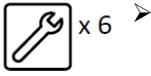
**0** = Default, no delay  
**99 minutes** = maximum length of delay



When programming is complete, wait a few seconds and the controller will return to the ASU's actual temperature.

Service Functions, continue:

**To Change Access Code (De-activate Keypad Locking)**



To change the Access Code, press the Service icon six times.



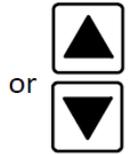
You will see "C-1" to indicate you are in Access Code programming mode.



Press the Hopper icon to see the programmed Access Code. For example, "999".



To change the Access Code, scroll up or down to the desired numeric value.



"- - -" = no Access Code (Access code is de-activated),  
 "- - -" = no Keypad Locking  
 1 - 999 = possible Access Code values



When programming is complete, wait a few seconds and the controller will return to the ASU's actual temperature.

## Controller Features

### System Ready Indicator Light

When not in programming mode, a flashing temperature scale light (LED) indicates that the ASU is not "Ready" for production. This LED will cease to flash when all temperature zones are within the programmed temperature tolerance window.



### Error Indication Messages

"E01" = the temperature sensor is open (no sensor attached) or has high resistance.



"E02" = the temperature sensor is shorted or has low resistance.



### To Copy and Paste Setpoints

The Copy/ Paste feature of the controller copies the hopper setpoint and pastes it as the setpoint of other temperature zones. The paste will apply to only temperature zones that are switched ON.

- Set your Hopper setpoint as described earlier in this chapter.
- then  &  Push and hold the Hopper icon. While holding, press the #1 Hose icon. Release.
-  &  Push and hold the Hopper icon again. While holding, press the #1 Head icon. Release.

The manually programmed setpoint has now been pasted in to all turned on hose and head zones.

When programming is complete, wait a few seconds and the controller will return to the ASU's actual temperature.



## Chapter 6

# Maintenance and Repair Notes

### 6.1 Security advices for maintenance and repair

Heed all security advices given in chapter 2.



Use only original parts from ITW Dynatec, otherwise ITW Dynatec's warranty is void!

Maintenance and repair work is only permitted for skilled personnel!

Always wear safety shoes, heat-resistant protective gloves, safety goggles and protective clothing that cover all vulnerable parts of the body while working on the heated unit! Risk of injury or heavy burns!



#### High Voltage! Risk of injury and mortal danger!

- All electrical connections must be made by qualified electrical personnel.
- Care must be taken to assure proper grounding prior to any disassembly.
- Lockout and tag the electrical sources as required.
- Make sure there is no electrical power on the leads you will be connecting.
- When covers are removed, high voltage sources create an electrocution hazard.
- Wear appropriate safety equipment when working with high voltage sources.



**Parts and surfaces of the unit get very hot. High temperatures! Risk of heavy burns!**



#### High adhesive temperature and adhesive pressure! Risk of injury or heavy burns!

Always assume that the system is under pressure, proceed with caution.

Keep a cool-pack, or bucket of clean water near the work area.

Place a heat-resistant catchment container/underlay under the components. Hot adhesive may come out.

CAUTION: At working temperature, molten adhesive could cause heavy burns. Let spilled out adhesive cool down first, before removing it!



CAUTION: Use only lint-free cleaning cloth and suitable cleaner for cleaning! Do not damage surfaces! Do not scratch above them with sharp-edged tools, otherwise the components will get leaky and inoperable!

**All maintenance and repair work has to be done at working temperature, except as noted otherwise. Else there is a risk of damaging the unit components!**

#### Before any service work disconnect the external power supply and switch the unit voltage-free:

1. Switch off the main switch and the controller.
2. Disconnect the power supply respectively remove the plug / cable.
3. Guard the unit against unauthorized restarting!

#### Before any service work the adhesive pressure must be relieved throughout the system. Switch the unit pressureless:

1. Disconnect the pressure air supply.
2. Turn the pressure regulator to zero bar, if necessary. Wait approximately 1 minute until the pressure is relieved.

## Equipment Preparation for Maintenance & Repair

- Adhesive processing equipment must be worked on while hot enough to soften any material residue within the assembly. This depends on the type of adhesive used with the equipment. This may require the system to be up to operating temperature before disassembled, to prevent damage to fasteners and components.
- Once disassembled, the individual parts may be cleaned by immersion in approved solvent. Surface deposits may be removed by lightly scrapped with a brass device or scrapper. Care must be taken not to damage sealing surfaces with sharp objects or sand paper.
- Components such as O-rings, fasteners and relief valves should be discarded and replaced by certified ITW Dynatec replacement parts.

## Re-Assembly Procedures and General Cautions

Unless noted, the re-assembly is simply the reverse sequence of the disassembly procedures. However, the following "cautions" should be followed (whenever they apply) for proper re-assembly:



### CAUTION

In general, all O-RINGS AND SEALS must be replaced whenever hot-melt equipment is re-assembled. All new O-rings must be lubricated with O-ring lube (PN N07588).

TAPERED PIPE THREADS are found on air pipe fittings used with the pump air supply and on the outlet filter manifold. Apply thread sealant (PN N02892) whenever tapered pipe threaded parts are re-assembled.

SOME FITTINGS used for adhesive on hot melt equipment have straight threads and O-ring seals. Use of thread sealant is not necessary with these parts, but the O-ring seals should be clean and lubricated. Tighten straight-threaded parts and fittings until their shoulders are firmly seated. Excessive torque may damage straight-threaded parts and the use of power wrenches is not recommended.

HOT-MELT RESIDUE must be cleaned from parts before they are re-assembled, particularly from threaded parts. As a precaution against adhesive residue preventing proper re-assembly, threaded parts must always be re-tightened at operating temperature.

## 6.2 Maintenance plan



### CAUTION

Heed all security advices given in chapter 6.1.

Use only original parts from ITW Dynatec, otherwise ITW Dynatec's warranty is void!

Please use only the indicated lubricants and keep the prescribed maintenance intervals. Consider in addition the enclosed regulations of manufactures.

Punctual and conscientious maintenance of the unit secures not only a trouble free function, but prevents also for expensive repair costs.

Remove all materials and tools used during the repair or maintenance from the workspace of the unit.

Place a heat-resistant catchment container/underlay under the components. Hot adhesive may come out.

Use only lint-free cleaning cloth and suitable cleaner for cleaning! Do not damage surfaces! Do not scratch above them with sharp-edged tools, otherwise the components will get leaky and inoperable!

#### Maintenance plan:

Operating time/ frequency	Inspection point / maintenance notes
Continuous	<ul style="list-style-type: none"> <li>Remove dropped out adhesive and scrap adhesive and search for the cause of that, eliminate the cause.</li> <li>Listen for abnormal sounds of the unit, e. g. from the motors, pumps, etc.</li> </ul>
Once a day	<ul style="list-style-type: none"> <li>Clean the ASU and components from dirt.</li> </ul>
Once a week	<ul style="list-style-type: none"> <li>Check pump and their seals for wearing and leaks and replace if necessary.</li> <li>Check filter for clogging and replace if necessary.</li> <li>Check pressure relief valves for function and replace if necessary.</li> <li>Check air supply connections for leaks and tighten if loose or replace if necessary.</li> <li>Check the solenoid valves for proper function and replace it if necessary.</li> </ul>
Every 3 months	<ul style="list-style-type: none"> <li>Check pump mounting screws for tightness and tighten if necessary.</li> <li>Check all hose fittings for tightness and tighten if necessary.</li> <li>Due to temperature differences a loosening of threads (threaded connections) is possible. Check all parts with threads, all screw fittings and fasteners for tightness and tighten them if necessary.</li> </ul>
Once a year	<ul style="list-style-type: none"> <li>Clean the ASU.</li> <li>Complete check-up for wearing.</li> </ul>
Every two years	<ul style="list-style-type: none"> <li>Complete maintenance.</li> </ul>

## 6.3 General Cleaning

Follow the manufacturer's directions when using industrial cleaners on the enclosure.

## 6.4 Purging the Filter Manifold of Adhesive and Pressure

As a safety precaution, purge the filter manifold before changing the output filter or before removing any of the hoses or applicators from their manifold port.



### WARNING

Heed all security advices given in chapter 6.1.

Maintenance and repair work is only permitted for skilled personnel!



Always wear safety shoes, heat-resistant protective gloves, safety goggles and protective clothing that cover all vulnerable parts of the body while working on the heated unit! Risk of injury or severe burns!

**During the purging procedure, hot adhesive can come out of the manifold under high pressure. Stand clear of the ASU until all pressure is relieved.**

Components and adhesive are hot. Take every precaution to prevent the material and hot surfaces from contacting the skin.

Refer to the illustration on next page while following these instructions.

1. The system should be at operating temperature.
2. Turn the pump/ motor OFF.
3. Switch the unit voltage-free and pressureless.
4. Guard the unit against unauthorized restarting.
5. Place a heat-resistant catchment container/underlay under the manifold's purge drain. Hot adhesive may come out!
6. With a hex key screwdriver (Allen wrench), slowly loosen the purge screw (do not remove it). Allow the adhesive and pressure to escape. All the adhesive will flow into the heat-resistant container.
7. Re-tighten the purge screw.

#### After finishing the maintenance or repair works:

- Remove all materials and tools used during the repair or maintenance from the workspace of the unit.
- Connect the voltage supply and the compressed air supply. Heat the unit up. Wait until all temperatures are within the tolerances and the adhesive in the hopper is molten completely.
- Continue production.

## 6.5 Preventive Maintenance

### Output Filter



#### WARNING

Heed all security advices given in chapter 6.1.



Maintenance and repair work is only permitted for skilled personnel!

Always wear safety shoes, heat-resistant protective gloves, safety goggles and protective clothing that cover all vulnerable parts of the body while working on the heated unit! Risk of injury or severe burns!

**During the purging procedure, hot adhesive can come out of the manifold under high pressure. Stand clear of the ASU until all pressure is relieved.**

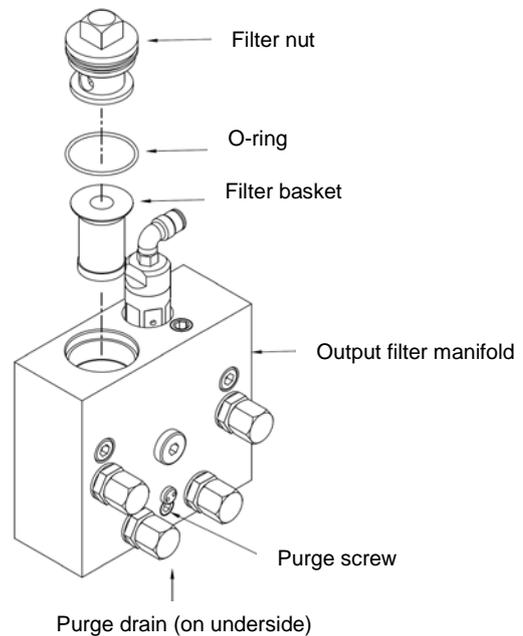
Components and adhesive are hot. Take every precaution to prevent the material and hot surfaces from contacting the skin.

#### NOTE:

**During the first weeks of operation, the output filter must be replaced monthly!**

#### To replace the Output Filter:

1. The system should be at operating temperature.
2. Turn the pump/ motor OFF.
3. Switch the unit voltage-free and pressureless.
4. Guard the unit against unauthorized restarting.
5. Place a heat-resistant catchment container/underlay under the manifold's purge drain. Hot adhesive may come out!
6. Unscrew and remove the filter nut (15.8 mm or 5/8" nut).
7. With pliers, pull the filter basket out.
8. Replace the O-ring on the filter nut. Apply O-ring lubricant (PN N07588) to the new O-ring.
9. Replace the filter basket.
10. Apply anti-seize to the threads of the filter nut and re-install. Tighten the filter nut until it is seated firmly, taking care not to cut the O-ring.



**After finishing the maintenance or repair works:**

- Remove all materials and tools used during the repair or maintenance from the workspace of the unit.
- Connect the voltage supply and the compressed air supply. Heat the unit up. Wait until all temperatures are within the tolerances and the adhesive in the hopper is molten completely.
- Continue production.

**Hose Fittings & Fasteners**

Periodically check all hose fittings and screws for tightness.

**Hopper Filter Inspection & Cleaning**

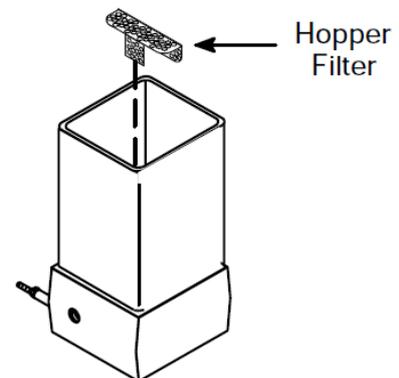
The hopper filter is a coarse screen located in the bottom of the hopper. It fits over the hopper's drain hole and prevents any large debris from leaving the hopper.

1. Pump all adhesive out of the ASU.
2. Turn the pump/ motor OFF.
3. Switch the unit voltage-free and pressureless.
4. Open the hopper lid and inspect the hopper filter.
5. If cleaning the filter is necessary, lower the temperature of the hopper 20-30°C (35-50°F) from operating temperature.

**WARNING HOT SURFACE**

**The ASU will still be hot during this procedure.  
Use insulated gloves and protective clothing when handling the hopper filter.**

6. Use a hook to pull the hopper filter out.
7. Immerse the clogged filter in flushing fluid (PN L15653), then use a hot air gun and rags to clean it.
8. Re-insert the filter into the hopper.
9. Refill the hopper.

**After finishing the maintenance or repair works:**

- Remove all materials and tools used during the repair or maintenance from the workspace of the unit.
- Connect the voltage supply and the compressed air supply. Heat the unit up. Wait until all temperatures are within the tolerances and the adhesive in the hopper is molten completely.
- Continue production.

## Flushing the System

Contaminated adhesive, accumulation of residue, or changing the adhesive formulation may require the system to be flushed. At least 6 liters (1.5 gallons) of flushing fluid is required (PN L15653).



### WARNING

Heed all security advices given in chapter 6.1.

Maintenance and repair work is only permitted for skilled personnel!



### The flushing fluid will splash easily.

Always wear safety shoes, heat-resistant protective gloves, safety goggles and protective clothing that cover all vulnerable parts of the body while working on the heated unit! Risk of injury or severe burns!

Components and adhesive are hot. Take every precaution to prevent the material and hot surfaces from contacting the skin.

1. Pump out as much of the molten adhesive as possible.
2. Reduce the pump pressure to zero by first turning the pump switch to OFF.
3. Then open the purge screw, following the instructions given in point 6.3 "Purging the Filter Manifold of Adhesive and Pressure" on previous pages.
4. Disconnect one of the supply hoses' adhesive feed from its applicator head. Do not disconnect electrical power to the head.
5. Put the hose in a secured position within a heat-resistant container to catch the used flushing fluid.
6. Add flushing fluid to the hopper and allow approximately fifteen minutes for it to reach hopper temperature. Carefully stir the flushing fluid to mix with any remaining adhesive.
7. Slowly turn the air pressure regulator clockwise to increase air pressure and pump about half of the fluid into the container.
8. Turn the regulator counter-clockwise to reduce air pressure to zero.
9. Connect the supply hose to his applicator head.
10. Remove the output filter and replace the basket.
11. Install a new O-ring on the filter nut (lubricate the new O-ring with O-ring lubricant prior to installation) and tighten the brass nut.
12. Add new adhesive to the hopper and heat to application temperature.
13. Slowly turn the air pressure regulator clockwise.
14. Actuate each applicator until all flushing fluid is removed and a steady stream of new adhesive flows.
15. Re-adjust the pump air pressure for desired flow.
16. Re-fill the hopper.



Pressure Regulator

**After finishing the maintenance or repair works:**

- Remove all materials and tools used during the repair or maintenance from the workspace of the unit.
- Connect the voltage supply and the compressed air supply. Heat the unit up. Wait until all temperatures are within the tolerances and the adhesive in the hopper is molten completely.
- Continue production.

# Chapter 7

## Troubleshooting

### Troubleshooting In General



**NOTE:** Please re-read all security advices given in chapter 2 before performing any troubleshooting or repair procedures.

All troubleshooting or repair procedures must be performed by qualified, trained technicians.



### DANGER HIGH VOLTAGE

The Dynamini ASU uses electrical power that can be life threatening and hot-melt adhesives that can cause serious burns. Only qualified persons should perform service on the ASU.



### WARNING HOT SURFACE

Severe burns can occur if unprotected skin comes in contact with molten adhesive or hot application system parts.

Some of the procedures in the following Troubleshooting Guide require working near hot adhesive.

Face shields (preferred) or safety glasses (for minimum protection), heat-resistant protective gloves and long-sleeved clothing must be worn whenever working with or around adhesive application systems.

Use proper tools for handling hot melt components.



### Handling Printed Circuit Boards (PCBs)



### DANGER HIGH VOLTAGE

Before unplugging connectors from the Control PCB, ground yourself to the ASU by touching any available unpainted cool metal surface, mounting screws, etc. This will avoid electrical discharge to the PCB assembly when you are removing and replacing connectors.



### CAUTION

Printed circuit boards (PCB) should be handled using the following procedures:

1. Wear a wrist grounding strap. If a grounding strap is not available, frequently touch a bare metal part of the ASU (unpainted frame, mounting screw, etc.) to safely discharge any electrostatic buildup on your body.
2. Handle a PCB by its edges only. Don't grip a PCB across its surface.
3. When removed from the ASU, the PCB must be packaged inside a metalized, static drain envelope. Do not place the removed PCB on a table, counter, etc. until it has first been placed in or on a static drain envelope.
4. When handing a PCB to another person, touch the hand or wrist of that person to eliminate any electrostatic charge *before* you hand the PCB to him.
5. When unwrapping a PCB from its static drain envelope, place the envelope on a *grounded, nonmetallic* surface.
6. To cushion a PCB for shipment, use only static-drain bubble pack. Do not use foam peanuts or bubble pack not known to be static draining.

### Control Printed Circuit Board

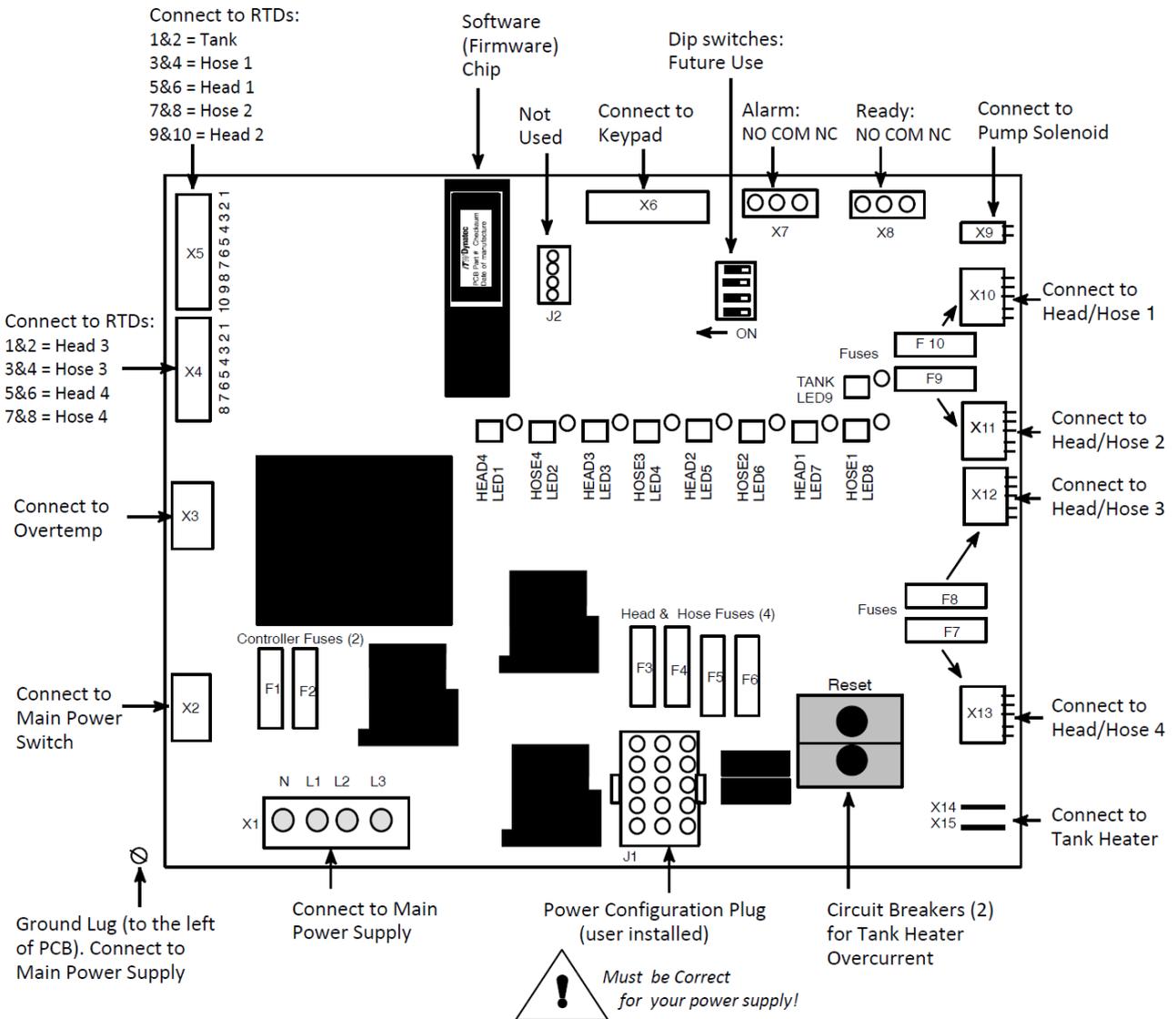
1. The green LEDs cycle on and off as each heater outputs.



#### CAUTION

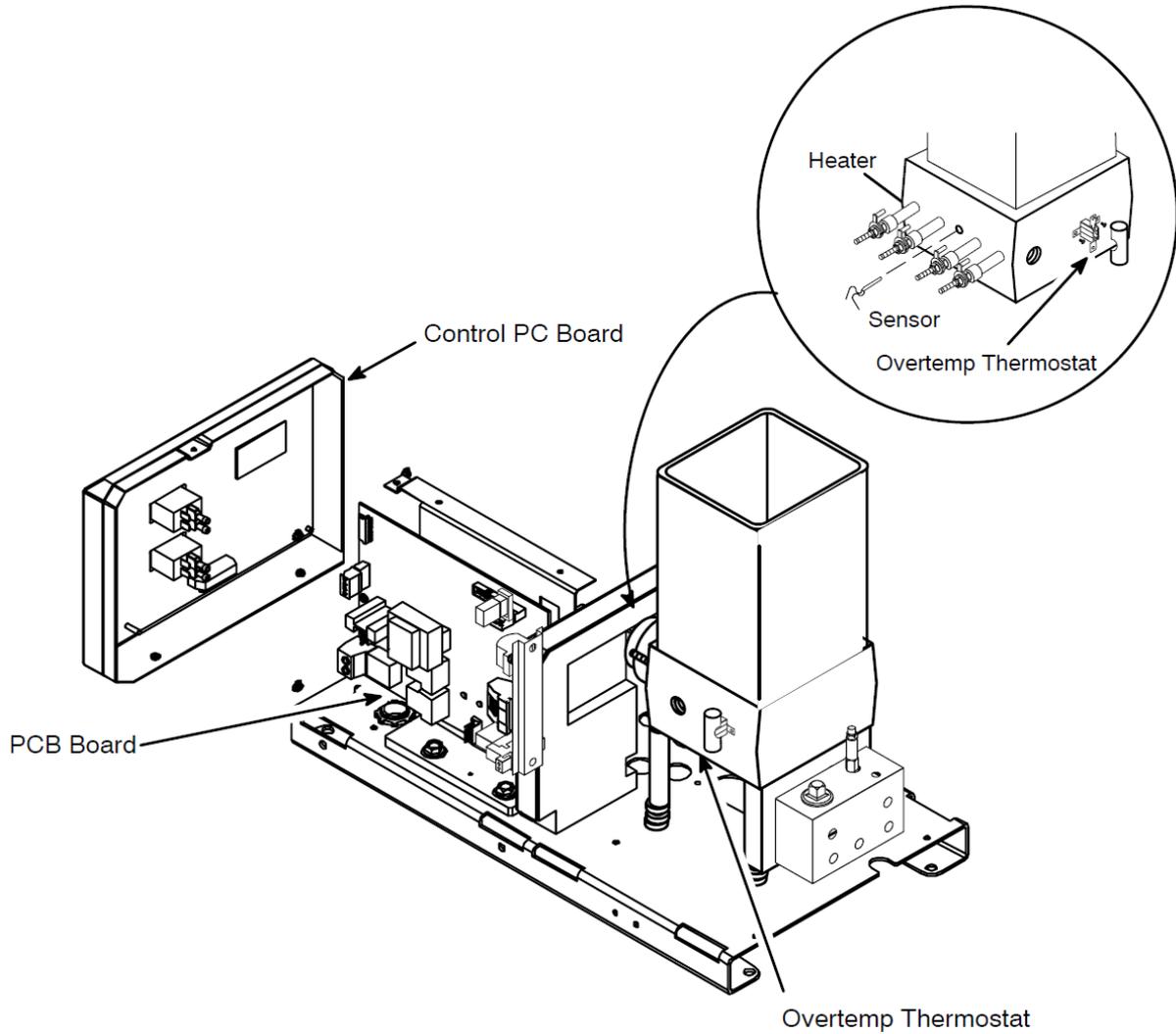
Using the incorrect power configuration plug may cause serious damage to the unit.

2. The Power Configuration Plug (user-installed) must be correct for your application or serious ASU damage will result. See Installation Chapter 4 for details.
3. If an overcurrent occurs on hopper heater(s), its circuit breaker(s) must be reset by depressing one or both of the round breakers illustrated below.
4. Fuses 1 & 2 = 1A, Fuses 3 - 6 = 6.3AF fast.



## Overtemp Thermostat

The overtemp thermostat cuts off power to all temperature zones if the hopper temperature exceeds 224°C (435°F). The overtemp thermostat must be re-set manually, by opening the ASUs front panel and pressing the reset button in the center of the overtemp switch (note: the reset button is protected by a plastic insulator).



*Location of Printed Circuit Boards and Overtemp Thermostat*

**Resistance Tables**

Temperature °F	Temperature °C	Resistance in Ohms
32	0	100
50	10	104
68	20	108
86	30	112
104	40	116
122	50	119
140	60	123
158	70	127
176	80	131
194	90	135
212	100	139
230	110	142
248	120	146
268	130	150
284	140	154
302	150	157
320	160	161
338	170	164
356	180	168
374	190	172
392	200	176
410	210	180
428	220	183

*Temperature Sensor Resistance*

Hose Length Meter	Hose Length Feet	Resistance in Ohms (240V)
1.2	4	400-490
1.8	6	291-355
2.4	8	204-249
3	10	155-189
3.7	12	125-153
4.9	16	98-120
7.3	24	61-75

*Nominal Hose Heater Resistance  
for DynaFlex-Hoses*

Watts	Resistance in Ohms (240V)
200	288
270	213
350	165
500	115
700	82

*Nominal Head Heater Resistance*

<b>Quantity Heaters</b>	2
<b>Resistance in Ohms for each Heater</b>	25

*Nominal Hopper Heater Resistance*

**Note:** Resistance is measured at ambient temperature (20°C/ 68°F).

## Troubleshooting Guide



**NOTE:** The temperatures measured on the outer surface may deviate significantly from the temperatures set and displayed. This can lead to a false conclusion (e.g. defective heating). Such a difference is normal and depends also largely on the materials used.

### Preliminary Checks: Verify the following before proceeding:

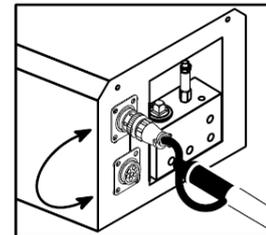
- The ASU is switched on.
- The ASU is supplied with power.
- The ASU is supplied with pneumatic air.
- Pneumatic and electrical connections are correct.
- Adhesive is in the hopper.
- The temperature controller is in operation. The setpoints are correct for the Melter, Heated Hoses and Applicators. All components are heating properly.

### Error Messages (see also Chapter 4)

- EO1 = temperature zone has an open sensor
- EO2 = temperature zone has a shorted sensor

### Hose/ Applicator Troubleshooting Tip

Hose or applicator problems can be isolated by electrically connecting the applicator and hose to an alternate socket on the ASU. If the malfunction goes with the applicator and hose, the problem will usually be in the applicator or hose that was moved. If the malfunction does not move with the applicator and hose, the problem is probably in the ASU.



Problem	Possible Cause	Solution
Controller setpoints are not adjustable.	<ol style="list-style-type: none"> <li>1. Main Power switch OFF.</li> <li>2. Control PCB inoperative.</li> <li>3. Keypad is locked.</li> </ol>	<ol style="list-style-type: none"> <li>1. Switch ON.</li> <li>2. Replace Control PCB.</li> <li>3. Unlock keypad (see Ch. 5 Programming).</li> </ol>
All channels display error message or wrong actual temperatures.	Control PCB inoperative.	Replace Control PCB.
System is not working, display is OFF.	<ol style="list-style-type: none"> <li>1. Power supply plug at X1 is not plugged in.</li> <li>2. Ribbon connector X6 or harness X2 disconnected.</li> <li>3. Fuse (F1 or F2) on the PCB is inoperative.</li> </ol>	<ol style="list-style-type: none"> <li>1. Check power supply plug connection.</li> <li>2. Check connection.</li> <li>3. Insert new fuse, if it blows, the PCB is inoperative.</li> </ol>
Actual hopper temperature is higher than set-point (overtemp).	<ol style="list-style-type: none"> <li>1. Hopper sensor not fully inserted.</li> <li>2. Hopper sensor inoperative.</li> <li>3. Inoperative PCB.</li> </ol>	<ol style="list-style-type: none"> <li>1. Check hopper sensor.</li> <li>2. Replace hopper sensor if resistance does not comply with resistance table.</li> <li>3. Replace PCB.</li> </ol>

Problem	Possible Cause	Solution
Display for Hopper = EO1.	<ol style="list-style-type: none"> <li>1. Plug connection X5 (1 &amp; 2) on PCB is loose.</li> <li>2. Temperature sensor inoperative.</li> </ol>	<ol style="list-style-type: none"> <li>1. Restore connection.</li> <li>2. Replace sensor if resistance does not comply with resistance table.</li> </ol>
Display for Hopper = EO2.	<ol style="list-style-type: none"> <li>1. Hopper sensor short circuit.</li> <li>2. Short circuit at plug connection X5 on Control PCB.</li> <li>3. Inoperative PCB.</li> </ol>	<ol style="list-style-type: none"> <li>1. Replace sensor if resistance does not comply with resistance table.</li> <li>2. Check and eliminate short circuit.</li> <li>3. Replace PCB.</li> </ol>
Hopper does not heat, but LED is ON.	<ol style="list-style-type: none"> <li>1. Circuit breaker has tripped on PCB.</li> <li>2. Hopper heater element is inoperative.</li> <li>3. Disconnection in hopper heater circuit.</li> <li>4. Inoperative PCB.</li> </ol>	<ol style="list-style-type: none"> <li>1. Re-set circuit breaker and observe ASU. If it trips again, check for a short circuit in heater.</li> <li>2. Replace hopper if element's resistance does not comply with resistance table. <i>Note: remove lead wires from heater element when measuring resistance.</i></li> <li>3. Check and repair (see wiring diagram).</li> <li>4. Replace PCB.</li> </ol>
Hopper does not heat, and LED is OFF.	Inoperative PCB.	Replace PCB.
Hose (or Head) is not heating. Hose (or Head) LED on the PCB is ON.	<ol style="list-style-type: none"> <li>1. Loose plug connection on PCB.</li> <li>2. Heating element inoperative.</li> </ol>	<ol style="list-style-type: none"> <li>1. Check connectors X10, X11, X12 and X13 and restore connection.</li> <li>2. Check resistance and compare to resistance table on page 7-4. <ol style="list-style-type: none"> <li>a. For head: if heater cartridge is inoperative, replace heater.</li> <li>b. For hose: if heating element is inoperative, replace hose.</li> </ol> </li> </ol>
Head & Hose are not heating.	<ol style="list-style-type: none"> <li>1. Disconnection between ASU and Hose (or between Hose and Head).</li> <li>2. Hose (or Head) fuse on the PCB is inoperative.</li> </ol>	<ol style="list-style-type: none"> <li>1. Check plug connections.</li> <li>2. Insert new fuse. If fuse blows again, check for a short circuit in heater. <i>Note: there are two fuses for each hose /head combination.</i></li> </ol>

Problem	Possible Cause	Solution
Hose (or Head) is not heating. Hose (or Head) LED on the PCB is OFF.	<ol style="list-style-type: none"> <li>1. Sequential heat-up may be active.</li> <li>2. Inoperative PCB.</li> </ol>	<ol style="list-style-type: none"> <li>1. Check controller display at start up. Re-program if necessary.</li> <li>2. Replace PCB.</li> </ol>
Hose (or Head) actual temperature is much higher than setpoint.	<ol style="list-style-type: none"> <li>1. Inoperative Hose (or Head) triac on PCB (corresponding PCB LED is OFF).</li> <li>2. Inoperative Hose (or Head) temperature sensor (corresponding PCB LED is ON).</li> </ol>	<ol style="list-style-type: none"> <li>1. Replace PCB.</li> <li>2. Check resistance and compare to resistance table.               <ol style="list-style-type: none"> <li>a. For head: if sensor is inoperative, replace sensor.</li> <li>b. For hose: if sensor is inoperative, replace hose.</li> </ol> </li> </ol>
Display for Hose (or Head) = EO1	<ol style="list-style-type: none"> <li>1. No Hose (or Head) is connected.</li> <li>2. Disconnection between ASU and Hose (or between Head and Hose).</li> <li>3. Disconnection at X4 or X5 on PCB.</li> <li>4. Hose (or Head) sensor is inoperative.</li> </ol>	<ol style="list-style-type: none"> <li>1. Connect Hose (or Head) if needed. If not needed, ignore display.</li> <li>2. Check plug connection.</li> <li>3. Make proper connection.</li> <li>4. Check resistance and compare to resistance table.               <ol style="list-style-type: none"> <li>a. For head: if sensor is inoperative, replace sensor.</li> <li>b. For hose: if sensor is inoperative, replace hose.</li> </ol> </li> </ol>
Display for Hose (or Head) = EO2	<ol style="list-style-type: none"> <li>1. Hose (or Head) sensor short circuit.</li> <li>2. Short circuit in plug connection between ASU and Hose (or between Hose and Head).</li> <li>3. Inoperative PCB.</li> </ol>	<ol style="list-style-type: none"> <li>1. Check resistance and compare to resistance table.               <ol style="list-style-type: none"> <li>a. For head: if sensor is inoperative, replace sensor.</li> <li>b. For hose: if sensor is inoperative, replace hose.</li> </ol> </li> <li>2. Make proper connection.</li> <li>3. Replace PCB.</li> </ol>

### Piston Pump Troubleshooting Guide



#### WARNING HOT SURFACE & HOT ADHESIVE

Severe burns can occur if unprotected skin comes in contact with molten adhesive or hot application system parts.

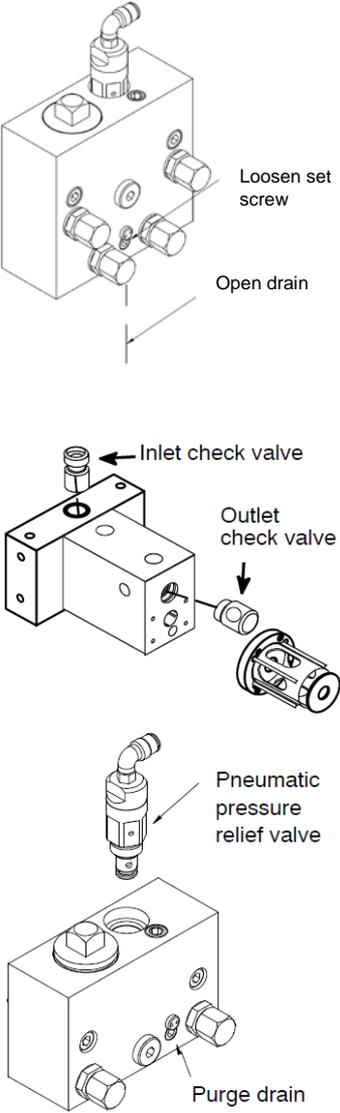


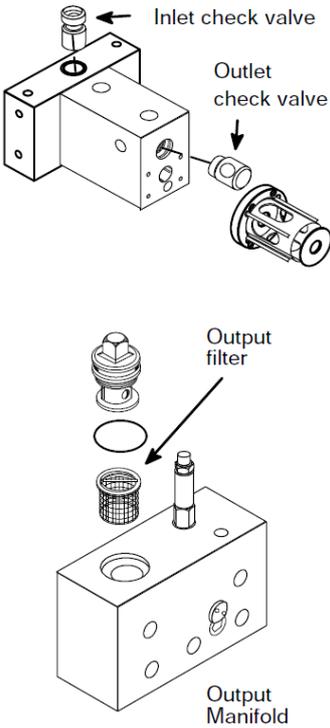
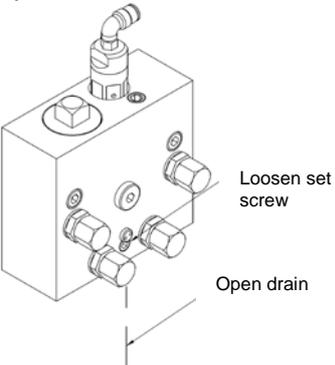
Some of the procedures in the following Troubleshooting Guide require working near hot adhesive.

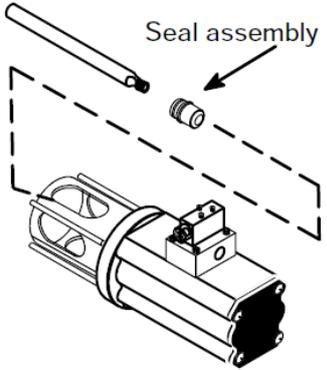
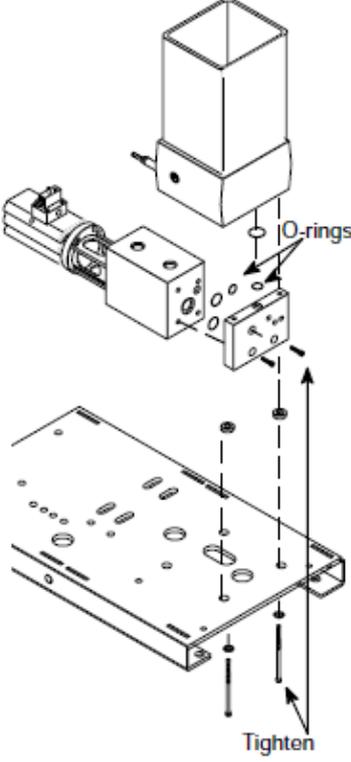
Face shields (preferred) or safety glasses (for minimum protection), heat-resistant protective gloves and long-sleeved clothing must be worn whenever working with or around adhesive application systems.

Use proper tools for handling hot melt components.

Problem	Possible Cause	Solution
<p>Pump Will Not Stroke</p>	<ol style="list-style-type: none"> <li>No air pressure.</li> <li>3-way solenoid valve is closed.</li> <li>Fault in compressed air fitting on ASU.</li> <li>Hopper temperature not ready.</li> <li>Inoperative air valve (on back end of pump air cylinder).</li> <li>Inoperative air cylinder 4-way solenoid valve.</li> <li>System is not ready.</li> </ol>	<ol style="list-style-type: none"> <li>Verify system has been provided with at least 0.5 SCFM of air at 20-100 PSIG (.014 std. cubic meters/minute at 6.8 bar).</li> <li>Verify that valve is properly connected (electrically) inside ASU. Verify that valve is properly connected to Air Control/ Filter Unit. Disconnect valve electrical leads and verify that air is passed through when 240 VAC is applied to the valve terminals. Replace valve if defective.</li> <li>Inspect the system for improper connections, loose tubing or fittings, or kinked tubing. Repair or replace tubing or fittings as necessary.</li> <li>Air valve cannot pass air until hopper has reached setpoint window. Wait until this has occurred. Check also the programming of the ready time delay. The default for this is "0".</li> <li>Remove air valve from pump. Inspect, clean and repair as necessary.</li> <li>Remove 4-way valve. Inspect, clean and repair as necessary.</li> <li>Wait until temperature scale (F/C) light is steady ON (not flashing).</li> </ol>

Problem	Possible Cause	Solution
<p>Pump Quick-Strokes in both Directions.</p> 	<ol style="list-style-type: none"> <li>1. No adhesive in hopper.</li> <li>2. Adhesive too cold to flow into pump.</li> <li>3. Adhesive used is too viscous.</li> <li>4. Pump needs priming.</li> <li>5. Problem with pump shaft piston.</li> <li>6. Large opening in system downstream of pump.</li> <li>7. Malfunctioning pneumatic pressure relief valve.</li> </ol>	<ol style="list-style-type: none"> <li>1. Verify that hopper has an adequate level of hot melt adhesive.</li> <li>2. Check ready temperature to make sure there has been enough time for the adhesive to rise to the hopper setpoint temperature.</li> <li>3. Verify that adhesive selection and hopper setpoint temperature are compatible and that both are appropriate for your application.</li> <li>4. Prime the pump by first lowering the air pressure, then letting the pump cycle very slowly until primed.</li> <li>5. Remove the shaft and piston from the pump. See Chapter 8 for disassembly/ assembly procedures. Verify that piston diameter is correct: 19.63mm to 19.66mm (0.773" to 0.774") and that piston is tightly assembled to end of shaft.</li> <li>6. Inspect system for open filter drain, disconnected or ruptured hose, or disconnected head. Repair as necessary.</li> <li>7. Open the purge drain and insure the drain has some adhesive flow to show pressure is being released. Remove the hose and close the purge drain. Slowly raise the pump pressure to check for flow directly from the manifold. If there is no flow, replace the pneumatic pressure relief valve.</li> </ol>
<p>Pump Quick-Strokes on the Forward-Stroke Only (shaft moving into pump body).</p>	<ol style="list-style-type: none"> <li>1. Inlet check valve blocked open.</li> </ol>	<ol style="list-style-type: none"> <li>1. Clean inlet check valve. This may be possible without removing the pump by cleaning debris through the pump inlet hole at bottom of hopper.</li> </ol>

Problem	Possible Cause	Solution
<p>Pump Motion on the Forward Stroke (shaft moving into pump) is very slow or stopped.</p>	<p>1. Outlet check valve is blocked closed.</p>	<p>1. Clean outlet check valve.</p>
<p>Pump Quick-Stroke on the Reverse Stroke (shaft moving out of pump).</p>	<p>1. Outlet check valve is blocked open.</p>	<p>1. Clean outlet check valve.</p>
<p>Low or Inconsistent Adhesive Output</p>  <p>The diagram illustrates the internal components of the pump assembly. It shows an inlet check valve at the top left, an outlet check valve on the right side, an output filter located below the outlet check valve, and an output manifold at the bottom. Arrows point from the text labels to the corresponding parts in the assembly.</p>	<p>1. Output filter clogged.</p> <p>2. Adhesive used is too viscous.</p> <p>3. Blocked hose.</p> <p>4. Blocked applicator heads.</p> <p>5. Pressure relief valve in output block is opening.</p>	<p>1. Remove and inspect output filter. Clean or replace as necessary. See Chapter 6 "Preventive Maintenance" for procedure.</p> <p>2. Verify that system components are at proper temperature and that selected adhesive is correct for your application.</p> <p>3. Inspect hose for kinks, internal plugs of debris or char (degraded adhesive). Clean or replace hoses as required.</p> <p>4. Inspect heads for plugged nozzles, proper air valve operation or plugged filters. Clean or repair heads as needed.</p> <p>5. Verify that air supplied to pump is less than 6.8 bar (100 PSIG). If relief valve is opening with air pressure less than 6.8 bar (100 PSIG), remove pump and replace pressure relief valve.</p>
<p>Adhesive Leak at Filter Drain Spout</p>  <p>The diagram shows a close-up of the filter drain valve assembly. A label 'Loosen set screw' points to a small screw on the valve. Another label 'Open drain' points to the drain spout. The assembly is mounted on a manifold.</p>	<p>1. Filter drain valve not tightly closed.</p> <p>2. Filter drain valve blocked open.</p>	<p>1. Close and tighten filter drain valve.</p> <p>2. Remove filter plug assembly from output manifold, clean and re-install.</p>

Problem	Possible Cause	Solution
<p>Adhesive Leak at Pump Shaft Seal</p> 	<ol style="list-style-type: none"> <li>1. Pump seal out of proper position inside air motor assembly.</li> <li>2. Seal inoperative.</li> </ol>	<ol style="list-style-type: none"> <li>1. Remove seal from air motor and inspect it. Replace worn or damaged seal. Be sure there are no burrs or other sharp edges on pump shaft or on installation tools that could damage the new seal.</li> <li>2. Remove seal from air motor and inspect it. Replace worn or damaged seal. Be sure there are no burrs or other sharp edges on pump shaft or on installation tools that could damage the new seal.</li> </ol>
<p>Adhesive Leak at Pump-Mounting Block Interface</p> 	<ol style="list-style-type: none"> <li>1. Pump assembly nuts missing or loose.</li> <li>2. Inoperative mounting block O-ring(s).</li> <li>3. Helicoil insert pulled out of hopper.</li> </ol>	<ol style="list-style-type: none"> <li>1. Verify that both pump nuts are tightly assembled to the pump mounting block thru the base plate with the proper hi-collar washer.</li> <li>2. Inspect the three O-rings and replace if worn or damaged. Be sure there are no burrs or other sharp edges in the O-ring grooves or on installation tools that could damage a new seal.</li> <li>3. Remove pump and inspect bottom of hopper. Repair or replace hopper as necessary.</li> </ol>



# Chapter 8

## Disassembly & Re-assembly Procedures

### Disassembly Procedures



**NOTE:** Please re-read all security advices given in chapter 2 before performing any troubleshooting or repair procedures.

All troubleshooting or repair procedures must be performed by qualified, trained technicians.



### DANGER HIGH VOLTAGE

Once the system is up to temperature, disconnect and lockout all incoming power before proceeding.

The Dynamini ASU uses electrical power that can be life threatening and hot-melt adhesives that can cause serious burns. Only qualified persons should perform service on the ASU.



### WARNING HOT SURFACE

Severe burns can occur if unprotected skin comes in contact with molten adhesive or hot application system parts.

Some of the procedures in this chapter require working near hot adhesive.

Face shields (preferred) or safety glasses (for minimum protection), heat-resistant protective gloves and long-sleeved clothing must be worn whenever working with or around adhesive application systems.

Use proper tools for handling hot melt components.



When needed, cross-reference the exploded-view component drawings in Chapter 10 with each procedure in addition to the instructions and illustrations given in this chapter. Read the "Cautions" under point Re-Assembly Procedures before re-assembling the ASU.

### Re-Assembly Procedures



**CAUTION:** In general, all *O-RINGS AND SEALS* must be replaced whenever hot-melt equipment is re-assembled. All new O-rings must be lubricated with O-ring lube (PN N07588).

**CAUTION:** *TAPERED PIPE THREADS* are found on air line fittings used with the pump air supply and on the outlet filter manifold. Apply thread sealant (PN N02892) whenever tapered pipe threaded parts are re-assembled.

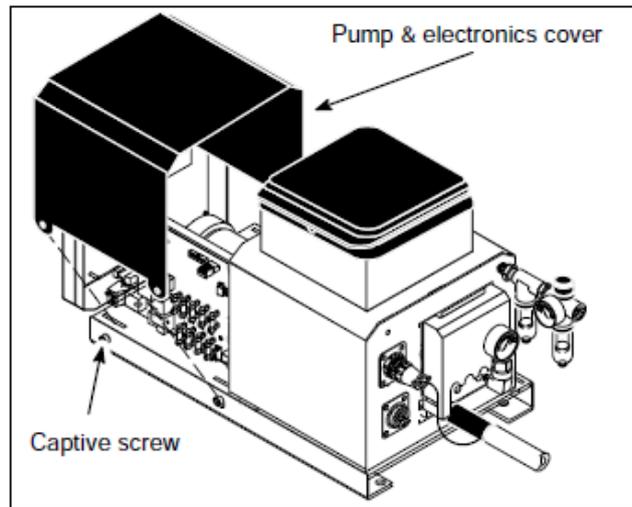
**CAUTION:** *SOME FITTINGS* used for adhesive on the ASU have straight threads and O-ring seals. Use of thread sealant is not necessary with these parts, but the O-ring seals should be clean and lubricated. Tighten straight-threaded parts and fittings until their shoulders are firmly seated. Excessive torque may damage straight-threaded parts and the use of power wrenches is not recommended.

**CAUTION:** *HOT-MELT RESIDUE* must be cleaned from parts before they are re-assembled, particularly from threaded parts. As a precaution against adhesive residue preventing proper re-assembly, threaded parts must be re-tightened at operating temperature.

**To Remove the Pump & Electronics Cover**

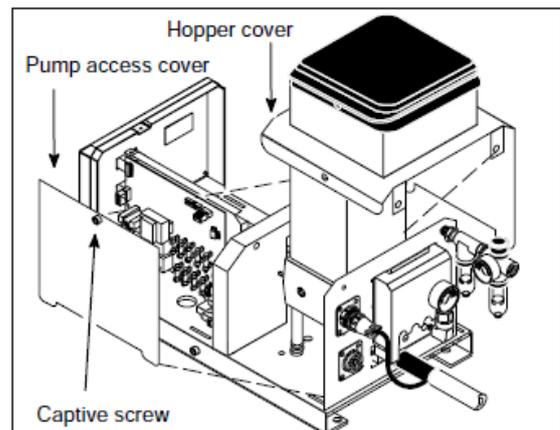
(See illustration in Chapter 10)

1. Loosen the four captive screws (two on each side) along the bottom of the pump and electronics cover.
2. Lift the cover straight up and out of its slots in the base.

**To Remove the Hopper Cover**

(See illustration in Chapter 10)

1. Loosen the two captive screws along the bottom of the hopper cover.
2. Remove the access cover screw, then lift the access cover out of its slots in the base.
3. Remove the screw that attaches to the heat shield.
4. Remove the two screws that attach the back panel to the hopper cover.
5. Lift the hopper cover up and out of its slots in the base.

**To Remove the Hopper Lid**

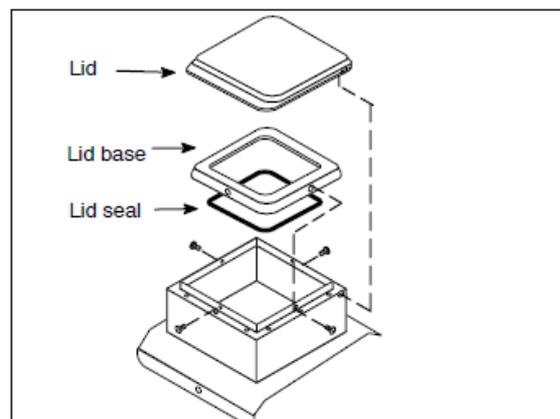
(See illustration in Chapter 10)

1. Remove the four flat head screws which are located one on each side of the lid base.
2. Pull the lid up to remove.

**Lid Seal Replacement:**

The lid seal (O-ring) is located inside the lid base.

1. Remove the old seal, which rests against the top of the hopper.
2. Install the new seal into the groove provided.



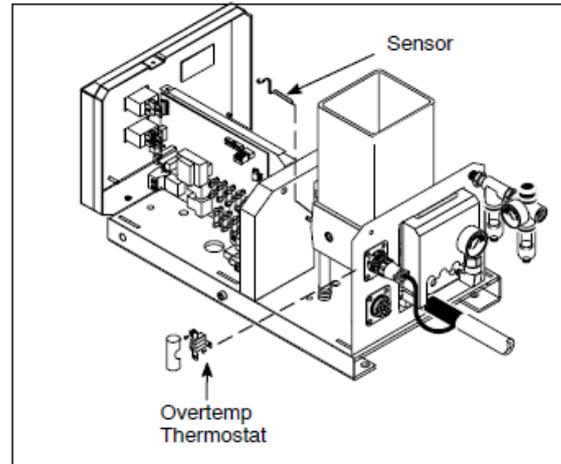
### **Thermostat Replacement**

(See illustration in Chapter 10)

1. Remove the access cover screw.
2. Lift the access cover out of its slots in the base.

#### **Overtemp Thermostat Replacement:**

1. Remove the two screws and slip the terminals and the hopper ground wire off of the thermostat.
2. Remove the thermostat from the base of the hopper.
3. Install new thermostat with two screws and re-install the terminals and hopper ground wire.



### **RTD Sensor Replacement**

(See illustration in Chapter 10)

1. Remove the pump and electronics cover. The RTD sensor is centered between the cast-in heaters on the base of the hopper.
2. Slip the sensor out of its adapter.
3. Unplug the sensor wires from pins 1 thru 4 at X4 on the Control PCB (see PCB illustration in Chapter 7).

## **To Access the Control Panel Components**

(See illustrations on previous page and in Chapter 10).

To remove the following components, remove the face plate of the control panel enclosure only.

### **Printed Circuit Board Fuse Replacement:**

*Note: Use replacement fuses of the same type. If in doubt, obtain the correct fuses from ITW Dynatec.*

1. Locate desired fuse by referring to PCB illustration in Chapter 7.
2. Grasp fuse from both ends and pull out of the printed circuit board.

### **Main On/ Off Switch Replacement:**

1. From the back of the switch, free it by squeezing it from either side.
2. Remove the switch through the back.
3. Disconnect four color-coded plug-in leads from the old switch and connect them to new switch.

### **To Remove the Control PCB:**

Reference the manual section entitled "Handling Printed Circuit Boards" in Chapter 7 before proceeding.

1. Remove the control enclosure.
2. Disconnect all electrical connections to the board.
3. Loosen the three large screws (behind the PCB) holding its heat sink and slide the PCB assembly out.

## To Access and to Remove Piston Pump

(See illustration in Chapter 10)



### WARNING HOT SURFACE

If the pump is not operable but the heating system will function, raise the temperature of the application system to the operating temperature to aid in the pump disassembly process. Otherwise, a controlled heating method is recommended to melt hardened hot melt adhesive. Never use a torch or an open flame on any of the components of the application system.

Severe burns can occur if unprotected skin comes in contact with molten adhesive or hot application system parts.



Some of the procedures in this chapter require working near hot adhesive.

Face shields (preferred) or safety glasses (for minimum protection), heat-resistant protective gloves and long-sleeved clothing must be worn whenever working with or around adhesive application systems.

Use proper tools for handling hot melt components.



### DANGER HIGH VOLTAGE

Once the system is up to temperature, disconnect and lockout all incoming power before proceeding.

The Dynamini ASU uses electrical power that can be life threatening and hot-melt adhesives that can cause serious burns. Only qualified persons should perform service on the ASU.

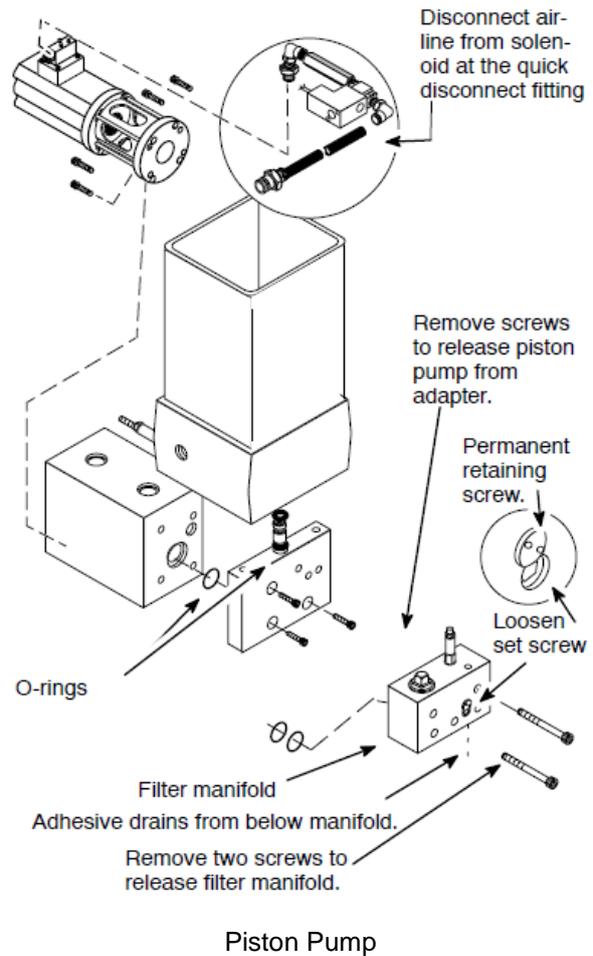


### WARNING HIGH PRESSURE

**BEFORE PERFORMING ANY PUMP REPAIR, YOU MUST PURGE ALL ADHESIVE AND PRESSURE FROM THE DYNAMINI SYSTEM.**

Position a heat-resistant container under the filter manifold's purge drain. Carefully loosen the purge screw located in the port of the outlet filter manifold and allow adhesive and pressure to escape. See point 6.3 "Purging the Filter Manifold of Adhesive and Pressure" for detailed instructions.

1. Remove the pump and electronics cover. See previous pages.
2. Turn OFF air pressure, then disconnect the air line from the solenoid valve mounted on the top of the air motor.
3. Disconnect the two wires that run from the solenoid to the circuit board.
4. Loosen set screw to drain excess glue from filter manifold.
5. Remove the two socket head cap screws that connect the filter manifold to the pump adapter.
6. Remove the three screws that hold the pump to the pump adapter.
7. Remove the pump/ air motor assembly from the end of the unit.
8. **To re-assemble:**
  - Replace three O-rings between pump & pump adapter and filter manifold and pump adapter.
  - Tighten the three pump adapter screws to the pump. Torque should be approximately 22.6 Nm (16.7 ft/lb) at room temperature. With pump and hopper at 177°C (350°F), the maximum allowable torque on pump assembly screws is 18.8 Nm (13.9 ft/lb). A Piston Pump Rebuild Kit is available.



## Chapter 9

# Available Options & Accessories

### **Pressure Gauge Kit: PN 101175**

An optional analog pressure gauge can be mounted on the outlet filter manifold. Reading the adhesive pressure at the manifold, rather than in-line on a hose, allows for more precise monitoring of system pressure. It is also useful for troubleshooting and maintenance.

The gauge is installed at one of the adhesive ports on the manifold (see illustration on page 3-5). There is no “dedicated” port for the gauge, any one of the three ports on the manifold may be used. Fittings are included in the kit.

### **Filter Option:**

**Standard equipment on Dynamini is a 100 mesh filter PN 101247.**

**Option: 40 Mesh Outlet Filter PN 101246.**

Some situations do not call for a fine mesh outlet filter. A “clean” adhesive or one with a long pot life are examples. Systems utilizing lower temperatures or systems running in a clean environment can also utilize a 40 mesh filter.

### **Pump Options and Accessories:**

**12:1 Piston Pump: PN 105072 (120v) or 105073 (240v)**

The ASU is available with a constant-pressure, air-operated piston pump. It provides smooth output pressure and insures a high pressure adhesive output from a low pressure, compressed air input.

A piston pump is superior for intermittent applications which require no volumetric control.

**Piston Pump Repair Kit: PN 105328**

The Piston Pump Repair Kit contains the following items needed to rebuild the 12:1 piston pump:

Part Number	Description	Qty. per Unit
L16569	Bearing & Shaft Seal Kit	1
108772	O-ring, Adapter Plate	1
108700	Lube, Seal, 1/4 oz.	1
N01703	Fitting	3
N01618	Fitting	1
N07121	Ring, Seal, 111	1
N00183	O-ring, 016	1
N01614	O-ring, 910	1
N00190	O-ring, 024	1
N01702	O-ring, 904	3
N00187	O-ring, 020	1
069X270	O-ring, 025	1

### **Piston Pump Rebuild Kit: PN 109969**

This kit contains a PN 105328 Pump Repair Kit, a PN 109968 Pump & Airmotor Seals Kit, a L16534 Pump Shaft, a L21189 Inlet Check Valve Assembly and a L21188 Outlet Check Valve Assembly.

**Piston Pump Bearing and Shaft Seal Kit: PN L16569**

This kit contains all items needed to replace the piston pump's shaft seal and bearing, including seals, O-ring, pump shaft bearing and retaining ring. A seal pedestal and O-ring lubricant are also included.

**Troubleshooting Job Aide**

A set of six 8.5" x 5.5" illustrated, laminated cards (12 pages front and back) which attach to the ASU and are used for troubleshooting the Dynamini.

**Stand Assembly: PN 111243**

This static Stand Assembly comes pre-drilled with front and back mounting plates for the installation of customer-selected auxiliary controls. Designed with square holes for carriage bolts that allow for one-wrench assembly. Assembly instructions enclosed.

**Pneumatic Pressure Relief Valve Retrofit Kits:**

PN 116620 Retrofit Kit for Piston Pump ASUs.  
ITW Dynatec's PN 115540 Pneumatic Pressure Relief Valve Assembly (contained in the above kit) automatically relieves adhesive pressure whenever the unit is turned off or when pneumatic air is disconnected. The retrofit kit is detailed in Chapter 10.

**Recommended Service Parts List**

Category	Part Number	Description	Quantity
<b>Electrical:</b>	665005	PCB/ Heat Sink Assembly PT100	1
	665008	PCB/Heat Sink Assembly Ni120	1
	108566	Fuse, 6.3 A/ Super-Fast 5x20 (on PCB)	8
	102762	Fuse, 1 A (on PCB)	2
	110720	Sensor Assembly, Tank	1
	104166	Over-Temperature Thermostat	1
	110747	Switch, DPDT	1
	111941	Circuit Breaker, 15A	2
<b>Filters:</b>	101246	Filter Basket, 40 mesh/ 420 micron (optional)	2
	101247	Filter Basket, 100 mesh/ 149 micron	2
	103041	Hopper Filter	1
<b>Misc:</b>	069X058	O-ring 028 (filter plug)	1
	N00181	O-ring 014 (outlet filter manifold)	3
	N00188	O-ring 022	1
	N00191	O-ring 027	1
	069X270	O-ring 024	1
	N00196	O-ring 111 (for optional pressure gauge)	1
	L15653	Kit, Flushing Fluid, 1 gallon	1
	N07588	O-ring Lubricant	2
	114852	Hopper Collar Gasket	1
<b>Kits:</b>	L16569	Piston Pump Bearing & Shaft Seal Kit	1
	105328	Piston Pump Repair Kit	1
	109969	Piston Pump Rebuild Kit	1
	109982	Pressure Relief Valve Repair Kit	1

## Chapter 10

# Component Illustrations and Bill of Materials

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### **WARNING**

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All parts must be periodically inspected and replaced if worn or broken. Failure to do this can affect equipment's operation and can result in personal injury.

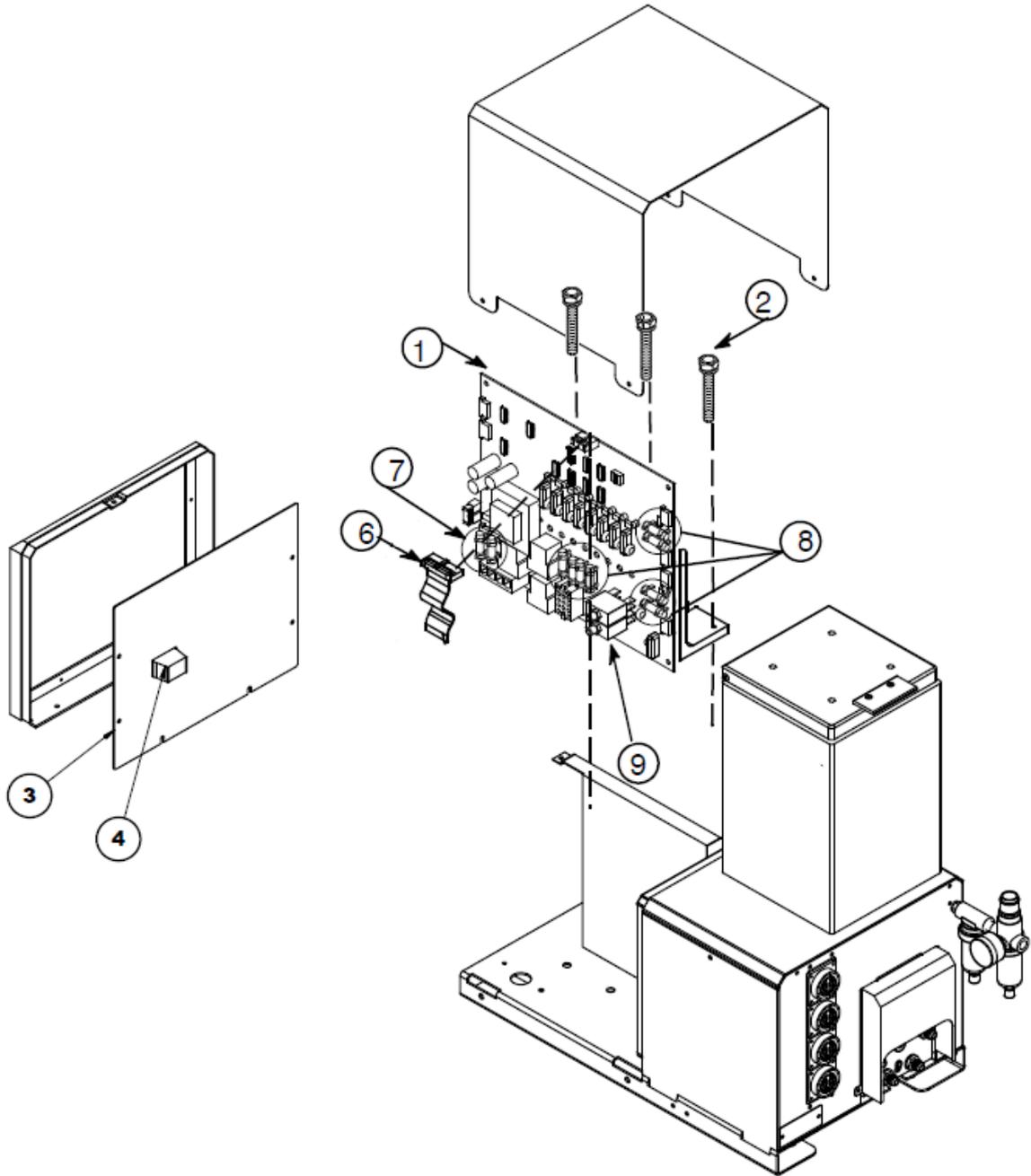
This chapter contains the component illustrations (exploded-view drawings) for each assembly of the Dynamini ASU. These drawings are useful for finding part numbers as well as for use when maintaining or repairing the equipment.

Note: Most common nuts, bolts and fasteners can be obtained locally at your hardware store. Specialty fasteners are available by contacting ITW Dynatec's Customer Service.

**Electrical Panel Assembly**

Item No.	Part Number	Description	Quantity
01	665005	PCB/ Heat Sink Assembly PT100	1
	665008	PCB/ Heat Sink Assembly Ni120	1
02	108297	Screw M8 x 20mm	3
03	117671	Control Panel Assembly	1
04	110747	Switch, DPDT, Rocker	1
05	110749	Cable Assembly, Power Switch (NOT SHOWN)	1
06	110748	Cable Assembly, Keypad/ Display	1
07	102762	Fuse, 5 x 20, 1.0A, Fast	2
08	108566	Fuse, 5 x 20, 6.3A, Time-Delay	8
09	111941	Circuit Breaker, 15A	2

\* see separate drawing and/or bill of material.



*Illustration: Electrical Panel Assembly*

**Piston Pump & Air Motor Assembly PN 105073 (240V)**

Item No.	Part Number	Description	Quantity
1	109970	Air Motor Assembly	1
2	-	2" Pump Piston	1
3*	-	2" Piston Seal 60030-4238	1
4*	-	2" Wear Strip 60624	1
5*	108379	Valve Gasket	1
6	-	2" Strke Pump Tube	1
7*	-	Pump Gasket A01046-02 (old-style pump only)	1
8	-	Mounting Flange A01046-11	1
9	105726	Mounting Flange with Float Seal	1
10	-	O-ring, -224	1
11	104437	Valve	1
12	106931	Valve Manifold	1
13	109953	Pump Shaft ( <i>Pump Shaft Old, 105070 Assembly</i> )	1
14*	-	Gasket Air Motor Cap	1
15	L16534	Piston, Pump Shaft	1
16*	N06918	Belleville Washer, 1/4	1
17*	N01739	Screw 1/4-20 x .50 HHC	1
18	110213	Solenoid Nipple	1
19	030B108	Breathing Vent	1
20	104101	Solenoid, 240V (included in PN 105073)	1
21	-	O-ring, -011	4
22	N06913	O-ring, -118	1
23*	-	Seal, Rod Wiper, .625 Viton	1
24	072X098	Street Elbow, 1/8 NPT	1
25	N06436	Elbow, 1/4 tube, Push-in x 1/8	1
26*	L16569	Seal And Bearing Assembly	1
26A	115497	1/8 NPT Street Tee	1
26B	N06506	Airline Plug (used only on ASUs equipped with mechanical pressure relief valve)	1

Note: \* These items are included in Piston Pump Rebuild Kit 109969

continue...

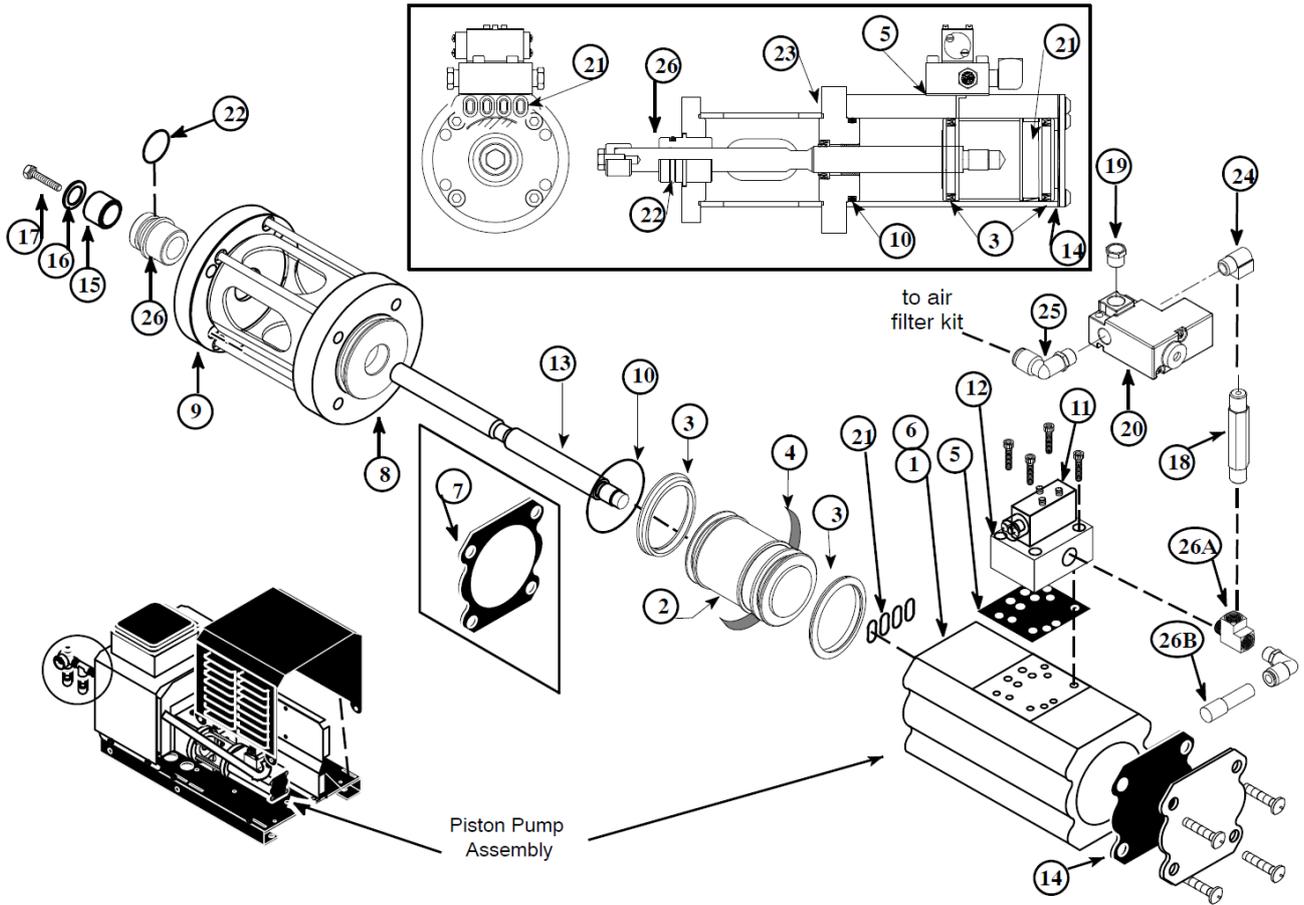


Illustration: Piston Pump & Air Motor Assembly PN 105073 (240V)

**Piston Pump & Air Motor Assembly PN 105073 (240V) continue...**

Item No.	Part Number	Description	Quantity
	<b>109970</b>	<b>Air Motor Assembly</b>	<b>1</b>
27	N00183	O-ring, -016	1
28	102243	Piston Pump Mounting Block	1
29	N01703	Plug Fitting	3
30	N01702	O-ring , -904	3
31	100344	Piston Pump Body	1
32	N01614	O-ring, -910	1
33	N00190	O-ring, -024	1
34	N01618	Plug Fitting	1
35	L16543	Pump Shaft	1
36	L16534	Piston, Pump Shaft	1
37	N06918	Bellevue Washer, 1/4	1
38	N00723	Screw 1/4-20 x .50 HHC	1
39	<b>069X270</b>	O-ring, -025	1
40	101156	Screw M6 x 20 SHC (Note: torque to 90 in/lbs (10nm))	8
41	<b>L21188</b>	<b>Outlet Check Valve, Service Assembly</b> (available as an assembly only)	1
42	N07121	O-ring, -111	1
43	<b>L21189</b>	<b>Inlet Check Valve Assembly</b> (available as an assembly only)	1
44	N00187	O-ring, -020	1
		<b>Fittings For Coalescing Air Filter</b>	1
45	N07677	TFE Tubing, .250 Diameter	2.5'
46	665033	Filter/ Regulator Assy	1
47	N06430	Brass Male Connect Fitting	1
48	105113	Screw M4 x 8 SHC	2
49	101888	Air Block	1
50	N01067	Brass Nipple	2

Note: \* These items are included in Piston Pump Rebuild Kit 109969

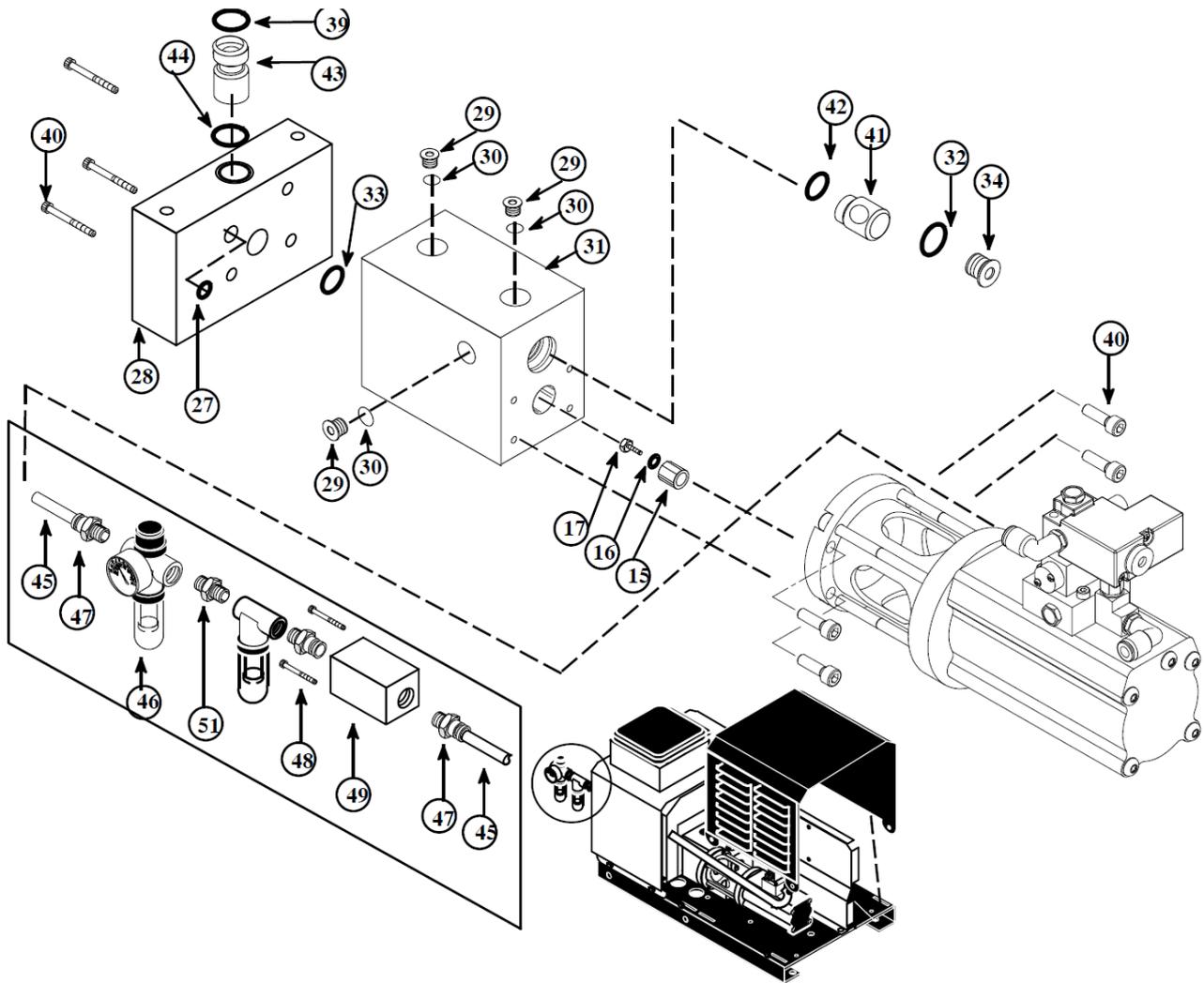


Illustration: Piston Pump & Air Motor Assembly PN 105073 (240V)

**Cabinet Assembly, Main Components**

Item No.	Part Number	Description	Quantity
1	680583	Base	1
2	680592	Front Cover End	1
3	103289	Lid assembly	1
4	680586	Hopper cover (10kg)	1
	680585	Hopper cover (5kg) (not shown)	1
5	680590	Pump and Electrical Cover	1
6	680589	Panel Mount	1
7	680588	Heat Shield	1
8	680591	Access Cover	1
9	680593	Cover, Hose, Single Filter	1
10	680584	Rear Cover End	1
11	610133	Bracket Connector, Dynacontrol	1
	680697	Bracket Connector, Nordson (not shown)	1
12	665004	Connector, Dynacontrol	4
	665007	Connector, Nordson (not shown)	4

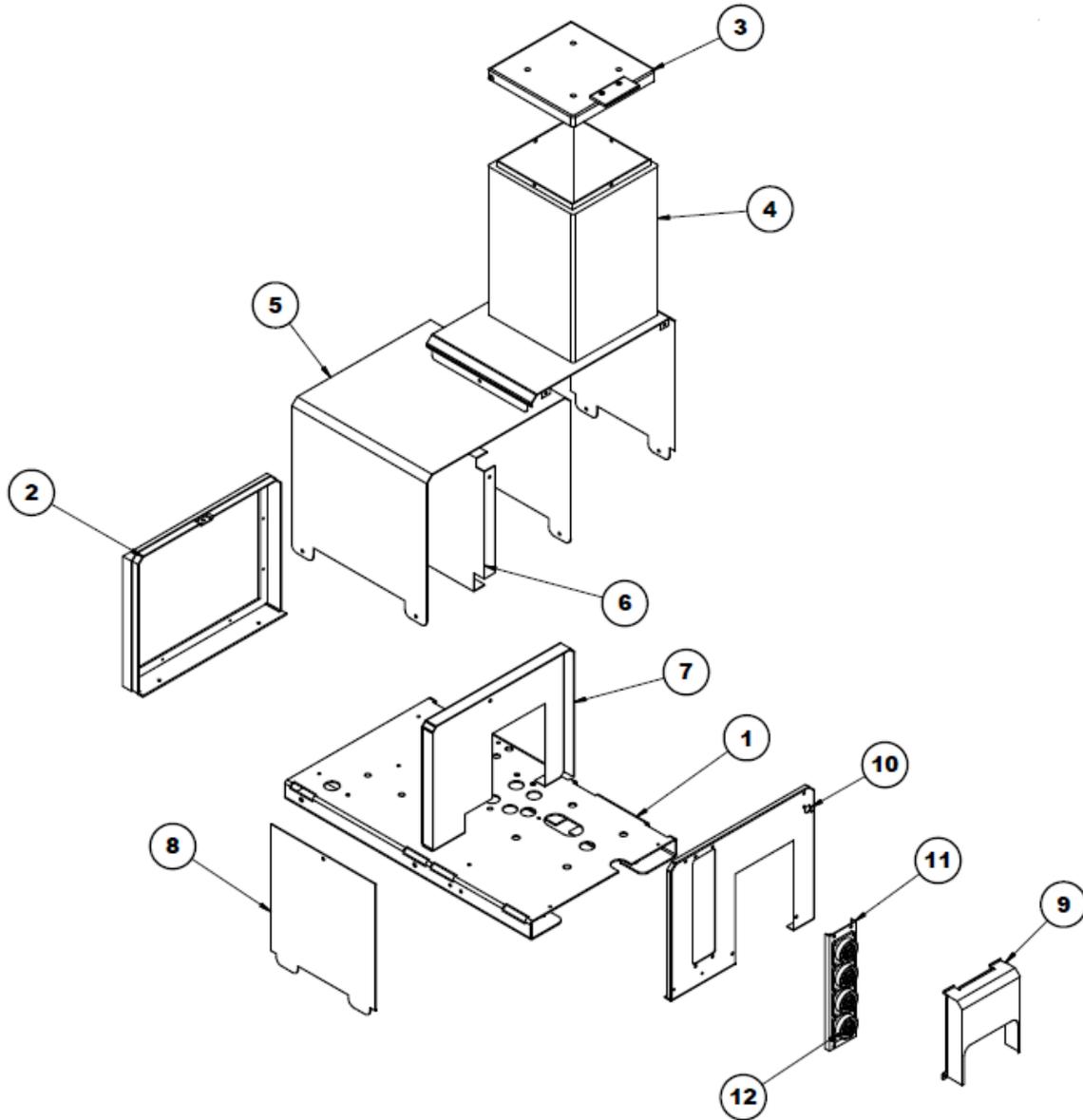


Illustration: Cabinet Assembly

**Drive Section**

Item No.	Part Number	Description	Quantity
1	102243	<b>Piston Pump Mounting Block</b>	1
2	102615	Spacer	2
3	105073	Piston Pump Assembly, 240V	1
4	102591	Hopper (5kg)	1
	103241	Hopper (10kg) (not shown)	1
5		Filter Assembly (reference melt section for details)	1
8	680583	Base	1
13	L00006	Spacer (used with aluminum block)	1
15	L00475	Spacer	4
16	105126	M8 Lock Nut	4
17	105061	M8 x 50 Stud	2
18	104570	M8 x 150mm, Stud	2
19	069X270	O-ring, #-024	1
20	N00188	O-ring, #-022	1
21	105135	Ceramic Spacer	4
22	104530	Aluminum Spacer	1
24	106157	Lock Washer, M4, Int. Tooth	1
25	105133	Screw, SHC Screw, M4 x 8mm	1
30	102998	Heat Transfer Plate, Piston Pump (option)	1
32	N00688	Flat Washer	4
35	803948	M8 x 40 Stud	2

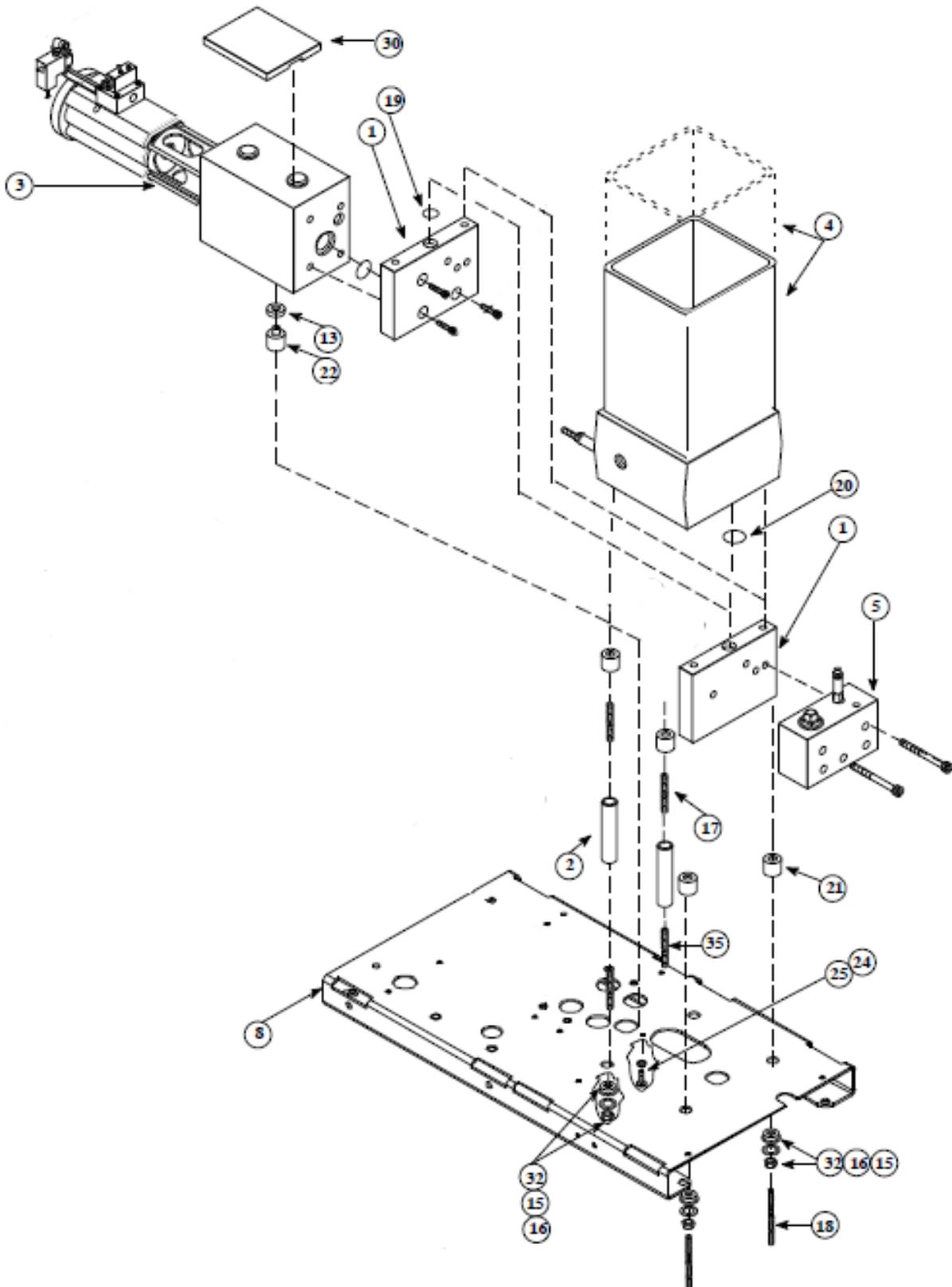


Illustration: Drive Section

**Melt Section**

Item No.	Part Number	Description	Quantity
1	102591	Hopper (5kg)	1
	103241	Hopper (10kg)	1
2	104166	Mechanical Overtemp Thermostat Assembly	1
3	105279	Temperature Sensor, RTD	1
4	Not replaceable	Cast-in Heater	4
5	103041	Hopper Filter	1
6	No P/N	Nut, M4	8
7	No P/N	Washer, M4	8
8	No P/N	Porcelain Spacer	4
9	102411	Cap, Hi Temp, .60 ID x 1.5L	2
23	L07348	Weir, Hopper	1

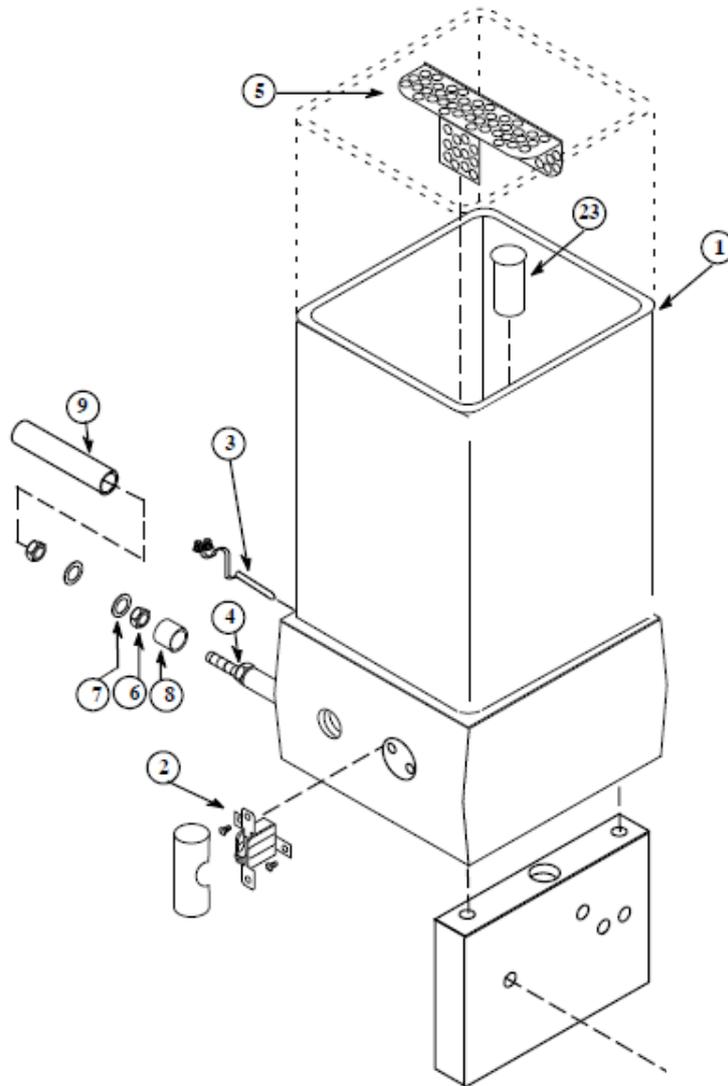


Illustration: Melt Section

### Filter Manifold Assembly

Item No.	Part Number	Description	Quantity
1	006C024	Filter nut	1
2	069X058	O-ring -028 Viton	1
3	101247	Filter 100 mesh	1
4	N00181	O-ring -014 Viton	2
5	680726	Manifold	1
6	115540	Pneumatic Pressure Relief Valve assy	1
7	N00754	Flush plug 1/4 NPT	5
8	105110	Screw M8x55mm	2
9	101624	Fitting #6 JIC x 1/4 BSPP	4
10	N08024	Cap, fitting	4
11	101625	Fitting, plug, 1/4 BSPP	1
12	101833	Screw, tamperproof, 10-32 x 1/2	1
13	104852	Drain plug	1
14	001U002	Lube, silicone, DOW 112	A/R
15	N08171	Sealant, DOW 732	A/R
16	107324	Anti-seize compound, Chesterton 710	A/R

\* A/R = As required.

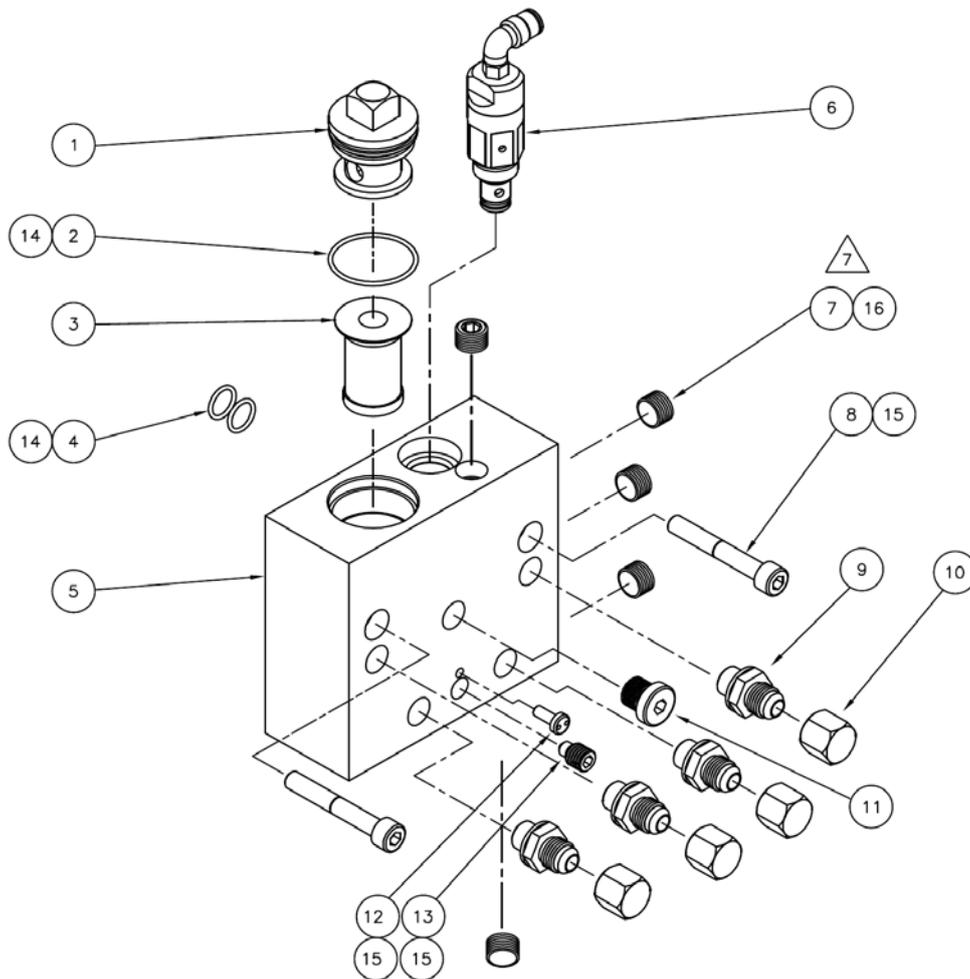
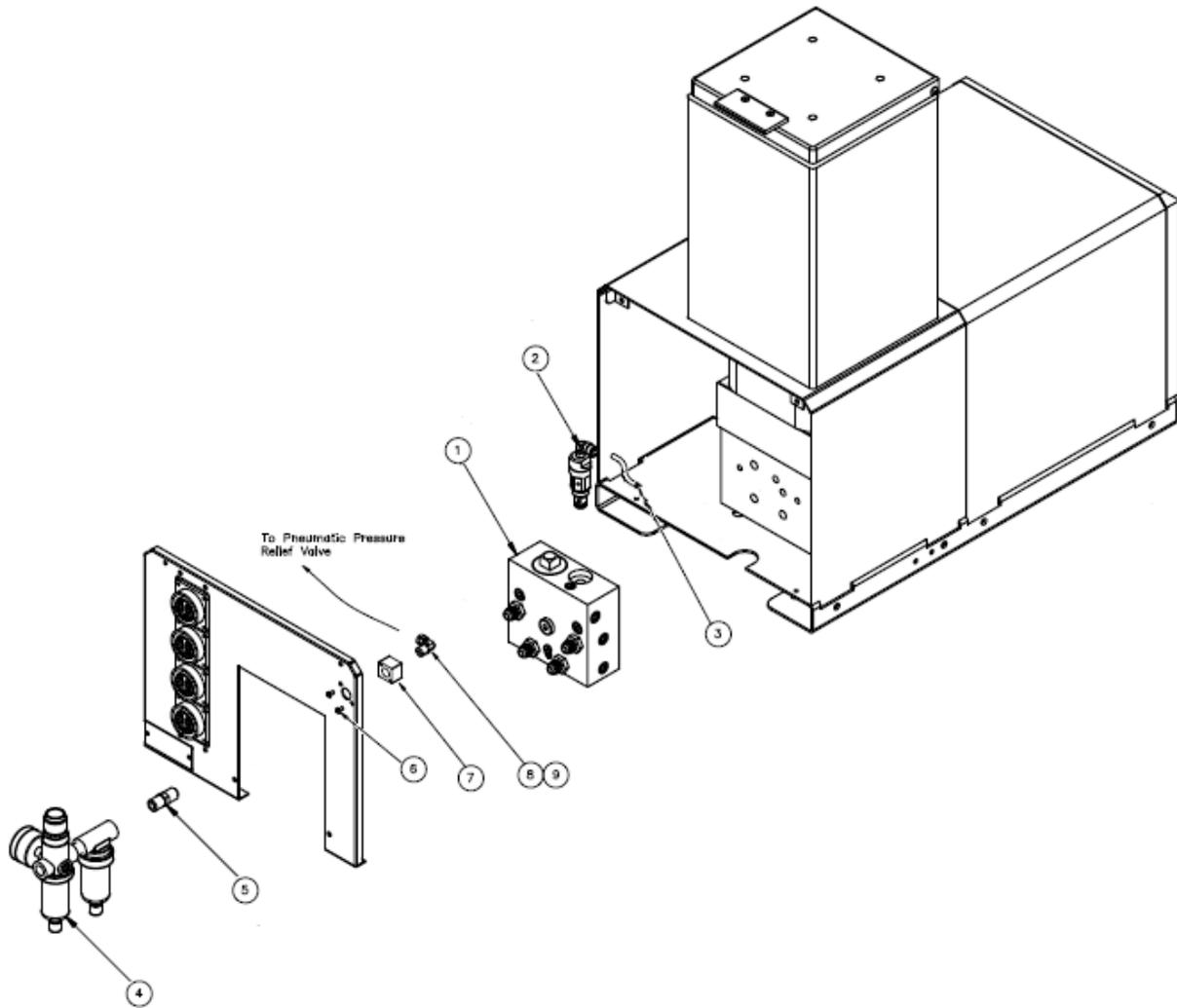


Illustration: Filter Manifold

**Pneumatic Accessories**



Item No.	Part Number	Description	Quantity
1	665003	Filter Manifold Assy, (includes item 2. For all other components see previous pages.)	1
2	115540*	Pneumatic Pressure Relief Valve	1
3	N07677	Teflon tubing 1/4" o.d.	0.7 ft
4	665033	Filter/ Regulator Assy	1
5	072X228	Fitting, hex nipple, 1/4 NPT	1
6		Screw M4x8mm	2
7	101888	Block, pneumatic transfer	1
8	N00101	Fitting 90°, 1/4 tube x 1/4 NPT	1
9	072X383	Airline support (not shown)	1

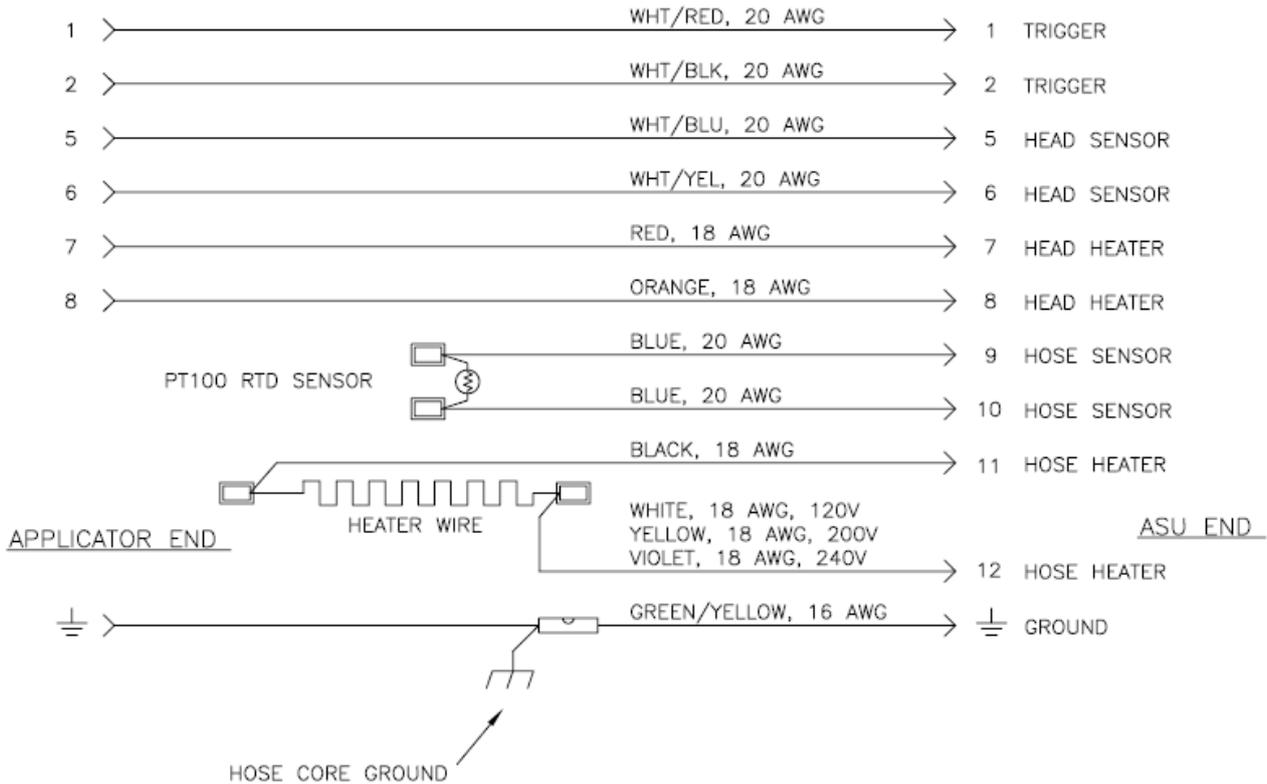
\* See detailed drawing on following pages.

# Chapter 11

## System Schematics & Engineering Drawings

### Hose Schematic, PN 101082, Rev.G

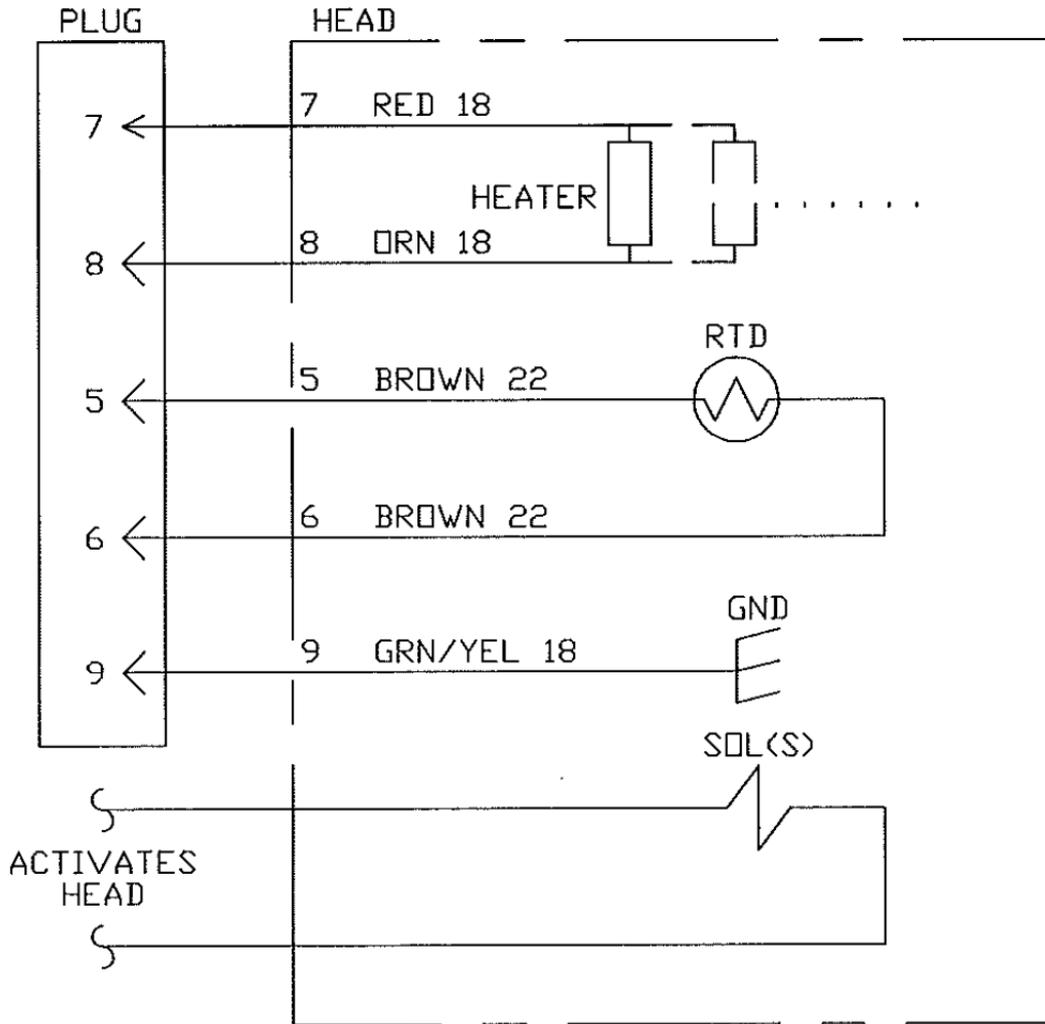
ASU to Applicator



**NOTES:**

1. All wiring is routed through the hose.
2. Wire sizes shown are for no. 6 and no. 8 hoses up to 24 ft. in length. For larger diameter and longer hoses, heater lead wires are 16 AWG. Other wire sizes and colors may be changed in special hoses, per customer request.

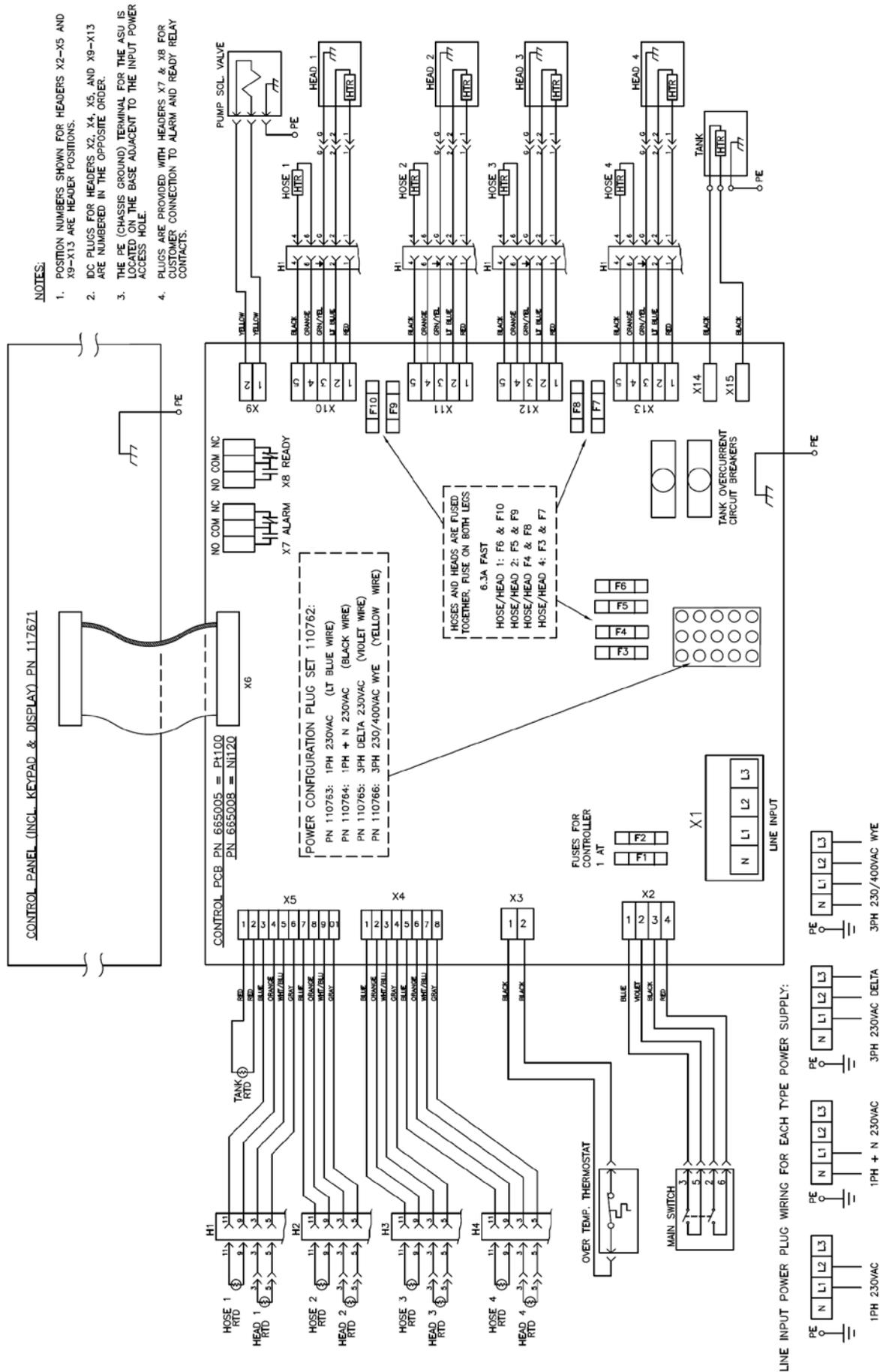
**Head Schematic, PN 103117, Rev.B**



**NOTES:**

1. All wire MIL-W-22759/10 or 12, minimum 600 Volts, 260 °C.
2. Solenoid(s) voltage and timing method depends on application.
3. RTD will be platinum 100 Ohm.

### Wiring Diagram 150064



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