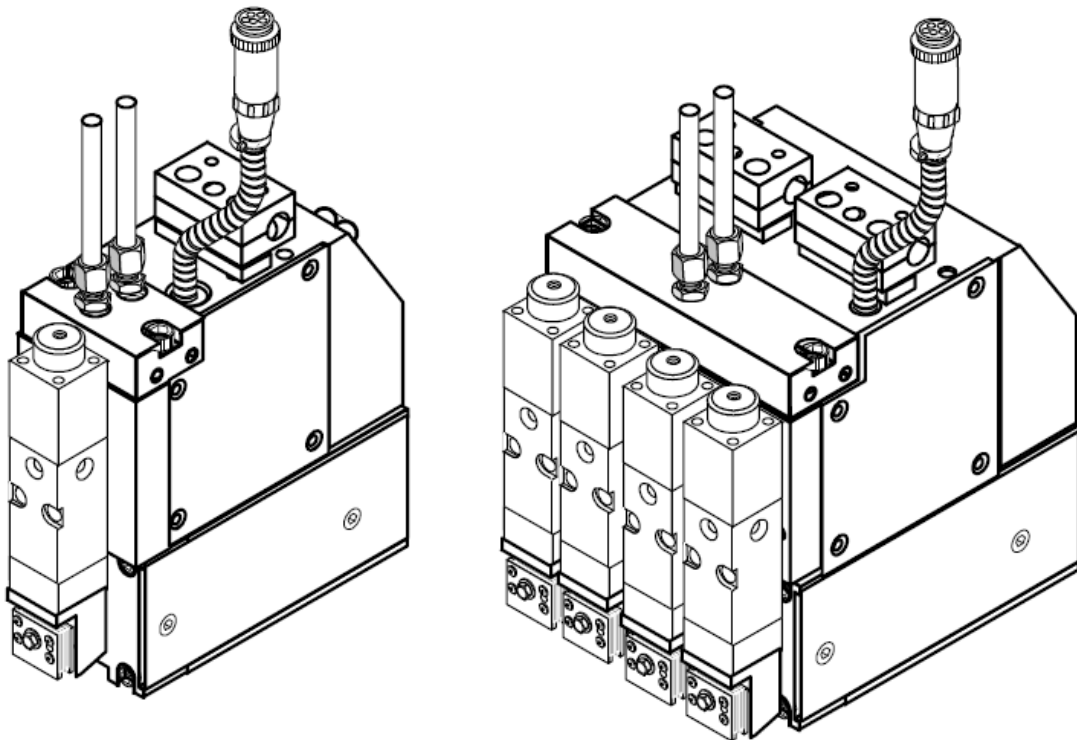


# DynaFiber UFD

## Spray Applicator, 1-6 Port

Technical Documentation



## 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

### Declaration of incorporation

according to the EU Machinery Directive 2006/42/EG, Annex II, 1.B  
for partly completed machinery

**Manufacturer:**

ITW Dynatec,  
31 Volunteer Drive  
37075 Hendersonville, TN

**Person residing within the Community authorised to compile the relevant technical documentation:**

Andreas Pahl  
ITW Dynatec GmbH,  
Industriestraße 28  
40822 Mettmann

**Description and identification of the partly completed machinery:**

Product / Article:	UFD Applicator Head
Serial no:	_____
Machine number:	_____
Project number:	UFD
Project name:	UFD Applicator Head
Function:	Delivery of hot melt adhesive to substrates

**It is declared that the following essential requirements of the Machinery Directive 2006/42/EG have been fulfilled:**

1.1.3.; 1.3.2.; 1.3.7.; 1.5.1.; 1.5.16.; 1.5.2.; 1.5.5.; 1.5.6.; 1.5.7.; 1.6.3.; 1.6.5.

**It is also declared that the relevant technical documentation has been compiled in accordance with part B of Annex VII.**

**It is expressly declared that the partly completed 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)

**Reference to the harmonized standards used:**

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 13850:2008	Safety of machinery - Emergency stop - Principles for design (ISO 13850:2006)

**Reference of the other technical standards and specifications used:**

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

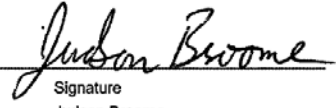
The manufacturer or his authorised representative undertake to transmit, in response to a reasoned request by the national authorities, relevant information on the partly completed machinery. This transmission takes place:

This does NOT affect the intellectual property rights!

**Important note! The partly completed machinery may be put into service only if it was determined, where appropriate, that the machinery into which the partly completed machinery is to be installed meets the provisions of this Directive.**

Hendersonville, TN, 2012.10.11

Place, date



Signature  
Judson Broome  
General Manager

## Chapter 2

# Safety Instructions

---

### 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 degrees C (300 degrees 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

---

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

---

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

---

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

---

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 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 UFD Applicator may be used only to apply 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 UFD Applicator 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 UFD Applicator 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 UFD Applicator, 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 Applicator 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 of UFD Spray Applicator

### Description

ITW Dynatec's UFD Spray Applicators are air-operated, single or multi-module hot melt adhesive applicator assemblies with integrated basket filters, which prevent particulate matter from obstructing flow through the heads.

The Applicator is heated by replaceable cartridge heating elements which are controlled by an integrated sensor and electronic control. Each model can be configured for ITW Dynatec's DynaControl, MCV or Upgrade control schemes or for Allen-Bradley PLC controls. Pressure transducer ports are standard features for all Applicators. A choice of adhesive inlets and an angled filter nut allows either vertical or horizontal spray.

Four standard UFD models supporting up to six modules, are available, ranging in width from 50mm to 150mm (2" to 6"). Their design is metric.

### Theory of Operation

Each Applicator features one or more modules (adhesive valve) mounted to a single service block. Each module is opened and closed by air pressure (solenoid valve). Springs are used to keep the stem closed when no air pressure is supplied to the head. The rate of adhesive flow from the applicator is determined by the adhesive pressure applied by the Adhesive Supply Unit's (ASU's) pump, the nozzle type and the stem stroke adjustment.

As shown in the illustration below, the heated adhesive supply hose may be connected at the rear of the applicator or at the top. Adhesive flows from the hose into the service block, through the filter and then to the module. Air pressure (Control Air) opens the module, allowing adhesive to flow through the module's nozzle.

Adapters are available to allow industry-standard pressure transducers (1/2-20 thread) to be connected to monitor adhesive pressure within the service block.

On the UFD spray models, an air preheater is located below the service block. The preheater supplies heated air (Process Air), used to fiberize the adhesive streams, to the UFD modules. The air preheater is thermally isolated from the service block and its temperature is controlled independently.

The adhesive pressure in the system is influenced by the following parameters:

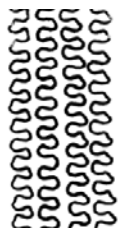
- Temperature and viscosity of the adhesive
- Size and speed of the Adhesive Application Unit's (ASU's) pump
- Cross-section and length of the adhesive hoses
- Adjusted adhesive pressure at Applicator (if adjustable pressure relief valve)
- Nozzle type

See illustration typical parts of UFD Applicator on next page.

### Nozzles compatible with UFD Applicator:

Two different UFD nozzles (Omega and Random) are available to fiberize the adhesive streams:

UFD Omega:



UFD Random:



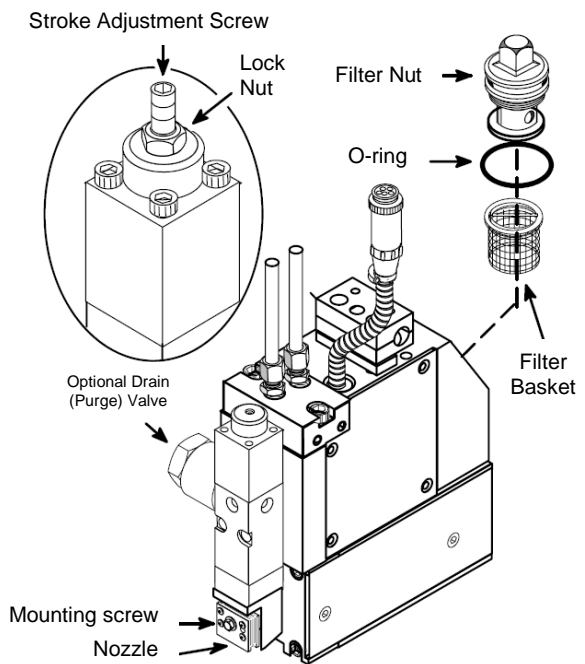
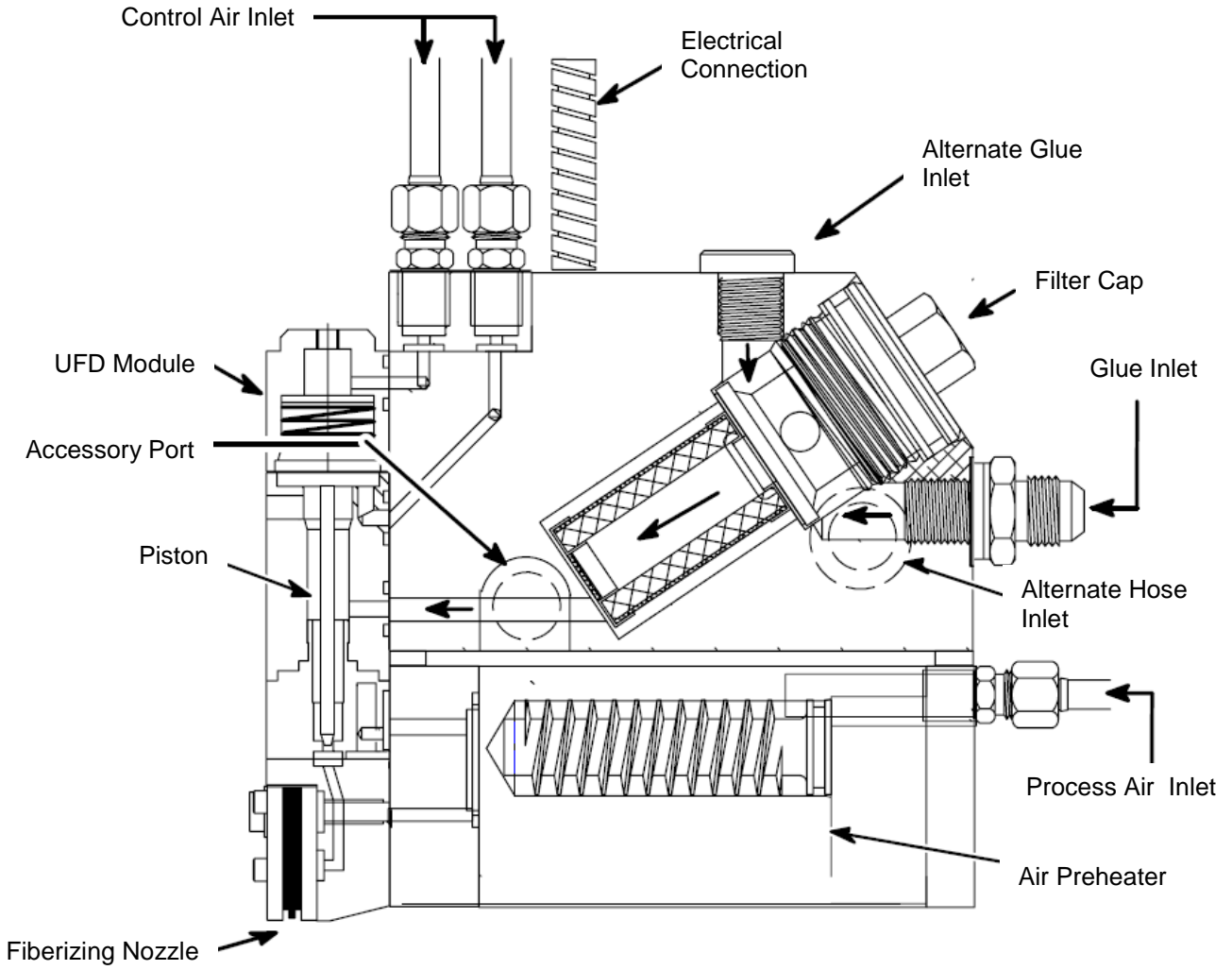


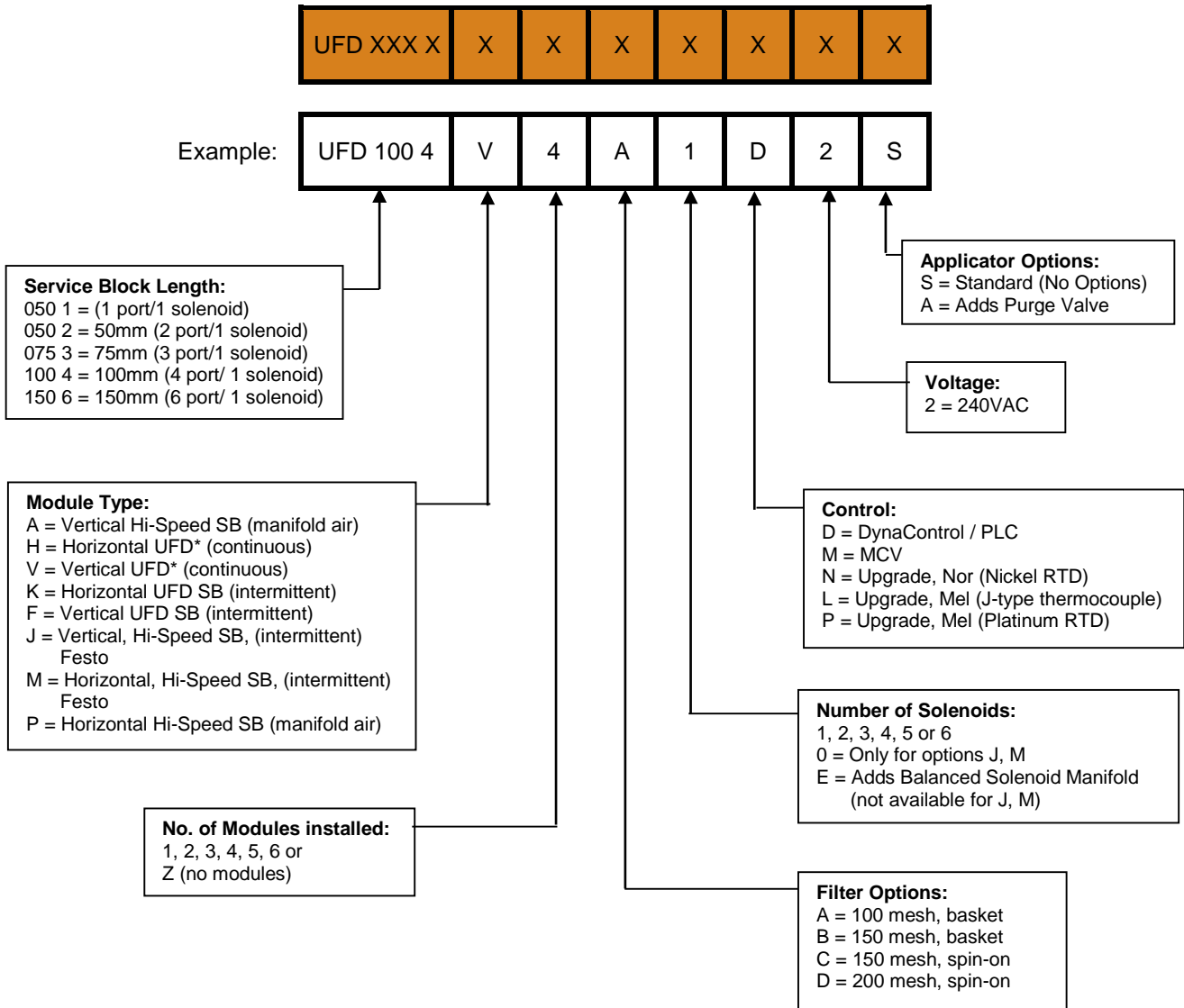
Illustration: Standard UFD Spray Applicator



## Technical Data

Model UFD	0501	0502	0753	1004	1506
Number of Modules	1	2	3	4	6
Spacing between nozzle centers	-	25.2 mm	25.2 mm	25.2 mm	25.2 mm
Wattage Adhesive Manifold	450	450	525	600	900
Wattage Standard Air Preheater	600	600	900	1200	1200
Wattage Slim Line Preheater	400	400	600	800	1200
Supply voltage	200-240 VAC/ 1p/ 50-60 Hz				
Dimensions	See dimensional layout on following page.				
Weight (including module and solenoid valve)	Model UFD0501: 3.52 kg (7.75 lb.)				
Mounting	M6 x 1 screws with insulators or 1/2" rod mount, insulated clamps, 12 to 13 mm rod				
Temperature range	38°C to 218°C (100°F to 425°F)				
Warm-up time	15 minutes for cold start/ 5 minutes for module change only				
Adhesive viscosity	100 to 30.000 mPa. sec. (100 to 30.000 centipoise)				
Adhesive pressure range	68 bar maximum (1000 psi maximum)				
Noise emission	70 dB(A)				
Air pressure range	4.1 to 6.9 bar (60 to 100 psi)				
Air pressure range for high speed snuffback modules (only)	4.8 to 6.2 bar (70 to 90 psi)				
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)				
CE approval granted	Yes				

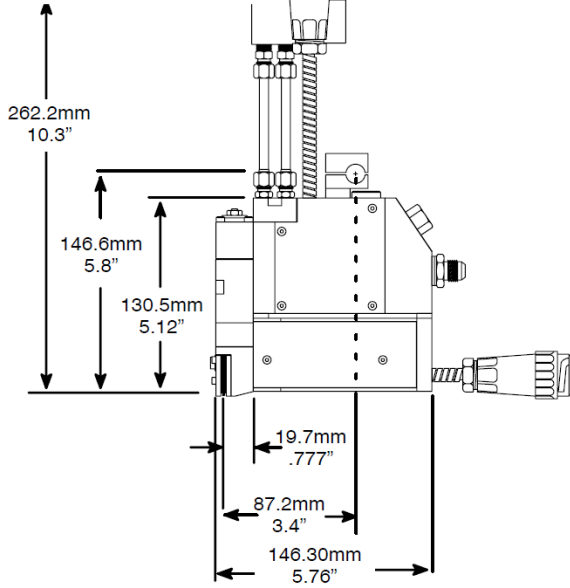
**Model Designation Guide**



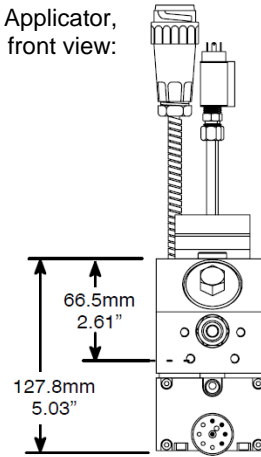
Notes: When specifying an Applicator with no modules, (see "Z" above), the Module Type (H, V, etc.) must still be specified for the application.

## Dimensions

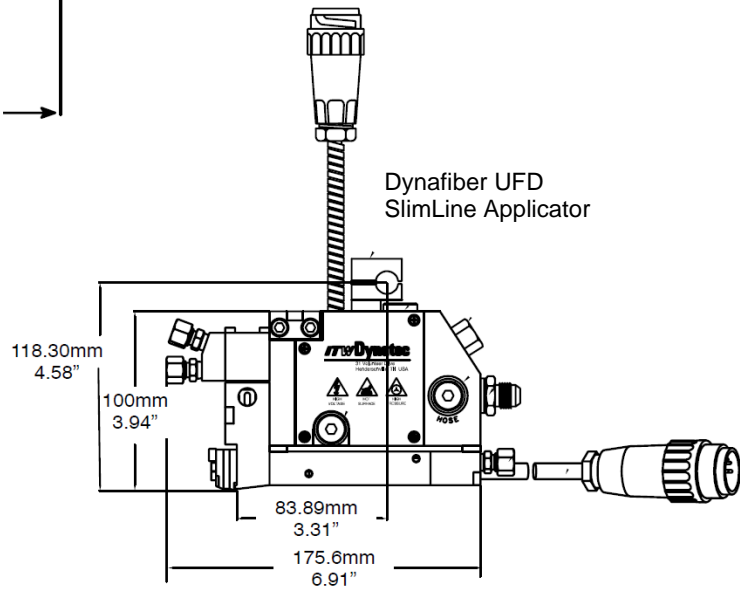
Dynafiber UFD Applicator, side view:



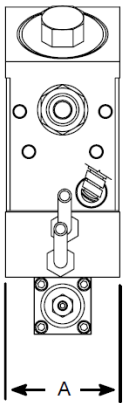
Dynafiber UFD Applicator, front view:



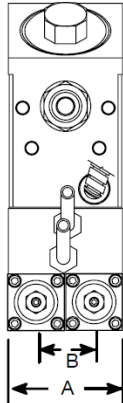
Model No.	Width	Centers
	A	B
UFD0501	50mm 2"	-
UFD0502	50mm 2"	25.2mm 1"
UFD0753	75mm 3"	50.4mm 2"
UFD1004	100mm 4"	75.6mm 3"
UFD1506	150mm 6"	126mm 5"



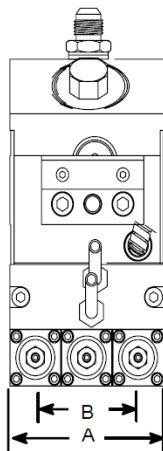
UFD0501



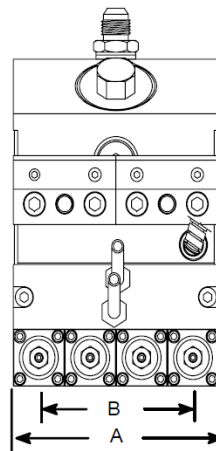
UFD0502



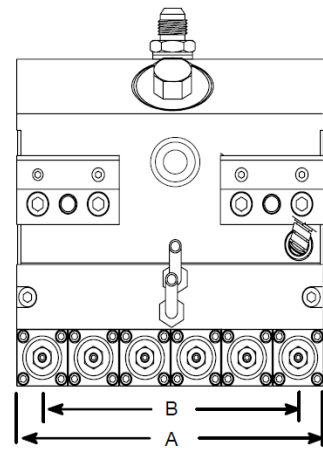
UFD0753



UFD1004



UFD1506



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# Chapter 4

## Installation & Startup



### 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

### Place requirement

Install the Applicator in the machine 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!
- The service block's incoming electrical power and temperature control is supplied through the flexible cable exiting the adhesive supply hose cuff or through an extension cable from the ASU. The Applicator has a circular, plastic connector which mates with the connector attached to this cable.
- Incoming power and temperature control for the air preheater, if applicable, is supplied by a cable extension from the ASU.

### 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.
- Incoming module-activation air is supplied through a solenoid valve. It must be clean and unlubricated.  
*For conventional modules* (module option H, V, HQ or VQ in the model number (see previous pages), the module activation air is controlled by a four-way solenoid valve and should be separately regulated and maintained at a pressure between 4.1 to 6.9 bar (60 to 100 psi). Air lines from the solenoid valve should be 6.4mm (1/4 inch). Head air inlet ports are G 1/8 threads (1/8 NPT).  
*For snuffback modules* (all other module options), the module activation air is controlled by a either a four-way or a five-way solenoid valve. See Appendix A and B for details on the solenoid setup.
- Incoming process (preheater) air must be supplied through a pressure regulator. The air must be clean and unlubricated. Operating pressure depends on the choice of nozzle. The Applicator's air supply line must be at least 1/4" O.D. For the UFD 150 applicator, 3/8" O.D. airline is recommended.



### 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 & Startup



### CAUTION

- All work on or with this unit is only permitted for skilled personnel!
- Pay attention to the electrical schematics!
- Clean and dry air and air pressure of 6 bar to the applicator solenoids is required.
- All heating elements have to be mounted and operated secured and according to the valid regulations.



### WARNING

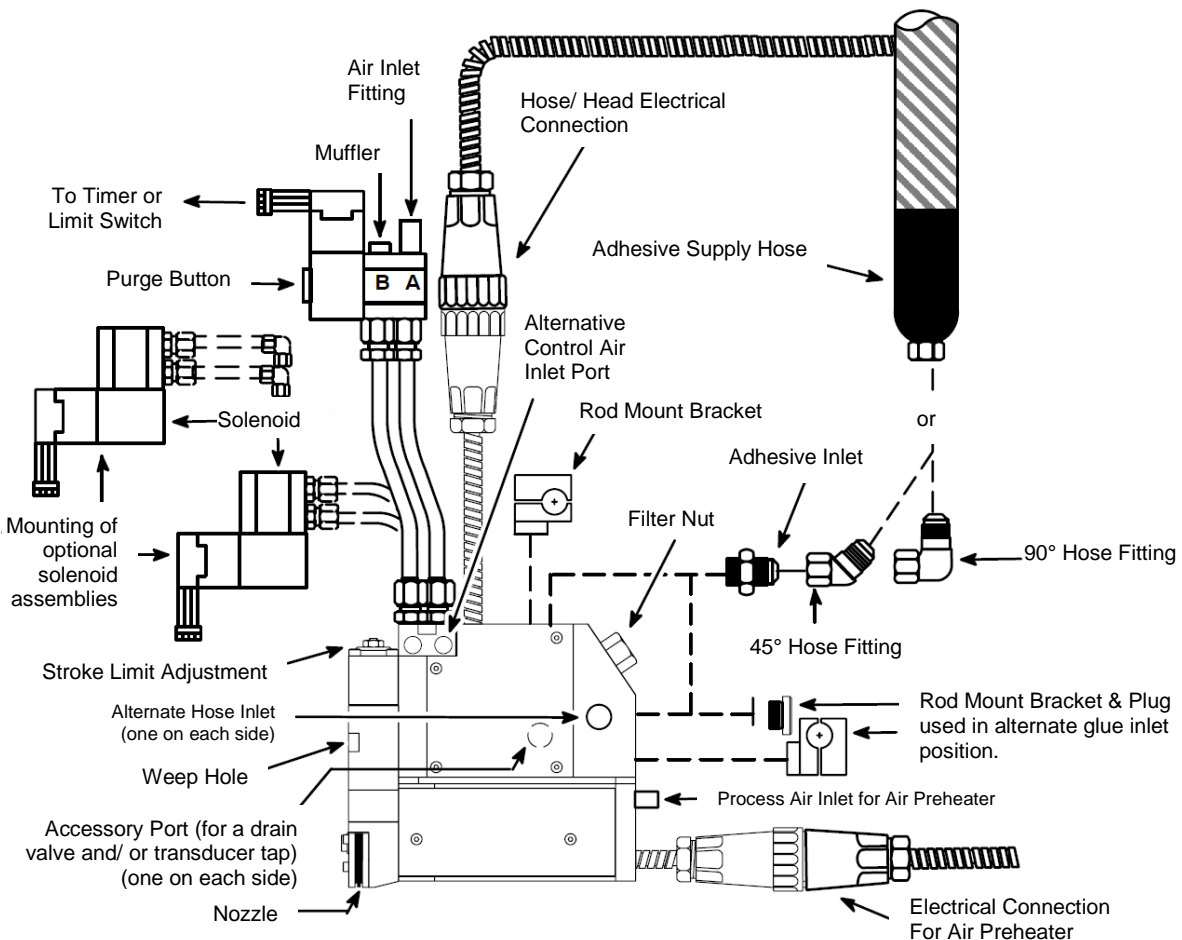
- While installing the Applicator, use an appropriate protection device to avoid unintended contact with heated parts and with spilling out Hotmelt. The protection device has to prevent also the operator against not reaching into the adhesive application and against injuring.
- Risk of burns and risk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

#### Typical installation for an ULTRA Applicator:

1. Install the Applicator on the machine at the foreseen place.

The Applicator should be supported from brackets that permit lateral and vertical adjustments. Mount the Applicator on a 12mm to 13mm rod or bracketry using the 6 mm screws and insulators provided. Allow access to the filter. Be sure that the stroke limit adjustment screws are accessible and that the “weep” holes are visible for periodic inspection. Leave sufficient clearance to install a pressure transducer, if applicable, and allow access to a drain valve, if installed.

**Installation Diagram:** See the diagram for location of the components referred to in the following section.



2. Connect the compressed-air supply to Applicator. Connect all solenoids with air hoses as required.



6 bar air pressure are required. **Reason:**

- Lower air pressure causes uneven adhesive application.
- The modules do not switch or switch with delay, resp. open and close again, if the air supply is uneven.
- Only permanent pressure and sufficient volume flow leads to reproducible application accuracy regarding position and amount.

**CAUTION: Do not use lubricating oil with the air supply as Applicators are lubricated at the factory and do not require lubrication when used in production. Where oil is present in the air supply, a coalescing filter (Dynatec PN 100055) must be installed between the standard air regulator/ filter and the UFD Applicator.**

UFD Applicators require at least one solenoid valve for each applicator. If your head was ordered without a solenoid valve, a 4-way valve (or a 5-way valve for snuffback modules) should be mounted so that the air lines to each Applicator are as close to the same length as practical.

Note: Air lines and fittings must be capable of withstanding temperatures up to 218°C (425°F). ITW Dynatec supplies Air Control Filter Coalescing Kits (PN 100055) to be used with air-operated Applicators (see the Air Control Filter Coalescing Kit Manual in Appendix A of this manual).

For process (preheater) air control, the filter/ regulator kit PN 107404 is recommended. It contains a 0-50 psi air filter/ regulator combination and a liquid-filled gauge for accurate process air control.

See the Process (Preheater) Air Control Filter/ Regulator information in Appendix B.

When connecting the air lines to the applicator, the air line which has air pressure to the module when the solenoid is OFF is the closing air line. See Appendix A and B for details and diagrams of solenoid setup.

3. If a pre- or post- filter pressure transducer is to be utilized: install the supplied adapter into the desired accessory port. Thread the transducer into the adapter (transducer adapter has 1/2-20 thread). Follow the transducer manufacturer's recommendations for torque specifications. Note: the alternate hose inlets on either side of the Applicator can also be used for the transducer adapter.
4. Before making the adhesive connection to the Applicator, align the adhesive supply hose with its electrical connector oriented in relation to the electrical connector on the top of the Applicator.

Connect the swivel fitting of the hot melt hose to the adapter on the service block, using either the inlet port located below the filter nut or the port located on the top of the Applicator (beside the electrical connection in the diagram). When tightening the hose fitting, hold the hose cuff to prevent the hose core from rotating.



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

- Heated hoses may be damaged by overheating, if they are laid faulty.
  - The heated hoses may not be stacked one on the other!
  - The heated hoses may not be pressed together and / or bound.
  - Put the hoses separated next to each other!
  - The connections for supply resp. return hoses may not be mixed up.
  - It is essential that the hoses will be laid without twisting!
  - Heated hoses may not be fastened with binders or similar.
  - Heated hoses may not be laid on a sharp edge.
  - When using a balancer, a hose support with a radius of 400mm has to be mounted.
- Reason:** The sensor cables and heating cables within the hoses can be damaged. As they cannot be repaired the hose would have to be changed completely.

5. Make the electrical connection from the hose to the applicator by connecting the female connector of the hose to the male connector of the applicator.
6. Connect the spray air line to the preheater using the adapter provided. Do not overtighten the compression fitting, or the air line could collapse, reducing air flow.
7. Make the electrical connection from the extension cable to the preheater by connecting the female connector of the cable to the male connector of the preheater
8. It is advisable to check the temperature of the applicator. This can be done through the temperature readout of the adhesive supply unit. Surface temperature may be checked with a separate pyrometer and surface probe or with a dial thermometer. Turn the system power switch ON. Permit the applicator to warm up at least 15 minutes (5 minutes for module change) before reading temperature.
9. Purge the Applicator of air and oil. Turn the Applicator ON electrically and pneumatically.



### **WARNING! HIGH PRESSURE! HOT ADHESIVE!**

**During the purging procedure, hot adhesive and oil can come out of the Applicator under high pressure. Wear safety glasses, gloves and protective clothing.**

**Use a stable, deep container to collect hot-melt adhesive and/ or oil.**

Remove the nozzle from the module. Place a heat resistant container under the module to collect the material that drains from the Applicator. Manually open the solenoid by pushing (with a small screwdriver or other tool) the purge button located on the solenoid coil. Continue to hold in the purge button until all air and oil have drained and only adhesive flows from the module.

10. Replace the nozzle, orienting the nozzle tip so it points toward the substrate.
11. Interconnect the components with the foreseen Profibus (or EtherNet, etc.) interface cables (if applicable).

#### **Daily operation**



Purge the Applicator before every start of production respectively of a shift by allowing the adhesive flows out until it is satisfactory.

Then switch off the adhesive and clean the nozzle from adhesive.

Bring the Applicator in work position and continue production.



## **Special Installation Notes on HiSpeed, Vertical Snuffback, Direct-Air Module**

### **Special Installation Notes on Optional PN 112690, 112440 & 112934 HiSpeed, Vertical Snuffback, Direct-Air Module (Option Code C,D, G see Chapter Model Designation Guide)**

The PN 112690, 112440 & 112934 modules are designed for the solenoid valve to be connected directly to the module air cylinder. Fittings and tubing are included with the module assembly.

If alternative fittings or tubing are desired, the recommended tubing is aluminum or stainless steel, 1/4" OD x 3/16" ID. For best performance, the tubing length should be as short as practical (recommended length is 2.5" min. to 6" max.). The port threads in the module are 1/8-27 NPT.

If necessary for clearance, the air cylinder can be rotated to re-position the tube fittings. Remove the four cap screws securing the air cylinder, and without removing the air cylinder, rotate to the desired position. Replace the cap screws and torque crosswise, first to 5 in-lb., then to 20 in-lbs.

Recommended operating air pressure is 70-90 psi.

## **Operation of Optional Drain Valve**

### **(Option Code A, see Chapter Model Designation Guide)**

UFD Applicators with the "A" option are equipped with a drain valve located on the right side of the Applicator. This drain valve allows residual adhesive pressure to be relieved prior to maintenance or repair of the Applicator. During Applicator installation, the drain valve can be relocated to the left side of the Applicator for access, if necessary.

The drain valve consists of a valve body with a rotatable outlet collar that directs the flow of adhesive. A plug is located inside the body, retained by a snap ring to prevent the plug from being fully removed.

### **Operation**

1. Ensure that all pumps in the ASU (Adhesive Supply Unit) are turned off. Power down the ASU or disable the Applicator and preheater zones at the control panel. Disconnect all electrical cables from the Applicator.



### **WARNING! HOT SURFACE & ADHESIVE!**

**The equipment will still be hot when this procedure is being done.**

**Use insulated gloves and protective clothing.**

2. Place a suitable container under the Applicator to catch adhesive. Using pliers, rotate the knurled outlet collar of the drain valve so that the exit hole points toward the container, and away from any personnel. Stand away from the valve while the adhesive pressure is being relieved.
3. Using a 19mm (3/4") wrench on the valve body to prevent rotation, insert a 5mm hex wrench into the plug. Rotate the plug counter-clockwise to allow adhesive to flow through the valve.
4. If no adhesive flows from the drain valve, do not assume that there is no adhesive pressure in the system. Always verify that adhesive pressure has been completely relieved before proceeding with maintenance or repairs. Never remove the snap ring in the end of the valve, as this would allow the plug to be removed, possibly resulting in personal injury.
5. After maintenance or repairs are complete, tighten the plug securely. Wipe any adhesive from the outer surface of the drain valve.

## Purging Adhesive Through the Applicator

This procedure may be used anytime the operator wishes to purge old adhesive from the Applicator and replace it with fresh adhesive. For example, this procedure could be used in instances where the adhesive system has been held at temperature for an extended time without running, such as during a production line start-up.



### WARNING! HOT SURFACE & ADHESIVE!

The equipment will still be hot when this procedure is being done.

Use insulated gloves and protective clothing.

#### Procedure

1. Remove all nozzles. Place a suitable container under the Applicator to catch adhesive.
2. Activate the modules and manually run the adhesive pump to purge the hoses and Applicators of old adhesive. Purge until the adhesive exiting the modules is fresh.
3. Check system pressure to see if filters are clogged and need to be changed.
4. Replace the nozzles and check the adhesive flow through them. Compare to target flow.
5. Check the nozzle spray pattern.
6. Clean any nozzles that do not spray properly and check the spray pattern again.

## 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	

# Chapter 5

## Maintenance and Repair Notes

### 5.1 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.
3. Open the pressure purge valve manually until the pressure is relieved.

## 5.2 Re-Assembly Procedures and General Cautions

Unless noted, component 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.

## 5.3 Stroke Limit Adjustment

All conventional MR1300 applicators are equipped with a stroke limit adjustment. For snuffback valves, the stroke is factory pre-set and no field adjustment is necessary.

Whenever the conventional module is disassembled, the stroke limit must be adjusted using the following procedure:

1. Bring applicator up to operating temperature.
2. Loosen the lock nut (see illustration on next pages, under Chapter 5.5 Replacement of the Built-in Filter) located on the top of the module.
3. Bottom the stroke adjustment screw lightly.



### CAUTION

**Tightening the stroke adjustment to shut OFF the nozzle will cause damage to the Applicator.**

4. Back off the screw one-half to one turn.
5. While holding the screw in position, tighten the lock nut.

## 5.4 Relieving Adhesive Pressure



### WARNING

Heed all security advices given in Chapter 5.1.

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!

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

**During the purging procedure, hot adhesive can come out of the Applicator under high pressure. Wear safety glasses, gloves and protective clothing.**

Many maintenance and troubleshooting procedures potentially expose the maintenance technician to dangerous hot adhesive, which is under pressure. Follow this procedure to release the adhesive pressure in the Applicator before performing such maintenance.

1. The Applicator should be at operating temperature.
2. Turn the ASU's pump/ motor OFF.
3. Place a heat-resistant catchment container/underlay under the Applicator.

#### Relieving Adhesive Pressure Manually:

1. Push the purge button located on the side of the air solenoid coil.  
Or, if the ASU filter block is equipped with a drain, adhesive pressure may be relieved at the ASU.

#### Relieving Adhesive Pressure by using the Optional Drain Valve (if applicable):

1. Place a heat-resistant container under the drain valve. If necessary, rotate the drain valve's opening by turning its knurled collar so that the opening is aiming downward into the container.
2. With a 5mm hex key screwdriver (Allen-wrench), slowly loosen the drain valve's purge screw (do not try to remove it) and allow the adhesive and residues to flow out of Applicator. Be sure to stand clear since there may be residual adhesive pressure in the Applicator.
3. Turn ON the ASU's pump/ motor. When all the contaminants have run out and the adhesive is clean, retighten the screw.

## 5.5 Replacement of the Built-in Filter



### WARNING

Heed all security advices given in Chapter 5.1.



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!



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

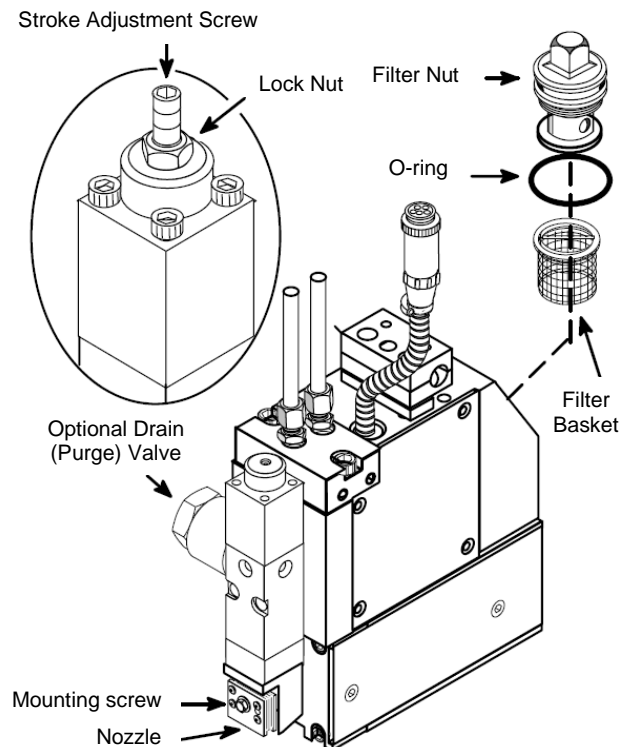
**During the purging procedure, hot adhesive can come out of the Applicator under high pressure. Wear safety glasses, gloves and protective clothing.**

Refer to the drawing in Chapter 7 for more information.

The applicator must be at operating temperature.

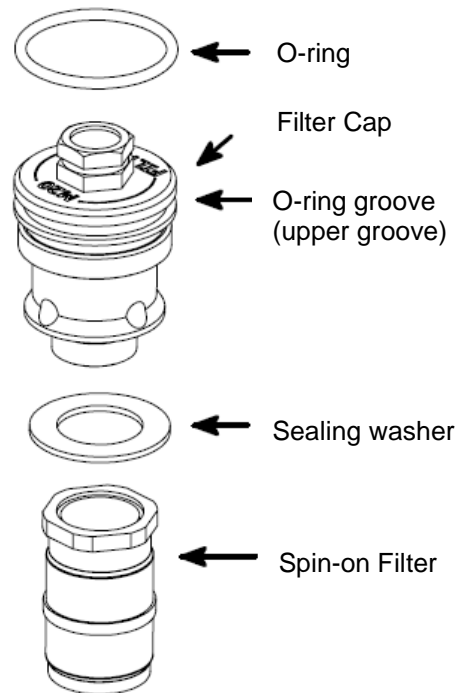
### Procedure for Basket-type Filter (Filter Codes A & B):

1. Stop all motors.
2. Switch the unit voltage-free and pressureless.
3. Guard the unit against unauthorized restarting.
4. Place a heat-resistant catchment container/underlay under the Applicator. Hot adhesive may come out!
5. Relieve the adhesive pressure by following the instructions under Chapter 5.4 "Relieving Adhesive Pressure".
6. Unscrew and remove the filter nut.
7. With needle nose pliers, pull the filter basket out of the manifold.
8. Replace the O-ring on the filter nut. Apply O-ring lubricant (PN N07588) to the new O-ring.
9. Apply a coat of anti-seize to the threads of the filter nut.
10. Re-install the filter basket and the filter nut. Tighten the filter nut until it is seated firmly, taking care not to cut the O-ring.



### Procedure for Spin-on Filter (Filter Code C)

1. Stop all motors.
2. Switch the unit voltage-free and pressureless.
3. Guard the unit against unauthorized restarting.
4. Place a heat-resistant catchment container/underlay under the Applicator. Hot adhesive may come out!
5. Relieve the adhesive pressure by following the instructions under Chapter 5.4 "Relieving Adhesive Pressure".
6. Unscrew and remove the filter cap.
7. Unscrew the filter from the filter cap.
8. Remove and discard the old sealing washer and O-ring.
9. Make sure the mating surface of the filter cap is clean.
10. Install a new sealing washer, filter and O-ring. Torque the filter to 40-50 in-lbs (4.5 – 5.5 Nm) on the cap.
11. Apply a coat of anti-seize to the threads of the filter cap.
12. Re-install the filter and the filter cap. Tighten the filter cap until it is seated firmly, taking care not to cut the O-ring.
13. Close the pressure bleed (purge) valve, return the equipment to service and check for leaks.
14. If leaking, it might be necessary to replace the filter cap's 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 tank is molten completely.
- Continue production.



## 5.6 Replacement of the Module

### Modules Which Are Not Serviceable

The following modules cannot be customer-serviced:

- PN 112440 Module, High-Speed SB, Hor, Dir Air
- PN 112444 Module, High-Speed SB, Hor, Bck Air

### Replacement of the Standard Module



#### WARNING

Heed all security advices given in Chapter 5.1.

Maintenance and repair work is only permitted for skilled personnel!

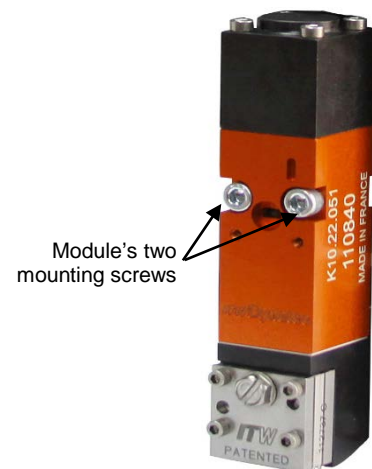
Always wear safety shoes, heat-resistant protective gloves, safety goggles and protective clothing that cover all vulnerable parts of the body while working on the heated unit! Risk of injury or severe burns!

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

**During the purging procedure, hot adhesive can come out of the Applicator under high pressure. Wear safety glasses, gloves and protective clothing.**

Refer to the drawing in Chapter 7 for more information.

1. Stop all motors.
2. Switch the unit to stand-by and pressureless.
3. Place a heat-resistant catchment container/underlay under the Applicator. Hot adhesive may come out!
4. Relieve the adhesive pressure by following the instructions under Chapter 5.4 "Relieving Adhesive Pressure".
5. Remove the module from the service block by removing the two mounting screws on the front of the module with a hex key screwdriver (Allen wrench). Make sure that the old O-rings located on the back of the module are also removed (the new module will include new O-rings).
6. Mount the new module in reverse order and attach it to the manifold with a torque of 20-25 in./lbs (2.3-2.8 Nm).



#### 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 tank is molten completely.
- Continue production.



## Module Assembly Instructions for the PN 104993 UFD Module

Demount the module from the service block, refer to the instructions in Chapter 5.6 Replacement of Standard Module on previous page.

Use the component illustration and parts list in Chapter 7 as a reference with the following instructions for the PN 104993 UFD module.

ITW Dynatec has a Module Seal Kit available (PN 105150) which contains the components necessary to rebuild one module, including the seal cartridge assembly, all O-rings, spring and seal lubricant.

1. During re-assembly, coat all O-rings with a liberal amount of High Temp Lube (PN N07588).



### CAUTION

**DO NOT SUBSTITUTE! Failure to use High Temp Lube (N07588) may result in premature seal breakdown and leakage of glue from the Applicator!**

2. Insert the new seal cartridge assembly into the module body. (Note that there are two holes in the seal cartridge cavity in the module body. One hole accepts the roll pin in the seal cartridge. The other is an air hole which must line up with the air hole in the seal cartridge.) Align the roll pin in the seal cartridge with the corresponding hole in the top of the module body. Press the seal cartridge into position. **The air hole in the seal cartridge must align with the air hole in the module body for the valve to function properly.**
3. Place a new piston O-ring onto the stem assembly and slowly insert the stem assembly into the seal cartridge.
4. Place the new spring on top of the piston.
5. Loosen and back out the adjusting screw in the air cylinder. Place the air cylinder over the spring and piston and press down into place. Take care not to dislodge the spring or damage may result. Secure the air cylinder with the four mounting screws.
6. Place new O-rings on the seat assembly and insert the seat assembly into the bottom of the module body. Secure with the four mounting screws. Spring resistance will be felt as the screws are tightened. Tighten the screws evenly to avoid binding.
7. Place new O-rings into the grooves on the rear face of the module and mount the module onto the service block.
8. Allow five minutes for the module to heat. Adjust the stem stroke to the desired setting.

*To disassemble, reverse above order.*

## Module Assembly Instructions for the PN 106224 UFD or 106226 HiTemp UFD Module

Demount the module from the service block, refer to the instructions in Chapter 5.6 Replacement of Standard Module on previous pages.

Use the component illustration and parts list in Chapter 7 as a reference with the following instructions for the PN 106224 or 106226 module. ITW Dynatec has a Module Seal Kit available (PN 105150/ 803012 for Hi Temp) which contains the components necessary to rebuild one module, including the seal cartridge assembly, all O-rings, spring and seal lubricant.

1. During re-assembly, coat all O-rings with a liberal amount of High Temp Lube (PN N07588).



### CAUTION

**DO NOT SUBSTITUTE! Failure to use High Temp Lube (N07588) may result in premature seal breakdown and leakage of glue from the Applicator!**

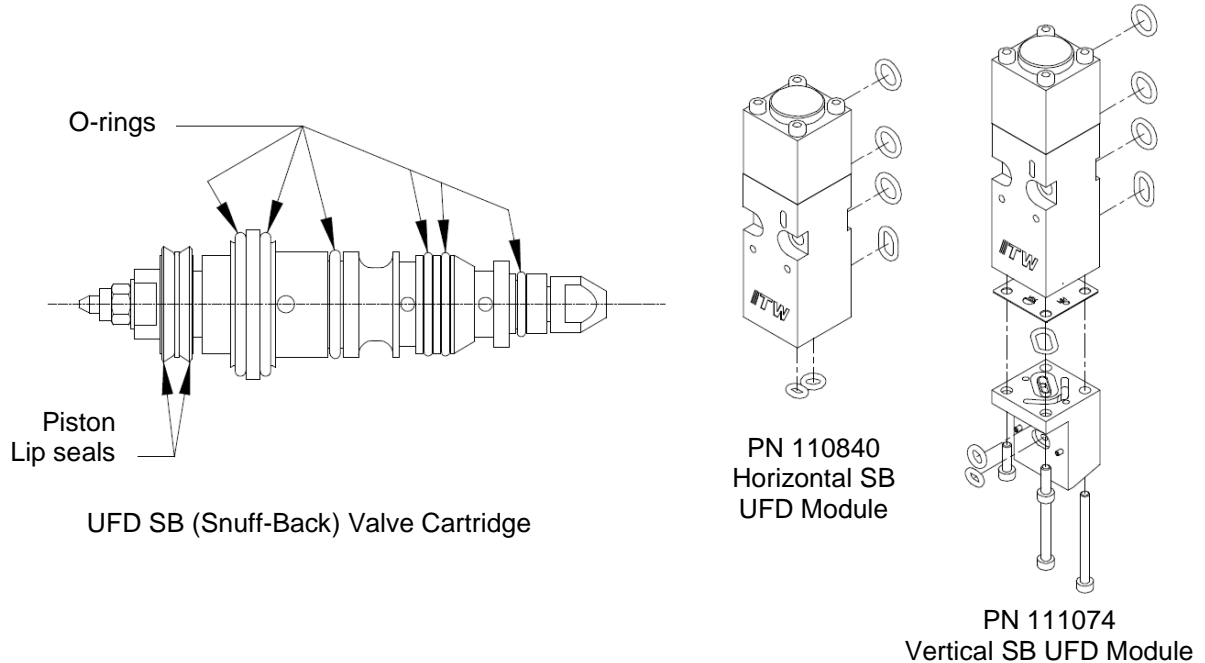
2. Insert the new seal cartridge assembly into the module body. (Note that there are two holes in the seal cartridge cavity in the module body. One hole accepts the roll pin in the seal cartridge. The other is an air hole which must line up with the air hole in the seal cartridge.) Align the roll pin in the seal cartridge with the corresponding hole in the top of the module body. Press the seal cartridge into position. **The air hole in the seal cartridge must align with the air hole in the module body for the valve to function properly.**
3. Place a new piston O-ring onto the stem assembly and slowly insert the stem assembly into the seal cartridge.
4. Place the new spring on top of the piston.
5. Loosen and back out the adjusting screw in the air cylinder. Place the air cylinder over the spring and piston and press down into place. Take care not to dislodge the spring or damage may result. Secure the air cylinder with the four mounting screws.
6. *a. Follow this step for new-style modules (those built after 11/12/07):* Place new O-rings on the vertical adapter and insert the seat assembly into the bottom of the module body. Spring resistance will be felt as the screws are tightened. Tighten the screws evenly to avoid binding.  
*b. Follow this step for old-style modules (those built prior to 11/12/07):* Place new O-rings on the seat assembly and insert the seat assembly into the bottom of the module body. Place new o-rings on the vertical adapter. Place the brass seal and the vertical adapter onto the seat assembly and secure with the four mounting screws. Spring resistance will be felt as the screws are tightened. Tighten the screws evenly to avoid binding.
7. Place new O-rings into the grooves on the rear face of the module and mount the module onto the service block.
8. Allow five minutes for the module to heat. Adjust the stem stroke to the desired setting.

*To disassemble, reverse above order.*

## Module Assembly Instructions for the PN 110840 Horizontal SB and PN 111074 Vertical SB UFD Modules

Demount the module from the service block, refer to the instructions in Chapter 5.6 Replacement of Standard Module on previous pages.

Use the component illustrations and parts lists in Chapter 7 as a reference with the following instructions for the PN 110840 & 111074 SB UFD modules. ITW Dynatec has a Module Rebuild Kit available (PN 110889) which contains the components necessary to rebuild one module, including the valve cartridge assembly and O-rings.



1. Disassemble the UFD SB module. Discard the old valve cartridge and thoroughly clean the remaining parts.
2. Lightly coat the O-rings on the new valve cartridge (included in the kit and shown above) with a high-temperature lubricant, such as PN 001U002 Dow 112 or PN 001V078 Krytox GPL206.  
Note: Take care to keep lubricant off of the air piston lip seals.



### CAUTION

**DO NOT SUBSTITUTE! Failure to use High Temp Lube (N07588) may result in premature seal breakdown and leakage of glue from the Applicator!**

3. Carefully install the new valve cartridge into the SB module body, pushing it in until it is firmly seated.
4. Making sure that the air cylinder and piston lip seals are clean and dry, carefully install the air cylinder over the piston and onto the valve cartridge.
5. Align the air cylinder's external O-ring with the three external O-rings in the SB module's body.
6. Secure the air cylinder with the four M3 x 35mm long cap screws dis-assembled in step 1.
7. Torque the cap screws cross-wise to 20 inch-lb. (2.3 NM).
8. Install new external o-rings (included in kit) on the SB module with a minimal coating of high-temp lubricant.

The module is now ready for installation and service.

*To disassemble, reverse above order.*

## 5.7 Replacement of the UFD Nozzle



### WARNING

Heed all security advices given in Chapter 5.1.

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!

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

**During the purging procedure, hot adhesive can come out of the Applicator under high pressure. Wear safety glasses, gloves and protective clothing.**

Refer to the drawing in Chapter 7 for more information.

Occasionally nozzles can become clogged with char, residue or other foreign material. This can result in the decrease or even stoppage of glue flow. Use following procedure to change nozzles:

The nozzle must be at operating temperature when cleaned.

1. Stop all motors.
2. Switch the unit voltage-free and pressureless.
3. Guard the unit against unauthorized restarting.
4. Place a heat-resistant catchment container/underlay under the Applicator. Hot adhesive may come out!
5. Relieve the adhesive pressure by following the instructions under Chapter 5.4 "Relieving Adhesive Pressure".
6. Remove the nozzle from the module by loosening its two (or one on UFD Snuffback Nozzle) mounting screws. See pictures on the side.
7. Mount the nozzle in reverse order and attach it to the module with a torque of 20-25 in./lbs (2.3-2.8 Nm).



UFD High-Speed Nozzle's two mounting screws



UFD Snuffback Nozzle's one mounting 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 tank is molten completely.
- Continue production.

## 5.8 Cleaning of the UFD Nozzle



### WARNING

Heed all security advices given in Chapter 5.1.

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!

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

**During the purging procedure, hot adhesive can come out of the Applicator under high pressure. Wear safety glasses, gloves and protective clothing.**

Refer to the drawing in Chapter 7 for more information.

Occasionally nozzles can become clogged with char, residue or other foreign material. This can result in the decrease or even stoppage of glue flow. Use one of the following two methods to clean nozzles.

### Cleaning by High Temperature Oven

For routine nozzle cleaning, a high temperature oven should be utilized. An optional Nozzle Cleaning Oven (PN 107307 or 107306) is available from ITW Dynatec.

After several cleanings in an oven, nozzles must be disassembled and soaked in solvent in order to remove all contaminants. Perform the following procedure as needed:

### Cleaning by Nozzle Disassembly

The nozzle must be at operating temperature when cleaned.

1. Stop all motors.
2. Switch the unit voltage-free and pressureless.
3. Guard the unit against unauthorized restarting.
4. Place a heat-resistant catchment container/underlay under the Applicator. Hot adhesive may come out!
5. Relieve the adhesive pressure by following the instructions under Chapter 5.4 "Relieving Adhesive Pressure".
6. Remove the nozzle from the module by loosening its two (or one on UFD Snuffback Nozzle) mounting screws. See pictures on the side.
7. Remove the mounting screws and the three (or four on UFD Snuffback Nozzle) cap screws from the nozzle. See pictures on the side.



UFD High-Speed Nozzle's two mounting screws

UFD Snuffback Nozzle's one mounting screw

8. Separate the nozzle from its front and rear mounting plates.
9. Soak the nozzle plates in solvent. If necessary, use a non-metallic brush to remove any foreign material, being careful not to damage any of the nozzle's orifices. Be sure to remove all residue before re-assembling.
10. Mount the nozzle in reverse order and attach it to the module with a torque of 20-25 in./lbs (2.3-2.8 Nm).

**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 tank is molten completely.
- Continue production.

## 5.9 Testing of Resistance

### Testing Resistance of Heater Cartridges



#### WARNING

Heed all security advices given in Chapter 5.1.  
Maintenance and repair work is only permitted for skilled personnel!

1. Stop all motors.
2. Turn the ASU OFF or disable the Applicator and preheater zones at the control panel. Disconnect all electrical cables from the Applicator.
3. Relieve the adhesive pressure by following the instructions under Chapter 5.4 "Relieving Adhesive Pressure".
4. Unplug the electrical cable from the adhesive supply hose or extension cable to expose the pins in the cable.
5. Use the schematics in Ch. 9 to determine the correct pins used to measure the heater resistance. Compare the reading with the values given in the charts below.

#### Service Block Heaters

The service block of the Dynafiber UFD Applicators contain three 10mm heaters wired in parallel. The parallel resistance values of these heaters is listed below:

Applicator Model	Parallel Resistance	
	Minimum	Maximum
UFD050 Series	115.8	141.9
UFD075 Series	98.7	120.7
UFD100 Series	86.9	106.4
UFD150 Series	57.9	70.9

#### Air Preheater Heaters

The air preheater contains three or more heaters wired in parallel. One heater, located at the front of the preheater, is 8mm diameter. The remainder of the heaters, located in the spiral tubes at the rear of the preheater, are 10mm diameter. The number of 10mm heaters depends on the width of the Applicator.

The parallel resistance values of these heaters is listed below:

Applicator Model	Standard Models Parallel Resistance		Slim Line Models Parallel Resistance	
	Minimum	Maximum	Minimum	Maximum
UFD050 Series	86.9	106.4	129.6	158.4
UFD075 Series	57.6	70.4	86.9	106.4
UFD100 Series	43.3	53.2	64.8	79.2
UFD150 Series	43.3	53.2	43.3	53.2

If one of the heaters is not functional, the parallel resistance as measured at the contact pins will be *higher* than the range given in the chart. To determine which heater is not functional, remove the cover plate and test each heater independently.



**Testing Resistance of the RTD Temperature Sensor**

(Options D, M, N and P in Chapter Model Designation Guide)

**WARNING**

Heed all security advices given in Chapter 5.1.

Maintenance and repair work is only permitted for skilled personnel!

1. Stop all motors.
2. Turn the ASU OFF or disable the Applicator and preheater zones at the control panel. Disconnect all electrical cables from the Applicator.
3. Relieve the adhesive pressure by following the instructions under Chapter 5.4 "Relieving Adhesive Pressure".
4. Unplug the electrical cable from the adhesive supply hose or extension cable to expose the pins in the cable.

Note: The resistance value (Ohms) of the temperature sensor depends on the temperature of the sensor at the time it is being tested. All values listed in the table below are given at 25°C (77°F). To correct for ambient temperatures other than 25°C (77°F), see next Chapter "Resistance Tables, Temperature sensors" for complete resistance-temperature tables for the RTD sensors.

5. Using the schematics in Chapter 9 as a reference, measure the resistance of the sensor and compare to the values in the table below. A tolerance of  $\pm 5\%$  is allowed for ambient temperature differences. A sensor that tests outside of this range must be replaced.

Applicator Control	Sensor Resistance at 25°C (77°F)
DynaControl (option D)	110 ohms
MCV Control (option M)	110 ohms
Upgrade (Ni, option N)	138 ohms
Allen-Bradley (option D)	110 ohms
Upgrade (Pt, option P)	110 ohms

**Testing the J-type Thermocouple Temperature Sensor**

(Control option L in Chapter Model Designation Guide)

**WARNING**

Heed all security advices given in Chapter 5.1.

Maintenance and repair work is only permitted for skilled personnel!

1. Stop all motors.
2. Turn the ASU OFF or disable the Applicator and preheater zones at the control panel. Disconnect all electrical cables from the Applicator.
3. Relieve the adhesive pressure by following the instructions under Chapter 5.4 "Relieving Adhesive Pressure".
4. Unplug the electrical cable from the adhesive supply hose or extension cable to expose the pins in the cable.
5. Using the schematics in Chapter 9 as a reference, first measure the resistance across the thermocouple leads to check for an open junction. The resistance should be zero



(allowing for the resistance of the test leads). If the resistance is high or infinite, an open junction or loose connection is indicated. If all the connections are secure, replace the thermocouple.

To test the thermocouple element further, specialized equipment is required which is outside the scope of this manual.

### Resistance Tables, Temperature sensors

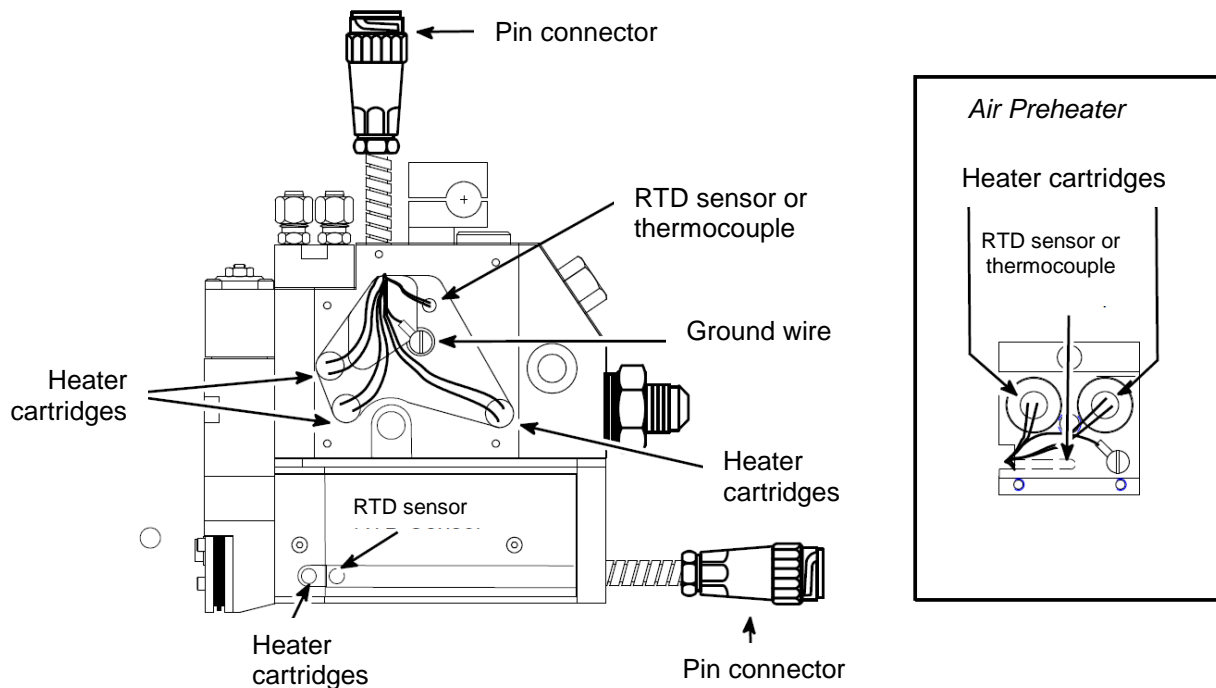
Temperature sensor PT 100 Ohms  
Control option: DCL

Temperature °F	°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 Ni 120 Ohms  
Control option: NOR

Temperature °F	°C	Resistance in Ohms
32	0	120
50	10	127
68	20	135
86	30	142
104	40	150
122	50	158
140	60	166
158	70	174
176	80	183
194	90	192
212	100	201
230	110	210
248	120	219
268	130	229
284	140	239
302	150	249
320	160	259
338	170	270
356	180	284
374	190	292
392	200	303
410	210	315
428	220	328

## 5.10 Replacement of Heater Cartridge or Temperature Sensor



*Heater, RTD Sensor or Thermocouple Replacement Diagram*

### Replacement of Service Block Heater Cartridges



#### **WARNING**

Heed all security advices given in Chapter 5.1.  
Maintenance and repair work is only permitted for skilled personnel!

1. Stop all motors.
2. Turn the ASU OFF and relieve all system pressure.  
Switch the unit voltage-free and pressureless.  
Guard the unit against unauthorized restarting.  
  
Relieve the adhesive pressure by following the instructions under Chapter 5.4  
"Relieving Adhesive Pressure".
3. Disconnect the service block's electrical cable assembly from the hose and disconnect the preheater's cable assembly from its cable extension.
4. Remove the four screws holding the left-side cover plate. Remove the plate. Pull the ceramic terminal blocks from the wiring cavity and disconnect the heater leads from the terminal blocks.
5. Locate the non-functioning heater with a multimeter. Remove and replace the heater. Apply a thin film of thermal paste to the new heater before installation.
6. Reconnect the three heaters to the terminal blocks, making sure that no strands of wire are protruding from the terminal blocks.
7. Place the terminal blocks back into the wiring cavity. Replace the left-side cover plate. The Applicator is now ready for installation and service.

## Replacement of Air Preheater Heater Cartridges



### WARNING

Heed all security advices given in Chapter 5.1.  
Maintenance and repair work is only permitted for skilled personnel!

See illustration on previous page for parts locations.

1. Stop all motors.
2. Turn the ASU OFF and relieve all system pressure.  
Switch the unit voltage-free and pressureless.  
Guard the unit against unauthorized restarting.  
  
Relieve the adhesive pressure by following the instructions under Chapter 5.4  
"Relieving Adhesive Pressure".
3. Disconnect the service block's electrical cable assembly from the hose and disconnect the preheater's cable assembly from its cable extension.
4. Remove the M4 screws and M5 screws from the wire cover. Remove the wire cover.
5. Disconnect the heater leads from the ceramic terminal blocks.
6. Locate the non-functioning heater with a multimeter.
7.
  - a. If one of the 10mm heaters is non-functioning, remove and replace it at this time.  
Apply a thin film of thermal paste to the new heater before installation.
  - b. To replace the 8mm heater: remove the two M3 screws holding the left-side cover. Remove the cover. Remove and replace the 8mm heater. Apply a thin film of thermal paste to the new heater before installation.
8. Reconnect all heaters to the terminal blocks, making sure that no strands of wire are protruding from the terminal blocks.
9. Replace the left-side cover if removed. Replace the wire cover.  
The Applicator is now ready for installation and service.

## Replacement of Service Block Temperature Sensor



### WARNING

Heed all security advices given in Chapter 5.1.  
Maintenance and repair work is only permitted for skilled personnel!

Note: a High-Temp Splice Kit (PN 102645) is required for this procedure.  
See illustration on previous page for parts locations.

1. Stop all motors.
2. Turn the ASU OFF and relieve all system pressure.  
Switch the unit voltage-free and pressureless.  
Guard the unit against unauthorized restarting.  
  
Relieve the adhesive pressure by following the instructions under Chapter 5.4  
"Relieving Adhesive Pressure".
3. Disconnect the service block's electrical cable assembly from the hose and disconnect the preheater's cable assembly from its cable extension.

4. Remove the four screws holding the left-side cover plate. Remove the plate.
5. Pull the sensor out of the service block.
6. Cut the old sensor wires off as close to the sensor as possible.
7. Apply a thin film of thermal paste to the new sensor and place it in the service block. Trim the lead wires so that they overlap the old sensor wires by one to two inches. Strip the ends of all four wires.
8. Use the high-temp splice kit to connect the new sensor to the old sensor wires.
9. Place the wires in the wiring cavity and replace the left side cover. The Applicator is now ready for installation and service.

### Replacement of Air Preheater Temperature Sensor



#### **WARNING**

Heed all security advices given in Chapter 5.1.  
Maintenance and repair work is only permitted for skilled personnel!

Note: a High-Temp Splice Kit (PN 102645) is required for this procedure.  
See illustration on pages for parts locations.

1. Stop all motors.
2. Turn the ASU OFF and relieve all system pressure.  
Switch the unit voltage-free and pressureless.  
Guard the unit against unauthorized restarting.  
  
Relieve the adhesive pressure by following the instructions under Chapter 5.4  
"Relieving Adhesive Pressure".
3. Disconnect the service block's electrical cable assembly from the hose and disconnect the preheater's cable assembly from its cable extension.
4. Remove the left-side cover plate.
5. Pull the sensor out of the preheater.
6. Cut the old sensor wires off as close to the sensor as possible.
7. Apply a thin film of thermal paste to the new sensor and place it in the service block. Trim the lead wires so that they overlap the old sensor wires by one to two inches. Strip the ends of all four wires.
8. Use the high-temp splice kit to connect the new sensor to the old sensor wires.
9. Replace the left side cover plate.  
The Applicator is now ready for installation and service.

## 5.11 Maintenance plan



### CAUTION

- Heed all security advices given in Chapter 5.1.
- 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 (if applicable).
- Punctual and conscientious maintenance of the unit secures not only a trouble free function, but prevents also for expensive repair costs.
- After maintenance work, 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> </ul>
Once a day	<ul style="list-style-type: none"> <li>• Clean the Applicator and components from dirt.</li> <li>• Wipe the Applicator clean of adhesive with a clean cloth while still hot at the end of each shift.</li> </ul>
Once a week	<ul style="list-style-type: none"> <li>• Check filters for clogging and replace if necessary.</li> <li>• Check modules on Applicator if leaky and replace if necessary. Check weep holes on modules if adhesive is leaking and replace seal cartridge or module if necessary.</li> <li>• Check nozzles for wearing or clogging and clean or replace if necessary, or re-adjust stroke limiter.</li> <li>• Check adhesive supply hose connection and tighten if loose.</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>• 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 Applicator.</li> <li>• Complete check-up for wearing.</li> </ul>
Every two years	<ul style="list-style-type: none"> <li>• Complete maintenance.</li> </ul>



# Chapter 6

## Troubleshooting

### Troubleshooting In General



**ADVICES:**

Please re-read all security advices given in Chapter 2 before troubleshooting. All troubleshooting or repair procedures must be performed by qualified, trained technicians.

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.

**In general:** If failure occurs, check first:

- Check all the electrical and pneumatic connections.
- Verify that the main power switch of the unit is ON.
- Verify that the pump is functioning and the Applicator has the required air pressure.
- Verify that the temperature controller is in operation and that the setpoints are correct for the Melter, Heated Hoses, Applicator and all other components connected to the unit.
- Check to see if all components are heating properly.

### Troubleshooting Guide UFD Applicator

Problem	Possible Cause	Solution
Module does not open.	<ol style="list-style-type: none"> <li>1. Temperature adjustment of head is too low.</li> <li>2. Solenoid defective.</li> </ol>	<ol style="list-style-type: none"> <li>1. Check temperature adjustment.</li> <li>2. Push the solenoid's manual button. If it opens, the problem is electrical. Check and/or replace the solenoid.</li> </ol>
No adhesive flowing out of module.	<ol style="list-style-type: none"> <li>1. Nozzle is clogged.</li> <li>2. Filter element is dirty.</li> <li>3. Module seals (O-rings) are defective.</li> <li>4. ASU's hopper is empty.</li> <li>5. Adhesive is too cold.</li> <li>6. Solenoid valve is not opening.</li> <li>7. Piston stroke is too low.</li> </ol>	<ol style="list-style-type: none"> <li>1. Clean or replace nozzle.</li> <li>2. Replace filter, see instructions in Ch. Maintenance.</li> <li>3. Check module O-rings, see instructions in Ch. Maintenance.</li> <li>4. Re-fill hopper.</li> <li>5. Adjust temperature, see ASU manual.</li> <li>6. Check solenoid valve.</li> <li>7. Adjust the stroke limit, see instructions in Ch. Maintenance.</li> </ol>

Continue next page...

Problem	Possible Cause	Solution
Hot melt is coming out of the module's "weep" holes.	1. Module seals are damaged.	1. Replace seal cartridge or module, see instructions in Ch. Maintenance.
Applicator does not reach operating temperature	1. Hopper temperature setpoint is too low. 2. Heater cartridge defective. 3. Temperature sensor defective.	1. Change setpoint, see ASU manual. 2. Check/ replace heater cartridge, see instructions in Ch. Maintenance. 3. Check/ replace sensor, see instructions in Ch. Maintenance.
Applicator is too hot	1. Applicator temperature setpoint is too high. 2. Temperature sensor defective.	1. Change setpoint, see ASU manual. 2. Check/ replace sensor, see instructions in Ch. Maintenance.
Air escapes from module	1. Piston O-ring defective. 2. O-rings located between module and service block are defective.	1. Replace O-ring, see instructions in Ch. Maintenance. 2. Remove module from block (see instructions in Ch. Maintenance) and replace O-rings.
Application pattern is erratic	1. Adhesive pressure is too low. 2. Adjust pattern controller.	1. a. <i>For units without speed control:</i> increase adhesive pressure at ASU. b. <i>For units with speed control (tach follower):</i> adjust pump speed control. 2. See pattern controller manual for proper adjustment.



## Chapter 7

# Component Illustrations & Bills 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. 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.

**1-Port UFD Vertical & Horizontal Apply Applicator Assemblies**

Item No.	Part Number	Description	Qty.
1	106224	Module, MR13, Vertical, Extended (UFD0501V1A1D2S)	1
2	104993	Module, MR13, Horizontal (UFD0501H1A1D2S)	1
	110840	Module, MR13, Horizontal/ Intermittent (Special)	1
	113346	Module, HSSB, Vertical (used with Festo Solenoid) (for more module options, see Chapter Model Designation Guide)	1
3	804354	Screw M5x30mm	2
4	106273	Filter Basket, 150 mesh	1
	101247	Filter Basket, 100 mesh	1
5	107820	Purge Valve Assembly, 1/4 BSPP (optional)	1
<b>6</b>	<b>110384</b>	<b>Solenoid Manifold Assembly</b>	<b>1</b>
7	N00093	Fitting, Compression	2
8	N00175	O-ring, -008	2
9	N07419	Screw M5x20mm	2
10	110383	Air Manifold	1
11	106333	Tube Stainless Steel, 1/4 x .065w x 3.5	2
<b>12</b>	<b>109256</b>	<b>Service Block Assembly (DCL)</b>	<b>1</b>
	<b>109257</b>	<b>Service Block Assembly (NOR)</b>	<b>1</b>
	<b>109258</b>	<b>Service Block Assembly (MEL-J)</b>	<b>1</b>
	<b>109259</b>	<b>Service Block Assembly (MCV)</b>	<b>1</b>
	<b>110144</b>	<b>Service Block Assembly (MEL-PT)</b>	<b>1</b>
	<b>109852</b>	<b>Service Block Assembly (J &amp; M)</b>	<b>1</b>
13	N00196	O-ring, #-111	1
14	N03812	O-ring, #-125	1
15	N07430	Terminal Ring	1
16	107881	Terminal Block, 2 Pos, Ceramic	1
17	078C088	Washer Int Tooth, Lock #4	1
18	101624	Fitting Straight, 6 JIC x 1/4 BSPP	1
19	101625	Fitting Plug, 1/4 BSPP, Soc	5
20	101627	Screw M3x6mm	1
21	106531	Screw M3x8mm	8
22	103467	Cable Assembly, BF240v, DCL, 9.0 (Built-in Sensor)	1
	106707	Cable Assembly, BF240v, MCV, 9.0 (Built-in Sensor)	1
	104528	Cable Assembly, BF240v, NOR, 9.0 (Built-in Sensor)	1
	107050	Cable Assembly, BF240v, MEL-J, 9.0 (Built-in Sensor)	1
	110143	Cable Assembly, BF240v, MEL-PT, 9.0 (Built-in Sensor)	1
	112098	Cable Assembly, SB, JM, w/Sol	1
23	103470	Screw M3x5mm	1
24	104663	Screw M6x25mm	2
25	109157	Service Block	1
26	106292	Spacer Mounting Clamp	1
27	106293	Mounting Clamp, 13mm, MK2	1
28	109107	Side Cover, Service Block	1
29	110451	Side Cover, Service Block	1
30	112099	Conduit Assembly (next to cable assy., not shown, J & M)	1
31	106303	Filter Nut	1
32	106444	Heater Cartridge, 150W, 240V, 10 x 40mm	3
33	116245	Filter Kit, M20 Spin-on (includes N03812 O-ring & 116243 washer)	1
	116594	Filter Kit, 200 mesh Spin-on (includes N03812 O-ring & 116243 washer)	1
34	116244	Filter Cap, M20 Spin-on Filter	1
35	117825	Cover, Left-Hand, Standard (used on all standard models)	1
	117823	Cover, Left-Hand, High speed (not shown)	1
36	117826	Cover, Right-Hand, Standard (used on all standard models)	1
	117824	Cover, Right-Hand, High speed (not shown)	1
37	117547	Screw M6x10mm	6
38	117543	Data tag	2

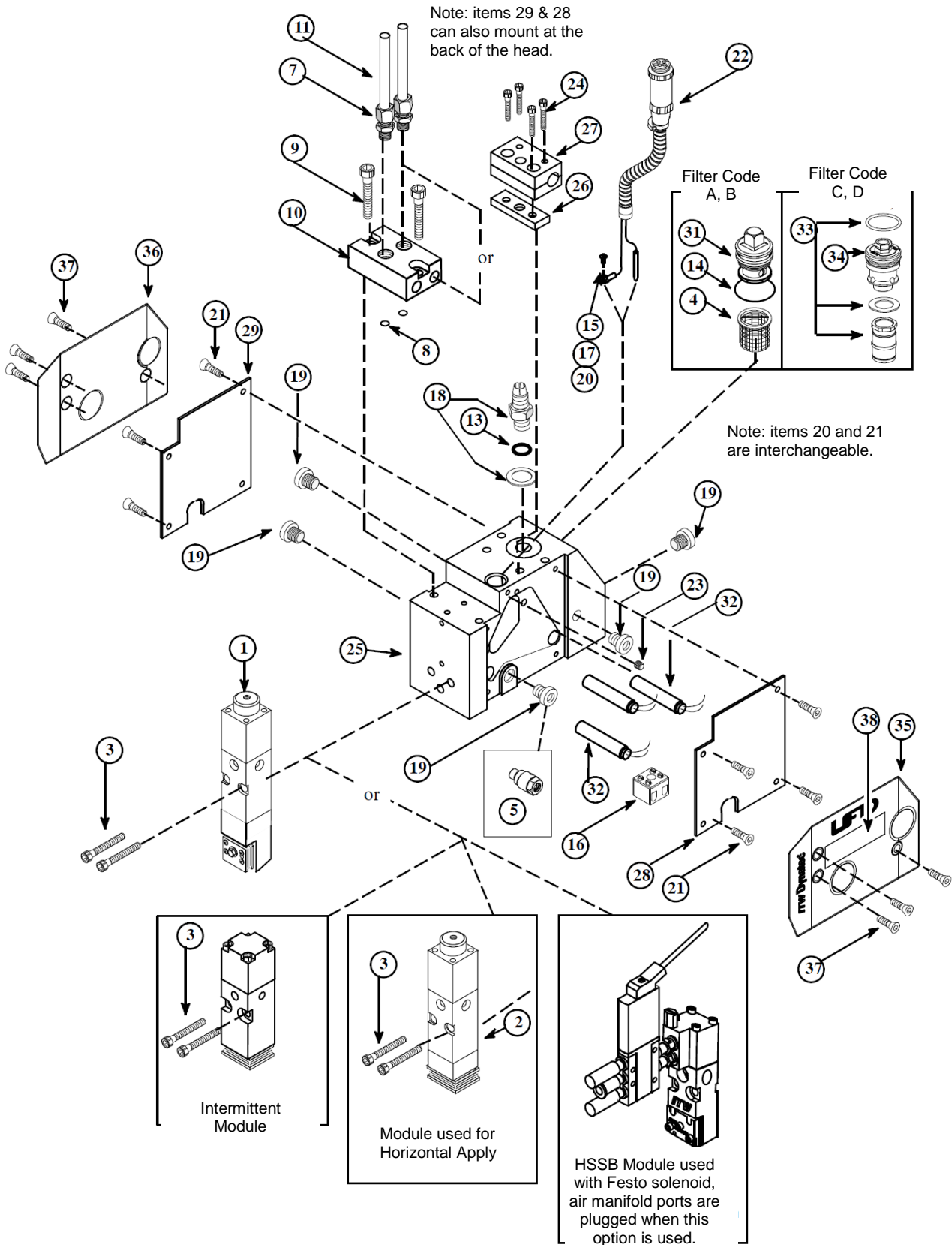


Illustration: 1-Port UFD Vertical & Horizontal Apply Applicator Assemblies

**Air Preheater Assembly for 1-Port UFD Vertical & Horizontal Apply**

Item No.	Part Number	Description	Qty.
	<b>109260</b>	<b>Air Preheater Assembly ( DCL)</b>	<b>1</b>
	<b>109261</b>	<b>Air Preheater Assembly (NOR)</b>	<b>1</b>
	<b>109262</b>	<b>Air Preheater Assembly (MEL-J)</b>	<b>1</b>
	<b>109263</b>	<b>Air Preheater Assembly (MCV)</b>	<b>1</b>
	<b>110146</b>	<b>Air Preheater Assembly (MEL-PT)</b>	<b>1</b>
35	N00183	O-ring, #-016	2
36	N00185	O-ring, #-018	1
37	N04268	Terminal Ring	1
38	N07541	Terminal Block, 1 Pos, Ceramic	2
39	106236	Washer Int Tooth, Lock #4	2
40	107389	Screw M3x6mm	1
41	106531	Screw M3x8mm	4
42	103470	Screw M3x5mm	1
43	100908	Screw M4x25mm	4
44	106294	Spiral Tube	2
45	109109	Preheater Manifold	1
46	109158	Distribution Manifold	1
47	109108	Wire Cover	1
48	109111	Cover	2
49		Temperature Sensor (shown for ref. part of cable assy.)	1
50	106306	Spacer	2
51	N00093	Fitting, Compression	1
52	106328	Screw M4x16mm	2
53	106329	Heater, Cartridge, 200W, 240V, 10 x 60mm	2
54	106448	Heater, Cartridge, 200W, 240V, 8 x 40mm	1
55	109253	Cable Assembly, DCL	1
	109286	Cable Assembly, MCV	1
	109287	Cable Assembly, NOR	1
	109288	Cable Assembly, MEL-J	1
	110145	Cable Assembly, MEL-PT	1
56	106332	Screw M5x55mm	2
57	107161	Screw M4x8mm	1
58	109252	Screw M5x25mm	2

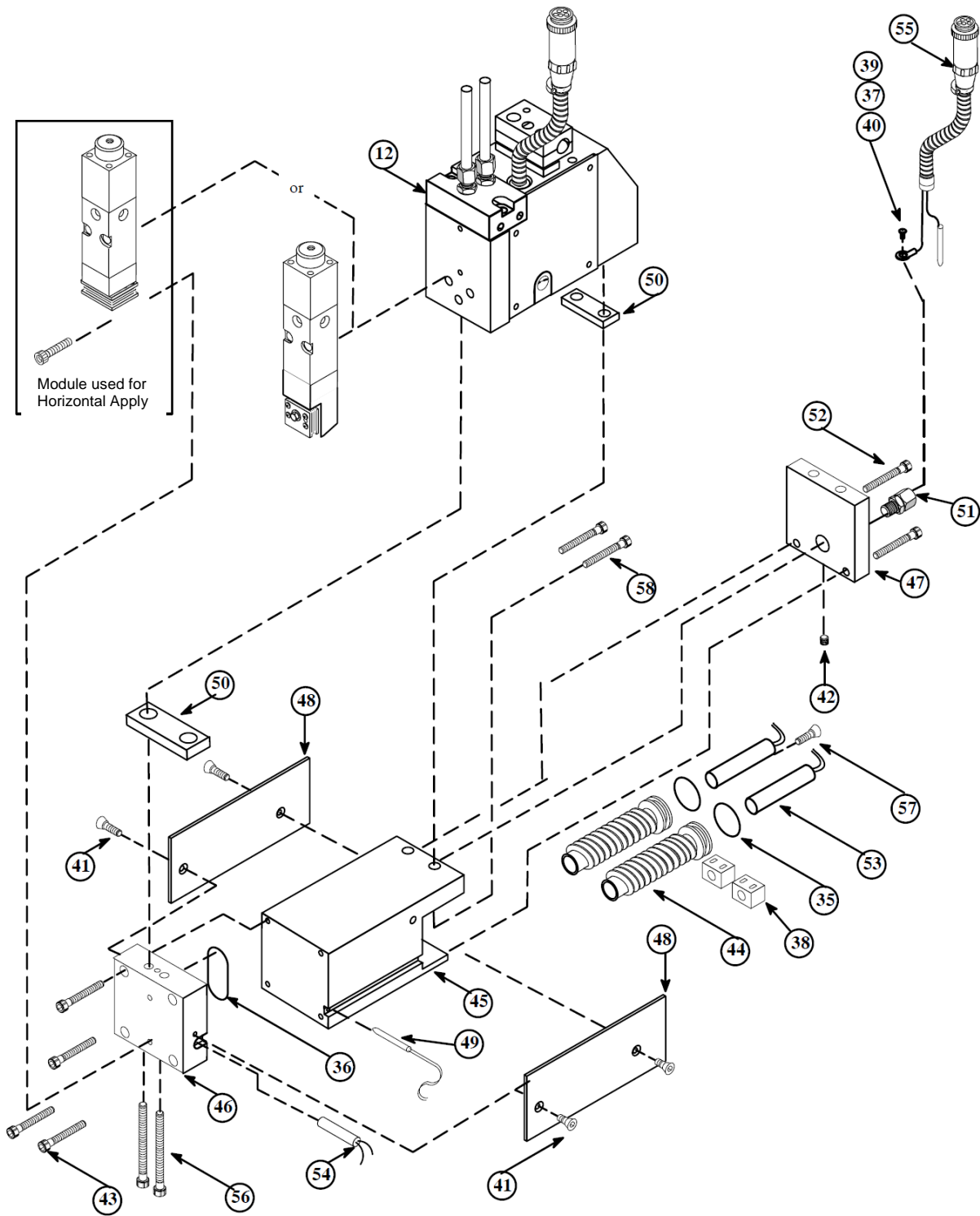


Illustration: Air Preheater Assembly for 1-Port UFD Vertical & Horizontal Apply

**Air Preheater Assembly for 1- or 2-Port UFD Slim Design**

Module Option Codes C, G, J, M only,

(This slim design is available in four port PN 112793 and six port PN 112794 Assemblies)

Item No.	Part Number	Description	Qty.
36	112791	Air Preheater Assembly Slim Design (DCL)	1
37	N00093	Fitting, Compression	1
38	N00174	O-ring, -007	1
39	N00181	O-ring, #-014	2
40	109252	Screw M5x25mm	4
41	106726	Pin Dowel, M5 x16mm	2
42		Nozzel (see order for part number)	1
43	112690	Module, HHSB Vert., Direct Air (shown for ref. See your order)	1- 2
44	078C088	Washer #4 int. Tooth	2
45	112714	Spiral Tube, Slim Design	2
46	112784	Preheater Manifold (1 port)	1
	112785	Preheater Manifold (2 port)	1
47	112788	Wire Cover 1-2 port (Part Of Cable Assy.)	1
48		Temperature Sensor (shown for ref. part of cable assy.)	1
49	106306	Spacer	2
50	101692	Screw M4x35mm	2
51	106329	Heater, Cart, 200w, 240v, 10 x 60mm (Part OfCable Assy.)	2
52	112806	Cable Assembly, DCL, Slim Line, 1 - 2 port	1
53	101627	Screw M3x6mm	2

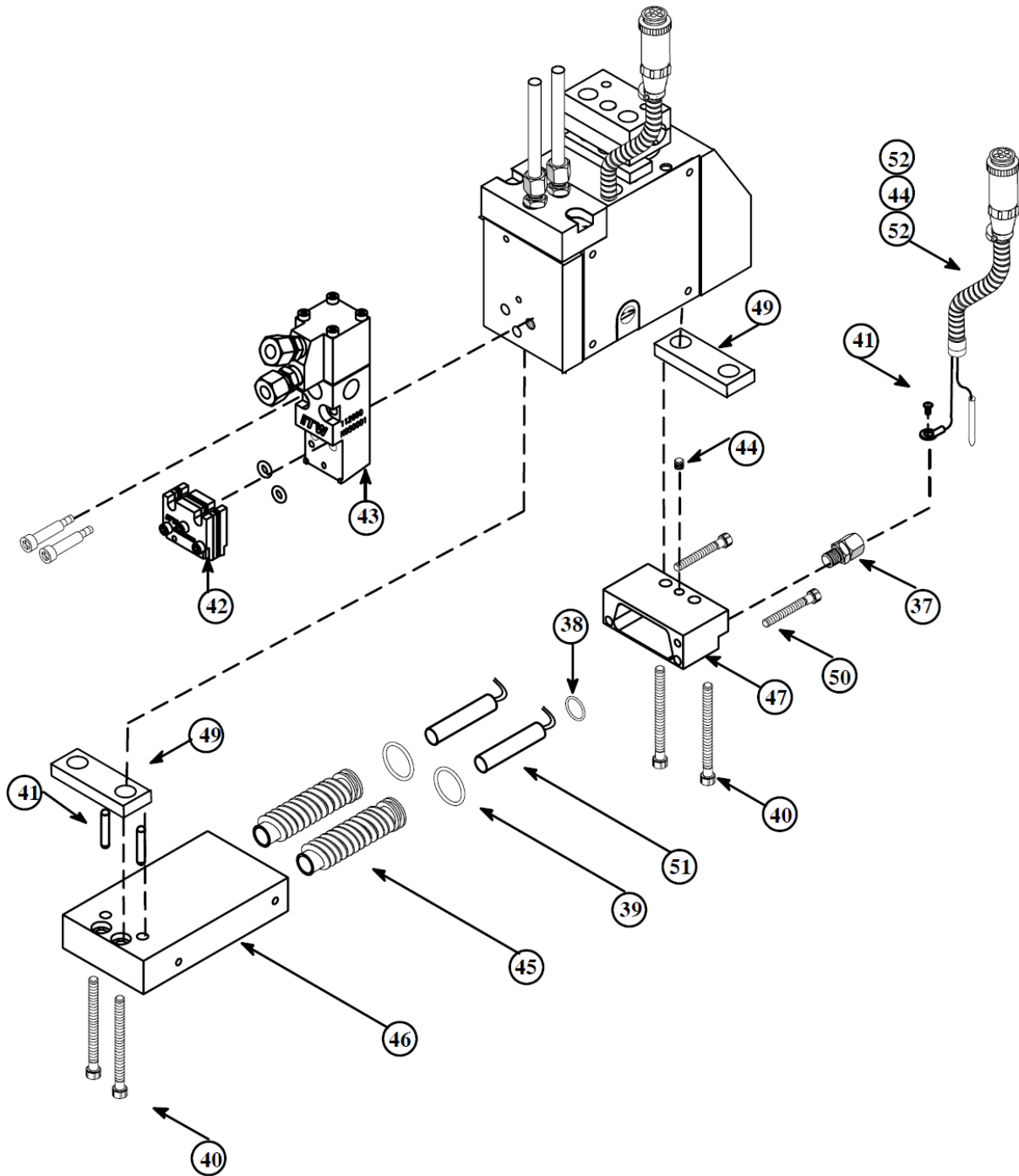


Illustration: Air Preheater Assembly for 1- or 2-Port UFD Slim Design

## 2-Port UFD Vertical & Horizontal Apply, 1 or 2 Program, Applicator Assemblies

Item No.	Part Number	Description	Qty.
1	106224	Module, MR13, Vertical, Extended	2
2	104993	Module, MR13, Horizontal	2
	110840	Module, MR13, Horizontal/ Intermittent (Special)	1
	113346	Module, HSSB, Vertical (used with Festo Solenoid)	1
		(for more module options, see Chapter Model Designation Guide)	
3	804354	Screw M5x30mm	4
4	106273	Filter Basket, 150 mesh	1
	101247	Filter Basket, 100 mesh	1
5	<b>106472</b>	<b>Module Block-off Assembly (option)</b>	<b>1</b>
6	106367	Blank Plate	2
7	N00178	O-ring, #-011	8
8	<b>106474</b>	<b>Solenoid Manifold Assembly, 1 Program</b>	<b>1</b>
9	N00093	Fitting, Compression	2
10	N00175	O-ring, -008	4
11	N07419	Screw M5x20mm	2
12	106305	Air Manifold 2 Port, 1 Program	1
13	106333	Tube Stainless Steel, 1/4 x .065w x 3.5	2
14	<b>106475</b>	<b>Solenoid Manifold Assembly, 2 Program</b>	<b>1</b>
15	N00093	Fitting, Compression	4
16	N00175	O-ring, -008	4
17	N07419	Screw M5x20mm	2
18	106307	Air Manifold, 2 Port, 2 Program	1
19	106333	Tube Stainless Steel, 1/4 x .065w x 3.5	4
20	<b>109254</b>	<b>Service Block Assembly (DCL)</b>	<b>1</b>
	<b>109264</b>	<b>Service Block Assembly (NOR)</b>	<b>1</b>
	<b>109265</b>	<b>Service Block Assembly (MEL)</b>	<b>1</b>
	<b>109266</b>	<b>Service Block Assembly (MCV)</b>	<b>1</b>
21	116245	Filter Kit, M20 Spin-on (includes N03812 o-ring & 116243 washer)	1
	116594	Filter Kit, 200 mesh Spin-on (includes N03812 o-ring & 116243 washer)	1
22	116244	Filter Cap, M20 Spin-on Filter	1
23	N03812	O-ring, #-125	1
24	N07430	Terminal Ring	1
25	107881	Terminal Block, 2 Pos, Ceramic	1
26	078C088	Washer Int Tooth, Lock #4	1
27	101624	Fitting Straight, 6 JIC x 1/4 BSPP	1
28	101625	Fitting Plug, 1/4 BSPP, Soc	5
29	N00196	O-ring, #-111	1
30	101627	Screw M3x6mm	1
31	106531	Screw M3x8mm	8
32	103467	Cable Assembly, BF240V, DCL, 9.0 (Built-in Sensor)	1
	106707	Cable Assembly, BF240V, MCV, 9.0 (Built-in Sensor)	1
	104528	Cable Assembly, BF240V, NOR, 9.0 (Built-in Sensor)	1
	107050	Cable Assembly, BF240V, MEL, 9.0 (Built-in Sensor)	1
33	103470	Screw M3x5mm	1
34	104663	Screw M6x25mm	2
35	109103	Service Block	1
36	106292	Spacer Mounting Clamp	1
37	106293	Mounting Clamp, 13mm, MK2	1
38	109107	Side Cover, Service Block	1
39	110451	Side Cover, Service Block	1
40	106303	Filter Nut	1
41	106444	Heater, Cartridge, 150W, 240V, 10 x 40mm	3
	<b>107936</b>	<b>Balanced Manifold Assembly (option, not shown)</b>	<b>1</b>



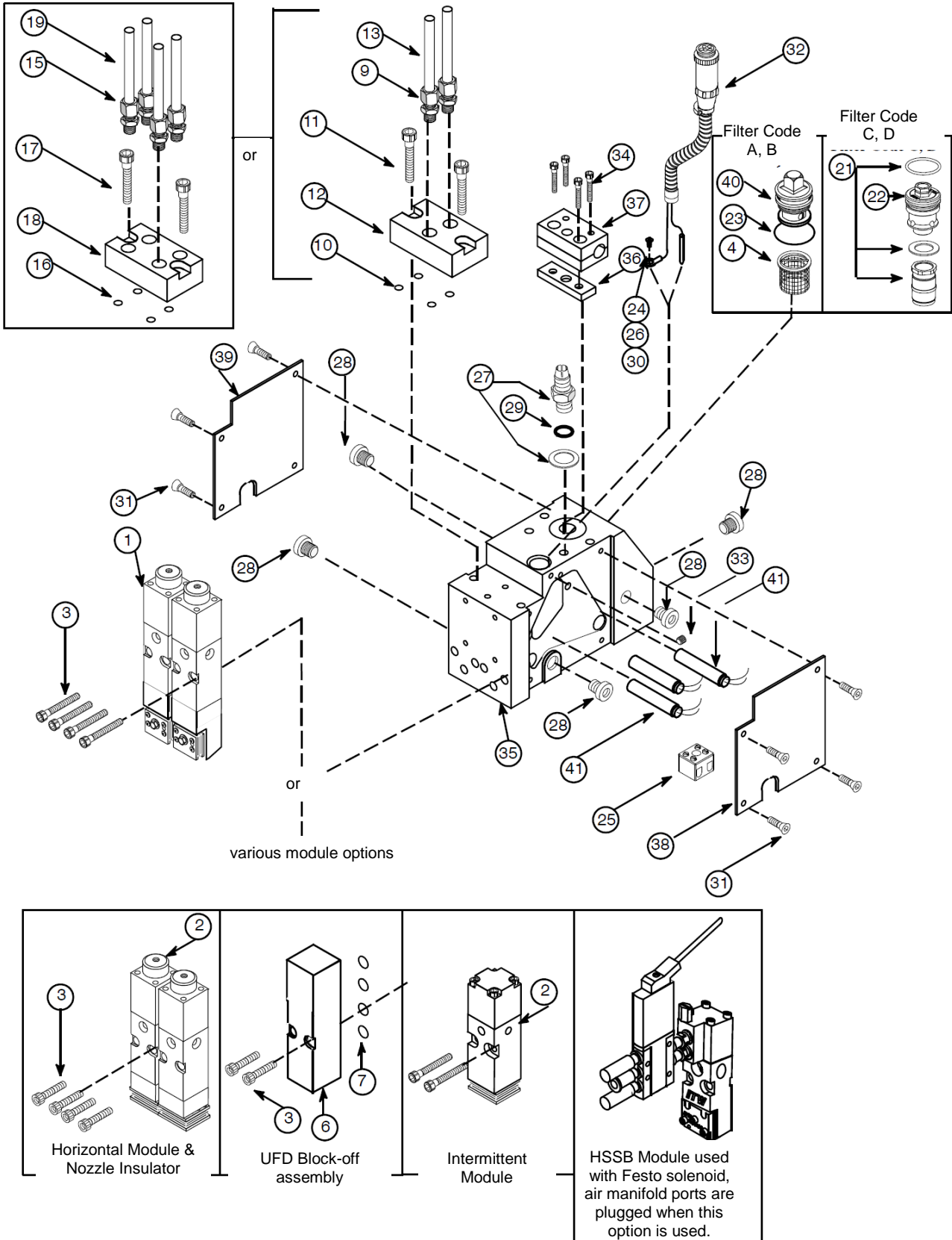


Illustration: 2-Port UFD Vertical & Horizontal Apply, 1 or 2 Program, Applicator Assemblies

**Air Preheater Assembly for 2-Port UFD Vertical & Horizontal Apply, 1 or 2 Program**

Item No.	Part Number	Description	Qty.
	109255	Air Preheater Assembly (DCL)	1
	109267	Air Preheater Assembly (NOR)	1
	109268	Air Preheater Assembly (MEL)	1
	109269	Air Preheater Assembly (MCV)	1
42	109252	Screw M5x25mm	2
43	N00093	Fitting, Compression	1
44	N00183	O-ring, #-016	2
45	069X270	O-ring, #-025	1
46	N04268	Terminal Ring	1
47	N07541	Terminal Block, 1 Pos, Ceramic	2
48	106236	Washer Int Tooth, Lock #4	1
49	107389	Screw M3x6mm	1
50	106531	Screw M3x8mm	4
51	103470	Screw M3x5mm	1
52	100908	Screw M4x25mm	4
53	106294	Spiral Tube	2
54	109109	Preheater Manifold	1
55	109110	Distribution Manifold	1
56	109108	Wire Cover	1
57	109111	Cover, Side	2
58		Temperature Sensor (shown for ref. part of cable assy.)	1
59	107161	Screw M4x8mm	1
60	106306	Spacer	2
61	106332	Screw M5x55mm	2
62	106328	Screw M4x16mm	2
63	106329	Heater, Cartridge, 200W, 240V, 10 x 60mm	2
64	106448	Heater, Cartridge, 200W, 240V, 8 x 40mm	1
65	109253	Cable Assembly, DCL	1
	109286	Cable Assembly, MCV	1
	109287	Cable Assembly, NOR	1
	109288	Cable Assembly, MEL	1

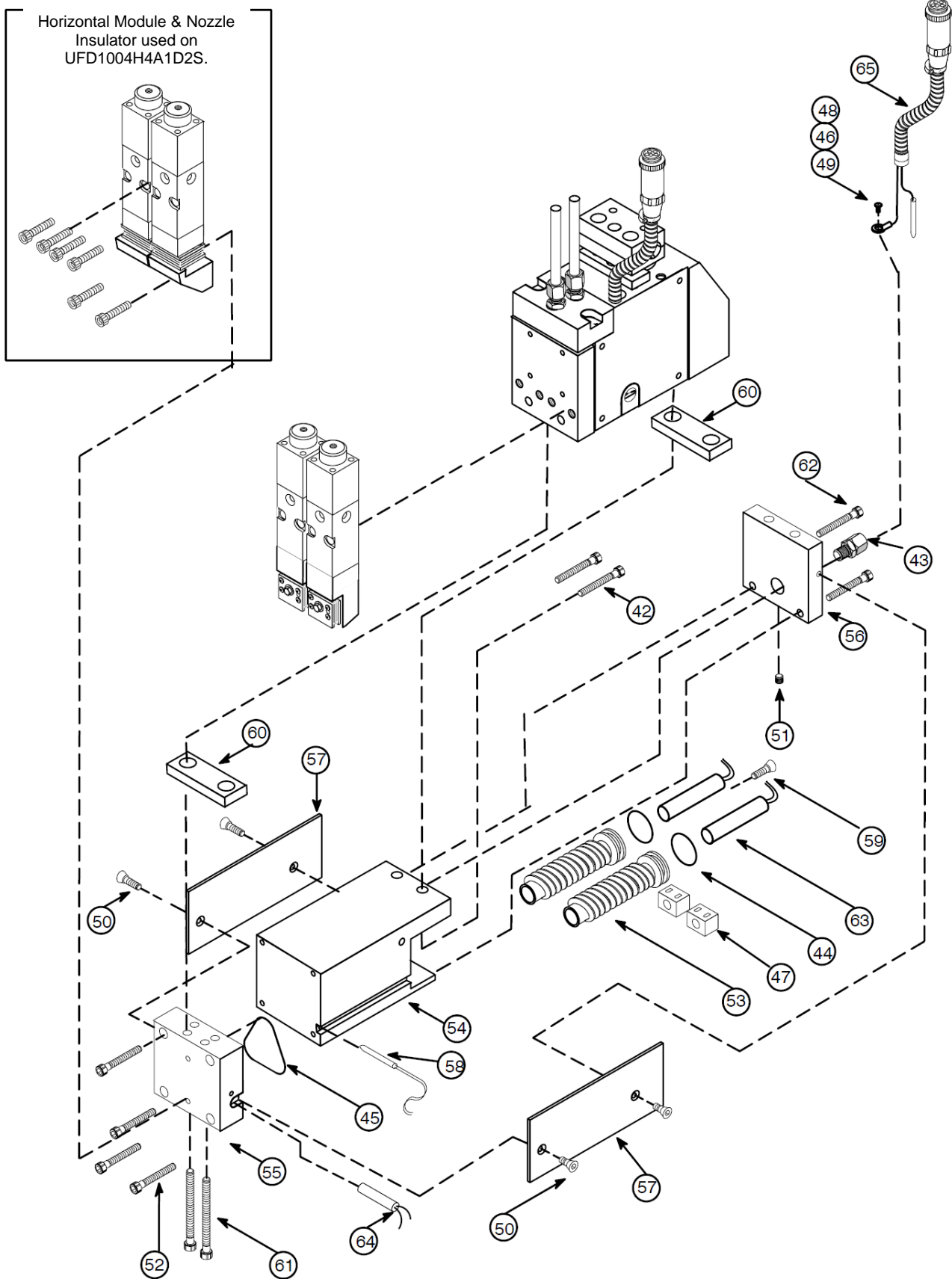


Illustration: Air Preheater Assembly for 2-Port UFD Vertical & Horizontal Apply, 1 or 2 Program

### 3-Port UFD Vertical & Horizontal Apply, 1, 2 or 3 Program, Applicator Assemblies

Item No.	Part Number	Description	Qty.
1	106224	Module, MR13, Vertical, Extended	4
2	104993	Module, MR13, Horizontal	4
	110840	Module, MR13, Horizontal/ Intermittent (Special)	1
	113346	Module, HSSB, Vertical (used with Festo Solenoid)	1
		<i>(for more module options, see Chapter Model Designation Guide)</i>	
3	804354	Screw M5x30mm	6
4	106273	Filter Basket, 150 mesh	1
	101247	Filter Basket, 100 mesh	1
5	<b>106472</b>	<b>Module Block-off Assembly</b>	<b>1-3</b>
6	106367	Blank Plate	1
7	N00178	O-ring, #-011	4
8	<b>106667</b>	<b>Solenoid Manifold Assembly, 1 Program</b>	<b>1</b>
	<b>114777</b>	<b>Solenoid Manifold Assembly, 2 Program</b>	<b>1</b>
9	N00093	Fitting, Compression	2
10	N00175	O-ring, -008	6
11	N07419	Screw M5x20mm	2
12	106546	Air Manifold 3 Port, 1 Program	1
13	106333	Tube Stainless Steel, 1/4 x .065w x 3.5	2
14	<b>106668</b>	<b>Solenoid Manifold Assembly, 3 Program</b>	<b>1</b>
	<b>107935</b>	<b>Solenoid Manifold Assembly, 3 Program, Balanced</b>	<b>1</b>
15	N00093	Fitting, Compression	6
16	N00175	O-ring, -008	6
17	N07419	Screw M5x20mm	2
18	106547	Air Manifold, 3 Port, 3 Program	1
	107932	Air Manifold, 3 Port, 3 Program, Balanced	1
19	106333	Tube Stainless Steel, 1/4 x .065w x 3.5	6
20	<b>109334</b>	<b>Service Block Assembly (DCL)</b>	<b>1</b>
	<b>109335</b>	<b>Service Block Assembly (MCV)</b>	<b>1</b>
	<b>109336</b>	<b>Service Block Assembly (NOR)</b>	<b>1</b>
	<b>109337</b>	<b>Service Block Assembly (MEL)</b>	<b>1</b>
21	116245	Filter Kit, M20 Spin-on (includes N03812 o-ring & 116243 washer)	1
	116594	Filter Kit, 200 mesh Spin-on (includes N03812 o-ring & 116243 washer)	1
22	116244	Filter Cap, M20 Spin-on Filter	1
23	N03812	O-ring, #-125	1
24	N07430	Terminal Ring	1
25	107881	Terminal Block, 2 Pos, Ceramic	1
26	078C088	Washer Int Tooth, Lock #4	1
27	101624	Fitting Straight, 6 JIC x 1/4 BSPP	1
28	101625	Fitting Plug, 1/4 BSPP, Soc	5
29	101627	Screw M3x6mm	1
30	106531	Screw M3x8mm	8
31	103467	Cable Assembly, BF240V, DCL, 9.0 (Built-in Sensor)	1
	106707	Cable Assembly, BF240V, MCV, 9.0 (Built-in Sensor)	1
	104528	Cable Assembly, BF240V, NOR, 9.0 (Built-in Sensor)	1
	107050	Cable Assembly, BF240V, MEL, 9.0 (Built-in Sensor)	1
32	103470	Screw M3x5mm	1
33	104663	Screw M6x25mm	2
34	109159	Service Block	1
35	106292	Spacer Mounting Clamp	1
36	106293	Mounting Clamp, 13mm, MK2	1
37	109107	Side Cover, Service Block	1
38	110451	Side Cover, Service Block	1
39	106303	Filter Nut	1
40	106548	Heater, Cartridge, 175W, 240V, 10 x 65mm	3
41	N00196	O-ring, #-111	1

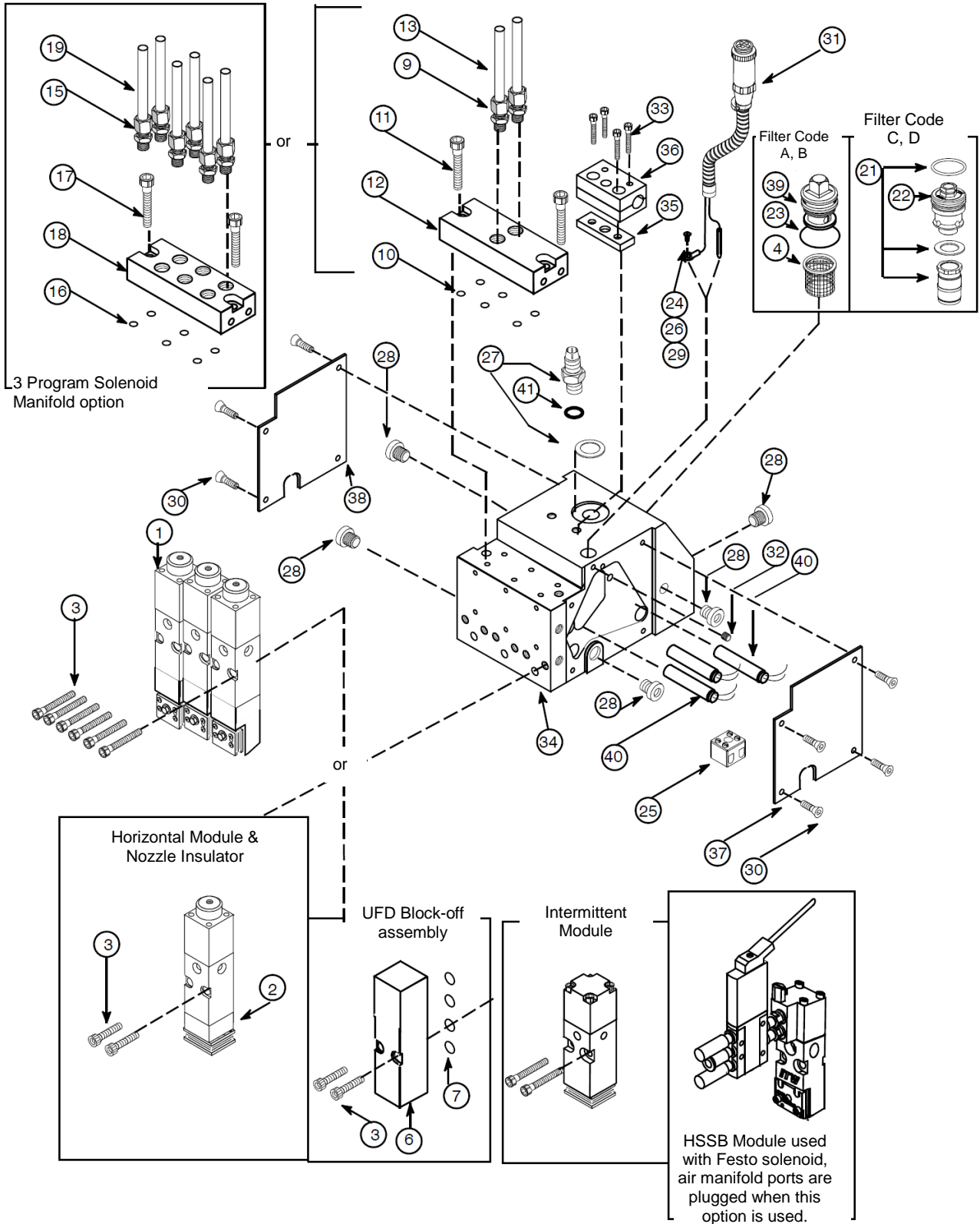


Illustration: 3-Port UFD Vertical & Horizontal Apply, 1, 2 or 3 Program, Applicator Assemblies

**Air Preheater Assembly for 3-Port UFD Vertical & Horizontal Apply, 1 or 3 Program**

Item No.	Part Number	Description	Qty.
	<b>109338</b>	<b>Air Preheater Assembly (DCL)</b>	<b>1</b>
	<b>109339</b>	<b>Air Preheater Assembly (MCV)</b>	<b>1</b>
	<b>109340</b>	<b>Air Preheater Assembly (NOR)</b>	<b>1</b>
	<b>109341</b>	<b>Air Preheater Assembly (MEL)</b>	<b>1</b>
42	109252	Screw M5x25mm	2
43	N00093	Fitting, Compression	1
44	N00183	O-ring, #-016	3
45	N00192	O-ring, #-032	1
46	N04268	Terminal Ring	1
47	N07541	Terminal Block, 1 Pos, Ceramic	2
48	106236	Washer Int Tooth, Lock #4	1
49	107389	Screw M3x6mm	1
50	106531	Screw M3x8mm	4
51	107161	Screw M4x8mm	2
52	103470	Screw M3x5mm	1
53	100908	Screw M4x25mm	3
54	106332	Screw M5x55mm	2
55	106294	Spiral Tube	3
56	109162	Preheater Manifold	1
57	109165	Distribution Manifold	1
58	109168	Wire Cover, Rear	1
59	109111	Cover, Side	2
61	106550	Spacer	2
62		Temperature Sensor (shown for reference, part of cable assy.)	1
63	106328	Screw M4x16mm	2
64	106329	Heater, Cartridge, 200W, 240V, 10 x 60mm	3
65	106549	Heater, Cartridge, 400W, 240V, 8 x 65mm	1
66	109253	Cable Assembly, DCL	1
	109286	Cable Assembly, MCV	1
	109287	Cable Assembly, NOR	1
	109288	Cable Assembly, MEL	1

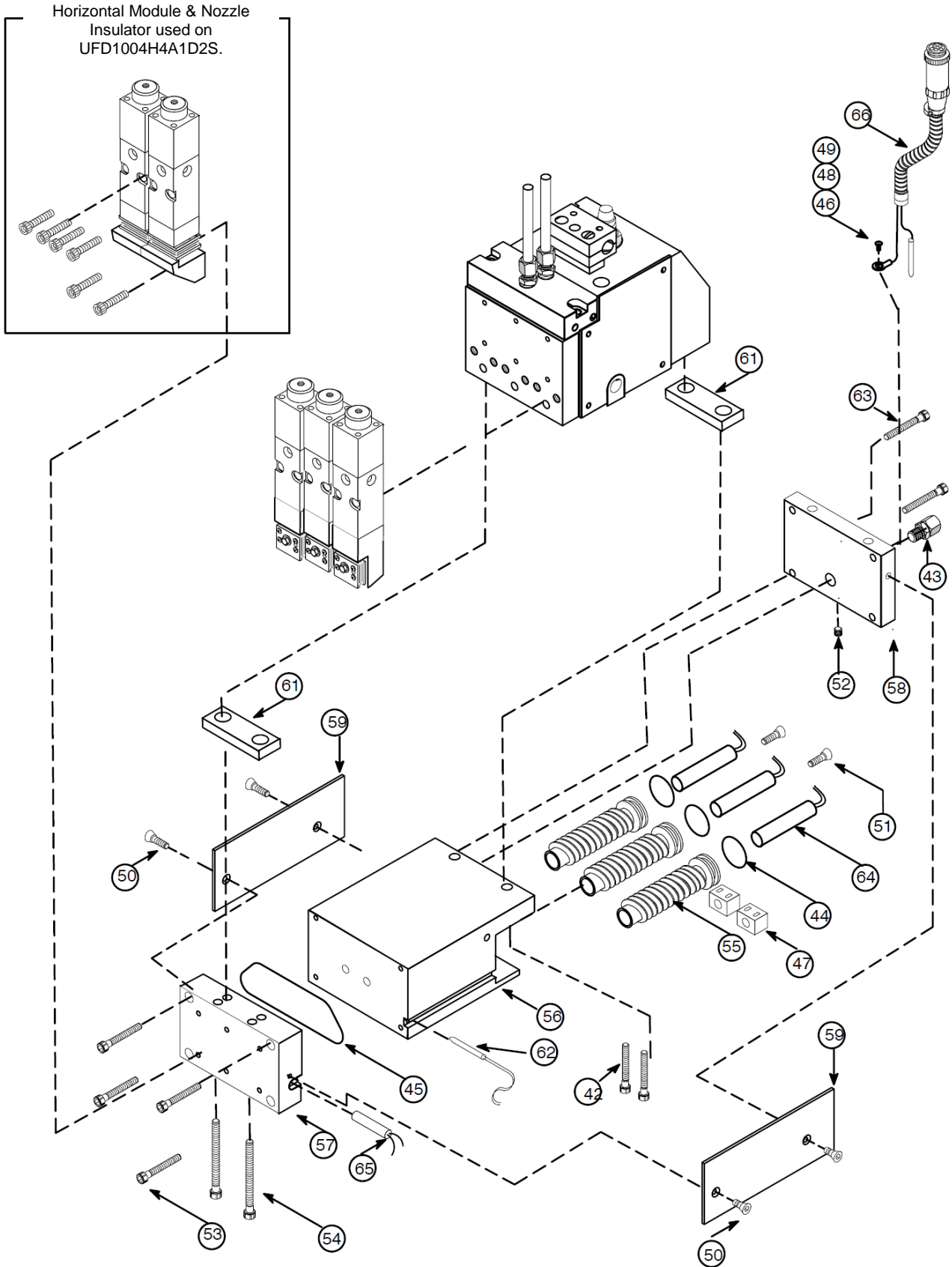


Illustration: Air Preheater Assembly for 3-Port UFD Vertical & Horizontal Apply, 1 or 3 Program



### Air Preheater Assembly for 3-Port UFD Slim Design (DCL PN 113841 shown)

Item No.	Part Number	Description	Qty.
1	113841	Air Preheater Assembly Slim Design (DCL)	1
2	N00093	Fitting, Compression	1
3	N00174	O-ring, -007	1
4	N00181	O-ring, #-014	3
5	109252	Screw M5x25mm	4
6	106726	Pin Dowel, M5 x16mm	2
7	112690	Module, HHSB Vert., Direct Air (shown for reference, see your order)	3
8	078C088	Washer #4 int. Tooth	2
9		Set Screw M3x0.5x6	1
10	112714	Spiral Tube, Slim Design	3
11	113839	Heater Body	1
12	113840	Wire Cover, 3-port	1
13	106550	Spacer	2
14	101692	Screw M4x35mm	2
15	106329	Heater, Cartridge, 200W, 240V, 10 x 60mm	3
16	101610	Cable Assembly, DCL	1
17	101627	Screw M3x6mm	2
18		Temperature Sensor (shown for reference, part of cable assy.)	1



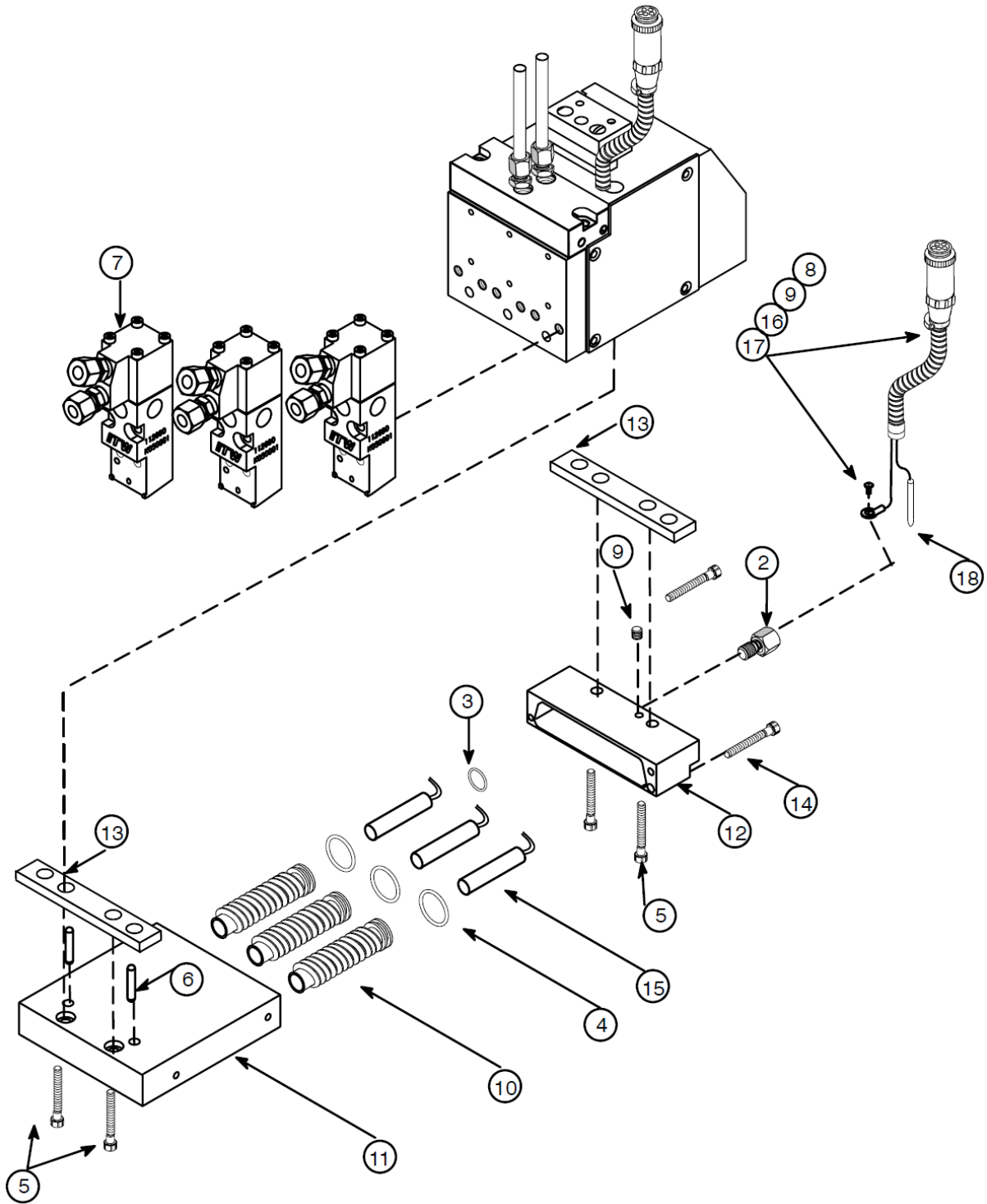


Illustration: Air Preheater Assembly for 3-Port UFD Slim Design (DCL PN 113841 shown)

## 4-Port UFD Vertical & Horizontal Apply, 1 or 4 Program, Applicator Assemblies

Item No.	Part Number	Description	Qty.
1	106224	Module, MR13, Vertical, Extended	4
2	104993	Module, MR13, Horizontal	4
	110840	Module, MR13, Horizontal/ Intermittent (Special)	1
	113346	Module, HSSB, Vertical (used with Festo Solenoid)	1
		(for more module options, see Chapter Model Designation Guide)	
3	804354	Screw 10-32 x 1.25	8
4	106273	Filter Basket, 150 mesh	1
	101247	Filter Basket, 100 mesh	1
<b>5</b>	<b>106472</b>	<b>Module Block-off Assembly</b>	<b>1-3</b>
6	106367	Blank Plate	1
7	N00178	O-ring, #-011	4
<b>8</b>	<b>106476</b>	<b>Solenoid Manifold Assembly, 1 Program</b>	<b>1</b>
9	N00093	Fitting, Compression	2
10	N00175	O-ring, -008	8
11	N07419	Screw M5x20mm	2
12	106297	Air Manifold 4 Port, 1 Program	1
13	106333	Tube Stainless Steel, 1/4 x .065w x 3.5	2
14	106475	<b>Solenoid Manifold Assembly, 2 Program</b>	<b>2</b>
15	N00093	Fitting, Compression	4
16	N00175	O-ring, -008	4
17	N07419	Screw M5x20mm	2
18	106307	Air Manifold, 2 Port, 2 Program	1
19	106333	Tube Stainless Steel, 1/4 x .065w x 3.5	4
<b>20</b>	<b>109270</b>	<b>Service Block Assembly (DCL)</b>	<b>1</b>
	<b>109271</b>	<b>Service Block Assembly (MCV)</b>	<b>1</b>
	<b>109272</b>	<b>Service Block Assembly (NOR)</b>	<b>1</b>
	<b>109273</b>	<b>Service Block Assembly (MEL)</b>	<b>1</b>
21	116245	Filter Kit, M20 Spin-on (includes N03812 O-ring & 116243 washer)	1
	116594	Filter Kit, 200 mesh Spin-on (includes N03812 O-ring & 116243 washer)	1
22	116244	Filter Cap, M20 Spin-on Filter	1
23	N03812	O-ring, #-125	1
24	N07430	Terminal Ring	1
25	107881	Terminal Block, 1 Pos, Ceramic	1
26	078C088	Washer Int Tooth, Lock #4	1
27	101624	Fitting Straight, 6 JIC x 1/4 BSPP	1
28	101625	Fitting Plug, 1/4 BSPP, Soc	5
29	101627	Screw M3x6mm	1
30	106531	Screw M3x8mm	8
31	103467	Cable Assembly, BF240V, DCL, 9.0 (Built-in Sensor)	1
	106707	Cable Assembly, BF240V, MCV, 9.0 (Built-in Sensor)	1
	104528	Cable Assembly, BF240V, NOR, 9.0 (Built-in Sensor)	1
	107050	Cable Assembly, BF240V, MEL, 9.0 (Built-in Sensor)	1
32	103470	Screw M3x5mm	1
33	104663	Screw M6x325mm	4
34	109160	Service Block	1
35	106292	Spacer Mounting Clamp	2
36	106293	Mounting Clamp, 13mm, MK	2
37	109107	Side Cover, Service Bloc	1
38	110451	Side Cover, Service Block	1
39	106303	Filter Nut	1
40	106325	Heater, Cartridge, 200W, 240V, 10 x 90mm	3
41	N00196	O-ring, #-111	1
	107934	Balanced Manifold Assembly (not shown)	

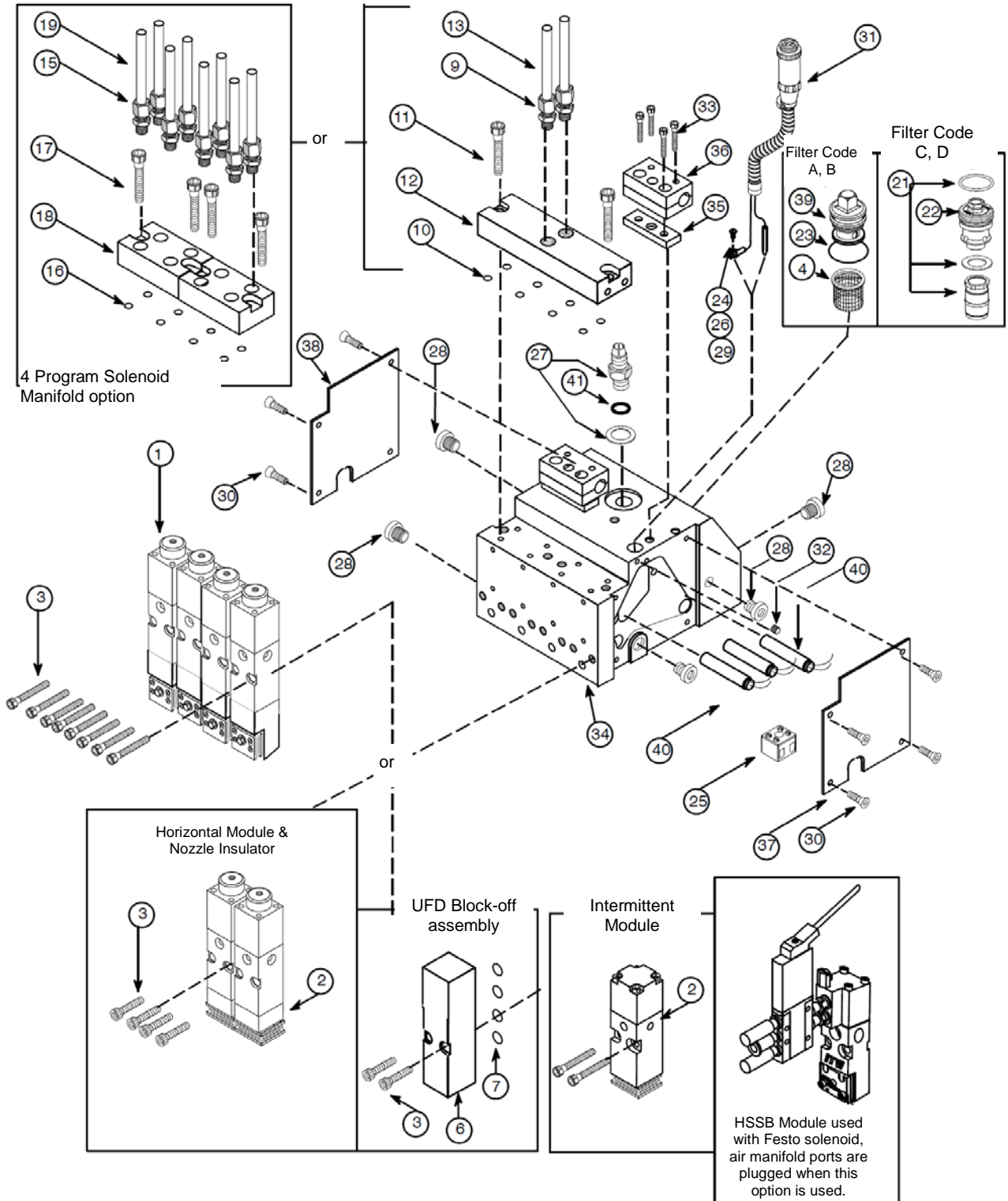


Illustration: 4-Port UFD Vertical & Horizontal Apply, 1 or 4 Program, Applicator Assemblies

**Air Preheater Assembly for 4-Port UFD Vertical & Horizontal Apply, 1 or 4 Program**

Item No.	Part Number	Description	Qty.
	<b>109274</b>	<b>Air Preheater Assembly (DCL)</b>	<b>1</b>
	<b>109275</b>	<b>Air Preheater Assembly (MCV)</b>	<b>1</b>
	<b>109276</b>	<b>Air Preheater Assembly (NOR)</b>	<b>1</b>
	<b>109277</b>	<b>Air Preheater Assembly (MEL)</b>	<b>1</b>
42	109252	Screw M5x25mm	2
43	N00093	Fitting, Compression	1
44	N00183	O-ring, #-016	4
45	N04126	O-ring, #-037	1
46	N04268	Terminal Ring	1
47	N07541	Terminal Block, 1 Pos, Ceramic	2
48	106236	Washer Int Tooth, Lock #4	1
49	107389	Screw M3x6mm	1
50	106531	Screw M3x8mm	4
51	107161	Screw M4x8mm	2
52	103470	Screw M3x5mm	1
53	100908	Screw M4x25mm	6
54	106332	Screw M5x	2
55	106294	Spiral Tube	4
56	109163	Preheater Manifold	1
57	109166	Distribution Manifold	1
58	109169	Wire Cover Rear	1
59	109111	Cover, Side	1
60		Temperature Sensor (shown for ref. part of cable assy.)	1
61	106470	Screw M4x8mm	4
62	106306	Spacer	4
64	106328	Screw M4x16mm	3
65	106329	Heater, Cartridge, 200W, 240V, 10 x 60mm	4
66	106330	Heater, Cartridge, 400W, 240V, 8 x 90mm	1
67	109253	Cable Assembly, DCL	1
	109286	Cable Assembly, MCV	1
	109287	Cable Assembly, NOR	1
	109288	Cable Assembly, MEL	1

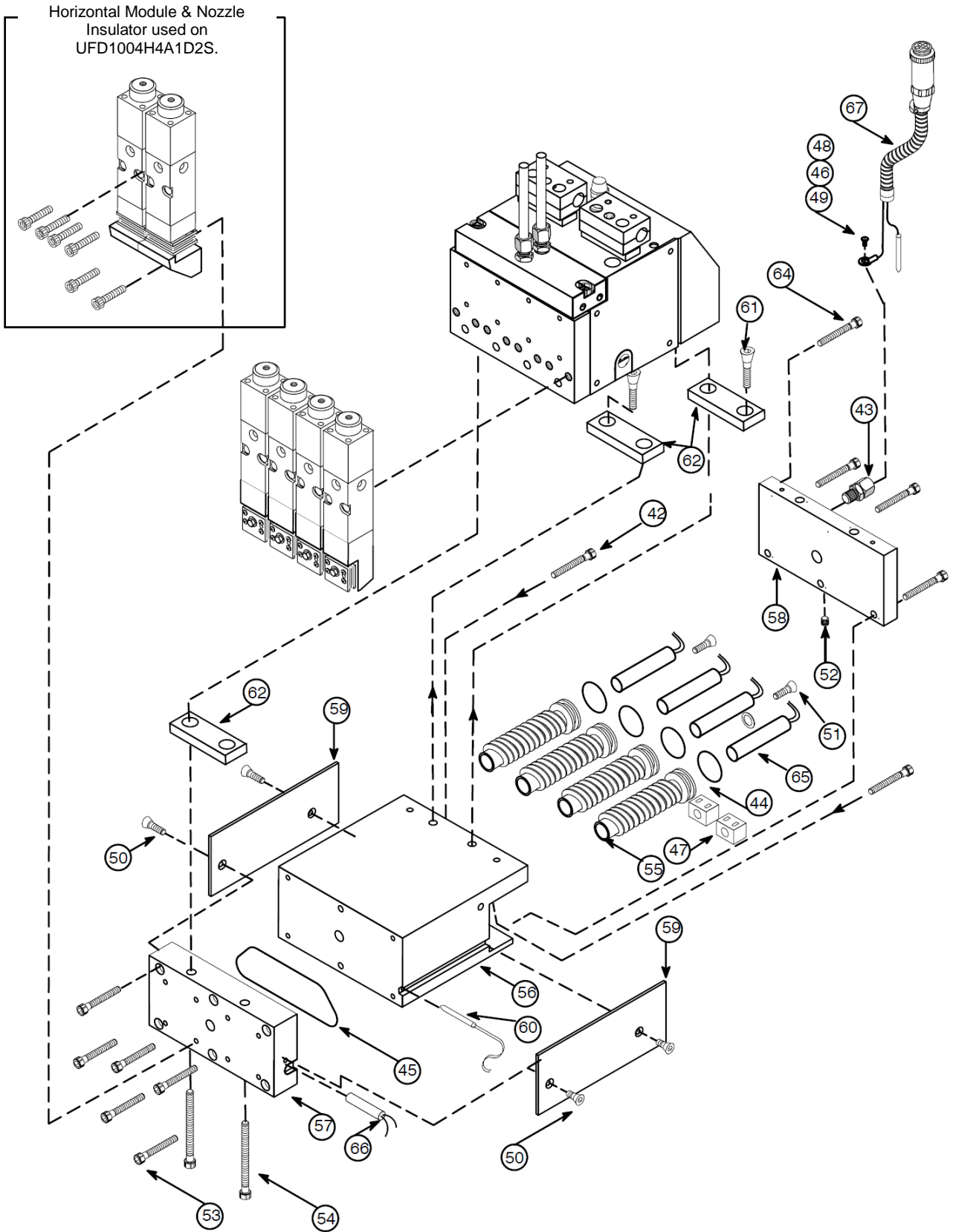


Illustration: Air Preheater Assembly for 4-Port UFD Vertical & Horizontal Apply, 1 or 4 Program

### Air Preheater Assembly PN 112793 for 4-Port UFD Slim Design (Module Option Codes C, G, J, M Only)

Item No.	Part Number	Description	Qty.
72	112786	Heater Body	1
73	112714	Spiral Tube	4
74	N00181	O-ring, -014	4
75	N00174	O-ring,-007	1
76	112789	Wire Cover	1
77	101692	Screw M4x35mm	3
78	N00093	Fitting, 1/4 Tube x 1/8 NPT	1
79	109252	Screw M5x25mm	
80	106726	Dowel Pin M5 x 16mm	2
81	106306	Spacer	4
82	106470	Screw M4x8mm	4
83	106329	Heater Cartridge, 10mm, 20W	4
84	101610	Cable Assembly, AH, DCL	1
85	112716	Screw M5x6mm	1
86	N01756	Term, PRL, 16-14 GA	2
87	048J271	Heat Shrink	0.1
88	078C088	Washer, #4 Internal Tooth	2
89	101627	Screw M3x6mm	2
90	N07430	Terminal Ring	1
91	048G016	Terminal Ring	1

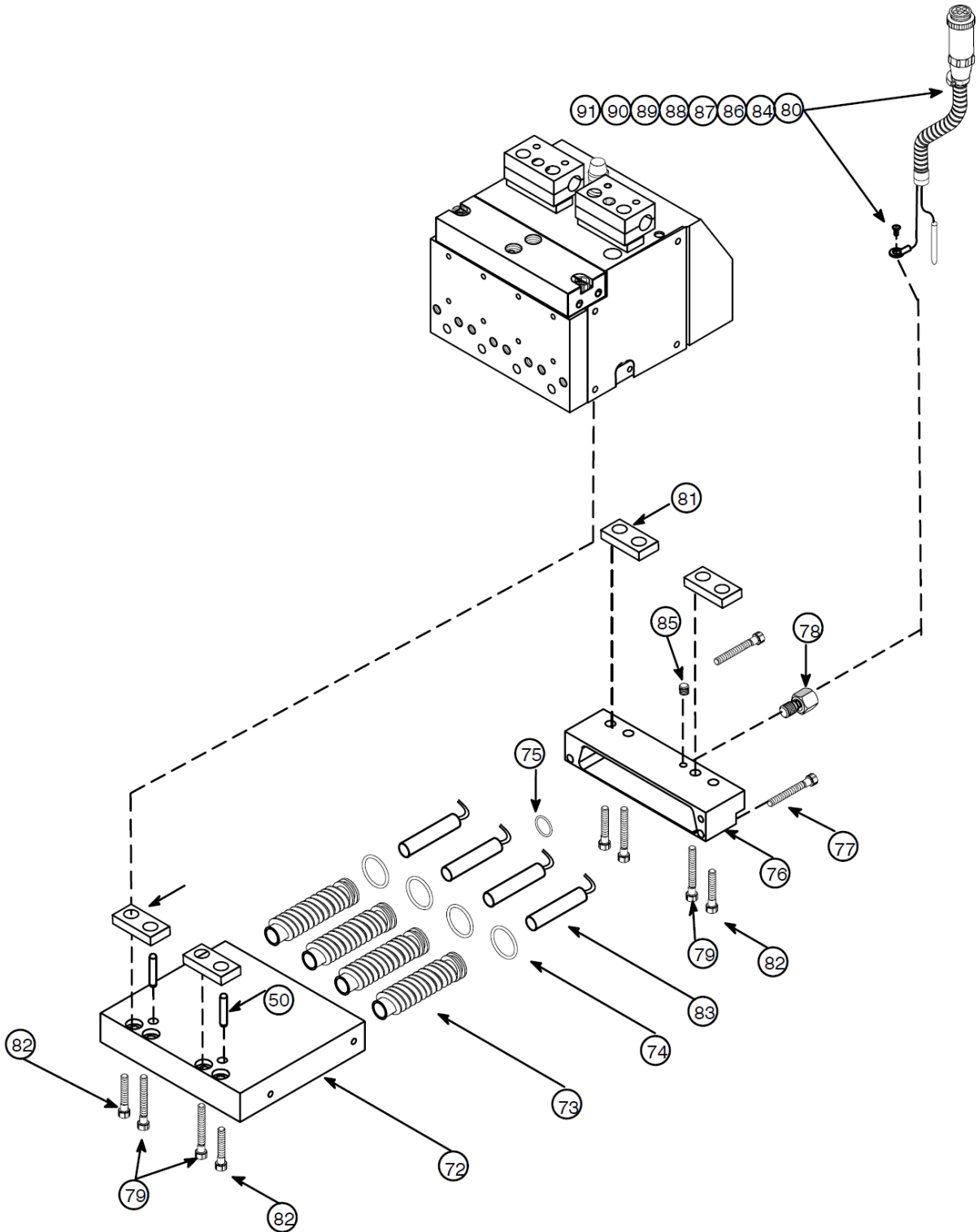


Illustration: Air Preheater Assembly PN 112793 for 4-Port UFD Slim Design



## 6-Port UFD Vertical & Horizontal Apply, 1 or 6 Program, Applicator Assemblies

Item No.	Part Number	Description	Qty.
1	106224	Module, MR13, Vertical, Extended	6
2	104993	Module, MR13, Horizontal	6
	110840	Module, MR13, Horizontal/ Intermittent (Special)	1
	113346	Module, HSSB, Vertical (used with Festo Solenoid)	1
3	804354	Screw M5x30mm	12
4	106273	Filter Basket, 150 mesh	1
	101247	Filter Basket, 100 mesh	1
<b>5</b>	<b>106472</b>	<b>Module Block-off Assembly</b>	<b>1-5</b>
6	106367	Blank Plate	1
7	N00178	O-ring, #-011	4
<b>8</b>	<b>106879</b>	<b>Solenoid Manifold Assembly, 1 Program</b>	<b>1</b>
9	N00093	Fitting, Compression	2
10	N00175	O-ring, -008	12
11	N07419	Screw M5x20mm	2
12	110345	Air Manifold 6 Port, 1 Program	1
13	106333	Tube Stainless Steel, 1/4 x .065w x 3.5	2
14	N00753	1/8 NPT Level Seal Plug	2
<b>15</b>	<b>106475</b>	<b>Solenoid Manifold Assembly, 2 Program</b>	<b>3</b>
16	N00093	Fitting, Compression	4
17	N00175	O-ring, -008	4
18	N07419	Screw M5x20mm	2
19	106307	Air Manifold, 2 Port, 2 Program	1
20	106333	Tube Stainless Steel, 1/4 x .065w x 3.5	4
<b>21</b>	<b>109278</b>	<b>Service Block Assembly (DCL)</b>	<b>1</b>
	<b>109279</b>	<b>Service Block Assembly (MCV)</b>	<b>1</b>
	<b>109280</b>	<b>Service Block Assembly (NOR)</b>	<b>1</b>
	<b>109281</b>	<b>Service Block Assembly (MEL)</b>	<b>1</b>
22	N00196	O-ring, #-111	1
23	N03812	O-ring, #-125	1
24	N07430	Terminal Ring	1
25	107881	Terminal Block, 2 Pos, Ceramic	1
26	078C088	Washer Int Tooth, Lock #4	1
27	101624	Fitting Straight, 6 JIC x 1/4 BSPP	1
28	101625	Fitting Plug, 1/4 BSPP, Soc	5
29	101627	Screw M3x6mm	1
30	106531	Screw M3x8mm	8
31	103467	Cable Assembly, BF240V, DCL, 9.0 (Built-in Sensor)	1
	106707	Cable Assembly, BF240V, MCV, 9.0 (Built-in Sensor)	1
	104528	Cable Assembly, BF240V, NOR, 9.0 (Built-in Sensor)	1
	107050	Cable Assembly, BF240V, MEL, 9.0 (Built-in Sensor)	1
32	103470	Screw M3x5mm	1
33	104663	Screw M6x25mm	4
34	109161	Service Block	1
35	106292	Spacer Mounting Clamp	2
36	106293	Mounting Clamp, 13mm, MK2	2
37	109107	Side Cover, Service Block	1
38	110451	Side Cover, Service Block	1
39	106303	Filter Nut	1
40	106715	Heater, Cartridge, 300W, 240V, 10 x 140mm	3
41	116245	Filter Kit, M20 Spin-on (includes N03812 o-ring & 116243 washer)	1
	116594	Filter Kit, 200 mesh Spin-on (includes N03812 o-ring & 116243 washer)	1
42	116244	Filter Cap, M20 Spin-on Filter	1



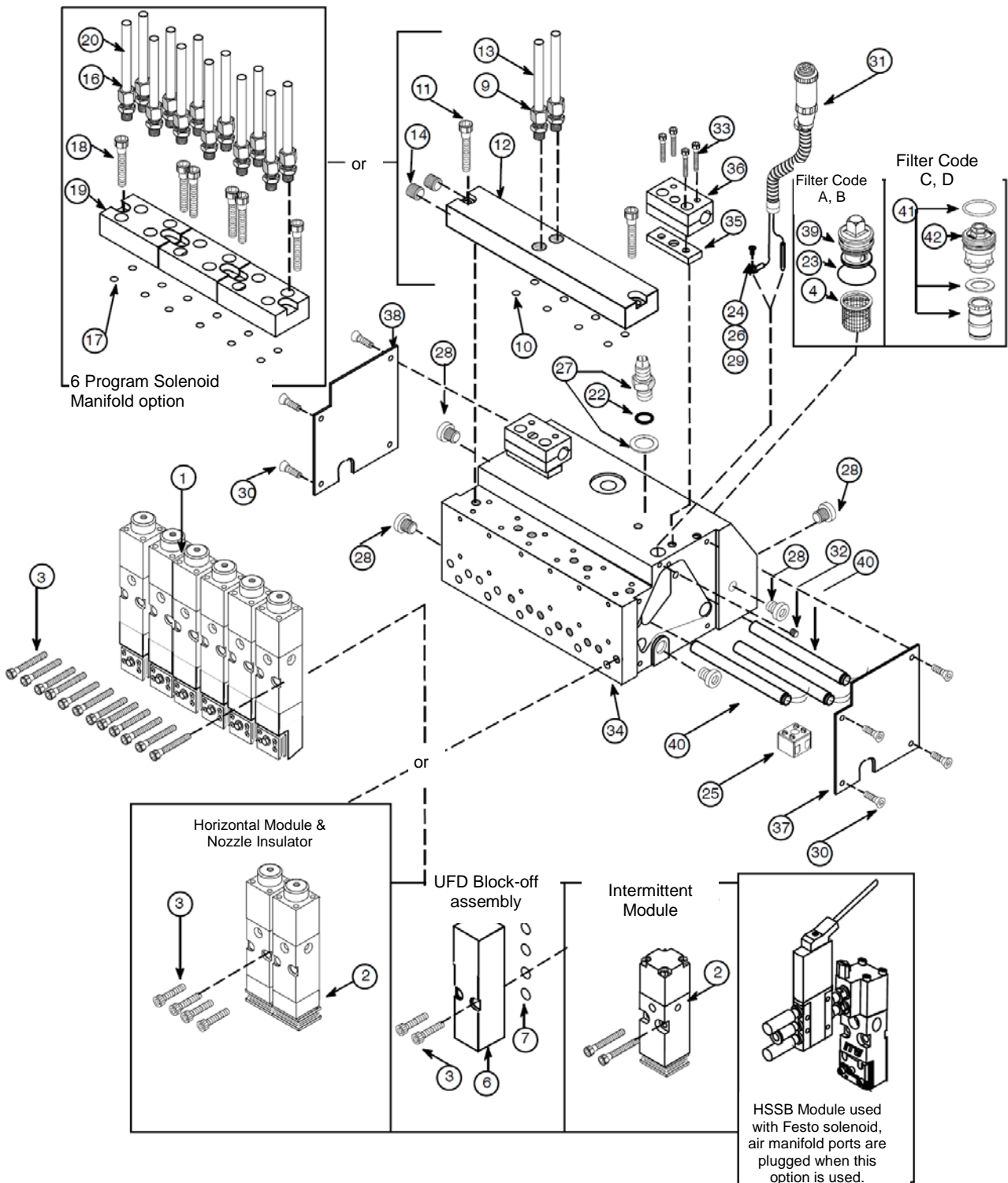


Illustration: 6-Port UFD Vertical & Horizontal Apply, 1 or 6 Program, Applicator Assemblies

**Air Preheater Assembly for 6-Port UFD Vertical & Horizontal Apply, 1 or 6 Program**

Item No.	Part Number	Description	Qty.
	109282	<b>Air Preheater Assembly (DCL)</b>	1
	109283	<b>Air Preheater Assembly (MCV)</b>	1
	109284	<b>Air Preheater Assembly (NOR)</b>	1
	109285	<b>Air Preheater Assembly (MEL)</b>	1
43	N00183	O-ring, #-016	6
44	106800	O-ring, #-044	1
45	N04268	Terminal Ring	1
46	106236	Washer Int Tooth, Lock #4	1
47	107389	Screw M3x6mm	1
48	106531	Screw M3x8mm	4
49	N00093	Fitting, Compression	1
50	103470	Screw M3x5mm	1
51	100908	Screw M4x25mm	6
52	109252	Screw M5x25mm	4
53	106294	Spiral Tube	6
54	109164	Preheater Manifold	1
55	109167	Distribution Manifold	1
56	109170	Back Plate	1
57	109111	Cover	2
58		Temperature Sensor (shown for reference, part of cable assy.)	1
59	107881	Terminal Block, 2 POS, Ceramic	2
60	106550	Spacer	4
61	107161	Screw M4x8mm	3
62	106328	Screw M4x16mm	3
63	106717	Heater, Cartridge, 100W, 240V, 10 x 60mm	6
64	106716	Heater, Cartridge, 600W, 240V, 8 x 140mm	1
65	106332	Screw M5x55mm	4
66	109253	Cable Assembly, DCL	1
	109286	Cable Assembly, MCV	1
	109287	Cable Assembly, NOR	1
	109288	Cable Assembly, MEL	1

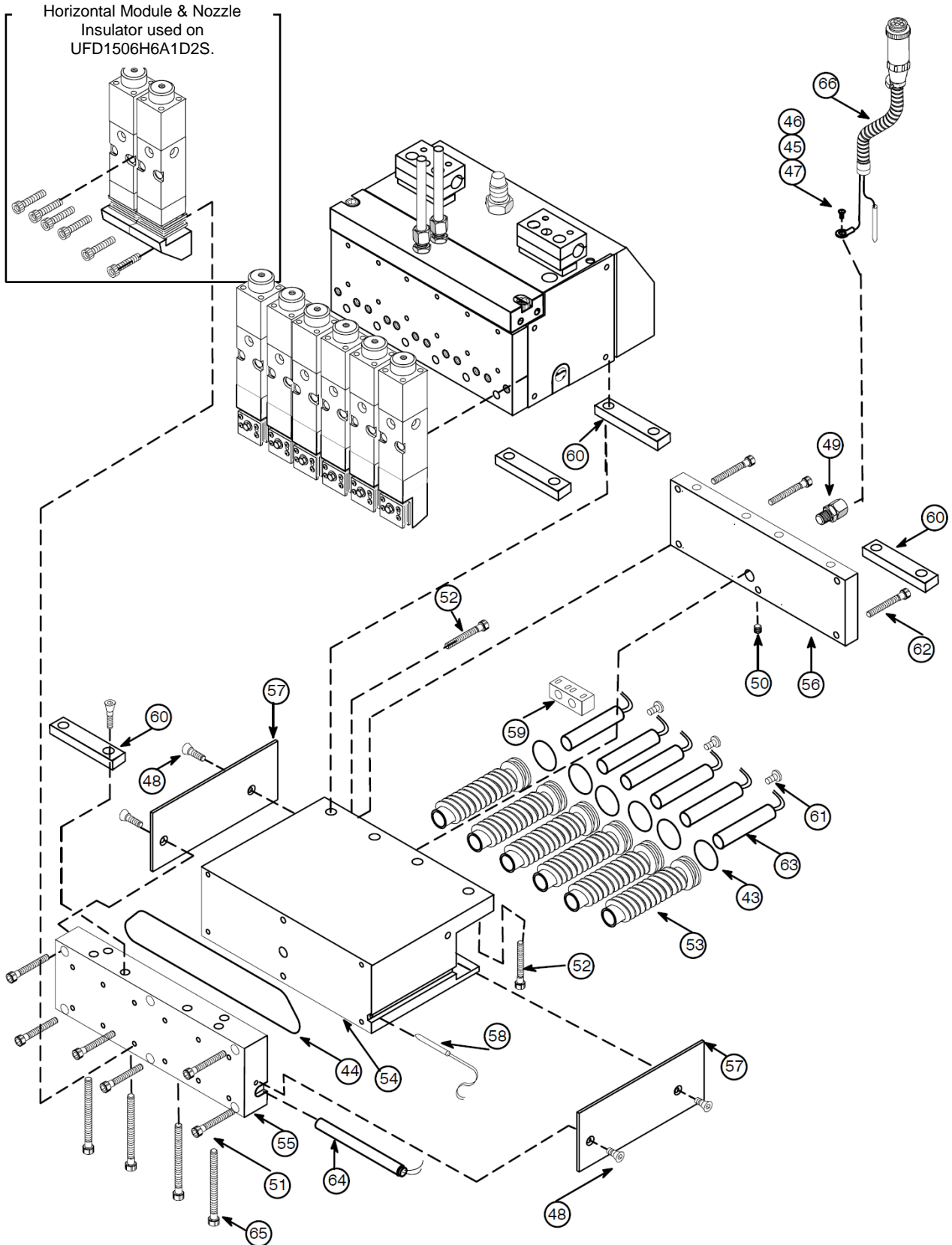


Illustration: Air Preheater Assembly for 6-Port UFD Vertical & Horizontal Apply, 1 or 6 Program

**Air Preheater Assembly PN 112794 for 6-Port UFD Slim Design**  
(Module Option Codes C, G, J, M Only)

Item No.	Part Number	Description	Qty.
72	112787	Heater Body	1
73	112714	Spiral Tube	6
74	N00181	O-ring, -014	6
75	N00174	O-ring,-007	1
76	112790	Wire Cover	1
77	101692	Screw M4x35mm	4
78	N00093	Fitting, 1/4 Tube x 1/8 NPT	1
79	109252	Screw M5x25mm	8
80	106726	Dowel Pin M5 x 16mm	2
81	106306	Spacer	4
82	106470	Screw M4x8mm	4
83	106329	Heater Cartridge, 10mm, 20W	6
84	101610	Cable Assembly, AH, DCL	1
85	112716	Screw M5x6mm	1
86	N01756	Term, PRL, 16-14 GA	2
87	048J271	Heat Shrink	0.1
88	078C088	Washer, #4 Internal Tooth	2
89	101627	Screw M3x6mm	2
90	N07430	Terminal Ring	1
91	048G016	Terminal Ring	1

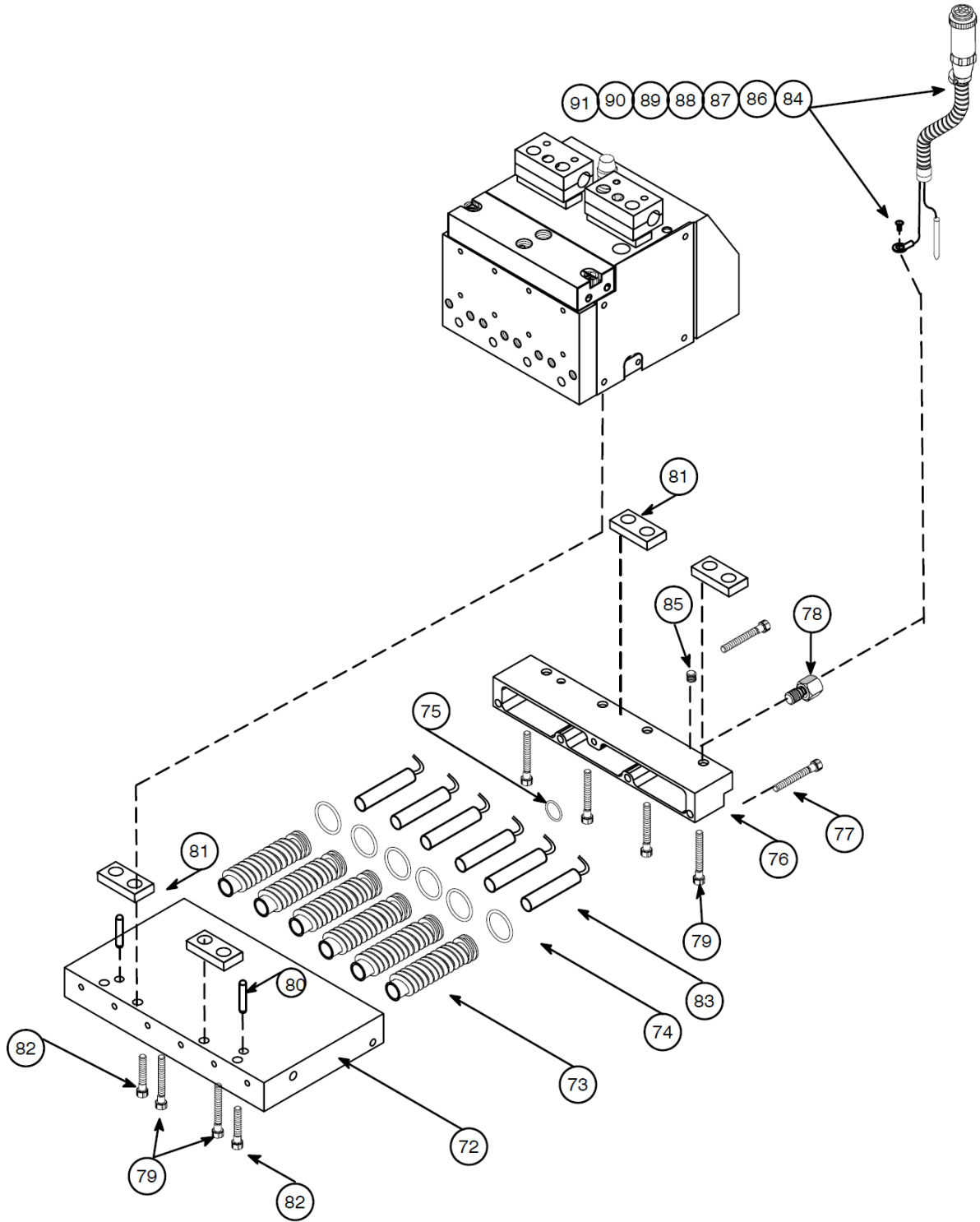


Illustration: Air Preheater Assembly PN 112794 for 6-Port UFD Slim Design

**UFD Modules****UFD Spray Module Assembly, Horizontal, PN 104993**

Item No.	Part Number	Description	Qty.
1	110791	Body Module	1
2	057C084	Stem Assembly (used on PN 104993 module)	1
2b	107178	Ball Stem Assembly (used on PN 107078 module)	1
3	Not used		
4	8785	Compression Spring	1
5	057F139	Air Cylinder	1
6	N00178	O-ring, #011	3
7	078A373	Screw 6-32 x 1 1/4	4
8	078A384	Screw 10-32 x 3/4	1
9	078D078	Sealing Hex Nut 10-32	1
10	N00198	O-ring, #113	1
11	078G028	Roll Pin 1/16 Dia. x 3/8 Long	2
12	N00794	Screw 6-32 x 3/4	4
13	Not used		
<b>14</b>	<b>084B1361</b>	<b>Seal Cartridge Assembly</b>	<b>1</b>
15	057E429	Seal Cartridge	1
16	057I260	Seal Cartridge Gasket	1
17	069X197	Stem Seal	2
18	069X198	Seal Backup	2
19	078C085	Washer, .25 x .16 x .04	2
20	078F034	Retaining Ring	2
21	078G028	Roll Pin	1
22	N00176	O-ring, #009	1
<b>23</b>	<b>104989</b>	<b>Spray Nozzle Adapter Assembly*</b>	<b>1</b>
24	N05044	O-ring, #109	1
25	N00178	O-ring, #011	1
26	Not used		
27	N00174	O-ring, #007	2
28	N00176	O-ring, #009	2

\* **Important:** P/N 104989 must be ordered as an assembly.

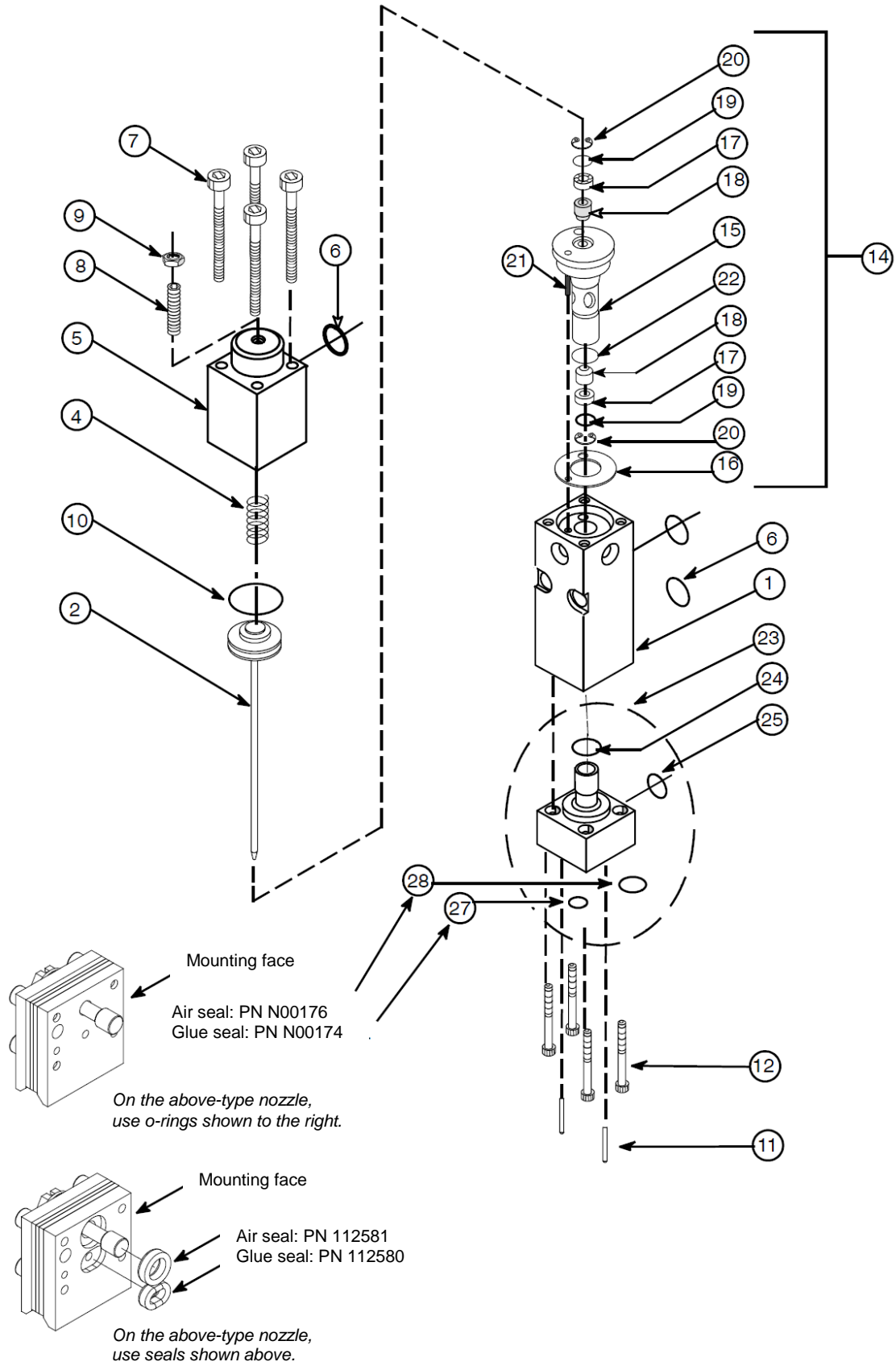


Illustration: UFD Spray Module Assembly, Horizontal, PN 104993

**UFD Spray Module Assembly, Vertical, Extended, PN 106224**

Item No.	Part Number	Description	Qty.
1	110791	Body Module	1
2	057C084	Stem Assembly	1
3	Not used		
4	8785	Compression Spring	1
5	057F139	Air Cylinder	1
6	N00178	O-ring, #011	3
7	078A184	Screw 6-32 x 2	2
8	N00795	Screw 6-32 x 1	2
9	078A373	Screw 6-32 x 1 1/4	4
10	078A384	Screw 10-32 x 3/4	1
11	078D078	Sealing Hex Nut10-32	1
12	N00198	O-ring, #113	1
13	084B1361	<b>Seal Cartridge Assembly</b>	1
14	057E429	Seal Cartridge	1
15	057I260	Seal Cartridge Gasket	1
16	069X197	Stem Seal	2
17	069X198	Seal Backup	2
18	078C085	Washer, .25 x .16 x .04	2
19	078F034	Retaining Ring	2
20	078G028	Roll Pin	1
21	N00176	O-ring, #009	1
22	113829	<b>Vertical Adapter Assembly</b>	1
23	N05044	O-ring, #109	1
24	N00174	O-ring, # 007	1
25	N00176	O-ring, #009	1
26	N00178	O-ring, #011	1
27	078G028	Roll Pin 1/16 Dia. x 3/8 Long	2



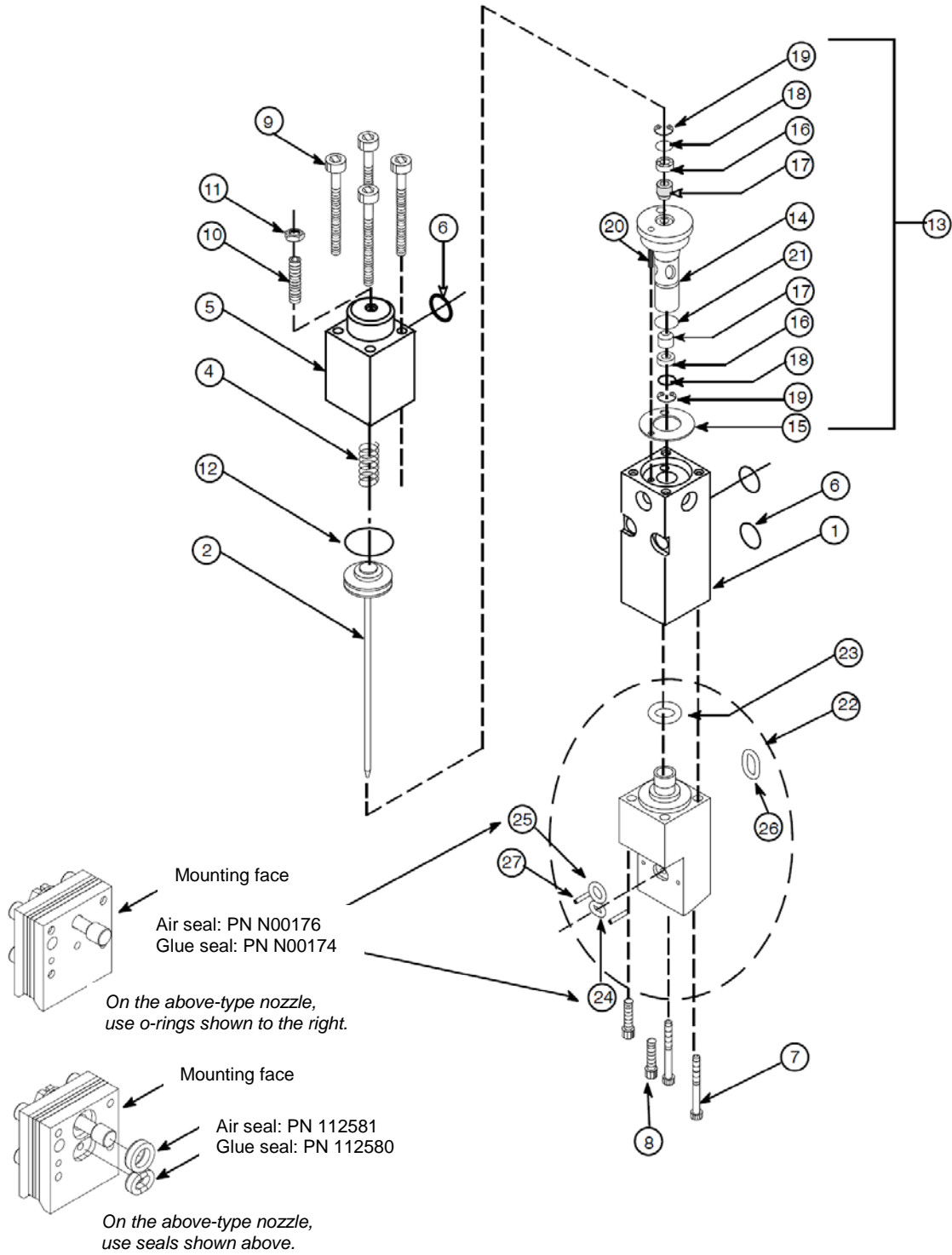
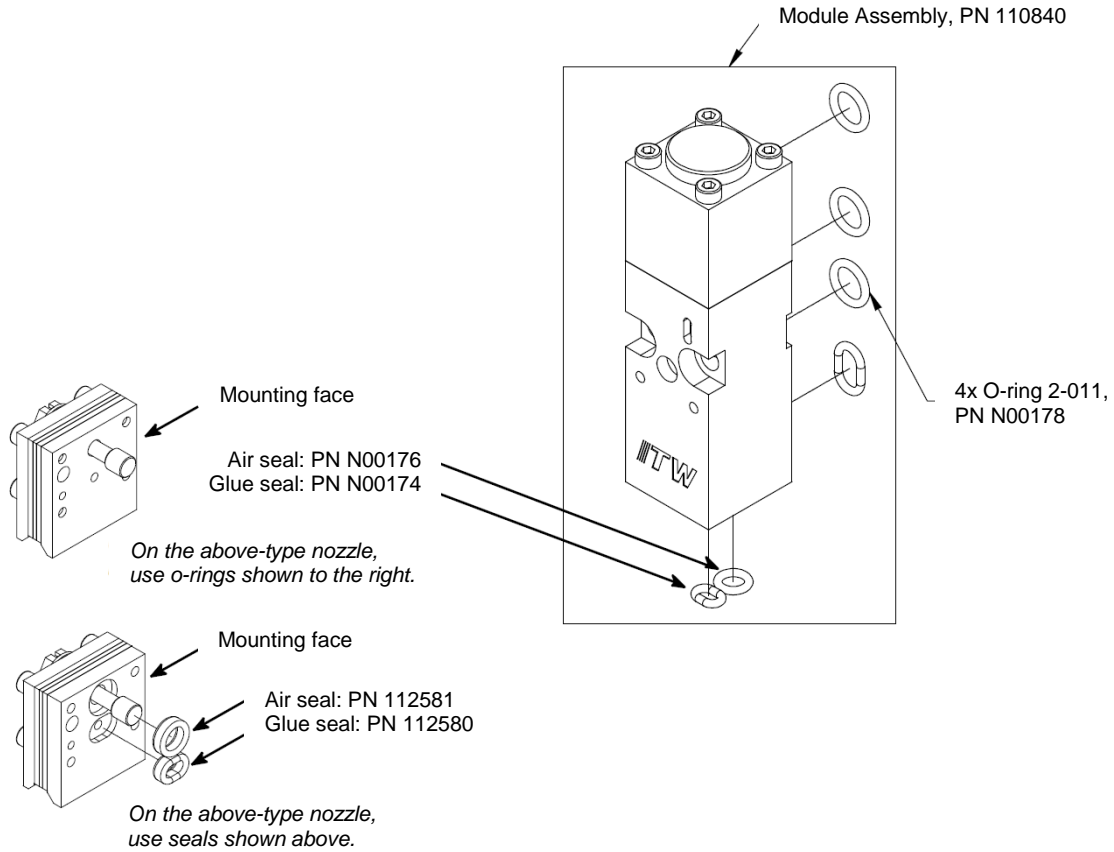


Illustration: UFD Spray Module Assembly, Vertical, Extended, PN 106224

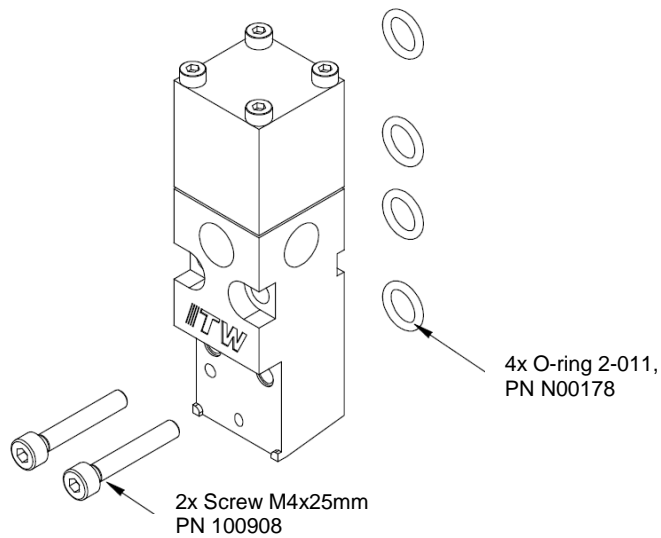
### UFD Spray Module Assembly, Horizontal, Snuffback, PN 110840

(Module Option "K")

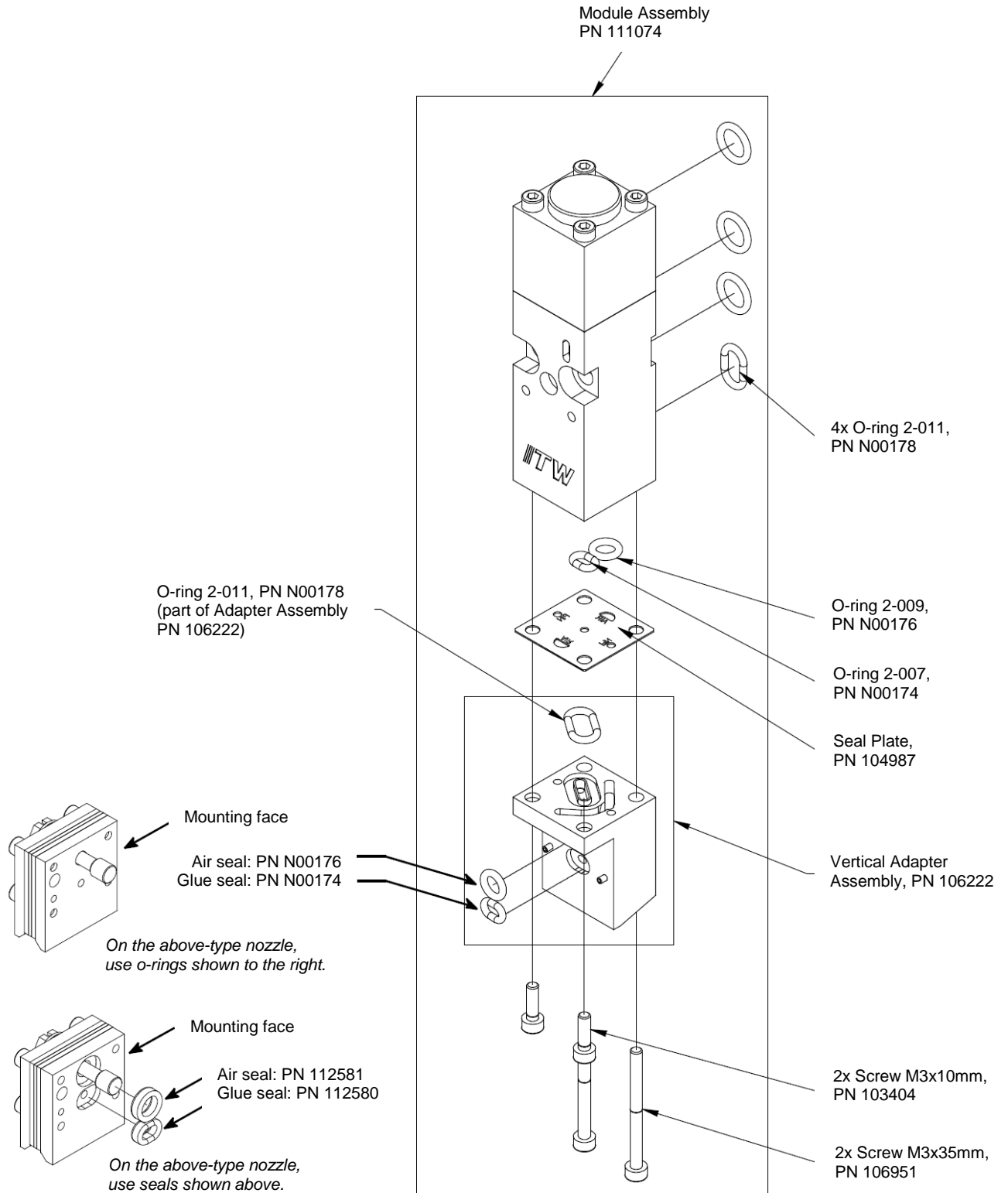


### UFD Spray Module Assembly, High Speed, Vertical, PN 113778

(Module Option "A")

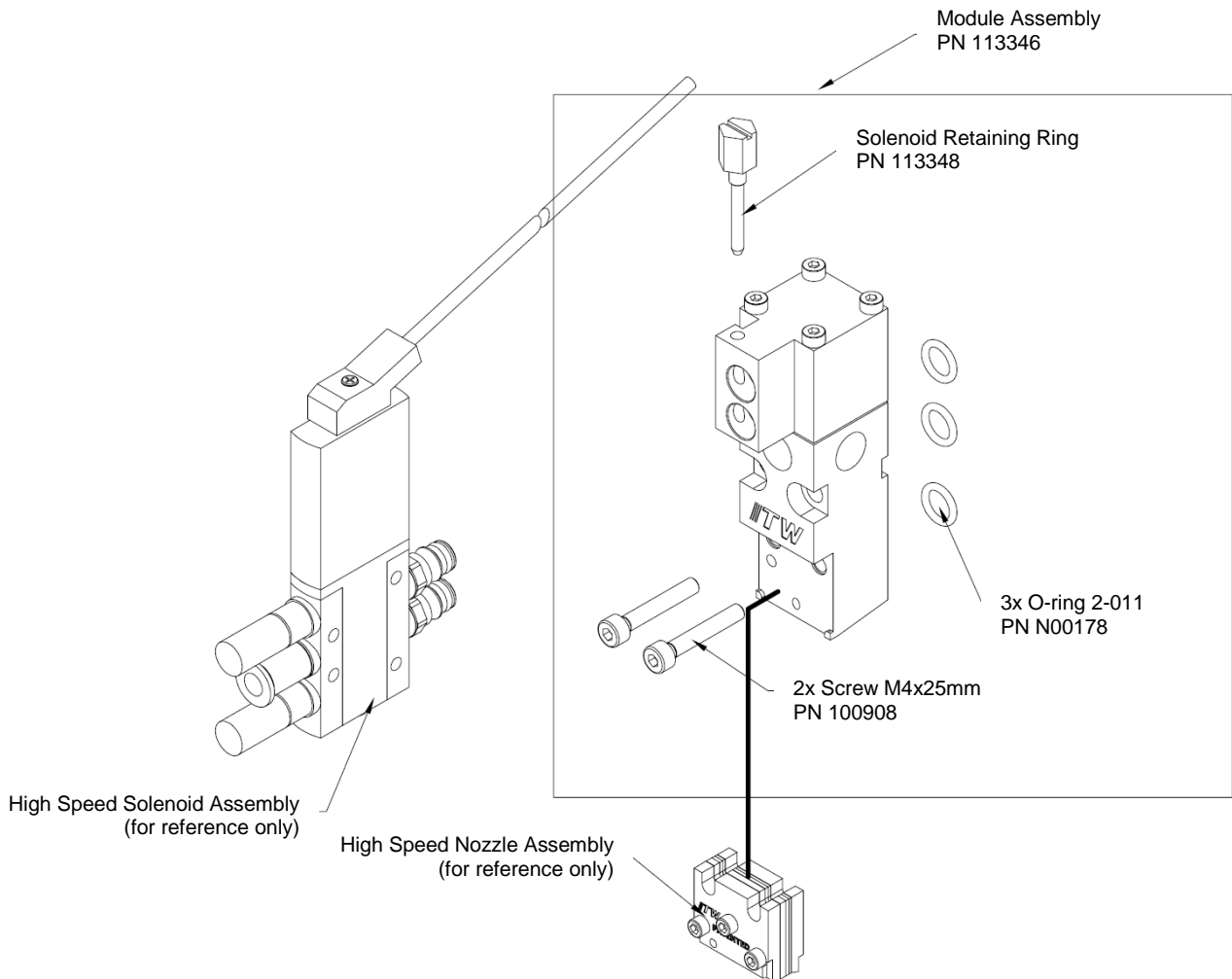


**UFD Spray Module Assembly, Snuffback, Vertical, PN 111074**

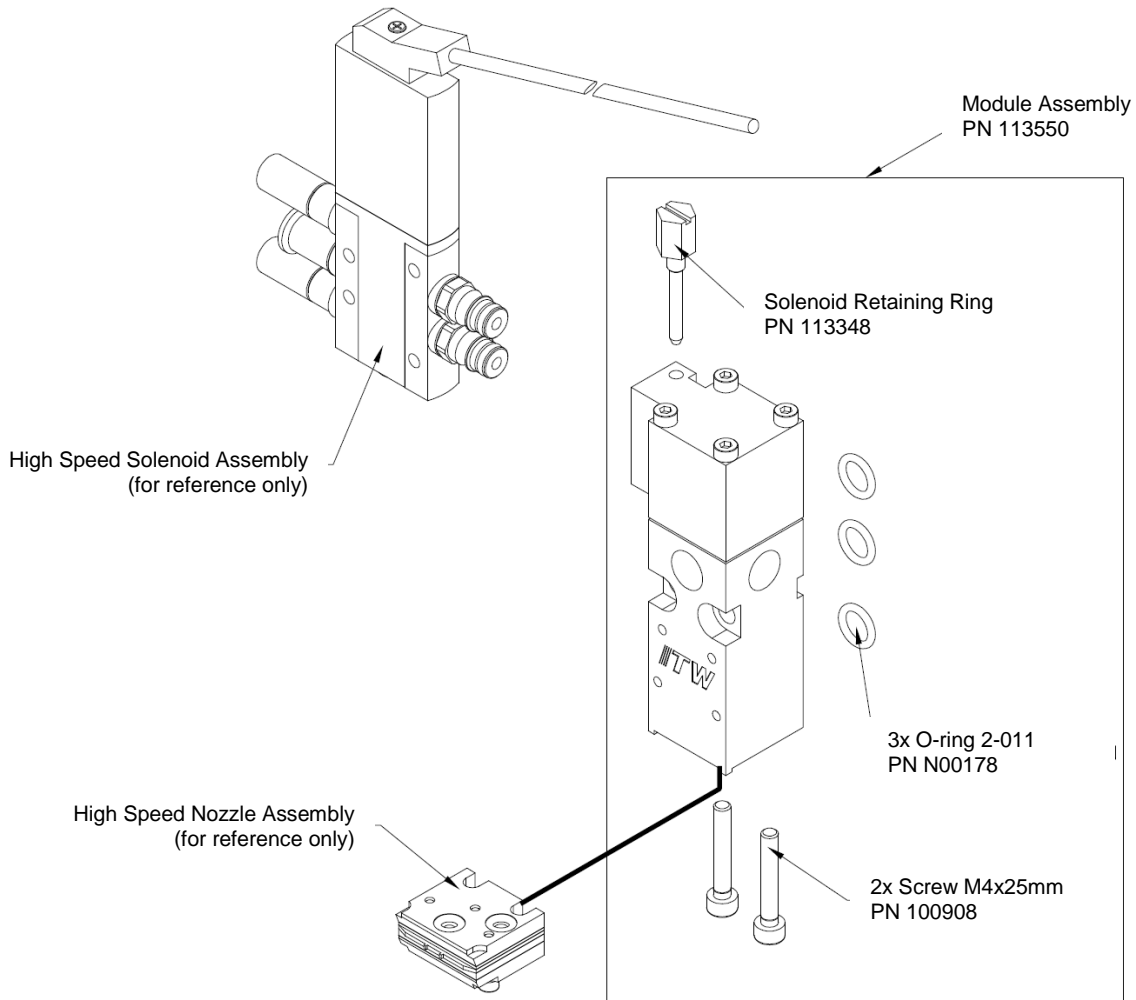


Note: PN 111074 module replaces PN 110559.

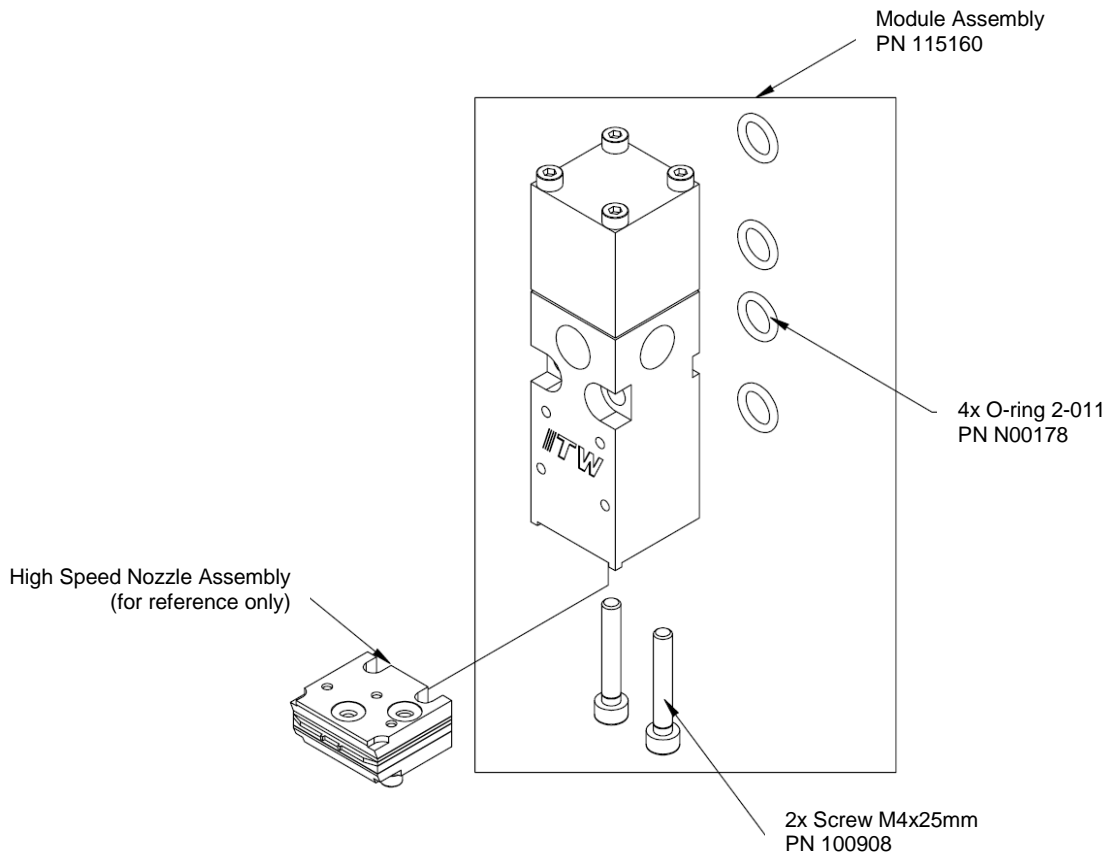
**UPD Spray Module Assembly, High Speed, Vertical, PN 113346**  
**(Module Option "J")**



**UFD Spray Module Assembly, High Speed, Horizontal, PN 113550**  
**(Module Option "M")**

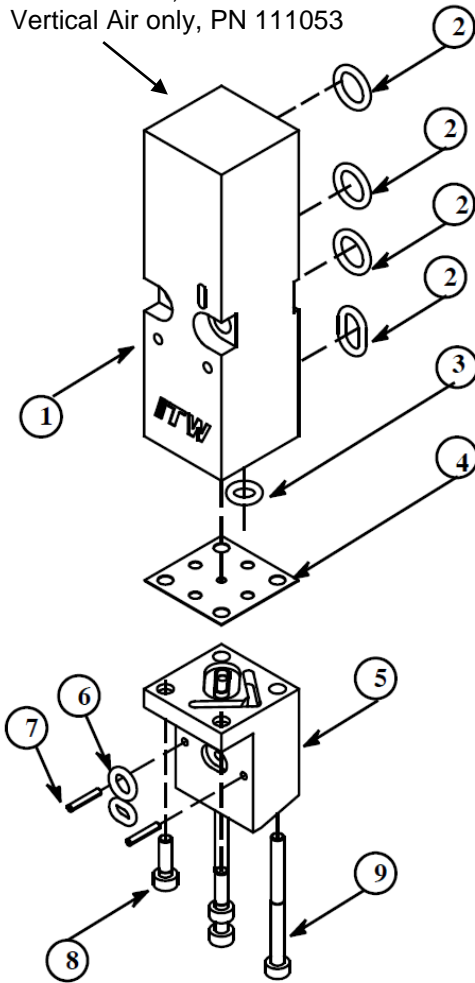


**UFD Spray Module Assembly, High Speed, Horizontal, PN 115160**  
**(Module Option "P")**

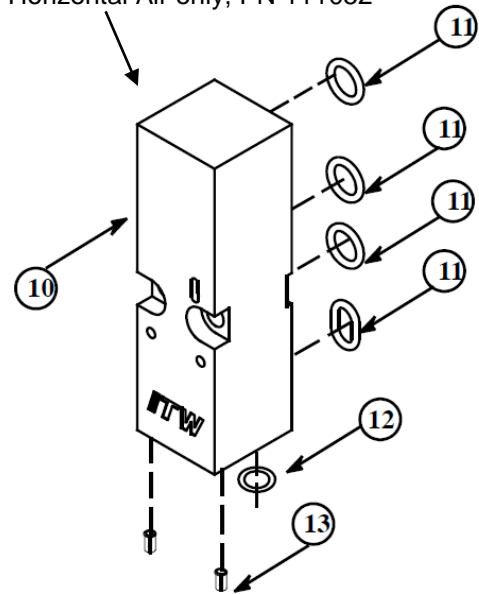


## Blank Module, Horizontal & Vertical

Blank Module,  
Vertical Air only, PN 111053



Blank Module,  
Horizontal Air only, PN 111052



### Blank Module, Vertical Air Only, PN 111053

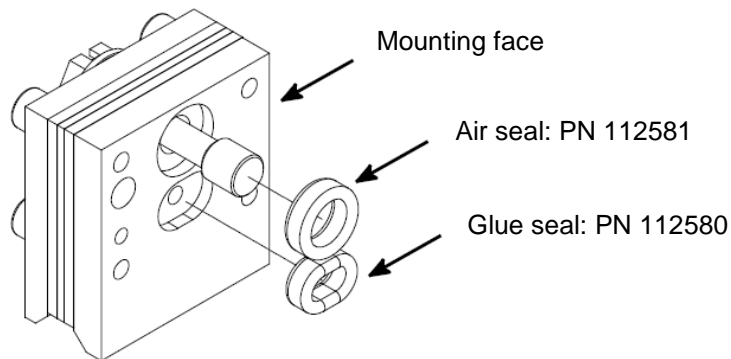
Item No.	Part Number	Description	Qty.
1	111051	Module Body, Air Only	1
2	N00178	O-ring, 2-011	4
3	N00176	O-ring, 2-009	2
4	104987	Vertical Adapter Seal	1
5	106221	Vertical Adapter	1
6	N00174	O-ring, 2-007	1
7	078G028	Spring Pin, 1/16 x 3/8	2
8	103404	Screw M3x10mm	2
9	106951	Screw M3x35mm	2

### Blank Module, Horizontal Air Only, PN 111052

Item No.	Part Number	Description	Qty.
1	111051	Module Body, Air Only	1
2	N00178	O-ring, 2-011	4
3	N00176	O-ring, 2-009	2
4	078G028	Spring Pin, 1/16 x 3/8	1

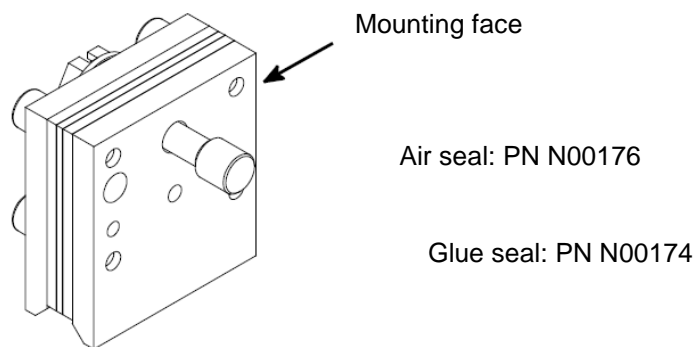
## UFD Nozzle Seals

**Standard Nozzle** (with seal grooves on mounting face)

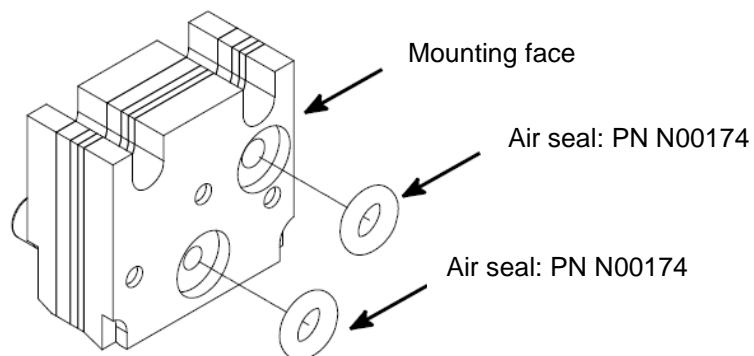


**Standard Nozzle** (with no seal grooves on mounting face)

The seals for this nozzle are supplied with and installed on the module.

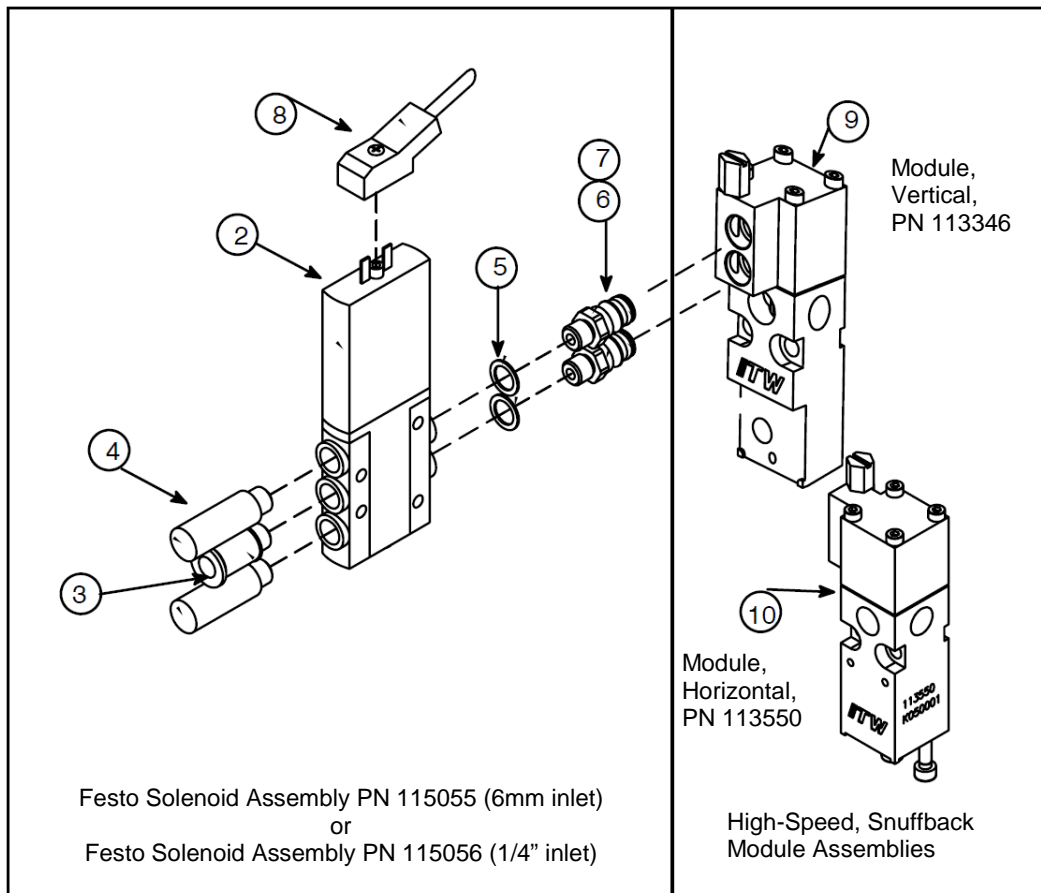


**High-Speed Nozzle** (with seal grooves on mounting face)





## Festo Solenoid Assemblies, PN 115055 & 115056



Item No.	Part Number	Description	Qty.
1	115055	<b>Solenoid Assembly, Festo MH, QC Module, 6mm Inlet</b>	
	115056	<b>Solenoid Assembly, Festo MH, QC Module, 1/4" Inlet</b>	
2	113350	Valve Solenoid, 4 Way, 24V, Festo	1
3	113362	Push-in Fitting, M7 x 6mm Tube OD (used on PN 115055 only)	1
	113363	Push-in Fitting, M7 x 1/4 Tube OD (used on PN 115056 only)	1
4	118390	Silencer	2
5	119731	O-ring 1mm WD x 7mm ID	2
6	113351	Fitting solenoid M7x1mm	2
7	N00175	O-ring 2-008	2
8		Cable, Solenoid (not included in assembly, see below*)	1
	<i>The above solenoid assemblies can be used with either of the two module assemblies shown (above right) for reference:</i>		
9	113346	Module, HSSB, Vertical ("J" Option)	
10	113550	Module, HSSB, Horizontal ("M" Option)	

**\* Available Control Cables:**

Cable Part Number	Control Type
113361	Cable, solenoid, 24V, LED, 2.5m
114557	Cable, solenoid, 24V, LED, 10m

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## Chapter 8

# Options & Accessories

### Applicator Heater Cartridges

Applicator	Part Number	Description	Location
UFD 050	106444	10x40mm, 150W	Service block
	106448	8x40mm, 200W	Air preheater (std. only)
	106329	10x60mm, 200W	Air preheater
UFD 075	106548	10x65mm, 175W	Service block
	106549	8x65mm, 300W	Air preheater (std. only)
	106329	10x60mm, 200W	Air preheater
UFD 100	106325	10x90mm, 200W	Service block
	106330	8x90mm, 400W	Air preheater (std. only)
	106329	10x60mm, 200W	Air preheater
UFD 150	106715	10x140mm, 300W	Service block
	106716	8x140mm, 600W	Air preheater (std. only)
	106717	10x60mm, 100W	Air preheater (std. only)
	106329	10x60mm, 200W	Air preheater

### Applicator RTD Sensors

Controller	Part Number	Description	Qty.
DynaControl/Allen-Bradley (option D)	N07958	PT100	2
MCV (option M)	104912	Dual PT100	2
Upgrade, Ni RTD (option N)	N07864	Ni120	2
Upgrade, J-type TC (option L)	107051	J-type TC	2
Upgrade, Pt RTD (option P)	N07958	PT100	2

### Filters

See Applicator model number for factory installed filter (in Chapter Model Designation Guide).

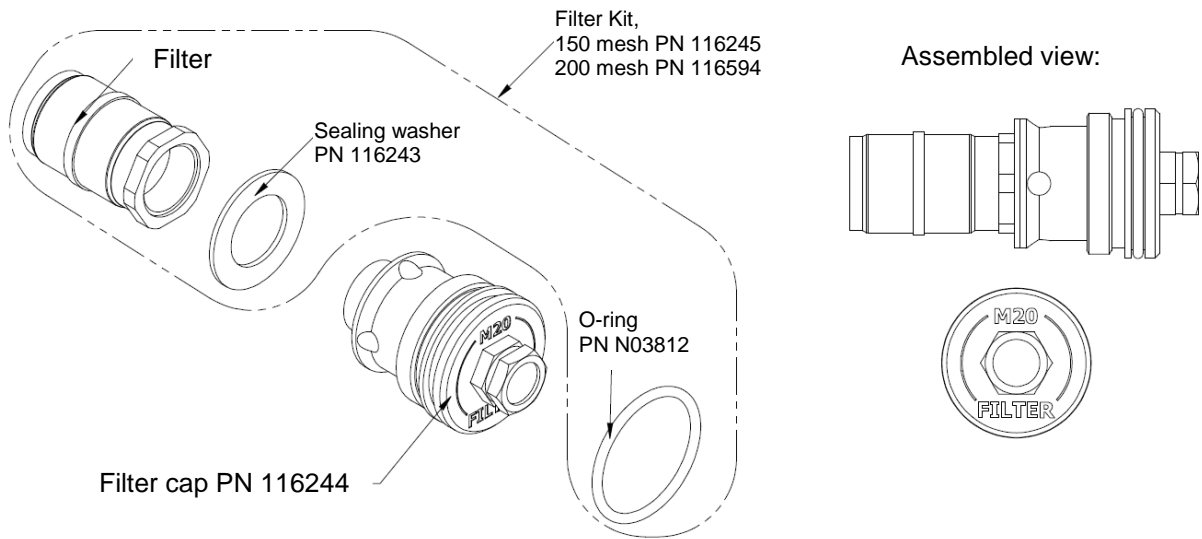
Filter Code	Part Number	Description
A	101247	Filter Basket 100 mesh
B	106273	Filter Basket 150 mesh
C	116245	Filter Kit 150 mesh, M20 Spin-on
D	116595	Filter Kit 200 mesh, M20 Spin-on

**Filter Kits**

To simplify ordering, Filter Kits are available.

Filter Kit Part Number	O-ring Part Number	Filter Cap Part Number	Filter Part Number
114291	N03812 O-ring #125	106303	101247 100 mesh, Basket
124292	N03812 O-ring #125	106303	106273 150 mesh, Basket
116246*	N03812 O-ring #125	116244	116245 150 mesh, Spin-on
116595*	N03812 O-ring #125	116244	116593 200 mesh, Spin-on

\* PN 116246 M-20 Spin-On Filter Assembly (filter code C),  
PN 116595 M-20 Spin-On Filter Assembly (filter code D)



**Service Kits**

- UFD Module Rebuild Kit PN 105150 (codes H, V, HQ, VQ)
- UFD Module Rebuild Kit PN 110889 (codes K, F)
- UFD Hi-Temp Module Rebuild Kit PN 803012

The module rebuild kits contain all the parts necessary to rebuild one module.

**High-Temp Splice Kit, PN102645**

This kit consists of a foot of shrink-wrap tubing and nine connectors (splices). These parts plus a sensor (order the sensor separately from the chart in this chapter) will enable you to replace the sensor in one applicator.

**UFD Nozzle Cleaning Oven**

**(PN 107307 = 200-240V Oven/ PN 107306 = 120V Oven)**

The use of the UFD Nozzle Cleaning Oven eliminates the need to disassemble the UFD nozzles for cleaning. Nozzles are baked in the oven for approximately six hours at 750-800 °F (400-425°C). Complete cleaning instructions are provided with the oven.

### **Pressure Transducer Tap**

Option Code "P" (see Chapter Model Designation Guide) adds one pressure transducer adapter to the applicator. A special fitting is installed in the left accessory port of the applicator. This fitting allows an industry-standard pressure transducer with 1/2--20 threads to be connected to the applicator downstream of the filter. A post-filter transducer is useful for monitoring the pressure drop across the filter as an indication of a plugged filter. The transducer adapter can be relocated to any of the hose inlets as required for installation clearance and operator access.

### **Drain Valve PN 107820**

Option Code "A" (see Chapter Model Designation Guide) adds a drain (purge) valve to the applicator. The drain valve is installed in the right accessory port of the applicator. The drain valve is useful for relieving pressure prior to maintenance or repair of the applicator. Also, the drain valve is useful for flushing the filter chamber after the filter has been replaced. It can be relocated to the left accessory port if necessary for installation clearance and operator access.

### **Balanced Solenoid Manifold**

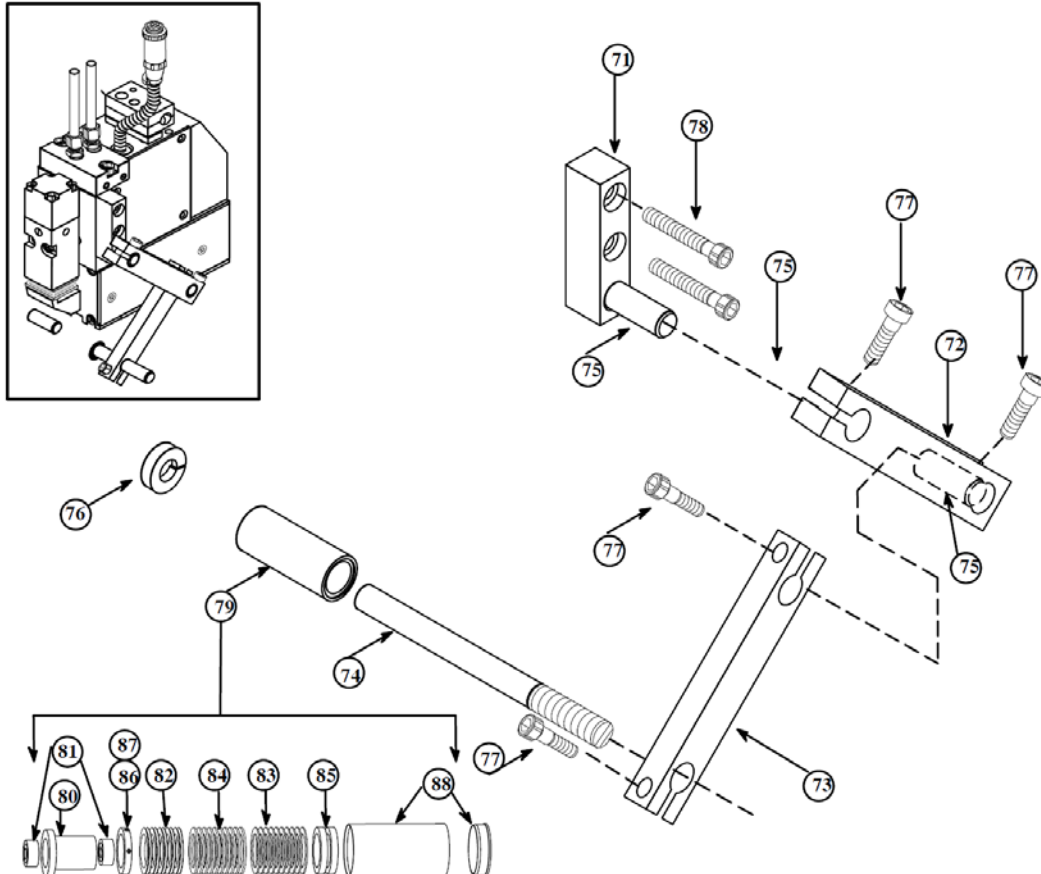
Option Code "E" (see Chapter Model Designation Guide) specifies a balanced solenoid manifold (equalized manifold). This manifold has multiple solenoids, but unlike a multiple program manifold, all of the open air passages of each solenoid are connected within the manifold. Likewise, all of the close air passages are connected. The purpose of this is to negate the effects of slight differences in modules and solenoids, resulting in a very consistent and even start-and-stop pattern. The applicator is, of course, limited to one program.

### **Low-Profile (Slim line) Models (codes A, J, M, P)**

A low-profile applicator refers to an overall smaller head. They are smaller due to the use of slimmer air heaters, smaller solenoids and the smaller modules of high speed applications. Operation, mounting and connectors remain the same as in standard models.

**Elastic Guide Bracket Assembly, PN 107622**

A strand guiding system is available for use with the UFD0501 and UFD0502 applicators. This system provides all of the components necessary for successful coating of elastic or Lycra strands such as those used in the production of disposable diapers and incontinence products. The system includes a bracket assembly that mounts to the side of the applicator and a modular roller kit which is configurable for most metric strand spacings. The arms of the guide are fully adjustable to work with both horizontal and vertical modules. The roller will support up to five strands, with a minimum strand spacing of 3mm.



Item No.	Part Number	Description	Qty.
71	107615	Base Guide Arm	1
72	107616	Guide Arm	1
73	107617	Roller Arm	1
74	107618	Roller Axle	1
75	107619	Dowel Pin, M10 x 30mm	2
76	107621	Shaft Collar, 3/8" Dia.	1
77	104662	Screw M6x16mm	2
78	803081	Screw M6x20mm	1
<b>79</b>	<b>108112</b>	<b>Guide Roller Kit</b>	<b>1</b>
80	108023	Roller Hub	1
81	107620	Shield Bearing	2
82	108019	Guide, 3mm	5
83	108020	Spacer, 1mm	10
84	108021	Spacer, 1.5mm	10
85	108022	Spacer, 5mm	10
86	108024	Collar Lock	1
87	103470	Screw M3x6mm	2
88	108110	Housing, 1.5 Dia. x 3.0 long	1

## Extension Cable Assemblies

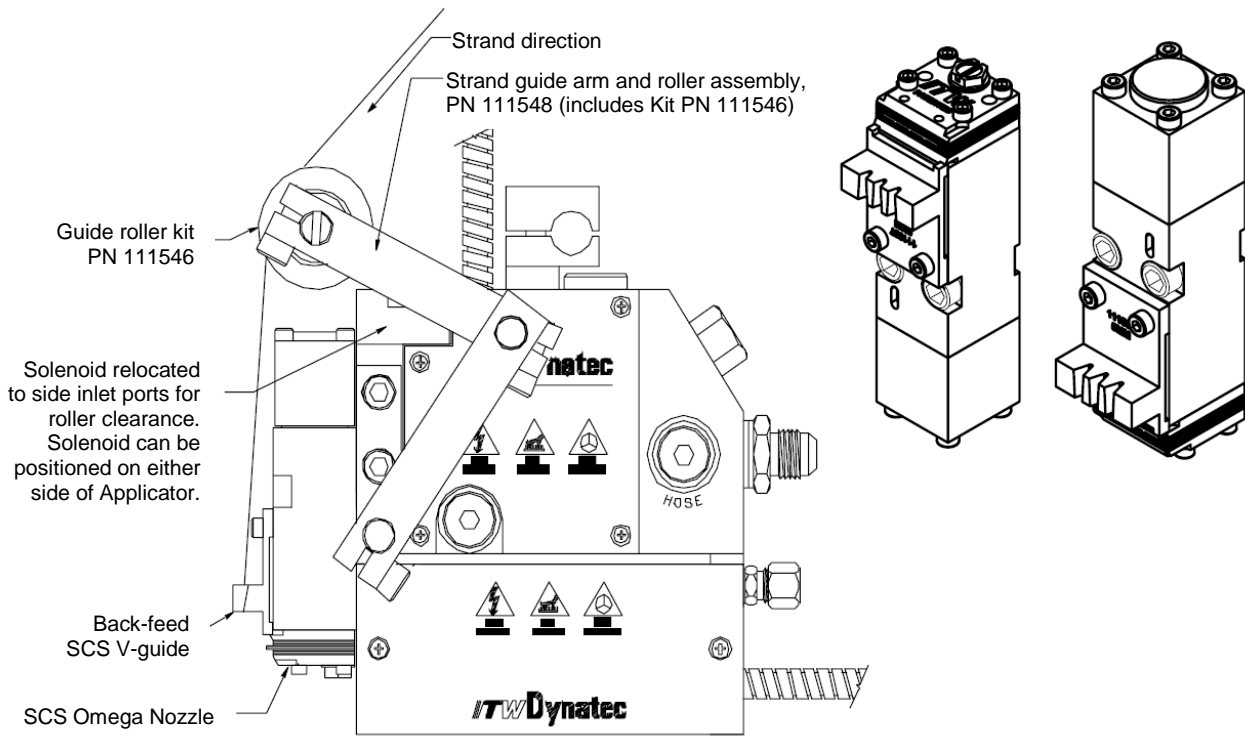
The following extension cable assemblies are available. These cables connect one applicator zone to the ASU. One cable assembly per applicator is usually required for the preheater; others may be used as necessary for the installation.

Controller	Cable Part Number	Cable Length	Cable Part Number	Cable Length
DCL/ PLC (control option D)	103773	10'	103776	25'
	103774	15'	105123	30'
	103775	20'	105147	40'
MCV (control option M)	084F222	10'	084F682	25'
	084F225	15'	084F383	30'
	084F223	20'		
Upgrade (Ni RTD) (control option N)	102706	10'	105834	40'
	106349	25'		
Upgrade (J-type TC) (control option L) Service Block only	107044	2m	107047	8m
	107045	4m	107309	10m
	107046	6m		
Upgrade (J-type TC) (control option L) Air Heater only	110149	2m	110152	8m
	110150	4m	110153	10m
	110151	6m		
Upgrade (Pt RTD) (control option P) Service Block only	110159	2m	110162	8m
	110160	4m	110163	10m
	110161	6m		
Upgrade (Pt RTD) (control option P) Air Heater only	110154	2m	110157	8m
	110155	4m	110158	10m
	110156	6m		

### Strand Coating System (SCS)

Dynatec's Strand Coating System is an application used for adhesive coating of elastics. A V-guide holds the elastic strand in position in front of the applicator's nozzle in order to precisely coat it with adhesive as it passes before the module's orifice. "Back-feed" refers to an elastic strand entering the guide from behind the module (see below) while "front-feed" refers to a strand entering from in front of the guide (see next page).

#### Back-Feed SCS V-Guide



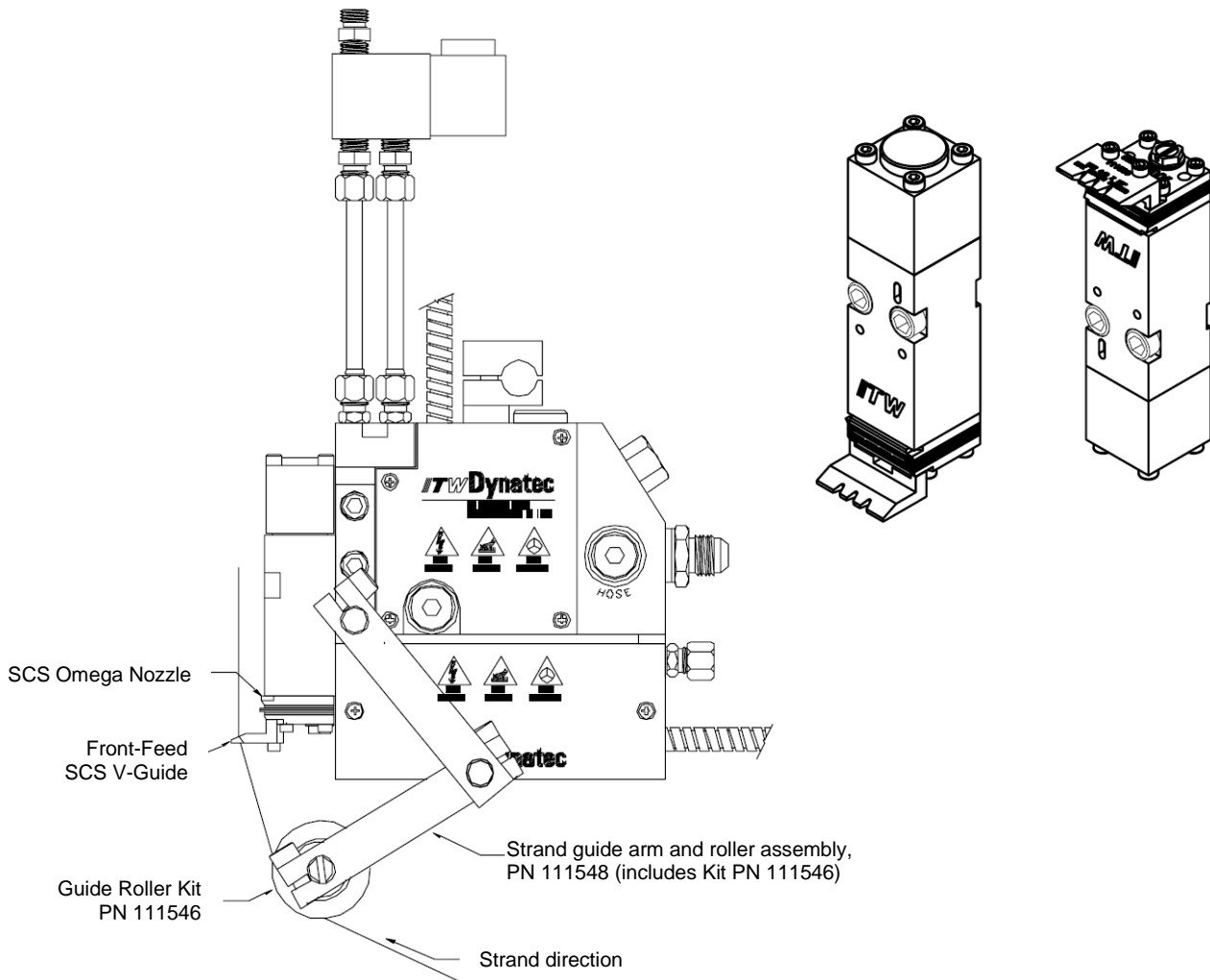
Back-Feed Guide Part Number	SCS V-Guide	Omega 12 SCS Nozzle	Omega 16 SCS Nozzle
111585	1 Strand	111574	111565
111586	2 Strand / 5mm	111575	111566
111587	3 Strand / 5mm	111576	111567
111588	4 Strand / 5mm	111577	111568
111589	3 Strand / 4mm	111578	111569
111590	2 Strand / 8mm		111570
111591	2 Strand / 9mm		111571
111592	2 Strand / 10mm	111581	111572
111593	5 Strand / 5mm	111582	111573
111594	4 Strand / 4mm	111579	111583
111595	2 Strand / 3mm	111580	
111641	3 Strand / 6mm	111639	111640
111653	3 Strand / 3mm	111651	111652

PN 111546: SCS Guide Roller Kit (guides up to five strands)

PN 111548: Strand Guide Arm & Roller Assembly (includes Kit PN 111546)



**Front-Feed SCS V-Guide**



Front-Feed Guide Part Number	SCS V-Guide	Omega 12 SCS Nozzle	Omega 16 SCS Nozzle
111597	1 Strand	111574	111565
111598	2 Strand / 5mm	111575	111566
111599	3 Strand / 5mm	111576	111567
111600	4 Strand / 5mm	111577	111568
111601	3 Strand / 4mm	111578	111569
111602	2 Strand / 8mm		111570
111603	2 Strand / 9mm		111571
111604	2 Strand / 10mm	111581	111572
111605	5 Strand / 5mm	111582	111573
111606	4 Strand / 4mm	111579	111583
111607	2 Strand / 3mm	111580	
111642	3 Strand / 6mm	111639	111640
111654	3 Strand / 3mm	111651	111652

PN 111546: SCS Guide Roller Kit (guides up to five strands)  
 PN 111548: Strand Guide Arm & Roller Assembly (includes Kit PN 111546)

**Recommended Service Parts List****As a general rule, we recommend that you keep on hand:**

- *Heaters*: half as many of each heater as listed on the BOM,
- *Sensors*: half as many of each sensor as listed on the BOM,
- *Kits*: half as many as the number of modules on the BOM,
- *O-rings*: the same quantity as listed on the BOM,
- *Filter Baskets*: twice as many as listed on the BOM.

Recommended quantities of spare parts vary depending on each individual applicator. Refer to your Applicator's bills of materials (BOMs) to determine quantities of heaters, sensors, O-rings, filter baskets and kits.

Part Number	Description	Qty. per Applicator
105150	UFD Module Rebuild Kit	Ar required
803012	UFD Hi-Temp Module Rebuild Kit	Ar required
See ordering guide	Heaters	Ar required
See ordering guide	RTD Sensor, Service Block	1
See ordering guide	RTD Sensor, Preheater	1
N03812	O-ring #125	2
N00196	O-ring #111	1
N00181	O-ring #014	1
N00178	O-ring #011	Ar required
N00176	O-ring #009	Ar required
N00174	O-ring #007	Ar required
102645	High-Temp Splice Kit	1
See ordering guide	Filter Basket	2
001V061	Thermal Paste	1
See ordering guide	Solenoid Valve	1
See ordering guide	Nozzle	2

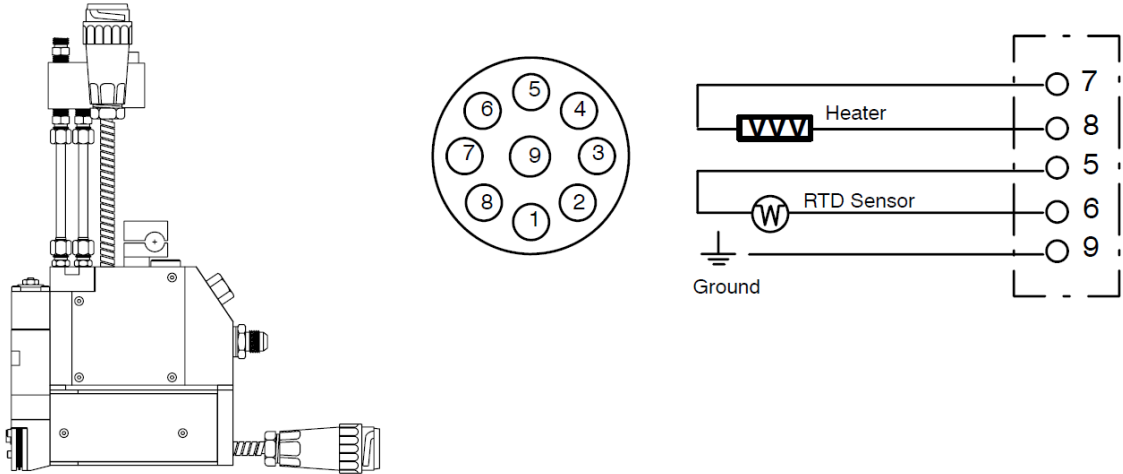
# Chapter 9

## Engineering Drawings & Schematics

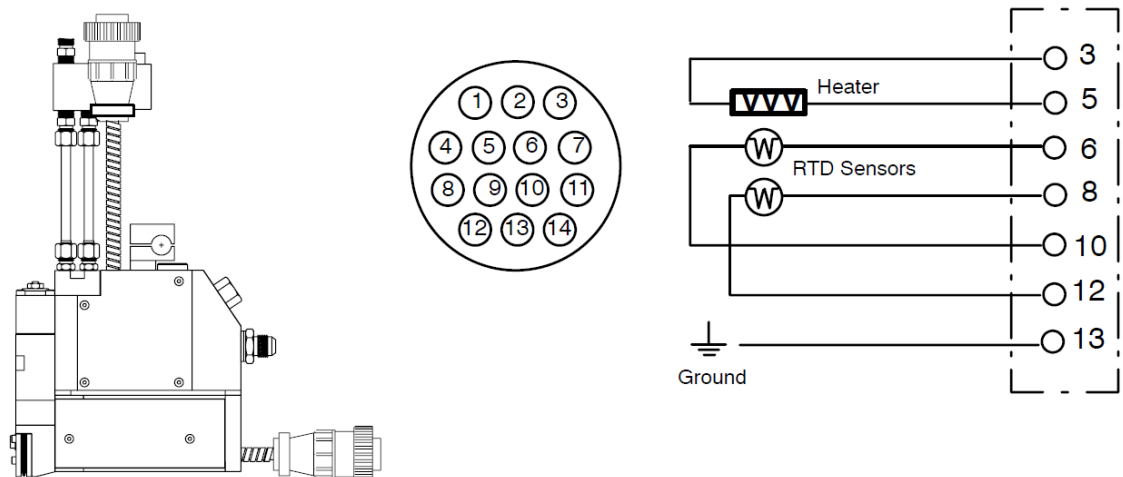
### Pin Connectors & Electrical Schematics

Note: Pin connectors are viewed from the exposed end. Pins not shown on schematics are not used.

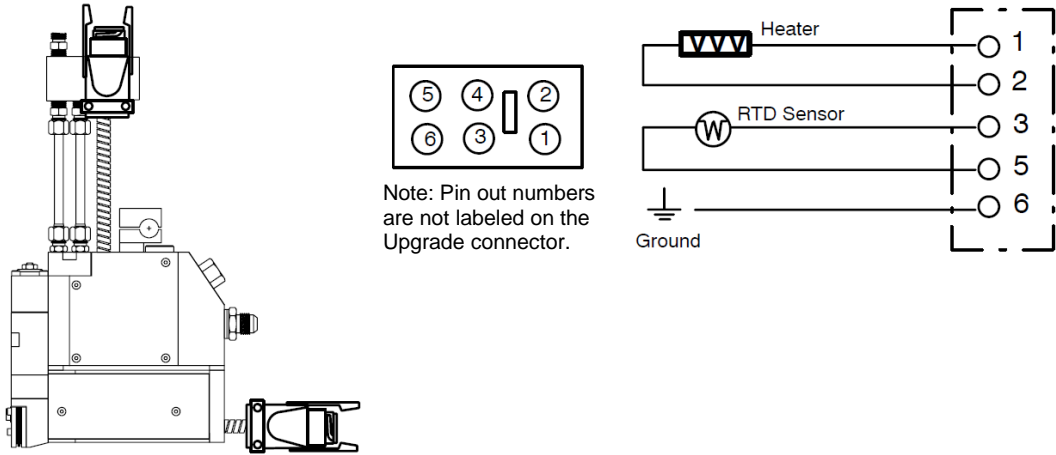
#### DynaControl/Dynamini or PLC Control Scheme PN 103117 (control option D)



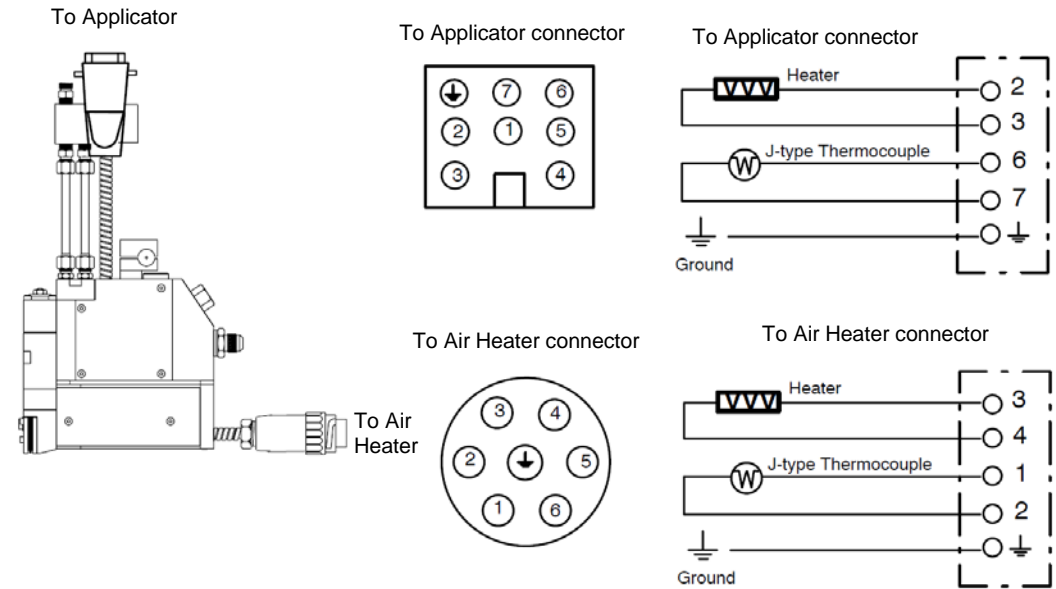
#### Microprocessor Temperature Control or CompuVision (MCV) Control Scheme PN 045X144 (control option M)



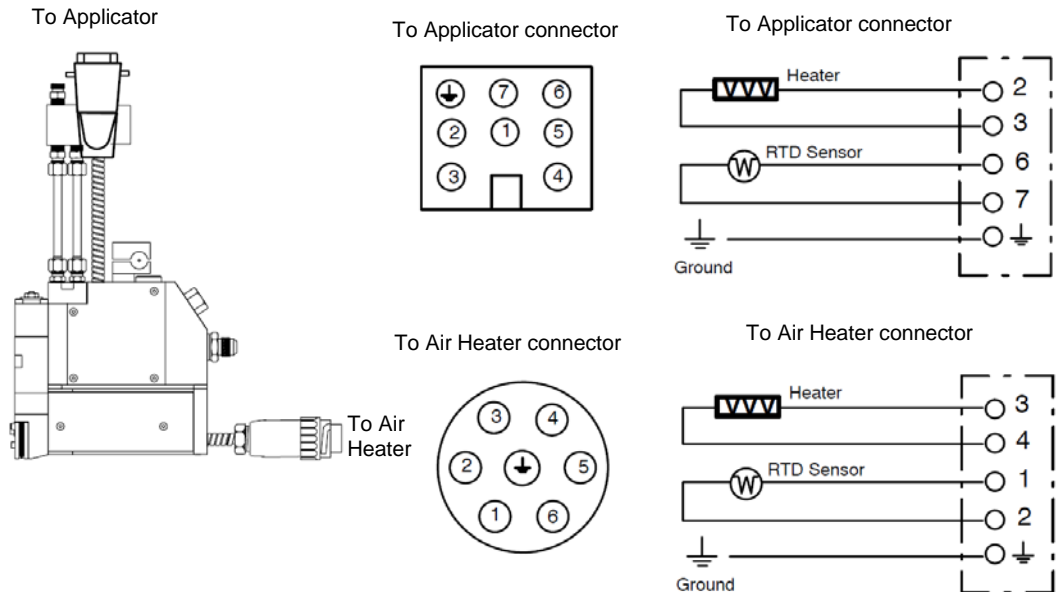
**Upgrade (Nickel RTD) Control Scheme PN 104551 (control option N)**



**Upgrade (J-type Thermocouple) Control Scheme (control option L)**



**Upgrade (Platinum RTD) Control Scheme (control option P)**



# Chapter 10

## Appendix

### **Solenoid Valve Configurations, Schematics & Setup**

This Appendix covers the pneumatic setup of the solenoid valves used to actuate the adhesive modules. A coalescing filter/ regulator kit (PN 100055) is available to provide regulated, oil-free air to the solenoid valves. The kit also contains the necessary fittings and tubing to configure the kit for each particular solenoid valve.

Some typical solenoid valve setups are shown on the following pages. While the most commonly used solenoid valves are shown, other valves not listed here may be used if required for the particular application. In general, however, the setups shown here can be applied to any solenoid valve. If there are questions about a valve that was supplied with the Applicator, and it is not shown here, consult ITW Dynatec.

The Appendix is divided into sections for easy reference:

<b>Section 1</b>	PN 100054	24 VDC MAC solenoid valve, 4 way, 02, 1/8 NPT
<b>Section 2</b>	PN 100383	24 VDC MAC solenoid valve, 4 way, 1/4 NPT
	PN 100421	120 VAC MAC solenoid valve, 4 way, 1/4 NPT
	PN 811506	240 VAC MAC solenoid valve, 4 way, 1/4 NPT
<b>Section 3</b>	PN 106937	24 VDC MAC solenoid valve, 5 way, 1/8 NPT
<b>Section 4</b>	PN 112496	24 VDC MAC solenoid valve, 4 way, 1/4 NPT
<b>Section 5</b>	PN 113350	24 VDC Festo high speed solenoid valve, 4 way, 6mm inlet fitting, 2.5m cable
	PN 113451	24 VDC Festo high speed solenoid valve, 4 way, 1/4 inlet fitting, 2.5m cable
	PN 114558	24 VDC Festo high speed solenoid valve, 4 way, 6mm inlet fitting, 10m cable
	PN 114559	24 VDC Festo high speed solenoid valve, 4 way, 1/4 inlet fitting, 10m cable
<b>Section 6</b>	PN 100055	Component Illustration: 100055 Air Control Kit

### **Air Filter/ Regulator Installation Notes**

1. Compressed air for Applicator operation should be clean, dry and oil free.
2. In general, operation of more than one Applicator from a single air control kit is not recommended, because Applicator response time may be increased and synchronization may be more difficult.
3. Install the filter/ regulator so that the bowl drains are easily accessible for servicing and the regulator knob is accessible for adjustments.
4. Use a minimum of 1/4" OD tubing to make connections.
5. If air tubing is routed close to the Applicator due to space constraints, high temperature TFE tubing should be used to avoid tubing damage.

**Section 1, 24 VDC MAC solenoid valve, 4 way, 02, 1/8 NPT, PN 100054**

**Description**

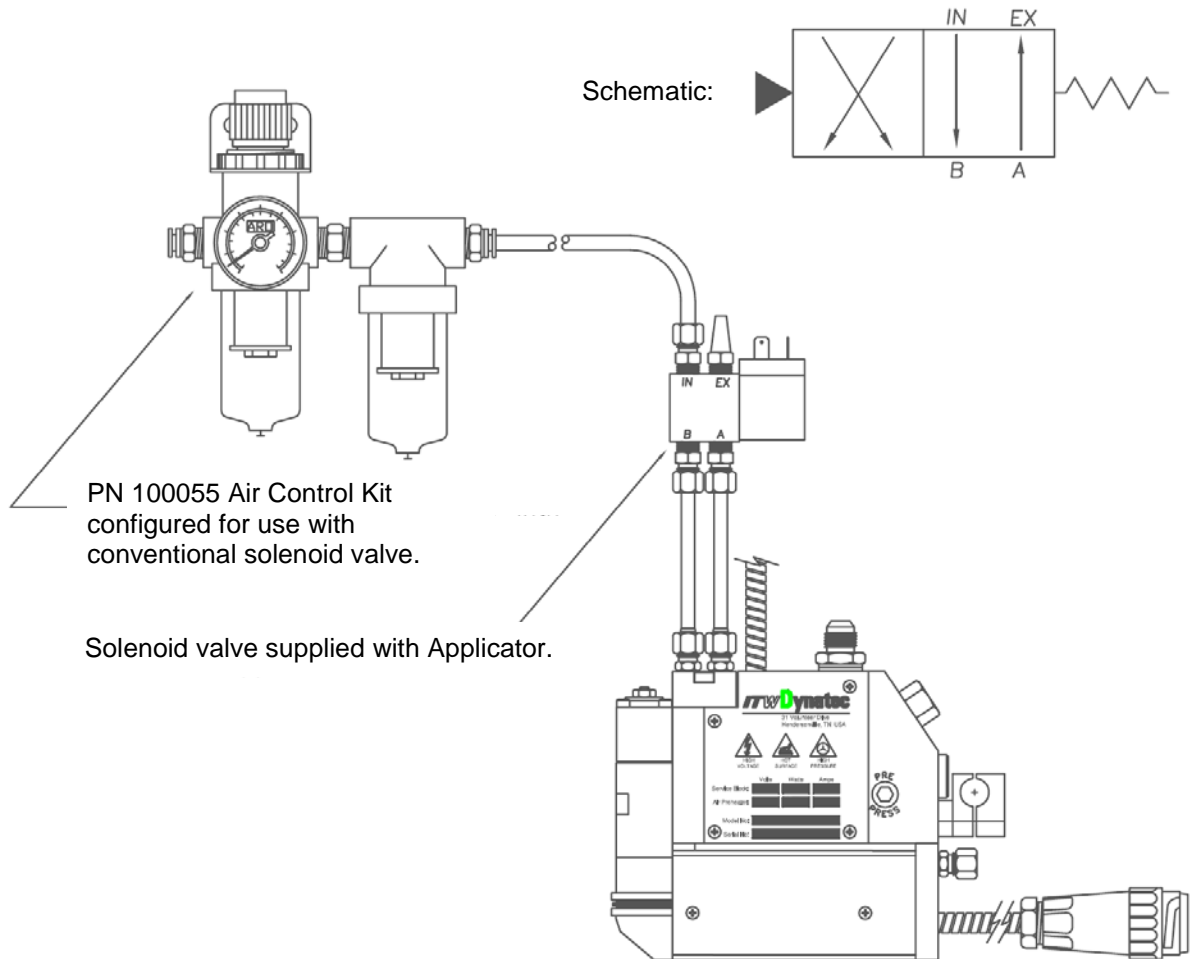
Direct acting poppet valve, 4-way, 1/8 NPT ports, with non-locking recessed manual operator.

**Connections**

IN	Inlet
EX	Exhaust
A	Open side of module
B	Close side of module

**Typical Setup**

Apply full air pressure (80-90 psi / 5.5-6.2 bar) to IN port of solenoid valve. Use air control kit PN 100055, configured as shown below.



## Section 2, MAC solenoid valve, 4 way, 1/4 NPT

<b>Section 2</b>	PN 100383	24 VDC MAC solenoid valve, 4 way, 1/4 NPT
	PN 100421	120 VAC MAC solenoid valve, 4 way, 1/4 NPT
	PN 811506	240 VAC MAC solenoid valve, 4 way, 1/4 NPT

### Description

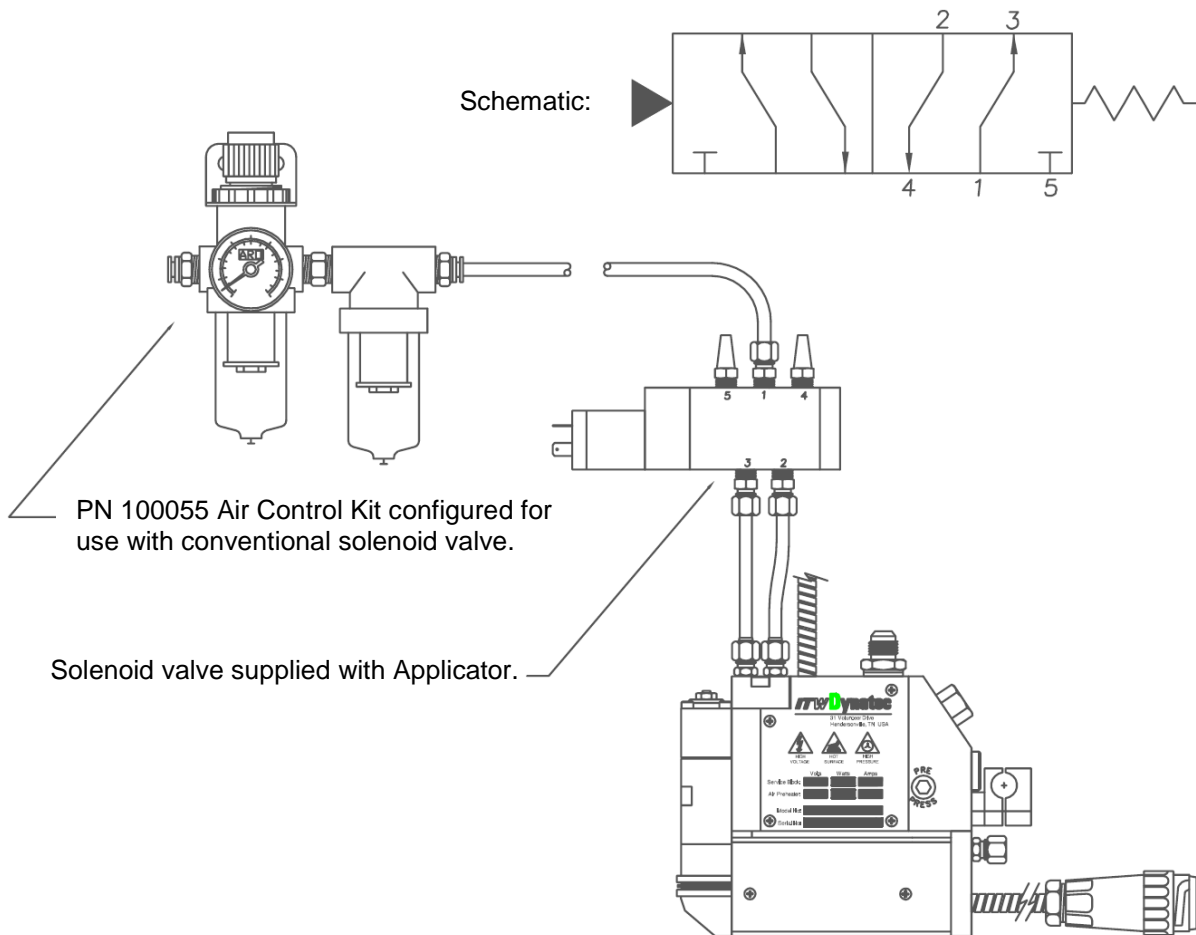
Piloted spool valve (internally piloted), 4-way, 1/4 NPT ports, with non-locking recessed manual operator.

### Connections

Port 1	Inlet
Port 2	Open side of module
Port 3	Close side of module
Port 4	Exhaust
Port 5	Exhaust

### Typical Setup

Apply full air pressure (80-90 psi / 5.5-6.2 bar) to port 1 of solenoid valve. Use air control kit PN 100055, configured as shown below.



**Section 3, 24 VDC MAC solenoid valve, 5 way, 1/8 NPT, PN 106937**

**Description**

Piloted spool valve (internally piloted from Port 5), dual pressure spool, 1/8 NPT ports, with nonlocking recessed manual operator.

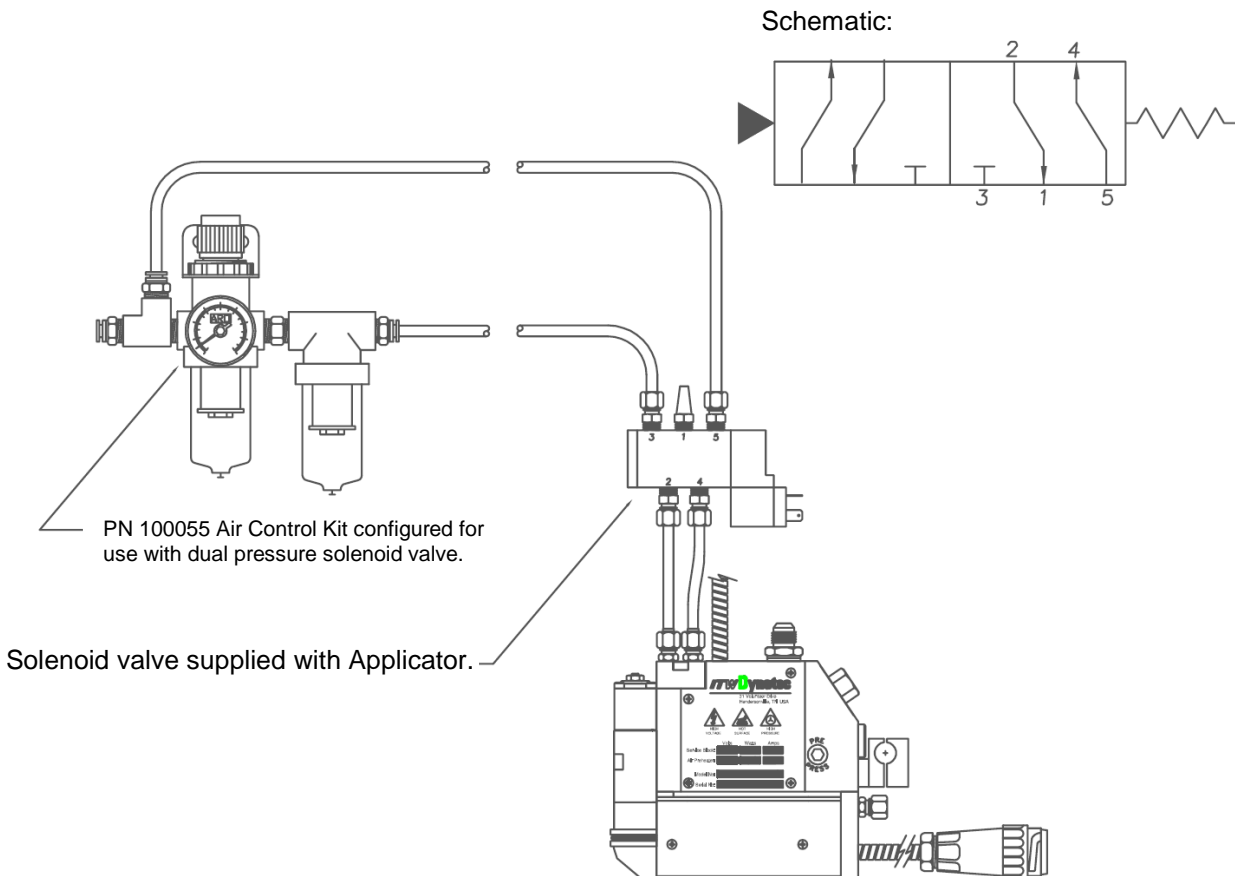
**Connections**

Port 1	Exhaust
Port 2	Open side of module
Port 3	Inlet (open air)
Port 4	Close side of module
Port 5	Inlet (close air)

**Typical Setup**

Apply full air pressure (80-90 psi / 5.5-6.2 bar) to Port 5. Apply reduced air pressure to Port 3, using the air control kit PN 100055, configured as shown below.

The opening characteristic of the snuffback valve may be tuned by adjusting the opening air pressure. A starting point of 40 psi (2.7 bar) is recommended. The air pressure can then be adjusted down to soften the start, or adjusted up to give a more crisp start. The final adjustment will depend on the desired speed of operation (i.e. line speed), adhesive pressure and customer preferences.





### Section 4, 24 VDC MAC solenoid valve, 4 way, 1/4 NPT, PN 112496

#### Description

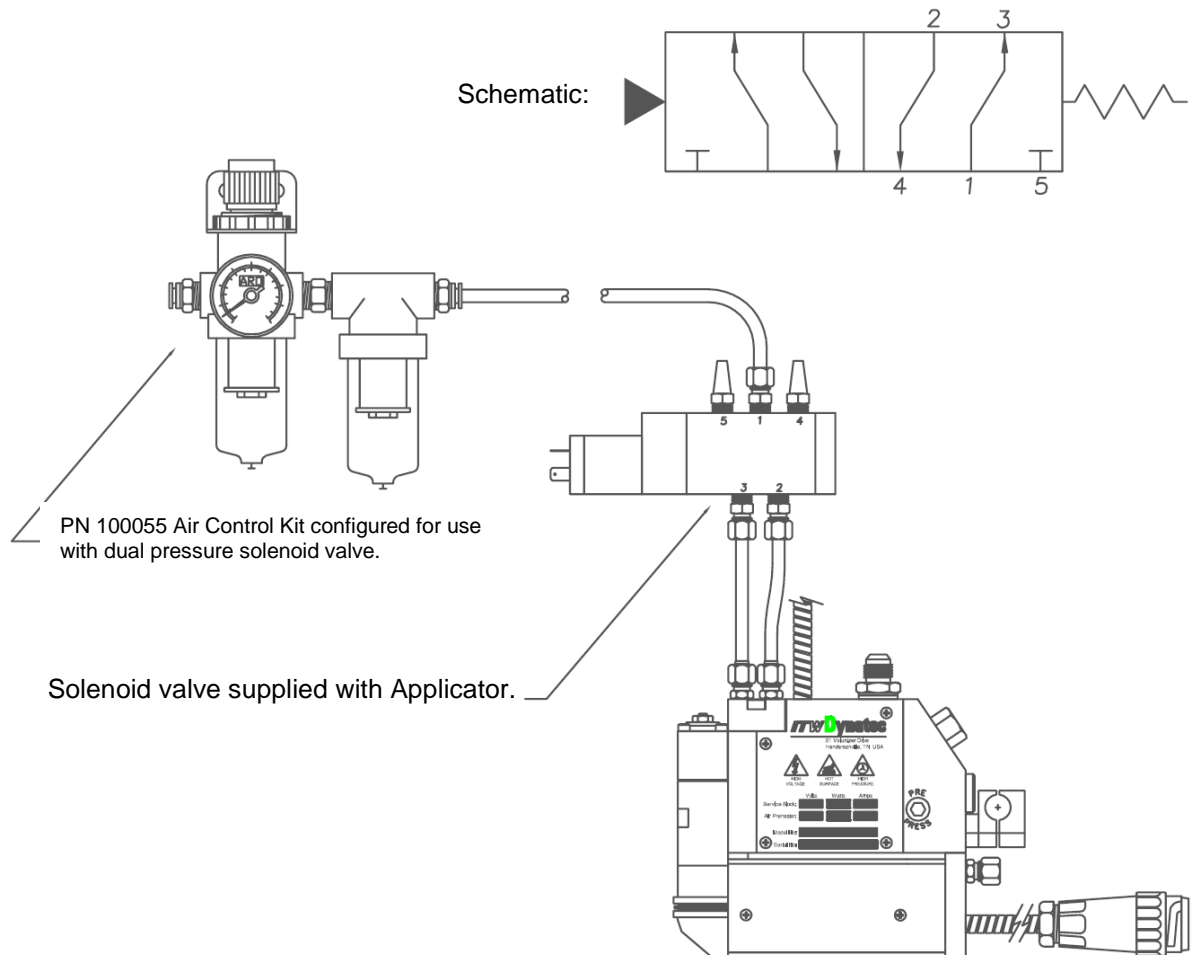
Piloted spool valve (internally piloted), 4-way, 1/4 NPT ports, with non-locking recessed manual operator.

#### Connections

Port 1	Inlet
Port 2	Close side of module
Port 3	Open side of module
Port 4	Exhaust
Port 5	Exhaust

#### Typical Setup

Apply full air pressure (80-90 psi / 5.5-6.2 bar) to Port 1 of solenoid valve. Use air control kit PN 100055, configured as shown below.



**Section 5, 24 VDC MAC solenoid valve, 4 way, 1/4 NPT, PN 112496**

<b>Section 5</b>	PN 113350	24 VDC Festo high speed solenoid valve, 4 way, 6mm inlet fitting, 2.5m cable
	PN 113451	24 VDC Festo high speed solenoid valve, 4 way, 1/4 inlet fitting, 2.5m cable
	PN 114558	24 VDC Festo high speed solenoid valve, 4 way, 6mm inlet fitting, 10m cable
	PN 114559	24 VDC Festo high speed solenoid valve, 4 way, 1/4 inlet fitting, 10m cable

**Description**

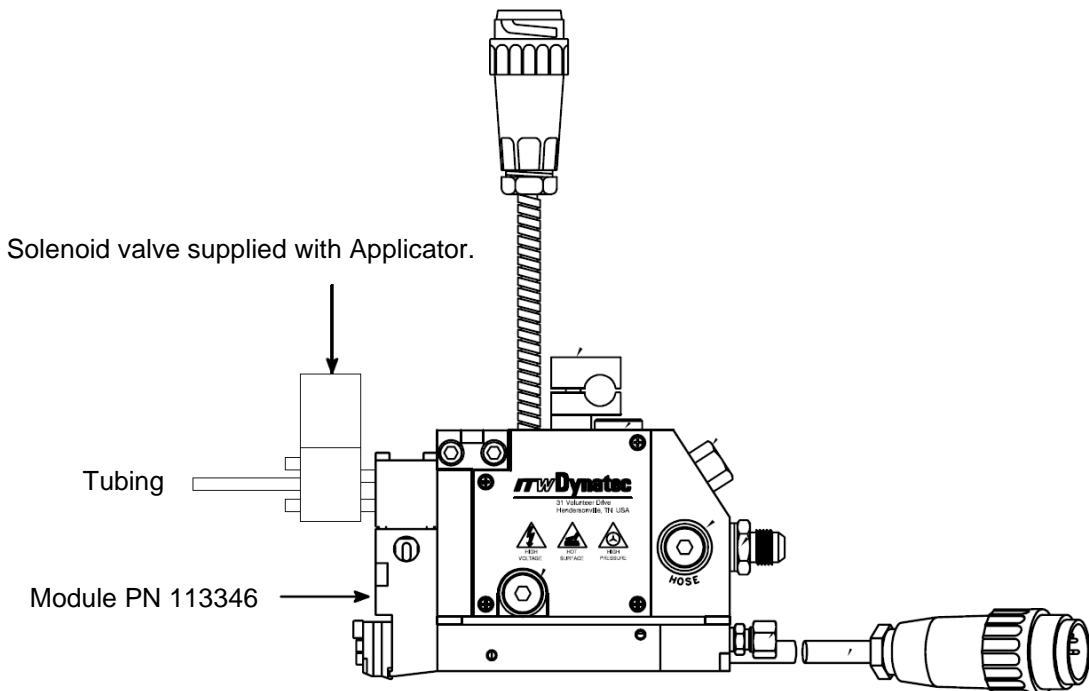
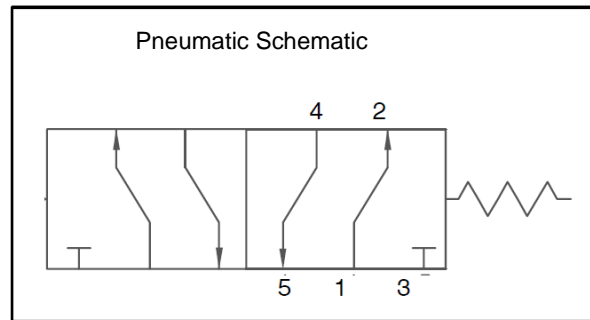
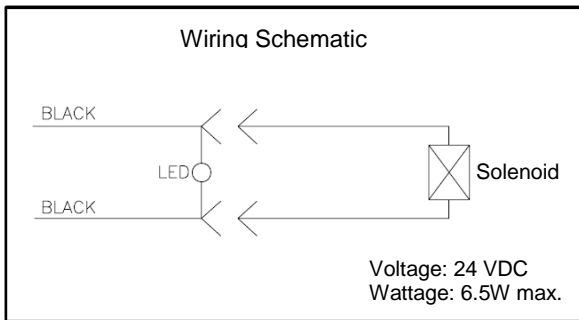
Direct-acting spool valve, 4-way, 24 VDC operation with M7 ports. Solenoid is configured to connect directly to the module. It is not setup for use as an in-line solenoid.

**Connections**

Port 1	Inlet
Port 2	Close side of module
Port 3	Exhaust
Port 4	Open side of module
Port 5	Exhaust

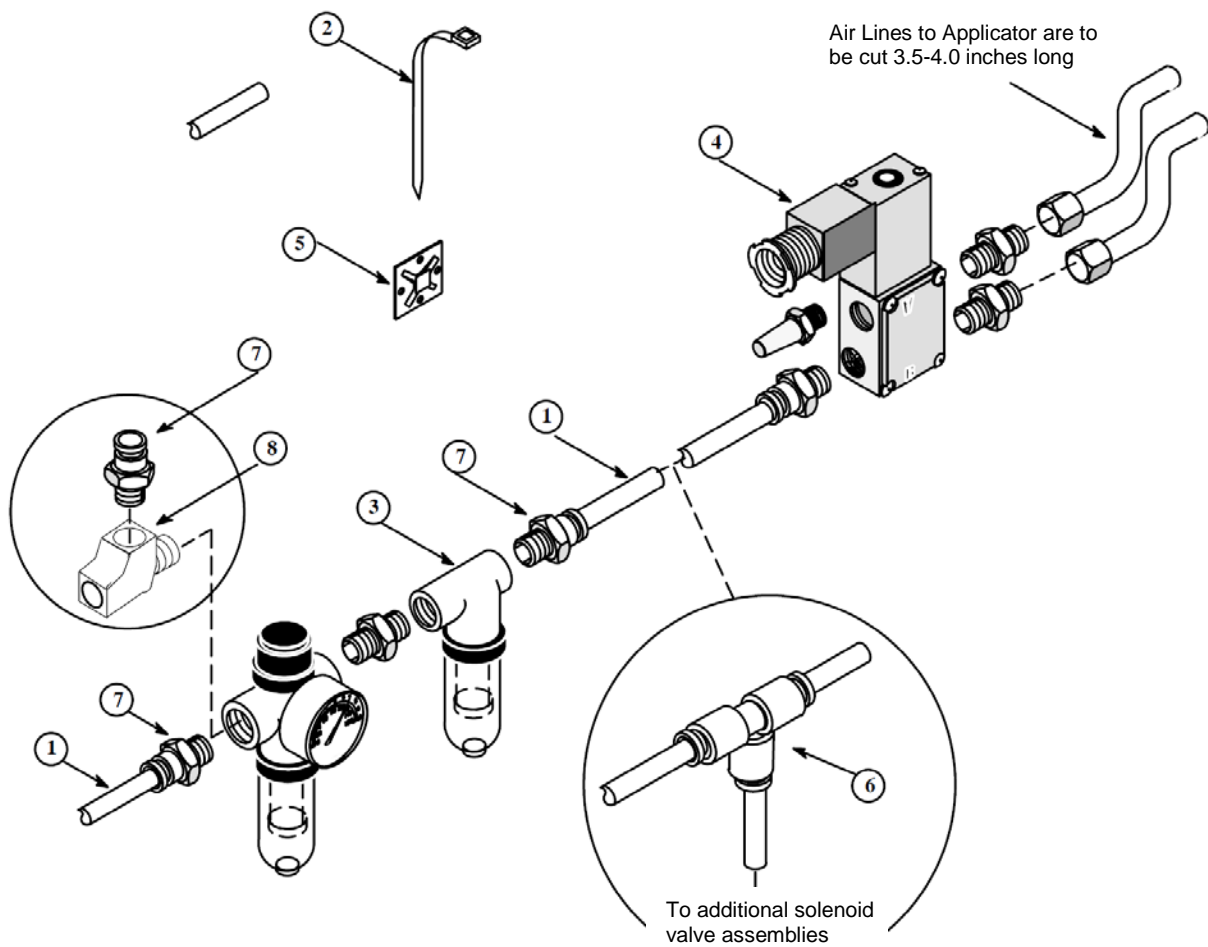
**Typical Setup**

Apply full air pressure (80-90 psi / 5.5-6.2 bar) to Port 1 of solenoid valve.



**Section 6, Air Control Kit PN 100055, Component Illustration**

Item No.	Part Number	Description	Quantity
1	N06438	Nylon Tubing, .250 Dia.	10'
2	N00318	Cable Tie, .09 x 3.62 Lg	10
3	100380	Filter Assembly	1
4		Solenoid Valve Assembly	1
5	N04264	Cable Tie Anchor	3
6	N06504	Push-in Union Tee Fitting	1
7	N06430	Male Connect Fitting	3
8	N04531	1/4 Treet T, Brass	1

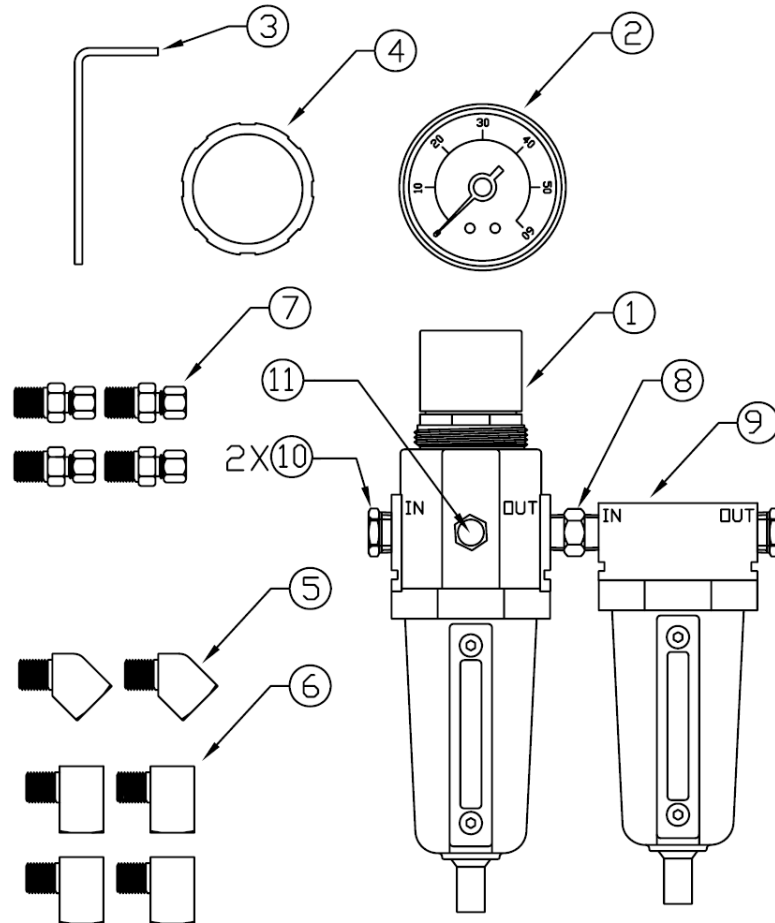


## Process (Preheater) Air Control Filter/ Regulator, PN 107404

The PN 107404 Filter/ Regulator is available for precise control of the process spray air. It includes a coalescing filter/ regulator, a liquid-filled gauge, mounting bracket and necessary fittings.

### Installation Notes

1. Locate the filter so that the bowl drains are easily accessible for servicing and the regulator knob is accessible for adjustments.
2. To ensure accurate process air control, operation of more than one applicator from a single filter/ regulator is not recommended.



Item No.	Part Number	Description	Quantity
1	100991	Filter/Regulator	1
2	100992	Gauge 0-60psi (0-4 bar)	1
3	100994	Mounting bracket	1
4	100995	Nut	1
5	072X002	Street elbow 1/4 NPT x 45°	2
6	072X040	Street elbow 1/4 NPT x 90°	4
7	N00092	Fitting 1/4 tube x 1/4 NPT	4
8	112319	Fitting, hexagonal nip 3/8 NPT	1
9	107403	Coalescing filter	1
10	066X028	Fitting, bushing, 3/8 NPT x 1/4 NPT	2
11	108000	Fitting, reducer, 1/4F to 1/8M NPT	1

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