

DynaFiber UFD

Spray Applicator, 1-6 Port

Technical Documentation, No.40-43, Rev.1.24
English – Original Instructions



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.

NOTICE:

Most common screws, nuts and washers called out in the manual are not for sale and they can be obtained locally at your hardware Store. Specialty fasteners are available by contacting ITW Dynatec's Customer Service.

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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

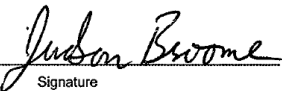
The manufacturer or his authorised representative undertake to transmit, in response to a reasoned request by the national authorities, relevant information on the partly completed machinery. This transmission takes place:

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

2.1 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.

2.2 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.

2.3 Safety Symbols in this Manual

Mandatory signs

	General mandatory sign		Wear foot guard!
	Read and adhere to the documentation!		Wear protective gloves!
	Switch the unit voltage-free before working! Main switch OFF!		Wear protective clothing!
	Wear headgear, protective goggles and ear protection!		

Warning signs

NOTE: The dangers and risks exist if the corresponding instructions are not heeded and the precautionary measures are not taken!

	Caution, danger spot! This sign points to possible dangers for life and physical condition or to possible risks for machine and material or to possible risks for environment. The word “DANGER” in addition with this points to possible dangers of life The words “WARNING” and “CAUTION” in addition with this sign point to possible risks of injury. The word “ADVICE” in addition with this sign points to possible risks for machine, material or environment.		Danger, high voltage! This sign points to possible dangers for life and physical condition caused by electricity. Risk of injury, mortal danger!
			Caution, hot surface! This sign points to possible risks of burns. Risk of Burns!
			Caution, high pressure! This sign points to possible risks of injury caused by high pressure. Risk of injury!
			Caution, rotating rolls! This sign points to possible risks of injury caused by inrunning nip (at rolls). Risk of injury!

Prohibition signs

	Fire danger! Smoking prohibited!		Fire danger! Fire and open flames prohibited!
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2.4 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!



Smoking, fire and open flames prohibited! Fire danger!

Make absolutely sure that there is no smoking and no fire being lit in the work area!

2.5 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.

2.6 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.

2.7 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.

2.8 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.

2.9 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.

2.10 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.

2.11 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.

2.12 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).

2.13 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.)!

2.14 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.

2.15 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.

2.16 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 (CO₂), Dry sand.

For safety reasons not appropriate extinguishing agents: None.

Firefighting - burning electrical equipment:

Appropriate extinguishing agents:

Carbon dioxide (CO₂), Dry powder.

2.17 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 do 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

3.1.1 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.

3.1.2 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.

3.1.3 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.

3.1.4 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.

3.1.5 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.

3.1.6 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

3.2.1 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 or Upgrade control schemes. 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:



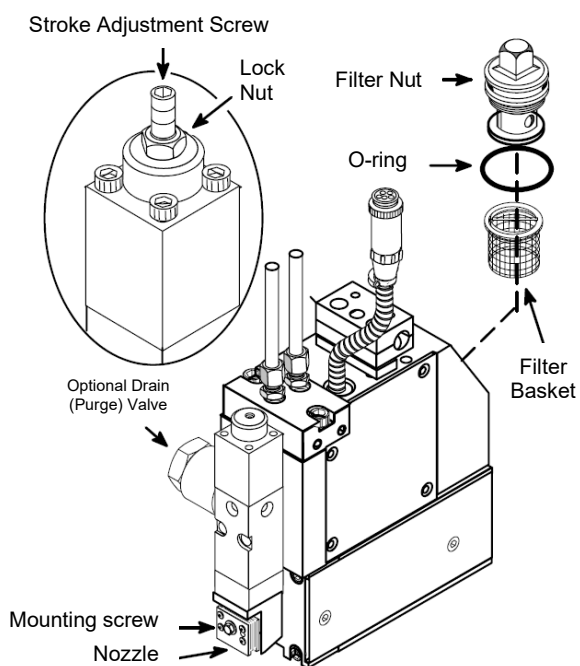
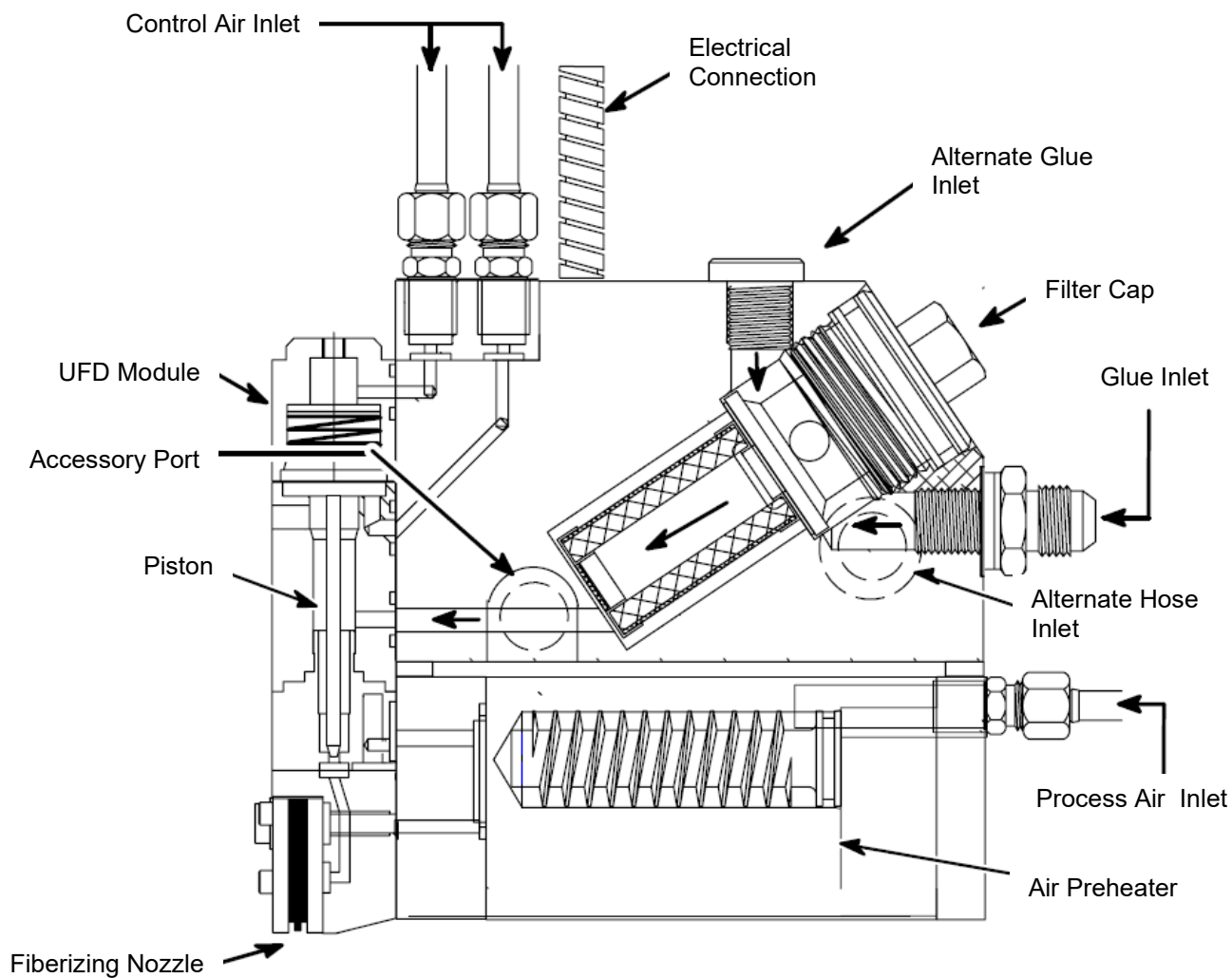
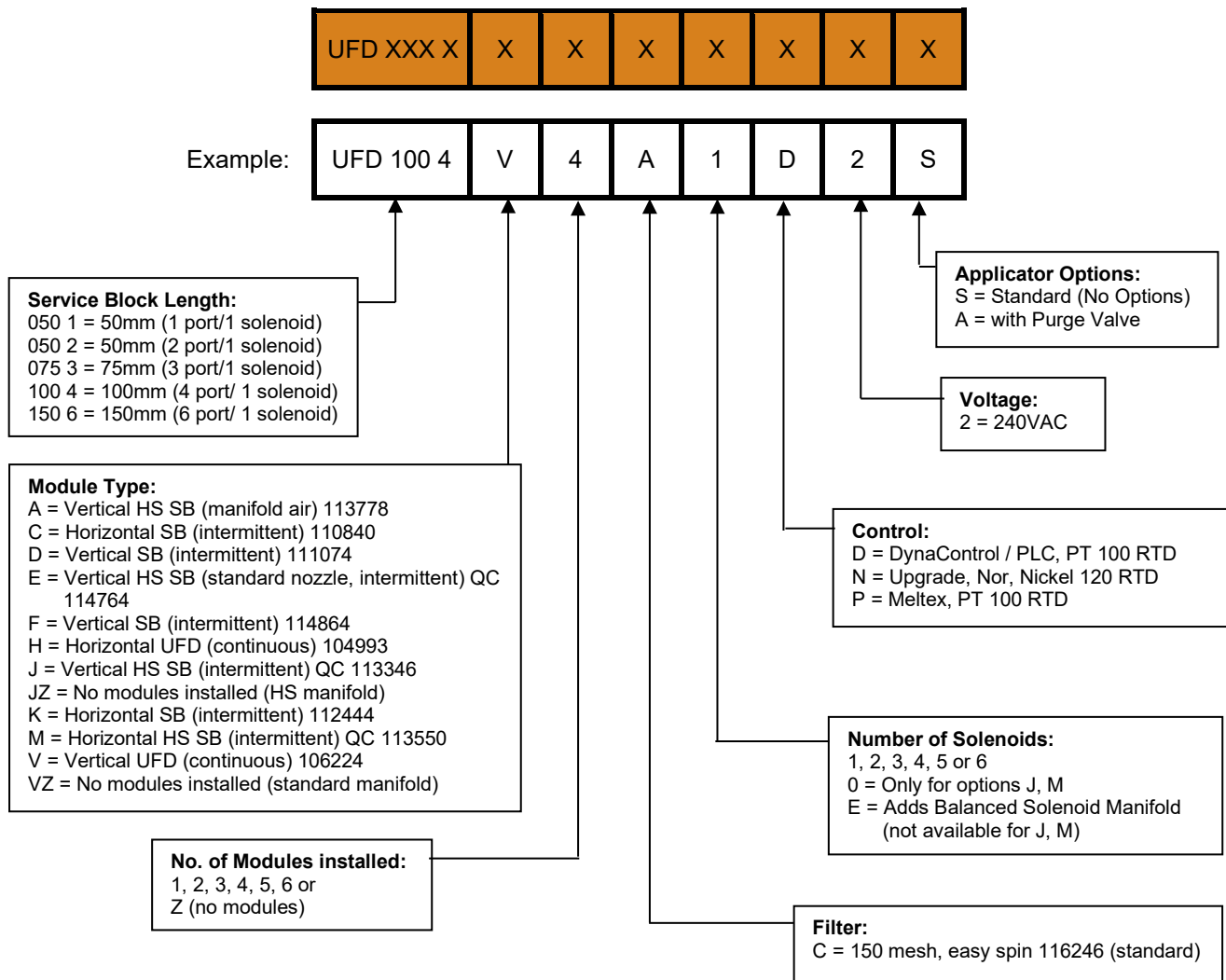


Illustration: Standard UFD Spray Applicator

3.2.2 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				

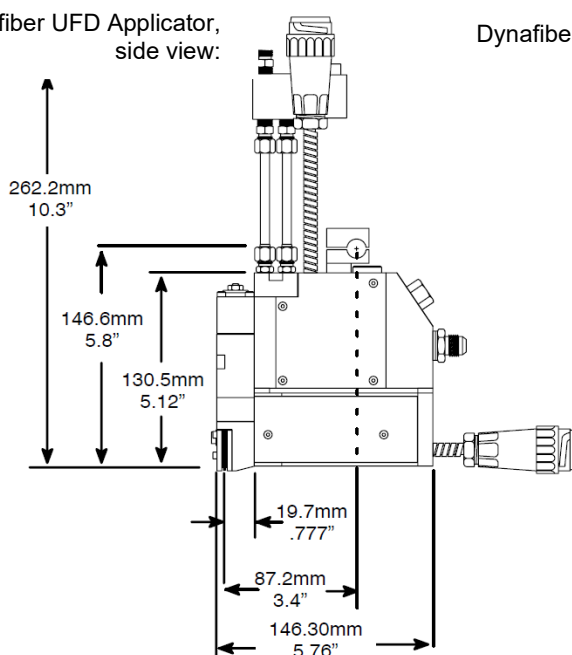
3.2.3 Model Designation Guide



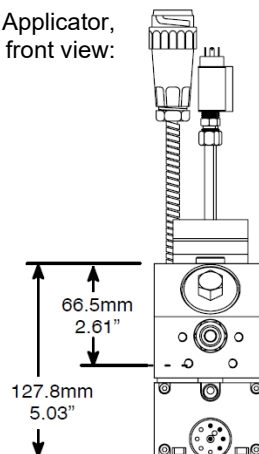
Notes: When specifying an Applicator with no modules, (see “Z” above), the Module Type (H, V, etc.) must still be specified for the application.

3.2.4 Dimensions

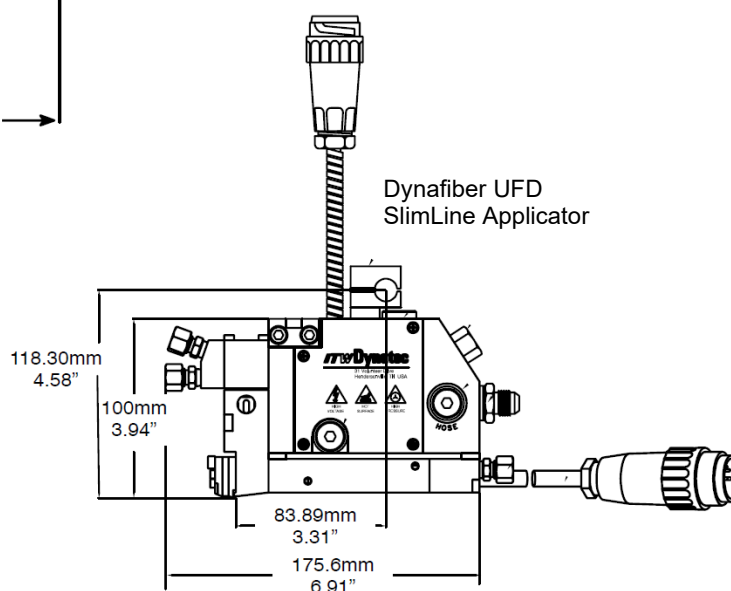
Dynafiber UFD Applicator,
side view:



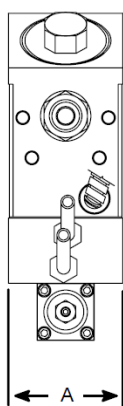
Dynafiber UFD Applicator,
front view:



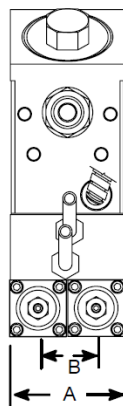
	Width	Centers
Model No.	A	B
UFD0501	50mm 2"	-
UFD0502	50mm 2"	25.2mm 1"
UFD0753	75mm 3"	50.4mm 2"
UFD1004	100mm 4"	75.6mm 3"
UFD1506	150mm 6"	126mm 5"



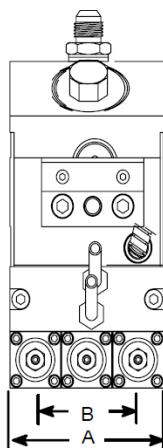
UFD0501



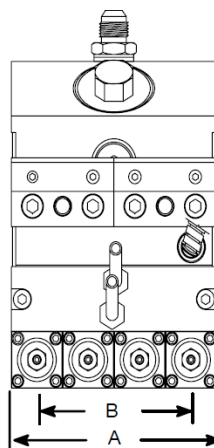
UFD0502



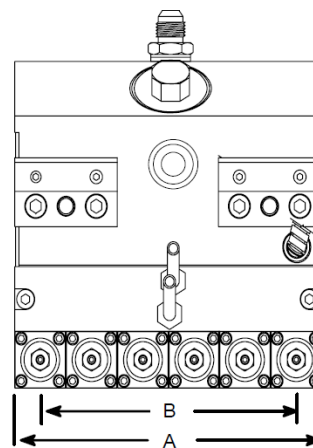
UFD0753



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

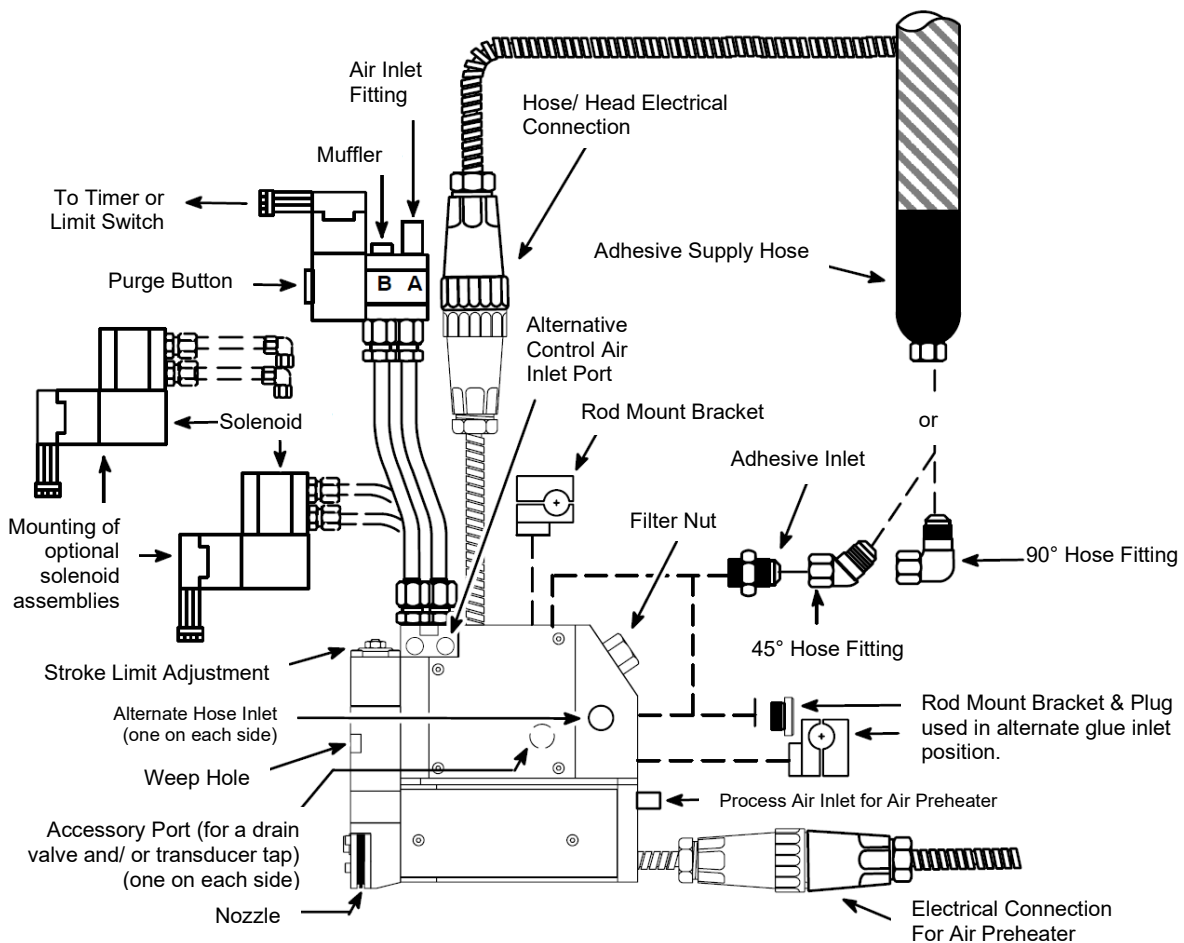
- While installing the Applicator, use an appropriate protection device to avoid unintended contact with heated parts and with spilling out Hotmelt. The protection device has to prevent also the operator against not reaching into the adhesive application and against injuring.
- Risk of burns and risk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

Typical installation for an 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, an Air filter / Regulator Kit (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 filter / Regulator Kit (PN 100055) to be used with air-operated Applicators (see the **Air filter / Regulator Kit** in Appendix).

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.
- See separate manual of the heated hoses.

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.
---	---

4.2.1 Special Installation Notes on High-Speed Snuffback Direct-Air Module

Special Installation Notes on Optional Direct-Air Modules High-Speed Vertical Snuffback PN 112690 & 112934 High-Speed Horizontal Snuffback,

The PN 112690 & 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.

4.2.2 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.

4.2.3 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



CAUTION

- In any case, the air has to be clean and dry!
- The min. requirement for compressed air supply to solenoids to control automatic Applicators is ISO 8573-1:2010 class 2:4:3. We recommend installing the ITW Dynatec's Air Control Kit PN 100055 (see Appendix).

Compressed air quality classes according to ISO 8573-1:2010 class 2:4:3:

ISO 8573-1: 2010	Solid particles				Water		Oil
Class	Maximum number of particles per m³			Mass concentration	Vapor pressure dew point °C	Liquid g/m³	Total oil content (liquid, aerosol and mist) mg/m³
	0.1-0.5 µm	0.5-1 µm	1-5 µm	mg/m³			
0	As stipulated by the equipment user, stricter requirements than class 1.						
1	≤ 20,000	≤ 400	≤ 10	-	≤ -70	-	0.01
2	≤ 400,000	≤ 6,000	≤ 100	-	≤ -40	-	0.1
3	-	≤ 90,000	≤ 1,000	-	≤ -20	-	1
4	-	-	≤ 10,000	-	≤ +3	-	5
5	-	-	≤ 100,000	-	≤ +7	-	-
6	-	-	-	≤ 5	≤ +10	-	-
7	-	-	-	5-10	-	≤ 0.5	-
8	-	-	-	-	-	0.5 - 5	-
9	-	-	-	-	-	5 - 10	-
X	-	-	-	> 10	-	> 10	> 10

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 High-Temp Lube (PN 001V078 Krytox GPL206).

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. **NOTE:** Recommended stroke setting is **0.75mm to 1mm**.

To do that: Screw entirely the stroke adjustment screw using a 6mm hex key (DO NOT tighten it) and then, unscrew it **1.5 to 2 turns**.



CAUTION

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

4. 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.
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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

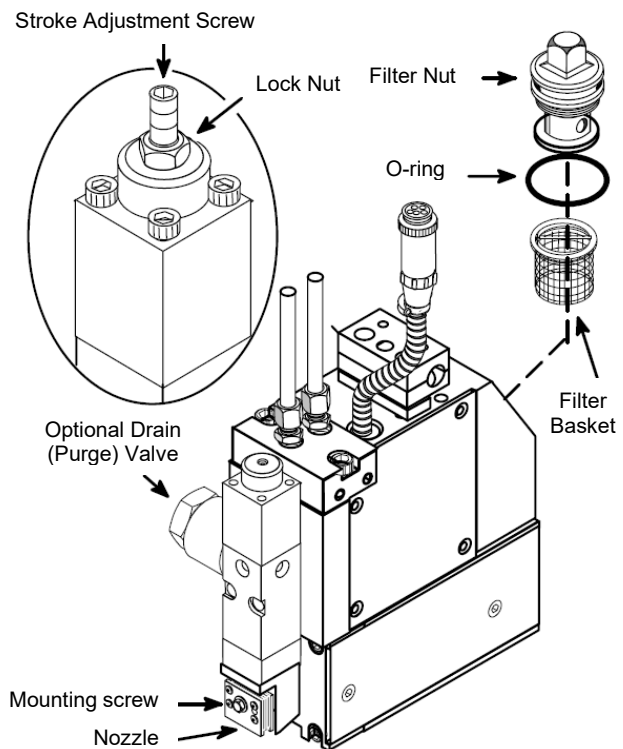
	WARNING Heed all security advices given in Chapter 5.1. Maintenance and repair work is only permitted for skilled personnel! Always wear safety shoes, heat-resistant protective gloves, safety goggles and protective clothing that cover all vulnerable parts of the body while working on the heated unit! 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.
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Refer to the drawing in Chapter 7 for more information.

The applicator must be at operating temperature.

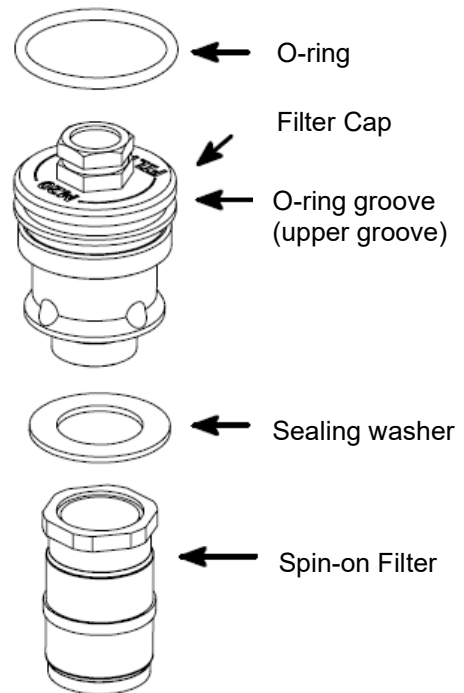
Procedure for Basket-type Filter (Filter Codes A & B):

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 001V078 Krytox GPL206) 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.

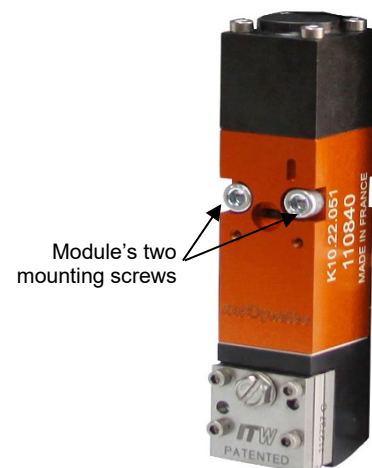
5.6 Replacement of the Module

5.6.1 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 78-94 in/lbs (8.8-10.6 Nm).



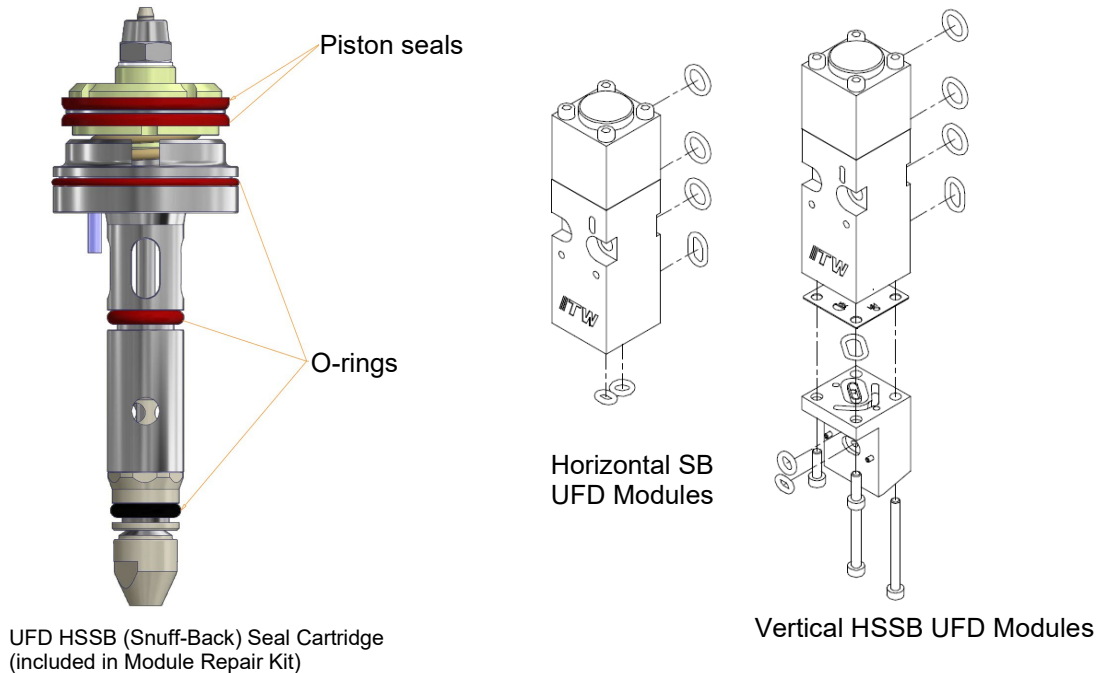
After finishing the maintenance or repair works:

- 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.

5.6.2 Module Assembly Instructions for Horizontal and Vertical HSSB 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 HSSB UFD modules. ITW Dynatec has Module Repair Kits available (refer to Ch. 8, Repair Kits) 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 a High Temp Lube (PN 001V078 Krytox GPL206) 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.
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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.
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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. In this case the nozzle must be cleaned in a High Temperature Oven or it must be replaced.

	CAUTION DO NOT DISASSEMBLE the nozzle for cleaning! This can damage the nozzle plates and this will void the guarantee! DO NOT USE alloy brushes made from steel stainless, brass or copper for nozzle cleaning; they could seriously damage the nozzle!
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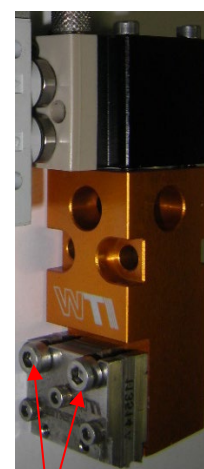
Cleaning of the UFD nozzle in a High Temperature Oven (Furnace)

A Nozzle Cleaning Oven (Furnace) (PN 80.80000.103) is available from ITW Dynatec. Nozzles will be "baked" in the oven for approximately four to six hours at 750-800 °F (400-425°C); the residual adhesive in the nozzles turns to ash/dust that can be blown with compressed air. Complete cleaning instructions are provided with the oven.

Replacement of the UFD nozzle

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.



UFD High-Speed Nozzle's two mounting screws



UFD Snuffback Nozzle's one mounting screw

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).

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

5.9.1 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.

5.9.2 Testing Resistance of the RTD Temperature Sensor**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 (PT100, Control option D)	110 ohms
Upgrade (Ni120, Control option N)	138 ohms
Meltex (PT100, Control option P)	110 ohms

5.9.3 Resistance Tables, Temperature sensors

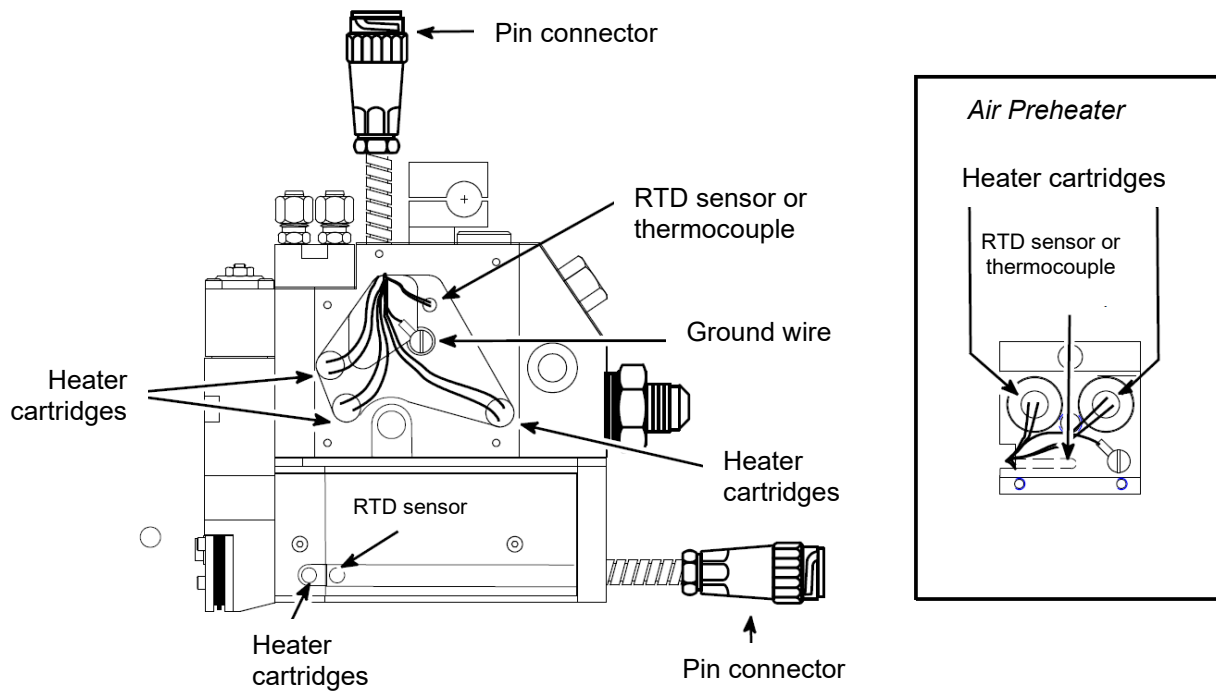
Temperature sensor PT 100 Ohms
Control option: DCL

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

5.10.1 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.

5.10.2 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.

5.10.3 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.

5.10.4 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	• Remove dropped out adhesive and scrap adhesive and search for the cause of that, eliminate the cause.
Once a day	• Clean the Applicator and components from dirt. • Wipe the Applicator clean of adhesive with a clean cloth while still hot at the end of each shift.
Once a week	• Check filters for clogging and replace if necessary. • 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. • Check nozzles for wearing or clogging and clean or replace if necessary, or re-adjust stroke limiter. • Check adhesive supply hose connection and tighten if loose. • Check air supply connections for leaks and tighten if loose or replace if necessary. • Check the solenoid valves for proper function and replace it if necessary.
Every 3 months	• 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. • Inspect air preheater cable assembly wire insulation for hardening, cracking, or other signs of thermal wear. Replace if necessary.
Once a year	• Clean the Applicator. • Complete check-up for wearing.
Every two years	• Complete maintenance.

Chapter 6

Troubleshooting

6.1 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.

6.2. Troubleshooting Guide UFD Applicator

Problem	Possible Cause	Solution
Module does not open.	1. Temperature adjustment of head is too low. 2. Solenoid defective.	1. Check temperature adjustment. 2. Push the solenoid's manual button. If it opens, the problem is electrical. Check and/or replace the solenoid.
No adhesive flowing out of module.	1. Nozzle is clogged. 2. Filter element is dirty. 3. Module seals (O-rings) are defective. 4. ASU's hopper is empty. 5. Adhesive is too cold. 6. Solenoid valve is not opening. 7. Piston stroke is too low.	1. Clean or replace nozzle. 2. Replace filter, see instructions in Ch. Maintenance. 3. Check module O-rings, see instructions in Ch. Maintenance. 4. Re-fill hopper. 5. Adjust temperature, see ASU manual. 6. Check solenoid valve. 7. Adjust the stroke limit, see instructions in Ch. Maintenance.

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



WARNING

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.

7.1 1-Port UFD Vertical & Horizontal Apply Applicator Assemblies

Item No.	Part Number	Description	Qty.
1	106224	UFD Spray Module Assembly, MR13, Vertical, Extended	1
2	104993	UFD Spray Module Assembly, MR13, Horizontal	1
	112444	UFD Spray Module Assembly, Horizontal, High-Speed Snuffback, Intermittent (Special)	1
	113346	UFD Spray Module Assembly, High-Speed Snuffback, Vertical, (used with Festo Solenoid)	1
		(for more module options, see Chapter Model Designation Guide)	
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
6	110384	Solenoid Manifold Assembly	1
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
12	109256	Service Block Assembly (DCL)	1
	109257	Service Block Assembly (NOR)	1
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
	104528	Cable Assembly, BF240v, NOR, 9.0 (Built-in Sensor)	1
23	112716	Screw M5x6 mm	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

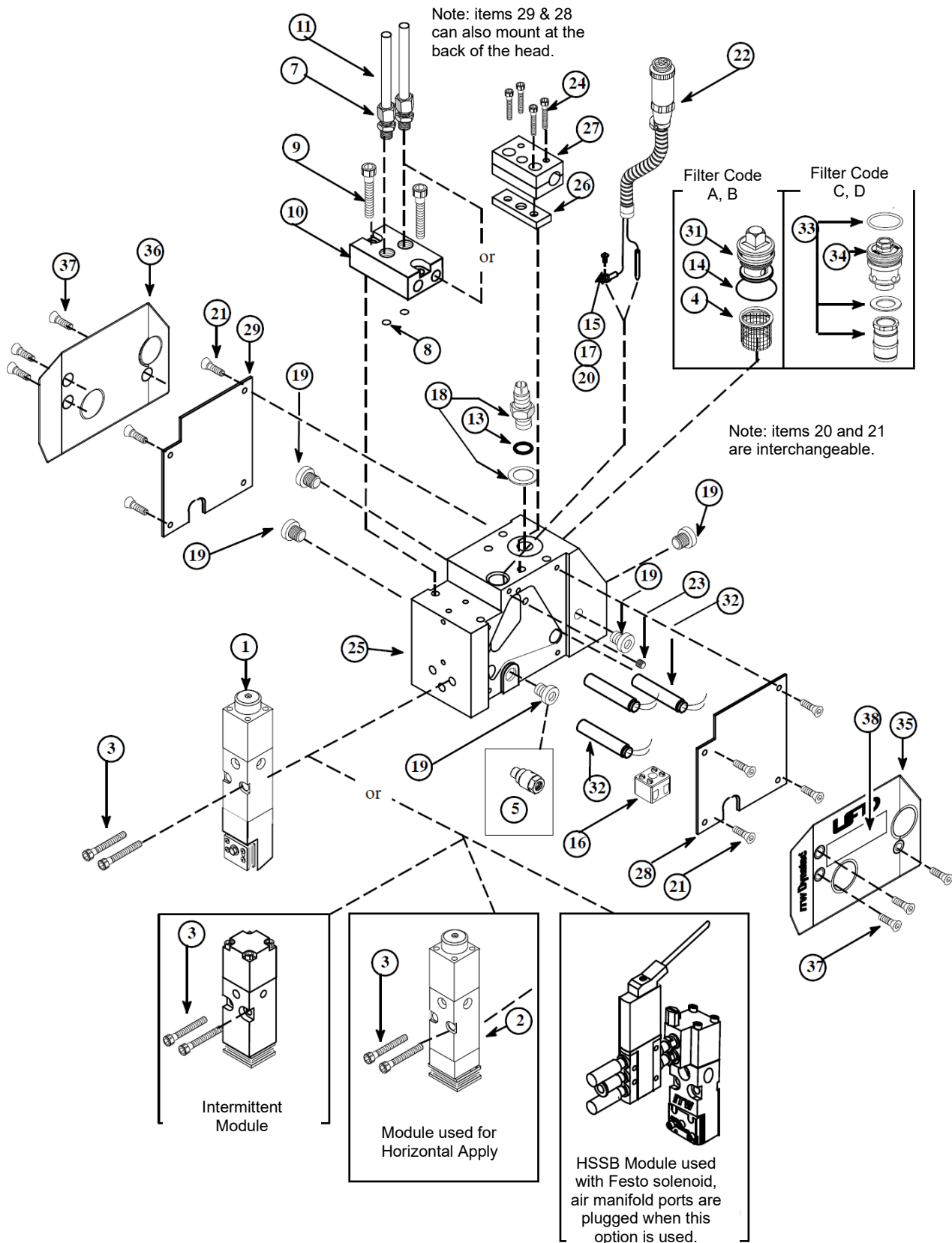


Illustration: 1-Port UFD Vertical & Horizontal Apply Applicator Assemblies

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

Item No.	Part Number	Description	Qty.
	109260	Air Preheater Assembly (DCL)	1
	109261	Air Preheater Assembly (NOR)	1
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	112716	Screw M5x6 mm	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
	109287	Cable Assembly, NOR	1
56	106332	Screw M5x55mm	2
57	107161	Screw M4x8mm	1
58	109252	Screw M5x25mm	2

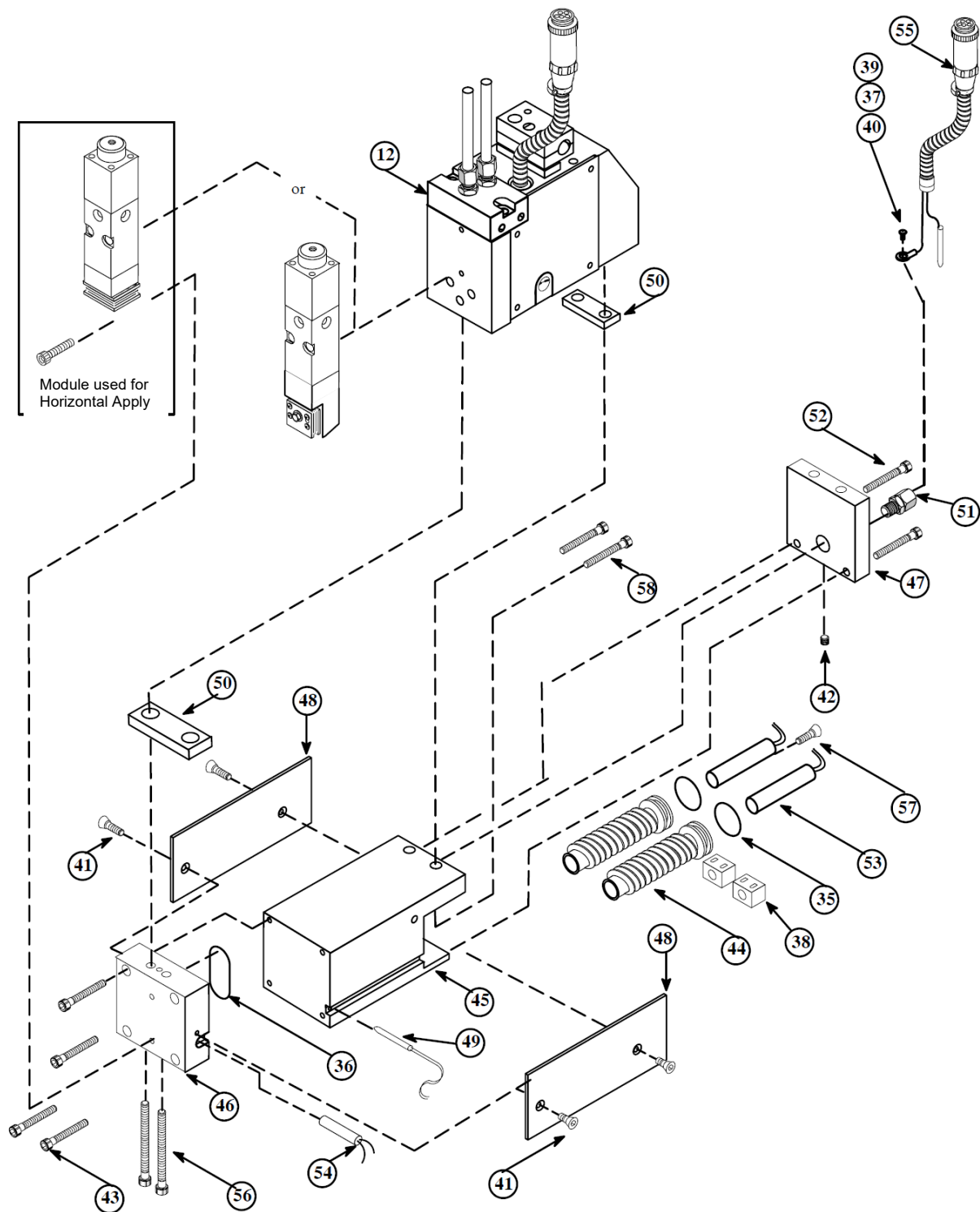


Illustration: Air Preheater Assembly for 1-Port UFD Vertical & Horizontal Apply

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

(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		Nozzle (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, Cartridge, 200W, 240V, 10 x 60mm (Part of Cable Assy.)	2
52	112806	Cable Assembly, DCL, Slim Line, 1 - 2 port	1
53	101627	Screw M3x6mm	2

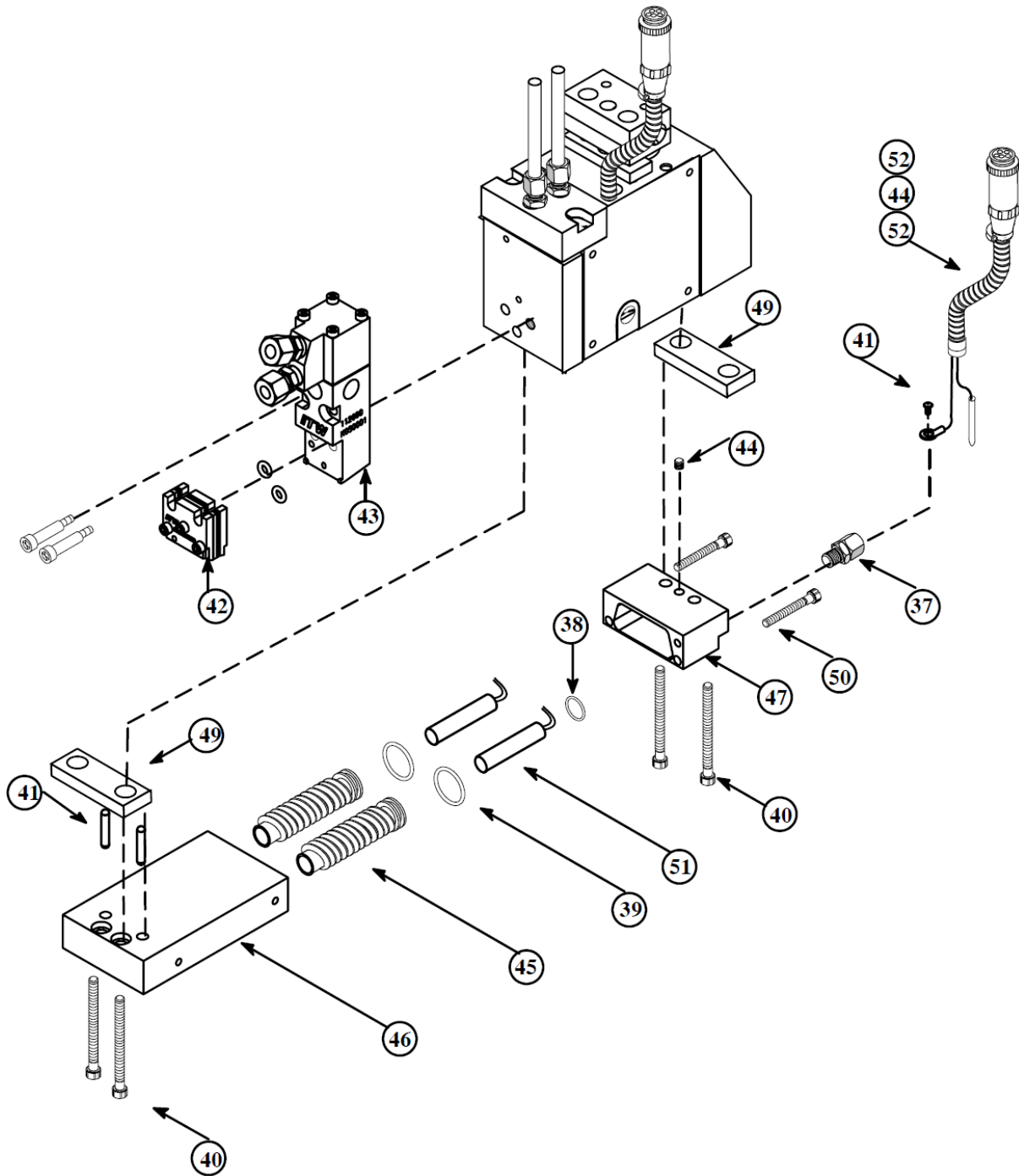


Illustration: Air Preheater Assembly for 1- or 2-Port UFD Slim Design

7.2 2-Port UFD Vertical & Horizontal Apply, 1 or 2 Program, Applicator Assemblies

Item No.	Part Number	Description	Qty.
1	106224	UFD Spray Module Assembly, MR13, Vertical, Extended	2
2	104993	UFD Spray Module Assembly, MR13, Horizontal	2
	112444	UFD Spray Module Assembly, Horizontal, High-Speed Snuffback, Intermittent (Special)	1
	113346	UFD Spray Module Assembly, High-Speed Snuffback, 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	106472	Module Block-off Assembly (option)	1
6	106367	Blank Plate	2
7	N00178	O-ring, #-011	8
8	106474	Solenoid Manifold Assembly, 1 Program	1
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	106475	Solenoid Manifold Assembly, 2 Program	1
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	109254	Service Block Assembly (DCL)	1
	109264	Service Block Assembly (NOR)	1
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
	104528	Cable Assembly, BF240V, NOR, 9.0 (Built-in Sensor)	1
33	112716	Screw M5x6 mm	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
	107936	Balanced Manifold Assembly (option, not shown)	1

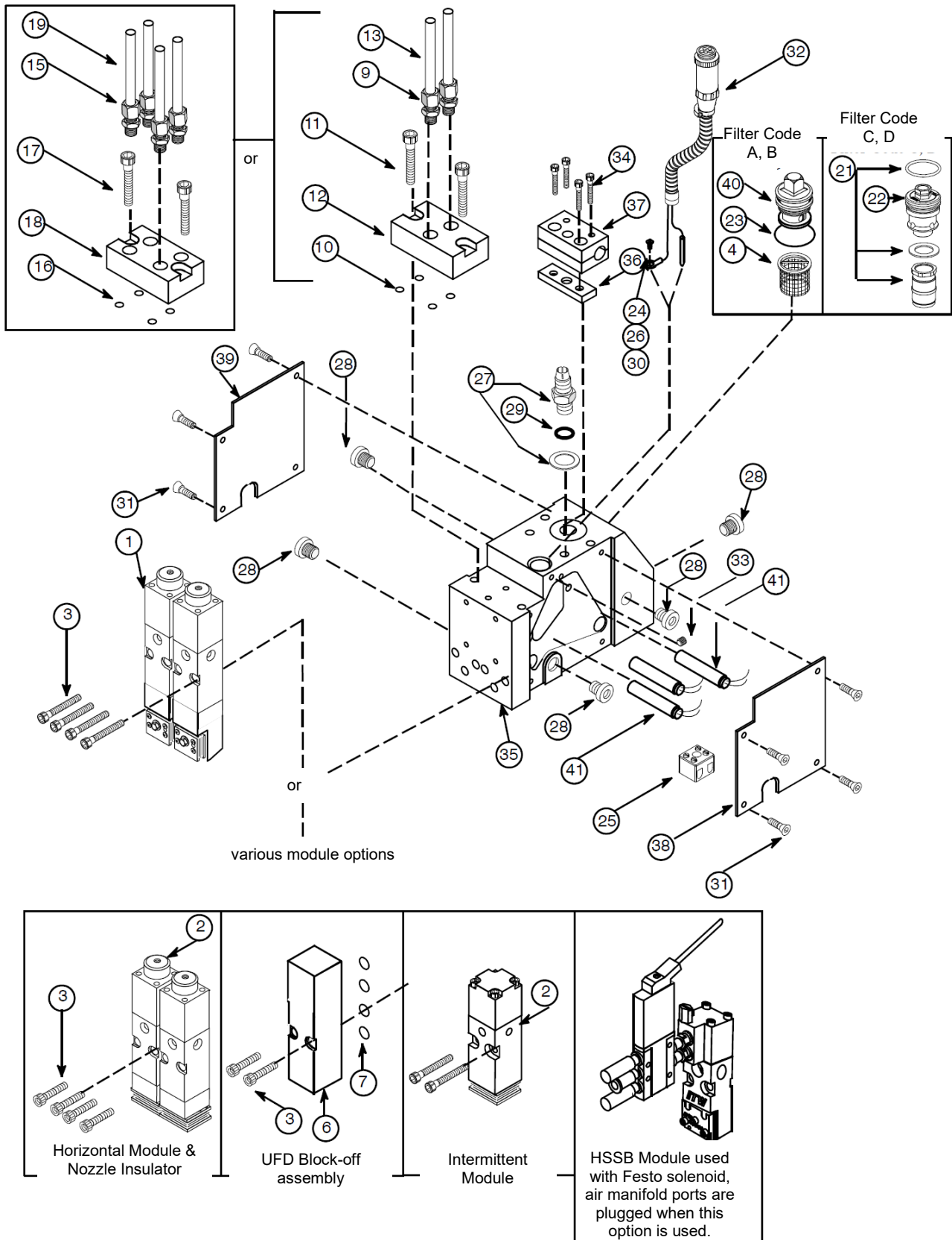


Illustration: 2-Port UFD Vertical & Horizontal Apply, 1 or 2 Program, Applicator Assemblies

7.2.1 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
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	112716	Screw M5x6mm	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
	109287	Cable Assembly, NOR	1

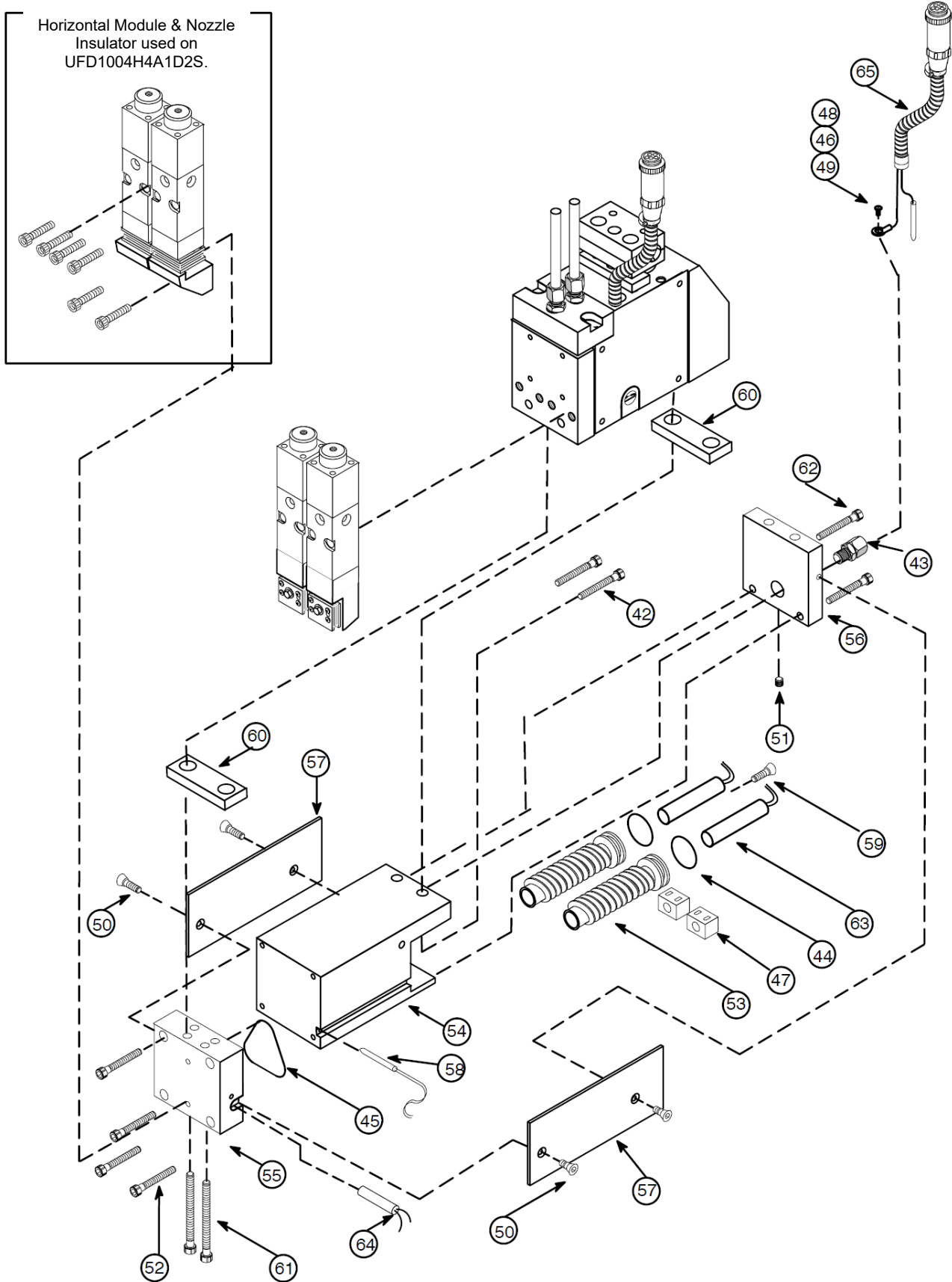


Illustration: Air Preheater Assembly for 2-Port UFD Vertical & Horizontal Apply, 1 or 2 Program

7.3 3-Port UFD Vertical & Horizontal Apply, 1, 2 or 3 Program, Applicator Assemblies

Item No.	Part No.	Description	Qty.
1	106224	UFD Spray Module Assembly, MR13, Vertical, Extended	4
2	104993	UFD Spray Module Assembly, MR13, Horizontal	4
	112444	UFD Spray Module Assembly, Horizontal, High-Speed Snuffback, Intermittent (Special)	1
	113346	UFD Spray Module Assembly, High-Speed Snuffback, Vertical, (used with Festo Solenoid)	1
		(for more module options, see Chapter Model Designation Guide)	
3	804354	Screw M5x30mm	6
4	106273	Filter Basket, 150 mesh	1
	101247	Filter Basket, 100 mesh	1
5	106472	Module Block-off Assembly	1-3
6	106367	Blank Plate	1
7	N00178	O-ring, #-011	4
8	106667	Solenoid Manifold Assembly, 1 Program	1
	114777	Solenoid Manifold Assembly, 2 Program	1
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	106668	Solenoid Manifold Assembly, 3 Program	1
	107935	Solenoid Manifold Assembly, 3 Program, Balanced	1
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	109334	Service Block Assembly (DCL)	1
	109336	Service Block Assembly (NOR)	1
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
	104528	Cable Assembly, BF240V, NOR, 9.0 (Built-in Sensor)	1
32	112716	Screw M5x6 mm	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

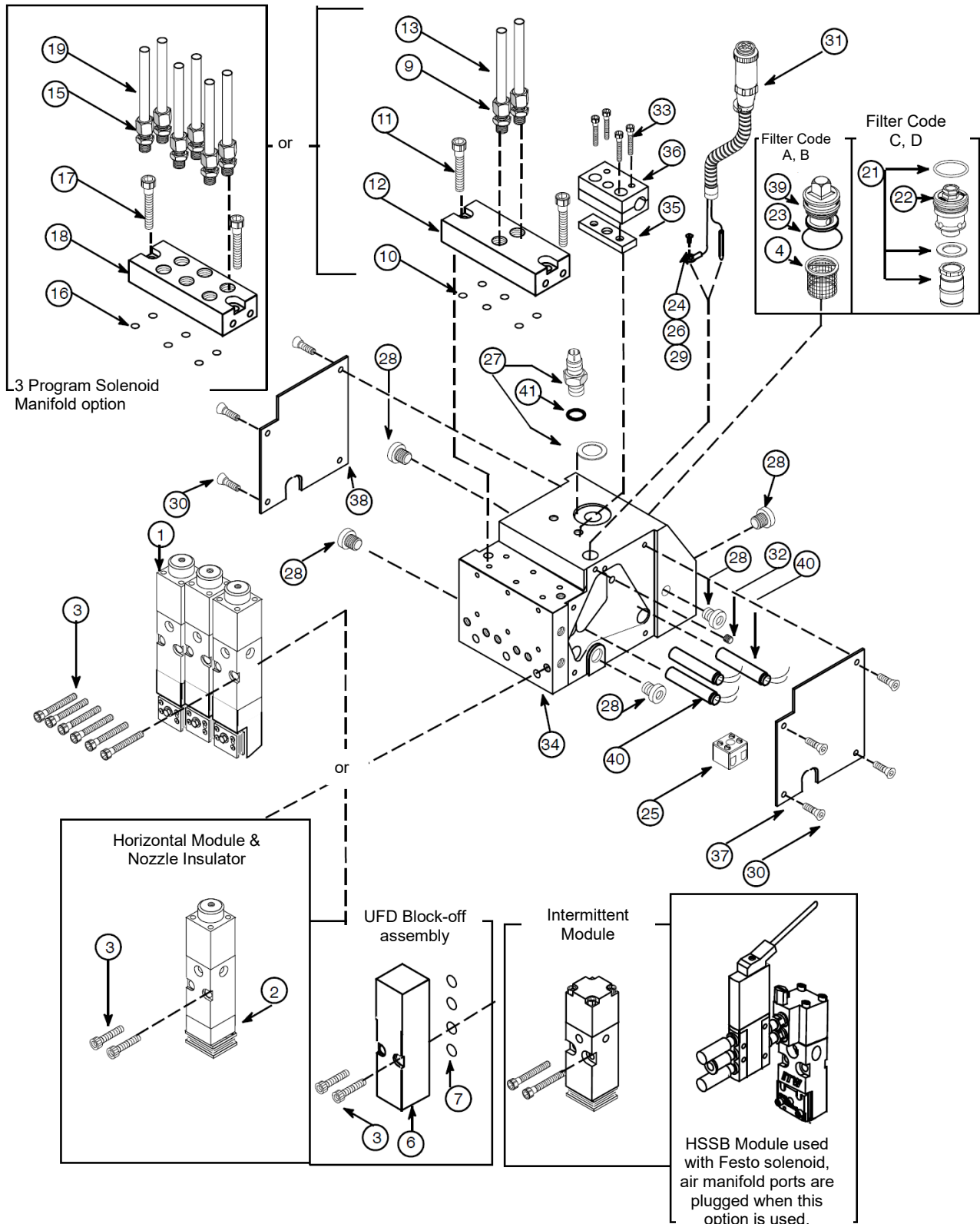


Illustration: 3-Port UFD Vertical & Horizontal Apply, 1, 2 or 3 Program, Applicator Assemblies

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

Item No.	Part Number	Description	Qty.
	109338	Air Preheater Assembly (DCL)	1
	109340	Air Preheater Assembly (NOR)	1
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	112716	Screw M5x6mm	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
	109287	Cable Assembly, NOR	1

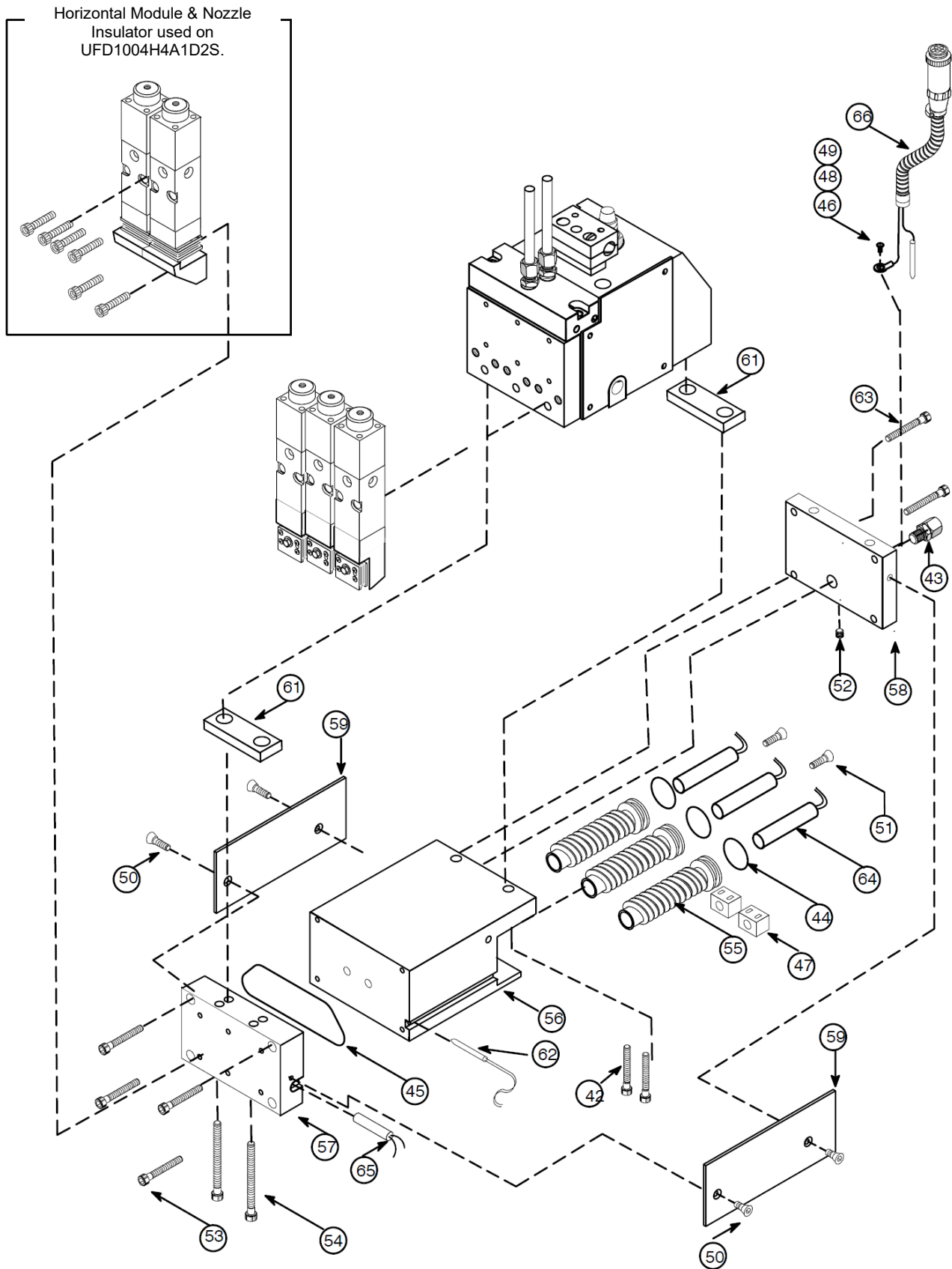


Illustration: Air Preheater Assembly for 3-Port UFD Vertical & Horizontal Apply, 1 or 3 Program

7.3.2 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

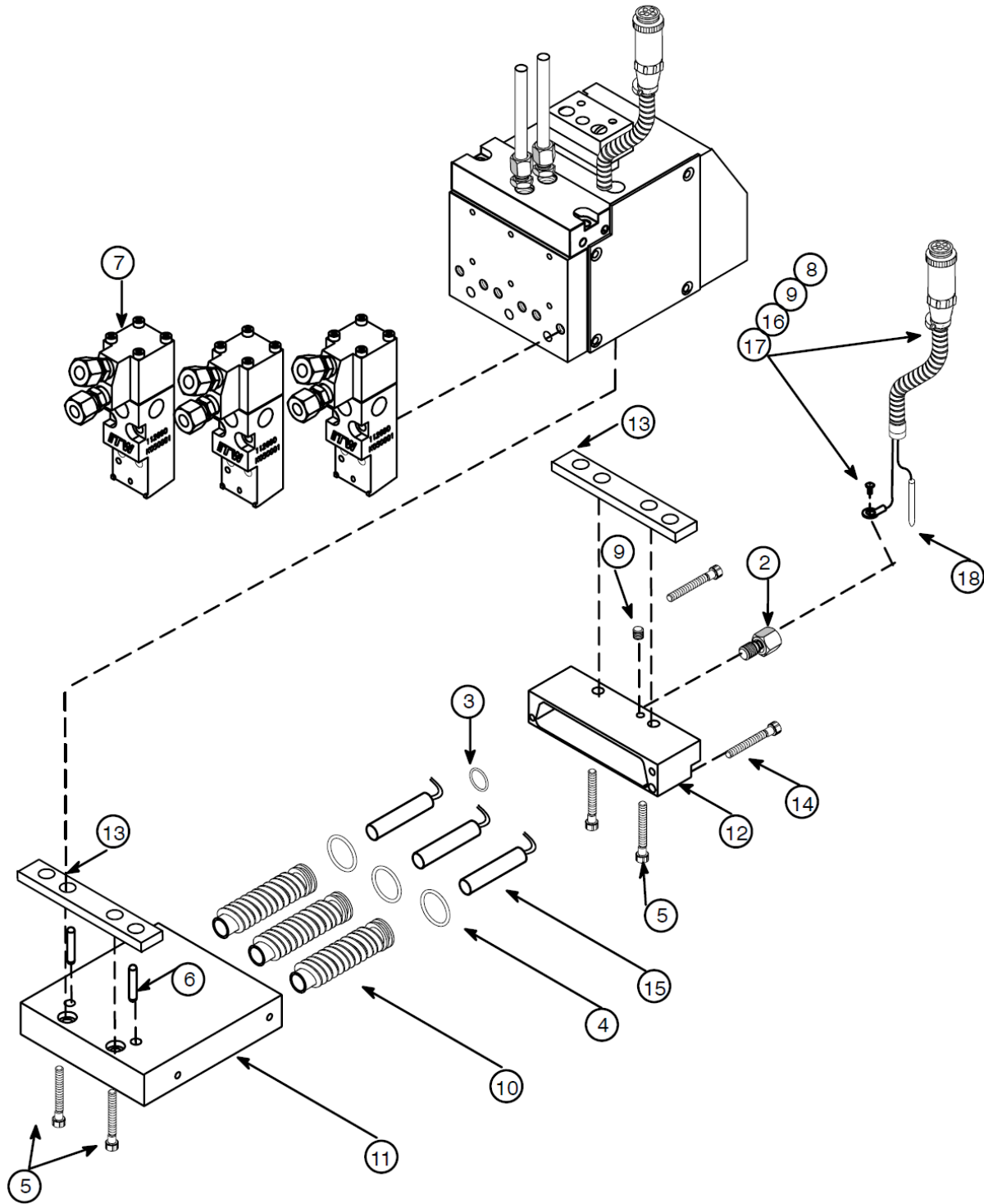


Illustration: Air Preheater Assembly for 3-Port UFD Slim Design (DCL PN 113841 shown)

7.4 4-Port UFD Vertical & Horizontal Apply, 1 or 4 Program, Applicator Assemblies

Item No.	Part Number	Description	Qty.
1	106224	UFD Spray Module Assembly, MR13, Vertical, Extended	4
2	104993	UFD Spray Module Assembly, MR13, Horizontal	4
	112444	UFD Spray Module Assembly, Horizontal, High-Speed Snuffback, Intermittent (Special)	1
	113346	UFD Spray Module Assembly, High-Speed Snuffback, 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
5	106472	Module Block-off Assembly	1-3
6	106367	Blank Plate	1
7	N00178	O-ring, #-011	4
8	106476	Solenoid Manifold Assembly, 1 Program	1
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	Solenoid Manifold Assembly, 2 Program	2
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	109270	Service Block Assembly (DCL)	1
	109272	Service Block Assembly (NOR)	1
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
	104528	Cable Assembly, BF240V, NOR, 9.0 (Built-in Sensor)	1
32	112716	Screw M5x6mm	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)	

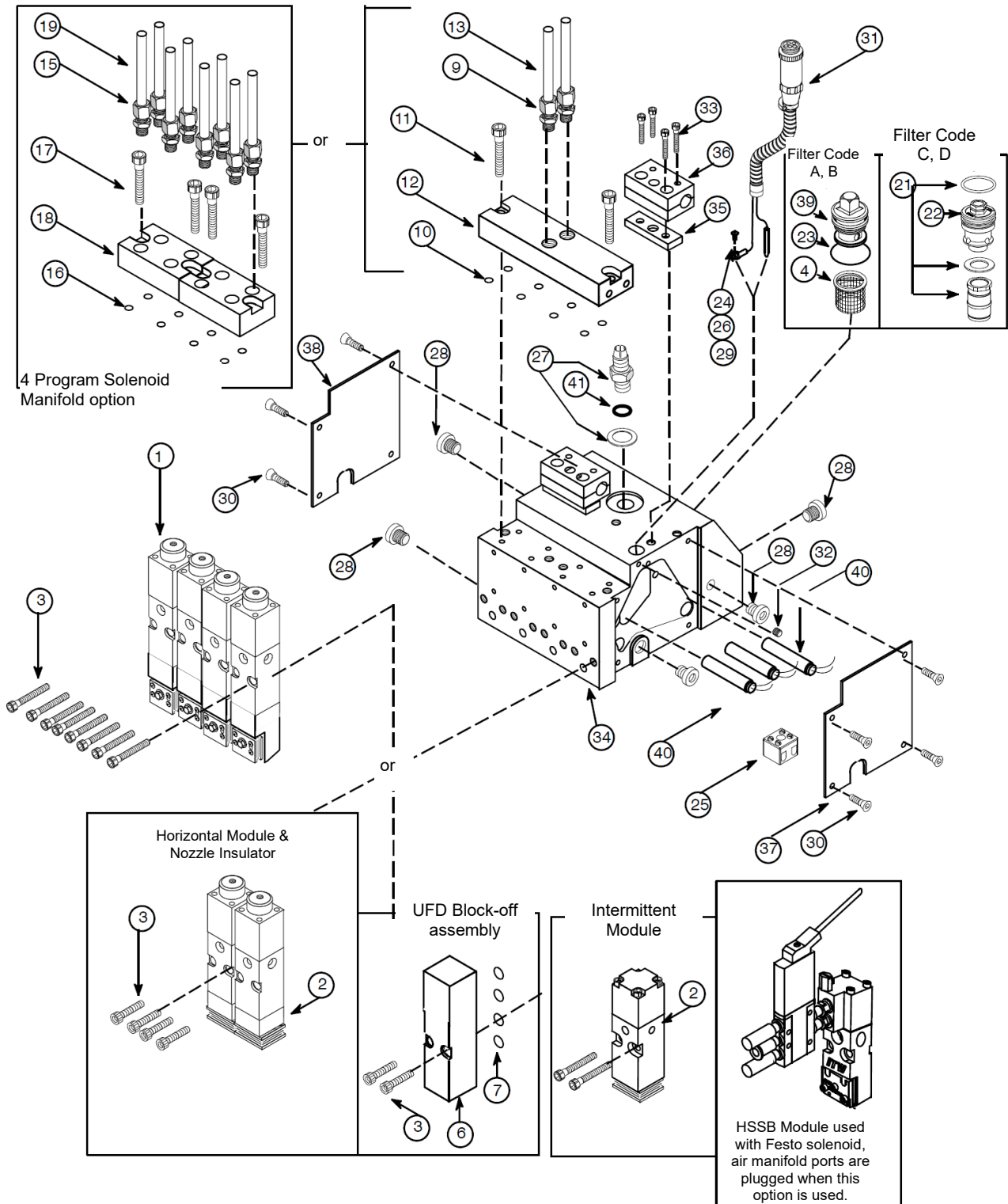


Illustration: 4-Port UFD Vertical & Horizontal Apply, 1 or 4 Program, Applicator Assemblies

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

Item No.	Part Number	Description	Qty.
	109274	Air Preheater Assembly (DCL)	1
	109276	Air Preheater Assembly (NOR)	1
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	112716	Screw M5x6mm	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
	109287	Cable Assembly, NOR	1

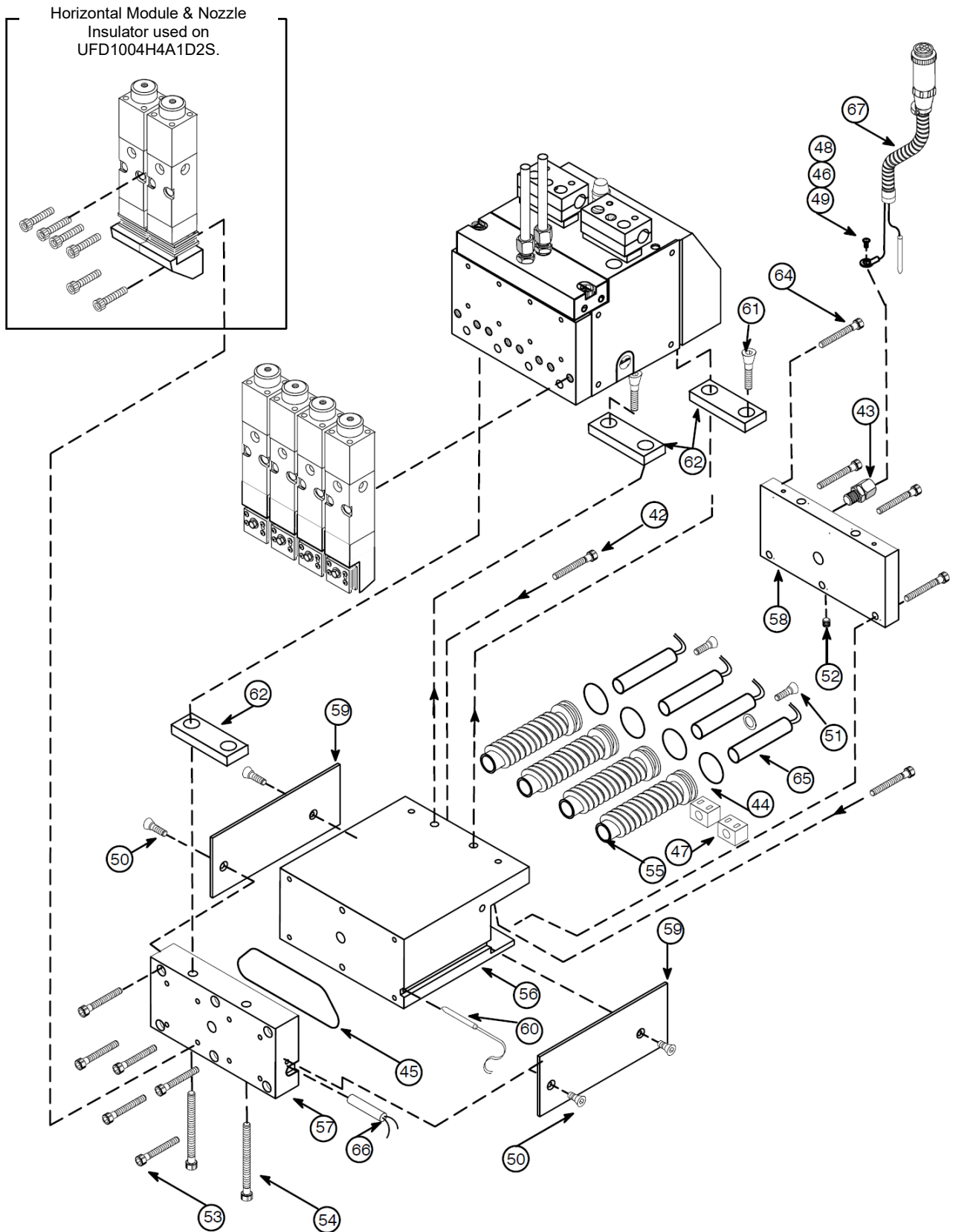


Illustration: Air Preheater Assembly for 4-Port UFD Vertical & Horizontal Apply, 1 or 4 Program

7.4.2 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, 200W, 240V, 10 x 60mm	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

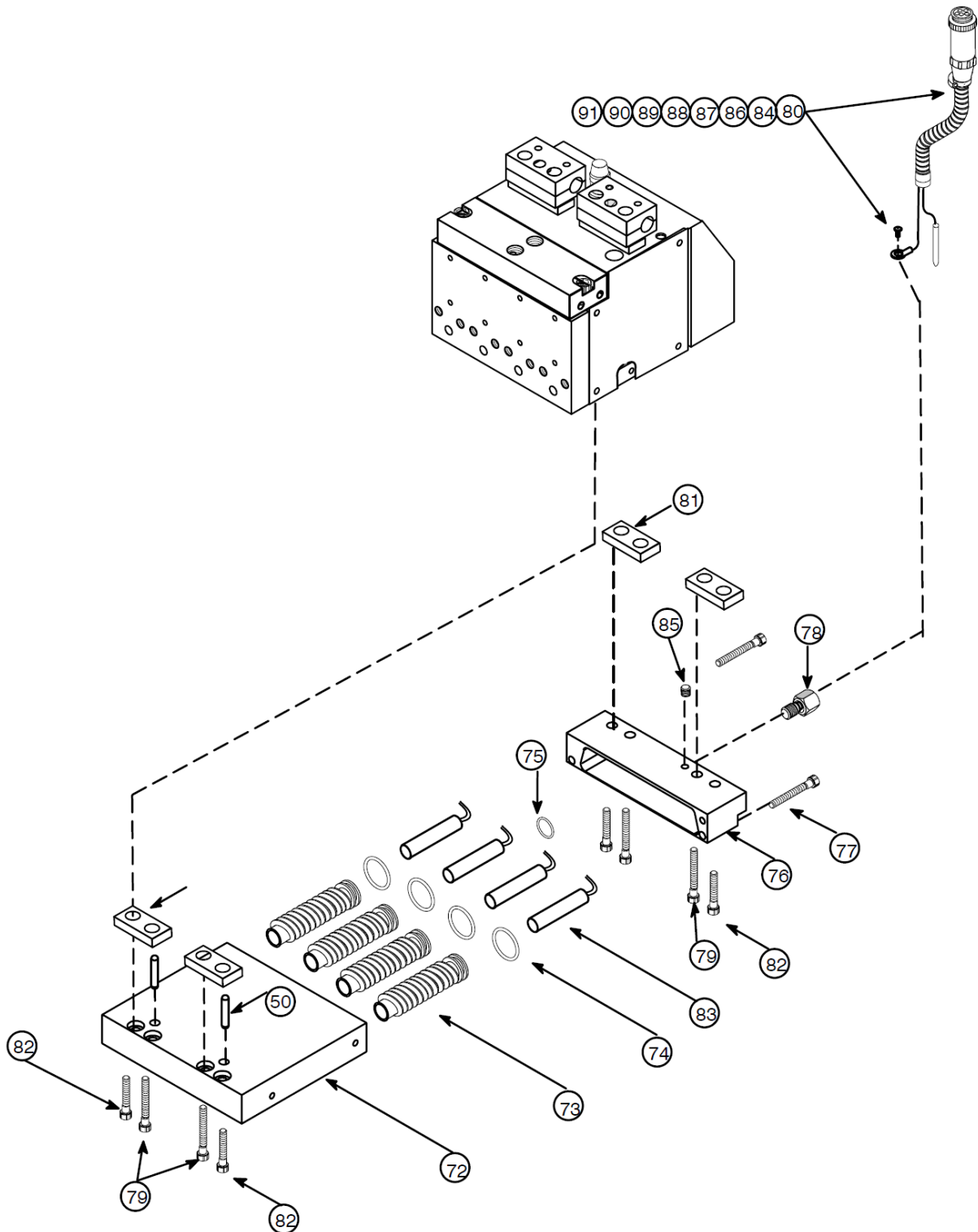


Illustration: Air Preheater Assembly PN 112793 for 4-Port UFD Slim Design

7.5 6-Port UFD Vertical & Horizontal Apply, 1 or 6 Program, Applicator Assemblies

Item No.	Part Number	Description	Qty.
1	106224	UFD Spray Module Assembly, MR13, Vertical, Extended	6
2	104993	UFD Spray Module Assembly, MR13, Horizontal	6
	112444	UFD Spray Module Assembly, Horizontal, High-Speed Snuffback, Intermittent (Special)	1
	113346	UFD Spray Module Assembly, High-Speed Snuffback, Vertical, (used with Festo Solenoid)	1
3	804354	Screw M5x30mm	12
4	106273	Filter Basket, 150 mesh	1
	101247	Filter Basket, 100 mesh	1
5	106472	Module Block-off Assembly	1-5
6	106367	Blank Plate	1
7	N00178	O-ring, #-011	4
8	106879	Solenoid Manifold Assembly, 1 Program	1
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
15	106475	Solenoid Manifold Assembly, 2 Program	3
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
21	109278	Service Block Assembly (DCL)	1
	109280	Service Block Assembly (NOR)	1
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
	104528	Cable Assembly, BF240V, NOR, 9.0 (Built-in Sensor)	1
32	112716	Screw M5x6mm	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

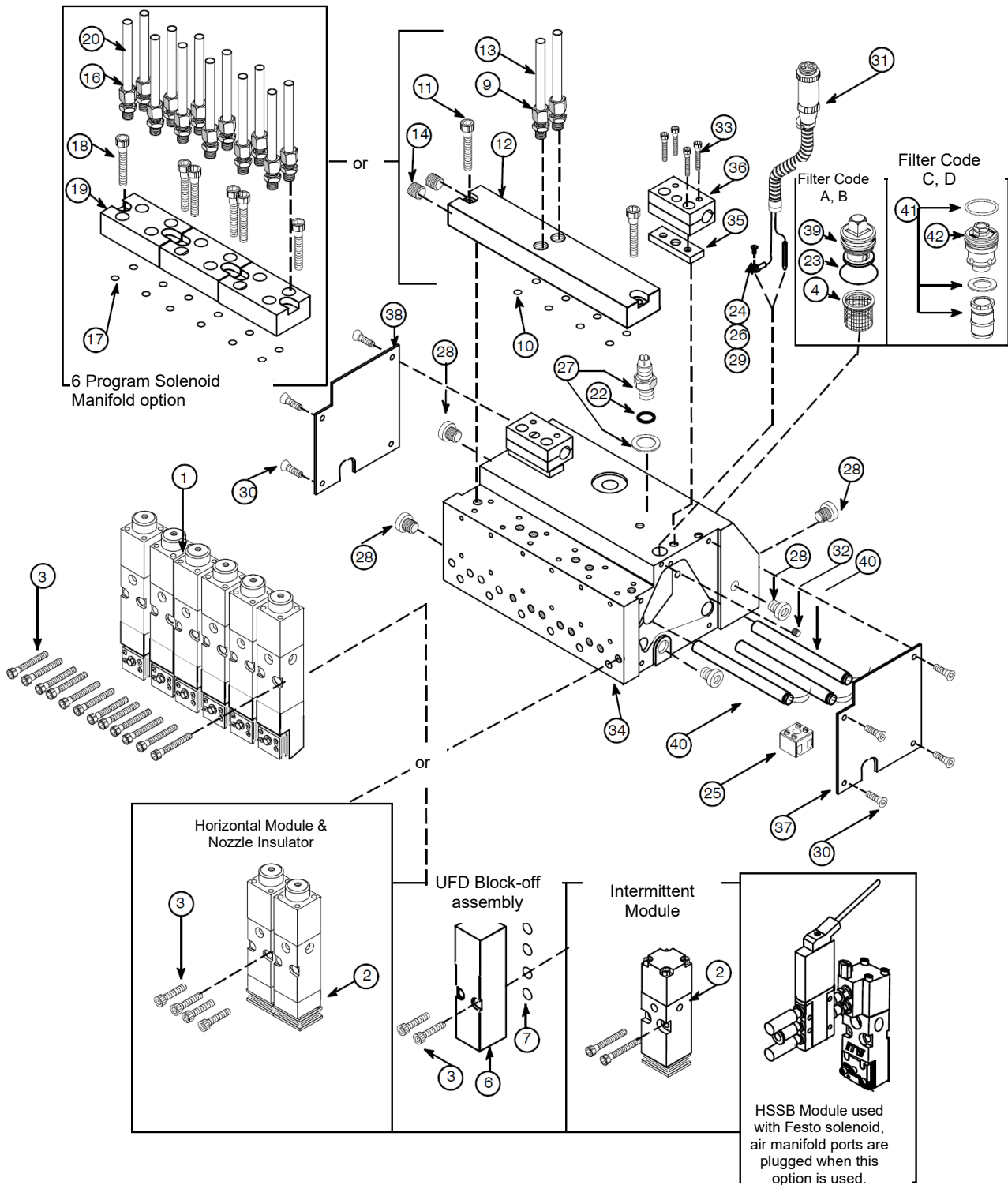


Illustration: 6-Port UFD Vertical & Horizontal Apply, 1 or 6 Program, Applicator Assemblies

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

Item No.	Part Number	Description	Qty.
	109282	Air Preheater Assembly (DCL)	1
	109285	Air Preheater Assembly (MEL)	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	112716	Screw M5x6mm	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
	109287	Cable Assembly, NOR	1

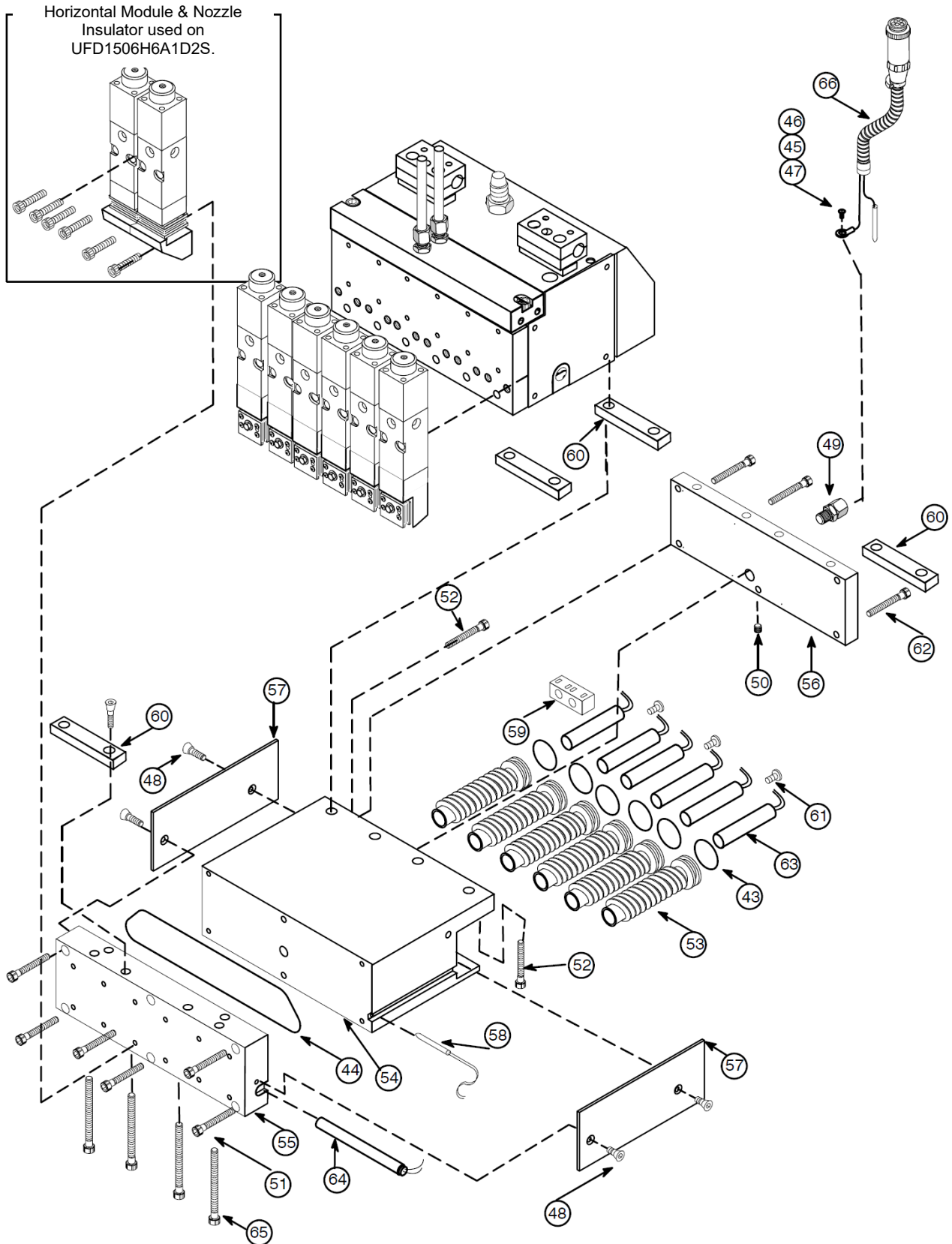


Illustration: Air Preheater Assembly for 6-Port UFD Vertical & Horizontal Apply, 1 or 6 Program

7.5.2 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, 200W, 240V, 10 x 60mm	6
84	101610	Cable Assembly, AH, DCL	1
85	112716	Screw M5x6mm	1
86	N01756	Term, PRLL, 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

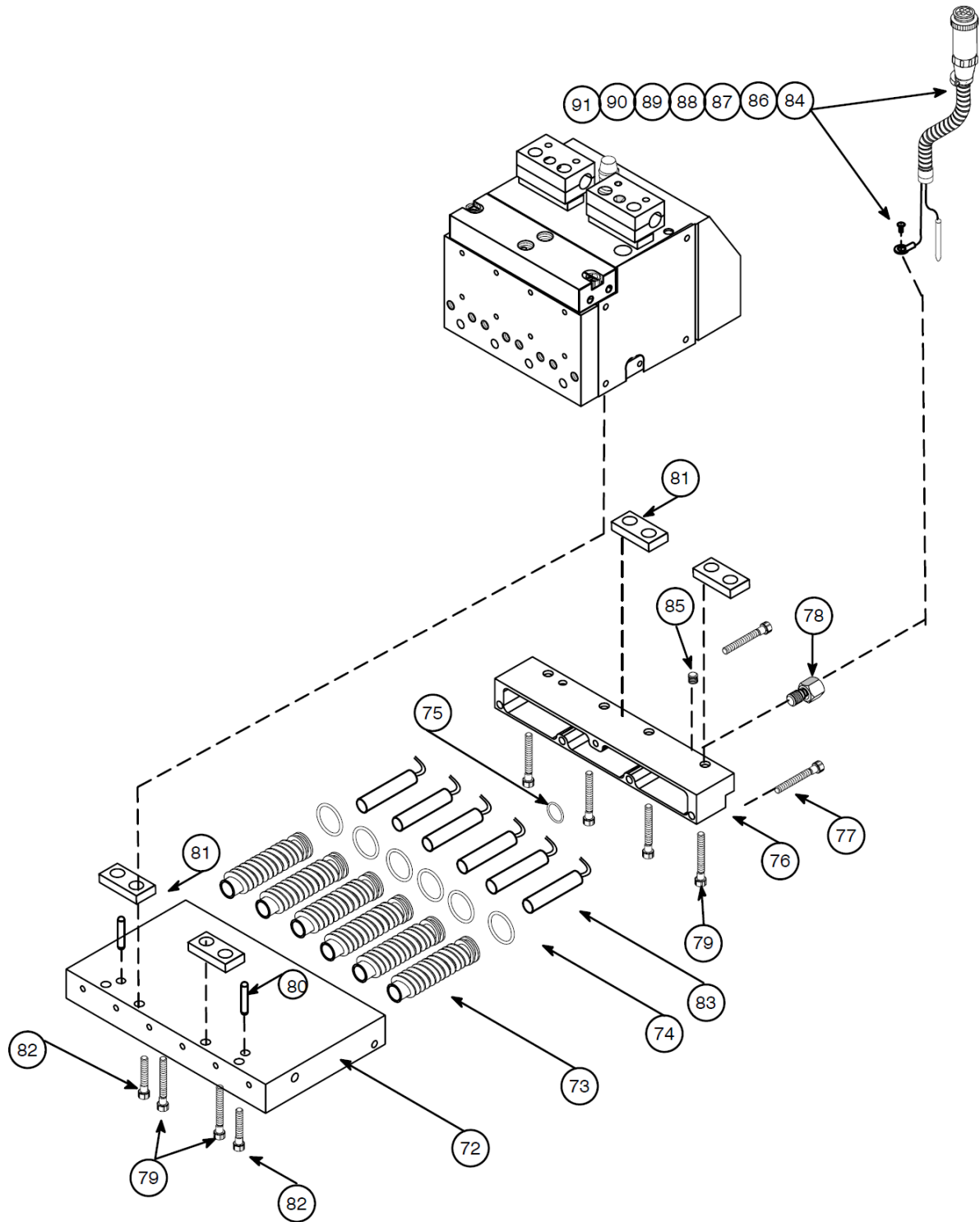
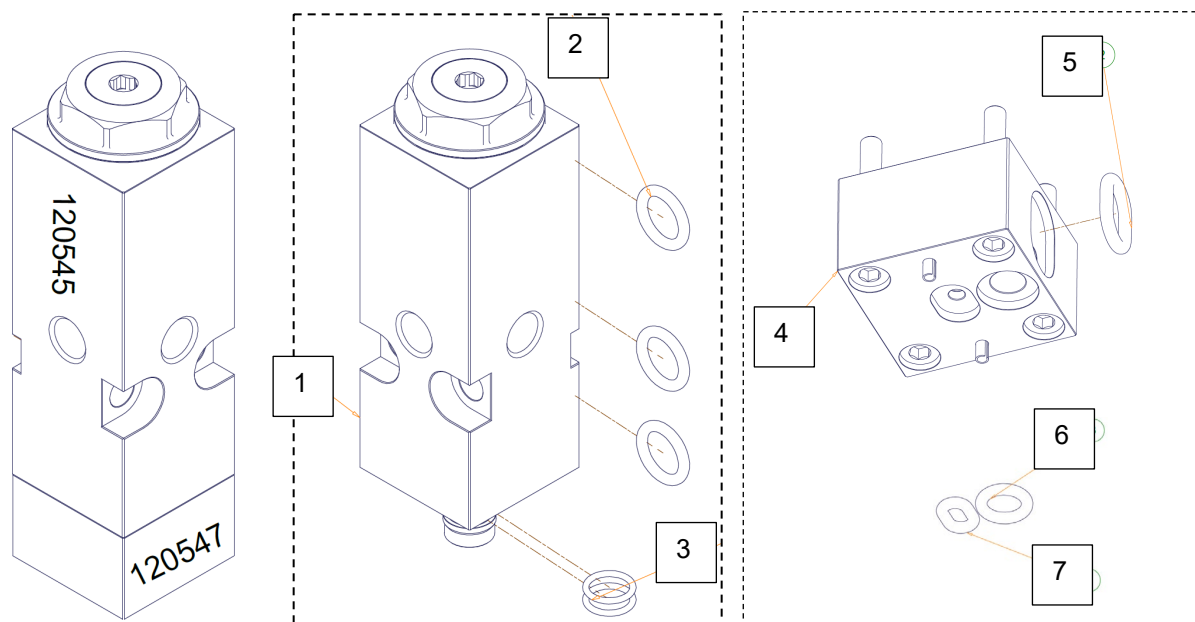


Illustration: Air Preheater Assembly PN 112794 for 6-Port UFD Slim Design

7.6 UFD Modules

7.6.1 UFD Spray Module Assembly, MR13, Horizontal, PN 104993

(The module consists of module PN 120545 and horizontal adapter PN 120547)
(Module Option "H")



UFD Spray Module
Assembly, MR13,
Horizontal, PN 104993

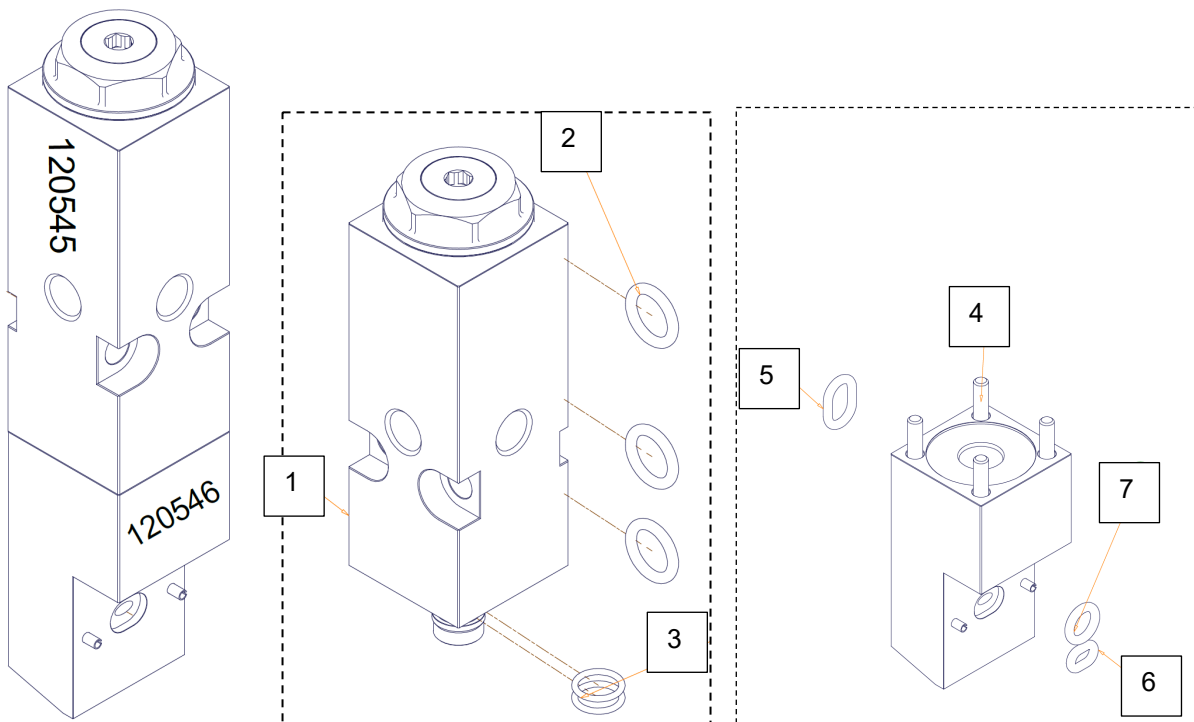
Module PN 120545

Horizontal Adapter PN 120547

Item No.	Part Number	Description	Qty.
Module PN 120545:			
1	120545	Module MR1300	1
2	8819	O-ring 011, 7.65 x 1.78	3
3	195030	O-ring 6.5 x 1	2
Horizontal Adapter PN 120547:			
4	120547	Horizontal Adapter	1
5	8819	O-ring 011, 7.65 x 1.78	1
6	8818	O-ring 09, 5.28x1.78	1
7	8820	O-ring 3.68 x 1.78	1

7.6.2 UFD Spray Module Assembly, MR13, Vertical, Extended, PN 106224

(The module consists of module 120545 + vertical adapter 120546)
(Module Option "V")



UFD Spray Module
Assembly, MR13, Vertical,
Extended, PN 106224

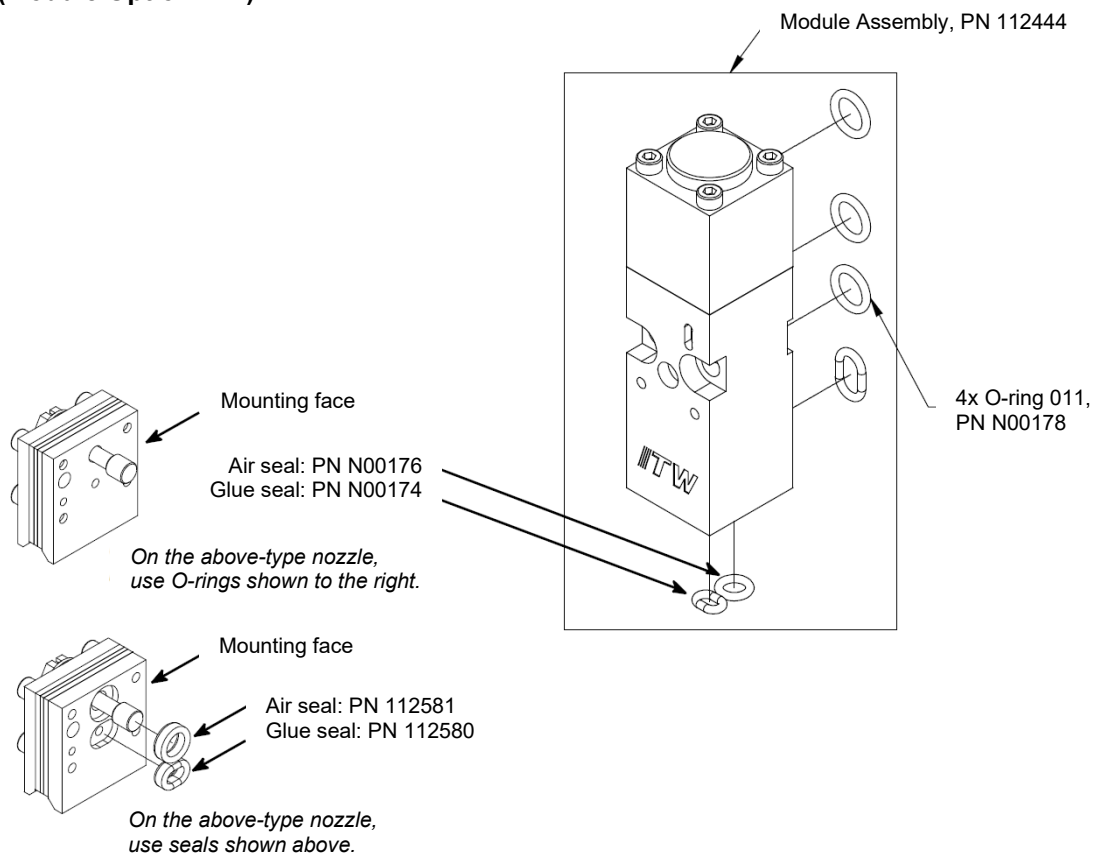
Module PN 120545

Vertical Adapter PN 120546

Item No.	Part Number	Description	Qty.
Module PN 120545:			
1	120545	Module MR1300	1
2	8819	O-ring 011, 7.65 x 1.78	3
3	195030	O-ring 6.5 x 1	2
Vertical Adapter PN 120546:			
4	120546	Vertical Adapter	1
5	8819	O-ring 011, 7.65 x 1.78	1
6	8820	O-ring 3.68 x 1.78	1
7	8818	O-ring 09, 5.28x1.78	1

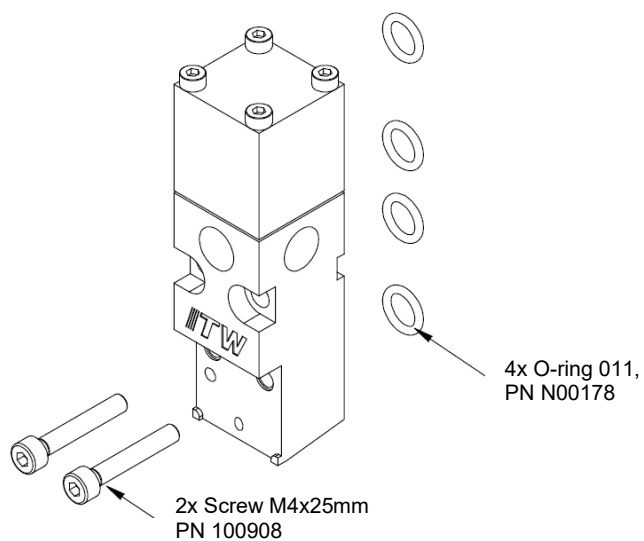
7.6.3 UFD Spray Module Assembly, Horizontal, High-Speed Snuffback, PN 112444

(Module Option "K")

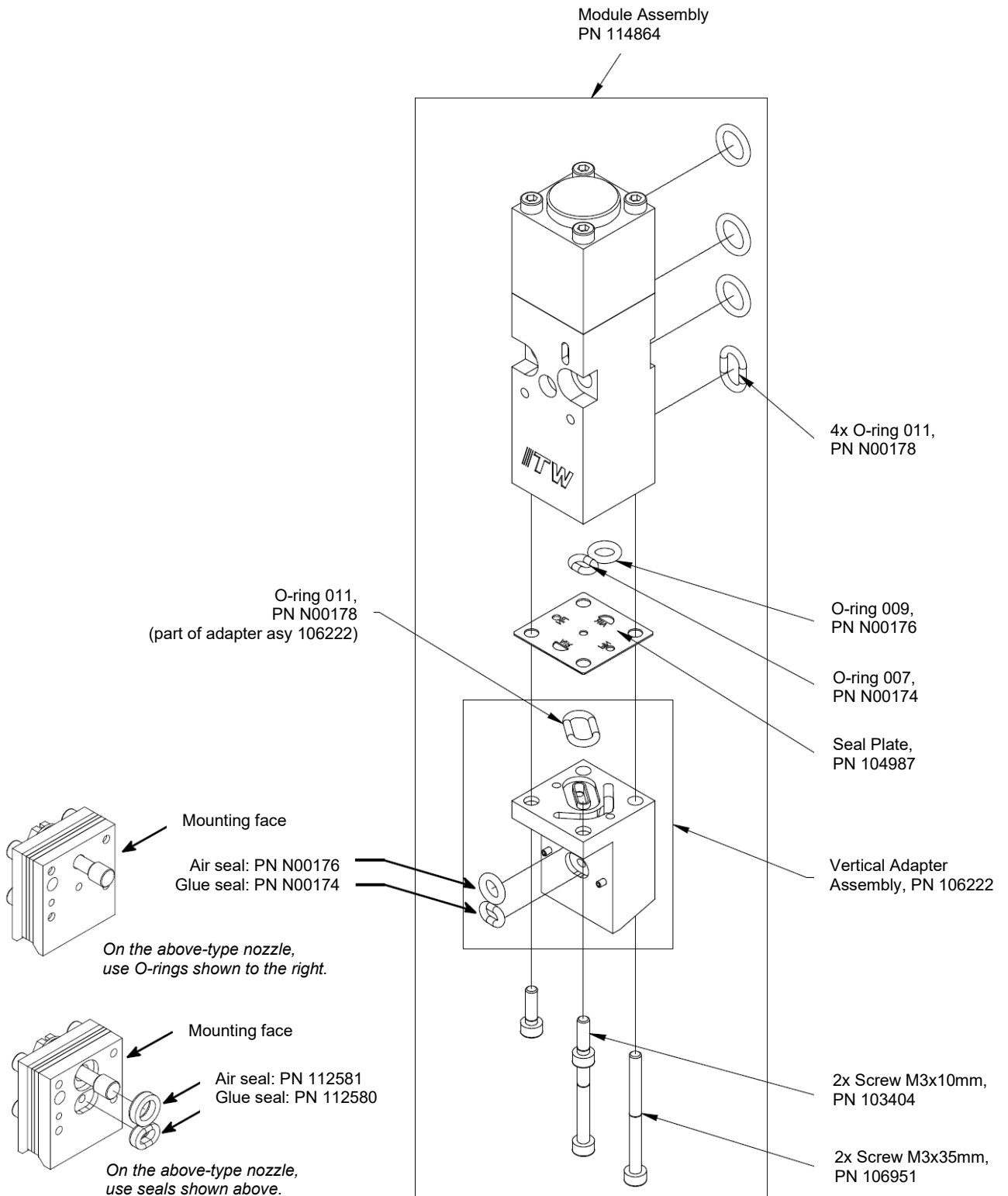


7.6.4 UFD Spray Module Assembly, High Speed, Vertical, PN 113778

(Module Option "A")

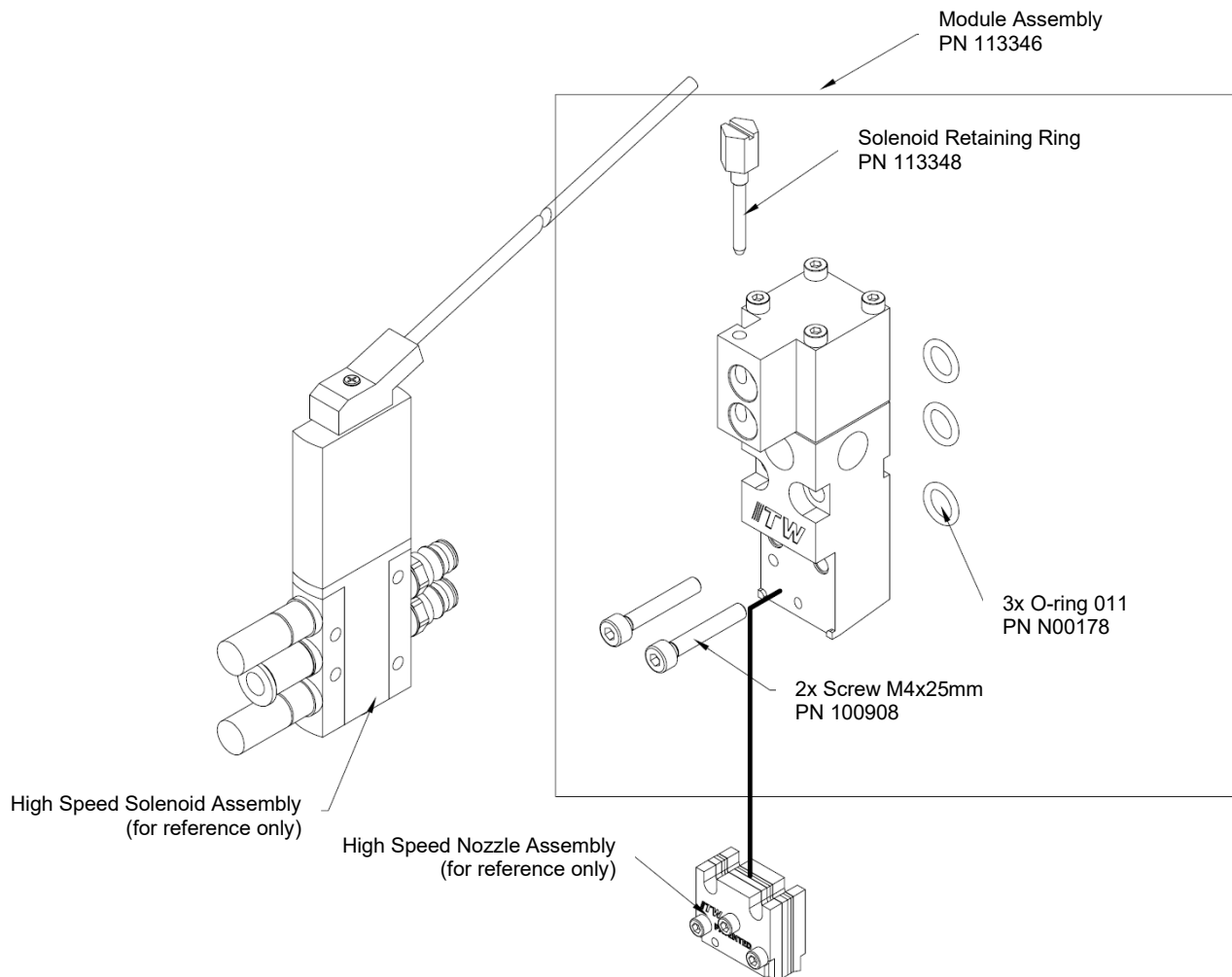


7.6.5 UFD Spray Module Assembly, High-Speed Snuffback, Vertical, PN 114864 (Module Option "F")

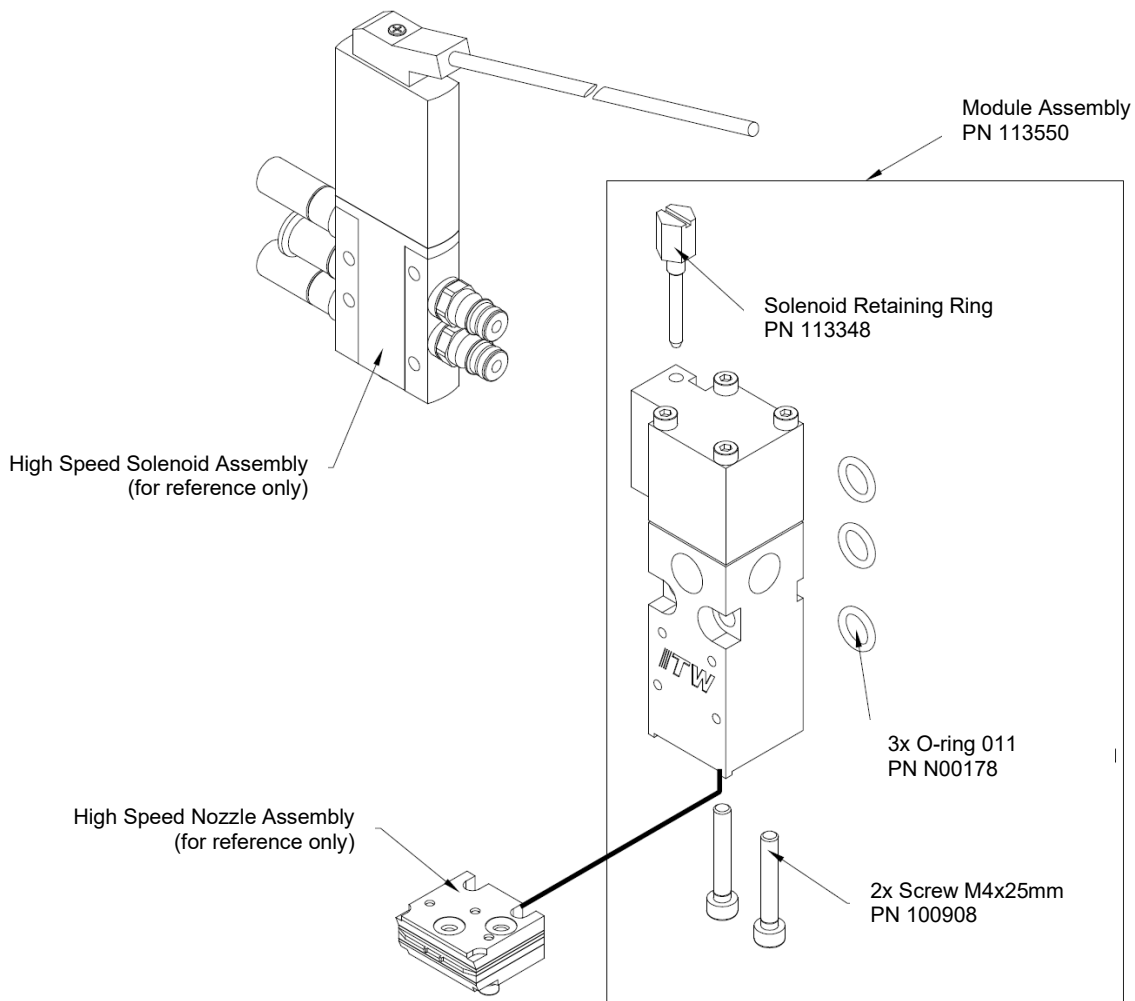


7.6.6 UFD Spray Module Assembly, High-Speed Snuffback, Vertical, PN 113346**(Module Option "J")**

(used with Festo Solenoid)

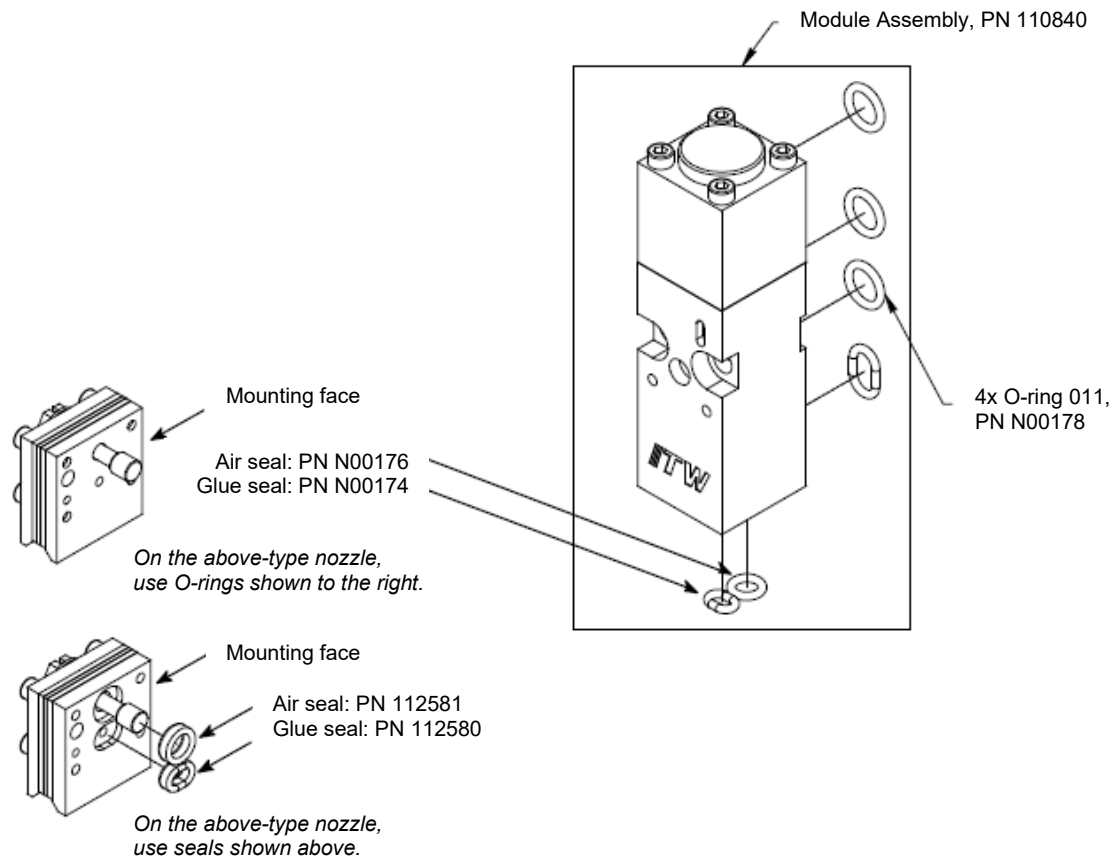


7.6.7 UFD Spray Module Assembly, High Speed, Horizontal, PN 113550 (Module Option "M")



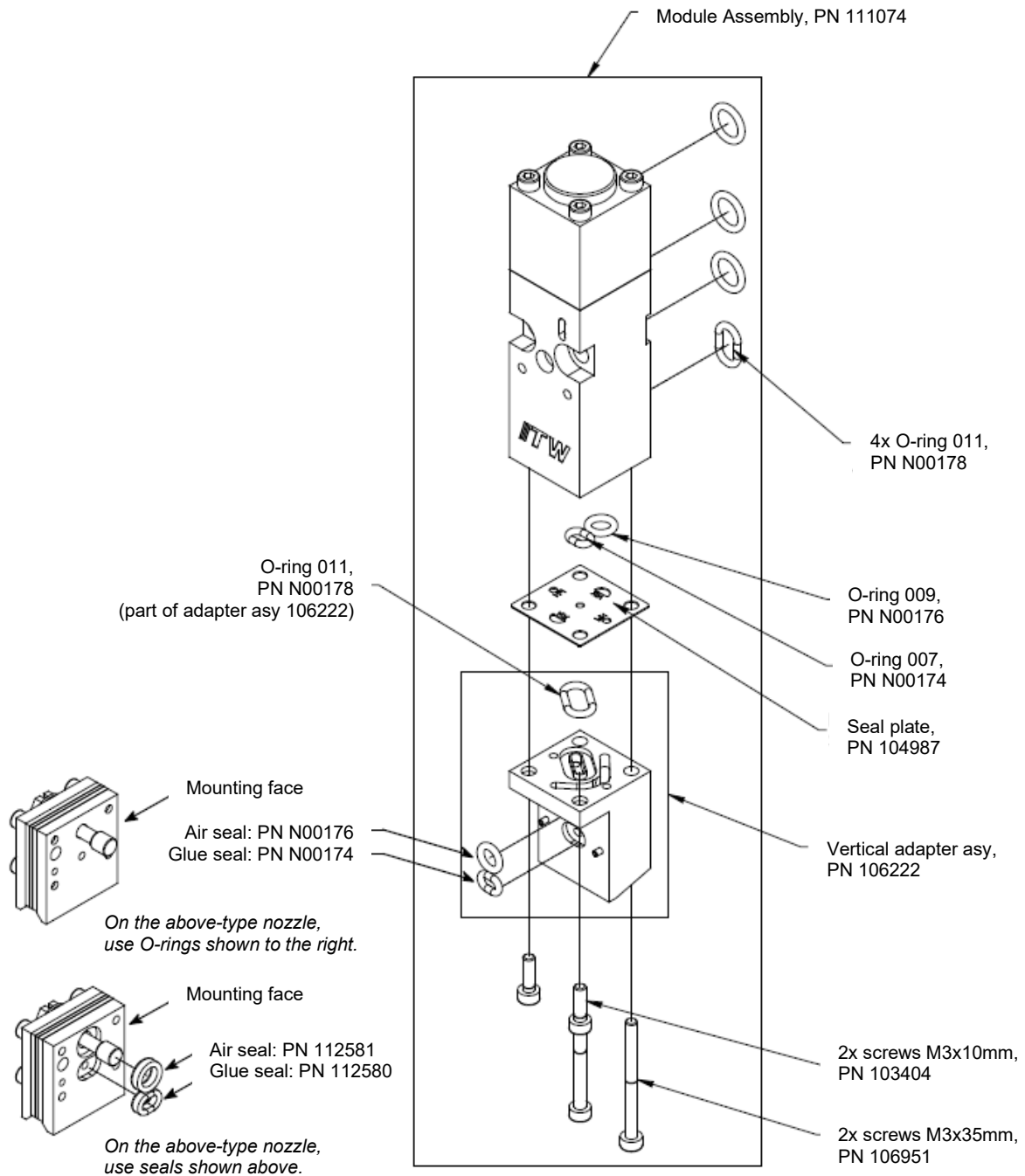
7.6.8 UFD Spray Module Assembly, Snuffback, Horizontal, PN 110840

(Module Option "C")



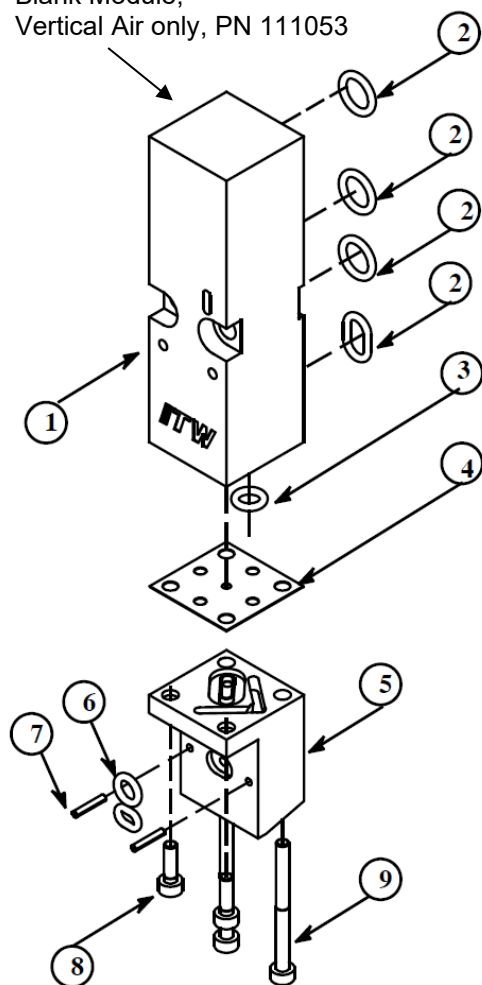
7.6.9 UFD Spray Module Assembly, Snuffback, Vertical, PN 111074

(Module Option "D")

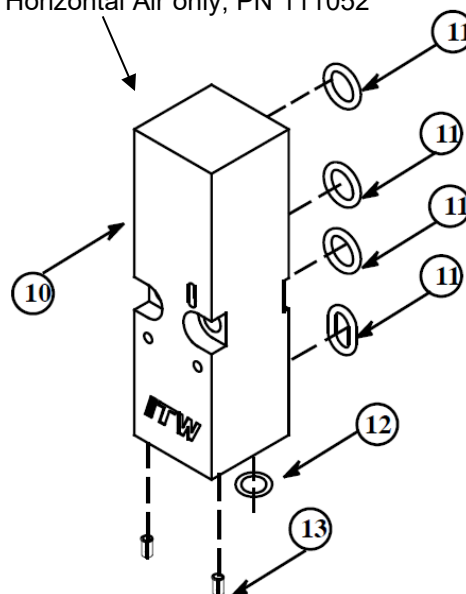


7.7 Blank Module, Horizontal & Vertical

Blank Module,
Vertical Air only, PN 111053



Blank Module,
Horizontal Air only, PN 111052



7.7.1 Blank Module, Vertical Air Only, PN 111053

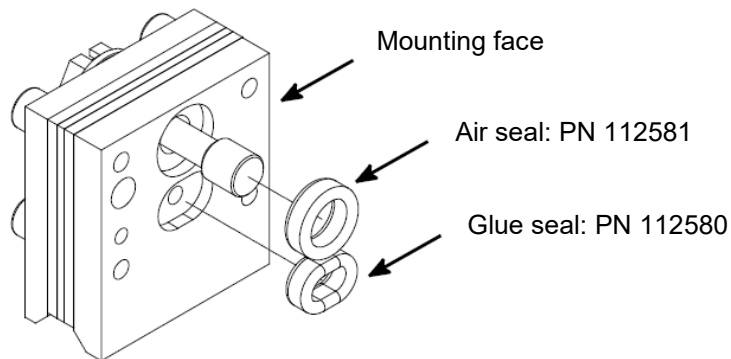
Item No.	Part Number	Description	Qty.
1	111051	Module Body, Air Only	1
2	N00178	O-ring, 011	4
3	N00176	O-ring, 009	2
4	104987	Vertical Adapter Seal	1
5	106221	Vertical Adapter	1
6	N00174	O-ring, 007	1
7	078G028	Spring Pin, 1/16 x 3/8	2
8	103404	Screw M3x10mm	2
9	106951	Screw M3x35mm	2

7.7.2 Blank Module, Horizontal Air Only, PN 111052

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

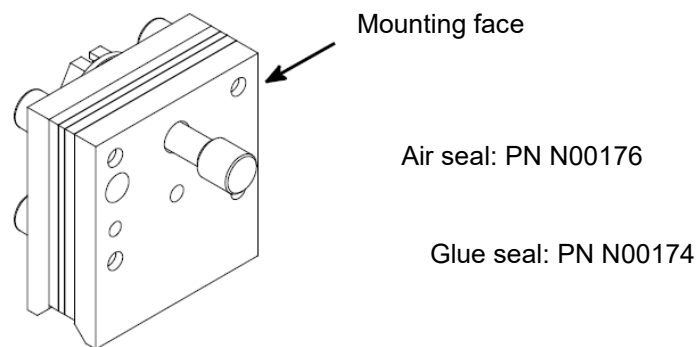
7.8 UFD Nozzle Seals

Standard Nozzle (with seal grooves on mounting face)

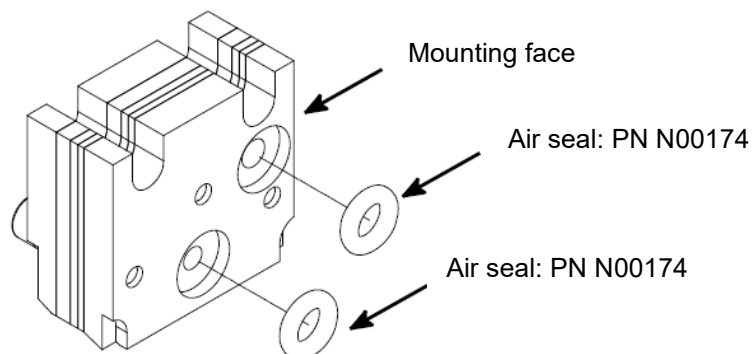


Standard Nozzle (with no seal grooves on mounting face)

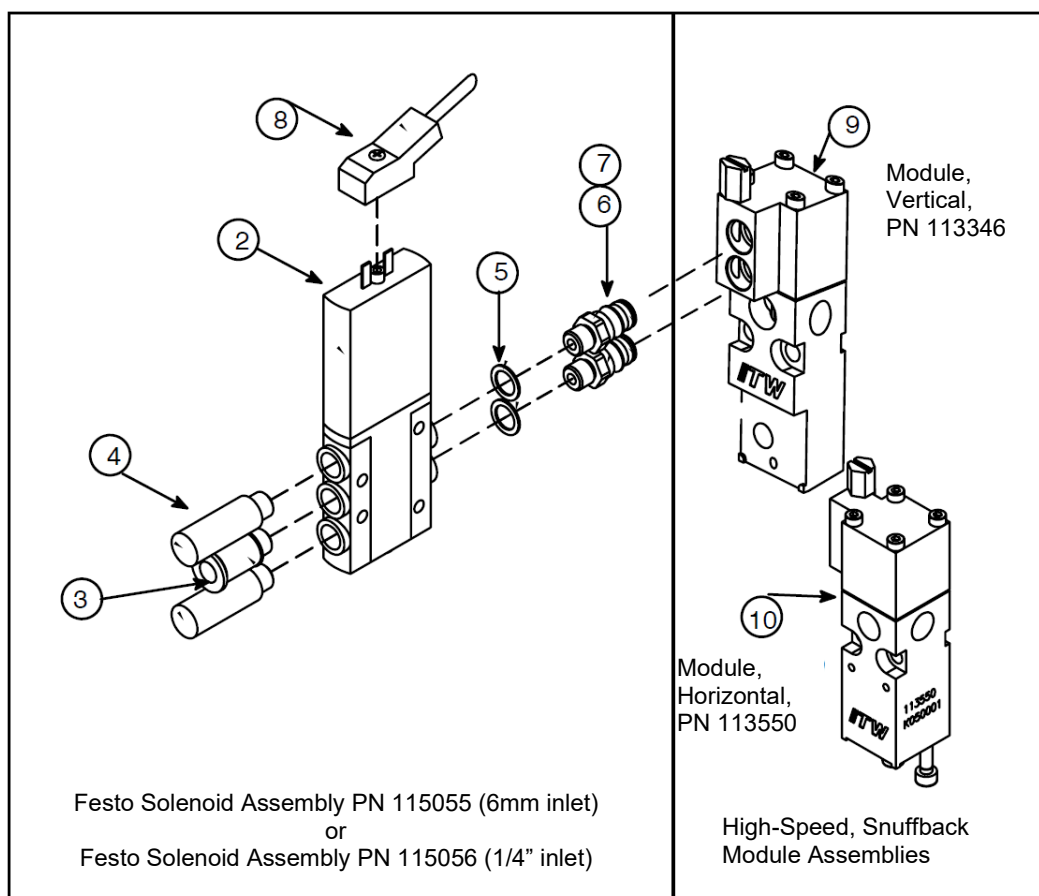
The seals for this nozzle are supplied with and installed on the module.



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



7.9 Festo Solenoid Assemblies, PN 115055 & 115056



Item No.	Part Number	Description	Qty.
1	115055	Solenoid Assembly, Festo MH, QC Module, 6mm Inlet	
	115056	Solenoid Assembly, Festo MH, QC Module, 1/4" Inlet	
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 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	Description
113361	Cable, solenoid, 24V, LED, 2.5m
114557	Cable, solenoid, 24V, LED, 10m

Chapter 8

Options & Accessories

8.1 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

8.2 Applicator RTD Sensors

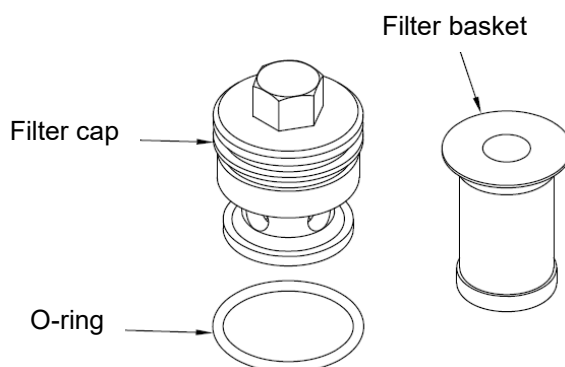
Controller	Part Number	Description	Qty.
DynaControl/Allen-Bradley PT100 RTD (control option D)	N07958	PT100	2
Upgrade, Ni120 RTD (control option N)	N07864	Ni120	2
Meltex, PT100 RTD (control option P)	N07958	PT100	2

8.3 Filter Kits

To simplify ordering, Filter Kits are available.

1. Option = Filter Kits with filter basket:

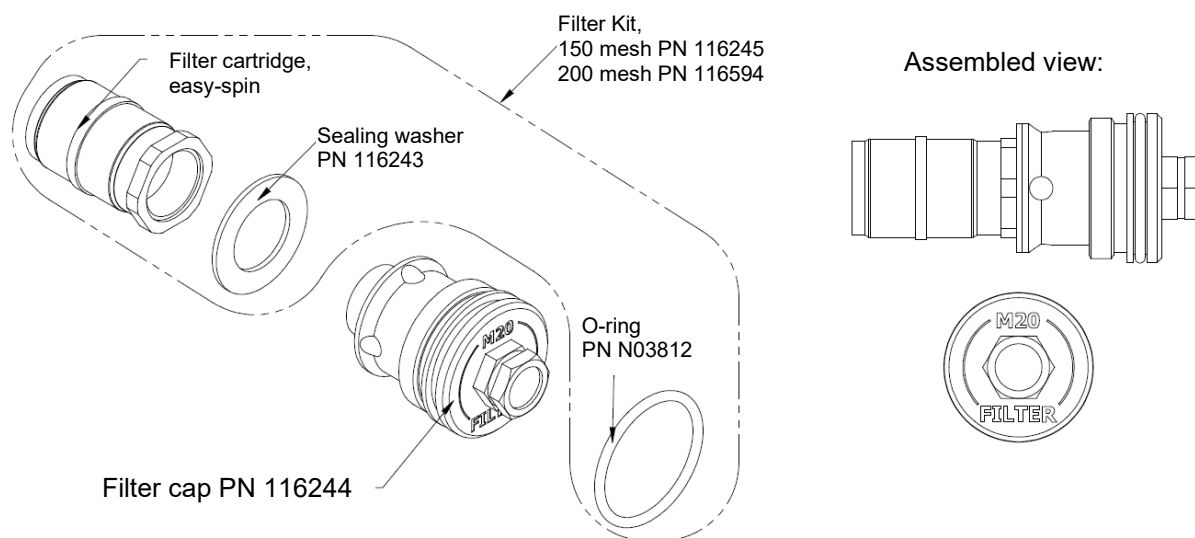
Filter Kit Part Number	O-ring Part Number	Filter Cap Part Number	Filter basket Part Number
-	N03812 O-ring #125	106303	102693 80 mesh,
114291	N03812 O-ring #125	106303	101247 100 mesh,
114292	N03812 O-ring #125	106303	106273 150 mesh,
-	N03812 O-ring #125	106303	109482 200 mesh,



2. Option = Filter Kits with easy-spin filter cartridge:

Filter Kit Part Number	O-ring Part Number	Filter Cap Part Number	Filter cartridge, easy-spin Part Number
116246*	N03812 O-ring #125	116244	116242 150 mesh, Spin-on M20
116245	N03812 O-ring #125	-	116242 150 mesh, Spin-on M20
116595	N03812 O-ring #125	116244	116593 200 mesh, Spin-on M20
116594	N03812 O-ring #125	-	116593 200 mesh, Spin-on M20

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



8.4 Repair Kits

- **UFD Module Repair Kit PN 114311** (for modules PN 112444, 114864, 113346, 113550, 115160, 113378, 114764)
- **UFD Module Repair Kit PN 110889** (for modules PN 110840, 111074)

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

8.5 Spray or Bead Nozzle Cleaning Kits

Two nozzle cleaning kits are available, sized to be orifice-specific:

- PN 101877 Nozzle Cleaning Kit .010 to .017 orifice
- PN 101878 Nozzle Cleaning Kit .018 to .040 orifice

8.6 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.

8.7 High Temperature Oven (Furnace) for UFD Nozzle Cleaning, PN 80.80000.103

The use of the UFD Nozzle Cleaning Oven eliminates the need to disassemble the UFD nozzles for cleaning. Nozzles will be “baked” in the oven for approximately four to six hours at 750-800 °F (400-425°C); the residual adhesive in the nozzles turns to ash/dust that can be blown with compressed air. Complete cleaning instructions are provided with the oven.

8.8 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.

8.9 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.

8.10 Balanced Solenoid Manifold

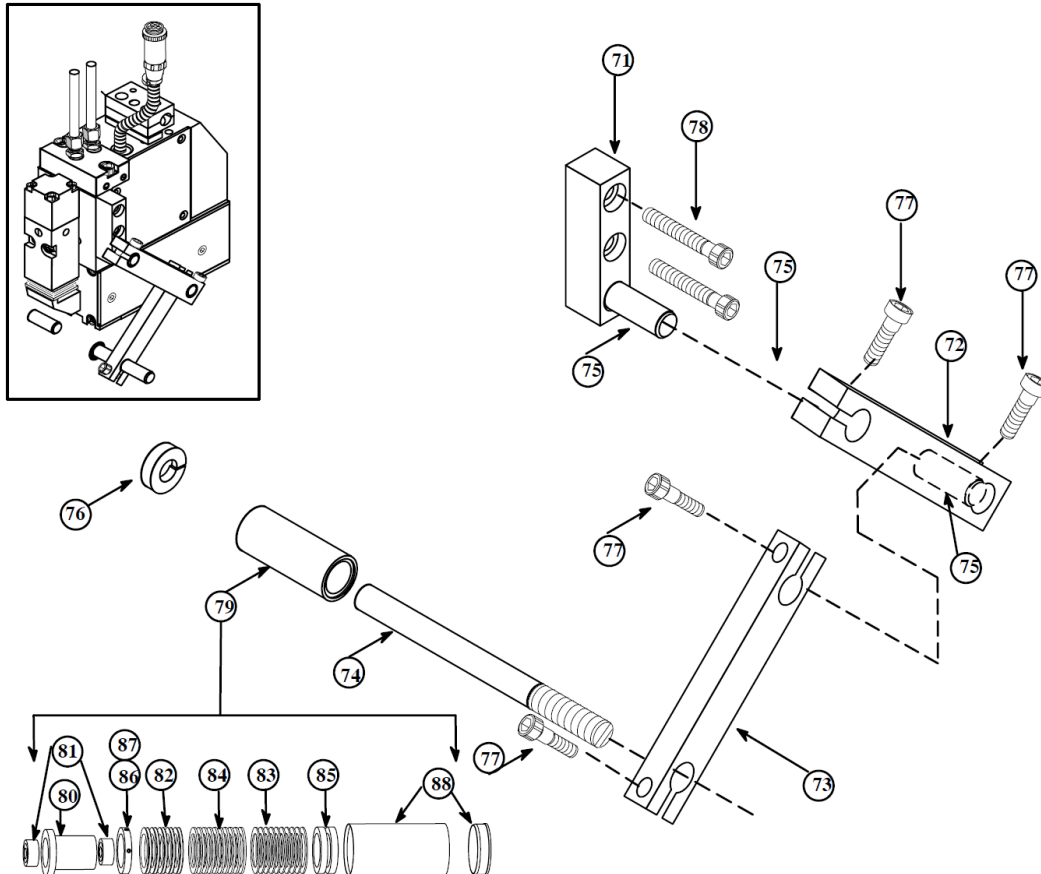
Option Code “E” (see Chapter Model Designation Guide) specifies a balanced solenoid manifold (equalized manifold). This manifold has multiple solenoids, but unlike a multiple program manifold, all of the open air passages of each solenoid are connected within the manifold. Likewise, all of the close 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.

8.11 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.

8.12 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
79	108112	Guide Roller Kit	1
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 M3x5mm	2
88	108110	Housing, 1.5 Dia. x 3.0 long	1

8.13 Extension Cable Assemblies

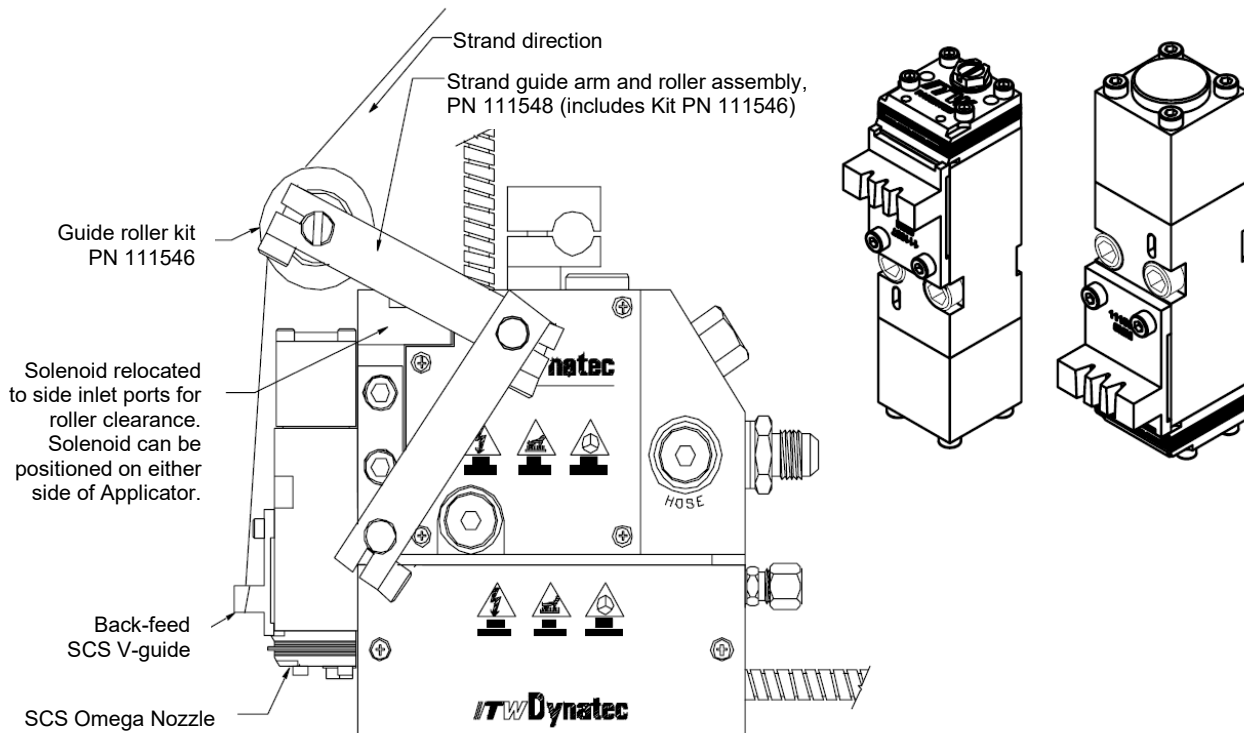
The following extension cable assemblies are available. These cables connect one applicator zone to the ASU. One cable assembly per applicator is usually required for the preheater; others may be used as necessary for the installation.

Controller	Cable Part Number	Cable Length	Cable Part Number	Cable Length
DCL/ PLC (PT100 RTD) (control option D)	103773	10 ft (3 m)	103776	25 ft (7.6 m)
	103774	15 ft (4.5 m)	105123	30 ft (9.1 m)
	103775	20 ft (6 m)	105147	40 ft (12.2 m)
Upgrade Nor (Ni120 RTD) (control option N)	102706	10 ft (3 m)	105834	40 ft (12.2 m)
	106349	25 ft (7.6 m)	-	-
Upgrade Meltex (PT100 RTD) (control option P) Service Block only	110159	6.5 ft (2 m)	110162	26.2 ft (8 m)
	110160	13 ft (4 m)	110163	32.8 ft (10 m)
	110161	20 ft (6 m)	-	-
Upgrade Meltex (PT100 RTD) (control option P) Air Heater only	110154	6.5 ft (2 m)	110157	26.2 ft (8 m)
	110155	13 ft (4 m)	110158	32.8 ft (10 m)
	110156	20 ft (6 m)	-	-

8.14 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).

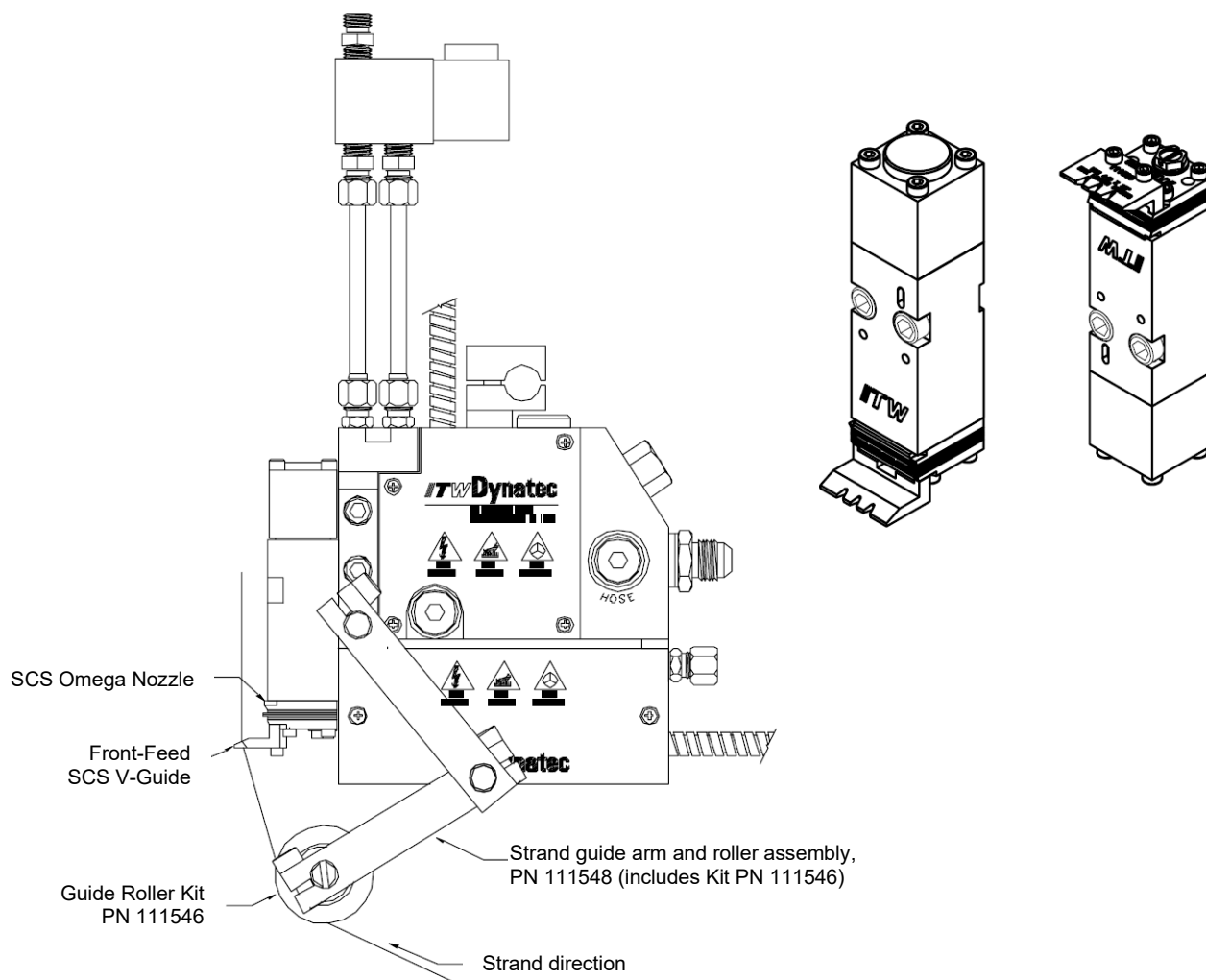
8.14.1 Back-Feed SCS V-Guide



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)

8.14.2 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)

8.15 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
*	Heaters	As required
*	RTD Sensor, Service Block	1
*	RTD Sensor, Preheater	1
N03812	O-ring #125	2
N00196	O-ring #111	1
N00181	O-ring #014	1
N00178	O-ring #011	As required
N00176	O-ring #009	As required
N00174	O-ring #007	As required
102645	High-Temp Splice Kit	1
*	Filter Basket	2
001V061	Thermal Paste	1
*	Solenoid Valve	1
*	Nozzle	2

* See Ch.8.

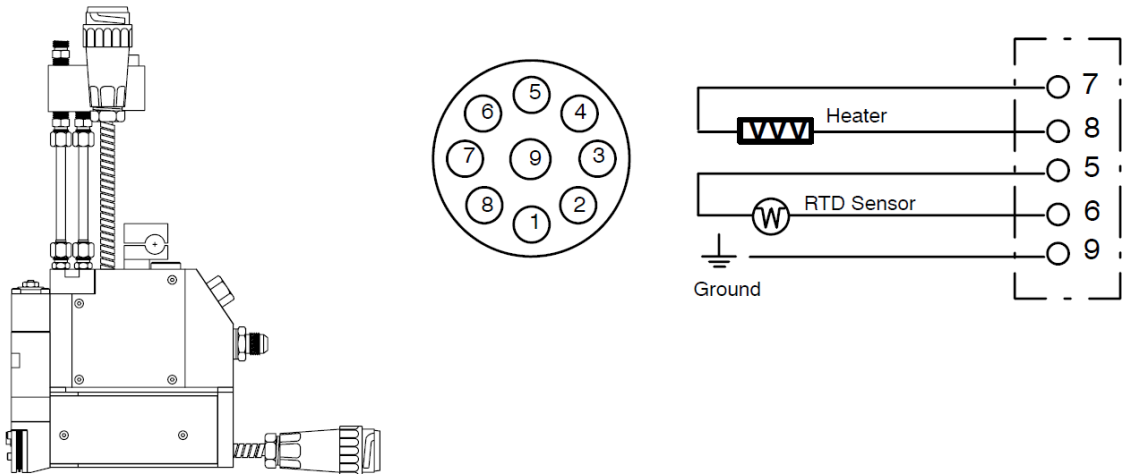
Chapter 9

Schematics

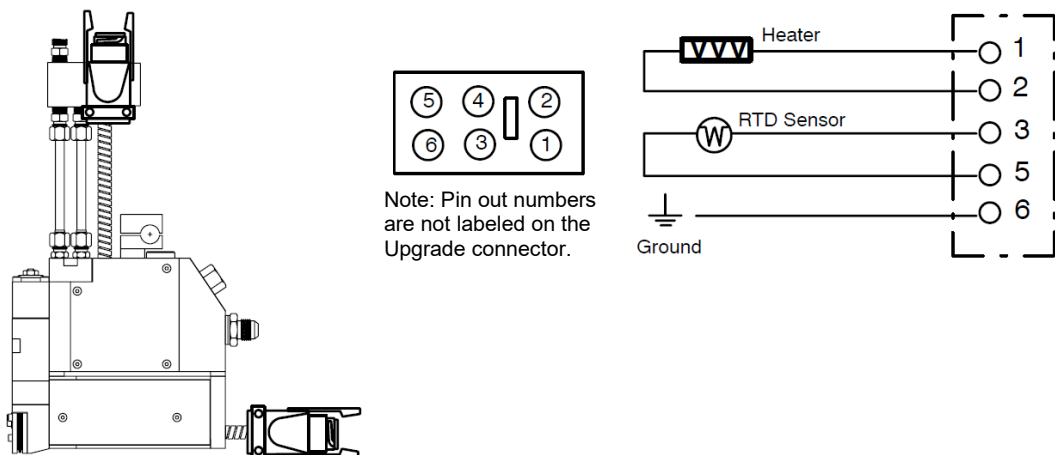
9.1 Pin Connectors & Electrical Schematics

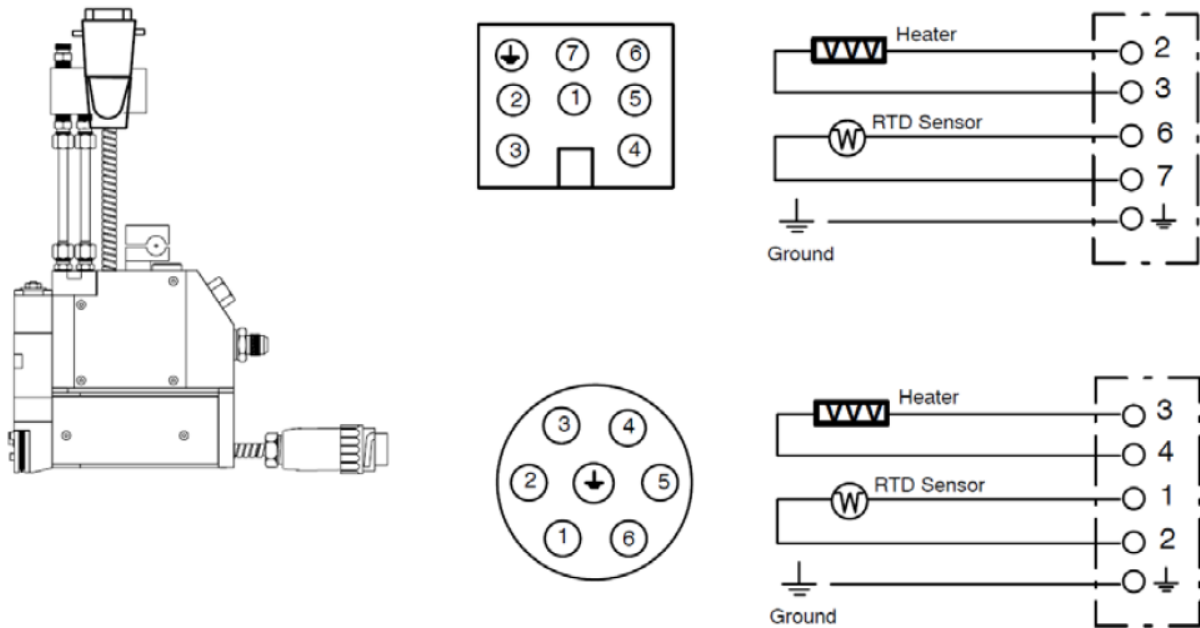
Note: Pin connectors are viewed from the exposed end. Pins not shown on schematics are not used.

DynaControl/Dynamini or PLC (PT100 RTD) Control Scheme PN 103117 (control option D)



Upgrade Nor (Ni120 RTD) Control Scheme PN 104551 (control option N)



Upgrade Meltex (PT100 RTD) Control Scheme (control option P)

Chapter 10

Appendix

10.1 Solenoid Valve Configurations, Schematics & Setup

This Appendix covers the pneumatic setup of the solenoid valves used to actuate the adhesive modules. An Air 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:

Section 1	PN 100054	24 VDC MAC solenoid valve, 4 way, 02, 1/8 NPT
Section 2	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
Section 3	PN 106937	24 VDC MAC solenoid valve, 5 way, 1/8 NPT
Section 4	PN 112496	24 VDC MAC solenoid valve, 4 way, 1/4 NPT
Section 5	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
Section 6	PN 100055	Component Illustration: 100055 Air Control Kit

10.2 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.

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

Description

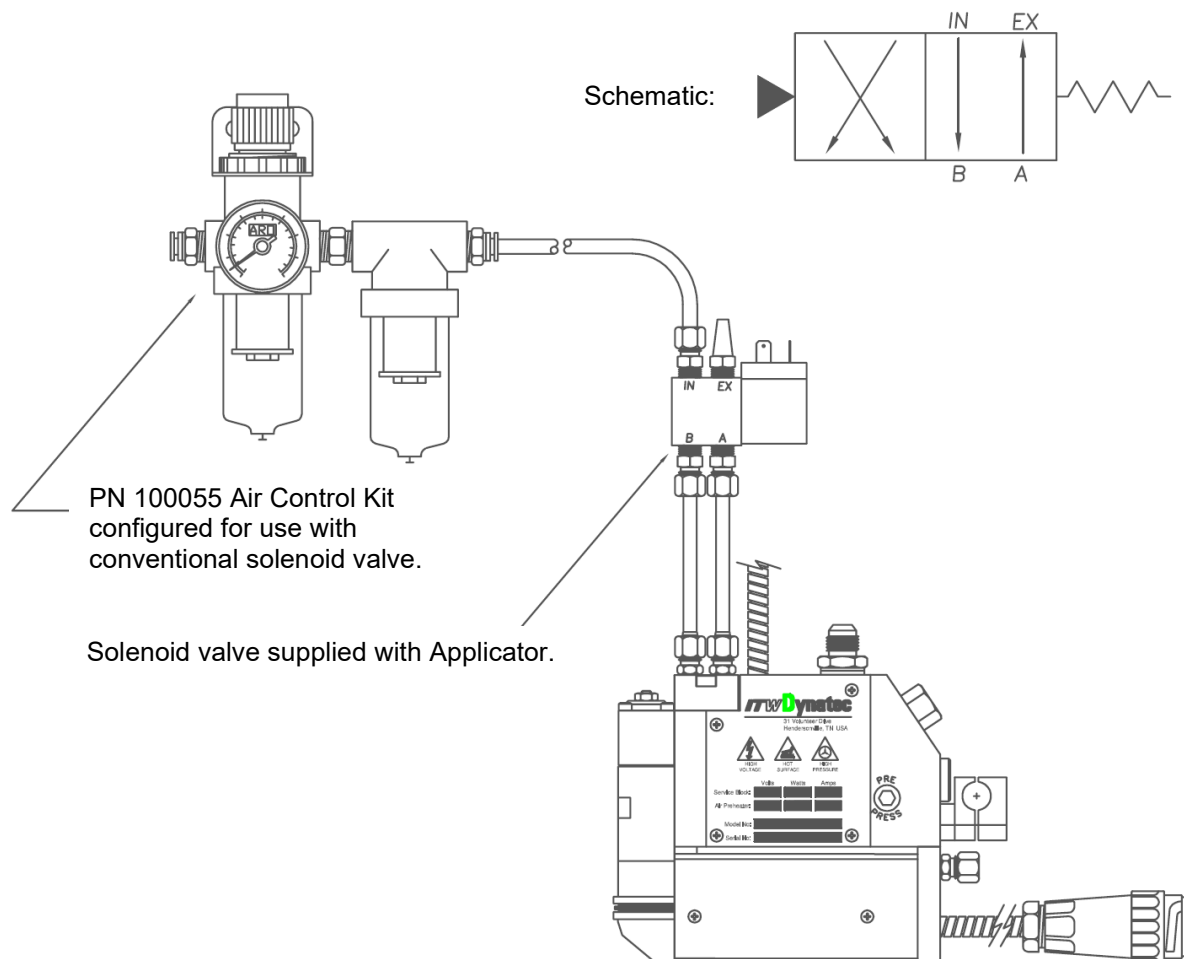
Direct acting poppet valve, 4-way, 1/8 NPT ports, with non-locking recessed manual operator.

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.



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

Section 2	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

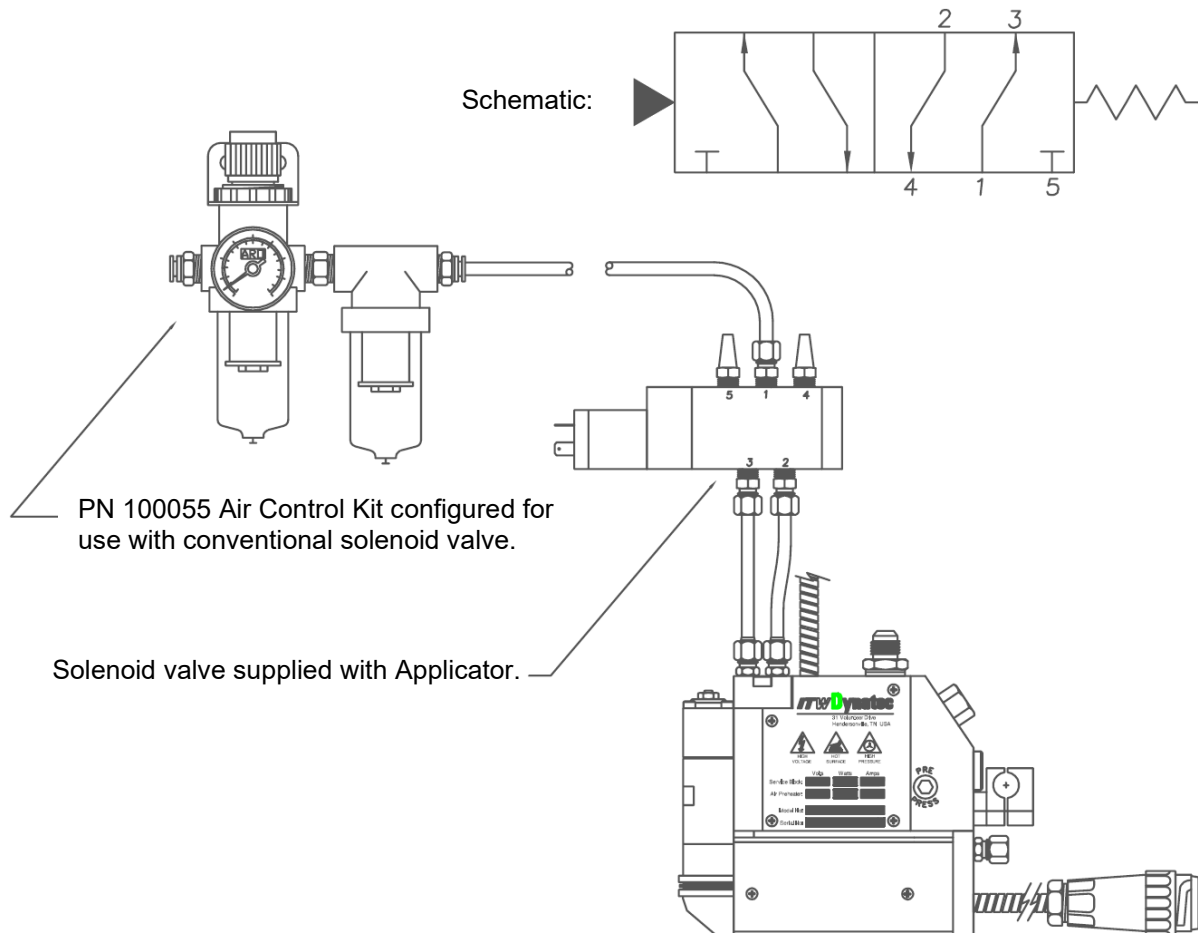
Piloted spool valve (internally piloted), 4-way, 1/4 NPT ports, with non-locking recessed manual operator.

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.



10.5 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.

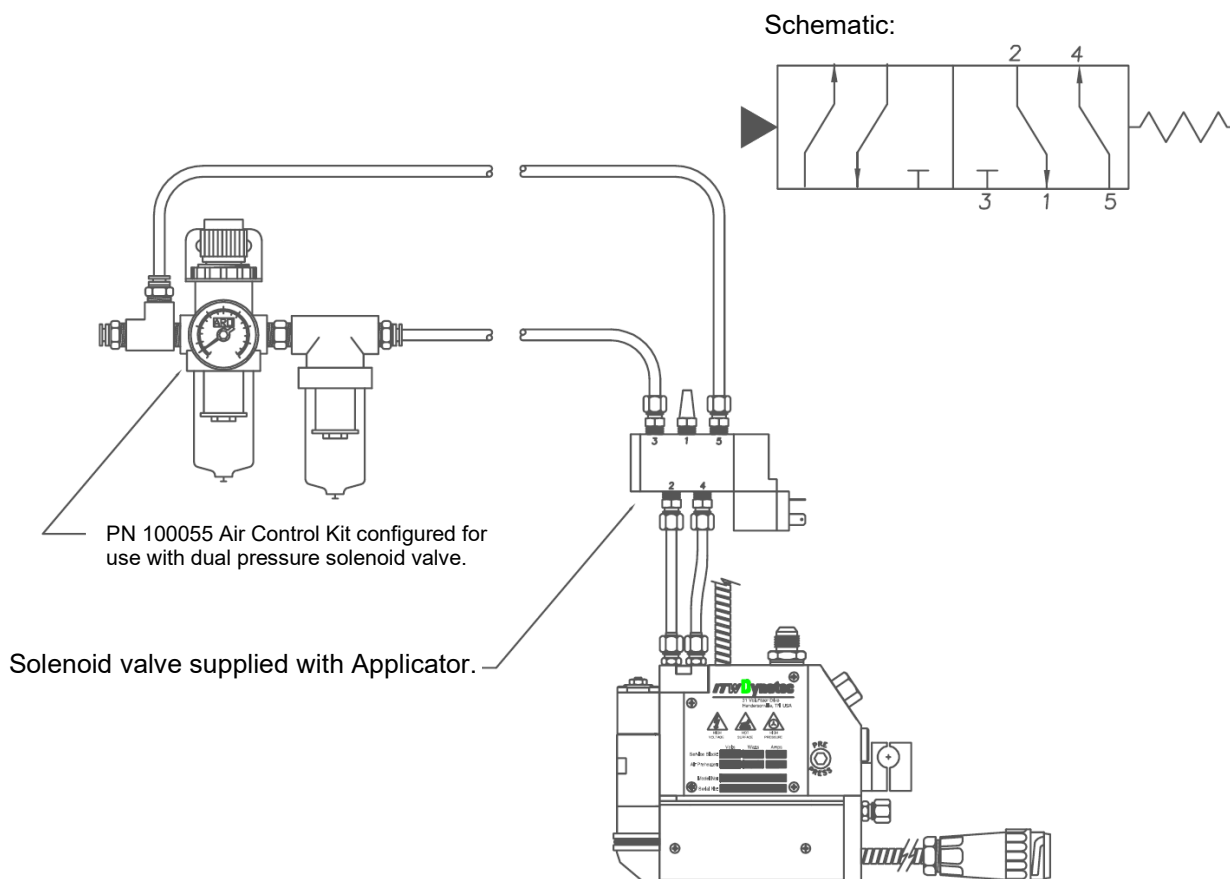
Connections

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.



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

Description

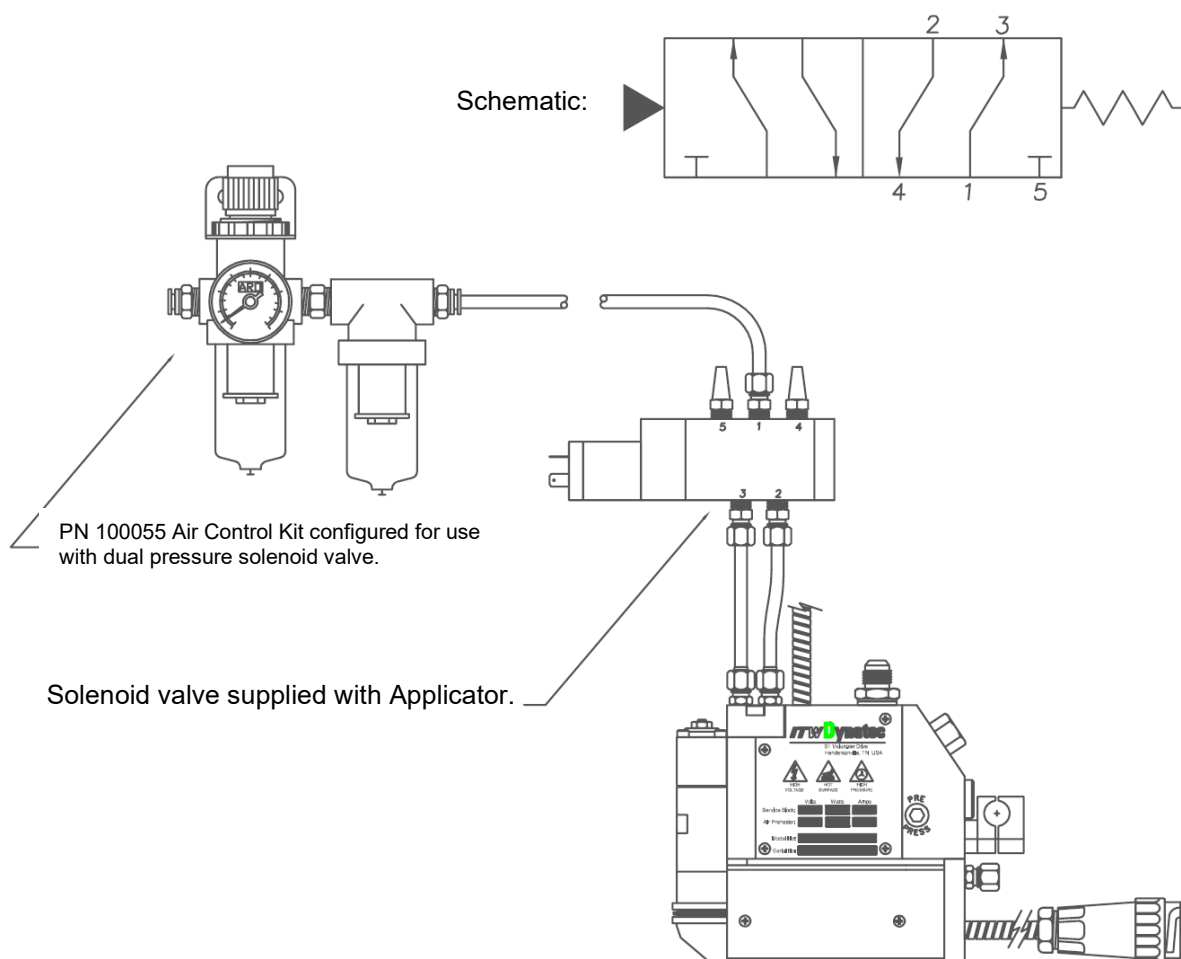
Piloted spool valve (internally piloted), 4-way, 1/4 NPT ports, with non-locking recessed manual operator.

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.



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

Section 5	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

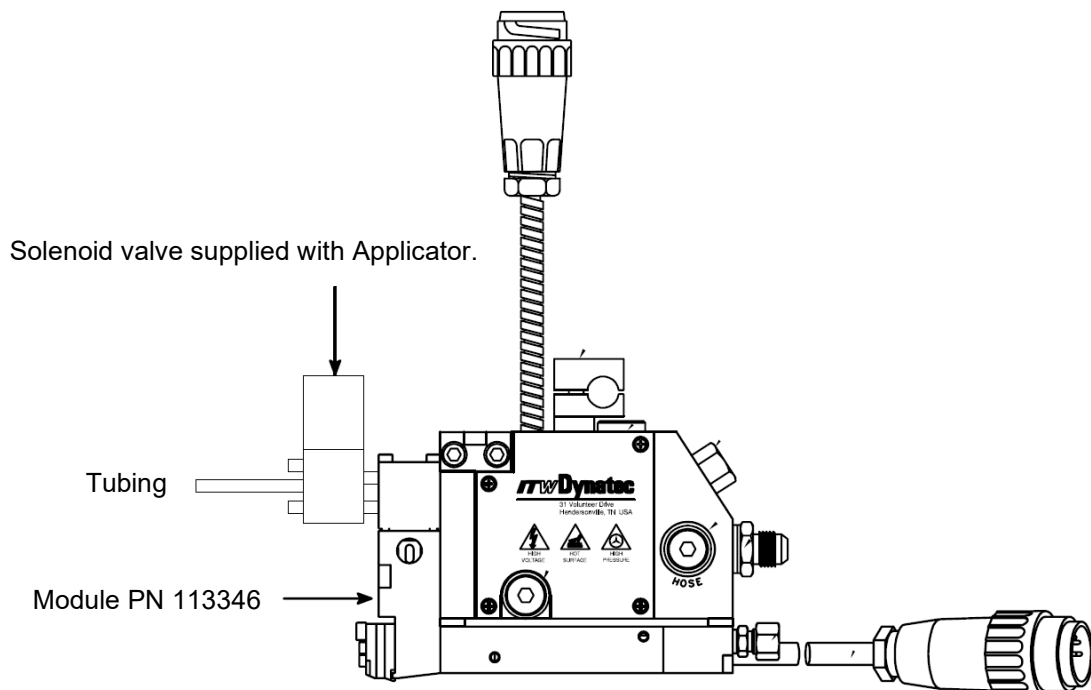
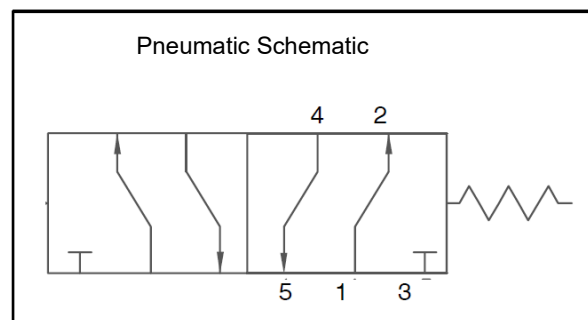
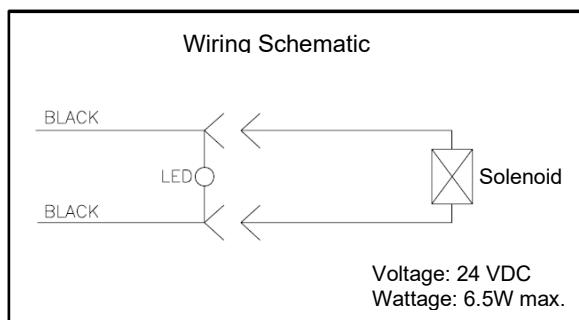
Direct-acting spool valve, 4-way, 24 VDC operation with M7 ports. Solenoid is configured to connect directly to the module. It is not setup for use as an in-line solenoid.

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.



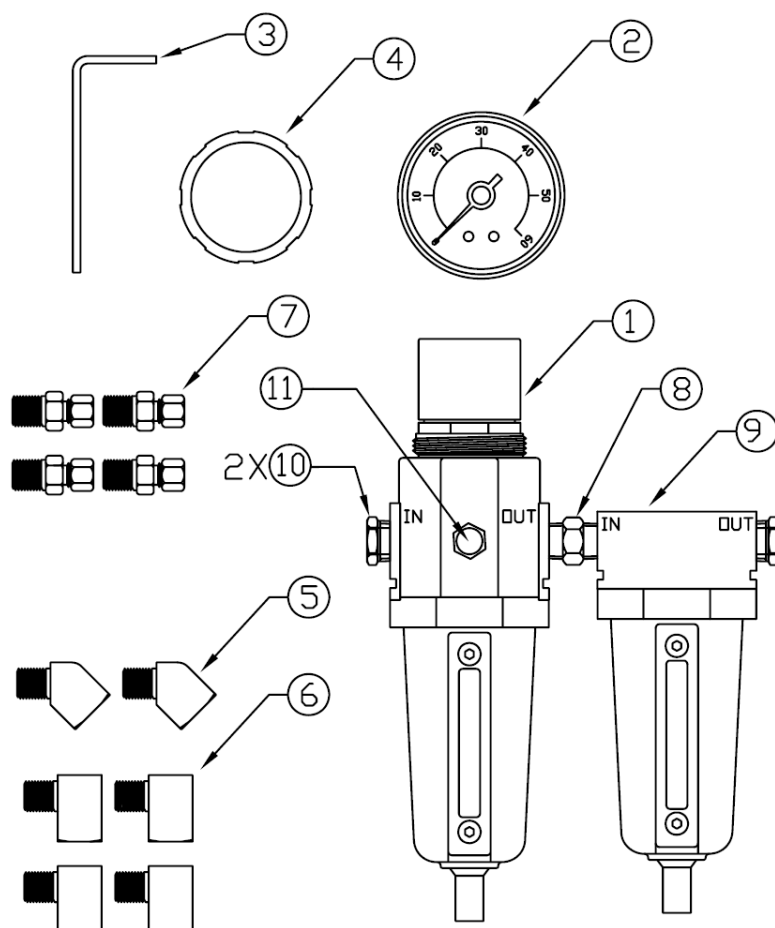
10.8 Section 6, Air Control Kit PN 100055

10.9 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 an air 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	Air 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

Manual Revisions

Revision	Page/ Chapter	Description
Rev.8.18	22	Module types, Filter options and Control options updated in Model Designation Guide.
	95	Extension cable options removed.
Rev.7.19	92	Filter kits updated.
Rev.3.20	36	The torque for module mounting screws is updated to 78-94 in/lbs (8.8-10.6 Nm).
Rev.5.20	Ch.5.11	Maintenance note "Inspect cable insulation" added.
	Ch.7	Modules 110840 and 111074 added.
Rev.3.21	Ch.5.3	Stroke adjustment updated.
Rev.3.22	Ch.7	M3x5mm screw 103470 replaced by M5x6mm screw 112716 In all UFD applicator assemblies.
Rev.7.22	Ch.5.8	Cleaning of the UFD Nozzle updated.
	Ch.8	Oven PN 107306+107307 replaced by 80.80000.103.
Rev.8.23	P.1	Manual language added.
Rev.1.24	Ch.3.2.3	Model Designation Guide - Meltex control option added.

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