ITW Dynatec®

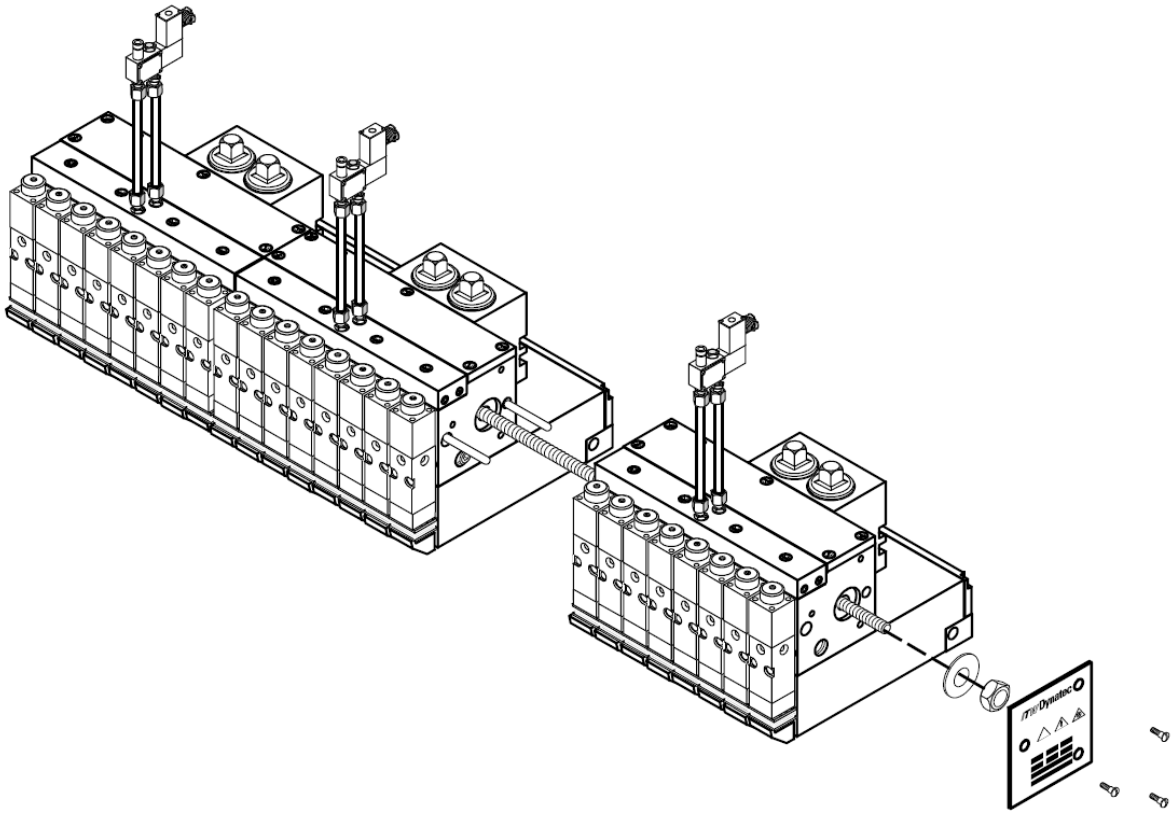
Adhesive Application Solutions | ISO 9001 certified

UFD Equity

Spray Applicators

Technical Documentation, No.40-38, Rev.7.24

English – Original Instructions



ITW Dynatec
An Illinois Tool Works Company
www.itwdynatec.com

Information about this manual

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

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

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.

ITW Dynatec Service Parts and Technical Service:

AMERICAS	EUROPE, MIDDLE EAST & AFRICA	ASIA PACIFIC	
ITW Dynatec 31 Volunteer Drive Hendersonville, TN 37075 USA Tel. +1.615.824.3634 info@itwdynatec.com service@itwdynatec.com	ITW Dynatec Industriestrasse 28 40822 Mettmann Germany Tel. +49.2104.915.0 info@itwdynatec.de service@itwdynatec.de	ITW Dynatec No. 2 Anzhi Street, SIP, 215122 Suzhou, China Tel. +86.512.6289.0620 info@itwdynatec.cn service@itwdynatec.cn	ITW Dynatec Tsukimura Building 5th Floor 26-11, Nishikamata 7-chome Ota-ku, Tokyo 144-0051, Japan Tel. +81.3.5703.5501 info@itwdynatec.co.jp service@itwdynatec.co.jp

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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:	EQUFD Applicator Head
Serial no:	_____
Machine number:	_____
Project number:	EQ/UFD
Project name:	EQUFD 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/EG:2004-12-15	(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/EG:2006-12-12	(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 12100-1/A1:2009	Safety of machinery - Basic concepts, general principles for design - Part 1: Basic terminology, methodology
EN ISO 12100-2:2003/A1	Safety of machinery - Basic concepts, general principles for design - Part 2: Technical principles
EN ISO 13850:2008	Safety of machinery - Emergency stop - Principles for design (ISO 13850:2006)

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

Judson Broome
Signature
Judson Broome
General Manager

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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
	Read and adhere to the documentation!
	Switch the unit voltage-free before working! Main switch OFF!
	Wear headgear, protective goggles and ear protection!

	Wear foot guard!
	Wear protective gloves!
	Wear protective clothing!

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!**

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.

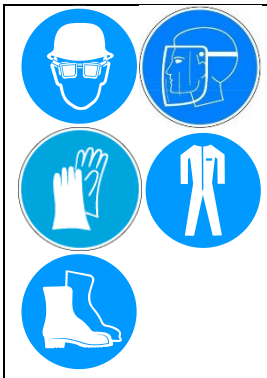
CAUTION

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 (CO_2), Dry sand.

For safety reasons not appropriate extinguishing agents: None.

Firefighting - burning electrical equipment:

Appropriate extinguishing agents:
Carbon dioxide (CO_2), 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 Equity 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 Equity 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 Equity 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 Equity 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 Equity Spray Applicator

3.2.1 Description

ITW Dynatec's Equity Line MR1300 UFD & Spiral Spray Applicators are air-operated, multi-module hot melt adhesive applicator assemblies with integrated basket filters designed to prevent particulate matter from obstructing adhesive flow. The stackable UFD applicators are modular and may be combined to produce segmented applicators of up to 50 ports. Design is all metric.

The applicators are 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, Upgrade control schemes or for PLC controls.

Five standard Equity UFD models, ranging in length from 150 mm (containing up to 6 modules) to 350 mm (up to 14 modules) are offered. Longer, customized applicators are created by joining two or more of the standard applicators into one larger, segmented applicator. The modules of each segment of the applicator are activated by at least one solenoid. Each segment is fed by an individual adhesive hose.

UFD modules for use on these applicators are available for continuous vertical (CV) or continuous horizontal (CH) applications. Snuff-Back modules are used for intermittent vertical (IV) or intermittent horizontal (IH) applications. Spiral spray modules are utilized for precise applications requiring superior edge definition.

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), activated by a solenoid(s), opens the module, allowing adhesive to flow through the module's nozzle.

On the UFD Equity spray models, a spiral rod 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:

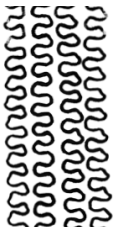
- Temperature and viscosity of the adhesive
- Size and speed of the Adhesive Application Unit's (ASU's) pump
- Cross-section and length of the adhesive hoses
- Adjusted adhesive pressure at Applicator (if adjustable pressure relief valve)
- Nozzle type

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:

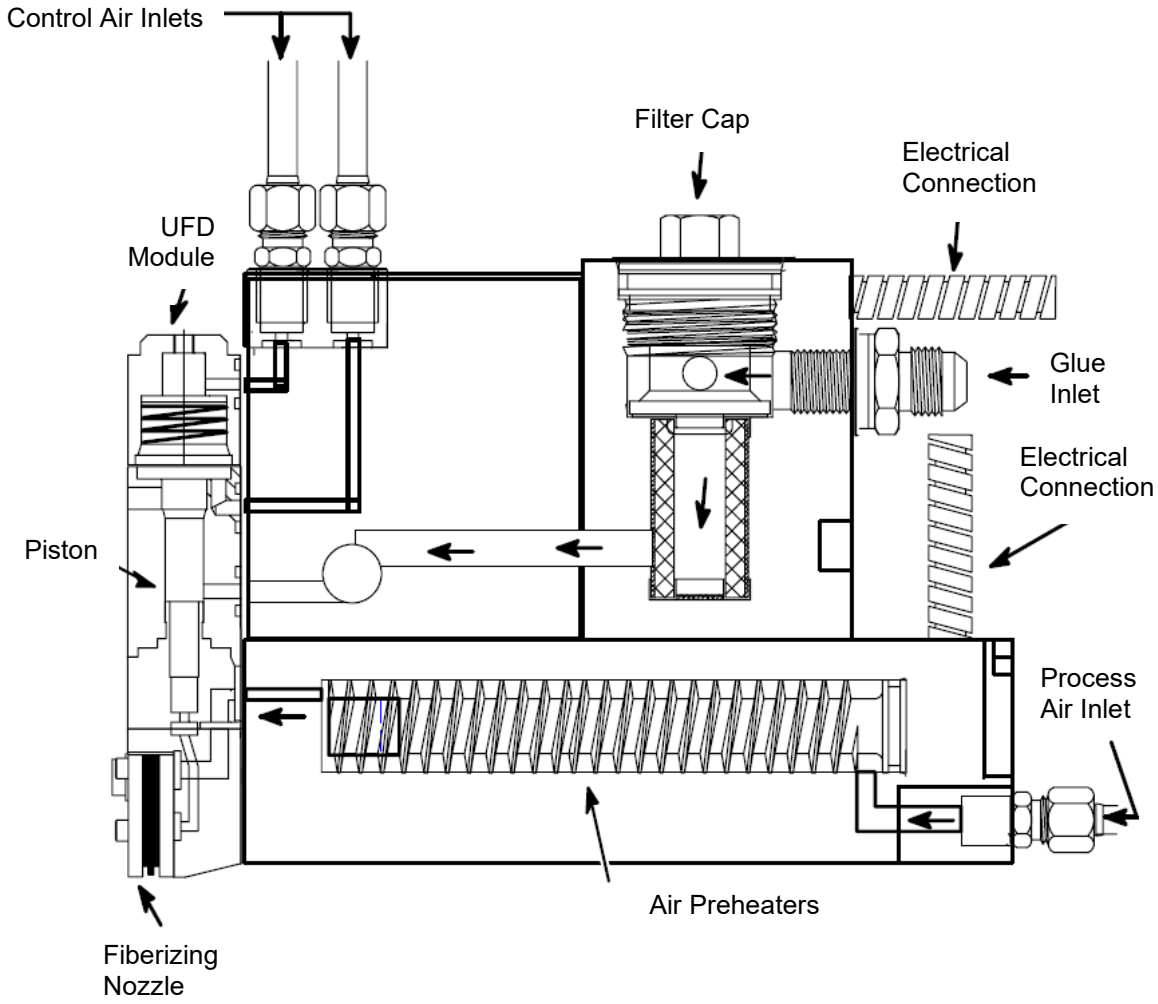


Illustration: Equity Line UFD Applicator

3.2.2 Solenoid Air Programs

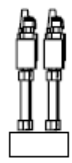
On the Equity UFD applicators, solenoids mounted on a solenoid manifold supply the air pressure which activates each adhesive module.

Each segment of a stackable UFD applicator must include at least one solenoid, but it may include as many as one solenoid per module. The advantage of more solenoids is that they give the operator the flexibility to produce more adhesive patterns.

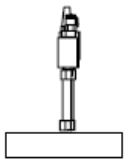
A solenoid air program describes the number of modules activated by each individual solenoid on a segmented applicator.

One program air manifolds are available in 2 port, 4 port, 3 port, 6 port, 7 port, 8 port, 9 port, 10 port, 12 port and 14 port configurations. Multiple-program air manifolds can be achieved by combining these with the 2 port/ 1 or 2 program air manifolds, as shown in the diagrams below.

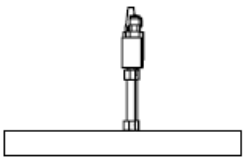
2 port
2 program
Manifold:



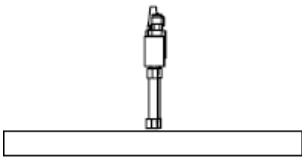
4 port
1 program
Manifold:



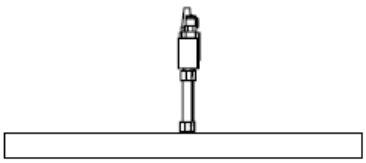
8 port
1 program
Manifold:



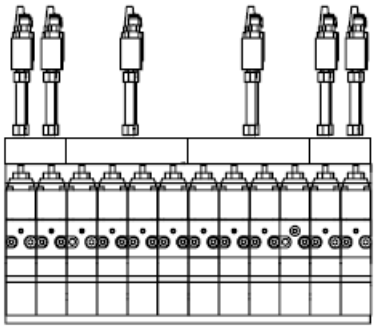
10 port
1 program
Manifold:



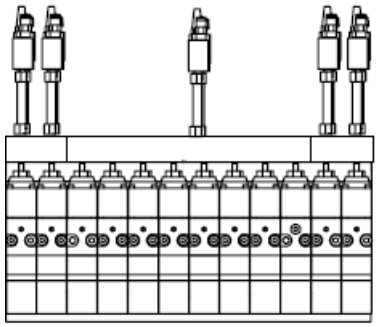
12 port
1 program
Manifold:



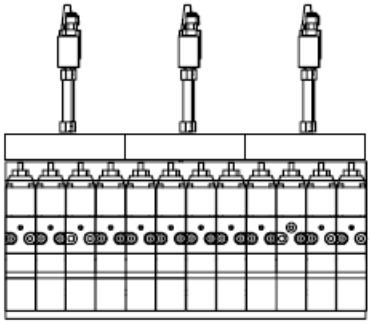
12 port, 6 program segment:



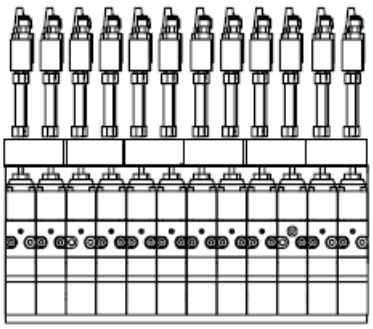
12 port, 5 program segment:



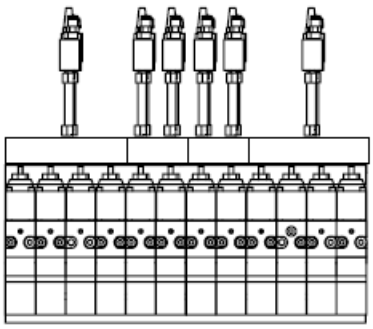
12 port, 3 program segment:



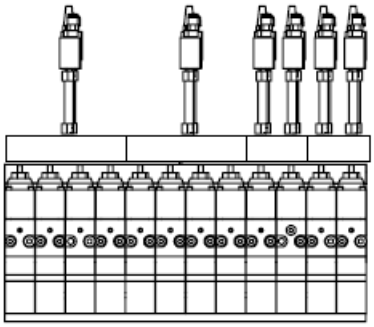
12 port, 12 program segment:



12 port, 6 program segment:



12 port, 6 program segment:



3.2.3 Specifications

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

Physical:	
Dimensions	see dimensional layouts on following pages
Weight (including modules and 1 solenoid valve)	6 port: 11.3 kg (25 lb.) 8 port: 13.5 kg (30 lb.) 9 port: 15.1 kg (33 lb.) 10 port: 16.8 kg (37 lb.) 12 port: 19.8 kg (43.5 lb.) 14 port: 22.72 kg (50 lb.)
Mounting	M8 x 1 screws with insulators or customer-configured mount

Performance:	
Temperature range:	38°C to 218°C (100°F to 425°F)
Warm-up time:	30 minutes for cold start/ 5 minutes for module change only
Adhesive viscosity	100 to 30000 mPa. sec. (100 to 30000 centipoise)
Adhesive pressure range	Up to 68 bar maximum (1000 psi maximum)
Noise emission	The acoustic pressure level measured according to EN 13023 does not exceed the value of 80 dB(A).

Air Requirements:	
Air pressure range	4.1 to 6.9 bar (60 to 100 psi)
Air pressure range for high-speed Snuff-Back modules (only)	4.8 to 6.2 bar (70 to 90 psi)

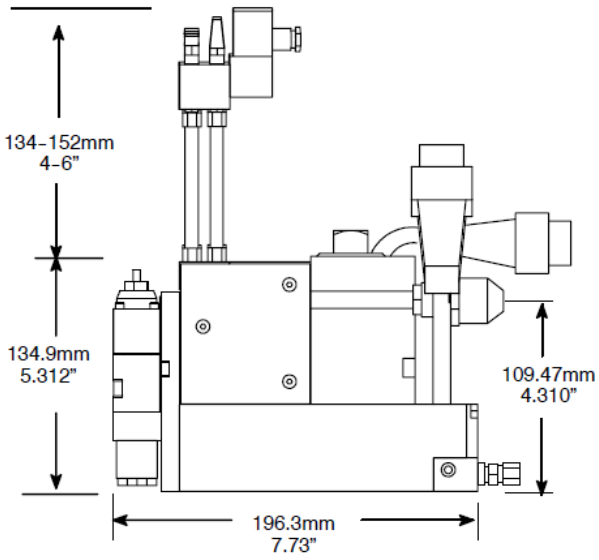
Electrical:	
Power supply	200-240 VAC/ 1p/ 50-60 Hz

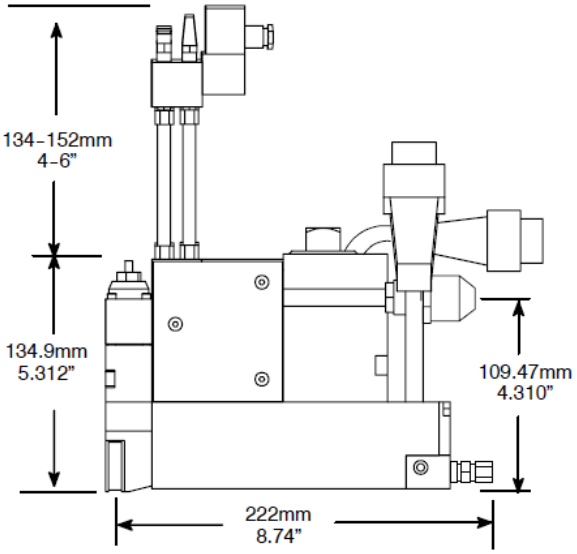
Power requirements:
Note: MR1300 Spiral Spray Applicators utilize the same power as listed below, without the air preheater.

Model	Spacing Between Nozzle Centers	Wattage	
		Adhesive Manifold	Air Preheater
6 port	25.2 mm	800	1320
8 port	25.2 mm	800	1760
9 port	25.2 mm	800	1980
10 port	25.2 mm	1200	2200
12 port	25.2 mm	1200	2400
14 port	25.2 mm	1600	3080

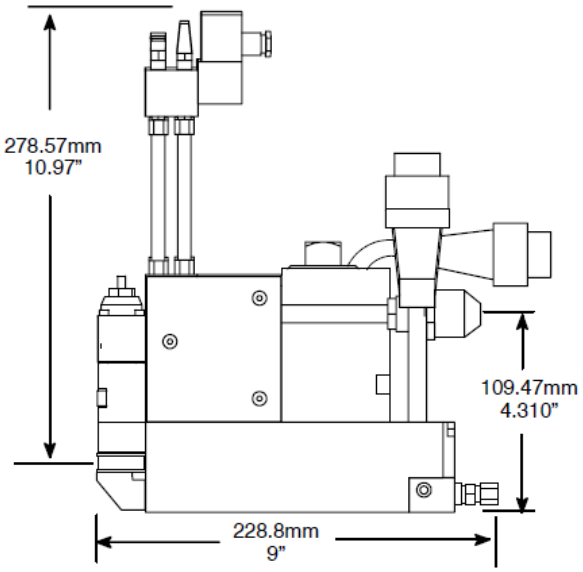
3.2.4 Dimensions

Side Views of MR1300 Spray Applicator & Equity UFD (Vertical Nozzle) Applicators:

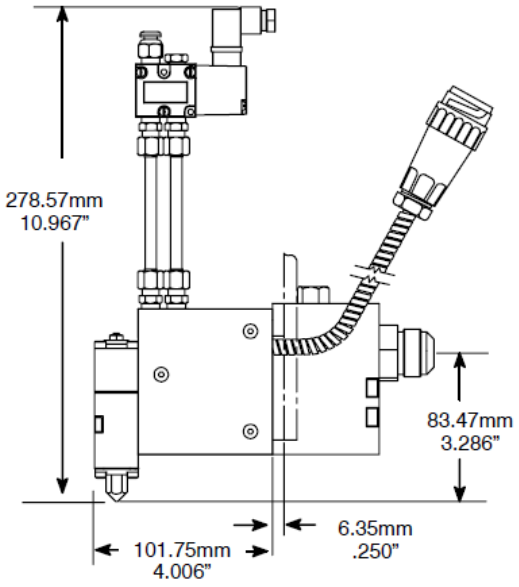


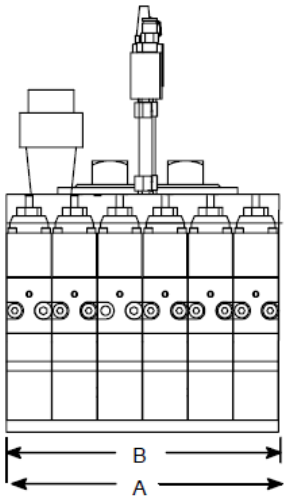


Side View of Equity UFD
(Horizontal Nozzle) Applicator:

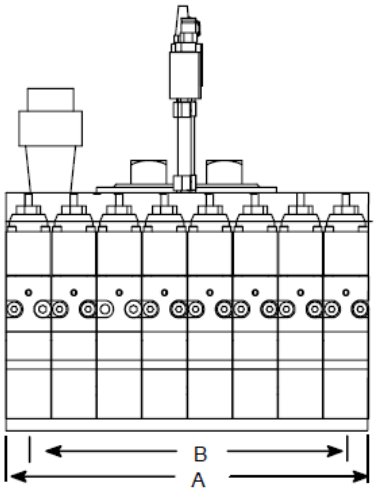


Side View of Equity Bead Applicator:

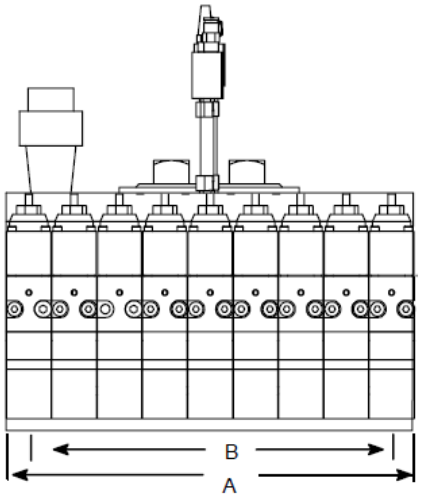




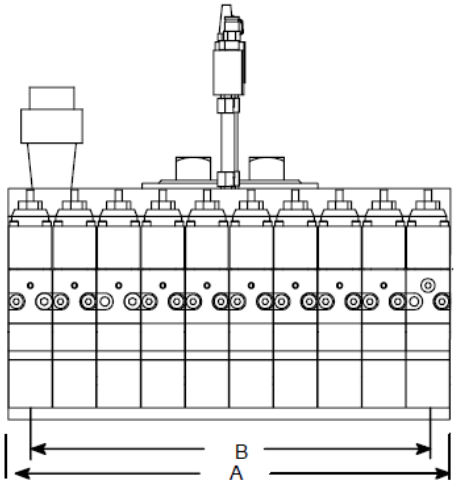
6 port Equity UFD Segment



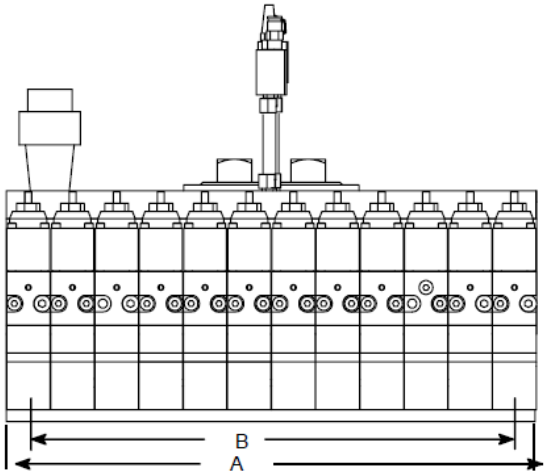
8 port Equity UFD Segment



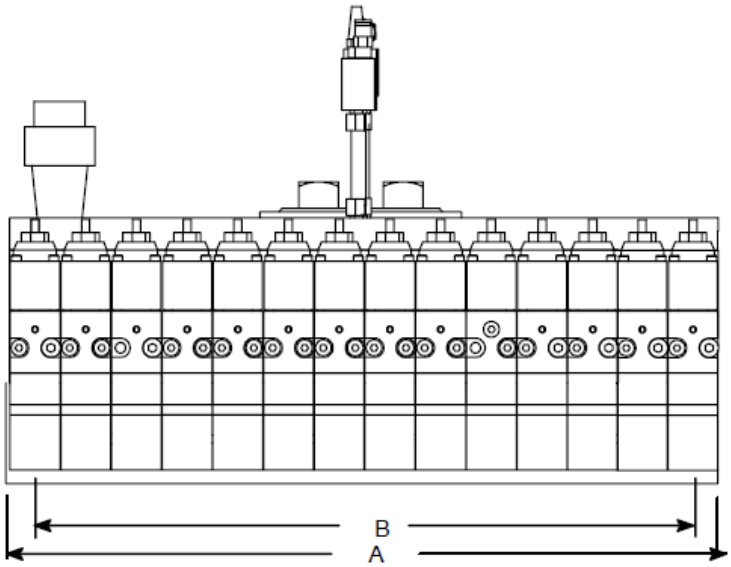
9 port Equity UFD Segment



10 port Equity UFD Segment



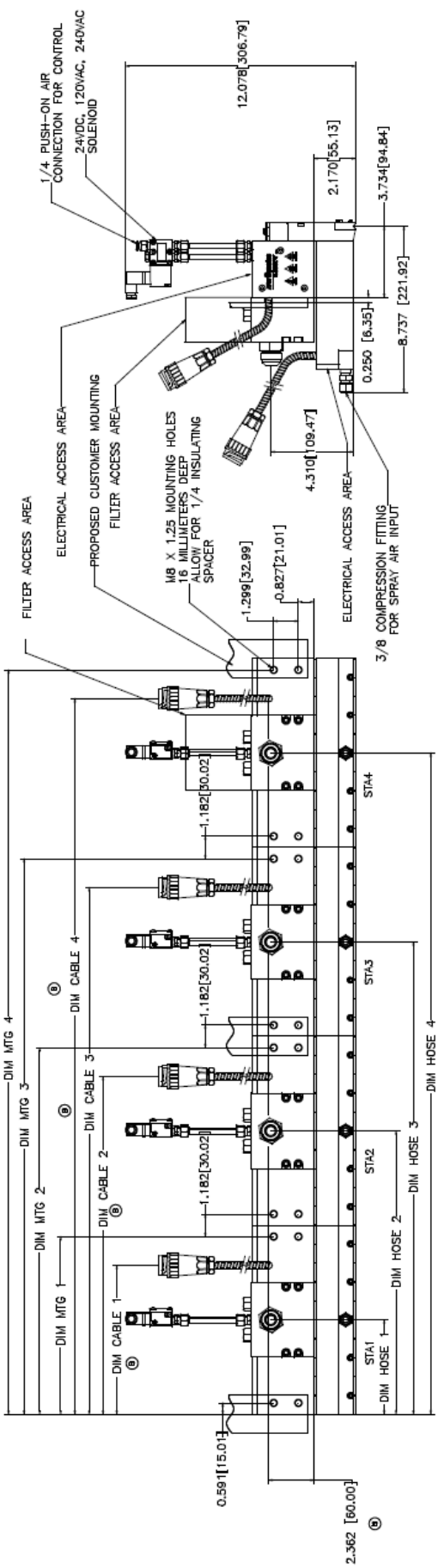
12 port Equity UFD Segment

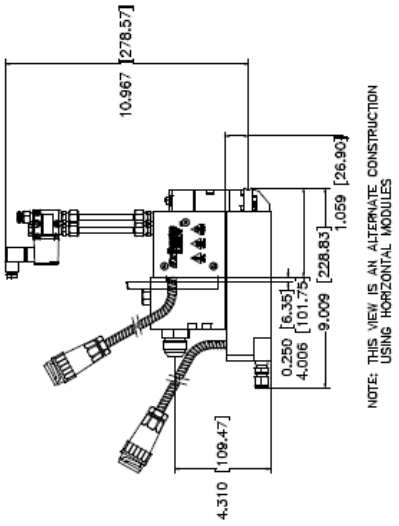


14 port Equity UFD Segment

Equity UFD Applicators		
	Width	Centers
Model No.	A	B
6 port	151mm 5.95“	0.31mm 0.992“
8 port	200mm 8“	176.4mm 7“
9 port	225mm 9“	201.6mm 8“
10 port	250mm 10“	226.8mm 9“
12 port	300mm 12“	277.2mm 11“
14 port	350mm 14“	327.6mm 13“

Mounting Dimensions:





Mounting Dimensions, continuation:

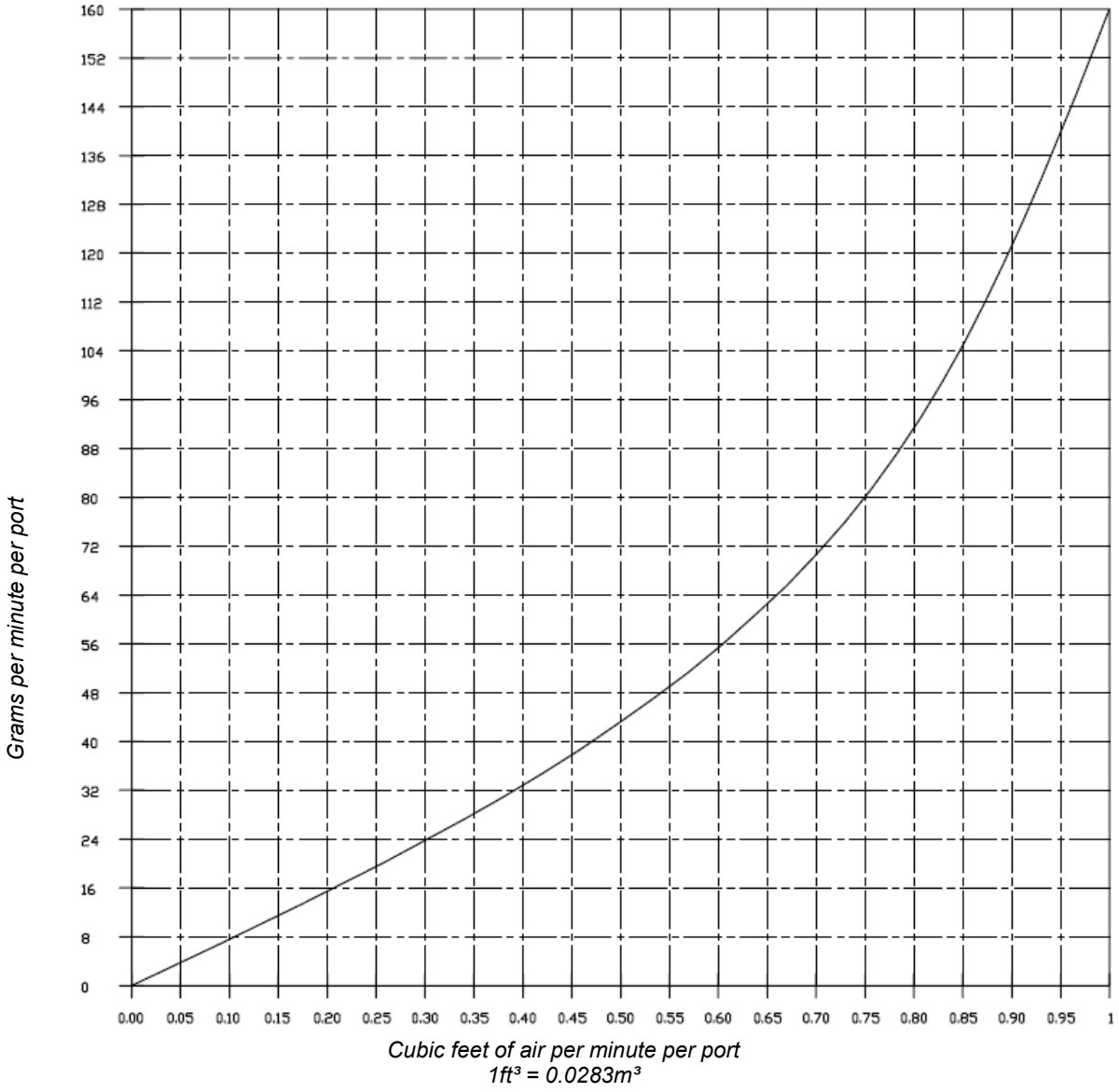
STANDARD DYNAFIBER UFD APPLICATORS

NOMINAL PATTERN WIDTH	PORTS	HOSE INLETS	DIM HOSE 1	DIM HOSE 2	DIM HOSE 3	DIM HOSE 4	DIM MTG 1	DIM MTG 2	DIM MTG 3	DIM MTG 4	DIM CABLE 1	DIM CABLE 2	DIM CABLE 3	DIM CABLE 4	STA1	STA2	STA3	STA4 ASSEMBLY ORDER	WEIGHT
1200	48	4	150.0	450.0	750.0	1050.0	287.4*	589.8	892.2*	1194.6	216.0	518.4	820.8	1123.2	12	12	12	12	130.4
1160	46	4	125.0	400.0	700.0	1000.0	237.0*	539.4	841.8*	1144.2	190.8	468.0	770.4	1072.8	10	12	12	12	125.5
1130	45	4	112.5	375.0	675.0	975.0	211.8*	514.2	816.6*	1119.0	178.2	442.8	745.2	1047.6	9	12	12	12	123.1
1110	44	4	100.0	350.0	650.0	950.0	186.6*	489.0	791.4*	1093.8	165.6	417.6	720.0	1022.4	8	12	12	12	120.6
1080	43	4	112.5	350.0	625.0	925.0	211.8*	463.8	766.2*	1068.6	178.2	417.6	694.8	997.2	9	10	12	12	118.2
1060	42	4	125.0	375.0	625.0	900.0	237.0*	489.0	741.0*	1043.4	190.8	442.8	694.8	972.0	10	10	10	12	115.7
1030	41	4	112.5	350.0	600.0	875.0	211.8*	463.8	715.8*	1018.2	178.2	417.6	669.6	946.8	9	10	10	12	113.3
1000	40	4	125.0	375.0	625.0	875.0	237.0*	489.0	741.0*	993.0	190.8	442.8	694.8	946.8	10	10	10	10	110.8
955	38	4	100.0	325.0	575.0	825.0	186.6*	438.6	690.6*	942.6	165.6	392.4	644.4	896.4	8	10	10	10	105.9
930	37	4	112.5	337.5	562.5	800.0	211.8*	438.6	665.4*	917.4	178.2	405.0	631.8	871.2	9	9	9	10	103.5
900	36	4	112.5	337.5	562.5	787.5	211.8*	438.6	665.4*	892.2	178.2	405.0	631.8	858.6	9	9	9	9	101.0
900	36	3	150.0	450.0	750.0	——	287.4*	589.8*	892.2*	——	216.0	518.4	820.8	——	12	12	12	——	97.8
880	35	4	100.0	312.5	537.5	762.5	186.6*	413.4*	640.2*	867.0	165.6	379.8	606.6	833.4	8	9	9	9	98.6
855	34	3	150.0	425.0	700.0	——	287.4*	539.4*	841.8*	——	216.0	493.2	770.4	——	12	10	12	——	92.9
830	33	3	150.0	412.5	675.0	——	287.4*	514.2*	816.6*	——	216.0	480.6	745.2	——	12	9	12	——	90.5
800	32	4	75.6	277.2	529.2	730.8	136.2*	388.2	640.2*	791.4	115.2	367.2	619.2	770.4	6	10	10	6	92.3
800	32	4	100.0	300.0	500.0	700.0	186.6*	388.2	589.8*	791.4	165.6	367.2	568.8	770.4	8	8	8	8	91.2
800	32	3	125.0	400.0	675.0	——	237.0*	539.4*	791.4	——	190.8	468.0	745.2	——	10	12	10	——	88.0
750	30	3	125.0	375.0	625.0	——	237.0*	489.0*	741.0	——	190.8	442.8	694.8	——	10	10	10	——	83.1
730	29	3	125.0	362.5	600.0	——	237.0*	463.8*	715.8	——	190.8	430.2	669.6	——	10	9	10	——	80.7
705	28	3	100.0	325.0	450.0	——	186.6*	438.6*	690.6	——	165.6	392.4	644.4	——	8	10	10	——	78.2
675	27	3	112.5	337.5	562.5	——	211.8*	438.6*	665.4	——	178.2	405.0	631.8	——	9	9	9	——	75.8
655	26	3	112.5	325.0	537.5	——	211.8*	413.4*	640.2	——	178.2	392.4	606.6	——	9	8	9	——	73.3
600	24	3	100.0	300.0	500.0	——	186.6*	388.2*	589.8	——	165.6	367.2	568.8	——	8	8	8	——	68.4
600	24	2	150.0	450.0	——	——	287.4*	589.8	——	——	216.0	518.4	——	——	12	12	——	——	65.2
550	22	2	125.0	400.0	——	——	237.0*	539.4	——	——	190.8	468.0	——	——	10	12	——	——	60.3
530	21	2	112.5	375.0	——	——	211.8*	514.2	——	——	178.2	442.8	——	——	9	12	——	——	57.9
500	20	2	125.0	375.0	——	——	237.0*	489.0	——	——	190.8	442.8	——	——	10	10	——	——	55.4
480	19	2	125.0	362.5	——	——	237.0*	463.8	——	——	190.8	430.2	——	——	10	9	——	——	53.0
450	18	2	112.5	337.5	——	——	211.8*	438.6	——	——	178.2	405.0	——	——	9	9	——	——	50.5
400	16	2	100.0	300.0	——	——	186.6*	388.2	——	——	165.6	367.2	——	——	8	8	——	——	45.6
300	12	1	150.0	——	——	——	287.4	——	——	——	216.0	——	——	——	——	——	——	——	32.6
250	10	1	125.0	——	——	——	237.0	——	——	——	190.8	——	——	——	——	——	——	——	27.7
225	9	1	112.5	——	——	——	211.8	——	——	——	178.2	——	——	——	——	——	——	——	25.3
200	8	1	100.0	——	——	——	186.6	——	——	——	165.6	——	——	——	——	——	——	——	22.8

Note: Mounting dimensions marked with an asterisk * are optional.

3.2.5 Air Consumption

Note: This chart is for rough estimation of spray air requirements. It is not intended as a specific setpoint for any specific application.



3.2.6 Identification Plates

Each segment of your Equity stackable applicator has an ITW Dynatec identification plate, located on the top of the junction cover. These identification plates list the volts, watts and amps for the segment's heat zone and air preheater. They are also stamped with the segment's model and serial numbers.

When two or more segments are joined into a longer applicator, the joining kit's end plate also serves as an identification plate. This plate lists info on the segment configuration* of the entire applicator (including volts, watts, amps, model and serial numbers), as it was originally built and shipped to you by ITW Dynatec.

If the configuration of your applicator changes, i.e., if you add or subtract or re-arrange the segments, contact ITW Dynatec in order to obtain an updated applicator identification plate.

** The segment configuration of the entire applicator is noted from left to right as you face the modules.*

3.2.7 Standard Equity Applicator Model Designation Guide

EQUFD XXX	XX	X	X	XX	X	X	X	XX
Example: EQUFD 200	08	H	E	01	D	2	A	06

Applicator Length:
150 = 150mm (6 port)
200 = 200mm (8 port)
250 = 250mm (10 port)
300 = 300mm (12 port)
350 = 350mm (14 port)

Hose Fitting:
(#X refers to size of hose)
06 = #6
08 = #8
12 = #12

No. of Modules installed:
06, 08, 10, 12, 14
0Z = (no modules) **

Module Type:
C = Horizontal SB* (intermittent) 110840
D = Vertical SB* (intermittent) 111074
H = Horizontal UFD (continuous) 104993
V = Vertical UFD (continuous) 106224
K = Horizontal SB* (intermittent) 112444
F = Vertical SB* (intermittent) 114864

Filter:
E = 150 mesh, easy spin 116246 (standard)

Number of Solenoid valves:
01 = 1 solenoid
XX = As many as the number of ports on head.

Custom part number will be assigned if the number of solenoid valves selected fall between 1 and max number of ports available on the head.

Control:
D = DynaControl / PLC (Pt 100 RTD)
N = Upgrade, Nor (Ni 120 RTD)

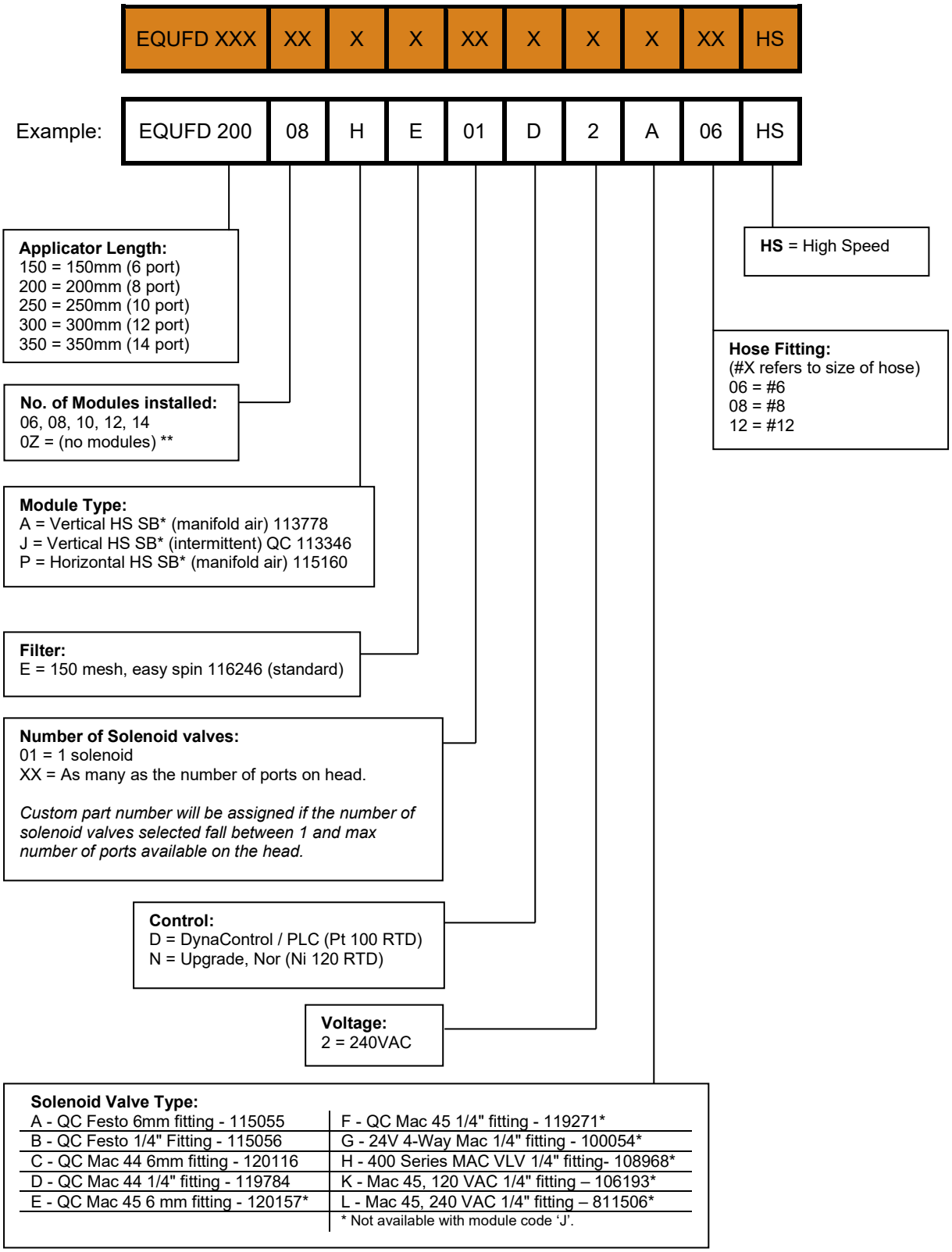
Voltage:
2 = 240VAC

Solenoid Valve Type:

A - QC Festo 6mm fitting - 115055	G - 24V 4-Way Mac 1/4" fitting - 100054
B - QC Festo 1/4" Fitting - 115056	H - 400 Series Mac 1/4" fitting - 108968
C - QC Mac 44 6mm fitting - 120116	J - 24V 5-Way Mac 1/4" fitting – 106937 (Not available with 'H' and 'V' Module code.)
D - QC Mac 44 1/4" fitting - 119784	K - Mac 45, 120 VAC 1/4" fitting - 106193
E - QC Mac 45 6 mm fitting - 120157	L - Mac 45, 240 VAC 1/4" fitting - 811506
F - QC Mac 45 1/4" fitting - 119271	

** SB = Snuff-Back*
*** Notes: When specifying a head with no modules, (see "0Z" above), the Module Type (H, V, etc.) must still be specified for the application.*

3.2.8 High-Speed Equity Applicator Model Designation Guide



** HS SB = High-Speed Snuff-Back*
*** Notes: When specifying a head with no modules, (see "0Z" above), the Module Type (A, J) must still be specified for the application.*

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 for dimensions.

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 and pneumatic connections & Service Requirements

- 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.

- 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.
- Incoming module-activation air is supplied through a solenoid valve. It must be clean and unlubricated.

  For conventional modules, 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 G1/8 threads (1/8 NPT).

  For Snuff-Back modules, the module-activation air is controlled by 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. For the applicator’s air supply line, 3/8” O.D. airline is recommended.

- Applicators require at least one solenoid valve for each segment. If your head was ordered without a solenoid valve, a 4-way valve (or a 5-way valve for Snuff-Back modules) should be mounted so that the air lines to each segment (or each module, depending on application) are as close to the same length as practical.

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

- For process (preheater) air control, the filter/ regulator kit PN 107404 is recommended. It contains a 0-50 psi (0-3.45 bar) air filter/ regulator combination and a gauge for accurate process air control. See the Process Air Control Filter/ Regulator information in Appendix B.

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

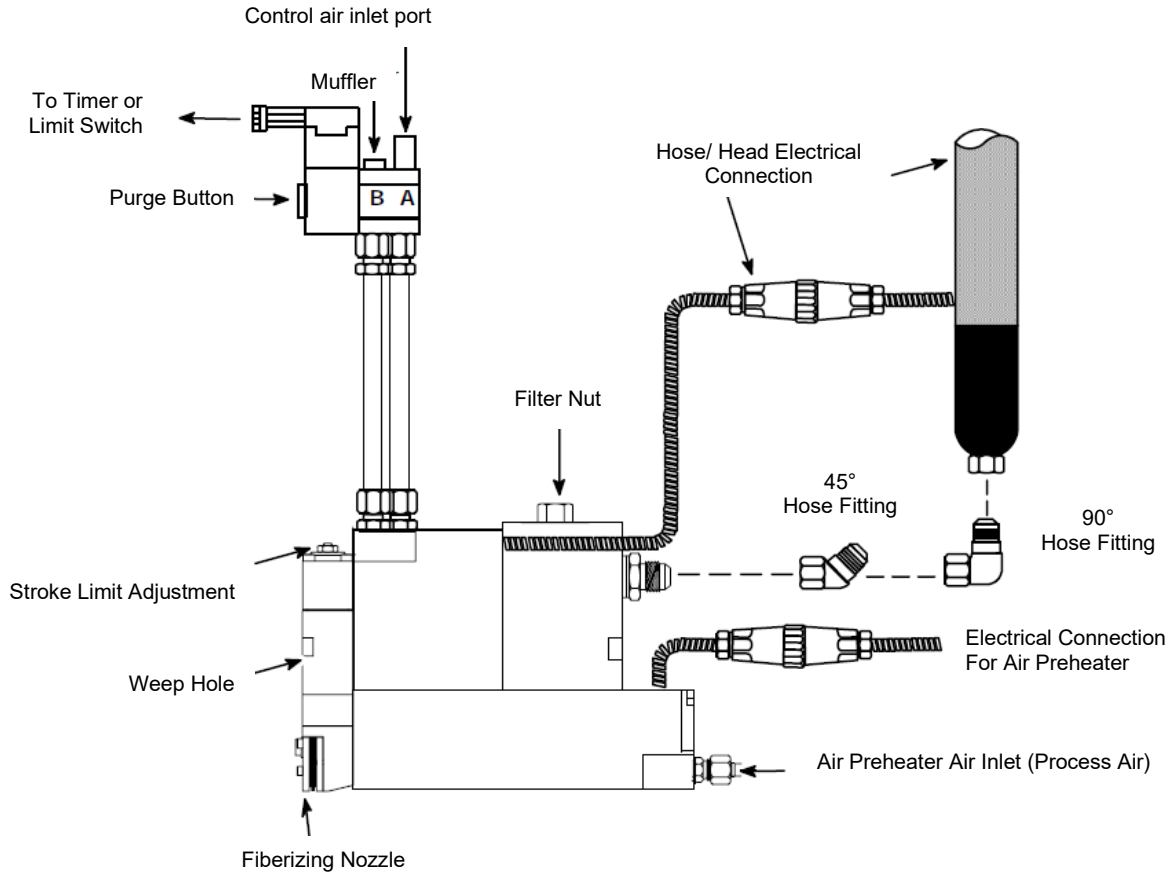
- While installing the Applicator, use an appropriate protection device to avoid unintended contact with heated parts and with spilling out Hotmelt. The protection device has to prevent also the operator against not reaching into the adhesive application and against injuring.
- Risk of burns and risk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

Typical installation for an Applicator:

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

   Mounting of the applicator is customer-defined. A layout of your specific applicator, with mounting dimensions and holes, is enclosed with this manual. If necessary, consult ITW Dynatec for assistance.

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



2. 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, back of the applicator (or segment).

   Connect the swivel fitting of the hot melt hose to the adapter on the service block, using the inlet port located below the filter nut. 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 the manual of the heated hoses.

3. Make the electrical connection from the hose to the applicator by connecting the female (internal) connector of the hose to the male (external) connector of the applicator.

4. 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.

   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.

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 for details and diagrams of solenoid setup.

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 (Dynatec PN 100055) must be installed between the standard air regulator/ filter and the UFD Applicator.

5. Make the electrical connection from the extension cable to the preheater by connecting the female connector (receptacle) of the cable to the male connector (plug) of the preheater.

6. 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. For steel applicators, wait at least 30 minutes (10 minutes for module change) before reading temperature.

7. 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 nozzles from the modules. Place a heat resistant container under the modules to collect the material that drains from the Applicator. Manually open the solenoids 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 modules.

8. Replace the nozzles, orienting the nozzle tips so they point toward the substrate.

9. 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 nozzles from adhesive.

Bring the Applicator in work position and continue production.

4.2.1 Operation of Optional Drain Valve

UFD Applicators are equipped optionally 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.

4.2.2 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	Liquid	Total oil content (liquid, aerosol and mist)
	0.1-0.5 µm	0.5-1 µm	1-5 µm	mg/m³	°C	g/m³	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. See Ch. "5.4 Pressure Relief".

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).

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.

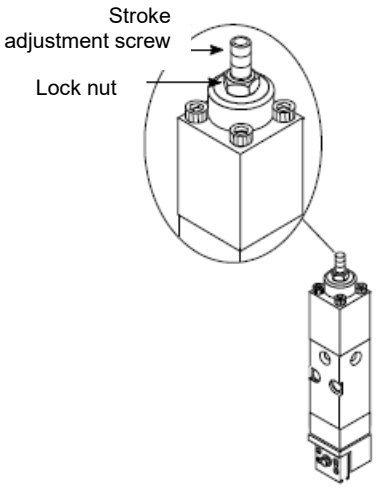
5.3 Stroke Limit Adjustment

All conventional modules are equipped with a stroke limit adjustment.
For Snuff-Back modules, 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 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 Pressure Relief

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 and risk of severe burns!

During this procedure, the components and the adhesive are hot. Take every precaution to prevent the material and hot surfaces from contacting the skin.

During the pressure relief procedure, hot adhesive can come out of the Applicator under high pressure. Risk of injury and risk of severe burns!

WARNING: Before any cleaning, maintenance and repair work on the applicator, the adhesive pressure in the in the entire system must be relieved!

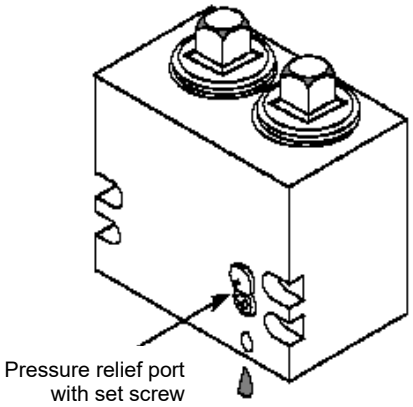
Relieve the adhesive pressure:

1. Stop all motors/pumps.
2. Switch the unit to stand-by.
3. Place a heat-resistant catchment container/underlay under the applicator. Hot adhesive may come out!
4. Relieve the residual adhesive pressure by carrying out the following work:

   a. Manually open the modules by pushing the manual trigger button on the solenoid valve and let flow out the remaining adhesive (pressure).

   Or, b., loosen the set screw within the pressure relief port on the rear side of the filter block (see illustration to the right) to open the port and to let flow out the remaining adhesive (pressure). After relieving the pressure, screw in the set screw again.

   Or, c., if the Adhesive Supply Unit's (ASU) filter manifold is equipped with a drain screw, adhesive pressure may be relieved at the ASU.
5. Disconnect the pressure air supply. Turn the pressure regulator to zero bar, if necessary, and wait approximately 1 minute until the air pressure is relieved.



Rear view of filter block

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 and risk of severe burns!

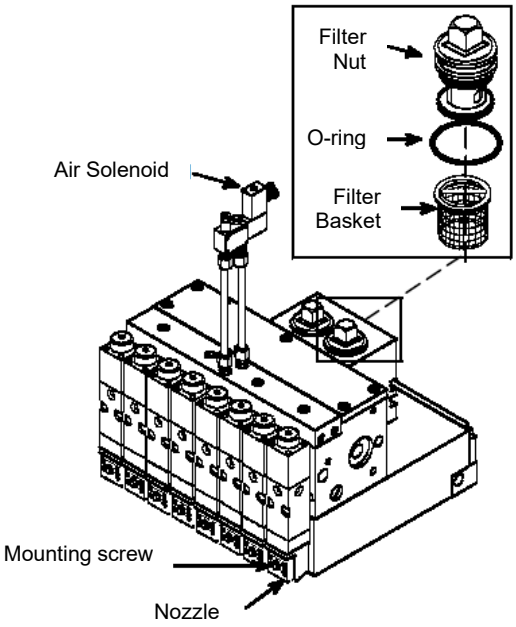
During this procedure, the components and the adhesive are hot. Take every precaution to prevent the material and hot surfaces from contacting the skin.

During the pressure relief procedure, hot adhesive can come out of the Applicator under high pressure. Risk of injury and risk of severe burns!

Refer to the drawing in Chapter 7 for more information.

The applicator must be at operating temperature.

1. Stop all motors.
2. Switch the unit to stand-by.
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 residual adhesive pressure in the system as described in Ch. "5.4 Pressure relief".
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.

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!

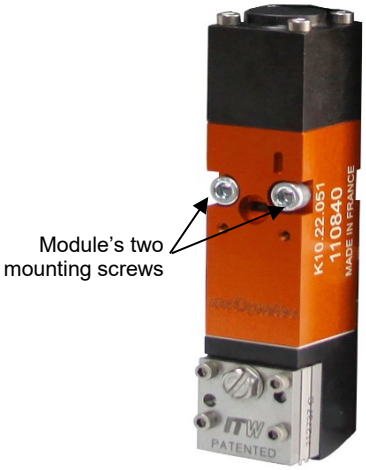
Always wear safety shoes, heat-resistant protective gloves, safety goggles and protective clothing that cover all vulnerable parts of the body while working on the heated unit! Risk of injury and risk of severe burns!

During this procedure, the components and the adhesive are hot. Take every precaution to prevent the material and hot surfaces from contacting the skin.

During the pressure relief procedure, hot adhesive can come out of the Applicator under high pressure. Risk of injury and risk of severe burns!

Refer to the drawing in Chapter 7 for more information.
The module must be at operating temperature when changed.

1. Stop all motors.
2. Switch the unit to stand-by.
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 residual adhesive pressure in the system as described in Ch. "5.4 Pressure relief".
6. 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).
7. 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).



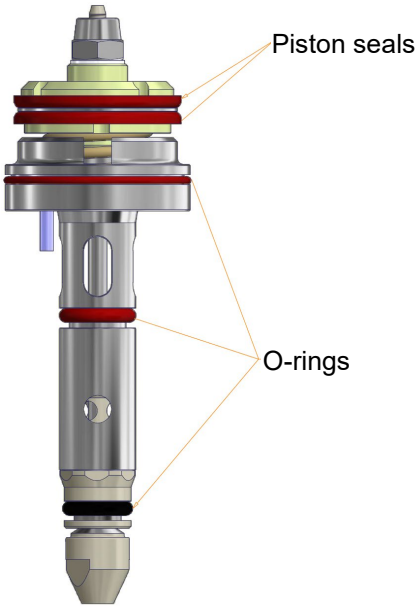
After finishing the maintenance or repair works:

- 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.

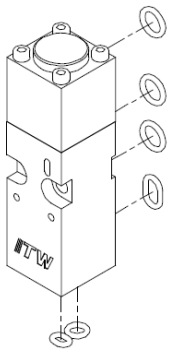
5.6.2 Module Assembly Instructions for Horizontal and Vertical HS SB UFD Modules

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

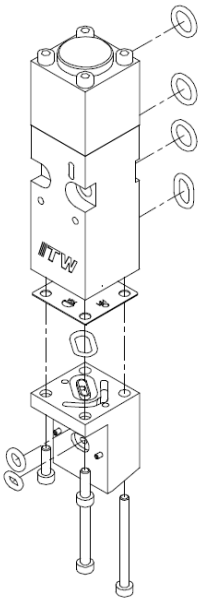
Use the component illustrations and parts lists in Chapter 7 as a reference with the following instructions for the HS SB (High-Speed Snuff-Back) UFD modules. ITW Dynatec has Module Repair Kits available (refer to Ch. 8, Repair Kits) which contains the components necessary to rebuild one module, including the valve cartridge assembly and O-rings.



UFD HS SB Seal Cartridge
(included in Module Repair Kit)



Horizontal SB UFD Modules



Vertical HS SB UFD Modules

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. Torque the cap screws cross-wise to 20 inch-lb. (2.3 Nm).
7. 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 Cleaning and 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 and risk of severe burns!

During this procedure, the components and the adhesive are hot. Take every precaution to prevent the material and hot surfaces from contacting the skin.

During the pressure relief procedure, hot adhesive can come out of the Applicator under high pressure. Risk of injury and risk of severe burns!

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!

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 replaced.

1. Stop all motors.
2. Switch the unit to stand-by.
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 residual adhesive pressure in the system as described in Ch. "5.4 Pressure relief".
6. Remove the nozzle from the module by loosening its two (or one on UFD Snuff-Back 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 Snuff-Back 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 Testing of Resistances

5.8.1 Testing the Resistance of the 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 residual adhesive pressure in the system as described in Ch. "5.4 Pressure relief".
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 Equity UFD Applicators contain several (quantity depends on configuration) 10mm heaters wired in parallel. The parallel resistance values of these heaters are listed below:

Applicator Model	Quantity of heaters	Parallel Resistance in Ohm		
		Nominal	Minimum	Maximum
6-port segment	4	68.4	65	75
8-port segment	4	68.4	65	75
9-port segment	4	68.4	65	75
10-port segment	6	45.6	43	50
12-port segment	6	45.6	43	50
14-port segment *	4 each zone	68.4 each	65	75

Air Preheater Heaters

The air preheaters contain several heaters wired in parallel. The heaters are located in the spiral tubes at the rear of the preheater and are 10mm diameter. The quantity of 10mm heaters depends on the width of the applicator. The parallel resistance values of these heaters are listed below:

Applicator Model	Quantity of heaters	Parallel Resistance in Ohm		
		Nominal	Minimum	Maximum
6-port segment	6	41.5	39	46
8-port segment	8	31.1	29	34
9-port segment	9	27.6	26	30
10-port segment	10	24.9	23	27
12-port segment	12	22.8	21	25
14-port segment *	7 each zone	39 each	37	43

** The 14-port segment consists of two 7-port segments and functions as two temperature zones.*

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. The ohmmeter used will also have lead and contact resistance of approximately 0.5 Ohm.

5.8.2 Testing the Resistance of the RTD Temperature Sensor

(used in DynaControl, PLC or Nickel RTD Upgrade models only)

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 residual adhesive pressure in the system as described in Ch. "5.4 Pressure relief".

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 for 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 ± 5% is allowed for ambient temperature differences. A sensor that tests outside of this range must be replaced.

Applicator Control	Sensor Resistance in Ohm at 25°C (77°F)
DynaControl / PLC (Pt 100)	110
Upgrade (Ni 120)	138

5.8.3 Resistance Tables of Temperature sensors

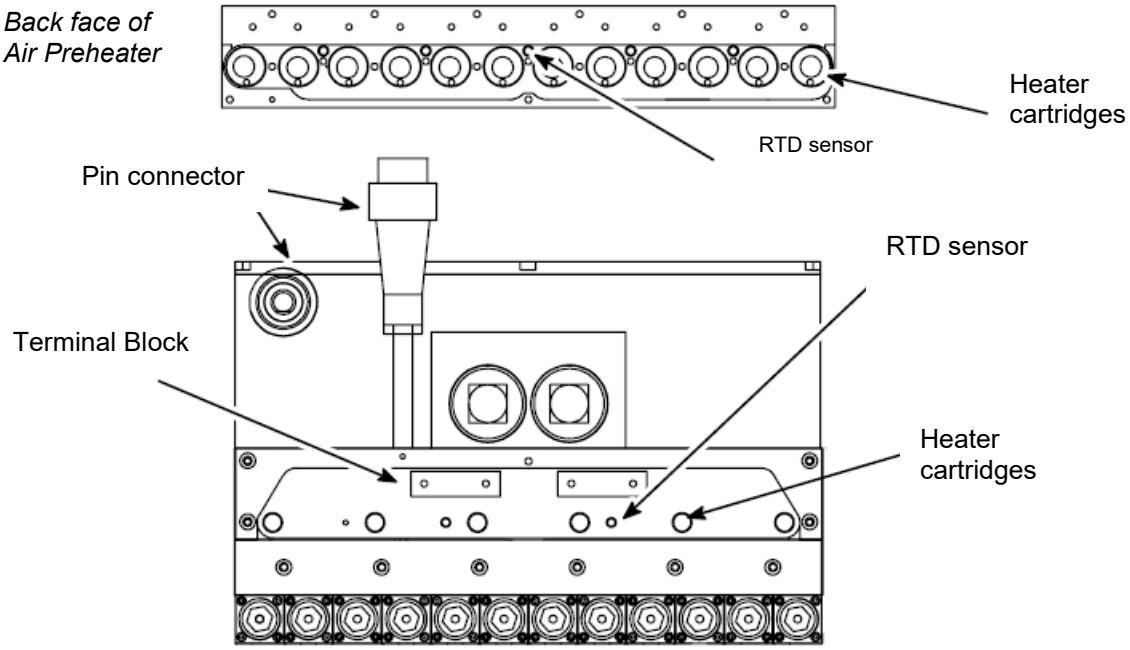
Temperature sensor
PT 100 Ohms
DynaControl, PLC

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

Temperature sensor
Ni 120 Ohms
Upgrade Control

Temperature °F	Temperature °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

5.9 Replacement of Heater Cartridge or Temperature Sensor



Top view, Heater, RTD Sensor Replacement Diagram

Replacement of Service Block Heater Cartridges

WARNING

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

1. Stop all motors.
2. Turn the ASU's main switch OFF.
   Disconnect the power supply cable and the compressed air supply hose.
   Guard the unit against unauthorized restarting.
3. Relieve the residual adhesive pressure in the system as described in Ch. "5.4 Pressure relief".
4. Disconnect the service block's electrical cable assembly from the hose and disconnect the preheater's cable assembly from its cable extension.
5. Remove the screws holding the junction cover plate. Remove the plate. Loosen the screws on the terminals in the cavity. Disconnect the heater leads from the terminal blocks.
6. 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.
7. Reconnect the heaters to the terminal blocks, making sure that no strands of wire are protruding from the terminal blocks. Re-tighten the screws on the terminals.
8. Replace the junction cover plate.

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's main switch OFF.
   Disconnect the power supply cable and the compressed air supply hose.
   Guard the unit against unauthorized restarting.
3. Relieve the residual adhesive pressure in the system as described in Ch. "5.4 Pressure relief".
4. Disconnect the service block's electrical cable assembly from the hose and disconnect the preheater's cable assembly from its cable extension.
5. Remove the screws from the junction cover. Remove the junction cover.
6. Disconnect the heater leads from the ceramic terminal blocks.
7. Locate the non-functioning heater with a multimeter.
8. Remove and replace the non-functioning heater. Apply a thin film of thermal paste to the new heater before installation.
9. Reconnect all heaters to the terminal blocks, making sure that no strands of wire are protruding from the terminal blocks.
10. Replace the junction cover.

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's main switch OFF.
   Disconnect the power supply cable and the compressed air supply hose.
   Guard the unit against unauthorized restarting.
3. Relieve the residual adhesive pressure in the system as described in Ch. "5.4 Pressure relief".
4. Disconnect the service block's electrical cable assembly from the hose and disconnect the preheater's cable assembly from its cable extension.
5. Remove the four screws holding the junction cover plate. Remove the plate.
6. Pull the sensor out of the service block. Note: the sensor is located in a port at the center (or near the center) of the service block.

7. Cut the old sensor wires off as close to the sensor as possible.

8. 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.

9. Use the high-temp splice kit to connect the new sensor to the old sensor wires.

10. Place the wires in the wiring cavity and replace the junction cover.

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 previous pages for parts locations.

1. Stop all motors.

2. Turn the ASU's main switch OFF.
Disconnect the power supply cable and the compressed air supply hose.
Guard the unit against unauthorized restarting.

3. Relieve the residual adhesive pressure in the system as described in Ch. "5.4 Pressure relief".

4. Disconnect the service block's electrical cable assembly from the hose and disconnect the preheater's cable assembly from its cable extension.

5. Remove the screws from the junction cover. Remove the junction cover.

6. Locate the ceramic terminal blocks which connect the sensor wires to the lead wires. Disconnect the old sensor from the terminal blocks and remove it from the preheater.

7. Apply a thin film of thermal paste to the new sensor and place it in the preheater. Connect the new sensor wires to the terminal blocks.

8. Replace the junction cover.

5.10 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!
- When handling hazardous substances (cleaning agents, etc.), heed the current safety data sheets.
- 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:

- All electrical and pneumatic connections are properly connected.
- The Melter is supplied with power and the main switch is turned On.
- There is adhesive in the tank and the Melter pump is running.
- The Melter and the applicator have sufficient air pressure.
- The temperature controller is running. The setpoints for the Melter, heated hoses, applicator and all other components connected to the unit are set correctly.
- 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. 3. Check module O-rings. 4. Re-fill hopper. 5. Adjust temperature. 6. Check solenoid valve. 7. Adjust the stroke limit.

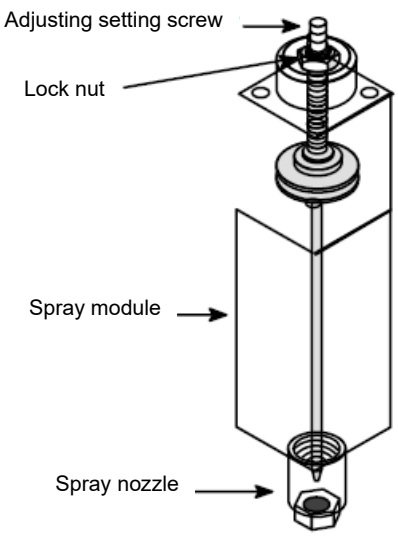
Continue next page…

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.
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. 3. Check/ replace sensor.
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.
Air escapes from module	1. Piston O-ring defective. 2. O-rings located between module and service block are defective.	1. Replace O-ring. 2. Remove module from block and replace O-rings.
Application pattern is erratic	1. Adhesive pressure is too low. 2. Adjust pattern controller.	1. a. *For units without speed control:* increase adhesive pressure at ASU. b. *For units with speed control (tach follower):* adjust pump speed control. 2. See pattern controller manual for proper adjustment.
Adhesive is not spiraling (on spiral spray modules only)	1. Air channel or nozzle orifices are clogged. 2. Adhesive pressure is too low. 3. Spiral air temperature is too low.	1. Clean channel, clean or replace nozzle. 2. See solution for erratic pattern above. 3. Adjust temperature of the air heater.

6.3 Troubleshooting Spray Nozzles on MR1300 module PN 120545 and MR1300 swirl adapter PN 120550

There are several ways to adjust the spray of adhesive as it exits the spray nozzle so that a consistent, desirable coating is achieved.

The most common spray adjustment is made by turning the Adjusting Screw located on the top of the module (see illustration at right). The typical spray adjustment is set between a 1/8 turn to a 1/2 turn open.

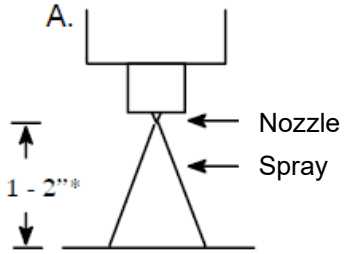
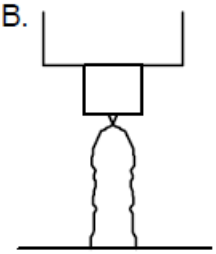
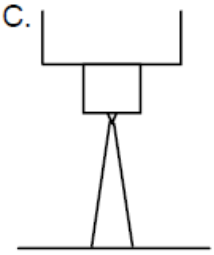


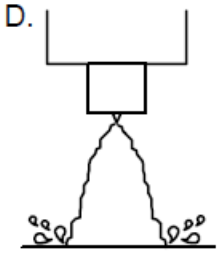
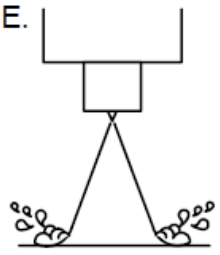
TO ADJUST: Loosen the lock nut. Turn the adjusting set screw clockwise until it stops. Then turn counter-clockwise to the proper position for your application (1/8 or 1/4 or 3/8 or 1/2 turn as determined below). Lock the screw in place with the lock nut.

TO DETERMINE SCREW POSITION:

- 1/8 turn is the normal position for a very light weight adhesive with a low viscosity between 500 cps to 1,500 cps. This application utilizes a nozzle with a small orifice (.010 - .020).
- 1/4 turn is normal for light to medium weight adhesives with low to medium viscosity (1,500 cps to 5,000 cps), utilizing a small to medium orifice nozzle (.020 - .030).
- 3/8 to 1/2 turn is the normal range for medium to heavy weight adhesive with medium to high viscosity (5,000 cps to 60,000 cps), utilizing a nozzle with a medium to large orifice (.030-.052).

The illustrations below show some typical application problems and give recommended solutions.

A.  CORRECT PATTERN Note: Air pressure is 5 to 15 PSI on examples A, B & C. *1.5 - 2" is typical for non-wovens application.	B.  PROBLEM: Inconsistent, unstable spray pattern. Width of pattern varies. SOLUTION: 1.Check the needle valve, it may be too far closed. 2.The nozzle orifice is too large for the amount of adhesive being used. Increase adhesive flow to correct pattern or utilize a smaller nozzle orifice for reduced coat weight.	C.  PROBLEM: The spray pattern is too narrow (constricted). SOLUTION: 1. Check the needle valve, it may be too far open. 2. The nozzle orifice is too small for the amount of adhesive being used; decrease adhesive flow to widen the pattern. 3. Increase nozzle orifice size.

D.  PROBLEM: Spray pattern is too wide and unstable. Spray patterns on multi-port heads overlap. SOLUTION: Caused by too low adhesive flow with too much air pressure. Increase adhesive flow and decrease PSI.	E.  PROBLEM: Adhesive bounces around edges of the pattern. Application is too wide. SOLUTION: 1. Too much air pressure. Reduce PSI. 2. Nozzle is too close to the web. Raise the head.

6.4 Recommended Torque Values for Modules and Nozzles

The following torque ranges are at room temperature (approx. 25°C / 77°F)**.** Do not exceed their upper limit.
For module mounting screws: 78-94 in/lbs (8.8-10.6 Nm).
For the UFD nozzle mounting screw: 20-25 in./lbs (2.3-2.8 Nm).

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.

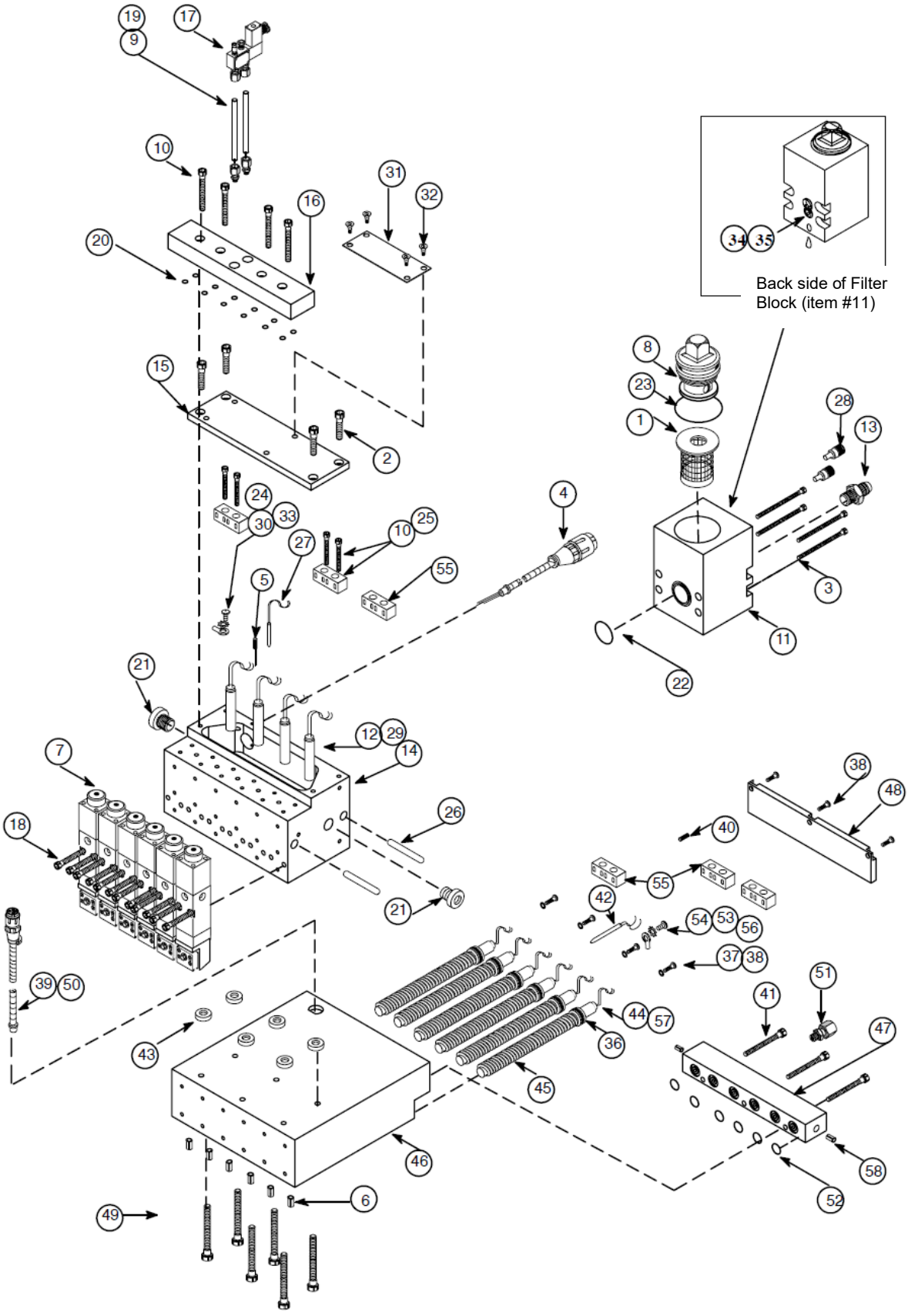
Note: Most common screws, nuts and washers called out in the manual are not for sale and they can be obtained locally at your hardware Store. Specialty fasteners are available by contacting ITW Dynatec's Customer Service.

7.1 Typical 6 Port, Equity UFD Head PN 809160

(Vertical Nozzle shown)

Item No.	Part Number	Description	Qty.
1	106273	Filter Basket 150 Mesh	1
2	102446	M4-0.7 x 10 mm SHC Screw	5
3	102602	M6-1 x 60mm SHC Screw	4
4	*	Cable Assembly, DCL	1
5	103470	M3-.5 x 5 mm Flat Point Set Screw	1
6	106327	Expansion Plugs	6
7	106224	Module MR1300, UFD, Vertical Nozzle (shown for reference only)	6
8	106303	Filter Nut	1
9	106333	Stainless Steel Tube, 1/4 x .65w x 3.5lg	2
10	106071	M4-.7 x 25mm SHC Screw	8
11	809154	Filter Block, 1-Filter	1
12	803960	Heater, 10 x 40mm, 240V, 200W	4
13	803984	Fitting, #6JIC x 1/2-14 BSPP	1
14	809153	Adhesive Manifold	1
15	809155	Junction Cover Plate	1
16	809159	Solenoid Manifold (shown for reference only)	1
17		Solenoid & Accessories (see your order for part number)	1
18	804354	M5.8 x 30mm SHC Screw	12
19	N00093	Fitting, connection, 1/4 TUBE - 1/8NPT	2
20	N00175	O-ring, -008	12
21	101625	1/4 BSPP Plug	2
22	N01010	O-ring, -021	1
23	N03812	O-ring, -125	1
24	N07354	Screw M4-0.7 x 10 mm	1
25	804493	Terminal Block Assembly	2
26	804356	Dowel Pin	2
27	*	Temperature Sensor	1
28	809671	Transducer Plug	2
29	104228	Ferrule 16AWG	10
30	N04302	Star Washer	1
31	804477	Data Plate	1
32	105117	M4-.7 x 8mm Pan Head Screw	4
33	N04268	Terminal Ring	1
34	101833	10-32 x 12 Tamper Proof Screw	1
35	104852	M10 x 12 Cone Relief Screw	1
	809161	**6-Port Air Heater Assembly:**	**1**
36	107430	O-ring, -016, Silicone,	6
37	078C005	#8 Flat Washer	4
38	102446	M4-4.7 x 10mm Screw	7
39	*	Cable Assembly, 240V, DCL	1
40	103470	M3-.5 x 5mm Flat Point Set Screw	1
41	803083	M4-.7 x 34mm SHC Screw	3
42	*	Temperature Sensor	1
43	803579	Spacer, .625 x .188 x .094	6
44	803905	Heater, 10 x 100mm, 240V, 220W	6
45	803979	Spiral Heater Tube	6
46	809156	Air Heater Body	1
47	809157	Air Manifold	1
48	809158	Junction Cover	1
49	804355	M4.7 x 50mm SHC Screw	6
50	*	Shrink tube, 3/16 (not shown, used in cable assembly)	1
51	100460	Fitting, 1/4NPT - 3/8 Tube	1
52	N00178	O-ring, #-011	6
53	N04268	Terminal Ring	1
54	N07354	Screw M4-0.7 x 10 mm	1
55	107881	Terminal Block, Ceramic	4
56	N04302	Star Washer	1
57	104228	Ferrule 16AWG	14
58	805880	Expansion Plug, 3/8	2

* See Ch.8.



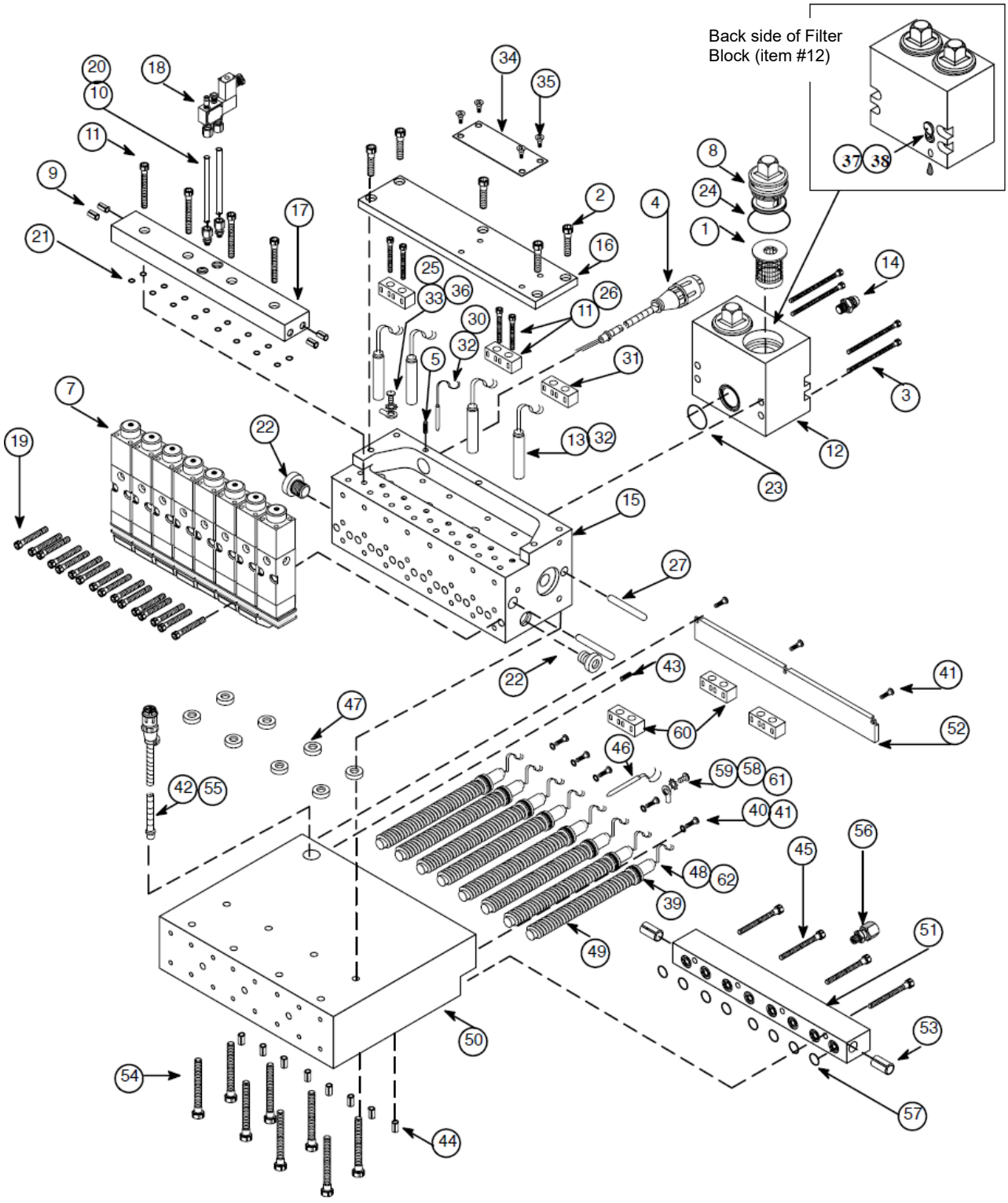
Component Illustration: Typical 6 Port, Equity UFD Head PN 809160 (Vertical Nozzle shown)

7.2 Typical 8 Port, Equity UFD Head PN 807320

(Horizontal Nozzle shown)

Item No.	Part Number	Description	Qty.
1	*	Filter Basket	2
2	102446	M4-0.7 x 10 mm SHC Screw	5
3	102602	M6-1 x 60mm SHC Screw	4
4	*	Cable Assembly, DCL	1
5	103470	M3-.5 x 5 mm Flat Point Set Screw	1
7	104993	MR1300, UFD, Horizontal Nozzle (shown for reference only)	8
8	106303	Filter Nut	2
9	805294	Expansion Plug, .219	4
10	106333	Stainless Steel Tube, 1/4 x .65w x 3.5lg	2
11	106071	M4-.7 x 25mm SHC Screw	8
12	803327	Filter Block, 2-Filter	1
13	*	Heater, 10 x 40mm, 240V, 200W	4
14	803984	Hose Fitting, #6JIC x 1/2-14 BSPP	1
15	804038	Adhesive Manifold	1
16	804042	Junction Cover Plate	1
17	804043	Solenoid Manifold (shown for reference only)	1
18		Solenoid & Accessories (see your order for part number)	1
19	804354	M5.8 x 30mm SHC Screw	16
20	N00093	Fitting, connection, 1/4 TUBE - 1/8NPT	2
21	N00175	O-ring, -008	16
22	101625	1/4 BSPP Plug	2
23	N01010	O-ring, -021	1
24	N03812	O-ring, -125	2
25	N07354	Screw M4-0.7 x 10 mm	1
26	804493	Terminal Block Assembly	2
27	804356	Dowel Pin	2
30	*	Temperature Sensor	1
31	107881	Terminal Block	1
32	104228	Ferrule 16AWG	14
33	N04302	Star Washer	1
34	804477	Data Plate	1
35	105117	M4-.7 x 8mm Pan Head Screw	4
36	N04268	Terminal Ring	1
37	101833	10-32 x 12 Tamper Proof Screw	1
38	104852	M10 x 12 Cone Relief Screw	1
	807326	**8 Port Air Heater Assembly:**	**1**
39	107430	O-ring, #-016 Kalrez	8
40	078C005	#8 Flat Washer	5
41	102446	M4-4.7 x 10mm Screw	8
42	*	Cable Assembly, 240V, DCL	1
43	103470	M3-.5 x 5mm Flat point Set Screw	1
44	106327	Expansion Plug, 4mm	8
45	803083	M4-.7 x 34mm SHC Screw	4
46	*	Temperature Sensor	1
47	803579	Spacer, .625 x .188 x .094	8
48	*	Heater, 10 x 100mm, 240V, 220W	8
49	803979	Spiral Heater Tube	8
50	804039	Air Heater Body	1
51	804040	Air Manifold	1
52	804041	Junction Cover	1
53	805880	3/8 Expansion Plug	2
54	804355	M4.7 x 50mm SHC Screw	8
55	A48J164	Shrink tube, 3/16 (not shown, used in cable assembly)	1
56	100460	Fitting, 1/4NPT - 3/8 Tube	1
57	N00178	O-ring, #-011	8
58	N04268	Terminal Ring	1
59	N07354	Screw M4-0.7 x 10 mm	1
60	107881	Terminal Block, Ceramic	3
61	N04302	Star Washer	1
62	104228	Ferrule 16AWG	12

* See Ch.8.



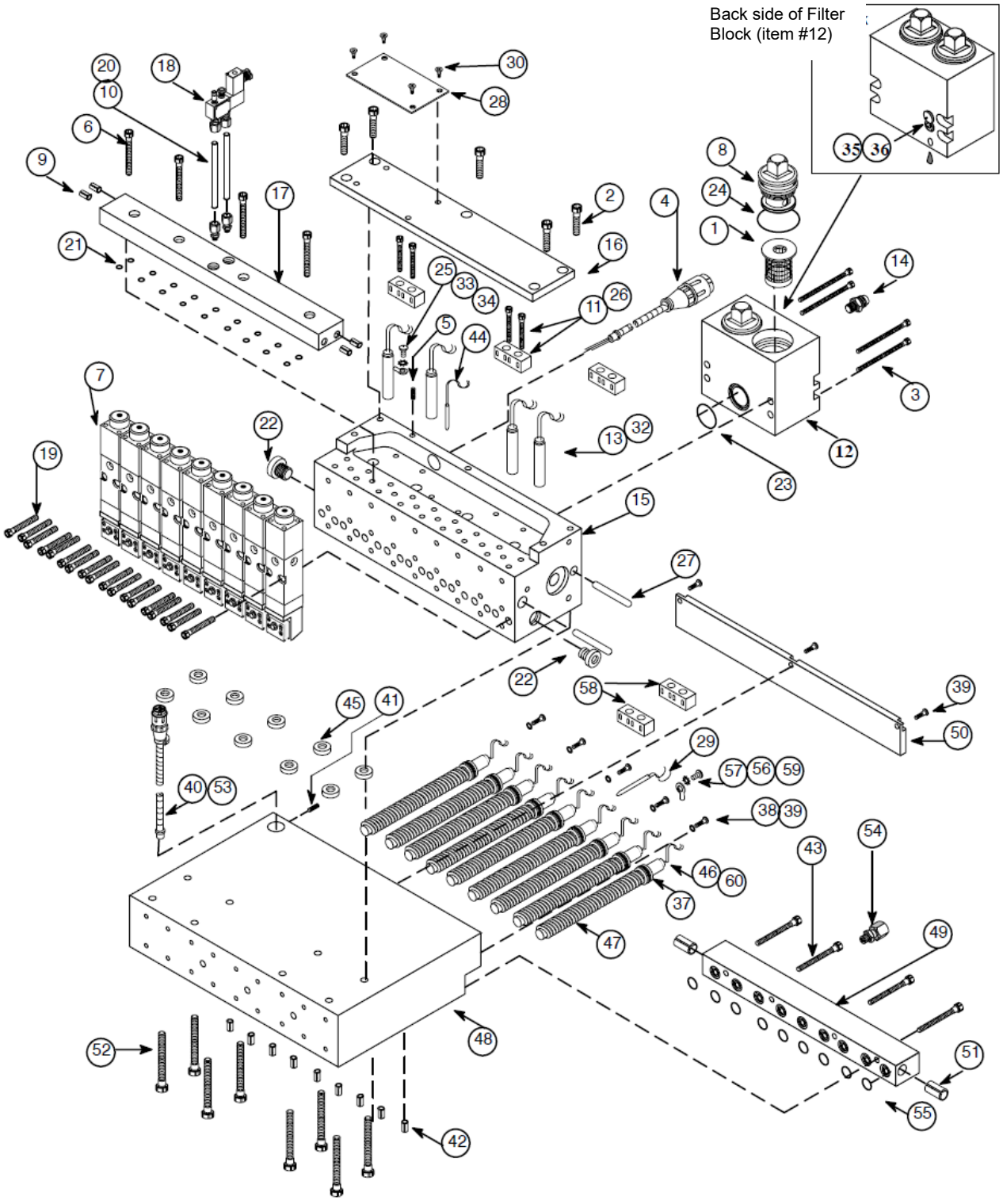
Component Illustration: Typical 8 Port, Equity UFD Head PN 807320 (Horizontal Nozzle shown)

7.3 Typical 9 Port, UFD Head PN 807321

(Vertical Nozzle shown)

Item No.	Part Number	Description	Qty.
1	*	Filter Basket	2
2	102446	M4-0.7 x 10 mm SHC Screw	5
3	102602	M6-1 x 60mm SHC Screw	4
4	*	Cable Assembly, DCL	1
5	103470	M3-.5 x 5 mm Flat Point Set Screw	1
7	106224	Module MR1300, UFD, (shown for reference only)	9
8	106303	Filter Nut	2
9	805294	Expansion Plug, .219	4
10	106333	Stainless Steel Tube, 1/4 x .65w x 3.5lg	2
11	803087	M4-.7 x 25mm SHC Screw	8
12	803327	Filter Block, 2-Filter	1
13	*	Heater, 10 x 40mm, 240V, 200W	4
14	803984	Hose Fitting, #6JIC x 1/2-14 BSPP	1
15	804220	Adhesive Manifold	1
16	804222	Junction Cover Plate	1
17	804221	Solenoid Manifold (shown for reference only)	1
18		Solenoid & Accessories (see your order for part number)	1
19	804354	M5.8 x 30mm SHC Screw	16
20	N00093	Fitting, connection, 1/4 TUBE - 1/8NPT	2
21	N00175	O-ring, -008	16
22	101625	1/4 BSPP Plug	2
23	N01010	O-ring, -021	1
24	N03812	O-ring, -125	2
25	N07354	Screw M4-0.7 x 10 mm	1
26	804493	Terminal Block Assembly	2
27	804356	Dowel Pin	2
28	804477	Data Plate	1
29	*	Temperature Sensor	1
30	105117	M4 x 8mm Pan Head Screw	4
32	104228	Ferrule 16AWG	14
33	N04302	Star Washer	1
34	N04268	Terminal Ring	1
35	101833	10-32 x 12 Tamper Proof Screw	1
36	104852	M10 x 12 Cone Relief Screw	1
	807327	**9 Port Air Heater Assembly:**	**1**
37	107430	O-ring, -016, Silicone,	9
38	078C005	#8 Flat Washer	5
39	102446	M4-4.7 x 10mm Screw	8
40	*	Cable Assembly, 240V, DCL	1
41	103470	M3-.5 x 5mm Flat point Set Screw	1
42	106327	3/8 Expansion Plug, 4mm	9
43	803083	M4-.7 x 34mm SHC Screw	4
44	*	Temperature Sensor	1
45	803579	Spacer, .625 x .188 x .094	8
46	*	Heater, 10 x 100mm, 240V, 220W	9
47	803979	Spiral Heater Tube	9
48	804224	Air Heater Body	1
49	804225	Air Manifold	1
50	804226	Junction Cover	1
51	805880	3/8 Expansion Plug	2
52	804355	M4.7 x 50mm SHC Screw	8
53	A48J164	Shrink tube, 3/16 (not shown, used in cable assembly)	1
54	100460	Fitting, 1/4NPT - 3/8 Tube	1
55	N00178	O-ring, #-011	9
56	N04268	Terminal Ring	1
57	N07354	Screw M4-0.7 x 10 mm	1
58	107881	Terminal Block, Ceramic	3
59	N04302	Star Washer	1
60	104228	Ferrule 16AWG	14

* See Ch.8.



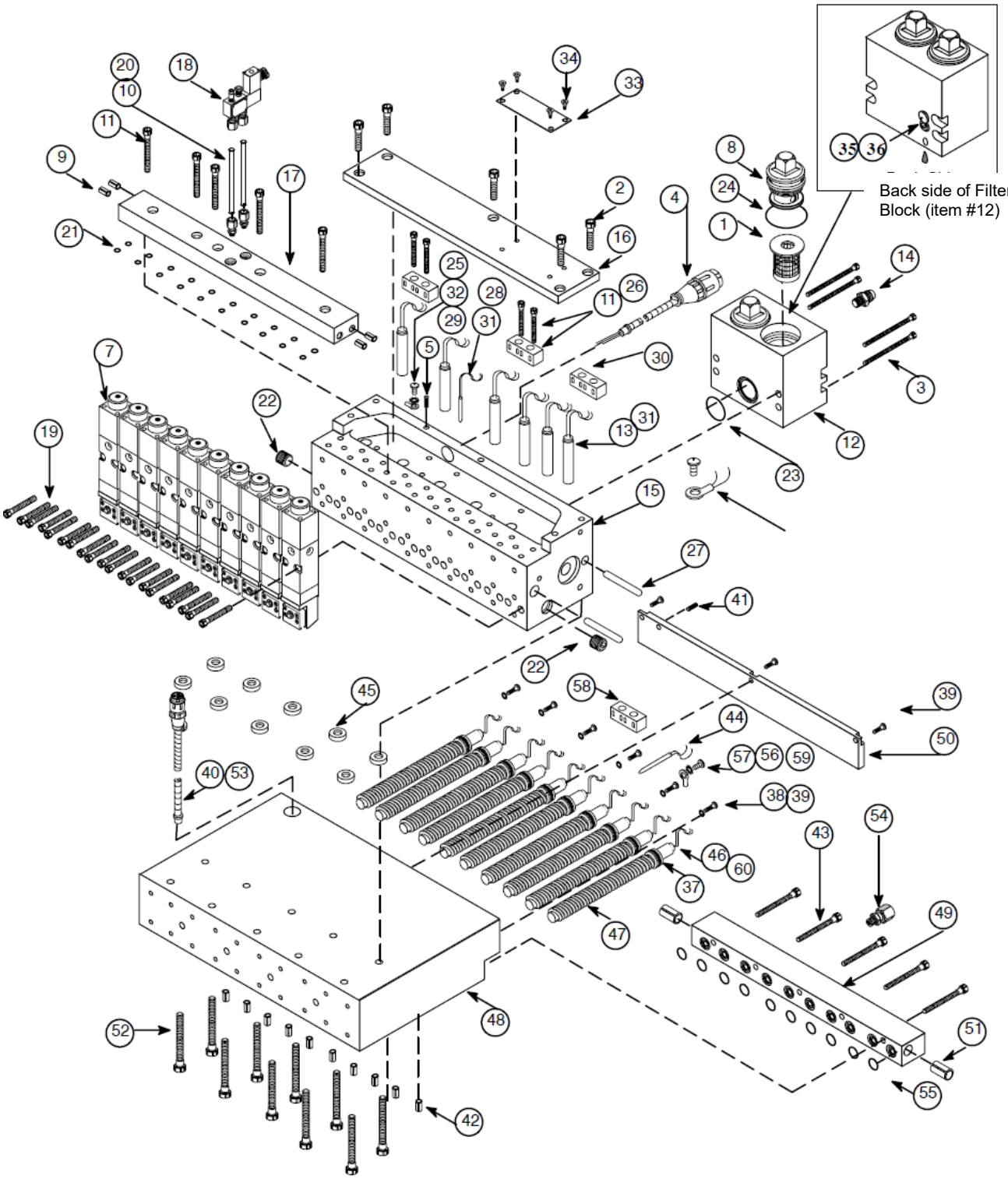
Component Illustration: 9 Port, UFD Head PN 807321 (Vertical Nozzle shown)

7.4 Typical 10 Port, UFD Head PN 807322

(Vertical Nozzle shown)

Item No.	Part Number	Description	Qty.
1	*	Filter Basket	2
2	102446	M4-0.7 x 10 mm SHC Screw	5
3	102602	M6-1 x 60mm SHC Screw	4
4	*	Cable Assembly	1
5	103470	M3-.5 x 5 mm Flat Point Set Screw	1
7	106224	Module MR1300, UFD, (shown for reference only)	10
8	106303	Filter Nut	2
9	805294	Expansion Plug, .219	4
10	106333	Stainless Steel Tube, 1/4 x .65w x 3.5lg	2
11	106071	M4-.7 x 25mm SHC Screw	4
12	803327	Filter Block, 2-Filter	1
13	*	Heater, 10 x 40mm, 240V, 200W	6
14	803984	Hose Fitting, #6JIC x 1/2-14 BSPP	1
15	804142	Adhesive Manifold	1
16	804163	Junction Cover Plate	1
17	804162	Solenoid Manifold	1
18		Solenoid & Accessories (see your order for part number)	1
19	804354	M5.8 x 30mm SHC Screw	20
20	N00093	Fitting, connection, 1/4 TUBE - 1/8NPT	2
21	N00175	O-ring, -008	20
22	101625	1/4 BSPP Plug	2
23	N01010	O-ring, -021	1
24	N03812	O-ring, -125	2
25	N07354	Screw M4-0.7 x 10 mm	1
26	804493	Terminal Block Assembly	2
27	804356	Dowel Pin	2
28	*	Temperature Sensor	1
29	N04268	Terminal Ring	1
30	107881	Terminal Block 1	1
31	104228	Ferrule 16AWG	14
32	N04302	Star Washer	1
33	804477	Data Plate	1
34	105117	M4 x 8mm Pan Head Screw	4
35	101833	10-32 x 12 Tamper Proof Screw	1
36	104852	M10 x 12 Cone Relief Screw	1
	807328	**10 Port Air Heater Assembly:**	**1**
37	107430	O-ring, -016, Silicone,	10
38	078C005	#8 Flat Washer	6
39	102446	M4-4.7 x 10mm Screw	9
40	*	Cable Assembly, 240V	1
41	103470	M3-.5 x 5mm Flat point Set Screw	1
42	106327	Expansion Plug, 4mm	10
43	803083	M4-.7 x 34mm SHC Screw	5
44	*	Temperature Sensor, .625 x .188 x .094	1
45	803579	Spacer, .625 x .188 x .094	10
46	*	Heater, 10 x 100mm, 240V, 220W	10
47	803979	Spiral Heater Tube	10
48	804160	Air Heater Body	1
49	804164	Air Manifold	1
50	804165	Junction Cover	1
51	805880	3/8 Expansion Plug	2
52	804355	M4.7 x 50mm SHC Screw	10
53	A48J164	Shrink tube, 3/16 (not shown, used in cable assembly)	1
54	100460	Fitting, 1/4NPT - 3/8 Tube	1
55	N00178	O-ring, #-011	10
56	N04268	Terminal Ring	1
57	N07354	Screw M4-0.7 x 10 mm	1
58	107881	Terminal Block, Ceramic	3
59	N04302	Star Washer	1
60	104228	Ferrule 16AWG	16

* See Ch.8.



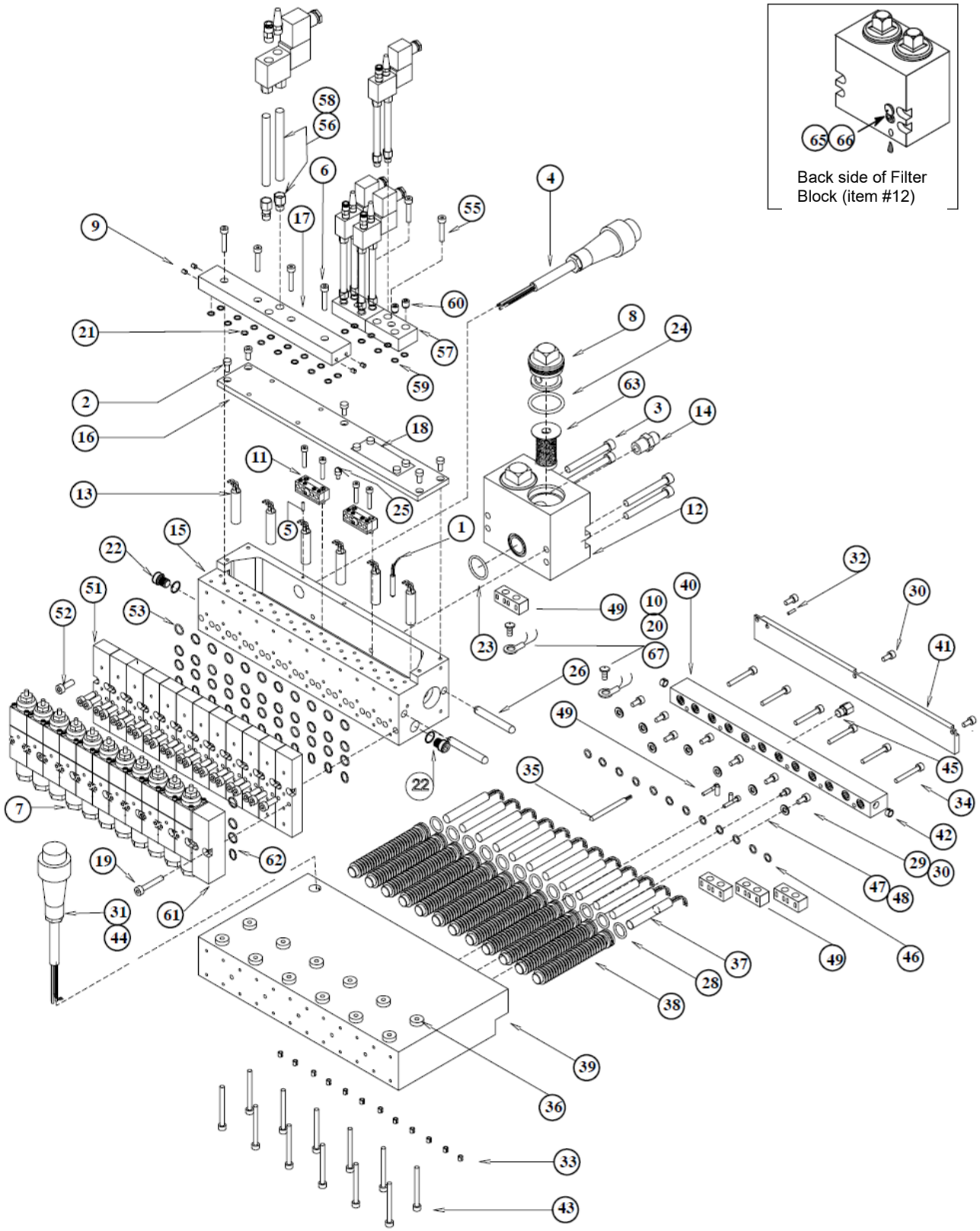
Component Illustration: 10 Port, UFD Head PN 807322 (Vertical Nozzle shown)

7.5 Typical 12 Port, Equity UFD Head PN 807323

(MR1300 Spray Module shown)

Item No.	Part Number	Description	Qty.
1	*	Temperature Sensor (part of cable)	1
2	102446	M4-0.7 x 10 mm SHC Screw	5
3	102602	M6-1 x 60mm SHC Screw	4
4	*	Cable Assembly, DCL	1
5	103470	M3-.5 x 5 mm Flat Point Set Screw	1
6	106071	M4 x 25mm SHC Screw	4
7	120545 + 120550	MR1300, Spray Module (shown for reference only)	12
8	106303	Filter Nut	2
9	805294	Expansion Plug	2
10	N04302	Washer	2
11	804493	Terminal Block Assembly	2
12	803327	Filter Block, 2-Filter	1
13	*	Heater, 10 x 40mm, 240V, 200W (w/wire end crimp PN 104228)	6
14	803984	Hose Fitting, #6JIC x 1/2-14 BSPP	1
15	804167	Adhesive Manifold	1
16	804203	Junction Cover plate	1
17	804169	Solenoid Manifold (shown for reference only)	1
18	804477	Data Plate (PN105117 = M4 X 8mm FHC Screw)	1
19	804354	M5.8 x 30mm SHC Screw	2
20	N00093	Fitting, connection, 1/4 TUBE - 1/8NPT	2
21	N00175	O-ring, -008	24
22	101625	1/4 BSPP Plug	2
23	N01010	O-ring, -021	1
24	N03812	O-ring, -125	2
25	N07354	Screw M4-0.7 x 10 mm	1
26	804356	Dowel Pin	2
27	**807329**	**Air Heater Assembly**	**1**
28	107430	O-ring, -016, Silicone,	12
29	078C005	#8 Flat Washer	5
30	102446	M4-4.7 x 10mm	10
31	*	Cable Assembly, 240V, DCL	1
32	103470	M3-.5 x 5mm Flat point Set Screw	1
33	106327	4mm Expansion Plug	12
34	803083	M4-.7 x 34mm SHC Screw	6
35	*	Temperature Sensor (part of cable)	1
36	803579	Spacer, .625 x .188 x .094	12
37	*	Heater, 10 x 100mm, 240V, 200W	12
38	803979	Spiral Heater Tube	12
39	804168	Air Heater Body	1
40	804204	Air Manifold	1
41	804205	Junction Cover	1
42	805880	3/8 Expansion Plug	2
43	804355	M4.7 x 50mm SHC Screw	12
44	A48J164	Shrink tube, 3/16 (not shown, used in cable assembly)	1
45	100460	Fitting, 1/4NPT - 3/8 Tube	1
46	N00178	O-ring, #-011	12
47	N04268	Terminal Ring	2
48	N07354	Screw M4-0.7 x 10 mm	2
49	107881	Terminal Block, Ceramic	3
50	**804694**	**UFD Adapter Assembly (shown for reference only)**	**1**
51	107079	Adapter, MR1300 Spray Module	1
52	106242	M5 x 16mm SHC Screw	2
53	N00178	O-ring, -011	4
54	**804522**	**2 Solenoid Air Manifold Kit (shown for reference only)**	**2**
55	106071	M4 x 25mm SHC Screw	1
56	106333	Stainless Steel Tube	4
57	804518	2 Solenoid Air Manifold	1
58	N00093	Fitting, connection, 1/4 TUBE - 1/8NPT	4
59	N00175	O-ring, -008	4
60	N00753	1/8 Level Seal Plug (used in case of Block-off Plate)	2
	804636	**Module Block Off Assembly**	**1**
61	106367	Block-Off Plate	1
62	N00178	O-ring, -011	4
63	*	* Filter Basket	2
64		Solenoid And Accessories	
65	101833	10-32 x 12 Tamper Proof Screw	1
66	104852	M10 x 12 Cone Relief Screw	1
67	N07354	Screw M4-0.7 x 10 mm, Ground	2

* See Ch.8.



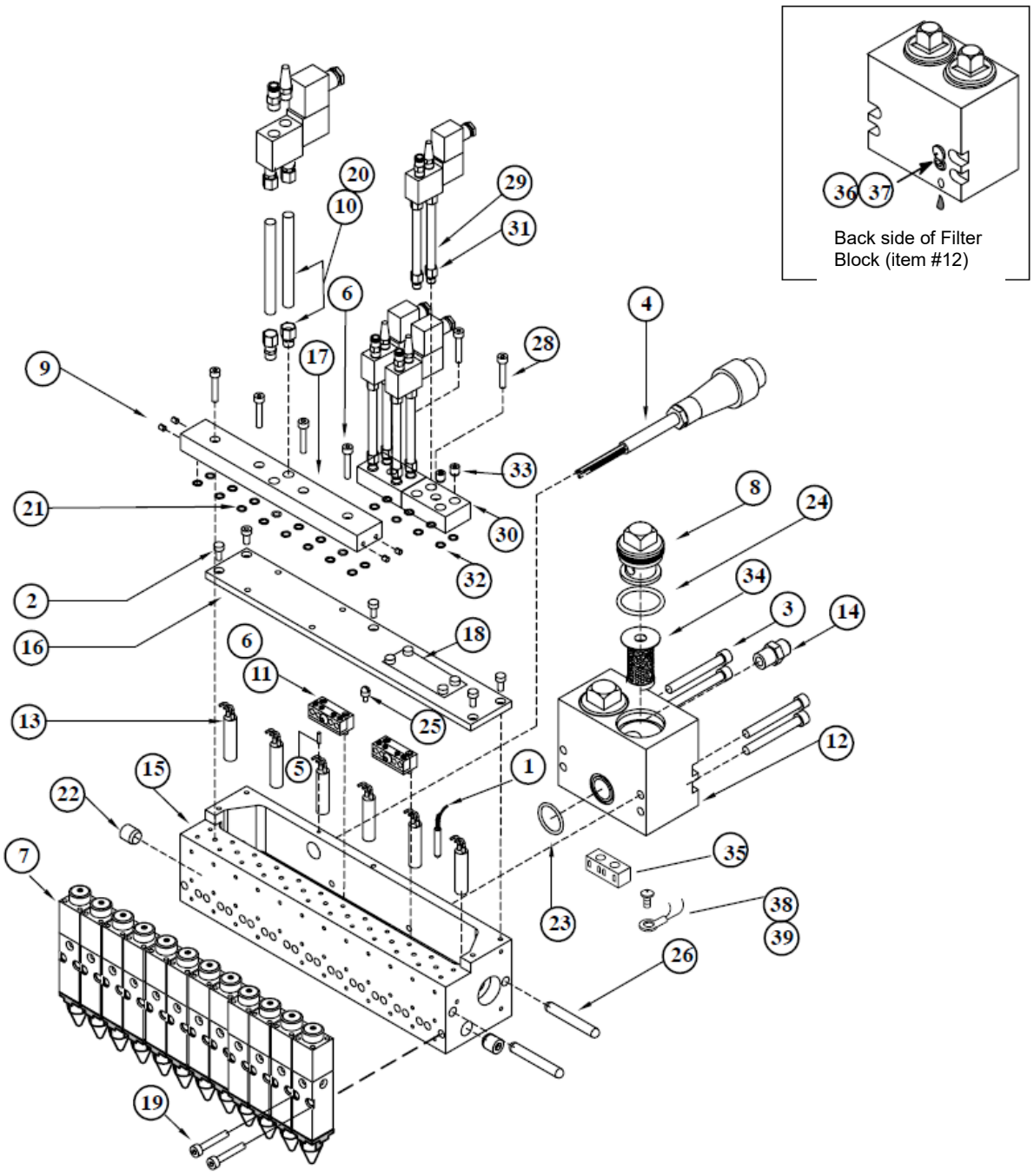
Component Illustration: 12 Port, Equity UFD Head PN 807323 (MR1300 Spray Module shown)

7.6 Typical 12 Port, Equity Bead Head PN 807685

(MR1300 Bead Module shown)

Item No.	Part Number	Description	Qty.
1	*	Temperature Sensor (part of cable)	2
2	102446	M4-0.7 x 10 mm SHC Screw	5
3	102602	M6-1 x 60mm SHC Screw	4
4	*	Cable Assembly, DCL	1
5	103470	M3-.5 x 5 mm Flat Point Set Screw	1
6	106071	M4 x 25mm SHC Screw	10
7	120548	MR1300, Bead Module (shown for reference only)	12
8	106303	Filter Nut	2
9	805294	Expansion Plug	2
10	106333	Stainless Steel Tube, 1/4 x .65w x 3.5lg	2
11	804493	Terminal Block Assembly	2
12	803327	Filter Block, 2-Filter	1
13	*	Heater, 10 x 40mm, 240V, 200W (w/wire end crimp = PN 104228)	6
14	803984	Hose Fitting, #6JIC x 1/2-14 BSPP	1
15	804167	Adhesive Manifold	1
16	804203	Junction Cover Plate	1
17	804169	Solenoid Manifold (shown for reference only)	1
18	804477	Data Plate with M4-x 8mm FHC Screws (PN 106470)	1
19	804354	M5.8 x 30mm SHC Screw	24
20	N00093	Fitting, connection, 1/4 TUBE - 1/8NPT	2
21	N00175	O-ring, -008	24
22	101625	1/4BSPP Plug	2
23	N01010	O-ring, -021	1
24	N03812	O-ring, -125	2
25	N07354	Screw M4-0.7 x 10 mm	1
26	804356	Dowel Pin	2
27	**804522**	**2 Solenoid Air Manifold Kit (shown for reference only)**	**2**
28	106071	M4 x 25mm SHC Screw	1
29	106333	Stainless Steel Tube	4
30	804518	2 Solenoid Air Manifold	1
31	N00093	Fitting, connection, 1/4 TUBE - 1/8NPT	4
32	N00175	O-ring, -008	4
33	N00753	1/8 Level Seal Plug (used in case of Block-off Plate)	2
		Accessories	
34	*	Filter Basket	1
35		**Solenoid And Accessories**	
36	107881	Terminal Block,	2
37	101833	10-32 x 12 Tamper Proof Screw	1
38	104852	M10 x 12 Cone Relief Screw	1
39	N04302	Washer	1
40	N04268	Terminal ring	1

* See Ch.8.



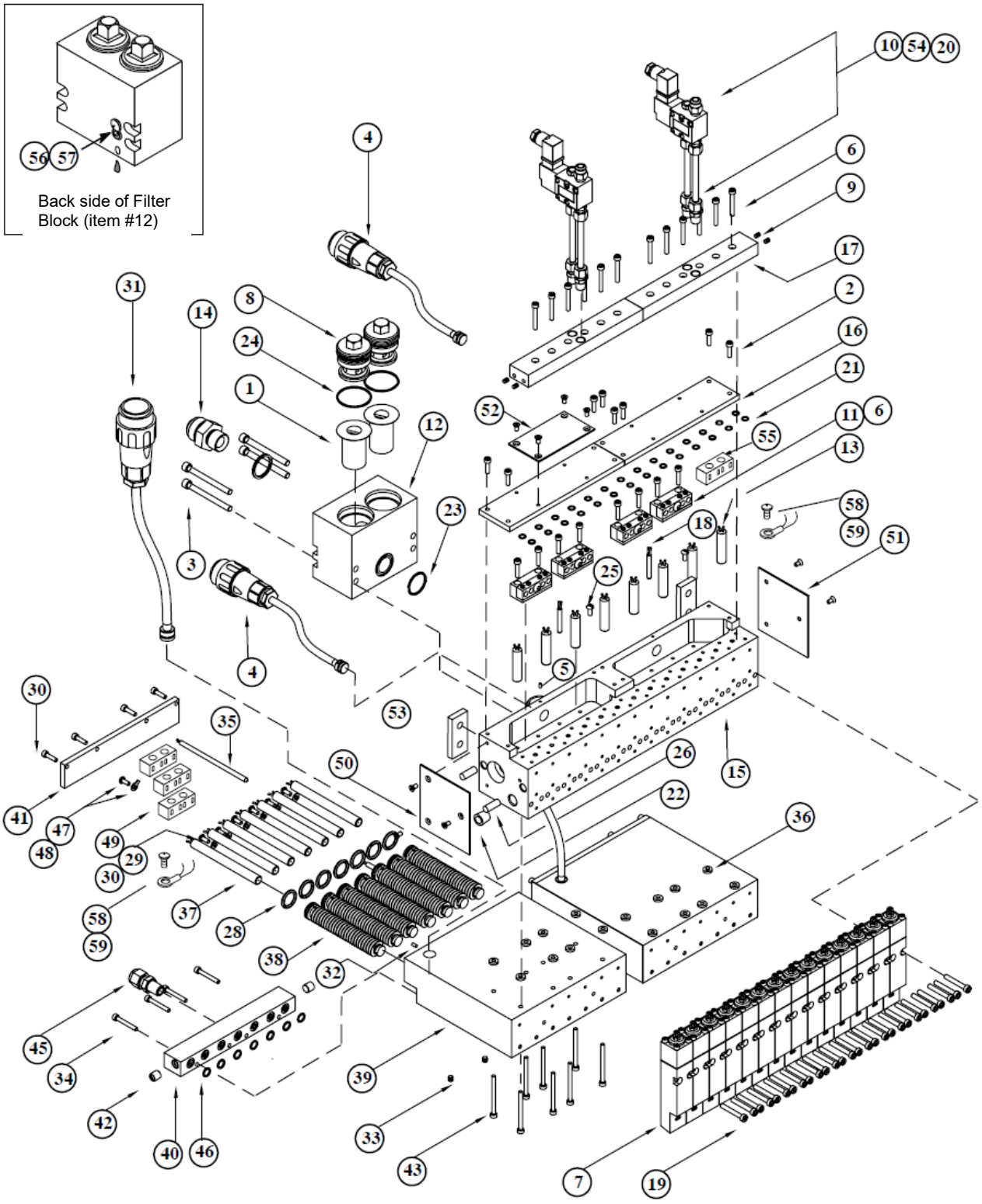
Component Illustration: 12 Port, Equity Bead Head PN 807685 (MR1300 Bead Module shown)

7.7 Typical 14 Port, Equity UFD Head PN 807324

(Vertical Nozzle shown)

Item No.	Part Number	Description	Qty.
1	*	Filter Basket	2
2	102446	M4-0.7 x 10 mm SHC Screw	8
3	102602	M6-1 x 60mm SHC Screw	4
4	*	Cable Assembly, DCL	2
5	103470	M3-.5 x 5 mm Flat Point Set Screw	2
6	106071	M4 x 25mm SHC Screw	20
7	106224	Module MR1300, UFD, (shown for reference only)	14
8	106303	Filter Nut	2
9	805294	Expansion Plug	8
10	106333	Stainless Steel Tube, 1/4 x .65w x 3.5lg	2
11	804493	Terminal Block Assembly	4
12	803327	Filter Block, 2-Filter	1
13	*	Heater, 10 x 40mm, 240V, 200W	8
14	803984	Hose Fitting, #6JIC x 1/2-14 BSPP	1
15	804601	Adhesive Manifold	1
16	804598	Junction Cover Plate	12
17	804599	Solenoid Manifold, 7 Port	2
18	*	Temperature Sensor	2
19	804354	M5.8 x 30mm SHC Screw	28
20	N00093	Fitting, connection, 1/4 TUBE - 1/8NPT	8
21	N00175	O-ring, -008	28
22	101625	1/4 BSPP Plug	4
23	N01010	O-ring, -021	1
24	N03812	O-ring, -125	2
25	N07354	Screw M4-0.7 x 10 mm	2
26	804356	Dowel Pin	2
27	807325	Air Heater Assembly	2
28	107430	O-ring, -016, Silicone,	7
29	078C005	#8 Flat Washer	5
30	102446	M4-4.7 x 10mm Screw	9
31	*	Cable Assembly, 240V, DCL, No RTD	1
32	103470	M3-.5 x 5mm Flat point Set Screw	1
33	106327	Expansion Plug, 4mm	7
34	803083	M4-.7 x 34mm SHC Screw	4
35	*	Temperature Sensor	1
36	803579	Spacer, .625 x .188 x .094	8
37	*	Heater, 10 x 100mm, 240V, 220W	7
38	803979	Spiral Heater Tube	7
39	804602	Air Heater Body	1
40	804605	Air Manifold	1
41	804603	Junction Cover	1
42	805880	Expansion Plug, 3/8	2
43	804355	M4.7 x 50mm SHC Screw	8
44	A48J164	Shrink tube, 3/16 (not shown)	1
45	100460	Fitting, 1/4NPT - 3/8 Tube	1
46	N00178	O-ring, #-011	7
47	N04268	Terminal Ring	1
48	N07354	Screw M4-0.7 x 10 mm	1
49	107881	Terminal Block, Ceramic	3
50	804373	End cover	1
51	804372	End cover	1
52	804477	Data Plate (with M4-7 x 8mm FHC Screw PN 106470)	1
53	804466	Insulator	2
54		**Solenoid & Accessories (see your order for part number)**	**2**
55	107881	Terminal Block	4
56	101833	10-32 x 12 Tamper Proof Screw	1
57	104852	M10 x 12 Cone Relief Screw	1
58	N04302	Washer	1
59	N04268	Terminal Ring	1

* See Ch.8.

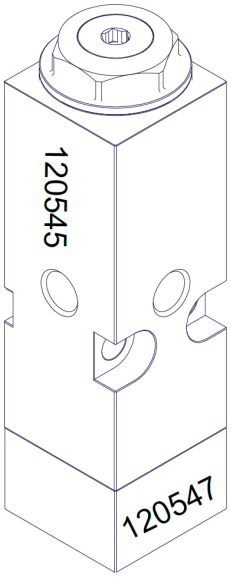


Component Illustration: 14 Port, Equity UFD Head PN 807324 (Vertical Nozzle shown)

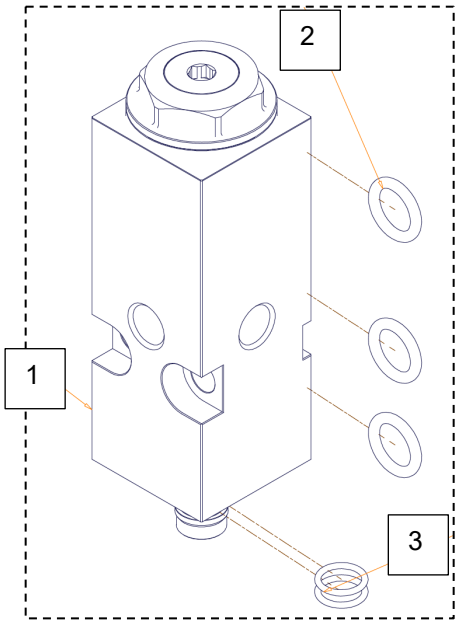
7.8 UFD Modules

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

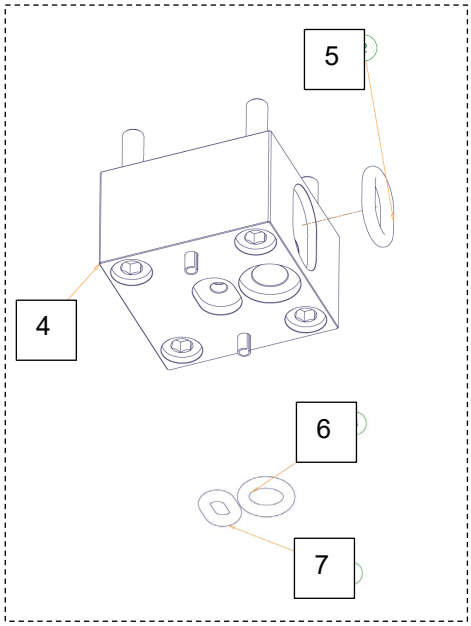
(The module consists of module PN 120545 and horizontal adapter PN 120547)
(Module Option H)



UFD Spray Module Assembly, MR13, Horizontal, PN 104993



Module PN 120545

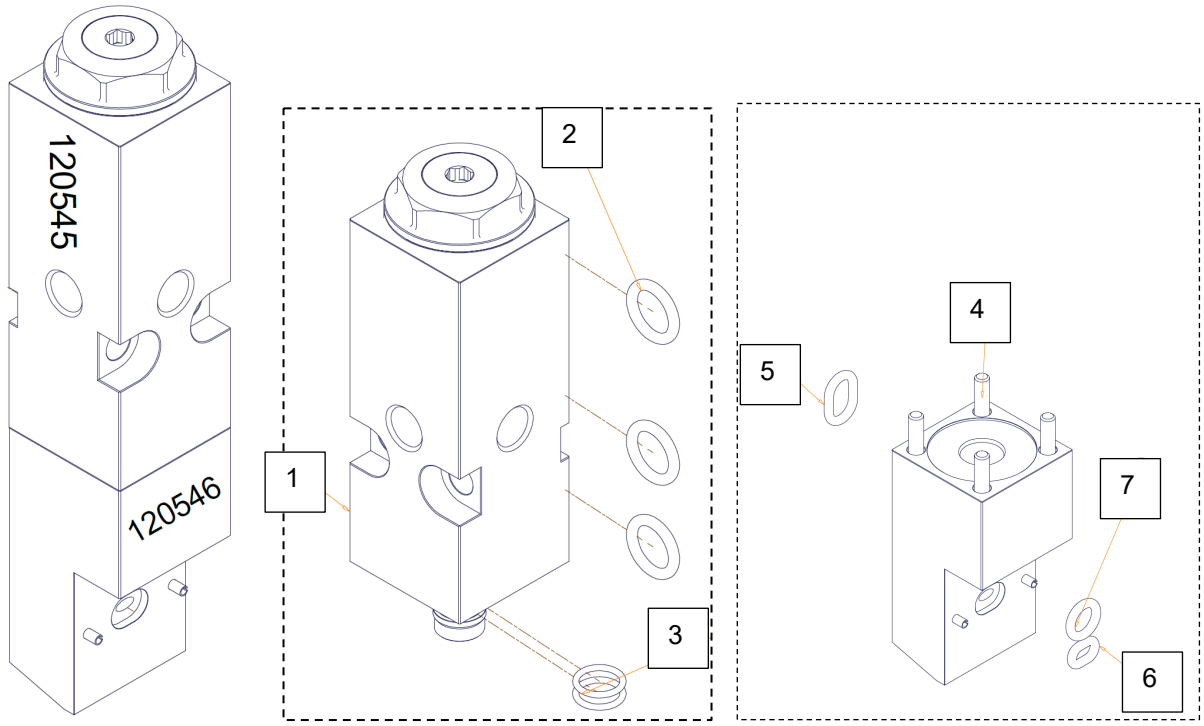


Horizontal Adapter PN 120547

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

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

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



UFD Spray Module Assembly, MR13, Vertical, 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

7.8.3 UFD Spray Module Assembly, Horizontal, High-Speed Snuff-Back, Back Air, PN 112444

(Module Option K)

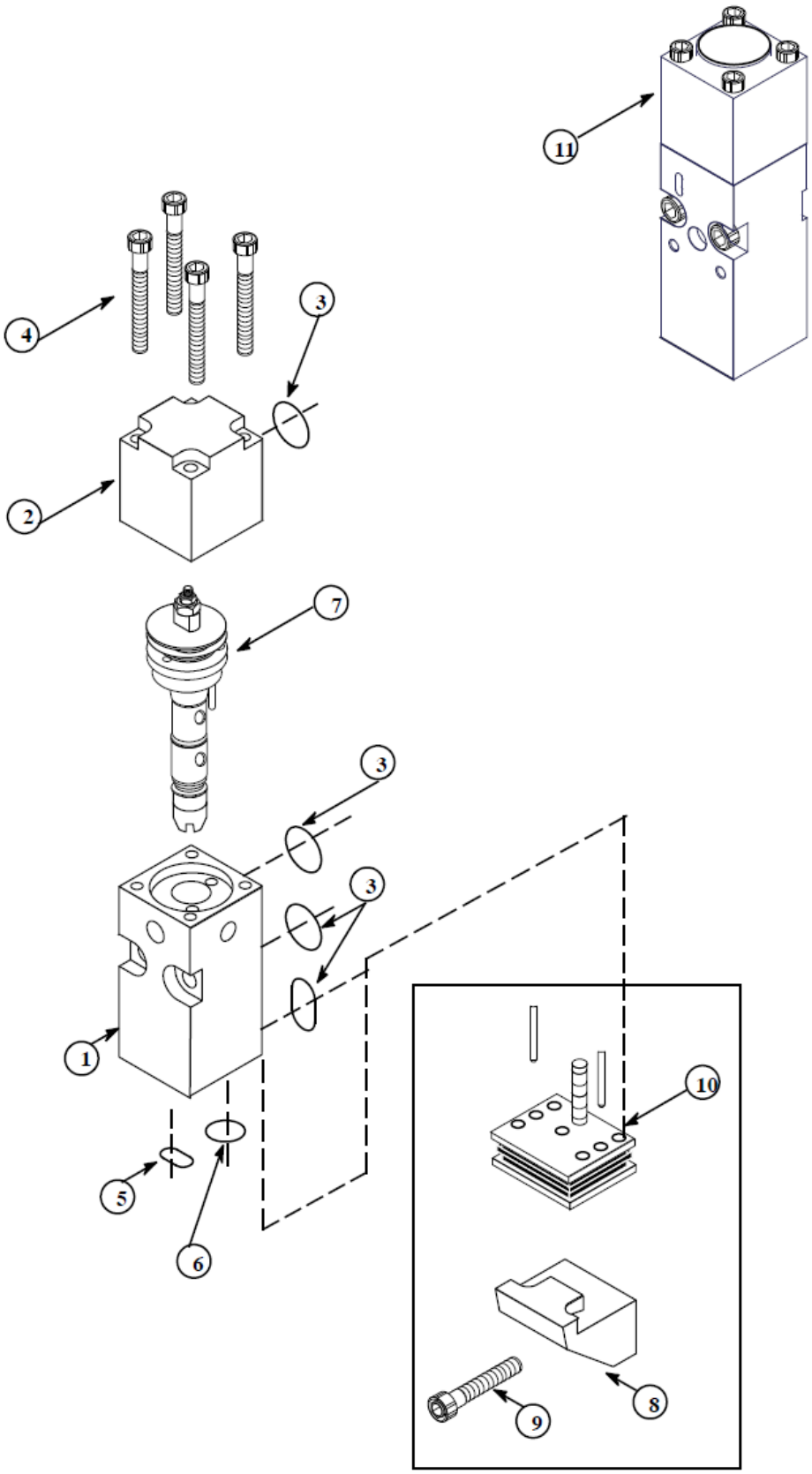


Illustration: UFD Spray Module Assembly, Horizontal, High-Speed Snuff-Back, Back Air, PN 112444

BOM: UFD Spray Module Assembly, Horizontal, High-Speed Snuff-Back, Back Air, PN 112444

Item No.	Part Number	Description	Qty.
1	110408	Module Body	1
2	110409	Air Cylinder	1
3	N00178 *	O-ring, #011	4
4	106951	Screw M3x35mm SHCS	4
5	N00174 *	O-ring, #007	1
6	N00176 *	O-ring, #009	1
7	*	Seal Cartridge Assembly	1
		Following parts are part of the head assembly shown here for reference:	
8	106471	Nozzle Insulator	1
9	106328	M4-0.7 x 16mm SHC Screw	1
10		Nozzle (see your order for part number)	1

* included in Module Repair Kit PN 114311.

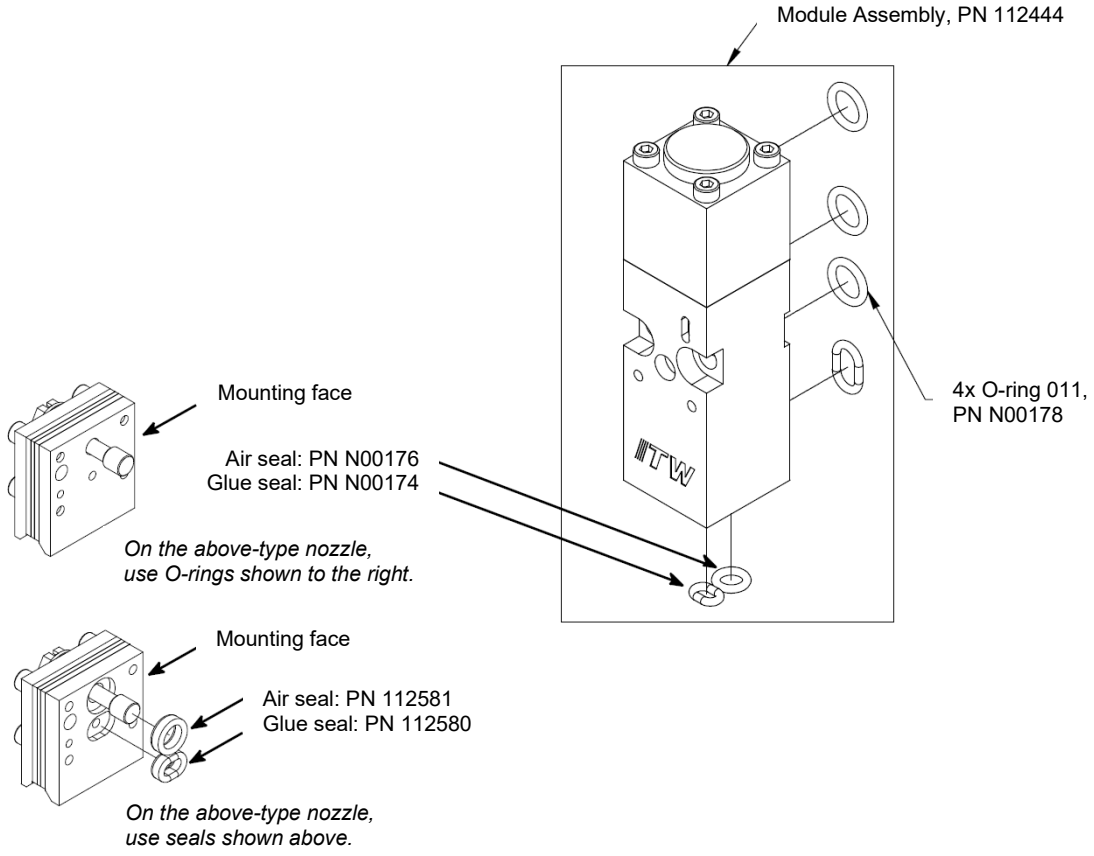


Illustration: UFD Spray Module Assembly, Horizontal, High-Speed Snuff-Back, PN 112444

7.8.4 UFD Spray Module Assembly, High-Temp, Vertical, PN 809723

Item No.	Part Number	Description	Qty.
1	057A358	Module body	1
2	057C084	Stem Assembly	1
3	-	-	-
4	8785	Compression Spring	1
5	809785	Air Cylinder	1
6	N07079	O-ring, #011, Kalrez	3
7	078A184	6-32 x 2 SHC Screw	2
8	N00795	6-32 x 1 SHC Screw	2
9	078A373	6-32 x 1 1/4 SHC Screw	4
10	078A384	10-32 x 3/4 SHS Screw	1
11	078D078	10-32 Sealing Hex Nut	1
12	069X222	O-ring, #113, Hi- Temp	1
13	104987	Seal of Vertical Adapter	1
14		Nozzle (see your order for part number)	1
	084B1457	**Seal Cartridge Assembly**	**1**
15	057E429	Seal Cartridge	1
16	057I260	Seal Cartridge Gasket	1
17	069X197	Stem Seal	2
18	069X198	Seal Backup	2
19	078C085	Washer, .25 x .16 x .04	2
20	078F034	Retaining Ring	2
21	078G028	Roll Pin	1
22	069X220	O-ring, #009, Hi- Temp	1
	811821	**Seat Adapter Assembly**	**1**
23	057B1478	Valve Seat	1
24	069X206	O-Ring, #109, Hi- Temp	1
25	N07079	O-Ring, #011, Hi- Temp	1
26	811820	Seat Adapter	1
27	802042	O-ring, #007, Kalrez	1
28	069X220	O-ring, #009, Kalrez	1
	811814	**Vertical Adapter Assembly**	**1**
29	802042	O-ring, #-007, Hi- Temp	1
30	069X220	O-ring, #-009, Hi- Temp	1
31	N07079	O-ring, #-011, Hi- Temp	1
32	078G028	1/16 Dia. x 3/8 Long Roll Pin	2
33	809724	Vertical Adapter	1

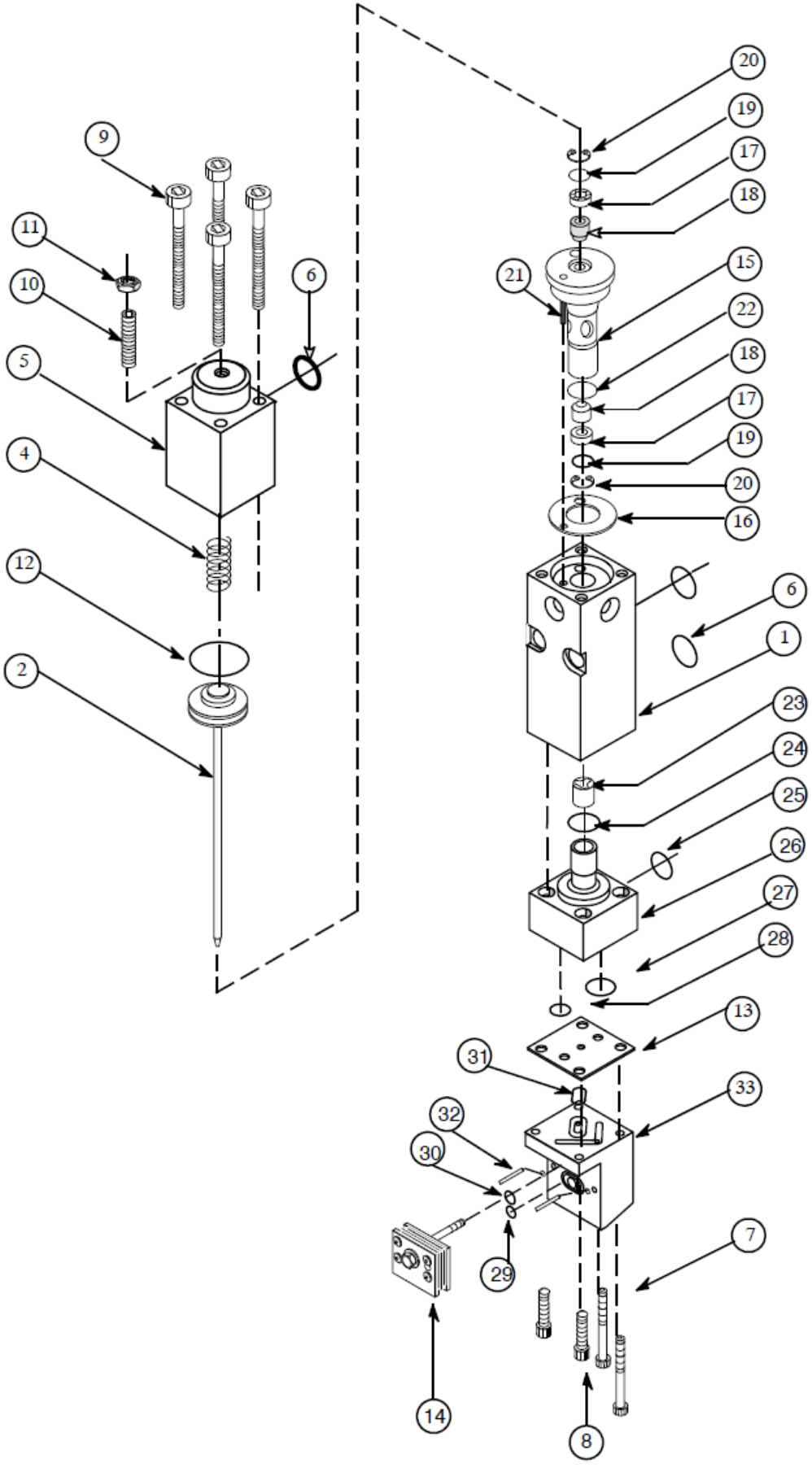
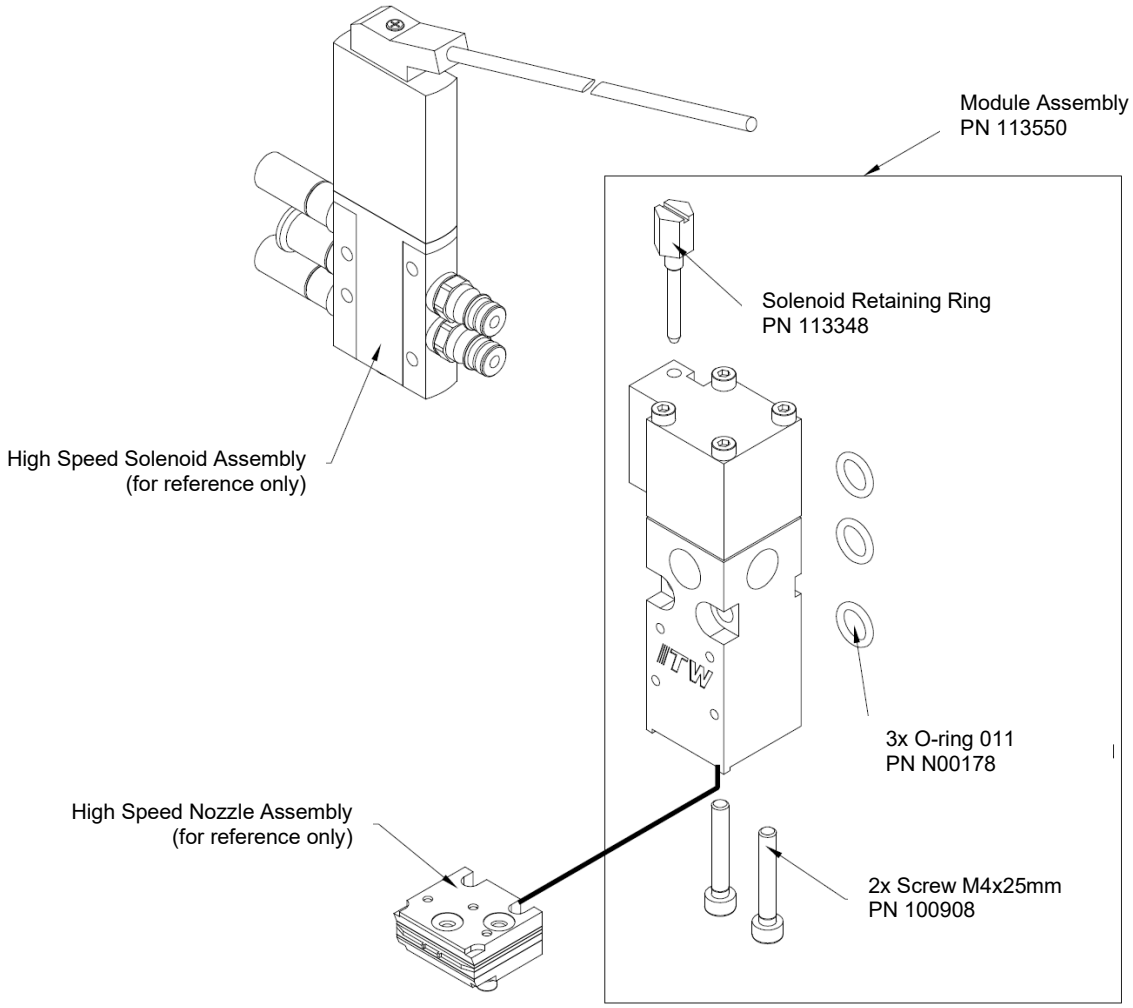


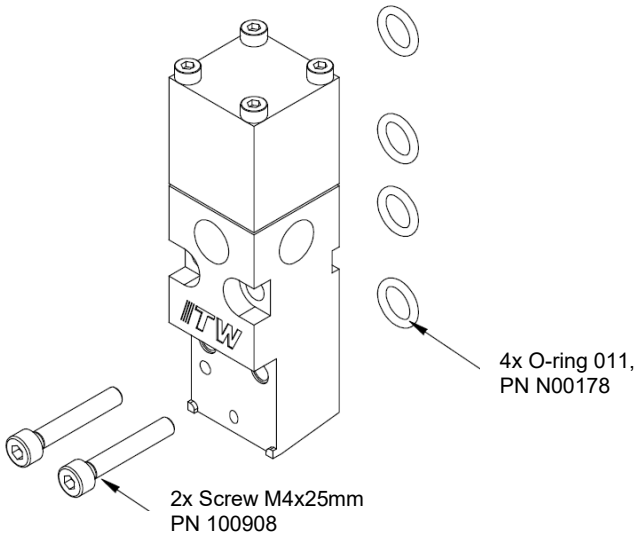
Illustration: UFD Spray Module Assembly, High-Temp, Vertical, PN 809723

7.8.5 UFD Spray Module Assembly, High Speed, Horizontal, PN 113550



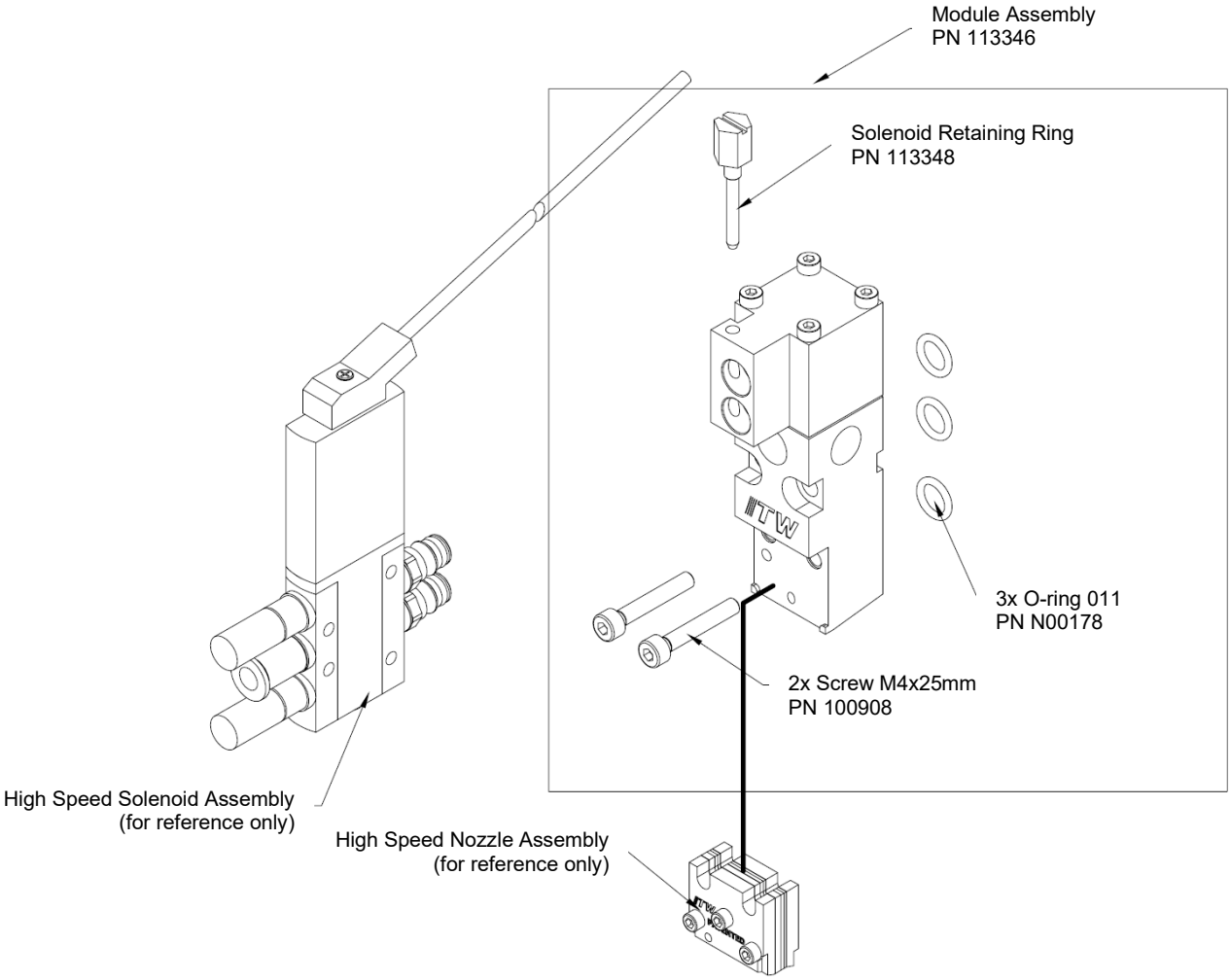
7.8.6 UFD Spray Module Assembly, High Speed, Vertical, PN 113778

(Module Option A)



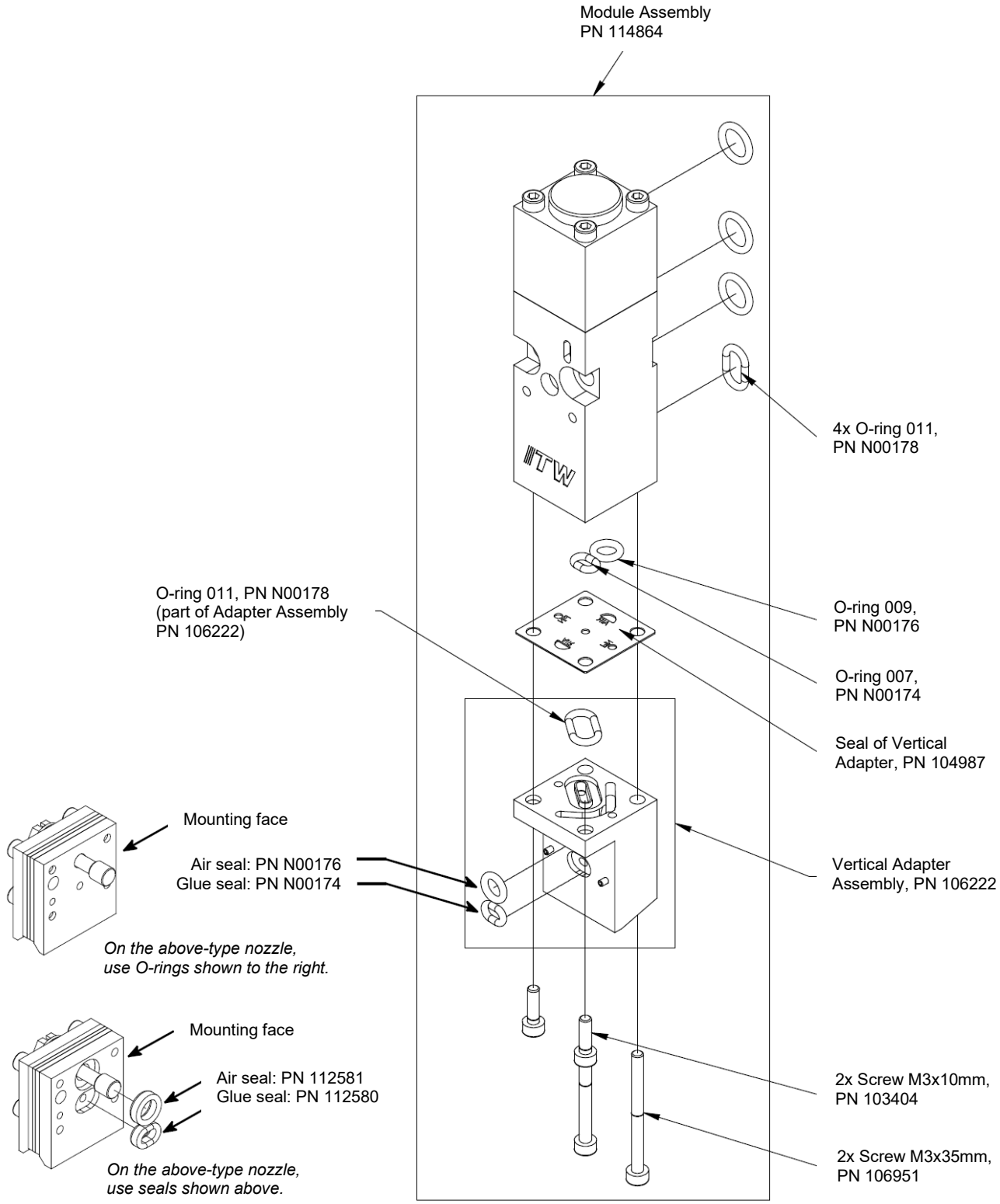
7.8.7 UFD Spray Module Assembly, High-Speed Snuff-Back, Vertical, PN 113346

(Module Option J)



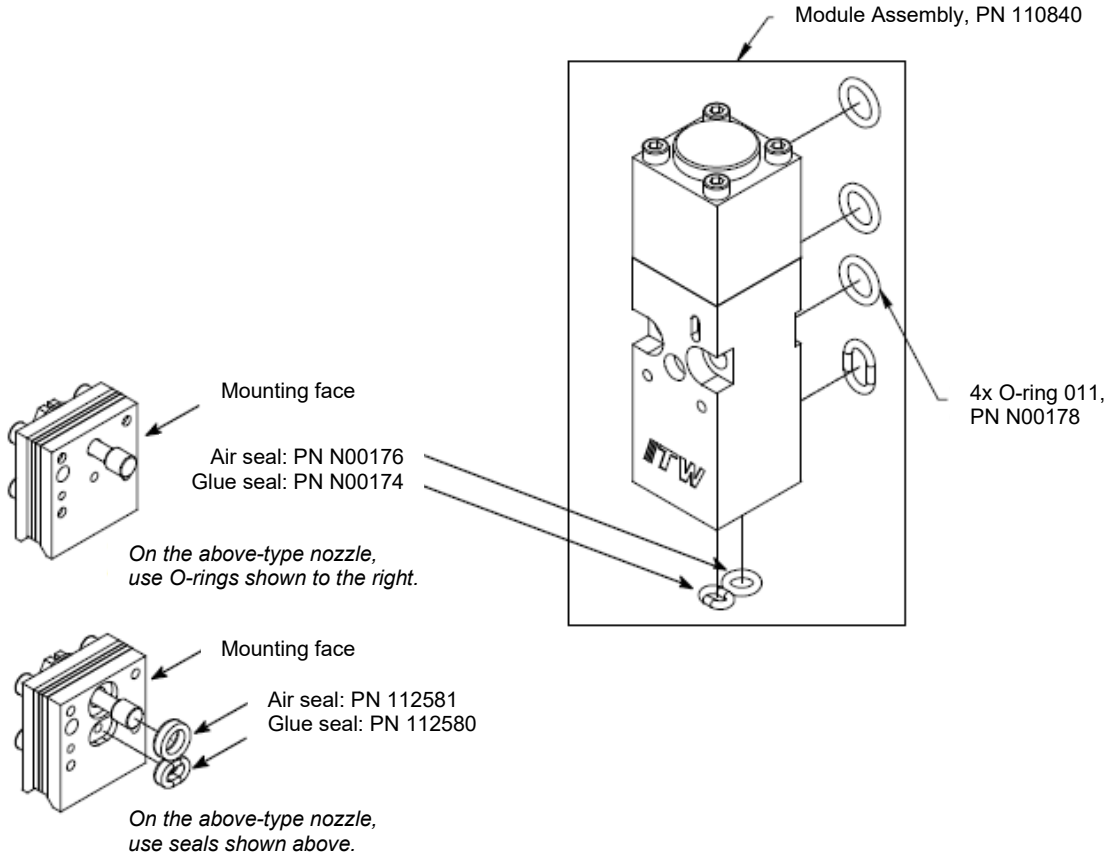
7.8.8 UFD Spray Module Assembly, High-Speed Snuff-Back, Vertical, PN 114864

(Module Option F)



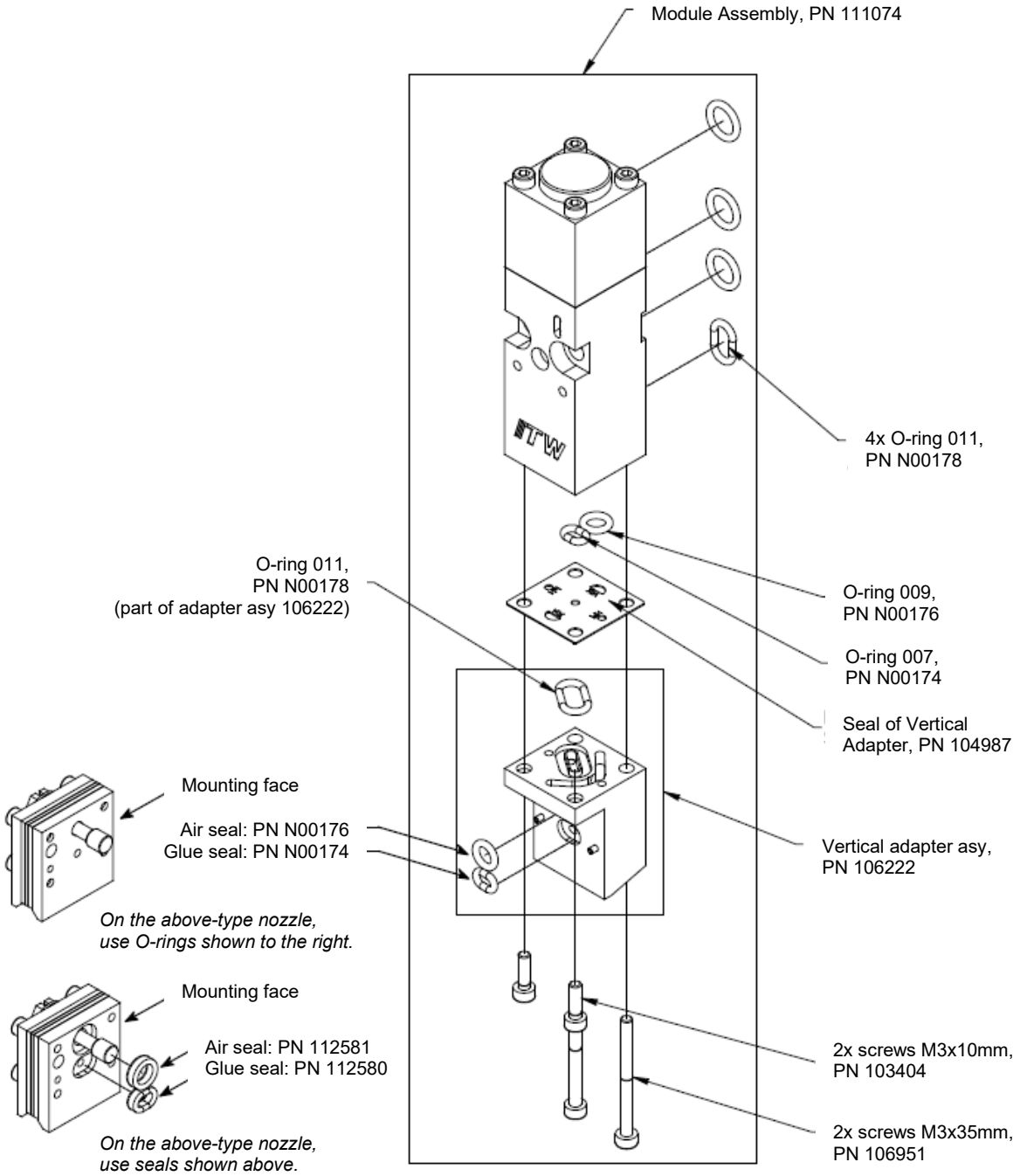
7.8.9 UFD Spray Module Assembly, Snuff-Back, Horizontal, PN 110840

(Module Option “C”)



7.8.10 UFD Spray Module Assembly, Snuff-Back, Vertical, PN 111074

(Module Option “D”)



7.9 Bead Module MR1300 Assembly, PN 120548

Item No.	Part Number	Description	Qty.
1	057A358	Module Body	1
2	057C084	Stem Assembly	1
3	not used	-	-
4	8785	Compression Spring	1
5	not used	-	-
6	057F139	Air Cylinder	1
7	N00178	O-ring, #011	3
8	078A314	6-32 x 1/2 BHSC Screw	4
9	078A373	6-32 x 1 1/4 SHC Screw	4
10	078A384	10-32 x 3/4 SHS Screw (SS)	1
11	078D078	10—32 Sealing Hex Nut	1
12	N00198	O-ring, #113	1
	105150	**MR1300 Module Rebuild Kit, consisting of:**	**1**
13	057E429	Seal Cartridge	1
14	057I260	Gasket, Seal Cartridge	1
15	069X197	Stem Seal	2
16	069X198	Seal Backup	2
17	078C085	Plain Washer, #4	2
18	078F034	Retaining Ring	2
19	078G028	Roll Pin	1
20	N00176	O-ring, #009	1
21	**118524**	**Bead Nozzle Adapter Assembly, consisting of:**	**1**
	057B1478	Valve Seat	1
	N05044	O-ring, #109	1
	118523	Nozzle Adapter	1

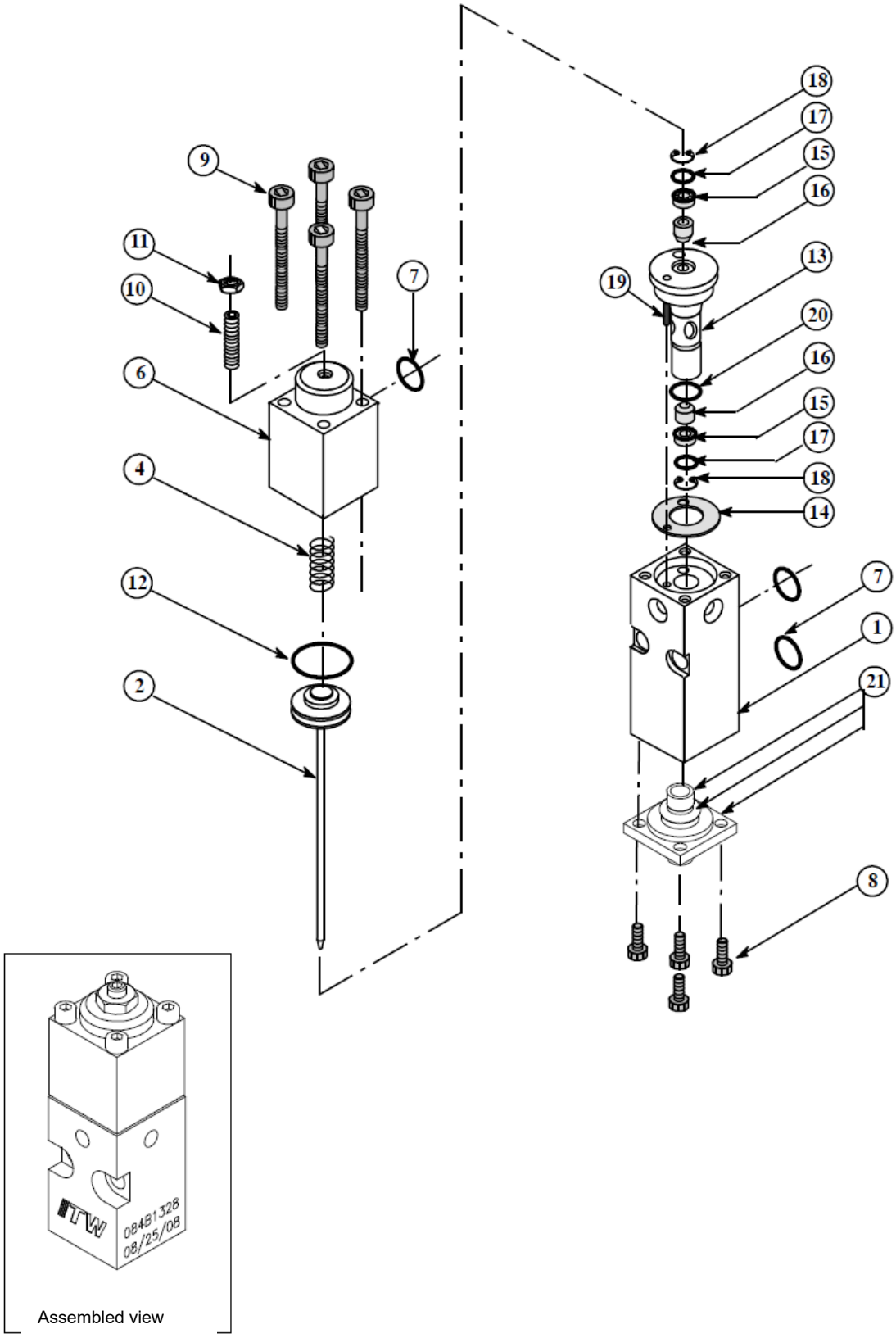
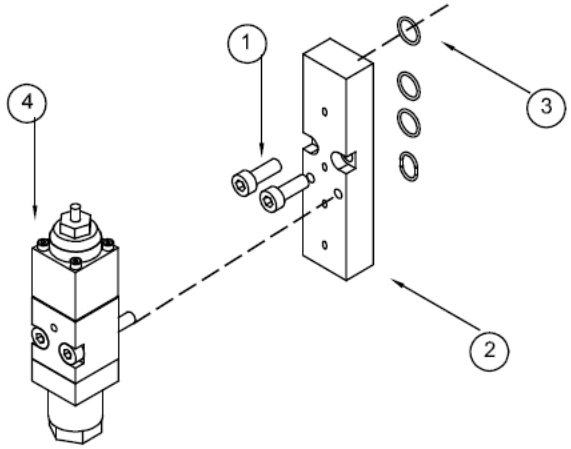


Illustration: Bead Module MR1300 Assembly, PN 120548

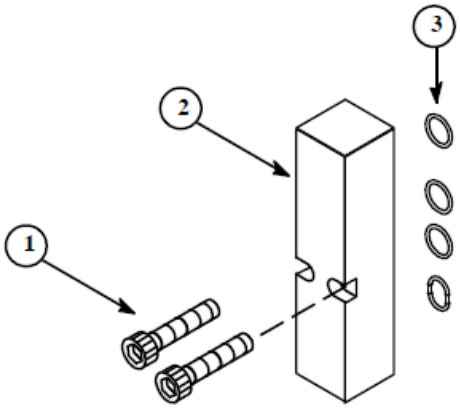
7.10 UFD Spray Adapter Kit, PN 107145

Item No.	Part Number	Description	Qty.
1	N07419	M5x20 mm screw	2
2	107079	UFD MK2 Spiral Spray Adapter	1
3	N00178	O-ring 011	4
4	Reference only	MR1300 Spray module - consists of MR1300 module PN 120545 and MR1300 swirl adapter PN 120550 (not part of this assembly)	1



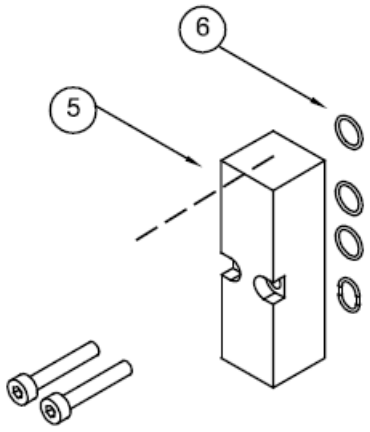
7.11 Blank MR1300 UFD Module Assembly (Block-Off), PN 106472

Item No.	Part Number	Description	Qty.
1	N00809	10-32 x 1.25 SHC Screw	2
2	106367	Blank Plate	1
3	N00178	O-ring 0-11	4

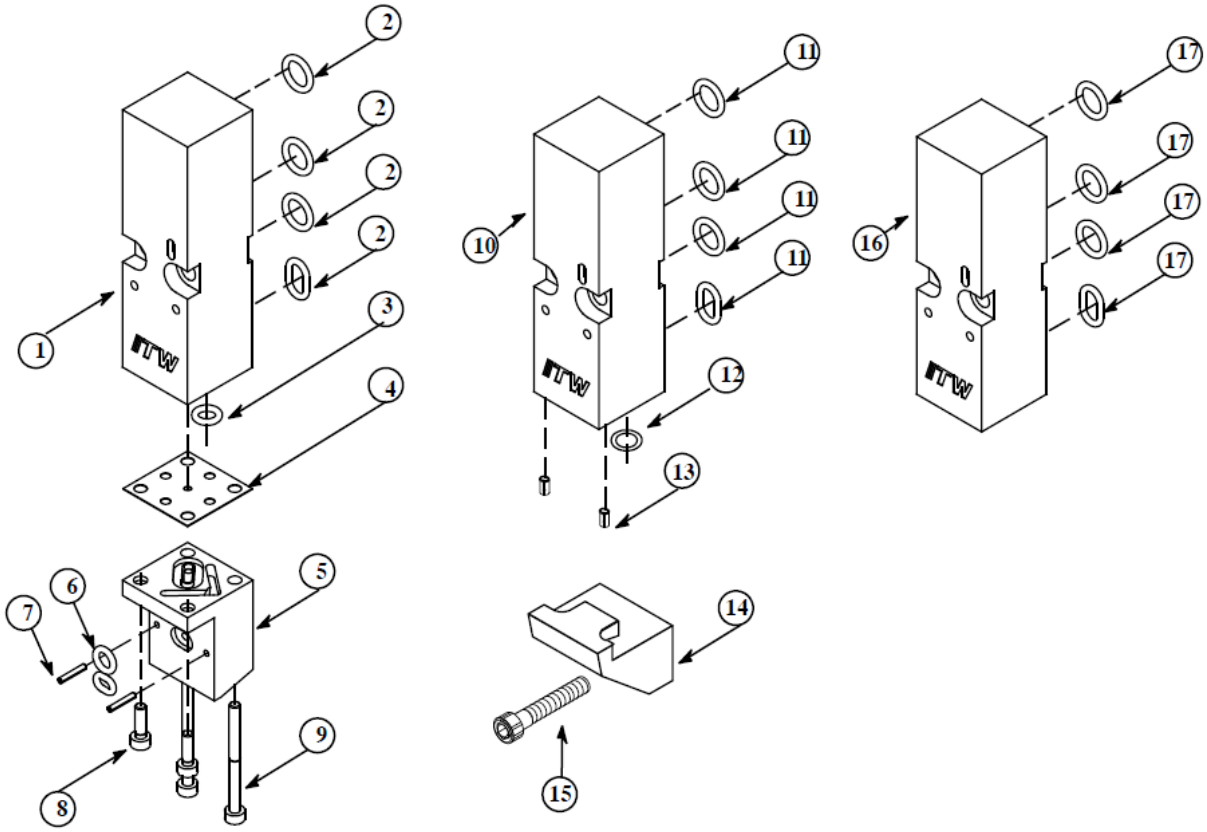


7.12 Module Block-Off Assembly, PN 805002

Item No.	Part Number	Description	Qty.
	805003	Block-Off Assembly	1
5	803570	Block-Off Plate	1
6	N00178	O-ring 011	4



7.13 Blank Module, Horizontal & Vertical



Blank Module, Vertical Air Only, PN 111053 (shown above left)

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	Seal of Vertical Adapter	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

Blank Module, Horizontal Air Only, PN 111052 (shown above center)

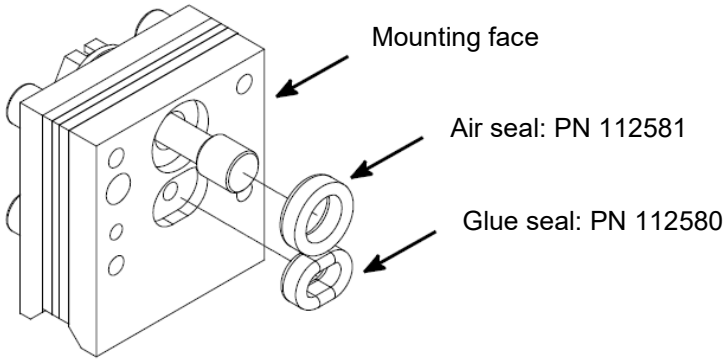
Item No.	Part Number	Description	Qty.
10	111051	Module Body, Air Only	1
11	N00178	O-ring, 011	4
12	N00176	O-ring, 009	2
13	078G028	Spring Pin, 1/16 x 3/8	1
		The following parts are part of the head assembly. They are shown here for reference:	
14	106471	Nozzle Insulator (1 per module)	
15	106328	M4-0.7 x 16mm SHC Screw (1 per module)	

Blank Module, High-Temp, PN 810798 (shown above right)

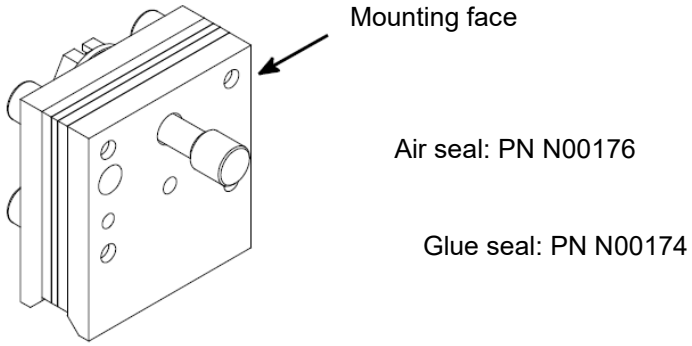
Item No.	Part Number	Description	Qty.
16	810799	Module body	1
17	N07079	O-ring, Hi Temp., 011	4

7.14 UFD Nozzle Seals

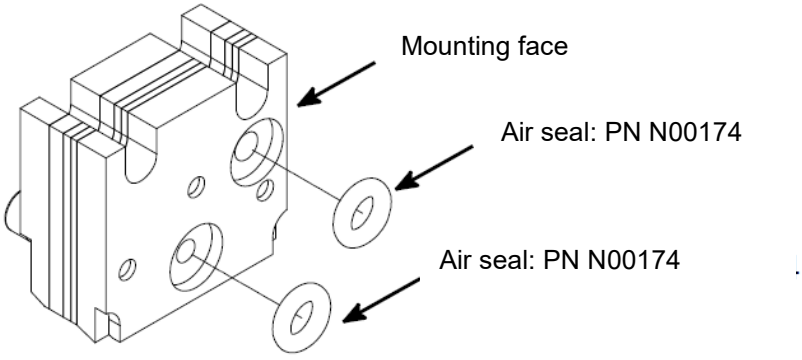
Standard Nozzle (with seal grooves on mounting face)



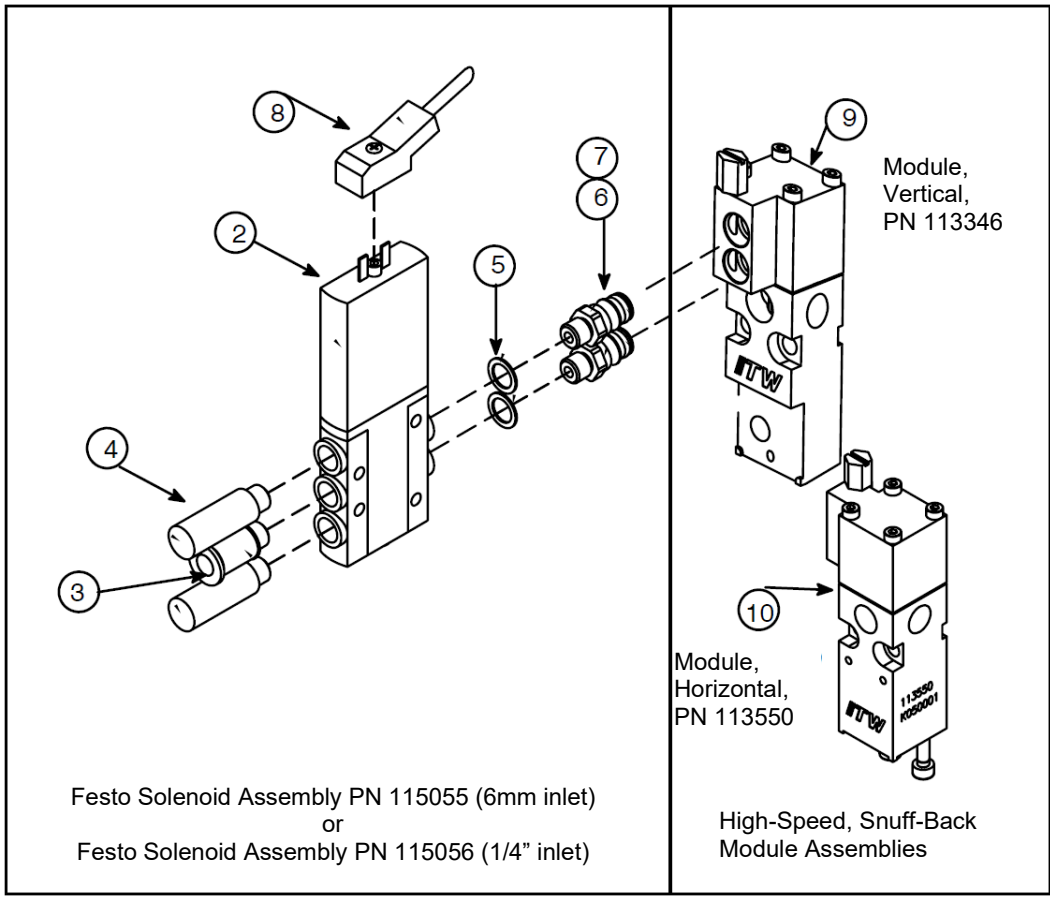
Standard Nozzle (with no seal grooves on mounting face)
The seals for this nozzle are supplied with and installed on the module.



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



7.15 Festo Solenoid Assemblies, PN 115055 & 115056



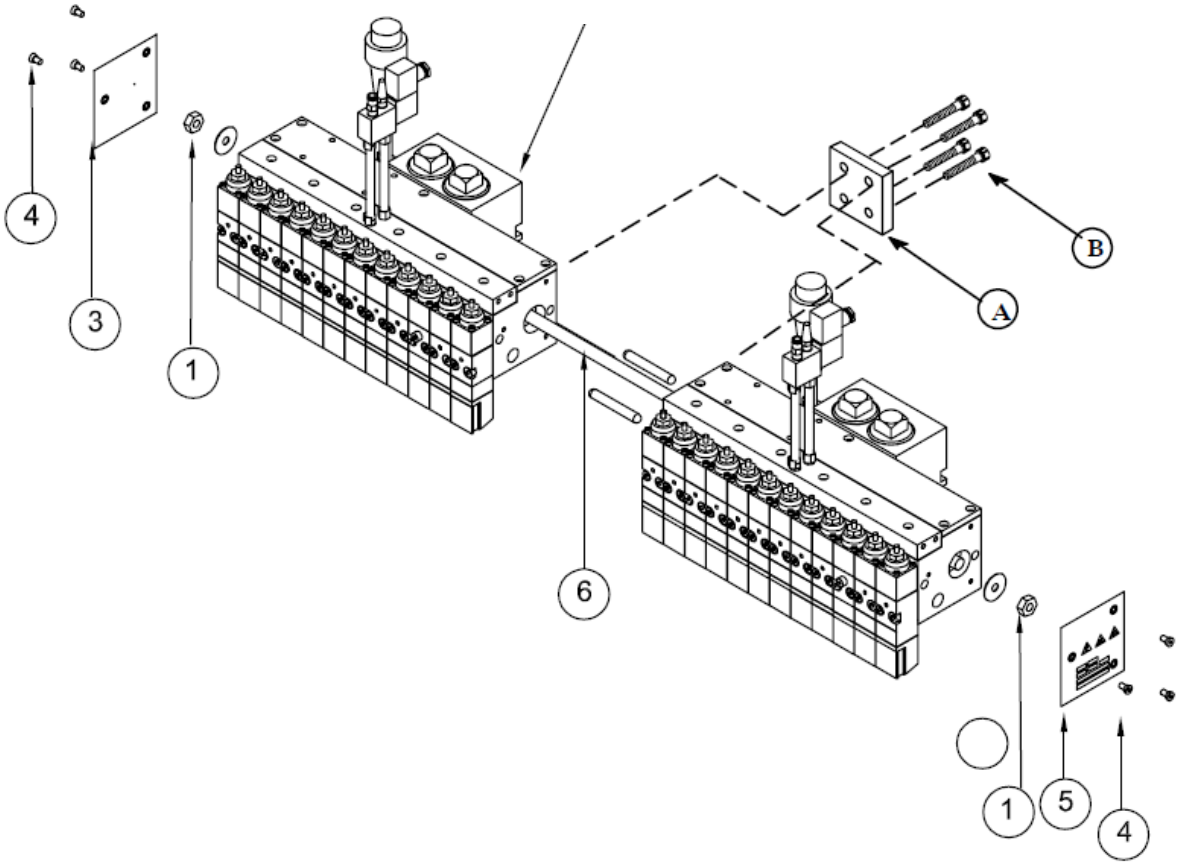
Item No.	Part Number	Description	Qty.
1	**115055**	**Solenoid Assembly, Festo MH, QC Module, 6mm Inlet**	
	115056	**Solenoid Assembly, Festo MH, QC Module, 1/4" Inlet**	
2	113350	Valve Solenoid, 4 Way, 24V, Festo	1
3	113362	Push-in Fitting, M7 x 6mm Tube OD (used on PN 115055 only)	1
	113363	Push-in 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
	The above solenoid assemblies can be used with either of the two module assemblies shown (above right) for reference:		
9	113346	Module, HS SB, Vertical ("J" Option)	
10	113550	Module, HS SB, Horizontal ("M" Option)	

*** Available Control Cables:**

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

7.16 Joining Kit, PN 804375

Note: Applicators may vary. These are shown for location only.



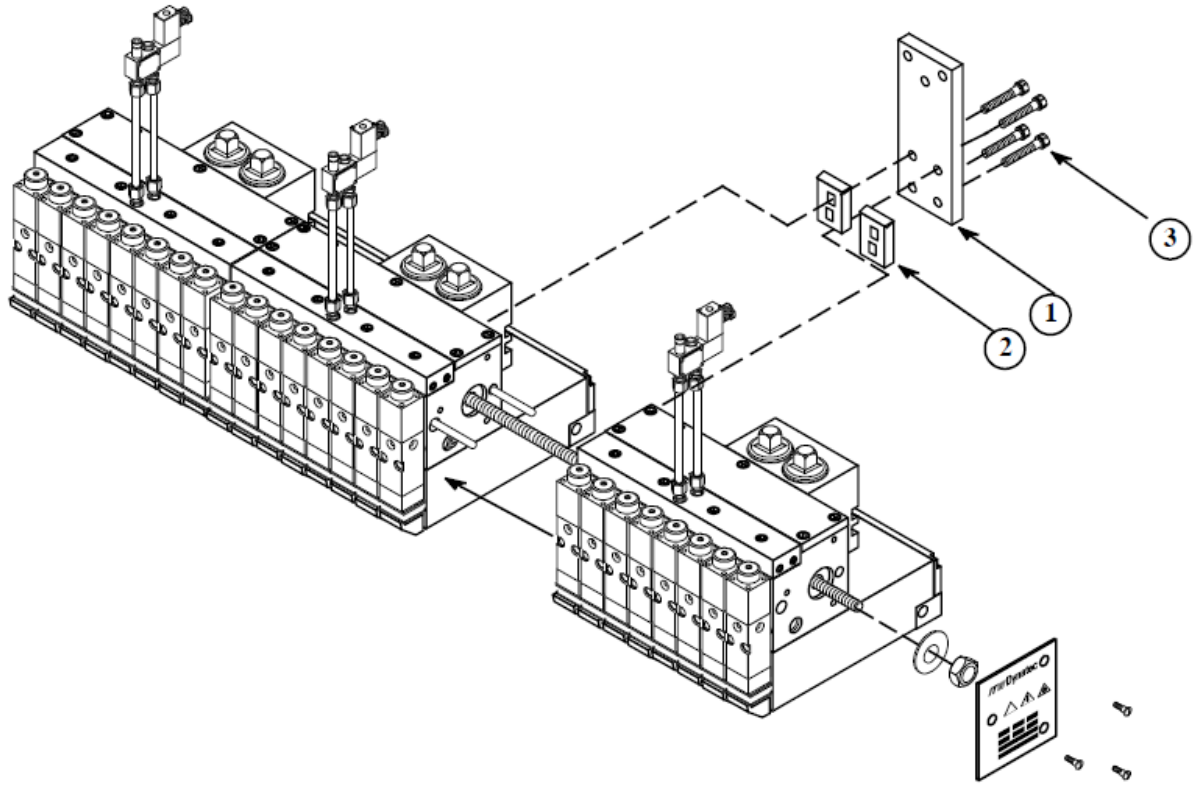
Item No.	Part Number	Description	Qty.
1	104158	Nut M10x1mm	2
2	-	-	-
3	804373	Side cover lh	1
4	105117	M4x8mm Pan head screw	6
5	804372	Date plate rh	1
6	804377	All thread rod (length varies per application)	1

7.17 Equity Joining and Mounting Kit, PN 808385

Item No.	Part Number	Description	Qty.
A	804521	Bracket, join and mounting, Equity	1
B	107345	M8-1.25x25mm SHC screw	4

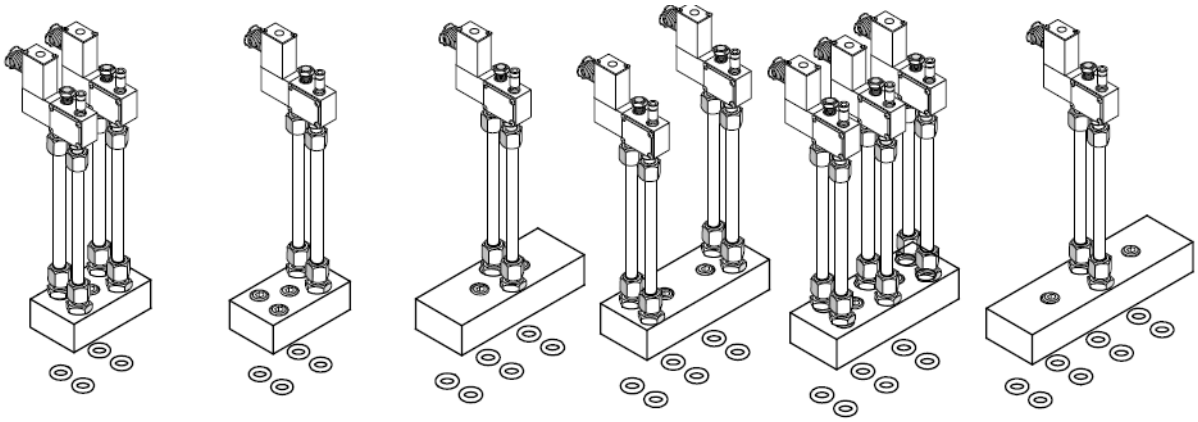
7.18 Equity Joining and Mounting Kit, PN 808911

Item No.	Part Number	Description	Qty.
1	808912	Bracket, Join and Mounting, Equity	1
2	804466	Insulator Spacer (shown for reference, included with head)	2
3	N07429	M8-1.25 x 30mm SHC Screw	4

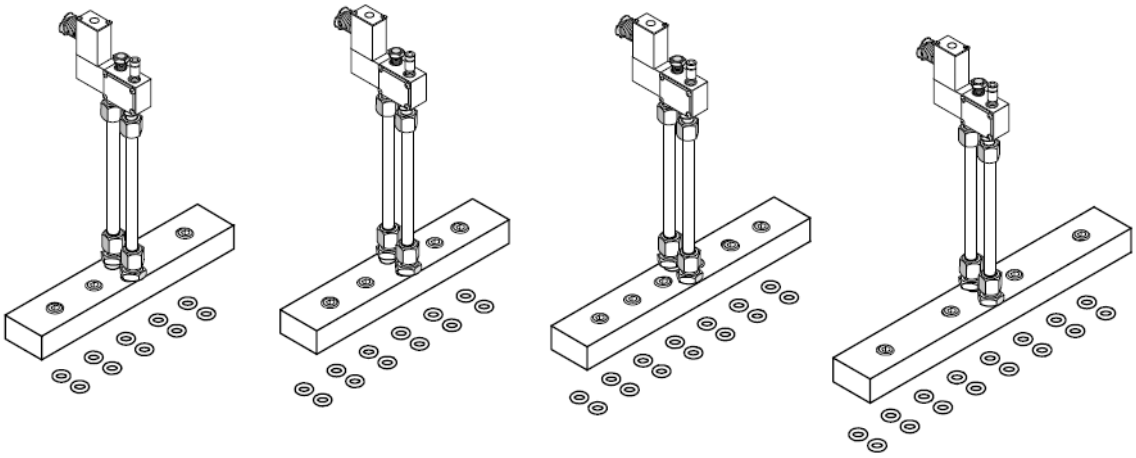


7.19 Air Manifold Configurators

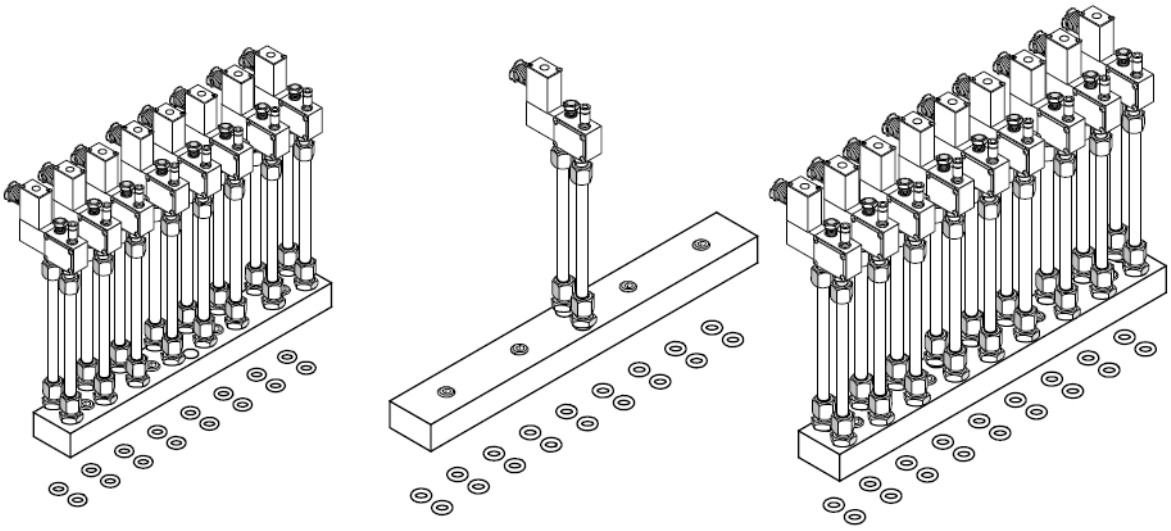
NOTE: The solenoid valves are not included in the air manifold assemblies!



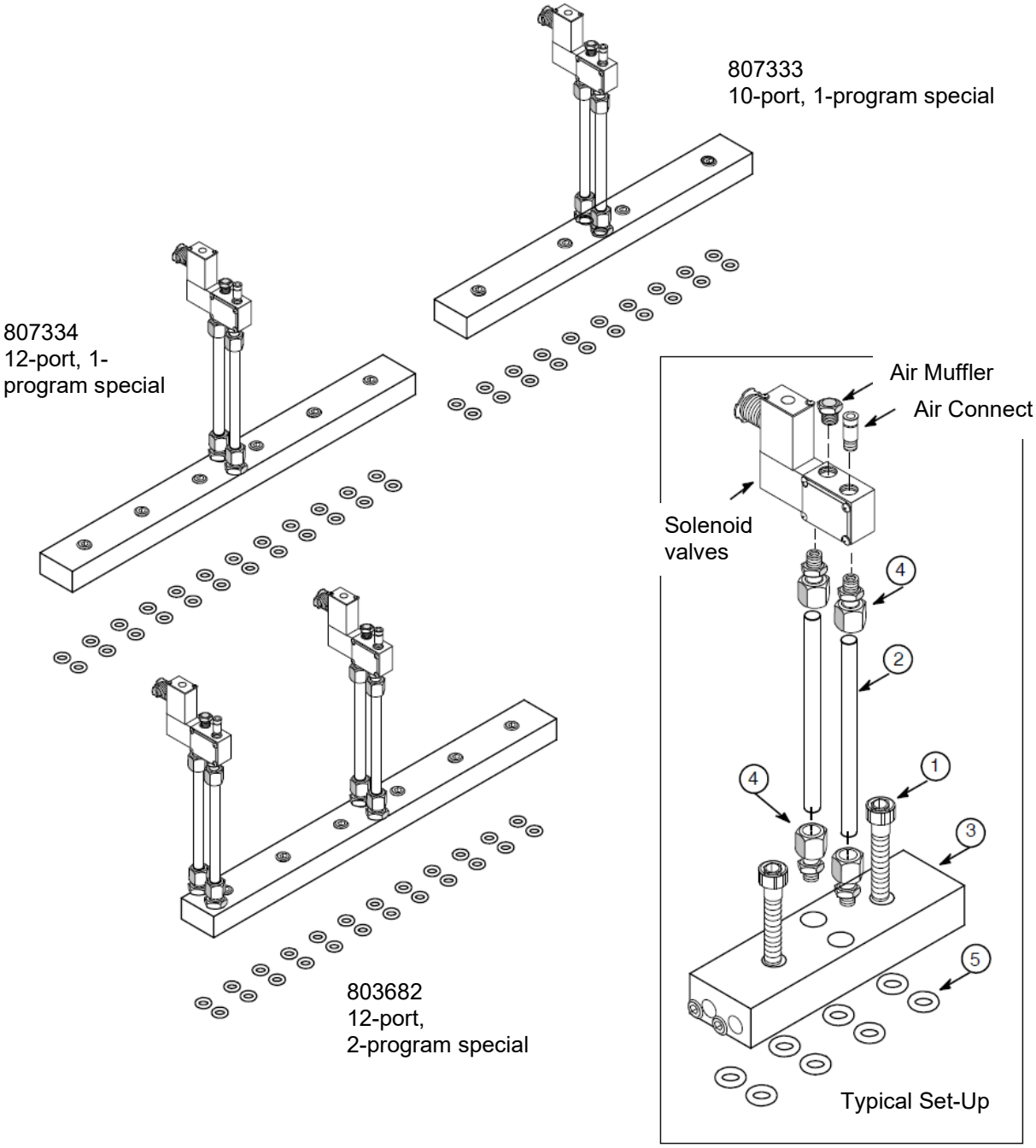
804522 2-port, 2-program	807316 2-port, 1-program	808183 3-port, 1-program	813680 3-port, 2-program	806318 3-port, 3-program	804525 4-port, 1-program



809414 5-port, 1-program	807318 6-port, 1-program	807330 7-port, 1-program	807331 8-port, 1-program



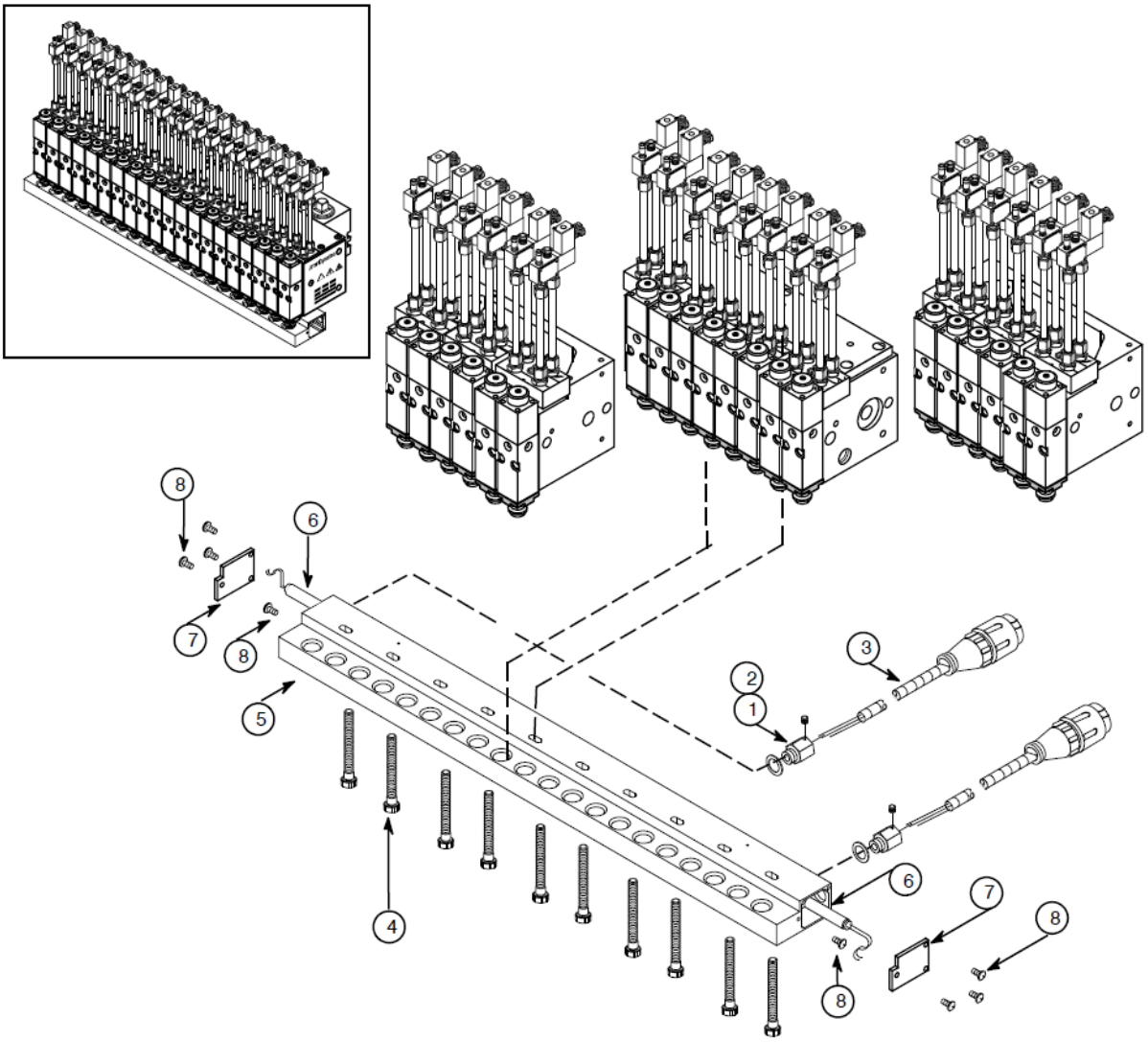
808767 8-port, 8-program	807332 9-port, 1-program	807319 9-port, 9-program



Item No.	Part Number	Description	Qty.
1	106071	M4 x 25mm SHC Screw	*
2	106333	1/4 x .065w x 3.5 Stainless Steel Tube	*
3	See configuration	Air Manifold	*
4	N00093	1/4 tube x 1/8 NPT Connector Fitting	*
5	N00175	O-ring, -008	*

* Quantities vary per configuration.

7.20 Nozzle Bar Assembly PN 811734 (Special)



Item No.	Part Number	Description	Qty.
1	048J049	Fitting,1/4” Conduit, 9/16- 18	2
2	078C137	Washer, 9/16	2
3	101610	Cable Assembly, 240V DCL	2
4	107531	M4-0.7 x 20mm SHC Screw	1
5	811722	Nozzle Bar, 20 Port	1
6	811736	Heater, 3/8 x 9.5”, 240V, 400W	2
7	811738	Cover Plate	2
8	N02354	6-32 x .38 BHDHD Screw	8

Note: Nozzle Bar Assemblies are used with MR1330 Slot Die Modules as they are supplied with O-rings where they couple with the nozzle bar.

This model is shown with a configuration of 6-port, 8-port, 6-port.

7.21 Typical High-Speed SB Equity Service Block Assembly PN 813679

(part of 813664 8-port Equity Head Assembly)

Item No.	Part Number	Description	Qty.
1	804038	Service Block	1
2	101625	1/4 BSPP Plug	2
3	813662	Filter Manifold	1
4	101833	10-32 x 1/2 Tamper Proof Screw	1
5	104852	Drain Plug	1
6	102602	M6-1x 60mm SHC Screw	4
7	106273	Filter, 150 mesh	2
8	N03812	O-ring, -125	2
9	106303	Filter Plug	2
10	N01010	O-ring, 021	1
11	803984	Fitting, #6 JIC Male x 1/2 BSPP	1
12	804493	Terminal Block	2
13	803087	M4-0.7 x 16mm SHC Screw	4
14	803960	Heater, 10 x 40mm, 240V, 200W	4
15	N04302	External Tooth Washer, #10	1
16	N04268	Terminal Ring	1
17	N07354	Screw M4-0.7 x 10 mm	1
18	104228	Wire Ferrule	10
19	103467	Cable Assembly, 240V, DCL	1
20	103470	M3-0.5 x 6mm SHSS	1
21	804042	Wire Cover Plate	1
22	102446	M4-0.7 x 10mm SHC Screw	5
23	804477	Data Plate	1
24	105117	M4-0.7 x 8mm Pan Head Screw	10
25	804043	Solenoid Manifold	1
26	N00753	1/8 NPT Level Seal Plug	2
27	N00175	O-ring, -008	16
28	107531	M4-0.7 x 20mm SHC Screw	4
29	804354	M5-0.8 x 30mm SHC Screw	16
30	804372	End Plate, Right Hand	1
31	804373	End Plate, Left Hand	1
32	804466	Mounting Insulator	2
33	001U002	Lube, Dow 112 (not shown)	

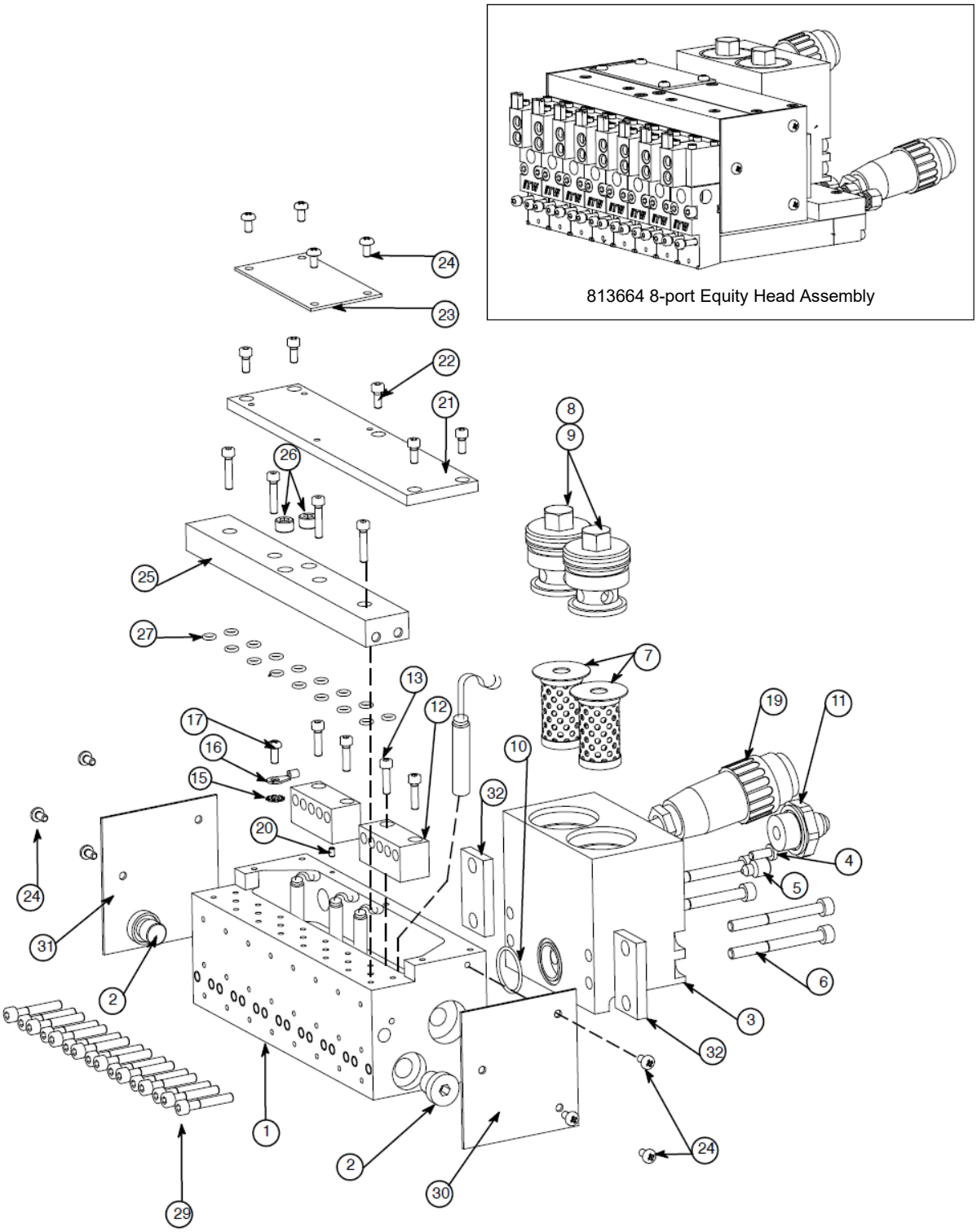


Illustration: Typical High-Speed SB Equity Service Block Assembly PN 813679 (part of 813664 Equity Assy.)

7.22 Typical High-Speed SB Equity Air Pre-Heater Assembly PN 813663

(part of 813664 8-port Equity Head Assembly)

Item No.	Part Number	Description	Qty.
1	813659	Air Heater Body	1
2	112714	Spiral Heater Tube	8
3	N00181	O-ring, -014	8
4	813660	Wire Cover	1
5	N00175	O-ring, -008	8
6	106328	M4-0.7 x 16mm SHC Screw	6
7	813661	Manifold, Air Inlet, Indv Air	1
8	101692	M4-0.7 x 35mm SHC Screw	4
9	103467	Cable Assembly, 240V, DCL	1
10	103470	M3-0.5 x 6mm SHS Screw	1
11	N00093	Fitting, Compression, 1/8 NPT x 1/4 Tube	8
12	100908	M4-0.7 x 25mm SHC Screw	8
13	803579	Spacer	8
14	106329	Heater, 10 x 60mm, 240V, 200 W	8
15	N01756	Terminal, PRII, 16-14GA	4
16	048J271	Heat Shrink PTFE, .15ID	.2’
17	078C088	Washer, #4, Internal Tooth	2
18	101627	M3-05.5 x 6mm Pan Head Screw	2
19	N07430	Terminal Ring	1
20	048G016	Terminal Ring	1
21	001U002	Lube Dow (not shown)	
22	042X016	Wire, Red, 18 GA, 260C	
23	042X233	Wire, Org, 18 Ga, 260C	

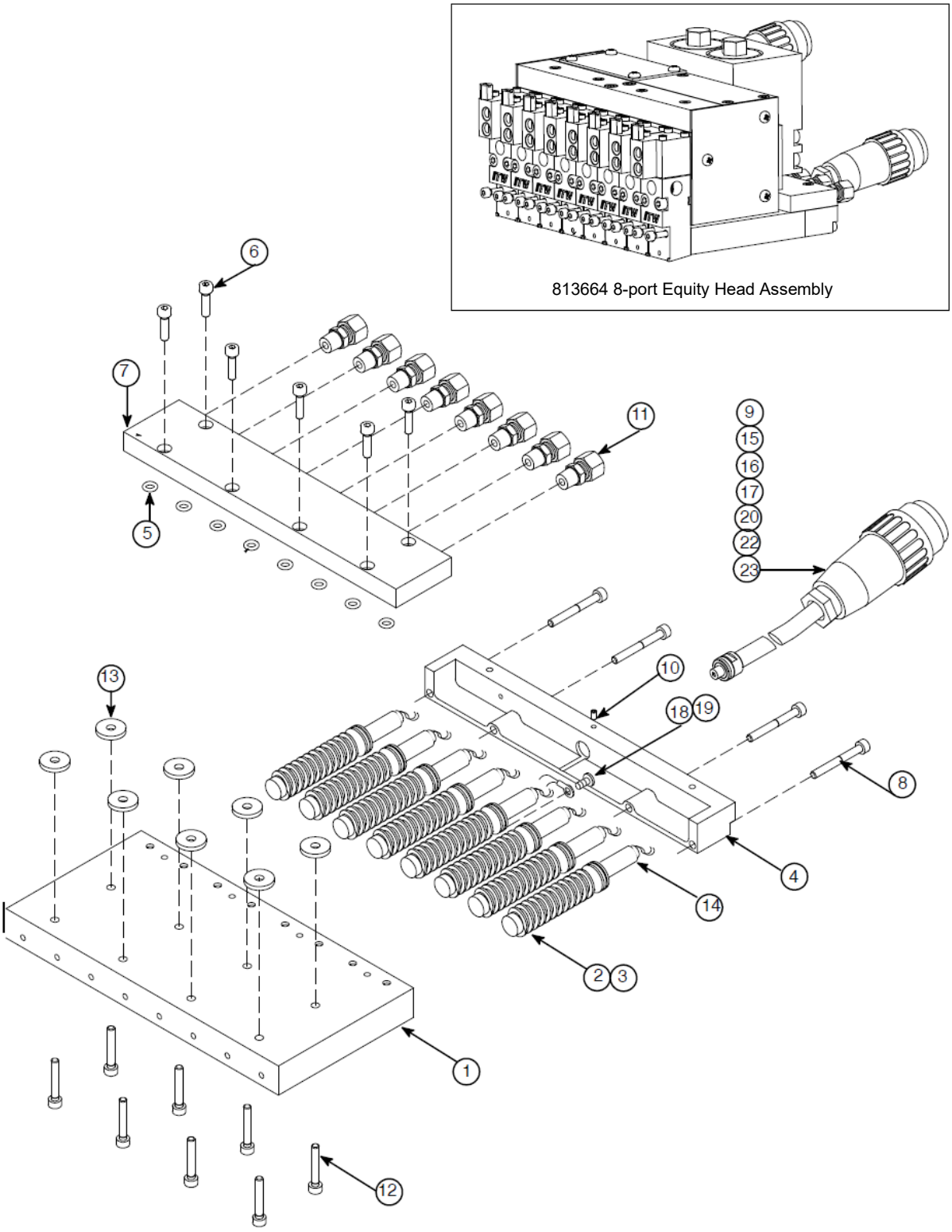


Illustration: Typical High-Speed SB Equity Air Pre-Heater Assembly PN 813663 (part of PN 813664)

Chapter 8
Ordering Guides

8.1 Heater Cartridges

Note: Spiral Spray Applicators use the same heaters as listed below.

Applicator	Heater Part No. / Description	Location	Quantity Heaters	
			Serv. Block	Air Preheater
6-port segment 8-port segment 9-port segment 10-port segment	PN 803960 = 10x40mm, 200W PN 803905 = 10x100mm, 220W	Service block Air preheater	4	6
			4	8
			4	9
			6	10
12-port segment 12-port segment	PN 803960 = 10x40mm, 200W PN 802989 = 10x100mm, 200W	Service block Air preheater	6	-
			-	12
14-port segment 14-port segment	PN 803960 = 10x40mm, 200W PN 803905 = 10x100mm, 220W	Service block Air preheater	8	-
			-	14

8.2 RTD Sensors

Note: Spiral Spray Applicators use the same sensors as listed below.

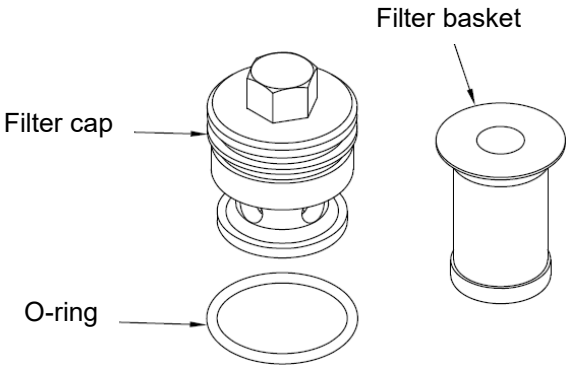
Controller	Part No.	Description	Location	Qty.
DynaControl/ PLC	N06703	PT100	Service block	1
DynaControl/ PLC	803386	PT100	Air preheater	1
Upgrade (Ni RTD)	N07864	Ni 120	Service block	1
Upgrade (Ni RTD)	N07864	Ni 120	Air preheater	1

8.3 Filter Kits

To simplify ordering, Filter Kits are available.

1. Option = Filter Kits with filter basket:

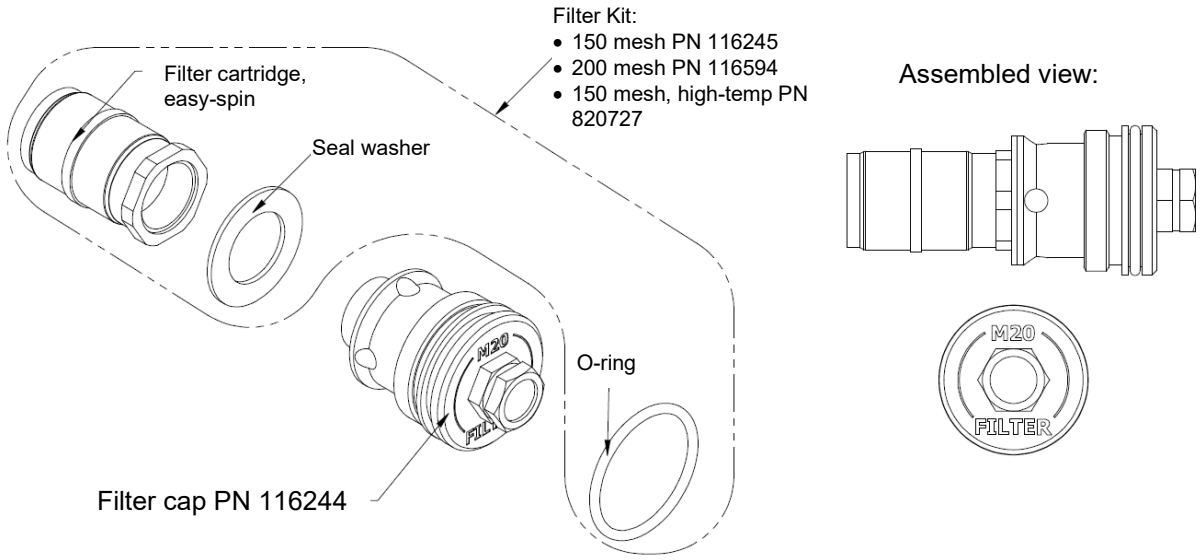
Filter Kit Part Number	O-ring Part Number	Filter Cap Part Number	Filter basket Part Number
-	N03812 O-ring 125	106303	102693 80 mesh
114291	N03812 O-ring 125	106303	101247 100 mesh
114292	N03812 O-ring 125	106303	106273 150 mesh
-	N03812 O-ring 125	106303	109482 200 mesh



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

Filter Kit PN	O-ring PN	Filter Cap PN	Seal washer PN	Filter cartridge, easy-spin PN
116246*	N03812 O-ring 125	116244	116243	116242 150 mesh, Spin-on M20
116245	N03812 O-ring 125	-	116243	116242 150 mesh, Spin-on M20
116595	N03812 O-ring 125	116244	116243	116593 200 mesh, Spin-on M20
116594	N03812 O-ring 125	-	116243	116593 200 mesh, Spin-on M20
820727	806859 O-ring 125 parafluor (high-temp)	-	116243	116242 150 mesh, Spin-on M20

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



8.4 Repair Kits

- **UFD Module MR1300 Repair Kit PN 105150** (for module PN 120548)
- **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.
Note: To determine the production code of a module (this is only necessary when ordering a Snuff-Back Module Renew Kit), look at the side of the module, near its bottom.

8.5 Spray or Bead Nozzle Cleaning Kits

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

- PN 101877 Nozzle Cleaning Kit, 0.010 to 0.017 inch orifice (0.25 to 0.43 mm)
- PN 101878 Nozzle Cleaning Kit, .0018 to 0.040 inch orifice (0.46 bis 1.02 mm)

8.6 High-Temp Heater cartridge Splice Kit, PN 102645

This kit consists of a foot (ca. 30 cm) 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 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 (Temperature sensor PT100)	103773	10 ft (305 cm)	103776	25 ft (762 cm)
	103774	15 ft (457 cm)	105123	30 ft (914 cm)
	103775	20 ft (610 cm)	105147	40 ft (1219 cm)
Upgrade (Temperature sensor Ni 120)	102706	10 ft (305 cm)	105834	40 ft (1219 cm)
	106349	25 ft (762 cm)		

8.8 Cable Assemblies

Controller	Cable Part Number	Control Designation	Cable Location
DCL/ PLC (Temperature sensor PT100)	112134	D	Service block
	112135	D	Air heater
Upgrade (Temperature sensor Ni 120)	804719	N	Service block & Air heater

8.9 Joining Kit, PN 804375

In order to connect two or more Equity UFD applicator segments together into one longer applicator, a Joining Kit is necessary. See the kit's exploded-view diagram in Chapter 6 for a complete bill of materials. When ordering a Joining Kit, you must specify the length of the all-thread rod needed to span the segments you are joining.

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

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.

8.11 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.
- *Nozzles:* approximately 10% of number of modules on applicator.

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

Part Number	Description	Qty. per Applicator
105150	UFD Module Rebuild Kit (for module PN120548)	As required
114311	UFD HS Snuff-Back Module Repair Kit (for modules PN 112444, 114864, 114346, 113550)	As required
*	Heaters	As required
*	RTD Sensor, Service Block	As required
*	RTD Sensor, Preheater	As required
*	Filter Basket	As required
*	Nozzles	As required
*	Solenoid Valve	As required
102645	High-Temp Splice Kit	1
803979	Spiral Tube	1
106303	Filter Cap	1
N00179	O-ring #12	4
N03812	O-ring #125	4
N01010	O-ring #021	2
N00175	O-ring #008	2 per module
N00178	O-ring #011	1 per module
107430	O-ring #016, Silicone	1 per module
001V061	Thermal Paste	1

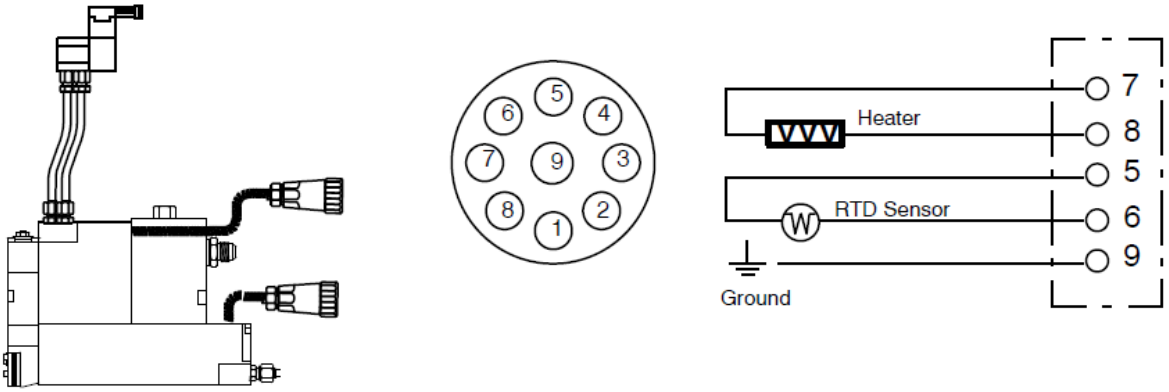
* See Ch.8.

Chapter 9
Electrical and Pneumatical Schematics

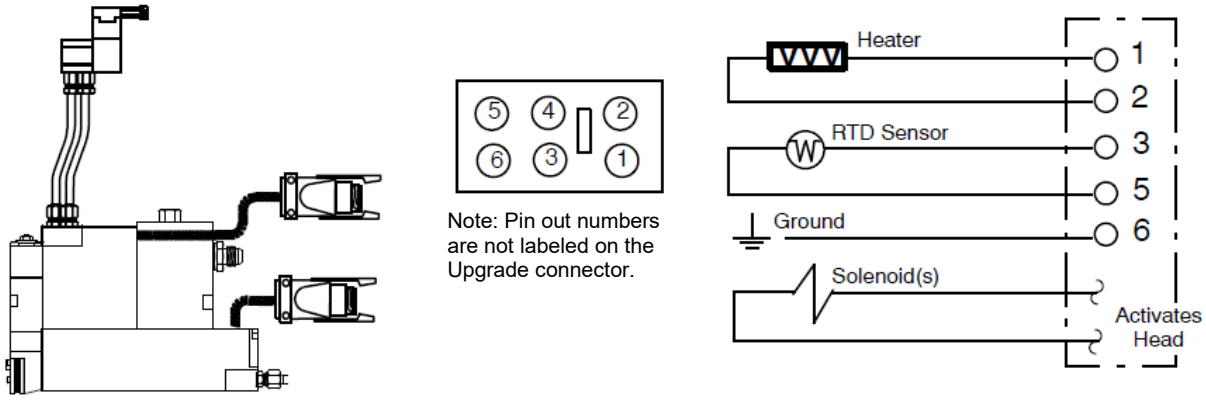
9.1 Pin Connectors & Electrical Schematics

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

DynaControl/Dynamini or PLC Control Scheme, (Temperature sensor PT100), PN 103117 (control option D)

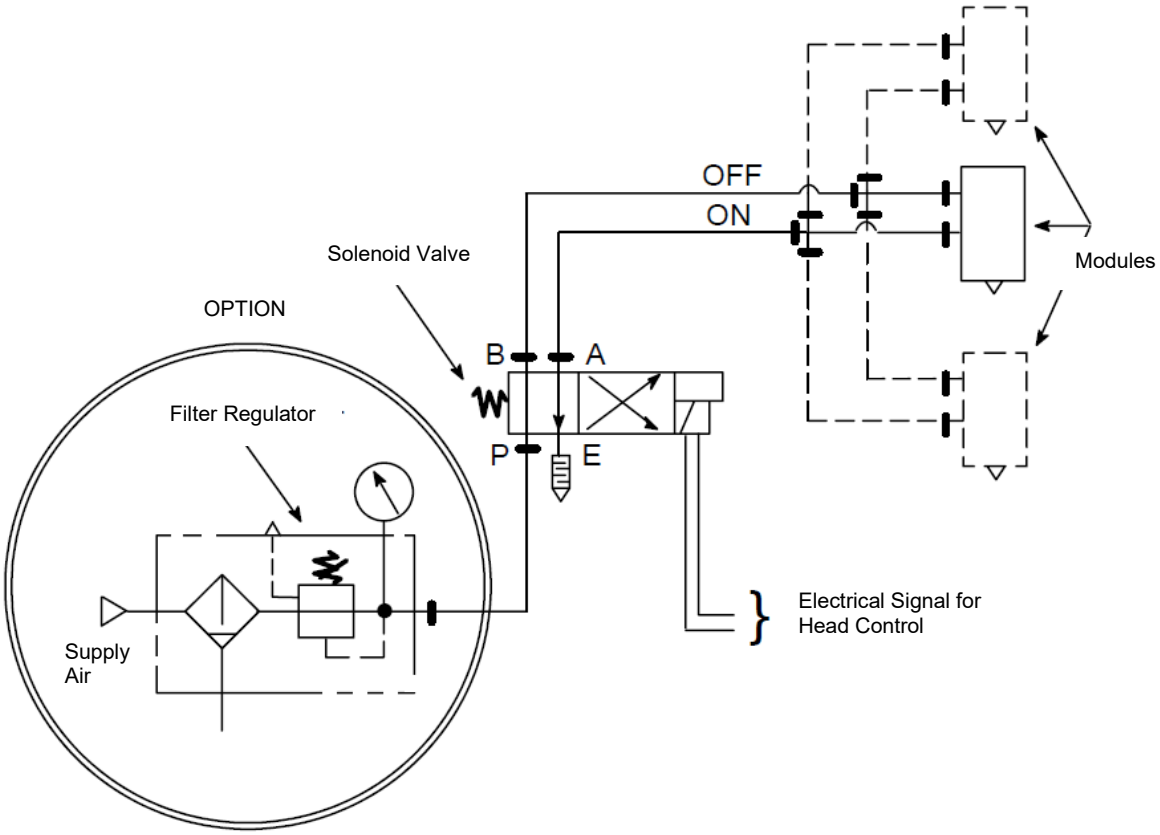


Upgrade Control Scheme, (Temperature sensor Ni 120), PN 804719 (control option N)



9.2 Pneumatic Schematic

(does not apply to Snuff-Back Modules)



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 106937	24 VDC MAC solenoid valve, 5 way, 1/8 NPT
Section 3	PN 112496	24 VDC MAC solenoid valve, 4 way, 1/4 NPT
Section 4	PN 100055	Air Control Kit
Section 5 Festo Valves	PN 113352	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
Section 6	PN 107404	Air-Filter/Regulator assembly, 0-50 psi (0 - 3,45 bar)

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

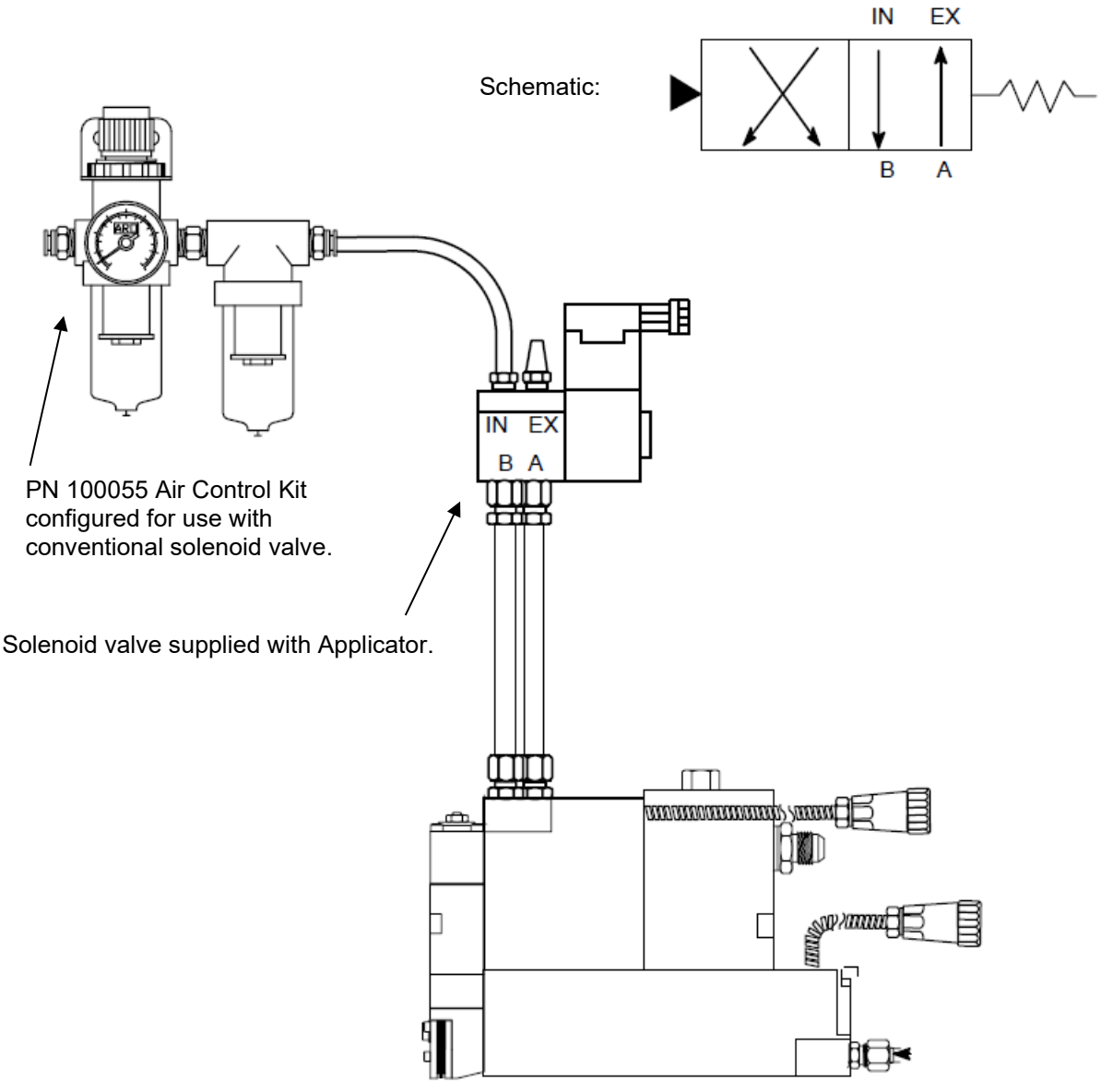
Direct acting poppet valve, 4-way, 1/8 NPT ports, with non-locking recessed manual operator.

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

(for Snuff-Back modules)

Description

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

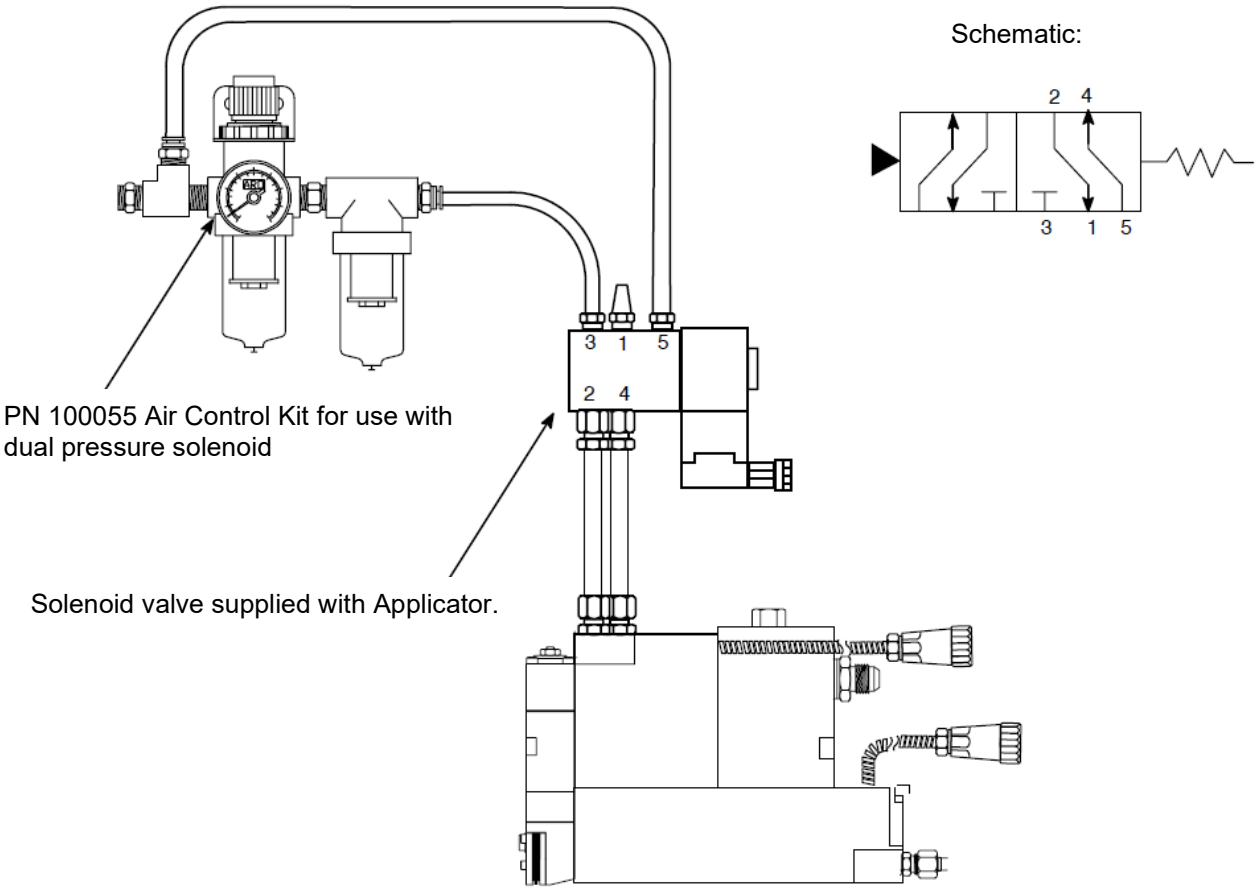
Connections

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 Snuff-Back 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.



10.5 Section 3, 24 VDC MAC solenoid valve, 4 way, 1/4 NPT, PN 112496

Description

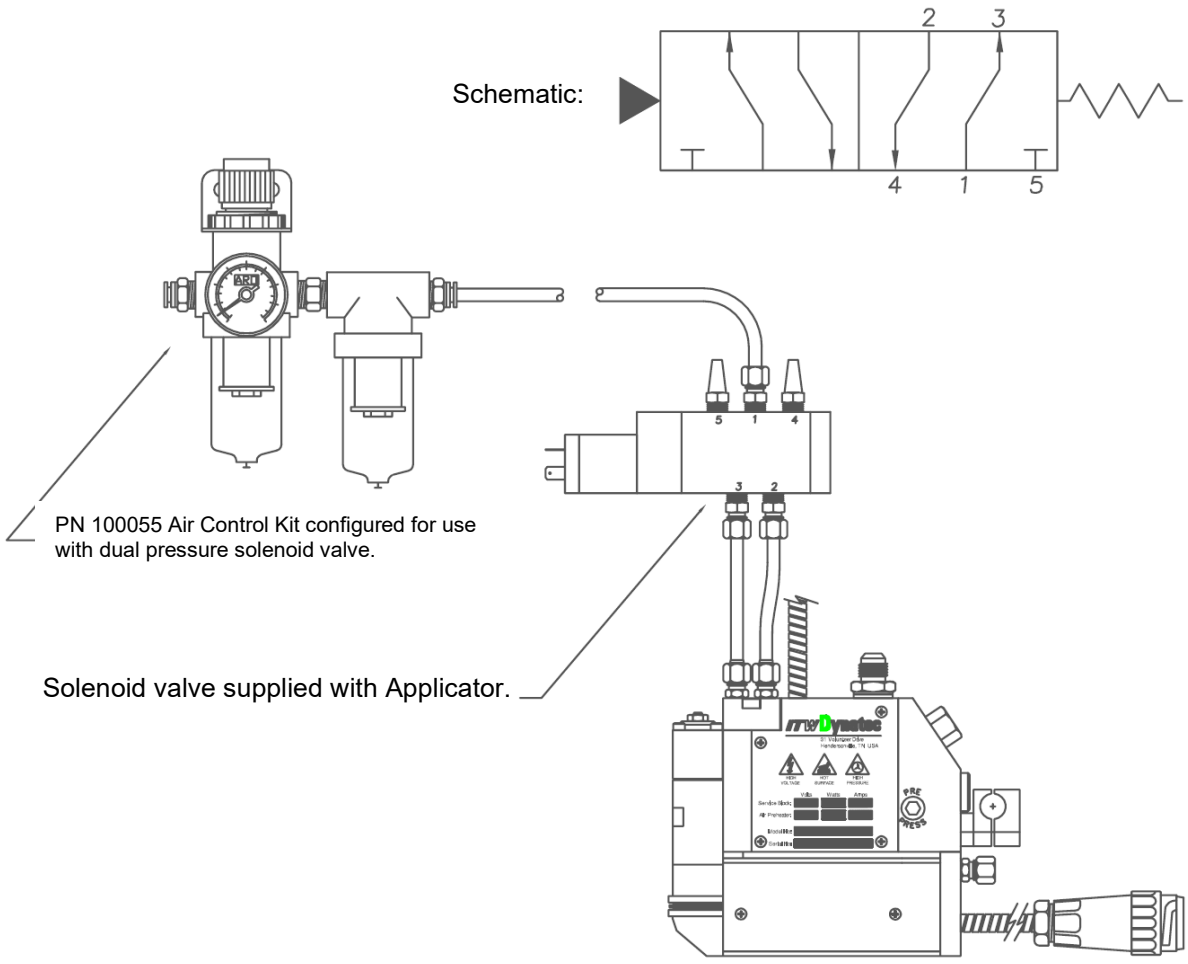
Piloted spool valve (internally piloted), 4-way, 1/4 NPT ports, with non-locking recessed manual operator.

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.



10.6 Section 4, Air Control Kit PN 100055

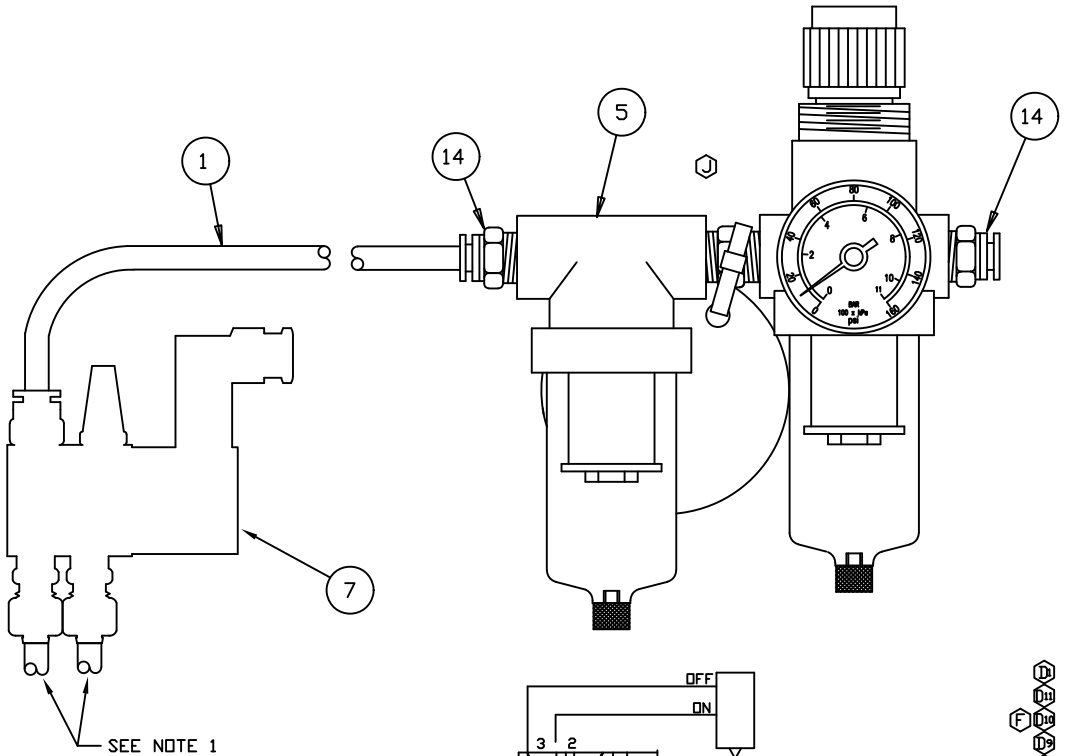
DWG. NO. 100055 SH. 1 REV. K

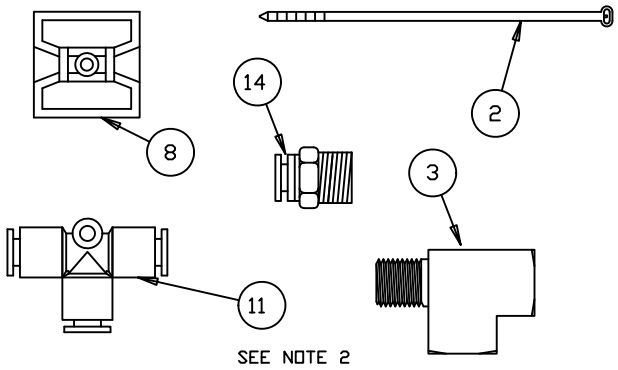
REVISIONS

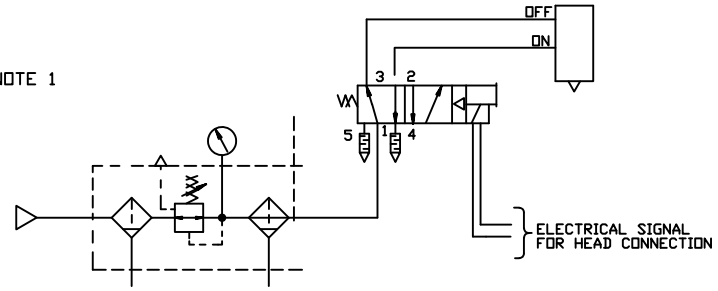
REL.	REV.	DESCRIPTION	DATE	BY	APPROVED
02163	G	ADDED ITEM 4	10.14.02	BB	
02584	H	ITEM 5 WAS 100380	10.30.02	BB	
02640	J	CORRECT VIEW OF FILTER	1.31.03	BB	
E436	K	SHOW ITEM 14 AS SPARE; ADD NOTE 2	07.09.19	JC	

REVISIONS

REL.	REV.	DESCRIPTION	DATE	BY	APPROVED
	A	ORIGINAL RELEASE	04.22.94	CN	
	B	REQ. VALVE WAS 100041	05.10.94	CN	
	C	N06438 WAS N07677, QTY WAS 20FT 100380 WAS N02774 ITEM 6 WAS 100081 ITEM 12 WAS N01067	07.08.94	CN	
	D	1. WAS N02535 2. QTY WAS 20; 3. WAS N00754 4. WAS N02745; 5. WAS VLV, SOL 6. QTY WAS 5; 7. WAS N06412 8. WAS N06435; 9. WAS N00093 10. QTY WAS 3; 11. WAS N00092	08.26.94	CN	
	E	QTY WAS 5	01.12.95	JT	
00095	F	ITEM 14 WAS QTY 1, ADDED ITEM 3	2.10.00	BB	







PNEUMATIC DIAGRAM FOR A-HEAD & S-HEAD CONTROL

(24VDC)

NOTE:

1. AIR LINES TO HEAD ARE TO BE CUT TO 3.5-4.0 INCHES LONG.
2. BAG ALL LOOSE ITEMS WITH FILTER/REGULATOR ASSY AND MARK WITH ITW DYNATEC PART NUMBER FOR CUSTOMER USE.

ITEM	PART NUMBER	QTY.	U/M	DESCRIPTION
16				
15				
14	N06430	3	EA	FTG,CONN,M,BRS
13				
12				
11	N06504	1	EA	FTG,TEE,UNION,BRS,PUSH-IN
10				
9				
8	N04264	3	EA	CABLE TIE ANCHOR, ADH BKD
7	REQ. VALVE ASSY	1	EA	ASY,VLV,SOL
6				
5	105610	1	EA	FLTR,ASY,A/C
4	100055-REF	1	REF	DWG ASSY INSTR
3	N04531	1	EA	FTG,TEE,STREET,#04
2	N00318	10	EA	CABLE TIE,.09X3.62 LG WYL
1	N06438	10	FT	TUBING,NYLON,.250D

PARTS LIST

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ARE:
FRACTIONS ± DECIMALS .XX±.03 .XXX±.010 ANGLES ±.5°

FOR MACHINING STANDARDS AND SYMBOLS, SEE ITW/DYNATEC SPEC. A05800

USED ON

NEXT ASSY.

DO NOT SCALE DRAWING

APPROVALS		DATE
DRAWN	C.NEVILLS	4.22.94
CHECKED	JCZ	4.22.94
APPROVED		

ITW Dynatec
HENDERSONVILLE, TN

U/M EA

KIT,FILTER,COALES

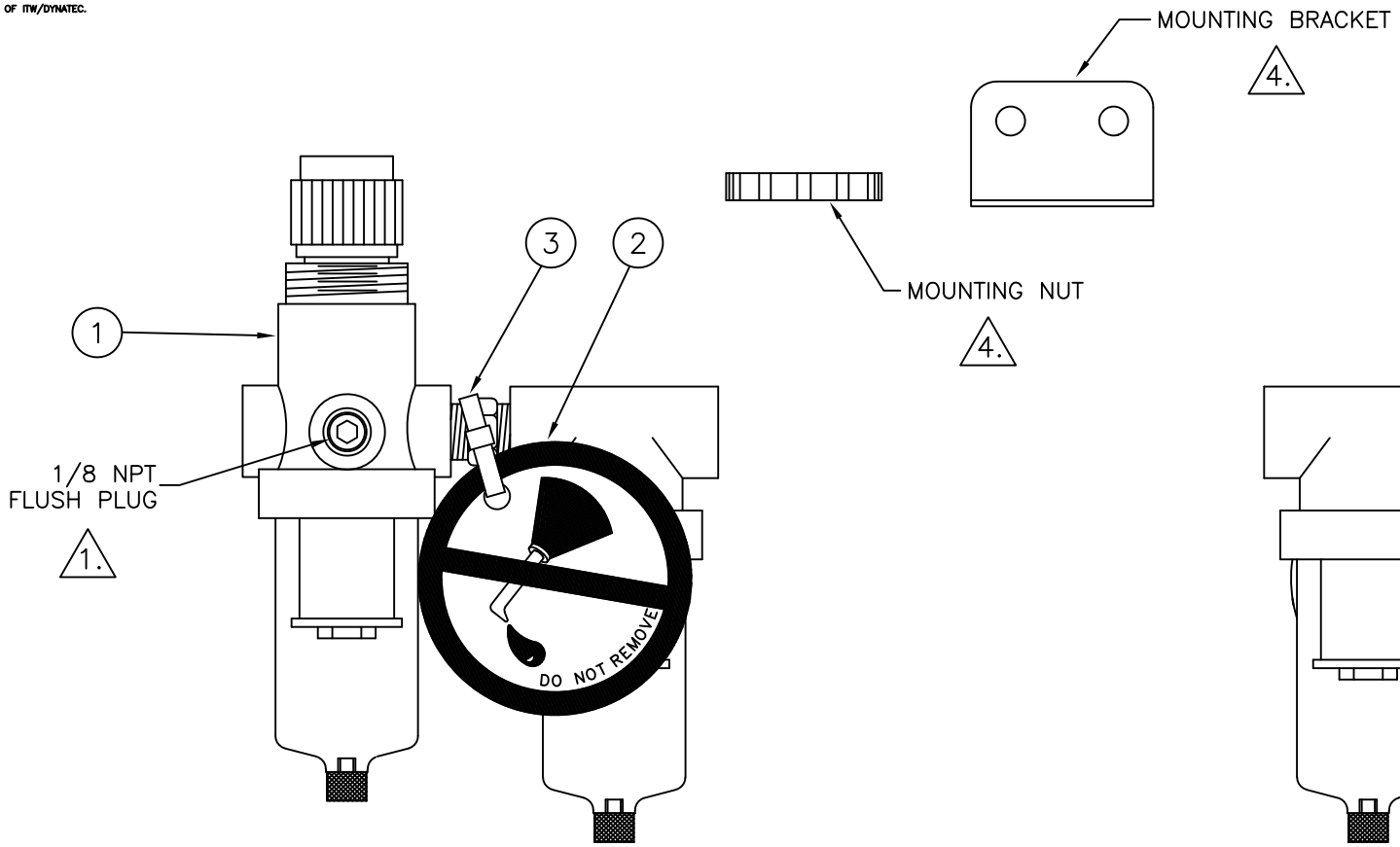
STATUS P

SOURCE P

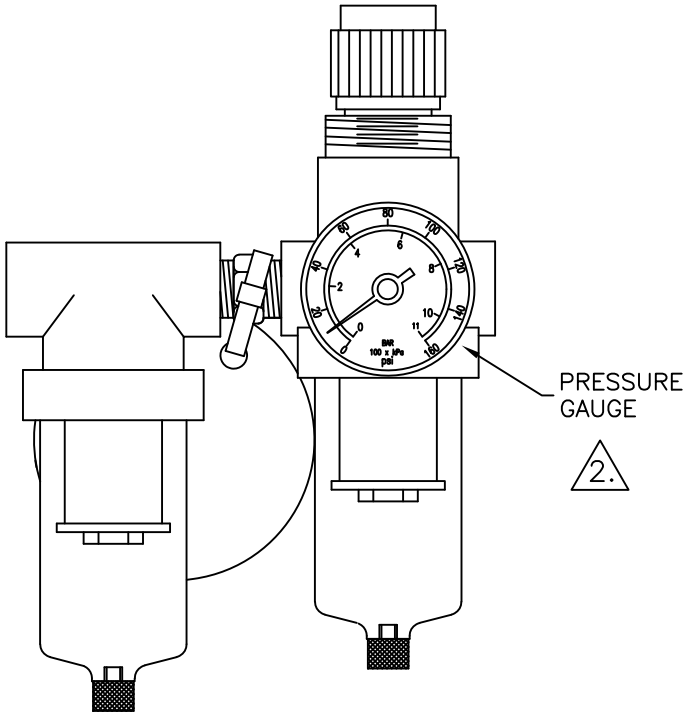
SIZE C DWG. NO. 100055 REV. K GROUP 00

SCALE 1:1 CAD DRAWING SHEET 1 OF 1

REVISIONS				
REV	DATE	DESCRIPTION	REF DOC	BY
A	2.26.98	ORIGINAL RELEASE	N97062	JCZ
B	4.10.02	ITEM 2 WAS 105607	02196	BB
C	10.30.02	DELETED ITEMS 4-9, REVISED NOTES	02584	BB
D	10.14.09	ITEM 3 WAS 048J008	09290	BB
E	26JUL19	NOTE 1 DETAILED FLUSH PLUG INSTALL, NO LONGER NECESSARY	ECN 471	ALM



BACK VIEW



FRONT VIEW

E NOTES:

1.

2. INSTALL GAUGE WITH FACE ORIENTATION AS SHOWN. PLACE TEFLON TAPE ON THREADS PRIOR TO ASSEMBLY.

3. ATTACH THE "DO NOT OIL" TAG (ITEM 2) TO THE FILTER/REGULATOR ASSY USING THE CABLE TIE (ITEM 3).

4. MOUNTING NUT AND BRACKET ARE SUPPLIED WITH FILTER/REGULATOR ASSY (ITEM 1) AND MAY OR MAY NOT BE USED ON ASSEMBLY LINE. IF NOT USED, BAG WITH FILTER/REGULATOR ASSY AND MARK WITH ITW DYNATEC PART NUMBER FOR CUSTOMER USE.

ITEM	PART NUMBER	QTY	U/M	DESCRIPTION
3	N00318	1	EA	CABLE TIE,.09X3.62 LG WY
2	103053	1	EA	TAG,OIL FREE
1	100380	1	EA	FLTR/REG ASY,COALESCING

PARTS LIST

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ARE:
FRACTIONS ± DECIMALS .XX±.03 .XXX±.010 ANGLES ±.5

USED ON: DYNAMELT & DYNAMINI

NEXT ASSY.: —

DO NOT SCALE DRAWING

FOR MACHINING STANDARDS AND SYMBOLS, SEE ITW/DYNATEC SPEC. A05800

APPROVALS	DATE
DRAWN JCZ	2.26.98
CHECKED JCZ	2.26.98

COMPUTER DESCRIPTION(24 CHARACTERS): FLTR/REG AS,DMS/DMIN

ITW Dynatec
HENDERSONVILLE, TN

FILTER/REGULATOR ASSEMBLY

SIZE	DWG. NO.	REV.
C	105610	E

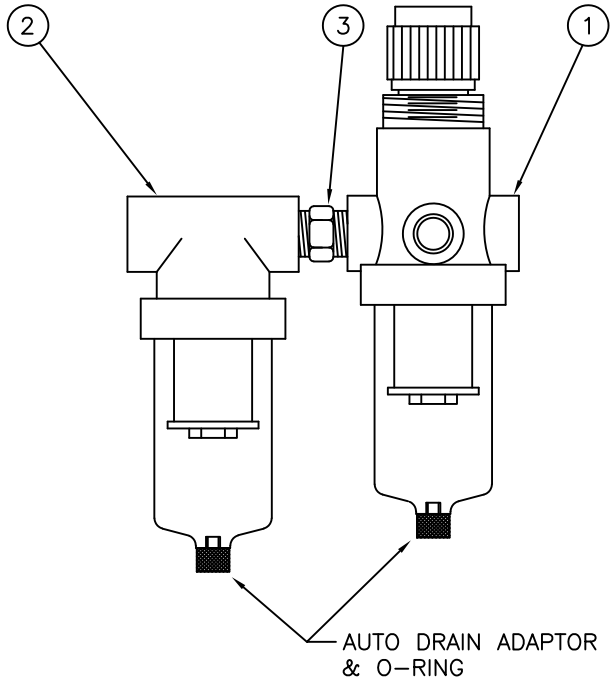
SCALE 1:1 | CAD DRAWING | SHEET 1 of 1

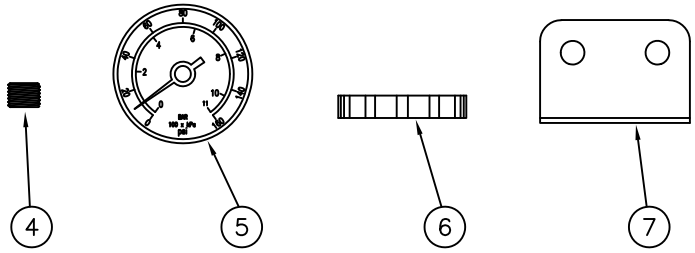
U/M: EA
STATUS: A
SOURCE: G
GROUP: 20

DWG. NO.	SHT.	REV.
100380	1	C

REVISIONS

REL.	REV.	DESCRIPTION	DATE	BY	APPROVED
02584	C	REVISED AND REDRAWN	10.30.02	BB	





ITEM	PART NUMBER	QTY.	U/M	DESCRIPTION
7	–	1	EA	BRACKET, MOUNTING
6	–	1	EA	NUT, MOUNTING
5	–	1	EA	GAUGE, PRESSURE
4	–	1	EA	PLUG, FLUSH, 1/8 NPT
3	072X228	1	EA	FITTING, PIPE NIPPLE, 1/4 NPT
2	100081	1	EA	FILTER, COALESCING, 1/4 NPT
1	N02774	1	EA	FILTER/REGULATOR, 1/4 NPT

PARTS LIST

NOTES:

1. VENDOR: FLUID POWER; VENDOR P/N CQ491
2. ITEMS 4–7 ARE SUPPLIED UNASSEMBLED AND BAGGED WITH THE FILTER/REGULATOR ASSEMBLY.

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ARE:
FRACTIONS ± | DECIMALS .XX±.010 .XXX±.005 | ANGLES ±.5

USED ON

NEXT ASSY. 105610

DO NOT SCALE DRAWING

FOR MACHINING STANDARDS AND SYMBOLS, SEE ITW/DYNATEC SPEC. A05800

APPROVALS	DATE
DRAWN BB	10.30.02
CHECKED	

COMPUTER DESCRIPTION(24 CHARACTERS)
FLTR/REG ASY,COALESCING

ITW Dynatec
HENDERSONVILLE, TN

FILTER/REGULATOR ASSEMBLY, COALESCING

U/M EA | STATUS P | SOURCE | GROUP

SIZE B | DWG. NO. 100380 | REV C

SCALE 1:1 | CAD DRAWING | SHEET 1 of 1

10.7 Section 5, 24 VAC Festo Valves

- 24 VAC, Quick-Change Festo solenoid valve, 4 way, 6mm-tube inlet fitting, PN 113352
- 24 VAC, Quick-Change Festo solenoid valve, 4 way, 1/4”-tube inlet fitting, PN 113451

Description

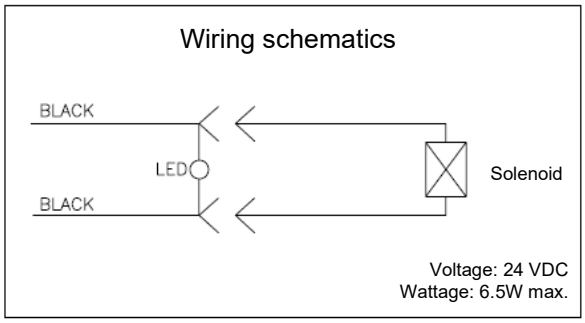
Direct-acting spool valve, 4-way, 24 VDC operation with M7 ports. Solenoid is configured to connect directly to the module. It is not setup for use as an in-line solenoid.

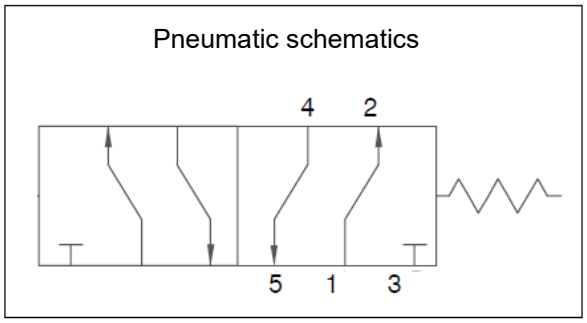
Connections

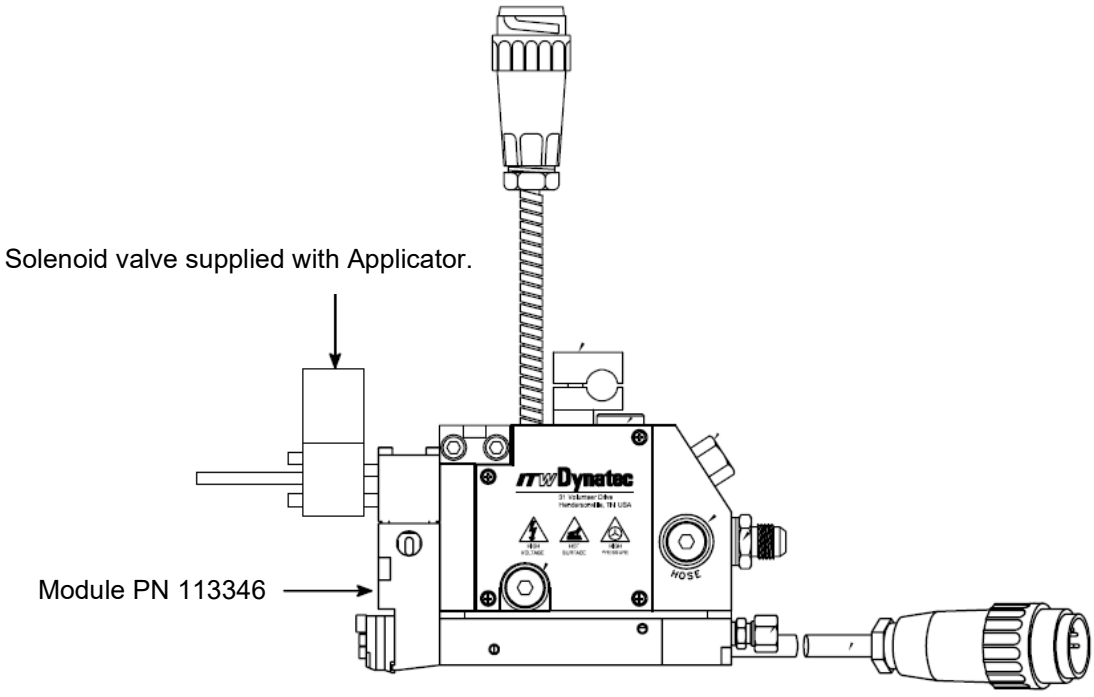
Port 1	Inlet
Port 2	Close side of module
Port 3	Exhaust
Port 4	Open side of module
Port 5	Exhaust

Typical Setup

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





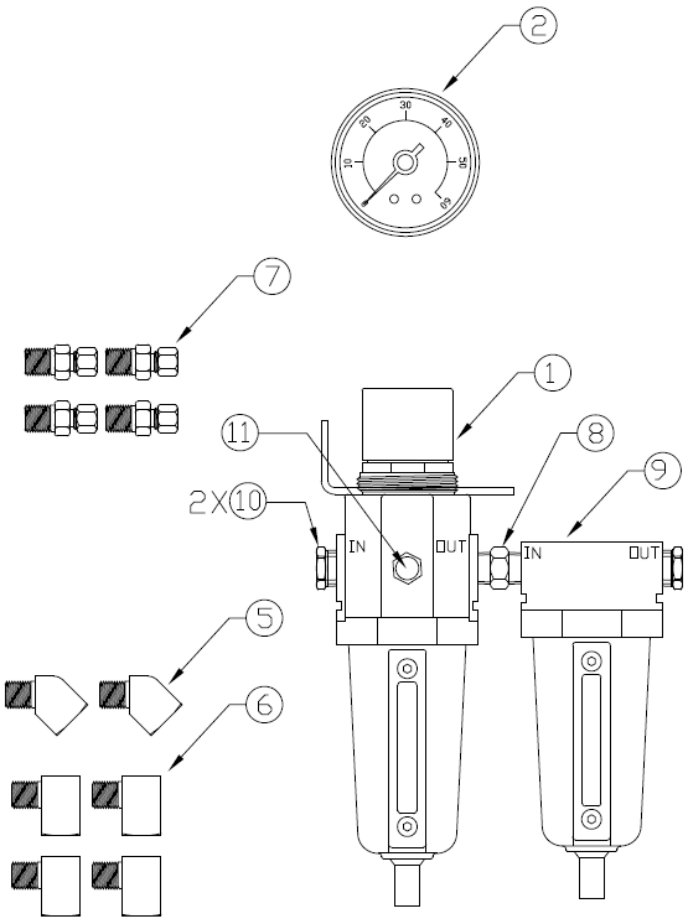


10.8 Section 6, Process (Preheater) Air Control Filter/ Regulator, PN 107404

The PN 107404 Air 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
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.10.18	28	Module types, Filter options and Control options updated in Model Designation Guide.
	95	Extension cable options removed.
Rev.2.19	28	Solenoid Valve Types added to Model Designation Guides. Both Model Designation Guides updated.
Rev.7.19	100	Filter kits updated.
Rev.11.19	100	Filter kit 820727 added.
Rev.3.20	41, 58	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.7.23	P.1	Manual language added.
Rev.10.23	Ch.7.19	The note “The solenoid valves are not included in the air manifold assemblies!” added.
Rev.7.24	Ch.10.8	Filter/Regulator-Kit, PN 107404, updated.
	Ch.7.10	UFD Spray Adapter Kit, PN 107145, updated. Module PN 084B1388 replaced by MR1300 module PN 120545 and MR1300 swirl adapter PN 120550.

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