

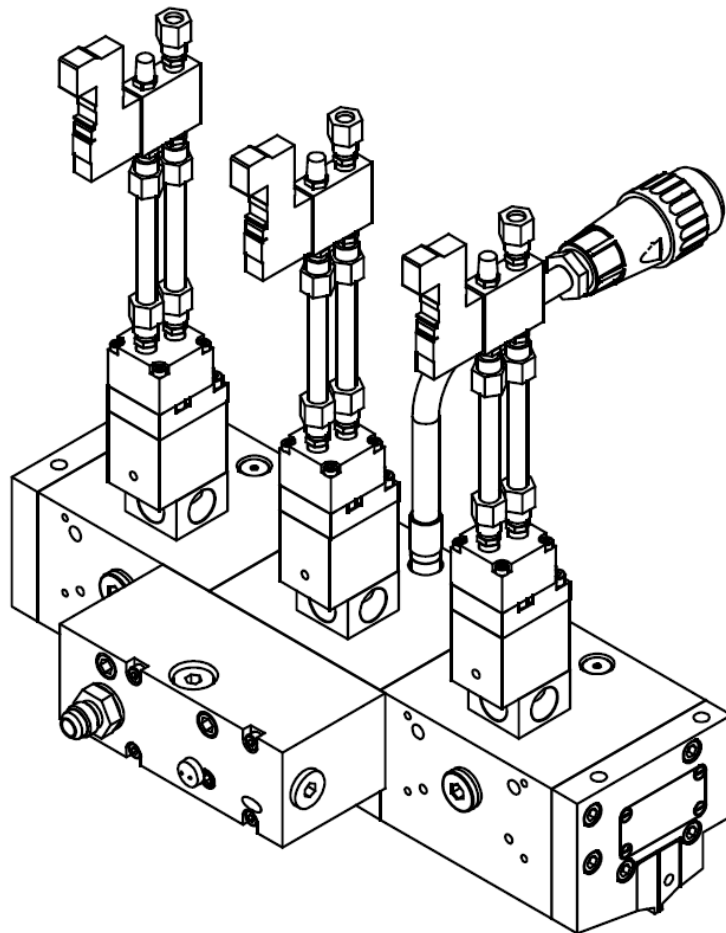


Adhesive Application Solutions | ISO 9001 certified

EQUITY-C

SLOT DIE APPLICATOR

Technical Documentation



Information about this manual



Read all instructions before operating this equipment!

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



NOTICE:

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

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

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

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Chapter 1

Declaration of Incorporation / Conformity

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: EQC Slot Die Applicator
Serial no: _____
Machine number: _____
Project number: EQC
Project name: EQC Slot Die Applicator
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:

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

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)

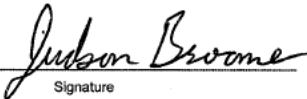
The manufacturer or his authorised representative undertake to transmit, in response to a reasoned request by the national authorities, relevant information on the partly completed machinery. This transmission takes place:

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


Signature
Judson Broome
General Manager

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Chapter 2

Safety Instructions

General Considerations



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



Read and adhere to the manual!

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

Warning Labels

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

Safety Symbols in this Manual

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

Safe Installation and Operation



Read and adhere to the manual!

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

Explosion/ Fire Hazard

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

Use of PUR (Polyurethane) Adhesives

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



CAUTION

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

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

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

Eye Protection & Protective Clothing



WARNING

EYE PROTECTION & PROTECTIVE CLOTHING REQUIRED

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

Electrical



DANGER HIGH VOLTAGE

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

Lockout/ Tagout



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

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

High Temperatures



WARNING HOT SURFACE

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

High Pressure



WARNING HIGH PRESSURE PRESENT

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

Protective Covers



WARNING DO NOT OPERATE WITHOUT GUARDS IN PLACE

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

Servicing, maintenance

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

Secure transport

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

Treatment for Burns from Hot Melt Adhesives

Measures after being burned:

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

Measures in case of fire

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

Measures in case of fire:

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

Firefighting - burning hot melt:

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



EXTINGUISH FIRE

Appropriate extinguishing agents:

Foam extinguisher, Dry powder, Spray, Carbon dioxide (CO₂), Dry sand.

For safety reasons not appropriate extinguishing agents: None.

Firefighting - burning electrical equipment:

Appropriate extinguishing agents:

Carbon dioxide (CO₂), Dry powder.

Keep attention to environmental protection standards

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

Chapter 3

Description and Technical Specs

3.1 Applicable Safety Regulations

Intended Use

The Equity-C (Continuous) Slot Die Applicator may be used only to apply suitable materials, e.g. adhesives. When in doubt, seek permission from ITW Dynatec.



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

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



Intended use includes, that you

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

Any other use is considered to be unintended.

Unintended Use, Examples

The Equity-C Slot Die 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 Equity-C Slot Die Applicator may not be used to process the following materials:

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

Residual Risks

In the design of the Equity-C Slot Die 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's components.
- Risk of burns when conducting maintenance and repair work for which the system must be heated up.



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

Technical changes

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

Using foreign components

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

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

Setting-up operation

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

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

3.2 Description Equity-C Slot Die Applicator

Description

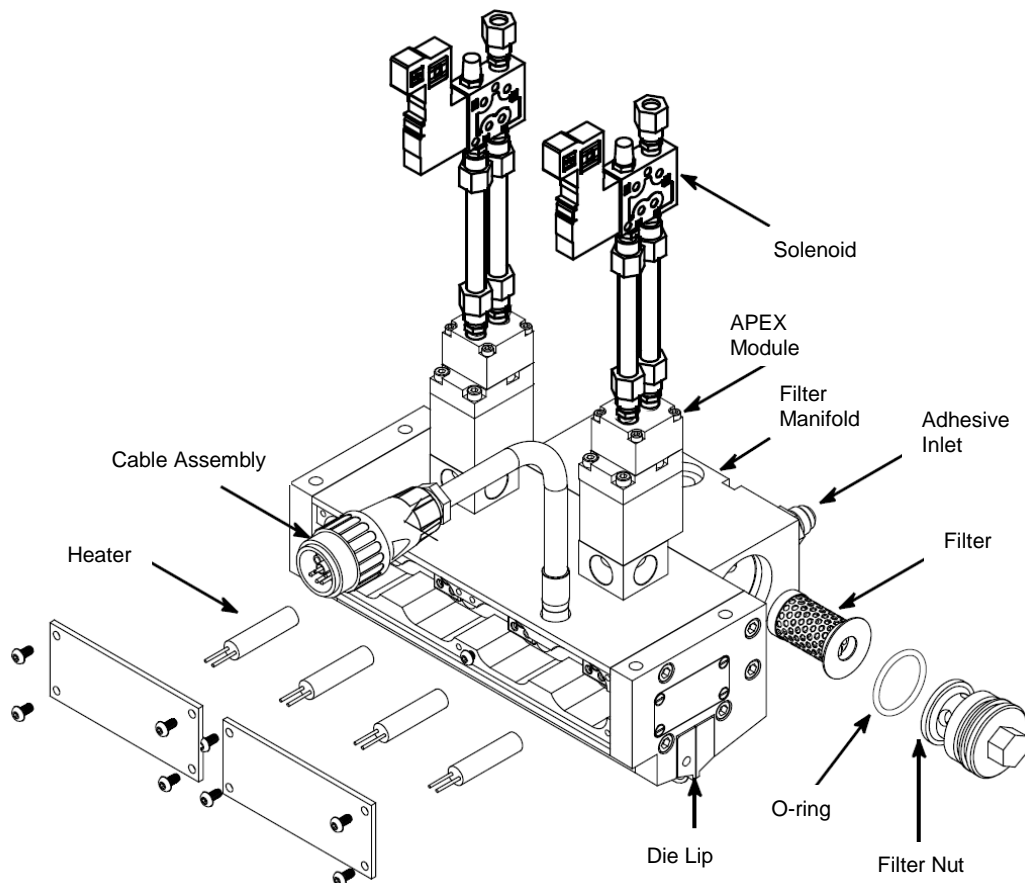
ITW Dynatec's Equity-C (Continuous) Slot Die Applicators are continuous adhesive application heads with application width ranging from 100mm to 900mm (4" to 36") and featuring good cross web distribution of adhesive, quick-change nozzles and no-adjust/easy-cut shims.

These heads are constructed by combining 100mm or 200mm modular segments horizontally using internal fluid connectors. Optional heated, 25mm spacer(s), placed at the ends of the applicator gives further head-width versatility (spacers not available on 900mm head).

One or multiple filter manifolds, containing integrated filter baskets designed to prevent particulate matter from obstructing adhesive flow, serve the applicator. Replaceable heater cartridges are controlled by RTD sensors. Control zones can be isolated electronically flexible applicator segments, if desired. The heads may be configured for Dynatec's DynaControl or PLC controls, as well as MCV, or competitive upgrade schemes.

One application module is mounted onto each 100mm of applicator length. A piston inside the module is pneumatically triggered by a tube-mounted solenoid, allowing adhesive to flow through a valve within the module. The rate of adhesive flow from the applicator is determined by the adhesive flow applied by the ASU's gear pump or by applied pressure (piston pump). Shim thickness can be chosen in relation to the quantity of glue to work in a perfect pressure area.

The slot die assembly spans the entire applicator. Heaters are spaced every 50mm to supply equal heat distribution. The nonadjustable die lips are ground as matched pairs and their easy-cut shims are perforated to make short, accurate work of shim cutting.



Equity-C Slot Die Applicator (200mm segment shown)

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 page
 Weight(see chart below) 100mm segment: 1 kg (2.21 lb)
 200mm segment: 2 kg (4.42 lb)
 Filter manifold: 1 kg (2.21 lb)
 Module: 0.67 kg (1.48 lb)
 25mm spacer: 0.28 kg (0.62 lb)
 Mounting..... M8 screws with insulators
 Application width 100mm to 900mm (4-36 in.)
 Construction coated aluminum
 Solenoid tube mounted
 Filtration..... filter manifold optional

Performance:

Operating temperature range 38°C to 200°C (100°F to 390°F)
 Warm-up time 20 minutes for cold start/ 1 minute for module change only
 Adhesive viscosity 100 to 20,000 mPa.sec. (centipoise)
 Adhesive delivery rate0.91 kg/min (2 lbs/min) (12:1 piston pump)
 Adhesive pressure range 7 bar (100 psi) to 68 bar (1000 psi)
 Noise emission30 dB(A), continuous

Air Requirements:

Air pressure range 5 to 9 bar (74 to 125 psi)

Electrical:

Supply voltage 200-240 V AC/ 1ph/ 50-60 Hz with 24 VDC control voltage
 Control zonesas specified, 2400w maximum depending on temperature control unit

Power requirements:

Model Number (without/ with spacers)	No. Modules	Maximum Recommended Slot Width (incl. spacers)	Wattage 240 VAC	No. Control Zones
Eq C 100/150	1	100/150mm (4/6")	400/800W	1
Eq C 200/250	1-2	200/250mm (8/10")	800/1200W	1
Eq C 300/350	1-3	300/350mm (12/14")	1200/1600W	1
Eq C 400/450	1-4	400/450mm (16/18")	1600/2000W	2
Eq C 500/550	1-5	500/550mm (20/22")	2000/2400W	2
Eq C 600/650	1-6	600/650mm (24/26")	2400/2800W	2
Eq C 700/750	1-7	700/750mm (28/30")	2800/3200W	3
Eq C 800/850	1-8	800/850mm (32/34")	3200/3600W	3
Eq C 900	1-9	900mm (36")	3600W	3

Solenoid Air Programs

On the Equity-C applicators, solenoids supply the air pressure which activates each adhesive module.

A solenoid air program describes the number of modules activated by each individual solenoid on an applicator. Equity-C slot die applicators are all single air-programmed solenoids. Therefore, an applicator with one module/ solenoid has one solenoid air program, an applicator with two modules/ solenoids has two solenoid air programs, etc.

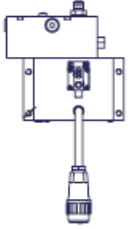
Standard Configurations

The diagrams on the following page show the standard configurations of the Equity-C line of slot die applicators. Illustrated are the standard placement of applicator segments, modules, filter manifolds, wattage and electrical connections.

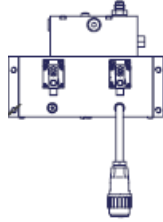
Equity-C Slot Die Applicator Standard Configurations

Note: when adding 50mm spacer kit add 200 Watts.

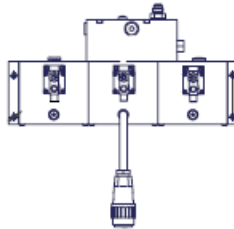
100mm 400W



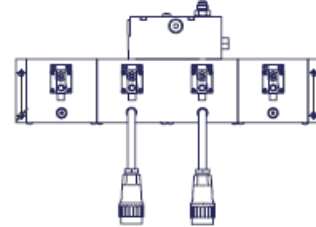
200mm 800W



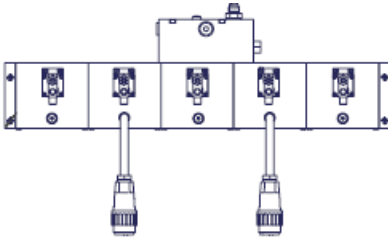
300mm 1200W



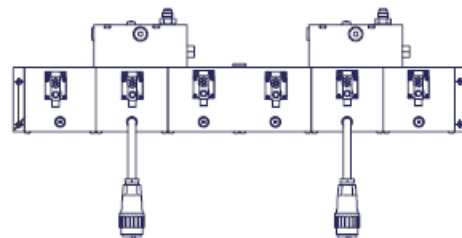
400mm 1600W



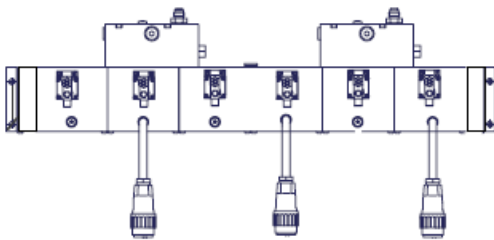
500mm 2000W
(may have two hose filter blocks)



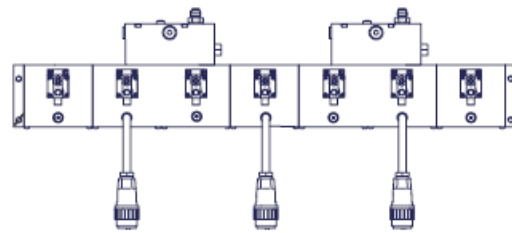
600mm 2400W
Note: when adding 50mm spacer kit add 200 Watts and additional cable Assy.



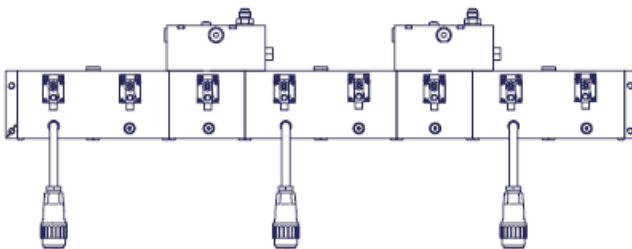
650mm 2800W
Note: when adding 50mm spacer kit add 200 Watts and additional cable Assy.



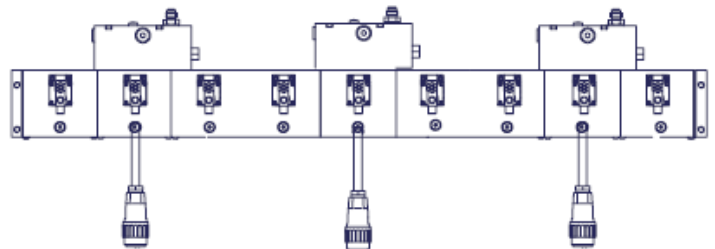
700mm 2800W



800mm 3200W

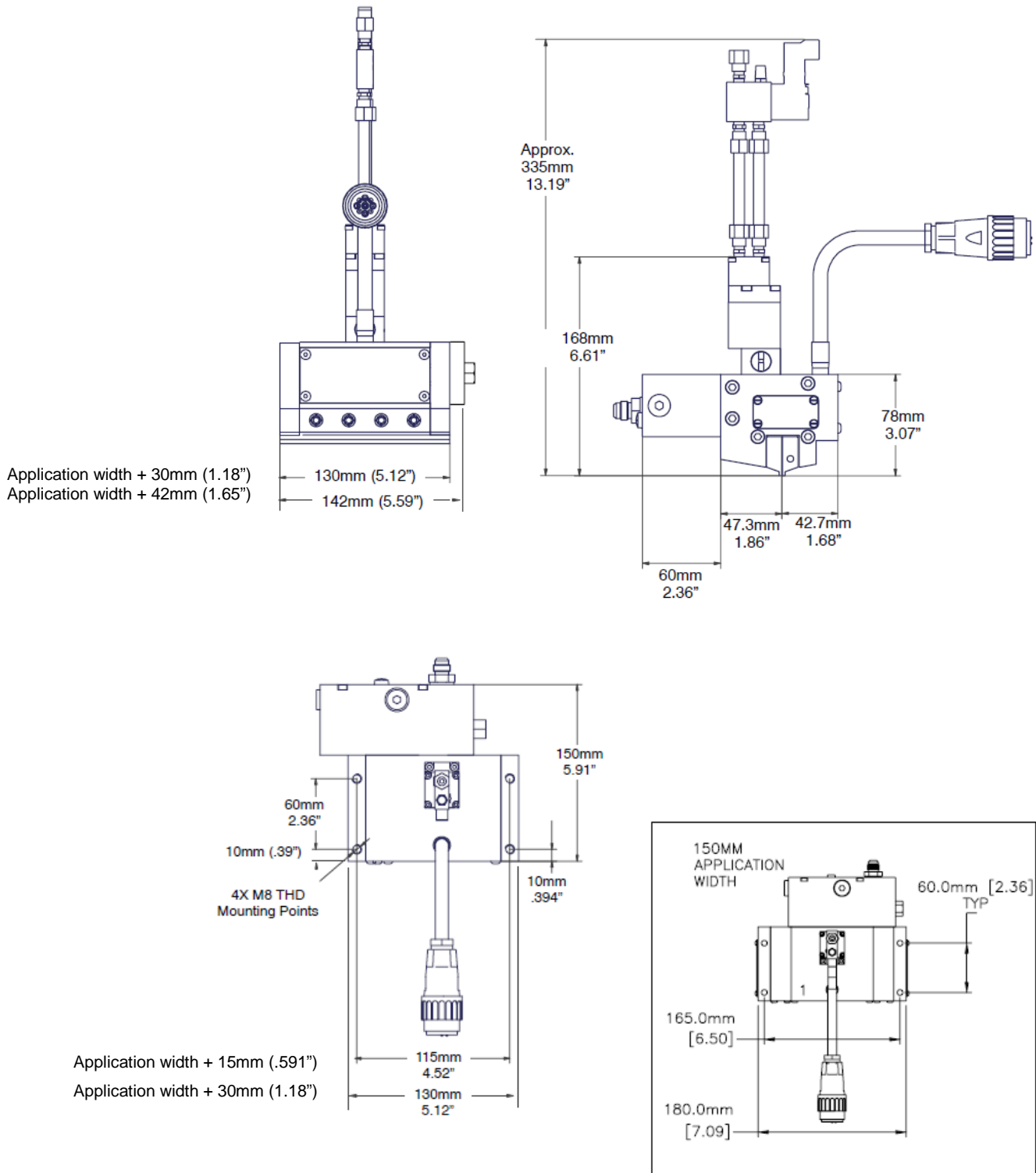


900mm 3600W



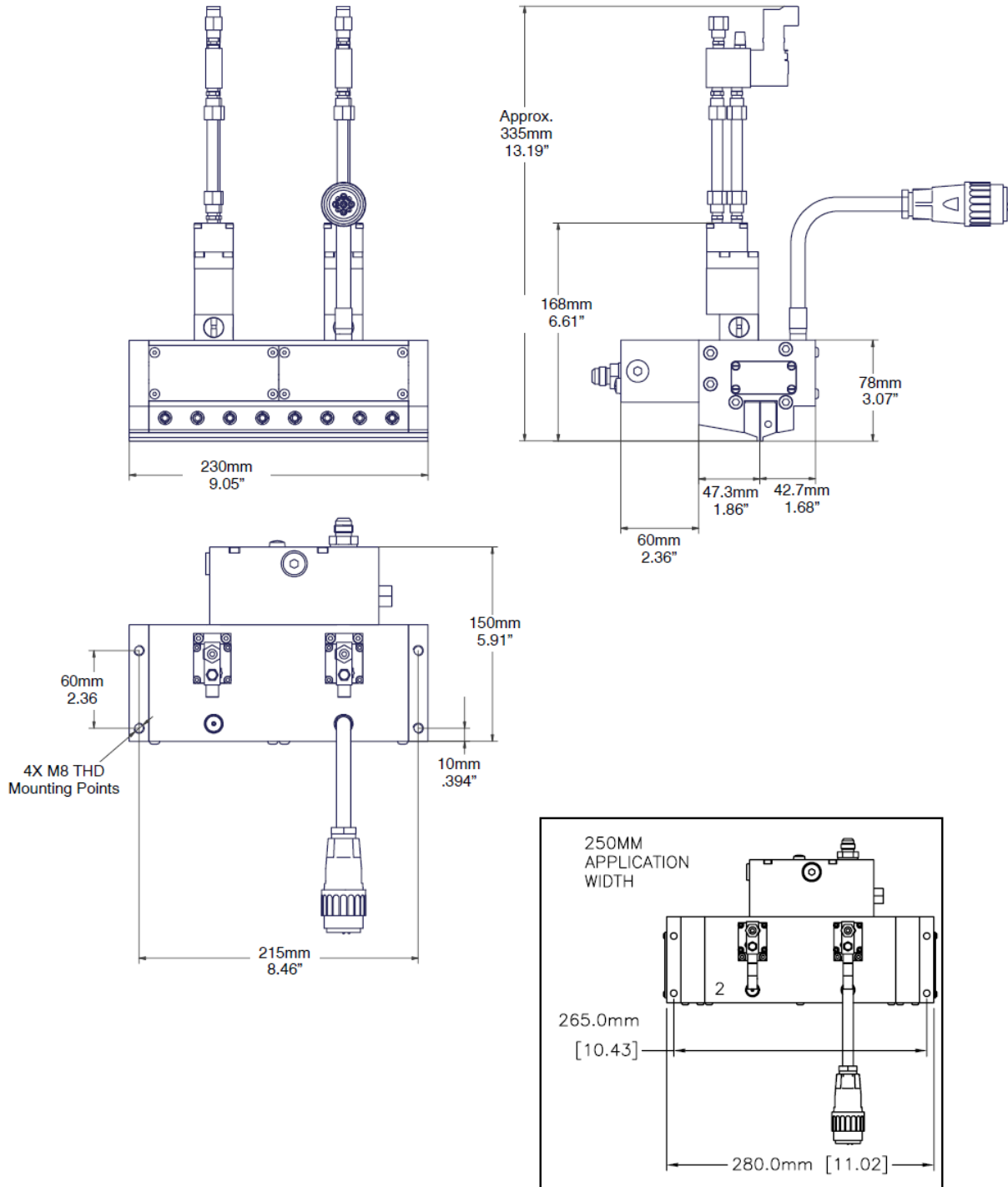
Dimensions: Equity-C 100mm

Note: Application width can be increased by 50mm when using a spacer kit.



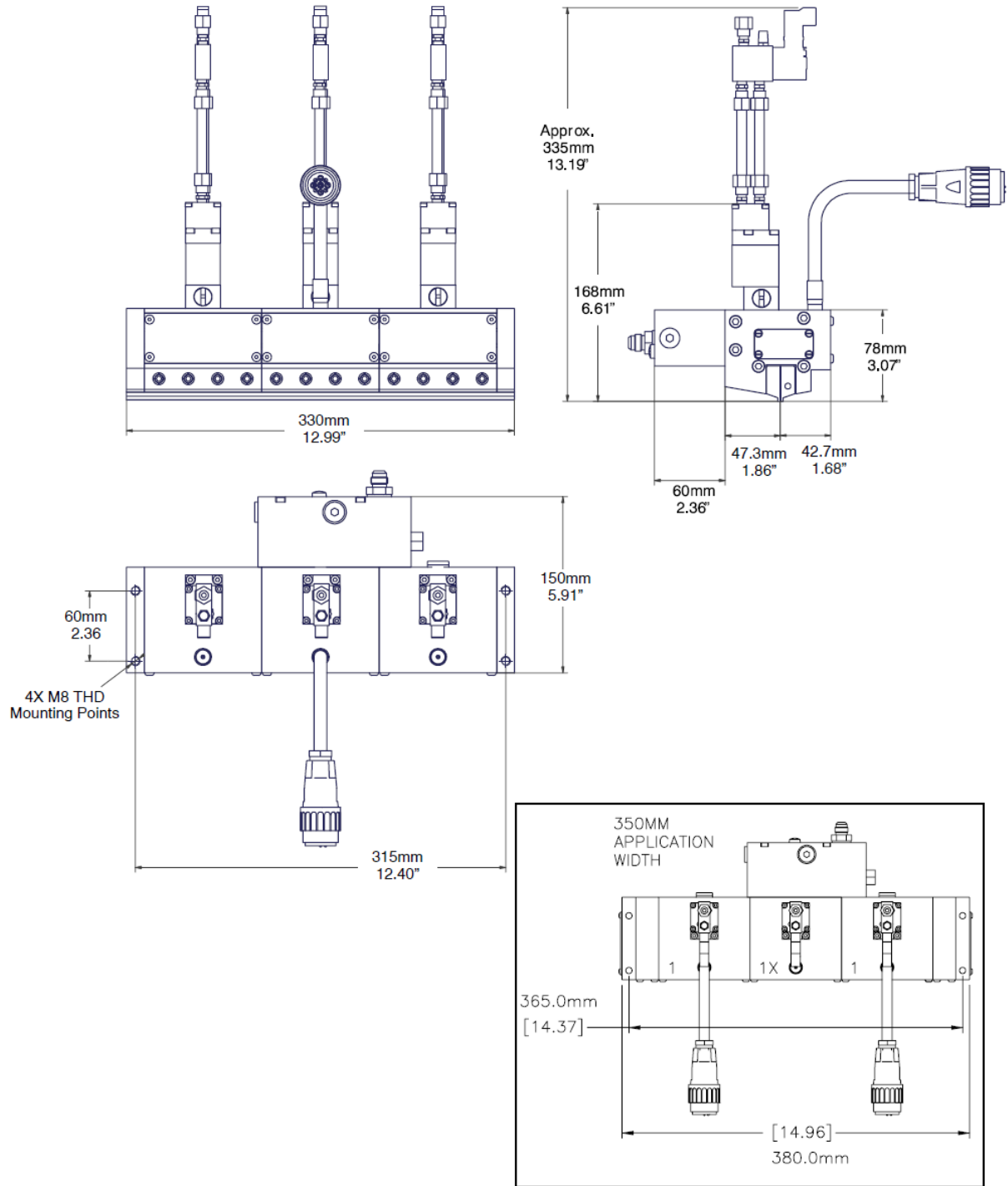
Dimensions: Equity-C 200mm

Note: Application width can be increased by 50mm when using a spacer kit.



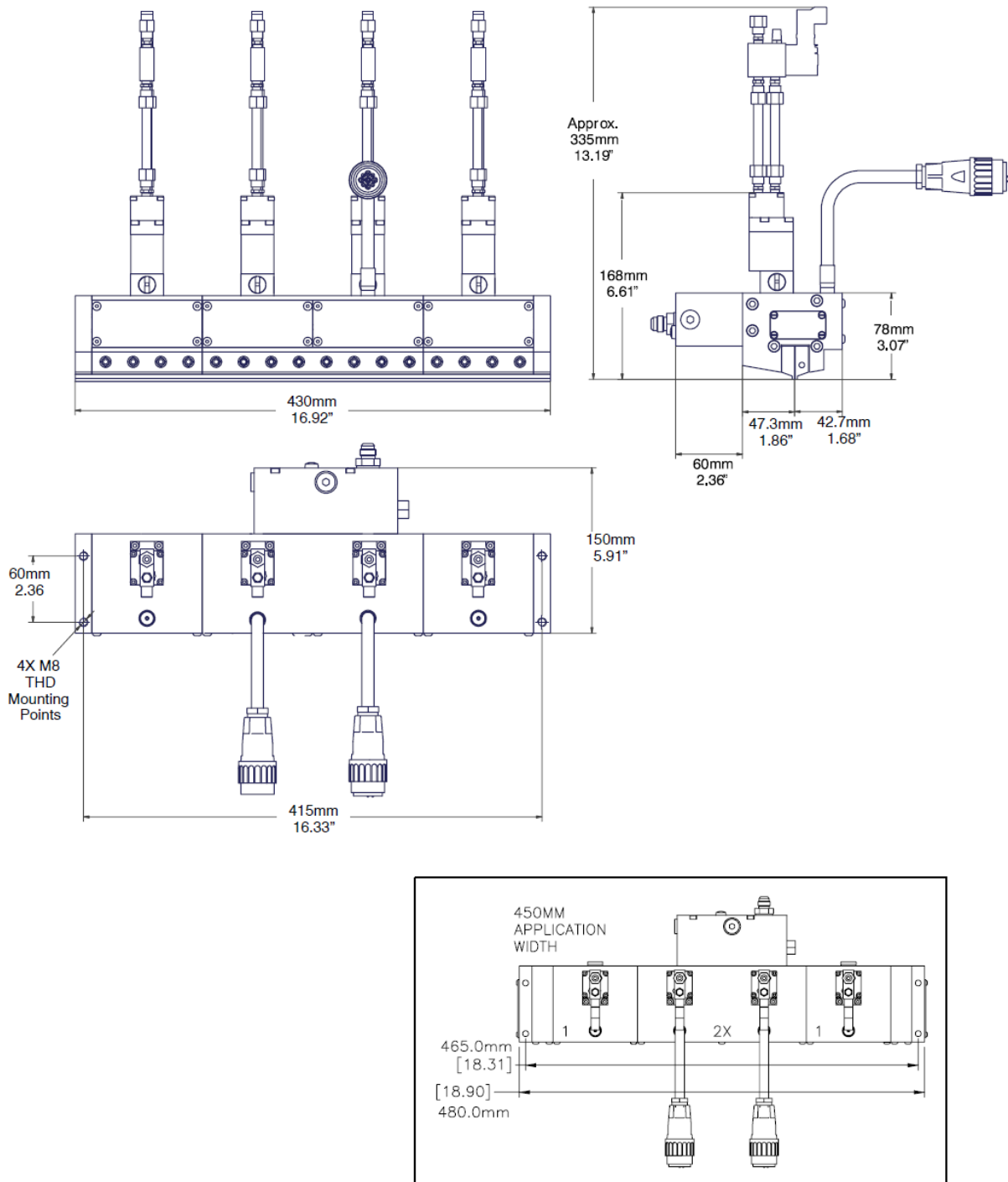
Dimensions: Equity-C 300mm

Note: Application width can be increased by 50mm when using a spacer kit.



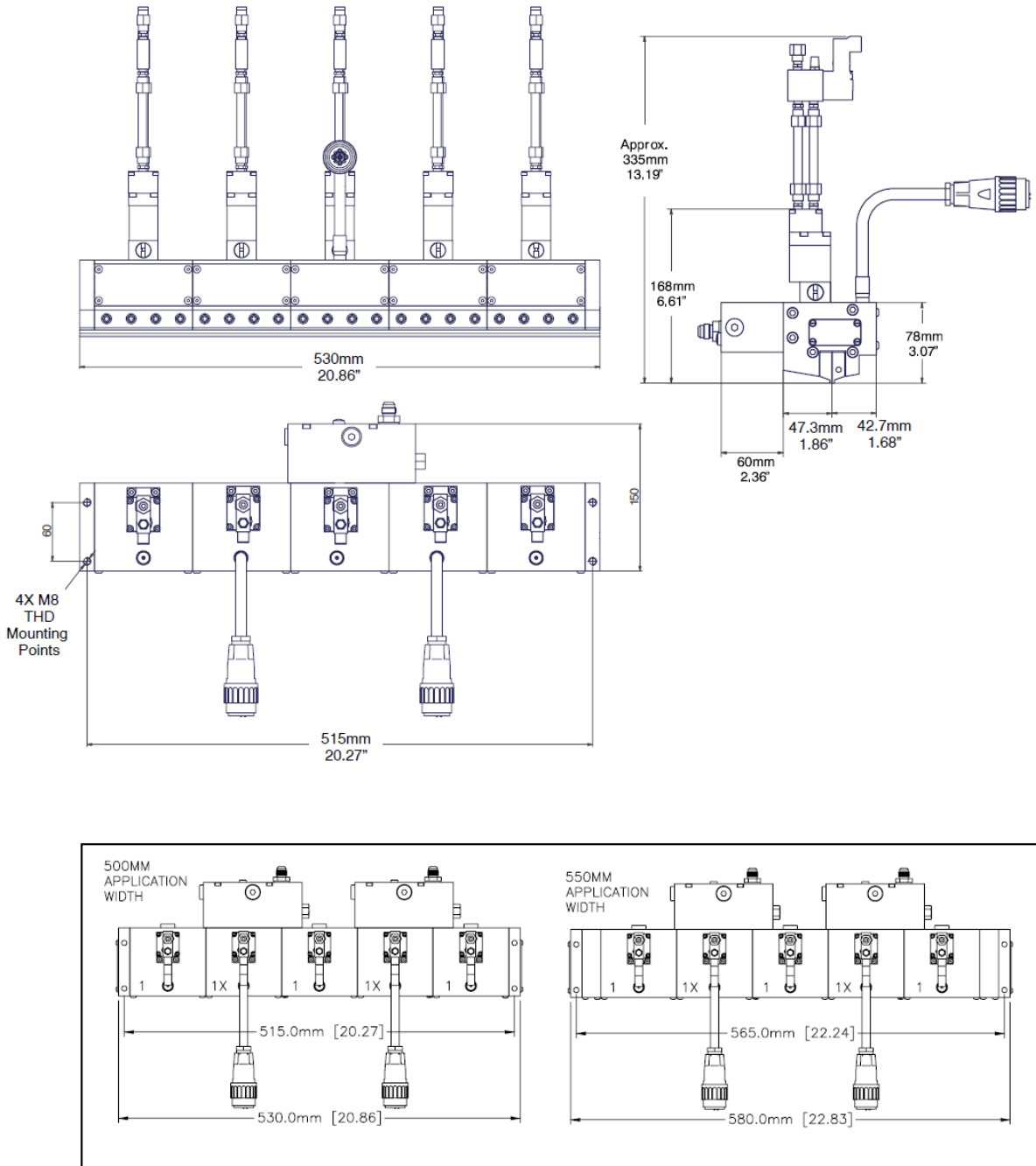
Dimensions: Equity-C 400mm

Note: Application width can be increased by 50mm when using a spacer kit.



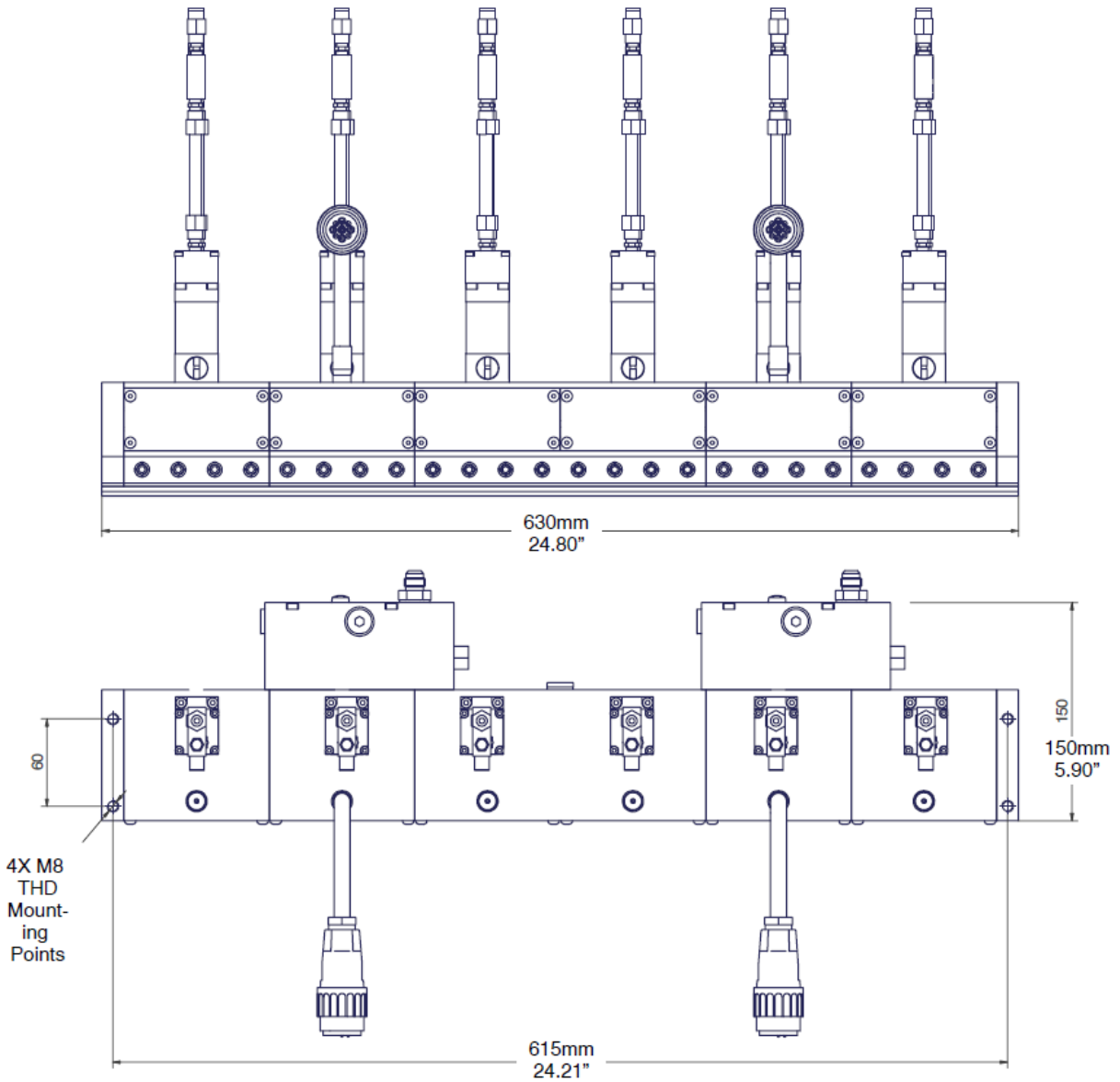
Dimensions: Equity-C 500mm

Note: Application width can be increased by 50mm when using a spacer kit.



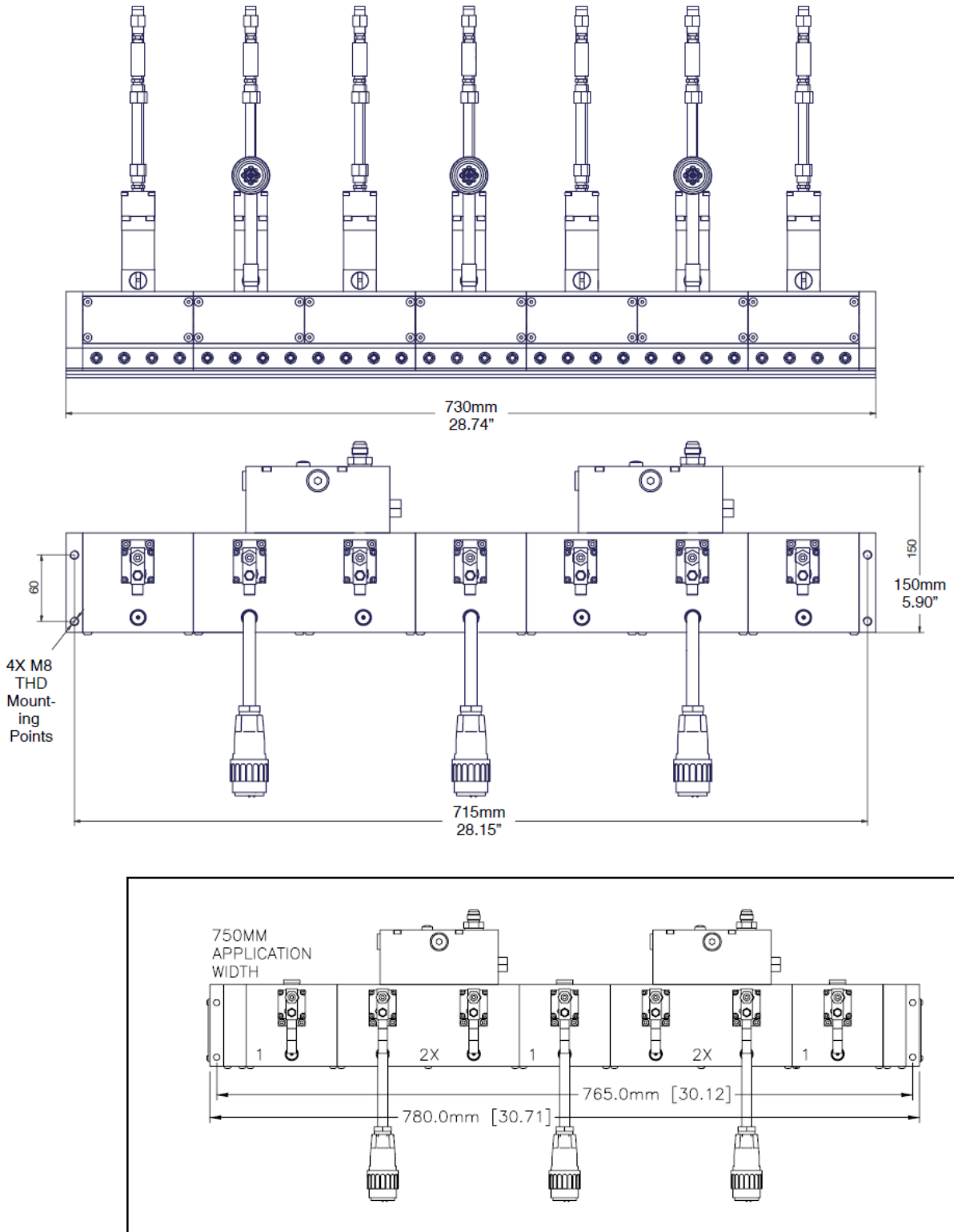
Dimensions: Equity-C 600mm

Note: Application width can be increased by 50mm when using a spacer kit.



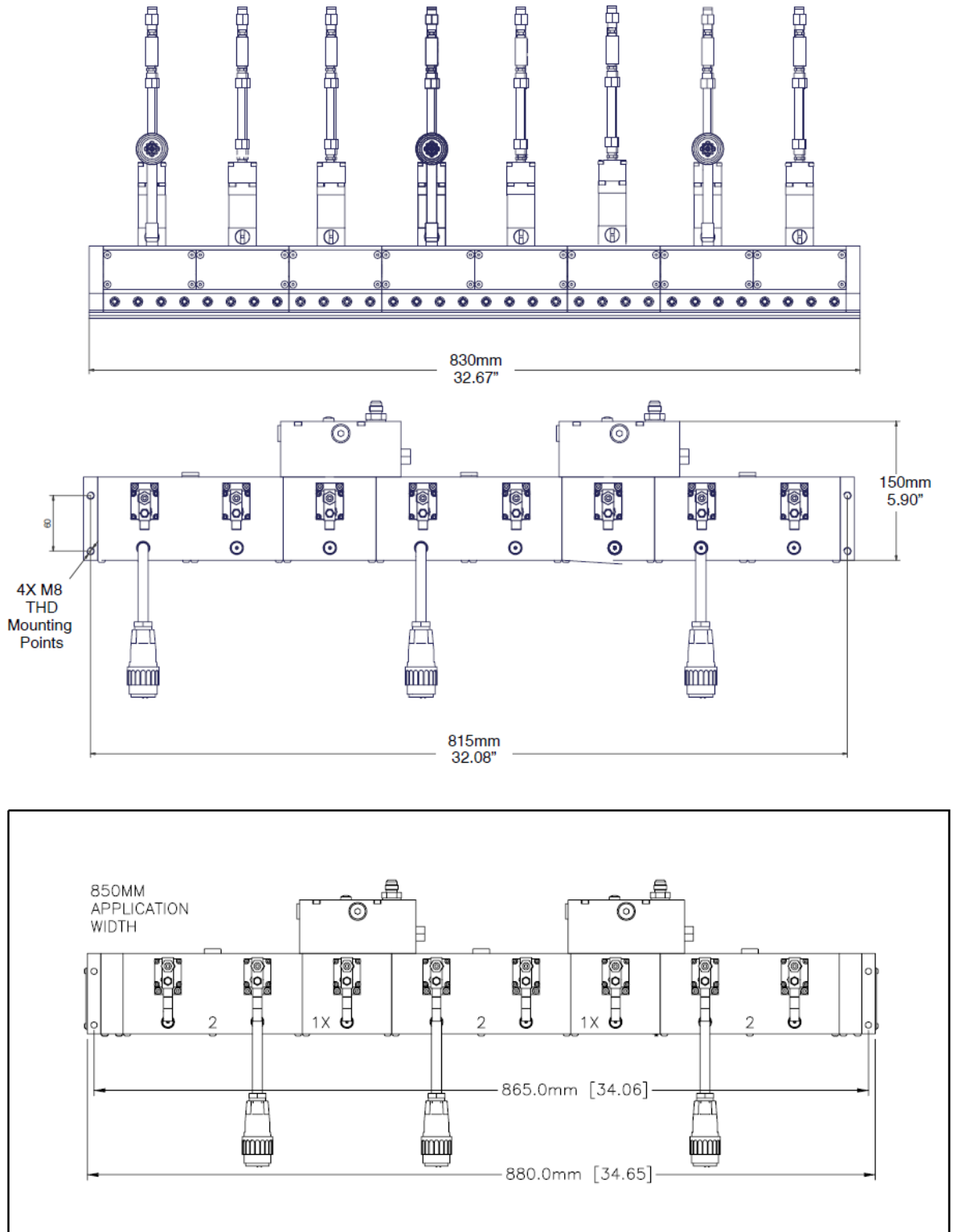
Dimensions: Equity-C 700mm

Note: Application width can be increased by 50mm when using a spacer kit.



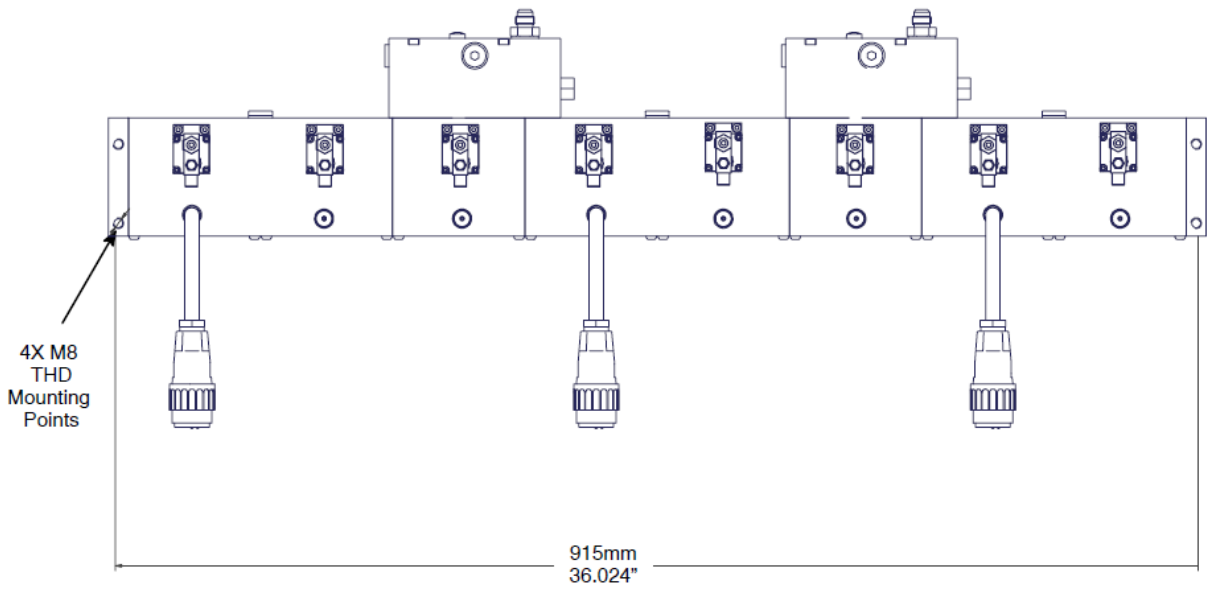
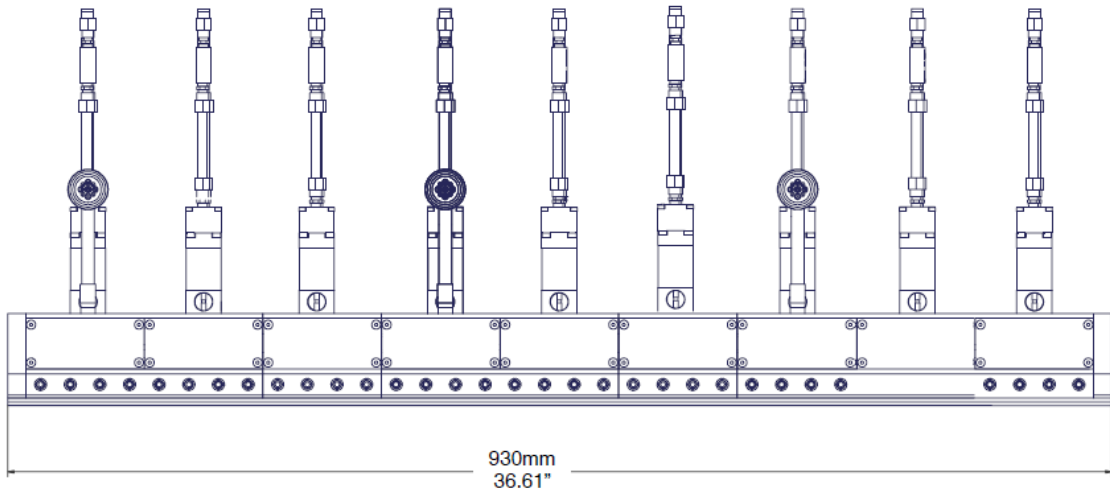
Dimensions: Equity-C 800mm

Note: Application width can be increased by 50mm when using a spacer kit.



Dimensions: Equity-C 900mm

Note: Application width can be increased by 50mm when using a spacer kit.



Chapter 4

Installation & Setting-up Operation



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 Equity-C Applicator in the machine so that the operator is able to work on it from all sides, for e.g. for adjusting, preparing, maintaining, repairing, cleaning, etc. See drawing of the unit for admeasurements.

Mounting and alignment

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

Electrical connection

- Necessary electrical connection has to be provided. See electrical schematics.
- Never connect or disconnect plug-and-socket connections under load!
- The service block's incoming electrical power and temperature control is supplied through the flexible cable exiting the adhesive supply hose cuff. The applicator has a circular, plastic connector which mates with the connector attached to this cable.

Pneumatic connection



- In any case the air has to be clean and dry! See advice in chapter 4.3 "Quality of compressed air".
- Incoming (operating) air is supplied through a solenoid valve. It is controlled by a four-way solenoid valve and should be separately regulated and maintained at a pressure 4.1 to 6.9 bar (60 to 100 psi). Head air inlet ports are 1/8 NPT threads.
- Please heed that units with high air demand may not be used at the same time with the same air supply.



Advices:

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

4.2 Installation



CAUTION

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



WARNING

- Risk of burns and risk of injury!
- 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.



NOTE

- Air lines and fittings must be capable of withstanding temperatures up to 218°C (425°F).
- Applicator control solenoid valves may be controlled by timers or limit switches which sense the position of the package or object to which adhesive is being applied. Switches should be mounted on moveable brackets to provide adjustment for proper location of adhesive application.

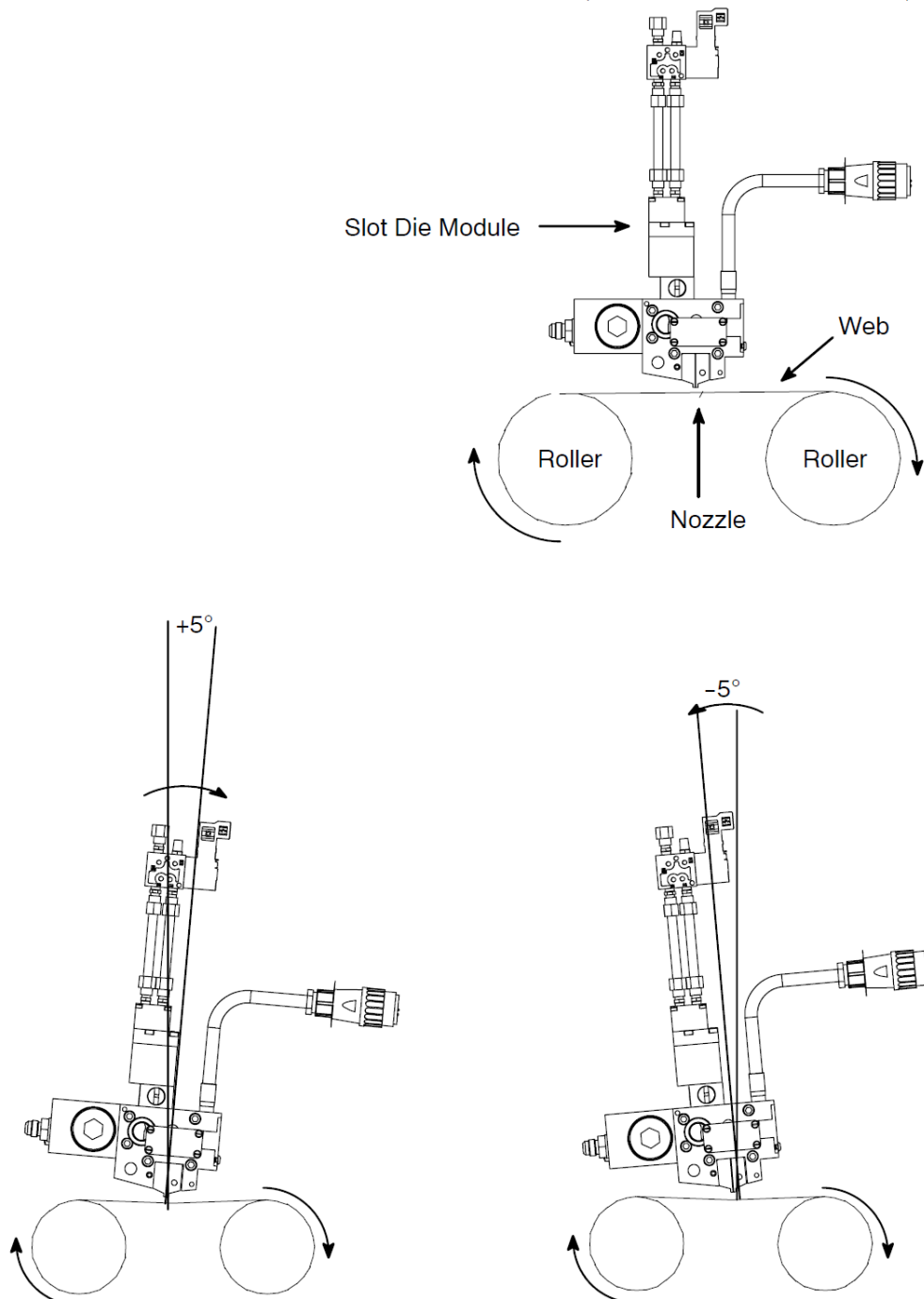
Typical installation for Equity-C Applicator:

1. Install the Applicator on the machine at the foreseen place.
The applicator should be supported from brackets that permit lateral and vertical adjustments. Mount the applicator on bracketry using the M8 screws and insulators provided. Allow access to the (optional) filter, if installed. Be sure that the modules' "weep" holes are visible for periodic inspection.

Off-roll Installation

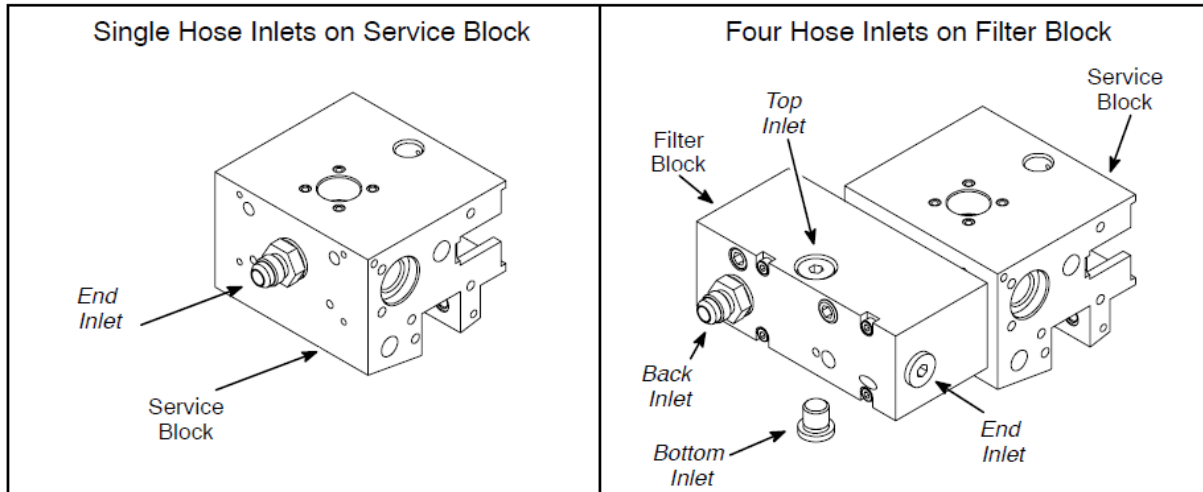
Notes on Proper Off-roll Installation:

- Support the web (as the two rollers are supporting it in the illustration below) within a few inches of each side of the slot nozzle.
- Contact must be made no more than $\pm 5^\circ$ from the vertical (see two lower illustrations).



- Before making the adhesive connection to the applicator, align the adhesive supply hose with its electrical connector oriented in relation to the electrical connector on the top of the applicator.

Connect the swivel fitting of the hot melt hose to the adapter on the service block (or the optional filter block), using any of the inlet ports located on the sides or back of the block. 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.
- Make your electrical hose connections at the numbered connects on the left side of the cover.
- Route hoses so that there is at least an 8 inch (20cm) radius at any bend. Do not hang hoses without proper support.
- Do not crimp, clamp, squeeze or tie hoses.
- The hose adhesive ports are located at the bottom of the filter block, to the right of the electrical connections.
- There are 5 ports for the use of up to 4 hoses and for the (optional) adhesive pressure gauge. When making hose connections, use the numbered connections and ports accordingly; i.e. make your hookup for hose/head #1 to electrical connection #1 and adhesive port #1, hose/ head #2 to electrical connection #2 and adhesive port #2, etc.

- Make the electrical connection as follows:
Make the connection from the hose to the applicator by connecting the female connector of the hose to the male connector of the applicator.
Connect all cables of the equipment components according to the electrical schematics (e.g. ASU, Hoses, Applicators, etc.).

- Install the air line onto the air inlet port on the solenoid valve.



CAUTION

- **Do not use lubricating oil with the air supply as applicators are lubricated at the factory and do not require lubrication when used in production. Where oil is present in the air supply, a coalescing filter (Dynatec PN 100055) must be installed between the standard air regulator/ filter and the applicator.**
 - **In any case the air has to be clean and dry! See advice in chapter 4.3 “Quality of compressed air”.**
- Interconnect the components with the foreseen Profibus (or EtherNet, etc.) interface cables (if applicable).

4.3 Quality of compressed Air

Compressed air quality class according to ISO 8573-1

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

Classification of Quality Classes According to ISO 8573-1:

Class	1. Particulate Material		2. Water Content	3. Oil Content
	max. particle size (µm)	max. particle density (mg/m3)	max. pressure dew point (°C)	max. oil concentration (mg/m3)
1	0,1	0,1	-70	0,01
2	1	1	-40	0,1
3	5	5	-20	1
4	15	8	+3	5
5	40	10	+7	25
6			+10	
7			not defined	

4.4 Advices for the setting-up operation



WARNING

Start with set-up operation not until

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

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

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

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

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



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



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

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

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



CAUTION

During operating the unit, heed the following:

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



CAUTION

The unit is ready for operation, when

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



Risk of stumbling on cables and heated hoses!



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

4.5 Setting-up operation, in general

This is a generic start-up and purging process:

1. Check the complete unit and the traverse paths for safety. Fix visible damages immediately.
2. Before switching the unit on, make sure that the starting unit could hurt no one!
3. Remove all material or other things not needed for the production from the workspace of the unit!

NOTE: 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.

4. To turn the main power on, turn all main switches of the components to "ON"!
5. Set the temperatures in the controller.

Heed following advices:

- The operating temperature range is 38°C to 200°C (100°F to 390°F)
- Use only adhesives recommended by the adhesive manufacturer! Before changing from one type of adhesive to another (even within the same product line of one manufacturer), the unit has to be cleaned respectively purged to avoid possible chemical reactions.
- Set the temperatures of the particular heating zones in the controller according to the adhesive that is in use. Always keep the temperature range given by the adhesive manufacturer. Wrong temperature settings could cause the burning of the adhesive within the system and unsatisfactory adhesion.
- Before starting the production, keep the required heat-up phase of the adhesive respectively of the Melter, so that sufficient adhesive can be molten and supplied to the applicator.



CAUTION

The unit is ready for operation, when

- all temperatures are within the tolerances,
- the adhesive in the tank of Melter is molten completely.

Switch on the motors/pumps only if the adhesive is completely molten!

Untimely start of the motors could cause the following risks:

- The pumps are not sufficiently supplied with adhesive and they intake air. The air causes foam formation within the adhesive system and reactions with PUR adhesives.
- The pumps run dry and may block.
- Solid adhesive could block the intake port. The pumps and motors may overheat and even be destroyed.

6. Adjust the adhesive pressure by the pressure regulator.
7. Place a heat resistant container under the applicator to collect the material that drains from it.



WARNING HIGH PRESSURE RISK OF BURNS AND INJURY!

- During the purging procedure, hot adhesive and oil can come out of the head under high pressure.
- The unit operates with very high temperatures and high adhesive pressure.
- Always wear safety shoes, heat-resistant protective gloves, safety goggles and protective clothing when working on or with the unit. Risk of burns and risk of injury!
- Molten adhesives at operating temperature could cause heavy burns.
- Do not touch the hot surfaces or parts without wearing heat-resistant protective gloves!

8. Start the motors/pumps of the Melter.
9. Purge the applicator of air and oil:
Turn the applicator ON electrically and pneumatically.

Manually open the solenoids using the controller or by pushing (with a small screwdriver or other tool) the purge button located on the solenoid coil.

Continue to hold in the purge button until all air and oil have drained and only adhesive flows from the module.

10. Switch off (deactivate) the module solenoids.
11. Clean the slot die from adhesive residuals.
12. Remove the heat resistant container.
13. Switch the controller to automatic mode.
14. Set the unit parameters respectively check if they are set correct.
15. Thread the material webs.



WARNING

Make sure, that the rolls are free from adhesive residuals or other contaminations before threading the material web!

Avoid collision!

In case of a collision with the rolls several parts of the coating station and of the Vector System can be destroyed!

Make sure unconditionally, that there is no mechanical contact possible between the Vector System and the rolls.



The basic requirement for proper coating is a tight guidance of the material web.

Varying material tension may cause wrinkles within the material web.

Keep your hands, head, etc. away from running rolls! Limbs may be drawn in. Risk of crushing!

16. Start the unit (web material). Make sure that the material web runs even.
17. Activate the module solenoids for the adhesive application. Adhesive will be applied; the adhesive film will be formed!
18. Production is running.

Daily operation



Purge the Applicator before every start of production respectively of a shift by allowing the adhesive flows out until the adhesive film is clean and without tears.

Then switch off the adhesive and clean the extruder lip/ die from adhesive.

Bring the Applicator in work position and continue production.

4.5 Shut Down Procedure



CAUTION! RISK OF BURNS AND INJURY!

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



Do not switch off the controller and the main switch, if the unit has to be operated by weekly timer.

Effect following steps for switching the unit off:

1. Switch all pumps respectively motors off.
2. Switch the main switch off!

Removing dirt:



Remove dirt from all unit components immediately.

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

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

Chapter 5

Maintenance and Repair Notes

5.1 Security advices for maintenance and repair

Heed all security advices given in chapter 2.



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

Maintenance and repair work is only permitted for skilled personnel!

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



High Voltage! Risk of injury and mortal danger!

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



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



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

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

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

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

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

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



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

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

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

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

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

Equipment Preparation for Maintenance & Repair

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

Re-Assembly Procedures and General Cautions

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



CAUTION

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

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

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

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

5.2 Maintenance plan



CAUTION

Heed all security advices given in chapter 5.1.

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

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

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

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

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

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

The applicator requires no regular maintenance. Wipe the applicator clean of adhesive with a clean cloth while still hot at the end of each shift, taking care not to damage the shim. Inspect the applicator periodically as outlined in the following table.

Maintenance plan:

Operating time/ frequency	Inspection point / maintenance notes
Continuous	<ul style="list-style-type: none"> Remove dropped out adhesive and scrap adhesive and search for the cause of that, eliminate the cause.
Once a day	<ul style="list-style-type: none"> Clean the Applicator and components from dirt.
Once a week	<ul style="list-style-type: none"> Check the Slot Die for proper operation and clean the Die assembly if necessary. Check filter for clogging and replace if necessary. Check modules on Applicator if leaky and replace if necessary. (Monitor for excess adhesive flow out of "Weap holes" – small amount is normal). Check air supply connections for leaks and tighten if loose or replace if necessary. Check all hose fittings for leaks and tighten if necessary. Check the solenoid valves for proper function and replace it if necessary.
Every 3 months	<ul style="list-style-type: none"> 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.
Once a year	<ul style="list-style-type: none"> Clean the Applicator. Complete check-up for wearing.
Every two years	<ul style="list-style-type: none"> Complete maintenance.

5.3 Stroke Limit Adjustment of Module

The stroke is factory set at ITW Dynatec to 0.3mm ± 0.05mm (0.012" ± 0.002").

5.4 Replacement of the Filter in Optional Filter Block



WARNING

Heed all security advices given in chapter 5.1.

Maintenance and repair work is only permitted for skilled personnel!

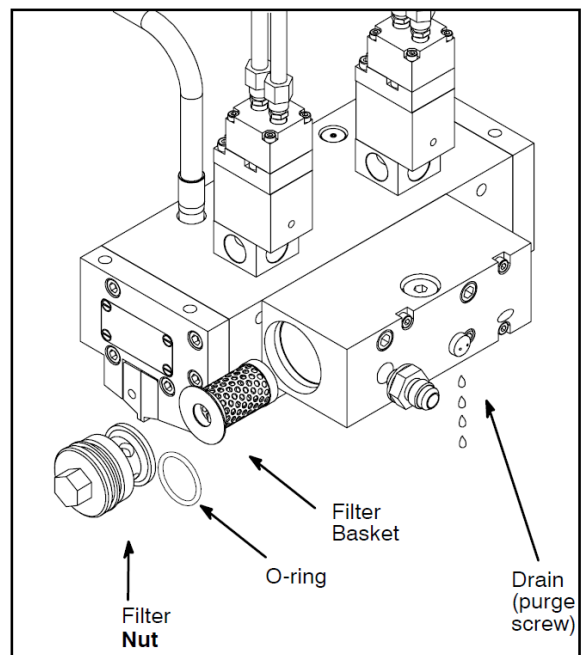
Always wear safety shoes, heat-resistant protective gloves, safety goggles and protective clothing that cover all vulnerable parts of the body while working on the heated unit! Risk of injury or severe burns!



During this procedure, hot adhesive can come out of the Applicator under high pressure.

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

1. The Applicator must be at operating temperature.
2. Turn the ASU's pump/ motor OFF.
3. Switch the unit voltage-free and pressureless.
4. Guard the unit against unauthorized restarting.
5. Place a heat-resistant catchment container/underlay under the Applicator. Hot adhesive may come out!
6. *Relieve the adhesive pressure by:*
 - a. Manually open the module(s). This is done by pushing the solenoid operator button(s) located on the back of the air solenoid coil(s).
 - b. Open the purge screw two turns. This screw is located on the back of the filter block next to the tamper-proof screw which prevents its removal.
 - c. If the ASU filter manifold is equipped with a drain, adhesive pressure may be relieved at the ASU.
7. Wearing insulated gloves, unscrew and remove the filter nut.
8. With needle nose pliers, pull the old filter basket out of the filter block.
9. Replace the O-ring on the filter nut. Apply O-ring lubricant (PN N07588) to the new O-ring.
10. Apply a coat of anti-seize to the threads of the filter nut.
11. Re-install a new 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 hopper is molten completely.
- Continue production.

5.5 Changing, Cleaning or Cutting New Shims

The shim is sandwiched in between the front plate and intermediate plate. These three parts (shim, front plate and intermediate plate) comprise the die lip set. (Note: Shims are sold separately from the front plate and intermediate plate, which are sold as a matched set.) Shims are available from Dynatec (in packages of 3 shims) in different thicknesses. It is the shim thickness, along with variations in glue application pressure, which determines the volume of glue that is applied by the slot die at any given web speed.



WARNING

Heed all security advices given in chapter 5.1.



Maintenance and repair work is only permitted for skilled personnel!

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

During this procedure, hot adhesive can come out of the Applicator under high pressure.

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

Disassembly of Die Lip Set (To Change or Clean Shim)

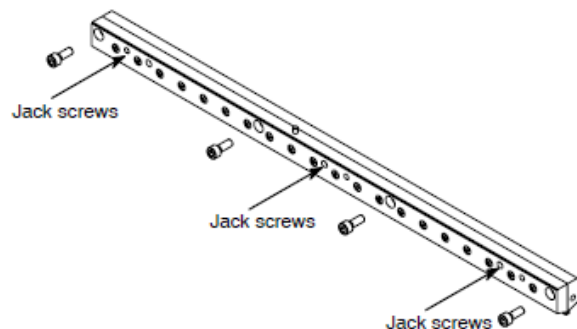
1. The Applicator must be at operating temperature.
2. Turn the ASU's pump/ motor OFF.
3. Switch the unit voltage-free and pressureless.
4. Guard the unit against unauthorized restarting.
5. Place a heat-resistant catchment container/underlay under the Applicator. Hot adhesive may come out!
6. Loosen the pressure screws approximately one revolution using a 4mm hex wrench.
7. Slide out the die lip set from the bottom side of the application head.



CAUTION

Take care not to scratch or nick the mating surfaces of the parts of die lip set during this procedure.

8. Remove the retaining screws from the rear die lip using a 4mm hex wrench.
9. Use two M6 screws in the tapped holes located next to the dowel pins to gently pry the intermediate plate from the front die lip plate.
10. Carefully disassemble the die lip set without scratching or nicking any surface.

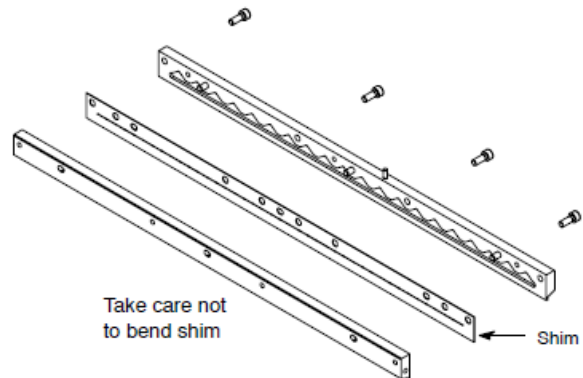




CAUTION

Extreme care must be taken not to bend, scratch or otherwise damage the delicate shim, as this will detrimentally affect the slot die performance.

11. Remove the shim from the dowel pins, taking care not to bend the shim.



Cleaning a Shim

The typical shim may be cleaned by removing all adhesive. However, some PUR adhesives that have been allowed to “cure” on a shim cannot be readily removed.

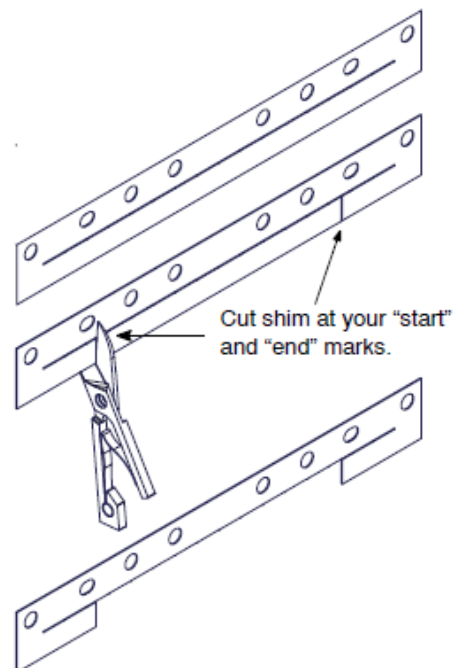
To clean adhesive from a shim, use one of the following methods:

1. Wearing heat-resistant gloves, carefully heat the shim, using a hand-held heating device, in order to liquify the adhesive on the shim, then wipe clean using a clean cloth.
2. Clean with an adhesive solvent recommended by your adhesive manufacturer.

Cutting a New Shim

Shims cut to the same pattern, out of the same thickness or a different thickness blank shim, can be used to replace the original shim within the die lip set.

1. Obtain a Dynatec “Easy-Cut” blank shim appropriate for the maximum application width of your applicator.
2. With a water-resistant marker, mark the cutout “start” and “end” positions on the shim, corresponding to your application’s width specifications.
3. Make two straight cuts at your marked positions to the perforations of the shim.
4. Carefully bend the shim slightly forward and backward to break out the cutout portion of the shim.



Reassembly

Reverse the order of the disassembly instructions provided earlier in this chapter.

1. Re-assemble the three pieces of the die lip assembly.
2. Properly position the single dowel pin on top of the die lip/ distribution plate assembly into the slot die and push it completely up into the applicator body.
3. Re-tighten the pressure screws (M8 set screws) equally, in increments, using a 4mm hex wrench.
Tighten from the center screw outward to the right and left sides of the applicator until reaching a final tightening torque of 25 in.lbs. To avoid O-ring leakage, do not over-torque screws.

After finishing the maintenance or repair works:

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

Chapter 6

Troubleshooting

Troubleshooting In General



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

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



DANGER HIGH VOLTAGE

The Adhesive Supply Unit and Applicator use electrical power that can be life threatening and hot-melt adhesives that can cause serious burns. Only qualified persons should perform service on the ASU.



WARNING HOT SURFACE

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

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

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

Use proper tools for handling hot melt components.



Re-Assembly Procedures

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



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

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

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

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

Troubleshooting Guide



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

Preliminary Checks: Verify the following before proceeding:

- All pneumatic and electrical connections are correct.
- The ASU is supplied with power and the main power switch is ON.
- Adhesive is in the hopper and the ASU's pump is ON.
- The ASU and Applicator have sufficient air pressure.
- The temperature controller is in operation. The setpoints are correct for the application, ASU, Heated Hoses and Applicators. All components are heating properly.

Problem	Possible Cause	Solution
Module does not open.	<ol style="list-style-type: none"> 1. Temperature adjustment of head is too low. 2. Inoperative solenoid. 	<ol style="list-style-type: none"> 1. Check temperature adjustment. 2. Push the solenoid's manual button. If it opens, the problem is electrical.
No adhesive flowing out of module.	<ol style="list-style-type: none"> 1. Die assembly is clogged. 2. Filter element is dirty. 3. Module seals (O-rings) are inoperative. 4. ASU's hopper is empty. 5. Adhesive is too cold. 6. Solenoid valve is not opening. 7. Shim is too thin for the adhesive being used. 	<ol style="list-style-type: none"> 1. Clean die assembly, see instructions in Ch. 5 Maintenance. 2. Replace filter, see instructions in Ch. 5 Maintenance. 3. Check module O-rings, see instructions in this chapter: "Module Assembly Instructions". 4. Re-fill hopper. 5. Adjust temperature, see ASU manual. 6. Check solenoid vave. 7. Use a thicker shim or a different adhesive.
Hot melt is coming out of the module's "weep" holes.	<ol style="list-style-type: none"> 1. Module seals are damaged. 	<ol style="list-style-type: none"> 1. Replace module, see instructions in this chapter.

Problem	Possible Cause	Solution
Applicator does not reach operating temperature.	<ol style="list-style-type: none"> 1. Hopper temperature setpoint is too low. 2. Inoperative heater cartridge. 3. Inoperative temperature sensor. 	<ol style="list-style-type: none"> 1. Change setpoint, see ASU manual. 2. Check/ replace heater cartridge, see instructions in this chapter. 3. Check/ replace sensor, see instructions in this chapter.
Applicator is too hot.	<ol style="list-style-type: none"> 1. Applicator temperature setpoint is too high. 2. Inoperative temperature sensor. 	<ol style="list-style-type: none"> 1. Change setpoint, see ASU manual. 2. Check/ replace sensor, see instructions in this chapter
Air escapes from module.	<ol style="list-style-type: none"> 1. Inoperative piston O-ring. 2. O-rings located between module and service block are inoperative. 	<ol style="list-style-type: none"> 1. Replace module, see instructions in this chapter. 2. Remove module from block (see instructions in this chapter: "Replacement of Module") and replace O-rings.
Application pattern is erratic.	<ol style="list-style-type: none"> 1. Adhesive pressure is too low. 2. Pattern controller's adjustment is improper. 	<ol style="list-style-type: none"> 1. <ol style="list-style-type: none"> a. <i>For units without speed control:</i> increase adhesive pressure at ASU. b. <i>For units with speed control (tach follower):</i> adjust pump speed control. 2. See pattern controller manual for proper adjustment.

Rebuild of Slot Die Module PN 810659**Important Rebuild Note**

Without the special tools required for the rebuild procedure (i.e. mold tool and thickness gauge), module rebuild of the tube-mounted high speed slot die module cannot be accomplished in the field. In this case, ITW Dynatec recommends that the customer either return their module to the factory for rebuilding, or replace it.

**WARNING**

Heed all security advices given in chapter 5.1.



Maintenance and repair work is only permitted for skilled personnel!

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



During this procedure, hot adhesive can come out of the Applicator under high pressure.

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

1. The Applicator must be at operating temperature.
2. Turn the ASU's pump/ motor OFF.
3. Switch the unit voltage-free and pressureless.
4. Guard the unit against unauthorized restarting.
5. Place a heat-resistant catchment container/underlay under the Applicator.
Hot adhesive may come out!



Use the Component Illustration of the Module PN 810821 in Chapter 8 to reference parts in the procedure below.
Use Rebuild Kit PN 110467. Note that two special tools are required to complete this procedure.

6. Loosen the four 3mm screws (item #25 in illustration PN 810659). Remove air manifold body (item #22).
7. Loosen the four M4 screws (item #20), pull the module out of the adhesive manifold and remove the cap (#19).
8. Prevent nozzle stem (#1) from turning, by means of the hexagon at the bottom.
9. Loosen lock nut (#10).
10. Loosen the piston (#17), with a cranked box wrench.
11. Take the fitting (#13) off of the stand-off (#9), remove the compression spring (#27).
Replace cylinder body if it is worn down.
12. Pull out nozzle stem (#1).
13. Replace O-rings (#2, 8, 21, 18), seal (#7), spacer (#6) and circlip (#5). Lubricate O-rings (#2, 8, 21, 18) with Dow Corning Lube (PN 001U002).

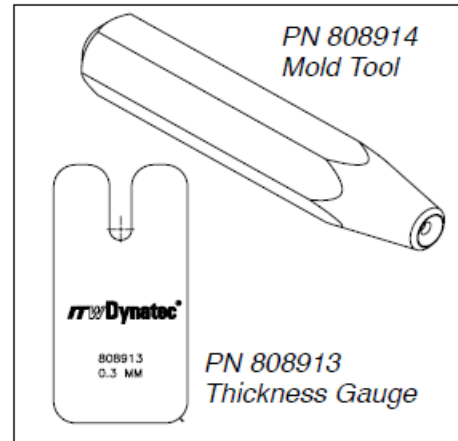
14. Clean spacer (#4), nozzle seat (#3), nozzle stem (#1) and stand-off (#9) with a cleaning agent.



CAUTION: Observe your material supplier's instructions regarding use of a cleaning agent. Read the Material Safety Data Sheet and product information of the cleaning agent used.

15. Re-assembly is reversal of above listed steps with the following additions:

- a. Before installing air cap (#19), check seat gap by inserting a thickness gauge (PN 808913) between the spacer (#4) and the seat (#3). Check the setting size (0.3 to 0.4 mm is allowable). If necessary, re-adjust, then check again.
- b. Use a mold tool (PN 808914) above the hexagon of the nozzle stem. Hit the mold tool once with a 150g hammer. This will seal the adhesive outlet.
- c. Put the air cap (#19) onto the module. Re-insert the complete module into the applicator. Tighten the four hexagonal screws (#20).
- d. Re-install air manifold body (#22).



Testing of Heater Cartridge or Temperature Sensor

1. Turn the ASU OFF and make sure all adhesive air pressure and the pump are turned OFF.
2. Unplug the electrical cable from the adhesive supply hose to expose the pins in the cable.

Note: Pin connectors and pinout numbers will vary depending on the control scheme of the applicator. See pages Chapter 8 for a diagram of each.

Testing Resistance of the Heater Cartridge

- a. The resistance value (Ohms) of your heater cartridge may be calculated using the formula:

$$\frac{\text{Volts}^2}{\text{Watts}} = \text{Ohms}$$

To determine wattage, see heater chart in Chapter 7.

- b. *For DynaControl/ PLC:* With an ohmmeter, contact pins 7 and 8 and measure resistance.
For Controller MCV or ETC: With an ohmmeter, contact pins 3 and 5 and measure resistance.
For DynaPlus/ Pro: With an ohmmeter, contact pins 8 and 9 and measure resistance.
For Upgrade (NI RTD): With an ohmmeter, contact pins 1 and 2 and measure resistance.
For Upgrade (Thermocouple): With an ohmmeter, contact pins 2 and 3 and measure resistance.
For Upgrade (PT RTD): With an ohmmeter, contact pins 2 and 3 and measure resistance.
- c. A tolerance range of $\pm 5\%$ is allowed. A heater cartridge that tests outside of this range must be replaced. Replacement instructions follow in this chapter.

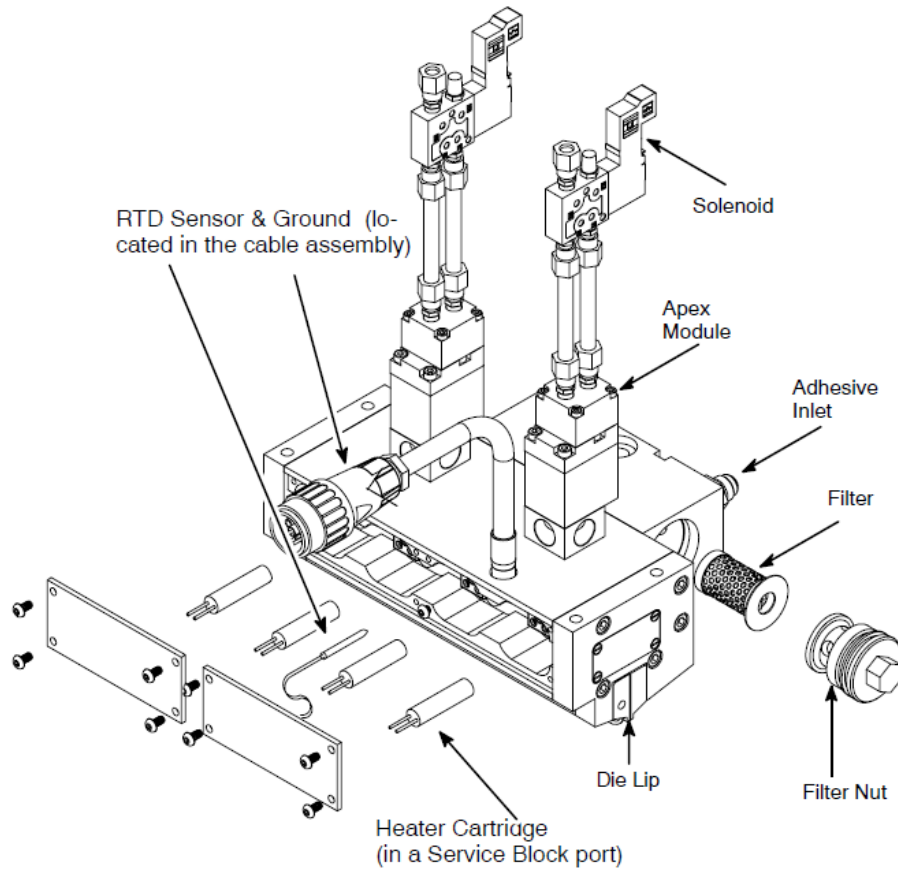
Testing Resistance of the RTD Temperature Sensor

- a. The resistance value (Ohms) of your temperature sensor depends on the temperature of the sensor at the time it is being tested. At 25°C (77°F), the resistance of a PT 100 (Platinum) sensor should be 110 Ohms. At 25°C (77°F), the resistance of a N120 (Nickel) sensor should be 138 Ohms. At 25°C (77°F), the resistance of a NiFe (Nickel Iron) sensor should be 100 Ohms.

- b. For DynaControl/ PLC: With an ohmmeter, contact pins 5 and 6 and measure resistance.
For Controller MCV or ETC: With an ohmmeter, contact pins 8 and 12 for one sensor (and contact pins 6 and 10 for the other sensor) and measure resistance.
For DynaPlus/ Pro: With an ohmmeter, contact pins 2 and 3 and measure resistance.
For Upgrade (NI RTD): With an ohmmeter, contact pins 3 and 5 and measure resistance.
For Upgrade (Thermocouple): With an ohmmeter, contact pins 6 and 7 and measure resistance.
For Upgrade (PT RTD): With an ohmmeter, contact pins 6 and 7 and measure resistance.

- c. A tolerance range of $\pm 10\%$ is allowed. A sensor that tests outside of this range must be replaced. Replacement instructions follow in this chapter.

Replacement of Heater Cartridge or Sensor



ITW Dynatec has a High Temp Heater Splice Kit available (PN 102645). Each kit contains sufficient connectors and shrink tube to replace a heater cartridge (the heater is ordered separately).

1. Disconnect power to the ASU and make sure all adhesive air pressure and pumps are turned OFF.
2. Disconnect the electrical cable assembly from the hose.
3. Remove the wire access cover plate via four (100mm) or six (200mm) holding screws.
4. Pull the heater (or sensor) out of the service block.
5. Apply a thin coat of thermal paste (PN 001V061) to the new cartridge heater (or new sensor).
6. Put new cartridge heater (or new sensor) in service block.
If replacing heater: crimp ferrules onto heater wires and assemble to ceramic terminal block.
7. Replace access cover plate.

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Chapter 7 Ordering Guide

Slot Die Head Heater Cartridges

Length of Segment/ # of Modules	Heater PN/ Qty. Heaters in Segment	Wattage of each Heater/ Total Wattage for Segment
25 mm/ 0 (ea. spacer)	803960/ 1 (ea. spacer)	200W / 400W
100 mm/ 1	803960/ 2	200W / 400W
200 mm/ 2	803960/ 4	200W / 800W

Add wattage of all segments on your applicator to determine total wattage of applicator.

Slot Die Head RTD Sensors

Control	Part Number	Quantity	Description
DynaControl	N07958	1	PT100
Upgrade (Nor)	N07864	1	N120
MCV	N07958	2	PT100
DynaPlus/ Pro	N07958	1	PT100
ETC	N08176	2	NiFe

Slot Die Shims Recommended Spares

See following pages for complete Spare Parts List.
Blank shims (brass) are sold in packages of 3 only.
Applicators are factory-shipped with 0.15mm/ 0.006" shims.

Length of Applicator mm	Shim Thickness PN (pkg. 3 each)				
	0.15mm/ 0.006"	0.2mm/ 0.008"	0.3mm/ 0.012"	0.4mm/ 0.016"	0.5mm/ 0.020"
100	112353	112354	112355	112356	112357
150	113072	113073	113074	113075	113076
200	111882	111883	111884	111885	111886
250	113029	113030	113031	113032	113033
300	111832	111833	111834	111835	111836
350	113116	113117	113118	113119	113120
400	111841	111842	111843	111844	111745
450	113055	113056	113057	113058	113059
500	111513	111514	111515	111516	111517
550	113137	113138	113139	113140	113141
600	112153	112154	112155	112156	112157
650	113099	113100	113101	113102	113103
700	112163	112164	112165	112166	112167
750	113148	113149	113150	113151	113152
800	112173	112174	112175	112176	112177
850	113158	113159	113160	113161	113162
900	112361	112362	112363	112364	112365

Hardware

All hardware (nuts, bolts, screws, etc.) used to construct the Equity-C applicator may be purchased at your local hardware store.

Multi-bead Nozzle

A multi-bead nozzle is offered to give added capability in continuous and multi-line applications.

Extention 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.

Control Scheme	Part No.	Length	Part No.	Length
DCL/ PLC	103773	10'	103776	25'
	103774	15'	105123	30'
	103775	20'	105147	40'
MCV	084F222	10'	084F682	25'
	084F225	15'	084F383	30'
	084F223	20'		
Upgrade (Ni RTD)	102706	10'	105834	40'
	106349	25'		
Upgrade (Pt RTD)	110159	2m	110162	8m
	110160	4m	110163	10m
Service block only	110161	6m		

Film Applications

When adhesive is applied to film, a smoother, more "closed" coating is required. The following slot die assemblies, featuring a curved nozzle, are recommended for film substrates.

Length of Applicator mm	Slot Die Assy. Part No.
100	113176
150	113180
200	113184
250	113188
300	113192
350	113196
400	113200
450	113204
500	113208
550	113212
600	113216
650	113220
700	113224
750	113228
800	113232
850	113234
900	113238

Filters

Part Number	Description
101247	Filter basket, 100 mesh (standard)
106273	Filter basket, 150 mesh (option)
109482	Filter basket, 200 mesh (option)
116245	Filter, spin-on, 150 mesh (option)

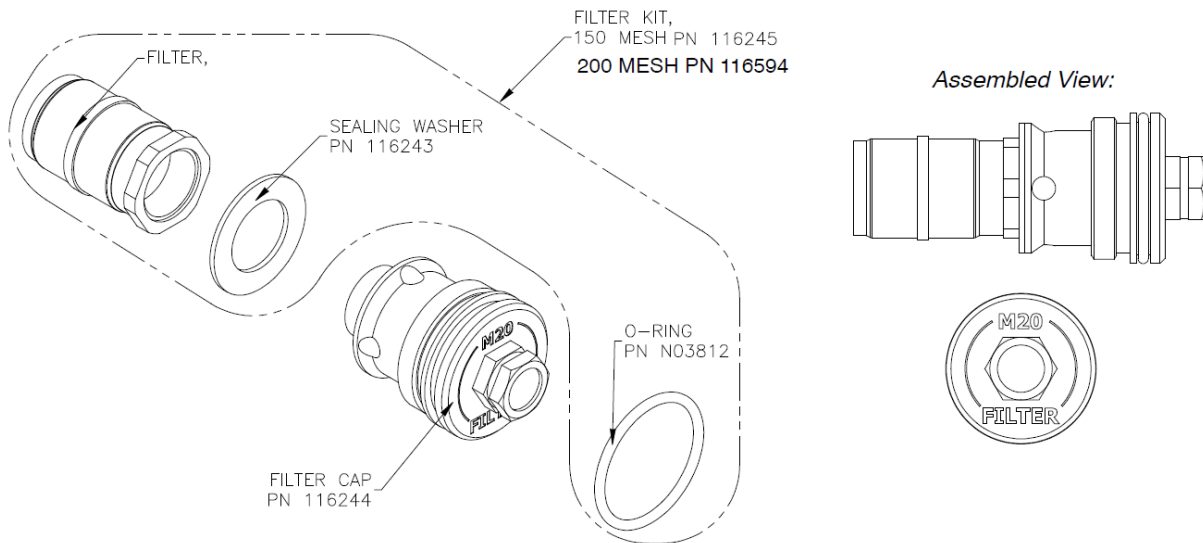
Filter Kits

To simplify ordering, Filter Kits are available.

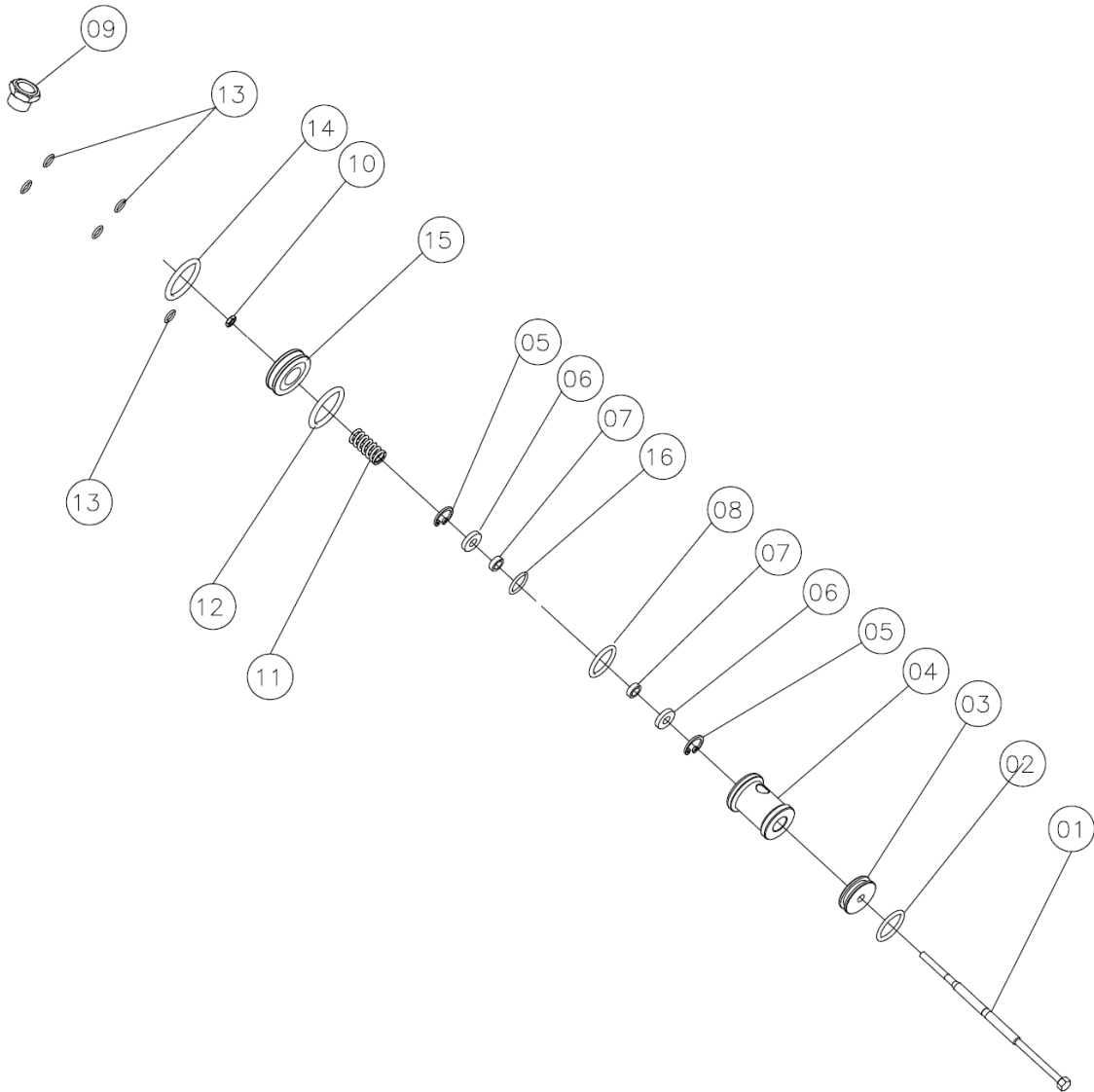
Filter Kit PN	O-ring PN	Filter Cap PN	Filter PN
114291	N03812 O-ring #125	106303	101247 100-mesh, Basket
114292	N03812 O-ring #125	106303	106273 150-mesh, Basket
116246*	N03812 O-ring #125	116244	116245 150 mesh, Spin-on
116595*	N03812 O-ring #125	116244	116593 200 mesh, Spin-on

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

* PN 116595 M-20 Spin-On Filter Assembly (filter code F)



APEX Rebuild Kit, Slot Die, PN 110467



Item No.	Part Number	Description	Quantity
01	110412	Stem	1
02	808269	O-ring 14x2mm	1
03	110413	Seat	1
04	110414	Spacer	1
05	110415	Retaining ring 10mm	2
06	110416	Spacer	2
07	110417	Seal	2
08	808268	O-ring 16x2mm	1
09	110420	Breather vent 1/8x11mm	1
10	821762	Lock nut M3	1
11	110426	Spring	1
12	110424	O-ring 22x1.5mm	1
13	N00175	O-ring 008	5
14	808266	O-ring 17x2.5mm	1
15	110421	Piston	1
16	808267	O-ring 12x2.5mm	1

Recommended Spare Parts List for Equity-C Slot Die Applicators

Item No.	Part Number	Description	Quantity
1	001V061	Thermal Paste	1
2	108700	TFE Lubricant	1
3	See order	Filter Basket	2
4	803960	Heater, 240V/ 200W	m x 0.5*
5	N07958	RTD Sensor, Pt 100 (in cable)	1
6	810659	Module (standard)	m x 0.5*
7	N00179	O-ring 012 (in cable)	1
8	N00175	O-ring 008 (on die lips)	m
9	N03812	O-ring 125	1
10	N00183	O-ring 016	1
11	110467	RA Slot Die Module Rebuild Kit	m x 0.5*
12	(see list in this chapter)	Shim	1 pkg.
13	808914	Mold Tool	1
14	808913	Thickness Gauge	1

* Quantities for these items vary per the number of modules (ports) on the Applicator.
m = number of modules.

Repair Kits

Module Rebuild Kit PN 110467

This kit consists of a piston, seal, stem, spring and all O-rings required to rebuild an Apex module.
Some modules do not require all kit parts for rebuild. See previous page for a complete kit parts list.

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Chapter 8

Component Illustrations and Bill of Materials



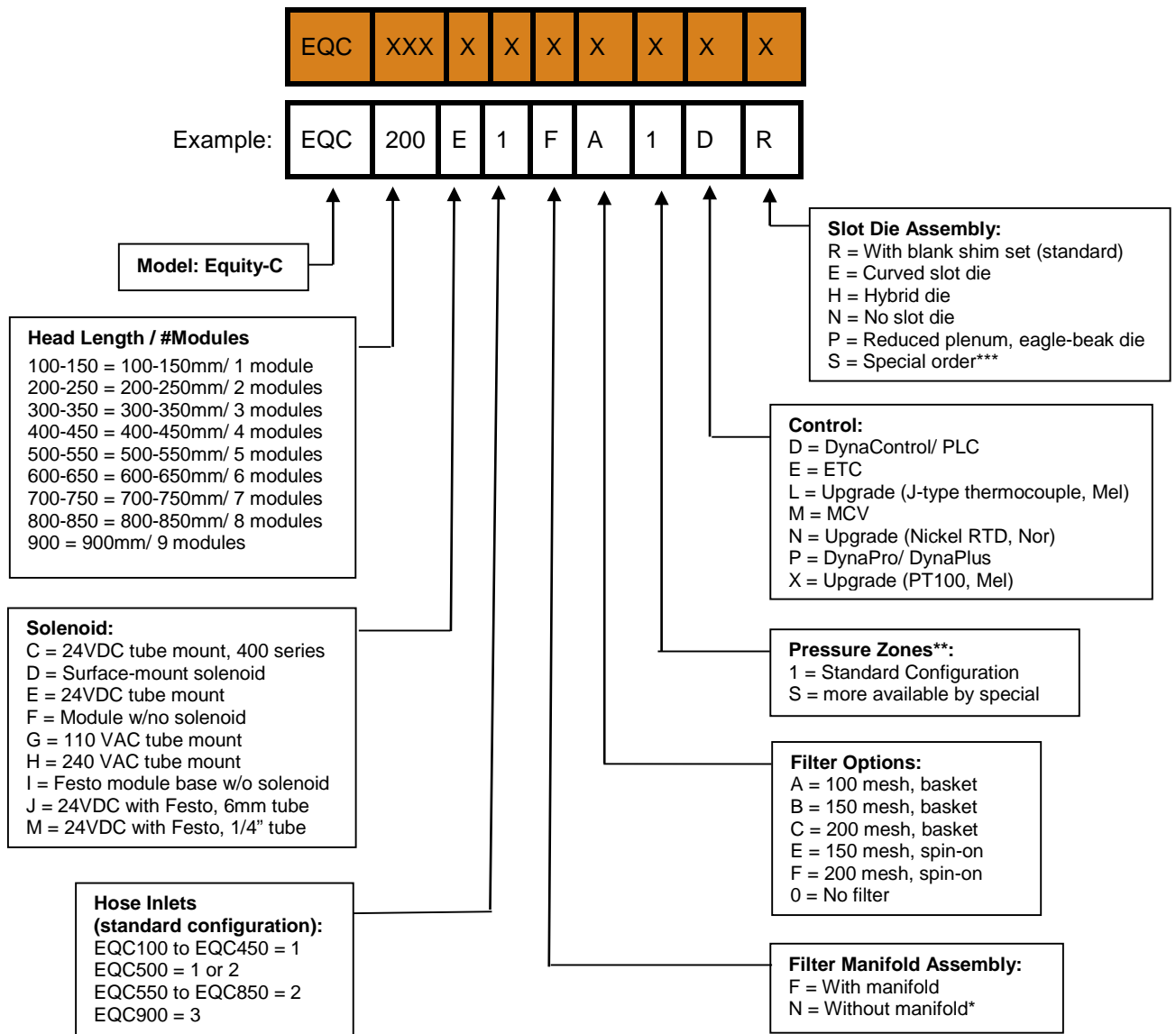
WARNING

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

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

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

Equity-C Applicator Model Designation Guide



Notes:

* If this option is selected, hose inlets are required.

** If more than one pressure zone is selected, plug assembly PN 112261 must be used to create separate zones.

***Design and part numbers "to be designed"

Typical Equity-C 100mm Manifold Assembly, PN 111520

Item No.	Part Number	Description	Quantity
1	111521	Plug Assembly	2
2	111504	Side Plate, Right	1
3	108081	Screw M3 x 8mm	8
4	110224	Information Plate	2
5	104229	Ferrule, 14G	4
6	107881	Terminal Block, Ceramic	1
7	111503	Side Plate Left	1
8	808411	Screw M6 x 16mm	10
9	112282	Dowel Pin	4
10	112300	Service Block Assembly, 100mm	1
11	111502	Service Block	1
12	805846	Screw M6 x 10mm	2
13	103470	Screw M3 x 5mm	1
14	803960	Heater, 10 x 40mm, 240V, 200W	2
15	111505	Wire Cover	1
16	106424	Screw M4 x 8mm	4
17	112298	Screw M8 x 10mm	4
18	810659	Module Assembly (MAC solenoid, not included)	1
	815093	Module Assembly (Festo solenoid, not included)	1
19	107324	Anti Seize Compound	A/R*
20	111518	Filter Block Assembly (not included in Service Block Assy.)	1-3
21	808285	Filter Block Mounting Screw M4x65mm	4
22		Cable Assembly Options (not included in Service Block Assy.)	1-3
	103467	Dynacontrol (DCL)	
	808792	Meltex Type J	
	800223	MCV Control	
	104528	Nordson Nickel RTD	
	104523	Dynapro/ Dynaplus	
	802578	Meltex PT100	

* see separate drawing and/or bill of material.

A/R* = As required.

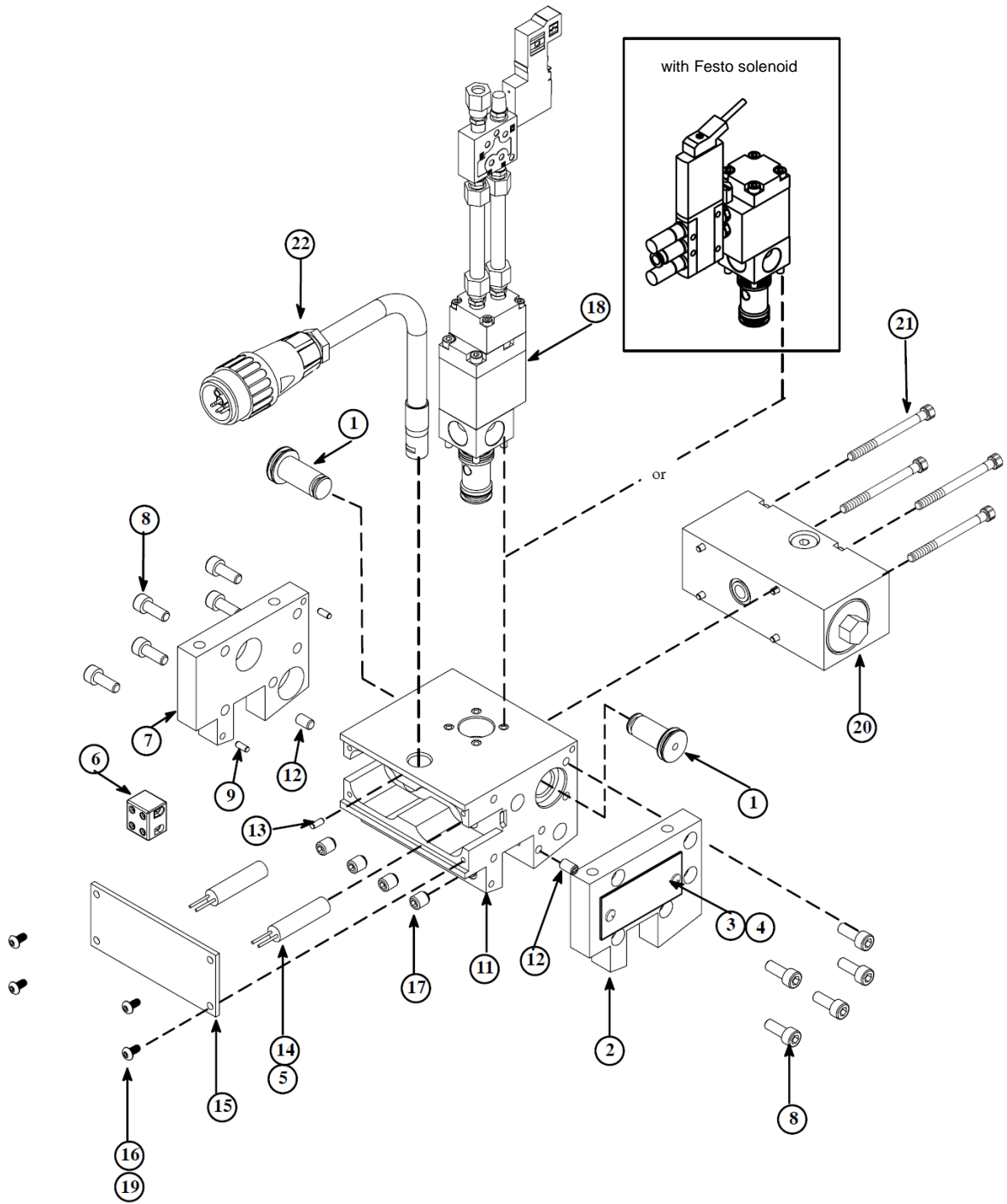


Illustration: Typical Equity-C 100mm Manifold Assembly, PN 111520

Typical Equity-C 200mm Service Block Assembly

Item No.	Part Number	Description	Quantity
1	111521	Plug Assembly	2
2	111504	Side Plate, Right	1
3	108081	Screw M3 x 8mm	8
4	110224	Information Plate	2
5	104229	Ferrule, 14G	8
6	107881	Terminal Block, Ceramic	2
7	111523	Plug Assembly, Cable Entry	1
8	111503	Side Plate Left	1
9	808411	Screw M6 x 16mm	10
10	112282	Dowel Pin	4
11	111526	Service Block Assembly, 200mm	1
12	111519	Service Block, 200mm	1
13	805846	Screw M6 x 10mm	2
14	103470	Screw M3 x 5mm	2
15	803960	Heater, 10 x 40mm, 240V, 200W	4
16	112283	Wire Cover	1
17	106424	Screw M4 x 8mm	6
18	112298	Screw M8 x 10mm	8
19	810659	Module Assembly (MAC solenoid, not included)	2
	815093	Module Assembly (Festo solenoid, not included)	2
20	107324	Anti Seize Compound	A/R*
21	111518	Filter Block Assembly (not included in Service Block Assy.)	1-3
22	808285	Filter Block Mounting Screw M4x65 mm	4
23		Cable Assembly Options (not included in Service Block Assy.)	1-3
	103467	Dynacontrol (DCL)	
	808792	Meltex Type J	
	800223	MCV Control	
	104528	Nordson Nickel RTD	
	104523	Dynapro/ Dynaplug	
	802578	Meltex PT100	

* see separate drawing and/or bill of material.

A/R* = As required.

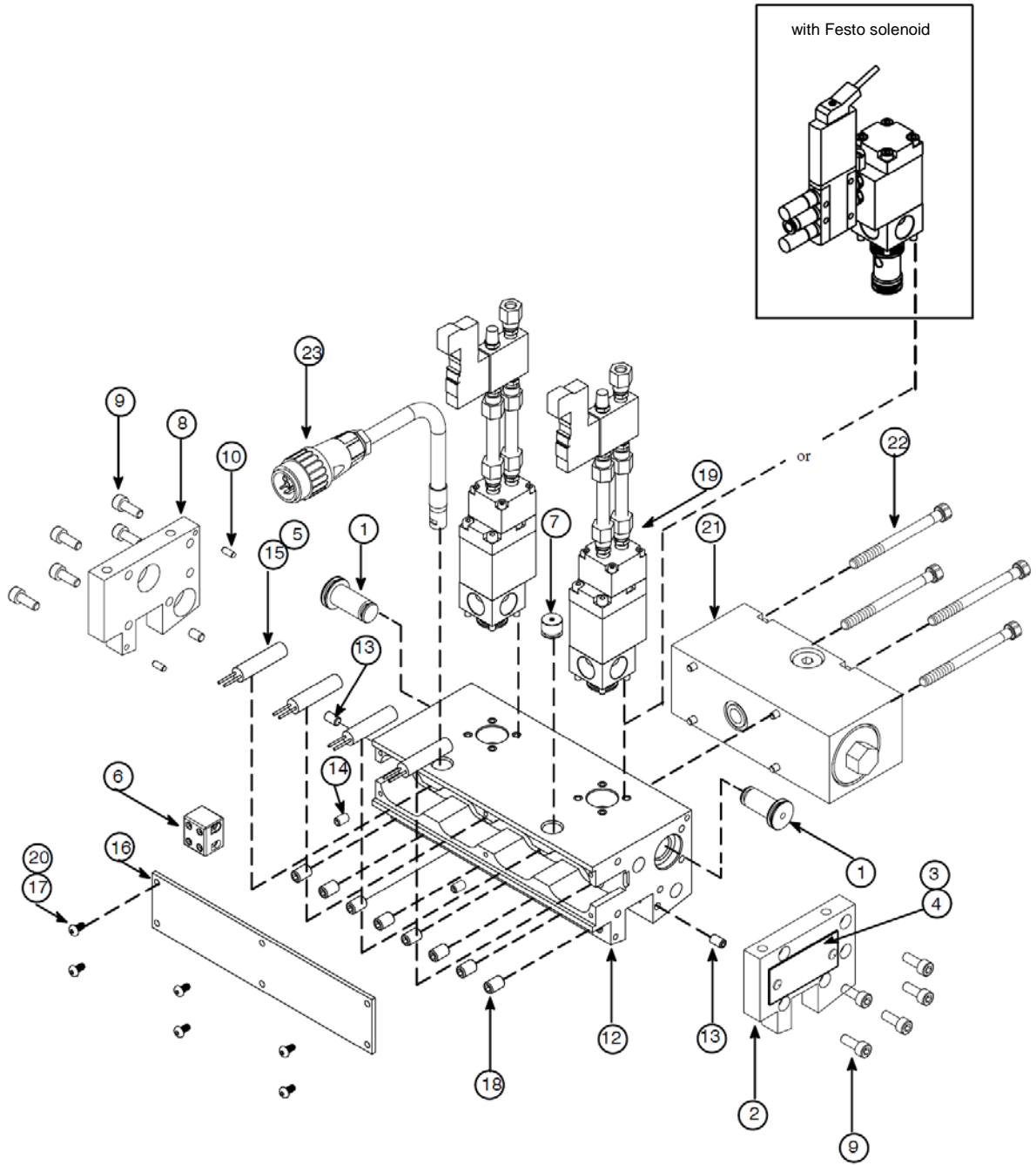


Illustration: Typical Equity-C 200mm Service Block Assembly

Typical Equity-C Multiple Service Block (assorted) Assemblies

Item No.	Part Number	Description	Quantity
1	111520	Manifold Assembly, 100mm	See table
2	111526	Manifold Assembly, 200mm	See table
3	101625	Fitting, Plug, 1/4 BSPP	See table
4	111521	Plug Assembly, Manifold	2
5	111504	Side Plate, Right	1
6	112299	Screw M3 x 8mm	8
7	111506	Information Plate	2
8	104229	Ferrule, 14G	See table
9	111522	Plug Assembly, Connection	See table
10	See table	Rod, Manifold Assembly	2
11	See table	Nozzle Assembly, Slot Die	1
12	107881	Terminal Block, Ceramic	See table
13	111523	Plug Assembly	See table
14	111503	Side Plate, Left	1
15	808411	Screw M6 x 16mm	10
16	808414	Lock washer M10, split (not used on 112300 or 112301)	4
17	808415	Hex nut M10 (not used on 112300 or 112301)	4
18	111282	Dowel Pin, 3mm x 8mm	See table
19	111507	Wire Assembly	See table
20	N07430	Terminal Ring, 12-16GA, Uninsulated	See table
21	107536	Screw M8 x 60mm	4
22	105060	Hex nut M8 x 1.25mm	8
23	106321	Flat washer 8.9 mm x 17mm x 1.6mm	8
24	L00006	Insulator Spacer	4
25	107326	Heat Transfer Compound	A/R*
26	001U002	Silicone Lubricant	A/R*
27	112773	Indexing Plunger	2
28	112192	Heated Spacer Assembly 25mm	See table

* see separate drawing and/or bill of material.

A/R* = As required.

Length	Head Assy.	Item 1 Qty.	Item 2 Qty.	Item 3 Qty.	Item 8 Qty.	Item 9 Qty.	Item 10	Item 11	Item 12 Qty.	Item 13 Qty.	Item 18 Qty.	Item 19 Qty.	Item 20 Qty.	Item 28 Qty.
100mm	112300	1			4			112284	1		4		1	
150mm	113050	1			8		113061	113077	2		8	2	1	2
200mm	112301		1		8			112274	2	1	4		1	
250mm	113036	1			8		113037	113034	2	1	8	2	1	2
300mm	112302	3		2	8	2	112286	112181	2	2	8	2	1	
350mm	113123	3		2	12	2	113062	113121	4	1	12	4	1	2
400mm	112303	2	1	2	16	2	112287	112180	4	2	8	2	2	
450mm	113051	2	1	2	20	2	113063	113060	4	2	12	4	2	2
500mm	112304	5		4	16	4	111510	111524	4	3	12	3	2	
550mm	113144	5		4	16	4	113064	113142	4	3	16	5	2	2
600mm	112305	4	1	3	16	4	111288	112150	4	4	12	3	2	
650mm	113105	4	1	3	20	4	113065	113104	4	4	16	5	2	2
700mm	112306	3	2	3	24	4	111289	112160	6	4	12	2	3	
750mm	113154	3	2	3	28	4	113066	113153	6	4	16	4	3	2
800mm	112307	2	3	3	24	4	111290	112170	6	5	12	2	3	
850mm	113164	2	3	3	28	4	113067	113163	6	5	16	4	3	2
900mm	112308	5	2	4	24	5	111291	112285	6	6	14	4	3	

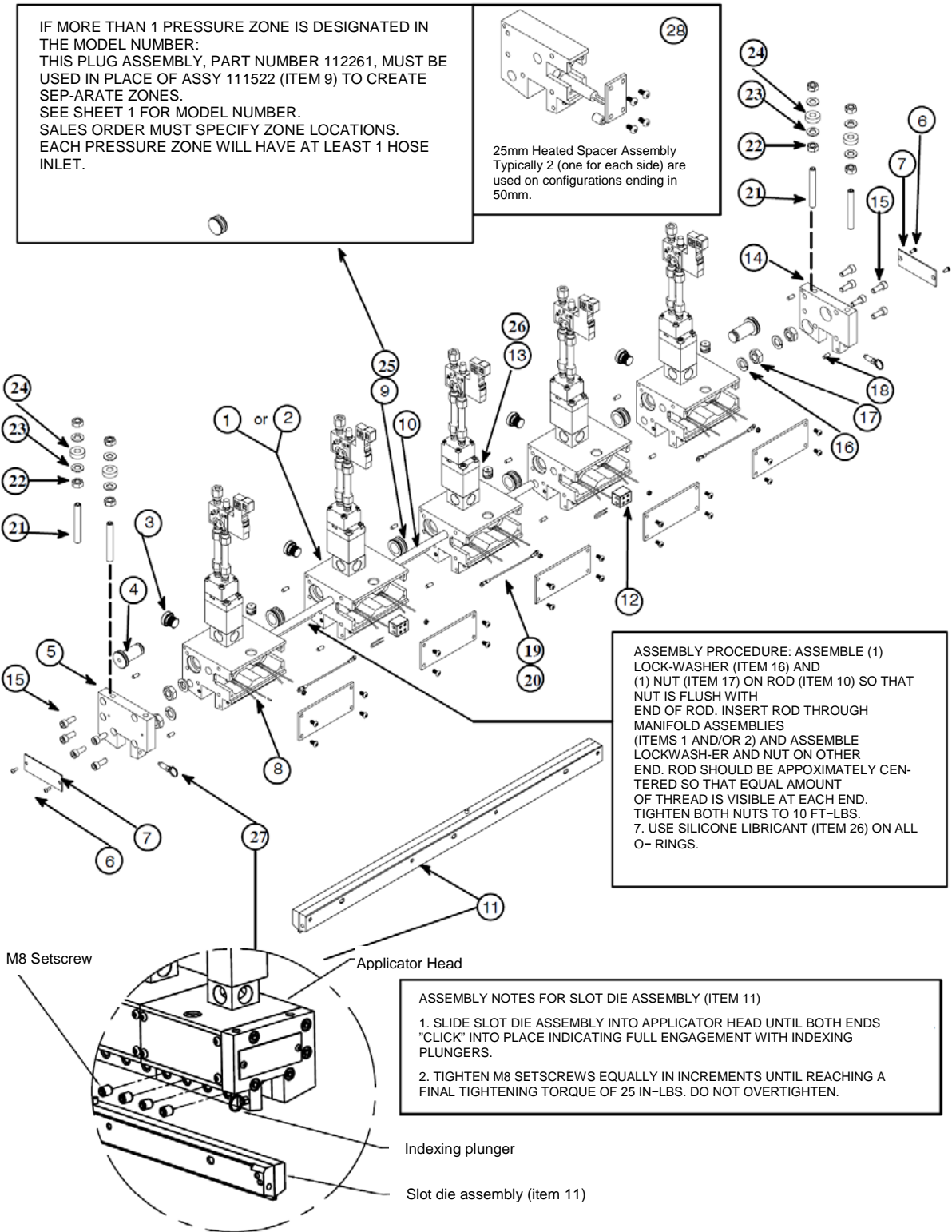


Illustration: Typical Equity-C Multiple Service Block (assorted) Assemblies

Typical APEX Filter Block Assembly, PN 111518

Item No.	Part Number	Description	Quantity
1	N00183	O-ring -016	1
2	N03812	O-ring -125	1
3	808285	Screw M4x65mm	4
4	110449	Filter block	1
5	106303	Cap	1
6	104852	Screw M10x12 mm cone	1
7	101833	Screw 10-12 x 1/2	1
8	101625	Fitting, Plug, 1/4 BSPP	5
9	101624	Fitting, straight, 6 JIC x 1/4 BSPP	1
10	106273	Filter basket, 150 mesh	1 / Ref.*
	101247	Filter basket, 100 mesh (optional)	Ref.*

Ref.* = Shown for reference only. See your order for specific part numbers.

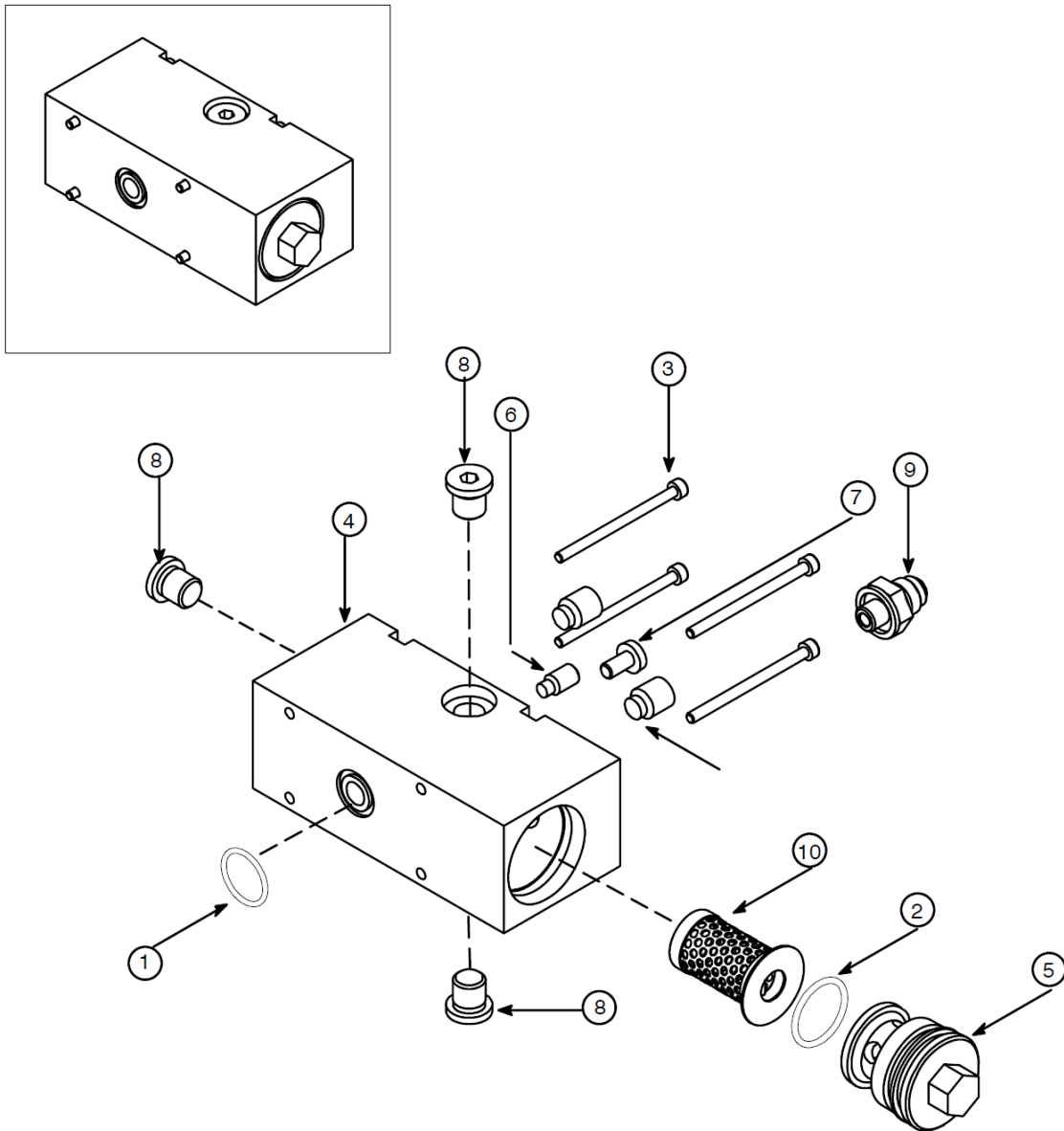


Illustration: Typical APEX Filter Block Assembly, PN 111518

Typical Equity-C Extruder Assemblies Table

	Item 1	Item 2		Item 3
Length of Applicator mm	Extruder assembly	O-ring -008	Qty	Shim .006, 3 pack
100	112352	N00175	4	112353
150	113071	N00175		113072
200	112275	N00175	8	111882
250	113028	N00175		113029
300	112276	N00175	12	111832
350	113115	N00175		113116
400	112277	N00175	16	111841
450	113054	N00175		113055
500	112278	N00175	20	111513
550	113136	N00175		113137
600	112279	N00175	24	112153
650	113098	N00175		113099
700	112280	N00175	28	112163
750	113147	N00175		113148
800	112281	N00175	32	112173
850	113157	N00175		113158
900	112360	N00175	36	112361

Eagle-Beak Style Equity-C Extruder Assemblies Table

	Item 1	Item 2		Item 3
Length of Applicator mm	Extruder assembly	O-ring -008	Qty	Shim .006, 3 pack
100	113175	N00175	4	112353
150	113179	N00175		113072
200	113183	N00175	8	111882
250	113187	N00175		113029
300	113191	N00175	12	111832
350	113195	N00175		113116
400	113199	N00175	16	111841
450	113203	N00175		113055
500	113207	N00175	20	111513
550	113211	N00175		113137
600	113215	N00175	24	112153
650	113219	N00175		113099
700	113223	N00175	28	112163
750	113227	N00175		113148
800	113231	N00175	32	112173
850	113233	N00175		113158
900	113237	N00175	36	112361

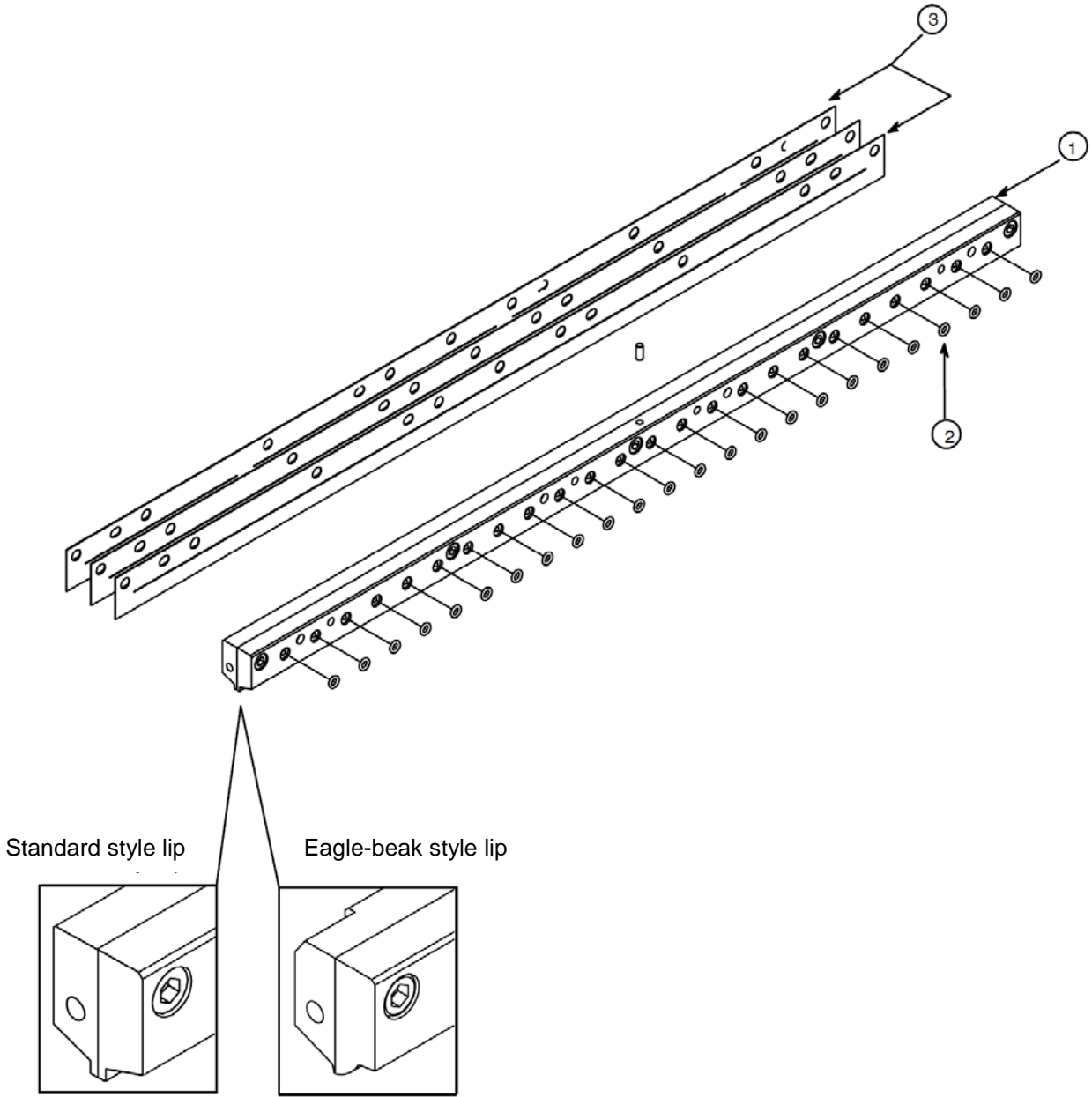


Illustration: Typical Equity-C Extruder assemblies

Festo Module, PN 815093

Item No.	Part Number	Description	Quantity
01	110412	Stem	1
02	110413	Seat	1
03	110414	Spacer	1
04	808268	O-ring 16x2mm Viton	1
05	110415	Internal retaining ring M10	2
06	110416	Spacer	2
07	110417	Seal	2
08	110418	Stand-off	1
09	808267	O-ring 12x2,5mm Viton	1
10	See table below	Fitting push-in M7	1
11	113606	Muffle M5	2
12	113607	Reducer M7-M5	2
13	113350	Solenoid valve 4-way 24V Festo	1
14	See table below	Cable, solenoid valve	1
15	113351	Fitting M7	2
16	113356	Seal ring M7	2
17	N00175	O-ring 008, Viton	2
18	813356	Air cylinder	1
19	113348	Pin	1
20	110426	Spring	1
21	110424	O-ring 22x1.5mm, Viton	1
22	110421	Piston	1
23	813357	O-ring 23x1.5mm, Viton	1
24	813358	Cap	1
25	110423	Screw M4x70mm	4
26	821762	Lock nut M3	1
27	808269	O-ring 14x2mm, Viton	1
28	001U002	Lube, silicone, DOW112	A/R*
29	108669	Thread sealant, Loctite 266	A/R*
30	107324	Compound anti-seize, CHSTN710	A/R*

A/R* = As required.

Item No.	Part Number	Description	Item 10 PN	Item 14 PN
31	113352	Festo Solenoid, 6mm Tube Fitting, 2.5m Cable	113362	113361
	113451	Festo Solenoid, 1/4" Tube Fitting, 2.5m Cable	113363	113361
	114558	Festo Solenoid, 6mm Tube Fitting, 10m Cable	113362	114557
	114559	Festo Solenoid, 1/4" Tube Fitting, 10m Cable	113363	114557
	115055	Festo Solenoid, 6mm Tube Fitting, No Cable	113362	-
	115056	Festo Solenoid, 1/4" Tube Fitting, No Cable	113363	-

Note: the Festo modules are not serviceable.

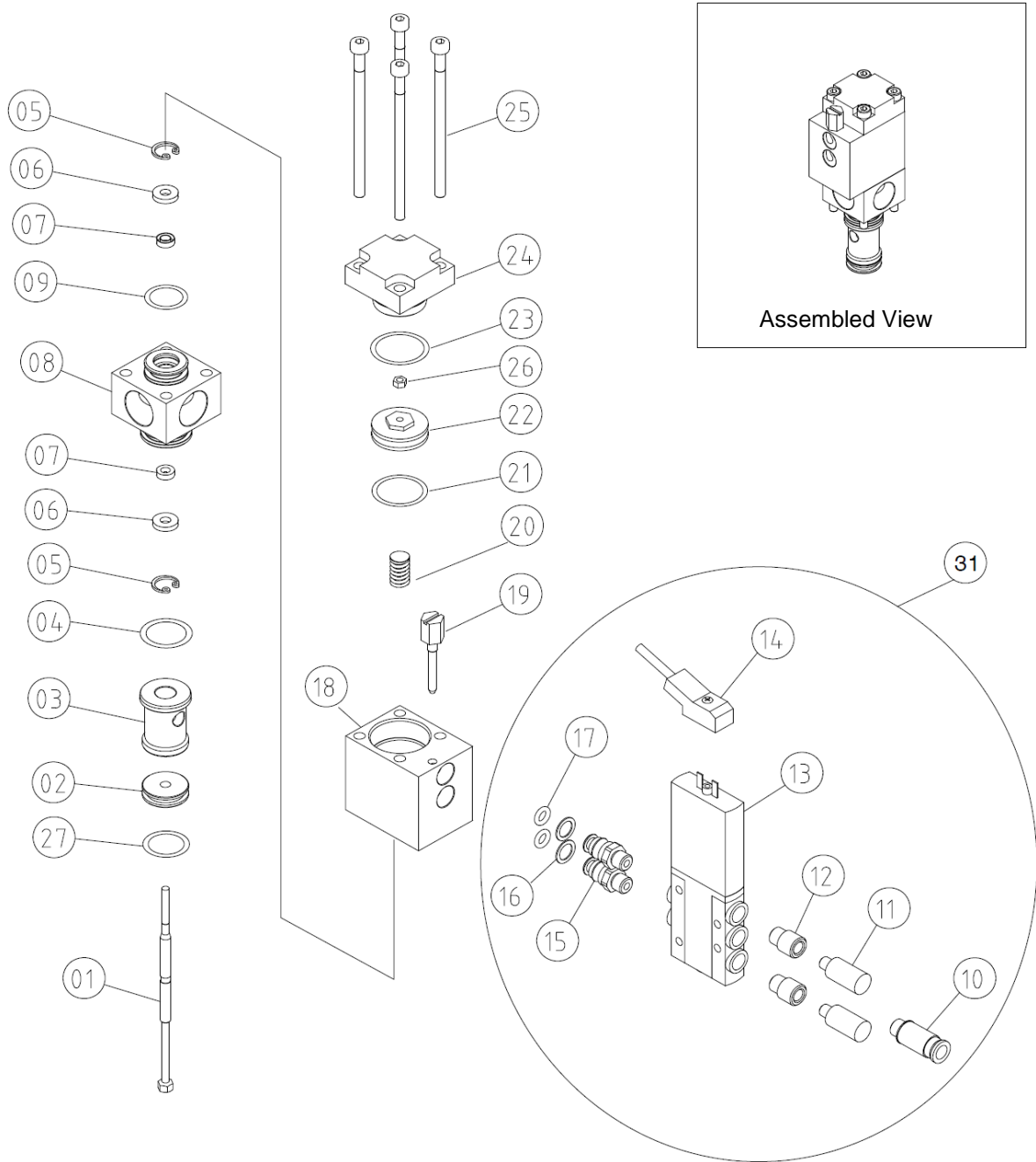


Illustration: Festo Module, PN 815093 (does not include solenoid or fittings)

APEX Slot Die Module, reverse-acting, PN 810659

Item No.	Part Number	Description	Quantity
01	110412	Stem	1
02	808269	O-ring 14x2mm	1
03	110413	Seat	1
04	110414	Spacer	1
05	110415	Internal retaining ring 10mm	2
06	110416	Spacer	2
07	110417	Seal	2
08	808268	O-ring 16x2mm	1
09	110418	Stand-off	1
10	821762	Lock nut M3	1
11	N00093	Fitting 1/4 Tube x 1/8 NPT	2
12	110317	Tube 1/4x.35x4	2
13	110419	Body piston	1
16	808267	O-ring 12x2.5mm	1
17	110421	Piston	1
18	808266	O-ring 17x2.5mm	1
19	110422	Cap	1
20	110423	Screw M4x70mm	4
21	110424	O-ring 22x1.5mm	1
22	809355	Air manifold, 1-port	1
23	106327	Plug, expansion, 4mm dia.	Ref.*
24	N00175	O-ring -008	5
25	810031	Screw M3x30mm	4
26	811228	Thermal isolator	1
27	110426	Spring	1
28	001U002	Lube, silicone, DOW 112	A/R*
29	107324	Compound anti-seize, CHSTN710	A/R*

Ref.* = Shown for reference only.

A/R* = As required.

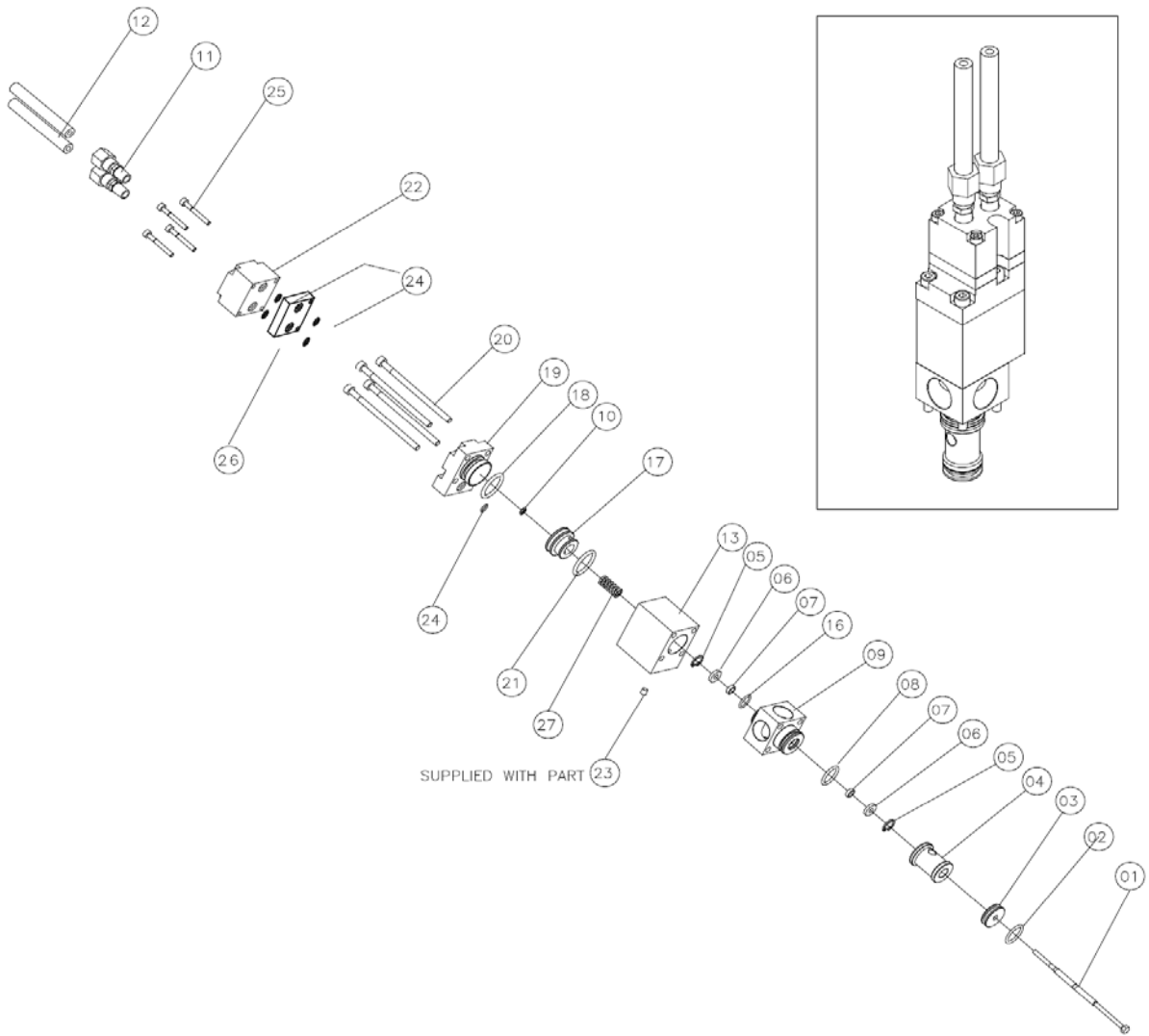


Illustration: APEX Slot Die Module, reverse acting, PN 810659

APEX Slot Die Module, PN 810821

Item No.	Part Number	Description	Quantity
01	110412	Stem	1
02	808269	O-ring 14x2mm	1
03	110413	Seat	1
04	110414	Spacer	1
05	110415	Internal retaining ring 10mm	2
06	110416	Spacer	2
07	110417	Seal	2
08	808268	O-ring 16x2mm	1
09	110418	Stand-off	1
10	821762	Lock nut M3	1
11	N00093	Fitting 1/4 Tube x 1/8 NPT	2
12	110317	Tube 1/4x.35x4	2
13	110419	Body, piston	1
14	100054	Solenoid valve,4,02,1/8,MAC,HIR	1
15	N00098	Fitting nut	2
16	808267	O-ring 12x2.5mm	1
17	110421	Piston	1
18	808266	O-ring 17x2.5mm	1
19	110422	Cap	1
20	110423	Screw M4x70mm	4
21	110424	O-ring 22x1.5mm	1
22	809355	Air manifold, 1-port	1
23	106327	Plug, expansion, 4mm dia.	Ref.*
24	N00175	O-ring -008	5
25	810031	Screw M3x30mm	4
26	811228	Thermal isolator	1
27	110426	Spring	1
28	001U002	Lube, silicone, DOW 112	A/R*
29	107324	Compound anti-seize, CHSTN710	A/R*

Ref.* = Shown for reference only.

A/R* = As required.

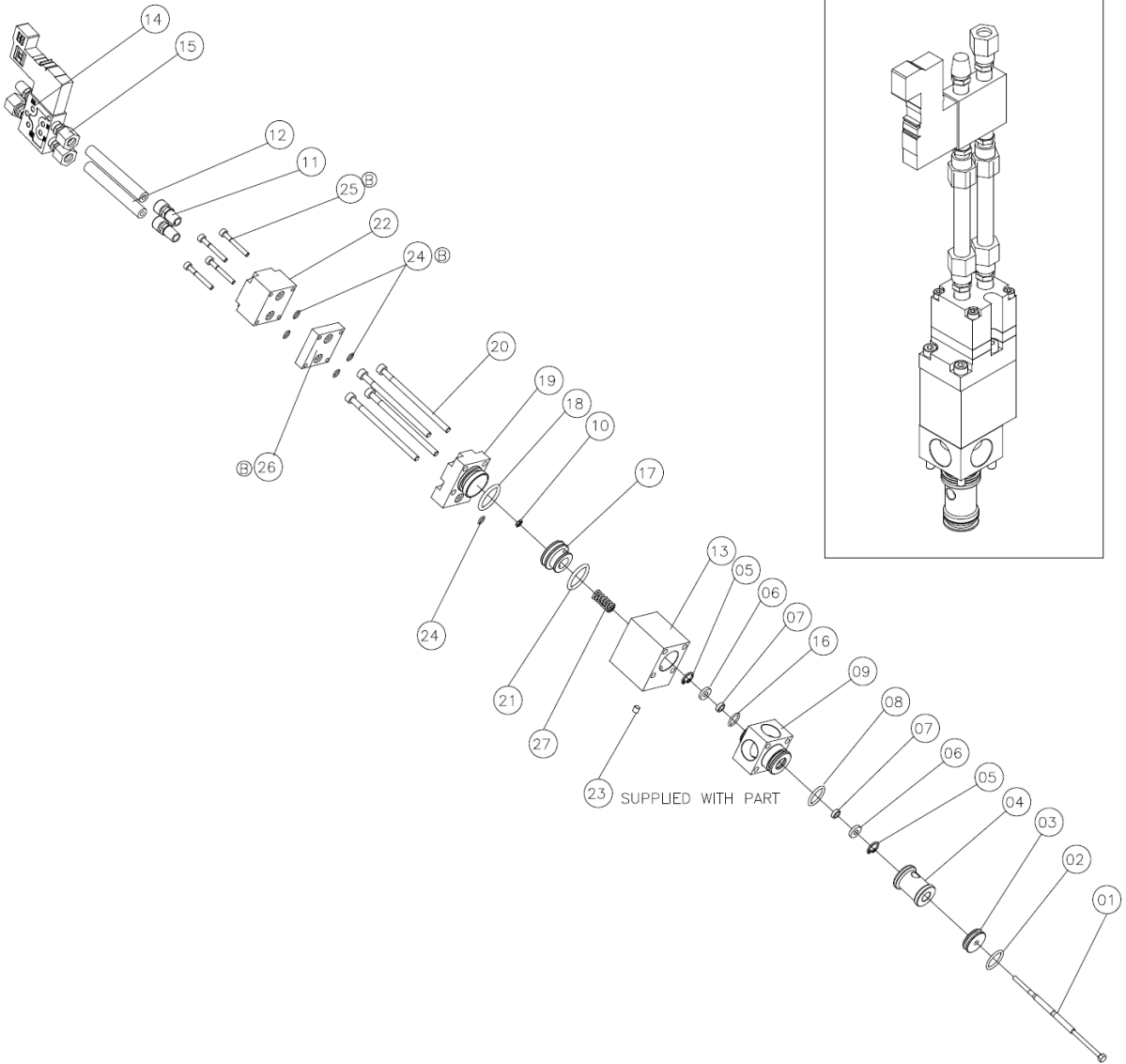


Illustration: APEX Slot Die Module, PN 810821

APEX Module, reverse-acting, with MAC Solenoid, PN 819214

Item No.	Part Number	Description	Quantity
01	110412	Stem	1
02	808269	O-ring 14x2mm	1
03	110413	Seat	1
04	110414	Spacer	1
05	110415	Internal retaining ring 10mm	2
06	110416	Spacer	2
07	110417	Seal	2
08	808268	O-ring 16x2mm	1
09	110418	Stand-off	1
10	821762	Lock nut M3	1
11	N00093	Fitting 1/4 Tube x 1/8 NPT	2
12	110317	Tube 1/4x.35x4	2
13	110419	Body, piston	1
14	108968	Solenoid valve,4,24,1/4,MAC,JB	1
15	808267	O-ring 12x2.5mm	1
16	110421	Piston	1
17	808266	O-ring 17x2.5mm	1
18	110422	Cap	1
19	110423	Screw M4x70mm	4
20	110424	O-ring 22x1.5mm	1
21	809355	Air manifold, 1-port	1
22	106327	Plug, expansion, 4mm dia.	Ref.*
23	N00175	O-ring -008	5
24	810031	Screw M3x30mm	4
25	811228	Thermal isolator	1
26	110426	Spring	1
27	001U002	Lube, silicone, DOW 112	A/R*
28	107324	Compound anti-seize, CHSTN710	A/R*

Ref.* = Shown for reference only.

A/R* = As required.

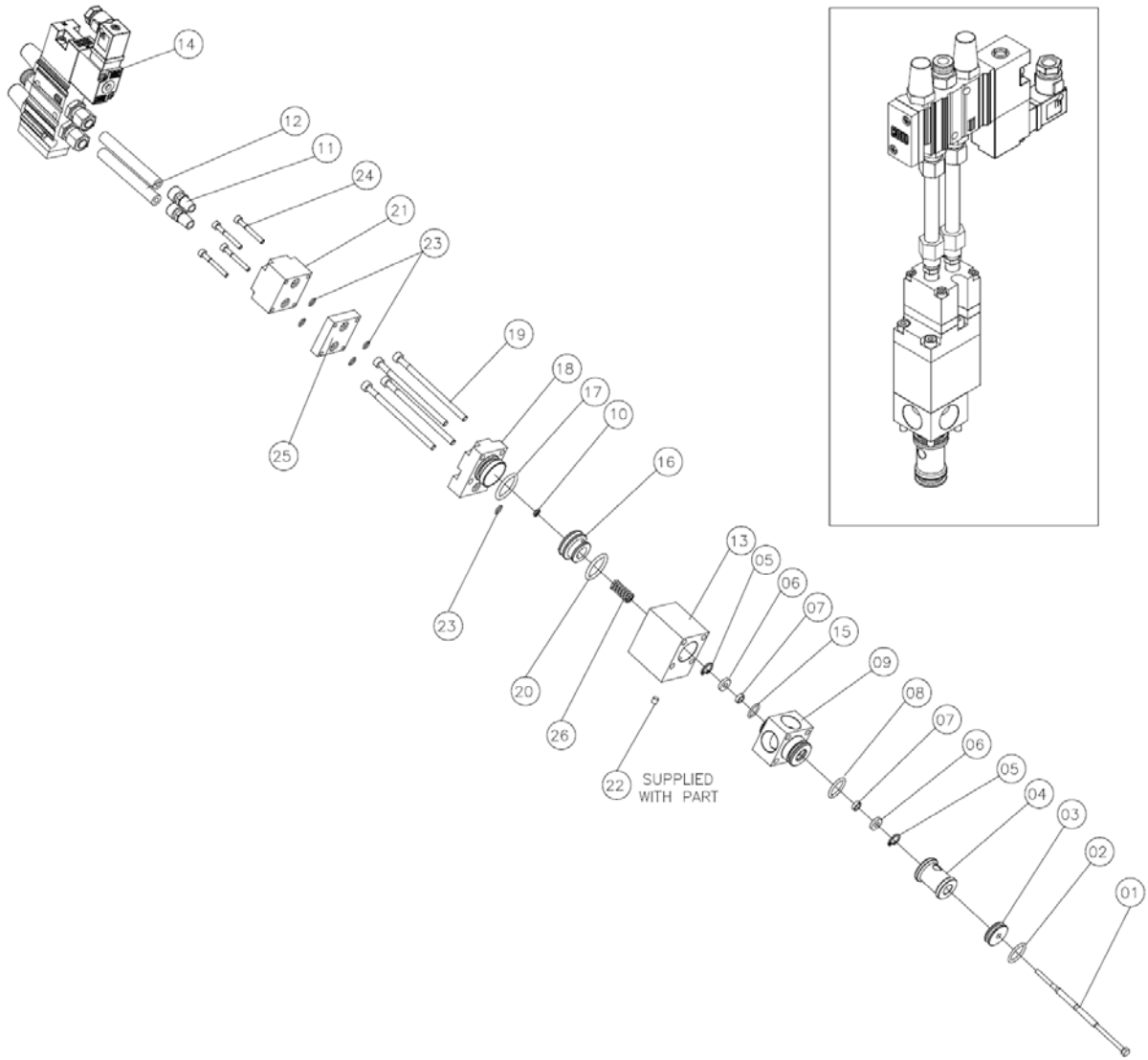


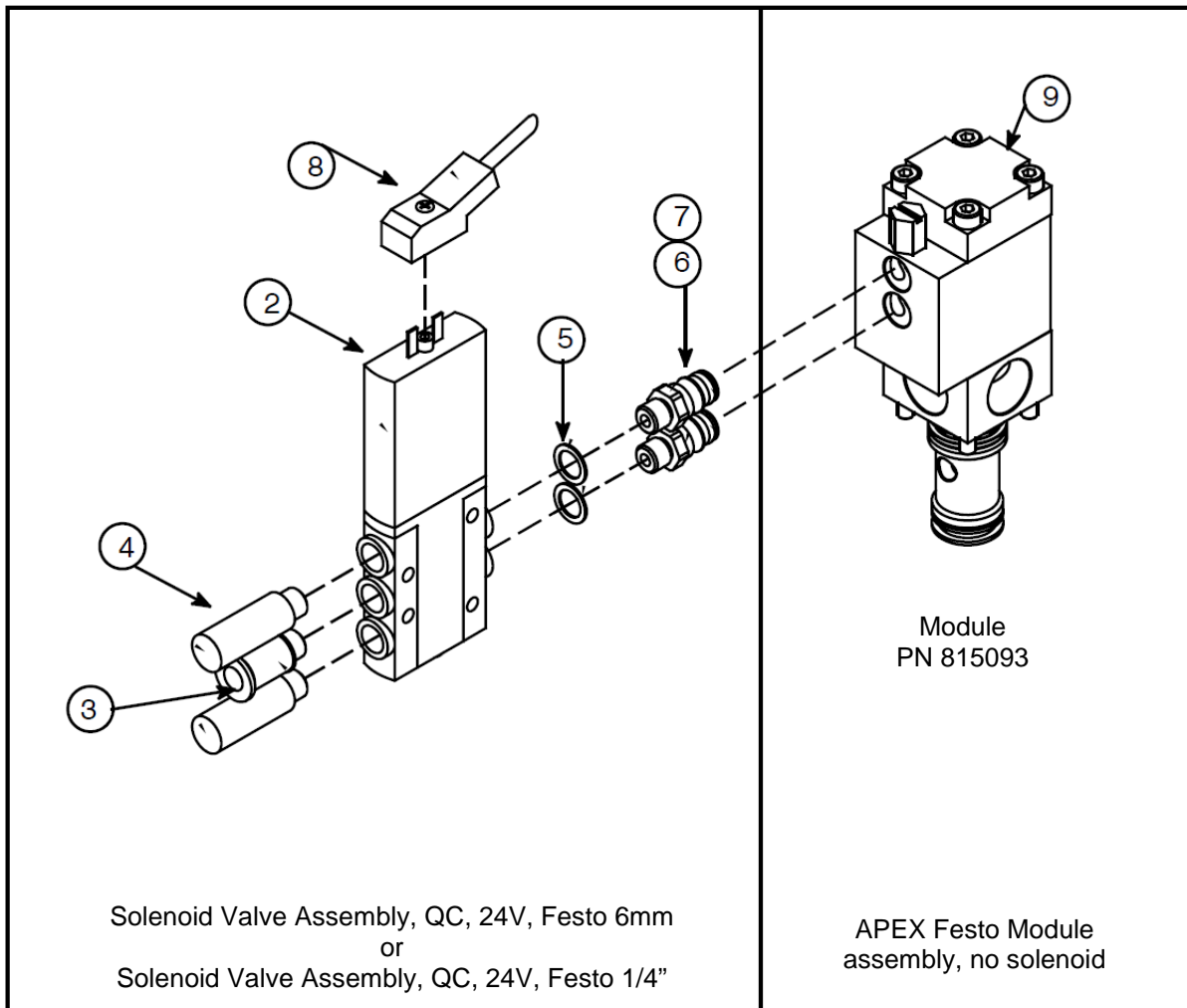
Illustration: APEX Module, reverse-acting, with MAC Solenoid, PN 819214

Festo Solenoid Assemblies, PN 115055 & 115056

Item No.	Part Number	Description	Quantity
01	115055	Solenoid Valve Assembly, QC, 24V, Festo 6mm	
	115056	Solenoid Valve Assembly, QC, 24V, Festo 1/4"	
02	113350	Valve Solenoid, 4 Way, 24V, Festo MHEZ-MS1H--5/2-M7	1
03	113362	Push-in Fitting, M7x6mm Tube OD (used on PN 115055 only)	1
	113363	Push-in Fitting, M7 x 1/4 Tube OD (used on PN 115056 only)	1
04	113608	Silencer with PN 113607 Reducer	2
05	113356	Seal Ring, M7	2
06	113351	Fitting Solenoid, M7 x QC Mod Prot	2
07	N00175	O-ring, -008	2
08	*	Cable, Solenoid (not included in assembly, see below*)	1
09	815093	Module, Apex, Festo, No Solenoid	

* Available Cables:
 PN 113361 Cable, Solenoid, 24V, LED, 2.5m
 PN 114557 Cable, Solenoid, 24V, LED, 10m

NOTE: The above solenoid assemblies can be used with either of the two module assemblies shown (below right) for reference.



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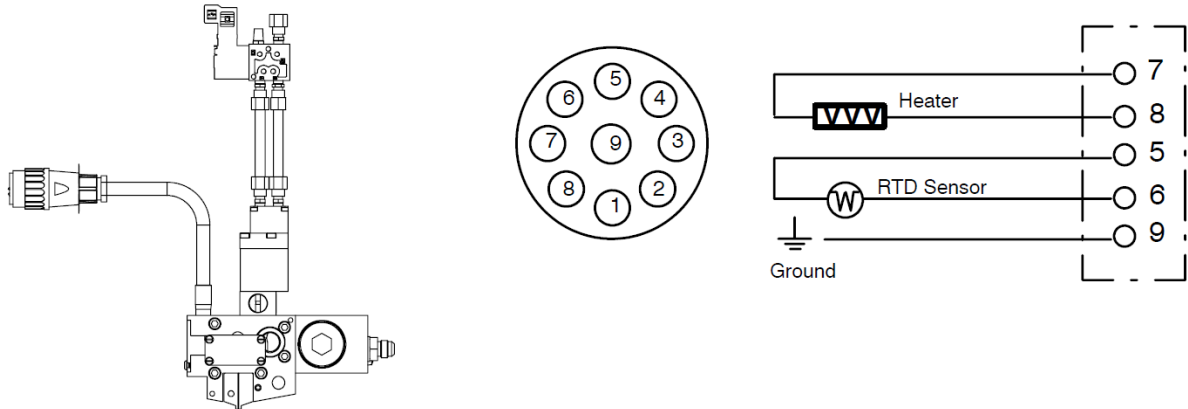
Chapter 9

Engineering Drawings & Schematics

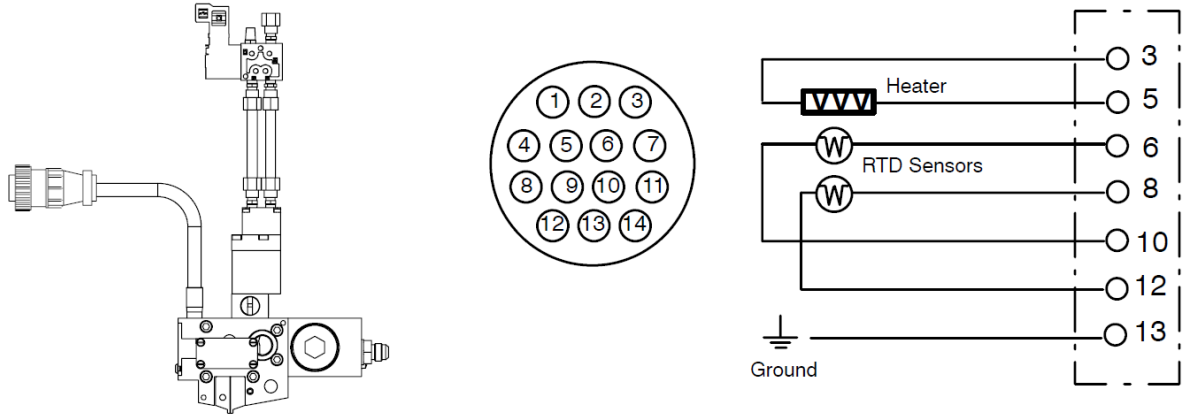
Pin Connectors & Electrical Schematics

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

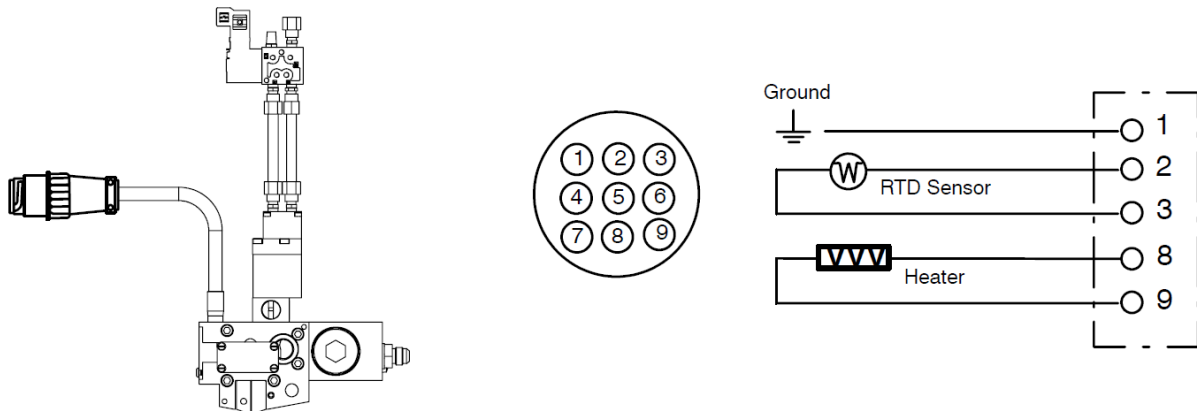
DynaControl/Dynamini or PLC (Platinum RTD) Control Scheme, PN 103117



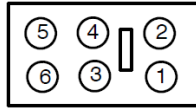
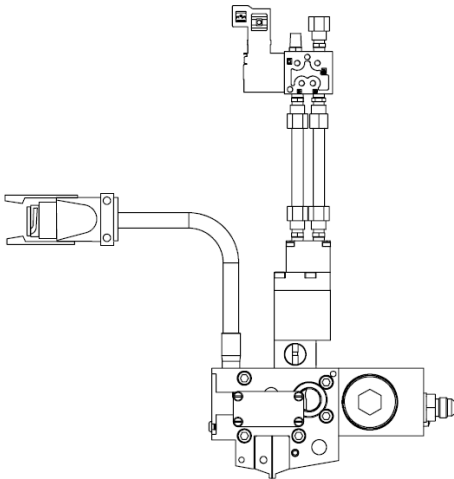
Microprocessor Temperature Control (MCV) or CompuVision Control Scheme, PN 045X144



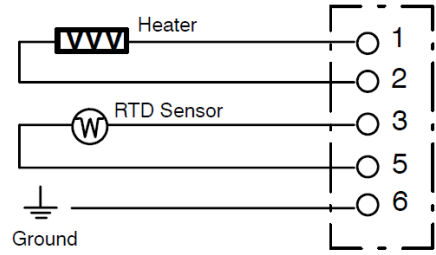
DynaPlus/Pro Control Scheme (Pt100 RTD), PN N07958



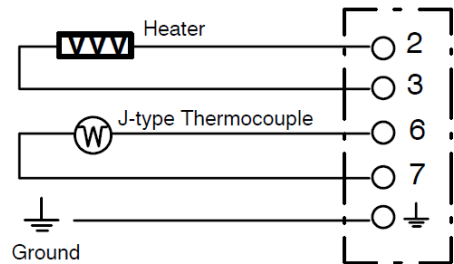
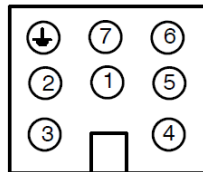
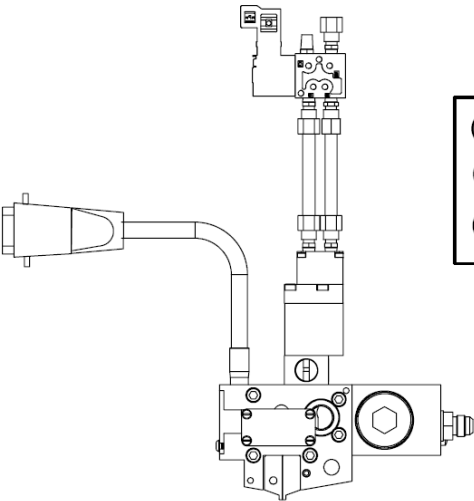
Upgrade (Nickel RTD) Control Scheme PN 104551



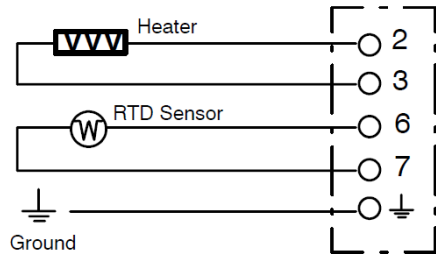
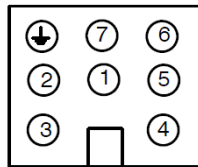
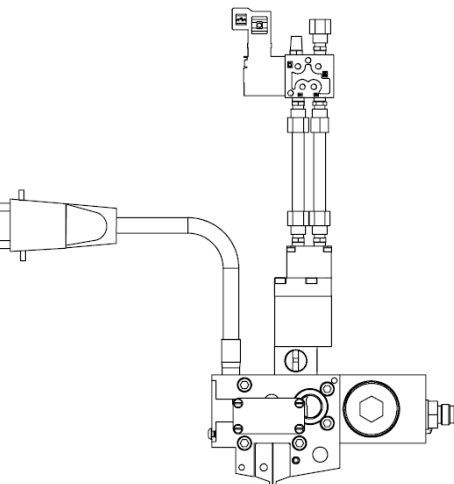
NOTE: Pin out numbers are not labeled on the upgrade connector.



Upgrade (J-type Thermocouple) Control Scheme

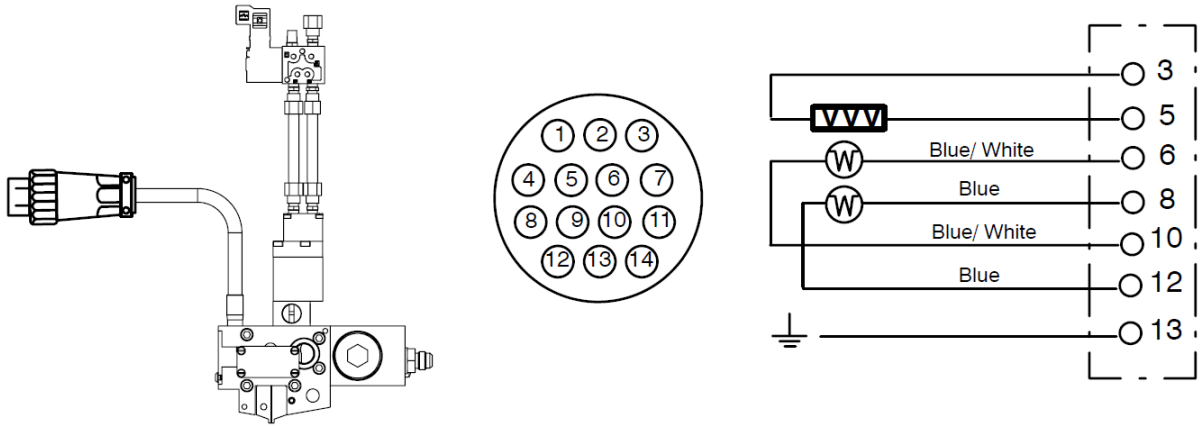


Upgrade (Platinum RTD) Control Scheme



Electronic Temperature Control with Readout (ETC)

Uses two PN N08176 RTD Sensor, NiFe.



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Chapter 10

Appendix

Appendix A

Solenoid Valve Configurations, Schematics & Setup

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

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

Appendix A is divided into sections for easy reference:

Section 1	PN 100054	24 VDC solenoid valve
	PN 106193	110 VAC solenoid valve
Section 2	PN 811506	240 VAC solenoid valve
Section 3	PN 113350	Hi-Speed (Festo) Solenoid, 24 VDC, used on:
	PN 815087	24 VDC hi-speed solenoid valve assy., 6mm inlet fitting, 2.5m
	PN 815088	24 VDC hi-speed solenoid valve assy., 1/4 inlet fitting, 2.5m
	PN 815089	24 VDC hi-speed solenoid valve assy., 6mm inlet fitting, 10m
	PN 815090	24 VDC hi-speed solenoid valve assy., 6mm inlet fitting, 10m
	PN 815091	24 VDC hi-speed solenoid valve assy., 6mm inlet fitting, no cable
Section 4	PN 100055	Air Control Kit, Component Illustration
	PN 113343	Air Control Kit, Component Illustration

Filter/ Regulator Installation Notes

1. Compressed air for applicator head operation should be clean, dry and oil free.
2. In general, operation of more than one applicator head 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 head due to space constraints, high temperature TFE tubing should be used to avoid tubing damage.

Section 1, Solenoid Valves PN 100054 (24 VAC) & PN 106193 (110 VAC)

Description

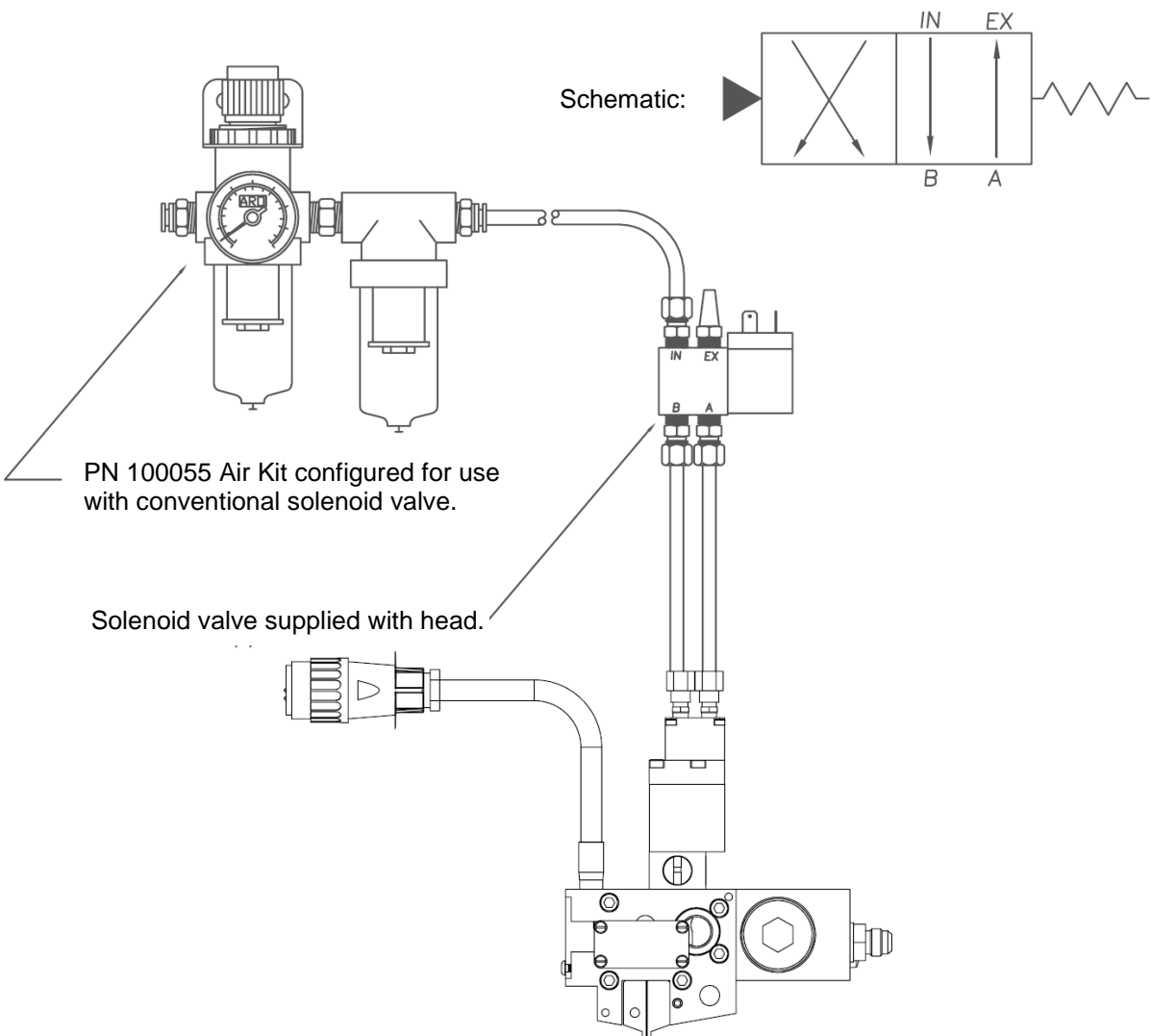
Direct acting poppet valve, 4-way, 1/8 NPT ports, with non-locking recessed manual operator.

Connections

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

Typical Setup

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



Section 2, Solenoid Valve PN 811506 (240 VAC)

Description

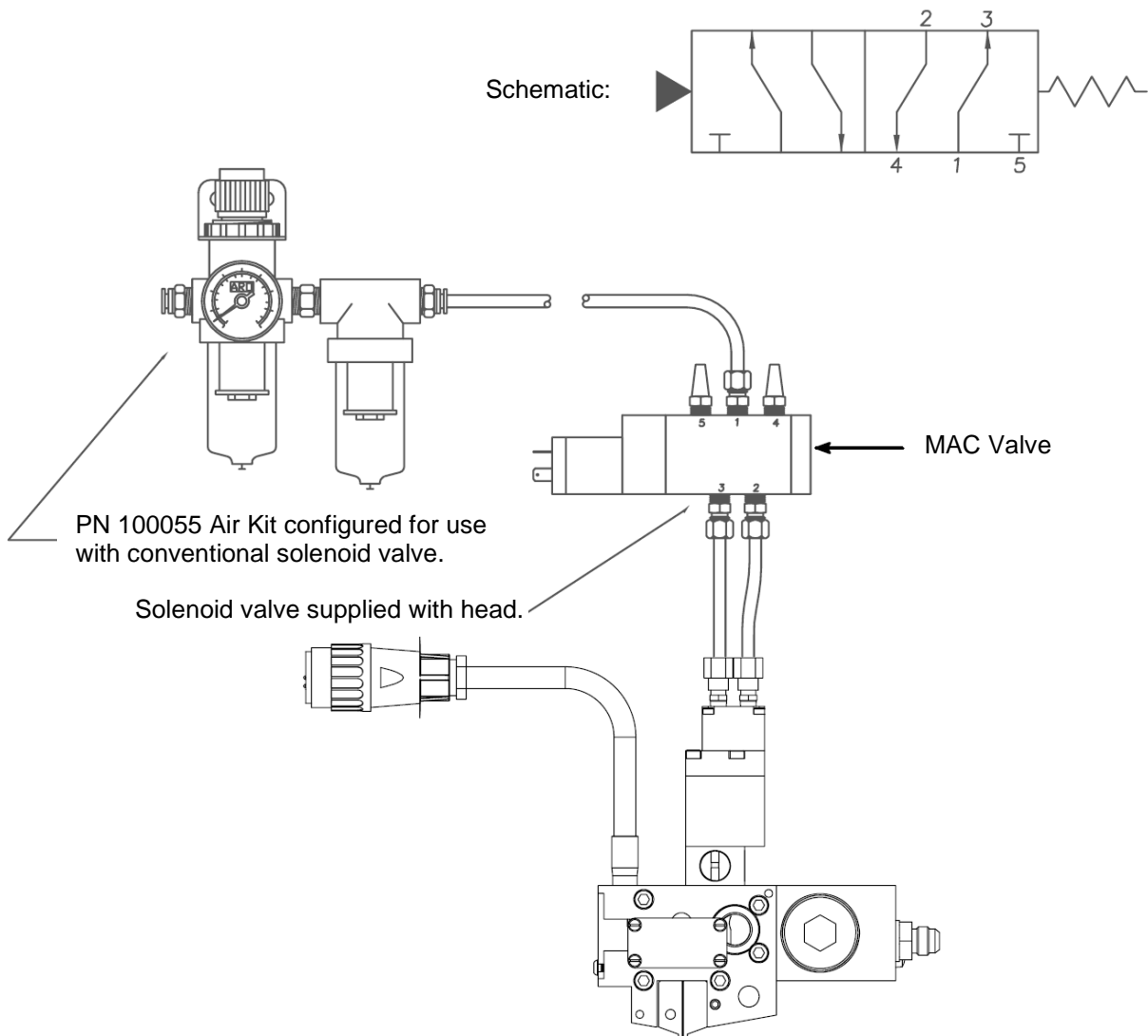
Piloted spool valve (internally piloted), 4-way, 1/8 NPT ports, with non-locking recessed manual operator.

Connections

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

Typical Setup

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



Section 3, High-Speed Solenoid Valve PN 113350 (24 VDC)

Description

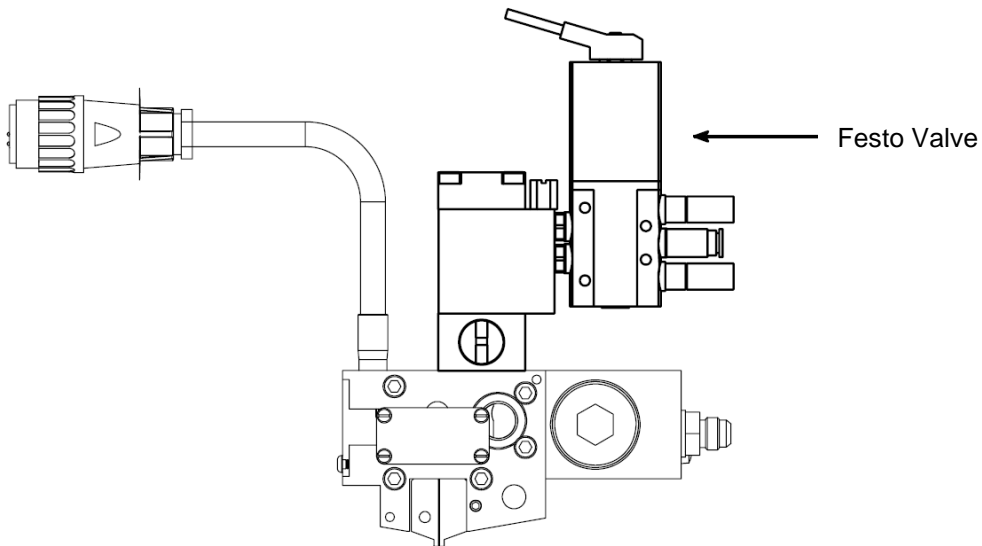
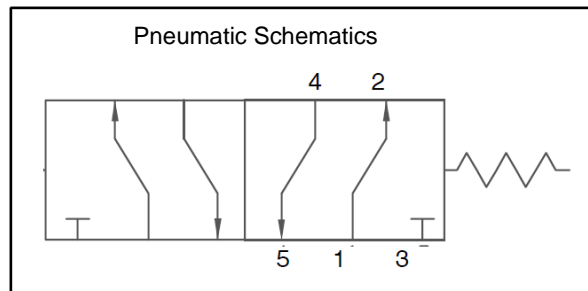
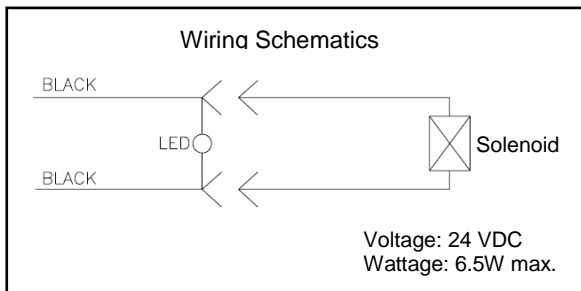
Direct-acting spool valve, 4-way, 24 VDC operation with M7 ports. Solenoid is configured to connect directly to the module. It is not setup for use as an in-line solenoid.

Connections

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

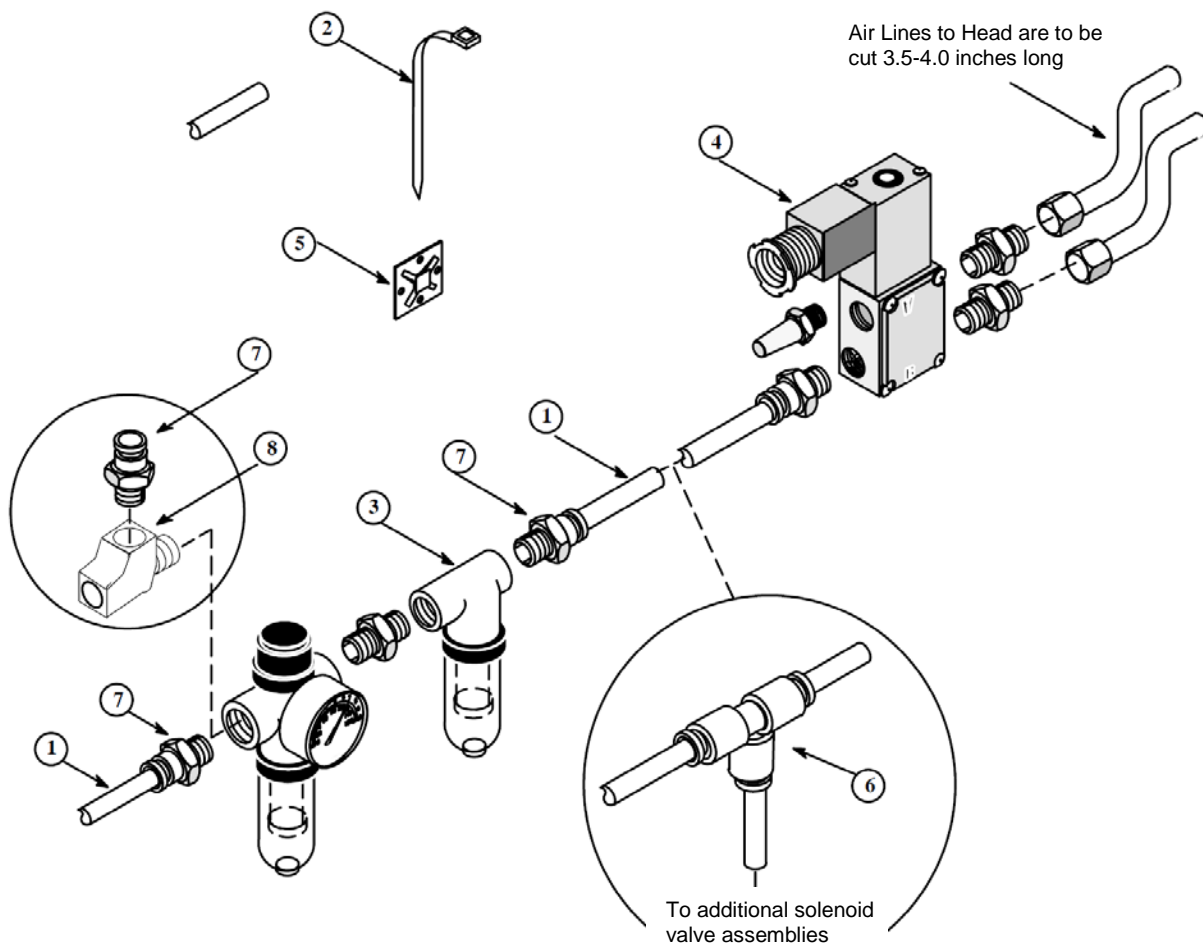
Typical Setup

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



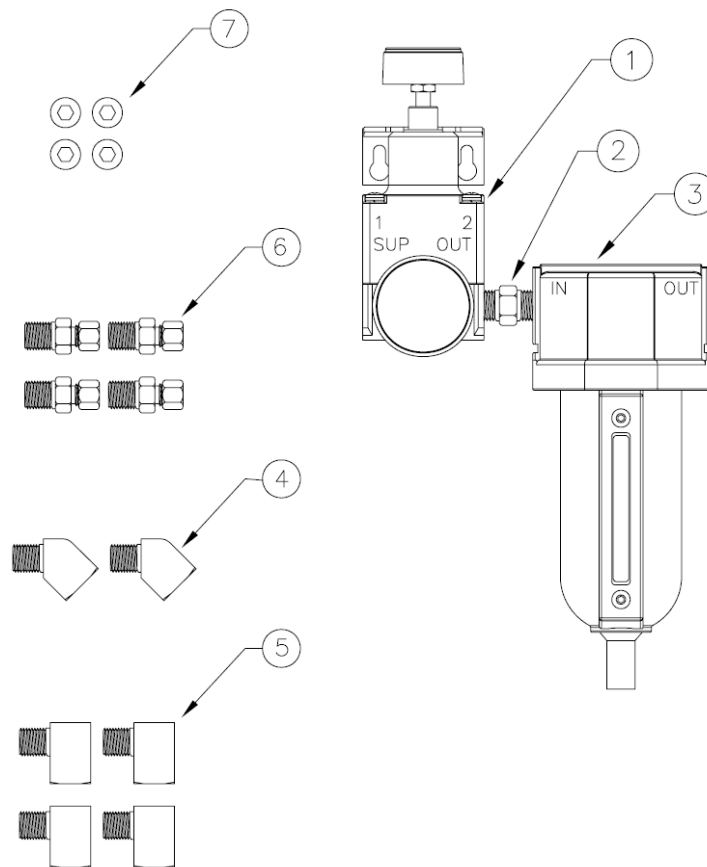
Section 4, Air Control Kit PN 100055, Component Illustration

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



Section 4, Air Control Kit PN 113343, Component Illustration

Item No.	Part Number	Description	Quantity
1	107804	Precision regulator 0-30 psi	1
2	072X228	Nipple, hex, 1/4 NPT	1
3	107403	Coalescing filter	1
4	072X002	Street elbow 1/4 NPT x 45°	2
5	072X040	Street elbow 1/4 NPT x 90°	4
6	N00092	Fitting 1/4 Tube x 1/4 NPT	4
7	N00754	Flush plug 1/4 NPT	4

**Kit Assembly Instructions:**

1. Apply pipe sealant to the threads of the 1/4 NPT hex nipple, and connect the filter/regulator and coalescing filter as shown. Make sure the outlet port of the regulator is connected to the IN port of the coalescing filter. Remove any excess sealant.
2. Assemble the gauge and mounting bracket (supplied with regulator) to the regulator as shown.
3. Place all of the fittings in a bag. Package these items, together with the assembled filter/regulator, into a single bag or box. Use the original bubble packaging from regulator to protect the gauge.

Appendix B

Resistance/ Voltage Tables

RTD Resistance - Temperature Tables						TC Voltage – Temperature Table		
PT 100 Ohms Control Option D, M, P or X			Ni 120 Ohms Control Option N			J-type TC Control Option L		
Temperature		Resistance in Ohms	Temperature		Resistance in Ohms	Temperature		Voltage in mV
°F	°C		°F	°C		°F	°C	
32	0	100	32	0	120	32	0	0
50	10	104	50	10	127	50	10	0.51
68	20	108	68	20	135	68	20	1.02
86	30	112	86	30	142	86	30	1.54
104	40	116	104	40	150	104	40	2.06
122	50	119	122	50	158	122	50	2.59
140	60	123	140	60	166	140	60	3.12
158	70	127	158	70	174	158	70	3.65
176	80	131	176	80	183	176	80	4.19
194	90	135	194	90	192	194	90	4.76
212	100	139	212	100	201	212	100	5.27
230	110	142	230	110	210	230	110	5.81
248	120	146	248	120	219	248	120	6.36
268	130	150	268	130	229	268	130	6.91
284	140	154	284	140	239	284	140	7.46
302	150	157	302	150	249	302	150	8.01
320	160	161	320	160	259	320	160	8.56
338	170	165	338	170	270	338	170	9.12
356	180	168	356	180	281	356	180	9.67
374	190	172	374	190	292	374	190	10.22
392	200	176	392	200	303	392	200	10.78
410	210	180	410	210	315	410	210	11.33
428	220	183	428	220	328	428	220	11.89

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