ITW Dynatec®

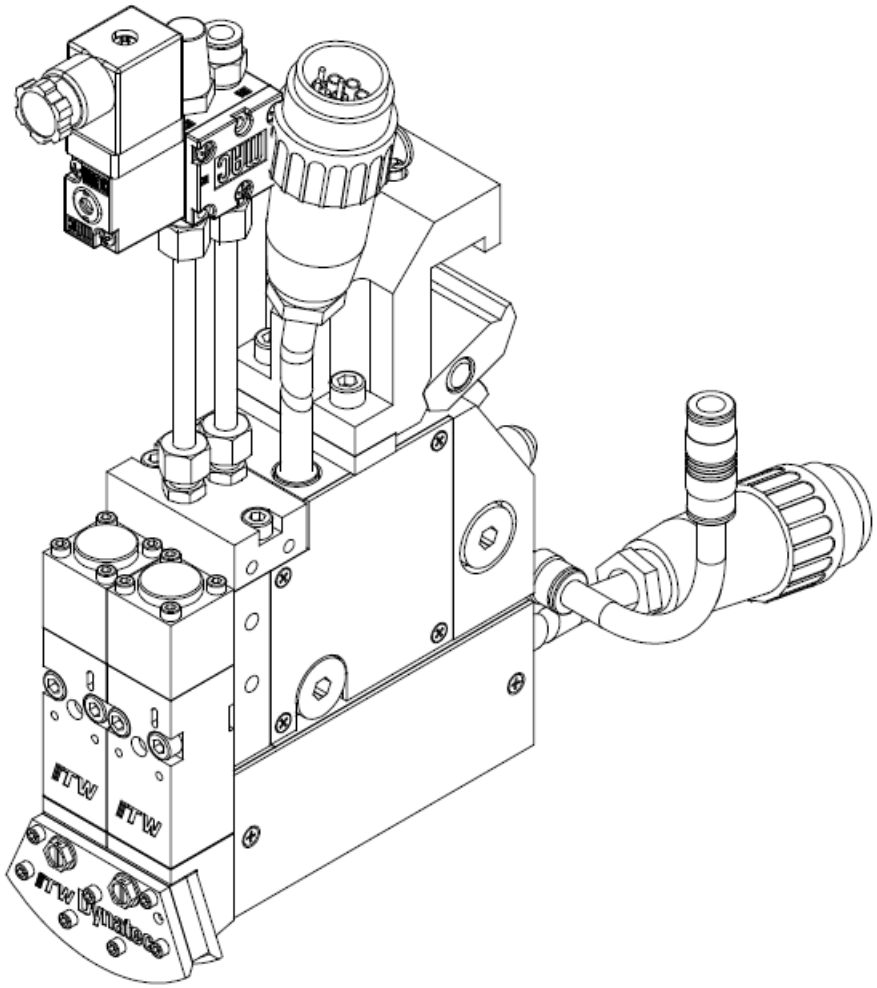
Adhesive Application Solutions | ISO 9001 certified

DELTA FX

SPRAY APPLICATOR

Technical Documentation, No.40-63, Rev.8.24

English – Original Instructions



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

Information about this manual

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

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

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

ITW Dynatec Service Parts Direct Dial: 1-800-538-9540
ITW Dynatec Technical Service Direct Dial: 1-800-654-6711

ITW Dynatec Service Parts and Technical Service:

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Index

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:	DeltaFx Applicator Head
Serial no:	_____
Machine number:	_____
Project number:	DeltaFx
Project name:	DeltaFx
Function:	Delivery of hot melt adhesive to substrates

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

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

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

It is expressly declared that the partly completed machinery fulfils all relevant provisions of the following EU Directives:

2004/108/EC:	(Electromagnetic compatibility) Directive 2004/108/EC of the European Parliament and of the Council of 15 December 2004 on the approximation of the laws of the Member States relating to electromagnetic compatibility and repealing Directive 89/336/EEC
2006/95/EC:	(Voltage limits) Directive of the european Parliament and of the council of 12 December 2006 on the harmonisation of the laws of Member States relating to electrical equipment designed for use within certain voltage limits (codified version)

Reference to the harmonized standards used:

EN ISO 14121-1:2007	Safety of machinery - Risk assessment - Part 1: Principles (ISO 14121-1:2007)
EN 60204-1:2006-06	Safety of machinery - Electrical equipment of machines - Part 1: General requirements
EN 349:1993+A1	Safety of machinery - Minimum gaps to avoid crushing of parts of the human body
EN ISO 13850:2008	Safety of machinery - Emergency stop - Principles for design (ISO 13850:2006)

Reference of the other technical standards and specifications used:

EN ISO 12100-1/A1:2009	Safety of machinery - Basic concepts, general principles for design - Part 1: Basic terminology, methodology
EN ISO 12100-2:2003/A1	Safety of machinery - Basic concepts, general principles for design - Part 2: Technical principles

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

This does not affect the intellectual property rights!

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

Hendersonville, TN, 2012.10.10
Place, date

Judson Broome
Signature
Judson Broome
General Manager

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Chapter 2
Safety Instructions

2.1 General Considerations

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

Read and adhere to the manual!

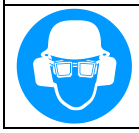
1. Read and follow these instructions.
   Failure to do this could result in severe personal injury or death.
2. Keep the binding rules for accident prevention valid for your country and the place of installation. Also keep the approved qualified technical rules for safety-conscious and professional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

2.2 Warning Labels

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

2.3 Safety Symbols in this Manual

Mandatory signs

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

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

Warning signs

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

	**Caution, danger spot!** This sign points to possible dangers for life and physical condition or to possible risks for machine and material or to possible risks for environment. The word **"DANGER"** in addition with this points to possible dangers of life The words **"WARNING" and "CAUTION"** in addition with this sign point to possible risks of injury. The word **"ADVICE"** in addition with this sign points to possible risks for machine, material or environment.

	**Danger, high voltage!** This sign points to possible dangers for life and physical condition caused by electricity. **Risk of injury, mortal danger!**
	**Caution, hot surface!** This sign points to possible risks of burns. **Risk of Burns!**
	**Caution, high pressure!** This sign points to possible risks of injury caused by high pressure. **Risk of injury!**
	**Caution, rotating rolls!** This sign points to possible risks of injury caused by inrunning nip (at rolls). **Risk of injury!**

Prohibition signs

	**Fire danger!** **Smoking prohibited!**

	**Fire danger!** **Fire and open flames prohibited!**

2.4 Safe Installation and Operation

Read and adhere to the manual!

1. Read this manual before applying electrical power to the equipment. Equipment may be damaged by incorrect electrical connections.

2. To avoid possible failure of hoses, make sure all hoses are routed to avoid kinking, tight radius turns (8” or less) and abrasive contact. Hot-melt hoses should not have prolonged contact with heat-absorbing surfaces such as cold floors or metal troughs. These heat-absorbing surfaces can alter adhesive flow and cause incorrect calibration. Hoses should never be covered with materials that prevent heat dissipation, such as insulation or sheathing. Hoses should be spaced apart from each other, not making direct contact.

3. Do not use adhesive that is dirty or that may be chemically contaminated. Doing so can cause system clogging and pump damage.

4. When adhesive hand-held applicators or other movable applicators are used, never point them at yourself or at any other person. Never leave a hand-held applicator's trigger unlocked when not actually in use.

5. Do not operate the hopper or other system components without adhesive for more than 15 minutes if the temperature is 150 degrees C (300 degrees F) or more. To do so will cause charring of the residual adhesive.

6. Never activate the heads, hand-held applicators and/ or other application devices until the adhesive's temperature is within the operating range. Severe damage could result to internal parts and seals.

7. Never attempt to lift or move the unit when there is molten adhesive in the system.

8. In case of an emergency or exceptional incident, press the emergency stop button in order to stop the unit quickly.

9. Use the unit only as it is intended to.

10. Never let the unit run unattended.

11. Operate the unit only in a faultless and fully functional condition. Check and make sure that all safety devices work in proper form!

	**Smoking, fire and open flames prohibited! Fire danger!** Make absolutely sure that there is no smoking and no fire being lit in the work area!

2.5 Explosion/ Fire Hazard

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

2.6 Use of PUR (Polyurethane) Adhesives

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

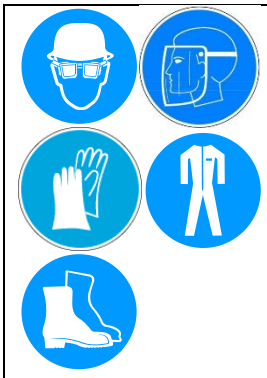
CAUTION

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

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

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

2.7 Eye Protection & Protective Clothing



WARNING
EYE PROTECTION & PROTECTIVE CLOTHING REQUIRED

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

2.8 Electrical

DANGER HIGH VOLTAGE

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

2.9 Lockout/ Tagout

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

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

2.10 High Temperatures

WARNING HOT SURFACE

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

2.11 High Pressure

WARNING HIGH PRESSURE PRESENT

1. To avoid personal injury, do not operate the equipment without all covers, panels and safety guards properly installed.

2. To prevent serious injury from molten adhesive under pressure when servicing the equipment, disengage the pumps and relieve the adhesive system's hydraulic pressure (i.e. trigger the heads, hand-held applicators, and/or other application devices into a waste container) before opening any hydraulic fittings or connections.

3. IMPORTANT NOTE: Even when a system's pressure gauge reads “0” psi, residual pressure and trapped air can remain within it causing hot adhesive and pressure to escape without warning when a filter cap or a hose or hydraulic connection is loosened or removed. For this reason, always wear eye protection and protective clothing.

4. Either of the two High Pressure symbols shown may be used on ITW Dynatec equipment.

5. Keep the given operating pressure.

6. Notify the maintenance personnel immediately, if hoses or components are damaged. Provide for exchanging the defective components immediately.

2.12 Protective Covers

WARNING
DO NOT OPERATE WITHOUT GUARDS IN PLACE

1. Keep all guards in place!

2. To avoid personal injury, do not operate the application system without all covers, panels and safety guards properly installed.

3. Never get your extremities and/or objects into the danger area of the unit. Keep your hands away from running parts of the unit (pumps, motors, rolls or others).

2.13 Servicing, maintenance

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

2.14 Secure transport

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

2.15 Treatment for Burns from Hot Melt Adhesives

Measures after being burned:

1. Burns caused by hot melt adhesive must be treated at a burn center. Provide the burn center's staff a copy of the adhesive's M.S.D.S. to expedite treatment.

2. Cool burnt parts immediately!

3. Do not remove adhesive forcibly from the skin!

4. Care should be used when working with hot melt adhesives in the molten state. Because they rapidly solidify, they present a unique hazard. Even when first solidified, they are still hot and can cause severe burns.

5. When working near a hot melt application system, always wear safety shoes, heat-resistant protective gloves, safety goggles and protective clothes that cover all vulnerable parts of the body.

6. Always have first-aid information and supplies available.

7. Call a physician and/or an emergency medical technician immediately. Let the burns medicate by a medic immediately.

2.16 Measures in case of fire

1. Please heed that not covered hot parts of the engine and molten hot melt may cause heavy burns. Risk of burns!

2. Work very carefully with molten hot melt. Keep in mind, that already jelled hot melt can be very hot, too.

3. When working near a hot melt application system, always wear safety shoes, heat-resistant protective gloves, safety goggles and protective clothes that cover all vulnerable parts of the body!

Measures in case of fire:

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

Firefighting - burning hot melt:

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

EXTINGUISH FIRE

Appropriate extinguishing agents:
Foam extinguisher, Dry powder, Spray, Carbon dioxide (CO_2), Dry sand.

For safety reasons not appropriate extinguishing agents: None.

Firefighting - burning electrical equipment:

Appropriate extinguishing agents:
Carbon dioxide (CO_2), Dry powder.

2.17 Keep attention to environmental protection standards

1. When working on or with the unit, the legal obligations for waste avoidance and the duly recycling / disposals have to be fulfilled.

2. Keep attention, that during installations, repairs or maintenance matters hazardous to water, like adhesive / adhesive scrap, lubricating grease or oil, hydraulic oil, coolant and cleaner containing solvent do not pollute the ground or get into the canalization!

3. These matters have to be caught, kept, transported and disposed in appropriate reservoirs!

4. Dispose these matters according to the international, national and regional regulations.

Chapter 3
Description and Technical Specs

3.1 Applicable Safety Regulations

3.1.1 Intended Use

The DeltaFx Spray 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.

3.1.2 Unintended Use, Examples

The 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 Applicator may not be used to process the following materials:
- Toxic, explosive and easily flammable materials.
- Erosive and corrosive materials.
- Food products.

3.1.3 Residual Risks

In the design of the 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.

3.1.4 Technical changes

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

3.1.5 Using foreign components

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

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

3.1.6 Start-up operation

We recommend asking for an ITW Dynatec-service technician for the start-up operation, to ensure a functioning system. Let yourself and the people working with or working on the system be introduced to the system on this occasion.
ITW Dynatec takes no responsibility for damages or faults caused by any untrained personal.

3.2 Description of DeltaFx Spray Applicator

3.2.1 Description

ITW Dynatec's DeltaFx Adhesive Applicators are air-operated hot melt adhesive applicator assemblies with integrated basket filters which prevent particulate matter from obstructing flow through the heads.

The applicator is heated by replaceable cartridge heating elements which are controlled by an integrated sensor and electronic control. The applicator can be configured for ITW Dynatec's DynaControl, MCV, Upgrade control schemes or Allen-Bradley PLC controls. A choice of adhesive inlets and an angled filter nut allows for easy installation and servicing. A solenoid valve is supplied with the applicator for module activation control.

3.2.2 Applicator Operation

Each DeltaFx applicator features two adhesive valve modules mounted to a single service block.
The modules are opened and closed by air pressure. Springs are used to keep the stem closed when no air pressure is supplied to the head. The module stroke is preset at the ITW Dynatec factory and no adjustment is necessary.

As shown in the illustration on next pages, the heated adhesive supply hose is connected at the rear of the applicator or on either side. Adhesive flows from the hose into the service block, through the filter and then to the modules. Air pressure (Control Air) opens the modules, allowing adhesive to flow through the nozzle.

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

3.2.3 Specifications

Environmental:

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

Physical:

Dimensions ..... see dimensional layouts on following page
Weight (including module, nozzle and solenoid valve) ..... 3.8kg (8.3 lb.)
Mounting.....19-20mm square bar mount, or
13mm rod mount, or
M6x1 screws with insulators

Performance:

Operating temperature range ..... 38°C to 200°C (100°F to 390°F)
Warm-up time ..... 15 minutes for cold start/ 5 minute for module change only
Adhesive viscosity ..... 100 to 15.000 mPa.sec. (centipoise)
Adhesive pressure range ..... 7 bar (100 psi) to 68 bar (1000 psi)
Noise emission ..... 70 dB(A)

Air Requirements:

Air pressure range (control) ..... 4.8 to 6.2 bar (70 to 90 psi)
Air pressure range (process, typical) ..... 0.8 to 1.5 bar (12 to 22 psi)

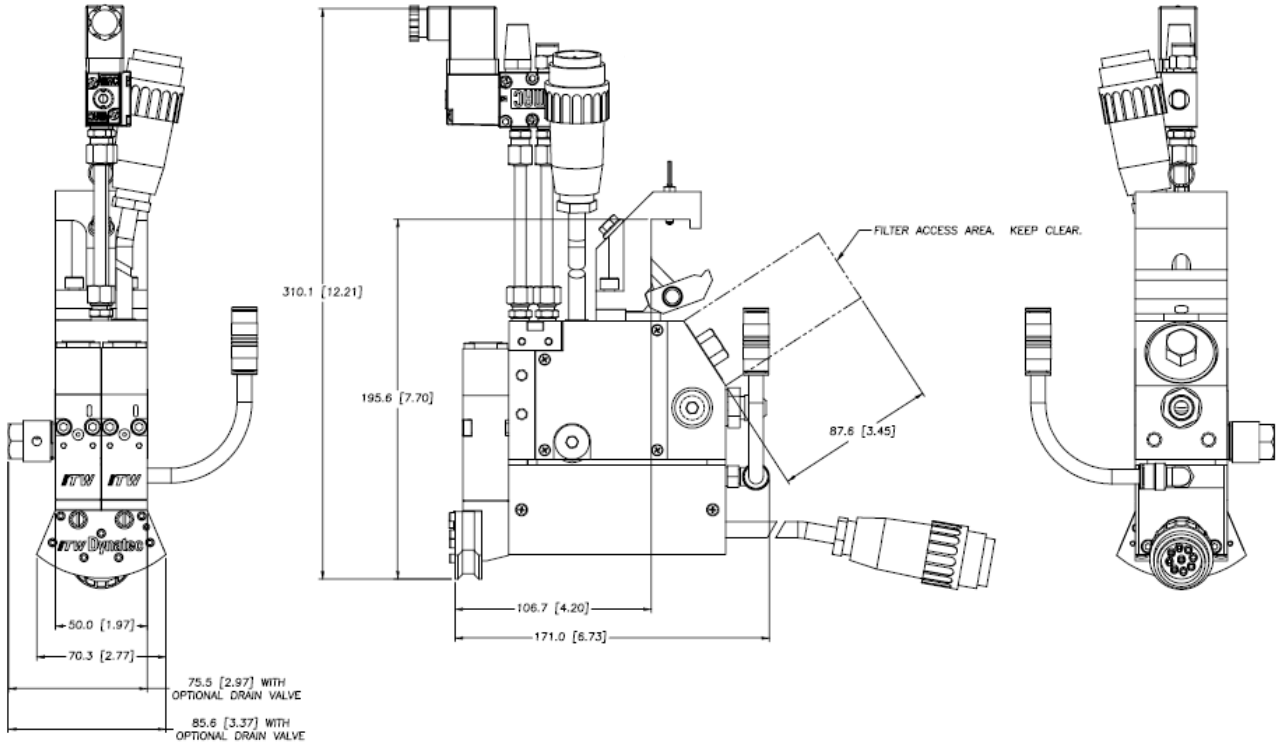
Electrical:

Supply voltage..... 200-240 V AC/ 1ph/ 50-60 Hz with 24 VDC control voltage
Power consumption:
Adhesive manifold 450W
Air heater..... 800W

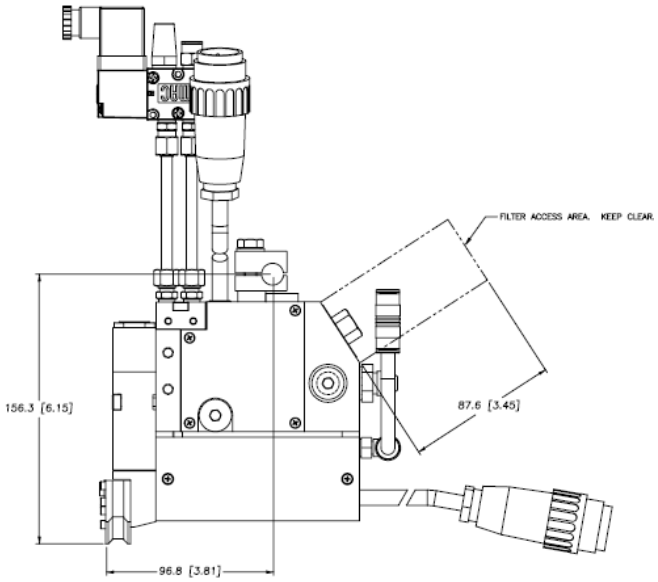
3.2.4 Dimensions

Dimensions are expressed as “mm [inch]”.

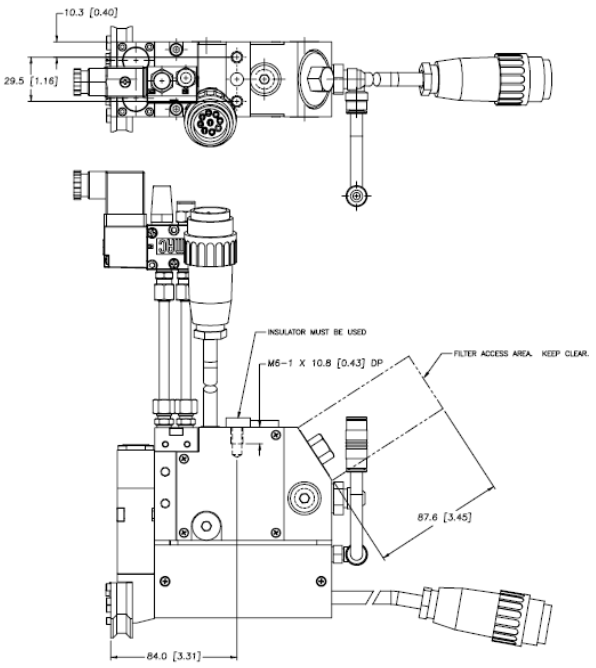
DeltaFx Applicator Dimensions (Clamp Option ‘S’):



DeltaFx Applicator Dimensions (Clamp Option ‘R’):



DeltaFx Applicator Dimensions (Direct Mounting):



Chapter 4
Installation & Start-up Operation

CAUTION

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

4.1 Conditions for set-up and mounting

Place requirement

Install the Applicator in the machine so that the operator is able to work on it from all sides, for e.g. for adjusting, preparing, maintaining, repairing, cleaning, etc. See drawings for dimensions.

Mounting and alignment

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

Electrical connection

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

Pneumatic connection

- In any case the air has to be clean and dry! See advices under "Quality of compressed air" on next page.
- Incoming module control air is supplied to the solenoid valve and should be separately regulated and maintained at a pressure 4.8 to 6.2 bar (70 to 90 psi). Air lines to the solenoid valve should be at least 6mm OD. 6mm and 1/4" OD push-lock style fittings are supplied with the applicator.
- Incoming process (preheater) air must be supplied through a pressure regulator. Operating pressure depends on the application. The applicator's air supply line must be at least 8mm (5/16") O.D. The applicator is supplied with an 8mm (5/16") OD push-lock style fitting for process air connection. The threads in the air heater are 1/8 NPT.
- Please heed that units with high air demand may not be used at the same time with the same air supply.

NOTE

- Air lines and fittings must be capable of withstanding temperatures up to 218°C (425°F).
- ITW Dynatec offers an Air Control Filter Coalescing Kit (PN 115600) for the air supply to the solenoid valve. See the Air Control Filter Coalescing Kit Manual in the Appendix.
- For process (preheater) air control, the filter/ regulator kit PN 115601 is recommended. It contains a 0-50 psi air filter/ regulator combination and a liquid-filled gauge for accurate process air control. See the Process (Preheater) Air Control Filter/ Regulator information in the Appendix.

Quality of compressed Air:

CAUTION

- **In any case, the air has to be clean and dry!**
- **The min. requirement for compressed air supply to solenoids to control automatic Applicators is ISO 8573-1:2010 class 2:4:3.**

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

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

4.2 Typical Installation & Start-Up Operation

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 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.

WARNING

Start with set-up operation not until

- the functioning of the unit is known, and
- the unit installation for start-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 start-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 start-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.

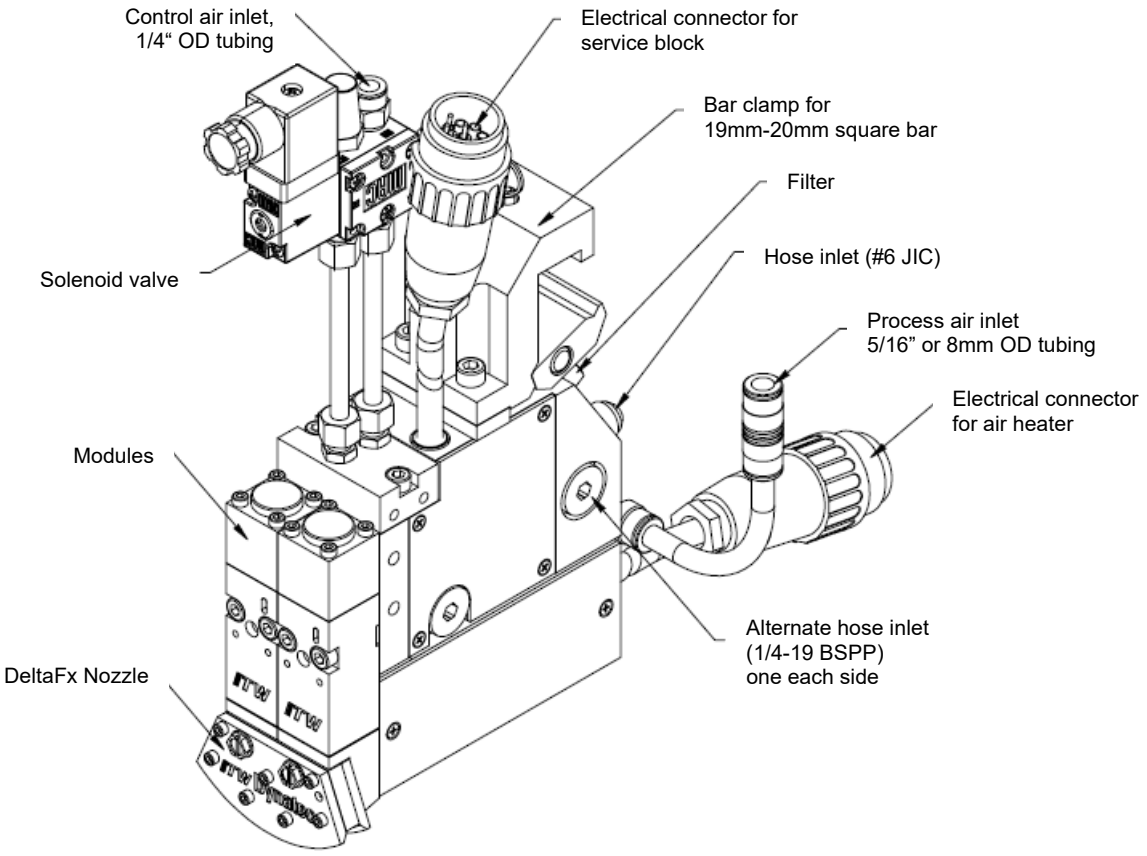
CAUTION

The unit is ready for operation, when

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

- 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.

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



DeltaFx Applicator Assembly

See the diagram on previous page for location of the components referred to in the following section.

1. The DeltaFx applicator can be ordered with either a round rod clamp or square bar clamp.
   The round rod clamp will fit a 12mm-13mm (0.47 in-0.51 in) diameter rod.
   The square bar clamp will fit a 19mm-20mm (0.75in-0.79in) square bar.
   Alternatively, the applicator may be direct mounted using the available M6--1 tapped holes. If the applicator is direct mounted, the insulator supplied with the applicator must be used to avoid heat loss through the mounting bracket.

   The applicator should be mounted on brackets that permit lateral and vertical adjustments. The filter access area must be unobstructed. Leave sufficient clearance to access the drain valve, if installed.

2. An optional mounting bracket assembly is available for the DeltaFx applicators. This bracket assembly is designed to work with the square bar clamp. See Appendix for more information.

3. 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. When tightening the hose fitting, hold the hose cuff to prevent the hose core from rotating.

4. Make the electrical connection from the hose to the applicator by connecting the female connector of the hose to the male connector of the applicator.

5. Connect the spray air line to the preheater using the fittings provided.

6. Make the electrical connection from the extension cable to the preheater by connecting the female connector of the cable to the male connector of the preheater.

7. See Appendix for details and diagrams of solenoid setup.

CAUTION: Do not use lubricating oil with the air supply as applicators are lubricated at the factory and do not require lubrication when used in production. Where oil is present in the air supply, a coalescing filter kit (Dynatec PN 115600) must be installed between the standard air regulator/ filter and the applicator.

8. It is advisable to check the temperature of the applicator. This can be done through the temperature readout of the adhesive supply unit. Surface temperature may be checked with a separate pyrometer and surface probe or with a dial thermometer. Turn the system power switch ON. Permit the applicator to warm up at least 15 minutes (5 minutes for module change) before reading temperature.

9. Purge the applicator of air and oil. Turn the applicator ON electrically and pneumatically.

WARNING HIGH PRESSURE

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

WARNING

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

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!

10. Remove the nozzle from the module.

    Place a heat resistant container under the module to collect the material that drains from the applicator.

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

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

11. Replace the nozzle.

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

Daily operation

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

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

Bring the Applicator in work position and continue production.

WARNING
PUR-adhesives react with air humidity. To avoid blocked nozzles, slot nozzles or application heads, these parts have to be protected airproof with PUR cleaner immediately after production stop.

Protection caps for nozzles:
Nozzles could be protected e.g. with protection caps filled with PUR-cleaner, mounted immediately after production stop.

Protection pan for slot nozzles:
Slot nozzles could be protected e. g. by a pan filled with PUR-Cleaner. Immediately after production stop you dunk the slot nozzle into this pan.

4.2.1 Operation of Optional Drain Valve

(Option Code A, see Ch. 7, Model Designation Guide)

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

CAUTION:
The drain valve assembly is not recommended for use with PUR adhesives, due to the possibility of adhesive curing in the valve.

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

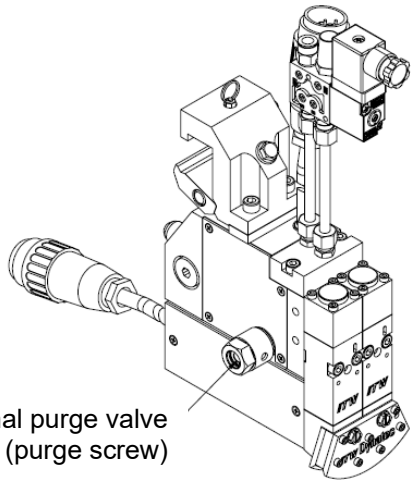
Operation

1. Ensure that all pumps in the Melter (adhesive supply unit) are turned off. Power down the Melter or disable the applicator and preheater zones at the control panel. Disconnect all electrical cables from the applicator.

WARNING
HOT SURFACE & HOT ADHESIVE!

- **The system will still be hot when this procedure is being done.**
- **Use insulated gloves and protective clothing.**

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



Optional purge valve
(purge screw)

4.2.2 Purging Adhesive Through the Applicator

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

WARNING
HOT SURFACE & HOT ADHESIVE!

- **The system will still be hot when this procedure is being done.**
- **Use insulated gloves and protective clothing.**

Procedure

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

4.3 Shut Down Procedure

CAUTION! RISK OF BURNS AND INJURY!

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

Effect following steps for switching the unit off:

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

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

WARNING
PUR-adhesives react with air humidity. To avoid blocked nozzles, slot nozzles or application heads, these parts have to be protected airproof with PUR cleaner immediately after production stop.

Protection caps for nozzles:
Nozzles could be protected e.g. with protection caps filled with PUR-cleaner, mounted immediately after production stop.

Protection pan for slot nozzles:
Slot nozzles could be protected e. g. by a pan filled with PUR-Cleaner. Immediately after production stop you dunk the slot nozzle into this pan.

Removing dirt:

Remove dirt from all unit components immediately.

Wooden scrapers 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.
3. Manually open the solenoid by pushing (with a small screwdriver or other tool) the purge button located on the solenoid coil. Continue to hold in the purge button until all adhesive have drained.

5.1.1 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.

5.1.2 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!
- When handling the hazardous substances (cleaning agents, etc.), always observe the current safety data sheets.
- Please use only the indicated lubricants and keep the prescribed maintenance intervals. Consider in addition the enclosed regulations of manufactures.
- Punctual and conscientious maintenance of the unit secures not only a trouble-free function, but also prevents 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	• Remove dropped out adhesive and scrap adhesive and search for the cause of that, eliminate the cause.
Once a day	• Clean the Applicator and components from dirt.
Once a week	• Check the nozzle for proper operation and clean or replace if necessary. • Check the modules on Applicator if leaky and replace if necessary. (Monitor for excess adhesive flow out of "Weep 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.
Once a month	• Check filter for clogging and replace if necessary.
Every 3 months	• Due to temperature differences a loosening of threads (threaded connections) is possible. Check all parts with threads, all screw fittings and fasteners for tightness and tighten them if necessary. • Inspect air preheater cable assembly wire insulation for hardening, cracking, or other signs of thermal wear. Replace if necessary.
Once a year	• Clean the Applicator. • Complete check-up for wearing.
Every two years	• Complete maintenance.

5.3 Purging Hot Adhesive Under Pressure

WARNING

Heed all security advices given in chapter 5.1.

Maintenance and repair work is only permitted for skilled personnel!

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

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

Components and adhesive are hot when this procedure is being done. Take every precaution to prevent the material and hot surfaces from contacting the skin.

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

NOTE:
The applicator should be at operating temperature.
Turn the Melter's pump/ motor OFF.

Relieving Adhesive Pressure Manually:

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

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

1. Place a heat-resistant container under the drain valve. If necessary, rotate the drain valve's opening by turning its knurled collar so that the opening is aiming downward into the container.

2. With a 5mm hex key screwdriver (Allen wrench), slowly loosen the drain valve's purge screw (do not try to remove it) and allow the adhesive and residues to flow out of applicator. Be sure to stand clear since there may be residual adhesive pressure in the applicator.

3. Turn ON the Melter's pump/ motor. When all the contaminants have run out and the glue is clean, re-tighten the screw.

5.4 Replacement of the Filter

WARNING

Heed all security advices given in chapter 5.1.

Maintenance and repair work is only permitted for skilled personnel!

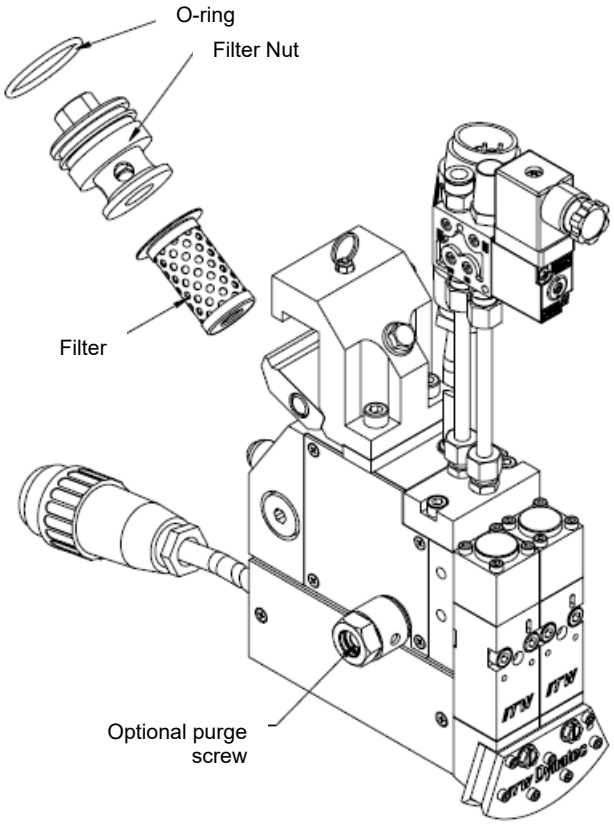
Always wear safety shoes, heat-resistant protective gloves, safety goggles and protective clothing that cover all vulnerable parts of the body while working on the heated unit! Risk of injury or severe burns!

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

Components and adhesive are hot when this procedure is being done. 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 Melter's pump/ motor OFF.
3. Switch the unit voltage-free or to standby.
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 following the "5.3 Purging Hot Adhesive Under Pressure" procedure on the preceding page.
7. Unscrew and remove the filter nut.
8. With needle nose pliers, pull the filter basket out of the manifold.
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. Switch to operation temperature and 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 Replacement of Module

WARNING

Heed all security advices given in chapter 5.1.

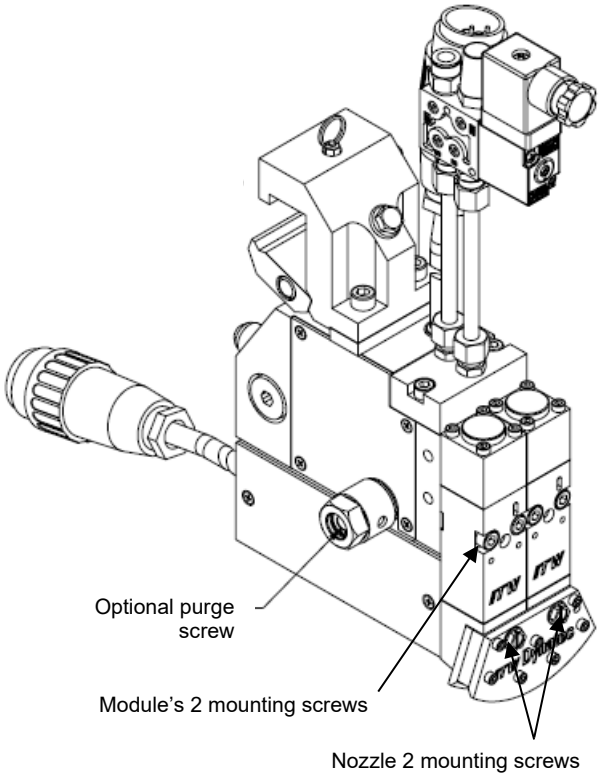
Maintenance and repair work is only permitted for skilled personnel!

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

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

Components and adhesive are hot when this procedure is being done. 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 Melter's pump/ motor OFF.
3. Switch the unit voltage-free or to standby.
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 following the "5.3 Purging Hot Adhesive Under Pressure" procedure on the preceding page.
7. Remove the air connections and the solenoid valve.
8. Remove the nozzle from the applicator by loosening its mounting screws.
9. Loosen the 2 screws of the defective module and remove the module with a 4mm hex key screw driver (Allen wrench). Make sure that the old o-rings located on the back of the module are also removed (the new module will include new o-rings).
10. Clean the adhesive residuals from module hole in Applicator and the surface of the manifold.
11. Lubricate the new module O-rings with O-ring lube (PN N07588).



12. Insert the new module and fasten it with its 2 screws using a torque wrench with a torque of 25-35 in./lbs (2.8-4.0 Nm).

13. Insert the nozzle on the applicator and fasten it with its mounting screws using a torque wrench with a torque of 20-25 in./lbs (2.3-2.8 Nm).

14. Re-connect the solenoid valve and the air connections.

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. Switch to operation temperature and heat the unit up. Wait until all temperatures are within the tolerances and the adhesive in the hopper is molten completely.
- Continue production.

5.5.1 Module Assembly Instructions for the PN 114864 Module

Use the component illustration and parts list in Chapter 6 as a reference with the following instructions for the PN 114864 module. ITW Dynatec has a Module Seal Kit available (PN 114311) which contains the components necessary to rebuild one module, including the seal cartridge assembly, all O-rings and seal lubricant.

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

CAUTION

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

2. All module body components must be cleaned of residual adhesive before reassembly. The new seal cartridge assembly is a complete working assembly, with the stroke preset at the factory. No field adjustment is necessary. Alterations to the stroke length may affect module life and applicator performance.

3. Insert the new seal cartridge assembly into the module body. Press the seal cartridge assembly fully into position. Do not deform the piston seals during assembly, as this will make installation of the air cap difficult.

4. Place the air cap carefully over the piston seals and press into position. Secure the air cylinder with the four M3 x 35 cap screws. Torque to 15 in-lbs (1.7 Nm).

5. Place new o-rings on the module body (four o-rings on the rear face and two on the bottom face).

6. Place new o-rings on the vertical adapter (one on the top face and two on the front face).

7. Align the seal plate correctly to the bottom of the module body. The two holes marked “PIN” should be located over the two spring pins. Install the vertical adapter. Torque the screws to 15 in-lbs (1.7 Nm).

8. Allow five minutes for the module to heat before operating the applicator.

To disassemble, reverse above order.

5.6 Cleaning of Nozzle

WARNING

Heed all security advices given in chapter 5.1.

Maintenance and repair work is only permitted for skilled personnel!

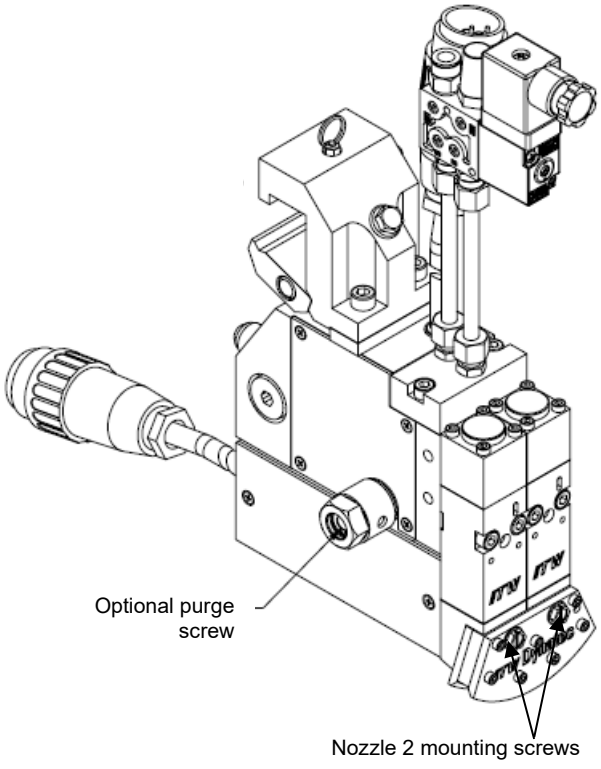
Always wear safety shoes, heat-resistant protective gloves, safety goggles and protective clothing that cover all vulnerable parts of the body while working on the heated unit! Risk of injury or severe burns!

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

Components and adhesive are hot when this procedure is being done. Take every precaution to prevent the material and hot surfaces from contacting the skin.

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

1. The Applicator must be at operating temperature.
2. Turn the Melter's pump/ motor OFF.
3. Switch the unit voltage-free.
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 following the "5.3 Purging Hot Adhesive Under Pressure" procedure on the preceding page.
7. Remove the nozzle from the applicator by loosening its mounting screws.
8. Clean the nozzle. See next page for Cleaning Procedures.
9. Insert the nozzle on the applicator and fasten it with its mounting screws using a torque wrench with a torque of 20-25 in./lbs (2.3-2.8 Nm).



Cleaning Nozzles by Disassembly is Not Recommended

CAUTION

Cleaning the nozzle by disassembly is NOT recommended.
The internal nozzle plates can be easily damaged during disassembly and foreign material left between the plates can cause air or adhesive leakage.

Cleaning by High Temperature Oven

For routine nozzle cleaning, a high temperature oven should be utilized.
An optional Nozzle Cleaning Oven (PN 80.80000.103) is available from ITW Dynatec.

Using an air gun with compressed air blow all dust/ash from the nozzle.
If any ash or other debris remains after the oven cleaning, soak the nozzle in solvent to remove. To do so, follow the instructions in the following section.

Cleaning by Soaking in Solvent

Soak the nozzle in a solvent that is compatible with the adhesive being utilized.
If necessary, use a non-metallic brush to remove any foreign material, being careful not to damage any of the nozzle's orifices. Be sure to remove all residue.

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. Switch to operation temperature and heat the unit up. Wait until all temperatures are within the tolerances and the adhesive in the hopper is molten completely.
- Continue production.

5.7 Replacement of Heater Cartridge or Sensor

WARNING

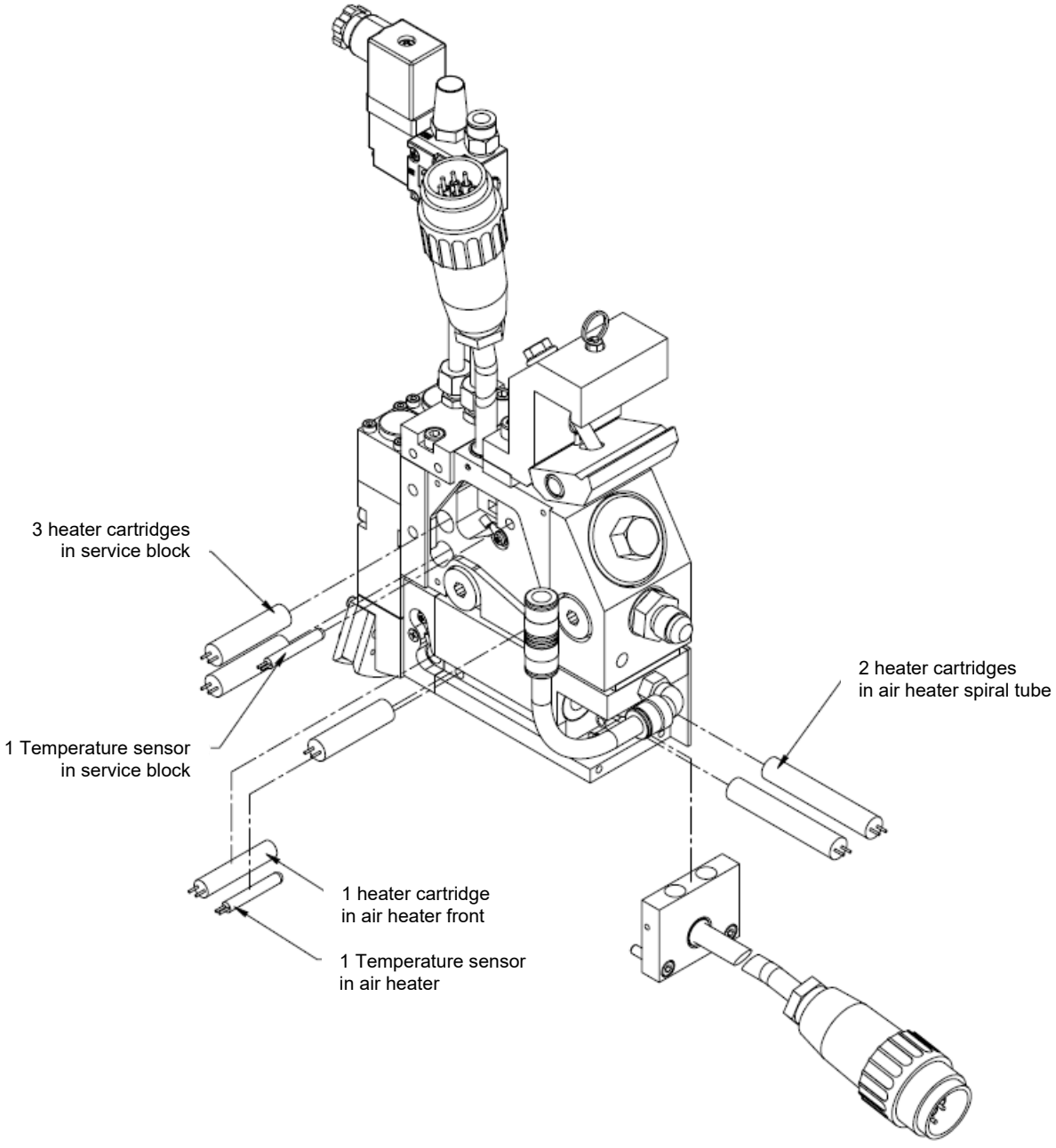
Heed all security advices given in chapter 5.1.

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 when this procedure is being done. Take every precaution to prevent the material and hot surfaces from contacting the skin.



5.7.1 Replacement of Service Block Heater Cartridges

See illustration on previous page for parts locations.

1. Turn OFF the Melter and switch it voltage-free and relieve all system pressure before proceeding. **CAUTION:** Heed all security advices given in chapter 5.1.

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

3. Remove the four screws holding the left-side cover plate. Remove the plate. Pull the ceramic terminal blocks from the wiring cavity and disconnect the heater leads from the terminal blocks.

4. Locate the non-functioning heater with a multimeter. Remove and replace the heater. Apply a thin film of thermal paste to the new heater before installation.

5. Reconnect the three heaters to the terminal blocks, making sure that no strands of wire are protruding from the terminal blocks.

6. Place the terminal blocks back into the wiring cavity. Replace the left-side cover plate.

5.7.2 Replacement of Air Preheater Heater Cartridges

See illustration on previous page for parts locations.

1. Turn OFF the Melter and switch it voltage-free and relieve all system pressure before proceeding. **CAUTION:** Heed all security advices given in chapter 5.1.

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

3. Remove the M4 screws and M5 screws from the wire cover. Remove the wire cover. For the heating cartridge at the front, the side cover must be removed.

4. Disconnect the heater leads from the ceramic terminal blocks.

5. Locate the non-functioning heater with a multimeter.

6. a. If one of the 10mm heaters is non-functioning, remove and replace it at this time. Apply a thin film of thermal paste to the new heater before installation.

   b. To replace the 8mm heater: remove the two M3 screws holding the left-side cover. Remove the cover. Remove and replace the 8mm heater. Apply a thin film of thermal paste to the new heater before installation.

7. Reconnect all heaters to the terminal blocks, making sure that no strands of wire are protruding from the terminal blocks.

8. Replace the left-side cover if removed. Replace the wire cover.

5.7.3 Replacement of Service Block Temperature Sensor

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

1. Turn OFF the Melter and switch it voltage-free and relieve all system pressure before proceeding. **CAUTION:** Heed all security advices given in chapter 5.1.

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

3. Remove the four screws holding the left-side cover plate. Remove the plate.

4. Pull the sensor out of the service block.

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

6. Apply a thin film of thermal paste to the new sensor and place it in the service block. Trim the lead wires so that they overlap the old sensor wires by one to two inches. Strip the ends of all four wires.

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

8. Place the wires in the wiring cavity and replace the left side cover.

5.7.4 Replacement of Air Preheater Temperature Sensor

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

1. Turn OFF the Melter and switch it voltage-free and relieve all system pressure before proceeding. **CAUTION:** Heed all security advices given in chapter 5.1.

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

3. Remove the left-side cover plate.

4. Pull the sensor out of the preheater.

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

6. Apply a thin film of thermal paste to the new sensor and place it in the hole. Trim the lead wires so that they overlap the old sensor wires by one to two inches. Strip the ends of all four wires.

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

8. Replace the left side cover plate.

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Chapter 6
Troubleshooting

6.1 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 Melter**.**

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.

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:
If the applicator does not operate properly, verify the following before proceeding:

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

6.2 Troubleshooting Guide

Problem	Possible Cause	Solution
Module does not open.	1. Temperature adjustment of head is too low. 2. Inoperative solenoid. 3. Inoperative module.	1. Check temperature adjustment. 2. Push the solenoid's manual button. If it opens, the problem is electrical. 3. Repair or replace module.
No adhesive flowing out of module and/or nozzle.	1. Nozzle is clogged. 2. Filter element is dirty. 3. Module seals (O-rings) are inoperative. 4. Melter's hopper (tank) is empty. 5. Adhesive is too cold. 6. Solenoid valve is not opening.	1. Clean or replace nozzle. 2. Replace filter. 3. Check module O-rings. 4. Re-fill hopper (tank). 5. Adjust temperature. 6. Check/ replace solenoid valve.
Hot melt is coming out of the module's "weep" holes.	1. Module seals are damaged.	1. Replace module.
Applicator does not reach operating temperature.	1. Hopper temperature setpoint is too low. 2. Inoperative heater cartridge. 3. Inoperative temperature sensor.	1. Change setpoint. 2. Check/ replace heater cartridge. 3. Check/ replace sensor.
Applicator is too hot.	1. Applicator temperature setpoint is too high. 2. Inoperative temperature sensor.	1. Change setpoint. 2. Check/ replace sensor.
Air escapes from module.	1. Inoperative piston O-ring. 2. O-rings located between module and service block are inoperative.	1. Replace module. 2. Remove module from block and replace O-rings.
Application pattern is erratic.	1. Adhesive pressure is too low. 2. Pattern controller's adjustment is improper.	1. *a. For units without speed control:* increase adhesive pressure at Melter. *b. For units with speed control (tach follower):* adjust pump speed control. 2. See pattern controller manual for proper adjustment.

6.3 Testing Resistance of Heater Cartridge or Temperature Sensor

1. Turn the Melter OFF or disable the head (applicator) and preheater zones at the control panel. Disconnect all electrical cables from the head. Turn all pumps OFF and relieve system pressure before proceeding.

2. Unplug the electrical cable from the adhesive supply hose or extension cable to expose the pins in the cable.

3. Use the schematic in Ch. 9 to determine the correct pins used to measure the heater resistance. Compare the reading with the values given in the charts below.

6.3.1 Testing Resistance of the Heater Cartridges

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

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

To determine wattage, see heater cartridges chart in Chapter 7.

NOTE: A tolerance range of ± 5% is allowed. A heater cartridge that tests outside of this range must be replaced.

Service Block Heaters

The service block of the DeltaFx applicator contains three 10mm heaters wired in parallel. The parallel resistance values of these heaters should be in the range of 115.8 - 141.9 Ohms.

Air Preheater Heaters

The air preheater contains three heaters wired in parallel. One heater, located at the front of the preheater, is 8mm diameter. The remainder of the heaters, located in the spiral tubes at the rear of the preheater, are 10mm diameter. The parallel resistance values of these heaters should be in the range of 67 - 81 ohms.

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

6.3.2 Testing Resistance of the RTD Temperature Sensor

(Control options D, M, N and P in the model number, see Ch.7, Model Designation Guide).

1. Turn the Melter OFF or disable the head (applicator) and preheater zones at the control panel. Disconnect all electrical cables from the head. Turn all pumps OFF and relieve system pressure before proceeding.
2. Unplug the electrical cable from the adhesive supply hose or extension cable to expose the pins in the cable.
   Note: The resistance value (Ohms) of the temperature sensor depends on the temperature of the sensor at the time it is being tested. All values listed in the table below are given at 25°C (77°F). To correct for ambient temperatures other than 25°C, see Resistance Temperature tables for the RTD sensors on next page.
3. Using the schematic in Chapter 9 as a reference, measure the resistance of the sensor and compare to the values in the table below. A sensor that tests outside of this range must be replaced.
   NOTE: A tolerance range of ± 10% is allowed.

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

6.3.3 Testing the J-type Thermocouple Temperature Sensor

(Control option L in the model number, see Ch.7, Model Designation Guide)

1. Turn the Melter OFF or disable the head (applicator) and preheater zones at the control panel. Disconnect all electrical cables from the head. Turn all pumps OFF and relieve system pressure before proceeding.

2. Unplug the electrical cable from the adhesive supply hose or extension cable to expose the pins in the cable.

3. Using the schematics in Chapter 9 as a guide, first measure the resistance across the thermocouple leads to check for an open junction. The resistance should be zero (allowing for the resistance of the test leads). If the resistance is high or infinite, an open junction or loose connection is indicated. If all the connections are secure, replace the thermocouple.

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

6.3.4 Resistance/ Voltage Tables for RTD Temperature Sensor

RTD Resistance - Temperature Tables

PT 100 Ohms Control Option D, M, P or X

Temperature °F	Temperature °C	Resistance in Ohms
32	0	100
50	10	104
68	20	108
86	30	112
104	40	116
122	50	119
140	60	123
158	70	127
176	80	131
194	90	135
212	100	139
230	110	142
248	120	146
268	130	150
284	140	154
302	150	157
320	160	161
338	170	165
356	180	168
374	190	172
392	200	176
410	210	180
428	220	183

Ni 120 Ohms Control Option N

Temperature °F	Temperature °C	Resistance in Ohms
32	0	120
50	10	127
68	20	135
86	30	142
104	40	150
122	50	158
140	60	166
158	70	174
176	80	183
194	90	192
212	100	201
230	110	210
248	120	219
268	130	229
284	140	239
302	150	249
320	160	259
338	170	270
356	180	281
374	190	292
392	200	303
410	210	315
428	220	328

TC Voltage – Temperature Table

J-type TC Control Option L

Temperature °F	Temperature °C	Voltage in mV
32	0	0
50	10	0.51
68	20	1.02
86	30	1.54
104	40	2.06
122	50	2.59
140	60	3.12
158	70	3.65
176	80	4.19
194	90	4.76
212	100	5.27
230	110	5.81
248	120	6.36
268	130	6.91
284	140	7.46
302	150	8.01
320	160	8.56
338	170	9.12
356	180	9.67
374	190	10.22
392	200	10.78
410	210	11.33
428	220	11.89

Chapter 7
Component Illustrations and Bill of Materials

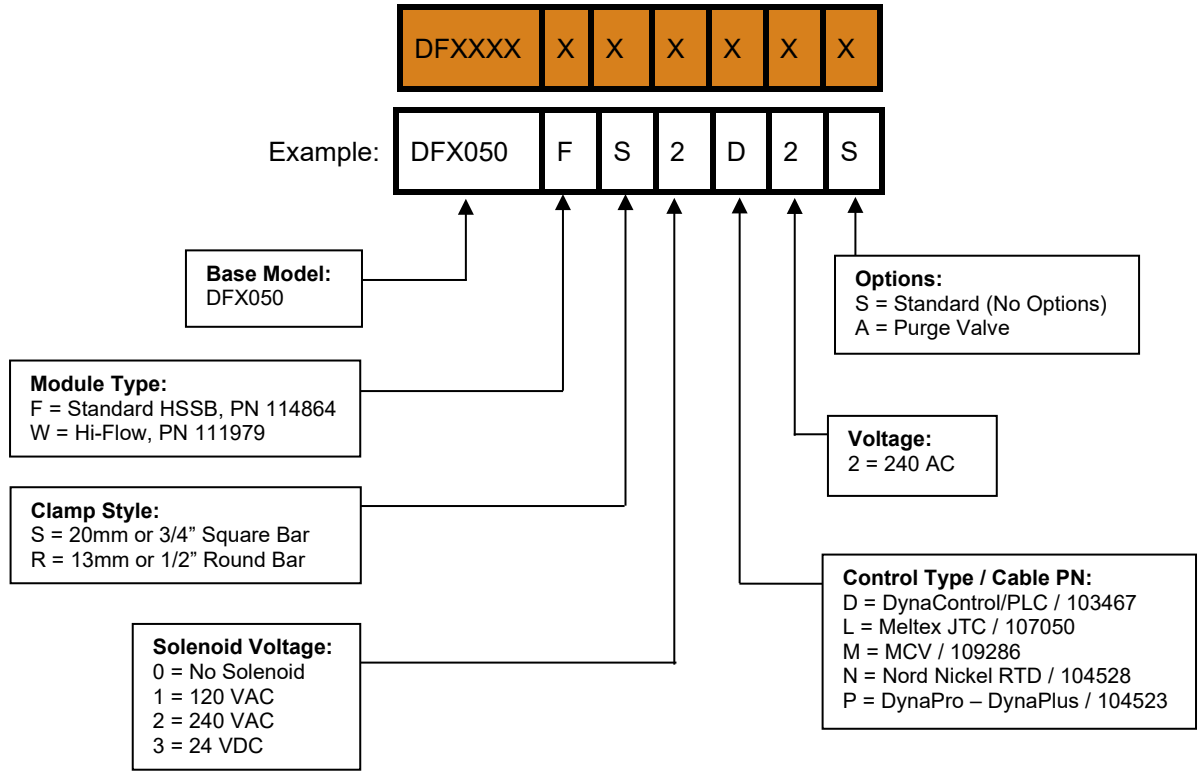
WARNING

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

7.1 Model Designation Guide, DeltaFx



7.2 DeltaFx Service Block Assemblies

Item No.	Part Number	Description	Quantity
1	109103	Service block, 2-port	1
2	101624	Fitting, #6 JIC x 1/4 BSPP	1
3	N00196	O-ring 111	1
4	101625	Plug 1/4 BSPP	5
5	106273	Filter 150 mesh	1
6	106303	Filter nut	1
7	N03812	O-ring 125	1
8	106292	Insulator	1
9	104663	Screw M6x25mm	2
10	See table below	Cable assembly with sensor	1
11	103470	Screw M3x5mm	1
12	106444	Heater cartridge Ø10x40mm, 150W, 240V	3
13	107881	Terminal block 2-pole	1
14	N07430	Terminal ring	1
15	078C088	Lock washer #4	1
16	101627	Screw M3x6mm	1
17	110451	Side cover	2
18	106531	Screw M3x8mm	8
19	804354	Screw M5x30mm	4
20	104229 *	Wire Ferrule	2
21	N08036 *	Wire Ferrule	2

* not shown.

Table for Service block and Cable PNs:

Applicator Control Type Code	Description	Service block asy PN	Cable asy PN (item 10)
D	DynaControl	115693	103467
N	Nord	115694	104528
M	MCV	115695	106707
L	Meltex JTC	115696	107050
P	Meltex PT	115697	110143

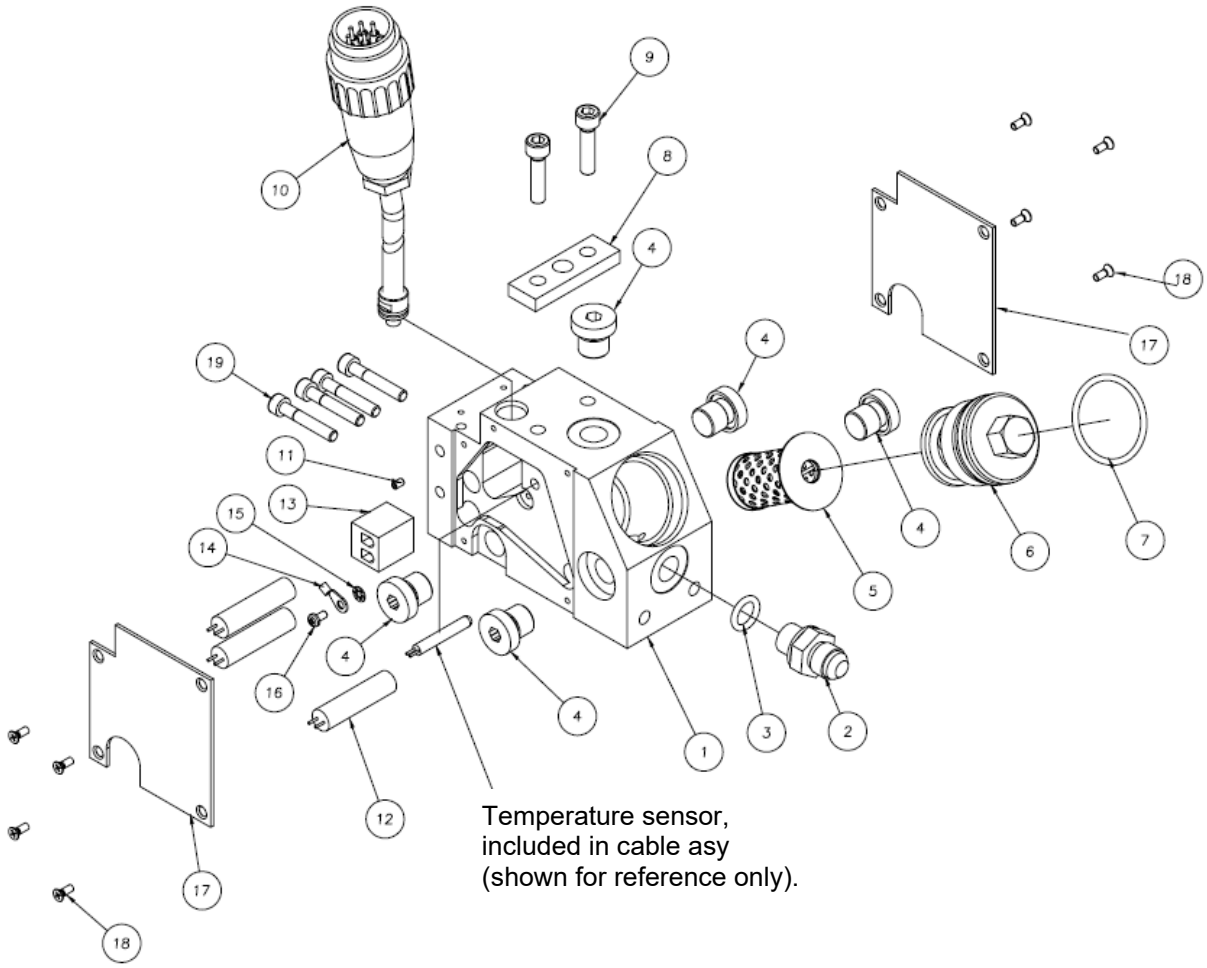


Illustration: DeltaFx Service Block Assemblies

7.3 DeltaFx Air Heater Assemblies

Item No.	Part Number	Description	Quantity
1	109109	Air heater Manifold 2-port	1
2	109110	Manifold, distribution, 2-port	1
3	069X270	O-ring 025	1
4	109108	Cover, rear wire	1
5	109111	Side cover	2
6	106531	Screw M3x8mm	4
7	106294	Spiral tube	2
8	107430	O-ring 016	2
9	107161	Screw M4x8mm	1
10	114667	Heater cartridge Ø10x60mm, 300W	2
11	106448	Heater cartridge Ø8x40mm, 200W	1
12	106328	Screw M4x16mm	2
13	100908	Screw M4x25mm	4
14	106332	Screw M5x55mm	2
15	109252	Screw M5x25mm	2
16	See table below	Cable asy with sensor	1
17	103470	Screw M3x6mm	1
18	N07541	Terminal block, ceramic, 1-pole	2
19	048G018	Terminal ring	1
20	106236	Washer M4	1
21	107389	Screw M4x8mm	1
22	106306	Spacer	2
23	106726	Dowel pin 5mm	2
24	N07430	Terminal pin 22-16	2
25	078C088	Washer #4	2
26	101627	Screw M3x6mm	2
27	115675	Elbow Fitting 90°	1
28	115676	Union, push-lock, 8mm	1
29	806517	Tubing 5/16OD	0.5 ft
30	104229 *	Wire ferrule	4
31	N06989 *	Wire, green/yellow, 18GA, 260°C	1.5 ft

* not shown.

Table for Air heater and Cable PNs:

Applicator Control Type Code	Description	Air heater asy PN	Cable asy PN (item 16)
D	DynaControl	115901	109253
N	Nord	115902	109287
M	MCV	115903	109286
L	Meltex JTC	115904	109288
P	Meltex PT	115905	110145

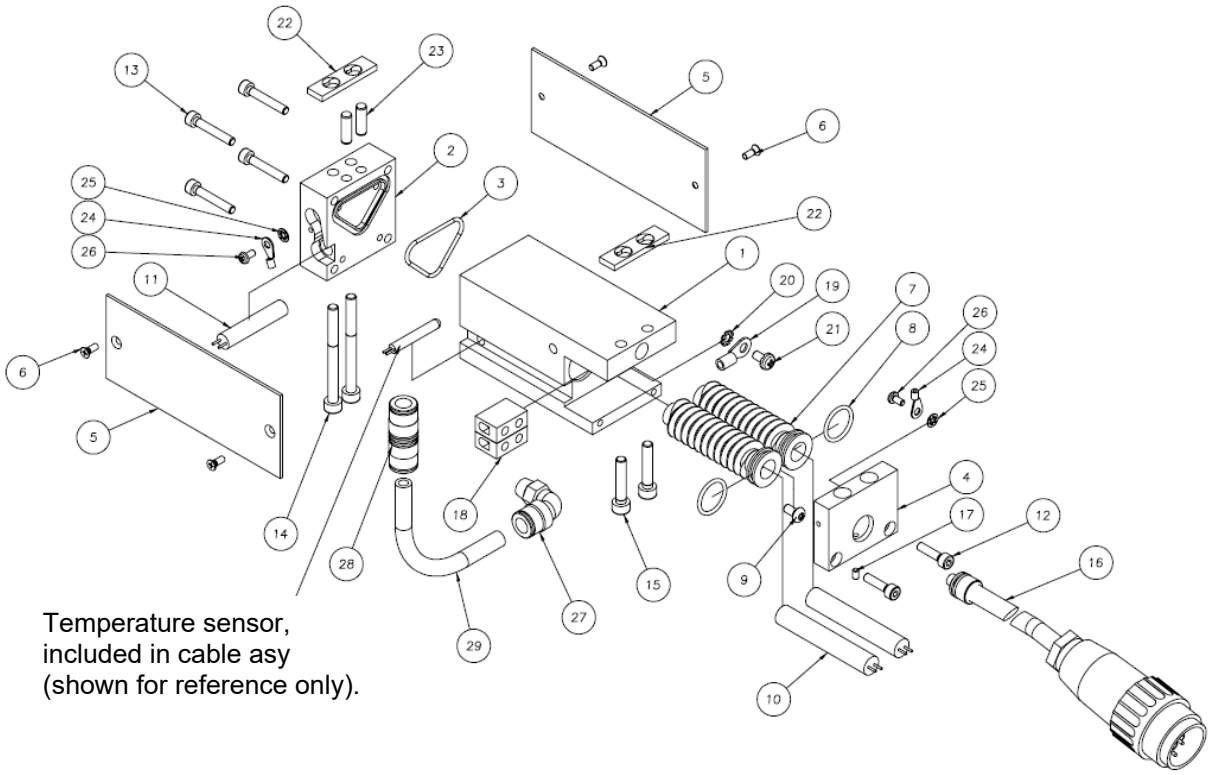
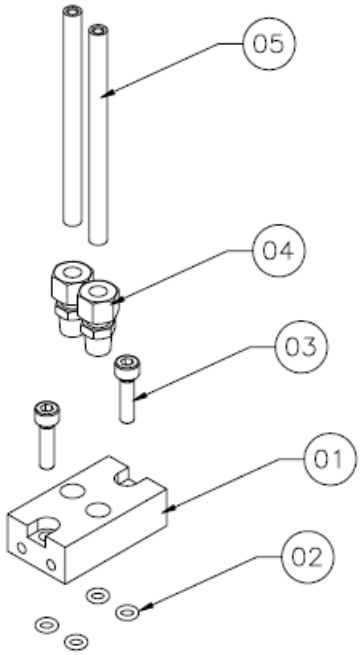


Illustration: DeltaFx Air Heater Assemblies

7.4 Solenoid Manifold Assembly, PN 106474

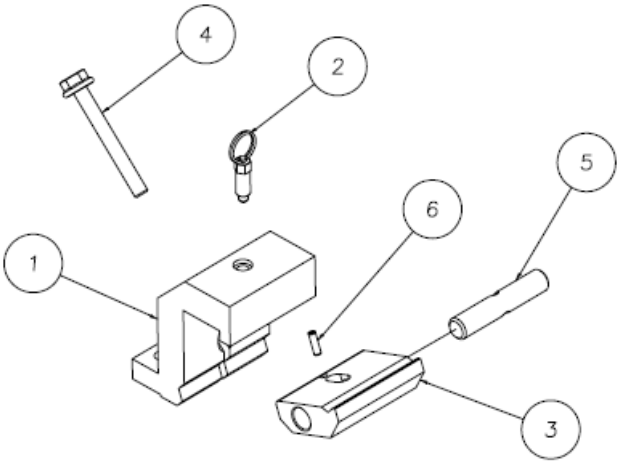
Item No.	Part Number	Description	Quantity
01	106305	Manifold, 2-port, 1 solenoid	1
02	N00175	O-ring 008	4
03	N07419	Screw M5x20mm	2
04	N00093	Fitting, 1/4 tube x 1/8 NPT	2
05	106333	Tube, SST, 1/4”ODx3.5”	2



7.5 Bar Clamp Assembly, PN 115568

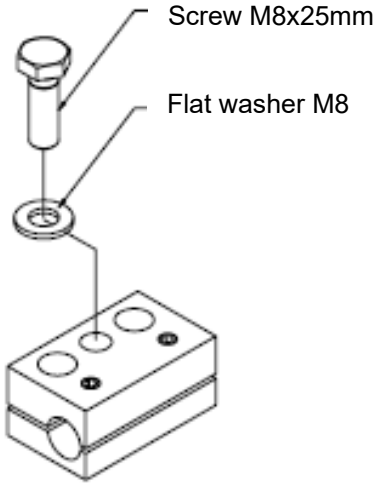
(Clamp option code “S”)

Item No.	Part Number	Description	Quantity
1	115569	Clamp base	1
2	112773	Spring plunger	1
3	115570	Locking plate	1
4	115679	Screw M6x50mm	1
5	115571	Barrel nut M6	1
6	115572	Spring pin M3x10mm	1



7.6 Rod Assembly, PN 106293

(Clamp option code “R”)

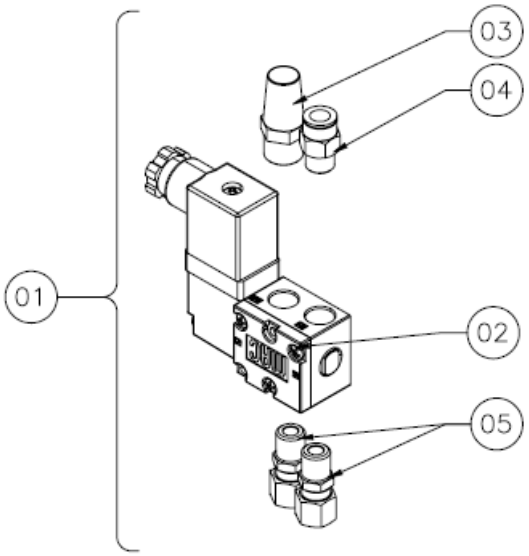


7.7 Solenoid Assembly

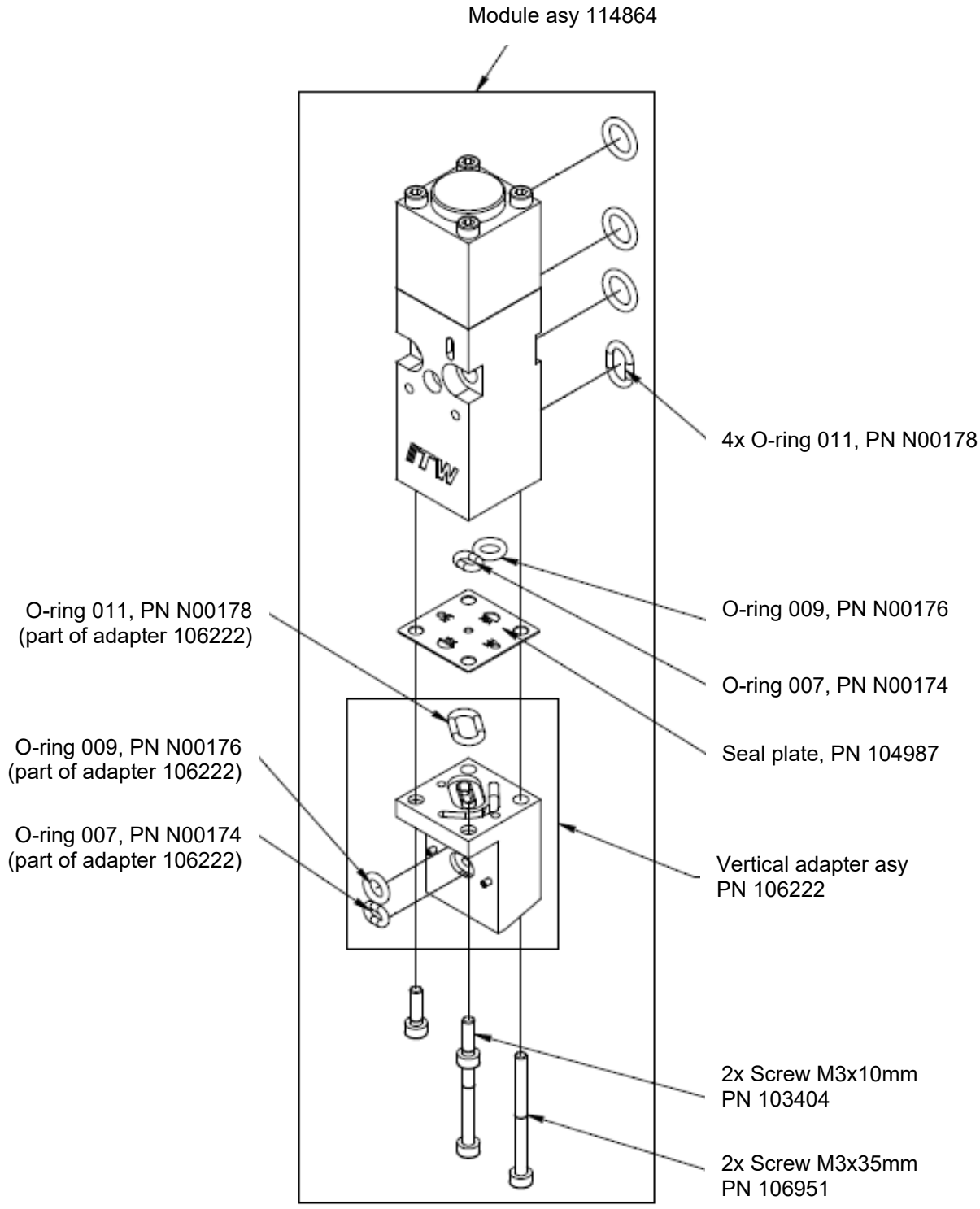
Item No.	Part Number	Description	Quantity
01	See table below	Solenoid asy with fittings	1
02	-	Solenoid	1
03	N02745	Muffler 1/8 NPT	1
04	N06435	Fitting, push-lock, 1/4 tube x 1/8 NPT	1
05	N00093	Fitting, 1/4 tube x 1/8 NPT	1

Table for Solenoid asy PNs:

Solenoid Option Code	Control Voltage	Solenoid asy PN
1	120 VAC	106193
2	240 VAC	811506
3	24 VDC	105148



7.8 Module Assembly, Vertical, High-Speed Snuffback, PN 114864



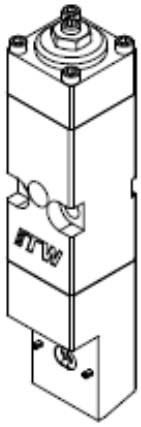
For module repair kit, see Ch. 8.

7.9 Module Assembly, Hi Flow, (option), PN 111979

Item No.	Part Number	Description	Quantity
01	111307	Module body	1
02	110417	Seal	2
03	111309	Washer	2
04	N05262	Snap ring, internal, 3/8” bore	2
05	111310	Stem	1
06	110589	Adapter asy	1
06A	N00195	O-ring 110	1
06B	110587	Seat asy	1
06C	N05044	O-ring 109	1
07	114137	Piston asy	1
07A	114136	Retainer	1
07B	111314	Piston seal	2
07C	111315	Spacer	1
07D	114135	Piston	1
08	110046	Lock nut #4-40	1
09	111311	Spring	1
10	111308	Cap	1
11	N00186	O-ring 019	1
12	107353	Screw #4-40x3/4	4
13	078A384	Screw #10-32x3/4	1
14	078D078	Nut, hex sealing, #10-32	1
15	111978	Vertical adapter asy	1
15A	-	Vertical adapter	1
15B	078G028	Pin	2
15C	N00174	O-ring 007	1
15D	N00176	O-ring 009	1
15E	N00178	O-ring 011	1
16	N00795	Screw #6-32x1	2
17	078A184	Screw #6-32x2	2
18	N00178	O-ring 011	3

7.10 Repair kit for PN 111979 Module Assembly, Hi Flow, PN 114321

Item No.	Part Number	Description	Quantity
02	110417	Seal	2
03	111309	Washer	2
04	N05262	Snap ring, internal, 3/8” bore	2
06A	N00195	O-ring 110	1
06C	N05044	O-ring 109	1
-	N02680	Screw #6-32x3/8	4
07	114137	Piston asy	1
08	110046	Lock nut #4-40	1
09	111311	Spring	1
11	N00186	O-ring 019	2
14	078D078	Nut, hex sealing, #10-32	1
15E	N00178	O-ring 011	5
15D	N00176	O-ring 009	1
15C	N00174	O-ring 007	1
-	108700	Lube, TFE, 1/4 oz tube	1



Assembled view

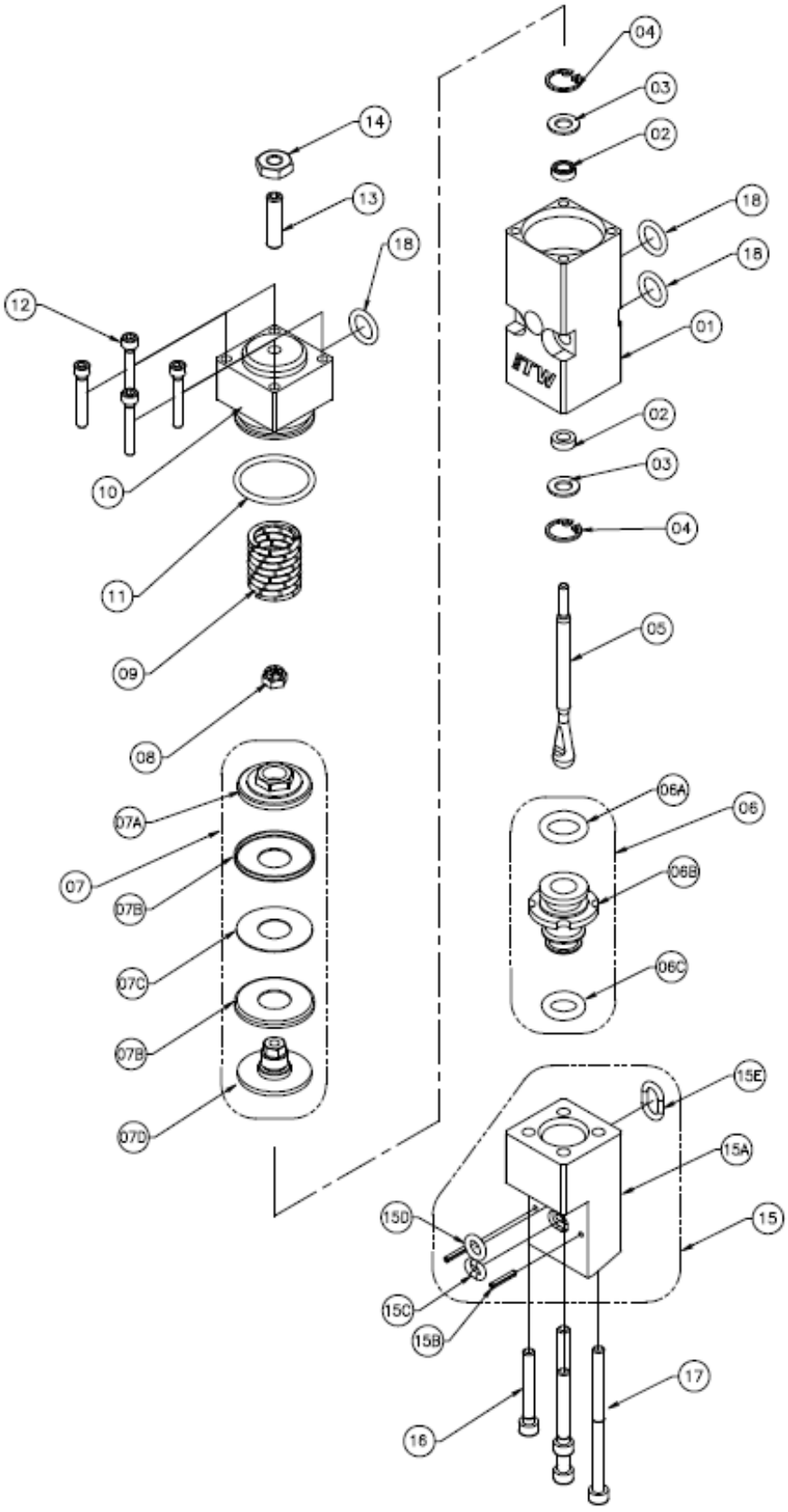
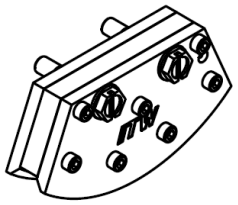


Illustration: Module Assembly, Hi Flow, (option), PN 111979

Chapter 8
Options & Ordering Guides

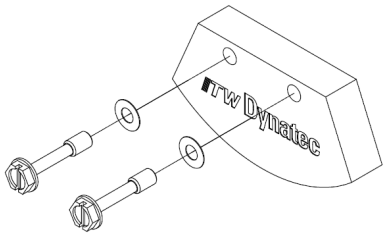
8.1 Nozzles

PN	Description
118751	DeltaFx nozzle, standard-flow, 31-orifice
118752	DeltaFx nozzle, high-flow, 31-orifice



8.2 Blank Nozzle PN 115685

A blank nozzle is available for use on the applicator when the DeltaFx nozzle is removed for cleaning. The blank nozzle is especially useful for reactive adhesives, to prevent adhesive from curring in the modules when the DeltaFx nozzle is removed.



8.3 Heater Cartridges

PN	Description	Location	Qty.
106444	Heater Cartridge Ø10x40mm, 150W	Service block	3
106448	Heater Cartridge Ø8x40mm, 200W	Air preheater	1
114667	Heater Cartridge Ø10x60mm, 300W	Air preheater	2

8.4 RTD Sensors

Control	RTD Sensor PN	Description	Qty.
DynaControl/ Allen-Bradley (Code D)	N07958	Pt-100	2
MCV (Code M)	104912	Dual Pt-100	2
Upgrade Nord (Code N)	N07864	Ni-120	2
Meltex Upgrade J-Type TC (Code L)	107051	J-type TC	2
Meltex upgrade Pt-RTD (Code P)	N07958	Pt-100	2

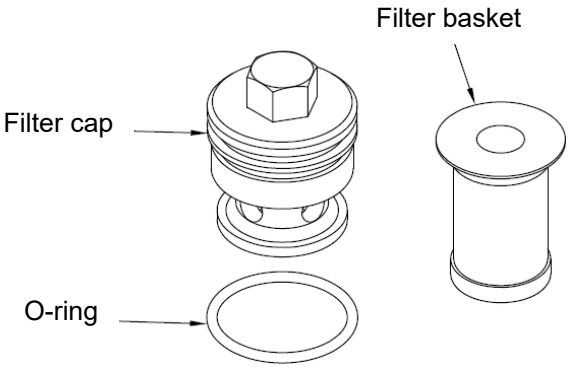
8.5 Filter

PN 106273, 150-mesh Filter basket

8.6 Filter Kit

To simplify ordering, Filter Kit is available for the 150-mesh filter.

Filter Kit PN	O-ring PN	Filter Cap PN	Filter basket PN
114292	N03812 O-ring #125	106303	106273 150 mesh



8.7 Solenoid Valves

Code	PN	Description
1	106193	Solenoid 120 VAC
2	811506	Solenoid 240 VAC
3	105148	Solenoid 24 VDC

8.8 Service Kits

Module Repair Kit for Standard Module PN 114311

The module repair kit contains all the parts necessary to rebuild one PN 114864 module.

Module Repair Kit for Hi Flow Module PN 114321

The module repair kit contains all the parts necessary to rebuild one PN 111979 module.

8.9 High-Temp Splice Kit PN102645

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

8.10 Nozzle Cleaning Oven, PN 80.80000.103

The use of the Nozzle Cleaning Oven eliminates the need to disassemble the nozzles for cleaning. Nozzles are baked in the oven for approximately six hours at 750-800 °F (400 - 426 °C). Complete cleaning instructions are provided.

8.11 Drain Valve PN 107820

Option Code “A” (see Model designation guide, Ch.7) adds a drain (purge) valve to the applicator. The drain valve is installed in the right accessory port of the applicator. The drain valve is useful for relieving pressure prior to maintenance or repair of the applicator. Also, the drain valve is useful for flushing the filter chamber after the filter has been replaced. It can be relocated to the left accessory port if necessary for installation clearance and operator access.

NOTE: The drain valve assembly is not recommended for use with PUR adhesives, due to the possibility of adhesive curing in the valve.

8.12 Extension Cable Assemblies

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

Control / Code	Cable PN	Length	Cable PN	Length
DCL / PLC (Code D)	103773	10’	103776	25’
	103774	15’	105123	30’
	103775	20’	105147	40’
MCV (Code M)	084F222	10’	084F682	25’
	084F225	15’	084F383	40’
	084F223	20’	-	-
Nor Upgrade (Ni-RTD) (Code N)	102706	10’	105834	40’
	106349	25’	-	-
Mel Upgrade (JTC) (Code L) Service block only	107044	2m	107047	8m
	107045	4m	107309	10m
	107046	6m	-	-
Mel Upgrade (JTC) (Code L) Air heater only	110149	2m	110152	8m
	110150	4m	110153	10m
	110151	6m	-	-
Mel Upgrade (Pt-RTD) (Conde P) Service block only	110159	2m	110162	8m
	110160	4m	110163	10m
	110161	6m	-	-
Mel Upgrade (Pt-RTD) (Conde P) Air heater only	110154	2m	110157	8m
	110155	4m	110158	10m
	110156	6m	-	-

8.13 Recommended Spare Parts List

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

As a general rule, we recommend that you keep on hand:

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

Part Number	Description	Quantity
*	Module Repair Kit	1
*	Heaters	A/R**
*	RTD sensor, Service Block	1
*	RTD sensor, Preheater	1
N03812	O-ring 125	2
N00196	O-ring 111	1
N00181	O-ring 014	1
N00178	O-ring 011	A/R**
N00176	O-ring 009	A/R**
N00174	O-ring 007	A/R**
102645	High-temp Splice kit	1
106273	Filter Basket, 150 mesh	2
001V061	Thermal Paste	1
*	Solenoid	1
See your order	Nozzle	2

* See ordering guide.
** A/R = As required.

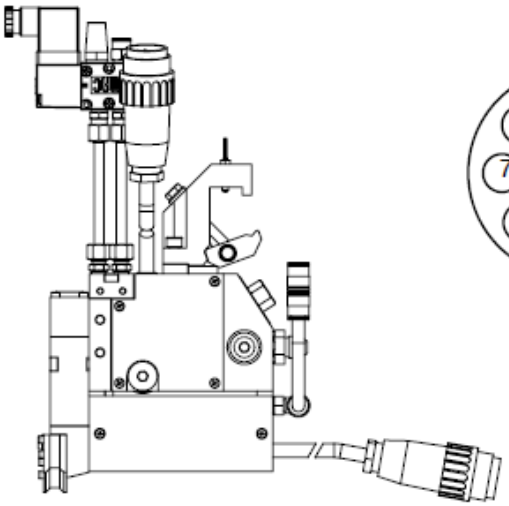
Chapter 9
Schematics

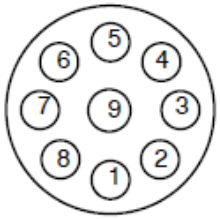
9.1 Pin Connectors & Electrical Schematics

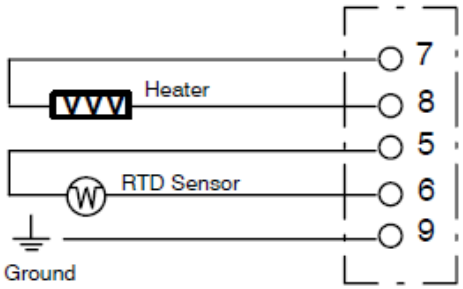
Note: Pin connectors are viewed from the exposed end. Pins not shown on schematics are not used.

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

(Control code D)

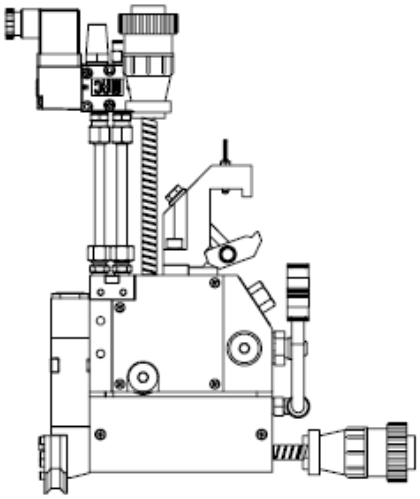


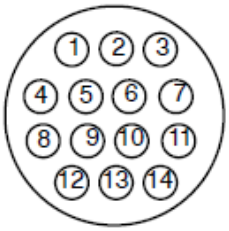


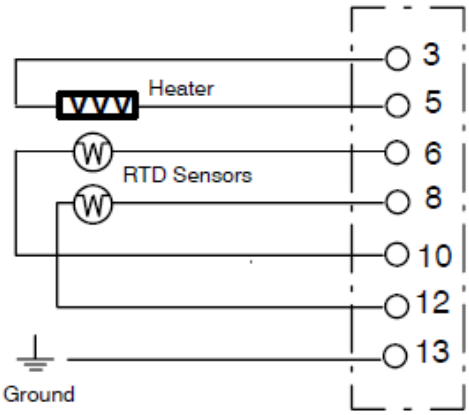


9.1.2 Microprocessor Temperature Control or CompuVision (MCV) Control Scheme PN 045X144

(Control code M)

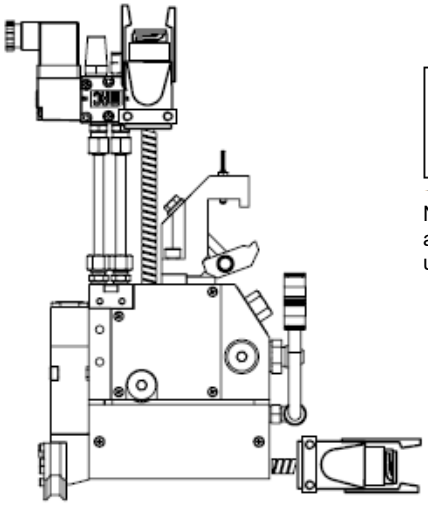


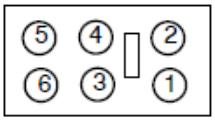




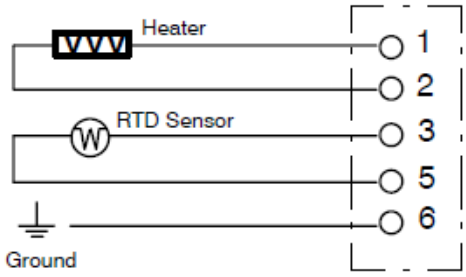
9.1.3 Nor Upgrade (Nickel RTD) Control Scheme PN 104551

(Control code N)





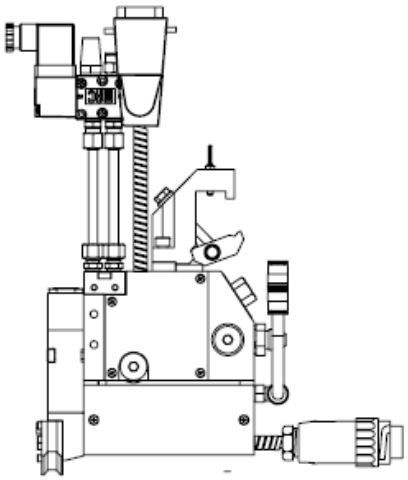
NOTE: Pin out numbers are not labeled on the upgrade connector.



9.1.4 Mel Upgrade (J-type Thermocouple) Control Scheme

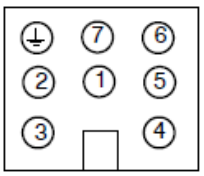
(Control code L)

To head

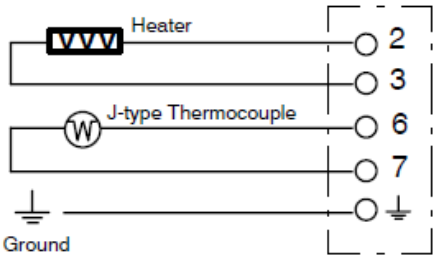


To Air Heater

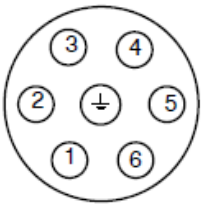
To head Connector



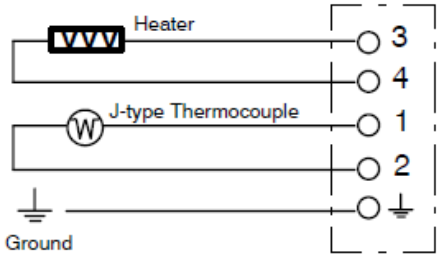
To head Connector



To Air Heater Connector

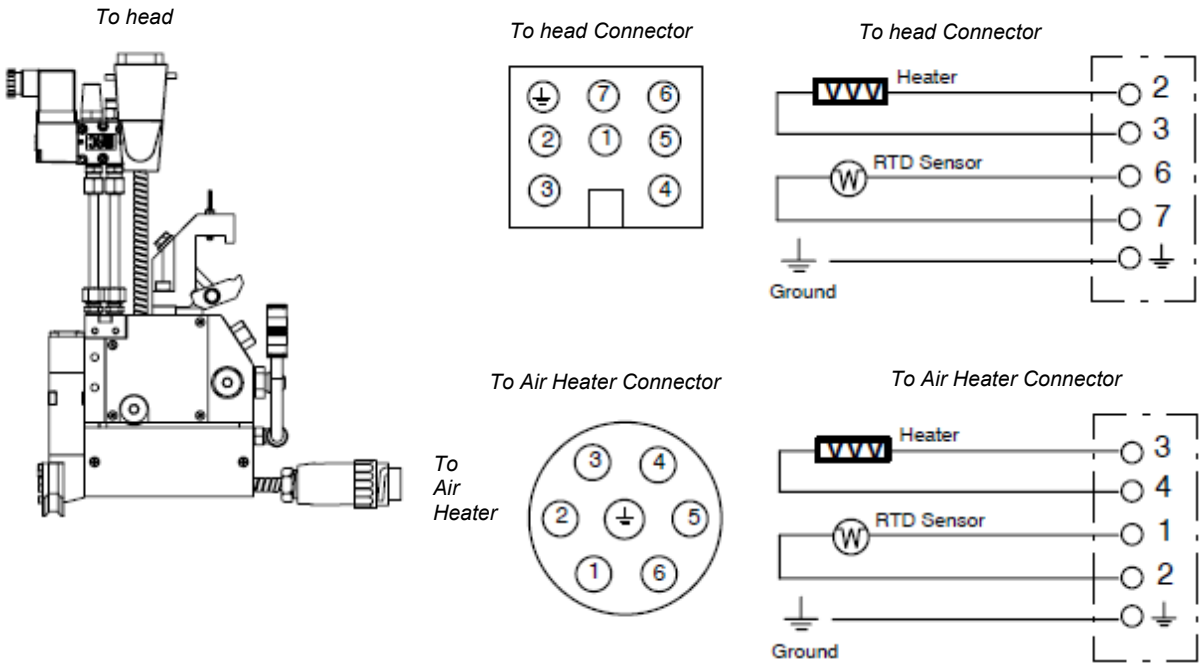


To Air Heater Connector



9.1.5 Mel Upgrade (Platinum RTD) Control Scheme

(Control code P)



Chapter 10
Appendix

10.1 Solenoid Valve Configurations, Schematics & Setup

This Appendix covers the pneumatic setup of the solenoid valves used to actuate the adhesive modules. A coalescing filter/ regulator kit (PN 115600) is available to provide regulated, oil-free air to the solenoid valves. The kit also contains the necessary fittings to configure the kit for each particular solenoid valve. Both 6mm and 1/4" OD fittings are included in the kit. The appropriate tubing must be supplied by the customer.

Appendix A is divided into two sections for easy reference:

- **Section 1** - 4-way solenoid valve
- **Section 2** - Component Illustration: 115600 Air Control Kit

10.1.1 Air Filter/ Regulator Installation Notes

1. Compressed air for applicator head operation should be clean, dry and oil free.

2. Install the filter/ regulator so that the bowl drains are easily accessible for servicing and the regulator knob is accessible for adjustments.

3. Use a minimum of 1/4" OD tubing to make connections.

4. If air tubing is routed close to the head due to space constraints, high temperature TFE tubing should be used to avoid tubing damage.

10.1.2 Section 1, 4-way Solenoid Valve

Description

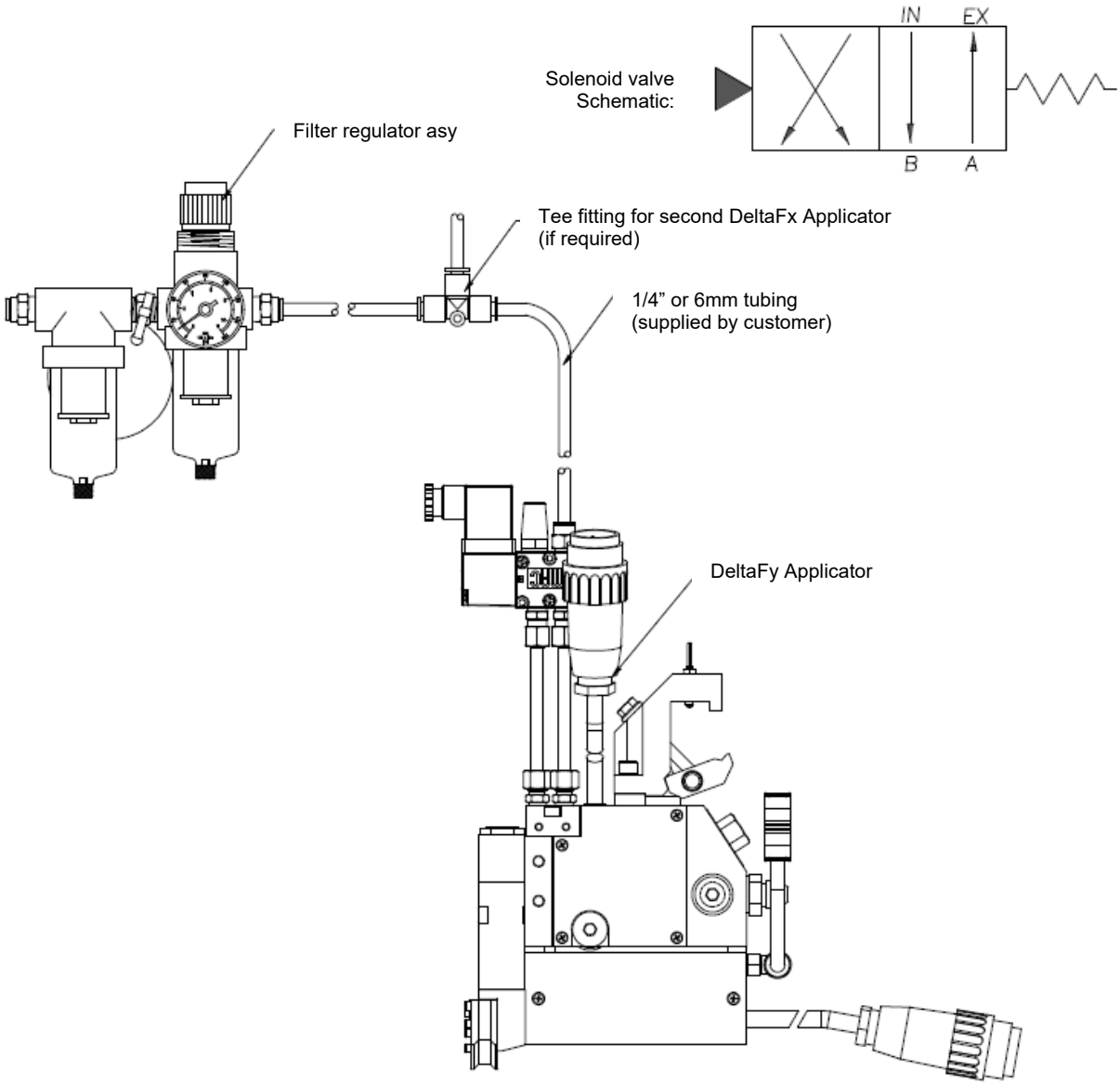
Direct acting poppet valve, 4-way, 1/8 NPT ports, with non-locking recessed manual operator.

Connections

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

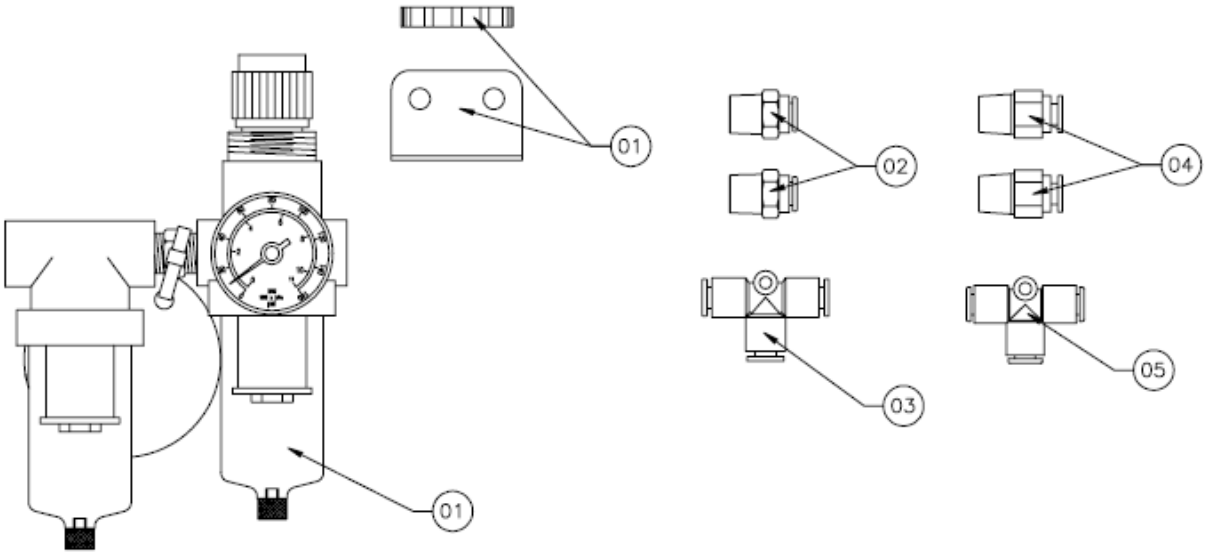
Typical Setup

Adjust regulator to 4.8-6.2 bar (70-90 psi). Use air control kit PN 115600, configured as shown below. See Appendix A Section 2 for PN 115600 Component Illustration.



10.1.3 Section 2, Air Control Kit, PN 115600

Item No.	Part Number	Description	Quantity
01	105610	Filter/ regulator asy	1
02	N06430	Straight fitting 1/4 tube x 1/4 NPT	2
03	N06504	Tee fitting 1/4 tube	1
04	113081	Straight fitting 6mm tube x 1/4 NPT	2
05	115699	Tee fitting 6 mm tube	1



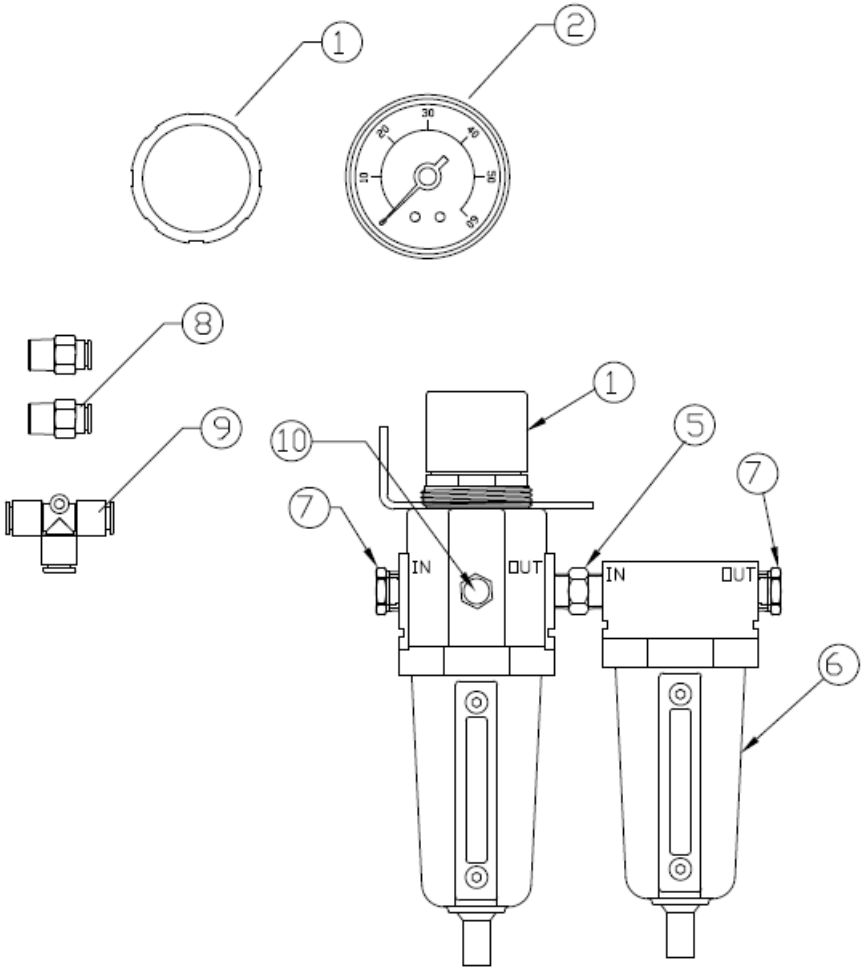
10.2 Process (Preheater) Air Control Filter/ Regulator Kit, PN 115601

The PN 115601 Filter/ Regulator is available for precise control of the process spray air. It includes a coalescing filter/ regulator, a liquid-filled gauge, mounting bracket and 8mm (5/16") OD quick-disconnect fittings.

Installation Notes

1. Locate the filter so that the bowl drains are easily accessible for servicing and the regulator knob is accessible for adjustments.

2. To ensure accurate process air control, operation of more than two applicators from a single filter/ regulator is not recommended.



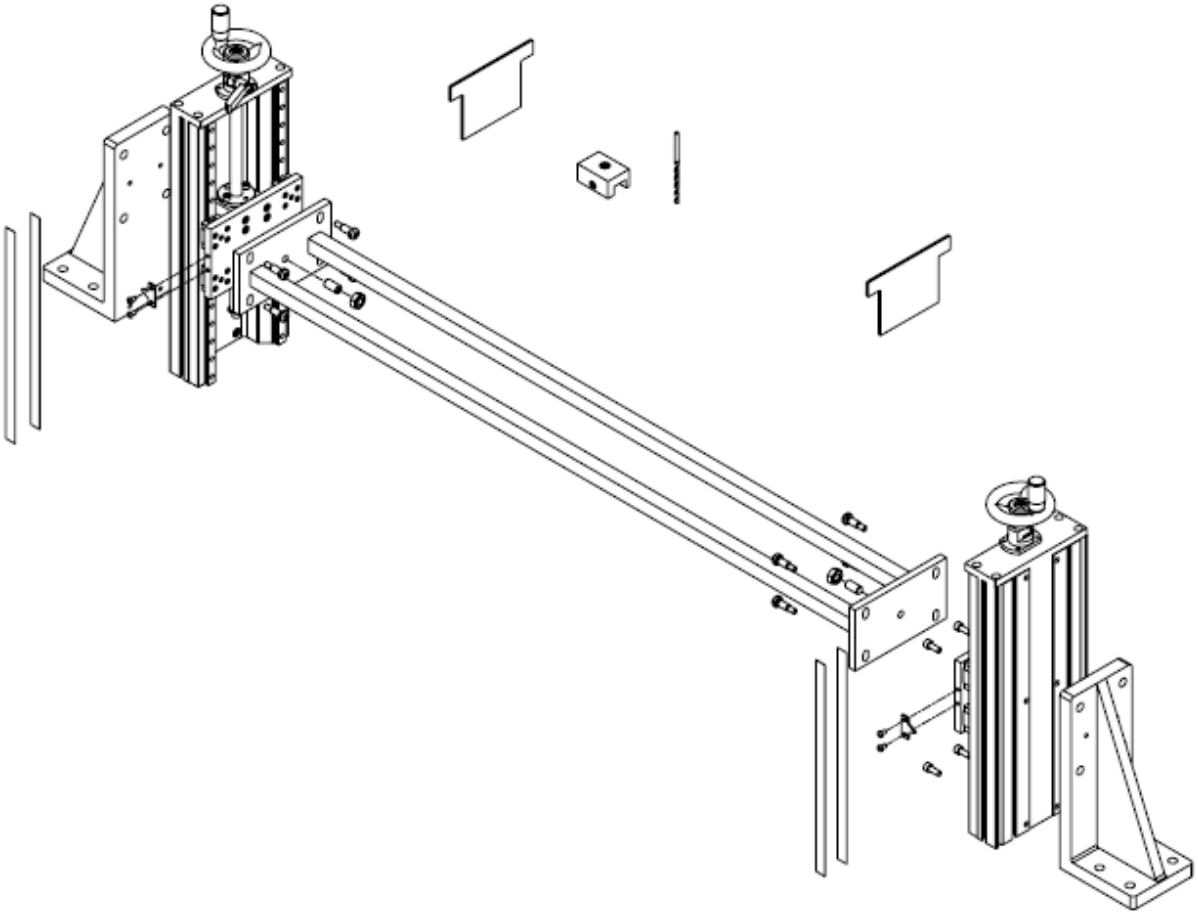
Item No.	Part Number	Description	Quantity
1	100991	Filter/ regulator	1
2	100992	Gauge 0-60psi (0-4 bar)	1
5	112319	Fitting, hex nip, 3/8 NPT	1
6	107403	Coalescing filter	1
7	066X028	Fitting, bush, 3/8NPTx1/4NPT	2
8	806641	Fitting 5/16 tube x 1/4 NPT	2
9	809471	Tee fitting 5/16 tube	1
10	108000	Fitting, RED, 1/4F to 1/8M NPT	1

10.3 Optional Mounting Bracket Assembly

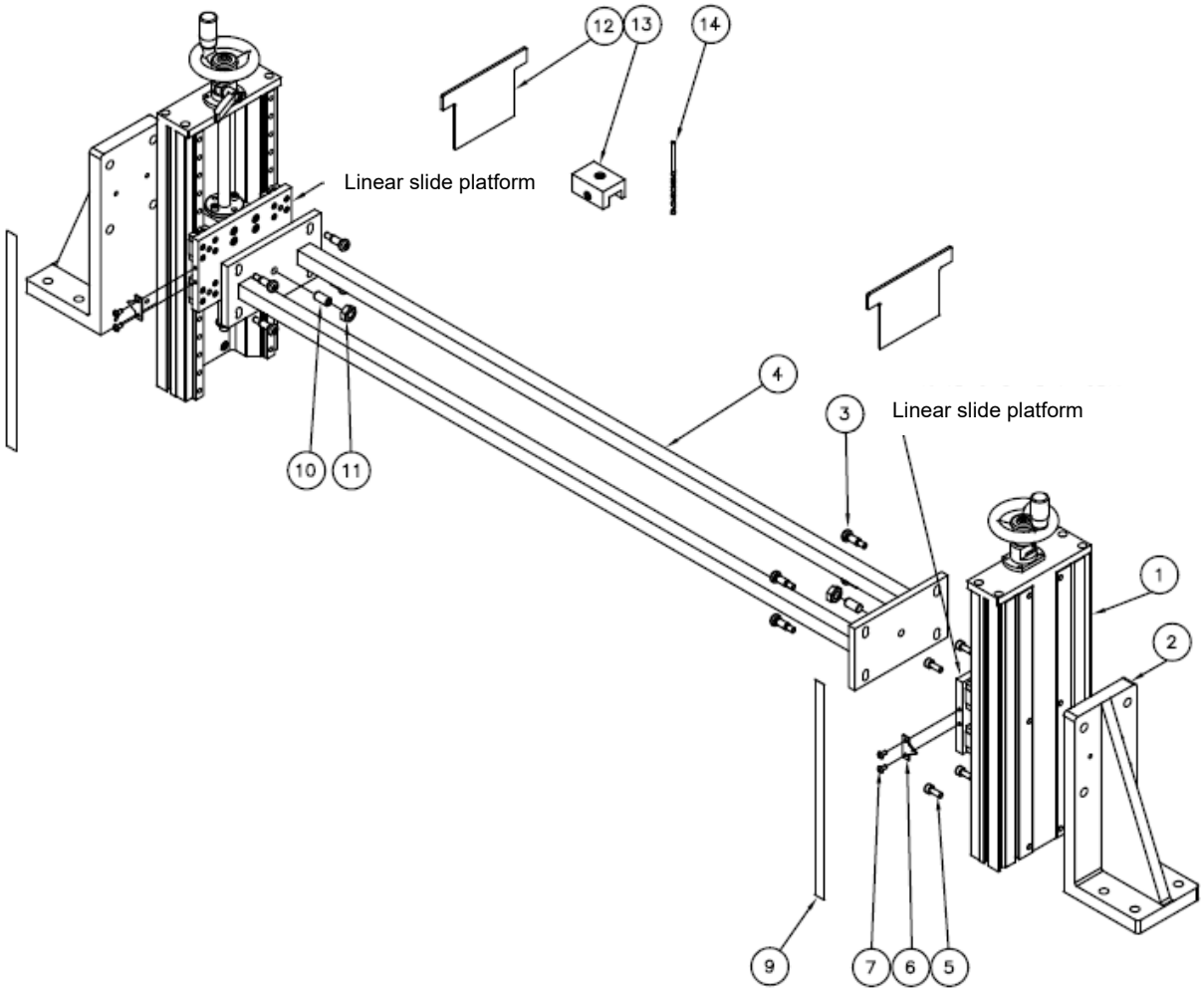
10.3.1 Optional DeltaFx Mounting Bracket Assembly, PN 115650

The mounting bracket assembly features two vertical, linear slides and a custom horizontal 19mm square bar weldment, made to the exact length required for the application. The horizontal mounting bar features two 19mm bars offset by 100mm in the machine direction. This permits multiple DeltaFx applicators to be mounted side-by-side without the process air from one applicator affecting the next. The vertical slides permit easy, quick and accurate height adjustment to fine-tune the DeltaFx pattern to the exact product requirements.

Included with the bracket assembly is a drilling jig that can be used to set the exact location of the applicator on the horizontal bar. The available square bar clamp for the DeltaFx applicator has a spring-loaded pin that snaps into the drilled hole to lock the applicator in place. Multiple pin location can be drilled to allow quick adjustments as required for the product width.



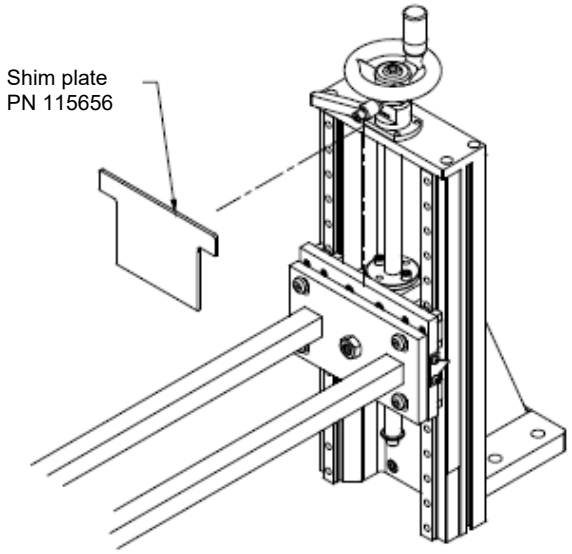
DeltaFx Mounting Bracket Assembly, PN 115650:



Item No.	Part Number	Description	Quantity
01	115640	Manual linear drive	2
02	115639	Mounting angle	2
03	115648	Shoulder screw M8x16mm	8
04	See sales order	Bar weldment (shown for reference)	-
05	814397	Screw M6x16mm	8
06	115642	Indicator arrow	2
07	107161	Screw M4x8mm	4
08	-	-	-
09	115643	Scale	2
10	115647	Set screw M10x20mm	2
11	808415	Nut M10	2
12	115656	Shim plate	2
13	115670	Drill JIG	1
14	115689	Drill BIT 4.2mm	1

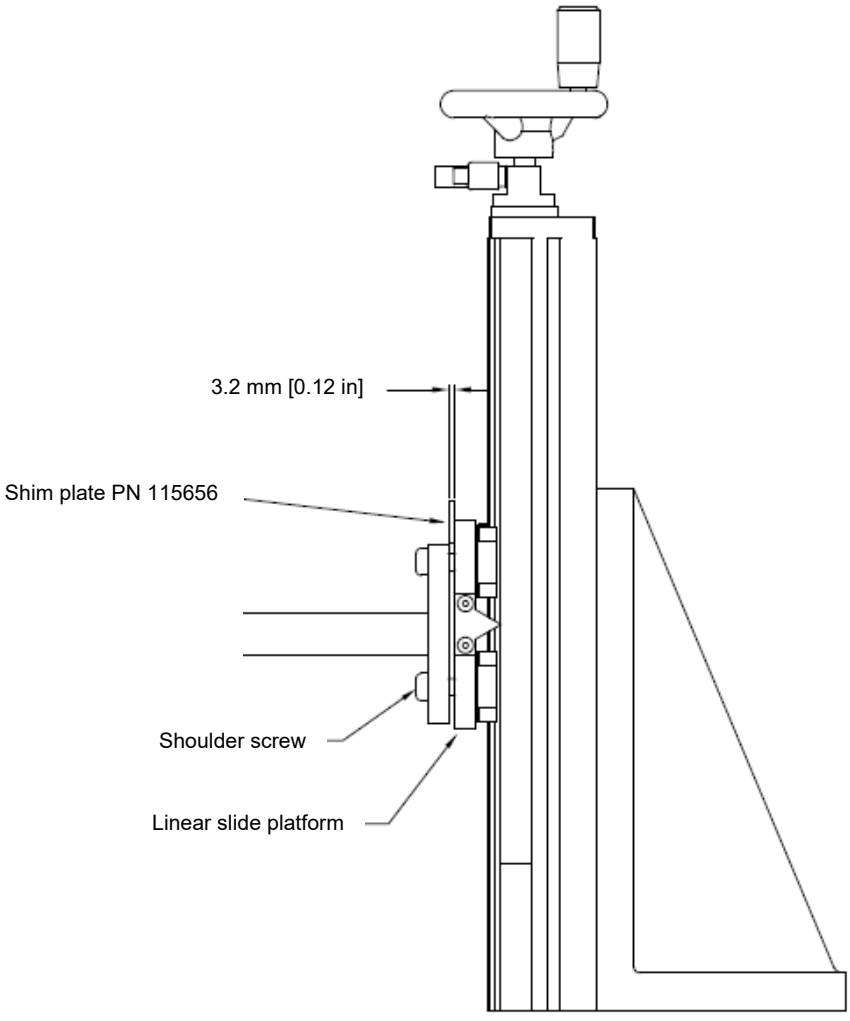
10.3.2 DeltaFx Bracket Spacing and Assembly

The DeltaFx bracket assembly includes two shims for achieving the proper spacing of the bracket weldment to the linear slide platforms. This will ensure free movement of the bracket for height adjustment.



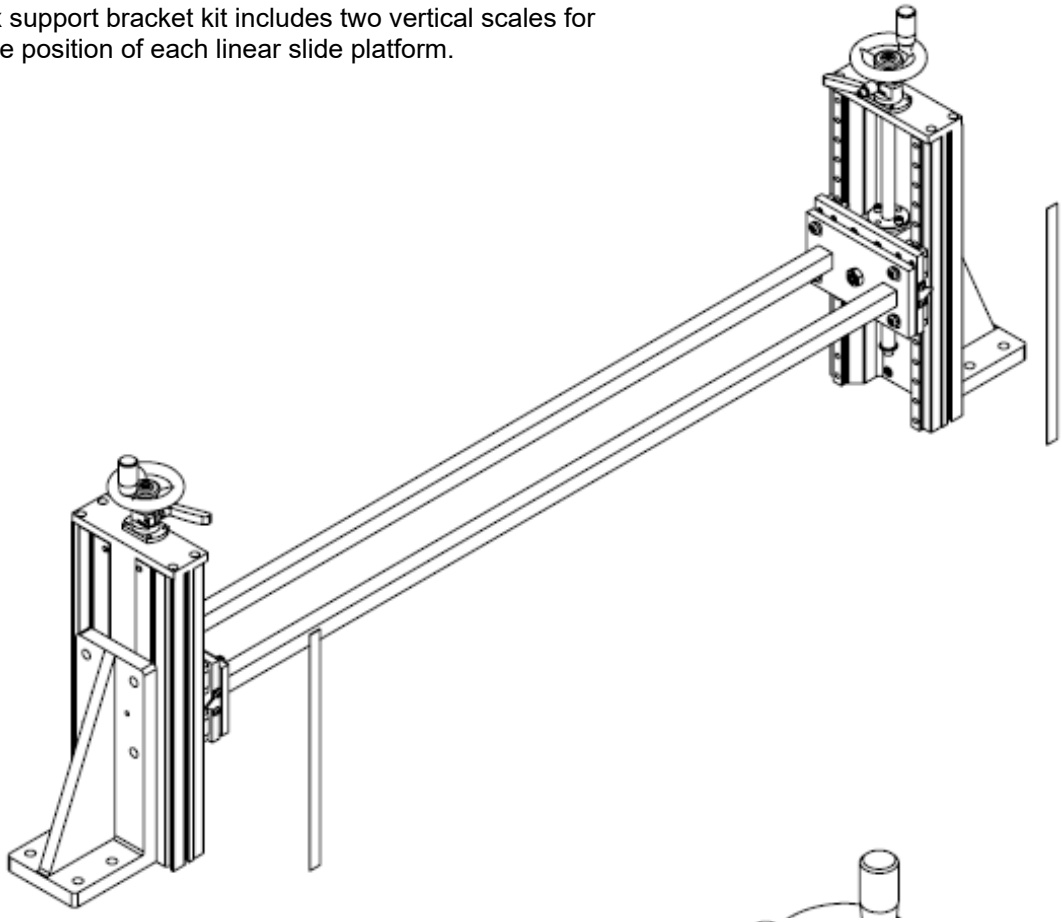
Assembly Procedure:

1. Loosely assemble the bracket weldment to the linear slide platforms using the M6 shoulder screws.
2. Slide the shim down between the bracket and slide until it rests on the top two shoulder screws.
3. Tighten the shoulder screws in equal increments until the shim is contacted. Remove the shim.



10.3.3 DeltaFx Vertical Position Scale

The DeltaFx support bracket kit includes two vertical scales for indicating the position of each linear slide platform.



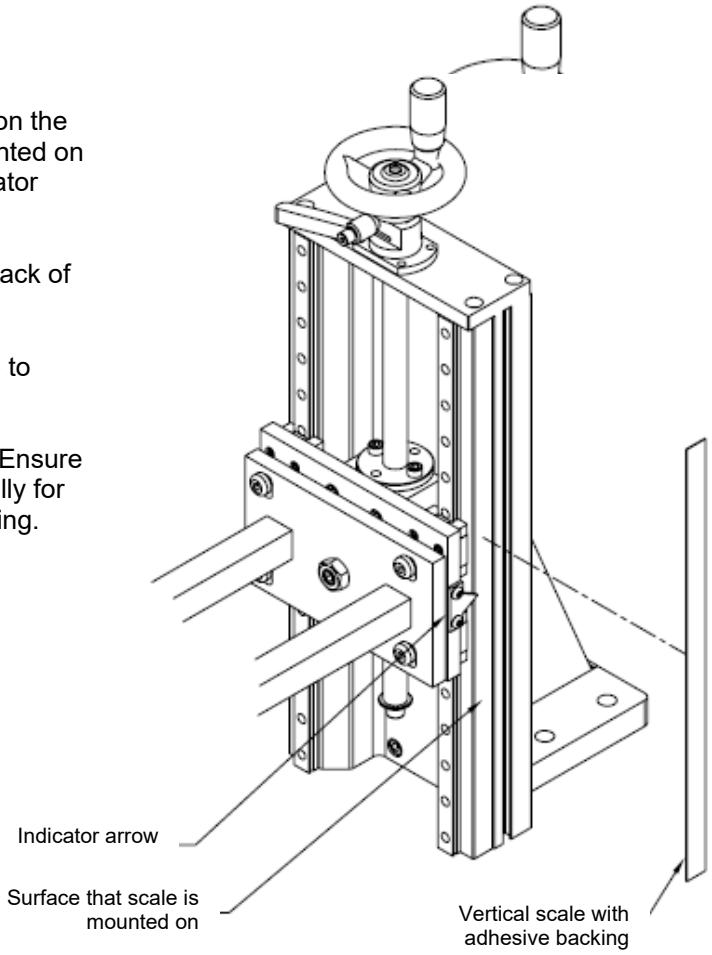
Positioning Procedure:

1. Determine the location of the scale on the linear slide. The scale must be mounted on the side of the slide where the indicator arrow is mounted.

2. Remove the release liner from the back of the scale exposing adhesive.

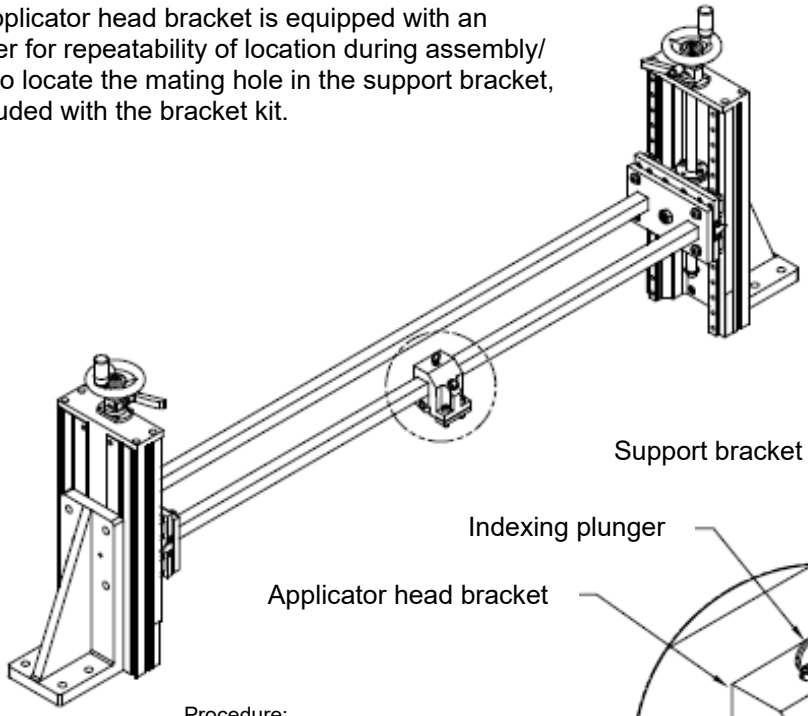
3. Press scale firmly onto slide surface to engage adhesive.

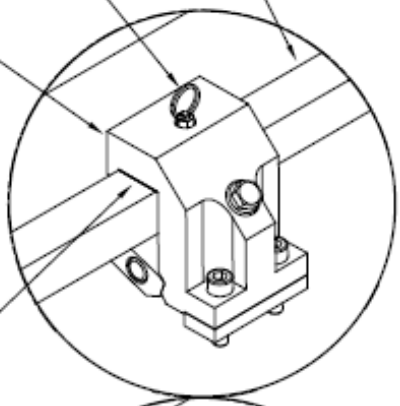
4. Repeat procedure for second slide. Ensure that both scales are located identically for accurate readout of vertical positioning.



10.3.4 DeltaFx Applicator Head Location

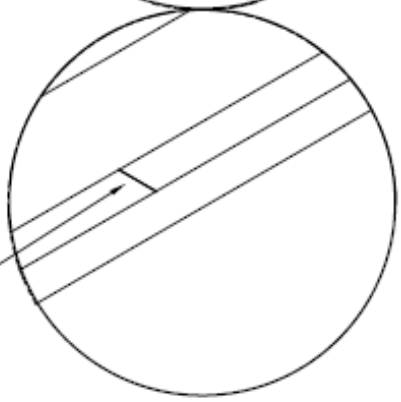
The DeltaFx applicator head bracket is equipped with an indexing plunger for repeatability of location during assembly/ disassembly. To locate the mating hole in the support bracket, a drill jig is included with the bracket kit.





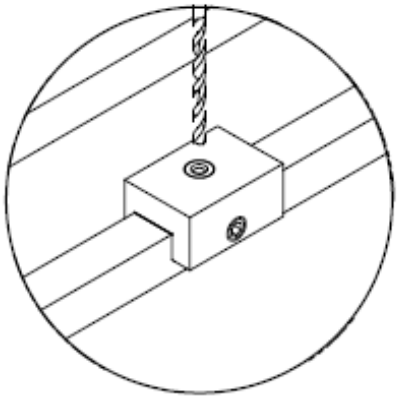
Procedure:
1. Position the applicator head bracket on the support bracket in the desired location. Mark the location on the support bracket as shown.

Mark bracket location



2. Remove the applicator head bracket.

Location of applicator head bracket as marked



3. Align drill JIG with mark. Make sure that set screw is in location for correct orientation. Tighten set screw against support bracket. Using supplied drill BIT drill hole a minimum depth of 2.5mm [0.098in].
Remove drill JIG. The support bracket is now ready for repeatable positioning of the applicator head.

Manual Revisions

Revision	Page/ Chapter	Description
Rev.7.22	Ch.8	Oven PN 107306+107307 replaced by 80.80000.103.
Rev.8.23	P.1	Manual language added.
Rev.7.24	Ch.10.2	Filter/ Regulator Kit, PN 115601, updated.
Rev.8.24	Ch.8.1	Nozzle options added.

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