

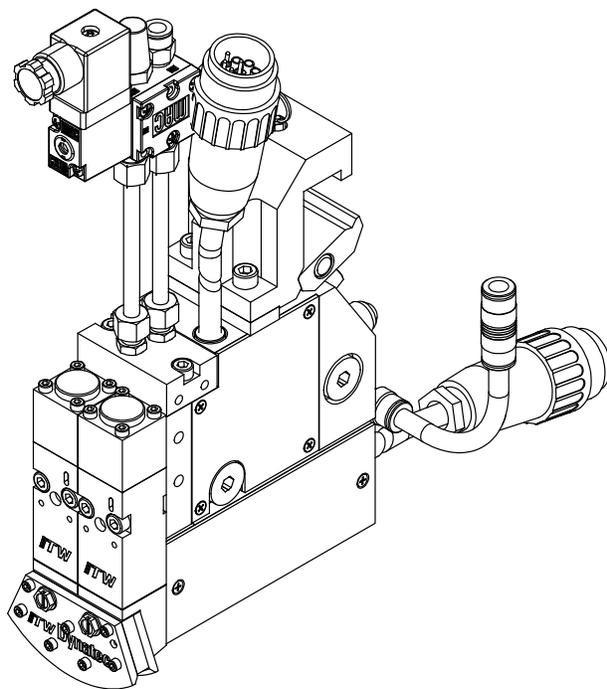


The Next Level of Technology

■ innovation ■ service ■ reliability

OPERATIONS AND SERVICE MANUAL

DeltaFx ADHESIVE APPLICATOR



IMPORTANT ! - READ ALL INSTRUCTIONS BEFORE OPERATING THIS EQUIPMENT

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

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

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



SAFETY INSTRUCTIONS

GENERAL CONSIDERATIONS

1. Read and follow these instructions. Failure to do this could result in severe personal injury or death.
2. Additional safety instructions and/ or symbols are located throughout this manual. They serve to warn maintenance personnel and operators about potentially hazardous situations.
3. Inspect the machine for unsafe conditions daily and replace all worn or defective parts.
4. Keep work area uncluttered and well lit.
5. All covers and guards must be in place before operating this equipment.

For precautions and definitions of safety symbols, refer to the Safety Chapter of the service manual.

SERVICING EQUIPMENT

1. Only trained personnel are to operate and service this equipment.
2. 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.
3. Follow the maintenance and service instructions in the manual.

SIGNS

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.

ADDITIONAL CONSIDERATIONS

1. To ensure proper operation of the equipment, use specified electrical and/ or air supply sources.
2. Do not attempt to alter the design of the equipment unless written approval is received from ITW Dynatec.
3. Keep all manuals readily accessible at all times and refer to it often for the best performance from your equipment.

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!

Declaration of incorporation

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

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



Signature
Judson Broome
General Manager

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Chapter 1 SAFETY PRECAUTIONS

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.

Electrical



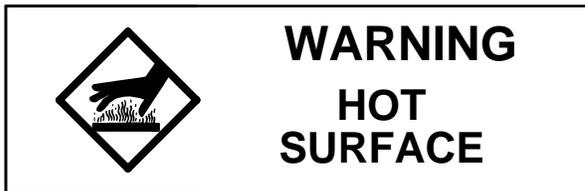
Dangerous voltages exist at several points in this equipment. To avoid personal injury, do not touch exposed connections and components while input

power is on. Disconnect, lockout and tag external electrical power before removing protective panels.

A secure connection to a reliable earth ground is essential for safe operation.

A 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.

High Temperatures



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

Safety glasses, gloves and long-sleeved clothing must be worn whenever working with or around adhesive application systems.

High Pressure



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

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

IMPORTANT NOTE: Even when a system's pressure gauge reads "0" psig, 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.

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

Protective Covers



Keep all guards in place!

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

Eye Protection & Protective Clothing



Wear safety glasses with side shields which conform to ANSI Z87.1 or EN166.

Failure to wear safety glasses could result in severe eye injury.

It is important to protect yourself from potential burns when working around hot melt adhesive equipment.

Wear protective gloves and long-sleeved, protective clothing to prevent burns that could result from contact with hot material or hot components.

Always wear steel-reinforced safety shoes.

It is very important that you PROTECT YOUR EYES when working around hot melt adhesive equipment!

Safe Installation and Operation

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.

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

Do not use adhesive that is dirty or that may be chemically contaminated. Doing so can cause system

clogging and pump damage.

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.

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.

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.

Treatment for Burns From Hot Melt Adhesives

Burns caused by hot melt adhesive must be treated at a burn center.

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. When working near a hot melt application system, always wear safety gloves, safety glasses and long-sleeved, protective clothing.

Always have first-aid information and supplies available.

Call a physician and/or an emergency medical technician immediately.

Service

Refer all servicing to qualified personnel only.

Explosion/ Fire Hazard

Never operate this unit in an explosive environment.

Use cleaning compounds recommended by ITW Dynatec or your adhesive supplier only. Flash points

of cleaning compounds vary according to their composition, so consult with your supplier to determine the maximum heating temperatures and safety precautions.

Lockout/ Tagout

Follow OSHA 1910.147 (Lockout/ Tagout Regulation) for equipment's lockout procedures and other important lockout/ tagout guidelines.

Be familiar with all lockout sources on the equipment.

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 before servicing electrical capacitors.

Use of PUR (Polyurethane) Adhesives

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 an exhaust hood or system be installed over any PUR system.

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 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 VOIDS ITW DYNATEC'S WARRANTY.

In This Manual

WARNINGS and CAUTIONS are found throughout this manual.

WARNINGS mean that failure to observe the specific

instructions may cause injury to personnel.

CAUTIONS mean that failure to observe the specific instructions may damage the equipment.

Chapter 2 DESCRIPTION AND SPECIFICATIONS

Description

ITW Dynatec's DeltaFx Adhesive Applicator Heads 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 Dyna-Control, MCV or Upgrade control schemes or for 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.

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 page 3-2, 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.

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

Performance:

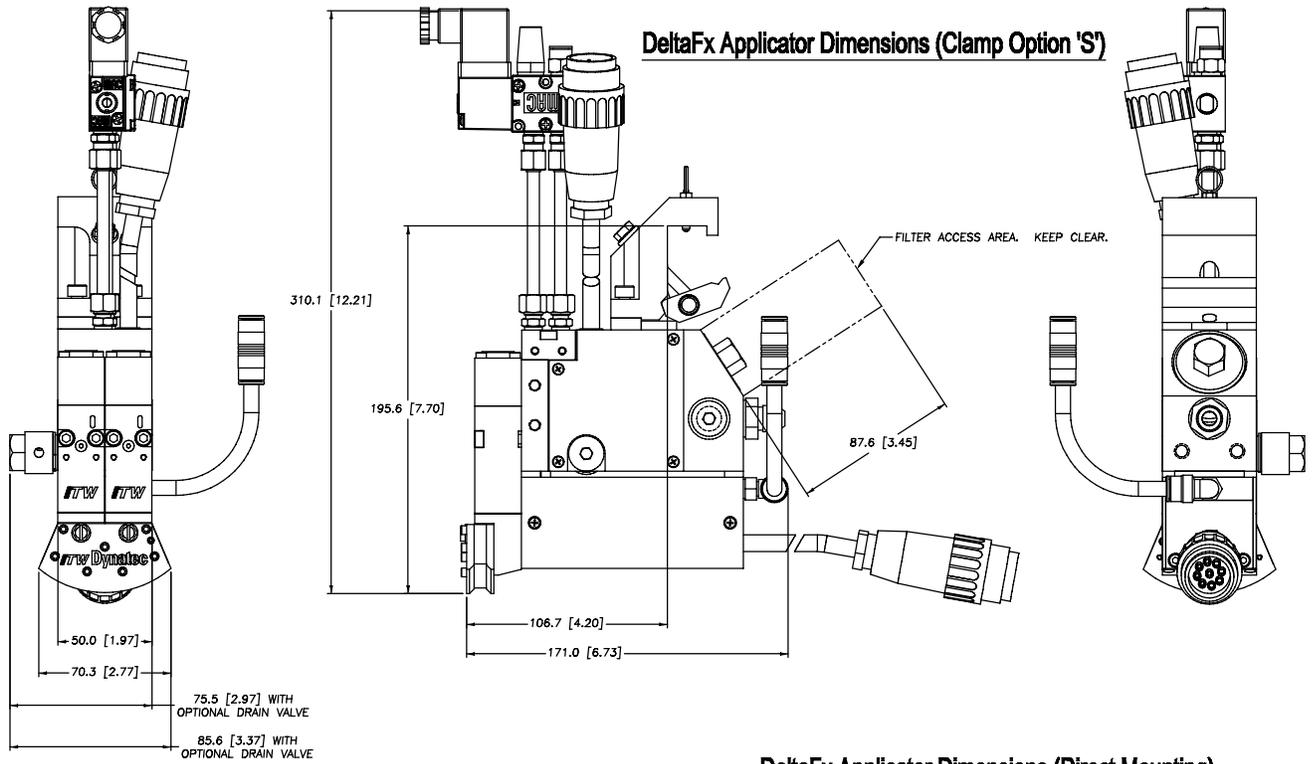
Temperature range 40°C to 200°C (100°F to 400°F)
Warm-up time 15 minutes for cold start/ 5 minutes for module change only
Adhesive viscosity 100 to 15,000 mPa. sec. (100 to 15000 centipoise)
Adhesive pressure range 68 bar maximum (1000 psi maximum)
Noise emission 70 dB(A)

Air Requirements:

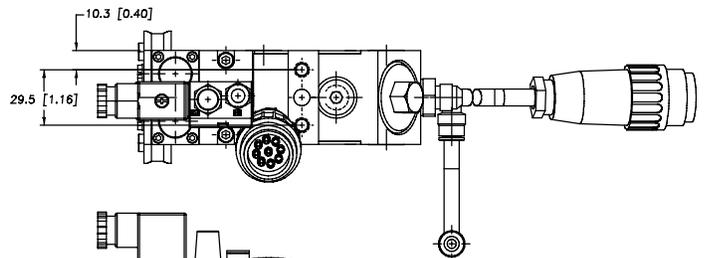
Air pressure range (control) 4.8 to 6.2 bar (70 to 90 psi)
Air pressure range (process, typical) 0.8 to 1.5 bar (12 to 22 psi)

Electrical:

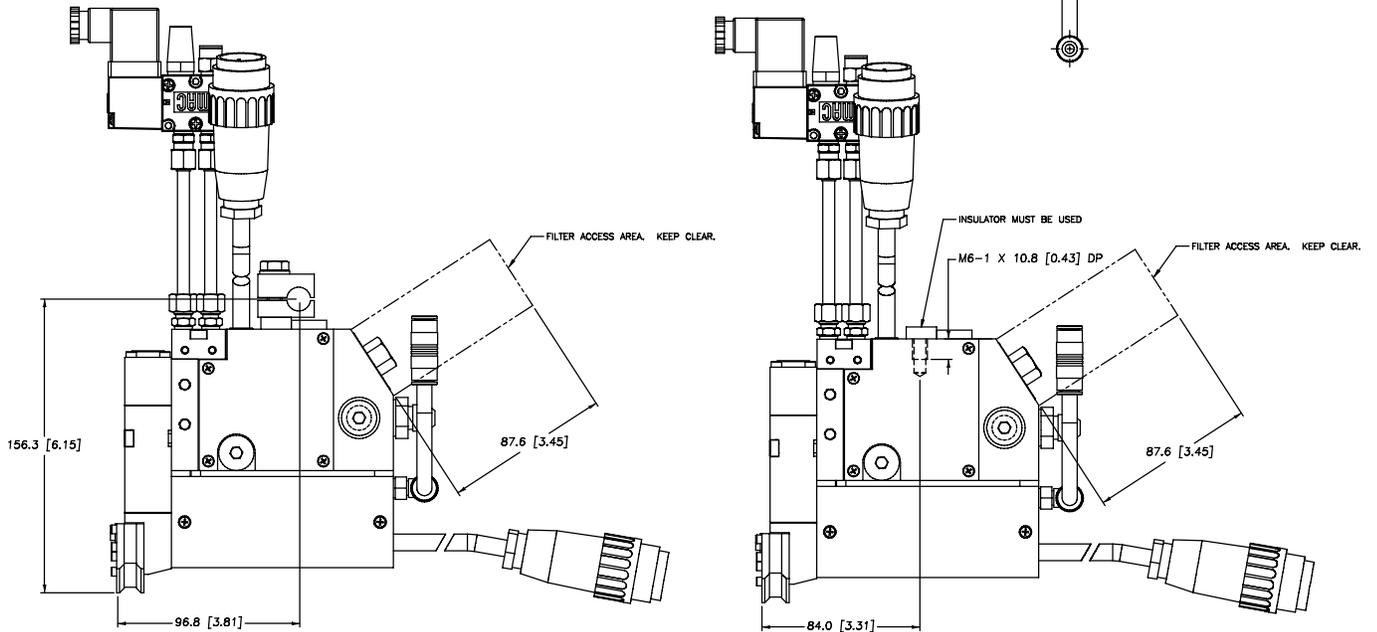
Supply voltage 200-240 VAC/ 1p/ 50-60 Hz
Power consumption:
Adhesive manifold 450W
Air heater 800W



DeltaFx Applicator Dimensions (Direct Mounting)



DeltaFx Applicator Dimensions (Clamp Option 'R')



Dimensions

Chapter 3 INSTALLATION & START UP

Note: Re-read Chapter 1 “Safety Precautions” before performing any installation or start-up procedures. All installation and start-up procedures must be performed by qualified, trained technicians.

Handling and Shipping

DeltaFx applicator head assemblies are packaged within protective cushioning material in a fiber packing carton. This package may be shipped inside another carton along with other individual boxes containing components of the system.

Service Requirements

The service block’s incoming electrical power and temperature control is supplied through the flexible cable exiting the adhesive supply hose cuff or through an extension cable from the ASU. The applicator has a circular, plastic connector which mates with the connector attached to this cable.

Incoming power and temperature control for the air preheater is supplied by a cable extension from the ASU.

Incoming module control air supplied to the solenoid valve must be clean and unlubricated and should be separately regulated and maintained at a pressure between 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.

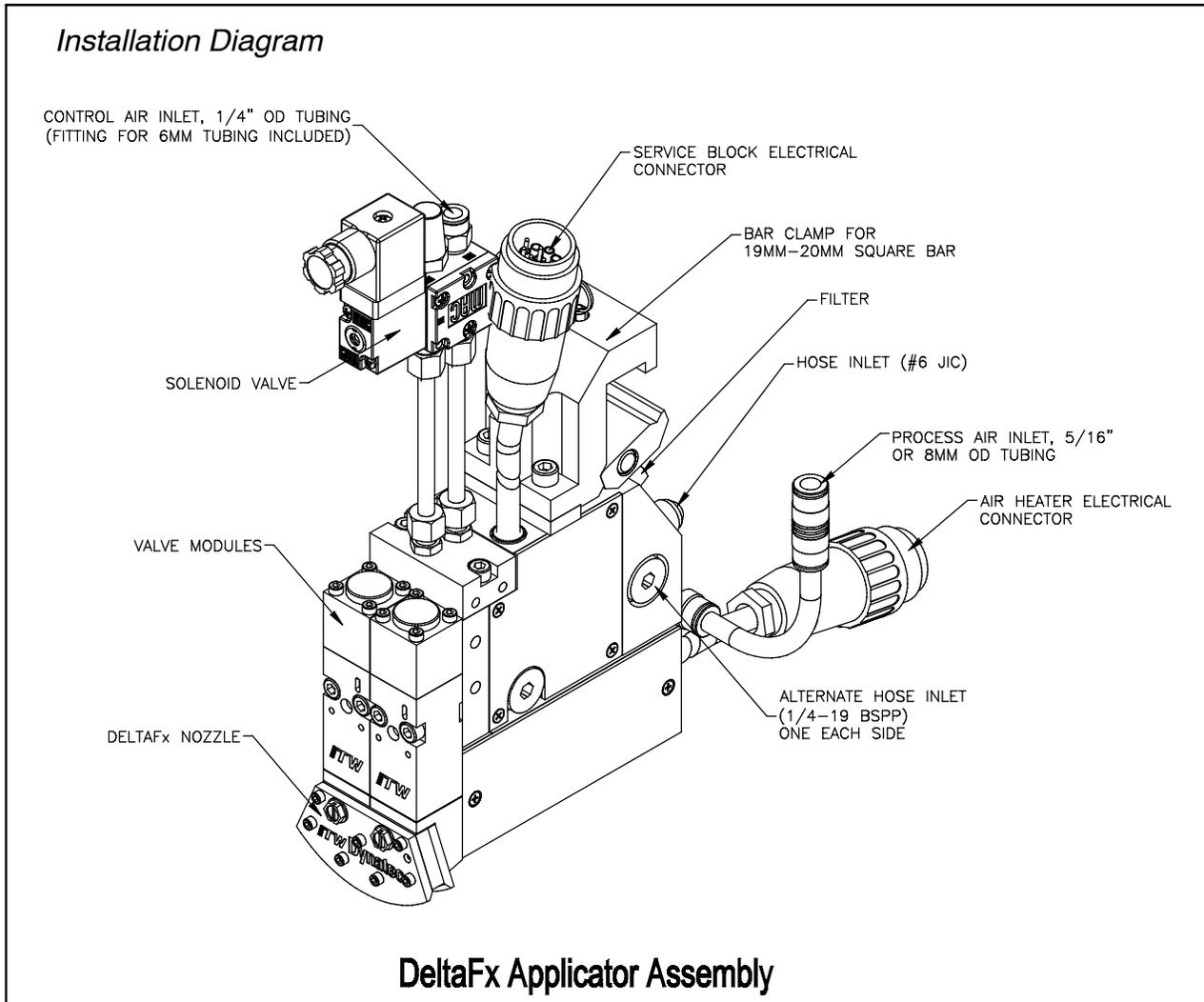
Incoming process (preheater) air must be supplied through a pressure regulator. The air must be clean and unlubricated. Operating pressure depends on the application. The applicator’s air supply line must be at least 8mm (5/16”) O.D. The applicator is supplied with an 8mm (5/16”) OD push--lock style fitting for process air connection. The threads in the air heater are 1/8 NPT.

Installation Instructions

The applicator head has been tested at the factory and is ready for installation and operation.

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 Appendix A of this manual.

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 Appendix B.



See the diagram above 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 applicator heads. This bracket assembly is designed to work with the square bar clamp. See Appendix E 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 A 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.

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

10 Replace the nozzle.

Operation of Optional Drain Valve (Option Code A, see page 6-1)

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 ASU (adhesive supply unit) are turned off. Power down the ASU or disable the applicator and preheater zones at the control panel. Disconnect all electrical cables from the applicator.



WARNING HOT SURFACE & ADHESIVE

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

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

Purging Adhesive Through the Applicator

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



WARNING HOT SURFACE & ADHESIVE

The machinery will still be hot when this procedure is being performed. 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.

Chapter 4 MAINTENANCE

Note: Re-read Chapter 1 “Safety Precautions” before performing any maintenance procedures. All maintenance procedures must be performed by qualified, trained technicians.

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. Inspect the applicator periodically as outlined in the following table.

Maintenance Schedule

ITEM	CHECK	FREQUENCY	ACTION
Adhesive supply hose fitting connection	Inspect for leaks	As required	Tighten if loose
Air supply connections	Inspect for leaks	As required	Tighten if loose
Weep holes	Inspect for adhesive	As required	Replace seal cartridge or valve module
Nozzle performance	Inspect all nozzles for proper operation	As required	Clean nozzle.
Built-in filter	Inspect for cleanliness	Monthly or as required by use	Replace filter element

Purging Hot Adhesive Under Pressure



WARNING HIGH PRESSURE

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

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

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

Relieving Adhesive Pressure Manually

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

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

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

Replacement of the Built-in Filter

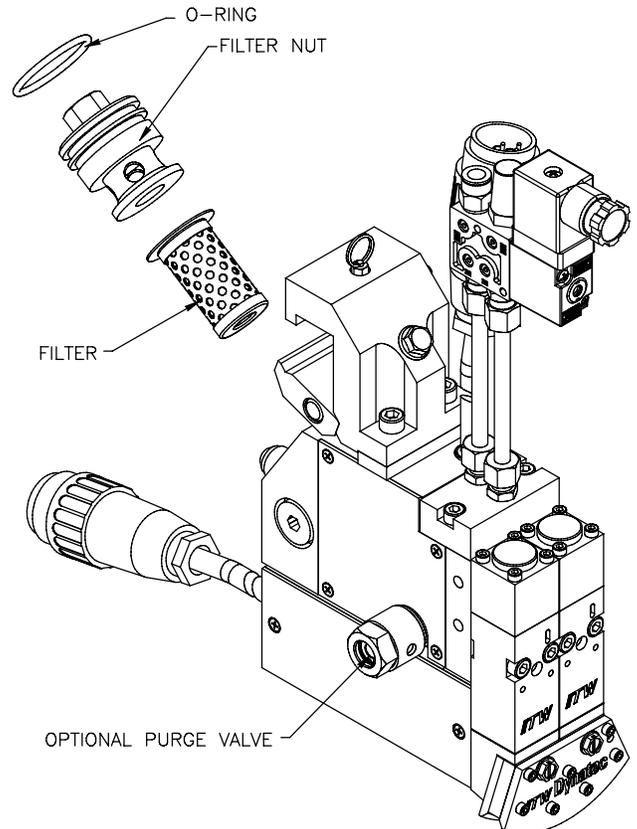


WARNING HIGH PRESSURE

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

The applicator must be at operating temperature. Turn the ASU's pump/ motor OFF.

1. Place a heat-resistant container under the module(s).
2. Relieve the adhesive pressure by following the “*Purging Hot Adhesive Under Pressure*” procedure on the preceding page.
3. Unscrew and remove the filter nut.
4. With needle nose pliers, pull the filter basket out of the manifold.
5. Replace the o-ring on the filter nut. Apply o-ring lubricant (PN N07588) to the new o-ring.
6. Apply a coat of anti-seize to the threads of the filter nut.
7. Re-install the filter basket and the filter nut. Tighten the filter nut until it is seated firmly, taking care not to cut the o-ring.



DeltaFx Nozzle Cleaning

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.

Remove Nozzle from Applicator



WARNING HIGH PRESSURE

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

1. Turn the ASU OFF and turn adhesive pressure OFF (to zero).
2. Relieve the adhesive pressure by following the “*Purging Hot Adhesive Under Pressure*” procedure on the preceding pages.
3. Remove the nozzle from the module by loosening its mounting screws.

Cleaning by High Temperature Oven

For routine nozzle cleaning, a high temperature oven should be utilized. An optional Nozzle Cleaning Oven (PN 107307 or 107306) is available from ITW Dynatec. Instructions for the use of the Dynatec oven are outlined in Appendix D of this manual.

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.

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.

Chapter 5 TROUBLESHOOTING & SERVICE

Note: Re-read Chapter 1 Safety Precautions” before performing any troubleshooting or repair procedures. All troubleshooting or repair procedures must be performed by qualified, trained technicians.

In General

If the applicator does not operate properly, first check all the electrical and pneumatic connections. Verify that the main power switch is ON at the ASU. Verify that the pump is ON and the application heads have sufficient air pressure. Verify that the temperature controller is in operation and that the setpoints are correct for the application. Check to see if all components are heating properly.

Troubleshooting Guide

Problem	Possible Cause	Solution
Module does not open	<ol style="list-style-type: none"> 1. Temperature adjustment of head is too low. 2. Inoperative solenoid. 3. Inoperative module. 	<ol style="list-style-type: none"> 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	<ol style="list-style-type: none"> 1. Nozzle is clogged. 2. Filter element is dirty. 3. Module seals (o-rings) are inoperative. 4. ASU’s hopper is empty. 5. Adhesive is too cold. 6. Solenoid valve is not opening. 	<ol style="list-style-type: none"> 1. Clean or replace nozzle. 2. Replace filter, see instructions in Ch. 4 Maintenance. 3. Check module o-rings, see instructions in this chapter: “Module Assembly Instructions.” 4. Re-fill hopper. 5. Adjust temperature, see ASU manual. 6. Check solenoid valve.
Hot melt is coming out of the module’s “weep” holes	<ol style="list-style-type: none"> 1. Module seals are damaged. 	<ol style="list-style-type: none"> 1. Replace seal cartridge or module, see instructions in this chapter.

cont.

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

Recommended Torque Values for Modules and Nozzles

The following torque ranges are at room temperature (approx. 77°). Do not exceed their upper limits.

For module mounting screws: 25-35 in./lbs (2.8-4.0 Nm).

For the nozzle mounting screw: 20-25 in./lbs (2.3-2.8 Nm).

Replacement of the Module

Turn the ASU OFF. Turn all adhesive and air pressure OFF.



WARNING HIGH PRESSURE

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

1. Place a heat-resistant container under the manifold.
2. Remove the nozzle.
3. Relieve the adhesive pressure:
 - a. *Using the drain valve (if applicable):*
Rotate the drain valve collar so its opening is directed at container. Use a 5mm hex wrench to open drain valve to relieve adhesive pressure.
 - b. *By manually opening the module(s):*
Push the purge button located on the side of the air solenoid coil. Or, if the ASU filter block is equipped with a drain, adhesive pressure may be relieved at the ASU.
4. Remove the module from the service block by removing the two mounting screws on the front of the module with a hex key screwdriver (allen wrench). Make sure that the old o-rings located on the back of the module are also removed (the new module will include new o-rings).
5. Mount the new module using a 4mm (5/32") hex key on the mounting screws.

Module Assembly Instructions for the PN 111074 Module

Use the component illustration and parts list in Chapter 6 as a reference with the following instructions for the PN 111074 module. ITW Dynatec has a Module Seal Kit available (PN 110889) 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.
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.
8. Allow five minutes for the module to heat before operating the applicator.

To disassemble, reverse above order.

Testing Resistance of Heater Cartridges

1. Turn the ASU 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. 8 to determine the correct pins used to measure the heater resistance. Compare the reading with the values given in the charts below.

Service Block Heaters

The service block of the 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.

Testing Resistance of the RTD Temperature Sensor (options D, M, N and P in the model number or in the matrix on page 6-1)

1. Turn the ASU 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 Appendix 4 for complete resistance-temperature tables for the RTD sensors.

3. Using the schematic in Chapter 8 as a reference, measure the resistance of the sensor and compare to the values in the table below. A tolerance of $\pm 5\%$ is allowed for ambient temperature differences. A sensor that tests outside of this range must be replaced.

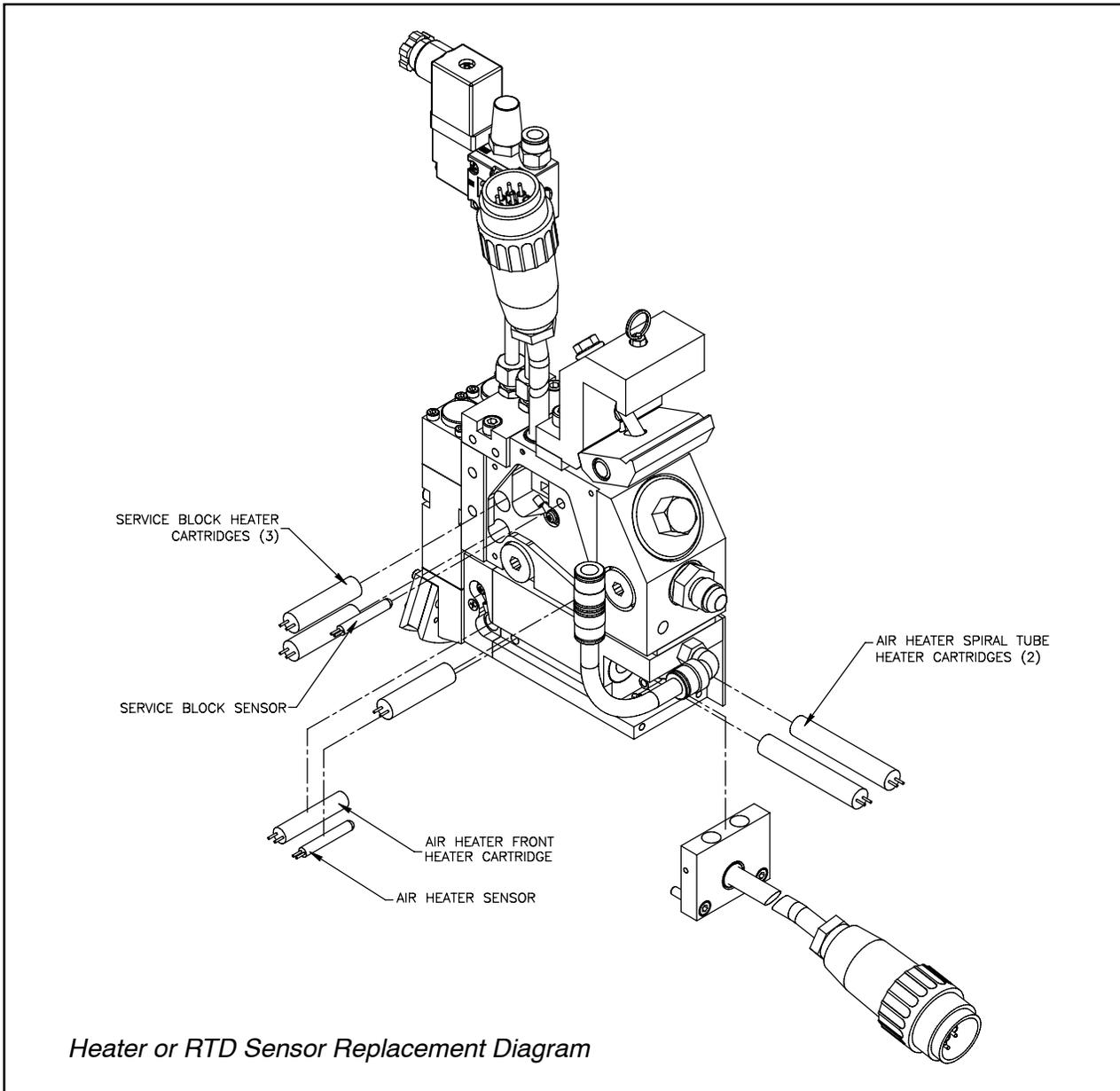
Applicator Control	Sensor Resistance @ 25°C
DynaControl (option D)	110 ohms
MCV (option M)	110 ohms
Upgrade (Ni, option N)	138 ohms
Allen-Bradley (option D)	110 ohms
Upgrade (Pt, option P)	110 ohms

Testing the J-type Thermocouple Temperature Sensor (control option L in the model number or in the matrix on page 6-1)

1. Turn the ASU 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 8 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.

Replacement of Heater Cartridge or Sensor



Replacement of Service Block Heater Cartridges

1. Turn OFF the ASU and relieve all system pressure before proceeding.
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.

Replacement of Air Preheater Heater Cartridges

See illustration on previous page for parts locations.

1. Turn OFF the ASU and relieve all system pressure before proceeding.
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.
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.

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. Disconnect the service block's electrical cable assembly from the hose and disconnect the preheater's cable assembly from its cable extension.
2. Remove the four screws holding the left-side cover plate. Remove the plate.
3. Pull the sensor out of the service block.
4. Cut the old sensor wires off as close to the sensor as possible.

5. 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.
6. Use the high-temp splice kit to connect the new sensor to the old sensor wires.
7. Place the wires in the wiring cavity and replace the left side cover.

Replacement of Air Preheater Temperature Sensor

Note: a High-Temp Splice Kit (PN 102645) is required for this procedure.

See illustration on page 5-10 for parts locations.

1. Disconnect the service block's electrical cable assembly from the hose and disconnect the preheater's cable assembly from its cable extension.
2. Remove the left-side cover plate.
3. Pull the sensor out of the preheater.
4. Cut the old sensor wires off as close to the sensor as possible.
5. 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.
6. Use the high-temp splice kit to connect the new sensor to the old sensor wires.
7. Replace the left side cover plate.

Re-Assembly Procedures and General Cautions

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



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

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

CAUTION: **SOME FITTINGS** used for adhesive on 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.

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

Chapter 6 COMPONENT ILLUSTRATIONS & BILLS OF MATERIAL



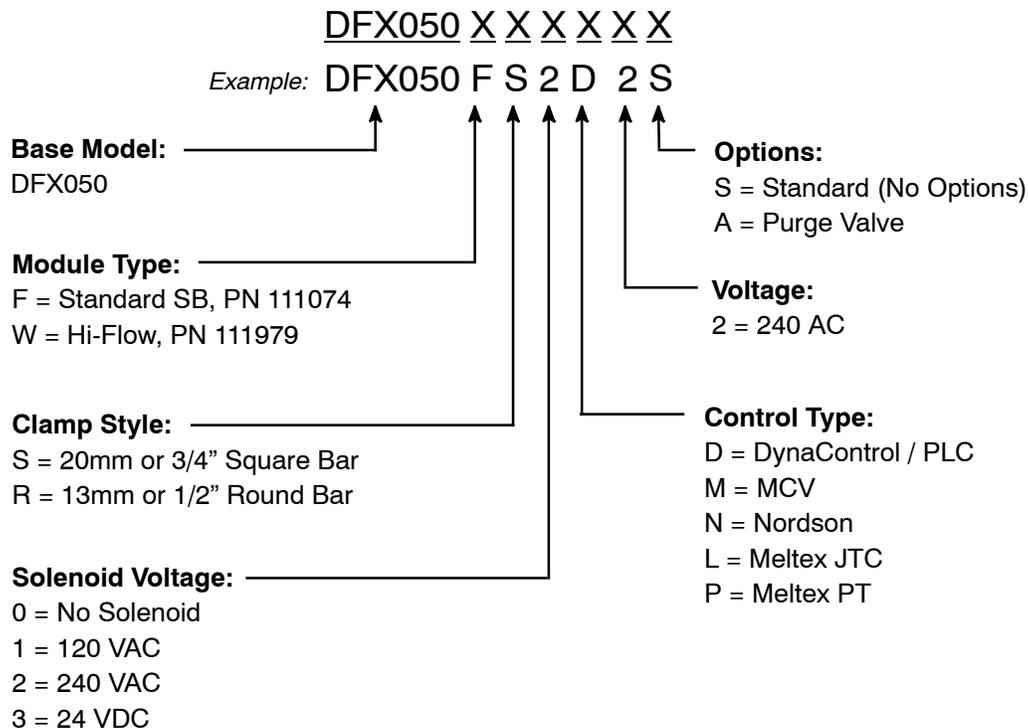
WARNING

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.

The following pages provide exploded-view reference drawings to assist users of the DeltaFx adhesive applicators to identify parts and aid in servicing the equipment.

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

Applicator Model Designation Guide (Codes)

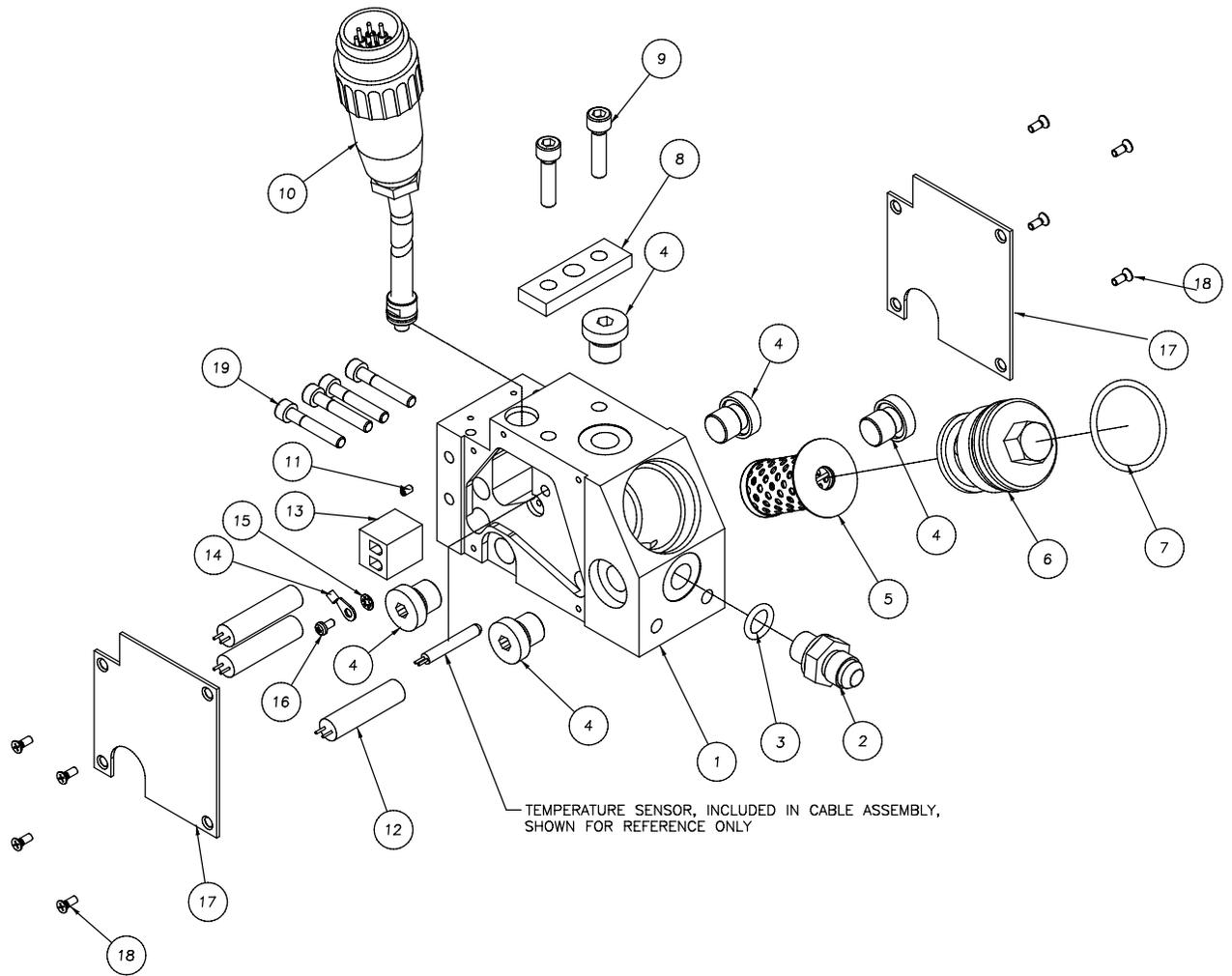


Bill of Materials for DeltaFx Service Block Assemblies

Item No.	Part Number	Qty.	Description
** 21	N08036	2	EA FERRULE, WIRE
** 20	104229	2	EA FERRULE, WIRE
19	804354	4	EA SCR, SHC, M5 X 30, ZP
18	106531	8	EA SCR, M3 X 8, FLT HD
17	110451	2	EA COVER, SIDE
16	101627	1	EA SCR, M3 X 6, PN HD
15	078C088	1	EA WSHR, LOCK, #4, INT TOOTH
14	N07430	1	EA RING TERMINAL
13	107881	1	EA TERM BLOCK, 2 POLE
12	106444	3	EA HEATER, ø10X40, 150W, 240V
11	103470	1	EA SHSS, M3X5, FLAT PT
10	SEE CHART	1	EA CABLE ASY W/SENSOR
09	104663	2	EA SHCS, M6-1.0 X 25
08	106292	1	EA INSULATOR, CLAMP
07	N03812	1	EA O-RING, -125, VITON 70 DURO
06	106303	1	EA NUT, FILTER
05	106273	1	EA FILTER, 150 MESH
04	101625	5	EA PLUG, 1/4 BSPP
03	N00196	1	EA O-RING, -111, VITON
02	101624	1	EA FTG, #6JIC X 1/4BSPP
01	109103	1	EA SERVICE BLOCK, 2-PORT
ITEM	PART NUMBER	QTY.	U/M DESCRIPTION
PARTS LIST			

** NOT SHOWN

Control Type		Service Block Assy. PN	Cable Assy. PN (item 10)
Code	Description		
D	DynaControl	115693	103467
N	Nordson	115694	104528
M	MCV	115695	106707
L	Meltex JTC	115696	107050
P	Meltex PT	115697	110143



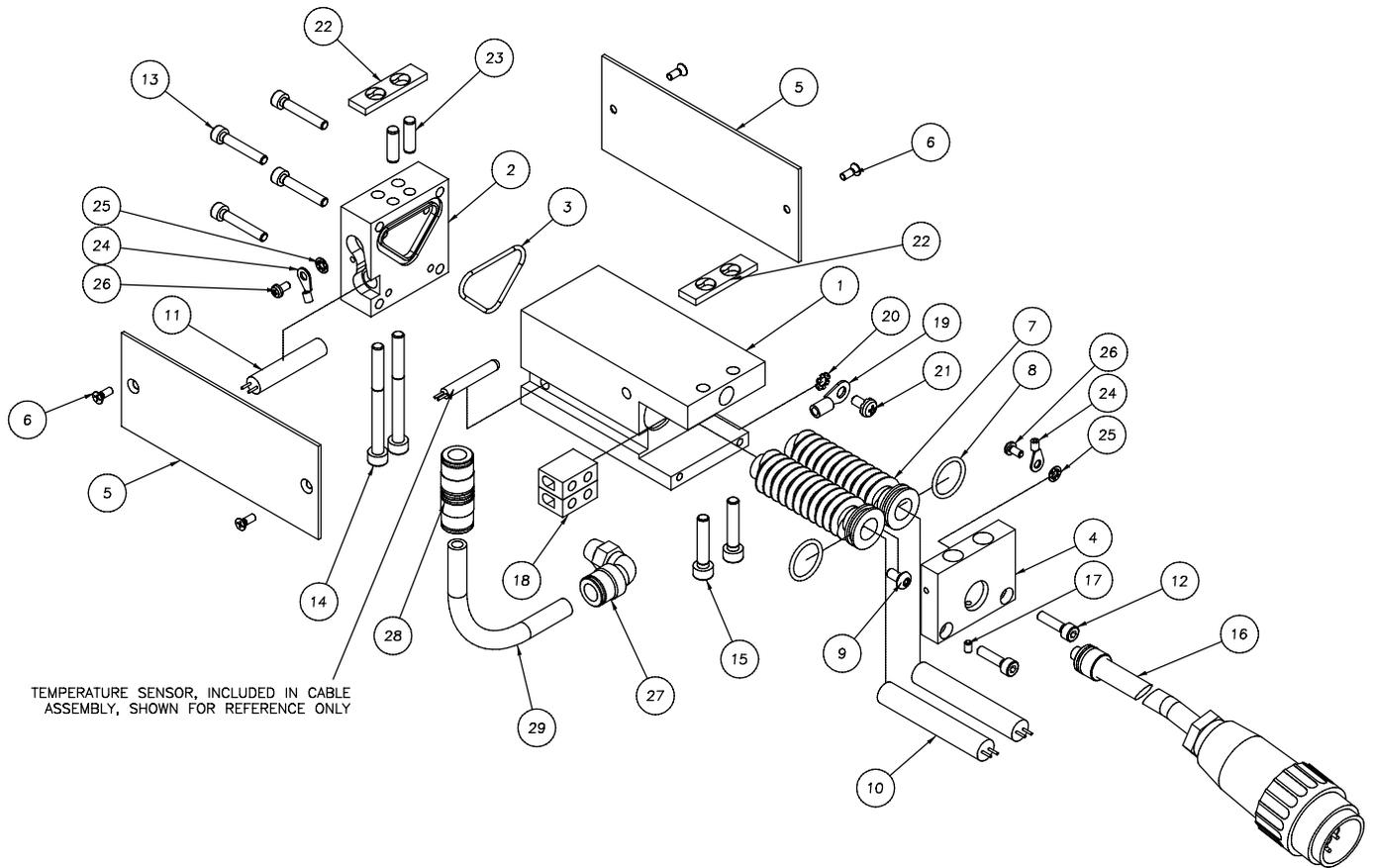
Component Illustration: DeltaFx Service Block Assemblies

Bill of Materials for DeltaFx Air Heater Assemblies

Item No.	Part Number	Qty.	Description		
**	31	N06989	1.5	FT WIRE, GREEN/YELLOW, 18GA, 260°C	
**	30	104229	4	EA WIRE FERRULE	
	29	806517	0.5	FT TUBING, 5/16 OD, TFE	
	28	115676	1	EA UNION, PUSH-LOCK, 8MM	
	27	115675	1	EA FTG, 90° ELBOW, VITON SEALS	
	26	101627	2	EA SCR, SLOT HEAD, M3-.5 X 6	
	25	078C088	2	EA WASHER, #4, INT. TOOTH	
	24	N07430	2	EA TERMINAL, RING, 22-16	
	23	106726	2	EA PIN, DOWEL, 5MM	
	22	106306	2	EA SPACER, PREHEATER	
	21	107389	1	EA SCR, M4, W/WASHER	
	20	106236	1	EA WASHER, M4, INT. TOOTH	
	19	048G018	1	EA RING TERMINAL	
	18	N07541	2	EA TERMINAL BLOCK, CERAMIC, 1-POLE	
	17	103470	1	EA SHSS, M3-.5 X 6	
	16	SEE TAB	1	EA CABLE ASSY, DCL	
	15	109252	2	EA SHCS, M5 - .8 X 25	
	14	106332	2	EA SHCS, M5 - .8 X 55	
	13	100908	4	EA SHCS, M4-.7 X 25	
	12	106328	2	EA SHCS, M4-.7 X 16	
	11	106448	1	EA HTR, CRTG, ø8 X 40 MM, 200W	
	10	114667	2	EA HTR, CRTG, ø10 X 60 MM, 300W	
	09	107161	1	EA BHSCS, M4-.7 X 8	
	08	107430	2	EA O-RING, -016, SILICONE	
	07	106294	2	EA SPIRAL TUBE	
	06	106531	4	EA SCR, FH, PHILLIPS, M3-.5 X 8	
	05	109111	2	EA SIDE COVER	
	04	109108	1	EA COVER, REAR WIRE	
	03	069X270	1	EA O-RING, -025, VITON 70 DURO	
	02	109110	1	EA MANIFOLD, DIST, 2-PORT	
	01	109109	1	EA MANIFOLD, AIR HEATER, 2-PORT	
	ITEM	PART NUMBER	QTY.	U/M	DESCRIPTION
PARTS LIST					

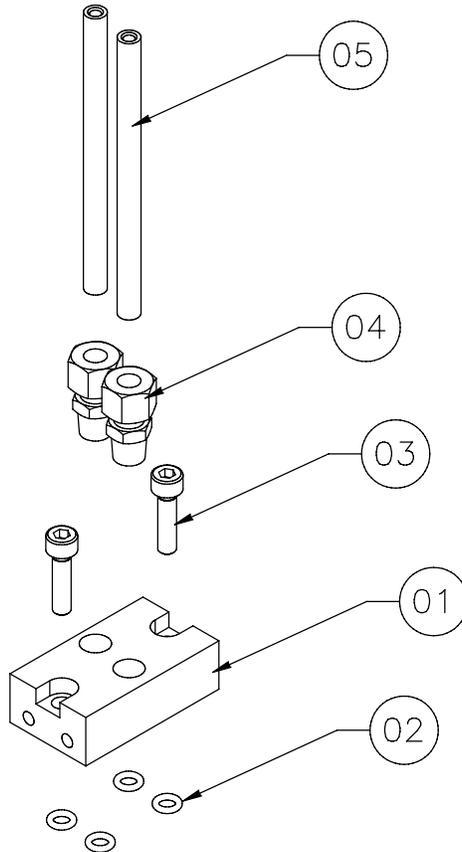
** NOT SHOWN

Control Type		Air Heater Assy. PN	Cable Assy. PN (item 16)
Code	Description		
D	DynaControl	115901	109253
N	Nordson	115902	109287
M	MCV	115903	109286
L	Meltex JTC	115904	109288
P	Meltex PT	115905	110145



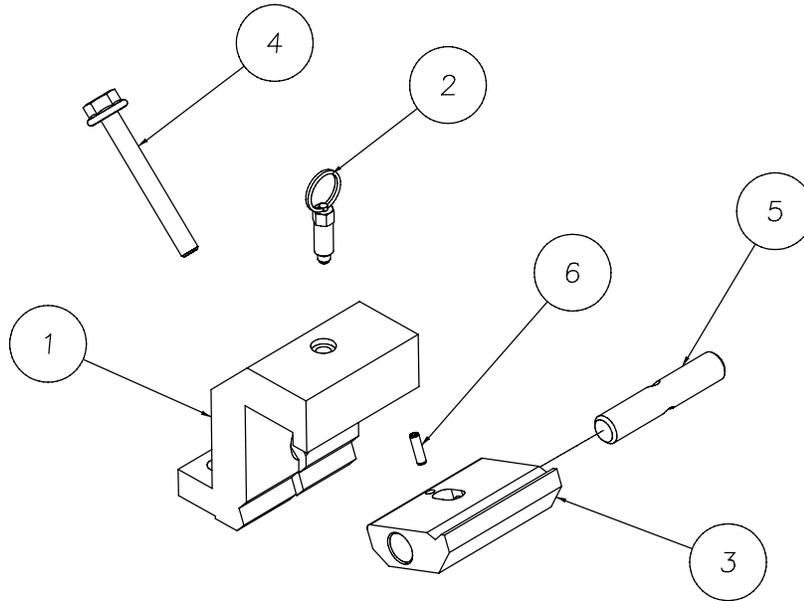
Component Illustration: DeltaFx Air Heater Assemblies

PN 106474 Solenoid Manifold Assembly



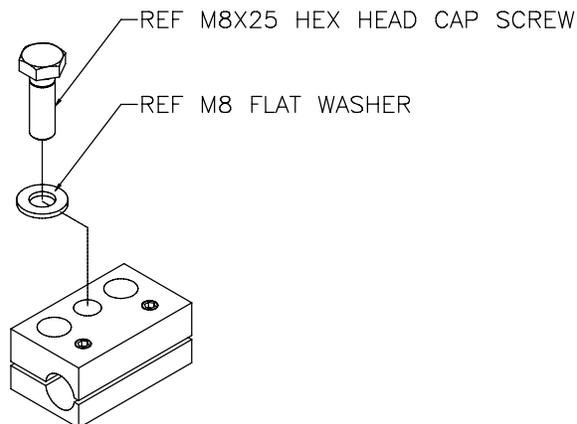
Item No.	Part Number	Qty.	Description	
05	106333	2	EA	TUBE,SST,1/4" OD X 3.5"
04	N00093	2	EA	FTG,CMPRSN,1/4 TUBE X 1/8 NPT
03	N07419	2	EA	SCR,SHC, M5-0.8 X 20, ZP
02	N00175	4	EA	O-RING,-008, VITON
01	106305	1	EA	MANIFOLD, 2-PORT, 1 SOL
ITEM	PART NUMBER	QTY.	U/M	DESCRIPTION
PARTS LIST				

PN 115568 Bar Clamp Assembly (Clamp Option Code "S")

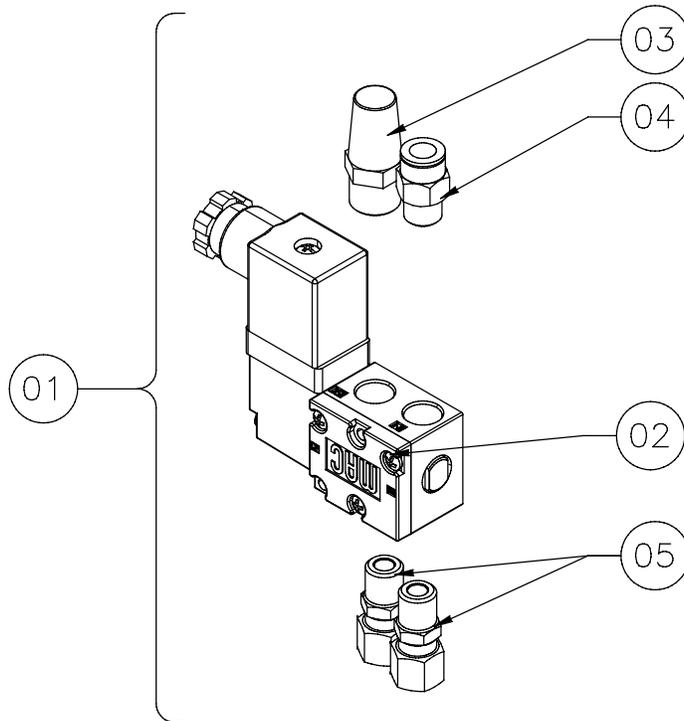


Item No.	Part Number	Qty.	Description	
06	115572	1	EA	SPRING PIN, M3 X 10, SST
05	115571	1	EA	BARREL NUT, M6-1
04	115679	1	EA	SCR, HEX FLNG HD, M6-1 X 50
03	115570	1	EA	LOCKING PLATE
02	112773	1	EA	SPRING PLUNGER
01	115569	1	EA	CLAMP BASE
ITEM	PART NUMBER	QTY.	U/M	DESCRIPTION
PARTS LIST				

PN 106293 Rod Assembly (Clamp Option Code "R")



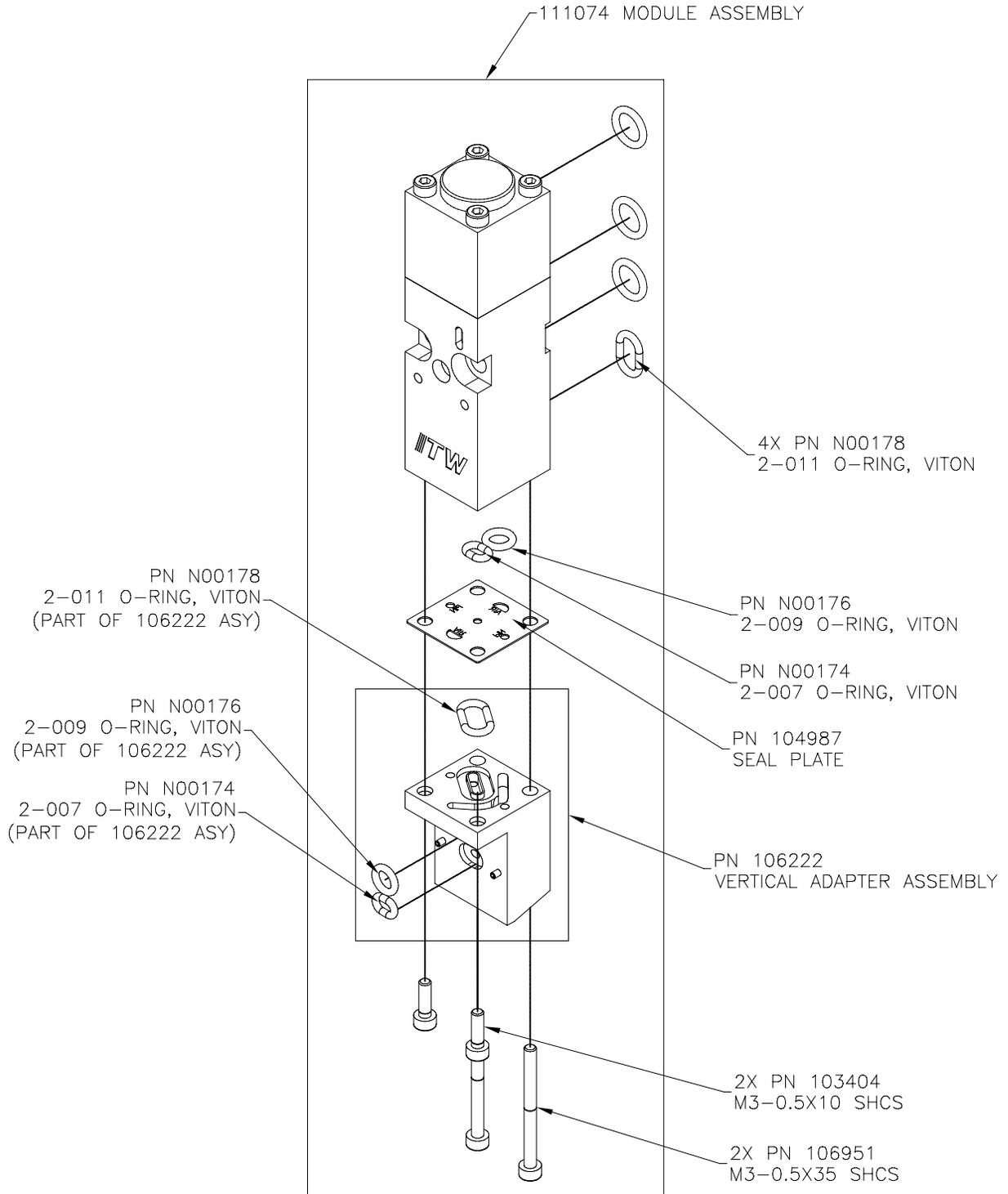
Solenoid Valve Assemblies



Item No.	Part Number	Qty.		Description
05	N00093	1	EA	FTG,CMPRSN,1/4 TUBE X 1/8 NPT
04	N06435	1	EA	FTG,PUSH-LOCK, 1/4 TUBE X 1/8 NPT
03	N02745	1	EA	MUFFLER,BRNZ,1/8 NPT
02	-	1	EA	VALVE, PNEUMATIC SOLENOID
01	SEE CHART	1	EA	SOLENOID VALVE ASY, W/FITTINGS
ITEM	PART NUMBER	QTY.	U/M	DESCRIPTION
PARTS LIST				

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

PN 111074 Module Assembly, Vertical, Snuffback



For module repair kit, see Ch. 7.

Bill of Materials for PN 111979 Module Assembly, Hi Flow, Slot (option)

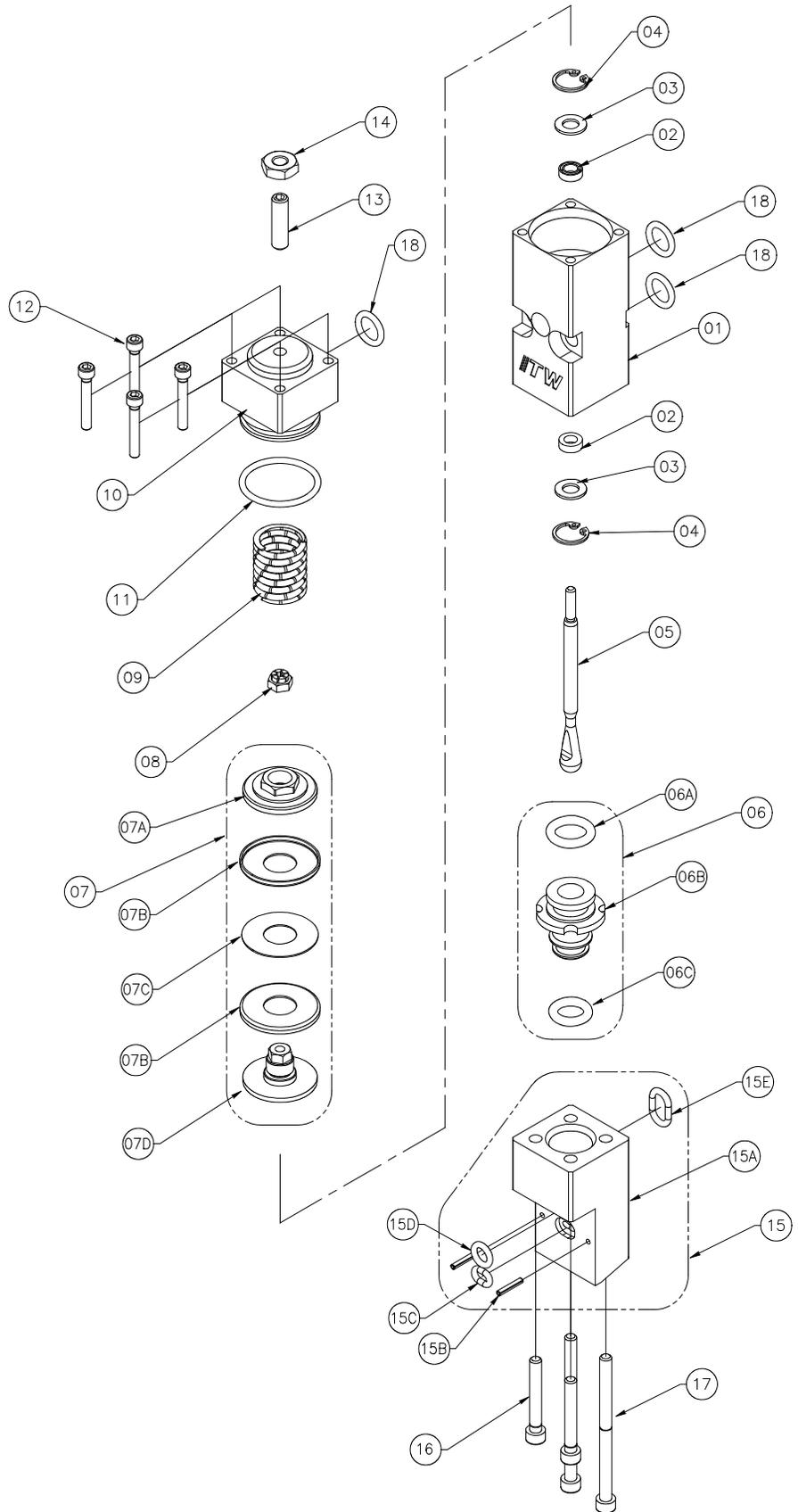
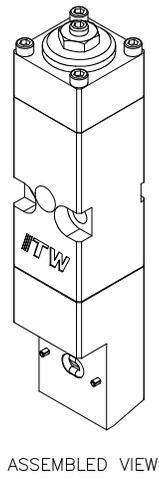
18	N00178	3	EA	O-RING, -011
17	078A184	2	EA	SHCS, #6-32 X 2
16	N00795	2	EA	SHCS, #6-32 X 1
15E	N00178	1	EA	O-RING, -011
15D	N00176	1	EA	O-RING, -009
15C	N00174	1	EA	O-RING, -007
15B	078G028	2	EA	PIN, SPRING,
15A	-	1	EA	VERTICAL ADAPTER
15	111978	1	EA	VERTICAL ADAPTER ASY
14	078D078	1	EA	NUT, HEX SEALING, #10-32
13	078A384	1	EA	SHSS, #10-32 X 3/4
12	107353	4	EA	SHCS, #4-40 X 3/4
11	N00186	1	EA	O-RING, -019
10	111308	1	EA	CAP, SPRING
09	111311	1	EA	SPRING, COMPRESSION
08	110046	1	EA	LOCKNUT, #4-40
07D	114135	1	EA	PISTON
07C	111315	1	EA	SPACER
07B	111314	2	EA	PISTON SEAL
07A	114136	1	EA	RETAINER
07	114137	1	EA	PISTON ASSEMBLY
06C	N05044	1	EA	O-RING, 2-109, VITON
06B	110587	1	EA	SEAT ASSEMBLY
06A	N00195	1	EA	O-RING, 2-110, VITON
06	110589	1	EA	ADPT ASY, SLOT, MR1300HF
05	111310	1	EA	STEM
04	N05262	2	EA	SNAP RING, INTERNAL, 3/8" BORE
03	111309	2	EA	WASHER, SEAL
02	110417	2	EA	SEAL, STEM
01	111307	1	EA	MODULE BODY
ITEM	PART NUMBER	QTY.	U/M	DESCRIPTION

PARTS LIST

PN 114321 Repair Kit for PN 111979 Hi Flow Module Assembly

-	108700	1	EA	LUBE, TFE, 1/4 OZ TUBE
-	N00174	1	EA	O-RING, -007 (NOT USED THIS ASY)
-	N00176	1	EA	O-RING, -009 (NOT USED THIS ASY)
17	N00178	5	EA	O-RING, -011
16	078D078	1	EA	NUT, HEX SEALING, #10-32
13	N00186	2	EA	O-RING, -019
10	111311	1	EA	SPRING, COMPRESSION
09	110046	1	EA	LOCKNUT, #4-40
08	114137	1	EA	PISTON ASSEMBLY
07	N02680	4	EA	BHSCS, #6-32 X 3/8
06C	N05044	1	EA	O-RING, -109
06A	N00195	1	EA	O-RING, -110
04	N05262	2	EA	SNAP RING, INTERNAL, 3/8" BORE
03	111309	2	EA	WASHER, SEAL
02	110417	2	EA	SEAL, STEM
ITEM	PART NUMBER	QTY.	U/M	DESCRIPTION

PARTS LIST



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

Chapter 7 OPTIONS & ORDERING GUIDES

Applicator Heater Cartridges

Part No.	Description	Location	Qty.
106444	10x40mm, 150w	service block	3
106448	8x40mm, 200w	air preheater (std. only)	1
114667	10x60mm, 300w	air preheater	2

Applicator RTD Sensors

Control Scheme	Code	Part No.	Description	Qty.
DynaControl/Allen-Bradley	D	N07958	Pt100	2
MCV	M	104912	Dual Pt100	2
Nord Upgrade, Ni RTD	N	N07864	N120	2
Mel Upgrade, J-type TC	L	107051	J-type TC	2
Mel Upgrade, Pt RTD	P	N07958	Pt100	2

Filter

PN 106273 150-mesh Filter Basket

Filter Kit

To simplify ordering, a 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 Filter Cap	106273 150-mesh

Solenoid Valves

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

For an explanation of applicator "codes", see matrix on page 6-1.

Service Kits

Module Repair Kit for Standard Module PN 110889

The module repair kit contains all the parts necessary to rebuild one PN 111074 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.

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.

Optional Nozzle Cleaning Oven (PN 107307 = 200-240v Oven/ PN 107306 = 120v Oven)

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 degrees F. Complete cleaning instructions are provided.

Optional Drain Valve PN 107820

Option Code "A" (see page 6-1) 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.

Optional 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 curing in the modules when the DeltaFx nozzle is removed.

Extension Cable Assemblies

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

Control Scheme	Part No.	Length	Part No.	Length
DCL/ PLC (control code D)	103773	10'	103776	25'
	103774	15'	105123	30'
	103775	20'	105147	40'
MCV (control code M)	084F222	10'	084F682	25'
	084F225	15'	084F383	30'
	084F223	20'		
Nor Upgrade (Ni RTD) (control code N)	102706	10'	105834	40'
	106349	25'		
Mel Upgrade (JTC) (control code L) Service Block only	107044	2m	107047	8m
	107045	4m	107309	10m
	107046	6m		
Mel Upgrade (JTC) (control code L) Air Heater only	110149	2m	110152	8m
	110150	4m	110153	10m
	110151	6m		
Mel Upgrade (Pt RTD) (control code P) Service Block only	110159	2m	110162	8m
	110160	4m	110163	10m
	110161	6m		
Mel Upgrade (Pt RTD) (control code P) Air Heater only	110154	2m	110157	8m
	110155	4m	110158	10m
	110156	6m		

Recommended Spare Parts List

Part Number	Description	Qty. per Applicator
<i>See Ordering Guide</i>	Module Repair Kit	1
<i>See Ordering Guide</i>	Heaters	as required
<i>See Ordering Guide</i>	RTD Sensor, Service Block	1
<i>See Ordering Guide</i>	RTD Sensor, Preheater	1
N03812	O-ring #125	2
N00196	O-ring #111	1
N00181	O-ring #014	1
N00178	O-ring #011	as required
N00176	O-ring #009	as required
N00174	O-ring #007	as required
102645	High-Temp Splice Kit	1
106273	Filter Basket, 150 mesh	2
001V061	Thermal Paste	1
<i>See Ordering Guide</i>	Solenoid Valve	1
<i>See Your Job Order</i>	Nozzle	2

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.

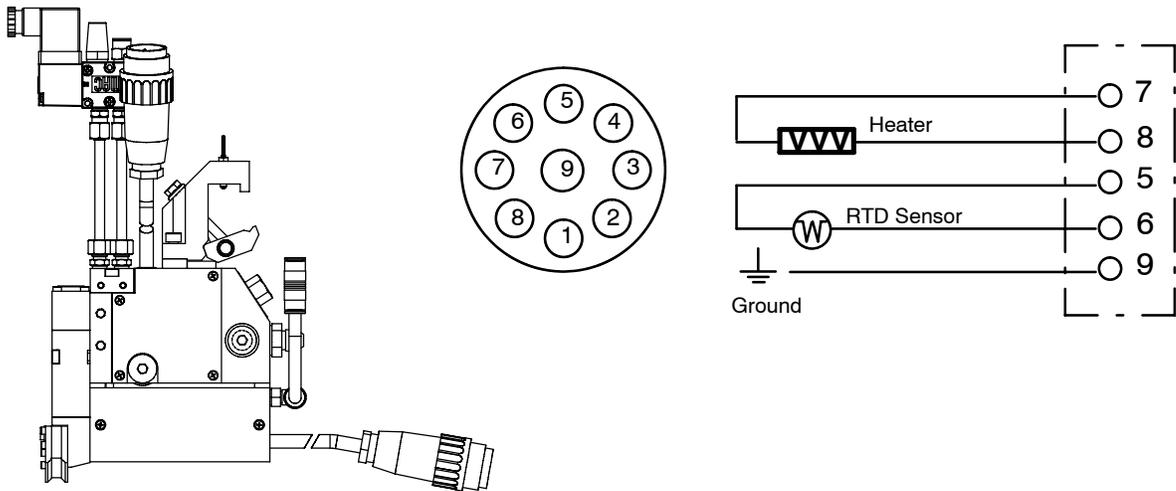
As a general rule, we recommend that you keep on hand:
Heaters: half as many of each heater as listed on the BOM,
Sensors: half as many of each sensor as listed on the BOM,
Kits: half as many as the number of modules on the BOM,
O-rings: the same quantity as listed on the BOM,
Filter Baskets: twice as many as listed on the BOM.

Chapter 8 ENGINEERING DRAWINGS & SCHEMATICS

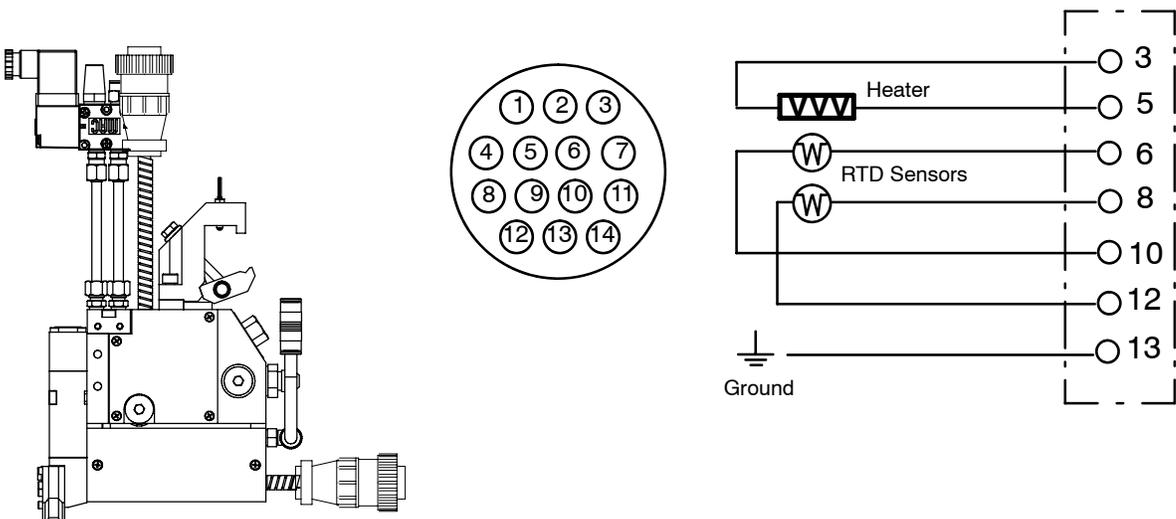
Pin Connectors & Electrical Schematics

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

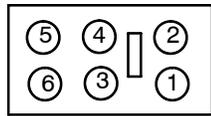
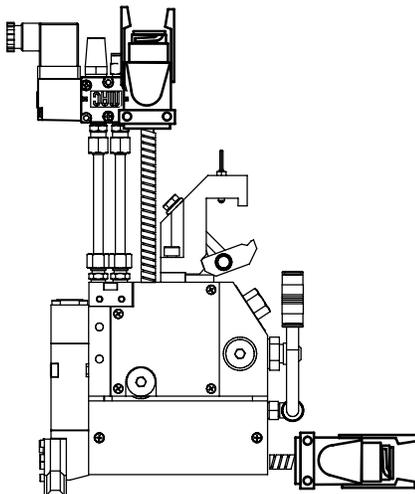
DynaControl/Dynamini or PLC Control Scheme PN 103117 (control code D)



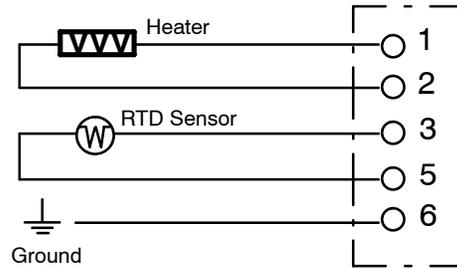
Microprocessor Temperature Control or CompuVision (MCV) Control Scheme PN 045X144 (control code M)



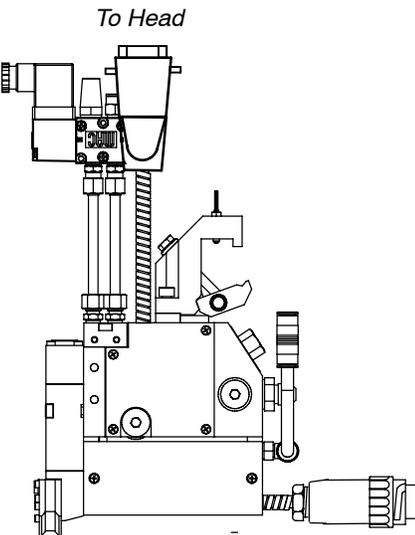
Nor Upgrade (Nickel RTD) Control Scheme PN 104551 (control code N)



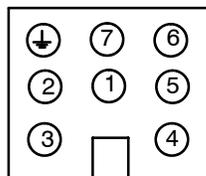
Note: pin out numbers are not labeled on the Upgrade connector.



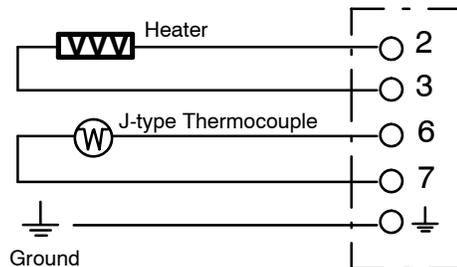
Mel Upgrade (J-type Thermocouple) Control Scheme (control code L)



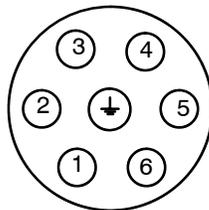
To Head Connector



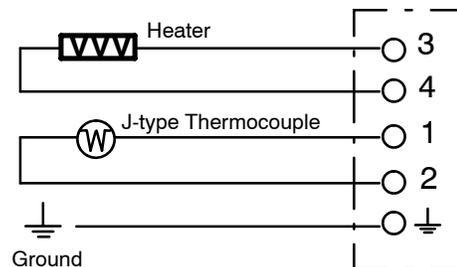
To Head Connector



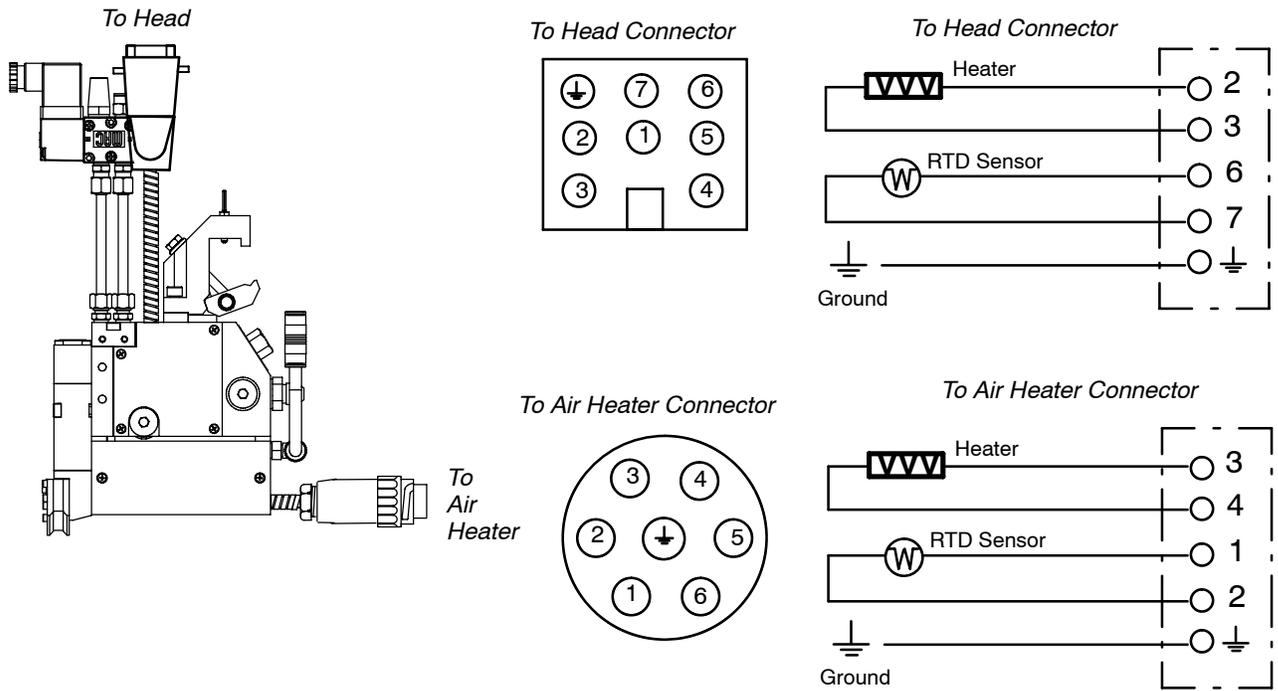
To Air Heater Connector



To Air Heater Connector



Mel Upgrade (Platinum RTD) Control Scheme (control code P)



Appendix A

SOLENOID VALVE CONFIGURATIONS, SCHEMATICS & SETUP

This Appendix covers the pneumatic setup of the solenoid valves used to actuate the adhesive modules. A coalescing filter/ regulator kit (PN 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

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 6mm or 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.

Appendix A Section 1 4-way Solenoid Valve

Description

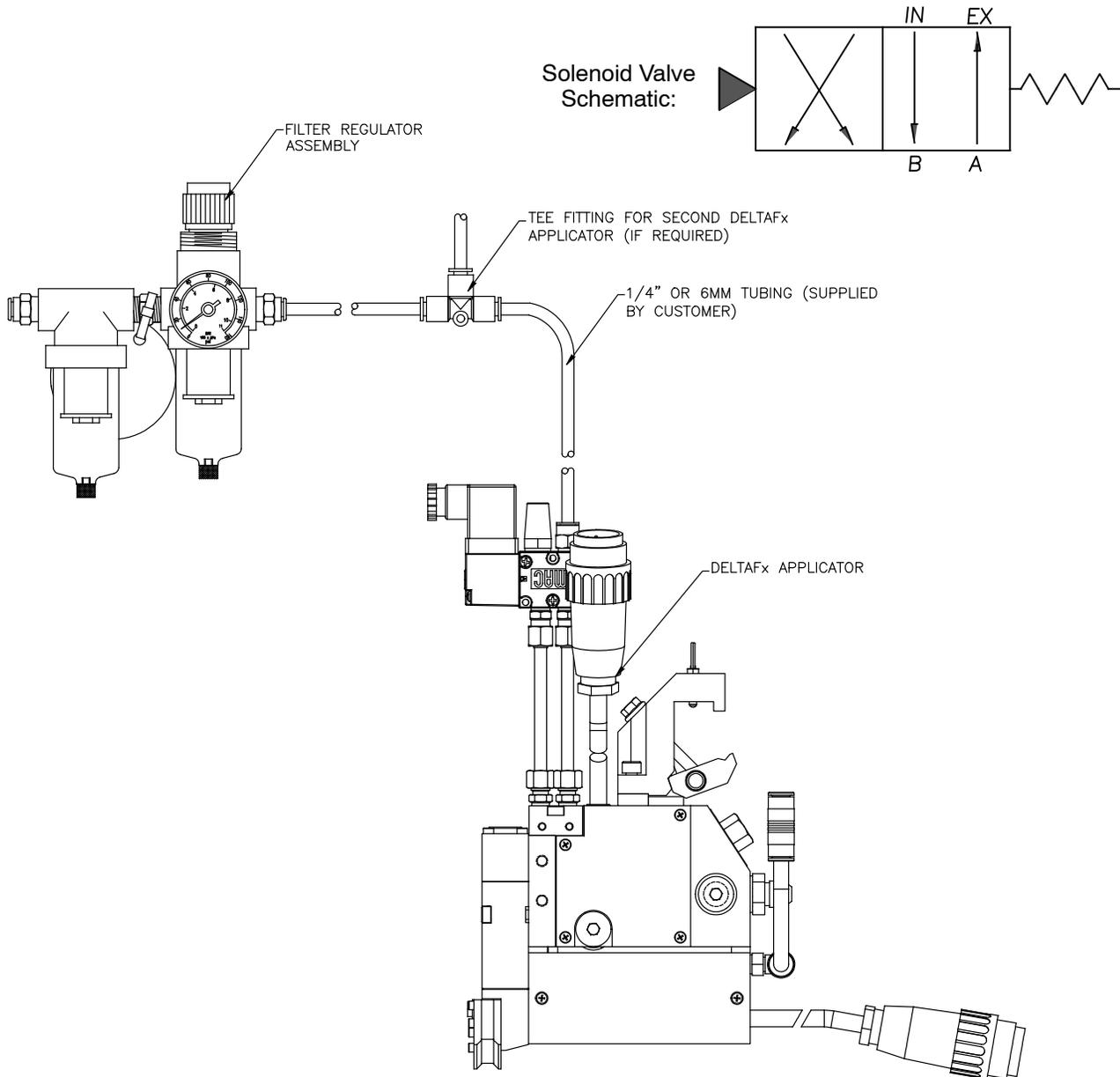
Direct acting poppet valve, 4-way, 1/8 NPT ports, with non-locking recessed manual operator.

Connections

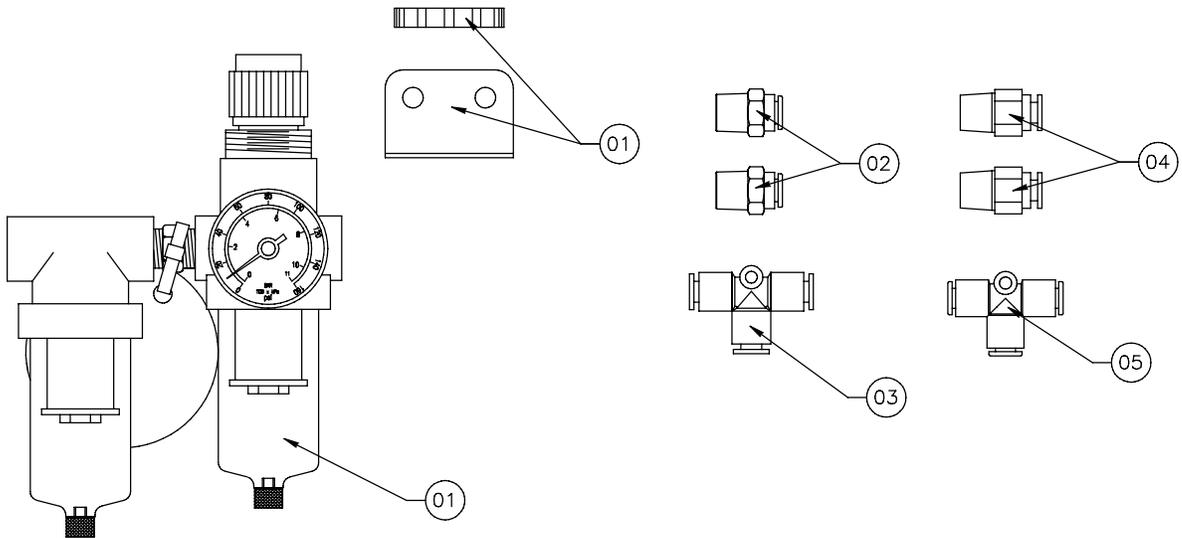
IN - Inlet A - Open side of module
EX - Exhaust B - Close side of module

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.



Appendix A
Section 2
COMPONENT ILLUSTRATION: PN 115600 AIR CONTROL KIT



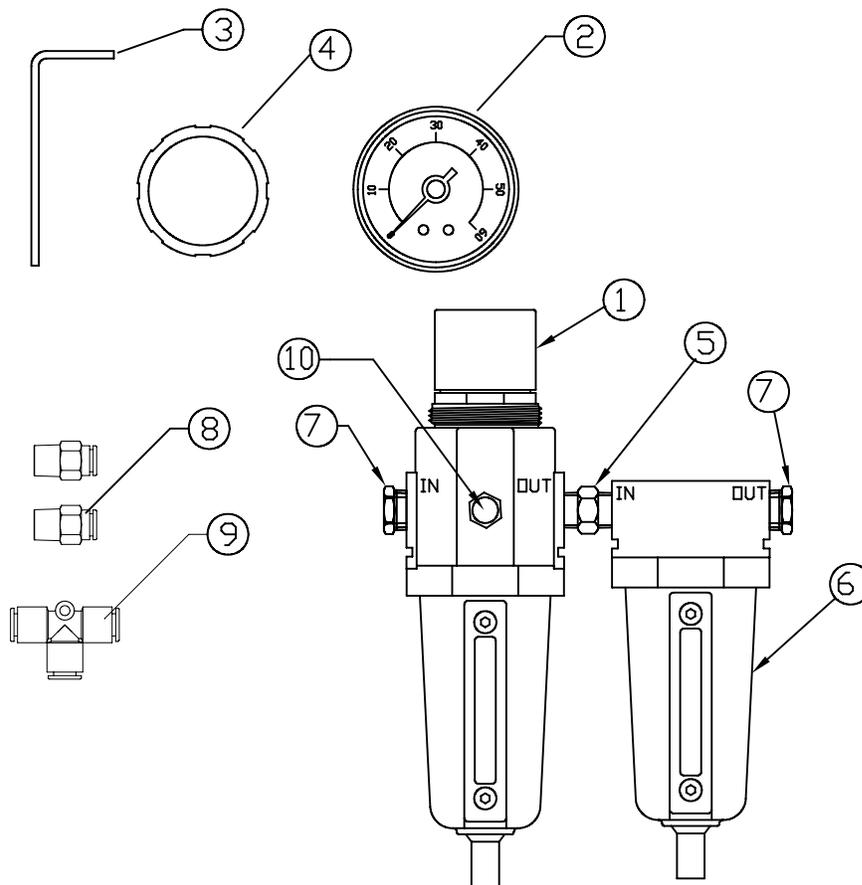
Item No.	Part Number	Qty.		Description
05	115699	1	EA	FTG,TEE,6MM TUBE
04	113081	2	EA	FTG,STR,6MM TUBE X 1/4 NPT
03	N06504	1	EA	FTG,TEE,1/4 TUBE
02	N06430	2	EA	FTG,STR,1/4 TUBE X 1/4 NPT
01	105610	1	EA	FILTER/REGULATOR ASY
ITEM	PART NUMBER	QTY.	U/M	DESCRIPTION
PARTS LIST				

Appendix B PN 115601 PROCESS (PREHEATER) AIR CONTROL FILTER/ REGULATOR

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	Qty.		Description
10	108000	1	EA	FTG,RED,1/4F TO 1/8M NPT
9	809471	1	EA	FTG, TEE, 5/16 TUBE
8	806641	2	EA	FTG, 5/16 TUBE X 1/4 NPT
7	066X028	2	EA	FTG,BUSH,3/8NPT X 1/4NPT,BRS
6	107403	1	EA	COALESCING FILTER
5	112319	1	EA	FTG,HEX NIP,3/8 NPT,BRS
4	100995	1	EA	NUT, PANEL MOUNT
3	100994	1	EA	BRACKET, MOUNTING
2	100992	1	EA	GAUGE, 0-60 PSI
1	100991	1	EA	FILTER/REGULATOR
ITEM	PART NUMBER	QTY.	U/M	DESCRIPTION

PARTS LIST

Appendix C RESISTANCE TABLES

RTD Resistance - Temperature Tables

Pt 100 Ohms
Control Code D, M or P

Temperature °F	Temperature °C	Resistance in Ohms
32	0	100.00
50	10	103.90
68	20	107.79
86	30	111.67
104	40	115.54
122	50	119.40
140	60	123.24
158	70	127.07
176	80	130.89
194	90	134.70
212	100	138.50
230	110	142.29
248	120	146.06
268	130	149.82
284	140	153.58
302	150	157.32
320	160	161.04
338	170	164.76
356	180	168.46
374	190	172.16
392	200	175.84
410	210	179.51
428	220	183.17

Ni 120 Ohms
Control Code N

Temperature °F	Temperature °C	Resistance in Ohms
32	0	120.00
50	10	127.17
68	20	134.52
86	30	142.06
104	40	149.80
122	50	157.75
140	60	165.90
158	70	174.27
176	80	182.85
194	90	191.64
212	100	200.64
230	110	209.85
248	120	219.29
268	130	228.95
284	140	238.84
302	150	248.95
320	160	259.30
338	170	269.89
356	180	280.77
374	190	291.95
392	200	303.46
410	210	315.31
428	220	327.54

Appendix D OPTIONAL NOZZLE-CLEANING OVEN MANUAL

PN 107307: 200-240v Oven/ PN 107306: 120V Oven

The use of the Nozzle Cleaning Oven eliminates the need to disassemble the DeltaFx nozzles for cleaning. Nozzles are baked in the oven for approximately four to eight hours at 750-800 degrees F (400-425C), depending on adhesive.

Oven users should read and understand the oven manufacturer's Owner's & Operator's Manual, supplied with the oven. This ITW Dynatec manual is intended to be a quick reference only for use with ITW Dynatec's nozzles.



Oven Safety Precautions

General Precautions

1. Never operate the oven in close proximity to combustible materials or place combustible materials on top of the oven.
2. Do not use solvents or liquid cleaners on the control panel as they will enter the panel and damage it.
3. Place nozzle-cleaning oven in a well ventilated area.

Setup Safety

1. Connect to a properly grounded outlet only in order to provide continued protection against the risk of electrical shock.
 2. a. The model PN 107306 (120v) oven must be electrically grounded to a three-wire electrical outlet or receptacle. The electrical service provided must be a dedicated line of the proper size according to local electrical codes (1500 watts).
 - b. The model PN 107307 (200-240v) oven must be electrically grounded to a four-wire electrical outlet or receptacle. The electrical service provided must be a dedicated line of the proper size according to local electrical codes (1300 watts).
3. The oven is not equipped with over-current protection on the AC primary. In the event that an over-current condition occurs, your facility's branch circuit over-current protection (fuse or circuit breaker) will be the primary means of protection.

Operator Safety

1. Always wear safety glasses and protective gloves and clothing when operating, loading and unloading the oven.
2. Always verify that the power switch light is OFF before attempting to load or reach into the oven chamber with any tools or instruments.
3. Do not attempt to operate the oven's controls with tongs or other tools which will damage the switches.

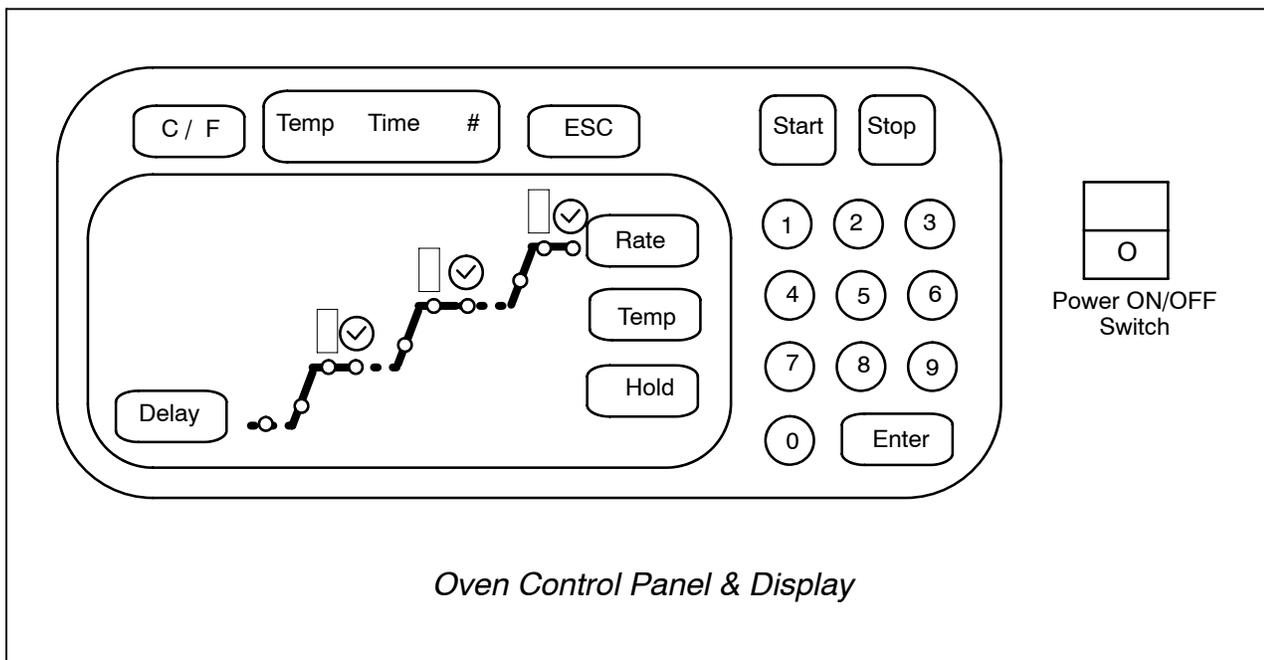
cont.

Oven Safety Precautions, cont.

4. Do not place firing trays or other hot objects directly in front of the oven; they will melt the graphic display.

Service Safety

1. Disconnect the line cord before attempting to service the oven.
2. Do not attempt to service the oven until you read and understand the manufacturer's Owner's & Operator's Manual. Maintenance issues are beyond the scope of this ITW Dynatec manual.



Nozzle Cleaning Procedure

1. Remove the nozzles from their adhesive manifold(s). Wipe excess adhesive from nozzles. DO NOT disassemble the nozzles prior to the cleaning process.
2. Place the nozzles on a metal or ceramic tray capable of withstanding 800 degrees Fahrenheit (425 degrees C).
3. If not already connected, connect the oven to an appropriate electrical source (120 or 240vac).
4. Place tray with nozzles within the oven and close the door completely.



WARNING

Do not load or unload the oven while the power supply is ON.

5. Turn ON the green Power Switch (seen above on right side of control panel). After a short delay for internal testing, the oven will display the approximate room temperature, program time (hours:

minutes) and program number. All red LEDs on the display will be OFF (if any LEDs are ON, then the oven was in the process of running a program when it was last shut down).

6. a. *Manual operation of oven:*

Select Program “0” (zero) by pressing the 0 (zero) numeric key. The 0 Program is a single-temperature-hold program. The oven will heat to the specified temperature and hold that temperature until the oven is turned off.

The display will read, for example, > TO 100°F → _____. Use the numeric keys to input the desired temperature (750-800F), then press Enter. The new temperature is stored in memory after three seconds. The display will now read XX°F*****0. (***** indicates that the program has not started.) Note: “XX” represents the current ambient temperature inside the oven.

b. *Automatic operation of oven:* consult the manufacturer’s manual for instructions.

7. Press the Start key to cause the oven to heat. The oven will heat at full power until it reaches the programmed temperature. The display will read > XX°F *hold* 0. The T1 LED will be ON.

8. After heat cycle, allow oven to cool to room temperature. Monitor display.

9. Remove the nozzles and tray from the oven. With clean, dry air, blow back through the nozzle openings at 40 to 60 pounds per square inch.

10. Wipe the outside surfaces of each nozzle with a clean, lint-free rag. Avoid wiping the nozzle tips.



CAUTION: Never use a wire brush or hard object when cleaning the nozzle tips or damage will result. Damage to nozzle tips will reduce the nozzle’s ability to achieve an acceptable spray pattern.

11. Check torque on the four assembly screws (recommended torque is 12-15 in/lb.).

12. Purge nozzles with a liquid media, preferably the adhesive being used in their application. Alternatively, mineral oil, silicone oil, water or another liquid which has proven to be non-corrosive and is compatible with the material being processed by the nozzles may be used.

13. Examine the ejection pattern of the purging liquid from the nozzles for inconsistencies. Any irregularities may indicate damage to the nozzle tips or plugging within the tips.

Note: a sketch of the ejection pattern placed in the nozzle testing area will make identification of correct ejection patterns easier.

14. Place the cleaned nozzles in a clean, padded container, separated from other nozzles and hard surfaces that can damage nozzle tips.

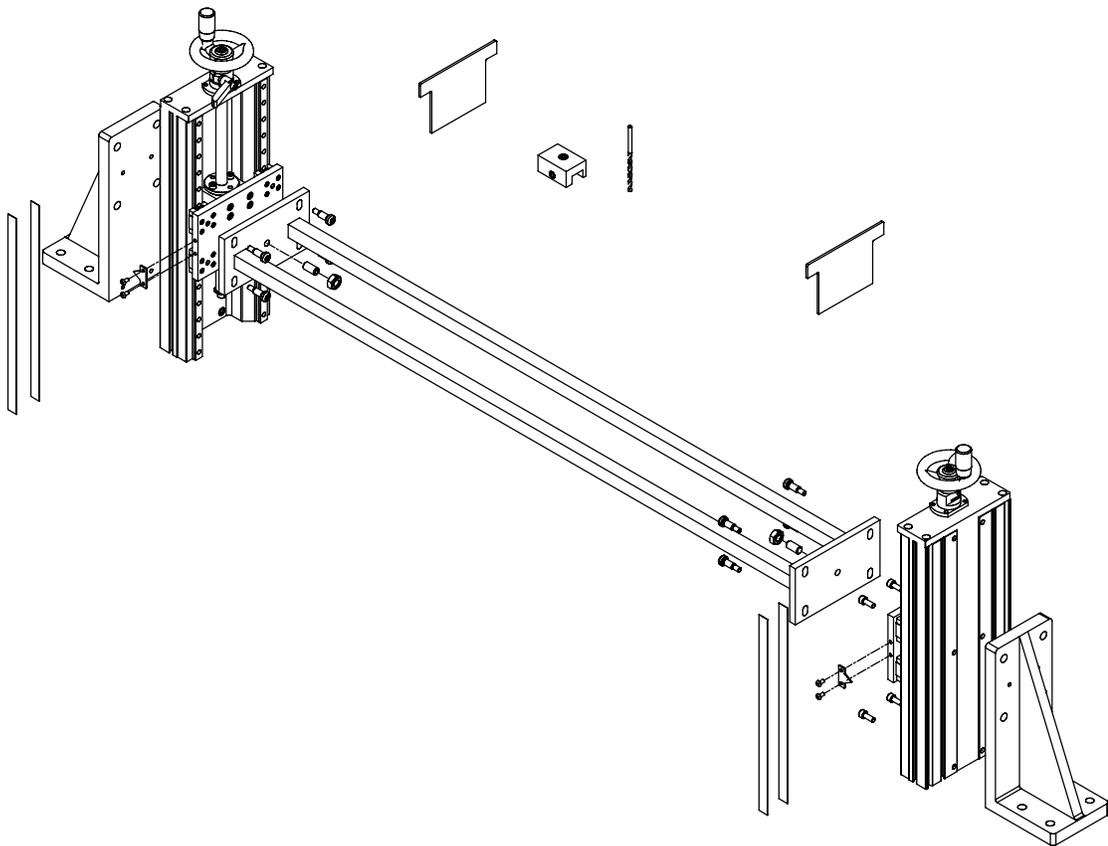
15. Clean any residue from the inside of the oven and close its door to prevent environmental contamination.

Appendix E OPTIONAL MOUNTING BRACKET ASSEMBLY

PN 115650 Optional DeltaFx Mounting Bracket Assembly

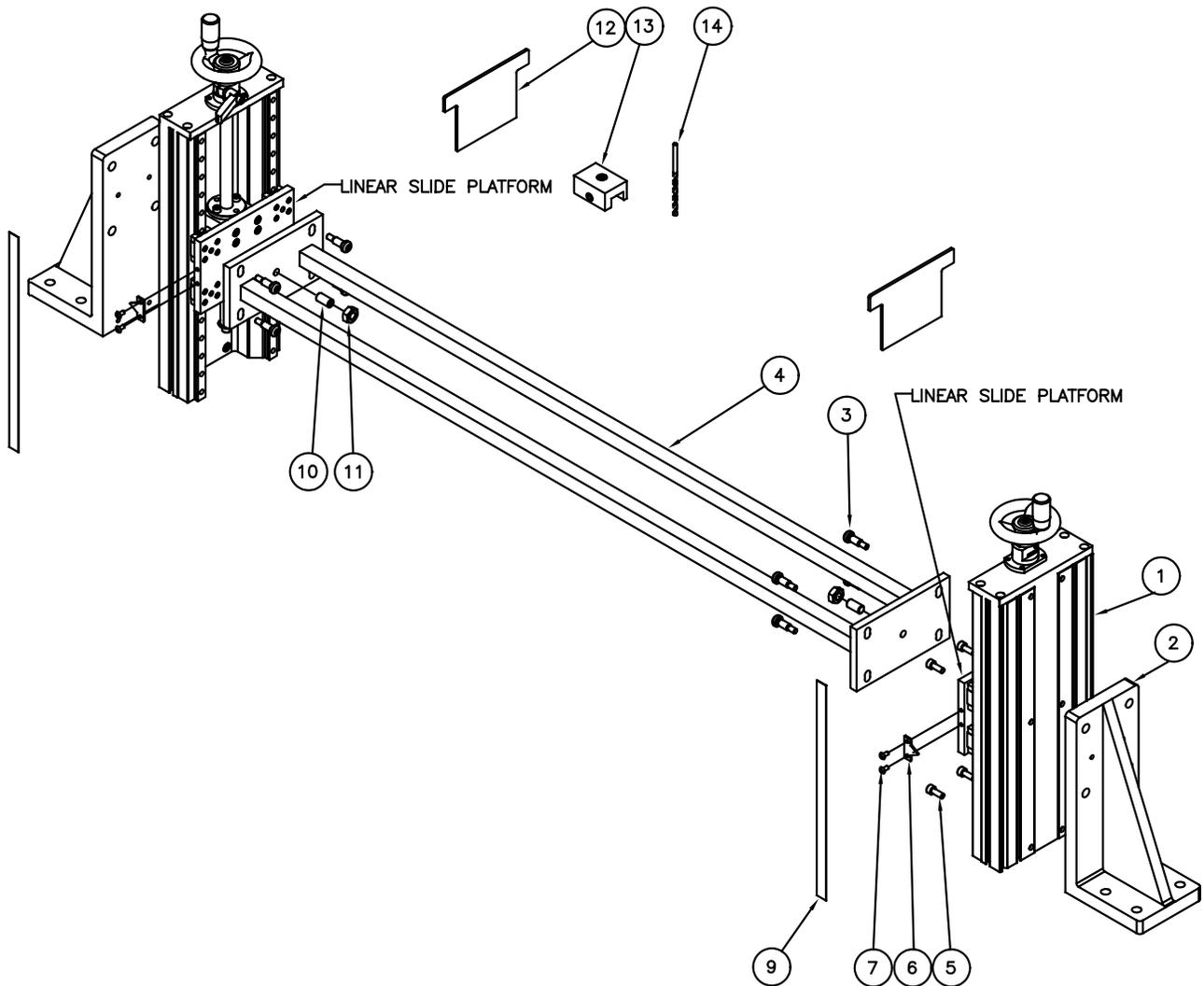
The mounting bracket assembly features two vertical, linear slides and a custom horizontal 19mm square bar weldment, made to the exact length required for the application. The horizontal mounting bar features two 19mm bars offset by 100mm in the machine direction. This permits multiple DeltaFx applicators 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.



PN 115650 Optional DeltaFx Mounting Bracket Assembly

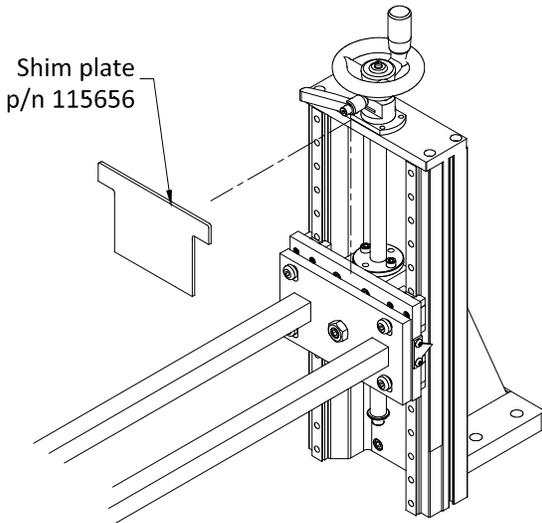
PN 115650 DeltaFx Mounting Bracket Assembly



Item No.	Part Number	Qty.	Description
14	115689	1	EA DRILL BIT, 4.2mm
13	115670	1	EA DRILL JIG
12	115656	2	EA SHIM PLATE, ASSEMBLY GAUGE
11	808415	2	EA NUT, M10x1.5, HEX
10	115647	2	EA SETSCREW, M10x1.5 X 20, FLAT PT, SST
09	115643	2	EA SCALE
08	not used		
07	107161	4	EA SCRW, BSHC, M4x0.7 X 8, ZINC PLT
06	115642	2	EA INDICATOR ARROW
05	814397	8	EA SCREW, SHC, M6x1.0 X 16, ZINC PLT
04	SEE SALES ORDER	—	REF BAR WELDMENT (SHOWN FOR REF)
03	115648	8	EA SHOULDER SCREW, 8 X 16
02	115639	2	EA MOUNTING ANGLE
01	115640	2	EA MANUAL LINEAR DRIVE
ITEM	PART NUMBER	QTY.	U/M DESCRIPTION
PARTS LIST			

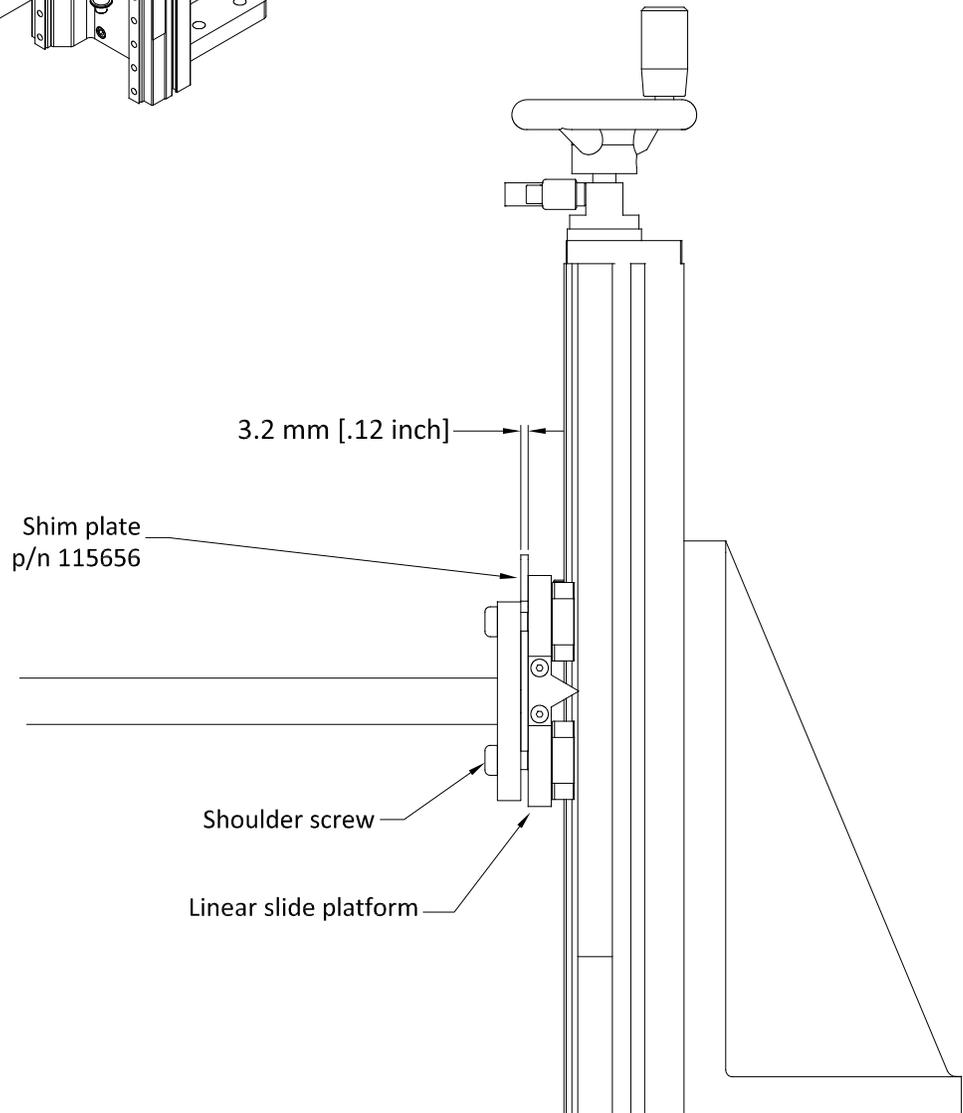
DeltaFx Bracket Spacing and Assembly

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.



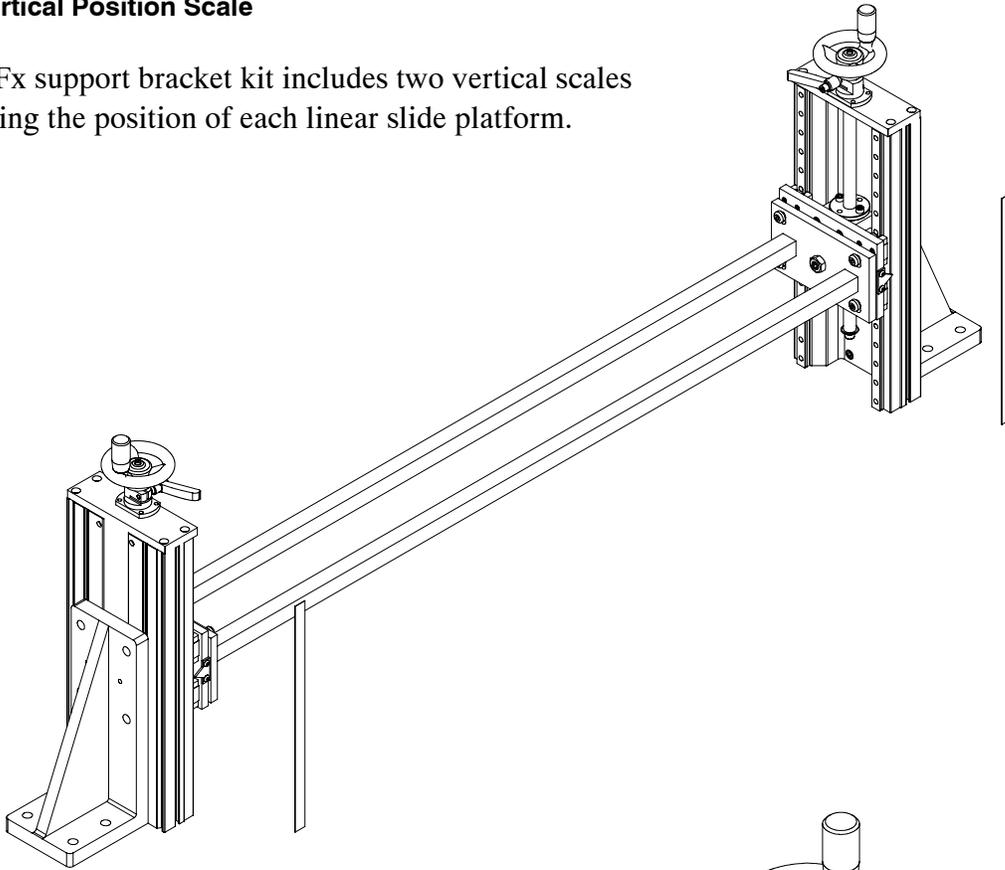
Assembly Procedure:

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.



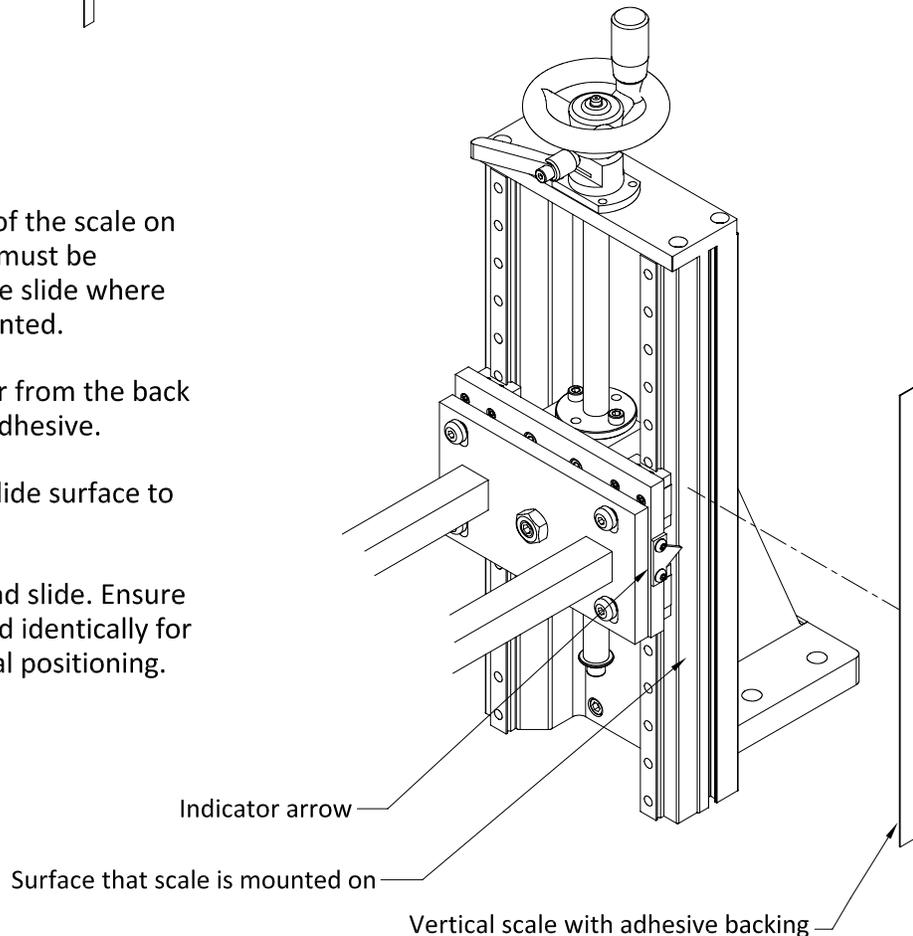
DeltaFx Vertical Position Scale

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 the adhesive.
3. Press scale firmly onto slide surface to engage adhesive.
4. Repeat procedure for 2nd slide. Ensure that both scales are located identically for accurate readout of vertical positioning.



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.

