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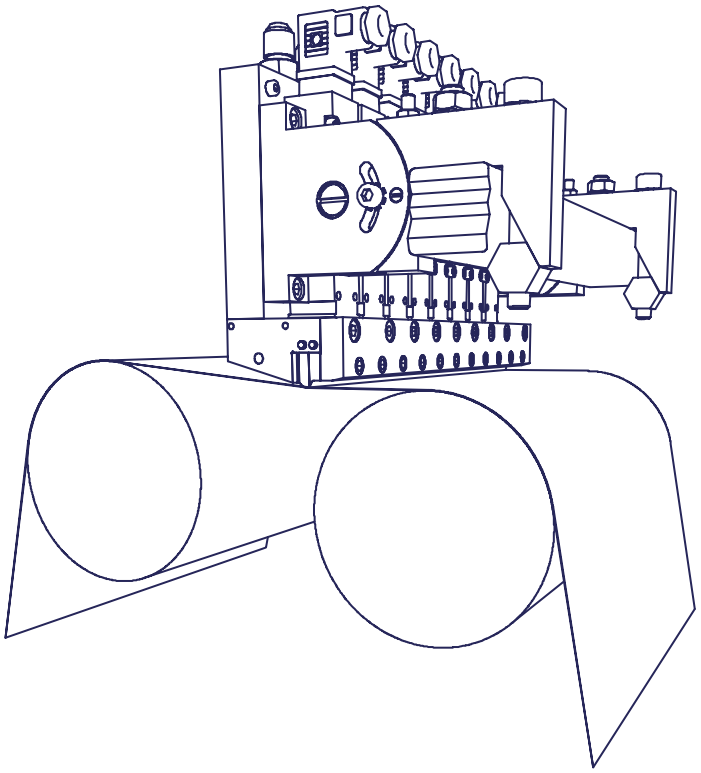
OPERATIONS MANUAL
Manual #40-48
Revised 11/03

ITW Dynatec

Adhesive Application Solutions ISO 9001 Certified

DYNASPEED SEGMENTED SLOT DIE APPLICATOR OPERATION/ INSTALLATION MANUAL



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

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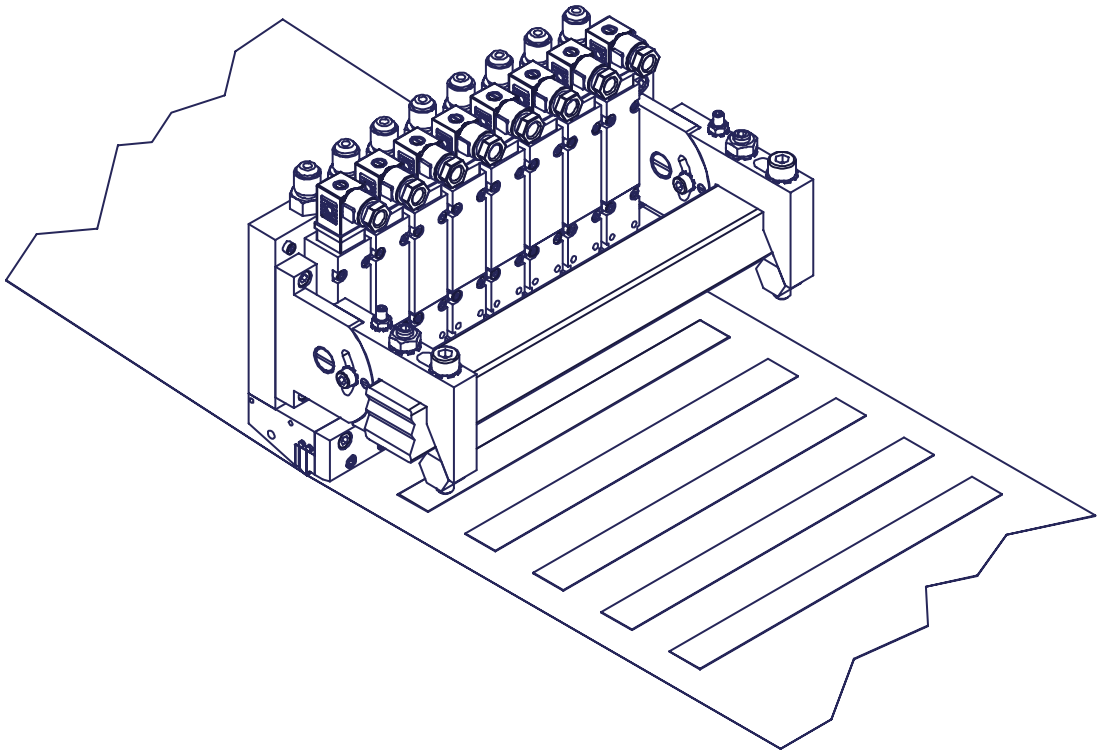
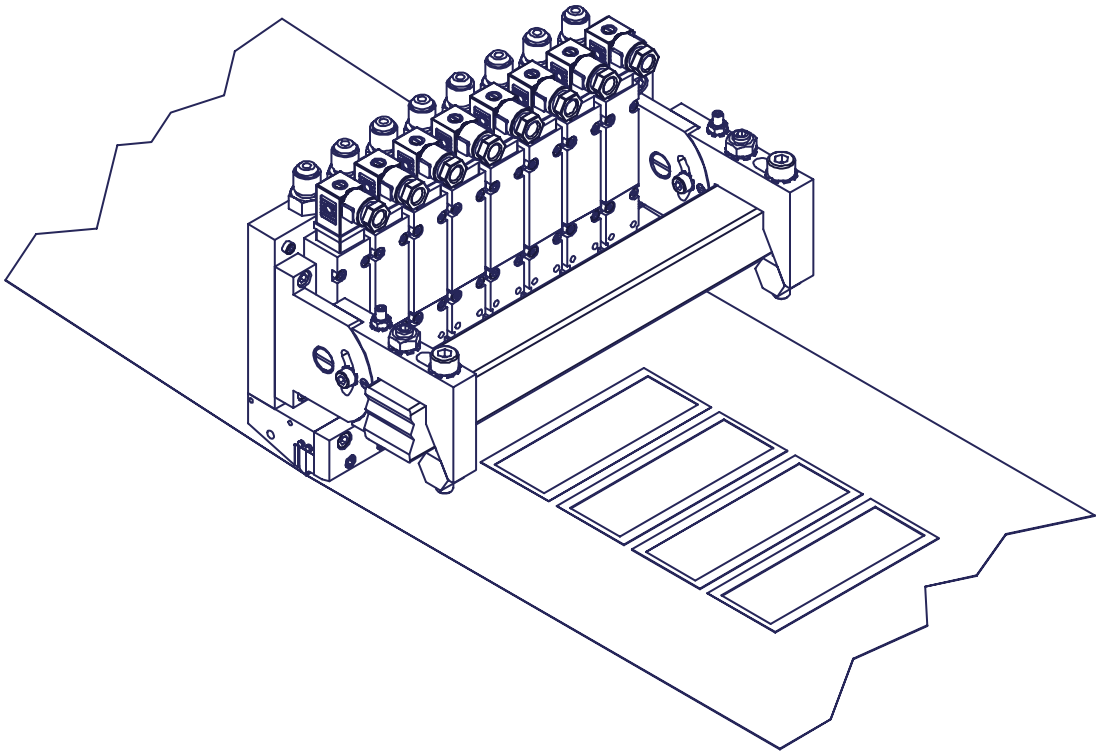
Chapter 1
DESCRIPTION & SPECIFICATIONS

Description

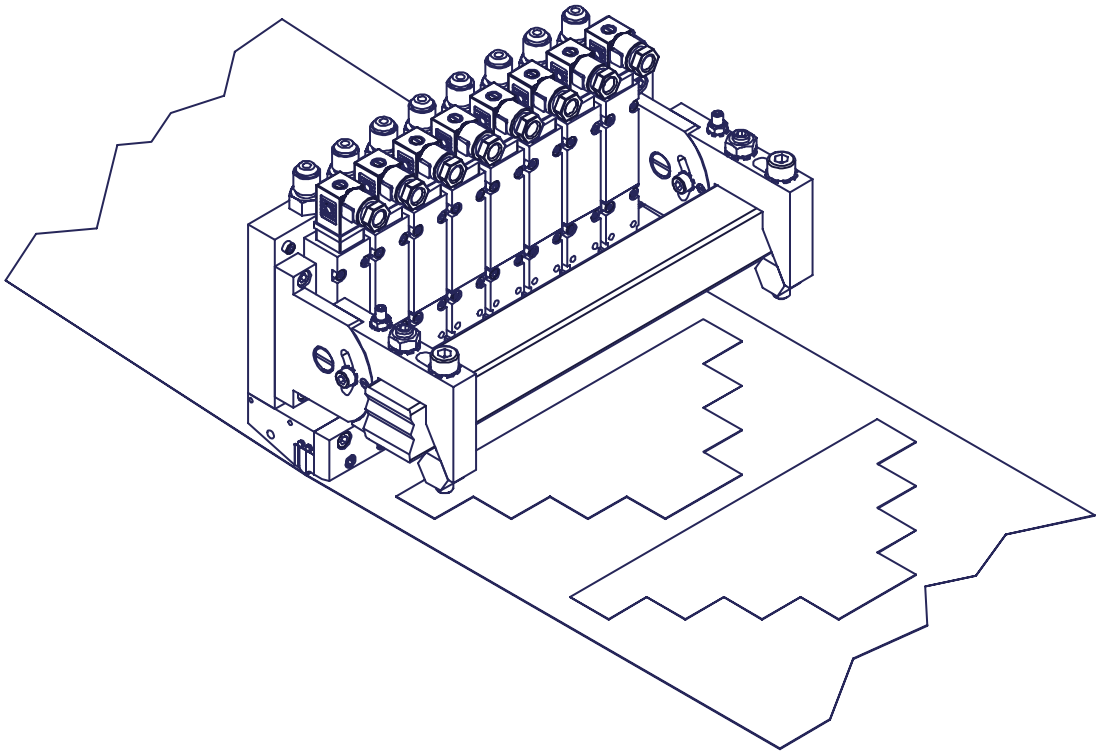
ITW Dynatec's DynaSpeed applicator is a fast, intermittent, electric cold glue slot die application head. It is equipped with 8 modules that can be controlled independently to allow the application of various patterns. Each module is equipped with its own fluid connection port. This gives the possibility to supply each module with a different pressure or with different glues. It is designed for high speed cross web (example 1), window (example 2) or for stepped pattern (example 3) applications.



Example 1: High Speed Cross Web Application



Example 2: Window Application



Example 3: Stepped Pattern Application

DynaSpeed is manufactured completely from stainless steel. The manifold is equipped with ½ UNF fluid fittings. The optional universal bracket allows easy mounting and adjusting on the machine. The optional die lip sealing device may be used to prevent adhesive drying in the slot of the applicator during periods of inactivity.

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 …….....7.5Kg (16.5 lbs)

Mounting ……M5x .8 screws/ universal bracket (optional)

Performance:

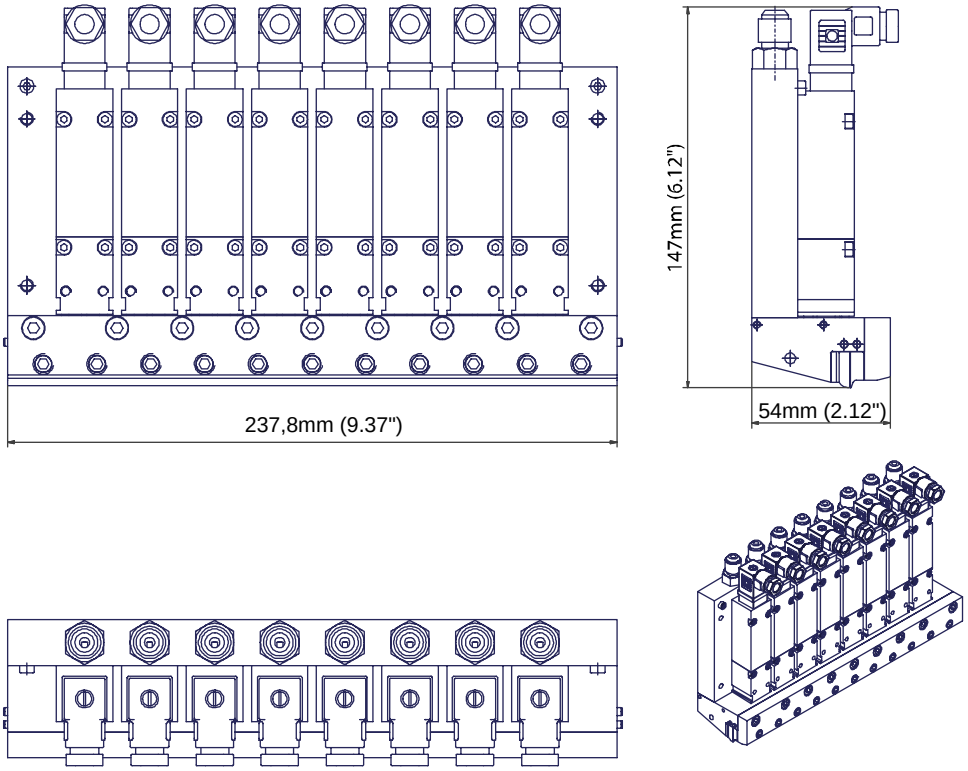
On/ Off times …… ….4 ms OFF/ 4 ms ON

Adhesive viscosity……300 to 3000 mPa. (300 to 3000 centipoise)

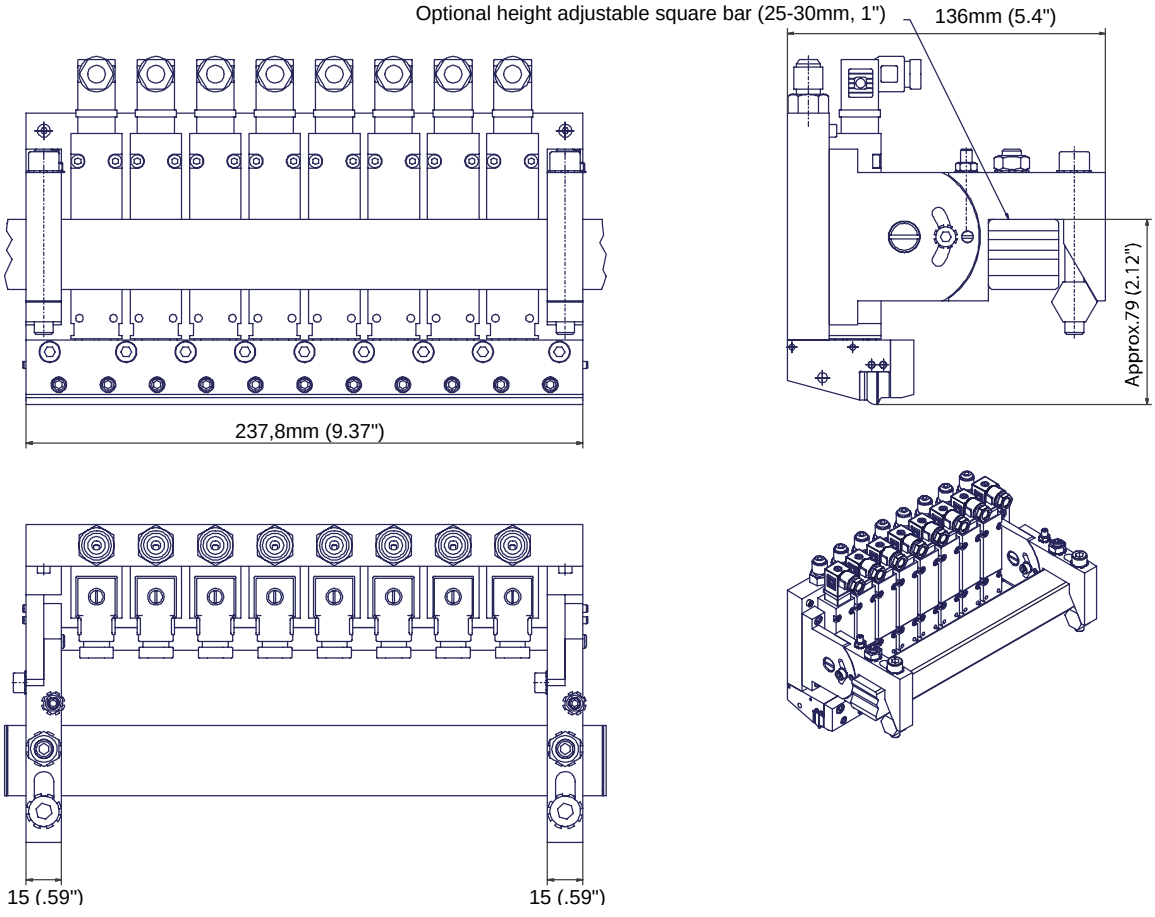
Adhesive pressure range…… 30 bar maximum (440 psi maximum)

Noise emission ……<70 dB (A)

Electrical control signal …… 24VDC nominal with 170VDC over excitation



DynaSpeed Dimensions



DynaSpeed with Universal Bracket Dimensions

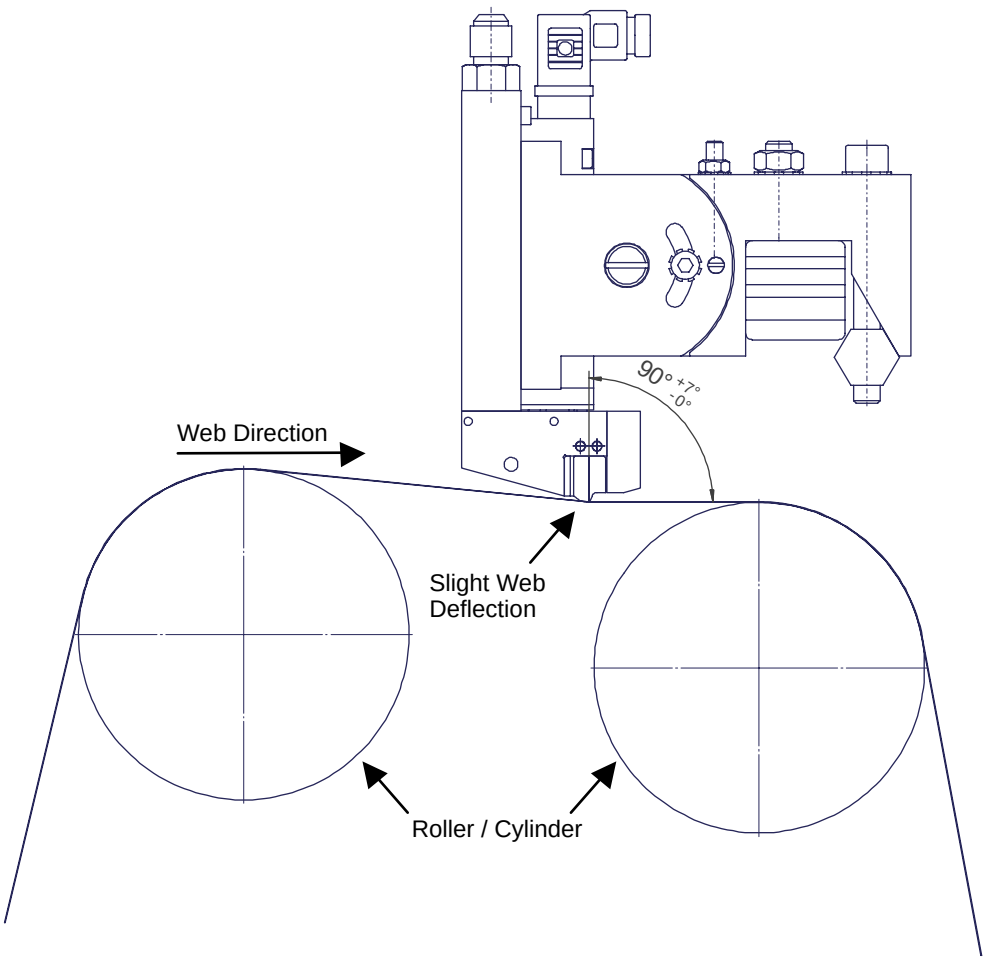
Chapter 2
SETUP

Fluid Fittings

The DynaSpeed fluid manifold provides ½ UNF male threads for each application module.

Adjusting the Application Head

The DynaSpeed should be mounted between two closely spaced idler rollers or drive cylinders. The head should be adjusted in height to press slightly into the substrate to give the needed tension on the material. The angle between the slot nozzle and the material moving out of the nozzle should be in a range of 90° +7°.

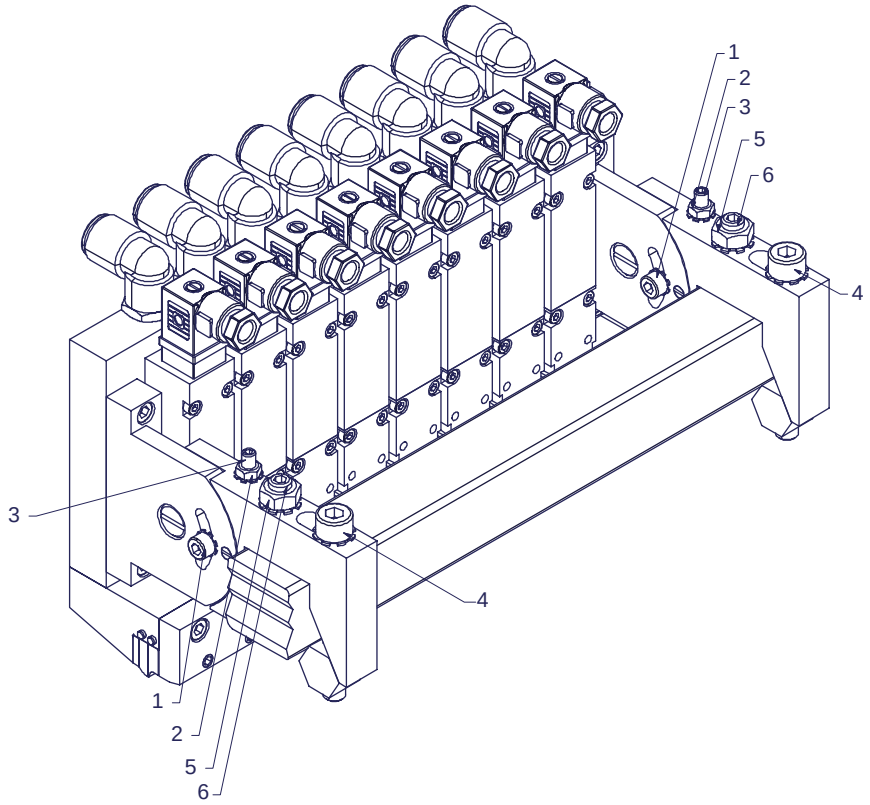


Adjusting DynaSpeed on the Web

Using the Universal Bracket

Mounting

Place the DynaSpeed applicator on a one inch square bar (25-30mm) and fasten the screws (Item #4) using a 6mm hex (Allen) wrench. The mounting bar should be height adjustable and vibration free.



Cross Web Adjustment

1) Look down the side of the DynaSpeed to check whether the slot nozzle edge is parallel to the roller.
2) If one side of the nozzle is too low, loosen the screw (Item #4) using a 6mm hex (Allen) wrench on the low side.
3) Loosen the jam nut (Item #5) on the low side using a 13mm wrench.
4) Tighten in the adjustment screw (Items #6) using a 4mm hex (Allen) wrench until the slot nozzle edge is parallel with the roller.
5) Re-tighten the nut (Item #5) and screw (Item #4) to secure the bracket assembly to the mounting bar.

Attention: Do not loosen the fasteners (Items #4, #5 and #6) on both sides of the DynaSpeed at the same time when making this adjustment.

Angle Adjustment

Adjust the DynaSpeed so the extrusion slot is positioned at a 90-degree angle to the substrate to be glued. Modify this angle as necessary (up to +7 degrees) to obtain the best cutoff and most consistent coverage by performing the following steps.

WARNING: Do not attempt this procedure while the machine is operating. Instead, stop the machine; make adjustments to the DynaSpeed bracketry and then attempt to operate the equipment after completing all adjustments.

1) Loosen the locking screws (Item #1) on both sides of the DynaSpeed using a 4mm hex (Allen) wrench.
2) Loosen the jam nuts (Item #2) on both sides of the DynaSpeed using an 8mm box wrench.
3) Loosen or tighten the adjustment screws (Item #3) using a 2.5mm hex (Allen) wrench until the desired angle is obtained. **NOTE: slightly lifting the DynaSpeed to remove pressure from the adjustment screws may facilitate the adjustment process**.
4) Re-tighten the jam nuts (Items #2).
5) Re-tighten the locking screws (Item #1).

Changing Shims, Die Lip Set and/or Distribution Plate

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

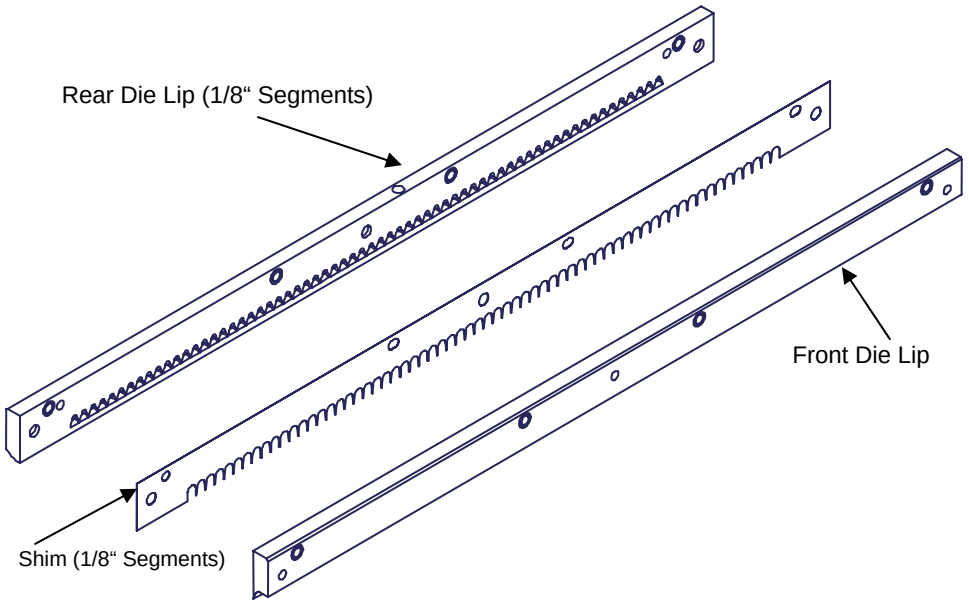
There are three different types of die lip sets, **Universal Standard**, **Universal Window** and **Dedicated Pattern**. Discussions below reference “cross-web patterns”, this means the width of each slot die sector across the web that is assigned to each one of the eight application modules that are part of the DynaSpeed Slot Die.

Universal Standard Die Lip Set

The Universal Standard Die Lip Set is comprised of 64 x 1/8" segments in both the rear die lip and the shim. This configuration allows for the employment of a large variety of cross-web patterns simply through the replacement of the fluid distribution plate. The advantages of this die lip set are that it is quite easy to change cross-web pattern configurations. A possible drawback is that the pattern configurations are limited to 1/8" increments and the narrow; 1/8" sectors of the shim can make cleaning the gap in the slot die more difficult. This type of die lip set is best suited for applications where changes to cross-web pattern are frequent.

WARNING: Never use a piece of shim stock or any other object as a tool to clear clogged segments of the die lip set. This practice will result in damage to the delicate teeth of the shim and detrimentally affect slot die performance.

Most clogs should be cleared by purging the head with higher glue pressure. Severe clogging should be remedied by disassembly of the die lip set.



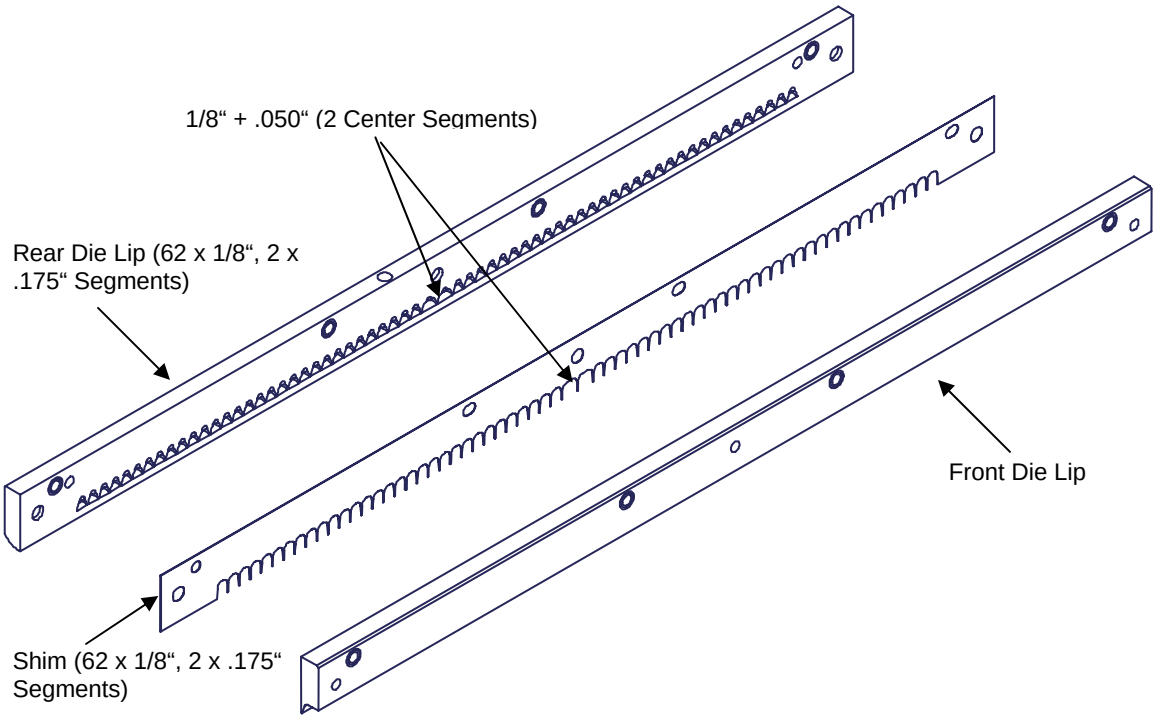
Universal Standard Die Lip Set

Universal Window Die Lip Set

The Universal Window Die Lip Set is very similar to the Universal Standard. It also is comprised of 64 segments in both the rear die lip and the shim, but the two centermost segments are .175" wide (i.e. 1/8" + .050"). The remainder of the 64 segments are 1/8" wide. The reason for the additional width of the two center segments is to provide a .050" gap around the left and right sides of standard window dimensions. This configuration accommodates a large variety of window widths simply through the replacement of the fluid distribution plate. The advantages of this die lip set are that it is quite easy to change to different window widths. A possible drawback is that the pattern configurations are limited to 1/8" increments and the narrow; 1/8" sectors of the shim can make cleaning the gap in the slot die more difficult. This type of die lip set is best suited for applications where changes of window width are frequent.

WARNING: Never use a piece of shim stock or any other object as a tool to clear clogged segments of the die lip set. This practice will result in damage to the delicate teeth of the shim and detrimentally affect slot die performance.

Most clogs should be cleared by purging the head with higher glue pressure. Severe clogging should be remedied by disassembly of the die lip set.



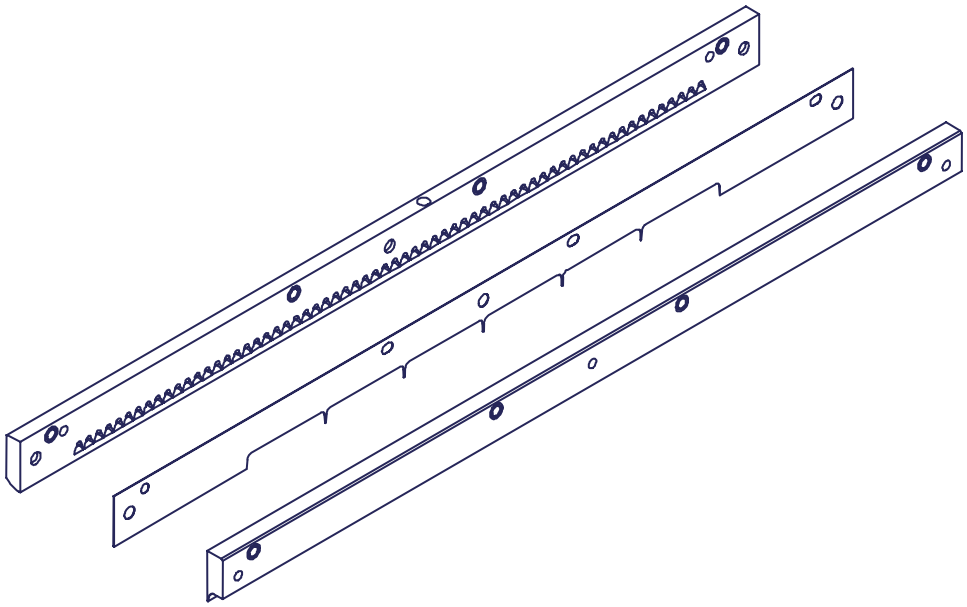
Universal Window Die Lip Set

Dedicated Pattern Die Lip Set

The Dedicated Pattern Die Lip Set has the shim cut to accommodate a specific cross-web pattern. Changing this pattern will require replacement of both the shim and the fluid distribution plate. The drawback of this design is the additional expense for replacing both the shim and distribution plate when a cross-web pattern change is required. The advantage is that cross-web sectors are not limited to 1/8" increments and the wider sectors make for easier cleaning of the gaps in the slot die. This type of die lip set is best suited for applications where changes to cross-web patterns are infrequent.

WARNING: Never use a piece of shim stock or any other object as a tool to clear clogged segments of the die lip set. This practice will result in damage to the delicate teeth of the shim and detrimentally affect slot die performance.

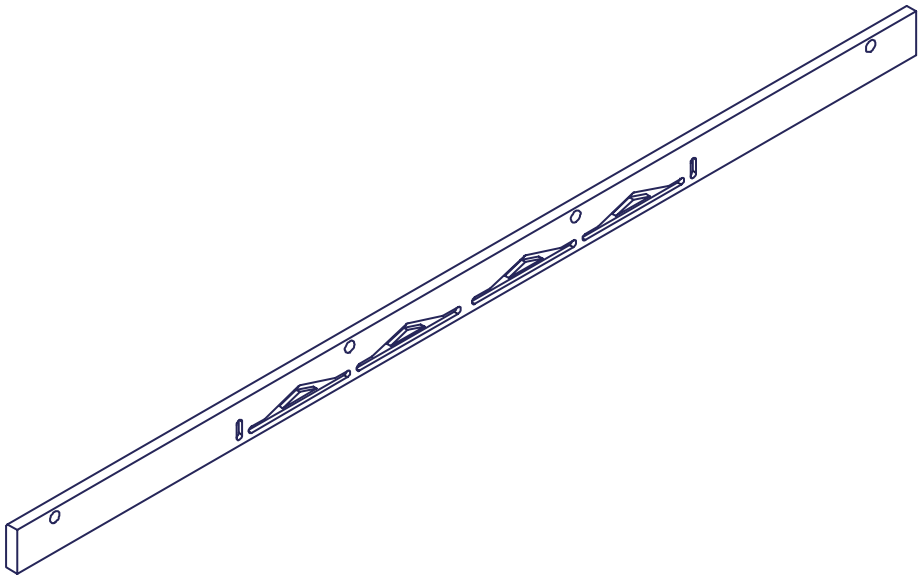
Most clogs should be cleared by purging the head with higher glue pressure. Severe clogging should be remedied by disassembly of the die lip set.



Dedicated Pattern Die Lip Set

Fluid Distribution Plate

The fluid distribution plate is mounted directly behind the die lip set. The distribution plate channels the adhesive from each application module to its assigned sector of the die lip set in an efficient manner for extrusion upon the substrate.



Four Inch Window Fluid Distribution Plate

Keep these simple rules in mind when attempting to change shims, die lip sets or distribution plates:

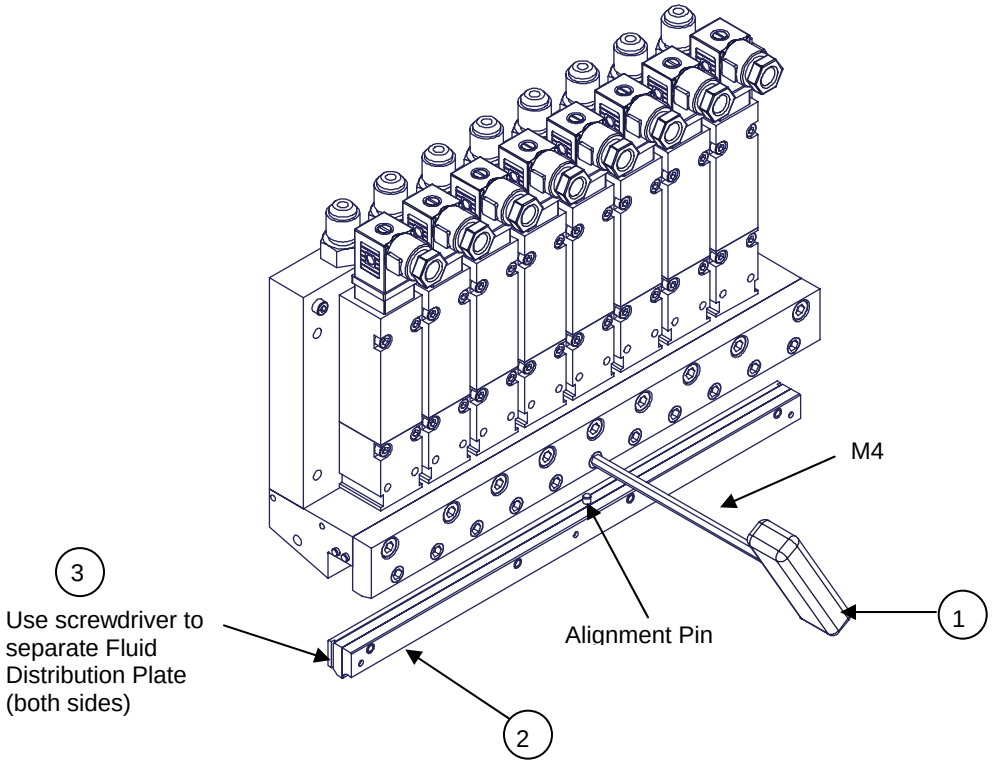
a) Shims cut to the same pattern, but of different thicknesses, can be replaced within the die lip set.

b) *For Universal Standard and Universal Window Die Lip Sets (see above):* the fluid distribution plate is the only part that must be changed in order to modify the cross-web pattern.

c) *For Dedicated Pattern Die Lip Sets (see above):* Both the shim and the fluid distribution plate must be changed in order to modify the cross-web pattern.

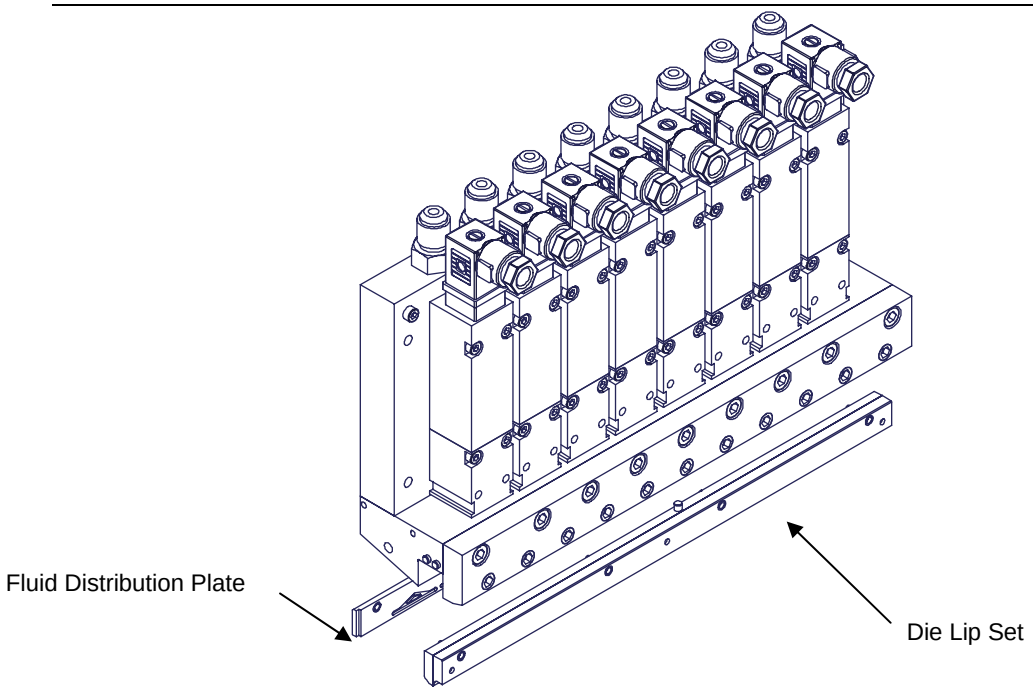
NOTE: **The Front and Rear Die Lips are manufactured as matched sets. As such, care must be taken not to mix parts from various sets with each other. These items are sold only as sets.**

Disassembly of the Die Lip Set and Fluid Distribution Plate



Perform the following steps to change the die lip set and the fluid distribution plate:

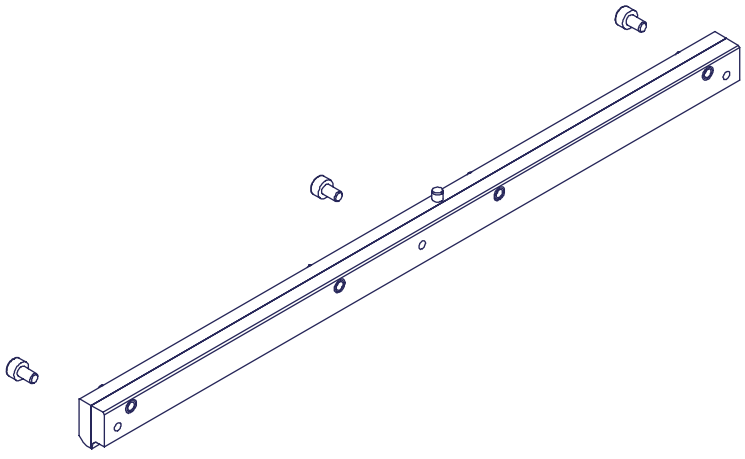
1) Loosen the eleven pressure screws approximately one revolution using a 4mm hex wrench
2) Slide out the die lip set/distribution plate from the bottom side of the application head.
3) The distribution plate is not screwed to the die lip assembly. There are four dowel pins holding the distribution plate in position. Carefully separate the distribution plate from the die lip set using a thin-bladed screwdriver or other such tool. Take care not to scratch or nick the mating surfaces of either the distribution plate or die lip set during this procedure.



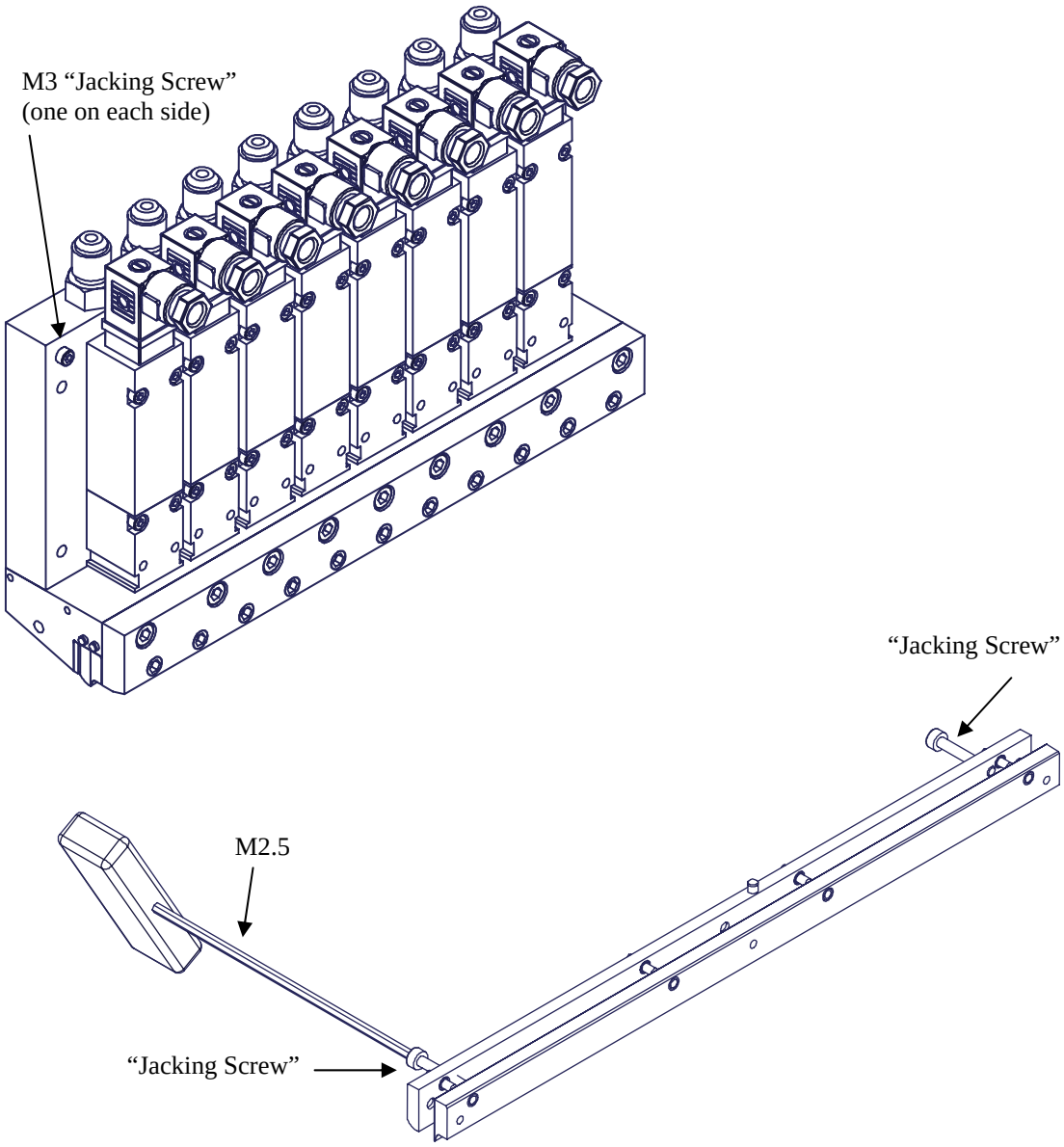
Disassembly of Die Lip Set (Changing or Cleaning Shims)

Perform the following steps to disassemble the die lip set:

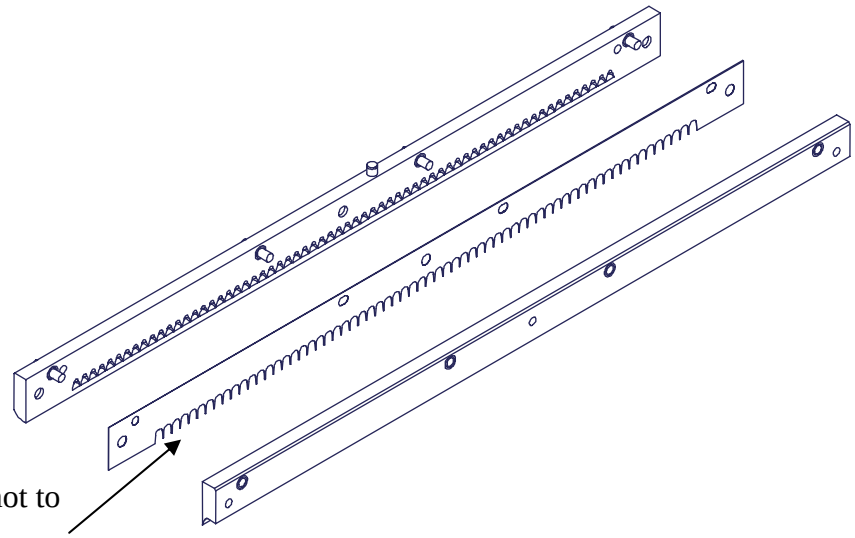
1) Disassemble the die lip set and fluid distribution plate from the DynaSpeed applicator, as discussed above.
2) Remove the three retaining screws from the rear die lip using a 2.5mm hex wrench.



3) Use the two M3 screws (supplied with the DynaSpeed) in the tapped holes located next to the removed screw holes to jack the rear die lip plate from the front die lip plate.



4) Carefully disassemble the die lip set without scratching or nicking any surface.



5) Remove the shim from the dowel pins taking care not to bend the shim, especially the pointed sector dividers.

WARNING: Extreme care must be taken not to bend or otherwise damage the delicate teeth of the shim as this will detrimentally affect the slot die performance.

Reassembly

1) Reverse the order of the disassembly instructions provided above.
2) Slide the die lip assembly and the fluid distribution plate together using the four alignment dowel pins as guides.
3) Properly position the single dowel pin on top of the die lip/distribution plate assembly into the DynaSpeed slot die and push it completely up into the applicator body.
4) Re-tighten the eleven pressure screws using a 4mm hex wrench. Tighten from the center outward to the right and left sides of the DynaSpeed applicator.

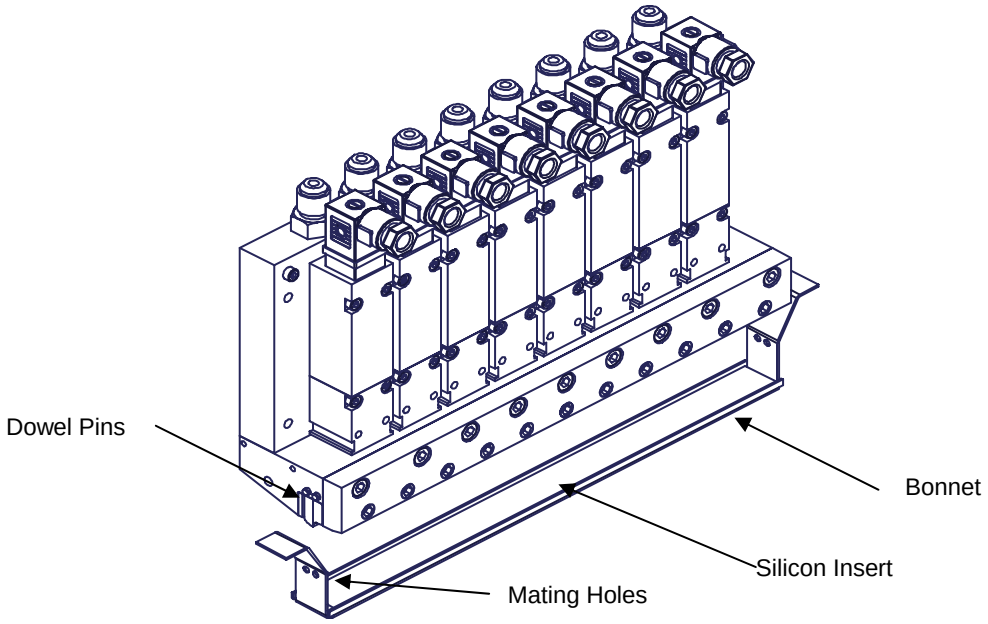
Using the Die Lip Sealing Bonnet, PN 11311 (Option)

The die lip sealing bonnet is an option that is offered as a convenient means to help prevent adhesive from drying in the die lip during periods of machine inactivity. The bonnet consists of a stainless steel strap that has a silicone strip attached to the surface

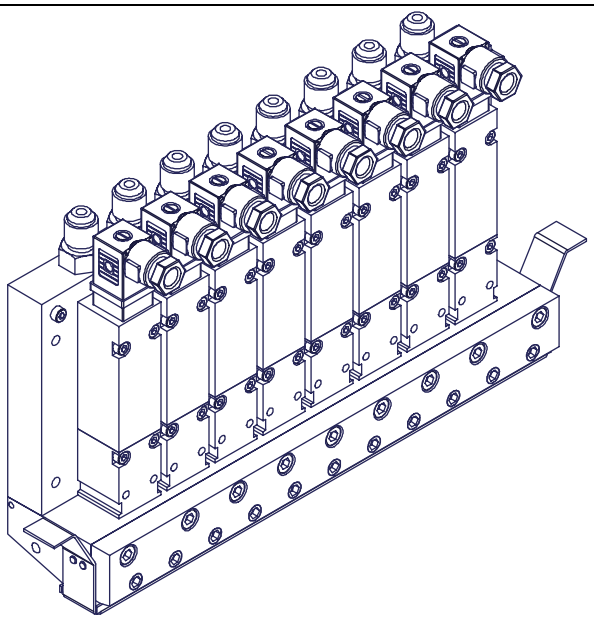
that contacts the open die lip. Proper installation of the bonnet results in the silicon strip being pressed tightly against the open die lip, sealing it from the air and inhibiting the drying of the adhesive in the die lip.

This strap should be installed when system shutdowns are anticipated to last more than just a few minutes. The strap should prove an effective means of sealing the die lip opening for anywhere from a few minutes to a few hours, depending upon the properties of the adhesive being used. It is strongly recommended that the DynaSpeed Slot Die be completely flushed with water if system shutdown is anticipated to last for more than four to eight hours. This will prevent adhesive drying in the die lip during the shutdown.

The bonnet is easily installed on the applicator by aligning the holes on the right and left straps of the bonnet to the dowel pins on both sides of the DynaSpeed body. It is easiest to latch the bonnet's mating holes to the dowel pins on one side of the body, then slide the bonnet into place on the opposite side of the body until the mating holes on that side latch onto the dowel pins.



Bonnet/DynaSpeed (Disassembled)



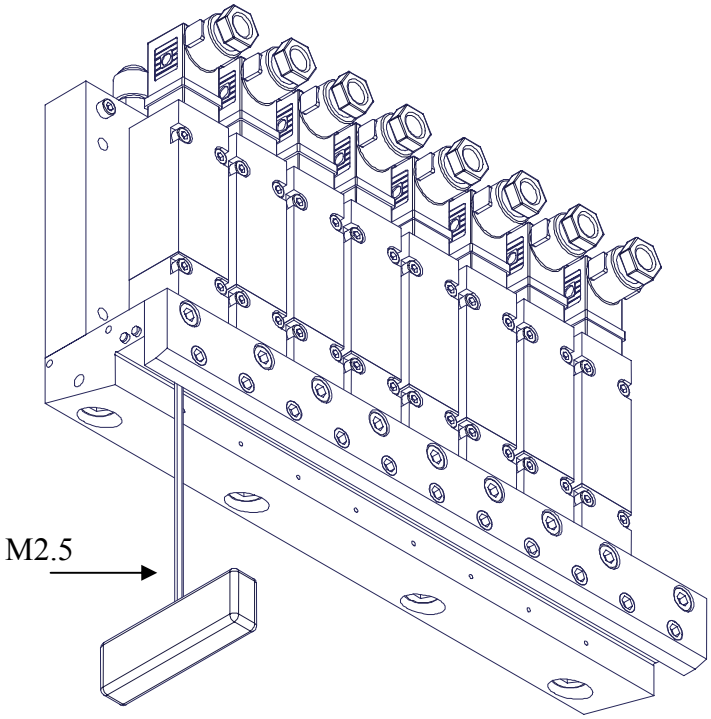
Bonnet/DynaSpeed (Assembled)

Chapter 3
MAINTENANCE

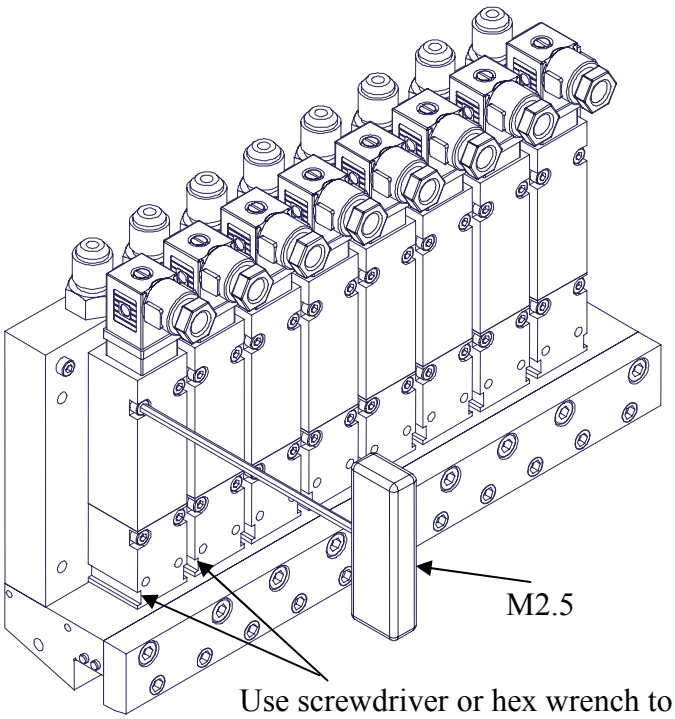
Replacing an Application Module

Perform the following steps to replace any one or all of the eight application modules on the DynaSpeed Slot Die:

1. It is best to completely flush the DynaSpeed applicator with water prior to any disassembly procedure, if at all possible.
2. Disassemble the Die Lip Set/Fluid Distribution Plate assembly from the DynaSpeed body (see Chapter 2 for details).
3. Observe in the channel of the DynaSpeed body where the Die Lip Set/Fluid Distribution Plate was inserted the presence of sixteen (16) socket head cap screws. Two of these screws are securing each of the eight modules mounted on the applicator body.

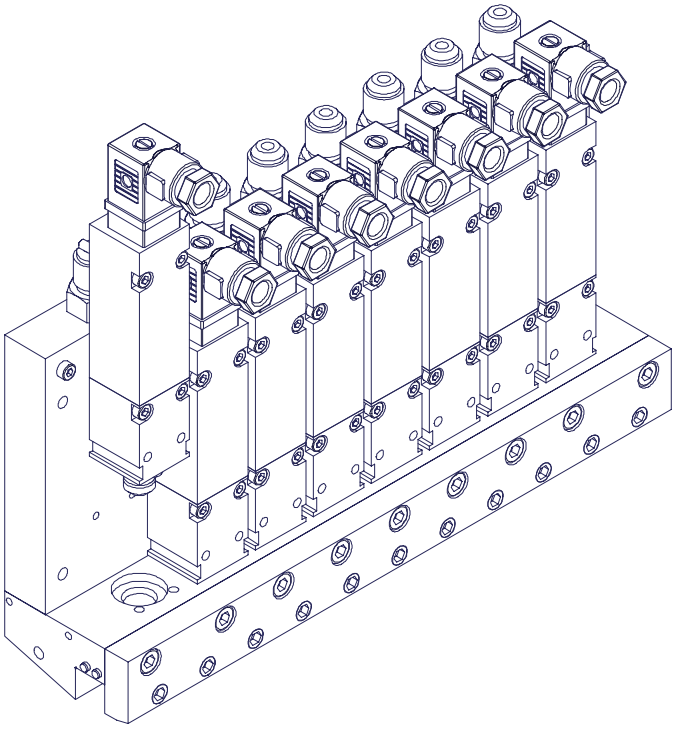


4. Loosen the two socket head cap screws securing the module that needs to be removed using a 2.5mm hex wrench.
5. Observe there are four socket head cap screws that secure the face of <u>each</u> module to the back of the DynaSpeed body.



6. Loosen and remove the four screws and lock washers secureing the module that needs to be removed using a 2.5mm hex wrench. Take care not to misplace these screws or washers.
7. Carefully slide the module from the base of the DynaSpeed body. This may be a bit difficult because of the O-ring installed around the outer circumference of the seat assembly. There are slots on the right and left sides of each module. Use a small screwdriver or hex wrench in these slots, if necessary, to assist in lifting the module from the applicator base assembly.

WARNING: Do not attempt to pull the module from the die body using only the electrical connector on top of the module. This will cause the two parts of the module to separate and possibly cause internal damage to the module.



8. At this point you can clean and rebuild the existing module with a new needle and seat or completely replace the module.
9. Prior to re-assembly of the module to the base:
   i. Check the DynaSpeed base assembly and assure it is as clean as possible, especially the area where the module seats into the DynaSpeed base assembly.
   ii. Check the O-ring around the outside of the module seat and on the back side of the module. Assure they are in place, are not damaged and lubricate with an approved O-ring lube.
10. Slide the module into the base until is snaps into place.
11. Loosely re-assemble all screws and washers securing each module to the DynaSpeed body.
12. Completely tighten the two screws that secure the bottom of the module to the DynaSpeed base.
13. Completely tighten the four screws and washers that secure the face of the module to the back of the DynaSpeed base.
14. Re-install the Die Lip Set and Fluid Distribution Plate assembly.

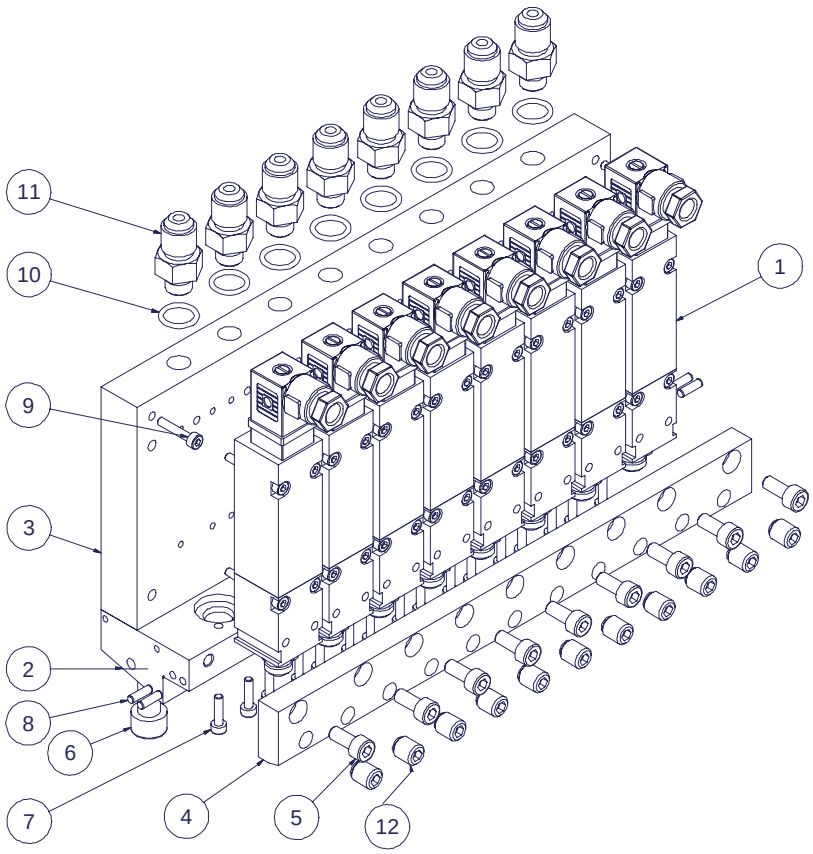
Troubleshooting Guide

Problem	Possible Cause	Solution
No, or insufficient, adhesive flowing out of slot nozzle	1. No or low AC voltage to pattern control	*Check AC power supply and electrical connections to pattern control unit*
	2. No or low adhesive pressure	Check and adjust pump and/or fluid regulator
	3. No drive output from pattern control to applicator modules	a. Manually PURGE the channel to see if it will work. b. Check drive cable from pattern control to module for damage c. Check to assure channel is programmed for 170VDC over-excitation d. Check for STOP condition on pattern control e. Check for proper TRIGGER input f. Check for "low speed" condition on pattern control g. Check that channel is assigned to proper trigger input
	4. Defective module coil	Check impedance across parallel electrical connectors with ohmmeter to assure 63 ±3.5Ω. Replace defective module.
	5. Dry adhesive in slot nozzle	a. Purge die lip by using as high a glue pressure as possible. b. Disassemble and clean die lip set.

	6. Shim is too thin for the glue being used.	Use a thicker shim or a different glue. ▲**CAUTION:** Never use a piece of shim stock or any other object as a tool to clear clogged segments of the die lip set. This practice will result in damage to the delicate teeth of the shim and detrimentally affect slot die performance. Most clogs should be cleared by purging the head with higher glue pressure. Severe clogging should be remedied by disassembly of the die lip set.
Poor pattern cut off	1. Improper adjustment of applicator on the web.	Check adjustment of applicator, refer to Chapter 2 of this manual
	2. Too much adhesive is being applied.	a. Reduce adhesive application pressure. b. Use a thinner shim.
	3. Adhesive build-up on the die lip	a. Clean the die lip. b. Re-adjust applicator on the web.
	4. Air in the fluid lines or in the application modules	a. Purge ALL application modules to remove air from the fluid lines b. If necessary, remove the die lip set and fluid distribution plate assembly and purge all application modules until the air is removed.
	5. Die lip set and fluid distribution plate not properly seated in the	Loosen the eleven pressure screws and properly seat the die lip set and fluid distribution plate into the

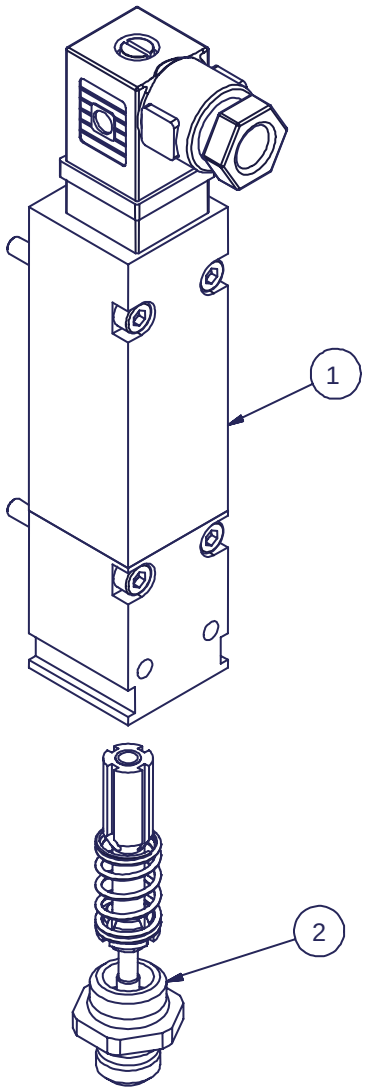
	DynaSpeed body.	DynaSpeed body.

Chapter 4
COMPONENT ILLUSTRATIONS & BILLS OF MATERIAL



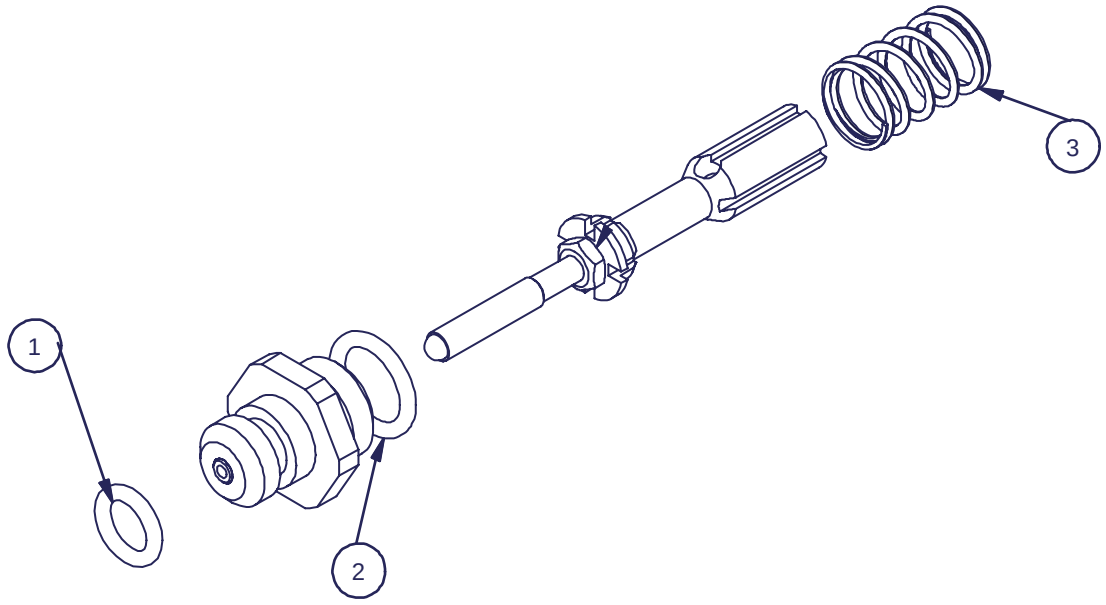
DynaSpeed Assembly PN 11402

Item-No.	Qty.	Part Number	Description
1	8	70.04304.707	DynaCold module
2	1	11301	Nozzle body
3	1	11300	Manifold
4	1	11302	Pressure plate
5	9	00.10512.912	Hexagon socket head cap screw
6	4	00.10816.912	Hexagon socket head cap screw
7	16	00.10312.912	Hexagon socket head cap screw
8	4	03.20310.873	Parallel pin
9	2	00.10316.912	Hexagon socket head cap screw
10	8	06.01082.013	O ring
11	8	07.04000.122	Hose connection Fitting
12	11	00.10810.605	Ball pressure screw



Application Module PN 70.04304.707

Item-No.	Qty.	Part Number	Description
1	1	70.04000.706	Application module without seat/armature
2	1	70.04000.711	Seat/armature assembly (sold and replaced only as set)

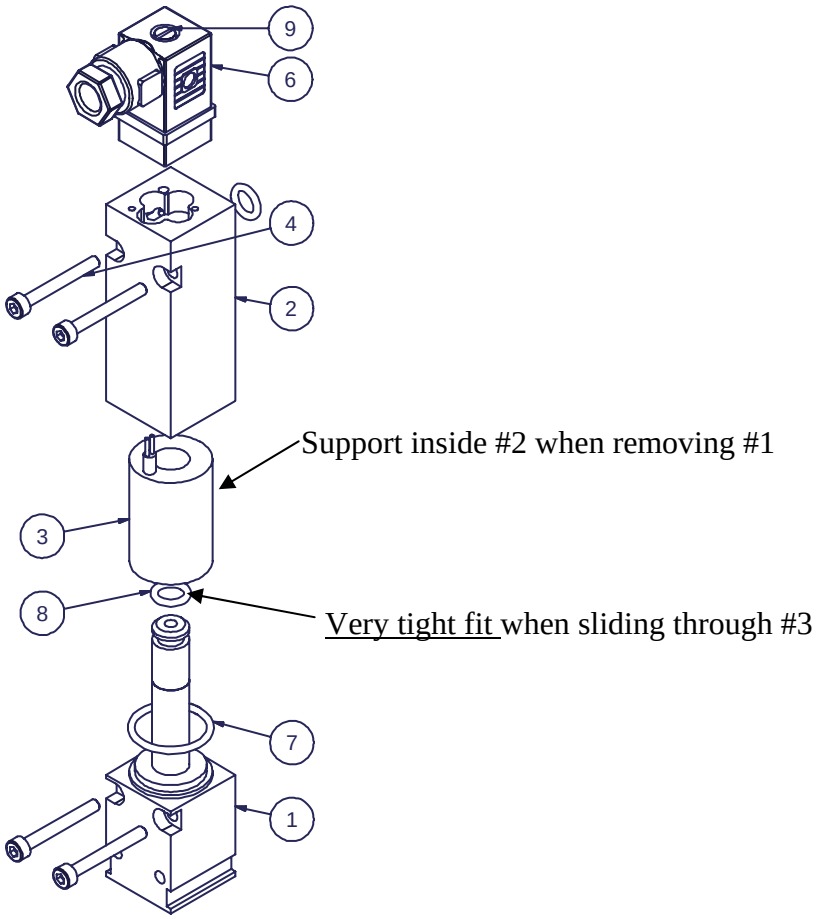


Seat/Armature Assembly PN 70.04000.711

Item-No.	Qty.	Part Number	Description
1	1	06.00765.011	O-Ring
2	1	06.00925.012	O-Ring
3	1	04.11009.098	Pressure spring

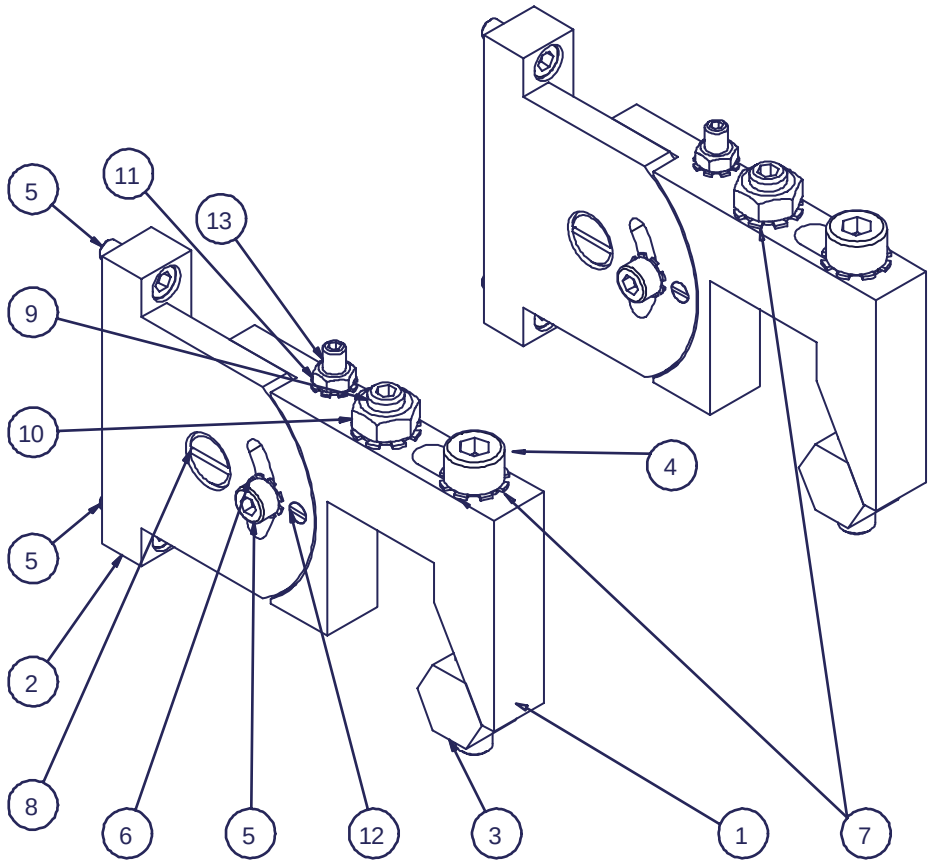
Note: Needle and seat sold only as a matched set.

▲ CAUTION: Extreme care must be exercised when separating the Armature Housing (Item #1) from the Coil Housing (Item #2). The Coil (Item #3) must be supported in the Coil Housing during disassembly to prevent the coil wires from being damaged.



Application Module PN 70.04000.706

Item-No.	Qty.	Part Number	Description
1	1	70.04000.121	Armature housing
2	1	70.04000.120	Coil housing
3	1	05.54110.004	Coil
4	4	00.10325.912	Hexagon socket head cap screw
5	1	06.00607.010	O-Ring
6	1	05.01003.104	Connector
7	1	06.01717.017	O-Ring
8	1	06.00607.010	O-Ring



Universal Bracket Assembly PN 74.50000.701

Item-No.	Qty.	Part Number	Description
1	2	74.50000.102	Swivel arm
2	2	74.50000.101	Holder
3	2	74.50000.103	Hexagon
4	2	00.10870.912	Hexagon socket head cap screw
5	6	00.10512.912	Hexagon socket head cap screw
6	4	02.70510.797	Lock Washer
7	4	02.70840.797	Lock Washer
8	2	00.10604.923	Shoulder Screw
9	2	00.10830.913	Hexagon socket set screw
10	2	01.00800.934	Nut
11	2	01.00500.934	Nut
12	2	00.10606.926	Slotted set screw
13	2	00.10535.913	Hexagon socket set screw