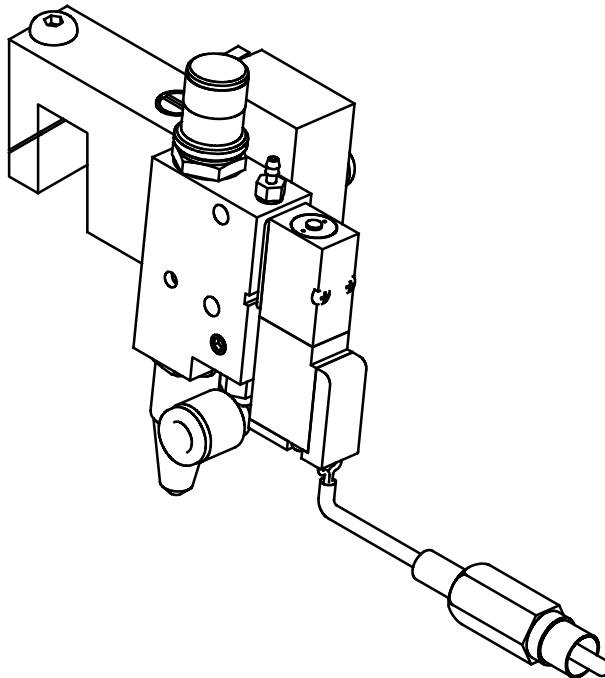




Adhesive Application Solutions • ISO 9001 Certified

OPERATIONS AND SERVICE MANUAL

DH12 SERIES COLD GLUE ADHESIVE APPLICATORS



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

SAFETY PRECAUTIONS for COLD GLUE SYSTEMS

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.

Make certain the power is turned OFF before handling electrical components and connections. Where any doubt exists as to the presence of electricity, test it with a voltmeter.

When equipment must be serviced with electrical power ON, insulate yourself from electrical ground by standing on dry rubber, wood or other insulating material.

High Pressure

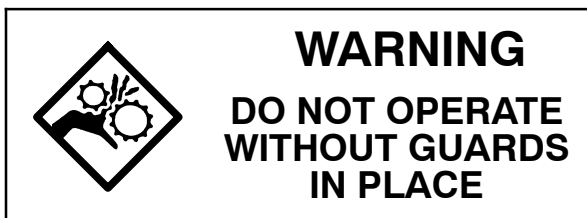


To avoid personal injury, do not operate the equipment without all covers, panels and safety guards properly installed.

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

Always verify that the air and fluid pressures have been relieved in each component you are servicing when disassembling a pressurized system. Actuate applicators until pressure has been relieved.

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



It is very important that you PROTECT YOUR EYES. Wear safety glasses with side shields which conform to ANSI Z87.1 or EN166.

Always wear steel-reinforced safety shoes.

Safe Installation and Operation

If harsh or unusual ambient conditions are present, such as extreme temperature, humidity, vibration, dust, etc. contact your ITW Dynatec representative before operating the equipment. The cold glue applicator includes general purpose electrical equipment and should not be used in a wet or hazardous environment.

To avoid possible failure of hoses, make sure all hoses are routed to avoid kinking, tight radius turns (8" or less) and abrasive contact.

Do not operate leaking equipment even if the leak is minor.

Never step on adhesive hoses or electrical wires.

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.

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.

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.

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

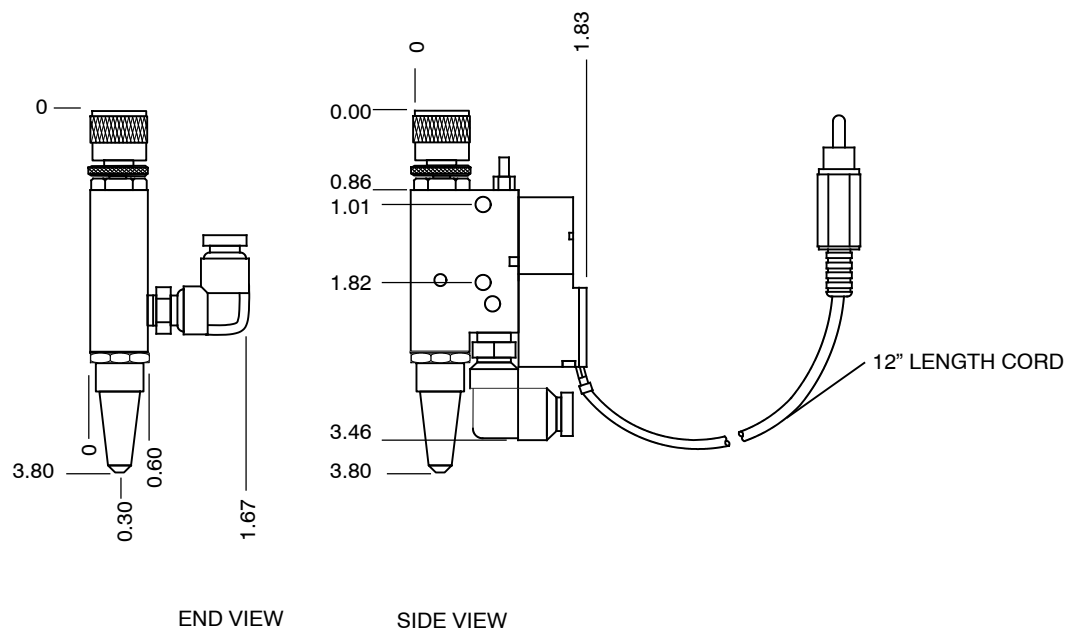
ITW Dynatec’s DH12 Series Applicators are electrically-triggered, air-actuated applicators designed for precise dispensing of ambient temperature adhesives.

The applicator employs a “zero-cavity” nozzle to reduce tip clogging. It is designed primarily for continuous web gluing environments, such as business forms, web press or other similar situations.

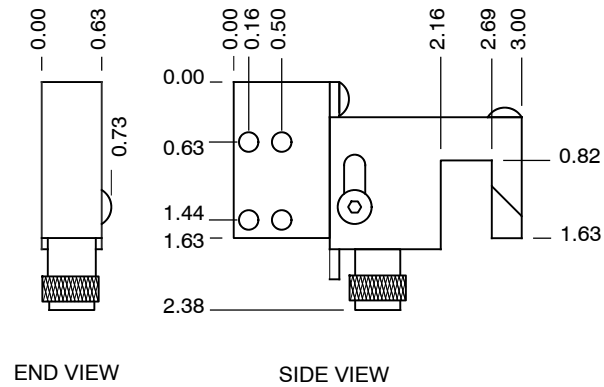
Specifications

On-Off cycle capability	up to 3000 cycles per minute
Adhesive pressure range	10 to 100 psi (0.68 to 6.8 bar)
Air pressure requirement	60 to 80 psi (4.0 to 5.4 bar)
Air consumption	0.1 scfm (2.8 std. liters/ min)
Electrical requirement, solenoid air valve	24 volts direct current
Weight	7.0 oz (0.20 kg)
Orifice Sizes	.015”, .031”
Adhesive property requirements:	
Water-base synthetic resin emulsion	
Solids content: 50 - 59%	
Viscosity range: 300 - 3,000 cps	
Clean-up solvent: 10% vinegar/ water solution	

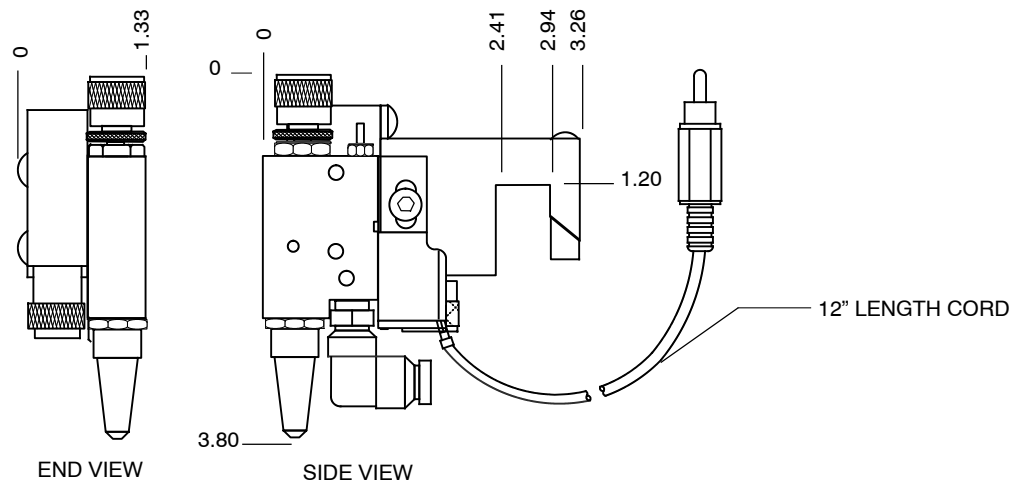
DH12B (PN 106105 or 113745)



BRACKET (PN L15320)



DH12B with Bracket (PN L15320)



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Chapter 3 SET-UP AND INSTALLATION

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.

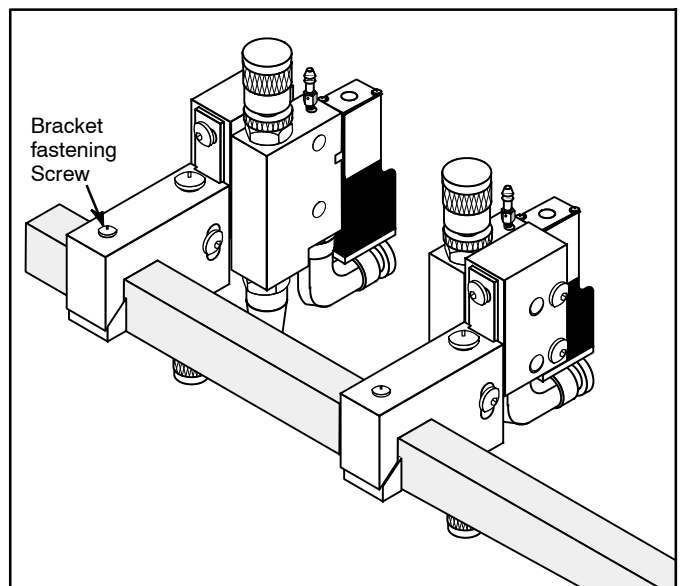
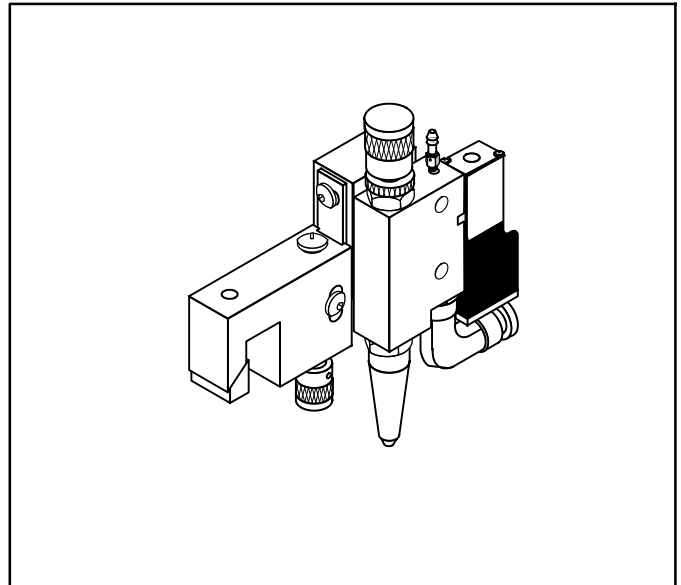
Applicator Installation Using Bracket L15320

Attach the applicator to the mounting bracket in either of two positions, depending upon space requirements, with the screws provided with the bracket. The heads are typically mounted so that the electrical and adhesive line connections face *away* from the cross bar. The heads are mounted on the inside of the mounting brackets (see section titled “Angular Adjustment”) when mounting two heads close together.

The heads have three dimensional position adjustment capabilities when attached to the mounting bracket, instruction on this adjustment follows. All adjustments are made using a 1/8” hex (Allen) wrench.

Horizontal Adjustment

The bracket is designed to mount on 1/2” rectangular bar stock. Rotate the fastening screw counter-clockwise until clearance is sufficient to mount the bracket to the cross bar. Properly position the applicator/bracket assembly on the cross bar and tighten the fastening screw until it is tight with the bar.



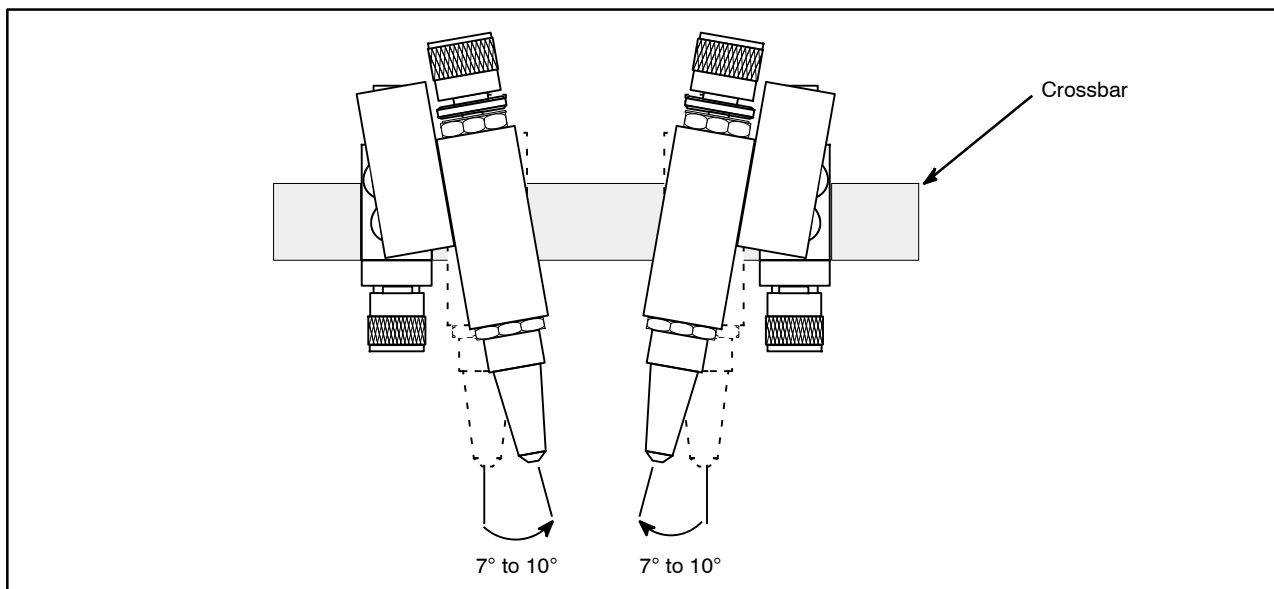
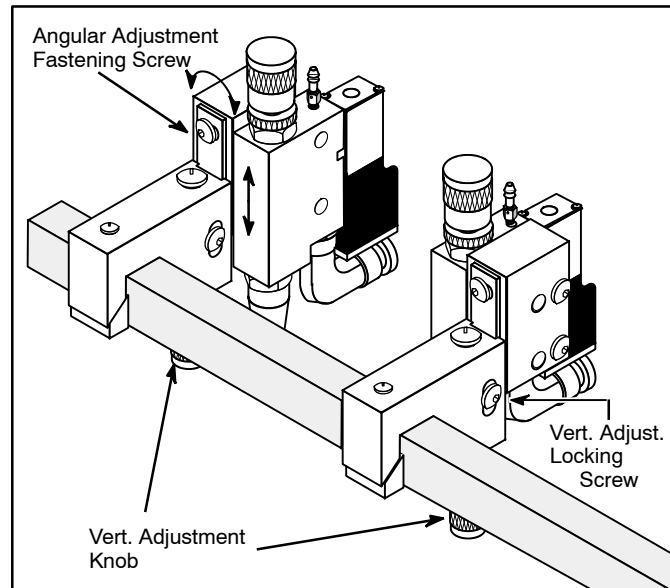
Vertical Adjustment

Precise vertical adjustment is possible by loosening the height adjustment fastening screw and rotating the height adjustment knob until the desired vertical position is obtained. Total height of vertical adjustment is approximately 0.4 inches. Be certain to retighten the fastening screw once the desired vertical position is achieved.

Angular Rotation

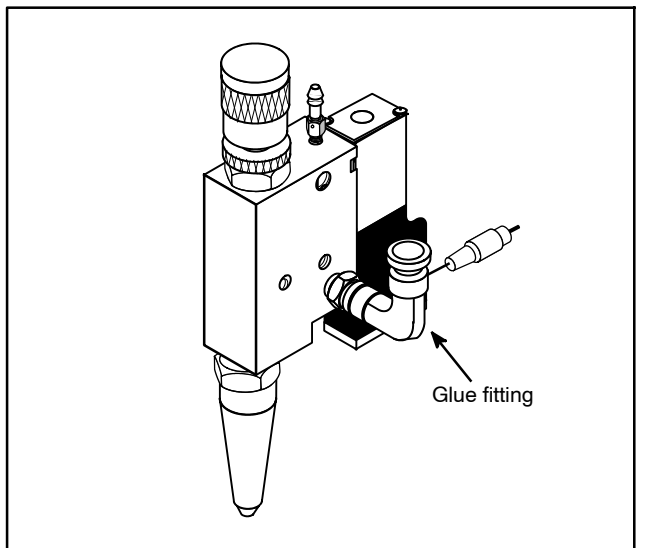
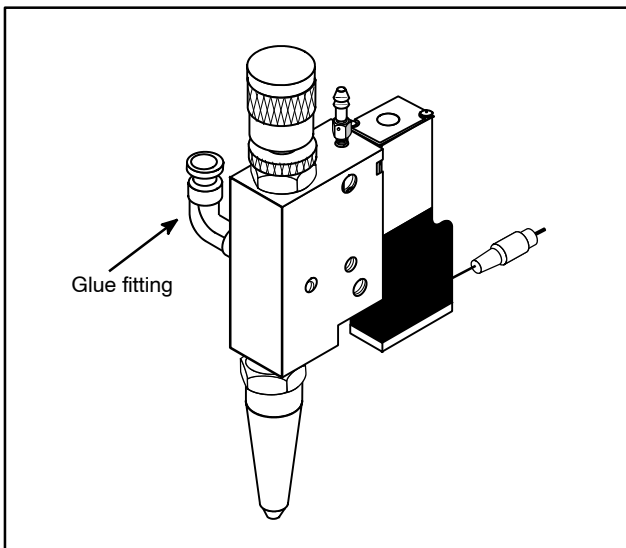
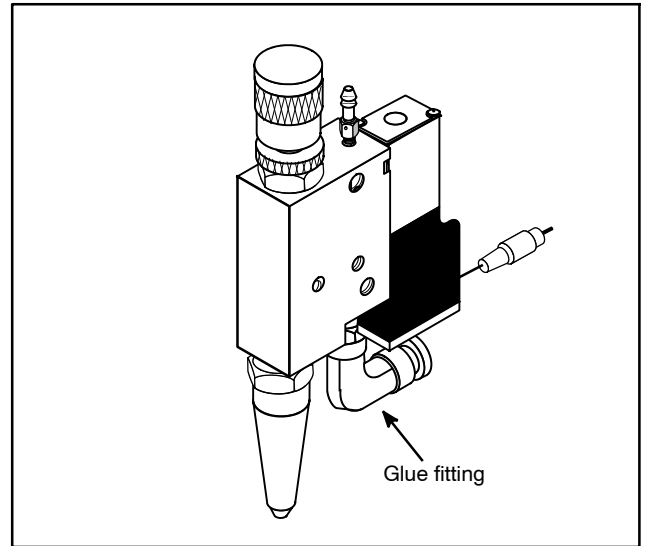
The applicator may be rotated on the bracket by loosening the angular adjustment fastening screw and rotating the applicator to the desired angle (maximum of 15° from vertical). Retighten the fastening screw once the desired angular position is achieved.

Note: Typical angular rotation for contact applicators on a continuous web is 7° to 10° from vertical.



Glue Inlet Positions

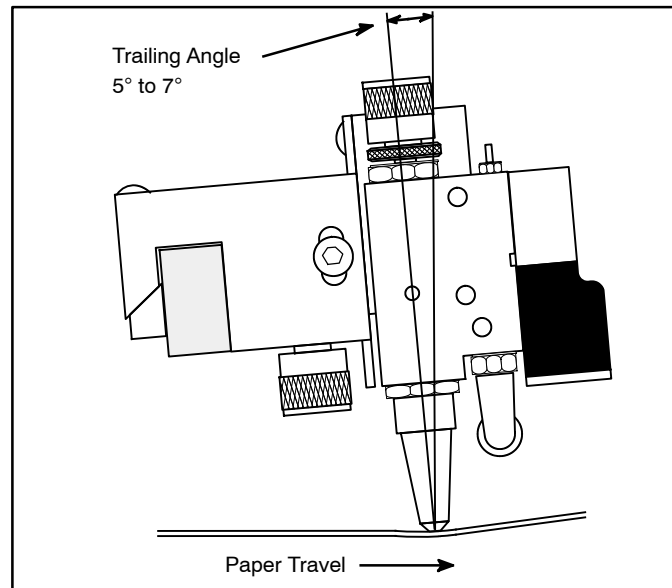
The DH12 body allows the 1/4" tube glue fitting to be located in any of three different positions, as indicated below. Position the glue fitting as necessary to meet installation requirements. Use thread sealant on all set screws that must be re-positioned.



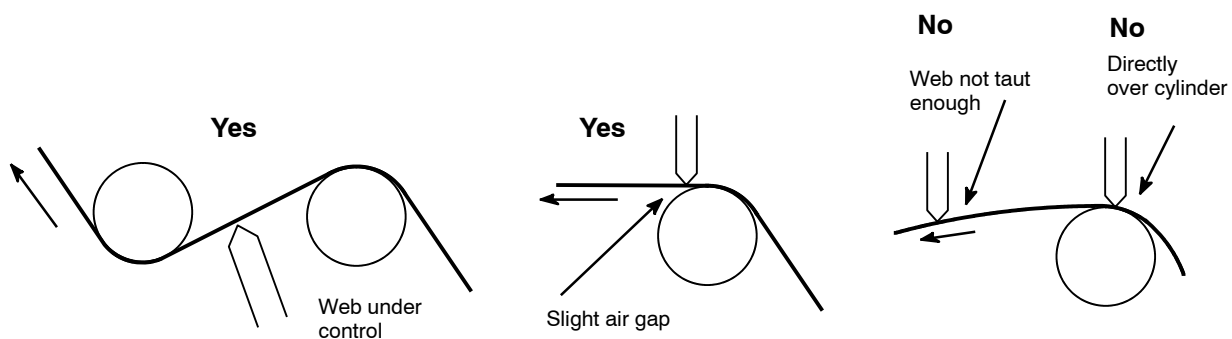
Contact Applications

The DH12 applicators are shipped completely assembled and ready for installation. They should be vertically positioned so that they push the substrate being glued to create a *slight* bow effect; this will create a fine-line, bead pattern. *Permanent creasing of the substrate after passing under the applicator is an indication that the head is positioned too low.* A trailing angle of 5° to 7° should be present between the heads and the substrate *in addition to the crossweb angular rotation discussed on the previous pages.* This acts as a relief so as to not restrict the flow of glue from the nozzle orifice. Failure to provide this relief may cause intermittent glue flow under tight web conditions.

The applicator should be mounted at a position where the web is under taut control by the machine; a position where the web is not subject to vertical movement that would affect contact between the applicator nozzle and the web. Ideal positions are between two closely spaced cylinders or just beyond the crest of a single cylinder. The applicator should be positioned so there is a slight air gap between the web and the supporting machinery to avoid excessive nozzle wear.



Applicator Head Mounting



Applicator Service Connections

The DH12 requires three service connections

- 1/8" tubing to supply pressurized air for head actuation;
- 1/4" tubing to supply pressurized glue; and
- a 24 VDC trigger signal to power the solenoid valve.

Air Supply Tubing

The air line is connected by twisting the 1/8" tubing on to the barbed connector as far as it will go. Removal of this tubing is most easily accomplished by cutting it slightly above the end of the barbed connector and using a utility knife to slit the tubing remaining on the barb.



CAUTION: Never re-use the portion of tubing removed from the barb. Cut an additional 1/2" from the end to assure fresh tubing will be stretched over the barb when it is replaced.



WARNING HIGH PRESSURE

Be certain the air lines are depressurized prior to removal from the applicator.

Glue Supply Tubing

The glue supply tubing is inserted into the 1/4" quick-connect fitting.



CAUTION: The tubing must be completely inserted into the connector (approximately 1/4") to assure correct sealing. Do not "test" the connection by pulling on the tubing as this may break the connection seal.

Removal of this tubing is accomplished by pressing the green ring surrounding the tubing inward while pulling the glue line outward from the fitting.



CAUTION: Be certain to cut off approximately 1/4" from the end of the tubing to assure a fresh piece is inserted into the fitting when reconnecting the glue line. A previously inserted tube end may not seal properly.



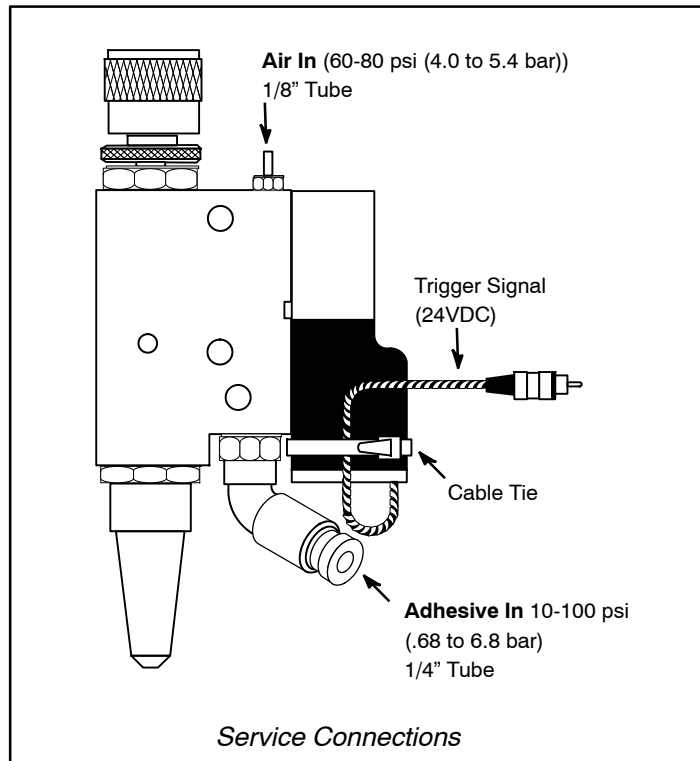
WARNING HIGH PRESSURE

Be certain the glue lines are depressurized prior to removal from the applicator.

24 VDC Trigger Signal

A 24 VDC trigger signal is supplied to the applicator via a 12-inch, 2-wire cable terminated with an RCA male connector pre-assembled to the solenoid valve. The valve is *not* polarity sensitive. Easy-to-assemble, quick-connect cables are available from ITW Dynatec for interconnection of the valves with ITW-supplied pattern controllers. Cutting off the RCA male connector allows a 2-wire connection into a customer-supplied timer.

NOTE: A cable tie is included with the applicator for additional strain relief to avoid damage to the solenoid's electrical connections under abusive operating conditions.



Flow Rate Adjustment

Adjusting the flow rate is the final step prior to commencing operation.

The adhesive flow rate is adjusted by changing the amount of needle travel and by changing glue pressure. Needle stroke adjustment is performed in the following manner:

1. Loosen the lock nut beneath the Needle Stroke Adjustment Knob by turning it clockwise with your fingers.



CAUTION: Do not loosen the retaining nut below the lock nut as this will cause air leakage from the applicator.

2. Turn the adjustment knob clockwise until it is *lightly* finger-tight, this “fully seats” the needle, allowing zero needle stroking distance.



CAUTION: Over-tightening the Needle Stroke Adjustment Knob will result in damage to the fluid tip and possibly the needle/piston assembly.

3. Turn the adjustment knob counter-clockwise between 1 and 1.5 revolutions.
4. Tighten the lock nut by turning it counter-clockwise with your fingers until it is tight against the bottom of the adjustment knob.

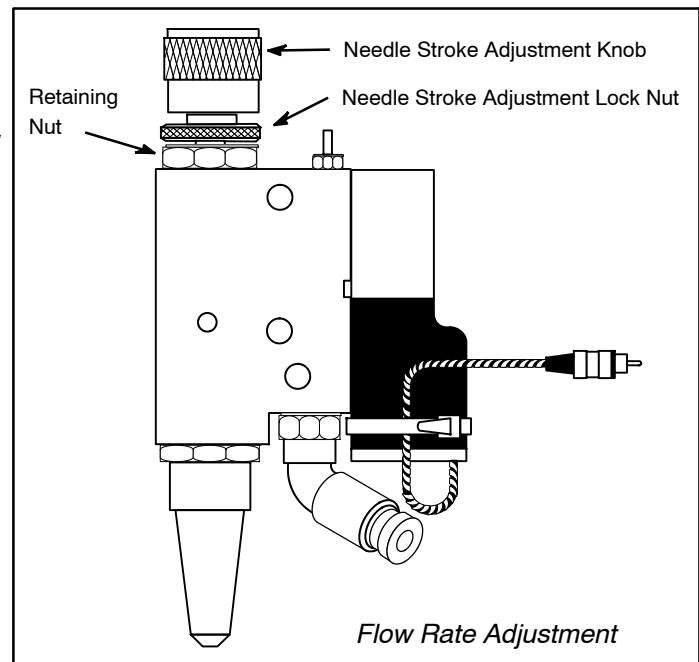
This adjustment should provide a good starting point for flow rate adjustment. The next step is to adjust the glue pressure so that the glue lines are consistent during operation.

Further fine-tuning of needle stroke adjustment may be required to balance the flow from several applicators or for consistent operation over varying speeds. Clockwise rotation of the adjustment knob reduces flow rate and counter-clockwise rotation increased flow rate.



CAUTION: Setting the Needle Stroke Adjustment Knob more than 2.5 revolutions from the “fully seated” position may cause premature seal wear and should be avoided.

CAUTION: Be certain the adhesive being used meets the requirements listed in Chapter 2 “Specifications” and is free of dirt or other contaminants.



Preventive Maintenance

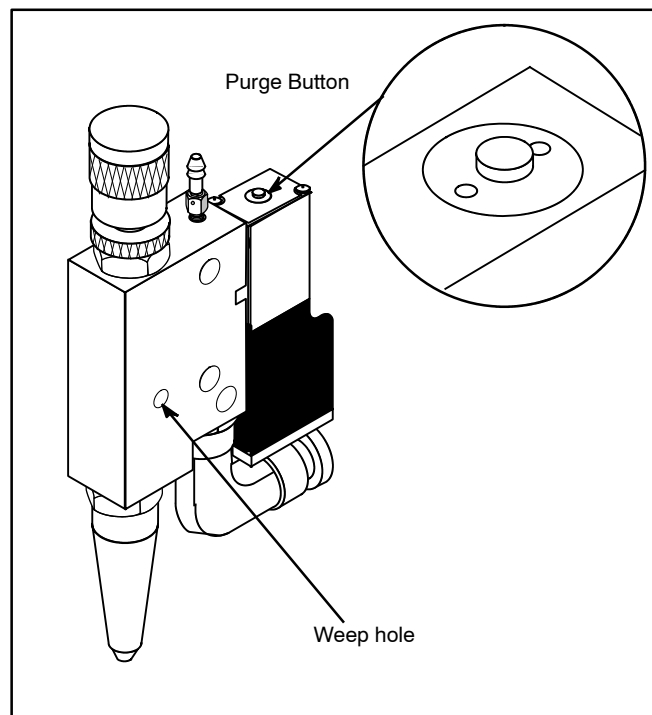
Very little maintenance is required for the DH12 applicator. The following list provides some guidelines:

- Inspect for air/glue line leaks and frayed or loose electrical connections at least once weekly.
- Assure the glue supply is free from contaminants that could block the glue lines or nozzle tips. The fluid delivery system should possess a 50- to 100-mesh (150 to 300 micron) filter. The filter should be cleaned at least once weekly.
- Assure the air supply is clean and free from water and oil. Appropriate filtration should be installed and maintained as necessary.



CAUTION: Failure to install and maintain filtration will result in premature solenoid valve failure.

- The zero-cavity nature of the contact version eliminates the necessity to purge nozzle tips prior to periods of downtime. Wiping the nozzle tips with a cloth prior to start-up should be all that is necessary. Use a stiff *fiber* brush if a wet cloth proves to be insufficient. *Use of nozzle cleaning wires should be avoided.*
- Manually purge each applicator prior to start-up after prolonged periods of inactivity to assure proper applicator operation. A manual purge is accomplished by pressurizing both the air and glue lines and pressing the brass button on the solenoid valve near the 1/8" air inlet. The brass button must be fully depressed for proper purging. Use of a pointed object, such as a pen or paper clip is recommended. 24 VDC power to the applicator is not required for manual purging.
- The DH12 body has "weep holes" on either side. It is possible that a small amount of glue (typically dry glue) may gradually seep from these holes after prolonged usage. This is not considered a problem, as long as applicator performance is not affected. Simply clean the glue from the hole and continue operation. Significant seepage of glue, especially if the glue is still liquid, is an indication of seal failure. See Chapter 4 "Troubleshooting & Repair" for seal replacement procedures.





WARNING

Do not operate a system that has air or glue leaks. Immediately cease operations until all leaks are repaired.



CAUTION: Refer to Chapter 4 “Troubleshooting and Repair” before lubricating any internal components.

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Adhesive Application Solutions

Chapter 4

TROUBLESHOOTING & REPAIR

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 failure occurs, first check all the electrical and pneumatic connections. Verify that the main power switch is ON at the Pattern Controller. Verify that the pump is operating and the application heads have sufficient air pressure. Assure that the glue supply is sufficient to be pumped to the applicators.

Troubleshooting Guide

Problem	Possible Cause/ Solution
No Adhesive Flow From Applicator	1. Is the 24 VDC power supply turned off or disconnected from the solenoid? Check all electrical lines for continuity and check any proximity or optical sensors in the pattern control system are functioning properly. 2. Is the air pressure to the solenoid below the minimum necessary for operation? Refer to the specifications in this manual and adjust accordingly. 3. Is the adhesive pressure to the applicator below the minimum necessary for operation? Refer to the specifications in this manual and adjust accordingly. 4. Is dried glue blocking the nozzle orifice? Use a wet rag or stiff fiber (not wire) brush to loosen any dried glue. De-pressurize the glue system, remove the nozzle and clean the tip under running water using a bore cleaner, if necessary. 5. Is the Needle Stroke Adjustment Knob fully seated, preventing the needle from stroking? Adjust the needle stroke in accordance with the instructions in Chapter 3 of this manual. 6. Is the air supply tubing broken, crimped or leaking? Check the lines for obvious damage. De-pressurize the system, remove the air supply tubing from the applicator, re-pressurize the system and check for proper airflow. Replace tubing if necessary. Reverse this procedure to re-assemble the system.

Problem	Possible Cause/ Solution
Erratic or Intermittent Adhesive Flow from the Applicator	7. Is the glue supply tubing broken, crimped or leaking? Check the lines for obvious damage. De-pressurize the system, re-move the glue supply tubing from the applicator, re-pressurize the system and check for proper glue flow (use a bucket to catch glue). Replace tubing if necessary. Check freshness of glue supply and cleanliness of the glue filter. Reverse this procedure to re-assemble the system. 8. Is there internal blockage of the Needle/Piston assembly? Disassemble the applicator in accord with the instructions found in this section. 9. Has the solenoid failed? You should feel and hear a “click” each time the solenoid is cycled with 24 VDC power. Exhaust air can also be felt on the sides of the solenoid nearest the applicator body as the valve cycles. Replace the solenoid if it is not functioning properly.
	1. Is the contact applicator pushed too tightly against the web, causing blockage of the nozzle? Check to assure only light contact of the nozzle to the web. Review installation instructions discussed in Chapter 3 of this manual. 2. Is the nozzle partially clogged? Use a wet rag or stiff fiber (not wire) brush to loosen any dried glue. De-pressurize the glue system, remove the nozzle and clean the tip under running water using a bore cleaner, if necessary. 3. Is the Needle Stroke Adjustment Knob restricting glue flow by being turned too tightly? Turn the knob counter-clockwise 1. to 1.5 revolutions from the fully seated position and lock in position using the lock nut below the knob. 4. Is this happening only at high speeds? If so, adjustment of glue pressure and needle stroke may be necessary. 5. Is the 24 VDC power connection loose or is the wire grounding on the machine? Check that all electrical connections are secure and there are no frayed wires. Also, check that any proximity or optical sensors in the pattern control system are functioning properly. 6. Is the pattern controller properly programmed and functioning properly? Test controller output jacks with a voltmeter, <i>under load</i> to determine whether output is correct.

Disassembly of the DH12 Applicator



CAUTION: Purge the applicator with clear water to remove all adhesive prior to disassembly.



WARNING

Relieve air and adhesive pressure from the applicator, disassemble all tubing connections and remove the 24VDC power connection prior to disassembly of the applicator. Removal of the applicator from its mounting bracket is also recommended.

Refer to the exploded view illustration in Chapter 5 for assistance in locating the components of the DH12 contact applicator.

1. Loosen and remove the nozzle.
2. Clean any adhesive from around the needle under running water prior to further disassembly to prevent contamination of internal seals.
3. Loosen and remove the retaining nut.
4. Remove the spring.
5. Remove the needle/ piston assembly.
6. Remove the six o-rings.
7. Thoroughly clean components with a 10% vinegar/ water solution. Rinse with fresh water.
8. Replace all o-rings with new o-rings.
9. Lubricate the o-rings (PN N07050, N06634 and N00179) with PN 108700 lubricant.



CAUTION: Do not lubricate PN N06836 o-rings or the needle piston shaft (which contacts these o-rings), as these o-rings are permanently lubricated. Additional lubricant on these parts may cause poor applicator performance

10. Re-assemble the applicator in the reverse order of the above procedure.



CAUTION: Special o-rings are used in the DH12 applicator. Do not replace ITW Dynatec o-rings with substitutes.

Chapter 5 COMPONENT ILLUSTRATIONS & BILLS OF MATERIAL



WARNING

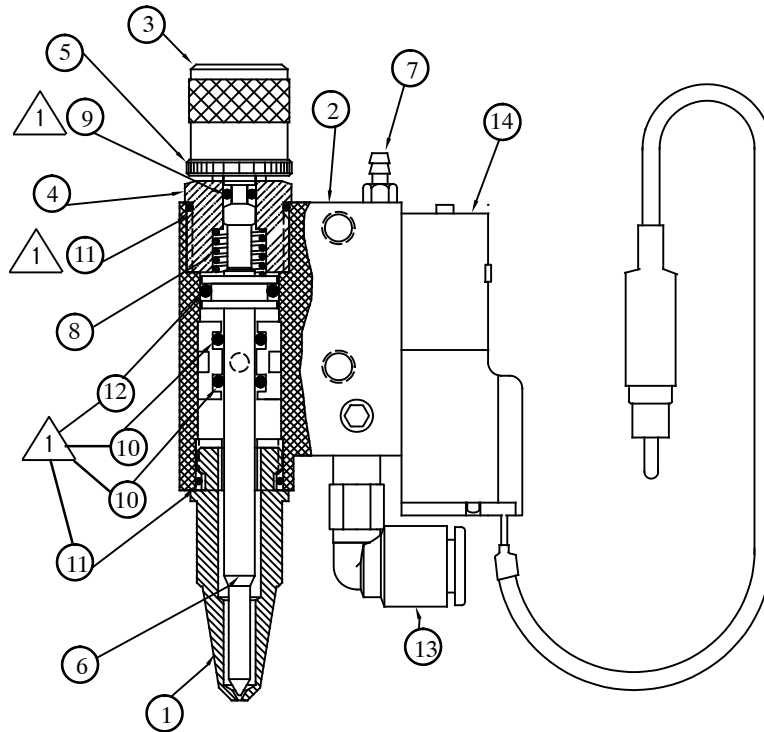
All parts must be periodically inspected and replaced if worn or broken. Failure to do this can affect equipment's operation and can result in personal injury.

Recommended Spare Parts, DH12 Applicator, .015" Orifice (PN 113745)

Part Number	Description	Qty.
113746	DH12B Repair Kit (may also be used for DH12A applicators) (consists of:)	
113744	Nozzle	1
113743	Needle/ Piston Assembly	1
N06836	O-ring #008	2
N00179	O-ring #012	2
N07050	O-ring #108	1
N06634	O-ring #004	1
N06573	Spring	1

Recommended Spare Parts, DH12 Applicator, .031" Orifice (PN 106105)

Part Number	Description	Qty.
106108	DH12B Repair Kit (may also be used for DH12A applicators) (consists of:)	
106107	Nozzle	1
L15288	Needle/ Piston Assembly	1
N06836	O-ring #008	2
N00179	O-ring #012	2
N07050	O-ring #108	1
N06634	O-ring #004	1
N06573	Spring	1



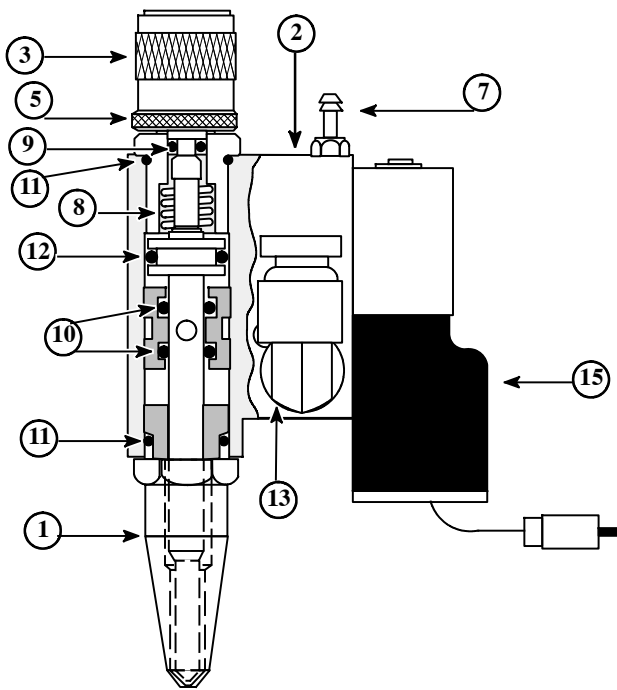
DH12 Applicators, .015" Orifice -113745			
Item No.	Part Number	Description	Qty.
1	113744	Nozzle, .015	1
2	L15455	Body Assembly	1
3	L15284	Stroke Adj. Screw	1
4	L15285	Retaining Nut	1
5	L15287	Locking Nut	1
6	113743	Piston/ Needle Assembly, .015	1
7	N06667	M3 x 1/16, Barb Fitting	1
8	N06573	Compression Spring	1
9	N06634	O-ring, 2-004	1
10	N06836	O-ring, 2-008	2
11	N00179	O-ring, 2-012	2
12	N07050	O-ring, 2-108	1
13	N06651	1/4 Tube Fitting	1
14	116229	Valve & Cable Assembly	1
15	108700	Dupont KRYTOX 20	A/R
16	048J008	Cable Tie	1

NOTES:

1. APPLY LUBRICANT (ITEM #15) TO ALL SEALS PRIOR TO ASSEMBLY, EXCEPT FOR ITEM #10

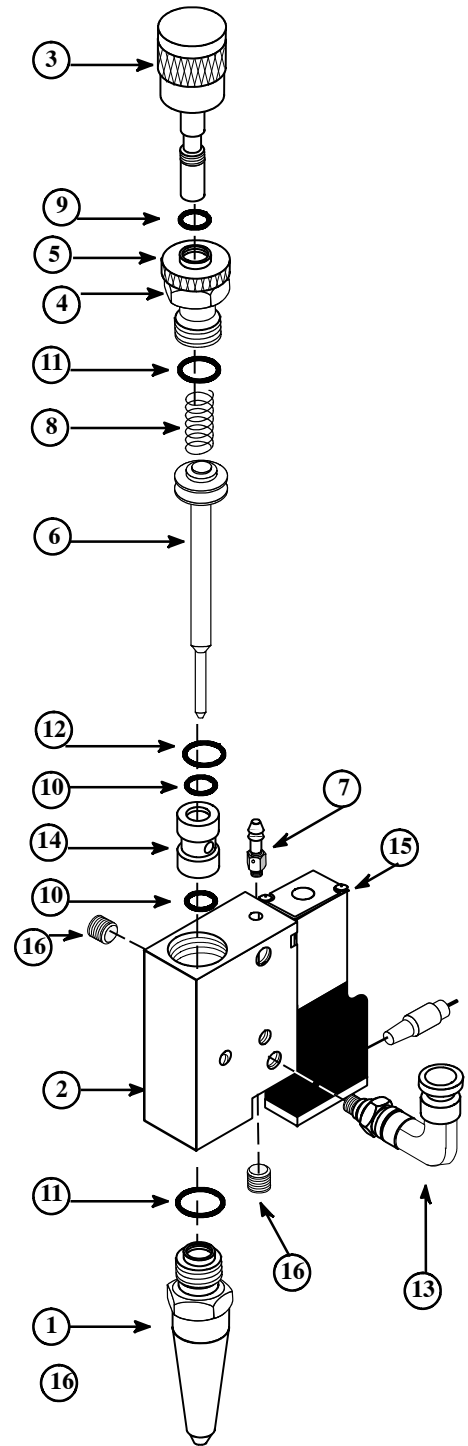


CAUTION: Relieve air pressure to applicator head before removing nozzle.
CAUTION: Do not use stroke limiter for nozzle shut-off.



DH12 Applicators, .031" Orifice - 106105*				
Item No.	Part Number	Description	Qty.	
1	106107	Nozzle	1	
2	L15455	Body Assembly	1	
3	L15284	Stroke Adj. Screw	1	
4	L15285	Retaining Nut	1	
5	L15287	Locking Nut	1	
6	L15288	Piston/ Needle Assembly	1	
7	N06667	M3 x 1/16, Barb Fitting	1	
8	N06573	Compression Spring	1	
9	N06634	O-ring, 2-004	1	
10	N06836	O-ring, 2-008	2	
11	N00179	O-ring, 2-012	2	
12	N07050	O-ring, 2-108	1	
13	N06651	1/4 Tube Fitting	1	
14	L15286	Cartridge Seal	1	
15	116229	Valve & Cable Assembly	1	
16	N07462	10-32 x .125 SH Set Screw	2	

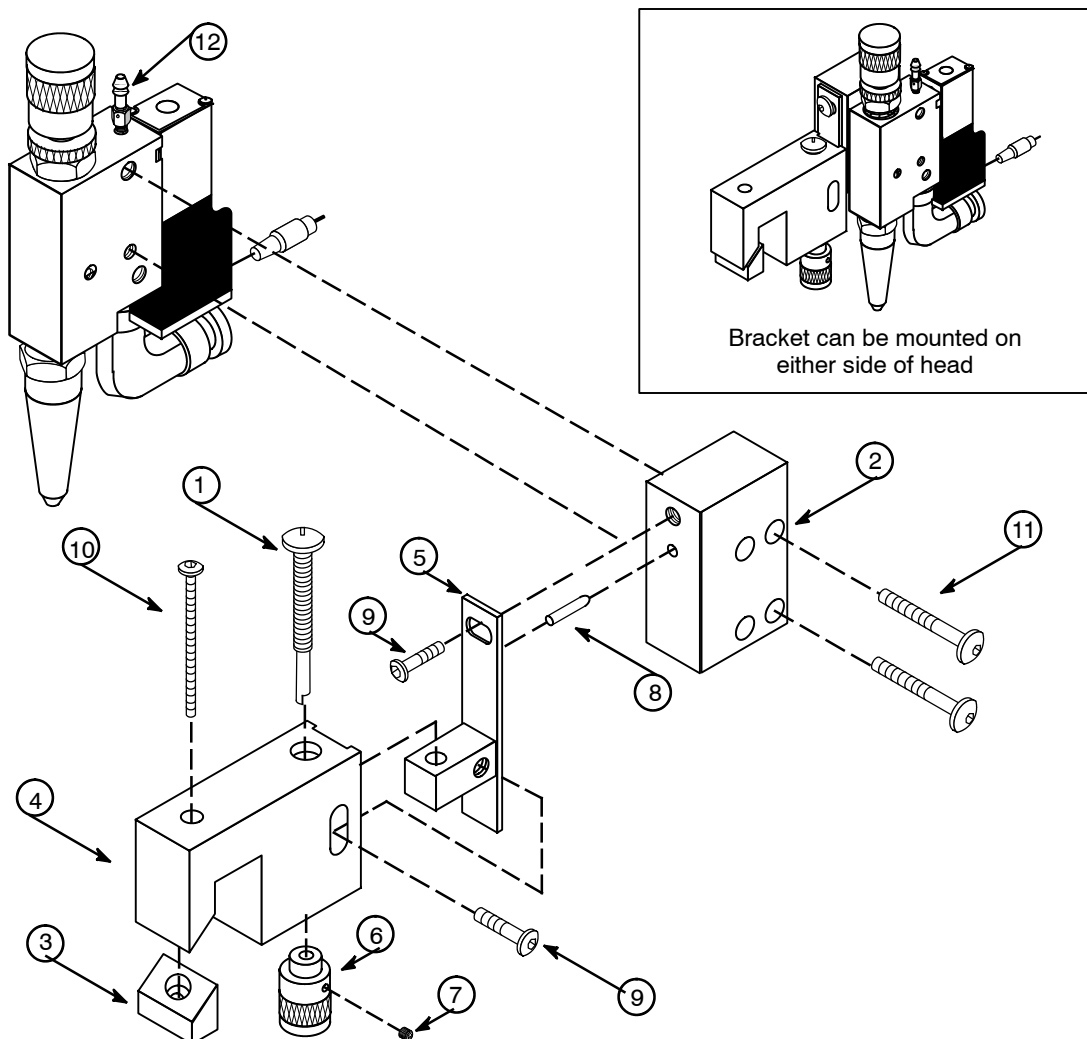
* Replaces PN L15290 Head Assembly



NOTES: Apply lubricant P/N 108700 to items #9, 11 and #12 prior to assembly.
DO NOT LUBRICATE ITEM #10.



CAUTION: Relieve air pressure to applicator head before removing nozzle.
CAUTION: Do not use stroke limiter for nozzle shut-off.



Bracket Assembly - L15320 for the DH12 Series Applicators

Item No.	Part Number	Description	Qty.
1	L15317	Vertical Adjustment Screw	1
2	L15318	Plate, Head Mounting	1
3	L15319	Locking Wedge	1
4	L15321	Bracket body	1
5	L15322	Vertical Adjustment Plate	1
6	L15937	Vertical Adjustment Knob	1
7	N00764	6-32 x 1/8 Set Screw	1
8	N04328	Dowel Pin, .125 x .25	1
9	N06853	10-32 x 1/2 Button Head Screw	2
10	N06854	10-32 x 1 1/4 Button Head Screw	1
11	N06863	10-32 x 1 Button Head Screw	
12		DH12A Applicator Head	1