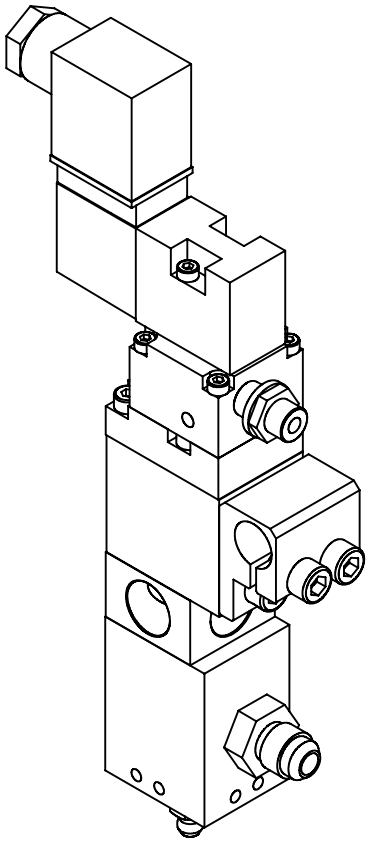
ITW Dynatec
An Illinois Tool Works Company
31 Volunteer Drive
Hendersonville, TN 37075 USA
Telephone 615.824.3634
FAX 615.264.5222

OPERATIONS & SERVICE MANUAL
Manual #40-53
Revised 8/07

ITW Dynatec

Adhesive Application Solutions • ISO 9001 Certified

APEX COLD GLUE MODULE SERVICE 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

TABLE OF CONTENTS

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 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 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 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 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

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

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.

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.

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 APEX module is an electrically-triggered, air-actuated valve designed for the dispensing of ambient temperature adhesives via bar nozzles or for other high-volume requirements. It may be configured for both contact and non-contact applications, depending upon the nozzle design attached to the valve body. The valve is "reverse acting", meaning that it seals on the outflow side of the seat rather than the inflow side; thus a slight negative pressure is created during valve shutoff which can potentially enhance the pattern cutoff during intermittent operations.

Specifications

Performance:

Cycle Rate . . . . . 5,000 Cycles per Minute
On/Off Times . . . . . 6ms ON/6ms OFF
Adhesive Viscosity . . . . . to 15,000centipoise (15,000mPa)
Adhesive Pressure . . . . . to 1,000psi (68bar)
Adhesive Type . . . . . Water-Based, Synthetic Resin Emulsion
Noise Emission . . . . . 30dB(A)

Air Requirements:

Actuating Air Pressure . . . . . 75 to 90psi (5 to 6 bar)
Air consumption . . . . . .28 liters/min @ 100 cycles/min (0.1 SCFM @ 100 cycles/min)

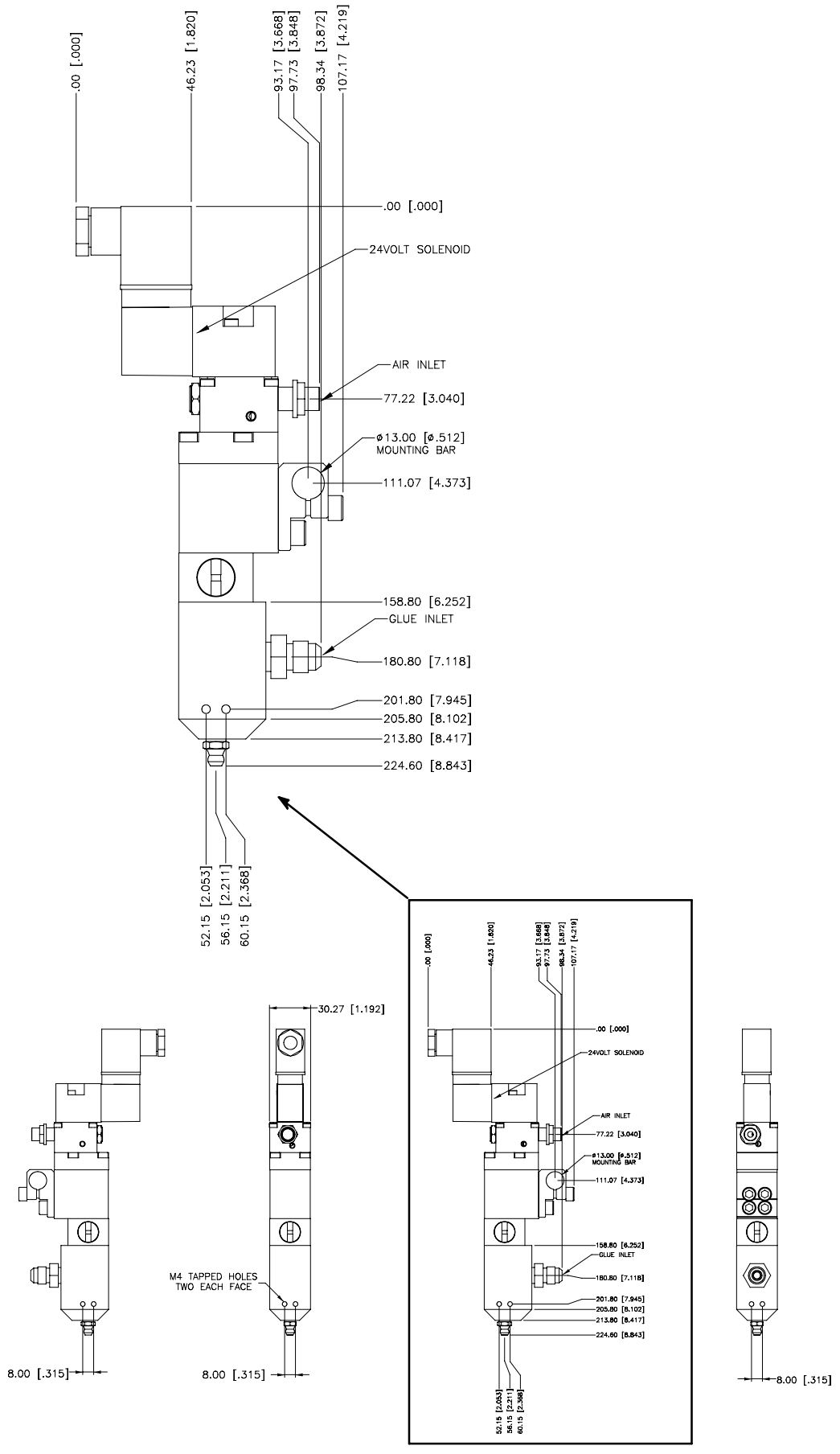
Electrical:

Supply voltage . . . . . 24VDC, 10 watts

Physical:

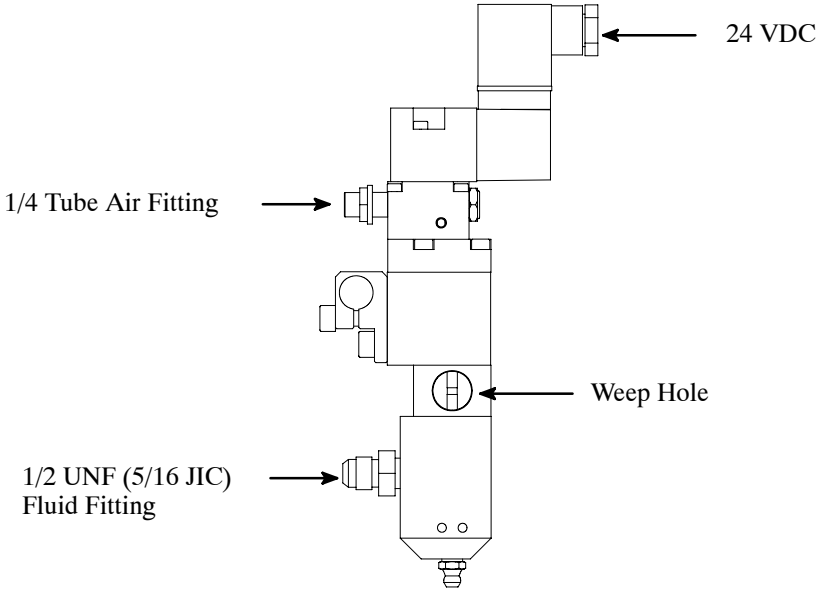
Mounting . . . . . ∅1/2" Rod
Weight . . . . . 2.2 lbs. (1,000gm)
Dimensions . . . . . see dimensional layout on following page

Dimensions


.00 [.000]
46.23 [1.820]
93.17 [3.668]
97.73 [3.848]
98.34 [3.872]
107.17 [4.219]
.00 [.000]
24VOLT SOLENOID
AIR INLET
77.22 [3.040]
ø13.00 [ø.512]
MOUNTING BAR
111.07 [4.373]
158.80 [6.252]
GLUE INLET
180.80 [7.118]
201.80 [7.945]
205.80 [8.102]
213.80 [8.417]
224.60 [8.843]
52.15 [2.053]
56.15 [2.211]
60.15 [2.368]
30.27 [1.192]
M4 TAPPED HOLES
TWO EACH FACE
8.00 [.315]
8.00 [.315]
8.00 [.315]

Chapter 3
INSTALLATION

Note: Re-read the listed "Safety Precautions" before performing any installation or start-up procedures. All installation and start-up procedures must be performed by qualified, trained technicians.



Mounting the Module

The APEX module is supplied with a mounting bracket designed to accommodate a ∅1/2" rod (customer-supplied). The module should be mounted on bracketry that permits vertical adjustments and the ability to easily rotate the application nozzle off the substrate to accomplish any necessary maintenance functions.

Fluid Connection

The APEX module employs a 1/2UNF (5/16JIC, 37° Flare) fluid fitting into a 1/4NPT(f) thread in the module body itself. It is strongly recommended that the supplied fluid fitting be utilized, especially for fluid application pressures in excess of 100psi (6.8bar). See Chapter 2 (Specifications) for details concerning fluid operating pressure ranges.

Air Connection

The APEX comes supplied with a 24VDC solenoid valve directly attached to the module. The solenoid valve is designed for connection of a 1/4" tube for actuating air. See Chapter 2 (Specifications) for details concerning actuating air operating pressure ranges.

CAUTION: Do not use lubricating oil with the air supply to the solenoid valve as this may cause premature failure of the valve. A coalescing filter (Dynatec PN 100055) must be installed between the standard air regulator/filter and applicator when oil is present in the air supply.

Electrical Connection

The solenoid valve comes supplied with a 3-wire, (positive, neutral & ground) DIN electrical connector. The solenoid is not polarity sensitive. It is recommended that AWG18 wire be used for the connection of power to the solenoid valve. See Chapter 2 (Specifications) for solenoid valve power requirements.

WARNING HIGH PRESSURE

Adhesive and oil can come out of the glue applicator under high pressure. Wear safety glasses, and protective clothing as approprite to prevent injury.

Chapter 4
MAINTENENCE & TROUBLESHOOTING

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.

Maintenence Schedule

ITEM	CHECK	FREQUENCY	ACTION
Adhesive supply hose	Inspect for leaks	As required	Tighten fitting and/or replace hose
Air supply tubing and fittings	Inspect for leaks	As required	Tighten fittings and/or replace tubing
Weep hole	Monitor for excess adhesive flow (small amount is acceptable)	As required	Replace seals (Dynatec PN 813333)
Clean applicator nozzle	Inspect for glue build-up	As required	Use damp cloth to clean all adhesive build-up
Flush module with water	N/A	At least monthly	Flush fluid delivery system and module with fresh water until clear water is purged
Flush module with vinegar/water solution	N/A	At least quarterly	Flush fluid delivery system and module with water, then a 10% to 20% vinegar/water solution, then flush again with water.

Stroke Limit Adjustment

The stroke is factory set at ITW Dynatec to 0.3mm (0.012"). Field adjustment of this stroke is not recommended.

Troubleshooting

Check all electrical and pneumatic connections if module failure occurs and verify that adequate fluid pressure is present in the system.

Troubleshooting Guide

Problem	Possible Cause	Solution
Module does not open	1. Inoperative solenoid.	1. Push the solenoid's manual button. The problem is electrical if the valve opens.
	2. Insufficient air pressure.	2. Check to assure actuating air pressure is within the limits prescribed in Chapter 2 of this manual.
	3. Insufficient fluid pressure.	3. Check to assure fluid pressure is adequate for the adhesive being used.
	4. Adhesive supply is empty.	4. Check Adhesive supply.
	5. Air or fluid supply lines are crimped, broken or leaking.	5. Check all supply lines for damage.
Adhesive is leaking from the module's "weep hole"	Module seals are worn/ damaged.	Module must be rebuilt (see instructions in this chapter).
Air escapes from module	Module seals are worn/ damaged.	Module must be rebuilt (see instructions in this chapter).
Erratic or intermittent adhesive flow from nozzle	1. The contact applicator is pushed too tightly against the web, causing blockage of the nozzle.	1. Adjust nozzle to assure proper pressure against the web.
	2. The nozzle is clogged.	2. Thoroughly clean the nozzle and/or application module.
	3. Glue pressure is too low.	3. Adjust glue pressure.
	4. The air pressure to the solenoid is too low.	4. Adjust the air pressure.
Adhesive is leaking from the module when shut off	The stem/seat is worn/ damaged.	Replace the stem/seat.

Rebuild the APEX Module

Important Rebuild Note

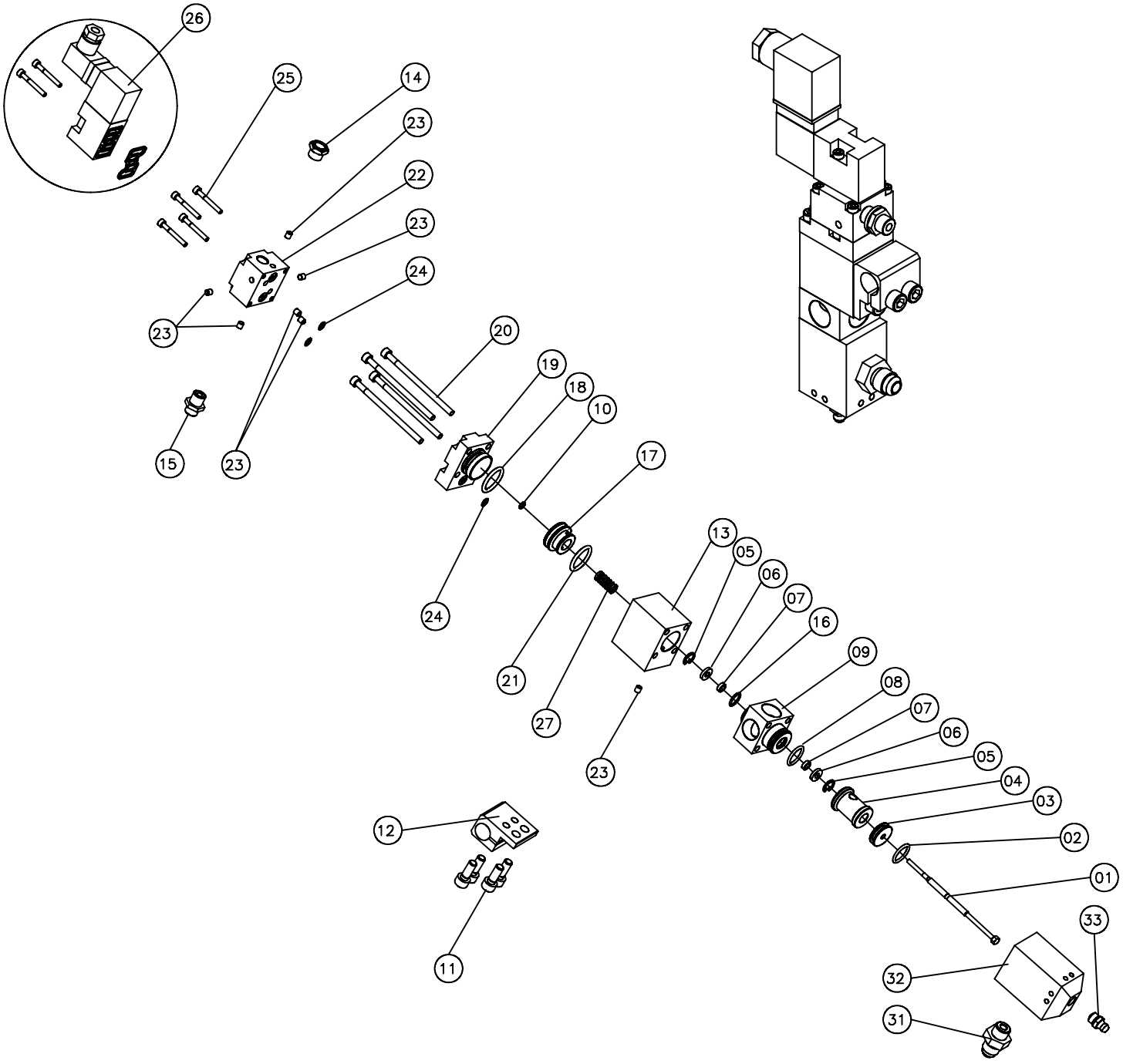
It is strongly encouraged that the Thickness Gauge (Dynatec PN 808913) be used to facilitate reassembly of the module, as described in the following procedures.

WARNING HIGH PRESSURE

Be certain to depressurize the entire glue application system prior to disassembly of any of its components. Wear safety glasses and any other appropriate personal protective equipment.

cont.

Slot Die Module Assembly, Reverse Acting (PN 813158)



Bill of Materials for Slot Die Module Assembly, Reverse Acting PN 813158

Item No.	Part Number	Description	Qty.
1	110412	Stem, D2, Apex	1
2	808269	O-ring, 14 x 2.0mm	1
3	110413	Seat, Apex	1
4	110414	Spacer, LG, SS, Apex	1
5	110415	10mm Internal Retaining Ring, SST	2
6	110416	Spacer, SS, Apex	2
7	110417	Seal, Apex	2
8	808268	O-ring, 16 x 2.0mm	1
9	110418	Stand-off, SS, Apex	1
10	108500	M3 Lock Nut	1
11	104661	M6-1.0 x12mm SHC Screw	4
12	813157	Apex, Module, CG, Mount	1
13	813159	Body, Piston, Air, 4 Apex	1
14	110420	Breather Vent, 1/8 UNI x 11mm	1
15	072X529	Fitting, 1/8 UNI, Straight male	1
16	808267	O-ring 12 x 2.5mm	1
17	110421	Piston,	1
18	808266	O-ring 17 x 2.5mm	1
19	110422	Body, Air, Cap, CM1100	1
20	813168	M4 x 70mm SHC Screw, SST	4
21	110424	Q-ring 22 x 1.5mm	1
22	110425	Body, Air Manifold	1
23	106327	Plug, Expansion, 4mm Dia (ref. Only)	
24	N00175	O-ring, -008	3
25	110568	M3-0.5 x 25mm, SHC Screw, SST	4
26	810028	Valve, Solenoid, 24V, 9.3w, H	1
27	110426	Spring, C, .450, .279, .5 .G, M	1
28	001U002	Lube Dow Corning 112	A/R
29	107324	Lube Anti-Seize (not shown)	A/R
30	108669	Sealant, Thread, Locktite 266	A/R
31	108070	Nipple, 1/4 NPT x 5/16 JIC, SST	1
32	813156	Apex, Module, CG, Body	1
33	110941	Fitting, Male Hydraulic, 1/8 MPT, SST	1

1. Loosen the four M3 x 30 screws (Item #25) and remove the Air Manifold Body (Item #22) and Solenoid (Item #26).

2. Remove the four M4 x 70 screws (Item #20) and carefully disassemble the Module Body (Item #32) from the remainder of the module assembly.

3. Prevent the Stem (Item #1) from rotating by using a 5.5mm box wrench on the hex at the bottom of the stem.

4. Remove the Retaining Nut (Item #10) using a 5.5mm box wrench

5. Remove the Piston (Item #17) using a 10mm box wrench.

6. Take the Body (Item #13) off of the Standoff (Item #9).

7. Remove the Compression Spring (Item #27) and pull the Stem (Item #1) from the Standoff (Item #9).

8. Remove the Retaining Ring (Item #5) from both ends of the Standoff (Item #9).

9. Remove the Spacer, Seal and O-Ring (Items #6, #7 and #8) of the lower end of the Standoff and the Spacer, Seal and O-Ring (Items #6, #7 and #16) from the upper end of the Standoff.

10. Clean all parts that will be reused with clear water or a mild soap/water solution.

11. Inspect the internal bore of the Piston Body (Item #13) for any damage/wear. Replace this part as is necessary.

12. Replace the Silencer (Item #14).

13. Replace/reassemble the Spacer, Seal and O-Ring along with the Retaining Ring that were disassembled from the Standoff in Steps #8 and #9 above. Note that there are different O-rings used in the upper and lower ends of the Standoff. Be certain the Seal (Item #7) is oriented so the spring in the cup seal is exposed toward the Spacer (Item #6).

14. Replace O-rings (Items #2, #8, #18, #21 and #24). Lubricate these with Dow Corning 112, silicone or similar high-quality O-ring lubricant.

15. Replace the Stem (Item #1), Seat (Item #3) and Spring (Item #27) and any other parts that are showing signs of excessive wear.

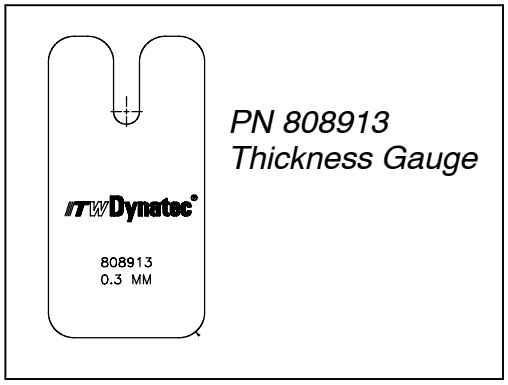
CAUTION: Take extreme care when inserting the Stem (Item #1) into the Standoff (Item #9) that the threads of the Stem do not rub against the Seals (Item #7) at either end of the Standoff. Failure to do so will cause possible premature wear of the seals and early module failure.

cont.

16. Reassemble the module in reverse order of the above-listed steps with the following additions:

a. Check the seat gap by inserting a thickness gauge (Dynatec PN 808913 is recommended) between the Spacer (Item #4) and the Seat (Item #3) before installing the Air Cap (Item #19). Tighten the Nut (Item #10) to allow a gap for stem travel of 0.3mm to 0.4mm.

b. Use removable thread locker (i.e. Loctite or similar) on both the Piston (Item #17) and Nut (Item #10) to assure their position on the Stem is maintained. Allow the thread locker to dry at least ten minutes before operating the module.



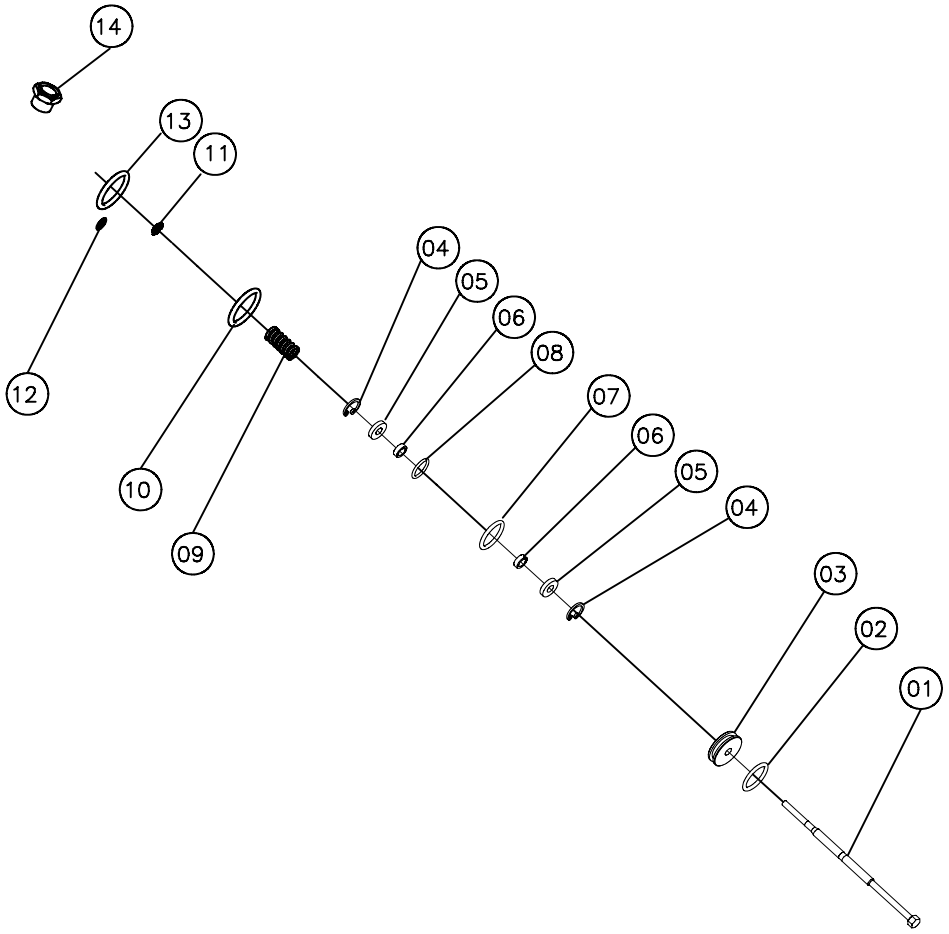
PN 808913
Thickness Gauge

17. Reassemble the Air Cap (Item #19) and Body (Item #32) to the valve assembly. Assure the O-ring (Item #24) is properly in place. Tighten the four screws (Item #20).

18. Reinstall the Air Manifold Body, assuring the two O--rings (Item #24) are properly in place. Tighten the four screws (Item #25).

19. Attach the Solenoid Valve (Item #26) using the two included screws.

APEX Cold Glue Module Repair Kit PN 813333



Item No.	*Part Number*	*Description*	*Qty.*
1	110412	Stem	1
2	808269	O-ring 14 x 2.0mm	1
3	813160	Seat, FLUO500, Apex	1
4	110415	10mm Int Retaining Ring, SST	2
5	110416	Spacer,SS,Apex	2
6	110417	Seal, Apex	2
7	808268	O-ring 16 x 2.0mm	1
8	808267	O-ring 12 x 2.5mm	1
9	110426	Spring, C, .450, .279, .5, .G,M	1
10	110424	Q-ring 22 x 1.5mm	1
11	108500	M3-0.5, Keps Nut	1
12	N00175	O-ring-008	3
13	808266	O-ring17 x 2.5mm	1
14	110420	Breather Vent	1