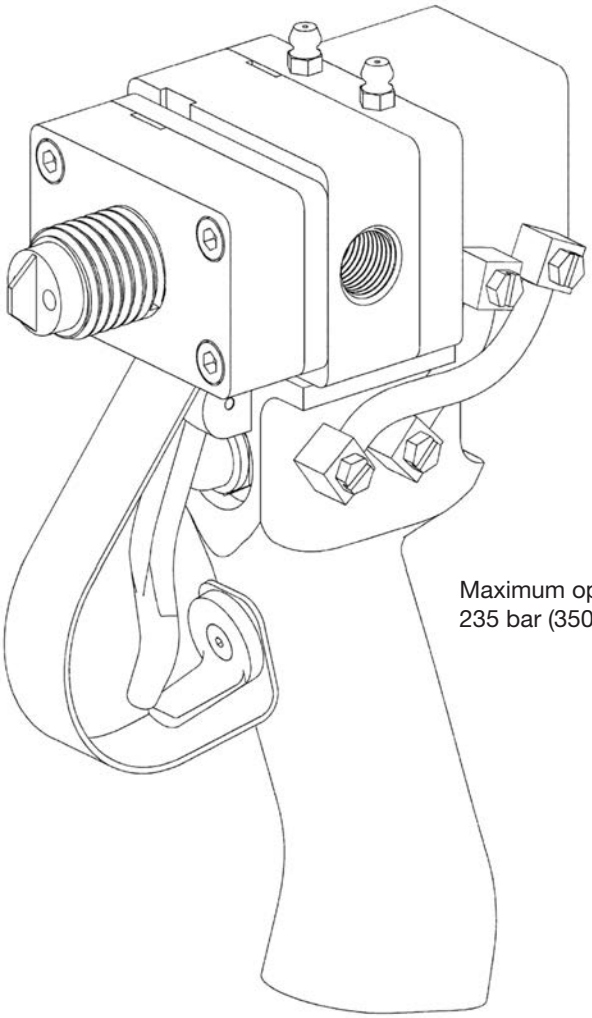
# Series 400 Autovalve

## Instructions / Parts Lists



Maximum operating pressure
235 bar (3500 psi)

Electronic pdf files of Nordson EFD manuals are also available at www.nordsonefd.com

Nordson EFD

# Contents

# Operation

The ON-OFF operation of the valve is controlled by movement of the piston inside the air cylinder (1). In the OFF position, the piston advances and the front seal (13) seats into the seat plate (8).

In the ON position, the piston and seals retract from the seat plate (8), which allows A & B fluids to pass through the manifold.

A disposable Series 160 mixer can be attached to the manifold. If the operating pressure exceeds 10 bar (150 psi), we recommend a metal jacket be used over the plastic mix tube.

**NOTE:** For all reference numbers in parenthesis, see pages 5–9.

**Your 400 AUTOVALVE in general...**

- Designed to dispense two-component adhesives and sealants
- Dispenses low or high viscosity urethanes, epoxies and silicones
- Can be mounted for beads or timed shots; optional handle is available for hand held applications
- Provides an ON-OFF function. The metering of the adhesives in the proper ratio of A:B is controlled by the metering pumps.

# Installation

## Connect Supply Lines

The A & B fluid hoses are connected to the side of the valve body (7), between the valve and the pumps, and should be as short as possible. It is a good practice to install check valves in the hoses just before the valve.

For stationary mount, the air lines will be connected to the side of the air cylinder (1). Air to the back of the cylinder to close and air to the front to open. If the optional handle is used, air is connected to the barbed fitting (105) on the side of the handle.

The air line should have minimum pressure of 5.5 bar (80 psi).

## Startup

1. With the hand-held model, start metering pumps and purge the air out of the A & B hoses and Autovalve. After the A and B fluids come out of the manifold, attach a mixer to the manifold and hold the valve upside down with the mixer pointing up. Dispensing A & B will purge the last pockets of air in the valve body.

   A stationary mount or gantry installation requires a swivel mounting bracket. To complete purging, turn the valve with the mixer pointing up and dispense A & B.

2. Take a ratio check by weight of A:B after the manifold. The Autovalve does **No Metering**. The Volume Ratio of A:B is controlled by the metering pumps. However, between the metering pumps and the Autovalve are hoses. These hoses will expand under pressure and cause lead-lag problems. Lead-lag refers to the uneven starting of the A fluid before the B fluid. Nordson EFD offers 1:1 and wide ratio manifolds to reduce this problem. The selection of the correct manifold depends on both the volume and viscosity ratio of A and B.

   Consult EFD Technical Services for details at 800-556-3484.

# Maintenance

## Disassembly and Cleaning

1. Remove the manifold and seat plate (8). Pry bar slots are provided.
2. Remove the air cylinder bolts (2) and wiggle the air cylinder apart. If the assembly is frozen, use the pry bar slots on the valve body (7) to separate the valve body (7) from the tie plate (5). Insert flat pieces of metal between the valve body and the tie plate as per Figure 1. Thread the manifold screws (36) into the back of the tie plate and push the valve body apart. Apply uniform pressure to prevent the body from cocking and bending the air cylinder shafts (75).
3. Once apart, the parts should be cleaned. We recommend overnight soaking in suitable solvent. All parts can be soaked except the handle and air cylinder.

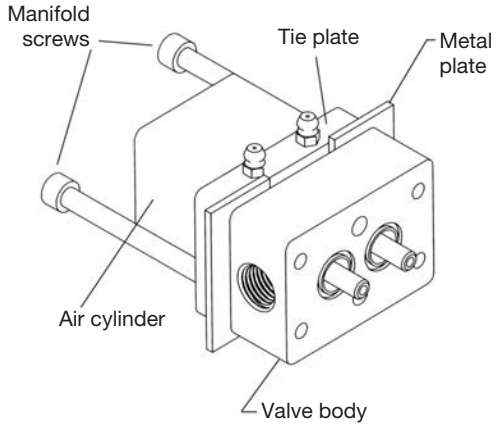



*Figure 1*

## Rebuilding the Autovalve

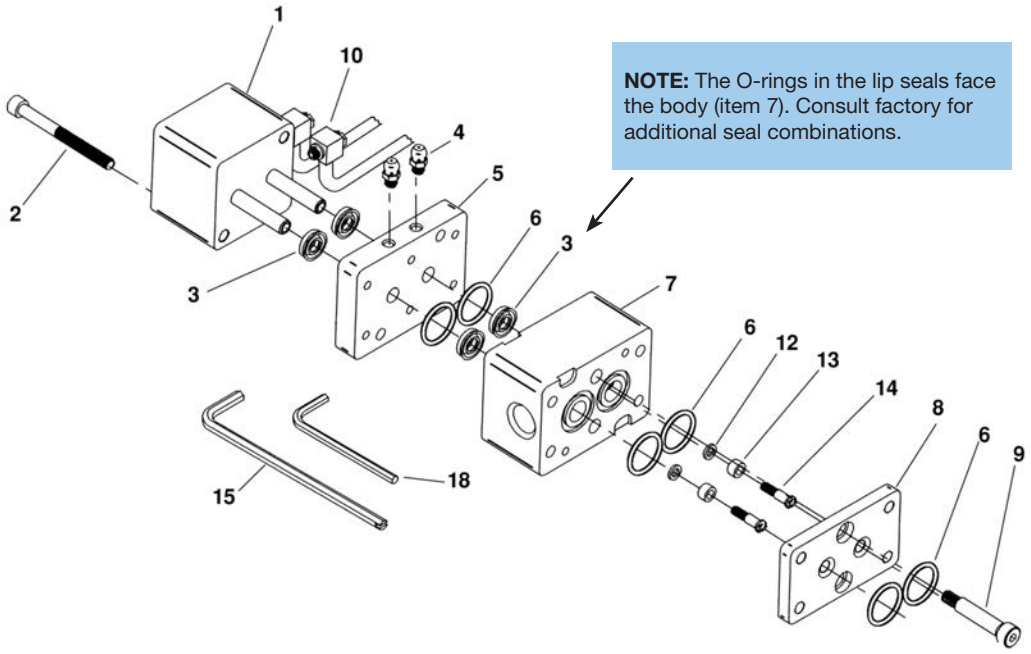
1. After cleaning, inspect the following components:
   a. Seat plate (8) on sealing surface
   b. Manually retract and extend the shafts (75) from air cylinder (1).
   c. If the optional handle is used, connect air into the inlet and check 4-way action of cartridge valve (103).
2. Refer to page 10 for a repair kit which contains lip seals, O-rings, and front seals.
3. Lubricate lip seals (3) and shafts (75) with auto grease (read SDS prior to use).
4. Insert four back lip seals (3): two into tie plate (5) and two into the valve body (7). The lip seals are two pieces: an O-ring and a U-cup. They should always be installed with the O-ring facing the material inlets (body of the valve).
5. Push the air cylinder (1) thru the tie plate (5) and the valve body (7) and engage the screws (2).
6. Push front seal (13) and washer (12) onto adjustment screw (14). To prevent binding, apply auto grease to the threads on the adjustment screws (14). Thread the seal and adjustment screw assembly into air cylinder shafts.
7. Assemble the seat plate (8) onto the valve body (7).

## Final QC Check

Before the manifold is assembled, we recommend air be connected to the air cylinder (1) and the open / close function of the front seals (13) be inspected for leakage.

The front seals cold flow into the proper shape as the valve is used. It may be necessary to pressurize the air cylinder, but not the A & B fluids.

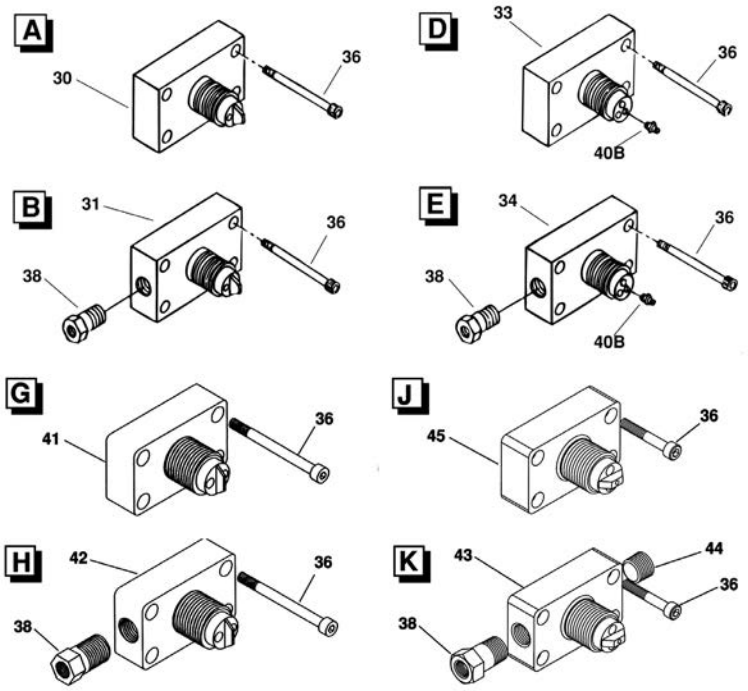
# Maintenance (continued)




**NOTE:** The O-rings in the lip seals face the body (item 7). Consult factory for additional seal combinations.

| P/N | Ref. # | Qty. | Description |
|---|---|---|---|
| 7702008 | 1 | 1 | Single Air Cylinder with Hardened SS Shafts |
| — | 2A | 2 | SHCS 10-24 x 2" long for Single Air Cylinder 450 Valve |
| 7702325 | 2B | 2 | SHCS 10-24 x 3" long for Double Air Cylinder (not shown) |
| — | 3A | 4 | Lip Seal: Viton® U-Cup and Viton O-ring |
| 7702281 | 3B | 4 | Lip Seal: PU U-Cup and Viton O-ring |
| 7702280 | 3C | 4 | Lip Seal: PTFE U-Cup and PTFE O-ring |
| 7702277 | 3D | 4 | Lip Seal: UHMPE U-Cup and SS Spring |
| 7702268 | 4 | 2 | Grease Fitting, 10-32 |
| 7702270 | 5 | 1 | Aluminum Tie Plate |
| — | 6A | 6 | Viton O-ring |
| — | 6B | 6 | EP O-ring |
| 7702275 | 6C | 6 | PTFE Encapsulated O-ring |
| 7702019 | 7A | 1 | Alum Body 9/16-18 Inlet Ports for 400 Valve |
| — | 7B | 1 | SS Body 9/16-18 Inlet Ports for 400 Valve |
| 7702026 | 8A | 1 | Stainless Steel Seat Plate for 400 Valve |
| — | 9 | 2 | Stainless Steel SHSS 1/4" Dia x 1" long for 400 Valve |
| — | 10 | 2 | Assembled Air Tube and Fitting 10-32 Thread |
| 7702010 | 12A | 2 | Stainless Steel Washer for 400 Valve |
| 7702011 | 13A | 2 | Front Seal for 400 Valve |
| 7702012 | 14 | 2 | Stainless Steel Adjustment Screw for 400 Valve |
| — | 15 | 1 | Adjustment Screw Driver for 400 Valve |
| 7702364 | 16 | 1 | Auto Grease Cartridge 3 oz (not shown) |
| 7702373 | 17 | 1 | Grease Gun |
| — | 18 | 1 | 1/8" Short Arm Hex Key |

# Manifolds for Series 160 Disposable Mixers




| P/N | Ref. # | Qty. | Description |
|---|---|---|---|
| 7702292 | 30A | 1 | Alum Manifold/160 Series 7/8-14 Thread, 1:1 Ratio |
| 7702293 | 30B | 1 | SS Manifold/160 Series 7/8-14 Thread, 1:1 Ratio |
| — | 31A | 1 | Alum Manifold/160 Series 7/8-14 Thread, 1:1 Ratio with 1/4 NPT Solvent Port |
| — | 33A | 1 | Alum Manifold/160 Series 7/8-14 Thread, Wide Ratio |
| 7702294 | 36 | 4 | SHCS 10-24 x 2 1/2" long for 450 Manifold |
| — | 38A | 1 | Check Valve: Brass Solvent Flush |
| — | 38B | 1 | Check Valve: Stainless Steel Solvent Flush |
| — | 40A | 1 | Polypropylene fitting, 10-32 with 0.09" orifice |
| — | 40B | 1 | Polypropylene fitting, 10-32 with 0.06" orifice |
| — | 40C | 1 | Polypropylene fitting, 10-32 with 0.04" orifice |
| 7702033 | 41A | 1 | Alum Manifold/160 Series 7/8-14 Thread, 1:1 Ratio, High Flow |
| — | 42A | 1 | Alum Manifold/160 Series 7/8-14 Thread, 1:1 Ratio, High Flow with 1/4 NPT Solvent Port |
| — | 44A | 1 | 1/4 NPT Plug |
| — | 45A | 1 | Alum Manifold/160 Series 7/8-14 Thread, Wide Ratio, High Flow |

**Additional manifolds available upon request:**

- 1/2 MNPT*
- 30 ppm and 60 ppm flow rates for foam applications*

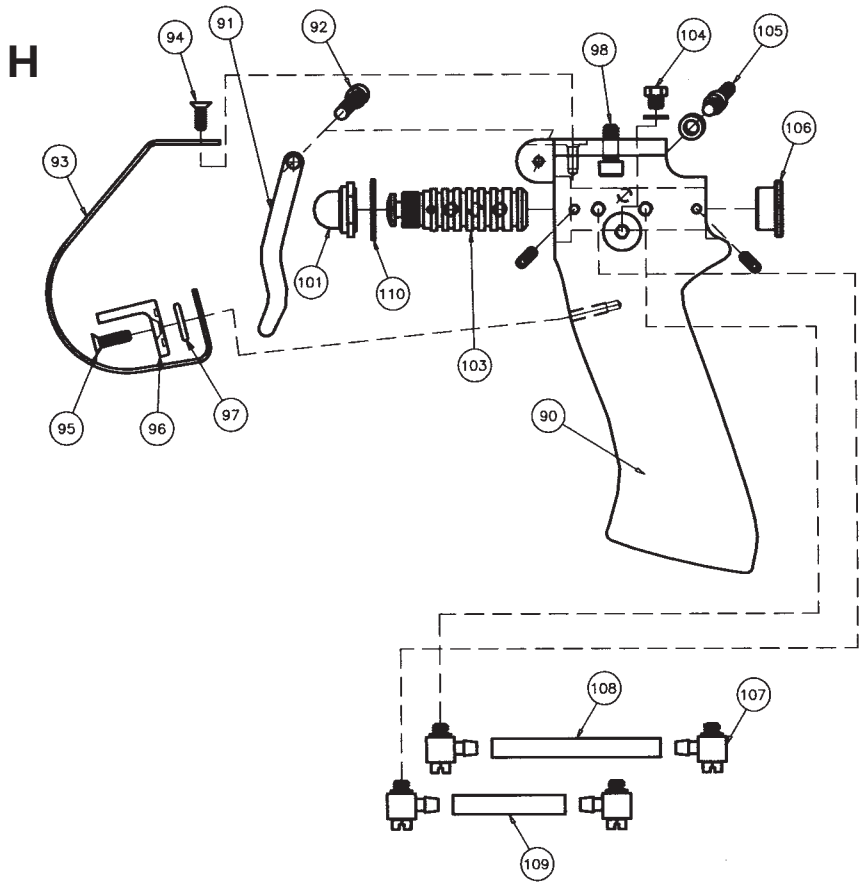
*These manifolds will not accept our 160 Series nozzles.

# Mount

## Hand Held with Pneumatic Switch #7701977

**NOTE:** Ref. Numbers 101, 103, and 110 can be purchased assembled #7702388

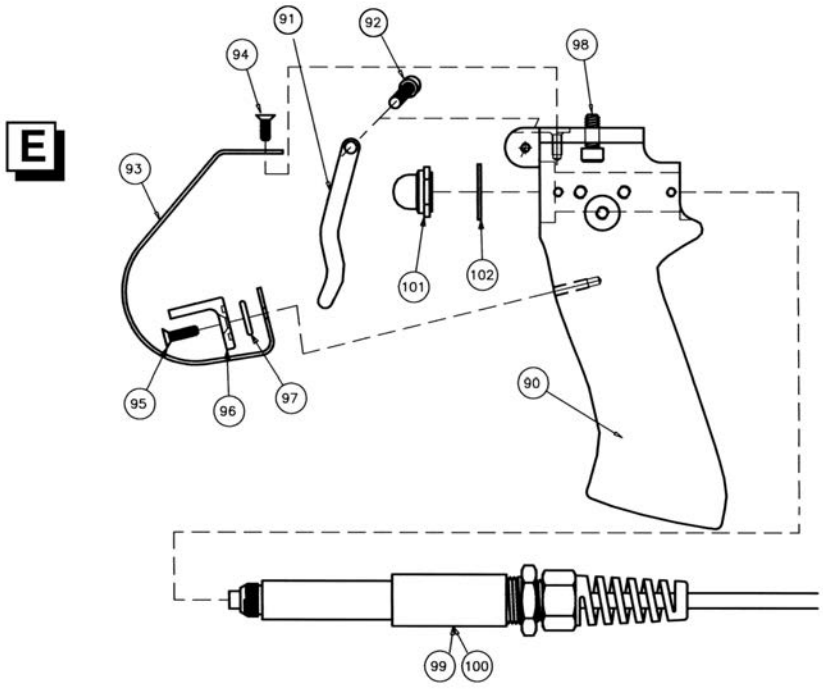
| P/N | Ref. # | Qty. | Description |
|---|---|---|---|
| — | 90 | 1 | Handle / Aluminum / Cartridge Option |
| 7702317 | 91 | 1 | Trigger for Mount H or E |
| — | 92 | 1 | Trigger Bolt, 8-32 x 3/4" long |
| — | 93 | 1 | Trigger Guard for 400/450 Switches |
| — | 94 | 1 | 6-32 x 5/16" FHSHCS for 400/450 Switches |
| — | 95 | 1 | 6-32 x 1/2" FHSHCS for 400/450 Switches |
| — | 96 | 1 | Safety Lock for 400/450 Switches |
| — | 97 | 1 | 1/2" OD x 1/16" O'Ring for 400/450 Switches |
| — | 98 | 2 | SHCS 10-24 x 1/2" long for Mount S, E or H |
| — | 101 | 1 | Protective Rubber Boot for 400/450 Switches |
| — | 103 | 1 | 4 Way Cartridge Valve for Pneumatic Handle |
| — | 104 | 1 | Brass Plug 10-32 |
| — | 105 | 1 | 10-32 Barbed Air Fitting |
| — | 106 | 1 | 3/4" Dia. Acetal Plug |
| — | 107 | 4 | 10-32 UNF Elbow Air Fitting |
| — | 108 | 1 | 1/8" ID Air Tubing x 2.25" |
| — | 110 | 1 | E-Clip |



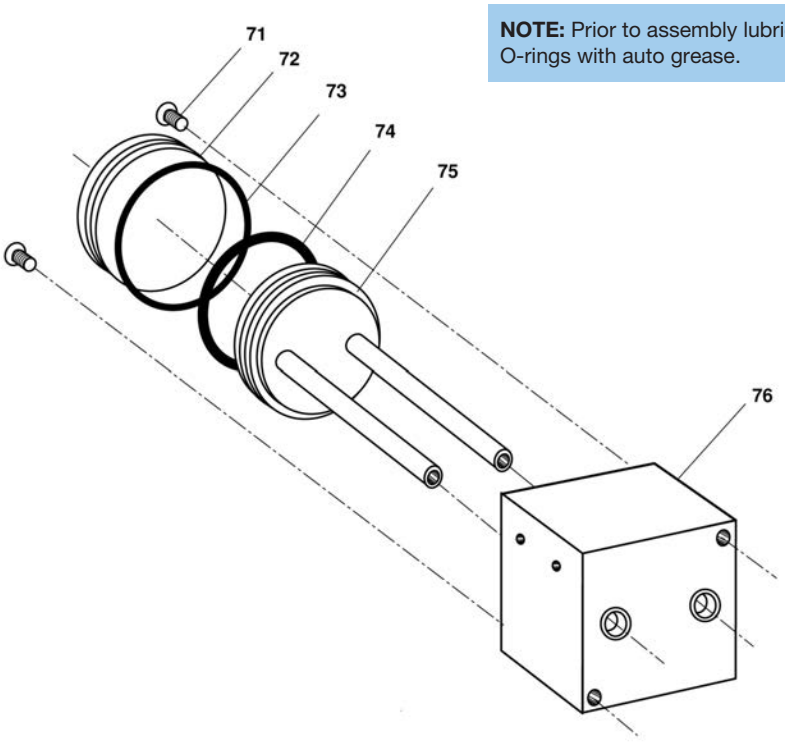
# Mount (continued)

## Hand Held — Electric Momentary Switch (24 Volt) #7701971

| P/N | Ref. # | Qty. | Description |
|---|---|---|---|
| — | 90 | 1 | Handle / Aluminum / Cartridge Option |
| 7702317 | 91 | 1 | Trigger for Mount H or E |
| — | 92 | 1 | Trigger Bolt, 8-32 x 3/4" long |
| — | 93 | 1 | Trigger Guard for 400/450 Switches |
| — | 94 | 1 | 6-32 x 5/16" FHSHCS for 400/450 Switches |
| — | 95 | 1 | 6-32 x 1/2" FHSHCS for 400/450 Switches |
| — | 96 | 1 | Safety Lock for 400/450 Switches |
| — | 97 | 1 | 1/2" OD x 1/16" O'Ring for 400/450 Switches |
| — | 98 | 2 | SHCS 10-24 x 1/2" long for Mount S, E or H |
| 7702376 | 99 | 1 | Momentary Switch Assembly for 400/450 Series |
| 7702378 | 100 | 1 | Complete Push on/off Switch Assembly for 400/450 Series |
| — | 101 | 1 | Protective Rubber Boot for 400/450 Switches |
| — | 102 | 1 | CS Flat Washer for 400/450 Switches |



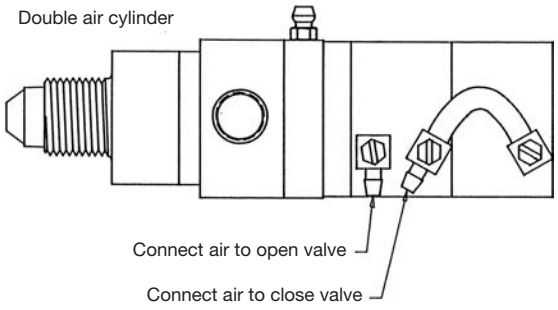
# Air Cylinders — Single Hardened SS Shafts

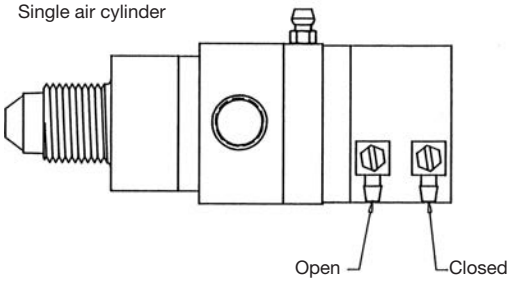



**NOTE:** Prior to assembly lubricate all O-rings with auto grease.

| P/N | Ref. # | Qty. | Description |
|---|---|---|---|
| — | 71 | 2 | BHCS 1/4-20 x 1/2" long |
| 7702402 | 72 | 1 | Aluminum Back Plate |
| — | 73 | 1 | Brown Viton O-ring (Back Plate) |
| — | 74 | 1 | Brown Viton O-ring (Piston) |
| 7702075 | 75 | 1 | Replacement Piston and Hardened SS Shafts |
| 7702074 | 76 | 1 | Replacement Body with Front Seals |

# Air Cylinders — Double



# Spare Parts Kits

### 400 Autogun Repair Kits

Each kit contains a complete set of lip seals, O-rings, and front seals.

**NOTE:** 400 AutoGun requires only (4) lips seals. (2) Extra lip seals are provided as spares for future use.

**Consult Factory for additional seal combinations.**

### AV-RK-TGT #7704093

| Ref. No. | Qty. | Description |
|---|---|---|
| 13 | 2 | PTFE Front Seal |
| 3 | 6 | UHMPE U-Cup & SS Spring |
| 6 | 6 | PTFE encapsulated O-ring |

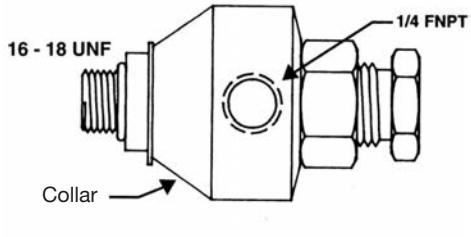
### AV-RK-TPV #7704095

| Ref. No. | Qty. | Description |
|---|---|---|
| 13 | 2 | PTFE Front Seal |
| 3 | 6 | PU U-Cup & Viton O-ring |
| 6 | 6 | Viton (brown) O-ring |

# Accessories

## Carbon Steel Adapters

| P/N | Description |
|---|---|
| 7702420 | 90 degree Elbow with 3/8 FNPS |
| 7702425 | Straight Adapter with 3/8 FNPS |




## Ratio Check Cap

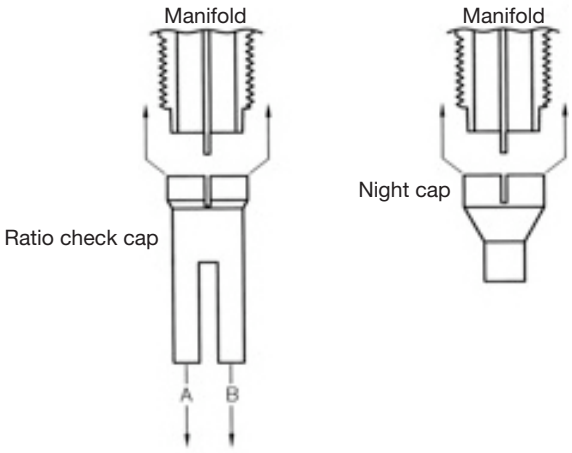
In order to ensure correct A/B ratio, ratio checks should be performed regularly with our new Ratio Check Cap.

## Night Cap

At night or on weekends, it is a good idea to seal your system. After the static mixer is removed, a night cap can be installed. This seals the system and makes startup simpler.

| P/N | Description |
|---|---|
| 7701184* | Ratio Check Cap with retaining nut |
| 7701181* | Night Cap with retaining nut |

*Use with 1:1 ratio manifolds only.



# Troubleshooting

| Problem | Possible Cause | Solution |
|---|---|---|
| No flow | Manifold clogged | Remove manifold and clean |
| | Air pressure too low | Requires 5.5 bar (80 psi) inlet pressure |
| | Air valve damaged | See Note 1 below |
| | Valve fouled | Disassemble (see Maintenance) |
| Valve leaks | Front seals (13) not seated | See Note 2 below |
| | Front seals (13) damaged | Replace seals |
| Valve drools | Air trapped in manifold | Review startup procedure |
| Off ratio A:B | Metering pumps | Check pumps |
| A & B back up into tie plate | Seals (3) damaged | Replace back lip seals (page 4) |
| Material not mixing | Mixer fouled | Replace mixer |
| | Off ratio A:B | Take ratio check |
| Mixer leaks | Manifold fouled | Clean nose of manifold |
| Lip seals deteriorated | Chemical attack | See Maintenance |

**NOTE 1:** Inspect air cartridge valve (103) in handle (90). The On-Off function of the valve is controlled by this cartridge valve in the handle. The air cylinder requires air in the back to close and air in the front to open.

To inspect the cartridge valve, disconnect the two air lines on the air cylinder (1). When the trigger is depressed, air should be flowing only through the back air line and not through the front air line. When the trigger (91) is released the air should reverse.

**NOTE 2:** The front seals cold flow into the seat plate (8). With valve closed, maintain air pressure on air cylinder to break in seals.

Nordson EFD

For Nordson EFD sales and service in over 40 countries, contact Nordson EFD or go to www.nordsonefd.com.

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