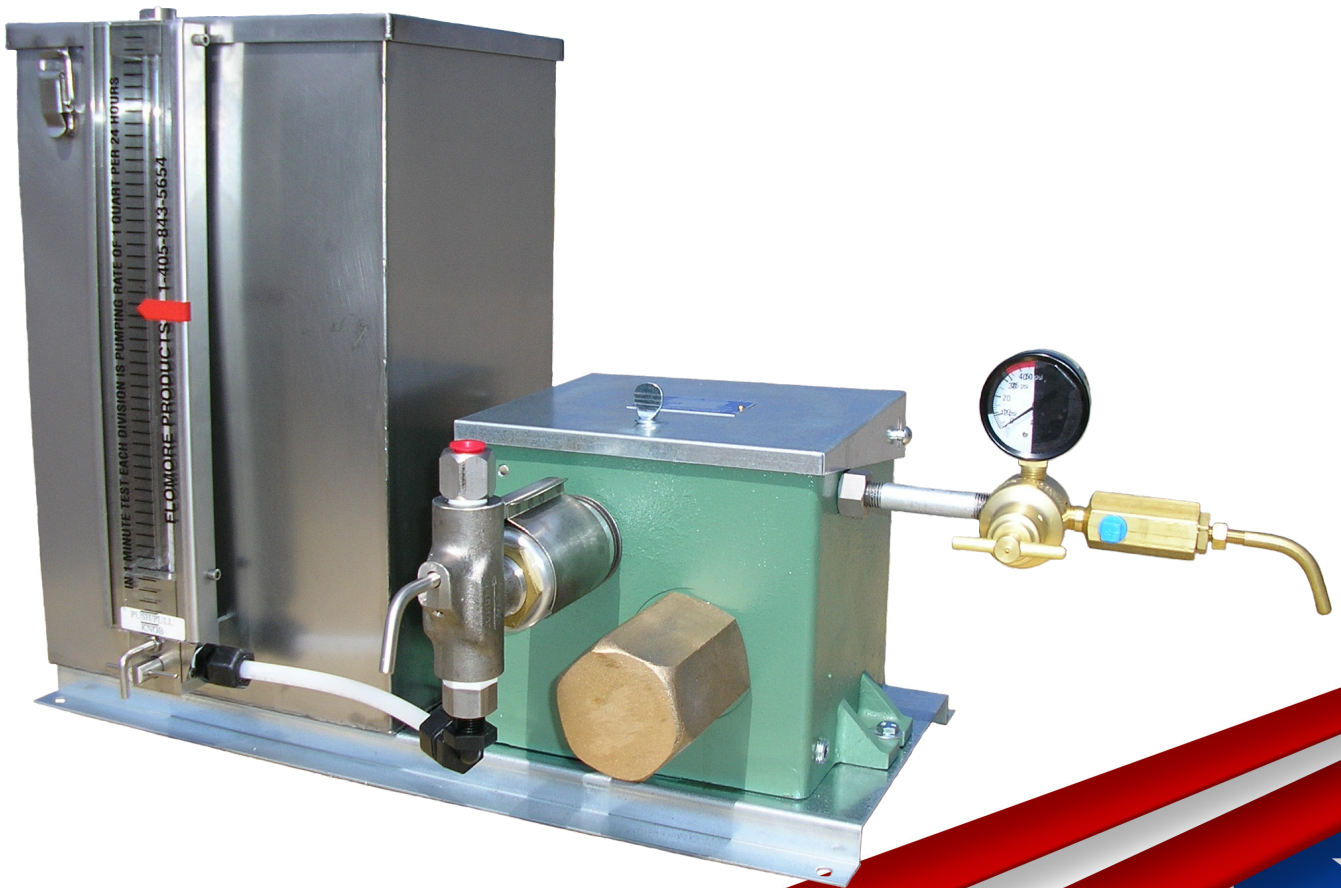




# ***3800 Series Injector***

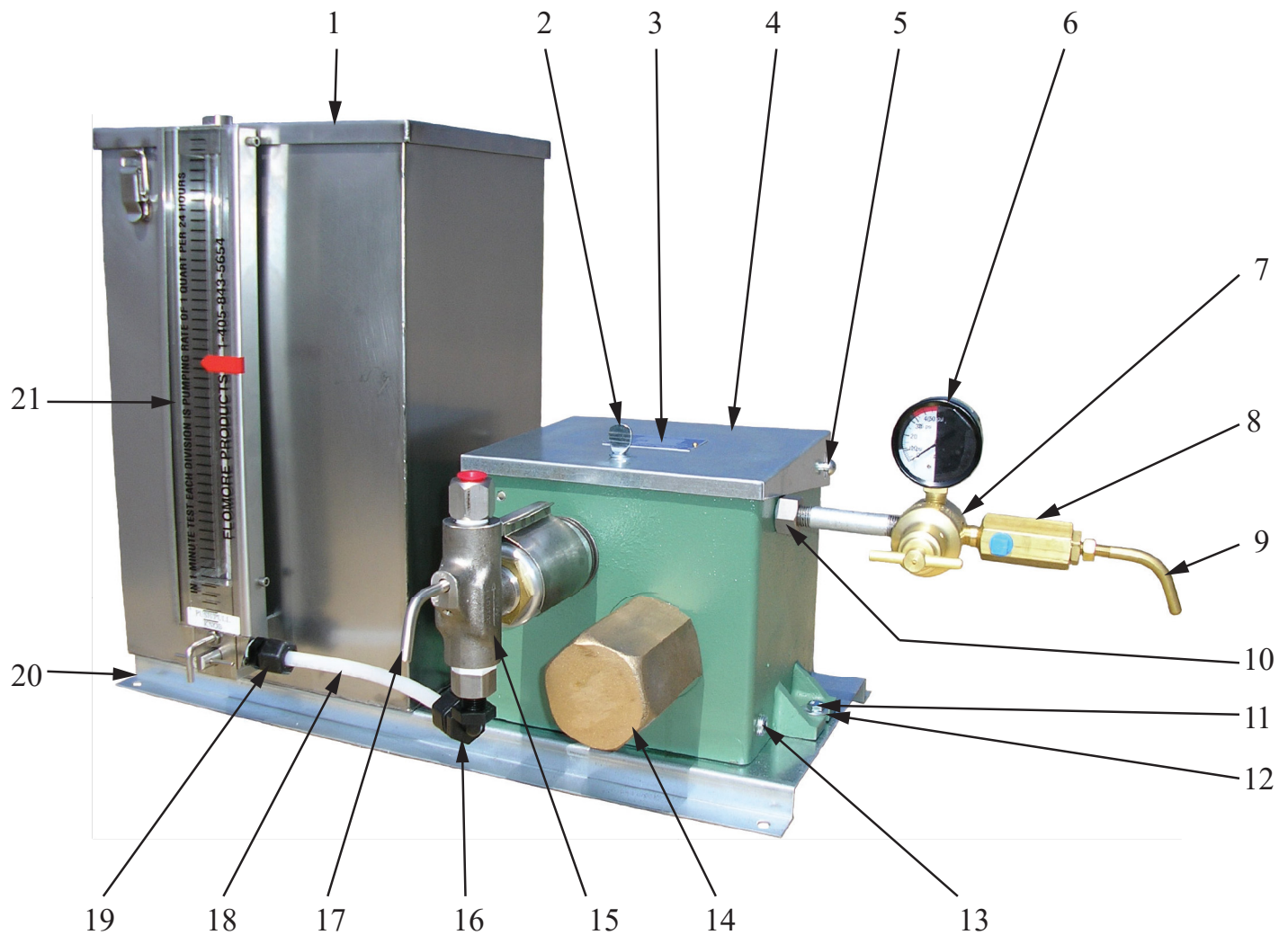




## ***Maintenance Instructions to Inspect and Replace Plunger Packing***

1. Turn off the pump. Isolate injection point from back flow or pressure.
2. Remove suction & discharge lines. (Caution: Pressure might be trapped inside head or lines.)
3. Loosen packing gland nut, then slide the nut back from the head.
4. Depending on pump model, loosen the brass jam nut from the yoke or body. You can now unscrew and remove the head body.
5. Remove packing gland from head if needed. This might remain on the plunger nut.
6. Inspect the plunger for wear. If the plunger needs to be replaced, remove the plunger pin and slide the plunger out. Insert the new plunger and reinstall the pin. (If plunger is good, move to step 7.)
7. Remove the plunger packing with a pick or small screwdriver. (Take note of packing orientation for reinstall.)
8. Inspect the throat of the head body for pitting and wear. Replace if needed.
9. Install new plunger packing one ring at a time, ensuring that each ring is seated flush.
10. Reinstall the packing gland. Insert the head onto the plunger and yoke. Thread the head back into the yoke until the jam nut touches. Align body into correct vertical position and tighten the jam nut securely. (Head should not be able to spin.)
11. Reinstall the packing gland nut until it makes contact with the packing. Apply an additional 1/4" turn into the packing.
12. Reinstall the suction and discharge lines. Open injection point valve and check for leaks.
13. Turn on the pump. Open the priming valve to bleed air from the suction lines and head. Confirm the pump is pumping and check for leaks.
14. Adjust the plunger packing as needed. Run the pump for 15 minutes and check for packing nut contact. If loose, tighten nut 1/4" at a time. (Make sure to bleed the head before making packing adjustments.)

# 3800 Series Injector



## Parts List

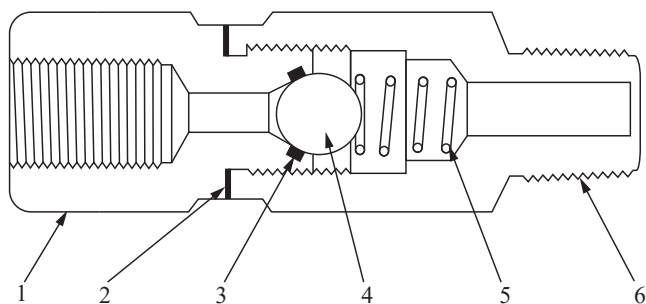
Item #	Part #	# Req.	Description
1	A-0664	1	5 Gallon 430 Stainless Steel Reservoir
2	A-0575	1	Thumb Screw
3	A-0172	1	Name Plate
4	B-0206	1	Injector Box Cover
5	A-0528	2	Cover Rivets
6	A-1295	1	Pressure Gauge 0-100 PSIG
7	B-0040.01	1	Pressure Regulator
8	A-0022	1	Speed Valve Assembly
9	A-0013	1	Stem
10	A-0866	1	Inlet Bushing

Item #	Part #	# Req.	Description
11	A-0144	2	Hex Nut
12	A-0142	1	Hex Bolt
13	A-0138	2	Drain Plug
14	A-0390	1	Cylinder Shell
15	See p. 8	1	Injector Head
16	A-3116	1	Elbow & Compression Nut
17	A-1497	1	Priming Valve
18	A-3117	1	Supply Line
19	A-3118	1	Connector Half & Compression Nut
20	A-0584	1	Single Tank Base
21	F-0871	1	Model 2000 Tank Gauge



# 3800 Series Components

## A-0675 & A-0676 Line Checks



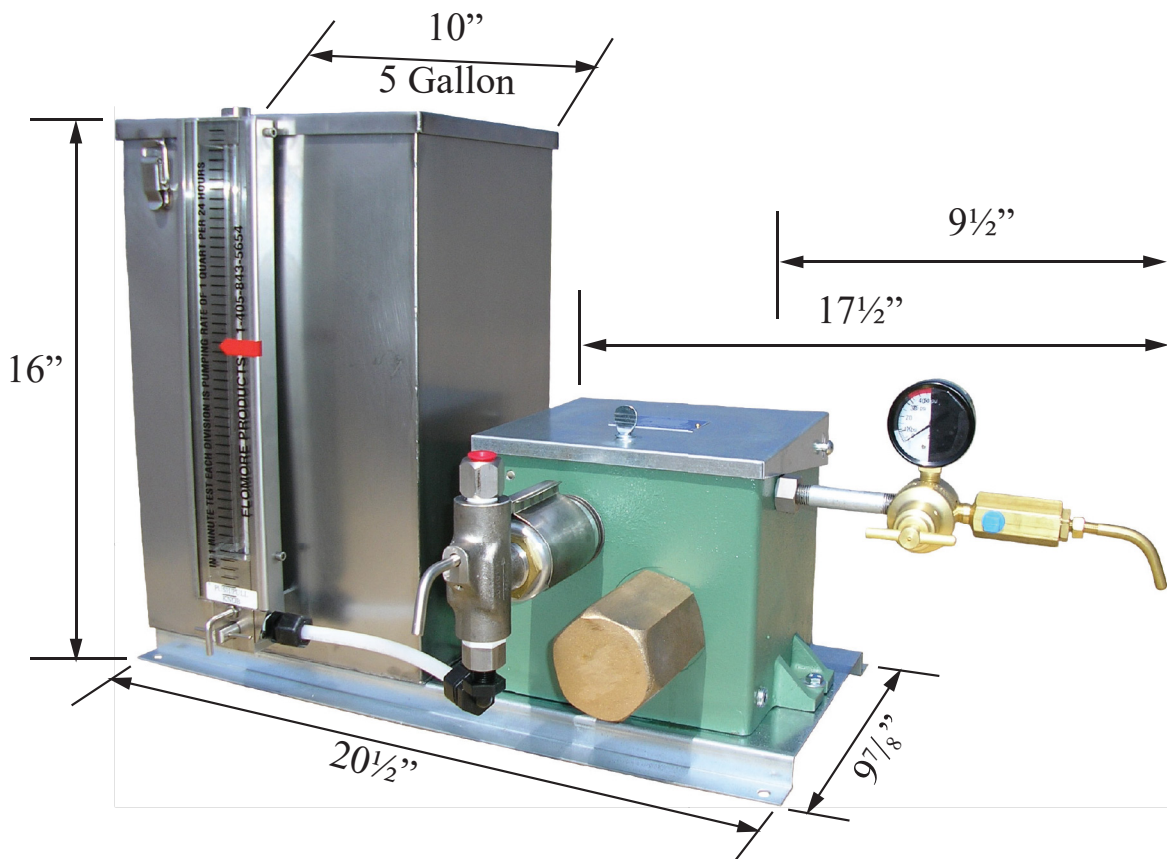
Item #	Part #	#Req	Description	Material
1	A-0678	1	Inlet Body	Brass
	A-1297	1	Inlet Body	303 Stainless Steel
2	A-1574	1	Washer	304 Stainless Steel
3	A-0479	1	O-Ring	Buna-N
	A-2580	1	O-Ring	Viton
4	A-0054	1	3/8" Ball	316 Stainless Steel
5	A-0391	1	Spring	316 Stainless Steel
6	A-0677	1	Outlet Body	Brass
	A-1296	1	Outlet Body	303 Stainless Steel

\*Recommended Spare Parts

\*\*A-0675 Only

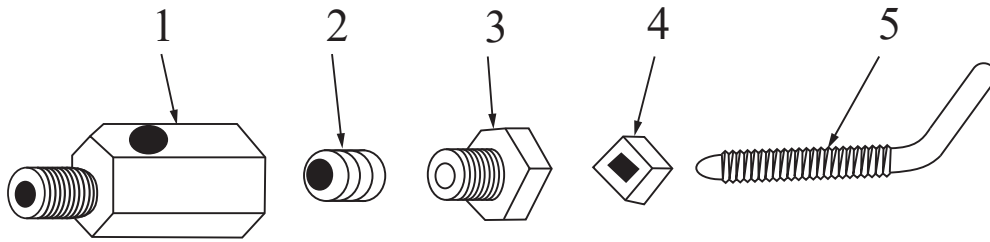
\*\*\*A-0676 Only

## 3800 Dimensions



# 3800 Series Components

## A-0022 Speed Valve Assembly

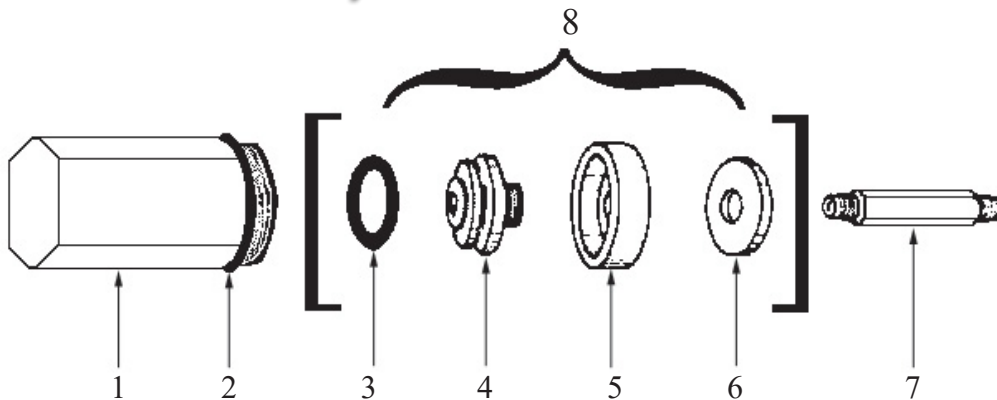


### Parts List

Item #	Part #	# Req.	Description	Material
1	A-0010	1	Needle Valve Body	Brass
2	A-0023	1	Packing	Graphite
3	A-0011	1	Gland Nut	Brass
4	A-0195	1	Needle Valve Nut	Brass
5	A-0013	1	Stem	Brass

\*Recommended Spare Parts

## Cylinder & Piston



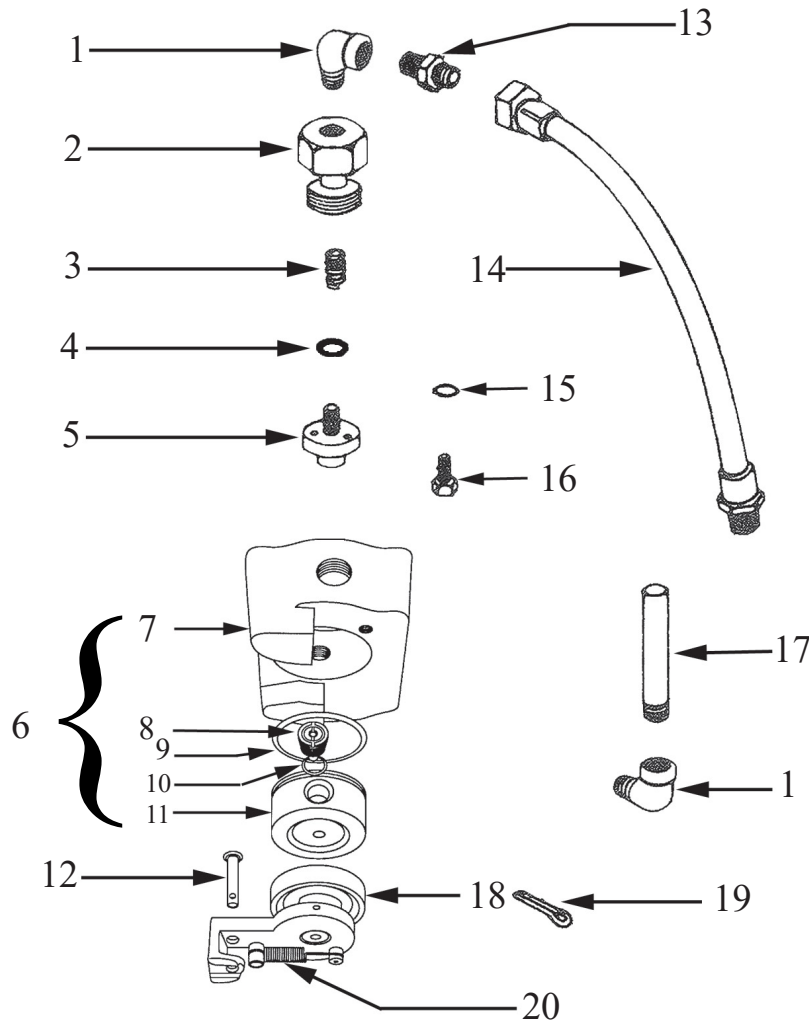
### Parts List

Item #	Part #	# Req.	Description	Material
1	A-0390	1	Cylinder Shell	Aluminum
2	A-2457	1	O-Ring	Buna-N
3	A-0808	1	Cup Spring	Steel
4	A-1211	1	Cup Retainer	Aluminum
5	A-0867	1	Piston Cup	Leather
6	A-0890	1	Tapped Washer	Steel
7	A-0881	1	Piston Rod	Steel
8	A-0597	1	Piston Assembly	▲

\*Recommended Spare Parts

# 3800 Series Components

## C-0107 Valve Assembly



## Parts List

Item #	Part #	# Req.	Description	Material
1	A-0578	1	Street Elbow	Galvanized Steel
2	C-0028.03	1	Bushing	Steel
3	A-0077	1	Spring	316 Stainless Steel
4	A-0579	1	Washer	Stainless Steel
5	A-4669	1	Valve Disc & Pin Assembly	Steel
6	C-0028	1	Pilot Valve Subassembly	▲
7	C-0028.02	1	Pilot Valve Body	Ductile Iron
8	C-0463	2	Seat Seal Screw	Steel
9	C-0485	1	Seat Seal O-Ring	Buna-N
10	C-0474	2	Seat Seal Screw O-Ring	Buna-N

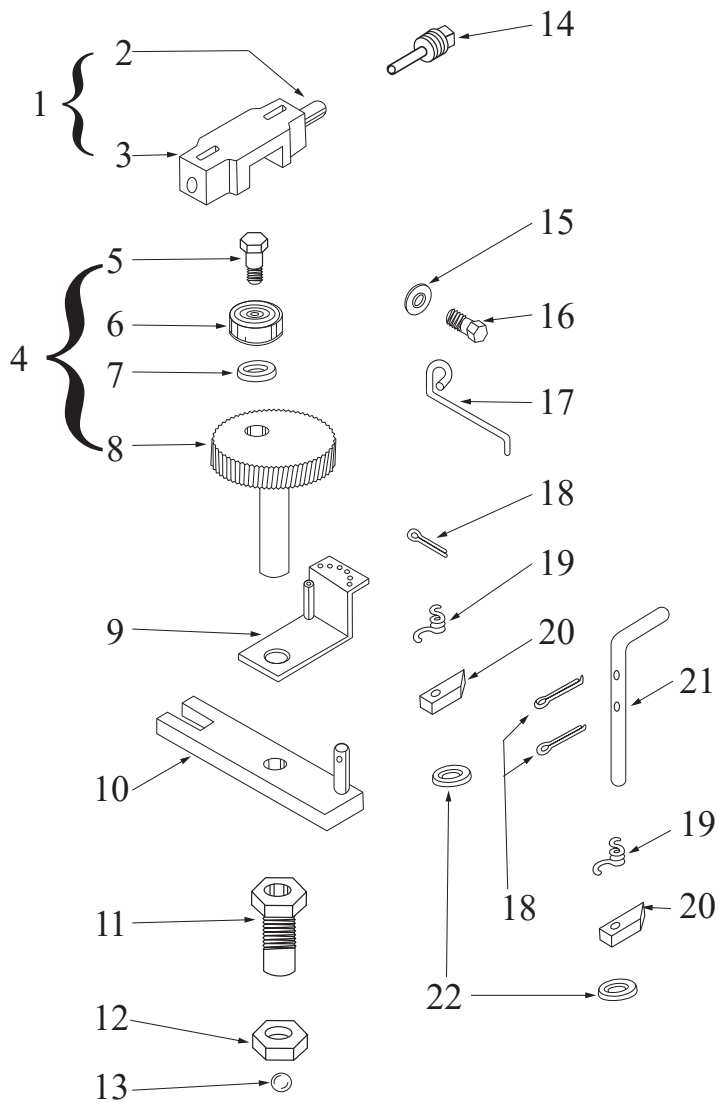
\*Recommended Spare Parts

Item #	Part #	# Req.	Description	Material
11	C-0028.04	1	Valve Seat	Steel
12	A-0170	1	Clevis Pin	Steel
*13	A-0137	1	Half Union	Brass
*14	B-0047	1	Gas Inlet Hose	▲
15	A-0167	1	Washer	Steel
16	A-3387	1	Cap Screw	Steel
17	A-0761	1	Exhaust Nipple	Steel
18	A-0065	1	Flipper Arm Assembly	▲
19	A-0168	1	Cotter Pin	Steel
20	A-0508	1	Flipper Spring Assembly	Steel

\*Items Sold Separately

# 3800 Series Components

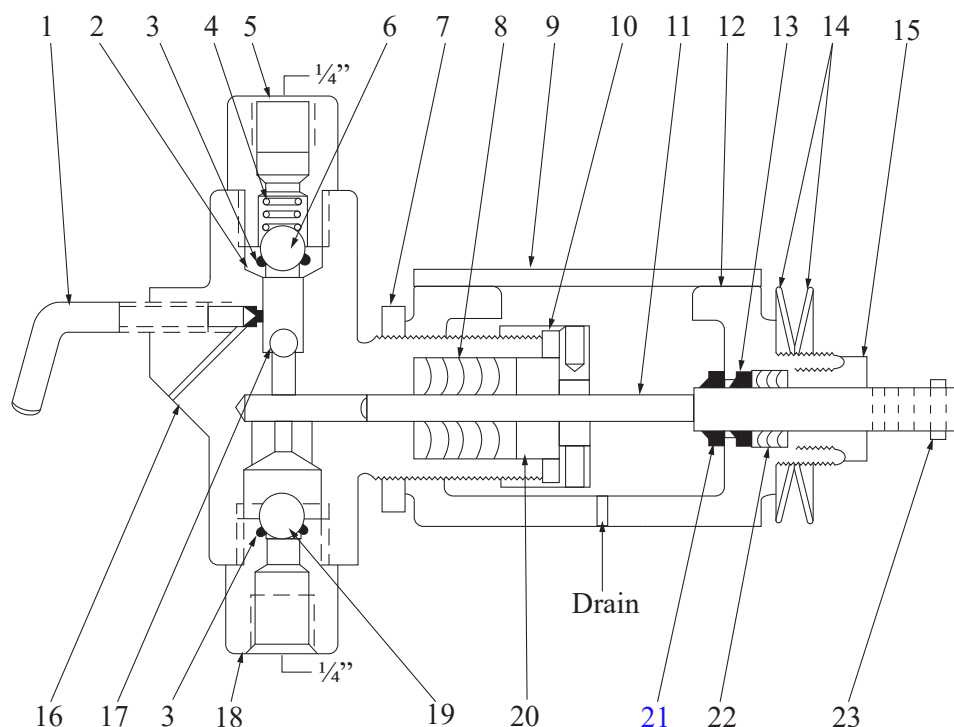
## Ratchet Drive



## Parts List

Item #	Part #	# Req.	Description	Material
1	A-0585	1	Crosshead Assembly	Steel
2	A-0883	1	Guide Sleeve	Brass
3	A-0939	1	Crosshead	Steel
4	A-0586	1	Ratchet Subassembly	Steel
5	A-0433	1	Bearing Bolt	Steel
6	A-0457	1	Ratchet Bearing	Steel
7	A-0458	1	Washer	Steel
8	B-0139	1	Ratchet Assembly	Steel
9	A-0948	1	Ratchet Control	Steel
10	A-0312	1	Cross Arm Assembly	Steel
11	A-0947	1	Bearing Insert	Steel
12	A-0107	1	Lock Nut	Brass
13	A-0126	1	Ball	316 Stainless Steel
14	A-0434	1	Guide Plug Assembly	Brass & Steel
15	A-0167	1	Washer	Steel
16	A-0574	1	Latch Bolt	Steel
17	A-0949	1	Ratchet Latch	Steel
18	A-2598	1	Cotter Pin	Steel
19	A-0955	1	Pawl Spring	Steel
20	A-0455	1	Ratchet Pawl	Heat Treated Steel
21	A-0956	1	Check Pawl Stud	Steel
22	A-0577	1	Washer	Steel

# Injector Heads



## Alternate Construction

Item #	Part #	Description	Material
2	A-0806	Top Seat Assembly (Metal to Metal)	303 Stainless Steel
	A-0843	Top Seat with Viton O-Ring	
3	A-2580	O-Ring	Viton
8	A-4102	1/4" Plunger Packing	Viton
	A-1642		Teflon
	A-2295		Hard
	A-4101	3/8" Plunger Packing	Viton
	A-1234		Teflon
	A-1875		Hard
	A-4103	1/2" Plunger Packing	Viton
	A-1012		Teflon
	A-1874		Hard
11	B-1175-C	1/4" Ceramic Plunger	▲
	B-1176-C	3/8" Ceramic Plunger	
	B-1177-C	1/2" Ceramic Plunger	
18	A-0771	Bottom Seat Assembly (Metal to Metal)	303 Stainless Steel
	B-0844	Bottom Seat Assembly (Viton)	
19	A-0053	1/2" Ball	316 Stainless Steel



# Injector Heads

## Parts List

Item #	Part #			# Req.	Description	Material
	1/4"	3/8"	1/2"			
---	C-1578	C-1579	C-1580	1	Head Assembly	Ductile Iron with Stainless Steel Trim
	C-1582	C-1583	C-1584			All Stainless Steel
1	A-1497			1	Priming Valve	303 Stainless Steel
*2	B-0737			1	Top Seat Assembly - Buna	303 Stainless Steel
*3	A-0479			1	O-Ring	Buna-N
4	A-0077			1	Ball Check Spring	316 Stainless Steel
5	A-1496			1	Top Bushing	302 Stainless Steel
6	A-0054			1	3/8" Large Top Ball	316 Stainless Steel
7	A-0225			1	Yoke Lock Nut	Brass
*8	A-1461	A-1456	A-0959	1	Plunger Packing Set	Buna-N
9	C-1604			1	Yoke Cover	303 Stainless Steel
10	A-4104			1	Plunger Packing Gland Nut	303 Stainless Steel
*11	B-1175	B-1176	B-1177	1	Plunger	17-4 pH Stainless Steel
12	B-1173			1	Yoke	Malleable Iron
13	A-4095			1	Plunger Wiper Ring	Buna-N
14	A-4256			2	Belleville Washer	302 Stainless Steel
15	A-4094			1	Yoke Packing Nut	Brass
16	C-0275	C-0276	C-0272	1	Body	Ductile Iron
	C-0291	C-0425	C-0349	1		Stainless Steel
17	A-0126			1	1/4" Small Top Ball	316 Stainless Steel
*18	B-0736			1	Bottom Seat Assembly	303 Stainless Steel
*19	A-0054			1	3/8" Suction Ball	316 Stainless Steel
20	A-1463	A-0957	A-1219	1	Plunger Packing Gland	303 Stainless Steel
21	A-4095			1	Plunger Drip Ring	Buna-N
22	A-4127			1	Yoke Packing Set	Buna-N
23	A-0290			1	Plunger Pin	Carbon Steel

\*Recommended Spare Parts

\*Alternate Components Available

# Performance Data

## Volume Output

\*Note: Multiply volume by number of ratchet teeth engaged. Maximum number if teeth is six.

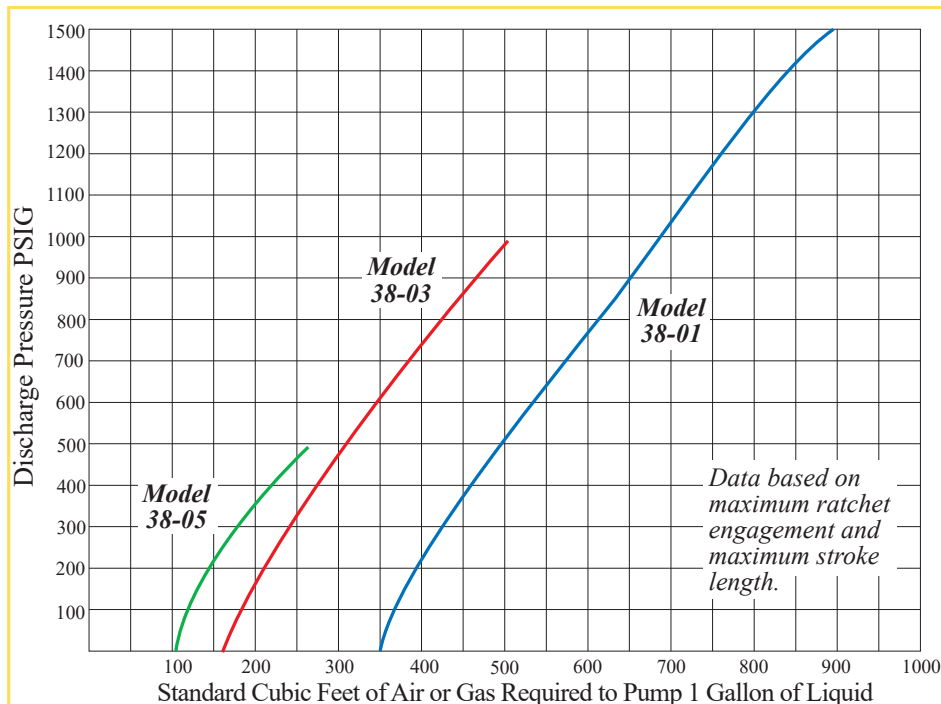
Strokes Per Minute	*Ratchet Teeth Engaged	1/4" Plunger			3/8" Plunger			1/2" Plunger		
		Short Stroke	Medium Stroke	Long Stroke	Short Stroke	Medium Stroke	Long Stroke	Short Stroke	Medium Stroke	Long Stroke
10	1									
20	2				0.5	0.7	1.0	1.0	1.5	2.0
40	1				0.8	1.5	3.0	1.2	3.0	5.3
60	1	0.5	1.0	1.8	1.1	2.6	4.5	2.3	5.0	8.2
80	1	0.7	1.4	2.6	1.7	3.7	6.0	3.2	6.7	10.5
100	1	1.0	2.0	3.4	2.3	4.8	7.7	4.3	8.7	14.0

## Pressure Volume Range

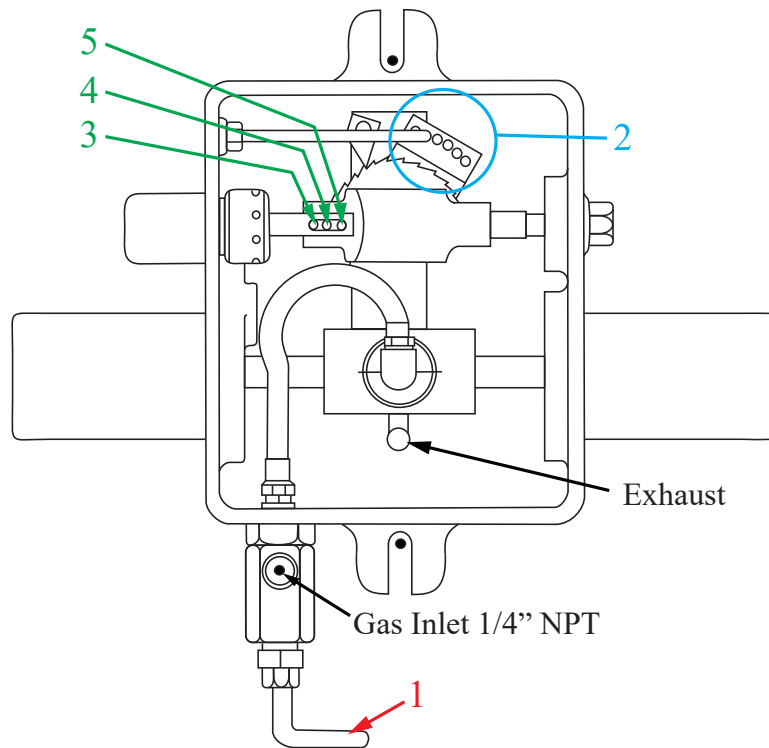
\*Note: For double headed units, increase maximum volume by two.

Plunger Size	Maximum Discharge Pressure	Model #	Pints Per Day	
			Minimum Volume	Maximum Volume
1/4"	1500	38-01	0.5	16
3/8"	1000	38-03	0.5	40
1/2"	500	38-05	1.0	70

## Air/Gas Consumption



# Volume Adjustment



## Volume Adjustment

There are three principal adjustments involved in controlling injector volumes on the 3800 chemical injector. They are pointed out in the diagram at the top under the heading of Adjustments A, B, and C.

### Adjustment A:

1. Gas valve to control speed or number of strokes per minute of motor.

### Adjustment B:

2. Ratchet control determines the number of teeth the drive pawl will engage in each stroke of the motor. Place ratchet latch A-0949 in the hole on the left to engage the maximum number of teeth to pump maximum volume.

### Adjustment C:

3. First position, long stroke (most volume).
4. Second position, medium stroke.
5. Third position, short stroke (least volume).

For maximum efficiency at any desired discharge rate, make adjustments in order **A - B - C**.

# ***Installation and Operating Instructions***

1. Bolt holes are provided for a permanent mounting (see drawing on p. 4 for dimensions).
2. Install the A-1497 priming valve (included with pump, but shipped in the pump packet) on the pump head
3. Connect the suction line to the pump head.
  - If a reservoir is furnished with the pump, the suction line is already connected. Fill the reservoir and fully open the shutoff assembly.
4. Connect the discharge line (5/16" copper tubing will suffice). A 1/4" line check is provided with all models. This valve should be installed as close to the point of injection as possible. Note the arrow on the check valve indicating the direction of flow. The top connection on the pump head is the outlet and has a 1/4" female pipe thread connection.
5. Connect the power gas line.
  - Blow the power gas line clean to remove any loose rust particles, slag, sand, etc.
  - Consider the pressure requirements of the pump. If the gas supply exceeds 35 PSI (considered erratic pressures), the pump should be equipped with a regulator to reduce the gas pressure to 35 PSI or below. The B-0040 regulator (purchased separately) is capable of handling upstream pressures to 1500 PSI.
  - Tie in the gas line to the A-0022 speed valve or A-0866 inlet bushing
6. Fill the A-0583 box assembly with enough SAE-30 oil to cover the A-0457 bearing (approximately 6 1/4 pints). If low ambient temperatures are encountered, a lighter oil such as SAE-10 should be used. Check oil level at regular intervals with the A-0946 oil gauge stick ( purchased separately).
7. Adjust for desired volumes by considering the performance data (p.10 & 11). If more volume is required, the pump head assembly can be changed or converted to a larger plunger size. An additional head can be installed on the opposite side of the A-0583 box assembly by removing the A-0434 guide plug assembly. The A-0883 guide sleeve should also be removed.
8. Start the pump by slowly opening the A-0022 speed valve. Prime the pump head by opening the A-1497 priming valve. After the pump discharges clear fluid without bubbles, close the priming valve for normal operations. At this point make a visual check of the plunger drip, and using the A-0315 gland wrench that is included in the package, slowly tighten the gland to prevent excess drippage and waste of chemicals. **Do not overtighten the plunger packing. Do not tighten with pressure on the head.** Keep the A-0315 gland wrench handy for future packing adjustment. It may be necessary to readjust the packing the next day. A slight leak during the break-in is beneficial. Sufficient time should be allowed to let the packing "seat-in". If low volumes are being pumped, the pump head, the fluid discharge line, and all other fittings up to the line check should be thoroughly purged of all air bubbles.  
Check the pump action by opening the A-1497 priming valve.

# ***Maintenance Instructions***

## ***To Inspect or Replace Power Cylinder or Piston Parts***

Shut off the power gas pressure. Unscrew the A-0390 cylinder shell. This will expose the A-0597 piston assembly and the A-0881 piston rod. To replace the A-0867 piston cup or A-0890 tapped washer, unscrew the A-1211 retainer. The A-0881 piston rod is hex material and is easily removed from the C-0028 valve body.

### ***To Inspect Pump Head Parts***

Suction and discharge balls and seats can be inspected or replaced without removing the pump head from the power unit. To do this, it is necessary to disconnect the suction and discharge lines at the head and unscrew the A-1496 top bushing and the B-0736 bottom bushing.

### ***To Remove the Pump Head from the Gear Box***

1. Disconnect the suction and discharge line
2. Pull the A-0290 pin.
3. The entire fluid head can now be unscrewed from the gear box.
4. Loosen the gland nut.
5. Pull the chemical plunger from the head.
6. Remove the A-0810 packing nut. This gives access to the yoke packing.
7. Loosen the A-0225 lock nut. The yoke can then be unscrewed from the fluid head (while unscrewing the yoke, the gland nut must also be backed off). This gives access to the main plunger packing.

### ***To Replace the A-0065 Flipper Arm Assembly and Bearing***

Remove both A-0166 cap screws and the A-0167 washer from the underside of the C-0028 valve body. An A-0126 valve ball should be inspected and replaced if necessary.

### ***To Inspect or Replace A-0457 Ratchet Bearing***

1. First remove the A-0434 guide plug assembly.
2. Next, remove the pump head from the gear box (in the case of double headed pumps, both heads should be removed).
3. The A-0585 crosshead assembly can then be lifted out. The A-0457 ratchet bearing and the A-0458 washer can now be inspected or replaced by removing the A-0433 bearing bolt. The B-0139 ratchet assembly can now be lifted out.
4. Disconnect the A-0948 ratchet control from the A-0949 ratchet latch and lift out.
5. The A-0312 cross arm assembly can be slipped from under the A-0793 bushing and lifted out. The A-0455 ratchet pawl, A-0955 pawl spring, A-0576 cotter pin key and the A-0577 washer can now be inspected or replaced.
6. The A-0793 bushing can be removed, exposing the A-0077 ball check spring, the A-0579 washer, and the B-0136 valve disc for inspection.

### ***To Remove the B-0107 Switching Valve***

Remove both A-0390 cylinder shells. Unscrew both A-0881 piston rods (A-0597 piston assemblies may be left on the A-0881 piston rod). At this point the B-0107 valve and the A-0065 flipper arm assembly can be lifted from the gear box. An A-0508 flipper spring subassembly can be replaced by removing the A-0168 cotter pin and the A-0170 clevis pin.

### ***To Replace the B-0047 Gas Hose***

Unscrew the hex nut (attached to hose) from the A-0137 half union. Then, unscrew the B-0047 hose from the A-0866 inlet bushing.



# ***Notes***

# ***Notes***



*Different By Design*

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