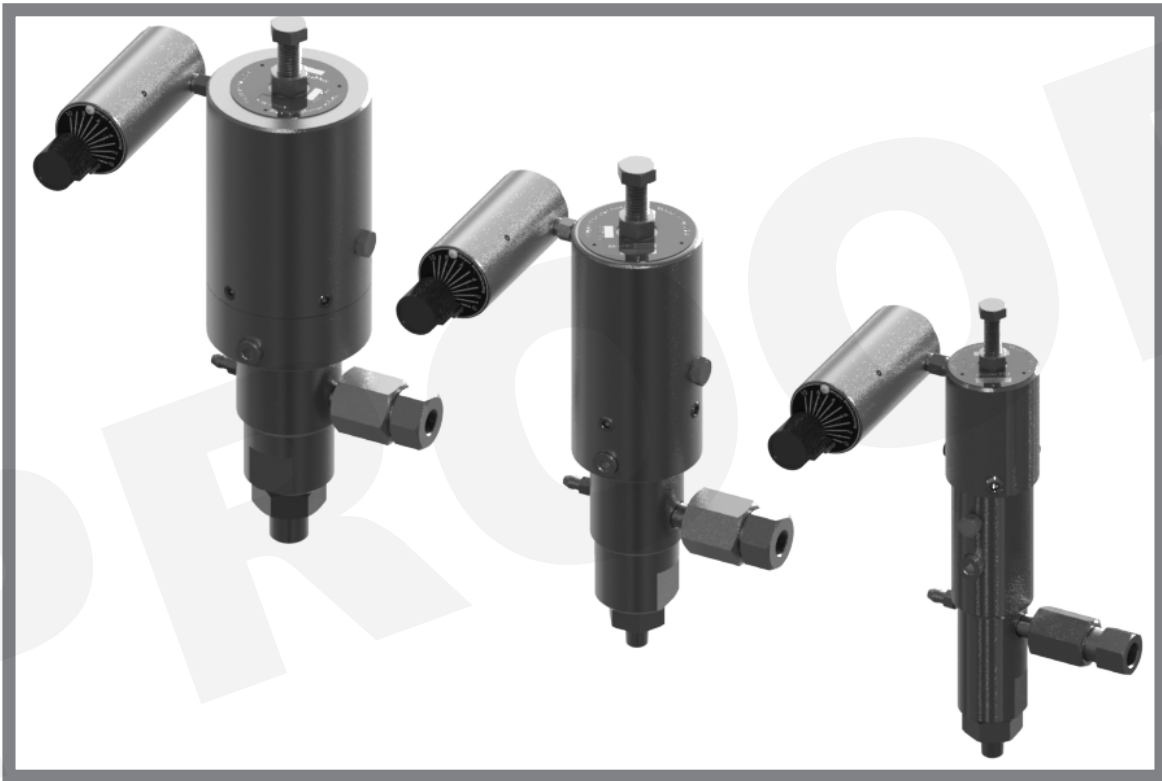


# MEGAS

## MANUFACTURING



**PNEUMATIC PUMP**  
**INSTALLATION**  
**AND**  
**OPERATION MANUAL**



# PNEUMATIC SPECS

## OPERATING SPECIFICATIONS

Model	P14	P24	P38
Max Discharge* (PSI)	4,500	10,500	4,500
Max Flow (Quarts/Day)	85	62	245
Min Flow (Quarts/Day)	.75	1.25	5
Supply : Discharge Ratio	1:31	1:75	1:33
Max Strokes/Minute	70	50	50

\*150 PSI Supply

## GAS EMISSION PER STROKE (SCF)

Supply Pressure	Piston Size			Supply Pressure	Piston Size		
	P14	P24	P38		P14	P24	P38
20 PSI	0.0024	0.0054	0.0097	90 PSI	0.0073	0.0164	0.0291
30 PSI	0.0031	0.007	0.0124	100 PSI	0.008	0.018	0.0319
40 PSI	0.0038	0.0086	0.0152	110 PSI	0.0087	0.0195	0.0347
50 PSI	0.0045	0.0101	0.018	120 PSI	0.0094	0.0211	0.0375
60 PSI	0.0052	0.0117	0.0208	130 PSI	0.0101	0.0226	0.0403
70 PSI	0.0059	0.0133	0.0236	140 PSI	0.0108	0.0242	0.043
80 PSI	0.0066	0.0148	0.0264	150 PSI	0.0115	0.0258	0.0458

# SAMPLE CODE: P14-SS-EVV-S

Piston Size x Plunger Size	Code
1.5" x 1/4"	P14
2.25" x 1/4"	P24
3" x 1/2"	P38

Plunger Material	Code
17-4 SST	SS
Ceramic Coated	CC

Seal Material	Code	O Ring Material	Code	Check Seat/Seal Material	Code
ETP	E	Viton	V	TFE/TFE	T
UHMWPE	U	Buna	B	TFE/Viton	V
FFKM	F	FFKM	F	TFE/Buna	B
Buna	B			TFE/FFKM	F
Viton	V				
Glass Moly	G				
Carbon/Graphite/TFE	Q				



# PNEUMATIC SIZING FORMULA

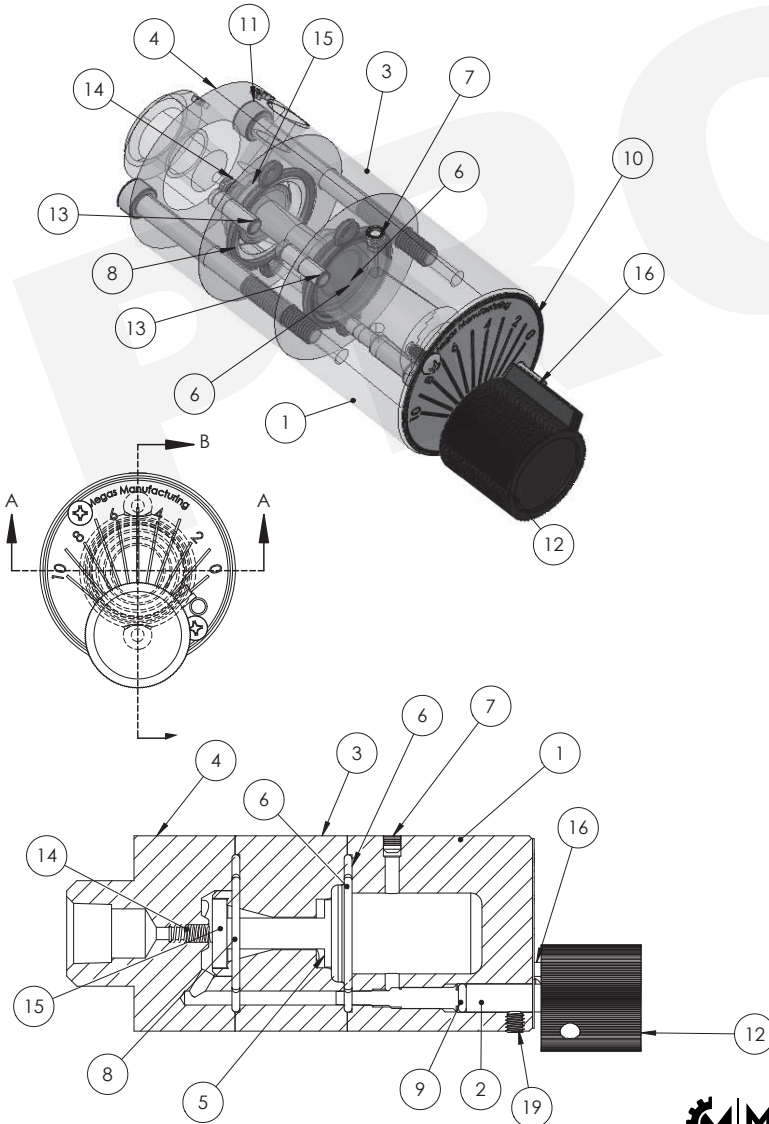
$$\text{Supply Pressure (20 PSI Min)} = \frac{\text{Injection Pressure + 200 PSI}}{\text{Discharge Ratio (See Specs)}}$$

## Example of a P14 Model in a 2500 PSI Application

$$\text{Supply Pressure} = \frac{2500 \text{ PSI} + 200 \text{ PSI}}{31} = 87 \text{ PSI}$$

$$\text{Supply Pressure} = \frac{2700 \text{ PSI}}{31} = 87 \text{ PSI}$$

# MT-250 CONTROLLER



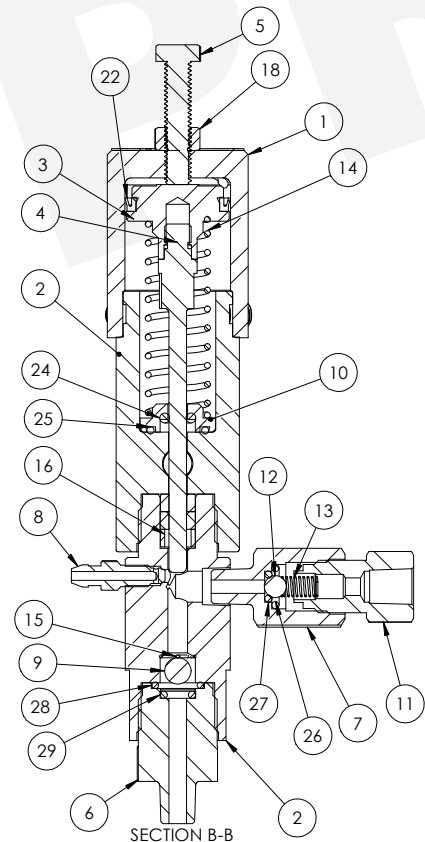
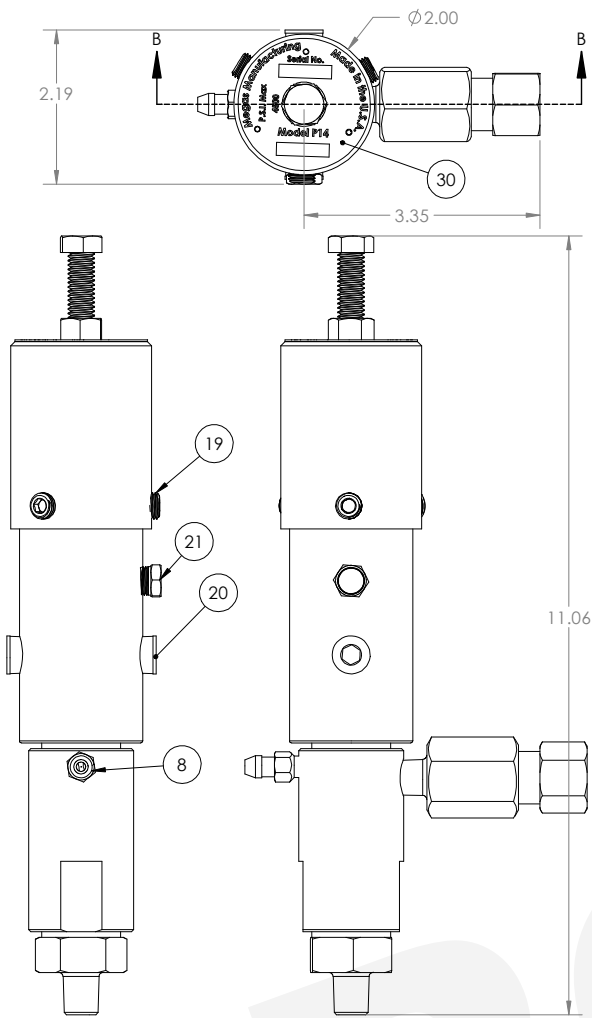
Item #.	P/N	DESCRIPTION	QTY
1	FG-1233	SST Controller Volume	1
2	FG-8260	SST Timer Stem	1
3	FG-1241	SST Controller Middle	1
4	FG-1251	SST Controller Inlet	1
5*	FG-1290	Delrin Push Rod	1
6*	PA-8200	Buna Diaphragm	1
7	PA-8150	SST Expansion Plug	1
8*	PA-8210	Buna Seal	1
9*	PA-8040	Buna 006 Oring	1
10	PA-8410	Dial Scale	1
11	PA-8110	SST 10-32 x 2.25 Screw	1
12	PA-8130	Nylon Control Knob	1
13	PA-8080	SST Roll Pin	2
14*	PA-8120	Timer Spring	1
15*	PA-1280	Buna Timer Disk Seal	2
	FG-1280	TFE Timer Disk Seal	1
16	PA-8190	Stop Pin	1
17	PA-8995	SST Drive Screw	2
18	PA-8161	Muffler	1
19	PA-8220	SST Set Screw	1

\* Included in Repair Kit TK-MT250



**P14 PUMP**

**REPAIR KITS**



Item #.	P/N	DESCRIPTION	QTY	PK	OK
1	FG-1201	SST Piston Housing	1		
2	SB-1160	SST Body Assembly	1		
3	FG-1170	SST Piston	1		
4	FG-1190	SST Plunger	1	X	
	SB-1191	Ceramic Coated Plunger			
5	PA-4600	SST Stroke Bolt	1		
6	FG-1110	SST Suction Check	1		
7	FG-4230	SST Discharge Check Inlet	1		
8	FG-4100	SST Bleed Screw	1		
9	CO-7430	SST 3/8" Ball	1	X	
	CO-7431	Carbide 3/8" Ball			
10	FG-1180	SST Spring Retainer	1		
11	FG-4240	SST Discharge Check Outlet	2		
12	CO-7320	SST 5/16 Ball	1	X	
	CO-7321	Carbide 5/16 Ball			
13	CO-7260	SST Check Spring	1		
14	PA-2210	Return Spring	1	X	
15	PA-7380	SST Ball Stop	2		
16	CO-1396	Delrin Packing Ring	1	X	X
17	CO-1390	Delring Back Up Ring	1	X	X
18	PA-4610	SST/Buna Sealing Nut	1		
19	PA-1420	SST Set Screw	3		
20	PA-7450	SST Plug	2		
	PA-7860	Nylon Vent Plug			
21	PA-1250	Lubritane U Cup	1	X	X
	PA-1252	Viton U Cup			
22	CO-1224	ETP Seal	1	X	X
	CO-1220	UHMWPE Seal			
	CO-1250	FFKM Seal			
	CO-1225	Buna Seal			
	CO-1226	Viton Seal			
	CO-1222	Glass Moly Seal			
	CO-1221	Carbon/Graphite/TFE Seal			
23	PA-1460	Viton 202 O Ring	1	X	X
	PA-1462	Buna 202 O Ring			
	PA-1464	FFKM 202 O Ring			
24	PA-1300	Viton 115 O Ring	1	X	X
	PA-1302	Buna 115 O Ring			
25	PA-1304	FFKM 115 O Ring	1	X	X
	CO-1341	111 TFE Oring			
26	CO-1340	111 Viton Oring	1	X	X
	CO-1342	111 Buna Oring			
	CO-1344	111 FFKM Oring			
27	PA-1441	Teflon 108 O Ring	1	X	X
28	PA-1441	TFE 113 O Ring	1	X	X
	PA-1440	Viton 113 O Ring			
	PA-1442	Buna 113 O Ring			
	PA-1444	FFKM 113 O Ring			
29	PA-1421	Teflon 109 O Ring	1	X	X
30	FG-1205	P14 Tag	1		



# INSTALLATION

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The pump must be installed in a vertical position with the suction check's NPT connection pointing straight down. Typical installations will include the following:

- High Pressure Line Check
- High Pressure Needle Valve
- Pump Setting Gage
- Y Strainer/Filter
- Isolation Valves – Suction and Rate Gage
- Supply Gas Regulator
- Tubing/Tube Fittings
- Pressure Safety Valve

*Your representative is happy to supply all relevant accessories.*

## BEST PRACTICES

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- Pump suction should be a minimum of 6" below chemical supply.
- Separate regulators are to be used for relays or multiple pumps.
- Mount the supply gas regulator as close to the pump as possible.
- Line Check -> Needle Valve installed at injection point
- Calculate and set supply pressure. Excessive supply pressure decreases pump life.
- Install a Pressure Safety Valve

*- A Pressure Safety Valve must always be used with a Positive Displacement, Chemical Metering Pump. A PSV is designed to protect the pump and system from over pressurization. To work effectively, the PSV must be set to relieve at the Maximum Working Pressure for the weakest point in the ENTIRE system. Contact Megas Support or your local representative for assistance*



# STARTUP

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1. Crack bleed screw until fluid streams out continuously with every stroke of the pump. Tighten bleeder as fluid is streaming out.
2. Set supply pressure using the formula provided on Pg. 2.
3. Set the injection rate by following the instructions on the rate gage (most utilize a 1-minute test). Adjust the rate by rotating the valve stem knob on the controller.
4. Adjusting the stroke length of the pump will also change the injection rate. Utilize for ultra-low rates or a more tailored injection stream.

# MAINTENANCE

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Add or replace lubricant as required (especially after repair). Use lubricant suitable for climate where the pump is installed. See Parts Breakdown for Repair Kit options.

# TROUBLESHOOTING

PROBLEM	POSSIBLE CAUSE	CORRECTIVE ACTION
<p><b>Controller Doesn't Cycle</b></p>	<ul style="list-style-type: none"> <li>- No or Insufficient Supply Gas</li> <li>- Valve Stem closed.</li> </ul>	<ul style="list-style-type: none"> <li>- Check Supply Gas Source and Gage. Confirm 20 to 150 PSI.</li> <li>- Turn Valve Stem Knob Counter Clockwise.</li> </ul>
<p><b>Supply Gas Rushing Through Exhaust Outlet</b></p>	<ul style="list-style-type: none"> <li>- Valve Stem Excessively Open</li> <li>- Debris Obstructing Seat</li> <li>- Torn, Damaged Diaphragm</li> </ul>	<ul style="list-style-type: none"> <li>- Turn Timer Stem Knob Clockwise.</li> <li>- Disassemble Controller, Remove Debris.</li> <li>- Replace Soft Goods (TK – MT250)</li> </ul>
<p><b>Plunger/Piston Not Stroking</b></p>	<ul style="list-style-type: none"> <li>- Damaged Return Spring</li> <li>- No or Insufficient Supply Gas</li> <li>- Piston U Cup Lodged in Housing</li> <li>- Discharge or Suction Line Obstructed</li> </ul>	<ul style="list-style-type: none"> <li>- Replace Return Spring</li> <li>- Confirm/Increase Supply Gas.</li> <li>- Inspect Controller (Steps Above)</li> <li>- Clean and Lubricate</li> <li>- Confirm Discharge Line Is Clear</li> </ul>
<p><b>Little or No Flow</b></p>	<ul style="list-style-type: none"> <li>-Insufficient Gravity Feed to Suction.</li> <li>-Viscosity of injection chemical too high.</li> <li>Air/Vapor in pump.</li> </ul>	<ul style="list-style-type: none"> <li>- Confirm Pump Suction Is a Minimum of 6" Below Source</li> <li>- Increase Suction/Discharge Piping</li> <li>- Bleed pump per startup procedure.</li> </ul>