

Pneumatic Chemical Metering Pump

Timberline's Pneumatic Chemical Metering Pump was designed with the well pumper and the chemical man in mind. Each pump has a simple but rugged design that can be repaired in the field within minutes on the tailgate of a pickup truck. Standard features include 316 SST wetted parts, TFE o-rings in both checks, sealed lube system, and a timer/controller that will turn down to 3 strokes per minute. For chemical injection applications where a pneumatic pump is the right choice, the Timberline Pneumatic Chemical Metering Pump is the ideal pump to meet your needs.

Features:

- Dual seals and a piston wear guide (2.25" pistons and larger) ensure concentric plunger stroke and longer seal life. The pump will continue to function properly even after the lower seal has failed. By adding a gauge to the lubrication system the lease operator can determine if maintenance on the pump is required. If maintenance is necessary the operator can order parts and schedule the maintenance at his convenience.
- Sealed lubrication system – Lubrication changed only when seals are replaced.
- Teflon seats in the discharge and suction check bodies give positive sealing.

- Springs are engineered for optimum performance and for long life.
- Exhaust gas from both the piston housing and the controller can be vented to a safe area.
- The bleed screw is designed to accept a hose to allow collection of chemical.

Materials of Construction:

Wetted Parts (Excluding plunger)	316 SST
Plunger	17-4PH SST
(Optional)	17-4PH SST Ceramic Coated
Piston	303 SST
Piston Housing	303 SST
O-Rings	Viton
(Optional)	Buna
Check Seats	TFE
MPT Body	303 SST
MPT-II Body	Aluminum
Check Ball	316 SST
(Optional)	Carbide



Operating Specifications

Model	2515	2522	2530	5030	5040	1560*
Max Discharge Pressure (psi)	4500	10,500	15,000	4500	9000	2400
Discharge Pressure @100 psi	3100	7500	13,000	3300	6100	1400
Ratio @ 100 psi	31:1	75:1	130:1	33:1	61:1	14:1
Stroke Length	1"					1.6"
Volume @ 50 strokes/min (QPD)	60 ¹	60	60	243	200	2120 ⁴
Minimum Volume (QPD) ^{2,3}	.75	1.25	1.25	5	5	44
Max Inlet Pressure (psi)	150					
Max Operating Temperature (°F)	180°					

- 84 QPD at 70 strokes per minute.
- Minimum rates for the Model 2515 or calculated using 1/8" stroke length and 4 strokes per minute.
- Minimum rates for Models 2522, 2530, 5030, & 5040 or calculated using 1/4" stroke length and 4 strokes per minute.
- Maximum Volume for 1560 achieved at approximately 35-40 strokes/minute. 50 strokes/minute does not allow for full stroke length and reduces overall flow rate.

Gas Consumption (SCF per 1" stroke)

Supply Pressure (psi)	2515	2522	2530 / 5030	5040	1560
20	0.0024	0.0054	0.0097	0.0172	.1618
30	0.0031	0.0070	0.0124	0.0221	.2084
40	0.0038	0.0086	0.0152	0.0271	.2556
50	0.0045	0.0101	0.0180	0.0320	.3019
60	0.0052	0.0117	0.0208	0.0370	.3491
70	0.0059	0.0133	0.0236	0.0419	.3961
80	0.0066	0.0148	0.0264	0.0468	.4423
90	0.0073	0.0164	0.0291	0.0518	.4891
100	0.0080	0.0180	0.0319	0.0567	.5361
110	0.0087	0.0195	0.0347	0.0617	.5826
120	0.0094	0.0211	0.0375	0.0666	.6296
130	0.0101	0.0226	0.0403	0.0716	.676
140	0.0108	0.0242	0.0430	0.0765	.7226
150	0.0115	0.0258	0.0458	0.0815	.7698

Caution:

Too much supply pressure may cause spring and/or plunger to break and may void warranty. For best results, use the equation below to determine the correct amount of supply pressure. (Use 20 PSI minimum if discharge pressure is extremely low)

$$\text{Supply Pressure (PSI)} = \left(\frac{\text{Discharge Pressure (PSI)} + 200}{\text{Ratio (From Table Above)}} \right)$$

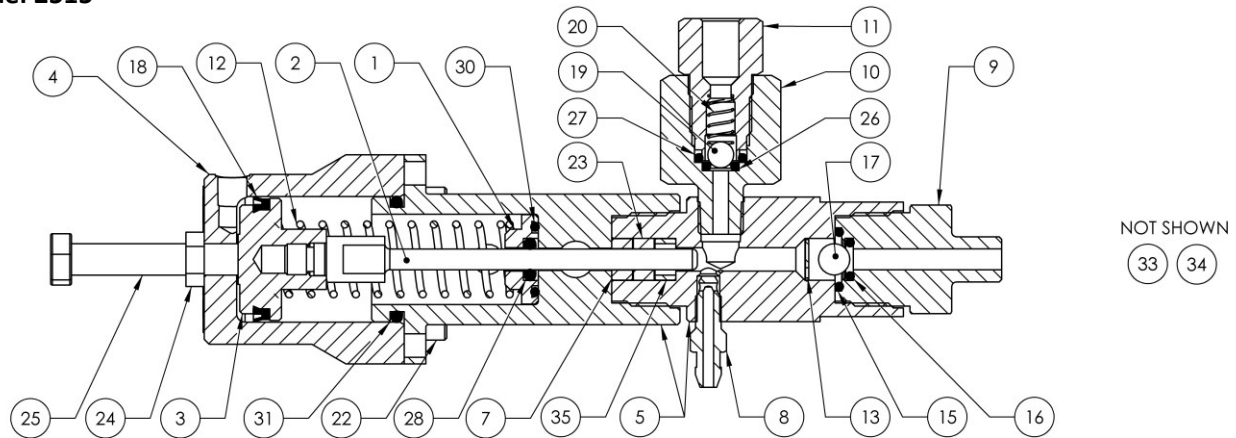
For example: At 2000 PSI discharge pressure, using a 2515 pump:

$$\text{Supply Pressure (PSI)} = \left(\frac{2000 \text{ PSI} + 200}{31} \right) = 71 \text{ PSI}^{**}$$

* Contact manufacturer for additional information and availability

** Use 20 PSI minimum, 150 PSI maximum

Model 2515



Item	Part Number	Qty	Material	Description
1	30180	1	316 SST	Retainer Seal Plunger
2	30190	1	17-4SST	Plunger
	30191		Ceramic Coated	
3	30170	1	303 SST	Piston
4	30201	1	303 SST	Piston Housing
5	30160	1	316 SST	Body Assembly
7	30090	1	Delrin	Ring Back-Up
8	30100	1	316 SST	Bleed Screw
9	30110	1	316 SST	Suction Check
10	30230	1	316 SST	Body Discharge Check Inlet
11	30240	1	316 SST	Body Discharge Check Outlet
12	30210X	1	Hasteloy C	Return Spring
13	30380	1	316 SST	Ball Stop
15	40040	1	Viton	O-Ring
	40041		TFE	
	40042		Buna-N	
16	40021	1	TFE	O-Ring
17	40430	1	316 SST	Ball
	40431		Carbide	
18	40250	1	Lubrithane	U-Cup
	40252		Viton	
19	40320	1	316 SST	Ball
	40321		Carbide	
20	40260	1	302 SST	Discharge Check Spring
22	40140	4	18-8 SST	Socket Head Screw
23	40220	1	UHMWPE (U)	Seal
	40221		TFE/Carbon (C)	
	40222		TFE/Glass Moly (G)	
	40223		TFE/Graphite (Q)	
	40224		TFE/ETP (E)	
	40225		Buna-N (B)	
24	40610	1	18-8 SST/Buna-N	Nut Self-Sealing
25	40600	1	18-8 SST	Hex Head Cap Screw
26	40281	1	TFE	O-Ring
27	40340	1	Viton	O-Ring
	40341		TFE	
	40342		Buna-N	
28	40060	1	Viton	O-Ring
	40062		Buna-N	
30	40300	1	Viton	O-Ring
	40302		Buna-N	
31	40400	1	Viton	O-Ring
	40402		Buna-N	
33	40450	2	SST	Plug
34	40860	1	Nylon	Vent
35	30096	1	Delrin	Packing Ring

Kits – When ordering kits you must include the pump model number

- **POK** – Includes o-rings, seals, back-ups, and check spring (Items 7, 15, 16, 20, 23, 26 thru 31, 35)
- **WRK** – Includes o-rings, seals, backups, check spring, u-cup, check balls, and return spring (Items 7, 12, 15 thru 20, 23, 26 thru 31, 35)
- **PRK** – Includes plunger, O-rings, seals, backups, check spring, u-cup, check balls, and return spring (Items 2, 7, 12, 15 thru 20, 23, 26 thru 31, 35)

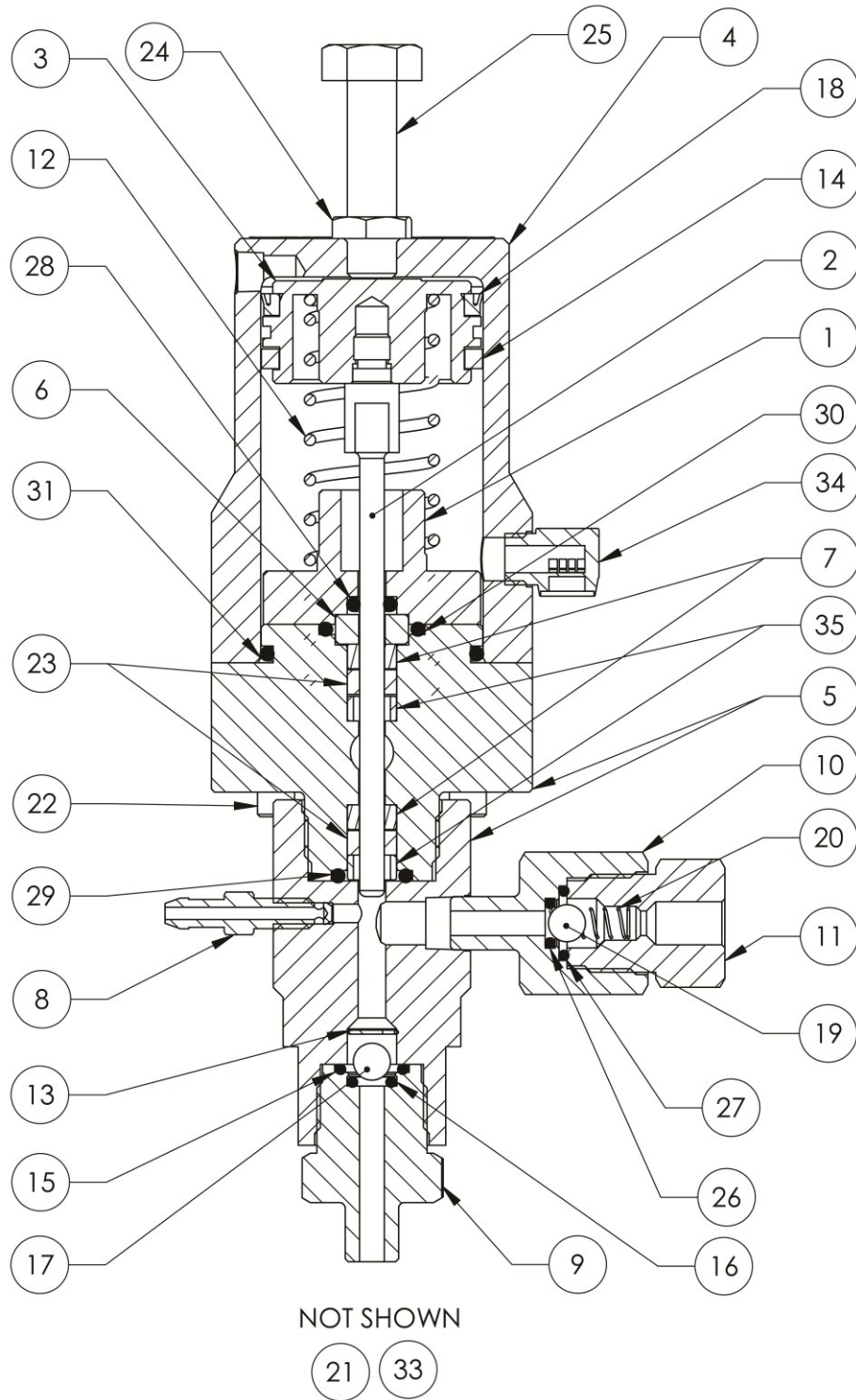
Model 2522 / 2530 / 5030 / 5040

Item	Model				Qty	Material	Description
	2522	2530	5030	5040			
1	30000	30480	30270	30600	1	303 SST	Retainer Seal Plunger
2	30010		30350		1	17-4 SST	Plunger
	30011		30351			17-4 SST – Ceramic Coated	
3	30020	30260		30590	1	303 SST	Piston
4	30031	30251		30581	1	303 SST	Housing Piston
5	30070	30500	30360	30620	1	316 SST	Body Assembly
6	30080		30320		1	316 SST	Centering Washer
7	30090		30330		2	Delrin	Ring Back-UP
8	30100				1	316 SST	Bleed Screw
9	30110		30340		1	316 SST	Suction Check
10	30120				1	316 SST	Body Discharge Check Valve Inlet
11	30130				1	316 SST	Body Discharge Check Valve Outlet
12	30430		30630		1	302 SST	Return Spring
	30220					17-7 SST	
13	30380		30390		1	316 SST	Ball Stop
14	30400	30410		30420	1	TFE/Graphite Comp	Wear Guide
15	40040		40300		1	Viton	O-Ring
	40041		40301			TFE	
	40042		40302			Buna-N	
16	40021		40341		1	TFE	O-Ring
17	40430		40310		1	316 SST	Ball
	40431		40311			Carbide	
18	40240	40230		40480	1	Lubritthane	U-Cup
	40242	40232		40482		Viton	
19	40430				1	316 SST	Ball
	40431					Carbide	
20	40260				1	302 SST	Discharge Check Spring
21	40140				4	18-8 SST	Socket Head Screw
22	40160				4	18-8 SST	Socket Head Screw
23	40220		40210		2	UHMWPE (U)	Seal
	40221					TFE/Carbon (C)	
	40222					TFE/Glass Moly (G)	
	40223		40213			TFE/Graphite (Q)	
	40224		40214			TFE/ETP (E)	
	40225					Buna-N(B)	
24	40200				1	18-8 SST/Buna	Nut Self-Sealing
25	40180				1	18-8 SST	Screw Cap Hex Head
26	40021				1	TFE	O-Ring
27	40040					Viton	O-Ring
	40041					TFE	
	40042					Buna-N	
28	40060		40360		1	Viton	O-Ring
	40062		40362			Buna-N	
29	40080		40100		1	Viton	O-Ring
	40082		40102			Buna-N	
30	40100		40380		1	Viton	O-Ring
	40102		40382			Buna-N	
31	40120	40420		40550	1	Viton	O-Ring
	40122	40422		40552		Buna-N	
33	40450				2	SST	Plug
34	40460				1	Nylon	Vent
35	30096		30336		2	Delrin	Packing Ring

Kits – When ordering kits you must include the pump model number

- **POK** – Includes o-rings, seals, back-ups, and check spring (Items 7, 15, 16, 20, 23, 26 thru 31, 35)
- **WRK** – Includes o-rings, seals, backups, check spring, u-cup, check balls, and return spring (Items 7, 12, 15 thru 20, 23, 26 thru 31, 35)
- **PRK** – Includes plunger, O-rings, seals, backups, check spring, u-cup, check balls, and return spring (Items 2, 7, 12, 15 thru, 20, 23, 26 thru 31, 35)

Model 2522 / 2530 / 5030 / 5040



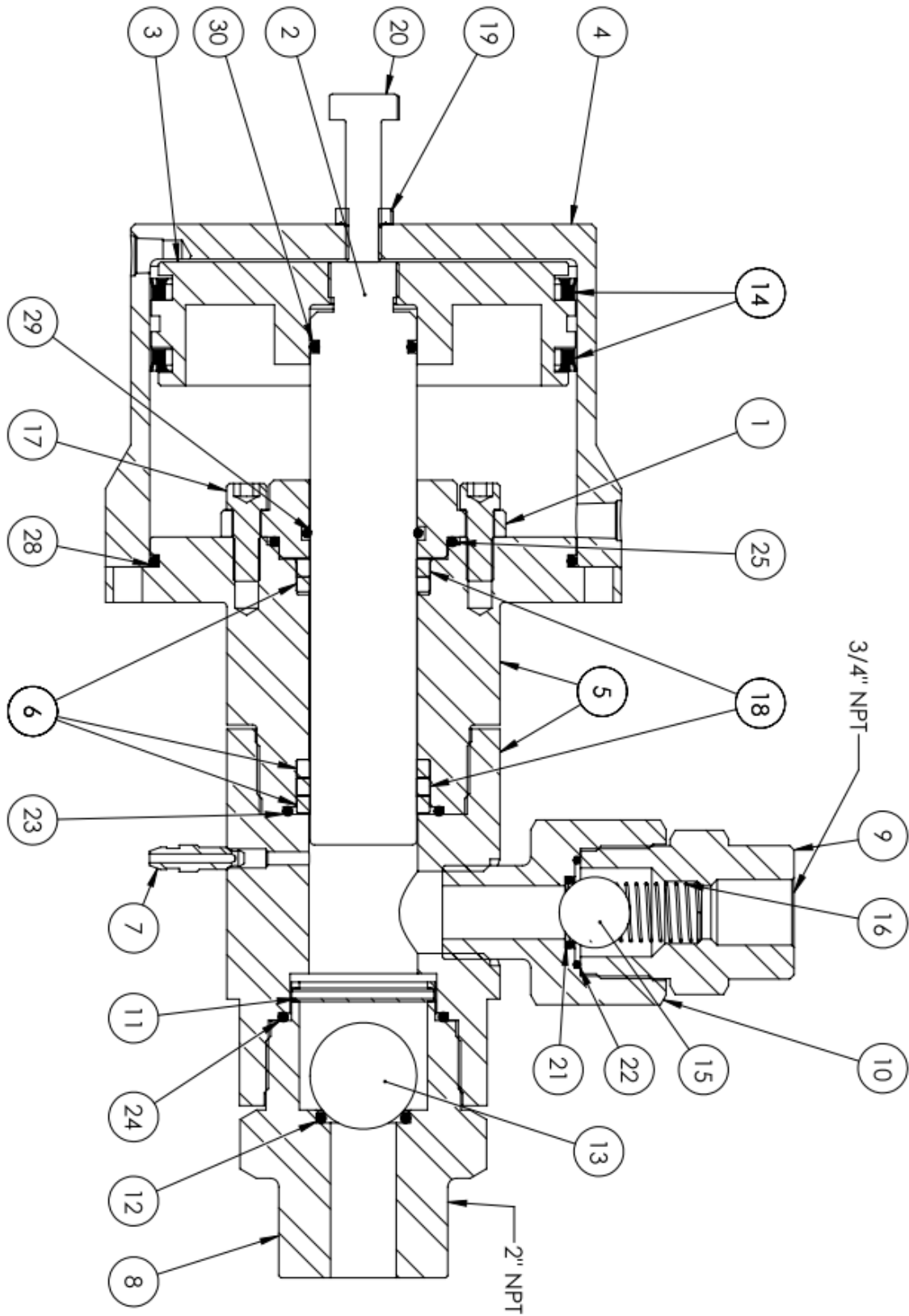
Model 1560 Pneumatic Pump Parts List

ITEM	PART NO.	QTY.	MATERIAL	DESCRIPTION
1	30926	1	303SS	CENTERING RETAINER SEAL
2	30970	1	17-4PH SS	PLUNGER
	30971		17-4PH SS -CERAMIC COATED	
3	30960	1	303SS	PISTON
4	30951	1	303SS	HOUSING PISTON
5	30937	1	316SS	BODY ASSEMBLY
6	30940	3	316SS	RING BACK-UP
7	30100	1	316SS	SCREW BLEED
8	30955	1	316SS	BODY SUCTION CHECK VALVE
9	30945	1	316SS	BODY DISCHARGE CHECK VALVE INLET
10	30947	1	316SS	BODY DISCHARGE CHECK VALVE OUTLET
11	40640	1	18-8 SS	PIN ROLL
12	40381	1	TEFLON	O-RING
13	40650	1	316 SS	BALL
	40651		CARBIDE	
14	40660	2	LUBRITHANE	U-CUP
15	40670	1	316 SS	BALL
	40671		CARBIDE	
16	40680	1	SS	SPRING
17	40690	10	18-8SS	SCREW SOCKET HD
18	40630	2	UHMWPE	U' SEAL
	40631		TFE / COMPOSITE	C' SEAL
19	40200	1	18-8SS/SILICONE WASHER	NUT SELF-SEALING
20	40180	1	18-8SS	SCREW CAP HEX HD
21	40711	1	TEFLON	O-RING
22	40720	1	VITON	O-RING
	40722		BUNA	
23	40120	1	VITON	O-RING
	40122		BUNA	
24	40730	1	VITON	O-RING
	40732		BUNA	
25	40740	1	VITON	O-RING
	40742		BUNA	
27	40450	2	SST	1/4NPT PLUG
28	40760	1	VITON	O-RING
	40762		BUNA	
29	30965	1	VITON	O-RING
	30967		BUNA	
30	40400	1	VITON	O-RING
	40402		BUNA	
31	91000	1	BRASS	VERSA VSP-4302 4 WAY VALVE
32	40460	2	NYLON	VENT 1/4 NPT
33	22004	1	STEEL	HEX NIPPLE 1/4 NPT X 2.00

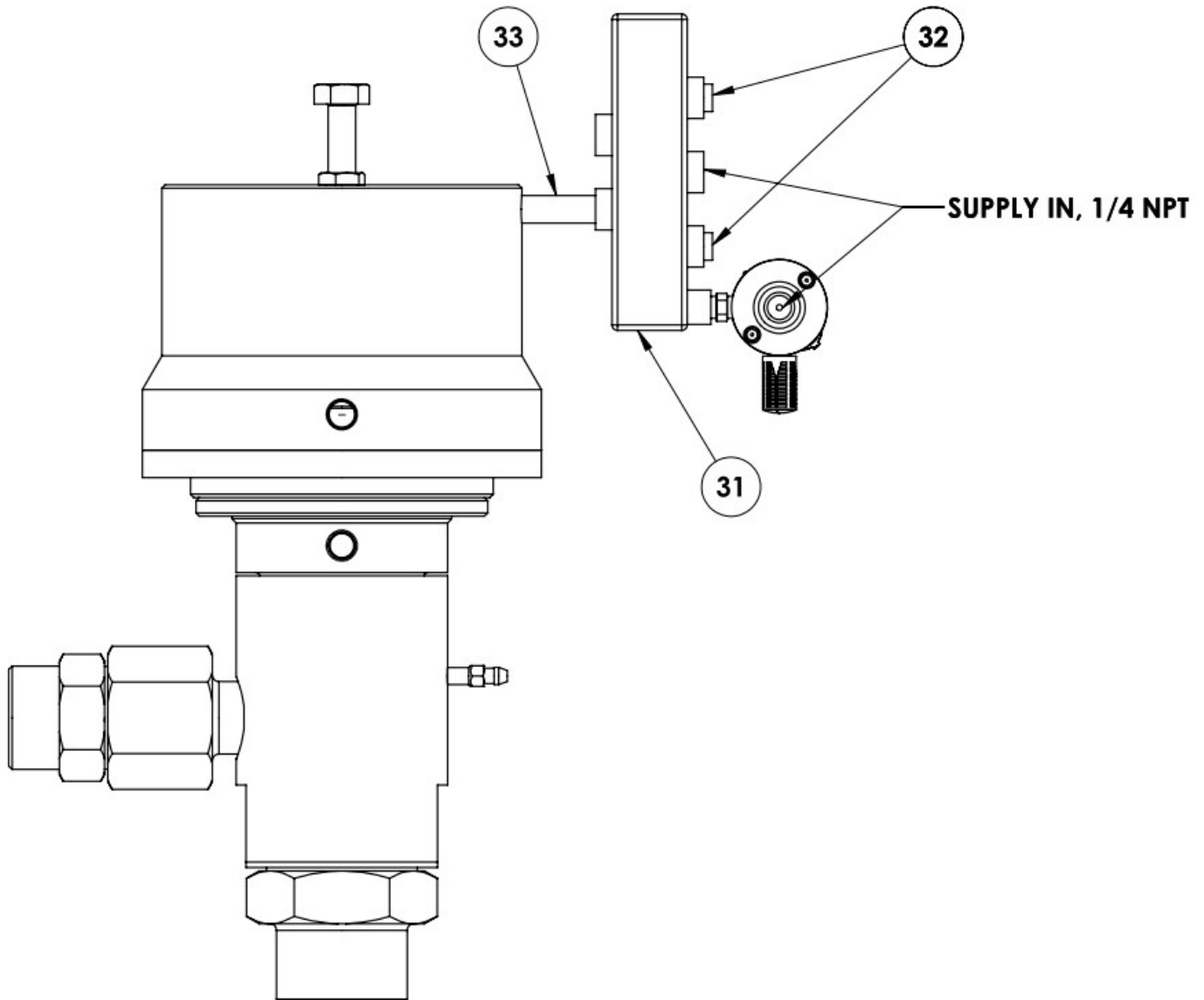
Kits – When ordering kits you must include the pump model number

- **POK** – Includes o-rings, seals, back-ups, and check spring (Items 6, 12, 16, 18, 21-25, 28-30)
- **WRK** – Includes o-rings, seals, backups, check spring, u-cup, check balls, and return spring (Items 6, 12 thru 16, 18, 21-25, 28-30)
- **PRK** – Includes plunger, o-rings, seals, backups, check spring, u-cup, check balls, and return spring (Items 2, 6, 12 thru 16, 18, 21-25, 28-30)

Model 1560 Pneumatic Pump



Model 1560 Pneumatic Pump Supply Connections

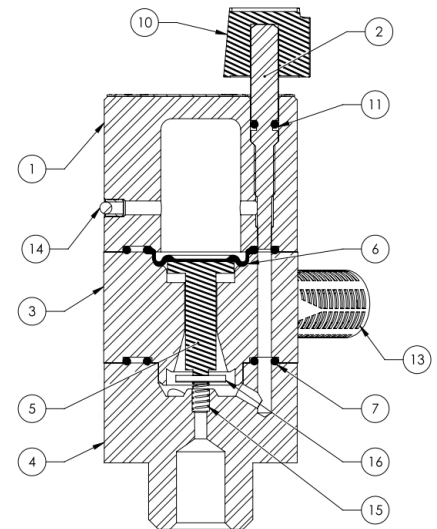


CONTROLLERS

MPT

ITEM	PART NUMBER	DESCRIPTION	MATERIAL	QTY
1	20031	VOLUME BODY	SST	1
2	20060	VALVE STEM	SST	1
3	20041	CENTER BODY	SST	1
4	20051	INLET BODY	SST	1
5	20090	TIMER PUSH ROD	ACETAL	1
6	20000	DIAPHRAGM TIMER	BUNA	1
7	20010	BODY TIMER SEAL	BUNA	1
8	40010	TIMER NAMEPLATE	ALUM	1
9	21010	SCREW	SST	2
10	21030	KNOB	NYLON	1
11	21040	O-RING STEM	BUNA	1
12	21090	TIMER PIN	SST	1
13	21060	MUFFLER	ACETAL	1
14	21050	PLUG BALL	SST	1
15	21020	TIMER RETURN SPRING	SST	1
16	20080	SEAL DISK	BUNA	1
	20081		TFE	
17	21070	KNOB SPRING	SST	1
18	40560	NIPPLE 1/8"	SST	1

Timer Repair Kit (TRK MPT): Includes push rod, seal disk, diaphragm, body seal, O-ring, and return spring (Items 5-7, 11, 15, 16)



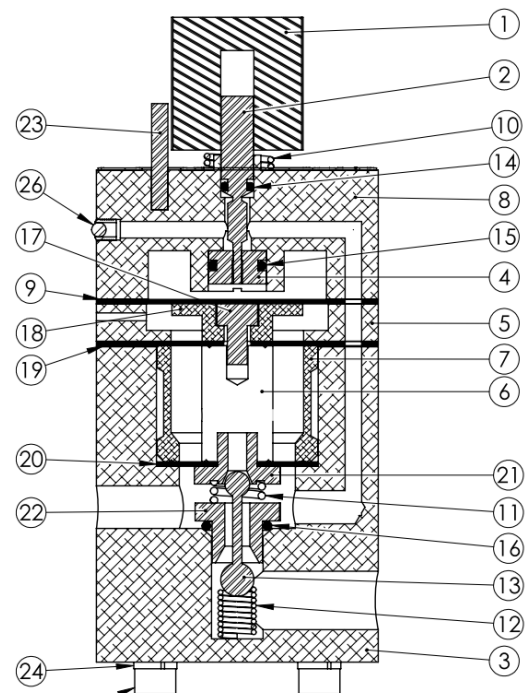
Items Not Shown

8 9 12 14 17 18

MPT-II

ITEM	PART NUMBER	DESCRIPTION	MATERIAL	QTY
1	21030	KNOB	NYLON	1
2	31080	TIMER STEM	SST	1
3	31070	BODY LOWER	ALUM	1
4	31010	SEAT	SST	1
5	31030	BODY CENTER	ALUM	1
6	31020	SPACER	ALUM	1
7	31040	CAGE	ALUM	1
8	31060	BODY VOLUME	ALUM	1
9	31050	RETAINER	ALUM	1
10	31140	KNOB SPRING	SST	1
11	31150	SPRING SEAT	SST	1
12	31130	SPRING PEANUT	SST	1
13	31220	PEANUT	SST	1
14	21040	O-RING STEM	BUNA	1
15	31192	O-RING SEAT	BUNA	1
16	31202	O-RING LOWER SEAT	BUNA	1
17	31210	SHC SCREW (SHORT)	SST	1
18	31120	DIAPHRAGM UPPER	BUNA	1
19	31110	DIAPHRAGM MIDDLE	BUNA	1
20	31100	DIAPHRAGM LOWER	BUNA	1
21	31230	SEAT UPPER	SST	1
22	31240	SEAT LOWER	SST	1
23	21090	TIMER PIN	SST	1
24	31160	LOCK WASHER	SST	4
25	31170	SHC SCREW (LONG)	SST	4
26	21050	PLUG BALL	SST	1
27	31005	TIMER LABEL	N/A	1
28	40560	NIPPLE 1/8"	SST	1
29	21060	MUFFLER	ACETAL	1

Timer Repair Kit (TRK II): Includes diaphragms, O-ring stem, O-ring lower seat, peanut, spring peanut, spring seat, and upper/lower seats (Items 11-14, 16, 18-20, 21, 22)



ITEMS NOT SHOWN

27 28 29

Installation

The pump must be installed in the vertical position with the suction check valve pointing straight down. Typical installations will include the following:

- A rate gauge or drum gauge to accurately set the injection rate
- The chemical supply level should be at least 6" above the suction check valve at startup
- Separate regulators when a relay is used in conjunction with the timer
- To prevent restricted supply gas, always mount the supply regulators as close to the pump as possible (no more than 6' away when using 1/4 tubing)
- Isolation valves on the suction, discharge, and supply lines
- Line check on the chemical discharge line

Caution:

If the discharge piping is not rated equal to or higher than the maximum discharge pressure rating of the pump then a relief valve should be used.

Startup

1. Loosen bleed screw until the chemical is coming out of the end. Tighten as the pump is making a down stroke.
2. Set supply pressure so that the discharge pressure is 200psi above process pressure.
3. Set the injection rate by timing the suction rate from the rate gauge for one minute. Adjust the rate by rotating the set-point knob on the timer.
4. Adjusting the stroke length of the pump will also change the injection rate.
5. If no rate gauge is available you can set the rate by counting the number of strokes per minute. Then multiply the total strokes by the amount of fluid injected per stroke (see table).

Maintenance

Add or replace lubricate as required (usually when repairing pump). Use lubricant suitable for climate where the pump is installed.

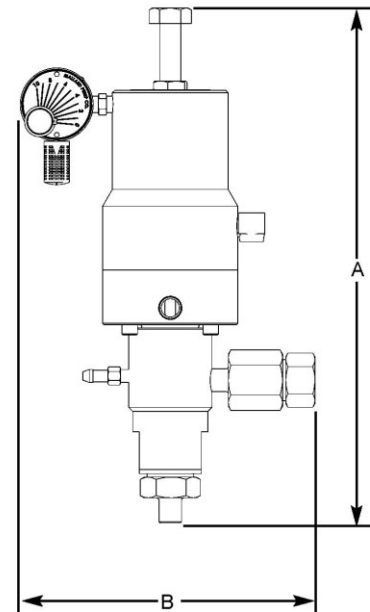
Troubleshooting

Problem	Possible Cause	Corrective Action
Timer not cycling	No supply gas/air.	Check supply side gauge. Setting should be 20 to 150 psi.
	Stroke rate adjustment knob closed.	Turn adjustment knob counter clockwise to proper setting.
Supply through to exhaust port	Stroke rate adjustment knob, open too much.	Turn adjustment knob counter clockwise to the proper setting.
	Trash in seat.	Disassemble timer and remove any foreign material.
	Bad soft goods in timer.	Install timer repair kit (TRK).
Pump not stroking	Broken return spring.	Replace spring.
	No output from timer.	Trouble shoot timer.
	Supply pressure to low.	Increase supply pressure to timer.
	Plunger stuck due to low lubrication.	Add lubricant.
Low or no pump output	Discharge or suction line plugged.	Clean lines.
	Pump mounted too high to create adequate suction.	Mount pump a minimum of 6" below chemical.
	Viscosity of injection chemical too high.	Increase suction & discharge line size.
	Air/Vapor in pump.	Bleed pump per startup procedure.

PNEUMATIC MODEL CODE BUILDER

Sample Model Code: **2515 - S 17 - U B / T**

Piston X Plunger Size	Code
1.50 X .250	2515
2.25 X .250	2522
3.00 X .250	2530
3.00 X .500	5030
4.00 X .500	5040
6.00 X 1.500	1560
Controller	Code
MPT	S
MPT-II	A
Plunger Material	Code
17-4 SST	17
CERAMIC COATED	CC
Seal Material	Code
BUNA	B
TFE/CARBON	C (1/4" only)
TFE/ETP	E
TFE/GLASS MOLY	G (1/4" only)
TFE/GRAPHITE	Q
UHMWPE	U
O-Ring Material	Code
BUNA	B
VITON	V
Options (Add all that Apply)	Code
TFE Check Seal O-Rings	T
Carbide Check Balls	C
Relay	R
Oiler	O



DIMENSIONS:

MODEL	2515	2522	2530	5030	5040	1560
A	11.55	12.34	12.34	12.66	12.64	18
B	6.18	7.08	7.32	7.27	7.74	16.5

IN-LINE CHECKS

Timberline manufactures an In-Line Check Valve for chemical injection applications. The valve is compact, reliable, and competitively priced.

Specifications:

Connections 1/4" male NPT x 1/4" female NPT
Max. working pressure Up to 10,000 PSI

Materials of Construction:

Body 304 SST
Seals Viton or Buna-N
Spring SST
Ball SST

IN-LINE CHECK MODEL CODE BUILDER

Sample Model Code: **24S V - 6**

O-Rings	Code
Viton	V
Buna	B
Max Pressure	Code
6,000 PSI	6
10,000 PSI	10

While this information is presented in good faith and believed to be accurate, Timberline Manufacturing Company does not guarantee results based upon such information. Timberline Manufacturing Company reserves the right to change the design or specifications of these products without notice.



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