

# ***INSTRUCTION MANUAL***

**M E T E R I N G P U M P S**

LINC84T-10, 11, 12, & 14 Series Chemical Metering Pump  
Pneumatic Plunger



# METERING PUMPS

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## P N E U M A T I C P L U N G E R

### General Specifications: 84T-10, 11, 12 & 14 Series Pneumatic Metering Pumps

#### Wetted Parts:

|               |                         |
|---------------|-------------------------|
| Pump Body:    | 316 ss                  |
| Plunger:      | 17-4 PH ss or Ceramic   |
| Plunger Seal: | Refer to Ordering Chart |

#### Check Valves :

|                     |                            |
|---------------------|----------------------------|
| Body:               | 316 ss                     |
| Ball:               | 440C ss or Carbide         |
| Spring - Discharge: | 316 ss                     |
| Seat:               | See Check Valve Parts List |

#### Pneumatic Section:

|                 |        |
|-----------------|--------|
| Piston Housing: | 303 ss |
| Timer:          | 303 ss |

**Plunger Sizes:** 3/16", 1/4", 1/2" & 1" plunger R diameters

**Pressure:** To 10,000 psi, maximum

**Optional Materials:** 316 ss, Hastelloy, Monel, & Titanium

### The LINC 84T-10, 11, 12 & 14 Series: Pneumatic, Plunger-Type Metering Pump Selection Chart

| Model Number                    | Plunger Diameter | Piston Diameter | Maximum Rate Gal/Hr | Maximum Rate Liter/Hr | Minimum Rate Gal/Hr | Minimum Rate Liter/Hr | Maximum Pressure psi <sup>5</sup> | Maximum Pressure bar | Amp. Ratio | Strokes Per Minute | Volume Per Stroke cc | Stroke Length |
|---------------------------------|------------------|-----------------|---------------------|-----------------------|---------------------|-----------------------|-----------------------------------|----------------------|------------|--------------------|----------------------|---------------|
| <b>3/16" Plunger with Timer</b> |                  |                 |                     |                       |                     |                       |                                   |                      |            |                    |                      |               |
| 84T-10-x1                       | 3/16"            | 2 1/4"          | 0.32                | 1.21                  | 0.002               | 0.015                 | 10,000                            | 689                  | 125:1      | 4 - 60             | 0.34                 | 1"            |
| <b>1/4" Plunger with Timer</b>  |                  |                 |                     |                       |                     |                       |                                   |                      |            |                    |                      |               |
| 84T-11-x1                       | 1/4"             | 2 1/4"          | 0.76                | 2.88                  | 0.01                | 0.038                 | 6,370                             | 439                  | 75:1       | 4 - 60             | 0.80                 | 1"            |
| 84T-11-x2                       | 1/4"             | 3"              | 0.64                | 2.42                  | 0.01                | 0.038                 | 10,000                            | 689                  | 120:1      | 4 - 50             | 0.80                 | 1"            |
| <b>1/2" Plunger with Timer</b>  |                  |                 |                     |                       |                     |                       |                                   |                      |            |                    |                      |               |
| 84T-12-x2                       | 1/2"             | 3"              | 2.5                 | 9.5                   | 0.03                | 0.10                  | 2,550                             | 176                  | 30:1       | 4 - 50             | 3.2                  | 1"            |
| 84T-12-x4                       | 1/2"             | 4"              | 1.5                 | 5.7                   | 0.03                | 0.10                  | 5,100                             | 352                  | 60:1       | 4 - 30             | 3.2                  | 1"            |
| <b>1" Plunger with Timer</b>    |                  |                 |                     |                       |                     |                       |                                   |                      |            |                    |                      |               |
| 84T-14-x4                       | 1"               | 4"              | 5.1                 | 19.3                  | 0.20                | 0.77                  | 1,190                             | 82                   | 14:1       | 4 - 25             | 12.8                 | 1"            |

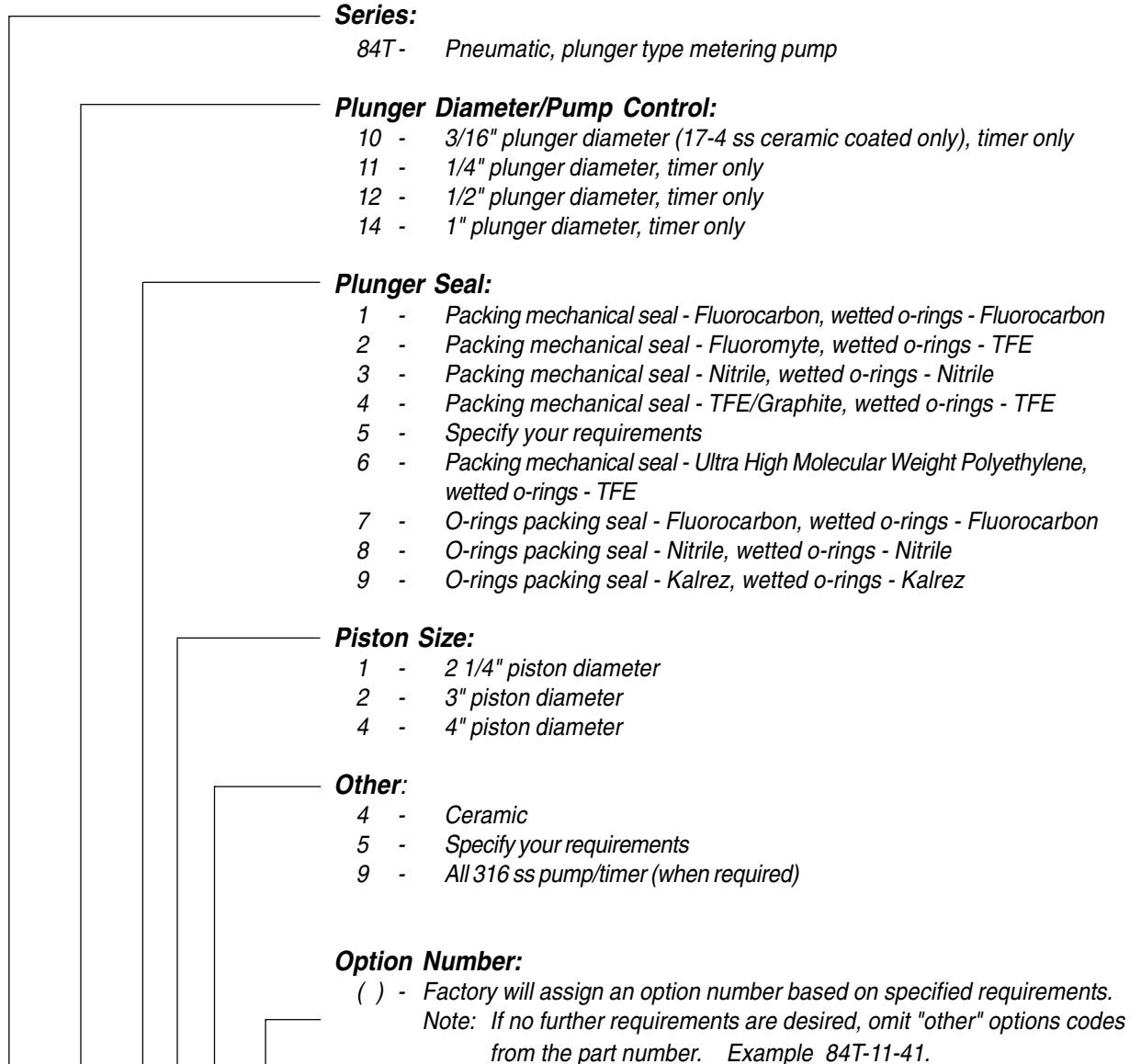
#### Notes:

- Maximum rates are based on maximum strokes per pump.
- Minimum rates are calculated as follows:  
3/16", 1/4" and 1/2" plunger pumps are 1/4" stroke length and a minimum of 4 strokes per minute.  
1" plunger pumps are 1/4" stroke length and a minimum of 4 strokes per minute.
- The timer supply pressure is 15 to 110 psi.
- When creating a Model Number using the Ordering Chart, the "X" in the Model Number column above will be replaced by a single digit representing the plunger seal selection. The plunger seal is shown in the Ordering Chart.
- Maximum pressure based on 100 psi supply pressure.
- Volume per stroke in shown for maximum pressure and strokes per minute. Volume per stroke increases as discharge pressure decreases.

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## P N E U M A T I C P L U N G E R

### Ordering Chart: LINC 84T-10, 11, 12 & 14 Pneumatic Plunger Metering Pump



LINC 84T-\_\_\_\_-\_\_\_\_ ( )

Example: LINC 84T-11-41 Pneumatic Metering Pump

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## **Important: Amplification Ratio:**

*For best results and longer pump life, it is recommended that a pressure regulator be used upstream of the pump timer to properly adjust the supply pressure. The supply to the pump timer should be a minimum of 15 psig and a maximum of 110 psig. Check the "Selection Chart" at the front of this manual for the Amplification Ratio for the pump being used.*

## **How to Determine Desired Supply Pressure:**

*Assuming a process line pressure of 1000 psig, simply divide this pressure by the amplification ratio to determine the minimum required air or gas pressure. In the case of the Model 84T-12-x2 where the amplification ratio is 30:1 (which indicates that for each 1 psig of supply pressure the pump can produce 30 psig of discharge pressure) divide 1000 by 30 equals 33 psig. In practice, the regulator should be set approximately 15 psig greater than the calculated value to ensure positive injection of the chemical. This would provide a regulator setting of  $33 + 15 = 48$  psig. Proper air or gas pressure will provide longer pump life and reduce maintenance.*

**Note: Do not exceed maximum discharge pressure of the pump as shown in the "Selection Chart" at the front of this manual.**

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## PNEUMATIC PLUNGER

### Scope Of This Manual:

This manual describes and provides instructions and parts list for the LINC84T-10, 11, 12 & 14 Series Chemical Metering Pump. This pump is a pneumatically operated plunger pump.

1. Figure 1 of this manual is the sectional drawing and parts list for the LINC84T-10, 11 & 14 Chemical Metering Pump.
2. Figure 2 of this manual is the sectional drawing and parts list for the LINC84T-12 Chemical Metering Pump.

### Installation:

The LINC84T-10, 11, 12 & 14 require a flooded suction and must be located lower than the chemical supply tank. Vertical installation of the piston housing is required.

1. Connect the suction line through a filter or strainer to the suction check valve (fig. 1, item 17 or fig. 2, item 16).
2. Connect the discharge line to the desired location.

**Note:** An in-line check valve at the point of injection is recommended to prevent back flow to the pump during shutdown or servicing.

3. Connect a supply pressure line to the timer (fig. 1, item 1 or fig. 2, item 1). Air is the recommended supply; however, any dry filtered gas may be used. The supply pressure to the timer must be regulated between 15 psig and 110 psig.

4. Set the regulator to the proper pressure to overcome the discharge pressure required by the pump. Refer to the paragraph on "Amplification Ratio" in this manual to determine the correct supply pressure.
5. To prime the pump, loosen the bleed screw (fig. 1, item 18 or fig. 2, item 18). Allow the liquid (chemical) to flow into the pump chamber, venting the trapped air or gas. Tighten the bleed screw.
6. Start the pump and run for a minimum of one minute. Open the bleed screw again and evacuate all the remaining air or gas from the pump chamber.
7. Using a rate gauge, set the desired pumping rate by adjusting the timer knob and stroke adjustment screw. The timer can be set to stroke the pump from 4 strokes/minute to the maximum rate for the particular pump being used. See selection chart in this section of the manual.
8. The stroke length is adjusted by rotating the stroke adjustment screw (fig. 1, item 5 or fig. 2, item 4) on top of the piston housing (fig. 1, item 8 or fig. 2, item 6). Loosen the jam nut and adjust the stroke adjustment screw as necessary (fig. 1, item 4 or fig. 2, item 5). Lock down the jam nut after any adjustments are made.

**Note:** The minimum stroke on the 84T-10, 11 & 12 is 1/8" and 1/4" on the 84T-14.

### Maintenance:

Refer to all sectional drawing and parts list in this manual. All repairs should be performed in a clean environment.

The following steps must be taken before proceeding with any maintenance operations:

### Removing the Pump from Service:

1. Rotate the control knob on the timer to the "O" position.
2. Disconnect the supply pressure from the timer.
3. Close the upstream and downstream valves on the chemical lines.
4. Open the bleed screw to release the pressure in the pump.
5. Disconnect the suction and discharge lines from the check valves.

**Timer,** Figure 1, item 1 or Figure 2, item 1 & Figure 3:

1. Disconnect the supply pressure from the timer.
2. Rotate the timer counter-clockwise on the pipe nipple that connects it to the piston housing until the timer is vertical with the supply pressure port pointing down.
3. Loosen and remove the two screws from the timer (fig. 3, item 1).

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4. Separate the three timer sections and discard the seal, diaphragm and the disc (fig. 3, items 4, 6 & 15). Be careful not to lose the small disc spring (fig. 3, item 16). Note the orientation of the diaphragm as it is removed.
5. Loosen the set screw on the knob (fig. 3, item 11). Remove the knob and knob spring (fig. 3, item 9).
6. Unscrew the adjustment screw (fig. 3, item 10) from the front body (fig. 3, item 13). Remove and discard the o-ring (fig. 3, item 12).
7. Reassemble the timer in reverse order of the above steps, using new rubber parts. Lubricate the adjustment screw threads and its o-ring. No other lubrication is required.
8. After installing the adjustment screw, turn it in by hand without the knob installed until it lightly seats. During this operations do not over-tighten the adjustment screw into its seat. Apply supply pressure to the timer and unscrew the adjustment screw slowly until the pump starts to run. Trial and error will be necessary to determine the proper orientation of the knob on the adjustment screw. Once the proper orientation is determined, re-install the knob spring and knob.

## **Suction Check Valve,**

Figure 1, item 17 or Figure 2, item 16 & Figure 6:

1. Disconnect the piping from the check valve.
2. Unscrew the check valve body from the pump (fig. 6, item 1).
3. Remove and discard the o-rings (fig. 6, items 3 & 4).
4. Inspect the ball for damage (fig. 6, item 2). Replace if necessary. Reassemble the check valve using new o-rings. If the seat o-ring is Teflon, install it onto the check valve body and "peen" the ball into the seat to ensure proper sealing (fig. 6, item 3).
5. Install the repaired suction check valve into the pump body. Tighten securely.

## **Discharge Check Valve,**

Figure 1, item 16 or Figure 2, item 15 & Figure 4:

1. Disconnect the piping from the check valve.
2. Unscrew the check valve body from the pump (fig. 4, item 1).
3. Remove and discard the o-rings (fig. 4, items 4 & 5).
4. Inspect the ball and spring for damage (fig. 4, items 2 & 3). Replace if necessary. Reassemble the check valve using new o-rings. If the seat o-ring is Teflon, install it into the pump body assembly and "peen" the ball onto the seat to ensure proper sealing.

5. Install the repaired discharge check valve into the pump body. Place the ball on the o-ring seat followed by the spring (small end of the spring toward the ball) and screw the discharge check valve body into the pump body assembly. Tighten securely.

## **Discharge Check Valve,**

Two-Piece, Model 84T-14 only, Figure 1, item 16 & Figure 5:

1. Separate the two halves of the check valve (fig. 5, items 1 & 4).
2. Replace the o-rings, ball and spring as required (fig. 5, items 2, 3, 5 & 6). The Teflon o-ring may be removed, turned around and reused if a new o-ring is not available (fig. 5, item 2). During this procedure extreme care should be exercised. The ball should be "peened" on the Teflon seat to ensure proper sealing (fig. 5, items 1, 2 & 5).
3. Ensure that the proper flow direction, as marked on the valve body is observed when installing or replacing this check valve.



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## **Piston/Plunger:**

1. Secure the pump body assembly in a vise (fig. 1, item 19 or fig. 2, item 17).
2. Remove the piston housing screws (fig. 1, item 11 or fig. 2, item 10). Grasp the piston housing and pull up to remove (fig. 1, item 8 or fig. 2, item 6).
3. Grasp the piston and pull away from the pump body assembly to remove (fig. 1, item 6 or fig. 2, item 7). Inspect the plunger for wear, especially longitudinal grooves. Replace the piston assembly if necessary. Inspect the piston u-cup (fig. 1, item 7 or fig. 2, item 8). Replace if necessary.
6. Remove the spring, lubricant seal back-up and lubricant seal from the spring cavity (fig. 1, items 9, 12, & 13 or fig. 2, items 9, 11 & 12). Inspect all three parts, especially the lubricant seal and replace worn or damaged parts as needed.

## **Plunger Seal, Figure 1, item 15 or Figure 2, item 14:**

1. With a pipe or strap wrench, separate the pump body assembly (fig. 1, item 19 or fig. 2, item 17).
2. Remove the seal back-up and plunger seal (fig. 1, item 15 or fig. 2, item 14) from the lower housing of the pump body assembly. Note that on Model 84T-12, the

plunger seal and plunger seal backup are in the upper housing of the pump body assembly (fig. 2, items 14). Carefully remove the seal back-up and seal. Inspect for wear or deterioration from being attacked by the chemical the pump is pumping.

3. Replace the plunger seal. If needed, also replace the plunger seal back-up. Extreme care should be taken not to scratch or distort these parts.

## **Reassemble the Pump:**

1. Lubricate the piston u-cup and plunger with light oil to protect against possible damage during assembly.
2. Reassemble the piston/plunger assembly, which includes the lubricant seal, lubricant seal back-up and spring and install into the pump body assembly. See Figure 1 or Figure 2 for correct assembly.
3. Replace the piston housing and secure with the piston housing screws.
4. Thread the timer connecting nipple into the port at the top of the piston housing. Thread the output port in the rear body of the timer to this nipple.

**Caution:** Be sure there are no leaks at these connections. If leaks

are present, the timer will not operate properly.

6. Install the new plunger seal and plunger seal back-up. See the procedure entitled "Plunger Seal" above.
7. Screw the upper part of the pump body assembly back into the lower part and tighten securely.
8. If the bleed screw has been removed, install and tighten securely.

## **Plunger and Plunger Seal Lubrication:**

1. Remove the plug from the pump body (fig. 1, item 14 or fig. 2, item 13).
2. Add silicone base lubricant (Dow Dorning DC-7, part #10354) or equal into the port where the plug was removed. Approximately 0.5 cc will be required for each refill. Replace the plug.

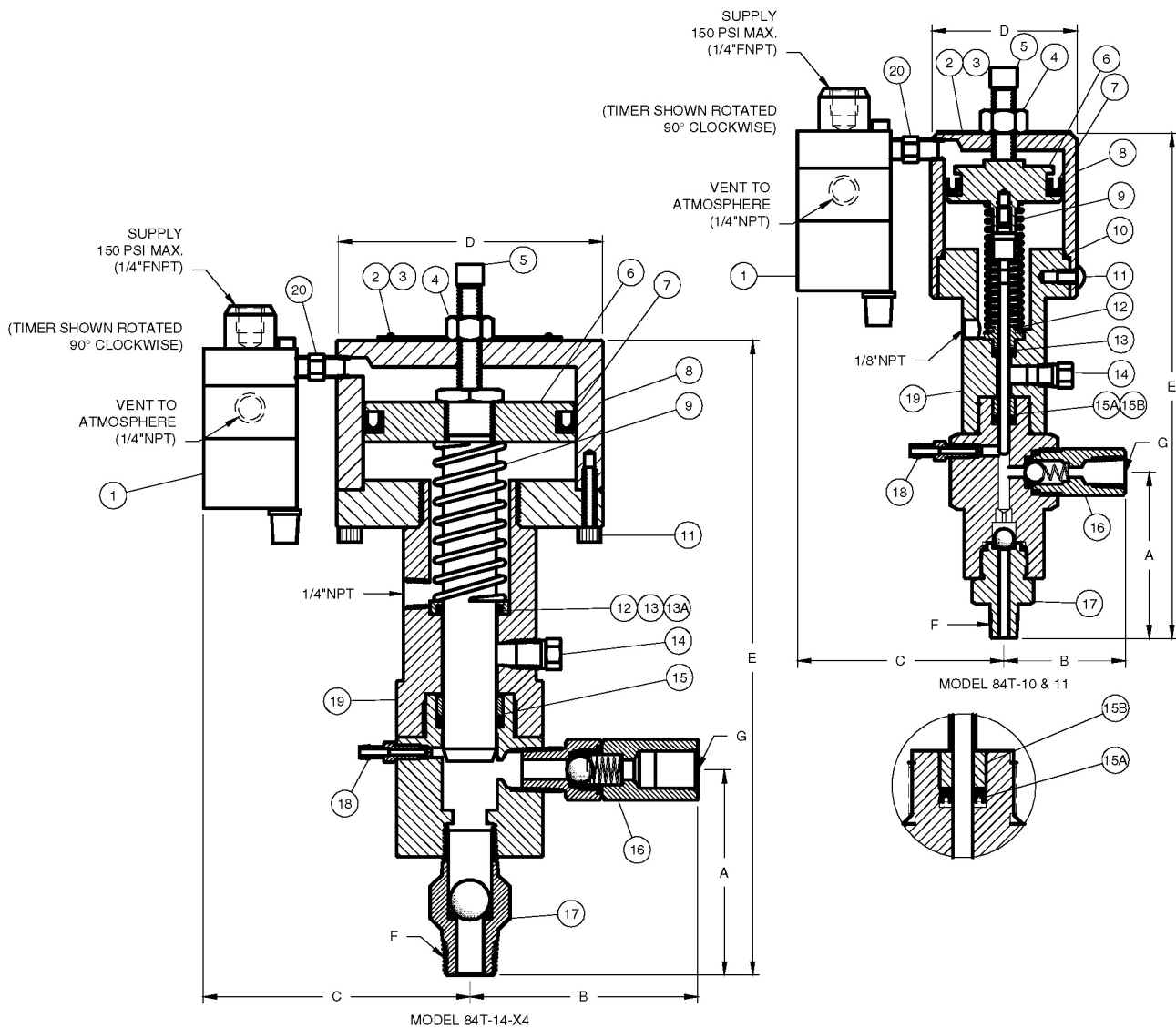
**Note:** Do not use a grease gun or any metal tool to insert the lubricant into the pump to prevent damage to the plunger or plunger seal.

3. Silicone lubricant should be added every 4 - 6 weeks depending upon operation conditions.

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## P N E U M A T I C P L U N G E R

Figure 1, LINC84T-10, 11, & 14 Series Pump



| Model            | 84T-10,11-X1 | 84T-10,11-X2 | 84T-14-X4 |
|------------------|--------------|--------------|-----------|
| A.....           | 3 1/4"       | 3 1/4"       | 3 7/8"    |
| B.....           | 2 1/8"       | 2 1/4"       | 4 1/4"    |
| C.....           | 3 7/8"       | 4 1/4"       | 5"        |
| D.....           | 2 3/4"       | 3 1/2"       | 5"        |
| E.....           | 8 7/8"       | 9 3/4"       | 11 7/8"   |
| F Suction.....   | 1/4" NPTM    | 1/4" NPTM    | 3/4" NPTM |
| G Discharge..... | 1/4" NPTF    | 1/4" NPTF    | 1/2" NPTF |

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## P N E U M A T I C P L U N G E R

### LINC84T-10, 11, & 14 Series Parts List

| Model        | 84T-10-X1 | 84T-11-X1                         | 84T-11-X2 | 84T-14-X4 |                                |              |     |
|--------------|-----------|-----------------------------------|-----------|-----------|--------------------------------|--------------|-----|
| Plunger Size | 3/16"     | 1/4"                              | 1/4"      | 1"        |                                |              |     |
| Piston Size  | 2 1/4"    | 2 1/4"                            | 3"        | 4"        |                                |              |     |
| Item         | Part#     | Part#                             | Part#     | Part #    | Description                    | Material     | Qty |
| 1            | 31668     | 31668                             | 31668     | 31668     | Pneumatic Timer                | 303 ss       | 1   |
| 2            | 10289     | 10289                             | 10289     | 10289     | Name Plate                     | 18-8 ss      | 1   |
| 3            | 10324     | 10324                             | 10324     | 10234     | Name Plate Drive Screw         | 18-8 ss      | 2   |
| 4            | 20985     | 20985                             | 20985     | 20985     | Sealing Jam Nut                | 18-8 ss      | 1   |
| 5            | 11843     | 11843                             | 11843     | 11843     | Stroke Adjustment Screw        | 18-8 ss      | 1   |
| 6            | 25233     | 20859                             | 22394     | 31091     | Piston Assembly                | 303 ss       | 1   |
| 7            | 10019     | 10019                             | 11146     | 11586     | Piston U-Cup                   | Nitrile      | 1   |
| 8            | 20457     | 20457                             | 30744     | 31090     | Piston Housing                 | 303 ss       | 1   |
| 9            | 10448     | 10448                             | 10448     | 11582     | Plunger Return Spring          | 17-7 ss      | 1   |
| 10           | 12371     | 12371                             |           |           | Piston Housing Seal            | Nitrile      | 1   |
| 11           | 11753     | 11753                             | 11753     |           | Piston Housing Screw           | 18-8 ss      | 3   |
| 11A          |           |                                   |           | 11599     | Piston Housing Screw           | 18-8 ss      | 6   |
| 12           | 25236     | 24658                             | 22869     | 23552     | Lubricant Seal Retainer        | Acetal       | 1   |
| 13           |           | 12947                             |           |           | Lubricant Seal                 | Lubrithane   | 1   |
| 13A          | 13303     |                                   | 11150     | 10466     | Lubricant Seal                 | Fluorocarbon | 1   |
| 13B          |           |                                   |           | 23553     | Lubricant Seal Back-Up         | Acetal       | 1   |
| 14           | 10278     | 10278                             | 10278     | 10278     | Lubricant Plug                 | 304 ss       | 1   |
| 15           |           | See Page 12-13 for Seal Materials |           |           | Plunger Seal Assembly          |              | 1   |
| 16           |           | See Page 18 for Seal Materials    |           |           | Discharge Check Valve Assembly |              | 1   |
| 17           |           | See Page 19-20 for Seal Materials |           |           | Suction Check Valve Assembly   |              | 1   |
| 18           | 20460     | 20460                             | 20460     | 20460     | Bleed Screw                    | 316 ss       | 1   |
| 19           | 31743     | 30814                             | 30837     | 31096     | Pump Body Assembly             | 316 ss       | 1   |
| 20           | 25130     | 25130                             | 25130     | 25130     | Close Nipple                   | 303 ss       | 1   |

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## P N E U M A T I C P L U N G E R

### Series 84T-10, 11 & 14 Seal Materials

#### Model 84T-10-41

| Item | Description              | Part # | Material     |
|------|--------------------------|--------|--------------|
| 15A  | Plunger Seal             | 13304  | TFE/Graphite |
| 15B  | Plunger Seal Back-Up     | 25258  | Acetal       |
| 16   | Discharge Check Assembly | 22626  | See Parts    |
| 17   | Suction Check Assembly   | 24777  | See Parts    |

#### Model 84T-11-11

| Item | Description              | Part # | Material     |
|------|--------------------------|--------|--------------|
| 15A  | Plunger Seal             | 10024  | Fluorocarbon |
| 15B  | Plunger Seal Back-Up     | 22571  | Acetal       |
| 16   | Discharge Check Assembly | 22624  | See Parts    |
| 17   | Suction Check Assembly   | 24774  | See Parts    |

#### Model 84T-11-21

| Item | Description              | Part # | Material   |
|------|--------------------------|--------|------------|
| 15A  | Plunger Seal             | 21197  | Fluoromyte |
| 15B  | Plunger Seal Back-Up     | 22571  | Acetal     |
| 16   | Discharge Check Assembly | 22626  | See Parts  |
| 17   | Suction Check Assembly   | 24773  | See Parts  |

#### Model 84T-11-31

| Item | Description              | Part # | Material  |
|------|--------------------------|--------|-----------|
| 15A  | Plunger Seal             | 10464  | Nitrile   |
| 15B  | Plunger Seal Back-Up     | 22571  | Acetal    |
| 16   | Discharge Check Assembly | 22625  | See Parts |
| 17   | Suction Check Assembly   | 24776  | See Parts |

#### Model 84T-11-41

| Item | Description              | Part # | Material     |
|------|--------------------------|--------|--------------|
| 15A  | Plunger Seal             | 11821  | TFE/Graphite |
| 16   | Discharge Check Assembly | 22626  | See Parts    |
| 17   | Suction Check Assembly   | 24773  | See Parts    |

#### Model 84T-11-61

| Item | Description              | Part # | Material  |
|------|--------------------------|--------|-----------|
| 15A  | Plunger Seal             | 13007  | UHMWPE    |
| 16   | Discharge Check Assembly | 22626  | See Parts |
| 17   | Suction Check Assembly   | 24773  | See Parts |

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## P N E U M A T I C P L U N G E R

### Series 84T-10, 11 & 14 Seal Materials

#### Model 84T-11-22

| Item | Description              | Part # | Material   |
|------|--------------------------|--------|------------|
| 15A  | Plunger Seal             | 21197  | Fluoromyte |
| 15B  | Plunger Seal Back-Up     | 22571  | Acetal     |
| 16   | Discharge Check Assembly | 22626  | See Parts  |
| 17   | Suction Check Assembly   | 24777  | See Parts  |

#### Model 84T-11-42

| Item | Description              | Part # | Material     |
|------|--------------------------|--------|--------------|
| 15A  | Plunger Seal             | 11283  | TFE/Graphite |
| 15B  | Plunger Seal Back-Up     | 22581  | Peek         |
| 16   | Discharge Check Assembly | 22626  | See Parts    |
| 17   | Suction Check Assembly   | 24777  | See Parts    |

#### Model 84T-11-62

| Item | Description              | Part # | Material  |
|------|--------------------------|--------|-----------|
| 15A  | Plunger Seal             | 13007  | UHMWPE    |
| 16   | Discharge Check Assembly | 22626  | See Parts |
| 17   | Suction Check Assembly   | 24777  | See Parts |

#### Model 84T-14-14

| Item | Description              | Part # | Material     |
|------|--------------------------|--------|--------------|
| 15A  | Plunger Seal             | 11587  | Fluorocarbon |
| 15B  | Plunger Seal Back-Up     | 23551  | Acetal       |
| 16   | Discharge Check Assembly | 24753  | See Parts    |
| 17   | Suction Check Assembly   | 24165  | See Parts    |

#### Model 84T-14-44

| Item | Description              | Part # | Material     |
|------|--------------------------|--------|--------------|
| 15A  | Plunger Seal             | 11590  | TFE/Graphite |
| 15B  | Plunger Seal Backup      | 23551  | Acetal       |
| 16   | Discharge Check Assembly | 24753  | See Parts    |
| 17   | Suction Check Assembly   | 24165  | See Parts    |

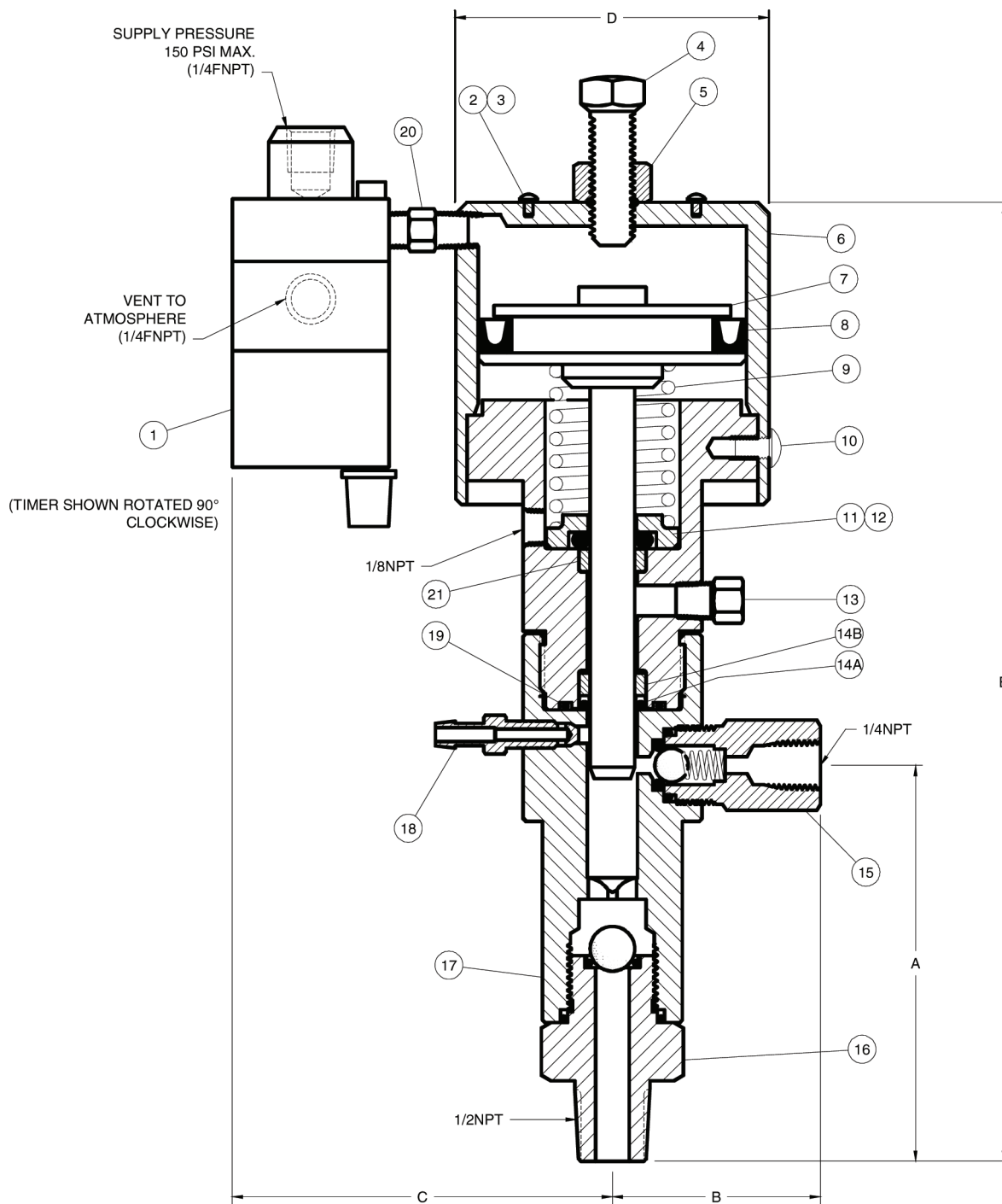
#### Model 84T-14-64

| Item | Description              | Part # | Material  |
|------|--------------------------|--------|-----------|
| 15A  | Plunger Seal             | 13143  | UHMWPE    |
| 15B  | Plunger Seal Back-Up     | 23551  | Acetal    |
| 16   | Discharge Check Assembly | 24753  | See Parts |
| 17   | Suction Check Assembly   | 24165  | See Parts |

# METERING PUMPS

## P N E U M A T I C P L U N G E R

Figure 2, 84T-12 Series Pump



MODEL 84T-12-X2, -X4

| Model | 84T-12-X2 | 84T-12-X4 |
|-------|-----------|-----------|
| A     | 3 7/8"    | 3 7/8"    |
| B     | 2 1/4"    | 2 1/4"    |
| C     | 4 1/4"    | 4 3/4"    |
| D     | 3 1/2"    | 4 1/2"    |
| E     | 10 3/4"   | 10 3/4"   |

# METERING PUMPS

## P N E U M A T I C P L U N G E R

### LINC84T-12 Series Parts List

| Model        | 84T-12-X2                         | 84T-12-X4 |                                |              |     |
|--------------|-----------------------------------|-----------|--------------------------------|--------------|-----|
| Plunger Size | 1/2"                              | 1/2"      |                                |              |     |
| Piston Size  | 3"                                | 4"        |                                |              |     |
| Item         | Part#                             | Part#     | Description                    | Material     | Qty |
| 1            | 31668                             | 31668     | Pneumatic Timer                | 303 ss       | 1   |
| 2            | 10289                             | 10289     | Nameplate                      | 18-8 ss      | 1   |
| 3            | 10324                             | 10324     | Nameplate Drive Screw          | 18-8 ss      | 2   |
| 4            | 20985                             | 11843     | Stroke Adjustment Screw        | 18-8 ss      | 1   |
| 5            | 20985                             | 20985     | Sealing Jam Nut                | 18-8 ss      | 1   |
| 6            | 30744                             | 31127     | Piston Housing                 | 303 ss       | 1   |
| 7            | 31505                             | 31513     | Piston Assembly                | 303/17-4 ss  | 1   |
| 8            | 11146                             | 11586     | Piston U-Cup                   | Nitrile      | 1   |
| 9            | 12992                             | 12992     | Plunger Return Spring          | 17-7 ss      | 1   |
| 10           | 11753                             |           | Piston Housing Screw           | 18-8 ss      | 3   |
| 10A          |                                   | 11753     | Piston Housing Screw           | 18-8 ss      | 6   |
| 11           | 24713                             | 24713     | Lubricant Seal Retainer        | Acetal       | 1   |
| 12           | 12991                             | 12991     | Lubricant Seal                 | Fluorocarbon | 1   |
| 13           | 10278                             | 10278     | Lubricant Plug                 | 304 ss       | 1   |
| 14           | See Page 16 for Seal Materials    |           | Plunger Seal Assembly          |              | 1   |
| 15           | See Page 18 for Seal Materials    |           | Discharge Check Valve Assembly | 316 ss       | 1   |
| 16           | See Page 19-20 for Seal Materials |           | Suction Check Valve Assembly   | 316 ss       | 1   |
| 17           | 31527                             | 31511     | Pump Body Assembly             | 316 ss       | 1   |
| 18           | 20460                             | 20460     | Bleed Screw                    | 316 ss       | 1   |
| 19           | 10466                             | 10466     | O-Ring                         | Fluorocarbon | 1   |
| 20           | 25130                             | 25130     | Close Nipple                   | 303 ss       | 1   |
| 21           | 12990                             | 12990     | Split Ring                     | Filled PTFE  | 1   |

# METERING PUMPS

## P N E U M A T I C P L U N G E R

### LINC84T-12 Series Seal Materials

#### Model 84T-12-12, 14

| Item | Description              | Part # | Material     | Qty |
|------|--------------------------|--------|--------------|-----|
| 14A  | Plunger Seal             | 10525  | Fluorocarbon | 1   |
| 14B  | Back-Up                  | 25374  | Peek         | 1   |
| 15   | Discharge Check Assembly | 22624  | See Parts    | 1   |
| 16   | Suction Check Assembly   | 24779  | See Parts    | 1   |

#### Model 84T-12-22, 24

| Item | Description              | Part # | Material   | Qty |
|------|--------------------------|--------|------------|-----|
| 14A  | Plunger Seal             | 21196  | Fluoromyte | 1   |
| 14B  | Back-Up                  | 25374  | Peek       | 1   |
| 15   | Discharge Check Assembly | 22626  | See Parts  | 1   |
| 16   | Suction Check Assembly   | 24778  | See Parts  | 1   |

#### Model 84T-12-32, 34

| Item | Description              | Part # | Material  | Qty |
|------|--------------------------|--------|-----------|-----|
| 14A  | Plunger Seal             | 10526  | Nitrile   | 1   |
| 14B  | Back-Up                  | 25374  | Peek      | 1   |
| 15   | Discharge Check Assembly | 22625  | See Parts | 1   |
| 16   | Suction Check Assembly   | 24780  | See Parts | 1   |

#### Model 84T-12-42, 44

| Item | Description              | Part # | Material     | Qty |
|------|--------------------------|--------|--------------|-----|
| 14A  | Plunger Seal             | 11004  | TFE Graphite | 1   |
| 14B  | Back-Up                  | 25374  | Peek         | 1   |
| 15   | Discharge Check Assembly | 22626  | See Parts    | 1   |
| 16   | Suction Check Assembly   | 24778  | See Parts    | 1   |

#### Model 84T-12-62, 64

| Item | Description              | Part # | Material  | Qty |
|------|--------------------------|--------|-----------|-----|
| 14A  | Plunger Seal             | 12963  | UHMWPE    | 1   |
| 14B  | Back-Up                  | 25374  | Peek      | 1   |
| 15   | Discharge Check Assembly | 22626  | See Parts | 1   |
| 16   | Suction Check Assembly   | 24778  | See Parts | 1   |



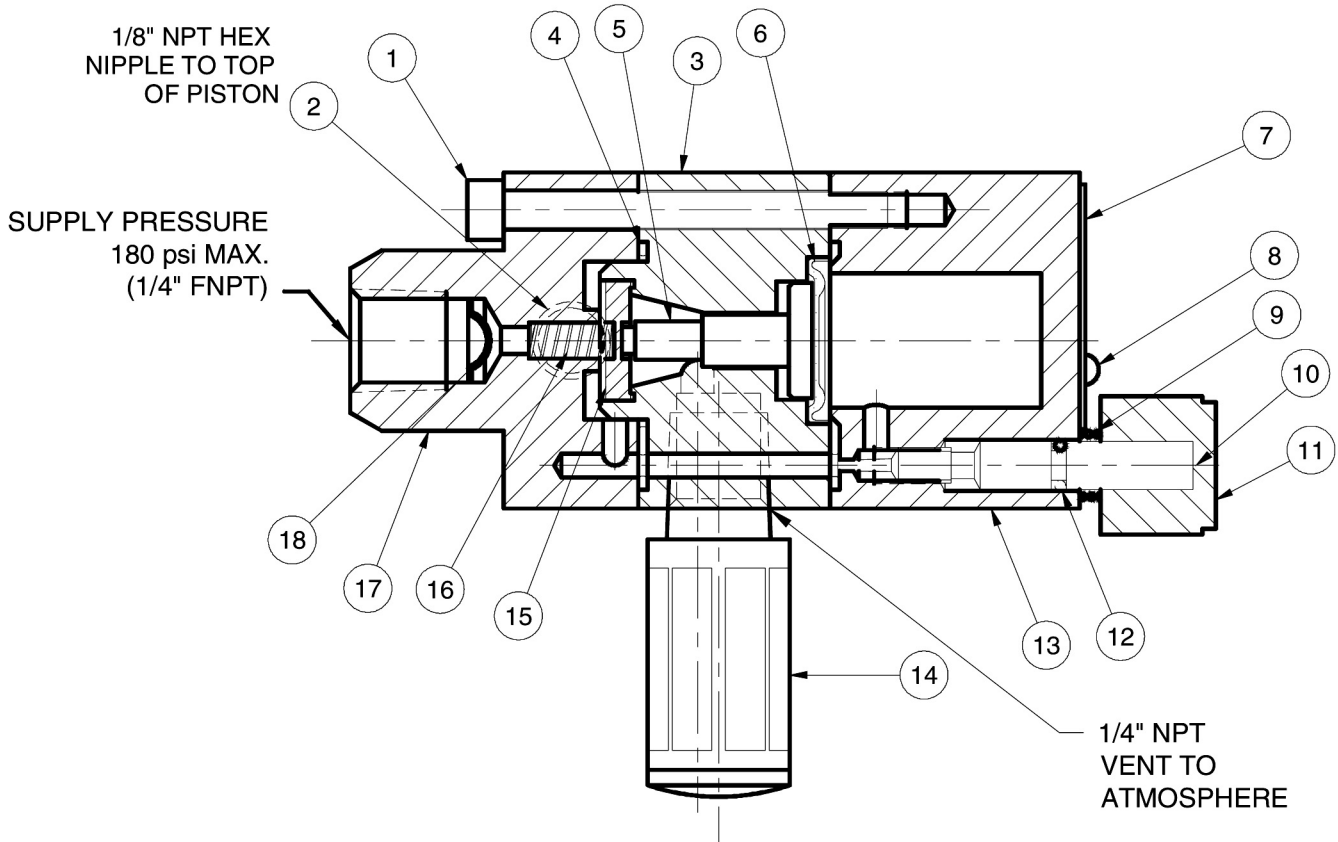
# METERING PUMPS

## P N E U M A T I C P L U N G E R

Figure 3, Timer

Reference fig. 1, item 1

Reference fig. 2, item 1



| Assembly Item | 31668 Part # | Timer Description | Material         | Qty |
|---------------|--------------|-------------------|------------------|-----|
| 1             | 13223        | Screw             | 18-8 ss          | 2   |
| 2             | 25130        | Hex Nipple        | 303 ss           | 1   |
| 3             | 31664        | Center Body       | 303 ss           | 1   |
| 4             | 13227        | Seal              | Nitrile          | 1   |
| 5             | 13247        | Disc Actuator     | Delrin           | 1   |
| 6 *           | 13226        | Diaphragm         | Nitrile          | 1   |
| 7             | 13246        | Nameplate         | 18-8 ss          | 1   |
| 8             | 10324        | Drive Screw       | 18-8 ss          | 2   |
| 9             | 13253        | Knob Spring       | Stainless Steel  | 1   |
| 10            | 25149        | Adjustment Screw  | 303 ss           | 1   |
| 11            | 13243        | Knob              | Polycarbon       | 1   |
| 12            | 10326        | O-Ring            | Nitrile          | 1   |
| 13 *          | 31663        | Front Body        | 303 ss           | 1   |
| 14            | 12952        | Muffler           |                  | 1   |
| 15            | 13225        | Disc              | Aluminum/Nitrile | 1   |
| 16 *          | 13222        | Disc Spring       | Stainless steel  | 1   |
| 17            | 31665        | Rear Body         | 303 ss           | 1   |
| 18 *          | 10244        | Screen            | Stainless Steel  | 1   |
| *             | 25183        | Repair Kit        |                  | 1   |

\*Recommended spare

# METERING PUMPS

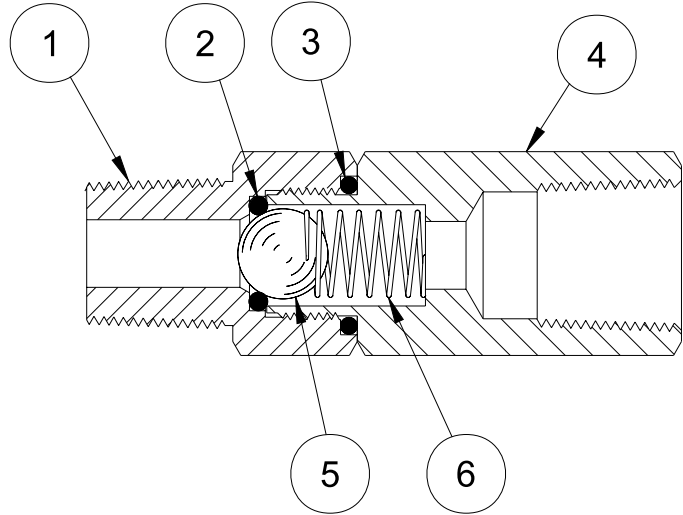
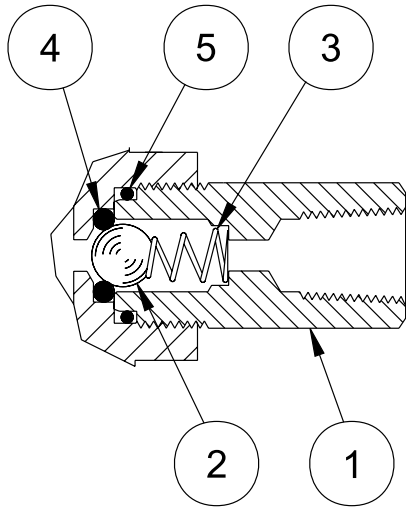
## P N E U M A T I C P L U N G E R

**Figure 4, Discharge Check Valve**  
**One Piece Body**

Reference fig. 1, item 16  
 Reference fig. 2, item 15

**Figure 5, Discharge Check Valve**  
**Two Piece Body**

Reference fig. 1, item 16  
 Model 84T-14 Only



| Assembly | 22624  | 22625  | 22626  | Discharge Check Valve - One Piece Body | Port Size 1/4" NPTF |     |
|----------|--------|--------|--------|--|---------------------|-----|
| Item     | Part # | Part # | Part # | Description                            | Material            | Qty |
| 1        | 20570  | 20570  | 20570  | Outlet Body                            | 316 ss              | 1   |
| 2        | 10283  | 10283  | 10283  | Ball                                   | Carbide             | 1   |
| 3        | 10068  | 10068  | 10068  | Spring                                 | 316 ss              | 1   |
| 4        | 10312  |        |        | Seat                                   | Fluorocarbon        | 1   |
|          |        | 10328  |        | Seat                                   | Nitrile             | 1   |
|          |        |        | 10317  | Seat                                   | TFE                 | 1   |
| 5        | 10482  |        |        | Seal                                   | Fluorocarbon        | 1   |
|          |        | 10124  |        | Seal                                   | Nitrile             | 1   |
|          |        |        | 10481  | Seal                                   | TFE                 | 1   |

| Assembly | 24753  | Discharge Check Valve - Two-Piece Body | Port Size 1/2" NPTF |
|----------|--------|--|---------------------|
| Item     | Part # | Description                            | Material Qty        |
| 1        | 23569  | Inlet Body                             | 316 ss 1            |
| 2        | 10469  | Seat                                   | TFE 1               |
| 3        | 11595  | Seal                                   | Fluorocarbon 1      |
| 4        | 24757  | Outlet Body                            | 316 ss 1            |
| 5        | 10529  | Ball                                   | Carbide 1           |
| 6        | 11604  | Spring                                 | 316 ss 1            |

# METERING PUMPS

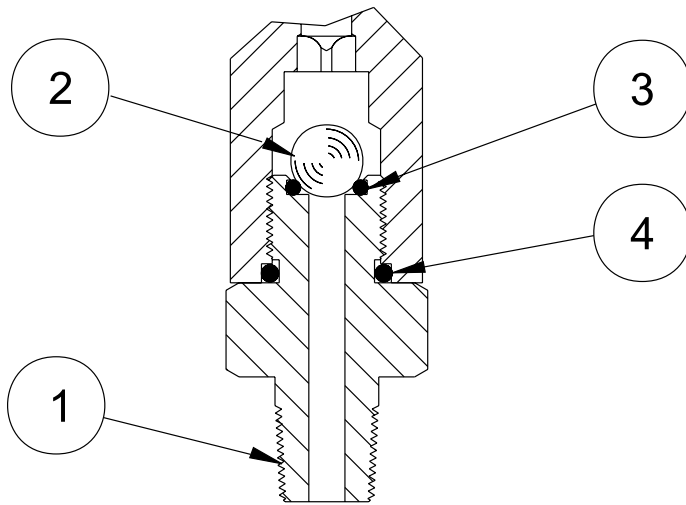
P N E U M A T I C P L U N G E R

Figure 6, Suction Check Valve

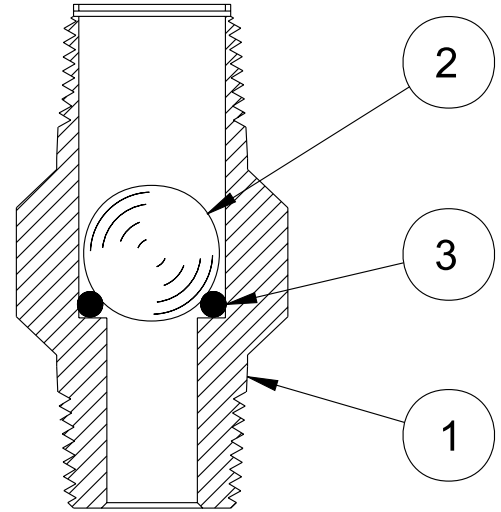
One Piece Body

Reference fig. 1, item 17

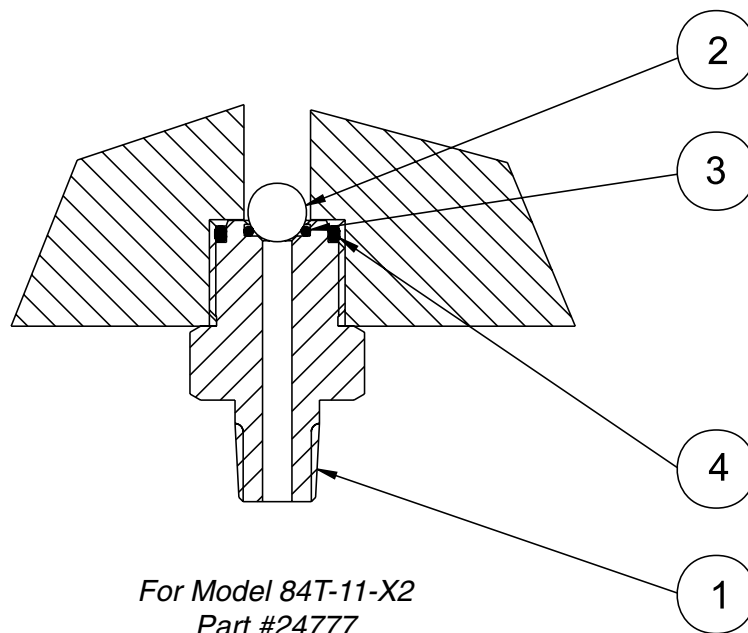
Reference fig. 2, item 16



For Model 84T-11 & 84-12



For Model 84T-14 Only



For Model 84T-11-X2  
Part #24777

# METERING PUMPS

## P N E U M A T I C P L U N G E R

### Suction Check Valves - One Piece Body

| <b>Part Number 24773</b> |                    |               |                 | <b>Port Size 1/4" NPTM</b> |  |
|--------------------------|--------------------|---------------|-----------------|----------------------------|--|
| <b>Item</b>              | <b>Description</b> | <b>Part #</b> | <b>Material</b> | <b>Qty</b>                 |  |
| 1                        | Inlet Body         | 24789         | 316 ss          | 1                          |  |
| 2                        | Ball               | 10283         | Carbide         | 1                          |  |
| 3                        | Seat               | 10365         | TFE             | 1                          |  |
| 4                        | Seal               | 10280         | Fluorocarbon    | 1                          |  |

| <b>Part Number 24774</b> |                    |               |                 | <b>Port Size 1/4" NPTM</b> |  |
|--------------------------|--------------------|---------------|-----------------|----------------------------|--|
| <b>Item</b>              | <b>Description</b> | <b>Part #</b> | <b>Material</b> | <b>Qty</b>                 |  |
| 1                        | Inlet Body         | 24789         | 316 ss          | 1                          |  |
| 2                        | Ball               | 10283         | Carbide         | 1                          |  |
| 3                        | Seat               | 10282         | Fluorocarbon    | 1                          |  |
| 4                        | Seal               | 10280         | Fluorocarbon    | 1                          |  |

| <b>Part Number 24775</b> |                    |               |                 | <b>Port Size 1/4" NPTM</b> |  |
|--------------------------|--------------------|---------------|-----------------|----------------------------|--|
| <b>Item</b>              | <b>Description</b> | <b>Part #</b> | <b>Material</b> | <b>Qty</b>                 |  |
| 1                        | Inlet Body         | 24789         | 316 ss          | 1                          |  |
| 2                        | Ball               | 10283         | Carbide         | 1                          |  |
| 3                        | Seat               | 10365         | TFE             | 1                          |  |
| 4                        | Seal               | 10122         | Nitrile         | 1                          |  |

| <b>Part Number 24776</b> |                    |               |                 | <b>Port Size 1/4" NPTM</b> |  |
|--------------------------|--------------------|---------------|-----------------|----------------------------|--|
| <b>Item</b>              | <b>Description</b> | <b>Part #</b> | <b>Material</b> | <b>Qty</b>                 |  |
| 1                        | Inlet Body         | 24789         | 316 ss          | 1                          |  |
| 2                        | Ball               | 10283         | Carbide         | 1                          |  |
| 3                        | Seat               | 10110         | Nitrile         | 1                          |  |
| 4                        | Seal               | 10122         | Nitrile         | 1                          |  |

| <b>Part Number 24777</b> |                    |               |                 | <b>Port Size 1/4" NPTM</b> |  |
|--------------------------|--------------------|---------------|-----------------|----------------------------|--|
| <b>Item</b>              | <b>Description</b> | <b>Part #</b> | <b>Material</b> | <b>Qty</b>                 |  |
| 1                        | Inlet Body         | 24790         | 316 ss          | 1                          |  |
| 2                        | Ball               | 10283         | Carbide         | 1                          |  |
| 3                        | Seat               | 10365         | TFE             | 1                          |  |
| 4                        | Seal               | 10481         | TFE             | 1                          |  |

| <b>Part Number 24778</b> |                    |               |                 | <b>Port Size 1/2" NPTM</b> |  |
|--------------------------|--------------------|---------------|-----------------|----------------------------|--|
| <b>Item</b>              | <b>Description</b> | <b>Part #</b> | <b>Material</b> | <b>Qty</b>                 |  |
| 1                        | Inlet Body         | 24787         | 316 ss          | 1                          |  |
| 2                        | Ball               | 10529         | Carbide         | 1                          |  |
| 3                        | Seat               | 10469         | TFE             | 1                          |  |
| 4                        | Seal               | 10467         | TFE             | 1                          |  |

| <b>Part Number 24779</b> |                    |               |                 | <b>Port Size 1/2" NPTM</b> |  |
|--------------------------|--------------------|---------------|-----------------|----------------------------|--|
| <b>Item</b>              | <b>Description</b> | <b>Part #</b> | <b>Material</b> | <b>Qty</b>                 |  |
| 1                        | Inlet Body         | 24787         | 316 ss          | 1                          |  |
| 2                        | Ball               | 10529         | Carbide         | 1                          |  |
| 3                        | Seat               | 10337         | Fluorocarbon    | 1                          |  |
| 4                        | Seal               | 10466         | Fluorocarbon    | 1                          |  |

| <b>Part Number 24780</b> |                    |               |                 | <b>Port Size 1/2" NPTM</b> |  |
|--------------------------|--------------------|---------------|-----------------|----------------------------|--|
| <b>Item</b>              | <b>Description</b> | <b>Part #</b> | <b>Material</b> | <b>Qty</b>                 |  |
| 1                        | Inlet Body         | 24787         | 316 ss          | 1                          |  |
| 2                        | Ball               | 10529         | Carbide         | 2                          |  |
| 3                        | Seat               | 10121         | Nitrile         | 1                          |  |
| 4                        | Seal               | 10468         | Nitrile         | 1                          |  |

| <b>Part Number 24165</b> |                    |               |                 | <b>Port Size 3/4" NPTM</b> |  |
|--------------------------|--------------------|---------------|-----------------|----------------------------|--|
| <b>Item</b>              | <b>Description</b> | <b>Part #</b> | <b>Material</b> | <b>Qty</b>                 |  |
| 1                        | Inlet Body         | 31123         | 316 ss          | 1                          |  |
| 2                        | Ball               | 11585         | 440C            | 1                          |  |
| 3                        | Seat               | 11772         | TFE             | 1                          |  |

# METERING PUMPS

## LINC Chemical Pump Gas Consumption Table

| ACTUATION PISTON DIA. (IN)>> | 1.50   | 2.25                         | 3                            | 4                            | 4                                      | 4                                   | 6                                   | 8                                   | 10                                  |
|------------------------------|--|------------------------------|------------------------------|------------------------------|--|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|
| >><br>CONFIGURATION<br>>>    | SPRING<br>RETURN<br>NO RELAY                         | SPRING<br>RETURN<br>NO RELAY | SPRING<br>RETURN<br>NO RELAY | SPRING<br>RETURN<br>NO RELAY | SPRING<br>RETURN<br>INCLUDING<br>RELAY | GAS<br>RETURN<br>INCLUDING<br>RELAY | GAS<br>RETURN<br>INCLUDING<br>RELAY | GAS<br>RETURN<br>INCLUDING<br>RELAY | GAS<br>RETURN<br>INCLUDING<br>RELAY |
| SUPPLY<br>PRESS.<br>(PSI)    | VOLUME DISPLACED BY PISTON FOR 1" STROKE(CUBIC FEET) |                              |                              |                              |  |                                     |                                     |                                     |                                     |
|                              | 0.00102265   | 0.00230097                   | 0.00409062                   | 0.00727221                   | 0.00727221                             | 0.01454441                          | 0.03272492                          | 0.05817764                          | 0.09090257                          |
|                              | THEORETICAL GAS CONSUMPTION FOR EACH 1" STROKE (SCF) |                              |                              |                              |  |                                     |                                     |                                     |                                     |
| 0                            | 0.0000   | 0.0000                       | 0.0000                       | 0.0000                       | 0.0000                                 | 0.0000                              | 0.0000                              | 0.0000                              | 0.0000                              |
| 10                           | 0.0017   | 0.0039                       | 0.0069                       | 0.0122                       | 0.0122                                 | 0.0244                              | 0.0550                              | 0.0978                              | 0.1527                              |
| 20                           | 0.0024   | 0.0054                       | 0.0097                       | 0.0172                       | 0.0172                                 | 0.0343                              | 0.0772                              | 0.1373                              | 0.2146                              |
| 30                           | 0.0031   | 0.0070                       | 0.0124                       | 0.0221                       | 0.0221                                 | 0.0442                              | 0.0995                              | 0.1769                              | 0.2764                              |
| 40                           | 0.0038   | 0.0086                       | 0.0152                       | 0.0271                       | 0.0271                                 | 0.0541                              | 0.1218                              | 0.2165                              | 0.3383                              |
| 50                           | 0.0045   | 0.0101                       | 0.0180                       | 0.0320                       | 0.0320                                 | 0.0640                              | 0.1440                              | 0.2561                              | 0.4001                              |
| 60                           | 0.0052   | 0.0117                       | 0.0208                       | 0.0370                       | 0.0370                                 | 0.0739                              | 0.1663                              | 0.2956                              | 0.4619                              |
| 70                           | 0.0059   | 0.0133                       | 0.0236                       | 0.0419                       | 0.0419                                 | 0.0838                              | 0.1886                              | 0.3352                              | 0.5238                              |
| 80                           | 0.0066   | 0.0148                       | 0.0264                       | 0.0468                       | 0.0468                                 | 0.0937                              | 0.2108                              | 0.3748                              | 0.5856                              |
| 90                           | 0.0073   | 0.0164                       | 0.0291                       | 0.0518                       | 0.0518                                 | 0.1036                              | 0.2331                              | 0.4144                              | 0.6474                              |
| 100                          | 0.0080   | 0.0180                       | 0.0319                       | 0.0567                       | 0.0567                                 | 0.1135                              | 0.2553                              | 0.4539                              | 0.7093                              |
| 110                          | 0.0087   | 0.0195                       | 0.0347                       | 0.0617                       | 0.0617                                 | 0.1234                              | 0.2776                              | 0.4935                              | 0.7711                              |
| 120                          | 0.0094   | 0.0211                       | 0.0375                       | 0.0666                       | 0.0666                                 | 0.1333                              | 0.2999                              | 0.5331                              | 0.8330                              |
| 130                          | 0.0101   | 0.0226                       | 0.0403                       | 0.0716                       | 0.0716                                 | 0.1432                              | 0.3221                              | 0.5727                              | 0.8948                              |
| 140                          | 0.0108   | 0.0242                       | 0.0430                       | 0.0765                       | 0.0765                                 | 0.1531                              | 0.3444                              | 0.6123                              | 0.9566                              |
| 150                          | 0.0115   | 0.0258                       | 0.0458                       | 0.0815                       | 0.0815                                 | 0.1630                              | 0.3667                              | 0.6518                              | 1.0185                              |







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