



## Rebuildable, Rechargeable Pulsation Dampeners

**Models** 701501  
thru 701543

### FEATURES

- Poppet reinforced bladder for durability.
- Nitrogen precharged to eliminate moisture and bladder deterioration.
- Sealed charging valve for positive pressure lock.
- Optional bladder materials for liquid compatibility.
- 316 stainless steel construction for strength and liquid compatibility.
- Convenient rebuildable style for greater economy.

### SPECIFICATIONS

| <b>MODEL 701506</b>           | U.S. Measure | Metric Measure |
|-------------------------------|--------------|----------------|
| Maximum Flow .....            | 15 GPM       | (57 L/M)       |
| Maximum Working Pressure..... | 8500 PSI     | (590 BAR)      |
| Maximum Temperature.....      | 160°F        | (71°C)         |
| Volume .....                  | 6 cu. in.    | (0.10 L)       |
| Safety Factor .....           | 4/1          | (4/1)          |
| Bladder Construction .....    | <b>NBR</b>   | <b>(NBR)</b>   |
| Port Size .....               | 1/2" NPTF    | (1/2" NPTF)    |
| Diameter.....                 | 3.0"         | (76.2 mm)      |
| Length .....                  | 6.92"        | (175.8 mm)     |
| Weight.....                   | 10.56 lbs.   | (4.8 kg)       |

| <b>MODEL 701501</b>            | U.S. Measure | Metric Measure |
|--------------------------------|--------------|----------------|
| Maximum Flow .....             | 15 GPM       | (57 L/M)       |
| Maximum Working Pressure ..... | 4300 PSI     | (296 BAR)      |
| Maximum Temperature.....       | 160°F        | (71°C)         |
| Volume .....                   | 6 cu. in.    | (0.10 L)       |
| Safety Factor .....            | 4/1          | (4/1)          |
| Bladder Construction .....     | <b>NBR</b>   | <b>(NBR)</b>   |
| Port Size .....                | 1/2" NPTF    | (1/2" NPTF)    |
| Diameter.....                  | 2.5"         | (63.5 mm)      |
| Length .....                   | 6.57"        | (166.9 mm)     |
| Weight.....                    | 5.34 lbs.    | (2.5 kg)       |

| <b>MODEL 701502</b>            | U.S. Measure | Metric Measure |
|--------------------------------|--------------|----------------|
| Maximum Flow .....             | 25 GPM       | (95 L/M)       |
| Maximum Working Pressure ..... | 3800 PSI     | (265 BAR)      |
| Maximum Temperature.....       | 160°F        | (71°C)         |
| Volume .....                   | 15 cu. in.   | (0.25 L)       |
| Safety Factor .....            | 4/1          | (4/1)          |
| Bladder Construction .....     | <b>NBR</b>   | <b>(NBR)</b>   |
| Port Size .....                | 1/2" NPTF    | (1/2" NPTF)    |
| Diameter.....                  | 3.0"         | (76.2 mm)      |
| Length .....                   | 7.79"        | (197.9 mm)     |
| Weight.....                    | 8.34 lbs     | (3.7 kg)       |

| <b>MODEL 701503</b>            | U.S. Measure | Metric Measure |
|--------------------------------|--------------|----------------|
| Maximum Flow .....             | 75 GPM       | (284 L/M)      |
| Maximum Working Pressure ..... | 3000 PSI     | (210 BAR)      |
| Maximum Temperature.....       | 160°F        | (71°C)         |
| Volume .....                   | 30 cu. in.   | (0.50 L)       |
| Safety Factor .....            | 4/1          | (4/1)          |
| Bladder Construction .....     | <b>NBR</b>   | <b>(NBR)</b>   |
| Port Size .....                | 1" NPTF      | (1" NPTF)      |
| Diameter.....                  | 3.51"        | (89.2 mm)      |
| Length .....                   | 9.69"        | (246 mm)       |
| Weight.....                    | 12.56 lbs.   | (5.7 kg)       |

NOTE: All models must be precharged before operation. When ordering add .800 to model number and specify required precharge.

*“Customer confidence is our greatest asset”*

## SPECIFICATIONS

| <b>MODEL 701521</b>            | U.S. Measure | Metric Measure | <b>MODEL 701541</b>            | U.S. Measure | Metric Measure |
|--------------------------------|--------------|----------------|--------------------------------|--------------|----------------|
| Maximum Flow .....             | 15 GPM       | (57 L/M)       | Maximum Flow .....             | 15 GPM       | (57 L/M)       |
| Maximum Working Pressure ..... | 4300 PSI     | (296 BAR)      | Maximum Working Pressure ..... | 4300 PSI     | (296 BAR)      |
| Maximum Temperature.....       | 160°F        | (71°C)         | Maximum Temperature.....       | 160°F        | (71°C)         |
| Volume .....                   | 6 cu. in.    | (0.10 L)       | Volume.....                    | 6 cu. in.    | (0.10 L)       |
| Safety Factor .....            | 4/1          | (4/1)          | Safety Factor .....            | 4/1          | (4/1)          |
| Bladder Construction .....     | <b>EPDM</b>  | <b>(EPDM)</b>  | Bladder Construction .....     | <b>FPM</b>   | <b>(FPM)</b>   |
| Port Size .....                | 1/2" NPTF    | (1/2" NPTF)    | Port Size .....                | 1/2" NPTF    | (1/2" NPTF)    |
| Diameter.....                  | 2.5"         | (63.5 mm)      | Diameter.....                  | 2.5"         | (63.5 mm)      |
| Length .....                   | 6.57"        | (166.9 mm)     | Length .....                   | 6.57"        | (166.9 mm)     |
| Weight.....                    | 5.34 lbs.    | (2.5 kg)       | Weight.....                    | 5.34 lbs.    | (2.5 kg)       |
| <b>MODEL 701522</b>            | U.S. Measure | Metric Measure | <b>MODEL 701542</b>            | U.S. Measure | Metric Measure |
| Maximum Flow .....             | 25 GPM       | (95 L/M)       | Maximum Flow .....             | 25 GPM       | (95 L/M)       |
| Maximum Working Pressure ..... | 3800 PSI     | (265 BAR)      | Maximum Working Pressure ..... | 3800 PSI     | (265 BAR)      |
| Maximum Temperature.....       | 160°F        | (71°C)         | Maximum Temperature.....       | 160°F        | (71°C)         |
| Volume .....                   | 15 cu. in.   | (0.25 L)       | Volume.....                    | 15 cu. in.   | (0.25 L)       |
| Safety Factor .....            | 4/1          | (4/1)          | Safety Factor .....            | 4/1          | (4/1)          |
| Bladder Construction .....     | <b>EPDM</b>  | <b>(EPDM)</b>  | Bladder Construction .....     | <b>FPM</b>   | <b>(FPM)</b>   |
| Port Size .....                | 1/2" NPTF    | (1/2" NPTF)    | Port Size .....                | 1/2" NPTF    | (1/2" NPTF)    |
| Diameter.....                  | 3.0"         | (76.2 mm)      | Diameter.....                  | 3.0"         | (76.2 mm)      |
| Length .....                   | 7.79"        | (197.9 mm)     | Length .....                   | 7.79"        | (197.9 mm)     |
| Weight.....                    | 8.34 lbs.    | (3.7 kg)       | Weight.....                    | 8.34 lbs.    | (3.7 kg)       |
| <b>MODEL 701523</b>            | U.S. Measure | Metric Measure | <b>MODEL 701543</b>            | U.S. Measure | Metric Measure |
| Maximum Flow .....             | 75 GPM       | (284 L/M)      | Maximum Flow .....             | 75 GPM       | (284 L/M)      |
| Maximum Working Pressure ..... | 3000 PSI     | (210 BAR)      | Maximum Working Pressure ..... | 3000 PSI     | (210 BAR)      |
| Maximum Temperature.....       | 160°F        | (71°C)         | Maximum Temperature.....       | 160°F        | (71°C)         |
| Volume.....                    | 30 cu. in.   | (0.50 L)       | Volume.....                    | 30 cu. in.   | (0.50 L)       |
| Safety Factor .....            | 4/1          | (4/1)          | Safety Factor .....            | 4/1          | (4/1)          |
| Bladder Construction .....     | <b>EPDM</b>  | <b>(EPDM)</b>  | Bladder Construction .....     | <b>FPM</b>   | <b>(FPM)</b>   |
| Port Size .....                | 1" NPTF      | (1" NPTF)      | Port Size .....                | 1" NPTF      | (1" NPTF)      |
| Diameter.....                  | 3.51"        | (89.2 mm)      | Diameter.....                  | 3.51"        | (89.2 mm)      |
| Length .....                   | 9.69"        | (246 mm)       | Length .....                   | 9.69"        | (246 mm)       |
| Weight.....                    | 12.56 lbs.   | (5.7 kg)       | Weight.....                    | 12.56 lbs.   | (5.7 kg)       |

NOTE: All models must be precharged before operation. When ordering add .800 to model number and specify required precharge.

MATERIAL CODES (Not Part of Part Number)

EPDM=Ethylene Propylene Diene Monomer FPM=Fluorocarbon (Viton®) NBR=Medium Nitrile (Buna-N)

### SELECTION:

The Pulsation Dampener should be selected to match the flow and pressure requirements of the system and satisfy the liquid compatibility.

### INSTALLATION:

The Pulsation Dampener should be mounted in a vertical position and directly onto the pump discharge manifold for optimum pulsation dampening and to avoid system vibration damage.

### OPERATION:

The Pulsation Dampener should be precharged with **NITROGEN ONLY** before operation. Be certain the charging valve cap at the top of the accumulator is securely tightened to assure no loss of pressure during operation.

#### CAUTION

Do not use oxygen or air. This could cause an explosion.

At standard 70°F (20°C), optimum pulsation dampener performance is obtained with a precharge of 40% to 80% of the operating pressure.

#### NOTE

When operating at lower temperatures, precharge should be 15% higher. When operating at higher temperatures, precharge should be 15% lower.

Check the precharge every 12 months for normal operation and more frequently for continuous-duty operation.

#### NOTE

Up to 50 PSI precharge pressure can be lost during the checking of your precharge.

#### CAUTION

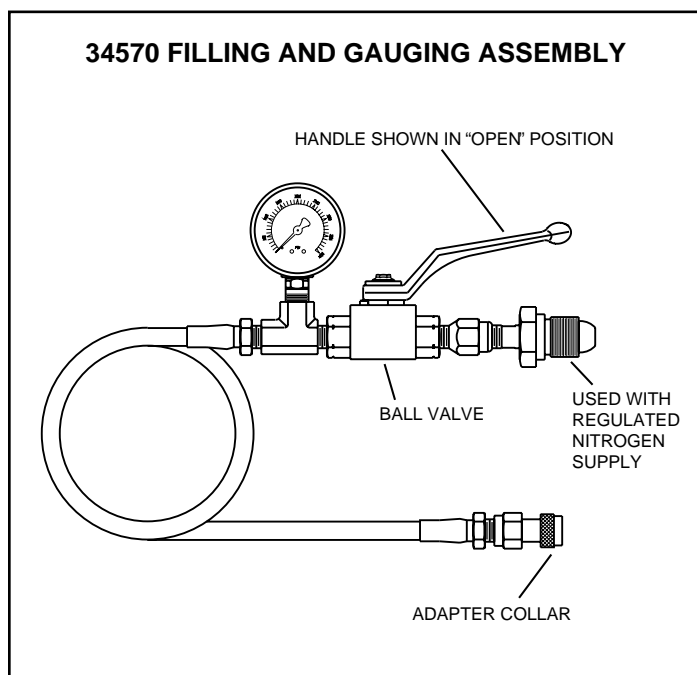
A gas regulator must be mounted between the nitrogen tank and the hose connection from the Filling and Gauging Assembly to enable you to regulate the precharge and to prevent excessive pressure being transmitted directly to the Pulsation Dampener. This over pressurization will void the warranty.

## TO ADD PRECHARGE:

1. Mount Filling and Gauging Assembly preferably onto a regulated nitrogen supply.
2. Open ball valve (handle inline with valve).
3. Thread adapter collar hand tight onto top of Pulsation Dampener.
4. Open main valve on nitrogen supply.
5. Slowly increase pressure from the regulator to Pulsation Dampener.
6. Close ball valve and regulated supply when desired precharge is reached.
7. Remove adapter collar from Pulsation Dampener (a small amount of nitrogen will escape from hose as collar is removed).
8. Replace charging valve cap and tighten securely.
9. Slowly open ball valve to purge all fittings of nitrogen before removing Filling and Gauging Assembly.

## TO REMOVE NITROGEN:

1. Do not mount Filling and Gauging Assembly to a nitrogen supply.
2. Remove the dust cap.
3. Remove charging valve cap from top of Pulsation Dampener.
4. Close ball valve (handle perpendicular to valve).
5. Secure adapter collar onto top of Pulsation Dampener.
6. Slowly open ball valve and release the nitrogen from the Pulsation Dampener.
7. When desired precharge pressure is reached, close the ball valve.
8. Remove the adapter collar from the Pulsation Dampener (a small amount of nitrogen will escape from the hose).
9. Replace the charging valve cap and tighten securely.



## REPLACING THE BLADDER

### Disassembly

1. Remove the dust cap at the top of the Pulsation Dampener.
2. Remove the charging valve cap.
3. Release the nitrogen precharge using the Filling and Gauging Assembly as described under TO REMOVE NITROGEN steps 4 through 8.
4. Using a soft mallet, tap threaded gas fitting to drive gas cap below snap ring.

### NOTE

If the gas cap will not press down after the precharge has been released, the charging valve may be plugged. Remove the charging valve to ensure all gas has been released. Then replace valve.

5. Using a screw driver, carefully remove the first segment of the three piece snap ring. The other two pieces can be removed by hand.
6. Grasp the gas cap and bladder assembly by the top hex nut with a locking plier and carefully remove from the body. Keep aligned to avoid damage to the bladder.
7. Inspect the bladder for cracks, punctures or deformity.
8. Remove bladder from gas cap, then inner and outer o-rings. Replace if damaged or worn.

### Reassembly

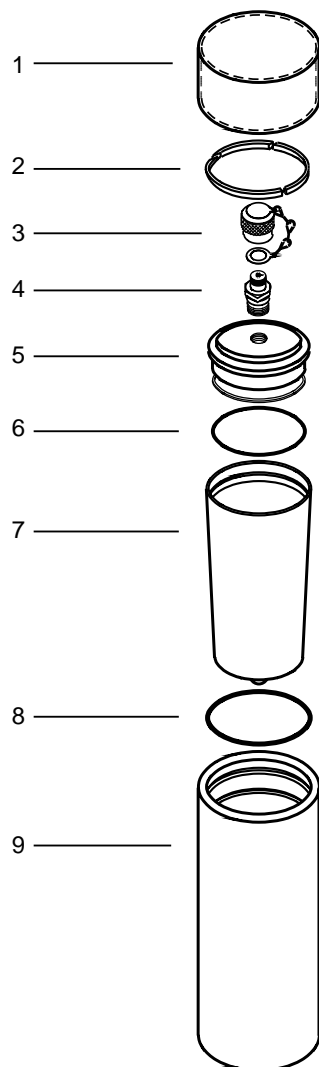
1. Install the new inner o-ring into the groove on the gas cap (back-up ring for model 701506).
2. Install the new bladder over the o-ring onto the gas cap.
3. Install the new outer o-ring into the groove in the body of the Pulsation Dampener.
4. Lubricate both the outer o-ring and bladder and press the bladder and gas cap assembly into the body.
5. Using a soft mallet tap the gas cap into the body until the snap ring groove is exposed, then insert the three sections of snap ring. Be certain the gas cap is pulled up squarely in position and gas valve is fully exposed.
6. Precharge Pulsation Dampener as described under TO ADD PRECHARGE steps 1 through 9.

### CAUTION

Do not use oxygen or air. This could cause an explosion.  
**USE NITROGEN ONLY**

7. Replace dust cap over top of Pulsation Dampener.

## EXPLODED VIEW



## PARTS LIST

| Item | Part No.    | Description                          | Model Used         | Qty |
|------|-------------|--------------------------------------|--------------------|-----|
| 1    | 701771 NY   | Cap, Dust (15 GPM)                   | 701501, 06, 21, 41 | 1   |
|      | 701772 NY   | Cap, Dust (25 GPM)                   | 701502, 22, 42     | 1   |
|      | 701773 NY   | Cap, Dust (75 GPM)                   | 701503, 23, 43     | 1   |
| 2    | — SS        | Ring, 3-piece                        | All                | 1   |
| 3    | — SS        | Cap, Charging Valve                  | All                | 1   |
| 4    | — SS        | Valve, Charging                      | All                | 1   |
| 5    | — SS        | Cap, Gas                             | All                | 1   |
| 6    | — NBR       | O-Ring, Inner                        | All                | 1   |
|      | — EPDM      | O-Ring, Inner                        | All                | 1   |
|      | — FPM       | O-Ring, Inner                        | All                | 1   |
| 7    | — NBR       | Bladder                              | 701501, 02, 03, 06 | 1   |
|      | — EPDM      | Bladder                              | 701521, 22, 23     | 1   |
|      | — FPM       | Bladder                              | 701541, 42, 43     | 1   |
| 8    | — NBR       | O-Ring, Outer                        | All                | 1   |
|      | — FPM       | O-Ring, Outer                        | All                | 1   |
|      | — EPDM      | O-Ring, Outer                        | All                | 1   |
| 9    | — SS        | Body                                 | All                | 1   |
| 10   | 701510 NBR  | Bladder Kit                          | 701506             | 1   |
|      | 701511 NBR  | Bladder Kit                          | 701501             | 1   |
|      | 701512 NBR  | Bladder Kit                          | 701502             | 1   |
|      | 701513 NBR  | Bladder Kit                          | 701503             | 1   |
|      | 701531 EPDM | Bladder Kit                          | 701521             | 1   |
|      | 701532 EPDM | Bladder Kit                          | 701522             | 1   |
|      | 701533 EPDM | Bladder Kit                          | 701523             | 1   |
|      | 701551 FPM  | Bladder Kit                          | 701541             | 1   |
|      | 701552 FPM  | Bladder Kit                          | 701542             | 1   |
|      | 701553 FPM  | Bladder Kit                          | 701543             | 1   |
|      | — 34570     | Filling and Gauging Assy             | All                | 1   |
| ●    | — 702038    | Charging Valve Assy<br>(Incls: 3, 4) | All                | 1 ● |

Kit includes bladder and two o-rings, except for Model 701506 which has bladder, one o-ring and one back-up ring.

*Italics are optional items.* ● Industrial Discount.

MATERIAL CODES (Not Part of Part Number):

EPDM=Ethylene Propylene Diene Monomer FPM=Fluorocarbon (Viton®)

NBR=Medium Nitrile (Buna-N) NY=Nylon SS=316SS

## MAINTENANCE:

Check the precharge every 12 months for normal operation and more frequently for continuous-duty operation.

If pulsation is noticed, relieve the precharge and inspect the bladder for wear. Replace as needed.

## WARRANTY

### 90 Day Warranty

Refer to complete CAT PUMP Warranty for further information.

Products described hereon are covered by one or more of the following U.S. patents 3558244, 3652188, 3809508, 3920356, 3930756 and 5035580

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