Pathway
CONTROL PRODUCTS, Inc.

22262 Cuttler Road • New Caney, TX 77537
Phone 281-354-3699 • Fax 281-354-4475
www.PathwayControl.com

# 500 Series
## Two Way, Low Pressure Valve

### Application:
This valve is used for on-off or modulating control of water, oil or gas on low pressure applications. Oil and gas production separators, heater/treaters or any type of liquid accumulators are but a few of the many applications where the 500 Series valves are perfectly suited.

### Operation:
In a normally closed application, a spring exerts a force onto the top side of the diaphragm, pushing the plug against the seat. To open the valve, pressure is applied to the lower side of the diaphragm overcoming the force, allowing flow through the valve. In a normally open application, the procedure is reversed. This valve may also be used with a hydraulic electric actuator.

### Features:
- Easily serviced with internal parts removable from the top of the valve without having to re move the valve body from the line.
- Stainless steel stem working in a replaceable bushing ensures a longer packing life.
- Soft trim of molded nitrile provides a bubble tight shut off. Other trim options are available.
- Spring closing will hold the following back pressure:
  1" = 100 psig; 2" = 100 psig; 3" = 50 psig;
  4" = 50 psig
  Higher pressures are available.

### Fluid Capacity
### Liquid Flow (Barrels/Day) Steady Flow

| Pressure Drop PSI | Valve Size | | | |
|---|---|---|---|---|
| | 1" | 2" | 3" | 4" |
| 5 | 1230 | 3470 | 6170 | 8500 |
| 10 | 1740 | 4900 | 8710 | 12100 |
| 25 | 2740 | 7700 | 13700 | 19000 |
| 50 | 3890 | 10980 | 19500 | 27000 |
| 100 | 5500 | 15400 | 27400 | 38200 |
| 150 | 6720 | 18900 | 34600 | 46700 |
| 200 | 7780 | 21800 | 38900 | 54000 |
| 250 | 8700 | 24400 | 43400 | 60300 |
| 300 | 9520 | 26800 | 47600 | 66000 |
| 350 | 10300 | 28900 | 51400 | 71300 |

*Values based on water.*
*For gravity correction multiply BBLS/DAY by:* $\frac{1}{\sqrt{\text{Specific Gravity}}}$

### Maximum Gas Capacity (MMSCFD)
### Steady Flow

| Inlet Pressure PSIG | Valve Size | | | |
|---|---|---|---|---|
| | 1" | 2" | 3" | 4" |
| 5 | .32 | .90 | 1.59 | 2.22 |
| 10 | .40 | 1.12 | 1.99 | 2.77 |
| 25 | .64 | 1.81 | 3.22 | 4.46 |
| 50 | 1.05 | 2.94 | 5.23 | 7.27 |
| 100 | 1.85 | 5.22 | 9.26 | 12.9 |
| 150 | 2.67 | 7.50 | 13.3 | 18.5 |
| 200 | 3.48 | 9.77 | 17.4 | 24.1 |
| 250 | 4.28 | 12.0 | 21.4 | 29.8 |
| 300 | 5.10 | 14.4 | 25.5 | 35.4 |
| 350 | 5.90 | 29.5 | 16.6 | 40.9 |

*Values Based on Natural Gas .75 Specific Gravity @ 60°F.*
*Outlet pressure (psia) is assumed to be 1/2 inlet pressure (psia) or less.*

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## Specifications:

| Size: | 1" Globe | 2" Globe | 3" Globe | 4" Globe |
|---|---|---|---|---|
| Working Pressure: | 600 psig | 600 psig | 600 psig | 300 psig |
| Effective Area: | 23 sq. in | 45 sq. in | 62 sq. in. | 62 sq. in. |
| $C_v$ Factor: | 16 | 45 | 80 | 111 |
| Temperature: | -20°F to + 180°F; available to + 240°F | | | |
| Topworks: | Pressed steel housing with nylon reinforced nitrile diaphragm; 50 psig maximum supply pressure. | | | |
| Trim: | | | | |
| Seat: | Integral in the valve body or removable stainless steel. | | | |
| Plug: | Steel with molded nitrile standard; optional fabricated acetal, polyurethane or TFE inserts. | | | |
| Materials: | | | | |
| Body: | Ductile ASTM A395 | | | |
| Stem: | Stainless steel | | | |
| Packing: | Poly Pak and/or o-rings | | | |

## Ordering Chart:

500 Series: Two-way, low pressure valve

Size:
- 1 - 1"
- 2 - 2"
- 3 - 3"
- 4 - 4"

Connection:
- 1 - Threaded
- 2 - Grooved
- 3 - Flanged, specify type*

Topworks:
- 1 - Spring top
- 2 - Spring under
- 3 - Pressure balanced

Trim:

Seat:
- 1 - Integral
- 2 - Removable, stainless steel

Plug:
- 1 - Steel with molded Nitrile
- 2 - Acetal - insert
- 3 - Polyurethane - insert
- 4 - TFE plug (fluorocarbon o-rings)
- 5 - Options *(see common options list)*

Other:
- 1 - No visual indicator
- 2 - Visual indicator
- 5 - Options *(see common options list)*

Option Number:
- ( ) - Pathway will assign an option number based on specified requirements.

500 - [ ] – [ ] ( )

**Example: 500-111-121**

**flanged models available in 150# or 300# RF*

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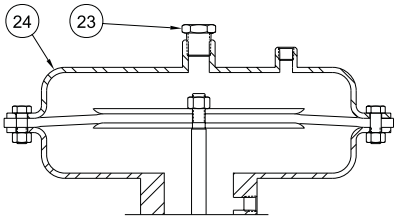
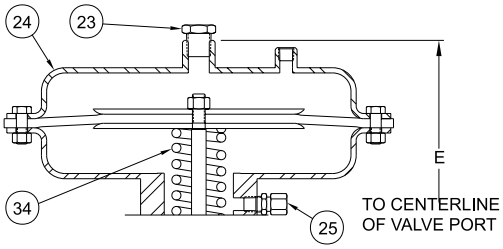


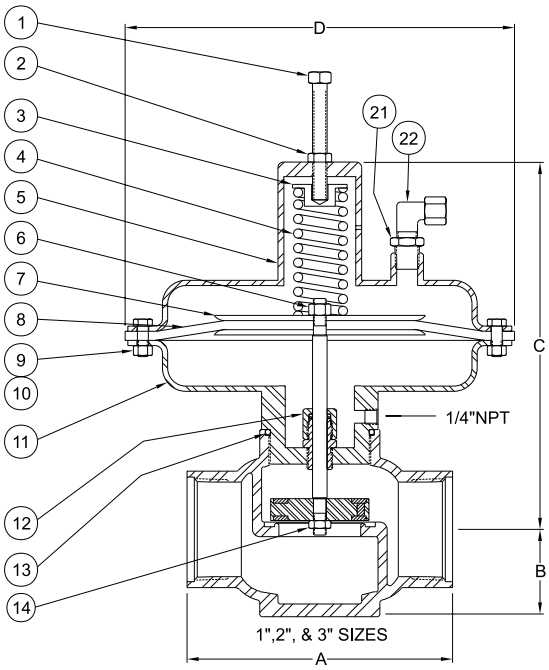




### Dimensions

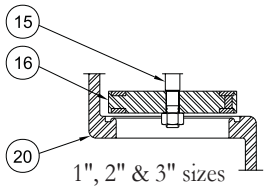
| Size | 1" | 2" | 3" | 4" |
|---|---|---|---|---|
| A | 5" | 6 1/2" | 9 1/8" | 11" |
| B | 1 9/16" | 2 3/4" | 3" | 3 3/8" |
| C | 7 5/8" | 9 1/2" | 12 1/4" | 13 3/4" |
| D | 9" | 10 1/2" | 13 1/16" | 13 1/16" |
| E | 6 1/4" | 8" | 9 1/4" | 10 3/4" |

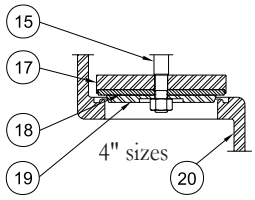
### Flanged Models

| Flange | Face to Face | W.P. @ 100°F |
|---|---|---|
| 2" 150# RF | 6 1/2" | 275 psig |
| 2" 300# RF | 9 1/8" | 600 psig |
| 3" 150# RF | 9 1/8" | 275 psig |
| 3" 300# RF | 12" | 600 psig |
| 4" 150# RF | 11" | 275 psig |

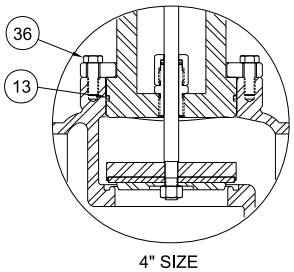



500-311-111 SHOWN

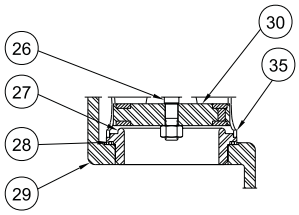


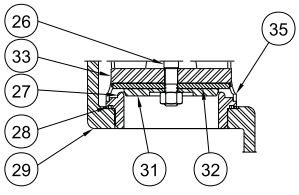




INTEGRAL SEAT




4" SIZE




REMOVABLE SEAT

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| Model | 1" | 2" | 3" | 4" | | | |
|---|---|---|---|---|---|---|---|
| Item | Part # | Part # | Part # | Part # | Description | Material | Qty |
| 1 | 10210 | 10210 | 10213 | 10213 | Adjustment Screw | Plated | 1 |
| 2 | 10177 | 10177 | 10182 | 10182 | Jam Nut | Plated | 1 |
| 3 | 20582 | 20628 | 20602 | 20602 | Spring Retainer | Carbon Steel | 1 |
| 4 | 10051 | 10075 | 10043 | 10060 | Spring | Oil Tempered Steel | 1 |
| 5 | 30043 | 30045 | 30051 | 30051 | Upper Diaphragm Housing | Fabricated Carbon Steel | 1 |
| 6 | 10172 | 10172 | 10180 | 10180 | Lock Nut | Plated | 1 |
| 7 | 20622 | 20696 | 30071 | 30071 | Diaphragm Plate | Cold Rolled Steel Plate | 2 |
| 8 | 10100 | 10094 | 10028 | 10028 | Diaphragm | Nylon Reinforced Nitrile | 1 |
| 9 | 10206 | 10207 | | | Cap Screw | Plated | 12 |
| | | | 10207 | 10207 | Cap Screw | Plated | 16 |
| 10 | 10175 | 10175 | | | Hex Nut | Plated | 12 |
| | | | 10175 | 10175 | Hex Nut | Plated | 16 |
| 11 | 30044 | 30057 | 30054 | 30050 | Lower Diaphram Housing | Fabricated Carbon Steel | 1 |
| 12 | 21409 | 21212 | 21348 | 21348 | Packing Gland Assembly | Brass/Nitrile | 1 |
| 13 | 10135 | 10138 | 10144 | 10147 | O-Ring | Nitrile | 1 |
| 14 | 10173 | 10173 | 10181 | 10181 | Lock Nut | 18-8 ss | 1 |
| 15 | 20072 | 20630 | 20690 | 20640 | Stem, Integral Seat | 303 ss | 1 |
| 16 | 20232 | 20384 | 20833 | | Plug | Molded Nitrile | 1 |
| 17 | | | | 20641 | Plug Disc | Carbon Steel | 1 |
| 18A | | | | 10559 | Plug Insert | Nitrile | 1 |
| 18B | | | | 20642 | Plug Insert | Polyurethane | 1 |
| 18C | | | | 20884 | Plug Insert | Acetal | 1 |
| 18D | | | | 20995 | Plug Insert | TFE | 1 |
| 19 | | | | 20643 | Plug Retainer | Carbon Steel | 1 |
| 20A | 20621 | 30068 | 30085 | 40075 | Body, Threaded, Integral Seat | Ductile ASTM A395 | 1 |
| 20B | 20410 | 30076 | 30077 | 40074 | Body, Grooved, Integral Seat | Ductile ASTM A395 | 1 |
| 20C | | 30107 | 40077 | 50023 | Body, 150# RF Flanged, Integral Seat | Ductile ASTM A395 | 1 |
| 20D | | 30385 | 40547 | | Body, 300# RF Flanged, Integral Seat | Ductile ASTM A395 | 1 |
| 21 | 10748 | 10748 | 10748 | 10748 | Bushing | Plated | 1 |
| 22 | 23339 | 23339 | 23339 | 23339 | Vent Assembly | Plated | 1 |
| 23 | 10346 | 10346 | 10346 | 10346 | Plug | Plated | 1 |
| 24 | 30012 | 30049 | 30101 | 30101 | Upper Diaphragm Housing | Fabricated Carbon Steel | 1 |
| 25 | 23338 | 23338 | 23338 | 23338 | Vent Assembly | Plated | 1 |
| 26 | 21006 | 20629 | 20480 | 20483 | Stem, Removable Seat | 303 ss | 1 |
| 27 | 21005 | 20631 | 20635 | 30073 | Seat | 303 ss | 1 |
| 28 | 10724 | 10136 | 10141 | 10146 | O-Ring | Nitrile | 1 |
| 29A | 21007 | 30083 | 30084 | 40076 | Body, Threaded, Removable seat | Ductile, ASTM A395 | 1 |
| 29B | 21585 | 30082 | 30086 | 40073 | Body, Grooved, Removable seat | Ductile, ASTM A395 | 1 |
| 29C | | 30081 | 40078 | 50022 | Body, 150# RF Flange, Removable seat | Ductile, ASTM A395 | 1 |
| 29D | | 30144 | 40546 | | Body, 300# RF Flanged, Removable seat | Ductile, ASTM A395 | 1 |
| 30 | | | | 20237 | Plug | Molded Nitrile | 1 |
| 31 | 21002 | 20626 | 20638 | | Plug Retainer | 303 ss | 1 |
| | | | | 20851 | Plug Retainer | Carbon Steel | 1 |
| 32A | 21003 | 20627 | 20639 | 20996 | Plug Insert | Polyurethane | 1 |
| 32B | 21587 | 21140 | 21144 | 20880 | Plug Insert | Acetal | 1 |
| 32C | 21363 | 21419 | 21143 | 20850 | Plug Insert | TFE | 1 |
| 32D | 10745 | | | | Plug Insert | Buna-N | 1 |
| 33 | 21004 | 20625 | 20637 | | Plug Disc | 303 ss | 1 |
| | | | | 20849 | Plug Disc | Carbon Steel | 1 |
| 34 | 10085 | 10075 | 10043 | 10043 | Spring | Oil Tempered Steel | 1 |
| 35 | | | | 30072 | Cage | Carbon Steel | 1 |
| 36 | | | | 10207 | Cap Screw | Plated | 8 |
| | 10016 | 10016 | 10016 | 10016 | Name Plate *(not shown)* | 18-8 ss | 1 |
| | 10324 | 10324 | 10324 | 10324 | Drive Screw *(not shown)* | 18-8 ss | 2 |