

CVS Series 2000 Pressure Pilot

Introduction

The CVS Series 2000 Pressure Pilot is a High and Low Pressure sensing unit; used to monitor process or pipeline pressure in high/low pressure shut down installations. It is operated by either a hydraulic or pneumatic signal. By utilizing a spring loaded piston, the CVS Series 2000 Pressure Pilot is able to sense the preset pressure settings and activate the pilot valve.

FEATURES

- Adjustable pressure range from 10 psi to 6000 psi (0.7 bar to 413 bar)
- Easy field adjustable set points
- Operating temperature range from -46°C to 100°C (-50°F to 212°F)
- Available in both manual and automatic reset configurations
- Ideal for use as a part of a complete CVS Shutdown System (ESD)
- Signal/Supply pressure up to 150 psig
- 316 SST Body, or Impreglon coated carbon steel body
- Optional NACE capable MR0175



CVS Series 2000 Automatic Reset

Standard 2" NPT threaded input connection
(additional options available upon request)

SPECIFICATIONS

| Model | | 2000 | 2200 | 2400 |
|---------------------------------|--------------|----------------------------------|---------|-----------|
| Piston Diameter | | 5/8" | 1-1/4" | 3/8" |
| Automatic Reset | | AR - Automatic Reset Pilot Valve | | |
| Manual Reset | | MR – Manual Reset Pilot Valve | | |
| Maximum Working Pressure (PSIG) | | 3500 | 2800 | 6000 |
| Range Limit/Max Span (PSIG) | High | 3250/1670 | 820/430 | 6000/4450 |
| | Low | 40/390 | 10/105 | 85/1120 |
| Deadband (PSIG) | Minimum | 55 | 25 | 160 |
| | Maximum | 265 | 95 | 775 |
| Weight (lbs) | Auto Reset | 11 | | |
| | Manual Reset | 13.5 | | |
| Supply Pressure Range (PSIG) | Auto Reset | 20-150 | | |
| | Manual Reset | 60-150 | | |
| Temperature Limits | Process | -46°C to 200°C (-50°F to 392°F) | | |
| | Ambient | -46°C to 100°C (-50°F to 212°F) | | |

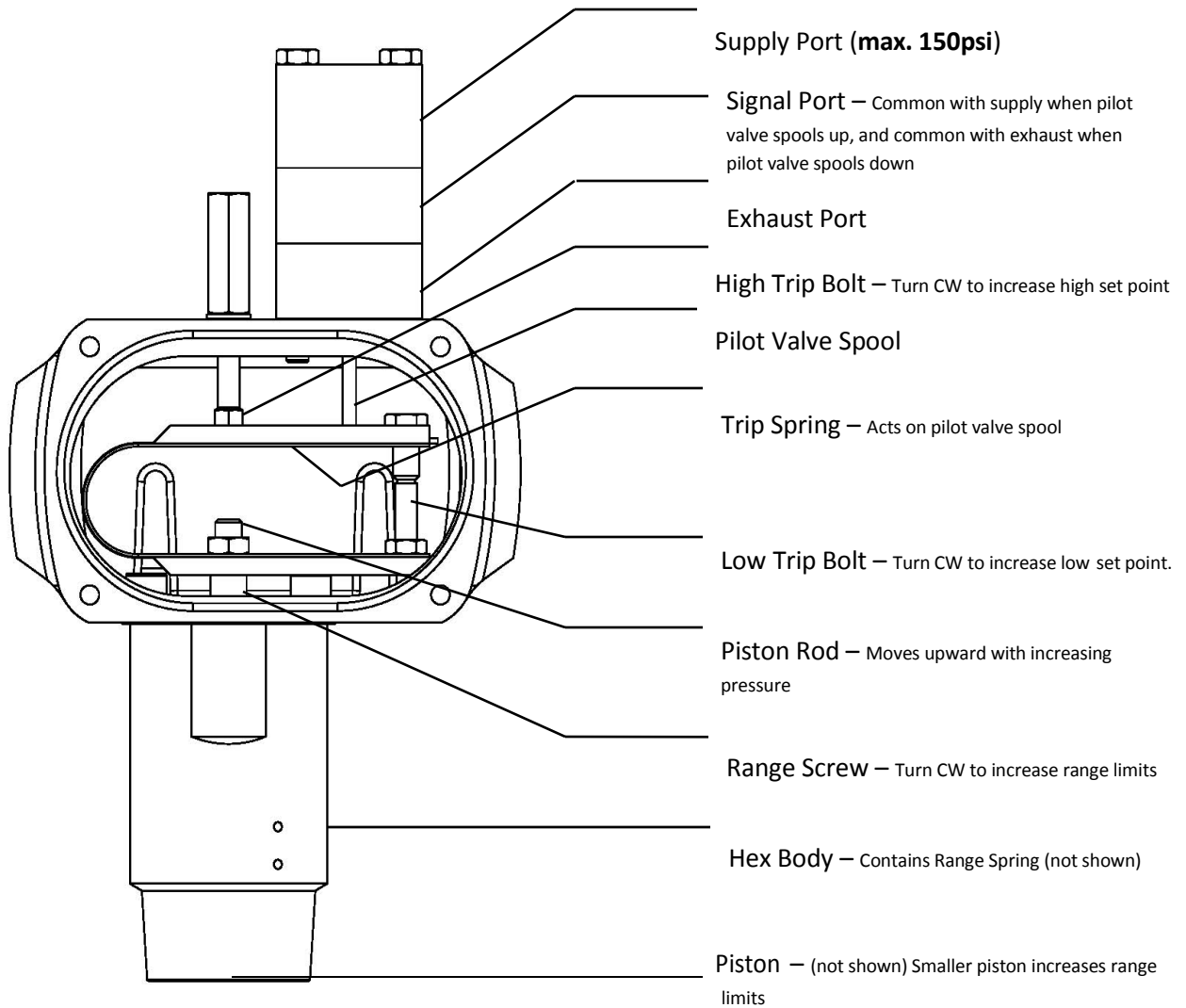


CVS Series 2000 Pressure Pilot as part of a complete ESD System

Installation and Adjustments

Note: Prior to beginning installation or disassembly of CVS Controls product, consult and follow the established safety procedures of your facility.

Ensure that all pressure is exhausted from the system prior to performing any service work. Failure to remove the pressure from the system can result in serious personal injury.



CVS Series 2000 AR

CVS Series 2000 Pilot, Spring and Model Selection

When selecting the CVS Series 2000 Pressure Pilot to best suit your application, use the softest spring with the largest piston to meet your high/low requirements. This will reduce the pilots deadband.

CVS Series 2000 Pilot - Spring Range Selection

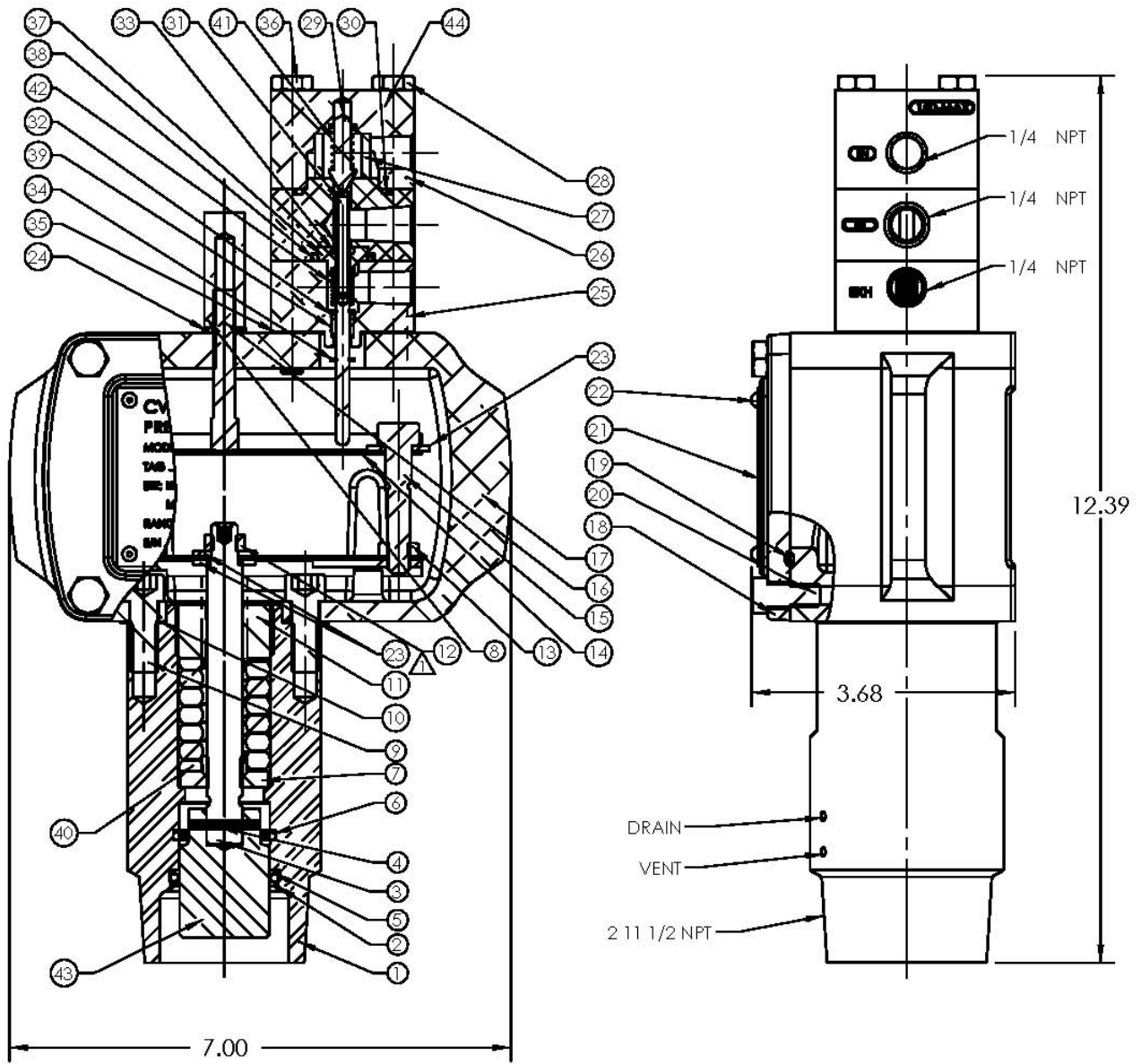
| Model | Spring | Range Screw Turns | Span (PSIG) | | Range Limit (PSIG) | | Deadband (PSIG) | |
|-----------------------------|-------------------|-------------------|-------------|-------|--------------------|-------|-----------------|-----|
| | | | Min | Max | Low | High | Min | Max |
| CVS 2200 (MAWP 2800 PSI) | Blue 2" (-1) | 0 | 55 | 105 | 10 | (115) | 25 | -- |
| | | 7-1/4 | 65 | 115 | (190) | 305 | -- | 40 |
| | Red 2" (-4) | 0 | 90 | 180 | 15 | (195) | 25 | -- |
| | | 5-1/2 | 95 | 200 | (270) | 470 | -- | 65 |
| | Bronze 2" (-7) | 0 | 95 | 295 | 15 | (310) | 30 | -- |
| | | 4 | 145 | 340 | (385) | 725 | -- | 90 |
| Green 2" (-10) | 0 | 130 | 395 | 20 | (415) | 35 | -- | |
| | 3 | 160 | 430 | (390) | 820 | -- | 95 | |

| Model | Spring | Range Screw Turns | Span (PSIG) | | Range Limit (PSIG) | | Deadband (PSIG) | |
|-----------------------------|-------------------|-------------------|-------------|--------|--------------------|--------|-----------------|-----|
| | | | Min | Max | Low | High | Min | Max |
| CVS 2000 (MAWP 3500 PSI) | Blue 2" (-1) | 0 | 185 | 390 | 40 | (430) | 55 | -- |
| | | 7-1/4 | 235 | 455 | (745) | 1200 | -- | 130 |
| | Red 2" (-4) | 0 | 280 | 680 | 55 | (735) | 75 | -- |
| | | 5-1/2 | 320 | 770 | (1060) | 1830 | -- | 185 |
| | Bronze 2" (-7) | 0 | 410 | 1190 | 80 | (1270) | 85 | -- |
| | | 4 | 460 | 1310 | (1550) | 2860 | -- | 255 |
| Green 2" (-10) | 0 | 450 | 1480 | 140 | (1620) | 120 | -- | |
| | 3 | 500 | 1670 | (1580) | 3250 | -- | 265 | |

| Model | Spring | Range Screw Turns | Span (PSIG) | | Range Limit (PSIG) | | Deadband (PSIG) | |
|-----------------------------|-------------------|-------------------|-------------|--------|--------------------|--------|-----------------|-----|
| | | | Min | Max | Low | High | Min | Max |
| CVS 2400 (MAWP 6000 PSI) | Blue 2" (-1) | 0 | 550 | 1120 | 85 | (1205) | 160 | -- |
| | | 7-1/4 | 775 | 1270 | (2050) | 3320 | -- | 425 |
| | Red 2" (-4) | 0 | 720 | 1880 | 130 | (2010) | 195 | -- |
| | | 5-1/2 | 950 | 2150 | (3000) | 5150 | -- | 550 |
| | Bronze 2" (-7) | 0 | 1000 | 3220 | 230 | (3450) | 270 | -- |
| | | 4 | 1400 | 3600 | 800 | (4400) | -- | 750 |
| Green 2" (-10) | 0 | 1100 | 4100 | 400 | (4500) | 360 | -- | |
| | 3 | 1650 | 4450 | (4400) | 8850 | -- | 775 | |

When ordering a CVS Series 2000 Pressure Pilot, add spring designation to end of model number.
For example, CVS 2200-10 is a Model 2200 with Green Spring.

Series 2000 Pressure Pilot Dimensions* and Assembly Parts Listing – Auto Reset



*Dimensions in Inches

CVS Series 2000 Parts Listing – Auto Reset

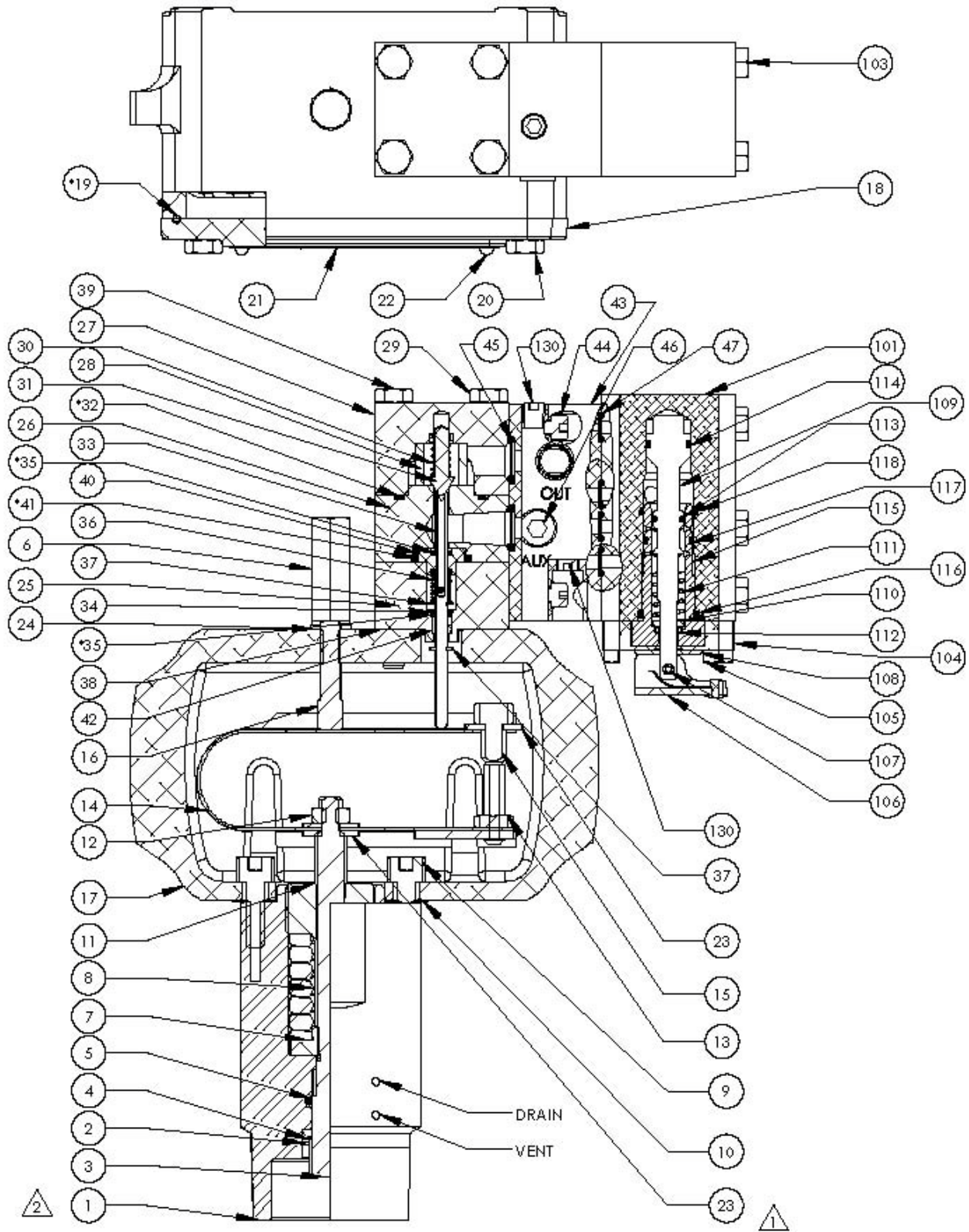
| Item | Part Number | Description | Qty |
|---|---|--|-----|
| 1 | CVS APB0570-20001 | Body, C1018, Model 2000 – 5/8 Piston | 1 |
| | CVS APB0570-001 | Body, C1018, Model 2200 – 1-1/4 Piston | 1 |
| | CVS | Body, C1018, Model 2400 – 3/8 Piston | 1 |
| Optional 316 SST Body available – Contact CVS Controls for more information | | | |
| 2 | CVS APB0570-002 | Retaining Ring, Model 2000 – 5/8 Piston | 1 |
| | CVS | Retaining Ring, Model 2400 – 3/8 Piston | 1 |
| 3 | CVS APB0570-20002 | Piston/Stem Assy. – Model 2000 – 5/8 Piston | 1 |
| | CVS APB0570-003-2 | Stem only, Piston – Model 2200 – 1-1/4 Piston | 1 |
| | CVS | Piston/Stem Assy. – Model 2400 – 3/8 Piston | 1 |
| 4 | CVS APB0570-003-3 | Spring Pin, (Model 2200 1-1/4 Piston) | 1 |
| 5 | * | Seal, Piston, Model 2000* | 1 |
| | ** | Seal, Piston, Model 2200** | 1 |
| | *** | Seal, Piston, Model 2400*** | 1 |
| 6 | * | O-Ring, Model 2000* | 1 |
| | ** | O-Ring, Model 2200** | 1 |
| | *** | O-Ring, Model 2400*** | 1 |
| 7 | CVS APB0570-007 | Spring, Seat | 1 |
| 8 | CVS APB0570-006 | High Trip Nut | 1 |
| 9 | CVS APB0570-009 | Bolt, Body+ | 2 |
| 10 | CVS APB0570-010 | Gasket, Body | 1 |
| 11 | CVS APB0570-011 | Range Screw | 1 |
| 12 | CVS APB0570-012 | Jam Nut, Trip Spring+ | 1 |
| 13 | CVS APB0570-013 | Jam Nut, Low Trip Bolt+ | 1 |
| 14 | CVS APB0570-014 | Trip Spring Assembly | 1 |
| 15 | CVS APB0570-015 | Adjust Bolt | 1 |
| 16 | CVS APB0570-016 | Adjust Bolt, High | 1 |
| 17 | CVS APB0570-017 | Housing | 1 |
| 18 | CVS APB0570-018 | Cover Plate | 1 |
| 19 | CVS APB0570-019 | O-Ring, Cover* | 1 |
| 20 | CVS APB0570-020 | Bolt, Cover+ | 4 |
| 21 | CVS APB0570-021 | Name Plate, 316 SST | 1 |
| 22 | CVS APB0570-022 | Drive Screw, Name Plate | 4 |
| 23 | CVS APB0570-023 | Washer, Trip Spring+ | 3 |
| 24 | CVS APB0570-024 | Stat-O-Seal, Adjust Bolt* | 1 |
| 25 | CVS APB0570-025 | Lower Pilot Body | 1 |
| 26 | CVS APB0570-027 | End Cap | 1 |
| 27 | CVS APB0570-028 | Filter, Bonded Felt | 1 |
| 28 | CVS APB0570-029 | Cap Screw, End Cap+ | 2 |
| 29 | CVS APB0570-031 | Pilot Poppet | 1 |
| 30 | CVS APB0570-032 | O-Ring, Upper body* | 1 |
| 31 | CVS APB0570-033 | Pilot | 1 |
| 32 | CVS APB0570-034 | Retaining Ring, Seal+ | 1 |
| 33 | CVS APB0570-035 | O-Ring, Spool* | 2 |
| 34 | CVS APB0570-037 | Retaining Ring, Seal | 2 |
| 35 | CVS APB0570-038 | Gasket | 1 |
| 36 | CVS APB0570-039 | Cap Screw, pilot Mount+ | 2 |
| 37 | CVS APB0570-040 | Sleeve, Pilot | 1 |
| 38 | CVS APB0570-041 | O-Ring, Sleeve* | 1 |
| 39 | CVS APB0570-042 | Pilot Bushing | 1 |
| 40 | Refer to pg. 4 for Model and Spring selection | Range Spring – Blue (-1), Red (-4), Bronze (-7), Green (-10) | 1 |
| 41 | CVS APB0570-030 | Poppet Spring | 1 |
| 42 | CVS APB0570-036 | Spool Spring | 1 |
| 43 | CVS APB0570-003-1 | Piston, Model 2200 – 1-1/4 Piston | 1 |
| 44 | CVS APB0570-026 | Pilot Upper Body | 1 |

*Part of Seal Kit – CVS APB05705/8-SKF, Seal Kit Model 2000

**Part of Seal Kit – CVS ABB05701.125-SKF, Seal Kit Model 2200

+Part of Bolt Kit, Series 2000 – CVS PAR-2000-Kit, Bolt Kit all Series 2000

Series 2000 Pressure Pilot Assembly Parts Listing - Manual Reset



CVS Series 2000 Parts Listing – Manual Reset

| Item | Part Number | Description | Qty | Item | Part Number | Description | Qty |
|--|--------------------------------------|------------------------------|-----|------|--------------------|-----------------------------|-----|
| 1 | CVS APB0570-20001 | Body, 5/8 Piston | 1 | 43 | CVS CB0066-10-043 | Manifold, Reset Valve | 1 |
| | CVS APB0570-001 | Body, 1-1/4 Piston | 1 | 44 | CVS CB0066-10-044 | Capscrew, Manifold | 2 |
| | | Body, 3/8 Piston | 1 | 45* | CVS CB0066-10-045 | O-Ring, Manifold, 2-112 | 2 |
| Optional 316 SST Available – Contact CVS Controls for more information | | | | 46 | CVS CB0066-10-046 | Plug, ¼" NPT, Manifold | 1 |
| 2 | CVS APB0570-002 | Ret Ring, 5/8 Piston | 1 | 47* | CVS CB0066-10-047 | O-Ring, Manifold, 2-011 | 4 |
| | | Ret Ring, 3/8 Piston | 1 | 101 | CVS CB0066-10-101 | Body, Reset Valve | 1 |
| 3 | CVS APB0570-20002 | Piston/Stem assy, 5/8 Piston | 1 | 103 | CVS CB0066-10-103 | Capscrew, Reset Valve | 3 |
| | CVS APB0570-003-2 | Stem, Piston, 1-1/4 Piston | 1 | 104 | CVS SCHA-RV-008 | Sleeve Retainer | 1 |
| | CVS | | | 105 | CVS CB0066-10-105 | Capscrew, Sleeve Retainer | 2 |
| 4 | * | Seal #1, Piston, 2000* | 1 | 106 | CVS SCHA-RV-002 | Toggle Assembly | 1 |
| | ** | Seal #1, Piston, 2200** | 1 | 107 | CVS CB 0066-10-107 | Slotted Spring Pin, Ø 5/32" | 1 |
| | | Seal #1, Piston, 2400 | 1 | 108 | CVS SCHA-RV-004 | Washer, Toggle | 1 |
| 5 | * | Seal #2, Piston, 2000* | 1 | 109 | CVS SCHA-RV-003 | Spool, Reset Valve | 1 |
| | ** | Seal #2, Piston, 2200** | 1 | 110 | CVS SCHA-RV-006 | Washer, Spring | 1 |
| | | Seal #2, Piston, 2400 | 1 | 111 | CVS SCHA-RV-005 | Spring, Reset Valve | 1 |
| 6 | CVS APB0570-006 | High Trip Blind Nut | 1 | 112* | CVS CB0066-10-112 | O-Ring, Sleeve Stem, 2-011 | 1 |
| 7 | CVS APB0570-007 | Spring Seat | 1 | 113* | CVS CB0066-10-113 | O-Ring, Seal, 2-013 | 1 |
| 8 | Refer to Page 4 for Spring Selection | Range Spring | 1 | 114* | CVS CB0066-10-114 | O-Ring, Spool Piston, 2-015 | 1 |
| 9 | CVS APB0570-009 | Bolt, Body | 2 | 115 | CVS SCHA-RV-007 | Sleeve, Reset Valve | 1 |
| 10 | CVS APB0570-010 | Gasket, Body | 1 | 116* | CVS CB0066-10-116 | O-Ring, Sleeve Head, 2-116 | 1 |
| 11 | CVS APB0570-011 | Range Screw | 1 | 117* | CVS CB0066-10-117 | O-Ring, Sleeve, 2-016 | 1 |
| 12 | CVS APB0570-012 | Jam Nut, Trip Spring | 1 | 118* | CVS CB0066-10-118 | O-Ring, Reset Valve, 2-018 | 1 |
| 13 | CVS APB0570-013 | Jam Nut, Low Trip Bolt | 1 | 130 | CVS CB0066-10-130 | Plug, Manifold | 2 |
| 14 | CVS APB0570-014PR | Trip Spring Assembly | 1 | | | | |
| 15 | CVS APB0570-015 | Low Trip Adjustment Bolt | 1 | | | | |
| 16 | CVS APB0570-016 | High Trip Bolt | 1 | | | | |
| 17 | CVS APB0570-017 | Housing | 1 | | | | |
| 18 | CVS APB0570-018 | Cover Plate | 1 | | | | |
| 19* | CVS APB0570-019 | O-ring, Cover 2-248 | 1 | | | | |
| 20 | CVS APB0570-020 | Bolt, Cover | 4 | | | | |
| 21 | CVS APB0570-021 | Nameplate | 1 | | | | |
| 22 | CVS APB0570-022 | Drive Screw, Nameplate | 4 | | | | |
| 23 | CVS APB0570-023 | Washer, Trip Spring | 3 | | | | |
| 24 | CVS APB0570-024 | Stat-O-Seal | 1 | | | | |
| 25 | CVS CB0066-10-025 | Low Body, Pilot | 1 | | | | |
| 26 | CVS CB 0066-10-026 | Upper Body, Pilot | 1 | | | | |
| 27 | CVS CB 0066-10-027 | End Cap, Pilot | 1 | | | | |
| 28 | CVS APB0570-028 | Filter Element, Pilot | 1 | | | | |
| 29 | CVS APB0570-029 | Capscrew, Endcap | 2 | | | | |
| 30 | CVS APB0570-030PR | Spring, Poppet | 1 | | | | |
| 31 | CVS APB0570-031 | Poppet, Pilot | 1 | | | | |
| 32* | CVS APB0570-032 | O-Ring, Upper Body | 1 | | | | |
| 33 | CVS APB0570-033 | Spool, Pilot | 1 | | | | |
| 34 | CVS APB0570-034 | Retaining Ring, Seal | 1 | | | | |
| 35* | CVS APB0570-035 | O-Ring, Spool | 2 | | | | |
| 36 | CVS APB0570-036PR | Spring, Spool | 1 | | | | |
| 37 | CVS APB0570-037 | Retaining Ring, Seal | 2 | | | | |
| 38 | CVS APB0570-038 | Gasket, Pilot | 1 | | | | |
| 39 | CVS APB0570-039 | Capscrew, Pilot Mounting | 2 | | | | |
| 40 | CVS APB0570-040 | Sleeve, Pilot | 1 | | | | |
| 41* | CVS APB0570-041 | O-Ring, Sleeve, 2-116 | 1 | | | | |
| 42 | CVS APB0570-042 | Bushing, Spool | 1 | | | | |

*Spare Parts Available

CVS Series 2000 Set Point

Adjustment

Ensure that all pressure is exhausted from the system prior to performing any service work. Failure to remove the pressure from the system can result in serious personal injury.

High and Low Set Point Adjustment:

- The Low set point is to be adjusted first. Once set, it will not be changed while setting the high set point. This prevents changes in high set point adjustment as the low point is being set.

1. Turn the High Trip Bolt (16) counter clockwise, to be completely away from the trip spring.
2. Adjust Low Trip Bolt (15) by repeatedly turning clockwise to increase the low set point, until low trip occurs at required pressure. Tighten low trip bolt jam nut (13) to secure and recheck. Ensure there is at least 0.02" of piston travel to low trip bottom stop.

- The Low trip bolt is easily adjusted by hand by pushing down on the trip spring while turning the low trip bolt.

3. Continually adjust the high trip bolt by turning clockwise to increase the pressure for required high trip set point. Tighten the high trip locknut (8) to secure high set point and double check settings.

Low Set Point Only Adjustment:

1. Turn the High Trip Bolt (16) counter clockwise, to be completely away from the trip spring.
2. Adjust Low Trip Bolt (15) by repeatedly turning clockwise to increase the low set point, until low trip occurs at required pressure. Tighten low trip bolt jam nut (13) to secure and recheck set point. Ensure there is at least 0.02" of piston travel to low trip bottom stop.
3. Disable High Trip by increasing pressure until the piston is at the upper stop. Adjust high trip bolt downward until high trip occurs, then back off high trip bolt ½ turn. Ensure that high trip does not occur when piston travels to upper stop. This adjustment is required to prevent the trip spring from placing unnecessary force on the solenoid valve spool.

High Set Point Only Adjustment:

1. In order to disable the low trip set point, adjust the low trip bolt until low trip occurs when piston is within 0.02" of bottom stop. Back off low trip bolt by turning counterclockwise three full turns. Tighten low trip bolt jam nut, and ensure that low trip does not occur when piston travels to bottom stop.
2. Continually adjust the high trip bolt by turning clockwise to increase the pressure for required high trip set point. Tighten the high trip locknut (8) to secure high set point and recheck.

CVS Series 2000 Range Screw Adjustments

When purchasing a CVS Series 2000 Pressure Pilot, the range/span is set to the requirements specified by end user. Should further range/span adjustments be required please contact a CVS Controls representative for information.

Notes:

Notes:

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