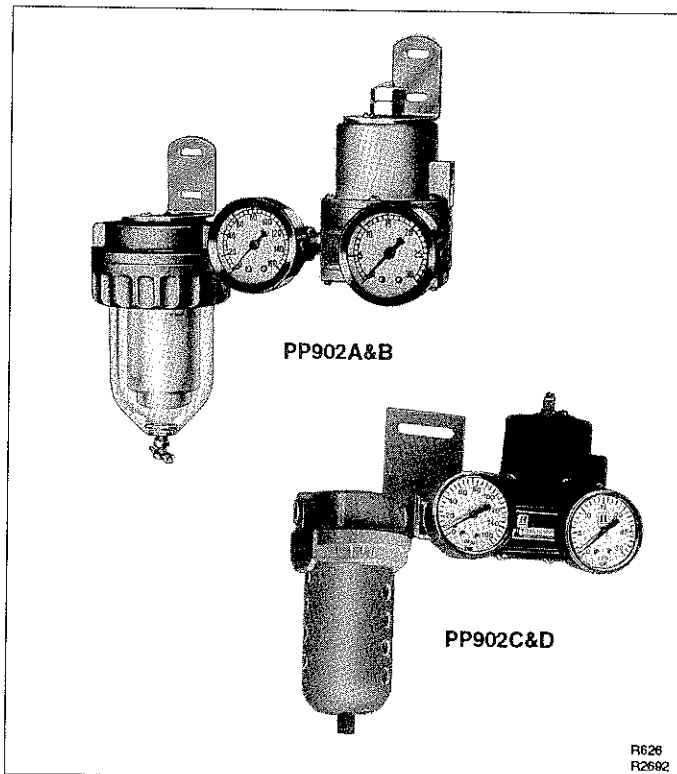


# PP901A, B & PP902A-D Pressure Reducing Valves and Filter Station

Service Data



## General

### Description

The PP901 and PP902 Pressure Reducing Valves (prvs) are designed to control the pressure of air delivered to a pneumatic control system. The PP902 also includes a filter station that provides filtering of high-pressure air. The PP902C and D replace the PP902A and B. The C and D models have a new high efficiency filter station with plastic bowl and metal guard and a new bracket.

### Application

The PP901A and the PP902A and C are used in single-pressure systems, while the PP901B and the PP902B and D are used in two-pressure systems. Switchover from one setting to the other is provided by a two-position switch actuated either electrically or pneumatically.

### Specifications

Inlet Pressure:  
45 to 150 psi (310 to 1034 kPa)

Outlet Pressure (Regulated):  
0 to 25 psi (0 to 172 kPa), factory set at 0 psi

Differential Pressure (PP901B, PP902B and D):  
Adjustable 0 to 5 psi (0 to 35 kPa), factory set at 4.5 psi (31 kPa)

Safety Pressure Relief:  
12 to 25 psi (83 to 172 kPa), factory set at 23.5 psi (162 kPa)

Air Connections:  
1/4 NPT, female, inlet and outlet; 1/8 NPT gage, 1/8 NPT Pilot (PP901B, PP902B and D)

Gages (PP902):  
0 to 160 psi (0 to 1103 kPa) inlet. 0 to 30 psi (0 to 207 kPa) outlet.

Filter Rating (PP902):  
Oil Removal: 99 percent of total present  
Solid Removal: 100 percent of particles 0.6 micron or larger;  
90 percent of particles 0.4 micron or larger

## Operation

The PP901A and PP902A and C function as standard pressure reducing valves. Figure 1 shows typical operation of the PP902A or C with the filter station. The filter removes oil and particulate contaminants from the air supply. When outlet pressure exceeds the pressure setting, the diaphragm chamber outlet closes. Continued pressure builds, reducing the flow through the prv. Should outlet pressure remain greater than the setting, the internal valve opens to bleed the pressure. When outlet pressure drops, the internal relief valve closes and the pilot valve opens, exhausting pressure from the diaphragm chamber, permitting higher flow.

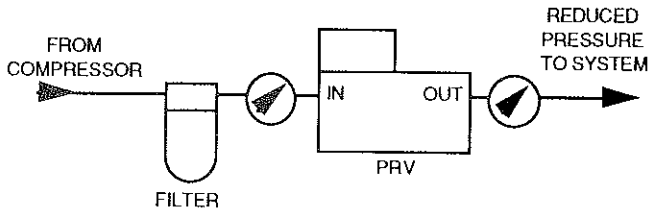


Fig. 1. PP902A or C Typical Operation.

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The PP901B and PP902B and D function as pressure reducing valves, furnishing either of two adjustable pressures (Day/Nite or Summer/Winter). Figure 2 shows typical operation of the PP902B or D with the filter station. Switchover from one setting to the other is provided by a two-position electric or pneumatic switching device. When switching from the higher to the lower of the two settings, the pressure relief feature exhausts the difference between the two pressures.

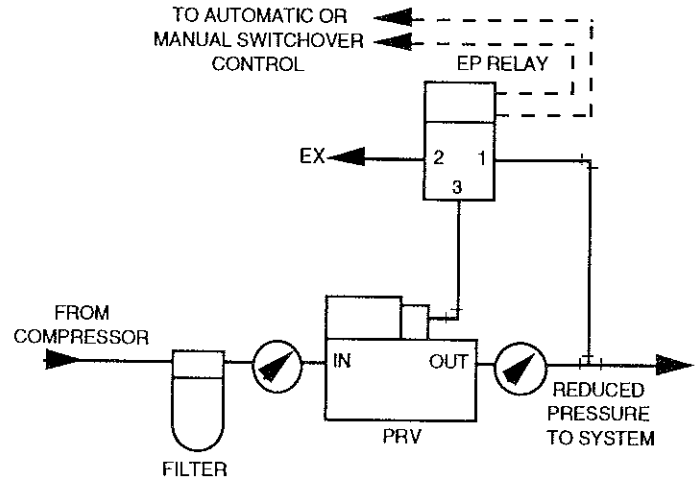


Fig. 2. PP902B or D Typical Operation.

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## Maintenance

### Equipment Required

No special tools or equipment are required for maintenance of the PP901 and PP902.

### Cleaning

1. Drain the filter station of the PP902 whenever liquid appears by opening the drain at the bottom of the filter station.
2. If filter element is saturated, causing a 10 to 15 psi (69 to 108 kPa) pressure drop when system is operating, it must be replaced. Refer to REPAIR section.
3. The bowl of the filter station should be cleaned when replacing the filter element. Plastic filter bowls must be cleaned with a mild household detergent.
4. Parts other than the polycarbonate plastic bowl and the filter element may be cleaned with Chlorothene or Vythene.

### WARNING

Special care should be exercised in the use of solvents. Avoid prolonged inhalation and/or contact with the skin. Careless handling can result in permanent damage to the respiratory system or skin tissue.

### CAUTION

Certain oils, chemicals, household cleaners, paints, and fumes will attack polycarbonate plastic and can cause bowl failure. Do not use these materials as listed on next page.

**LIMITED RESISTANCE**

Cyclohexanol  
Gasoline (High Aromatic)  
Hydrochloric Acid (Conc.)

Milk of Lime (CaOh)  
Nitric Acid (Conc.)  
Sulfuric Acid (Conc.)

**NON RESISTANT**

Acetaldehyde  
Acetic Acid (Conc.)  
Acetone  
Acrylonitrile  
Ammonium Fluoride  
Ammonium Sulfide

Ethane Tetrachloride  
Ethylamine  
Ethyl Ether  
Ethyl Chlorohydrin  
Formic Acid (Conc.)  
Freon (Refrigerant & Propellant)\*

Benzene  
Benzoic Acid

Nitrobenzene  
Nitrocellulose

Benzyl Alcohol  
Bromobenzene

Lacquer  
Phenol  
Phosphorous  
Hydroxy Chloride

Butyric Acid

Phosphorous  
Trichloride

Carbon Tetrachloride  
Carbon Disulfide  
Carbolic Acid  
Caustic Potash Solution (5%)  
Caustic Soda Solution (5%)

Propionic Acid  
Sodium Sulfide  
Styrene  
Sulfuryl Chloride

Chlorobenzene  
Cyclo Hexanone  
Cyclohexene  
Dimethyl Formamide

Tetra  
Hydronaphthalene  
Thiophene  
Toluene  
Xylene  
Synthetic Compressor Lubricants†

**DISSOLVED BY**

Chloroform  
Cresol  
Dioxane

Ethylene Dichloride  
Methylene Chloride  
Pyridine

\* DuPont Trademark

† Phosphate Ester Lubricants; where compressor lubricants other than normal mineral base lubricants are used, contact lubricant manufacturer.

**Operational Check**

Measure the air pressure with gages to insure accuracy. To vary outlet pressure, turn the adjustment screw on the top of the prv. A minimum of 45 psi (310 kPa) inlet pressure at the prv after the filter is required for proper operation.

To check operation of the switchover diaphragm (PP901B and PP902B and D), apply pressure to switchover pressure inlet. Outlet pressure should increase to the secondary pressure setting.

**Adjustment**

1. Outlet pressure will increase when pressure adjusting screw (Fig. 3) is turned clockwise.
2. When pressure is applied to switchover pressure inlet, the outlet pressure will increase when the secondary pressure adjustment nut (Fig. 3) is turned clockwise.
3. Safety relief setting will increase as the relief pressure adjusting screw (Fig. 4) is turned clockwise.

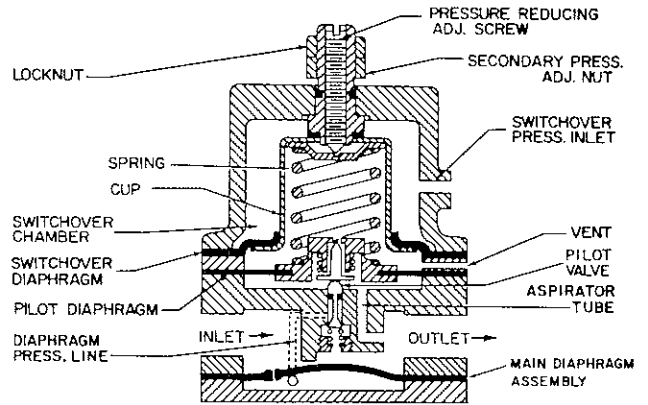


Fig. 3. Detail of Pressure Reducing Valve.

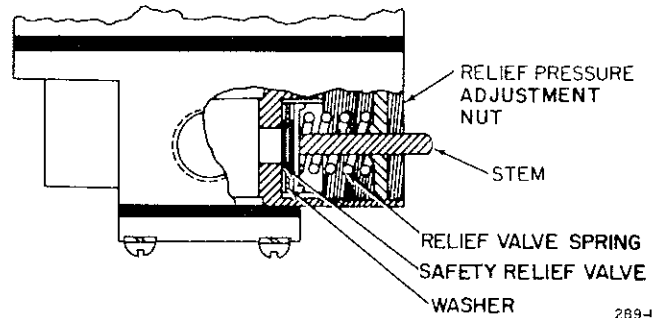


Fig. 4. Detail of Safety Pressure Relief Valve.

# Troubleshooting

Refer to Figure 5 for troubleshooting the pressure reducing valve.

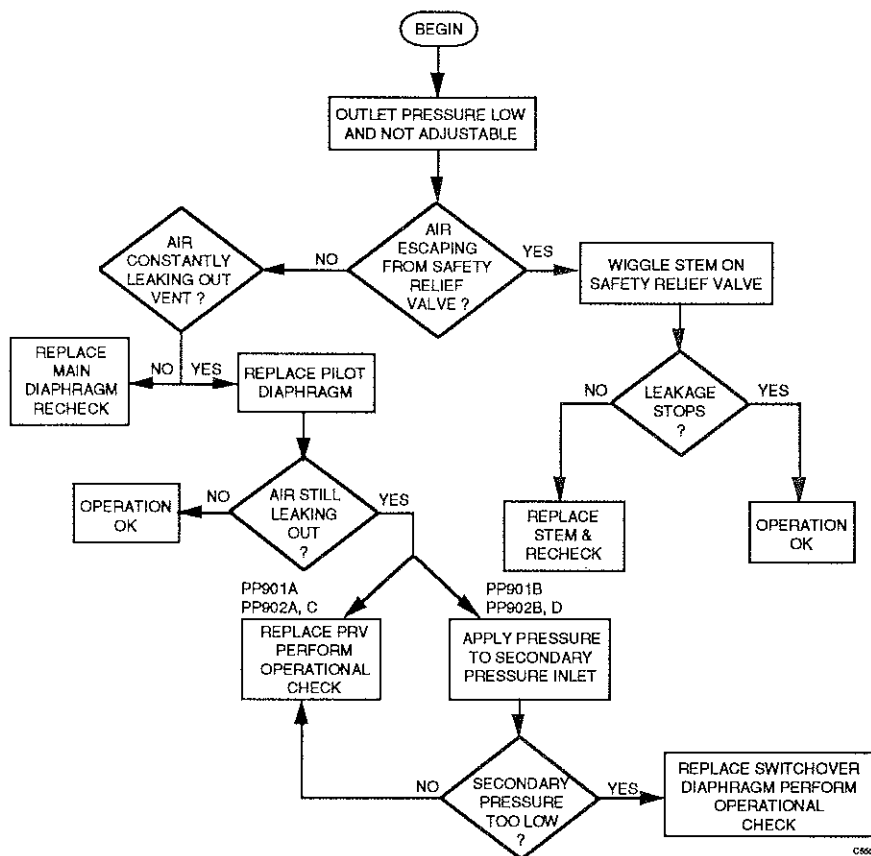


Fig. 5. PP901 and PP902 Troubleshooting Flow Chart.

# Repair

## Pressure Reducing Valve Replacement

### PP901A, B and PP902A,B

1. Turn off air compressor. For PP902 models, open manual drain on bottom of filter station bowl.
2. When system air pressure has bled down to zero, remove prv by disconnecting inlet and outlet tubing.
3. Remove gage, if applicable from prv.
4. Install new prv in reverse manner.
5. Replace gage, if applicable, into prv.
6. For PP902 models, close manual drain on bottom of filter station.
7. Turn on air compressor and check for leaks after normal pressure builds up.
8. Perform operational check, and adjust to proper system pressure.

### PP902C and D

1. Turn off air compressor. Open manual drain on bottom of filter station bowl.

2. When 0 to 160 psi gage reads zero, disconnect outlet tubing from prv.
3. Remove prv from nipple, and remove 0 to 30 psi gage from prv.
4. Install new prv in reverse manner.
5. Close manual drain on bottom of filter station bowl.
6. Turn on air compressor and check for leaks after normal pressure builds up.
7. Perform operational check, and adjust to proper system pressure.

## Pressure Reducing Valve Repair

1. Depressurize the system. Remove tubing from prv, then remove prv from nipple.
2. To replace worn or nonfunctioning parts between the housing and the body assembly, remove the six screws from the housing (Fig. 12 in PARTS AND ACCESSORIES section).
3. To replace the main diaphragm assembly, a clogged filter, or worn parts between the diaphragm assembly and the body assembly, remove the six screws from the diaphragm cover.

4. Reassemble as shown. Attach pressure reducing valve to the nipple, and attach tubing to the prv.
5. Turn on air compressor and check for leaks after normal pressure builds up.
6. Perform operational check, and adjust to proper system pressure.

7. Attach prv to mounting bracket and attach mounting bracket to wall.
8. Replace gage into tee.
9. Connect inlet tubing to filter station.
10. Turn on air compressor and check for leaks after normal pressure builds up.
11. Perform operational check and adjust to proper system pressure.

## Filter Station Replacement

### PP902A and B

1. Turn off air compressor. Open manual drain on bottom of bowl (Fig. 6).
2. When 0 to 160 psi gage reads zero, disconnect tubing on inlet side of filter station.
3. Remove complete filter station including mounting bracket, and mounting bracket from prv.
4. Remove gage from tee and unscrew tee from nipples.
5. Install nipple into prv, and slide new mounting bracket onto nipple. Screw tee into nipple, then other nipple into tee, securing new mounting bracket to filter station assembly.
6. Install the new filter station. If there is not room to swing the new filter station around to secure to the nipple, do the following.
  - a. Remove clamp ring, plastic bowl and guard, and filter assembly from body assembly.
  - b. Screw new body assembly into nipple, then filter assembly into body assembly. Attach bowl, bowl guard, and clamp ring to body assembly.

### PP902C and D

1. Turn off air compressor. Open manual drain on bottom of bowl.
2. When 0 to 160 psi gage reads zero, disconnect tubing on inlet side of filter station.
3. Remove clamp ring, plastic bowl and guard, and filter assembly from body assembly.
4. Unscrew body assembly from nipple.
5. Install new filter station. If there is not room to swing the new filter station around to secure it to the nipple, do the following.
  - a. Screw new body assembly into nipple, then filter cartridge into body assembly, being careful to hold the filter cartridge by the bottom end cap.
  - b. Attach bowl, bowl guard, and clamp ring to body assembly.
6. Connect inlet tubing to filter station.
7. Turn on air compressor and check for leaks after normal pressure builds up.
8. Perform operational check, and adjust to proper system pressure.

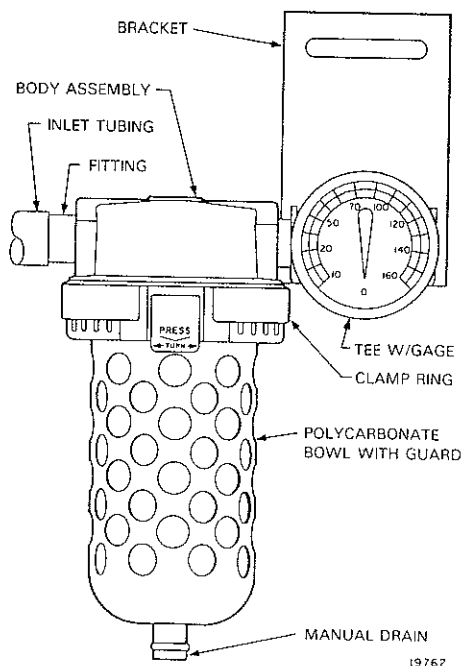


Fig. 6. Filter Station Assembly 14004205-001 Installation Detail.

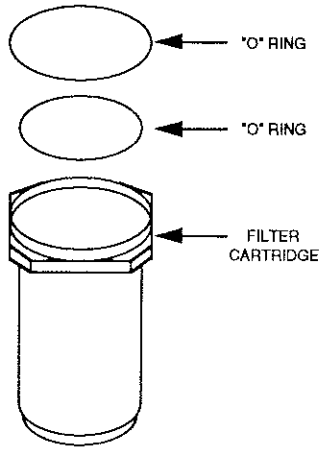
## Filter Element Replacement

### PP902A-D

#### CAUTION

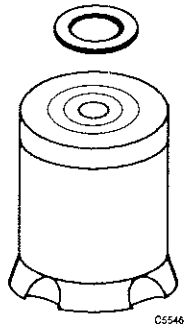
The filter cartridge should never be handled by its outside foam cover. Damage to the filter cartridge can result. Hold the filter cartridge by the bottom end cap only.

1. Turn off air compressor and reduce inlet line pressure indicated on 0 to 160 psi gage to zero. Open manual drain on bottom of bowl.
2. Remove bowl mounting ring (clamp ring on PP902C and D models).
3. Discard all parts inside bowl including O-rings.
4. Clean the bowl and any parts that have accumulation of dirt. For polycarbonate bowls use a mild household detergent.
5. Reassemble using the new parts provided (Fig. 7 and 8). Be sure to seat the O-rings properly in the grooves provided.
6. Turn on the air compressor and check for leaks after normal pressure build up.



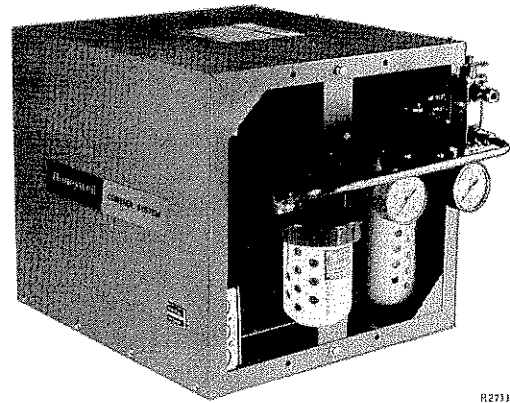
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Fig. 7. Filter Element Replacement Kit 14003121-002 for PP902A,B.



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Fig. 8. Filter Element Replacement Kit 14004203-001 for PP902C, D.

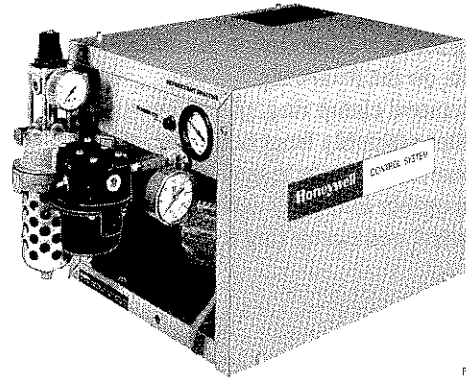


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Fig. 9. Compressed Air Dryer HKN8210.

### Wilkerson Compressed Air Dryers

When replacing a filter element on a WLKA10AHC66 or WLKA10AHE66 Compressed Air Dryer (Fig. 10), use Filter Element Replacement Kit 14004203-001. The instruction sheet is packed with the kit.



R2762

Fig. 10. Compressed Air Dryer WLKA10AHC66 or WLKA10AHE66.

### Compresses Air Dryer Pre-Piped Filter Stations

#### Hankison Compressed Air Dryers

When replacing a filter element on a HKN8010 or HKN8210 Compressed Air Dryer (Fig. 9), use Filter Element Replacement Kit 14004209-001. The instruction sheet is packed with the kit.

# Parts and Accessories

## Parts List

Pressure Reducing Valve: Refer to Figure 11 and Table 1.

Table 1. Pressure Reducing Valve Parts List.

Figure Key	Part Number	Description	PP901A, PP902A, C	PP901B, PP902B, D
1	—	Nut, Hex 1/4-20	1	—
2	—	Washer (older models)	1	—
3	—	Screw, 1/4-20 x 1-1/2	1	1
4	—	Screw, 8-32 x 3/8	2	2
5	—	Screw, 8-32 x 3/4	6	6
6	—	Housing	1	1
7	—	Nut, Hex 1-1/2-20	—	1
8	14004285-001	O-Ring	—	1
9	312898	Switchover Diaphragm	—	1
10	312880A	Guide Assembly	—	1
11	312877-00155	Spacer	—	1
12	312896-00605	Cup	1	1
13	312895-00605	Spring	1	1
14	312887A	Pilot Diaphragm—For PP901A, B Series 1 through 4, PP902A, B Series 1 through 5	1	1
	312887B	Pilot Diaphragm—For PP901A, B Series 5 and later, PP902A, B Series 6 and later, PP902C, D Series 1	1	1
15	316197-00605	Spring	1	1
16	316200-00152	Check	1	1
17	31603A	Valve Assembly	1	—
	316203B	Valve Unit	—	1
18	—	Washer—New Stem replaces old stem and washer	—	—
19	1400769-001	Stem, Molded	1	1
20	312882-00605	Spring, Press. Rel.	1	1
21	313881	Screw	1	1
22	316196	Spring	1	1
23	316195	Filter	1	1
24	312888-00605	Support	1	1
25	304745	Roll Pin (See Fig. 12)	1	1
26	316134A	Main Diaphragm Assembly	1	1
	316134B	Diaphragm Repair Kit includes Key 22 and 23	1	1
27	14002795-001	Gasket	1	1
28	312876-00155	Cover	1	1
29	—	Screw, 8-32 x 5/8 with Spring-Type Lockwasher	6	6

### Filter Station Assemblies:

PP901, PP902A, B: 14000226 (obsolete, order 14004205-001)

Available Parts for old 14000226 Filter Station:

Ring 316992-01109

Bowl (Heavy Duty, Amber) 14003410-001

Retainer 14000215-002

Cock 311206

Adapter 14000227-002

O-Rings 313001, 313002, 311105

PP902C, D: 14004205-002

### Filter Element Repair Kits:

For PP902A and B: 14003121-002

For HKN8200 or HKN8210 units: 14004209-001

For WLKA10AH and PP902C, D: 14004203-001

### Mounting Brackets:

For PP901A, B and PP902A, B: 312980A (Fig. 13)

For PP902C, D: 14004160-001 (Fig. 14)

### Gages:

0 to 30 psi: 305914-00106

0 to 30 psi, 0 to 2 Kg/cm<sup>2</sup> (International): 305915-00106

0 to 160 psi: 305917-00106

0 to 160 psi, 0 to 11 Kg/cm<sup>2</sup> (International): 305919-00106

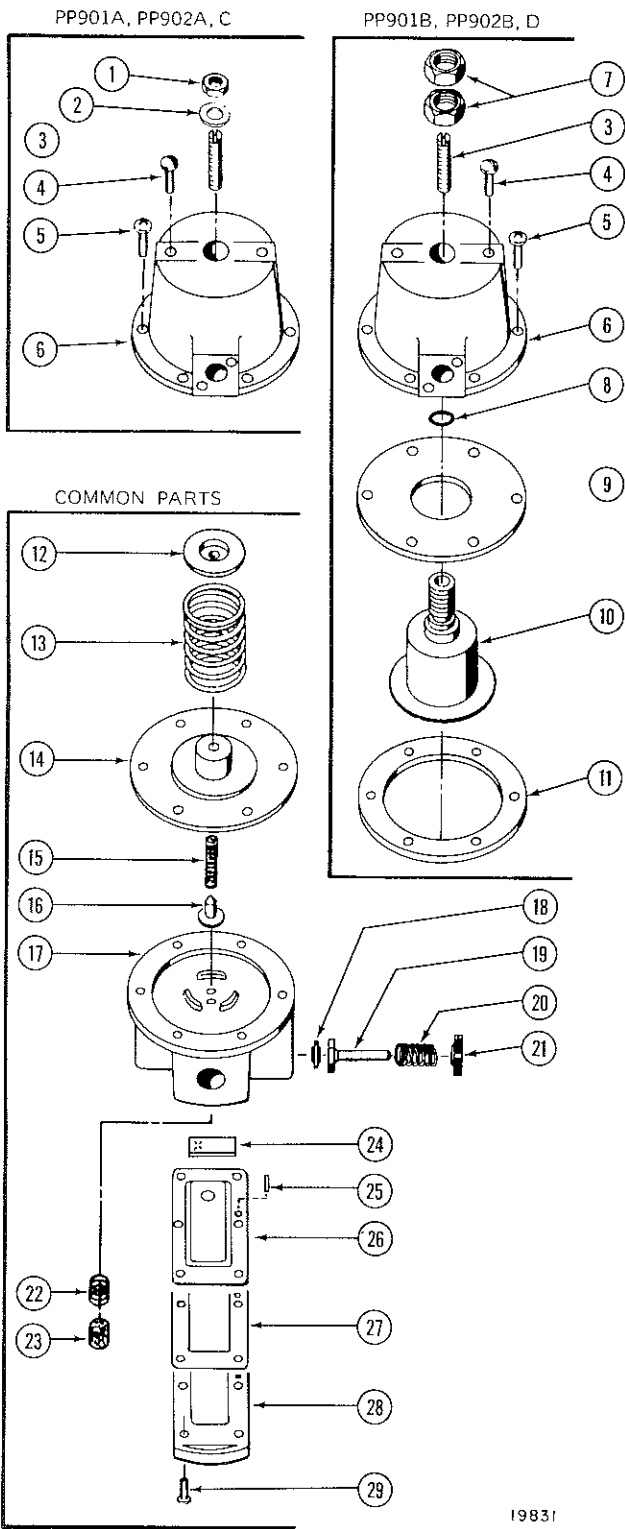
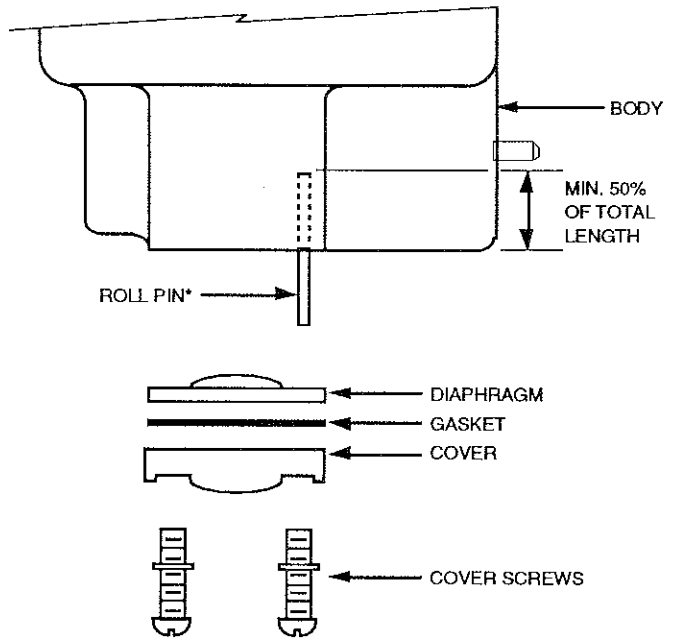


Fig. 11. Pressure Reducing Valve Exploded View.



\* WHEN ATTACHING THE COVER TO THE BODY, AT LEAST HALF OF THE ROLL PIN MUST BE IN THE BODY TO PREVENT THE PIN FROM RESTRICTING THE CROSS-DRILLED HOLE IN THE COVER.

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Fig. 12. Detail of Locating Roll Pin.

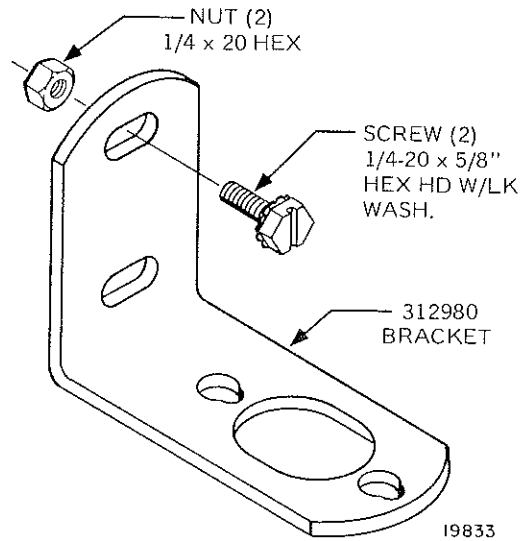


Fig. 13. PP901A, B and PP902A, B Mounting Bracket 312980A.



## Accessories

Adapter Kit 14003638-001 for mounting RP418 or RP818  
Electric-Pneumatic Relay to PP902B or D models.

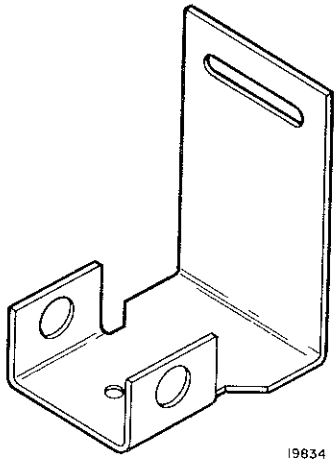


Fig. 14. PP902C and D Mounting Bracket 14004160-001.

**Honeywell**

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