

## Spring Operated Safety Relief Valves (SOPRV)

# ANDERSON GREENWOOD

Before installation these instructions must be fully read and understood.

**WARNING**

An attempt to repair this product by unauthorized or unqualified persons voids the product warranty and may cause damage to equipment and serious injury or death to persons.

The product is a safety related component intended for use in critical applications. The improper application, installation or maintenance of the product or the use of parts or components not manufactured by Anderson Greenwood Crosby may result in a failure of the product.

Any installation, maintenance, adjustment, test, etc. performed on the Product must be done in accordance with the requirements of all applicable Anderson Greenwood Crosby Procedures and Instructions as well as applicable National and International Codes and Standards.

**1.0 General**

The Anderson, Greenwood Type 81P Relief Valve is a direct acting spring loaded valve for liquid service and uses a plastic seat and O-ring seals.

The intent of these instructions is to acquaint the user with the maintenance of this product. Please read these instructions carefully. This product should only be used in accordance with the applicable operating instructions and within the application specifications of the original purchase order. The Installation and Operational Safety Instructions (available at [www.tycovalves.com](http://www.tycovalves.com)) should be fully read and understood before returning this product to service after maintenance.

**2.0 Valve Repair (-4,-8 Orifice) Refer to Figure 1****2.1 Disassembly**

- 2.1.1 Relieve spring tension by turning the pressure adjusting screw counterclockwise.
- 2.1.2 Remove inlet bushing, bushing seal and valve internals.
- 2.1.3 Separate nozzle from guide by hitting top of spindle on soft surface. Remove spindle seals.

**2.2 Repair**

- 2.2.1 Hold spindle by skirt O.D. in soft jaw vise and replace seat.
- 2.2.2 Examine nozzle and polish out any scratches or nicks. Replace if necessary.
- 2.2.3 To obtain better seat seal with Teflon at low set pressures, burnish seat against nozzle by chucking spindle in lathe and holding nozzle against spindle. Burnish with small force and for short time as Teflon deforms easily.

**2.3 Assembly**

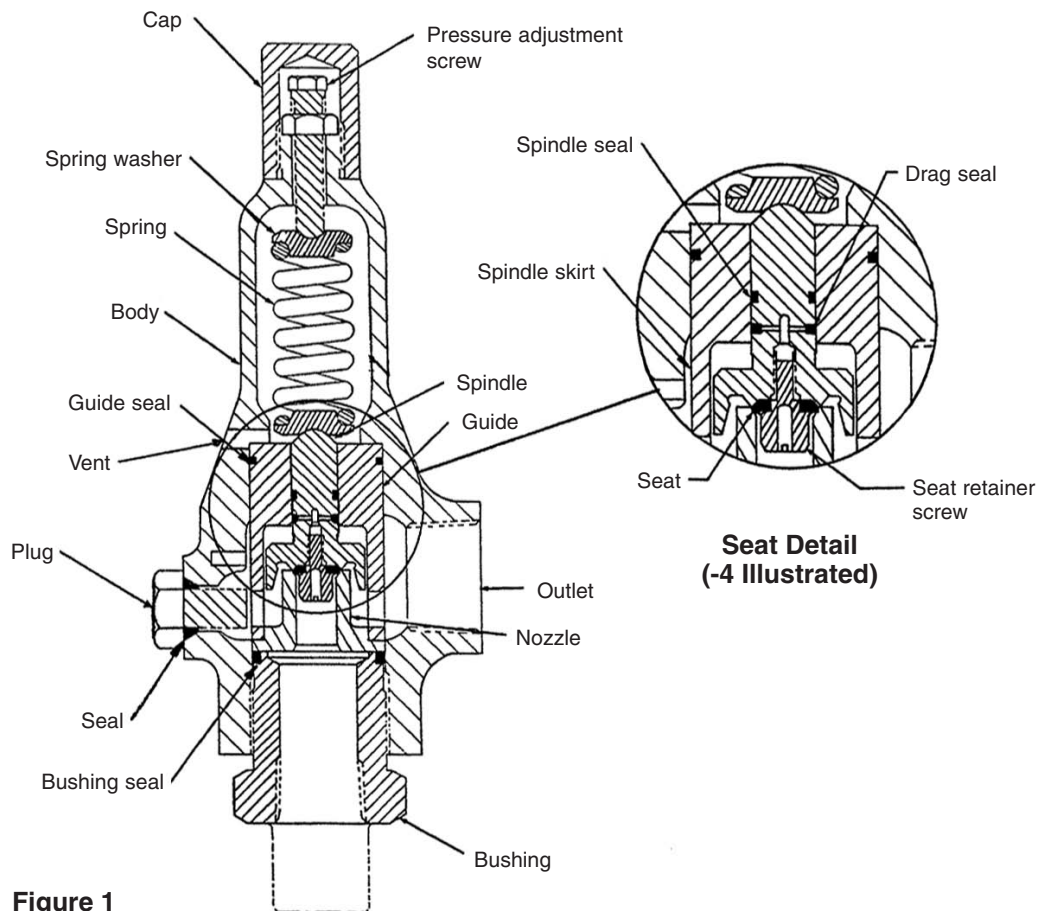
Assemble in reverse order of disassembly. Lubricate the parts listed below with the specified lubricant. Make sure the nozzle is fully and squarely seated in guide.

**Lubricants**

Part	Set Pressure	Lubricant
Spindle seals	50-1000 psig [3,4 - 69,0 barg]	Dow Corning FS3451
	Above 1000 psig [69,0 barg]	Desco 600
Thread and adjusting bolt tip	All	Dow Corning 33

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**Figure 1**  
**Type 81P (-4, -8 Orifice)**

### 2.4 Soft Goods Repair Kit

The part numbers for soft goods repair kits are listed below. Each kit contains the seat and seals for all pressure ranges and the lubricant specified in paragraph 2.3.

#### Material

Orifice	BUNA-N	Viton®	EPR
-4	04.4805.029	04.4805.032	04.4805.071
-8	04.4805.029	04.4805.032	04.4805.071

### 3.0 Valve Repair (G, J Orifice) Refer to Figure 2

#### 3.1 Disassembly

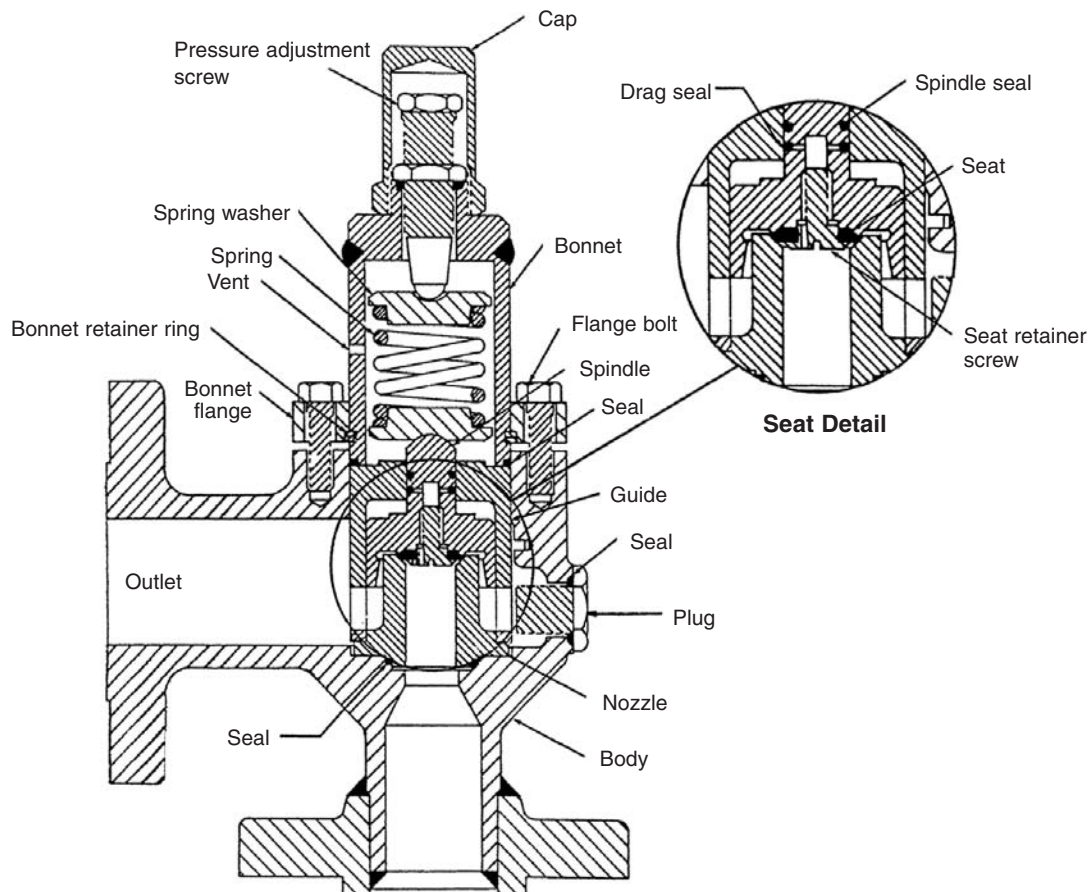
- 3.1.1 Relieve spring tension.
- 3.1.2 Remove spring bonnet and valve internals.
- 3.1.3 Separate nozzle from guide by hitting top of spindle on soft surface.

#### 3.2 Repair

- 3.2.1 Hold spindle by skirt O.D. in soft jaw vise and replace seat.
- 3.2.2 Examine nozzle and polish seating surface as required. Replace if necessary.

#### 3.3 Assembly

Assemble in reverse order of disassembly. Lubricate the parts listed below with the lubricant specified. Make sure the nozzle is fully and squarely seated in guide.



**Figure 2**  
**Type 81P (G, J Orifice)**

Lubricants			
Part	Set Pressure	Orifice	Lubricant
Spindle seals	50-300 psig [3,4 - 20,7 barg]	G	Dow Corning FS3451
	50-100 psig [3,4 - 6,9 barg]	J	Dow Corning FS3451
Spindle seals	Above 300 psig [20,7 barg]	G	Desco 600
	Above 100 psig [6,9 barg]	J	Desco 600
Thread and adjusting bolt tip	All	G & J	Dow Corning 33

### 3.4 Soft goods repair kit

The part numbers for soft goods repair kits are listed below. Each kit contains the seat and seals for all pressure ranges and the lubricant specified in paragraph 3.3.

Material			
Orifice	BUNA-N	Viton®	EPR
G	04.4805.030	04.4805.033	04.4805.072
J	04.4805.031	04.4805.034	04.4805.073

## 4.0 Valve Adjustment

### 4.1 General

The only adjustment required for the Type 81P valve is the set pressure. The reseal pressure is not adjustable. Reseal will occur at approximately 75% to 80% of set pressure.

### 4.2 Proof Test

The spindle seals and bonnet seal of the Type 81P valve shall be checked for integrity by pressurizing the outlet with 30 psig [207 KPAG] of air. A soap solution shall be applied to the exterior joints of the bonnet, including across the vent hole. There shall be no evidence of leakage.

### 4.3 Set Pressure

Type 81P Liquid Valves marked with the UV code stamp (relief capacity in volume of liquid per time, GPM) shall be set using water and a 50 gallon pressure vessel.

When setting the valve using water, turn the spring adjustment screw on the bonnet in most of the way. Increase the pressure to 107%  $\pm$  2% of nameplate set and back out screw until the valve “pops” or “gushes” liquid. Set pressure is defined as 93% of that pressure where the valve “pops.”

Example Liquid	English Liquid	International Liquid
Nameplate set =	75 psig	5,2 barg
“POP” or “GUSH” =	(107% $\pm$ 2%) 75 = 78.75 to 81.75 psig	(107% $\pm$ 2%) 5,2 = 5,4 to 5,6 barg
Actual “POP” =	80 psig	5,5 Barg
Actual set =	80 (.93) = 74.4 psig	5,5 (.93) = 5,1 barg

If the Type 81P Liquid Valve is not marked with the UV code stamp and if a water source is not available valves with set pressures greater than 750 psi [51,7 barg] may be set on air by adjusting the spring to obtain first crack at 95% of set pressure. The valve should not be popped on air as this may damage the seat. For set pressures below 750 psi [51,7 barg], the 81P should only be set pressure adjusted using the water method above.

**NOTE:** Valves with relief capacity in GPM must be set using water if the valve will bear the “VR” repair symbol stamp.

Type 81P Air Valves shall be set using an accumulator large enough to accurately measure set pressure. Turn the spring adjustment screw on bonnet in most of the way. Increase pressure to desired level and back out screw until valve pops. Lock screw with jam nut and retest. Readjust as required.

### 4.4 Adjustment Tolerances

Set Pressure Range	Valve Operating Characteristics	Tolerance or Limit
Above 70 psig [4,8 barg]	Set pressure	$\pm$ 3% of nameplate set
70 psig [4,8 barg] and below	Set pressure	$\pm$ 2 psig
100 psig [6,9 barg] and above	Cracking pressure	92 <sup>1</sup> / <sub>2</sub> % of nameplate set
50 psig [3,4 barg] to 99 psig [6,8 barg]	Cracking pressure	80% of nameplate set

## 5.0 Seat Leakage

If the valve leaks after repair, check for the following:

1. Full and square seating of nozzle and guide.
2. Foreign particles trapped between the seat and nozzle, if any are found seat damage may have occurred and replacement may be necessary.
3. Correct seat material for the valve set pressure.

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