

CIRCLE SEAL CONTROLS, INC.
 A division of CIRCOR International, Inc.

5300 Series Relief Valves 400 to 10,500 PSIG

Features

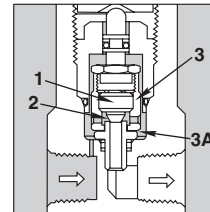
- Zero Leakage to 95% of Cracking Pressure
- No Chatter or Squeal
- Positive Reseal at a High Percentage of Cracking Pressure
- No Pressure Rise with Increasing Flow
- Externally Adjustable

Technical Data

- | | |
|------------------------------|---|
| Body Construction Materials: | • Brass, 303 or 316 Stainless Steel |
| O-ring Materials: | • Buna N, Neoprene, and Viton® |
| Poppet Materials: | • Liquid service – CRES 440C Gas service to 3074 – Kel F Gas service above 3074 – Polyimide |
| Retainer Stem: | • 303 Stainless Steel |
| Seat Material: | • 17-4 PH Stainless Steel |
| Spring Material: | • 17-7 PH Stainless Steel |
| Backup Rings: | • Teflon® |
| Operating Pressure: | • 400 to 10,500 PSIG (28 to 724 BAR); specify cracking pressure |
| Proof Pressure: | • 4,500 PSIG on gas • 16,000 PSIG on liquid |
| Burst Pressure: | • Brass – over 30,000 PSIG • Stainless Steel – over 40,000 PSIG |
| Temperature Range: | • -20° F to +350° F (-29° C to +177° C) Based on o-ring material, see "How to Order" |
| Connection Size: | • 1/4 inch to 1/2 inch Female Pipe • 1/4 inch to 1 inch Female Tube |

NOTE: Proper filtration is recommended to prevent damage to sealing surfaces.

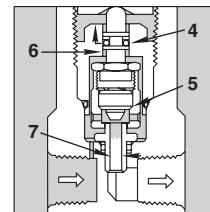
How it Works



CLOSED

In the closed position the poppet (1) is impressed against the orifice (2) by the spring and seals the orifice. This impression is limited by the poppet retainer (3) which bottoms on the shoulder of the orifice nozzle unit at point

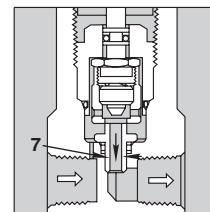
3A. As system pressure rises, pressure within the poppet retainer and above the poppet increases, effecting further sealing efficiency. As pressure rises above normal operating pressure, the poppet retainer (3) moves upward overcoming breakaway friction of the o-ring seal (4) before the preset cracking pressure is reached. This insures extremely precise cracking pressure accuracy.



CRACKING

When system pressure rises above the cracking pressure the force at area (6) is increased and overcomes the preset spring force, permitting the poppet retainer (3) to continue its upward movement and lift the poppet (1) away

from the orifice at (5) permitting flow through the orifice passage (7).



OPEN

Under conditions of flow, back pressure in the orifice nozzle (7) reduces the effective downward force on the poppet, which allows the poppet retainer unit to open further, providing increased flow with little or no increase in

pressure. Where the valve is used as a sequence or priority valve, the downstream pressure buildup permits the poppet to open fully, allowing flow with minimum pressure drop.

2301 Wardlow Circle, P.O. Box 3300
 Corona, California 92878
 tel 909.270.6200
 fax 909.270.6201
 www.circle-seal.com
 sales@circle-seal.com

5300 Series

400 to 10,500 PSIG

Cracking Pressure Tolerance ±5%

Flow at Cracking Pressure
 Gas 5cc/min
 Liquid 5cc/min

Reseal Pressure

| | |
|-----------------------|---------------|
| <u>Crack Pressure</u> | <u>Reseal</u> |
| <u>Pressure</u> | |
| 400-599 | 80% of CP |
| 600-899 | 85% of CP |
| 900-5999 | 90% of CP |
| 6000 & greater | 95% of CP |

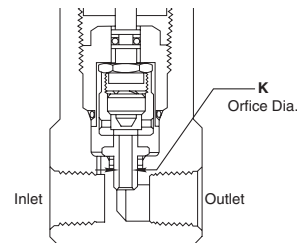
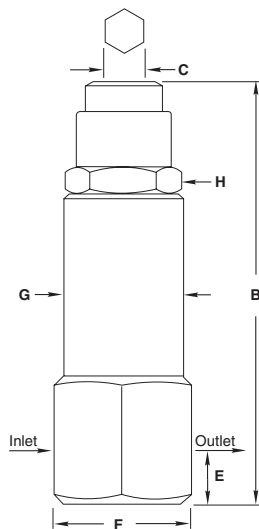
Leakage

| | | |
|--------|---------------------|--------------------------|
| Gas | Ascending Pressure | zero to 95% of CP |
| | Descending Pressure | zero at reseal |
| Liquid | Ascending Pressure | 5cc/min max to 95% of CP |
| | Descending Pressure | 15cc/min max at reseal |

Repair Kits

In normal service the only part(s) which may require replacement is(are) the seal(s). A repair kit may be ordered by placing a K/ in front of the complete part number, (i.e. K/5349B-4PP).

Dimensions (Inches)



| Tube Size | C.P. Range (PSI) | B Max. | C Hex. | E | F Hex. | G Dia. | H Hex | K Dia. | Weight (lbs) | |
|------------|------------------|--------|--------|-----|--------|--------|-------|--------|--------------|------|
| | | | | | | | | | Brass | S.S. |
| 1/4", 3/8" | 420-3074 | 4.88 | 1/2 | .52 | 1.63 | 1.38 | 1.25 | .125 | 1.6 | 1.5 |
| 1/4", 3/8" | 3075-10,500 | 5.78 | 3/8 | .52 | 1.63 | 1.38 | 1.25 | .125 | 1.8 | 1.7 |
| 1/2" | 420-3074 | 4.88 | 1/2 | .70 | 1.88 | 1.38 | 1.25 | .125 | 1.6 | 1.5 |
| 1/2" | 3075-10,500 | 5.78 | 3/8 | .70 | 1.88 | 1.38 | 1.25 | .125 | 1.8 | 1.7 |
| 3/4" | 400-2299 | 7.01 | 9/16 | .94 | 2.50 | 1.75 | 1.50 | 1.88 | — | — |
| 3/4" | 2300-10,500 | 8.48 | 1/2 | .94 | 2.50 | 1.75 | 1.50 | 1.88 | — | — |
| 1" | 400-2299 | 7.01 | 9/16 | .94 | 3.00 | 1.75 | 1.50 | 1.88 | — | — |
| 1" | 2300-10,500 | 8.48 | 1/2 | .94 | 3.00 | 1.75 | 1.50 | 1.88 | — | — |

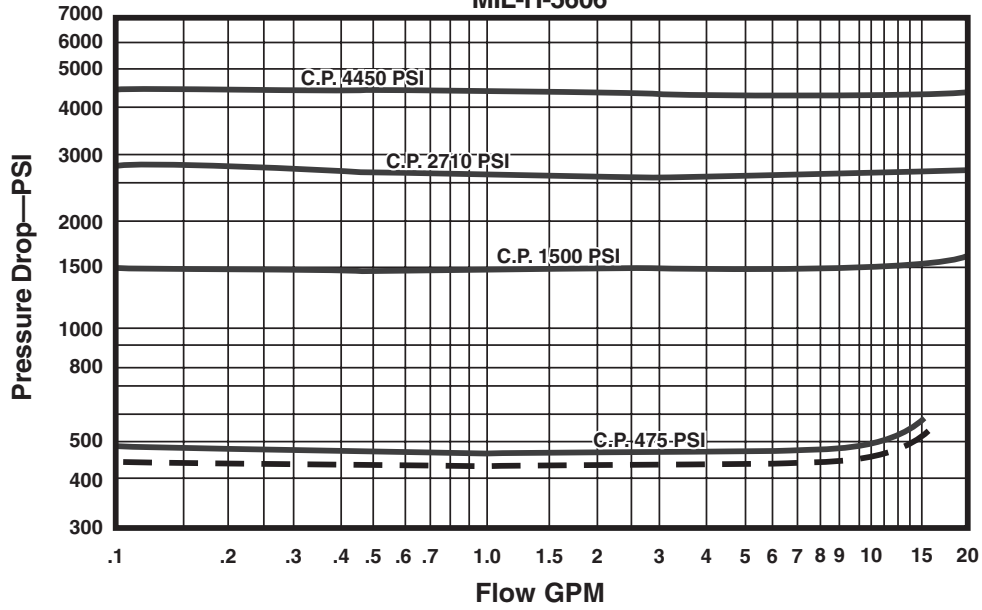
| Pipe Size | C.P. Range (PSI) | B Max. | C Hex. | E | F Hex. | G Dia. | H Hex | K Dia. | Weight (lbs) | |
|-----------|------------------|--------|--------|-----|--------|--------|-------|--------|--------------|------|
| | | | | | | | | | Brass | S.S. |
| 1/4" | 420-3074 | 4.88 | 1/2 | .52 | 1.50 | 1.38 | 1.25 | .125 | 1.6 | 1.5 |
| 1/4" | 3075-10,500 | 5.78 | 3/8 | .52 | 1.50 | 1.38 | 1.25 | .125 | 1.8 | 1.7 |
| 1/2" | 400-2299 | 7.01 | 9/16 | .82 | 2.00 | 1.75 | 1.50 | .188 | 3.2 | 3.0 |
| 1/2" | 2300-10,500 | 8.48 | 1/2 | .82 | 2.00 | 1.75 | 1.50 | .188 | 3.7 | 3.5 |

5300 Series

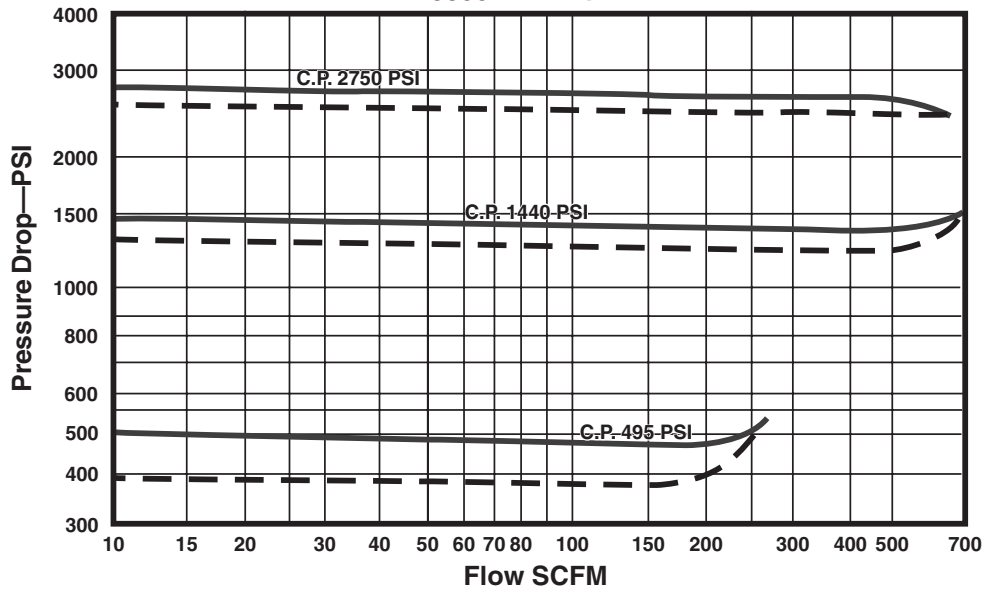
400 to 10,500 PSIG

Typical Flow Curves

5300-4PP with Hydraulic Fluid
MIL-H-5606



5300-4PP with Air



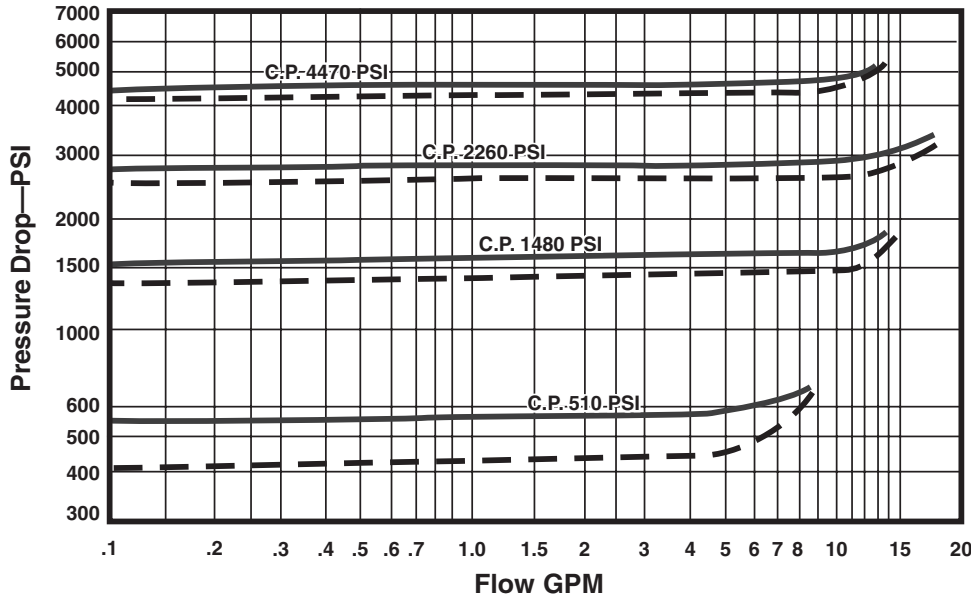
Increasing flow ———— Decreasing flow - - - - -

5300 Series

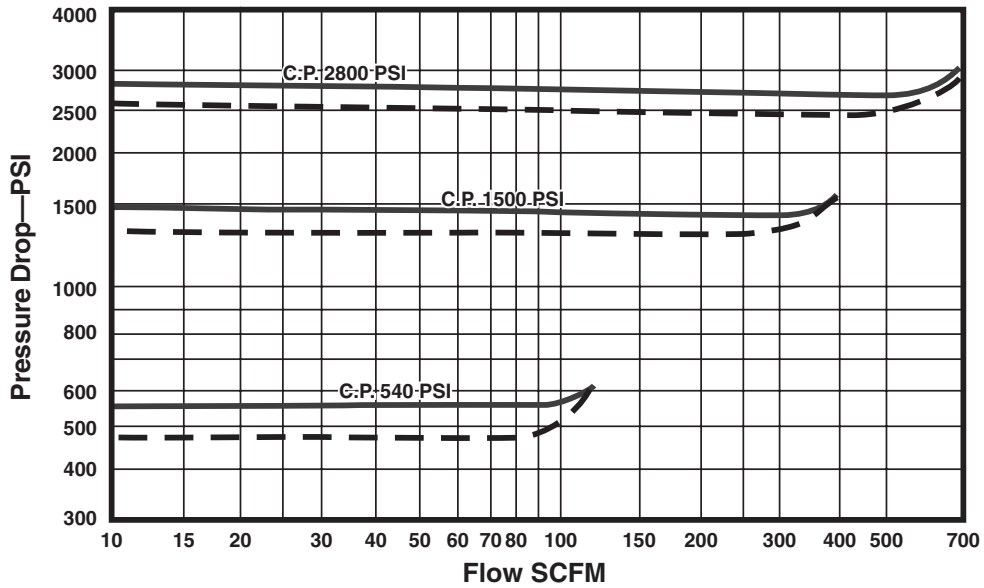
400 to 10,500 PSIG

Typical Flow Curves

5300-BB, 5300-2PP with Hydraulic Fluid
MIL-H-5606



5300-8BB, 5300-2PP with Air



Increasing flow ———— Decreasing flow - - - - -

5300 Series

400 to 10,500 PSIG

How to Order

L 53 49 B – 4 PP (L) – 500

VARIATION

- L – For all liquids
- B – Kel-F poppet
2000 psi max with liquids
3024 psi max with gas

BASIC MODEL NUMBER

5300 Series

O-RING MATERIAL & TEMPERATURE

- 49 – Buna N -40° F to +250° F
- 33 – Neoprene -20° F to +240° F
- 32 – Viton® -20° F to +350° F

BODY MATERIAL

- B – Brass
- T – 303 Stainless Steel
- T1 – 316 Stainless Steel

CRACKING PRESSURE

Specify cracking pressure setting in PSIG

500 – 500 PSIG

SPECIAL CHARACTERISTICS

(L) – Lockwire

CONNECTIONS

- P – Female Pipe
- B – Female Tube, AND10050
- K – Male British Parallel Pipe
- L – Female British Parallel Pipe
- G – Aminco, Union
- V – NASA MC240

VALVE SIZE

Pipe sizes in 1/8" increments

Tube sizes in 1/16" increments

| | Pipe | Tube |
|----|------|------|
| 2 | 1/4" | N/A |
| 4 | 1/2" | 1/4" |
| 6 | N/A | 3/8" |
| 8 | N/A | 1/2" |
| 12 | N/A | 3/4" |
| 16 | N/A | 1" |

Notes:

Back Pressure – Any back pressure above atmosphere reduces the cracking pressure by .35 psi for each 1.0 psi of back pressure.

Teflon® is a registered trademark of DuPont.

Viton® is a registered trademark of DuPont Dow Elastomers.

For Your Safety

It is the sole responsibility of the system designer and user to select products suitable for their specific application requirements and to ensure proper installation, operation and maintenance of these products. Material compatibility product ratings and application details should be considered in the selection. Improper selection or use of products described here in can cause personal injury or property damage.

Cracking Pressure Spring Ranges

Consult factory for replacement spring part numbers

| Dash No. (Valve Size) | C.P. Range |
|--|-------------|
| 4PP (1/2") 12BB (3/4") 16BB (1") | 400-700 |
| | 550-950 |
| | 850-1350 |
| | 1250-2000 |
| | 1650-2700 |
| | 1900-3500 |
| | 3100-7200 |
| | 4000-10,500 |

| Dash No. (Valve Size) | C.P. Range |
|--|-------------|
| 2PP (1/4") 4BB (1/4") 6BB (3/8") 8BB (1/2") | 420-600 |
| | 575-850 |
| | 825-1190 |
| | 1170-1650 |
| | 1500-2075 |
| | 1710-2570 |
| | 2300-3120 |
| | 3030-4100 |
| | 3890-7560 |
| | 4000-10,500 |