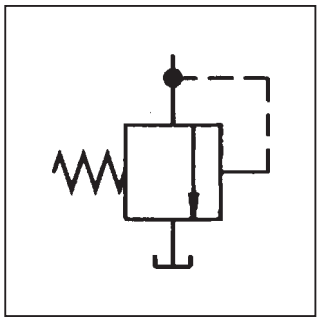
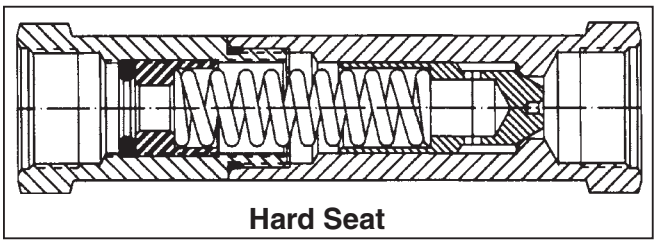
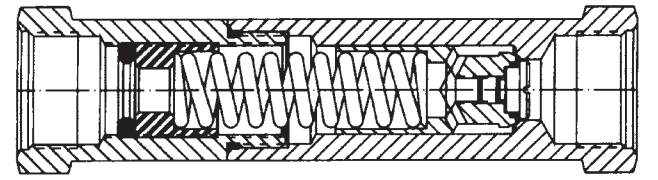
## General Description

Series 665 relief valves are adjustable, in-line direct-acting relief valves. The valve opens when the system pressure exceeds the pressure at which the valve is set.





**Hard Seat**



**Soft Seat**

## Specifications

| | | |
|---|---|---|
| **Service App.** | Hard seat: | Hydraulic |
| | Soft seat: | Hydraulic and air |
| **Maximum Operating Pressure** | Working: | 0.3 to 248.4 Bar (4 to 3600 PSI) in 13 ranges |
| | Reseat: | Range 1: 80% of cracking press. Ranges 2 - 13: 90% of cracking pressure |
| | Proof: | 310.5 Bar (4500 PSI) |
| **Sizes** | NPT | 1/4", 1/2", 3/4", 1" |
| **Ports** | NPT | Pipe threads |
| | IST | Internal straight threads |
| **Material** | Body, Cap | Aluminum alloy, anodized Stainless steel |
| | Poppet, Adj. Screw | 416 Stainless Steel (Hard seat) 303 Stainless Steel (Soft seat) |
| | Locknut | 303 Stainless steel |
| | Spring | Stainless steel AMS5688 and 17-7PH |
| | O-ring | Synthetic rubber |
| | Seat (soft) | Ranges 1 -3: Synthetic rubber |
| | | Ranges 4 - 13: PTFE |
| **Operating Temperature** | -40°C to +121°C (-40°F to +250°F) Higher on special order | |

## Features

- Internal adjustment ideal for tamper-proof applications.
- Available for hydraulic or pneumatic service.
- In-line design saves space in power unit application.

## Ordering Information

| S | 665 | -1 | -1/8 | D | 2 |
|---|---|---|---|---|---|
| Options | Catalog Number | Pressure Range | Size | Materials | O-Ring Code |
| S Soft Seat | 665 Inline Direct-Acting Relief | 1 4 - 15 PSI<br>2 10 - 50 PSI<br>3 40 - 125 PSI<br>4 115 - 250 PSI<br>5 235 - 450 PSI<br>6 430 - 650 PSI<br>7 630 - 850 PSI<br>† 8 630 - 1020 PSI<br>† 9 800 - 1500 PSI<br>† 10 1400 - 2100 PSI<br>† 11 1500 - 2750 PSI<br>† 12 2000 - 3100 PSI<br>† 13 3000 - 3600 PSI<br>ML*<br>MH** | 1/8 NPT<br>1/4 NPT<br>3/8 NPT<br>1/2 NPT<br>3/4 NPT<br>1 NPT<br>4 IST<br>6 IST<br>8 IST<br>12 IST<br>16 IST | D Aluminum Alloy<br>SS Stainless Steel | 2 Nitrile Others Available |

**Pressure Range**

| Range PSI | Pre-Set Cracking Pressure | Soft Seat Material (when used) | Range Dash Number |
|---|---|---|---|
| 4-15 | 10 | Synthetic Rubber | -1 |
| 10-50 | 35 | | -2 |
| 40-125 | 90 | | -3 |
| 115-250 | 200 | PTFE | -4 |
| 235-450 | 360 | | -5 |
| 430-650 | 550 | | -6 |
| 630-850 | 750 | | -7 |
| 630-1020 | 850 | | -8 |
| 800-1500 | 1000 | | -9 |
| 1400-2100 | 1750 | | -10 |
| 1500-2750 | 2200 | | -11 |
| 2000-3100 | 2600 | | -12 |
| 3000 - 3600 | 3200 | | -13 |

**† NOTE:** Ranges 8 and above – Hard Seat only
Teflon seats for Ranges 4, 5, 6 and 7 only

**Definitions:**
Cracking pressure – Liquid: 15 to 20 DPM
Air: steady stream of bubbles
Reseat leakage – Less than 1 DPM or 1 BPM

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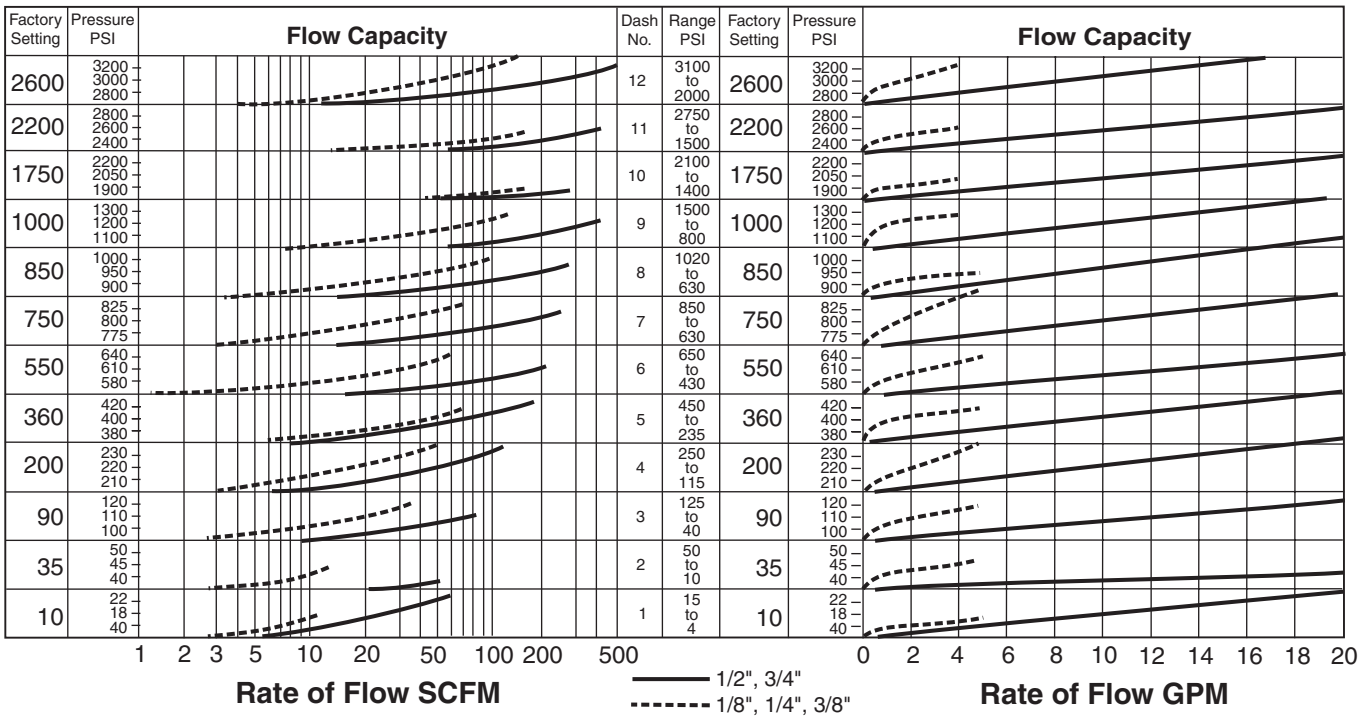
Hydraulic Valve Division
Elyria, Ohio, USA

## Performance Curves

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## Examples

**Pneumatic:**

Establish cracking pressure setting of 1/2" valve for flow of 70 SCFM at 27.6 Bar (400 PSI) pressure:

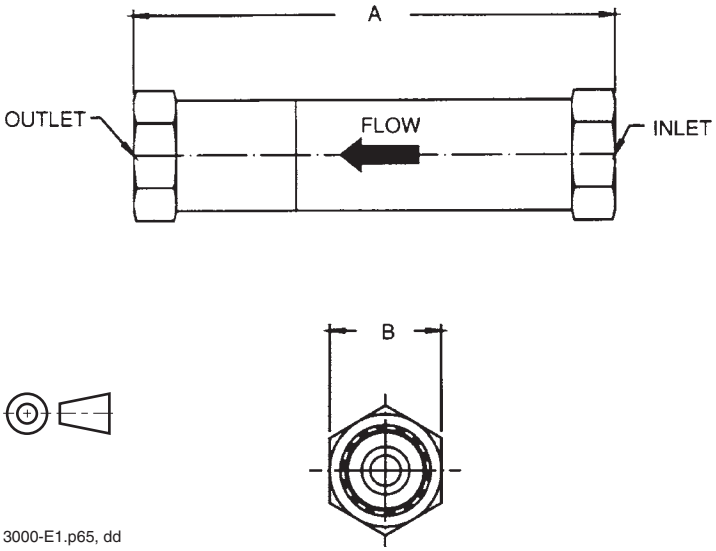
1. Project 70 SCFM on vertical scale.
2. Project 27.6 Bar (400 PSI) scale horizontally intersectiong 1.
3. Project line parallel to curves back to vertical line 1.
4. Read cracking pressure setting: 24.8 Bar (360 PSI).

**Hydraulic:**

Find amount of pressure increase above 24.8 Bar (360 PSI) cracking pressure when flow through 3/4" valve is increased to 54 LPM (14 GPM):

1. From 360 on vertical pressure scale, follow 3/4" curve until it intersects with the vertical line representing 54 LPM (14 GPM).
2. Project intersecting point horizontally and read pressure, i.e., 29 Bar (420 PSI).
3. Accumulated Pressure: 420 minus 360 = 4.1 Bar (60 PSI).

## Dimensions – Shown in inches




| Valve Size NPT | A | B | Maximum Rated Flow G.P.M. | Weights (Approx.) Aluminum Alloy | Weights (Approx.) Stainless Steel |
|---|---|---|---|---|---|
| 1/4 | 5 | 1 3/16 | 4 | 0.6 Lbs. | 1.3 Lbs. |
| 1/2 | 5 | 1 3/16 | 10 | | |
| 3/4 | 7 | 1 5/8 | 15 | 1.7 Lbs. | 3.2 Lbs. |
| 1 | 7 | 1 5/8 | 15 | | |

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