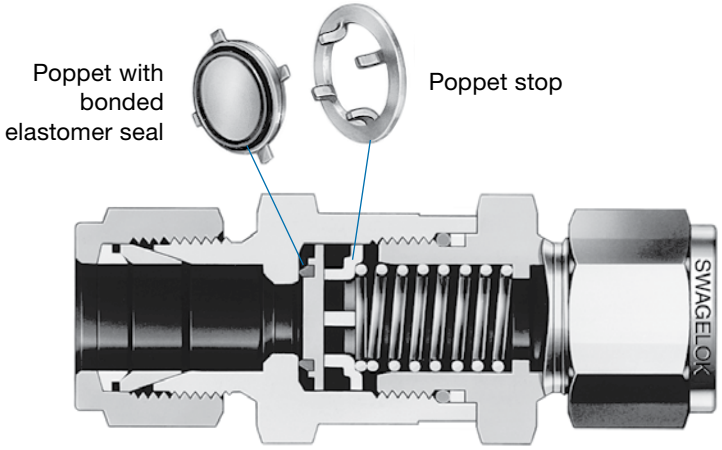
# Check Valves—Special Alloy Materials

## CH Series

- Alloy 625, alloy 825, and SAF 2507™ super duplex stainless steel materials
- Available for CH4 and CH8 series check valves
- Working pressures up to 6000 psig (413 bar)
- 1/4 to 1/2 in. Swagelok® tube fitting or NPT end connections
- Fixed cracking pressures: 1 to 25 psi (0.07 to 1.8 bar)




## Pressure-Temperature Ratings

Ratings based on fluorocarbon FKM seals.

| Material | Alloy 625 | Alloy 825 | SAF 2507 |
|---|---|---|---|
| **Temperature,** °F (°C) | **Working Pressure,** psig (bar) | | |
| –10 (–23) to 100 (37) | 6000 (413) | 6000 (413)① | 6000 (413) |
| 200 (93) | 6000 (413) | 5510 (379) | 5980 (412) |
| 250 (121) | 6000 (413) | 5370 (369) | 5820 (400) |
| 300 (148) | 6000 (413) | 5225 (360) | 5655 (389) |
| 350 (176) | 5940 (409) | 5110 (352) | 5555 (382) |
| 400 (204) | 5880 (405) | 4995 (344) | 5455 (375) |

For more information about pressure ratings of valves with tube fitting end connections, see Swagelok *Tubing Data,* MS-01-107.

① Pressure ratings for valves with 1/2 in. female NPT end connections limited to 5700 psig (392 bar).

## Testing

Every CH series check valve is factory tested for crack and reseal performance with a liquid leak detector.

Check valves are cycled six times prior to testing. Every valve is tested to ensure it seals within 5 s at the appropriate reseal pressure.

## Cleaning and Packaging

All CH series check valves are cleaned in accordance with Swagelok *Standard Cleaning and Packaging (SC-10),* MS-06-62.

## Cracking and Reseal Pressures at 70°F (20°C)

Cracking pressure—the inlet pressure at which the first indication of flow occurs (steady stream of bubbles).

Reseal pressure—the pressure at which there is no indication of flow.

Back pressure—the differential pressure between the inlet and outlet pressures.

| Nominal Cracking Pressure psi (bar) | Cracking Pressure Range psi (bar) | Reseal Pressure psi (bar) |
|---|---|---|
| 1 (0.07) | Up to 4 (0.28) | Up to 5 (0.35) back pressure |
| 5 (0.35) | 3 to 9 (0.21 to 0.63) | Up to 2 (0.14) back pressure |
| 10 (0.69) | 7 to 15 (0.49 to 1.1) | 3 (0.21) or more inlet pressure |
| 25 (1.8) | 20 to 30 (1.4 to 2.1) | 17 (1.2) or more inlet pressure |

⚠ **For valves not actuated for a period of time, initial cracking pressure may be higher than the set cracking pressure.**

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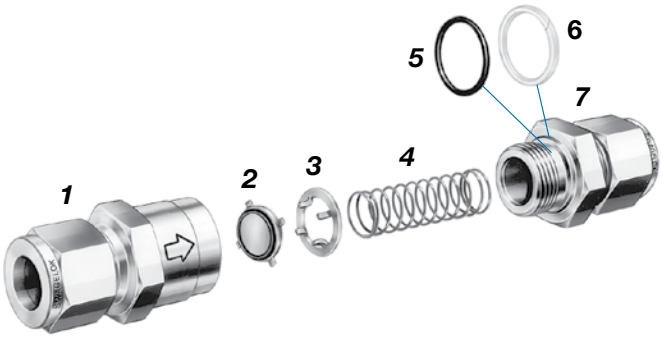
## Materials of Construction




| Component | Material Grade/ ASTM Specification | | |
|---|---|---|---|
| | Alloy 625 | Alloy 825 | SAF 2507 |
| **1** *Inlet body* | *Alloy 625/B446* | *Alloy 825/B425* | *SAF 2507/A479* |
| **2** *Poppet* | *Fluorocarbon FKM-bonded① alloy C-276/B574* | | |
| **3** *Poppet stop* | *Alloy C-276/B575* | | |
| **4** *Spring* | *Alloy X-750 /AMS 5699* | | |
| **5** *O-ring* | *Fluorocarbon FKM* | | |
| **6** Backup ring | PTFE/D1710 | | |
| **7** *Outlet body* | *Alloy 625/B446* | *Alloy 825/B425* | *SAF 2507/A479* |
| *Lubricant* | *PTFE-based* | | |

Wetted components listed in *italics*.

① Material Safety Data Sheet for bonding agent available on request.

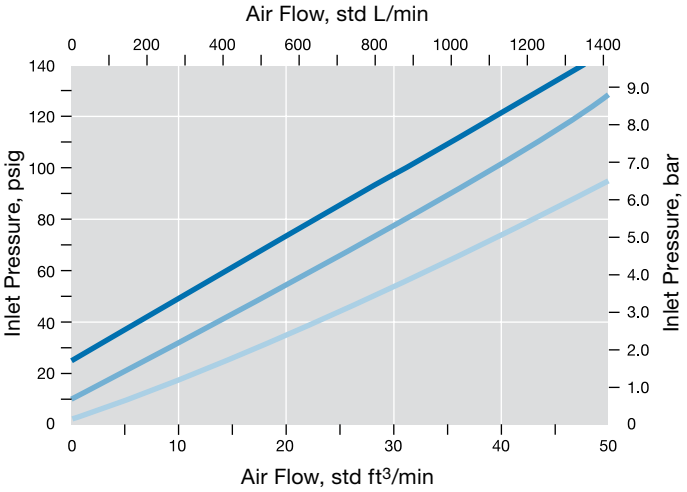
## Flow Data at 70°F (20°C)

**Nominal Cracking Pressures**

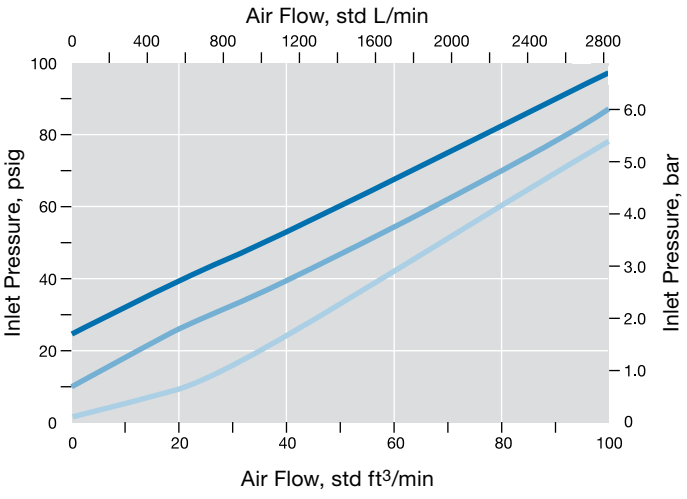
1 psi (0.07 bar) 10 psi (0.69 bar) 25 psi (1.8 bar)

### *Air*

#### CH4 Series

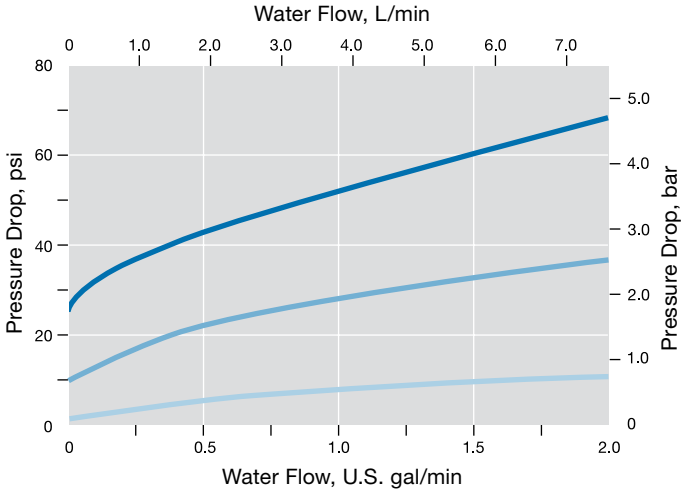



#### CH8 Series

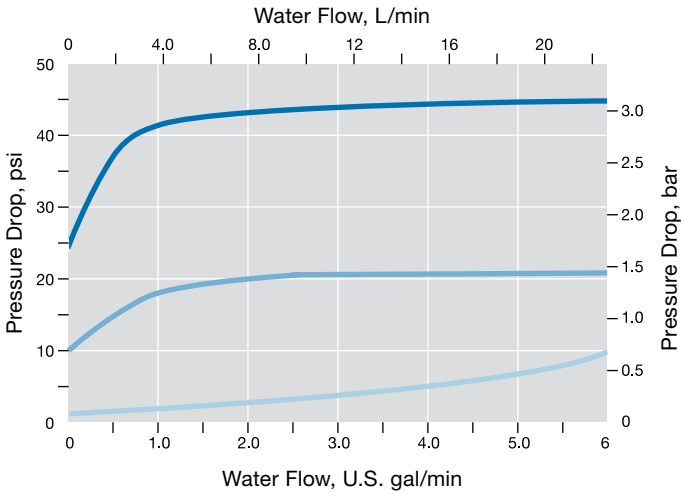



### *Water*

#### CH4 Series

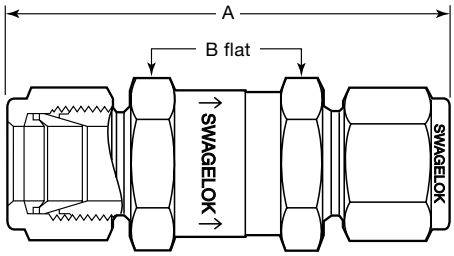



#### CH8 Series



## Dimensions

Dimensions are for reference only and are subject to change.
Dimensions shown with Swagelok tube fitting nuts finger-tight.




| End Connections | | $C_V$ | Basic Ordering Number | Series | Dimensions in. (mm) | |
|---|---|---|---|---|---|---|
| Type | Size | | | | A | B |
| Fractional Swagelok tube fitting | 1/4 in. | 0.67 | -CHS4- | CH4 | 2.43 (61.7) | 11/16 |
| | 3/8 in. | 1.8 | -CHS6- | CH8 | 2.75 (69.9) | 1 1/16 |
| | 1/2 in. | 1.8 | -CHS8- | | 2.96 (75.2) | |
| Female NPT | 1/4 in. | 0.67 | -CHF4- | CH4 | 2.13 (54.1) | 11/16 |
| | 3/8 in. | 1.8 | -CHF6- | CH8 | 2.55 (64.8) | 1 1/16 |
| | 1/2 in. | 1.8 | -CHF8- | | 3.03 (77.0) | 1 1/16 |
| Male NPT | 1/4 in. | 0.67 | -CHM4- | CH4 | 2.17 (55.1) | 11/16 |
| | 3/8 in. | 1.8 | -CHM6- | CH8 | 2.36 (59.9) | 1 1/16 |
| | 1/2 in. | 1.8 | -CHM8- | | 2.73 (69.3) | |

⚠ **Check valves are designed for directional flow control only. Swagelok check valves should never be used as code safety relief devices.**

## Ordering Information

To order, select a basic ordering number from the **Dimensions** table above.

- Add the valve material designator from the table below.

  Example: **625**-CHS4-

| Material | Designator |
|---|---|
| Alloy 625 | 625 |
| Alloy 825 | 825 |
| SAF 2507 | 2507 |

- Add a cracking pressure designator to the basic ordering number.

  Example: 625-CHS4-**1**

| Cracking Pressure psi (bar) | Designator |
|---|---|
| 1 (0.07) | 1 |
| 5 (0.35) | 5 |
| 10 (0.69) | 10 |
| 25 (1.8) | 25 |

## Options

### *Special Cleaning and Packaging (SC-11)*

To order CH series valves with optional special cleaning and packaging to ensure compliance with product cleanliness requirements stated in ASTM G93 Level C, add **-SC11** to the valve ordering number.

Example: 625-CHS4-1-**SC11**

## Oxygen Service Hazards

For more information about hazards and risks of oxygen-enriched systems, see the Swagelok *Oxygen System Safety* technical report, MS-06-13.

## Maintenance Kits

For spring kits and seal kits, contact your authorized Swagelok representative for more information.

## Additional Products.

- For Swagelok special alloy BV series bleed valves, see the *Bleed Valves —Special Alloy Materials* catalog, MS-02-356.

- For Swagelok special alloy N and HN series needle valves, see the *Severe Service Union-Bonnet Needle Valves—Special Alloy Materials* catalog, MS-02-365.

- For Swagelok special alloy 83 series ball valves, see the *Trunnion Ball Valves—Special Alloy Materials* catalog, MS-02-357.

- For Swagelok tube fittings products, see the *Gaugeable Tube Fittings and Adapter Fittings* catalog, MS-01-140.

- For Swagelok SAF 2507 tube fittings products, see the *Gaugeable SAF 2507 Super Duplex Tube Fittings* catalog, MS-01-147.

**Safe Product Selection**
**When selecting a product, the total system design must be considered to ensure safe, trouble-free performance. Function, material compatibility, adequate ratings, proper installation, operation, and maintenance are the responsibilities of the system designer and user.**

**Caution: Do not mix or interchange parts with those of other manufacturers.**

## Warranty Information

Swagelok products are backed by The Swagelok Limited Lifetime Warranty. For a copy, visit swagelok.com or contact your authorized Swagelok representative.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