

## Features

- Adjustable flow control design provides greater capacity than most constructions
- Spring-loaded disc allows free flow in one direction and an adjustable flow in the other
- Tapered brass stem controls flow through the cross-hole in the disc
- Unique locking device in adjusting knob
- Scribed graduations provide position indication for the stem
- 316L Stainless Steel constructions available with integrated check valve
- Mountable in any position



## Construction

| Valve Parts in Contact with Fluids |                        |                      |
|------------------------------------|------------------------|----------------------|
|                                    | V022 Series            | 8800 Series          |
| <b>Body and Stem</b>               | Brass                  | 316L Stainless Steel |
| <b>Seals</b>                       | NBR                    |                      |
| <b>Disc</b>                        | CA                     | -                    |
| <b>Spring</b>                      | 302 Stainless Steel    | -                    |
| <b>Retainer</b>                    | 17-7PH Stainless Steel | -                    |

## Nominal Ambient Temp. Ranges

8800 series: -4°F to 221°F (-20°C to 105°C)

V022 series: 32°F to 125°F (-0°C to 52°C)

Refer to Engineering Section for details.

## Operation (V022 Series)

When the pawl is in the up position, it creates a friction lock on the knurled bonnet and the knob cannot rotate. When the pawl is at 90° to the knob, the knob can be rotated.

Refer to Engineering Section for details.

## Specifications (English units)

| Pipe Size (in)  | Orifice Size (in) | Cv Flow Factor ① (KV) |             | Opening Pressure psi (bar) | Maximum Operating Pressure Differential psi (bar) | Max. Fluid Temp. °F (°C) | Catalog Number  | Body Material   | Const. Ref. |
|---|-------------------|-----------------------|-------------|----------------------------|---|--------------------------|-----------------|-----------------|-------------|
|   |                   | Meter Flow            | Free Flow   |                            |   |                          |                 |                 |             |
| <b>Flow control valves</b>                              |                   |                       |             |                            |   |                          |                 |                 |             |
| 1/4   | 3/8               | 0.22 (0.2)            | 1.2 (1)     | 1 (0.07)                   | 125 (8.6)   | 180 (82)                 | V022A001        | Brass           | 1           |
| 1/4   | 5/23              | 0.01 (0.008)          | 0.74 (0.64) | 0 (0)                      | 232 (16) ②  | 221 (105)                | 8800A50000N0000 | Stainless Steel | 5           |
| 3/8   | 3/8               | 0.9 (0.8)             | 1.4 (1.2)   | 1 (0.07)                   | 125 (8.6)   | 180 (82)                 | V022 002        | Brass           | 2           |
| 1/2   | 7/16              | 1.2 (1)               | 2.6 (2.2)   | 1 (0.07)                   | 150 (10.3)  | 180 (82)                 | V022 003        | Brass           | 3           |
| 1/2   | 1/2               | 0.01 (0.008)          | 3.9 (3.4)   | 0 (0)                      | 232 (16) ②  | 221 (105)                | 8800A50200N0000 | Stainless Steel | 6           |
| 3/4   | 17/32             | 1.6 (1.4)             | 4 (3.4)     | 2.5 (0.17)                 | 175 (12)  | 180 (82)                 | V022 004        | Brass           | 4           |
| <b>Flow control valves with integrated check valves</b> |                   |                       |             |                            |   |                          |                 |                 |             |
| 1/4   | 5/23              | 0.02 (0.017)          | 0.75 (0.65) | 0 (0)                      | 232 (16) ②  | 221 (105)                | 8800A30000N0000 | Stainless Steel | 7           |
| 1/2   | 1/2               | 0.02 (0.017)          | 3.6 (3.1)   | 0 (0)                      | 232 (16) ②  | 221 (105)                | 8800A30200N0000 | Stainless Steel | 8           |

① Refer to Metering Stem Turns chart on next page.

② Only suitable for use with clean dry air or dry inert gas.

Dimensions inches (mm)

| Catalog Number |    | H    | L    | M    | P    | W    |
|----------------|----|------|------|------|------|------|
| V022A001       | in | 3.12 | 2.69 | 1.91 | 2.62 | 1.31 |
|                | mm | 79   | 68   | 49   | 67   | 33   |
| V022 002       | in | 3.12 | 2.69 | 1.91 | 2.69 | 1.31 |
|                | mm | 79   | 68   | 49   | 68   | 33   |
| V022 003       | in | 3.34 | 3.22 | 2.28 | 2.81 | 1.31 |
|                | mm | 85   | 82   | 58   | 71   | 33   |
| V022 004       | in | 3.75 | 3.69 | 2.75 | 3.09 | 1.47 |
|                | mm | 95   | 94   | 70   | 79   | 37   |

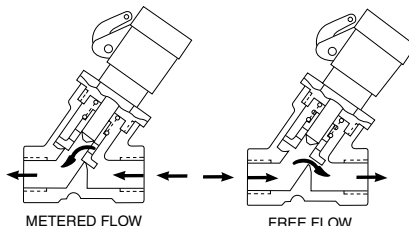
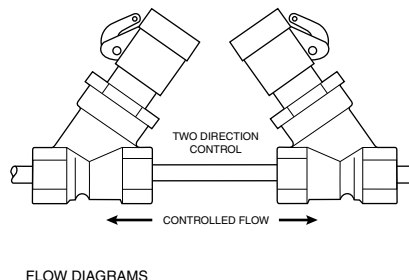
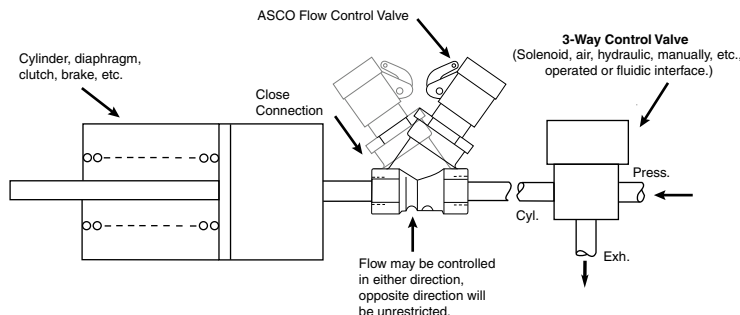
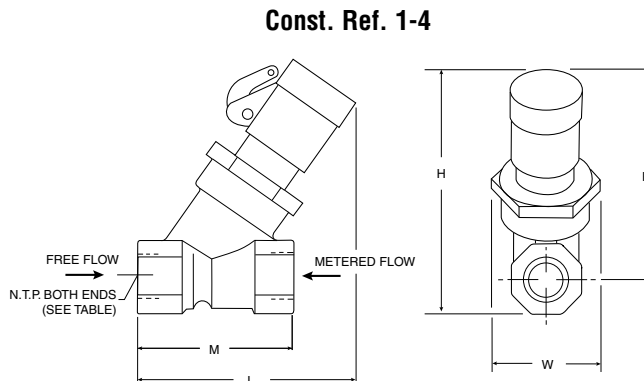


CHART A

**Example I:** A 1/2" N.P.T. flow control valve is required to pass 3 GPM of water at a  $\Delta p$  of 16 psi. Determine the position of the metering stem.

$$Cv = \frac{GPM}{\sqrt{\Delta p}} \quad Cv = \frac{3}{\sqrt{16}} = 0.75$$

From the graph for the 1/2" N.P.T. flow control valve with a Cv of .75, the stem should be positioned three turns out from fully closed.

**Example II:** To determine the flow using the same data of 16 psi,  $\Delta p$  and METERED Cv of .75, the solution will be:

$$GPM = Cv \sqrt{\Delta p} = .75 \sqrt{16} = 3$$

**Example III:** The flow through this valve in the FREE FLOW position is:

$$GPM = Cv^* \sqrt{\Delta p} = 2.6 \sqrt{16} = 10.4$$

\*Cv is obtained from free flow data table.

- P<sub>1</sub> - Inlet Pressure (PSIA)
- P<sub>2</sub> - Outlet Pressure (PSIA)
- $\Delta p$  - Pressure Drop (P<sub>1</sub> - P<sub>2</sub>) psi
- G - Specific Gravity of Gas @ 14.7 PSIA and 60°F.
- T - Absolute Temperature of Flowing Medium (°F + 460)

SIZING EQUATIONS

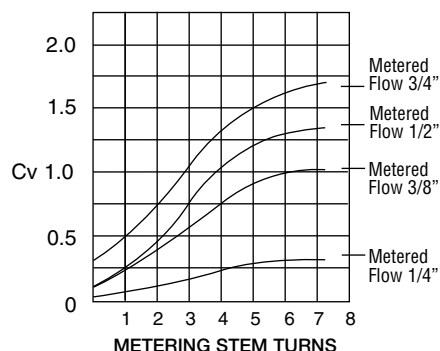
$$\text{WATER } Cv = \frac{GPM}{\sqrt{\Delta p}} \quad GPM = Cv \sqrt{\Delta p}$$

$$\text{AIR } Cv = \frac{SCFH}{960 \sqrt{\frac{\Delta p(P_1 + P_2)}{GT}}}$$

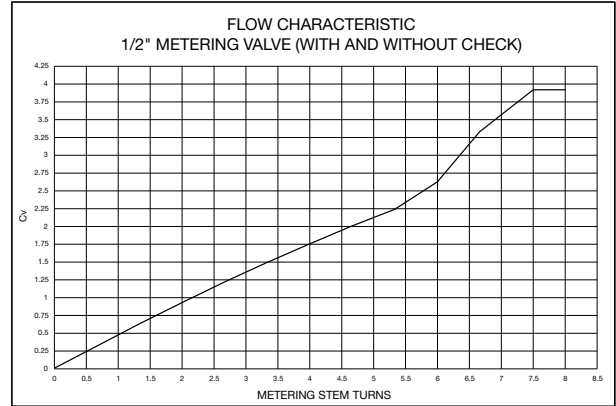
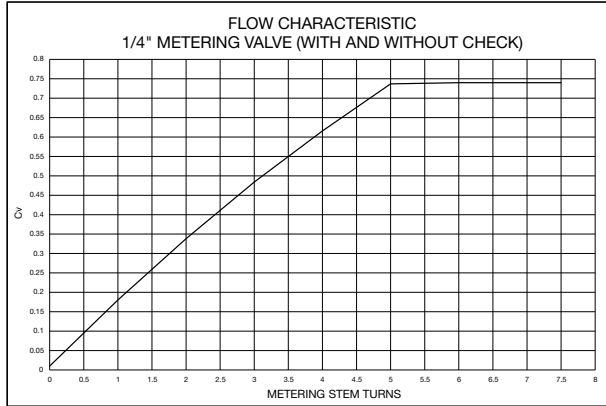
$$SCFH = Cv \cdot 960 \sqrt{\frac{\Delta p(P_1 + P_2)}{GT}}$$

| Free Flow Data |     |
|----------------|-----|
| Pipe Size      | Cv  |
| 1/4            | 1.2 |
| 3/8            | 1.4 |
| 1/2            | 2.6 |
| 3/4            | 4.0 |

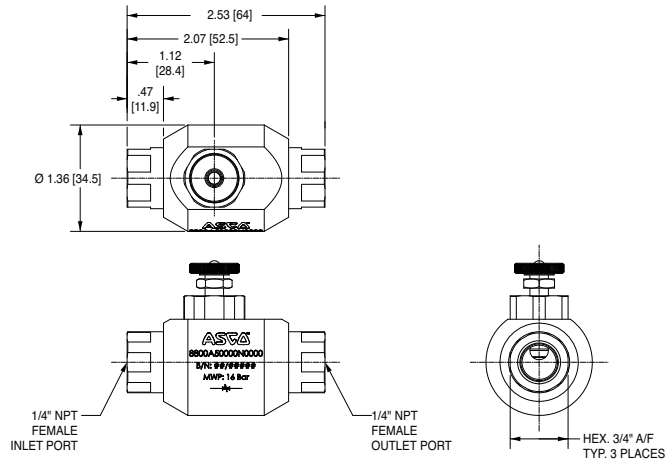
FLOW CHARACTERISTICS FOR V022 SERIES FLOW CONTROL VALVES



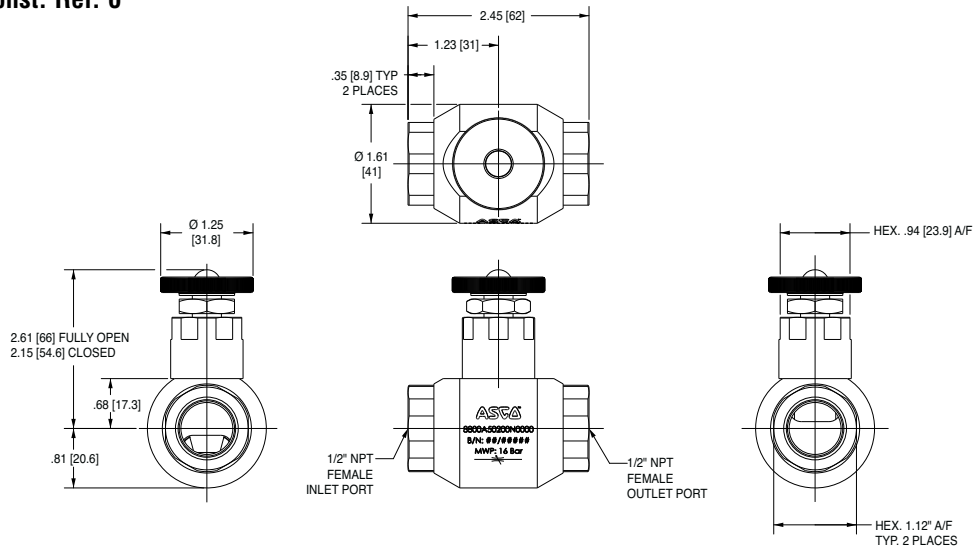
### Dimensions inches (mm)



#### Const. Ref. 5

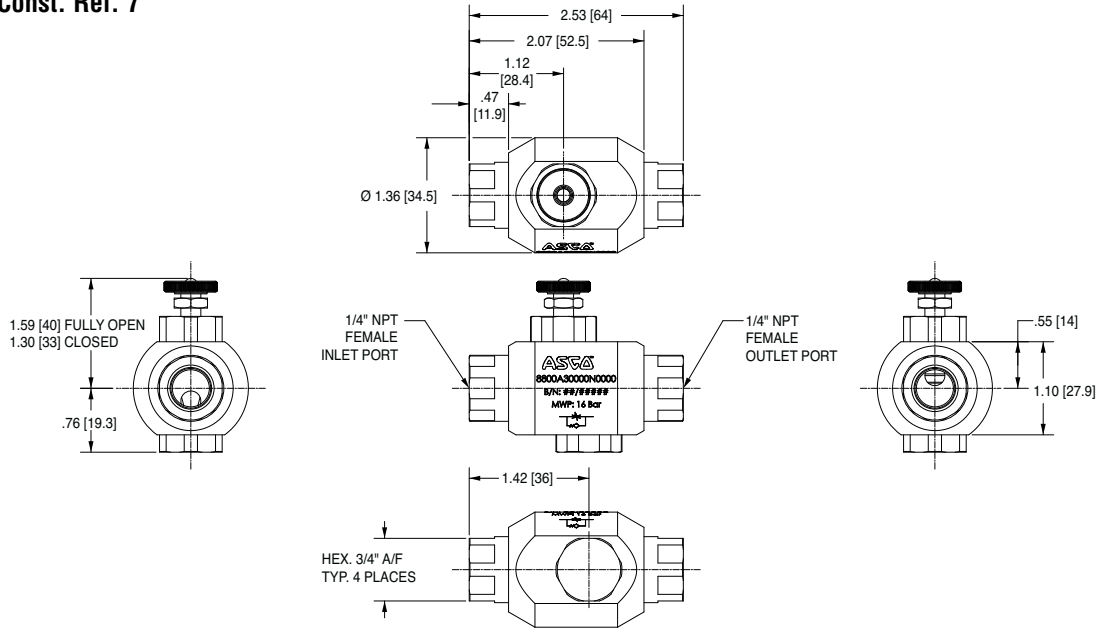


#### Const. Ref. 6



Dimensions inches (mm)

Const. Ref. 7



Const. Ref. 8

