



# MODEL V-Series Precision Tube

## SPECIFICATION SHEET PRECISION TUBE SERIES

### DESCRIPTION AND GENERAL PERFORMANCE SPECIFICATIONS

The V-Cone® flowmeter is a patented, differential pressure type flow measurement device. A cone is positioned in the center of the pipe to increase the velocity of the flowing fluid and create a differential pressure. This pressure difference can be measured and used to accurately interpret flowrate. Two taps are provided on every V-Cone to allow sensing of the high and low pressures. A typical V-Cone application can follow these general performance specifications:

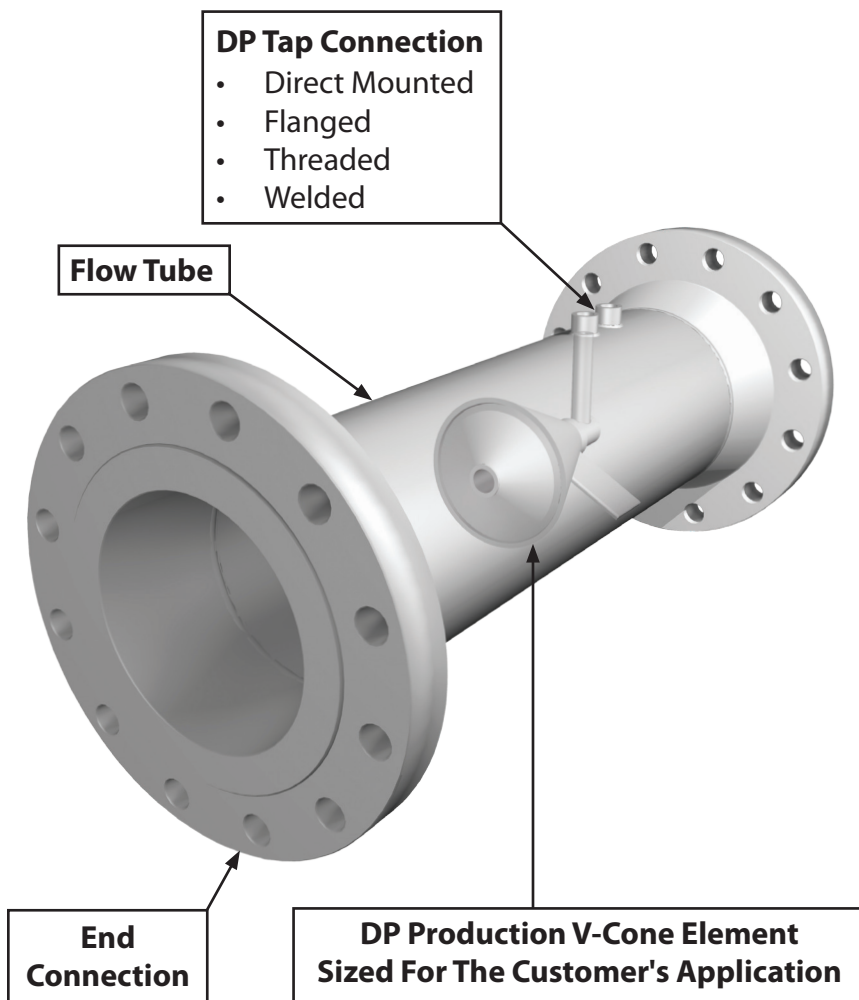
- Accuracy: up to  $\pm 0.5\%$  of rate
- Repeatability:  $\pm 0.1\%$
- Turndown: 10:1
- Standard Betas: 0.45 through 0.85
- Headloss: Percentage of differential pressure produced varies with beta ratio.
- Installation: Typically 0-3 diameters upstream and 0-1 diameters downstream.

\* Each V-Cone is sized for the intended application. Specific performance ratings must be obtained through the sizing process.

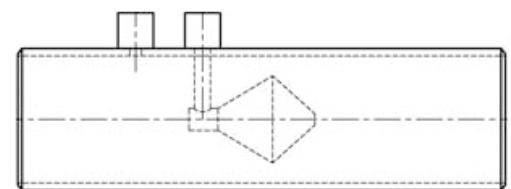
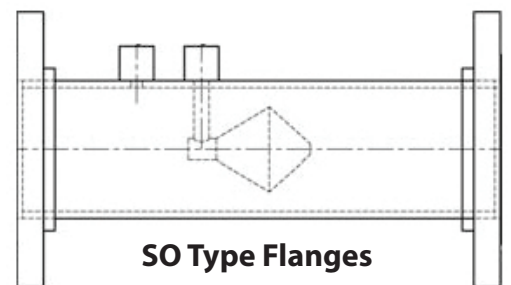
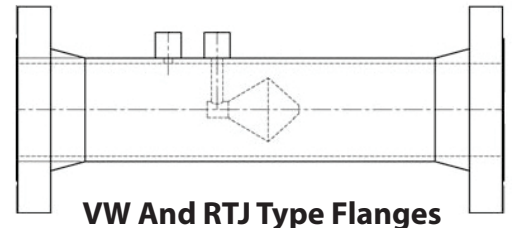


The V-Cone is manufactured under a quality management system that is certified to ISO 9001:2015.

## General Configuration



### End Connections





Part Number Configurator: Choose the code for each category from the menus and place the codes in the corresponding categories shown below to create a custom V-Cone part number.

Part number code categories:

Option menus are on the next page.

Example part numbers:

O&G **VW** **VS** **04** **06** **G** **Q** **F** **E** **16** **03** **BC** **N** **N4** **W2** **None** **F8** (Options)

| Flange Type Code | Description   |
|------------------|---------------|
| VS               | (Slip On)     |
| VW               | (RF WN)       |
| VR               | (ANSI RTJ/WN) |
| VB               | (Beveled)     |
| VT               | (NPT)         |
| VP               | (Plain End)   |
| VC               | (DIN SO)      |
| VD               | (DIN WN)      |
| VJ               | (JIS SO)      |
| VN               | (JIS WN)      |
| VG               | (Hub)         |

| Line Size Code | Description |
|----------------|-------------|
| 0A             | 0.5"        |
| 0B             | 0.75"       |
| 01             | 1"          |
| 0C             | 1.5"        |
| 02             | 2"          |
| 0D             | 2.5"        |
| 03             | 3"          |
| 04             | 4"          |
| 05             | 5"          |
| 06             | 6"          |
| 08             | 8"          |
| 10             | 10"         |
| 12             | 12"         |
| Up to 120"     |             |

| Materials Code | Description  |
|----------------|--|
| U              | (CS Pipe & Flg, S304/L Cone, supports & Cplg, final prep must be specified)  |
| W              | (CS Pipe, Flg & Cplg, S304/L Cone & support, final prep must be specified)   |
| F              | (CS Pipe, Flg & Cplg, S316/L Cone & support, final prep must be specified)   |
| G              | (LTCS Pipe, Flg & Cplg, S316/L cone & support, final prep must be specified) |
| S              | (CS Pipe, Flg & Cplg, S304/L Cone & support, Epoxy Blue Coating)             |
| Q              | (All S304/L)   |
| A              | (All S316/L)   |
| Y              | (All S304H)  |
| Z              | (All S316H)  |
| N              | (S304 Body, Cone, support & Couplings, CS Flanges Painted HT Silver)         |
| D              | (Duplex S31803)  |
| H              | (Super Duplex S32760)  |
| K              | (CS Body C276 Cone & Supports)   |
| C              | (P11 Chrome-Moly S316/L Cone & Supports)                                     |
| P              | (P22 Chrome-Moly S316/L Cone & Supports)                                     |
| O              | (X52/F52 Body, S316/L Cone & Supports)                                       |
| R              | (X60/F60 Body, S316/L Cone & Supports)                                       |
| M              | (All Monel 400)  |
| I              | (All Inconel 625)  |
| T              | (All Titanium)   |

| Schedule Code | Description |
|---------------|-------------|
| D             | Std         |
| E             | S 40        |
| F             | S 80        |
| J             | S 100       |
| K             | S 120       |
| L             | S 140       |
| G             | S 160       |
| H             | XXS         |
| P             | XS          |
| Q             | S 60        |
| R             | S 30        |

| Flange & Class Code | Description                             |
|---------------------|---|
| 00                  | VP Smooth Ends                          |
| 01                  | VB Beveled Ends                         |
| 02                  | VT Threaded Ends                        |
| 03                  | V5 SO ANSI CL 150 RF                    |
| 04                  | V5 SO ANSI CL 300 RF                    |
| 05                  | V5 SO ANSI CL 600 RF                    |
| 06                  | V5 SO ANSI CL 900 RF                    |
| 07                  | V5 SO ANSI CL 1500 RF                   |
| 13                  | VC SO DIN 2576 PN10 FF                  |
| 14                  | VW WN ANSI CL 150 RF                    |
| 15                  | VW WN ANSI CL 300 RF                    |
| 16                  | VW WN ANSI CL 600 RF                    |
| 17                  | VW WN ANSI CL 900 RF                    |
| 18                  | VW WN ANSI CL 1500 RF                   |
| 19                  | VR WN ANSI CL 150 RTJ                   |
| 20                  | VR WN ANSI CL 300 RTJ                   |
| 21                  | VR WN ANSI CL 600 RTJ                   |
| 22                  | VR WN ANSI CL 900 RTJ                   |
| 23                  | VR WN ANSI CL 1500 RTJ                  |
| 24                  | VD WN DIN 2633 PN16 RF                  |
| 25                  | VD WN DIN 2635 PN40 RF                  |
| 26                  | VJ SO JIS 10K                           |
| 27                  | VJ SO JIS 20K                           |
| 28                  | VN WN JIS 16K                           |
| 29                  | VN WN JIS 20K                           |
| 32                  | VR WN ANSI CL 2500 RTJ                  |
| 33                  | VS AWWA SO FF CL B                      |
| 34                  | VS AWWA SO FF CL D                      |
| 35                  | VS AWWA SO FF CL E                      |
| 36                  | VS AWWA SO FF CL F                      |
| 37                  | VD WN DIN 2637 PN100 RF                 |
| 39                  | VG Hub type                             |
| 40                  | SO ANSI CL 150 FF                       |
| 44                  | VP Victaulic Grooved Ends               |
| 45                  | VW WN B16.47 A 150# RF (MSS SP-44 150#) |
| 46                  | VW WN B16.47 B 150# RF (API-605 150#)   |
| 48                  | SO DIN 2666 PN25 FF                     |
| 49                  | VW WN ANSI CL 2500 RF                   |
| 50                  | VW WN B16.47 A 300# RF (MSS SP-44 300#) |
| 51                  | VW WN B16.47 B 300# RF (API-605 300#)   |
| 52                  | VR WN API 6A 10000# 6BX RTJ             |
| 53                  | VR WN API 6A 5000# 6BX RTJ              |

| Process Connection Code | Description                          |
|-------------------------|--------------------------------------|
| N                       | 1/2" 3000# NPT Cplg                  |
| S                       | 1/2" 3000# Soc Cplg                  |
| F                       | Futbol Flanges                       |
| J                       | 1/2" RC 3000#                        |
| J2                      | 1/2" 15A 3000#                       |
| J3                      | 1/4" RC 3000#                        |
| V                       | 1/2" NPT Outlet 800# Isolation Valve |

OR

| Process Connection Code | Flanged Type Code | Flanged Type (in line) | Rating                |
|-------------------------|-------------------|------------------------|-----------------------|
| A                       | 1/2" Flg. Tap     | A                      | ANSI 150# RF S80 Bore |
| B                       | 3/4" Flg. Tap     | B                      | ANSI 300# RF S80      |
| C                       | 1" Flg. Tap       | C                      | ANSI 600# RF S160     |
| D                       | 1.5" Flg. Tap     | D                      | ANSI 900# RF S160     |
| E                       | 2" Flg. Tap       | E                      | ANSI 1500# RF XXS     |
| F                       |                   | F                      | ANSI 2500# RF XXS     |
| G                       |                   | G                      | ANSI 600# RTJ S160    |
| H                       |                   | H                      | ANSI 900# RTJ S160    |
| I                       |                   | I                      | ANSI 1500# RTJ XXS    |
| J                       |                   | J                      | ANSI 2500# RTJ XXS    |

OR

| Process Connection Code | Coupling/Olet Type Code | Coupling/Olet Type (in line) | Rating          |
|-------------------------|-------------------------|------------------------------|-----------------|
| N                       | NPT Cplg/Olet           | 2                            | 1/4" Cplg 3000# |
| S                       | Soc Cplg/Olet           | 3                            | 1/2" Cplg 6000# |
|                         |                         | 4                            | 3/4" Cplg 3000# |
|                         |                         | 5                            | 1" Cplg 3000#   |
|                         |                         | 6                            | 1/2" Olet 3000  |
|                         |                         | 7                            | 1/2" Olet 6000# |
|                         |                         | 8                            | 1/4" Cplg 6000# |
|                         |                         | 9                            | 3/4" Cplg 6000# |
|                         |                         | Z                            | 3/4" Olet 6000# |
|                         |                         | Y                            | 3/4" Olet 3000# |

The example part numbers above are:

O&G: **VW04GF16BC-N4-W2** is a V-Cone with: Flange Type: RF WN flange; Line Size: 4"; Materials: LTCS Pipe, Flg & Cplg, S316/L cone & support, final prep must be specified; Sch. 80; Flange and Class: VW WN ANSI CL 600 RF; Process connections: 3/4" Flg. Tap ANSI 600# RF S160; RTD: 1/2" 3000# NPT Cplg 3/4" Cplg 3000#; Optional wall taps: Wall tap Configuration - 2 set taps - Tap sets 180 degrees apart.

Industrial: **VS06QE03-F8** is a V-Cone with: Flange Type: Slip On; Line Size: 6"; Materials: All S304/L; Sch. 40; Flange and Class: V5 SO ANSI CL 150 RF; Process Connections: 1/2" 3000# NPT Cplg; Options: 8" Reducing Flange.



### Option Menus

Enter Option Menu Codes Into Part Number Configurator On Previous Page.

| Optional RTD                     |                     |                    |
|----------------------------------|---------------------|--------------------|
| Coupling Type RTD (Optional)     |                     |                    |
| Select One Code From Each Column |                     |                    |
| Code                             | Description         | Description        |
| N                                | 1/2" 3000# NPT Cplg | (Use Dash As Code) |
| S                                | 1/2" 3000# Soc Cplg | (Use Dash As Code) |
| N                                | NPT Cplg/Olet       | 1/4" Cplg 3000#    |
| S                                | Soc Cplg/Olet       | 1/2" Cplg 6000#    |
|                                  |                     | 3/4" Cplg 3000#    |
|                                  |                     | 1" Cplg 3000#      |
|                                  |                     | 1/2" Olet 3000#    |
|                                  |                     | 1/2" Olet 6000#    |
|                                  |                     | 1/4" Cplg 6000#    |
|                                  |                     | 3/4" Cplg 6000#    |
|                                  |                     | 3/4" Olet 6000#    |
|                                  |                     | 3/4" Olet 3000#    |

| Optional RTD                     |               |                       |
|----------------------------------|---------------|-----------------------|
| Flanged Type RTD (Optional)      |               |                       |
| Select One Code From Each Column |               |                       |
| Code                             | Description   | Description           |
| A                                | 1/2" Flg. Tap | ANSI 150# RF S80 Bore |
| B                                | 3/4" Flg. Tap | ANSI 300# RF S80      |
| 1                                | 1" Flg. Tap   | ANSI 600# RF S160     |
| C                                | 1.5" Flg. Tap | ANSI 900# RF S160     |
| 2                                | 2" Flg. Tap   | ANSI 1500# RF XXS     |
|                                  |               | ANSI 2500# RF XXS     |
|                                  |               | ANSI 600# RTJ S160    |
|                                  |               | ANSI 900# RTJ S160    |
|                                  |               | ANSI 1500# RTJ XXS    |
|                                  |               | ANSI 2500# RTJ XXS    |

| Options   |   |          |
|---|---|----------|
| See The Note Table For Important Information For Each Option  |   |          |
| Code  | Description   | Note     |
| <b>Tap Orientation - When taps are not in-line (Optional)</b> |   |          |
| W-  | Wall tap Configuration - 1 set taps                                       | <b>f</b> |
| W2  | Wall tap Configuration - 2 set taps - Tap sets 180 degrees apart          |          |
| WA  | Wall tap Configuration - 2 set taps - Tap sets 90 degrees apart           | <b>a</b> |
| R0  | LP tap Rotated 180 degrees from HP tap - single set standard DP taps only |          |
| R1  | LP tap Rotated 90 degrees from HP tap - single set standard DP taps only  | <b>a</b> |
| R3  | LP tap Rotated 45 degrees from HP tap - single set standard DP taps only  | <b>a</b> |

| Material Specs/Build Code Requirements (Optional) |  |          |
|---|--|----------|
| -PED  | PED Cat II or III (PED Cat I include code 10, 11 or 12)    | <b>b</b> |
| -C  | CRN (Canada only)  | <b>b</b> |
| MIN   | All Material/Construction to NORSOK M630/M601 latest Rev   | <b>b</b> |
| MM  | All Material to MESG latest Rev                            | <b>b</b> |
| MT  | All Material/Construction to Maersk TS-02/TS-12 latest Rev | <b>b</b> |
| MH  | NACE MR0103 Compliant                                      | <b>c</b> |
| MB  | Flanged Taps/RTD Taps Braced                               | <b>e</b> |

| Reducing Flanges (Optional) |                      |          |
|-----------------------------|----------------------|----------|
| F1                          | 1" Reducing Flange   | <b>b</b> |
| FC                          | 1.5" Reducing Flange | <b>b</b> |
| F2                          | 2" Reducing Flange   | <b>b</b> |
| FD                          | 2.5" Reducing Flange | <b>b</b> |
| F3                          | 3" Reducing Flange   | <b>b</b> |
| F4                          | 4" Reducing Flange   | <b>b</b> |
| F5                          | 5" Reducing Flange   | <b>b</b> |
| F6                          | 6" Reducing Flange   | <b>b</b> |
| F8                          | 8" Reducing Flange   | <b>b</b> |
| FE                          | 10" Reducing Flange  | <b>b</b> |
| FF                          | 12" Reducing Flange  | <b>b</b> |

| Other Options |   |          |
|---------------|---|----------|
| -QS           | Quick Ship V-Cone - See Quick Ship Price List | <b>d</b> |

| Option Notes |  |
|--------------|--|
| Note Code    | Notes  |
| <b>a</b>     | Not recommended for steam service  |
| <b>b</b>     | Contact factory for quote  |
| <b>c</b>     | PWHT Required for CS meter body material codes   |
| <b>d</b>     | Quick ship V-Cones can not be customized beyond what is shown in the QS pricelist.           |
| <b>e</b>     | Use only if the model number includes flanged tap codes or if it includes a flanged RTD Code |
| <b>f</b>     | Recommended for liquid verticle down flows and wet gas/steam vertical up flows               |