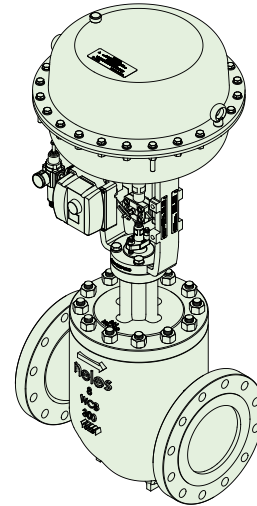


# Neles™ Omega™ globe valves Series GM

The series GM, Omega trim valves are most suitable for high pressure drop applications of both compressible and incompressible fluids as it enables the flow velocity to be controlled through the multistage Omega trim. Also, series GM range of valves combines high integrity features, such as 2 or 3 dimensional flow path multistage trim, a high flow capacity and a wide range of 'OMEGA' trim designs. This means it is ideally suited to meet the various severe service process control requirements that are demanded from a wide range of industry related applications. The 'OMEGA' trim design is a multi-passage, multistage disk stack trim. There are 2-32 turns designs available depending on pressure drop and potential for cavitation. The fluid passes through the flow passage generated by the Omega multistage trim. The pressure drop is staged across the stacks so that the pressure drop progressively reduces as it passes through the steps of the trim. This gives excellent resistance to cavitation on high pressure drop applications. Standard valves are equipped with VD spring diaphragm actuators, VB or VC cylinder actuators with Neles™ intelligent valve controllers for precise flow control, extended operational life and performance monitoring on-line.

## Construction

- Various construction design available with a range of different end styles and connections
- The Omega standard balanced trim design is based on 2 or 3 dimensional multistage cage and balanced plug.
- The multistage trim shape defines the flow path through the valve and flow characteristics of the valve (linear, equal percentage or others), standard trim characteristic is linear.
- The balancing holes are located in the top of the plug. This trim is specially suited to high pressure drop application and is used in the majority of control applications.
- Wide variety of trims with different Cv and characteristics
- Both metal and soft seats are available depending the application
- Optional bellows seal for toxic or other applications where no stem seal leakage is allowed
- Wide material selection for different applications
- Many end connection styles available for different applications
- Extension bonnet design for wide temperature range



## Wide range of applications

- Suitable for gas, liquid and steam
- Wide temperature ranges from -196 ... +593 °C (-320 ... +1099 °F) with different bonnet constructions. Temperature limits -29 ... +425 °C / (-20 ... +797 °F) with standard bonnet construction, over +425 °C (+797 °F) and under -29 °C / (-20 °F) with extended bonnets
- Large variation of trim designs for multi-turns and passages for low-noise, and anti-cavitation applications
- Wide range of applicable noise control components, silencers, attenuate plates
- Inherently characterized trim offered in linear, and optionally equal percentage.
- Large range of trims per size allowing for wide rangeability in process conditions
- Clamped cage for heavy duty guiding on severe service applications
- High integrity cage guiding system
- Double packing available

## Benefits of 'OMEGA' trim applications

- Quick change trim and top entry construction for easy in-line maintenance
- Self guided components makes for easy valve assembly
- All trim components removable from the top side for easy maintenance
- Prolonged trim and valve life time
- Effective noise control
- Reduction of cavitation damage and pipe fatigue
- Stable process control
- Faster start-up, reduced system managing cost
- Neles™ digital valve controller with online diagnostics enables performance follow up and predictive maintenance
- Efficient asset management with any FDT frame application and excellent networking capabilities

## Accurate control & performance

- ND9000 digital valve controller for auto-calibration and accurate control
- Accurate and sensitive diaphragm and cylinder actuators
- Stable flow control with high rangeability
- Low-noise, anti-cavitation control and erosion resistant trims
- Streamline flow passage to secure capacity

## Safety and quality

- Rugged one piece body structure to minimize leakage paths and make the valve less insensitive from prone stress
- Strictly tested to ensure specified performance with quality assurance systems in accordance to ISO 9001
- Certified ISO 15848 fugitive emissions
- Certified CE/PED & ATEX, TSG & EAC (GOST-R)
- Certified SIL (Safety Integrity Level) in accordance to IEC61508

## Applications for 'OMEGA' trim

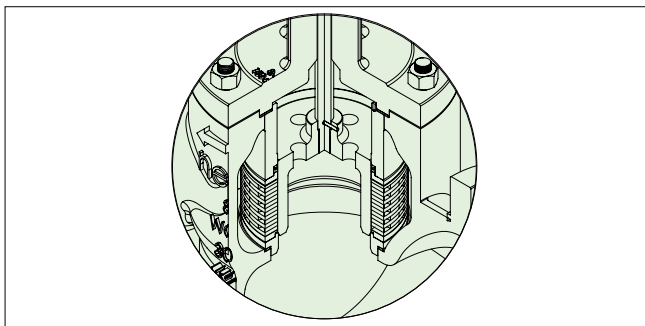
### Severe services in power plant

- Flow control for main & start-up feed pump recirculation
- Main & booster feed water control
- Condensate booster pump recirculation
- Deaerator level control
- Turbine by-pass & steam generator blow down
- Auxiliary steam shoot blower control
- Boiler start-up main steam spray
- Pressurizer & POSRV
- Chemical & Volume Control System (CVCS) letdown
- HP coolant injection
- Atmospheric steam dump
- Atmospheric venting silencer

### Severe services in oil & gas plant

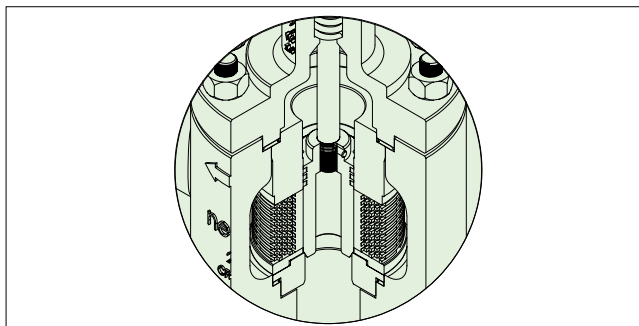
- Compressor anti-surge, kick back & recycle
- Pump minimum flow & recirculation
- Blow down discharge to vent flare
- Reactor de-pressurization
- Turbo expander by-pass
- Gas injection lift control
- Gas storage pressure letdown
- Gas flow regulation
- Pipeline anti-surge
- Heavy oil letdown
- Ethylene letdown
- Steam vent to atmosphere
- Well head choke valves

## Different trim designs



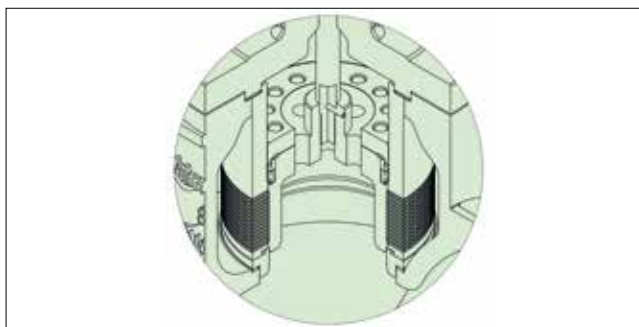
### Omega quick change, Standard balanced trim

The Omega standard balanced trim design is based on 2 or 3 dimensional labyrinth disk stack cage and balanced plug. The opened disk stack shape defines the flow path through the valve and flow characteristics of the valve (linear, equal percentage, others), standard trim characteristic is linear. The balancing holes are located in the top of the plug. This trim is specially suited to high pressure drop application and is used in the majority of control applications.



### Omega quick change, High temperature graphite seal trim

Multiple graphite seal ring construction is ideal solution for high temperature applications requiring FCI 70-2 Class III or IV tightness. It can be used in various high temperature applications, including high pressure service. The trim is compatible with both standard cage and Tendril trims.



### Omega quick change, high temperature metal seal trim

High temperature metal seal trim will enable the valve to achieve tightness of FCI 70-2 Class V at high temperature up to 593°C. This seal is compatible with both standard trim and anti-cavitation trim.

## GM Application guide

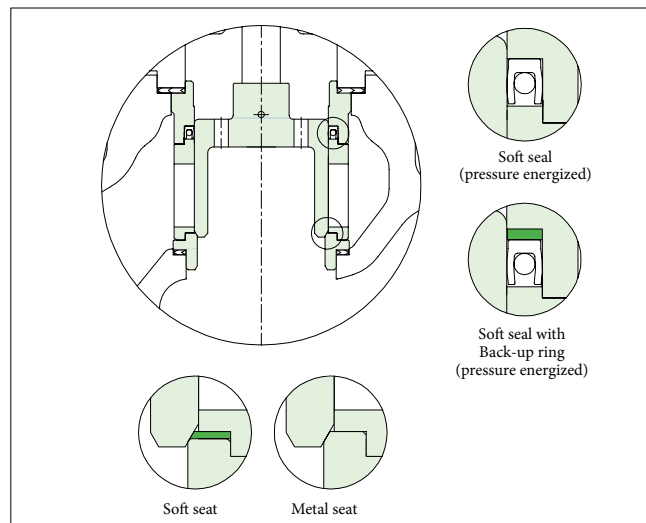
### Temperature range

|                                                                   |                |
|-------------------------------------------------------------------|----------------|
| PTFE + Graphite pressure energized seal with metal seat:          | -56...+260 °C  |
| PTFE + Graphite + Carbon pressure energized seal with metal seat: | -56...+320 °C  |
| PTFE pressure energized seal with metal seat:                     | -196...+232 °C |
| High temperature graphite seal with metal seat:                   | -56...+540 °C  |
| High temperature metal seal with metal seat:                      | -56...+593 °C  |

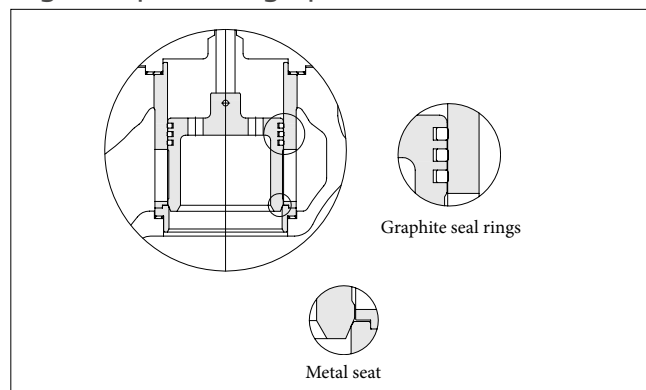
### Pressure energized seal ring construction

ANSI FCI 70-2 Class IV and V available with metal and soft seat.

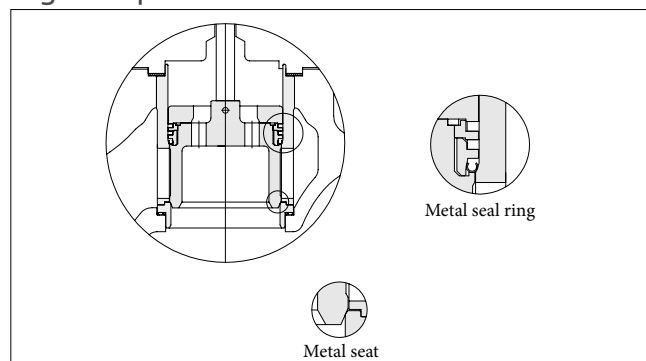
### Seal-ring & seat solutions for GM valve trims



### High temperature graphite seal construction



### High temperature metal seal construction



### Temperature range with different body and stud/nut materials

| Body, bonnet material                  | Stud molt, nut application             | Temp. range (°C) | Sign 18 |
|----------------------------------------|----------------------------------------|------------------|---------|
| Carbon steel (WCB)                     | ASTM A193-B7M STUD / ASTM A194-2HM NUT | -29...+425       | G       |
| Stainless steel (CF3, CF8, CF3M, CF8M) | ASTM A193-B8M / ASTM A194 -8M NUT      | -196...+425      | D       |
| Stainless steel (CF3, CF8, CF3M, CF8M) | A453 gr. 660 / A453 gr. 660            | -196...+593      | E       |
| Cr.Mo. Steel (WC6, WC9, C12A)          | ASTM A193-B16 STUD / ASTM A194-4 NUT   | -29...+593       | H       |

### Trim materials

| GB, Trim              |        |                       |            | Temp. range (°C) | Sign 8, 9, 10, 11, 12, 13 |
|-----------------------|--------|-----------------------|------------|------------------|---------------------------|
| Plug                  | Stem   | Seat                  | Disk stack |                  |                           |
| 316 SS                | 316 SS | 316 SS                | 316 L      | -196...+425      | T6 X TC S1 R4 X           |
| 316 SS + Cobalt based | 316 SS | 316 SS + Cobalt based | 316 L      | -196...+425      | T6 A TC S1 R4 A           |
| 420 J2                | 630 SS | 420 J2                | 420 J2     | -10...+425       | P2 X BC S1 P2 X           |
| 420 J2                | XM-19  | 420 J2                | 420 J2     | -10...+540       | P2 X VM S1 P2 X           |
| 316 SS + Cobalt based | XM-19  | 316 SS + Cobalt based | 316 L      | -196...+593      | T6 A VM S1 R4 A           |

### Gasket applications

| Body, bonnet material                  | Gasket material                          | Temp. range (°C) | Sign 17 |
|----------------------------------------|------------------------------------------|------------------|---------|
| Carbon steel (WCB)                     | S/W (Spiral wound) 316L SS + Graphite    | -29...+425       | S       |
| Stainless steel (CF8, CF8M, CF3, CF3M) | S/W (Spiral wound) 316L SS + Graphite    | -56...+425       | S       |
|                                        | S/W (Spiral wound) 316L SS + PTFE        | -196...+232      | L       |
| Stainless steel (CF8, CF8M, CF3, CF3M) | S/W (Spiral wound) 316L SS + Hi Graphite | -29...+593       | H       |
| Cr.Mo. Steel (WC6, WC9, C12A)          | S/W (Spiral wound) 316L SS + Hi Graphite | -29...+593       | H       |

### Packing applications

| Packing material                                             | Temp (°C)   | Pressure class | Sign 15              |
|--------------------------------------------------------------|-------------|----------------|----------------------|
| PTFE + Carbon Fiber (Braided TEF + Graphite)                 | -196...+260 | Up to CL900    | G                    |
| PTFE V-Ring                                                  | - 49...+232 | Up to CL600    | T                    |
| Graphite (with Mold + Braided), Standard packing             | -196...+400 | Up to CL2500   | F (with sign 14 'S') |
| Graphite (with Mold + Braided), Live loaded emission packing | -196...+450 | Up to CL2500   | F (with sign 14 'E') |
| Hi-Graphite (with Mold + Braided)                            | -54...+593  | Up to CL2500   | H                    |

### Flow direction

|        | General Omega (Unbalanced plug - Bar type) | General Omega (Balanced plug) | High temperature Omega (HT graphite seal plug) | High temperature Omega (HT metal seal plug) |
|--------|--------------------------------------------|-------------------------------|------------------------------------------------|---------------------------------------------|
| Gas    | FTO                                        | FTO                           | FTO                                            | FTO                                         |
| Liquid | FTC                                        | FTC                           | FTC                                            | FTC                                         |

FTO: Flow to Open  
FTC: Flow to Close

### Cv ratio

100: 1

### Flow characteristics

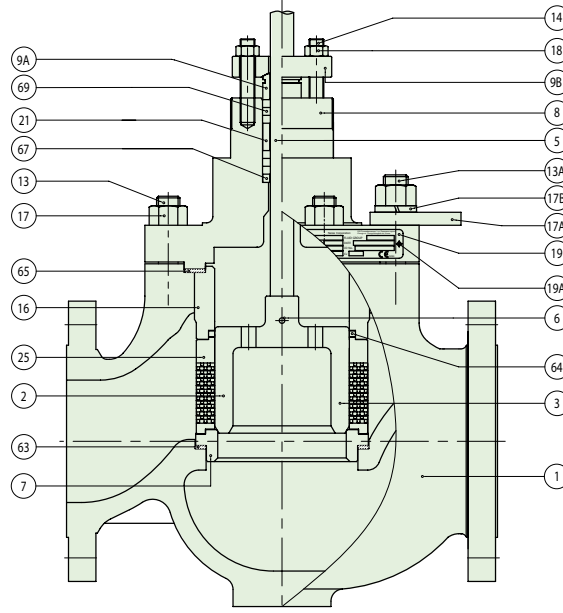
Linear, equal percentage or other customized characteristic.

## GM, ratings &amp; end connetions

| DN / Inch | GM, ASME ratings  |     |    |    |                    |     |    |    |            |     |    |
|-----------|-------------------|-----|----|----|--------------------|-----|----|----|------------|-----|----|
|           | Class 150 ... 600 |     |    |    | Class 900 ... 1500 |     |    |    | Class 2500 |     |    |
|           | RF                | RTJ | SW | BW | RF                 | RTJ | SW | BW | RF         | RTJ | BW |
| 25 / 1    | O                 | O   | O  | O  | O                  | O   | O  |    |            | O   |    |
| 40 / 1.5  | O                 | O   | O  | O  | O                  | O   | O  |    |            | O   |    |
| 50 / 2    | O                 | O   | O  | O  | O                  | O   | O  | O  |            | O   | O  |
| 80 / 3    | O                 | O   |    | O  | O                  | O   |    | O  |            | O   | O  |
| 100 / 4   | O                 | O   |    | O  | O                  | O   |    | O  |            | O   | O  |
| 150 / 6   | O                 | O   |    | O  | O                  | O   |    | O  |            | O   | O  |
| 200 / 8   | O                 | O   |    | O  | O                  | O   |    | O  |            | O   | O  |
| 250 / 10  | O                 | O   |    | O  | O                  | O   |    | O  |            | O   | O  |
| 300 / 12  | O                 | O   |    | O  | O                  | O   |    | O  |            | O   | O  |
| 350 / 14  | O                 | O   |    | O  | O                  | O   |    | O  |            | O   | O  |
| 400 / 16  | O                 | O   |    | O  | O                  | O   |    | O  |            | O   | O  |
| 450 / 18  | O                 | O   |    | O  | O                  | O   |    | O  |            | O   | O  |
| 500 / 20  | O                 | O   |    | O  | O                  | O   |    | O  |            | O   | O  |
| 600 / 24  | O                 | O   |    | O  | O                  | O   |    | O  |            | O   | O  |

\*Note 1. RF: Raised Face Flange, RTJ: Ring Joint, SW: Socket Weld, BW: Butt Weld.  
 Bigger sizes are available, please contact Valmet.

## GM, Components and materials



| Body material: Carbon steel or alloy steel |                      |                                  |
|--------------------------------------------|----------------------|----------------------------------|
| Part no.                                   | Description          | Material                         |
| 1                                          | BODY                 | A216 WCB / ALLOY STEEL AVAILABLE |
| 2                                          | PLUG SET             | 420(J2) SS / 630 SS              |
| 3*                                         | PLUG                 | 420(J2) STAINLESS STEEL          |
| 5*                                         | STEM                 | 630 STAINLESS STEEL + HCr        |
| 6*                                         | PLUG PIN             | 316 STAINLESS STEEL              |
| 7                                          | SEAT RING            | 420 STAINLESS STEEL              |
| 8                                          | BONNET               | A216 WCB / ALLOY STEEL AVAILABLE |
| 9A                                         | GLAND                | 304 STAINLESS STEEL              |
| 9B                                         | GLAND FLANGE         | A351 CF8                         |
| 13 / 13A                                   | STUD                 | A193 Gr.B7M                      |
| 14                                         | STUD                 | A193 Gr.B8M                      |
| 16                                         | CAGE GUIDE           | 420(J2) STAINLESS STEEL          |
| 17                                         | HEXAGON NUT          | A194 Gr.2HM                      |
| 17A                                        | LIFTING PLATE        | JIS G3101-SS400                  |
| 17B                                        | SPRING WASHER        | AISI 304                         |
| 18                                         | HEXAGON NUT          | A194 Gr.8M                       |
| 19                                         | IDENTIFICATION PLATE | 304 STAINLESS STEEL              |
| 19A                                        | RIVET                | 304 STAINLESS STEEL              |
| 21                                         | LANTERN RING         | 304 STAINLESS STEEL              |
| 25                                         | DISK STACK           | 420(J2) STAINLESS STEEL          |
| 63                                         | SEAT GASKET          | S/W GASKET, 316L SS + GRAPHITE   |
| 64                                         | SEAL RING            | PTFE + GRAPHITE                  |
| 65                                         | BODY GASKET          | S/W GASKET, 316L SS + GRAPHITE   |
| 67                                         | PACKING SPACER       | 304 STAINLESS STEEL              |
| 69                                         | PACKING RING         | PTFE + Carbon Fiber              |

| Body material: Stainless steel |       |  |
|--------------------------------|-------|--|
| Material                       | Spare |  |
| A351 CF8M                      |       |  |
| 316 SS / 316 SS                | Cat 3 |  |
| 316 STAINLESS STEEL            |       |  |
| 630 STAINLESS STEEL + HCr      |       |  |
| 316 STAINLESS STEEL            |       |  |
| 316 STAINLESS STEEL            | Cat 3 |  |
| A351 CF8M                      |       |  |
| 304 STAINLESS STEEL            |       |  |
| A351 CF8                       |       |  |
| A193 Gr. B8M                   |       |  |
| A193 Gr. B8M                   |       |  |
| 420(J2) STAINLESS STEEL        | Cat 3 |  |
| A194 Gr. 8M                    |       |  |
| JIS G3101-SS400                |       |  |
| AISI 304                       |       |  |
| A194 Gr. 8M                    |       |  |
| 304 STAINLESS STEEL            |       |  |
| 304 STAINLESS STEEL            |       |  |
| 304 STAINLESS STEEL            |       |  |
| 316L STAINLESS STEEL           | Cat 3 |  |
| S/W GASKET, 316L SS + GRAPHITE | Cat 1 |  |
| PTFE + GRAPHITE                | Cat 1 |  |
| S/W GASKET, 316L SS + GRAPHITE | Cat 1 |  |
| 304 STAINLESS STEEL            |       |  |
| GRAPHITE                       | Cat 1 |  |

### Note.

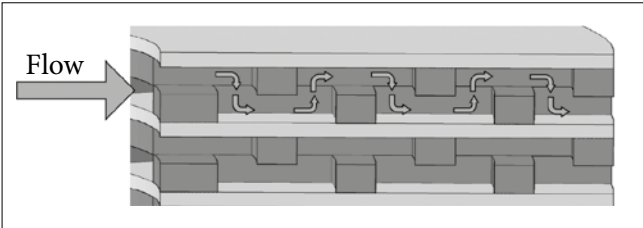
1. Plug/Seat hard facing (Cobalt based alloy) & Soft seat are available
2. Materials description  
316 SS : ASTM A276 TP316 or JIS 316 St. Steel  
410 SS : ASTM A276 TP410 or JIS 410 St. Steel  
420 SS : ASTM A276 TP420 or JIS 420 St. Steel  
440C SS : ASTM A276 TP440C or JIS 440C St. Steel  
17-4PH : ASTM A564 630 (H1100) or JIS 630 (H1100) St. Steel
3. Above standard materials to be applicable depending on specific service conditions, other optional materials to consult Valmet.
4. Optional materials to meet to requirements of NACE MR 01-75 are available
5. The materials are subject to change as equivalent depending on detail design
6. The part no. 3, 5, 6 are delivered as a set with no. 2

### Note.

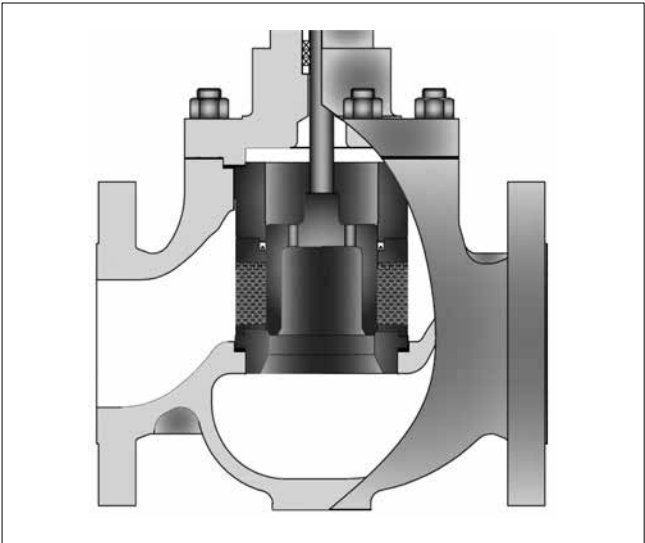
1. Plug/Seat hard facing (Cobalt based alloy) & Soft seat are available
2. Materials description  
316 SS : ASTM A276 TP316 or JIS 316 St. Steel  
420 SS : ASTM A276 TP420 or JIS 420 St. Steel
3. Above standard materials to be applicable depending on specific service conditions, other optional materials to consult Valmet.
4. Cryogenic application : ASTM A320 B8M & 8M for studs(13) and nuts(17)
5. Optional materials to meet to requirements of NACE MR 01-75 are available
6. The materials are subject to change as equivalent depending on detail design
7. The part no. 3, 5, 6 are delivered as a set with no. 2

OMEGA design principals

- Omega trim can handle a larger differential pressure than a conventional type trim through its multi-stage structure. The value of pressure drop in the omega trim is a sum of the 'dynamic pressure in omega trim' and the 'dynamic pressure in valve design'.



Trim outlet velocity and kinetic energy limitation



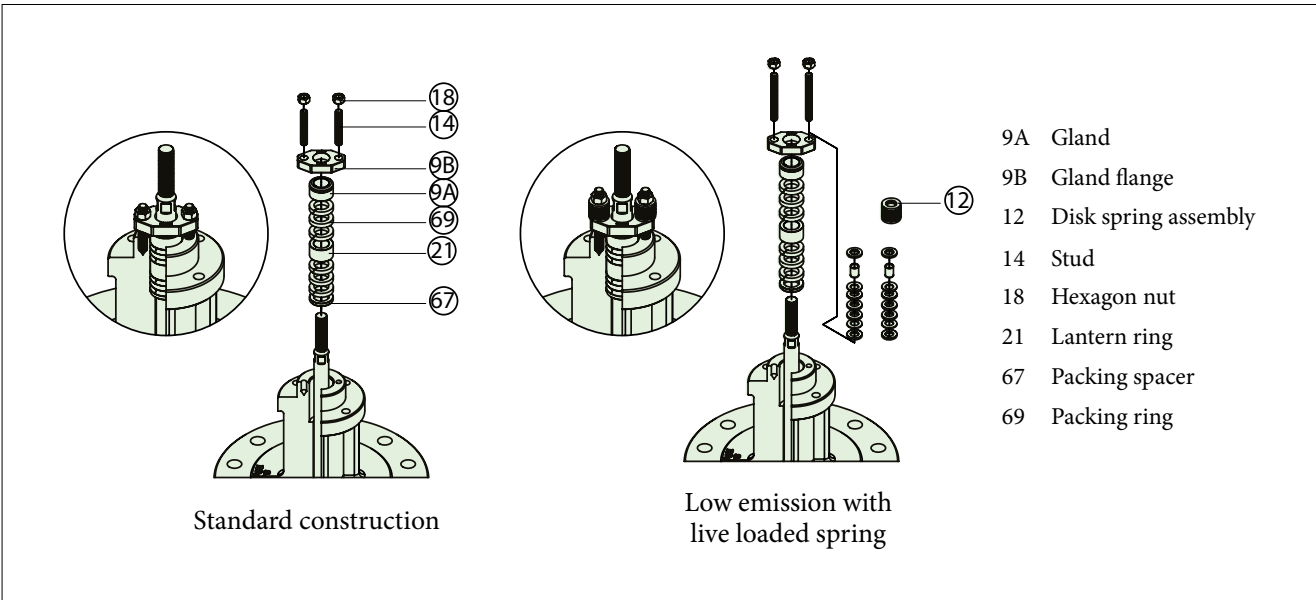
The limitation data is based on ISA04-P211.

- Excessive velocity can induce vibration and cause erosive damage to the valve body, trim, and the outlet pipe wall.
- Excessive energy levels can result in mechanical vibrations and cause erosive damage to the valve body, trim, and outlet pipe wall.

Valve trim outlet fluid kinetic energy density criteria

| Service conditions                     | Water velocity | Oil velocity (Gf=0.8) | Air velocity (p=7 Mpa) | Kinetic energy |
|----------------------------------------|----------------|-----------------------|------------------------|----------------|
|                                        | m/s (ft/s)     | m/s (ft/s)            | m/s (ft/s)             | kpa (psi)      |
| Continuous service, single phase fluid | 30 (100)       | 34 (112)              | 105 (345)              | 480 (70)       |
| Cavitating and multi-phase fluids      | 23 (75)        | 26 (84)               | -                      | 275 (40)       |
| Vibration sensitive system             | 12 (40)        | 14 (45)               | 42 (140)               | 75 (11)        |

Packing constructions



## GM Series Cv vs Travel Standard OMEGA

ANSI Class: 150# ... 2500#

Size: 1" ... 16"

Flow Characteristic: LINEAR

| Valve travel [%] |     |                  |      |       |        |     | 10       | 20    | 30    | 40    | 50    | 60    | 70    | 80    | 90    | 100    |
|------------------|-----|------------------|------|-------|--------|-----|----------|-------|-------|-------|-------|-------|-------|-------|-------|--------|
| F <sub>L</sub>   |     |                  |      |       |        |     | 1.00     | 1.00  | 1.00  | 1.00  | 1.00  | 1.00  | 1.00  | 1.00  | 1.00  | 1.00   |
| Valve size       |     | Orifice diameter |      |       | Travel |     | Rated Cv |       |       |       |       |       |       |       |       |        |
| inch             | mm  | sign             | inch | mm    | inch   | mm  |          |       |       |       |       |       |       |       |       |        |
| 1                | 25  | FC               | 0.6  | 15.7  | 1.2    | 30  | 0.69     | 1.37  | 2.06  | 2.75  | 3.43  | 4.12  | 4.80  | 5.49  | 6.18  | 7      |
|                  |     | 1A               |      |       |        |     | 0.29     | 0.59  | 0.88  | 1.18  | 1.47  | 1.76  | 2.06  | 2.35  | 2.65  | 3      |
|                  |     | 2A               |      |       |        |     | 0.16     | 0.31  | 0.47  | 0.63  | 0.78  | 0.94  | 1.10  | 1.25  | 1.41  | 1.6    |
|                  |     | 3A               |      |       |        |     | 0.08     | 0.16  | 0.24  | 0.31  | 0.39  | 0.47  | 0.55  | 0.63  | 0.71  | 0.8    |
| 1-1/2            | 40  | FC               | 0.9  | 23.0  | 1.2    | 30  | 1.57     | 3.14  | 4.71  | 6.28  | 7.84  | 9.41  | 10.98 | 12.55 | 14.12 | 16     |
|                  |     | 1A               |      |       |        |     | 0.79     | 1.57  | 2.35  | 3.14  | 3.92  | 4.71  | 5.49  | 6.27  | 7.06  | 8      |
|                  |     | 2A               |      |       |        |     | 0.39     | 0.78  | 1.18  | 1.57  | 1.96  | 2.35  | 2.74  | 3.14  | 3.53  | 4      |
|                  |     | 3A               |      |       |        |     | 0.20     | 0.39  | 0.59  | 0.78  | 0.98  | 1.18  | 1.37  | 1.57  | 1.76  | 2      |
| 2                | 50  | FC               | 1.5  | 37.0  | 1.6    | 40  | 2.55     | 5.10  | 7.65  | 10.20 | 12.75 | 15.29 | 17.84 | 20.39 | 22.94 | 26     |
|                  |     | 1A               |      |       |        |     | 1.18     | 2.35  | 3.53  | 4.71  | 5.88  | 7.06  | 8.23  | 9.41  | 10.59 | 12     |
|                  |     | 2A               |      |       |        |     | 0.59     | 1.18  | 1.77  | 2.35  | 2.94  | 3.53  | 4.12  | 4.71  | 5.29  | 6      |
|                  |     | 3A               |      |       |        |     | 0.29     | 0.59  | 0.88  | 1.18  | 1.47  | 1.76  | 2.06  | 2.35  | 2.65  | 3      |
| 3                | 80  | FC               | 3.0  | 77.0  | 2.0    | 50  | 5.30     | 10.59 | 15.89 | 21.18 | 26.47 | 31.76 | 37.05 | 42.35 | 47.64 | 54     |
|                  |     | 1A               |      |       |        |     | 2.75     | 5.49  | 8.24  | 10.98 | 13.73 | 16.47 | 19.21 | 21.96 | 24.70 | 28     |
|                  |     | 2A               |      |       |        |     | 1.37     | 2.75  | 4.12  | 5.49  | 6.86  | 8.23  | 9.61  | 10.98 | 12.35 | 14     |
|                  |     | 3A               |      |       |        |     | 0.69     | 1.37  | 2.06  | 2.75  | 3.43  | 4.12  | 4.80  | 5.49  | 6.18  | 7      |
| 4                | 100 | FC               | 3.6  | 91.0  | 2.0    | 50  | 8.2      | 16.5  | 24.7  | 32.9  | 41.2  | 49.4  | 57.6  | 65.9  | 74.1  | 84     |
|                  |     | 1A               |      |       |        |     | 5.1      | 10.2  | 15.3  | 20.4  | 25.5  | 30.6  | 35.7  | 40.8  | 45.9  | 52     |
|                  |     | 2A               |      |       |        |     | 2.6      | 5.1   | 7.6   | 10.2  | 12.7  | 15.3  | 17.8  | 20.4  | 22.9  | 26     |
|                  |     | 3A               |      |       |        |     | 1.4      | 2.7   | 4.1   | 5.5   | 6.9   | 8.2   | 9.6   | 11.0  | 12.4  | 14     |
| 6                | 150 | FC               | 4.1  | 133.6 | 2.4    | 60  | 14.3     | 28.6  | 43.0  | 57.3  | 71.6  | 85.9  | 100.2 | 114.5 | 128.8 | 146    |
|                  |     | 1A               |      |       |        |     | 8.8      | 17.7  | 26.5  | 35.3  | 44.1  | 52.9  | 61.8  | 70.6  | 79.4  | 90     |
|                  |     | 2A               |      |       |        |     | 4.4      | 8.8   | 13.2  | 17.6  | 22.1  | 26.5  | 30.9  | 35.3  | 39.7  | 45     |
|                  |     | 3A               |      |       |        |     | 2.2      | 4.3   | 6.5   | 8.6   | 10.8  | 12.9  | 15.1  | 17.3  | 19.4  | 22     |
| 8                | 200 | FC               | 6.9  | 175.5 | 3.1    | 70  | 24.7     | 49.4  | 74.1  | 98.8  | 123.5 | 148.2 | 172.9 | 197.6 | 222.3 | 252    |
|                  |     | 1A               |      |       |        |     | 15.3     | 30.6  | 45.9  | 61.2  | 76.5  | 91.8  | 107.0 | 122.3 | 137.6 | 156    |
|                  |     | 2A               |      |       |        |     | 7.7      | 15.3  | 22.9  | 30.6  | 38.2  | 45.9  | 53.5  | 61.2  | 68.8  | 78     |
|                  |     | 3A               |      |       |        |     | 3.9      | 7.8   | 11.8  | 15.7  | 19.6  | 23.5  | 27.4  | 31.4  | 35.3  | 40     |
| 10               | 250 | FC               | 8.1  | 214.2 | 3.5    | 80  | 37.7     | 75.3  | 113.0 | 150.6 | 188.2 | 225.9 | 263.5 | 301.1 | 338.8 | 384    |
|                  |     | 1A               |      |       |        |     | 23.0     | 45.9  | 68.8  | 91.8  | 114.7 | 137.6 | 160.6 | 183.5 | 206.4 | 234    |
|                  |     | 2A               |      |       |        |     | 11.4     | 22.8  | 34.1  | 45.5  | 56.9  | 68.2  | 79.6  | 91.0  | 102.3 | 116    |
|                  |     | 3A               |      |       |        |     | 5.7      | 11.4  | 17.1  | 22.7  | 28.4  | 34.1  | 39.8  | 45.5  | 51.2  | 58     |
| 12               | 300 | FC               | 10.4 | 264.8 | 4.7    | 120 | 55.0     | 109.9 | 164.8 | 219.6 | 274.5 | 329.4 | 384.3 | 439.2 | 494.0 | 560    |
|                  |     | 1A               |      |       |        |     | 33.4     | 66.7  | 100.0 | 133.3 | 166.7 | 200.0 | 233.3 | 266.6 | 299.9 | 340    |
|                  |     | 2A               |      |       |        |     | 16.7     | 33.4  | 50.0  | 66.7  | 83.3  | 100.0 | 116.7 | 133.3 | 150.0 | 170    |
|                  |     | 3A               |      |       |        |     | 8.2      | 16.5  | 24.7  | 32.9  | 41.2  | 49.4  | 57.6  | 65.9  | 74.1  | 84     |
| 14               | 350 | FC               | 12.4 | 315.5 | 5.5    | 140 | 75.6     | 151.1 | 226.5 | 302.0 | 377.5 | 452.9 | 528.4 | 603.8 | 679.3 | 770    |
|                  |     | 1A               |      |       |        |     | 46.1     | 92.2  | 138.3 | 184.3 | 230.4 | 276.5 | 322.5 | 368.6 | 414.6 | 470    |
|                  |     | 2A               |      |       |        |     | 23.0     | 45.9  | 68.8  | 91.8  | 114.7 | 137.6 | 160.6 | 183.5 | 206.4 | 234    |
|                  |     | 3A               |      |       |        |     | 11.4     | 22.8  | 34.1  | 45.5  | 56.9  | 68.2  | 79.6  | 91.0  | 102.3 | 116    |
| 16               | 400 | FC               | 14.1 | 357.7 | 6.3    | 160 | 100.0    | 200.1 | 300.1 | 400.0 | 500.0 | 600.0 | 699.9 | 799.9 | 899.8 | 1020.0 |
|                  |     | 1A               |      |       |        |     | 60.8     | 121.6 | 182.4 | 243.2 | 303.9 | 364.7 | 425.4 | 486.2 | 547.0 | 620.0  |
|                  |     | 2A               |      |       |        |     | 36.5     | 73.0  | 109.4 | 145.9 | 182.4 | 218.8 | 255.3 | 291.7 | 328.2 | 372.0  |
|                  |     | 3A               |      |       |        |     | 22.0     | 43.9  | 65.9  | 87.9  | 109.8 | 131.8 | 153.7 | 175.7 | 197.6 | 224.0  |

## NOTE

C<sub>v</sub>: Valve flow coefficientF<sub>L</sub>: Liquid pressure recovery factor

FC: Full capacity

1A: 1-Step reduction

2A: 2-Step reduction

3A: 3-Step reduction



## GM Series Cv vs Travel Standard OMEGA

ANSI Class: 150# ... 2500#

Size: 1" ... 16"

Flow Characteristic: EQ%

| Valve travel [%] |     |                  |      |       |        |     | 10       | 20    | 30    | 40    | 50     | 60     | 70     | 80     | 90     | 100    |
|------------------|-----|------------------|------|-------|--------|-----|----------|-------|-------|-------|--------|--------|--------|--------|--------|--------|
| F <sub>L</sub>   |     |                  |      |       |        |     | 1.0      | 1.0   | 1.0   | 1.0   | 1.0    | 1.0    | 1.0    | 1.0    | 1.0    | 1.0    |
| Valve size       |     | Orifice diameter |      |       | Travel |     | Rated Cv |       |       |       |        |        |        |        |        |        |
| inch             | mm  | sign             | inch | mm    | inch   | mm  |          |       |       |       |        |        |        |        |        |        |
| 1                | 25  | FC               | 0.6  | 15.7  | 1.2    | 30  | 0.15     | 0.22  | 0.32  | 0.48  | 0.71   | 1.05   | 1.55   | 2.29   | 3.38   | 5.00   |
|                  |     | 1A               |      |       |        |     | 0.07     | 0.11  | 0.16  | 0.24  | 0.35   | 0.52   | 0.77   | 1.14   | 1.69   | 2.50   |
|                  |     | 2A               |      |       |        |     | 0.04     | 0.05  | 0.08  | 0.11  | 0.17   | 0.25   | 0.37   | 0.55   | 0.81   | 1.20   |
|                  |     | 3A               |      |       |        |     | 0.02     | 0.03  | 0.04  | 0.06  | 0.08   | 0.13   | 0.19   | 0.27   | 0.41   | 0.60   |
| 1-1/2            | 40  | FC               | 0.9  | 23    | 1.2    | 30  | 0.30     | 0.44  | 0.65  | 0.96  | 1.41   | 2.09   | 3.09   | 4.57   | 6.76   | 10.00  |
|                  |     | 1A               |      |       |        |     | 0.18     | 0.26  | 0.39  | 0.57  | 0.85   | 1.25   | 1.86   | 2.74   | 4.06   | 6.00   |
|                  |     | 2A               |      |       |        |     | 0.09     | 0.13  | 0.19  | 0.29  | 0.42   | 0.63   | 0.93   | 1.37   | 2.03   | 3.00   |
|                  |     | 3A               |      |       |        |     | 0.04     | 0.07  | 0.10  | 0.14  | 0.21   | 0.31   | 0.46   | 0.69   | 1.01   | 1.50   |
| 2                | 50  | FC               | 1.5  | 37    | 1.6    | 40  | 0.53     | 0.79  | 1.16  | 1.72  | 2.55   | 3.76   | 5.57   | 8.23   | 12.17  | 18.00  |
|                  |     | 1A               |      |       |        |     | 0.33     | 0.48  | 0.71  | 1.05  | 1.56   | 2.30   | 3.40   | 5.03   | 7.44   | 11.00  |
|                  |     | 2A               |      |       |        |     | 0.15     | 0.22  | 0.32  | 0.48  | 0.71   | 1.05   | 1.55   | 2.29   | 3.38   | 5.00   |
|                  |     | 3A               |      |       |        |     | 0.06     | 0.09  | 0.13  | 0.19  | 0.28   | 0.42   | 0.62   | 0.91   | 1.35   | 2.00   |
| 3                | 80  | FC               | 3    | 77    | 2      | 50  | 1.12     | 1.66  | 2.46  | 3.63  | 5.37   | 7.95   | 11.75  | 17.38  | 25.70  | 38.00  |
|                  |     | 1A               |      |       |        |     | 0.71     | 1.05  | 1.55  | 2.30  | 3.39   | 5.02   | 7.42   | 10.98  | 16.23  | 24.00  |
|                  |     | 2A               |      |       |        |     | 0.35     | 0.52  | 0.78  | 1.15  | 1.70   | 2.51   | 3.71   | 5.49   | 8.11   | 12.00  |
|                  |     | 3A               |      |       |        |     | 0.18     | 0.26  | 0.39  | 0.57  | 0.85   | 1.25   | 1.86   | 2.74   | 4.06   | 6.00   |
| 4                | 100 | FC               | 3.6  | 91    | 2      | 50  | 1.80     | 2.60  | 3.90  | 5.70  | 8.50   | 12.50  | 18.60  | 27.40  | 40.60  | 60.00  |
|                  |     | 1A               |      |       |        |     | 1.10     | 1.60  | 2.30  | 3.40  | 5.10   | 7.50   | 11.10  | 16.50  | 24.30  | 36.00  |
|                  |     | 2A               |      |       |        |     | 0.53     | 0.79  | 1.16  | 1.72  | 2.55   | 3.76   | 5.57   | 8.23   | 12.17  | 18.00  |
|                  |     | 3A               |      |       |        |     | 0.30     | 0.40  | 0.60  | 0.90  | 1.30   | 1.90   | 2.80   | 4.10   | 6.10   | 9.00   |
| 6                | 150 | FC               | 4.1  | 133.6 | 2.4    | 60  | 3.10     | 4.50  | 6.70  | 9.90  | 14.70  | 21.70  | 32.20  | 47.60  | 70.30  | 104.00 |
|                  |     | 1A               |      |       |        |     | 1.90     | 2.80  | 4.10  | 6.10  | 9.10   | 13.40  | 19.80  | 29.30  | 43.30  | 64.00  |
|                  |     | 2A               |      |       |        |     | 0.90     | 1.40  | 2.10  | 3.10  | 4.50   | 6.70   | 9.90   | 14.60  | 21.60  | 32.00  |
|                  |     | 3A               |      |       |        |     | 0.50     | 0.70  | 1.00  | 1.50  | 2.30   | 3.30   | 4.90   | 7.30   | 10.80  | 16.00  |
| 8                | 200 | FC               | 6.9  | 175.5 | 3.1    | 70  | 5.20     | 7.70  | 11.40 | 16.80 | 24.90  | 36.80  | 54.40  | 80.50  | 119.00 | 176.00 |
|                  |     | 1A               |      |       |        |     | 3.20     | 4.70  | 7.00  | 10.30 | 15.30  | 22.60  | 33.40  | 49.40  | 73.00  | 108.00 |
|                  |     | 2A               |      |       |        |     | 1.60     | 2.40  | 3.50  | 5.20  | 7.60   | 11.30  | 16.70  | 24.70  | 36.50  | 54.00  |
|                  |     | 3A               |      |       |        |     | 0.80     | 1.20  | 1.70  | 2.60  | 3.80   | 5.60   | 8.30   | 12.30  | 18.30  | 27.00  |
| 10               | 250 | FC               | 8.1  | 214.2 | 3.5    | 80  | 7.90     | 11.70 | 17.30 | 25.60 | 37.90  | 56.00  | 82.90  | 122.60 | 181.20 | 268.00 |
|                  |     | 1A               |      |       |        |     | 4.90     | 7.20  | 10.60 | 15.70 | 23.20  | 34.30  | 50.70  | 75.00  | 110.90 | 164.00 |
|                  |     | 2A               |      |       |        |     | 2.40     | 3.60  | 5.30  | 7.80  | 11.60  | 17.10  | 25.40  | 37.50  | 55.50  | 82.00  |
|                  |     | 3A               |      |       |        |     | 1.20     | 1.70  | 2.60  | 3.80  | 5.70   | 8.40   | 12.40  | 18.30  | 27.00  | 40.00  |
| 12               | 300 | FC               | 10.4 | 264.8 | 4.7    | 120 | 11.50    | 17.10 | 25.20 | 37.30 | 55.20  | 81.60  | 120.60 | 178.30 | 263.70 | 390.00 |
|                  |     | 1A               |      |       |        |     | 7.00     | 10.30 | 15.30 | 22.60 | 33.40  | 49.40  | 73.00  | 107.90 | 159.60 | 236.00 |
|                  |     | 2A               |      |       |        |     | 3.50     | 5.20  | 7.60  | 11.30 | 16.70  | 24.70  | 36.50  | 54.00  | 79.80  | 118.00 |
|                  |     | 3A               |      |       |        |     | 1.80     | 2.60  | 3.90  | 5.70  | 8.50   | 12.50  | 18.60  | 27.40  | 40.60  | 60.00  |
| 14               | 350 | FC               | 12.4 | 315.5 | 5.5    | 140 | 16.00    | 23.60 | 34.90 | 51.60 | 76.40  | 112.90 | 167.00 | 246.90 | 365.20 | 540.00 |
|                  |     | 1A               |      |       |        |     | 9.70     | 14.30 | 21.20 | 31.40 | 46.40  | 68.60  | 101.40 | 150.00 | 221.80 | 328.00 |
|                  |     | 2A               |      |       |        |     | 4.90     | 7.20  | 10.60 | 15.70 | 23.20  | 34.30  | 50.70  | 75.00  | 110.90 | 164.00 |
|                  |     | 3A               |      |       |        |     | 2.40     | 3.60  | 5.30  | 7.80  | 11.60  | 17.10  | 25.40  | 37.50  | 55.50  | 82.00  |
| 16               | 400 | FC               | 14.1 | 357.7 | 6.3    | 160 | 21.00    | 31.10 | 45.90 | 67.90 | 100.40 | 148.50 | 219.60 | 324.70 | 480.10 | 710.00 |
|                  |     | 1A               |      |       |        |     | 12.70    | 18.80 | 27.80 | 41.10 | 60.80  | 89.90  | 133.00 | 196.60 | 290.80 | 430.00 |
|                  |     | 2A               |      |       |        |     | 6.30     | 9.40  | 13.80 | 20.50 | 30.30  | 44.80  | 66.20  | 97.90  | 144.70 | 214.00 |
|                  |     | 3A               |      |       |        |     | 3.10     | 4.60  | 6.90  | 10.10 | 15.00  | 22.20  | 32.80  | 48.50  | 71.70  | 106.00 |

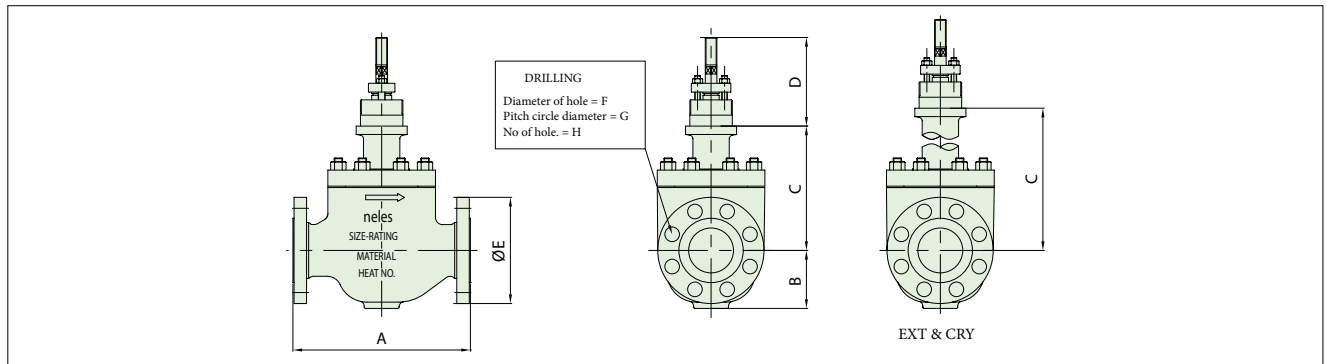
## NOTE

C<sub>v</sub>: Valve flow coefficientF<sub>L</sub>: Liquid pressure recovery factor

FC: Full capacity    1A: 1-Step reduction    3A: 3-Step reduction



## GM, Valve dimensions and weights



## 150 #/ 300 #/ 600 #

| Dimension<br>(mm) | A    |      |      | B    |      |      | C   |     |      | D      | E    |      |      | F    |      |      | G     |       |       | H    |      |      | Weight (kg)<br>(Approximate) |      |      |
|-------------------|------|------|------|------|------|------|-----|-----|------|--------|------|------|------|------|------|------|-------|-------|-------|------|------|------|------------------------------|------|------|
|                   | 150# | 300# | 600# | 150# | 300# | 600# | STD | EXT | CRY  | COMMON | 150# | 300# | 600# | 150# | 300# | 600# | 150#  | 300#  | 600#  | 150# | 300# | 600# | 150#                         | 300# | 600# |
| 25                | 184  | 197  | 210  | 55   | 63   | 63   | 142 | 250 | 400  | 110    | 110  | 125  | 125  | 15.9 | 19.1 | 19.1 | 79.4  | 88.9  | 88.9  | 4    | 4    | 4    | 14                           | 15   | 23   |
| 40                | 222  | 235  | 251  | 65   | 78   | 78   | 161 | 269 | 419  | 110    | 125  | 155  | 155  | 15.9 | 22.2 | 22.2 | 98.4  | 114.3 | 114.3 | 4    | 4    | 4    | 22                           | 23   | 27   |
| 50                | 254  | 267  | 286  | 83   | 83   | 83   | 178 | 333 | 458  | 110    | 150  | 165  | 165  | 19.1 | 19.1 | 19.1 | 120.7 | 127   | 127   | 4    | 8    | 8    | 30                           | 32   | 40   |
| 80                | 298  | 318  | 337  | 109  | 109  | 120  | 222 | 395 | 545  | 115    | 190  | 210  | 210  | 19.1 | 22.2 | 22.2 | 152.4 | 168.3 | 168.3 | 4    | 8    | 8    | 65                           | 67   | 72   |
| 100               | 352  | 368  | 394  | 135  | 135  | 135  | 248 | 402 | 552  | 140    | 230  | 255  | 275  | 19.1 | 22.2 | 25.4 | 190.5 | 200   | 215.9 | 8    | 8    | 8    | 100                          | 103  | 112  |
| 150               | 451  | 473  | 508  | 170  | 170  | 178  | 340 | 467 | 642  | 150    | 280  | 320  | 355  | 22.2 | 22.2 | 28.6 | 241.3 | 269.9 | 292.1 | 8    | 12   | 12   | 185                          | 195  | 240  |
| 200               | 543  | 568  | 610  | 230  | 230  | 230  | 451 | 557 | 732  | 150    | 345  | 380  | 420  | 22.2 | 25.4 | 31.8 | 298.5 | 330.2 | 349.2 | 8    | 12   | 12   | 363                          | 385  | 443  |
| 250               | 673  | 708  | 752  | 275  | 275  | 275  | 488 | 670 | 870  | 150    | 405  | 445  | 510  | 25.4 | 28.6 | 34.9 | 362   | 387.4 | 431.8 | 12   | 16   | 16   | 552                          | 595  | 681  |
| 300               | 737  | 775  | 819  | 350  | 350  | 350  | 543 | 716 | 916  | 140    | 485  | 520  | 560  | 25.4 | 31.8 | 34.9 | 431.8 | 450.8 | 489   | 12   | 16   | 20   | 905                          | 955  | 1020 |
| 350               | 889  | 927  | 972  | 385  | 385  | 385  | 616 | 846 | 1046 | 210    | 535  | 585  | 605  | 28.6 | 31.8 | 38.1 | 476.3 | 514.4 | 527   | 12   | 20   | 20   | 1170                         | 1230 | 1311 |
| 400               | 1016 | 1057 | 1108 | 440  | 440  | 440  | 692 | 909 | 1109 | 220    | 595  | 650  | 685  | 28.6 | 34.9 | 41.3 | 539.8 | 571.5 | 603.2 | 16   | 20   | 20   | 1380                         | 1460 | 1587 |

| Dimension<br>(inch) | A    |      |      | B    |      |      | C    |      |      | D      | E    |      |      | F    |      |      | G    |      |      | H    |      |      | Weight (lbs)<br>(Approximate) |      |      |
|---------------------|------|------|------|------|------|------|------|------|------|--------|------|------|------|------|------|------|------|------|------|------|------|------|-------------------------------|------|------|
|                     | 150# | 300# | 600# | 150# | 300# | 600# | STD  | EXT  | CRY  | COMMON | 150# | 300# | 600# | 150# | 300# | 600# | 150# | 300# | 600# | 150# | 300# | 600# | 150#                          | 300# | 600# |
| 1"                  | 7.2  | 7.8  | 8.3  | 2.2  | 2.5  | 2.5  | 5.6  | 9.8  | 15.7 | 4.3    | 4.3  | 4.9  | 4.9  | 0.6  | 0.8  | 0.8  | 3.1  | 3.5  | 3.5  | 4    | 4    | 4    | 31                            | 33   | 51   |
| 1-1/2"              | 8.7  | 9.3  | 9.9  | 2.6  | 3.1  | 3.1  | 6.3  | 10.6 | 16.5 | 4.3    | 4.9  | 6.1  | 6.1  | 0.6  | 0.9  | 0.9  | 3.9  | 4.5  | 4.5  | 4    | 4    | 4    | 49                            | 51   | 60   |
|                     | 10   | 10.5 | 11.3 | 3.3  | 3.3  | 3.3  | 7    | 13.1 | 18   | 4.3    | 5.9  | 6.5  | 6.5  | 0.8  | 0.8  | 0.8  | 4.8  | 5    | 5    | 4    | 8    | 8    | 66                            | 71   | 88   |
| 2"                  | 11.7 | 12.5 | 13.3 | 4.3  | 4.3  | 4.7  | 8.7  | 15.6 | 21.5 | 4.5    | 7.5  | 8.3  | 8.3  | 0.8  | 0.9  | 0.9  | 6    | 6.6  | 6.6  | 4    | 8    | 8    | 143                           | 148  | 159  |
| 3"                  | 13.9 | 14.5 | 15.5 | 5.3  | 5.3  | 5.3  | 9.8  | 15.8 | 21.7 | 5.5    | 9.1  | 10   | 10.8 | 0.8  | 0.9  | 1    | 7.5  | 7.9  | 8.5  | 8    | 8    | 8    | 221                           | 227  | 247  |
| 4"                  | 17.8 | 18.6 | 20   | 6.7  | 6.7  | 7    | 13.4 | 18.4 | 25.7 | 5.9    | 11   | 12.6 | 14   | 0.9  | 0.9  | 1.1  | 9.5  | 10.6 | 11.5 | 8    | 12   | 12   | 408                           | 430  | 529  |
| 6"                  | 21.4 | 22.4 | 24   | 9.1  | 9.1  | 9.1  | 17.8 | 21.9 | 28.8 | 5.9    | 13.6 | 15   | 16.5 | 0.9  | 1    | 1.3  | 11.8 | 13   | 13.7 | 8    | 12   | 12   | 800                           | 849  | 977  |
| 8"                  | 26.5 | 27.9 | 29.6 | 10.8 | 10.8 | 10.8 | 19.2 | 26.4 | 34.3 | 5.9    | 15.9 | 17.5 | 20.1 | 1    | 1.1  | 1.4  | 14.3 | 15.3 | 17   | 12   | 16   | 16   | 1217                          | 1312 | 1501 |
| 10"                 | 29   | 30.5 | 32.2 | 13.8 | 13.8 | 13.8 | 21.4 | 28.2 | 36.1 | 5.9    | 19.1 | 20.5 | 22   | 1    | 1.3  | 1.4  | 17   | 17.7 | 19.3 | 12   | 16   | 20   | 1995                          | 2105 | 2249 |
| 12"                 | 35   | 36.5 | 38.3 | 15.2 | 15.2 | 15.2 | 24.3 | 33.3 | 41.2 | 8.3    | 21.1 | 23   | 23.8 | 1.1  | 1.3  | 1.5  | 18.8 | 20.3 | 20.7 | 12   | 20   | 20   | 2579                          | 2712 | 2890 |
| 14"                 | 40   | 41.6 | 43.6 | 17.3 | 17.3 | 17.3 | 27.2 | 35.8 | 43.7 | 8.7    | 23.4 | 25.6 | 27   | 1.1  | 1.4  | 1.6  | 21.3 | 22.5 | 23.7 | 16   | 20   | 20   | 3042                          | 3219 | 3499 |
| 16"                 |      |      |      |      |      |      |      |      |      |        |      |      |      |      |      |      |      |      |      |      |      |      |                               |      |      |

## 900 #/ 1500 #

| Dimension<br>(mm) | A    |       | B    |       | C   |      | D      | E    |       | F    |       | G     |       | H    |       | Weight (kg) |       |
|-------------------|------|-------|------|-------|-----|------|--------|------|-------|------|-------|-------|-------|------|-------|-------------|-------|
|                   | 900# | 1500# | 900# | 1500# | STD | EXT  | COMMON | 900# | 1500# | 900# | 1500# | 900#  | 1500# | 900# | 1500# | 900#        | 1500# |
| 25                | 292  | 292   | 78   | 78    | 236 | 330  | 110    | 150  | 180   | 25.4 | 25.4  | 101.6 | 101.6 | 4    | 4     | 60          | 60    |
| 40                | 333  | 333   | 100  | 100   | 240 | 380  | 110    | 180  | 180   | 28.6 | 28.6  | 123.8 | 123.8 | 4    | 4     | 63          | 63    |
| 50                | 375  | 375   | 113  | 113   | 240 | 380  | 110    | 215  | 215   | 25.4 | 25.4  | 165.1 | 165.1 | 8    | 8     | 67          | 67    |
| 80                | 441  | 460   | 142  | 142   | 322 | 430  | 115    | 240  | 265   | 25.4 | 31.8  | 190.5 | 203.2 | 8    | 8     | 150         | 163   |
| 100               | 511  | 530   | 182  | 182   | 375 | 475  | 140    | 290  | 310   | 31.8 | 34.9  | 235   | 241.3 | 8    | 8     | 244         | 255   |
| 150               | 714  | 768   | 210  | 240   | 420 | 500  | 150    | 380  | 395   | 31.8 | 39    | 317.5 | 317.5 | 12   | 12    | 530         | 540   |
| 200               | 914  | 972   | 290  | 290   | 550 | 600  | 150    | 470  | 485   | 38.1 | 45    | 393.7 | 393.7 | 12   | 12    | 698         | 821   |
| 250               | 991  | 1067  | 310  | 350   | 600 | 700  | 150    | 545  | 585   | 38.1 | 51    | 469.9 | 482.6 | 16   | 12    | 955         | 1137  |
| 300               | 1130 | 1219  | 385  | 385   | 680 | 800  | 140    | 610  | 675   | 38.1 | 54    | 533.4 | 571.5 | 20   | 16    | 1180        | 1240  |
| 350               | 1257 | 1257  | 385  | 385   | 770 | 920  | 210    | 640  | 750   | 41.3 | 61    | 558.8 | 635   | 20   | 16    | 1387        | 1477  |
| 400               | 1422 | 1422  | 450  | 450   | 850 | 1050 | 220    | 705  | 825   | 44.5 | 67    | 616   | 704.8 | 20   | 16    | 1601        | 1721  |

| Dimension<br>(inch) | A    |       | B    |       | C    |     | D      | E    |       | F    |       | G    |       | H    |       | Weight (lbs) |       |
|---------------------|------|-------|------|-------|------|-----|--------|------|-------|------|-------|------|-------|------|-------|--------------|-------|
|                     | 900# | 1500# | 900# | 1500# | STD  | EXT | COMMON | 900# | 1500# | 900# | 1500# | 900# | 1500# | 900# | 1500# | 900#         | 1500# |
| 1"                  | 11.5 | 11.5  | 3    | 3     | 9    | 13  | 4      | 5.9  | 7.1   | 1    | 1     | 4    | 4     | 4    | 4     | 132          | 132   |
| 1-1/2"              | 13.1 | 13.1  | 3.9  | 3.9   | 9.5  | 15  | 4      | 7.1  | 7.1   | 1.1  | 1.1   | 4.9  | 4.9   | 4    | 4     | 139          | 139   |
| 2"                  | 14.8 | 14.8  | 4.4  | 4.4   | 9.5  | 15  | 4      | 8.5  | 8.5   | 1    | 1     | 6.5  | 6.5   | 8    | 8     | 148          | 148   |
| 3"                  | 17.4 | 18.1  | 5.6  | 5.6   | 12.7 | 17  | 5      | 9.4  | 10.4  | 1    | 1.3   | 7.5  | 8     | 8    | 8     | 331          | 359   |
| 4"                  | 20.1 | 20.9  | 7.2  | 7.2   | 15   | 19  | 6      | 11.4 | 12.2  | 1.3  | 1.4   | 9.3  | 9.5   | 8    | 8     | 538          | 562   |
| 6"                  | 28.1 | 30.2  | 8.3  | 9.4   | 17   | 20  | 6      | 15   | 15.6  | 1.3  | 1.5   | 12.5 | 12.5  | 12   | 12    | 1168         | 1191  |
| 8"                  | 36   | 38.3  | 11.4 | 11.4  | 22   | 24  | 6      | 18.5 | 19.1  | 1.5  | 1.8   | 15.5 | 15.5  | 12   | 12    | 1539         | 1810  |
| 10"                 | 39   | 42    | 12.2 | 13.8  | 24   | 28  | 6      | 21.5 | 23    | 1.5  | 2     | 18.5 | 19    | 16   | 12    | 2105         | 2507  |
| 12"                 | 44.5 | 48    | 15.2 | 15.2  | 27   | 31  | 6      | 24   | 26.6  | 1.5  | 2.1   | 21   | 22.5  | 20   | 16    | 2602         | 2734  |
| 14"                 | 49.5 | 49.5  | 15.2 | 15.2  | 30   | 36  | 8      | 25.2 | 29.5  | 1.6  | 2.4   | 22   | 25    | 20   | 16    | 3058         | 3256  |
| 16"                 | 56   | 56    | 17.7 | 17.7  | 33   | 41  | 8      | 27.8 | 32.5  | 1.8  | 2.6   | 24.3 | 27.7  | 20   | 16    | 3530         | 3794  |

Bigger sizes and ASME class 2500 ratings are available, please contact Valmet.

## How to order

### Globe Omega trim, multi-stage type, series GM

| 1. | 2. | 3. | 4. | 5. | 6. | 7. | 8. | 9. | 10. | 11. | 12. | 13. | 14. | 15. | 16. | 17. | 18. | 19. | 20. | 21. | 22. |
|----|----|----|----|----|----|----|----|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| GM | 02 | H  | Z  | B  | J2 | B  | P2 | X  | BC  | S1  | P2  | X   | S   | G   | G   | S   | G   | X   | A   | E   | FG  |

### Valve constructions

| 1. | Valve series                       |  |  |
|----|------------------------------------|--|--|
| GM | Globe Omega trim, multi-stage type |  |  |

| 2. | Body size    |    |              |
|----|--------------|----|--------------|
| 01 | 1" / DN 25   | 1H | 1.5" / DN 40 |
| 02 | 2" / DN 50   | 03 | 3" / DN 80   |
| 04 | 4" / DN 100  | 06 | 6" / DN 150  |
| 08 | 8" / DN 200  | 10 | 10" / DN 250 |
| 12 | 12" / DN 300 | 14 | 14" / DN 350 |
| 16 | 16" / DN 400 | 18 | 18" / DN 450 |
| 20 | 20" / DN 500 | 24 | 24" / DN 600 |
| 28 | 28" / DN 700 | 30 | 30" / DN 750 |
| 32 | 32" / DN 800 | 36 | 36" / DN 900 |
| YY | Special      |    |              |

| 3. | Pressure rating |   |                 |
|----|-----------------|---|-----------------|
| C  | ASME class 150  | D | ASME class 300  |
| F  | ASME class 600  | G | ASME class 900  |
| H  | ASME class 1500 | I | ASME Class 2500 |
| J  | EN PN 10        | K | EN PN 16        |
| L  | EN PN 25        | M | EN PN 40        |
| N  | EN PN 63        | P | EN PN 100       |
| B  | EN PN 160       | E | EN PN 250       |
| Y  | Special         | R | JIS 10K         |
| T  | JIS 20K         |   |                 |

| 4. | End connection                |  |  |
|----|-------------------------------|--|--|
| W  | Flanged RF, ASME B16.5        |  |  |
| C  | Flanged RF, EN 1092-1         |  |  |
| Z  | Ring joint flange, ASME B16.5 |  |  |
| V  | Socket welding, ASME B16.11   |  |  |
| Q  | Butt welding, ASME B16.25     |  |  |
| Y  | Special                       |  |  |

| 5. | Bonnet construction |                             |
|----|---------------------|-----------------------------|
|    | Bonnet Type         | Actuator Connection         |
| A  | General             | Applicable for VD_25/29/37  |
| B  | General             | Applicable for VD_48/55     |
| C  | General             | Applicable for VC_30, VB_32 |
| D  | General             | Applicable for VC/VB_40/50  |
| T  | General             | Applicable for VC/VB_60/70  |
| E  | Extension           | Applicable for VD_25/29/37  |
| F  | Extension           | Applicable for VD_48/55     |
| G  | Extension           | Applicable for VC_30, VB_32 |
| H  | Extension           | Applicable for VC/VB_40/50  |
| U  | Extension           | Applicable for VC/VB_60/70  |
| P  | Cryogenic           | Applicable for VD_25/29/37  |
| Q  | Cryogenic           | Applicable for VD_48/55     |
| R  | Cryogenic           | Applicable for VC_30, VB_32 |
| S  | Cryogenic           | Applicable for VC/VB_40/50  |
| V  | Cryogenic           | Applicable for VC/VB_60/70  |
| Y  | Special             | Special                     |

| 6. | Body material |  |  |
|----|---------------|--|--|
| J2 | A216 gr. WCB  |  |  |
| S6 | A351 gr. CF8M |  |  |
| S1 | A351 gr. CF3M |  |  |
| J4 | A217 gr. WC6  |  |  |
| CG | A217 gr. WC9  |  |  |
| YY | Special       |  |  |

- Bonnet material is equivalent to body material.

| 7. | Model code |  |  |
|----|------------|--|--|
| B  | Model B    |  |  |

### Trim constructions

| 8. | Plug material |                                   |
|----|---------------|-----------------------------------|
|    | Material      | Description                       |
| P2 | CA40          | General for carbon steel valve    |
| T6 | CF8M + HCr    | General for stainless steel valve |
| YY | Special       | Special materials                 |

| 9. | Plug application   |  |  |
|----|--------------------|--|--|
| X  | Not applicable     |  |  |
| A  | Cobalt based alloy |  |  |
| Y  | Special            |  |  |

| 10. | Stem material |                                   |
|-----|---------------|-----------------------------------|
|     | Material      | Description                       |
| BC  | 630 SS        | General for carbon steel valve    |
| TC  | 316 SS        | General for stainless steel valve |
| FC  | 316L SS       |                                   |
| VX  | XM-19         | High temperature                  |

| 11. | Seat type         |  |  |
|-----|-------------------|--|--|
| S1  | Single metal seat |  |  |
| YY  | Special           |  |  |

| 12. | Seat / disk stack material |            |            |
|-----|----------------------------|------------|------------|
|     | Seat                       | Disk Stack | Cage Guide |
| P2  | CA40                       | SUS 420J2  | CA40       |
| R4  | CF8M                       | 316L SS    | CF8M + HCr |
| YY  | Special                    | Special    | Special    |

| 13. | Seat application   |  |  |
|-----|--------------------|--|--|
| X   | Not applicable     |  |  |
| A   | Cobalt based alloy |  |  |
| Y   | Special            |  |  |

## Others

| 14. | Packing / bellows type         | 17. | Gasket material                        |
|-----|--------------------------------|-----|----------------------------------------|
| S   | General packing                | S   | S/W gasket type, 316L SS + Graphite    |
| E   | Low emission, Live loaded      | L   | S/W gasket type, 316L SS + PTFE        |
| C   | Bellows seal (316L SS, Formed) | H   | S/W gasket type, 316L SS + Hi-Graphite |
| Y   | Special                        | Y   | Special                                |

| 15. | Packing material           | 18. | Stud / nut material              |
|-----|----------------------------|-----|----------------------------------|
| G   | PTFE + Carbon fiber        | G   | A193 gr. B7M / A194 gr. 2HM      |
| F   | Graphite                   | D   | A193 gr. B8M / A194 gr. 8M       |
| T   | PTFE V-Ring                | K   | A320 gr. B8M cl. 2 / A194 gr. 8M |
| C   | PTFE + Carbon fiber (ATEX) | H   | A193 gr. B16 / A194 gr. 7        |
| H   | Hi-Graphite                | E   | A453 gr. 660 / A453 gr. 660      |
| Y   | Special                    | Y   | Special                          |

| 16. | Seal ring material                      | 19. | Options            |
|-----|-----------------------------------------|-----|--------------------|
| G   | PTFE + Graphite                         | X   | Not applicable     |
| H   | PTFE + Graphite + Carbon                | E   | Anti-erosion       |
| M   | Graphite (High temp graphite seal)      | L   | Lub. & Isol. valve |
| N   | Graphite + metal (High temp metal seal) | W   | Water seal         |
| T   | PTFE                                    | Y   | Special            |
| X   | Not applicable                          |     |                    |
| Y   | Special                                 |     |                    |

- \* ASME valve face to face length according to ISA 75.08. EN valve face to face length according to ISA 75.08.
- \* The body, bonnet, trim materials are subject to change as equivalent depending on detail design.
- \* See 'Neles Globe Type code Instruction' for further options and explanations.
- \* Round bar material such as AISI 410SS (for A743 gr. CA 15), AISI 316SS (for A351 gr. CF8M), SUS420J2 (for A743 gr. CA40) and AISI 630SS (for A747 gr. CB7Cu-1) can be used depending on manufacturing process.

## Trim type &amp; rated Cv

| 20. | Trim type                    | 21.  | Trim characteristic | 22.  | Description          | Rated Cv                                   |      |     |      |    |      |    |      |    |      |     |      |     |      |     |      |     |       |     |       |      |       |
|-----|------------------------------|------|---------------------|------|----------------------|--------------------------------------------|------|-----|------|----|------|----|------|----|------|-----|------|-----|------|-----|------|-----|-------|-----|-------|------|-------|
|     |                              | Sign |                     | Sign |                      | Body size and stroke                       |      |     |      |    |      |    |      |    |      |     |      |     |      |     |      |     |       |     |       |      |       |
|     | 1"                           |      | Str.                |      |                      | 1,5"                                       | Str. | 2"  | Str. | 3" | Str. | 4" | Str. | 6" | Str. | 8"  | Str. | 10" | Str. | 12" | Str. | 14" | Str.  | 16" | Str.  |      |       |
| A   | Balanced plug                | L    | Linear              | FG   | Full capa. / Gas     | 7                                          | (20) | 16  | (20) | 26 | (40) | 54 | (50) | 84 | (50) | 146 | (60) | 252 | (70) | 384 | (80) | 560 | (120) | 770 | (140) | 1020 | (160) |
| A   | High temp graphite seal plug |      |                     | FL   | Full capa. / Liquid  |                                            |      |     |      |    |      |    |      |    |      |     |      |     |      |     |      |     |       |     |       |      |       |
| A   | High temp metal seal plug    |      |                     | 1G   | 1-Step red. / Gas    | 3                                          | (20) | 8   | (20) | 12 | (40) | 28 | (50) | 52 | (50) | 90  | (60) | 156 | (70) | 234 | (80) | 340 | (120) | 470 | (140) | 620  | (160) |
| U   | Unbalanced plug              |      |                     | 1L   | 1-Step red. / Liquid |                                            |      |     |      |    |      |    |      |    |      |     |      |     |      |     |      |     |       |     |       |      |       |
|     |                              |      |                     | 2G   | 2-Step red. / Gas    | 1.6                                        | (20) | 4   | (20) | 6  | (40) | 14 | (50) | 26 | (50) | 45  | (60) | 78  | (70) | 116 | (80) | 170 | (120) | 234 | (140) | 372  | (160) |
|     |                              |      |                     | 2L   | 2-Step red. / Liquid |                                            |      |     |      |    |      |    |      |    |      |     |      |     |      |     |      |     |       |     |       |      |       |
|     |                              |      |                     | 3G   | 3-Step red. / Gas    | 0.8                                        | (20) | 2   | (20) | 3  | (40) | 7  | (50) | 14 | (50) | 22  | (60) | 40  | (70) | 58  | (80) | 84  | (120) | 116 | (140) | 224  | (160) |
|     |                              |      |                     | 3L   | 3-Step red. / Liquid |                                            |      |     |      |    |      |    |      |    |      |     |      |     |      |     |      |     |       |     |       |      |       |
|     |                              | E    | Equal %             | FG   | Full capa. / Gas     | 5                                          | (20) | 10  | (20) | 18 | (40) | 38 | (50) | 60 | (50) | 104 | (60) | 176 | (70) | 268 | (80) | 390 | (120) | 540 | (140) | 710  | (160) |
|     |                              |      |                     | FL   | Full capa. / Liquid  |                                            |      |     |      |    |      |    |      |    |      |     |      |     |      |     |      |     |       |     |       |      |       |
|     |                              |      |                     | 1G   | 1-Step red. / Gas    | 2.5                                        | (20) | 6   | (20) | 11 | (40) | 24 | (50) | 36 | (50) | 64  | (60) | 108 | (70) | 164 | (80) | 236 | (120) | 328 | (140) | 430  | (160) |
|     |                              |      |                     | 1L   | 1-Step red. / Liquid |                                            |      |     |      |    |      |    |      |    |      |     |      |     |      |     |      |     |       |     |       |      |       |
|     |                              |      |                     | 2G   | 2-Step red. / Gas    | 1.2                                        | (20) | 3   | (20) | 5  | (40) | 12 | (50) | 18 | (50) | 32  | (60) | 54  | (70) | 82  | (80) | 118 | (120) | 164 | (140) | 214  | (160) |
|     |                              |      |                     | 2L   | 2-Step red. / Liquid |                                            |      |     |      |    |      |    |      |    |      |     |      |     |      |     |      |     |       |     |       |      |       |
|     |                              |      |                     | 3G   | 3-Step red. / Gas    | 0.6                                        | (20) | 1.5 | (20) | 2  | (40) | 6  | (50) | 9  | (50) | 16  | (60) | 27  | (70) | 40  | (80) | 60  | (120) | 82  | (140) | 106  | (160) |
|     |                              |      |                     | 3L   | 3-Step red. / Liquid |                                            |      |     |      |    |      |    |      |    |      |     |      |     |      |     |      |     |       |     |       |      |       |
| Y   | Special                      | Y    | Special             | YY   | Special              | Please contact Valmet for more information |      |     |      |    |      |    |      |    |      |     |      |     |      |     |      |     |       |     |       |      |       |

- Rated Cv is different depending on trim type and characteristic.
- Str. : valve stroke length (mm). It should be matched with actuator stroke length.

**Valmet Flow Control Oy**

Vanha Porvoontie 229, 01380 Vantaa, Finland.

Tel. +358 10 417 5000.

[www.valmet.com/flowcontrol](http://www.valmet.com/flowcontrol)

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