

## NEOTECHA NTB - NTC PFA LINED BALL VALVES (DISCONTINUED)

THIS PRODUCT IS NOW DISCONTINUED

These PFA lined ball valves are used in a wide variety of applications in many industries



### FEATURES

- The Neotecha Model NTB/NTC PFA Lined Ball Valves is now discontinued. Please see the relevant documentation for product features.
- PFA lining offers highest corrosion resistance
- Bubble tight shut-off: precision machined ball and seats guarantees an absolute leak-free valve.
- Full bore offers high  $K_v$ -value equal to the pipe
- One-piece ball/stem: no possibility of damaging PFA-lining on ball by the stem, no hysteresis, ideal for flow control applications.
- Specific anti blow-out shaft design, which can not be affected by the media, according API 609.
- Static electricity: any build-up of static electricity is eliminated since the ball/stem and the housing are of the same potential.
- Constant torque: the unique two-piece body construction together with the spring loaded seats guarantee a constant torque even after months of operation. TA-Luft VDI 2440 approved.
- The self adjusting packing is maintenance free and provides a leak free stem seal.
- The handle lever features a positive locked position in the open and closed position for type NTB, and 6 intermediate positions for type NTC.
- The body has a thermally applied polyester powder coating (RAL 9002) which offers excellent protection against external corrosion and rust.
- Direct mounting according to ISO 5211.

### GENERAL APPLICATION

The valves are ideally suited for corrosive applications, requiring reliable performance, tight shutoff, constant torque and no maintenance. The valves successfully handle a multitude of corrosive applications in industries such as chemical, petro-chemical, pharmaceutical, pulp and paper, foundries and mining like sulphuric acid, etc. This unique design, together with the self adjusting stem seal (U.S. Patent 4.696.323) are two of the reasons behind the excellent performance and broad industry acceptance of this valve.

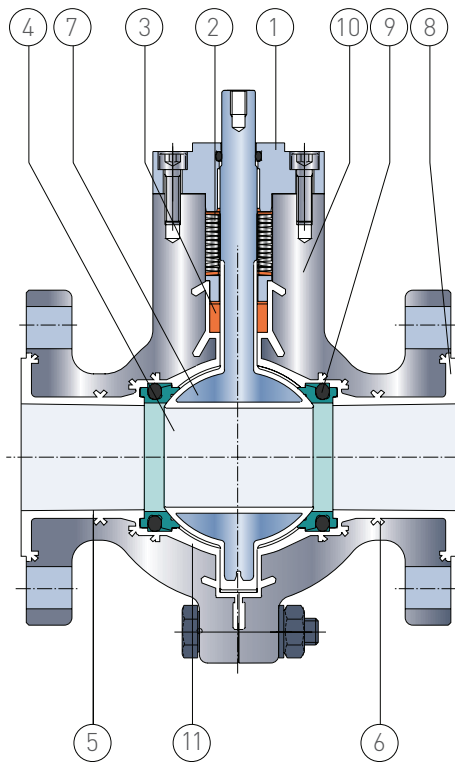
### TECHNICAL DATA

|                     |                                         |
|---------------------|-----------------------------------------|
| Size range:         | DN 15 - 150 (NPS ½ - 6)                 |
| Temperature (°C):   | -40 up to +210                          |
| Pressure range:     | vacuum 0.1 mbar to 16 bar (see diagram) |
| Flange connections: | DIN PN 16, ANSI 150, JIS B 2212 10 K    |
| Face to face:       | DIN EN 558, row 1<br>ANSI B 16.10       |

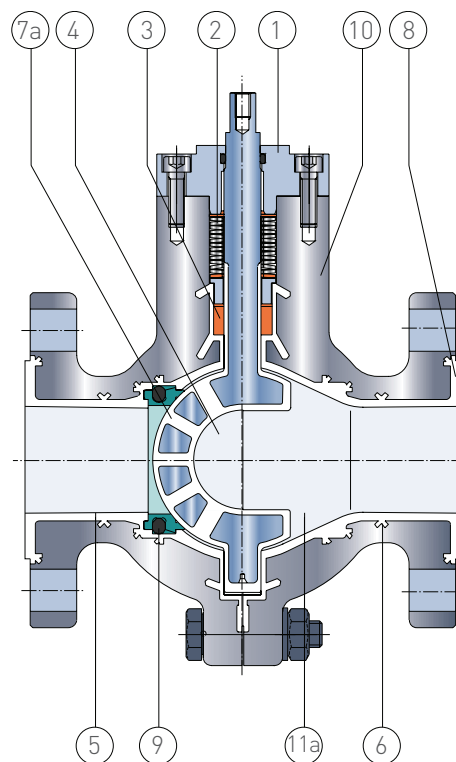
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## FEATURES

TYPE NTB



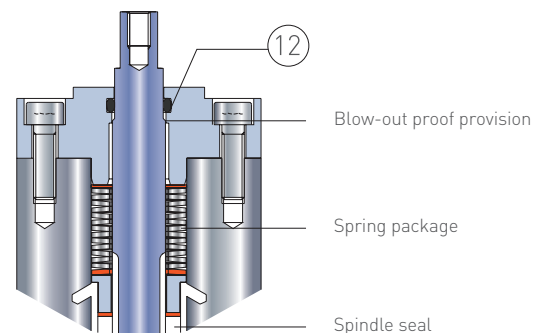
TYPE NTC



1. Every valve has a mounting flange according to ISO 5211 which simplifies the mounting of any actuator built to this standard.
2. A set of Belleville disc springs exert uniform loading on the packing, resulting in a maintenance free operation.
3. Flexible and corrosion resistant virgin PTFE packing ensures a leak-free stem seal (TA-Luft VDI 2440 approved).
4. Full bore design resulting in high  $K_v$ -value, especially required when high viscosity liquids have to be controlled.
5. The PFA lining is 3 mm thick and is spark tested at 20 000 Volts. This ensures a homogeneous PFA lining, void of any pinholes, giving protection against diffusion and corrosion.
6. The liner is locked to the casting by means of machined dovetails in the casting, permitting the valve to be used on high vacuum and elevated temperature without the danger of a liner collapse.
7. The one-piece trunnion mounted ball/stem ensures uniform support of the ball. The energized seats keep in constant contact with the ball under all operating conditions. Wear and tear on the seats is reduced, resulting in an increased operating life.
- 7a. The C-ball\* reduces flow distortion and provides excellent regulating characteristics. The C-ball design is also, an ideal control valve for highly corrosive and sterile conditions.
8. Available in DIN and ANSI face to face dimensions, which allow an easy replacement of plug and diaphragm valves.
9. Locked in energized seats ensure both up stream and down stream bubble tight sealing, constant operating torque, and extended service life versus a floating ball seat design which depends on differential pressure for sealing.
10. Rugged symmetrical body halves made from ductile iron (GGG 40.3), coated on the outside with polyester powder coating which offers excellent corrosion protection.

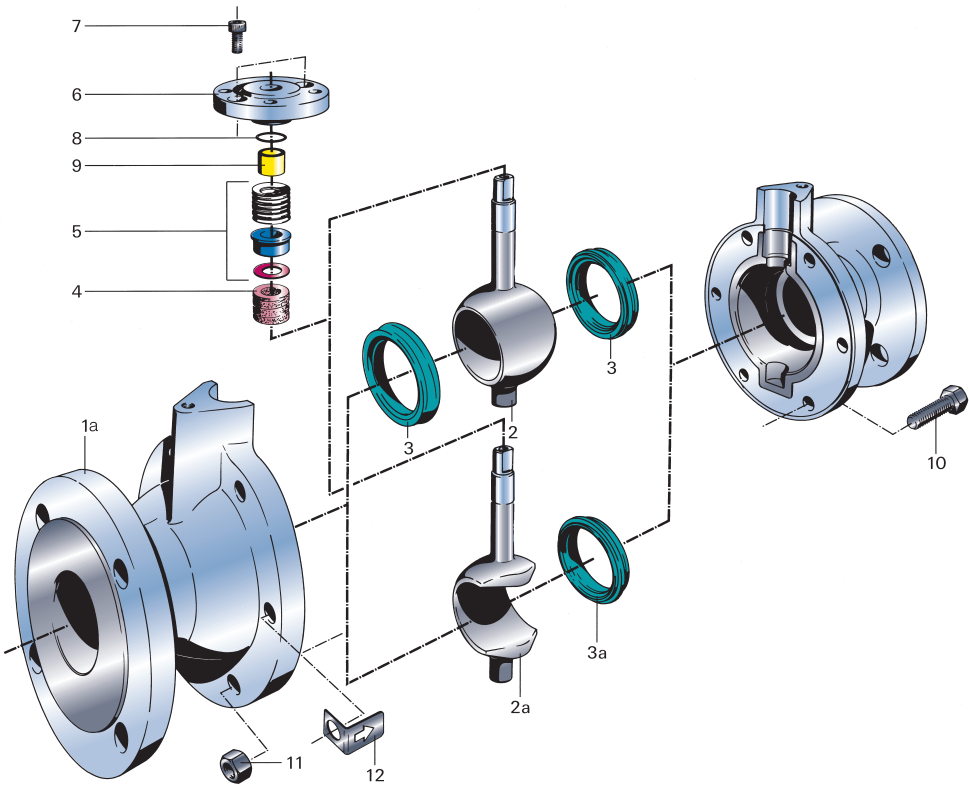
11. The split body design allows the dead space between the ball stem and housing to be kept to an absolute minimum. The C-ball version is dead space free.
- 11a. The C-ball valve is dead space free and is ideally suited for tight shut off and control of hazardous, solidifying or high purity products where it is imperative that no product is entrapped in the ball and surrounding cavity.
12. Full proof anti blow-out shaft design, located in the dry area of the valve and therefore unaffected by the media.

\* C-Ball® is a registered trademark



NEOTECHA NTB - NTC PFA LINED BALL VALVES (DISCONTINUED)

CONSTRUCTIONS, ASSEMBLY AND MATERIALS



BALL VALVE TYPE NTB

| Pos. | Description           | Material                              |
|------|-----------------------|---------------------------------------|
| 1a   | Body halves           | PFA lined ductile iron ASTM A395      |
| 2    | Ball-stem             | PFA encapsulated alloy steel          |
| 3    | Ball seat with O-ring | PTFE with PFA encapsulated FKM O-ring |
| 4    | Stem seal             | PTFE                                  |
| 5    | Spring package        | Spring steel                          |
| 6**  | Mounting flange       | Stainless steel                       |
| 7    | Internal hex bolt     | DIN 912, 8.8 galv.                    |
| 8    | O-ring                | FKM                                   |
| 9    | Bearing               | Iglidur*                              |
| 10   | Hex bolt              | DIN 931, 8.8 galv.                    |
| 11   | Nut                   | DIN 934, galv.                        |

NOTES

- \* Iglidur = registered trademark of Igus GmbH
- \*\* Mounting flange according ISO 5211

C-BALL VALVE

| Pos. | Description           | Material                             |
|------|-----------------------|--------------------------------------|
| 1a   | Body halves           | PFA lined ductile iron ASTM A395     |
| 2a   | C-ball-stem           | PFA encapsulated alloy steel         |
| 3a   | Ball seat with O-ring | TFM with PFA encapsulated FKM O-ring |
| 4    | Stem seal             | PTFE                                 |
| 5    | Spring package        | Spring steel                         |
| 6**  | Mounting flange       | Stainless steel                      |
| 7    | Internal hex bolt     | DIN 912, 8.8 galv.                   |
| 8    | O-ring                | FKM                                  |
| 9    | Bearing               | Iglidur*                             |
| 10   | Hex bolt              | DIN 931, 8.8 galv.                   |
| 11   | Nut                   | DIN 934, galv.                       |
| 12   | Flow arrow            | Stainless steel (304)                |

# NEOTECHA NTB - NTC PFA LINED BALL VALVES (DISCONTINUED)

## TECHNICAL DATA NTB - METRIC

### OPERATING TORQUES AND K<sub>v</sub>-VALUES

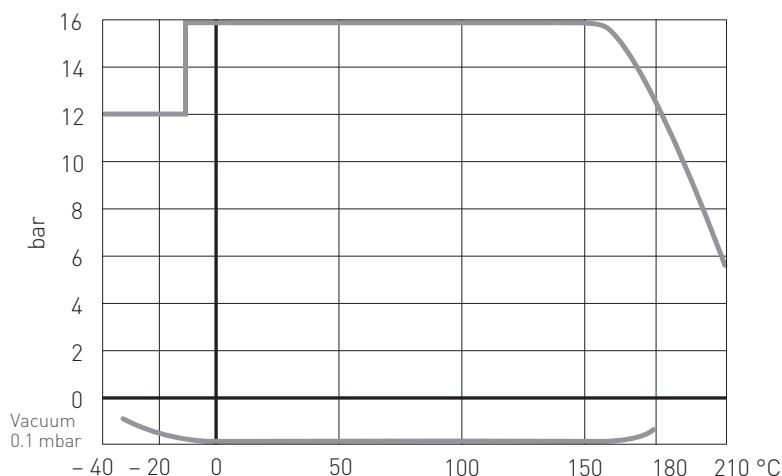
| Size<br>DN | NPS | Torque* |      | K <sub>v</sub><br>m³/h | C <sub>v</sub><br>USGPM |
|------------|-----|---------|------|------------------------|-------------------------|
|            |     | Nm      | inlb |                        |                         |
| 15         | ½   | 20      | 177  | 12                     | 14                      |
| 20         | ¾   | 20      | 177  | 18                     | 21                      |
| 25         | 1   | 30      | 266  | 37                     | 43                      |
| 40         | 1½  | 50      | 443  | 96                     | 111                     |
| 50         | 2   | 70      | 620  | 170                    | 196                     |
| 65         | 2½  | 145     | 1283 | 380                    | 439                     |
| 80         | 3   | 145     | 1283 | 490                    | 566                     |
| 100        | 4   | 190     | 1681 | 780                    | 901                     |
| 150        | 6   | 350     | 3096 | 1900                   | 2196                    |

\* Torque applicable for full pressure range

### TECHNICAL DATA

Size (DN): 15 - 150  
 Temperature (°C): -40 up to +210  
 Pressure range: vacuum 0.1 mbar to 16 bar (see diagram)  
 Flange connections: DIN PN 16, ANSI 150, JIS B 2212 10 K  
 Face to face: DIN EN 558-1, row 1 ANSI B 16.10

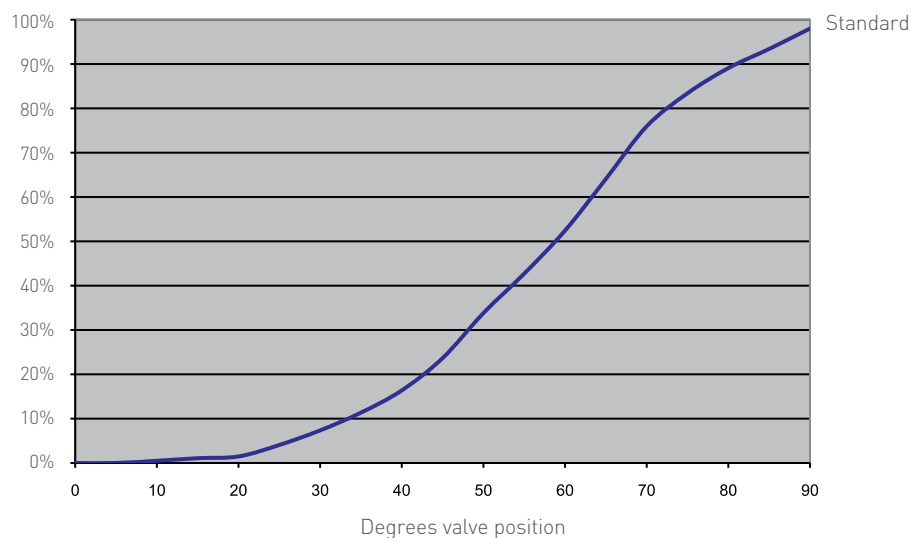
### PRESSURE-TEMPERATURE DIAGRAM



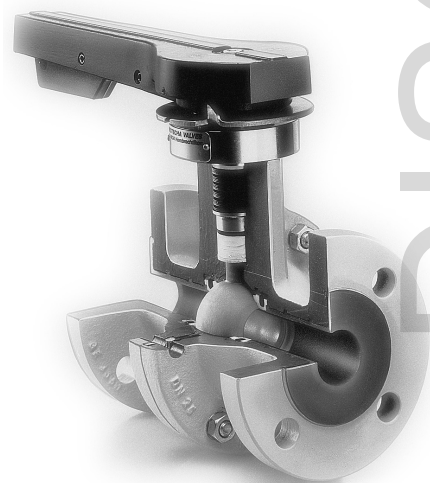
### HEAVY DUTY SERVICE

Neotecha also offers the NTB-NB2 prepared for chlorine (Cl<sub>2</sub>), HCl, HF and oxygen service. The specially prepared NB2 version includes TFM as seat material, stringent cleaning before assembly, special inert grease and packed in sealed bags to avoid contamination during transport or handling.

### NTB DN 80 WITH STANDARD SEAT



Example of inherent flow characteristic for a NTB DN 80



# NEOTECHA NTB - NTC PFA LINED BALL VALVES (DISCONTINUED)

## TECHNICAL DATA NTB - IMPERIAL

### OPERATING TORQUES AND C<sub>v</sub>-VALUES

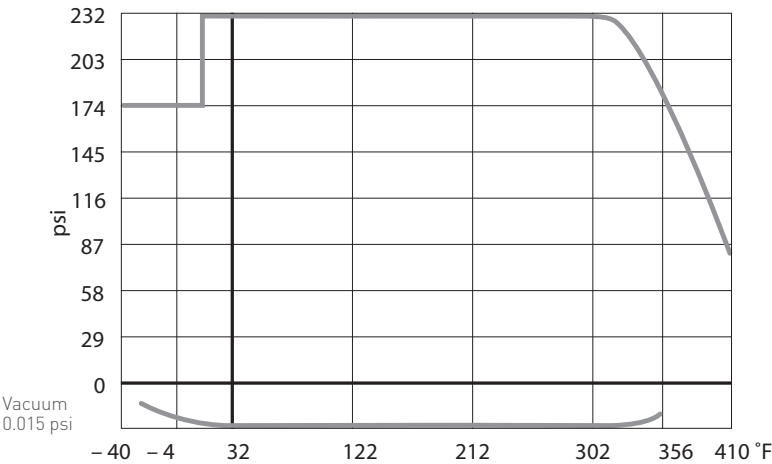
| Size<br>DN | NPS | Torque* |      | K <sub>v</sub><br>m³/h | C <sub>v</sub><br>USGPM |
|------------|-----|---------|------|------------------------|-------------------------|
|            |     | Nm      | inlb |                        |                         |
| 15         | ½   | 20      | 177  | 12                     | 14                      |
| 20         | ¾   | 20      | 177  | 18                     | 21                      |
| 25         | 1   | 30      | 266  | 37                     | 43                      |
| 40         | 1½  | 50      | 443  | 96                     | 111                     |
| 50         | 2   | 70      | 620  | 170                    | 196                     |
| 65         | 2½  | 145     | 1283 | 380                    | 439                     |
| 80         | 3   | 145     | 1283 | 490                    | 566                     |
| 100        | 4   | 190     | 1681 | 780                    | 901                     |
| 150        | 6   | 350     | 3096 | 1900                   | 2196                    |

\* Torque applicable for full pressure range

### TECHNICAL DATA

Size (NPS): ½ - 6  
Temperature (°F): 40 up to +410  
Pressure range: 0.015 to 232 psi  
Flange connections: DIN PN 16, ANSI 150, JIS B 2212 10 K  
Face to face: DIN EN 558-1, row 1 ANSI B 16.10

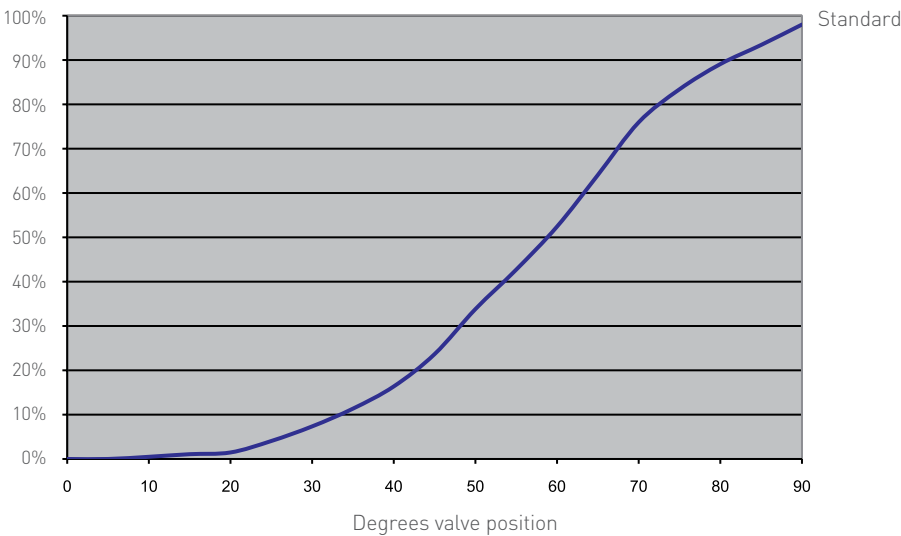
### PRESSURE-TEMPERATURE DIAGRAM



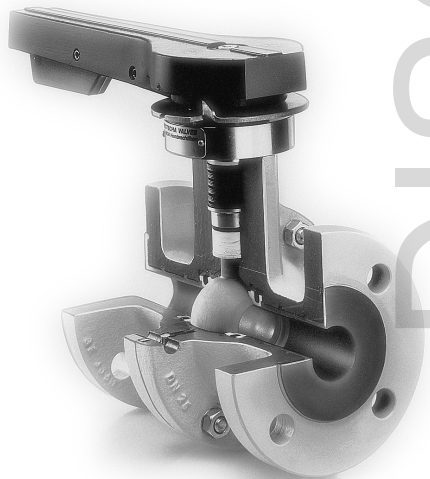
### HEAVY DUTY SERVICE

Neotecha also offers the NTB-NB2 prepared for chlorine (Cl<sub>2</sub>), HCl, HF and oxygen service. The specially prepared NB2 version includes TFM as seat material, stringent cleaning before assembly, special inert grease and packed in sealed bags to avoid contamination during transport or handling.

### NTB 3" WITH STANDARD SEAT



Example of inherent flow characteristic for a NTB 3"



# NEOTECHA NTB - NTC PFA LINED BALL VALVES (DISCONTINUED)

## TECHNICAL DATA NTC - METRIC

### OPERATING TORQUES AND K<sub>v</sub>-VALUES

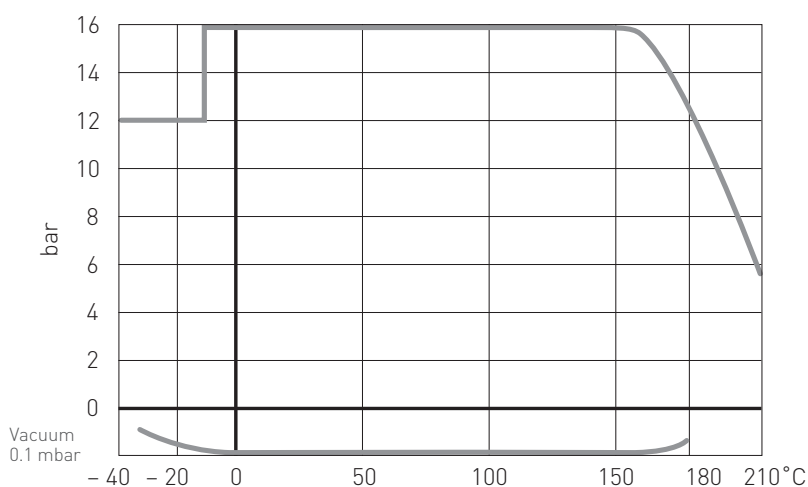
| Size<br>DN | NPS | Torque* |        | K <sub>v</sub><br>m³/h | C <sub>v</sub><br>USGPM |
|------------|-----|---------|--------|------------------------|-------------------------|
|            |     | Nm      | in/lbs |                        |                         |
| 15         | ½   | 10      | 89     | 11                     | 13                      |
| 20         | ¾   | 10      | 89     | 16                     | 18                      |
| 25         | 1   | 15      | 133    | 34                     | 39                      |
| 40         | 1½  | 25      | 222    | 90                     | 104                     |
| 50         | 2   | 35      | 310    | 160                    | 185                     |
| 65         | 2½  | 75      | 664    | 360                    | 416                     |
| 80         | 3   | 75      | 664    | 450                    | 520                     |
| 100        | 4   | 110     | 973    | 710                    | 821                     |
| 150        | 6   | 200     | 1770   | 1800                   | 2081                    |

\* Torque values applicable for standard seats only. For NTC with "V port seats" use the torque values indicated for the NTB

### TECHNICAL DATA

Size (DN): 15 - 150  
 Temperature (°C): -40 up to +210  
 Pressure range: vacuum 0.1 mbar to 16 bar (see diagram)  
 Flange connections: DIN PN 16, ANSI 150, JIS B 2212 10 K  
 Face to face: DIN EN 558-1, row 1  
 ANSI B 16.10

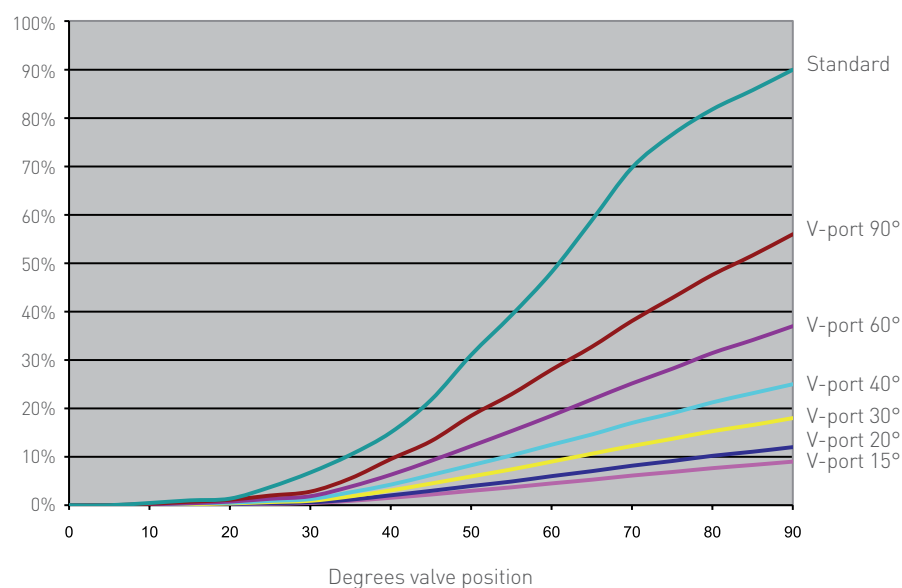
### PRESSURE-TEMPERATURE DIAGRAM



### HEAVY DUTY SERVICE

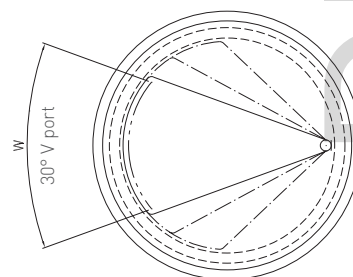
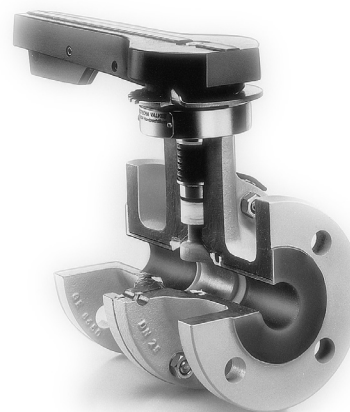
Neotech also offers the NTC-NB2 version. These valves are especially prepared for chlorine (Cl<sub>2</sub>), HCl, HF and oxygen service. The specially prepared NB2 version includes TFM as seat material, stringent cleaning before assembly, special inert grease and packed in sealed bags to avoid contamination during transport or handling.

### NTC DN 80 WITH V-PORT



Example of inherent flow characteristics for a NTC DN 80.

V-port seats transform the standard equal percentage characteristics into a linear characteristics.



# NEOTECHA NTB - NTC PFA LINED BALL VALVES (DISCONTINUED)

## TECHNICAL DATA NTC - IMPERIAL

### OPERATING TORQUES AND C<sub>v</sub>-VALUES

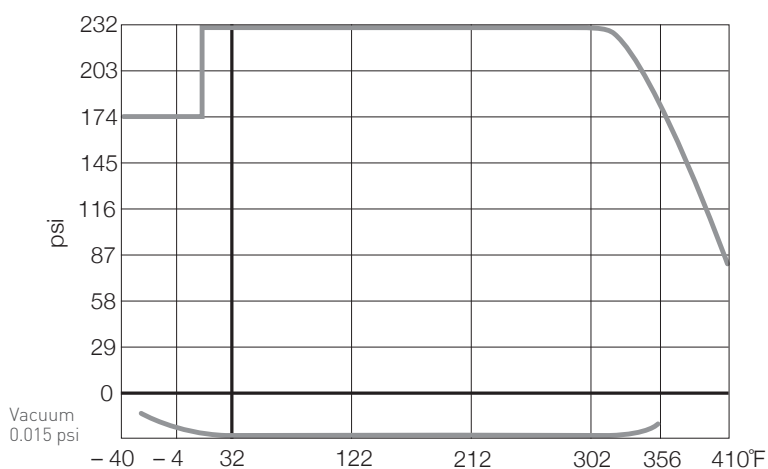
| Size<br>DN | NPS   | Torque* |        | K <sub>v</sub><br>m <sup>3</sup> /h | C <sub>v</sub><br>USGPM |
|------------|-------|---------|--------|-------------------------------------|-------------------------|
|            |       | Nm      | in/lbs |                                     |                         |
| 15         | 1/2   | 10      | 89     | 11                                  | 13                      |
| 20         | 3/4   | 10      | 89     | 16                                  | 18                      |
| 25         | 1     | 15      | 133    | 34                                  | 39                      |
| 40         | 1 1/2 | 25      | 222    | 90                                  | 104                     |
| 50         | 2     | 35      | 310    | 160                                 | 185                     |
| 65         | 2 1/2 | 75      | 664    | 360                                 | 416                     |
| 80         | 3     | 75      | 664    | 450                                 | 520                     |
| 100        | 4     | 110     | 973    | 710                                 | 821                     |
| 150        | 6     | 200     | 1770   | 1800                                | 2081                    |

\* Torque values applicable for standard seats only. For NTC with "V port seats" use the torque values indicated for the NTB

### TECHNICAL DATA

Size (NPS): 1/2 - 6  
 Temperature (°F): -40 up to +410  
 Pressure range: vacuum 0.015 to 232 psi  
 Flange connections: DIN PN 16, ANSI 150, JIS B 2212 10 K  
 Face to face: DIN EN 558-1, row 1  
 ANSI B 16.10

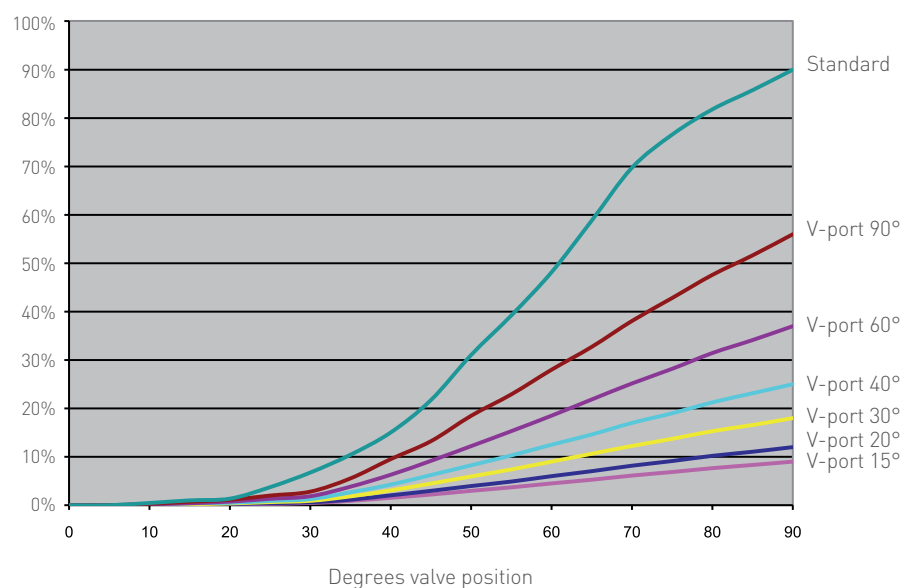
### PRESSURE-TEMPERATURE DIAGRAM



### HEAVY DUTY SERVICE

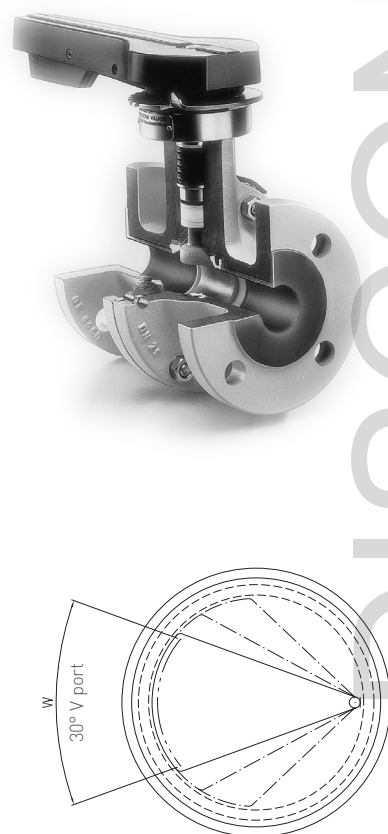
Neotecha also offers the NTC-NB2 version. These valves are especially prepared for chlorine (Cl<sub>2</sub>), HCl, HF and oxygen service. The specially prepared NB2 version includes TFM as seat material, stringent cleaning before assembly, special inert grease and packed in sealed bags to avoid contamination during transport or handling.

### NTC 3" WITH V-PORT



Example of inherent flow characteristics for a NTC 3".

V-port seats transform the standard equal percentage characteristics into a linear characteristics.



# NEOTECHA NTB - NTC PFA LINED BALL VALVES (DISCONTINUED)

THIS PRODUCT IS NOW DISCONTINUED

## K<sub>v</sub> VALUES FOR V-PORT CONTROL SEAT

|         |        | Valve opening angle |     |     |      |      |      |      |       |       |       |       |       |       |       |       |       |        |        |        |
|---------|--------|---------------------|-----|-----|------|------|------|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|--------|--------|--------|
| Size DN | V-port | 0°                  | 5°  | 10° | 15°  | 20°  | 25°  | 30°  | 35°   | 40°   | 45°   | 50°   | 55°   | 60°   | 65°   | 70°   | 75°   | 80°    | 85°    | 90°    |
| 15      | 15°    | 0.0                 | 0.0 | 0.0 | 0.0  | 0.0  | 0.0  | 0.1  | 0.1   | 0.2   | 0.3   | 0.5   | 0.6   | 0.7   | 0.8   | 0.9   | 1.1   | 1.2    | 1.3    | 1.4    |
|         | 20°    | 0.0                 | 0.0 | 0.0 | 0.0  | 0.0  | 0.1  | 0.1  | 0.2   | 0.3   | 0.5   | 0.6   | 0.8   | 0.9   | 1.1   | 1.3   | 1.4   | 1.6    | 1.7    | 1.9    |
|         | 30°    | 0.0                 | 0.0 | 0.0 | 0.0  | 0.1  | 0.1  | 0.1  | 0.3   | 0.5   | 0.7   | 0.9   | 1.1   | 1.4   | 1.6   | 1.9   | 2.1   | 2.4    | 2.6    | 2.8    |
|         | 40°    | 0.0                 | 0.0 | 0.0 | 0.0  | 0.1  | 0.1  | 0.2  | 0.4   | 0.6   | 0.9   | 1.2   | 1.5   | 1.9   | 2.2   | 2.5   | 2.8   | 3.1    | 3.4    | 3.7    |
|         | 60°    | 0.0                 | 0.0 | 0.0 | 0.1  | 0.1  | 0.2  | 0.3  | 0.6   | 1.0   | 1.4   | 1.9   | 2.4   | 2.8   | 3.3   | 3.9   | 4.3   | 4.8    | 5.2    | 5.7    |
|         | 90°    | 0.0                 | 0.0 | 0.0 | 0.1  | 0.2  | 0.3  | 0.4  | 0.8   | 1.4   | 2.0   | 2.8   | 3.6   | 4.2   | 5.0   | 5.7   | 6.4   | 7.2    | 7.8    | 8.4    |
| 20      | 15°    | 0.0                 | 0.0 | 0.0 | 0.0  | 0.0  | 0.1  | 0.1  | 0.2   | 0.3   | 0.4   | 0.5   | 0.6   | 0.8   | 0.9   | 1.0   | 1.1   | 1.3    | 1.4    | 1.5    |
|         | 20°    | 0.0                 | 0.0 | 0.0 | 0.0  | 0.0  | 0.1  | 0.1  | 0.2   | 0.4   | 0.5   | 0.7   | 0.9   | 1.0   | 1.2   | 1.4   | 1.6   | 1.8    | 1.9    | 2.1    |
|         | 30°    | 0.0                 | 0.0 | 0.0 | 0.0  | 0.1  | 0.1  | 0.2  | 0.3   | 0.5   | 0.8   | 1.0   | 1.3   | 1.6   | 1.8   | 2.1   | 2.4   | 2.7    | 2.9    | 3.1    |
|         | 40°    | 0.0                 | 0.0 | 0.0 | 0.1  | 0.1  | 0.1  | 0.2  | 0.4   | 0.7   | 1.0   | 1.3   | 1.7   | 2.0   | 2.4   | 2.8   | 3.1   | 3.4    | 3.7    | 4.0    |
|         | 60°    | 0.0                 | 0.0 | 0.0 | 0.1  | 0.1  | 0.2  | 0.3  | 0.6   | 1.0   | 1.5   | 2.0   | 2.5   | 3.1   | 3.6   | 4.2   | 4.7   | 5.2    | 5.7    | 6.1    |
|         | 90°    | 0.0                 | 0.0 | 0.1 | 0.1  | 0.2  | 0.3  | 0.5  | 0.9   | 1.6   | 2.3   | 3.1   | 3.8   | 4.6   | 5.4   | 6.3   | 7.1   | 7.9    | 8.5    | 9.2    |
| 25      | 15°    | 0.0                 | 0.0 | 0.0 | 0.1  | 0.1  | 0.1  | 0.2  | 0.4   | 0.7   | 1.0   | 1.4   | 1.7   | 2.1   | 2.4   | 2.8   | 3.2   | 3.5    | 3.8    | 4.2    |
|         | 20°    | 0.0                 | 0.0 | 0.0 | 0.1  | 0.1  | 0.2  | 0.3  | 0.6   | 1.0   | 1.4   | 1.9   | 2.3   | 2.8   | 3.3   | 3.9   | 4.3   | 4.8    | 5.3    | 5.7    |
|         | 30°    | 0.0                 | 0.0 | 0.0 | 0.1  | 0.2  | 0.3  | 0.4  | 0.9   | 1.4   | 2.0   | 2.8   | 3.5   | 4.2   | 4.9   | 5.7   | 6.4   | 7.2    | 7.8    | 8.4    |
|         | 40°    | 0.0                 | 0.0 | 0.1 | 0.2  | 0.2  | 0.4  | 0.6  | 1.2   | 2.0   | 2.8   | 3.8   | 4.8   | 5.8   | 6.8   | 7.9   | 8.8   | 9.8    | 10.7   | 11.6   |
|         | 60°    | 0.0                 | 0.0 | 0.1 | 0.3  | 0.4  | 0.6  | 0.9  | 1.7   | 3.0   | 4.2   | 5.7   | 7.0   | 8.7   | 10.1  | 11.8  | 13.1  | 14.7   | 15.9   | 17.3   |
|         | 90°    | 0.0                 | 0.0 | 0.1 | 0.3  | 0.5  | 1.0  | 1.3  | 2.8   | 4.3   | 6.4   | 8.4   | 10.5  | 12.7  | 15.0  | 17.3  | 19.5  | 22.0   | 24.0   | 25.0   |
| 40      | 15°    | 0.0                 | 0.0 | 0.1 | 0.1  | 0.2  | 0.4  | 0.6  | 1.2   | 2.0   | 2.9   | 3.8   | 4.7   | 5.8   | 6.8   | 7.9   | 8.8   | 9.8    | 10.7   | 11.6   |
|         | 20°    | 0.0                 | 0.0 | 0.1 | 0.2  | 0.3  | 0.5  | 0.8  | 1.5   | 2.8   | 3.9   | 5.3   | 6.7   | 8.1   | 9.5   | 11.0  | 12.3  | 13.8   | 14.9   | 16.2   |
|         | 30°    | 0.0                 | 0.0 | 0.1 | 0.2  | 0.5  | 0.9  | 1.2  | 2.6   | 4.1   | 5.9   | 8.0   | 9.9   | 12.1  | 14.2  | 16.5  | 18.6  | 20.6   | 22.0   | 24.0   |
|         | 40°    | 0.0                 | 0.0 | 0.2 | 0.4  | 0.7  | 1.1  | 1.6  | 3.4   | 5.5   | 8.0   | 10.7  | 13.5  | 16.2  | 19.0  | 22.0  | 25.0  | 28.0   | 30.0   | 32.0   |
|         | 60°    | 0.0                 | 0.0 | 0.2 | 0.6  | 1.0  | 1.7  | 2.4  | 4.3   | 8.3   | 12.3  | 16.0  | 20.4  | 24.0  | 29.0  | 33.0  | 37.0  | 41.0   | 45.0   | 49.0   |
|         | 90°    | 0.0                 | 0.0 | 0.4 | 0.9  | 1.5  | 2.6  | 3.6  | 7.6   | 12.4  | 17.9  | 24.0  | 31.0  | 36.0  | 43.0  | 50.0  | 55.0  | 62.0   | 68.0   | 73.0   |
| 50      | 15°    | 0.0                 | 0.0 | 0.1 | 0.2  | 0.4  | 0.6  | 0.9  | 2.0   | 3.1   | 4.4   | 6.1   | 7.4   | 9.2   | 10.8  | 12.6  | 14.1  | 15.7   | 17.1   | 18.5   |
|         | 20°    | 0.0                 | 0.0 | 0.1 | 0.3  | 0.5  | 0.8  | 1.3  | 2.6   | 4.3   | 6.3   | 8.4   | 10.4  | 12.7  | 14.9  | 17.3  | 19.4  | 22.0   | 24.0   | 25.0   |
|         | 30°    | 0.0                 | 0.0 | 0.2 | 0.5  | 0.8  | 1.2  | 1.9  | 3.9   | 6.5   | 9.4   | 12.6  | 15.7  | 19.1  | 22.0  | 26.0  | 29.0  | 32.0   | 36.0   | 38.0   |
|         | 40°    | 0.0                 | 0.0 | 0.3 | 0.7  | 1.0  | 1.5  | 2.5  | 5.2   | 8.6   | 12.7  | 16.8  | 20.8  | 25.0  | 30.0  | 35.0  | 39.0  | 43.0   | 47.0   | 51.0   |
|         | 60°    | 0.0                 | 0.0 | 0.4 | 0.8  | 1.5  | 2.3  | 3.8  | 8.0   | 13.0  | 18.6  | 25.0  | 31.0  | 38.0  | 44.0  | 52.0  | 58.0  | 65.0   | 70.0   | 76.0   |
|         | 90°    | 0.0                 | 0.0 | 0.6 | 1.6  | 2.3  | 3.6  | 5.7  | 11.4  | 19.5  | 28.0  | 38.0  | 47.0  | 57.0  | 67.0  | 78.0  | 87.0  | 97.0   | 106.0  | 114.0  |
| 65      | 15°    | 0.0                 | 0.0 | 0.2 | 0.4  | 0.8  | 1.2  | 2.0  | 4.3   | 6.9   | 9.7   | 13.4  | 16.6  | 20.2  | 24.0  | 28.0  | 31.0  | 34.0   | 38.0   | 40.0   |
|         | 20°    | 0.0                 | 0.0 | 0.3 | 0.6  | 1.2  | 1.8  | 2.9  | 6.0   | 9.8   | 14.2  | 19.1  | 24.0  | 29.0  | 34.0  | 39.0  | 44.0  | 49.0   | 53.0   | 58.0   |
|         | 30°    | 0.0                 | 0.0 | 0.4 | 1.2  | 1.7  | 2.6  | 4.3  | 8.6   | 14.7  | 21.0  | 29.0  | 35.0  | 43.0  | 51.0  | 59.0  | 66.0  | 74.0   | 80.0   | 87.0   |
|         | 40°    | 0.0                 | 0.0 | 0.6 | 1.0  | 2.3  | 4.0  | 5.8  | 12.0  | 19.7  | 29.0  | 38.0  | 48.0  | 58.0  | 67.0  | 79.0  | 88.0  | 98.0   | 107.0  | 116.0  |
|         | 60°    | 0.0                 | 0.0 | 0.9 | 2.3  | 3.5  | 6.0  | 8.7  | 18.0  | 29.0  | 43.0  | 57.0  | 71.0  | 87.0  | 101.0 | 118.0 | 132.0 | 147.0  | 160.0  | 173.0  |
|         | 90°    | 0.0                 | 0.0 | 1.3 | 3.5  | 5.1  | 9.2  | 12.7 | 28.0  | 43.0  | 63.0  | 84.0  | 105.0 | 127.0 | 149.0 | 173.0 | 194.0 | 216.0  | 236.0  | 254.0  |
| 80      | 15°    | 0.0                 | 0.0 | 0.3 | 0.6  | 1.0  | 1.6  | 2.6  | 5.2   | 8.8   | 12.7  | 17.2  | 21.0  | 26.0  | 30.0  | 35.0  | 40.0  | 44.0   | 48.0   | 52.0   |
|         | 20°    | 0.0                 | 0.0 | 0.4 | 0.9  | 1.4  | 2.4  | 3.5  | 6.6   | 11.8  | 17.1  | 23.0  | 28.0  | 35.0  | 41.0  | 47.0  | 53.0  | 59.0   | 64.0   | 69.0   |
|         | 30°    | 0.0                 | 0.0 | 0.5 | 1.1  | 2.1  | 3.7  | 5.2  | 10.5  | 17.7  | 26.0  | 34.0  | 43.0  | 52.0  | 61.0  | 71.0  | 79.0  | 88.0   | 96.0   | 104.0  |
|         | 40°    | 0.0                 | 0.0 | 0.7 | 2.2  | 2.9  | 5.1  | 7.2  | 15.4  | 25.0  | 36.0  | 48.0  | 59.0  | 72.0  | 84.0  | 98.0  | 110.0 | 123.0  | 134.0  | 145.0  |
|         | 60°    | 0.0                 | 0.0 | 1.1 | 2.3  | 4.3  | 7.6  | 10.7 | 22.0  | 36.0  | 53.0  | 71.0  | 88.0  | 107.0 | 126.0 | 145.0 | 163.0 | 182.0  | 197.0  | 214.0  |
|         | 90°    | 0.0                 | 0.0 | 1.6 | 4.1  | 6.5  | 11.5 | 16.2 | 32.0  | 55.0  | 76.0  | 107.0 | 132.0 | 162.0 | 189.0 | 220.0 | 248.0 | 275.0  | 298.0  | 324.0  |
| 100     | 15°    | 0.0                 | 0.0 | 0.4 | 0.9  | 1.6  | 2.6  | 4.0  | 8.2   | 13.8  | 19.7  | 27.0  | 33.0  | 40.0  | 47.0  | 55.0  | 62.0  | 69.0   | 75.0   | 81.0   |
|         | 20°    | 0.0                 | 0.0 | 0.6 | 1.3  | 2.3  | 4.0  | 5.8  | 11.7  | 19.7  | 28.0  | 38.0  | 47.0  | 58.0  | 68.0  | 79.0  | 88.0  | 98.0   | 107.0  | 116.0  |
|         | 30°    | 0.0                 | 0.0 | 0.8 | 2.1  | 3.4  | 5.1  | 8.4  | 16.6  | 28.0  | 40.0  | 55.0  | 69.0  | 84.0  | 99.0  | 114.0 | 127.0 | 142.0  | 155.0  | 168.0  |
|         | 40°    | 0.0                 | 0.0 | 1.1 | 3.4  | 4.5  | 8.5  | 11.3 | 22.0  | 38.0  | 56.0  | 74.0  | 92.0  | 113.0 | 131.0 | 153.0 | 170.0 | 192.0  | 208.0  | 225.0  |
|         | 60°    | 0.0                 | 0.0 | 1.7 | 4.6  | 6.7  | 12.0 | 16.8 | 36.0  | 57.0  | 84.0  | 111.0 | 140.0 | 168.0 | 197.0 | 228.0 | 253.0 | 285.0  | 310.0  | 335.0  |
|         | 90°    | 0.0                 | 0.0 | 2.5 | 8.0  | 10.2 | 18.0 | 25.0 | 50.0  | 86.0  | 119.0 | 168.0 | 207.0 | 254.0 | 297.0 | 346.0 | 386.0 | 432.0  | 471.0  | 509.0  |
| 150     | 15°    | 0.0                 | 0.0 | 1.0 | 2.4  | 4.2  | 6.6  | 10.4 | 20.9  | 35.0  | 50.0  | 69.0  | 85.0  | 104.0 | 121.0 | 141.0 | 158.0 | 177.0  | 192.0  | 208.0  |
|         | 20°    | 0.0                 | 0.0 | 1.4 | 4.0  | 5.8  | 8.8  | 14.5 | 30.0  | 49.0  | 71.0  | 95.0  | 117.0 | 145.0 | 168.0 | 197.0 | 219.0 | 246.0  | 267.0  | 289.0  |
|         | 30°    | 0.0                 | 0.0 | 2.1 | 5.0  | 8.6  | 14.0 | 21.0 | 42.0  | 73.0  | 105.0 | 141.0 | 174.0 | 214.0 | 249.0 | 291.0 | 325.0 | 364.0  | 394.0  | 428.0  |
|         | 40°    | 0.0                 | 0.0 | 2.9 | 5.0  | 11.6 | 18.0 | 29.0 | 58.0  | 98.0  | 135.0 | 191.0 | 237.0 | 289.0 | 335.0 | 393.0 | 444.0 | 491.0  | 533.0  | 578.0  |
|         | 60°    | 0.0                 | 0.0 | 4.3 | 8.0  | 17.1 | 29.0 | 43.0 | 87.0  | 145.0 | 203.0 | 282.0 | 352.0 | 428.0 | 500.0 | 582.0 | 653.0 | 727.0  | 793.0  | 855.0  |
|         | 90°    | 0.0                 | 0.0 | 6.4 | 16.0 | 26.0 | 42.0 | 64.0 | 134.0 | 218.0 | 317.0 | 423.0 | 532.0 | 642.0 | 758.0 | 873.0 | 980.0 | 1091.0 | 1189.0 | 1283.0 |



DISCONTINUED

# NEOTECHA NTB - NTC PFA LINED BALL VALVES (DISCONTINUED)

THIS PRODUCT IS NOW DISCONTINUED

## C<sub>v</sub> VALUES FOR V-PORT CONTROL SEAT

| Size |        | Valve opening angle |     |     |      |      |      |      |       |       |       |       |       |       |       |       |       |        |        |        |
|------|--------|---------------------|-----|-----|------|------|------|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|--------|--------|--------|
| NPS  | V-port | 0°                  | 5°  | 10° | 15°  | 20°  | 25°  | 30°  | 35°   | 40°   | 45°   | 50°   | 55°   | 60°   | 65°   | 70°   | 75°   | 80°    | 85°    | 90°    |
| ½"   | 15°    | 0.0                 | 0.0 | 0.0 | 0.0  | 0.0  | 0.0  | 0.1  | 0.1   | 0.2   | 0.3   | 0.5   | 0.6   | 0.7   | 0.8   | 0.9   | 1.1   | 1.2    | 1.3    | 1.4    |
|      | 20°    | 0.0                 | 0.0 | 0.0 | 0.0  | 0.0  | 0.1  | 0.1  | 0.2   | 0.3   | 0.5   | 0.6   | 0.8   | 0.9   | 1.1   | 1.3   | 1.4   | 1.6    | 1.7    | 1.9    |
|      | 30°    | 0.0                 | 0.0 | 0.0 | 0.0  | 0.1  | 0.1  | 0.1  | 0.3   | 0.5   | 0.7   | 0.9   | 1.1   | 1.4   | 1.6   | 1.9   | 2.1   | 2.4    | 2.6    | 2.8    |
|      | 40°    | 0.0                 | 0.0 | 0.0 | 0.0  | 0.1  | 0.1  | 0.2  | 0.4   | 0.6   | 0.9   | 1.2   | 1.5   | 1.9   | 2.2   | 2.5   | 2.8   | 3.1    | 3.4    | 3.7    |
|      | 60°    | 0.0                 | 0.0 | 0.0 | 0.1  | 0.1  | 0.2  | 0.3  | 0.6   | 1.0   | 1.4   | 1.9   | 2.4   | 2.8   | 3.3   | 3.9   | 4.3   | 4.8    | 5.2    | 5.7    |
|      | 90°    | 0.0                 | 0.0 | 0.0 | 0.1  | 0.2  | 0.3  | 0.4  | 0.8   | 1.4   | 2.0   | 2.8   | 3.6   | 4.2   | 5.0   | 5.7   | 6.4   | 7.2    | 7.8    | 8.4    |
| ¾"   | 15°    | 0.0                 | 0.0 | 0.0 | 0.0  | 0.0  | 0.1  | 0.1  | 0.2   | 0.3   | 0.4   | 0.5   | 0.6   | 0.8   | 0.9   | 1.0   | 1.1   | 1.3    | 1.4    | 1.5    |
|      | 20°    | 0.0                 | 0.0 | 0.0 | 0.0  | 0.0  | 0.1  | 0.1  | 0.2   | 0.4   | 0.5   | 0.7   | 0.9   | 1.0   | 1.2   | 1.4   | 1.6   | 1.8    | 1.9    | 2.1    |
|      | 30°    | 0.0                 | 0.0 | 0.0 | 0.0  | 0.1  | 0.1  | 0.2  | 0.3   | 0.5   | 0.8   | 1.0   | 1.3   | 1.6   | 1.8   | 2.1   | 2.4   | 2.7    | 2.9    | 3.1    |
|      | 40°    | 0.0                 | 0.0 | 0.0 | 0.1  | 0.1  | 0.1  | 0.2  | 0.4   | 0.7   | 1.0   | 1.3   | 1.7   | 2.0   | 2.4   | 2.8   | 3.1   | 3.4    | 3.7    | 4.0    |
|      | 60°    | 0.0                 | 0.0 | 0.0 | 0.1  | 0.1  | 0.2  | 0.3  | 0.6   | 1.0   | 1.5   | 2.0   | 2.5   | 3.1   | 3.6   | 4.2   | 4.7   | 5.2    | 5.7    | 6.1    |
|      | 90°    | 0.0                 | 0.0 | 0.1 | 0.1  | 0.2  | 0.3  | 0.5  | 0.9   | 1.6   | 2.3   | 3.1   | 3.8   | 4.6   | 5.4   | 6.3   | 7.1   | 7.9    | 8.5    | 9.2    |
| 1"   | 15°    | 0.0                 | 0.0 | 0.0 | 0.1  | 0.1  | 0.1  | 0.2  | 0.4   | 0.7   | 1.0   | 1.4   | 1.7   | 2.1   | 2.4   | 2.8   | 3.2   | 3.5    | 3.8    | 4.2    |
|      | 20°    | 0.0                 | 0.0 | 0.0 | 0.1  | 0.1  | 0.2  | 0.3  | 0.6   | 1.0   | 1.4   | 1.9   | 2.3   | 2.8   | 3.3   | 3.9   | 4.3   | 4.8    | 5.3    | 5.7    |
|      | 30°    | 0.0                 | 0.0 | 0.0 | 0.1  | 0.2  | 0.3  | 0.4  | 0.9   | 1.4   | 2.0   | 2.8   | 3.5   | 4.2   | 4.9   | 5.7   | 6.4   | 7.2    | 7.8    | 8.4    |
|      | 40°    | 0.0                 | 0.0 | 0.1 | 0.2  | 0.2  | 0.4  | 0.6  | 1.2   | 2.0   | 2.8   | 3.8   | 4.8   | 5.8   | 6.8   | 7.9   | 8.8   | 9.8    | 10.7   | 11.6   |
|      | 60°    | 0.0                 | 0.0 | 0.1 | 0.3  | 0.4  | 0.6  | 0.9  | 1.7   | 3.0   | 4.2   | 5.7   | 7.0   | 8.7   | 10.1  | 11.8  | 13.1  | 14.7   | 15.9   | 17.3   |
|      | 90°    | 0.0                 | 0.0 | 0.1 | 0.3  | 0.5  | 1.0  | 1.3  | 2.8   | 4.3   | 6.4   | 8.4   | 10.5  | 12.7  | 15.0  | 17.3  | 19.5  | 22.0   | 24.0   | 25.0   |
| 1½"  | 15°    | 0.0                 | 0.0 | 0.1 | 0.1  | 0.2  | 0.4  | 0.6  | 1.2   | 2.0   | 2.9   | 3.8   | 4.7   | 5.8   | 6.8   | 7.9   | 8.8   | 9.8    | 10.7   | 11.6   |
|      | 20°    | 0.0                 | 0.0 | 0.1 | 0.2  | 0.3  | 0.5  | 0.8  | 1.5   | 2.8   | 3.9   | 5.3   | 6.7   | 8.1   | 9.5   | 11.0  | 12.3  | 13.8   | 14.9   | 16.2   |
|      | 30°    | 0.0                 | 0.0 | 0.1 | 0.2  | 0.5  | 0.9  | 1.2  | 2.6   | 4.1   | 5.9   | 8.0   | 9.9   | 12.1  | 14.2  | 16.5  | 18.6  | 20.6   | 22.0   | 24.0   |
|      | 40°    | 0.0                 | 0.0 | 0.2 | 0.4  | 0.7  | 1.1  | 1.6  | 3.4   | 5.5   | 8.0   | 10.7  | 13.5  | 16.2  | 19.0  | 22.0  | 25.0  | 28.0   | 30.0   | 32.0   |
|      | 60°    | 0.0                 | 0.0 | 0.2 | 0.6  | 1.0  | 1.7  | 2.4  | 4.3   | 8.3   | 12.3  | 16.0  | 20.4  | 24.0  | 29.0  | 33.0  | 37.0  | 41.0   | 45.0   | 49.0   |
|      | 90°    | 0.0                 | 0.0 | 0.4 | 0.9  | 1.5  | 2.6  | 3.6  | 7.6   | 12.4  | 17.9  | 24.0  | 31.0  | 36.0  | 43.0  | 50.0  | 55.0  | 62.0   | 68.0   | 73.0   |
| 2"   | 15°    | 0.0                 | 0.0 | 0.1 | 0.2  | 0.4  | 0.6  | 0.9  | 2.0   | 3.1   | 4.4   | 6.1   | 7.4   | 9.2   | 10.8  | 12.6  | 14.1  | 15.7   | 17.1   | 18.5   |
|      | 20°    | 0.0                 | 0.0 | 0.1 | 0.3  | 0.5  | 0.8  | 1.3  | 2.6   | 4.3   | 6.3   | 8.4   | 10.4  | 12.7  | 14.9  | 17.3  | 19.4  | 22.0   | 24.0   | 25.0   |
|      | 30°    | 0.0                 | 0.0 | 0.2 | 0.5  | 0.8  | 1.2  | 1.9  | 3.9   | 6.5   | 9.4   | 12.6  | 15.7  | 19.1  | 22.0  | 26.0  | 29.0  | 32.0   | 36.0   | 38.0   |
|      | 40°    | 0.0                 | 0.0 | 0.3 | 0.7  | 1.0  | 1.5  | 2.5  | 5.2   | 8.6   | 12.7  | 16.8  | 20.8  | 25.0  | 30.0  | 35.0  | 39.0  | 43.0   | 47.0   | 51.0   |
|      | 60°    | 0.0                 | 0.0 | 0.4 | 0.8  | 1.5  | 2.3  | 3.8  | 8.0   | 13.0  | 18.6  | 25.0  | 31.0  | 38.0  | 44.0  | 52.0  | 58.0  | 65.0   | 70.0   | 76.0   |
|      | 90°    | 0.0                 | 0.0 | 0.6 | 1.6  | 2.3  | 3.6  | 5.7  | 11.4  | 19.5  | 28.0  | 38.0  | 47.0  | 57.0  | 67.0  | 78.0  | 87.0  | 97.0   | 106.0  | 114.0  |
| 2½"  | 15°    | 0.0                 | 0.0 | 0.2 | 0.4  | 0.8  | 1.2  | 2.0  | 4.3   | 6.9   | 9.7   | 13.4  | 16.6  | 20.2  | 24.0  | 28.0  | 31.0  | 34.0   | 38.0   | 40.0   |
|      | 20°    | 0.0                 | 0.0 | 0.3 | 0.6  | 1.2  | 1.8  | 2.9  | 6.0   | 9.8   | 14.2  | 19.1  | 24.0  | 29.0  | 34.0  | 39.0  | 44.0  | 49.0   | 53.0   | 58.0   |
|      | 30°    | 0.0                 | 0.0 | 0.4 | 1.2  | 1.7  | 2.6  | 4.3  | 8.6   | 14.7  | 21.0  | 29.0  | 35.0  | 43.0  | 51.0  | 59.0  | 66.0  | 74.0   | 80.0   | 87.0   |
|      | 40°    | 0.0                 | 0.0 | 0.6 | 1.0  | 2.3  | 4.0  | 5.8  | 12.0  | 19.7  | 29.0  | 38.0  | 48.0  | 58.0  | 67.0  | 79.0  | 88.0  | 98.0   | 107.0  | 116.0  |
|      | 60°    | 0.0                 | 0.0 | 0.9 | 2.3  | 3.5  | 6.0  | 8.7  | 18.0  | 29.0  | 43.0  | 57.0  | 71.0  | 87.0  | 101.0 | 118.0 | 132.0 | 147.0  | 160.0  | 173.0  |
|      | 90°    | 0.0                 | 0.0 | 1.3 | 3.5  | 5.1  | 9.2  | 12.7 | 28.0  | 43.0  | 63.0  | 84.0  | 105.0 | 127.0 | 149.0 | 173.0 | 194.0 | 216.0  | 236.0  | 254.0  |
| 3"   | 15°    | 0.0                 | 0.0 | 0.3 | 0.6  | 1.0  | 1.6  | 2.6  | 5.2   | 8.8   | 12.7  | 17.2  | 21.0  | 26.0  | 30.0  | 35.0  | 40.0  | 44.0   | 48.0   | 52.0   |
|      | 20°    | 0.0                 | 0.0 | 0.4 | 0.9  | 1.4  | 2.4  | 3.5  | 6.6   | 11.8  | 17.1  | 23.0  | 28.0  | 35.0  | 41.0  | 47.0  | 53.0  | 59.0   | 64.0   | 69.0   |
|      | 30°    | 0.0                 | 0.0 | 0.5 | 1.1  | 2.1  | 3.7  | 5.2  | 10.5  | 17.7  | 26.0  | 34.0  | 43.0  | 52.0  | 61.0  | 71.0  | 79.0  | 88.0   | 96.0   | 104.0  |
|      | 40°    | 0.0                 | 0.0 | 0.7 | 2.2  | 2.9  | 5.1  | 7.2  | 15.4  | 25.0  | 36.0  | 48.0  | 59.0  | 72.0  | 84.0  | 98.0  | 110.0 | 123.0  | 134.0  | 145.0  |
|      | 60°    | 0.0                 | 0.0 | 1.1 | 2.3  | 4.3  | 7.6  | 10.7 | 22.0  | 36.0  | 53.0  | 71.0  | 88.0  | 107.0 | 126.0 | 145.0 | 163.0 | 182.0  | 197.0  | 214.0  |
|      | 90°    | 0.0                 | 0.0 | 1.6 | 4.1  | 6.5  | 11.5 | 16.2 | 32.0  | 55.0  | 76.0  | 107.0 | 132.0 | 162.0 | 189.0 | 220.0 | 248.0 | 275.0  | 298.0  | 324.0  |
| 4"   | 15°    | 0.0                 | 0.0 | 0.4 | 0.9  | 1.6  | 2.6  | 4.0  | 8.2   | 13.8  | 19.7  | 27.0  | 33.0  | 40.0  | 47.0  | 55.0  | 62.0  | 69.0   | 75.0   | 81.0   |
|      | 20°    | 0.0                 | 0.0 | 0.6 | 1.3  | 2.3  | 4.0  | 5.8  | 11.7  | 19.7  | 28.0  | 38.0  | 47.0  | 58.0  | 68.0  | 79.0  | 88.0  | 98.0   | 107.0  | 116.0  |
|      | 30°    | 0.0                 | 0.0 | 0.8 | 2.1  | 3.4  | 5.1  | 8.4  | 16.6  | 28.0  | 40.0  | 55.0  | 69.0  | 84.0  | 99.0  | 114.0 | 127.0 | 142.0  | 155.0  | 168.0  |
|      | 40°    | 0.0                 | 0.0 | 1.1 | 3.4  | 4.5  | 8.5  | 11.3 | 22.0  | 38.0  | 56.0  | 74.0  | 92.0  | 113.0 | 131.0 | 153.0 | 170.0 | 192.0  | 208.0  | 225.0  |
|      | 60°    | 0.0                 | 0.0 | 1.7 | 4.6  | 6.7  | 12.0 | 16.8 | 36.0  | 57.0  | 84.0  | 111.0 | 140.0 | 168.0 | 197.0 | 228.0 | 253.0 | 285.0  | 310.0  | 335.0  |
|      | 90°    | 0.0                 | 0.0 | 2.5 | 8.0  | 10.2 | 18.0 | 25.0 | 50.0  | 86.0  | 119.0 | 168.0 | 207.0 | 254.0 | 297.0 | 346.0 | 386.0 | 432.0  | 471.0  | 509.0  |
| 6"   | 15°    | 0.0                 | 0.0 | 1.0 | 2.4  | 4.2  | 6.6  | 10.4 | 20.9  | 35.0  | 50.0  | 69.0  | 85.0  | 104.0 | 121.0 | 141.0 | 158.0 | 177.0  | 192.0  | 208.0  |
|      | 20°    | 0.0                 | 0.0 | 1.4 | 4.0  | 5.8  | 8.8  | 14.5 | 30.0  | 49.0  | 71.0  | 95.0  | 117.0 | 145.0 | 168.0 | 197.0 | 219.0 | 246.0  | 267.0  | 289.0  |
|      | 30°    | 0.0                 | 0.0 | 2.1 | 5.0  | 8.6  | 14.0 | 21.0 | 42.0  | 73.0  | 105.0 | 141.0 | 174.0 | 214.0 | 249.0 | 291.0 | 325.0 | 364.0  | 394.0  | 428.0  |
|      | 40°    | 0.0                 | 0.0 | 2.9 | 5.0  | 11.6 | 18.0 | 29.0 | 58.0  | 98.0  | 135.0 | 191.0 | 237.0 | 289.0 | 335.0 | 393.0 | 444.0 | 491.0  | 533.0  | 578.0  |
|      | 60°    | 0.0                 | 0.0 | 4.3 | 8.0  | 17.1 | 29.0 | 43.0 | 87.0  | 145.0 | 203.0 | 282.0 | 352.0 | 428.0 | 500.0 | 582.0 | 653.0 | 727.0  | 793.0  | 855.0  |
|      | 90°    | 0.0                 | 0.0 | 6.4 | 16.0 | 26.0 | 42.0 | 64.0 | 134.0 | 218.0 | 317.0 | 423.0 | 532.0 | 642.0 | 758.0 | 873.0 | 980.0 | 1091.0 | 1189.0 | 1283.0 |



DISCONTINUED

# NEOTECHA NTB - NTC PFA LINED BALL VALVES (DISCONTINUED)

THIS PRODUCT IS NOW DISCONTINUED

## K<sub>v</sub> VALUES FOR EQUAL PERCENTAGE CONTROL SEAT

|         | Valve opening angle |     |      |      |      |       |       |       |       |       |       |       |       |       |       |       |        |        |        |
|---------|---------------------|-----|------|------|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|--------|--------|--------|
| Size DN | 0°                  | 5°  | 10°  | 15°  | 20°  | 25°   | 30°   | 35°   | 40°   | 45°   | 50°   | 55°   | 60°   | 65°   | 70°   | 75°   | 80°    | 85°    | 90°    |
| 15      | 0.0                 | 0.0 | 0.0  | 0.1  | 0.1  | 0.3   | 0.3   | 0.5   | 0.5   | 0.8   | 1.1   | 1.4   | 1.7   | 2.0   | 2.5   | 3.6   | 4.2    | 5.6    | 5.9    |
| 20      | 0.0                 | 0.0 | 0.0  | 0.1  | 0.2  | 0.3   | 0.4   | 0.5   | 0.6   | 0.9   | 1.2   | 1.5   | 1.9   | 2.2   | 2.7   | 3.9   | 4.7    | 6.1    | 6.5    |
| 25      | 0.0                 | 0.2 | 0.4  | 0.6  | 0.7  | 1.0   | 1.1   | 1.3   | 1.6   | 2.1   | 3.4   | 4.1   | 5.2   | 6.6   | 9.4   | 12.6  | 14.9   | 16.7   | 18.5   |
| 40      | 0.0                 | 0.1 | 0.2  | 0.3  | 0.4  | 1.1   | 1.4   | 1.9   | 2.3   | 3.5   | 4.7   | 6.6   | 8.0   | 10.2  | 12.9  | 15.7  | 19.1   | 25.0   | 30.0   |
| 50      | 0.0                 | 0.0 | 0.3  | 0.4  | 0.5  | 1.0   | 2.0   | 2.9   | 3.1   | 4.0   | 5.5   | 7.0   | 9.4   | 12.0  | 16.0  | 21.0  | 29.0   | 34.0   | 36.0   |
| 65      | 0.0                 | 0.0 | 0.2  | 0.7  | 2.7  | 6.2   | 10.4  | 15.0  | 20.1  | 26.0  | 34.0  | 43.0  | 54.0  | 68.0  | 89.0  | 120.0 | 151.0  | 180.0  | 190.0  |
| 80      | 0.0                 | 2.5 | 5.5  | 12.0 | 22.0 | 35.0  | 45.0  | 52.0  | 61.0  | 73.0  | 85.0  | 97.0  | 117.0 | 129.0 | 170.0 | 202.0 | 233.0  | 262.0  | 293.0  |
| 100     | 0.0                 | 2.5 | 7.0  | 18.0 | 32.0 | 49.0  | 55.0  | 67.0  | 79.0  | 95.0  | 111.0 | 124.0 | 150.0 | 168.0 | 220.0 | 262.0 | 304.0  | 340.0  | 381.0  |
| 150     | 0.0                 | 7.6 | 48.0 | 71.0 | 98.0 | 123.0 | 151.0 | 189.0 | 222.0 | 282.0 | 355.0 | 514.0 | 651.0 | 747.0 | 853.0 | 969.0 | 1060.0 | 1104.0 | 1153.0 |

## C<sub>v</sub> VALUES FOR EQUAL PERCENTAGE CONTROL SEAT

|          | Valve opening angle |     |      |      |      |       |       |       |       |       |       |       |       |       |       |       |        |        |        |
|----------|---------------------|-----|------|------|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|--------|--------|--------|
| Size NPS | 0°                  | 5°  | 10°  | 15°  | 20°  | 25°   | 30°   | 35°   | 40°   | 45°   | 50°   | 55°   | 60°   | 65°   | 70°   | 75°   | 80°    | 85°    | 90°    |
| ½"       | 0.0                 | 0.0 | 0.0  | 0.1  | 0.1  | 0.3   | 0.3   | 0.5   | 0.5   | 0.8   | 1.1   | 1.4   | 1.7   | 2.0   | 2.5   | 3.6   | 4.2    | 5.6    | 5.9    |
| ¾"       | 0.0                 | 0.0 | 0.0  | 0.1  | 0.2  | 0.3   | 0.4   | 0.5   | 0.6   | 0.9   | 1.2   | 1.5   | 1.9   | 2.2   | 2.7   | 3.9   | 4.7    | 6.1    | 6.5    |
| 1"       | 0.0                 | 0.2 | 0.4  | 0.6  | 0.7  | 1.0   | 1.1   | 1.3   | 1.6   | 2.1   | 3.4   | 4.1   | 5.2   | 6.6   | 9.4   | 12.6  | 14.9   | 16.7   | 18.5   |
| 1½"      | 0.0                 | 0.1 | 0.2  | 0.3  | 0.4  | 1.1   | 1.4   | 1.9   | 2.3   | 3.5   | 4.7   | 6.6   | 8.0   | 10.2  | 12.9  | 15.7  | 19.1   | 25.0   | 30.0   |
| 2"       | 0.0                 | 0.0 | 0.3  | 0.4  | 0.5  | 1.0   | 2.0   | 2.9   | 3.1   | 4.0   | 5.5   | 7.0   | 9.4   | 12.0  | 16.0  | 21.0  | 29.0   | 34.0   | 36.0   |
| 2½"      | 0.0                 | 0.0 | 0.2  | 0.7  | 2.7  | 6.2   | 10.4  | 15.0  | 20.1  | 26.0  | 34.0  | 43.0  | 54.0  | 68.0  | 89.0  | 120.0 | 151.0  | 180.0  | 190.0  |
| 3"       | 0.0                 | 2.5 | 5.5  | 12.0 | 22.0 | 35.0  | 45.0  | 52.0  | 61.0  | 73.0  | 85.0  | 97.0  | 117.0 | 129.0 | 170.0 | 202.0 | 233.0  | 262.0  | 293.0  |
| 4"       | 0.0                 | 2.5 | 7.0  | 18.0 | 32.0 | 49.0  | 55.0  | 67.0  | 79.0  | 95.0  | 111.0 | 124.0 | 150.0 | 168.0 | 220.0 | 262.0 | 304.0  | 340.0  | 381.0  |
| 6"       | 0.0                 | 7.6 | 48.0 | 71.0 | 98.0 | 123.0 | 151.0 | 189.0 | 222.0 | 282.0 | 355.0 | 514.0 | 651.0 | 747.0 | 853.0 | 969.0 | 1060.0 | 1104.0 | 1153.0 |

## K<sub>v</sub> VALUES FOR LINEAR CONTROL SEAT

| Size DN | Slot<br>(mm) | Valve opening angle |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |      |      |
|---------|--------------|---------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|------|------|
|         |              | 0°                  | 5°  | 10° | 15° | 20° | 25° | 30° | 35° | 40° | 45° | 50° | 55° | 60° | 65° | 70° | 75° | 80°  | 85°  | 90°  |
| 15      | 1.6          | 0.0                 | 0.0 | 0.0 | 0.0 | 0.1 | 0.1 | 0.2 | 0.3 | 0.3 | 0.4 | 0.4 | 0.5 | 0.6 | 0.6 | 0.7 | 0.7 | 0.8  | 0.9  | 0.9  |
|         | 3.0          | 0.0                 | 0.0 | 0.0 | 0.2 | 0.3 | 0.6 | 0.8 | 1.1 | 1.3 | 1.5 | 1.8 | 2.0 | 2.2 | 2.5 | 2.7 | 2.9 | 3.2  | 3.4  | 3.6  |
| 20      | 1.6          | 0.0                 | 0.0 | 0.0 | 0.0 | 0.1 | 0.2 | 0.2 | 0.3 | 0.4 | 0.5 | 0.5 | 0.6 | 0.7 | 0.8 | 0.8 | 0.9 | 1.0  | 1.1  | 1.1  |
|         | 3.0          | 0.0                 | 0.0 | 0.0 | 0.2 | 0.4 | 0.7 | 0.9 | 1.3 | 1.5 | 1.8 | 2.1 | 2.5 | 2.7 | 3.1 | 3.4 | 3.6 | 4.0  | 4.2  | 4.4  |
| 25      | 1.6          | 0.0                 | 0.0 | 0.0 | 0.1 | 0.2 | 0.3 | 0.4 | 0.6 | 0.7 | 0.9 | 1.0 | 1.2 | 1.3 | 1.4 | 1.5 | 1.7 | 1.8  | 2.0  | 2.1  |
|         | 3.0          | 0.0                 | 0.0 | 0.0 | 0.2 | 0.5 | 0.9 | 1.2 | 1.6 | 2.0 | 2.3 | 2.7 | 3.1 | 3.5 | 3.9 | 4.3 | 4.5 | 5.1  | 5.3  | 5.6  |
| 40      | 1.6          | 0.0                 | 0.0 | 0.1 | 0.2 | 0.3 | 0.5 | 0.7 | 0.9 | 1.2 | 1.4 | 1.6 | 1.8 | 2.0 | 2.2 | 2.4 | 2.7 | 2.9  | 3.1  | 3.3  |
|         | 3.0          | 0.0                 | 0.0 | 0.0 | 0.4 | 0.8 | 1.4 | 1.9 | 2.6 | 3.1 | 3.8 | 4.4 | 5.0 | 5.6 | 6.3 | 6.9 | 7.3 | 8.2  | 8.6  | 9.1  |
| 50      | 1.6          | 0.0                 | 0.0 | 0.1 | 0.2 | 0.4 | 0.6 | 0.9 | 1.1 | 1.4 | 1.7 | 2.0 | 2.3 | 2.5 | 2.8 | 3.0 | 3.3 | 3.6  | 3.9  | 4.1  |
|         | 3.0          | 0.0                 | 0.0 | 0.0 | 0.5 | 0.9 | 1.7 | 2.4 | 3.3 | 4.0 | 4.7 | 5.5 | 6.3 | 7.1 | 7.9 | 8.7 | 9.2 | 10.2 | 10.8 | 11.4 |

## C<sub>v</sub> VALUES FOR LINEAR CONTROL SEAT

| Slot     |      | Valve opening angle |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |      |      |
|----------|------|---------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|------|------|
| Size NPS | (mm) | 0°                  | 5°  | 10° | 15° | 20° | 25° | 30° | 35° | 40° | 45° | 50° | 55° | 60° | 65° | 70° | 75° | 80°  | 85°  | 90°  |
| ½"       | 1.6  | 0.0                 | 0.0 | 0.0 | 0.0 | 0.1 | 0.1 | 0.2 | 0.3 | 0.3 | 0.4 | 0.4 | 0.5 | 0.6 | 0.6 | 0.7 | 0.7 | 0.8  | 0.9  | 0.9  |
|          | 3.0  | 0.0                 | 0.0 | 0.0 | 0.2 | 0.3 | 0.6 | 0.8 | 1.1 | 1.3 | 1.5 | 1.8 | 2.0 | 2.2 | 2.5 | 2.7 | 2.9 | 3.2  | 3.4  | 3.6  |
| ¾"       | 1.6  | 0.0                 | 0.0 | 0.0 | 0.0 | 0.1 | 0.2 | 0.2 | 0.3 | 0.4 | 0.5 | 0.5 | 0.6 | 0.7 | 0.8 | 0.8 | 0.9 | 1.0  | 1.1  | 1.1  |
|          | 3.0  | 0.0                 | 0.0 | 0.0 | 0.2 | 0.4 | 0.7 | 0.9 | 1.3 | 1.5 | 1.8 | 2.1 | 2.5 | 2.7 | 3.1 | 3.4 | 3.6 | 4.0  | 4.2  | 4.4  |
| 1"       | 1.6  | 0.0                 | 0.0 | 0.0 | 0.1 | 0.2 | 0.3 | 0.4 | 0.6 | 0.7 | 0.9 | 1.0 | 1.2 | 1.3 | 1.4 | 1.5 | 1.7 | 1.8  | 2.0  | 2.1  |
|          | 3.0  | 0.0                 | 0.0 | 0.0 | 0.2 | 0.5 | 0.9 | 1.2 | 1.6 | 2.0 | 2.3 | 2.7 | 3.1 | 3.5 | 3.9 | 4.3 | 4.5 | 5.1  | 5.3  | 5.6  |
| 1½"      | 1.6  | 0.0                 | 0.0 | 0.1 | 0.2 | 0.3 | 0.5 | 0.7 | 0.9 | 1.2 | 1.4 | 1.6 | 1.8 | 2.0 | 2.2 | 2.4 | 2.7 | 2.9  | 3.1  | 3.3  |
|          | 3.0  | 0.0                 | 0.0 | 0.0 | 0.4 | 0.8 | 1.4 | 1.9 | 2.6 | 3.1 | 3.8 | 4.4 | 5.0 | 5.6 | 6.3 | 6.9 | 7.3 | 8.2  | 8.6  | 9.1  |
| 2"       | 1.6  | 0.0                 | 0.0 | 0.1 | 0.2 | 0.4 | 0.6 | 0.9 | 1.1 | 1.4 | 1.7 | 2.0 | 2.3 | 2.5 | 2.8 | 3.0 | 3.3 | 3.6  | 3.9  | 4.1  |
|          | 3.0  | 0.0                 | 0.0 | 0.0 | 0.5 | 0.9 | 1.7 | 2.4 | 3.3 | 4.0 | 4.7 | 5.5 | 6.3 | 7.1 | 7.9 | 8.7 | 9.2 | 10.2 | 10.8 | 11.4 |

## SPECIAL CUSTOMIZED CONTROL SEATS

Please contact factory

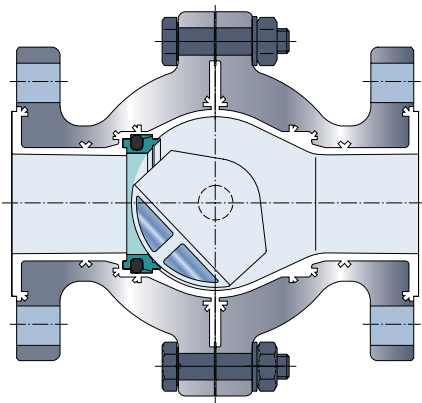
## NEOTECHA NTB - NTC PFA LINED BALL VALVES (DISCONTINUED)

### TECHNICAL DATA

The C-ball lined valve is dead spot free and is ideally suited for shut-off and control of corrosive, poisonous, crystallizing or high purity products where it is imperative that no product is entrapped in the ball and surrounding cavity.

The C-ball valve is based on a full port design resulting in high  $K_v$  values, which are especially required when high viscosity liquids have to be controlled or for those applications which require a large rangeability.

The advantage of the C-ball is a reduced flow distortion and excellent control characteristic. The wide range of available seat control styles have been designed based on our experience in corrosive flow control applications for many years. Most common control seats are the various V-port designs as well as the equal percentage of linear. These V-port seats are available with a V-port opening of 15, 20, 30, 40, 60 and 90°. For the most demanding flow control applications, Neotecha is able to calculate customized control seats.



#### Main benefits NTC as control valve

- Full trunnion mounted ball stem design utilized enhance control accuracy by eliminating a point of undesired hysteresis and it eliminates torque transmission through the PFA lining common to two piece designs.
- Full port design resulting in a large rangeability.
- Dead spot and cavity free design.
- Smooth flow path due to C-ball design.
- High cycle spindle seal construction.
- Fully trunnion mounted design eliminates radial shaft movement resulting in extreme low emissions (spindle seal is TA-Luft and VDI 2440 approved).
- Standard TFM seat resulting in low friction and low wear seat design.
- Wide range of control seats able to suit wide range of flow control characteristics.
- Integrated ISO 5211 topplate to allow direct actuator mounting resulting in a compact package.
- Emerson is able to supply complete flow control packages including flow calculation, control valves, actuators and positioners, all from one source.

NEOTECHA NTB - NTC PFA LINED BALL VALVES (DISCONTINUED)

TECHNICAL DATA

SELECTION GUIDE

| Example:                      |  | NTB | 050 | NB1 | F | 16 | L | 00 |                        |  |  |  |  |  |  |                                                                |  |   |  |                          |  |  |
|-------------------------------|--|-----|-----|-----|---|----|---|----|------------------------|--|--|--|--|--|--|----------------------------------------------------------------|--|---|--|--------------------------|--|--|
| Type                          |  |     |     |     |   |    |   |    |                        |  |  |  |  |  |  |                                                                |  |   |  |                          |  |  |
| NTB                           |  |     |     |     |   |    |   |    | standard ball stem     |  |  |  |  |  |  |                                                                |  |   |  |                          |  |  |
| NTC                           |  |     |     |     |   |    |   |    | C-ball stem            |  |  |  |  |  |  |                                                                |  |   |  |                          |  |  |
| Size (DN)                     |  |     |     |     |   |    |   |    |                        |  |  |  |  |  |  |                                                                |  |   |  |                          |  |  |
| 15 - 150                      |  |     |     |     |   |    |   |    |                        |  |  |  |  |  |  |                                                                |  |   |  |                          |  |  |
| Trim                          |  |     |     |     |   |    |   |    |                        |  |  |  |  |  |  |                                                                |  |   |  |                          |  |  |
| See material trim table       |  |     |     |     |   |    |   |    |                        |  |  |  |  |  |  |                                                                |  |   |  |                          |  |  |
| Body style                    |  |     |     |     |   |    |   |    |                        |  |  |  |  |  |  |                                                                |  |   |  |                          |  |  |
| F                             |  |     |     |     |   |    |   |    |                        |  |  |  |  |  |  | Flanged                                                        |  |   |  |                          |  |  |
| Flange pattern / face to face |  |     |     |     |   |    |   |    |                        |  |  |  |  |  |  |                                                                |  |   |  |                          |  |  |
| A1                            |  |     |     |     |   |    |   |    |                        |  |  |  |  |  |  | ANSI 150 (face to face in accordance to ANSI B16.10 class 150) |  |   |  |                          |  |  |
| 16                            |  |     |     |     |   |    |   |    |                        |  |  |  |  |  |  | PN 16 (face to face in accordance to DIN EN 558-1, row 1)      |  |   |  |                          |  |  |
| J0                            |  |     |     |     |   |    |   |    |                        |  |  |  |  |  |  | JIS 10K                                                        |  |   |  |                          |  |  |
| Operation/Connection          |  |     |     |     |   |    |   |    |                        |  |  |  |  |  |  |                                                                |  |   |  |                          |  |  |
| L                             |  |     |     |     |   |    |   |    |                        |  |  |  |  |  |  | Lever operated                                                 |  | 4 |  | With mounting flange F10 |  |  |
| G                             |  |     |     |     |   |    |   |    |                        |  |  |  |  |  |  | Gear operated                                                  |  | 5 |  | With mounting flange F12 |  |  |
| 1                             |  |     |     |     |   |    |   |    |                        |  |  |  |  |  |  | With mounting flange F04                                       |  | 6 |  | With mounting flange F14 |  |  |
| 2                             |  |     |     |     |   |    |   |    |                        |  |  |  |  |  |  | With mounting flange F05                                       |  | 7 |  | With mounting flange F16 |  |  |
| 3                             |  |     |     |     |   |    |   |    |                        |  |  |  |  |  |  | With mounting flange F07                                       |  | B |  | Bare shaft               |  |  |
| Variant                       |  |     |     |     |   |    |   |    |                        |  |  |  |  |  |  |                                                                |  |   |  |                          |  |  |
| 00                            |  |     |     |     |   |    |   |    | Standard               |  |  |  |  |  |  |                                                                |  |   |  |                          |  |  |
| 15                            |  |     |     |     |   |    |   |    | 15 degrees V port seat |  |  |  |  |  |  |                                                                |  |   |  |                          |  |  |
| 20                            |  |     |     |     |   |    |   |    | 20 degrees V port seat |  |  |  |  |  |  |                                                                |  |   |  |                          |  |  |
| 30                            |  |     |     |     |   |    |   |    | 30 degrees V port seat |  |  |  |  |  |  |                                                                |  |   |  |                          |  |  |
| 40                            |  |     |     |     |   |    |   |    | 40 degrees V port seat |  |  |  |  |  |  |                                                                |  |   |  |                          |  |  |
| 60                            |  |     |     |     |   |    |   |    | 60 degrees V port seat |  |  |  |  |  |  |                                                                |  |   |  |                          |  |  |
| 90                            |  |     |     |     |   |    |   |    | 90 degrees V port seat |  |  |  |  |  |  |                                                                |  |   |  |                          |  |  |

MATERIAL TRIM TABLE NTB AND NTC

| Trim number | Body                        | Ball                        | Shaft                       | Seat           | O-ring backing       | Sizes              | Remarks                                                    |
|-------------|-----------------------------|-----------------------------|-----------------------------|----------------|----------------------|--------------------|------------------------------------------------------------|
| NB1         | PFA encapsulated            | PFA encapsulated            | PFA encapsulated            | TFM            | FPM/PFA encapsulated | DN 15-150<br>½"-6" | NTC control seats are made of PTFE/glass                   |
| NB2         | PFA encapsulated            | PFA encapsulated            | PFA encapsulated            | TFM            | FPM/PFA encapsulated | DN 15-150<br>½"-6" | Especially cleaned and treated for HCl and Cl <sub>2</sub> |
| NB4         | Conductive PFA encapsulated | Conductive PFA encapsulated | Conductive PFA encapsulated | TFM Conductive | FPM/PFA encapsulated | DN 15-150<br>½"-6" |                                                            |
| NB5         | Conductive PFA encapsulated | Conductive PFA encapsulated | Conductive PFA encapsulated | TFM Conductive | FPM/PFA encapsulated | DN 15-150<br>½"-6" | Especially cleaned and treated for HCl and Cl <sub>2</sub> |

# NEOTECHA NTB - NTC PFA LINED BALL VALVES (DISCONTINUED)

## LEVER AND GEAR OPERATOR - METRIC

### FLANGE DRILLED DIN PN 16, FACE TO FACE DIN EN 558, ROW 1

| Size DN | B    | H   | L   | D   | D1  | T <sub>k</sub> | nxd  | b  | Weight (kg) |
|---------|------|-----|-----|-----|-----|----------------|------|----|-------------|
| 15      | 130  | 110 | 210 | 95  | 95  | 65             | 4x14 | 12 | 3.6         |
| 20      | 150  | 110 | 210 | 105 | 95  | 75             | 4x14 | 14 | 3.9         |
| 25      | 160  | 135 | 210 | 115 | 120 | 85             | 4x14 | 14 | 6.2         |
| 40      | 200  | 150 | 210 | 150 | 156 | 110            | 4x18 | 16 | 11.0        |
| 50      | 230  | 155 | 210 | 165 | 165 | 125            | 4x18 | 18 | 13.5        |
| 65      | 290  | 190 | 300 | 185 | 230 | 145            | 4x18 | 18 | 24.3        |
| 80      | 310  | 190 | 300 | 200 | 230 | 160            | 8x18 | 20 | 25.0        |
| 100     | 350  | 205 | 300 | 220 | 265 | 180            | 8x18 | 22 | 35.0        |
| 150     | *480 | 270 | -   | 279 | 365 | 241            | 8x22 | 26 | 98.0        |

\* With spool piece

### FLANGE DRILLED ANSI B 16.5 CLASS 150, FACE TO FACE ANSI B 16.10 CLASS 150

| Size DN | B    | H   | L   | D   | D1  | T <sub>k</sub> | nxd  | b  | Weight (kg) |
|---------|------|-----|-----|-----|-----|----------------|------|----|-------------|
| 15      | 108  | 110 | 210 | 89  | 95  | 60.3           | 4x16 | 11 | 3.4         |
| 20      | 117  | 110 | 210 | 98  | 95  | 70.0           | 4x16 | 13 | 3.6         |
| 25      | 127  | 135 | 210 | 108 | 120 | 79.5           | 4x16 | 14 | 5.7         |
| 40      | 165  | 150 | 210 | 127 | 156 | 98.5           | 4x16 | 18 | 9.6         |
| 50      | 178  | 155 | 210 | 152 | 165 | 120.5          | 4x19 | 18 | 12.2        |
| 65      | *290 | 190 | 300 | 185 | 230 | 145.0          | 4x19 | 18 | 24.3        |
| 80      | 203  | 190 | 300 | 190 | 230 | 152.5          | 4x19 | 24 | 23.8        |
| 100     | 229  | 205 | 300 | 229 | 265 | 190.5          | 8x19 | 24 | 33.8        |
| 150     | 267  | 270 | -   | 279 | 365 | 241.0          | 8x22 | 26 | 79.0        |

\* Face to face to DIN EN 558, row 1

### FLANGE DRILLED JIS B 2212 10K, FACE TO FACE DIN EN 558, ROW 1

| Size DN | B    | H   | L   | D   | D1  | T <sub>k</sub> | nxd  | b  | Weight (kg) |
|---------|------|-----|-----|-----|-----|----------------|------|----|-------------|
| 15      | 130  | 110 | 210 | 95  | 95  | 70             | 4x15 | 12 | 3.6         |
| 20      | 150  | 110 | 210 | 100 | 95  | 75             | 4x15 | 14 | 3.9         |
| 25      | 160  | 135 | 210 | 118 | 120 | 90             | 4x19 | 14 | 6.2         |
| 40      | 200  | 150 | 210 | 140 | 156 | 105            | 4x19 | 16 | 11.0        |
| 50      | 230  | 155 | 210 | 155 | 165 | 120            | 4x19 | 18 | 13.5        |
| 65      | 290  | 190 | 300 | 175 | 230 | 140            | 4x19 | 18 | 24.3        |
| 80      | 310  | 190 | 300 | 185 | 230 | 150            | 8x19 | 20 | 25.0        |
| 100     | 350  | 205 | 300 | 210 | 265 | 175            | 8x19 | 22 | 35.0        |
| 150     | *480 | 270 | -   | 279 | 365 | 240            | 8x23 | 26 | 98.0        |

\* With spool piece

### GEAR OPERATOR

| Size DN | Size NPS | H   | Weight (kg) |
|---------|----------|-----|-------------|
| 15      | 1/2      | 118 | 7.1         |
| 20      | 3/4      | 118 | 7.3         |
| 25      | 1        | 140 | 9.6         |
| 40      | 1 1/2    | 153 | 14.4        |
| 50      | 2        | 158 | 16.9        |
| 65      | 2 1/2    | 206 | 31.6        |
| 80      | 3        | 206 | 32.3        |
| 100     | 4        | 222 | 42.3        |
| 150     | 6        | 285 | 122.2       |

### GEAR OPERATOR DIMENSIONS

| Size DN (NPS)    | Gear | ISO | A   | B   | Ø D | E  | F  | G  |
|------------------|------|-----|-----|-----|-----|----|----|----|
| 15-50 (1/2-2)    | *    | F07 | 150 | 194 | 200 | 71 | 46 | 28 |
| 65-150 (2 1/2-6) | **   | F10 | 140 | 213 | 250 | 85 | 70 | 35 |

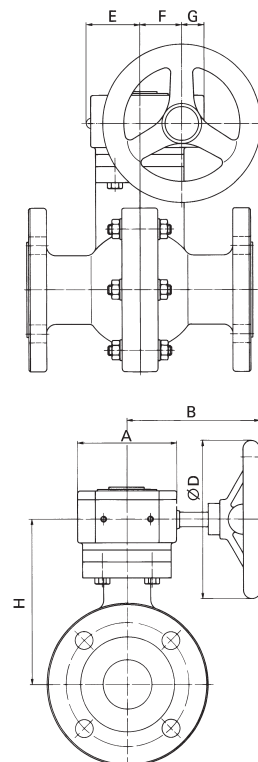
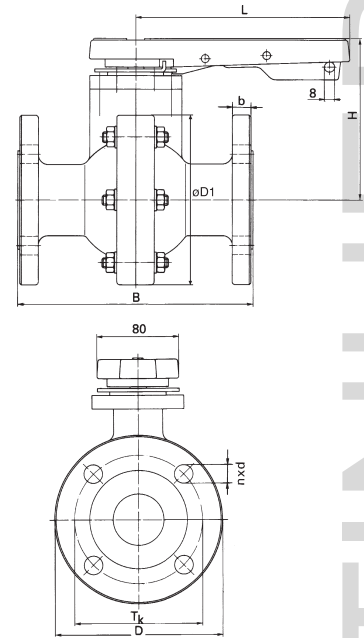
\* Type 1

\*\* Type 2

### HANDLEVER

Type ZE: lockable in end position (DN 15-80)

Type Z for C-ball valve: lockable in 6 intermediate positions.



# NEOTECHA NTB - NTC PFA LINED BALL VALVES (DISCONTINUED)

## LEVER AND GEAR OPERATOR - IMPERIAL

### FLANGE DRILLED DIN PN 16, FACE TO FACE DIN EN 558, ROW 1

| Size NPS | B      | H     | L     | D     | D1    | T <sub>k</sub> | nxd      | b    | Weight (lb) |
|----------|--------|-------|-------|-------|-------|----------------|----------|------|-------------|
| 1/2      | 5.12   | 4.33  | 8.27  | 3.74  | 3.74  | 2.56           | 4 x 0.55 | 0.47 | 7.94        |
| 3/4      | 5.91   | 4.33  | 8.27  | 4.13  | 3.74  | 2.95           | 4 x 0.55 | 0.55 | 8.60        |
| 1        | 6.30   | 5.31  | 8.27  | 4.53  | 4.72  | 3.35           | 4 x 0.55 | 0.55 | 13.67       |
| 1 1/2    | 7.87   | 5.91  | 8.27  | 5.91  | 6.14  | 4.33           | 4 x 0.71 | 0.63 | 24.25       |
| 2        | 9.06   | 6.10  | 8.27  | 6.50  | 6.50  | 4.92           | 4 x 0.71 | 0.71 | 29.76       |
| 2 1/2    | 11.42  | 7.48  | 11.81 | 7.28  | 9.06  | 5.71           | 4 x 0.71 | 0.71 | 53.57       |
| 3        | 12.20  | 7.48  | 11.81 | 7.87  | 9.06  | 6.30           | 8 x 0.71 | 0.79 | 55.12       |
| 4        | 13.78  | 8.07  | 11.81 | 8.66  | 10.43 | 7.09           | 8 x 0.71 | 0.87 | 77.16       |
| 6        | *18.89 | 10.63 | -     | 10.98 | 14.37 | 9.49           | 8 x 0.87 | 1.02 | 216.05      |

\* With spool piece

### FLANGE DRILLED ANSI B 16.5 CLASS 150, FACE TO FACE ANSI B 16.10 CLASS 150

| Size NPS | B      | H     | L     | D     | D1    | T <sub>k</sub> | nxd      | b    | Weight (lb) |
|----------|--------|-------|-------|-------|-------|----------------|----------|------|-------------|
| 1/2      | 4.25   | 4.33  | 8.27  | 3.50  | 3.74  | 2.37           | 4 x 0.63 | 0.43 | 7.50        |
| 3/4      | 4.61   | 4.33  | 8.27  | 3.86  | 3.74  | 2.76           | 4 x 0.63 | 0.51 | 7.94        |
| 1        | 5.00   | 5.31  | 8.27  | 4.25  | 4.72  | 3.13           | 4 x 0.63 | 0.55 | 12.57       |
| 1 1/2    | 6.50   | 5.91  | 8.27  | 5.00  | 6.14  | 3.88           | 4 x 0.63 | 0.71 | 21.16       |
| 2        | 7.01   | 6.10  | 8.27  | 5.98  | 6.50  | 4.74           | 4 x 0.75 | 0.71 | 26.90       |
| 2 1/2    | *11.42 | 7.48  | 11.81 | 7.28  | 9.06  | 5.71           | 4 x 0.75 | 0.71 | 53.57       |
| 3        | 7.99   | 7.48  | 11.81 | 7.48  | 9.06  | 6.00           | 4 x 0.75 | 0.94 | 52.47       |
| 4        | 9.02   | 8.07  | 11.81 | 9.02  | 10.43 | 7.50           | 8 x 0.75 | 0.94 | 74.52       |
| 6        | 10.51  | 10.63 | -     | 10.98 | 14.37 | 9.49           | 8 x 0.87 | 1.02 | 174.17      |

\* Face to face to DIN EN 558, row 1

### FLANGE DRILLED JIS B 2212 10K, FACE TO FACE DIN EN 558, ROW 1

| Size NPS | B      | H     | L     | D     | D1    | T <sub>k</sub> | nxd      | b    | Weight (lb) |
|----------|--------|-------|-------|-------|-------|----------------|----------|------|-------------|
| 1/2      | 5.12   | 4.33  | 8.27  | 3.74  | 3.74  | 2.76           | 4 x 0.59 | 0.47 | 7.94        |
| 3/4      | 5.91   | 4.33  | 8.27  | 3.94  | 3.74  | 2.95           | 4 x 0.59 | 0.55 | 8.60        |
| 1        | 6.30   | 5.31  | 8.27  | 4.65  | 4.72  | 3.54           | 4 x 0.75 | 0.55 | 13.67       |
| 1 1/2    | 7.87   | 5.91  | 8.27  | 5.51  | 6.14  | 4.13           | 4 x 0.75 | 0.63 | 24.25       |
| 2        | 9.06   | 6.10  | 8.27  | 6.10  | 6.50  | 4.72           | 4 x 0.75 | 0.71 | 29.76       |
| 2 1/2    | 11.42  | 7.48  | 11.81 | 6.89  | 9.06  | 5.51           | 4 x 0.75 | 0.71 | 53.57       |
| 3        | 12.20  | 7.48  | 11.81 | 7.28  | 9.06  | 5.91           | 8 x 0.75 | 0.79 | 55.12       |
| 4        | 13.78  | 8.07  | 11.81 | 8.27  | 10.43 | 6.89           | 8 x 0.75 | 0.87 | 77.16       |
| 6        | *18.90 | 10.63 | -     | 10.98 | 14.37 | 9.45           | 8 x 0.91 | 1.02 | 216.05      |

\* With spool piece

### GEAR OPERATOR

| Size NPS | Size DN | H     | Weight (lb) |
|----------|---------|-------|-------------|
| 1/2      | 15      | 4.65  | 15.65       |
| 3/4      | 20      | 4.65  | 16.09       |
| 1        | 25      | 5.51  | 21.16       |
| 1 1/2    | 40      | 6.02  | 31.75       |
| 2        | 50      | 6.22  | 37.26       |
| 2 1/2    | 65      | 8.11  | 69.67       |
| 3        | 80      | 8.11  | 71.21       |
| 4        | 100     | 8.74  | 93.26       |
| 6        | 150     | 11.22 | 269.41      |

### GEAR OPERATOR DIMENSIONS

| Size NPS (DN)      | Gear | ISO | A    | B    | Ø D  | E    | F    | G    |
|--------------------|------|-----|------|------|------|------|------|------|
| 1/2 - 2 (15-50)    | *    | F07 | 5.91 | 7.64 | 7.87 | 2.80 | 1.81 | 1.10 |
| 2 1/2 - 6 (65-150) | **   | F10 | 5.51 | 8.39 | 9.84 | 3.35 | 2.76 | 1.38 |

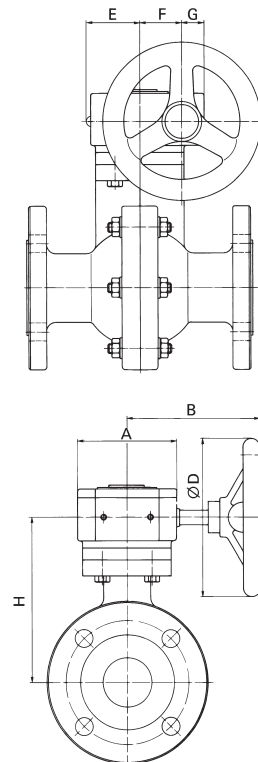
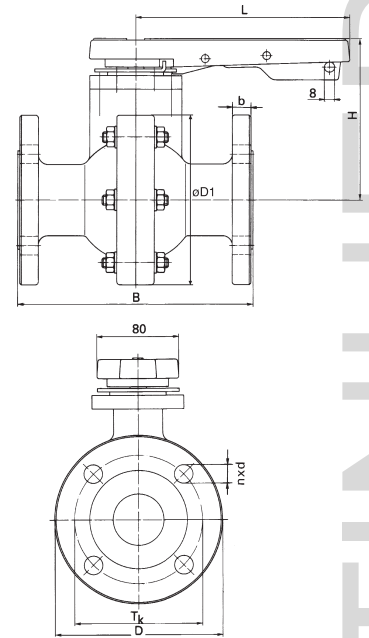
\* Type 1

\*\* Type 2

### HANDLEVER

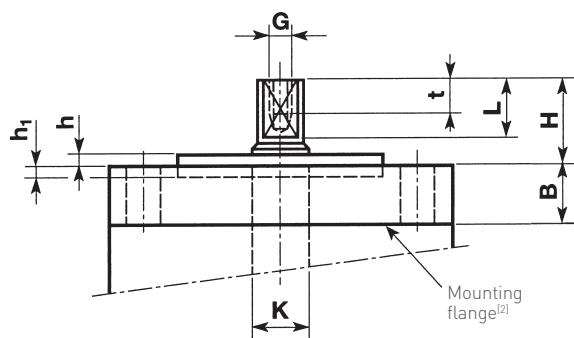
Type ZE: lockable in end position (DN 15-80)

Type Z for C-ball valve: lockable in 6 intermediate positions.



# NEOTECHA NTB - NTC PFA LINED BALL VALVES (DISCONTINUED)

## ISO 5211 FLANGE AND STEM ADAPTER DIMS - METRIC

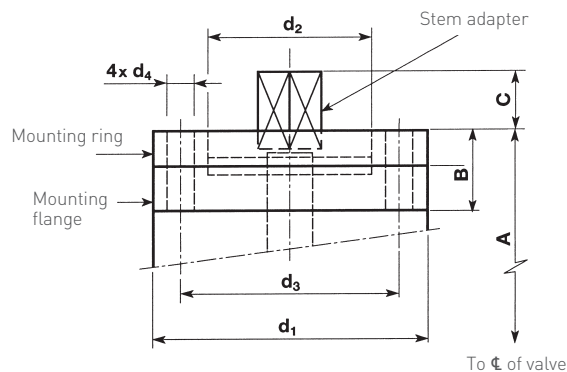


### NOTES

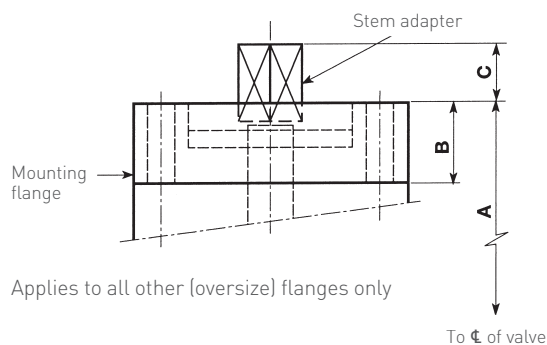
1. For direct mounting of actuators/gear units, please use the ISO5211 version.
2. All Mounting flanges for DN 150 have a recess (h<sub>1</sub>).
3. All flange and stem dimensions are in mm.

### BARE SHAFT FLANGE AND STEM DIMENSIONS in mm (Operation code "B")

| Size DN   | ISO flange | PCD | Stem Dia K | Double "D" (Flat) | Diag. Sq. | G  | H    | h/h <sub>1</sub>  | L  | t  | B    |
|-----------|------------|-----|------------|-------------------|-----------|----|------|-------------------|----|----|------|
| 015 - 020 | F04        | 42  | 11.0       | 7.0               | NA        | M5 | 22.0 | 2                 | 15 | 8  | 18.0 |
| 025 - 040 | F05        | 50  | 12.8       | 10.0              | NA        | M5 | 22.0 | 3                 | 15 | 9  | 19.0 |
| 050       | F07        | 70  | 14.0       | 10.0              | NA        | M6 | 22.0 | 3                 | 15 | 9  | 19.0 |
| 065 - 080 | F07        | 70  | 18.0       | NA                | 14.0      | NA | 33.5 | 3                 | 25 | NA | 19.0 |
| 100       | F07        | 70  | 20.0       | NA                | 16.0      | NA | 33.5 | 3                 | 25 | NA | 19.0 |
| 150       | F10        | 102 | 28.0       | NA                | 22.0      | M8 | 23.5 | 13 <sup>[2]</sup> | 35 | 20 | 30.5 |



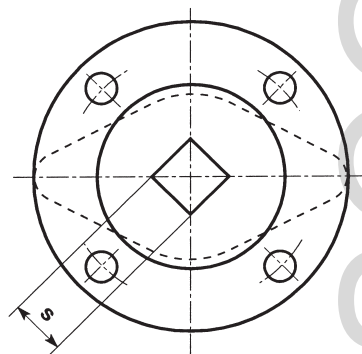
Applies to flange sizes marked<sup>[4]</sup> only



Applies to all other (oversize) flanges only

### ISO 5211/DIN 3337 TOP FLANGE AND STEM DIMENSIONS in mm (Operation code 1 - 7)

| Size DN   | PCD                | Diag. Sq. <sup>[5]</sup> | A     | B    | C    | D1  | D2  | D3  | D4   | Code |
|-----------|--------------------|--------------------------|-------|------|------|-----|-----|-----|------|------|
| 015 - 020 | F04 <sup>[4]</sup> | 11 x 11                  | 95.0  | 30.0 | 11.5 | 54  | 30  | 42  | 5.4  | 1    |
| 015 - 020 | F05                | 14 x 14                  | 93.0  | 27.5 | 12.5 | 65  | 35  | 50  | 7.0  | 2    |
| 015 - 020 | F07                | 17 x 17                  | 93.0  | 27.5 | 15.5 | 90  | 55  | 70  | 9.0  | 3    |
| 025       | F05 <sup>[4]</sup> | 14 x 14                  | 115.0 | 27.5 | 15.5 | 65  | 35  | 50  | 7.0  | 2    |
| 025       | F07                | 17 x 17                  | 115.0 | 27.5 | 18.5 | 90  | 55  | 70  | 9.0  | 3    |
| 025       | F10                | 22 x 22                  | 115.0 | 27.5 | 22.5 | 125 | 70  | 102 | 11.0 | 4    |
| 040       | F05 <sup>[4]</sup> | 14 x 14                  | 128.0 | 27.5 | 15.5 | 65  | 35  | 50  | 7.0  | 2    |
| 040       | F07                | 17 x 17                  | 128.0 | 27.5 | 18.5 | 90  | 55  | 70  | 9.0  | 3    |
| 040       | F10                | 22 x 22                  | 128.0 | 27.5 | 22.5 | 125 | 70  | 102 | 11.0 | 4    |
| 050       | F07 <sup>[4]</sup> | 17 x 17                  | 133.0 | 27.5 | 18.5 | 90  | 55  | 70  | 9.0  | 3    |
| 050       | F10                | 22 x 22                  | 133.0 | 27.5 | 22.5 | 125 | 70  | 102 | 11.0 | 4    |
| 050       | F12                | 27 x 27                  | 132.0 | 26.5 | 27.5 | 150 | 85  | 125 | 13.0 | 5    |
| 065 - 080 | F07 <sup>[4]</sup> | 17 x 17                  | 171.0 | 31.0 | 18.5 | 90  | 55  | 70  | 9.0  | 3    |
| 065 - 080 | F10                | 22 x 22                  | 168.0 | 27.5 | 22.0 | 125 | 70  | 102 | 11.0 | 4    |
| 065 - 080 | F12                | 27 x 27                  | 165.0 | 24.5 | 25.0 | 150 | 85  | 125 | 13.0 | 5    |
| 065 - 080 | F14                | 36 x 36                  | 165.0 | 24.5 | 30.0 | 175 | 100 | 140 | 17.0 | 6    |
| 100       | F07 <sup>[4]</sup> | 17 x 17                  | 187.0 | 31.0 | 18.5 | 90  | 55  | 70  | 9.0  | 3    |
| 100       | F10                | 22 x 22                  | 184.0 | 27.5 | 22.0 | 125 | 70  | 102 | 11.0 | 4    |
| 100       | F12                | 27 x 27                  | 181.0 | 24.5 | 25.0 | 150 | 85  | 125 | 13.0 | 5    |
| 100       | F14                | 36 x 36                  | 181.0 | 24.5 | 30.0 | 175 | 100 | 140 | 17.0 | 6    |
| 150       | F10 <sup>[4]</sup> | 22 x 22                  | 246.5 | 30.5 | 23.5 | 125 | 70  | 102 | 11.0 | 4    |
| 150       | F12                | 27 x 27                  | 243.0 | 27.0 | 27.0 | 150 | 85  | 125 | 13.0 | 5    |
| 150       | F14                | 36 x 36                  | 238.0 | 22.0 | 32.0 | 175 | 100 | 140 | 17.0 | 6    |
| 150       | F16                | 46 x 46                  | 238.0 | 22.0 | 40.0 | 210 | 130 | 165 | 22.0 | 7    |



### NOTES

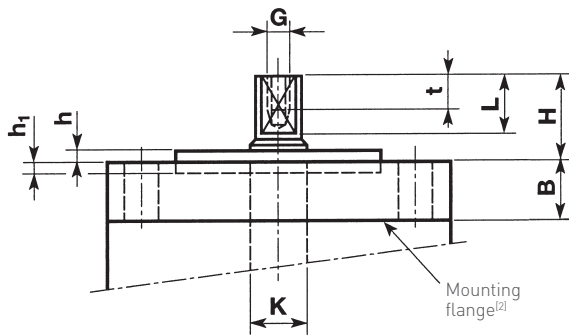
4. Flange dimensions for standard ball valves.
5. Diagonal square to ISO 5211

### WARNING

The mounting flange is an integral part of the valve. Removal, alteration or modification will disturb the "live-loaded" stem seal design and void warranty. Please consult your Neotecha technical representative.

# NEOTECHA NTB - NTC PFA LINED BALL VALVES (DISCONTINUED)

## ISO 5211 FLANGE AND STEM ADAPTER DIMS - IMPERIAL

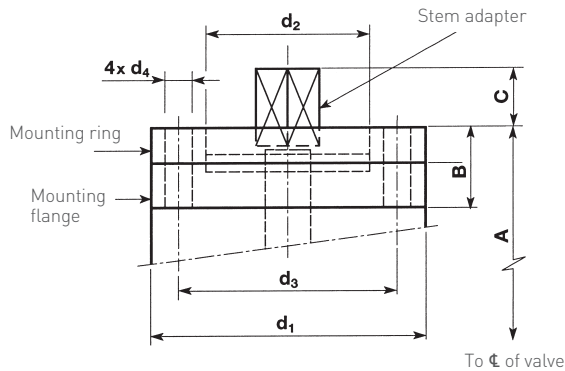


### NOTES

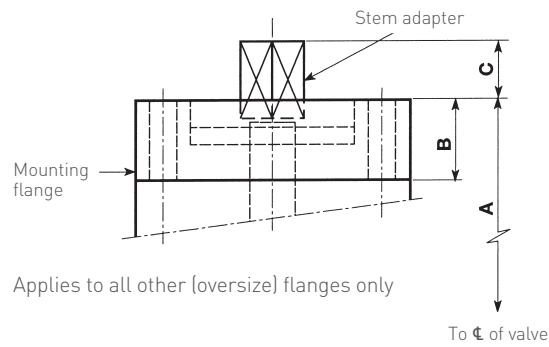
- For direct mounting of actuators/gear units, please use the ISO5211 version.
- All Mounting flanges for DN 150 have a recess (h<sub>1</sub>).
- All flange and stem dimensions are in imperial units.

### BARE SHAFT FLANGE AND STEM DIMENSIONS in inch (Operation code "B")

| Size NPS | ISO flange | PCD  | Stem Dia K | Double "D" (Flat) | Diag. Sq. | G  | H    | h/h <sub>1</sub>    | L    | t    | B    |
|----------|------------|------|------------|-------------------|-----------|----|------|---------------------|------|------|------|
| 1/2-3/4  | F04        | 1.65 | 0.43       | 0.28              | NA        | M5 | 0.87 | 0.08                | 0.59 | 0.31 | 0.71 |
| 1-1 1/2  | F05        | 1.97 | 0.50       | 0.39              | NA        | M6 | 0.87 | 0.12                | 0.59 | 0.35 | 0.75 |
| 2        | F07        | 2.76 | 0.55       | 0.39              | NA        | M6 | 0.87 | 0.12                | 0.59 | 0.35 | 0.75 |
| 2 1/2-3  | F07        | 2.76 | 0.71       | NA                | 0.55      | NA | 1.32 | 0.12                | 0.98 | NA   | 0.75 |
| 4        | F07        | 2.76 | 0.79       | NA                | 0.63      | NA | 1.32 | 0.12                | 0.98 | NA   | 0.75 |
| 6        | F10        | 4.02 | 1.10       | NA                | 0.87      | M8 | 0.93 | 0.51 <sup>[2]</sup> | 1.38 | 0.79 | 1.20 |



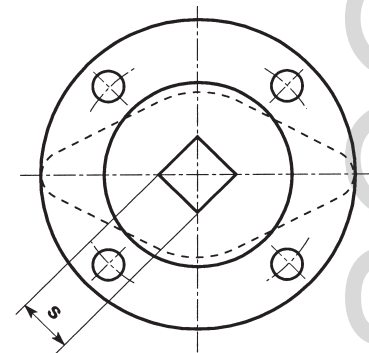
Applies to flange sizes marked<sup>[4]</sup> only



Applies to all other (oversize) flanges only

### ISO 5211/DIN 3337 TOP FLANGE AND STEM DIMENSIONS in inch (Operation code 1 - 7)

| Size NPS | PCD                | Diag. Sq. <sup>[5]</sup> | A    | B    | C    | D1   | D2   | D3   | D4   | Code |
|----------|--------------------|--------------------------|------|------|------|------|------|------|------|------|
| 1/2-3/4  | F04 <sup>[4]</sup> | 0.43 x 0.43              | 3.74 | 1.18 | 0.45 | 2.13 | 1.18 | 1.65 | 0.21 | 1    |
| 1/2-3/4  | F05                | 0.55 x 0.55              | 3.66 | 1.08 | 0.49 | 2.56 | 1.38 | 1.97 | 0.28 | 2    |
| 1/2-3/4  | F07                | 0.67 x 0.67              | 3.66 | 1.08 | 0.61 | 3.54 | 2.17 | 2.76 | 0.35 | 3    |
| 1        | F05 <sup>[4]</sup> | 0.55 x 0.55              | 4.53 | 1.08 | 0.61 | 2.56 | 1.38 | 1.97 | 0.28 | 2    |
| 1        | F07                | 0.67 x 0.67              | 4.53 | 1.08 | 0.73 | 3.54 | 2.17 | 2.76 | 0.35 | 3    |
| 1        | F10                | 0.87 x 0.87              | 4.53 | 1.08 | 0.89 | 4.92 | 2.76 | 4.02 | 0.43 | 4    |
| 1 1/2    | F05 <sup>[4]</sup> | 0.55 x 0.55              | 5.04 | 1.08 | 0.61 | 2.56 | 1.38 | 1.97 | 0.28 | 2    |
| 1 1/2    | F07                | 0.67 x 0.67              | 5.04 | 1.08 | 0.73 | 3.54 | 2.17 | 2.76 | 0.35 | 3    |
| 1 1/2    | F10                | 0.87 x 0.87              | 5.04 | 1.08 | 0.89 | 4.92 | 2.76 | 4.02 | 0.43 | 4    |
| 2        | F07 <sup>[4]</sup> | 0.67 x 0.67              | 5.24 | 1.08 | 0.73 | 3.54 | 2.17 | 2.76 | 0.35 | 3    |
| 2        | F10                | 0.87 x 0.87              | 5.24 | 1.08 | 0.89 | 4.92 | 2.76 | 4.02 | 0.43 | 4    |
| 2        | F12                | 1.06 x 1.06              | 5.20 | 1.04 | 1.08 | 5.91 | 3.35 | 4.92 | 0.51 | 5    |
| 2 1/2-3  | F07 <sup>[4]</sup> | 0.67 x 0.67              | 6.73 | 1.22 | 0.73 | 3.54 | 2.17 | 2.76 | 0.35 | 3    |
| 2 1/2-3  | F10                | 0.87 x 0.87              | 6.61 | 1.08 | 0.87 | 4.92 | 2.76 | 4.02 | 0.43 | 4    |
| 2 1/2-3  | F12                | 1.06 x 1.06              | 6.50 | 0.96 | 0.98 | 5.91 | 3.35 | 4.92 | 0.51 | 5    |
| 2 1/2-3  | F14                | 1.42 x 1.42              | 6.50 | 0.96 | 1.18 | 6.89 | 3.94 | 5.51 | 0.67 | 6    |
| 4        | F07 <sup>[4]</sup> | 0.67 x 0.67              | 7.36 | 1.22 | 0.73 | 3.54 | 2.17 | 2.76 | 0.35 | 3    |
| 4        | F10                | 0.87 x 0.87              | 7.24 | 1.08 | 0.87 | 4.92 | 2.76 | 4.02 | 0.43 | 4    |
| 4        | F12                | 1.06 x 1.06              | 7.13 | 0.96 | 0.98 | 5.91 | 3.35 | 4.92 | 0.51 | 5    |
| 4        | F14                | 1.42 x 1.42              | 7.13 | 0.96 | 1.18 | 6.89 | 3.94 | 5.51 | 0.67 | 6    |
| 6        | F10 <sup>[4]</sup> | 0.87 x 0.87              | 9.70 | 1.20 | 0.93 | 4.92 | 2.76 | 4.02 | 0.43 | 4    |
| 6        | F12                | 1.06 x 1.06              | 9.57 | 1.06 | 1.06 | 5.91 | 3.35 | 4.92 | 0.51 | 5    |
| 6        | F14                | 1.42 x 1.42              | 9.37 | 0.87 | 1.26 | 6.89 | 3.94 | 5.51 | 0.67 | 6    |
| 6        | F16                | 1.81 x 1.81              | 9.37 | 0.87 | 1.57 | 8.27 | 5.12 | 6.50 | 0.87 | 7    |



### NOTES

- Flange dimensions for standard ball valves.
- Diagonal square to ISO 5211

### WARNING

The mounting flange is an integral part of the valve. Removal, alteration or modification will disturb the "live-loaded" stem seal design and void warranty. Please consult your Neotecha technical representative.

## NEOTECHA NTB - NTC PFA LINED BALL VALVES (DISCONTINUED)

### QUESTIONNAIRE FOR CONTROL VALVE SIZING - METRIC

Flow calculations can be made with the following sizing formulas for liquid and gas.

Neotecha is able to supply a detailed flow control calculation sheet based on the actual process data and the required system characteristic.

#### Liquid:

$$K_V = Q \sqrt{\frac{RHO}{(P_1 - P_2) \times 1000}}$$

|       |                              |
|-------|------------------------------|
| $K_V$ | valve capacity coefficient   |
| $Q$   | flow [m <sup>3</sup> /h]     |
| $RHO$ | density [kg/m <sup>3</sup> ] |
| $P_1$ | inlet pressure [bar a]       |
| $P_2$ | outlet pressure [bar a]      |

#### Gas:

$$K_V = \frac{Q_N}{514} \sqrt{\frac{RHO_N \times T}{\Delta p \times P_2}}$$

|            |                                   |
|------------|-----------------------------------|
| $K_V$      | valve capacity coefficient        |
| $Q_N$      | flow [Norm m <sup>3</sup> /h]     |
| $RHO_N$    | density [kg/Norm m <sup>3</sup> ] |
| $P_1$      | inlet pressure [bar a]            |
| $P_2$      | outlet pressure [bar a]           |
| $\Delta P$ | Delta P ( $P_1 - P_2$ )           |
| $T$        | temperature in °Kelvin            |

For factory sizing please indicate the following data's:

#### Liquid:

|                                |                     |                      |
|--------------------------------|---------------------|----------------------|
| Flow                           | Q min.              | [m <sup>3</sup> /h]  |
|                                | Q norm.             | [m <sup>3</sup> /h]  |
|                                | Q max.              | [m <sup>3</sup> /h]  |
| $P_1$ inlet pressure absolute  | $P_1$ at min. flow  | [bar a]              |
|                                | $P_1$ at norm. flow | [bar a]              |
|                                | $P_1$ at max. flow  | [bar a]              |
| $P_2$ outlet pressure absolute | $P_2$ at min. flow  | [bar a]              |
|                                | $P_2$ at norm. flow | [bar a]              |
|                                | $P_2$ at max. flow  | [bar a]              |
| Vapor pressure absolute        | pv                  | [bar a]              |
| Critical pressure absolute     | pc                  | [bar a]              |
| Density                        | $RHO$               | [kg/m <sup>3</sup> ] |
| Line size                      | DN                  | [mm]                 |
| Preferred valve size           | DN                  | [mm]                 |

#### Gas:

|                                |                     |                       |
|--------------------------------|---------------------|-----------------------|
| Flow                           | W min.              | [kg/h]                |
|                                | W norm.             | [kg/h]                |
|                                | W max.              | [kg/h]                |
| $P_1$ inlet pressure absolute  | $P_1$ at min. flow  | [bar a]               |
|                                | $P_1$ at norm. flow | [bar a]               |
|                                | $P_1$ at max. flow  | [bar a]               |
| $P_2$ outlet pressure absolute | $P_2$ at min. flow  | [bar a]               |
|                                | $P_2$ at norm. flow | [bar a]               |
|                                | $P_2$ at max. flow  | [bar a]               |
| Temperature upstream           | $T_1$               | [Kelvin]              |
| Norm density                   | $RHO_N$             | [kg/nm <sup>3</sup> ] |
| Density                        | $RHO$               | [kg/m <sup>3</sup> ]  |
| Ratio of spec. Heat            | Kappa               | [ ]                   |
| Line size                      | DN                  | [mm]                  |
| Preferred valve size           | DN                  | [mm]                  |

The units mentioned are preferred units. If you have different units please precise them.

With equal percentage and V-port seats, the best control characteristics are between a opening angle of 20° to 60°.

The control of minimum to maximum flow should be chosen in this opening range.

# NEOTECHA NTB - NTC PFA LINED BALL VALVES (DISCONTINUED)

## QUESTIONNAIRE FOR CONTROL VALVE SIZING - IMPERIAL

Flow calculations can be made with the following sizing formulas for liquid and gas.

Neotecha is able to supply a detailed flow control calculation sheet based on the actual process data and the required system characteristic.

### Liquid:

$$C_v = Q \sqrt{\frac{R.D.}{\Delta p}}$$

$C_v$  valve capacity coefficient  
 $Q$  flow [cu ft/hr]  
 $R.D.$  relative density of liquid [water = 1]  
 $\Delta P$  pressure drop [psi]

### Gas:

$$C_v = \frac{Q}{61} \sqrt{\frac{R.D.}{P_2 \Delta p}}$$

$C_v$  valve capacity coefficient  
 $Q$  flow [scu ft/hr]  
 $R.D.$  relative density of gas [air = 1]  
 $\Delta P$  pressure drop [psi]  
[less than 1/2 inlet pressure (psia)]  
 $P_2$  outlet pressure [psi abs.]

For factory sizing please indicate the following data's:

### Liquid:

|                                |                     |                         |
|--------------------------------|---------------------|-------------------------|
| Fluid name                     |                     | [°F]                    |
| Temperature                    |                     |                         |
| Flow rate min.                 |                     | [cu ft/hr]              |
| Flow rate norm.                |                     | [cu ft/hr]              |
| Flow rate max.                 |                     | [cu ft/hr]              |
| $P_1$ inlet pressure absolute  | $P_1$ at min. flow  | [psia]                  |
|                                | $P_1$ at norm. flow | [psia]                  |
|                                | $P_1$ at max. flow  | [psia]                  |
| $P_2$ outlet pressure absolute | $P_2$ at min. flow  | [psia]                  |
|                                | $P_2$ at norm. flow | [psia]                  |
|                                | $P_2$ at max. flow  | [psia]                  |
| Vapor pressure absolute        | $p_v$               | [psia]                  |
| Critical pressure absolute     | $p_c$               | [psia]                  |
| Density                        | at $p_{1t1}$        | [lbs/ ft <sup>3</sup> ] |
| Line size                      |                     | [inch]                  |
| Preferred valve size           |                     | [inch]                  |

### Gas:

|                                |                     |                         |
|--------------------------------|---------------------|-------------------------|
| Fluid name                     |                     | [scu ft/hr]             |
| Flow rate min.                 |                     | [scu ft/hr]             |
| Flow rate norm.                |                     | [scu ft/hr]             |
| Flow rate max.                 |                     | [scu ft/hr]             |
| $P_1$ inlet pressure absolute  | $P_1$ at min. flow  | [psia]                  |
|                                | $P_1$ at norm. flow | [psia]                  |
|                                | $P_1$ at max. flow  | [psia]                  |
| $P_2$ outlet pressure absolute | $P_2$ at min. flow  | [psia]                  |
|                                | $P_2$ at norm. flow | [psia]                  |
|                                | $P_2$ at max. flow  | [psia]                  |
| Temperature upstream           | $T_1$               | [°F]                    |
| Density                        | at $p_{1t1}$        | [lbs/ ft <sup>3</sup> ] |
| Compressibility factor         |                     | [ ]                     |
| Adiabatic ratio                | $cp/cv$             | [inch]                  |
| Line size                      |                     | [inch]                  |
| Preferred valve size           |                     | [inch]                  |

The units mentioned are preferred units. If you have different units please precise them.

With equal percentage and V-port seats, the best control characteristics are between a opening angle of 20° to 60°.

The control of minimum to maximum flow should be chosen in this opening range.

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