

# VK Series Ball Valves

## Product Data Sheet



### < STANDARDS >



ASTM D1784  
ASTM D4101-86  
ASTM D3222  
ASTM D2466  
ASTM D2467  
ASTM F439  
ASTM D2464  
ASTM F437  
ASTM F1498



ISO 3609  
ISO 10931



ANSI B1.20.1  
ANSI B16.5

## introduction

IPEX VK Series Ball Valves are ideal for industrial and automated applications. These high quality valves feature a compact double block design, and full port bi-directional operation. A patented seat stop carrier allows for in-line micro-adjustment of the ball seating, and provides o-ring cushioning to minimize wear and prevent seizing. The true union design allows the valve to be easily removed from the piping system while the removable tool allows for simple ball seat adjustment. VK Series Ball Valves are part of our complete systems of pipe, valves, and fittings, engineered and manufactured to our strict quality, performance, and dimensional standards.

### Valve Availability

|                  |   |
|------------------|---|
| Body Material:   | PVC, CPVC, PP, PVDF   |
| Size Range:      | 1/2" through 6" (PVC, CPVC), 1/2" through 2" (PP, PVDF)                   |
| Pressure:        | 232 psi (1/2" to 2"), 150 psi (2 1/2" to 6")<br>150 psi (all sizes of PP) |
| Seats:           | Teflon® (PTFE)  |
| Seals:           | EPDM, or Viton® (FPM)   |
| End Connections: | Socket (IPS), Threaded (FNPT),<br>Flanged (ANSI 150), Socket (Metric)     |



# VK Series Ball Valves

## Sample Specification



### 1.0 Ball Valves - VK

#### 1.1 Material

- The valve body, stem, ball and unions shall be made of PVC compound which shall meet or exceed the requirements of cell classification 12454 according to ASTM D1784.
- or The valve body, stem, ball and unions shall be made of Corzan® CPVC compound which shall meet or exceed the requirements of 23447 according to ASTM D1784.
- or The valve body, stem, ball and unions shall be made of stabilized PP homopolymer compound, also containing a RAL 7032 pigment, which shall meet or exceed the requirements of Type I Polypropylene according to ASTM D4101-86.
- or The valve body, stem, ball and unions shall be made of virgin, non-regrind PVDF compound which shall meet or exceed the requirements of Table 1 according to ASTM D3222.
- These compounds shall comply with standards that are equivalent to NSF Standard 61 for potable water.

#### 1.2 Seats

- The ball seats shall be made of Teflon® (PTFE) which shall comply with standards that are equivalent to NSF Standard 61 for potable water.

#### 1.3 Seals

- The o-ring seals shall be made of EPDM which shall comply with standards that are equivalent to NSF Standard 61 for potable water.
- or The o-ring seals shall be made of Viton® (FPM) which shall comply with standards that are equivalent to NSF Standard 61 for potable water.

- 1.4 All other wetted and non-wetted parts of the valves shall comply with standards that are equivalent to NSF Standard 61 for potable water.

### 2.0 Connections

#### 2.1 Socket style

- The IPS socket PVC end connectors shall conform to the dimensional standards ASTM D2466 and ASTM D2467.
- or The IPS socket CPVC end connectors shall conform to the dimensional standard ASTM F439.
- or The Metric socket PP end connectors shall conform to the dimensional standard ISO 3609.
- or The Metric socket PVDF end connectors shall conform to the dimensional standard ISO 10931.

#### 2.2 Threaded style

- The female NPT threaded PVC end connectors shall conform to the dimensional standards ASTM D2464, ASTM F1498, and ANSI B1.20.1.
- or The female NPT threaded CPVC end connectors shall conform to the dimensional standards ASTM F437, ASTM F1498, and ANSI B1.20.1.
- or The female NPT threaded PP end connectors shall conform to the dimensional standards ASTM F1498, and ANSI B1.20.1.
- or The female NPT threaded PVDF end connectors shall conform to the dimensional standards ASTM F1498, and ANSI B1.20.1.

#### 2.3 Flanged style

- The ANSI 150 flanged PVC end connectors shall conform to the dimensional standard ANSI B16.5.



# VK Series Ball Valves

## Sample Specification (cont'd)



- or The ANSI 150 flanged CPVC end connectors shall conform to the dimensional standard ANSI B16.5.
- or The ANSI 150 flanged PP end connectors shall conform to the dimensional standard ANSI B16.5.
- or The ANSI 150 flanged PVDF end connectors shall conform to the dimensional standard ANSI B16.5.

### 3.0 Design Features

- The valve shall be double blocking with union ends.
- All sizes 1/2" through 4" shall be full port.
- All sizes shall allow for bi-directional flow.
- The valve body shall be single end entry with a threaded carrier (ball seat support).
- The threaded carrier shall be adjustable with the valve installed.
- The valve body shall have an expansion and contraction compensating groove on the molded end.
- The valve body, union nuts, and carrier shall have deep square style threads for increased strength.
- The ball shall be machined smooth to minimize wear on valve seats.
- All valve seats shall have o-ring backing cushions to compensate for wear and prevent seizure of the ball.
- The stem design shall feature a shear point above the o-ring to maintain system integrity in the unlikely event of a stem breakage.
- The handle shall incorporate a removable tool for adjustment of the threaded carrier.
- All sizes 2 1/2" through 6" shall have integrally molded mounting pads for actuation.

### 3.1 Pressure Tested

- All valves shall have been pressure tested in both the open and closed positions by the manufacturer.

### 3.2 Pressure Rating

- Valve sizes 1/2" through 2" shall be rated at 232 psi at 73°F (PVC, CPVC, PVDF)
- Valve sizes 1/2" through 2" shall be rated at 150 psi at 73°F (PP).
- Valve sizes 2 1/2" through 6" shall be rated at 150 psi at 73°F (PVC, CPVC).
- All sizes of flanged valves shall be rated at 150 psi at 73°F.

### 3.3 Markings

- All valves shall be marked to indicate size, material designation, and manufacturers name or trade mark.

### 3.4 Color Coding

- All PVC valves shall be color-coded dark gray.
- or All CPVC valves shall be color-coded light gray.
- or All PP valves shall be color-coded beige gray.
- or All PVDF valves shall not be color-coded and be white in appearance.

4.0 All valves shall be Xirtec® 140, Corzan®, PP or PVDF by IPEX or approved equal.



# VK Series Ball Valves

## Valve Selection

| Size (inches) | Body Material | O-ring Material | IPEX Part Number |               |                                | Pressure Rating @ 73°F |
|---------------|---------------|-----------------|------------------|---------------|--------------------------------|------------------------|
|               |               |                 | IPS Socket       | FNPT Threaded | ANSI Flanged                   |                        |
| 1/2           | PVC           | EPDM            | 053563           | 053673        | 232 psi for Socket or Threaded |                        |
|               |               | Viton®          | 053564           | 053683        |                                |                        |
|               | CPVC          | EPDM            | 053600           | 053696        |                                |                        |
|               |               | Viton®          | 053601           | 053706        |                                |                        |
| 3/4           | PVC           | EPDM            | 053565           | 053674        |                                |                        |
|               |               | Viton®          | 053566           | 053684        |                                |                        |
|               | CPVC          | EPDM            | 053602           | 053697        |                                |                        |
|               |               | Viton®          | 053603           | 053707        |                                |                        |
| 1             | PVC           | EPDM            | 053567           | 053675        | 150 psi for Flanged            |                        |
|               |               | Viton®          | 053568           | 053685        |                                |                        |
|               | CPVC          | EPDM            | 053604           | 053698        |                                |                        |
|               |               | Viton®          | 053605           | 053708        |                                |                        |
| 1-1/4         | PVC           | EPDM            | 053569           | 053676        |                                |                        |
|               |               | Viton®          | 053570           | 053686        |                                |                        |
|               | CPVC          | EPDM            | 053606           | 053699        |                                |                        |
|               |               | Viton®          | 053607           | 053709        |                                |                        |
| 1-1/2         | PVC           | EPDM            | 053571           | 053677        | 150 psi for all joint types    |                        |
|               |               | Viton®          | 053572           | 053687        |                                |                        |
|               | CPVC          | EPDM            | 053693           | 053700        |                                |                        |
|               |               | Viton®          | 053609           | 053710        |                                |                        |
| 2             | PVC           | EPDM            | 053573           | 053678        |                                |                        |
|               |               | Viton®          | 053574           | 053688        |                                |                        |
|               | CPVC          | EPDM            | 053610           | 053701        |                                |                        |
|               |               | Viton®          | 053611           | 053711        |                                |                        |
| 2-1/2         | PVC           | EPDM            | 053575           | n/a           | 150 psi for all joint types    |                        |
|               |               | Viton®          | 053576           | n/a           |                                |                        |
|               | CPVC          | EPDM            | 053588           | n/a           |                                |                        |
|               |               | Viton®          | 053589           | n/a           |                                |                        |
| 3             | PVC           | EPDM            | 053579           | n/a           |                                |                        |
|               |               | Viton®          | 053580           | n/a           |                                |                        |
|               | CPVC          | EPDM            | 053592           | n/a           |                                |                        |
|               |               | Viton®          | 053593           | n/a           |                                |                        |
| 4             | PVC           | EPDM            | 053584           | n/a           |                                |                        |
|               |               | Viton®          | 053585           | n/a           |                                |                        |
|               | CPVC          | EPDM            | 053596           | n/a           |                                |                        |
|               |               | Viton®          | 053597           | n/a           |                                |                        |
| 6             | PVC           | EPDM            | 053671           | n/a           |                                |                        |
|               |               | Viton®          | 053672           | n/a           |                                |                        |
|               | CPVC          | EPDM            | 053694           | n/a           |                                |                        |
|               |               | Viton®          | 053695           | n/a           |                                |                        |

| Size (inches) | Metric Size | Body Material | O-ring Material | IPEX Part Number |               |              | Pressure Rating @ 73°F |
|---------------|-------------|---------------|-----------------|------------------|---------------|--------------|------------------------|
|               |             |               |                 | IPS Socket       | FNPT Threaded | ANSI Flanged |                        |
| 1/2           | 20mm        | PP            | EPDM            | 053716           | 053728        | 053740       | 150 psi                |
|               |             |               | Viton®          | 053722           | 053734        | 053746       | 232 psi                |
|               | 25mm        | PP            | EPDM            | 053717           | 053729        | 053741       | 150 psi                |
|               |             |               | Viton®          | 053723           | 053735        | 053747       | 232 psi                |
|               | 32mm        | PP            | EPDM            | 053718           | 053730        | 053742       | 150 psi                |
|               |             |               | Viton®          | 053724           | 053736        | 053748       | 232 psi                |
|               | 40mm        | PP            | EPDM            | 053719           | 053731        | 053743       | 150 psi                |
|               |             |               | Viton®          | 053725           | 053737        | 053749       | 232 psi                |
|               | 50mm        | PP            | EPDM            | 053720           | 053732        | 053744       | 150 psi                |
|               |             |               | Viton®          | 053726           | 053738        | 053750       | 232 psi                |
|               | 63mm        | PP            | EPDM            | 053721           | 053733        | 053745       | 150 psi                |
|               |             |               | Viton®          | 053727           | 053739        | 053751       | 232 psi                |
|               |             |               | Viton®          | 053757           | 053763        | 053769       | 232 psi                |

### Body Material:

- PVC       PP  
 CPVC       PVDF

### Size (inches):

- 1/2       2  
 3/4       2-1/2  
 1       3  
 1-1/4       4  
 1-1/2       6

- 20mm       40mm  
 25mm       50mm  
 32mm       63mm

### Seals:

- EPDM  
 Viton® (FPM)

### End Connections:

- Socket (IPS)  
 Threaded (FNPT)  
 Flanged (ANSI 150)  
 Socket (Metric)

### IPEX Part Number:

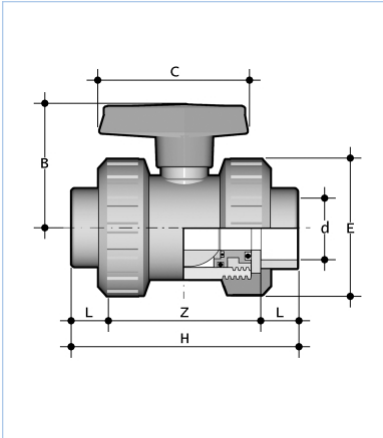
Flanged valves are rated at 150 psi at 73°F



# VK Series Ball Valves

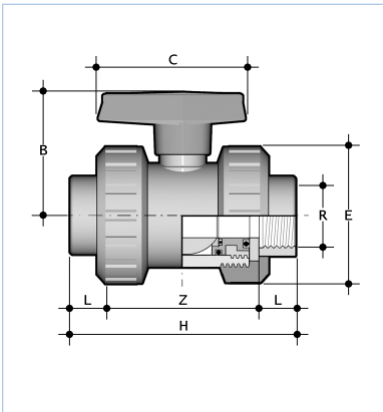
## Technical Data

### dimensions

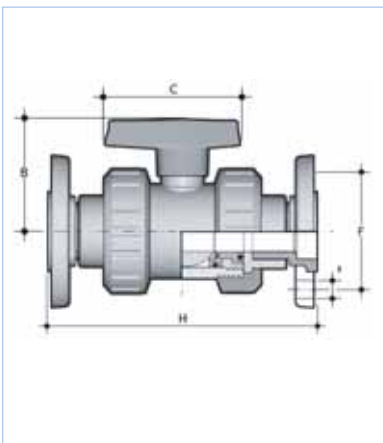


| IPS Socket Connections - Dimension (inches) |      |      |       |       |      |      |       |
|---|------|------|-------|-------|------|------|-------|
| Size  | d    | L    | Z     | H     | E    | B    | C     |
| 1/2   | 0.84 | 0.89 | 2.83  | 4.61  | 2.17 | 1.93 | 2.60  |
| 3/4   | 1.05 | 1.00 | 3.07  | 5.08  | 2.60 | 2.32 | 2.95  |
| 1   | 1.32 | 1.13 | 3.33  | 5.59  | 2.95 | 2.60 | 3.35  |
| 1-1/4                                       | 1.66 | 1.26 | 3.86  | 6.38  | 3.43 | 2.95 | 3.82  |
| 1-1/2                                       | 1.90 | 1.38 | 4.02  | 6.77  | 3.94 | 3.43 | 4.33  |
| 2   | 2.38 | 1.50 | 4.83  | 7.83  | 4.80 | 3.98 | 5.28  |
| 2-1/2                                       | 2.88 | 1.75 | 5.75  | 9.25  | 6.06 | 4.88 | 9.25  |
| 3   | 3.50 | 1.89 | 6.50  | 10.28 | 7.44 | 5.59 | 11.22 |
| 4   | 4.50 | 2.26 | 7.60  | 12.13 | 8.70 | 6.54 | 13.19 |
| *6  | 6.63 | 3.03 | 19.54 | 25.61 | 8.70 | 6.54 | 13.19 |

\*The 6" valve is a 4" with venturied ends.



| Female NPT Threaded Connections - Dimension (inches) |           |      |      |       |      |      |       |
|--|-----------|------|------|-------|------|------|-------|
| Size   | R         | L    | Z    | H     | E    | B    | C     |
| 1/2  | 1/2-NPT   | 0.70 | 2.97 | 4.37  | 2.17 | 1.93 | 2.60  |
| 3/4  | 3/4-NPT   | 0.71 | 3.19 | 4.61  | 2.60 | 2.32 | 2.95  |
| 1  | 1-NPT     | 0.89 | 3.54 | 5.31  | 2.95 | 2.60 | 3.35  |
| 1-1/4  | 1-1/4-NPT | 0.99 | 4.05 | 6.02  | 3.43 | 2.95 | 3.82  |
| 1-1/2  | 1-1/2-NPT | 0.97 | 4.20 | 6.14  | 3.94 | 3.43 | 4.33  |
| 2  | 2-NPT     | 1.17 | 4.99 | 7.32  | 4.80 | 3.98 | 5.28  |
| 2-1/2  | 2-1/2-NPT | 1.31 | 6.64 | 9.25  | 6.06 | 4.88 | 9.25  |
| 3  | 3-NPT     | 1.40 | 7.83 | 10.63 | 7.44 | 5.59 | 11.22 |
| 4  | 4-NPT     | 1.48 | 9.17 | 12.13 | 8.70 | 6.54 | 13.19 |



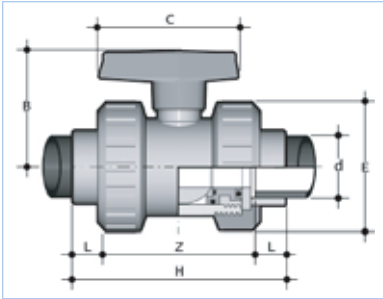
| ANSI 150 Flanged (Vanstone) Connections - Dimension (inches) |         |     |       |       |      |       |
|--|---------|-----|-------|-------|------|-------|
| Size   | # holes | f   | F     | H     | B    | C     |
| 1/2  | 4       | 5/8 | 2-3/8 | 6.42  | 1.93 | 2.60  |
| 3/4  | 4       | 5/8 | 2-3/4 | 7.02  | 2.32 | 2.95  |
| 1  | 4       | 5/8 | 3-1/8 | 7.72  | 2.60 | 3.35  |
| 1-1/4  | 4       | 5/8 | 3-1/2 | 8.57  | 2.95 | 3.82  |
| 1-1/2  | 4       | 5/8 | 3-7/8 | 9.27  | 3.43 | 4.33  |
| 2  | 4       | 3/4 | 4-3/4 | 10.58 | 3.98 | 5.28  |
| 2-1/2  | 4       | 3/4 | 5-1/2 | 11.88 | 4.88 | 9.25  |
| 3  | 4       | 3/4 | 6     | 12.77 | 5.59 | 11.22 |
| 4  | 8       | 3/4 | 7-1/2 | 14.95 | 6.54 | 13.19 |
| *6   | 8       | 7/8 | 9-1/2 | 28.51 | 6.54 | 13.19 |

\*The 6" valve is a 4" with venturied ends.

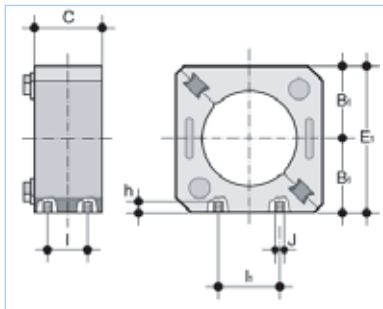
# VK Series Ball Valves

## Technical Data (cont'd)

### dimensions cont'd

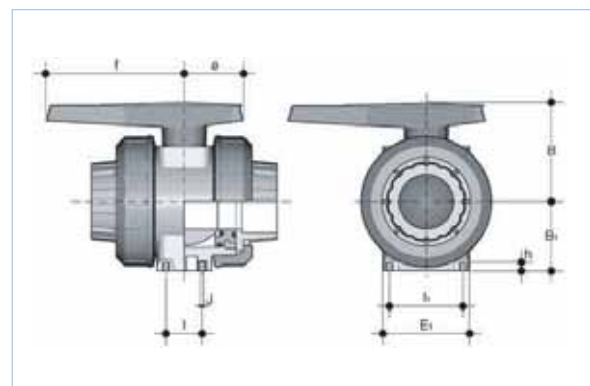
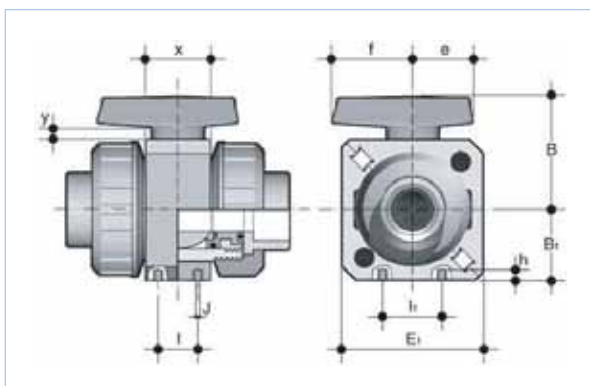


| Metric Socket Connections - Dimension (inches) |      |      |      |      |      |      |      |
|--|------|------|------|------|------|------|------|
| Size   | d    | L    | Z    | H    | E    | B    | C    |
| 20mm   | 0.84 | 0.57 | 2.87 | 4.02 | 2.17 | 1.93 | 2.60 |
| 25mm   | 1.05 | 0.63 | 3.23 | 4.49 | 2.56 | 2.32 | 2.95 |
| 32mm   | 1.31 | 0.71 | 3.54 | 4.96 | 2.91 | 2.60 | 3.35 |
| 40mm   | 1.66 | 0.81 | 3.94 | 5.55 | 3.39 | 2.95 | 3.82 |
| 50mm   | 1.90 | 0.93 | 4.61 | 6.46 | 3.90 | 3.43 | 4.33 |
| 63mm   | 2.38 | 1.08 | 5.67 | 7.83 | 4.72 | 3.98 | 5.28 |



| Plastic Mounting Bracket for Sizes 1/2" through 2" - Dimension (inches) |                |                |      |                |      |    |      |
|---|----------------|----------------|------|----------------|------|----|------|
| Size  | E <sub>1</sub> | B <sub>1</sub> | C    | I <sub>1</sub> | I    | J  | h    |
| 1/2   | 2.48           | 1.24           | 1.38 | 0.94           | 0.94 | M4 | 0.24 |
| 3/4   | 2.87           | 1.44           | 1.38 | 1.22           | 0.98 | M4 | 0.24 |
| 1   | 3.54           | 1.77           | 1.61 | 1.57           | 1.06 | M5 | 0.24 |
| 1-1/4   | 4.09           | 2.05           | 1.81 | 1.61           | 1.26 | M5 | 0.24 |
| 1-1/2   | 4.41           | 2.20           | 1.81 | 2.09           | 1.10 | M6 | 0.39 |
| 2   | 5.31           | 2.66           | 2.05 | 2.28           | 1.34 | M6 | 0.39 |

| with Mounting Bracket - Dimension (inches) |                |      |    |      |                |      |                |      |      |      |      |
|--|----------------|------|----|------|----------------|------|----------------|------|------|------|------|
| Size                                       | I <sub>1</sub> | I    | J  | h    | E <sub>1</sub> | B    | B <sub>1</sub> | e    | f    | x    | y    |
| 1/2  | 0.94           | 0.94 | M4 | 0.24 | 2.48           | 1.93 | 1.24           | 1.02 | 1.57 | 0.94 | 0.02 |
| 3/4  | 1.22           | 0.98 | M4 | 0.24 | 2.87           | 2.32 | 1.44           | 1.22 | 1.73 | 1.10 | 0.08 |
| 1  | 1.57           | 1.06 | M5 | 0.24 | 3.54           | 2.60 | 1.77           | 1.42 | 1.93 | 1.26 | 0.06 |
| 1-1/4                                      | 1.61           | 1.26 | M5 | 0.24 | 4.09           | 2.95 | 2.05           | 1.65 | 2.17 | 1.42 | 0.08 |
| 1-1/2                                      | 2.09           | 1.10 | M6 | 0.39 | 4.41           | 3.43 | 2.20           | 1.89 | 2.44 | 1.57 | 0.20 |
| 2  | 2.28           | 1.34 | M6 | 0.39 | 5.31           | 3.98 | 2.66           | 2.28 | 2.99 | 1.81 | 0.24 |
| 2-1/2                                      | 3.31           | 1.77 | M6 | 0.39 | 4.06           | 4.88 | 3.11           | 2.68 | 6.57 | 2.09 | 0.63 |
| 3  | 4.02           | 2.17 | M8 | 0.51 | 4.96           | 5.59 | 3.94           | 3.35 | 7.87 | 2.44 | 0.51 |
| 4  | 4.80           | 1.97 | M8 | 0.51 | 5.79           | 6.54 | 4.53           | 3.35 | 9.84 | 2.44 | 0.63 |



# VK Series Ball Valves

## Technical Data (cont'd)

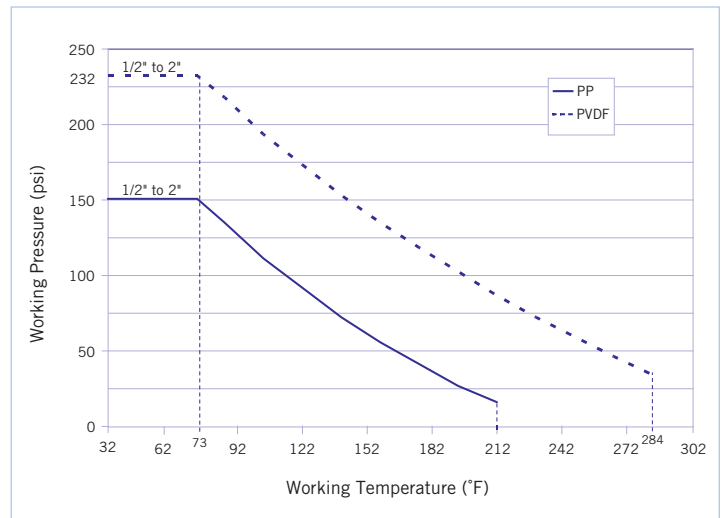
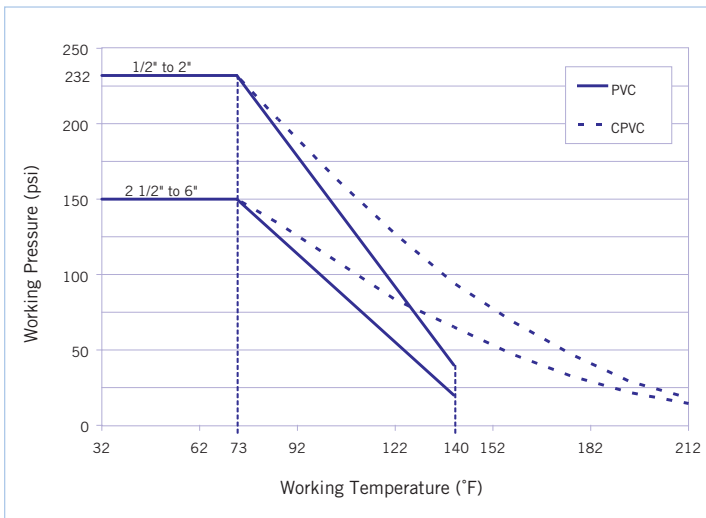


### weights

| Size  | Approximate Weight (lbs) |               |              |            |               |              |
|-------|--------------------------|---------------|--------------|------------|---------------|--------------|
|       | PVC                      |               |              | CPVC       |               |              |
|       | IPS Socket               | FNPT Threaded | ANSI Flanged | IPS Socket | FNPT Threaded | ANSI Flanged |
| 1/2   | 0.45                     | 0.44          | 0.85         | 0.49       | 0.48          | 0.91         |
| 3/4   | 0.72                     | 0.69          | 1.30         | 0.77       | 0.75          | 1.37         |
| 1     | 0.99                     | 0.99          | 1.77         | 1.07       | 1.07          | 1.89         |
| 1-1/4 | 1.48                     | 1.39          | 2.48         | 1.59       | 1.50          | 2.59         |
| 1-1/2 | 2.05                     | 2.01          | 3.25         | 2.20       | 2.16          | 3.47         |
| 2     | 3.58                     | 3.48          | 5.46         | 3.80       | 3.70          | 5.81         |
| 2-1/2 | 6.51                     | n/a           | 9.09         | 7.10       | n/a           | 10.18        |
| 3     | 10.98                    | n/a           | 14.72        | 12.19      | n/a           | 16.14        |
| 4     | 17.13                    | n/a           | 23.12        | 18.46      | n/a           | 24.80        |
| 6     | 25.71                    | n/a           | 35.74        | 27.56      | n/a           | 38.16        |

| Size  |      | Approximate Weight (lbs) |              |               |               |              |               |
|-------|------|--------------------------|--------------|---------------|---------------|--------------|---------------|
|       |      | PP                       |              |               | PVDF          |              |               |
|       |      | FNPT Threaded            | ANSI Flanged | Metric Socket | FNPT Threaded | ANSI Flanged | Metric Socket |
| 1/2   | 20mm | 0.30                     | 0.81         | 0.30          | 0.54          | 1.11         | 0.54          |
| 3/4   | 25mm | 0.46                     | 1.12         | 0.46          | 0.83          | 1.54         | 0.83          |
| 1     | 32mm | 0.66                     | 1.74         | 0.66          | 1.19          | 2.05         | 1.19          |
| 1-1/4 | 40mm | 0.95                     | 2.25         | 0.95          | 1.73          | 3.15         | 1.73          |
| 1-1/2 | 50mm | 1.39                     | 2.89         | 1.39          | 2.38          | 3.97         | 2.38          |
| 2     | 63mm | 2.33                     | 4.51         | 2.33          | 4.10          | 5.96         | 4.10          |

### pressure – temperature ratings



# VK Series Ball Valves

## Technical Data (cont'd)



### flow coefficients

The flow coefficient (CV) represents the flow rate in gallons per minute (GPM) at 68°F for which there is a 1 psi pressure drop across the valve in the fully open position. These values are determined from an industry standard testing procedure which uses water as the flowing media (specific gravity of 1.0). To determine specific flow rate and pressure loss scenarios, one can use the following formula:

$$f = sg \times \left( \frac{Q}{C_v} \right)^2$$

Where,

$f$  is the pressure drop (friction loss) in psi,

$sg$  is the specific gravity of the fluid,

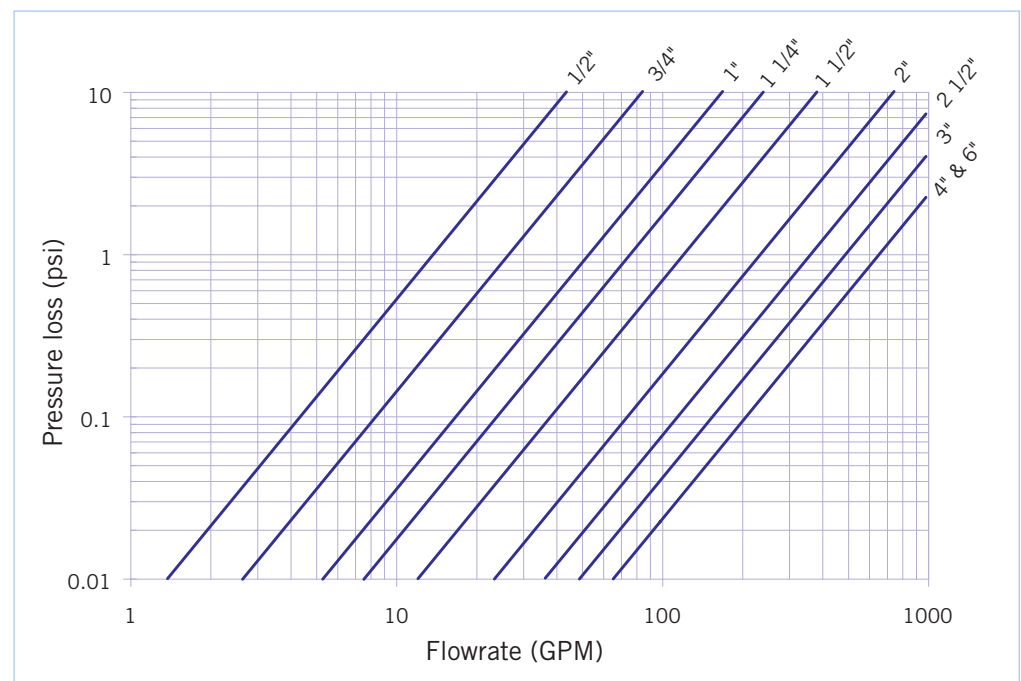
$Q$  is the flow rate in GPM,

$C_v$  is the flow coefficient.

| Size  | $C_v$ |
|-------|-------|
| 1/2   | 14.0  |
| 3/4   | 27.0  |
| 1     | 53.9  |
| 1-1/4 | 77.0  |
| 1-1/2 | 123   |
| 2     | 238   |
| 2-1/2 | 368   |
| 3     | 497   |
| 4     | 665   |
| 6     | 665*  |

\* Not including venturied ends.

### pressure loss chart

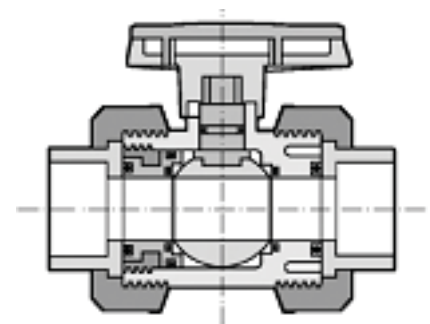
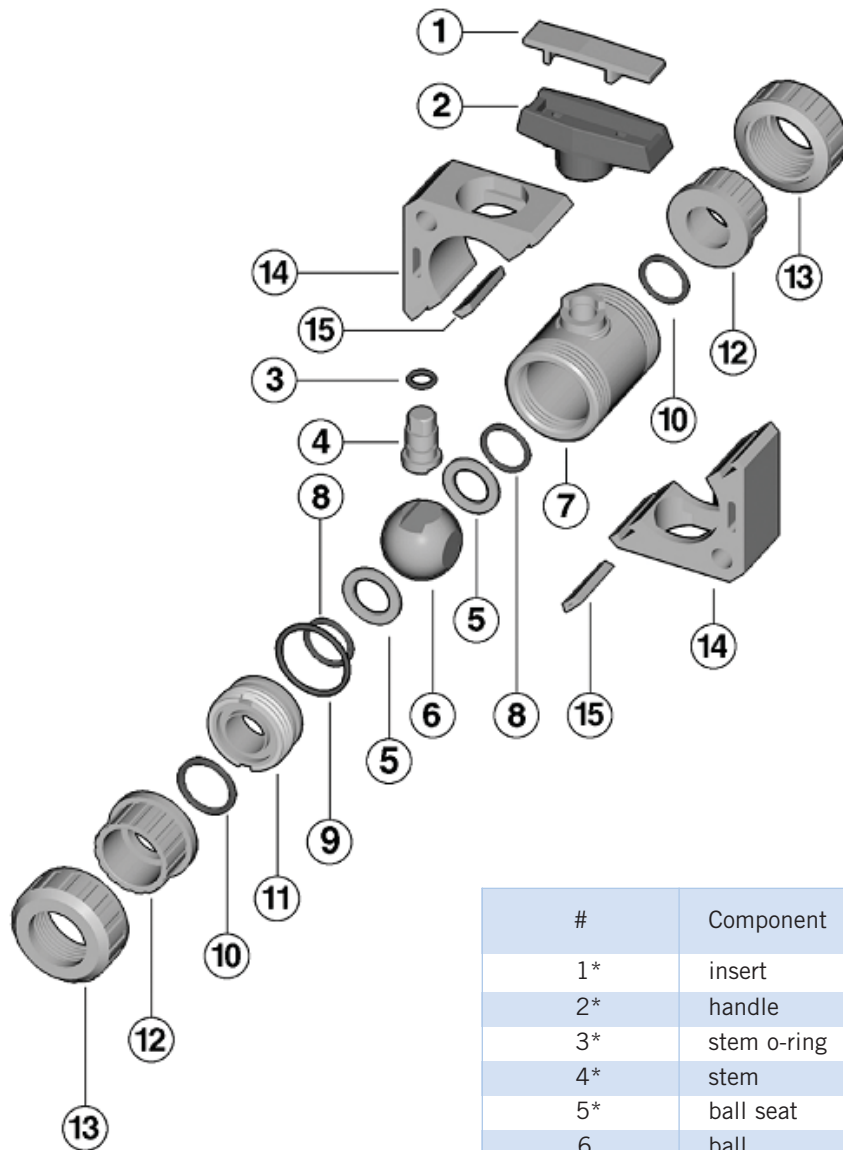




# VK Series Ball Valves

## Components

sizes 1/2" through 2"



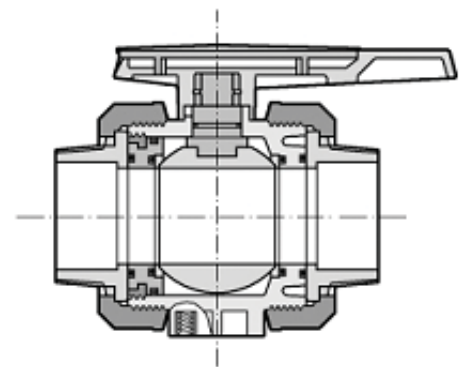
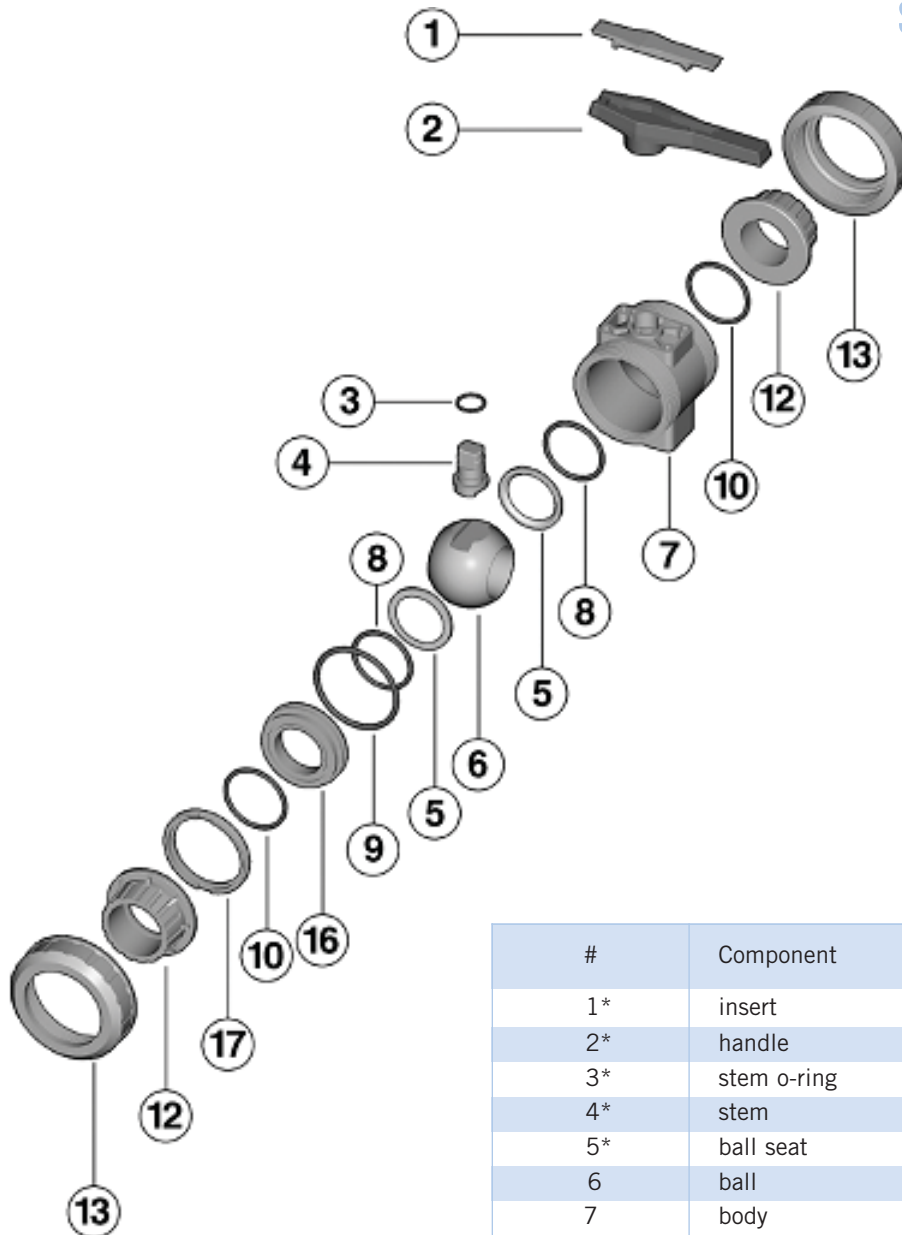
| #   | Component            | Material               | Qty |
|-----|----------------------|------------------------|-----|
| 1*  | insert               | PVC                    | 1   |
| 2*  | handle               | PVC                    | 1   |
| 3*  | stem o-ring          | EPDM or FPM            | 1   |
| 4*  | stem                 | PVC / CPVC / PP / PVDF | 1   |
| 5*  | ball seat            | PTFE                   | 2   |
| 6   | ball                 | PVC / CPVC / PP / PVDF | 1   |
| 7   | body                 | PVC / CPVC / PP / PVDF | 1   |
| 8*  | ball seat o-ring     | EPDM or FPM            | 2   |
| 9*  | body o-ring          | EPDM or FPM            | 1   |
| 10* | socket o-ring        | EPDM or FPM            | 2   |
| 11  | carrier w/ stop-ring | PVC / CPVC / PP / PVDF | 1   |
| 12* | end connector        | PVC / CPVC / PP / PVDF | 2   |
| 13* | union nut            | PVC / CPVC / PP / PVDF | 2   |
| 14  | half-bracket         | Technopolymer          | 2   |
| 15  | wedge                | Technopolymer          | 2   |

\* Spare parts available.

# VK Series Ball Valves

## Components (cont'd)

sizes 2-1/2" through 3"



| #   | Component        | Material               | Qty |
|-----|------------------|------------------------|-----|
| 1*  | insert           | PVC                    | 1   |
| 2*  | handle           | PVC                    | 1   |
| 3*  | stem o-ring      | EPDM or FPM            | 1   |
| 4*  | stem             | PVC / CPVC / PP / PVDF | 1   |
| 5*  | ball seat        | PTFE                   | 2   |
| 6   | ball             | PVC / CPVC / PP / PVDF | 1   |
| 7   | body             | PVC / CPVC / PP / PVDF | 1   |
| 8*  | ball seat o-ring | EPDM or FPM            | 2   |
| 9*  | body o-ring      | EPDM or FPM            | 1   |
| 10* | socket o-ring    | EPDM or FPM            | 2   |
| 12* | end connector    | PVC / CPVC / PP / PVDF | 2   |
| 13* | union nut        | PVC / CPVC / PP / PVDF | 2   |
| 16  | carrier          | PVC / CPVC / PP / PVDF | 1   |
| 17  | stop-ring        | PVC / CPVC / PP / PVDF | 1   |

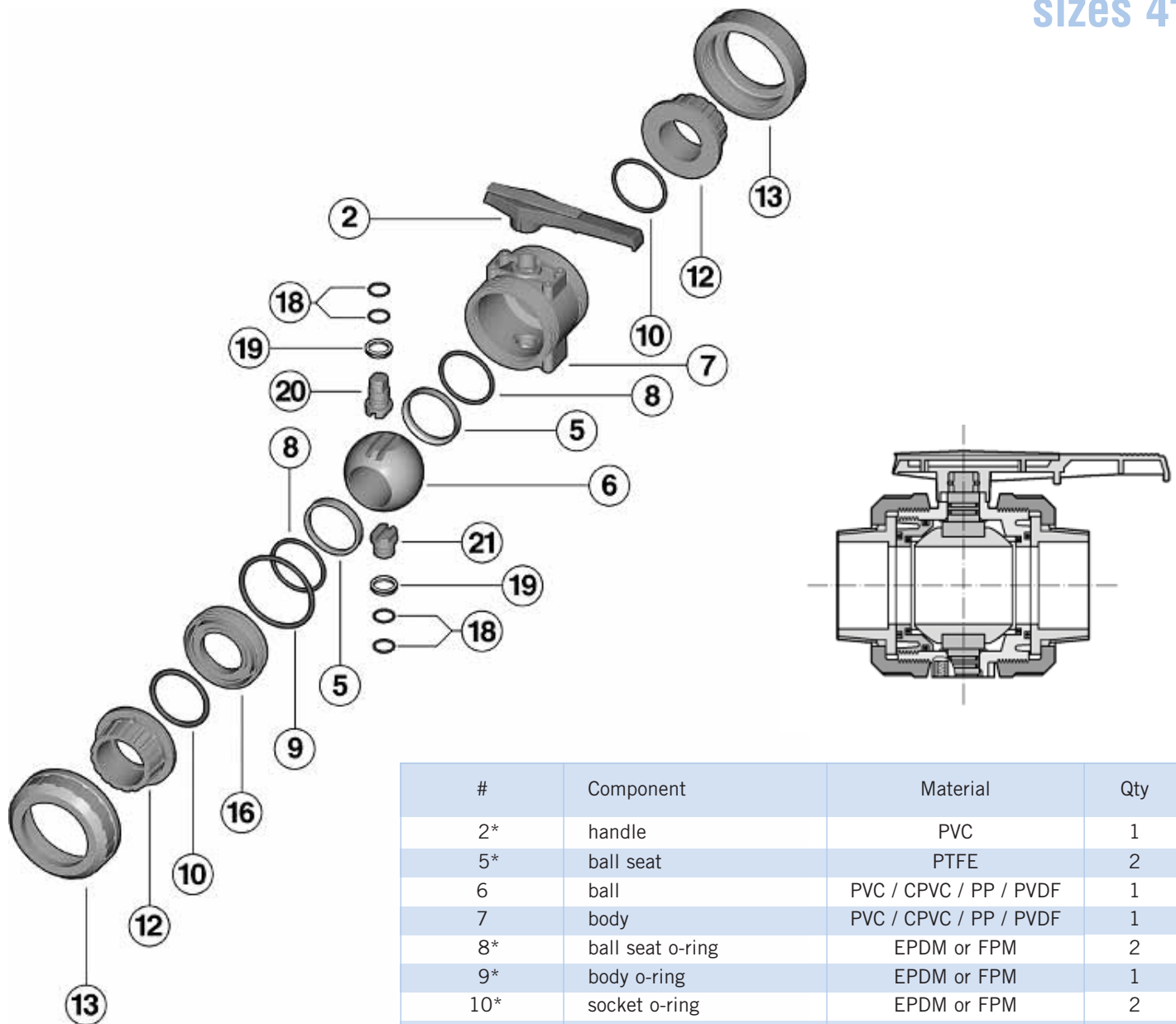
\* Spare parts available.



# VK Series Ball Valves

## Components (cont'd)

sizes 4"



| #   | Component        | Material               | Qty |
|-----|------------------|------------------------|-----|
| 2*  | handle           | PVC                    | 1   |
| 5*  | ball seat        | PTFE                   | 2   |
| 6   | ball             | PVC / CPVC / PP / PVDF | 1   |
| 7   | body             | PVC / CPVC / PP / PVDF | 1   |
| 8*  | ball seat o-ring | EPDM or FPM            | 2   |
| 9*  | body o-ring      | EPDM or FPM            | 1   |
| 10* | socket o-ring    | EPDM or FPM            | 2   |
| 12* | end connector    | PVC / CPVC / PP / PVDF | 2   |
| 13* | union nut        | PVC / CPVC / PP / PVDF | 2   |
| 16  | carrier          | PVC / CPVC / PP / PVDF | 1   |
| 18* | stem o-rings     | EPDM or FPM            | 2   |
| 19* | bushing          | PTFE                   | 2   |
| 20  | upper stem       | PVC / CPVC / PP / PVDF | 1   |
| 21  | lower stem       | PVC / CPVC / PP / PVDF | 1   |

\* Spare parts available.



# VK Series Ball Valves

## Installation Procedures



1. For socket and threaded style connections, remove the union nuts (part #13 on previous pages) and slide them onto the pipe. For flanged connections, remove the union nut / flange assemblies from the valve.
2. Please refer to the appropriate connection style sub-section:
  - a. For socket style, solvent cement the end connectors (12) onto the pipe ends. For correct joining procedure, please refer to the section entitled, *“Joining Methods – Solvent Cementing”* in the IPEX Industrial Technical Manual Series, *“Volume I: Vinyl Process Piping Systems”*. **Be sure to allow sufficient cure time before continuing with the valve installation.**
  - b. For threaded style, thread the end connectors (12) onto the pipe ends. For correct joining procedure, please refer to the section entitled, *“Joining Methods – Threading”* in the IPEX Industrial Technical Manual Series, *“Volume I: Vinyl Process Piping Systems”*.
  - c. For flanged style, join the union nut / flange assemblies to the pipe flanges. For correct joining procedure, please refer to the section entitled, *“Joining Methods – Flanging”* in the IPEX Industrial Technical Manual Series, *“Volume I: Vinyl Process Piping Systems”*.
3. Open and close the valve to ensure that the carrier (11 or 16) is at the desired adjustment. If adjustment is required, ensure that the valve is in the closed position then remove the insert tool (1) from the handle (2). Line up the moldings on the tool with the slots in the carrier. Tighten or loosen to the desired position then replace the tool on the handle.
4. Ensure that the valve is in the closed position, and that the socket o-rings (10) are properly fitted in their grooves. Carefully place the valve in the system between the two end connections. If anchoring is required, proceed as follows:
  - a. For sizes 1/2" through 2":
    - i. Fix the bottom half-bracket (14) to the supporting structure using the 4 mounting holes.
    - ii. Remove the handle (2) from the valve by pulling upwards.
    - iii. Position the valve body (7) onto the bottom half-bracket.
    - iv. Position the upper half-bracket onto the valve body and replace the handle on the stem (4).
    - v. Insert the two wedges (15) into the brackets and drive home until fully locked.
  - b. For sizes 2-1/2" through 6":
    - i. Fix the valve to the supporting structure using the 4 mounting holes on the bottom of the valve body.
5. Tighten the union nut on the side opposite to that which is marked “ADJUST”. Hand tightening is typically sufficient to maintain a seal for the maximum working pressure. **Over-tightening may damage the threads on the valve body and/or the union nut, and may even cause the union nut to crack.**
6. Tighten the union nut on the side marked “ADJUST”. Tightening the union nuts in this order results in the best possible valve performance due to optimum positioning and sealing of the ball and seat support system.
7. Open and close the valve to again ensure that the cycling performance is adequate. If adjustment is required, place the valve in the closed position, loosen the union nuts, remove the valve from the system, and then continue from Step 3.



# VK Series Ball Valves

## Valve Maintenance



### disassembly

1. If removing the valve from an operating system, isolate the valve from the rest of the line. **Be sure to depressurize and drain the valve and isolated branch.**
2. If necessary, detach the valve from the support structure by disassembling the 4 threaded connections on either the bottom bracket (14), or the bottom of the valve body (7). Remove the locking wedges (15) from the bracket (14). The upper bracket can be removed after detaching the handle (2) from the valve body.
3. Loosen both union nuts (13) and drop the valve out of the line. If retaining the socket o-rings (10), take care that they are not lost when removing the valve from the line.
4. Place the valve in the closed position then remove the insert tool (1) from the handle.
5. Line up the moldings on the tool with the slots in the carrier (found on the side marked "ADJUST"). Loosen and remove the carrier (11 or 16) by turning in a counterclockwise direction.
6. Carefully press the ball (6) out of the valve body, taking care not to score or damage the outer surface.
7. Remove the handle from the valve stem (4 or 20) by pulling upwards. To remove the stem, press it into the valve body (7) from above. For sizes 4" and above, remove the lower stem (21) by pushing it into the valve body from below.
8. The stem o-ring(s) (3 or 18), body o-ring (9), ball seats (5), ball seat o-rings (8), and bushings (19 on 4" and above) can now be removed and/or replaced.

### assembly



- Note:** Before assembling the valve components, it is advisable to lubricate the o-rings with a water soluble lubricant. **Be sure to consult the "IPEX Chemical Resistance Guide" and/or other trusted resources to determine specific lubricant-rubber compatibilities.**
1. Place the ball seat o-ring (8) and then the ball seat (5) in the groove on the opposite end inside the valve body (7).
  2. Properly fit the stem o-ring(s) (3 or 18) in the groove on the stem (4 or 20), then insert the stem from the inside of the valve body. For sizes 4" and above, ensure that the bushings (19) are properly fitted then repeat installation procedure for the lower stem (21).
  3. Ensure that the valve stem(s) is/are in the closed position then insert the ball (6) into the valve body taking care not to score or damage the outer surface.
  4. Check that the ball seat o-ring (8), ball seat (5), and body o-ring (9) are properly fitted on the carrier (11 or 16), then slightly hand tighten into the valve body. Line up the moldings on the insert tool (1) with the slots in the carrier then tighten by turning in a clockwise direction.
  5. Place the handle (2) on the valve stem then cycle the valve open and closed to determine whether or not the performance is adequate. Adjust to the desired performance then replace the insert tool on the handle.
  6. Properly fit the socket o-rings (10) in their respective grooves.
  7. Place the end connectors (12) into the union nuts (13), then thread onto the valve body taking care that the socket o-rings remain properly fitted in their grooves.



# VK Series Ball Valves

## Testing and Operating



The purpose of system testing is to assess the quality of all joints and fittings to ensure that they will withstand the design working pressure, plus a safety margin, without loss of pressure or fluid. Typically, the system will be tested and assessed in sub-sections as this allows for improved isolation and remediation of potential problems. With this in mind, the testing of a specific installed valve is achieved while carrying out a test of the overall system.

An onsite pressure test procedure is outlined in the IPEX Industrial Technical Manual Series, “*Volume I: Vinyl Process Piping Systems*” under the section entitled, “*Testing*”. The use of this procedure should be sufficient to assess the quality of a valve installation. **In any test or operating condition, it is important to never exceed the pressure rating of the lowest rated appurtenance in the system.**

### Important points:

- Never test thermoplastic piping systems with compressed air or other gases including air-over-water boosters.
- When testing, do not exceed the rated maximum operating pressure of the valve.
- Avoid the rapid closure of valves to eliminate the possibility of water hammer which may cause damage to the pipeline or the valve.

**For safety reasons, please contact IPEX customer service and technical support when using volatile liquids such as hydrogen peroxide (H<sub>2</sub>O<sub>2</sub>) and sodium hypochlorite (NaClO). These liquids may vaporize causing a potentially dangerous pressure increase in the dead space between the ball and the valve body. Special VK ball valves are available for these types of critical applications.**

Please contact IPEX customer service and technical support with regard to any concern not addressed in this data sheet or the technical manual.

# VK Series Ball Valves

## About IPEX

IPEX is a leading supplier of thermoplastic piping systems. We provide our customers with one of the world's largest and most comprehensive product lines. All IPEX products are backed by over 50 years of experience. With state-of-the-art manufacturing facilities and distribution centers across North America, the IPEX name is synonymous with quality and performance.

Our products and systems have been designed for a broad range of customers and markets. Contact us for information on:

- PVC, CPVC, PP, FR-PVDF, ABS, PEX and PE pipe and fittings ( $\frac{1}{4}$ " to 48")
- Industrial process piping systems
- Double containment systems
- Acid waste systems
- High purity systems
- Industrial, plumbing and electrical cements
- Municipal pressure and gravity piping systems
- Plumbing and mechanical pipe systems
- Electrical systems
- Telecommunications systems
- Irrigation systems
- PE Electrofusion systems for gas and water
- Radiant heating systems

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