

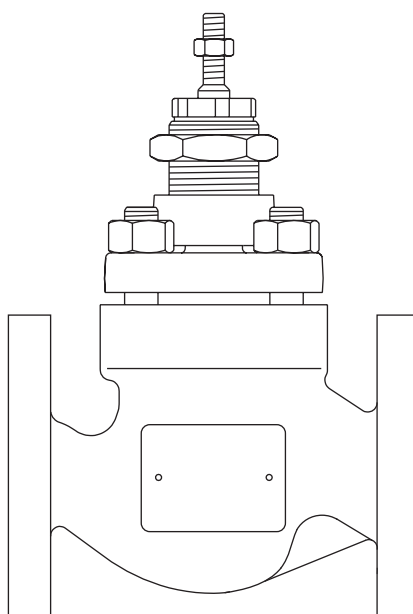


## Spira-trol™ Two-port Control Valves ASME Standard K and L Series ½" to 4"

### Description

Spira-trol™ is a range of two-port single seat globe valves with cage retained seats conforming to ASME standard. These valves are available in four body materials in sizes ranging from (½" to 4"). When used in conjunction with a pneumatic or electric linear actuator they provide characterized modulating or on/off control.

**Important note:** Throughout this document, reference has been made to the standard LEA or KEA control valve. With the exception of trim type, the LEA, KEA, LFA, KFA, LLA and KLA control valves are identical.



### Sizes and pipe connections

| Valve series | Material        | Screwed  | SW       | Flanged          |         |                          |         |         |          |      |
|--------------|-----------------|----------|----------|------------------|---------|--------------------------|---------|---------|----------|------|
|              |                 | NPT      |          | ASME250          | ASME125 | ASME125                  | ASME150 | ASME300 | KS10     | KS20 |
|              |                 | Up to 2" | Up to 2" | 1" and 1½" to 4" |         | ½" to 4" (excluding 1¼") |         |         | ½" to 4" |      |
| L Series     | Cast Iron       | •        |          |                  |         | •                        |         |         |          |      |
|              | Carbon Steel    |          |          |                  |         |                          | •       |         | •        |      |
|              | Stainless Steel |          |          |                  |         |                          | •       |         | •        |      |
| K series     | SG Iron         | •        |          | •                | •       |                          |         |         | •        |      |
|              | Carbon Steel    | •        | •        |                  |         |                          |         | •       |          | •    |
|              | Stainless Steel | •        | •        |                  |         |                          |         | •       |          | •    |

## Compliance

The Spira-trol™ control valve when coupled to the PN9000 series or AEL7 actuator (as defined in the technical information sheets TI-P357-30 and TI-P713-02) complies to the requirements of Machinery Directive 2006/42EC. Please refer to the installation and maintenance instructions for the PN9000 series (IM-P357-29) and the Spira-trol™ valve (IM-S24-42) and the AEL7 (IM-P713-01) for potential hazards and safety information relating to the installation, commissioning, maintenance and disposal of the product assembly and its component parts.

## Standards

Designed in accordance with EN 60534. This product fully complies with the requirements of the EU Pressure Equipment Directive (2014/68/EU) and carries the  mark when so required.

## Certification

This product is available with certification to EN 10204 3.1. Seat leakage test certificate is available on request.

**Note:** All certification/inspection requirements must be stated at the time of order placement.

## Food contact

This product is not to be used on steam, liquid or gas that either forms an ingredient of, or comes into direct contact with food products in the EU.

For up to date information on product compliance please visit : [www.spiraxsarco.com/product-compliance](http://www.spiraxsarco.com/product-compliance)

## Spira-trol™ valve characteristic - options:

**LEA and KEA Equal percentage (E)** - Suitable for most modulating process control applications providing good control at all flowrates.

**LLA and KFA Fast opening (F)** - For on/off applications only.

**LFA and KLA Linear (L)** - Primarily for liquid flow control where the differential pressures across the valve is constant.

## Spira-trol™ valve options:

|              |                                                                                                              |                                                                            |
|--------------|--------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------|
| Stem sealing | PTFE chevron seals (P-N)                                                                                     | Standard                                                                   |
|              | Graphite packing (H)                                                                                         | High temperature applications                                              |
|              | Bellows/graphite secondary seals (D)                                                                         | Zero emissions and high temperature applications CL150 - up to 800 °F      |
| Seating      | Metal-to-metal                                                                                               | 431 stainless steel - standard                                             |
|              |                                                                                                              | 316L stainless steel                                                       |
|              | Soft seating                                                                                                 | Up to 306 °F - PTFE for Class VI shut-off for low temperature applications |
|              |                                                                                                              | Up to 428 °F PEEK (C and P) for Class VI shut-off                          |
|              | Hard facing                                                                                                  | 316L stainless steel with Stellite™ 6 facing                               |
| Bonnet type  | Standard bonnet                                                                                              |                                                                            |
|              | Extended bonnet for hot/cold applications                                                                    |                                                                            |
| Trim         | Standard trim                                                                                                |                                                                            |
|              | Low noise and anti-cavitation trim (see TI-S24-59) <b>Note:</b> Not available with Reverseable PEEK Seat (C) |                                                                            |

Spira-trol™ is a modular valve based on 4 body sizes covering DN15-100 sizes (½" - 1", 1¼" - 2", 2½" - 3" and 4") in order to reduce the number of spare parts. The valves are available with a range of accessories including actuators, positioners, solenoid valves, limit switches.

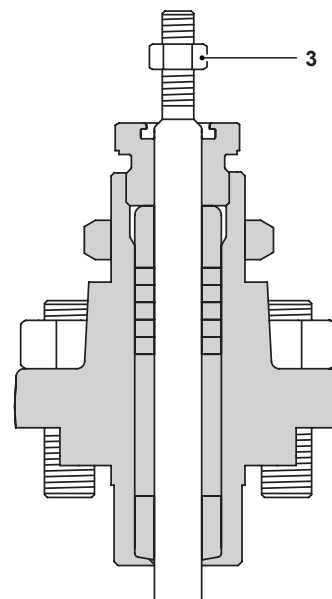
Please refer to respective data sheets.

|                                         |                                                   |                                       |
|-----------------------------------------|---------------------------------------------------|---------------------------------------|
| Please refer to respective data sheets. | Special trims, please refer to                    | TI-S24-59                             |
|                                         | EN version, please refer to                       | TI-S24-71                             |
|                                         | Smart positioner, please refer to                 | TI-P706-01, TI-P706-04 and TI-P707-02 |
|                                         | Pneumatic Positioners please refer to             | TI-P704-01                            |
|                                         | For electro-pneumatic positioners please refer to | TI-P703-01 and TI-P703-03             |
|                                         | For large size Spira-trol™, please refer to       | TI-S24-73                             |

## Materials - ½" to 4"

|                     | LEA3<br>½" to 4"             | KEA7<br>½" to 4" | LEA-KEA4<br>½" to 2"    2½" - 4" | LEA-KEA6<br>½" to 4" |
|---------------------|------------------------------|------------------|----------------------------------|----------------------|
| 1 Body              | A126 Class B                 | A395             | A216 WCB                         | A351 CF8M            |
| 2 Bonnet            | A395                         | A395             | A105N    A216 WCB                | A351 CF8M            |
| 2a Bonnet extension | A216 WCB                     |                  |                                  | A351 CF8M            |
| 2b Bellows          | Stainless steel 316L         |                  |                                  |                      |
| 2c Extended bonnet  | A216 WCB                     |                  |                                  | A351 CF8M            |
| 3 Stem lock-nut     | Stainless steel A2-70        |                  |                                  |                      |
| 4 Bonnet gasket     | Graphite and Stainless steel |                  |                                  |                      |

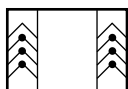
KEA valve with  
graphite packing



### \* Graphite packing

|                                |                                       |                                  |                |
|--------------------------------|---------------------------------------|----------------------------------|----------------|
| High<br>temperature<br>packing | 9<br>16                               | Lower and<br>upper stem<br>guide | Stellite 6     |
|                                | 14                                    | Grafoil<br>packing               | Graphite rings |
|                                | 10, 11, 12, 15, 17 and 19<br>Not used |                                  |                |

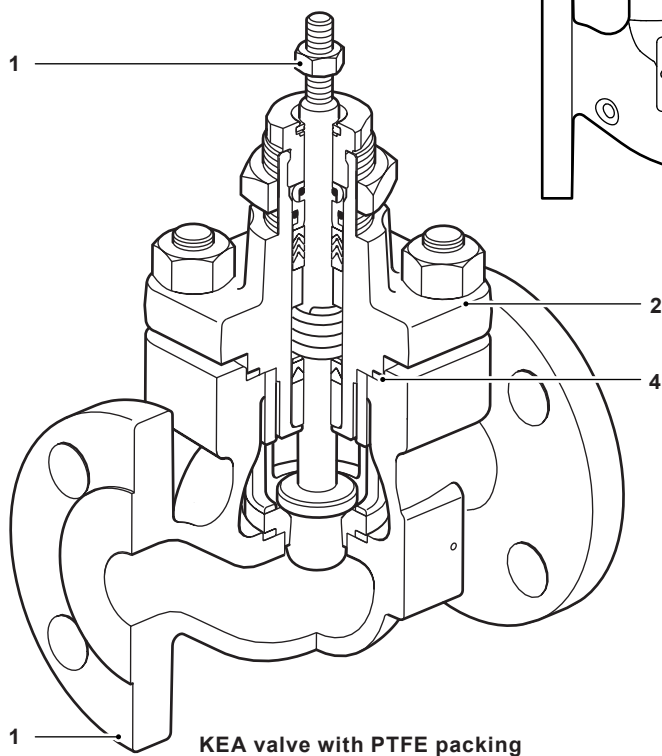
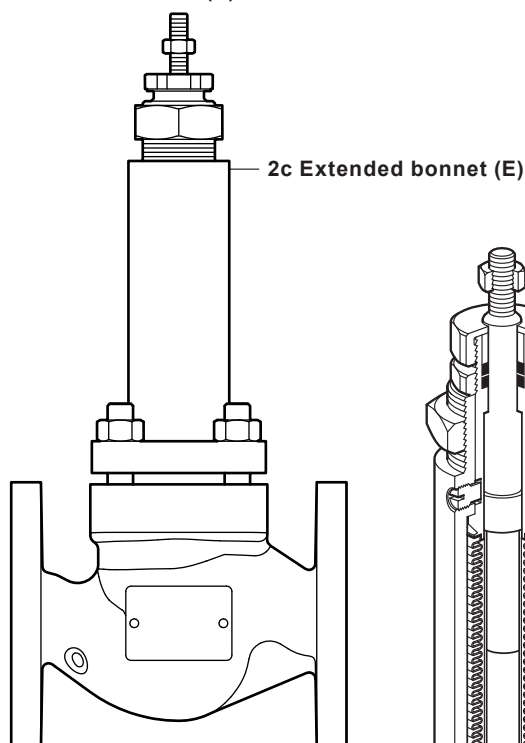
\*  
PTFE  
stem sealing



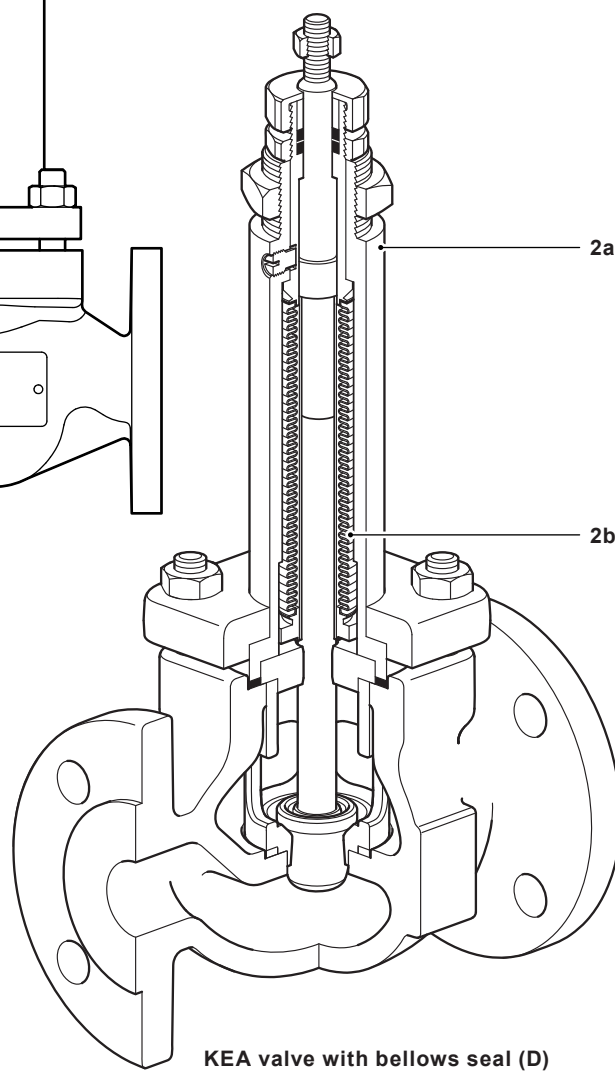
PTFE  
stem sealing for  
vacuum service



KE valve with extended  
bonnet (E)



KEA valve with PTFE packing

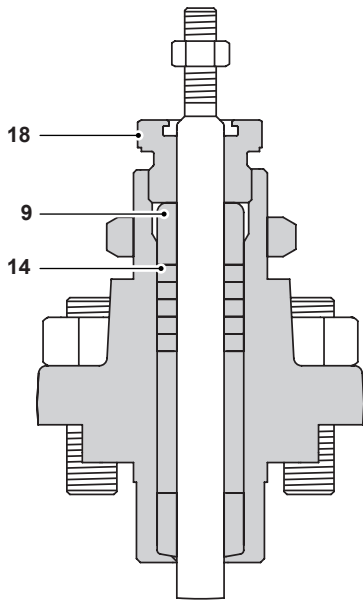


KEA valve with bellows seal (D)

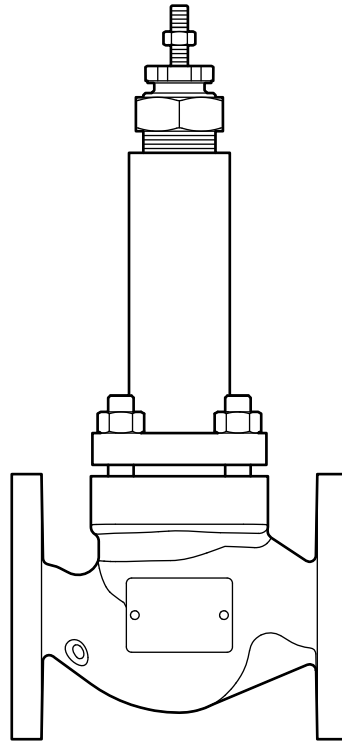
## Materials - ½" to 4" (continued)

|           |                                           |                       |                                                                                                 |
|-----------|-------------------------------------------|-----------------------|-------------------------------------------------------------------------------------------------|
| <b>5</b>  | <b>Seat retainer</b>                      |                       | DUPLEX Stainless steel ASME A994 CD4MCuN                                                        |
|           |                                           | Seat option T         | Stainless steel 431                                                                             |
|           |                                           | Seat option S         | Stainless steel 316L                                                                            |
| <b>6</b>  | <b>Valve seat ring</b>                    | Seat option W         | Stainless steel 316L + Stellite™ 6                                                              |
|           |                                           | Seat option CandP     | PEEK                                                                                            |
|           |                                           | Seat option G         | PTFE + Stainless Steel 316L                                                                     |
| <b>7</b>  | <b>Seat gasket</b>                        |                       | Graphite and stainless steel                                                                    |
|           |                                           | Seat option T         | Stainless steel 431                                                                             |
|           |                                           | Seat option S         | Stainless steel 316L                                                                            |
| <b>8</b>  | <b>Valve plug and stem</b>                | Seat option W         | Stainless steel 316L + Stellite™ 6                                                              |
|           |                                           | Seat option C/P/G     | Stainless steel 316L for Stainless steel valve and Stainless steel 431 for all other materials  |
|           |                                           | Bonnet option P       | PTFE glass filled                                                                               |
| <b>9</b>  | <b>Lower stem guide</b>                   | Bonnet option N       | Nitronic™ 60                                                                                    |
|           |                                           | Bonnet option H       | Stellite™ 6                                                                                     |
| <b>10</b> | <b>Lower stem wiper</b>                   | Bonnet option P - N   | PTFE                                                                                            |
| <b>11</b> | <b>Packing guard washer</b>               |                       | Stainless steel 316L                                                                            |
| <b>12</b> | <b>Spring</b>                             | Bonnet option P - N   | Stainless steel 316L                                                                            |
| <b>13</b> | <b>Packing spacer</b>                     |                       | Stainless steel 316L                                                                            |
| <b>14</b> | <b>Packing set</b>                        | Bonnet option P - N   | PTFE chevron                                                                                    |
|           |                                           | Bonnet option H       | Graphite rings                                                                                  |
| <b>15</b> | <b>Outer 'O' ring</b>                     | Bonnet option P - N   | VITON™                                                                                          |
|           |                                           | Bonnet option P       | PTFE glass filled                                                                               |
| <b>16</b> | <b>Upper stem guide</b>                   | Bonnet option N       | Nitronic™ 60                                                                                    |
|           |                                           | Bonnet option H       | Stellite™ 6                                                                                     |
| <b>17</b> | <b>Inner 'O' ring</b>                     | Bonnet option P - N   | VITON™                                                                                          |
| <b>18</b> | <b>Gland nut</b>                          |                       | Stainless steel 316L for stainless steel valve and stainless steel 431 for all others materials |
| <b>19</b> | <b>Scraper ring</b>                       | Bonnet option P - N   | PTFE                                                                                            |
| <b>20</b> | <b>Actuator clamp nut</b>                 | Stainless steel valve | Nickel plated carbon steel                                                                      |
|           |                                           | All others            | Zinc plated carbon steel                                                                        |
| <b>22</b> | <b>Bonnet extension gasket</b>            |                       | Graphite and stainless steel                                                                    |
| <b>26</b> | <b>Spindle lock and anti-rotation nut</b> |                       | Stainless steel                                                                                 |
| <b>27</b> | <b>Nut</b>                                |                       | Stainless steel A194 Gr8M for Stainless Steel valve and A194 2H for others valves               |
| <b>28</b> | <b>Stud</b>                               |                       | Stainless steel A193 GrB8M2 for Stainless Steel valve and A193 B7 for others valves             |

**KEA valve with graphite packing**



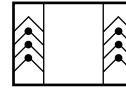
**KE valve with extended bonnet (E)**



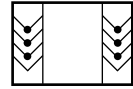
**\* Graphite packing**

|                          |                                       |                            |                |
|--------------------------|---------------------------------------|----------------------------|----------------|
| High temperature packing | 9                                     | Lower and upper stem guide | Stellite 6     |
|                          | 16                                    |                            |                |
|                          | 14                                    | Grafoil packing            | Graphite rings |
|                          | 10, 11, 12, 15, 17 and 19<br>Not used |                            |                |

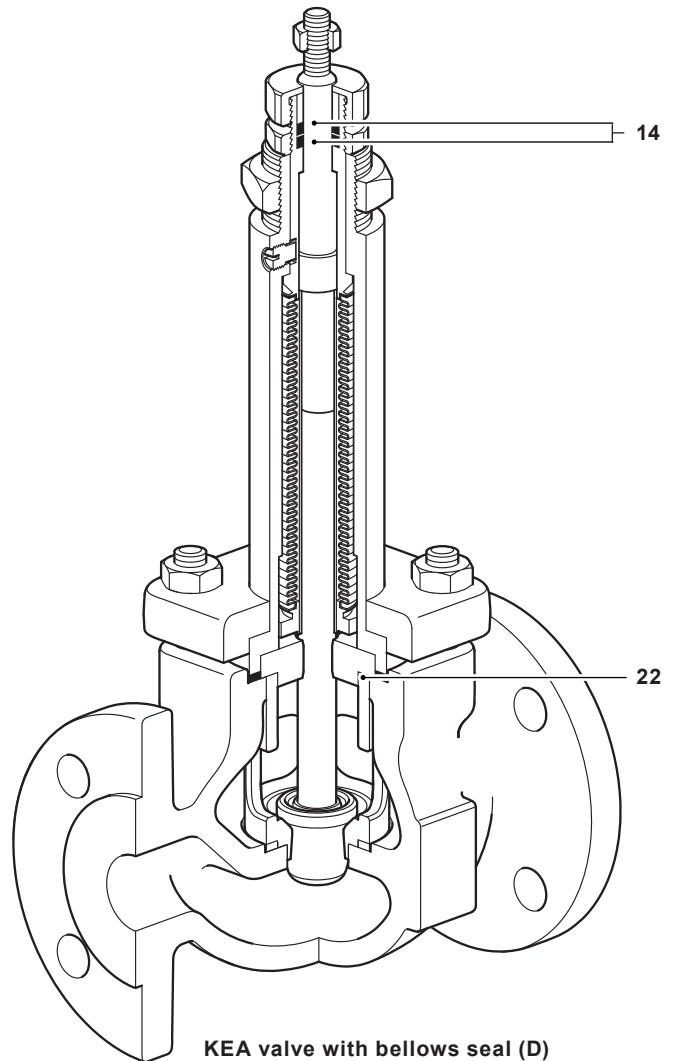
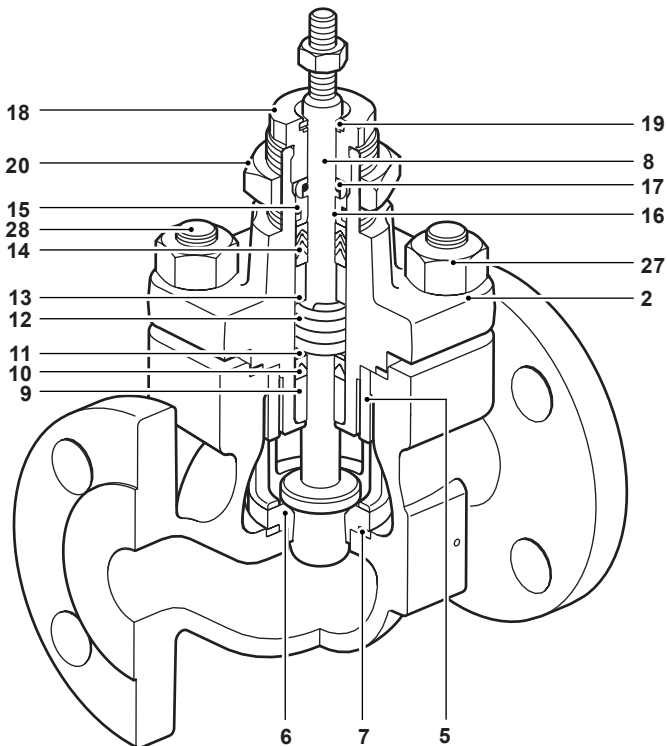
**\* PTFE stem sealing**



**PTFE stem sealing for vacuum service**



**KEA valve with PTFE packing**



**KEA valve with bellows seal (D)**

**Cv (US) values**  
**Cv (US) = Cv (UK) x 1.2009**

| Valve size    |                                                                | ½"           | ¾"    | 1"    | 1¼"   | 1½"  | 2"   | 2½"  | 3"    | 4"    |
|---------------|----------------------------------------------------------------|--------------|-------|-------|-------|------|------|------|-------|-------|
| Standard trim | High capacity Equal %                                          | 5.7          | 8.3   |       | 20.2  | 36.0 | 53.0 |      |       |       |
|               | Full port                                                      | Equal %      | 4.6   | 7.3   | 12.0  | 18.0 | 29.0 | 42.0 | 85.0  | 116.0 |
|               |                                                                | Linear       | 4.6   | 7.3   | 12.0  | 18.0 | 29.0 | 42.0 | 85.0  | 116.0 |
|               |                                                                | Fast opening | 5.7   | 8.3   | 12.7  | 21.0 | 36.0 | 58.0 | 104.0 | 208.0 |
|               | Reduced trim 1                                                 | Equal %      | 2.9   | 4.6   | 7.3   | 12.0 | 18.0 | 29.0 | 42.0  | 85.0  |
|               |                                                                | Linear       | 2.9   | 4.6   | 7.3   | 12.0 | 18.0 | 29.0 | 42.0  | 85.0  |
|               | Reduced trim 2                                                 | Equal %      | 1.8   | 2.9   | 4.6   | 7.3  | 12.0 | 18.0 | 29.0  | 42.0  |
|               |                                                                | Linear       | 1.8   | 2.9   | 4.6   | 7.3  | 12.0 | 18.0 | 29.0  | 42.0  |
|               | Reduced trim 3                                                 | Equal %      | 1.2   | 1.8   | 2.9   | 4.6  | 7.3  | 12.0 | 18.0  | 29.0  |
|               |                                                                | Linear       | 1.2   | 1.8   | 2.9   | 4.6  | 7.3  | 12.0 | 18.0  | 29.0  |
|               | Reduced trim 4                                                 | Equal %      |       | 1.2   | 1.8   |      | 4.6  | 7.3  |       | 18.0  |
|               |                                                                | Linear       |       | 1.2   | 1.8   |      | 4.6  | 7.3  |       | 18.0  |
|               | Reduced trim 5                                                 | Equal %      |       |       | 1.2   |      | 4.6  |      |       |       |
|               |                                                                | Linear       |       |       | 1.2   |      | 4.6  |      |       |       |
|               | Microflute (linear only)<br>(not available with C Seat option) |              | 0.58  | 0.58  | 0.6   |      |      |      |       |       |
|               |                                                                |              | 0.23  | 0.23  | 0.23  |      |      |      |       |       |
|               |                                                                |              | 0.12  | 0.12  | 0.12  |      |      |      |       |       |
|               |                                                                |              | 0.081 | 0.081 | 0.081 |      |      |      |       |       |
|               |                                                                |              | 0.012 | 0.012 | 0.012 |      |      |      |       |       |

**Note:** For low noise and anti-cavitation Cv please see TI-S24-59

## Spira-trol Series Valve

|                  |    |           |          |           |          |           |           |           |           |
|------------------|----|-----------|----------|-----------|----------|-----------|-----------|-----------|-----------|
| Nominal Size     | DN | ½" - 2"   | 2½" - 4" | ½" - 2"   | 2½" - 4" | ½" - 2"   | 2½" - 4"  | ½" - 2"   | 2½" - 4"  |
| Travel *         | mm | 20*       | 30       | 20*       | 30       | 20*       | 30        | 20*       | 30        |
| Nominal Pressure |    | Class 125 |          | Class 250 |          | Class 150 | Class 300 | Class 150 | Class 300 |
| Body Material    |    | LEA3      |          | KEA7      |          | LEA4      | KEA4      | LEA6      | KEA6      |

**For Full Temperature/pressure operating curves, please refer to IM-S24-42**

|                               |           |                   |             |                |                |                |           |                |           |        |
|-------------------------------|-----------|-------------------|-------------|----------------|----------------|----------------|-----------|----------------|-----------|--------|
| Maximum Operating Pressure    |           | Flanged           | ASME125     | 200 psi g      | 200 psi g      |                |           |                |           |        |
|                               |           |                   | ASME250     |                | 500 psi g      |                |           |                |           |        |
|                               |           |                   | ASME150     |                |                | 285 psi g      |           | 275 psi g      |           |        |
|                               |           |                   | ASME300     |                |                |                | 740 psi g |                | 720 psi g |        |
|                               |           |                   | KS10        |                | 189 psi g      | 203 psi g      |           | 203 psi g      |           |        |
|                               |           |                   | KS20        |                |                |                | 493 psi g |                | 493 psi g |        |
|                               |           | Threaded          | NPT         | 200 psi g      | 500 psi g      |                | 740 psi g |                | 720 psi g |        |
|                               |           | SW                |             |                |                |                | 740 psi g |                | 720 psi g |        |
| Operating temperature range   |           |                   | Std. Bonnet | -20 to +450 °F | -20 to +450 °F | -20 to +482 °F |           | -20 to +482 °F |           |        |
|                               |           |                   | Ext. Bonnet | -20 to +450 °F | -20 to +450 °F | -20 to +800 °F |           | -20 to +800 °F |           |        |
|                               |           |                   | Bellows     | -20 to +450 °F | -20 to +450 °F | -20 to +800 °F |           | -20 to +800 °F |           |        |
| Maximum Operating temperature | Seat      | PEEK              | C           | 428 °F         |                |                |           |                |           |        |
|                               |           | PEEK              | P           | 428 °F         |                |                |           |                |           |        |
|                               |           | PTFE insert       | G           | 306 °F         |                |                |           |                |           |        |
|                               |           | 431S29            | T           | 800 °F         |                |                |           |                |           |        |
|                               |           | 316L              | S           |                |                |                |           |                |           |        |
|                               |           | 316L/ Stellite™ 6 | W           |                |                |                |           |                |           |        |
|                               | Stem seal | P and N           |             | 482 °F         |                |                |           |                |           |        |
|                               |           | H                 |             | 800 °F         |                |                |           |                |           |        |
|                               |           | Bellows D         |             | 800 °F         |                |                |           |                |           |        |
| Maximum operating temperature |           |                   | Flanged     | ASME125        | 450 °F         | 450 °F         |           |                |           |        |
|                               |           |                   |             | ASME250        |                | 450 °F         |           |                |           |        |
|                               |           |                   |             | ASME150        |                |                | 800 °F    |                | 800 °F    |        |
|                               |           |                   |             | ASME300        |                |                |           | 800 °F         |           | 800 °F |
|                               |           |                   |             | KS10           |                | 450 °F         | 572 °F    |                | 572 °F    |        |
|                               |           |                   |             | KS20           |                |                |           | 752 °F         |           | 752 °F |
|                               |           |                   | Threaded    | NPT            | 450 °F         | 450 °F         |           | 800 °F         |           | 800 °F |
|                               |           |                   | SW          |                |                |                |           | 800 °F         |           | 800 °F |

**Note:** Consider the limitation of all of the constructive components when selecting a valve

## Spira-trol Series Valve

| Body Material                   |                              |          |           | LEA3                                                                                | KEA7               | LEA4               | KEA4               | LEA6               | KEA6                 |
|---------------------------------|------------------------------|----------|-----------|-------------------------------------------------------------------------------------|--------------------|--------------------|--------------------|--------------------|----------------------|
| Maximum Saturated Steam Service | Body                         | Flanged  | ASME125   | 364 °F @ 147 psi g                                                                  | 364 °F @ 147 psi g |                    |                    |                    |                      |
|                                 |                              |          | ASME250   |                                                                                     | 415 °F @ 279 psi g |                    |                    |                    |                      |
|                                 |                              |          | ASME150   |                                                                                     |                    | 389 °F @ 203 psi g |                    | 386 °F @ 196 psi g |                      |
|                                 |                              |          | ASME300   |                                                                                     |                    |                    | 490 °F @ 607 psi g |                    | 468 °F @ 490 psi g   |
|                                 |                              |          | KS10      |                                                                                     | 379 °F @ 180 psi g | 383 °F @ 189 psi g |                    | 383 °F @ 189 psi g |                      |
|                                 |                              |          | KS20      |                                                                                     |                    |                    | 457 °F @ 437 psi g |                    | 457 °F @ 437 psi g   |
|                                 |                              | Threaded | NPT       | 364 °F @ 147 psi g                                                                  | 415 °F @ 279 psi g |                    | 490 °F @ 607 psi g |                    | 468 °F @ 490 psi g   |
|                                 |                              | SW       |           |                                                                                     |                    |                    | 490 °F @ 607 psi g |                    | 468 °F @ 490 psi g   |
|                                 | Seat                         | C/P      |           | 414 °F @ 276 psi g                                                                  |                    |                    |                    |                    |                      |
|                                 |                              | G        |           | 306 °F @ 58 psi g                                                                   |                    |                    |                    |                    |                      |
|                                 | Bellows                      | D        |           | 364 °F @ 147 psi g                                                                  |                    |                    | 389 °F @ 203 psi g |                    | 386 °F @ 196 psi g * |
| Leakage Class                   | In accordance to IEC 60534-4 |          | PEEK      | Class VI                                                                            |                    |                    |                    |                    |                      |
|                                 |                              |          | PTFE      |                                                                                     |                    |                    |                    |                    |                      |
|                                 |                              |          | Metal     | Class IV (Class V on request)                                                       |                    |                    |                    |                    |                      |
|                                 |                              |          | Stellite™ |                                                                                     |                    |                    |                    |                    |                      |
|                                 |                              |          | Balanced  | Class IV                                                                            |                    |                    |                    |                    |                      |
| Characteristic                  |                              |          |           | Equal %                                                                             |                    | Linear             |                    | Fast Acting        |                      |
| Rangeability                    |                              |          |           | 50 : 1                                                                              |                    | 30 : 1             |                    | 10 : 1             |                      |
| Travel                          |                              |          |           | Ø½" to Ø2" : 20 mm/¾" (Reduce travel on Microflute trim)<br>Ø2½" to Ø4" : 30 mm/1¾" |                    |                    |                    |                    |                      |

**Note:** Consider the limitation of all of the constructive components when selecting a valve

\* Limitation to CL150

## Bellows D Service Life Expectancy

| Valve         |        |         | Process                  |                 | Estimated life expectancy (operations) |                   |
|---------------|--------|---------|--------------------------|-----------------|----------------------------------------|-------------------|
| Inlet Size    | Stem Ø | No. Ply | Pressure                 | Temperature     | 100% Stroke                            | 25-75% modulation |
| DN15 to DN50  | 12 mm  | 3       | 10.6 bar g (153.7 psi g) | 20 °C (68 °F)   | 220,000                                | >2,000,000        |
|               |        |         | 10.6 bar g (153.7 psi g) | 185 °C (365 °F) | 150,000                                | >2,000,000        |
|               |        |         | 17.1 bar g (247.9 psi g) | 400 °C (752 °F) | 30,000                                 | 750,000           |
| DN65 to DN100 | 16 mm  | 3       | 10.6 bar g (153.7 psi g) | 20 °C (68 °F)   | 200,000                                | >2,000,000        |
|               |        |         | 10.6 bar g (153.7 psi g) | 185 °C (365 °F) | 140,000                                | 2,000,000         |
|               |        |         | 17.1 bar g (247.9 psi g) | 400 °C (752 °F) | 30,000                                 | 150,000           |

**Note:** 316L material. Refer to IM-S24-42 for valve body material pressure and temperature limitations



Maximum differential pressures for Class IV shut-off  
 - Metal Seated (T&S)  
 - FLOW UNDER  
 - standard trim  
 - (Pneumatic Actuators)

| Valve DN           |                                 | DN15 to DN25<br>( <sup>1</sup> / <sub>2</sub> " to 1") |    |    |          |    |      |      |     |      |     |      |    |      |      |      |         |     |      |      |      |      |      |    |   |      |  |  |
|--------------------|---------------------------------|--------------------------------------------------------|----|----|----------|----|------|------|-----|------|-----|------|----|------|------|------|---------|-----|------|------|------|------|------|----|---|------|--|--|
| Actuator Type      | Cv                              | 0.012- 0.23                                            |    |    | 0.58-1.2 |    |      | 1.8  |     |      | 2.9 |      |    | 4.6  |      |      | 5.7-7.3 |     |      | 8.3  |      |      | 12   |    |   | 12.7 |  |  |
|                    | Stem sealing<br>Actuator thrust | N-P                                                    | H  | D  | N-P      | H  | D    | N-P  | H   | D    | N-P | H    | D  | N-P  | H    | D    | N-P     | H   | D    | N-P  | H    | D    | N-P  | H  | D |      |  |  |
|                    |                                 |                                                        |    |    |          |    |      |      |     |      |     |      |    |      |      |      |         |     |      |      |      |      |      |    |   |      |  |  |
| PN9120E<br>0.2-1.0 | 192                             | 40                                                     |    |    |          |    |      |      |     |      |     |      |    |      |      |      |         |     |      |      |      |      |      |    |   |      |  |  |
| PN9120E<br>0.4-1.2 | 384                             | 40                                                     |    | 25 | 40       |    | 17.6 | 26.5 | 0.6 | 12.2 |     |      |    | 5.1  |      |      |         |     |      |      |      |      |      |    |   |      |  |  |
| PN9126E<br>1.0-2.0 | 960                             | 40                                                     | 40 | 25 | 40       | 40 | 25   | 40   | 40  | 25   | 40  | 29.5 | 25 | 27.8 | 12.9 | 21.3 | 20.5    | 8.7 | 15.4 | 5.8  | 11.2 | 11.4 | 3.7  | 8  |   |      |  |  |
| PN9123E<br>2.0-4.0 | 1920                            | 40                                                     | 40 | 25 | 40       | 40 | 25   | 40   | 40  | 25   | 40  | 40   | 25 | 40   | 40   | 25   | 40      | 40  | 25   | 36.4 | 25   | 36.2 | 28.5 | 25 |   |      |  |  |

Maximum differential pressures for Class IV shut-off  
- Metal Seated (T&S)  
- FLOW UNDER  
- standard trim  
- (Pneumatic Actuators)  
- continued

| Valve size         |                                 | DN32 to DN50<br>(1¼" to 2") |      |      |      |      |      |      |      |      |      |      |      |         |      |     |      |      |      |       |      |      |       |      |      |
|--------------------|---------------------------------|-----------------------------|------|------|------|------|------|------|------|------|------|------|------|---------|------|-----|------|------|------|-------|------|------|-------|------|------|
|                    |                                 | 4.6                         |      |      | 7.2  |      |      | 12   |      |      | 18   |      |      | 20.2-21 |      |     | 29   |      |      | 36-42 |      |      | 53-58 |      |      |
| Actuator type      | C <sub>v</sub>                  | N-P                         | H    | D    | N-P  | H    | D    | N-P  | H    | D    | N-P  | H    | D    | N-P     | H    | D   | N-P  | H    | D    | N-P   | H    | D    | N-P   | H    | D    |
|                    | Stem sealing<br>Actuator thrust |                             |      |      |      |      |      |      |      |      |      |      |      |         |      |     |      |      |      |       |      |      |       |      |      |
| PN9120E<br>0.4-1.2 | 384                             | 7.9                         |      |      |      |      |      |      |      |      |      |      |      |         |      |     |      |      |      |       |      |      |       |      |      |
| PN9126E<br>1.0-2.0 | 960                             | 40                          | 31.5 | 25   | 30.3 | 15.4 | 23.8 | 17.4 | 7.8  | 13.2 | 13.5 | 5.6  | 10.1 | 9.5     | 3.4  | 6.9 | 3.6  | 0.3  | 2.2  | 2.3   | 1.2  | 1    |       |      |      |
| PN9123E<br>2.0-4.0 | 1920                            | 40                          | 40   | 25   | 40   | 40   | 25   | 40   | 38.4 | 25   | 38.8 | 30.9 | 25   | 29.1    | 23   | 25  | 14.2 | 10.9 | 12.7 | 10.8  | 8.1  | 9.6  | 7     | 5.1  | 6.2  |
| PN9220E<br>0.2-1.0 | 680                             | 33.2                        | 7.6  | 22.1 | 16.3 | 1.4  | 9.9  | 8.5  |      | 4.3  | 6.2  |      | 2.7  | 3.8     |      | 1.2 | 0.5  |      |      |       |      |      |       |      |      |
| PN9220E<br>0.4-1.2 | 1360                            | 40                          | 40   | 25   | 40   | 35.2 | 25   | 30.1 | 20.6 | 25   | 24.1 | 16.2 | 20.6 | 17.7    | 11.6 | 15  | 8    | 4.7  | 6.6  | 5.8   | 3.2  | 4.7  | 3.5   | 1.6  | 2.7  |
| PN9226E<br>1.0-2.0 | 3400                            | 40                          | 40   | 25   | 40   | 40   | 25   | 40   | 40   | 25   | 40   | 40   | 25   | 40      | 40   | 25  | 30.5 | 27.2 | 25   | 23.8  | 21.2 | 22.7 | 16.3  | 14.4 | 15.5 |
| PN9223E<br>2.0-4.0 | 6800                            | 40                          | 40   | 25   | 40   | 40   | 25   | 40   | 40   | 25   | 40   | 40   | 25   | 40      | 40   | 25  | 40   | 40   | 25   | 40    | 40   | 25   | 37.7  | 35.8 | 25   |

**Maximum differential pressures for Class IV shut-off**  
- Metal Seated (T&S)  
- FLOW UNDER  
- standard trim  
- (Pneumatic Actuators)  
- continued

| Actuator Type      | Valve size<br><br>C <sub>v</sub> | DN65 to DN100<br>(2½" to 4") |      |      |      |      |      |      |      |      |           |      |      |         |      |      |         |      |      |
|--------------------|----------------------------------|------------------------------|------|------|------|------|------|------|------|------|-----------|------|------|---------|------|------|---------|------|------|
|                    |                                  | 18                           |      |      | 29   |      |      | 42   |      |      | 73-85-104 |      |      | 116-135 |      |      | 185-208 |      |      |
|                    |                                  | P                            | H    | D    | P    | H    | D    | P    | H    | D    | P         | H    | D    | P       | H    | D    | P       | H    | D    |
| PN9230E<br>0.2-1.0 | 680                              | 2.8                          |      | 1.2  |      |      |      |      |      |      |           |      |      |         |      |      |         |      |      |
| PN9230E<br>0.4-1.2 | 1360                             | 16.6                         | 6.3  | 15   | 5.4  | 0.9  | 4.7  | 3.2  |      | 2.7  | 0.9       |      | 0.7  |         |      |      |         |      |      |
| PN9236E<br>1.0-2.0 | 3400                             | 40                           | 40   | 25   | 23.4 | 18.9 | 22.7 | 16   | 12.8 | 15.5 | 8.2       | 6.4  | 7.9  | 4.7     | 3.5  | 4.5  | 2.5     | 1.8  | 2.4  |
| PN9233E<br>2.0-4.0 | 6800                             | 40                           | 40   | 25   | 40   | 40   | 25   | 37.4 | 34.2 | 21   | 20.2      | 18.4 | 19.9 | 12.4    | 11.2 | 12.2 | 7.3     | 6.6  | 7.2  |
| PN9330E<br>0.2-1.0 | 1340                             | 16.2                         | 5.9  | 14.6 | 5.2  | 0.7  | 4.5  | 3    |      | 2.5  | 0.9       |      | 0.6  |         |      |      |         |      |      |
| PN9330E<br>0.4-1.2 | 2680                             | 40                           | 33.2 | 25   | 17   | 12.5 | 16.3 | 11.5 | 8.3  | 11   | 5.6       | 3.8  | 5.3  | 3.1     | 1.9  | 2.9  | 1.5     | 0.7  | 1.4  |
| PN9336E<br>1.0-2.0 | 6700                             | 40                           | 40   | 25   | 40   | 40   | 25   | 36.7 | 33.5 | 25   | 19.8      | 18   | 19.5 | 12.2    | 11   | 12   | 7.1     | 6.4  | 7    |
| PN9337E<br>2.5-3.5 | 16750                            | 40                           | 40   | 25   | 40   | 40   | 25   | 40   | 40   | 25   | 40        | 40   | 25   | 34.9    | 33.8 | 25   | 21.3    | 20.6 | 21.2 |

**Maximum differential pressures for Class IV shut-off**  
**- Metal Seated (T&S)**  
**- FLOW UNDER**  
**- standard trim**  
**- (Electric Actuators)**

| Valve DN     |                | DN15 to DN25    |    |    |          |    |    |     |      |    |     |    |    |     |      |    |         |      |      |      |      |     |      |      |      |
|--------------|----------------|-----------------|----|----|----------|----|----|-----|------|----|-----|----|----|-----|------|----|---------|------|------|------|------|-----|------|------|------|
|              |                | 0.012- 0.23     |    |    | 0.58-1.2 |    |    | 1.8 |      |    | 2.9 |    |    | 4.6 |      |    | 5.7-7.3 |      |      | 8.3  |      |     | 12   |      |      |
|              |                | N-P             | H  | D  | N-P      | H  | D  | N-P | H    | D  | N-P | H  | D  | N-P | H    | D  | N-P     | H    | D    | N-P  | H    | D   | N-P  | H    | D    |
| Acuator Type | C <sub>v</sub> | Stem sealing    |    |    |          |    |    |     |      |    |     |    |    |     |      |    |         |      |      |      |      |     |      |      |      |
|              |                | Actuator thrust |    |    |          |    |    |     |      |    |     |    |    |     |      |    |         |      |      |      |      |     |      |      |      |
| AE3          | 2000           | 40              | 40 | 25 | 40       | 40 | 25 | 40  | 40   | 25 | 40  | 40 | 25 | 40  | 40   | 25 | 40      | 40   | 25   | 40   | 40   | 25  | 38.3 | 30.5 | 25   |
| AE71T        | 900            | 40              | 40 | 25 | 40       | 40 | 25 | 40  | 39.7 | 25 | 40  | 40 | 25 | 40  | 24.2 | 25 | 24.8    | 9.9  | 18.3 | 6.3  | 13   | 3.9 | 9.3  | 2.1  | 6.5  |
| AE71         | 1200           | 40              | 40 | 25 | 40       | 40 | 25 | 40  | 40   | 25 | 40  | 40 | 25 | 40  | 40   | 25 | 39.7    | 24.8 | 25   | 18.1 | 24.8 | 23  | 13.5 | 17.6 | 14.2 |
| AE72/82      | 2000           | 40              | 40 | 25 | 40       | 40 | 25 | 40  | 40   | 25 | 40  | 40 | 25 | 40  | 40   | 25 | 40      | 40   | 25   | 40   | 40   | 25  | 38.3 | 30.5 | 25   |
| AE72T        | 2100           | 40              | 40 | 25 | 40       | 40 | 25 | 40  | 40   | 25 | 40  | 40 | 25 | 40  | 40   | 25 | 40      | 40   | 25   | 40   | 40   | 25  | 40   | 33.1 | 25   |
| AE73         | 4000           | 40              | 40 | 25 | 40       | 40 | 25 | 40  | 40   | 25 | 40  | 40 | 25 | 40  | 40   | 25 | 40      | 40   | 25   | 40   | 40   | 25  | 40   | 40   | 25   |
| AE83         | 4500           | 40              | 40 | 25 | 40       | 40 | 25 | 40  | 40   | 25 | 40  | 40 | 25 | 40  | 40   | 25 | 40      | 40   | 25   | 40   | 40   | 25  | 40   | 40   | 25   |

**Maximum differential pressures for Class IV shut-off**  
- Metal Seated (T&S)  
- FLOW UNDER  
- standard trim  
- (Electric Actuators)  
- continued

| Valve size    |                                 | DN32 to DN50<br>(1¼" to 2") |      |    |      |      |      |      |      |      |      |      |      |         |      |      |      |      |      |
|---------------|---------------------------------|-----------------------------|------|----|------|------|------|------|------|------|------|------|------|---------|------|------|------|------|------|
|               |                                 | 4.6                         |      |    | 7.2  |      |      | 12   |      |      | 18   |      |      | 20.2-21 |      |      | 29   |      |      |
| Actuator type | C <sub>v</sub>                  |                             |      |    |      |      |      |      |      |      |      |      |      |         |      |      |      |      |      |
|               | Stem sealing<br>Actuator thrust | N-P                         | H    | D  | N-P  | H    | D    | N-P  | H    | D    | N-P  | H    | D    | N-P     | H    | D    | N-P  | H    | D    |
| AE3           | 2000                            | 40                          | 40   | 25 | 40   | 40   | 25   | 40   | 40   | 25   | 40   | 33   | 25   | 30.7    | 24.6 | 25   | 15   | 11.7 | 13.6 |
| AE71T         | 900                             | 40                          | 26.4 | 25 | 27.3 | 12.4 | 20.8 | 15.5 | 5.9  | 11.3 | 12   | 4.1  | 8.5  | 8.3     | 2.2  | 5.6  | 2.9  |      |      |
| AE71          | 1200                            | 40                          | 40   | 25 | 40   | 27.3 | 25   | 25   | 15.5 | 20.9 | 19.8 | 12   | 16.4 | 14.4    | 8.3  | 11.8 | 6.2  | 2.9  | 4.8  |
| AE72/82       | 2000                            | 40                          | 40   | 25 | 40   | 40   | 25   | 40   | 40   | 25   | 40   | 33   | 25   | 30.7    | 24.6 | 25   | 15   | 11.7 | 13.6 |
| AE72T         | 2100                            | 40                          | 40   | 25 | 40   | 40   | 25   | 40   | 40   | 25   | 40   | 35.6 | 25   | 32.7    | 26.6 | 25   | 16.1 | 12.8 | 14.7 |
| AE73          | 4000                            | 40                          | 40   | 25 | 40   | 40   | 25   | 40   | 40   | 25   | 40   | 40   | 25   | 40      | 40   | 25   | 37.1 | 33.8 | 25   |
| AE74/84       | 6000                            | 40                          | 40   | 25 | 40   | 40   | 25   | 40   | 40   | 25   | 40   | 40   | 25   | 40      | 40   | 25   | 40   | 40   | 25   |
| AE83          | 4500                            | 40                          | 40   | 25 | 40   | 40   | 25   | 40   | 40   | 25   | 40   | 40   | 25   | 40      | 40   | 25   | 40   | 40   | 25   |

**Maximum differential pressures for Class IV shut-off**  
- Metal Seated (T&S)  
- FLOW UNDER  
- standard trim  
- (Electric Actuated)  
- continued

| Actuator Type     | Valve size     |                                 | DN65 to DN100<br>(2½" to 4") |      |      |      |      |      |      |      |      |           |      |      |         |      |      |         |      |   |  |  |     |
|-------------------|----------------|---------------------------------|------------------------------|------|------|------|------|------|------|------|------|-----------|------|------|---------|------|------|---------|------|---|--|--|-----|
|                   | C <sub>v</sub> | Stem sealing<br>Actuator thrust | 18                           |      |      | 29   |      |      | 42   |      |      | 73-85-104 |      |      | 116-135 |      |      | 185-208 |      |   |  |  |     |
|                   |                |                                 | P                            | H    | D    | P    | H    | D    | P    | H    | D    | P         | H    | D    | P       | H    | D    | P       | H    | D |  |  |     |
|                   |                |                                 |                              |      |      |      |      |      |      |      |      |           |      |      |         |      |      |         |      |   |  |  |     |
| AEL71T            | 900            | 7.3                             |                              | 5.6  | 1.3  |      | 0.6  | 0.3  |      |      |      |           |      |      |         |      |      |         |      |   |  |  |     |
| AEL71             | 1200           | 13.4                            | 3                            | 11.8 | 4    |      | 3.3  | 2.2  |      | 1.7  | 0.4  |           | 0.1  |      |         |      |      |         |      |   |  |  |     |
| AEL72/82          | 2000           | 29.7                            | 19.3                         | 25   | 11   | 6.6  | 10.3 | 7.2  | 4    | 6.7  | 3.2  | 1.4       | 2.9  | 1.5  | 0.4     | 1.3  | 0.5  |         |      |   |  |  | 0.4 |
| AEL72T            | 2100           | 31.7                            | 21.3                         | 25   | 11.9 | 7.4  | 11.2 | 7.8  | 4.6  | 7.3  | 3.6  | 1.8       | 3.3  | 1.7  | 0.6     | 1.6  | 0.6  |         |      |   |  |  | 0.5 |
| AEL73             | 4000           | 40                              | 40                           | 25   | 28.7 | 24.2 | 25   | 19.8 | 16.6 | 19.3 | 10.3 | 8.5       | 10   | 6    | 4.9     | 5.9  | 3.3  | 2.6     | 3.2  |   |  |  |     |
| AEL74/84          | 6000           | 40                              | 40                           | 25   | 40   | 40   | 25   | 32.3 | 29.1 | 25   | 17.4 | 15.6      | 17.1 | 10.6 | 9.4     | 10.4 | 6.1  | 5.4     | 6    |   |  |  |     |
| AEL75/85          | 8000           | 40                              | 40                           | 25   | 40   | 40   | 25   | 40   | 40   | 25   | 24.4 | 22.6      | 24.1 | 15.1 | 13.9    | 14.9 | 9    | 8.2     | 8.9  |   |  |  |     |
| AEL76/86          | 12000          | 40                              | 40                           | 25   | 40   | 40   | 25   | 40   | 40   | 25   | 38.6 | 36.8      | 25   | 24.2 | 23      | 24   | 14.6 | 13.9    | 14.5 |   |  |  |     |
| AEL77/87          | 15000          | 40                              | 40                           | 25   | 40   | 40   | 25   | 40   | 40   | 25   | 40   | 40        | 25   | 30.9 | 29.8    | 25   | 18.8 | 18.1    | 18.7 |   |  |  |     |
| AEL78             | 20000          | 40                              | 40                           | 25   | 40   | 40   | 25   | 40   | 40   | 25   | 40   | 40        | 25   | 40   | 40      | 25   | 25.9 | 25.2    | 25   |   |  |  |     |
| AEL83             | 4500           | 40                              | 40                           | 25   | 40   | 40   | 25   | 40   | 40   | 25   | 40   | 40        | 25   | 40   | 40      | 25   | 25.9 | 25.2    | 25   |   |  |  |     |
| Only for 431 trim |                |                                 |                              |      |      |      |      |      |      |      |      |           |      |      |         |      |      |         |      |   |  |  |     |

Maximum differential pressures for Class VI shut-off

- Resilient Seated (P&C)
- FLOW UNDER
- standard trim
- (Pneumatic Actuators)

| Actuator Type      | Valve size     | DN15 to DN25    |    |    |           |    |    |      |    |    |     |    |    |     |    |    |     |    |    |     |    |    |         |    |    |
|--------------------|----------------|-----------------|----|----|-----------|----|----|------|----|----|-----|----|----|-----|----|----|-----|----|----|-----|----|----|---------|----|----|
|                    | C <sub>v</sub> | 0.01-0.081      |    |    | 0.12-0.23 |    |    | 0.58 |    |    | 1.2 |    |    | 1.8 |    |    | 2.9 |    |    | 4.6 |    |    | 5.7-7.3 |    |    |
|                    | Stem sealing   | N-P             | H  | D  | N-P       | H  | D  | N-P  | H  | D  | N-P | H  | D  | N-P | H  | D  | N-P | H  | D  | N-P | H  | D  | N-P     | H  | D  |
|                    |                | Actuator thrust |    |    |           |    |    |      |    |    |     |    |    |     |    |    |     |    |    |     |    |    |         |    |    |
| PN9126E<br>1.0-2.0 | 960            | 19              | 19 | 19 | 19        | 19 | 19 | 19   | 19 | 19 | 19  | 19 | 19 | 19  | 19 | 19 | 19  | 19 | 19 | 19  | 19 | 19 | 19      | 19 | 19 |
| PN9123E<br>2.0-4.0 | 1920           | 19              | 19 | 19 | 19        | 19 | 19 | 19   | 19 | 19 | 19  | 19 | 19 | 19  | 19 | 19 | 19  | 19 | 19 | 19  | 19 | 19 | 19      | 19 | 19 |

| Actuator Type      | Valve size      | DN15 to DN25 |      |    |     |      |    |      |      |      |  |
|--------------------|-----------------|--------------|------|----|-----|------|----|------|------|------|--|
|                    | C <sub>v</sub>  | 8.3          |      |    | 12  |      |    |      | 12.7 |      |  |
|                    | Stem sealing    | N-P          | H    | D  | N-P | H    | D  | N-P  | H    | D    |  |
|                    | Actuator thrust |              |      |    |     |      |    |      |      |      |  |
| PN9126E<br>1.0-2.0 | 960             | 19           | 17.6 | 19 | 19  | 13.8 | 19 | 18.6 | 10.9 | 15.3 |  |
| PN9123E<br>2.0-4.0 | 1920            | 19           | 19   | 19 | 19  | 19   | 19 | 19   | 19   | 19   |  |

**Note :** Maximum differential pressure for saturated steam. Refer to Spirax Sarco for other liquids or gases.

**Maximum differential pressures for Class VI shut-off**  
**- Resilient Seated (P&C)**  
**- FLOW UNDER**  
**- standard trim**  
**- (Pneumatic Actuators)**  
**- continued**

| Actuator Type      | Valve size | DN32 to DN50<br>(1¼" to 2") |      |    |     |     |    |      |      |      |      |      |      |         |      |      |      |      |      |
|--------------------|------------|-----------------------------|------|----|-----|-----|----|------|------|------|------|------|------|---------|------|------|------|------|------|
|                    |            | 4.6                         |      |    | 7.2 |     |    | 12   |      |      | 18   |      |      | 20.2-21 |      |      | 29   |      |      |
|                    |            | N-P                         | H    | D  | N-P | H   | D  | N-P  | H    | D    | N-P  | H    | D    | N-P     | H    | D    | N-P  | H    | D    |
| PN9126E<br>1.0-2.0 | 960        | 19                          | 19   | 16 | 19  | 19  | 16 | 19   | 13.8 | 16   | 19   | 11.1 | 15.6 | 14.3    | 8.2  | 11.7 | 7.1  | 3.8  | 5.7  |
| PN9123E<br>2.0-4.0 | 1920       | 19                          | 19   | 16 | 19  | 19  | 16 | 19   | 19   | 16   | 19   | 19   | 19   | 19      | 19   | 16   | 17.7 | 14.4 | 16   |
| PN9220E<br>0.2-1.0 | 680        | 19                          | 17.4 | 16 | 19  | 8.9 | 16 | 14.5 | 4.9  | 10.3 | 11.6 | 3.7  | 8.2  | 8.6     | 2.5  | 6    | 4    | 0.7  | 2.6  |
| PN9220E<br>0.4-1.2 | 1360       | 19                          | 19   | 16 | 19  | 19  | 16 | 19   | 19   | 16   | 19   | 19   | 16   | 19      | 16.4 | 16   | 11.5 | 8.2  | 10.1 |
| PN9226E<br>1.0-2.0 | 3400       |                             |      |    |     |     |    |      |      |      |      |      |      |         |      |      |      |      |      |

| Actuator Type      | Valve size | DN65 to DN100<br>(2½" to 4") |      |    |     |      |     |      |      |      |           |     |     |         |      |      |         |     |     |
|--------------------|------------|------------------------------|------|----|-----|------|-----|------|------|------|-----------|-----|-----|---------|------|------|---------|-----|-----|
|                    |            | 18                           |      |    | 29  |      |     | 42   |      |      | 73-85-104 |     |     | 116-135 |      |      | 185-208 |     |     |
|                    |            | P                            | H    | D  | P   | H    | D   | P    | H    | D    | P         | H   | D   | P       | H    | D    | P       | H   | D   |
| PN9230E<br>0.2-1.0 | 680        | 7.6                          |      | 6  | 2.6 |      | 1.9 | 1.6  |      | 1.1  | 0.5       |     | 0.3 | 0.1     |      |      |         |     |     |
| PN9230E<br>0.4-1.2 | 1360       | 19                           | 11.1 | 19 | 8.6 | 4.1  | 7.9 | 5.8  | 2.6  | 5.3  | 2.9       | 1.1 | 2.7 | 1.7     | 0.5  | 1.5  | 0.9     | 0.1 | 0.8 |
| PN9236E<br>1.0-2.0 | 3400       |                              |      |    | 19  | 19   | 19  | 18.7 | 15.5 | 18.2 | 10.2      | 8.4 | 9.9 | 6.3     | 5.1  | 6.1  | 3.7     | 3   | 3.6 |
| PN9233E<br>2.0-4.0 | 6800       |                              |      |    |     |      |     |      |      |      | 19        | 19  | 19  | 14      | 12.8 | 13.8 | 8.5     | 7.8 | 8.4 |
| PN9330E<br>0.2-1.0 | 1340       | 19                           | 10.7 | 19 | 8.4 | 3.9  | 7.7 | 5.7  | 2.5  | 5.2  | 2.9       | 1.1 | 2.6 | 1.6     | 0.5  | 1.4  | 0.8     | 0.1 | 0.7 |
| PN9330E<br>0.4-1.2 | 2680       |                              |      |    | 19  | 15.7 | 19  | 14.1 | 10.9 | 13.6 | 7.6       | 5.8 | 7.3 | 4.7     | 3.5  | 4.5  | 2.7     | 2   | 2.6 |
| PN9336E<br>1.0-2.0 | 6700       |                              |      |    |     |      |     |      |      |      | 19        | 19  | 19  | 13.8    | 12.6 | 13.6 | 8.4     | 7.7 | 8.3 |
| PN9337E<br>2.5-3.5 | 16750      |                              |      |    |     |      |     |      |      |      |           |     |     |         |      |      | 19      | 19  | 19  |

**Note** : Maximum differential pressure for saturated steam. Refer to Spirax Sarco for other liquids or gases.



**Maximum differential pressures for Class VI shut-off**  
**- Resilient Seated (P&C)**  
**- FLOW UNDER**  
**- standard trim**  
**- (Electric Actuators)**

| Valve size    |                 | DN15 to DN25   |    |    |    |      |    |    |      |      |      |      |    |
|---------------|-----------------|----------------|----|----|----|------|----|----|------|------|------|------|----|
|               |                 | Upto Cv7.3     |    |    |    | 8.3  |    |    |      | 12   |      |      |    |
|               |                 | C <sub>v</sub> |    |    |    | 12.7 |    |    |      |      |      |      |    |
|               |                 | Stem sealing   |    |    |    |      |    |    |      |      |      |      |    |
| Actuator Type | Actuator thrust | P              | H  | D  | P  | H    | D  | P  | H    | D    | P    | H    | D  |
|               |                 |                |    |    |    |      |    |    |      |      |      |      |    |
| AEL3          | 2000            | 10             | 10 | 10 | 10 | 10   | 10 | 10 | 10   | 10   | 10   | 10   | 10 |
| AEL71T        | 900             | 19             | 19 | 19 | 19 | 15.2 | 19 | 19 | 17.3 | 17.1 | 9.3  | 13.7 |    |
| AEL71         | 1200            | 19             | 19 | 19 | 19 | 19   | 19 | 19 | 19   | 19   | 17.1 | 19   |    |
| AEL72/82      | 2000            | 19             | 19 | 19 | 19 | 19   | 19 | 19 | 19   | 19   | 19   | 19   | 19 |

| Valve size    |                          | DN32 to DN50<br>(1¼" to 2") |    |    |    |    |    |     |    |      |      |      |    |      |      |      |      |      |      |      |      |      |      |      |      |
|---------------|--------------------------|-----------------------------|----|----|----|----|----|-----|----|------|------|------|----|------|------|------|------|------|------|------|------|------|------|------|------|
|               |                          | 4.6                         |    |    |    |    |    | 7.2 |    |      |      |      |    | 12   |      |      |      |      |      | 18   |      |      |      |      |      |
|               |                          | C <sub>v</sub>              |    |    |    |    |    |     |    |      |      |      |    |      |      |      |      |      |      |      |      |      |      |      |      |
|               |                          | Stem sealing                |    |    |    |    |    |     |    |      |      |      |    |      |      |      |      |      |      |      |      |      |      |      |      |
| Actuator Type | Actuator thrust          | P                           | H  | D  | P  | H  | D  | P   | H  | D    | P    | H    | D  | P    | H    | D    | P    | H    | D    | P    | H    | D    | P    | H    | D    |
|               |                          |                             |    |    |    |    |    |     |    |      |      |      |    |      |      |      |      |      |      |      |      |      |      |      |      |
| AEL3          | 2000                     | 10                          | 10 | 10 | 10 | 10 | 10 | 10  | 10 | 10   | 10   | 10   | 10 | 10   | 10   | 10   | 10   | 10   | 10   | 10   | 10   | 10   | 10.2 | 8.3  | 9.4  |
| AEL71T        | 900                      | 19                          | 19 | 19 | 19 | 19 | 19 | 19  | 19 | 17.3 | 17.4 | 9.5  | 14 | 13.1 | 7    | 10.4 | 6.5  | 3.2  | 5    | 4.9  | 2.3  | 3.8  | 3.3  | 1.4  | 2.4  |
| AEL71         | 1200                     | 19                          | 19 | 19 | 19 | 19 | 19 | 19  | 19 | 19   | 19   | 17.4 | 19 | 19   | 13.1 | 16.6 | 9.8  | 6.5  | 8.3  | 7.6  | 4.9  | 6.4  | 5.1  | 3.3  | 4.3  |
| AEL72/82      | 2000                     | 19                          | 19 | 19 | 19 | 19 | 19 | 19  | 19 | 19   | 19   | 19   | 19 | 19   | 19   | 19   | 18.6 | 15.3 | 17.1 | 14.6 | 12   | 13.5 | 10.2 | 8.3  | 9.4  |
| AEL72T        | 2100                     |                             |    |    |    |    |    |     |    |      |      |      |    |      |      |      |      |      |      | 15.5 | 12.9 | 14.1 | 10.8 | 8.9  | 10   |
| AEL83         | 2300<br>(reduced thrust) |                             |    |    |    |    |    |     |    |      |      |      |    |      |      |      |      |      |      | 17.3 | 14.6 | 16.1 | 12.1 | 10.2 | 11.2 |

**Note :** Maximum differential pressure for saturated steam. Refer to Spirax Sarco for other liquids or gases.

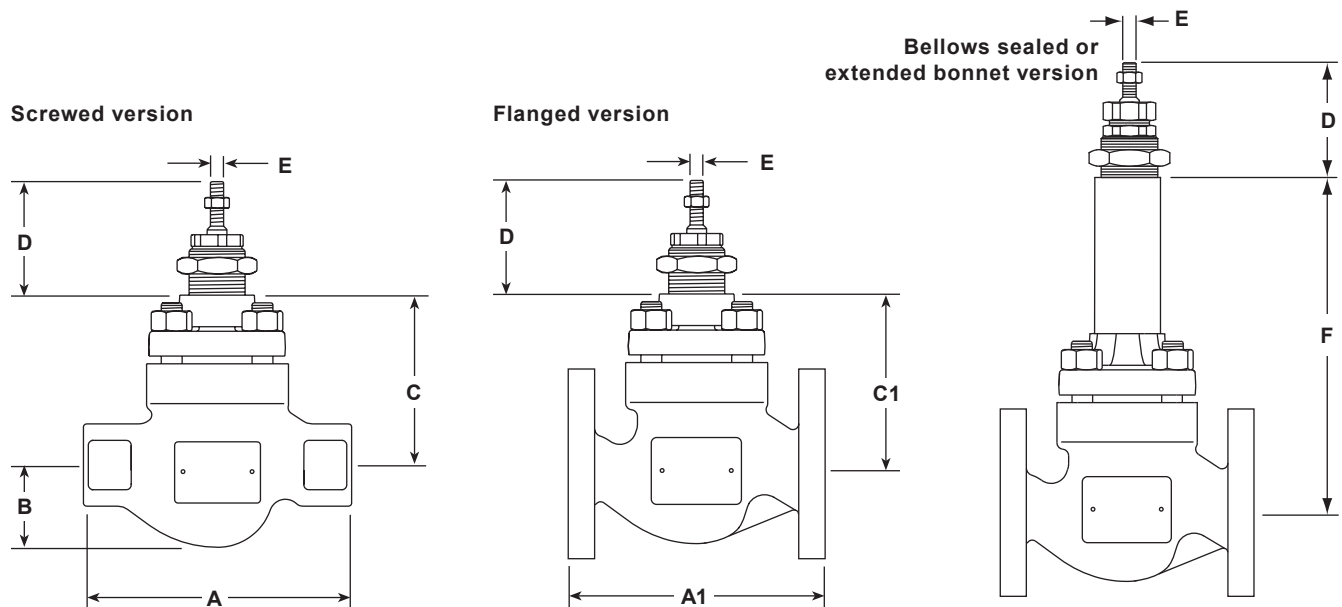
**Maximum differential pressures for Class VI shut-off**  
**- Resilient Seated (P&C)**  
**- FLOW UNDER**  
**- standard trim**  
**- (Electric Actuators)**  
**- continued**

| Valve size    |                                 | DN65 to DN100<br>(2½" to 4") |     |      |      |      |      |      |     |     |           |      |     |         |      |      |         |      |      |
|---------------|---------------------------------|------------------------------|-----|------|------|------|------|------|-----|-----|-----------|------|-----|---------|------|------|---------|------|------|
|               |                                 | 18                           |     |      | 29   |      |      | 42   |     |     | 73-85-104 |      |     | 116-135 |      |      | 185-208 |      |      |
|               |                                 | P                            | H   | D    | P    | H    | D    | P    | H   | D   | P         | H    | D   | P       | H    | D    | P       | H    | D    |
| Actuator Type | C <sub>v</sub>                  |                              |     |      |      |      |      |      |     |     |           |      |     |         |      |      |         |      |      |
|               | Stem sealing<br>Actuator thrust |                              |     |      |      |      |      |      |     |     |           |      |     |         |      |      |         |      |      |
| AEL71T        | 900                             | 12.1                         | 1.7 | 10.4 | 4.5  |      | 3.8  | 2.9  |     | 2.4 | 1.3       |      | 1   |         |      |      |         |      |      |
| AEL71         | 1200                            | 18.2                         | 7.8 | 16.6 | 7.2  | 2.7  | 6.4  | 4.8  | 1.6 | 4.3 | 2.4       | 0.6  | 2.1 | 1.3     |      | 1.1  | 0.6     |      | 0.5  |
| AEL72/82      | 2000                            | 19                           | 19  | 19   | 14.2 | 9.7  | 13.5 | 9.9  | 6.6 | 9.4 | 5.2       | 3.4  | 4.9 | 3.1     | 2    | 2.9  | 1.8     | 1    | 1.7  |
| AEL72T        | 2100                            | 15.1                         | 4.7 | 19   | 14.2 | 9.7  | 13.5 | 10.5 | 7.3 | 10  | 5.6       | 3.8  | 5.3 | 3.3     | 2.2  | 3.2  | 1.9     | 1.2  | 1.8  |
| AEL73         | 4000                            |                              |     |      |      |      |      |      |     |     | 12.3      | 10.5 | 12  | 7.6     | 6.5  | 7.5  | 4.6     | 3.9  | 4.5  |
| AEL74/84      | 6000                            |                              |     |      |      |      |      |      |     |     | 19        | 17.6 | 19  | 12.2    | 11   | 12   | 7.4     | 6.7  | 7.3  |
| AEL75/85      | 8000                            |                              |     |      |      |      |      |      |     |     |           |      |     | 16.7    | 15.5 | 16.5 | 10.2    | 9.5  | 10.1 |
| AEL76/86      | 12000                           |                              |     |      |      |      |      |      |     |     |           |      |     |         |      |      | 15.9    | 15.2 | 15.8 |
| AEL77/87      | 15000                           |                              |     |      |      |      |      |      |     |     |           |      |     |         |      |      | 19      | 19   | 19   |
| AEL83         | 2300<br>(reduced thrust)        | 19                           | 19  | 19   | 16.8 | 12.3 | 16.1 | 10.5 | 7.3 | 10  |           |      |     |         |      |      |         |      |      |
|               | 4500                            |                              |     |      |      |      |      |      |     |     | 12.3      | 10.5 | 12  | 7.6     | 6.5  | 7.5  | 4.6     | 3.9  | 4.5  |

**Note :** Maximum differential pressure for saturated steam. Refer to Spirax Sarco for other liquids or gases.

**Dimensions** for the **Spira-trol™ two-port control valve** approximate in mm and (inches)

| Valve size | Screwed<br>NPT |          |          | Flanged                      |                              |           | D        | E<br><br>Thread | Bellows Seals and<br>Extended bonnet |        |
|------------|----------------|----------|----------|------------------------------|------------------------------|-----------|----------|-----------------|--------------------------------------|--------|
|            | A              | B        | C        | A1                           |                              | C1        |          |                 | F                                    |        |
|            |                |          |          | KS 10<br>ASME 125<br>and 150 | KS 20<br>ASME 250<br>and 300 |           |          |                 | mm                                   | inches |
| DN15 (½")  | 165 (6½")      | 44 (1¾") | 102 (4") | 184 (7¼")                    | 190 (7½")                    | 102 (4")  | 69 (2¾") | M8              | 216                                  | 8.5    |
| DN20 (¾")  | 165 (6½")      | 44 (1¾") | 102 (4") | 184 (7¼")                    | 190 (7½")                    | 102 (4")  |          |                 | 218                                  | 8.58   |
| DN25 (1")  | 197 (7¾")      | 57 (2¼") | 102 (4") | 184 (7¼")                    | 197 (7¾")                    | 102 (4")  |          |                 | 214                                  | 8.42   |
| DN32 (1¼") | 216 (8½")      | 57 (2¼") | 127 (5") | 222 (8¾")                    | 127 (8¾")                    | 127 (5")  |          |                 | 243                                  | 9.57   |
| DN40 (1½") | 235 (9¼")      | 63 (2½") | 127 (5") | 222 (8¾")                    | 235 (9¼")                    | 127 (5")  |          |                 | 238                                  | 9.37   |
| DN50 (2")  | 267 (10½")     | 76 (3")  | 127 (5") | 254 (10")                    | 267 (10½")                   | 127 (5")  |          |                 |                                      |        |
| DN65 (2½") |                |          |          | 276 (10¾")                   | 292 (11½")                   | 200 (7⅞") | 81 (3")  | M12             | 351                                  | 13.82  |
| DN80 (3")  |                |          |          | 298 (11¾")                   | 317 (12½")                   | 200 (7⅞") |          |                 |                                      |        |
| DN100 (4") |                |          |          | 349 (13¾")                   | 368 (14½")                   | 216 (8½") |          |                 | 365                                  | 14.37  |

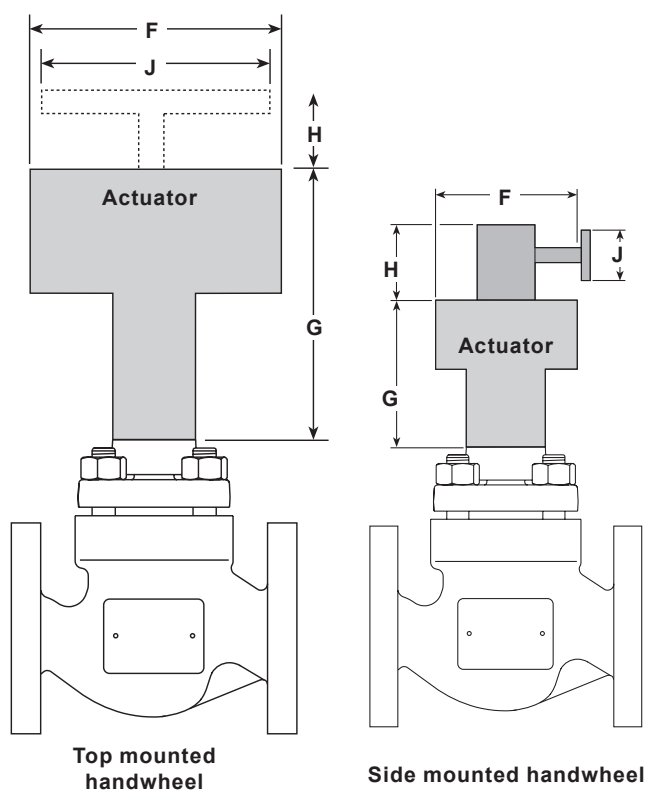


**Weights** approximate in kg (and lbs)

| Valve size | KEA valves |            |            |                                           | LEA valves |           |           |           | Additional bellows<br>and Extended<br>bonnet |
|------------|------------|------------|------------|-------------------------------------------|------------|-----------|-----------|-----------|----------------------------------------------|
|            | KEA43      | KEA63      | KEA73      | KEA41<br>KEA42<br>KEA61<br>KEA62<br>KEA71 | LEA31      | LEA33     | LEA43     | LEA63     |                                              |
| DN15 (½")  | 7.3 (16)   | 7.3 (16)   | 7.3 (16)   | 7.3 (16)                                  | 7.3 (16)   | 7.3 (16)  | 7.3 (16)  | 7.3 (16)  | 4.5 (10)                                     |
| DN20 (¾")  | 8.2 (18)   | 8.2 (18)   | 8.2 (18)   | 7.3 (16)                                  | 7.3 (16)   | 8.2 (18)  | 8.2 (18)  | 8.2 (18)  |                                              |
| DN25 (1")  | 9.1 (20)   | 9.1 (20)   | 9.1 (20)   | 10 (22)                                   | 10 (22)    | 13.2 (29) | 13.6 (30) | 13.6 (30) |                                              |
| DN32 (1¼") | 14.1 (31)  | 14.1 (31)  | 13.2 (29)  | 11.3 (25)                                 | 11.3 (25)  | 13.6 (30) | 14.1 (31) | 14.1 (31) | 5.5 (12)                                     |
| DN40 (1½") | 16.3 (36)  | 16.3 (36)  | 14.1 (31)  | 14.1 (31)                                 | 14.1 (31)  | 14.1 (31) | 16.3 (36) | 16.3 (36) |                                              |
| DN50 (2")  | 17.2 (38)  | 18.1 (40)  | 17.2 (38)  | 15 (33)                                   | 15 (33)    | 17.2 (38) | 17.2 (38) | 17.2 (38) |                                              |
| DN65 (2½") | 35.4 (78)  | 35.4 (78)  | 38.1 (84)  |                                           |            | 38 (84)   | 38 (84)   | 38 (84)   | 10 (21)                                      |
| DN80 (3")  | 39 (86)    | 40.4 (89)  | 41.3 (91)  |                                           |            | 41 (91)   | 40 (89)   | 40 (89)   |                                              |
| DN100 (4") | 56.2 (124) | 56.2 (124) | 59.9 (132) |                                           |            | 60 (132)  | 56 (124)  | 56 (124)  | 13 (28)                                      |

## Dimensions/weights for the PN actuator range approximate in mm and kgs (inches and lbs)

| Actuator range and variants | F   |                    | G   |                    | H   |                    | J   |                    | Weight   |       |                |        |
|-----------------------------|-----|--------------------|-----|--------------------|-----|--------------------|-----|--------------------|----------|-------|----------------|--------|
|                             | mm  | inches             | mm  | inches             | mm  | inches             | mm  | inches             | Actuator |       | With handwheel |        |
|                             |     |                    |     |                    |     |                    |     |                    | kg       | lbs   | kg             | lbs    |
| PN9100E                     | 170 | 6 A"               | 275 | 10 $\frac{7}{8}$ " | 55  | 2 $\frac{3}{16}$ " | 225 | 8 $\frac{7}{8}$ "  | 6        | 13.25 | +5.86          | +13.00 |
| PN9100R                     |     |                    |     |                    | 140 | 5 $\frac{1}{2}$ "  |     |                    |          |       | +2.50          | +5.50  |
| PN9200E                     | 300 | 11 $\frac{7}{8}$ " | 300 | 11 $\frac{7}{8}$ " | 55  | 2 $\frac{3}{16}$ " | 225 | 8 $\frac{7}{8}$ "  | 17       | 37.50 | +7.20          | +15.75 |
| PN9200R                     |     |                    |     |                    | 140 | 5 $\frac{1}{2}$ "  |     |                    |          |       | +3.77          | +8.50  |
| PN9320E                     | 390 | 15 $\frac{1}{2}$ " | 325 | 12 $\frac{7}{8}$ " | 65  | 2 $\frac{3}{16}$ " | 350 | 13 $\frac{3}{4}$ " | 27       | 59.50 | +7.20          | +15.75 |
| PN9320R                     |     |                    |     |                    | 150 | 15 $\frac{5}{8}$ " |     |                    |          |       | +3.77          | +8.50  |
| PN9330E                     | 390 | 15 $\frac{1}{2}$ " | 335 | 13 $\frac{3}{8}$ " | 65  | 2 $\frac{3}{16}$ " | 350 | 13 $\frac{3}{4}$ " | 27       | 59.50 | +7.20          | +15.75 |
| PN9330R                     |     |                    |     |                    | 150 | 15 $\frac{5}{8}$ " |     |                    |          |       | +3.77          | +8.50  |
| TN2100E                     | 405 | 16"                | 369 | 14 $\frac{1}{2}$ " | 402 | 15 $\frac{5}{8}$ " | 330 | 13"                | 37       | 83.25 | +23.00         | +51.75 |
| TN2100R                     |     |                    |     |                    |     |                    |     |                    |          |       |                |        |
| TN2100DA                    | 405 | 16"                | 369 | 14 $\frac{1}{2}$ " |     |                    |     |                    | 30       | 67.50 |                |        |



## Dimensions/weights for the AEL actuator ranges

approximate in mm and kgs (and in inches and lbs)

| Actuator | F   |                    | G   |                    | Weight |      |
|----------|-----|--------------------|-----|--------------------|--------|------|
|          | mm  | inches             | mm  | inches             | kg     | lbs  |
| AEL3     | 230 | 9                  | 283 | 11 $\frac{1}{4}$ " | 5.7    | 12.5 |
| AEL71T   | 162 | 6                  | 490 | 19 $\frac{1}{4}$ " | 8.7    | 19.5 |
| AEL72T   |     |                    | 508 | 20                 | 9.3    | 20.5 |
| AEL71    | 129 | 5                  | 292 | 11 $\frac{1}{2}$ " | 2.1    | 5    |
| AEL72-3  | 173 | 7                  | 379 | 15                 | 4.8    | 11   |
| AEL74    | 211 | 8 $\frac{1}{4}$ "  | 474 | 18 $\frac{3}{4}$ " | 8.0    | 18   |
| AEL75-7  | 259 | 10 $\frac{1}{4}$ " | 527 | 20 $\frac{3}{4}$ " | 15.0   | 33   |
| AEL78    | 283 | 11 $\frac{1}{4}$ " | 657 | 26                 | 19.0   | 42   |
| AEL62-3  | 180 | 7                  | 459 | 18                 | 5.0    | 11   |
| AEL64    |     |                    | 490 | 19 $\frac{1}{4}$ " | 7.0    | 15.5 |
| AEL65    |     |                    | 557 | 22                 | 10.0   | 22   |
| AEL66    | 226 | 9                  | 760 | 30                 | 20.0   | 44   |

## Spare parts

### Spira-trol™ two-port control valve DN15 to DN100 - ½" to 4"

The spare parts available are shown in solid outline. Parts drawn in broken line are not supplied as spares.

**Note:** When placing an order for spare parts please specify clearly the full product description as found on the label of the valve body, as this will ensure that the correct spare parts are supplied.

#### Available spares - K series

|                               |                                                         |              |
|-------------------------------|---------------------------------------------------------|--------------|
| <b>Actuator clamping nut</b>  |                                                         | <b>A</b>     |
| <b>Gasket set</b>             | (Non-bellows sealed)                                    | <b>B, G</b>  |
|                               | PTFE packing                                            | <b>C</b>     |
| <b>Stem seal kits</b>         | Graphite packing                                        | <b>C1</b>    |
|                               | Graphite seal set                                       | <b>C2</b>    |
|                               | * <b>Equal percentage trim</b><br>(No gaskets supplied) | <b>D, E</b>  |
| <b>Plug stem and seat kit</b> | <b>Fast opening trim</b><br>(No gaskets supplied)       | <b>D1, E</b> |
|                               | <b>Linear trim</b><br>(No gaskets supplied)             | <b>D2, E</b> |
| <b>PTFE soft seat seal</b>    |                                                         | <b>H</b>     |

\* Specify if reduced trim.

#### How to order spares

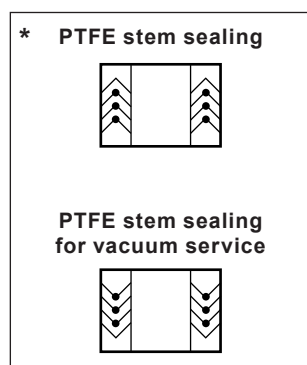
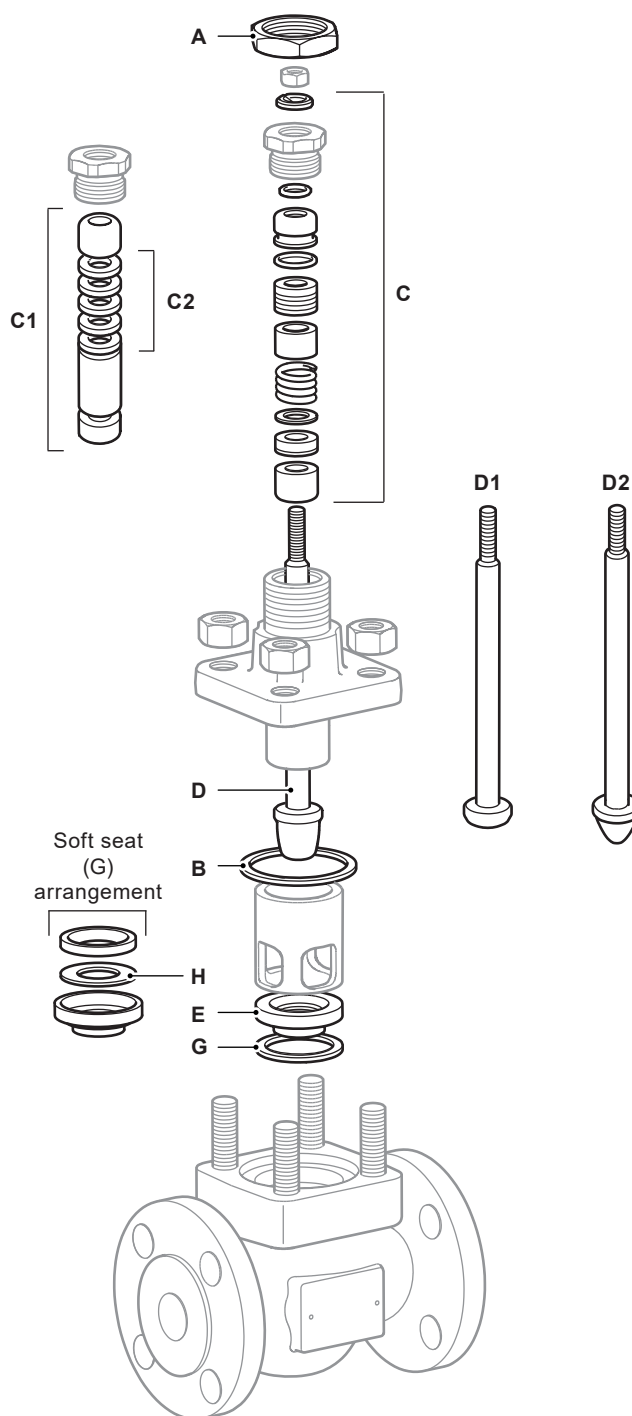
Always order spares by using the description given in the column headed 'Available spares', and state the size and type of valve including the full product description of the product.

#### Example:

1 - PTFE stem seal kit for a Spirax Sarco 1" Spira-trol™ two-port KE43 PTSUSS.2 Cv 12 control valve.

#### How to fit spares

Full fitting instructions are given in the Installation and Maintenance Instructions supplied with the spare.



## Spare parts

### Spira-trol™ two-port control valve with bellows seal - Type D DN15 to DN100 - ½" to 4"

The spare parts available are shown in solid outline. Parts drawn in a grey line are not supplied as spares.

**Note:** When placing an order for spare parts please specify clearly the full product description as found on the label of the valve body, as this will ensure that the correct spare parts are supplied.

#### Available spares - K series

|                               |                                                        |              |
|-------------------------------|--------------------------------------------------------|--------------|
| <b>Actuator clamping nut</b>  |                                                        | <b>A</b>     |
| <b>Gasket set</b>             | (Bellows sealed)                                       | <b>B, G</b>  |
| <b>Stem seal kit</b>          | <b>Graphite</b> secondary seal and gasket set          | <b>C3</b>    |
| <b>Plug stem and seat kit</b> | <b>*Equal percentage trim</b><br>(No gaskets supplied) | <b>D6, E</b> |
|                               | <b>Fast opening trim</b><br>(No gaskets supplied)      | <b>D7, E</b> |
|                               | <b>Linear trim</b><br>(No gaskets supplied)            | <b>D8, E</b> |
| <b>Bellows seal assembly</b>  |                                                        | <b>F</b>     |
| <b>* PTFE soft seat seal</b>  |                                                        | <b>H</b>     |

Specify if reduced trim.

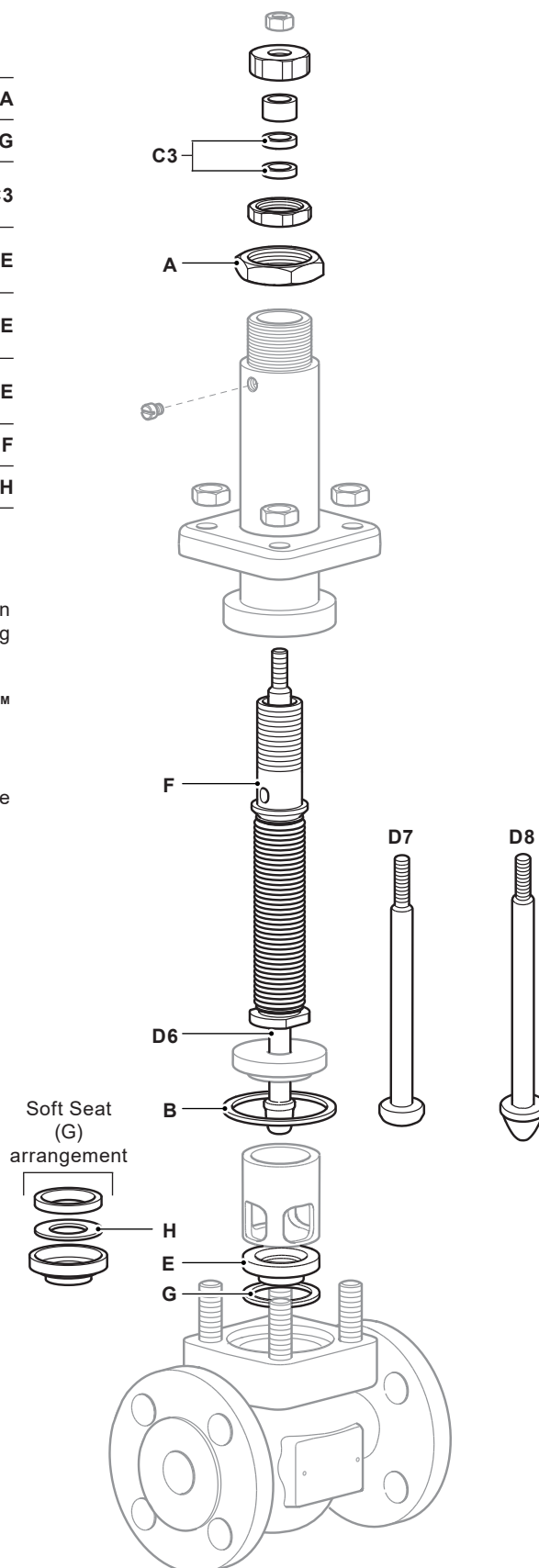
#### How to order spares

Always order spares by using the description given in the column headed 'Available spares', and state the size and type of valve including the full product description of the product.

**Example:** 1 - Graphite stem seal kit for a Spirax Sarco DN25 Spira-trol™ two-port KE43 DTSUSS.2 Cv12 control valve.

#### How to fit spares

Full fitting instructions are given in the Installation and Maintenance Instructions supplied with the spare.



## Spira-trol™ selection guide:

|                             |                                                                                                                                                                                |                          |
|-----------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|
| <b>Valve size</b>           | ASME standard = ½", ¾", 1", 1¼", 1½", 2", 2½", 3" and 4"                                                                                                                       | <b>1½"</b>               |
| <b>Valve series</b>         | K = K series 2-port control valve<br>L = L Series 2-port control valve                                                                                                         | <b>K</b>                 |
| <b>Valve characteristic</b> | E = Equal percentage<br>F = Fast opening<br>L = Linear                                                                                                                         | <b>E</b>                 |
| <b>Flange type</b>          | A = ASME                                                                                                                                                                       | <b>A</b>                 |
| <b>Flow</b>                 | Blank = under<br>T = over                                                                                                                                                      | <b>Blank</b>             |
| <b>Body material</b>        | 3 = Cast iron<br>4 = Carbon steel<br>6 = Stainless steel<br>7 = SG iron                                                                                                        | <b>4</b>                 |
| <b>Connections</b>          | 1 = Screwed<br>2 = Socket weld<br>3 = Flanged                                                                                                                                  | <b>3</b>                 |
| <b>Stem sealing</b>         | D = Bellows/graphite secondary seals<br>H = Graphite<br>N = PTFE with Nitronic™ bush - DN15 to DN50 only<br>P = PTFE<br>V = PTFE for vacuum service                            | <b>P</b>                 |
| <b>Seating</b>              | C = Reverseable PEEK Seat<br>G = PTFE soft seat<br>P = Full PEEK<br>S = 316L stainless steel<br>T = 431 stainless steel<br>W = 316L with stellite™ 6 facing                    | <b>T</b>                 |
| <b>Type of trim</b>         | A1 = 1 stage anti-cavitation<br>A2 = 2 stage anti-cavitation<br>P1 = 1 stage low noise cage<br>P2 = 2 stage low noise cage<br>P3 = 3 stage low noise cage<br>S = Standard trim | <b>S</b>                 |
| <b>Trim balancing</b>       | B = Balanced (not available with seating option C)<br>U = Unbalanced                                                                                                           | <b>U</b>                 |
| <b>Bonnet type</b>          | E = Extended<br>S = Standard                                                                                                                                                   | <b>S</b>                 |
| <b>Bolting</b>              | S = Standard                                                                                                                                                                   | <b>S</b>                 |
| <b>Series</b>               | 2 = .2                                                                                                                                                                         | <b>.2</b>                |
| <b>Cv</b>                   | To be specified                                                                                                                                                                | <b>Cv29</b>              |
| <b>Connection type</b>      | To be specified                                                                                                                                                                | <b>Flanged Class 300</b> |

### Selection example:

|     |   |   |   |   |   |   |   |   |   |   |   |   |  |    |   |      |   |                   |
|-----|---|---|---|---|---|---|---|---|---|---|---|---|--|----|---|------|---|-------------------|
| 1½" | - | K | E | A | 4 | 3 | P | T | S | U | S | S |  | .2 | - | Cv29 | - | Flanged Class 300 |
|-----|---|---|---|---|---|---|---|---|---|---|---|---|--|----|---|------|---|-------------------|

### How to order

**Example:** 1 off Spirax Sarco Spira-trol™ 1.5" KEA43PTSUSS.2 Cv29 two-port control valve having flanged Class 300 connections.