



# ***Kämmer® Series 191000***

*Aseptic and Sanitary Valves*



*Experience In Motion*

## Series 191000

### Description

In many of today's clinical laboratories or biotech pilot plants, valves and related equipment are manually cleaned with a caustic solution, flushed and sterilized in an autoclave after each batch process. This is usually very time consuming because valves need to be disassembled and cleaned. This is not a viable option for production plants. Present and future batch sequencing and continuous mode production scale bioprocessing plants require automatic sanitary control valves that meet standards for cleaning in place (CIP) and sanitizing in place (SIP) designed to drain freely from inlet to outlet. The result is a pure aseptic valve design, free from residue or organisms left behind after cleaning which can be a source of product contamination. Of critical importance for the maintenance and the cleanliness of the valve is the surface finish which must meet all the requirements for an aseptic design. It needs to be free of pits and cracks on all wetted parts. The Kämmer valve series 191000 meets all these requirements.

Kämmer control valve series 191000 have a wide range of applications within the food and beverage industry as well as in biotech, pharmacy and all areas where perfect cleanliness and sterile valves are required. All parts of the easy maintenance valve which are in contact with the media are made of corrosion resistance materials, PTFE or silicon. For the aseptic version of this valve series a PTFE diaphragm seals the media from the environment. These valves have excellent hygienic properties, they are pocket free and can be cleaned in place. It goes without saying that all approvals such as USDA and 3A are fulfilled.

A surface finish of 0.6 Ra for the whole 191000 series is standard. If there are applications which require a higher quality surface finish than 0.6 Ra this is also not a problem for FLOWSERVE.

Figure 1 shows a standard valve series 191400. This valve type is used for food and beverage applications. Figure 2 shows the aseptic version series 191800 with test port connection. This version is also available without a test port as series 191700.



Figure 1: Food and Beverage Valve



Figure 2: Aseptic, Ultra Clean Valve

## Series 191000

### Features and Advantages

| Features                 | Advantages  |
|--------------------------|---|
| <b>Body</b>              | One body with different bonnet options for various applications. Standard or aseptic. Because of the body construction a pocket free design is guaranteed. CIP and SIP are standard.<br>The standard version is designed for PN16 |
| <b>Connections</b>       | Because of various end connection options these valves can be installed in almost every plant.  |
| <b>Aseptic diaphragm</b> | The aseptic diaphragm for the versions 191700 and 191800 is made of a combination of TFM on media side and EPDM as the base material. This diaphragm is FDA approved.   |

### Specifications

**Table 1: Body**

|                       |  |
|-----------------------|--|
| <b>Material</b>       | 316L (1.4404)  |
| <b>Sizes</b>          | DN 10 - 0.38"<br>DN 15 - 0.5"<br>DN 20 - 0.75"<br>DN 25 - 1"<br>DN 32 - 1.25"<br>DN 40 - 1.5"<br>DN 50 - 2"<br>DN 65 - 2.5"<br>DN 80 - 3"<br>DN 100 - 4" |
| <b>Pressure class</b> | DIN PN 10 (191700 - 191800)<br>DIN PN 16 (191400)<br>ANSI Class 150  |

**Table 2: Connections**

|  |
|--|
| DIN 11850 Reihe 2 (DN10 - 100) weld ends<br>ISO 2037 / BS 4825 weld ends<br>DIN EN ISO 1127 weld ends<br>DIN 11851 threaded connection<br>DIN 11864 Form A threaded<br>DIN 2526 flanged PN 10<br>DIN 32676 clamped<br>ISO 2852 clamped |
|--|

**Table 3: Bonnet**

|                          |  |
|--------------------------|--|
| <b>Type</b>              | Standard bonnet (3A)<br>Aseptic bonnet w/o test port<br>Aseptic bonnet with test port ¼" NPT |
| <b>Aseptic diaphragm</b> | TFM / EPDM - acc. to FDA   |
| <b>Packing</b>           | Silicon O-Ring acc. to FDA (191400 / 191800)<br>Without - (191700)                           |

**Table 4: Specials**

|                       |   |
|-----------------------|---|
| <b>Surface finish</b> | Ra 0.6 µm standard<br>Ra 0.4 µm electropolish |
| <b>Approvals</b>      | 3A, FDA, USDA                                 |

**Table 5: Plug**

|                        |  |
|------------------------|--|
| <b>Material</b>        | 316L (1.4404)<br>Alloy 6 (optional)    |
| <b>Characteristics</b> | Equal percentage<br>Linear<br>On - Off |

## Series 191000

### Type 191400 Hygienic, Food and Beverage

The type 191400 is the prime choice for nearly all applications in the food and beverage industry. Because of its optimised body design the valve is pocket free so that bacteria or any other kinds of contamination are avoided. The seat is an integral part of the body to avoid additional gaps. The O-Ring seal and general bonnet design ensure a very compact overall height. The stem is guided by a PTFE guide and two IGLIDUR® bushes for precise control, reduced friction and minimal wear. A wiper ring is provided to protect against contamination from the outside.

Repair, maintenance or the replacement of individual parts is easy to perform because the body and the bonnet are connected together by a clamp.

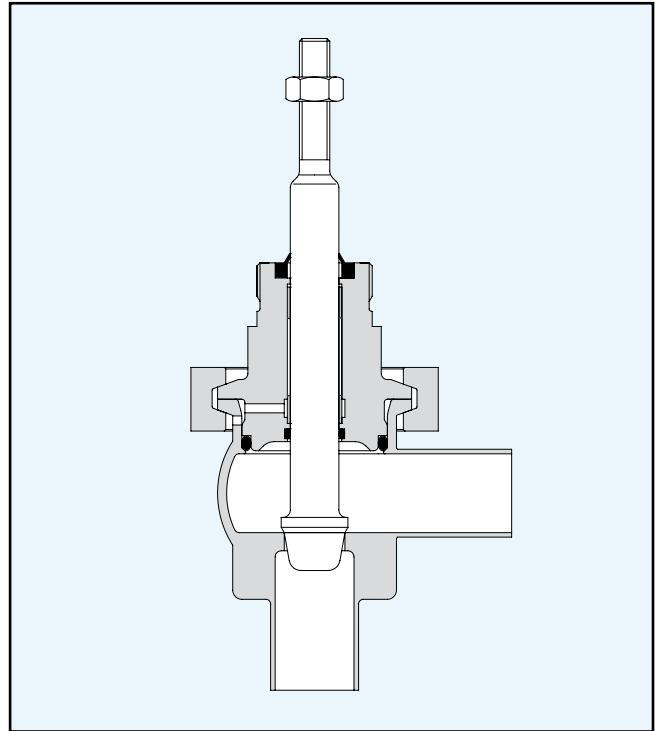


Figure 3: Typ 191400

### Kammer series 191400 in accordance with 3A and USDA

The Type 191400 is designed in accordance with 3A and USDA (United States Department of Agriculture) requirements. Leakage can be very quickly detected by a system of holes drilled into the bonnet and the body. The hole in the bonnet is connected to a circular groove just above the O-Ring. Any media leaking past the O-Ring can flow through the holes to the outside and is readily visible. The hole in the body is situated within the body and bonnet clamp enclosure to prevent the ingress of contamination from the outside. The stem O-Ring is located very close to the lower end of the bonnet to ensure that the gap between the stem and the bonnet is as small as possible.

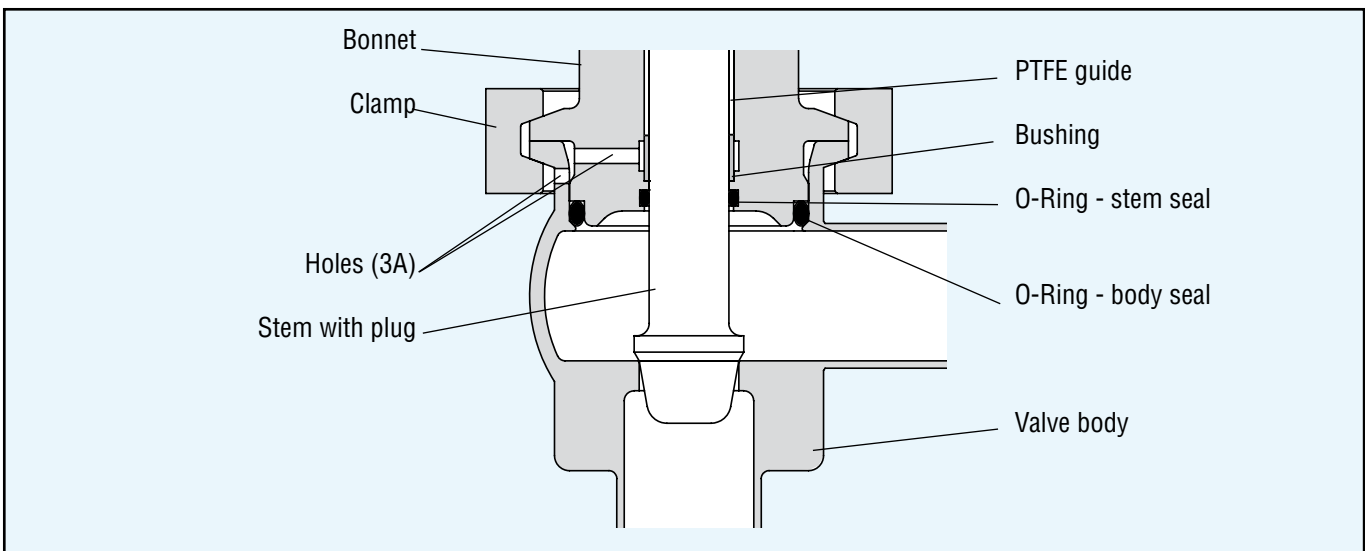


Figure 4: Type 191400 (3A design)

# Series 191000

Type 191400 Hygienic, Food and Beverage

K<sub>Vs</sub> / C<sub>V</sub> Table

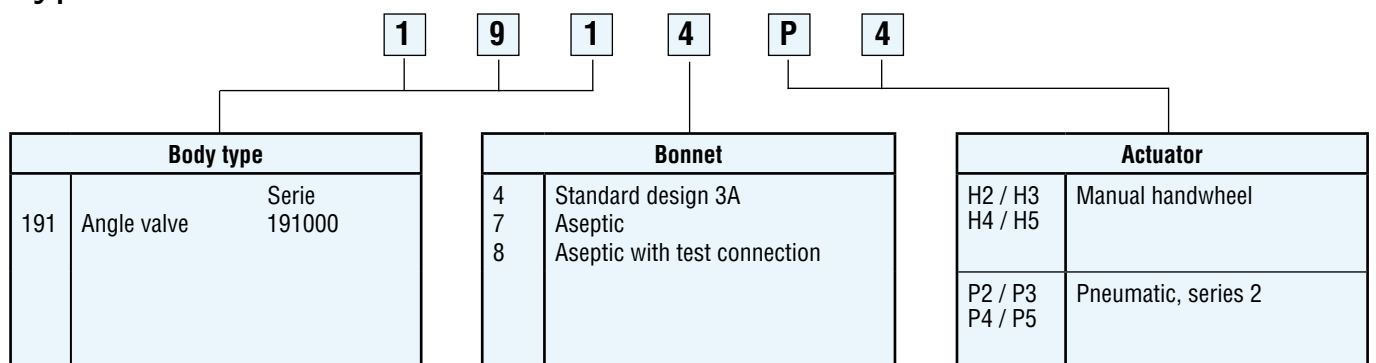
Table 6: K<sub>Vs</sub> / C<sub>V</sub> values

|                       |      |     |      |    |      |     |    |     |    |     | K <sub>Vs</sub> -value | C <sub>V</sub> -value | Trim-No. | Seat diameter (mm) |
|-----------------------|------|-----|------|----|------|-----|----|-----|----|-----|------------------------|-----------------------|----------|--------------------|
| Body size DIN (mm)    | 10   | 15  | 20   | 25 | 32   | 40  | 50 | 65  | 80 | 100 |                        |                       |          |                    |
| Body size ANSI (inch) | 0.38 | 0.5 | 0.75 | 1  | 1.25 | 1.5 | 2  | 2.5 | 3  | 4   |                        |                       |          |                    |
| Stroke (mm)           | 10   | 10  | 10   | 20 | 20   | 20  | 20 | 40  | 40 | 40  |                        |                       |          |                    |
|                       |      |     |      |    |      |     |    |     |    |     | 0.011                  | 0.013                 | 3H       | 3.0                |
|                       |      |     |      |    |      |     |    |     |    |     | 0.017                  | 0.020                 | 3G       | 3.0                |
|                       |      |     |      |    |      |     |    |     |    |     | 0.025                  | 0.029                 | 3F       | 3.0                |
|                       |      |     |      |    |      |     |    |     |    |     | 0.04                   | 0.047                 | 3E       | 3.0                |
|                       |      |     |      |    |      |     |    |     |    |     | 0.063                  | 0.074                 | 3D       | 3.0                |
|                       |      |     |      |    |      |     |    |     |    |     | 0.1                    | 0.12                  | 3C       | 3.0                |
|                       |      |     |      |    |      |     |    |     |    |     | 0.16                   | 0.19                  | 3B       | 3.0                |
|                       |      |     |      |    |      |     |    |     |    |     | 0.25                   | 0.29                  | 3A       | 3.0                |
|                       |      |     |      |    |      |     |    |     |    |     | 0.1                    | 0.12                  | 4.5E     | 4.5                |
|                       |      |     |      |    |      |     |    |     |    |     | 0.16                   | 0.19                  | 4.5D     | 4.5                |
|                       |      |     |      |    |      |     |    |     |    |     | 0.25                   | 0.29                  | 4.5C     | 4.5                |
|                       |      |     |      |    |      |     |    |     |    |     | 0.4                    | 0.47                  | 4.5B     | 4.5                |
|                       |      |     |      |    |      |     |    |     |    |     | 0.63                   | 0.74                  | 4.5A     | 4.5                |
|                       |      |     |      |    |      |     |    |     |    |     | 1.0                    | 1.2                   | 7B       | 7.0                |
|                       |      |     |      |    |      |     |    |     |    |     | 1.6                    | 1.9                   | 7A       | 7.0                |
|                       |      |     |      |    |      |     |    |     |    |     | 2.5                    | 2.9                   | 10       | 10                 |
|                       |      |     |      |    |      |     |    |     |    |     | 4.0                    | 4.7                   | 12       | 12                 |
|                       |      |     |      |    |      |     |    |     |    |     | 6.3                    | 7.4                   | 16       | 16                 |
|                       |      |     |      |    |      |     |    |     |    |     | 10                     | 12                    | 20       | 20                 |
|                       |      |     |      |    |      |     |    |     |    |     | 16                     | 19                    | 25       | 25                 |
|                       |      |     |      |    |      |     |    |     |    |     | 25                     | 29                    | 32       | 32                 |
|                       |      |     |      |    |      |     |    |     |    |     | 40                     | 47                    | 40       | 40                 |
|                       |      |     |      |    |      |     |    |     |    |     | 63                     | 74                    | 50       | 50                 |
|                       |      |     |      |    |      |     |    |     |    |     | 100                    | 120                   | 63       | 63                 |
|                       |      |     |      |    |      |     |    |     |    |     | 160                    | 190                   | 80       | 80                 |

Rangeability: 50:1

Plug material: 316L (1.4404)

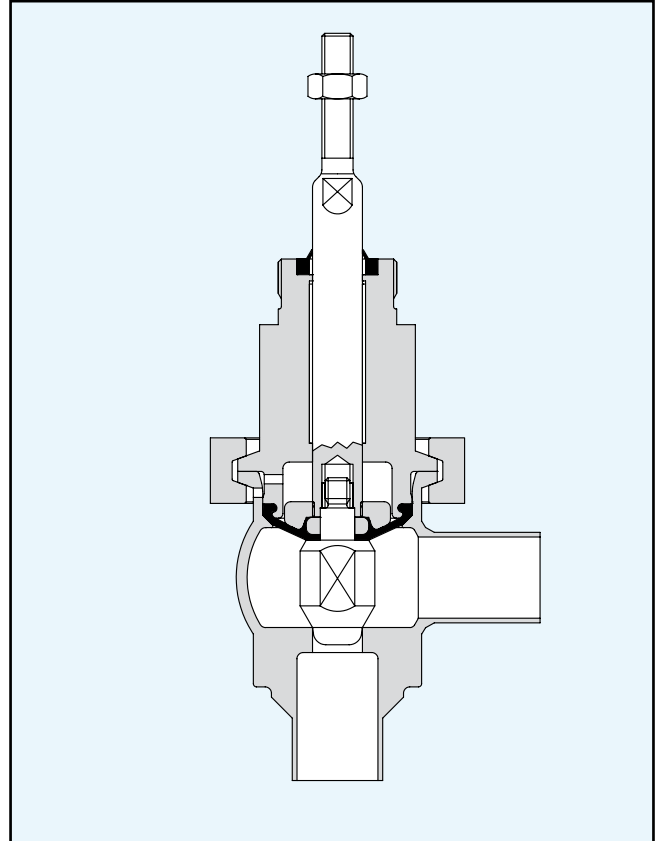
## Type code



## Series 191000

### Type 191700 / 191800 Aseptic

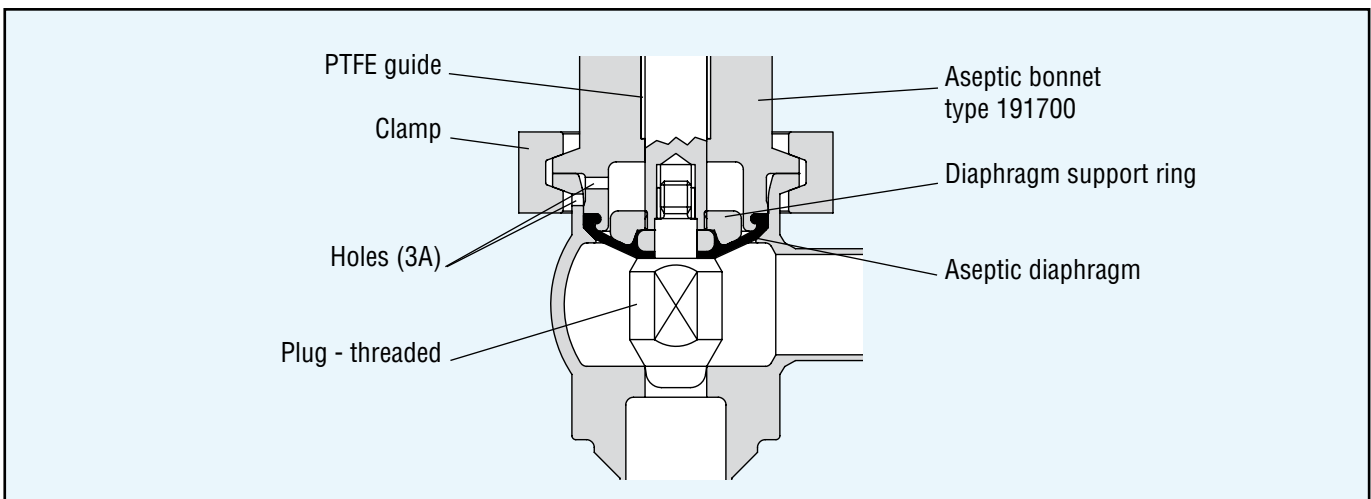
Both valve types 191700 and 191800 were developed for aseptic applications in the pharmaceutical industry as well as biotechnology and ultra clean applications. An aseptic diaphragm made from EPDM with a TFM coating is used to seal the media from the environment. To extend the lifetime of the diaphragm a support ring is installed on it's reverse side. For different applications there are two options available. Type 191700 with aseptic diaphragm without a stem O-Ring seal but with leakage detection hole in case of diaphragm damage. Type 191800 with an additional O-Ring seal and ¼" NPT test port for leak detection. Both versions use the same body, aseptic diaphragm and plug heads but have different bonnets and stems.



**Figure 5: Type 191700**

### Type 191700 Aseptic

The type 191700 is an aseptic version without a test connection port. The outside radius of the aseptic diaphragm is clamped between body and bonnet and also serves as the body gasket. Possible leaks are detected in the same way as the standard type 191400 through small holes in the bonnet and body. The hole in the body is situated within the body and bonnet clamp enclosure to prevent the ingress of contamination from the outside. Because of the screwed plug design it is very easy to replace the diaphragm or the plug.



**Figure 6: Type 191700 3A design**

## Series 191000

### Type 191700 / 191800 Aseptic

#### Type 191800 Aseptic with test port connection

Contrary to type 191700 the 191800 version uses an O-Ring seal on the stem and a 1/4" NPT test port connection. All the other features such as the diaphragm support ring and the screwed plug head – diaphragm – stem combination are also available on the type 191800 valve. The valve types 191700 and 191800 cover nearly all aseptic applications.

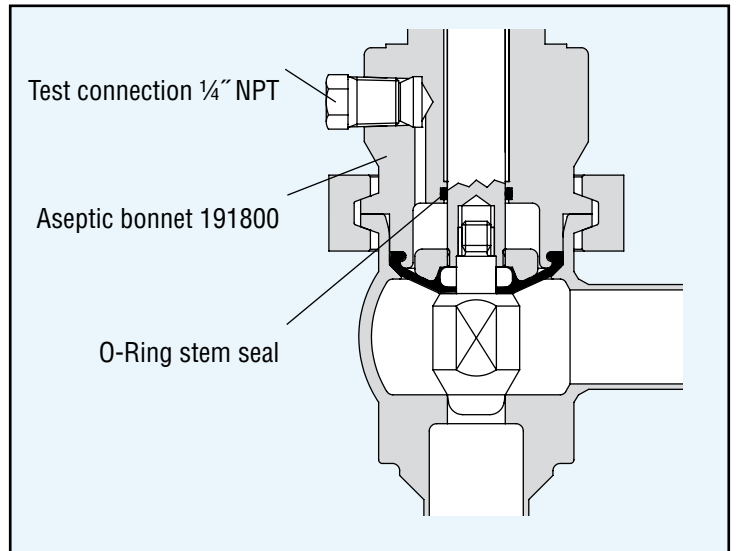


Figure 7: Type 191800 with test port connection

### K<sub>Vs</sub> / C<sub>V</sub> Table

Table 7: K<sub>Vs</sub> / C<sub>V</sub> values

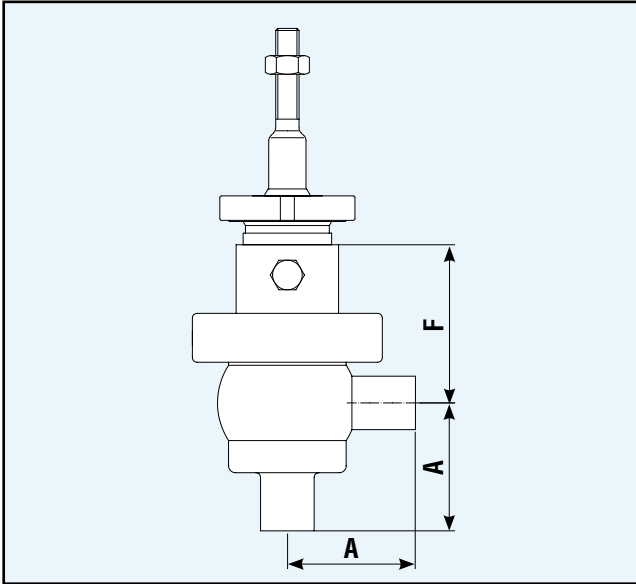
|  |             |            |             |           |             |            |           |           |            |           |            |            | K <sub>Vs</sub> -value | C <sub>V</sub> -value | Trim-No. | Seat diameter (mm) |
|--|-------------|------------|-------------|-----------|-------------|------------|-----------|-----------|------------|-----------|------------|------------|------------------------|-----------------------|----------|--------------------|
| <b>Body size DIN (mm)</b>              | <b>10</b>   | <b>15</b>  | <b>20</b>   | <b>25</b> | <b>32</b>   | <b>40</b>  | <b>50</b> | <b>50</b> | <b>65</b>  | <b>80</b> | <b>100</b> | <b>100</b> |                        |                       |          |                    |
| <b>Body size ANSI (inch)</b>           | <b>0.38</b> | <b>0.5</b> | <b>0.75</b> | <b>1</b>  | <b>1.25</b> | <b>1.5</b> | <b>2</b>  | <b>2</b>  | <b>2.5</b> | <b>3</b>  | <b>4</b>   | <b>4</b>   |                        |                       |          |                    |
| <b>Stroke (mm)</b>                     | <b>10</b>   | <b>10</b>  | <b>10</b>   | <b>10</b> | <b>10</b>   | <b>10</b>  | <b>10</b> | <b>13</b> | <b>20</b>  | <b>20</b> | <b>20</b>  | <b>25</b>  |                        |                       |          |                    |
| <b>Diaphragm area (cm<sup>2</sup>)</b> | <b>14</b>   | <b>14</b>  | <b>14</b>   | <b>14</b> | <b>14</b>   | <b>23</b>  | <b>35</b> | <b>35</b> | <b>48</b>  | <b>71</b> | <b>100</b> | <b>100</b> |                        |                       |          |                    |
|  |             |            |             |           |             |            |           |           |            |           |            |            | 0.011                  | 0.013                 | 3H       | 3.0                |
|  |             |            |             |           |             |            |           |           |            |           |            |            | 0.017                  | 0.020                 | 3G       | 3.0                |
|  |             |            |             |           |             |            |           |           |            |           |            |            | 0.025                  | 0.029                 | 3F       | 3.0                |
|  |             |            |             |           |             |            |           |           |            |           |            |            | 0.04                   | 0.047                 | 3E       | 3.0                |
|  |             |            |             |           |             |            |           |           |            |           |            |            | 0.063                  | 0.074                 | 3D       | 3.0                |
|  |             |            |             |           |             |            |           |           |            |           |            |            | 0.1                    | 0.12                  | 3C       | 3.0                |
|  |             |            |             |           |             |            |           |           |            |           |            |            | 0.16                   | 0.19                  | 3B       | 3.0                |
|  |             |            |             |           |             |            |           |           |            |           |            |            | 0.25                   | 0.29                  | 3A       | 3.0                |
|  |             |            |             |           |             |            |           |           |            |           |            |            | 0.4                    | 0.47                  | 4.5B     | 4.5                |
|  |             |            |             |           |             |            |           |           |            |           |            |            | 0.63                   | 0.74                  | 4.5A     | 4.5                |
|  |             |            |             |           |             |            |           |           |            |           |            |            | 1.0                    | 1.2                   | 7B       | 7.0                |
|  |             |            |             |           |             |            |           |           |            |           |            |            | 1.6                    | 1.9                   | 7A       | 7.0                |
|  |             |            |             |           |             |            |           |           |            |           |            |            | 2.5                    | 2.9                   | 10       | 10                 |
|  |             |            |             |           |             |            |           |           |            |           |            |            | 4.0                    | 4.7                   | 12       | 12                 |
|  |             |            |             |           |             |            |           |           |            |           |            |            | 6.3                    | 7.4                   | 16       | 16                 |
|  |             |            |             |           |             |            |           |           |            |           |            |            | 10                     | 12                    | 20       | 20                 |
|  |             |            |             |           |             |            |           |           |            |           |            |            | 16                     | 19                    | 25       | 25                 |
|  |             |            |             |           |             |            |           |           |            |           |            |            | 25                     | 29                    | 32       | 32                 |
|  |             |            |             |           |             |            |           |           |            |           |            |            | 40                     | 47                    | 40       | 40                 |
|  |             |            |             |           |             |            |           |           |            |           |            |            | 63                     | 74                    | 50       | 50                 |
|  |             |            |             |           |             |            |           |           |            |           |            |            | 100                    | 120                   | 63       | 63                 |
|  |             |            |             |           |             |            |           |           |            |           |            |            | 160                    | 190                   | 80       | 80                 |

Rangeability: 50:1

Plug material: 316L (1.4404)

## Series 191000

### Dimensions (mm)



| DN      | A<br>DIN 11850 | F<br>191400 | F<br>191700/800 |
|---------|----------------|-------------|-----------------|
| 10 / 20 | 60             | 56          | 81              |
| 25      | 65             | 56          | 81              |
| 32      | 70             | 56          | 81              |
| 40      | 75             | 63          | 82              |
| 50      | 85             | 70          | 84              |
| 65      | 100            | 77          | 105             |
| 80      | 110            | 90          | 109             |
| 100     | 120            | 100         | 115             |

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