

## PRESSURE REDUCING VALVE RP45 (EN)

### DESCRIPTION

The ADCA RP45 series pressure reducing valves are single seated, bellows sealed controllers that operate without auxiliary energy. Designed for use with steam, compressed air, and other gases compatible with the construction.

These valves are particularly suitable for reducing steam pressure in all energy and process systems where pressures must be kept under control.

### MAIN FEATURES

Specially designed high durability bellows, providing pressure balancing and frictionless plug stem.

Robust construction (fit-and-forget).

Suitable for use with high pressure turndowns.

Interchangeable actuators and adjustment springs.

**OPTIONS:**

- Soft sealing in PTFE/GR for use with steam.
- Soft sealing in nitrile rubber for use with air and gases.
- Low-noise flow divider.
- Sensing pipe on body.

**USE:**

Steam, compressed air and other gases compatible with the construction. Limited use with liquids. Consult manufacturer before installing the valve with liquids.

**AVAILABLE MODELS:**

- RP45G and RP45GT or N – SG iron.
- RP45S and RP45ST or N – carbon steel.
- RP45i and RP45iT or N – stainless steel (only available from DN 15 to DN 100).
- Suffix T: soft sealed with PTFE/GR.
- Suffix N: soft sealed with nitrile rubber.

**SIZES:** DN 15 to DN 150.

**CONNECTIONS:**

- RP45G – Flanged EN 1092-2 PN 16.
- RP45S and RP45i – Flanged EN 1092-1 PN 16 or PN 40.
- Standard PN 16 DN 65 flanges are supplied with 4 holes. 8 holes, according to EN 1092-1/-2 on request.

**AVAILABLE ACTUATORS:**

- A1, A10, A11, A12, A3, A4, B1, B3, B4 and C11 – carbon steel.
- A2, A21, B2 and B21 – SG iron or carbon steel.
- A1i, A10i, A11i, A12i, A2i, A21i, A3i and A4i – stainless steel.

**INSTALLATION:** See IMI – Installation and maintenance instructions.



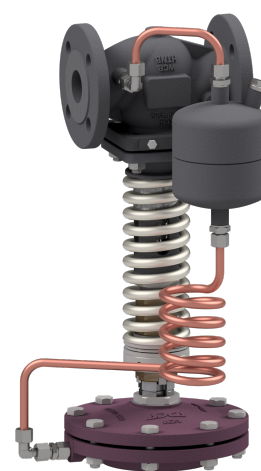
**RP45**  
DN 15 to DN 100



**RP45i**  
DN 15 to DN 100



**RP45**  
DN 125 and DN 150



**RP45**  
DN 15 to DN 100  
with sensing pipe  
on body

#### CE MARKING – GROUP 2 (PED – European Directive)

| PN 16        | PN 40          | Category      |
|--------------|----------------|---------------|
| DN 15 to 50  | DN 15 to 32    | SEP           |
| DN 65 to 150 | DN 40 to 100   | 1 (CE marked) |
| –            | DN 125 and 150 | 2 (CE marked) |

#### LIMITING CONDITIONS

| Valve model                                  | RP45G<br>RP45S | RP45S    | RP45i    | RP45GT<br>RP45ST | RP45ST   | RP45iT   | RP45GN<br>RP45SN | RP45SN   | RP45iN   |
|----------------------------------------------|----------------|----------|----------|------------------|----------|----------|------------------|----------|----------|
| Body design conditions                       | PN 16          | PN 40    | PN 40    | PN 16            | PN 40    | PN 40    | PN 16            | PN 40    | PN 40    |
| Maximum upstream pressure                    | 13 bar         | 25 bar   | 25 bar   | 13 bar           | 25 bar   | 25 bar   | 13 bar           | 25 bar   | 25 bar   |
| Maximum downstream pressure (DN 15 to 100)   | 13 bar         | 18 bar   | 18 bar   | 13 bar           | 18 bar   | 18 bar   | 13 bar           | 18 bar   | 18 bar   |
| Maximum downstream pressure (DN 125 and 150) | 12 bar         | 16,5 bar | 16,5 bar | 12 bar           | 16,5 bar | 16,5 bar | 12 bar           | 16,5 bar | 16,5 bar |
| Minimum downstream pressure                  | 0,15 bar       | 0,15 bar | 0,15 bar | 0,15 bar         | 0,15 bar | 0,15 bar | 0,15 bar         | 0,15 bar | 0,15 bar |
| Maximum operating temperature                | 200 °C         | 250 °C   | 250 °C   | 200 °C           | 200 °C   | 200 °C   | 80 °C            | 80 °C    | 80 °C    |
| Maximum reducing ratio                       | 25:1           | 25:1     | 25:1     | 25:1             | 25:1     | 25:1     | 10:1             | 10:1     | 10:1     |
| Rangeability                                 | 10:1           | 10:1     | 10:1     | 10:1             | 10:1     | 10:1     | 10:1             | 10:1     | 10:1     |
| Maximum hydraulic factory valve body test    | 24 bar         | 60 bar   | 60 bar   | 24 bar           | 60 bar   | 60 bar   | 24 bar           | 60 bar   | 60 bar   |

Remark: Other soft materials and temperature limits on request.

| Actuator model                   | A1<br>A1i | A10<br>A10i | A11<br>A11i | A12<br>A12i | A2<br>A2i | A21<br>A21i | A3<br>A3i | A4<br>A4i | B1 | B2 | B21 | B3  | B4  | C11 |
|----------------------------------|-----------|-------------|-------------|-------------|-----------|-------------|-----------|-----------|----|----|-----|-----|-----|-----|
| Maximum operating pressure (bar) | 25        | 25          | 25          | 25          | 12        | 18          | 2,5       | 1,5       | 25 | 13 | 18  | 2,5 | 1,5 | 25  |
| Maximum operating temperature    | 90 °C *   |             |             |             |           |             |           |           |    |    |     |     |     |     |

\* The water seal pot must be installed in the sensing pipe when operating with steam or liquids at temperatures above 90 °C.

#### FLOW RATE COEFFICIENTS (m³/h)

| SIZE | DN 15 | DN 20 | DN 25 | DN 32 | DN 40 | DN 50 | DN 65 | DN 80 | DN 100 | DN 125 | DN 150 |
|------|-------|-------|-------|-------|-------|-------|-------|-------|--------|--------|--------|
| Kvs  | 4,8   | 6,9   | 9,1   | 11,8  | 14,4  | 26,5  | 51,5  | 79,5  | 129,5  | 150    | 204    |

#### SATURATED STEAM CAPACITY TABLE (kg/h)

| INLET<br>(barg) | SIZE  |       |       |       |       |       |       |       |        |        |        |
|-----------------|-------|-------|-------|-------|-------|-------|-------|-------|--------|--------|--------|
|                 | DN 15 | DN 20 | DN 25 | DN 32 | DN 40 | DN 50 | DN 65 | DN 80 | DN 100 | DN 125 | DN 150 |
| 0,5             | 51    | 68    | 90    | 118   | 186   | 300   | 460   | 800   | 1250   | 1500   | 1800   |
| 0,75            | 63    | 84    | 112   | 146   | 230   | 360   | 580   | 1000  | 1550   | 1750   | 2350   |
| 1               | 75    | 100   | 133   | 175   | 280   | 430   | 700   | 1200  | 1850   | 2250   | 3200   |
| 1,5             | 100   | 133   | 175   | 240   | 360   | 590   | 910   | 1600  | 2500   | 3000   | 4000   |
| 2               | 126   | 170   | 230   | 290   | 450   | 730   | 1160  | 2000  | 3050   | 3500   | 4700   |
| 2,5             | 150   | 200   | 260   | 350   | 550   | 880   | 1390  | 2400  | 3600   | 4500   | 6500   |
| 3               | 175   | 240   | 310   | 400   | 640   | 1010  | 1600  | 2700  | 4300   | 5500   | 8500   |
| 4               | 220   | 290   | 390   | 510   | 800   | 1300  | 2000  | 3400  | 5400   | 7000   | 10000  |
| 5               | 260   | 350   | 480   | 620   | 1000  | 1600  | 2500  | 4200  | 6500   | 8000   | 12000  |
| 6               | 330   | 440   | 580   | 760   | 1220  | 1930  | 3000  | 5100  | 8000   | 9500   | 14000  |
| 7               | 400   | 520   | 700   | 910   | 1430  | 2300  | 3600  | 6100  | 9500   | 11500  | 16000  |
| 8               | 450   | 600   | 800   | 1040  | 1670  | 2700  | 4100  | 7100  | 11000  | 13000  | 18000  |
| 9               | 500   | 670   | 880   | 1180  | 1800  | 2900  | 4600  | 7800  | 12000  | 15000  | 20000  |
| 10              | 560   | 750   | 980   | 1300  | 2000  | 3200  | 5100  | 8500  | 13500  | 17000  | 22000  |
| 12              | 680   | 900   | 1180  | 1540  | 2500  | 4000  | 6100  | 10500 | 16300  | 20000  | 25000  |
| 14              | 800   | 1050  | 1400  | 1850  | 2900  | 4700  | 7200  | 12600 | 19000  | 23000  | 29000  |
| 16              | 920   | 1230  | 1630  | 2150  | 3400  | 5500  | 8300  | 14600 | 22000  | 26000  | 33000  |
| 18              | 1040  | 1400  | 1860  | 2450  | 3800  | 6200  | 9500  | 16600 | 25000  | 30000  | 38000  |
| 20              | 1170  | 1540  | 2100  | 2700  | 4200  | 7000  | 10800 | 18600 | 28000  | 33000  | 42000  |
| 22              | 1330  | 1780  | 2350  | 3050  | 4900  | 7800  | 12200 | 21000 | 32000  | 36000  | 45000  |
| 24              | 1500  | 2000  | 2600  | 3400  | 5400  | 8700  | 13700 | 23500 | 36000  | 40000  | 48000  |
| 25              | 1600  | 2150  | 2800  | 3600  | 5700  | 9200  | 14500 | 25500 | 38000  | 42000  | 50000  |

Remark: For pressure ratios where  $P_2 > 0,7 P_1$  and/or when the operating medium is superheated steam, a correction factor must be applied. See next page.

## CORRECTION FACTORS

Pressure ratio:

The capacities given in the “Saturated steam capacity table” are applicable in scenarios where  $P_2 < 0,7 P_1$ .  
In the remaining scenarios a correction factor must be applied:

| PRESSURE RATIO *<br>$P_2 / P_1$ | CORRECTION<br>FACTOR f |
|---------------------------------|------------------------|
| $\geq 0,7$                      | 1,25                   |
| $\geq 0,8$                      | 1,6                    |
| $\geq 0,9$                      | 2,25                   |

\* Pressure ratio in bar abs (barg + 1)

Superheated steam:

When the medium is superheated steam, instead of saturated steam, a correction factor must also be applied. The required mass flow must be multiplied by the following factor:

$\frac{V_h}{V_s}$ , where  $V_h$  = specific volume of superheated steam, and  
 $V_s$  = specific volume of saturated steam.

ACTUATOR AND SPRING SELECTION TABLE

| SIZE   | ACTUATOR           |           |           |           |           |             |           |       |             |             |             |         |         |         |       |      |        |
|--------|--------------------|-----------|-----------|-----------|-----------|-------------|-----------|-------|-------------|-------------|-------------|---------|---------|---------|-------|------|--------|
|        |                    | A4<br>A4i |           | A3<br>A3i | A2<br>A2i | A21<br>A21i | A1<br>A1i |       | A10<br>A10i | A11<br>A11i | A12<br>A12i | B4      | B3      | B2      | B21   | B1   | C11    |
| DN 15  | Spring range (bar) | 0,15-0,49 | 0,5-0,99  | 1,0-1,6   | 1,7-3,8   | 3,9-5,5     | 5,6-8,2   | –     | –           | 8,3-13      | 10-18       | –       | –       | –       | –     | –    | –      |
|        | Spring N°          | 66        | 60        | 60        | 60        | 60          | 60        | –     | –           | 60          | 60.1        | –       | –       | –       | –     | –    | –      |
| DN 20  | Spring range (bar) | 0,15-0,49 | 0,5-0,99  | 1,0-1,6   | 1,7-3,8   | 3,9-5,5     | 5,6-8,2   | –     | –           | 8,3-13      | 10-18       | –       | –       | –       | –     | –    | –      |
|        | Spring N°          | 66        | 60        | 60        | 60        | 60          | 60        | –     | –           | 60          | 60.1        | –       | –       | –       | –     | –    | –      |
| DN 25  | Spring range (bar) | 0,15-0,49 | 0,5-0,99  | 1,0-1,6   | 1,7-3,8   | 3,9-5,5     | 5,6-8,2   | –     | –           | 8,3-13      | 10-18       | –       | –       | –       | –     | –    | –      |
|        | Spring N°          | 66        | 60        | 60        | 60        | 60          | 60        | –     | –           | 60          | 60.1        | –       | –       | –       | –     | –    | –      |
| DN 32  | Spring range (bar) | 0,15-0,49 | 0,5-0,99  | 1,0-1,6   | 1,7-3,8   | 3,9-5,5     | 5,6-8,2   | –     | –           | 8,3-13      | 10-18       | –       | –       | –       | –     | –    | –      |
|        | Spring N°          | 66        | 60        | 60        | 60        | 60          | 60        | –     | –           | 60          | 60.1        | –       | –       | –       | –     | –    | –      |
| DN 40  | Spring range (bar) | 0,15-0,49 | 0,5-0,99  | 1,0-1,6   | 1,7-3,8   | 3,9-5,5     | 5,6-8,2   | –     | –           | 8,3-13      | 10-18       | –       | –       | –       | –     | –    | –      |
|        | Spring N°          | 66        | 60        | 60        | 60        | 60          | 60        | –     | –           | 60          | 60.1        | –       | –       | –       | –     | –    | –      |
| DN 50  | Spring range (bar) | 0,15-0,49 | 0,5-0,99  | 1,0-1,9   | 2,0-4,2   | 4,3-6,9     | 7-8,5     | –     | 10-18       | 8,6-13      | –           | –       | –       | –       | –     | –    | –      |
|        | Spring N°          | 67        | 61        | 61        | 61        | 61          | 64        | –     | 61          | 64          | –           | –       | –       | –       | –     | –    | –      |
| DN 65  | Spring range (bar) | 0,15-0,49 | 0,5-0,99  | 1,0-1,9   | 2,0-4,2   | 4,3-6,9     | 7-8,5     | –     | 10-18       | 8,6-13      | –           | –       | –       | –       | –     | –    | –      |
|        | Spring N°          | 67        | 61        | 61        | 61        | 61          | 64        | –     | 61          | 64          | –           | –       | –       | –       | –     | –    | –      |
| DN 80  | Spring range (bar) | 0,15-0,45 | 0,46-0,99 | 1,0-1,9   | 2,0-5,0   | 5,1-8,9     | 9-13      | 11-18 | –           | –           | –           | –       | –       | –       | –     | –    | –      |
|        | Spring N°          | 68        | 62        | 62        | 62        | 62          | 65        | 62    | –           | –           | –           | –       | –       | –       | –     | –    | –      |
| DN 100 | Spring range (bar) | 0,15-0,45 | 0,46-0,99 | 1,0-1,9   | 2,0-6,0   | 6,1-13,0    | –         | 11-18 | –           | –           | –           | –       | –       | –       | –     | –    | –      |
|        | Spring N°          | 69        | 63        | 63        | 63        | 63          | –         | 63    | –           | –           | –           | –       | –       | –       | –     | –    | –      |
| DN 125 | Spring range (bar) | –         | –         | –         | –         | –           | –         | –     | –           | –           | –           | 0,5-1,5 | 1,1-2,5 | 1,5-5,5 | 4-8,5 | 6-12 | 8-16,5 |
|        | Spring N°          | –         | –         | –         | –         | –           | –         | –     | –           | –           | –           | 70      | 70      | 70      | 70    | 70   | 70     |
| DN 150 | Spring range (bar) | –         | –         | –         | –         | –           | –         | –     | –           | –           | –           | 0,5-1,5 | 1,1-2,5 | 1,5-5,5 | 4-8,5 | 6-12 | 8-16,5 |
|        | Spring N°          | –         | –         | –         | –         | –           | –         | –     | –           | –           | –           | 70      | 70      | 70      | 70    | 70   | 70     |

## HOW TO SIZE (USING STEAM TABLE)

### Example

Required saturated steam capacity: 300 kg/h; Upstream pressure: 3 bar; Required downstream pressure: 2 bar.

### Solution:

First determine correction factor for pressure ratio:  $(2+1) / (3+1) = 0,75 \rightarrow f = 1,25$

Then multiply the given capacity:  $300 \times 1,25 = 375 \text{ kg/h}$

Afterwards, refer to the cell with the number "3" in the column "INLET" of the saturated steam capacity table. In that line, the values for selection of the pressure reducing valve size can be found. In this particular scenario, a value equal to or higher than 375 kg/h is required, and the right selection would be DN 32, with a capacity of 400 kg/h.

On the actuator and spring selection table, for a downstream pressure of 2 bar, the recommended actuator is the A2, and the regulating spring is N° 60.

Remarks: Never size the valve according to the pipe diameter in which it has to be fitted, but according to the actual flow required. Pipe sizing must also respect the maximum recommended flow velocities, according to the medium.

## HOW TO SIZE (USING Kvs)

Please consult formulas on IS PV10.00 E or consult manufacturer.

## HOW TO ORDER

RP45G DN 32 PN 16 valve complete with spring N° 60, A2 actuator, condensate vessel and copper sensing pipe.

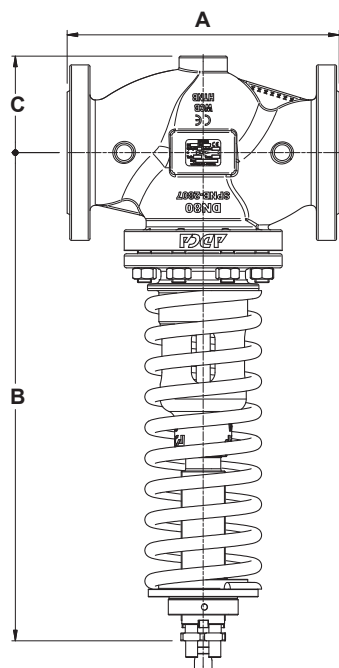
## INSTALLATION

Horizontal installation with the actuator vertically, pointing downwards.

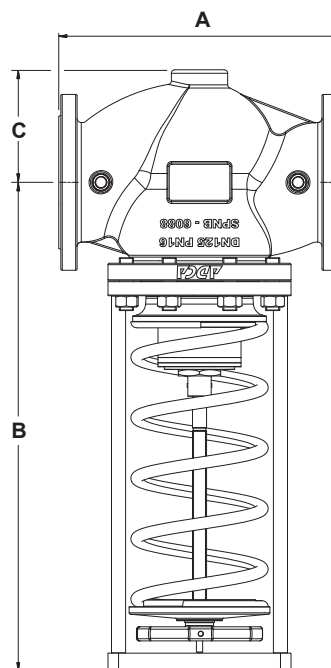
Installation with the actuator pointing upwards is possible only when the medium temperature is below 90 °C.

The sensing pipe, if not fitted on the valve body, must be installed downstream of the valve at a minimum of 1 meter away or 15 pipe diameters.

In steam applications, a "Y" strainer, humidity separator and steam trap should be installed upstream of the valve.



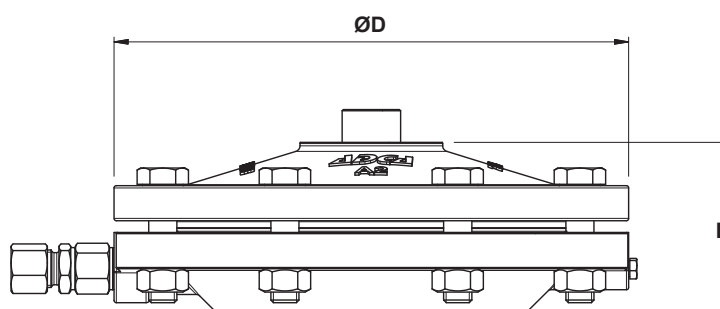
DN 15 to DN 100



DN 125 to DN 150

**DIMENSIONS – VALVE (mm)**

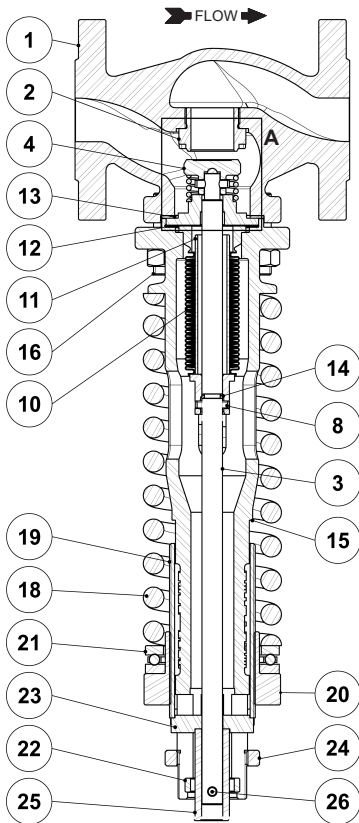
| DIMENSION          | SIZE  |       |       |       |       |       |       |       |        |        |        |
|--------------------|-------|-------|-------|-------|-------|-------|-------|-------|--------|--------|--------|
|                    | DN 15 | DN 20 | DN 25 | DN 32 | DN 40 | DN 50 | DN 65 | DN 80 | DN 100 | DN 125 | DN 150 |
| <b>A</b>           | 130   | 150   | 160   | 180   | 200   | 230   | 290   | 310   | 350    | 400    | 480    |
| <b>B</b>           | 366   | 366   | 371   | 377   | 384   | 470   | 495   | 556   | 597    | 694    | 710    |
| <b>C</b>           | –     | –     | –     | –     | –     | 85    | 100   | 110   | 130    | 160    | 180    |
| <b>WEIGHT (kg)</b> | 9,5   | 10,2  | 11,2  | 14    | 15,5  | 21,7  | 32,2  | 45,4  | 53,3   | 91,3   | 113    |



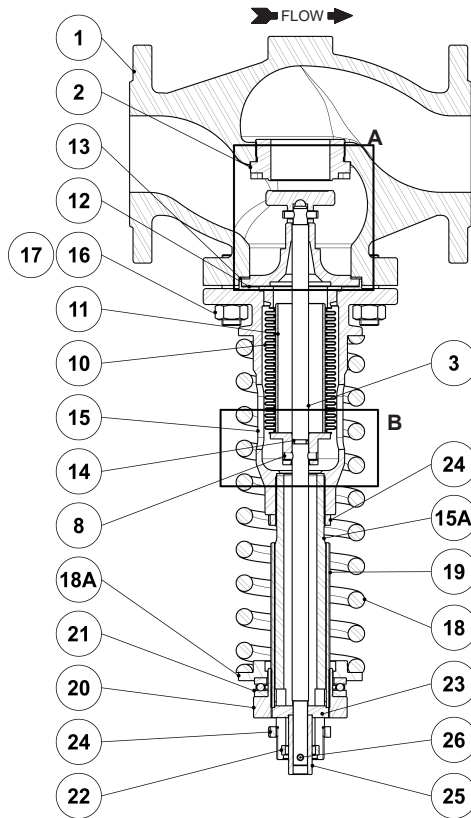
**DIMENSIONS – ACTUATOR (mm)**

| DIMENSION          | ACTUATOR  |             |             |             |           |             |           |           |     |     |     |      |      |     |
|--------------------|-----------|-------------|-------------|-------------|-----------|-------------|-----------|-----------|-----|-----|-----|------|------|-----|
|                    | A1<br>A1i | A10<br>A10i | A11<br>A11i | A12<br>A12i | A2<br>A2i | A21<br>A21i | A3<br>A3i | A4<br>A4i | B1  | B2  | B21 | B3   | B4   | C11 |
| <b>ØD</b>          | 172       | 172         | 172         | 172         | 220       | 220         | 282       | 340       | 172 | 220 | 220 | 283  | 340  | 145 |
| <b>E</b>           | 67        | 67          | 67          | 67          | 74        | 74          | 71        | 81        | 80  | 86  | 86  | 88   | 98   | 93  |
| <b>WEIGHT (kg)</b> | 4,3       | 4,3         | 4,3         | 4,3         | 7,3       | 7,3         | 11,3      | 16,3      | 4,4 | 7,4 | 7,4 | 11,6 | 18,6 | 2,3 |

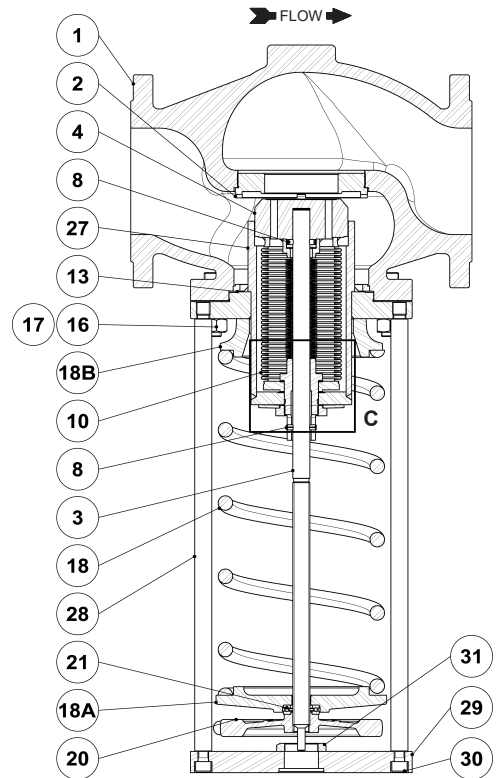
## MATERIALS



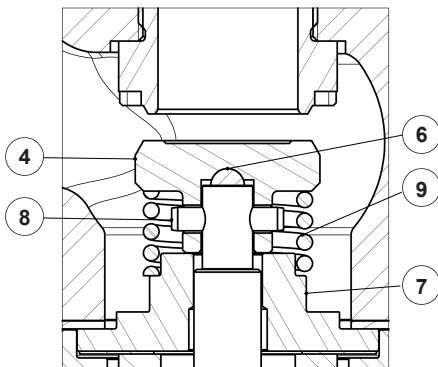
DN 15 to DN 50



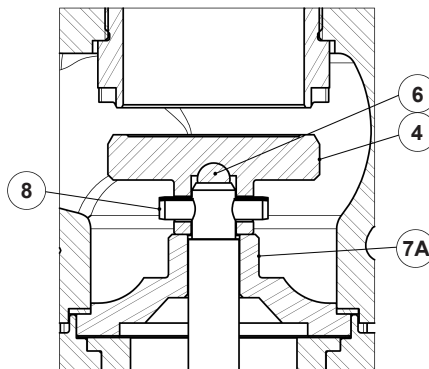
DN 65 to DN 100



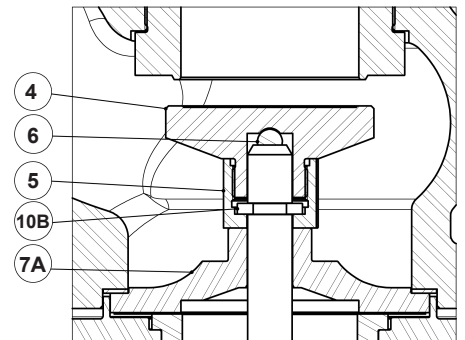
DN 125 and DN 150



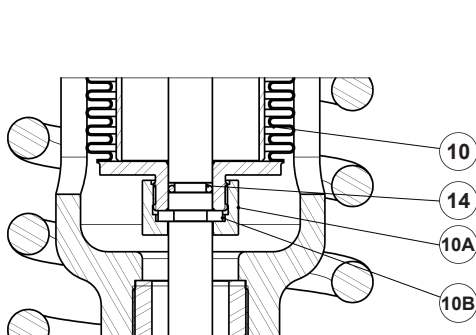
Detail A  
(DN 15 to DN 40)



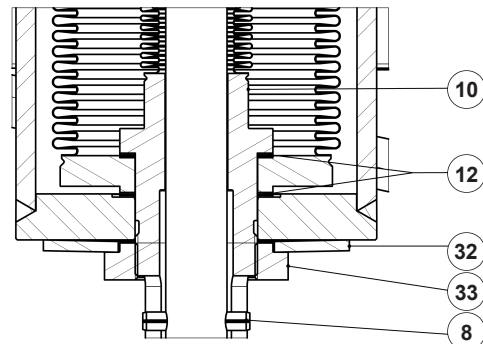
Detail A  
(DN 50 and DN 65)



Detail A  
(DN 80 and DN 100)



Detail B  
(DN 80 and DN 100)

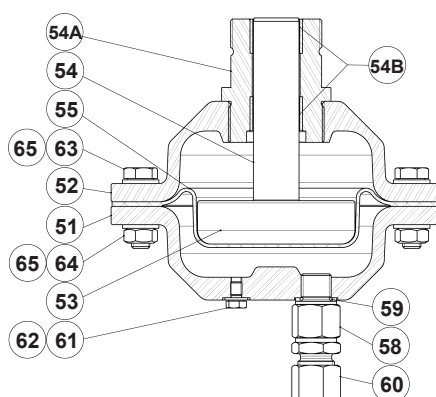
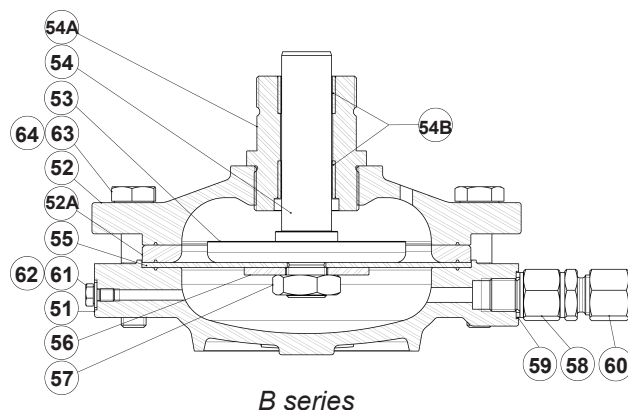
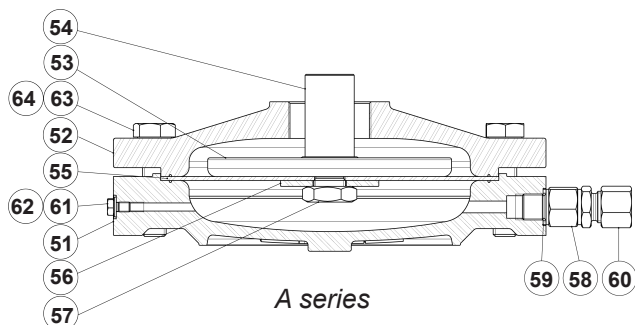


Detail C  
(DN 125 and DN 150)

**MATERIALS – VALVE**

| POS. N° | DESIGNATION                             | DN 15 to DN 100            | DN 125 to DN 150           |
|---------|-----------------------------------------|----------------------------|----------------------------|
| 1       | Valve body (RP45G)                      | GJS-400-15 / 0.7040        | GJS-400-15 / 0.7040        |
|         | Valve body (RP45S)                      | A216 WCB / 1.0619          | A216 WCB / 1.0619          |
|         | Valve body (RP45i)                      | A351 CF8M / 1.4408         | A351 CF8M / 1.4408         |
| 2       | Seat                                    | AISI 316 / 4.4401          | AISI 316 / 4.4401          |
| 3       | Stem                                    | AISI 304 / 1.4301          | AISI 304 / 1.4301          |
| 4       | * Valve plug                            | AISI 420 / 1.4021          | AISI 316 / 4.4401          |
| 5       | Nut                                     | AISI 316 / 1.4401          | AISI 316 / 4.4401          |
| 6       | Ball                                    | AISI 440C / 1.4125         | –                          |
| 7       | Stem guide                              | AISI 304 / 1.4301          | –                          |
| 7A      | Stem guide                              | AISI 304 / 1.4301          | –                          |
| 8       | Pin                                     | AISI 301 / 1.4310          | AISI 304 / 1.4301          |
| 9       | Compensating spring                     | AISI 302 / 1.4300          | –                          |
| 10      | * Bellows                               | AISI 316Ti / 1.4571        | AISI 316 / 1.4401          |
| 10A     | Nut                                     | AISI 316 / 1.4401          | –                          |
| 10B     | Split ring                              | AISI 316 / 1.4401          | –                          |
| 11      | Guide tube                              | CuZn39Pb3                  | –                          |
| 12      | Bellows gasket                          | Stainless steel / Graphite | Stainless steel / Graphite |
| 13      | Body gasket                             | Stainless steel / Graphite | Stainless steel / Graphite |
| 14      | O-ring                                  | EPDM                       | –                          |
| 15      | Piston body (RP45G and RP45S)           | A216 WCB / 1.0619          | –                          |
|         | Piston body (RP45i)                     | A351 CF8M / 1.4408         | –                          |
| 15A     | Piston body extension (RP45G and RP45S) | P355T1 / 1.0421            | –                          |
|         | Piston body extension (RP45i)           | AISI 304 / 1.4301          | –                          |
| 16      | Studs (RP45G and RP45S)                 | Steel 8.8; EN 10269 steel  | Steel 8.8; EN 10269 steel  |
|         | Studs (RP45i)                           | Stainless steel A2-70      | –                          |
| 17      | Nuts (RP45G and RP45S)                  | Steel 8.8; EN 10269 steel  | Steel 8.8; EN 10269 steel  |
|         | Nuts (RP45i)                            | Stainless steel A2-70      | –                          |
| 18      | * Adjustment spring                     | Spring steel               | Spring steel               |
| 18A     | Lower spring plate (RP45G and RP45S)    | C45E / 1.1191              | A216 WCB / 1.0619          |
|         | Lower spring plate (RP45i)              | AISI 304 / 1.4301          | –                          |
| 18B     | Upper spring plate                      | –                          | S235JG2R / 1.0038          |
| 19      | Threaded tube                           | CuZn39Pb3                  | –                          |
| 20      | Spring adjusting nut (RP45G and RP45S)  | C45E / 1.1191              | A216 WCB / 1.0619          |
|         | Spring adjusting nut (RP45i)            | AISI 304 / 1.4301          | –                          |
| 21      | Ball bearing                            | Zinc plated steel          | Zinc plated steel          |
| 22      | Spacer (RP45G and RP45S)                | S355JR / 1.0045            | –                          |
|         | Spacer (RP45i)                          | AISI 304 / 1.4301          | –                          |
| 23      | Pressure star (RP45G and RP45S)         | S235JR / 1.0038            | –                          |
|         | Pressure star (RP45i)                   | AISI 304 / 1.4301          | –                          |
| 24      | Lock nut (RP45G and RP45S)              | C45E / 1.1191              | –                          |
|         | Lock nut (RP45i)                        | AISI 303 / 1.4305          | –                          |
| 25      | Pressure tube (RP45G and RP45S)         | C45E / 1.1191              | –                          |
|         | Pressure tube (RP45i)                   | AISI 304 / 1.4301          | –                          |
| 26      | Pin                                     | AISI 303 / 1.4305          | –                          |
| 27      | Bellows housing                         | –                          | S355JR / 1.0045            |
| 28      | Pillars                                 | –                          | C45E / 1.1191              |
| 29      | Pillars flange                          | –                          | C45E / 1.1191              |
| 30      | Bolts                                   | –                          | Zinc plated steel          |
| 31      | Stem nut                                | –                          | A351 CF8 / 1.4308          |
| 32      | Belleville washer                       | –                          | P235GH / 1.0345            |
| 33      | Tightening nut                          | –                          | S235JR / 1.0038            |

\* Available spare parts.



#### MATERIALS – ACTUATOR

| POS.<br>N° | DESIGNATION             | A1 / A10 / A11 /<br>A12 / A3 / A4 | A2 / A21                                 | A1i / A10i / A11i /<br>A12i / A2i<br>A21i / A3i / A4i | B1 / B3 / B4                    | B2 / B21                                 | C11                 |
|------------|-------------------------|-----------------------------------|------------------------------------------|-------------------------------------------------------|---------------------------------|------------------------------------------|---------------------|
| 51         | Lower diaph.<br>chamber | A216 WCB / 1.0619                 | GJS-400-15 / 0.7040<br>A216 WCB / 1.0619 | A351 CF8M / 1.4408                                    | A216 WCB / 1.0619               | GJS-400-15 / 0.7040<br>A216 WCB / 1.0619 | S235JR / 1.0038     |
| 52         | Upper diaph.<br>chamber | A216 WCB / 1.0619                 | GJS-400-15 / 0.7040<br>A216 WCB / 1.0619 | A351 CF8M / 1.4408                                    | A216 WCB / 1.0619               | GJS-400-15 / 0.7040<br>A216 WCB / 1.0619 | S235JR / 1.0038     |
| 52A        | Spacer ring             | –                                 | –                                        | –                                                     | S355JR / 1.0045                 | S355JR / 1.0045                          | –                   |
| 53         | Pressure plate          | A216 WCB / 1.0619                 | GJS-400-15 / 0.7040                      | A351 CF8M / 1.4408<br>AISI 304 / 1.4301               | S355JR / 1.0045                 | S355JR / 1.0045                          | C45E / 1.1191       |
| 54         | Diaph. plate<br>spindle | A216 WCB / 1.0619                 | GJS-400-15 / 0.7040                      | A351 CF8M / 1.4408<br>AISI 304 / 1.4301               | AISI 420 / 1.4021               | AISI 420 / 1.4021                        | AISI 420 / 1.4021   |
| 54A        | Guide                   | –                                 | –                                        | –                                                     | C45E / 1.1191                   | C45E / 1.1191                            | C45E / 1.1191       |
| 54B        | * Plain bearing         | –                                 | –                                        | –                                                     | Bronze                          | Bronze                                   | Bronze              |
| 55         | * Diaphragm             | Neoprene reinforced<br>polyamid   | Neoprene reinforced<br>polyamid          | Neoprene reinforced<br>polyamid                       | Neoprene reinforced<br>polyamid | Neoprene reinforced<br>polyamid          | Reinforced<br>NBR   |
| 56         | Washer                  | Copper                            | Copper                                   | AISI 304 / 1.4301                                     | Copper                          | Copper                                   | –                   |
| 57         | Hex nut                 | CuZn39Pb3                         | CuZn39Pb3                                | AISI 304 / 1.4301                                     | CuZn39Pb3                       | CuZn39Pb3                                | –                   |
| 58         | Flow restrictor         | AISI 303 / 1.4305                 | AISI 303 / 1.4305                        | AISI 303 / 1.4305                                     | AISI 303 / 1.4305               | AISI 303 / 1.4305                        | AISI 303 / 1.4305   |
| 59         | Gasket                  | Copper                            | Copper                                   | Copper                                                | Copper                          | Copper                                   | Copper              |
| 60         | Compression<br>fitting  | AISI 316Ti / 1.4571               | AISI 316Ti / 1.4571                      | AISI 316Ti / 1.4571                                   | AISI 316Ti / 1.4571             | AISI 316Ti / 1.4571                      | AISI 316Ti / 1.4571 |
| 61         | Vent screw              | Zinc plated steel                 | Zinc plated steel                        | AISI 304 / 1.4301                                     | Zinc plated steel               | Zinc plated steel                        | Zinc plated steel   |
| 62         | Washer                  | Copper                            | Copper                                   | AISI 304 / 1.4301                                     | Copper                          | Copper                                   | Copper              |
| 63         | Bolts                   | Zinc plated steel                 | Zinc plated steel                        | AISI 304 / 1.4301                                     | Zinc plated steel               | Zinc plated steel                        | Zinc plated steel   |
| 64         | Nuts                    | Zinc plated steel                 | Zinc plated steel                        | AISI 304 / 1.4301                                     | Zinc plated steel               | Zinc plated steel                        | Zinc plated steel   |
| 65         | Washer                  | –                                 | –                                        | –                                                     | –                               | –                                        | Zinc plated steel   |

\* Available spare parts.