



## DCV 1, 2, 3 Disc Check Valves

### Description

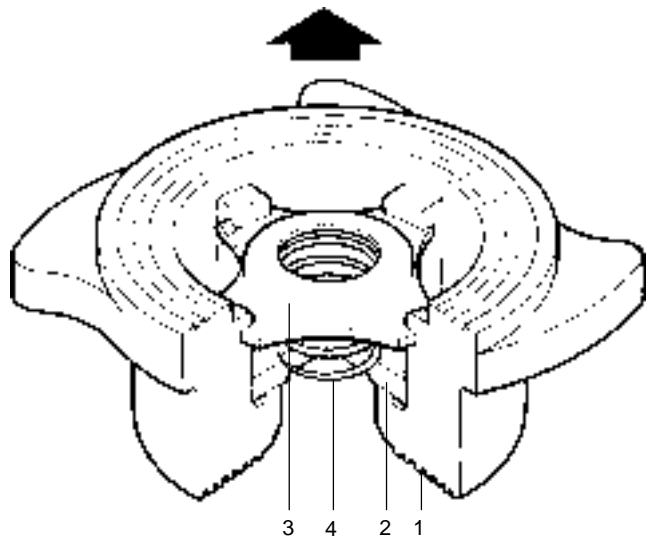
DCV 1, 2 and 3 disc check valves are of the wafer pattern designed to be sandwiched between flanges. They are suitable for use on a wide range of fluids for applications in process lines, hot water systems, steam and condensate systems etc.

### Standards

Designed and manufactured in accordance with BS 7438.

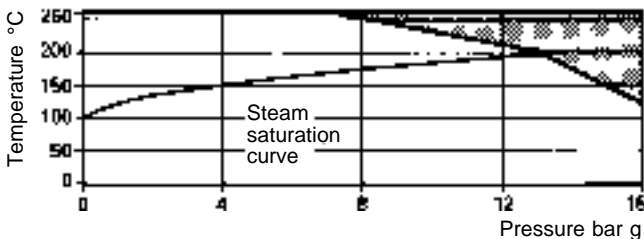
### Limiting conditions

|   |             |             |             |
|---|-------------|-------------|-------------|
| Maximum body design                       | <b>DCV1</b> | <b>DCV2</b> | <b>DCV3</b> |
| PMO - Maximum operating pressure          | PN16        | PN40        | PN40        |
| TMO - Maximum operating temperature       | 16 bar g    | 40 bar g    | 40 bar g    |
| Maximum cold hydraulic test pressure      | 260°C       | 300°C       | 300°C       |
| Minimum operating temperature             | 24 bar g    | —           | 400°C       |
|   | -50°C       | -50°C       | -50°C       |
| Maximum body design                       |             |             |             |
| PMO - Maximum operating pressure          |             |             |             |
| TMO - Maximum operating temperature:-     |             |             |             |
| With standard spring or heavy duty spring | 300°C       | 300°C       | 300°C       |
| Without spring                            | 300°C       | 400°C       | 400°C       |
| With high temperature Nimonic spring      | —           | 400°C       | 400°C       |
| Minimum operating temperature             | -50°C       | -50°C       | -50°C       |

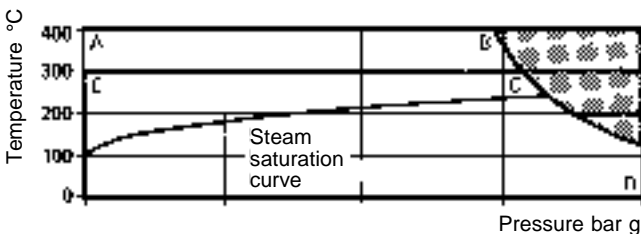


### Operating range

#### DCV 1



#### DCV 2 and DCV 3



This product must not be used in this region.

E - C - D - DCV 2 and 3 with standard spring  
A - B - C - D - DCV 3 without spring or with Nimonic spring

### Sizes and pipe connections

DN 15, 20, 25, 32, 40, 50, 65, 80, 100  
DCV 1, 2 and 3 can be fitted between BS 10 Tables 'E' and 'H';  
BS 4504/DIN PN6, 10, 16, 25, 40; JIS 5, 10, 16, 20 flanges with the following exception:-  
DN 40, 50, 80 and 100 - will not fit between JIS 5 flanges  
DN 65 and 80 - will not fit between BS 10 'E' flanges.

#### Spring options available:

Heavy duty springs for boiler feed check applications. For sizes up to DN65 in DCV 1 and DCV 2 models.  
Nimonic springs for temperatures up to 400°C for all sizes of DCV 3 models only.

#### Soft seated options available:

Viton (for oils and gases) - temperature limits: -15°C to + 250°C  
EPDM (for water) - temperature limits: -50°C to + 150°C

### Materials

| No Part                 |                   | Material                   |                 |
|-------------------------|-------------------|----------------------------|-----------------|
| 1 Body                  | DCV 1             | Bronze                     | WS 2.1050       |
|                         | DCV 2             | Ferritic stainless steel   | WS 1.4313       |
|                         | DCV 3             | Austenitic stainless steel | WS 1.4581       |
| 2 Disc                  |                   | Austenitic stainless steel | BS 1449 316 S11 |
| 3 Spring retainer       |                   | Austenitic stainless steel | BS 1449 316 S11 |
| 4 Standard spring       |                   | Austenitic stainless steel | BS 2056 316 S42 |
|                         | Heavy duty spring | Austenitic stainless steel | BS 2056 316 S42 |
| High temperature spring |                   | Nickel alloy               | Nimonic 90      |

### Opening pressures in mbar

Differential pressures with zero flow for standard and Nimonic springs

#### → Flow direction

| DN | 15   | 20   | 25   | 32   | 40   | 50   | 65 | 80   | 100  |
|----|------|------|------|------|------|------|----|------|------|
| ↑  | 25   | 25   | 25   | 27   | 28   | 29   | 30 | 31   | 33   |
| →  | 22.5 | 22.5 | 22.5 | 23.5 | 24.5 | 24.5 | 25 | 25.5 | 26.5 |
| ↓  | 20   | 20   | 20   | 20   | 20   | 20   | 20 | 20   | 20   |

Where lowest opening pressures are required, valves without springs can be installed in vertical pipes with bottom - to - top flow.

Without spring

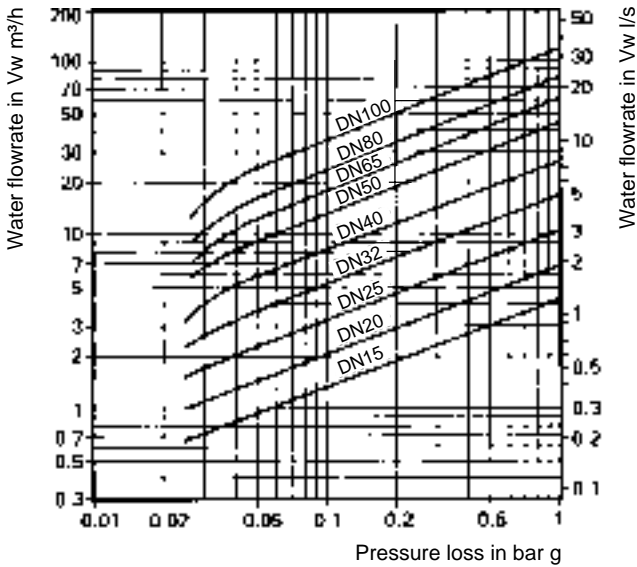
|   |     |     |     |     |   |     |   |     |     |
|---|-----|-----|-----|-----|---|-----|---|-----|-----|
| ↑ | 2.5 | 2.5 | 2.5 | 3.5 | 4 | 4.5 | 5 | 5.5 | 6.5 |
|---|-----|-----|-----|-----|---|-----|---|-----|-----|

Heavy duty spring approximately 700 mbar

### Standard of shut-off

Standard valves conform to DIN 3230 Part 3, BN 2. Valves conforming to DIN 3230 Part 3, BO3 available on request. Soft seated versions meet DIN 3230 Part 3 BN 1 and BO 1 provided a differential pressure exists.

## Pressure loss diagram



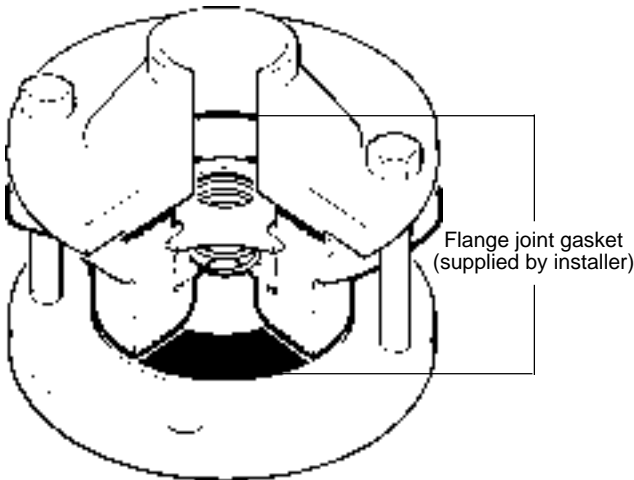
Pressure loss diagram with open valve at 20°C. The values indicated are applicable to spring loaded valves with horizontal flow. With vertical flow, insignificant deviations occur only within the range of partial opening. The curves given in the chart are valid for water at 20°C. To determine the pressure drop for other fluids the equivalent water volume flowrate must be calculated and used in the graph.

$$V_w = \sqrt{\frac{Q}{1000}} \times V$$

$V_w$  = Equivalent water volume flow in l/s or m³/h  
 $Q$  = Density of fluid kg/m³  
 $V$  = Volume of fluid l/s or m³/h.

Pressure loss information for steam, compressed air and gases available from Spirax Sarco.

## Installation

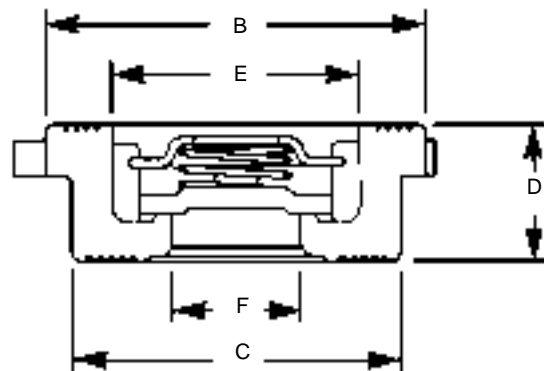
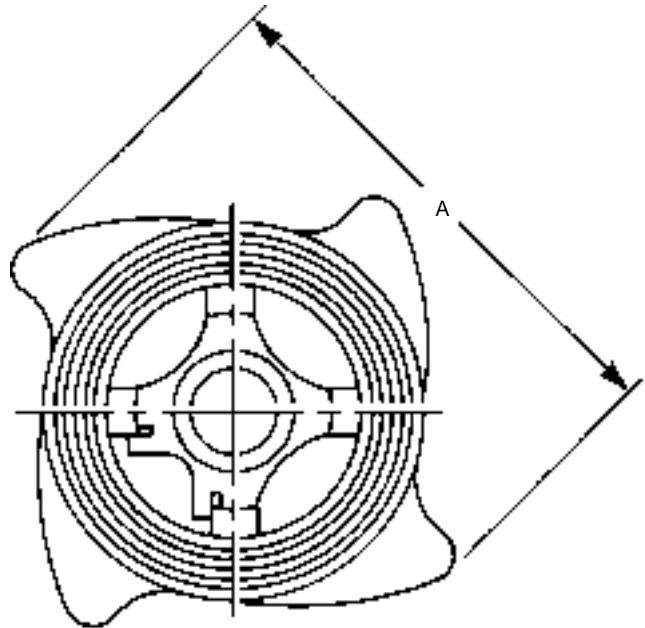


DCV disc check valves must be fitted in accordance with the direction of flow arrow indicating correct fluid flow direction. When fitted with a spring they can be installed in any plane. When supplied without a spring these must be fitted in a vertical flow line with the flow from bottom to top. The 'cam' design of the body allows the various flange types to be accommodated. The body is rotated to touch the flange joint bolts ensuring that the valve is centred in the pipeline. This is fully detailed in the Installation Instructions supplied with each DCV.

**Note:** Disc check valves are not suitable for use where heavily pulsating flow exists, such as close to a compressor.

## Dimensions (approximate) in millimetres

| Size  | A    | B   | C   | D    | E     | F   | Weight kg |          |
|-------|------|-----|-----|------|-------|-----|-----------|----------|
|       |      |     |     |      |       |     | DCV1      | DCV2 & 3 |
| DN15  | 60   | 43  | 38  | 16   | 29    | 15  | 0.13      | 0.11     |
| DN20  | 69.5 | 53  | 45  | 19   | 35.7  | 20  | 0.19      | 0.17     |
| DN25  | 80.5 | 63  | 55  | 22   | 44    | 25  | 0.32      | 0.28     |
| DN32  | 90.5 | 75  | 68  | 28   | 54.5  | 32  | 0.55      | 0.47     |
| DN40  | 101  | 85  | 79  | 31.5 | 65.5  | 40  | 0.74      | 0.64     |
| DN50  | 115  | 95  | 93  | 40   | 77    | 50  | 1.25      | 1.11     |
| DN65  | 142  | 115 | 113 | 46   | 97.5  | 65  | 1.87      | 1.64     |
| DN80  | 154  | 133 | 128 | 50   | 111.5 | 80  | 2.42      | 2.21     |
| DN100 | 184  | 154 | 148 | 60   | 130   | 100 | 3.81      | 3.31     |



## How to specify

Spirax Sarco DCV 3 disc check valve for fitting between BS 4504 PN25 Flanges.

### Valve bodies that are marked with:-

|      |   |                         |
|------|---|-------------------------|
| 'N'  | - Nimonic spring                        | - Standard metal disc   |
| 'W'  | - Without spring                        | - Standard metal disc   |
| 'H'  | - Heavy duty spring                     | - Standard metal disc   |
| 'V'  | - Standard spring                       | - Viton soft faced disc |
| 'E'  | - Standard spring                       | - EPDM soft faced disc  |
| 'WV' | - Without spring                        | - Viton soft faced disc |
| 'WE' | - Without spring                        | - EPDM soft faced disc  |
| 'HV' | - Heavy duty spring                     | - Viton soft faced disc |
| 'HE' | - Heavy duty spring                     | - EPDM soft faced disc  |
| 'T'  | - Valves tested to DIN 3230 part 3, B03 |                         |

No identification indicates a standard spring with a metal disc.