



TI-P134-04  
 ST Issue 11

## DCV4 Disc Check Valve

### Description

The DCV4 stainless steel disc check valve is of the wafer pattern designed to be sandwiched between ASME flanges. It is suitable for use on a wide range of fluids for applications in process lines, hot water systems, steam and condensate systems etc. Face-to-face dimensions conform to EN 558 part 2, series 52. As standard it will be supplied with a metal-to-metal seat for use on steam applications. Where it will be used on oil, air, gas and water applications, alternative seat material is available - see 'Optional extras'.

### Optional extras

**High temperature springs** for temperatures up to 400°C.

**Viton soft seats** for oils, air and gas applications.

**EPM soft seats** for water applications.

### Standards

This product fully complies with the requirements of the European Pressure Equipment Directive 97/23/EC.

### Standard shut-off

Standard valves conform to EN 12266-1 rate E. Valves conforming to EN 12266-1 rate D are available on request. Soft seated versions meet EN 12266-1 rate A, providing a differential pressure exists.

### Certification

This product is available with certification to EN 10204 3.1. **Note:** All certification/inspection requirements must be stated at the time of order placement.

### Sizes and pipe connections

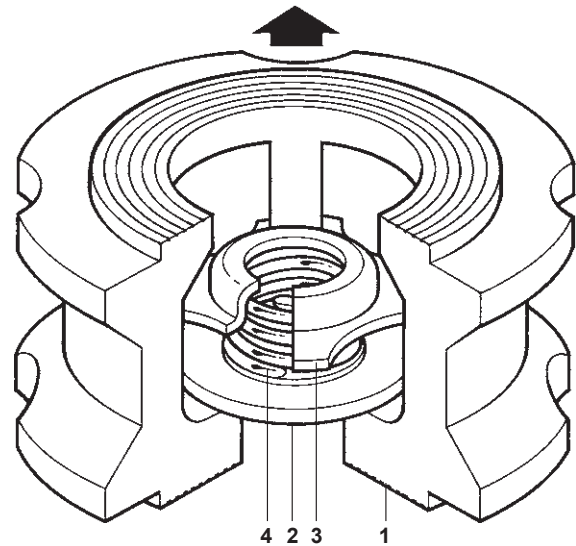
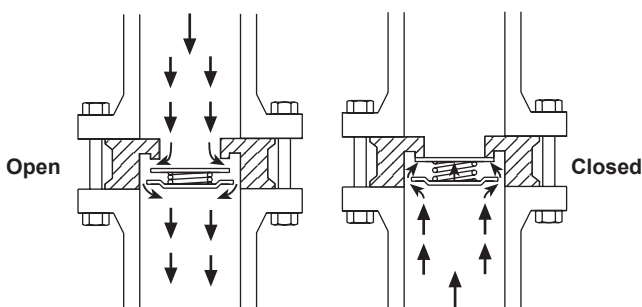
DN15, DN20, DN25, DN40, DN50, DN80 and DN100  
 Suitable for installation between ASME 150 or ASME 300 flanges.

### Materials

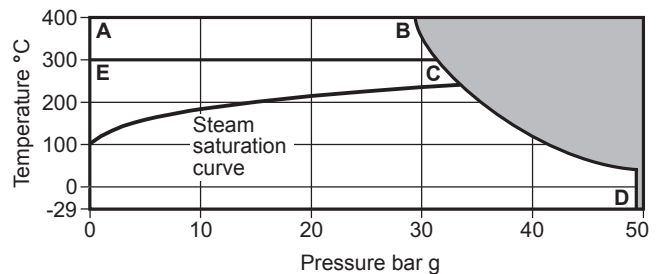
No. Part	Material
1 Body	Austenitic stainless steel ASTM A351 CF3M
2 Disc	Austenitic stainless steel ASTM A276 316
3 Spring retainer	Austenitic stainless steel BS 1449 316 S11
4 Standard spring	Austenitic stainless steel BS 2056 316 S42
High temp. spring	Nickel alloy Nimonic 90

### Operation

Disc check valves are opened by the pressure of the fluid and closed by the spring as soon as the flow ceases and before the reverse flow occurs.



### Pressure / temperature limits



The product **must not** be used in this region.

**A-B-D** High temperature spring and without spring.

**E-C-D** Standard spring.

**Please note:** The figures displayed are only relevant when a metal-to-metal seat is used. If Viton or EPDM seats are used the product is restricted to the limits of the seat material chosen.

Body design conditions for saturated steam service ASME 300

PMA Maximum allowable pressure 49 bar g @ 37°C

TMA Maximum allowable temperature 400°C @ 29 bar g

Minimum allowable temperature -29°C

PMO Maximum operating pressure for saturated steam service 49 bar g @ 37°C

Standard spring 300°C @ 31.5 bar g

TMO Maximum operating temperature High temperature spring 400°C @ 29 bar g

Without spring 400°C @ 29 bar g

Minimum operating temperature -29°C

**Note:** For lower operating temperatures consult Spirax Sarco

Temperature limits Viton seat -25°C to +205°C

EPDM seat -40°C to +120°C

Designed for a maximum cold hydraulic test pressure of 76 bar g

**Dimensions/weights (approximate) in mm and kg**

Size	ASME		C	D	E	F	Weight
	300 A	150 B					
DN15	54	47	38	25	22.35	15	0.24
DN20	67	57	46	31	27.35	20	0.41
DN25	73	67	54	35	33.15	25	0.54
DN40	95	86	76	45	49.15	40	1.15
DN50	111	105	95	56	59.15	50	1.84
DN80	149	136	130	71	90.15	80	3.69
DN100	181	174	160	80	111.15	100	5.70

**K<sub>v</sub> values**

DN	15	20	25	40	50	80	100
K <sub>v</sub>	4.4	7.5	12	26	39	84	150

For conversion: C<sub>v</sub> (UK) = K<sub>v</sub> x 0.963    C<sub>v</sub> (US) = K<sub>v</sub> x 1.156

**Opening pressures in mbar**

Differential pressures with zero flow for standard and high temperature springs.

→ Flow direction

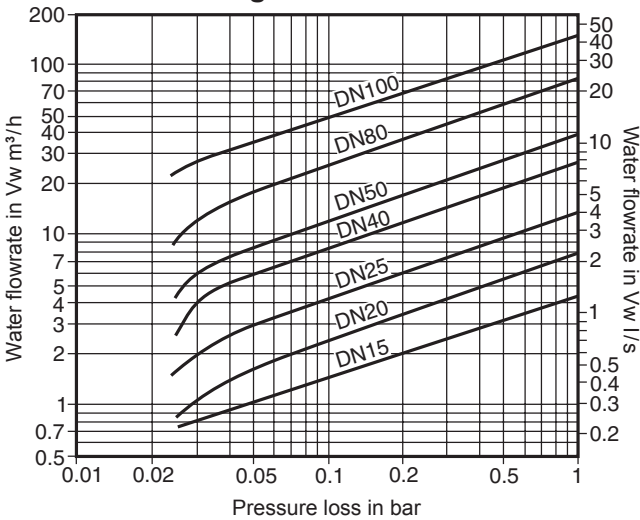
DN	15	20	25	40	50	80	100
↑	25	25	25	28	29	31	33
→	22.5	22.5	22.5	24	24.5	25.5	26.5
↓	20	20	20	20	20	20	20

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	4.0	4.5	5.5	6.5
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**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 for other fluids the equivalent water volume flowrate must be calculated and used in the graph.

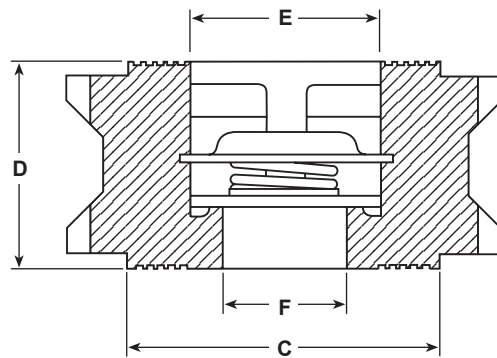
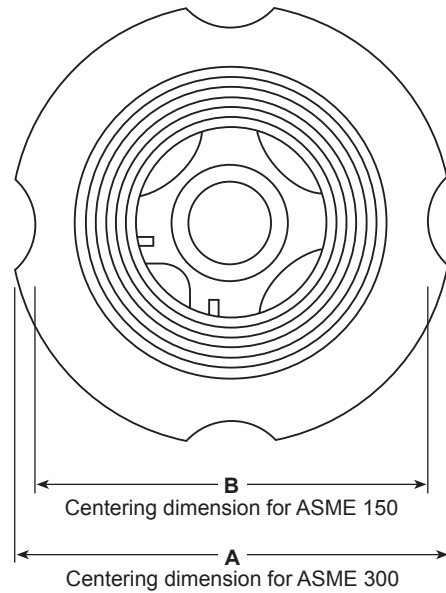
$$\dot{V}_w = \sqrt{\frac{\rho}{1000}} \times \dot{V}$$

Where:  $\dot{V}_w$  = Equivalent water volume flow in l/s or m³/h  
 $\rho$  = Density of fluid kg/m³  
 $\dot{V}$  = Volume of fluid l/s or m³/h

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

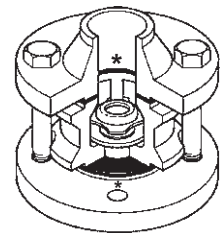
**How to order**

**Example:** 1 off Spirax Sarco DN40, DCV4 stainless steel disc check valve for fitting between ASME 300 flanges.



**Safety information, installation and maintenance**

For full details see the Installation and Maintenance Instructions (IM-P134-08) supplied with the product. DCV4 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 they must be fitted in a vertical flow line with the flow from bottom-to-top.



\* **Note:** Flanges, bolts (or studs), nuts and joint gaskets are to be provided by the installer. Disc check valves are non-maintainable (no spares are available). Disc check valves are not suitable for use where heavily pulsating flow exists, such as close to a compressor.

**Various options are denoted by a marking on the valve body:-**

- 'N' – High temperature spring
- 'W' – Without spring
- 'V' – Standard spring
- 'E' – Standard spring
- 'WW' – Without spring
- 'WE' – Without spring
- 'T' – Valves tested to EN 12266-1 Rate D
- Standard metal disc
- Standard metal disc
- Viton soft faced disc
- EPDM soft faced disc
- Viton soft faced disc
- EPDM soft faced disc

No identification indicates a standard spring with a metal disc.

**Disposal**

If a product which contains a Viton component has been subjected to a temperature approaching 315°C or higher, then it may have decomposed and formed hydrofluoric acid. Avoid skin contact and inhalation of any fumes as the acid will cause deep skin burns and damage to the respiratory system. Viton must be disposed of in a recognised manner as stated in the Installation and Maintenance Instructions (IM-P134-08). No other ecological hazard is anticipated with the disposal of this product providing due care is taken.