



TI-P134-26  
ST Issue 8

## DCV6 Disc Check Valve

### Description

The DCV6 stainless steel disc check valve is of the wafer pattern designed to be sandwiched between flanges. It is suitable for use on a wide range of fluids for applications in process lines, hot water systems, steam and condensate lines etc. They have an increased gasket face area compared to the DCV3, with face-to-face dimensions conforming 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 is being used on oil, air, gas and water applications, alternative seat material is available - see 'Optional extras'.

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

### Optional extras

**Heavy duty springs** (700 mbar opening pressure, up to DN65) for boiler feed applications

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

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

**EPDM 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 D.

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, DN32, DN40, DN50, DN65, DN80 and DN100 Suitable for installation between the following flanges:

EN 1092 PN10, PN16, PN25 and PN40,  
JIS 10K, JIS 16K, JIS 20K, JIS 30K and JIS 40K,  
KS 10K, KS 16K, KS 20K, KS 30K and KS 40K,  
ASME B 16.5 Class 150 and Class 300

**Note:** DN80 and DN100 - will not fit between JIS 10K.

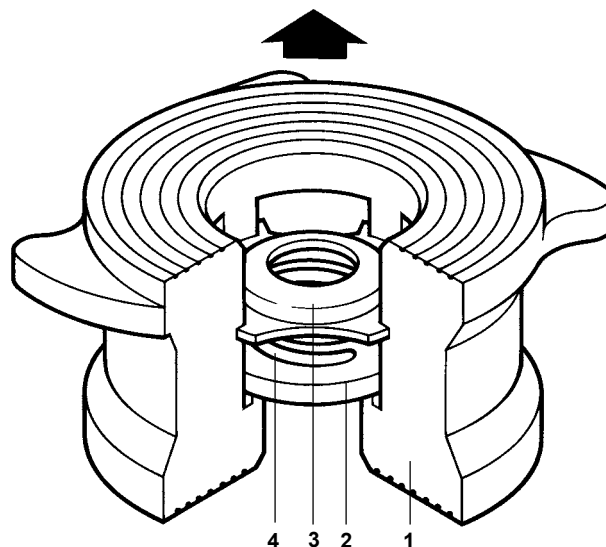
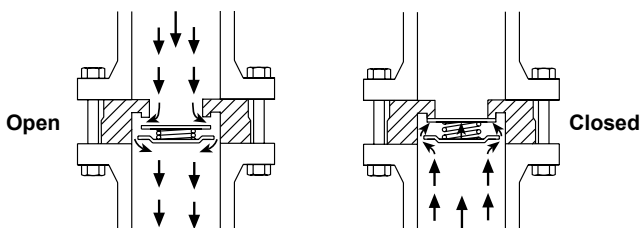
**Flange face options:** Flange faces may be machined to fit between flanges according to DIN 2512, 2513, 2514 and ASME 150/300 RJ.

### Materials

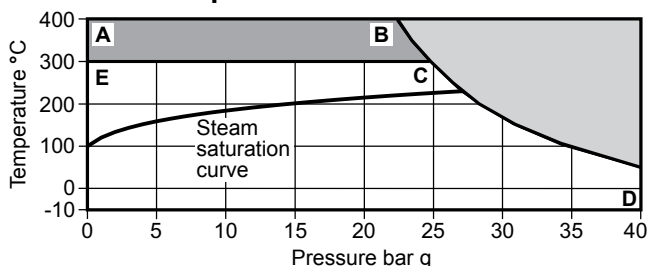
No.	Part	Material
1	Body	Austenitic stainless steel WS 1.4581
2	Disc	Austenitic stainless steel ASTM A276 316
3	Spring retainer	Austenitic stainless steel BS 1449 316 S 11
	Standard spring	Austenitic stainless steel BS 2056 316 S 42
4	Heavy duty spring	Austenitic stainless steel BS 2056 316 S 42
	High 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.

For use in this area use a DCV6 with high temperature spring or DCV6 without spring.

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

**E-C-D** Standard spring and heavy duty 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 PN40 and ASME 300

PMA Maximum allowable pressure 40 bar g @ 50°C

TMA Maximum allowable temperature 400°C @ 22.4 bar g

Minimum allowable temperature -10°C

PMO Maximum operating pressure for saturated steam service 40 bar g @ 50°C

Standard spring 300°C @ 33.3 bar g

Heavy duty spring 300°C @ 33.3 bar g

TMO Maximum operating temperature High temperature spring 400°C @ 31.2 bar g

Without spring 400°C @ 31.2 bar g

Minimum operating temperature -10°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	A	B	C	D	E	Weight
DN15	64	22	15	48	25.0	0.25
DN20	73	27	20	61	31.5	0.45
DN25	85	33	25	71	35.5	0.67
DN32	95	41	32	81	40.0	0.85
DN40	106	49	40	91	45.0	1.12
DN50	119	59	50	105	56.0	1.75
DN65	149	75	65	125	63.0	2.75
DN80	158	90	80	141	71.0	3.58
DN100	189	111	100	164	80.0	5.39

## K<sub>v</sub> values

DN	15	20	25	32	40	50	65	80	100
K <sub>v</sub>	4.4	7.5	12	17	26	39	58	86	158

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	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

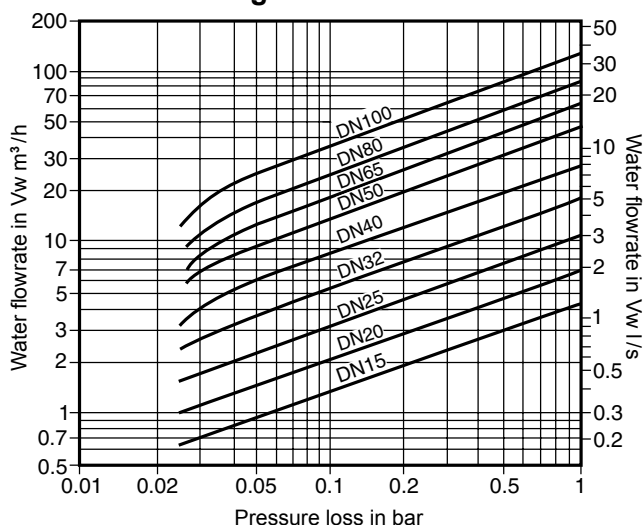
Where lowest opening pressures are required, valves without springs can be installed in vertical pipes with bottom-to-top flow.

Without spring

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

Heavy duty springs approximately 700 mbar

## 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

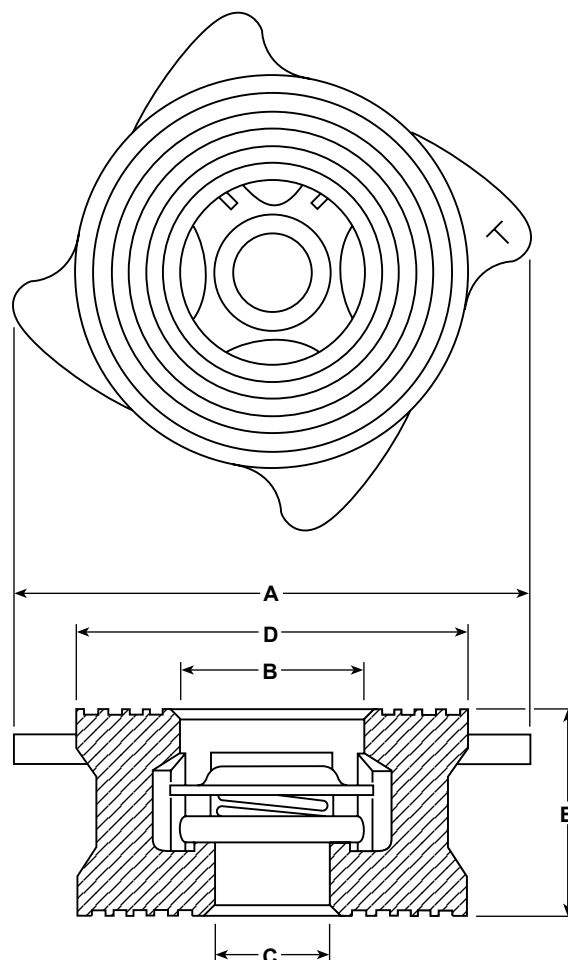
$\rho$  = Density of fluid kg/m³

$\dot{V}$  = 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 DN15, DCV6 stainless steel disc check valve for fitting between EN 1092 PN40 flanges.

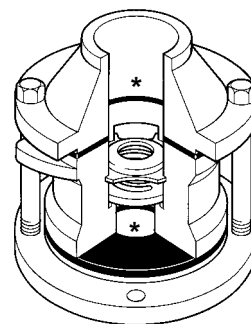


## Safety information, installation and maintenance

For full detail see the Installation and Maintenance Instructions (IM-P134-22) supplied with the product.

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 they 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.



**\* 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 – 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 EN 12266-1 Rate D

**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-P134-22). No other ecological hazard is anticipated with the disposal of this product providing due care is taken.