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## Disc Check Valves DCV3

### Description :

The DCV3 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. Face-to-face dimensions conform to EN 558 part 1, series 49.

### Sizes and Pipe Connections :

DN15, 20, 25, 40, 50.  
 Suitable for installation between BS 10 Tables 'E' and 'H'  
 BS 4504 / (DIN) PN6, 10, 16, 25, 40;  
 JIS 5, 10, 16, 20 flanges with the following exceptions :-  
 DN40, 50 will not fit between JIS 5 flanges.

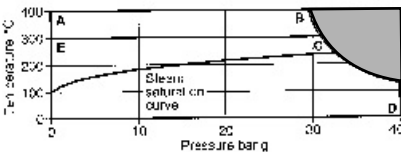
### Optional extras :

Heavy duty springs (700 mbar opening pressure, up to DN50) for boiler fed applications.  
 Viton soft seats for oil, gas and steam applications.  
 EPDM soft seats for water applications.

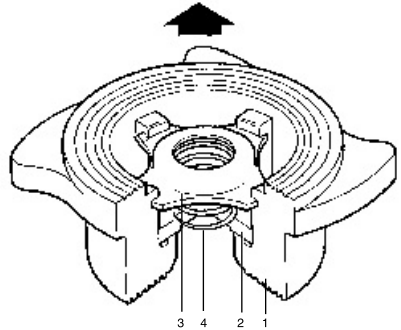
### Limiting Conditions :

Body design conditions	PN40	
PMO - Maximum operating pressure	40 bar g	(580 psi g)
Maximum Operating Temperature	Standard spring	300 °C (572 °F)
	Heavy duty spring	300 °C (572 °F)
	High temperature spring	400 °C (752 °F)
	Without spring	400 °C (752 °F)
Minimum operating temperature (Standard disc)	-10 °C (14 °F)	
Temperature Limits	Viton seat	-10 °C to +250 °C (14 °F to 482 °F)
	EPDM seat	-10 °C to +150 °C (14 °F to 302 °F)
Designed for a maximum cold hydraulic test pressure of:	60 bar g	(870 psi g)

### Operating Range



- The Product must not be used in this region.
- E - C - D DCV3 with standard spring.
- A - B - D DCV3 High temperature spring and without spring



### Materials

No.	Part	Material	
1.	Body	Austenitic Stainless steel	ASTM A351 CF8M
2.	Disc	Austenitic Stainless steel	ASTM A351 CF3M
3.	Spring retainer	Austenitic Stainless steel	ASTM A240 SS316L
4.	Standard spring	Austenitic Stainless steel	IS4454:IV:GR, 3 SS316
	Heavy duty spring	Austenitic Stainless steel	IS4454:IV:GR, 3 SS316
	High Temp. spring	Nickel alloy	Nimonic 90

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### Certification

Available with IBR certification  
 All certifications / inspection requirements must be stated at the time of order placement.

### Standards

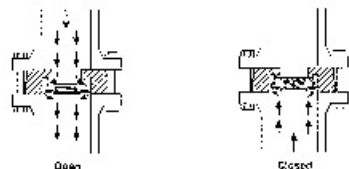
Designed and manufactured in accordance with BS 7438.

### Standard shut-off

Standard valves conform to BS 6755  
 Valves conforming to DIN 3230 part 3, BO3 available on request.  
 Soft seated versions meet DIN 3230 part 3 BN1 and B01 provided a differential pressure exists.

### Operation

Disk 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



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

Size	A	B	C	D	E	F	Weight
DN15	60.0	43	38	16.0	29.0	15	0.13
DN20	69.5	53	45	19.0	35.7	20	0.19
DN25	80.5	63	55	22.0	44.0	25	0.32
DN40	101.0	85	79	31.5	65.5	40	0.74
DN50	115.0	95	93	40.0	77.0	50	1.25

### Kv Values

DN	15	20	25	40	50
Kv	4.4	6.8	10.8	26	43

For conversion : Cv (UK) = Kv x 0.963 Cv (US) = Kv x 1.156

### Opening pressures in mbar

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

Flow direction	15	20	25	40	50
→	15	20	25	40	50
↑	25	25	25	28	29
→	22.5	22.5	22.5	24.5	24.5
↓	20	20	20	20	20

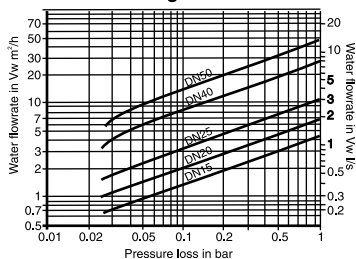
Where lowest opening pressures are required, valves without springs can be installed in vertical pipes with bottom-to-top flow.

Without spring

↑	2.5	2.5	2.5	4.0	4.5
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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

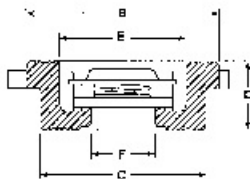
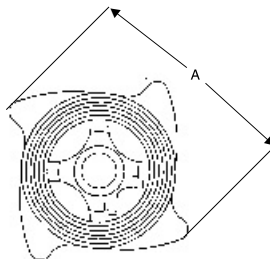
$$\rho = \text{Density of fluid kg/m}^3$$

$$\dot{V} = \text{Volume of fluid l/s or m}^3/\text{h}$$

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

### How to order

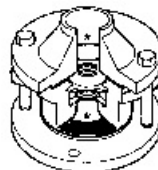
Example : 1 of Spirax Marshall DN50, DCV3 austenitic stainless steel disc check valve for fitting between BS10 Table 'E' flanges.



### Safety information, installation and maintenance

For full details see the User Manual (S2016758) 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 centered in the pipeline.



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\* **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
'VV'	- 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.

### 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.