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spirax sarco

DCV41

TI-P601-18
ST Issue 6

Austenitic Stainless Steel Disc Check Valve

Description

The DCV41 is an austenitic stainless steel disc check valve available with either screwed or socket weld end connections. Its function is to prevent reverse flow on a wide variety of fluids for applications in process lines, hot water systems, steam and condensate systems.

For oil and gas applications, a Viton seat is available.

For water applications an EPDM seat is available.

Soft seat versions provide a zero leakage rate or bubble tight shut-off, i.e. they meet EN 12266-1 Rate A, providing a differential pressure exists. Please note that the soft seat options are not available with socket weld ends.

The shut-off of the standard valve conforms to EN 12266-1 Rate E.

When a heavy duty spring is installed with an EPDM seat, the valve is suitable for boiler feedwater check applications.

A high temperature spring version is available to operate at 400°C.

Optional extras

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

High temperature springs

Viton soft seats for oils and gas applications - screwed only

EPDM soft seats for water applications - screwed only

Standards

Designed and manufactured in accordance with BS 7438. 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.

Soft seated versions meet EN 2266-1 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

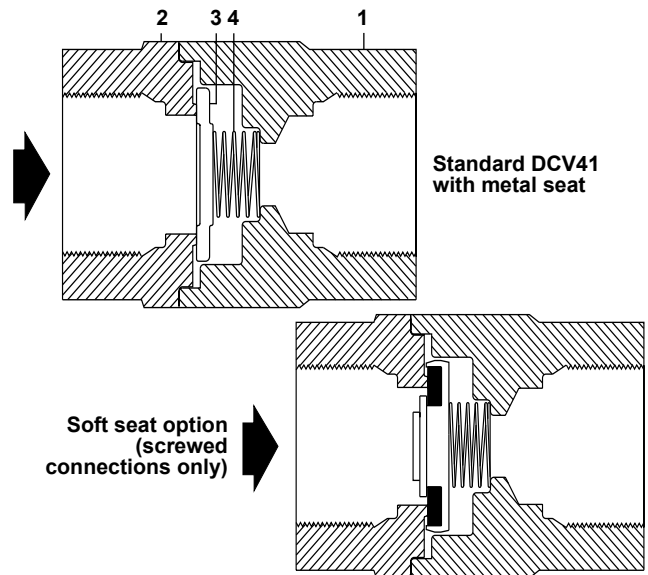
½", ¾" and 1" screwed BSP to BS 21 female taper, screwed NPT to ASME B 1.20.1 and socket weld to ASME B 16.11 Class 3000.

Materials

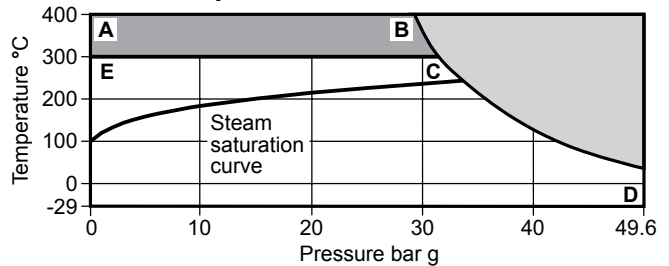
No.Part	Material
1 Body	Austenitic stainless steel ASTM A351 CF3M
2 Seat	Austenitic stainless steel ASTM A351 CF3M
3 Disc	Austenitic stainless steel ASTM A276 316
Standard spring	Austenitic stainless steel BS 2056 316 S42
4 Heavy duty spring	Austenitic stainless steel BS 2056 316 S42
High temp. spring	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



Light grey area: The product **must not** be used in this region.

Dark grey area: For use in this area use a DCV41 with high temperature spring or DCV41 without spring.

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

E-C-D Standard spring.

Please note: Special testing to allow lower temperature operation can be provided at extra cost. Consult Spirax Sarco.

Body design conditions		PN50
PMA	Maximum allowable pressure	49.6 barg @ 38°C
TMA	Maximum allowable temperature	400°C @ 29.4 barg
Minimum allowable temperature		-29°C
PMO	Maximum operating pressure (bar g)	49.6 bar g @ 38°C
		With metal seat and standard spring 300°C
		With metal seat and high temperature spring 400°C
TMO	Maximum operating temperature	Without spring 400°C
		Viton seat 205°C
		EPDM seat 120°C
* Minimum operating temperature	With metal seat	-29°C
	With viton seat	-25°C to +205°C
	With EPDM seat	-40°C to +120°C

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

* **Note:** Special testing to allow lower temperature operation can be provided at extra cost. Consult Spirax Sarco.

First for Steam Solutions

Dimensions / weight (approximate) in mm and kg

Size	A Socket weld	A Screwed	B A/F	Weight
1/2"	50	51	34	0.2
3/4"	55	57	41	0.3
1"	67	68	50	0.5

K_v values

Size	1/2"	3/4"	1"
K _v	4.4	7.5	12

For conversion: C_v (UK) = K_v x 0.963 C_v (US) = K_v x 1.156

Opening pressures in mbar

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

→ Flow direction

Size	1/2"	3/4"	1"
↑	25	25	25
→	22.5	22.5	22.5
↓	20	20	20

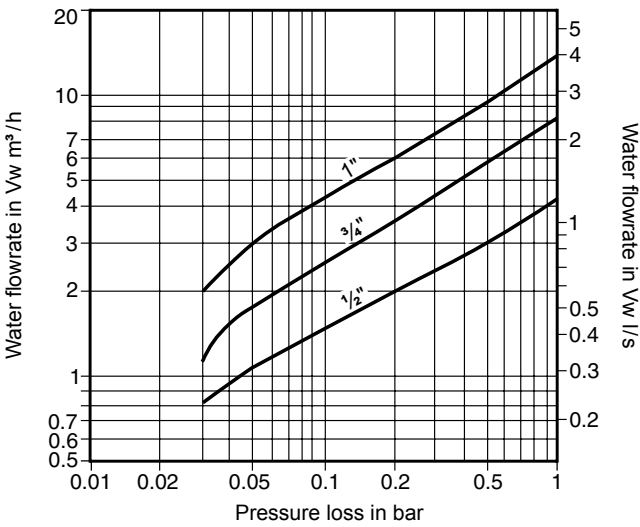
Where lower opening pressures are required, valves without springs can be installed in vertical pipes with bottom-to-top flow.

Without spring

↑	3	2.5	4
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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.

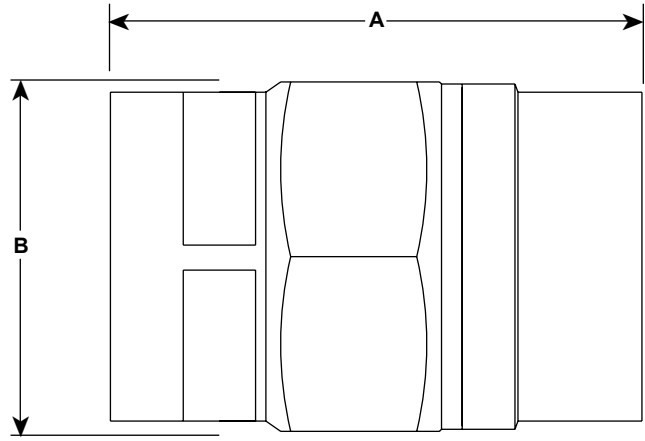
$$\dot{V}_w = \sqrt{\frac{\rho}{1000}} \times \dot{V}$$

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

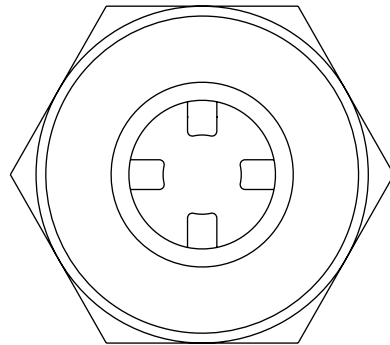
Pressure loss information for steam, compressed air and gases is available from Spirax Sarco.

How to order

Example: 1 off Spirax Sarco DCV41 austenitic stainless steel bodied disc check valve having 1/2" screwed BSP connections supplied fitted with a Viton soft seat and certification to EN 10204 3.1 for the body.



End elevation



Safety information, installation and maintenance

For full details see the Installation and Maintenance Instructions (IM-P601-19) supplied with the product.

The DCV41 disc check valve 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 spring, they must be fitted in a vertical flow line with the flow from bottom-to-top.

Note: 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 seat
- 'W' - Without spring - Standard metal seat
- 'WV' - Without spring - Viton seat
- 'WE' - Without spring - EPDM seat
- 'H' - Heavy duty spring - Standard metal seat
- 'HV' - Heavy duty spring - Viton seat
- 'HE' - Heavy duty spring - EPDM seat
- 'V' - Standard spring - Viton seat
- 'E' - Standard spring - EPDM seat

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-P601-19). No other ecological hazard is anticipated with the disposal of this product providing due care is taken.

