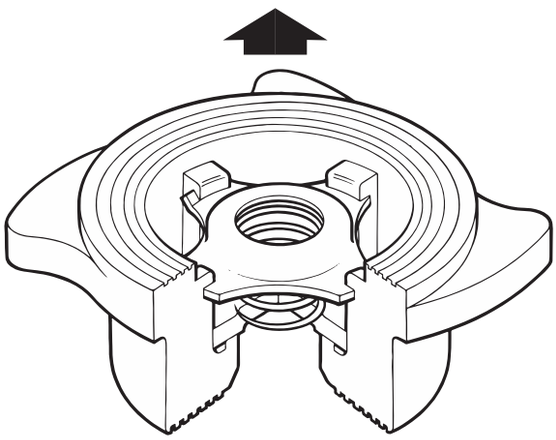
TI-P134-05
CMGT Issue 10

DCV1
Disc Check Valve

Description
The DCV1 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 systems etc. Face-to-face dimensions conform to EN 558 part 1, series 49.
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.

Viton soft seats for oil, air and gas applications.

EPDM soft seats for water applications.

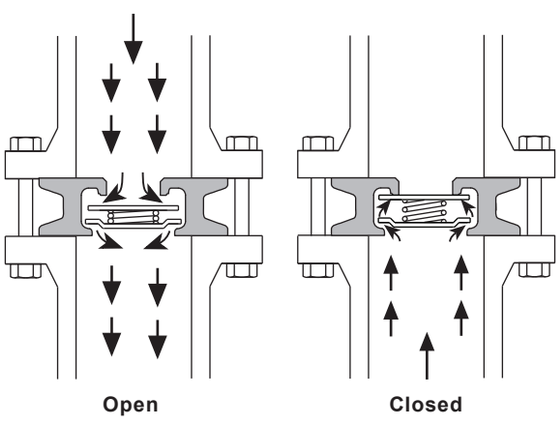
Standards
This product fully complies with the requirements of the Pressure Equipment Directive (PED).

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 a manufacturers Typical Test Report.
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 BS 10 Tables 'E' and 'H', EN 1092 PN6, PN10, PN16, PN25, PN40; JIS 5, JIS 10, JIS 16, and JIS 20 flanges with the following exceptions:
Note 1: DN40, DN50, DN80 and DN100 - will not fit between JIS 5 flanges.
Note 2: DN65 and DN80 - will not fit between BS 10 'E' flanges.

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.



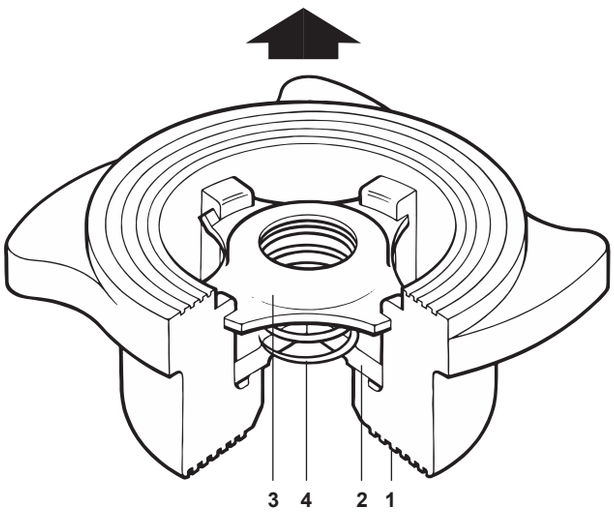
Polígono Industrial O Rebullón s/n. 36416 - Mos - España - rodavigo@rodavigo.com

Pipeline ancillaries

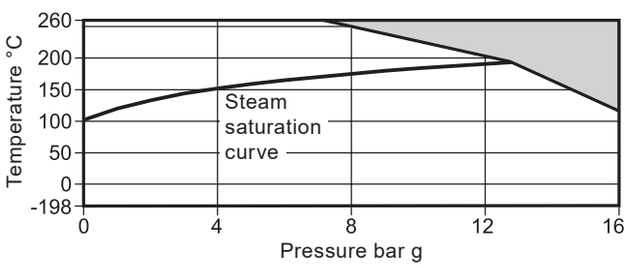
Disc, split disc and wafer check valves

Materials

No.	Part	Material	
1	Body	Bronze	WS 2.1050
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
	Heavy duty spring	Austenitic stainless steel	BS 2056 316 S42



Pressure/temperature limits



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

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			PN16
PMA	Maximum allowable pressure		16 bar g @ 120 °C
TMA	Maximum allowable temperature		260 °C @ 7 bar g
Minimum allowable temperature			-198 °C
PMO	Maximum operating pressure for saturated steam service		13.2 bar g @ 196 °C
TMO	Maximum operating temperature		260 °C @ 7 bar g
Minimum operating temperature **Note:** For lower operating temperatures consult Spirax Sarco			-198 °C
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			24 bar g

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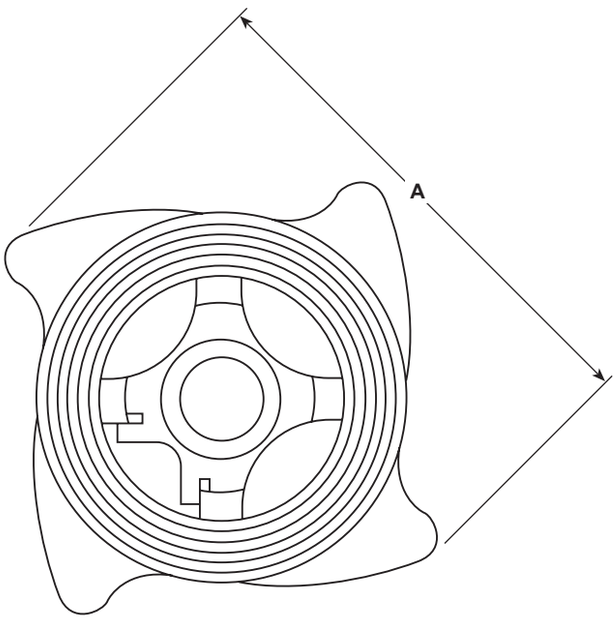
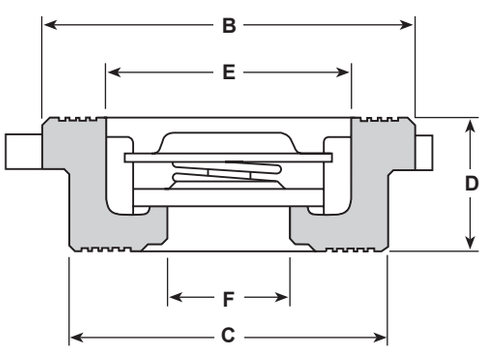
Dimensions/weights (approximate) in mm and kg

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
DN32	90.5	75	68	28.0	54.5	32	0.55
DN40	101.0	85	79	31.5	65.5	40	0.74
DN50	115.0	95	93	40.0	77.0	50	1.25
DN65	142.0	115	113	46.0	97.5	65	1.87
DN80	154.0	133	128	50.0	111.5	80	2.42
DN100	184.0	154	148	60.0	130.0	100	3.81





K_v values

DN	15	20	25	32	40	50	65	80	100
K_v	4.4	6.8	10.8	17	26	43	60	80	113

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

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

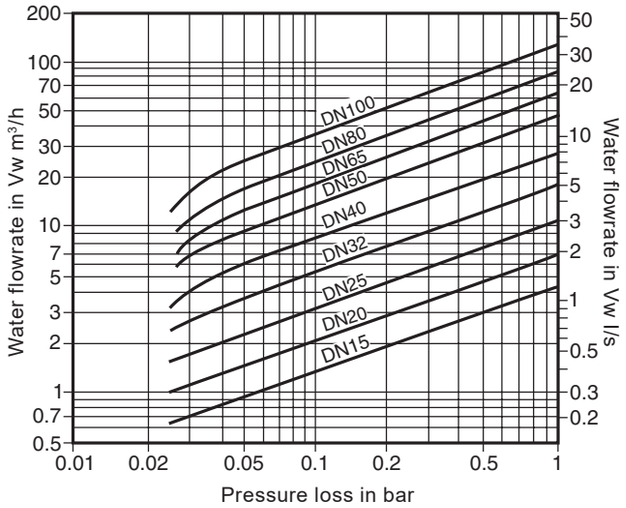
Where lowest opening pressures are required, valves without springs can be installed in vertical pipes with bottom-to-top flow.

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

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 DN50, DCV1 bronze disc check valve for fitting between EN 1092 PN25 flanges.

Safety information, installation and maintenance

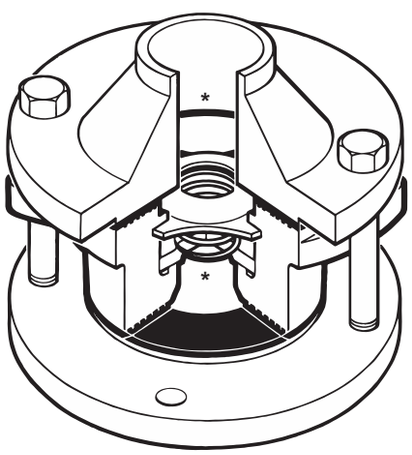
For full details see the Installation and Maintenance Instructions (IM-S19-04-EN-ISS1) supplied with the product.
DCV disc check valves must be fitted in accordance with the direction of flow arrow indicating correct fluid flow direction. When fitted with a spring they can be installed in any plane. 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:

'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

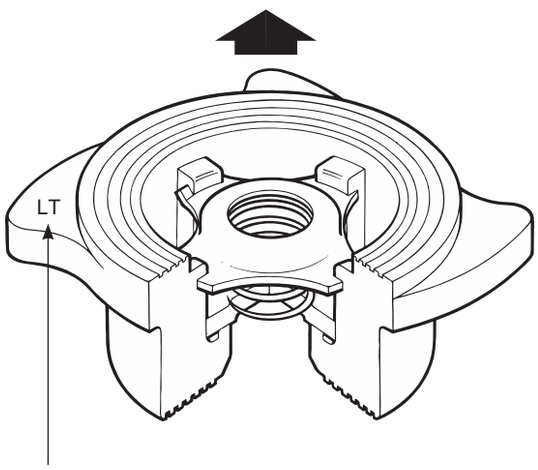
If a product which contains a Viton component has been subjected to a temperature approaching 315 °C or higher, then it may have decomposed and formed hydrofluoric acid. Avoid skin contact and inhalation of any fumes as the acid will cause deep skin burns and damage to the respiratory system. Viton must be disposed of in a recognised manner as stated in the Installation and Maintenance Instructions (IM-S19-04-EN-ISS1). No other ecological hazard is anticipated with the disposal of this product providing due care is taken.

TI-P134-50
CMGT Issue 8

DCV3 and DCV3LT
Disc Check Valves

Description

The DCV3 and DCV3LT 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.
As standard they will be supplied with a metal-to-metal seat for use on steam applications. Where they are being used on oil, air, gas and water applications, alternative seat material is available - see 'Optional extras'.



The **DCV3LT** is supplied with '**LT**' stamped on the unit.

Optional extras

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

Viton soft seats for oil, air and gas applications.

EPDM soft seats for water applications.

Standards

These products fully comply with the requirements of the Pressure Equipment Directive (PED).

Standard shut-off

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

Certification

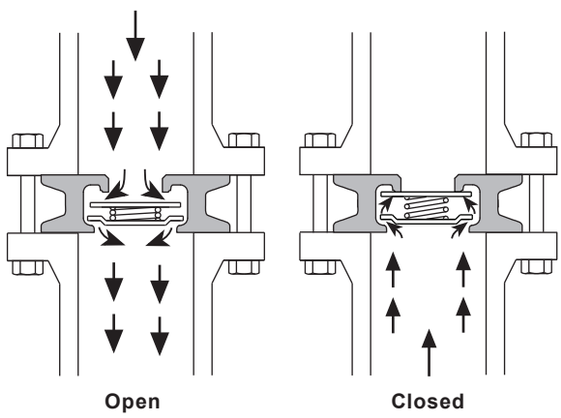
These products are available with a Typical Test Report.
The products are also available with certification to EN 10204 3.1.
Note: All certification/inspection requirements must be stated at the time of order placement.

Sizes and pipe connections

DN15, DN20, DN25, DN32, DN40, DN50, DN65, DN80 and DN100.
Suitable for installation between BS 10 Tables 'E' and 'H', EN 1092 PN6, PN10, PN16, PN25 and PN40; JIS 5, JIS 10, JIS 16, JIS 20 flanges with the following exceptions:
DN40, DN50, DN80 and DN100 - will not fit between JIS 5 flanges.
DN65 and DN80 - will not fit between BS 10 'E' flanges.

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.



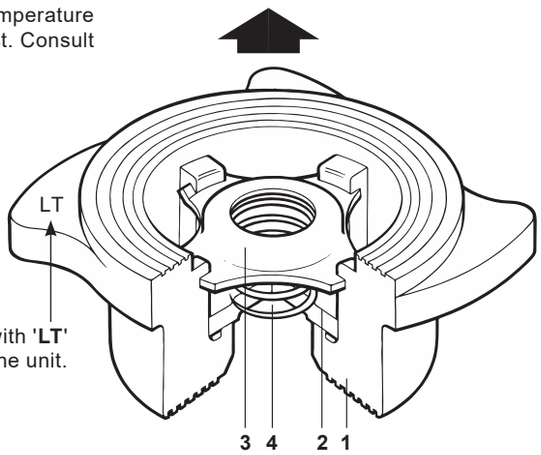
Pipeline ancillaries

Disc, split disc and wafer check valves

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 S11
	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

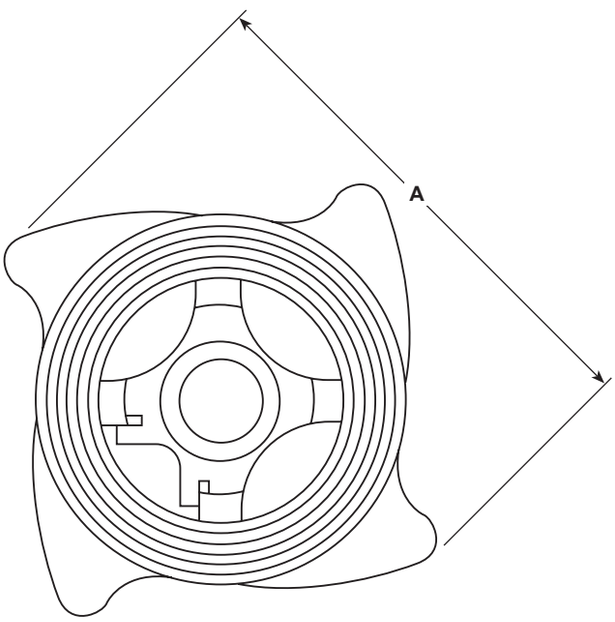
Note: Special testing to allow lower temperature operation can be provided at extra cost. Consult Spirax Sarco.

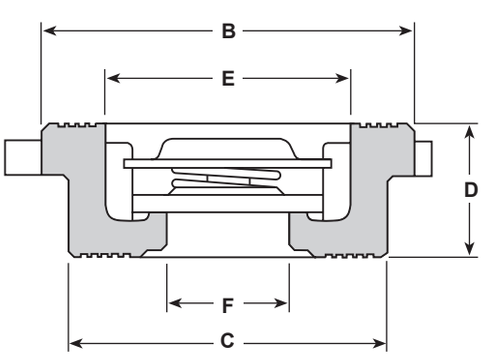


The **DCV3LT** is supplied with '**LT**' stamped on the unit.

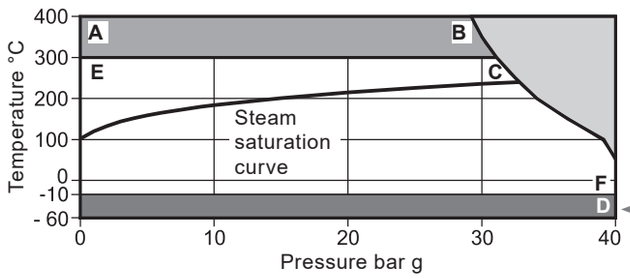
Dimensions/weights (approximate) in mm and kg

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
DN32	90.5	75	68	28.0	54.5	32	0.55
DN40	101.0	85	79	31.5	65.5	40	0.74
DN50	115.0	95	93	40.0	77.0	50	1.25
DN65	142.0	115	113	46.0	97.5	65	1.87
DN80	154.0	133	128	50.0	111.5	80	2.42
DN100	184.0	154	148	60.0	130.0	100	3.81





Pressure/temperature limits



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

Use either a DCV3 with high temperature spring or DCV3/DCV3LT without spring for use in this area.

Only the DCV3LT can be used down to -60 °C

A-B-F DCV3 without spring and with high temperature spring.

A-B-D DCV3LT without spring.

E-C-F DCV3 with standard spring and heavy duty spring.

E-C-D DCV3LT with 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				PN40
PMA	Maximum allowable pressure			40 bar g @ 50 °C
TMA	Maximum allowable temperature			400 °C @ 31.2 bar g
Minimum allowable temperature			DCV3	-10 °C
			DCV3LT	-60 °C
PMO	Maximum operating pressure (metal-to-metal seat)			40 bar g @ 50 °C
TMO	Maximum operating temperature	Standard spring		300 °C @ 33.3 bar g
		Heavy duty spring		300 °C @ 33.3 bar g
		High temperature spring	DCV3 only	400 °C @ 31.2 bar g
		Without spring		400 °C @ 31.2 bar g
Minimum operating temperature **Note:** For lower operating temperatures consult Spirax Sarco			DCV3	-10 °C
			DCV3LT	-60 °C
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				60 bar g

K_v values

DN	15	20	25	32	40	50	65	80	100
K_v	4.4	6.8	10.8	17	26	43	60	80	113

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

10.5
11

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.

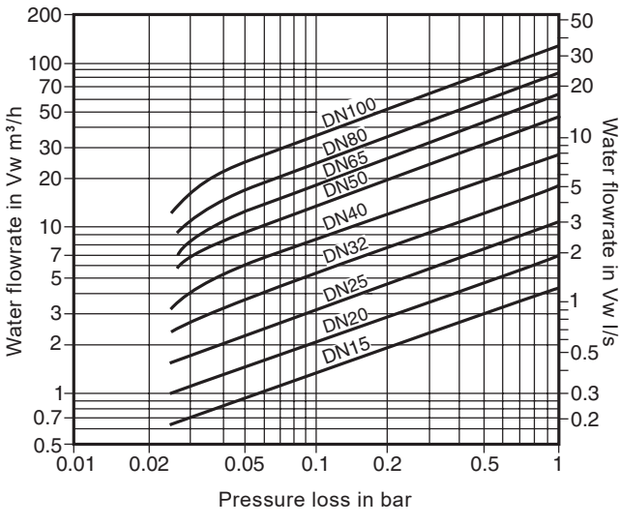
Without spring	↑	2.5	2.5	2.5	3.5	4	4.5	5	5.5	6.5

Heavy duty springs approximately 700 mbar

Pipeline ancillaries

Disc, split disc and wafer check valves

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 DN50, DCV3 austenitic stainless steel disc check valve for fitting between EN 1092 PN25 flanges.

Safety information, installation and maintenance

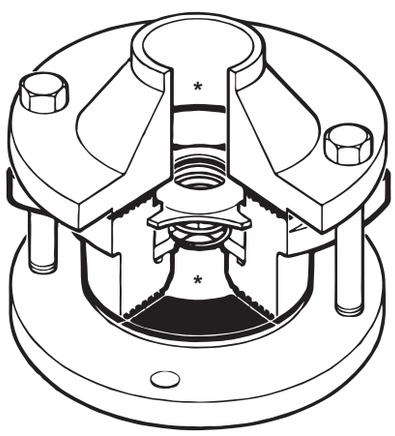
For full details see the Installation and Maintenance Instructions (IM-P134-08) supplied with the product.
DCV disc check valves must be fitted in accordance with the direction of flow arrow indicating correct fluid flow direction. When fitted with a spring they can be installed in any plane. When supplied 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 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-P134-08). No other ecological hazard is anticipated with the disposal of this product providing due care is taken.

TI-P134-04
CMGT Issue 13

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.

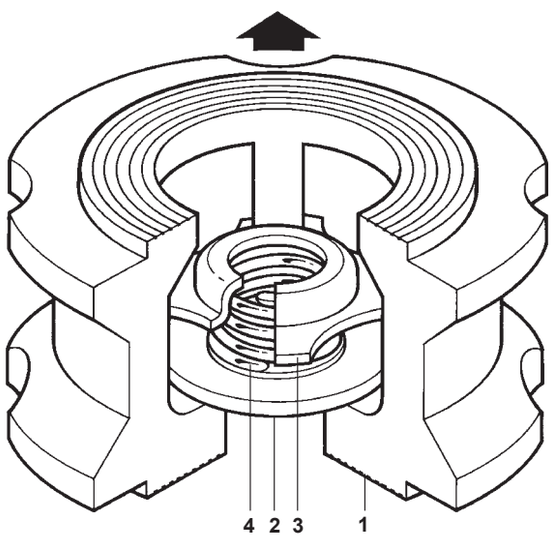
Viton soft seats for oils, air and gas applications.

EPM soft seats for water applications.

Standards
This product fully complies with the requirements of the Pressure Equipment Directive 2014/68/EU.

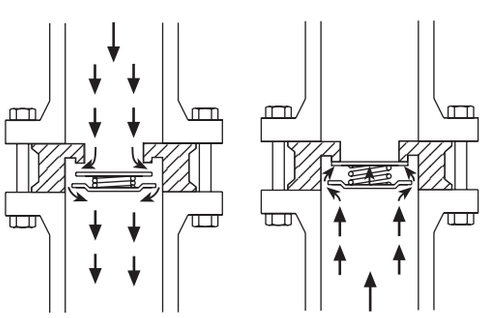
Standard shut-off
Standard valves conform to EN 12266-1 rate E.
Valves conforming to EN 12266-1 rate D are available on request.
Soft seated versions meet EN 12266-1 rate A, providing a differential pressure exists.

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.

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.



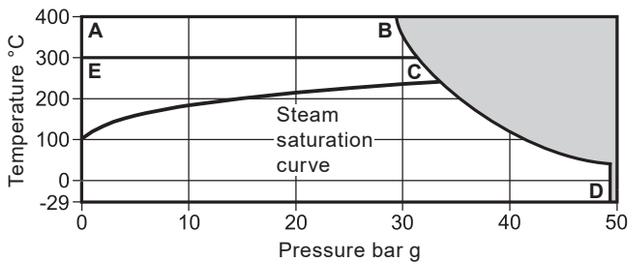
Materials

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 temperature spring	Nickel alloy	Nimonic 90

Pipeline ancillaries

Disc, split disc and wafer check valves

Pressure/temperature limits



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

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

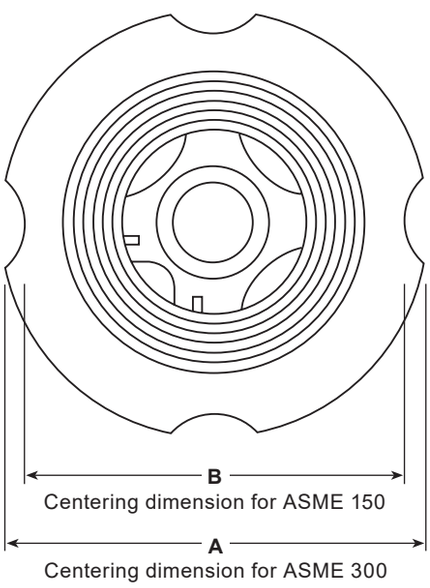
E-C-D Standard spring.

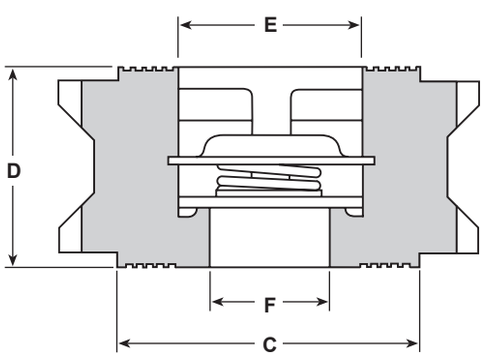
Please note: The figures displayed are only relevant when a metal-to-metal seat is used. If Viton or EPDM seats are used the product is restricted to the limits of the seat material chosen.

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		34 bar g @ 243 °C
TMO	Maximum operating temperature	Standard spring	300 °C @ 31.5 bar g
		High temperature spring	400 °C @ 29 bar g
		Without spring	400 °C @ 29 bar g
Minimum operating temperature **Note:** For lower operating temperatures consult Spirax Sarco			-29 °C
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

	ASME 300	ASME 150					
Size	**A**	**B**	**C**	**D**	**E**	**F**	**Weight**
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





10.5
14

K_V values

DN	15	20	25	40	50	80	100
K_V	4.4	7.5	12	26	39	84	150

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.

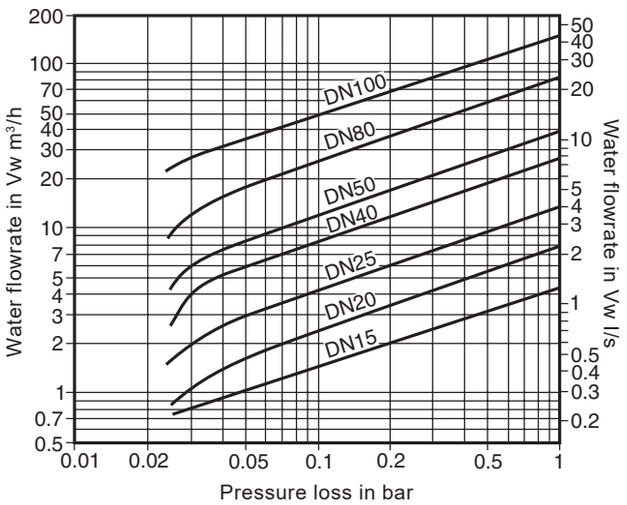
→ Flow direction

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

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.

10.5
15

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-P144-02-EN-ISS1) 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 - Standard metal disc

'W' - Without spring - Standard metal disc

'V' - Standard spring - Viton soft faced disc

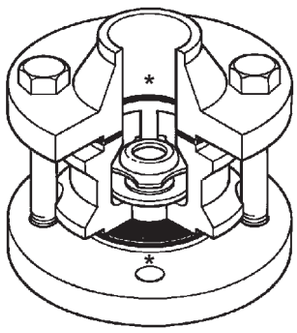
'E' - Standard spring - EPDM soft faced disc

'WV' - Without spring - Viton soft faced disc

'WE' - Without spring - EPDM soft faced disc

'T' - Valves tested to EN 12266-1 Rate D

No identification indicates a standard spring with a metal disc.



Disposal

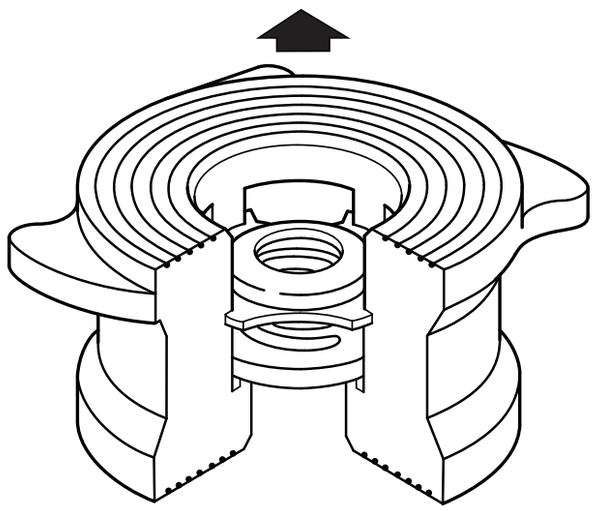
If a product which contains a Viton component has been subjected to a temperature approaching 315 °C or higher, then it may have decomposed and formed hydrofluoric acid. Avoid skin contact and inhalation of any fumes as the acid will cause deep skin burns and damage to the respiratory system. Viton must be disposed of in a recognised manner as stated in the Installation and Maintenance Instructions (IM-P144-02-EN-ISS1). No other ecological hazard is anticipated with the disposal of this product providing due care is taken.

TI-P134-26
CMGT Issue 9

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 Pressure Equipment Directive (PED).

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.

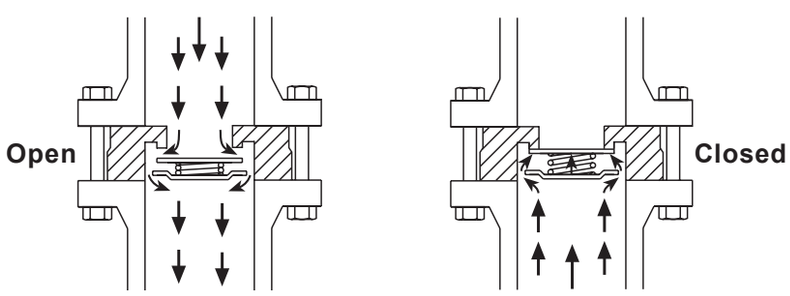
Certification
This product is available with certification to EN 10204 3.1. **Note:** All certification/inspection requirements must be stated at the time of order placement.

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.

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.



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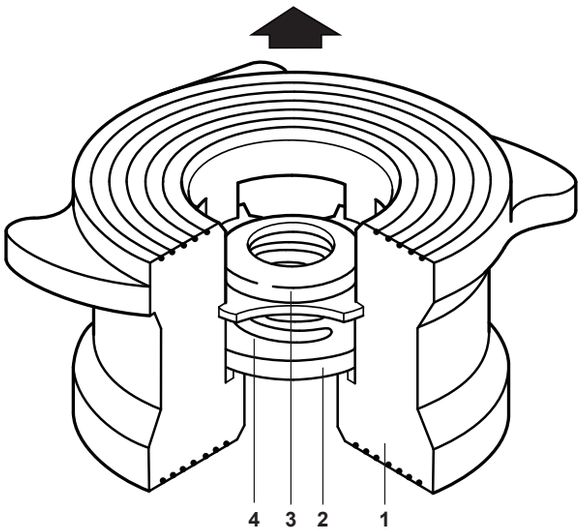
Pipeline ancillaries

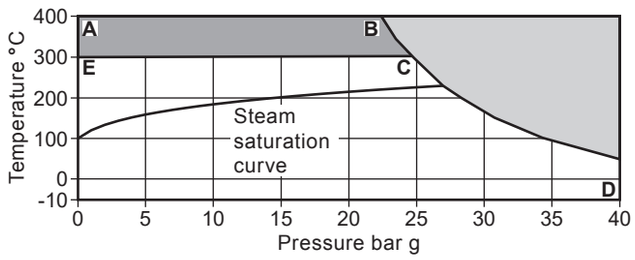
Disc, split disc and wafer check valves

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



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 Screwed, socket weld, butt weld and flanged ANSI 300.

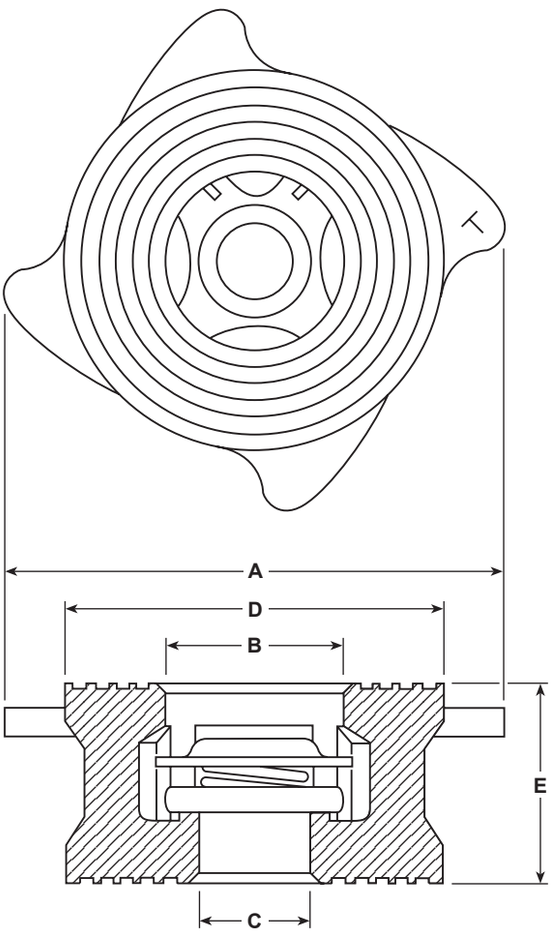
A-C-D Flanged EN 1092 PN40.

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			PN40
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
TMO	Maximum operating temperature	Standard spring	300 °C @ 33.3 bar g
		Heavy duty spring	300 °C @ 33.3 bar g
		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



Kv values

DN	15	20	25	32	40	50	65	80	100
Kv	4.4	7.5	12	17	26	39	58	86	158

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

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

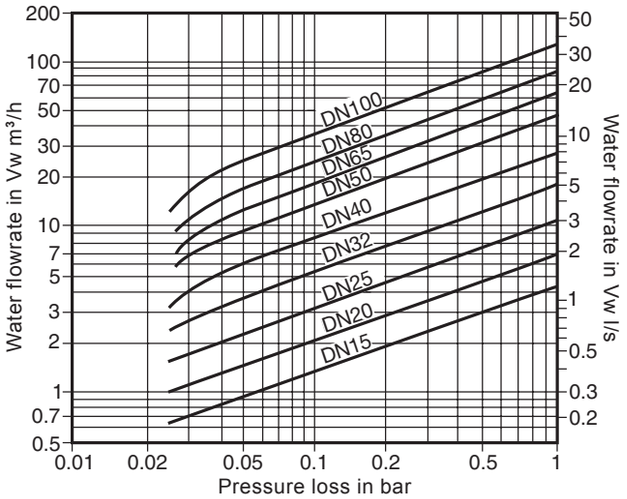
Where lowest opening pressures are required, valves without springs can be installed in vertical pipes with bottom-to-top flow.

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.

$$\dot{w} = \sqrt{\frac{\rho}{1000}} \times \dot{}$$

Where:

$\dot{w}$ = Equivalent water volume flow in l/s or m³/h

ρ = Density of fluid kg/m³

$\dot{}$ = 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

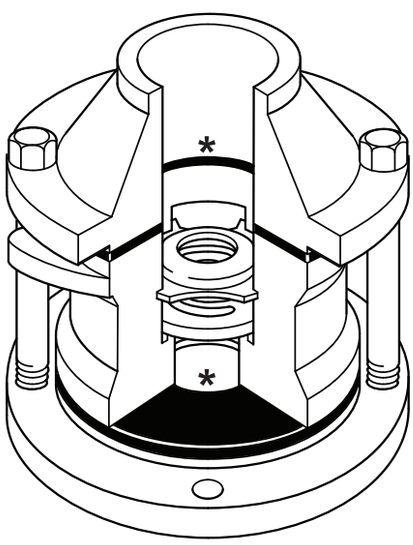
For full detail see the Installation and Maintenance Instructions (IM-P146-02-EN-ISS1) supplied with the product.
DCV disc check valves must be fitted in accordance with the direction of flow arrow indicating correct fluid flow direction. When fitted with a spring they can be installed in any plane. 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.



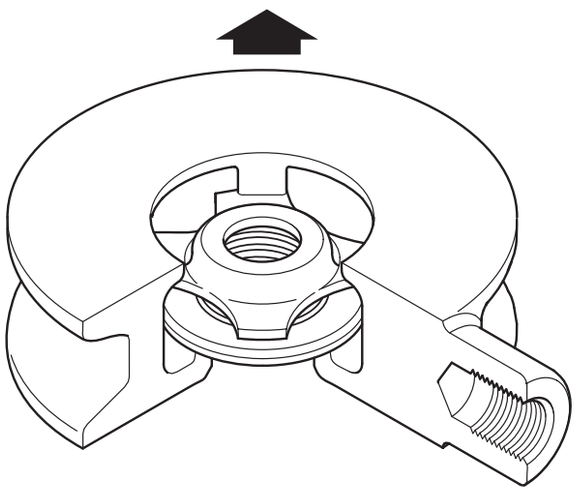
Disposal

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-P146-02-EN-ISS1). No other ecological hazard is anticipated with the disposal of this product providing due care is taken.

TI-P601-01
CMGT Issue 12

DCV8
Disc Check Valve

Description
DCV8 disc check valves are of a wafer pattern, designed to be sandwiched between DIN 2501 and EN 1092 flanges. Their function is to prevent reverse flow on a wide variety of fluids. The DCV8 is designed for use with agressive fluids, vapours, acids and alkalines at high pressures and temperatures. The valves are provided with an M8 threaded tapping for product earthing and conform to EN 558 part 1, series 49.



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

EPM soft seats for water applications

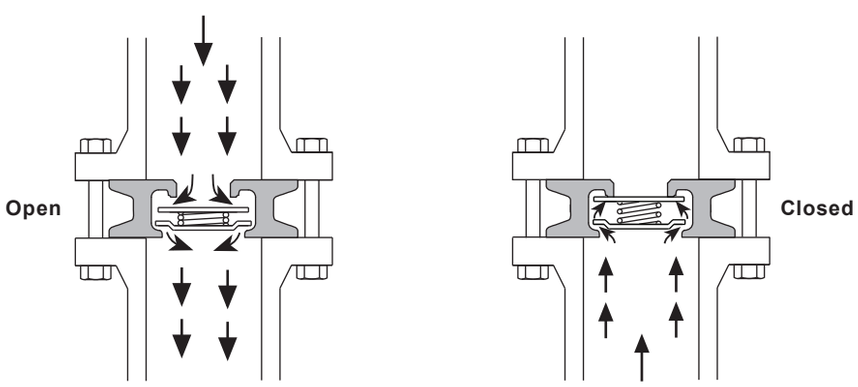
Standards
Designed and manufactured in accordance with ÄD Merkblatter. This product fully complies with the requirements of the Pressure Equipment Directive (PED).

Standard shut-off
Standard valves conform to EN 122 66-1 rate D.
Soft seated versions meet EN 12266-1 rate A, providing a differential pressure exists.

Certification
These products are available with certification to EN 10204 3.1 and the body is sourced from a TÜV approved foundry.
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/DIN 2501 PN10, PN16, PN25 and PN40.

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.



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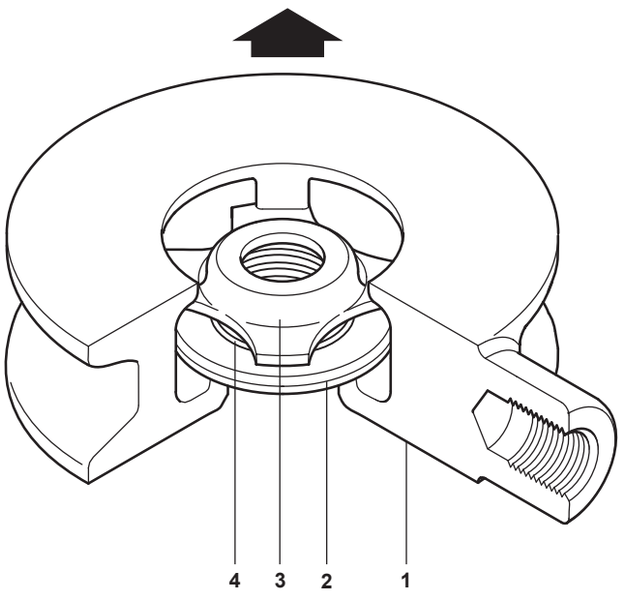
Pipeline ancillaries

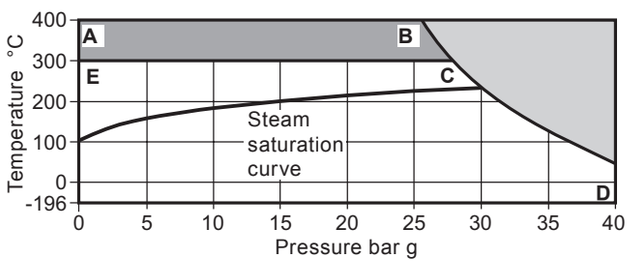
Disc, split disc and wafer check valves

Materials

No.	Part	Material	
1	Body	Austenitic stainless steel	WS 1.4408
2	Disc	Austenitic stainless steel	ASTM A276 316
3	Spring retainer	Austenitic stainless steel	BS 1449 316 S 11
4	Standard spring	Austenitic stainless steel	BS 2056 316 S 42
	Heavy duty spring	Austenitic stainless steel	BS 2056 316 S 42
	High temperature spring	Nickel alloy	Nimonic 90



Pressure/temperature limits



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

For use in this area use a DCV8 with high temperature spring or DCV8 without spring.

A-B-D Without standard or high temperature springs.

E-C-D Standard spring and heavy duty spring.

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

Body design conditions			PN40
PMA	Maximum allowable pressure		40 barg @ 50 °C
TMA	Maximum allowable temperature		400 °C @ 25.6 barg
Minimum allowable temperature			-196 °C
PMO	Maximum operating pressure		40 bar g @ 50 °C
TMO	Maximum operating temperature	Standard spring	300 °C @ 27.6 bar g
		Heavy duty spring	300 °C @ 27.6 bar g
		High temperature spring	400 °C @ 25.6 bar g
		Without spring	400 °C @ 25.6 bar g
Minimum operating temperature (standard disc)			-196 °C
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			60 bar g

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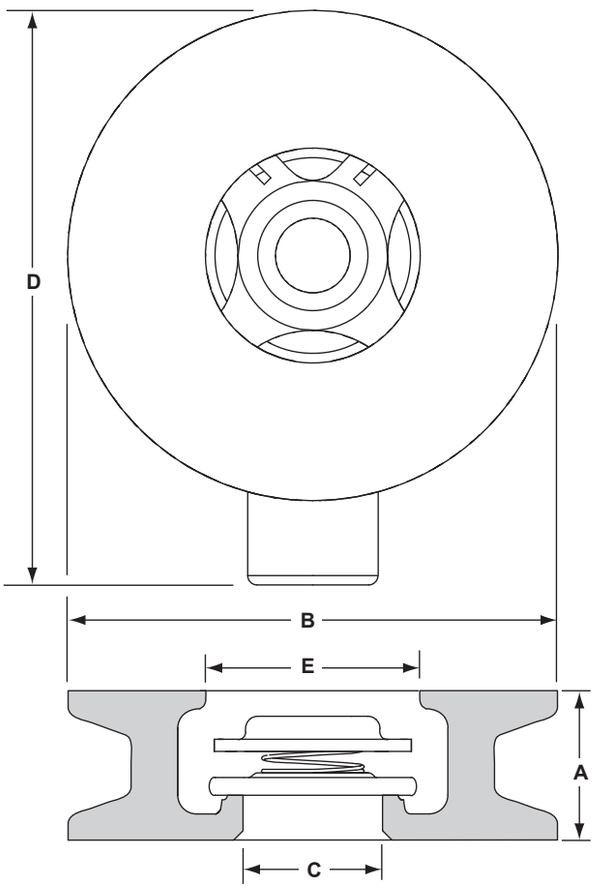
Dimensions/weights (approximate) in mm and kg

		A (EN 558 part 1, series 49)	B	C	D	E	Weight
DN15		16.0	53	15	65	23.0	0.18
DN20		19.0	63	20	72	28.0	0.27
DN25		22.0	72	25	78	33.8	0.40
DN32		28.0	84	32	93	41.8	0.67
DN40		31.5	94	40	104	49.8	0.90
DN50		40.0	109	50	115	59.8	1.45
DN65		46.0	129	65	138	75.8	2.14
DN80		50.0	144	80	152	90.8	2.69
DN100	**PN16**	60.0	164	100	171	111.8	4.36
	PN40	60.0	169	100	174	111.8	4.36



K_v values

DN	15	20	25	32	40	50	65	80	100
K_v	4.4	6.8	10.8	17	26	43	60	80	113

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

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

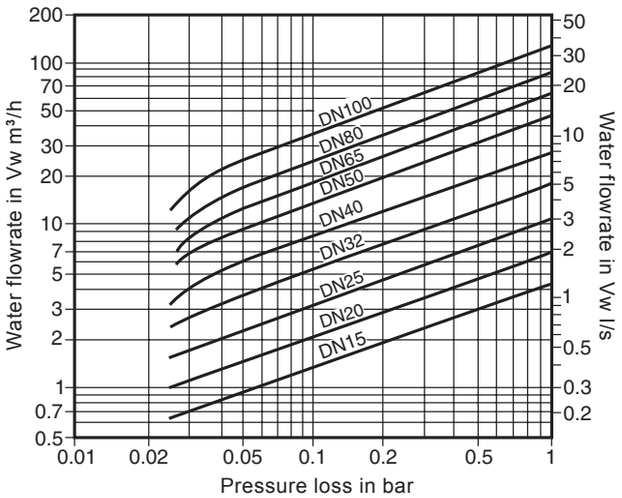
Where lowest opening pressures are required, valves without springs can be installed in vertical pipes with bottom-to-top flow.

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
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.

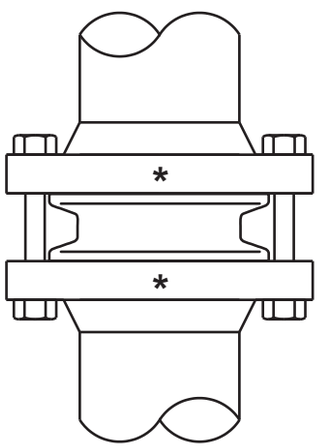
How to order

Example: 1 off Spirax Sarco DN25, DCV8 disc check valve for fitting between DIN 2501/EN 1092 DN25 PN40 flanges.

Safety information, installation and maintenance

For full details see the Installation and Maintenance Instructions (IM-P147-02-EN-ISS1) supplied with the product.
DCV8 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	– 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

No identification indicates a standard spring with a metal disc.

Disposal

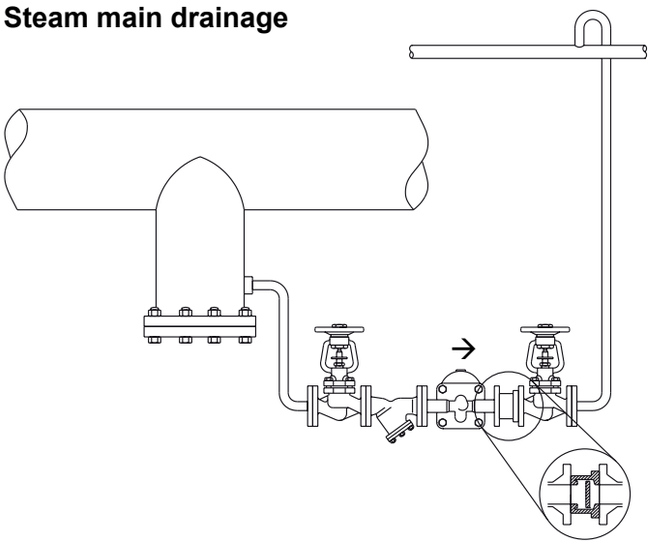
If a product that contains a Viton component has been subjected to a temperature approaching 315 °C or higher, then it may have decomposed and formed hydrofluoric acid. Avoid skin contact and inhalation of any fumes as the acid will cause deep skin burns and damage to the respiratory system. Viton must be disposed of in a recognised manner as stated in the Installation and Maintenance Instructions (IM-P147-02-EN-ISS1). No other ecological hazard is anticipated with the disposal of this product providing due care is taken.

spirax sarco

AI-P134-25
ST Issue 4

DCV
Wafer Check Valve
Applications Sheet 1

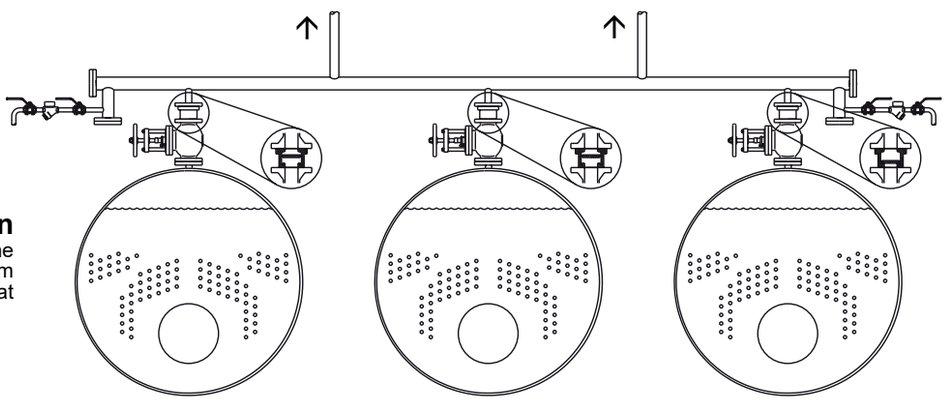
Steam main drainage



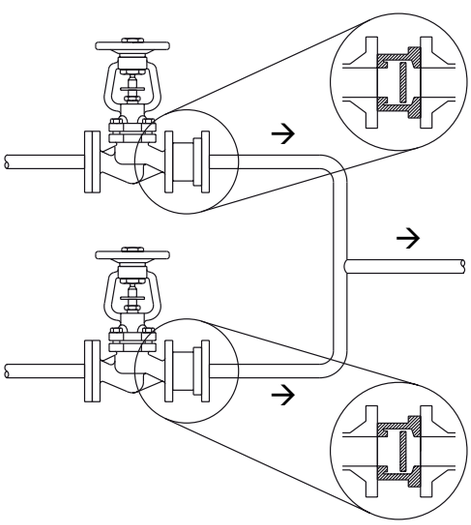
A DCV wafer check valve fitted after the steam trap will protect against possible waterhammer, by preventing condensate from flowing back into the steam main.

Multiple boiler installation

A DCV wafer check valve fitted on the outlet from each boiler will prevent steam from flowing back into any boilers that are on stand-by.



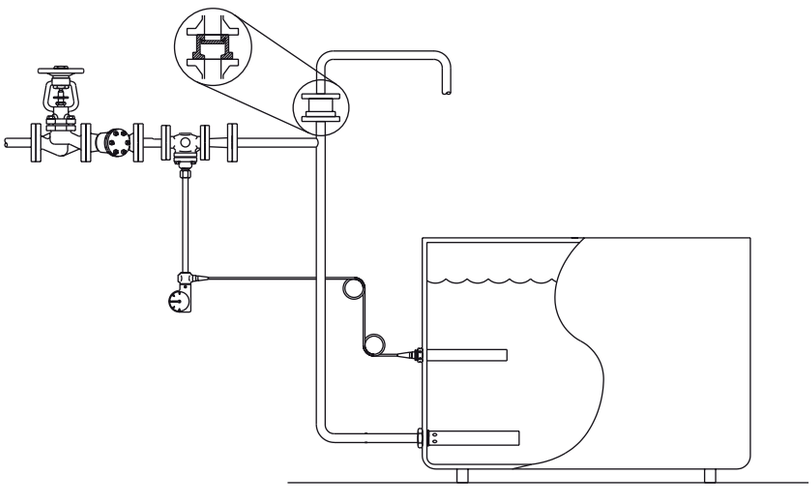
Blending



In blending applications DCV wafer check valves will prevent reverse flow back along the supply lines. A common blending application is steam/cold water mixing to produce hot water.

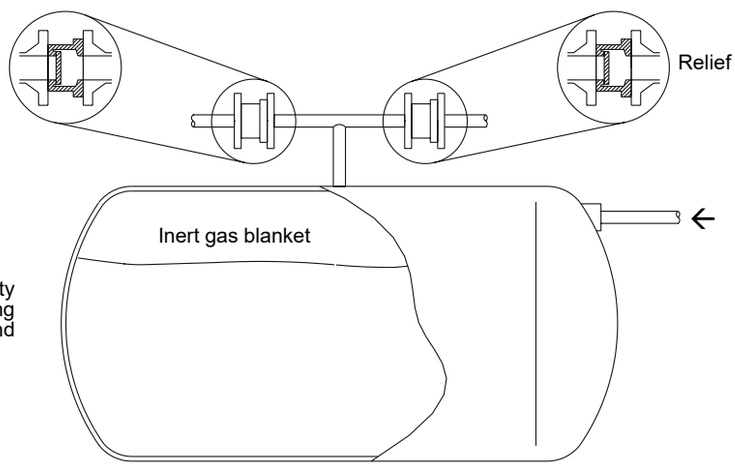
Local regulations may restrict the use of this product to below the conditions quoted.
In the interests of development and improvement of the product, we reserve the right to change the specification.

Direct steam injection



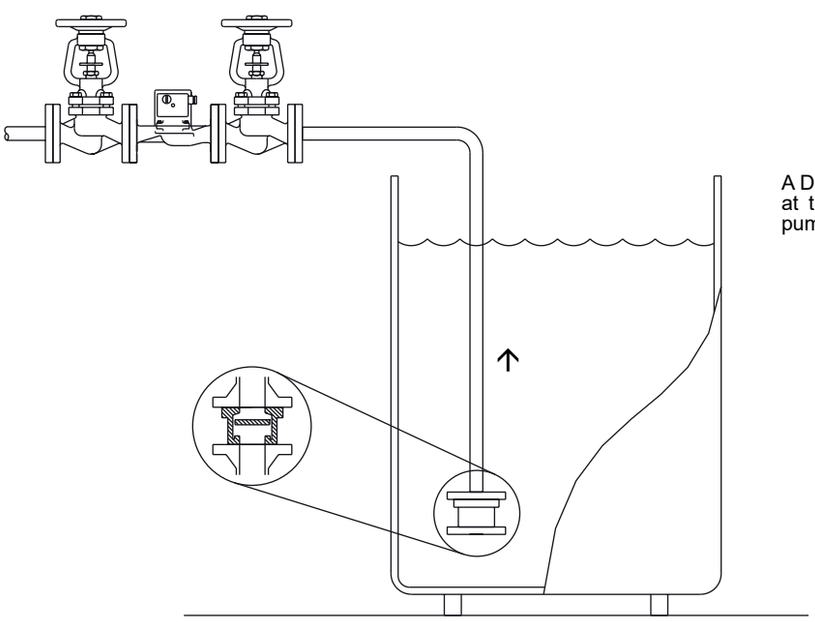
In a direct steam injection application, when the contents of the tank has reached the set temperature, the temperature control valve will close. Any steam downstream of the temperature control valve will rapidly condense and reduce in volume. This rapid reduction in volume will create a vacuum and liquid from the tank could be drawn back up into the steam line. A DCV wafer check valve fitted after the temperature control valve and in reverse, will prevent this from happening. It will open when a vacuum is present and allow air into the line.

Inert gas blanket



One DCV wafer check valve fitted with a heavy duty spring, acts as a low pressure relief valve, maintaining a constant pressure within the vessel. The second DCV wafer check valve acts as a vacuum breaker.

Pump foot valve



A DCV wafer check valve fitted with a soft seat, installed at the suction inlet of the pump, will ensure that the pump's prime is not lost when it stops running.

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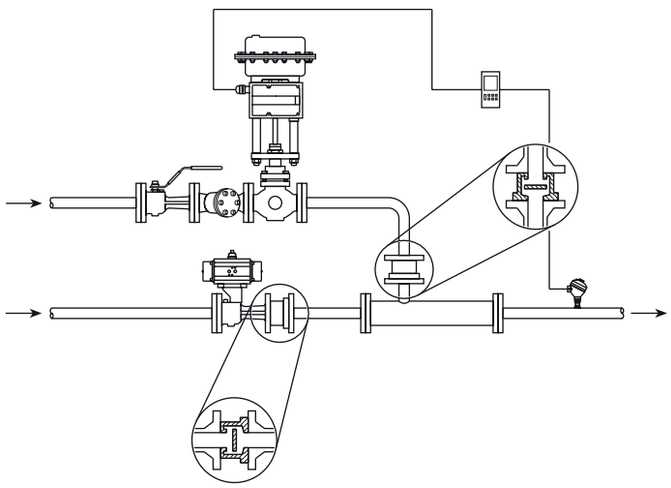
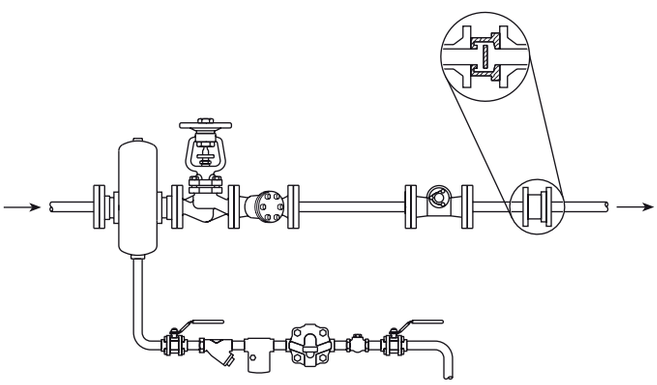
DCV
Wafer Check Valve
Applications Sheet 2

De-superheaters

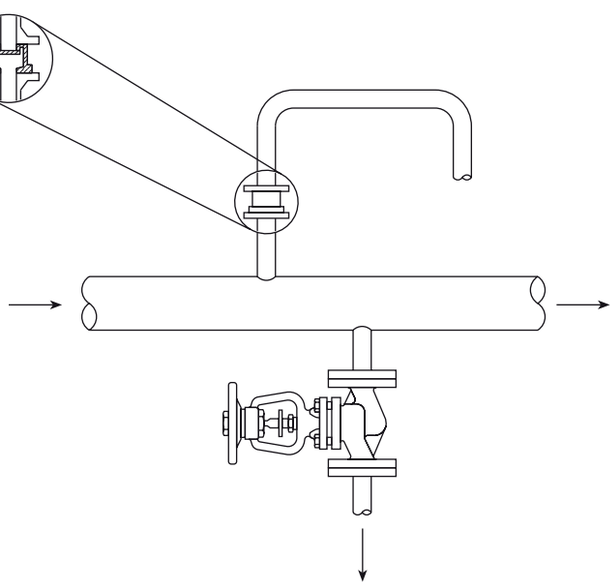
A DCV wafer check valve installed after the control valve will prevent any reverse flow of steam into the water feedline. Another valve in the steam line will prevent reverse flow of water in the steam main.





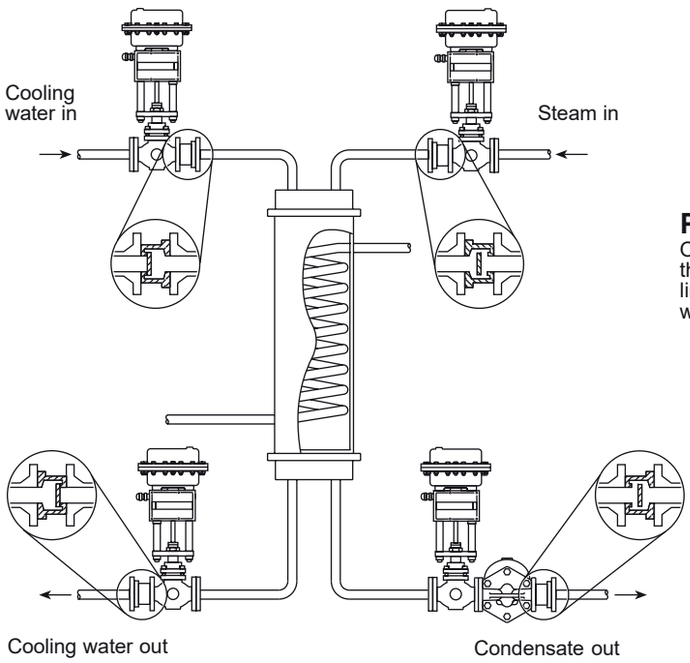
Flowmetering

Downstream of the flowmeter pipeline unit, a DCV wafer check valve should be fitted to prevent damage to the flowmeter internals in the event of reverse flow conditions.



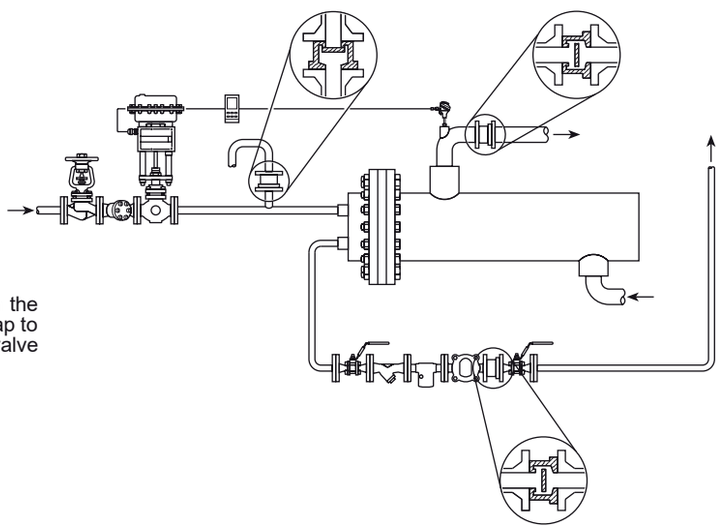
Pipeline draining

Drainage of liquid pipelines is assisted if air is allowed into the system. A DCV wafer check valve fitted as a vacuum breaker will allow this to happen. An EPDM soft faced disc should be fitted.



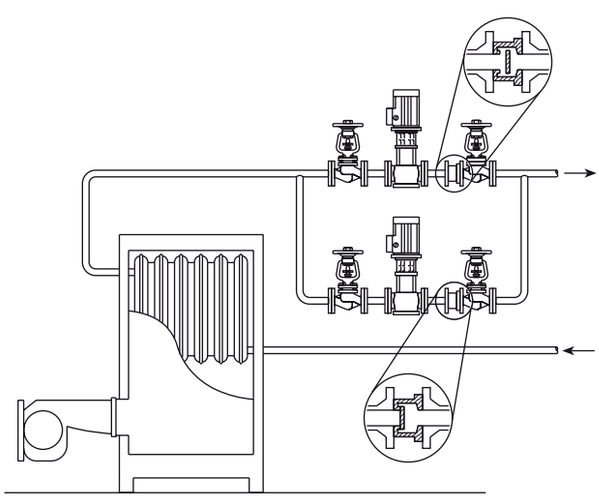
Process vessels

On process applications that require both heating and cooling of the vessel a DCV wafer check valve will protect each of the supply lines against reverse flow. Valves on water duty should be fitted with EPDM soft faced discs.



Heat exchangers

DCV wafer check valves are used to prevent reverse flow in the secondary flow line, and in the condensate line after the float trap to ensure that the exchanger does not flood. A DCV wafer check valve fitted after the control valve will also act as a vacuum breaker.



Hot water heating systems

In dual pump installations where one pump is running and the others is on stand-by, DCV wafer check valves prevent short circuiting through the stand-by pump. Heavy duty springs will help prevent gravity circulation when pumps are shutdown. EPDM soft faced discs should be fitted.

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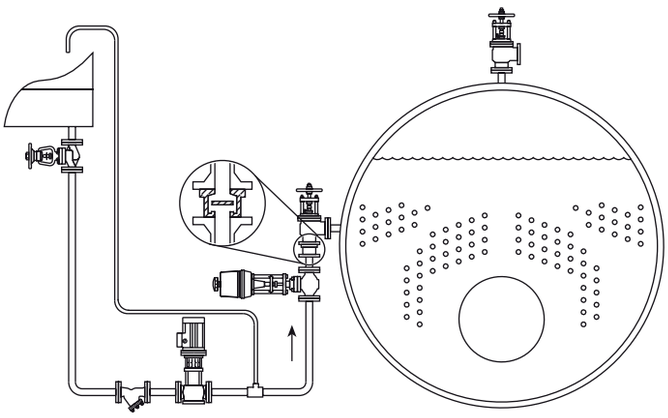
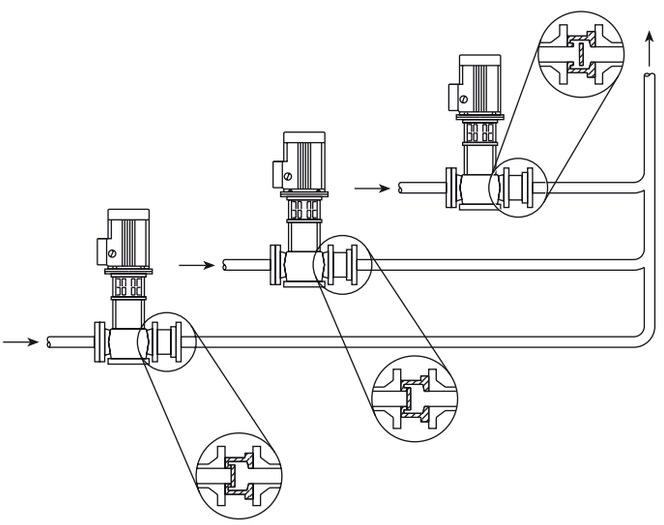
DCV
Wafer Check Valve
Applications Sheet 3



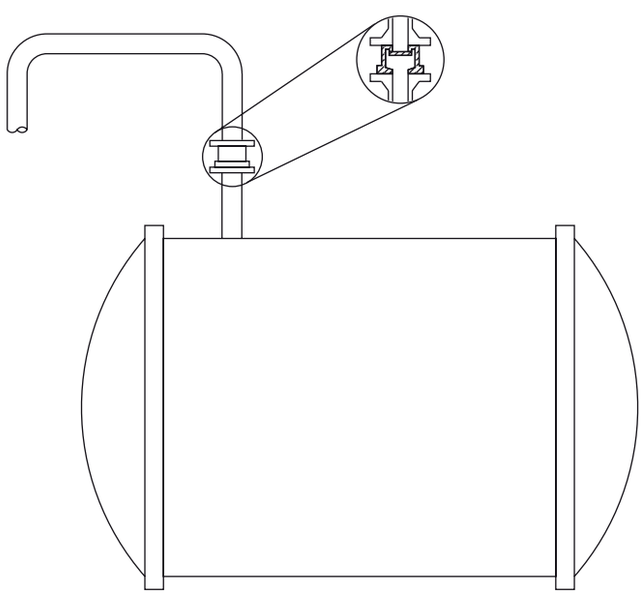
Boiler feedline

A DCV wafer check valve, fitted with an EPDM soft seat and a heavy duty spring, is installed after the boiler feedpump. This ensures that reverse flow back through the pump will not happen when the pump shuts down. The heavy duty spring ensures that gravity flow into the boiler does not occur when both the pump and the boiler are shutdown, therefore protecting the boiler against flooding.



Multiple pump installations

A DCV wafer check valve fitted with a suitable soft seat is installed after each pump. This will ensure that reverse flow does not occur back through the pumps that have stopped running.

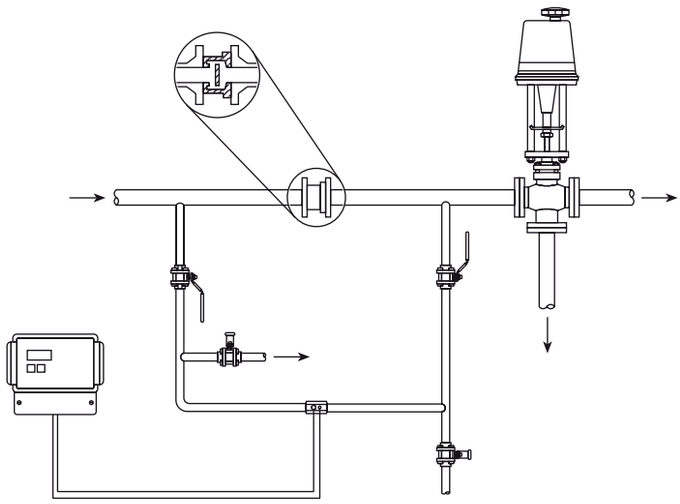


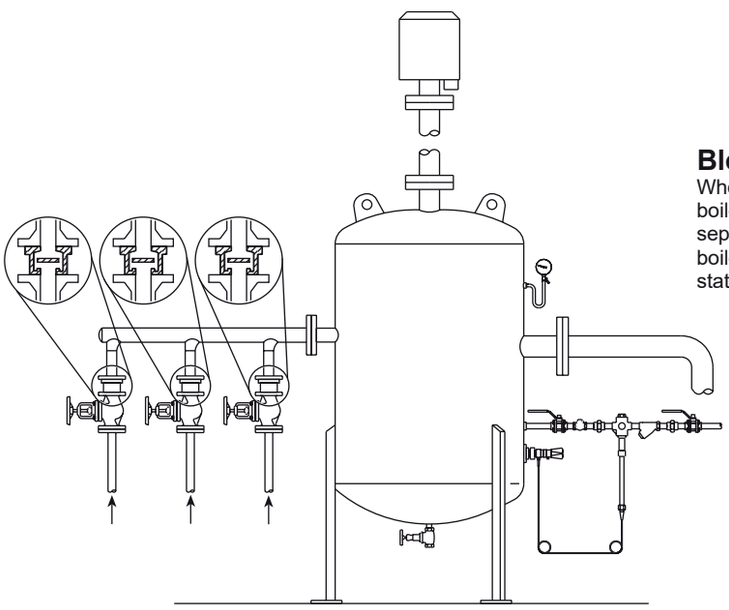
Storage tanks

A DCV wafer check valve fitted in reverse will act as a vacuum breaker, safeguarding the vessel from possible collapse if a vacuum forms inside.

Contamination detection

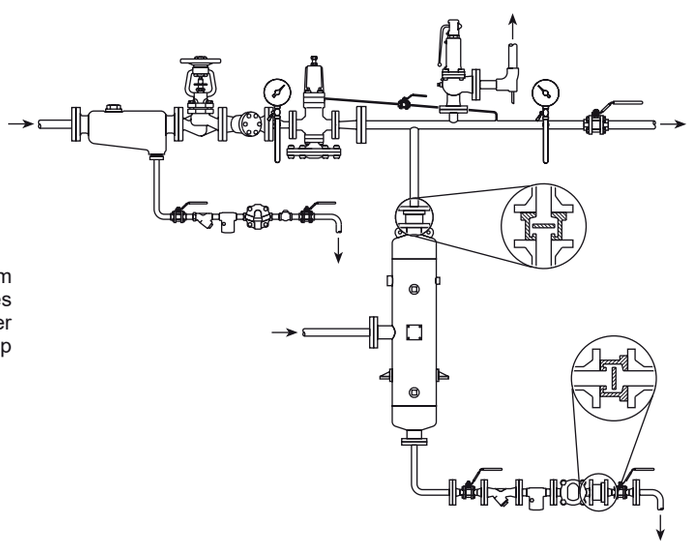
A DCV wafer check valve installed in the main line produces a small pressure drop, ensuring that a proportion of the flow passes through the sampling chamber.





Blowdown vessel

When a blowdown vessel receives blowdown from more than one boiler, a DCV wafer check valve should be installed on each separate blowdown line. This will prevent the blowdown from one boiler flowing back into another boiler. In many countries this is a statutory requirement.



Flash vessel

The DCV wafer check valve installed at the flash steam outlet from the flash vessel, ensures that steam from the make-up valve does not flow back into the flash vessel. The DCV wafer check valve after the FT steam trap ensures that condensate does not flood back up into the flash vessel.

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