Coreline

Thin wafer swing check valves

English

Fig.614 (without spring)
Fig.615 (with spring)

www.coreline.dk

General applications and specifitions

General applications

Petrochemical
Marine
Offshore
Heating
Water
Fire protection

Specifications

Nominal diameter:	DN40-DN1000
Standard differential pressure:	16bar for DN40-DN200,
	10bar for DN250-DN1000
Maximum differential pressure:	40bar for DN40-DN100
	25bar for DN125-DN600
	16bar for DN700-DN1000
Opening pressure:	7mbar for horizontal installation
	12~44mbar for vertical installation
Flange accommodation:	EN1092-1 PN10/PN16/PN25/PN40, ASME B16.5 CLASS150
Face to face:	Industrial standard
Temperature range:	-40°C to +450°C (depending on pressure, medium and material)
Tightness test:	Rubber seated: ISO 5208 Rate A, API 598 Table 6
	Metal seated: ISO 5208 Rate D, API 598 Table 6

CE The check valves meet the safety requirements of the Pressure Equipments Directive 97/23/EC (PED) appendix 1 for fluids of the groups 1 and 2.

Index

Features

High quality and reliability with certificate, robust construction and excellent finish

Flexibility and low weight because of short face-to-face dimension

Minimum head loss due to straight flow direction

Resistance to aggressive media with many material options

Self-centering over the outside diameter of body

1-pc body design makes it easy for recycling

Eyebolt for easy installation

Precisely machined dovetail keep body gasket very firmly for sealing between valve and flange. No other flange gasket is required.

Machined body with excellent finish and certificate

Advanced machining of body to ensure right angle of disc in open position, to avoid disc to hit flange and make noise in pipeline.

Precisely machined dovetail keep the gasket very firmly for sealing between body and disc. The sealing is placed in body part, sheltered from media.

Precisely machining for safe fixing of disc/hinge together with washer and screw, to avoid accident in pipe system.

Integral casting for disc and hinge is strong and reliable solution compare to welding execution.

Spring in quality material to ensure no broken parts in pipeline.

Fig. 614

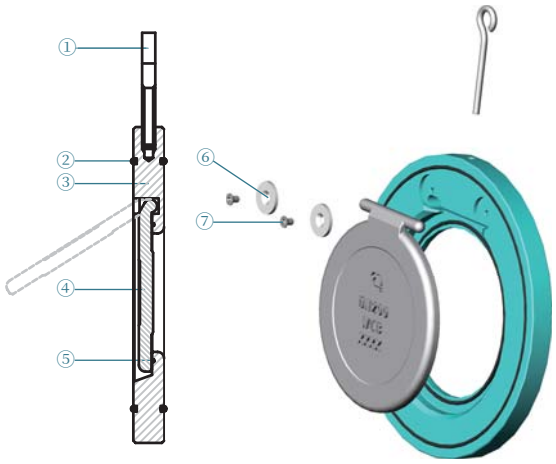
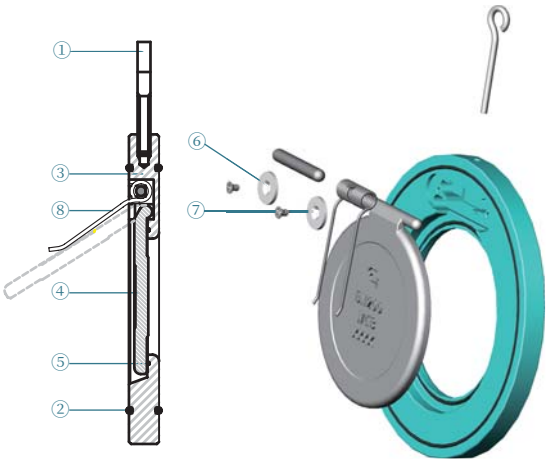


Fig. 615

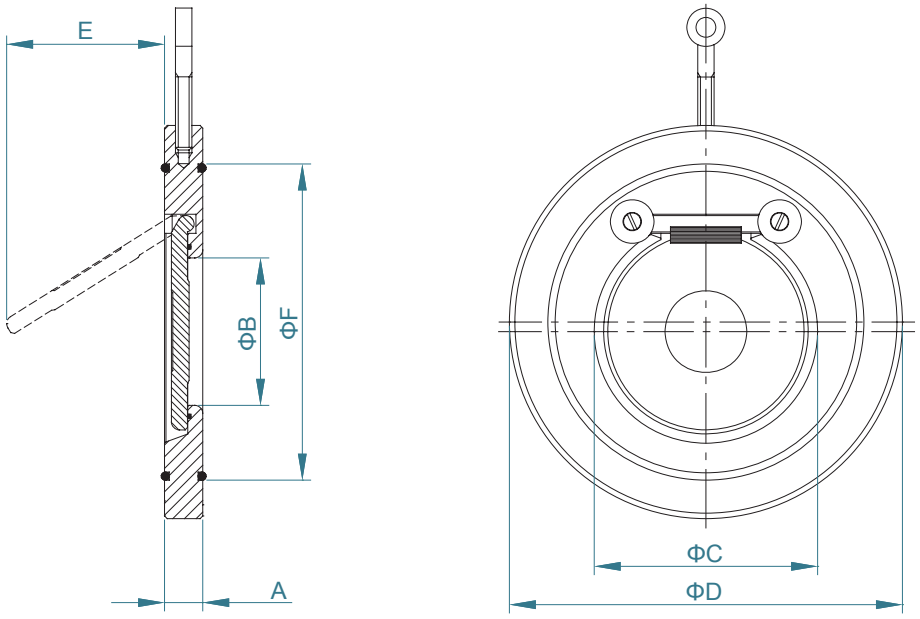


No.	Part name	Description	Material	No.	Part name	Description	Material
1	Eye bolt	Stainless steel	SS316	5	Seat	-20°C~85°C	NBR
			SS304			-30°C~145°C	EPDM
2	O-ring	Same as seat	Same as seat			-20°C~200°C	FPM
3	Body	Steel	Zinc plated			-40°C~200°C	PTFE
		Stainless steel	SS316			-40°C~450°C	Same as body
			SS304	6	Washer	Stainless steel	SS316
			SS201				SS304
		Aluminum bronze	C95800	7	Screw	Stainless steel	SS316
			C95400				SS304
4	Disc	Stainless steel	SS316	8	Spring	Stainless steel	SS321
			SS304				SS304
			SS201			Alloy steel	Inconel
		Aluminum bronze	C95800				
			C95400				

Chart for medium resistance

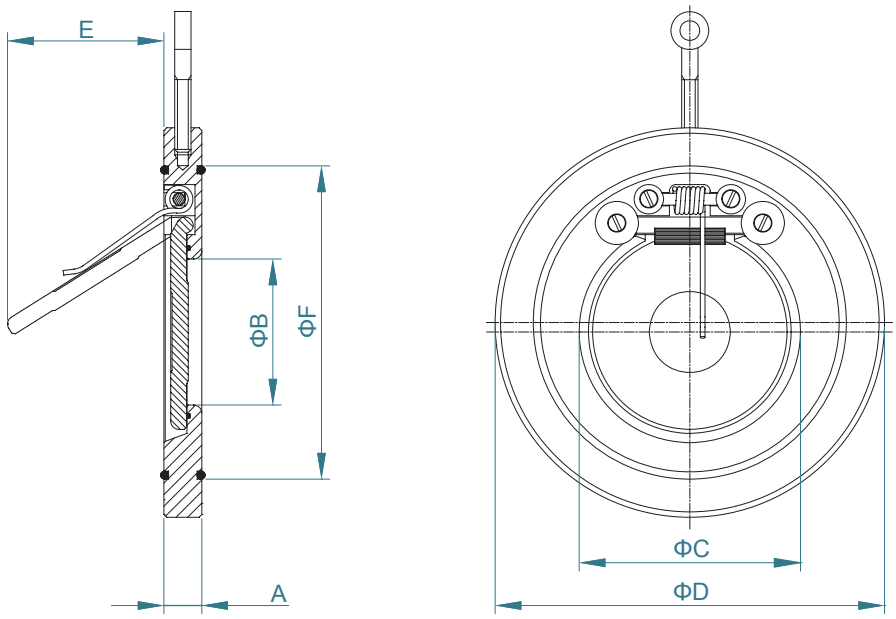
Liner	Suitable for	Unsuitable for
EPDM	Water, steam, alcohol, glycol, caustic soda, ozone,food products, glycerine, milk, oxygen, air, saturated salt, iron chloride, gelatine, dry hydrogen sulphide, potassium chloride, sodium, magnesium chloride	Mineral oil, chlorine compounds, ketones, acetyl, chloride, asphalt, bromine, butane, butyl, petrol, diesel oil, acid, fish oil, freon, chlorine, natural gas, exhaust gas, nitric acid
NBR	Mineral oil, grease, air, seawater, gas, boric acid, aluminium chloride, ammonia gas, citric acid, diesel oil, fish oil, petrol, gelatine, glycerine, magnesium chloride, lactic acid, linseed oil, natural gas	Ozone, acetone, aniline, chlorine dioxide, chromic acid, phenol, ethyl acetate, freon 21+22+23, hot nitric acid, styrene, hydrogen sulphide, isopropyl acetate, oxygen, sulphuric acid
FPM	Oil, mineral acid, grease, phosphorus, tannic acid, gelatine, glycol, oxygen, slaked lime, carbon acid, natural gas, pulp, salt, sugar, sulphur	Hot water, steam, ketone, ammonia gas, acetone, formaldehyde, cellulose acetate, freon, urea, ethanoic acid, methyl
FPM-B	Acid, alkali, amine hot water, steam	Gasoline, naphtha, hydrocarbon solvent, chlorine solvent
PTFE	Resistance to almost any medium	Molten alkali metals, chlorine trifluoride, Chlorine pentafluoride, liquid fluorine
Metal	According to body/disc material	According to body/disc material

Fig. 614 DN40 to DN1000 dimensions



SIZE		A	B	C	D					E	F	Weight [kg]
DN	INCH				PN10	PN16	PN25	PN40	CLASS150			
DN40	1 1/2”	14	22	39	94	94	94	94	85.7	25	76.2	0.9
DN50	2”	14	32	48	109	109	109	109	104.8	37	86.2	1.1
DN65	2 1/2”	14	40	59	129	129	129	129	123.8	50	107.2	1.5
DN80	3”	14	54	76	144	144	144	144	136.5	61	121.2	1.8
DN100	4”	18	70	96	164	164	170	170	174.6	77	146.2	3.0
DN125	5”	18	92	115	194	194	196		196.8	94	175	3.4
DN150	6”	20	112	138	220	220	226		222.2	100	199.2	5.4
DN200	8”	22	154	183	275	275	286		279.4	152	255.2	7.7
DN250	10”	26	200	232	330	330	343		339.7	180	316.2	13.2
DN300	12”	32	240	272	380	386	403		409.5	215	361.2	23.3
DN350	14”	38	269	305	440	446	460		450.9	245	402.4	38
DN400	16”	44	308	349	491	498	517		514.4	285	454.4	52.5
DN450	18”	50	360	398.6	541	558	567		549.3	335	512	76.3
DN500	20”	56	405	445.4	596	620	627		606.4	398	575.2	98.5
DN600	24”	62	486	529	698	737	734		717.5	453	678	136
DN700	28”	67	588	636	813	807			831.8	512	769.6	170.5
DN800	32”	78	622	687	920	914			936.8	588		231.2
DN900	36”	95	720	794	1020	1014			1047.7	642		280
DN1000	40”	105	810	883	1127	1131			1162.1	723		354

Fig. 615 DN40 to DN600 dimensions



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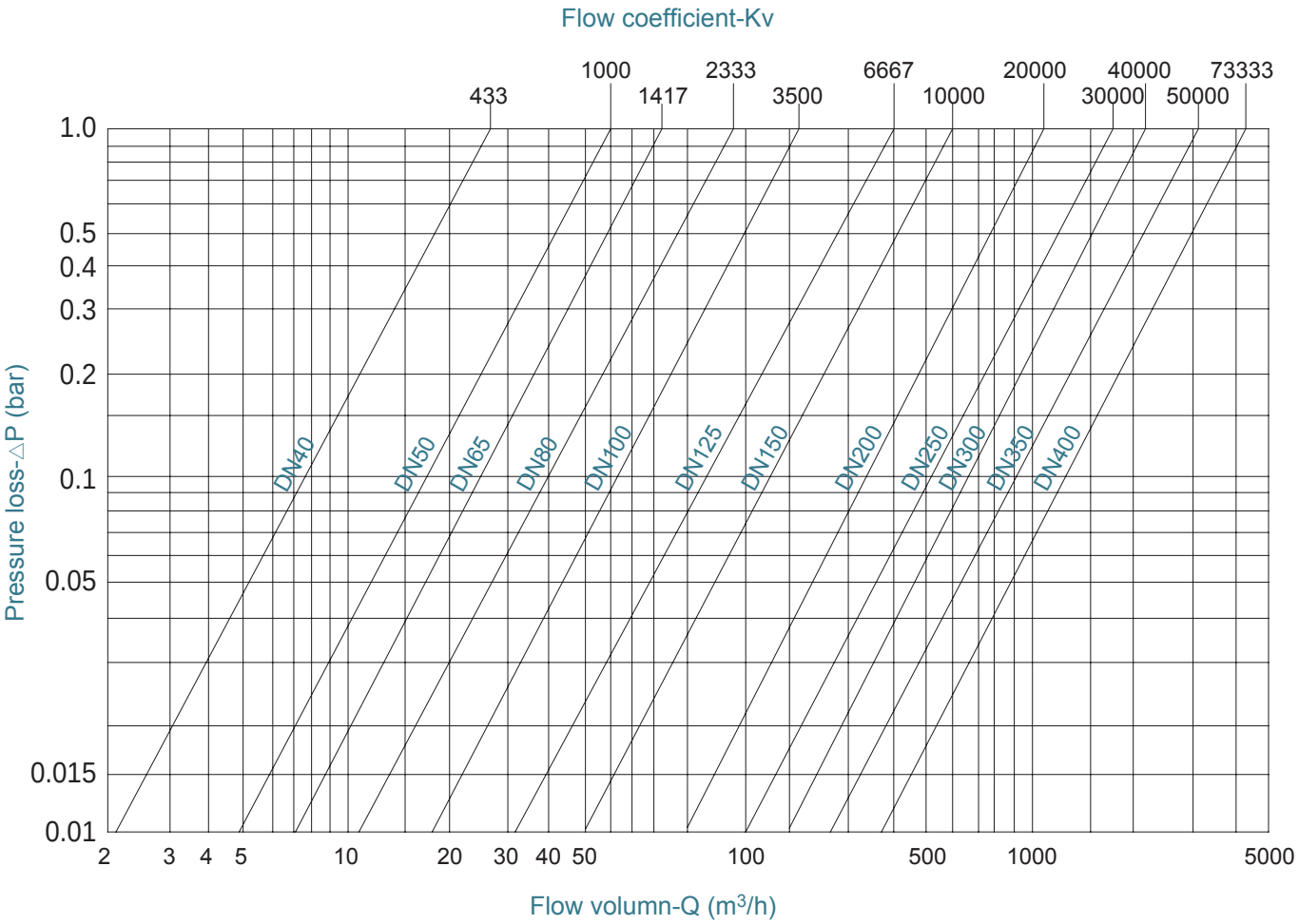
DN40	1 1/2”	14	22	39	94	94	94	94	85.7	25	76.2	0.9
DN50	2”	14	32	48	109	109	109	109	104.8	37	86.2	1.1
DN65	2 1/2”	14	40	59	129	129	129	129	123.8	50	107.2	1.5
DN80	3”	14	54	76	144	144	144	144	136.5	61	121.2	1.8
DN100	4”	18	70	96	164	164	170	170	174.6	77	146.2	3.0
DN125	5”	18	92	115	194	194	196		196.8	94	175	3.4
DN150	6”	20	112	138	220	220	226		222.2	100	199.2	5.4
DN200	8”	22	154	183	275	275	286		279.4	152	255.2	7.7
DN250	10”	26	200	232	330	330	343		339.7	180	316.2	13.2
DN300	12”	32	240	272	380	386	403		409.5	215	361.2	23.3
DN350	14”	38	269	305	440	446	460		450.9	245	402.4	38
DN400	16”	44	308	349	491	498	517		514.4	285	454.4	52.5
DN450	18”	50	360	398.6	541	558	567		549.3	335	512	76.3
DN500	20”	56	405	445.4	596	620	627		606.4	398	575.2	98.5
DN600	24”	62	486	529	698	737	734		717.5	453	678	136

Pressure loss chart



This chart shows the pressure loss-△P over the flow volumn-Q.

The flow coefficient - Kv can be calculated according to the below formula:

Liquild:

$$K_V = Q * \sqrt{\frac{W}{\Delta P}}$$

Gas:

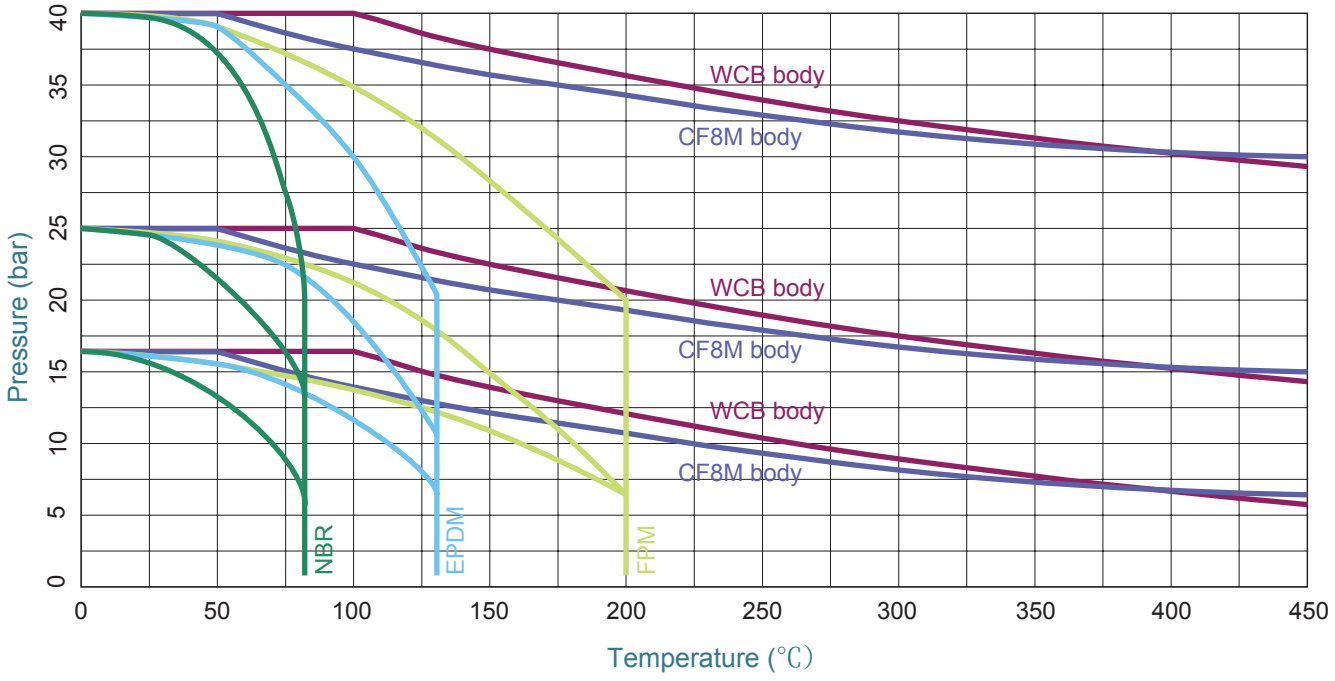
$$K_V = \frac{V_N}{514} * \sqrt{\frac{G*T}{\Delta P * P_d}}$$

K_V:	Flow coefficient
Q:	Maximum flow volumn, m^3/h
W:	Exact weight, kg/m^3
△P:	Pressure loss, bar
V_N:	Maximum flow, Nm^3/h
G:	Exact weight, kg/Nm^3
T:	Absolute temperature, Kelvin
P_d:	Absolute pressure downstream, bar

Opening pressure—zero flow differential pressure(mbar)

SIZE		614 Without spring		615 With spring	
DN	INCH	Horizontal flow	Vertical flow	Horizontal flow	Vertical flow
DN40	1 1/2”	0.3	5	7	12
DN50	2”	0.3	5	7	12
DN65	2 1/2”	0.3	7	7	14
DN80	3”	0.3	10	7	17
DN100	4”	0.3	12	8	20
DN125	5”	0.3	12	8	20
DN150	6”	0.3	18	8	26
DN200	8”	0.3	20	8	28
DN250	10”	0.3	20	8	28
DN300	12”	0.3	25	8	33
DN350	14”	0.3	25	9	34
DN400	16”	0.3	25	9	34
DN450	18”	0.3	30	9	39
DN500	20”	0.3	30	9	39
DN600	24”	0.3	35	9	44
DN700	28”	0.3	35		
DN800	32”	0.3	35		
DN900	36”	0.3	40		
DN1000	40”	0.3	45		

Pressure temperature curve



Coreline Fig. 614, 615 thin wafer check valve is a self-operating check valve designed to allow the media just flow in one direction and prevent backflow of media. The disc opens in case that the upstream pressure which is called “cracking pressure” exceeds the downstream pressure and the spring’s elasticity. If the flow velocity upstream of Coreline Fig. 614, 615 thin wafer check valve decreases or ceases, the gravity and/ or spring will force the disc to a close position prior to flow reversal. This creats a positive shutoff against flow reserval and alleviates the potential for water hammer.

Warning

- Pulsation/vibrant media flow damage the valve.
- Spinners or fragments may prevent the valve from closing.
- Make sure that the dimensioning of the size is correct.
- Check identification plate to ensure the check valve has right material for application (Fig. 1)

Fig. 1 Identification plate for thin check valve

Coreline Flow

TYPE:	614	BAR MAX:	16bar	BODY:	Steel
DN:	50	TEMP.MAX:	+85℃	DISC:	SS201
FLANGES:	PN10-16	TEMP.MIN:	-20℃	SEAT:	NBR

CE

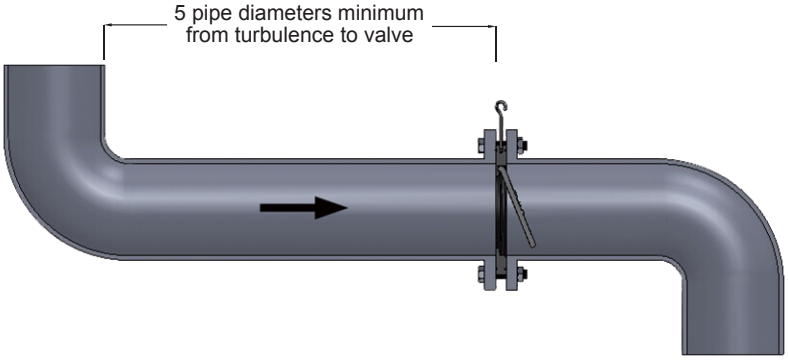
Handling and lifting instructions

- Only use eyebolt or body for lifting. Never use disc. Don’t drop or damage the valve.

Installation instructions

- Welding operations may not be performed nearby the check valves since welding drops can damage the internal components.
- The pipes must be depressurized and purged before installation in order to avoid any danger to the operator or damage to pipeline.
- The pipe work and flanges must be correctly aligned to ensure tightness to ambient and avoid stress on valve.
- The check valve shall be installed minimum 5 pipe diameters from sources of turbulence. (Fig. 2)

Fig. 2



- Ensure that the surfaces of the flanges are clean and undamaged.
- Make sure that the valve can be easily fitted between flanges without damaging the surface of the flanges.
- Ensure the inner flange diameter is enough and suitable for disc movement.
- Check that the flow direction is the same as the one indicated by an arrow on the valve's label.
- Permissible orientation is horizontal or vertical upward flow. (Fig. 4)
- For horizontal installation, eyebolt must be straight upwards. (Fig. 5)

Fig. 4 Flow orientation

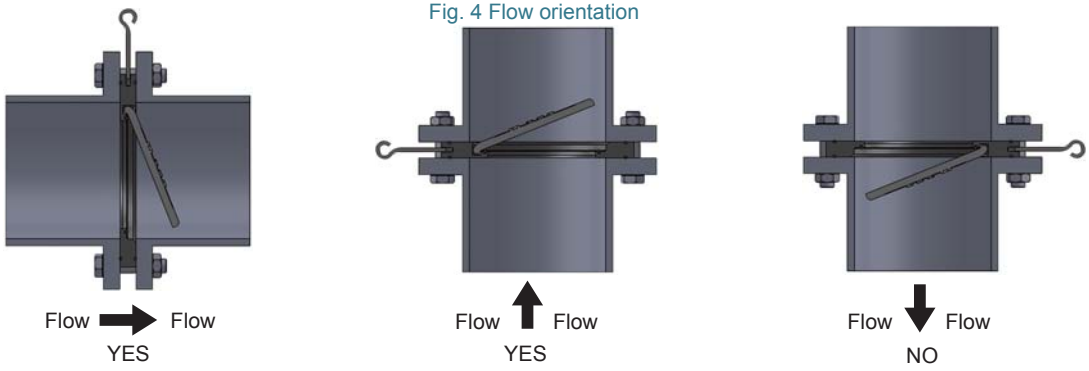


Fig. 5

Storage instructions

- Store the check valve in a secure area to protect it against dirts and damp.
- Protect valve discs and flange mating surfaces against any possible damage.
- If long term storge is required, cover the rubber surface with a thin film of grease (NOT mineral grease for EPDM).
- Make sure the rubber surface should never be exposed to sunlight or ozone for extended period.

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