

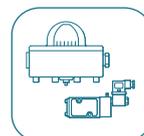
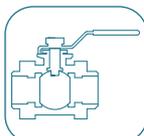
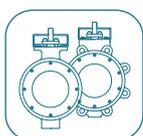
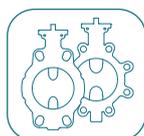
## Thin wafer swing check valve

**Fig.614 : without spring**

**Fig.615 : with spring**



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# General applications and specifications

## 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-DN80 25bar for DN100-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

## Index

page 3	Design features
page 4	Part list and chart for medium resistance
page 5	Fig. 614 Dimensions
page 6	Fig. 615 Dimensions
page 7	Pressure loss
page 8	Opening pressure and pressure temperature rating

# Design features

## Features

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

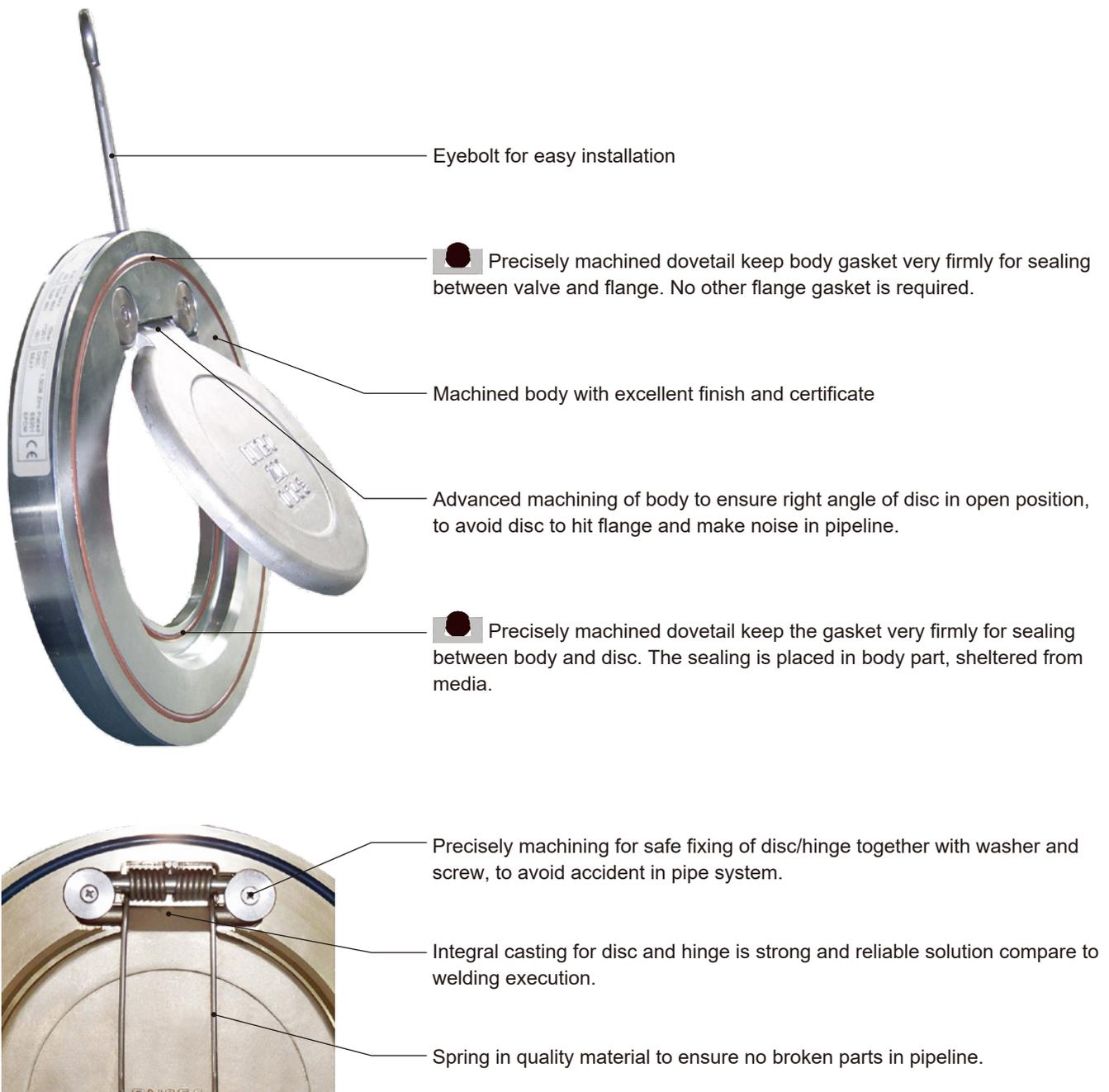
**Flexibility and low weight** because of short face-to-face dimension

**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



# Part list and chart for medium resistance

Fig. 614

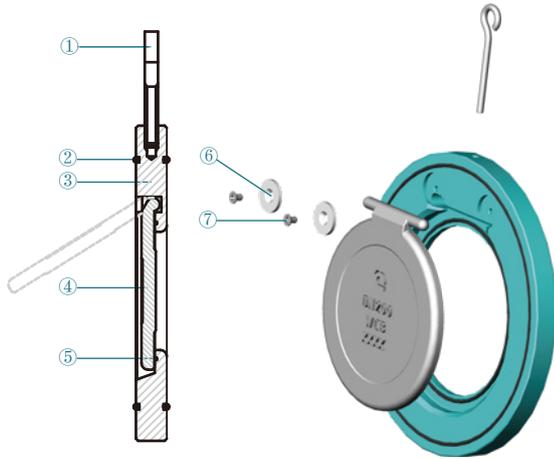
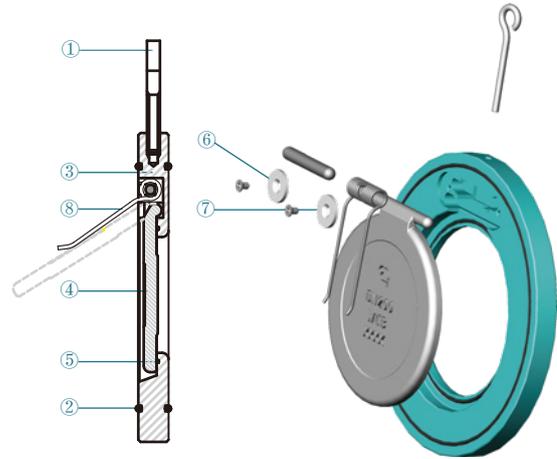


Fig. 615



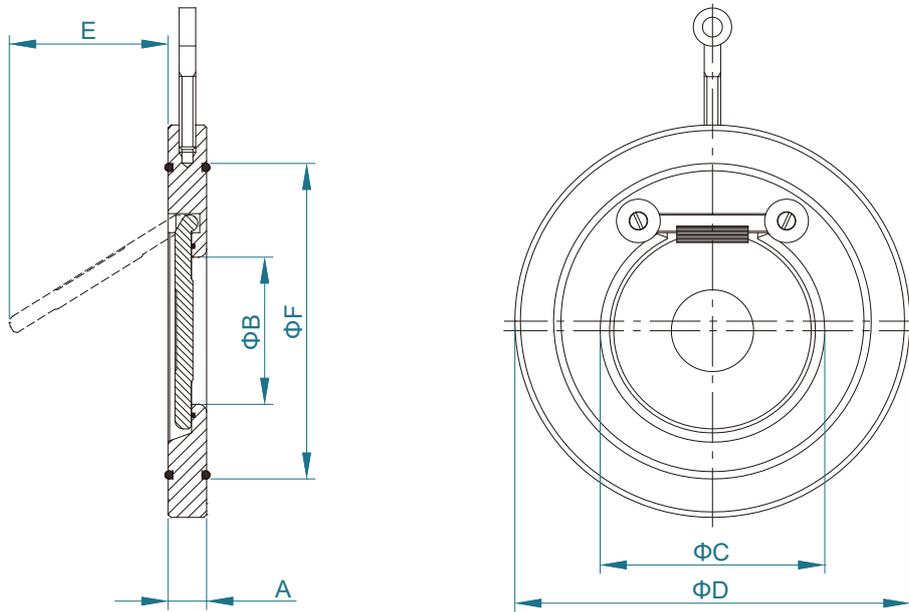
No.	Part name	Description	Material	No.	Part name	Description	Material	
1	Eye bolt	Stainless steel	SS316	5	Seat	-20°C~85°C	NBR	
			SS304			-30°C~120°C	EPDM	
2	O-ring	Same as seat	Same as seat			-20°C~200°C	FPM	
							-40°C~200°C	PTFE
						-40°C~450°C	Same as body	
3	Body	Steel	Zinc plated		6	Washer	Stainless steel	SS316
		Stainless steel	SS316					SS304
			SS304		SS201			
			Aluminum bronze		C95800	7	Screw	Stainless steel
		C95400			SS304			
		4	Disc	Stainless steel	SS316	8	Spring	Stainless steel
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 Dimensions

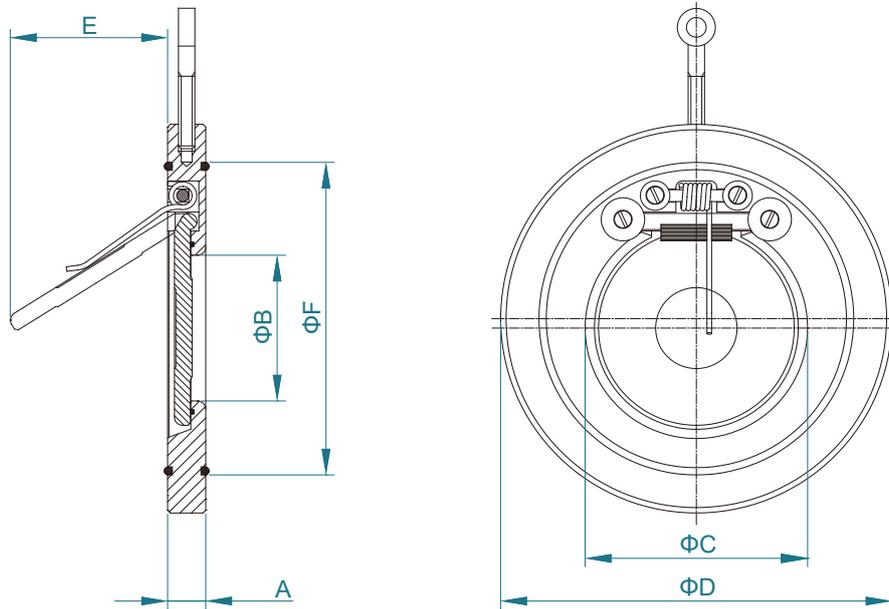
Fig. 614 DN25 to DN1000 dimensions



SIZE		A	B	C	D					E	F	Weight [kg]
DN	INCH				PN10	PN16	PN25	PN40	CLASS150			
DN25	1"	14	13	29	73	73	73	73	66.7	14	63.2	0.5
DN32	1 1/4"	14	13	29	84	84	84	84	76.2	16	63.2	0.6
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		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

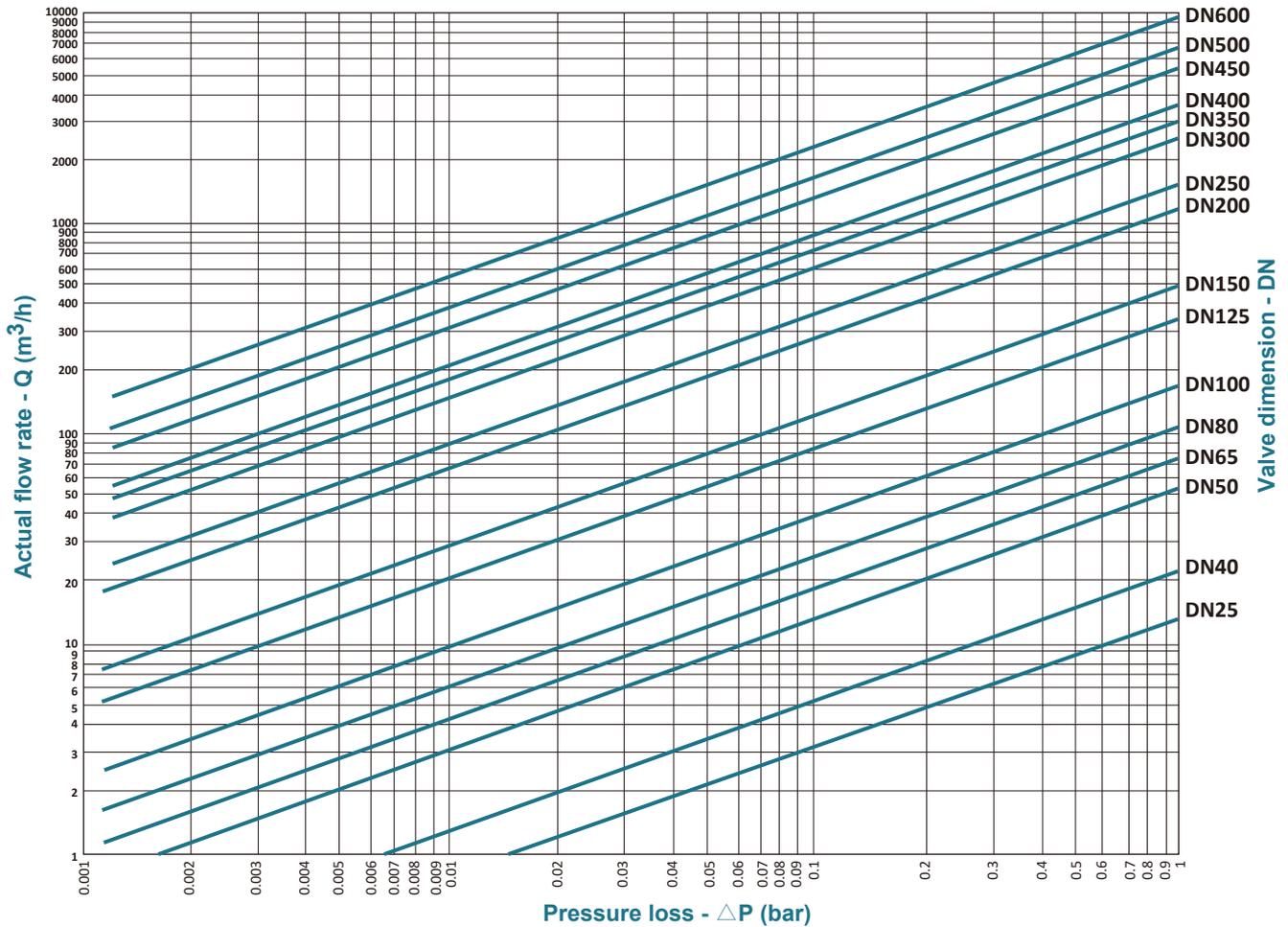
## Fig. 615 Dimensions

Fig. 615 DN25 to DN600 dimensions



SIZE		A	B	C	D					E	F	Weight [kg]
DN	INCH				PN10	PN16	PN25	PN40	CLASS150			
DN25	1"	14	13	29	73	73	73	73	66.7	14	63.2	0.5
DN32	1 1/4"	14	13	29	84	84	84	84	76.2	16	63.2	0.6
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		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



The pressure drop diagram shown above is based on water (H<sub>2</sub>O) at a temperature of 20°C and a specific weight of 1000 kg/m<sup>3</sup> (equivalent to 1 kg/dm<sup>3</sup>). The flow axis marked as Q (m<sup>3</sup>/h) refers to actual flow for medium water under these conditions.

For other fluids (liquids or gases), the flow must first be converted to equivalent water flow using the following formula:

$$Q_e = Q \cdot \sqrt{\frac{\rho}{1000}}$$

For liquids:

$$K_v = Q \cdot \sqrt{\frac{\rho}{\Delta P}} = Q_e \cdot \sqrt{\frac{1000}{\Delta P}}$$

For gases (non-critical flow):

$$K_v = \frac{Q}{514} \cdot \sqrt{\frac{\rho \cdot T}{\Delta P \cdot P_d}} = \frac{Q_e}{514} \cdot \sqrt{\frac{1000 \cdot T}{\Delta P \cdot P_d}}$$

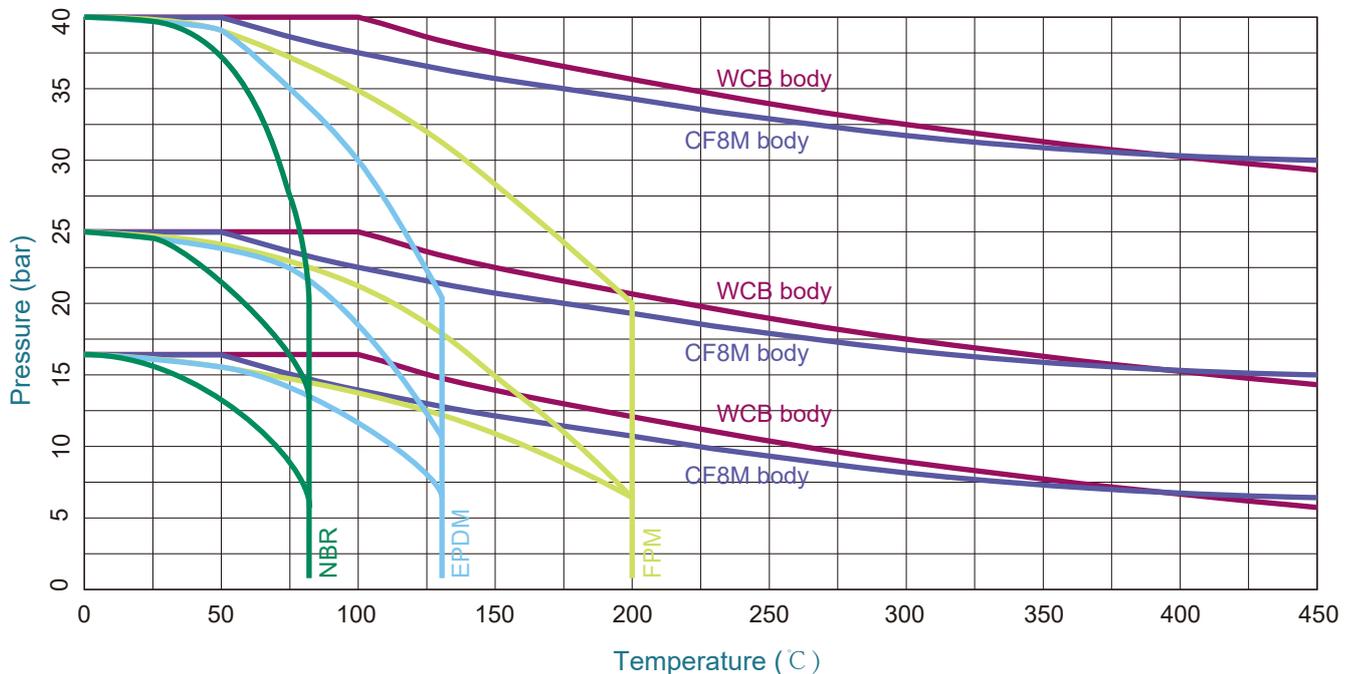
Symbol	Meaning	Unit
$K_v$	Flow coefficient	m <sup>3</sup> /h ( $\Delta P = 1$ bar, 20°C water)
Q	Actual flow rate under operating conditions	m <sup>3</sup> /h
$\rho$	Fluid density at operating conditions	kg/m <sup>3</sup>
$Q_e$	Equivalent water flow rate	m <sup>3</sup> /h
$\Delta P$	Pressure drop across the valve	bar
T	Absolute temperature	Kelvin (K)
$P_d$	Absolute pressure downstream of the valve	bar

# Opening pressure and pressure temperature rating

## Opening pressure—zero flow differential pressure(mbar)

SIZE		614 Without spring		614 With spring	
DN	INCH	Horizontal flow	Vertical flow	Horizontal flow	Vertical flow
DN25	1"	0.3	5	7	12
DN32	1 1/4"	0.3	5	7	12
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



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