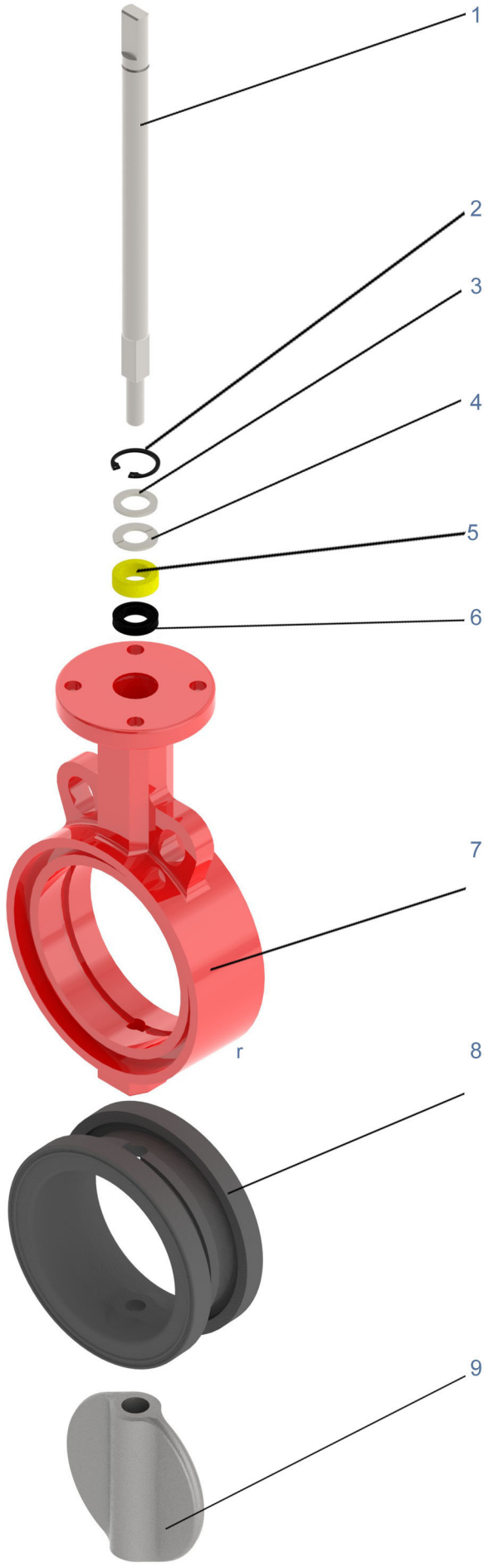
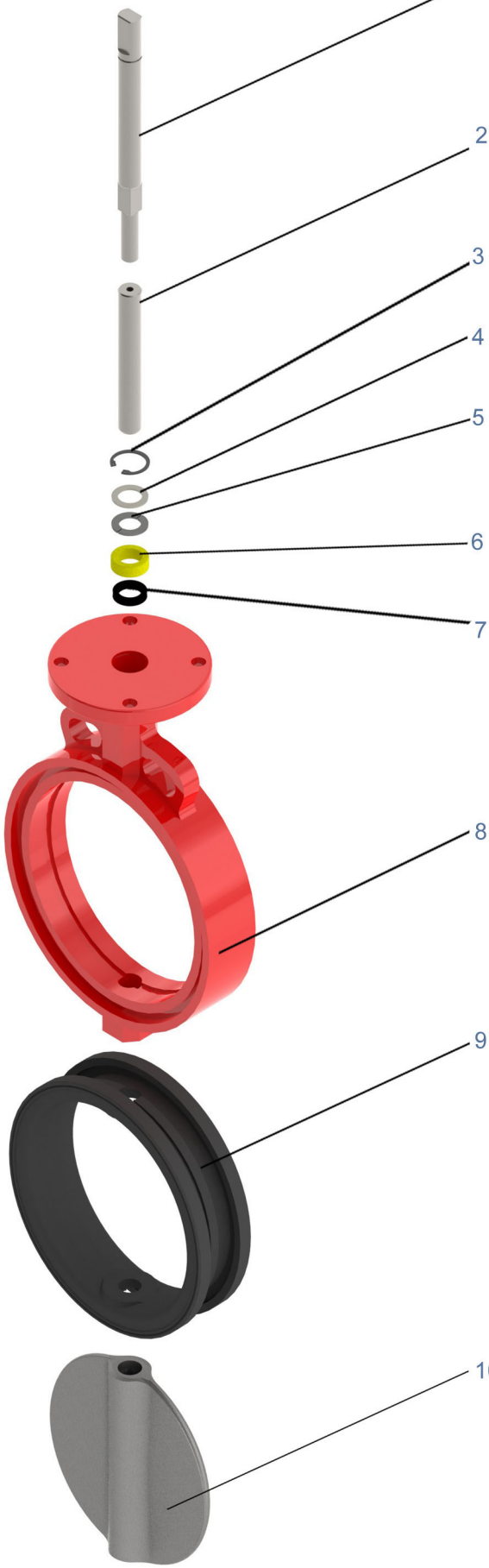
Main Spare Part Material Quality（DN50-DN150）



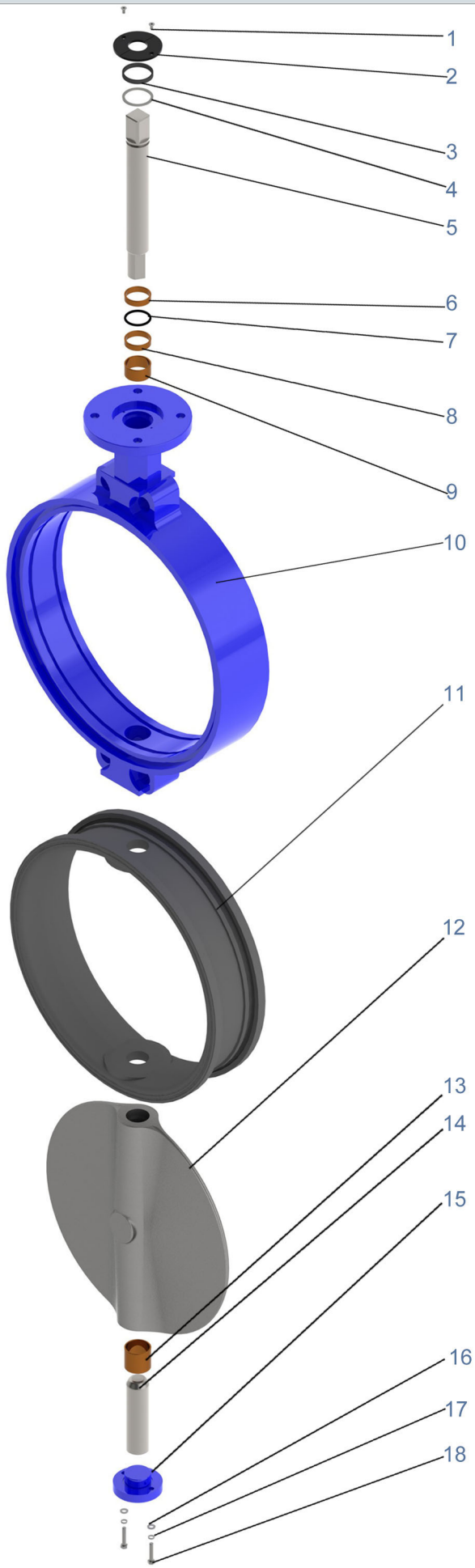
1	Shaft	SS410 SS304 SS431 SS316 MONEL K500 17-4PH C63000 C92200 2507 2205
2	Retaining Ring	Sk7
3	Thrust Washer	Staunless Steel Carbon Steel
4	Shaft Retainer	Staunless Steel Carbon Steel
5	Bushing	PTFE
6	“O” Ring	NBR VITON
7	Body	GG20 GG25 GGG40 GGG45 GGG50 WCB WCC LCC LCB CF8 CF8M CF3 CF3M C95800 C95400
8	Body seat	NBR(BUNA) EPDM HEPDM FKM(VITON) Polychloroprene Natural Rubber Sillicon Rubb
9	Disc	GGG40 GGG45 GGG50 WCB WCC LCC LCB CF8 CF8M CF3 CF3M C95800

Main Spare Part Material Quality（DN200-DN300）



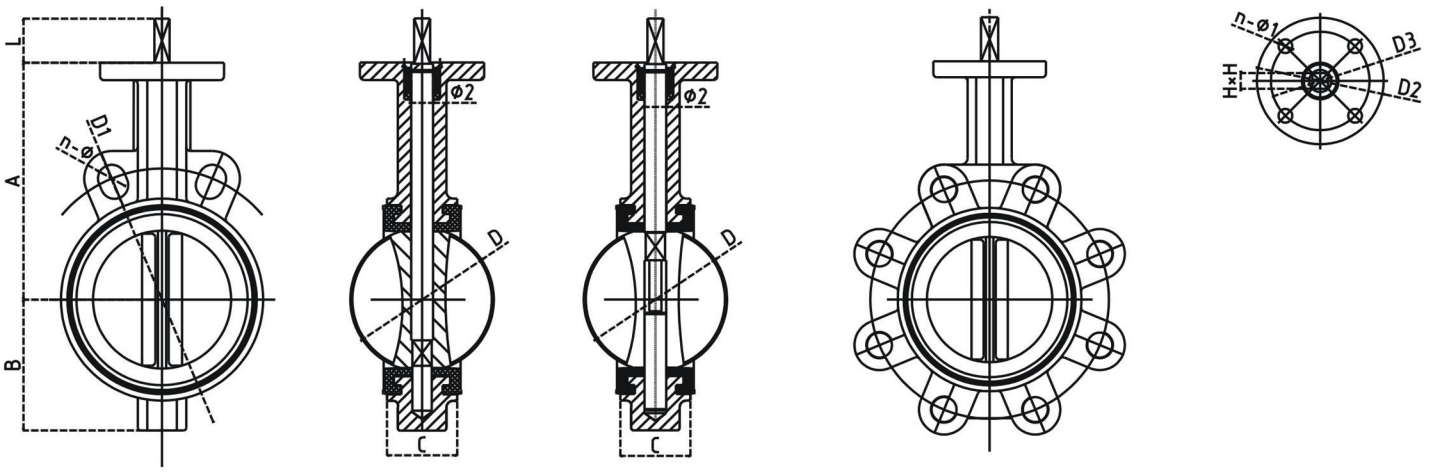
1	Up Shaft	SS410 SS304 SS431 SS316 MONEL K500 17-4PH C63000 C92200 2507 2205
2	Down Shaft	MONEL K500 17-4PH C63000 C92200 2507 220
3	Retaining Ring	Sk7
4	Thrust Washer	Staunless Steel Carbon Steel
5	Shaft Retainer	Staunless Steel Carbon Steel
6	Bushing	PTFE
7	"O"Ring	NBR VITON
8	Body	GG20 GG25 GGG40 GGG45 GGG50 WCB WCC LCC LCB CF8 CF8M CF3 CF3M C95800 C95400
9	Body seat	NBR(BUNA) EPDM HEPDM FKM(VITON) Polychloroprene Natural Rubber Sillicon Rubb
10	Disc	GGG40 GGG45 GGG50 WCB WCC LCC LCB CF8 CF8M CF3 CF3M C95800

Main Spare Part Material Quality（DN350-DN1200）



1	Screw	Stainless Steel
2	Retainer Ring	Q235
3	Seal	NBR EPDM
4	Gasket	Stainles Steel
5	Shaf	SS410 SS304 SS431 SS316 C63000 Monel
6	Short Bushing	Bronze
7	"O"Ring	NBR EPDM
8	Short Bushing	Bronze
9	Long Bushing	Bronze
10	Body	GGG40 GGG45 GGG50 WCB WCC LCC LCB CF8 CF8M CF3 CF3M C95800 C95400
11	Body Seat	NBR(BUNA-N) EPDM FKM(VITON) Polychloroprene Natural Rubber Sillicon Rubber
12	Disc	GGG40 GGG45 GGG50 CF8 CF8M CF3 CF3M C95800 C95400 WCB WCC LCC LCB
13	Long Bushing	Bronze
14	Down Shaft	SS410 SS304 SS316 SS431 C63000 Monel
15	End Cover	GGG40 GGG45 GGG50 WCB WCC LCC LCB CF8 CF8M CF3 CF3M C95800 C95400
16	Gasket	Stainless Steel
17	Spring Washer	Stainless Steel
18	Screw	Stainless Steel

Drawing (50-350)



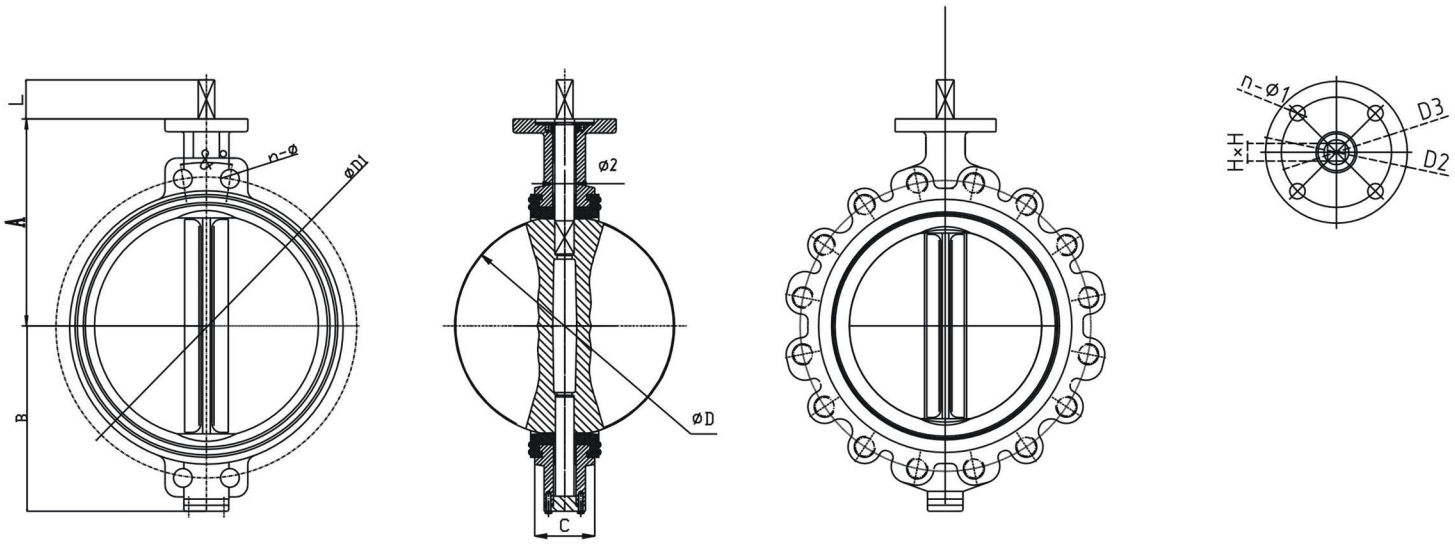
Outline Dimensions

SIZE	A	B	C	D	ø2	ISO5211	D2	D3	n-ø1	D1	n-ø	H*H	L
50	140	61	43	52.6	12.6	F07	90	70	4-10	120.7	4-19	11*11	28
65	150	68	46	64.3	12.6	F07	90	70	4-10	139.7	4-19	11*11	28
80	158	76	46	78.8	12.6	F07	90	70	4-10	152.4	4-19	11*11	28
100	176	92	52	104	15.77	F07	90	70	4-10	190.5	8-19	11*11	28
125	190	107	56	123.3	18.92	F07	90	70	4-10	215.9	8-22	14*14	28
150	211	120	56	155.7	18.92	F07	90	70	4-10	241.3	8-22	14*14	28
200	235	151	60	202.4	22.1	F10	125	102	4-12	298.5	8-22	17*17	35
250	265	186	68	250.42	28.45	F10	125	102	4-12	362	12-25	22*22	35
300	305	211	78	301.5	31.6	F10	125	102	4-12	431.8	12-25	22*22	35
350	368	267	78	333.5	31.6	F10	125	102	4-12	476.3	12-29	22*22	35

Connection Dimensions

	Outer Diameter of flange			Diameter of center Circle			Number and Diameter of bolt		
DN	150LB	PN10	PN16	150LB	PN10	PN16	150LB	PN10	PN16
50	150	165	165	120.7	125	125	4-19	4-18	4-18
65	180	185	185	139.7	145	145	4-19	4-18	4-18
80	190	200	200	152.4	160	160	4-19	8-18	8-18
100	230	220	220	190.5	180	180	8-19	8-18	8-18
125	255	250	250	215.9	210	210	8-22	8-18	8-18
150	280	285	285	241.3	240	240	8-22	8-23	8-23
200	345	340	340	298.5	295	295	8-22	8-23	12-23
250	405	395	405	362	350	355	12-26	12-23	12-26
300	485	445	460	431.8	400	410	12-26	12-23	12-26
350	535	505	520	476.3	460	470	42002	16-23	16-26

Drawing (400-600)



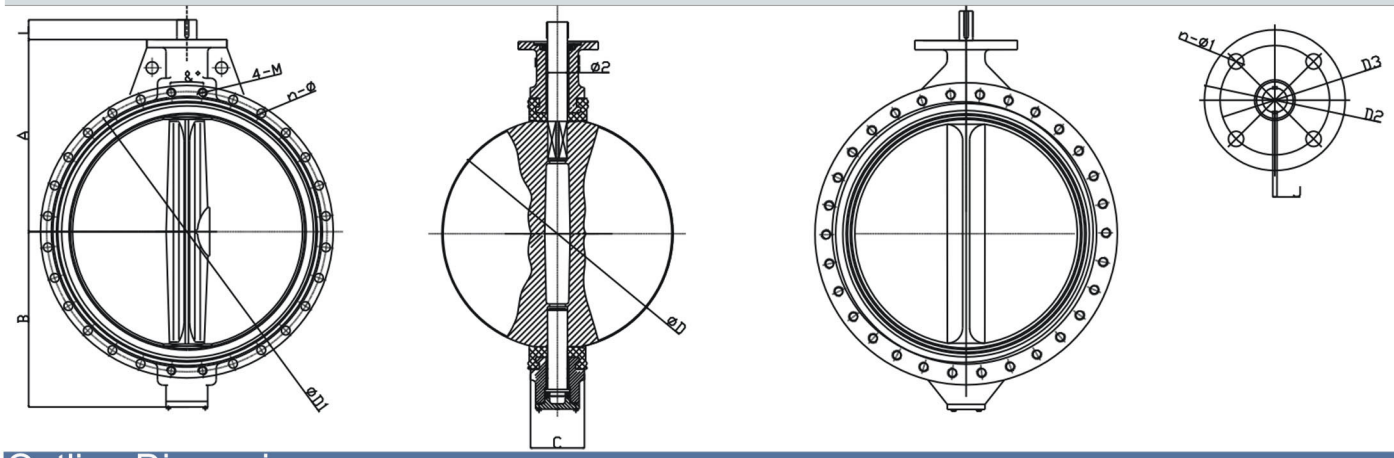
Outline Dimensions

SIZE (mm)	A	B	C	D	ø2	ISO5211	D2	D3	n-ø1	D1	n-ø	&°	H	L
400	400	310	102	389.6	37.95	F14	175	140	4-18	515	16-26	22.5	27	55
450	422	340	114	440.5	42.86	F14	175	140	4-18	565	20-26	18	27	55
500	440	362	127	491.6	45.72	F14	175	140	4-18	620	20-26	18	36	55
600	565	452	154	592.5	53.98	F16	210	165	4-22	725	20-30	18	36	60

Connection Dimensions

	Outer Diameter of flange			Diameter of center Circle			Number and Diameter of bolt		
DN	150LB	PN10	PN16	150LB	PN10	PN16	150LB	PN10	PN16
400	595	565	580	539.8	515	525	16-29	16-26	16-30
450	635	615	640	577.9	565	585	16-32	20-26	20-30
500	700	670	715	635	620	650	20-32	20-26	20-33
600	815	780	840	749.3	725	770	20-35	20-30	20-36

Drawing (700-1200)



Outline Dimensions

SIZE (mm)	A	B	C	D	ø2	ISO5211	D2	D3	n-ø1	D1	n-ø	4-M	&°	L	J
700	624	520	163	695	63.35	F25	300	254	8-18	840	20-30	4-27	15	80	18
800	672	591	188	794.7	63.35	F25	300	254	8-18	950	20-33	4-30	15	80	18
900	720	656	203	864.7	75	F25	300	254	8-18	1050	24-33	4-30	12.85	100	20
1000	800	722	216	965	85	F25	300	254	8-18	1160	24-36	4-33	12.85	120	22
1200	941	864	276	1160.6	105	F30	350	298	8-22	1380	28-39	4-36	11.25	140	28

Connection Dimensions

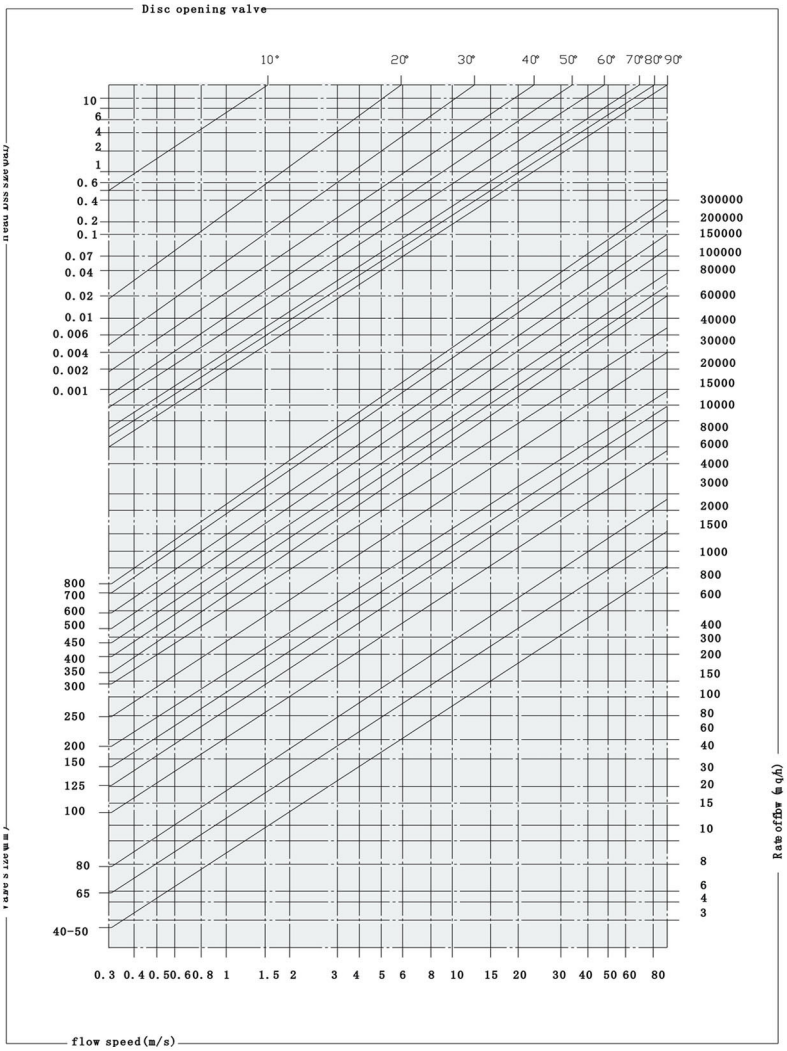
	Outer Diameter of flange			Diameter of center Circle			Number and Diameter of bolt		
DN	150LB	PN10	PN16	150LB	PN10	PN16	150LB	PN10	PN16
700	927	895	910	863.6	840	840	28-35	24-31	24-37
800	1060	1015	1025	977.9	950	950	28-41	24-34	24-41
900	1168	1115	1125	1200	1050	1050	32-41	28-34	28-41
1000	1289	1230	1255	1315.4	1160	1170	36-41	28-37	28-44
1200	1511	1455	1485	1422.4	1380	1390	44-42	32-41	32-50

Torque values-Nm

SIZE		APPICATION In Water			APPICATION In Air		
mm	inch	Deltap 6 bar (Nm)	Deltap 10 bar (Nm)	Deltap 16 bar (Nm)	Deltap 6 bar (Nm)	Deltap 10 bar (Nm)	Deltap 16 bar (Nm)
DN50	2	9	10	10	12	13	13
DN65	2 ½	14	15	16	19	20	22
DN80	3	19	28	24	25	37	32
DN100	4	29	31	41	38	41	54
DN125	5	46	54	63	61	72	84
DN150	6	74	90	99	98	120	132
DN200	8	126	151	198	168	202	264
DN250	10	207	252	342	276	336	456
DN300	12	288	324	450	384	432	600
DN350	14	432	540	864	576	720	1152
DN400	16	639	828	1350	852	1104	1800
DN450	18	860	1134	1800	1146	1512	2400
DN500	20	1080	1440	2250	1440	1920	3000
DN600	24	1800	2340	3690	2400	3120	4920
DN700	28	2934	3348	5382	3912	4464	7176
DN750	30	3271	3735	6444	4361	4980	8592
DN800	32	3690	4860	7056	4920	6480	9408
DN900	36	6165	6516	11889	8220	8688	15852
DN1000	40	8386	9900	/	11182	13200	/
DN1200	48	10985	18000	/	14647	24000	/

Head losses

Notes:Values indicated in this page is only for information



Formulae for calculation of rate flow

Liquids: $Q = \frac{KV}{\sqrt{\frac{PS}{\Delta P}}}$

Q rate of flow (m3/h)

PS specific gravity (water=1)

ΔP pressure drop (bar)

Gas: $Q = 28.5 \frac{KV}{\sqrt{\frac{PS}{P_2 \cdot \Delta P}}}$

Q rate of flow (m3/h)

PS specific gravity (air=1)

ΔP pressure drop (bar)
(less than 1/2 inlet pressure)

P2 outlet pressure

Steam: $Q = 22.5 \cdot KV \cdot \sqrt{P_2 \cdot \Delta P}$

Q rate of flow (Kg/h)

ΔP pressure drop (bar)
(less than 1/2 inlet pressure)

P2 outlet pressure

Calculation of the rate of flow equivalent to H2O:

For different liquid, gas or steam head losses are determined by equivalent water of flow, as followsw:

Qe equivalent water flow
(mc/l o l/s)

Q fluid flow
(mc/l o l/s)

d fluid specific gravity
(Kg/mc)

Values KV（CV=1.16KV）

Size	Flow in Gpm@1 PSI P@ Various Disc Angles								
(mm)	10°	20°	30°	40°	50°	60°	70°	80°	90°
50	0.1	5	12	24	45	64	90	125	135
65	0.2	8	20	37	65	98	144	204	220
80	0.3	12	22	39	70	116	183	275	302
100	0.5	17	36	78	139	230	364	546	600
125	0.8	29	61	133	237	392	620	930	1022
150	2	45	95	205	366	605	958	1437	1579
200	3	89	188	408	727	1202	1903	2854	3136
250	4	151	320	694	1237	2047	3240	4859	5340
300	5	234	495	1072	1911	3162	5005	7507	8250
350	6	338	715	1549	2761	4568	7230	10844	11917
400	8	464	983	2130	3797	6282	9942	14913	16388
450	11	615	1302	2822	5028	8320	13168	19752	21705
500	14	971	1674	3628	6465	10698	16931	25396	27908
600	22	1222	2587	5605	9989	16528	26157	39236	43116
700	30	1633	3522	7630	12599	20036	30482	46899	58696
800	45	2387	4791	8736	13786	20613	31395	48117	68250
900	60	3021	6063	11055	17449	26086	39731	60895	86375
1000	84	4183	8395	15307	24159	36166	55084	84425	119750
1200	102	4651	10365	17010	27242	43853	70431	108968	132888