

DOUBLE FLANGED BUTTERFLY VALVES



Intertek



VAHN-TECH International Inc., headquartered in Toronto, Canada is a unique company within the Flow Control Industry.

- ✳ 'vt' brand = high quality certified products (API, NSF, CSA, WRAS etc.)
- ✳ Valves, Actuators and Accessories – all 'vt' branded
- ✳ Width and Depth of Product Offerings
- ✳ Flexibility to customize products to customer needs
- ✳ Specialized user-friendly products including large sizes
- ✳ Quick Response
- ✳ Reduced Delivery times
- ✳ Efficient after sales service
- ✳ Competitive Pricing

VAHN-TECH International Inc. is a customer focused organization based on “Value-Add” and “Quality Service” principles. Achieving long term partnership with our customers and being their supplier of choice is our prime mission.

We develop, manufacture and market VAHN-TECH (vt) branded Valves, Actuators, Automatic Control Valves and Accessories for variety of Industrial Applications. Our product range includes:



Oil and Gas



Water and Sewage,
Desalination



Chemicals



Paper and Pulp



Irrigation



Power Plants



Various
Industrial Applications

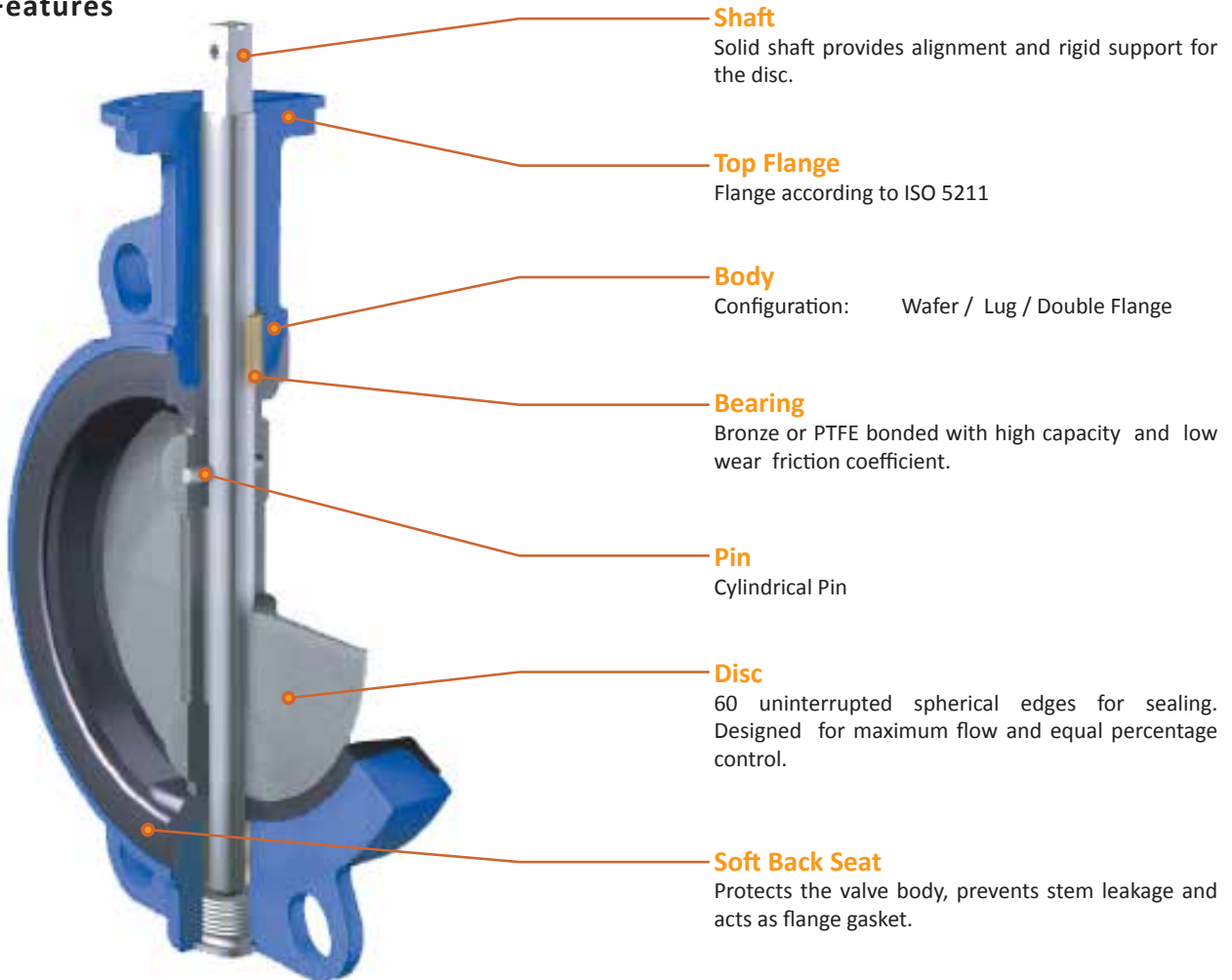
We can supply all types of valves with following materials of construction like:

Ductile Iron, Cast Iron, Carbon Steel, Stainless Steel – SS304, SS304L, SS316, SS316L, Duplex Stainless Steel, Super Duplex, Alloy, Monel and Inconel with variety of seating and stem configurations.



Rubber Seated Butterfly Valves

Design Features



1. Polished disc edge provides full concentric sealing with lower torque and long service life.
2. Bi-directional Sealing which is suitable for normal flow and contraflow working condition.
3. Cylindrical pin enables a vibration free connection between the shaft and the disc.
4. Rubber seats vulcanized on the body in such a way that the seats protrude a little outside the valve body (this eliminates need for a flange gasket).
5. Replaceable seal held with seat ring on the disc allows easy maintenance.

The design features a one - piece body for minimum weight and maximum strength, the back seat allows easy installation, reliable operation.

Resilient seated butterfly valves are applicable in a wide variety of industry such as:

- | | |
|------------------------------|----------------------------------|
| → Agriculture | → Drinking Water and Waste Water |
| → Oil and Gas | → District Cooling & HVAC |
| → Food and Beverages | → Power and Mining |
| → Chemical and Petrochemical | → Marine |

Not recommended as replacement of blind flange at full rated pressure.

Flow Performance

Definition of Cv Value (Flow Coefficient)
The valve Cv is the flow rate of pure water at 60°F passing through the valve when the disc is fully opened and the differential pressure between the two ends of the valve is 1 lbf/in ² .
V: Max. Flow (US gal/min)
G: Specific Gravity (1 for water)
ΔP: Differential in Valve (lbf/in ²)

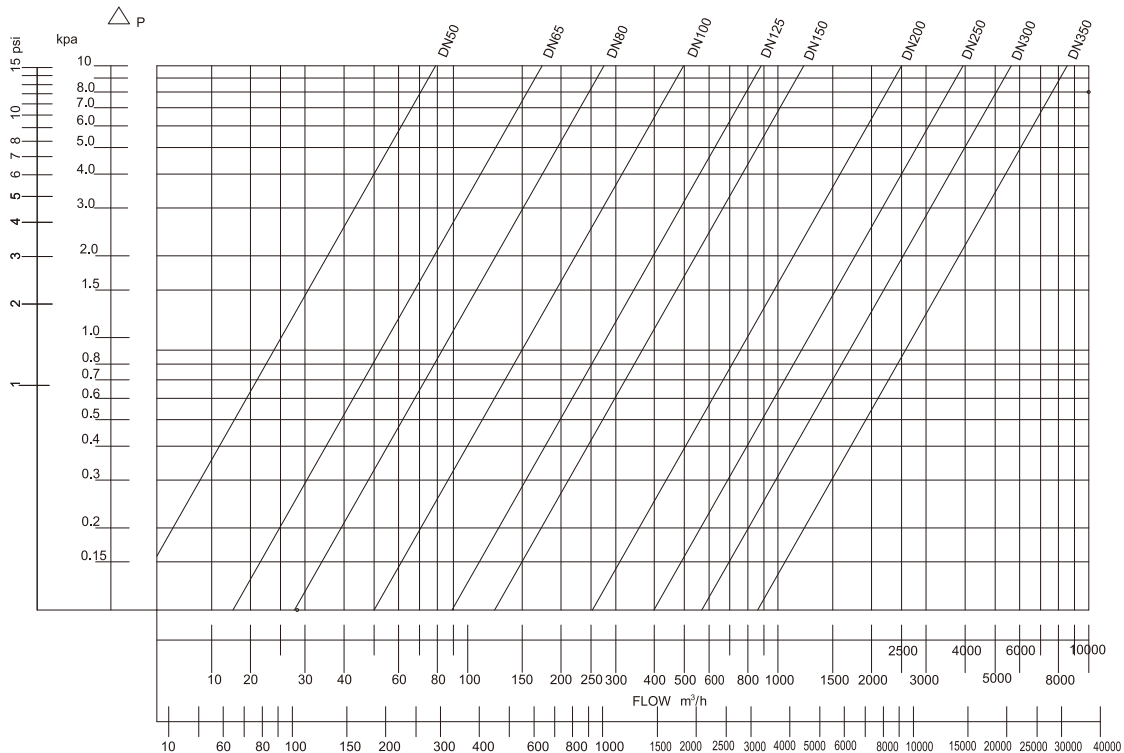
Definition of Kv Value (Flow Coefficient)
The valve Kv is the flow rate of pure water at 15°C passing through the valve when the disc is fully opened and the differential pressure between the two ends of the valve is 1 bar.
Q: Max. Flow (m ³ /h)
G: Medium Density (g/cm ³)(1 for water)
ΔP: Differential Pressure in Valve (100 kpa) ie. bar

CV Value of Concentric Butterfly Valves										
Size		10°	20°	30°	40°	50°	60°	70°	80°	90°
inch	mm									
2"	50	0.06	3	7	15	27	44	70	105	115
2 1/2"	65	0.1	6	12	25	45	75	119	178	196
3"	80	0.2	9	18	39	70	116	183	275	302
4"	100	0.3	17	36	78	139	230	364	546	600
5"	125	0.5	29	61	133	237	392	620	930	1022
6"	150	0.8	45	95	205	366	605	958	1437	1579
8"	200	2	89	188	408	727	1202	1903	2854	3136
10"	250	3	151	320	694	1237	2047	3240	4859	5340
12"	300	4	234	495	1072	1911	3162	5005	7507	8250
14"	350	6	338	715	1549	2761	4568	7230	10844	11917
16"	400	8	464	983	2130	3797	6282	9942	14913	16388
18"	450	11	615	1302	2822	5028	8320	13168	19752	21705
20"	500	14	791	1647	3628	6465	10698	16931	25396	27908
24"	600	22	1222	2587	5605	9989	16528	26157	39236	43116
28"	700	36	1813	3639	6636	10000	14949	22769	34898	49500
30"	750	37	2080	4406	9546	17010	28147	44545	66818	73426
32"	800	45	2387	4791	8736	13788	20613	31395	48117	38250
36"	900	260	3050	6730	12740	20220	32500	52500	79600	87500
40"	1000	84	4183	8395	15307	24159	36166	55084	84425	119750
42"	1050	350	4095	9040	17108	27150	43640	70500	106890	117500
48"	1200	455	5365	11840	22400	30600	51200	92300	140000	154000

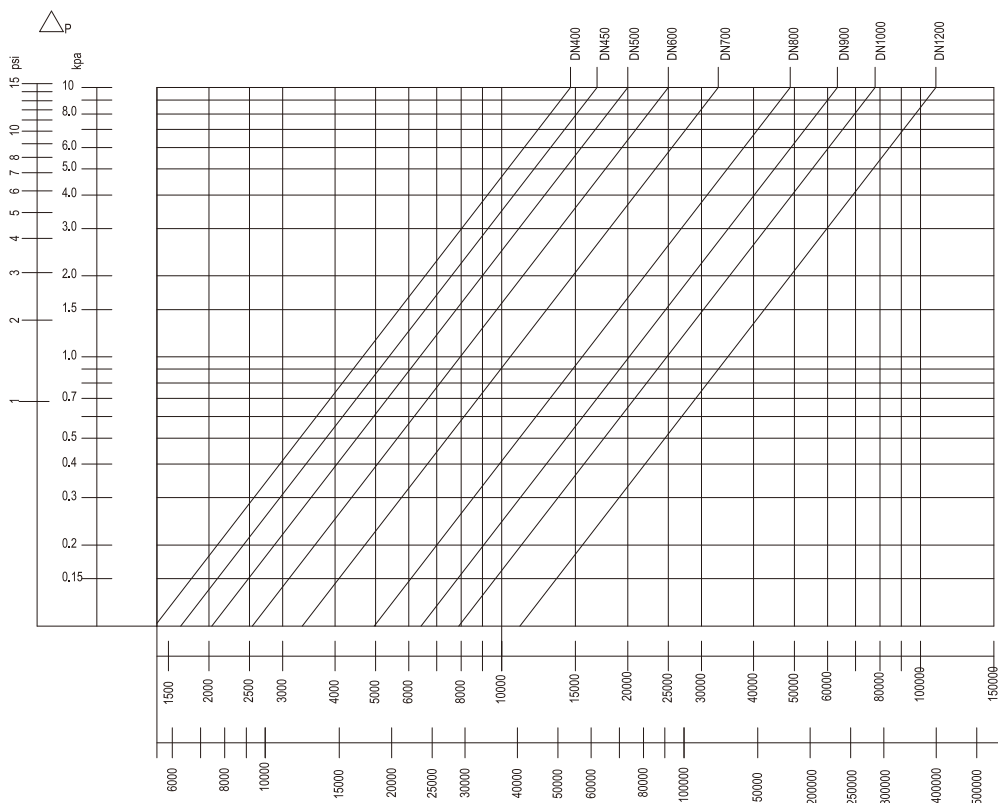
Kv Value of Concentric Butterfly Valves										
Size		10°	20°	30°	40°	50°	60°	70°	80°	90°
inch	mm									
2"	50	0.05	2.6	6	13	23	38	60	90	99
2 1/2"	65	0.09	5	10	21	39	64	102	153	168
3"	80	0.17	8	15	33	60	99	157	236	259
4"	100	0.26	15	31	67	119	197	312	468	514
5"	125	0.43	25	52	114	203	336	531	797	876
6"	150	0.69	39	81	176	314	518	821	1231	1353
8"	200	1.7	76	161	350	623	1030	1631	2446	2687
10"	250	2.6	129	274	595	1060	1754	2776	4164	4576
12"	300	3	201	424	919	1638	2710	4289	6433	7069
14"	350	5	290	613	1327	2366	3914	6195	9292	10212
16"	400	7	398	842	1825	3254	5383	8519	12779	14043
18"	450	9	527	1116	2418	4308	7129	11284	16925	18599
20"	500	12	678	1411	3109	5540	9167	14508	21762	23914
24"	600	19	1047	2217	4803	8560	14163	22414	33621	36946
28"	700	31	1554	3118	5686	8569	12810	19511	29904	42416
30"	750	32	1782	3775	8180	14576	24119	38171	57256	62919
32"	800	39	2045	4105	7486	11815	17663	26902	41231	32776
36"	900	223	2614	5767	10917	17326	27849	44987	68209	74979
40"	1000	72	3584	7194	13117	20702	30991	47201	72344	102614
42"	1050	300	3509	7746	14660	23265	37395	60411	91594	100686
48"	1200	390	4597	10146	19195	26221	43873	79092	119966	131962

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Valve Pressure Drop Curve Table

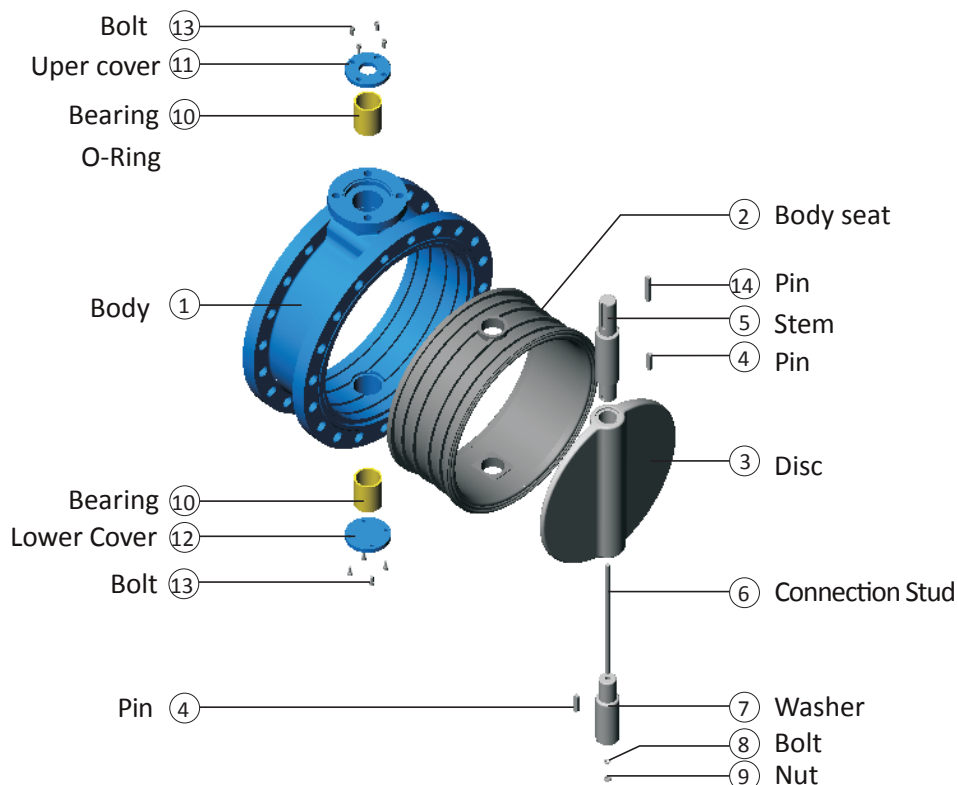


FLOW GALLON/MIN (m³/h)



FLOW (m³/h)

Double Flange Concentric (Series 500)

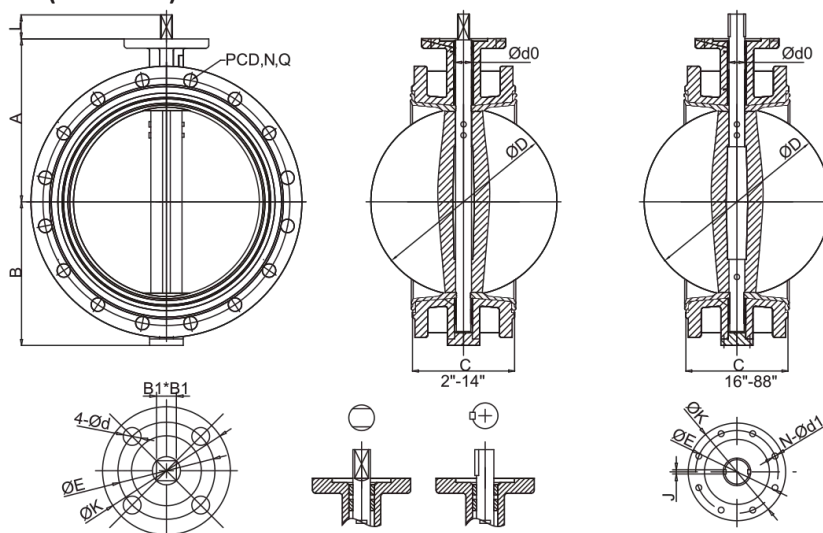


DN50-DN2200
(2" - 88")

Parts List & Materials

PARTS NAME	MATERIAL	SPECIFICATIONS (ASTM)
Body	Cast Iron Ductile Iron Carbon Steel Stainless Steel	ASTM A126B ASTM A536 A216 WCB A351 CF8M A351 CF8
Disc	Plated Ductile Iron Aluminum Bronze Stainless Steel Carbon Steel	ASTM A536 B148-954 A351 CF8M A351 CF8 A216 WCB
Stem	Stainless Steel	A276-410 A276-304 A276-316 A276-316L
Seat	NBR EPDM NEOPRENE VITON Natural Rubber PTFE	
Pin	Stainless Steel	A182 F6A A182 F304 A182 F316

Double Flange Concentric (Series 500)



Standard Specifications

Design Standard	: BS 5155, MSS SP 68
Test Standard	: DIN 3230 Part3, API 598, EN 12266-1
Face-to-Face Standard	: DIN 3202 F4, EN 558-13/14 Series, ISO 5752 13/14 Series
Flange Connection	: DIN 2501 PN10/16, BS 4505 PN10/16, ASME B16.1 125LB/150LB, JISB 2220 10K & so on.
Working Pressure	: 10 bar / 16 bar / Class 150
Medium	: Oil, Gas and so on.

Size		A	B	C	d0	PCD	N-Q	ØK	ØE	N-ØP	B1x2	J	L	ISO 5211
inch	mm													
2"	50	110	80	108	12.6	125	4-19	90	70	4-10	11x11	-	26	F07
2 1/2"	65	134	80	112	12.6	145	4-19	90	70	4-10	11x11	-	30	F07
3"	80	134	95	114	12.6	160	8-19	90	70	4-10	11x11	-	30	F07
4"	100	150	114	127	15.77	180	8-19	90	70	4-10	11x11	-	30	F07
5"	125	170	114	140	18.92	210	8-19	90	70	4-10	14x14	-	30	F07
6"	150	180	139	140	18.92	240	8-22	90	70	4-10	14x14	-	40	F07
8"	200	210	175	152	22.1	295	8-22	125	102	4-12	17x17	-	40	F10
10"	250	245	203	165	28.45	350	12-22	125	102	4-12	22x22	-	40	F10
12"	300	276	242	178	31.6	400	12-22	125	102	4-12	22x22	-	40	F10
14"	350	328	250	190	31.6	460	16-22	125	102	4-12	22x22	-	40	F10
16"	400	376	310	216	33.15	515	16-26	175	140	4-18	27x27	-	50	F14
18"	450	407	332	222	37.95	565	20-26	175	140	4-18	27x27	-	70	F14
20"	500	433	358	229	41.12	620	20-26	175	140	4-18	36x36	-	80	F14
24"	600	508	423	267	50.62	725	20-30	210	165	4-23	36x36	-	80	F16
28"	700	560	479	292	63.35	840	24-30	300	254	8-18	-	2-18	85	F25
32"	800	620	533	318	63.35	950	24-33	300	254	8-18	-	2-18	95	F25
36"	900	692	602	330	75	1050	28-33	300	254	8-18	-	2-20	118	F25
40"	1000	735	656	410	85	1160	28-36	300	254	8-18	-	2-22	118	F25
48"	1200	971	781	470	105	1380	32-36	350	298	8-22	-	2-28	154	F30
56"	1400	1000	925	530	120	1590	36-42	415	356	8-32	-	2-32	200	F35
64"	1600	1150	1041	600	140	1820	40-48	415	356	8-32	-	2-36	200	F35
72"	1800	1200	1156	670	160	2020	44-48	475	406	8-40	-	2-40	200	F40
80"	2000	1360	1350	760	160	2230	48-48	475	406	8-40	-	2-40	200	F40
88"	2200	1500	1430	800	180	2440	52-56	560	483	12-40	-	2-45	300	F48

NOTE:

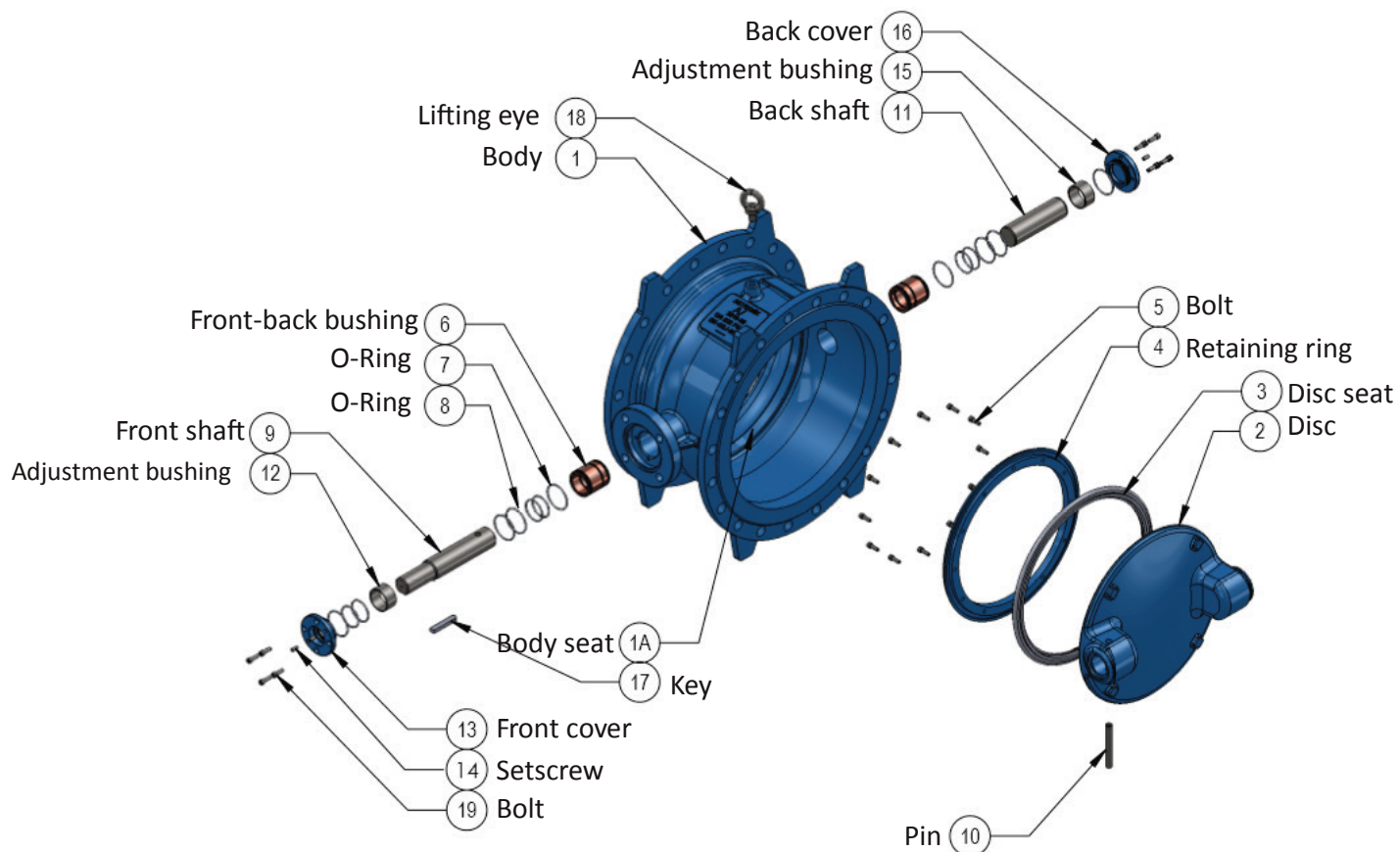
*The shaft end can be double D and key connection. From DN700 and above, the shaft end is double key type.

*The flange connection of the above table can be DIN2501 PN16, ASME B16.47-A 125/150LB, BS4504 PN10/PN16, JIS B2220 10K & so on.

Ⓛ When working pressure is PN16, the diameter of the stems are different from PN10. (from DN400-DN600)

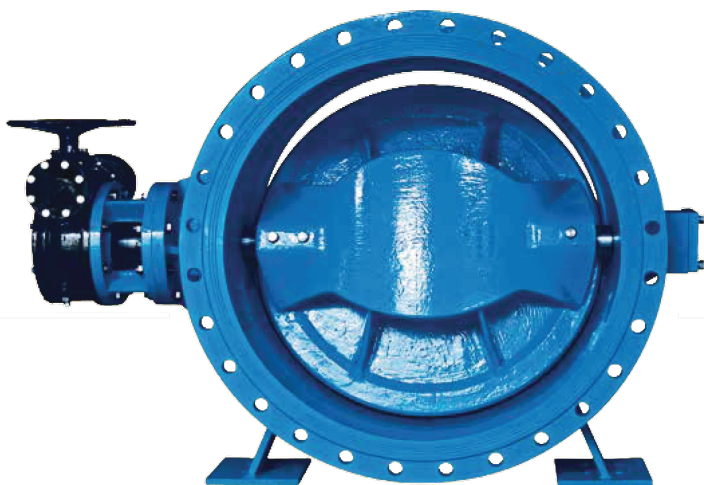
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Double Flange Double Eccentric (Series 500)



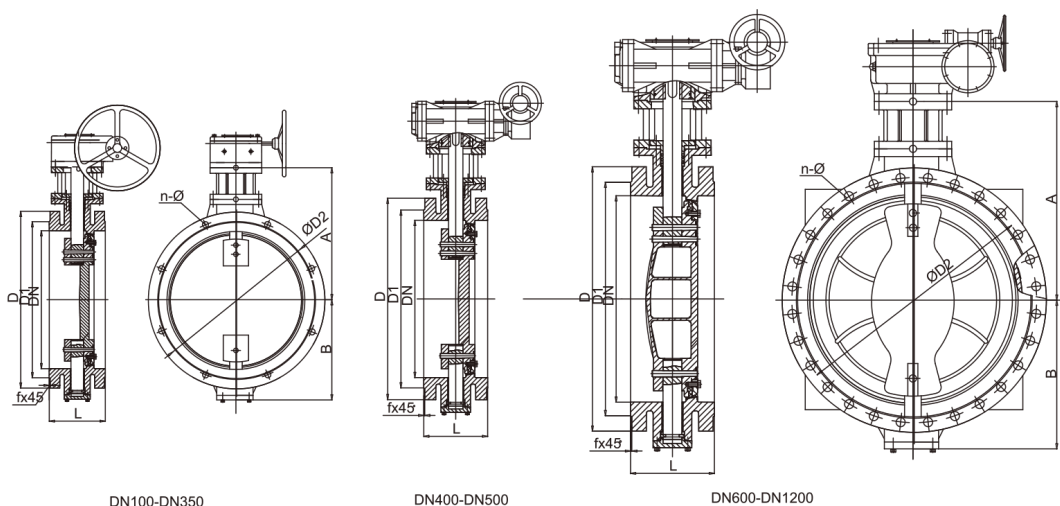
Parts List & Materials

MAIN PARTS	MATERIAL	SPECIFICATIONS (ASTM)
Body	Ductile Iron	ASTM 536
Disc	Plated Ductile Iron	ASTM A536
Stem	Stainless Steel	A276-410
Disc Sealing	NBR EPDM	-
Pin	Stainless Steel	A182 F6A
Adjustment Bushing	PTFE	
Packing Gland	Ductile Iron	ASTM A536
Packing	EPDM NBR	-



DN100-DN1800
(4" - 72")

Double Flange Double Eccentric (Series 500)



Standard Specifications	
Design Standard	: BS 5155, MSS SP 68
Test Standard	: DIN 3230 Part3, API 598, EN 12266-1
Face-to-Face Standard	: DIN 3202 F4, EN 558-13/14 Series, ISO 5752 13/14 Series
Flange Connection	: DIN 2501 PN10/16, BS 4505 PN10/16, ASME B16.1 125LB/150LB, JISB 2220 10K & so on.
Working Pressure	: 10 bar / 16 bar
Medium	: Oil, Gas and so on.

unit: mm

Size		D	D1	D2	fx45°	L		n-Ø	A	B
inch	mm					LONG	MIDDLE			
4"	100	220	158	180	3	190	127	8-19	234	122
5"	125	250	180	210	3	200	140	8-19	255	141
6"	150	285	213	240	3	210	140	8-23	279	153
8"	200	340	268	295	3	230	152	12-23	349	216
10"	250	405	320	355	3	250	165	12-28	406	219
12"	300	460	370	410	4	270	178	12-28	542	267
14"	350	520	437	470	4	290	190	16-28	583	315
16"	400	580	482	525	4	310	216	16-31	620	350
18"	450	640	548	585	4	330	222	20-31	667	373
20"	500	715	609	650	4	350	229	20-34	702	428
24"	600	840	720	770	5	390	267	20-37	759	450
28"	700	910	800	840	5	430	292	24-37	885	528
32"	800	1025	905	950	5	470	318	24-40	1013	573
36"	900	125	1001	1050	5	510	330	28-40	1071	639
40"	1000	1255	1110	1170	5	550	410	28-43	1234	723
48"	1200	1485	1330	1390	5	630	470	32-49	1343	833
56"	1400	1686	1530	1590	5	-	530	36-49	1668	1078
64"	1600	1930	1750	1820	5	-	600	40-56	1778	1218
72"	1800	2130	1950	2020	5	-	670	44-56	2044	1426

NOTE:

*The shaft end can be doubl D and key connection. From DN700 and above, the shaft end is double key type.

*The flange connection of the above table can be DIN2501 PN16, ASME B16.47-A 125/150LB, BS4504 PN10/PN16, JIS B2220 10K.

Torque Data

Total torque can be calculated as follows:

$$T_a = T_s + T_b + T_d$$

Where:

T_s = Seat Torque
 T_b = Bearing Torque
 T_d = Dynamic Torque

$$T_b = Q_c * f_c * D_s / 2$$

Where:

P = Normal Pressure
 f_c = Friction Coefficient
 D_s = Shaft Diameter

$$T_d = C_t * D^3 * \Delta P$$

Where:

T_d = Dynamic Torque Coefficient
 D = Valve Normal Diameter
 ΔP = Pressure Drop

$$T_s = Q_m * R / 1000$$

Where:

Q_m = Friction of Sealing Face
 Q_c = Bearing Loading
 R = Radius Disc

The concentric butterfly valve's torque in relation to three factors:

1. Seat Torque

Friction of disc displace from the resilient seat.

2. Bearing Torque

Friction of force from the bushing surfaces and shaft.

3. Dynamic Torque

The force of flow through the valve faced by disc.

Dynamic torque is not a major concern in resilient seated butterfly valve unless the flow velocity exceeds 6 m/s. In such cases include dynamic torque valves while selecting an actuator.

C_t Against Disc Angle Open

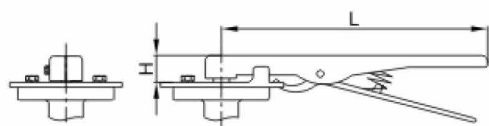
Angle Open	0°	10°	20°	30°	40°	50°	60°	70°	80°	90°
C_t	0	0.007	0.014	0.022	0.033	0.050	0.087	0.143	0.225	0

VALVE SIZE		Torque Value for Rubber Seat Butterfly Valve (N.m)					
		PN6 (85PSI)		PN10 (16PSI)		PN16 (250PSI)	
inch	mm	Dry	Wet	Dry	Wet	Dry	Wet
1.5"	40	11.5	8	18.5	9	22	11
2"	50	20.3	12.5	22.1	13.9	24.2	15.1
2.5"	65	26.1	13.8	29.2	15.4	32.7	17.2
3"	80	39.9	21	41.1	21.7	43.7	23.1
4"	100	60.5	34.9	67.8	37.1	72.8	39.8
5"	125	85.1	53.5	101	57.9	108	61.9
6"	150	149	84.5	165	93.9	174	102
8"	200	264	154	297	173	30	192
10"	250	423	249	486	286	549	323
12"	300	605	371	699	429	799	490
14"	350	699	466	825	550	970	625
16"	400	948	632	1133	755	1307	846
18"	450	1247	831	1518	1012	1788	1131
20"	500	1639	1093	2026	1350	2308	1431
24"	600	2519	1679	3166	2111	3711	2301
28"	700	4511	3008	4903	3269	6850	5670
30"	750	5222	3482	5677	3785	7916	6782
32"	800	5939	3762	6456	4304	9180	7840
36"	900	7363	4949	7879	5252	13786	10150
40"	1000	12539	8359	13377	8917	-	-
42"	1050	14300	9538	15291	10193	-	-
44"	1100	16301	10867	17390	11592	-	-
48"	1200	17585	11723	18816	12735	-	-
56"	1400	33800	28610	38600	31420	-	-
64"	1600	51380	43450	57910	49765	-	-
72"	1800	70381	59670	75820	63570	-	-
80"	2000	79560	62687	81703	69865	-	-
88"	2200	79860	69480	95760	78545	-	-

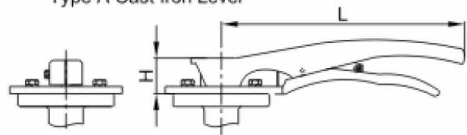
VALVE SIZE		Torque Value for Teflon Seat Butterfly Valve (N.m)			
		PN6 (85PSI)		PN16 (250PSI)	
inch	mm	Dry	Wet	Dry	Wet
1.5"	40	31.3	19.4	36.2	23
2"	50	39.1	24.3	45.2	28.2
2.5"	65	48.8	35	61	32.1
3"	80	74.6	39.4	81.8	43
4"	100	119.3	65.3	136	74.3
5"	125	175	100.6	202	116
6"	150	278	158	325	191
8"	200	494	287	617	358
10"	250	790	465	1026	603
12"	300	1132	694	1493	916
14"	350	1814	1153	1905	1269
16"	400	2398	1394	2518	1534
18"	450	3340	2047	3508	2252
20"	500	4122	2449	4329	2694
24"	600	7044	3882	7396	4270

VALVE SIZE		Torque Value for Double Eccentric Butterfly Valve (N.m)		
		PN6	PN10	PN16
inch	mm			
4"	100	55	70	240
5"	125	100	140	265
6"	150	121	175	340
8"	200	190	328	574
10"	250	290	545	847
12"	300	490	894	1358
14"	350	804	1269	1905
16"	400	1074	1534	2528
18"	450	1328	2252	3508
20"	500	1550	2694	4329
24"	600	3189	4270	7396
28"	700	3640	6425	9873
30"	750	3917	8680	11716
32"	800	5143	9022	13765
36"	900	6950	11877	19398
40"	1000	9187	15630	27626
48"	1200	8632	22688	33920
56"	1400	22887	27762	63639
64"	1600	26897	36978	93255
72"	1800	36730	56668	126914

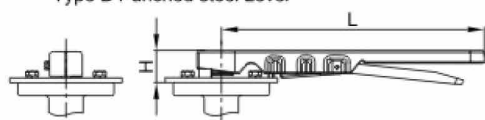
Lever & Gearbox Selection



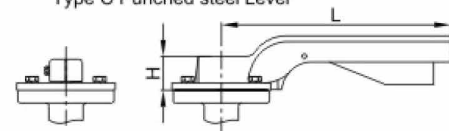
Type A Cast Iron Lever



Type B Punched steel Lever



Type C Punched steel Lever



Type D Aluminum Alloy Lever



Type A Product photo



Type B Product photo

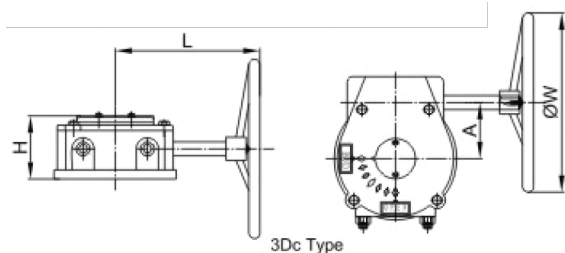


Type C Product photo

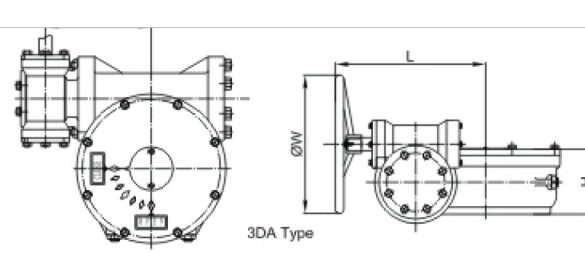


Type D Product photo

Size		ISO 5211 TOP FLANGE	TYPE A		TYPE B		TYPE C		TYPE D	
inch	mm		L	H	L	H	L	H	L	H
2"	50	F05	245	32	240	32	220	27	200	26
2 1/2"	65	F05	245	32	240	32	220	27	200	26
3"	80	F05	245	32	240	32	220	27	275	32
4"	100	F07	280	32	265	32	240	30	275	32
5"	125	F07	280	32	265	32	260	30	275	32
6"	150	F07	280	32	265	32	260	30	275	32
8"	200	F10	390	45	265	32	260	30	275	32
10"	250	F10	390	45	395	39	395	39	395	30
12"	300	F10	535	45	395	39	395	39	395	30



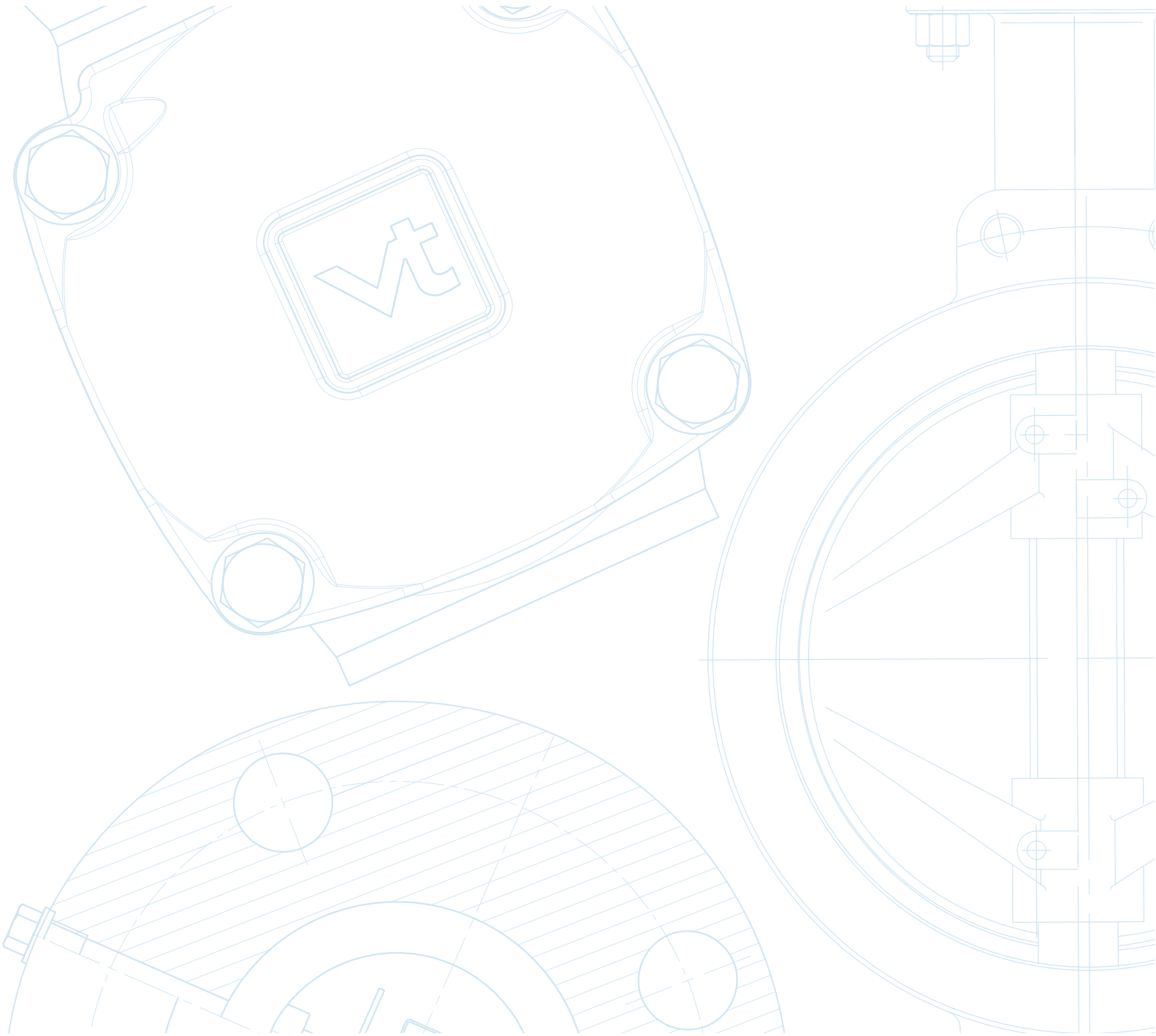
3Dc Type



3DA Type

Size Range	TYPE	RATED OUTPUT (N.m)	MAXIMUM OUTPUT (N.m)	RATIO	A	L	H
2" - 6"	3Dc - 15	245	32	240	32	220	27
8" - 10"	3Dc - 50	245	32	240	32	220	27
12" - 14"	3Dc - 120	245	32	240	32	220	27
16" 20"	3DA - 30/250	280	32	265	32	240	30
24"	3DA - 30/400	280	32	265	32	260	30
28" 32"	3DA - 30/800	280	32	265	32	260	30
36" 44"	3DA - 120/1500	390	45	265	32	260	30
48"	3DA - 120/2500	390	45	395	39	395	39

VAHN-TECH International Inc. reserves the right to change the technical data without prior notice.



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