



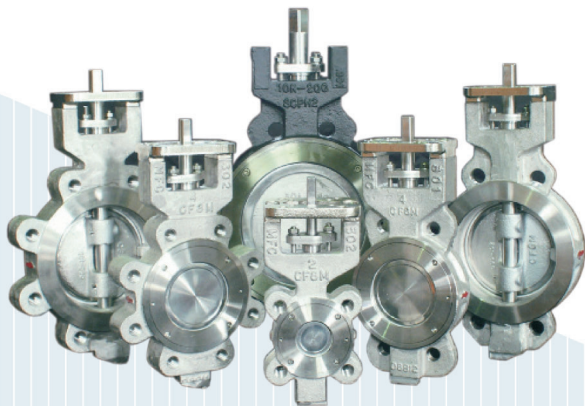
# Butterfly Valve



H A N I L M I C R O T E C H C O R P .

## FEATURE

- 1 Wafer & lug bodies butterfly valve for bi-directional dead-end service are offered as standard in full ANSI Class 150 and 300 ratings. The design of double offset sealing assure smooth low-torque operation and reduce seat wear. Extended neck length allows adequate insulation and is easily accessible for mounting actuators.
- 2 Valve has a disc stopper to prevent disc overtravel of disc, minimizing possible seat damage with extending the service life of valve operator.
- 3 The disc has been hydromechanically designed to maximize flow and minimize resistance, providing a high Cv value. The disc is spherically machined and hand polished disc edge provides bubble-tight shut-off at minimum torque.
- 4 One piece through stem design achieves high strength and positive disc control optional mounting plate is available to international standard. Non-lubricated, coated bearings securely support the stem and minimize bearing friction and operating torque.
- 5 Securing the butterfly disc to the valve shaft and permitting accurate disc closure for consistent sealing and positive shut-off.
- 6 V-Packings are designed to give excellent resistance to pressures and effective at both low and high pressure with little or no gland adjustment required. Grafoil packings are also available for high temperature applications and are standard on firesafe valve & metal seat.
- 7 All valves shall be tested for leakage at rated internal pressure, and we can accomplish zero defects through a wide range testing process
- 8 With a locking spring loaded, lever operator has directional pointer for valve disc position indication with easy-grip handle



## DESIGN STANDARD

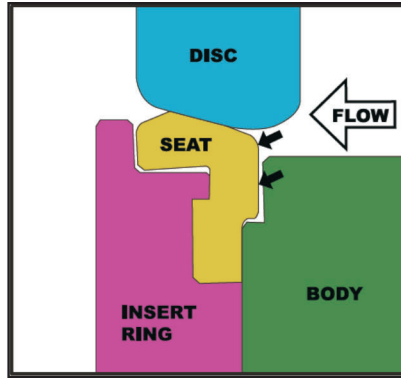
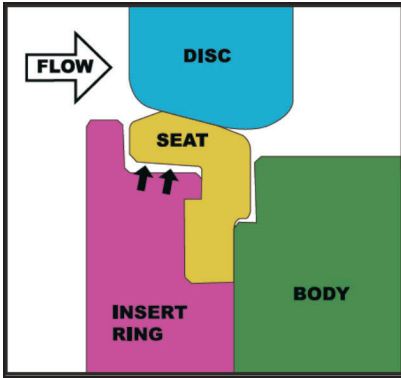
- 1 Valve nominal diameter
  - 2" (50A) ~ 60" (1500A)
- 2 Face to face dimension
  - API 609 Category B
  - MSS SP-68
  - DIN 3202
  - ISO 5752
  - BS 5155
- 3 End connection
  - Wafer, Lug
- 4 Testing
  - API 598, MSS SP-61, BS 6755
  - ANSI B 16.104



# SEAT EXPLATION

## TEFLON SEAT

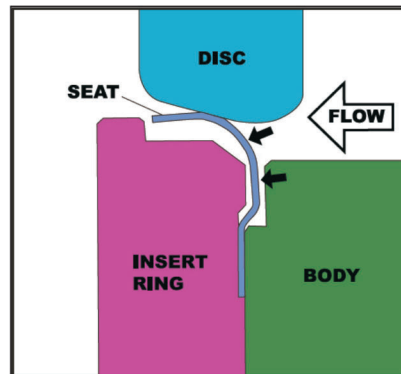
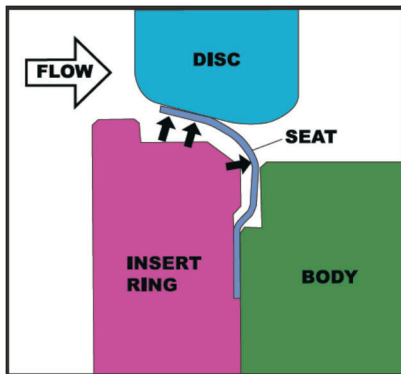
SEAT MATERIAL : PTFE & RTFE



Blowout Proof Stem Design  
Lower Operating Torque  
Tight Shut-Off  
Bi-Direction Application  
Leakage Class VI(Zero)

## METAL SEAT

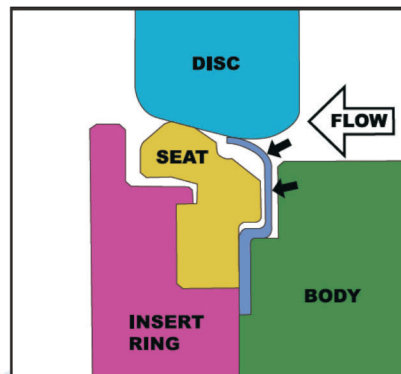
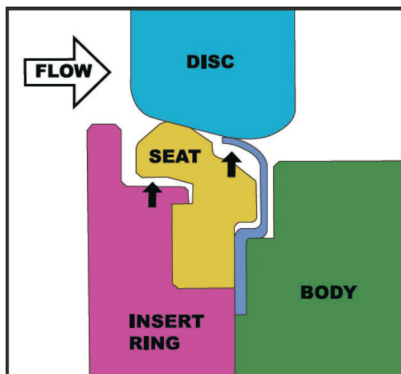
SEAT MATERIAL : 316L & INCONEL



Blowout Proof Stem Design  
Inherent Fire Safe Design  
Suitability for High  
-Temperature Service  
Leakage Class IV, V

## FIRE-SAFE

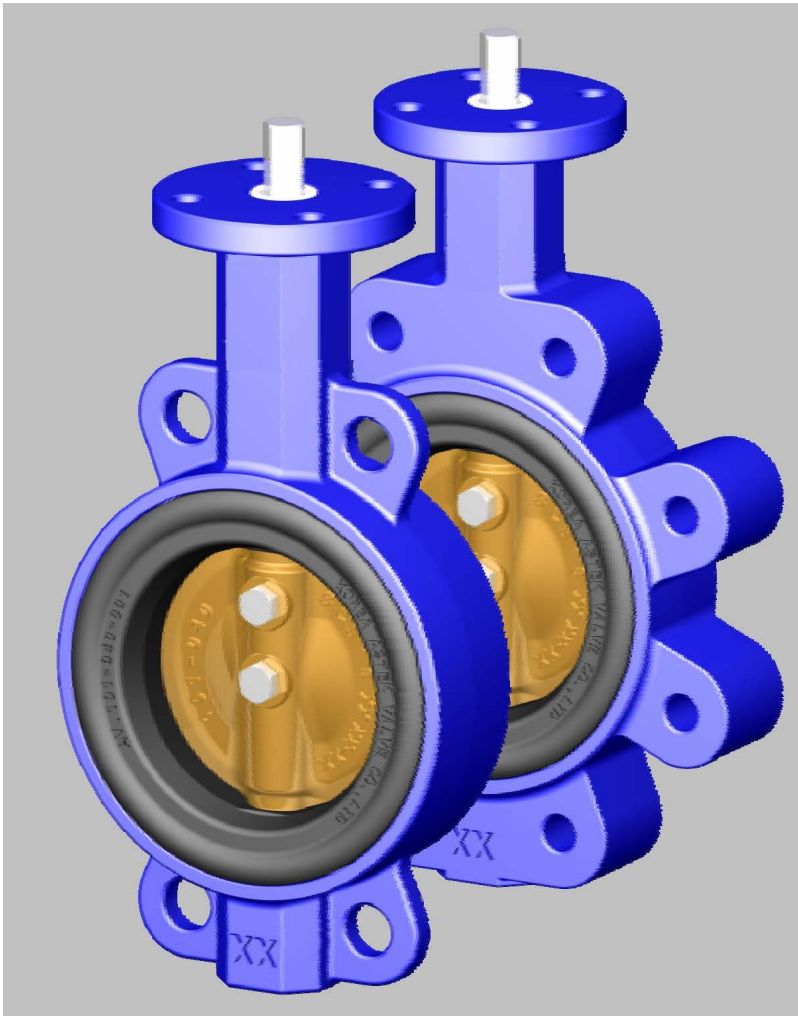
During and after a fire, when the soft(Teflon) seat material has burned away, the metal seat activates automatically and prevents excessive flow.



Blowout Proof Stem Design  
Tight Shut-Off  
Bi-Direction Application  
Inherent Fire Safe Design  
Leakage Class VI(Zero)

# HBV-500 DESIGN WITH PROVIDE LONG SERVICE LIFE WITHOUT MAINTENANCE.

## Features & benefits



1. All valves are bubble tight shut off, and the closure test is done at 110% of design pressure.
2. Upper bushing helps smooth operation and absorb the side load, and packing provides positive sealing in both sides.
3. The long neck is designed for the heat-retention and is suitable for the insulation service.
4. The Spherical disc surface lowers operating torque and enhances the endurance of the disc.
5. One piece stem provides the high strength and has the ISO 5211 standard mounting dimension for easy mounting with the standardized actuator.
6. The upper and bottom side of the seat is flat face to achieve the tight sealing at the hub of disc and to block the flow through into the body. Polish finished disc edge provides perfect sealing with the seat.
7. The 'Cosine' shaped seat is installed onto the body without bonding, thus the seat replacement is easy and the seat is rarely torn out.
8. The raised seat O-ring acts as the flange gasket accordingly the valve does not require the flange gasket for installation between flanges.
9. Stainless steel screws on the disc enable quick and easy disassembly of disc and stem.

## General Applications

HBV butterfly valve, a general butterfly valve widely used for a heating-cooling system, chemical, water-sewage, is applicable for the various industries and many different applications.

## Standard Specification

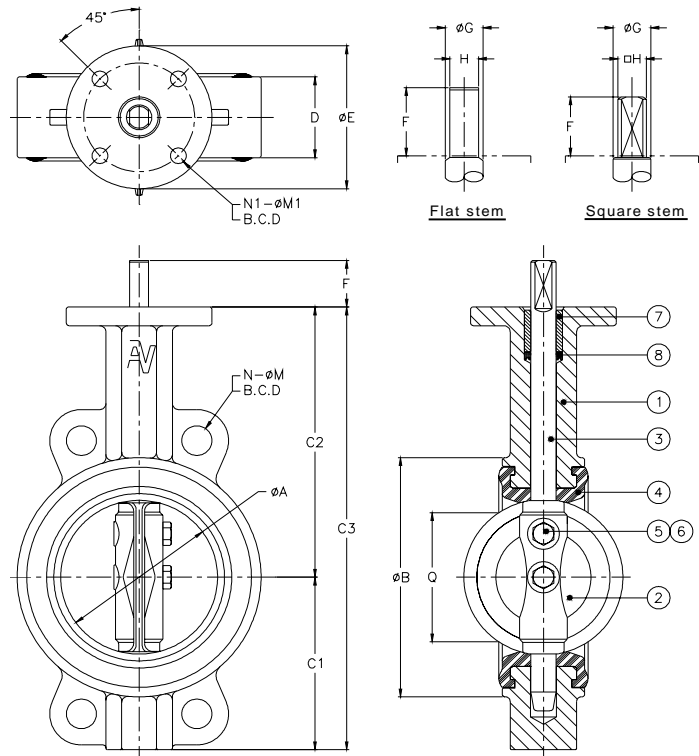
1. Valve Nominal Diameter : 2" (50A) 40" (1000)
2. Applicable Flange Standards
  - JIS/KS 5K, 10K
  - MSS SP44 CL.150
  - AWWA C207 CL.D
  - ANSI CL. 125/150
  - BS/DIN PN6, PN10
  - AS 2129 TABLE D
3. Maximum Applicable Pressure : 1.0 MPa
4. Shell Test (Body) : 1.5 MPa
5. Seat Test : 1.1 MPa
6. Face To Face Dimension
  - API609 Category A
  - ISO 5752 SERIES 20
7. Actuation Mounting Plate Dimension
  - ISO 5211
8. Applicable Temperature Range
  - NBR (0°C ~ 70°C)
  - EPDM (0°C ~ 120°C)



# HBV-510 DIMENSIONS/TOP PLATE & FLANGE DATA

## Part name

1. Body
2. Disc
3. Stem
4. Seat
5. Disc screw
6. O-ring
7. Bushing
8. Packing



## Notes

The dimension "Q" is to check whether the disc swing may interfere with the flange or pipe.

The dimensions herein are only for the reference and are subject to change without notice

## Dimensions (mm)

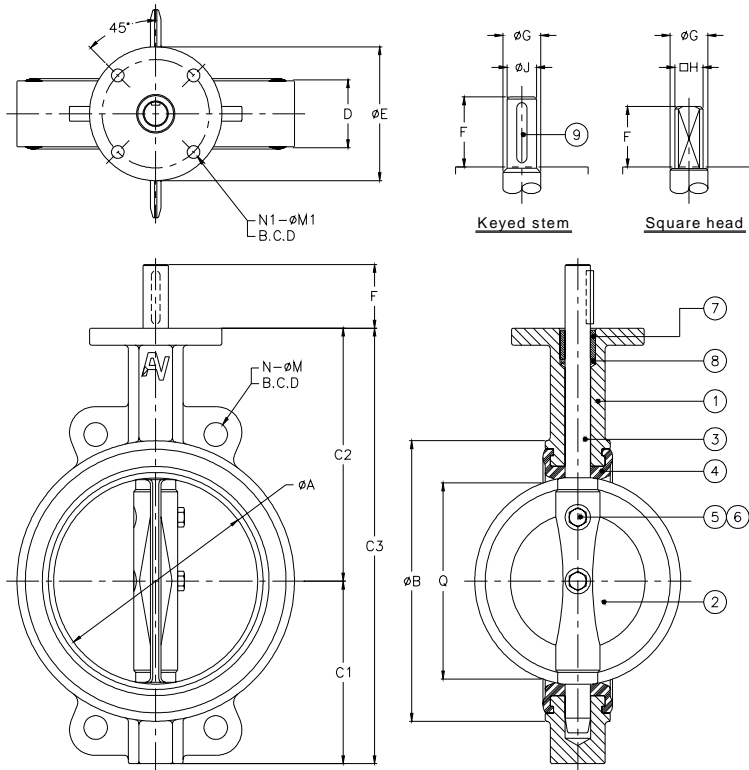
SIZE		Dimensions							Flat stem			Square stem		
inch	mm	$\phi A$	$\phi B$	C1	C2	C3	D	Q	F	$\phi G$	H	F	$\phi G$	$\square H$
2	50	48	92	71	133	204	42	26	32	14	11	15	14	11
2.5	65	63	110	85	147	232	45	46	32	15	12	16	15	12
3	80	76	128	94	156	250	45	63	32	15	12	16	15	12
4	100	99	154	111	174	285	52	86	32	16	12	16	16	12
5	125	124	187	128	191	319	55	114	32	20	16	22	20	16
6	150	149	214	142	205	347	55	141	32	20	16	22	20	16

## Plate & Flange Drilling Data (mm)

SIZE		Top plate mounting (ISO 5211)				JIS 5K		JIS 10K		ANSI CL.150		Weight
inch	mm	Type	$\phi E$	B.C.D	$N1-\phi M1$	B.C.D	$N-\phi M$	B.C.D	$N-\phi M$	B.C.D	$N-\phi M$	(Kg)
2	50	F07	92	$\phi 70$	4- $\phi 10$	$\phi 105$	4- $\phi 15$	$\phi 120$	4- $\phi 19$	$\phi 120.7$	4- $\phi 19$	3
2.5	65	F07	92	$\phi 70$	4- $\phi 10$	$\phi 130$	4- $\phi 15$	$\phi 140$	4- $\phi 19$	$\phi 139.7$	4- $\phi 19$	3.6
3	80	F07	92	$\phi 70$	4- $\phi 10$	$\phi 145$	4- $\phi 19$	$\phi 150$	4- $\phi 19$	$\phi 152.4$	4- $\phi 19$	4
4	100	F07	92	$\phi 70$	4- $\phi 10$	$\phi 165$	4- $\phi 19$	$\phi 175$	4- $\phi 19$	$\phi 190.5$	4- $\phi 19$	6
5	125	F07	92	$\phi 70$	4- $\phi 10$	$\phi 200$	4- $\phi 19$	$\phi 210$	4- $\phi 23$	$\phi 215.9$	4- $\phi 22.4$	8
6	150	F07	92	$\phi 70$	4- $\phi 10$	$\phi 230$	4- $\phi 19$	$\phi 240$	4- $\phi 23$	$\phi 241.3$	4- $\phi 22.4$	10

# HBV-510 DIMENSIONS/TOP PLATE & FLANGE DATA

Part name



1. Body
2. Disc
3. Stem
4. Seat
5. Disc screw
6. O-ring
7. Bushing
8. Packing

## Notes

The dimension "Q" is to check whether the disc swing may interfere with the flange or pipe.

The dimensions herein are only for the reference and are subject to change without notice

## Dimensions (mm)

SIZE		Dimensions							Keyed stem			Square stem			
inch	mm	ØA	ØB	C1	C2	C3	D	Q	F	ØG	ØJ	Key size	F	ØG	□H
8	200	194	264	172	238	410	62	186	60	24	24	8x7-50L	26	24	19
10	250	246	324	204	270	474	66	240	60	28	28	8x7-50L	30	28	22
12	300	297	374	236	310	546	78	288	60	32	32	10x8-50L	33	32	24
14	350	332	416	260	340	596	78	325	60	34	32	10x8-50L	33	34	24
16	400	380	478	294	375	669	102	369	90	44	44	14x9-80L	50	44	34

## Top Plate & Flange Drilling Data (mm)

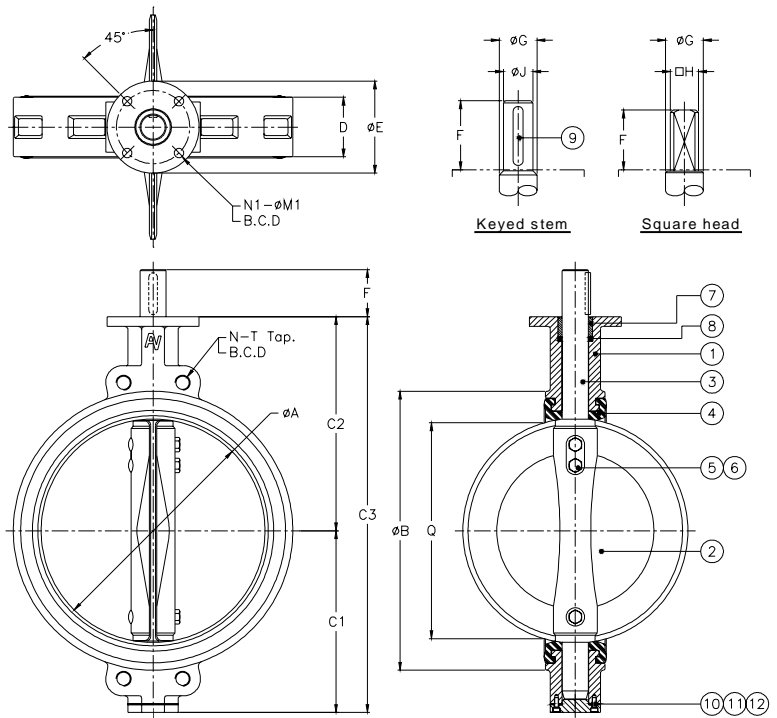
SIZE		Top plate mounting (ISO 5211)			JIS 5K		JIS 10K		ANSI CL.150		Weight	
inch	mm	Type	ØE	B.C.D	N1-ØM1	B.C.D	N-ØM	B.C.D	N-ØM	B.C.D	N-ØM	(Kg)
8	200	F10	126	Ø102	4-Ø12	Ø280	4-Ø23	Ø290	4-Ø23	Ø298.5	4-Ø22.4	17
10	250	F10	126	Ø102	4-Ø12	Ø345	4-Ø23	Ø355	4-Ø25	Ø362.0	4-Ø25.4	23
12	300	F12	152	Ø125	4-Ø14	Ø390	4-Ø23	Ø400	4-Ø25	Ø431.8	4-Ø25.4	31
14	350	F12	152	Ø125	4-Ø14	Ø435	4-Ø25	Ø445	4-Ø25	Ø476.3	4-Ø28.6	52
16	400	F14	176	Ø140	4-Ø18	Ø495	4-Ø25	Ø510	4-Ø27	Ø539.8	4-Ø28.6	61



# HBV-510 DIMENSIONS/TOP PLATE & FLANGE DATA

Part name

1. Body
2. Disc
3. Stem
4. Seat
5. Disc screw
6. O-ring
7. Bushing
8. Packing
9. Key
10. Bottom cover
11. Gasket
12. Cover screw



## Notes

The dimension "Q" is to check whether the disc swing may interfere with the flange or pipe.

The dimensions herein are only for the reference and are subject to change without notice

## Dimensions (mm)

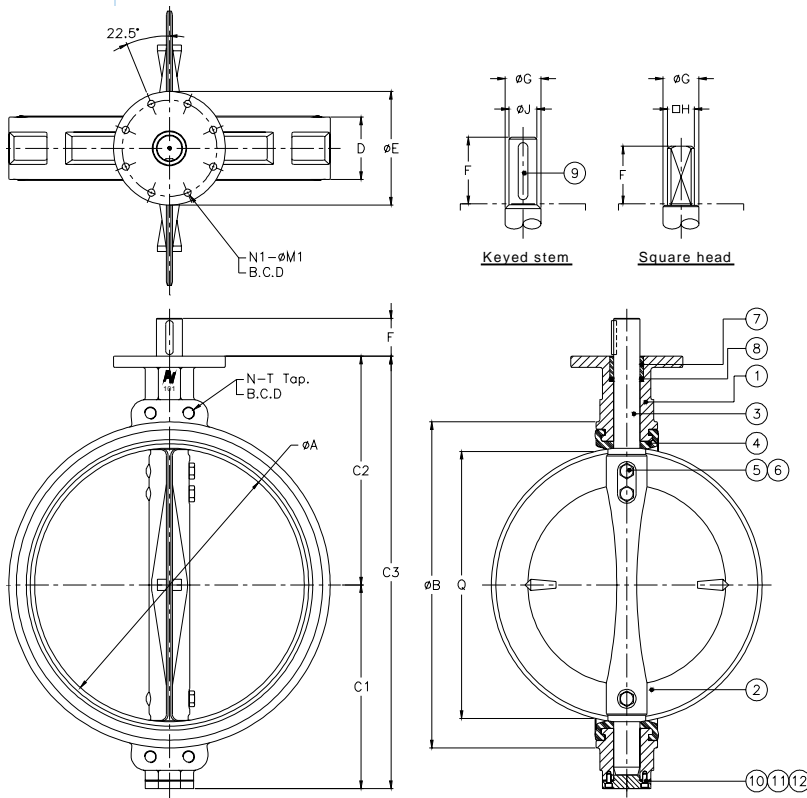
SIZE		Dimensions							Keyed stem			Square stem			
inch	mm	ØA	ØB	C1	C2	C3	D	Q	F	ØG	ØJ	Key size	F	ØG	□H
18	450	428	534	348	410	758	114	416	90	50	50	16x10-80L	55	50	36
20	500	478	588	384	447	831	127	464	90	55	50	16x10-80L	60	55	40
22	550	527	642	420	475	895	152	508	100	65	60	18x11-90L	65	65	50
24	600	577	692	450	500	950	152	560	100	65	60	18x11-90L	65	65	50
26	650	617	742	480	540	1020	165	598	110	70	65	20x12-100L	75	70	55
28	700	667	802	508	570	1078	165	650	110	70	65	20x12-100L	75	70	55

## Top Plate & Flange Drilling Data (mm)

SIZE		Top plate mounting (ISO 5211)			JIS 5K		JIS 10K		ANSI CL.150		Weight	
inch	mm	Type	ØE	B.C.D	N1-ØM1	B.C.D	N-T TAP	B.C.D	N-T TAP	B.C.D	N-T TAP	(Kg)
18	450	F14	176	Ø140	4-Ø18	Ø555	4-M22	Ø565	4-M24	Ø577.9	4-1 1/8"	90
20	500	F16	212	Ø165	4-Ø22	Ø605	4-M22	Ø620	4-M24	Ø635.0	4-1 1/8"	110
22	550	F16	212	Ø165	4-Ø22	Ø665	4-M24	Ø680	4-M30	Ø692.3	4-1 1/4"	140
24	600	F16	212	Ø165	4-Ø22	Ø715	4-M24	Ø730	4-M30	Ø749.3	4-1 1/4"	180
26	650	F25	300	Ø254	8-Ø19	Ø770	4-M24	Ø780	4-M30	Ø806.5	4-1 1/4"	210
28	700	F25	300	Ø254	8-Ø19	Ø820	4-M24	Ø840	4-M30	Ø863.6	4-1 1/4"	240

# HBV-510 DIMENSIONS/TOP PLATE & FLANGE DATA

## Part name



1. Body
2. Disc
3. Stem
4. Seat
5. Disc screw
6. O-ring
7. Bushing
8. Packing
9. Key
10. Bottom cover
11. Gasket
12. Cover screw

## Notes

The dimension "Q" is to check whether the disc swing may interfere with the flange or pipe.

The dimensions herein are only for the reference and are subject to change without notice

## Dimensions (mm)

SIZE		Dimensions							Keyed stem			Square stem			
inch	mm	ØA	ØB	C1	C2	C3	D	Q	F	ØG	ØJ	Key size	F	ØG	□H
30	750	723	862	538	605	1143	165	708	110	70	65	20x12-100L	75	70	55
32	800	768	913	577	650	1227	190	748	120	80	80	22x14-100L	85	80	60
34	850	815	964	602	680	1282	200	794	120	90	80	22x14-100L	85	90	60
36	900	865	1014	632	710	1342	200	845	120	90	80	22x14-100L	85	90	60
40	1000	959	1118	702	762	1464	216	938	140	100	80	22x14-120L	100	100	75

## Top Plate & Flange Drilling Data (mm)

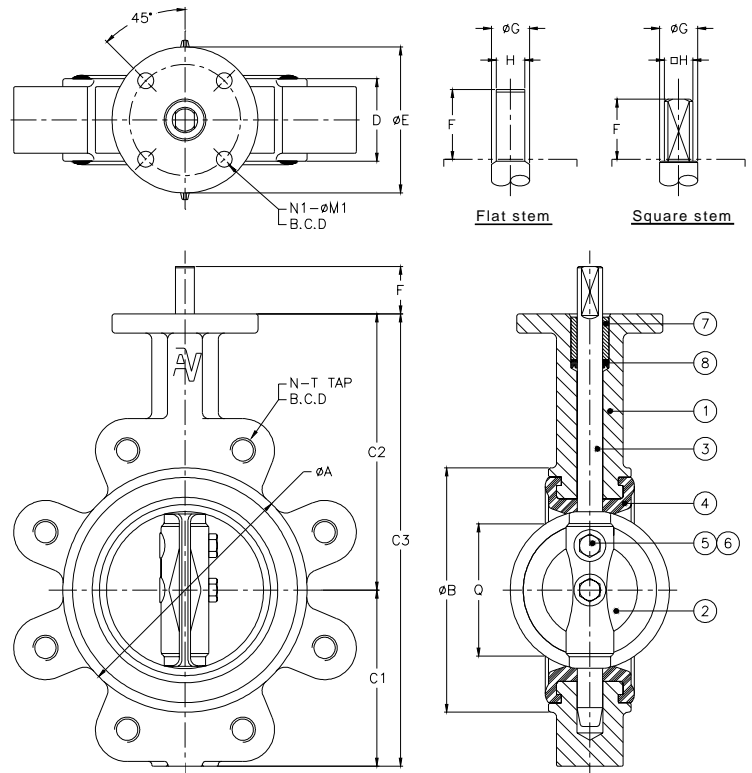
SIZE		Top plate mounting (ISO 5211)				JIS 5K		JIS 10K		ANSI CL.150		Weight
inch	mm	Type	ØE	B.C.D	N1-ØM1	B.C.D	N-T TAP	B.C.D	N-T TAP	B.C.D	N-T TAP	(Kg)
30	750	F25	300	Ø254	8-Ø19	Ø880	4-M30	Ø900	4-M30	Ø914.4	4-1 1/4"	280
32	800	F25	300	Ø254	8-Ø19	Ø930	4-M30	Ø950	4-M30	Ø977.9	4-1 1/2"	320
34	850	F25	300	Ø254	8-Ø19	Ø980	4-M30	Ø1000	4-M30	Ø1028.7	4-1 1/2"	480
36	900	F25	300	Ø254	8-Ø19	Ø1030	4-M30	Ø1050	4-M30	Ø1085.9	4-1 1/2"	585
40	1000	F30	350	Ø298	8-Ø23	Ø1130	4-M30	Ø1160	4-M36	Ø1200.2	4-1 1/2"	726



# HBV-520 DIMENSIONS/TOP PLATE & FLANGE DATA

## Part name

1. Body
2. Disc
3. Stem
4. Seat
5. Disc screw
6. O-ring
7. Bushing
8. Packing



## Notes

The dimension "Q" is to check whether the disc swing may interfere with the flange or pipe.

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## Dimensions (mm)

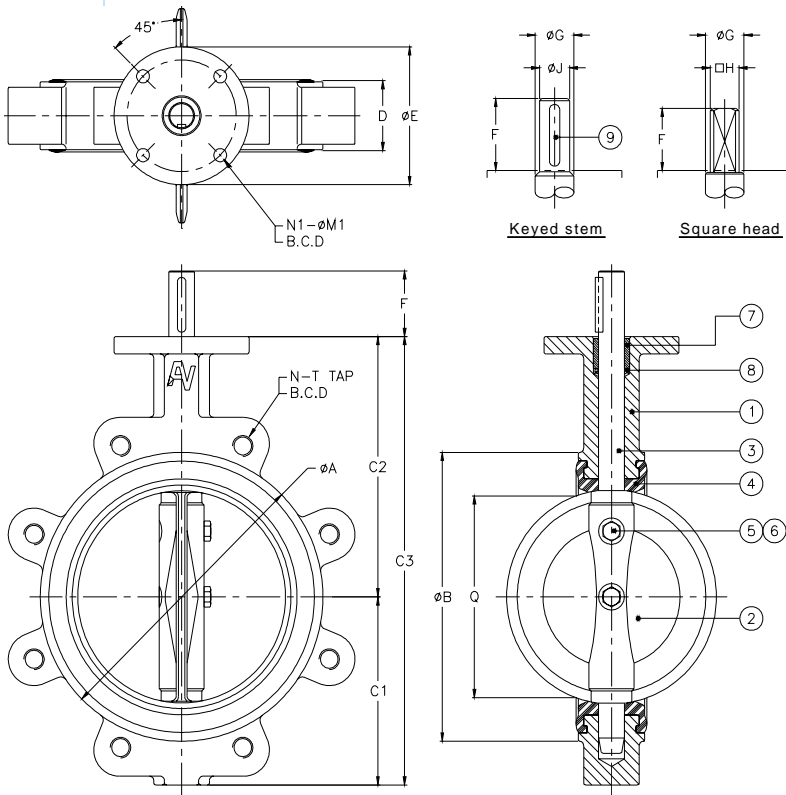
SIZE		Dimensions							Flat stem			Square stem		
inch	mm	$\phi A$	$\phi B$	C1	C2	C3	D	Q	F	$\phi G$	H	F	$\phi G$	$\square H$
2	50	48	92	71	133	204	42	26	32	14	11	15	14	11
2.5	65	63	110	85	147	232	45	46	32	14	11	16	14	11
3	80	76	128	94	156	250	45	63	32	14	11	16	14	11
4	100	99	154	111	174	285	52	86	32	16	12	16	16	12
5	125	124	187	128	191	319	55	114	32	18	14	22	18	14
6	150	149	214	142	205	347	55	141	32	18	14	22	18	14

## Top Plate & Flange Drilling Data (mm)

SIZE		Top plate mounting (ISO 5211)				JIS 5K		JIS 10K		ANSI CL.150		Weight
inch	mm	Type	$\phi E$	B.C.D	$N1-\phi M1$	B.C.D	N-T TAP	B.C.D	N-T TAP	B.C.D	N-T TAP	(Kg)
2	50	F07	92	$\phi 70$	4- $\phi 10$	$\phi 105$	4-M12	$\phi 120$	4-M16	$\phi 120.7$	4-5/8"	4
2.5	65	F07	92	$\phi 70$	4- $\phi 10$	$\phi 130$	4-M12	$\phi 140$	4-M16	$\phi 139.7$	4-5/8"	5.5
3	80	F07	92	$\phi 70$	4- $\phi 10$	$\phi 145$	4-M16	$\phi 150$	8-M16	$\phi 152.4$	4-5/8"	6
4	100	F07	92	$\phi 70$	4- $\phi 10$	$\phi 165$	8-M16	$\phi 175$	8-M16	$\phi 190.5$	8-5/8"	8
5	125	F07	92	$\phi 70$	4- $\phi 10$	$\phi 200$	8-M16	$\phi 210$	8-M20	$\phi 215.9$	8-3/4"	10
6	150	F07	92	$\phi 70$	4- $\phi 10$	$\phi 230$	8-M16	$\phi 240$	8-M20	$\phi 241.3$	8-3/4"	12

# HBV-520 DIMENSIONS/TOP PLATE & FLANGE DATA

Part name



1. Body
2. Disc
3. Stem
4. Seat
5. Disc screw
6. O-ring
7. Bushing
8. Packing

## Notes

The dimension "Q" is to check whether the disc swing may interfere with the flange or pipe.

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## Dimensions (mm)

SIZE		Dimensions							Keyed stem			Square stem			
inch	mm	ØA	ØB	C1	C2	C3	D	Q	F	ØG	ØJ	Key size	F	ØG	□H
8	200	194	264	172	238	410	62	186	60	24	—	8x7-50L	26	24	19
10	250	246	324	204	270	474	66	240	60	28	—	8x7-50L	30	28	22
12	300	297	374	236	310	546	78	288	60	32	—	10x8-50L	33	32	24
14	350	332	416	260	340	596	78	325	60	34	32	10x8-50L	33	34	24
16	400	380	478	294	375	669	102	369	90	44	—	14x9-80L	50	44	34

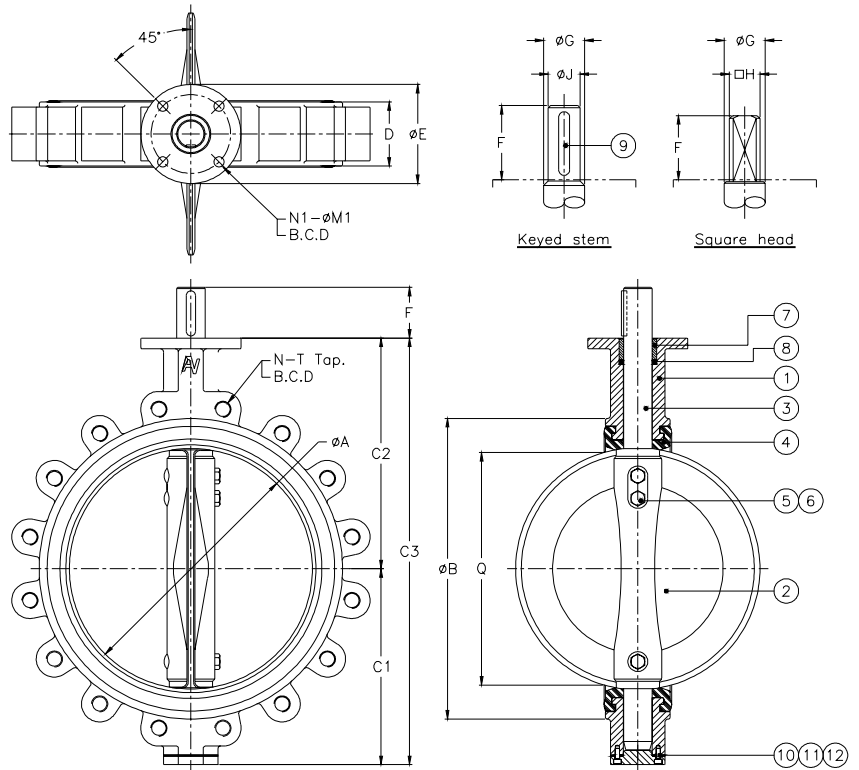
## Top Plate & Flange Drilling Data (mm)

SIZE		Top plate mounting (ISO 5211)				JIS 5K		JIS 10K		ANSI CL.150		Weight
inch	mm	Type	ØE	B.C.D	N1-ØM1	B.C.D	N-T TAP	B.C.D	N-T TAP	B.C.D	N-T TAP	(Kg)
8	200	F10	126	Ø102	4-Ø12	Ø280	8-M20	Ø290	12-M20	Ø298.5	8-3/4"	20
10	250	F10	126	Ø102	4-Ø12	Ø345	12-M20	Ø355	12-M22	Ø362.0	12-7/8"	30
12	300	F12	152	Ø125	4-Ø14	Ø390	12-M20	Ø400	16-M22	Ø431.8	12-7/8"	42
14	350	F12	152	Ø125	4-Ø14	Ø435	12-M22	Ø445	16-M22	Ø476.3	12-1"	64
16	400	F14	176	Ø140	4-Ø18	Ø495	16-M22	Ø510	16-M24	Ø539.8	16-1"	80

# HBV-520 DIMENSIONS/TOP PLATE & FLANGE DATA

## Part name

1. Body
2. Disc
3. Stem
4. Seat
5. Disc screw
6. O-ring
7. Bushing
8. Packing
9. Key
10. Bottom cover
11. Gasket
12. Cover screw



## Notes

The dimension "Q" is to check whether the disc swing may interfere with the flange or pipe.

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## Dimensions (mm)

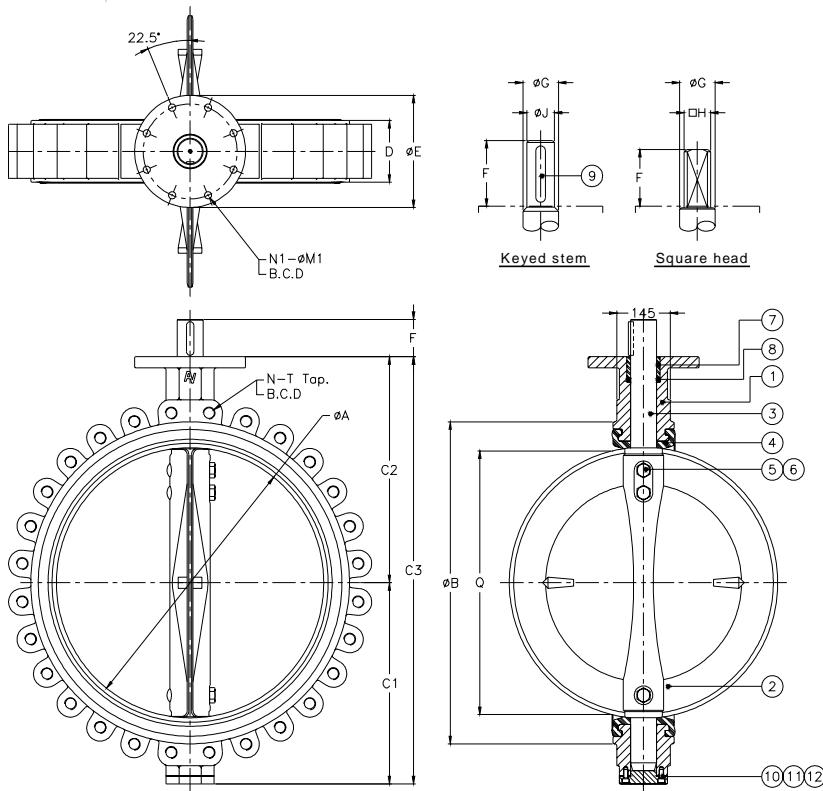
SIZE		Dimensions							Keyed stem				Square stem		
inch	mm	ØA	ØB	C1	C2	C3	D	Q	F	ØG	ØJ	Key size	F	ØG	□H
18	450	428	534	348	410	758	114	416	90	50	—	16x10-80L	55	50	36
20	500	478	588	384	447	831	127	464	90	55	50	16x10-80L	60	55	40
22	550	527	642	420	475	895	152	508	100	65	60	18x11-90L	65	65	50
24	600	577	692	450	500	950	152	560	100	65	60	18x11-90L	65	65	50
26	650	617	742	480	540	1020	165	598	110	70	65	20x12-100L	75	70	55
28	700	667	802	508	570	1078	165	650	110	70	65	20x12-100L	75	70	55

## Top Plate & Flange Drilling Data (mm)

SIZE		Top plate mounting (ISO 5211)				JIS 5K		JIS 10K		ANSI CL.150		Weight
inch	mm	Type	ØE	B.C.D	N1-ØM1	B.C.D	N-T TAP	B.C.D	N-T TAP	B.C.D	N-T TAP	(Kg)
18	450	F14	176	Ø140	4-Ø18	Ø555	16-M22	Ø565	20-M24	Ø577.9	16-1 1/8"	110
20	500	F16	212	Ø165	4-Ø22	Ø605	20-M22	Ø620	20-M24	Ø635.0	20-1 1/8"	145
22	550	F16	212	Ø165	4-Ø22	Ø665	20-M24	Ø680	20-M30	Ø692.3	20-1 1/4"	210
24	600	F16	212	Ø165	4-Ø22	Ø715	20-M24	Ø730	24-M30	Ø749.3	20-1 1/4"	245
26	650	F25	300	Ø254	8-Ø19	Ø770	24-M24	Ø780	24-M30	Ø806.5	24-1 1/4"	290
28	700	F25	300	Ø254	8-Ø19	Ø820	24-M24	Ø840	24-M30	Ø863.6	28-1 1/4"	310

# HBV-520 DIMENSIONS/TOP PLATE & FLANGE DATA

Part name



1. Bo
2. Di
3. St
4. Se
5. Disc scr
6. O-ri
7. Bushi
8. Packi
9. K
10. Bottom co
11. Gas
12. Cover sc

## Notes

The dimension "Q" is to check whether the disc swing may interfere with the flange or pipe.

The dimensions herein are only for the reference and are subject to change without notice

## Dimensions (mm)

SIZE		Dimensions							Keyed stem				Square stem		
inch	mm	ØA	ØB	C1	C2	C3	D	Q	F	ØG	ØJ	Key size	F	ØG	□H
30	750	723	862	538	605	1143	165	708	110	70	65	20x12-100L	75	70	55
32	800	768	913	577	650	1227	190	748	120	80	—	22x14-100L	85	80	60
34	850	815	964	602	680	1282	200	794	120	90	80	22x14-100L	85	90	60
36	900	865	1014	632	710	1342	200	845	120	90	80	22x14-100L	85	90	60
40	1000	959	1118	702	762	1464	216	938	140	100	80	22x14-120L	100	100	75

## Top Plate & Flange Drilling Data (mm)

SIZE		Top plate mounting (ISO 5211)			JIS 5K		JIS 10K		ANSI CL.150		Weight	
inch	mm	Type	ØE	B.C.D	N1-ØM1	B.C.D	N-T TAP	B.C.D	N-T TAP	B.C.D	N-T TAP	(Kg)
30	750	F25	300	Ø254	8-Ø19	Ø880	24-M30	Ø900	24-M30	Ø914.4	28-1 1/4"	414
32	800	F25	300	Ø254	8-Ø19	Ø930	24-M30	Ø950	28-M30	Ø977.9	28-1 1/2"	441
34	850	F25	300	Ø254	8-Ø19	Ø980	24-M30	Ø1000	28-M30	Ø1028.7	32-1 1/2"	570
36	900	F25	300	Ø254	8-Ø19	Ø1030	24-M30	Ø1050	28-M30	Ø1085.9	32-1 1/2"	742
40	1000	F30	350	Ø298	8-Ø23	Ø1130	28-M30	Ø1160	28-M36	Ø1200.2	36-1 1/2"	1010

# HBV Kv VALUES & TORQUE

## Kv values

Size		Disc Opening								
inch	mm	10°	20°	30°	40°	50°	60°	70°	80°	90°
2	50	1.5	5	11	21	37	59	86	107	116
2.5	65	2.6	9	19	34	62	98	142	178	191
3	80	3.7	13	27	50	90	143	207	258	278
4	100	6	21	46	84	152	242	350	438	472
5	125	10	34	73	132	239	380	550	687	740
6	150	14	48	105	191	345	548	794	992	1069
8	200	24	82	178	324	585	929	1345	1682	1812
10	250	39	132	286	520	888	1488	2478	3434	3617
12	300	57	191	413	753	1285	2455	3588	4971	5237
14	350	72	243	526	959	1637	2744	4569	6330	6668
16	400	94	318	688	1255	2141	3589	5976	8280	8722
18	450	115	403	872	1590	2713	4547	7573	100491	11051
20	500	140	504	1091	1989	3394	5690	9775	13127	13828
22	550	180	612	1325	2415	4121	6908	11504	17382	20808
24	600	216	732	1586	2892	4935	8273	13777	20817	24919
26	650	247	837	1813	3305	5639	9454	15743	23787	28475
28	700	288	978	2118	3860	6586	11040	18385	27778	33253
30	750	339	1147	2486	4532	7732	12963	21587	32616	44034
32	800	382	1294	2803	5111	8720	14620	24345	36785	44034
34	850	430	1457	3156	5753	9816	16456	27404	41406	49566
36	900	484	1640	3553	6478	11053	18530	30857	46623	55811
40	1000	595	2015	4364	7957	13576	22760	37902	57267	68554

## Notes

1. Kv (hr) is the volume of water through the valve at 20 with 1 bar pressure drop.
2. Cv=1.156

## Sizing torque ( $\Delta P$ in bar)

Size		3 bar			7.5 bar			10 bar		
inch	mm	Kg·m	N·m	Lb·in	Kg·m	N·m	Lb·in	Kg·m	N·m	Lb·in
2	50	1.4	14	122	2.1	21	186	2.3	23	204
2.5	65	1.8	17	154	2.7	26	230	3	29	257
3	80	2.2	22	191	3.3	32	283	4	36	319
4	100	3.3	32	287	5	49	434	6	54	478
5	125	5	46	404	7	68	602	8	76	673
6	150	7	68	605	11	103	912	12	114	1009
8	200	13	126	1117	20	189	1673	22	210	1859
10	250	18	173	1533	27	260	2301	30	289	2558
12	300	28	269	2382	40	386	3416	46	449	3974
14	350	39	378	3349	56	542	4797	65	631	5584
16	400	56	549	4861	81	787	6965	94	915	8098
18	450	77	750	6634	110	1074	9505	128	1249	11054
20	500	102	994	8800	146	1425	12611	169	1657	14664
22	550	162	1584	14038	232	2274	20125	270	2644	23399
24	600	195	1906	16864	279	2731	24169	324	3176	28108
26	650	233	2282	20192	334	3270	28940	388	3803	33657
28	700	273	2674	23662	391	3832	33913	455	4456	39436
30	750	322	3152	27898	461	4518	39984	536	5254	46498
32	800	395	3872	34266	566	5550	49118	658	6453	57109
34	850	453	4072	36038	596	5837	51657	693	6787	60065
36	900	485	4750	42035	695	6808	60251	808	7916	70057
40	1000	641	6286	55635	919	9011	79747	1069	10477	92721

# SPECIAL BUTTERFLY VALVE-SOLUTION TO CAVITATIONS AND NOISE

## HBV 700 SERIES : 710(Rating 150~600), 770(Rating 900~2500)

### Materials

The Varidiff trim has been used successfully on a number of demanding applications where the use of standard butterfly valves had resulted in severe operational problems, and premature failure of the valve. One such application is back pressure control on overboard dump lines in the offshore industry. Other applications include firewater ring system control valve, brine blowdown control, jetty loading valves, sea-water drain and re-circulation, cooling water circulation, and distillate to culvert valves. In addition to the above liquid service applications it has also found use on steam vent headers, and gas pipelines, for low noise requirements.

Part Description	Carbon Steel	AlI-bronze	Duplex St. St.
Body	ASTM A216 WCB	BS1400 AB2C	ASTM A890 Gr4A
Vane	ASTM A351 CF8M	BS1400 AB2C	ASTM A890 Gr4A
Spindle	17/4	Monel	25% Duplex St. St.
Split taper pin	17/4	Monel	25% Duplex St. St.
Sealing ring (*)	Glass Filled P.T.F.E.	Glass Filled P.T.F.E.	Glass Filled P.T.F.E.
Spindle bearing	316 + P.T.F.E.	Bronze + P.T.F.E.	P.T.F.E.
Packing set	P.T.F.E. / Graphoil	P.T.F.E. / Graphoil	P.T.F.E. / Graphoil
Gland Follower	St. Steel	St. Steel	St. Steel

Alternative material options available on request.  
 (\*) Used on tight shut-off applications.

Figure 1. Sectional view of valve fitted with Varidiff vane and baffle plate

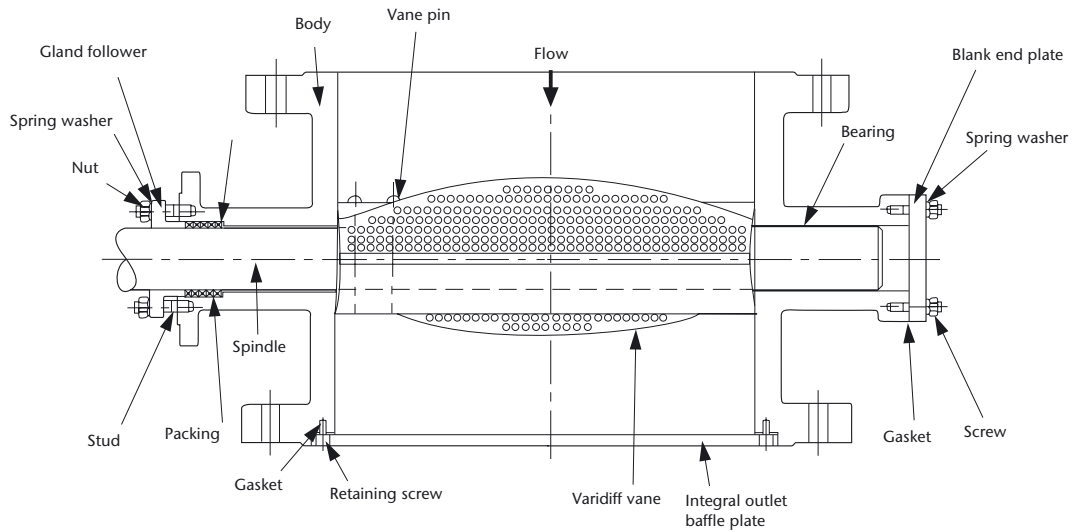
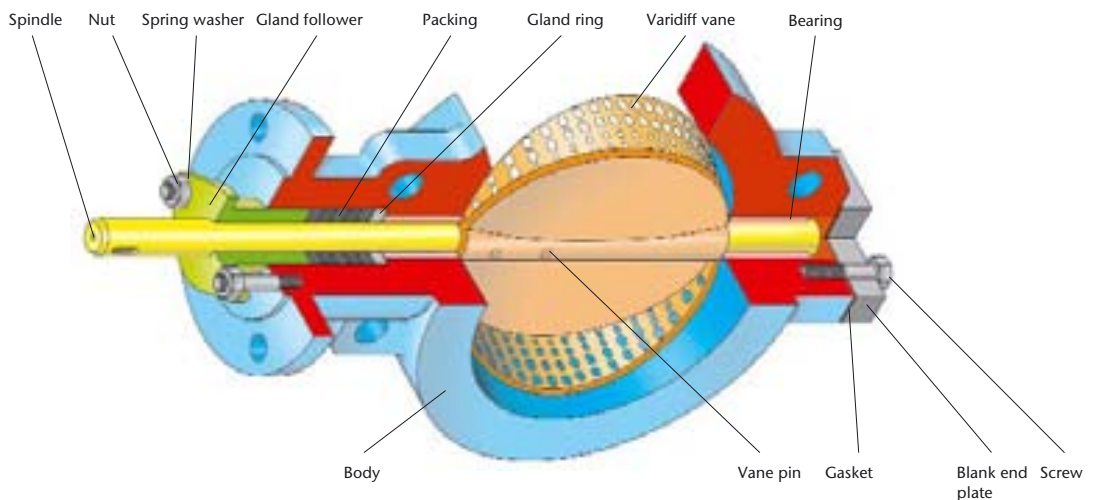


Figure 2. Wafer style valve with 'Swingthro' Varidiff vane





# SPECIAL BUTTERFLY VALVE-SOLUTION TO CAVITATIONS AND NOISE

HBV 700 SERIES : 710(Rating 150~600), 770(Rating 900~2500)

## Sizing & Selection

### Swing Through Varidiff CV Values

Valve Size mm	Valve opening								
	90°	80°	70°	60°	50°	40°	30°	20°	10°
100	400	320	220	152	100	64	40	20	7
125	625	500	344	237	156	100	63	31	12
150	899	719	495	341	224	144	90	44	17
200	1599	1279	880	607	399	256	160	79	29
250	2498	1998	1374	949	624	400	250	124	46
300	3598	2878	1979	1366	898	576	360	178	66
350	4621	3696	2542	1755	1154	739	463	229	85
400	6080	4863	3344	2309	1518	973	609	301	112
450	7739	6189	4257	2939	1933	1238	775	383	142
500	9598	7676	5279	3645	2397	1535	961	475	177
600	13915	11129	7654	5284	3475	2226	1393	689	256
700	19032	15221	10469	7227	4753	3044	1905	942	350
750	21890	17507	12041	8313	5466	3501	2192	1083	403
800	24948	19953	13723	9474	6230	3991	2498	1234	459
900	31663	25323	17416	12024	7907	5065	3170	1567	583
1000	39179	31334	21551	14878	9783	6267	3922	1939	721
1200	56607	45273	31137	21496	14135	9055	5667	2801	1042

### CV Values For Hyperseal

Valve Size mm	Valve opening								
	90°	80°	70°	60°	50°	40°	30°	20°	10°
100	221	177	122	84	55	35	22	11	4
125	353	282	194	134	88	56	35	17	6
150	662	529	364	251	165	106	66	33	12
200	1205	964	663	458	301	193	121	60	22
250	2030	1624	1117	771	507	325	203	100	37
300	3016	2412	1659	1145	753	482	302	149	56
350	3808	3046	2095	1446	951	609	381	188	70
400	5059	4046	2783	1921	1263	809	506	250	93
450	6455	5163	3551	2451	1612	1033	646	319	119
500	7818	6253	4300	2969	1952	1251	783	387	144
600	11436	9146	6290	4343	2856	1829	1145	566	211
700	16167	12930	8893	6139	4037	2586	1619	800	298
750	18710	14964	10292	7105	4672	2993	1873	926	344
800	21395	17111	11768	8125	5343	3422	2142	1059	394
900	25336	20263	13936	9621	6327	4053	2537	1254	466
1000	33043	26427	18176	12548	8251	5285	3308	1635	608

Please note that the Cv's shown above are for guidance only as Cv's will change dependent on shaft size and the design of the Varidiff trim, which can vary with the required duty.

### Recommended Maximum Velocities For Liquid Service

Valve Size ins	mm	Body Material					
		Carbon steel		316 + Duplex		Al-bronze	
		ft/sec	m/sec	ft/sec	m/sec	ft/sec	m/sec
4-12	100-300	30	9	30	9	20	6.1
14-24	350-600	18	5.5	18	5.5	14	4.3
Above 24	Above 600	12	3.6	12	3.6	9	2.7

### Recommended maximum velocities for gas/vapour service

Valve Size ins	mm	Max. Inlet		Max. Outlet		Max. Outlet Mach No. for required noise level		
		ft/s	m/s	ft/s	m/s	>95 dBA	<95 dBA	<85 dBA
4-12	100-300	200	61	350	107	0.3	0.25	0.2
14-24	350-600	100	30					
Above 24	Above 600	80	24					

Figure 3. Static pressure recovery

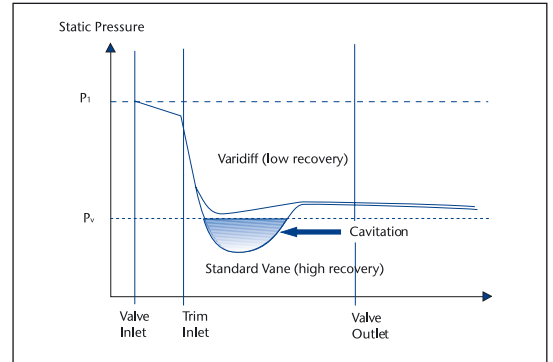


Figure 4. Typical Varidiff characteristic curve

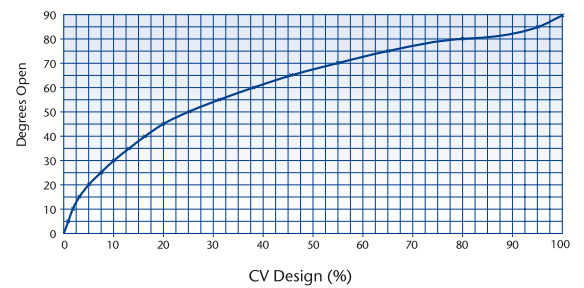
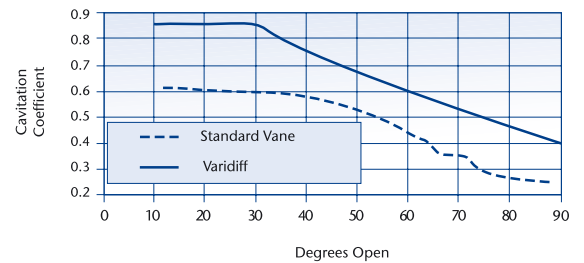


Figure 5. Comparison between cavitation coefficient for Varidiff and Standard Vane



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