H-Series

DK T.M.I INT'L

HIGH PERFORMANCE BUTTERFLY VALVES

DK T.M.I INT'L BUTTERFLY
RAINBOW Series

Model	Valve Type
C-sr	Concentric Type
H-sr	High Performance/Cargo
MT-sr	Triple Offset Metal Seat
W-sr	Water Works
M-sr	Marine Valves
Cr-sr	Cryogenic Valves

DK T.M.I INTERNATIONAL Co., Ltd.

http://www.dktmi.com

KSA KAB
ISO 9001 : 2000
KSA 9001 : 2001

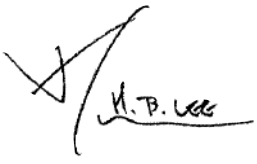
DK T.M.I INT'L

Business philosophy to secure the newest and best quality products starts from the best facilities and systemized managemet!

Greetings

We are specialized in the production of the industrial and technical butterfly valves since our foundation, and thus have obligations and the strong will to develop the new phase of valve for the jump of Advanced Industrial Korea and have devoted our best efforts to the continuous technical innovation and the development of new products with accumulated knowledge and technology in consideration with the characteristics of pressure, temperature and fluid of all kinds of pipe line based on the high quality and the excellent technique upon the demand and request of user, and thus are already acknowledged in its quality and performance by domestic and foreign market. We promise you that we will manufacture the products with our eagerness and sincerity even a small quantity, by the attitude which we will assume responsibility of our products until end, taking our principle as the honesty and the trust, and moreover hope you to be prosperous and to have the endless development. We want your favorable encouragement and continuous guidance from now on. Thank you

President, H.B.Lee



http://www.dktmi.com

DK T.M.I INT'L

Company History

1980

1986. 05. The foundation as named Dongkwang Precision Ind.
1989. 12. The production of Butterfly Valve

1990

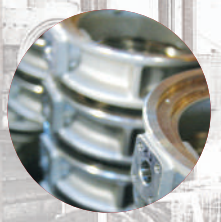
1992. 10. The vendor registration of POSCO CO., LTD.
1992. 12. The vendor registration of Yechone Namhae Chemical Ltd.
1993. 06. The Establish of our own foundry
1995. 08. The turnover as named Dongkwang Valve Co., Ltd.
1998. 06. Acquired ISO 9001 Certificate
1998. 07. The establish of second factory
1999. 03. The vendor registration of HANJIN Heavy Ind., Ltd.

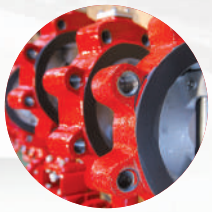
2000

2002. 03. The vendor registration of Daelim E&C
The vendor registration of Hyundai E&C
2006. 08. The vendor registration of Hyundai Samho Heavy Ltd.
2006. 10. Acquired " ABS Type Approval " Certificate
2006. 11. Acquired "CE" Certificate
2007. 03. Acquired "API" Certificate
2007. 04. The vendor registration of SK E&C.
2007. 05. The vendor registration of DONGYANG Chemical Co., ltd.
2007. 06. The vendor registration of HONAM Petrochemical Ltd.
2008. 07. The Established of R&D Center
2008. 10. Acquired "Lloyd" s Type Approval Certificate
2008. 11. Acquired "Innobiz company certificate"
2008. 12. Acquired "DNV" Type Approval

Quality management Facilities and Equipments

DK T.M.I INT'L is always stepping ahead with the second to-none competitive power to make a difference from other rival companies thanks to the complete system by linking with the up-to-date equipments and the best quality management in a systematic way!

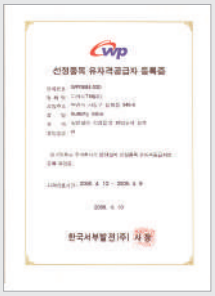
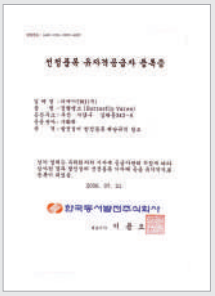


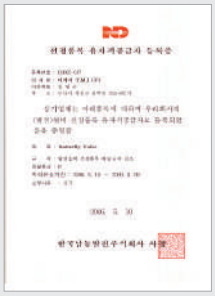


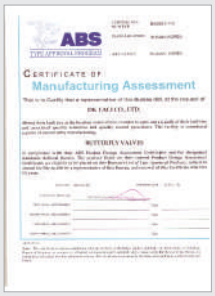
CERTIFICATE

Received certification in outstanding technology and high quality

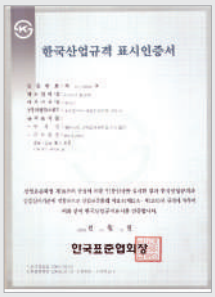










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HIGH PERFORMANCE BUTTERFLY VALVES

DHP-11(Lever Type)

DHP-12(Worm Gear Type)

DHP-13(Double acting Type)

DHP-14(Spring Return Type)

DHP-15(Electric Moter Type)

DHP-16(Control Type)

※ ACCESSORIES

- Limit Switch
- Air Filter Set
- Positioner
- Silencer
- Speed Controller
- Solenoid Valve

Description

DK T.M.I INT'L co.,ltd, DK-H Series has been designed and developed the butterfly valve which is able to do as good Working under low and high temperature, high vacuum condition inspite of present butterfly valve is difficult to Cope with the various condition.

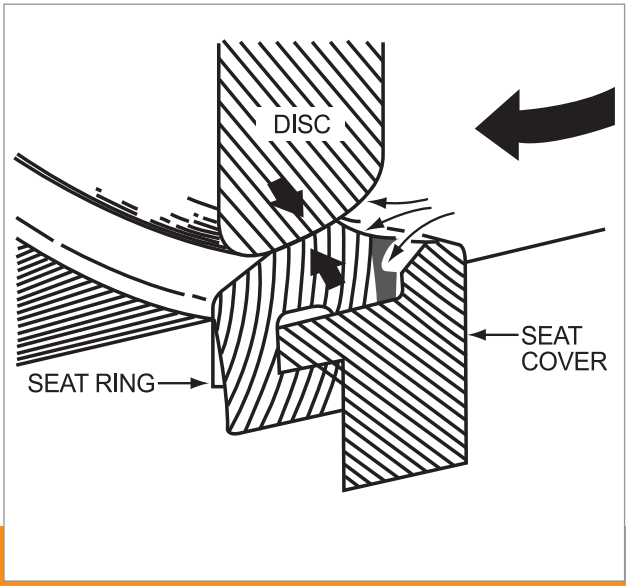
DK-H Series High performance valve has been applied the 0 leakage, double eccentricity constuction. It has established the many highest automatic produce system,achived the improve the quality to its maximise with the automatic processing working and make a stadndardize in all componet parts.

Furthermore, DK-H Series can applied various seat type such as PTFE, RTFE, PEEK, and PCTFE as well as NBR, EDPM, and Viton seated Cargo valve Application.

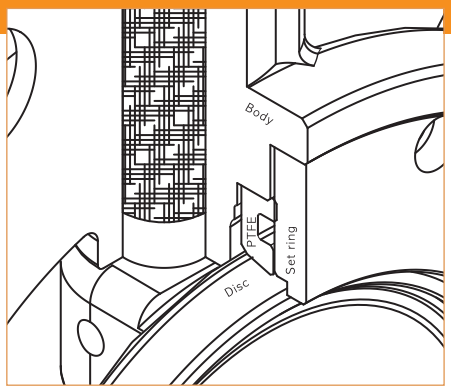
The Principle of Seat Sealing

The structure of the disc and seat can maintain the 0 leakage in spite of the both direction flow and the more pressure is increasing the high confidence is ensuring.

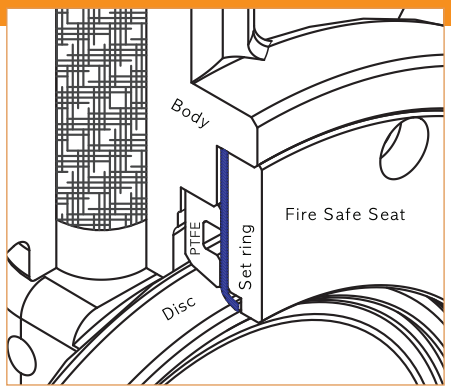
The 0 leakage is not broken even the flow direction changed from forward flow to reverse flow



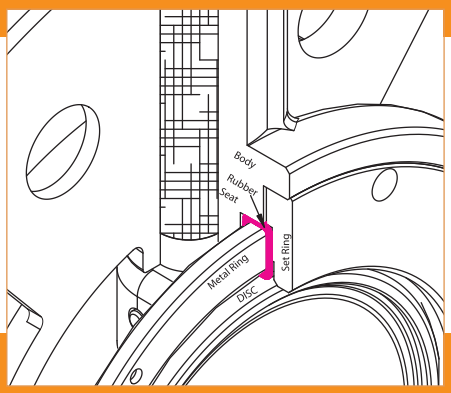
DOUBLE ECCENTRIC
PTFE / RTFE SEAT VALVE



DOUBLE ECCENTRIC
METAL+FIRE SAFE SEAT VALVE



DOUBLE ECCENTRIC
CARGO SEAT VALVE



Drawings

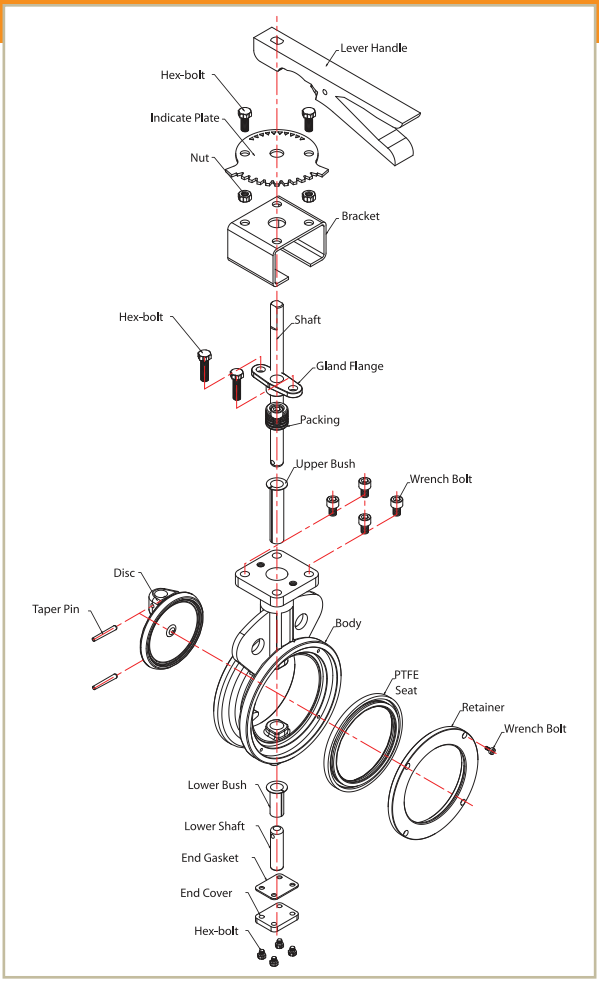


Figure 1 - Valve Component

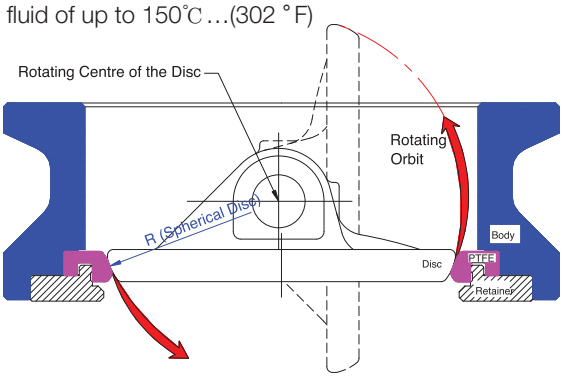
Part Name	Materials	Material Equivalent	
		ASTM	JIS
1. Body	Ferrous Iron	A126-CL B	FC200 / FCD450
	Cast Steel	A216-WCB	SC480
	Stainless Steel Casting	A351-CF8, CF8M,CF3,CF3M	SCS13, SCS14, SCS14, SCS16
	Non-Ferrous Steel Casting	B148-C95500, 95800 etc	AL-BRONZE
	Special Material	Inconel, Monel	Inconel, Monel
2. Disc	Stainless Steel Casting	A351-CF8, CF8M,CF3, CF3M	SCS13, SCS14, SCS16
	Non-Ferrous Steel Casting	B148-C95500, 95800 etc	AL-BRONZE
	Special Material	Inconel, Monel	Inconel, Monel
3. Seat	Teflon / Rubber	PTFE / RTFE / PEEK / NBR / VITON (SS304, SS316, SS316L)	
4. Shaft	Stainless Steel	A276-304, 316,	SUS304, SUS316, SUS316L, SUS630
	Special Material	MONEL. HASTELLOY	
5. Retainer	Stainless Steel	A240-304, 316, HASTELLOY	SUS304, BRONZE
6. Packing	Teflon / Graphite	VITON, PTFE, GRAPHITE (Fugitive Emission Type)	
7. Others	Stainless Steel	SS304, SS316, SS316L, Special Material	

The material can be changed in accordance with the customer's requirements

PTFE Seat High Performance Valve (DK-H-P)

As can be seen in the figure below, the interrelation bewteen the disc and the seat, is such that the contact surface of both are kept slightly Separated due to the eccentricity of the rotating centre of the disc, Except when the disc is in the fully closed position.
The sealing seat is Geometrical flue Dynamic shaped and has sufficient elastisticity for permitting the proper closure and watertightness of the fluids.

The Teflon seat ring is designed to withstand corrosive chemical solutions and high temperature fluid of up to 150℃…(302 °F)



General Feature

- Perfect Sealing in both flow directions according to DIN 3230 part3
- Easy replacement of Soft Seat (P.T.F.E/R.T.F.E/PEEK)
- Antistatic Design
- 2 Pieces Shaft for Low Pressure / 1 Piece Shaft for Hig Pressure
- Investment Casting Body and Disc for valve size 50A TO 300A
- Can Applied on High Clean System or Vacuum Valve

Applications

- Demi-water, chilled/hot water, Sea water
- Formaldehyde solution, Oxygen, exhaust gas, Steam
- Air Conditioning System
- High Clean Piping System

Specifications

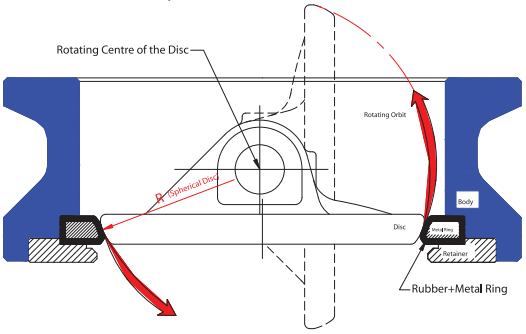
- Design Code : ASME B16.34, API 609, JIS, KS, DIN available
- Valve Nominal Size : 50A Up to 1800A (2″ ~ 72 ″)
- Application Flange Standard : ASME B 16.5 Class 150, 300-up to 600A
  ASME B 16.47-Sr A, Sr B Class 150, 300 -Up to 1500A (60″)
  AWWA C207 Class 150- Up to 1,800A (72″)
- Face- to- Face Dimensions : API 609 Category B, JIS, KS, DIN available
- Body Style : Wafer, Lugged, Double Flanged
- Seat Leakage Rate : ISO 5208 Rate A (Zero Leakage), API 598
- Flow Direction : Bi-direction (Recommended flow direction : Pressure to shaft side)
- Test Pressure : - Body Hydrostatic Test : 1.5 Times of Pressure-Temperature rating
  - Seat Leakage : 5.5 bar(Air) or 110% or Pressure-Temperature rating

Rubber Seat Cargo Valve(DK-H-CA)

As shown by the figure below, DK-H-CA Series Cargo seat valves are designed in the shape of a disc, with two separate geometric axies.
Double Offset disc structure can provide low torque when open/Close the valve.
With this design, after a few of opening, the surface of the spherical diameter of the disc manages to remain free of contact of the rubber Seat, in this way preventing any concentrated point of deterioration and thus extending the life of the elastomer.
The perimeter of the disc,its spherical surface, is protected with a layer of stainless steel, bronze, Monel or any other anticorrosive material
in order to ensure :

- That no decrease or wear takes place in the spherical edge due to friction from the fluid.
- That no layers of rust or corrosion build up that would deform the butterfly valve.
  The Valve seat is generally manafactured by vulcanising the rubber material on a metal ring, which gives a single piece as a result.

The material for the metal ring is steel and the synthetic rubber can be made of differenct materials, Nitrile, Neoprene, Viton, silicone, etc., depending on the fluid or the temperature.



General Feature

- Inner METAL ring + Vulcanizing Rubber enveloped Seat
- Easy replacement of Seat (EPDM, NBR, VITON, SILICON)
- 1 Piece Shaft hole disc.

Applications

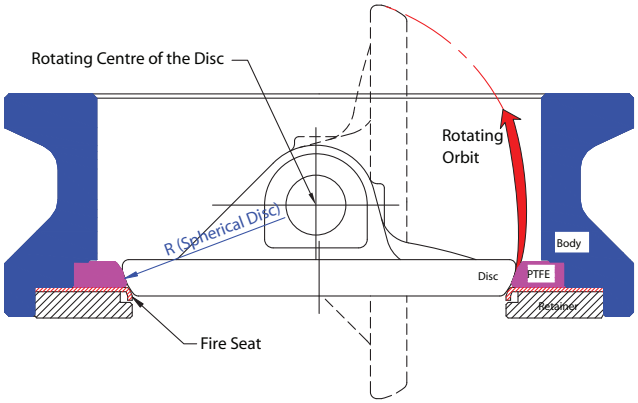
- Cargo oil system in the Tanker & bilge, drainage System
- Sea water system & Water ballast system
- Fuel oil and Diesel oil system
- Tank Venting and Inert gas system

Specifications

- Design Code & Pressure : JIS F7480 , 5K, 10K, 16K ,20K (PN10, 16)
- Valve Nominal Size : 50A Up to 1800A (2″ ~ 72 ″)
- Application Flange Standard : JIS B2210
- Face- to- Face Dimensions : JIS B 2002
- Body Style : Wafer & Semi Lug, Full Lugged
- Seat Leakage Rate JIS B F7480 & JIS B2003
- Flow Direction : Bi-direction(Recommended flow direction : Pressure to shaft side)
- Test Pressure : - Body Hydrostatic Test : 1.5 Times of Pressure-Temperature rating
  - Seat Leakage : 5.5 bar(Air) or 110% or Pressure-Temperature rating

Fire Safe Seat Valve(DK-H-FS)

As can be appreciated in the figure below, this seat combines a Nitrile, Viton or P.T.F.E seat with a secondary ring, made of metal, complying with the fire safety standard as per BS 6755 part 2, API 607.
The design is based on the double eccentricity described above for valve with metal or P.T.F.E seat, with the advantage of incorpotating soft rubber or P.T.F.E instead of the metal.
Under normal fuctioning conditions, and with the disc in the closed position, it a fire occurs to the outside, then the second seat, the metal one,will come into operation after the first seat has been destroyed by the effect of the heat, thereby completely stopping the passage of the fluid.



Temperatures

From -100℃ to +200℃ depending on the conditions, only metal +600℃

Applications

Water, Sea water , Crude-oil similars to the P.T.F.E Construction. Chemicals

Constructions

Part Name	Materials
1. Body	ASTM A216 gr WCB / ASTM-A351 CF8, CF8M
2. Disc	ASTM 216 gr WCB / ASTM-A351 CF8, CF8M
3. Shaft	ASTM A182 F-316 / A276-316
4. Bearings	ASTM A182F-316 + Unalloyed nickel
5. 1' st Seat	Nitrile / Viton / NBR / P.T.F.E / R.T.F.E
6. 2' nd Metal Seat	ASTM A240-F316
7. Packing	Graphite.

Specifications

- Design Code & Pressure : JIS F7480 , 5K, 10K, 16K ,20K (PN10, 16)
- Valve Nominal Size : 50A Up to 1800A (2″ ~ 72″)
- Application Flange Standard : JIS B2210
- Face- to- Face Dimensions : JIS B 2002
- Body Style : Wafer & Semi Lug ,Full Lugged ,
- Seat Leakage Rate JIS B F7480 & JIS B2003
- Flow Direction : Bi-direction (Recommended flow direction : Pressure to shaft side)
- Test Pressure : - Body Hydrostatic Test : 1.5 Times of Pressure-Temperature rating
  - Seat Leakage : 5.5 bar(Air) or 110% or Pressure-Temperature rating

PACKING
Packing

Several packing options are available, See Figure 1, 2 and 3
For parts identification

PTFE Dual-Seal Packing for Live loaded Actuating Device

The primary packing and the secondary packing each parts are putted into gland seal hole to prevent leakage of medium.
To assure leaking sensing, Lantern Ring and seal port are provided at body neck
This Dual seal Packing is used at frequently condition of dynamic loaded shaft

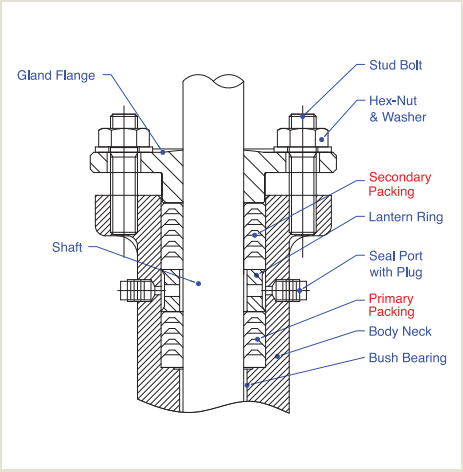


Figure 1- Dual Seal Packing

PTFE Seal Packing for General Purpose

The PTFE Seal Packing is used on general purpose,
Which made of TEFLON , V-Type Packing. Provide
Ensure excellent sealing mechanism.
This type is also can be changed with RUBBER .

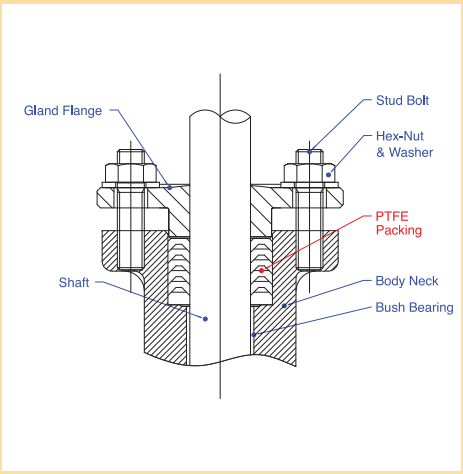


Figure 2- PTFE Packing

Graphoil Seal Packing for Emission Defence Condition

Both sides of flexible Graphite packing or Carbon fiber (Graphite fiber) braided packings are covered
With special shape of flexible Graphite to improve the hermetic property.
Use style EDP(Emission Defence Packing) in combination with style 6701 or 6528G of Pillar°Øs Products
Style 6710 is flexible graphite braided packing, reinforced by Inconel wire, and is used as adapter
Packing in combination.

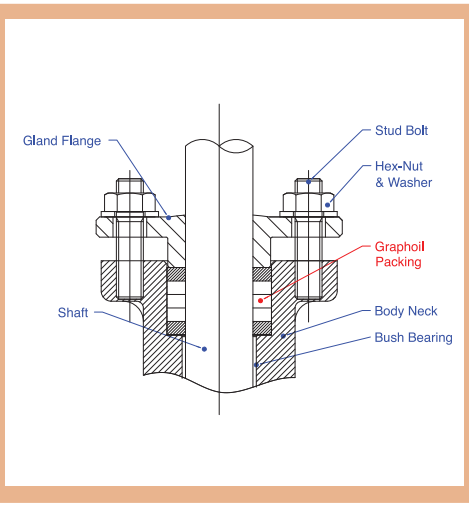


Figure 3- Graphol Packing

HIGH PERFORMANCE BUTTERFLY VALVES

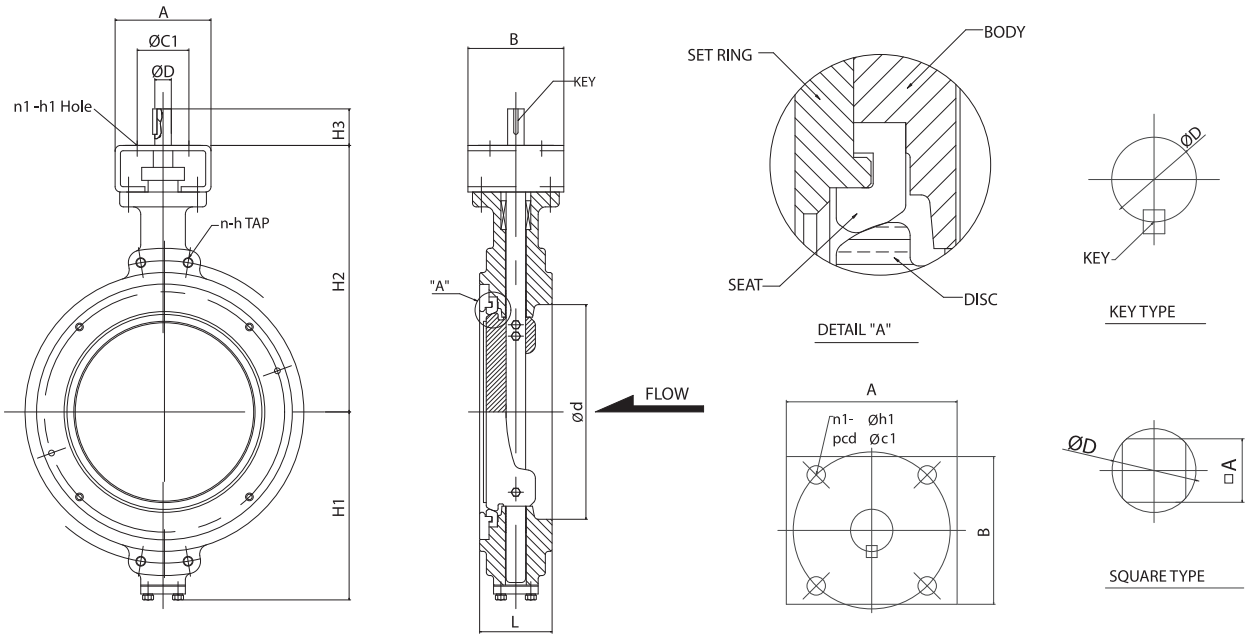
STANDARD SPECIFICATIONS

Lever-Operated Type | Worm Gear Type | Electric-Motor Type | Pneumatic-Cylinder Type

Model		DK-H-P	DK-H-CA	DK-H-FS	DK-H-MT
Product Name		High Performance	Cargo Valve	Fire Safe Valve	Metal Seat Valve
Seat Type		PTFE/RTFE	RUBBER	PTFE + METAL	METAL
Size		50 TO 1200	50 TO 1200	50 TO 1200	50 TO 600
Applicable Flange Size		JIS 5K/10K/16K, ASME 150#, 300#, PN10/PN16			
Design Pressure		16K/ ASME 150#/300#			
Design Temperature		-20 TO 150 ℃	-10 TO 120 ℃	-50 TO 200℃	Ma x 400 ℃
Hydro. Test	Shell Test	1.5 times design pressure / 1.5 times Pressure-temp. rating According to API 598			
	Seat Test	1.1 times design pressure / 1.1 times differenctial pressure			
Face to Face		JIS B or According to API 609 class B			
Seat Leakage		Zero Leakage		API 607	API 609
ISO Mounting Top Flange		According to ISO 5211			
Actuator (#1)		Lever handle, Worm Gear, Pneumatic-cylinder, Electric-Motor			
Materials		Ductile Cast Iron / Cast steel / Stainless / Duple x / Albronze			
Painting		Urethane / Epoxy Coating		Heat Resistance Silver Coating	
Packing		PTFE V-Packing	RTFE V-Packing	Fugitive Emission Packing	

DIMENSIONS- DK-H-P, High Performance Valve

Wafer Style



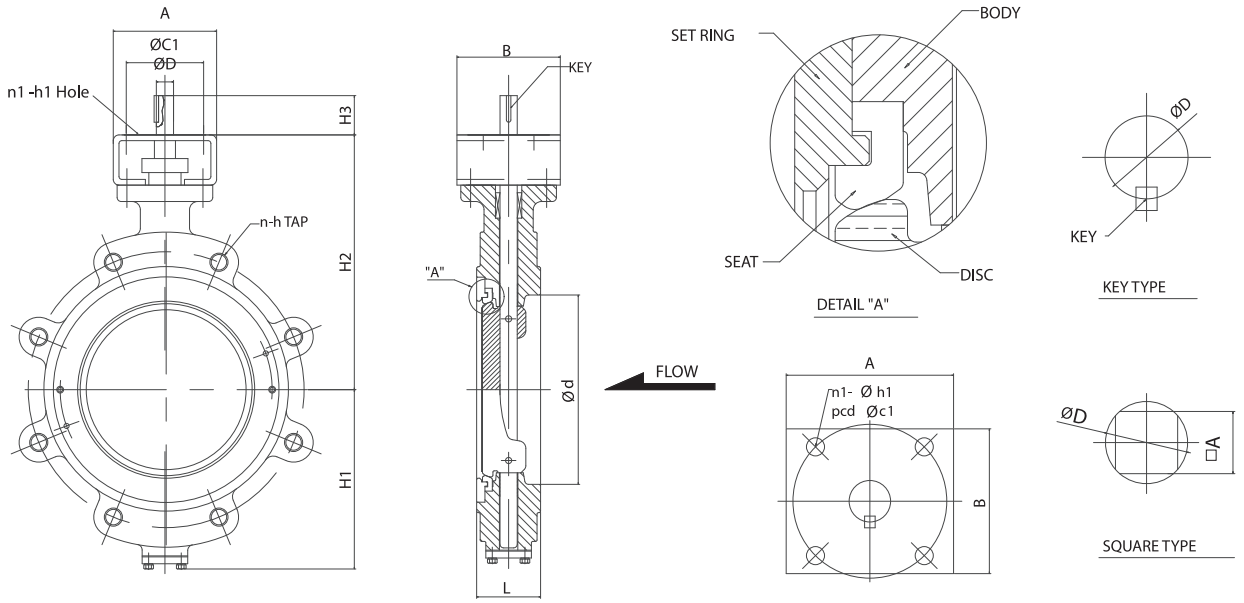
(Unit:mm)

NOMINAL DIAMETER	ød	L		H1	H2	STEM				TOP FLANGE			ISO 5211 CLASS
		ISO 5752	API 609 CATEGORY B			H3	ØD	□A	KEY SIZE	ØC1	A * B	n1-Øh1	
50A(2")	55	43	-	62	180	40	14	11	5*5*29	70	82*70	4-Ø10	F07
65A(2 1/2")	70	46	-	72	190	40	14	11	5*5*29	70	82*70	4-Ø10	
80A(3")	84	46	48	82	200	40	14	11	5*5*29	70	82*70	4-Ø10	
100A(4")	104	52	54	92	210	40	14	11	5*5*29	70	82*70	4-Ø10	
125A(5")	130	56	-	109	230	40	18	14	5*5*29	70	82*70	4-Ø10	
150A(6")	155	56	57	123	245	40	18	14	5*5*29	70	82*70	4-Ø10	
200A(8")	205	60	64	180	295	60	22	17	6*6*44	102	111*96	4-Ø12	F10
250A(10")	255	68	71	238	350	60	28	22	8*7*44	102	132*114	4-Ø12	
300A(12")	305	78	81	275	370	65	32	27	8*7*44	102	132*114	4-Ø12	
350A(14")	340	78	92	310	450	80	35	27	10*8*44	140	156*136	4-Ø19	F14
400A(16")	380	102	102	340	480	80	40	27	12*8*69	140	156*136	4-Ø19	
450A(18")	430	114	114	370	510	80	45		14*9*69	165	200*180	4-Ø23	F16
500A(20")	480	127	127	402	550	100	50		18*11*69	165	200*180	4-Ø23	
550A(22")	540	154	-	435	585	100	60		18*11*69	165	200*180	4-Ø23	
600A(24")	590	154	154	472	620	100	60		18*11*69	165	200*180	4-Ø23	
650A(26")	640	165	-	511	664	100	65		18*11*69	165	200*180	4-Ø23	
700A(28")	690	165	-	536	686	120	70		20*12*99	254	300*270	8-Ø18	F25
750A(30")	736	190	-	575	735	120	75		20*12*99	254	300*270	8-Ø18	
800A(32")	786	190	-	580	735	120	80		22*14*99	254	300*270	8-Ø18	
900A(36")	890	203	-	678	890	130	90		25*14*119	298	380*330	8-Ø22	F30
1000A(40")	980	216	-	724	950	130	100		28*16*129	298	380*330	8-Ø22	
1200A(48")	1190	254	-	845	1085	180	120		32*18*159	356	460*400	8-Ø33	F35

FACE TO FACE DIMENSION IS AVAILABLE ON OTHER STANDARD SIZE IF YOU REQUEST IT

DIMENSIONS- DK-H-P, High Performance Valve

Lugged Style



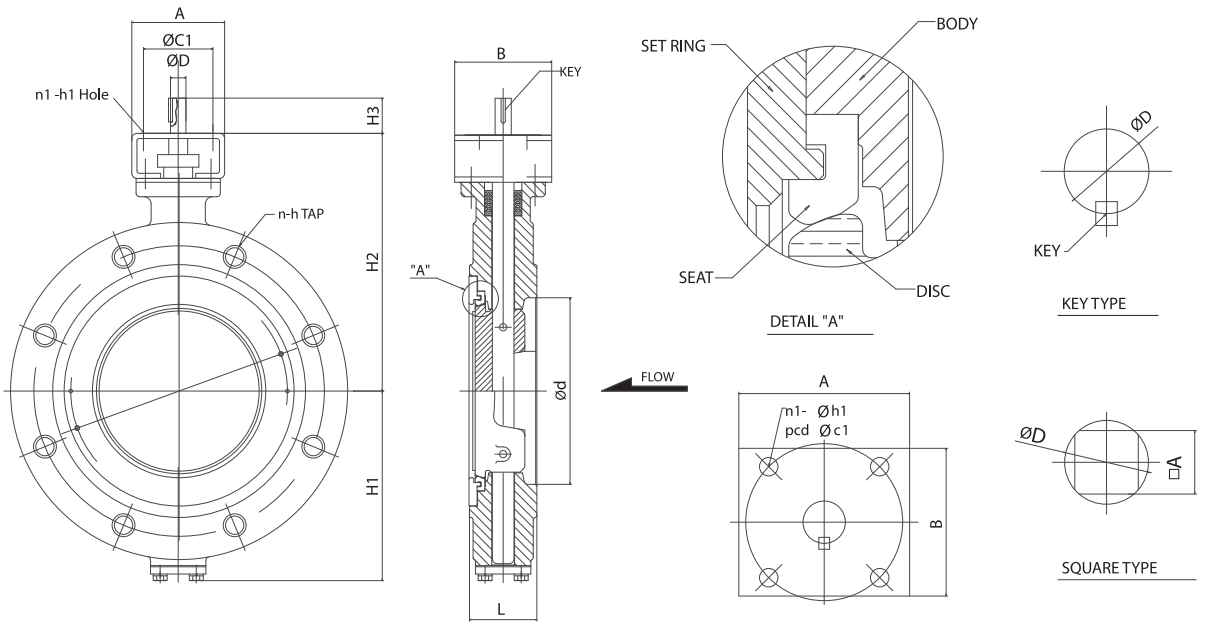
(Unit:mm)

NOMINAL DIAMETER	Ød	L		H1	H2	STEM				TOP FLANGE			ISO 5211 CLASS
		ISO 5752	API 609 CATEGORY B			H3	ØD	□A	KEY SIZE	ØC1	A * B	n1-Øh1	
50A(2")	55	43	-	62	180	40	14	11	5*5*29	70	82*70	4-Ø10	F07
65A(2½")	70	46	-	72	190	40	14	11	5*5*29	70	82*70	4-Ø10	
80A(3")	84	46	48	82	200	40	14	11	5*5*29	70	82*70	4-Ø10	
100A(4")	104	52	54	130	210	40	14	11	5*5*29	70	82*70	4-Ø10	
125A(5")	130	56	-	147	230	40	18	14	5*5*29	70	82*70	4-Ø10	
150A(6")	155	56	57	157	245	40	18	14	5*5*29	70	82*70	4-Ø10	
200A(8")	205	60	64	190	295	60	22	17	6*6*44	102	111*96	4-Ø12	F10
250A(10")	255	68	71	225	350	60	28	22	8*7*44	102	132*114	4-Ø12	
300A(12")	305	78	81	265	370	65	32	27	8*7*44	102	132*114	4-Ø12	
350A(14")	340	78	92	294	450	80	35	27	10*8*44	140	156*136	4-Ø19	F14
400A(16")	380	102	102	330	480	80	40	27	12*8*69	140	156*136	4-Ø19	
450A(18")	430	114	114	357	510	80	45		14*9*69	165	200*180	4-Ø23	F16
500A(20")	480	127	127	377	525	100	50		18*11*69	165	200*180	4-Ø23	
550A(22")	540	154	-	410	555	100	60		18*11*69	165	200*180	4-Ø23	
600A(24")	590	154	154	470	580	100	60		18*11*69	165	200*180	4-Ø23	
650A(26")	640	165	-	476	627	100	65		18*11*69	165	200*180	4-Ø23	
700A(28")	690	165	-	514	653	120	70		20*12*99	254	300*270	8-Ø18	F25
750A(30")	736	190	-	575	735	120	75		20*12*99	254	300*270	8-Ø18	
800A(32")	786	190	-	580	735	120	80		22*14*99	254	300*270	8-Ø18	
900A(36")	890	203	-	678	890	130	90		25*14*119	298	380*330	8-Ø22	F30
1000A(40")	980	216	-	724	950	130	100		28*16*129	298	380*330	8-Ø22	
1200A(48")	1190	254	-	845	1085	180	120		32*18*159	356	460*400	8-Ø33	F35

FACE TO FACE DIMENSION IS AVAILABLE ON OTHER STANDARD SIZE IF YOU REQUEST IT

DIMENSIONS- DK-H-P, High Performance Valve

Flange Style



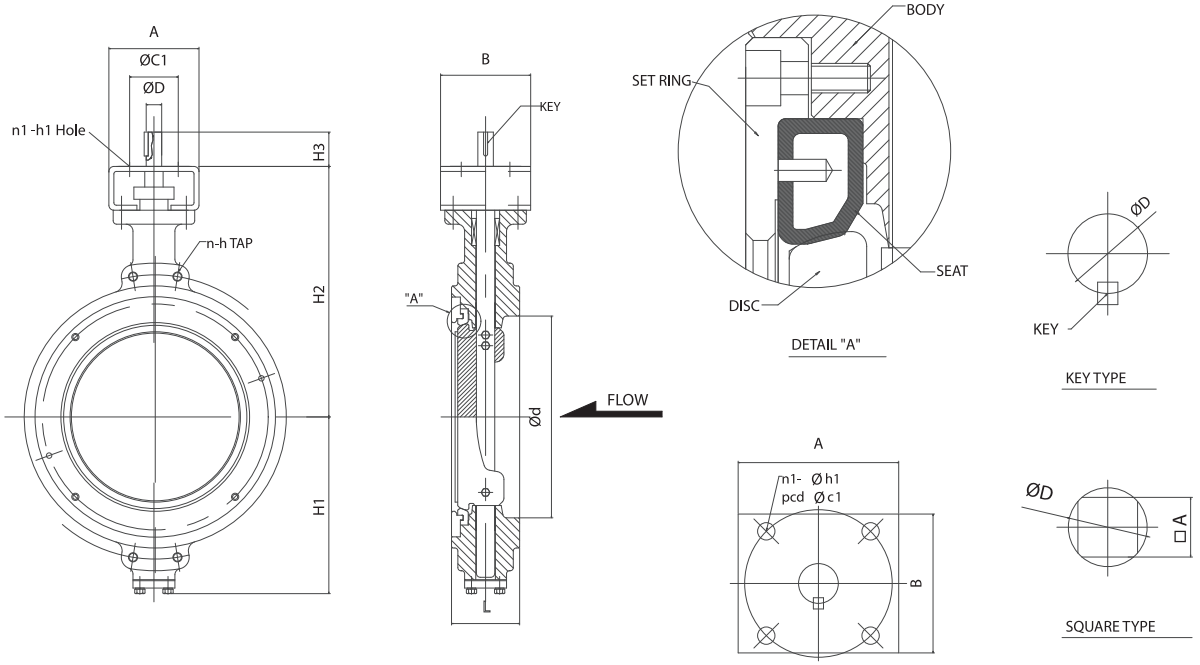
(Unit:mm)

NOMINAL DIAMETER	Ød	L			H1	H2	STEM				TOP FLANGE			ISO 5211 CLASS
		ISO 5752	API 609 CATEGORY B	JIS F 7480			H3	ØD	□A	KEY SIZE	ØC1	A * B	n1-Øh1	
50A(2")	55	43	-	40	90	180	40	14	11	5*5*29	70	82*70	4-Ø10	F07
65A(2½")	70	46	-	40	107	190	40	14	11	5*5*29	70	82*70	4-Ø10	
80A(3")	84	46	48	60	122	200	40	14	11	5*5*29	70	82*70	4-Ø10	
100A(4")	104	52	54	60	130	210	40	14	11	5*5*29	70	82*70	4-Ø10	
125A(5")	130	56	-	100	148	230	40	18	14	5*5*29	70	82*70	4-Ø10	
150A(6")	155	56	57	100	158	245	40	18	14	5*5*29	70	82*70	4-Ø10	
200A(8")	205	60	64	100	188	295	60	22	17	6*6*44	102	111*96	4-Ø12	F10
250A(10")	255	68	71	110	223	350	60	28	22	8*7*44	102	132*114	4-Ø12	
300A(12")	305	78	81	110	265	370	65	32	27	8*7*44	102	132*114	4-Ø12	
350A(14")	340	78	92	120	314	450	80	35	27	10*8*44	140	156*136	4-Ø19	F14
400A(16")	380	102	102	130	346	480	80	40	27	12*8*69	140	156*136	4-Ø19	
450A(18")	430	114	114	150	377	510	80	45		14*9*69	165	200*180	4-Ø23	F16
500A(20")	480	127	127	160	400	550	100	50		18*11*69	165	200*180	4-Ø23	
550A(22")	540	154	-	170	435	585	100	60		18*11*69	165	200*180	4-Ø23	
600A(24")	590	154	154	170	447	580	100	60		18*11*69	165	200*180	4-Ø23	
650A(26")	640	165	-	170	475	627	100	65		18*11*69	165	200*180	4-Ø23	
700A(28")	690	165	-	180	514	653	120	70		20*12*99	254	300*270	8-Ø18	F25
750A(30")	736	190	-	190	575	735	120	75		20*12*99	254	300*270	8-Ø18	
800A(32")	786	190	-	200	580	735	120	80		22*14*99	254	300*270	8-Ø18	
900A(36")	890	203	-	230	678	890	130	90		25*14*119	298	380*330	8-Ø22	F30
1000A(40")	980	216	-	250	724	950	130	100		28*16*129	298	380*330	8-Ø22	
1200A(48")	1190	254	-	300	845	1085	180	120		32*18*159	356	460*400	8-Ø33	F35

FACE TO FACE DIMENSION IS AVAILABLE ON OTHER STANDARD SIZE IF YOU REQUEST IT

DIMENSIONS- DK-H-CA, Cargo Valve

Wafer Style



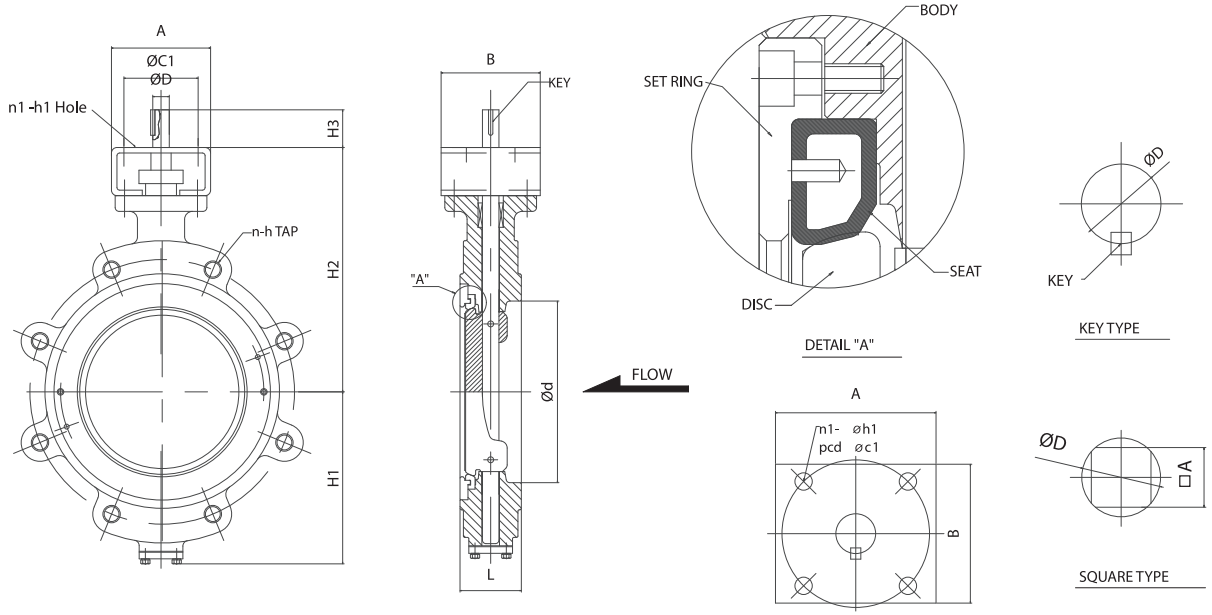
(Unit:mm)

NOMINAL DIAMETER	ød	L		H1	H2	STEM				TOP FLANGE			ISO 5211 CLASS
		ISO 5752	API 609 CATEGORY B			H3	ØD	□A	KEY SIZE	ØC1	A * B	n1-Øh1	
50A(2")	55	43	-	62	180	40	14	11	5*5*29	70	82*70	4-Ø10	F07
65A(2 1/2")	70	46	-	72	190	40	14	11	5*5*29	70	82*70	4-Ø10	
80A(3")	84	46	48	82	200	40	14	11	5*5*29	70	82*70	4-Ø10	
100A(4")	104	52	54	92	210	40	14	11	5*5*29	70	82*70	4-Ø10	
125A(5")	130	56	-	109	230	40	18	14	5*5*29	70	82*70	4-Ø10	
150A(6")	155	56	57	123	245	40	18	14	5*5*29	70	82*70	4-Ø10	
200A(8")	205	60	64	180	295	60	22	17	6*6*44	102	111*96	4-Ø12	F10
250A(10")	255	68	71	238	350	60	28	22	8*7*44	102	132*114	4-Ø12	
300A(12")	305	78	81	275	370	65	32	27	8*7*44	102	132*114	4-Ø12	
350A(14")	340	78	92	310	450	80	35	27	10*8*44	140	156*136	4-Ø19	F14
400A(16")	380	102	102	340	480	80	40	27	12*8*69	140	156*136	4-Ø19	
450A(18")	430	114	114	370	510	80	45		14*9*69	165	200*180	4-Ø23	F16
500A(20")	480	127	127	402	550	100	50		18*11*69	165	200*180	4-Ø23	
550A(22")	540	154	-	435	585	100	60		18*11*69	165	200*180	4-Ø23	
600A(24")	590	154	154	472	620	100	60		18*11*69	165	200*180	4-Ø23	
650A(26")	640	165	-	511	664	100	65		18*11*69	165	200*180	4-Ø23	
700A(28")	690	165	-	536	686	120	70		20*12*99	254	300*270	8-Ø18	F25
750A(30")	736	190	-	575	735	120	75		20*12*99	254	300*270	8-Ø18	
800A(32")	786	190	-	580	735	120	80		22*14*99	254	300*270	8-Ø18	
900A(36")	890	203	-	678	890	130	90		25*14*119	298	380*330	8-Ø22	F30
1000A(40")	980	216	-	724	950	130	100		28*16*129	298	380*330	8-Ø22	
1200A(48")	1190	254	-	845	1085	180	120		32*18*159	356	460*400	8-Ø33	F35

FACE TO FACE DIMENSION IS AVAILABLE ON OTHER STANDARD SIZE IF YOU REQUEST IT

DIMENSIONS- DK-H-CA, Cargo Valve

Lugged Style



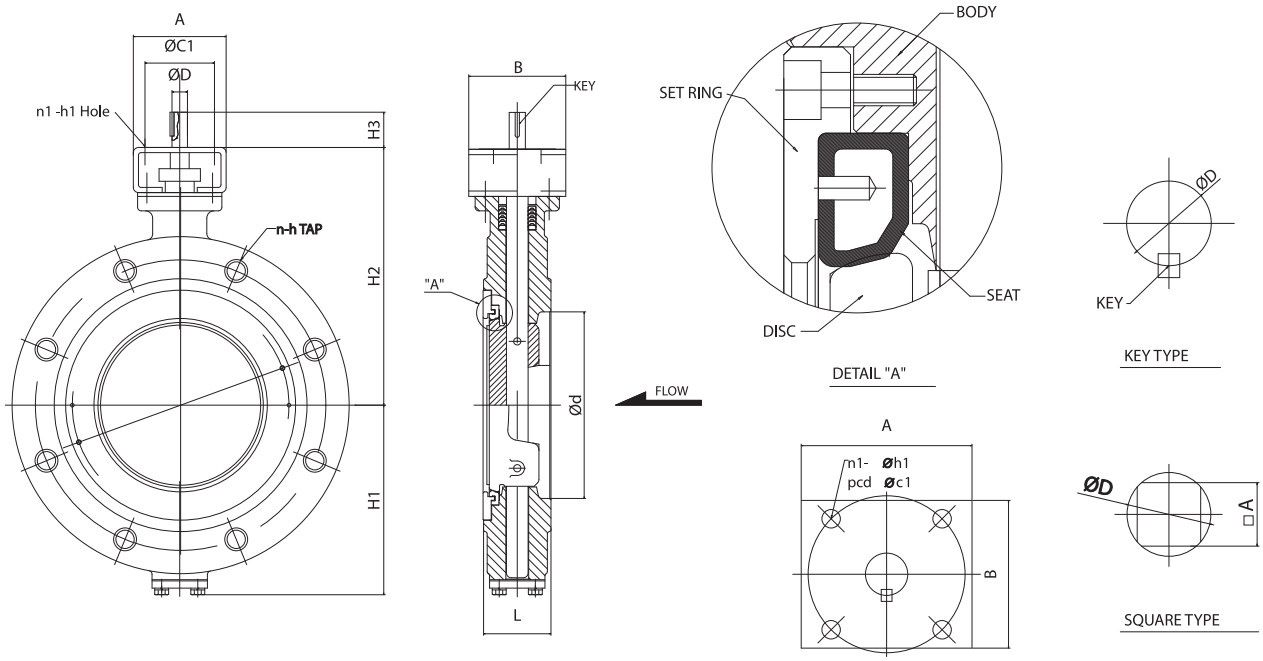
(Unit:mm)

NOMINAL DIAMETER	Ød	L		H1	H2	STEM				TOP FLANGE			ISO 5211 CLASS
		ISO 5752	API 609 CATEGORY B			H3	ØD	□A	KEY SIZE	ØC1	A * B	n1-Øh1	
50A(2")	55	43	-	62	180	40	14	11	5*5*29	70	82*70	4-Ø10	F07
65A(2½")	70	46	-	72	190	40	14	11	5*5*29	70	82*70	4-Ø10	
80A(3")	84	46	48	82	200	40	14	11	5*5*29	70	82*70	4-Ø10	
100A(4")	104	52	54	130	210	40	14	11	5*5*29	70	82*70	4-Ø10	
125A(5")	130	56	-	147	230	40	18	14	5*5*29	70	82*70	4-Ø10	
150A(6")	155	56	57	157	245	40	18	14	5*5*29	70	82*70	4-Ø10	
200A(8")	205	60	64	190	295	60	22	17	6*6*44	102	111*96	4-Ø12	F10
250A(10")	255	68	71	225	350	60	28	22	8*7*44	102	132*114	4-Ø12	
300A(12")	305	78	81	265	370	65	32	27	8*7*44	102	132*114	4-Ø12	
350A(14")	340	78	92	294	450	80	35	27	10*8*44	140	156*136	4-Ø19	F14
400A(16")	380	102	102	330	480	80	40	27	12*8*69	140	156*136	4-Ø19	
450A(18")	430	114	114	357	510	80	45		14*9*69	165	200*180	4-Ø23	F16
500A(20")	480	127	127	377	525	100	50		18*11*69	165	200*180	4-Ø23	
550A(22")	540	154	-	410	555	100	60		18*11*69	165	200*180	4-Ø23	
600A(24")	590	154	154	470	580	100	60		18*11*69	165	200*180	4-Ø23	
650A(26")	640	165	-	476	627	100	65		18*11*69	165	200*180	4-Ø23	
700A(28")	690	165	-	514	653	120	70		20*12*99	254	300*270	8-Ø18	F25
750A(30")	736	190	-	575	735	120	75		20*12*99	254	300*270	8-Ø18	
800A(32")	786	190	-	580	735	120	80		22*14*99	254	300*270	8-Ø18	
900A(36")	890	203	-	678	890	130	90		25*14*119	298	380*330	8-Ø22	F30
1000A(40")	980	216	-	724	950	130	100		28*16*129	298	380*330	8-Ø22	
1200A(48")	1190	254	-	845	1085	180	120		32*18*159	356	460*400	8-Ø33	F35

FACE TO FACE DIMENSION IS AVAILABLE ON OTHER STANDARD SIZE IF YOU REQUEST IT

DIMENSIONS- DK-H-CA, Cargo Valve

Flange Style



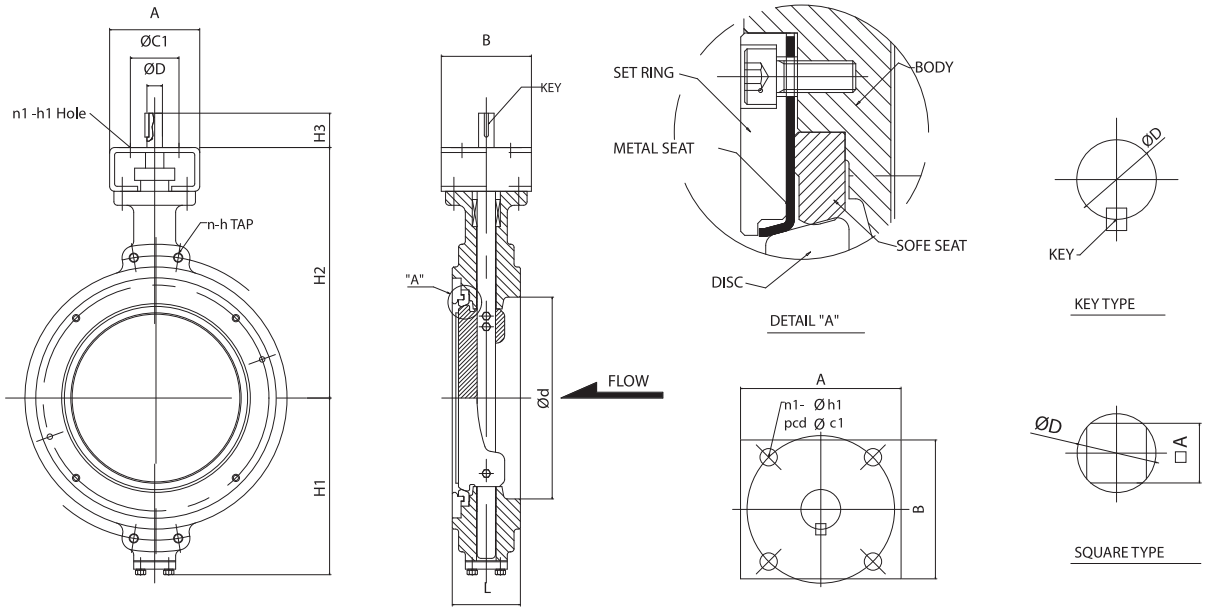
(Unit:mm)

NOMINAL DIAMETER	Ød	L			H1	H2	STEM				TOP FLANGE			ISO 5211 CLASS
		ISO 5752	API 609 CATEGORY B	JIS F 7480			H3	ØD	□A	KEY SIZE	ØC1	A * B	n1-Øh1	
50A(2")	55	43	-	40	90	180	40	14	11	5*5*29	70	82*70	4-Ø10	F07
65A(2½")	70	46	-	40	107	190	40	14	11	5*5*29	70	82*70	4-Ø10	
80A(3")	84	46	48	60	122	200	40	14	11	5*5*29	70	82*70	4-Ø10	
100A(4")	104	52	54	60	130	210	40	14	11	5*5*29	70	82*70	4-Ø10	
125A(5")	130	56	-	100	148	230	40	18	14	5*5*29	70	82*70	4-Ø10	
150A(6")	155	56	57	100	158	245	40	18	14	5*5*29	70	82*70	4-Ø10	
200A(8")	205	60	64	100	188	295	60	22	17	6*6*44	102	111*96	4-Ø12	F10
250A(10")	255	68	71	110	223	350	60	28	22	8*7*44	102	132*114	4-Ø12	
300A(12")	305	78	81	110	265	370	65	32	27	8*7*44	102	132*114	4-Ø12	
350A(14")	340	78	92	120	314	450	80	35	27	10*8*44	140	156*136	4-Ø19	F14
400A(16")	380	102	102	130	346	480	80	40	27	12*8*69	140	156*136	4-Ø19	
450A(18")	430	114	114	150	377	510	80	45		14*9*69	165	200*180	4-Ø23	F16
500A(20")	480	127	127	160	400	550	100	50		18*11*69	165	200*180	4-Ø23	
550A(22")	540	154	-	170	435	585	100	60		18*11*69	165	200*180	4-Ø23	
600A(24")	590	154	154	170	447	580	100	60		18*11*69	165	200*180	4-Ø23	
650A(26")	640	165	-	170	475	627	100	65		18*11*69	165	200*180	4-Ø23	
700A(28")	690	165	-	180	514	653	120	70		20*12*99	254	300*270	8-Ø18	F25
750A(30")	736	190	-	190	575	735	120	75		20*12*99	254	300*270	8-Ø18	
800A(32")	786	190	-	200	580	735	120	80		22*14*99	254	300*270	8-Ø18	
900A(36")	890	203	-	230	678	890	130	90		25*14*119	298	380*330	8-Ø22	F30
1000A(40")	980	216	-	250	724	950	130	100		28*16*129	298	380*330	8-Ø22	
1200A(48")	1190	254	-	300	845	1085	180	120		32*18*159	356	460*400	8-Ø33	F35

FACE TO FACE DIMENSION IS AVAILABLE ON OTHER STANDARD SIZE IF YOU REQUEST IT

DIMENSIONS- DK-H-FS(MT), Fire Safe & Metal Seat Valve

Wafer Style



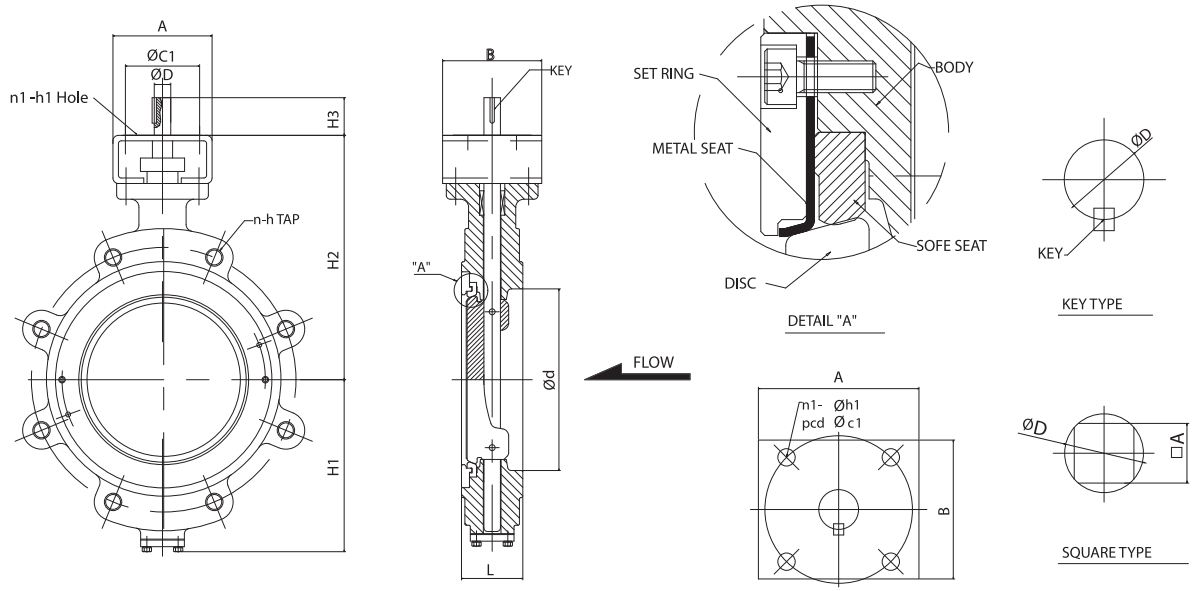
(Unit:mm)

NOMINAL DIAMETER	ød	L		H1	H2	STEM				TOP FLANGE			ISO 5211 CLASS
		ISO 5752	API 609 CATEGORY B			H3	ØD	□A	KEY SIZE	ØC1	A * B	n1-Øh1	
50A(2")	55	43	-	62	180	40	14	11	5*5*29	70	82*70	4-Ø10	F07
65A(2 1/2")	70	46	-	72	190	40	14	11	5*5*29	70	82*70	4-Ø10	
80A(3")	84	46	48	82	200	40	14	11	5*5*29	70	82*70	4-Ø10	
100A(4")	104	52	54	92	210	40	14	11	5*5*29	70	82*70	4-Ø10	
125A(5")	130	56	-	109	230	40	18	14	5*5*29	70	82*70	4-Ø10	
150A(6")	155	56	57	123	245	40	18	14	5*5*29	70	82*70	4-Ø10	
200A(8")	205	60	64	180	295	60	22	17	6*6*44	102	111*96	4-Ø12	F10
250A(10")	255	68	71	238	350	60	28	22	8*7*44	102	132*114	4-Ø12	
300A(12")	305	78	81	275	370	65	32	27	8*7*44	102	132*114	4-Ø12	
350A(14")	340	78	92	310	450	80	35	27	10*8*44	140	156*136	4-Ø19	F14
400A(16")	380	102	102	340	480	80	40	27	12*8*69	140	156*136	4-Ø19	
450A(18")	430	114	114	370	510	80	45		14*9*69	165	200*180	4-Ø23	F16
500A(20")	480	127	127	402	550	100	50		18*11*69	165	200*180	4-Ø23	
550A(22")	540	154	-	435	585	100	60		18*11*69	165	200*180	4-Ø23	
600A(24")	590	154	154	472	620	100	60		18*11*69	165	200*180	4-Ø23	
650A(26")	640	165	-	511	664	100	65		18*11*69	165	200*180	4-Ø23	
700A(28")	690	165	-	536	686	120	70		20*12*99	254	300*270	8-Ø18	F25
750A(30")	736	190	-	575	735	120	75		20*12*99	254	300*270	8-Ø18	
800A(32")	786	190	-	580	735	120	80		22*14*99	254	300*270	8-Ø18	
900A(36")	890	203	-	678	890	130	90		25*14*119	298	380*330	8-Ø22	F30
1000A(40")	980	216	-	724	950	130	100		28*16*129	298	380*330	8-Ø22	
1200A(48")	1190	254	-	845	1085	180	120		32*18*159	356	460*400	8-Ø33	F35

FACE TO FACE DIMENSION IS AVAILABLE ON OTHER STANDARD SIZE IF YOU REQUEST IT

DIMENSIONS- DK-H-FS(MT), Fire Safe & Metal Seat Valve

Lugged Style



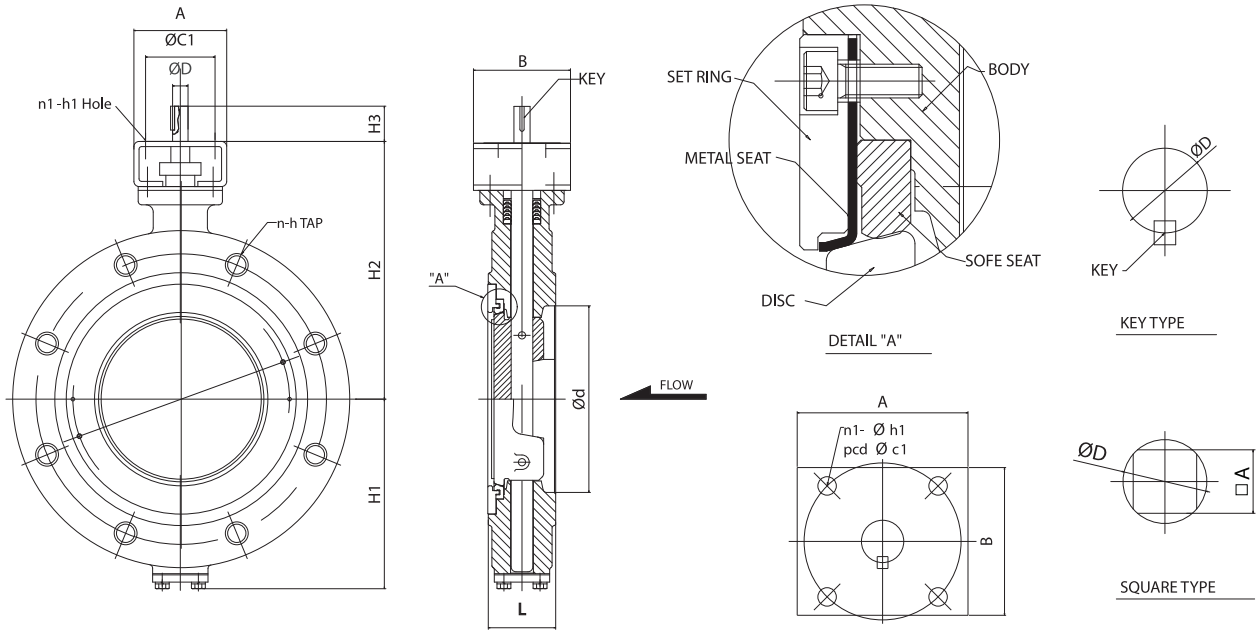
(Unit:mm)

NOMINAL DIAMETER	Ød	L		H1	H2	STEM				TOP FLANGE			ISO 5211 CLASS
		ISO 5752	API 609 CATEGORY B			H3	ØD	□A	KEY SIZE	ØC1	A * B	n1-Øh1	
50A(2")	55	43	-	62	180	40	14	11	5*5*29	70	82*70	4-Ø10	F07
65A(2½")	70	46	-	72	190	40	14	11	5*5*29	70	82*70	4-Ø10	
80A(3")	84	46	48	82	200	40	14	11	5*5*29	70	82*70	4-Ø10	
100A(4")	104	52	54	130	210	40	14	11	5*5*29	70	82*70	4-Ø10	
125A(5")	130	56	-	147	230	40	18	14	5*5*29	70	82*70	4-Ø10	
150A(6")	155	56	57	157	245	40	18	14	5*5*29	70	82*70	4-Ø10	
200A(8")	205	60	64	190	295	60	22	17	6*6*44	102	111*96	4-Ø12	F10
250A(10")	255	68	71	225	350	60	28	22	8*7*44	102	132*114	4-Ø12	
300A(12")	305	78	81	265	370	65	32	27	8*7*44	102	132*114	4-Ø12	
350A(14")	340	78	92	294	450	80	35	27	10*8*44	140	156*136	4-Ø19	F14
400A(16")	380	102	102	330	480	80	40	27	12*8*69	140	156*136	4-Ø19	
450A(18")	430	114	114	357	510	80	45		14*9*69	165	200*180	4-Ø23	F16
500A(20")	480	127	127	377	525	100	50		18*11*69	165	200*180	4-Ø23	
550A(22")	540	154	-	410	555	100	60		18*11*69	165	200*180	4-Ø23	
600A(24")	590	154	154	470	580	100	60		18*11*69	165	200*180	4-Ø23	
650A(26")	640	165	-	476	627	100	65		18*11*69	165	200*180	4-Ø23	
700A(28")	690	165	-	514	653	120	70		20*12*99	254	300*270	8-Ø18	F25
750A(30")	736	190	-	575	735	120	75		20*12*99	254	300*270	8-Ø18	
800A(32")	786	190	-	580	735	120	80		22*14*99	254	300*270	8-Ø18	
900A(36")	890	203	-	678	890	130	90		25*14*119	298	380*330	8-Ø22	F30
1000A(40")	980	216	-	724	950	130	100		28*16*129	298	380*330	8-Ø22	
1200A(48")	1190	254	-	845	1085	180	120		32*18*159	356	460*400	8-Ø33	F35

FACE TO FACE DIMENSION IS AVAILABLE ON OTHER STANDARD SIZE IF YOU REQUEST IT

DIMENSIONS- DK-H-FS(MT), Fire Safe & Metal Seat Valve

Flange Style



(Unit:mm)

NOMINAL DIAMETER	Ød	L			H1	H2	STEM				TOP FLANGE			ISO 5211 CLASS
		ISO 5752	API 609 CATEGORY B	JIS F 7480			H3	ØD	□A	KEY SIZE	ØC1	A * B	n1-Øh1	
50A(2")	55	43	-	40	90	180	40	14	11	5*5*29	70	82*70	4-Ø10	F07
65A(2½")	70	46	-	40	107	190	40	14	11	5*5*29	70	82*70	4-Ø10	
80A(3")	84	46	48	60	122	200	40	14	11	5*5*29	70	82*70	4-Ø10	
100A(4")	104	52	54	60	130	210	40	14	11	5*5*29	70	82*70	4-Ø10	
125A(5")	130	56	-	100	148	230	40	18	14	5*5*29	70	82*70	4-Ø10	
150A(6")	155	56	57	100	158	245	40	18	14	5*5*29	70	82*70	4-Ø10	
200A(8")	205	60	64	100	188	295	60	22	17	6*6*44	102	111*96	4-Ø12	F10
250A(10")	255	68	71	110	223	350	60	28	22	8*7*44	102	132*114	4-Ø12	
300A(12")	305	78	81	110	265	370	65	32	27	8*7*44	102	132*114	4-Ø12	
350A(14")	340	78	92	120	314	450	80	35	27	10*8*44	140	156*136	4-Ø19	F14
400A(16")	380	102	102	130	346	480	80	40	27	12*8*69	140	156*136	4-Ø19	
450A(18")	430	114	114	150	377	510	80	45		14*9*69	165	200*180	4-Ø23	F16
500A(20")	480	127	127	160	400	550	100	50		18*11*69	165	200*180	4-Ø23	
550A(22")	540	154	-	170	435	585	100	60		18*11*69	165	200*180	4-Ø23	
600A(24")	590	154	154	170	447	580	100	60		18*11*69	165	200*180	4-Ø23	
650A(26")	640	165	-	170	475	627	100	65		18*11*69	165	200*180	4-Ø23	
700A(28")	690	165	-	180	514	653	120	70		20*12*99	254	300*270	8-Ø18	F25
750A(30")	736	190	-	190	575	735	120	75		20*12*99	254	300*270	8-Ø18	
800A(32")	786	190	-	200	580	735	120	80		22*14*99	254	300*270	8-Ø18	
900A(36")	890	203	-	230	678	890	130	90		25*14*119	298	380*330	8-Ø22	F30
1000A(40")	980	216	-	250	724	950	130	100		28*16*129	298	380*330	8-Ø22	
1200A(48")	1190	254	-	300	845	1085	180	120		32*18*159	356	460*400	8-Ø33	F35

FACE TO FACE DIMENSION IS AVAILABLE ON OTHER STANDARD SIZE IF YOU REQUEST IT

TECHNICAL DATA

-TORQUE VALUE FOR SELECTING ACTUATOR

The torques listed are applicable to water, sea water, lubricating type of hydro carbons and most media at temperature 0~80 ℃ (32 ~180 ℉)

Actuator torques can be calculated with the following formulas

$Ta = Tb+Ts+Th=1.2Tb+Td$

$Ts = Cs+D^2$

$Tb = 4.17D^2+ d+f+p$

$Td = Ct+D^3 P$

$Th = 3.06+D^4$

$$V = Cf+\sqrt{p} = \frac{Q}{0.785*D^2}$$

Ta : The required actuator torque (lb*ft)
Ts : Seat or Unseating torque (lb-ft)
Td : Dynamic torque (lb-ft)
Q : Flow (cubic for per second)
V : Velocity (feet per second)
D : Diameter of Valve (feet)
d : Diameter of Shaft (inch)
P : Pressure drop across valve (PSI)
Cs : Coefficient of seating or unseating torque
Ct : Coefficient of flow
f : Bearing friction coefficient

■ Torque Table

Valve Size		Shut Off Pressure					
		3bar°		5bar°		10bar°	
mm	inch	kg-m	Nm	kg-m	Nm	Kg-m	Nm
50	2	0.64	6.27	0.80	7.84	1.00	9.8
65	2*1/2	0.80	7.84	1.00	9.80	1.40	13.72
80	3	1.04	10.19	1.30	12.74	1.80	17.64
100	4	1.20	11.76	1.50	14.70	2.00	19.60
125	5	1.84	18.03	2.30	22.54	3.00	29.40
150	6	2.24	21.95	2.80	27.44	3.80	37.24
200	8	5.70	55.86	7.13	69.83	16.35	160.23
250	10	11.20	109.76	14.80	145.04	25.70	251.86
300	12	19.60	192.08	24.50	240.10	35.00	343.00
350	14	32.80	321.44	41.00	401.80	58.00	568.40
400	16	40.80	399.84	51.00	499.80	72.00	705.60
450	18	52.60	515.48	63.70	624.26	98.50	965.30
500	20	67.60	662.48	84.50	828.10	138.00	1352.40
550	22	75.68	741.66	94.60	927.08	155.00	1519.00
600	24	108.00	1058.40	135.00	1323.00	199.00	1950.20

The Factors affect the Torque required to operate butterfly valves

1. Valve Diameter
2. Shaft Diameter
3. Bearing Friction Coefficient
4. Type of Seat Material
5. Shut Off Pressure
6. Velocity
7. Shape of Disc
8. System Head Characteristics
9. Piping Arrangement.

SPECIFICATIONS

-TECHNICAL DATA - Cv VALUE

For determining the valve nominal size, multiply the Cv-valve gotten from these formulas by 1.25 and select the correct size from the Cv-valve list as follows.

For Liquid

$$Cv = 1.72Q\sqrt{\frac{G}{\Delta P}}$$

For Gases

When ① $\Delta P < \frac{P1}{2}$

$$Cv = \frac{Q}{272}\sqrt{\frac{G(273+T)}{\Delta P(P1+P2)}}$$

When ② $\Delta P \geq \frac{P1}{2}$

$$Cv = \sqrt{\frac{G(273+T)}{236P1}}$$

For Steam

When ① $\Delta P < \frac{P1}{2}$

$$Cv = \frac{WK}{13.5\sqrt{\Delta P(P1+P2)}}$$

When ② $\Delta P \geq \frac{P1}{2}$

$$Cv = \frac{WK}{11.9\,P1}$$

For Steam in General

$$Cv = \frac{W}{1210}\sqrt{\frac{V1+V2}{\Delta P}}$$

Where Q : Volume rate of flow (Liquid m^3/h, Gas Nm^3/h) [# 1ft^3/h = 0.02832 m^3/h]
W : Volume rate of flow (Steam Kg/h) [# 1lb=0.45359 kg]
P1 : Inlet Pressure (Liquid Kgf/cm^2, Gas & Steam Kgf/cm^2 abs)
P2 : Outlet Pressure (Liquid Kgf/cm^2, Gas & Steam Kgf/cm^2 abs)
△P : Pressure Drop P1- P2 (Kgf/cm^2)
G : Specific Gravity of fluid (Water= 1, air= 1)
T : Temperature of fluid (℃) [# ℃ = 5/9 (℉ - 32)]
K : 1+ (0.0013 x TSH), TSH (℃) : Total Temperature minus saturation Temperature
V1 : Specific Volume (Cm^3/g....P1)
V2 : Specific Volume (Cm^3/g....P2)

Notes When P2 1/2P1 use P1/2 instead of△P For V2, use V2 in accordance with P1/2

■ Cv-Value

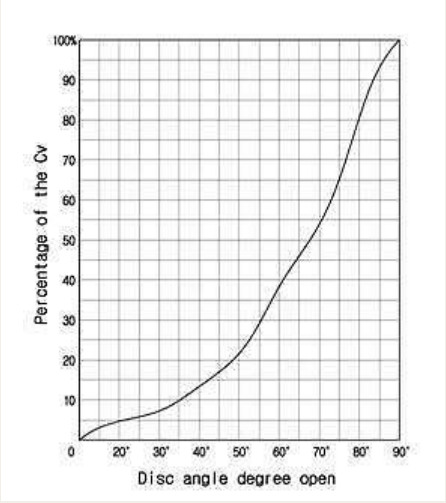
Valve Size		Disc Opening								
		10°	20°	30°	40°	50°	60°	70°	80°	90°
mm	inch	Cv	Cv	Cv	Cv	Cv	Cv	Cv	Cv	Cv
50	2	2	11	15	32	48	59	65	71	83
65	2*1/2	4	13	21	34	53	80	111	140	153
80	3	7	18	35	58	90	137	180	236	261
100	4	14	35	63	110	168	222	295	395	460
125	5	22	58	105	175	263	400	535	660	750
150	6	32	110	180	280	410	580	800	1015	1100
200	8	58	165	290	440	700	995	1400	1850	2100
250	10	85	235	440	670	1050	1500	2180	2850	3250
300	12	125	330	580	950	1500	2200	3050	4020	4500
350	14	189	485	980	1340	2300	2950	4320	5100	6050
400	16	240	635	1320	1820	2890	4160	6030	8110	9500
450	18	302	850	1560	2390	3780	5340	7750	9980	11980
500	20	390	995	1997	2906	4600	6520	9658	13080	16100
600	24	530	1400	2310	4140	6680	9620	12900	18400	21830

TECHNICAL DATA-PRESSURE

-TEMPERATURE RATINGS

Temperature		Class 150				Class 300				Class 600			
		Carbon Steel		Stainless Steel		Carbon Steel		Stainless Steel		Carbon Steel		Stainless Steel	
℃	°F	Psig	Bar	Psig	Bar	Psig	Bar	Psig	Bar	Psig	Bar	Psig	Bar
−29~38	−200~100	285	19.6	275	18.9	740	51	720	49.6	1480	102	1440	99.3
93	200	260	17.9	240	16.5	675	46.5	620	42.7	1350	93.1	1240	85.5
149	300	230	15.8	215	14.8	655	45.1	560	38.6	1315	90.6	1120	77.2
204	400	200	13.7	195	13.4	635	43.7	515	35.5	1270	87.5	1030	71
260	500	170	11.7	170	11.7	600	41.3	480	33.1	1200	82.7	955	65.8
316	600	140	9.6	140	9.6	550	37.9	450	31	1095	75.5	905	62.4
343	650	125	8.6	125	8.6	535	36.8	445	30.6	1075	74.1	890	61.3
371	700	110	7.5	110	7.5	55	36.8	430	29.6	1065	73.3	865	59.6
399	750	95	6.5	95	6.5	505	34.8	425	29.3	1010	69.6	845	58.2
427	800	80	5.5	80	5.5	410	28.2	415	28.6	825	56.8	830	57.2
454	850	65	4.4	65	4.4	270	18.6	405	27.9	535	36.8	810	55.8
482	900	50	3.4	50	3.4	170	11.7	395	27.2	345	23.7	790	54.4
510	950	35	2.4	35	2.4	105	7.2	385	26.5	205	14.1	775	53.4
538	1000	20	1.3	20	1.3	50	3.4	365	25.1	105	7.2	725	50
566	1050	–	–	20	1.3	–	–	360	24.8	–	–	720	49.6
593	1100	–	–	20	1.3	–	–	325	22.4	–	–	645	44.4
621	1150	–	–	20	1.3	–	–	275	18.9	–	–	550	37.9
649	1200	–	–	20	1.3	–	–	205	14.1	–	–	410	28.2

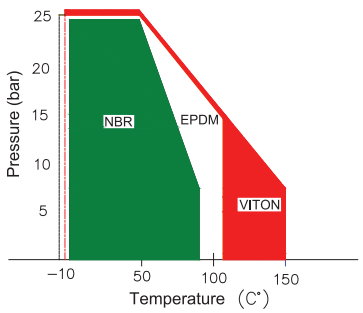
■ Flow Characteristics



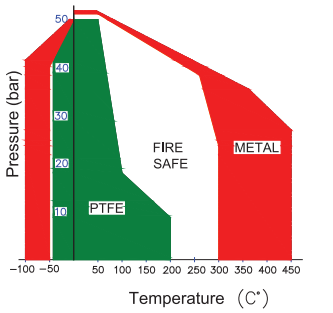
Note] Cv = The flow rate of water in U.S gpm
That will pass through a valve with
Prossure drop of 1 psi at a temperature
Of 68°F

■ Pressure Temperarue rating

RUBBER SEAT

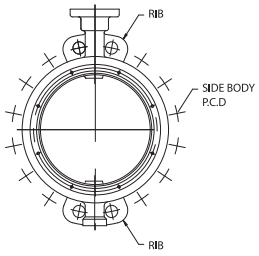


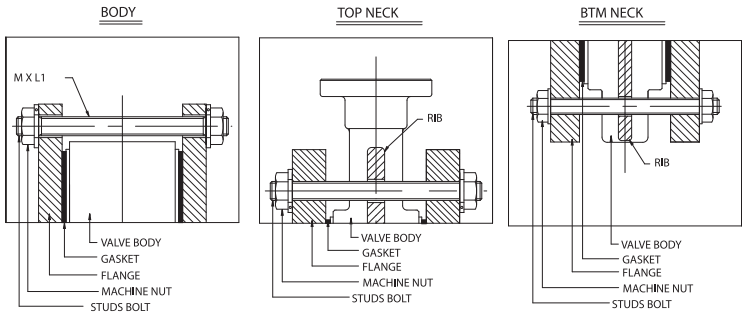
PTFE, FIRE SAFE, METAL SEAT



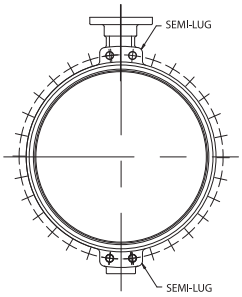
PIPING FLANGE BOLT SIZES

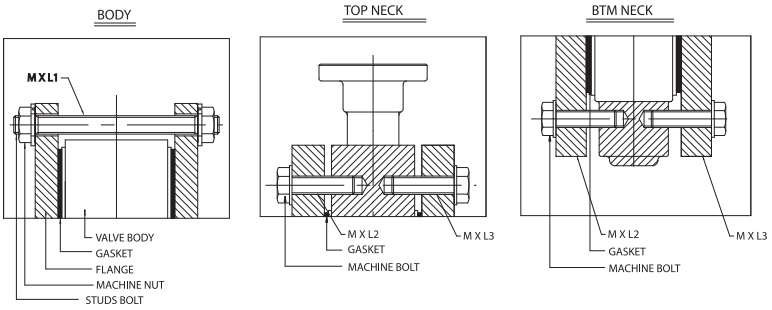
■ WAFER STYLE



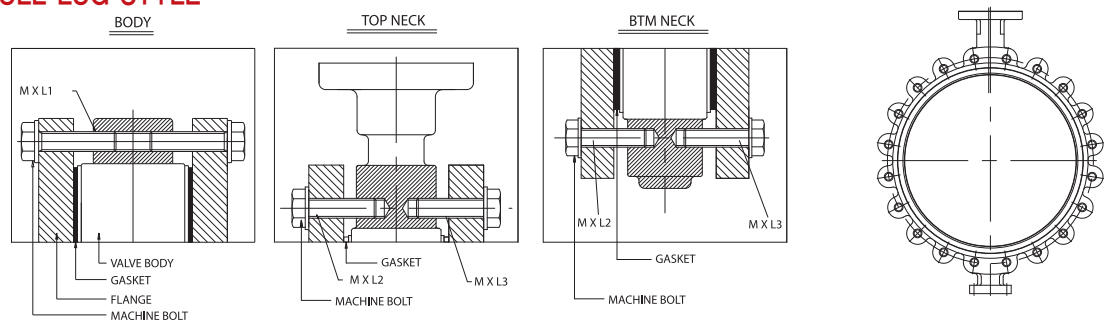


■ SEMI-LUG STYLE

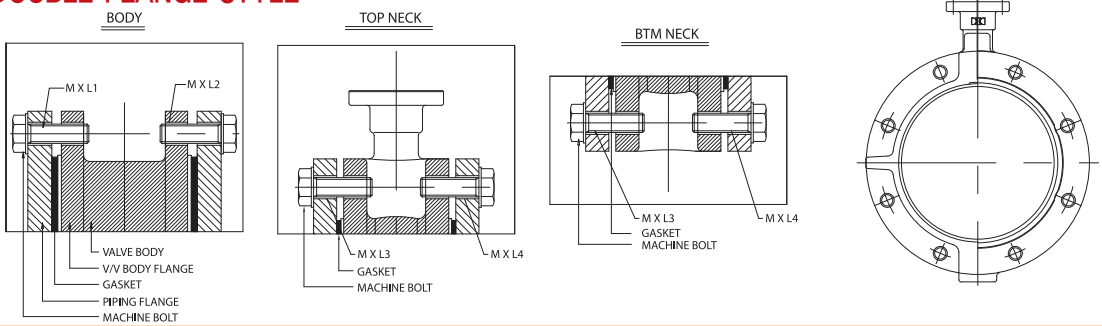




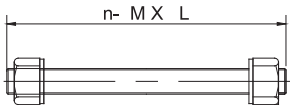
■ FULL LUG STYLE



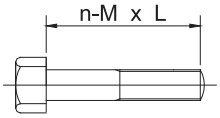
■ DOUBLE FLANGE STYLE



PIPING FLANGE BOLT SIZES



Long stud bolt for Wafer Type



Hexagonal bolt for Semi-Lug Type

■ APPLICATION FLANGE-JIS FLANGE 5K, 10K

CONN' T TYPE	Nominal Size		JIS 5K				JIS 10K			
	Inch	mm	Q' ty	Stud Bolt w/WSH	Q' ty	Hex.Bolt	Q' ty	Stud Bolt w/WSH	Q' ty	Hex.Bolt
WAFER -RIB	2"	50	4	M12 x 120L	–	n/a	4	M16 x 130L	–	n/a
	2*1/2	65	4	M12 x 120L	–	n/a	4	M16 x 130L	–	n/a
	3	80	4	M16 x 120L	–	n/a	8	M16 x 130L	–	n/a
	4	100	8	M16 x 130L	–	n/a	8	M16 x 135L	–	n/a
	5	125	8	M16 x 140L	–	n/a	8	M20 x 155L	–	n/a
	6	150	8	M16 x 145L	–	n/a	8	M20 x 155L	–	n/a
	8	200	8	M20 x 160L	–	n/a	12	M20 x 165L	–	n/a
	10	250	12	M20 x 175L	–	n/a	12	M22 x 180L	–	n/a
	12	300	12	M20 x 185L	–	n/a	16	M22 x 180L	–	n/a
SEMI LUG	14	350	8	M22 x 205L	8	M22 x 55L	12	M22 x 205L	8	M22 x 60L
	16	400	12	M22 x 220L	8	M22 x 60L	12	M24 x 225L	8	M24 x 65L
	18	450	12	M22 x 230L	8	M22 x 55L	16	M24 x 240L	8	M24 x 65L
	20	500	16	M22 x 240L	8	M22 x 55L	16	M24 x 255L	8	M24 x 65L
	22	550	16	M24 x 280L	8	M24 x 65L	16	M30 x 315L	8	M30 x 75L
	24	600	16	M24 x 280L	8	M24 x 60L	20	M30 x 300L	8	M30 x 75L
	26	650	20	M24 x 330L	8	M24 x 60L	20	M30 x 320L	8	M30 x 65L
	28	700	20	M24 x 330L	8	M24 x 60L	20	M30 x 340L	8	M30 x 65L
	30	750	20	M30 x 330L	8	M30 x 65L	20	M30 x 340L	8	M30 x 75L
	32	800	20	M30 x 330L	8	M30 x 65L	24	M30 x 350L	8	M30 x 75L
	34	850	20	M30 x 340L	8	M30 x 70L	24	M30 x 350L	8	M30 x 75L
	36	900	20	M30 x 360L	8	M30 x 70L	24	M30 x 370L	8	M30 x 75L
	40	1000	24	M30 x 370L	8	M30 x 70L	24	M36 x 400L	8	M36 x 75L
	44	1100	24	M30 x 420L	8	M30 x 70L	24	M36 x 440L	8	M36 x 80L
	48	1200	28	M30 x 420L	8	M30 x 70L	28	M36 x 440L	8	M36 x 80L

■ APPLICATION FLANGE - ASME B 16.5 & B16.47 FLANGE

CONN' T TYPE	Nominal Size		JIS 5K				JIS 10K			
	Inch	mm	Q' ty	Stud Bolt w/WSH	Q' ty	Hex.Bolt	Q' ty	Stud Bolt w/WSH	Q' ty	Hex.Bolt
WAFER -RIB	2"	50	4	5/8" x 120L	–	n/a	4	5/8" x 130L	–	n/a
	2*1/2	65	4	5/8" x 120L	–	n/a	4	3/4" x 130L	–	n/a
	3	80	4	5/8" x 120L	–	n/a	8	3/4" x 130L	–	n/a
	4	100	8	5/8" x 130L	–	n/a	8	3/4" x 135L	–	n/a
	5	125	8	3/4" x 140L	–	n/a	8	3/4" x 155L	–	n/a
	6	150	8	3/4" x 145L	–	n/a	8	3/4" x 155L	–	n/a
	8	200	8	3/4" x 160L	–	n/a	12	7/8" x 165L	–	n/a
	10	250	12	7/8" x 175L	–	n/a	12	1" x 180L	–	n/a
	12	300	12	7/8" x 185L	–	n/a	16	1 1/8" x 180L	–	n/a
SEMI LUG	14	350	8	1" x 205L	8	1" x 55L	12	1 1/8" x 205L	8	1 1/8 x 60L
	16	400	12	1" x 220L	8	1" x 60L	12	1 1/4" x 225L	8	1 1/4" x 65L
	18	450	12	1 1/8" x 230L	8	1 1/8" x 55L	16	1 1/4" x 240L	8	1 1/4" x 65L
	20	500	16	1 1/8" x 240L	8	1 1/8" x 55L	16	1 1/4" x 255L	8	1 1/4" x 65L
	22	550	16	1 1/4" x 280L	8	1 1/4" x 65L	16	1 1/2" x 315L	8	1 1/2" x 75L
	24	600	16	1 1/4" x 280L	8	1 1/4" x 60L	20	1 1/2" x 300L	8	1 1/2" x 75L
	26	650	20	1 1/4" x 330L	8	1 1/4" x 60L	20	1 5/8" x 320L	8	1 5/8" x 65L
	28	700	20	1 1/4" x 330L	8	1 1/4" x 60L	20	1 5/8" x 340L	8	1 5/8" x 65L
	30	750	20	1 1/4" x 330L	8	1 1/4" x 65L	20	1 3/4" x 340L	8	1 3/4" x 75L
	32	800	20	1 1/2" x 330L	8	1 1/2" x 65L	24	1 7/8" x 350L	8	1 7/8" x 75L
	34	850	20	1 1/2" x 340L	8	1 1/2" x 70L	24	1 7/8" x 350L	8	1 7/8" x 75L
	36	900	20	1 1/2" x 360L	8	1 1/2" x 70L	24	2" x 370L	8	2" x 75L
	40	1000	24	1 1/2" x 370L	8	1 1/2" x 70L	24	1 5/8" x 400L	8	1 5/8" x 75L
	44	1100	24	1 1/2" x 420L	8	1 1/2" x 70L	24	1 3/4" x 440L	8	1 3/4" x 80L
	48	1200	28	1 1/2" x 420L	8	1 1/2" x 70L	28	1 7/8" x 440L	8	1 7/8" x 80L

PACKING & STORAGE INSTRUCTIONS

■ PACKING

1.All valves should be shipped with protective covers attached to the flange faces to protect the gasket sealing surfaces and internal trim.
2.The valve disc is crackde off the seat in the almost closed position.
3.The Tritec nameplate shown in the picture contains information such as size,pressure classm materials and the unique serial number.

■ SPARE PARTS

1.When ordering spare parts or discussing matters concerning this valve with a sales office, you must provide the unique serial number of the valve found on the stainless steel nameplate to the valve body adjacent to the operator.

■ TRANSPORTATION

1.Use crates or packing cases for ocean transportation.
2.For overland transportation,a covered vehicle is recommended with protective sheets covering the valves.

■ STORAGE

1.Store the valves indoors in a cool temperature between-10 degrees and+60 degrees C with humidity at 70% or less.
2.Donot remove the protectve covers until ready to install valves.
3.Machined ferrous surfaces are protected with an approved rust preventative. For long periods of storage, apply the rust preventative once a year to the unpainted surfaces.
4.When storing valves unpacked, take care to protect valves and actuators from excessive loads. Do not stack unpackunpacked valves.
5.If the valve is for clean gas duty and is being supplied degreased a label will be attached stating this and the Valve will be sealed in a polythene covering. It is suggested that the valve be kept packed until it is installed in The pipeline.

■ UNPACKING

1.Unpack valves just before installation.

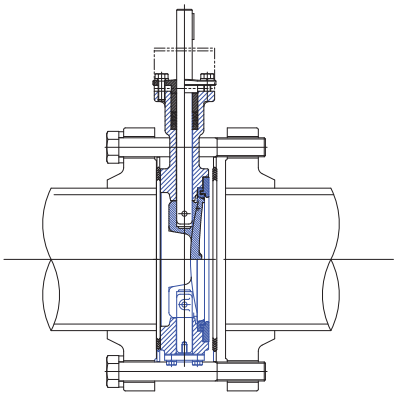
HOW TO INSTALL VALVE IN PIPE LINE

ⓐ The valve is designed to seal against bidirectional flow and can therefore be installed with flow in either direction. However, enhanced sealing life will be obtained with upstream flow against the shaft side of the disc. This preferred flow direction is shown on the nameplate attached to the valve body adjacent to the operator and also on the GA drawing. The valve may be installed in the pipeline with the valve shaft in a horizontal, vertical or intermediate porsition.
Ⓑ Prior to installation, the pipeline must be cleaned from dirt and welding residues to avoid damage to the valve during operation.
ⓒ Ensure that the valve is closed prior to installation to avoid the risk or damage to the sealing surfaces.
ⓓ The vlave must be lifted by the eyebolt or lifting eyes provided with the valve.
ⓔ The valve must not be lifted by the operator or handwheel.
ⓕ The valve must not be used for pipework alignment.
ⓖ The Lugged or Double flanged type valve is suitable for dead and service, ie. end of line duty, in either direction (in case of the valve specified for both directions) to the full rating pressure of the piping system.

MAINTENANCE GUIDE

A.REMOVING VALVE FROM PIPELINE

1.Before removing the valve, Relieve the valve in the pipeline
2.Close the valve
3.Support the valve and maintaine valve gap with spacer ring
4.Remove the flange bolts and remove the valve from the pipeline

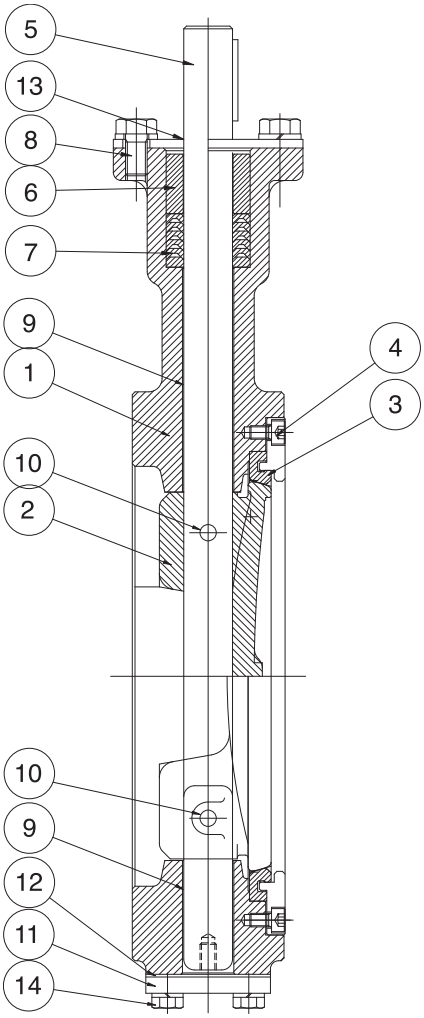


B.REPLACING THE SEAT

1.Place the valve in a horizontal position, with the seat up
2.Unfasten the Wrench bolt in the Retainer ring
3.Remove the Retainer ring (No.4) with wrench tool
4.Remove the Seat (No.3)
5.Clean the Seat face in the body and the retainer face in the body
6.Close the disce
7.Place the new seat(No.3)in the body seat face
8.Place the Retainer ring (No.4) in the body
9.Tighten the Wrench bolt

C.REPLACING PACKING

1.If the actuator is powered, disconnect and lock out the power
To te actuator
2.Remove the actuator (Lever, Gear, MOV, Pneumatic Act.) from
The top flange
3.Remove the taper pin (No.10) from the valve shaft
4.Unfasten the two gland blot (No.8) and Remove the gland
(No.13) and pull out the gland (No.6)
5.Remove the all the V-Packing (No. 7)
6.Place the New Packing in the body neck hole, one ring at a time,
Do not lubricate.
7.Replace the gland (No.6) and Tighten the two gland bolt(No.8)
8.Replace the New Taper pin (No.10) in the valve shaft



MAINTENANCE GUIDE(CONTINUED)

9. If the valve has single packing, re-mount the actuator bracket on the valve and tighten the the screws
10. Mount the actuator on the valve.
11. If the actuator is a powered actuator, reconnect power to the actuator
12. Pressurize the valve
13. If the packing leaks, tighten the gland bolt slowly, just enough to stop the leak.

TROUBLESHOOTING IN AN EMERGENCY CONDITION

Condition	Cause	Corrective Action
1. Packing leaks	Packing is loose	Adjust packing
	Packing is worn out	Replace Packing
2. Valve leaks when closed	Closed position stop is Incorrect setted	Adjust closed set bolt
	Seat is worn out or damaged	Replace Seat
	Sealing edge of disc is worn out	Replace disc.
3. Valve body leaks from seat retainer	Pipeline flange bolting is loose	Tighten pipeline flange bolts
	Pipeline flange are misaligned.	Align pipeline flanges
	Pipleline flange gasket or retainer Gasket is worn	Repace gasket(s)
4. Valve does not close	Object is wegded between disc and seat	Opent valve and allow flushing action to remove object
	Close position stop is not adjusted	Adjust close stop set bolt
5. Valve does not open	Open position setting is not adjusted correctly	Adjust open stop set bolt
	Disc to shaft connection has failed	Replace disc pins and shaft
6. Torque is excsssive	Bearing,shaft,disc and seat are dirty	Clean or repalce dirty or worn Components
	Shaft is bend deformation	Replace shaft
7. Seat leakage and damage to seat has occurred	Abrasive Media	Replace existing seat with that Is suitable for abrasive media.
8. Valve leakage and damage seat	Valve encountered higher than rated Temperature.	Reduce media temperature
		Repalce existing seat with a seat Suitable for the required temp.

DK T.M.I INTERNATIONAL Co., Ltd.

http://www.dktmi.com

dkvalve@dktmi.com

HEAD OFFICE FACTORY
#365-3, SIKMAN-DONG, GANGSEO-GU, PUSAN, KOREA
TEL: (051)973-7331~2 FAX: (051)973-7334

OVERSEAS DIVISION
TEL: +82-51-973-7331~2 FAX: +82-51-973-7334

SEOUL OFFICE
C-1906, STEEL LAND, JUNGWANG-DONG, SIHEUNG, KYUNGGI-DO, KOREA
TEL: 02)8041-7334 FAX: 02)8041-8906

DAE JEON OFFICE
#488-6, OJEONG-DONG, DAEDUK-GU, DAE JEON, KOREA
TEL: 042)627-7331~2 FAX: 042)623-7334

DAE GU OFFICE
#35-1, SOO CHANG-DONG, JOONG-GU, DAEGU, KOREA
TEL: 053)254-1991 FAX: 053)254-6734

Agency