No : ZK–01

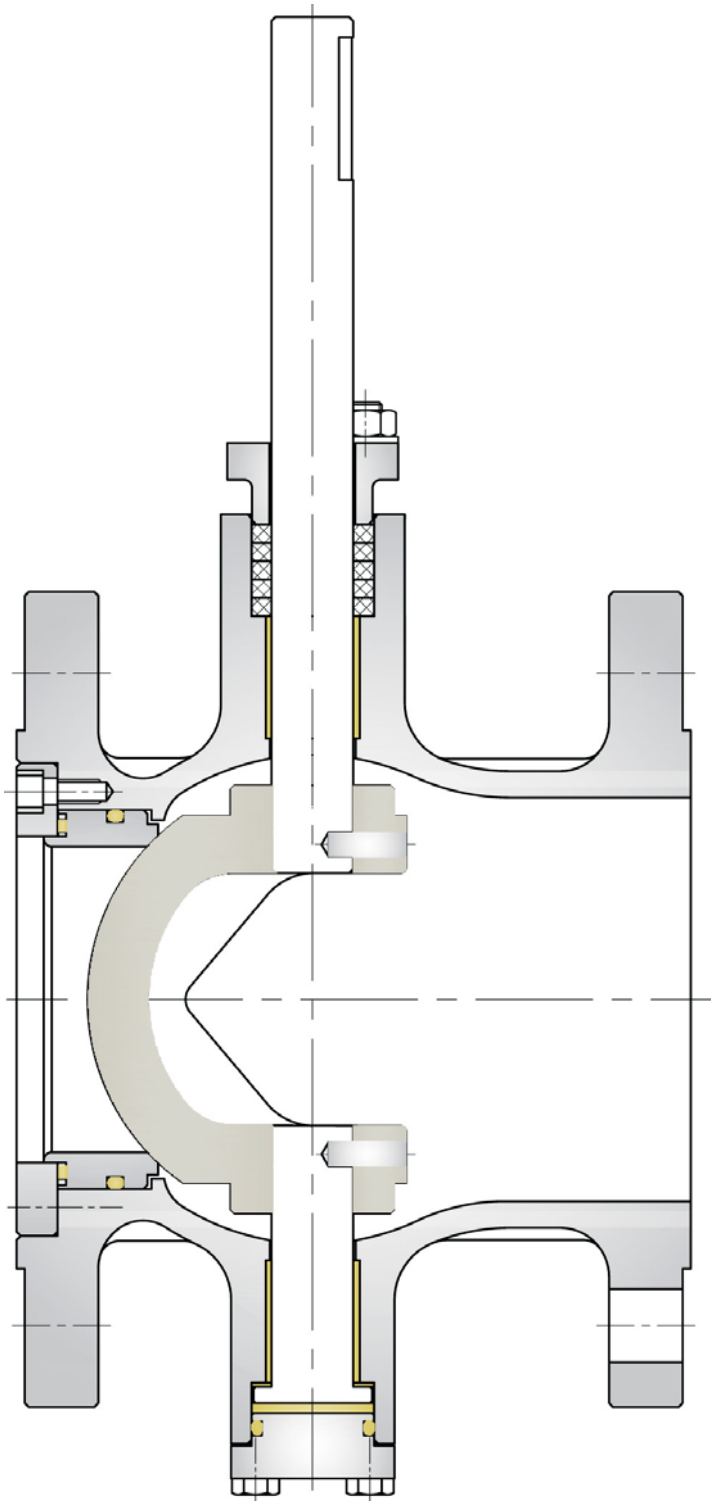
SEGMENT BALL VALVE

KVM

KVM | SEGMENT BALL VALVE

SERVICE

RV series is quarter turn control valve mainly recommended for throttle service, segment ball valve combines globe valve control with the efficiency of a rotary ball valve. Segment Ball is in V-notch design with strong cutting force and self-cleanness, especially suitable for control of medium containing fiber and tiny solids. Segment ball valve was from pulp and paper industry, By research and development, segment ball valve is extend to other industrial such as petrochemical, petroleum, chemical fiber, power, metallurgy, pharmacy, environmental protection etc.



FEATURES

Precise contouring of the V-noctch provides excellent control characteristics for an extensive variety of flow application.

Splined connection between the shaft and ball ensures precise control and low hysteresis.

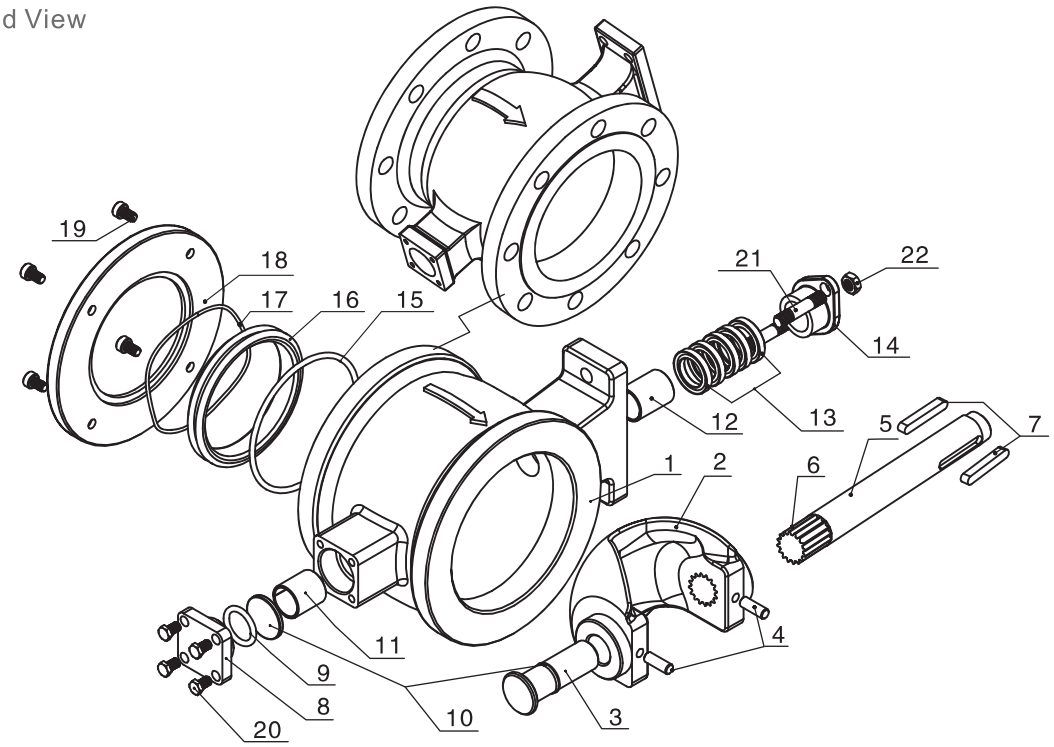
Seat Retainer by side mounted, easy to change seats, means low cost for valve repairs.

Superior trunnion bearing technology is engineered for excellent abrasion resistance.

Rugged self-adjusting metal seated option is ideally suited for high temperature applications or slurries. spring load seat maintains constant contact with the ball, giving enhanced sealing performance.

Shearing action between ball and seal promotes smooth, non-clogging operation-perfect for fiber or slurry application.

Exploded View



PARTS LIST / MATERIALS OF CONSTRUCTION

Table 1

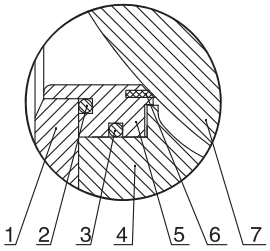
No.	Name	Quantity	Material
1	Body	1	WCB、CF8、CF8M
2	Ball	1	CF8, CF8M, Hard Chromium Plating or Stellite Surfacing
3	Lower shaft	1	17-4PH, SS316
4	Cylindrical pin	2	SS304, SS316
5	Upper shaft	1	17-4PH, SS316
6	Spline	1	17-4PH, SS316
7	Flat key	2	SS304, 45#
8	Blind flange	1	CF8, CF8M
9	O-ring	1	Viton, Graphite
10	Gasket	1 each	PTFE, Graphite
11	Self-lubricating bearing	1	Composite material
12	Self-lubricating bearing	1	Composite material
13	Packing	1 Set	PTFE, Graphite
14	Gland	1	CF8
15	O-ring	1	Viton, Graphite
16	Seat	1	PTFE, SS304, SS316, Hard Chrome Plating or Stelllite Surfacing
17	Wavy spring	1	SS316
18	Retainer	1	Carbon Steel, SS304, SS316
19	Socked head screw	4	A193 B7, A193 B8
20	Hexagon screw	4	A193 B7, A193 B8
21	Stud	2	A193 B7, A193 B8
22	Hexagon nut	2	A194 2H, A194 8

KVM | SEGMENT BALL VALVE

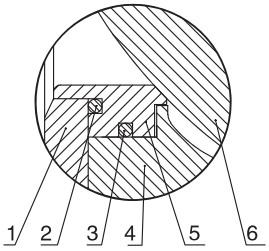
TECHNICAL DATA

End Connection: Wafer DN25 through DN250/1" through 10", MFR standard.
Flanged DN25 through DN700 / 1" through 28", IEC/DIN 534-3-2 or ISA S75.04
Nominal Pressure Rating: 1.0, 1.6, 2.5, 4.0, 6.4(MPa), ANSI 150, ANSI 300
Working Temperature: -20~160℃ / -20 ~320℉,
Optional-20~230℃ / -20 ~446℉, -20~425 ℃ / -20 ~797℉
Pressure Test: Each Linuo valve undergoes hydraulic test with 1.5 X pressure rating as shell test, and seat tightness test according the ANSI/FCI 70.2.
Leakage: Soft Seat: ANSI/FCI Class VI.
Metal Seat:Maximum allowable leakage equal to 1% of maximum leakage of ANSI/FCI 70.2 Class IV.

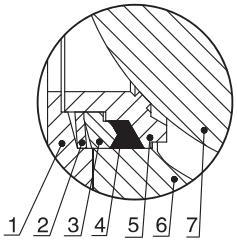
THREE DIFFERENT SEATS FOR APPLICATION.



Flow direction
Seat A



Flow direction
Seat B



Flow direction
Seat C

PTFE Seat

No.	Parts	Temp.Range
1	Retainer	−20~160℃
2	Spring	
3	O ring	
4	Valve Body	
5	Seat Body	
6	Seat Seal	
7	Ball	

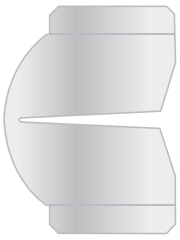
Metal Seat

No.	Parts	Temp.Range
1	Retainer	−20~160℃ /−20~230℃
2	Spring	
3	O ring	
4	Valve Body	
5	Seat	
6	Ball	

Metal Seat for high temp

No.	Parts	Temp.Range
1	Retainer	−20~450℃
2	Belville Spring	
3	Plunge Ring	
4	Graphite ring	
5	Metal Seat	
6	Valve Body	
7	Ball	

DIFFERENT BALL FOR APPLICATION



Rated CV on small flow Segment Ball Valve of DN20 and DN25 offers various kinds of small CVs to reach precisely control within low flow rate, which makes it highly suitable for additive and painting modulatingin pulp and paper making sector.

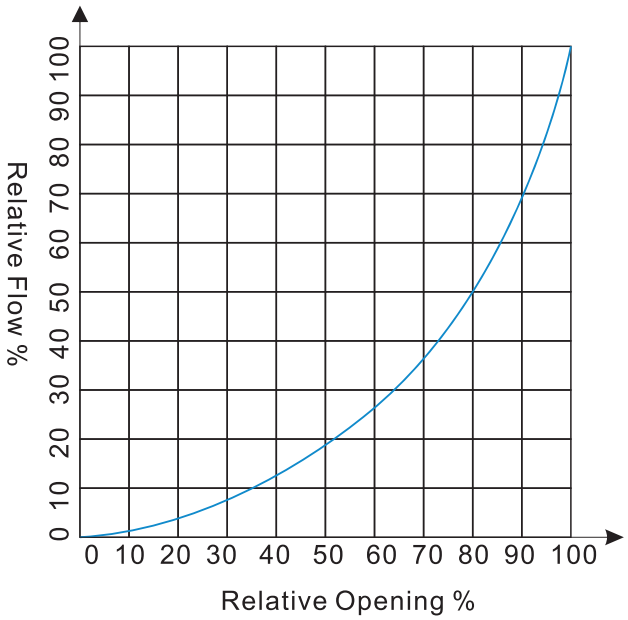
Noise reduction trim construction It's common to see maximum limitation of noise in control valve application. Especially in gas and steam process, valve without special design will definitely cause exceeding of noise.
When under high pressure differential water, large gas etching will damage pipeline system, and make bad influence on valve service life and precision. Fortunately, noise reduction trim construction has solutions for such hidden danger.

MAXIMUM ALLOWABLE DIFFERENTIAL PRESSURE AND RATED CV

Table 2

DN	Max.shut off dp.	Max. control dp.	Rated CV
25	50	35	27
32	50	35	47
40	50	35	70
50	50	35	135
65	50	35	210
80	50	35	390
100	40	25	560
125	40	25	790
150	40	25	1130
200	35	25	1860
250	35	20	2900
300	30	10	4320
350	30	10	6640
400	30	10	8000

EQUAL PERCENTAGE INHERENT FLOW CHARACTERISTIC



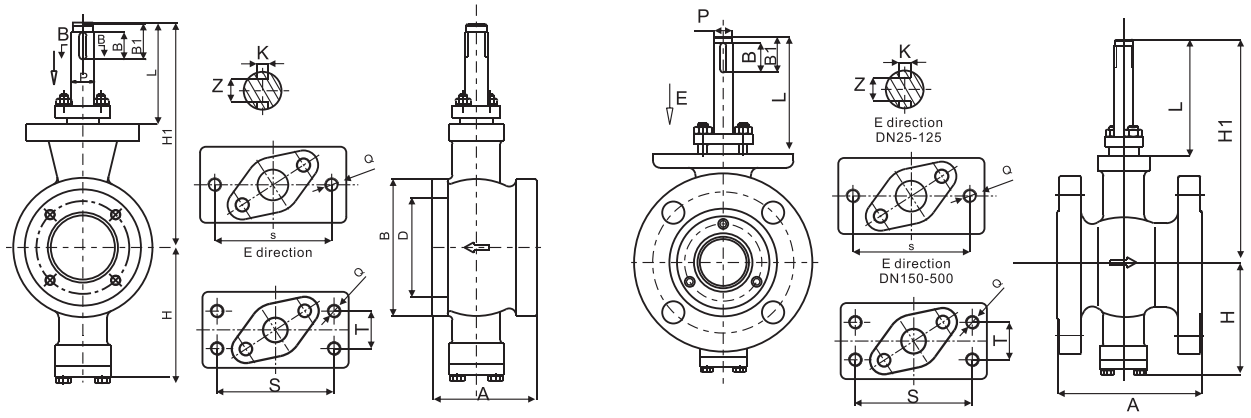
ACTUATOR SIZING

Operation		Z Series Actuator		Air Supply
DN	Torque（N.m）1.6MPa	Double Acting	Single Acting	Pressure （MPa）
Table 3				
25	25	ZSQ32-63	ZDQ41-100	0.5~0.7
32	25	ZSQ32-63	ZDQ41-100	
40	30	ZSQ32-63	ZDQ41-100	
50	35	ZSQ41-80	ZDQ41-100	
65	60	ZSQ41-80	ZDQ41-125	
80	80	ZSQ41-100	ZDQ50-125	
100	125	ZSQ50-100	ZDQ50-160	
125	160	ZSQ50-100	ZDQ50-160	
150	220	ZSQ50-125	ZDQ60-160	
200	350	ZSQ60-125	ZDQ60-200	
250	660	ZSQ60-160	ZDQ80-200	
300	1200	ZSQ80-200	ZDQ100-300	
350	1700	ZSQ80-250	ZDQ130-350	
400	2600	ZSQ130-300	ZDQ130-400	
450	3200	ZSQ130-300	ZDQ160-400	
500	4000	ZSQ130-350	ZDQ160-400	

Note:

ZSQ and ZDQ series piston actuators are manufactured by Linuo. The actuators above are recommended for valves of pressure PN10, PN16, ANSI 150Lb and temp. -20~230℃, with minimum air supply pressure of 5 bar.

KVM | SEGMENT BALL VALVE



DIMENSION OF WAFER TYPE

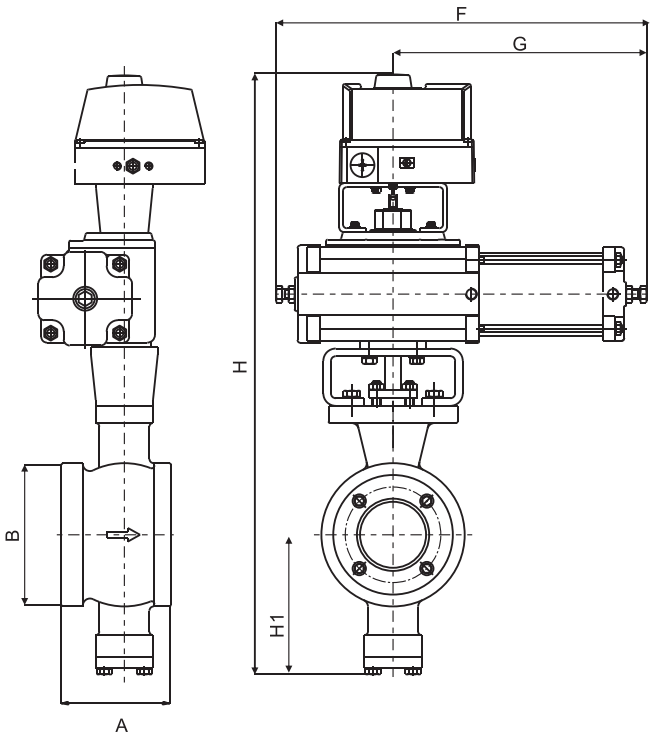
Table 4

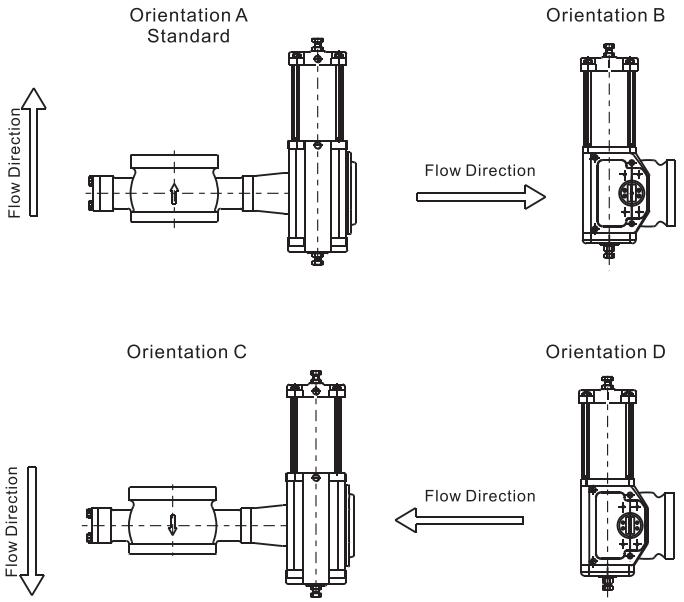
DN mm	A	H1	H2	ΦD	ΦB	L	ΦP	B1	B	K	N	S	Q	T	KG
20	62	75	188	33	56	116	14	30	25	5	11	65	M10	/	2. 7
25	62	87	190	38	68	115	16	30	25	5	13	80	M10	/	2. 7
32	62	87	193	42	78	112	16	30	25	5	13	80	M10	/	3
40	62	87	195	50	85	110	16	30	25	5	13	80	M10	/	3. 5
50	75	97	198	60	100	107	16	30	25	5	13	80	M10	/	4. 2
65	90	112	218	75	120	108	16	30	25	5	13	80	M10	/	6
80	100	112	240	94	130	122	20	30	25	6	16. 5	90	M12	/	7. 5
100	115	122	250	110	158	118	20	30	25	6	16. 5	90	M12	/	11
125	129	142	270	135	184	120	25	40	35	8	21	100	M12	/	15. 5
150	160	165	308	165	216	133	30	45	40	10	25	110	M12	40	25
200	200	195	328	210	268	123	30	45	40	10	25	110	M12	40	39
250	240	237	380	260	322	138	40	55	50	12	35	110	M12	45	64

DIMENSION OF FLANGED TYPE

Table 5

DN mm	A	H1	H2	L	ΦP	B1	B	K	N	S	Q	T	KG
25	102	87	190	112	16	30	25	5	13	80	M10	/	4
32	105	87	193	108	16	30	25	5	13	80	M10	/	5.5
40	114	87	195	110	16	30	25	5	13	80	M10	/	6
50	124	97	198	105	16	30	25	5	13	80	M10	/	7.5
65	145	112	218	106	16	30	25	5	13	80	M10	/	9..5
80	165	112	240	122	20	30	25	6	16.5	90	M12	/	14
100	194	122	250	118	20	30	25	6	16.5	90	M12	/	21.5
125	213	142	270	120	25	40	35	8	21	100	M12	/	23
150	229	165	308	133	30	45	40	10	25	110	M12	40	37
200	243	195	328	123	30	45	40	10	25	110	M12	40	58
250	297	237	380	138	40	55	50	12	35	110	M12	45	85
300	338	281	415	146	40	55	50	12	35	130	M12	45	131
350	400	338	509	180	50	68	60	16	44	134	M16	64	199
400	400	390	595	214	60	88	80	18	53	175	M20	70	345
450	520	422	642	214	70	88	80	20	62.5	190	M20	90	510
500	600	510	720	230	80	88	80	22	71	215	M20	96	607
600	680	550	845	285	85	115	100	22	75	230	M20	90	720





DIMENSION OF DNE UMATIC WAFER TYPE

Table 6

	Double Acting								Signle Acting						
DN	A	B	H1	H	G	F	Actuator	DN	A	B	H1	H	G	F	Actuator
20	62	56	75	518	235	345	ZSQ32-63	20	62	56	75	555	480	635	ZDQ41-100
25	62	68	87	525	235	345	ZSQ32-63	25	62	68	87	555	480	635	ZDQ41-100
32	62	78	87	525	235	345	ZSQ32-63	32	62	78	87	555	480	635	ZDQ41-100
40	62	85	87	525	235	345	ZSQ32-63	40	62	85	87	555	480	635	ZDQ41-100
50	75	100	97	565	300	422	ZSQ41-80	50	75	100	97	605	480	635	ZDQ41-100
65	90	120	112	585	300	422	ZSQ41-80	65	90	120	112	625	550	720	ZDQ41-125
80	100	130	112	600	315	440	ZSQ41-100	80	100	130	112	640	620	770	ZDQ50-125
100	115	158	122	625	328	474	ZSQ50-100	100	115	158	122	645	660	810	ZDQ50-160
125	129	184	142	650	328	474	ZSQ50-100	125	129	184	142	700	660	810	ZDQ50-160
150	160	216	165	720	328	474	ZSQ50-125	150	160	216	165	770	640	830	ZDQ60-200
200	200	268	195	810	356	530	ZSQ60-125	200	200	268	195	870	680	870	ZDQ80-200
250	240	322	237	900	396	570	ZSQ60-160	250	240	322	237	980	875	1170	ZDQ80-250

How To Order

RV	100	D1-16	M	51	Y	56	E	ZS
1	2	3	4	5	6	7	8	9	10

1 Valve Series

RV	Segment Ball Valve

2 Valve Size

015	DN 15	1/2"	050	DN 50	2"	150	DN 150	6"	400	DN 400	16"
020	DN 20	3/4"	065	DN 65	2-1/2"	200	DN 200	8"	450	DN 450	18"
025	DN 25	1"	080	DN 80	3"	250	DN 250	10"	500	DN 500	20"
032	DN 32	1-1/4"	100	DN 100	4"	300	DN 300	12"	600	DN 600	24"
040	DN 40	1-1/2"	125	DN 125	5"	350	DN 350	14"	700	DN 700	26"

3 Connection Type

F1 Flanged(RF)	F2 Flanged (MF)	D1 Wafer(RF)	D2 Wafer(MF)

4 Pressure Rating

10	PN10	01	150Lb	1K	10K
16	PN16	03	300Lb	2K	20K
25	PN 25	06	600Lb		
40	PN 40				
64	PN 64				
80	PN 100				

5 Body Material

C	WCB	G	CG8M
P	CF8	B	LCB
Q	CF3	D	LCC
M	CF8M	W	WC6
L	CF3M	S	Duplex SS

6 Disc Material and Treatment

Disc material		Surface treatment	
3	CF8	1	Hard chrome plating
4	CF3	2	Nickle plating
5	CF8M	3	Nickle based hard alloy spray welding
6	CF3M	4	Tungsten Carblde spray welding
7	CG8M	5	Nitriding
8	Duplex ss	6	Stellite

7 Sealing Type

Metal seat	Y
Soft seat	R
High-Temp,Metal Seat	G

8 Seat Material and Treatment

Metal seat				Soft seat	
Material		Surface treatment		Material	
3	304	1	Hard Chrome plating	PO	PTFE
4	304L	4	Tungsten Carbide spray welding	LO	PPL
5	316	5	Nitriding	NO	NYLON
6	316L	6	Stellite	RO	RTFE
7	317			KO	PEEK
8	2205				

9 O-ring Material

Soft seat,Material and temperature		
E	EPDM	-29℃~120℃
V	Viton	-29℃~230℃
A	PFA	-29℃~230℃
F	FEP	-29℃~160℃
G	Graphite	-29℃~425℃

10 Actuator

ZS	Pneumatic double acting
ZDK	Pneumatic spring return to close
ZDB	Pneumatic spring return to open
ZK	Electric
SD	Manual operation

No：ZK–03

BUTTERFLY VALVE

LINUO
力诺流体控制
| 力 量 源 于 承 诺 |

KVM

KVM | BUTTERFLY VALVE

SERVICE

Linuo top quality butterfly valves are suitable for both on/off and throttling service.
The triple offset design incorporates torques in seating for tight shutoff or control even in the roughest applications. Industries where the triple offset butterfly valves are widely used include Power, Refining, Petrochemical, Chemical, and Pulp and Paper.

FEATURES

Shaft Bearings

Shaft is centered on two self-lubricating bearings with extremely high rotation precision and stability. Bearing is PTFE lined on internal surface on bronze sintered stainless steel base material with super abrasion resistance and self-lubrication to free from seizure problem.

Compact Construction

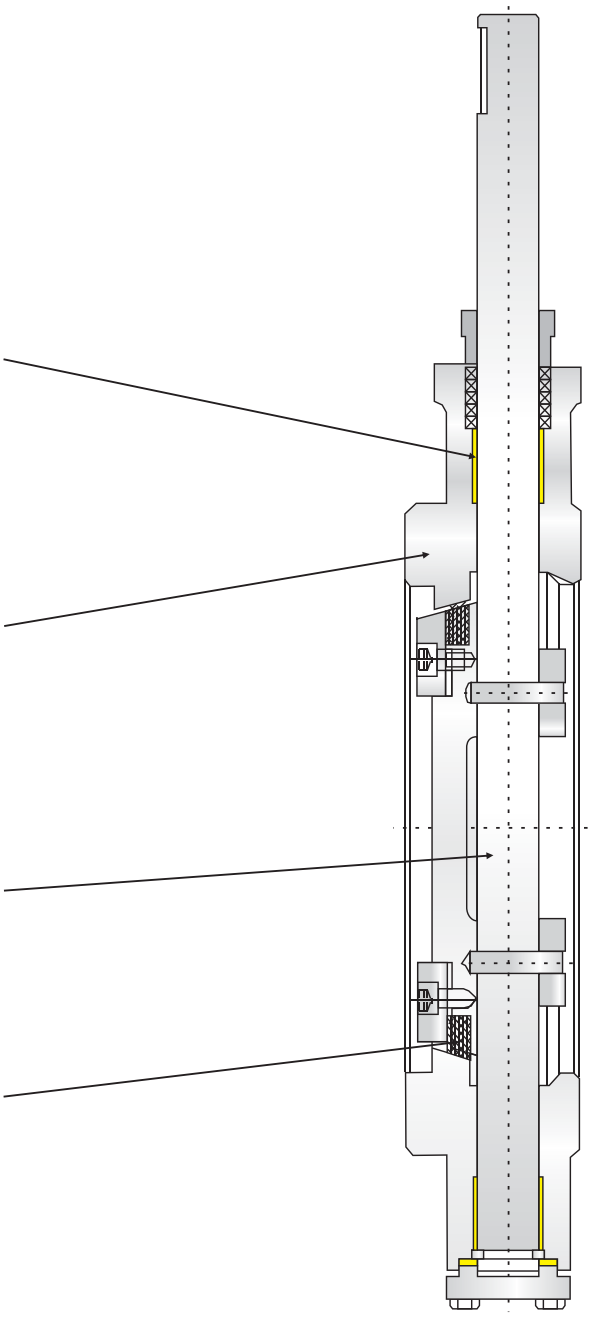
Due to the nature of their design, butterfly valves can offer very short face to face dimensions. Less metal means butterflies are often a very economical alternative to ball valves. Also, reduced torque for butterfly valves offers even more cost savings, as they can be operated with smaller actuators.

Low Emission Shaft

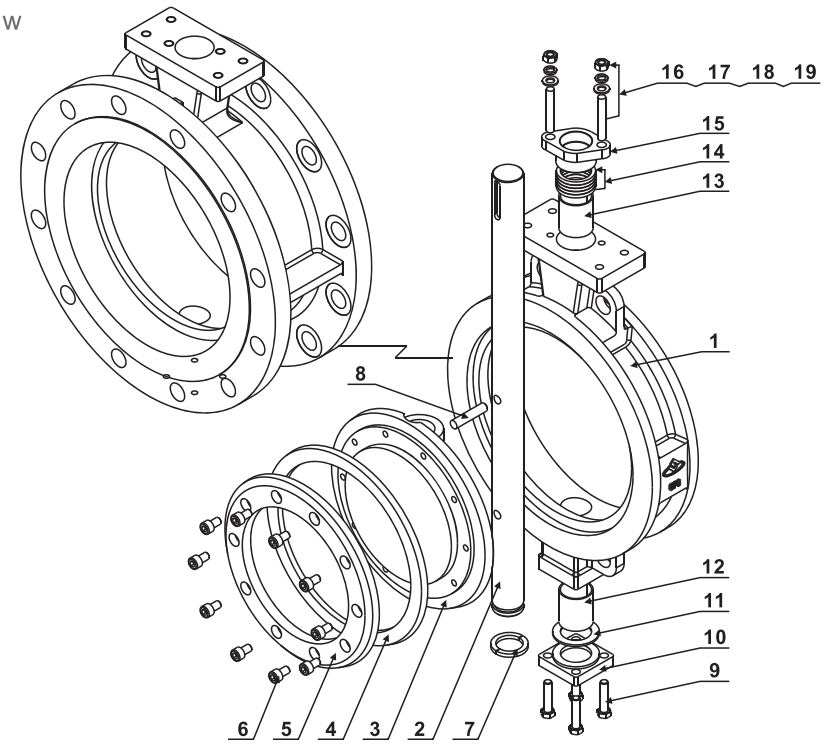
Shafts are precisely ground by CNC machine with very fine finish and low friction factor, therefore, low emission from packing and long packing cycle life.

Various Sealing Design

Valves are with standard laminated disc seal with graphite layers carefully assembled between stainless steel layers with reliable high temperature resistance and seat tightness. Torque seating during closing of the valve provides friction free sealing for long circle life.Based on suitability of the intended service,seat options may include PTFE seat,metal seat. Consult Linuo with specifics on your application,and we'll be happy to help to select a valve for your service.



Exploded View



PARTS LIST

Table 1

No	Parts	QTY (pc)	Material
1	Body	1	WCB, CF8, CF8M
2	Shaft	1	17-4PH, SS304, SS316,SS410
3	Disc	1	WCB, CF8, CF8M
4	Sealing ring	1	Stainless steel + graphite, PTFE
5	Retainer flange	1	Carbon Steel, SS304, SS316
6	Hexagon bolt	as required	SS304, SS316
7	Split Collar	1	SS304, SS316
8	Pin	2	SS304, SS316
9	Hexagon bolt	4	SS304
10	Blind flange	1	WCB, CF8, CF8M
11	Gasket	1	Spiral wound metal/graphite gasket
12	Self-lubricating bearing	1	Composite material
13	Self-lubricating bearing	1	Composite material
14	Packing	as required	PTFE, flexible graphite
15	Gland	1	WCB, CF8, CF8M
16	Stud	2	SS304
17	Washer	2	SS304
18	Spring Washer	2	SS 304
19	Nut	2	SS 304

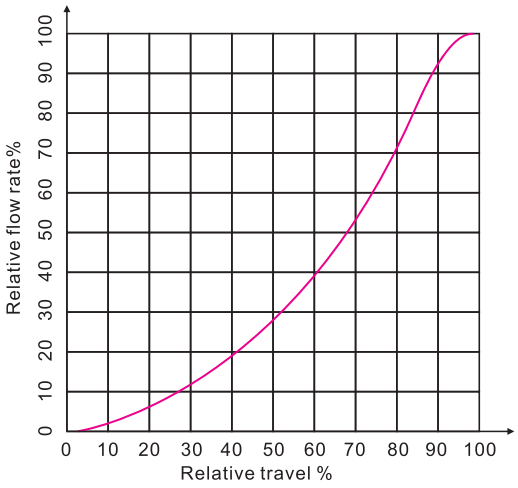
KVM | BUTTERFLY VALVE

TECHNICAL PARAMETERS

Nominal Diameter:DN50-DN1200 2 inch-48 inch
Pressure Rating:PN10-PN40,ANSI150,ANSI300
Connection Type:Wafer,Lug,Flanged
Working Temperature: -40℃~+160℃ / -40℉~+320℉ for PTFE seat
-40℃~+425℃ / -40℉~+797℉ for metal seat
For temperature exceeds the above ranges, please consult Linuo factory.
Design and manufacture standard: API609,GB/T 12238
Face-to-face dimensions standard:API609 for flanged type,GB/T 12221,EN558.1 for wafer and lug type.
Seat tightness:Control valve---ANSI/FCI 70.2-2006 Class V
On/Off Valve---ISO 5208 rate D for metal seat,ISO 5208 rate A for soft seat.

FLOW CHARACTERISTIC CURVE

Figure1



RATED CV

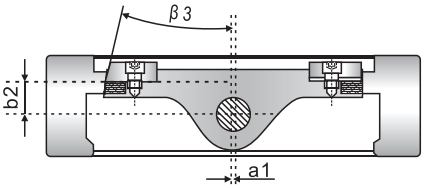
Table 2

Size(mm/inch)	Rated Cv
50/2	95
65/2.5	175
80/3	270
100/4	470
125/5	850
150/6	1400
200/8	2300
250/10	3560
300/12	5800
350/14	7800
400/16	10000
450/18	13500
500/20	18000
600/24	25000
700/28	38500
800/32	48000
900/36	52500
1000/40	61700
1200/48	81000

Cv VERSUS VALVE ROTATION,in Degrees

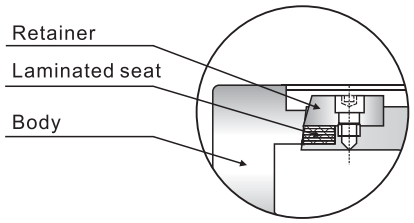
Table 3

Size		Cv								
mm	inch	10°	20°	30°	40°	50°	60°	70°	80°	90°
50	2	1.53	4.29	10	12	16	20	42	82	95
65	2 1/2	3.32	8.36	20	23	27	44	86	159	175
80	3	4.68	14.78	27	38	39	78	152	249	270
100	4	9.97	39.44	81	168	231	307	359	425	470
125	5	54.06	164.04	270	391	473	531	634	781	850
150	6	58.33	172.22	307	501	614	953	1183	1379	1400
200	8	66.74	185.38	360	619	983	1409	1793	2171	2300
250	10	147.95	385.90	710	1106	1646	2305	2892	3419	3560
300	12	254.47	622.68	1078	1636	2419	3470	4435	5332	5800
350	14	341.64	820.42	1365	2198	3234	4375	7158	7165	7800
400	16	408.16	965.28	1654	2694	4041	5833	7634	9573	10000
450	18	489.22	1175.31	2015	3305	4982	7238	9737	12076	13500
500	20	692.40	1539.74	2560	4013	6321	9214	12510	15716	18000
600	24	1027.97	2279.72	3840	5858	8934	12862	17425	22261	25000
700	28	1274.25	2523.27	4628	7812	12254	18887	26357	33522	38500
800	32	1811.41	4124.70	6387	10453	15803	23502	33052	42317	48000
900	36	2463.56	4123.04	6909	11359	16879	25188	35844	44836	52500
1000	40	4225.34	11579.49	13908	16501	21419	30477	37120	47632	61700
1200	48	5264.63	17148.26	20640	26114	30179	37181	46032	52688	81000



TRIPLE OFFSET

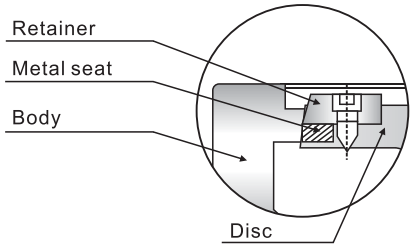
1.Shaft centerline is offset from the centerline of the valve and of the pipe.
2.Shaft is offset behind the disc face.
3.The third offset is at the sealing face.The sealing surface on the disc is similar to a slice taken from a cone shape. This cone shape is offset from the centerline of the pipeline. The shape resulting from this third offset reduces friction and thus torque,and helps provide for uniform sealing forces around the surface of the seat.



FEATURES OF VARIOUS SEAT DESIGNS

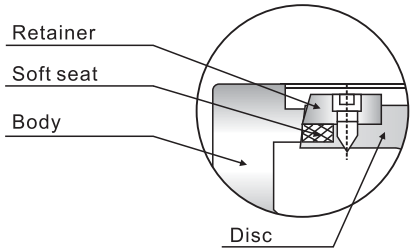
Resilient Laminated Seat

1.Low operation torque and easy operation and cost saving.
2.Tight shut off up to bubble tightness.
3.Reliable tightness can be ensured even under low differential pressure.
4.Good pressure,corrosion and abrasion resistance and long circle life.



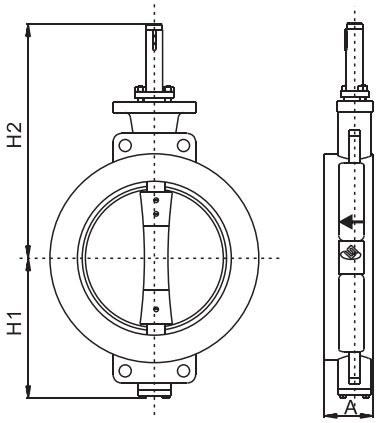
Metal Seat

1.Low operation torque and easy operation and cost saving.
2.Hard alloy coated metal seat provides super abrasion resistance.
3.Good pressure,corrosion and abrasion resistance and long circle life.

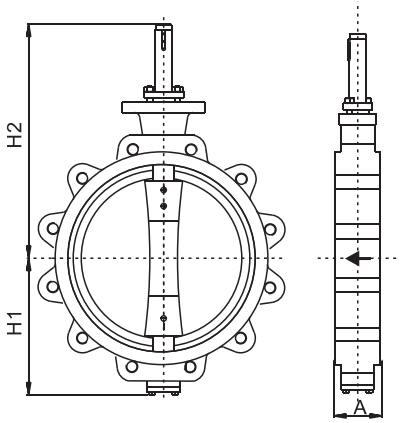


Soft Seat

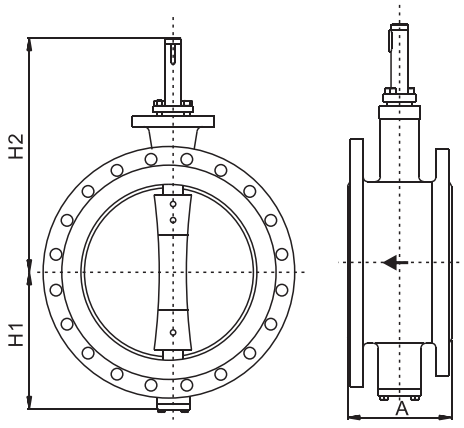
1.Reliable bubble tightness.
2.Low operation torque and easy operation and cost saving.



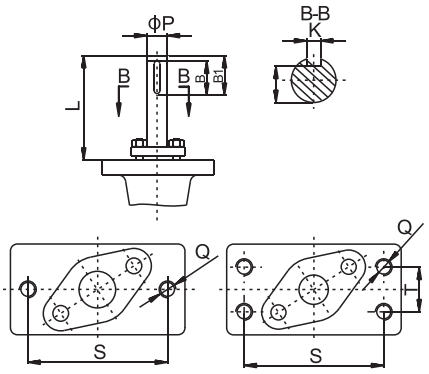
Wafer Type



Lug Type



Flanged Type



Actuator Bracket Mounting Face

BARE SHAFT VALVES

mm

Table 5

Size		A					Actuator mounting dimensions								
mm	inch	Wafer	Lug	Flanged	H1	H2	L	ϕP	B1	B	K	N	S	Q	T
50	2	43	43	108	104	210	110	14	39	35	5	11	70	M10	/
65	2-1/2	46	46	112	120	230	110	14	39	35	5	11	70	M10	/
80	3	49	49	114	122	225	110	16	39	35	5	13	80	M12	/
100	4	56	56	127	136	240	110	20	39	35	6	16.5	80	M12	/
125	5	64	64	140	157	268	120	20	39	35	6	16.5	90	M12	/
150	6	70	70	140	170	280	120	25	39	35	8	21	100	M12	32
200	8	71	71	152	200	330	140	30	49	40	10	25	100	M10	32
250	10	76	76	165	243	380	140	35	54	50	10	30	110	M12	40
300	12	83	83	178	268	436	185	40	64	60	12	35	130	M12	45
350	14	92	92	190	298	485	185	45	64	60	14	39.5	134	M16	64
400	16	102	102	216	338	524	185	50	64	60	16	44	134	M16	64
450	18	114	114	222	367	670	225	50	75	70	16	44	165	M20	70
500	20	127	127	229	402	658	235	55	75	70	16	49	190	M22	70
600	24	154	154	267	470	773	285	70	85	80	20	62.5	215	M27	90
700	28	165	165	292	514	818	285	80	85	80	22	71	215	M30	90
800	32	190	190	318	565	905	310	85	95	90	22	76	230	M30	100
900	36	203	203	330	637	976	310	95	95	90	25	86	230	M36	100
1000	40	216	216	410	697	1038	310	105	105	100	28	90	230	M36	100
1200	48	254	254	470	804	1163	352	115	105	100	32	104	300	M45	140

Note: The above actuator mounting dimensions applicable for wafer, lugged and flanged type.

HOW TO ORDER

BW	100	D1	–	16	M	50	Y	57	W	–	ZS
1	2	3		4	5	6	7	8	9		10

1 Valve Type

BW	Butterfly Valve

2 Size

050	DN50	2"	300	DN300	12"	900	DN900	36"
065	DN65	2-1/2"	350	DN350	14"	1000	DN1000	40"
080	DN80	3"	400	DN400	16"	1200	DN1200	48"
100	DN100	4"	450	DN450	18"			
125	DN125	5"	500	DN500	20"			
150	DN150	6"	600	DN600	24"			
200	DN200	8"	700	DN700	28"			
250	DN250	10"	800	DN800	32"			

3 Connection Type

F1 Flanged (RF)	D1 Wafer (RF)	L1 Lug

4 Pressure Rating

10	PN10	01	150Lb	1K	10K
16	PN16	03	300Lb	2K	20K
25	PN25				
40	PN40				
64	PN64				

5 Body Material

C	WCB	G	CG8M
P	CF8	B	LCB
Q	CF3	D	LCC
M	CF8M	W	WC6
L	CF3M	S	Duplex SS

6 Disc Material and treatment

Disc material		Surface treatment	
1	WCB	0	NoTreatment
3	CF8	1	Hard Chrome plating
4	CF3	2	Nickle plating
5	CF8M	3	Nickle based hard alloy spray welding
6	CF3M	4	Tungsten Carbide spray welding
7	CG8M	5	Nitriding
S	Duplex SS	6	Stellite

7 Sealing Type

Laminated or Metal seat	Y
Soft seat	R

8 Seat Material and Treatment

Metal seat				Soft seat	
Material		Surface treatment		Material	
3	304	0	No treatment	PO	PTFE
4	304L	1	Hard Chrome plating	LO	PPL
5	316	4	Tungsten Carbide spray welding		
6	316L	5	Nitriding		
7	317	6	Stellite		
S	2205	7	Graphite layers		

9 O-ring Material

Material and temperature	
W	Without O-ring

10 Actuator

ZS	Pneumatic double acting
ZDK	Pneumatic spring return to close
ZDB	Pneumatic spring return to open
ZK	Electric
SD	Manual operation