



Floating Ball Valve Design Torque

Size (inch)	Design Torque (N.m)				
	Class 150	Class 300	Class 600	Class 900	Class 1500
1/2	12	17	30	38	51
3/4	14	23	38	56	71
1	27	48	66	98	130
1-1/2	55	89	120	189	238
2	75	100	160	240	350
2-1/2	125	141	233	390	550
3	162	216	308	610	980
4	234	476	635	---	---
5	546	910	---	---	---
6	804	1338	1944	---	---
8	1410	3100	---	---	---
10	2600	5400	---	---	---

Notes:

1. For FC, FR & FF series valves, torque is the same.
2. All valves are in normal temperature, with PTFE seat for Class 150~300 and Nylon seat for Class 600~1500.
3. For cryogenic ball valve, torque will be 2~2.5 times the above torque.
4. Torque shown in this table is to be used as a guide for actuator selection. A safety factor of 1.5 is recommended for actuator sizing.
5. Torque may be changed according to different medium and trim material.

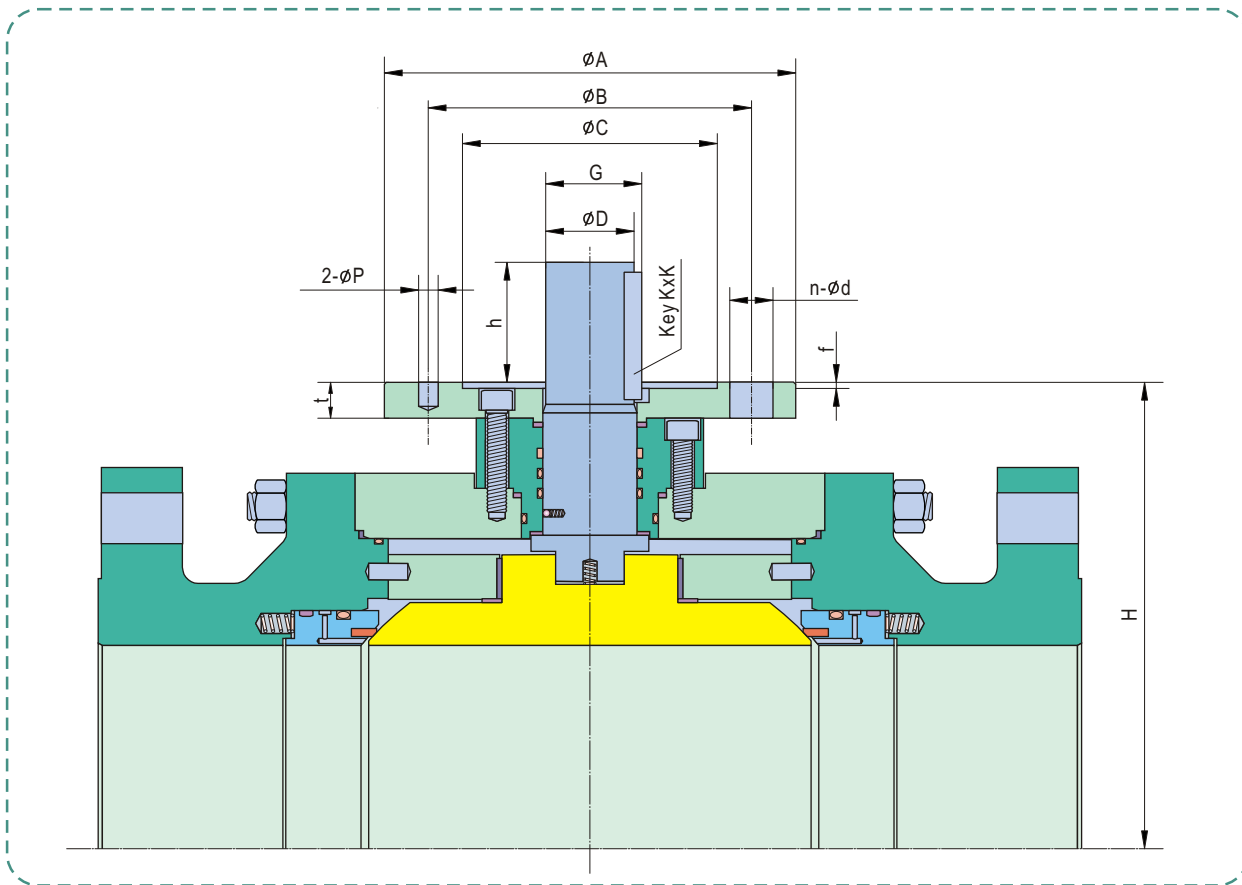
Ball Valve Flow Coefficient (Cv)

Size (inch)	Cv					
	Class 150	Class 300	Class 600	Class 900	Class 1500	Class 2500
1/2	24	24	24	24	24	24
3/4	53	53	53	53	53	53
1	92	92	92	92	92	92
1-1/2	211	211	211	211	211	211
2	381	381	381	381	381	283
3	845	845	845	845	845	600
4	1523	1523	1523	1523	1523	1160
6	3381	3381	3381	3381	3120	2590
8	6031	6031	6031	6031	5508	4795
10	9442	9442	9442	9442	8500	7410
12	13614	13614	13614	13614	12223	10433
14	16621	16621	16621	15363	14800	---
16	21920	21920	21920	20581	19178	---
18	28076	28076	28076	26435	24243	---
20	34995	34995	34995	32743	30565	---
22	42676	42676	42676	40184	35860	---
24	51117	51117	51117	47884	41733	---
26	59012	59012	59012	56076	---	---
28	68872	68872	68872	65110	---	---
30	79493	79493	79493	74610	---	---
32	89268	89268	89268	84977	---	---
34	101307	101307	101307	96020	---	---
36	112306	112306	112306	107487	---	---
40	139982	139982	139982	---	---	---

Note:

1. The flow coefficient "Cv" of a valve is the flow rate in Gallons /minute of 60°F water through a fully opened valve, at a pressure drop of 1 psi across the valve.
2. All the ball valves are in full bore.

Torque Value & Mounting Flange Dimensions



Size inch	Class	Torque N.m	Flange Dimensions mm							ISO5211 Flange No.	Key Size KxK mm	G mm	D mm	h mm	H mm
			A	B	C	f	t	n-d	P						
2*1-1/2	150	42	90	70	55	3	12	4-9	6	F07	6x6	25	22	25	100
	300	66	90	70	55	3	12	4-9	6	F07	6x6	25	22	25	100
	600	102	90	70	55	3	12	4-9	6	F07	6x6	25	22	25	100
	900	142	90	70	55	3	12	4-9	6	F07	6x6	25	22	25	100
	1500	241	90	70	55	3	12	4-9	6	F07	6x6	25	22	25	100
	2500	423	125	102	70	3	15	4-11	8	F10	8x8	32	28	30	115
2	150	76	90	70	55	3	12	4-9	6	F07	6x6	25	22	25	103
	300	91	90	70	55	3	12	4-9	6	F07	6x6	25	22	25	103
	600	143	90	70	55	3	12	4-9	6	F07	6x6	25	22	25	103
	900	231	125	102	70	3	15	4-11	8	F10	8x8	32	28	30	117
	1500	349	125	102	70	3	15	4-11	8	F10	8x8	32	28	30	117
	2500	798	150	125	85	3	18	4-13	10	F12	10x10	41	36	55	135
3	150	121	125	102	70	3	15	4-11	8	F10	8x8	32	28	30	130
	300	159	125	102	70	3	15	4-11	8	F10	8x8	32	28	30	130
	600	269	125	102	70	3	15	4-11	8	F10	8x8	32	28	30	132
	900	524	150	125	85	3	18	4-13	10	F12	10x10	41	36	55	142
	1500	887	150	125	85	3	18	4-13	10	F12	10x10	41	36	55	147
	2500	1583	175	140	100	4	20	4-18	10	F14	12x12	51	45	65	165
4	150	179	125	102	70	3	15	4-11	8	F10	8x8	32	28	30	150
	300	355	125	102	70	3	15	4-11	8	F10	8x8	32	28	30	150
	600	670	150	125	85	3	18	4-13	10	F12	10x10	41	36	55	160
	900	875	175	140	100	4	20	4-18	10	F14	12x12	51	45	65	172
	1500	1351	210	165	130	5	22	4-22	12	F16	14x14	57	50	75	185
	2500	2111	210	165	130	5	22	4-22	12	F16	14x14	62	55	80	205



Torque Value & Mounting Flange Dimensions

Size inch	Class	Torque N.m	Flange Dimensions mm							ISO5211 Flange No.	Key Size KxK mm	G mm	D mm	h mm	H mm
			A	B	C	f	t	n-d	P						
6	150	631	150	125	85	3	18	4-13	10	F12	10x10	41	36	55	186
	300	854	150	125	85	3	18	4-13	10	F12	10x10	41	36	55	186
	600	1609	175	140	100	4	20	4-18	10	F14	12x12	51	45	65	208
	900	1927	210	165	130	5	22	4-22	12	F16	14x14	62	55	80	215
	1500	3512	210	165	130	5	24	4-22	14	F16	16x16	68	60	90	255
	2500	5454	300	254	200	5	26	8-18	16	F25	16x16	73	65	95	305
8	150	987	210	165	130	5	20	4-22	10	F16	12x12	51	45	60	233
	300	1562	210	165	130	5	20	4-22	10	F16	12x12	51	45	60	233
	600	2501	210	165	130	5	22	4-22	12	F16	14x14	62	55	80	250
	900	4012	210	165	130	5	22	4-22	14	F16	16x16	68	60	90	260
	1500	6513	300	254	200	5	25	8-18	16	F25	18x18	79	70	105	280
	2500	8495	300	254	200	5	28	8-18	16	F25	18x18	84	75	110	360
10	150	1321	210	165	130	5	22	4-22	12	F16	14x14	62	55	80	280
	300	2304	210	165	130	5	22	4-22	12	F16	14x14	62	55	80	280
	600	3450	210	165	130	5	24	4-22	14	F16	16x16	68	60	90	290
	900	5017	300	254	200	5	25	8-18	16	F25	18x18	79	70	105	305
	1500	7996	300	254	200	5	28	8-18	16	F25	18x18	84	75	110	345
	2500	13148	300	254	200	5	28	8-18	16	F25	20x20	95	85	125	390
12	150	1650	210	165	130	5	24	4-22	14	F16	16x16	68	60	90	315
	300	3041	210	165	130	5	24	4-22	14	F16	16x16	68	60	90	315
	600	4507	300	254	200	5	25	8-18	16	F25	18x18	79	70	105	345
	900	6512	300	254	200	5	28	8-18	16	F25	18x18	84	75	110	360
	1500	10078	300	254	200	5	28	8-18	16	F25	20x20	95	85	125	405
	2500	18007	300	254	200	5	30	8-18	16	F25	24x24	107	95	140	465
14	150	2415	300	254	200	5	26	8-18	16	F25	16x16	73	65	95	353
	300	4019	300	254	200	5	26	8-18	16	F25	16x16	73	65	95	353
	600	6578	300	254	200	5	28	8-18	16	F25	18x18	84	75	110	370
	900	9489	300	254	200	5	28	8-18	16	F25	20x20	95	85	125	390
	1500	14860	300	254	200	5	30	8-18	16	F25	24x24	107	95	140	435
	2500	21857	350	298	230	5	32	8-22	20	F30	28x28	119	105	165	485
16	150	3314	300	254	200	5	28	8-18	16	F25	18x18	84	75	110	393
	300	5350	300	254	200	5	28	8-18	16	F25	18x18	84	75	110	400
	600	9025	300	254	200	5	28	8-18	16	F25	20x20	95	85	125	420
	900	12877	300	254	200	5	30	8-18	16	F25	24x24	107	95	140	440
	1500	21857	350	298	230	5	32	8-22	20	F30	28x28	119	105	165	485
	2500	29032	350	298	230	5	38	8-22	20	F30	32x32	136	120	180	545
18	150	5148	300	254	200	5	28	8-18	16	F25	18x18	84	75	110	435
	300	8375	300	254	200	5	28	8-18	16	F25	20x20	95	85	125	440
	600	13493	300	254	200	5	30	8-18	16	F25	24x24	107	95	140	462
	900	18975	350	298	230	5	32	8-22	20	F30	28x28	119	105	165	500
	1500	29032	350	298	230	5	38	8-22	20	F30	32x32	136	120	180	545
	2500	40907	415	356	260	5	42	8-33	28	F35	36x36	158	140	210	580
20	150	6425	300	254	200	5	30	8-18	16	F25	20x20	90	80	120	485
	300	10987	300	254	200	5	30	8-18	16	F25	24x24	107	95	140	490
	600	18502	350	298	230	5	32	8-22	20	F30	28x28	119	105	165	515
	900	26048	350	298	230	5	38	8-22	20	F30	32x32	136	120	180	530
	1500	40907	415	356	260	5	42	8-33	28	F35	36x36	158	140	210	580
	2500	65223	475	406	300	8	48	8-39	28	F40	40x40	180	160	240	730
24	150	12379	300	254	200	5	32	8-18	16	F25	24x24	102	90	135	562
	300	19384	350	298	230	5	32	8-22	20	F30	28x28	124	110	165	570
	600	29546	350	298	230	5	38	8-22	20	F30	32x32	136	120	180	610
	900	42379	415	356	260	5	42	8-33	28	F35	36x36	158	140	210	630
	1500	65223	475	406	300	8	48	8-39	28	F40	40x40	180	160	240	730
	2500	95454	540	475	350	10	54	8-45	28	F45	45x45	200	180	270	810

Notes:

1. The above table is for TF, TW&TT series valves, which are with ISO 5211 mounting flange and adaptability for all types actuators mounting.
2. The torque is for valves with PTFE seat or Molon seat as per different size/class selection.
3. The torque value showed in above table is the valve torque at normal temperature. For customer's sizing actuator:
 - a. If medium temperature is -10°C~40°C, the output torque of actuator should be 1.5 times the valve torque;
 - b. If medium temperature is less than -10°C, the output torque of actuator should be 2 or 2.5 times the valve torque.



Specifications for Seat Materials

	PTFE	RPTFE	Molon(Nylon+MoS2)	PEEK
Tensile Strength (MPa)	24.8	25.4	75~100	91
Compressive Strength (MPa)	35	52	100~140	137
Elongation (%)	250	120	10~30	50
Hardness(SH.A)	56	60	78	82
Water Absorption (%)	<0.01	<0.01	0.7	0.12
Specific Gravity (G/cm3)	2.2	2.2	1.2	1.35
Temperature Range (°F)	-300~400	-150~425	-40~300	-150~500
Pressure Rating (Class)	150~600	150~600	150~1500	150~2500
Service Application	Chemical & Cryogenic	Chemical & Cryogenic	High Pressure & Low Temperature	High Pressure & High Temperature
	Nylon 1010	Nylon 12	Devlon V	Delrin
Tensile Strength (MPa)	55	60	80	68
Compressive Strength (MPa)	70	79	140	110
Elongation (%)	150	200	5.37	220
Hardness(SH.A)	70	75	78	78
Water Absorption (%)	0.3	0.2	0.1	0.2
Specific Gravity (G/cm3)	1.04	1.01	1.14	1.41
Temperature Range (°F)	-40~200	-58~250	-150~300	-58~230
Pressure Rating (Class)	600~1500	600~1500	150~1500	150~1500
Service Application	High Pressure & Low Temperature	High Pressure & Low Temperature	High Pressure & Low Temperature	High Pressure & Low Temperature

Specifications for Seal Materials

	Viton A	NBR	Viton B	HNBR (HSN)	Viton AED
Temperature range (°F)	-20~400	-50~250	-20~400	-40~320	-20~480
Hardness (SH.A)	70	70	70	80	90
Specific Gravity (G/cm3)	1.85	1.2	1.85	1.33	1.9
Service Application	Petroleum Oils, Gasoline, Transmission Fluid	Petroleum Oils, Water, Hydraulic Oils	Mineral Acid, Steam, MTBE	Petroleum Oils, H2S & CO2, Anti-Explosive Decompression	Petroleum Oils, H2S & CO2, Anti-Explosive Decompression

Specifications for Gasket Materials

	Flexible Graphite	Spiral Wound 316+Graphite	PTFE	Spiral Wound Monel + PTFE
Temperature Range °F	-300~900	-300~900	-300~400	-300~400
PH	0~14	0~14	0~14	0~14
Service Application	Fire-safe	Fire-safe	Cryogenic, High Corrosive	High Corrosive

*Due to quick develop, we reserve the right to institute changes in material, design and specifications for all VIZA designed valves without prior notice.