



12-1

Pneumatic actuator Rack & pinion - GD, GS Series



Summary

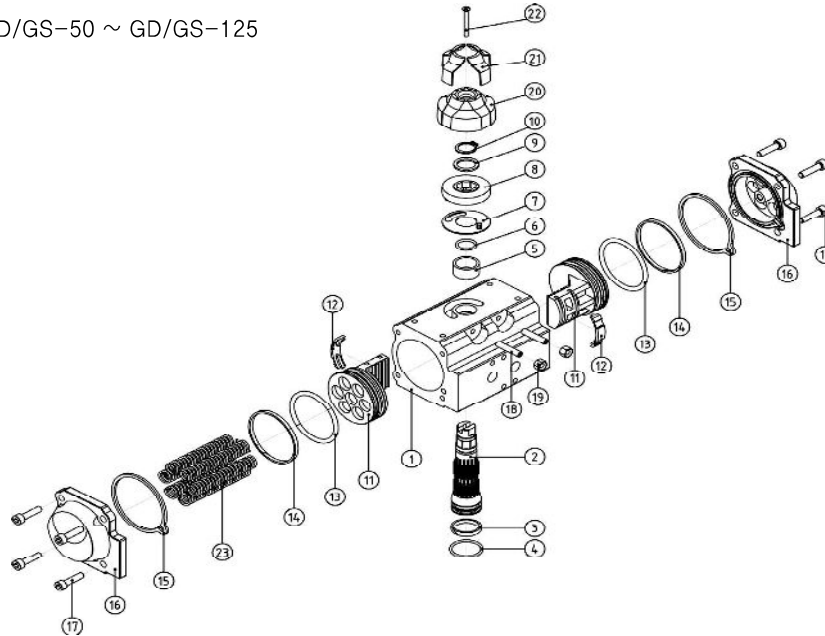
- GD / GS series
pneumatic actuator are designed & developed with new concept for the next generation.
- GD / GS series
provide various & wide solutions with following characteristics•
 - Rack & Pinion type
 - Double Acting & Spring Return (Single Acting)
 - Wide range of torque range (Quarter Turn, Ball, Butterfly, Plug & Damper)
 - Convenient for use
 - High Performance

Construction

1. Aluminium alloy Body
 - Hard anodized
 - Nickel plated
2. Dual piston rack & pinion designed
3. Alloy steel pinion
 - Nickel plated
4. Multifunction position Indicator
5. NBR Rubber pinion seal
6. Internal and external stainless steel fasteners for long term corrosion resistance
7. Full Open / Close position adjustment
8. NAMUR accessory mounting
 - VDI / VDE 3845
 - NAMUR Solenoid
9. Valve mounting pad
 - ISO5211 / DIN 3337 (Int'l standard)

Parts and materials

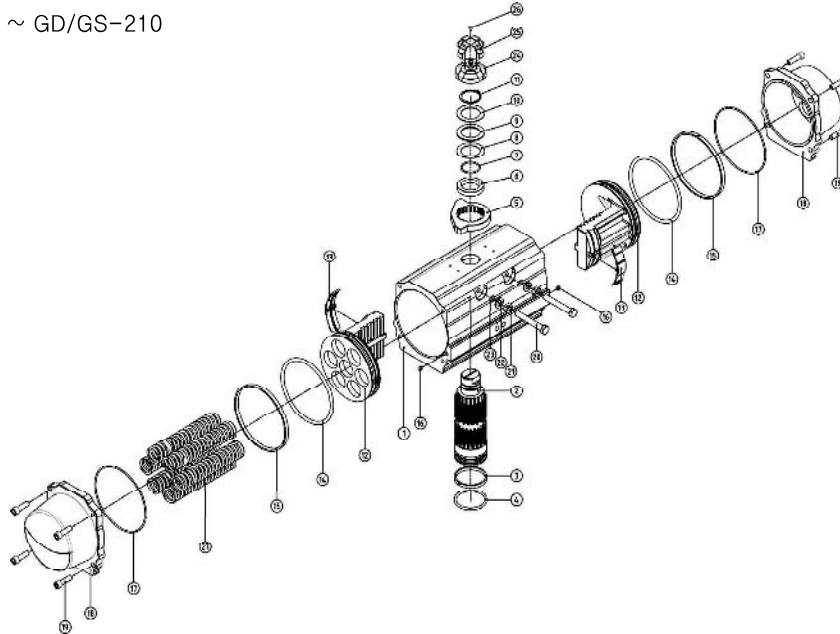
▶GD-35, GD/GS-50 ~ GD/GS-125



No.	Part Name	Standard material	Unit Q'ty	Corrosion protection	Optional
1	Body	Aluminum alloy	1	Hard anodized	—
2	Shaft	Steel alloy	1	Nickel plated	—
3	Shaft Bushing (Bottom)	PTFE	1	—	—
4	Shaft O-ring (Bottom)	NBR	1	—	Viton / Silicone
5	Shaft Bushing (Top)	PTFE	1	—	—
6	Shaft O-ring (Top)	NBR	1	—	Viton / Silicone
7	Flat Bushing	PTFE	1	—	—
8	Stopper	Stainless steel	1	—	—
9	Flat Washer	Stainless steel	1	—	—
10	Snap Ring	Stainless steel	1	—	—
11	Piston	ADC12	2	Anodized	—
12	Piston Guide	Acetal	2	—	—
13	Piston O-ring	NBR	2	—	Viton / Silicone
14	Piston Backup Ring	PTFE	2	—	—
15	Cover O-ring	NBR	2	—	—
16	Cover	AC4C	2	Chromate + Polyester coated	Viton / Silicone
17	Cover Bolt	Stainless steel	8	—	—
18	Stopper Bolt	Stainless steel	2	—	—
19	Stopper Nut	Stainless steel	2	—	—
20	Indicator Cap	ABS	1	—	—
21	Indicator	ABS	4	—	—
22	Indicator Bolt	Stainless steel	1	—	—
23	Spring	PW-1	Vary	—	—

Parts and materials

▶GD/GS-145 ~ GD/GS-210



No.	Part Name	Standard material	Unit Q'ty	Corrosion protection	Optional
1	Body	Aluminum alloy	1	Hard anodized	—
2	Shaft	Steel alloy	1	Nickel plated	—
3	Shaft Bushing (Bottom)	PTFE	1	—	—
4	Shaft O-ring (Bottom)	NBR	1	—	Viton / Silicone
5	Stopper	Stainless steel	1	—	—
6	Shaft Bushing (Top)	PTFE	1	—	—
7	Shaft O-ring (Top)	NBR	1	—	Viton / Silicone
8	Flat Washer	Stainless steel	1	—	—
9	Flat Bushing	PTFE	1	—	—
10	Flat Washer	Stainless steel	1	—	—
11	Snap Ring	Stainless steel	1	—	—
12	Piston	ADC12	2	Anodized	—
13	Piston Guide	Acetal	2	—	—
14	Piston O-ring	NBR	2	—	Viton / Silicone
15	Piston Backup Ring	PTFE	2	—	—
16	O-ring	NBR	2	—	—
17	Cover O-ring	NBR	2	—	Viton / Silicone
18	Cover	AC4C	2	Chromate + Polyester coated	—
19	Cover Bolt	Stainless steel	8	—	—
20	Stopper Bolt	Stainless steel	2	—	—
21	Stopper Nut	Stainless steel	2	—	—
22	Stopper Bolt Washer	Stainless steel	2	—	—
23	Stopper Bolt O-ring Indicator	NBR	2	—	—
24	Cap	ABS	1	—	—
25	Indicator	ABS	4	—	—
26	Indicator Bolt	Stainless steel	1	—	—
27	Spring	PW-1	Vary	—	—

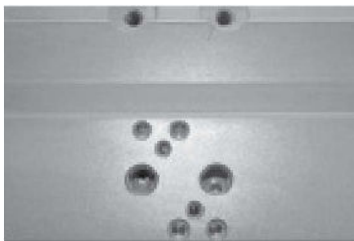
Specifications

- Working Pressure Max. 10bar (145psig), Double acting / Spring return : 2.5 ~ 8bar
- Working Temperature Standard / -20°C ~ 80°C (-4°F ~ 175°F), Available up to -35°C when change O-Ring material.
- Operating Media Clean Dry Air
- Rotation 90° ± 5°
- Life cycle 1,000,000 operations

Applications

Type	Model	Valve Limit of application (적용범위)	
		Butterfly valve(10K)	2Way Flanged Ball valve(10K)
Double Acting	GD-35	—	15A
	GD-50	40A, 50A	15A, 20A
	GD-63	50A, 65A	25A, 32A
	GD-75	80A ~ 100A	40A, 50A
	GD-88	125A, 150A	65A, 80A
	GD-100	200A	80A, 100A
	GD-125	200A ~ 250A	100A, 125A
	GD-145	250A	125A
	GD-170	300A	125A, 150A
	GD-190	300, 350A	150A, 200A
	GD-210	400A ~ 450A	200A, 250A
Type	Model	Valve Limit of application (적용범위)	
		Butterfly valve(10K)	2Way Flanged Ball valve(10K)
Single Acting	—	—	—
	GS-50	40A	15A, 20A
	GS-63	40A, 50A	20A, 25A
	GS-75	65A	32A, 40A
	GS-88	65A, 80A	40A
	GS-100	100A, 125A	40A, 50A
	GS-125	125A, 150A	65A~100A
	GS-145	200A	100A, 125A
	GS-170	250A	125A, 150A
	GS-190	300A	150A
	GS-210	350A ~ 400A	200A

Connection

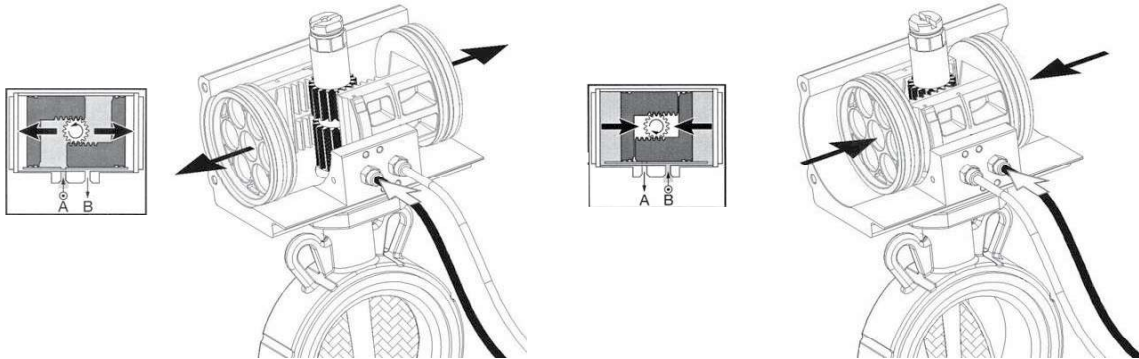


- Side mounting connection is designed in accordance with VDI, VDE3845 NAMUR standard to install solenoid valve.
- With Stopper (Stop arrangement)



- Bottom mounting connection is designed in accordance with ISO5211 and DIN3337 standard for direct mounting with valves.
- Star drive and square insert permits easy installation of the actuator directly.

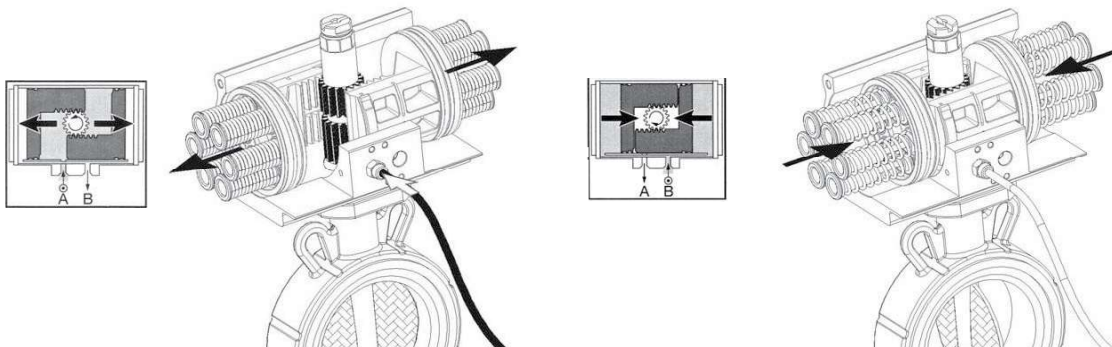
Double action



Air to port A counterclockwise / open.

Air to port B clockwise / close.

Spring return

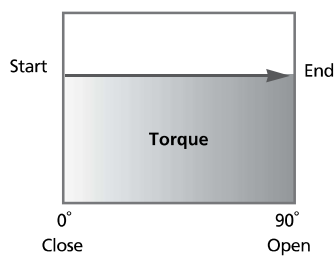


Air to port A counterclockwise / open.

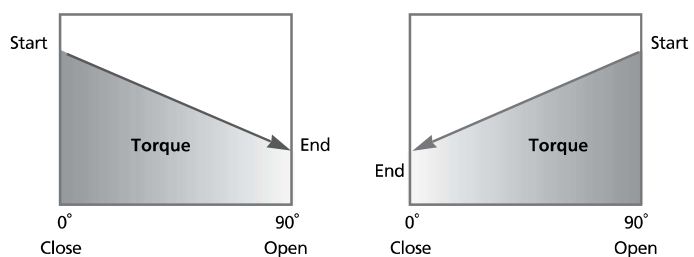
Spring return clockwise / close.

Torque

Torque diagram double acting actuators



Torque diagram single acting actuators



※한국산업기술시험원(kti) 토크(Torque)테스트 시험 인증 (No:07-1533-485)

※한국산업기술시험원(kti) 토크(Torque)테스트 시험 인증 (No:07-1533-485)

PRODUCT GUIDE



GD-SERIES | Double acting Torque in Nm |

Model	BAR@ PSI@	2.8	4.2	5	5.6	7	8.4
		40	60	70	80	100	120
GD – 145	N,m	209	314	374	418	523	628
	lbf,in	1852	2778	3307	3704	4630	5556
GD – 170	N,m	393	589	701	785	982	1178
	lbf,in	3475	5213	6206	6951	8688	10426
GD – 190	N,m	584	876	1043	1168	1460	1752
	lbf,in	5168	7752	9228	10336	12920	15504
GD – 210	N,m	685	1027	1223	1370	1712	2054
	lbf,in	6061	9091	10823	12121	15152	18182

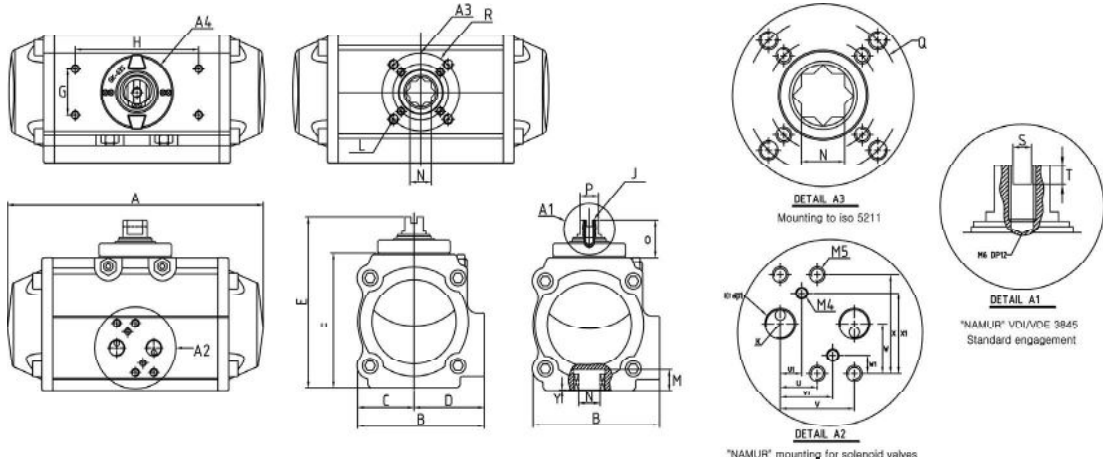


GS-SERIES | Single acting Torque in Nm |

Model	SPRING SIDE (5 STD.)	SPRING TORQUE		2.8Bar 40psi		4.2Bar 60psi		5.6Bar 80psi		7Bar 100psi	
		END	BREAK	BREAK	END	BREAK	END	BREAK	END	BREAK	END
GS – 145	2	N,m	59.82	103.84	125.17	169.19	240.29	284.31			
		Lb,in	530	920	1109	1499	2129	2519			
	3	N,m	89.73	155.76	73.36	139.39	188.37	254.40	302.37	368.40	
		Lb,in	795	1380	650	1235	1669	2254	2679	3264	
	4	N,m	119.64	207.67			136.46	224.49	250.45	338.49	364.67
		Lb,in	1060	1840			1209	1989	2219	2999	3231
	5	N,m	149.55	259.59			84.65	194.70	198.53	308.58	312.53
		Lb,in	1325	2300			750	1725	1759	2734	2769
	6	N,m	179.46	311.51					146.61	278.67	260.61
		Lb,in	1590	2760					1299	2469	2309
		N,m									3479
		Lb,in									
GS – 170	2	N,m	83.52	138.83	169.19	224.49	330.59	385.89			
		Lb,in	740	1230	1499	1989	2929	3419			
	3	N,m	124.15	207.11	123.59	206.55	262.30	345.26	411.29	494.24	
		Lb,in	1100	1835	1095	1830	2324	3059	3644	4379	
	4	N,m	164.79	275.40			194.02	304.63	343.00	453.61	487.58
		Lb,in	1460	2440			1719	2699	3039	4019	4320
	5	N,m	204.85	344.24			125.28	264.67	274.15	413.54	418.62
		Lb,in	1815	3050			1110	2345	2429	3664	3709
	6	N,m	244.92	413.09					205.30	373.48	349.77
		Lb,in	2170	3660					1819	3309	3099
		N,m									4589
		Lb,in									
GS – 190	2	N,m	118.51	205.42	229.01	315.91	472.80	559.71			
		Lb,in	1050	1820	2029	2799	4189	4959			
	3	N,m	177.77	308.13	126.41	256.77	370.09	500.45	583.41	713.77	
		Lb,in	1575	2730	1120	2275	3279	4434	5169	6324	
	4	N,m	237.02	410.84			267.38	441.20	480.70	654.51	693.00
		Lb,in	2100	3640			2369	3909	4259	5799	6140
	5	N,m	296.28	513.54			164.79	382.05	377.99	595.26	583.41
		Lb,in	2625	4550			1460	3385	3349	5274	5169
	6	N,m	355.53	616.25					275.28	536.00	480.70
		Lb,in	3150	5460					2439	4749	4259
		N,m									6569
		Lb,in									
GS – 210	2	N,m	156.88	274.27	344.13	461.51	691.20	808.58			
		Lb,in	1390	2430	3049	4089	6124	7164			
	3	N,m	235.33	411.40	207.11	383.18	554.06	730.14	865.01	1041.08	
		Lb,in	2085	3645	1835	3395	4909	6469	7664	9224	
	4	N,m	313.77	548.53			416.93	651.69	727.88	962.64	1027.09
		Lb,in	2780	4860			3694	5774	6449	8529	9100
	5	N,m	392.21	685.67			279.91	573.36	590.74	884.20	889.84
		Lb,in	3475	6075			2480	5080	5234	7834	7884
	6	N,m	470.65	822.80					453.61	805.76	752.71
		Lb,in	4170	7290					4019	7139	6669
		N,m									9789
		Lb,in									

Shape dimension

- Double GD-35, GD-50, GD-63, GD-75, GD-88, GD-100, GD-125, GD-145, GD-170, GD-190, GD-210
- Single - , GS-50, GS-63, GS-75, GS-88, GS-100, GS-125, GS-145, GS-170, GS-190, GS-210

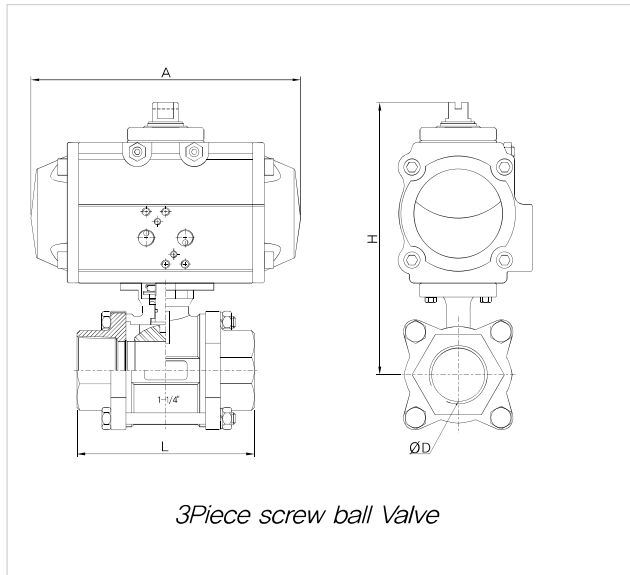


Model		L (ISO 5211)	R		A	B	C	D	E	F	G	H	I	J	K	O	P	S	T	U	U1	V	V1	W	W1	X	X1
			Q	M N																							
GD	-35	F03/F05 Ø36/Ø50	M5/M6 10 9		111	58	23	35	72	52	25	50	PT	M6	1/8"	20	10	4	4	12	7	24	17	16	6	32	26
GD	-50	F03/F05 Ø36/Ø50	M5/M6 12 11		144	69	28	41	89	69	30	80	PT	M6	1/8"	20	12	4	4	12	7	24	17	16	6	32	26
GS																											
GD	-63	F05/F07 Ø50/Ø70	M6/M8 16 14		166	82	36	46	111	86	30	80	PT	M6	1/8"	20	12	4	4	12	7	24	17	16	6	32	26
GS																											
GD	-75	F05/F07 Ø50/Ø70	M6/M8 18 17		213	93	40	53	1288	103	30	80	PT	M6	1/8"	20	16	4	4	12	7	24	17	16	6	32	26
GS																											
GD	-88	F05/F07 Ø50/Ø70	M6/M8 19 17		253	108,5	49,5	59	136	116	30	80	PTT	M6	1/4"	20	12	4	4	12	7	24	17	16	6	32	26
GS																											
GD	-100	F07/F10 Ø70/Ø102	M8/M10 22 17		296	123	56,8	67	152	132	30	80	PT	M6	1/4"	20	12	4	4	12	7	24	17	16	6	32	26
GS																											
GD	-125	F07/F10 Ø70/Ø102	M8/M10 24 22		352	150	69	80	195	159	30	80	PT	M6	1/4"	20	12	4	4	12	7	24	17	16	6	32	26
GS																											
GD	-145	F10/F12 Ø102/Ø125	M10/M12 30 27		438,6	164,9	75,4	89,5	211,5	182	30	130	PT	M6	1/4"	29,5	29,5	4	4	12	-	24	-	16	-	32	-
GS																											
GD	-170	F10/F12 Ø102/Ø125	M10/M12 30 27		561,3	199	92	107	243	214	30	130	PT	M6	1/4"	29	40	4	4	12	-	24	-	16	-	32	-
GS																											
GD	-190	F10/F14 Ø102/Ø140	M10/M16 43 36		601,8	206,3	103,1	103,1	264	234,9	30	130	PT	M6	1/4"	29,1	40	4	4	12	-	24	-	16	-	32	-
GS																											
GD	-210	F12/F16 Ø125/Ø165	M12/M20 43 36		639	226,3	113,1	113,1	283,8	254,7	30	130	PT	M6	1/4"	29,1	40	4	4	12	-	24	-	16	-	32	-
GS																											

ACTUATOR MODEL			GD-35	GD/GS-50	GD/GS-63	GD/GS-75	GD/GS-88	GD/GS-100	GD/GS-125	GD/GS-145	GD/GS-170	GD/GS-190	GD/GS-210
APPROXIMATE WEIGHT	DA	kg	0.6	1.1	1.8	2.9	4.34	6.2	11	18.5	29.5	35	43
	SR	kg	-	1.26	2	3.34	4.89	7.05	12.9	21	34.9	42	52
OPERATING TIME	DA	OPEN(sec)	0.15	0.15	0.2	0.25	0.4	0.5	0.9	1.2	1.75	2.35	3.1
	DA	CLOSE(sec)	0.15	0.2	0.25	0.35	0.5	0.7	1.2	1.5	2.1	2.95	4
	SR	OPEN(sec)	-	0.2	0.25	0.3	0.5	0.6	1.1	1.4	1.95	2.7	3.5
	SR	CLOSE(sec)	-	0.25	0.3	0.45	0.6	0.9	1.4	1.8	2.45	3.4	4.5
AIR VOLUME (litres)	DA	OPEN	0.04	0.08	0.15	0.3	0.5	0.7	1.53	2.4	3.7	5.1	7.8
	DA	CLOSE	0.05	0.14	0.25	0.48	0.77	1.1	2.33	3.8	5.55	8.2	8.2
	SR	OPEN	-	0.08	0.15	0.3	0.5	0.7	1.54	2.4	3.7	5.1	7.8
	SR	CLOSE	-	0.08	0.15	0.3	0.5	0.7	1.54	2.4	3.7	5.1	7.8

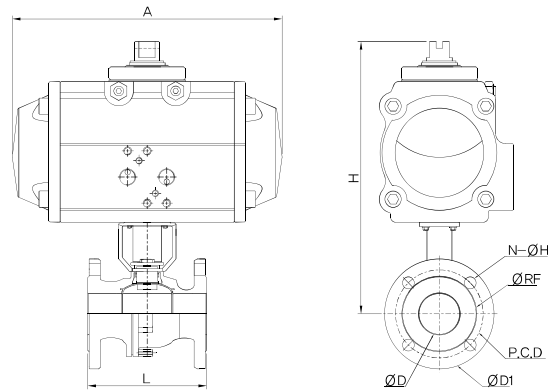


3PIECE SCREW BALL VALVE | 3PIECE SCREW BALL VALVE |



SIZE		Valve	Actuator	ø D	L [mm]	H [mm]	A [mm]	Stem [mm]	ISO5211 PCD
Inch	mm								
3/8"	10A	KV23-10	GD-35	12,8	63,5	109	111	9	F03,F05
			GS-50			126	144	11	F03,F05
1/2"	15A	KV23-15	GD-35	15	63,5	109	111	9	F03,F05
			GS-50			126	144	11	F03,F05
3/4"	20A	KV23-20	GD-35	20	72,5	117	111	9	F03,F05
			GS-50			134	144	11	F03,F05
1"	25A	KV23-25	GD-50	25	81,0	142,5	144	11	F03,F05
			GS-63			164,5	166	14	F05,F07
1-1/4"	32A	KV23-32	GD-50	32	94,5	148	144	11	F03,F05
			GS-75			187	213	17	F05,F07
1-1/2"	40A	KV23-40	GD-63	40	108,0	185,8	166	11	F05,F07
			GS-75			202,8	213	17	F05,F07
2"	50A	KV23-50	GD-63	50	121,5	194,5	166	11	F05,F07
			GS-100			235,5	296	17	F07,F10
2-1/2"	65A	KV23-65	GD-88	65	157,5	244,8	253	17	F05,F07
			GS-100			260,8	296	17	F07,F10

2WAY FLANGED BALL VALVE | 2WAY FLANGED BALL VALVE |

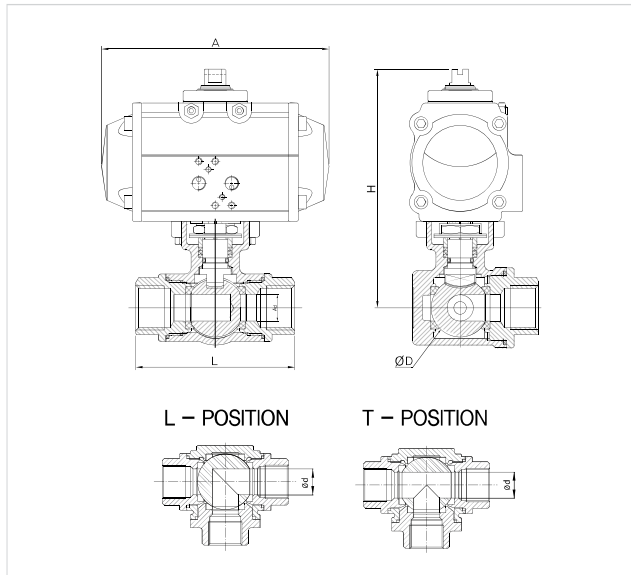


2Way Flanged ball Valve

Size		Vlave	Actuator	ø d	L [mm]	H [mm]	A [mm]	ØRD	PCD [mm]	Ød1	N-Ø-H	Stem [mm]	ISO5211 PCD
Inch	mm												
1/2"	15A	BV2-15	GD-35	15	108	133	111	51	70	95	4-15	9x9	F03.F05
			GS-50			150	144					11x11	F03.F05
3/4"	20A	BV2-20	GD-50	20	117	150	144	56	75	100	4-15	11x11	F03.F05
			GS-50			150	144					11x11	F03.F05
1"	25A	BV2-25	GD-63	25	127	172	166	67	90	125	4-19	14x14	F05.F07
			GS-63			172	166					14x14	F05.F07
1-1/4"	32A	BV2-32	GD-63	32	140	172	166	76	100	135	4-19	14x14	F05.F07
			GS-75			189	213					17x17	F05.F07
1-1/2"	40A	BV2-40	GD-75	40	165	200	213	81	105	140	4-19	17x17	F05.F07
			GS-88			208	253					17x17	F05.F07
2"	50A	BV2-50	GD-75	50	178	200	213	96	120	155	4-19	17x17	F05.F07
			GS-100			224	296					17x17	F07.F10
2-1/2"	65A	BV2-65	GD-88	65	190	208	253	116	140	175	4-19	17x17	F05.F07
			GS-125			267	352					22x22	F07.F10
3"	80A	BV2-80	GD-100	80	203	239	296	126	150	185	8-19	17x17	F07.F10
			GS-125			282	352					22x22	F07.F10
4"	100A	BV2-100	GD-125	100	229	282	352	151	175	210	8-19	22x22	F07.F10
			GS-145			298.5	438.6					27x27	F10.F12
5"	125A	BV2-125	GD-145	125	356	311.5	438.6	182	210	250	8-23	27x27	F10.F12
			GS-170			343	561.3					27x27	F10.F12
6"	150A	BV2-150	GD-170	150	394	343	561.3	212	240	280	8-23	27x27	F10.F12
			GS-190			364	602					36x36	F10.F14
8"	200A	BV2-200	GD-190	200	457	374	602	262	290	330	12-23	36x36	F10.F14
			GS-210			393.8	639					36x36	F12.F16
10"	250A	BV2-250	GD-210	250	533	433.8	639	324	355	400	12-25	36x36	F12.F16
12"	300A	BV2-300	GD-210	300	610	443.8	639	368	400	445	16-25	36x36	F12.F16

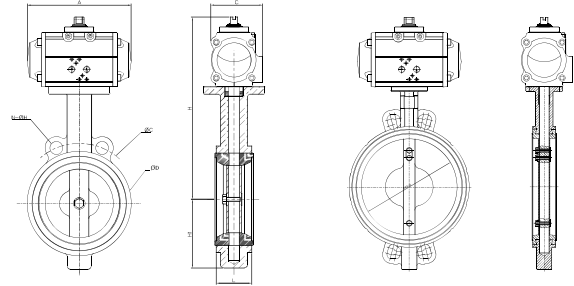


3WAY SCREW BALL VALVE | 3WAY SCREW BALL VALVE |



SIZE		Valve	Actuator	ø D	L [mm]	H [mm]	A [mm]	Stem [mm]	ISO5211 PCD
Inch	mm								
3/8"	10A	KV30-10	GD-35	11	72	110,5	111	9	F03,F05
			GS-50	11	72	127,5	144	11	F03,F05
1/2"	15A	KV30-15	GD-35	12	72	110,5	111	9	F03,F05
			GS-50	12	72	149,5	144	11	F03,F05
3/4"	20A	KV30-20	GD-50	15	83	131	144	11	F03,F05
			GS-63	15	83	153	166	14	F05,F07
1"	25A	KV30-25	GD-50	20	99	138	144	11	F03,F05
			GS-63	20	99	160	166	14	F05,F07
1-1/4"	32A	KV30-32	GD-50	25	112	144	144	11	F03,F05
			GS-63	25	112	166	166	14	F05,F07
1-1/2"	40A	KV30-40	GD-63	32	125	174	166	14	F05,F07
			GS-75	32	125	191	213	17	F05,F07
2"	50A	KV30-50	GD-63	38	149	185	166	14	F05,F07
			GS-75	38	149	202	213	17	F05,F07

BUTTERFLY VALVE | BUTTERFLY VALVE |



SIZE		Valve	Actuator	øD	L [mm]	H [mm]	H1 [mm]	A [mm]	Stem [mm]	ISO5211 (PCD)
Inch	mm									
1-1/2"	40A	BF2-40	GD-50	40	40	209	54	144	11	F03,F05
			GS-50			209		144	11	F03,F05
2"	50A	BF2-50	GD-50	52	43	219	68	144	11	F03,F05
			GS-63			241		166	14	F05,F07
2-1/2"	65A	BF2-65	GD-63	64	46	249	77	166	14	F05,F07
			GS-75			266		213	17	F05,F07
3"	80A	BF2-80	GD-75	76	46	285	84	213	17	F05,F07
			GS-88			293		253	17	F05,F07
4"	100A	BF2-100	GD-75	101	52	298	105	213	17	F05,F07
			GS-100			322		296	17	F07,F10
5"	125A	BF2-125	GD-88	126	56	322	120	253	17	F05,F07
			GS-100			338		296	17	F05,F07
6"	150A	BF2-150	GD-88	149	56	336	135	253	17	F05,F07
			GS-125			395		352	22	F07,F10
8"	200A	BF2-200	GD-125	196	60	432	183	352	22	F07,F10
			GS-145			449		438.6	27	F10,F12
10"	250A	BF2-250	GD-145	244	68	498	223	438.6	27	F10,F12
			GS-170			529		561.3	27	F10,F12
12"	300A	BF2-300	GD-170	294	78	557	255	561.3	27	F10,F12
			GS-190			578		601.8	36	F10,F14
14"	350A	BF2-350	GD-190	333	78	604	280	601.8	36	F10,F14
			GS-210			624		639	36	F12,F16
16"	400A	BF2-400	GD-210	333	78	662	310	639	36	F12,F16
			GS-210			662		639	36	F12,F16
18"	450A	BF2-450	GD-210	333	78	684	350	639	36	F12,F16
			-			-		-	-	-