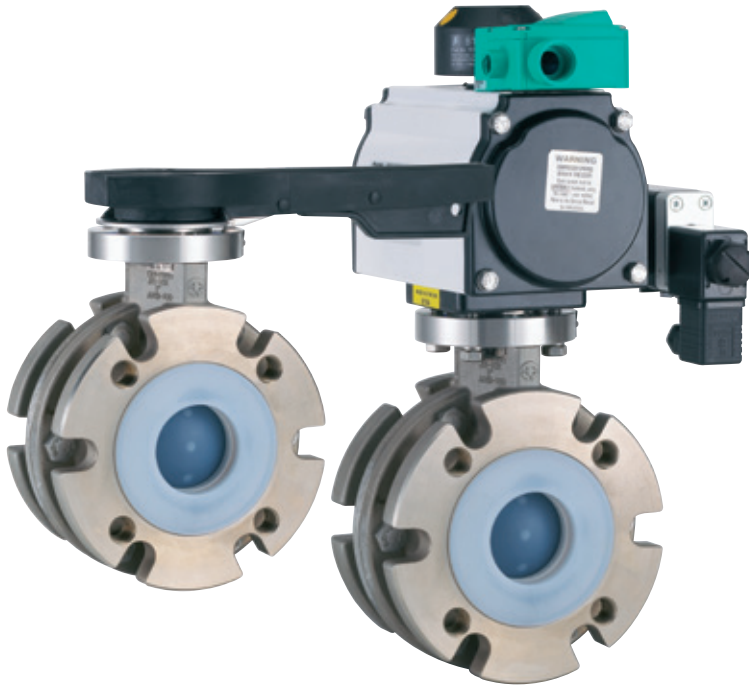


## NEOTECHA PFA LINED BALL VALVES SNB - SNC

PFA lined stainless steel ball valve with short face to face and well proven trunnion mounted design for use in pharmaceutical and bio-engineering industries



### FEATURES

- PFA lining offers highest corrosion resistance
- The smooth external surface of the investment cast Stainless Steel body makes the valve an ideal selection for high integrity installations
- Short face to face dimensions allow easy installation
- Bubble tight shut-off: precision machined ball and seats guarantee an absolute leak-free valve
- Full bore offers high  $K_V$ -value equal to the pipe
- One piece ball/stem: protects the integrity of the PFA ball lining, no hysteresis, ideal for flow control applications
- Anti blow-out shaft design, which can not be affected by the media, according API 609
- Static electricity: any build-up of static electricity is eliminated since the ball/stem and the housing are of the same potential
- Constant torque: the unique two-piece body construction together with the spring loaded seats guarantee a constant torque even after months of operation
- The self adjusting packing is maintenance free and provides a leak free stem seal which is TA-Luft VDI 2440 approved
- The C ball version is dead space free and allows easy cleaning in line
- Direct mounting according to ISO 5211

### GENERAL APPLICATION

The ball valves with the short face to face dimension are ideally suited for corrosive on-off and control applications, tight shut-off in up to 16 bar as well as in low vacuum applications. The Stainless Steel investment cast body allows installing the valves in clean environments. The valve is available with a standard ball stem as well as in a segmented ball stem design where it is necessary to ensure that no residual product remains within the body of the valve.

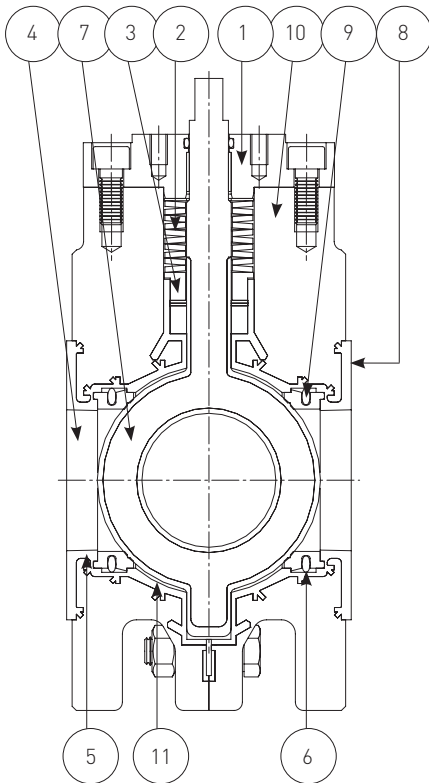
### TECHNICAL DATA

Size range:	DN 25 - 100 (NPS 1 - 4)
Temperature [°C]:	-40 up to +210
Pressure range:	vacuum 0,1 m bar to 16 bar (see diagram)
Flange connections:	DIN PN 16, ANSI 150, JIS B 2212 10 K
Face to face:	DIN/EN 558-1, row 98

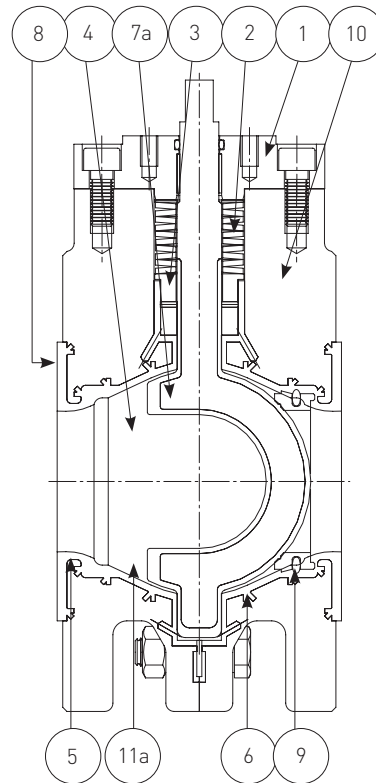
# NEOTECHA PFA LINED BALL VALVES SNB - SNC

## FEATURES

TYPE SNB



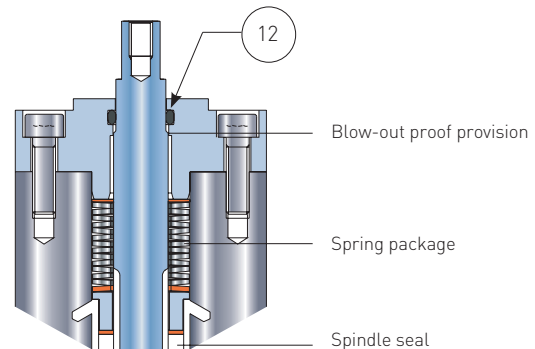
TYPE SNC



1. Every valve has a mounting flange according to ISO 5211 which simplifies the mounting of any actuator built to this standard.
2. A set of Belleville disc springs exert uniform loading on the packing, resulting in a maintenance free operation.
3. Flexible and corrosion resistant virgin PTFE packing ensures a leak-free stem seal (TA-Luft VDI 2440 approved).
4. Full bore design resulting in high  $K_v$ -value, especially required when high viscosity liquids have to be controlled.
5. The PFA lining is 3 mm thick and is spark tested at 30 000 volts. This ensures a homogeneous PFA lining, void of any pinholes, giving protection against diffusion and corrosion.
6. The liner is locked to the casting by means of machined dovetails in the casting, permitting the valve to be used on high vacuum and elevated temperature without the danger of a liner collapse.
7. The one-piece trunnion mounted ball/stem ensures uniform support of the ball. The energized seats keep in constant contact with the ball under all operating conditions. Wear and tear on the seats is reduced, resulting in an increased operating life.
- 7a. The C-ball\* reduces flow distortion and provides excellent regulating characteristics. The C-ball design is an ideal control valve for highly corrosive and sterile conditions too.
8. Short face to face dimensions according to EN 558 row 98, which allow compact designing of equipment. Due to the heat transmitting characteristics of Stainless Steel, the valve body will obtain the same temperature as the pipe line, which eliminates the need for additional tracing equipment on the valve body.
9. Locked in energized seats ensure both up stream and down stream bubble tight sealing, constant operating torque, and extended service life versus a floating ball seat design which depends on differential pressure for sealing.
10. An investment cast Stainless Steel 1.4408 (CF8M), which is corrosive resistant against most cleaning solvents.

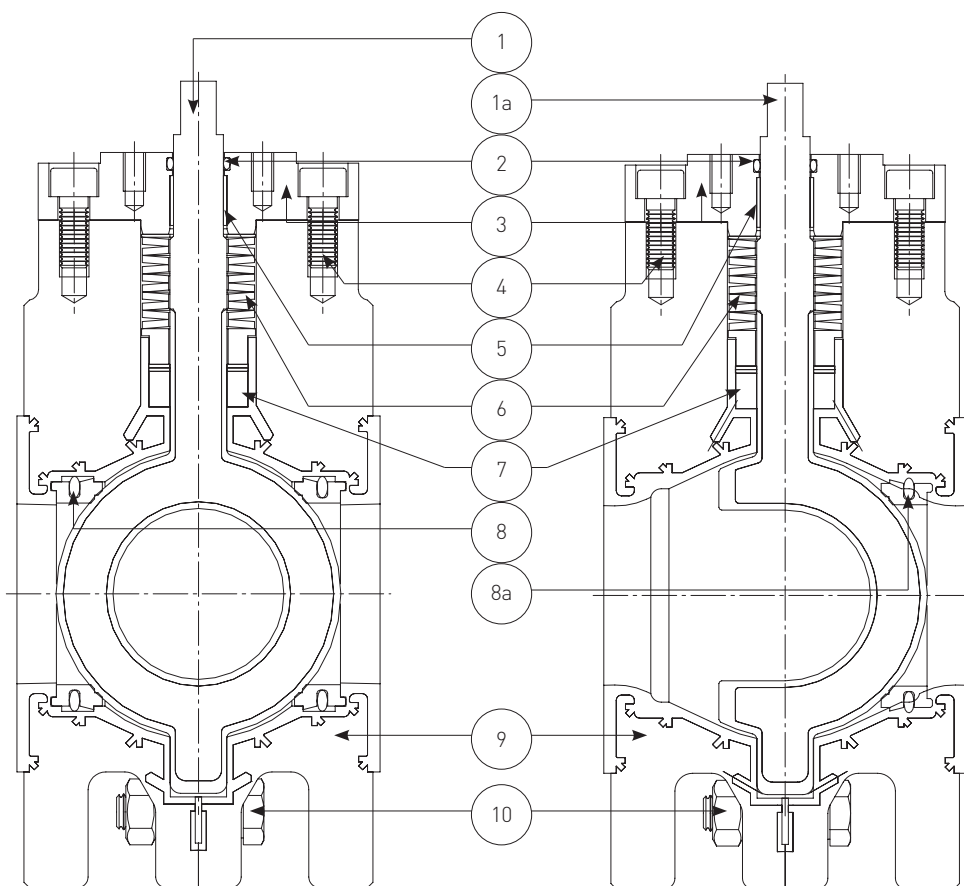
11. The split body design allows the dead space between the ball stem and housing to be kept to an absolute minimum. The C-ball version is dead space free.
- 11a. The C-ball valve is dead space free and is ideally suited for tight shut off and control of hazardous, solidifying or high purity products where it is imperative that no product is entrapped in the ball and surrounding cavity.
12. Full proof anti blow-out shaft design, located in the dry area of the valve and therefore unaffected by the media.

\* C-Ball® is a registered trademark



# NEOTECHA PFA LINED BALL VALVES SNB - SNC

## CONSTRUCTION, ASSEMBLY AND MATERIALS



Ball valve type SNB			Ball valve type SNC		
Pos.	Description	Material	Pos.	Description	Material
1	Ball -stem	PFA encapsulated alloy steel	1a	C-Ball stem	PFA encapsulated alloy steel
2	O-ring	Fluorelastomer	2	O-ring	Fluorelastomer
3	Mounting flange	Stainless steel	3	Mounting flange	Stainless steel
4	Internal hex bolt	Stainless steel	4	Internal hex bolt	Stainless steel
5	Bearing	Iglidur*	5	Bearing	Iglidur*
6	Spring package	Spring steel	6	Spring package	Spring steel
7	Stem seal	PTFE	7	Stem seal	PTFE
8	Ball seat with O-ring	PTFE with PFA encapsulated fluor elastomer	8a	Ball seat with O-ring	TFM with PFA encapsulated fluor elastomer
9	Body	PFA lined Stainless steel	9	Body	PFA lined Stainless steel
10	Body bolts and nuts	Stainless steel	10	Body bolts and nuts	Stainless steel

\* Iglidur =registered trademark of Iigus GmbH

### OPERATING TORQUES AND FLOW DATA SNB

Size		Torque		$K_V$	$C_V$
DN	NPS	Nm	inlb		
25	1	30	266	37	42
40	1½	50	443	96	111
50	2	70	620	170	196
80	3	145	1283	490	566
100	4	190	1681	780	902

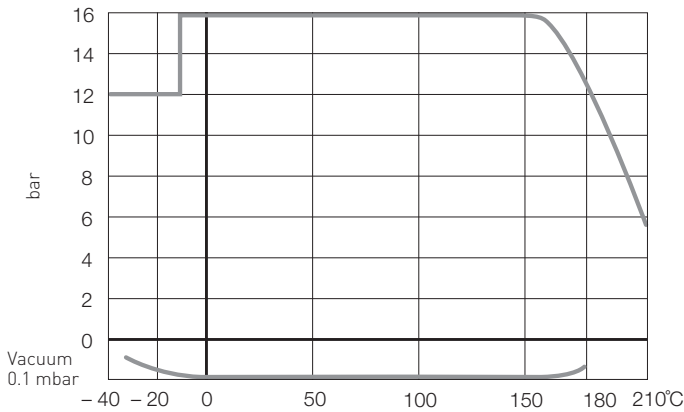
### OPERATING TORQUES AND FLOW DATA SNC

Size		Torque		$K_V$	$C_V$
DN	NPS	Nm	inlb		
25	1	15	133	34	40
40	1½	25	222	90	104
50	2	35	310	160	185
80	3	75	664	450	520
100	4	110	973	710	820

# NEOTECHA PFA LINED BALL VALVES SNB - SNC

## CONTROL CHARACTERISTICS

PRESSURE-TEMPERATURE DIAGRAM



### HEAVY DUTY SERVICE

Neotecha also offers the SNC-C1 prepared for chlorine (Cl<sub>2</sub>), HCl, HF and oxygen service. The specially prepared C1 version includes TFM as seat material, stringent cleaning before assembly, special inert grease and packed in sealed bags to avoid contamination during transport or handling.

### SNC IS UNIDIRECTIONAL ONLY (seat down stream)

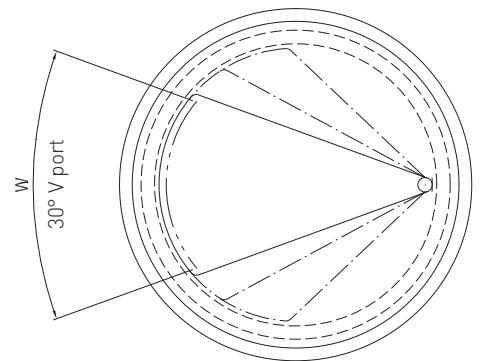
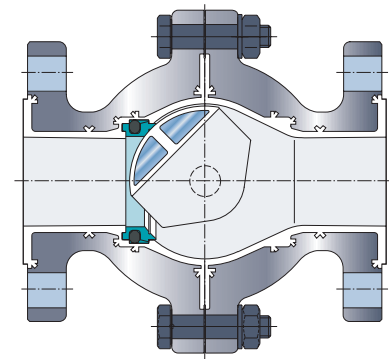
The C-ball lined valve is dead spot free and is ideally suited for shut-off and control of corrosive, poisonous, crystallizing or high purity products where it is imperative that no product is entrapped in the ball and surrounding cavity.

The C-ball valve is based on a full port design resulting in high K<sub>v</sub>-values, which are especially required when high viscosity liquids have to be controlled or for those applications which require a large rangeability.

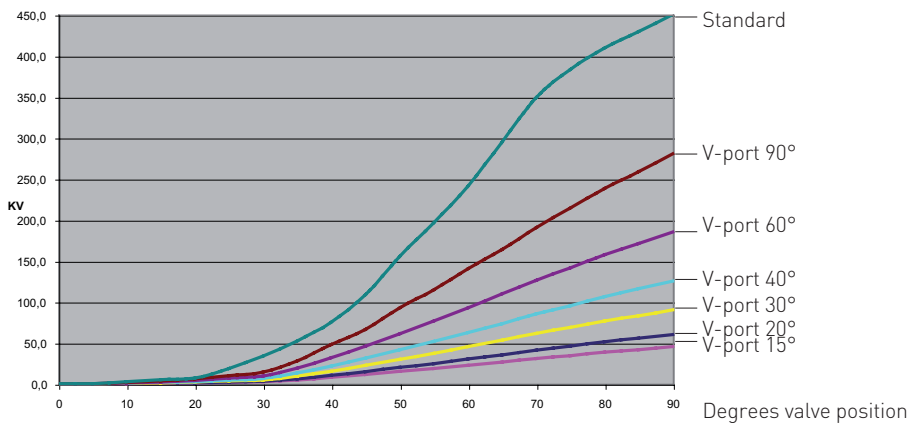
The advantage of the C-ball is a reduced flow distortion and excellent control characteristic. The wide range of available seat control styles have been designed based on our experience in corrosive flow control applications for many years. Most common control seats are the various V port designs as well as the equal percentage and Linear. These V port seats are available with a V port opening of 15, 20, 30, 40, 60 and 90 degrees. For the most demanding flow control applications Neotecha is able to calculate customized control seats.

### Main benefits SNC as control valve

- Full trunnion mounted ball stem design utilized enhance control accuracy by eliminating a point of undesired hysteresis and it eliminates torque transmission though the PFA lining common to two piece designs
- Full port design resulting in a large rangeability
- Dead spot and cavity free design
- Smooth flow path due to C ball design.
- High cycle spindle seal construction
- Fully trunnion mounted design eliminates radial shaft movement resulting in extreme low emissions (spindle seal is TA Luft VDI 2440 approved)
- Standard TFM seat resulting in low friction and low wear seat design.
- Wide range of control seats able to suit wide range of flow control characteristics.
- Intergraded ISO5211 top plate to allow direct actuator mounting resulting in a compact package.
- Pentair is able to supply complete flow control package including flow calculation, control valve, actuator and positioner, all from one source.



EXAMPLE OF INHERENT CHARACTERISTICS FOR A SNC DN80



# NEOTECHA PFA LINED BALL VALVES SNB - SNC

## CONTROL SEATS

### K<sub>v</sub> VALUE V-PORT SEAT

Size DN	V-port	Valve opening angle																		
		0°	5°	10°	15°	20°	25°	30°	35°	40°	45°	50°	55°	60°	65°	70°	75°	80°	85°	90°
25	15°	0.0	0.0	0.0	0.0	0.1	0.1	0.2	0.4	0.6	0.9	1.2	1.5	1.8	2.1	2.5	2.7	3.1	3.3	3.6
	20°	0.0	0.0	0.0	0.1	0.1	0.2	0.2	0.5	0.8	1.2	1.6	2.0	2.5	2.8	3.3	3.7	4.2	4.5	4.9
	30°	0.0	0.0	0.0	0.1	0.1	0.3	0.4	0.8	1.2	1.8	2.4	3.0	3.7	4.3	5.0	5.5	6.2	6.7	7.3
	40°	0.0	0.0	0.1	0.1	0.2	0.4	0.5	1.0	1.7	2.5	3.3	4.1	5.0	5.9	6.8	7.6	8.5	9.3	10.0
	60°	0.0	0.0	0.1	0.2	0.3	0.6	0.8	1.5	2.6	3.7	5.0	6.1	7.5	8.7	10.2	11.4	12.8	13.8	15.0
	90°	0.0	0.0	0.1	0.3	0.4	0.8	1.1	2.4	3.7	5.6	7.3	9.1	11.0	13.0	15.0	16.8	18.7	20.0	22.0
40	15°	0.0	0.0	0.1	0.1	0.2	0.3	0.5	1.1	1.7	2.5	3.3	4.1	5.0	5.9	6.8	7.6	8.5	9.2	10.0
	20°	0.0	0.0	0.1	0.2	0.3	0.5	0.7	1.3	2.4	3.4	4.6	5.8	7.0	8.2	9.5	10.7	11.9	12.9	14.0
	30°	0.0	0.0	0.1	0.2	0.4	0.7	1.0	2.2	3.6	5.1	6.9	8.6	10.5	12.3	14.3	16.1	17.9	19.4	21.0
	40°	0.0	0.0	0.1	0.4	0.6	1.0	1.4	3.0	4.8	6.9	9.2	11.7	14.0	16.5	19.0	21.0	24.0	26.0	28.0
	60°	0.0	0.0	0.2	0.5	0.8	1.5	2.1	3.7	7.1	10.6	13.9	17.7	21.0	25.0	29.0	32.0	36.0	39.0	42.0
	90°	0.0	0.0	0.3	0.8	1.3	2.3	3.2	6.6	10.7	15.5	21.0	27.0	31.0	37.0	43.0	48.0	54.0	58.0	63.0
50	15°	0.0	0.0	0.1	0.2	0.3	0.5	0.8	1.7	2.7	3.8	5.3	6.4	8.0	9.4	10.9	12.2	13.6	14.8	16.0
	20°	0.0	0.0	0.1	0.2	0.4	0.7	1.1	2.3	3.7	5.5	7.3	9.0	11.0	12.9	15.0	16.8	18.7	20.0	22.0
	30°	0.0	0.0	0.2	0.4	0.7	1.0	1.7	3.4	5.6	8.1	10.9	13.6	16.5	19.3	22.0	25.0	28.0	31.0	33.0
	40°	0.0	0.0	0.2	0.6	0.9	1.3	2.2	4.5	7.5	11.0	14.5	18.0	22.0	26.0	30.0	33.0	37.0	41.0	44.0
	60°	0.0	0.0	0.3	0.7	1.3	2.0	3.3	6.9	11.2	16.1	22.0	27.0	33.0	38.0	45.0	51.0	56.0	61.0	66.0
	90°	0.0	0.0	0.5	1.4	2.0	3.1	5.0	9.9	16.8	25.0	33.0	41.0	49.0	58.0	67.0	75.0	84.0	91.0	99.0
80	15°	0.0	0.0	0.2	0.5	0.9	1.4	2.3	4.5	7.7	11.0	14.8	18.4	23.0	26.0	31.0	34.0	38.0	42.0	45.0
	20°	0.0	0.0	0.3	0.8	1.2	2.1	3.0	5.7	10.2	14.8	19.8	24.0	30.0	35.0	41.0	46.0	51.0	55.0	60.0
	30°	0.0	0.0	0.5	1.0	1.8	3.2	4.5	9.1	15.3	22.0	30.0	37.0	45.0	53.0	61.0	69.0	77.0	83.0	90.0
	40°	0.0	0.0	0.6	1.9	2.5	4.4	6.3	13.3	21.0	31.0	41.0	51.0	63.0	73.0	85.0	95.0	106.0	116.0	125.0
	60°	0.0	0.0	0.9	2.0	3.7	6.6	9.2	19.1	31.0	46.0	61.0	77.0	93.0	109.0	126.0	141.0	157.0	171.0	185.0
	90°	0.0	0.0	1.4	3.5	5.6	10.0	14.0	28.0	48.0	66.0	92.0	115.0	140.0	164.0	190.0	214.0	238.0	258.0	280.0
100	15°	0.0	0.0	0.3	0.8	1.4	2.3	3.5	7.1	11.9	17.1	23.0	29.0	35.0	41.0	48.0	54.0	59.0	65.0	70.0
	20°	0.0	0.0	0.5	1.1	2.0	3.5	5.0	10.1	17.0	24.0	33.0	41.0	50.0	59.0	68.0	77.0	85.0	92.0	100.0
	30°	0.0	0.0	0.7	1.8	2.9	4.4	7.2	14.4	25.0	35.0	48.0	60.0	73.0	85.0	99.0	110.0	123.0	134.0	145.0
	40°	0.0	0.0	1.0	2.9	3.9	7.4	9.7	19.1	33.0	48.0	64.0	80.0	97.0	113.0	133.0	147.0	166.0	180.0	195.0
	60°	0.0	0.0	1.4	4.0	5.8	10.4	14.5	31.0	49.0	73.0	96.0	121.0	145.0	170.0	197.0	219.0	247.0	268.0	290.0
	90°	0.0	0.0	2.2	6.9	8.8	15.6	22.0	43.0	75.0	103.0	145.0	179.0	220.0	257.0	299.0	334.0	374.0	408.0	440.0



### K<sub>v</sub> VALUES FOR EQUAL PERCENTAGE CONTROL SEAT

Size DN	Valve opening angle																		
	0°	5°	10°	15°	20°	25°	30°	35°	40°	45°	50°	55°	60°	65°	70°	75°	80°	85°	90°
25	0.0	0.2	0.4	0.5	0.6	0.9	1.0	1.1	1.4	1.8	2.9	3.6	4.5	5.7	8.1	10.9	12.9	14.4	16.0
40	0.0	0.1	0.2	0.2	0.4	1.0	1.2	1.6	2.0	3.0	4.1	5.7	6.9	8.9	11.2	13.6	16.5	21.0	26.0
50	0.0	0.0	0.3	0.3	0.4	0.9	1.7	2.5	2.7	3.5	4.8	6.1	8.1	10.4	13.8	18.0	25.0	29.0	31.0
80	0.0	2.2	4.8	10.4	19.0	30.0	39.0	45.0	53.0	63.0	74.0	84.0	101.0	112.0	147.0	175.0	202.0	227.0	253.0
100	0.0	2.2	6.1	15.6	28.0	42.0	48.0	58.0	68.0	82.0	96.0	107.0	130.0	145.0	190.0	227.0	263.0	294.0	329.0



### K<sub>v</sub> VALUES FOR LINEAR CONTROL SEAT

Size DN	Slot (mm)	Valve opening angle																		
		0°	5°	10°	15°	20°	25°	30°	35°	40°	45°	50°	55°	60°	65°	70°	75°	80°	85°	90°
25	1,6	0.0	0.0	0.0	0.1	0.1	0.3	0.4	0.5	0.6	0.8	0.9	1.0	1.1	1.2	1.3	1.5	1.6	1.7	1.8
	3	0.0	0.0	0.0	0.2	0.4	0.7	1.0	1.4	1.7	2.0	2.4	2.7	3.0	3.4	3.7	3.9	4.4	4.6	4.9
40	1,6	0.0	0.0	0.0	0.1	0.3	0.4	0.6	0.8	1.0	1.2	1.4	1.6	1.7	1.9	2.1	2.3	2.5	2.7	2.8
	3	0.0	0.0	0.0	0.3	0.7	1.2	1.6	2.3	2.7	3.3	3.8	4.4	4.9	5.4	6.0	6.3	7.1	7.4	7.8
50	1,6	0.0	0.0	0.1	0.2	0.3	0.5	0.8	1.0	1.2	1.5	1.7	2.0	2.2	2.4	2.6	2.9	3.2	3.4	3.5
	3	0.0	0.0	0.0	0.4	0.8	1.5	2.1	2.9	3.4	4.1	4.8	5.5	6.1	6.8	7.5	7.9	8.9	9.4	9.8



### SPECIAL CUSTOMIZED CONTROL SEATS

Please contact factory



# NEOTECHA PFA LINED BALL VALVES SNB - SNC

## DIMENSIONS AND PRODUCT IDENTIFICATION

### FLANGE DRILLED DN PN16, FACE TO FACE EN 558-1, ROW 98

Size DN	B	H	L	D	D1	T <sub>k</sub>	nxd	b	Weight kg
25	65	135	210	115	115	85	4xM12		5
40	85	150	210	150	156	110	4xM16	16	8
50	100	155	210	165	165	125	4xM16	18	10
80	160	190	300	200	230	160	8xM16	20	19
100	190	206	300	220	265	180	8xM16	22	27

### HANDLEVER

Type ZE: lockable in end position

Type Z for C-ball valve: lockable in 6 intermediate positions.

### FLANGE DRILLED ANSI B 16.5 CLASS 150, FACE TO FACE EN 558-1, ROW 98

Size NPS	B	H	L	D	D1	T <sub>k</sub>	nxd	b	Weight kg
1	65	135	210	115.0	155	79.4	4xUNC1/2	-	5
1½	85	150	210	127.0	156	98.4	4xUNC1/2	16	8
2	100	155	210	152.0	165	120.6	4xUNC3/8	18	10
3	160	190	300	190.5	230	152.4	4xUNC3/8	20	19
4	190	206	300	228.6	265	190.5	8xUNC3/8	22	27

### FLANGE DRILLED JIS B 2212 10K, FACE TO FACE EN 558-1, ROW 98

Size DN	B	H	L	D	D1	T <sub>k</sub>	nxd	b	Weight kg
25	65	135	210	115	115	90	4xM12	-	5
40	85	150	210	140	156	105	4xM12	16	8
50	100	155	210	155	165	120	4xM12	18	10
80	160	190	300	185	230	150	8xM12	20	19
100	190	206	300	210	265	175	8xM12	22	27

### GEAR OPERATOR

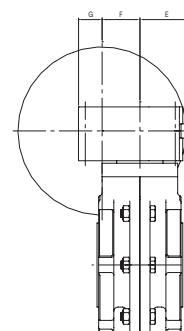
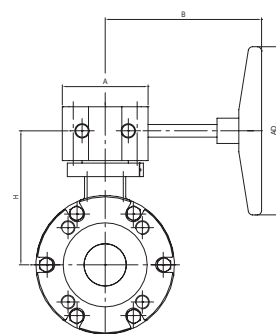
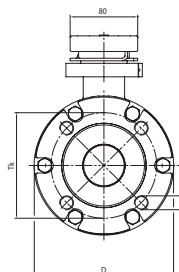
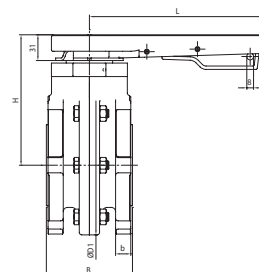
Size DN	Size NPS	H	Weight kg
25	1	140	8.4
40	1½	153	11.4
50	2	158	13.4
80	3	206	28.3
100	4	222	34.3

### GEAR OPERATOR DIMENSIONS

Size DN (NPS)	Gear	ISO	A	B	Ø D	E	F	G
25-50 (1-2)	*	F07	150	194	200	71	46	28
80-100 (3-4)	**	F10	140	213	250	85	70	35

\* Type 1

\*\* Type 2



# NEOTECHA PFA LINED BALL VALVES SNB - SNC

## DIMENSIONS AND PRODUCT IDENTIFICATION

### SELECTION GUIDE

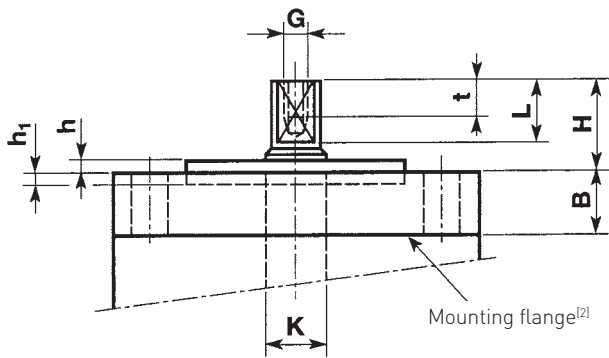
<b>Example:</b>	<b>SNB</b>	<b>050</b>	<b>NS1</b>	<b>W</b>	<b>16</b>	<b>L</b>	<b>00</b>
<b>Type</b>							
<b>SNB</b> Standard ball stem							
<b>SNC</b> C- ball stem							
<b>Size (DN)</b>							
<b>025 - 100</b>							
<b>Trim</b>							
* See material trim table							
<b>Body style</b>							
<b>W</b> Wafer							
<b>Flange pattern/face to face</b>							
<b>A1</b> ANSI 150 (face to face in accordance with EN 558-1, row 98)							
<b>16</b> PN16 (face to face in accordance with EN 558-1, row 98)							
<b>J0</b> JIS 10K							
<b>Operation/connection</b>							
<b>L</b> Lever operated	<b>4</b> With mounting flange F10						
<b>G</b> Gear operated	<b>5</b> With mounting flange F12						
<b>1</b> With mounting flange F04	<b>6</b> With mounting flange F14						
<b>2</b> With mounting flange F05	<b>7</b> With mounting flange F16						
<b>3</b> With mounting flange F07	<b>B</b> Bare shaft						
<b>Variant</b>							
<b>00</b> Standard	<b>40</b> 40 degrees V port seat						
<b>15</b> 15 degrees V port seat	<b>60</b> 60 degrees V port seat						
<b>20</b> 20 degrees V port seat	<b>90</b> 90 degrees V port seat						
<b>30</b> 30 degrees V port seat							

### MATERIAL TRIM TABLE

Trim number	Body	Ball	Shaft	Seat	O-ring backing	Sizes	Remarks
NS1	PFA encapsulated	PFA encapsulated	PFA encapsulated	PTFE glass 15%	FPM/PFA encapsulated	DN 25-100	
NS2	PFA encapsulated	PFA encapsulated	PFA encapsulated	TFM	FPM/PFA encapsulated	DN 25-100	Special cleaned and treated for HCl and Cl <sub>2</sub>
NS4	Conductive PFA encapsulated	Conductive PFA encapsulated	Conductive PFA encapsulated	PTFE Conductive	FPM/PFA encapsulated	DN 25-100	
NS5	Conductive PFA encapsulated	Conductive PFA encapsulated	Conductive PFA encapsulated	PTFE Conductive	FPM/PFA encapsulated	DN 25-100	Special cleaned and treated for HCl and Cl <sub>2</sub>

# NEOTECHA PFA LINED BALL VALVES SNB - SNC

## ISO 5211 - FLANGE AND STEM ADAPTER DIMENSIONS

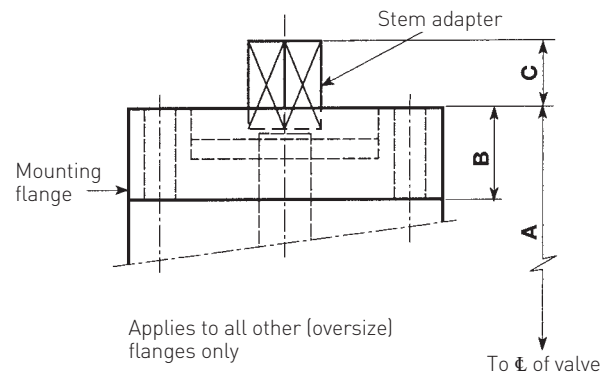
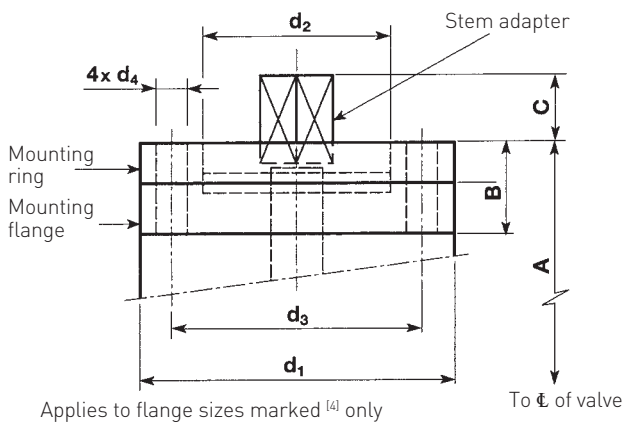


### WITH BARE SHAFT (Code B)

Size DN	Double 'D'	Diag. Sq.	Stem Dia. K	G	H	h/h <sub>1</sub>	L	t	B
25 - 40	10	-	12.8	M6	22.0	3	15	9	19
50	10	-	14.0	M6	22.0	3	15	9	19
80	-	14	18.0	-	33.5	3	25	-	19
100	-	16	20.0	-	33.5	3	25	-	19

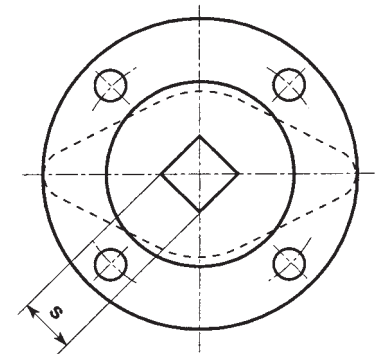
### NOTES

1. All mounting flanges for a valve size DN 150 have a recess (h<sub>1</sub>).
2. The mounting flange is an integral part of the valve.



### WITH MOUNTING FLANGE FOR ACTUATORS BUILT TO ISO 5211/DIN 3337 (Code 1-7)

Size DN	ISO Flange	A	B	C	d <sub>1</sub>	d <sub>2</sub>	d <sub>3</sub>	d <sub>4</sub>	S <sup>[3]</sup>
25	F05 <sup>[4]</sup>	115	27.5	15.5	65	35	50	7	14 x 14
25	F07	115	27.5	18.5	90	55	70	9	17 x 17
25	F10	115	27.5	22.5	125	70	102	11	22 x 22
40	F05 <sup>[4]</sup>	128	27.5	15.5	65	35	50	7	14 x 14
40	F07	128	27.5	18.5	90	55	70	9	17 x 17
40	F10	128	27.5	22.5	125	70	102	11	22 x 22
50	F07 <sup>[4]</sup>	133	27.5	18.5	90	55	70	9	17 x 17
50	F10	133	27.5	22.5	125	70	102	11	22 x 22
50	F12	132	26.5	27.5	150	85	125	13	27 x 27
80	F07 <sup>[4]</sup>	171	31.0	18.5	90	55	70	9	17 x 17
80	F10	168	27.5	22.0	125	70	102	11	22 x 22
80	F12	165	24.5	25.0	150	85	125	13	27 x 27
80	F14	165	24.5	30.0	175	100	140	17	36 x 36
100	F07 <sup>[4]</sup>	187	31.0	18.5	90	55	70	9	17 x 17
100	F10	184	27.5	22.0	125	70	102	11	22 x 22
100	F12	181	24.5	25.0	150	85	125	13	27 x 27
100	F14	181	24.5	30.0	175	100	140	17	36 x 36



### NOTES

- Flange and stem dimensions are in millimeters.
3. Diagonal square to ISO 5211.
  4. Flange dimensions for standard ball valves.



# NEOTECHA PFA LINED BALL VALVES SNB - SNC

## QUESTIONNAIRE FOR CONTROL VALVE SIZING

Flow calculations can be made with the following sizing formulas for liquid and gas. Neotecha is able to supply a detailed flow control calculation sheet based on the actual process data and the required system characteristic.

**Liquid:**

$$K_V = Q \sqrt{\frac{RHO}{(P_1 - P_2) \times 1000}}$$

- $K_V$  valve capacity coefficient
- $Q$  flow [m<sup>3</sup>/h]
- $RHO$  density [kg/m<sup>3</sup>]
- $P_1$  inlet pressure [bar a]
- $P_2$  outlet pressure [bar a]

**Gas:**

$$K_V = \frac{Q_N}{514} \sqrt{\frac{RHO_N \times T}{\Delta p \times P_2}}$$

- $K_V$  valve capacity coefficient
- $Q_N$  flow [Norm m<sup>3</sup>/h]
- $RHO_N$  density [kg/Norm m<sup>3</sup>]
- $P_1$  inlet pressure [bar a]
- $P_2$  outlet pressure [bar a]
- $\Delta P$  Delta P ( $P_1 - P_2$ )
- $T$  temperature in °Kelvin

For factory sizing please indicate the following data's:

**Liquid:**

Flow	Q min.	[m <sup>3</sup> /h]
	Q norm.	[m <sup>3</sup> /h]
	Q max.	[m <sup>3</sup> /h]
$P_1$ inlet pressure absolute	$P_1$ at min. flow	[bar a]
	$P_1$ at norm. flow	[bar a]
	$P_1$ at max. flow	[bar a]
$P_2$ outlet pressure absolute	$P_2$ at min. flow	[bar a]
	$P_2$ at norm. flow	[bar a]
	$P_2$ at max. flow	[bar a]
Vapor pressure absolute	$p_v$	[bar a]
Critical pressure absolute	$p_c$	[bar a]
Density	$RHO$	[kg/m <sup>3</sup> ]
Line size	$DN$	[mm]
Preferred valve size	$DN$	[mm]

**Gas:**

Flow	W min.	[kg/h]
	W norm.	[kg/h]
	W max.	[kg/h]
$P_1$ inlet pressure absolute	$P_1$ at min. flow	[bar a]
	$P_1$ at norm. flow	[bar a]
	$P_1$ at max. flow	[bar a]
$P_2$ outlet pressure absolute	$P_2$ at min. flow	[bar a]
	$P_2$ at norm. flow	[bar a]
	$P_2$ at max. flow	[bar a]
Temperature upstream	$T_1$	[Kelvin]
Norm density	$RHO_N$	[kg/nm <sup>3</sup> ]
Density	$RHO$	[kg/m <sup>3</sup> ]
Ratio of spec. heat	$Kappa$	[ ]
Line size	$DN$	[mm]
Preferred valve size	$DN$	[mm]

The units mentioned are preferred units. If you have different units please precise them.

With equal percentage and V-port seats, the best control characteristic are between a opening angle of 20° to 60°.

The control of minimum to maximum flow should be chosen in this opening range.