



## InterApp Product Catalogue



# **Welcome to InterApp.**

**The partner you can expect more from.**

When it comes to transporting and regulating liquids, gases and solids as safely as possible, valves and regulating devices from InterApp play a decisive role.

Our many years of experience mean we can act as an international solutions provider for the most demanding applications and projects.

**Butterfly valves**

**5 - 43**

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**Ball valves**

**44 - 69**

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**Check valves**

**70 - 87**

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**Actuators & Accessories**

**88 - 135**

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**Manuals**

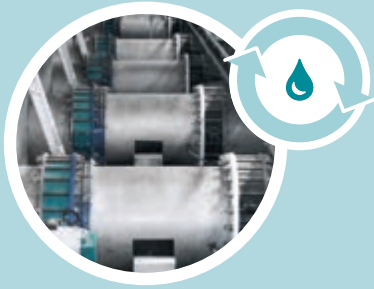
**136 - 161**

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## Products for Industrial Applications

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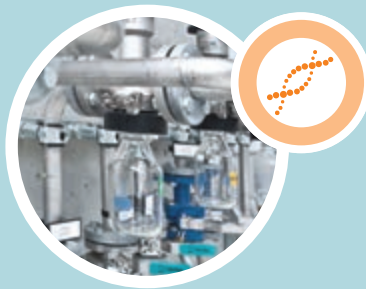
**Water Treatment**



**Power Generation**



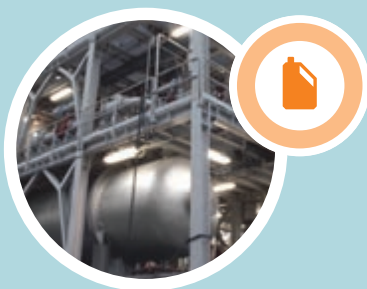
**Chemical Process**



**Life Science**



**HVAC & Swimming Pools**



**Oil & Gas**



**Mining & Slurry**



**Steel Industry**

- 
- Pulp & Paper
  - Marine
  - Dams & Reservoirs
  - District Cooling & Heating
  - Irrigation
  - Bulk Handling
  - Air Separation

## Description

Centric butterfly valve with elastomer liner for liquids and gases in the industrial range, general services, water treatment, ...

## Product features

- Body construction D1 Wafer DN 25-1000  
D3 Lug DN 25-600  
D4 U-section DN 150-1600
- Face to face dimension according to ISO 5752/20, EN 558-1/20
- Design according to ISO 593 / API 609 category A (under request)
- Top flange according to EN ISO 5211
- Max. working pressure 16 bar
- Rating PN6, PN10, PN16, ANSI cl. 150
- Temperature range -20°C ÷ 140°C according to material
- Tightness test according to EN 12266-1/P12 leakage rate A, test fluid water according to API 598 (under request)

CE

The butterfly valves DESPONIA meet the safety requirements of the pressure Equipments Directive 2014/68/UE (PED) appendix 1 for fluids of the groups 1 and 2.

SIL

Butterfly valves DESPONIA are suitable to be operated in safety related systems according to IEC 61508 / 61511, Safety Integrity Level SIL 2



D1  
Wafer



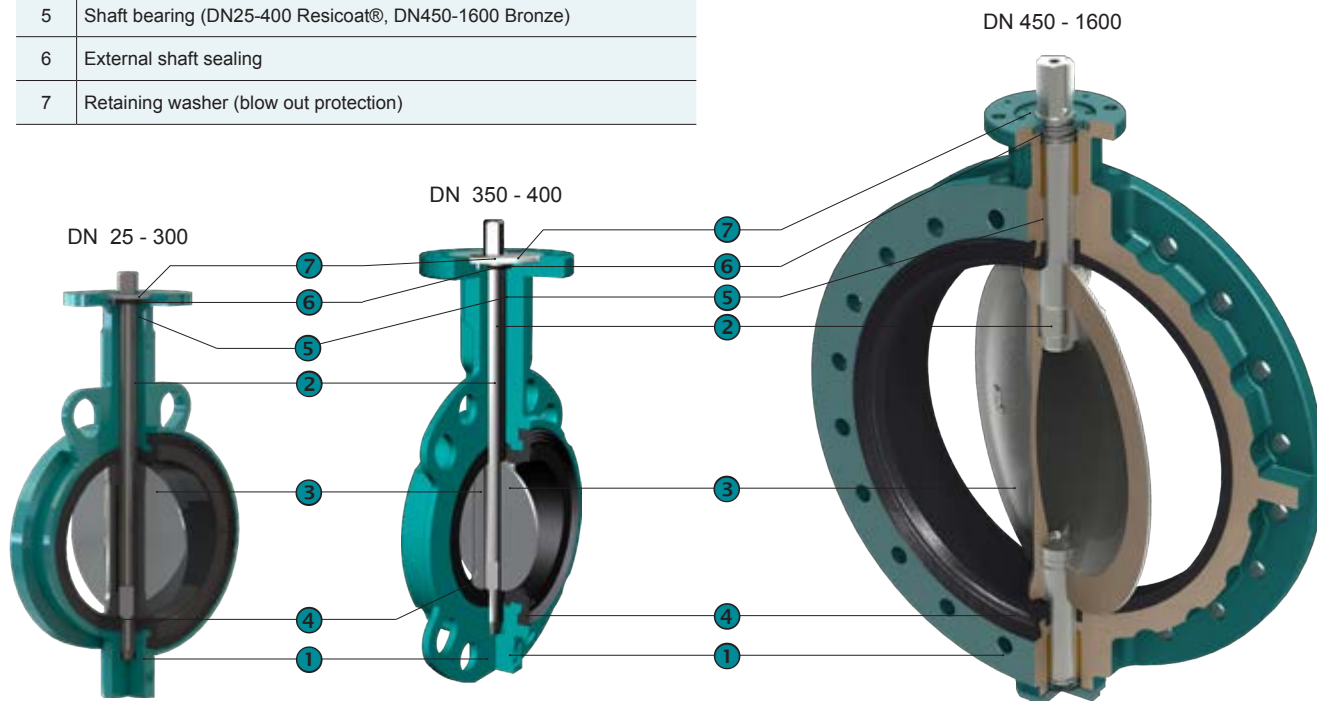
D3  
Lug



D4  
U-section

Construction

1	Body (extended valve neck allowing insulation)
2	Blow out proof shaft with position indication
3	Disc
4	Exchangeable liner with sealing grooves on the tightening face
5	Shaft bearing (DN25-400 Resicoat®, DN450-1600 Bronze)
6	External shaft sealing
7	Retaining washer (blow out protection)



Kv values m³/h

opening angle of the valve

DN	20°	30°	40°	50°	60°	70°	80°	90°
25/32		1,5	5	10	15	26	34	40
40		2,7	8,5	16	25	37	46	50
50	2	7	15	28	45	68	88	100
65	3	11	24	48	85	138	180	210
80	8	22	50	83	134	230	312	360
100	15	35	70	130	225	410	585	650
125	28	70	135	230	360	600	920	1050
150	33	95	205	320	580	980	1410	1620
200	60	175	355	580	910	1600	2450	2800
250	132	340	590	940	1480	2550	3950	4480
300	200	505	890	1450	2100	3800	5960	6800
350	280	680	1200	2050	3150	5050	8100	9200
400	365	860	1500	2490	3980	6600	10200	11700
450	465	1080	1900	3150	5050	8700	13300	15200
500	580	1200	2300	3740	6150	11000	16800	18900
600	820	1600	2780	5200	8940	14500	23500	26800
700	890	2050	3450	6050	11050	18800	31500	37100
800	1300	2550	4950	8750	14200	23500	39500	48500
900	1650	3300	6400	11800	19400	31500	52500	61300
1000	2150	4250	8200	15100	23500	39400	65500	80500
1200	4000	7500	12500	19800	34000	55400	98300	119200
1400	5200	10120	18200	32500	51500	89500	142000	162000
1600	7100	14210	26050	45000	71200	118500	196200	228500

Type code




D1	0100	.	3	3	-	2KR	.	41	.	2AR	.	E
①	②	③	④	⑤	⑥	⑦	⑧					

①	Type	D1	Wafer	DN25-1000	
		D3	Lug body	DN25-600	
		D4	U-section body	DN150-1600	
②	Nominal diameter	0025-1600	mm		
③	Working pressure	0	2,5 bar	DN100-1600	
		1	6 bar	DN350-1600	
		*	10/16/20 bar, see table below		
④	Rating	**	PN6/10/16 see table below. Other ratings on request		
⑤	Body	1AE	Cast iron EN-GJL-250, Polyurethan coated 80µ	< 140°C	DN450-1600
		2KR	Ductile iron EN-GJS-400-15, Epoxy (Resicoat®) coated 200µ Wafer and Lug	< 110°C <sup>1)</sup>	DN25-300
		2AR	Ductile iron EN-GJS-400-15, Epoxy (Resicoat®) coated 200µ U-shape	< 110°C <sup>1)</sup>	DN150-300
			Ductile iron EN-GJS-400-15, Epoxy (Resicoat®) coated 200µ	< 110°C <sup>1)</sup>	DN350-400
		2AE	Ductile iron EN-GJS-400-15, Polyurethan coated 80µ	< 140°C	DN450-1600
2AN	Ductile iron EN-GJS-400-15, Polyurethan coated 250µ	< 140°C	DN450-1600		
⑥	Shaft	41	Stainless steel 1.4021, AISI420		DN25-300
		42	Stainless steel 1.4542 / 17-4PH		DN25-300
		4A	Stainless steel 1.4021, AISI420		DN350-1600
		4L	Stainless steel 1.4542 / 17-4PH		DN350-1600
⑦	Disc	2AR	Ductile iron EN-GJS-400-15, Rilsan coated 250µ	< 90°C	DN25-700
		2AE	Ductile iron EN-GJS-400-15, Polyurethan coated 80µ	< 120°C	DN800-1600
		2AC	Ductile iron EN-GJS-400-15, Chrome coated		DN25-600
		2AH	Ductile iron EN-GJS-400-15, Halar coated min.600µ	< 70°C	
		3OD	Carbon steel 1.0552 / GS52.3, Ultralene Coating™ coated	< 80°C, pmax. 10 ≤ DN300 / 6 bar > DN800	DN80-300, 800-1400
		4C0	Stainless steel 1.4408 ≈ CF8M		
		4CP	Stainless steel 1.4408 ≈ CF8M polished		DN25-600
		4CQ	Stainless steel 1.4408, PEKK coated min. 400µ	< 200°C	
		4S0	Super austenitic steel 1.4588		
		5C0	Alubronze ASTM B148 C95800 / G-Cu Al 10 Ni		
7H0	Hastelloy ASTM A494 CW-12MW		≥ DN450 on request		
⑧	Liner	E	EPDM	< 95°C	pmax DN25-1200 = 16 bar, DN1400-1600 = 10 bar
		EE	EPDM DVGW, ACS, WRAS, NSF-61, EN681-1	< 95°C	pmax DN25-1200 = 16 bar, DN1400-1600 = 10 bar
		EC	EPDM HT	< 130°C	pmax DN25-1200 = 16 bar, DN1400-1600 = 10 bar
		N	Nitril (NBR)	< 100°C	pmax DN25-300 = 16 bar, DN350-1600 = 10 bar
		H	CSM (Hypalon)	< 110°C	pmax DN25-300 = 16 bar, DN350-1600 = 10 bar
		V	FPM (Viton)	< 200°C	pmax DN25-300 = 16 bar, DN350-1600 = 10 bar
Other materials and white liners on request					

1) For temperatures between 110 and 140 °C, the valve is only tight up to next lower pressure class (e.g. PN16 valve, max. 10 bar)

* Working pressure (Code)	25	32	40	50	65	80	100	125	150	200	250	300	350	400	450	500	600	700	800	900	1000	1200	1400	1600	
Body material EN-GJL-250 (1A)	DN 6 bar																							1	
EN-GJS-400-15 (2A/2K)	10 bar																								
	16 bar																								

\*\*Rating (Code)

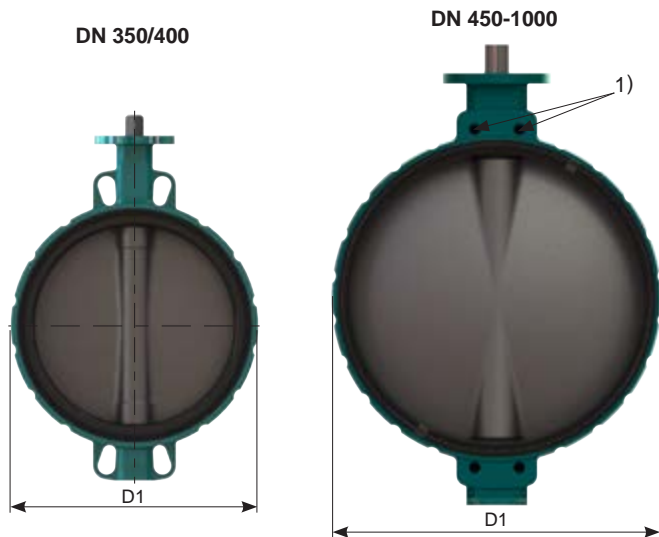
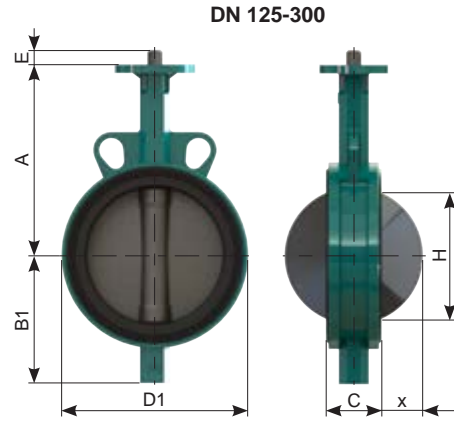
DESPONIA	DN→	25	32	40	50	65	80	100	125	150	200	250	300	350	400	450	500	600	700	800	900	1000	1200	1400	1600
 D1	PN6																								
	PN10																								
	PN16																								
 D3	ANSI cl. 150																								
	PN10																								
	PN16																								
 D4	ANSI cl. 150																								
	PN10																								
	PN16																								

Max. pressure and temperature limits of application are dependent of the working conditions.

Other executions on request !

Dimensions

D1 Wafer, DN25-1000

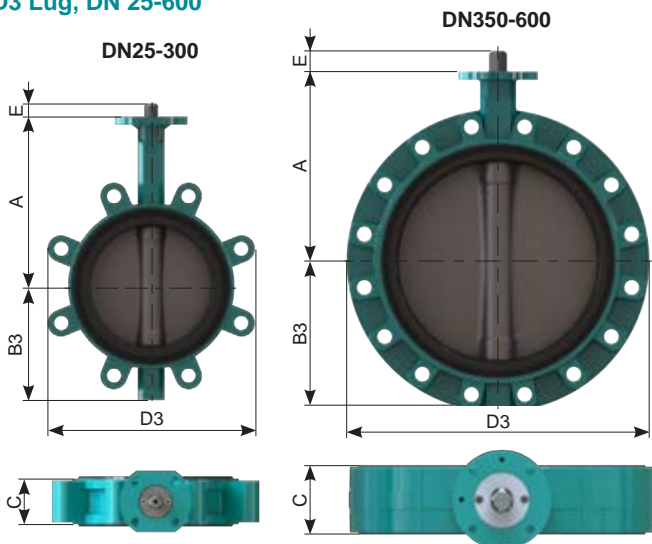


1) DN 450 - 1600, 2 x threads on valve neck and bottom

DN	A	B1	C	D1	E	H*	x*	[kg]
(25)32	110	51	30	101	12	19	3	1,0
40	130	55	33	108	12	28	6	1,3
50	135	72	43	120	12	32	6	1,8
65	150	82	46	138	12	50	11	2,3
80	160	92	46	142	12	69	19	2,3
100	180	110	52	162	12	88	26	3,9
125	195	128	56	181	16	115	36	5,0
150	210	141	56	205	16	141	48	5,9
200	240	174	60	260	19	194	72	9,3
250	279	201	68	310	24	240	91	17,0
300	315	234	78	362	24	290	112	23,7
350	330	268	80	425	40	330	130	41,5
400	365	299	102	475	40	377	145	57,2
450	397	355	113	538	65	425	164	95
500	437	393	126	595	65	474	182	125
600	522	464	153	695	80	569	218	180
700	565	503	168	800	80	660	257	280
800	627	577	190	908	80	774	304	387
900	696	643	204	1015	100	855	337	502
1000	745	693	218	1133	100	960	383	710

\* When using plastic stubs please check dimension H / x to avoid damaging of disc

D3 Lug, DN 25-600

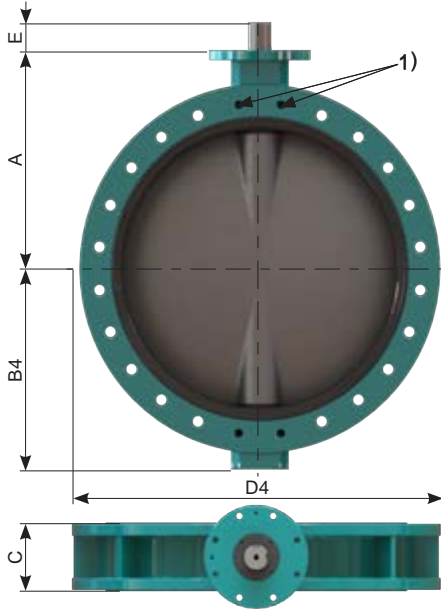


DN	A	B3	C	D3	E	H*	x*	[kg]
25	110	51	30	101	12	19	3	1,5
32	110	51	30	101	12	19	3	1,5
40	130	54	33	108	12	28	6	1,9
50	135	72	43	116	12	32	6	2,4
65	150	82	46	131	12	50	11	4,8
80	160	88	46	188	12	69	19	4
100	180	102	52	219	12	88	26	6,2
125	195	116	56	248	16	115	36	7,7
150	210	128	56	274	16	141	48	8,4
200	240	161	60	332	19	194	72	16,6
250	279	199	68	402	24	240	91	23,5
300	315	234	78	472	24	290	112	32,4
350	330	258	80	520	40	330	130	55
400	365	290	102	584	40	377	145	75
450	397	355	113	655	65	425	164	150
500	437	393	126	712	65	474	182	170
600	522	464	153	829	80	569	218	240



## Dimensions

### D4 U-section, DN 150-1600

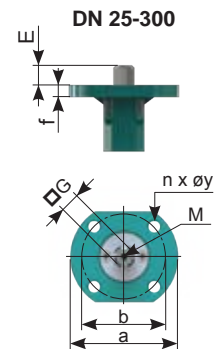


DN	A	B4	C	D4	H*	x*	J	E	[kg]
150	210	143	56	285	141	48	10	16	15
200	240	170	60	340	194	72	12,5	19	19,5
250	279	200	68	406	240	91	15	24	30,5
300	315	239	78	482	290	112	15	24	44
350	330	265	80	533	330	130	18	40	59
400	365	296	102	597	377	145	20	40	82
450	397	355	113	640	425	164	24	65	118
500	437	393	126	715	474	182	26	65	175
600	522	464	153	840	569	218	28,5	80	260
700	565	503	168	927	660	257	31,5	80	345
750	590	541	170	985	709	272	34	80	435
800	627	577	190	1060	774	304	36,5	80	510
900	696	643	204	1170	855	337	38	100	660
1000	745	693	218	1255	960	383	44	100	790
1100	820	738	218	1395	1054	429	44	100	850
1200	881	806	254	1485	1149	462	47	120	1180
1400	990	908	280	1746	1336	543	40	120	1700
1600	1117	1048	318	1924	1553	634	50	155	2600

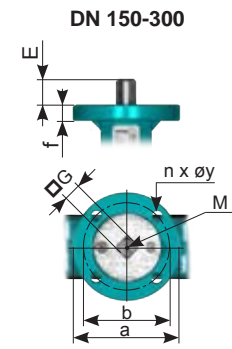
1) DN 450 - 1600, 2 x threads on valve neck and bottom

### Top flange according to ISO 5211

#### Wafer and Lug



#### U-section



### Wafer and Lug

DN	E	G	M	f	ISO	a	b	n x øy
25-40	12	□ 8	M4	10	F05*	65	50	4 x 7
50-80	12	□ 11	M6	10	F05	65	50	4 x 7
100	12	□ 11	M6	10 / 10	F05 / F07	65 / 89	50 / 70	4 x 7 / 4 x 9,5
125	16	□ 14	M6	10 / 10	F05 / F07	65 / 89	50 / 70	4 x 7 / 4 x 9,5
150	16	□ 14	M6	10	F07	89	70	4 x 9,5
200	19	□ 17	M6	10	F07	89	70	4 x 9,5
250-300	24	□ 22	**	18	F10/F12	150	102/125	4 x 11 / 4 x 13

\*F04 on request

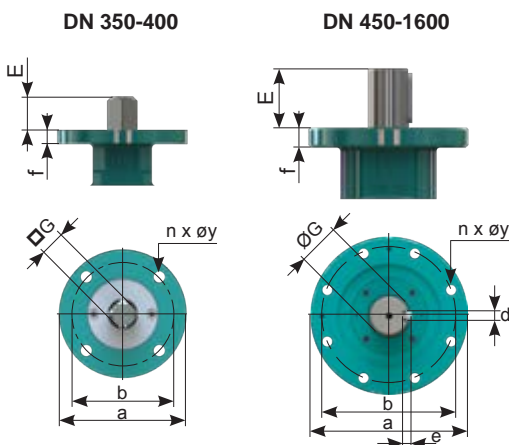
\*\*Shaft end not threaded

### U-section

DN	E	G	M	f	ISO	a	b	n x øy
150	16	□ 14	M6	12	F07	90	70	4 x 9
200	19	□ 17	M6	12	F07	90	70	4 x 9
250-300	24	□ 22	**	18	F10/F12	150	102/125	4 x 11 / 4 x 13

\*\*Shaft end not threaded

### Wafer, Lug and U-section



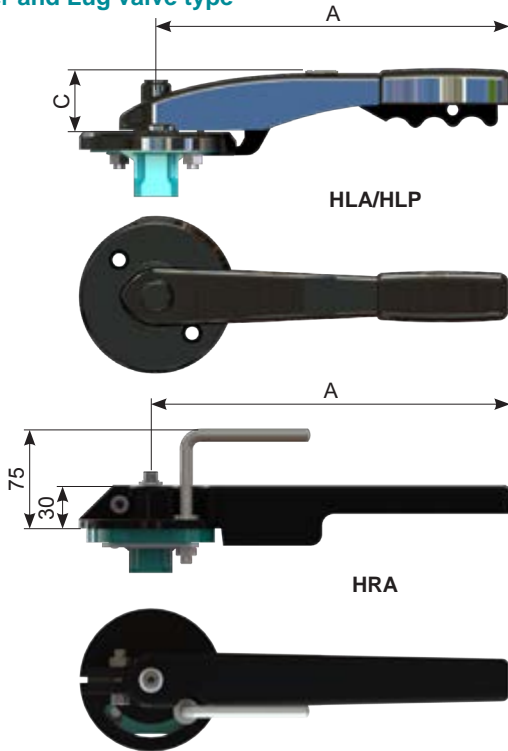
### Wafer, Lug and U-section

DN	E	G	d	e	f	ISO	a	b	n x øy
350	40	□ 22	-	-	18	F12	155	125	4 x 13
400	40	□ 27	-	-	18	F12	155	125	4 x 13
450-500	65	Ø 45	14	9	25	F14	175	140	4 x 18
600	80	Ø 70	20	12	25	F16	220	165	4 x 22
700	80	Ø 70	20	12	25	F25	300	254	8 x 18
(750)	80	Ø 70	20	12	30	F25	300	254	8 x 18
800	80	Ø 70	20	12	30	F25	300	254	8 x 18
900	100	Ø 80	22	14	30	F30	350	298	8 x 22
1000	100	Ø 80	22	14	30	F30	350	298	8 x 22
(1100)	100	Ø 80	22	14	30	F30	350	298	8 x 22
1200	120	Ø 100	28	16	30	F30	350	298	8 x 22
1400	120	Ø 120	32	18	35	F30	350	298	8 x 22
1600	155	Ø 130	32	18	40	F35	418	356	8 x 33,5

## Dimensions

### Handlever

#### Wafer and Lug valve type



Aluminium, Epoxy coated

DN		A	C	[kg]
25-40	HLA.F0508.180K	180	41	0.4
50-65	HLA.F0511.180K	180	41	0.4
80	HLA.F0511.240K	243	43	0.5
100	HLA.F0711.240K	243	43	0.5
125-150	HLA.F0714.340K	340	51	0.6
200 <sup>1)</sup>	HLA.F0717.340K	340	51	0.6

Polyamide PA 6, 30% glass fibers reinforced

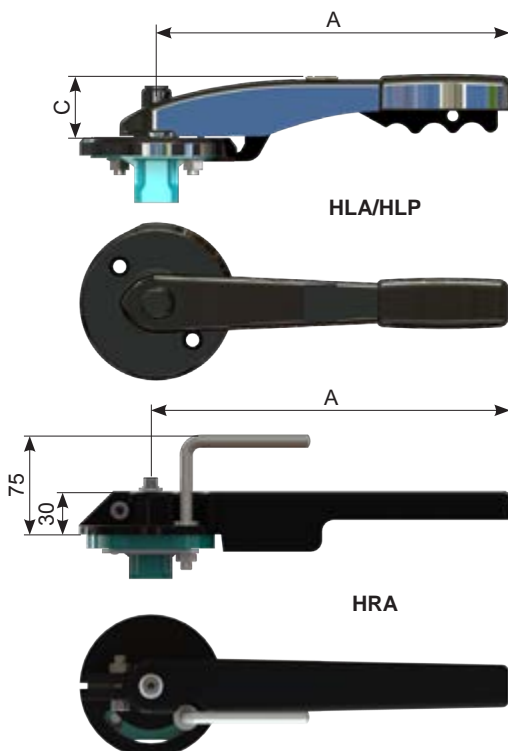
DN		A	C	[kg]
50-80	HLP.F0511.240K	240	61	0.6
100	HLP.F0711.240K	240	61	0.6
125-150	HLP.F0714.240K	240	61	0.6
200 <sup>1)</sup>	HLP.F0717.390K	390	66	0.9

Aluminium, Epoxy coated

DN		A	[kg]
25-40	HRA.F0508.180K	180	0.4
50-65	HRA.F0511.180K	180	0.4
80	HRA.F0511.250K	250	0.5
100	HRA.F0711.250K	250	0.6
125-150	HRA.F0714.340K	340	0.6
200 <sup>1)</sup>	HRA.F0717.340K	340	0.6

1) Use a gearbox for severe conditions, LF and FF executions

#### U-section valve type



Aluminium, Epoxy coated

DN		A	C	[kg]
150	HLA.F0714.340K	340	51	0.6
200 <sup>1)</sup>	HLA.F0717.340K	340	51	0.6

Polyamide PA 6, 30% glass fibers reinforced

DN		A	C	[kg]
150	HLP.F0714.240K	240	61	0.6
200 <sup>1)</sup>	HLP.F0717.390K	390	66	0.9

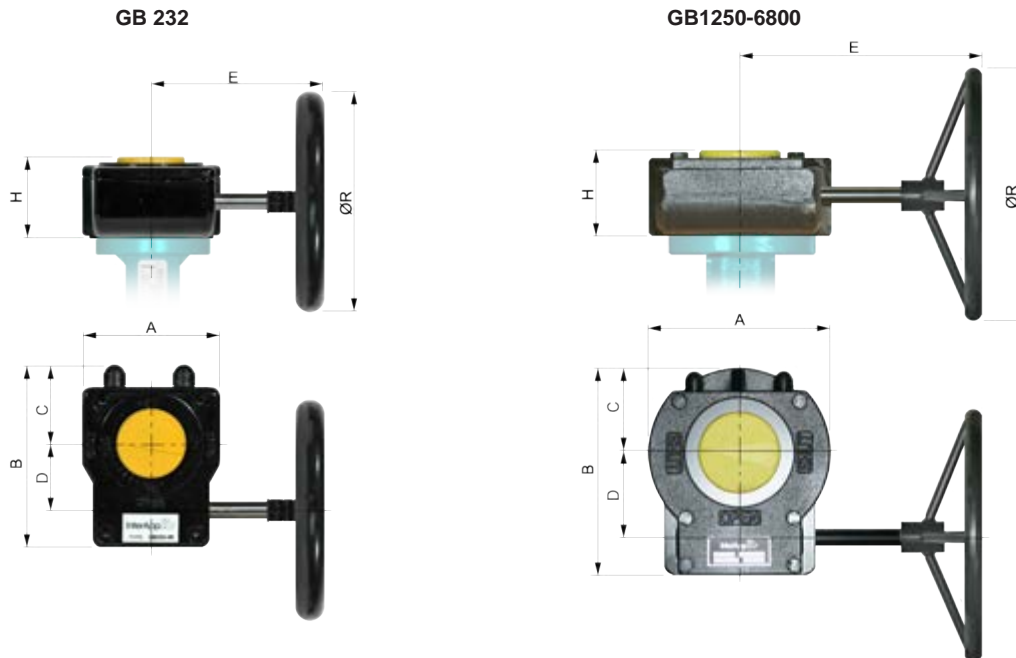
Aluminium, Epoxy coated

DN		A	[kg]
150	HRA.F0714.340K	340	0.6
200 <sup>1)</sup>	HRA.F0717.340K	340	0.6

1) Use a gearbox for severe conditions, LF and FF executions

## Dimensions

### Gearbox



For liquids 20°C - 80°C , p<sub>max</sub> DN25-300 ...16 bar, DN350-1600 ... 10 bar

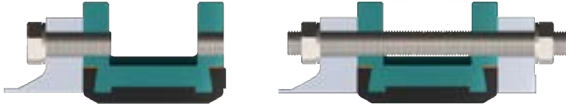
DN		A	B	C	D	E	H	ØR	n*	[kg]
25-40	GB232-05.F05-F0708.100	80	114	48	42.5	121	53	100	10	0.8
50-100	GB232-05.F05-F0711.100	80	114	48	42.5	121	53	100	10	0.8
125-150	GB232-05.F05-F0714.100	80	114	48	42.5	121	53	100	10	0.8
200	GB232-06.F05-F0717.160	80	114	48	42.5	180	59	160	10	0.9
250-300	GB232-08.F07-F1022.250	100	131	56	50	216	67	250	9.25	1.55
350	GB232-13.F10-F1222.300	175	209	83	80	361	84	300	10	5.4
400	GB232-13.F10-F1227.500	175	209	83	80	396	84	500	10	5.4
450	GB1250N.F1445.400	220	258	110	104.5	326	102	400	13.75	22
500	GB1250N.F1445.400	220	258	110	104.5	326	102	400	13.75	22
600	GB2000N.F1670.500	241	255	106	53	348	121	500	27	24
700	GB2000NLB.F2570.600-SH100	285	293	142	53	348	121	600	27	27
750	GB2000NLB.F2570.700-SH100	285	293	142	53	348	121	700	27	27
800	GB1950N/PR4.F2570.500	285	322.5	142.5	130	417	126	500	54	39
900	GB1950NLB/PR4.F3080.500-SH100	350	355	175	130	445	129	500	54	52
1000	GB6800N/PR4.F3080.500	370	407	170	182	470	159	500	81	62.5
1100	GB6800N/PR4.F3080.500	370	407	170	182	470	159	500	81	62.5
1200	GB6800N/PR4.F30100.600	370	407	170	182	480	159	600	117	62.5
1400	GBA200N/PR10.F30120.700	440	492	207.5	209	490.5	215	700	182.25	134.4
1600	GBIW82/R720.F35130.800	520	531	260	67	600.5	185	800	130	222

\* n = Handwheel turns ON/OFF

Material:

GB232 : Aluminium, Polyurethan coated  
 GB880-GB6800 : Cast iron, Polyurethan coated

## Installation at the end of a line



When installing the valve at the end of a line please consult document Installation/Maintenance DESPONIA.

## Further documentation

Pneumatic actuators, Electric actuators, Accessories according separate data sheets.  
 Installation guide, Maintenance guide, Flanges: Please consult these guides for the installation and maintenance of our butterfly valves.

**Declaración de conformidad DEP 2014/68/UE**  
**Declaration of Conformity PED 2014/68/EU**

Fabricante <i>Manufacturer</i> 	InterApp-Valcom SA Calderon de la Barca 12-14 28860 Paracuellos de Jarama España	
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Declaramos, que las válvulas abajo indicadas cumplen los requisitos de la directiva 2014/68/UE.  
*We declare that the valves listed below comply with the requirements of the Pressure Equipment Directive 2014/68/EU.*

Descripción: Válvula de mariposa <i>Description: Butterfly Valve</i>	- Desponia (Incluida S820) - Desponia <i>plus</i>	DN 25/32 – 1600 DN 25/32 – 600
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**Clasificación de la válvulas**  
*Classification of the valves*

Válvula de mariposa Desponia (incluida S820) DN 25/32- DN 1600  
 Válvula de mariposa Desponia plus DN 25/32-600

Fluidos grupo 1 / Fluids group 1		Fluidos grupo 2 / Fluids group 2
Gases	Líquidos	Gases
DN25-32-150 PN2.5-20	DN150-200 PN16-PN20	DN50 PN20
DN200 PN2.5-16	DN250-300 PN10-PN20	DN85-100 PN16-PN20
DN250-350 PN2.5-10	DN350-800 PN6-PN20	DN125-150 PN10-PN20
	DN900-1200 PN2.5-PN20	DN200-250 PN6-PN20
	DN1400 PN2.5-PN16	DN300 PN6-PN16
	DN1600 PN2.5-PN10	DN350 PN6-PN10
		DN400-500 PN2.5-PN10
		DN600-800 PN2.5-PN6
		DN900-1600 PN2.5

<b>Procedimiento de valoración de la conformidad</b> <i>Conformity Assessment Procedure</i>	Módulo A1
<b>Organismo Notificado para el control</b> <i>Notified Body for the inspection</i>	TÜV Rheinland Ibérica, Inspection, Certification & Testing, S.A. N° 1027
<b>Dirección</b> <i>Address</i>	C/Garroba, 10-12 08820 El Prat de Llobregat.
<b>Certificado-N°</b> <i>Certificate number</i>	DEP.A1.000606
<b>Normas empleadas</b> <i>Technical Standards used</i>	EN 593; EN 1561; EN 1563; etc
<b>Persona autorizada por el fabricante</b> <i>Authorised Person for the Manufacturer</i>	Responsable de Calidad / <i>Quality Manager</i>

Alberto Nieto <i>(Name)</i>	Firma: <i>(Signature)</i>
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## Description

Centric butterfly valve with elastomer liner for liquids and gases in the industrial range, general services, water treatment, ...

## Product features

- Body construction DP1 Wafer DN 25-600  
DP3 Lug DN 50-600
- Face to face dimension according to ISO 5752/20, EN 558-1/20
- Top flange according to EN ISO 5211
- Max. working pressure 16/20 bar
- Rating PN6, PN10, PN16, PN25, ANSI cl. 150
- Temperature range -40°C ÷ 200°C according to material
- Tightness test according to EN 12266-1/P12 leakage rate A, test fluid water

CE

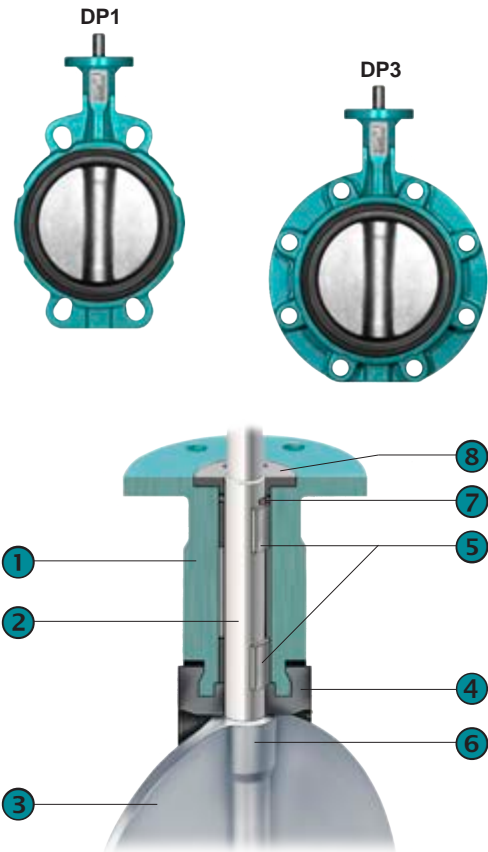
SIL

The butterfly valves DESPONIA plus meet the safety requirements of the pressure Equipments Directive 2014/68/EU (PED) appendix 1 for fluids of the groups 1 and 2.

Butterfly valves DESPONIA plus are suitable to be operated in safety related systems according to IEC 61508 / 61511, Safety Integrity Level SIL 2

## Construction

1	Body (extended valve neck allowing insulation)
2	Blow out proof shaft with position indication
3	Disc
4	Exchangeable liner with sealing grooves on the tightening face
5	Self-lubricating shaft bushing
6	Square driven disc
7	External shaft sealing
8	Retaining washer (blow out protection)



## Type code

DP1	100	. 3	3	. 2AE	. 4A	. 2AR	. E
①	②	③	④	⑤	⑥	⑦	⑧

①	Body type	DP1	Wafer	DN25-600
		DP3	Lug	DN50-600
②	Nominal diameter	025-600	mm	
③	Working pressure	→	1 = 6 bar, 2 = 10bar, 3 = 16bar, 4 = 20bar (with body 3HE or 4C0, for 2AE body consult our technical department)	
④	Rating	→	1 = PN6, 2 = PN10, 3 = PN16, A = ANSI cl. 150, 5 = PN25 on request	
⑤	Body	2AE	Ductile iron EN-GJS-400-15, Polyurethan coated 80µ	< 140°C DP1+DP3, DN25-400
		3HE	Cast steel GP240GH, 1.0619, Polyurethan coated 80µ	< 140°C DP1 DN50-600, DP3 DN50-600
		4C0	Stainless steel 1.4408, AISI316	DP1 DN50-600, DP3 DN50-600
⑥	Shaft	41	Stainless steel 1.4021, AISI420 (max. 16 bar)	DN 25-300
		42	Stainless steel 1.4542 / 17-4PH	DN 25-300
		4A	Stainless steel 1.4021, AISI420 (max. 16 bar)	DN 350-600
		4L	Stainless steel 1.4542 / 17-4PH	DN 350-600
⑦	Disc	2AR	Ductile iron EN-GJS-400-15, Rilsan coated 250µ (max. 16 bar)	< 90°C <16 bar DN25-600
		2AE	Ductile iron EN-GJS-400-15, Polyurethan coated 80µ (max. 16 bar)	< 120°C DN25-600
		3HE	Cast steel GP240GH, 1.0619, Polyurethan coated 80µ	< 120°C DN250-600
		3OD	Carbon steel 1.0552 / GS52.3, Ultralene Coating™ coated < 80°C, pmax. 10 ≤ DN400 / 6 bar > DN400	DN80-300
		4C0	Stainless steel 1.4408, AISI316	DN25-600
		4CP	Stainless steel 1.4408, AISI316, polished (max. 16 bar)	DN25-600
		4S0	Super austenitic steel 1.4588	DN40-600
⑧	Liner	5C0	Alubronze ASTM B148 C95800 / G-Cu Al 10 Ni	DN25-600
		7H0	Hastelloy ASTM A494 CW-12MW (max. 16 bar)	DN40-600
		→	E = EPDM <95°C EC = EPDM HT < 130°C V = FPM (Viton) <200°C <16 bar N = Nitril (NBR) < 100°C H = CSM (Hypalon) < 110°C <16 bar Other materials and white liners on request S = MVQ (Silicone) <200°C <6bar	

Max. pressure and temperature limits of application are dependent of the working conditions.

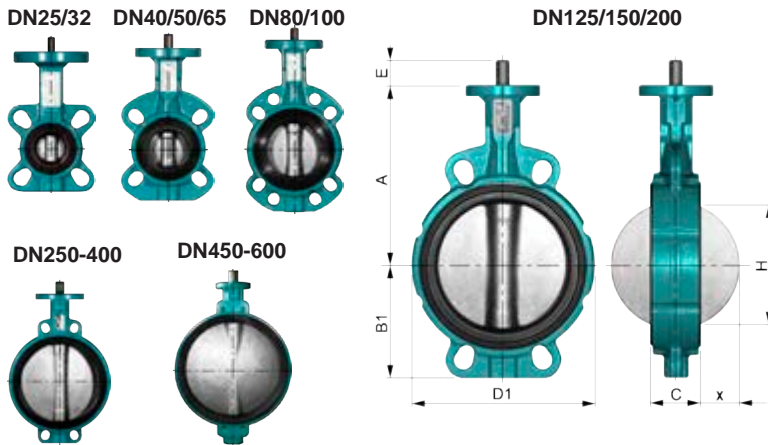
When mounting the valve at the end of a line please note:

- Body type	DP3
- Medium	only for liquids, 10÷30°C
- Max. working pressure	DN25-200 10 bar
(with 16 bar disc)	DN250-600 6 bar
- no water hammer !!!	

please consult our document "Flanges"

## Dimensions

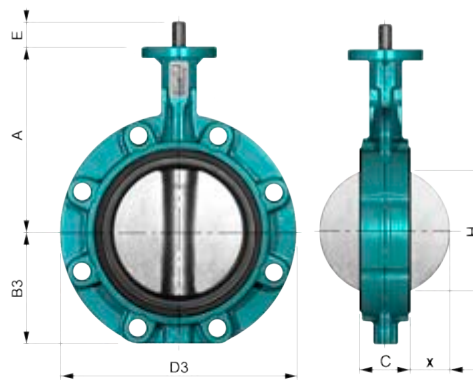
### DP1 Wafer, DN 25-600



DN	A	B1	C	D1	E	H*	x*	[kg]
25/32	110	51	30	101	12	19	3	1,4
40	130	54	33	108	12	28	6	2,0
50	135	72	43	120	12	32	6	3,0
65	150	82	46	138	12	50	11	3,6
80	160	92	46	142	12	69	19	4,0
100	180	102	52	162	12	88	26	5,5
125	195	120	56	189	16	115	36	7,5
150	210	133	56	214	16	141	48	8,6
200	240	166	60	270	19	194	72	12,7
250	279	201	68	324	24	240	91	22,2
300	315	234	78	378	24	290	112	30,8
350	330	268	80	425	40	330	130	41,5
400	365	299	102	475	40	377	145	57,2
450	397	355	113	538	65	425	164	95,0
500	437	393	126	595	65	474	182	125
600	522	464	153	695	80	569	218	180

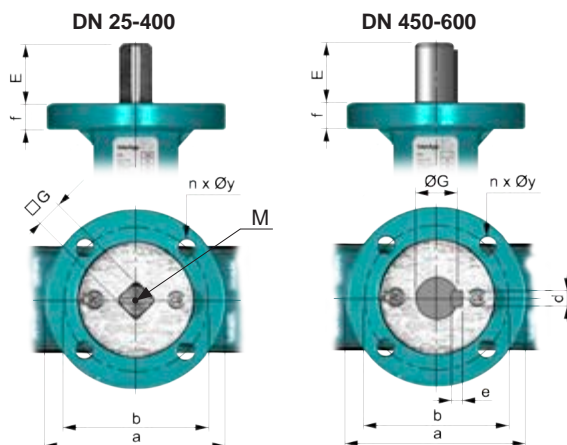
\* When using plastic stubs please check dimension H/x to avoid disc damaging

### DP3 LUG body, DN 50-600



DN	A	B3	C	D3	E	H*	x*	[kg]
50	135	72	43	116	12	32	6	3,2
65	150	82	46	131	12	50	11	4,0
80	160	88	46	188	12	69	19	6,1
100	180	102	52	219	12	88	26	8,5
125	195	116	56	248	16	115	36	10,0
150	210	128	56	274	16	141	48	11,0
200	240	161	60	332	19	194	72	19,6
250	279	199	68	402	24	240	91	28,7
300	315	234	78	472	24	290	112	41,2
350	330	258	80	520	40	330	130	55,0
400	365	290	102	584	40	377	145	75,0
450	397	355	113	655	65	425	164	150
500	437	393	126	712	65	474	182	170
600	522	464	153	829	80	569	218	240

### Top flange according to EN ISO 5211



DN	E	G	M	d	e	f	ISO	a	b	n x Øy
25/32	12	□ 8	M4	-	-	12	F07	90	70	4 x 9
40	12	□ 8	M4	-	-	12	F07	90	70	4 x 9
50	12	□ 11	M6	-	-	12	F07	90	70	4 x 9
65	12	□ 11	M6	-	-	12	F07	90	70	4 x 9
80	12	□ 11	M6	-	-	12	F07	90	70	4 x 9
100	12	□ 11	M6	-	-	12	F07	90	70	4 x 9
125	16	□ 14	M6	-	-	12	F07	90	70	4 x 9
150	16	□ 14	M6	-	-	12	F07	90	70	4 x 9
200	19	□ 17	M6	-	-	12	F07	90	70	4 x 9
250	24	□ 22	-	-	-	18	F10/F12	155	102/125	4 x 10 / 4 x 13
300	24	□ 22	-	-	-	18	F10/F12	155	102/125	4 x 10 / 4 x 13
350	40	□ 22	-	-	-	18	F12	155	125	4 x 13
400	40	□ 27	-	-	-	18	F12	155	125	4 x 13
450	65	∅ 45	-	14	9	25	F14	175	140	4 x 18
500	65	∅ 45	-	14	9	25	F14	175	140	4 x 18
600	80	∅ 70	-	20	12	25	F16	220	165	4 x 22

### Further documentation

Pneumatic actuators, Electric actuators, Accessories according separate data sheets.

Installation guide, Maintenance guide, Flanges: Please consult these guides for the installation and maintenance of our butterfly valves.

## Description

Centric butterfly valve, Fluoroplastic lined for shut-off and control service in aggressive and corrosive fluids and high purity applications. Designed and manufactured in Switzerland for over 20 years.

## Product features

- Body construction B1 Wafer DN 32-600  
B3 Lug DN 32-400  
B4 U-section DN 450-900
- Face to face dimension according to ISO 5752/20, EN 558-1/20
- Top flange according to EN ISO 5211
- Max. working pressure 16 bar (DN32-150)  
10 bar (DN200-300)  
6 bar (DN350-900)
- Flange connection PN10, PN16, ANSI cl. 150  
AS 2129 table D + E and others
- Temperature range -20°C ÷ 200°C according to working conditions, other temperatures on request
- Factory tests Porosity check of the liner and overmoulded disc according to DIN EN 60243-1. Test certificates on request. Tightness test according to EN 12266-1 leakage rate A. The torque of each valve is recorded.

CE

SIL



TA-Luft

FDA and EC 1935/2004

BIANCA butterfly valves meet the safety requirements of the Pressure Equipment Directive 2014/68/EU (PED) appendix 1 for fluids of the groups 1 and 2.

BIANCA Butterfly valves are suitable to be operated in safety related systems according to IEC 61508 / 61511, Safety Integrity Level SIL 3

Special versions of the Bianca valves may be used in potentially explosive atmospheres.

EN ISO 15848 as an available option

The Teflon® used for the Bianca is in compliance with FDA and EC 1935/2004.



CE



**B1**  
Wafer

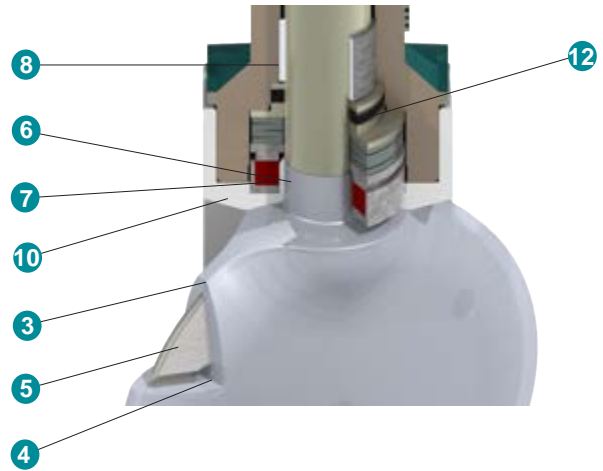
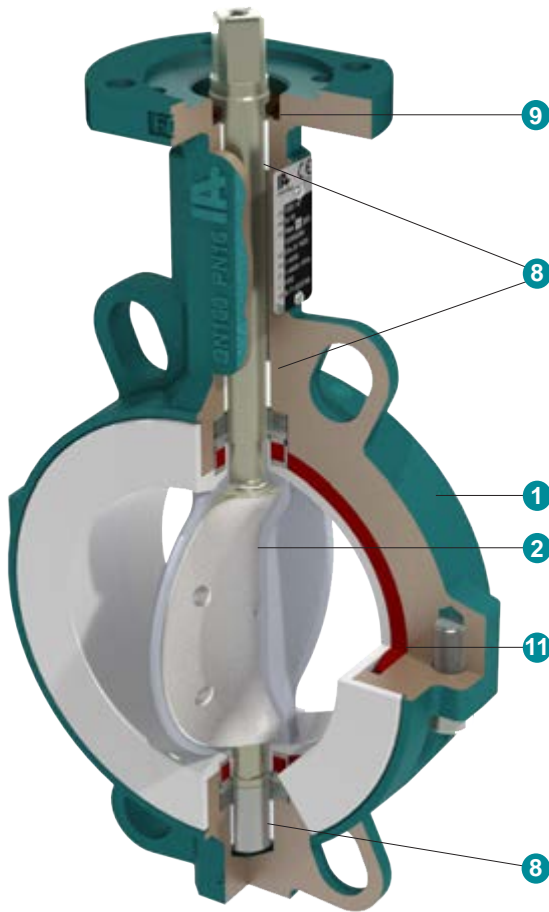


**B3**  
Lug



**B4**  
U-section

Construction



1	Two-piece body in ductile iron EN-JS 1025
2	One-piece, blow out proof disc/shaft
3	Overmoulding with a min. thickness of 3 mm
4	Overmoulding is mechanically locked on the disc
5	Thin core, allows high $k_v$ flow rate
6	Shaft overmoulded in the shaft sealing area
7	Life loaded safety shaft sealing
8	Self-lubricating shaft bushing
9	External shaft seal
10	Chambered liner, prevents radial cold-flow
11	Elastomer backliner, immersed in body
12	TA-Luft VDI 2440 / EN ISO 15848 packing optional

BIANCA HP cleanroom production



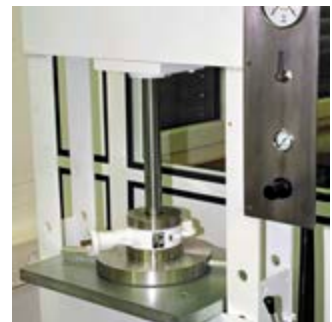
Cleansing the parts with ultrapure water



Material lock



Assembly, testing, packaging in clean room class 10'000 / ISO Class 7



Tightness test with ultrapure air

Torques with PTFE liner, safety factor included

DN	32/40	50	65	80	100	125	150	200	250	300	350	400	450	500	600	700	750	800	900
Nm	21	25	39	43	73	87	146	189	330	476	675	900	1100	1300	1750	2100	2500	3100	4000

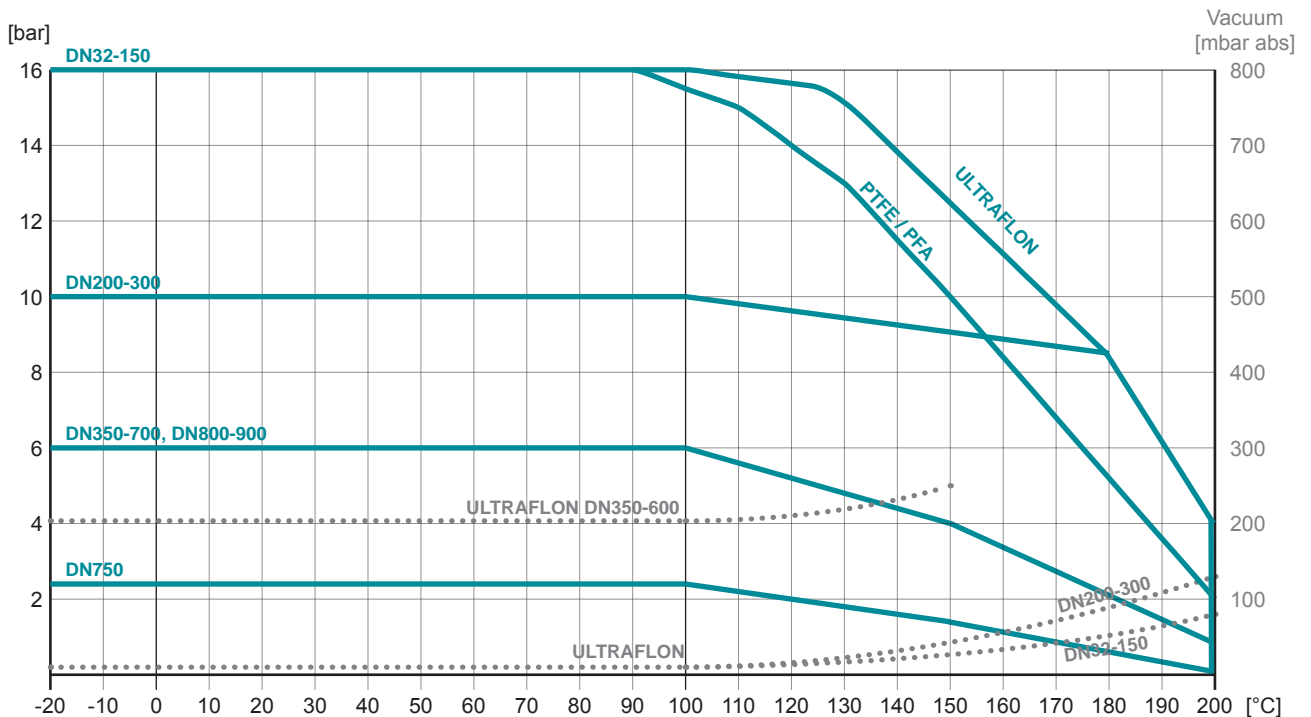


## Kv values m<sup>3</sup>/h

DN	Opening angle of the valve							
	20°	30°	40°	50°	60°	70°	80°	90°
32/40	4	8	17	30	45	65	85	95
50	5	11	24	42	64	92	118	134
65	8	19	41	70	108	155	200	227
80	15	33	72	125	190	270	335	392
100	20	48	95	162	255	385	485	585
125	38	82	165	255	455	645	815	1015
150	60	130	235	395	645	955	1220	1495
200	95	230	465	795	1180	1815	2410	3050
250	175	350	710	1160	1610	2420	3650	4510
300	265	522	995	1720	2665	3965	5960	7210
350	350	660	1180	1800	2880	4550	7180	8760
400	510	985	1480	2450	4230	6550	9250	11350
450	665	1255	2230	3850	6250	9200	12250	14900
500	890	1620	2980	5350	8150	11800	15560	18000
600	970	2150	4180	7420	11350	16450	21200	24500
700	1060	2560	4868	8412	14359	23901	37638	48633
750	1217	2939	5588	9675	16484	27437	43207	55829
800	1402	3328	6351	11169	19073	32074	51820	63905
900	1915	4259	7897	13849	23887	41112	66771	81016

$$c_v = k_v \cdot 1,16$$

## Pressure / temperature diagram

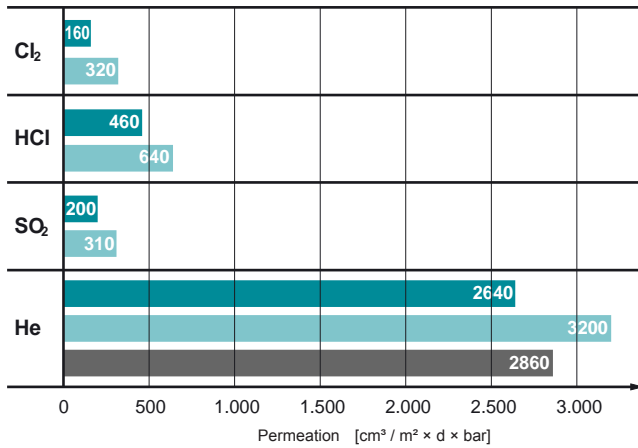


Please consult our technical department for higher temperatures.

### Advantage of ULTRAFLO<sup>®</sup> liner

#### Permeation

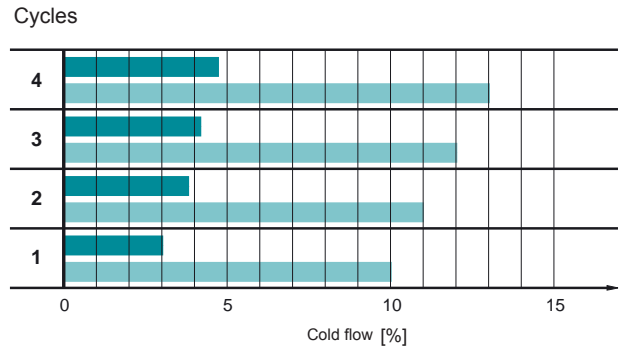
Comparison of ULTRAFLO<sup>®</sup> - PTFE - PFA (film thickness 1mm)



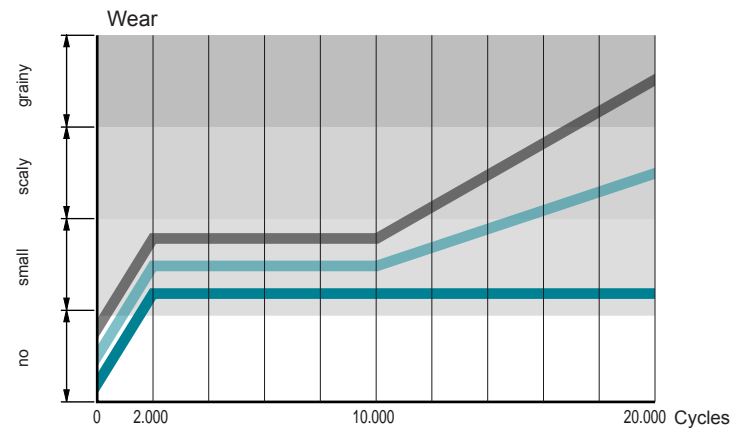
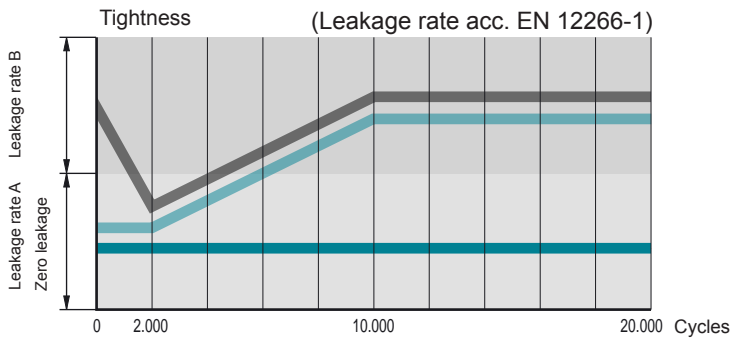
#### Deformation

Under repeated load „Cold flow behavior“

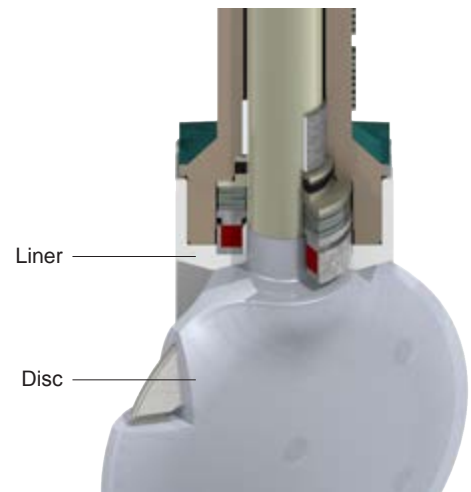
Loading : 15 N/mm<sup>2</sup>, 4 cycles  
 Duration : 100 hours each cycle  
 Temperature : 23°C (73°F)  
 Perm. deformation after 24 hours recovery



#### Endurance test (tightness)



ULTRAFLO<sup>®</sup>  
 PTFE  
 PFA






Type code

B1 0100 . 3 3 . 2BE . 4GT . T\* E . xx  
 ① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨

① Body type	B1	Wafer	DN32-600
	B3	LUG body	DN32-400
	B4	U-section body	DN450-900
② Nominal diameter	0032-0900	mm	
③ Working pressure	0	2,5 bar	DN750, 6 bar with 4LT disc
	1	6 bar	DN350-700, DN800-900
	2	10 bar	DN200-300
	3	16 bar	DN32-150
④ Flange connection	**	PN10/16/ANSI B16.5 cl150 see table below; others on request	
⑤ Body	2BE	Ductile iron EN-JS 1025 / EN-GJS-400-18LT / ≈ ASTM A395 60-40-18, Epoxy coated 80 μm	
	4B0	Stainless steel 1.4409 / ≈ ASTM CF3M	DN32-400
⑥ Disc-shaft, one piece	4G0	Stainless steel 1.4408 / ≈ ASTM CF8M	DN32-300
		Stainless steel 1.4404 / ≈ AISI 316L	DN350-900
	4GP	Stainless steel 1.4408 / ≈ ASTM CF8M polished Ra < 0,8	DN32-300
		Stainless steel 1.4404 / ≈ AISI 316L polished Ra < 0,8	DN350-900
	4GJ	Stainless steel 1.4435 / ≈ AISI 316L, Ferrite < 1%, e-polished Ra < 0,4	DN32-250
	4GT	Stainless steel PFA overmoulded	DN32-300 (>300 on request)
	4LT	Stainless steel PFA overmoulded	DN 750, 6 bar
	3BT	Disc carbon steel PFA overmoulded, shaft stainless steel	DN350-900
	**A	PFA antistatic (no FDA and EC 1935/2004 compliance)	
	4W0	Duplex 1.4469 / ≈ ASTM A 890 grade 5A	DN40-400
	7H0	Hastelloy 2.4819 / ≈ Hastelloy C276	DN50-300 (others on request)
7T0	Titanium 3.7035, Grade 2	(on request)	
⑦ Liner	T*	PTFE (* for elastomer backliner)	
	T*V	ULTRAFYLON® (UF) for vacuum, chlorine or high temperature applications	
	T*A	PTFE antistatic	
	T*VA	ULTRAFYLON® antistatic	
	U*	Ultralene (UHMWPE) for abrasive applications, max. 80 °C	DN 80, 100, 150, 200
⑧ * Elastomer backliner	S	MVQ	
	E	EPDM	
	V	FPM	
⑨ Special execution	LF	Without painting adhesion interfering substance	
	HP	High purity: The valve is cleaned, assembled, tested and packaged under cleanroom conditions. (US federal standard 209b, class 10000, ISO Class 7 (ISO 14644-1))	
	112/246	See corresponding document: InterApp Butterfly Valves for use in potentially explosive atmospheres	
	180	TA-Luft VDI 2440 / EN ISO 15848	

Other options upon request!

\*\*Flange connection (Code)

BIANCA	DN →	32	40	50	65	80	100	125	150	200	250	300	350	400	450	500	600	700	750	800	900		
 B1	PN10							3								2							
	PN16							3		3													
	ANSI cl.150							3									A						
 B3	PN10					3					2												
	PN16					3																	
	ANSI cl.150									A													
 B4	PN10															2						2	
	PN16															3						3	
	ANSI cl.150																		A				

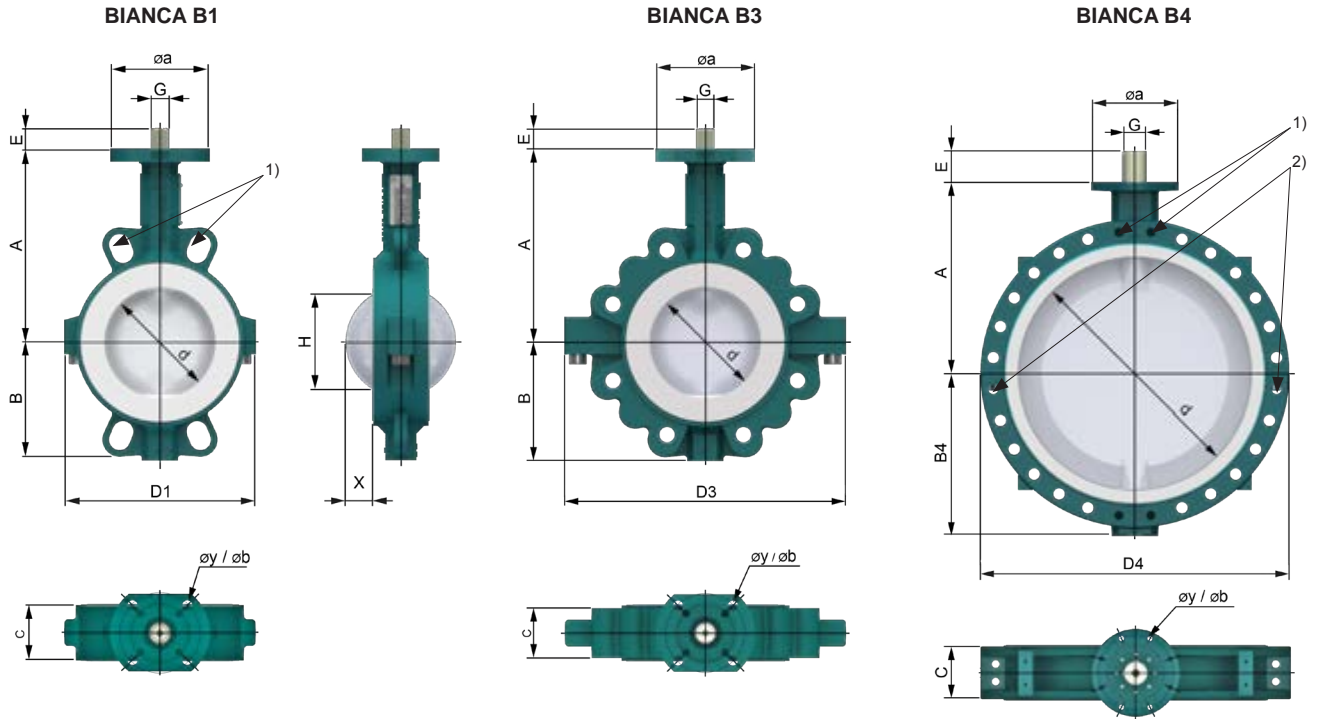
When mounting the valve at the end of a line please note:

- Body type Lug B3
- Temperature 10 + 60°C
- Medium only for non-hazardous liquids
- no water hammer !

- Max. working pressure

DN32-150	8 bar
DN200-300	6 bar
DN350-400	4 bar

## Dimensions



1) DN 450 - 900, 2 x threads on valve neck and bottom  
 2) DN 600 - 900, 2 threads on both sides

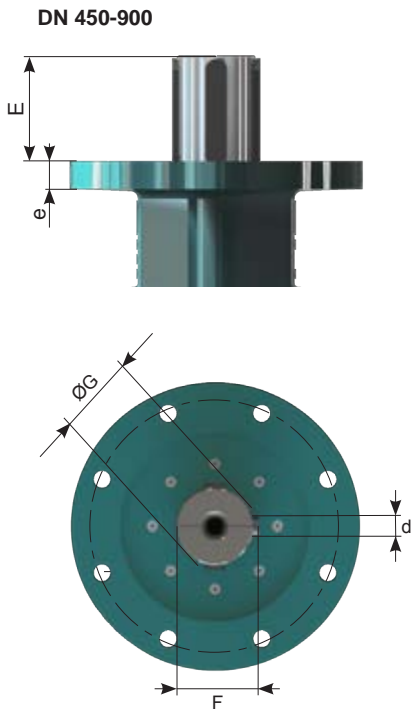
DN	d	A	B	B4	C	H	X	D1	D3	D4	ISO	a	y	b	G	E	B1[kg]	B3[kg]	B4[kg]
32/40	40	125	69	-	33	23	4	105.8	136	-	F05	65	4x7	50	11	12	1.7	2.4	-
50	50	134	68	-	43	26	9	118.4	162	-	F05	65	4x7	50	11	12	2.3	3.2	-
65	65	145	78	-	46	39	7	132.5	170	-	F05	65	4x7	50	11	12	2.9	4.1	-
80	80	160	92	-	46	66	17	144	216	-	F05	65	4x7	50	11	12	3.4	6.2	-
100	100	175	107	-	52	86	24	173	254	-	F05/07	90	4x7/9	50/70	14	16	5.1	9.3	-
125	125	194	120	-	56	112	35	219	293	-	F05/07	90	4x7/9	50/70	14	16	6.9	10.7	-
150	150	210	134	-	56	140	47	247	315	-	F07	90	4x9	70	17	19	10	12.9	-
200	200	239	162	-	60	191	70	295	389	-	F07/F10	125	4x9/11	70/102	17	19	14.1	22.3	-
250	250	275	199	-	68	241	91	367	483	-	F10	125	4x11	102	22	24	22.9	32.4	-
300	300	310	230	-	78	290	111	419	543	-	F10	125	4x11	102	22	24	32.9	46.9	-
350	339	349	254	-	78	330	131	428	564	-	F12	155	4x 13.5	125	27	40	50	87	-
400	400	379	287	-	102	387	149	473	620	-	F12	155	4x 13.5	125	27	40	68	98	-
450	450	426	320	320	114	436	168	528	-	630	F14	175	4x 18	140	Ø45	65	100	-	140
500	500	451	360	360	127	484	187	588	-	700	F14	175	4x 18	140	Ø45	65	122	-	175
600	600	555	415	415	154	580	223	686	-	820	F16	210	4x 22	165	Ø60	90	180	-	275
700	703	605	-	482	165	684	269	-	-	930	F16	210	4x 22	165	Ø72	80	-	-	423
750	750	629	-	489	190	726	280	-	-	970	F16	210	4x 22	165	Ø60	91	-	-	383
800	803	658	-	550	190	781	307	-	-	1060	F25	300	8x 18	254	Ø80	108	-	-	670
900	900	710	-	602	203	877	349	-	-	1160	F30	350	8x 22	298	Ø98	128	-	-	880

**Dimensions X and H are without safety factors!**

The customer must define safety distances to allow proper installation of the valve.

## Dimensions

### Top flange according to ISO 5211

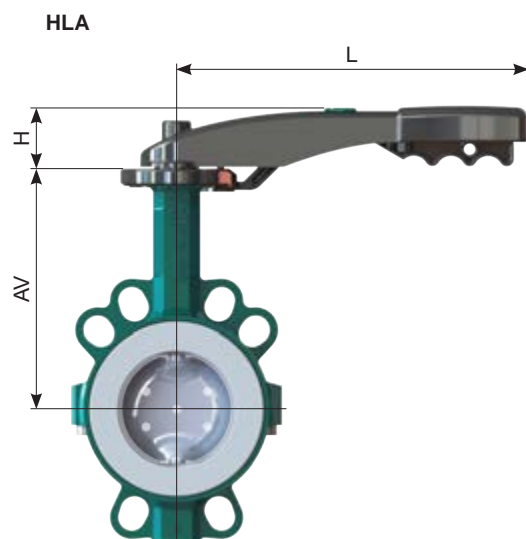


### Wafer, Lug and U-section

Size	E	ØG	d	e	F
450	65	45	14	9	48,8
500	65	45	14	9	48,8
600	90	60	18	11	64,4
700	3	72	20	12	76,9
750	91	60	18	11	64,4
800	108	80	22	14	85,4
900	128	98	28	16	104,4

## Dimensions

### Handlever



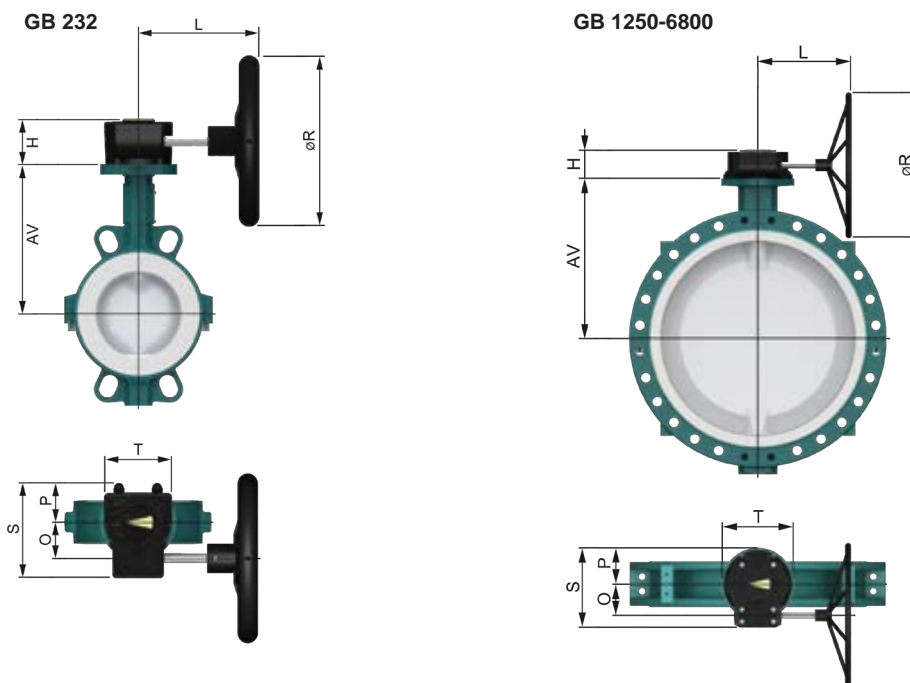
HLA : Aluminum Epoxy coated

DN		AV	H	L	[kg]*
32/40	HLA.F0511.180K	125	41	180	0.4
50	HLA.F0511.240K	134	43	240	0.5
65	HLA.F0511.240K	145	43	240	0.5
80	HLA.F0511.240K	160	43	240	0.5
100	HLA.F0714.340K	175	51	340	0.6
125	HLA.F0714.340K	194	51	340	0.6
150	HLA.F0717.340K	210	51	340	0.6

\* [kg] weight without butterfly valve

## Dimensions

### Gearbox



DN		AV	H	L	O	P	R	S	T	n**	[kg]*
32/40	GB232-05.F05-F0711.100	125	53	126	42,5	48	100	114	80	10	0,8
50	GB232-05.F05-F0711.100	134	53	126	42,5	48	100	114	80	10	0,8
65	GB232-05.F05-F0711.100	145	53	126	42,5	48	100	114	80	10	0,8
80	GB232-05.F05-F0711.100	160	53	126	42,5	48	100	114	80	10	0,8
100	GB232-05.F05-F0714.100	175	53	126	42,5	48	100	114	80	10	0,8
125	GB232-05.F05-F0714.100	194	53	126	42,5	48	100	114	80	10	0,8
150	GB232-06.F05-F0717.160	210	59	189	42,5	48	160	114	80	10	0,9
200	GB232-06.F05-F0717.160	239	59	189	42,5	48	160	114	80	10	0,9
250	GB232-08.F07-F1022.250	275	67	219	50	56	250	131	100	9,25	1,55
300	GB232-08.F07-F1022.250	310	67	219	50	56	250	131	100	9,25	1,55
350	GB232-13.F10-F1227.300	349	85	371	80	83	300	209	175	10	5,4
400	GB232-13.F10-F1227.400	379	85	371	80	83	300	209	175	10	5,4
450	GB880N.F1445.500	426	92	305	86	101	500	227	200	9,5	14
500	GB880N.F1445.500	451	92	305	86	101	500	227	200	9,5	14
600	GB1250N.F1660.500	555	102	346	104,5	110	500	258	220	13,75	22
700	GB1950N.F1672.600	605	126	387	130	142,5	600	322,5	285	13	32
750	GB1950N.F1660.700	629	126	387	130	142,5	700	322,5	285	13	32
800	GB2000NLB.F2580.500	658	120	348	53	142	500	300	285	27	27
900	GB6800N/PR4.F3098.400	710	159	470	182	170	400	407,5	370	81,5	63

Material: GB 232 Aluminum, Polyurethane coated  
 GB1250-GB6800 GG 25 Polyurethane coated

\* [kg] weight without butterfly valve and handwheel

\*\* n = Handwheel turns ON/OFF

## Further documentation

**Pneumatic actuators, Electric actuators, Accessories** please see respective data sheets.

**Installation guide, Maintenance guide, Flanges:** Please consult these guides for installation and maintenance of our butterfly valves.

## Description

Double eccentric high performance butterfly valve Lug and wafer body type.

## Product features



- Body construction Econaxe - L201 - Lug  
Econaxe - W201 - Wafer
- Face to face dimension according to EN558 Series 20 (14" / DN 350: Series 25)
- Top flange according to EN ISO 5211
- Max. working pressure 20 bar
- Flange connection EN 1092 PN 6, 10, 16, 25, 40  
ASME B16.5 cl. 150  
JIS 5K, 10K, 16K  
MSS SP 44 cl. 150
- Temperature range -29°C to +350°C
- Shell strength test EN 12266-1, P10  
ISO 5208  
API 598
- Shell tightness test EN 12266-1, P11  
API 598
- Seat tightness test EN 12266-1, P12, Rate A  
ISO 5208, Rate A  
API 598
- Operability test EN 12266-2, F20  
ISO 5208  
API 598



## Standard materials list

<b>Body materials</b>	Austenitic Stainless Steel (1.4408), CF3M min 2,8% Mo
	Carbon Steel 1.0619 / GP240GH / WCB
<b>Disc materials</b>	Austenitic Stainless Steel (1.4408)
<b>Disc Seat ring</b>	RTFE / RTFE Fire Safe / Metal-to-Metal
<b>Upper / Lower Shaft</b>	Austenitic Stainless Steel

## Range overview

Series	View	Body Type	DN	Face to face dimension	Max. working pressure	Flange connection	Length of the valve neck
Econaxe - L201		Lug	DN 50 - 600	EN558 Basic Series 20 (14" Series 25)	20 bar	EN 1092 PN 6, 10, 16, 25, 40 ASME B16.5 cl. 150 JIS 5K, 10K, 16K MSS SP 44 cl. 150	Short
Econaxe - W201		Wafer	DN 50 - 600	EN558 Basic Series 20 (14" Series 25)	20 bar	EN 1092 PN 6, 10, 16, 25, 40 ASME B16.5 cl. 150 JIS 5K, 10K, 16K MSS SP 44 cl. 150	Short



## Description

Double eccentric high performance butterfly valve Lug, wafer and double flange body types.

## Product features







- Body construction  
 Dynaxe - F131 - Double flanged type  
 Dynaxe - F142 - Double flanged type  
 Dynaxe - L162 - Lug  
 Dynaxe - L201 - Lug  
 Dynaxe - W162 - Wafer  
 Dynaxe - W201 - Wafer
- Face to face dimension  
 according to EN558-1/2 Series 13, 14, 16, 20 and API 609, depending on the body type
- Top flange  
 according to EN ISO 5211
- Max. working pressure  
 50 bar
- Flange connection  
 EN 1092 PN 10, 16, 25, 40; ASME B16.5 cl 150 / 300 / B16.47 cl. 150; MSS SP 44 cl. 150 / 300, depending on the body type
- Temperature range  
 -40°C to +250°C, higher on request
- Shell strength test  
 EN 12266-1, P10  
 ISO 5208  
 API 598  
 DIN 3230, Part 3, depending on the body type
- Shell tightness test  
 EN 12266-1, P11  
 ISO 5208  
 API 598
- Seat tightness test  
 EN 12266-1, P12, Rate A/B  
 ISO 5208, Rate A/B  
 API 598
- Operability test  
 EN 12266-2, F20  
 ISO 5208  
 API 598  
 DIN 3230, Part 3 depending on the body type



## Standard materials list

<b>Body materials</b>	Austenitic Stainless Steel 1.4408 / CF8M
	Carbon Steel 1.0619 / GP240GH / WCB On request: Hastelloy Titan
<b>Disc materials</b>	Austenitic Stainless Steel / 1.4401
	Carbon Steel / 1.0619 / 6P2406H
<b>Disc Seat ring</b>	RTFE / RTFE - Fire Safe / Metal-to-metal / NBR / EPDM / FPM
<b>Upper / Lower Shaft</b>	Austenitic Stainless Steel 1.3964
	Martensitic Stainless Steel 1.4021

## Dynaxe - Butterfly valve DN 50-900

Series	View	Body Type	DN	Face to face dimension	Max. working pressure	Flange connection	Length of the valve neck
Dynaxe - F131		Double flanged type	DN 50 - 900	According to EN558-1/2 Series 13	20 bar	EN 1092 PN 10,16 ASME B16.5 cl. 150/ B16.47 cl. 150 MSS SP44 cl. 150	Short
Dynaxe - F142		Double flanged type	DN 50 - 600	According to EN558-1/2 Series 14	50 bar	EN 1092 PN 25, 40 ASME B16.5 cl. 300/ B16.47 cl. 300 MSS SP 44 cl. 300	Short
Dynaxe - L162		Lug	DN 50 - 600	According to EN558-1/2 Series 16	50 bar	EN 1092 PN 25,40 ASME B16.5 cl. 300/ B16.47 cl. 300 MSS SP 44 cl. 300	Short
Dynaxe - L201		Lug	DN 50 - 900	According to EN558 Basic Series 20 API 609	20 bar	EN 1092 PN 10, 16 ASME B16.5 cl. 150/ B16.47 cl. 150 MSS SP 44 cl. 150	Short
Dynaxe - W162		Wafer	DN 50 - 600	According to EN558-1/2 Series 16	50 bar	EN 1092 PN 25, 40 ASME B16.5 cl. 300/ B16.47 cl. 150 MSS SP 44 cl. 300	Short
Dynaxe - W201		Wafer	DN 50 - 900	According to EN558 Basic Series 20 API 609	20 bar	EN 1092 PN 10, 16 ASME B16.5 cl. 150/ B16.47 cl. 150 MSS SP 44 cl. 150	Short

## Description

Double eccentric butterfly valve in 3 variations of sealing

- **TG** with PTFE+25% glass fibre seat
- **TI** Fire Safe
- **IN** with metal seat

Application fields: industrial and petrochemical range

## Product features

- Body construction E1 Wafer, E3 Lug
- Face to face dimension according to ISO 5752/20, EN558-1/5, BS 5155/4
- Top flange according to EN ISO 5211
- Rating PN10/16/25/40, ANSI cl. 150  
ANSI cl. 300 (DN50-300)
- Tightness **TG/TI**: Gas tightness according to EN 12266-1/P12 leakage rate A / API 598  
**IN**: Gas tightness according to API 598
- ATEX option Execution according to ATEX 94/9/EC, Zone 1 and 21 – Gr II, Cat. 2 G/D



The butterfly valves ELARA meet the safety requirements of the pressure Equipments Directive 97/23/EC (PED) appendix 1 for fluids of the groups 1 and 2.



E1

E3

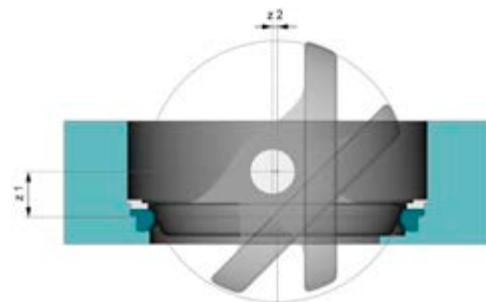


### Double eccentric function:

The ELARA is a double eccentric butterfly valve. The double eccentricity results from

- Offset of the disc to the shaft (z 1) and
- Offset of the disc centre to the shaft (z 2).

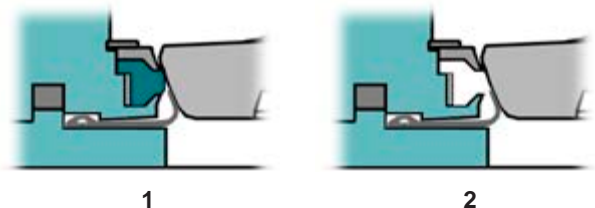
Consequently, when opening, the disc is immediately disengaged from the seat and thus, the friction and the torque remain very low.



### Fire Safe function:

According to BS 6755 part 2  
(Bureau Veritas - approval no. AIX3P00.0620J.3A)

- 1 Under normal working conditions, the tightness is done by the **PTFE seat ring**.
- 2 In case of fire, the PTFE seat ring is destroyed and the tightness is ensured by the **metal seat ring**.



1

2

## Product features

### Torques [Nm]:

TG with PTFE seal

DN	50	65	80	100	125	150	200	250	300	350	400	450	500	600	700	800
16 bar	25	35	40	55	100	140	220	470	650	850	1000	1650	2100	3250	4700	6500
20 bar	30	40	50	65	125	160	260	650	900	1150	1400	2200	2800	4300	6100	
25 bar																
40 bar	35	45	60	85	150	225										
50 bar																

### Torques [Nm]:

TI Fire Safe IN with metal seat

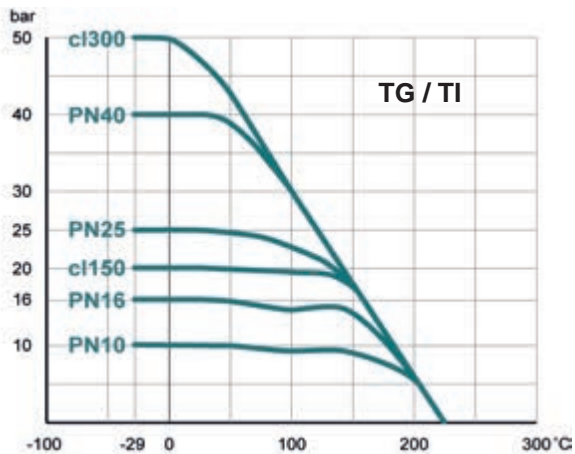
DN	50	65	80	100	125	150		200		250		300		350		400		450		500		600		700		800		
						OPEN	CLOSE	OPEN	CLOSE	OPEN	CLOSE	OPEN	CLOSE	OPEN	CLOSE	OPEN	CLOSE	OPEN	CLOSE	OPEN	CLOSE	OPEN	CLOSE	OPEN	CLOSE	OPEN	CLOSE	OPEN
10 bar						111		235		336		568		770		1349		1618		2511		3889		6189		11277		8399
16 bar	50	70	100	150	220	179	285	378	415	546	587	926	983	1275	1237	2232	2007	2684	2515	4129	3598	6391	4175	10131	6856	18502		
20 bar						225		474		686		1164		1612		2820		3395		5207		8058		12766				
25 bar						281		540		862		1462		2033		3555		4283		6555								
*40 bar	90	120	150	180	250	330	285	640	415																			
*50 bar																												

\*only TI Fire Safe

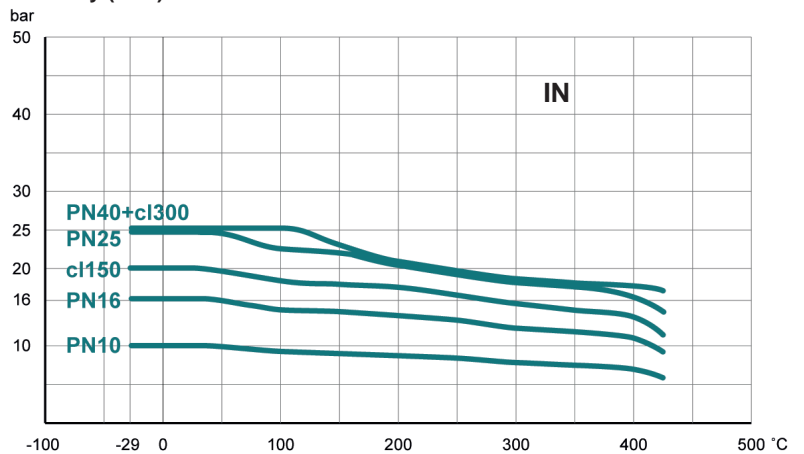
### Flow values $k_v$ [m³/h]:

DN	50	65	80	100	125	150	200	250	300	350	400	450	500	600	700	800
kv	87	148	320	456	750	1125	1950	2940	4270	5550	7870	9419	11674	16914	23115	30283

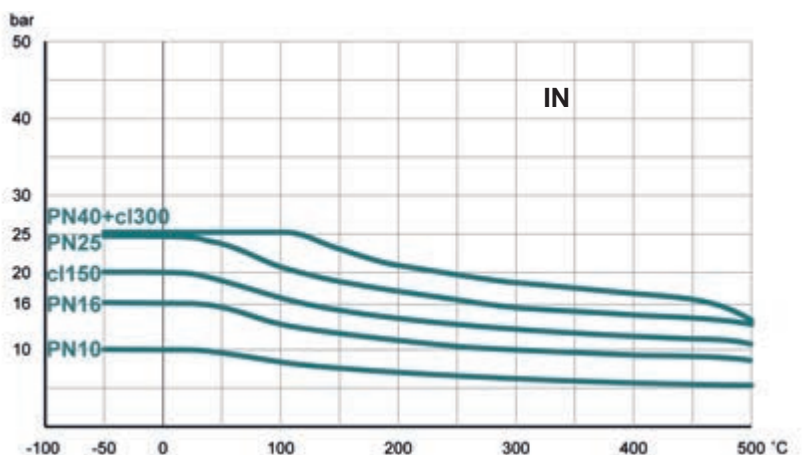
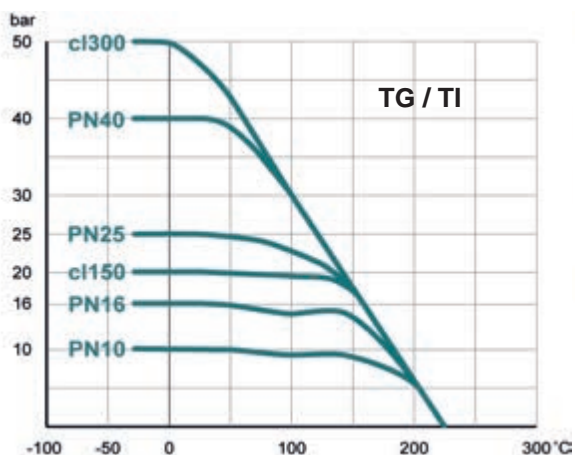
### Pressure / temperature:



### Steel body (3HD)



### Stainless steel body (4C0)



## Type code

E1C 0150 . 6 B . 3HD . 4A . 4A0 . TG - ATEX

①    ②    ③ ④    ⑤    ⑥    ⑦    ⑧    ⑨

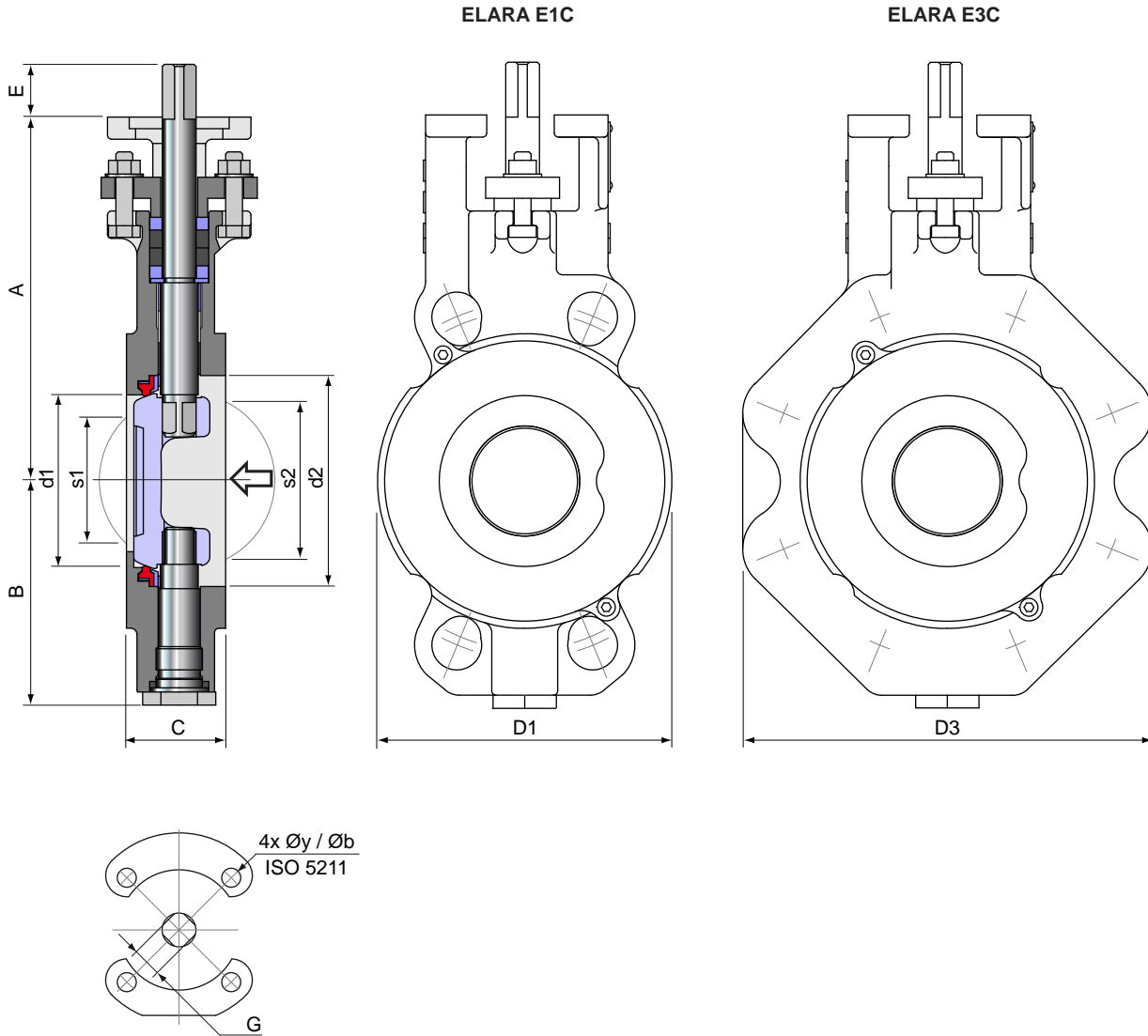
①	Body type	E1C	Wafer	DN50-800
		E3C	Lug	DN50-800
②	Nominal diameter	050-800	mm	
③	Working pressure	3	16 bar	DN50-800
		4	20 bar	DN50-700
		5	25 bar	DN50-500
		6	40 bar	DN50-150
		7	50 bar	DN50-100
④	Rating	for E1C (Wafer)		
		2	PN 10	DN 450-800
		3	PN 16	DN 450-800
		5	PN 25	DN 450-800
		6	PN 10 / 16 / 25 / 40 / ANSI cl.150	DN 350-400
		A	ANSI cl. 150	DN 450-800
		B	PN 10 / 16 / 25 / 40 / ANSI cl.150 / 300	DN 50-300
		for E3C (Lug)		
		2	PN 10	DN 200-800
		3	PN 10 / 16	DN 50-150
			PN 16	DN 200-800
		A	ANSI cl.150	DN 50-800
		5	PN 25	DN 200-800
		6	PN 25 / 40	DN 50-150
PN 40	DN 200-400			
B	ANSI cl.300 (~50bar)	DN 50-300		
⑤	Body	3HD	Cast steel, A216WCB, SODOX coated	
		4C0	Stainless steel 1.4408, A351CF8M	
⑥	Shaft	4A	Stainless steel 1.4021 (with cast steel body 3HD)	
		4T	Stainless steel 1.4462 (with stainless steel body 4C0)	
⑦	Disc	4C0	Stainless steel 1.4408, A351CF8M (with cast steel body 3HD)	DN 50-125
			Stainless steel 1.4408, A351CF8M (with stainless steel body 4C0)	DN 50-800
		4A0	Stainless steel 1.4021 (with cast steel body 3HD)	DN 150-800
⑧	Seat	TG	PTFE with 25% glass fibre	DN 50-800
		TI	Fire Safe	DN 50-800
		IN	Stainless steel (max. 25 bar)	DN 50-800
⑨	ATEX option	ATEX	Execution according to ATEX 94/9/EC, Zone 1 and 21 – Gr II, Cat. 2 G/D	

Mounting the valve at the end of a line on request

Pressure and temperature limits of application are dependent of the working conditions

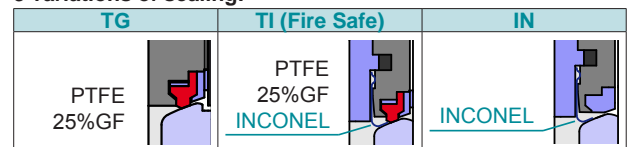
Dimensions

ELARA DN 50 - 125



Body	<b>3HD</b>	Cast steel 1.0625 / A216WCB	<b>4C0</b>	Stainless steel 1.4408 / A351CF8M
Shaft	<b>4A</b>	Stainless steel 1.4021	<b>4T</b>	Stainless steel 1.4462
Disc	<b>4C0</b>	Stainless steel 1.4408	<b>4C0</b>	Stainless steel 1.4408

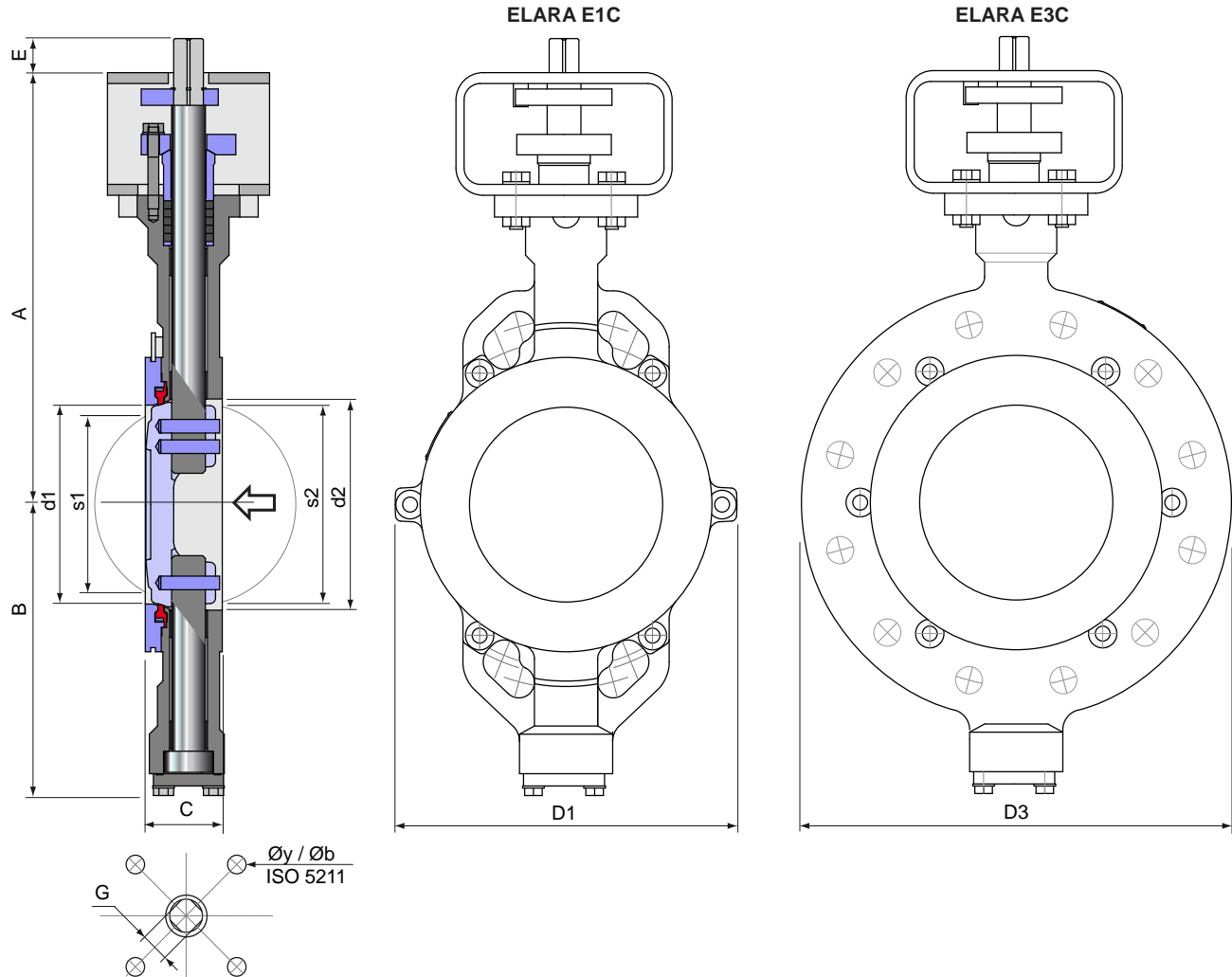
3 variations of sealing:



DN	d1	d2	A	B	C	D1	D3	(TG)		(TI, IN)		E	G	ISO5211	y	b	E1C	E3C
								s1	s2	s1	s2						[kg]	[kg]
50	48	68	163	93	44	105	154	12	32	0	41	19	14	F07	9	70	5,3	7,5
65	64	82	170	100	47	125	178	47	58	38	63	19	14	F07	9	70	6,0	9,2
80	80	100	174	106	47	140	196	64	68	55	73	19	14	F07	9	70	7,0	10,3
100	101	123	206	123	53	163	225	84	88	77	93	19	14	F07	9	70	8,7	12,4
125	121	146	215	137	57	193	260	112	117	105	121	19	14	F07	9	70	12,0	16,7

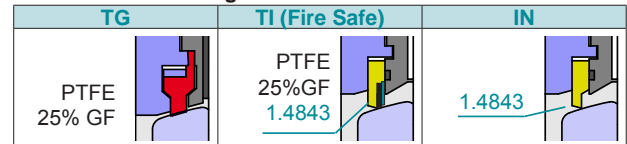
Dimensions

ELARA DN 150 - 800



Body	<b>3HD</b>	Cast steel 1.0625 / A216WCB	<b>4C0</b>	Stainless steel 1.4408 / A351CF8M
Shaft	<b>4A</b>	Stainless steel 1.4021	<b>4T</b>	Stainless steel 1.4462
Disc	<b>4A0</b>	Stainless steel 1.4021	<b>4C0</b>	Stainless steel 1.4408

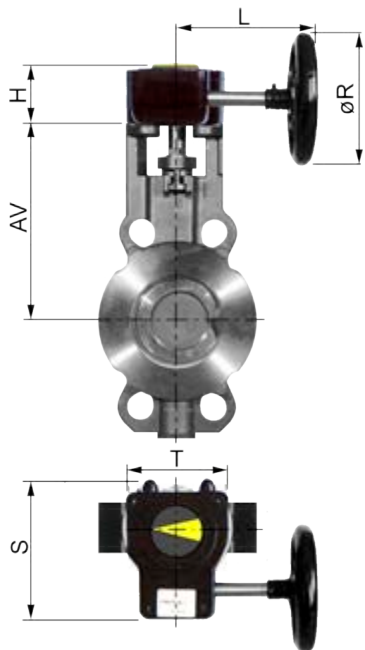
3 variations of sealing:



DN	(TG)		(TI, IN)		E	G	ISO5211	y	b	E1C [kg]	E3C [kg]
	d1	d2	s1	s2							
150	146	155	137	143	25	17	F10	4x 11	102	21	28
200	194	204	189	194	25	17	F10	4x 11	102	29	41
250	241,5	258,5	222	235	28	22	F12	4x 13	125	46	70
300	289	309	268	284	28	27	F14	4x 17	140	67	105
350	323	342	290	308	28	27	F16	4x 21	165	91	140
400	385	405	341	360	37	36	F16	4x 21	165	132	211
450	414	436,5	375	396	37	36	F16	4x 21	165	183	275
500	464	487	418	441	47	46	F25	8x 17	254	241	356
600	553	581	495	529	100	Ø65	F30	8x 21	298	369	547
700	645	683	586	618	111	Ø75	F30	8x 21	298	501	756
800	769	796	688	731	111	Ø75	F30	8x 21	298	653	1000

## Dimensions

### Gearbox:



### TG with PTFE seal

DN		pmax [bar]	AV	H	L	R	S	T	n**	[kg]*
50	GB232-05.F05-F0714.100	50	163	53	121	100	114	80	10	0,8
65	GB232-05.F05-F0714.100	50	170	53	121	100	114	80	10	0,8
80	GB232-05.F05-F0714.100	50	174	53	121	100	114	80	10	0,8
100	GB232-05.F05-F0714.100	50	206	53	121	100	114	80	10	0,8
125	GB232-06.F05-F0714.160	40	215	59	179	160	131	80	10	0,9
150	GB232-08.F07-F1017.250	40	317	67	209	250	131	100	9,25	1,55
200	GB232-08.F07-F1017.250	25	349	67	209	250	131	100	9,25	1,55
250	GB232-13.F10-F1222.300	25	395	84	361	300	209	175	10	5,4
300	GB232-13.F1427.400	25	460	84	376	400	209	175	10	5,4
350	GB880N-F1627.500	25	508	92	315	500	227	200	9,5	14
400	GB880N-F1636.600	25	556	92	315	600	227	200	9,5	14
450	GB1250N-F1636-600	25	594	101	356	600	258	220	13,75	22
500	GB1950N/HR-F2546-500	25	625	123	397	500	323	285	21	32
600	GB6800N-F3065-600	16	698	160	422	600	402	370	19,5	56
700	GBA250G/SP9-F3075-400	16	813	175	609	400	725	510	176	225
800	GBA250G/SP9-F3075-400	16	869	175	609	400	725	510	176	225

### TI Fire Safe

### IN with metal seat

DN		pmax [bar]	AV	H	L	R	S	T	n**	[kg]*
50	GB150N.F05-F0714.160	25	163	52	134	160	124	80	10	2,2
65	GB150N.F05-F0714.160	25	170	52	134	160	124	80	10	2,2
80	GB150N.F05-F0714.160	25	174	52	134	160	124	80	10	2,2
100	GB215N.F07-F1014.160	25	206	64	193	160	143	125	9,25	3,5
125	GB215N.F07-F1014.160	25	215	64	193	160	143	125	9,25	3,5
150	GB215N.F07-F1017.160	25	317	64	193	160	143	125	9,25	3,5
200	GB215N.F07-F1017.250	25	349	64	208	250	143	125	9,25	3,5
250	GB880N.F1222.500	25	395	92	315	500	227	200	9,5	14
300	GB1250N.F1427.500	25	460	101	356	500	258	220	13,75	22
350	GB1950N/HR.F1627.500	25	508	123	397	500	323	285	21	32
400	GB1950N/SP4.F1636.400	25	556	155	437	400	403	285	52	45
450	GB1950N/SP4.F1636.400	25	594	155	437	400	403	285	52	45
500	GB1950N/SP4.F2546.600	25	625	155	457	600	403	285	79,25	45
600	GB6800N-F3065-700	16	698	160	422	700	402	370	19,5	56
700	GBA250G/SP9-F3075-400	16	813	175	609	400	725	510	176	225
800	GBA250G/SP9-F3075-400	16	869	175	609	400	725	510	176	225

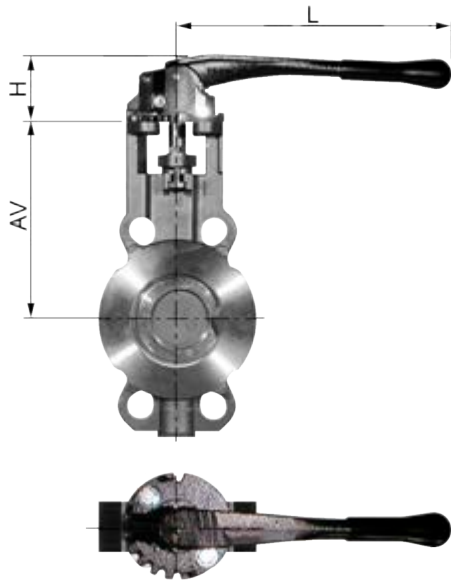
\* [kg] weight without butterfly valve

\*\* n = Handwheel turns ON/OFF



## Dimensions

### Handlever:



DN		pmax[bar]	AV	H	L	[kg]*
50	HLG.F0714.260-E.C	50	162,5	66	260	1,2
65	HLG.F0714.260-E.C	50	169,5	66	260	1,2
80	HLG.F0714.260-E.C	25	173,5	66	260	1,2
100	HLG.F0714.260-E.C	25	205,5	66	260	1,2
125	HLG.F0714.350-E.C	20	215,0	66	350	1,6

\* [kg] weight without butterfly valve

## Further documentation

**Pneumatic actuators, Electric actuators, Accessories** according separate data sheets.

**Installation guide, Maintenance guide, Flanges:** Please consult these guides for the installation and maintenance of our butterfly valves.

## Description

Triple offset metal to metal seat butterfly valve Titania is specially designed to ensure a perfect tightness in steam, gas, chemical, petrochemical and cryogenic applications.

## Product features

- Body types T1 Wafer, T3 Lug, T8 Flange
- Face to face dimension PN10/16/25/40 according to EN558-1  
ANSI cl.150/300 according to EN558-1  
Table 16 for T1 Wafer and T3 Lug  
Table 13 for T8 Flange
- Top flange according to EN ISO 5211
- Rating PN10/16/25/40, ANSI cl.150/300
- Max. working pressure 50 bar
- Temperature range  $-196^{\circ}\text{C} \dots +700^{\circ}\text{C}$  according to material
- Tightness test according to API 598
- FIRE SAFE design according to BS 6755 part 2-87, with amendment 2
- ATEX option Execution according to ATEX 2014/34/EC, Zone 1 and 21 – Gr II, Cat. 2 G/D



The butterfly valves TITANIA meet the safety requirements of the pressure Equipments Directive 2014/68/EC (PED) appendix 1 for fluids of the groups 1 and 2.

### Triple offset function:

#### Offset 1E:

The center of rotation is offset from the tightness surface to allow a total contact around the entire seal.

#### Offset 2E:

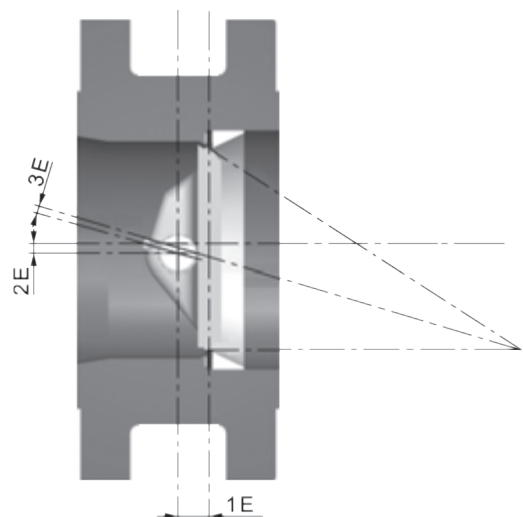
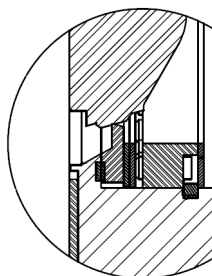
The center of rotation of the disc is offset from the pipe centerline to allow a cleaning opening valve.

#### Offset 3E:

The third offset issue from the seal cone tilting cancel jamming and friction and allow complete tightness without seal deformation (solid seal).

### Tightness:

Bi-directional tightness  
Closing without jamming and friction  
No deformation on the seal



## Product features

Flow values  $k_v$  [m<sup>3</sup>/h], Torques [Nm]:

DN	$k_v$ [m <sup>3</sup> /h]	Md [Nm]																
		Δ p 4 bar		Δ p 6 bar		Δ p 10 bar		Δ p 16 bar		Δ p 20 bar		Δ p 25 bar		Δ p 40 bar		Δ p 50 bar		
		o*	c*	o	c	o	c	o	c	o	c	o	c	o	c	o	c	
80	213												59	212	92	251	114	276
100	323												117	275	179	323	221	355
125	323												117	275	179	323	221	355
150	888					153	296	226	320	273	336	333	355	513	415	633	454	
200	1701					356	469	524	504	635	527	774	557	1192	645	1471	703	
250	2780					583	640	854	686	1034	717	1260	756	1937	870	2389	946	
300	4038					888	1042	1337	1123	1636	1177	2008	1245	3132	1449	3880	1584	
350	4984					1228	1189	1855	1280	2272	1341	2794	1416	4359	1642	5403	1793	
400	7128					2005	2059	3072	2223	3784	2333	4674	2471	7343	2883	9121	3158	
450	8150					2614	2525	3964	2719	4866	2849	5993	3012	9372	3499	11625	3824	
500	10460					3874	4038	5870	4352	7201	4562	8865	4824	13856	5609	17182	6133	
600	14674					5953	5537	9128	5976	11244	6268	13889	6634	21824	7731	27115	8461	
700	20095					9793	9666	14858	10414	18234	10912	22454	11536	35114	13407	43556	14653	
800	35791	5099	4962	7522	5430	12608	6094	10649	7090									
1000	52958	10891	8550	15615	9092	26159	10175	41977	11780									
1200	77439	17136	13475	25938	14337	43541	16062											
1400	100987	27284	17504	41096	18608	68717	20814											

\* o=open, c=close

## Type code

T1 00150 . 3 3 . 3PD . 4A . 4HS . 4X - ATEX

① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨

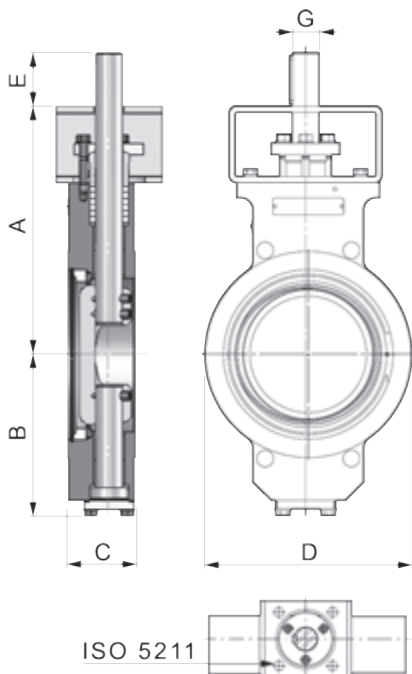
①	Body type	T1	Wafer	DN80-1200	
		T3	Lug	DN80-1200	
		T8	Flange	DN80-1400	
②	Nominal diameter	0080-1400	mm		
③	Working pressure	2	10 bar		
		3	16 bar		
		4	20 bar		
		5	25 bar		
		6	40 bar		
		7	50 bar		
④	Rating	2	PN 10	DN 200-1400	
		3	PN 10 / 16	DN 80-150	
			PN 16	DN 200-1400	
		A	ANSI cl.150	DN 80-1400	
		5	PN 25	DN 200-1400	
		6	PN 25 / 40	DN 80-150	
PN 40	DN 200-600				
⑤	Body	T1 Wafer, T3 Lug	3PD	Cast steel E36-3 / P355GH / 1.0473	T1, T3
			4B0	Stainless steel X2CrNiMo17-12-1 1.4404	T1, T3 DN 80-450
			4C0	Stainless steel 1.4408	T1, T3 DN 500-1200
		T8 Flange	3HD	Cast steel GP280GH 1.0625	T8
			4C0	Stainless steel A351CF8M 1.4408	T8
			4A	Stainless steel X20Cr13, 1.4021 (with cast steel body)	
				Stainless steel X5CrNiCuNb16-4, 1.4542 (with stainless steel body)	
			4L	Cast steel 1.0619 A216WCB stellited (with cast steel body)	
Stainless steel A351CF8M, 1.4408 stellited (with stainless steel body)					
⑦	Disc	3HS	Cast steel 1.0619 A216WCB stellited (with cast steel body)		
		4CS	Stainless steel A351CF8M, 1.4408 stellited (with stainless steel body)		
⑧	Seat	4X	Stainless steel GX12CrNiSi25-20, 1.4843		
⑨	ATEX option	ATEX	Execution according to ATEX 2014/34/EC, Zone 1 and 21 – Gr II, Cat. 2 G/D		

Mounting the valve at the end of a line on request

Pressure and temperature limits of application are dependent of the working conditions

Dimensions

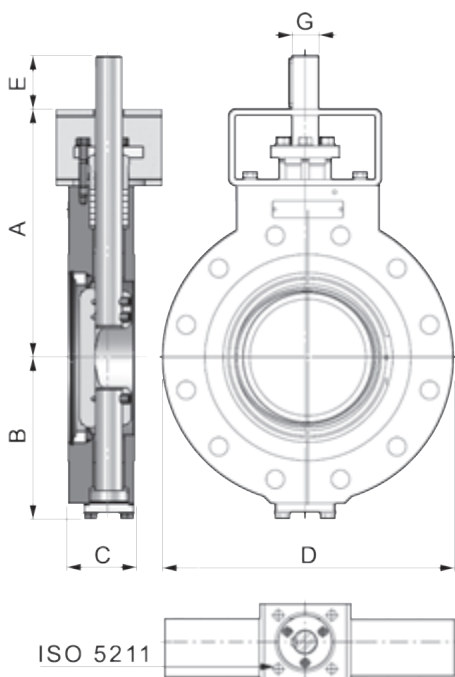
TITANIA T1 Wafer



DN	A	B	C	Dmax	E	G	ISO 5211	[kg]					
								PN10	PN16	cl.150	PN25	PN40	cl.300
80	200	119	64	138	35	16	F05-07	11,6	11,6	11	11,6	11,6	11
100	225	143	64	160	45	20	F05-07	16,5	16,5	16,5	16,5	16,5	16,5
125	250	143	70	190	45	20	F05-07	24	24	24	24	24	24
150	295	175	76	216	55	25	F07-10-12-14	31	31	31	31	31	31
200	325	210	89	285	70	35	F07-10-12-14	47,7	47,7	47,7	49,4	51,1	47,7
250	360	247	114	345	75	40	F10-12-14-16	73	73	73	75,5	79,2	73
300	400	287	114	410	80	45	F10-12-14-16	90,3	92	92	98	104,5	92
350	445	322	127	465	85	50	F14-16-25	134,5	138,7	126,2	145	153,3	126,2
400	530	355	140	535	90	60	F16-25-30	186	190	180	198	214	180
450	565	393	152	560	100	65	F25-30	240	255	240	255	264	240
500	652	427	152	615	115	75	F25-30	296	321	296	326	326	296
600	726	502	178	736	130	85	F25-30-35	472	520	472	513	534	472
700	860	574	229	797	150	100	F30-35-40	592	592	592	592	592	592
800	865	646	241	905	115*	75*	F30	858	858				
900	990	710	241	1005	115*	75*	F30-35	1080	1080				
1000	1078	772	300	1117	150*	100*	F30-35	1342	1342				
1200	1243	920	254	1330	165*	110*	F30-40	1675	1675				

\* PN10/16

TITANIA T3 Lug

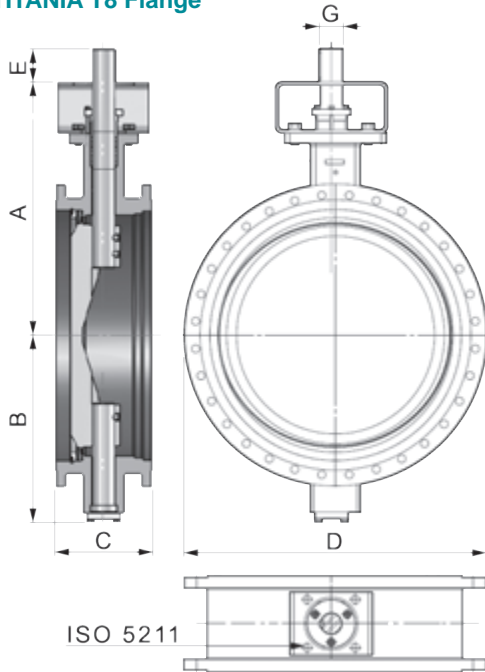


DN	A	B	C	Dmax	E	G	ISO 5211	[kg]					
								PN10	PN16	cl.150	PN25	PN40	cl.300
80	200	119	64	210	35	16	F05-07	15	15	14	15	15	15
100	225	143	64	254	45	20	F05-07	20	20	21	21	21	23
125	250	143	70	279	45	20	F05-07	29	29	29	31	31	32
150	295	175	76	318	55	25	F07-10-12-14	40	40	39	43	43	46
200	325	210	89	381	70	35	F07-10-12-14	63	63	63	68	72	73
250	360	247	114	450	75	40	F10-12-14-16	98	101	101	108	119	117
300	400	287	114	521	80	45	F10-12-14-16	121	126	137	137	154	156
350	445	322	127	582	85	50	F14-16-25	176	185	194	208	226	226
400	530	355	140	660	90	60	F16-25-30	245	256	273	287	316	316
450	565	393	152	711	100	65	F25-30	312	337	337	367	383	410
500	652	427	152	775	115	75	F25-30	379	429	409	446	475	497
600	726	502	178	914	130	85	F25-30-35	594	692	642	692	764	802
700	860	574	229	1035	150	100	F30-35-40	800	800	800	800	800	800
800	865	646	241	1150*	115*	75*	F30	1100	1100				
900	990	710	241	1185*	115*	75*	F30-35	1450	1450				
1000	1078	772	300	1117	150*	100*	F30-35	1800	1800				
1200	1243	920	254	1485	165*	110*	F30-40	2178	2178				

\* PN10/16

## Dimensions

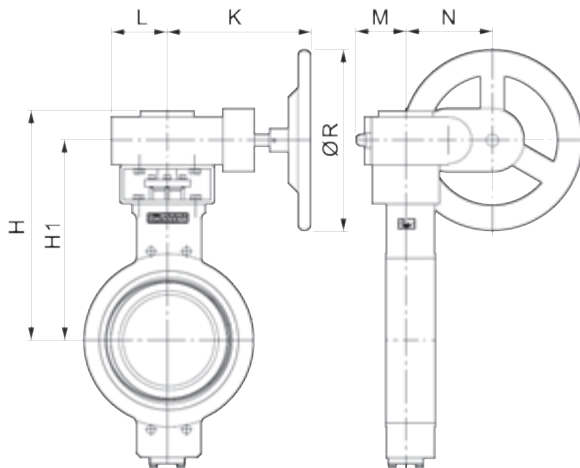
### TITANIA T8 Flange



DN	A	B	C	Dmax	E	G	ISO 5211	[kg]	
								PN10/16/25/cl.150	PN40/cl.300
80	200	119	114	210	35	16	F05-07	-	16
100	225	143	127	254	45	20	F05-07	-	25
125	250	143	140	279	45	20	F05-07	-	39
150	295	175	140	318	55	25	F07-10-12-14	-	58
200	325	210	152	381	70	35	F07-10-12-14	68	86
250	360	247	165	450	75	40	F10-12-14-16	97	127
300	400	287	178	521	80	45	F10-12-14-16	131	176
350	445	322	190	584	85	50	F14-16-25	178	235
400	530	355	216	660	90	60	F16-25-30	258	337
450	565	393	222	711	100	65	F25-30	300	400
500	652	427	229	775	115	75	F25-30	420	522
600	726	502	267	914	130	85	F25-30-35	639	820
700	860	574	292	1035	150	100	F30-35-40	784	1029
800	865	646	318	1149	115*	75*	F30	1024	1344
900	990	710	330	1270	115*	75*	F30-35	1437	1844
1000	1078	772	410	1320	150*	100*	F30-35	1850	-
1200	1243	919	470	1485	165*	110*	F30-40	2226	-
1400	1409	1066	530	1685	185*	126*	F40	3091	-

\* PN10/16

### Gearbox:



DN	bar		ØR	H	H1	K	L	M	N	T1[kg]	T3[kg]	T8[kg]
80	50	GB210	200	260	227	187	51	51	45	14,8	18,8	20
100	50	GB210	200	285	252	187	51	51	45	19,7	26,2	29
125	50	GB210	200	310	277	187	51	51	45	27,5	35,5	43
150	25	GB210	200	355	322	187	51	51	45	34,8	46,8	62
	50	GB550	250	384	336	238	69	83	71	37,8	49,8	67
200	10	GB550	200	414	366	238	69	83	71	56,5	71,5	77
	25	GB550	300	414	366	238	69	83	71	56,5	75,5	77
250	25	GB880	500	417	367	226	100	101	86	62,0	87,0	101
	10	GB880	250	452	402	226	100	101	86	87,5	115	112
300	25	GB880	400	452	402	226	100	101	86	89,5	122	112
	50	GB1250	700	461	408	330	110	110	105	95,5	139	149
350	10	GB1250	300	501	448	330	110	110	105	113	147	153
	25	GB1250	600	501	448	330	110	110	105	120	159	153
400	10	GB1950	800	525	455	375	143	143	130	124	188	209
	25	GB1250	400	546	493	330	110	110	105	158	203	200
450	25	GB1250	800	546	493	330	110	110	105	168	230	200
	50	GB1950/SP4	400	556	500	405	143	143	211	213	286	295
500	10	GB1950	500	655	585	375	143	143	130	219	284	290
	25	GB1950	800	655	585	375	143	143	130	231	319	290
550	50	GB6800	800	690	589	400	185	170	182	237	372	393
	10	GB1950/SP4	200	720	620	405	143	143	211	300	372	350
600	25	GB1950/SP4	400	720	620	405	143	143	211	315	427	350
	50	GB6800/SP4	500	724	624	488	185	170	263	311	480	480
650	10	GB1950/SP4	300	807	707	405	143	143	211	356	439	480
	25	GB6800/SP4	400	811	711	488	185	170	263	397	516	490
700	50	GBA250/SP9	300	826	737	599	255	235	431	522	722	747
	10	GB6800/SP4	250	885	785	488	185	170	263	543	714	709
800	25	GB6800/SP4	600	885	785	488	185	170	263	584	762	709
	50	GBA250/SP9	500	900	811	599	255	235	431	698	965	1045

## Further documentation

Pneumatic actuators, Electric actuators, Accessories according separate data sheets.

Installation guide, Maintenance guide, Flanges: Please consult these guides for the installation and maintenance of our butterfly valves.

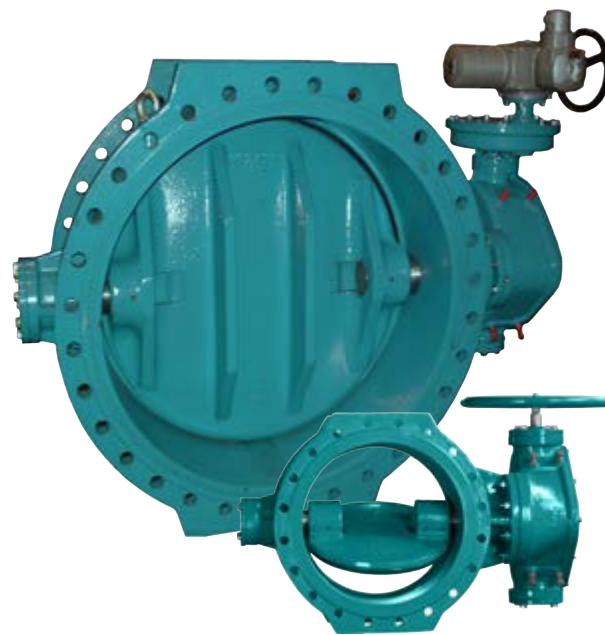
# LYSITHEA - Double eccentric butterfly valve DN400-2200 (3000)

## Description

The LYSITHEA is a double eccentric butterfly valve for all kind of water and other non aggressive fluids.

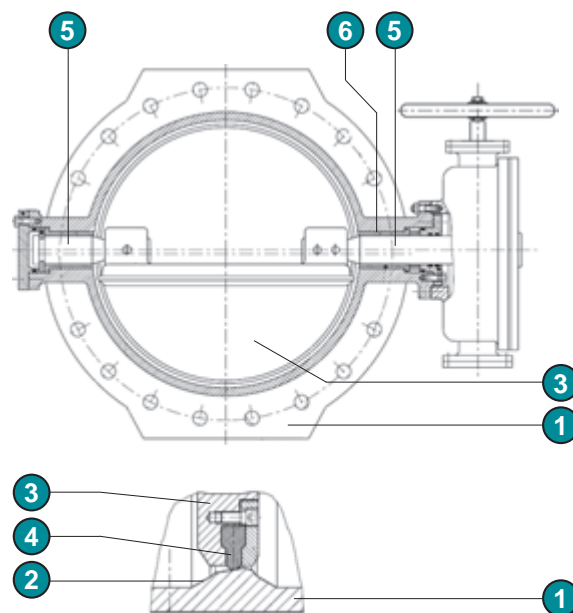
## Product features

	PN10/16	PN25	PN40
• Diameters	DN 400 - 2200 (DN 2400 - 3000 on request)	DN400-800 (DN 900 - 1200 on request)	DN400-800
• Face to face dimension	acc. to ISO 5752 series 14 (EN 558-1 series 14, DIN 3202 F4)	acc. to ISO 5752 series 14 (EN 558-1 series 14, DIN 3202 F4)	acc. to ISO 5752 series 15 (EN 558-1 series 15, DIN 3202 F5)
• Max. working pressure	10/16 bar	25 bar <70°C 16 bar <200°C	40 bar <70°C 25 bar <200°C
• Rating	PN10, PN16, ANSI cl.150	PN25, ANSI cl.300	PN40, ANSI cl.300
• Top flange	according to EN ISO 5211		
• Temperature range	90°C (EPDM), 200°C (FPM)		



## Material specification

Item	Description	Material	
1+3	Body + Disc	PN10/16/25	EN-GJS-400-15, GGG40
		PN40	S235JR, St37.2
2	Body seat surface	CrNi-Plasma	
4	Seat	EPDM, FPM	
5	Shaft	X20Cr13, 1.4021	
6	Bearing bush	CC480K, CuSn10	



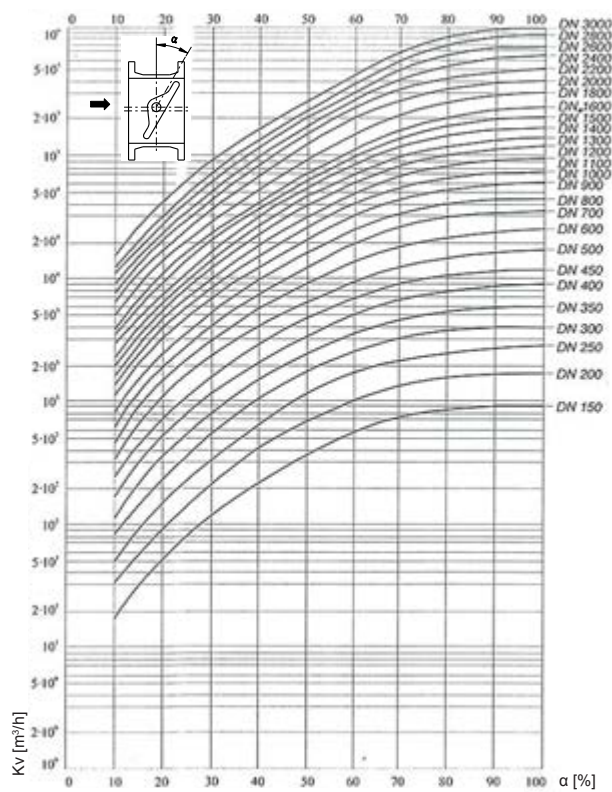
## Torques [Nm]

DN ->	400	450	500	600	700	800	900	1000	1100	1200	1400	1600	1800	2000	2200
PN10	1471	1872	2593	3907	5498	7926	10148	13467	17274	21797	32306	46829	64084	87231	112637
PN16	2148	2736	3800	5734	8054	11680	14939	19876	26935	32159	47681	69017	106340	140397	181990
PN25	3200	4600	5800	9500	14400	24000									
PN40	4950	6710	9240	15730	23980	38170									

# LYSITHEA - Double eccentric butterfly valve DN400-2200 (3000)

## Kv values [m³/h]

DN	PN10	PN16	PN25	PN40
400	12000	10700	8320	6240
450	16000	13500	10500	8060
500	20600	16700	13000	9950
600	29700	24100	18700	14300
700	40400	32800	25500	20600
800	52800	42800	33300	27600
900	66900	55000		
1000	82500	67900		
1100	99900	86300		
1200	119000	103500		
1400	162000	140300		
1600	211000	183500		
1800	280000	246600		
2000	354000	308000		
2200	440000	383000		



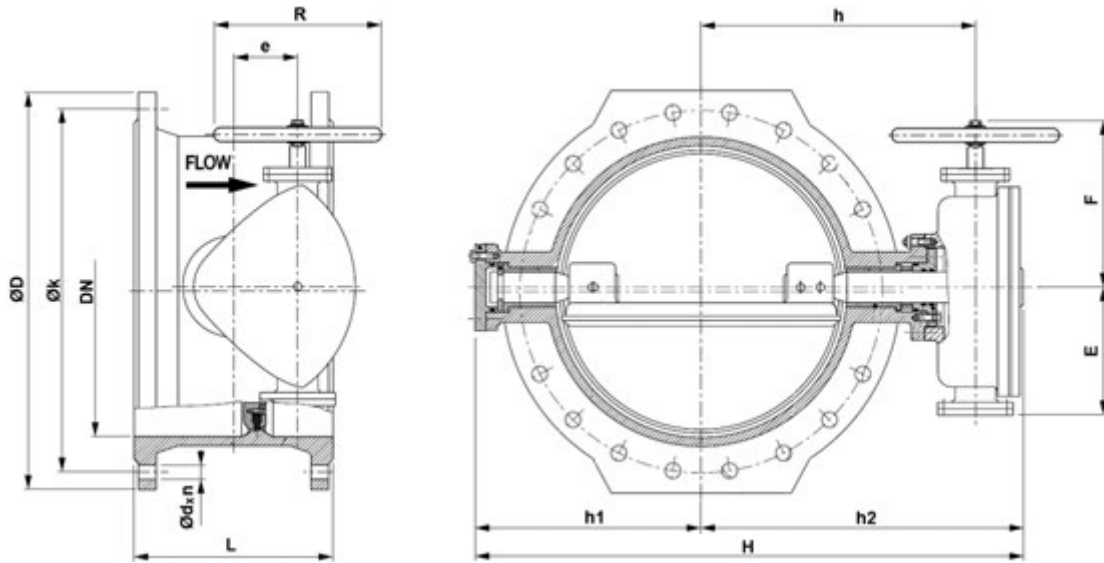
## Type code

<b>L6M</b>	<b>1000</b>	<b>3</b>	<b>3</b>	<b>- 2AR</b>	<b>4A</b>	<b>2AR</b>	<b>E</b>
<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>	<b>8</b>

<b>1</b> Type	<b>L6M</b>	Double eccentric butterfly valve LYSITHEA	
<b>2</b> Nominal diameter	<b>0400 - 2200</b>	mm	
<b>3</b> Working pressure	<b>2</b>	10 bar	DN400-2200
	<b>3</b>	16 bar	DN400-2200
	<b>5</b>	25 bar	DN400-800
	<b>6</b>	40 bar	DN400-800
<b>4</b> Rating	<b>2</b>	PN10	DN400-2200
	<b>3</b>	PN16	DN400-2200
	<b>5</b>	PN25	DN400-800
	<b>6</b>	PN40	DN400-800
<b>5</b> Body material	<b>2AR</b>	GGG40 / EN-GJS-400-15 (Resicoat 250 µm) / PN10/16/25	
	<b>2AV</b>	GGG40 / EN-GJS-400-15 / EPDM lined (with WRAS approval) / PN10/16/25	
	<b>3CR</b>	S235JR, St37.2, 1.0037 (Resicoat 250 µm) / PN40	
<b>6</b> Shaft	<b>4A</b>	X20Cr13 / 1.4021 / AISI 420	
<b>7</b> Disc	<b>2AR</b>	GGG40 / EN-GJS-400-15 / GGG 40 (Resicoat 250 µm)	PN10/16/25
	<b>2AV</b>	GGG40 / EN-GJS-400-15 / GGG 40 EPDM lined (with ACS approval)	PN10/16/25
	<b>3CR</b>	S235JR, St37.2, 1.0037 (Resicoat 250 µm)	PN40
	<b>4C0</b>	Stainless steel 1.4408 / AISI 316	PN10/16/25
<b>8</b> Seat	<b>E</b>	EPDM (with WRAS approval)	
	<b>V</b>	FPM	

Other executions on request (DN2400-3000, other materials for body, disc and seat)

Dimensions PN10/16/25



PN10	DN	L	D PN10	k x n x d PN10	E	F	e	h	h <sub>1</sub>	h <sub>2</sub>	H	R	ISO 5211	n *	kg PN10
	400	310	565	515x16x28	200	250	85	433	345	550	895	320	F12	28	228
	450	330	615	565x20x28	200	250	85	458	375	560	935	320	F14	28	285
	500	350	670	620x20x28	295	390	145	537	445	680	1125	500	F14	36	415
	600	390	780	725x20x31	295	390	145	597	515	745	1260	500	F16	36	566
	700	430	895	840x24x31	430	540	230	632	525	807	1332	640	F25	50	730
	800	470	1015	950x24x34	430	540	230	750	655	937	1592	640	F25	50	1020
	900	510	1115	1050x28x34	430	540	230	799	710	987	1697	640	F30	50	1350
	1000	550	1230	1160x28x37	430	540	230	865	760	1052	1812	640	F30	50	1790
	1100	590	1340	1270x32x37	430	540	230	765	810	1100	1910	640	F30	50	1920
	1200	630	1455	1380x32x41	430	540	230	810	855	1142	1997	640	F30	50	2070
	1400	710	1675	1590x36x44	375	830	400	983	975	1252	2227	640	F30	268	3600
	1600	790	1915	1820x40x50	375	830	400	1280	1100	1392	2492	640	F35	268	4700
1800	870	2115	2020x44x50	375	830	400	1490	1280	1572	2852	640	F40	268	5600	
2000	950	2325	2230x48x50	330	785	440	1590	1390	1750	3140	640	F48	300	9200	
2200	1030	2550	2440x52x56	330	785	440	1700	1490	1850	3340	640	F60	300	11500	

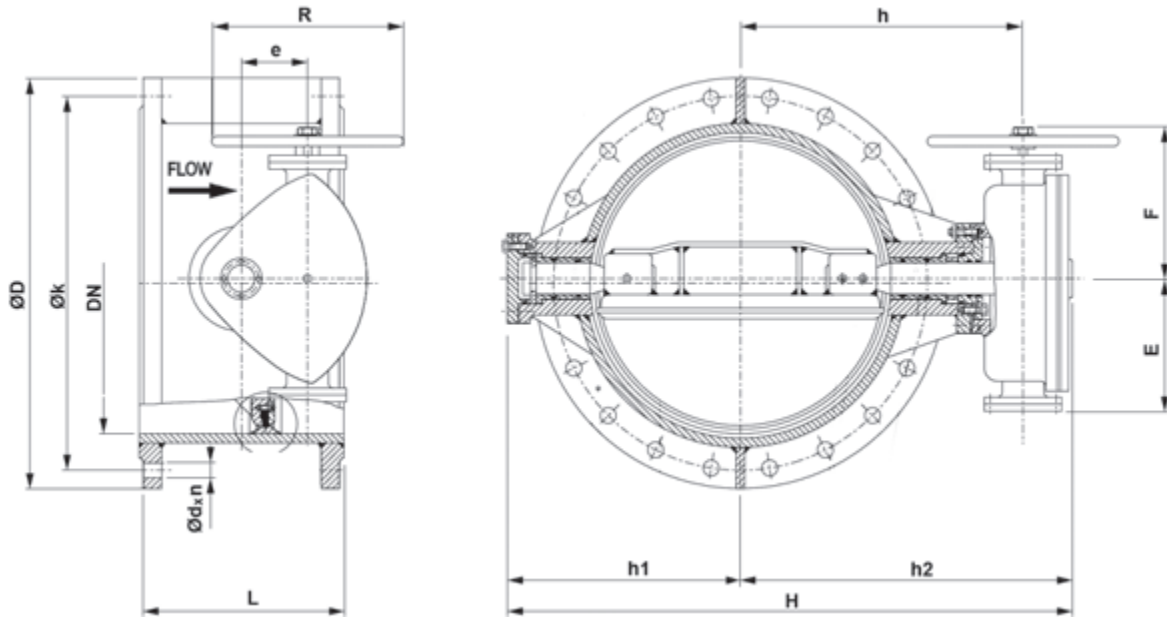
PN16	DN	L	D PN16	k x n x d PN16	E	F	e	h	h <sub>1</sub>	h <sub>2</sub>	H	R	ISO 5211	n *	kg PN16
	400	310	580	525x16x31	200	250	85	433	345	550	895	320	F12	28	251
	450	330	640	585x20x31	200	250	85	458	375	560	935	320	F14	28	314
	500	350	715	650x20x34	295	390	145	537	445	680	1125	500	F14	36	457
	600	390	840	770x20x37	295	390	145	597	515	745	1260	500	F16	36	623
	700	430	910	840x24x37	430	540	230	632	525	807	1332	640	F25	50	803
	800	470	1025	940x24x41	430	540	230	750	655	937	1592	640	F25	50	1122
	900	510	1125	1050x28x41	430	540	230	799	710	987	1697	640	F30	50	1485
	1000	550	1255	1170x28x44	430	540	230	865	760	1052	1812	640	F30	50	1969
	1100	590	1355	1270x32x44	430	540	230	765	810	1100	1910	640	F30	50	2112
	1200	630	1485	1390x32x50	430	540	230	810	855	1142	1997	640	F30	50	2277
	1400	710	1685	1590x36x50	375	830	400	983	975	1252	2227	640	F30	268	3960
	1600	790	1930	1820x40x57	375	830	400	1280	1100	1392	2492	640	F35	268	5170
1800	870	2130	2020x44x57	375	830	400	1490	1280	1572	2852	640	F40	268	6160	
2000	950	2345	2230x48x62	330	785	440	1590	1390	1750	3140	640	F48	300	10120	
2200	1030	2555	2440x52x62	330	785	440	1700	1490	1850	3340	640	F60	300	12650	

PN25	DN	L	D PN25	k x n x d PN25	E	F	e	h	h <sub>1</sub>	h <sub>2</sub>	H	R	ISO 5211	n *	kg PN25
	400	310	620	550x16x37	200	250	85	433	345	550	895	320	F12	28	228
	450	330	685	600x20x37	200	250	85	458	375	560	935	320	F14	28	285
	500	350	730	660x20x37	295	390	145	537	445	680	1125	500	F14	36	415
	600	390	845	770x20x41	295	390	145	597	515	745	1260	500	F16	36	566
	700	430	960	875x24x44	430	540	230	632	525	807	1332	640	F25	50	730
800	470	1085	990x24x50	430	540	230	750	655	937	1592	640	F25	50	1020	

\* n = Handwheel turns ON/OFF



Dimensions PN40



PN40	DN	L	D PN40	k x n x d PN40	E	F	e	h	h <sub>1</sub>	h <sub>2</sub>	H	R	ISO 5211	n *	kg PN25
	400	600	660	585x16x41	200	250	85	433	345	550	895	320	F12	36	600
	450	650	685	610x20x41	200	250	85	458	375	560	935	320	F14	36	680
	500	700	755	670x20x45	295	390	145	537	445	680	1125	500	F14	50	790
	600	800	890	795x20x50	295	390	145	597	515	745	1260	500	F16	50	1210
	700	900	995	900x24x50	430	540	230	632	525	807	1332	640	F25	50	1680
800	1000	1140	1030x24x57	430	540	230	750	655	937	1592	640	F25	50	2340	

## Description

ON-OFF and regulating service of gas and air flow for:

- Cogeneration and incineration plants
- Steel and cement works
- Air treatment
- Thermal combustion plants
- System for energy recovery from waste
- Power plants
- Pulp and paper industry
- Chemical and petrochemical plants
- Furnaces
- Marine industry

## Technical Data

Metal seal valve with controlled leakage to intercept or regulate the flow of fumes and air with working temperatures of up to 600°C (higher temperatures on request)

Leakage classes are in compliance with EN1349 and ANSI B16.104

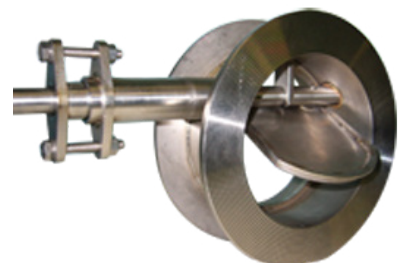
Shaft seal is guaranteed by the PTFE or graphite (for use with higher temperatures) braid packing

- Max working temperature 600°C
- Max working pressure 2 bar
- WAFER or FLANGED version for flanges EN 1092-1 PN6-10-16 and ANSI B 16.5 class 150
- Standard series DN 50 – DN 2000 (others available on request)
- Max leakage class: III =  $10^{-3}$  x nominal valve capacity (EN1349)
- Manual operation with lever or gear
- Automatic operation with pneumatic or electrical actuator
- Proportional control valve with electro-pneumatic positioner with input signal 4-20 mA

## Material

Carbon steel (S275 JR, ASTM A 516, COR-TEN) with Epoxy coating and coating resistant up to 600°C, stainless steel AISI 304, 316, 321, 309 or 310

All valves are available in different versions according to the needs of our costumers.



## Butterfly Damper Valve

Metal-to-metal seal butterfly valve with controlled leakage to intercept or regulate the flow of fumes and air with working temperatures of **up to 300°C**

Versions: wafer and flanged (double flanged)

Metal-to-metal seal butterfly valve with controlled leakage to intercept or regulate the flow of fumes and air with working temperatures of **up to 600°C**

Versions: wafer and flanged (double flanged)

Metal-to-metal seal butterfly valve with controlled leakage to intercept or regulate the flow of fumes and air with working temperatures of **up to 1100°C**

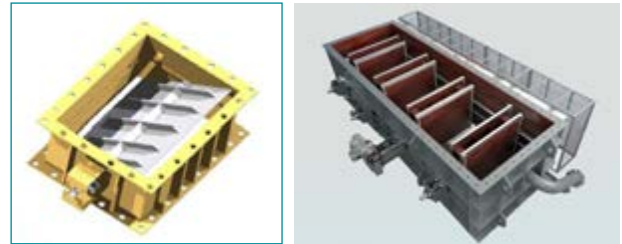
Versions: wafer and flanged (double flanged)



## Louvre Damper

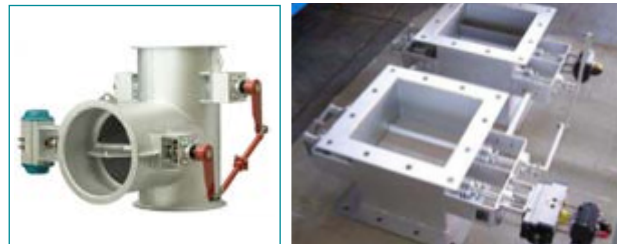
Rectangular or square section flanged damper to intercept or regulate air, fumes or gas at high temperatures ( T<sub>max</sub> 900°C). Standard or customer's own dimensions

Single- and Multi-Louvre version



## By pass system (Diverter Damper)

Diverter damper to direct fumes or gas (T<sub>max</sub> 800°C)  
3-way valve. Takes up significantly less plant space than traditional systems.



## Check Valve for air lines

Check valve for air lines with counterweight or lever rectangular section flanged connection.  
Carbon steel, Cor-Ten, 304SS, 316SS. Others available on request



# BVE - Ball valve (stainless steel) 1/4"-4"

## Description

**BVE22** Stainless steel ball valve PN63 with two-piece body, full bore with hand lever

**BVA22** Stainless steel ball valve PN63 with two-piece body, full bore, top flange for mounting of actuator

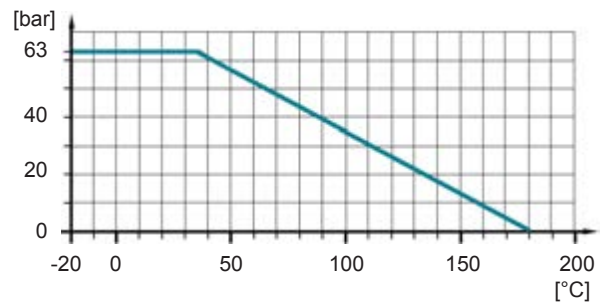
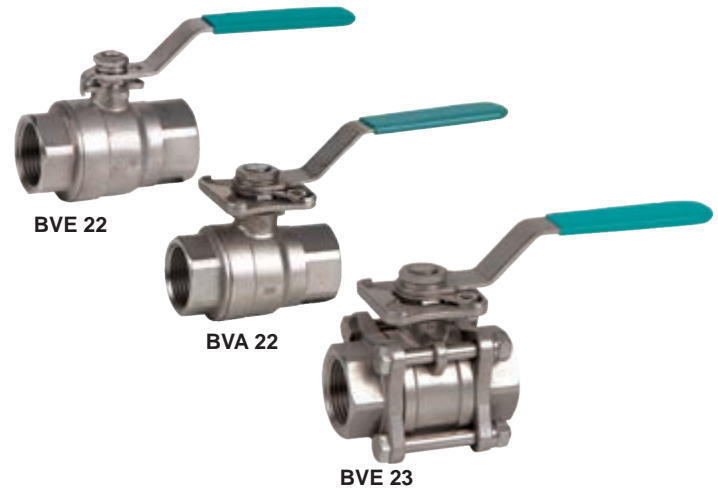
**BVE23** Stainless steel ball valve PN63 with 3-piece body, full bore, top flange for mounting of actuator

## Product features

- Connection BVE22 Thread  
BVA22 Thread  
BVE23 Thread / welding ends
- Max. working pressure 63 bar
- Temperature range BVE22: -20°C ÷ 180°C, BVE23: -20°C ÷ 200°C

## Pressure / temperature diagram

BVE23/BVA22: For temperatures >100°C a mounting bracket with adapter is mounted between ball valve and actuator.



## Type code

**BVE 22 FT . 014 . SST**  
 ① ② ③ ④ ⑤

① Type	<b>BVE</b>	ball valve with handlever	
② Construction	<b>22</b>	2/2 ways, two-piece body	
③ Bore, connection	<b>F</b>	full bore	
	<b>T</b>	threaded connection DIN EN 10226-1 (DIN 2999)	
④ Size	<b>014-300</b>	1/4" - 3"	
⑤ Materials	<b>S</b>	Body stainless steel	AISI 316 (CF8M)
	<b>S</b>	Ball stainless steel	AISI 316 (CF8M)
	<b>T</b>	Seat ring	PTFE +15% glass fibre

**BVA 22 FT . 014 . SST**  
 ① ② ③ ④ ⑤

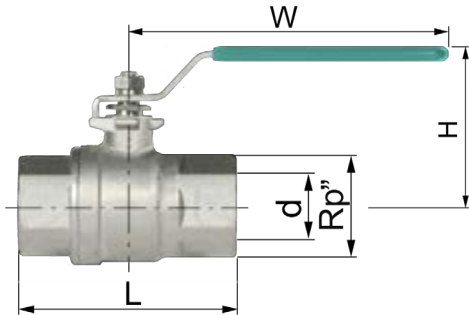
① Type	<b>BVA</b>	Ball valve with top flange	
② Construction	<b>22</b>	2/2 ways, two-piece body	
③ Bore, connection	<b>F</b>	Full bore	
	<b>T</b>	Threaded ends DIN EN 10226-1 (DIN 2999)	
④ Size	<b>014-200</b>	1/4" - 2"	
⑤ Materials	<b>S</b>	Body stainless steel	AISI 316 (CF8M)
	<b>S</b>	Ball stainless steel	AISI 316 (CF8M)
	<b>T</b>	Seat ring	PTFE +15% glass fibre

**BVE 23 F T . 014 . SST**  
 ① ② ③ ④ ⑤ ⑥

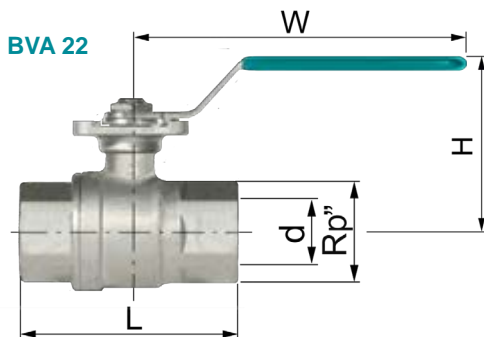
① Type	<b>BVE</b>	Ball valve with top flange	
② Construction	<b>23</b>	2/2 ways, 3-piece body	
③ Bore	<b>F</b>	Full bore	
④ Connection	<b>T</b>	Threaded ends DIN EN 10226-1 (DIN 2999)	
	<b>B</b>	Butt weld ends ANSI B16.25	
	<b>S</b>	Socket weld ends ANSI B16.11	
⑤ Size	<b>014-400</b>	1/4" - 4"	
⑥ Materials	<b>S</b>	Body stainless steel	AISI 316 (CF8M)
	<b>S</b>	Ball stainless steel	AISI 316 (CF8M)
	<b>T</b>	Seat ring	PTFE +15% glass fibre

## Dimensions

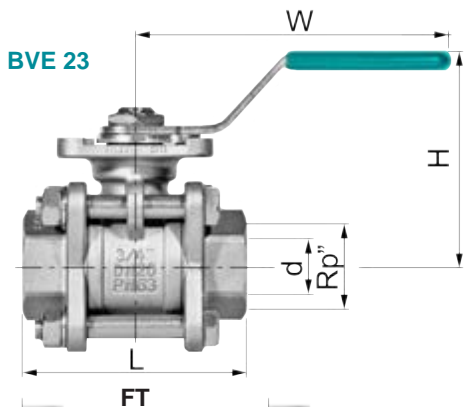
### BVE 22



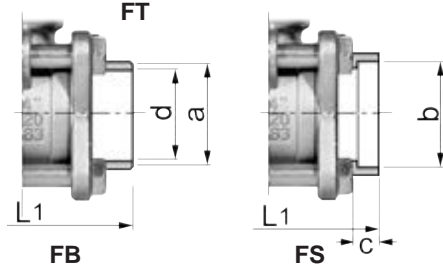
Rp''	d	L	H	W	kv[m <sup>3</sup> /h]	[kg]
1/4	11,0	50	50	104	6	0,21
3/8	12,7	50	50	104	10	0,20
1/2	15,0	55	51,5	104	24	0,24
3/4	20,6	70	62	122	43	0,44
1	25,4	83	65	122	83	0,61
1 1/4	31,8	91	82	180	130	1,08
1 1/2	38,1	103	88	205	205	1,54
2	50,8	120	106	219	340	2,65
2 1/2	65,0	152	119	240	520	4,71
3	80,0	172	135	275	1100	7,29



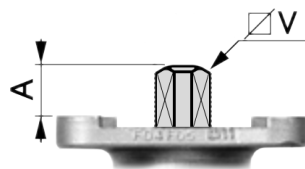
Rp''	d	L	H	W	ISO 5211	kv[m <sup>3</sup> /h]	[kg]
1/4	11,0	50	62	112	F03	6	0.30
3/8	12,7	50	62	112	F03	10	0.30
1/2	15,0	55	63	112	F04	24	0.35
3/4	20,6	70.5	70	138	F04/F05	43	0.56
1	25,4	83	70	138	F04/F05	83	0.78
1 1/4	31,8	91	88	160	F05/F07	130	1.35
1 1/2	38,1	103	94	205	F05/F07	205	1.90
2	50,8	120	100	205	F05/F07	340	2.83



Rp''	d	L	L1	H	W	a	b	c	FT [kg]	FB [kg]	FS [kg]	kv[m <sup>3</sup> /h]
1/4	11	47,6	47,6	60	112	13	14,1	10	0,39	0,37	0,38	6
3/8	12,7	47,6	47,6	60	112	14,7	17,6	10	0,38	0,37	0,38	10
1/2	15	56	55	60	112	17	21,7	10	0,44	0,44	0,44	24
3/4	20	73	73	70	138	22	27,1	14	0,82	0,81	0,82	43
1	25	82	81	70	138	28	33,8	14	1,02	0,99	1,02	83
1 1/4	32	91	91	88	160	35	42,6	15	1,79	1,77	1,78	130
1 1/2	40	104	103	94	205	43	48,7	15	2,46	2,35	2,47	205
2	50	120	120	100	205	54	61,1	19	3,47	3,28	3,40	340
2 1/2	65	155	155	150	330	69	73,8	21	8,50	8,55	8,80	520
3	80	182	182	165	330	87	89,8	24	12,40	11,85	12,35	1100
4	100	220	229	175	340	105	115,5	35	19,65	20,30	19,60	1820



### BVA22 / BVE23



Rp''	A	V	ISO 5211
1/4	10	9	F03
3/8	10	9	F03
1/2	11	9	F03/F04
3/4	11	11	F04/F05
1	11	11	F04/F05
1 1/4	15	14	F05/F07
1 1/2	15	14	F05/F07
2	15	14	F05/F07
2 1/2	19	17	F07/F10
3	19	17	F07/F10
4	19	17	F07/F10

# BVH22 - Ball valve (stainless steel, 2-piece body) Rp ¼" - 2"

## Description

Stainless steel ball valve PN63 with two-piece body, full bore with hand lever

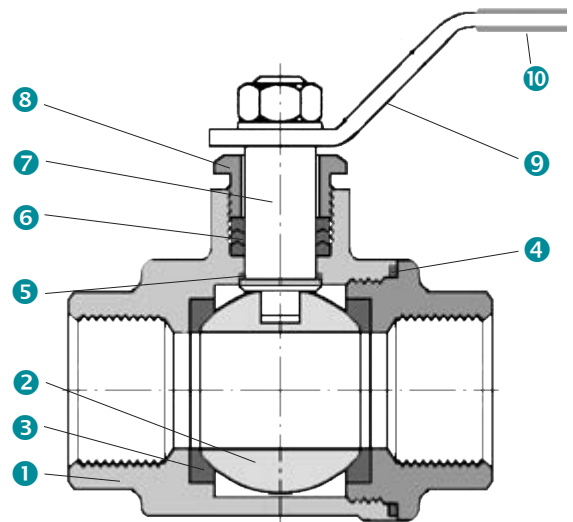
## Product features

- Connection DIN EN 10226-1 (DIN 2999)
  - Max. working pressure 63 bar
  - Temperature range -20°C ÷ 200°C, Versions for lower temperatures on request
- The ball valves BVH22 meet the safety requirements of the pressure Equipments Directive 97/23/EC (PED) appendix 1 for fluids of the groups 1 and 2.

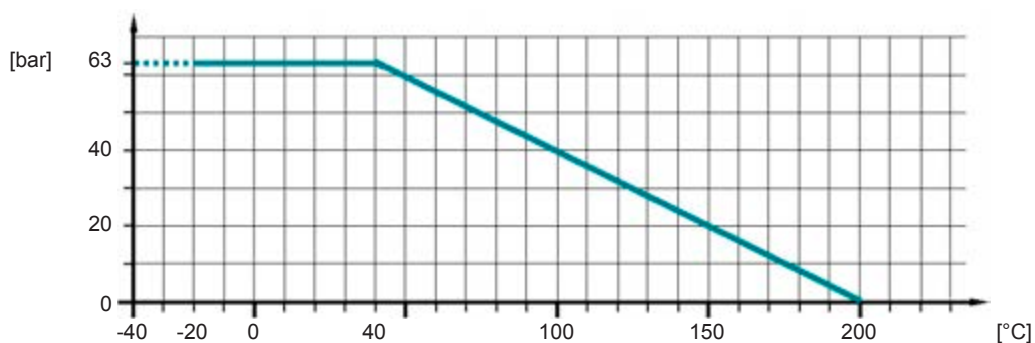


## Construction

1	Two-piece body	CF8M (1.4408)
2	Ball	AISI 316 (1.4401)
3	Seat ring	PTFE + 15% GF
4	Seal ring	PTFE
5	Washer	PTFE
6	Stem seal	PTFE
7	Stem	AISI 316 (1.4401)
8	Gland nut	AISI 304 (1.4301)
9	Locking pad (option)	AISI 304 (1.4301)
10	Handle cover by plastic	AISI 304 (1.4301)



## Pressure / temperature diagram



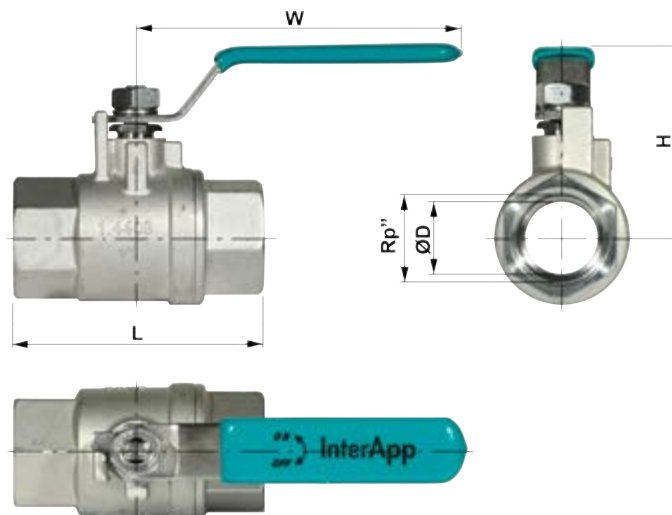
# BVH22 - Ball valve (stainless steel, 2-piece body) Rp ¼" - 2"

## Type code

BVH	22	FT	014	SST
①	②	③	④	⑤

① Type	BVH	ball valve with handlever	
② Construction	22	2/2 ways, two-piece body	
③ Bore, connection	F	full bore	
	T	threaded connection	
④ Size	014-	Rp 1/4" -	
	200	Rp 2"	
⑤ Materials	S	Body stainless steel	CF8M (1.4408)
	S	Ball stainless steel	AISI 316 (1.4401)
	T	Seat ring	PTFE + 15% GF

## Dimensions



Rp"	DN	ØD	L	H	W	kv[m³/h]	[kg]
¼	10	11,5	50	57	96	6	0,25
⅜	12	12,5	60	57	96	9	0,25
½	15	15,0	75	57	96	19	0,4
¾	20	20,0	80	63	110	46	0,5
1	25	25,4	90	70	113	72	0,9
1¼	32	32,0	110	75	132	105	1,6
1½	40	38,0	120	93	156	170	2,3
2	50	50,0	140	100	156	275	3,6

# BVH23 - Ball valve (stainless steel, 3-piece body) 1/4" - 4"

## Description

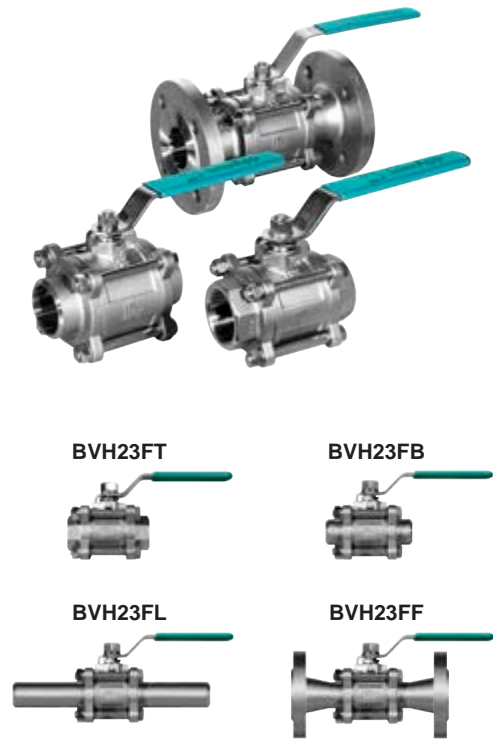
Stainless steel ball valve with 3-piece body, full bore with handlever

## Product features

- Connection (Face to face dimension)
  - BVH23FT threaded ends DIN EN 10226-1 Rp $\frac{1}{4}$ " - 4" (DIN 3202-M3)
  - BVH23FB buttweld ends DN10-100 (DIN 3202-S13)
  - BVH23FL buttweld ends long DN15-100
  - BVH23FF flanged ends PN40 DN15-100 (DIN 3202-F1)
- Max. working pressure 63 bar (BVH23FF 40bar)
- Temperature range -10°C + 230°C, Versions for lower temperatures on request

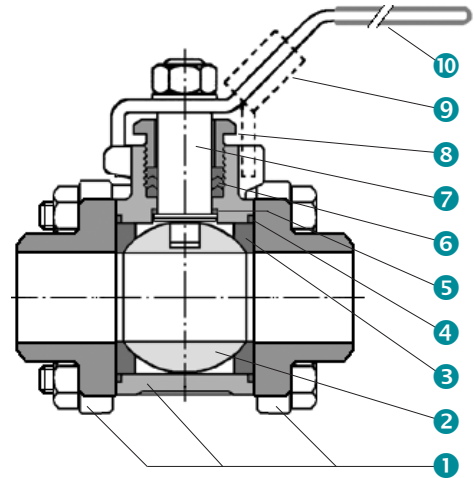


The ball valves BVH23 meet the safety requirements of the pressure Equipments Directive 97/23/EC (PED) appendix 1 for fluids of the groups 1 and 2.

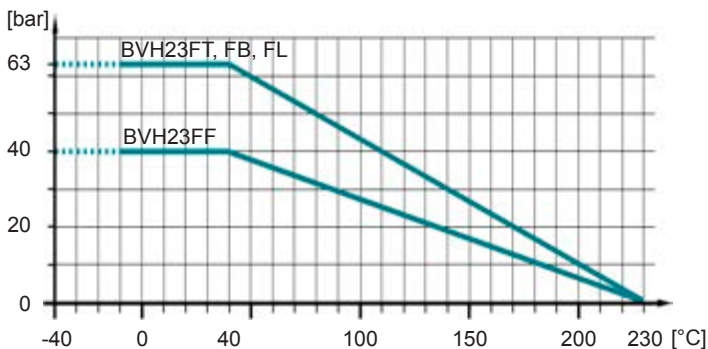


## Construction

1	3-piece body	CF8M (1.4408)
2	Ball	AISI 316 (1.4401)
3	Seat ring white (standard)	PTFE + 15% GF
	Seat ring black (for steam)	PTFE-C, 25% Carbon
4	Seal ring	PTFE
5	Washer	PTFE
6	Stem seal	PTFE
7	Stem	AISI 316 (1.4401)
8	Gland nut	AISI 304 (1.4301)
9	Locking pad (option)	AISI 304 (1.4301)
10	Handle cover by plastic	AISI 304 (1.4301)



## Pressure / temperature diagram



For applications with steam:  
 - use seat ring „S“ PTFE-C, 25% Carbon  
 -  $t_{max} = 160^{\circ}\text{C}$ ,  $p_{max} = 6 \text{ bar}$



# BVH23 - Ball valve (stainless steel, 3-piece body) 1/4" - 4"

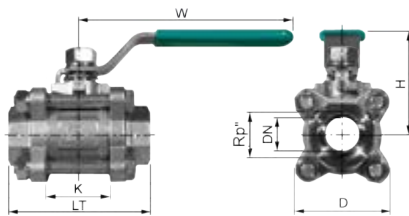
## Type code

BVH	23	F	T	. 014	. SS	T
①	②	③	④	⑤	⑥	⑦

① Type	BVH	Ball valve with handlever
② Construction	23	2/2 ways, 3-piece body
③ Bore	F	Full bore
④ Connection	T	Threaded ends DIN EN 10226-1 (DIN 2999)
	B	Buttweld ends ≈ according to DIN EN 12627
	L	Buttweld ends long ≈ according to DIN EN 12627
	F	Flanged ends PN40
⑤ Size	014-400	Rp 1/4" - 4"
	015-100	DN15-100 (BVH23FF)
⑥ Materials body / ball	S	Body stainless steel CF8M (1.4408)
	S	Ball stainless steel AISI 316 (1.4401)
⑦ Materials seat ring	T	Seat ring white (standard) PTFE + 15% GF
	S	Seat ring grey (for steam tmax = 160°C, pmax = 5 bar) PTFE-C, 25% Carbon

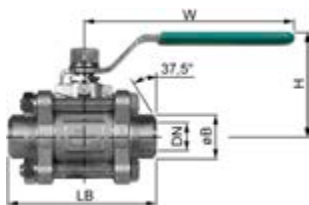
## Dimensions

### BVH23FT



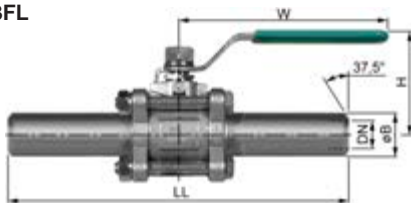
	Rp"	DN	LT	K	H	D	W	k <sub>v</sub> [m³/h]	kg
BVH23FT.014.SST	¼	10	60	21	55	48.5	95	8,6	0,35
BVH23FT.038.SST	¾	12	60	21	55	48.5	95	21	0,40
BVH23FT.012.SST	½	15	75	26	64	48.5	125	35	0,65
BVH23FT.034.SST	¾	20	80	33	67	53.5	125	46	0,80
BVH23FT.100.SST	1	25	90	39	83	60.5	140	72	1,20
BVH23FT.114.SST	1¼	32	110	51	89	72	140	105	1,95
BVH23FT.112.SST	1½	40	120	58	100	81.5	200	170	2,75
BVH23FT.200.SST	2	50	140	71	108	99.5	200	275	4,50
BVH23FT.212.SST	2½	65	185	77	150	126	250	507	8,90
BVH23FT.300.SST	3	80	205	105	161	191	250	905	12,9
BVH23FT.400.SST	4	100	240	130	180	223	290	1414	22,5

### BVH23FB



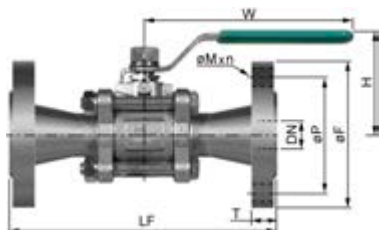
	Rp"	DN	øB	LB	H	W	k <sub>v</sub> [m³/h]	kg
BVH23FB.014.SST	¼	10	20	70	55	95	8,6	0,35
BVH23FB.038.SST	¾	12	20	70	55	95	21	0,40
BVH23FB.012.SST	½	15	23	75	64	125	35	0,65
BVH23FB.034.SST	¾	20	28	90	67	125	46	0,80
BVH23FB.100.SST	1	25	34	100	83	140	72	1,20
BVH23FB.114.SST	1¼	32	41	110	89	140	105	1,95
BVH23FB.112.SST	1½	40	49	125	100	200	170	2,75
BVH23FB.200.SST	2	50	62	150	108	200	275	4,50
BVH23FB.212.SST	2½	65	78	190	150	250	507	8,90
BVH23FB.300.SST	3	80	94	220	161	250	905	12,9
BVH23FB.400.SST	4	100	125	270	180	290	1414	22,5

### BVH23FL



	Rp"	DN	øB	LL	H	W	k <sub>v</sub> [m³/h]	kg
BVH23FL.012.SST	½	15	23	225	64	125	35	0,72
BVH23FL.034.SST	¾	20	28	225	67	125	46	0,88
BVH23FL.100.SST	1	25	34	245	83	140	72	1,32
BVH23FL.114.SST	1¼	32	41	255	89	140	105	2,15
BVH23FL.112.SST	1½	40	49	260	100	200	170	3,03
BVH23FL.200.SST	2	50	62	275	108	200	275	4,95
BVH23FL.212.SST	2½	65	78	335	150	250	507	9,79
BVH23FL.300.SST	3	80	94	355	161	250	905	14,2
BVH23FL.400.SST	4	100	125	365	180	290	1414	24,8

### BVH23FF



	DN	øF	øP	T	øMxn	LF	H	W	k <sub>v</sub> [m³/h]	kg
BVH23FF.015.SST	15	95	65	16	14x4	130	64	125	35	2,45
BVH23FF.020.SST	20	105	75	18	14x4	150	67	125	46	3,50
BVH23FF.025.SST	25	115	85	18	14x4	160	83	140	72	4,70
BVH23FF.032.SST	32	140	100	18	18x4	180	89	140	105	5,90
BVH23FF.040.SST	40	150	110	18	18x4	200	100	200	170	7,80
BVH23FF.050.SST	50	165	125	20	18x4	230	108	200	275	11,3
BVH23FF.065.SST	65	185	145	22	18x8	290	150	250	507	16,9
BVH23FF.080.SST	80	200	160	24	18x8	310	161	250	905	23,9
BVH23FF.100.SST	100	235	190	24	22x8	350	180	290	1414	34,9

# BVA23 - Ball valve (stainless steel, 3-piece body) 1/4" - 4"

## Description

Stainless steel ball valve with 3-piece body, full bore, top flange for mounting of actuator

## Product features

- Connection (Face to face dimension)
  - BVA23FT threaded ends DIN EN 10226-1 Rp 1/4" - 4" (DIN 3202-M3)
  - BVA23FB buttweld ends DN10-100 (DIN 3202-S13)
  - BVA23FL buttweld ends long DN15-100
  - BVA23FF flanged ends PN40 DN15-100 (DIN 3202-F1)
- Max. working pressure 63 bar (BVA23FF 40bar)
- Temperature range -20°C ÷ 160°C, Versions for lower temperatures on request



The ball valves BVA23 meet the safety requirements of the pressure Equipments Directive 97/23/EC (PED) appendix 1 for fluids of the groups 1 and 2.



BVA23FT



BVA23FB



BVA23FL

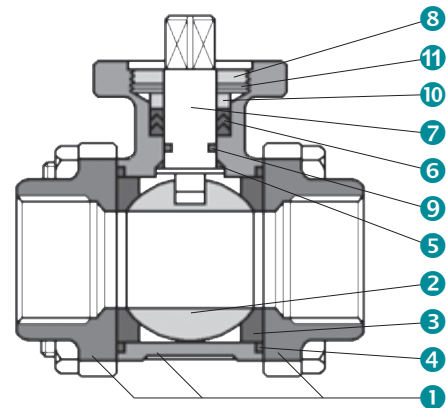


BVA23FF

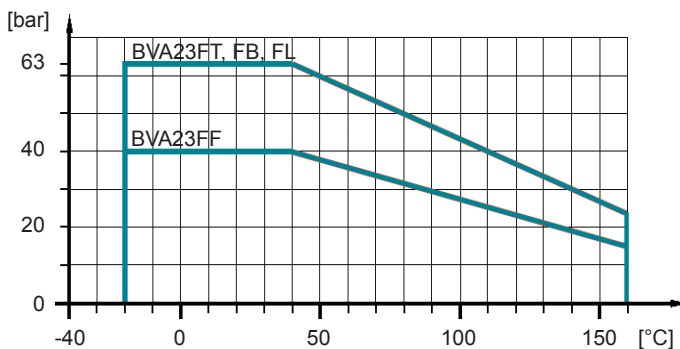


## Construction

1	3-piece body	CF8M (1.4408)
2	Ball	AISI 316 (1.4401)
3	Seat ring white (standard)	PTFE + 15% GF
3	Seat ring grey (for steam)	PTFE-C, 25% Carbon
4	Seal ring	PTFE
5	Washer	PTFE
6	Stem seal self-adjusting with bevel washer (for approx. 30.000 cycles)	PTFE
7	Stem	AISI 316 (1.4401)
8	Gland nut	AISI 304 (1.4301)
9	Seal ring	Viton
10	Gland ring	AISI 304 (1.4301)
11	Bevel washer	Spring steel



## Pressure / temperature diagram



For temperatures >100°C a mounting bracket with adapter is mounted between ball valve and actuator.

For applications with steam:  
 - use seat ring „S“ PTFE-C, 25% Carbon  
 -  $t_{max} = 160^{\circ}\text{C}$ ,  $p_{max} = 6 \text{ bar}$

# BVA23 - Ball valve (stainless steel, 3-piece body) 1/4" - 4"

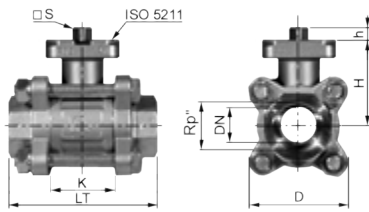
## Type code

<b>BVA</b>	<b>23</b>	<b>F</b>	<b>T</b>	<b>. 014</b>	<b>. SS</b>	<b>T</b>
<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>

<b>1</b> Type	<b>BVA</b>	Ball valve with top flange
<b>2</b> Construction	<b>23</b>	2/2 ways, 3-piece body
<b>3</b> Bore	<b>F</b>	Full bore
<b>4</b> Connection	<b>T</b>	Threaded ends DIN EN 10226-1 (DIN 2999)
	<b>B</b>	Buttweld ends ≈ according to DIN EN 12627
	<b>L</b>	Buttweld ends long ≈ according to DIN EN 12627
	<b>F</b>	Flanged ends PN40
<b>5</b> Size	<b>014-400</b>	Rp 1/4" - 4"
	<b>015-100</b>	DN15-100 (BVA23FF)
<b>6</b> Materials body / ball	<b>S</b>	Body stainless steel CF8M (1.4408)
	<b>S</b>	Ball stainless steel AISI 316 (1.4401)
<b>7</b> Materials seat ring	<b>T</b>	Seat ring white (standard) PTFE + 15% GF
	<b>S</b>	Seat ring grey (for steam tmax = 160°C, pmax = 5 bar) PTFE-C, 25% Carbon

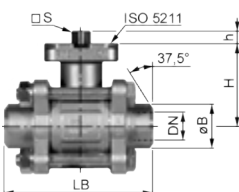
## Dimensions

### BVA23FT



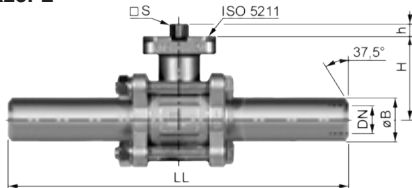
	Rp"	DN	LT	H	K	h	D	S	ISO	kv(m³/h)	kg
BVA23FT.014.SST	¼	10	65	40	21	7	48.5	9	F03+04	6	0.35
BVA23FT.038.SST	⅜	12	65	40	21	7	48.5	9	F03+04	9	0.40
BVA23FT.012.SST	½	15	75	40	26	7	48.5	9	F03+04	19	0.65
BVA23FT.034.SST	¾	20	80	44	33	9	53.5	9	F03+04	46	0.80
BVA23FT.100.SST	1	25	90	52	39	12	60.5	11	F04+05	72	1.20
BVA23FT.114.SST	1¼	32	110	58	51	12	72	11	F04+05	105	1.95
BVA23FT.112.SST	1½	40	120	68	58	16	81.5	14	F05+07	170	2.75
BVA23FT.200.SST	2	50	140	72	71	16	99.5	14	F05+07	275	4.50
BVA23FT.212.SST	2½	65	185	98	77	19	126	17	F07+10	507	8.90
BVA23FT.300.SST	3	80	205	110	105	19	191	17	F07+10	905	12.9
BVA23FT.400.SST	4	100	240	138	130	24	223	22	F10	1414	22.5

### BVA23FB



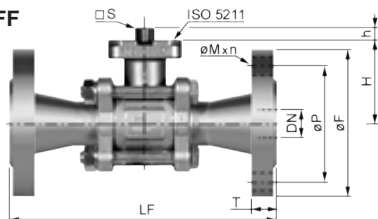
	DN	øB	LB	H	h	S	ISO	kv(m³/h)	kg	
BVA23FB.014.SST	¼	10	20	70	40	7	9	F03+04	6	0.35
BVA23FB.038.SST	⅜	12	20	70	40	7	9	F03+04	9	0.40
BVA23FB.012.SST	½	15	23	75	40	7	9	F03+04	19	0.65
BVA23FB.034.SST	¾	20	28	90	44	9	9	F03+04	46	0.80
BVA23FB.100.SST	1	25	34	100	52	12	11	F04+05	72	1.20
BVA23FB.114.SST	1¼	32	41	110	58	12	11	F04+05	105	1.95
BVA23FB.112.SST	1½	40	49	125	68	16	14	F05+07	170	2.75
BVA23FB.200.SST	2	50	62	150	72	16	14	F05+07	275	4.50
BVA23FB.212.SST	2½	65	78	190	98	19	17	F07+10	507	8.90
BVA23FB.300.SST	3	80	94	220	110	19	17	F07+10	905	12.9
BVA23FB.400.SST	4	100	125	270	138	24	22	F10	1414	22.5

### BVA23FL



	DN	øB	LL	H	h	S	ISO	kv(m³/h)	kg	
BVA23FL.012.SST	½	15	23	225	40	7	9	F03+04	19	0.72
BVA23FL.034.SST	¾	20	28	225	44	9	9	F03+04	46	0.88
BVA23FL.100.SST	1	25	34	245	52	12	11	F04+05	72	1.32
BVA23FL.114.SST	1¼	32	41	255	58	12	11	F04+05	105	2.15
BVA23FL.112.SST	1½	40	49	260	68	16	14	F05+07	170	3.03
BVA23FL.200.SST	2	50	62	275	72	16	14	F05+07	275	4.95
BVA23FL.212.SST	2½	65	78	335	98	19	17	F07+10	507	9.79
BVA23FL.300.SST	3	80	94	355	110	19	17	F07+10	905	14.2
BVA23FL.400.SST	4	100	125	365	138	24	22	F10	1414	24.8

### BVA23FF



	DN	øF	øP	T	øMxN	LF	H	h	S	ISO	kv(m³/h)	kg
BVA23FF.015.SST	15	95	65	16	14x4	130	40	7	9	F03+04	19	2.45
BVA23FF.020.SST	20	105	75	18	14x4	150	44	9	9	F03+04	46	3.50
BVA23FF.025.SST	25	115	85	18	14x4	160	52	12	11	F04+05	72	4.70
BVA23FF.032.SST	32	140	100	18	18x4	180	58	12	11	F04+05	105	5.90
BVA23FF.040.SST	40	150	110	18	18x4	200	68	16	14	F05+07	170	7.80
BVA23FF.050.SST	50	165	125	20	18x4	230	72	16	14	F05+07	275	11.3
BVA23FF.065.SST	65	185	145	22	18x8	290	98	19	17	F07+10	507	16.9
BVA23FF.080.SST	80	200	160	24	18x8	310	110	19	17	F07+10	905	23.9
BVA23FF.100.SST	100	235	190	24	22x8	350	138	24	22	F10	1414	34.9

# BVP23 - Ball valve for Pharma, Food and Biotech DN 8-100

## Product features

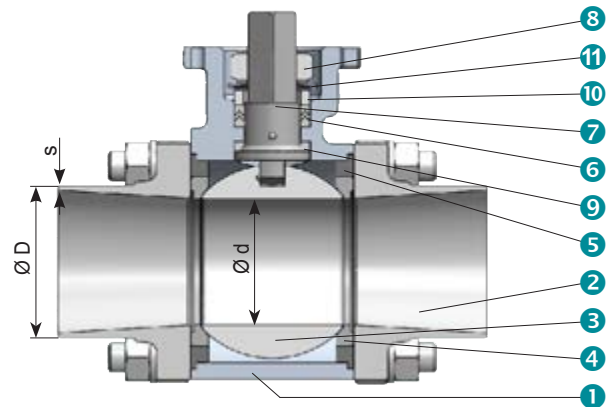
- Connection: Buttweld ends DN 8-100 (1/4" - 4") acc. to EN ISO 1127, length of buttweld ends suitable for orbital welding.
  - Materials and surface: Stainless steel 1.4409 / inside 0,5 µm mechanically polished, outside electrically polished
  - Seals: TFM FDA-conform
  - Max. working pressure: See pressure/temperature diagram below
  - Temperature range: See pressure/temperature diagram below
- The ball valves BVP meet the safety requirements of the Pressure Equipments Directive 97/23/EC (PED) appendix 1 for fluids of the groups 1 and 2.



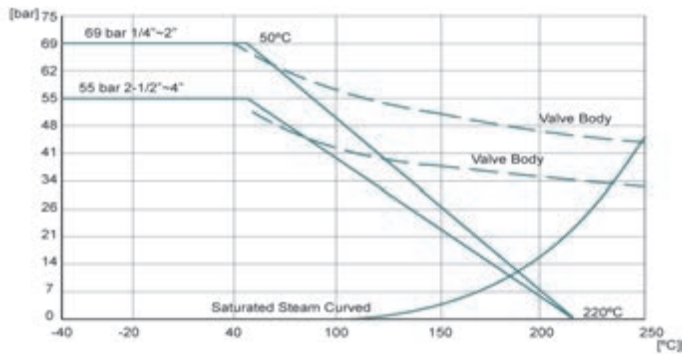
## Construction

1	Body	1.4409
2	Butt welded ends	1.4409 Fe < 1%
3	Ball	SS316L
4	Seat ring	TFM 1600 FDA
5	Body sealing	PTFE FDA
6	Self-adjusting stem sealing	1 x PTFE 25 % GFR + 2 x PTFE FDA
7	Stem	SS316L
8	Nut	SS316
9	Seal ring	PTFE FDA
10	Gland ring	SS316
11	Belleville washer	SS301

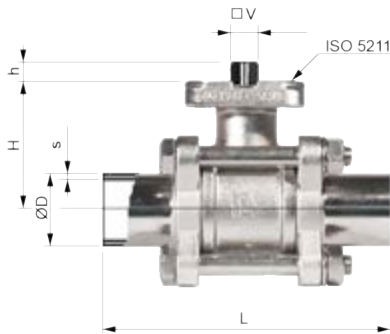
Option: cavity filler seats (TFM 1600 FDA)



## Pressure / temperature diagram

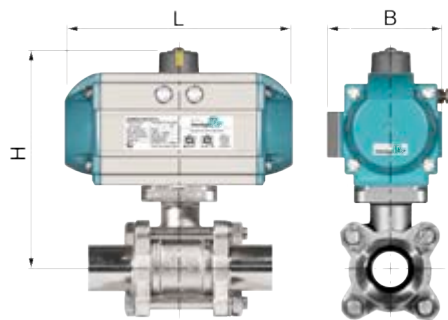


## Dimensions



	DN	H	h	□ V	ISO	kv[m <sup>3</sup> /h]	[kg]	L	s	Ø D	Ø d
<b>BVP23FG.014.BBU-77</b>	10	42,1	6,1	9	F03+04	7	0,6	95	1,6	13,5	10
<b>BVP23FG.038.BBU-77</b>	12	42,1	6,1	9	F03+04	7	0,6	95	1,6	17,2	12,7
<b>BVP23FG.012.BBU-77</b>	15	42,1	6,1	9	F03+04	13	0,7	100	1,6	21,3	15
<b>BVP23FG.034.BBU-77</b>	20	48,6	6,6	9	F03+04	29	0,8	105	1,6	26,9	20
<b>BVP23FG.100.BBU-77</b>	25	56,6	10,9	11	F04+05	48	1,3	115	2,0	33,7	25
<b>BVP23FG.114.BBU-77</b>	32	60,9	10,9	11	F04+05	72	1,9	140	2,0	42,4	32
<b>BVP23FG.112.BBU-77</b>	40	77,5	13,9	14	F05+07	106	3,2	150	2,0	48,3	38
<b>BVP23FG.200.BBU-77</b>	50	85,2	13,9	14	F05+07	213	4,6	170	2,0	60,3	50
<b>BVP23FG.212.BBU-77</b>	65	108,7	16,8	17	F07+10	272	9,0	220	2,0	76,1	65
<b>BVP23FG.300.BBU-77</b>	80	117,7	17,8	17	F07+10	493	12,3	300	2,3	88,9	76
<b>BVP23FG.400.BBU-77</b>	100	132,6	16,8	17	F07+10	867	21,5	325	2,3	114,3	100

Other connection standards on request.



### BVP + IA...D (pneum. double acting actuator)

	Size	DN	L	B	H	[kg]
<b>BVP23FG.014.BBU-77 + IA050D.F0411 (R09)</b>	¼	8	137	79	131	1,8
<b>BVP23FG.038.BBU-77 + IA050D.F0411 (R09)</b>	⅜	10	137	79	131	1,8
<b>BVP23FG.012.BBU-77 + IA050D.F0411 (R09)</b>	½	15	137	79	131	1,8
<b>BVP23FG.034.BBU-77 + IA050D.F0411 (R09)</b>	¾	20	137	79	137	2,0
<b>BVP23FG.100.BBU-77 + IA100D.F05-F0711</b>	1	25	154	92	162	3,0
<b>BVP23FG.114.BBU-77 + IA100D.F05-F0711</b>	1¼	32	154	92	166	3,6
<b>BVP23FG.112.BBU-77 + IA200D.F05-F0714</b>	1½	40	204	105	200	6,2
<b>BVP23FG.200.BBU-77 + IA200D.F05-F0714</b>	2	50	204	105	207	7,6
<b>BVP23FG.212.BBU-77 + IA250D.F05-F0717</b>	2½	65	241	119	244	13,2
<b>BVP23FG.300.BBU-77 + IA300D.F05-F07-F1017</b>	3	80	259	131	265	18,0
<b>BVP23FG.400.BBU-77 + IA350D.F07-F1017</b>	4	100	304	149	308	30,3

### BVP + IA...S (pneum. single acting actuator)

	Size	DN	L	B	H	[kg]
<b>BVP23FG.014.BBU-77 + IA100S12.F0411 (R09)</b>	¼	8	154	92	147	2,5
<b>BVP23FG.038.BBU-77 + IA100S12.F0411 (R09)</b>	⅜	10	154	92	147	2,5
<b>BVP23FG.012.BBU-77 + IA100S12.F0411 (R09)</b>	½	15	154	92	147	2,6
<b>BVP23FG.034.BBU-77 + IA100S12.F0411 (R09)</b>	¾	20	154	92	153	2,7
<b>BVP23FG.100.BBU-77 + IA200S12.F05-F0711</b>	1	25	204	105	179	4,7
<b>BVP23FG.114.BBU-77 + IA200S12.F05-F0711</b>	1¼	32	204	105	183	5,3
<b>BVP23FG.112.BBU-77 + IA250S12.F05-F0714</b>	1½	40	241	119	213	8,0
<b>BVP23FG.200.BBU-77 + IA300S12.F05-F07-F1014</b>	2	50	259	131	232	11,2
<b>BVP23FG.212.BBU-77 + IA350S12.F07-F1017</b>	2½	65	304	149	284	19,2
<b>BVP23FG.300.BBU-77 + IA400S12.F07-F1017</b>	3	80	333	159	305	24,9
<b>BVP23FG.400.BBU-77 + IA450S12.F10-F1217</b>	4	100	395	183	340	40,2

- Actuator selection for
- standard TFM seat ring,
  - working pressure 16 bar,
  - air supply pressure 6 bar.

For other seat ring versions or other working conditions please contact our technical department.

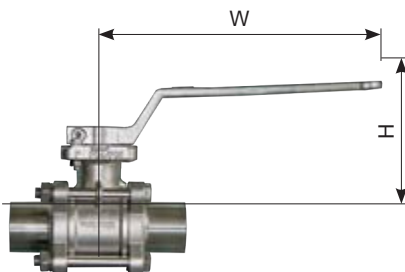
For temperatures >100°C a mounting bracket with adapter is mounted between ball valve and actuator. Please add the following values to dimension H:

DN10 - 20 +50mm

DN25 - 50 +60mm

DN65 - 100 +80mm

### BVP + HL (hand lever 1.4408)



	Size	DN	W	H
<b>BVP23FG.014.BBU-77 + HLS</b>	¼	8	160	88
<b>BVP23FG.038.BBU-77 + HLS</b>	⅜	10	160	88
<b>BVP23FG.012.BBU-77 + HLS</b>	½	15	160	88
<b>BVP23FG.034.BBU-77 + HLS</b>	¾	20	160	94
<b>BVP23FG.100.BBU-77 + HLS</b>	1	25	200	116
<b>BVP23FG.114.BBU-77 + HLS</b>	1¼	32	200	120
<b>BVP23FG.112.BBU-77 + HLS</b>	1½	40	250	146
<b>BVP23FG.200.BBU-77 + HLS</b>	2	50	250	153
<b>BVP23FG.212.BBU-77 + HLS</b>	2½	65	300	167
<b>BVP23FG.300.BBU-77 + HLS</b>	3	80	370	176
<b>BVP23FG.400.BBU-77 + HLS</b>	4	100	370	192

# BVC21 - Compact ball valve DN15-150

## Description

Compact ball valve with full bore. Top flange for actuators according ISO 5211.

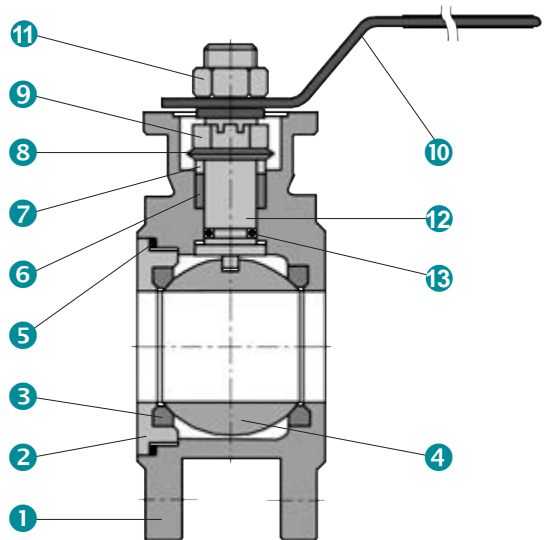
## Product features

- Connection DN15-50 Flanges PN16/25/40  
DN65-150 Flanges PN16
  - Max. working pressure 40bar
  - Temperature range -10°C ÷ 160°C, Versions for lower temperatures on request
- The ball valves BVC21 meet the safety requirements of the pressure Equipments Directive 97/23/EC (PED) appendix 1 for fluids of the groups 1 and 2.

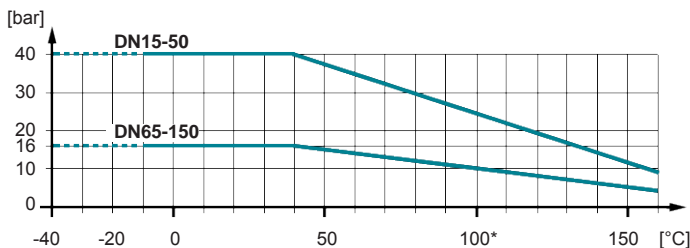


## Construction

1	Body	Stainless steel CF8M (1.4408) or Cast steel GS-C25 (ASTM A216 WCB)
2	End cap	Stainless steel CF8M (1.4408)
3	Seat ring	PTFE + 15% GF
4	Ball	Stainless steel AISI 316 (1.4401)
5	Gasket	PTFE
6	Gland packing (self adjusting)	PTFE
7	Gland	Stainless steel AISI 304 (1.4301)
8	Disc washer	Spring steel
9	Gland nut + tab washer	Stainless steel AISI 304 (1.4301)
10	Handlever	Stainless steel AISI 304 (1.4301)
11	Handle nut	Stainless steel AISI 304 (1.4301)
12	Blow out proof stem	Stainless steel AISI 316 (1.4401)
13	O-ring	Viton®



## Pressure / temperature diagram



For temperatures >100°C a mounting bracket with adapter is mounted between ball valve and actuator.

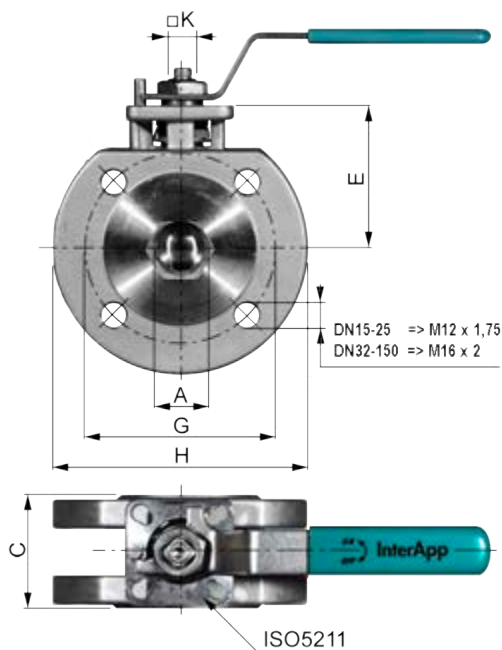
# BVC21 - Compact ball valve DN15-150

## Type code

<b>BVC</b>	<b>21</b>	<b>F</b>	<b>F</b>	<b>. 025</b>	<b>. S</b>	<b>S</b>	<b>T</b>
<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>	<b>8</b>

<b>1</b> Type	<b>BVC</b>	Ball valve with top flange	
<b>2</b> Construction	<b>21</b>	2/2 ways, one-piece body	
<b>3</b> Bore	<b>F</b>	Full bore	
<b>4</b> Connection	<b>F</b>	Flanged ends	
<b>5</b> Size	<b>015-150</b>	DN15-150	
<b>6</b> Materials body	<b>S</b>	stainless steel	CF8M (1.4408)
	<b>C</b>	cast steel	GS-C25 (ASTM A216 WCB)
<b>7</b> Material ball	<b>S</b>	stainless steel	AISI 316 (1.4401)
<b>8</b> Materials seat ring	<b>T</b>	Seat ring	PTFE + 15% GF

## Dimensions



	DN	A	C	G	H	E	K	ISO5211	kv[m³/h]	[kg]
<b>BVC21FF.015.SST</b>	15	15	40	65	95	60,0	9	F03+04	35	1,6
<b>BVC21FF.020.SST</b>	20	20	44	75	105	64,3	9	F03+04	46	2,1
<b>BVC21FF.025.SST</b>	25	25	53	85	115	64,6	11	F04+05	72	2,6
<b>BVC21FF.032.SST</b>	32	32	58,4	100	135	69,0	11	F04+05	105	3,6
<b>BVC21FF.040.SST</b>	40	38	62	110	145	76,3	14	F05+07	170	4,3
<b>BVC21FF.050.SST</b>	50	50	78	125	155	85,7	14	F05+07	275	6,0
<b>BVC21FF.065.SST</b>	65	65	100	145	185	105	17	F07	507	10,0
<b>BVC21FF.080.SST</b>	80	76	120	160	200	123	17	F07	905	14,1
<b>BVC21FF.100.SST</b>	100	96	152	180	220	132	17	F07+10	1414	20,6
<b>BVC21FF.125.SST</b>	125	114	180	210	250	157,5	27	F10+12	2362	25
<b>BVC21FF.150.SST</b>	150	135	215	240	285	172,5	27	F10+12	3674	35

# BVO22 - Flange ball valve (stainless steel) DN 15-200

## Description

Stainless steel ball valve PN16/40 with flanged ends and two-piece body, full bore. Mounting flange for actuators according to ISO 5211. Antistatic execution.

## Product features

- Connection DN15-50 flanges PN40  
DN65-200 flanges PN16 or PN40
- Face to face dimension DN15-100 DIN 3202-F4 (short) = standard, or DIN 3202-F1 (long)  
DN125-200 DIN 3202-F5
- Max. working pressure 16/40 bar
- Temperature range -10°C + 180°C, Versions for lower temperatures on request
- Fire Safe execution optional for DN15-100 (according to BS 6755 and ISO 10479)
- Fire Safe design optional for DN125-200
- TA Luft in compliance with TA Luft requirements

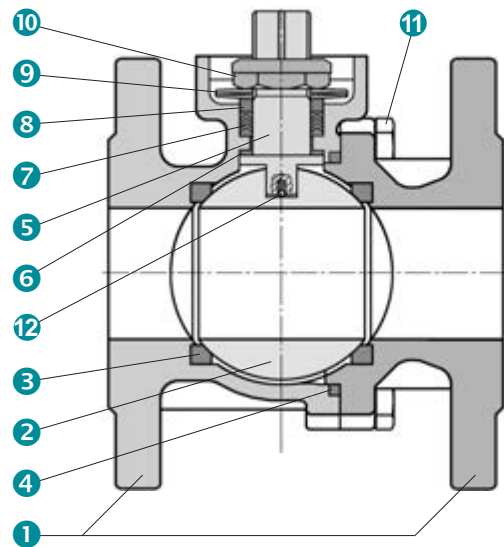


The ball valves BVO22 meet the safety requirements of the pressure Equipments Directive 2014/68/UE (PED) appendix 1 for fluids of the groups 1 and 2.

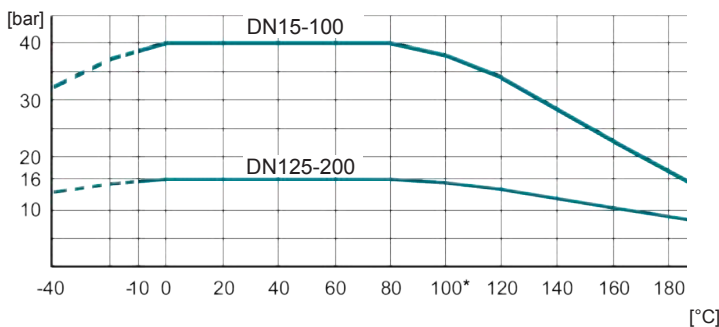


## Construction

1	Two-piece body	Stainless steel CF8M, DN15-200 Cast steel GS-C25, DN125-200
2	Ball DN15-50, DN125-200	Stainless steel AISI 316 (1.4401)
3	Seat ring (ball)	Stainless steel CF8M (1.4408)
3	Seat ring (ball)	PTFE + 15% GF
4*	Seal ring	PTFE
5	Stem	Stainless steel AISI 316 (1.4401)
6	Lower bearing	PTFE glass fibre reinforced
7*	Gland packing self adjusting according to TA-Luft (DN15-200)	PTFE
8	Gland ring	Stainless steel AISI 316 (1.4401)
9	Bevel washer	Spring steel
10	Nut	A2
11	Bolt	DN15-100, A4-70 DN125-200, A2-70
12	Antistatic ball	Stainless steel AISI 316 (1.4401)
* Material = graphite for Fire Safe execution „FS“		



## Pressure / temperature diagram



For temperatures >100°C a mounting bracket with adapter is mounted between ball valve and actuator.

For applications with steam:  
 - use seat ring „S“ PTFE-C, 25% Carbon  
 -  $t_{max} = 160^{\circ}C$ ,  $p_{max} = 5$  bar



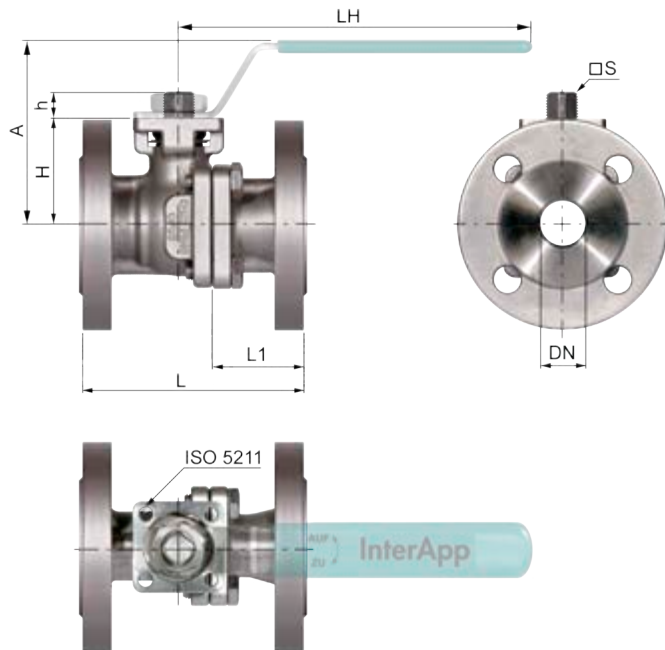
# BVO22 - Flange ball valve (stainless steel) DN 15-200

## Type code

BVO	22	F	K	.	025	.	SS	T	-	..
1	2	3	4		5		6	7		8

1 Type	BVO	Ball valve flanged type with ISO top flange	
2 Construction	22	2/2 ways, two-piece body	
3 Bore	F	Full bore	
4 Face to face dimension	K	F4 (short) standard DN15-100, F5 DN125-200	
	F	F1 (long) DN15-100	
5 Size	015-200	DN15-200	
6 Materials body / ball	S	Body stainless steel	CF8M (1.4408) DN15-200
	S	Ball stainless steel	DN15-50, DN125-200 AISI 316 (1.4401) DN65-100 CF8M (1.4408)
7 Materials seat ring	T	Seat ring white (standard)	PTFE + 15% GF
	S	Seat ring grey (for steam) $t_{max} = 160^{\circ}C$ , $p_{max} = 5$ bar	PTFE-C, 25% Carbon
8 Special executions	FS	Fire safe execution (according BS 6755 and ISO 10497)	DN15-100
	FD	Fire safe design	DN125-200
	HJ	Heating jacket	
	PN16	Flange rating PN16	DN65-200

## Dimensions



### BVO22FK face to face dim. DIN 3202 F4 (DN15-100), F5 (DN125-200)

	DN	L	L1	H	h	S	ISO 5211	kv[m³/h]	[kg]
BVO22FK.015.SST	15	115	48,5	50,0	11	11	F05	35	2,7
BVO22FK.020.SST	20	120	51,5	53,5	11	11	F05	46	3,4
BVO22FK.025.SST	25	125	52,0	58,5	14	14	F05	72	4,4
BVO22FK.032.SST	32	130	57,0	71,0	14	14	F05	105	5,6
BVO22FK.040.SST	40	140	59,0	76,0	17	17	F07	170	8,1
BVO22FK.050.SST	50	150	62,0	83,5	17	17	F07	275	10,7
BVO22FK.065.SST	65	170	72,0	95,0	17	17	F07	507	14,5
BVO22FK.080.SST	80	180	71,2	113	22	22	F10	905	20,7
BVO22FK.100.SST	100	190	75,5	131	22	22	F10	1414	29,7
BVO22FK.125.SST	125	325	123	152	22	22	F10	2362	59,5
BVO22FK.150.SST	150	350	126	217	37	36	F14	3674	80,2
BVO22FK.200.SST	200	400	140	252	37	36	F14	7155	144

### BVO22FF face to face DIN 3202 F1

	DN	L	L1	H	h	S	ISO 5211	kv[m³/h]	[kg]
BVO22FF.015.SST	15	130	63,5	50,0	11	11	F05	35	2,7
BVO22FF.020.SST	20	150	81,5	53,5	11	11	F05	46	3,5
BVO22FF.025.SST	25	160	87,0	58,5	14	14	F05	72	4,5
BVO22FF.032.SST	32	180	107,0	71,0	14	14	F05	105	6,0
BVO22FF.040.SST	40	200	119,0	76,0	17	17	F07	170	8,6
BVO22FF.050.SST	50	230	142,0	83,5	17	17	F07	275	11,5
BVO22FF.065.SST	65	290	192,0	95,0	17	17	F07	507	16,1
BVO22FF.080.SST	80	310	201,2	113	22	22	F10	905	22,6
BVO22FF.100.SST	100	350	235,5	131	22	22	F10	1414	33,4

### Handlever

DN	A	LH	[kg]
15	92	180	0,5
20	93	180	0,6
25	101	180	0,6
32	113	180	0,9
40	123	300	1,5
50	130	300	1,8
65	142	300	2,6
80	195	400	3,4
100	213	400	5,2
125	272	700	12
150	281	700	12

# BVT34, BVL34 - 3-way ball valve (stainless steel) Rp1/4" - 2"

## Description

3-way stainless steel ball valve PN63, DN10-50 (1/4" - 2"), with reduced bore and top flange for mounting of actuator

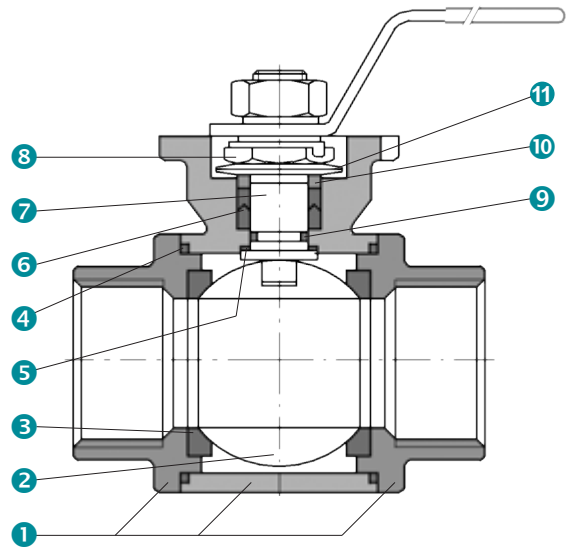
## Product features

- Connection DIN EN 10226-1 (DIN 2999)
  - Max. working pressure 63 bar
  - Temperature range -20°C + 160°C, Versions for lower temperatures on request
- The ball valves BVT meet the safety requirements of the pressure Equipments Directive 97/23/EC (PED) appendix 1 for fluids of the groups 1 and 2.

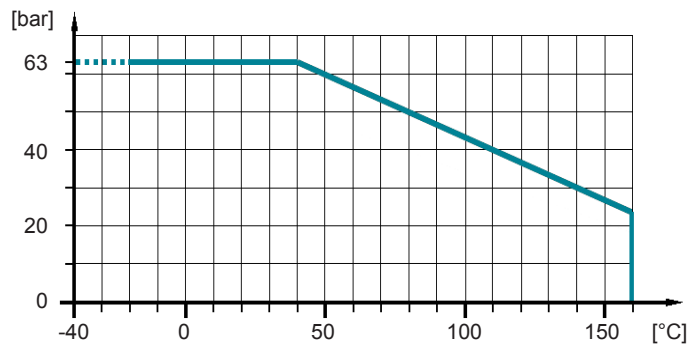


## Construction

1	Body	CF8M (1.4408)
2	Ball	AISI 316 (1.4401)
3	Seat ring (4 pcs)	PTFE + 15% GF
4	Seal ring	PTFE
5	Washer	PTFE
6	Stem seal self-adjusting with disc spring	PTFE
7	Stem	AISI 316 (1.4401)
8	Gland nut	AISI 304 (1.4301)
9	Seal ring	Viton
10	Gland ring	AISI 304 (1.4301)
11	Bevel washer	Spring steel



## Pressure / temperature diagram



For temperatures >100°C a mounting bracket with adapter is mounted between ball valve and actuator.

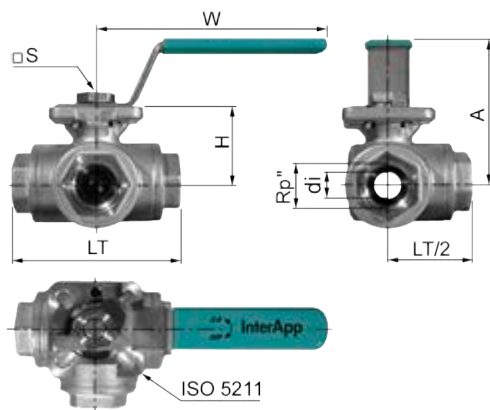
# BVT34, BVL34 - 3-way ball valve (stainless steel) Rp1/4" - 2"

## Type code

<b>BVT</b>	<b>34</b>	<b>RT</b>	<b>014</b>	<b>SST</b>
<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>

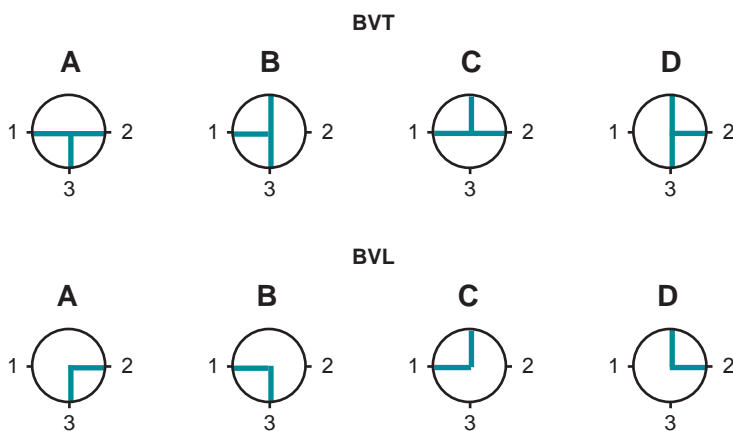
<b>1</b> Type	<b>BVT</b>	ball valve with T-bore	
	<b>BVL</b>	ball valve with L-bore	
<b>2</b> Construction	<b>34</b>	3 ways, 4-piece body	
<b>3</b> Bore, connection	<b>R</b>	Reduced bore	
	<b>T</b>	Threaded connection	
<b>4</b> Size	<b>014-</b>	Rp 1/4" -	
	<b>200</b>	Rp 2"	
<b>5</b> Materials	<b>S</b>	Body stainless steel	CF8M (1.4408)
	<b>S</b>	Ball stainless steel	AISI 316 (1.4401)
	<b>T</b>	Seat ring	PTFE + 15% GF

## Dimensions



Type	Rp"	DN	di	LT	H	S	A	W	ISO	kg
<b>BV...014</b>	1/4	10	11,6	80	36	9	73	114	F03+04	0,5
<b>BV...038</b>	3/8	12	12,7	80	36	9	73	114	F03+04	0,5
<b>BV...012</b>	1/2	15	12	80	36	9	73	114	F03+04	0,8
<b>BV...034</b>	3/4	20	15	87,5	42	11	78	133	F04+05	1,0
<b>BV...100</b>	1	25	20	100	47	11	83	133	F04+05	1,5
<b>BV...114</b>	1 1/4	32	25	123	52	11	92	187	F04+05	2,0
<b>BV...112</b>	1 1/2	40	32	142	58	11	98	187	F04+05	3,0
<b>BV...200</b>	2	50	40	171	66	14	126	187	F05+07	5,0

## Possible ball positions



## Kv values m³/h

Type	BVL	BVT	BVT
<b>BV...014</b>	6	7	5
<b>BV...038</b>	6	7	5
<b>BV...012</b>	9	11	7
<b>BV...034</b>	17	22	15
<b>BV...100</b>	26	29	19
<b>BV...114</b>	40	46	35
<b>BV...112</b>	60	72	46
<b>BV...200</b>	114	136	83

# TLBVH22 – Teflon™ Lined Ball Valve, handlever operated

## Description

Full bore Teflon™ lined ball valve with flanged ends and 2-piece body, for corrosive applications.

## Product features

- Size range DN 15 – 100
- Flange rating PN 10/16 (ANSI cl. 150)
- Face to face dimension DIN 3202-F1 / EN 558-1
- Max. working pressure max. 16 bar
- Temperature range -50 °C to 180 °C
- Anti-static version available as option

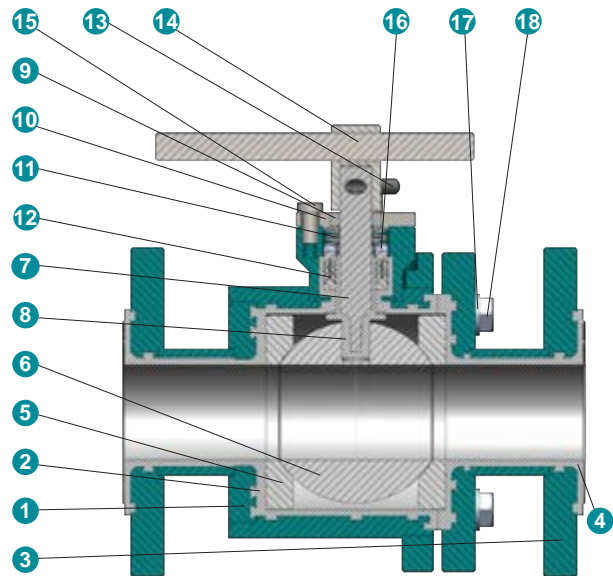


The ball valves TLBV meet the safety requirements of the PED 2014/68/EU and with antistatic lining as well the ATEX 2014/34/EU.

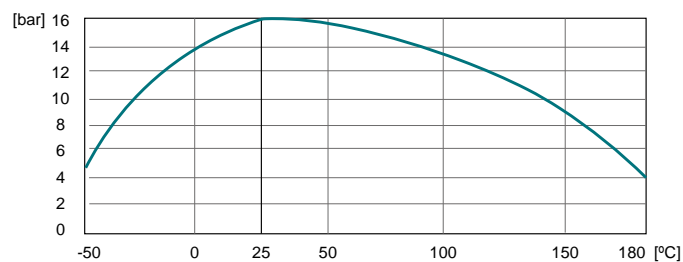


## Construction

Item	Description	Material
1	Body	Carbon steel 1.0037 / St 37, Epoxy / polyester coated
2	Body lining	FEP / PFA / PFA antistatic
3	Flange end pieces	Carbon steel 1.0037 / St 37, Epoxy /polyester coated
4	Lining of flanges	FEP / PFA / PFA antistatic
5	Seat ring	PTFE / PTFE antistatic
6	Ball	PTFE / PTFE antistatic (DN 65 - 100 with steel reinforcements)
7	Stem	Carbon steel 1.6580 / 30CrNiMo8
8	Lining of stem	FEP / PFA / PFA antistatic
9	Stem gliding ring	PTFE antistatic
10	Retaining flange	Stainless steel 1.4571 / X6CrNiMoTi17-12-2 / ≈ AISI 316Ti
11	Spring washers	Spring steel 51Si7 / 1.5025
12	Packing bellows	PTFE / PTFE antistatic
13	Spring bolt	Steel 1.0044 / S275JR
14	Handlever	Stainless steel 1.4571 / X6CrNiMoTi17-12-2 / ≈ AISI 316Ti
15	Stroke limiter bolt	Stainless steel A4-70
16	Gland ring	Stainless steel 1.4571 / X6CrNiMoTi17-12-2 / ≈ AISI 316Ti
17	Washer	Stainless steel A2-70
18	Screw	Stainless steel A2-70



## Pressure- / temperature diagram



# TLBVH22 – Teflon™ Lined Ball Valve, handlever operated

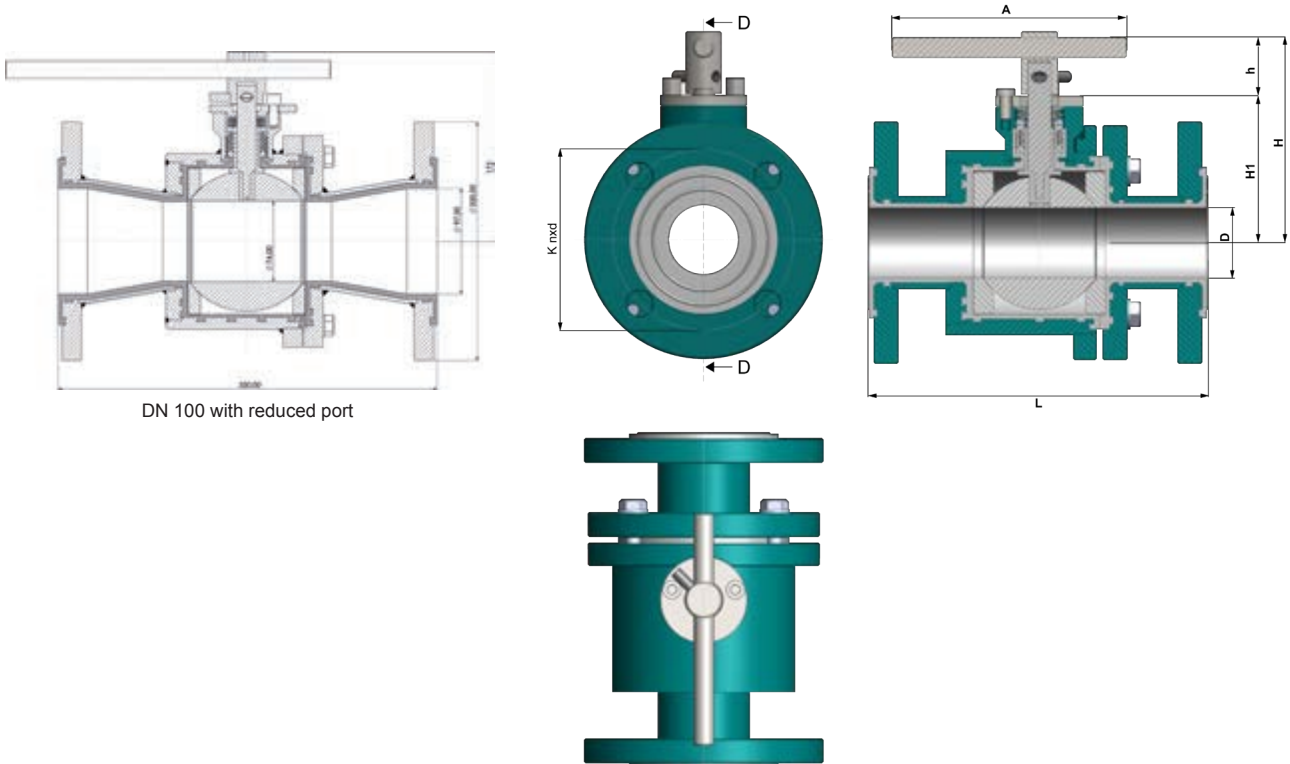
## Type code

TLBVH 22 F F . 025 . 3CT . T . T - ...

① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨

①	Type	TLBVH	Teflon™ lined ball valve with handlever	
②	Construction	22	2/2 ways, 2-piece body	
③	Bore	F	Full bore; DN 100 standard with reduced port; full port on request	
④	Face to face	F	DIN 3202-F1 / EN 558-1 (long)	
⑤	Size	015-100	DN 15 - 100 mm (½" - 4")	
⑥	Material body	3CT	Carbon steel 1.0037 / St 37 PFA lined	
		3CA	Carbon steel 1.0037 / St 37 PFA antistatic lined (no FDA and EC 1935/2004 compliance)	
⑦	Material ball	T	PTFE	
		A	PTFE antistatic	
		TG	PTFE GF reinforced	Optional
		C	Ceramic Al <sub>2</sub> O <sub>3</sub>	Optional
⑧	Material seat rings	T	PTFE	
		A	PTFE antistatic	
		TG	PTFE GF reinforced	Optional
⑨	Special executions	SCF	Cavity filler seats (very low dead volume)	
		ANSI150	Flange drilling acc. to ANSI class 150	

## Dimensions



DN	L	D	K	n x d	H	H1	A	h	kv [m <sup>3</sup> /h]	[kg]
15	130	13	65	4 x 14	78	48	90	30	17.5	1.9
20	150	18	75	4 x 14	79,5	49,5	135	30	31	2.9
25	160	24	85	4 x 14	83,5	53,5	135	30	75	4.0
32	180	32	100	4 x 18	107	72	175	35	155	6.0
40	200	38	110	4 x 18	113	78	175	35	200	8.4
50	230	48	125	4 x 18	140	100	215	40	310	11.2
65	290	62	145	4 x 18	144,5	104,5	250	40	500	15.0
80	310	76	160	8 x 18	172	127	285	45	800	20.5
100	350	96	180	8 x 18	172	127	320	45	1250	29.0

# TLBVH23 – Teflon™ Lined Ball Valve, handlever operated

## Description

Full bore Teflon™ lined ball valve with flanged ends and 3-piece body, for corrosive applications.

## Product features

- Size range DN 15 – 100
- Flange rating PN 10/16 (ANSI cl. 150)
- Face to face dimension DIN 3202-F1 / EN 558-1
- Max. working pressure max. 16 bar
- Temperature range -50 °C to 180 °C
- Anti-static version available as option

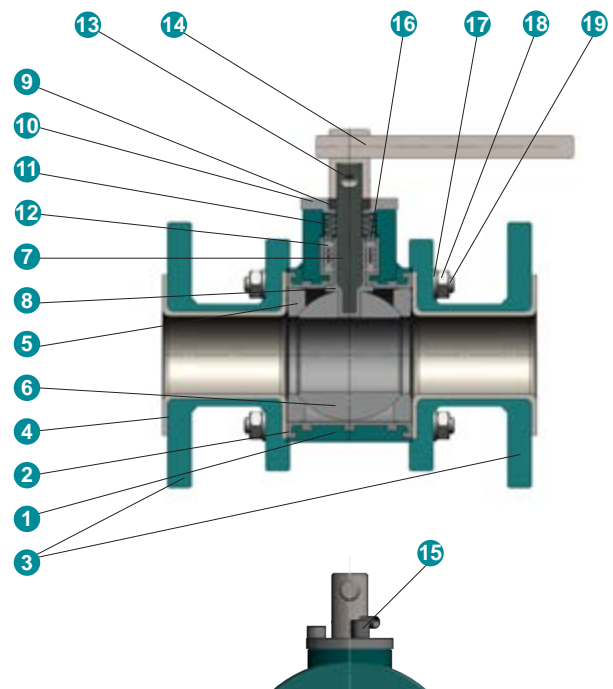


The ball valves TLBV meet the safety requirements of the PED 2014/68/EU and with antistatic lining as well the ATEX 2014/34/EU.

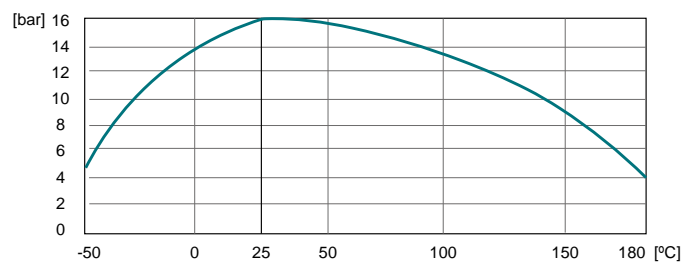


## Construction

Item	Description	Material
1	Body	Carbon steel 1.0037 / St 37, Epoxy coated
2	Body lining	PFA / PFA antistatic
3	Flange end pieces	Carbon steel 1.0037 / St 37, Epoxy coated
4	Lining of flanges	PFA / PFA antistatic
5	Seat ring	PTFE / PTFE antistatic
6	Ball	PTFE / PTFE antistatic (DN 65 - 100 with steel reinforcements)
7	Stem	Carbon steel 1.6580 / 30CrNiMo8
8	Lining of stem	PFA / PFA antistatic
9	Stem gliding ring	PTFE antistatic
10	Retaining flange	Stainless steel 1.4571 / X6CrNiMoTi17-12-2 / ≈ AISI 316Ti
11	Spring washers	Spring steel 51Si7 / 1.5025
12	Packing bellows	PTFE / PTFE antistatic
13	Spring bolt	Steel 1.0044 / S275JR
14	Handlever	Stainless steel 1.4571 / X6CrNiMoTi17-12-2 / ≈ AISI 316Ti
15	Stroke limiter bolt	Stainless steel A4-70
16	Gland ring	Stainless steel 1.4571 / X6CrNiMoTi17-12-2 / ≈ AISI 316Ti
17-19	Body bolting	Stainless steel A2-70



## Pressure- / temperature diagram



# TLBVH23 – Teflon™ Lined Ball Valve, handlever operated

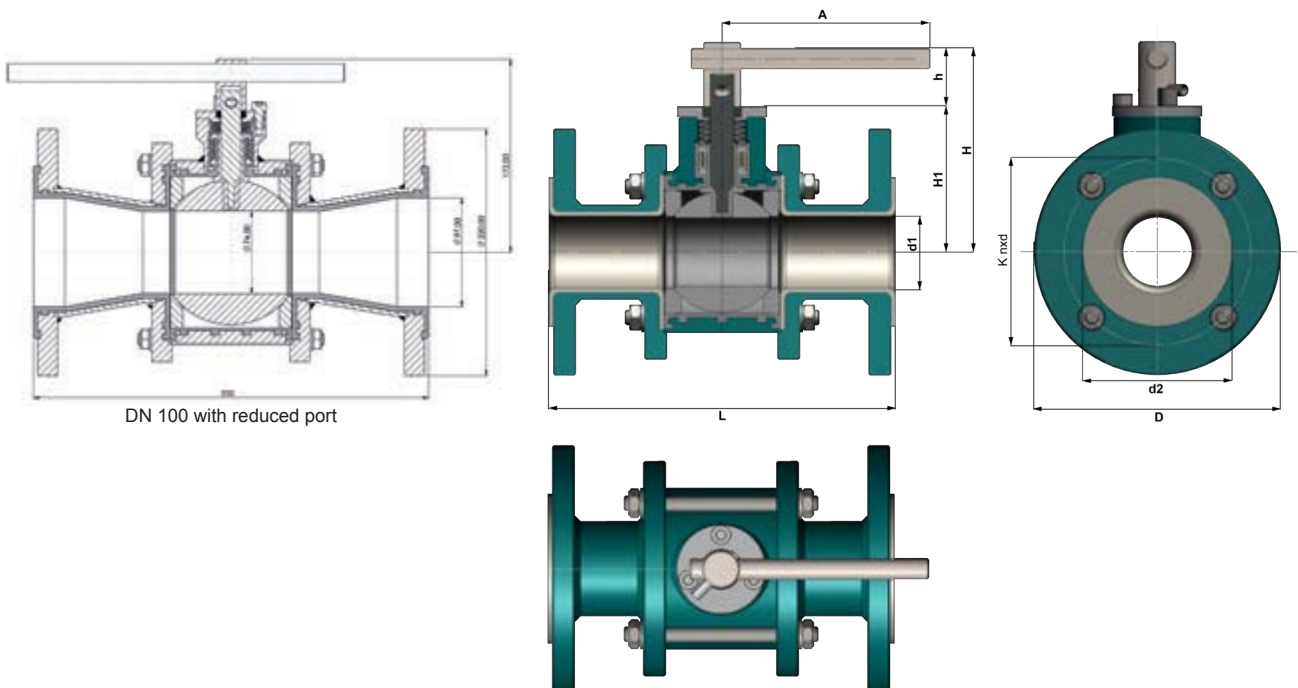
## Type code

TLBVH 23 F F . 025 . 3CT . T . T - ...

① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨

①	Type	TLBVH	Teflon™ lined ball valve with handlever	
②	Construction	23	2/2 ways, 3-piece body	
③	Bore	F	Full bore; DN 100 standard with reduced port; full port on request	
④	Face to face	F	DIN 3202-F1 / EN 558-1 (long)	
⑤	Size	015-100	DN 15 - 100 mm (½" - 4")	
⑥	Material body	3CT	Carbon steel 1.0037 / St 37 PFA lined	
		3CA	Carbon steel 1.0037 / St 37 PFA antistatic lined (no FDA and EC 1935/2004 compliance)	
⑦	Material ball	T	PTFE	
		A	PTFE antistatic	
		TG	PTFE GF reinforced	Optional
		C	Ceramic Al <sub>2</sub> O <sub>3</sub>	Optional
⑧	Material seat rings	T	PTFE	
		A	PTFE antistatic	
		TG	PTFE GF reinforced	Optional
⑨	Special executions	SCF	Cavity filler seats (very low dead volume)	
		ANSI150	Flange drilling acc. to ANSI class 150	

## Dimensions



DN	D	K	n x d	d1	d2	L	H	H1	A	h	kv [m <sup>3</sup> /h]	[kg]
15	95	65	4 x 14	13	46	130	78	48	90	30	17.5	1.9
20	105	75	4 x 14	18	56	150	80	50	135	30	31	2.9
25	115	85	4 x 14	24	65	160	84	54	135	30	75	4.0
32	140	100	4 x 18	32	75	180	107	72	175	35	155	6.0
40	150	110	4 x 18	38	83	200	113	78	175	35	200	8.4
50	165	125	4 x 18	48	101	230	140	100	215	40	310	11.2
65	185	145	4 x 18	62	111	290	145	105	250	40	500	15.0
80	200	160	8 x 18	76	133	310	172	127	285	45	800	20.5
100	220	180	8 x 18	96	154	350	172	127	320	45	1250	29.0

# TLBVH23A – Teflon™ Lined Ball Valve, handlever operated ANSI cl. 150

## Description

Full bore Teflon™ lined ball valve with flanged ends and 3-piece body, for corrosive applications.

## Product features

- Size range DN 15 (½") – 100 (4")
- Flange rating ANSI cl. 150
- Face to face dimension ANSI B16.10
- Max. working pressure max. 16 bar
- Temperature range -50 °C to 180 °C
- Anti-static version available as option

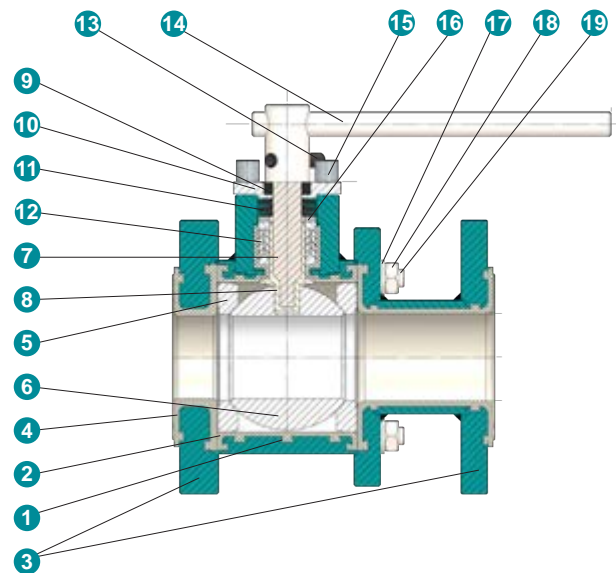


The ball valves TLBV meet the safety requirements of the PED 2014/68/EU and with antistatic lining as well the ATEX 2014/34/EU.

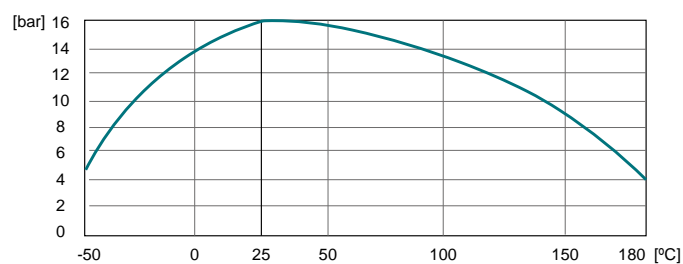


## Construction

Item	Description	Material
1	Body	Carbon steel 1.0037 / St 37, Epoxy coated
2	Body lining	PFA / PFA antistatic
3	Flange end pieces	Carbon steel 1.0037 / St 37, Epoxy coated
4	Lining of flanges	PFA / PFA antistatic
5	Seat ring	PTFE / PTFE antistatic
6	Ball	PTFE / PTFE antistatic
7	Stem	Carbon steel 1.6580 / 30CrNiMo8
8	Lining of stem	PFA / PFA antistatic
9	Stem gliding ring	PTFE antistatic
10	Retaining flange	Stainless steel 1.4571 / X6CrNiMoTi17-12-2 / ≈ AISI 316Ti
11	Spring washers	Spring steel 51Si7 / 1.5025
12	Packing bellows	PTFE / PTFE antistatic
13	Spring bolt	Steel 1.0044 / S275JR
14	Handlever	Stainless steel 1.4571 / X6CrNiMoTi17-12-2 / ≈ AISI 316Ti
15	Stroke limiter bolt	Stainless steel A4-70
16	Gland ring	Stainless steel 1.4571 / X6CrNiMoTi17-12-2 / ≈ AISI 316Ti
17-19	Body bolting	Stainless steel A2-70



## Pressure- / temperature diagram





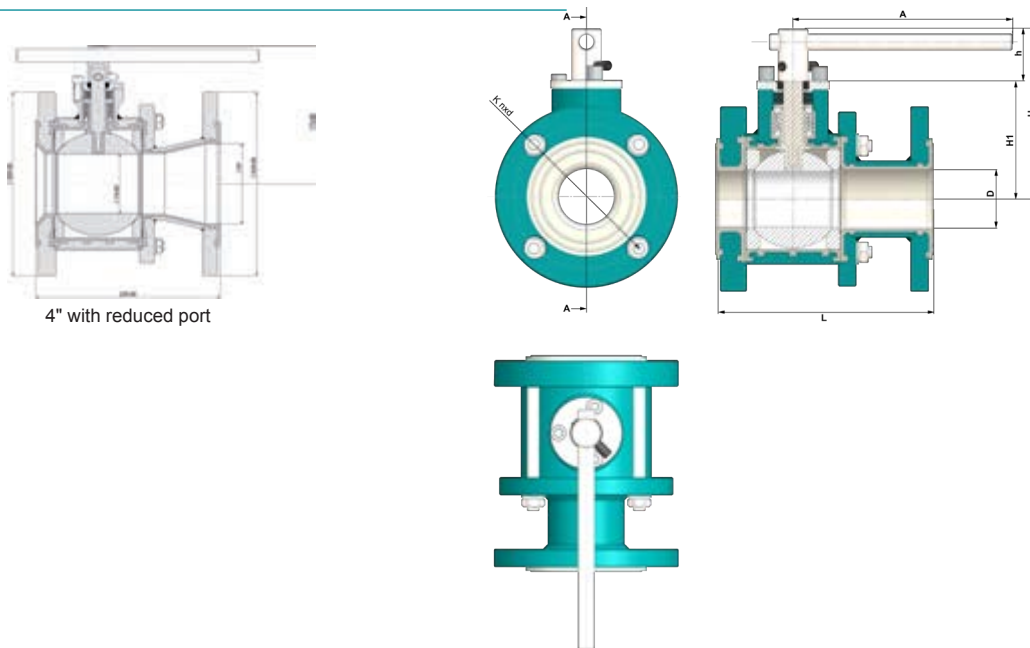
# TLBVH23A – Teflon™ Lined Ball Valve, handlever operated ANSI cl. 150

## Type code

TLBVH 23 F A . 025 . 3CT . T . T . ANSI150 . SCF

	1	2	3	4	5	6	7	8	9	10	
1	Type	TLBVH	Teflon™ lined ball valve with handlever								
2	Construction	23	2/2 ways, 3-piece body								
3	Bore	F	Full bore; 4" standard with reduced port; full port on request								
4	Face to face	A	ANSI B16.10								
5	Size	015-100	DN 15 - 100 mm (½" - 4")								
6	Material body	3CT	Carbon steel 1.0037 / St 37 PFA lined								
		3CA	Carbon steel 1.0037 / St 37 PFA antistatic lined (no FDA and EC 1935/2004 compliance)								
7	Material ball	T	PTFE								
		A	PTFE antistatic								
		TG	PTFE GF reinforced								Optional
		C	Ceramic Al <sub>2</sub> O <sub>3</sub>								Optional
8	Material seat rings	T	PTFE								
		A	PTFE antistatic								
		TG	PTFE GF reinforced								Optional
9	Flange drilling	ANSI150	Acc. to ANSI class 150								
10	Special executions	SCF	Cavity filler seats (very low dead volume)								

## Dimensions



4" with reduced port

Size	L	D	K	n x d	H	H1	A	h	kv [m <sup>3</sup> /h]	[kg]
½"	108	13	60.5	4 x 16	78	48	90	30	17.5	1.9
¾"	117	18	70	4 x 16	79.5	49.5	135	30	31	2.9
1"	127	24	79.5	4 x 16	83.5	53.5	135	30	75	4.0
1 ¼"	140	32	89	4 x 16	107	72	175	35	155	6.0
1 ½"	165	38	98.5	4 x 16	113	78	175	35	200	8.4
2"	178	48	120.5	4 x 19	140	100	215	40	310	11.2
2 ½"	190	62	139.5	4 x 19	144.5	104.5	250	40	500	15.0
3"	203	76	152.5	8 x 19	172	127	285	45		20.5
4"	229	96	190.5	8 x 19	172	127	320	45	800	29.0

# TLBVA23 – Teflon™ Lined Ball Valve, pneumatically operated

## Description

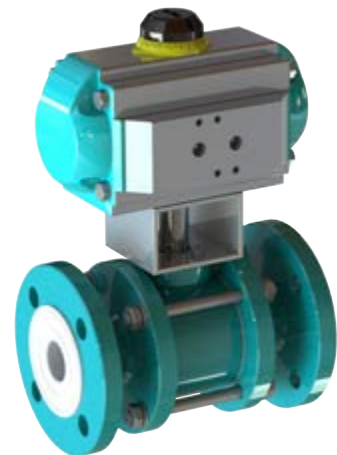
Full bore Teflon™ lined ball valve with flanged ends and 3-piece body, for corrosive applications.

## Product features

- Size range DN 15 – 100
- Flange rating PN 10/16 (ANSI cl. 150)
- Face to face dimension DIN 3202-F1 / EN 558-1
- Max. working pressure max. 16 bar
- Temperature range -50 °C to 180 °C
- Anti-static version available as option

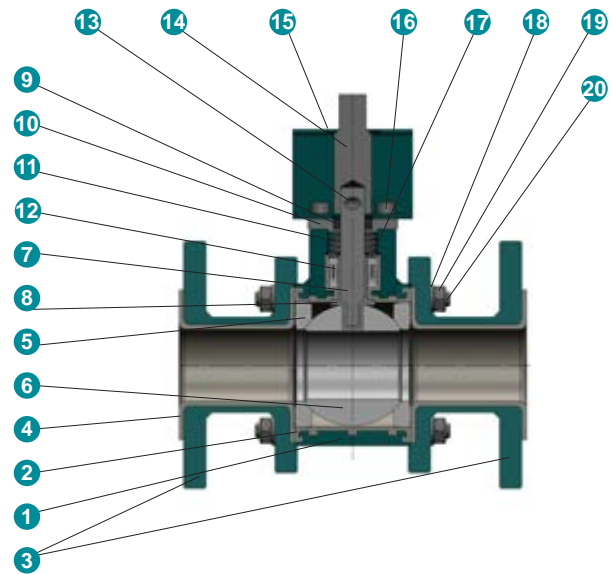


The ball valves TLBV meet the safety requirements of the PED 2014/68/EU and with antistatic lining as well the ATEX 2014/34/EU.

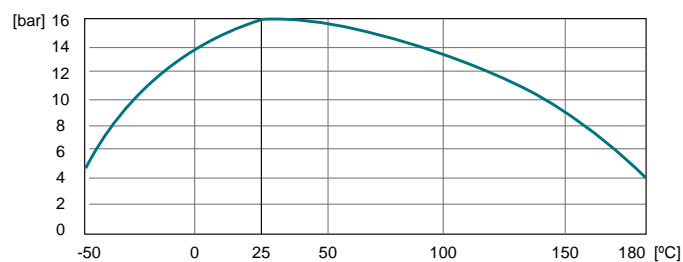


## Construction

Item	Description	Material
1	Body	Carbon steel 1.0037 / St 37, Epoxy coated
2	Body lining	PFA / PFA antistatic
3	Flange end pieces	Carbon steel 1.0037 / St 37, Epoxy coated
4	Lining of flanges	PFA / PFA antistatic
5	Seat ring	PTFE / PTFE antistatic
6	Ball	PTFE / PTFE antistatic (DN 65 - 100 with steel reinforcements)
7	Stem	Carbon steel 1.6580 / 30CrNiMo8
8	Lining of stem	PFA / PFA antistatic
9	Stem gliding ring	PTFE antistatic
10	Retaining flange	Stainless steel 1.4571 / X6CrNiMo-Ti17-12-2 / ≈ AISI 316Ti
11	Spring washers	Spring steel 51Si7 / 1.5025
12	Packing bellows	PTFE / PTFE antistatic
13	Spring bolt	Steel 1.0044 / S275JR
14	Coupling	Carbon steel 1.0037 / St 37, Epoxy coated
15	Bracket	Carbon steel 1.0037 / St 37, Epoxy coated
16	Bolt	Stainless steel A4-70
17	Gland ring	Stainless steel 1.4571 / X6CrNiMo-Ti17-12-2 / ≈ AISI 316Ti
18-20	Body bolting	Stainless steel A2-70



## Pressure- / temperature diagram



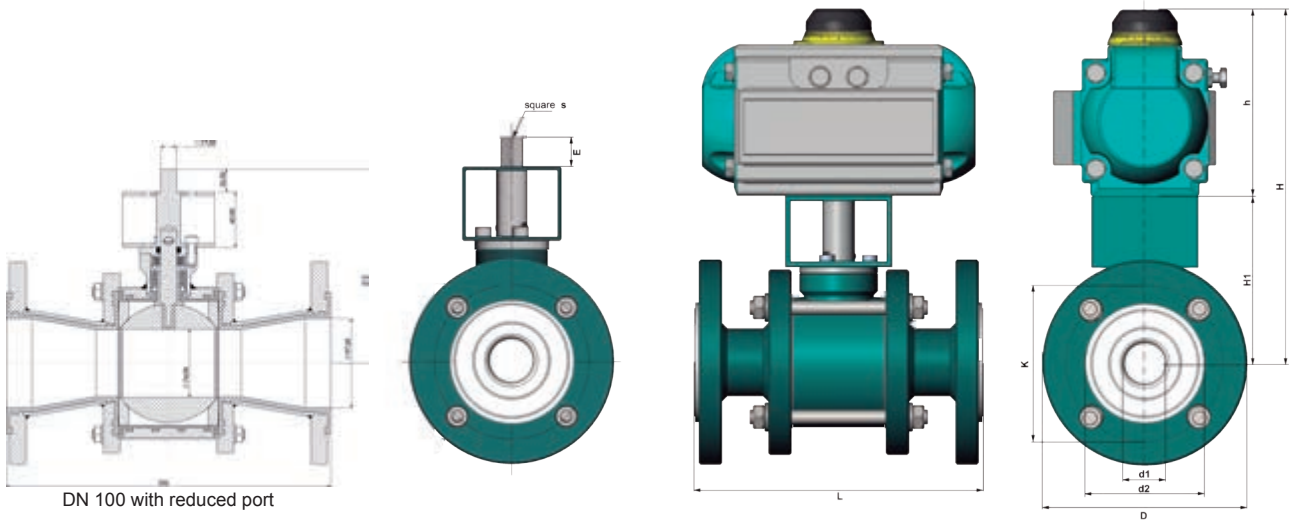
# TLBVA23 – Teflon™ Lined Ball Valve, pneumatically operated

## Type code

TLBVA 23 F F . 025 . 3CT . T . T - ...  
 ① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨

①	Type	TLBVA	Teflon™ lined ball valve with ISO top flange	
②	Construction	23	2/2 ways, 3-piece body	
③	Bore	F	Full bore; DN 100 standard with reduced port; full port on request	
④	Face to face	F	DIN 3202-F1 / EN 558-1 (long)	
⑤	Size	015-100	DN 15 - 100 mm (½" - 4")	
⑥	Material body	3CT	Carbon steel 1.0037 / St 37 PFA lined	
		3CA	Carbon steel 1.0037 / St 37 PFA antistatic lined (no FDA and EC 1935/2004 compliance)	
⑦	Material ball	T	PTFE	
		A	PTFE antistatic	
		TG	PTFE GF reinforced	Optional
		C	Ceramic Al <sub>2</sub> O <sub>3</sub>	Optional
⑧	Material seat rings	T	PTFE	
		A	PTFE antistatic	
		TG	PTFE GF reinforced	Optional
⑨	Special executions	SCF	Cavity filler seats (very low dead volume)	
		ANSI150	Flange drilling acc. to ANSI class 150	

## Dimensions



DN 100 with reduced port

DN	D	K	n x d	d1	d2	L	H1	s x E	ISO 5211		h IA...D	H IA...D	[kg] IA...D	h IA...S	H IA...S	[kg] IA...S	kv [m3/h]
									Double acting	Single acting							
15	95	65	4 x 14	13	46	130	88	11 x 12	F05	F05	105	193	3.6	122	210	5.3	17.5
20	105	75	4 x 14	18	56	150	90	11 x 12	F05	F05	105	195	4.6	122	212	6.3	31
25	115	85	4 x 14	24	65	160	94	11 x 12	F05	F05	105	199	5.7	135	229	8.8	75
32	140	100	4 x 18	32	75	180	132	14 x 16	F05	F07	122	254	9.0	147	279	12.6	155
40	150	110	4 x 18	38	83	200	138	14 x 16	F05	F07	122	260	11.4	147	285	15.0	200
50	165	125	4 x 18	48	101	230	160	14 x 16	F05	F07	122	282	14.2	175	335	21.4	310
65	185	145	4 x 18	62	111	290	165	14 x 16	F05	F07	122	287	18.0	175	340	25.2	500
80	200	160	8 x 18	76	133	310	187	17 x 19	F07	F10	147	334	26.2	187	374	33.1	800
100	220	180	8 x 18	96	154	350	187	17 x 19	F07	F10	147	334	34.7	187	374	41.6	1250

# TLBVA23A – Teflon™ Lined Ball Valve, ANSI cl. 150 type with ISO top flange

## Description

Full bore Teflon™ lined ball valve with flanged ends and 3-piece body, for corrosive applications.

## Product features

- Size range DN 15 (½") – 100 (4")
- Flange rating ANSI cl. 150
- Face to face dimension ANSI B16.10
- Max. working pressure max. 16 bar
- Temperature range -50 °C to 180 °C
- Anti-static version available as option

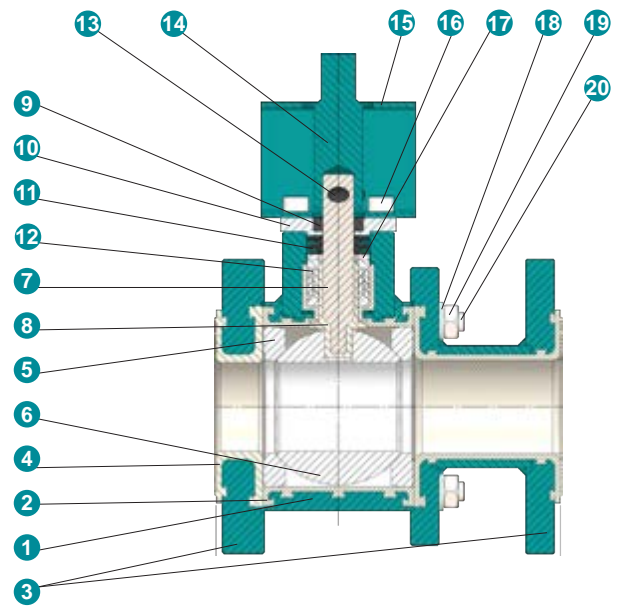


The ball valves TLBV meet the safety requirements of the PED 2014/68/EU and with antistatic lining as well the ATEX 2014/34/EU.

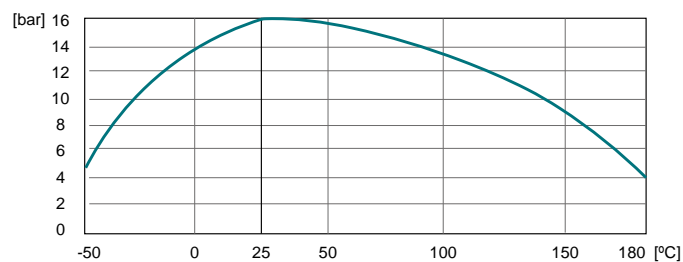


## Construction

Item	Description	Material
1	Body	Carbon steel 1.0037 / St 37, Epoxy coated
2	Body lining	PFA / PFA antistatic
3	Flange end pieces	Carbon steel 1.0037 / St 37, Epoxy coated
4	Lining of flanges	PFA / PFA antistatic
5	Seat ring	PTFE / PTFE antistatic
6	Ball	PTFE / PTFE antistatic
7	Stem	Carbon steel 1.6580 / 30CrNiMo8
8	Lining of stem	PFA / PFA antistatic
9	Stem gliding ring	PTFE antistatic
10	Retaining flange	Stainless steel 1.4571 / X6CrNiMo-Ti17-12-2 / ≈ AISI 316Ti
11	Spring washers	Spring steel 51Si7 / 1.5025
12	Packing bellows	PTFE / PTFE antistatic
13	Spring bolt	Steel 1.0044 / S275JR
14	Coupling	Carbon steel 1.0037 / St 37, Epoxy coated
15	Bracket	Carbon steel 1.0037 / St 37, Epoxy coated
16	Bolt	Stainless steel A4-70
17	Gland ring	Stainless steel 1.4571 / X6CrNiMo-Ti17-12-2 / ≈ AISI 316Ti
18-20	Body bolting	Stainless steel A4-70



## Pressure- / temperature diagram

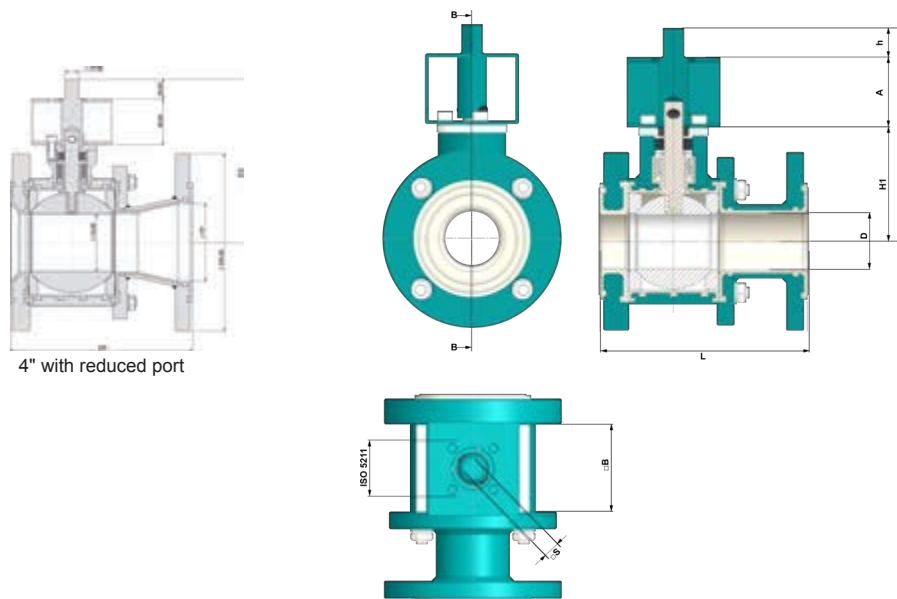


## Type code

TLBVA	23	F	A	.025	.3CT	T	T	.ANSI150	.SCF
①	②	③	④	⑤	⑥	⑦	⑧	⑨	⑩

①	Type	TLBVA	Teflon™ lined ball valve with ISO top flange	
②	Construction	23	2/2 ways, 3-piece body	
③	Bore	F	Full bore; 4" standard with reduced port; full port on request	
④	Face to face	A	ANSI B16.10	
⑤	Size	015-100	DN 15 - 100 mm (½" - 4")	
⑥	Material body	3CT	Carbon steel 1.0037 / St 37 PFA lined	
		3CA	Carbon steel 1.0037 / St 37 PFA antistatic lined (no FDA and EC 1935/2004 compliance)	
⑦	Material ball	T	PTFE	
		A	PTFE antistatic	
		TG	PTFE GF reinforced	Optional
		C	Ceramic Al <sub>2</sub> O <sub>3</sub>	Optional
⑧	Material seat rings	T	PTFE	
		A	PTFE antistatic	
		TG	PTFE GF reinforced	Optional
⑨	Flange drilling	ANSI150	Acc. to ANSI class 150	
⑩	Special executions	SCF	Cavity filler seats (very low dead volume)	

## Dimensions



Size	L	D	K	n x d	H	H1	A	s x h	ISO 5211		kv [m3/h]	[kg]
									Double acting	Single acting		
½"	108	13	60.5	4 x 16	107	48	60	11 x 12	F05	F05	17.5	1.9
¾"	117	18	70	4 x 16	105.8	49.5	60	11 x 12	F05	F05	31	2.9
1"	127	24	79.5	4 x 16	112.5	53.5	60	11 x 12	F05	F05	75	4.0
1 ¼"	140	32	89	4 x 16	151	72	80	14 x 16	F05	F07	155	6.0
1 ½"	165	38	98.5	4 x 16	157	78	80	14 x 16	F05	F07	200	8.4
2"	178	48	120.5	4 x 19	179	100	80	14 x 16	F05	F07	310	11.2
2 ½"	190	62	139.5	4 x 19	183.5	104.5	80	14 x 16	F05	F07	500	15.0
3"	203	76	152.5	8 x 19	212	127	100	17 x 19	F07	F10	800	20.5
4"	229	96	190.5	8 x 19	212	127	100	17 x 19	F07	F10	1250	29.0

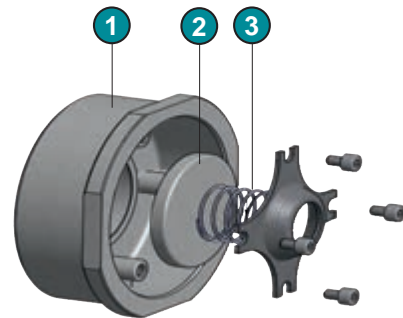
# DCV 930 - Disco check valves DN15 - 100

## Description

Disco check valves are suitable for liquids and gases in the industrial range as well as in systems where much higher demands are made on the material. Not suitable for media with solid components.

## Product features

- Max. working pressure DN15-100 40 bar
  - Rating PN6 to 40 other ratings on request
  - Face to face dimension DIN EN 558-1, series 49
  - Temperature range up to 200°C according to materials
  - Flange DIN EN 1092-1 B1 / ASME B16.5
- CE** The disco check valves 930 meet the safety requirements of the pressure Equipments Directive 97/23/EC (PED) appendix 1 for fluids of the groups 1 and 2.

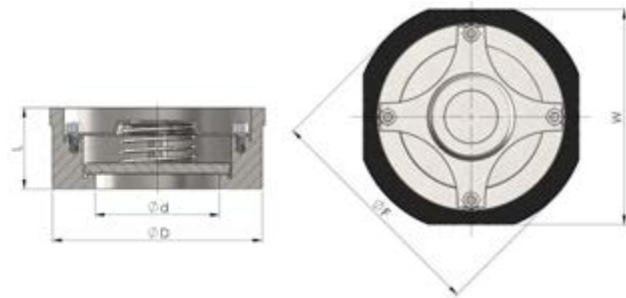


## Construction

1	Body
2	Disc
3	Spring

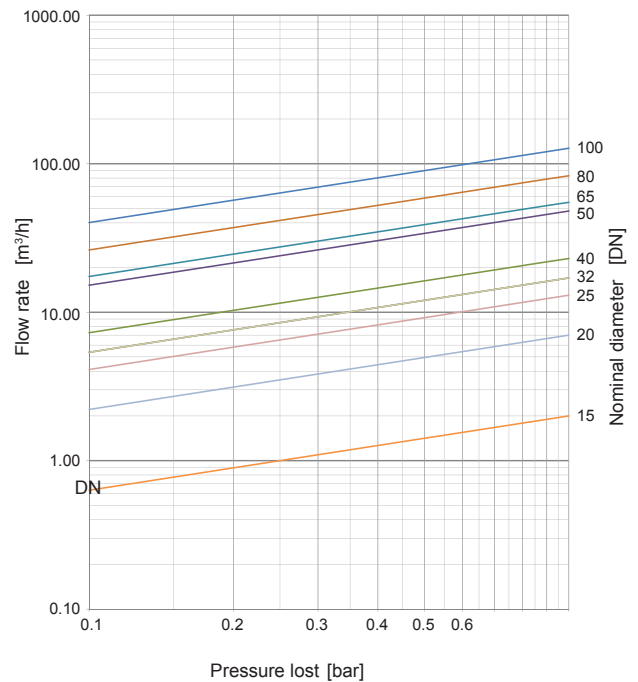
## Dimensions

	Ød	ØD	ØF	L	W	kg
15	15	43	53	16	43	0.10
20	20	53	63	19	53	0.16
25	25	63	73	22	63	0.28
32	30	75	84	28	75	0.52
40	38	86	94	32	86	0.70
50	47	95	107	40	95	1.10
65	62	115	126	46	115	1.58
80	77	131	145	50	131	1.78
100	96	150	164	60	150	3.30



DN [mm]	kv [m³/h]	opening pressure [mbar]			without spring
		↔	↑	↓	↑
15	2	25	30	20	2.5
20	7	25	30	20	2.5
25	13	25	30	20	3
32	17	25	30	20	3.5
40	23	25	30	20	3.5
50	48	25	30	20	4
65	55	25	30	20	k.W.
80	83	25	30	20	k.W.
100	127	25	30	20	k.W.

## Pressure loss diagram



## Type code

DCV	100	6	6	4C0	4K0	T
①	②	③	④	⑤	⑥	⑦

① Type	DCV	disco check valves	
② Nominal Diameter	015-100	mm	
③ working pressure	6	40 bar	
④ Rating	6	PN6/10/16/25/40	
⑤ Body	4C0	Stainless steel 1.4408 (A 351 CF8M)	
⑥ Disc	4K0	Stainless steel 1.4436 (AISI 316), Spring Stainless steel 1.4436 (AISI 316)	
⑦ Seal	N	NBR	-10°C ÷ 90°C
	E	EPDM	-10°C ÷ 120°C
	V	FKM	-10°C ÷ 200°C
	T	PTFE	-10°C ÷ 200°C
	M	metal seated (without O-ring)	-10°C ÷ 200°C
⑧ Options	FF	free of oil and grease	
	KTW	Seal with KTW approval	
	FDA	Seal with FDA approval	

Other executions on request !

## Operating instructions

### Appropriate use in accordance to designed capabilities:

DCV 930 disco check valves are designed to block media on one side of the pipe within allowable pressure and temperature limits and to be installed in a pipe system only. They have only to be used on fluids, to which the material and the seals are resistant. They are not suitable for fluids with solid content.

### Storage:

Disco check valves have to be transported in their original packaging and to be stored in a clean location. They include sealing elements consisting of organic material, that reacts to environmental effects. Therefore, they have to be stored in a place, which has also to be kept as cool, dry and dark as possible. The front and back sides of the disco check valves must not be mechanically damaged.

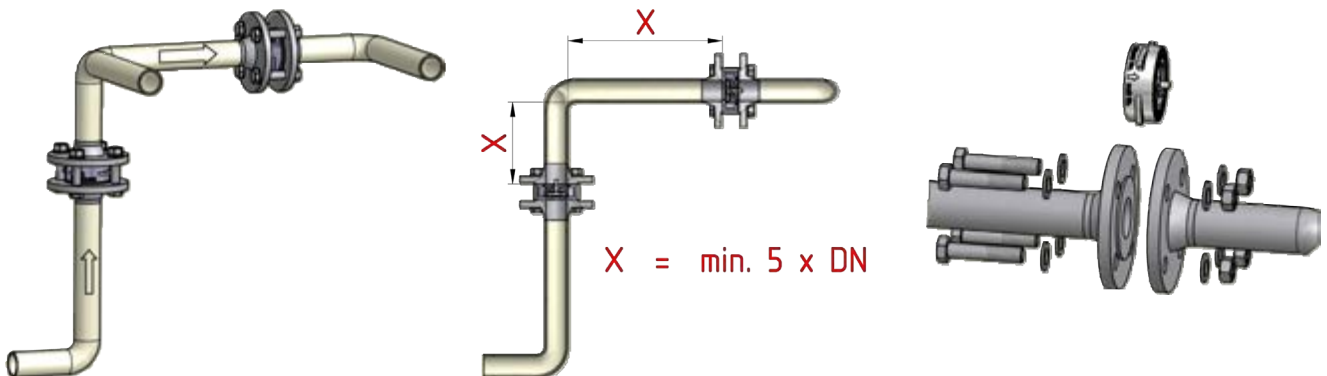
### Installation:

- Possible damages to the disco check valves and o-rings have to be checked prior to installation. Check if the valve can be moved. Damaged parts must not be installed.
- Make sure that only those disco check valves are installed, that meet the operational requirements regarding pressure category, chemical resistance, connection and dimensions.
- Make sure to install a minimum of 5 x nominal diameter of straight pipeline upstream and downstream the valve.
- Do not install the valves directly onto a pump flange.
- Avoid pulsation and pressure impact.
- Watch flow direction (see arrow on the plate) !



### Special risks:

Before the swing check valve is being removed, pressure has to be completely taken off the plant to avoid media escaping from the pipe. Fluid being left in the pipe must be drained off. Fluid, which has remained in the valve and comes out during removal, is to be collected. If hazardous fluids or gases are left in the valves, the safety measurements required must be taken.



## Description

Disco check valves are suitable for liquids and gases in the industrial range as well as in systems where much higher demands are made on the material. Not suitable for media with solid components.

## Product features

- Max. working pressure 40 bar
- Rating DN 15-100 PN6 up to 40  
DN 125-300 PN10 up to 40  
other ratings on request
- Temperature range DN 15-100 max. 400°C acc. to materials  
DN 125-300 max. 300°C acc. to materials
- Face to face dimension DIN EN 558-1, series 49



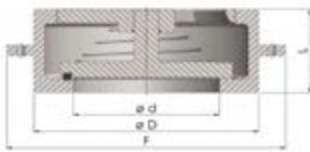
The disco check valves 932 meet the safety requirements of the pressure Equipments Directive 97/23/EC (PED) appendix 1 for fluids of the groups 1 and 2.

## Construction

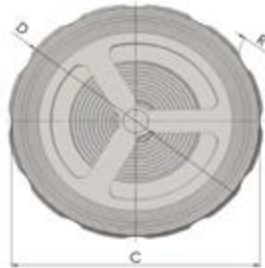
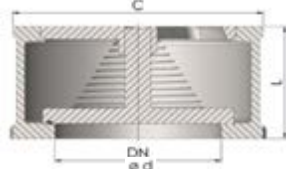
1	Body
2	Disc
3	Spring
4	Spring retainer

## Dimensions

### DN 15 - 100



### DN 125 - 300

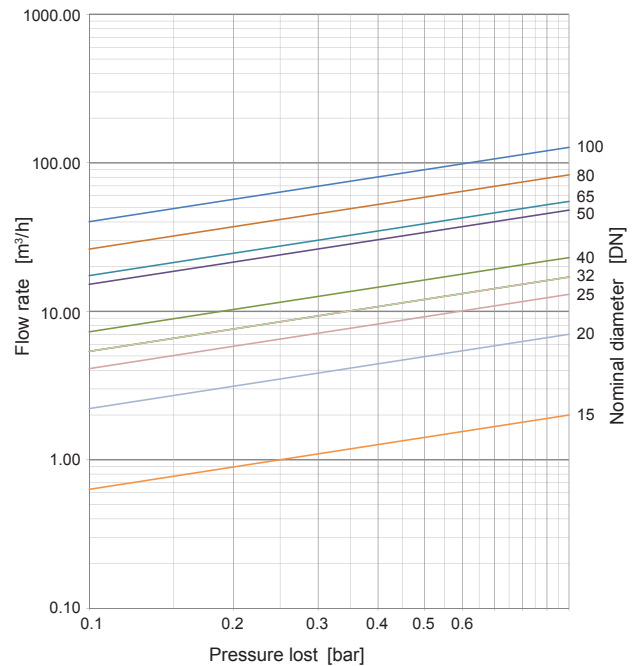


DN	Ø d	Ø D	F	L
15	15	43	56	16
20	19	53	69	19
25	25	63	76	22
32	32	75	87	28
40	38	80	101	31.5
50	47	95	114	40
65	63	115	136	46
80	77	131	154	50
100	97.5	150	178	60

DN	Ø d	PN10/16			PN25		PN40	ANSI150	L
		C	D	R	C	R	D	D	
125	118.5	194	194	-	194	-	194	194	90
150	141	220	220	-	220	-	220	220	106
200	190	275	280	11	286	30	294	280	140
250	229	331	340	11	344	33	356	340	145
300	280	380	386	11	404	33	421	404	160



## Pressure loss diagram



DN [mm]	kv [m³/h]	opening pressure [mbar]			without spring
		↔	↑	↓	↑
15	4	20	24	16	4
20	7	20	25	15	5
25	10	20	25	15	5
32	17	20	26	14	6
40	24	20	27	13	7
50	37	20	28	12	8
65	61	20	29	11	9
80	74	20	30	10	10
100	115	20	33	7	13
125	201	30	46	14	16
150	286	30	47	13	17
200	553	30	51	9	21
250	643	40	64	16	24
300	867	40	68	12	38



Type code

DCV932 100 . 3 6 . 4U0 . 4U0 . T

① ② ③ ④ ⑤ ⑥ ⑦

① Type	DCV932	Disco check valves					
② Nominal Diameter	015-300	mm					
③ Working pressure	3	16 bar					DN15-100
	5	25 bar					
	6	40 bar					
④ Rating	6	PN6/10/16/25/40, ANSI B16.5 Cl.150/300					DN15-300
⑤ + ⑥ Execution		<b>Body</b>	<b>Disc</b>	<b>Spring retainer</b>	<b>Spring</b>	<b>Max. working pressure</b>	
	4U0.4U0	Stainless steel 1.4581, A 351 CF8M	Stainless steel 1.4581, A 351 CF8M	Stainless steel 1.4581, A 351 CF8M	Stainless steel 1.4571, AISI 316 Ti	40 bar	DN15-100
	5F0.5F0	Allu-bronze CC333G (2.0975)	Allu-bronze CC333G (2.0975)	Allu-bronze CC333G (2.0975)	Hastelloy C4 (2.4610)	25 bar	
	5F0.4U0	Allu-bronze CC333G (2.0975)	Stainless steel 1.4581, A 351 CF8MC	A 351 CF8MC	Stainless steel 1.4571, AISI 316 Ti	25 bar	
	3HZ.4U0	Steel 1.0619, zinc plated, A 216 WCB	Stainless steel 1.4581, A 351 CF8M	Stainless steel 1.4581, A 351 CF8M	Stainless steel 1.4571, AISI 316 Ti	40 bar	
	4W0.4W0	Superduplex 1.4469, A 890 Grade 5A	Superduplex 1.4469, A 890 Grade 5A	Superduplex 1.4469, A 890 Grade 5A	Hastelloy C4 (2.4610)	40 bar	DN125-300
	4C0.4C0	Stainless steel 1.4408, AISI 316	Stainless steel 1.4408, AISI 316	Stainless steel 1.4408, AISI 316	Stainless steel 1.4571, AISI 316 Ti	40 bar	
3HZ.4C0	Steel 1.0619, zinc plated, A 216 WCB	Stainless steel 1.4408, AISI 316	Stainless steel 1.4408, AISI 316	Stainless steel 1.4571, AISI 316 Ti	40 bar		
⑦ Seal	N	NBR			-10°C ÷ 90°C		
	E	EPDM			-10°C ÷ 120°C		
	V	FKM			-10°C ÷ 200°C		
	T	PTFE			-10°C ÷ 200°C		
	M	metal seated (without O-ring)			-10°C ÷ 400°C		

Other executions on request !

Operating instructions

Appropriate use in accordance to designed capabilities:

DCV 932 disco check valves are designed to block media on one side of the pipe within allowable pressure and temperature limits and to be installed in a pipe system only. They have only to be used on fluids, to which the material and the seals are resistant. They are not suitable for fluids with solid content.

Storage:

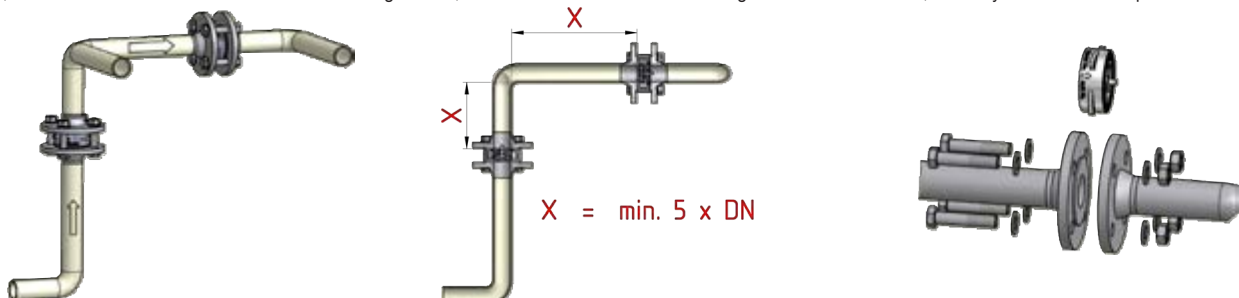
Disco check valves have to be transported in their original packaging and to be stored in a clean location. They include sealing elements consisting of organic material, that reacts to environmental effects. Therefore, they have to be stored in a place, which has also to be kept as cool, dry and dark as possible. The front and back sides of the disco check valves must not be mechanically damaged.

Installation:

- Possible damages to the disco check valves and o-rings have to be checked prior to installation. Check if the valve can be moved. Damaged parts must not be installed.
- Make sure that only those disco check valves are installed, that meet the operational requirements regarding pressure category, chemical resistance, connection and dimensions.
- Make sure to install a minimum of 5 x nominal diameter of straight pipeline upstream and downstream the valve.
- Do not install the valves directly onto a pump flange.
- Avoid pulsation and pressure impact.
- Watch flow direction (see arrow on the plate) !
- Centre perfectly the valve body between the flange screws.
- Tighten the flange screws crosswise regarding the torque required.

Special risks:

Before the swing check valve is being removed, pressure has to be completely taken off the plant to avoid media escaping from the pipe. Fluid being left in the pipe must be drained off. Fluid, which has remained in the valve and comes out during removal, is to be collected. If hazardous fluids or gases are left in the valves, the safety measurements required must be taken.



# RHEA R1C - Swing check valve DN32 - 600

## Description

Swing check valve, for mounting directly between flanges according to DIN. Maintenance not required. For liquids and gases in the industrial range, general services, water treatment. Not suitable for media with solid components.

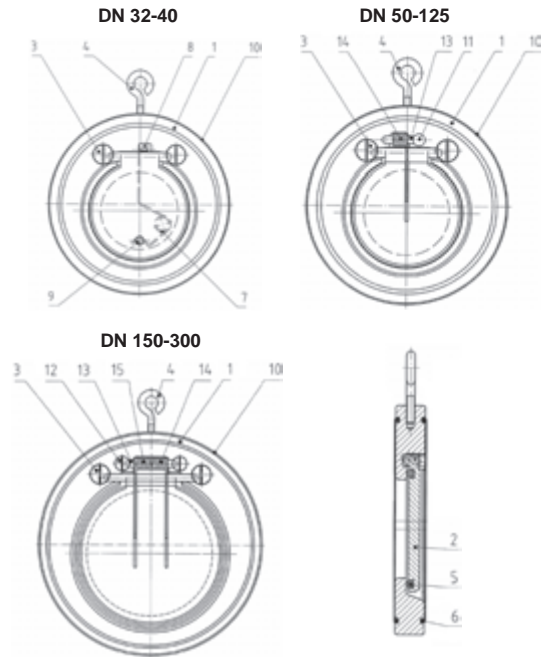
## Product features

- Max. working pressure DN32-250 -> 16 bar, DN300-600 -> 10 bar
  - Rating PN10, PN16, other ratings on request
- The check valves RHEA R1C meet the safety requirements of the pressure Equipments Directive 97/23/EC (PED) appendix 1 for fluids of the groups 1 and 2.

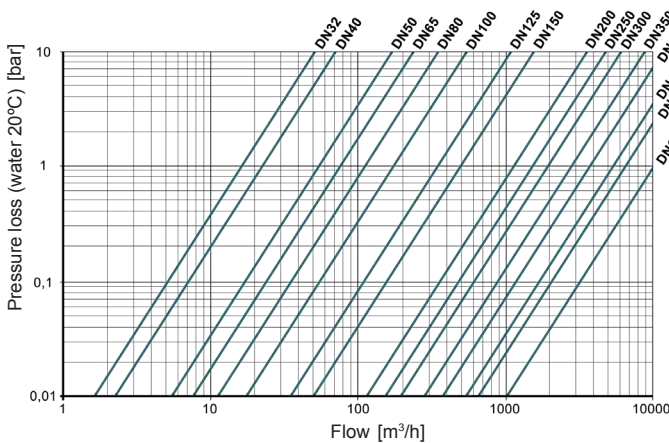


## Construction

1	Body	9	Jig
2	Disc	10	Plate
3	Screw	11	Jig for pin
4	Eye bolt	12	Screws
5	O-Ring (seat)	13	Pin for spring
6	O-Ring (flange)	14	Spring right (option, max. DN300)
7	Spring (option)	15	Spring left (option, max. DN300)
8	Pivot		

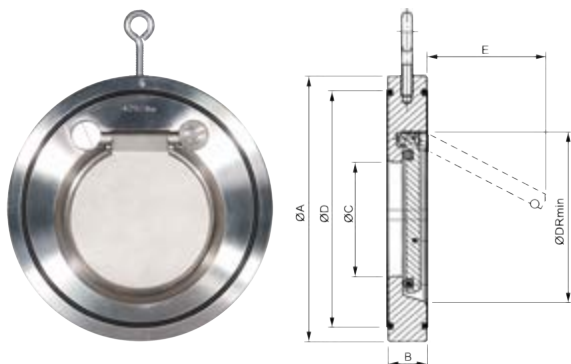


## Hydraulic characteristics



DN [mm]	kv [m³/h]	Opening pressure [mbar]			
		without spring	with spring	without spring	with spring
32	16,2	~ 2	~ 15	~ 10	~ 25
40	22,2	~ 2	~ 15	~ 10	~ 25
50	54	~ 2	~ 15	~ 10	~ 25
65	75	~ 2	~ 15	~ 10	~ 25
80	112	~ 2	~ 15	~ 10	~ 25
100	172	~ 2	~ 15	~ 10	~ 25
125	342	~ 2	~ 15	~ 10	~ 25
150	490	~ 2	~ 15	~ 10	~ 25
200	1128	~ 4	~ 17	~ 14	~ 25
250	1500	~ 4	~ 17	~ 14	~ 25
300	2290	~ 4	~ 17	~ 14	~ 25
350	2890	~ 6		~ 18	
400	3700	~ 6		~ 18	
450	5000	~ 6		~ 18	
500	6550	~ 6		~ 24	
600	9500	~ 6		~ 26	

## Dimensions



DN	A (PN10)	A (PN16)	B	C	D	E	DR	[kg]
32	85	85	15	18	59	22	37	0,5
40	95	95	16	22	72	25	43	0,8
50	109	109	14	32	86	37	54	1,0
65	129	129	14	40	109	50	70	1,4
80	144	144	14	54	119	61	82	1,8
100	164	164	18	70	146	77	106	2,9
125	195	195	18	92	173	98	131	3,9
150	220	220	20	112	197	120	159	4,5
200	275	275	22	154	255	160	207	7,5
250	330	331	26	192	312	190	260	13,0
300	380	386	32	227	363	220	309	23,0
350	440	446	38	266	416	250	341	33,5
400	491	499	44	310	467	290	392	52,0
450	541	558	52	350	520	340	442	71,0
500	596	621	58	400	550	390	493	94,0
600	698	738	62	486	660	470	595	128,0

## Type code

R1C	100	. 3	3 .	3IZ	. 4U0	. N	. (S)
①	②	③	④	⑤	⑥	⑦	⑧

① Type	R1C	Swing check valve - wafer type	DN32-600
② Nominal diameter	032-600	mm	
③ Working pressure	2	10 bar	DN300-600
	3	16 bar	DN32-250
④ Rating	2	PN10	DN300-600
	3	PN16	DN32-250
		andere Normen auf Anfrage (PN6/25/40, ANSI B16.5 Cl.150/300)	
⑤ Body	3HZ	galvanized steel 10619	
	4C0	Stainless steel 1.4408 (AISI 316)	
	5C0	Aluminiumbronze ASTM B148 C95800 / G-Cu Al 10 Ni	
⑥ Disc	3HZ	galvanized steel 10619	
	4U0	Stainless steel 1.4581 (~AISI 316Cb)	
	5C0	Aluminiumbronze ASTM B148 C95800 / G-Cu Al 10 Ni	
⑦ O-Ring	N	Nitrile (NBR)	-10°C + 90°C
	E	EPDM	-10°C + 120°C
	V	Viton® (FPM)	-10°C + 150°C
	T	PTFE	-10°C + 200°C
	M	metal seated (without O-ring)	-10°C + 400°C
⑧ Spring	S	Option: with spring, stainless steel	DN32-300

Other executions on request !

## Operating instructions

### Appropriate use in accordance to designed capabilities:

RHEA R1C swing check valves are designed to block media on one side of the pipe within allowable pressure and temperature limits and to be installed in a pipe system only. **They may be used only with media, which the material and the seals are resistant to.** They are not suitable for media with solid components.

### Storage:

Swing check valves include sealing elements consisting of organic material, that reacts to environmental effects. Therefore, they are to be stored in their original packaging in a place, which is also to be kept as cool, dry and dark as possible. The front and back sides of the swing check valves must not be mechanically damaged.

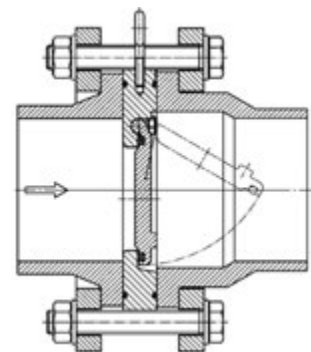
### Transport:

The personnel must pay special attention, when big swing check valves (>DN 100) are unpacked and transported. The valve is to be held in a horizontal position in a way, that it can open at the top only. This is to avoid, that the valve unintentionally drops down and is damaged.



### Installation:

- Possible damages to the swing check valves and O-rings are to be checked prior to installation. Check if the valve can be moved. Damaged parts must not be installed.
- Make sure that only those swing check valves are being installed, that meet the operational requirements regarding pressure category, chemical resistance, connection and dimensions.
- Make sure to install a minimum of 5 x nominal diameter of straight pipeline in front of and behind the swing check valve.
- Do not install the valves directly onto a pump flange.
- Avoid pulsation and pressure impact.
- Vertical throughput is allowable only if the valve can open at the top.
- In case of horizontal throughput, the ring screw must be at the top.
- Watch flow direction (see arrow on the plate) !
- The swing check valves are placed between the flanges by means of a ring screw. They are put in their central position according to the outer diameter of the case and the flange screw inner side.
- Tighten the flange screws crosswise.
- After the installation is finished, check the tightness of the connections by a pressure check.



### Special risks:

Before the swing check valve is being removed, pressure has to be completely taken off the plant to avoid media escaping from the pipe. Fluid being left in the pipe must be drained off. Fluid, which has remained in the valve and comes out during removal, is to be collected. If hazardous fluids or gases are left in the valves, the safety measurements required must be taken.

## Description

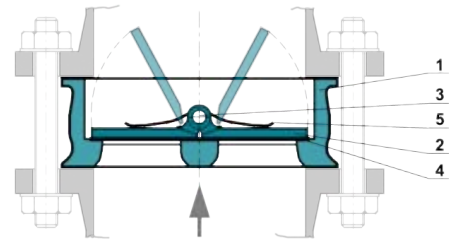
DUO check valve, for mounting directly between flanges according to DIN. Maintenance not required. For liquids and gases in the industrial range, general services, water treatment. Not suitable for media with solid components.

## Product features

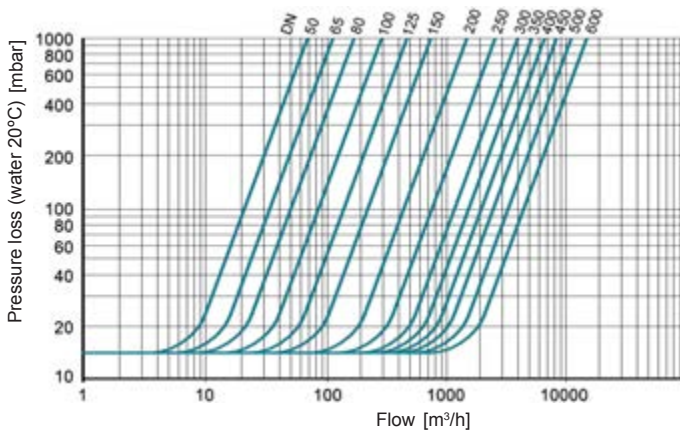
- Max. working pressure 16 bar
- Rating PN10, PN16, other ratings on request
- Face to face dimension according to DIN EN 558-1

## Construction

1	Body
2	Plate
3	Stem
4	Seals
5	Spring



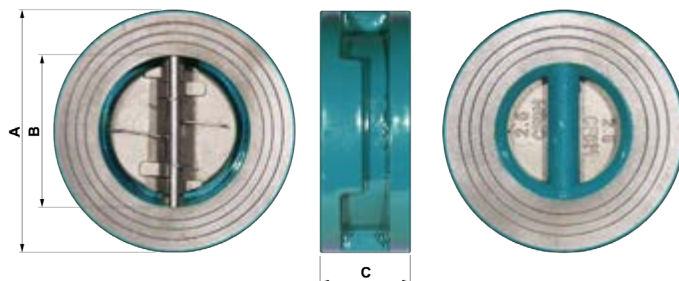
## Hydraulic characteristics



DN [mm]	Kv-value [m³/h]	min. opening pressure [mbar]		
		← →	↑	↓
50	63	15	20	10
65	109	15	20	10
80	172	15	20	10
100	289	15	20	10
125	476	15	20	10
150	750	15	20	10
200	1.550	15	20	10
250	2.880	15	20	
300	4.100	15	20	
350	5.274	15	20	
400	8.250	15	30	
450	10.550	15	30	
500	14.500	15	30	
600	24.000	15	30	

$$c_v = k_v \times 1,16$$

## Dimensions



DN	A PN10	A PN16	B	C	[kg]
50	107	107	70,5	43	1,5
65	127	127	80	46	2,4
80	142	142	94	64	3,6
100	162	162	117	64	5,7
125	192	192	145	70	7,3
150	218	218	170	76	9,0
200	273	273	221	89	17
250	328	328	275,5	114	26
300	378	383	325,5	114	42
350	438	444	360	127	55
400	489	495	410	140	75
450	539	555	467	152	101
500	594	617	515	152	111
600	695	734	624	178	172

## Type code

N1C	100	.	3	3	.	4C0	.	4C0	.	N
①	②		③	④		⑤		⑥		⑦

① Type	N1C	DUO check valve - wafer type	DN50-600
② Nominal diameter	032-600	mm	≤ DN 1000 on request
③ Working pressure	2	10 bar	
	3	16 bar	
④ Rating	2	PN10	
	3	PN16	
		other ratings on request	
⑤ Body	2AE	GGG40, Epoxy coated, min. 80 µm	
	4C0	Stainless steel 1.4408	
	5D0	Alubronze ASTM B148 C95400	
⑥ Plate	2AN	GGG40, nickled	
	4C0	Stainless steel 1.4408	
	5D0	Alubronze ASTM B148 C95400	
⑦ O-Ring	N	Nitrile (NBR)	-10°C ÷ 90°C
	E	EPDM	-10°C ÷ 120°C
	V	Viton® (FPM)	-10°C ÷ 150°C

Other executions on request !

## Operating instructions

### Appropriate use in accordance to designed capabilities:

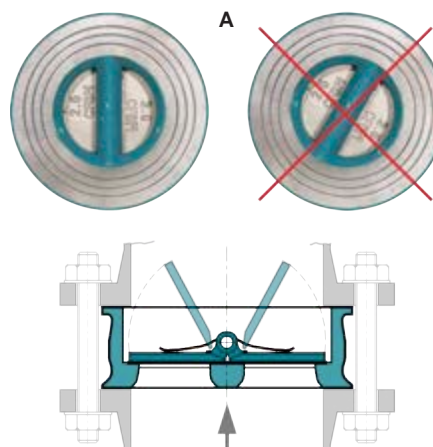
NEPTUNIA N1C swing check valves are designed to block media on one side of the pipe within allowable pressure and temperature limits and to be installed in a pipe system only. **They may be used only with media, which the material and the seals are resistant to.** They are not suitable for media with solid components.

### Storage:

Swing check valves include sealing elements consisting of organic material, that reacts to environmental effects. Therefore, they are to be stored in their original packaging in a place, which is also to be kept as cool, dry and dark as possible. The front and back sides of the swing check valves must not be mechanically damaged.

### Installation:

- Possible damages to the check valve and O-rings are to be checked prior to installation. Check if the plates can be moved. Damaged parts must not be installed.
- Make sure that only those check valves are being installed, that meet the operational requirements regarding pressure category, chemical resistance, connection and dimensions.
- Make sure to install a minimum of 5 x nominal diameter of straight pipeline in front of and behind the swing check valve.
- Do not install the valves directly onto a pump flange.
- Avoid pulsation and pressure impact.
- In a horizontal pipe, the check valve must always be installed with its hinge pin in the vertical position (A).
- Watch flow direction (see arrow on the plate) !
- The check valves are put in their central position according to the outer diameter of the case and the flange screw inner side.
- Tighten the flange screws crosswise.
- After the installation is finished, check the tightness of the connections by a pressure check.



### Special risks:

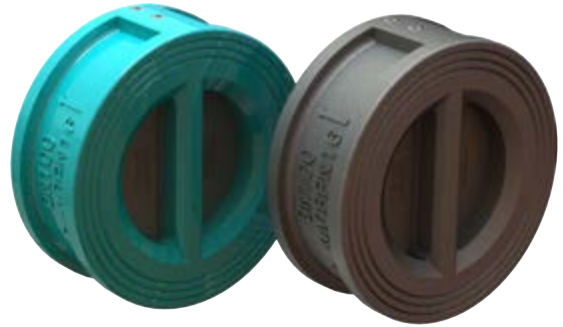
Before the swing check valve is being removed, pressure has to be completely taken off the plant to avoid media escaping from the pipe. Fluid being left in the pipe must be drained off. Fluid, which has remained in the valve and comes out during removal, is to be collected. If hazardous fluids or gases are left in the valves, the safety measurements required must be taken.

## Description

DUO check valve, for mounting directly between flanges according to DIN. Maintenance not required. For liquids in general services and water treatment. Not suitable for media with solid components.

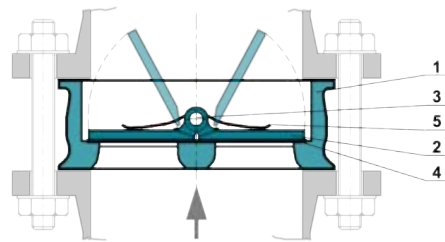
## Product features

- Body construction Wafer
- Max. working pressure 16 bar
- Rating PN10, PN16, other ratings on request
- Face to face dimension according to DIN EN 558-1
- Temperature range -10°C + +120°C

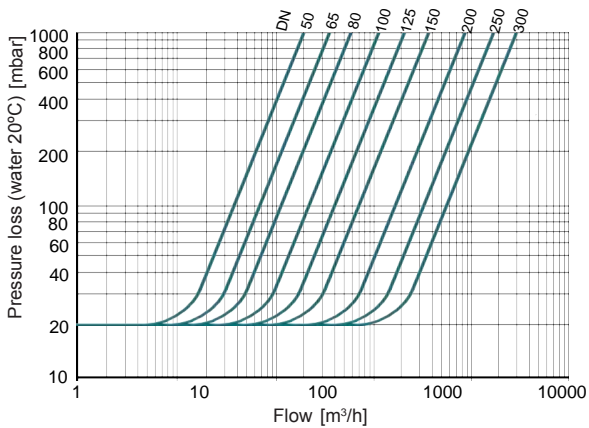


## Construction

1	Body
2	Plate
3	Stem
4	Seals
5	Spring



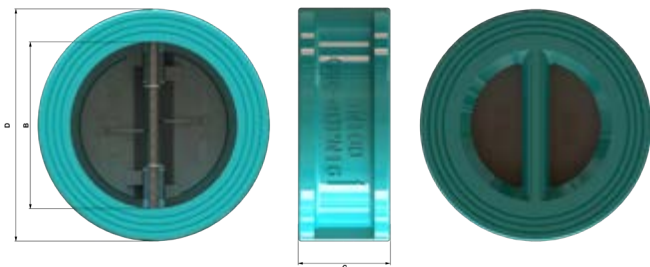
## Hydraulic characteristics



DN [mm]	Kv-value [m³/h]	Min. opening pressure [mbar]
50	36	20
65	64	20
80	123	20
100	208	20
125	353	20
150	670	20
200	1.467	20
250	2.494	20
300	3.351	20

$$c_v = K_v \times 1,16$$

## Dimensions



DN [mm]	A PN10/16	B	C	Weight [kg]
50	107	65	43	1,5
65	127	80	46	2,3
80	142	94	64	3,6
100	162	117	64	4,4
125	192	145	70	6,0
150	218	170	76	8,6
200	273	224	89	15
250	328	265	114	24
300	378	310	114	35

## Type code

N1V	100	. 3	3 -	2AE	. 4C0	. E
①	②	③	④	⑤	⑥	⑦

① Type	N1V	DUO check valve - wafer type	DN50-300
② Nominal diameter	50 - 300	mm	
③ Working pressure	3	16 bar	
④ Rating	3	PN 10 and PN 16	
⑤ Body	2AE	GGG40, Epoxy (Resicoat®) coated	
	4C0	Stainless steel 1.4408	
⑥ Plate	2AN	GGG40 Nickel coated	
	4C0	Stainless steel 1.4408	
⑦ Seals	E	EPDM (WRAS approved)	

## Operating instructions

### Appropriate use in accordance to designed capabilities:

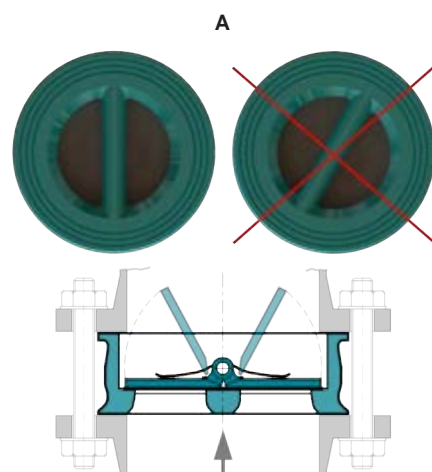
NEPTUNIA N1V check valves are designed to block media on one side of the pipe within allowable pressure and temperature limits and to be installed in a pipe system only. **They may be used only with media, which the material and the seals are resistant to.** They are not suitable for media with solid components.

### Storage:

Check valves include sealing elements consisting of organic material, that reacts to environmental effects. Therefore, they are to be stored in their original packaging in a place, which is also to be kept as cool, dry and dark as possible. The front and back sides of the check valves must not be mechanically damaged.

### Installation:

- Possible damages to the check valve and O-rings are to be checked prior to installation. Check if the plates can be moved. Damaged parts must not be installed.
- Make sure that only those check valves are being installed, that meet the operational requirements regarding pressure category, chemical resistance, connection and dimensions.
- Make sure to install a minimum of 5 x nominal diameter of straight pipeline in front of and behind the check valve.
- Do not install the valves directly onto a pump flange.
- Avoid pulsation and pressure impact.
- In a horizontal pipe, the check valve must always be installed with its hinge pin in the vertical position (A).
- Watch flow direction (see arrow on the plate) !
- The check valves are put in their central position according to the outer diameter of the case and the flange screw inner side.
- Tighten the flange screws crosswise.
- After the installation is finished, check the tightness of the connections by a pressure check.



### Special risks:

Before the check valve is being removed, pressure has to be completely taken off the plant to avoid media escaping from the pipe. Fluid being left in the pipe must be drained off. Fluid, which has remained in the valve and comes out during removal, is to be collected. If hazardous fluids or gases are left in the valves, the safety measurements required must be taken.

# FPCV - Flanged Poppet Check Valve

## Description

The FPCV check valve, with flanged ends, for use in the most demanding corrosive and toxic applications. The product is available for both standard DIN PN 10/16 and ANSI 150.

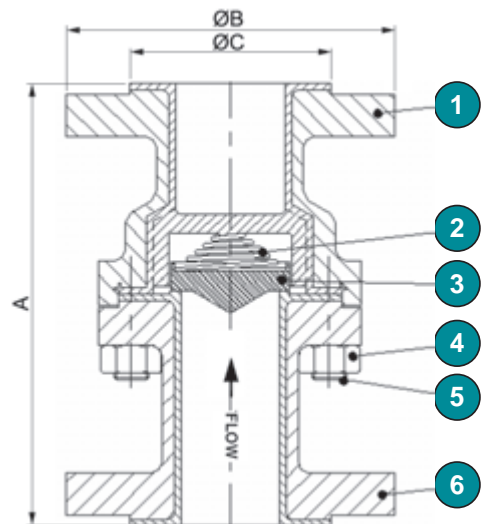


## Product features

- Design suitable for both horizontal and vertical installation
- Flanged connection for installations not compatible with the wafer installation
- Guided spring and poppet - secure from misalignment
- Ideal design for low pressure duties
- Full bore design provides maximum flow with minimum pressure drop
- Hastelloy C276 spring as standard, other materials available
- Poppet lift pressure 14 mbar
- Standard face to face dimensions
- Customized connections available

## Material specification

Item	Qty	Description	Materials	Specification	DIN equivalent material
1	1	Valve body	Carbon steel / PFA	ASTM A216 Gr. WCB / PFA	1.0619 / PFA
2	1	Spring	Hastelloy® C276	ASTM B574 Gr UNS N10276	2.4819
3	1	Poppet	PTFE	BS6564 UA1/1	-
4	4 / 6	Nut	Stainless steel	ASTM F594 Gr. 304	1.4301
5	4 / 6	Stud	Stainless steel	BS970 Pt 1 Gr 303S42	1.4305
6	1	Valve Inlet	Carbon steel / PFA	ASTM A216 Gr. WCB / PFA	1.0619 / PFA
		Paint finish	75µ, RAL 5021	Epoxy coating	-
		PFA lining	ASTM D 3307		

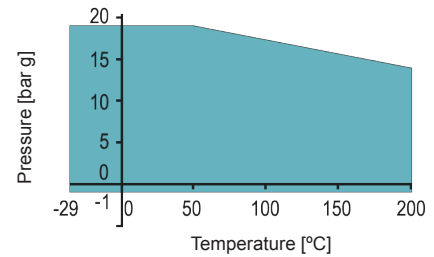




## Dimensions

Nominal size		Face to face	Flange diameter	Raised face	Weight
ANSI 150 Piping systems					
Inches	mm	A	ØB	ØC	kg
1	25	152	110	51	3.9
1½	40	178	125	73	7.1
2	50	203	150	92	9.5
3	80	241	190	127	17.1
4	100	292	230	157	27.7
DIN PN10/16 Piping systems					
Inches	mm	A	ØB	ØC	kg
1	25	160	115	68	4
1½	40	200	150	88	7
2	50	230	165	102	10
3	80	310	200	138	20
4	100	350	220	158	30

Pressure / Temperature Diagram



## Options

Component	Description
Body	Stainless steel
Lining	Conductive PFA
Length	Special face to face dimensions
Spring	Alternative pressure ratings
	PTFE encapsulated
	Alternative spring materials
	Without spring (floating poppet)

## Type code

<b>FPCV</b>	<b>080</b>	<b>.</b>	<b>3</b>	<b>3</b>	<b>.</b>	<b>3HT</b>	<b>.</b>	<b>T</b>	<b>.</b>	<b>S</b>
①	②		③	④		⑤		⑥		⑦

①	Type	<b>FPCV</b>	Flanged Poppet Check Valve
②	Nominal diameter	<b>025 - 100</b>	mm
③	Working pressure	<b>3</b>	16 bar
④	Rating	<b>3</b>	PN10/16
		<b>A</b>	ANSI Class 150 others on request
⑤	Body	<b>3HT</b>	Carbon steel / PFA
		<b>4MT</b>	Stainless steel / PFA
⑥	Poppet	<b>T</b>	PTFE
⑦	Spring		without spring (floating poppet)
		<b>S</b>	Hastelloy C276

# TLBCV – Teflon™ Lined Ball Check Valve

## Description

Full bore Teflon™ lined ball check valve with flanged ends and 3-piece body, for corrosive applications.

## Product features

- Size range DN 15 – 100
- Flange rating PN 10/16
- Face to face dimension DIN 3202-F1 / EN 558-1
- Max. working pressure max. 16 bar
- Temperature range -50 °C to 180 °C
- Anti-static version available as option

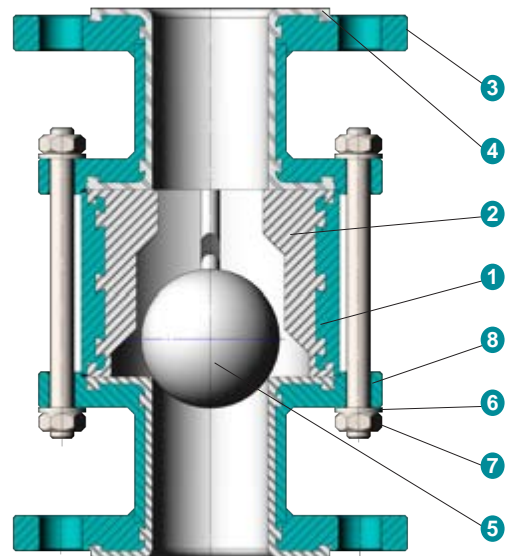


The ball check valves TLBCV meet the safety requirements of the PED 2014/68/EU and with antistatic lining as well the ATEX 2014/34/EU

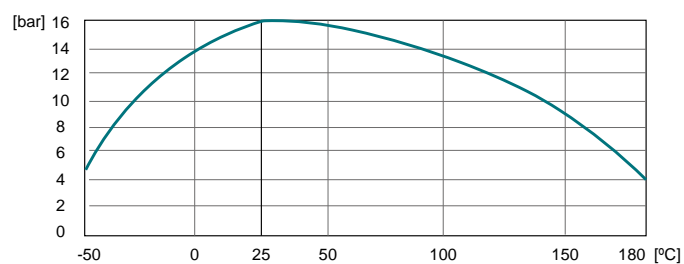


## Construction

Item	Description	Material
1	Body	Carbon steel 1.0037 / St 37, Epoxy coated
2	Body lining	PFA / PFA antistatic
3	Flange end pieces	Carbon steel 1.0037 / St 37, Epoxy coated
4	Lining of flanges	PFA / PFA antistatic
5	Ball	PTFE / PTFE antistatic (DN 65 - 100 with steel reinforcements)
6-8	Body bolting	Stainless steel A2-70



## Pressure- / temperature diagram



# TLBCV – Teflon™ Lined Ball Check Valve

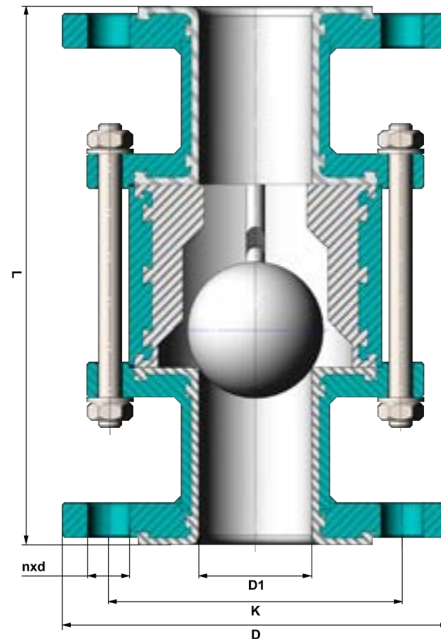
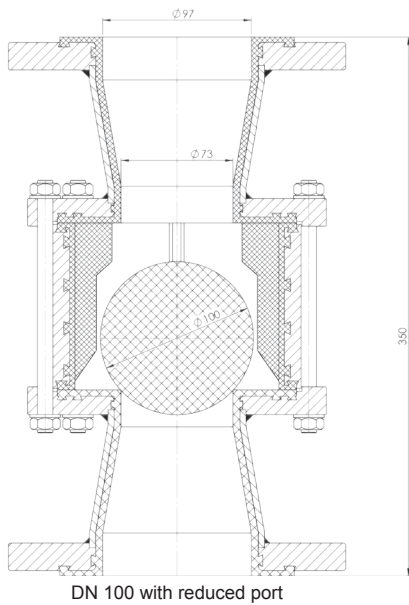
## Type code

TLBCV F F . 025 . 3CT . T . T - ...

① ② ③ ④ ⑤ ⑥ ⑦ ⑧

① Type	TLBVH	Teflon™ Lined Ball Check Valve	
② Bore	F	Full bore, DN 100 standard with reduced port; full port on request	
③ Face to face	F	DIN 3202-F1 / EN 558-1 (long)	
④ Size	015-100	DN 15 - 100 mm (½" - 4")	
⑤ Material body	3CT	Carbon steel 1.0037 / St 37 PFA lined	
	3CA	Carbon steel 1.0037 / St 37 PFA antistatic lined (no FDA and EC 1935/2004 compliance)	
⑥ Material ball	T	PTFE	
	A	PTFE antistatic	
	TG	PTFE GF reinforced	Optional
⑦ Material seat rings	C	Ceramic Al <sub>2</sub> O <sub>3</sub>	Optional
	T	PTFE	
	A	PTFE antistatic	
⑧ Special executions	TG	PTFE GF reinforced	Optional
	SCF	Cavity filler seats (very low dead volume)	
	ANSI150	Flange drilling acc. to ANSI class 150	

## Dimensions



DN	D	K	n x d	D1	L	kv [m <sup>3</sup> /h]	[kg]
15	95	65	4 x 14	13	130	17.5	1.9
20	105	75	4 x 14	18	150	31	2.9
25	115	85	4 x 14	24	160	75	4.0
32	140	100	4 x 18	32	180	155	6.0
40	150	110	4 x 18	38	200	200	8.4
50	165	125	4 x 18	48	230	310	11.2
65	185	145	4 x 18	62	290	500	15.0
80	200	160	8 x 18	76	310	800	20.5
100	220	180	8 x 18	96	350	1250	29.0

# STCV - Swing Check Valve

## Description

The STCV is a high integrity moulded wafer swing check valve, with fully encapsulated one piece disc / hinge assembly ensuring prolonged maintenance free service. Suitable for a wide range of chemical process conditions. The product is available for both standard DIN PN 10/16 and ANSI 150.

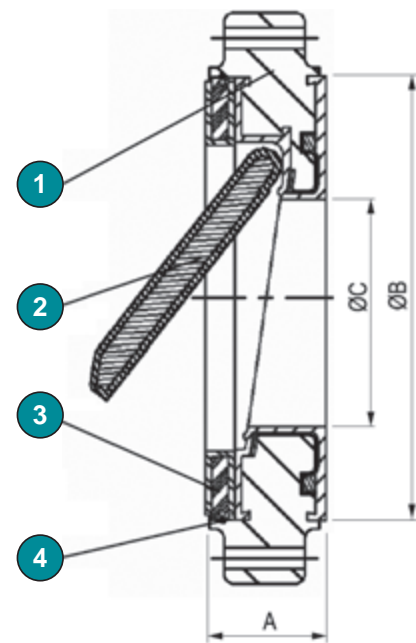
## Product features

- Retained hinge design to aid installation and prevent disc removal in service
- Machined body T-slots and liner locking system securely holding liner in position
- Angled seat design ensures positive location in horizontal lines
- Virgin PFA with no pigmentation to hide defects
- Strong robust design



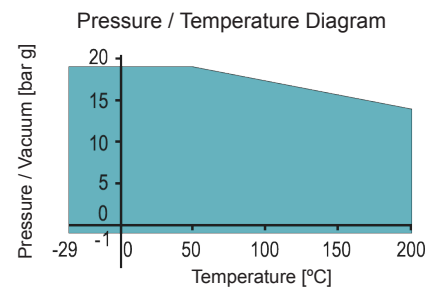
## Material specification

Item	Qty	Description	Materials	Specification	DIN equivalent material
1	1	Body	Cast steel / PFA	ASTM A216 Gr WCB / PFA	1.0619 / PFA
2	1	Disc	Cast steel / PFA	ASTM A216 Gr WCB / PFA	1.0619 / PFA
3	1	Retaining Plate	Carbon Steel / PFA	BS4360 Gr 43A / PFA	1.0490 / PFA
4	1	Circlip	Stainless steel	BS2056 Gr 304S15	1.4301
		Paint finish	75µ, RAL 5021	Epoxy coating	-
		PFA lining	ASTM D 3307		



## Dimensions

To suit pipework		Face to face	Diameter ASME 150	Diameter DIN PN10/16	Valve bore	Weight
mm	Inches	A	B	B	C	kg
100	4	52	171	152	71.5	6.0
150	6	56	219	218	110	12.0
200	8	60	275	273	150	21.5
250	10	68	336	329	184	27.5
300	12	78	406	378 / 384	230	40.5



# STCV - Swing Check Valve

## Options

Component	Description
Body	Antistatic liner
Seat	Soft seats, Kalrez & Viton for gas applications



## Type code

STCV	100	.	3	3	.	3HT	.	3HT	.
①	②		③	④		⑤		⑥	⑦

①	Type	STCV	Swing Check Valve
②	Nominal diameter	100 - 300	mm
③	Working pressure	3	16 bar
④	Rating	3	PN10/16
		A	ASME Class 150
			others on request
⑤	Body	3HT	Cast steel / PFA
			Body with antistatic liner on request
⑥	Disc	3HT	Cast steel / PFA
⑦	Seat (option)		Kalrez® & Viton® for gas applications on request

# WPCV - Wafer Poppet Check Valve

## Description

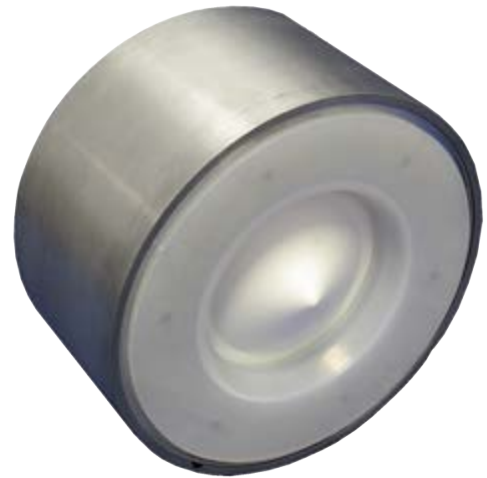
The WPCV check valve has a spring assisted poppet and a robust design, suitable for a wide range of process applications.

PFA, PTFE & Hastelloy to all wetted parts ensures long, high cycle performance.

The product is available for both standard DIN PN 10/16 and ANSI 150.

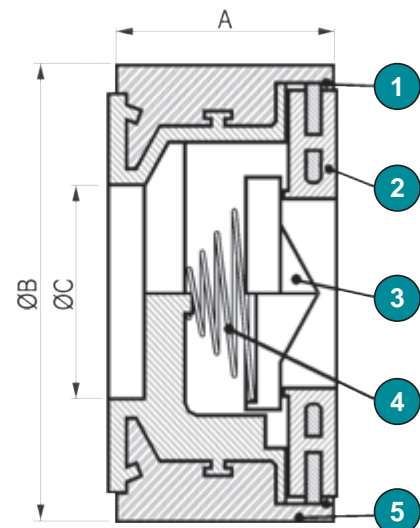
## Product features

- Guided spring and poppet - secure from misalignment
- Crush resistant design guards against installation abuse
- Ideal design for low pressure duties
- Full bore design provides maximum flow with minimum pressure drop
- Hastelloy C276 spring as standard, poppet lift pressure 14mbar, other materials under request
- Designed for easy disassembly



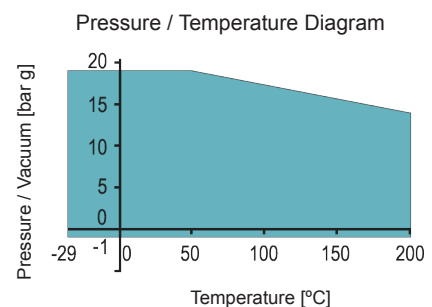
## Material specification

Item	Qty	Description	Materials	Specification	DIN equivalent material
1	1	Circlip	Stainless steel	BS2056 Gr 316S42	1.4401
2	1	Seat plate	Stainless steel / PFA	ASTM A240 Gr 304 / PFA	1.4301 / PFA
3	1	Poppet	PTFE	BS6564 UA1/1	-
4	1	Spring	Hastelloy C276	ASTM B574 Gr UNS N10276	2.4819
5	1	Valve body	Stainless steel / PFA	BS970 Gr.316S31 / PFA	1.4401 / PFA
			Carbon steel / PFA	BS970 Gr.230M07 / PFA	1.0715 / PFA
		Coating	75µ, RAL 5021	Epoxy coating	-
		PFA lining		ASTM D3307	



## Dimensions

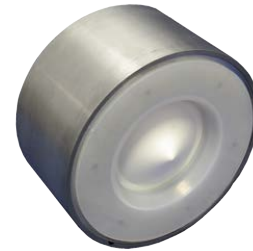
Nominal size		Face to face	Diameter ANSI 150	Diameter DIN PN10/16	Valve bore	Weight
mm	Inches	A	B	B	C	kg
15	½	30	45	51	16	0.2
25	1	35	63	73	25	0.5
40	1½	45	82	92	36	1.1
50	2	56	101	107	50	1.7
80	3	71	133	142	66	3.5
100	4	80	171	162	88	5.3



# WPCV - Wafer Poppet Check Valve

## Options

Component	Description
Body	Stainless steel (for 4" / DN100)
Spring	Alternative pressure ratings
	PTFE encapsulated
	Alternative spring materials
	Without spring (floating poppet)



## Type code

WPCV	080	.	3	3	.	4KT	.	T	.	S
①	②		③	④		⑤		⑥		⑦

①	Type	WPCV	Wafer Poppet Check Valve	
②	Nominal diameter	015 - 100	mm	
③	Working pressure	3	16 bar	
④	Rating	3	PN10/16	
		A	ASTM Class 150	
			Others on request	
⑤	Body	30T	Carbon steel / PFA	Standard for DN100 (4")
		4KT	Stainless steel / PFA	Standard for DN15-80 (1/2" - 3") Option for DN100 (4")
⑥	Poppet	T	PTFE	
⑦	Spring		without spring (floating poppet)	
		S	Hastelloy C276	

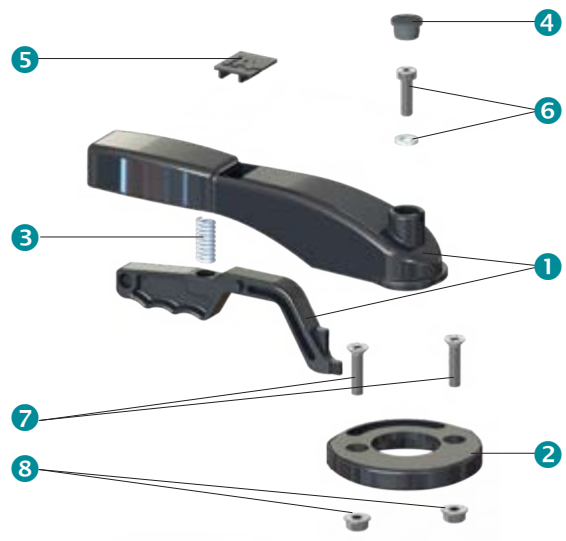
## Description

Aluminium handlever polyester coated



## Construction

1	Handlever	Alumimum L-2521 EN AC-47100 coated with polyester RAL 9005
2	Notch plate	Alumimum L-2521 EN AC-47100 coated with polyester RAL 9005
3	Spring	Stainless steel AISI-302
4	Plug	Low Density Polyethylene
5	Name plate	Acrylonitrile butadiene styrene (ABS)
6	Screw and washer	Stainless steel A2-70
7	Screws	Stainless steel A2-70
8	Nuts	Stainless steel A2-70



## Type code

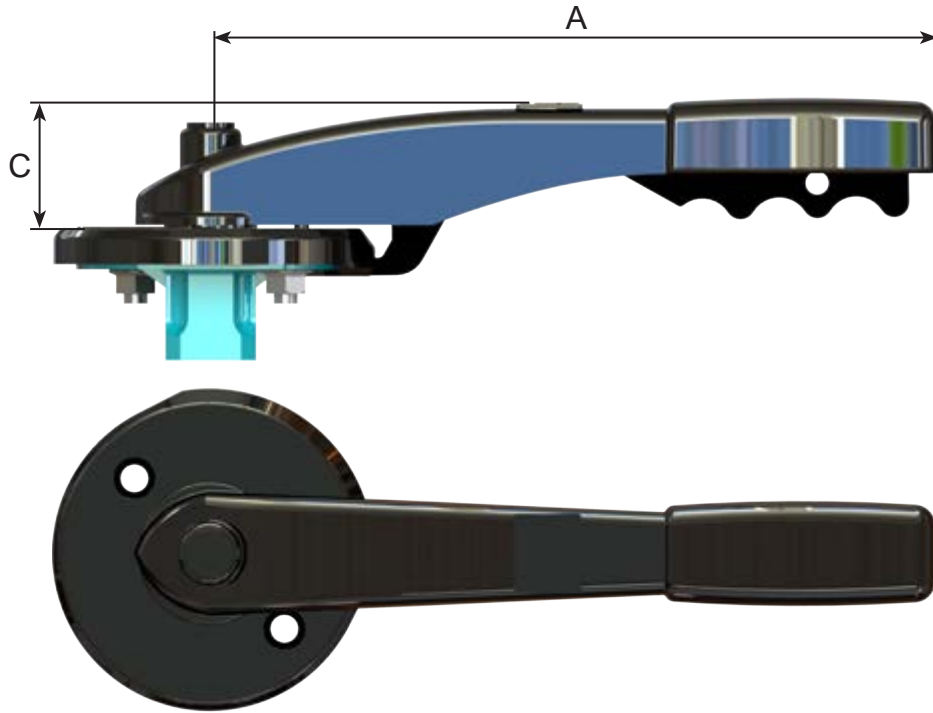
HLA . F07 08 . 180K

① ② ③ ④

① Actuator type	HLA	Aluminium handlever
② Mounting face for valve	F05 - F07	according to EN ISO5211
③ Shaft square	[mm]	Dimension of shaft connection
④ Handlever length	[mm]	



## Dimensions



Handlever type	A [mm]	C [mm]	[kg]
HLA.F0508.180K	180	41	0.4
HLA.F0511.180K	180	41	0.4
HLA.F0708.180K	180	41	0.4
HLA.F0711.180K	180	41	0.4
HLA.F0511.240K	243	43	0.5
HLA.F0711.240K	243	43	0.5
HLA.F0714.340K	340	51	0.6
HLA.F0717.340K	340	51	0.6

# HRA - Adjustable handlever, Aluminum

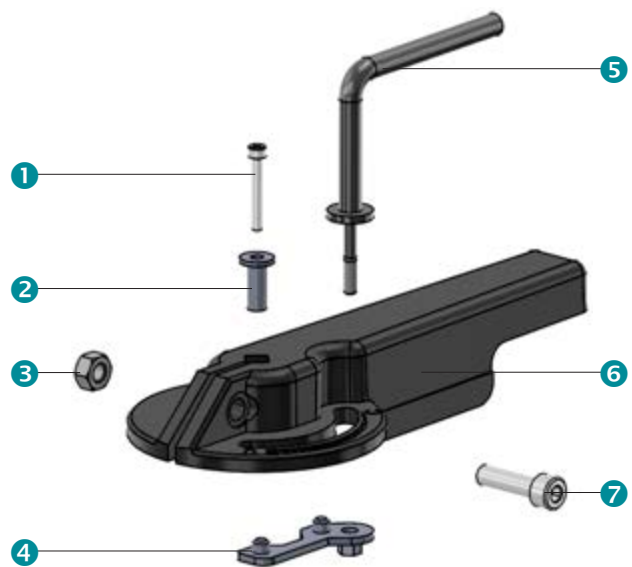
## Description

Adjustable Aluminium handlever, Epoxy coated



## Construction

1	Bolt	Stainless steel A4-70
2	Coupling	Stainless steel A4-70
3	Nut	Stainless steel A4-70
4	Fixation	Steel F112 zinc plated
5	Locking lever	Steel F112 zinc plated
6	Lever	Aluminium coated RAL-9005
7	Bolt	Stainless steel A4-70



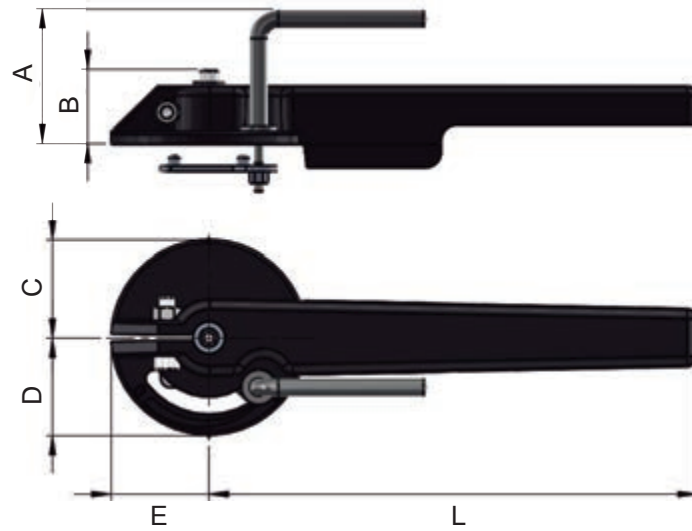
## Type code

HRA . F05 08 . 180K

① ② ③ ④

① Actuator type	HRA	Adjustable Aluminium handlever
② Mounting face for valve	F05 - F07	according to EN ISO5211
③ Shaft square	[mm]	Dimension of shaft connection
④ Handlever length	[mm]	

## Dimensions



	A [mm]	B [mm]	C [mm]	D [mm]	E [mm]	L [mm]	Weight [Kg]
HRA.F0508.180K	69	36	50	50	50	180	0,4
HRA.F0511.180K	69	38	50	50	50	180	0,4
HRA.F0708.180K	69	36	50	50	50	180	0,4
HRA.F0711.180K	69	38	50	50	50	180	0,4
HRA.F0711.250K	69	38	50	50	50	180	0,5
HRA.F0511.250K	69	38	50	50	50	250	0,5
HRA.F0714.340K	69	38	50	50	50	340	0,6
HRA.F0717.340K	69	38	50	50	50	340	0,5

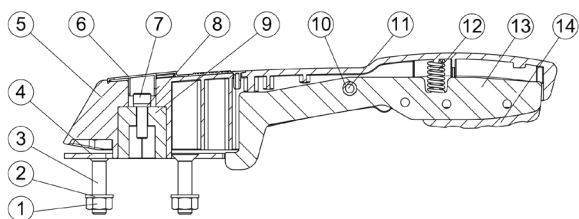
## Description

Handlever plastic with 10 notched positions

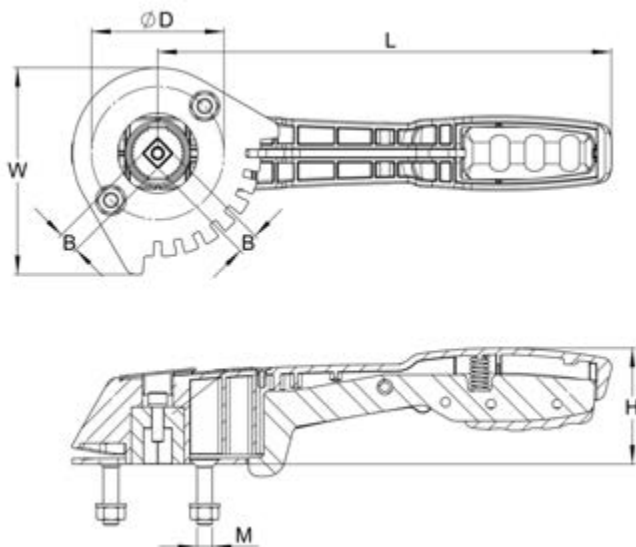


## Construction

1	Nut	Stainless steel A2
2	Washer	Stainless steel A2
3 / 7	Bolts	Stainless steel A2
4	Notch Plate	DIN 17100 1.0037/ FZV
5	Lever	PA6.6 and 30% Glass fiber
6	Name plate	PA6.6 and 30% Glass fiber
8	Washer	Stainless steel A2
9	Insert	Sinter Metal
10	Bearing	POM
11	Spiral pin	DIN 7343 ST/FZV
12	Spring	DIN 17100 1.0037/ FZV
13	Latch	DIN 17100 1.0037/ FZV
14	Grip	PA6.6 and 30% Glass fiber



## Dimensions



DN [mm]	L [mm]	H [mm]	W [mm]	D [mm]	M [mm]	B [mm]
100	240	61	109	70	M8	11
125-150	240	61	109	70	M8	14
200	390	65,5	109	70	M8	17
200	390	65,5	109	70	M8	17

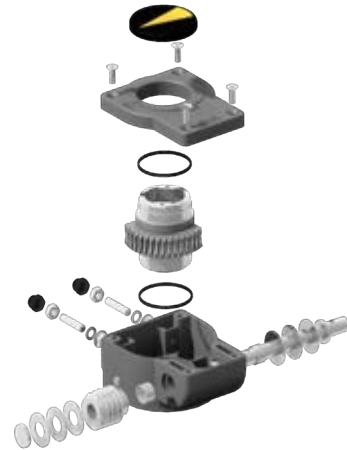
# GB232 - Gearbox, body aluminium

## Description

Quarter turn gearbox handoperated with cast aluminium housing Polyurethane coated

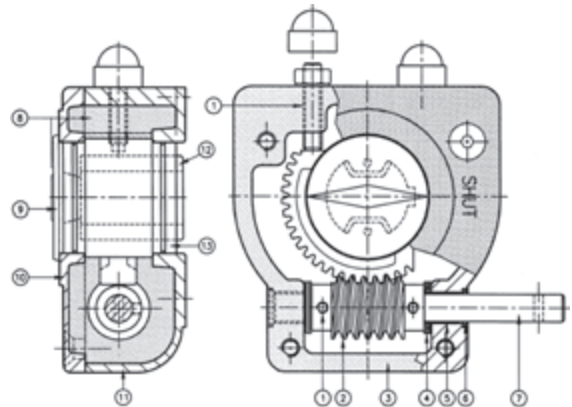
## Product features

- Valve connection            Mounting face for valves according to EN ISO 5211
- Torque                            125 - 1500 Nm
- Temperature range            -20°C ÷ +120°C
- Stroke                            0-90° (±5° adjustable)
- Lubrication                    Factory lubricated for the life of actuator under normal working conditions
- Protection class                IP65



## Construction

1	Set screw	Steel 8.8
2	Worm	Steel C45
3	Gasket	NBR
4	Needle bearing	
5	Plain bearing	Permaglide
6	Seal ring	Nitrile
7	Shaft	Stainless steel
8	Grease	Multipurpose EP2
9	Position indicator	Polypropylene
10	Coverplate	Aluminium AL231
11	Body	Aluminium AL231
12	Insert	Sintered steel
13	Quadrant	GGG40

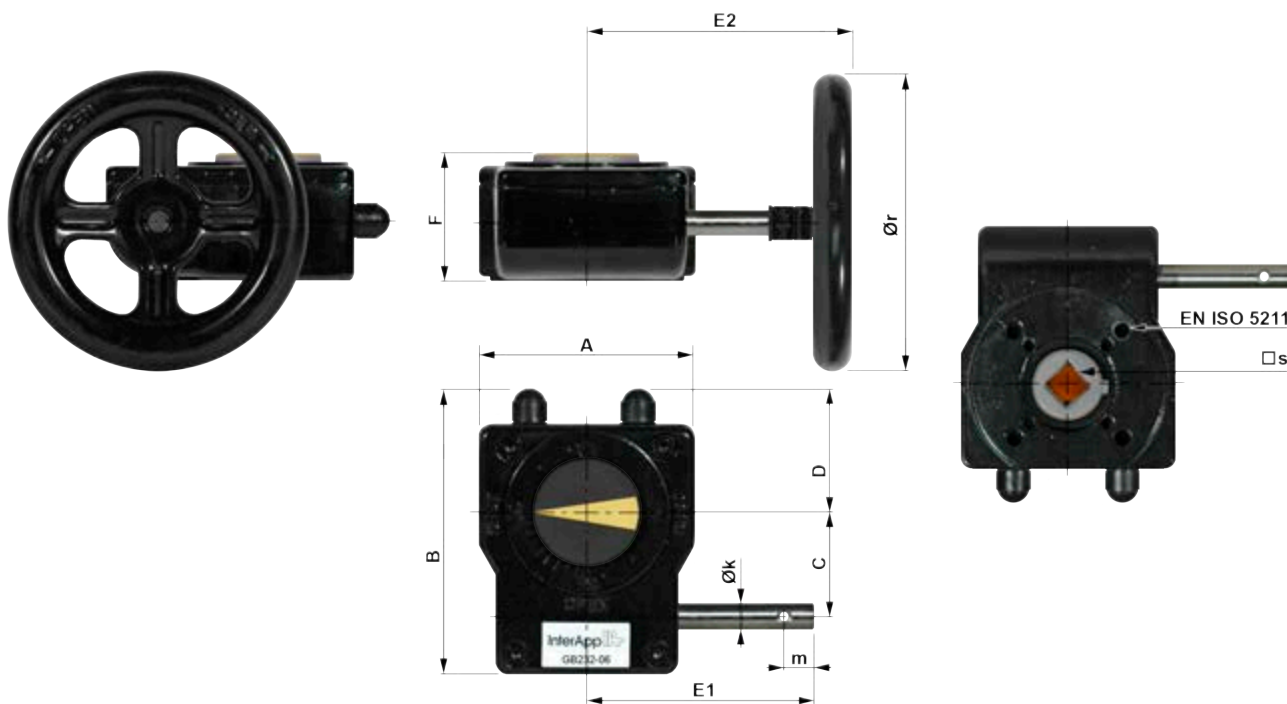


## Type code

<b>GB232-05 . F05-F07 14 . 100</b>
<div style="display: flex; justify-content: space-around; width: 100%;"> <span>①</span> <span>②</span> <span>③</span> <span>④</span> </div>

① Actuator size	<b>GB232-05</b>	125 Nm
	<b>GB232-06</b>	250 Nm
	<b>GB232-08</b>	500 Nm
	<b>GB232-13</b>	1000 Nm
	<b>GB232-14</b>	1500 Nm
② Mounting face for valve	<b>F05 - F14</b>	according to EN ISO5211
③ Shaft connection	<b>[mm]</b>	Dimension of shaft connection
④ Handwheel diameter	<b>[mm]</b>	

## Dimensions



	EN ISO5211	□s	Ør	Md max	A	B	C	D	E1	E2	F	Øk	m	n*	[kg]
GB232-05	F05-F07	11 / 14	100	125 Nm	80	114	42,5	48	105	121	53	12	14	10	0,8
			160							129					
GB232-06	F05-F07	14 / 17	160	250 Nm	80	114	42,5	48	155	179	59	12	14	10	0,9
GB232-08	F07-F10	17 / 22	250	500 Nm	100	131	50	56	170	209	67	12	14	9,25	1,55
GB232-13	F10-F12 / F14	22 / 27	300	720 Nm	175	209	80	83	280	361	84	20	24	10	5,4
			400	960 Nm						376					
			500	1000 Nm						396					
GB232-14	F10-F12 / F14	22 / 27 / Ø45	500	1200 Nm	175	209	80	83	280	396	84	20	24	10	5,4
			600	1440 Nm						396					
			700	1500 Nm						396					

\* n = Handwheel turns ON/OFF

### Maintenance:

The actuators are factory lubricated for the life of the actuator under normal working conditions. The standard lubricant is suitable for use from - 20°C to + 120°C.

### Storage:

The actuator should always be stored free from dust and humidity.

## Description

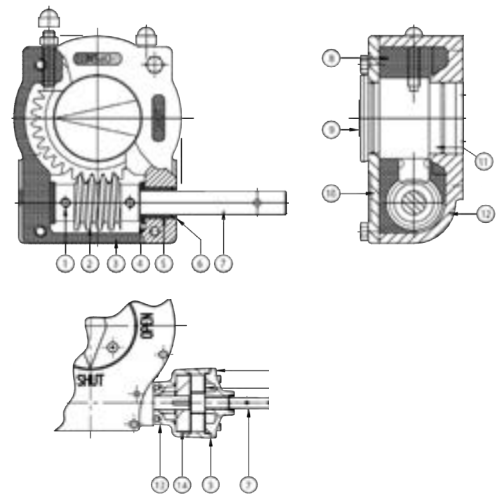
Quarter turn gearbox handoperated with cast iron housing Polyurethane coated

## Product features

- Valve connection            Mounting face for valves according to EN ISO 5211
- Torque                            150 - 32000 Nm
- Temperature range            -20°C ÷ +120°C
- Stroke                            0-90° (±5° adjustable)
- Lubrication                    Factory lubricated for the life of actuator under normal working conditions
- Protection class                GB...N -> IP67  
GB...G -> IP68

## Construction

1	Set screw	Steel 12.9
2	Worm	Steel C45
3	Gasket	NBR
4	Needle bearing	
5	Bushing	Siintered steel
6	Seal ring	Nitrile
7	Shaft	AISI 303
8	Grease	Multipurpose EP2
9	Position indicator	GB150-1950 Polypropylene GB6800-250 GG25
10	Coverplate	GG25
11	Quadrant	GGG40
12	Body	GG25
13	Gear	Carbon steel C45
14	Body	Steel

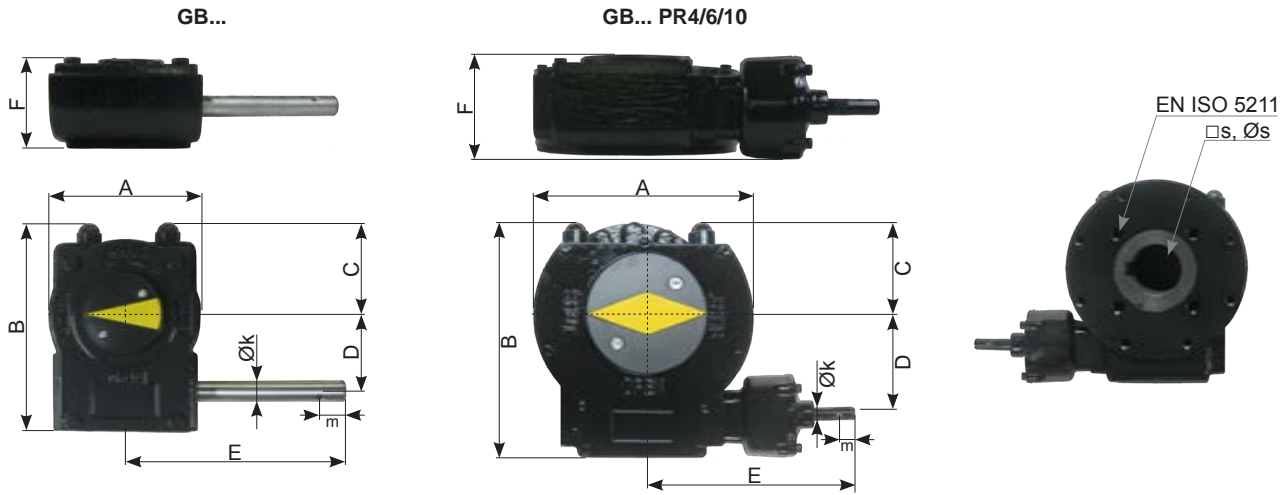


## Type code

<b>GB1950N</b>	.	<b>F14</b>		<b>45</b>	.	<b>500</b>
<b>1</b>		<b>2</b>		<b>3</b>		<b>4</b>

<b>1 Actuator size</b>	<b>GB...N</b>	Protection class IP67
	<b>GB...G</b>	Protection class IP68
<b>2 Mounting face for valve</b>	<b>F05 - F40</b>	according to EN ISO5211
<b>3 Shaft connection</b>	<b>[mm]</b>	Dimension of shaft connection
<b>4 Handwheel diameter</b>	<b>[mm]</b>	

## Dimensions



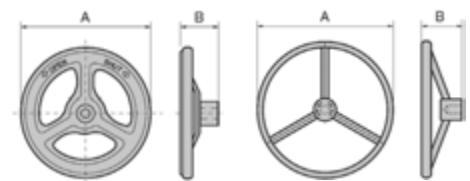
	EN ISO5211	□s max.	Øs max.	A	B	C	D	E	F	Øk	m	n*	[kg]
GB150N	F05, F07	14	20	80	124	58	42,5	99.5	54.5	12	14	9.6	2
GB210N	F05, F07, F10	24	30	102	127.5	48	52	159	63	15	14	11.6	4
GB215N	F05, F07, F10	24	30	102	127.5	48	52	159	63	15	14	11.6	4
GB550N	F07, F10, F12	38	45	138	174	69	71	201	88	20	24	12	9
GB880N	F10, F12, F14, F16	46	60	200	226	100	86	189	92.5	20	24	13.2	14
GB1250N	F10, F12, F14, F16	50	65	220	258	110	104,5	230	102	20	24	13.75	22
GB2000N	F12, F14, F16	60	80	214	255	106	53	232	121	20	24	27	24
GB2000NLB	(F16), F25	60	80	285	293	142	53	232	121	20	24	27	27
GB1950N	F12, F14, F16, F25	60	80	285	322.5	142,5	130	275	126	25	28	13	32
GB1950N/PR4	F12, F14, F16, F25	60	80	285	322.5	142,5	130	301	126	20	24	54	39
GB1950NLB/PR4	F30	60	80	350	355	175	130	329	129	20	24	54.34	52
GB3000N/PR4	F16, F25	75	100	293	337	142	140	314	153	20	24	61	49
GB6800N/PR4	F16, F25, F30	75	100	370	407	170	182	354	159	20	24	81	62.5
GB6800N/PR6	F16, F25, F30	75	100	370	407	170	182	354	159	20	24	117	64.2
GBA200N/PR10	F25, F30, F35, F40	115	160	440	491	207.5	209	374.5	215	20	24	182.25	134.4
GBA250/PR10	F25, F30, F35, F40	115	160	510	585	235	256	414.5	224	20	24	182.25	219.4

\* n = Handwheel turns ON/OFF

### Torque (handwheel force 400N):

	Handwheel diameter								
	100	160	250	300	400	500	600	700	800
GB150N	150	150							
GB210N		330	330						
GB215N		371	500						
GB550N			600	720	960	1000			
GB880N					1056	1320	1584	1848	2000
GB1250N					1520	1900	2280	2660	3040
GB2000N / NLB					2640	3300	3960	4500	
GB1950N					1520	1900	2280	2660	3040
GB1950N/PR4					5280	6600	7000		
GB1950NLB/PR4					5280	6600	7000		
GB3000N/PR4					6480	8100	9000		
GB6800N/PR4					7680	9600	11520	12500	
GB6800N/PR6					11200	14000	16800	17000	
GBA200N/PR10					16800	21000	25200	26000	
GBA250/PR10					18000	22500	27000	31500	32000

### Handwheel:



	ØA	B
PS 100	100	35
PS 160	160	48
PS 250	250	63

	ØA	B
SG 300	300	115
SG 400	400	130
SG 500	500	150
SG 600	600	150
SG 700	700	150
SG 800	800	150

### Maintenance:

The actuators are factory lubricated for the life of the actuator under normal working conditions. The standard lubricant is suitable for use from - 20°C to + 120°C. The actuator should always be stored free from dust and humidity.



## Description

Adjustable handwheel to be mounted directly on the valve top flange. Made of coated aluminium.



## Construction

1	Locking lever	Steel F112 zinc plated
2	Bolt	Stainless steel A4-70
3	Washer	Stainless steel A4-70
4	Handwheel	Aluminium L2653-60 coated RAL-9005
5	Fixation	Steel F112 zinc plated



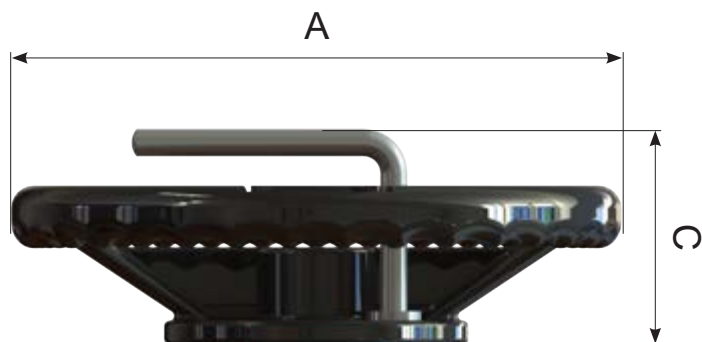
## Type code

HW . F05 08 . 200K

① ② ③ ④

① Actuator type	HW	Handwheel
② Mounting face for valve	F05 - F07	according to EN ISO5211
③ Shaft square	[mm]	Dimension of shaft connection
④ Handwheel diameter	[mm]	200

## Dimensions




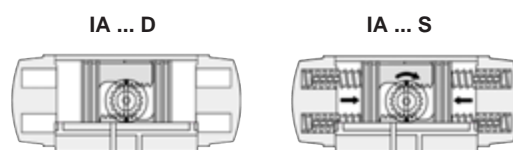
Handwheel type	A [mm]	C [mm]	Weight [Kg]
HW.F0508.200K	200	71	0,33
HW.F0511.200K	200	71	0,33
HW.F0708.200K	200	72	0,34
HW.F0711.200K	200	71	0,34
HW.F0714.250K	250	71	0,39

## Description

The rack and pinion pneumatic actuator IA Motion combines innovative design features with the latest technology, materials and protection coatings available, resulting in one of the highest grade pneumatic actuators on the market.

## Product features

- Function **IA...D** double acting  
**IA...S** single acting
- Nominal torque 15 ÷ 10007 Nm  
(double acting at 6 bar air supply)
- Supply pressure 3 ÷ 8 bar (IA1000D 3 ÷ 7 bar)
- Supply fluids Filtered air or neutral gas
- Working temperature -40°C ÷ 80°C
- Connection Mounting face for valves according to EN ISO 5211,  
for solenoid valves and accessories to VDI/VDE 3845 (NAMUR)
- Lubrication Factory lubricated for the life of actuator  
under normal working conditions
-  ATEX Actuator IP67, standard in compliance with ATEX 94/9/EC



## Design properties

- Compact design with identical body and end caps for double acting and spring return types, allowing field conversion by adding or removing spring cartridges.
- Body made of extruded aluminium with internal and external ALODUR® corrosion protection, with honed cylinder surface for a higher cycle life and lower coefficient of friction.
- Symmetric rack and pinion design for high-cycle life and fast operation. Reverse rotation can be accomplished by inverting the pistons.
- Two independent external travel stop adjustments, enabling an easy and precise adjustment of -5°÷15° / 75°÷95°, in order to get a precise valve positioning.
- One-piece blow-out proof, electroless nickel-plated drive shaft with bearing guided one-piece pinion for improved safety and max. cycle life.
- Fully machined piston teeth for accurate low backlash rack and pinion engagement and maximum efficiency.
- Pistons standard anodised for higher life.
- Multifunction position indicator, adaptable to all kinds of limit and proximity switches.
- Preloaded spring cartridges with coated springs for simple versatile range and corrosion resistance. Spring return actuator can be disassembled without danger on field.
- High quality bearings and seals for low friction, high cycle life and a wide operating temperature range.
- End caps, anodized and Polyester® coated (RAL 5021).
- All used screws in stainless steel for life time corrosion resistance.
- Full compliance to the latest specifications: EN ISO 5211, VDI/VDE 3845, NAMUR and ATEX (Directive 94/9/CE).
- Every single actuator is tested and provided with a unique serial number for traceability.

## Your benefits

- High quality actuator designed for high-cycle life.
- Multiple mounting circles and shafts to fit most quarter turn valves.
- Easy conversion from double to single acting and vice versa.
- Lower inventory with greater flexibility.
- Position indicator with graduated ring indicating accurate angle.
- Two external travel stop adjustments for easy valve positioning  $-5^{\circ}$  to  $+15^{\circ}$  /  $75^{\circ}$  to  $+95^{\circ}$ .
- Extensive size range to fit the requested torque at lowest costs.
- Full compliance to latest worldwide standards.

## Materials

Body	Extruded aluminium EN AW-6063, ALODUR® corrosion protected (IA045-750), anodized and polyurethane coated (IA800-1000)
End caps	EN AC-46000, anodized and Polyester® coated (RAL 5021)
Pistons	EN AC-46000, anodized
Springs	SiCr spring alloy steel, Epoxy coated
Shaft	C22, nickel plated
Position indicator	PA66 + 30%GF + carbon black

## Function

### IA...D double acting actuator

Air supplied to port ② moves pistons toward endposition.  
(→ 90° counterclockwise rotation)

Air supplied to port ④ moves pistons toward center position.  
(→ 90° clockwise rotation)

### IA...S single acting actuator

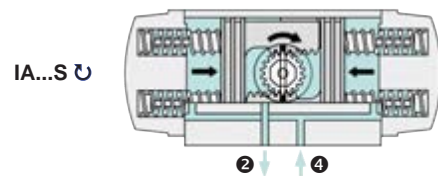
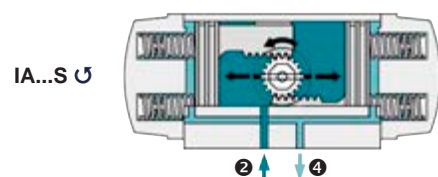
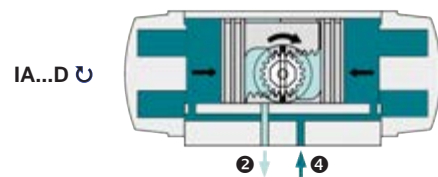
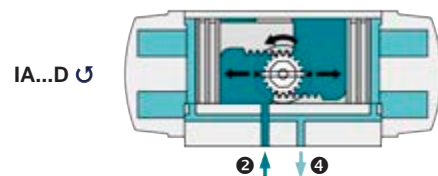
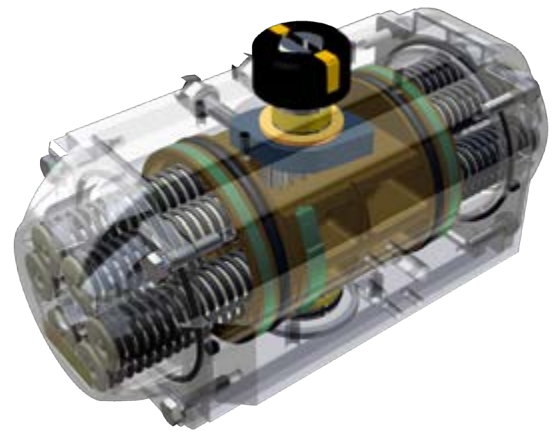
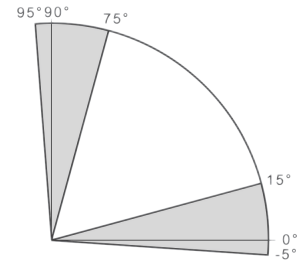
Air supplied to port ② moves pistons toward endposition, compressing springs  
(→ 90° counterclockwise rotation)

Air failure allows springs to move pistons toward center position  
(→ 90° clockwise rotation)



IA050-100

IA200-1000



## Type code

IA200 D . F05 - F07 14

① ② ③ ④

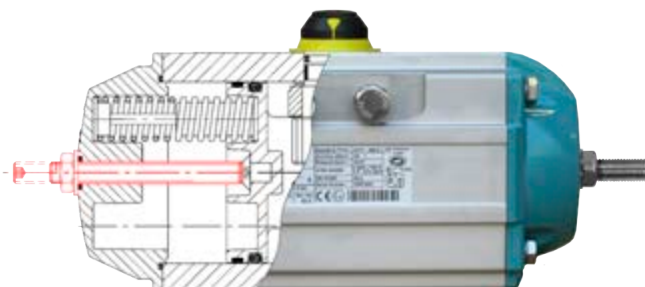
① Actuator size	IA045 - IA1000	
② Function	D	Double acting
	S12	Single acting + number of springs
③ Mounting face for valve	F03 - F30	According to EN ISO5211
④ Shaft connection	[mm]	Dimension of shaft connection

### Available options:

- 5 different external coatings.
- Stainless steel AISI 303, 430 or 316 drive shaft.
- High and low temperature versions.
- 0 ÷ 90° adjustable travel stop.
- Cost efficient lock out capability.
- Other drive shaft connections.
- Rotation 120° and 180° and intermediate such as 135°.
- 3 position actuators.
- Stainless steel actuators.

Please contact our technical department for more information about these options.

0 ÷ 90° adjustable travel stop

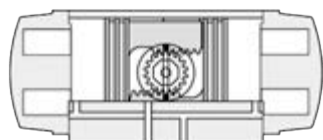
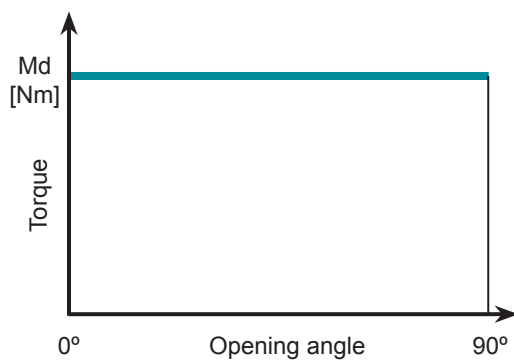


## Torques [Nm]

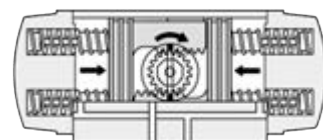
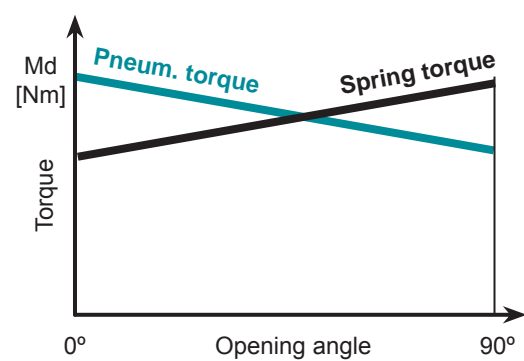
### IA...D - Double acting actuators

	Pneumatical torque at air supply of					
	3 bar	4 bar	5 bar	6 bar	7 bar	8 bar
IA 045 D	7,2	9,6	12,0	14,4	16,8	19,1
IA 050 D	10,0	13,3	16,6	19,9	23,3	26,6
IA 100 D	17,6	23,5	29,3	35,2	41,0	46,9
IA 200 D	34,9	46,5	58,2	69,8	81,4	93,1
IA 250 D	54,9	73,2	91,5	109,8	128,1	146,4
IA 300 D	79,8	106	133	160	186	213
IA 350 D	129	172	215	258	301	344
IA 400 D	166	222	277	332	388	443
IA 450 D	261	348	435	522	609	696
IA 500 D	340	454	567	681	794	908
IA 550 D	459	613	766	919	1072	1225
IA 600 D	638	851	1064	1276	1489	1702
IA 650 D	1072	1430	1787	2144	2502	2859
IA 700 D	1556	2075	2594	3112	3631	4150
IA 750 D	2154	2872	3590	4308	5026	5744
IA 800 D	2703	3604	4504	5405	6306	7207
IA 1000 D	5003	6671	8339	10007	11674	-

### IA...D

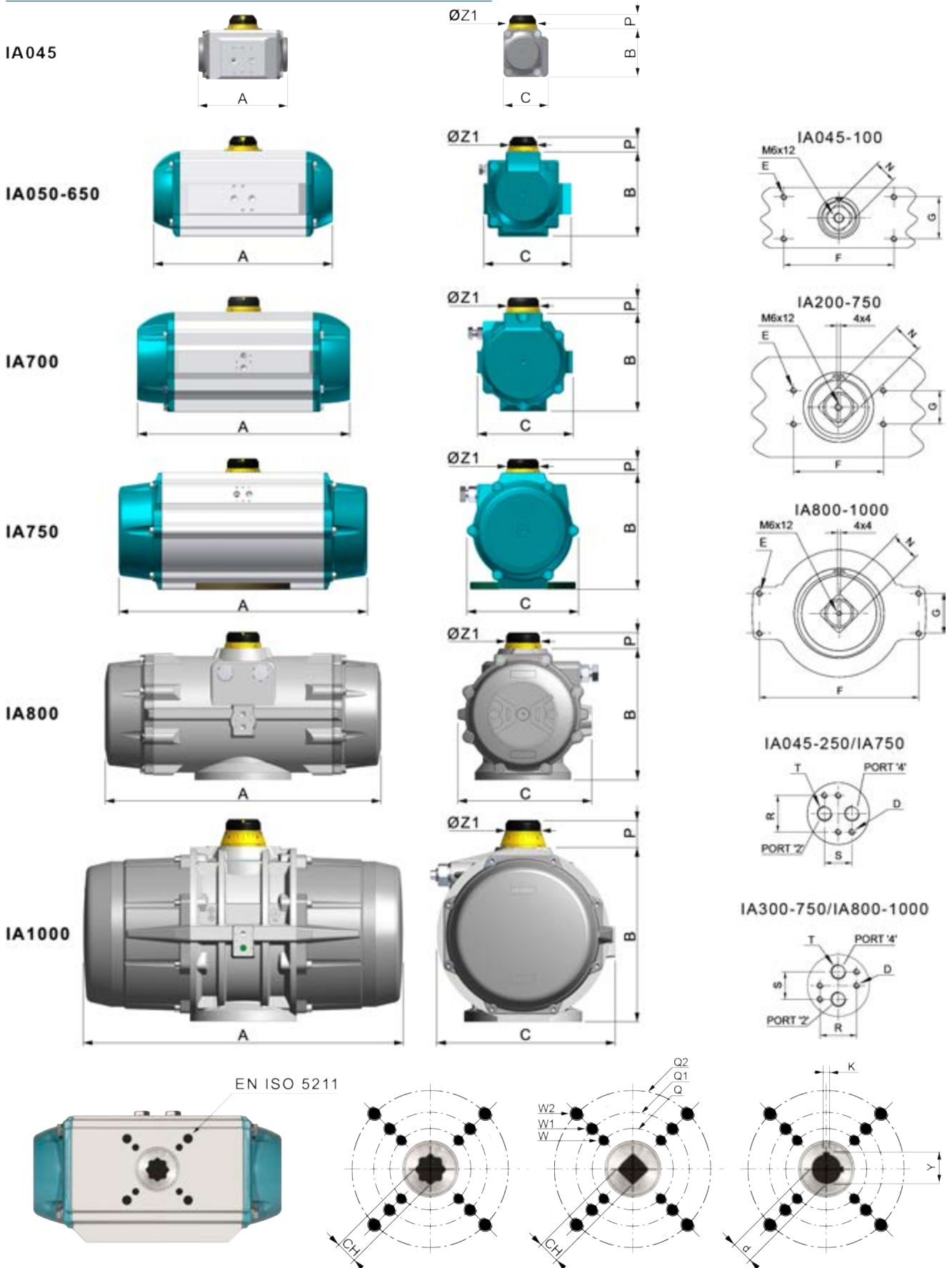


### IA...S



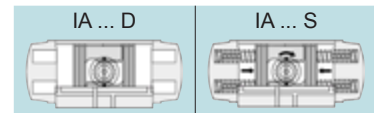


Dimensions





Dimensions



	A	B	C	D	E	F	G	N	P	R	S	T <sup>1)</sup>	Z1	V <sub>o</sub> [l]	V <sub>c</sub> [l]	t <sub>o</sub> "	t <sub>c</sub> "	[kg]	t <sub>o</sub> "	t <sub>c</sub> "	[kg]
IA 045	118	66	62	M5x8	M5x8	80	30	11	20	32	24	1/8"	37	0,06	0,1	0,15	0,20	0,75	0,20	0,25	0,9
IA 050	137	69	78,5	M5x8	M5x8	80	30	11	20	32	24	1/8"	42	0,09	0,15	0,2	0,25	1,15	0,25	0,3	1,26
IA 100	154	85	91,5	M5x8	M5x8	80	30	11	20	32	24	1/8"	42	0,16	0,26	0,25	0,3	1,7	0,3	0,35	1,9
IA 200	204	102	105	M5x8	M5x8	80	30	17	20	32	24	1/8"	42	0,31	0,49	0,3	0,35	3,0	0,4	0,5	3,4
IA 250	241	115	118,5	M5x8	M5x8	80	30	17	20	32	24	1/8"	42	0,51	0,78	0,4	0,5	4,2	0,5	0,6	4,8
IA 300	259	127	130,5	M5x8	M5x8	80	30	17	20	32	24	1/4"	42	0,71	1,11	0,5	0,6	5,7	0,7	0,9	6,6
IA 350	304	145	148,5	M5x8	M5x8	80	30	27	30	32	24	1/4"	58	1,19	1,80	0,7	0,8	8,8	0,9	1,1	10,2
IA 400	333	157	159	M5x8	M5x8	80	30	27	30	32	24	1/4"	58	1,54	2,34	0,9	1,1	10,7	1,2	1,4	12,6
IA 450	395	177	182,5	M5x8	M5x8	80	30	27	30	32	24	1/4"	67,5	2,41	3,78	1,2	1,4	15,5	1,5	1,8	18,7
IA 500	423	196	200,5	M5x8	M5x8	80	30	27	30	32	24	1/4"	67,5	3,14	4,92	1,5	1,7	19,6	1,8	2,1	23,7
IA 550	473	221	223	M5x8	M5x8	130	30	36	50	32	24	1/4"	80	4,26	6,89	2	2,2	25	2,4	2,8	33
IA 600	528	245	244,5	M5x8	M5x8	130	30	36	50	32	24	1/4"	80	5,94	9,46	2,7	3,2	37	3,5	4	45
IA 650	605	299	284	M6x10	M5x8	130	30	36	50	45	40	3/8"	115	10,0	15,2	3,5	4	56	4,1	4,6	71
IA 700	710	330	319	M6x10	M5x8	130	30	36	50	45	40	1/2"	115	14,5	21,4	4	4,5	77	4,5	5	97
IA 750	812	383	371	M6x10	M5x8	130	30	36	50	45	40	1/2"	115	20	33	5	6	118	6	7	150
IA 800	876	410	418	M6x10	M5x8	130	30	36	50	45	40	1/2"	115	25	40	6	7	127	7,5	8,5	169
IA 1000	950	518	528	M6x10	M6x10	200	50	36	80	45	40	1/2"	135	49	84	8	9	170	10	11	238

1) BSP / ISO 228 / DIN 259

V(l) Volume in litre, V<sub>o</sub> = OPEN, V<sub>c</sub> = CLOSE

To calculate the air consumption, multiply the volume in litre by the supply pressure.

t<sub>o</sub> / t<sub>c</sub> t<sub>o</sub> = opening time / t<sub>c</sub> = closing time, in seconds

The above mentioned operating times are obtained under the following conditions:

- Air supply pressure min. 5,5 bar (80 psi) - at room temperature - medium clean air - actuator stroke 90° - actuator without resistance load

**Caution:** obviously, during operation, if one or more of the above listed criteria differ, the operating time will be different.

	EN ISO 5211	Q	Q1	Q2	W	W1	W2	CH* x l	CH♦ x l	d● x l	K	Y
IA 045	F03	36	-	-	M5	-	-	9 x 11	-	-	-	-
	F04	42	-	-	M5	-	-	11 x 12	-	-	-	-
IA 050	F03-F05	36	50	-	M5	M6	-	9 x 11	-	-	-	-
	F04	42	-	-	M5	-	-	11 x 12	-	-	-	-
IA 100	F04	42	-	-	M5	-	-	11 x 19	-	-	-	-
	F05-F07	50	70	-	M6	M8	-	11 x 19	-	-	-	-
IA 200	F05-F07	50	70	-	M6	M8	-	14 x 16	-	-	-	-
IA 250	F05-F07	50	70	-	M6	M8	-	14 x 19	11 x 19	-	-	-
IA 300	F05-F07-F10	50	70	102	M6	M8	M10	17 x 19	14 x 19	-	-	-
IA 350	F07-F10	70	102	-	M8	M10	-	22 x 25	-	-	-	-
IA 400	F07-F10	70	102	-	M8	M10	-	17 x 25	14 x 19	-	-	-
IA 450	F10-F12	102	125	-	M10	M12	-	22 x 32	17 x 25	-	-	-
IA 500	F10-F12	102	125	-	M10	M12	-	27 x 40	22 x 32	-	-	-
IA 550	F10-F12	102	125	-	M10	M12	-	27 x 40	22 x 40	-	-	-
IA 600	F14	140	-	-	M16	-	-	22 x 40	22 x 40	-	-	-
	F10-F12	102	125	-	M10	M12	-	36 x 38	-	-	-	-
IA 650	F14	140	-	-	M16	-	-	27 x 40	22 x 40	d45 x 65	14	49
	F12	125	-	-	M12	-	-	-	-	-	-	-
IA 700	F14	140	-	-	M16	-	-	22 x 40	27 x 40	-	-	-
	F12	125	-	-	M12	-	-	-	-	d45 x 65	14	49
IA 750	F14	140	-	-	M16	-	-	27 x 40	27 x 40	d45 x 65	14	49
	F16	165	-	-	M20	-	-	-	-	d65 x 80	18	69,5
IA 800	F14	140	-	-	M16	-	-	27 x 70	27 x 40	d45 x 80	14	49
	F16	165	-	-	M20	-	-	-	-	d60 x 115	18	64,5
IA 1000	F16-F25	165	254	-	M20	M16 (8x)	-	46 x 49	-	d70 x 130	20	75
	F16-F25-F30	165	254	298	M20	M16 (8x)	M20 (8x)	55 x 59	-	d70 x 130	20	75
								75 x 80	-	d80 x 135	22	85,5

## Accessories

Our wide range of accessories includes all kinds of position indicators, solenoid valves, positioners, Bus systems, manual emergency overdrives, etc. Please refer to the corresponding documentation or download it from our website.



Limit switches



Proximity switch  
AS-Interface



Positioner



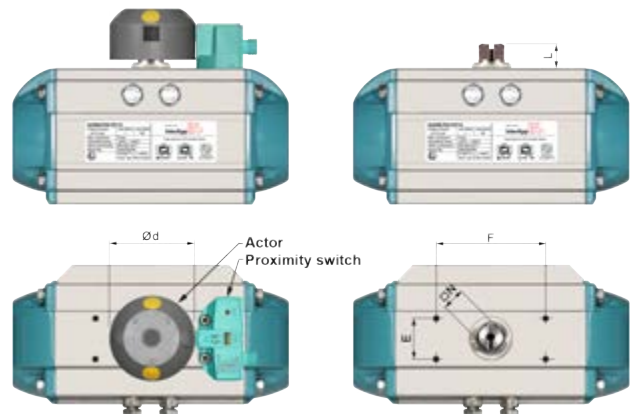
Solenoid valve

Actuator size, solenoid valve and air supply pipe according table below.

Actuator size	Solenoid valve	Air supply pipe
IA045 - 350	≥ DN 4	≥ DN 4
IA400 - 600	≥ DN 7	≥ DN 6
IA650 - 700	≥ DN 12	≥ DN 8
IA750 - 1000	≥ DN 12	≥ DN 10

## Dimensions

IA motion	F x E	□N x L	Actor	Proximity switch
IA 045	80 x 30	11 x 20	IA05819A-P	ES2.PFF25E80AZ-V1
IA 050	80 x 30	11 x 20		
IA 100	80 x 30	11 x 20		
IA 200	80 x 30	17 x 20		
IA 250	80 x 30	17 x 20	IA2019A-P	ES2.PFF31E80AZ-V1
IA 300	80 x 30	17 x 20		
IA 350	80 x 30	27 x 30		
IA 400	80 x 30	27 x 30		
IA 450	80 x 30	27 x 30	IA4519A-S	ES2.PFF31E80AZ-V1
IA 500	80 x 30	27 x 30		
IA 550	130 x 30	36 x 50	IA6519A-S	
IA 600	130 x 30	36 x 50		
IA 650	130 x 30	36 x 50		
IA 700	130 x 30	36 x 50		
IA 800	130 x 30	36 x 50		



## Proximity switch - executions and technical data

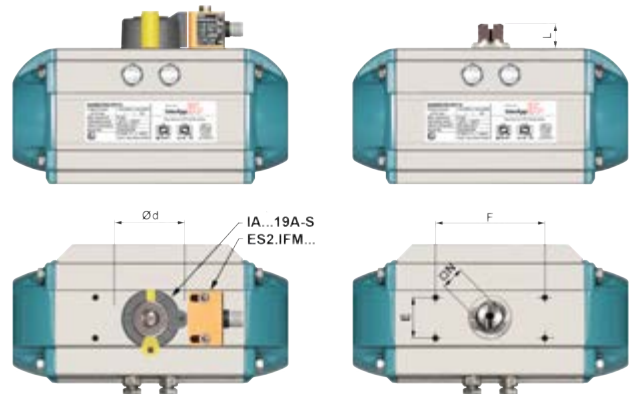
3-wire, PNP, Dual Make function		ES2.PFF25E80AZ-V1 (P&F: NBN3-F25-E8-V1)	ES2.PFF25E80AZ-K (P&F: NBN3-F25-E8-K)
Connection	system valve	Connector M12 x 1	MINI-COMBICON
LED display	operating voltage switching state valve status	LED green LED yellow	LED green LED yellow
Operating distance	: 3 mm		
Operating voltage U <sub>B</sub>	: 10...30 V		
Operating current I <sub>L</sub>	: 0...200 mA		
Voltage drop U <sub>d</sub>	: ≤ 3 V		
No-load supply I <sub>0</sub>	: ≤ 25 mA		
Ambient temperature	: -25...70°C		
Protection degree	: IP20		
EMV according to	: EN 60947-5-2		
Reverse polarity protection	: all connections		
Short circuit protection	: pulsing		

3-wire, PNP, Dual Make function		ES2.PFF31E80AZ-V1 (P&F: NBN3-F31-E8-V1)	ES2.PFF31E80AZ-K (P&F: NBN3-F31-E8-K)
Connection	system valve	Connector Rd24 x 1/8 M12 x 1 socket	PVC-cable 5m
LED display	operating voltage switching state valve status	LED green LED yellow	LED green LED yellow
Operating distance	: 3 mm		
Operating voltage U <sub>B</sub>	: 10...30 V		
Operating current I <sub>L</sub>	: 0...100 mA		
Voltage drop U <sub>d</sub>	: ≤ 3 V		
No-load supply I <sub>0</sub>	: ≤ 25 mA		
Ambient temperature	: -25...70°C		
Protection degree	: IP67		
EMV according to	: EN 60947-5-2		
Reverse polarity protection	: all connections		
Short circuit protection	: pulsing		

# ES2.IFM - Proximity switches (IFM)

## Dimensions

IA motion	F x E	□N x L	Actor	Proximity switch
IA 045	80 x 30	11 x 20	IA05819A-S	ES2.IFM...
IA 050	80 x 30	11 x 20		
IA 100	80 x 30	11 x 20		
IA 200	80 x 30	17 x 20		
IA 250	80 x 30	17 x 20	IA2019A-S	ES2.IFM...
IA 300	80 x 30	17 x 20		
IA 350	80 x 30	27 x 30		
IA 400	80 x 30	27 x 30	IA4519A-S	ES2.IFM... +IFM E10579
IA 450	80 x 30	27 x 30		
IA 500	80 x 30	27 x 30		
IA 550	130 x 30	36 x 50		
IA 600	130 x 30	36 x 50	IA6519A-S	ES2.IFM... +IFM E10579
IA 650	130 x 30	36 x 50		
IA 700	130 x 30	36 x 50		
IA 800	130 x 30	36 x 50		



## Proximity switch - executions and technical data

3-wire, PNP, Dual Make function		ES2.IFM IN5225 0AZ-V1 (IFM: IN5225)	ES2.IFM IN5251 0AZ-K (IFM: IN5251)	ES2.IFM IN5334 0AZ-Rd24-V1 (IFM: IN5334)
Connection	system valve	Connector M12x1	PVC-cable 2m	Rd 24x1/8 M12x1
LED display	switching state	2x LED yellow	2x LED yellow	2x LED yellow
Operating distance	: 4 mm			
Operating voltage $U_B$	: 10...36 V			
Operating current $I_L$	: 0...250 mA			
Voltage drop $U_d$	: $\leq 2,5$ V			
No-load supply $I_0$	: $\leq 15$ mA			
Ambient temperature	: -25...80°C			
Protection degree	: IP67			
EMV according to	: EN 60947-5-2			
Reverse polarity protection	: yes			
Short circuit protection	: pulsing			
2-wire, PNP, Dual Brake function		ES2.IFM NN5008 0AZ-V1 (IFM: NN5008)	ES2.IFM IN5009 0AZ-K (IFM: NN5009)	ES2.IFM N95001 0AZ-Rd24-V1 (IFM: N95001)
Connection	system valve	Connector M12x1	Silicone-cable 2m	Rd 24x1/8 M12x1
LED display	switching state	2x LED yellow	2x LED yellow	2x LED yellow
Operating distance	: 4 mm			
Supply voltage $U_B$	: 7,5 - 15 V			
Nominal voltage $U_0$	: 8,2 V (1kΩ)			
Current consumption	: $\leq 1$ mA			
Ambient temperature	: -25...70°C			
Protection degree	: IP67			
ATEX	: II 2G EEx ia IIC T6			
EMV according to	: EN 60947-5-2			
Standards (NAMUR)	: DIN EN 60947-5-6			

## Description

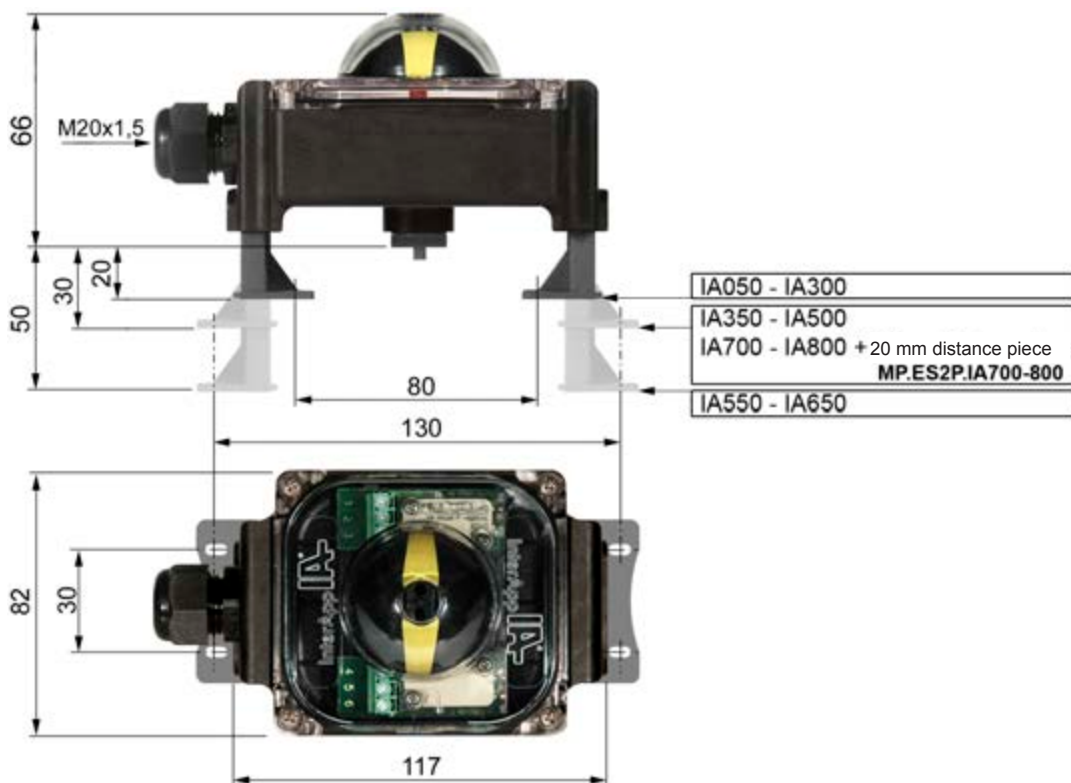
The plastic limit switch box is for direct mounting on pneumatic actuators IA050-IA600. The mounting brackets can be used for all standard NAMUR (VDI/VDE3845) top mounting hole spacing 80x30mm and 130x30mm and standard NAMUR shaft heights 20, 30, 40 and 50mm.

## Product features

- Housing cover Polycarbonate clear, UV resistant, self extinguishing rate V0
- Housing base PPE (Polyphenyl Ether) black, self extinguishing rate V0, IP65
- Limit switches 1x ON, 1x OFF
- Cam with 2 independent adjustable cams
- Cable gland M20 x 1,5



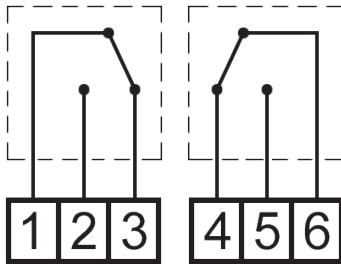
## Dimensions



Configuration

**ES2.P01H**

Box with  
mechanical microswitches  
max. 5A@250V~ - 3A@24=  
min. 50mA@250V~ - 50mA@24=  
IP65, T = -15°C ...80°C

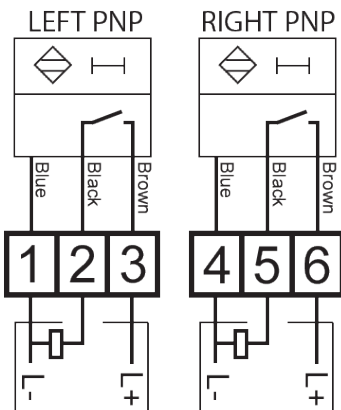


**ES2.P03H**

with gold contacts  
max. 3A@250V~ - 1A@24=  
min. 5mA@250V~ - 1mA@24=

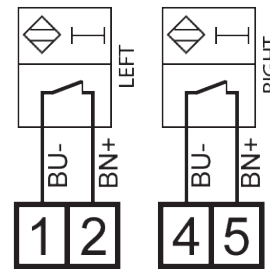
**ES2.P73H**

Box with  
proximity switches, PNP  
P+F NBB2 V3 E2  
10-30V=, 200mA, 3-wire  
IP65, T = -15°C ...70°C



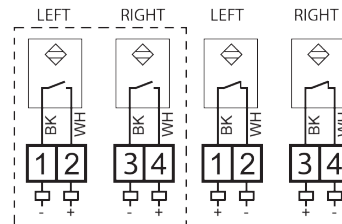
**ES2.P70A**

Box with  
proximity switches,  
Ex II 2GD Ex ia IIC T6  
NAMUR P+F NJ2 V3 N  
0-8V=, 3mA, 2-wire  
IP65, T = -15°C ...80°C



**ES2.P75H**

Box with  
proximity switches  
IFM IS 5026  
5-36V=, 4-200mA, 2-wire NC/NO  
IP65, T = -15°C ...80°C

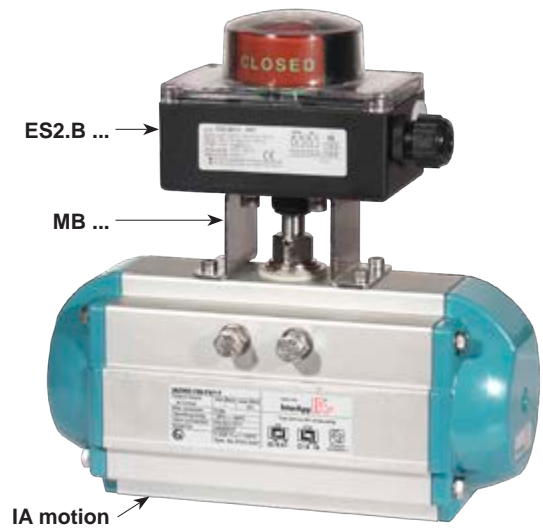


## Description

The metal limit switch box is for direct mounting on pneumatic actuators IA050-IA800. The mounting brackets can be used for all standard NAMUR (VDI/VDE3845) top mounting hole spacing 80x30mm and 130x30mm and standard NAMUR shaft heights 20, 30, 40 and 50mm

## Product features

- Housing ES2.B/F/A : Aluminium  
ES2.S : Stainless steel AISI316 (CF8M)
- Limit switches 1x ON, 1x OFF
- Cam with 2 independent adjustable cams
- Weather proof, Temperature IP67, -20°C ... +80°C or maximum temperature of the installed limit switch



## Dimensions



IA motion	MB	a	b	c
IA050-300	<b>MB.KN01</b>	80	20	45
IA350-500	<b>MB.KNC03</b>	80	30	55
IA550-800	<b>MB.KNC04</b>	130	50	75
IA1000	<b>MB IA1000</b>	200	80	105

## Configuration

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Limit switch types ES2.B .., ES2.F .., ES2.A .., ES2.S ..		
01	electromech SPDT silver plated contacts	max. 5A@250VAC - 3A@24VDC, min 50mA@250VAC - 50mA@24VDC
03	electromech SPDT gold plated contacts	max. 3A@250VAC - 1A@24VDC, min 5mA@250VAC - 1mA@24VDC
73	proximity PNP NO P+F NBB2 V3 E2	3 wire amplified 10-30VDC, 100mA
75	proximity NO / NC programmable IFM IS5026	2 wire amplified 5-36VDC, 200mA

\*Oder configurations under request



### Description

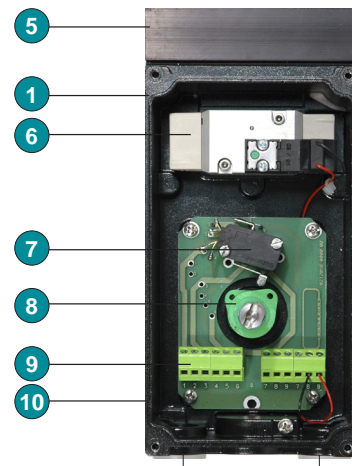
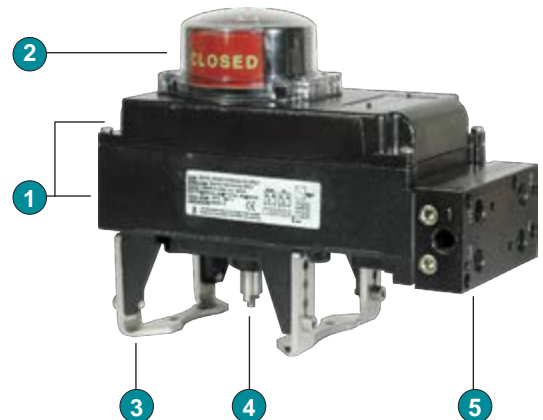
The multi function box is a limit switch box with integrated 5/2 solenoid valve for direct mounting on pneumatic actuators IA050-IA600. The mounting brackets can be used for all standard NAMUR (VDI/VDE3845) top mounting hole spacing 80x30mm and 130x30mm and standard NAMUR shaft heights 20, 30, 40 and 50mm.

### Product features

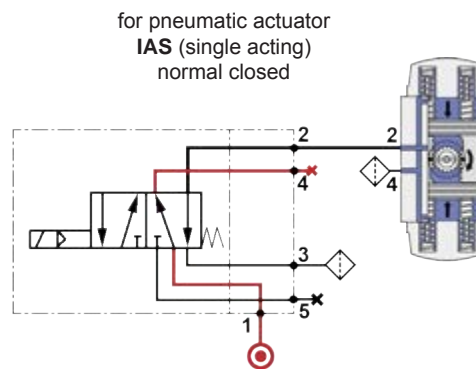
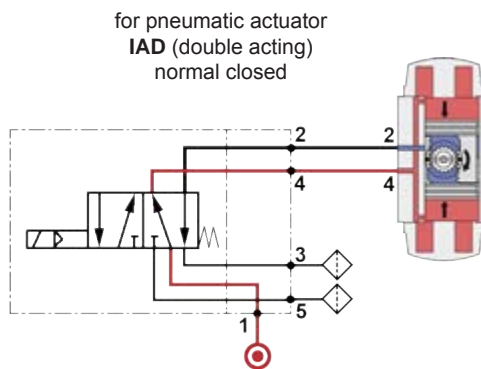
- **Supply pressure** 2,5 - 8 bar
- **Supply fluids** Filtered air or neutral gas, lubricated or dry
- **Solenoid valve** Qn = 750 l/min (at 6 bar supply pressure)
- **Weather proof** IP67
- **Temperature** -5°C ... +50°C or maximum temperature of the installed limit switch

### Construction

1	Housing base and cover	Aluminium, Epoxy coated
2	3D position indicator	Polycarbonate clear, UV resistant
3	NAMUR mounting bracket	Stainless steel
4	Shaft	Stainless steel
5	Pneumatic manifold	Aluminium, hard-coat anodised
6	5/2or 5/3 solenoid valve	Aluminium
7	Limit switches 1x ON, 1x OFF	see keycode
8	2 independent adjustable cams	
9	Terminal strip	
10	Cable entry M20x1,5	



### Pneumatic connection:



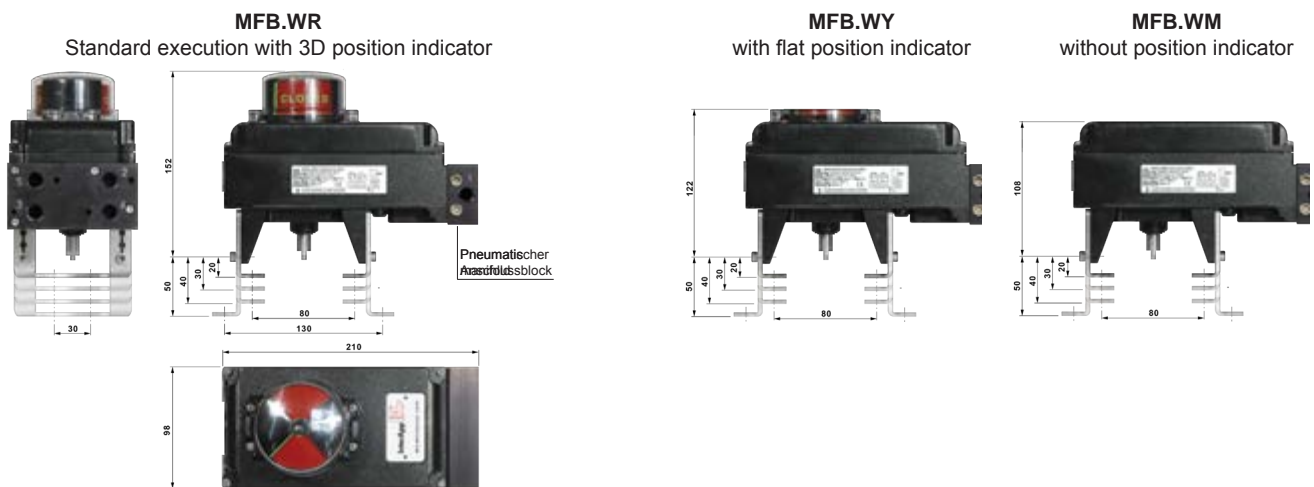
1	Air supply connection
2+4	Connections to pneumatic actuator
3+5	Exhaust connections for damper / trottle

Type code

MFB .	WR	01	2	0	0	2	A	1	6	C	
		①	②	③	④	⑤	⑥	⑦	⑧	⑨	⑩

① Type MFB	WR	Execution with 3D position indicator (standard)	
	WY	Execution with flat position indicator	
	WM	Execution without position indicator	
② Limit switch type	01	electromech SPDT silver plated contacts	max. 5A@250VAC - 3A@24VDC min 50mA@250VAC - 50mA@24VDC
	02	electromech SPDT gold plated contacts hermetically sealed	max. 3A@250VAC - 1A@24VDC min 5mA@250VAC - 1mA@24VDC
	03	electromech SPDT gold plated contacts	max. 3A@250VAC - 1A@24VDC min 5mA@250VAC - 1mA@24VDC
	20	Proximity NAMUR P+F NJ4 12GK N	2 wire not amplified Ex II 2 G EEx ia IIC T6
	24	Proximity NAMUR P+F NJ2 12GK N	2 wire not amplified Ex II 2 G EEx ia IIC T6
	39	Proximity NAMUR P+F NJ2 12GK SN	2 wire not amplified Ex II 2 G/D EEx ia IIC T6
	60	Proximity NAMUR P+F SJ 3.5N	2 wire not amplified Ex II 2 G/D EEx ia IIC T6
	62	Proximity NAMUR P+F SJ 3.5SN	2 wire not amplified Ex II 2 G/D EEx ia IIC T6
	70	Proximity NAMUR P+F NJ2 V3 N	2 wire not amplified Ex II 2 G/D EEx ia IIC T6
	C3	Proximity SPST bifurcated inert gas hermetically sealed	max. 1,5A@120VAC - 0,5A@24VDC (resistive / inductive)
	C4	Proximity SPDT inert gas hermetically sealed	max. 1A@120VAC - 1A@24VDC - max. 25Watt
	32	Proximity NO P+F NBN4 12GM40 Z0	2 wire amplified, 5-60VDC, 2-100mA
	73	Proximity PNP NO P+F NBB2 V3 E2	3 wire amplified 10-30VDC, 100mA
	75	Proximity NO / NC programmable IFM IS5026	2 wire amplified 5-36VDC, 200mA
	83	Proximity NO P+F NBB3-V3-Z4	2 wire amplified 5-60VDC, 100mA
91	4-20mA Transmitter	10-30VDC, direct - reverse action	
ASI	AS-i Communication card	24VDC, 2 digital input, 1 digital output	
③ Switch quantity	2	1-4 depends on switch type (standard 2 pcs)	
④ Terminal strip (depends on switch type)	0	Standard PCB (9 poles)	
	2	Blue PCB (6 poles)	
	7	Cage clamp blue (6 poles)	
⑤ Housing color	0	Black	
⑥ Cable entry	2	M20x1,5 (2x)	
⑦ Mounting bracket	A	Integral mounting kit NAMUR	
⑧ Solenoid valve	1	5 ways 2 positions, 1 solenoid (standard)	
	2	5 ways 2 positions, 2 solenoids	
	3	5 ways 3 positions, 2 solenoids (center position closed)	
⑨ Solenoid valve coil voltage	2	12VDC (2,3W)	
	3	24VDC (2,3W)	
	4	24VAC (2,8VA)	
	5	110VAC (2,8VA)	
	6	230VAC (2,8VA)	
⑩ Pneumatic connections	C	1/4" BSP (standard)	
	D	1/4" BSP with 3 pressure gauges 1/8"	
	A	1/4" NPT	
	B	1/4" NPT with 3 pressure gauges 1/8"	

Dimensions



# ES2.K - limit switch box

## Description

The ES2.K series limit switch box is for direct mounting on pneumatic actuators IA050-IA800. Including mounting brackets for all standard NAMUR (VDI/VDE3845) top mounting hole spacing 80x30mm and 130x30mm and standard NAMUR shaft heights 20, 30, 40 and 50mm.

## Product features

- Protection** ATEX explosion proof Ex II 2GD, Ex d IIC T4/T5/T6  
Ex tb IIIC T70°C/95°C/115°C IP66/IP67 or IP66/IP68  
water proof IP66/IP67 on request IP66/IP68
- Housing** ES2.K: Die cast aluminum, external polyester powder coated  
Option ES2.Q: heavy duty housing made of stainless steel 316L (CF3M) electro polished.
- Optical position indicator** Indicator dome UV resistant and V0 polycarbonate, large two-colour position indicator
- Shaft and fasteners** stainless steel, captive cover screws
- Cams** 2 easy-set splined and independently adjustable cams (tool free calibration)
- Limit switch types** see keycode page 2
- Temperature range** -20°C ÷ 80°C (standard)  
-40°C ÷ 105°C (optional)  
or maximum temperature of the installed limit switch

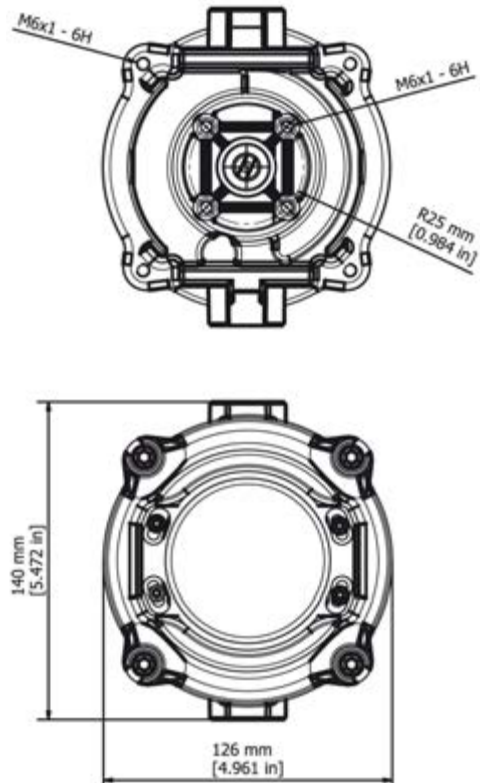
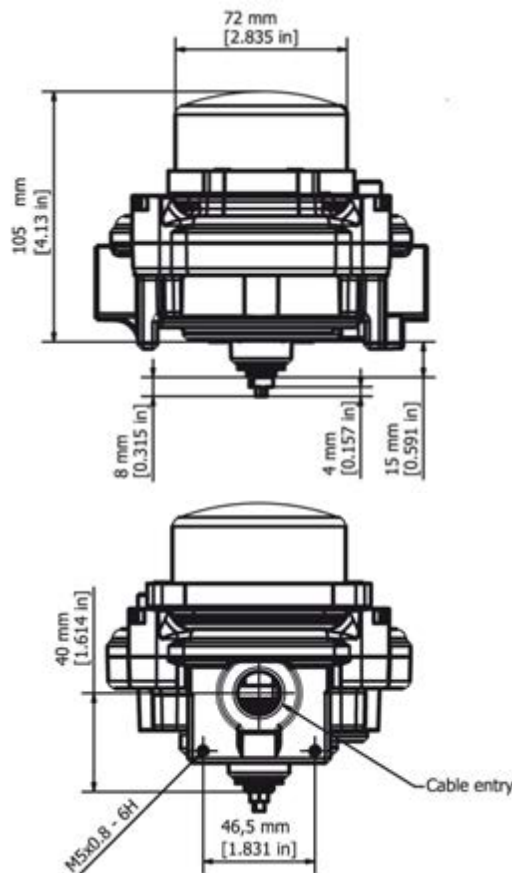
ES2.Q



ES2.K



## Dimensions



## ES2.K -limit switch box

### Type code

ES2.K 01 . 0 0 . 1 .

① ② ③ ④ ⑤

① Construction	ES2.K	limit switch box, die cast aluminum, external polyester powder coated	
	ES2.Q	limit switch box, stainless steel 316L (CF3M) electro polished	
② limit switch type	01	electromech SPDT silver plated contacts	max. 5A@250VAC - 3A@24VDC min 50mA@250VAC - 50mA@24VDC
	03	electromech SPDT gold plated contacts	max. 3A@250VAC - 1A@24VDC min 5mA@250VAC - 1mA@24VDC
	73	proximity PNP NO P+F NBB2 V3 E2	3 wire amplified 10-30VDC, 100mA
	75	proximity NO / NC programmable IFM IS5026	2 wire amplified 5-36VDC, 200mA
	83	proximity NO P+F NBB2 V3 Z4	2 wire amplified 5-60VDC, 100mA
	N1	NOVA V3 magnetic proximity SPDT silver plated	max 250 VAC, 28 VDC, resistive load 5A, inductive load 4A
	N3	NOVA V3 magnetic proximity SPDT gold / bifurcated	max 250 VAC, 30 VDC, resistive load 1A, inductive load 0.5A
	ASI	AS-i board interface	see AS-i LITE bulletin
③ Terminal strip	0	standard PCB + extra solenoid terminals	
④ Housing colour	0	black	
	1	blue RAL 5015	
⑤ Cable entry	1	2x 1/2" NPT	
	2	2x M20x1,5	

## Description

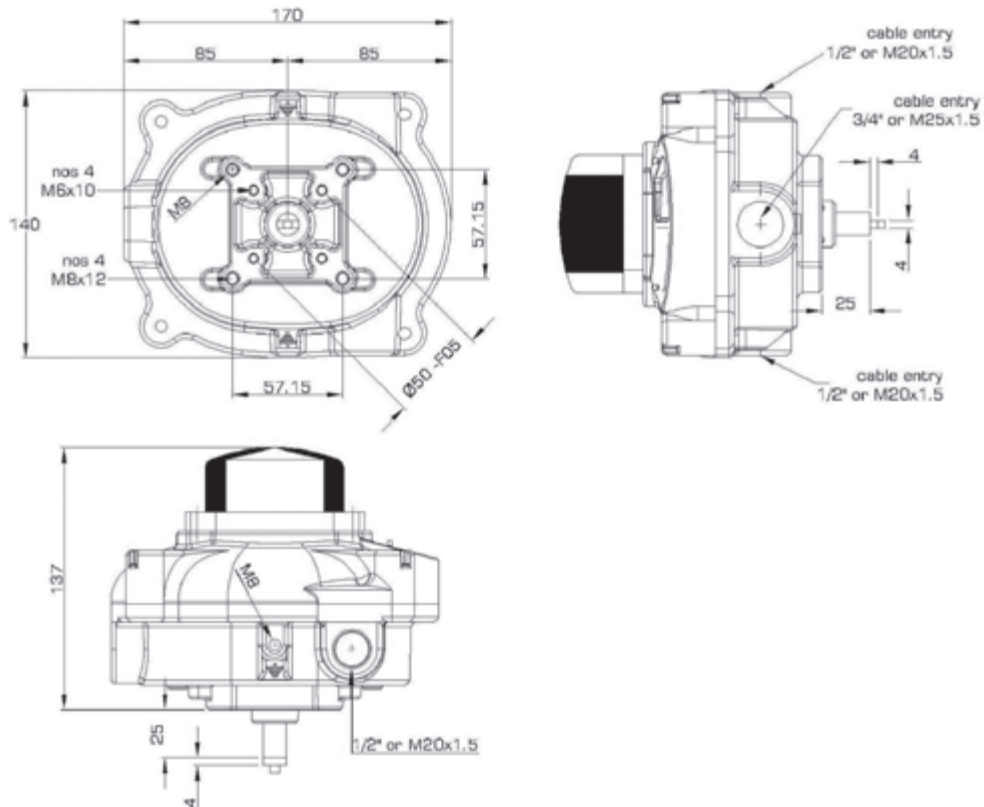
This Ex-limit switch box is for direct mounting on pneumatic actuators IA050-IA800. Mounting brackets can be used for all standard NAMUR (VDI/VDE3845) top mounting hole spacing 80x30mm and 130x30mm and standard NAMUR shaft heights 20, 30, 40 and 50mm.

## Product features

- **Protection** ATEX explosion proof II2D/G, EEx d IIB T4/T5/T6  
water proof IP67  
Optional: EEx d IIB + H2 or NEMA4, 4X, 7&9
- **Housing** Aluminum, external polyester coated, internal die chromated
- **Optical position indicator** Indicator dome UV resistant and V0 polycarbonate, large two-colour position indicator
- **Shaft and fasteners** stainless steel, captive cover screws
- **Cams** 2 easy-set splined cams (tool free calibration)
- **Limit switch types** see keycode page 2
- **Temperature range** -25°C ÷ 60°C (T6)  
-25°C ÷ 80°C (T5)  
-25°C ÷ 105°C (T4)  
or maximum temperature of the installed limit switch



## Dimensions



# ES2X - EEx-Limit switch box for pneumatic actuators

## Type code

ES2X 01 . 0 0 . 1 .

① ② ③ ④ ⑤

<b>① Construction</b>	<b>ES2.X</b>	EEx limit switch box with 2 limit switches
<b>② limit switch type</b>	<b>01</b>	electromech SPDT silver plated contacts max. 5A@250VAC - 3A@24VDC min 50mA@250VAC - 50mA@24VDC
	<b>02</b>	electromech SPDT gold plated contacts hermetically sealed max. 3A@250VAC - 1A@24VDC min 5mA@250VAC - 1mA@24VDC
	<b>03</b>	electromech SPDT gold plated contacts max. 3A@250VAC - 1A@24VDC min 5mA@250VAC - 1mA@24VDC
	<b>C3</b>	proximity SPST bifurcated inert gas hermetically sealed max. 1,5A@120VAC - 0,5A@24VDC (resistive / inductive)
	<b>C4</b>	proximity SPDT inert gas hermetically sealed max. 1A@120VAC - 1A@24VDC - max. 25Watt
	<b>32</b>	proximity NO P+F NBN4 12GM40 Z0 2 wire amplified 5-60VDC, 2-100mA
	<b>73</b>	proximity PNP NO P+F NBB2 V3 E2 3 wire amplified 10-30VDC, 100mA
	<b>75</b>	proximity NO / NC programmable IFM IS5026 2 wire amplified 5-36VDC, 200mA
	<b>83</b>	proximity NO P+F NBB2 V3 Z4 2 wire amplified 5-60VDC, 100mA
	<b>91</b>	Transmitter 4-20mA 10-30VDC direct - reverse action
<b>③ Terminal strips</b> (depends on switch type)	<b>0</b>	standard PCB + extra solenoid terminals
	<b>2</b>	blue PCB + extra solenoid terminals
	<b>7</b>	cage clamp blue + extra solenoid terminals
	<b>8</b>	cage clamp blue
<b>④ Housing colour</b>	<b>0</b>	black
	<b>1</b>	blue RAL 5015
<b>⑤ Cable entry</b>	<b>1</b>	N° 2: 1/2" NPT
	<b>2</b>	N° 2: M20x1,5
	<b>3</b>	N° 2: 1/2" NPT + N° 1: 3/4"NPT
	<b>4</b>	N° 2: M20x1,5 + N° 1: M25x1,5

## Description

Positioners are used to control the opening or closing of the actuator based on electric or pneumatic signals. InterApp offers a complete range of positioners that includes analog and digital designs.



## Analog Positioner – EP5

The compact and sturdy electro-pneumatic positioner is designed for maximum performance in all types of environments. The EP5 is available in Standard, Intrinsically Safe and Explosion Proof versions.

A modular feedback unit allows for the addition of limit switches and/or position transmitters, without additional mounting brackets.

Features:

- Modular, sturdy and reliable design
- Easy to add on Feedback Unit F5
- Simple calibration, external zero adjustment
- High gain pilot valve
- Built in gauge ports
- Optical position indicator



## Digital Positioner – D3

D3 is a Digital positioner where high air delivery capacity is combined with low air consumption.

Five keys and a large graphic display make D3 simple to configure and adjust. Communication is possible via HART, Profibus PA and Foundation Fieldbus.

D3 offers a wide range of special versions:

- Intrinsically Safe
- Explosion Proof
- Remote Mounted
- 270° extended travel range
- Feedback + Alarm plug in module
- ... etc.



### Digital Positioner – TZIDC

Electronically configurable positioner with low air consumption and with varied communication capabilities designed for mounting to linear or rotary actuators.

It is available with various communication protocols: HART 5, HART 7, PROFIBUS PA, FOUNDATION Fieldbus as well as local interface.

TZIDC offers a wide range of special features:

- Intrinsically Safe
- Explosion Proof
- Fail-safe
- Fail-freeze
- ... etc.



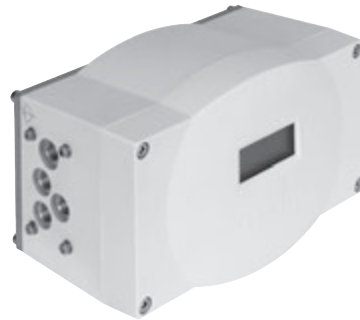
### Digital Positioner – CMSX

The positioner CMSX is used to control the position of single- and double-acting pneumatic actuators and double-acting linear actuators in process automation systems.

The CMSX enables simple and efficient position control based on the PID control algorithm.

Features:

- The end position can be flexibly defined via the freely configurable analogue signal (0 ... 10 V, 0 ... 20 mA, 4 ... 20 mA).
- A safety position for the process valve (close, open, hold) can be predefined in case of a power failure.
- The flow rate for the controlled pneumatic actuator of the process valve can be up to 130 l/min depending on the variant chosen (low or high flow rate).
- At standstill, the compressed air consumption is zero.



**Additionally any other brand can be supplied on request.**

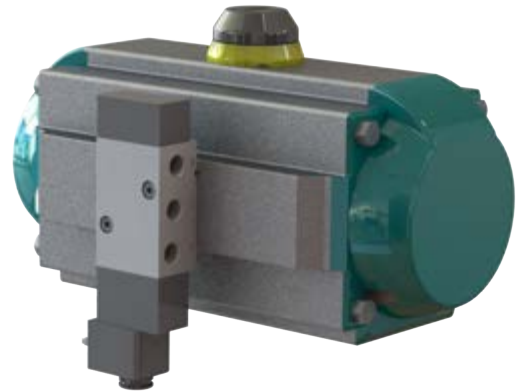


## Description

3/2 and 5/2 ways monostable solenoid valve to control pneumatic double and spring return actuators. Conversion from 3/2-way to 5/2-way valve simply by turning the seal.

## Product features

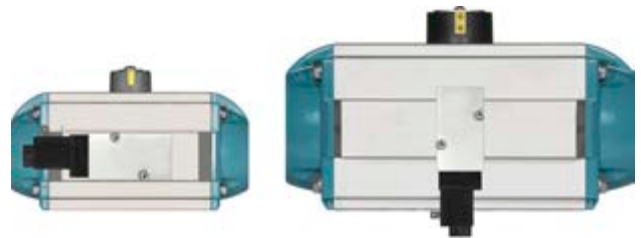
	<b>VSNC</b>
• Orifice	7mm
• Nominal flow	1250 l/min
• Interface	NAMUR
• Pressure	min. 2,5 bar, max. 10 bar
• Temperature range	-20°C to 60°C



IA motion	Solenoid valve IP65
IA050-IA600	<b>VSNC-FC-M52-MD-G14-FN-1A1+G.24VDC</b>
	<b>VSNC-FC-M52-MD-G14-FN-1AA1+G.24V/50-60Hz</b>
	<b>VSNC-FC-M52-MD-G14-FN-16BA1+G110V50-60Hz</b>
	<b>VSNC-FC-M52-MD-G14-FN-3AA1+G.230V50-60Hz</b>
	Options: 12VDC, 48VDC
	Other versions on request

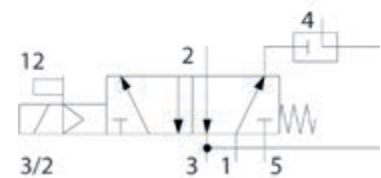
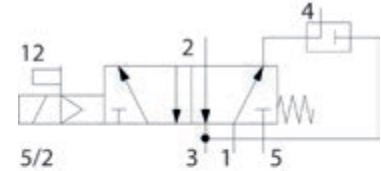
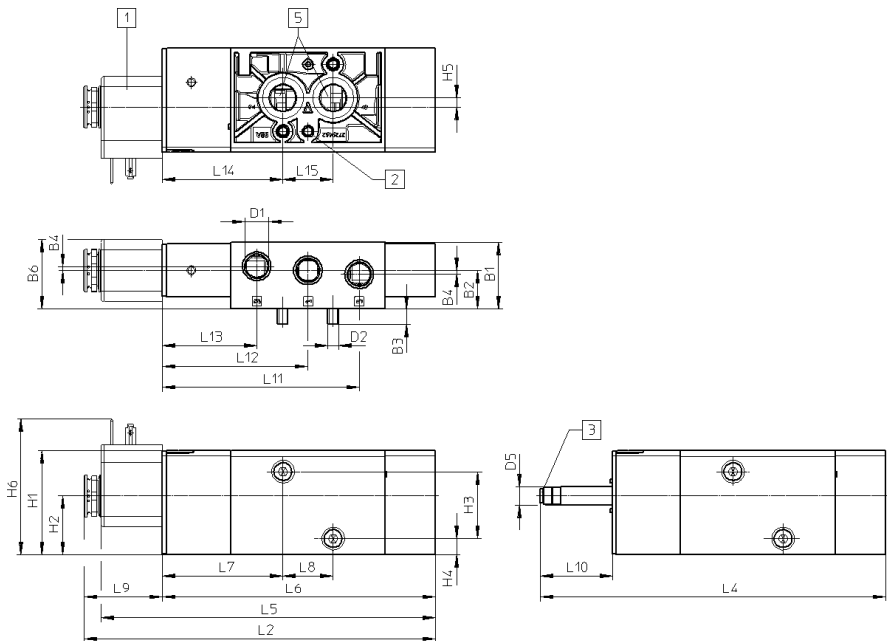
IA050 - IA250

IA300 - IA600



## Dimensions

### VSNC 3/2 + 5/2



B1	B2	B3	B4	D1	D2	H1	H2	H3	H4	H5	H6	L2	L4	L6	L7	L8	L9	L10	L11	L12	L13	L14	L15	[Watt]	[kg]
31.8	18.6	7.3	1.9	G¼	M5	49.9	28.2	32	7.8	4.4	57.2	162.2	161.1	127.8	53.8	24	34.4	33.3	90.3	65.8	41.3	53.8	24	3	0.42

## Description

Silencers with metal nipple and 36 µm sintered bronze filter element. Flat filter and hexagonal key on nipple.

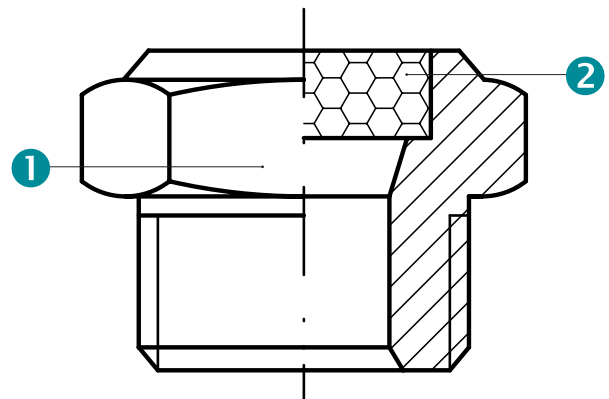


## Product Features

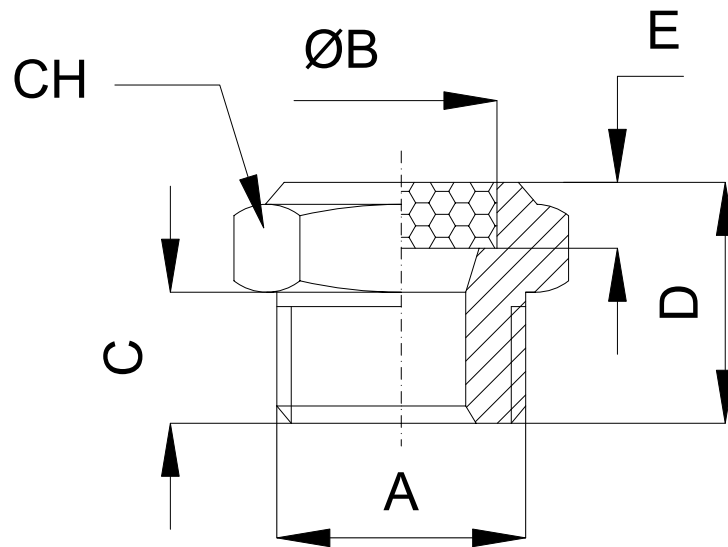
- Fluid Compressed air
- Max. working pressure 12 bar
- Temperature range -10°C to 80°C
- Parallel threads UNI - ISO 228 / 1 (BSP)
- Metric threads ISO R / 262
- Filter degree 36 µm

## Construction

1	Filter element	Sintered spherical bronze
2	Nipple	Brass



Dimensions



	A	CH	C	D
PS18	1/8"	13	6	13
PS14	1/4"	16	8	17
PS38	3/8"	19	7,5	17
PS12	1/2"	24	10	19

## Description

Silenced air flow regulators are normally used to reduce the exhaust velocity and so the operating time of pneumatic actuators, mounted on solenoid valve exhausts. Characterised by including 2 functions in one item only: flow control and silencer.

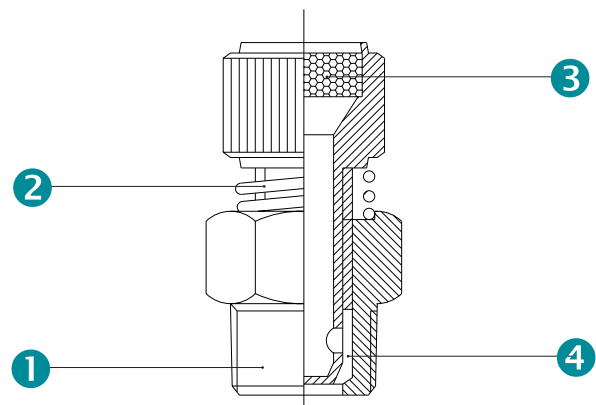


## Product Features

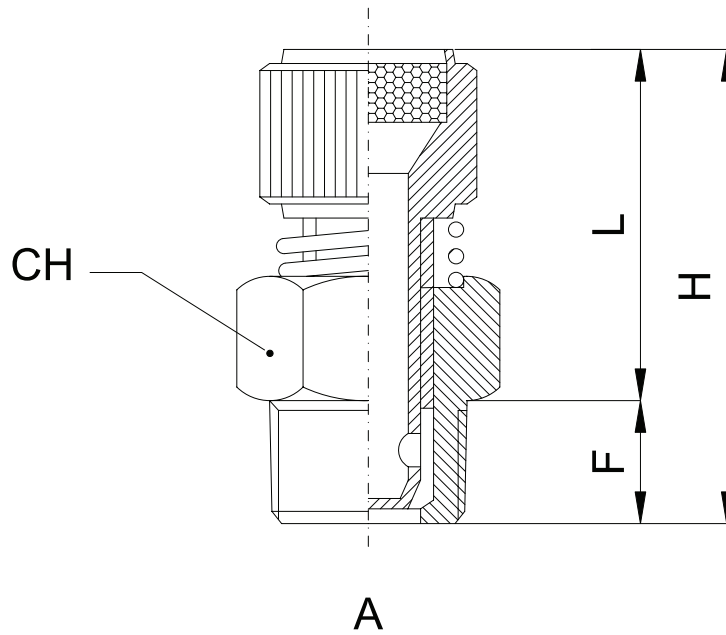
- Fluid Compressed air
- Pressure range 0,5 - 10 bar
- Temperature range -20°C to 70°C
- Parallel threads UNI - ISO 228 / 1 (BSP)
- Metric threads ISO R / 262
- Filter degree 36 µm

## Construction

1	Body	Sintered bronze
2	Spring	Stainless steel
3	Filter element	Sintered bronze
4	Seals	NBR rubber



Dimensions



	A	CH	F	L		H	
				min	max	min	max
<b>AVE18</b>	1/8"	13	6	20	22	26	28
<b>AVE14</b>	1/4"	15	8	22	24	30	32
<b>AVE38</b>	3/8"	18	10	25	28	35	38
<b>AVE12</b>	1/2"	22	11	26	29	36	39

## Description

Flow regulator with NAMUR interface for 3 or 5-way NAMUR valves, precise regulation

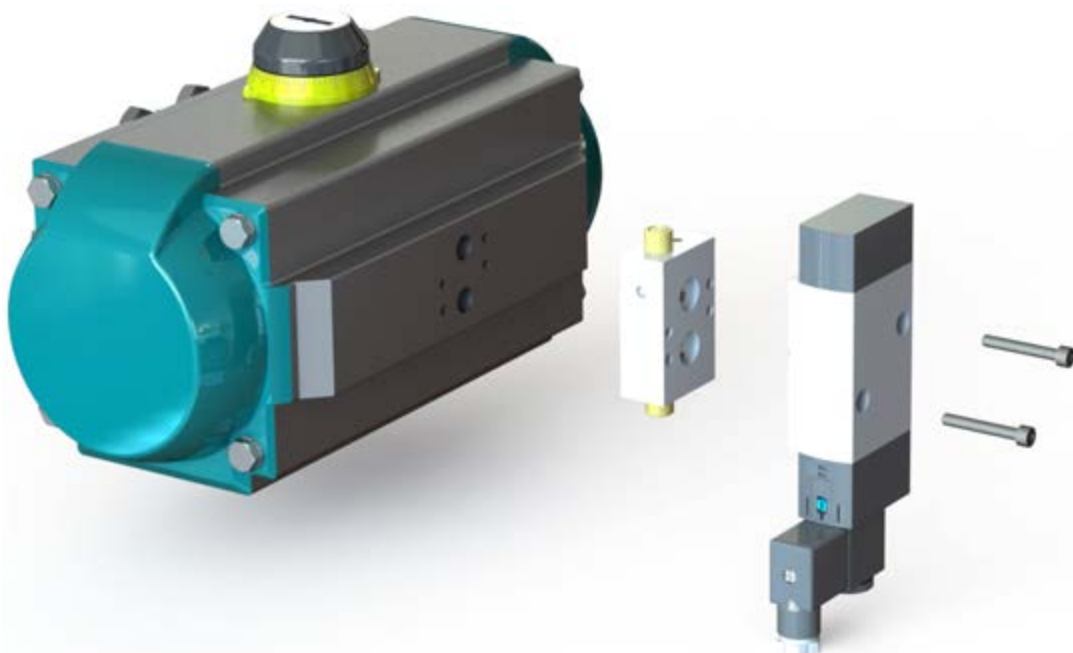
## Product features

- Temperature range -20°C - 80°C
- Working pressure 0,5...10 bar
- Interface NAMUR
- Media dry or lubricated noncorrosive gas compatible with NBR o-ring
- Nominal bore 0 - 5 mm
- Air flow 650 l/min



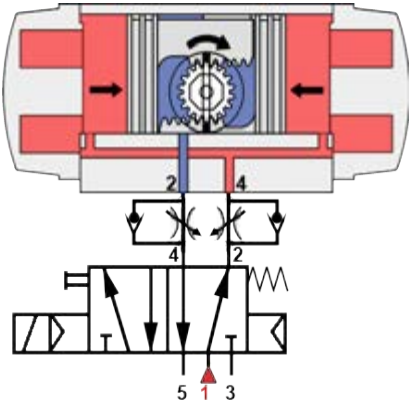
## Type code

Flow control	DRN 5 611	double acting actuator	IA050D-IA600D	NAMUR flow control double unidirectional needle valve for double acting actuators. Used to adjust closing and opening speed.
	DRN 3 611	single acting actuator	IA050S-IA600S	NAMUR flow control double unidirectional needle valve for spring return actuators. Used to adjust closing and opening speed (also suitable for use with solenoid valve with air purge function).

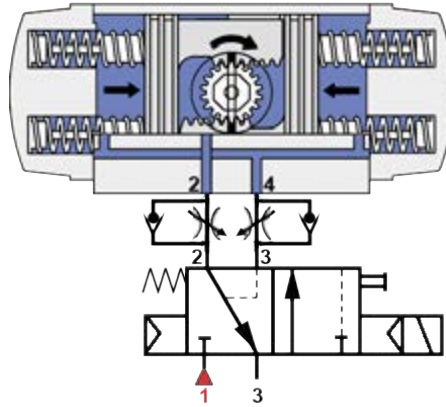


## Schema

Double acting actuator



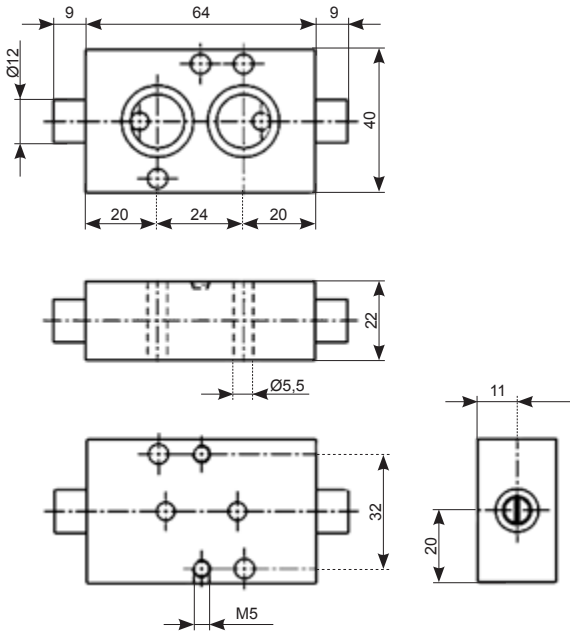
Single acting actuator



## Dimensions

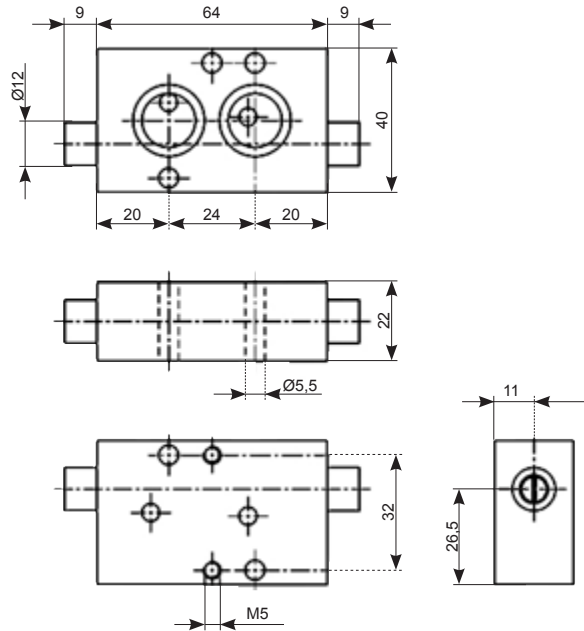
Double acting actuator

DRN 5 611



Single acting actuator

DRN 3 611



# ER - Electric actuator quarter turn, with manual override

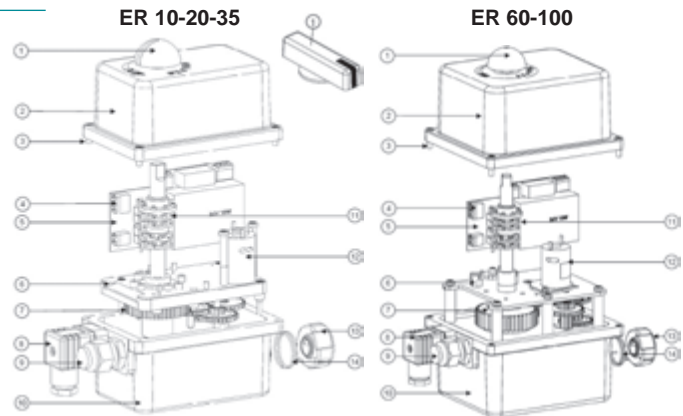
## Product features

- Torque range Md = 10-20-35-60-100 Nm
- Limit switches 4 adjustable limit switches 5A (2x int. + 2x ext.)
- Heating resistance ER 10 + 20 7 W, ER 35 + 100 10 W controlled
- Duty rating ED = 50%
- Protection IP66
- Temperature range -10°C ÷ 55°C (Fail Safe: -10°C ÷ 40°C)
- Electronic torque limiter, failure feedback relay



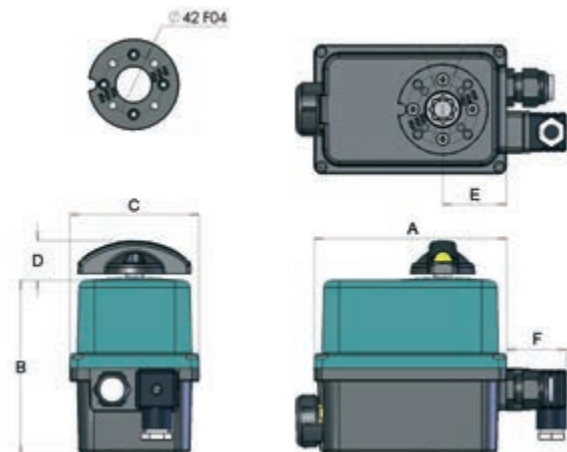
## Construction

1	Position indicator
2	Cover Polyamide 6.6 UL94VO
3	Stainless steel screws (4x)
4	Auxiliary limit switch terminal trip
5	Circuit board
6	Gear box plate
7	Reductor
8	Connector (3P+T)
9	Gland PG, M20
10	Housing Polyamide 6.6 GF 25%
11	Cams (4x)
12	Motor
13	Clutch knob
14	Spring



## Emergency manual override:

- In case of an electric supply failure, it is possible to operate the actuator manually:
- Turn the clutch knob «13» to position MAN and hold it in position (reduction «7» disengaged)
  - Turn the outgoing drive shaft of the actuator with the handlever (ER10-20) or a adjusting spanner (ER35-100).
  - In order to re-engage the reduction, release the clutch knob.

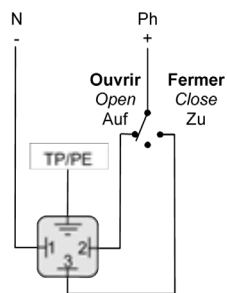


## Dimensions

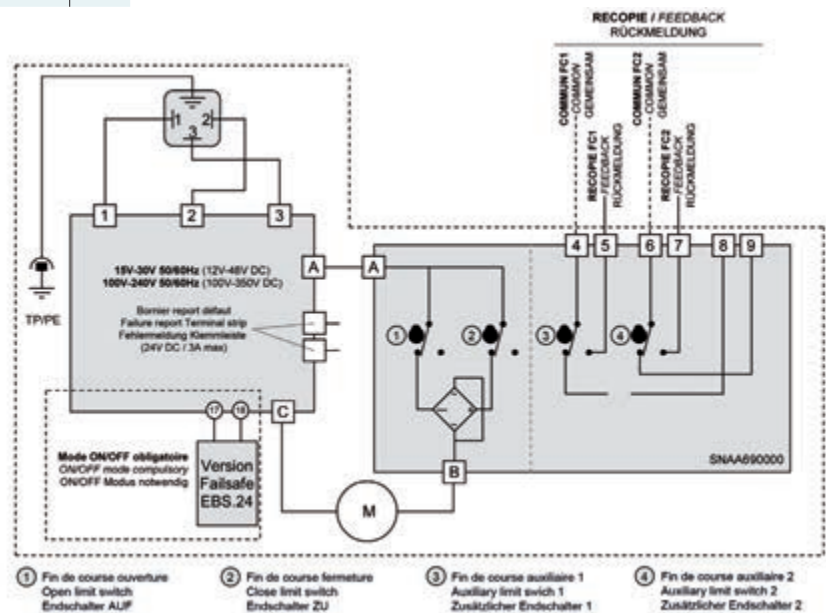
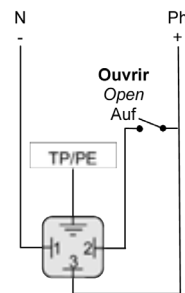
	A	B	C	D	E	F	ISO 5211	[kg]
ER10	136	124	90	28	45	42	F03-F04-F05	1,5
ER20	136	124	90	28	45	42	F03-F04-F05	1,5
ER35	136	124	90	28	45	42	F03-F04-F05	1,5
ER60	151	152	127	24	54	42	F05-F07	3,0
ER100	151	152	127	24	54	42	F05-F07	3,0

## Power supply: Connector 3P+G DIN43650

Mode 3 points modulants  
3-points modulating mode  
3 Modulationspunkte Modus



Mode Tout ou rien (ON/OFF)  
On-Off mode  
Auf-Zu Modus





## Executions

### Multivolt (Standard)

Type	ISO 5211	Shaft	Shaft reduction*			Torque	Voltage	ON-OFF	Power
ER10.100-240AC/100-350DC.11.F03-F04-F0514	F03-F04-F05	*14	□11	□9		10 Nm	100-240V 50/60Hz, 100-350VDC	11 s	15 W
ER10.15-30AC/12-48DC.11.F03-F04-F0514	F03-F04-F05	*14	□11	□9		10 Nm	15-30V 50/60Hz, 12-48VDC	11 s	15 W
ER20.100-240AC/100-350DC.12.F03-F04-F0514	F03-F04-F05	*14	□11	□9		20 Nm	100-240V 50/60Hz, 100-350VDC	12 s	15 W
ER20.15-30AC/12-48DC.12.F03-F04-F0514	F03-F04-F05	*14	□11	□9		20 Nm	15-30V 50/60Hz, 12-48VDC	12 s	15 W
ER35.100-240AC/100-350DC.26.F03-F04-F0514	F03-F04-F05	*14	□11	□9		35 Nm	100-240V 50/60Hz, 100-350VDC	26 s	15 W
ER35.15-30AC/12-48DC.24.F03-F04-F0514	F03-F04-F05	*14	□11	□9		35 Nm	15-30V 50/60Hz, 12-48VDC	24 s	15 W
ER60.100-240AC/100-350DC.12.F05-F0722	F05-F07	*22	□17	*14	□11	60 Nm	100-240V 50/60Hz, 100-350VDC	12 s	45 W
ER60.15-30AC/12-48DC.12.F05-F0722	F05-F07	*22	□17	*14	□11	60 Nm	15-30V 50/60Hz, 12-48VDC	12 s	45 W
ER100.100-240AC/100-350DC.23.F05-F0722	F05-F07	*22	□17	*14	□11	100 Nm	100-240V 50/60Hz, 100-350VDC	23 s	45 W
ER100.15-30AC/12-48DC.22.F05-F0722	F05-F07	*22	□17	*14	□11	100 Nm	15-30V 50/60Hz, 12-48VDC	22 s	45 W

### Multivolt (Slow)

Type	ISO 5211	Shaft	Shaft reduction*			Torque	Voltage	ON-OFF	Power
ER35.100-240AC/100-350DC.40.F05-F0722	F05-F07	*22	□17	*14	□11	35 Nm	100-240V 50/60Hz, 100-350VDC	40 s	45 W
ER35.15-30AC/12-48DC.41.F05-F0722	F05-F07	*22	□17	*14	□11	35 Nm	15-30V 50/60Hz, 12-48VDC	41 s	45 W
ER60.100-240AC/100-350DC.79.F05-F0722	F05-F07	*22	□17	*14	□11	60 Nm	100-240V 50/60Hz, 100-350VDC	79 s	45 W
ER60.15-30AC/12-48DC.79.F05-F0722	F05-F07	*22	□17	*14	□11	60 Nm	15-30V 50/60Hz, 12-48VDC	79 s	45 W
ER100.100-240AC/100-350DC.119.F05-F0722	F05-F07	*22	□17	*14	□11	100 Nm	100-240V 50/60Hz, 100-350VDC	119 s	45 W
ER100.15-30AC/12-48DC.119.F05-F0722	F05-F07	*22	□17	*14	□11	100 Nm	15-30V 50/60Hz, 12-48VDC	119 s	45 W

### Option Fail Safe position: (Code ER...S)

- In case of power failure the valve returns to the initial position.
- Same actuator as above listed versions but with additional module Fail Safe (temperature range -10°C ÷ 40°C), except ER35 with mounting flange F03-F04-F05.
- Battery loading indicator.
- Power shut off after 2 min. to avoid discharging battery.
- Quick and easy replacement of the battery.
- 2 initial safety position settings „normally close“ or „normally open“ upon order.

### Option with positioner POSI: (Code ER...P)

- Same Multivolt (**Slow**) actuators as listed above but with additional module POSI, except ER10. Furthermore use ER20 with longer operating time (see table below).
- Self configurable input signal 4-20mA, 0-20mA or 0-10V.
- Reversible input signal (20-4mA).
- Electronic torque limiter, failure feedback relay.

Type	ISO 5211	Shaft	Shaft reduction*			Torque	Voltage	ON-OFF	Power
ER20P.100-240AC/90-350DC.25.F03-F04-F0514	F03-F04-F05	*14	□11	□9		20 Nm	100-240V 50/60Hz, 100-350VDC	25 s	15 W
ER20P.15-30AC/12-48DC.25.F03-F04-F0514	F03-F04-F05	*14	□11	□9		20 Nm	15-30V 50/60Hz, 12-48VDC	25 s	15 W

### Additional equipment:

Type	Code actuator	for actuator ->	ER-Standard	ER-Fail Safe (ER...S)	ER-Positioner (ER...P)
<b>EPR.1B</b>	ER...R	Potentiometer 1000 Ohm			
<b>EPR.5B</b>	ER...Y	Potentiometer 5000 Ohm	✓	-	-
<b>EPR.10B</b>	ER...Z	Potentiometer 10000 Ohm			
<b>EFC.2</b>	ER...C	2 additional limit switches	✓	-	-
<b>EPT.C</b>	ER...T	Transmitter 4-20mA, 0-20mA, 0-10V	✓	-	included

Options EPR.B, EFC.2 and EPT.C each alone, no combination possible

\* Shaft reduction (grey values) optional available:

Type	
PSA.22/11	*22 / □11
PSS.22/14	*22 / *14
PSA.22/17	*22 / □17



## Description

Electric actuators, quarter turn with operating torques up to 2400 Nm. Multi-voltage, manual override. For "ON-OFF" and modulating applications. Special executions available; Explosion-proof, fail-safe executions, etc.



## VR and VS range

- Compact design with IP68 protection
- Integrated anti-condensation self-regulated heater
- Electronic torque limiter
- Failure mode reporting relay
- Optical position indicator
- Manual override
- 3-point modulating or On-Off control
- Voltage:
  - 15V to 30V AC (50/60Hz) and 12V to 48V DC
  - 100V to 240V AC (50/60Hz) and 100V to 350V DC
  - 400V 3-phase version (50/60Hz)
- Mechanical travel stops
- Different possible rotation angles
- Compliant with RoHs and REACH

### VR

- From 25 Nm to 75 Nm
- Manual override by external shaft

### VS

- From 100 Nm to 300 Nm
- Manual override by hand wheel

## Versions

- FAILSAFE: security unit ensuring return to initial position in case of power failure
- POSI: positioner
- 3-POSITION: version allowing an intermediate position
- POSI-SAFE: FAILSAFE + POSI
- 3 POSITION-SAFE: FAILSAFE + 3-POSITION
- Marine coating: suitable for corrosive atmospheres
- Bluetooth® communicating actuators



### VT range

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- From 600 Nm to 2400 Nm
- Asynchronous 50/60Hz 230V AC or 400V three phase motors
- 3-point modulating control
- Manual override
- Mechanical torque limiter
- Failure feedback relay (normal duty, failure)
- 4 adjustable limit switches (2 for motor control and 2 for position feedback)
- Optical position indicator
- Adjustable mechanical limit stops (+/- 5°)
- Regulated anti-condensation heater
- Duty rating: 50% (CEI34)
- Working temperature: -20°C to +70°C
- Enclosure: IP68

### Versions

- 90° standard version and 180° or 270° version (on request)
- ATEX version for explosives atmospheres II 2 G D - Ex d IIB T5 Gb - Ex tb IIIC T90°C Db
- Version for marine applications. High durability coating



## Description

Industrial Electric actuators.  
Quarter turn or Multi-Turn, with operating torques up to 500.000 Nm.  
Power supply: AC / DC and three-phase.  
For On-Off and Modulating applications.  
Special executions available:  
- Explosion-proof  
- Fail-safe executions  
- Continuous modulating  
- ... etc.



## AQ and AT RANGE

For moderate environment, moderate operational constraints and standard applications.

### Quarter-turn AQ RANGE

- 15 to 500 Nm (direct mount) & up to 200,000 Nm on request
- Type of Controls:
  - Electromechanical SWITCH
  - Integrated LOGIC (v2)
- BC Duty & Modulating Classification:
  - On-Off A
  - Inching Positioning B
  - Modulating III
- Environment: IP 68 / C3 / T: -20°C ...+60°C



### Multi-turn AT RANGE

- 10 to 500 Nm (direct) & up to 3,600 Nm on request
- 10 to 120 rpm (direct)
- Type of Controls:
  - Electromechanical SWITCH
  - Integrated LOGIC (v2)
- Connector: Double-sealing as standard
  - Screw Type Terminal
- BC Duty & Modulating Classification:
  - On-Off A
  - Inching Positioning B
  - Modulating III
- Environment: IP 68 / C3/ T: -20°C ...+70°C



## BC Premium range

A complete solutions, for severe environment, demanding operational constraints and critical and heavy duty applications.

### Quarter-turn SQ RANGE

- 45 to 10.000 Nm (up to 800 Nm direct mount) & up to 1.000.000 Nm on request
- Type of Controls:
  - Electromechanical SWITCH
  - Integrated LOGIC (v2)
  - Integrated INTELLI+®(v3)
- BC Duty & Modulating Classification:
  - On-Off A+
  - Inching Positioning B+
  - Modulating III
- Connector: Double-sealing with INTELLI+®
- Environment: IP 68 / C3 up to C5-M / T: -20°C ...+70°C  
option low T -40°C / option high T +90°C (high T for SWITCH versions)



### Multi-turn ST RANGE

- 700 to 2.200 Nm (direct) & up to 20.000 Nm on request
- pm (direct) & high speed: up to 180 rpm (direct & <300Nm)
- Type of Controls:
  - Electromechanical SWITCH
  - Integrated LOGIC (v2)
  - Integrated INTELLI+®(v3)
- BC Duty & Modulating Classification:
  - On-Off A+
  - Inching Positioning B+
  - Modulating III
- Connector: Double-sealing with INTELLI+®
- Environment: IP 68 / C3 up to C5-M / T: -20°C ...+70°C  
option low T -40°C / option high T +90°C (high T for SWITCH versions)



### Special executions

- Quarter-turn & Multi-turn SQX & STX RANGES
- Explosion proof range with compliance with international explosion proof standards: ATEX, INMETRO, IEC-Ex, EAC-Ex, NEMA 7 & 9...
- Failsafe Actuators FQ RANGE
- Fast and shock-free reliable spring-return technology during emergency operation
- Continuous Modulating Actuators: OAP, MA, MB, MAS, MBS, SQXM & STXM MODELS



## Description

Industrial electric actuators  
Quarter turn or Multi-Turn, with operating torques up to 120.000 Nm  
Power supply: AC / DC and three-phase  
For On-Off and Modulating applications  
Special executions available:  
- Explosion-proof  
- Fail-safe executions  
- ... etc.



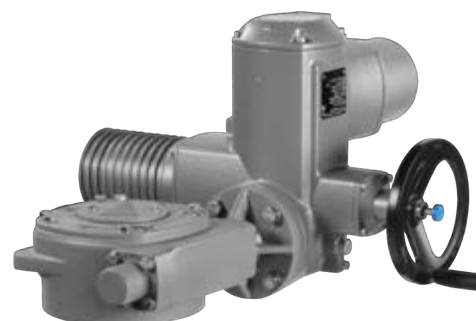
## SQ and SQR part-turn actuators

SQ and SQR actuators are part turn actuators that in compliance with EN ISO 5211, transmit torque to the valve for a rotation of one revolution or less.  
SQ/SQR part-turn actuators are equipped with internal end stops to allow precise approaching of end positions during handwheel operation.  
SQ /SQR actuators are supplied in increased enclosure protection IP68.  
SQ /SQR actuators are available with various swing angle ranges.



## SA and SAR multi-turn actuators

SA and SAR actuators are multi-turn actuators capable of withstanding thrust applied to the valve and transmits torque to the valve for at least one revolution. In general, multi-turn actuators are required to perform more than one revolution.  
SA /SAR actuators are supplied in increased enclosure protection IP68. The application range is considerably increased by mounting gearboxes to SA/SAR multi-turn actuators:  
– A linear actuator is obtained in combination with LE linear thrust unit.  
– When higher torques are required a part-turn actuator is obtained when combining with GS gearbox.



## Operations modes

SQ / SA actuators are intended for open-close duty and positioning duty.  
– Classes A and B or types of duty S2 - 15 min/30 min.  
SQR/SAR actuators are intended for modulating duty.  
– Class C or types of duty S4 - 25 %/50%.

### Integral control

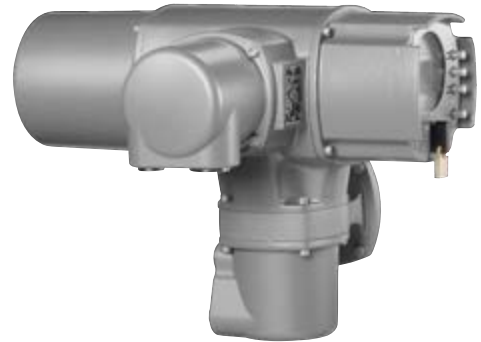
Integral controls evaluate actuator signals and operation commands and switch the motor on and off without delay, using the installed reversing contactors or thyristors.

#### AM Controls – AUMATIC

AM controls with simple design and defined features are the perfect choice when using parallel signal transmission and if a relatively low number of feedback signals is required.

#### AC Controls – AUMATIC

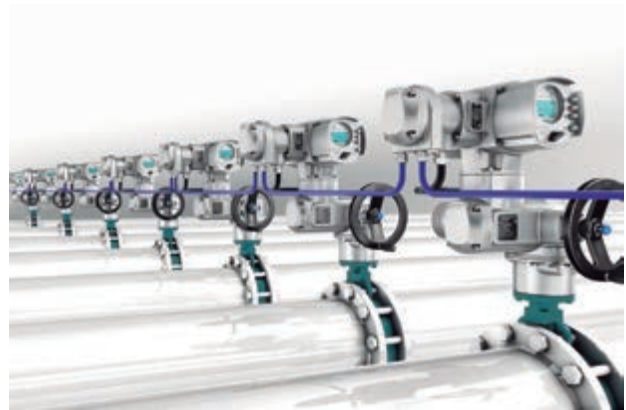
AC controls are your perfect solution if the application requires self-adapting control functions, data logging, configurable interface or if valve and actuator are to be integrated into a Plant Asset Management System due to advanced diagnostic functions.



### Communication

SQ/SQR and SA/SAR actuators can be equipped with different fieldbus interfaces:

- Profibus DP
- Modbus RTU
- Foundation Fieldbus
- HART



# InterApp Butterfly Valves for use in potentially explosive atmospheres

The special versions of the InterApp butterfly valves suitable for the use in explosive atmospheres are as described below. If you need assistance to choose the right version suitable to your specific application, contact our technical department. For this, we absolutely need to know the group and the category of equipment, the atmosphere outside the valve and the kind of fluid and its condition inside the valve.

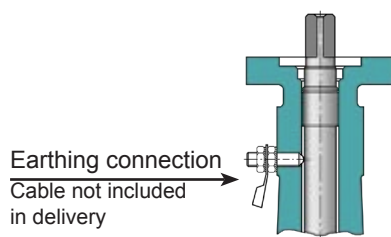
Special code	Explosive environments	Body coating	Version	Documents
135	2GD(o) IIB	80 µm to 2 mm, Code R, N, M, Y and customer specific	<ul style="list-style-type: none"> <li>Earthing connection</li> <li>all liner and disc materials</li> </ul>	Manufacturer declaration
112	2GD(o) IIC	Max. 80 µm, Code E		
278	1GD(i)/2GD(o) IIB	80 µm to 2 mm, Code R, N, M, Y and customer specific	<ul style="list-style-type: none"> <li>Earthing connection</li> <li>Only allowed liner materials (E, EC, EF, N, NA, NH, NG, V, VA, FP, TEC, T*A, T*VA)</li> <li>Liners T* and T*V only in combination with non-coated discs</li> <li>Only discs with conductive coating (3BA, 4GA) or non-coated discs</li> </ul>	
246	1GD(i)/2GD(o) IIC	Max. 80 µm, Code E		

The table below shows the respective valve version to be used. These are recommendations only. The plant operator / purchaser have the sole responsibility for the definition and the appropriate selection.

## InterApp butterfly valves for use in explosive atmospheres Group II, Equipment group II - not for Mining

### Atmosphere around the valve outside

			non explosive atmosphere outside	explosive atmosphere max. zone 1/21, gas and dust outside	
Atmosphere inside the valve	non explosive atmosphere inside	Liquid with low conductivity and inflammable liquids	Standard version	2GD(o) IIB Code 135  2GD(o) IIC Code 112	
		non inflammable dusts			
		Gases; as well inflammable but non explosive mixtures			
	explosive atmosphere inside	Gas	Dry and particle free gases respectively gas mixtures	1G(i)/2GD(o) IIB Code 278	1G(i)/2GD(o) IIB Code 278
				1G(i)/2GD(o) IIC Code 246	1G(i)/2GD(o) IIC Code 246
		Drops (vaporous and mist), vapours of inflammable liquids	Zone 1 or 2 (not zone 0)	1GD(i)/2GD(o) IIB Code 278	1GD(i)/2GD(o) IIB Code 278
Zone 0 (as well applicable for Zone 1 or 2)					
Dust	Zone 20, 21 or 22	1GD(i)/2GD(o) IIC Code 246	1GD(i)/2GD(o) IIC Code 246		



### Example how to order:

**DESPONIA**

D1 0150.33-2AR.4A.4C0.E-135

**DESPONIAplus**

DP1 150.33-2AE.4A.4C0.E-112

Description of keycode see datasheet  
DESPONIA, DESPONIAplus, BIANCA



Special versions of the InterApp valves may be used in explosive atmospheres when the following rules are observed.

### 1. Concerning safety regulations

- a. Valves can only be used when the materials according to the respective working conditions are resistant against mechanical and/or chemical influence respectively corrosion, so that the explosion protection is remaining.
- b. All metallic parts – as well those add by the operator of the installation – must be electrically connected to each other and put to ground.
- c. Accessories of the valve must as well be according to the 2014/34/EU.
- d. The operator of the installation is responsible to assure that the allowed temperatures according to
  - i. the conveyed fluid and the zone classification in the inner hazardous atmosphere as well as
  - ii. the substances appearing at the external hazardous atmosphere are not exceeded.

### 2. Important notice concerning installation

- a. By use in explosive location, the earthing terminal of the valve must be connected to the ground. The volume resistance must be tested and must be  $< 10^6$  Ohm.
- b. The volume resistance must be tested regularly by the operator of the installation, at least once per year.
- c. Before removing valves from piping systems conveying inflammable or explosive fluids, the piping system must be rinsed or made inert, so that no inflammable or explosive gases remain at the work place.
- d. The operator of the installation is responsible to assure that the allowed temperatures according to
  - i. the conveyed fluid and the location classification in inner explosive atmosphere as well as
  - ii. the substances appearing at the external explosive atmosphere are observed.

### 3. Important notice concerning maintenance

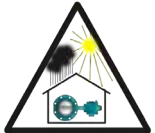
- a. The volume resistance must be tested frequently by the operator of the installation, at least once per year ( $< 10^6$  Ohm).

## Installation



### Introduction:

To guarantee the benefits of the InterApp butterfly valves DESPONIA + DESPONIA plus, proper procedures and compliance with the installation instruction are essential. The installation has to be carried out according to the state of the art and only by qualified personnel. InterApp reserves the right to decline responsibility for damage or premature failure if the recommendations contained in this instruction are not being followed. Consult the corresponding valve datasheet concerning the installation of a valve at the end of the line. Dimension, material and application range of the butterfly valves DESPONIA + DESPONIA plus are according to the technical documentation.



### Storage:

InterApp butterfly valves DESPONIA + DESPONIA plus should always be stored free from dust and humidity.

The valve is supplied with the disc in a slightly open position and should remain so until the installation is completed. (Fig. 1).

Butterfly valves supplied with a single acting spring closing pneumatic actuator should be stored with disassembled actuator, this to avoid a lasting deformation of the liner.

The actuator should be mounted only after the installation of the valve in the piping.



### Precautions to be taken prior to installation:

Please make sure that the valve intended for installation is suitable for the service conditions prevailing. The responsibility about the used fluids (corrosion resistance, pressure, temperature, etc.) lies by the user of the plant.

Call your supplier or InterApp if you need any assistance.

Please consider that turbulences (i.e. created by piping bow) generate hydro dynamic forces increasing the operating torque of the valve. We recommend installing the valve minimum 5 x DN after pipe fittings.



### Check before installation:

#### Positioning:

For the installation of valves in horizontal pipelines, we recommend to install the valves with their shaft in a horizontal position.

Please ensure that the lower edge of the disc opens with the direction of the flow. This prevents deposition of slurries and contamination in the shaft sealing area. (Fig. 2)



### Gaskets:

Never use gaskets nor grease. (Fig. 3)

### Installation:

Flange facings must be smooth and clean. Rust, welding scores, rests of paint, dirt, etc. must be removed in order to prevent damage of the valve gasket.

DESPONIA + DESPONIA plus butterfly valves, in wafer style design, are suitable for installation between DIN PN10/16 or ANSI150 flanges. For the installation of valve between flanges of other standards consult InterApp or its authorised distributors.

The valve should not be mounted in pipes, where the actual bore diameter is less than the nominal bore dimension of the valve. In that case, spacer rings should be fitted between flanges and valve to prevent damage to the disc on opening. (Fig.4)

The valve should never be installed between flanges which are not parallel to each other.

Make sure that pipes and valves are installed concentric. The disc of a misaligned valve may be damaged. (Fig.5).

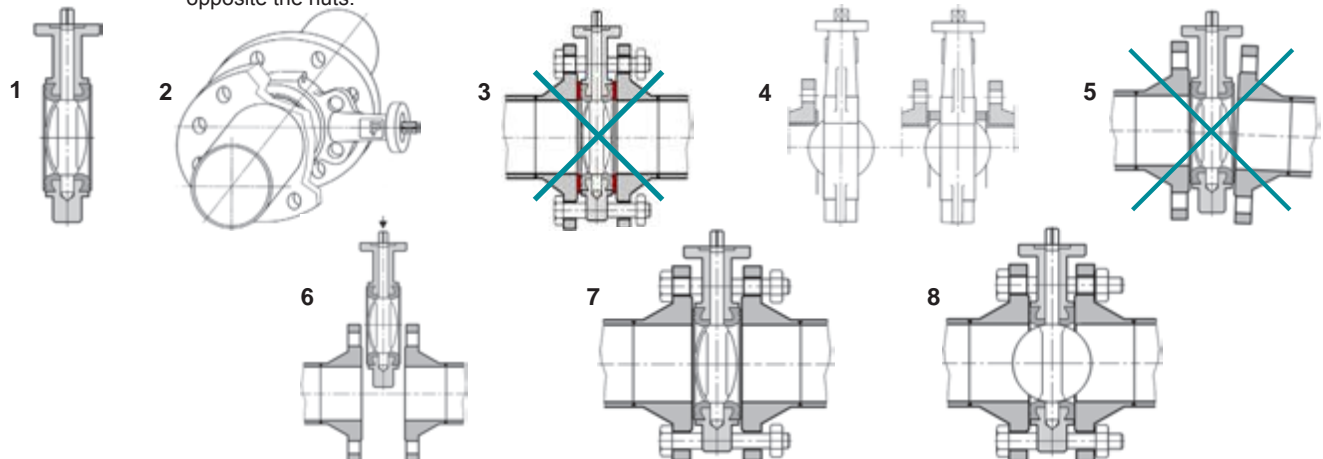
Furthermore, it is absolutely inadmissible to carry out any welding on the piping while the valve is between the flanges. This would destroy the liner of the valve.

The flanges have to be spread in order to ease the installation of the valve and the disc must be partially open (Fig. 6).

Misspread flanges may damage or roll the liner outside the body flanges.

Set all stay-bolts by keeping the disc slightly open and do not tighten the nuts (Fig. 7).

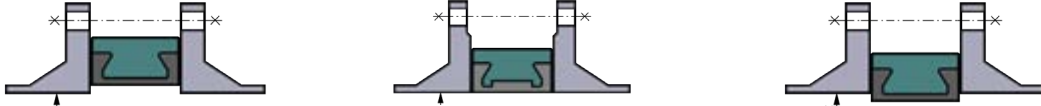
By tightening the stay-bolts when the disc is closed, the liner will be compressed in a wrong position. An excessive closing torque and leakage will result. Open completely the disc (Fig. 8). Ensure that the piping is aligned. Tighten diagonally opposite the nuts.





**Flange inside diameter:**

The InterApp butterfly valve has to be mounted between flanges without gasket. It has bidirectional tightness. Consult the corresponding valve datasheet concerning the installation of a valve at the end of the line. It is centered by stay-bolts or by screws. The diameter of the flange should be in accordance with the stated values D<sub>opt</sub>, D<sub>min</sub>, D<sub>max</sub>.



**D<sub>min</sub>** Minimum diameter of the flange enabling to move the disc (in case of a perfectly centered valve).

**D<sub>opt</sub>** Diameter of the flange for optimal mounting.

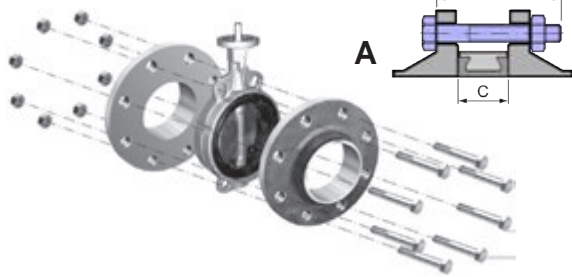
**D<sub>max</sub>** Maximum diameter of the flange.

DN	32	40	50	65	80	100	125	150	200	250	300	350	400	450	500	600	700	800	900	1000	1200	1400	1600
D <sub>min</sub>	19	32	35	53	74	93	119	147	198	247	297	340	384	425	490	585	680	790	880	980	1175	1348	1560
D <sub>opt</sub>	34	42	53	68	83	103	128	153	202	253	303	345	395	453	505	605	696	810	900	997	1195	1387	1602
D <sub>max</sub>	47	57	68	87	104	126	154	174	226	277	328	370	421	462	514	617	715	817	918	1019	1225	1430	1640

**Bolting::**

**Wafer + U-section body DN 25 - 400**

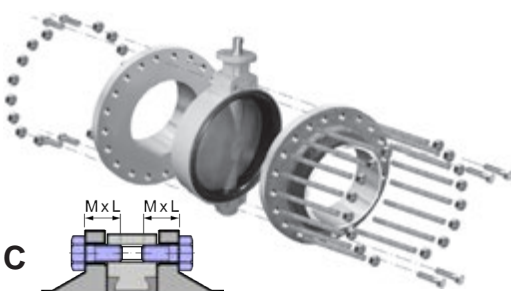
**A Bolt with nut**



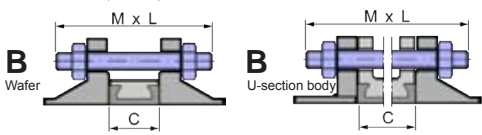
DN	PN 6		PN 10		PN 16		ANSI 150		
	C	n	A	n	A	n	A	n	
25	30	4	M10x80	4	M12x90	4	M12x90	4	UNC 1/2"-13 x 3"
32	30	4	M12x80	4	M16x100	4	M16x100	4	UNC 1/2"-13 x 3 1/4"
40	33	4	M12x90	4	M16x100	4	M16x100	4	UNC 1/2"-13 x 3 1/2"
50	43	4	M12x100	4	M16x110	4	M16x110	4	UNC 5/8"-11 x 4"
65	46	4	M12x100	4	M16x110	4(8)	M16x110	4	UNC 5/8"-11 x 4 1/2"
80	46	4	M16x110	8	M16x120	8	M16x120	4	UNC 5/8"-11 x 4 1/2"
100	52	4	M16x120	8	M16x120	8	M16x120	8	UNC 5/8"-11 x 5"
125	56	8	M16x120	8	M16x130	8	M16x130	8	UNC 3/4"-10 x 5"
150	56	8	M16x120	8	M20x140	8	M20x140	8	UNC 3/4"-10 x 5 1/4"
200	60	8	M16x130	8	M20x150	12	M20x150	8	UNC 3/4"-10 x 5 1/2"
250	68	12	M16x140	12	M20x160	12	M24x170	12	UNC 7/8"-9 x 6 1/4"
300	78	12	M20x160	12	M20x170	12	M24x180	12	UNC 7/8"-9 x 6 3/4"
350	78	12	M20x160	16	M20x170	16	M24x190	12	UNC 1"-8 x 7 1/4"
400	102	16	M20x190	16	M24x200	16	M27x220	16	UNC 1"-8 x 8 1/4"

**Wafer + U-section body DN 450 - 1600**

**B Stay bolt with 2 nuts + C bolt**

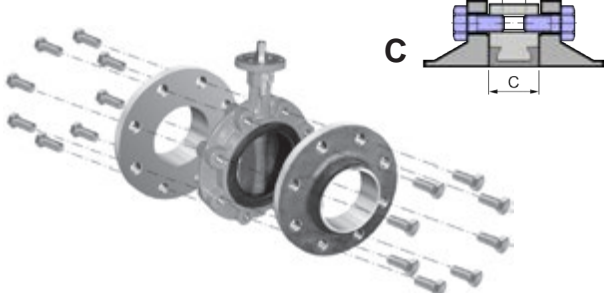


DN	C	PN 10		PN 16		ANSI 150							
		B	C	B	C	B	C						
450	113	16	M24x240	8	M24x60	16	M27x280	8	M27x80	12	UNC 1 1/8"-7 x 9"	8	UNC 1 1/8"-7 x 3 1/2"
500	126	16	M24x250	8	M24x60	16	M30x310	8	M30x90	16	UNC 1 1/8"-7 x 10"	8	UNC 1 1/8"-7 x 4"
600	153	16	M27x290	8	M27x70	16	M33x360	8	M33x100	16	UNC 1 1/4"-7 x 11 1/2"	8	UNC 1 1/4"-7 x 4 1/2"
700	165	20	M27x310	8	M27x70	20	M33x340	8	M33x90	24	UNC 1 1/4"-7 x 12"	8	UNC 1 1/4"-7 x 5"
750	178										On request		
800	190	20	M30x340	8	M30x80	20	M36x370	8	M36x90	24	UNC 1 1/2"-6 x 16 1/2"	8	UNC 1 1/2"-6 x 7"
900	203	24	M30x360	8	M30x80	24	M36x390	8	M36x90	28	UNC 1 1/2"-6 x 17"	8	UNC 1 1/2"-6 x 7 1/2"
1000	218	24	M33x380	8	M33x80	24	M39x420	8	M39x100	32	UNC 1 1/2"-6 x 18"	8	UNC 1 1/2"-6 x 8"
1100	218	28	M33x380	8	M33x80	28	M39x420	8	M39x100	36	UNC 1 1/2"-6 x 18 1/2"	8	UNC 1 1/2"-6 x 8"
1200	254	28	M36x440	8	M36x90	28	M45x490	8	M45x120	40	UNC 1 1/2"-6 x 20 1/2"	8	UNC 1 1/2"-6 x 9"
1400	280	32	M39x480	8	M39x100	32	M45x520	8	M45x120	44	UNC 1 3/4"-x 23"	8	UNC 1 3/4"-x 10"
1600	318	36	M45x600	8	M45x140	36	M52x680	8	M52x180	-	-	-	-



**LUG type DN 50 - 600**

**C Bolt**

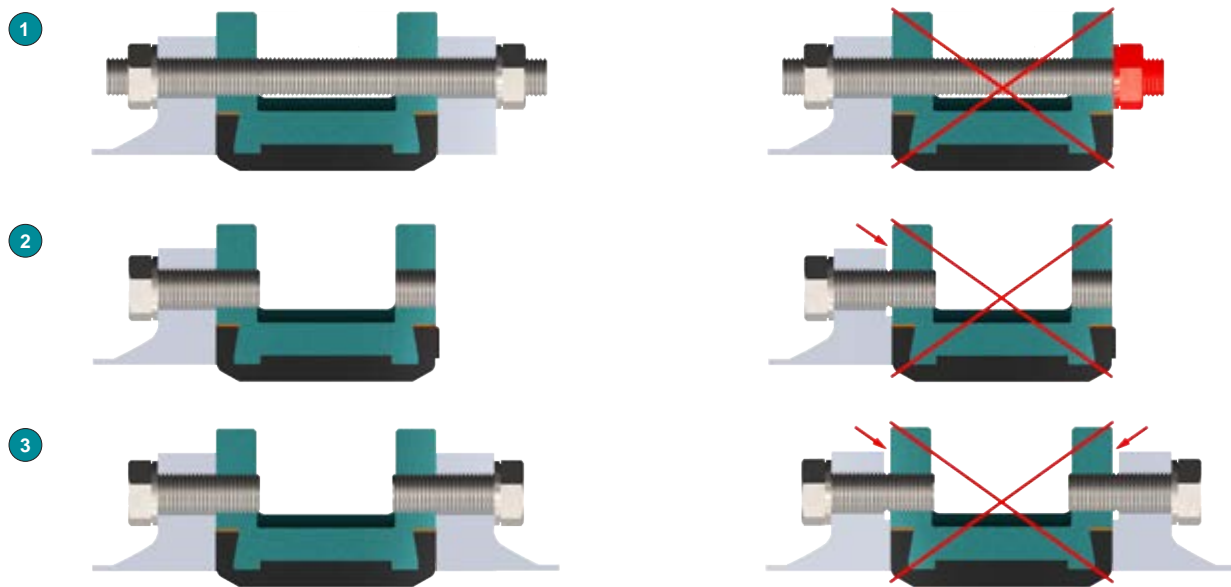


DN	PN 10		PN 16		ANSI 150		
	C	n	C	n	C	n	
25	30	8	M12X30	8	M12X30	8	UNC 1/2"-13 x 1"
32	30	8	M16X30	8	M16X30	8	UNC 1/2"-13 x 1"
40	33	8	M16X30	8	M16X30	8	UNC 1/2"-13 x 1 1/4"
50	43	8	M16x30	8	M16x30	8	UNC 5/8"-11 x 1 1/2"
65	46	8	M16x40	8	M16x40	8	UNC 5/8"-11 x 1 1/2"
80	46	16	M16x40	16	M16x40	8	UNC 5/8"-11 x 1 3/4"
100	52	16	M16x40	16	M16x40	16	UNC 5/8"-11 x 2"
125	56	16	M16x50	16	M16x50	16	UNC 3/4"-10 x 2"
150	56	16	M20x50	16	M20x50	16	UNC 3/4"-10 x 2"
200	60	16	M20x50	24	M20x50	16	UNC 3/4"-10 x 2"
250	68	24	M20x60	24	M24x60	24	UNC 7/8"-9 x 2 1/2"
300	78	24	M20x60	24	M24x60	24	UNC 7/8"-9 x 2 1/2"
350	78	32	M20x60	32	M24x60	24	UNC 1"-8 x 2 3/4"
400	102	32	M24x70	32	M27x80	32	UNC 1"-8 x 3 1/4"
450	113	40	M24x60	40	M27x70	32	UNC 1 1/8"-7 x 3 1/2"
500	126	40	M24x60	40	M30x80	40	UNC 1 1/8"-7 x 4"
600	153	40	M27x70	40	M33x90	40	UNC 1 1/4"-7 x 4 1/2"

n = number of bolts for one valve

## Mounting the valve at the end of a line:

When installing of the valve at the end of a line please note:	
Fluid	Only neutral liquids, temperature 10 - 80°C
Body material	Ductile iron GGG 40 / EN-GJS-400-15, carbon steel 1.0619 or stainless steel 1.4408
Flange bolting	Tightening torque values according to the supplier of the bolting you are using



Body type	Picture	Mounting end of line	DN	Max. working pressure
Wafer D1	--	not allowed	--	--
Lug D3	--	possible without counter flange	DN 25 - 600	valve PN 16 = 10 bar, valve PN 10 = 6 bar
		with flanges on both sides	DN 25 - 600	nominal pressure of the valve
Flanged D4	1	only with counter flange using passing through bolts	DN 150 - 1600	nominal pressure of the valve
	2	possible without counter flange; use flat face flange only and valve with special code -081, for flanges PN 10 and PN 16 only. All other flange ratings on request	DN 700 - 1600	valve PN 16 = 10 bar, valve PN 10 = 6 bar
	3	<b>Flanged installation</b> using flat face flanges and valve with special code -081	DN 700 - 1600	nominal pressure of the valve



### Function test:

Prior starting to use the installation, we recommend to make a function test. Therefore the valve must be opened and closed at least once in order to check that the disc doesn't touch the flanges and that the valve is tight through the passage and toward outside.

If a pressure test of the complete piping system is being carried out, it is very important that the testing pressure is not higher than the nominal pressure of the valve. An overpressure could destroy the valve. In order to ensure a reliable function of the butterfly valves, we recommend to operate these at least once monthly.



### Cleansing of the piping:

When cleansing the piping system it is very important to assure that the cleaning products and devices are harmless for the valve. Not convenient products and devices might destroy the valve.

### Removal:

Before removing the valve from the pipe consider that dangerous fluids might leak. Corresponding measures of precaution have to be applied.

When removing the valve from the pipe please take care not to damage the disc and the liner of the valve.



### Disposal:

Please notice that some residues could remain in the inner of the valve and that they might be dangerous for people or the environment. Therefore, the butterfly valve has to be handled with the corresponding caution. After its use, the butterfly valve has to be disposed of according to the state of the art and under consideration of the environment.

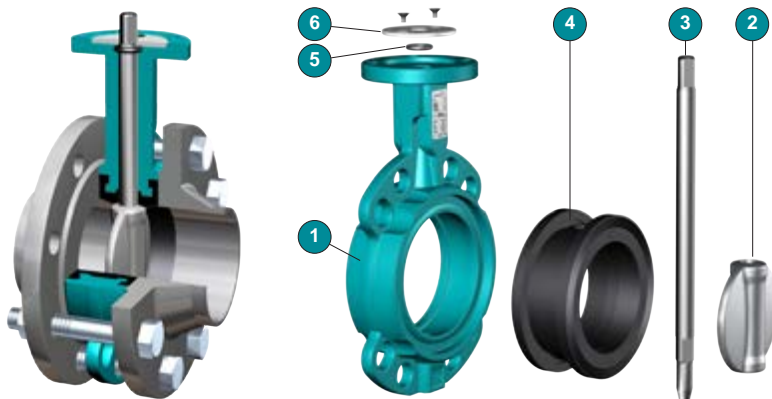
## Maintenance



### Introduction:

Please notice that fluid residues inside the butterfly could be dangerous for humans and the environment. The butterfly valve must be handled accordingly and be cleaned carefully prior to the maintenance. Maintenance is made at the own risk of the user. Maintenance on a DESPONIA must be executed by trained staff only. Only original spare parts are to be used.

### 1. Parts of a DESPONIA:



Parts list	
1	Body
2	Disc
3	Shaft
4	Liner
5	O-ring
6	Retaining washer + 2x screws

### 2. Valve removal from the line:

Before removing the valve from the pipe consider that dangerous fluids might leak. Corresponding measures of precaution have to be applied. When removing the valve from the pipe please take care not to damage the disc and the liner of the valve.

- 2.1 Do not close the valve completely.
- 2.2 Loosen all bolts and remove the valve.
- 2.3 Use flange spreaders and remove the valve

### 3 Disassembly:

- 3.1 Make sure there is no overpressure trapped inside of the valve prior disassembly.
- 3.2 Open the valve completely.
- 3.3 Remove the actuator.
- 3.4 Unlock screws and remove the retaining washer
- 3.5 Remove the shaft (either by using an extractor or by tightening the square of the shaft in a vise).
- 3.6 Remove the disc.
- 3.7 Loosen the liner at a point, squeeze until it is heart-shaped and then remove the liner.

### 4. Reassembly:

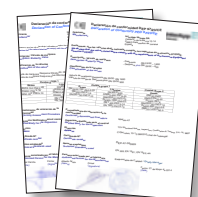
- 4.1 Clean all parts. Use, if possible, a silicone spray or similar to ease the handling.
- 4.2 Ensure that the bigger hole of the liner is on the top side of the valve (the shaft diameter on the upper side is bigger than this on the lower side).
- 4.3 Insert the heart-shaped liner. Set the upper part facing the shaft hole (use the shaft to center the liner), let the liner expand and adapt with the body.
- 4.4 Replace the disc. Ensure that the square is at the lower part (opposite the top of the valve). Take care not to damage the liner.
- 4.5 Introduce the shaft through the liner and the disc, by rotating the disc in an alternated movement to ease the operation.
- 4.6 Properly align the axis of the shaft square with the axis of the disc. Completely insert the shaft, evacuating air from the lower shaft housing (slightly lift the liner using a screwdriver).
- 4.7 Remount the actuator.



Before using the valve in a piping system, it is required to make a tightness test (e.g. EN 12266-1) or similar as well as a function test. Afterwards, put the disc in a slightly open position, so that the disc edge doesn't surpass the flange surface. This position must be kept until the valve is being installed.

## Further documentation

Please find the certificates of Desponia on [www.interapp.net](http://www.interapp.net) - **DOWNLOADS - Certificates**

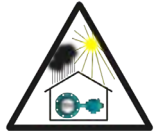


**Installation**



**Introduction:**

To guarantee the benefits of the InterApp butterfly valves Bianca, proper procedures and compliance with the installation instruction are essential. The installation has to be carried out according to the state of the art and only by qualified personnel. InterApp reserves the right to decline responsibility for damage or premature failure if the recommendations contained in this instruction are not being followed. Please consult the InterApp datasheet «Flanges» concerning the allowed flange dimensions. Consult the corresponding valve datasheet concerning the installation of a valve at the end of the line. Dimension, material and application range of the butterfly Bianca are according to the technical documentation of the Bianca.



**Storage:**

InterApp butterfly valves Bianca should always be stored in the original package - never expose them to dust. The valve is supplied with the disc in a slightly open position and should remain so until the installation is completed. (Fig. 1) Butterfly valves supplied with a single acting spring closing pneumatic actuator should be stored with disassembled actuator, this to avoid a lasting deformation of the liner. The actuator should be mounted only after the installation of the valve in the piping.



**Precautions to be taken prior to installation:**

Please make sure that the valve intended for installation is suitable for the service conditions prevailing. The responsibility about the used fluids (corrosion resistance, pressure, temperature, etc.) lies by the user of the plant. Call your supplier or InterApp if you need any assistance.



**Check before installation:**

**Positioning:**

For the installation of valves in horizontal pipelines, we recommend to install the valves with their shaft in a horizontal position. Please ensure that the lower edge of the disc opens with the direction of the flow. This prevents deposition of slurries and contamination in the shaft sealing area. (Fig. 2) Please consider that turbulences (i.e. created by piping bow) generate hydro dynamic forces increasing the operating torque of the valve. We recommend installing the valve minimum 5 x DN after pipe fittings.



**Gaskets:**

There is no need to use gaskets between the flanges and the valve. However, where the valve has to be mounted between flanges which are uneven or slightly distorted, PTFE-envelope gaskets should be fitted. (Fig. 3)



**Actuator-Torque:**

The PTFE liner, during extended period of storage, has the tendency to deform along the contact line with the valve disc. This will result in an increase of the working torque of the valve. By rotating the disc 360° for several times, after the valve is installed, the liner will regain its original shape and the torque returns to its initial rating. (Fig. 4)



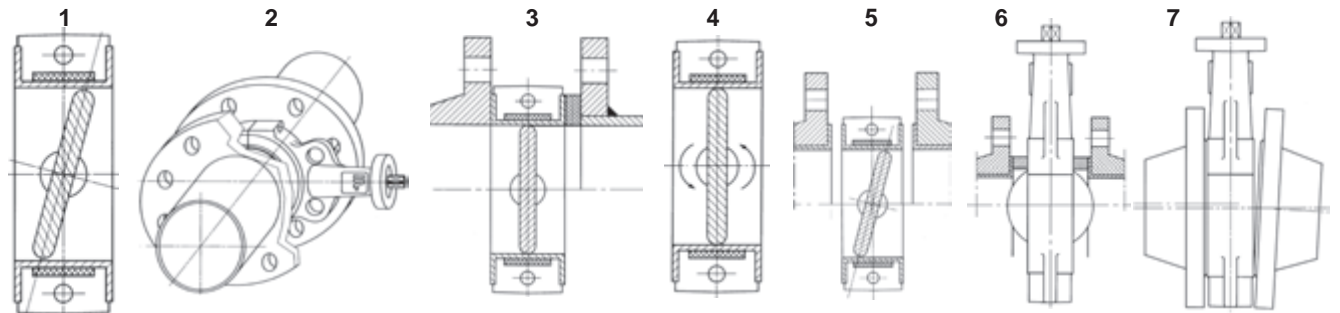
**Installation:**

Flange facings must be smooth and clean. Rust, welding scores, rests of paint, dirt, etc. must be removed in order to prevent damage of the valve gasket. (Fig.5)

Bianca butterfly valves, in wafer style design, are suitable for installation between DIN PN10/16 or ANSI 150 flanges. Please consult the InterApp datasheet « Flanges » concerning the allowed flange dimensions. For the installation of valve between flanges of other standards consult InterApp or its authorised distributors.

The valve should not be mounted in pipes, where the actual bore diameter is less than the nominal bore dimension of the valve. In that case, spacer rings should be fitted between flanges and valve to prevent damage to the disc on opening. (Fig.6)

The valve should never be installed between flanges which are not parallel to each other. Make sure that pipes and valves are installed concentric. The disc of a misaligned valve may be damaged. (Fig.7). Furthermore, it is absolutely inadmissible to carry out any welding on the piping while the valve is between the flanges. This would destroy the liner of the valve.



**Flange inside diameter:**

The InterApp butterfly valve has to be mounted between flanges without gasket. It has bidirectional tightness. Consult the corresponding valve datasheet concerning the installation of a valve at the end of the line. It is centered by stay-bolts or by screws. The diameter of the flange should be in accordance with the stated values  $D_{opt}$ ,  $D_{min}$ ,  $D_{max}$ .



$D_{min}$  Minimum diameter of the flange enabling to move the disc (in case of a perfectly centered valve)  
 $D_{opt}$  Diameter of the flange for optimal mounting.

DN	32/40	50	65	80	100	125	150	200	250	300	350	400	450	500	600	700	750	800	900
$D_{min}$	31	50	47	74	94	120	148	199	249	298	338	395	444	492	588	692	734	789	885
$D_{opt}$	40	50	65	80	100	125	150	200	250	300	339	400	450	500	600	703	750	803	900

**When mounting the valve at the end of a line please note:**

- Body type **Lug B3**
  - Temperature  $10 \div 60^\circ\text{C}$
  - Medium only for non hazardous liquids
  - no water hammer !!!
- Max. working pressure
- |           |       |
|-----------|-------|
| DN32-150  | 8 bar |
| DN200-300 | 6 bar |
| DN350-400 | 4 bar |

**Flange bolting tightening torques:**

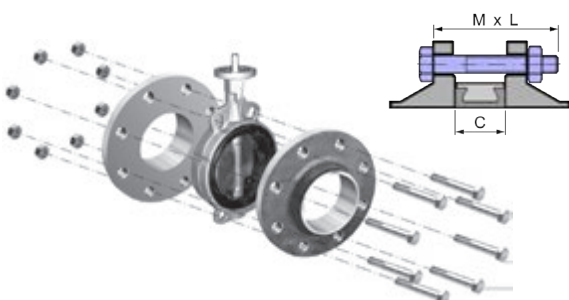
PTFE has the tendency to cold-flow. Therefore, it is very important to observe the tightening torques of the flange bolting according to the table below.

DN	PN10	PN16	ANSI UNC	ANSI metr.	DN	PN10	PN16	ANSI UNC	ANSI metr.
[mm] [inch]	[Nm] [lb-in]	[Nm] [lb-in]	[Nm] [lb-in]	[Nm] [lb-in]	[mm] [inch]	[Nm] [lb-in]	[Nm] [lb-in]	[Nm] [lb-in]	[Nm] [lb-in]
32	1 1/4"	40	357	40	357	33	288	31	271
40	1 1/2"	40	357	40	357	33	288	31	271
50	2"	52	460	52	460	52	462	52	460
65	2 1/2"	52	460	52	460	52	462	52	460
80	3"	32	285	32	285	65	573	64	571
100	4"	45	396	45	396	45	398	45	396
125	5"	55	483	55	483	65	578	68	603
150	6"	90	794	90	794	86	760	90	794
200	8"	112	993	75	662	107	950	112	993
250	10"	116	1028	139	1234	129	1144	127	1124
300	12"	137	1209	164	1451	152	1345	149	1321
350	14"	142	1255	170	1506	240	2126	227	2009
400	16"	160	1414	178	1578	169	1496	160	1414
450	18"	183	1620	204	1808	273	2413	255	2259
500	20"	188	1664	234	2070	224	1983	210	1857
600	24"	249	2200	303	2681	293	2592	277	2453
700	28"	275	2436	335	2968	278	2460	263	2327
750	30"	-	-	-	-	355	3141	336	2972
800	32"	386	3415	462	4085	419	3706	396	3502
900	36"	453	4011	542	4797	502	4442	474	4198
1000									
1200									

**Bolting:**

**Wafer + U-section body DN 32 - 400**

A Bolt with nut



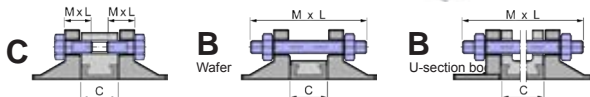
DN	C	n	PN 6	PN 10	PN 16	ANSI 150	
			A	A	A	A	
			M x L	M x L	M x L	UNC x L [Inch]	
32	30	4	M12x80	4	M16x100	4	UNC 1/2"-13 x 3 1/4"
40	33	4	M12x90	4	M16x100	4	UNC 1/2"-13 x 3 1/2"
50	43	4	M12x100	4	M16x110	4	UNC 5/8"-11 x 4"
65	46	4	M12x100	4	M16x110	4(8)	UNC 5/8"-11 x 4 1/2"
80	46	4	M16x110	8	M16x120	8	UNC 5/8"-11 x 4 1/2"
100	52	4	M16x120	8	M16x120	8	UNC 5/8"-11 x 5"
125	56	8	M16x120	8	M16x130	8	UNC 3/4"-10 x 5"
150	56	8	M16x120	8	M20x140	8	UNC 3/4"-10 x 5 1/4"
200	60	8	M16x130	8	M20x150	12	UNC 3/4"-10 x 5 1/2"
250	68	12	M16x140	12	M20x160	12	UNC 7/8"-9 x 6 1/4"
300	78	12	M20x160	12	M20x170	12	UNC 7/8"-9 x 6 3/4"
350	78	12	M20x160	16	M20x170	16	UNC 1"-8 x 7 1/4"
400	102	16	M20x190	16	M24x200	16	UNC 1"-8 x 8 1/4"

**Wafer + U-section body DN 450 - 900**

**B** Stay bolt with 2 nuts + **C** bolt

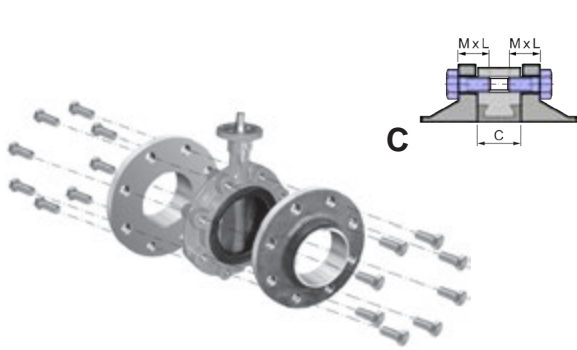


DN	C	n	PN 10		PN 16		ANSI 150						
			B	C	B	C	B	C					
450	113	16	M24x240	8	M24x60	16	M27x80	12	UNC 1 1/8"-7 x 9"	8	UNC 1 1/8"-7 x 3 1/2"		
500	126	16	M24x250	8	M24x60	16	M30x310	8	M30x90	16	UNC 1 1/8"-7 x 10"	8	UNC 1 1/8"-7 x 4"
600	153	16	M27x290	8	M27x70	16	M33x360	8	M33x100	16	UNC 1 1/4"-7 x 11 1/2"	8	UNC 1 1/4"-7 x 4 1/2"
700	165	20	M27x310	8	M27x70	20	M33x340	8	M33x90	24	UNC 1 1/4"-7 x 12"	8	UNC 1 1/4"-7 x 5"
800	190	20	M30x340	8	M30x80	20	M36x370	8	M36x90	24	UNC 1 1/2"-6 x 16 1/2"	8	UNC 1 1/2"-6 x 7"
900	203	24	M30x360	8	M30x80	24	M36x390	8	M36x90	28	UNC 1 1/2"-6 x 17"	8	UNC 1 1/2"-6 x 7 1/2"



**LUG type DN 32 - 400**

**C** Bolt



DN	C	n	PN 10		PN 16		ANSI 150	
			C	M x L	C	M x L	C	UNC x L [Inch]
32	30	8	M16X30	8	M16X30	8	UNC 1/2"-13 x 1"	
40	33	8	M16X30	8	M16X30	8	UNC 1/2"-13 x 1 1/4"	
50	43	8	M16x30	8	M16x30	8	UNC 5/8"-11 x 1 1/2"	
65	46	8	M16x40	8	M16x40	8	UNC 5/8"-11 x 1 1/2"	
80	46	16	M16x40	16	M16x40	8	UNC 5/8"-11 x 1 3/4"	
100	52	16	M16x40	16	M16x40	16	UNC 5/8"-11 x 2"	
125	56	16	M16x50	16	M16x50	16	UNC 3/4"-10 x 2"	
150	56	16	M20x50	16	M20x50	16	UNC 3/4"-10 x 2"	
200	60	16	M20x50	24	M20x50	16	UNC 3/4"-10 x 2"	
250	68	24	M20x60	24	M24x60	24	UNC 7/8"-9 x 2 1/2"	
300	78	24	M20x60	24	M24x60	24	UNC 7/8"-9 x 2 1/2"	
350	78	32	M20x60	32	M24x60	24	UNC 1"-8 x 2 3/4"	
400	102	32	M24x70	32	M27x80	32	UNC 1"-8 x 3 1/4"	

n = number of bolts for one valve



**Function test:**

Prior starting to use the installation, we recommend to make a function test. Therefore the valve must be opened and closed at least once in order to check that the disc doesn't touch the flanges and that the valve is tight through the passage and toward outside.

If a pressure test of the complete piping system is being carried out, it is very important that the testing pressure is not higher than the nominal pressure of the valve. An overpressure could destroy the valve.



**Cleansing of the piping:**

When cleansing the piping system it is very important to assure that the cleaning products and devices are harmless for the valve. Not convenient products and devices might destroy the valve.



**Removal:**

Before removing the valve from the pipe consider that dangerous fluids might leak. Corresponding measures of precaution have to be applied.

When removing the valve from the pipe please take care not to damage the disc and the liner of the valve.

**Disposal:**

Please notice that some residues could remain in the inner of the valve and that they might be dangerous for people or the environment. Therefore, the butterfly valve has to be handled with the corresponding caution. After its use, the butterfly valve has to be disposed of according to the state of the art and under consideration of the environment.

**Maintenance**

**Introduction:**



Please notice that fluid residues inside the butterfly could be dangerous for humans and the environment. The butterfly valve must be handled accordingly and be cleaned carefully prior to the maintenance.

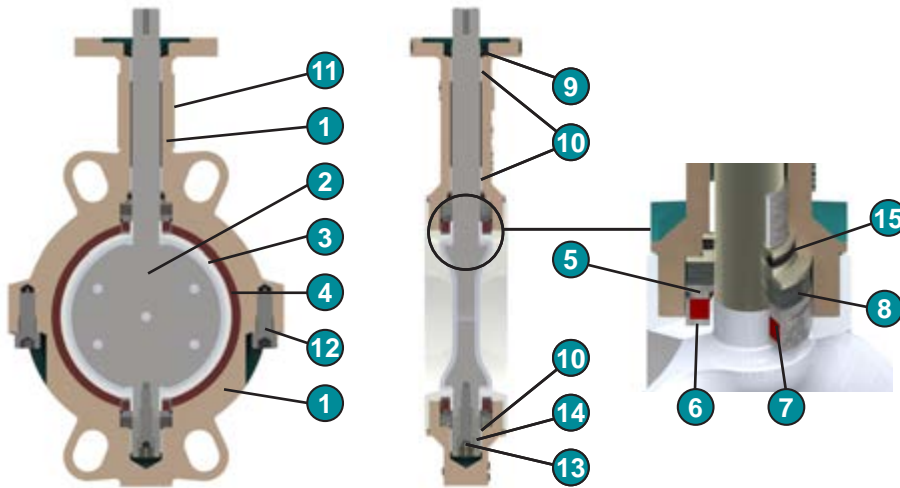
Maintenance is made at the own risk of the user. Maintenance on a BIANCA must be executed by trained staff only. Only original spare parts are to be used.

The Teflon parts of the BIANCA are very fragile and only a small scratch causes already a leaking. Thus, these parts have to be handled very carefully.

The frequency of replacement of the wear parts, is highly dependent on the fluid, cycles, operating conditions, etc. The user should include in its maintenance program a chapter for inspecting the valves to check the wear parts and change them if necessary. In the next paragraph the spare parts are identified. Please contact InterApp to obtain the specific codes and additional information for the recommended spare parts.



1. Parts of a BIANCA



Parts list	
1	2-piece body
2	Disc (PFA-coated/1.4435; AISI 316L)
3	Liner (PTFE)
4	Backliner (2 pieces)
5	Thrust collar (2 pieces)
6	Pressure capsule (2 pieces)
7	Seal (2 pieces)
8	Spring washer (8 pieces)
9	V-Ring
10	Bushing (3 pieces)
11	Label / Tag
12	Bolts of body (2 pieces)
13	Extension screw only for sizes DN50-100
14	Extension only for sizes DN50-100
15	TA-Luft seal (optional)

2. Disassembly

2.1 Disassembly of the body halves:



**Important:** Before the body is disassembled, mark the body halves. It is important to reassemble the body halves in their original configuration. Unscrew both body bolts (12) alternately (body halves are spring loaded) and remove them. Pay attention not to lose spring washers or seals. Remove Liner and disc unit. Afterwards remove o-ring and backliners.

3. Reassembly

Actually, you may reassemble the valve in reverse order of disassembly. You should clean all parts before reassembling. It is necessary to replace all seals. Please use the premounted spare part kit including disc/shaft/liner and all seals and springs.

3.1 Reassembly of the liner and disc into the body:

Please stand the top body half on the top flange upside down on a surface or piece of wood with a hole for the shaft. Glue only the end of the backliners onto the body. This will hold the backliner in place during reassembly. Put the 4 spring washers and the thrust collar into the shaft bore of the top body half and following also the thrust collar. Put the pressure capsule and the seal over the long end of the shaft and make sure that the pressure capsule fits right on the liner. Then put the disc/shaft into the top body half. The position of the backliner has to be controlled before the installation of the bottom body half.

3.2 Assembling of the 2 body halves:

Now you can mount the bottom body half. Note the marks on the body halves. Screw the body bolts alternately in, but keep 3mm between the body halves. From time to time, move the disc 2-3 times. This will insure proper alignment. Afterwards you can compress the body halves. **The disc has to be closed during this process.** Finally, insert the V-ring on the shaft on the actuator mounting flange.



Before using the valve in a piping system, if it is required to make a tightness test (e.g. EN 12266-1) or similar as well as a function test. Afterwards, put the disc in a slightly open position, so that the disc edge doesn't surpass the flange surface. This position must be kept until the valve is being installed.

## Installation



### Introduction:

To guarantee the benefits of the InterApp butterfly valves ELARA, proper procedures and compliance with the installation instruction are essential. The installation has to be carried out according to the state of the art and only by qualified personnel. InterApp reserves the right to decline responsibility for damage or premature failure if the recommendations contained in this instruction are not being followed. Please consult the InterApp datasheet « Flanges » concerning the allowed flange dimensions.

Consult the corresponding valve datasheet concerning the installation of a valve at the end of the line. Dimension, material and application range of the butterfly valves ELARA are according to the technical documentation.



### Storage:

InterApp butterfly valves ELARA should always be stored free from dust and humidity. The valve is supplied with the disc in a slightly open position.



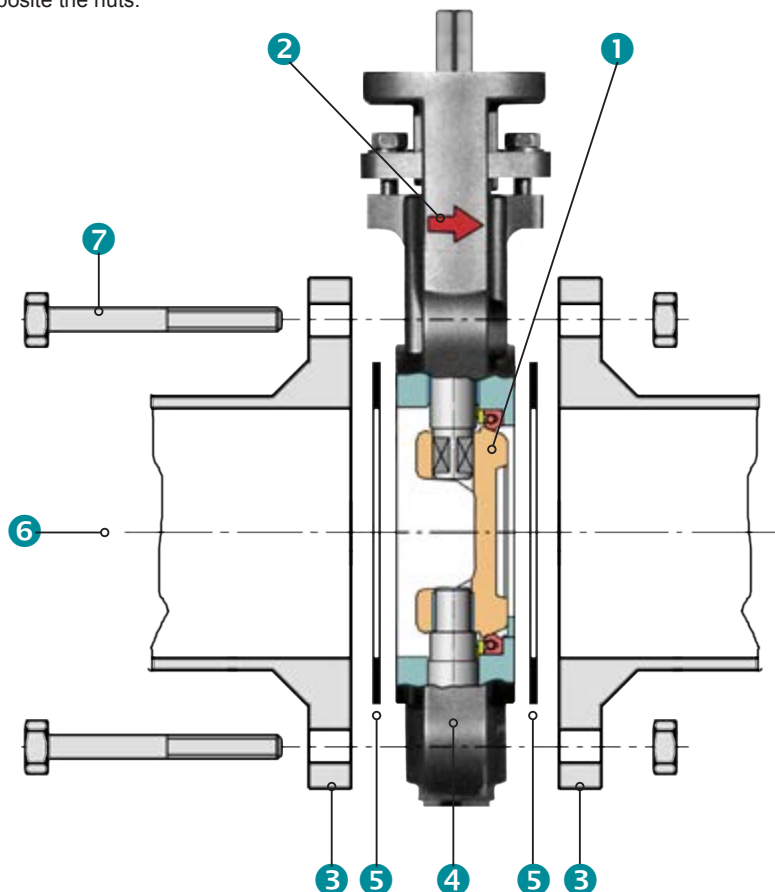
### Precautions to be taken prior to installation:

Please make sure that the valve intended for installation is suitable for the service conditions prevailing. The responsibility about the used fluids (corrosion resistance, pressure, temperature, etc.) lies by the user of the plant. Call your supplier or InterApp if you need any assistance.

Please consider that turbulences (i.e. created by piping bow) generate hydro dynamic forces increasing the operating torque of the valve. We recommend installing the valve minimum 5 x DN after pipe fittings.

### Installation:

- Flange facings must be smooth and clean. Rust, welding scores, rests of paint, dirt, etc. must be removed.
- ELARA butterfly valves, in wafer style design, are suitable for installation between DIN PN10-PN50 and ANSI150/300 flanges. Please consult the InterApp datasheet « Flanges » concerning the allowed flange dimensions. For the installation of valve between flanges of other standards consult InterApp or its authorised distributors.
- Close the disc of the valve ❶.
- Check the flow direction (arrow at valve body ❷)
- The valve should never be installed between flanges which are not parallel to each other ❸. The flanges have to be spread in order to ease the installation of the valve.
- Insert the valve ❹ and the flat packing seals ❺ between valve and pipe.
- Make sure that pipes and valves are installed concentric ❻.
- Set all stay-bolts ❼ and tighten the nuts by hand. Ensure again that valve and piping is aligned.
- Tighten diagonally opposite the nuts.





### Function test:

Prior starting to use the installation, we recommend to make a function test. Therefore the valve must be opened and closed at least once in order to check that the disc doesn't touch the flanges and that the valve is tight through the passage and toward outside.

If a pressure test of the complete piping system is being carried out, it is very important that the testing pressure is not higher than the nominal pressure of the valve. An overpressure could destroy the valve.



### Cleansing of the piping:

When cleansing the piping system it is very important to assure that the cleaning products and devices are harmless for the valve. Not convenient products and devices might destroy the valve.

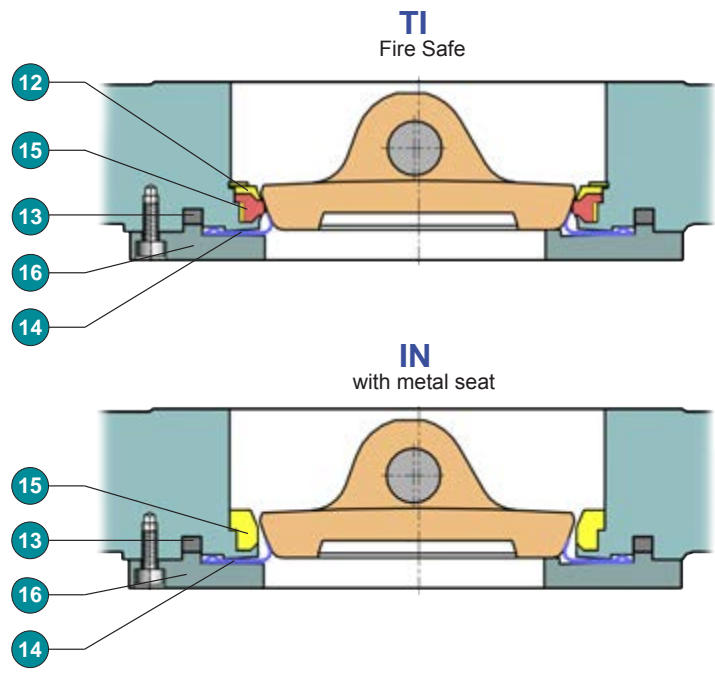
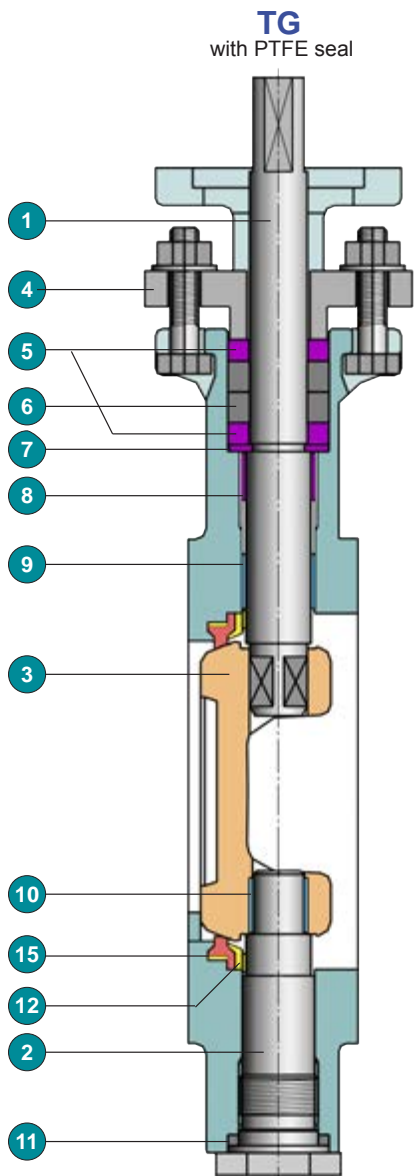
Wartung



**Introduction:**

Please notice that fluid residues inside the butterfly could be dangerous for humans and the environment. The butterfly valve must be handled accordingly and be cleaned carefully prior to the maintenance. Maintenance is made at the own risk of the user. Maintenance on a ELARA must be executed by trained staff only. Only original spare parts are to be used.

**1. Parts of a ELARA:**



Parts list	
1	Upper shaft
2	Lower shaft
3	Disc
4	Packing gland
5	Packing washer
6	Graphite packing
7	Washer
8	Shaft bushing
9	Upper shaft bearing
10	Lower shaft bearing
11	Graphite seal
12	Retaining ring for seat
13	Body graphite seal
14	Metal seat
15	Seat ring (TG, TI) Disc centering ring (IN)
16	Flange

**2. Valve removal from the line:**

Before removing the valve from the pipe consider that dangerous fluids might leak. Corresponding measures of precaution have to be applied. When removing the valve from the pipe please take care not to damage the disc of the valve.

- Close the valve completely.
- Loosen all bolts and remove the valve.
- Use flange spreaders and remove the valve

### 3. Dismantling:

#### ELARA, all models:

- a. Dismantle the valve actuator
- b. Remove the packing gland (4)
- c. Unscrew and remove the lower shaft (2)
- d. DN 250 and 300 mm: Remove the disc stem pins
- e. Take off the upper shaft (1) and the rings (5-7), using a stem punch tool
- f. Extract the graphite seal (11)

#### ELARA "TG", PTFE models:

- g1. Remove the disc (3)
- h1. Remove the retaining ring (12) (except for DN 250 & 300)
- i1. Remove the seat ring (15)
- j1. Take out the shaft bearings (9+10)

#### ELARA "TI", Fire Safe model:

- g2. Remove the disc (3)
- h2. Remove the retaining ring (12) (except for DN 250 & 300)
- i2. Remove the seat ring (15)
- j2. Take out the shaft bearings (9+10)
- k2. Unscrew the flange (16)
- l2. Remove the metal seat and metal washer (14)
- m2. Take of the body graphite seal (13)

#### ELARA "IN", Metal-Metal model:

- g3. Remove the disc (3)
- h3. remove the disc centering ring of the disc (15)
- i3. Unscrew the flange (16)
- j3. Remove the metal seat and metal washer (14)
- k3. Take of the body graphite seal (13)

### 4. Reassembly:

Actually, you may reassemble the valve in reverse order of disassembly. You should clean all parts before reassembling. It's necessary to replace all seals.

Before using the valve in a piping system, it is required to make a tightness test according to DIN 3230 part 3 or similar as well as a function test. Afterwards, put the disc in a slightly open position, so that the disc edge doesn't surpass the flange surface. Close the disc just before you install the valve into the piping.



#### Removal:

Before removing the valve from the pipe consider that dangerous fluids might leak. Corresponding measures of precaution have to be applied.

#### Disposal:

Please notice that some residues could remain in the inner of the valve and that they might be dangerous for people or the environment. Therefore, the butterfly valve has to be handled with the corresponding caution. After its use, the butterfly valve has to be disposed of according to the state of the art and under consideration of the environment.

**Installation:****General information for on-site installation**

- The ball valve may be fitted in any position on the pipeline.
- Before installing the valves, the pipes must be flushed clean of dirt, burrs and welding residues to prevent damage to the seats and ball surface.
- The pipeline must be free of tension.
- Please consider that turbulences (i.e. created by piping bow) generate hydro dynamic forces increasing the operating torque of the valve. We recommend installing the valve minimum 5 x DN after pipe fittings.

**Installation of threaded ball valves**

- Use conventional sealant, such as hemp core, PTFE, etc. on the threads.
- Apply wrench on the hexagon end of the valve only.  
Tightening by using the valve body or handle can seriously damage the valve.
- For applications where screwed end valves are back-welded on site, these valves must be dismantled according to instructions for weld end valves.

**Installation of weld-end valves**

- Tack-weld the valve on the pipe in four points on both end caps, with the ball valve in open position.  
Ball valves with extended butt-weld ends allow direct welding to the pipeline provided that the temperature in the area of the sealings do not exceed 200°C.  
**For ball valves with short butt-weld ends, proceed with next steps:**
- Dismount the valve body.  
Secure seats from falling with tape.
- Finish welding both end caps on the pipe.
- When cooled down, clean both end caps and body surface.
- Swing the body back in position and replace the bolts.  
Tighten all nuts slightly. This operation is very important to keep body and end caps perfectly parallel, thus, preventing distortion of the end caps.
- Tighten diagonally opposite the body bolts evenly.
- Check proper operation of the valve.

**Installation of ball valves with flange connection**

- Use conventional flat seals for flanges. Pay attention to select proper sealing material (EPDM, PTFE ...) resistant to the medium.

**Storage:**

InterApp ball valves should always be stored free from dust and humidity.

**Disposal:**

Please notice that some residues could remain in the inner of the valve and that they might be dangerous for people or the environment. Therefore, the valve has to be handled with the corresponding caution. After its use, the valve has to be disposed of according to the state of the art and under consideration of the environment.

**Maintenance:****1 Cleaning**

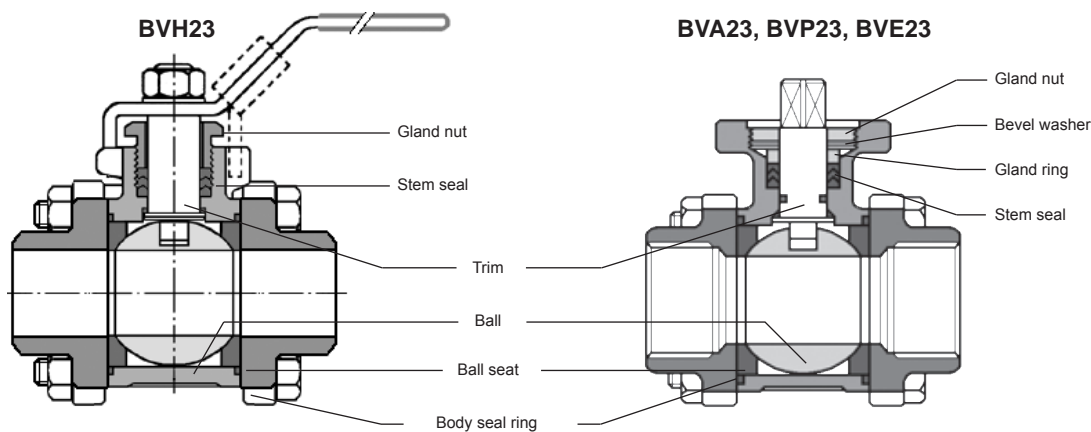
- **Caution:**  
Ball valves can trap fluids in ball cavity when it is in closed position. If the valve has been used to control hazardous media, it must be decontaminated before disassembly.  
It is recommended that the following steps be taken for safe removal and reassemble.
- Relieve the line pressure.
- Place the valve in half-open position and flush the line to remove any hazardous material from valve.
- All persons involved in the removal and disassembly of the valve should wear the proper protective clothing.
- Place the valve in closed position.

**2 Disassembly**

- Maintenance of parts is easy, even if the valve is installed in the line. By removing one body bolt and loosening the others, valve body can be swung out.
- But for better handling (especially for changing stem seals) we recommend to dismantle the valve body.

**3 Changing the ball, ball seats, body seals and stem seals for stainless steel ball valves**

- **Changing ball, ball seats and body seals**  
Remove body seals, balls seats and ball (ball must be in closed position!!!).  
Inspect the ball closely for scratches, if any, the ball should be replaced.
- **Changing stem seals**  
Dismantle actuator or handlever. Remove the following parts.  
**BVH23:** Gland nut and stem seal.  
**BVA23, BVP23, BVE23:** Gland nut, bevel washer, gland ring and stem seal.  
Move out the stem from body.
- **Reassembly:**  
Assemble the ball valve in reverse order by using new seals and if necessary a new ball.  
Swing the body back to original position and tighten diagonally opposite the body bolts evenly.  
Mount actuator or handlever.  
Check proper operation of the valve.



### Mounting parts

- 1 Butterfly valve in closed position.
- 2 Mounting plate with 2 bolts and nuts.
- 3 Handlever with screw, washer and plug.



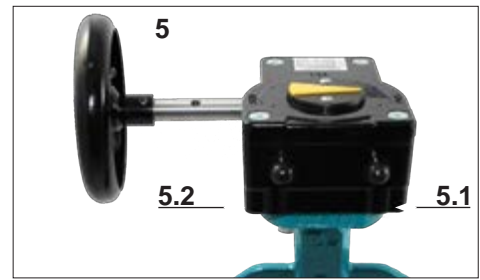
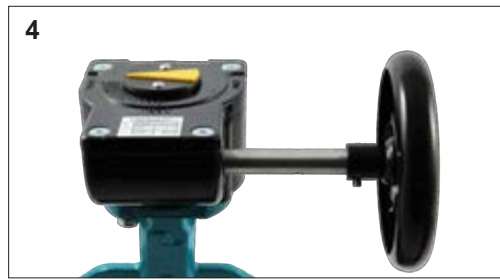
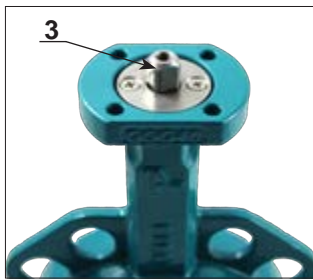
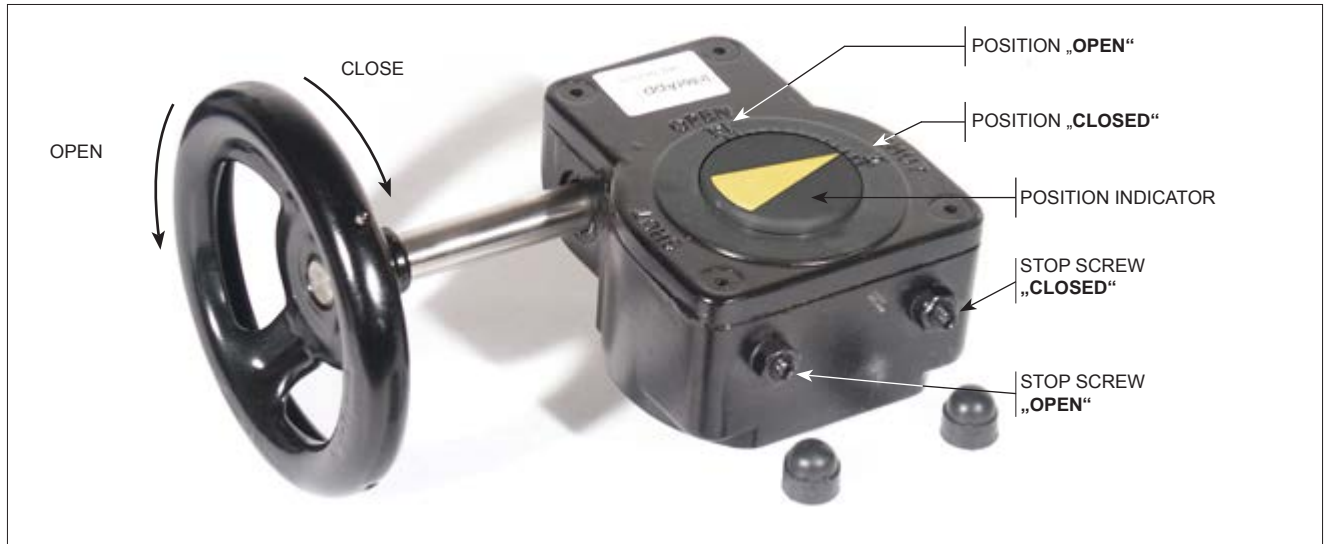
### Mounting the handlever

- 4 Be sure that the valve is in closed position. If the valve is mounted in a pipe look at the position indicator at the shaft end to check the closed position of the disc.
- 5 Fasten the mounting plate by using 2 bolts and nuts. Take care that the „CLOSED“ symbol is in the correct position.
- 6 Mount the handlever and fix it with the screw, washer and plug.



### Mounting parts

- 1 Hand operated gear box (in closed position) with optical position indicator and mechanical adjustable stops.
- 2 Protection caps for stop screws.



### Mounting the gearbox

- 3 Secure that the **valve and the gear box are in closed position**. If the valve is mounted in a pipe look at the position indicator at the shaft end to check the closed position of the disc.
- 4 Loosen the stop nut and screw out a little the stop screw „CLOSED“ (5.1). Put the gearbox onto the topflange of the valve and if necessary turn the handwheel until the mounting faces of gearbox and valve fit together. Now you can fasten the gearbox with corresponding bolts (Dimension und number of bolts see valve- and gearbox documentation).
- 5 Screw in the stop screw (5.1) until you feel resistance. Then fix the stop screw with the stop nut. Now you can open the valve and if necessary adjust the stop screw „OPEN“ (5.2) in the same way.

## Installation



### Introduction:

To guarantee the benefits of the InterApp actuator **IA motion**, proper procedures and compliance with the installation instruction are essential. The installation has to be carried out according to the state of the art and only by qualified personnel. InterApp reserves the right to decline responsibility for damage or premature failure if the recommendations contained in this instruction are not being followed. Dimension, material and application range of the **IA motion** actuator are according to the technical documentation.

### Working conditions and technical data:

- Operating media: Dry or lubricated air or inert gases, provided that they are compatible with the actuator internal parts and lubricant. The operating media must have a dew point equal to  $-20^{\circ}\text{C}$  ( $-4^{\circ}\text{F}$ ) or at least  $10^{\circ}\text{C}$  below the ambient temperature. The maximum particle size contained into the operating media must not exceed  $30\ \mu\text{m}$ .
- Supply pressure: The maximum supply pressure is 8 bar (116 Psi), only for IA800 it is 7 bar (101,5 Psi). For double acting and spring return actuators the working pressure is from 2.5 bar (36 Psi) to 8 bar (116 Psi).
- Operating temperature: Standard IA motion from  $-40^{\circ}\text{C}$  ( $-40^{\circ}\text{F}$ ) to  $+80^{\circ}\text{C}$  ( $+176^{\circ}\text{F}$ ) For low and high temperature service please contact InterApp. Working at high or low temperature can affect the life and the output torque of the actuator.
- Operating time (see technical data sheet): Caution: the operating time depends on several factors such as supply pressure, supply system capacity (pipe diameter, flow capacity of pneumatic accessories), valve type, valve torque and figures, applied safety factor, cycle frequency, temperature, etc.
- Rotation and stroke adjustment (see technical data sheet): For standard actuators ( $90^{\circ}$  rotation). Stroke adjustment at  $0^{\circ}$  (closed pistons):  $+15^{\circ}\text{max}/ - 5^{\circ}$ . Stroke adjustment at  $90^{\circ}$  (open pistons):  $+5^{\circ}/-15^{\circ}\text{max}$ . For actuator IA045 the stroke adjustment at  $90^{\circ}$  (open pistons) is available only on request.
- Lubrication: The actuators IA motion are factory lubricated for the life of the actuator in normal working conditions. The standard lubricant type GSTD is suitable for use from  $-40^{\circ}\text{C}$  ( $-40^{\circ}\text{F}$ ) to  $+80^{\circ}\text{C}$  ( $+176^{\circ}\text{F}$ ). For extreme low temperature (LLT) and high temperature (HT) service, special grease is required: please contact InterApp.
- Construction: rack and pinion actuator design suitable for both indoor or outdoor installations.
- Protection and corrosion resistance: All the actuators are supplied with corrosion protection for normal environments. For corrosion resistance of the different types of protection see technical data sheet. Before installing the actuator in aggressive environment, ensure that the selected protection level is suitable.
- Actuator designation and marking (see technical data sheets): The actuator type, size, operating pressure, output torque, direction of rotation, spring action, operating temperature and type of connections/interfaces are determined by designation.
- All IA motion actuators are supplied with an identification label showing the serial number and all necessary information on use, service, operation and product designation. Where applicable, the label indicates the classification according to ATEX Directive ATEX 2014/34/EC.

### Check before mounting:

- Please make sure that the actuator is suitable for the service conditions prevailing (air supply pressure, temperature, torque). Before mounting the **IA motion** on a valve, please check that the mounting flange and the shaft dimension of the actuator are compatible with this of the valve. Is the shaft of the valve smaller than this of the actuators, please use an adaptor. Do both flanges not fit to each other, than you have to use a bracket and a coupling piece. Actuators and valves ordered as a unit at InterApp include already the necessary adapting parts.
- Do not operate the actuator using inflammable, oxidizing, corrosive, explosive or unstable gases or liquids (use only not dangerous fluids - group 2 according to 97/26/EC directive). Moreover, for actuators installed in potentially explosive zones, make sure that the internal parts of the actuator do not come into contact with the external atmosphere.
- Referring to the Machinery Directive 2006/46/EC, the actuators can be classified as "PARTLY COMPLETED MACHINERY" (see the DECLARATION OF INCORPORATION). Therefore the actuator can not put into service until the machinery and/or the system, where the actuator is incorporated, will be declared in compliance with the requirements of the Directive 2006/42/EC.
- **IA motion** actuators are designed, produced and classified according to the ATEX 2014/34/EC (see actuator label and safety instructions). The use of the actuators in potential explosive atmosphere zones has to comply with the ATEX classification indicated on the actuator label and according to the ATEX safety instructions.
- The use, the installation and the maintenance of the **IA motion** actuators must be made by adequately trained personnel. For the use, installation and maintenance of **IA motion** actuators it is recommended to comply to the safety notice and to use proper equipment to protect health and prevent accidents.
- It is important that the actuator is used only within the working limits indicated in the technical specifications.
- Do not operate the actuator over temperature limits: this could damage internal and external components (disassembly of spring return actuator may become dangerous).
- Do not operate the actuator over pressure limits: this could damage internal parts as well as cause damage to the housing and end-caps.
- Do not use the actuator in corrosive environments with incorrect protection: this could damage the internal and external parts.
- Do not disassemble individual spring cartridges, this may result in personal injury. If maintenance to springs is necessary, send them to InterApp.
- Close and disconnect all air supply lines and make sure that air connections are vented during maintenance and installation on valve.
- Do not disassemble the actuator or remove end caps while the actuator is pressurized.
- The **IA motion** actuators are designed to be used only on valves.
- Before installing the actuator onto the valve make sure that the rotation direction and the position indicator are in the correct position.
- If the actuator is incorporated in a system or used within safety devices or circuits, the customer shall ensure that the national and local safety laws and regulations are observed.



## Operating function and direction of rotation:

The actuator is a pneumatic device for remote operation of industrial valves. The operation (90°, 120°, 135° or 180° rotation) may be activated by different methods:

- Direct mounting of solenoid valve (5/2 for double acting, 3/2 for spring return) to pressure connections 2 and 4, connected to supply and control lines.
- Screwed connection (to pressure connections 2 and 4) with air lines from separate control cabinet. The standard rotation (when port 4 is pressurized or for spring action) is clockwise to close. When port 2 is pressurized, counter-clockwise rotation is obtained. **IAmotion** actuators can be supplied with different types of assembly/rotation direction depending on the type of required operation and/or installation, see technical data sheets.

## Standard mounting, IA...D + IA...S normal closed

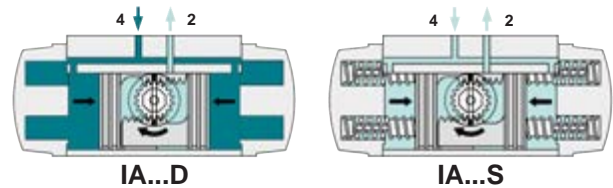
### 1. Close the actuator (pistons in inner position)

#### IA...D double acting:

The closed position is achieved by giving supply pressure to connection «4».

#### IA...S single acting:

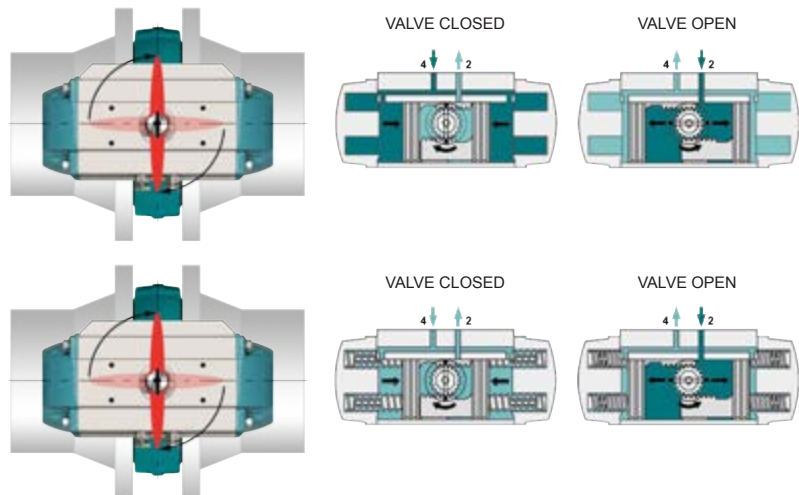
The closed position is already achieved by the springs pushing the pistons toward each other.



### 2. Close the valve

#### 3. Mount the actuator to the valve

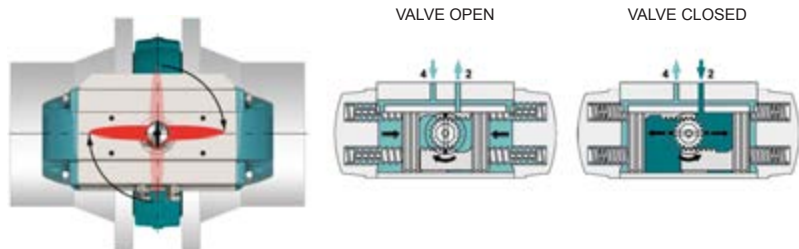
The actuator can be mounted either parallel to the pipe (standard) or perpendicular to it. InterApp delivers the valves with actuators mounted parallel to the pipe.



## Mounting of single acting actuator IA...S normal open

Use the same procedure as described under standard mounting, but **open the valve** before **mounting the closed actuator**.

Please note that in this case the valve is closed by counter clockwise rotation and the slit at the top of the actuator shaft does not correspond with the valve position.

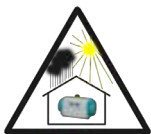


Screw stroke adjustment - turns „n“ for 1° angle:

IA motion	n
IA050 - IA200	1/6
IA250 - IA350	1/5
IA400 - IA1000	1/4

Actuator size, solenoid valve and air supply pipe according table below.

Actuator size	Solenoid valve	Air supply pipe
IA050 - 350	≥ DN 4	≥ DN 4
IA400 - 600	≥ DN 7	≥ DN 6
IA650 - 700	≥ DN 12	≥ DN 8
IA750 - 1000	≥ DN 12	≥ DN 10



### Storage:

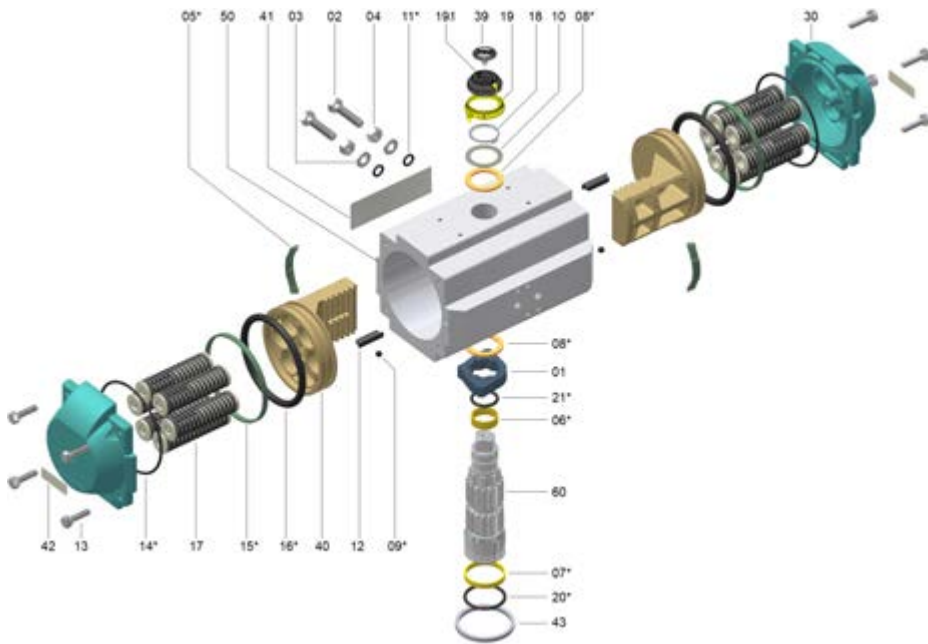
- If the actuator is not for immediate use, the following precaution must be taken for storage:
- Store the actuator in a clean and dry environment and at temperature between -20°C and +40°C.
- It is recommended that the actuator be stored in its original box.
- Do not remove the plastic plugs on air supply ports.

### Lifting and handling:

It is recommended to lift the actuators with proper, adequate and permitted systems in relation to the actuator weight and by following the ruling laws in terms of safety and health protection. The weight of the actuators is indicated on the Air Torque catalogue and on the related technical data-sheets. During the lifting and the handling of the actuators, it is recommended to avoid clashes and/or accidental falls in order to avoid irreparable damages to the actuators and to compromise the functionality. Contact InterApp for any information and technical data-sheets.

Maintenance instruction

Parts list:



	Pcs	Description
01	1	OCTI-CAM (Stop arrangement)
02	2	STOP CAP SCREW
03	2	WASHER
04	2	NUT (Stop screw)
05*	2	BEARING (Piston back)
06*	1	BEARING (Pinion top)
07*	1	BEARING (Pinion bottom)
08*	2	THRUST BEARING (Pinion)
09*	2	PLUG
10	1	THRUST WASHER (Pinion)
11*	2	O-RING (Stop screw)
12	2	PISTON GUIDE
13	8-16	CAP SCREW (End cap)
14*	2	O-RING (End cap)
15*	2	BEARING (Piston head)
16*	2	O-RING (Piston)
17	5-12	SPRING (Cartridge)
18	1	SPRING CLIP (Pinion)
19	1	GRADUATED RING
19.1	1	POSITION INDICATOR
20*	1	O-RING (Pinion bottom)
21*	1	O-RING (Pinion top)
30	2	END CAP
39	1	CAP SCREW (Indicator)
40	2	PISTON
41	1	IDENTIFICATION LABEL
42	2	END CAP LABEL
43	1	SPIGOT (Only on request)
50	1	BODY
60	1	DRIVE SHAFT

\* Suggested spare parts for maintenance

DISASSEMBLY

When disassembly of actuator is required for maintenance, firstly remove the actuator from the valve. Before performing any disassembly operations it is important to verify that the actuator is not pressurised.

Always use caution and double check that the ports 2 and 4 are vented and are free from any accessory and/or device. When the actuator is a spring return unit, make sure that the actuator is in the failed position and with pistons completely inwards before disassembling.

A) Removal of position indicator and graduated ring (Part N° 19,19.0,19.1), figure 01:

- Remove cap screw (39) if fitted.
- Lift position indicator (19 or 19.1) off shaft, it may be necessary to pry gently with a screwdriver.
- Lift, if necessary, the graduated ring (19.0) off the body, it may be necessary to pry gently with a screwdriver.

B) Removal of stop cap screws (Part N° 02), figure 02:

- Remove both stop cap screws together with nut (04) and washer (03).
- Remove stop screw o-rings (11) and discard if replacing all soft parts.

C) End caps disassembly (Part N° 30), figure 03:

- End caps disassembly for spring return actuators (disassemble one end cap at a time).

Unscrew the end cap bolts (13) in the sequence shown in figure 03, until the end-caps are free from springs force (for IA050 20-23 turns of the screws, for IA100 to IA800 4-5 turns of the screws). Then completely unscrew the screws and remove the end-cap and the springs. If there is still force on the end-caps after unscrewing as indicated above, this may indicate that spring cartridge is damaged or that the pistons are not completely closed, so any further disassembly should be discontinued. Further disassembly of the end caps may result in injury.

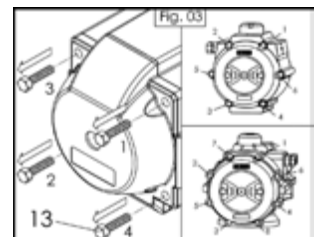
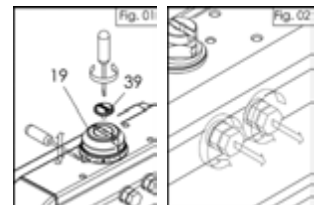
- End caps disassembly for double acting actuators (disassemble one end cap at a time). Unscrew the end cap bolts (13) in the sequence shown in figure 03, until the screws are completely unscrewed and the end caps are free.
- Remove the o-rings (14) using a screwdriver. Discard soft parts if replacing.
- Only for actuators with adjustment 50% or 100%, remove the nut 04R, the washers 03R and o-rings 11R and discard soft parts if replacing.

D) Pistons disassembly (Part N° 40), figure 04:

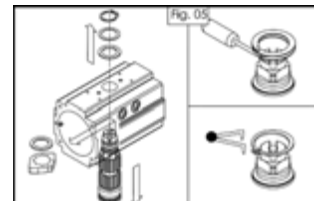
- Holding the body (50) in a vice or similar device, rotate the drive shaft (60) until the pistons (40) are released. Caution: air pressure should not be used to remove the pistons from the body.
- Remove o-rings (16) using a screwdriver. Remove the piston back (05) and piston head (15) bearings.
- Discard bearings when replacing all soft components.

E) Drive shaft disassembly (Part N° 60), figure 05:

- If necessary, remove the graduated ring (19.0) with a screwdriver, remove the spring clip (18) using snap-ring pliers or screwdriver for spiral rings, remove the thrust washer (10) and the external thrust bearing (08). Apply downward force to top of drive shaft (60), until it is partially out of the bottom of the body when it is possible to remove the internal thrust bearing (08) and the octi-cam (01), then push the pinion (60) completely out of the body. If pinion is not easily removed, gently tap the top of the shaft with a plastic hammer.
- Remove top (06) and bottom (07) pinion bearings and top (20) and bottom (21) pinion o-rings.
- Discard bearings (06) and (07), internal and external thrust washer (08) and o-rings (20) and (21) if replacing the soft components. All the components disassembled and not replaced will have to be cleaned and inspected for wear and before reassembly, if necessary, also replace the plugs (09).



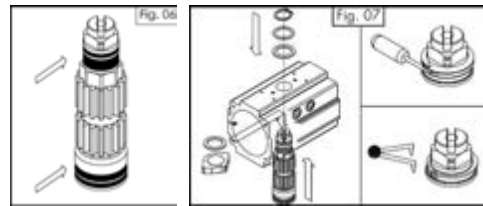
	SW1	SW2
IA050	10	8
IA100	10	10
IA200-250	13	10
IA300	17	13
IA350	19	13
IA400	19	17
IA450	22	17
IA500	22	19
IA550	24	19
IA600	30	22
IA650	30	24
IA700	36	22
IA750-800	46	24



## ASSEMBLY

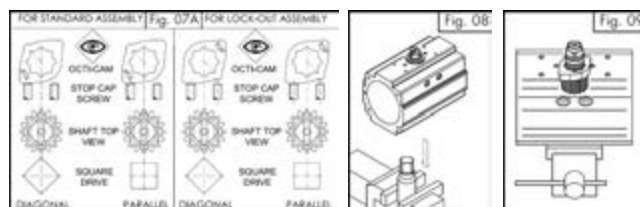
### A) Drive shaft assembly (Part N° 60), figures 06, 07 and 07A:

- Install top (06) and bottom (07) bearings, grease and insert the bottom (20) and top (21) pinion o-rings onto the shaft.
- Grease the outside surface of the drive shaft as shown in figure 06.
- Insert partially the drive shaft (60) in the body (50), install octi-cam (01) in the correct position (for standard assembly or for lock-out) as shown in figures 07 and 07A, related to the bottom and top of the drive shaft and the rotation of the actuator when energised. Install the internal thrust bearing (08). Insert completely the drive shaft in the body.
- Fit external thrust bearing (08), thrust washer (10) and then external spring clip (18) using snap ring pliers or screwdriver for spiral rings.



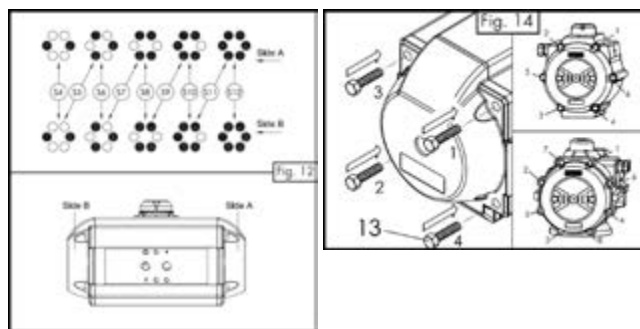
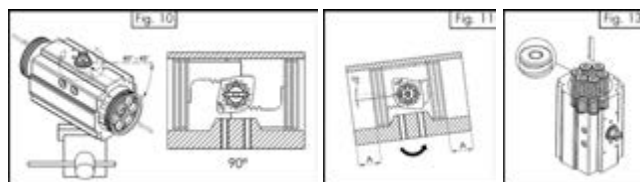
### B) Pistons assembly (Part N° 40), figures 08, 09, 10 and 11:

- Grease and install o-rings (16), piston back (05) and piston head (15) bearings.
- Grease the internal surface of the body (50) and the piston (40) rack teeth.
- Insert the female connection of the drive shaft (60) in a properly fixed coupling.
- Ensure that the octi-cam is in the right position as shown in figure 09.
- For standard rotation assembly type "ST" (clockwise to close), rotate the body (50) about 40-45° clockwise from top view, as shown in figure 10.
- Insert and press the two pistons (40) simultaneously inside the body (50) until the pistons are engaged, then rotate the body anticlockwise from top view until the stroke is completed.
- Ensure that with pistons completely closed, the rotation obtained referred to the axis of the body is about over 0° and that the dimension "A" on both sides is the same as shown in figure 11.



### C) End cap assembly (Part N° 30), figures 12, 13 and 14:

- Assemble one end cap at a time.
- Lubricate the body.
- For spring return actuators, insert the springs in each end cap according to the desired configuration, as shown in figure 12 and related tables. For models IA100→IA800 B insert spring cartridges as shown in figure 13.
- Fit end cap o-ring seal (14) into the groove on both end caps.
- Fit end caps onto the body (50), verifying that the o-ring remains in the groove.
- Only for actuators with 50% or 100% stroke adjustment, ensure that the adjustment screws 221G/222G are completely screwed into the end-cap.
- Insert the cap screws (13) and tighten each only partially. Complete tightening by making 1-2 turns for each screw in the sequence shown in figure 14 until tightening is completed. See the table for screw tightening torque.



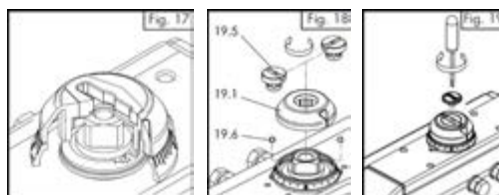
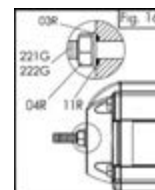
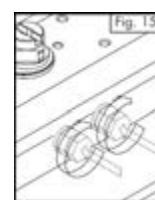
### D) Assembly of stop cap screws (Part 02) and stroke adjustment for models IA050 B→ IA800 B, figures 15 and 16:

- Insert on both stop screws (02) the nut (04), the washer (03) and the o-ring (11).
- Fit the stop cap screws (02) in the body.
- Stroke adjustment for actuators with standard type "ST" rotation / assembly (clockwise to close).  
Stroke adjustment in close position: with the actuator in close position 0°, screw or unscrew the right (from top view) stop cap screw until the desired stop position is achieved. Then tighten the stop adjustment nut (04) to lock it in place.  
Stroke adjustment in open position: with the actuator in open position 90°, screw or unscrew the left (from top view) stop cap screw until the desired stop position is achieved. Then tighten the stop adjustment nut (04) to lock it in place.
- For spring return actuators, it could be necessary to make rotation tests to verify the correct stroke adjustment in open position.

- Only for actuators with adjustment 50% or 100%, fit on end-cap adjustment screws 221G/222G the o-rings 11R, the washers 03R and the nuts 04R. To adjust the stroke in open position: with the actuator in partially or totally open position, screw or unscrew the end-cap adjustment screw 221G/222G until the desired position is achieved. It is important that the two end-cap adjustment screws are both in contact with the pistons. Then lock the nuts 04R.

### E) Assembly of graduated ring and position indicator (Part N° 19,19.0,19.1), figures 17,18 and 19:

- Fix the graduated ring (19.0) to the body.
- If necessary, correctly position the "Top Adaptor" (19.5) and lock it with the proper screws (19.6).
- Insert the indicator (19 or 19.1) making sure that it indicates the correct actuator position.
- Screw the indicator screw (39) if assembled.



## 1 Prior installation

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### 1.1 General rules

#### 1.1.1 Storage

Principally, the goods must be stored protected from light, heat, dust, dirt and humidity. If the goods cannot be stored in a building until they can be installed, we recommend storing them under a shed or in the shadow and covered with a tarpaulin to protect them from weather. In case goods would be stored unprotected, valve body, liner and disc, as well as carter of actuators and accessories must be perfectly cleaned before installation in the plant.

#### 1.1.2 Pneumatic connections

All pneumatic actuators and accessories are supplied with plugs protecting the orifices from dust. These plugs must remain in any case until the supply air piping is been connected in order to assure that no impurity enters these products. This could cause later on a malfunction or leakage of the concerned goods.

#### 1.1.3 Handling

In order to validate the painting warranty required, it is essential to handle the goods with care, avoiding damaging the painting during handling, storage, installation and adjustments. In fact, even if the painting procedures have been applied strictly, damage on the coating will compromise the painting warranty.

### 1.2 Storage of the butterfly valves

#### 1.2.1 Position of the disc in general

The butterfly valve must be always stored (and later on installed between flanges) with the disc in a slightly opened position. All InterApp valves are delivered with disc in this position. They shall not be operated before being installed between the flanges. This position of the disc is essential to avoid deforming the liner permanently because the valve was closed during months before installation. Furthermore, closing the valve while the liner is not compressed between the flanges, and so kept in place, might dislodge the liner from its position, what could make the liner being torn apart during the first operation.

#### 1.2.2 Special case, valves with spring return pneumatic actuators

For butterfly valves supplied with pneumatic spring return actuators, **spring to close**, actuators are either delivered: a) separately from the valves, or b) when ordered so, with a special stroke limit screw avoiding the disc closing completely. The stroke limit screw must be adjusted during commissioning of the plant to enable the valve to close completely.

Valves with function **spring to open** are always delivered with dismantled actuator, this to avoid the disc being damaged during installation of the valve with open disc between flanges. The actuator must be mounted once the valve is properly installed in the piping.

### 1.3 Installation of valves in the piping

The installation instructions supplied with the goods and included in the technical documentation must be studied and followed carefully in order to assure a perfect installation of the valves. If attentively observed, any malfunction of the products can be excluded during commissioning and start up of the installation.

## 2 Maintenance prior start up of the installation and in case of temporary shut down of the plant

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### 2.1 Butterfly valves

If once installed between flanges, the valves are put in the position "disc closed" and are not operated frequently before start up of the plant, problems will most probably occur when opening the valves. It is therefore strongly recommended to keep the valves in the slightly opened position – as they have been supplied – in order to avoid the disc edge to mark the liner, what can happen if valve remains closed long. This will make the valve being hard to open at the beginning after the start up of the installation.

In case it is impossible to keep the valves in the slightly opened position, it is essential to operate the valves frequently (at least every 15 days), the piping being watered (if applicable), before the start up of the installation.

### 2.2 Manual actuators (levers and gear boxes)

These parts do not need any special maintenance.

# Preservation and long term storage procedure

## 2.3 Pneumatic actuators

The actuators being operated automatically together with the valves during the operations as required under point 2.1, they do not need any additional maintenance.

Nevertheless, make sure before the start up of the installation that the sealing of the actuators are still perfectly tight and replace them if necessary.

After a storage period of 3 years without utilisation, we strongly recommend replacing all seals of the actuators.

## 2.4 Accessories

The accessories being operated automatically together with the valves during the operations as required under point 2.1, they do not need any additional maintenance.

Nevertheless, make sure before the start up of the installation that the sealing of the solenoid valves and positioners (if applicable) are still perfectly tight and replace them if necessary.

## 2.5 Electric actuators

Please refer to the installation and operation manuals of the electric actuators.

## Further documentation

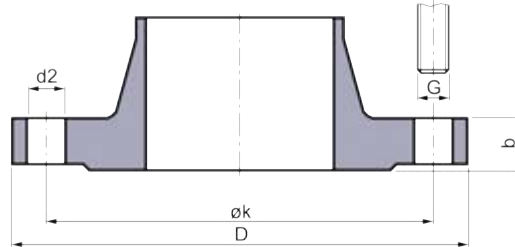
**Installation guide, Maintenance guide, Flanges:** Please consult these guides for the installation and maintenance of our butterfly valves. **Pneumatic actuators, Electric actuators, Accessories** according separate data sheets.

### Bad examples:



# Flanges

## EN1092-1:2007 (Type 11,12,13) welding neck flanges:



DN	PN 6					PN 10					PN 16					PN 25					PN 40					DN
	D	b	k	n x G	d2	D	b	k	n x G	d2	D	b	k	n x G	d2	D	b	k	n x G	d2	D	b	k	n x G	d2	
25	100	14	75	4x M10	11	115	18	85	4x M12	14	115	18	85	4x M12	14	115	18	85	4x M12	14	115	18	85	4x M12	14	25
32	120	14	90	4x M12	14	140	18	100	4x M16	18	140	18	100	4x M16	18	140	18	100	4x M16	18	140	18	100	4x M16	18	32
40	130	14	100	4x M12	14	150	18	110	4x M16	18	150	18	110	4x M16	18	150	18	110	4x M16	18	150	18	110	4x M16	18	40
50	140	14	110	4x M12	14	165	18	125	4x M16	18	165	18	125	4x M16	18	165	20	125	4x M16	18	165	20	125	4x M16	18	50
65	160	14	130	4x M12	14	185	18	145	4(8)x M16	18	185	18	145	4(8)x M16	18	185	22	145	8x M16	18	185	22	145	8x M16	18	65
80	190	16	150	4x M16	18	200	20	160	8x M16	18	200	20	160	8x M16	18	200	24	160	8x M16	18	200	24	160	8x M16	18	80
100	210	16	170	4x M16	18	220	20	180	8x M16	18	220	20	180	8x M16	18	235	24	190	8x M20	22	235	24	190	8x M20	22	100
125	240	18	200	8x M16	18	250	22	210	8x M16	18	250	22	210	8x M16	18	270	26	220	8x M24	26	270	26	220	8x M24	26	125
150	265	18	225	8x M16	18	285	22	240	8x M20	22	285	22	240	8x M20	22	300	28	250	8x M24	26	300	28	250	8x M24	26	150
200	320	20	280	8x M16	18	340	24	295	8x M20	22	340	24	295	12x M20	22	360	30	310	12x M24	26	375	34	320	12x M27	30	200
250	375	22	335	12x M16	18	395	26	350	12x M20	22	405	26	355	12x M24	26	425	32	370	12x M27	30	450	38	385	12x M30	33	250
300	440	22	395	12x M20	22	445	26	400	12x M20	22	460	28	410	12x M24	26	485	34	430	16x M27	30	515	42	450	16x M30	33	300
350	490	22	445	12x M20	22	505	26	460	16x M20	22	520	30	470	16x M24	26	555	38	490	16x M30	33	580	46	510	16x M33	36	350
400	540	22	495	16x M20	22	565	26	515	16x M24	26	580	32	525	16x M27	30	620	40	550	16x M33	36	660	50	585	16x M36	39	400
450	595	22	550	16x M20	22	615	28	565	20x M24	26	640	34	585	20x M27	30	670	46	600	20x M33	36	685	57	610	20x M36	39	450
500	645	24	600	20x M20	22	670	28	620	20x M24	26	715	36	650	20x M30	33	730	48	660	20x M33	36	755	57	670	20x M39	42	500
600	755	30	705	20x M24	26	780	30	725	20x M27	30	840	40	770	20x M33	36	845	48	770	20x M36	39	890	72	795	20x M45	48	600
700	860	30	810	24x M24	26	895	35	840	24x M27	30	910	40	840	24x M33	36	960	50	875	24x M39	42						700
800	975	30	920	24x M27	30	1015	38	950	24x M30	33	1025	41	950	24x M36	39	1085	53	990	24x M45	48						800
900	1075	34	1020	24x M27	30	1115	38	1050	28x M30	33	1125	48	1050	28x M36	39	1185	57	1090	28x M45	48						900
1000	1175	38	1120	28x M27	30	1230	44	1160	28x M33	36	1255	59	1170	28x M39	42	1320	63	1210	28x M52	56						1000
1100*						1340	43	1270	32x M33	37	1355	54	1270	32x M39	44	1420	65	1310	32x M52	57						1100*
1200	1405	42	1340	32x M30	33	1455	55	1380	32x M36	39	1485	78	1390	32x M45	48											1200
1400	1630	56	1560	36x M33	36	1675	65	1590	36x M39	42	1685	84	1590	36x M45	48											1400
1600	1830	63	1760	40x M33	36	1915	75	1820	40x M45	48	1930	102	1820	40x M52	56											1600

n = number of bores/bolts

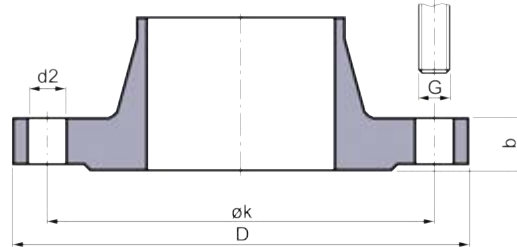
According to EN 1092-1:2007, DN65 can have 4 or 8 holes.  
InterApp standard is 4 holes.

\* According to EN 1092-2:1997



# Flanges

## ANSI - welding neck flanges:



ASME B16.5 Class 150, series A								
DN"	mm	D"	b"	k"	n	G*		d2"
						UNC	metric	
1	25	4,25	0,56	3,12	4	½"	M12	0,62
1 ¼	32	4,62	0,62	3,50	4	½"	M12	0,62
1 ½	40	5,00	0,69	3,88	4	½"	M12	0,62
2	50	6,00	0,75	4,75	4	⅝"	M16	0,75
2 ½	65	7,00	0,88	5,50	4	⅝"	M16	0,75
3	80	7,50	0,94	6,00	4	⅝"	M16	0,75
4	100	9,00	0,94	7,50	8	⅝"	M16	0,75
5	125	10,0	0,94	8,50	8	¾"	M20	0,88
6	150	11,0	1,00	9,50	8	¾"	M20	0,88
8	200	13,5	1,12	11,75	8	¾"	M20	0,88
10	250	16,0	1,19	14,25	12	⅞"	M22	1,00
12	300	19,0	1,25	17,00	12	⅞"	M22	1,00
14	350	21,0	1,38	18,75	12	1"	M24	1,13
16	400	23,5	1,44	21,25	16	1"	M24	1,13
18	450	25,0	1,56	22,75	16	1 ⅛"	M27	1,25
20	500	27,5	1,69	25,00	20	1 ⅛"	M27	1,25
24	600	32,0	1,88	29,50	20	1 ¼"	M30	1,38

ASME B16.5 Class 300, series A								
DN"	mm	D"	b"	k"	n	G*		d2"
						UNC	metric	
1	25	4,88	0,69	3,50	4	⅝"	M16	0,75
1 ¼	32	5,25	0,75	3,88	4	⅝"	M16	0,75
1 ½	40	6,13	0,81	4,50	4	¾"	M20	0,88
2	50	6,50	0,88	5,00	8	⅝"	M16	0,75
2 ½	65	7,50	1,00	5,88	8	¾"	M20	0,88
3	80	8,25	1,12	6,62	8	¾"	M20	0,88
4	100	10,0	1,25	7,88	8	¾"	M20	0,88
5	125	11,0	1,38	9,25	8	¾"	M20	0,88
6	150	12,5	1,44	10,62	12	¾"	M20	0,88
8	200	15,0	1,62	13,00	12	⅞"	M22	1,00
10	250	17,5	1,88	15,25	16	1"	M24	1,13
12	300	20,5	2,00	17,75	16	1 ⅛"	M27	1,25
14	350	23,0	2,12	20,25	20	1 ⅛"	M27	1,25
16	400	25,5	2,25	22,50	20	1 ¼"	M30	1,38
18	450	28,0	2,38	24,75	24	1 ¼"	M30	1,38
20	500	30,5	2,50	27,00	24	1 ½"	M30	1,38
24	600	36,0	2,75	32,00	24	1 ½"	M36	1,62

ASME B16.47 Class 150, series A								
DN"	mm	D"	b"	k"	n	G*		d2"
						UNC	metric	
26	650	34,25	2,69	31,75	24	1 ¼"	M30	1,38
28	700	36,50	2,81	34,00	28	1 ¼"	M30	1,38
30	750	38,75	2,94	36,00	28	1 ¼"	M30	1,38
32	800	41,75	3,19	38,50	28	1 ½"	M36	1,62
34	850	43,75	3,25	40,50	32	1 ½"	M36	1,62
36	900	46,00	3,56	42,75	32	1 ½"	M36	1,62
38	950	48,75	3,44	45,25	32	1 ½"	M36	1,62
40	1000	50,75	3,56	47,25	36	1 ½"	M36	1,62
42	1050	53,00	3,81	49,50	36	1 ½"	M36	1,62
44	1100	55,25	4,00	51,75	40	1 ½"	M36	1,62
46	1150	57,25	4,06	53,75	40	1 ½"	M36	1,62
48	1200	59,50	4,25	56,00	44	1 ½"	M36	1,62
56	1400	68,75	4,88	65,00	48	1 ¾"	M45	1,88

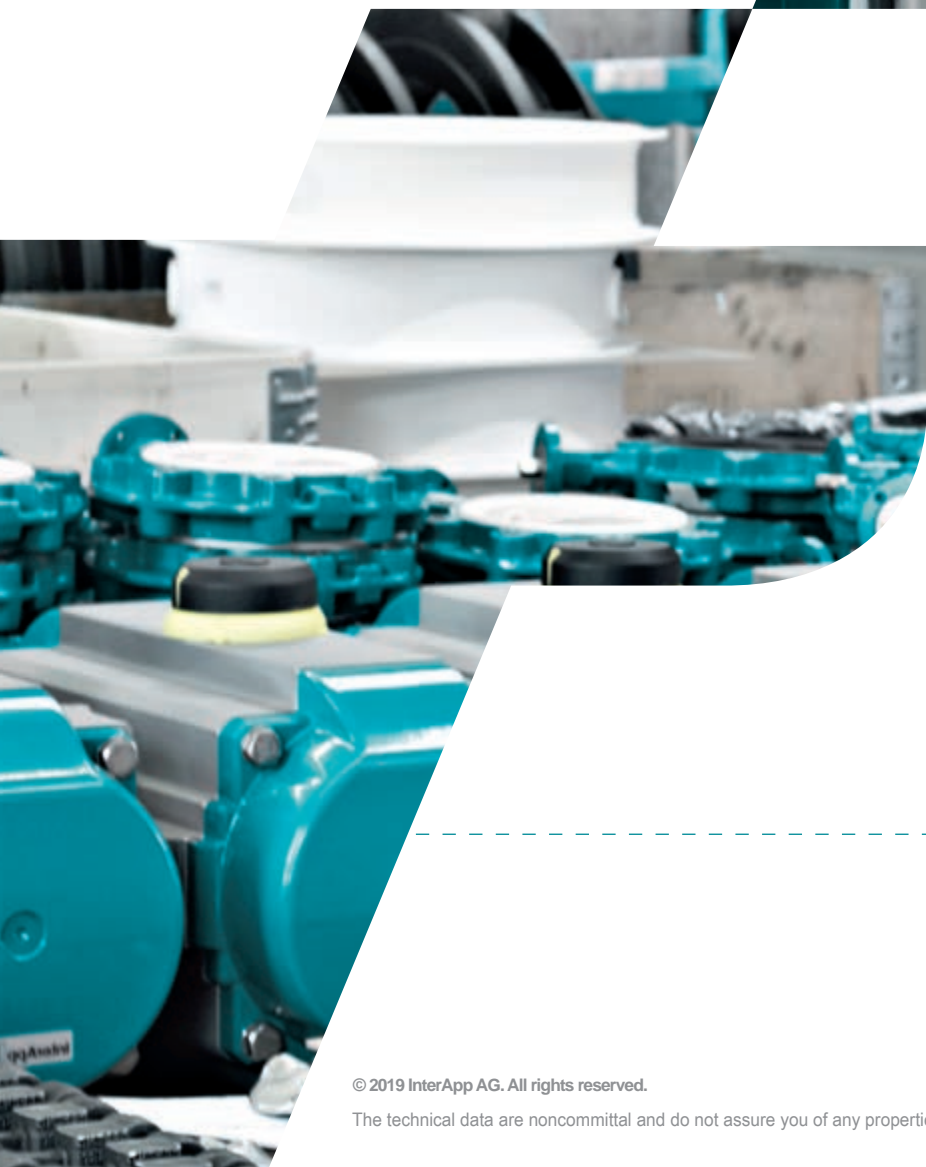
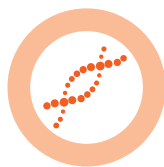
ASME B16.47 Class 300, series A								
DN"	mm	D"	b"	k"	n	G*		d2"
						UNC	metric	
26	650	38,25	3,13	34,50	28	1 ⅝"		1,75
28	700	40,75	3,38	37,00	28	1 ⅝"		1,75
30	750	43,00	3,62	39,25	28	1 ¾"		1,88
32	800	45,25	3,88	41,50	28	1 ⅞"		2,00
34	850	47,50	4,00	43,50	28	1 ⅞"		2,00
36	900	50,00	4,12	46,00	32	2"		2,13
38	950	46,00	4,25	43,00	32	1 ½"		1,62
40	1000	48,75	4,50	45,50	32	1 ⅝"		1,75
42	1050	50,75	4,69	47,50	32	1 ⅝"		1,75
44	1100	53,25	4,88	49,75	32	1 ¾"		1,88
46	1150	55,75	5,06	52,00	28	1 ⅞"		2,00
48	1200	57,75	5,25	54,00	32	1 ⅞"		2,00
56	1400	67,25	6,06	63,00	28	2 ¼"		2,38

n = number of bores/bolts

\* Recommendation: must be specified on order







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