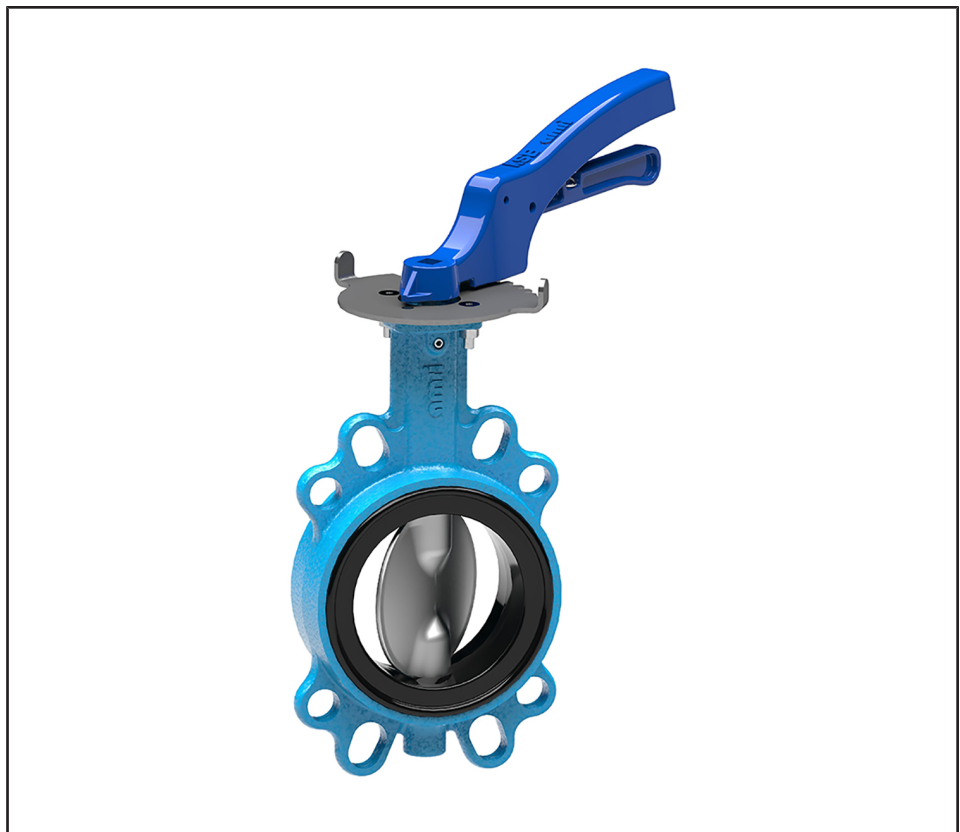


## Butterfly Valve

# BOAX-B

PS 10 bar: DN 40 - 1000  
PS 16 bar: DN 40 - 600

## Type Series Booklet



## **Legal information/Copyright**

Type Series Booklet BOAX-B

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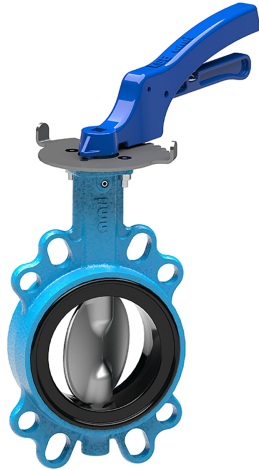
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## Butterfly Valves

### Centred-disc Butterfly Valves

## BOAX-B



#### Main applications

- Spray irrigation systems
- Domestic water supply
- Water extraction
- Hot-water heating systems
- Air-conditioning
- Washing plants
- Paint shops
- General irrigation systems
- Swimming pools
- Pressure boosting
- Water treatment
- Rainwater harvesting

#### Fluids handled

- Heating water
- Cooling water
- Drinking water
- Waste water without faeces
- Fluids containing mineral oils
- Oil

#### Operating data

Table 1: Operating properties

Characteristic	Value
Nominal pressure	PN 10/16
Nominal diameter	DN 40 - 1000
Max. permissible pressure [bar]	16 (DN 40 - 600) / 10 (DN 40 - 1000) at ambient temperature
Min. permissible temperature [°C]	≥ -10
Max. permissible temperature [°C]	≤ +110 (see below)
Valve for lubricating fluids	Maximum reference velocity: 3 m/s
Temperature with	
▪ XC liner	▪ -10 °C to +110 °C
▪ XU liner	▪ -10 °C to +130 °C
▪ K liner	▪ -5 °C to +90 °C
Downstream dismantling and dead-end service	Permissible
Shaft end	All DN's = Square end, ISO 5211

#### Design details

##### Design

- Wafer-type body with flat faces - T1: DN 650 - 1000
- Semi-lug body - T2: DN 40 - 600
- Full-lug body with raised faces - T4: DN 40 - 600
- Flanged body with flat faces - T5: DN 650 to 1000 (DN 150 to 600 on request)
- Dead-end service and downstream dismantling possible with body types T2, T4 and T5
- Elastomer liner: thicker elastomer in the area of the shaft passage ensures leak-proof sealing to atmosphere
- The spherically machined valve disc ensures perfectly tight shut-off.
- Face-to-face length to ISO 5752-20 and EN 558-1-20
- EN, ASME connections
- Top flange and square valve shaft end to ISO 5211
- Marking in accordance with EN 19
- Absolutely tight shut-off in either direction of flow in accordance with EN 12266-1, leakage rate A, and ISO 5208, category A.
- Design to EN 593 and ISO 10631
- Body with polyurethane coating, thickness 80 µm, colour: RAL 5012 (light blue), in compliance with water specifications.
- Valve discs made of nodular cast iron, epoxy-coated, thickness 80 µm, colour: reddish brown, suitable for drinking water
- The valves can be installed between all commercial mating flanges and line connections without requiring any flange gaskets. The elastomer liner alone provides a tight seal at the flange connections.
- Standard manual actuation:
  - CR+/ CM+ quarter-turn levers
  - MA+ manual gearbox
  - MS/MC manual gearboxes

### Actuator variants

- Electric actuators
- ACTAIR EVO / DYNACTAIR EVO pneumatic actuators

### Automation options

- AMTROBOX for open/closed position signalling
- AMTRONIC U on/off control unit
- SMARTRONIC U positioner

### Valve body materials

**Table 2:** Overview of available materials

Material	Material number	Body	DN	KSB code
EN-GJS-400-15	JS 1030 / ASTM A536 Gr. 60.40.18	T1	DN 650 - 1000	3g
EN-GJS-400-15	5.3106	T2	DN 40 - 600	3g
EN-GJS-400-15	5.3106	T4	DN 40 - 600	3g
EN-GJS-400-15	JS 1030 / ASTM A536 Gr. 60.40.18	T5	DN 650 - 1000	3g

### Product benefits

- The spherical contact between valve disc and liner ensures durable and permanently tight shut-off.
- Splined or keyed connection between shaft and valve disc: dry shaft, no contact with fluid handled
- Sealing to atmosphere is ensured even when the actuator has been removed.
- Marking indicates position of valve disc
- A screw serves as shaft anti-blow out device to ensure that the shafts are retained in the body.
- Valve equipped with stainless steel plain bearing with reinforced PTFE coating depending on DN
- The elastomer liner provides tight sealing at the flanged line connections, eliminating the need for an extra gasket.
- Valve certified to:
  - ACS, DVGW, ÖVGW, WRAS and BELGAQUA for drinking water applications, with EPDM elastomer liner
  - Suitable for foodstuffs in accordance with FDA / EN 1935, with EPDM liner
- Leak-proof shaft passage ensured by spherically machined valve disc and thicker elastomer liner in the area of the shaft passage
- Heat barrier between valve and lever stop plate

### Product information

#### Product information as per Pressure Equipment Directive 2014/68/EU (PED)

The valves satisfy the safety requirements of Annex I of the European Pressure Equipment Directive 2014/68/EU (PED) for fluids in Groups 1 and 2.

#### Product information as per UK Pressure Equipment (Safety) Regulations 2016

The valves satisfy the safety requirements of the UK Pressure Equipment (Safety) Regulations 2016 (PER) for fluids in Groups 1 and 2.

#### EC Machinery Directive 2006/42/EC

Valves with actuators can meet the requirements of the 2006/42/EC Machinery Directive for partly completed machinery.

### Product information as per Regulation No. 1907/2006 (REACH)

For information as per European chemicals regulation (EC) No. 1907/2006 (REACH) see <https://www.ksb.com/en-global/company/corporate-responsibility/reach>.

### Certifications

**Table 3:** Overview

Label	Effective in:	Comment
	Worldwide	-
	Germany	Approved in accordance with the German drinking water regulation
	Austria	Approved in accordance with the Austrian drinking water regulation
	Belgium	Approved in accordance with the Belgian drinking water regulation
	France	Approved in accordance with the French drinking water regulation
	United Kingdom	Approved in accordance with the UK drinking water regulation
	Worldwide	Elastomeric parts meet FDA standards.

### Related documents

**Table 4:** Information/documents

Document	Reference number
Actuator selection	8450.11
Operating manual	8411.801

### Purchase order specifications

1. Type
2. Nominal pressure
3. Nominal size
4. Fluid handled
5. Flow rate / flow velocity
6. Operating temperature
7. Materials (body, valve disc, seat)
8. Line connection, flange facing and flange surface quality
9. Actuator / automation
10. Reference number

## Technical data

### Technical data of butterfly valve

#### Vacuum resistance

Table 5: Table: vacuum resistance data

DN	NPS	Liner mounting method	Min. pressure	Max. temperature [°C]
	[inch]		[bar absolute]	
40 - 300	1½-12	Non-glued (standard)	1,33 · 10 <sup>-5</sup> (10 <sup>-2</sup> torr)	90
350 - 1000	14-40	Non-glued (standard)	0,3	90

### Hydraulic characteristics of butterfly valve

Table 6: Table: Kv0 and Cv0

DN	NPS	Flow coefficient with valve disc fully open		Zeta
	[inch]	Kvo	Cvo	
40	1½	53	62	1,46
50	2	133	154	0,56
65	2½	240	280	0,49
80	3	410	475	0,39
100	4	655	760	0,37
125	5	900	1044	0,48
150	6	1800	2090	0,25
200	8	3550	4120	0,20
250	10	7350	8453	0,12
300	12	9100	10465	0,16
350	14	11200	12880	0,19
400	16	14800	17020	0,19
450	18	19700	22655	0,17
500	20	25000	28750	0,16
600	24	36400	41860	0,16
650	26	37700	43730	0,20
700	28	47500	55100	0,17
750	30	51500	59740	0,19
800	32	63500	73660	0,16
900	36	84700	98250	0,15
1000	40	108500	125860	0,14

### Actuating torques

A safety coefficient has already been included in the actuating torques for actuator selection.

Table 7: Table: actuating torques [Nm]

DN	NPS	Actuating torques		
	[inch]	10 bar (lubricating)	10 bar (non-lubricating)	16 bar (lubricating)
40	1½	8	16	16
50	2	16	24	24
65	2½	24	32	32
80	3	32	40	40
100	4	48	56	56
125	5	64	80	80
150	6	104	112	112
200	8	136	168	168
250	10	198	297	297
300	12	342	468	468
350	14	450	648	648
400	16	585	882	882
450	18	720	1080	1080
500	20	900	1350	1350
600	24	1260	1890	1890
650	26	1700	2600	-
700	28	2000	3000	-
750	30	2300	3500	-
800	32	2600	4000	-
900	36	3400	5000	-
1000	40	4100	6000	-



## Technical data of pneumatic actuators

### Technical data of double-acting pneumatic actuators

#### Valve with double-acting pneumatic quarter-turn actuator of the ACTAIR EVO type series

##### Control pressure: 4 to 6 bar

Specially designed for actuating valves of the BOAX-B type series, this pneumatic scotch-yoke actuator develops a variable torque which reaches its maximum upon butterfly valve closure.

The translatory movement caused by the control pressure results in a clockwise quarter turn of the pinion and the valve shaft.

The operating fluid is air or any neutral gas, lubricated, filtered and compressed to 4, 5 or 6 bar:

- Filtration: 40 µm

- At maximum operating pressure, the dew point must be 5 °C below the minimum application temperature.

Valves for 10 bar: lubricating and non-lubricating fluids

Valves for 16 bar: lubricating fluids only

Valves for lubricating fluids: max. reference velocity: 3 m/s

Valves for non-lubricating fluids: max. reference velocity: 50 m/s

### Technical data of single-acting pneumatic actuators

#### Valve with pneumatic quarter-turn actuator of the DYNACTAIR EVO type series

##### Control pressure: 4 to 6 bar

Specially designed for actuating valves of the BOAX-B type series, this pneumatic scotch-yoke actuator develops a variable torque.

The translatory movement caused by the control pressure results in a clockwise quarter turn of the pinion and the valve shaft.

On loss of control pressure, the valve is closed by the spring-return mechanism.

The operating fluid is air or any neutral gas, lubricated, filtered and compressed to 4, 5 or 6 bar:

- Filtration: 40 µm

- At maximum operating pressure, the dew point must be 5 °C below the minimum application temperature.

Valves for 10 bar: lubricating and non-lubricating fluids

Valves for 16 bar: lubricating fluids only

Valves for lubricating fluids: max. reference velocity: 3 m/s

Valves for non-lubricating fluids: max. reference velocity: 50 m/s

### Compressed air supply

- Pilot valves with NAMUR interface, 5/2 monostable or 5/2 bistable
- Power supply: 230 V AC / 50 Hz or 24 V AC (other voltages on request)
- Operating temperature: -20°C

### Electro-pneumatic positioner

- On request

Materials

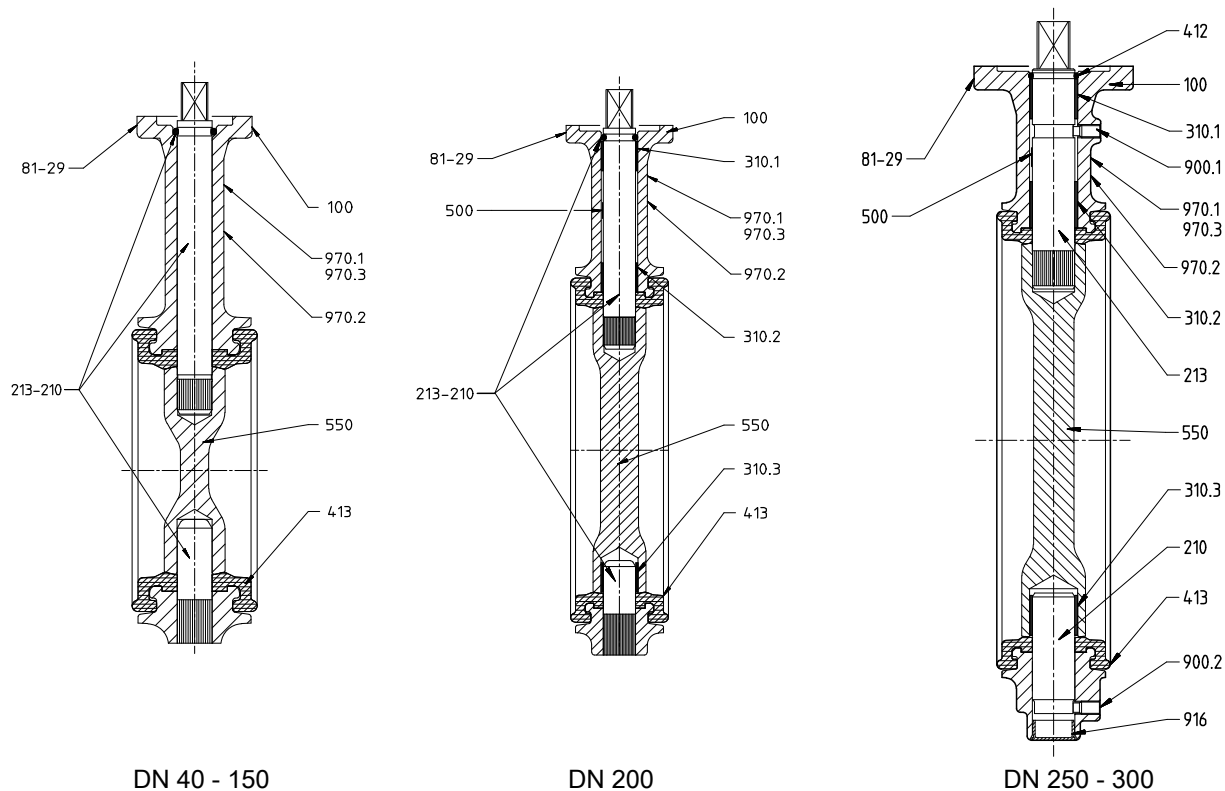


Fig. 1: Sectional drawing of BOAX-B DN 40 to DN 300

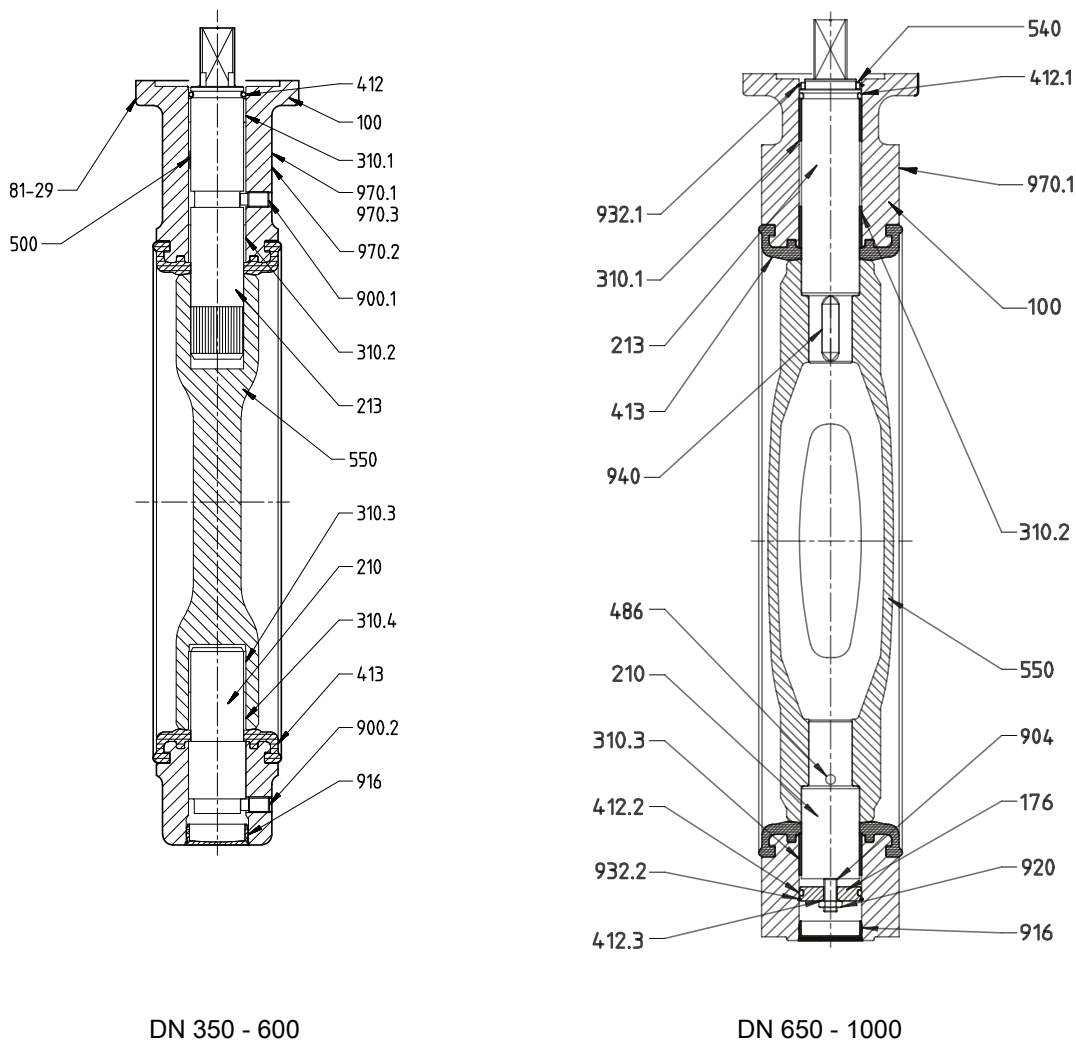


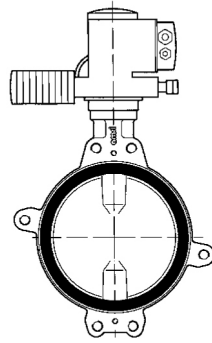
Fig. 2: Sectional drawing of BOAX-B DN 350 to DN 1000

**Table 8:** List of components

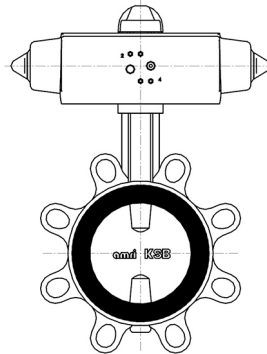
Part No.	Description	DN	Materials	KSB code
100	Body T1	650 - 1000	Nodular cast iron 5.3106 / ASTM A536 Gr. 60.40.18	3g
100	Body T2	40 - 600	Nodular cast iron 5.3106	3g
100	Body T4	40 - 600	Nodular cast iron 5.3106	3g
100	Body T5	650 - 1000 <sup>1)</sup>	Nodular cast iron 5.3106 / ASTM A536 Gr. 60.40.18	3g
176	Bottom	40 - 1000	Steel	
210 <sup>2)</sup>	Shaft	40 - 600	Stainless steel 1.4028 (13 % Cr)	6k
213 <sup>2)</sup>	Actuating shaft	40 - 1000	Stainless steel 1.4028 (13 % Cr)	6k
310.1 <sup>2)</sup>	Plain bearing	200 - 1000	Steel with reinforced PTFE coating	
310.2 <sup>2)</sup>	Plain bearing	200 - 1000	Steel with reinforced PTFE coating	
310.3 <sup>2)3)</sup>	Plain bearing	200 - 1000	Steel with reinforced PTFE coating	
310.4 <sup>2)3)</sup>	Plain bearing	350 - 600	Steel with reinforced PTFE coating	
412 <sup>2)3)4)</sup>	O-ring	40 - 600	Nitrile	
412.1 <sup>2)3)4)</sup>	O-ring	650 - 1000	Nitrile	
412.2 <sup>2)3)4)</sup>	O-ring	650 - 1000	Nitrile	
412.3 <sup>2)3)4)</sup>	O-ring	650 - 1000	Nitrile	
413 <sup>4)</sup>	Liner	40 - 1000	EPDM	XC
		40 - 1000	EPDM	XU
		40 - 1000	High-grade nitrile	K
486 <sup>2)</sup>	Ball	650 - 1000	Stainless steel	
540 <sup>2)3)4)</sup>	Bush	650 - 1000	Acetal	
550 <sup>3)</sup>	Valve disc	40 - 1000	Nodular cast iron 5.3106	3g
		40 - 1000	Stainless steel 1.4408 / ASTM A351 Gr. CF8M	6 <sup>5)</sup>
561	Half round head grooved pin	650 - 1000	Stainless steel	
900.1 <sup>2)3)4)</sup>	Shaft anti-blow out device (screw)	250 - 600	Stainless steel	
900.2 <sup>2)3)4)</sup>	Shaft anti-blow out device (screw)	250 - 600	Stainless steel	
904 <sup>2)</sup>	Adjusting screw	650 - 1000	Steel	
916 <sup>2)3)4)</sup>	Plug	250 - 1000	Polyethylene	
920 <sup>2)</sup>	Nut	650 - 1000	Steel	
932 <sup>2)3)4)</sup>	Serrated washer	40 - 200	Steel	
932.1 <sup>2)3)4)</sup>	Circlip	650 - 1000	Steel	
932.2 <sup>2)3)4)</sup>	Circlip	650 - 1000	Steel	
940 <sup>2)</sup>	Key	650 - 1000	Steel	
970.1	Name plate	40 - 600	Adhesive polyester	
970.1	Name plate	650 - 1000	Stainless steel	

- 
- <sup>1</sup> DN 150 to 600 on request only  
<sup>2</sup> Part from shaft spare parts kit: (available for DN 250 and above)  
<sup>3</sup> Part from valve disc spare parts kit (available for DN 250 and above)  
<sup>4</sup> Part from liner spare parts kit (available for DN 250 and above)  
<sup>5</sup> Variant made of stainless steel 1.4308 (6g) (available on request only)
-

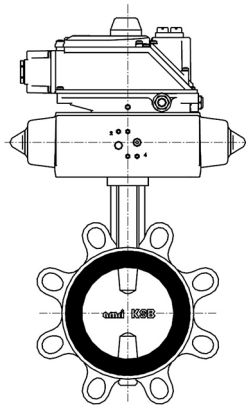
Variants



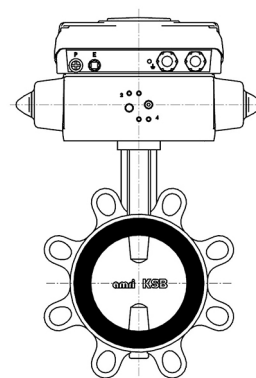
Electric actuator



ACTAIR EVO / DYNACTAIR EVO pneumatic actuators



AMTRONIC U / SMARTRONIC U control air supply, positioner



AMTROBOX, AMTROBOX S, AMTROBOX R, AMTROBOX R EEx-ia  
limit switch box

Dimensions and weights

Dimensions of BOAX-B

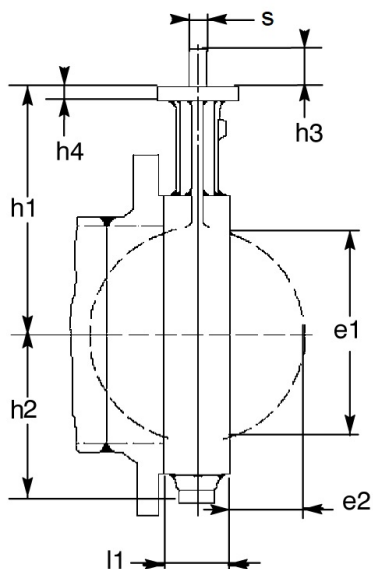


Fig. 3: BOAX-B with bare shaft end

Table 9: Dimensions [mm]

DN	NPS [inch]	l1	h1	h2	Top flange to ISO 5211		Shaft end Square end		Valve disc	
					No.	h4	∅s	h3	e1	e2
40	1½	33	105	51	F05	10	L11	12	32	4
50	2	43	109	55	F05	10	L11	12	33	4
65	2½	46	136	67	F05	10	L11	12	55	11
80	3	46	142	73	F05	10	L11	12	71	17
100	4	52	163	92	F05	10	L14	16	90	23
125	5	56	176	105	F05	10	L14	16	119	35
150	6	56	194	120	F07	12	L14	16	144	46
200	8	60	222	150	F07	12	L17	19	196	69
250	10	68	255	194	F10	15	L22	24	249	92
300	12	78	282	226	F12	18	L22	24	297	111
350	14	78	335	269	F12	23	L27	29	326	127
400	16	102	380	298	F14	23	L36	38	370	140
450	18	114	410	329	F14	23	L36	38	422	160
500	20	127	440	359	F14	27	L36	38	470	178
600	22	154	495	439	F16	27	L46	48	566	215
650	26	165	535	451	F16	26	L46	48	620	235
700	28	165	560	482	F16	26	L46	48	671	260
750	30	190	590	513	F16	26	L46	48	717	273
800	32	190	615	546	F16	26	L46	48	769	298
900	36	203	665	588	F25	30	L55	57	869	341
1000	40	216	735	646	F25	30	L55	57	970	385

Dimensions and weights of BOAX-B + lever CR+/CM+

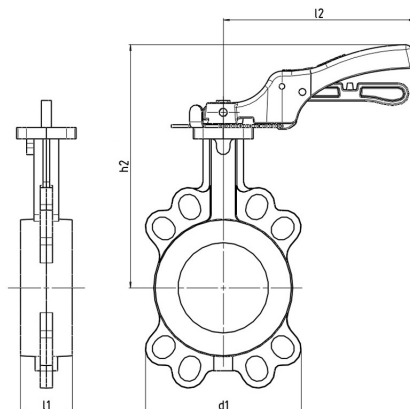


Fig. 4: Unit comprising BOAX-B + lever CR+/CM+

Table 10: Actuation via CR+/CM+ lever [mm]

DN	NPS	Max. velocity	l1	d1	l2	h2	[kg] <sup>6)</sup>
	[inch]	[m/s]					
40	1½	3,0	33	108	165	175	0,8
50	2	3,0	43	118	165	179	0,8
65	2½	3,0	46	132	165	206	0,8
80	3	3,0	46	138	165	212	0,8
100	4	3,0	52	150	230	246	1,2
125	5	3,0	56	234	300	272	1,7
150	6	3,0	56	260	300	290	1,7
200	8	3,0	60	322	510 <sup>7)</sup>	332	3,1
250	10	3,0	68	394	510 <sup>7)</sup>	365	3,1
300	12	3,0	78	462	510 <sup>7)</sup>	392	3,1

<sup>6)</sup> The weights given refer to the actuating element.

<sup>7)</sup> \* With lubricating fluids only

Dimensions and weights of BOAX-B + manual gearbox MA+

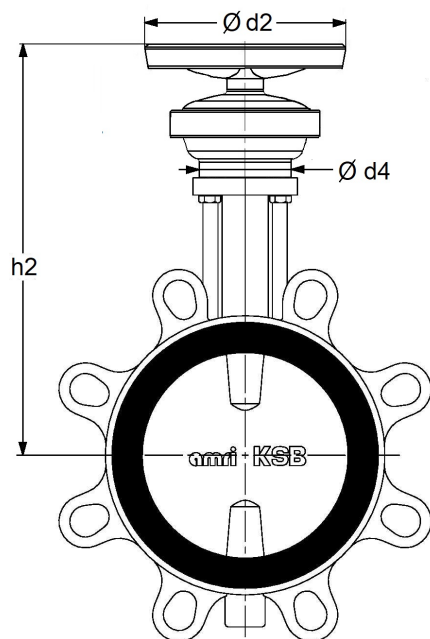


Fig. 5: Unit comprising BOAX-B + manual gearbox MA+

Table 11: Actuation via MA+ manual gearbox for BOAX-B [mm]

DN	NPS [inch]	Max. velocity [m/s]	Type	d2	h2	d4	[kg] <sup>8)</sup>
40	1½	3,0	MA12+	140	220	60	1,5
50	2	3,0	MA12+	140	225	60	1,5
65	2½	3,0	MA12+	140	251	60	1,5
80	3	3,0	MA12+	140	257	60	1,5
100	4	3,0	MA12+	140	285	70	1,5
125	5	3,0	MA12+	140	299	70	1,5
150	6	3,0	MA25+	225	355	95	3
200	8	3,0	MA25+	225	383	95	3

<sup>8)</sup> The weights given refer to the actuating element.



Dimensions and weights of BOAX-B + MS manual gearbox

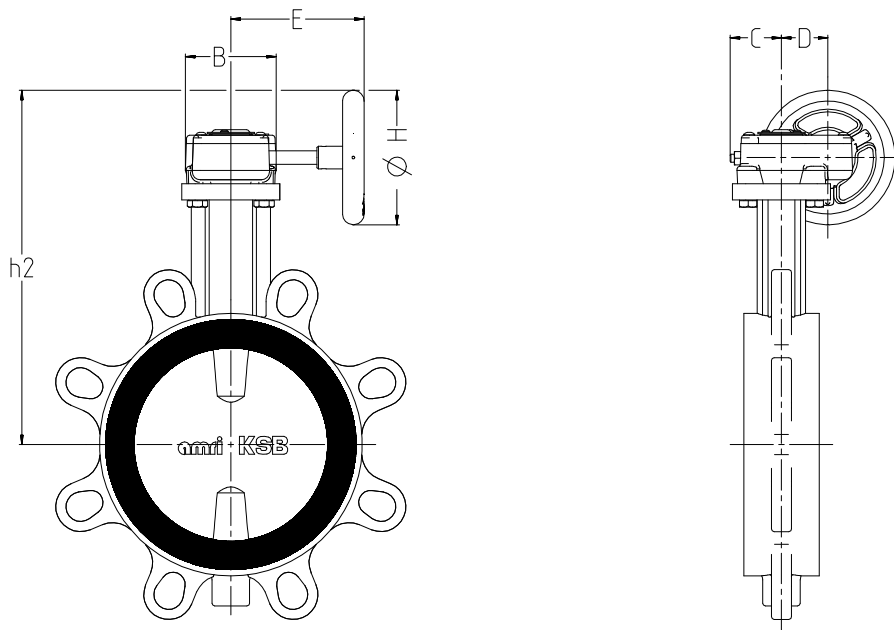


Fig. 6: Unit comprising BOAX-B + MS manual gearbox

Table 12: Actuation via MS manual gearbox for BOAX-B

DN	NPS	Max. velocity	Type	B	C	D	E	H	h2	[kg] <sup>9)</sup>
	[inch]	[m/s]								
40	1½	3,0	MS15	68	39	34,4	153	100	174,5	1,2
50	2	3,0	MS15	68	39	34,4	153	100	178,5	1,2
65	2½	3,0	MS15	68	39	34,4	153	100	205,5	1,2
80	3	3,0	MS15	68	39	34,4	153	100	211,5	1,2
100	4	3,0	MS15	68	39	34,4	153	100	232,5	1,2
125	5	3,0	MS15	68	39	34,4	153	100	245,5	1,2
150	6	3,0	MS15	68	39	34,4	153	100	263,5	1,2
200	8	3,0	MS30	88	47	41,3	231	200	349,5	2,7
250	10	3,0	MS30	88	47	41,3	231	200	382,5	2,7
300	12	3,0	MS50	110,5	57	55	245	250	440,5	5,4
350	14	3,0	MS50	110,5	57	55	245	250	493,5	5,4
400	16	3,0	MS100	135	66,4	68,8	298	400	617,5	8,7
450	18	2,5	MS100	135	66,4	68,8	298	400	647,5	8,7
500	20	2,5	MS100	135	66,4	68,8	298	400	677,5	8,7
600	24	2,5	MS200	156	77	81,3	276	500	797,5	12,5
650	26	2,0	MS200	156	77	81,3	276	500	837,5	12,5
700	28	2,0	MS200	156	77	81,3	276	500	862,5	12,5
750	30	2,0	MS450	213	111	53	348	500	896	27,5
800	32	2,0	MS450	213	111	53	348	500	921	27,5
900	36	1,5	MS700	285	142,5	130	417	500	970	42,5
1000	40	1,5	MS700	285	142,5	130	417	500	1040	42,5

8409.11/22-EN

<sup>9)</sup> The weights given refer to the actuating element.

Dimensions and weights of BOAX-B + MC manual gearbox

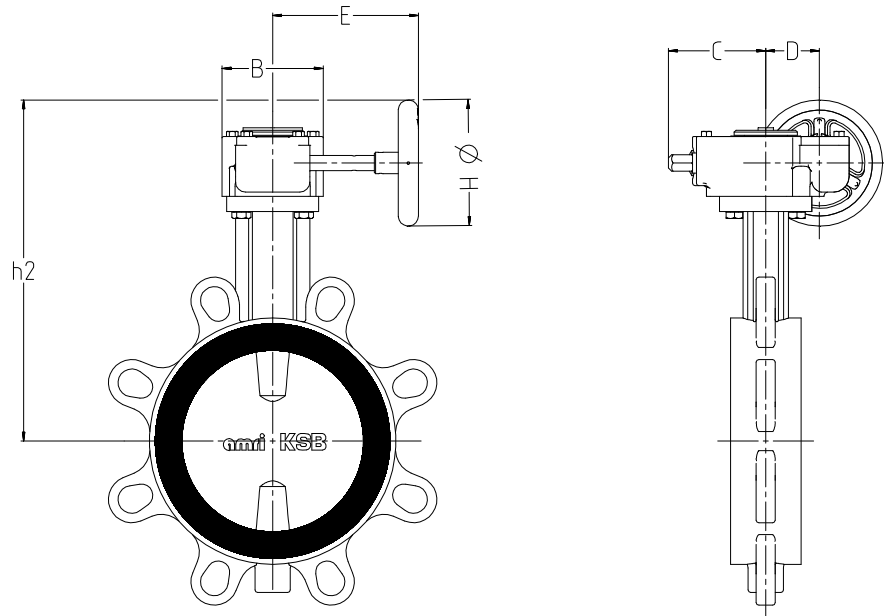


Fig. 7: Unit comprising BOAX-B + MC manual gearbox

Table 13: Actuation via MC manual gearbox for BOAX-B [mm]

DN	NPS	Max. velocity	Type	B	C	D	E	H	h2	[kg] <sup>10)</sup>
	[inch]	[m/s]								
40	1½	3,0	MC15	80	75	42,5	115,5	100	181,5	2,4
50	2	3,0	MC15	80	75	42,5	115,5	100	185,5	2,4
65	2½	3,0	MC15	80	75	42,5	115,5	100	212,5	2,4
80	3	3,0	MC15	80	75	42,5	115,5	100	218,5	2,4
100	4	3,0	MC15	80	75	42,5	115,5	100	239,5	2,4
125	5	3,0	MC15	80	75	42,5	115,5	100	252,5	2,4
150	6	3,0	MC15	80	75	42,5	115,5	100	270,5	2,4
200	8	3,0	MC30	102	62	52	198	200	350,5	4,3
250	10	3,0	MC30	102	62	52	198	200	383,5	4,3
300	12	3,0	MC100	138	93	71	297	400	522,5	11,3
350	14	3,0	MC100	138	93	71	297	400	575,5	11,3
400	16	3,0	MC100	138	93	71	297	400	620,5	11,3
450	18	2,5	MC100	138	93	71	297	400	650,5	11,3
500	20	2,5	MC100	138	93	71	297	400	680,5	11,3
600	24	2,5	MC200	200	106	86	305	500	787	17,5
650	26	2,0	MC200	200	106	86	305	500	827	17,5
700	28	2,0	MC200	200	106	86	305	500	852	17,5
750	30	2,0	MC450	213	120	53	348	500	896	27,5
800	32	2,0	MC450	213	120	53	348	500	921	27,5
900	36	1,5	MC700	285	143	130	451	500	970	42,5
1000	40	1,5	MC700	285	143	130	451	500	1040	42,5

<sup>10)</sup> The weights given refer to the actuating element.

Dimensions and weights of BOAX-B + ACTAIR EVO pneumatic actuator

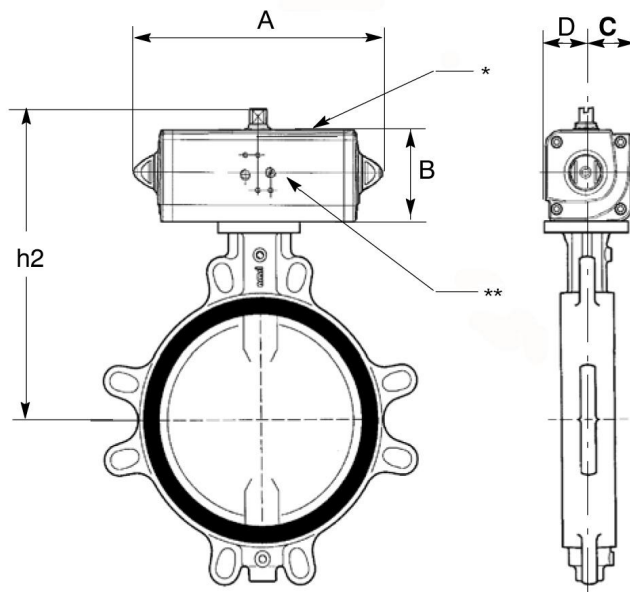


Fig. 8: BOAX-B with ACTAIR EVO pneumatic actuator

Table 14: Symbols key

*	NAMUR VDI/DE 3845 interface
**	NAMUR-compatible interface
Note:	We have: - 2 threaded holes G 1/8 gas-threaded for ACTAIR EVO 2 to 20 - 2 threaded holes G 1/8 gas-threaded for ACTAIR EVO 40

Table 15: Dimensions and weights of BOAX-B with ACTAIR EVO pneumatic actuator [mm]

DN	NPS [inch]	PS [bar]	Type	A	B	C	D	h2	[kg] <sup>11)</sup>	
									ACTAIR EVO + T2	ACTAIR EVO + T4
<b>On/off duty at a control pressure of 5 bar</b>										
40	1½	10/16	ACTAIR EVO 2	174,3	27,7	31,5	31,5	198,2	2,1	3,0
50	2	10/16	ACTAIR EVO 2	174,3	27,7	31,5	31,5	202,2	2,3	3,5
65	2½	10/16	ACTAIR EVO 5	198,1	32,7	37,7	37,7	234,4	3,5	4,6
80	3	10/16	ACTAIR EVO 5	198,1	32,7	37,7	37,7	246,4	4,1	6,1
100	4	10/16	ACTAIR EVO 10	237,1	38,5	44,8	44,8	274,3	6,4	8,0
125	5	10/16	ACTAIR EVO 10	237,1	38,5	44,8	44,8	293,3	7,2	11,5
150	6	10/16	ACTAIR EVO 15	289,9	51,0	56,5	56,5	329,5	11,5	15,6
200	8	10/16	ACTAIR EVO 20	313,6	51,0	60,1	60,1	361,1	15,9	29,4
250	10	10	ACTAIR EVO 20	313,6	51,0	60,1	60,1	398,1	21,8	44,4
300	12	10	ACTAIR EVO 40	387,7	62,0	72,9	72,9	458,9	39,6	55,6

<sup>11</sup> The weights given refer to the valve + actuating element.

Dimensions and weights of BOAX-B + DYNACTAIR EVO pneumatic actuator

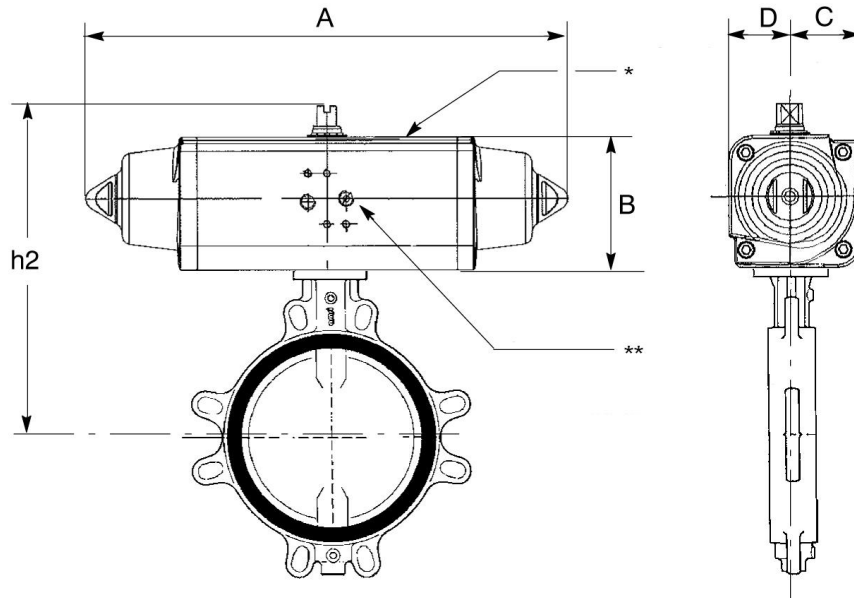


Fig. 9: BOAX-B with DYNACTAIR EVO pneumatic actuator

Table 16: Symbols key

*	NAMUR VDI/DE 3845 interface
**	NAMUR-compatible interface
Note:	We have: - 2 threaded holes G 1/8 gas-threaded for DYNACTAIR EVO 1 to 12 - 2 threaded holes G 1/4 gas-threaded for DYNACTAIR EVO 16 to 35

Table 17: Dimensions and weights of BOAX-B with DYNACTAIR EVO pneumatic actuator [mm]

DN	NPS [inch]	PS [bar]	Type	A	B	C	D	h2	[kg] <sup>12)</sup>	
									DYNACTAIR EVO + T2	DYNACTAIR EVO + T4
<b>On/off duty at a control pressure of 5 bar</b>										
40	1½	10/16	DYNACTAIR EVO 2	259,0	32,7	37,7	37,7	203,4	3,1	4,0
50	2	10/16	DYNACTAIR EVO 2	259,0	32,7	37,7	37,7	207,4	3,3	4,5
65	2½	10/16	DYNACTAIR EVO 4	304,3	38,5	44,8	44,8	247,3	4,9	6,0
80	3	10/16	DYNACTAIR EVO 4	304,3	38,5	44,8	44,8	253,3	5,5	7,5
100	4	10/16	DYNACTAIR EVO 6	393,7	51,0	56,5	56,5	296,5	9,8	11,4
125	5	10/16	DYNACTAIR EVO 8	409,6	51,0	60,1	60,1	313,1	11,5	15,8
150	6	10/16	DYNACTAIR EVO 12	474,0	56,0	62,0	62,0	350,0	15,8	19,9
200	8	10/16	DYNACTAIR EVO 16	520,5	62,0	72,9	72,9	395,9	22,3	36,8
250	10	10	DYNACTAIR EVO 16/4	520,5	62,0	72,9	72,9	427,9	28,2	50,8
300	12	10	DYNACTAIR EVO 35	648,2	74,5	93,5	93,5	498	52,7	68,7

<sup>12)</sup> The weights given refer to the valve + actuating element.

Dimensions and weights of BOAX-B + electric actuator

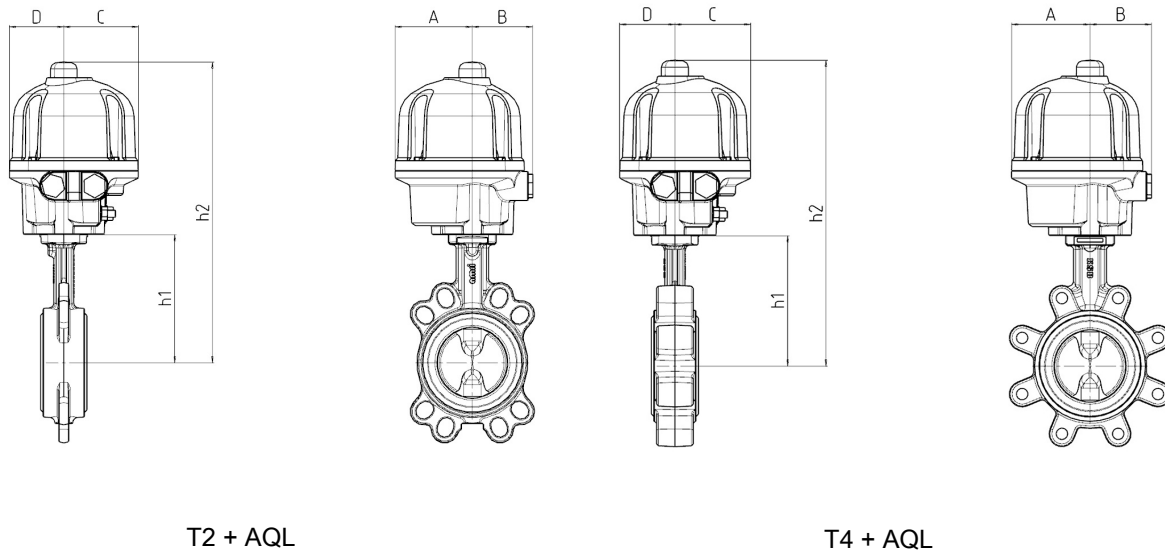


Fig. 10: BOAX-B with AQL electric actuator

Table 18: Dimensions and weights of BOAX-B with AQL electric actuator [mm]

DN	NPS [inch]	PS [bar]	Type	A (230V)	B	C	D	E	h1	h2	[kg] <sup>13)</sup>	
											With T2	With T4
40	1½	10/16	AQ7L	67	85	83	60	-	105	296	4,6	5,5
50	2	10/16	AQ7L	67	85	83	60	-	109	300	4,8	6,0
65	2½	10/16	AQ7L	67	85	83	60	-	136	327	5,4	6,5
80	3	10/16	AQ7L	67	85	83	60	-	1142	333	6,0	8,0
100	4	10/16	AQ7L	67	85	83	60	-	163	354	7,4	9,0

<sup>13</sup> The weights given refer to the valve + actuating element.

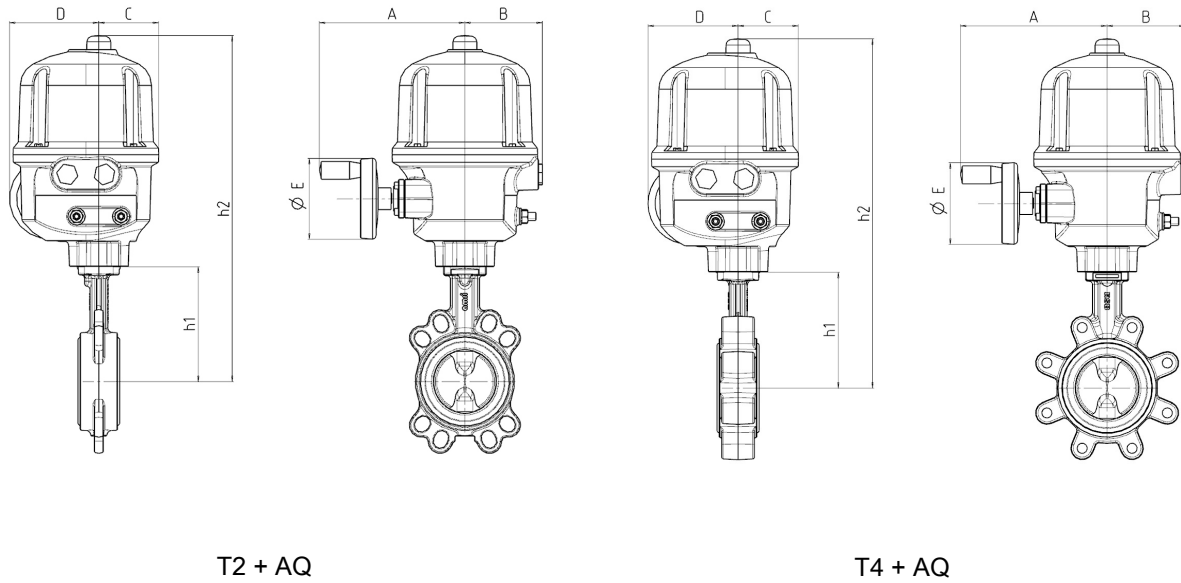


Fig. 11: BOAX-B with AQ electric actuator

Table 19: Dimensions and weights of BOAX-B with AQ electric actuator [mm]

DN	NPS	PS	Type	A (230V)	B	C	D	E	h1	h2	[kg] <sup>13)</sup>	
	[inch]	[bar]									With T2	With T4
40	1½	10/16	AQ5	180	96	74	110	100	105	391	11,1	12,0
50	2	10/16	AQ5	180	96	74	110	100	109	395	11,3	12,5
65	2½	10/16	AQ5	180	96	74	110	100	136	422	11,9	13,0
80	3	10/16	AQ5	180	96	74	110	100	142	428	12,5	14,5
100	4	10/16	AQ10	180	96	74	110	100	136	422	13,9	15,5
125	5	10/16	AQ10	180	96	74	110	100	176	462	14,7	19,0
150	6	10/16	AQ15	180	96	74	110	100	194	480	16,9	21,0
200	8	10/16	AQ25	248	117	86	138	100	222	539	23,5	38,0
250	10	10	AQ25	248	117	86	138	100	255	583	29,4	52,0
300	12	10	AQ50	310	117	86	174	200	282	610	45,0	61,0

### Valve connections

Table 20: Wafer-type body - T1

DN	NPS	EN 1092 PN 10	EN 1092 PN 16	ASME B16.1 Class 125	ASME B16.47 Class 150 Serie A
	[inch]				
650	26	•	•	•	✓
700	28	✓	✓	•	✓
750	30	•	•	✓	✓
800	32	✓	✓	•	✓
900	36	✓	✓	✓	✓
1000	40	✓	✓	•	✓

Table 21: Semi-lug body - T2<sup>14)</sup>

DN	NPS	EN 1092 PN 10	EN 1092 PN 16
	[inch]		
40	1½	✓	✓
50	2	✓	✓
65	2½	✓	✓
80	3	✓	✓
100	4	✓	✓
125	5	✓	✓
150	6	✓	✓
200	8	✓	✓
250	10	✓	✓
300	12	✓	✓
350	14	✓	✓
400	16	✓	✓
450	18	✓	✓
500	20	✓	✓
600	24	✓	✓

Table 22: Full-lug body with raised faces - T4<sup>14)</sup>

DN	NPS	EN 1092 PN 10	EN 1092 PN 16
	[inch]		
40	1½	✓	✓
50	2	✓	✓
65	2½	✓	✓
80	3	✓	✓
100	4	✓	✓
125	5	✓	✓
150	6	✓	✓
200	8	✓	✓
250	10	✓	✓
300	12	✓	✓
350	14	✓	✓
400	16	✓	✓
450	18	✓	✓
500	20	✓	✓
600	24	✓	✓

<sup>14</sup> Connections to ASME, tables on request

**Table 23:** Flanged body with flat faces - T5<sup>15)</sup>

DN	NPS	EN 1092 PN 10	EN 1092 PN 16	ASME B16 Class 125	ASME B16.47 Class 150 Serie A	ASME B16.5 Class 150
	[inch]					
650	26	•	•	•	✓■	•
700	28	✓■	✓■	•	✓■	•
750	30	•	•	✓■	✓■	•
800	32	✓■	✓■	•	✓■	•
900	36	✓■	✓■	✓■	✓■	•
1000	40	✓■	✓■	•	✓■	•

**Table 24:** Key

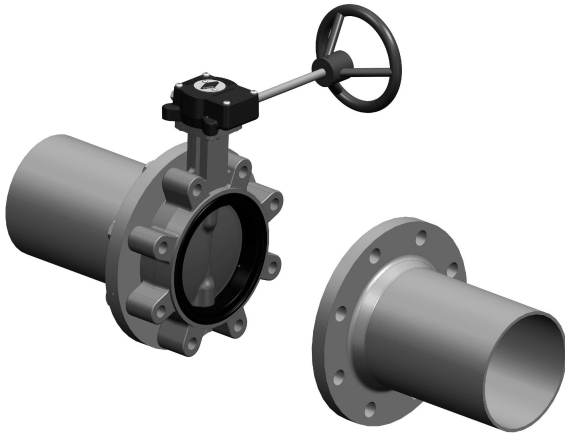
Symbol	Description	Symbol	Description
✓	Installation possible	•	Non-standardised connection
■	Flanged installation possible	▲	Fit washer between nut and body

<sup>15)</sup> Variant DN 150 to 600, table on request only



## Installation information

### Dead-end service and downstream dismantling



Downstream dismantling

For downstream dismantling,  
successively loosen diagonally opposed tie rods.



Dead-end service

### Flange dimensions

Please verify that the connection meets the requirements given below.  
The flange dimensions indicated in the table apply to all body types.

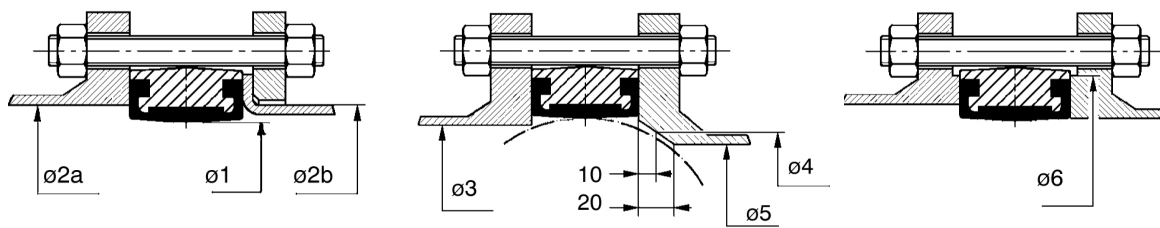


Fig. 12: Drawings, flange dimensions

Table 25: Dimensions table [mm]

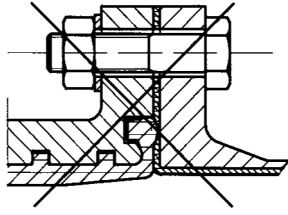
DN	NPS	Optimum Ø	Max. permissible Ø		Min. permissible Ø of flange face	Min. Ø at a distance of 10 mm from the flange face	Min. Ø at a distance of 20 mm from the flange face	Min. permissible raised face Ø of flanges with raised faces
		Ø1	Ø2a <sup>16)</sup>	Ø2b <sup>17)</sup>				
40	1½	40	54	49	32	-	-	77
50	2	49	63	61	33	-	-	86
65	2½	65	80	77	55	13	-	107
80	3	77	93	89	71	50	-	121
100	4	96	116	115	90	74	40	141
125	5	123	141,5	140	119	107	87	171
150	6	146	170,5 <sup>18)</sup>	169	144	134	120	196
200	8	196	222 <sup>18)</sup>	220	196	189	178	250
250	10	249	276,5 <sup>18)</sup>	273	249	243	234	306
300	12	298	327,5 <sup>18)</sup>	324	297	291	283	358
350	14	330	361	356	326	321	314	399
400	16	380	412	407	370	366	358	452
450	18	430	463	457	422	416	409	505
500	20	480	515	508	470	464	457	558
550	22	540	568	561	522	516	509	625
600	24	580	617	610	566	560	554	664
650	26	630	668	-	620	614	608	723
700	28	680	718	-	671	666	660	773
750	30	730	770	-	717	711	705	830
800	32	780	820	-	769	764	758	880
900	36	880	924	-	869	864	859	987
1000	40	980	1027	-	970	965	960	1094

<sup>16</sup> Flange face diameter

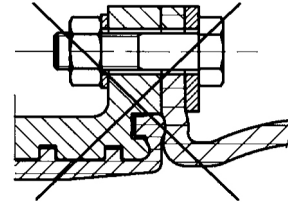
<sup>17</sup> Pipe OD with loose plate flange to DIN 2642 and NF E 29-251

<sup>18</sup> Verify that the body is correctly centred between the tie bolts.

Coated flange



Flange with rubber coating



Expansion bellows

N.B.: Direct installation between rubber-coated flanges or with expansion bellows is not permitted. Please contact us.

**Bolting and weights**

**Bolting and weights for wafer-type body - T1**

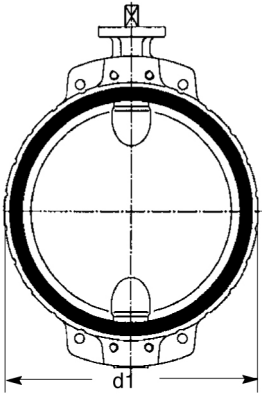


Fig. 13: BOAX-B with wafer-type body T1, DN 650 (example)

**i** The bolting is not included in our standard scope of supply.

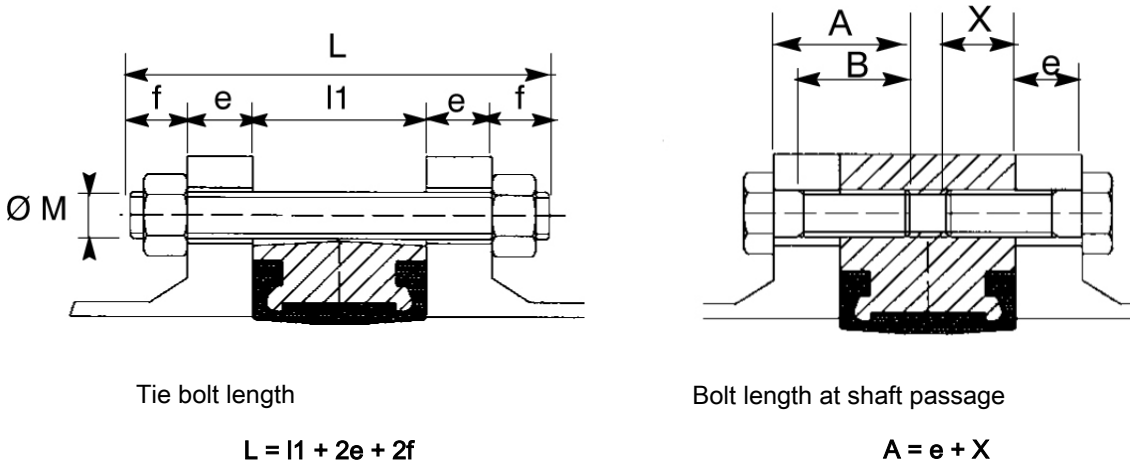


Fig. 14: Bolting for wafer-type body T1

- |   |   |
|---|---|
| L: minimum tie bolt length                              | A: max. bolt length                     |
| l1: face-to-face length of valve                        | X: max. thread engagement depth         |
| e: flange thickness (customer-specific)                 | e: flange thickness (customer-specific) |
| f: thickness of nut + standardised overhang of tie bolt | B: min. thread length > A-e             |

Table 26: Dimensions [mm] and weights [kg] for wafer-type body T1 – connections PN 10 and PN 16

DN	NPS [inch]	d1	l1	EN 1092-1 PN 10					EN 1092-1 PN 16					[kg]
				Ø M	Tie bolt <sup>19)</sup>		Bolt		Ø M	Tie bolt <sup>19)</sup>		Bolt		
					f	Qty <sup>20)</sup>	X	Qty <sup>20)</sup>		f	Qty <sup>20)</sup>	X	Qty <sup>20)</sup>	
650	26	745	165	-	-	-	-	-	-	-	-	-	-	270
700	28	795	165	M27	32	20	30	4	M33	38	20	25	4	315
750	30	853	190	-	-	-	-	-	-	-	-	-	-	380
800	32	903	190	M30	35	20	33	4	M36	42	20	36	4	475
900	36	1111	203	M30	35	24	33	4	M36	42	24	36	4	545
1000	40	1118	216	M33	38	24	36	4	M39	45	24	29	4	670

<sup>19</sup> Quantity of nuts = quantity of tie bolts x 2

<sup>20</sup> Number of bolts per side

**Table 27:** Dimensions [mm] and weights [kg] for wafer-type body T1 – connections Class 125 and Class 150

DN	NPS	d1	l1	ASME B16.1 Class 125					ASME B16.47 Class 150 Series A					[kg]
				UNC	Tie bolt <sup>19)</sup>		Bolt		UNC	Tie bolt <sup>19)</sup>		Bolt		
				[inch]	f	Qty <sup>20)</sup>	X	Qty <sup>20)</sup>	[inch]	f	Qty <sup>20)</sup>	X	Qty <sup>20)</sup>	
650	26	745	165	1 <sup>1</sup> / <sub>4</sub>	38	20	25	4	1 <sup>1</sup> / <sub>4</sub>	38	20	25	4	270
700	28	795	165	1 <sup>1</sup> / <sub>4</sub>	38	24	25	4	1 <sup>1</sup> / <sub>4</sub>	38	24	25	4	315
750	30	853	190	1 <sup>1</sup> / <sub>4</sub>	38	24	33	4	1 <sup>1</sup> / <sub>4</sub>	38	24	33	4	380
800	32	903	190	1 <sup>1</sup> / <sub>2</sub>	45	24	29	4	1 <sup>1</sup> / <sub>2</sub>	45	24	29	4	475
900	36	1111	203	1 <sup>1</sup> / <sub>2</sub>	45	28	29	4	1 <sup>1</sup> / <sub>2</sub>	45	28	29	4	545
1000	40	1118	216	1 <sup>1</sup> / <sub>2</sub>	45	32	35	4	1 <sup>1</sup> / <sub>2</sub>	45	32	35	4	670

Bolting and weights for semi-lug body - T2

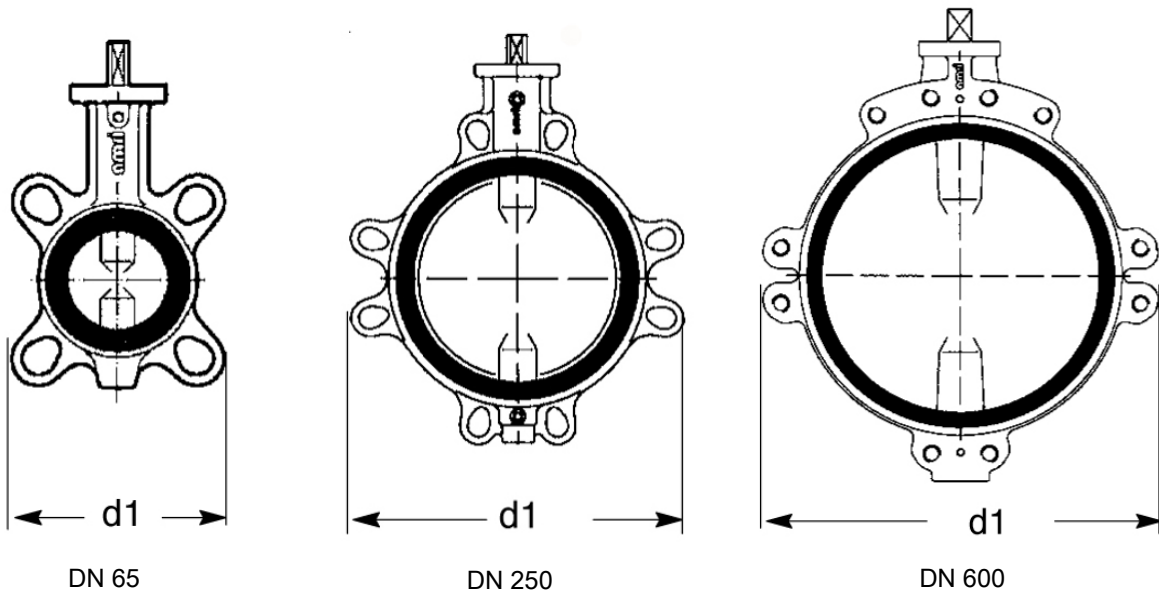


Fig. 15: BOAX-B with semi-lug body T2, DN 65 - 600 (examples)

The bolting is not included in our standard scope of supply.

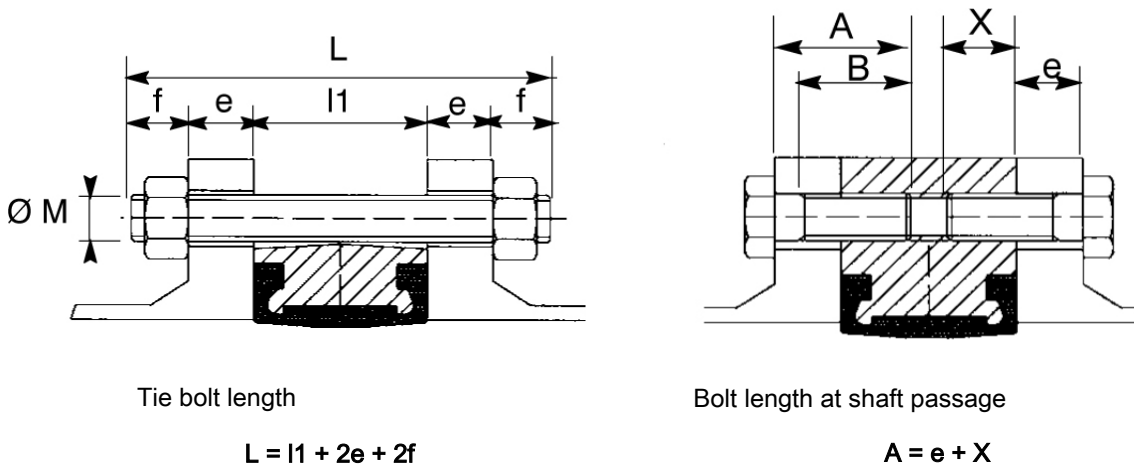


Fig. 16: Bolting for semi-lug body T2

- L: minimum tie bolt length
- l1: face-to-face length of valve
- e: flange thickness (customer-specific)
- f: thickness of nut + standardised overhang of tie bolt

- A: max. bolt length
- X: max. thread engagement depth
- e: flange thickness (customer-specific)
- B: min. thread length > A-e

**Table 28:** Dimensions [mm] and weights [kg] for semi-lug body T2 – connections PN 10 and PN 16<sup>21)</sup>

DN	NPS	d1	l1	EN 1092-1 PN 10					EN 1092-1 PN 16					[kg]
				Ø M	Tie bolt <sup>22)</sup>		Bolt		Ø M	Tie bolt <sup>22)</sup>		Bolt		
	[inch]				f	Qty <sup>23)</sup>	X	Qty <sup>23)</sup>		f	Qty <sup>23)</sup>	X	Qty <sup>23)</sup>	
40	1½	108	33	M16	20	4	-	-	M16	20	4	-	-	1,1
50	2	118	43	M16	20	4	-	-	M16	20	4	-	-	1,3
65	2½	132	46	M16	20	4	-	-	M16	20	4	-	-	1,9
80	3	138	46	M16	20	8	-	-	M16	20	8	-	-	2,5
100	4	150	52	M16	20	8	-	-	M16	20	8	-	-	3,9
125	5	234	56	M16	20	8	-	-	M16	20	8	-	-	4,7
150	6	260	56	M20	24	8	-	-	M20	24	8	-	-	6,9
200	8	322	60	M20	24	8	-	-	M20	24	12	-	-	10,5
250	10	394	68	M20	24	12	-	-	M24	29	12	-	-	16,4
300	12	462	78	M20	24	12	-	-	M24	29	12	-	-	30
350	14	538	78	M20	24	10	20	6	M24	29	10	24	6	60
400	16	604	102	M24	29	10	24	6	M27	32	10	27	6	80
450	18	656	114	M24	29	14	24	6	M27	32	14	27	6	110
500	20	716	127	M24	29	12	24	8	M30	35	12	30	8	145
600	24	836	154	M27	32	10	27	10	M33	38	10	33	10	220

<sup>21</sup> Connections Class 125 and Class 150 on request

<sup>22</sup> Quantity of nuts = quantity of tie bolts x 2

<sup>23</sup> Number of bolts per side

Bolting and weights for full-lug body - T4

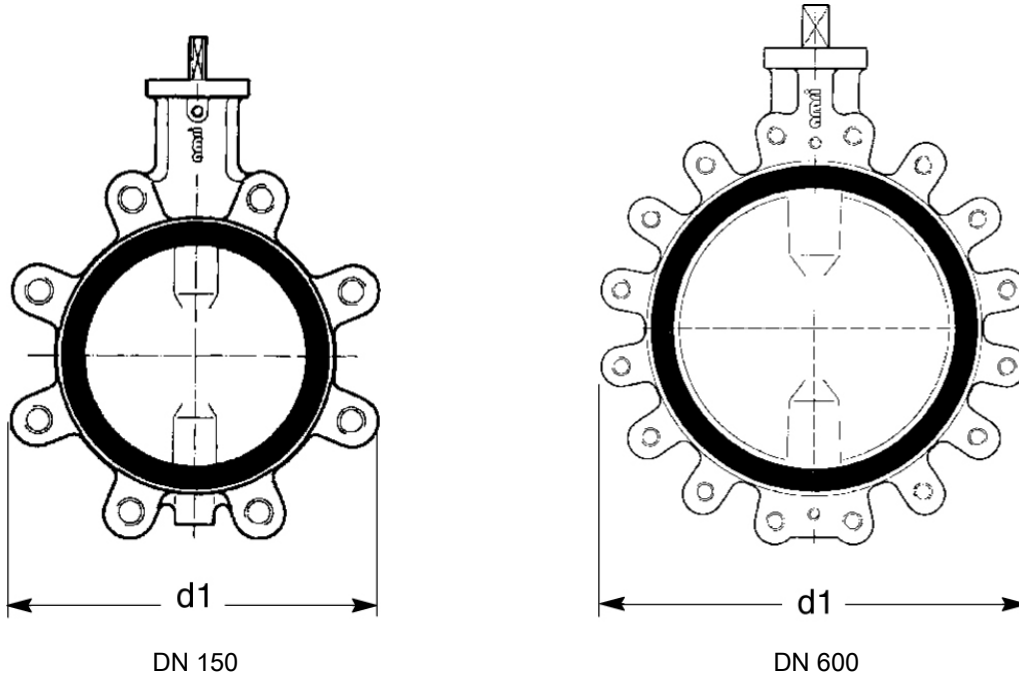
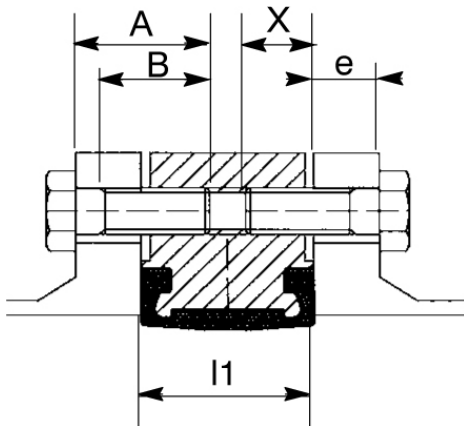


Fig. 17: BOAX-B with full-lug body T4, DN 150 - 600 (examples)

The bolting is not included in our standard scope of supply.



Bolt length at shaft passage

$$A = e + X$$

Fig. 18: Bolting for full-lug body T4

- A: max. bolt length
- X: max. thread engagement depth
- e: flange thickness (customer-specific)
- B: min. thread length > A-e
- l1: flange thickness



**Table 29:** Dimensions [mm] and weights [kg] for full-lug body T4 – connections PN 10 and PN 16<sup>24)</sup>

DN	NPS	d1	l1	EN 1092-1 PN 10					EN 1092-1 PN 16					[kg]
				Ø M	Tie bolt <sup>25)</sup>		Bolt		Ø M	Tie bolt <sup>25)</sup>		Bolt		
	[inch]				f	Qty <sup>26)</sup>	X	Qty <sup>26)</sup>		f	Qty <sup>26)</sup>	X	Qty <sup>26)</sup>	
40	1½	108	33	M16	-	-	14	4	M16	-	-	14	4	2,0
50	2	120	43	M16	-	-	18	4	M16	-	-	18	4	2,5
65	2½	134	46	M16	-	-	20	4	M16	-	-	20	4	3,0
80	3	140	46	-	-	-	-	-	-	-	-	-	-	4,0
80	3	178	46	M16	-	-	20	8	M16	-	-	20	8	4,5
100	4	210	52	M16	-	-	22	8	M16	-	-	22	8	5,5
125	5	236	56	M16	-	-	22	8	M16	-	-	22	8	9
150	6	260	56	M20	-	-	26	8	M20	-	-	26	8	11
200	8	312	60	M20	-	-	26	8	-	-	-	-	-	24
200	8	322	60	-	-	-	-	-	M20	-	-	26	12	25
250	10	396	68	M20	-	-	26	12	M24	-	-	29	12	39
300	12	466	78	M20	-	-	26	12	M24	-	-	30	12	46
350	14	510	78	-	-	-	-	-	-	-	-	-	-	62
350	14	530	78	M20	-	-	26	16	M24	-	-	30	16	70
400	16	598	102	M24	-	-	31	16	M27	-	-	34	16	101
450	18	622	114	-	-	-	-	-	-	-	-	-	-	122
450	18	654	114	M24	-	-	31	20	M27	-	-	34	20	139
500	20	708	127	M24	-	-	31	20	M30	-	-	37	20	179
600	24	822	154	M27	-	-	36	20	M33	-	-	42	20	256

<sup>24</sup> Connections Class 125 and Class 150 on request

<sup>25</sup> Quantity of nuts = quantity of tie bolts x 2

<sup>26</sup> Number of bolts per side

Bolting/weights for flanged body with flat faces - T5 DN 650-1000 (DN 150-600 on request)

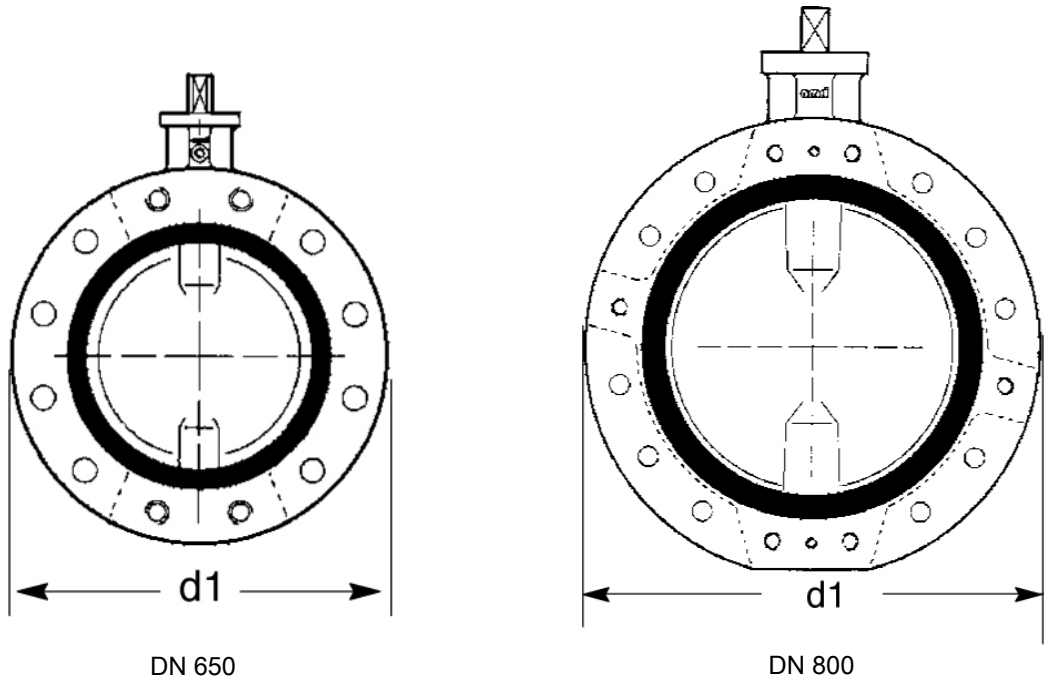
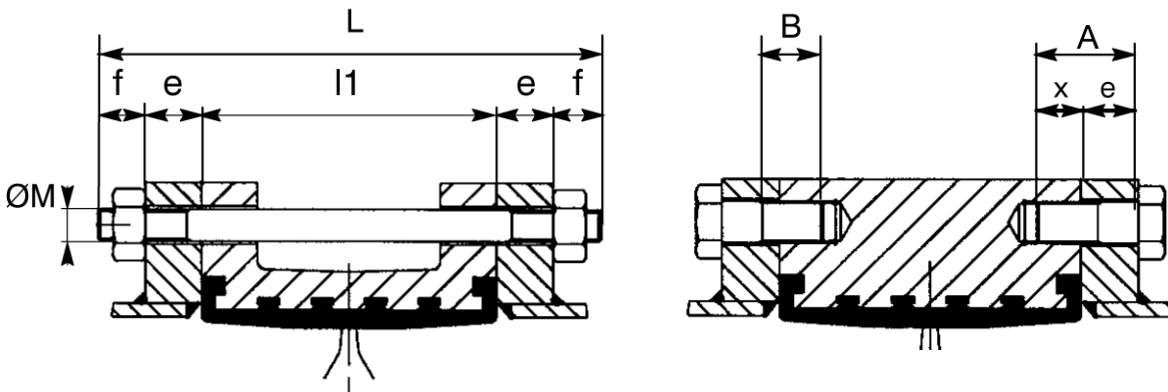


Fig. 19: BOAX-B with flanged body and flat faces T5, DN 650 - 800 (examples)

- Flanged installation is permitted up to a max. differential pressure of 10 bar
- The bolting is not included in our standard scope of supply.

Installation between flanges



Tie bolt length

DN 150 - 600

$$L = l1 + 2e + 2f$$

Bolt length at shaft passage

DN 650 - 1000

$$A = e + X$$

Fig. 20: Bolting for flanged body with flat faces T5, installation between flanges

- |   |   |
|---|---|
| L: minimum tie bolt length                              | A: max. bolt length                     |
| l1: face-to-face length of valve                        | X: max. thread engagement depth         |
| e: flange thickness (customer-specific)                 | e: flange thickness (customer-specific) |
| f: thickness of nut + standardised overhang of tie bolt | B: min. thread length > A-e             |

Flanged installation

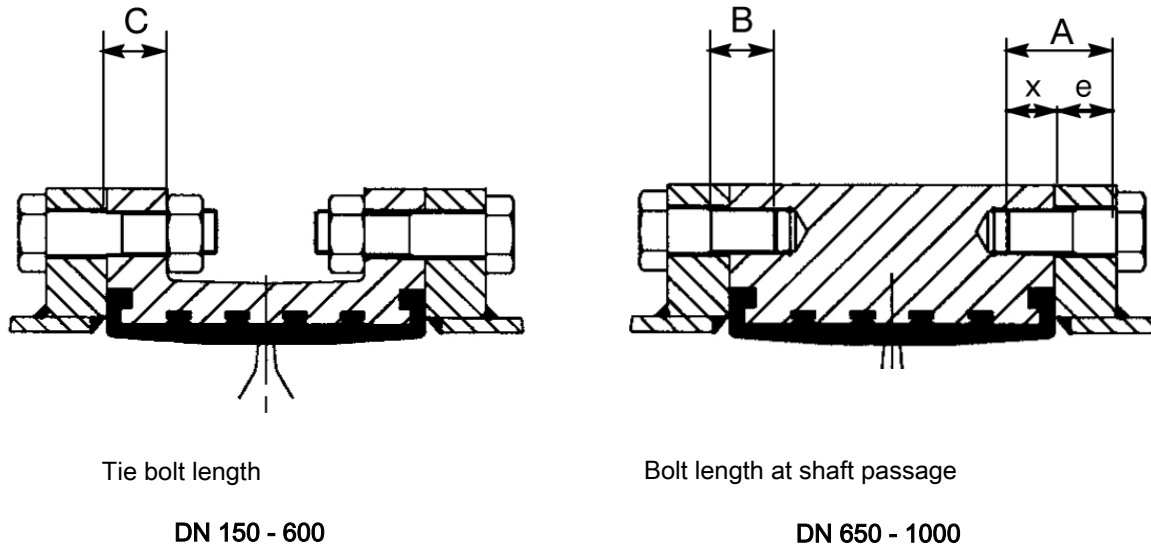


Fig. 21: Bolting for flanged body with flat faces T5, flanged installation

Information on fasteners available on request

Table 30: Dimensions [mm] and weights [kg] for flanged body with flat faces T5 – DN 650 - 1000<sup>27)</sup> - connections PN 10 and PN 16

DN	NPS	d1	l1	C	EN 1092-1 PN 10					EN 1092-1 PN 16					[kg]
					Ø M	Tie bolt <sup>28)</sup>		Bolt		Ø M	Tie bolt <sup>28)</sup>		Bolt		
						f	Qty <sup>29)</sup>	X	Qty <sup>29)</sup>		f	Qty <sup>29)</sup>	X	Qty <sup>29)</sup>	
650	26	869	165	31,0	-	-	-	-	-	-	-	-	-	-	305
700	28	895	165	32,5	M27	32	20	27	4	-	-	-	-	-	330
700	28	925	165	32,5	-	-	-	-	-	M33	38	20	25	4	350
750	30	985	190	33,5	-	-	-	-	-	-	-	-	-	-	350
800	32	1015	190	35,0	M30	35	20	30	4	-	-	-	-	-	505
800	32	1075	190	35,0	-	-	-	-	-	M36	42	20	36	4	525
900	36	1115	203	37,5	M30	35	24	30	4	-	-	-	-	-	590
900	36	1160	203	37,5	-	-	-	-	-	M36	42	24	36	4	620
1000	40	1230	216	40,0	M33	38	24	33	4	-	-	-	-	-	740
1000	40	1275	216	40,0	-	-	-	-	-	M39	45	24	29	4	780

Table 31: Dimensions [mm] and weights [kg] for flanged body with flat faces T5 – DN 650 - 1000<sup>27)</sup> - connections Class 125 and Class 150

DN	NPS	d1	L1	C	ASME B16.1 Class 125					ASME B16.47 Class 150 Series A					[kg]
					UNC	Tie bolt <sup>28)</sup>		Bolt		UNC	Tie bolt <sup>28)</sup>		Bolt		
						[inch]	f	Qty <sup>29)</sup>	X		Qty <sup>29)</sup>	[inch]	f	Qty <sup>29)</sup>	
650	26	869	165	31,0	1 1/4	38	20	25	4	1 1/4	38	20	25	4	305
700	28	895	165	32,5	-	-	-	-	-	-	-	-	-	-	330
700	28	925	165	32,5	1 1/4	38	24	25	4	1 1/4	38	24	25	4	350
750	30	985	190	33,5	1 1/4	38	24	33	4	1 1/4	38	24	33	4	350
800	32	1015	190	35,0	-	-	-	-	-	-	-	-	-	-	505
800	32	1075	190	35,0	1 1/2	45	24	29	4	1 1/2	45	24	29	4	525
900	36	1115	203	37,5	-	-	-	-	-	-	-	-	-	-	590

<sup>27)</sup> DN 150 to 600 on request

<sup>28)</sup> Quantity of nuts = quantity of tie bolts x 2

<sup>29)</sup> Number of bolts per side

DN	NPS [inch]	d1	L1	C	ASME B16.1 Class 125					ASME B16.47 Class 150 Series A					[kg]
					UNC	Tie bolt <sup>28)</sup>		Bolt		UNC	Tie bolt <sup>28)</sup>		Bolt		
					[inch]	f	Qty <sup>29)</sup>	X	Qty <sup>29)</sup>	[inch]	f	Qty <sup>29)</sup>	X	Qty <sup>29)</sup>	
900	36	1160	203	37,5	1 1/2	45	28	29	4	1 1/2	45	28	29	4	620
1000	40	1230	216	40,0	-	-	-	-	-	-	-	-	-	-	740
1000	40	1275	216	40,0	1 1/2	45	32	35	4	1 1/2	45	32	35	4	780





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