

Butterfly Valve

ISORIA 10

Centred-disc Butterfly Valve
AMRING Elastomer Liner
DN 40-1000
PS 10 bar

Type Series Booklet



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Type Series Booklet ISORIA 10

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Butterfly Valves

Centred-disc Butterfly Valves

ISORIA 10



Main applications

- Water extraction
- Chemical industry
- Cooling circuits
- Seawater desalination/reverse osmosis
- Flue gas desulphurisation
- Food and beverage industry
- Paper and cellulose industry
- Spray irrigation systems
- Descaling units
- General irrigation systems
- Washing plants
- Paint shops
- Shipbuilding
- Mixing
- Mining
- Pipelines and tank farms
- Swimming pools
- Process engineering
- Sugar industry
- Pressure boosting
- Industrial recirculation systems
- Water treatment/conditioning

Fluids handled

- Condensate
- Cleaning agents

- Distillate
- Wash water
- Seawater
- Service water
- Cooling water
- Fire-fighting water
- Drinking water
- Brackish water
- Grey water
- River, lake and groundwater
- Abrasive fluids
- Aggressive fluids
- Fluids containing mineral oils
- Solids-laden fluids
- Fluids containing gas
- Corrosive fluids
- Explosive fluids
- Inorganic fluids
- Organic fluids
- Polymerising/crystallising fluids
- Radioactive fluids
- Toxic fluids
- Volatile fluids
- Gas
- Oil
- Brine
- Solvents

Operating data

Operating properties

Characteristic	Value
Nominal pressure	PN 10
Nominal size	DN 40-1000
Max. permissible pressure (PS)	10 bar
Max. permissible temperature	+200 °C
Min. permissible temperature	-10 °C
Actuation at ΔP	10 bar (max.) - ambient temperature
Suitable for vacuum applications down to	0.3 bar absolute
Max. permissible flow velocity at operating pressure	1.5 to 3 m/s (max.) for water

Pressure limits of liner based on pressure/materials table of liners

Design details

Design

- Wafer-type body with flat faces - T1: DN 40 - 1000
- Semi-lug body - T2: DN 40 - 600
- Full-lug body with flat faces - T3: DN 40 - 600
- Full-lug body with raised faces - T4: DN 40 - 600
- Flanged body with flat faces - T5: DN 150 - 1000

- Downstream dismantling possible with body types T2, T3, T4 and T5
- Dead-end service with counterflange possible with all body types
- Design to EN 593 and ISO 10631
- Top flange to ISO 5211
- Marked in accordance with EN 19
- Absolutely tight shut-off (no leakage visible to the naked eye) in either direction of flow in accordance with EN 12266-1, leakage rate A, and ISO 5208, category A.
- Face-to-face length to ISO 5752-20 and EN 558-1-20
- EN, ASME, JIS, AWWA connections possible.
- Body with polyurethane coating, thickness 80 µm, colour: RAL 5002, blue.
- Valve disc made of nodular cast iron, epoxy-coated, thickness 80 µm, colour: RAL 8012, brown
- The valves satisfy the safety requirements of Annex I of the European Pressure Equipment Directive 97/23/EC (PED) for fluids in Groups 1 and 2.
- Valves with actuators can meet the requirements of the 2006/42/EC Machinery Directive for partly completed machinery.
- The valves meet the requirements of the REACH 1907/2006 regulation. None of the substances listed in the candidate list and in Annex XIV of the regulation is present in a concentration above 0.1 % (w/w) (Article 33/REACH).

Variants

- Valve cleaned and packaged, free from substances which impair the adhesive strength of paint
- S / SR / SP quarter-turn levers
- MN / MR manual gearboxes
- ACTELEC electric actuators
- ACTAIR / DYNACTAIR pneumatic actuators
- ACTO/DYNACTO/ENNACTO hydraulic actuators
- AMTROBOX control unit for position indication
- AMTRONIC valve controller with compressed air supply via directional control valve
- SMARTRONIC intelligent positioner
- ATEX design in compliance with the 94/9/EC Directive

Body materials

Overview of available materials

Material	Material number	Body	DN (max.)	KSB code
EN-GJL-250	JL 1040	T1	DN 40-600	3t
EN-JS1030	JS 1030	T1	DN 650-1000	3g
ASTM A536 gr. 60.40.18				
EN-JS1030	JS 1030	T2	DN 40-600	3g
ASTM A 216 gr. CCC		T3	DN 40-600	1
EN-JS1030	JS 1030	T4	DN 40-600	3g
EN-JS1030	JS 1030	T5	DN 150-600	3g
EN-JS1030	JS 1030	T5	DN 650-1000	3g
ASTM A536 gr. 60.40.18				

Product benefits

- Spherically machined valve disc with rounded sealing contour
 - ensures durable and permanently tight shut-off
- Splined or keyed connection between stem and valve disc
 - Dry stem, no contact with fluid handled
- Sealing to atmosphere and tight shut-off are ensured,
 - even when the actuator has been removed
- Marking indicates position of valve disc
- Stem and actuating stem in anti-blow out design with screw or circlip
 - Stem and actuator stem are retained in the body.
- Valve equipped with stainless steel bearings with reinforced PTFE coating
- The elastomer liner provides tight sealing at the flanged line connections, eliminating the need for a flange gasket.
- Valve certified to
 - ACS / DVGW / WRAS for drinking water applications, with XC elastomer liner
 - DVGW / NF ROB GAZ for mineral gas applications:
 - with EG liner: -20 °C to +60 °C
 - with K liner: -5 °C to +60 °C
- Elastomer liner
 - EPDM - XC approved by KTW, ILP Nancy, WRC
 - Epichlorohydrin - EG approved by KTW, AFG
- Valve actuation options:
 - Manual
 - Electric
 - Pneumatic
 - Hydraulic

Related documents

Other applicable documents

Document	Reference number
Actuator selection	8444.11
Operating manual	8449.8

On all enquiries/orders please specify

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

Technical data

Pressure limits of AMRING liners

DN	NPS	Max. permissible pressure PS [bar]			
		XA - XC - XV - K - Y - NH - CB	VA - VC	EG	CC - SK - NB
40-500	1½-20	10	10	10	6
550	22	10	10	/	/
600	24	10	10	10	6
650	26	10	/	/	/
700	28	10	6	/	/
750	30	10	/	/	/
800-1000	32-40	10	6	/	/

Vacuum resistance

DN	NPS	Liner mounting method	Minimum pressure	Max. temperature	
			[bar absolute]	XV	Other
40-300	1½-12	Non-glued (standard)	$1,33 \cdot 10^{-5}$ (10^{-2} torr)	130 °C	80 °C
350-1000	14-40	Non-glued (standard)	0,3	130 °C	80 °C
350-1000	14-40	Glued (optional)	$1,33 \cdot 10^{-5}$ (10^{-2} torr)	80 °C	80 °C

Hydraulic characteristics

DN	NPS	Flow coefficient with disc fully open		Zeta
		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
550	22	31700	36455	0,15
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 (in Nm)

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

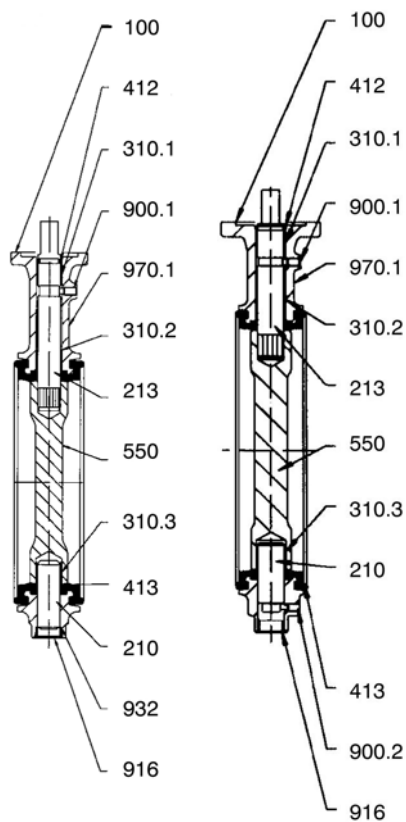
DN	NPS	Liners XA, XC, XV, K with lubricating fluid	All liners with non-lubricating fluid and ¹⁾
40	1½	10	20
50	2	20	30
65	2½	30	40
80	3	40	50
100	4	60	70
125	5	80	100
150	6	130	140
200	8	170	210
250	10	220	330
300	12	380	520
350	14	500	720
400	16	650	980
450	18	800	1200
500	20	1000	1500
550	22	1200	1800
600	24	1400	2100
650	26	1700	2600
700	28	2000	3000
750	30	2300	3500
800	32	2600	4000
900	36	3400	5000
1000	40	4100	6000

¹⁾ Other liners (except XA, XC, XV, K) with lubricating fluid

Materials

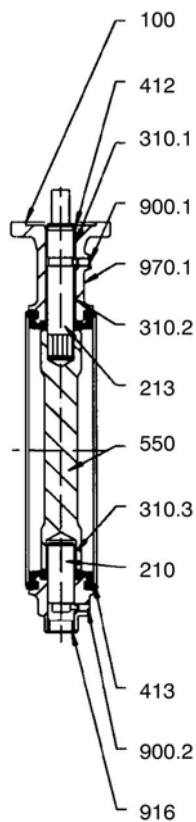
DN 40-1000

Sectional drawing

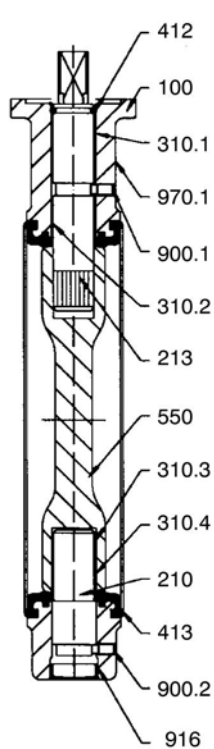


DN 40 - 200

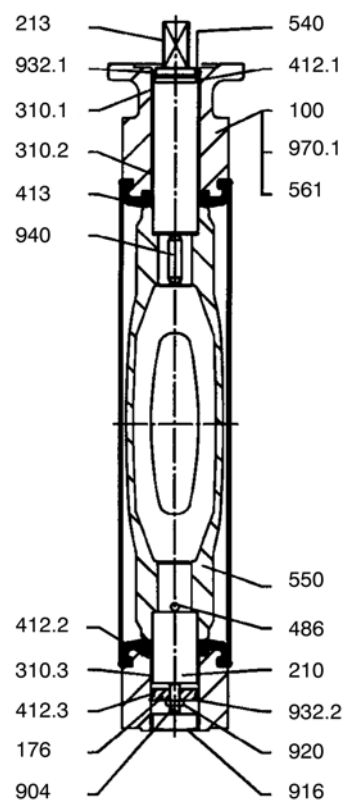
Parts 310.1, 310.2,
310.3 on DN 200 only



DN 250 - 300



DN 350 - 600



DN 650 - 1000

List of components

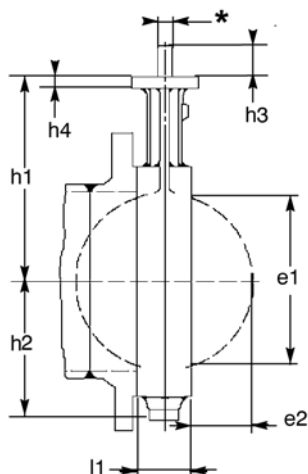
Part No.	Description	DN	Materials	KSB code
100	Body T1	40 - 600	Lamellar graphite cast iron JL 1040	3t
100	Body T1	650 - 1000	Nodular cast iron JS 1030 ASTM A536 Gr. 60.40.18	3g
100	Body T2	40 - 600	Nodular cast iron JS 1030	3g
100	Body T3	40 - 600	Steel	1
100	Body T4	40 - 600	Nodular cast iron JS 1030	3g
100	Body T5	150 - 600	Nodular cast iron JS 1030	3g
100	Body T5	650 - 1000	Nodular cast iron JS 1030 ASTM A536 Gr. 60.40.18	3g
176	Bottom	650 - 1000	Steel	
210 ²⁾	Stem	40 - 600	Stainless steel 1.4029 (13% Cr)	6k
210 ²⁾	Stem	650 - 1000	Stainless steel 1.4028 (13% Cr)	6k
210 ²⁾	Stem	40 - 1000	Stainless steel 1.4057 (17% Cr)	6e
213 ²⁾	Actuating stem	40 - 600	Stainless steel 1.4029 (13% Cr)	6k
213 ²⁾	Actuating stem	650 - 1000	Stainless steel 1.4028 (13% Cr)	6k
213 ²⁾	Actuating stem	40 - 1000	Stainless steel 1.4057 (17% Cr)	6e
310.1 ²⁾	Plain bearing	200 - 1000	Steel with reinforced PTFE coating	
310.2 ²⁾	Plain bearing	200 - 1000	Steel with reinforced PTFE coating	
310.3 ²⁾³⁾	Plain bearing	200 - 1000	Steel with reinforced PTFE coating	
310.4 ²⁾³⁾	Plain bearing	350 - 600	Steel with reinforced PTFE coating	
412 ²⁾³⁾⁴⁾	O-ring	40 - 600	Nitrile	
412.1 ²⁾³⁾⁴⁾	O-ring	650 - 1000	Nitrile	
412.2 ²⁾³⁾⁴⁾	O-ring	650 - 1000	Nitrile	
412.3 ²⁾³⁾⁴⁾	O-ring	650 - 1000	Nitrile	
413 ⁴⁾	Liner	40 - 1000	EPDM	XA
413 ⁴⁾	Liner	40 - 1000	EPDM suitable for drinking water	XC
413 ⁴⁾	Liner	40 - 1000	EPDM, heat-resistant	XV
413 ⁴⁾	Liner	40 - 1000	Nitrile HT	K
413 ⁴⁾	Liner	40 - 1000	Carboxylated nitrile	CB
413 ⁴⁾	Liner	40 - 1000	Carboxylated nitrile, white	CC
413 ⁴⁾	Liner	40 - 1000	HYPALON (chlorosulfonated) polyethylene	Y
413 ⁴⁾	Liner	40 - 1000	Fluoroelastomer Viton, acid-resistant	VA
413 ⁴⁾	Liner	40 - 1000	Fluoroelastomer Viton, heat-resistant	VC
413 ⁴⁾	Liner	40 - 1000	Epichlorohydrin	EG
413 ⁴⁾	Liner	40 - 1000	Silicone, heat-resistant	SK
413 ⁴⁾	Liner	40 - 1000	Polybutadiene natural rubber	NB
413 ⁴⁾	Liner	40 - 1000	HNBR hydrogenated nitrile butadiene rubber	NH
486 ²⁾	Ball	650 - 1000	Steel	
540 ²⁾³⁾⁴⁾	Bush	650 - 1000	Acetal	
550 ³⁾	Valve disc	40 - 1000	Nodular cast iron JS 1030	3g
550 ³⁾	Valve disc	650 - 1000	Nodular cast iron JS 1030 ASTM A536 gr. 60.40.18	3g
550 ³⁾	Valve disc	40 - 600	Nodular cast iron JS 1030, Halar-coated	3a
550 ³⁾	Valve disc	40 - 1000	Nodular cast iron JS 1030, ebonite-coated	3p
550 ³⁾	Valve disc	40 - 1000	Nodular cast iron JS 1030, Rilsan-coated	3r
550 ³⁾	Valve disc	40 - 300	Nodular cast iron JS 1030, EPDM-coated	3x
550 ³⁾	Valve disc	40 - 200	Stainless steel 1.4401	6

- 2) Included in stem spare parts kit
3) Included in valve disc spare parts kit
4) Included in liner spare parts kit

Part No.	Description	DN	Materials	KSB code
550 ³⁾	Valve disc	250 - 1000	Stainless steel 1.4408 / ASTM A351 gr. CF8M	6
550 ³⁾	Valve disc	40 - 200	Stainless steel 1.4401, polished	6i
550 ³⁾	Valve disc	250 - 600	Stainless steel 1.4408 / ASTM A351 gr. CF8M, polished	6i
550 ³⁾	Valve disc	40 - 1000	Copper aluminium alloy CC333G	2
550 ³⁾	Valve disc	40 - 1000	ASTM A890 gr. CD4MCu, equivalent of NORIDUR	5a
550 ³⁾	Valve disc	40 - 1000	ASTM A890 gr. CE3MN, equivalent of NORICLOR	5g
550 ³⁾	Valve disc	40 - 1000	Stainless steel, austenitic, URANUS B6	6u
550 ³⁾	Valve disc	40 - 1000	HASTELLOY C	7c
561	Grooved pin	650 - 1000	Stainless steel	
900.1 ²⁾³⁾⁴⁾	Stem anti-blow out device (screw)	40 - 1000	Stainless steel	
900.2 ²⁾³⁾⁴⁾	Stem anti-blow out device (screw)	250 - 1000	Stainless steel	
904 ²⁾	Adjusting screw	650 - 1000	Steel	
916 ²⁾³⁾⁴⁾	Plug	40 - 1000	Polyethylene	
920 ²⁾	Nut	650 - 1000	Galvanised steel	
932 ²⁾³⁾⁴⁾	Toothed lock washer	40 - 200	Steel	
932.1 ²⁾³⁾⁴⁾	Circlip	650 - 1000	Steel	
932.2 ²⁾³⁾⁴⁾	Circlip	650 - 1000	Steel	
940 ²⁾	Key	650 - 1000	Steel	
970.1	Name plate	40 - 600	Adhesive polyester	
970.1	Name plate	650 - 1000	Stainless steel	

Dimensions

Drawings



* Flat end s in $\varnothing z$ or $\varnothing s$

Dimensions

[mm]

DN	NPS	l1	h1	h2	Top flange to ISO 5211		Stem end Flat end			Stem end Square end		Valve disc	
					No.	h4	s	$\varnothing z$	h3	$\varnothing s$	h3	e1	e2
40	1½	33	105	51	F05	10	11	14	24	/	/	32	4
50	2	43	109	55	F05	10	11	14	24	/	/	33	4
65	2½	46	136	67	F05	10	11	14	24	/	/	55	11
80	3	46	142	73	F05	10	11	14	24	/	/	71	17
100	4	52	163	92	F05	10	14	18	24	/	/	90	23
125	5	56	176	105	F05	10	14	18	30	/	/	119	35
150	6	56	194	120	F07	12	14	18	30	/	/	144	46
200	8	60	222	150	F07	12	19	25	35	/	/	196	69
250	10	68	255	194	F10	15	19	25	35	/	/	249	92
300	12	78	282	226	F12	18	22	28	40	/	/	297	111
350	14	78	335	269	F12	23	/	/	/	25	45	326	127
400	16	102	380	298	F14	23	/	/	/	36	55	370	140
450	18	114	410	329	F14	23	/	/	/	36	55	422	160
500	20	127	440	359	F14	27	/	/	/	36	55	470	178
550	22	154	475	406	F16	27	/	/	/	50	65	522	195
600	22	154	495	439	F16	27	/	/	/	50	65	566	215
650	26	165	535	451	F16	26	/	/	/	50	65	620	235
700	28	165	560	482	F16	26	/	/	/	50	65	671	260
750	30	190	590	513	F16	26	/	/	/	50	65	717	273
800	32	190	615	546	F16	26	/	/	/	50	65	769	298
900	36	203	665	588	F25	30	/	/	/	60	80	869	341
1000	40	216	735	646	F25	30	/	/	/	60	80	970	385

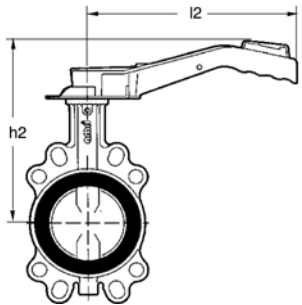
Manual actuation

The selection of actuators given below typically applies to butterfly valves handling liquid fluids at the maximum flow velocities shown.

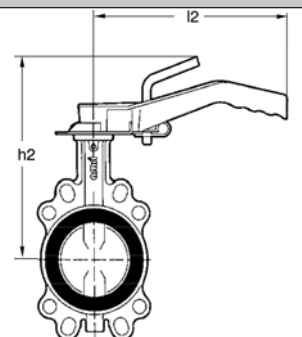
For valves handling non-lubricating fluids (gas), a max. flow velocity of 50 m/s applies.

Higher flow velocities and further actuator/valve combinations are possible, depending on the operating conditions and hydraulic characteristics. Please contact us.

Levers S - SR

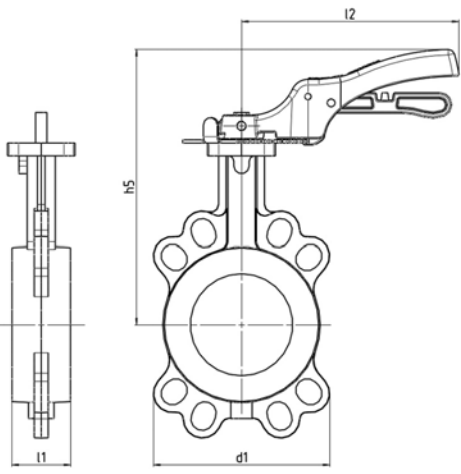
Lever S ▪ Can be locked in end positions	DN	NPS	Max. velocity [m/s]	Levers S + SR with all fluids		
				l2 [mm]	h2 [mm]	Weight ⁵⁾ [kg]
	40	1½	3,0	180	160	0,5
	50	2	3,0	180	165	0,5
	65	2½	3,0	180	191	0,5
	80	3	3,0	180	197	0,5
	40	1½	3,0	260	180	0,6
	50	2	3,0	260	185	0,6
	65	2½	3,0	260	211	0,6
	80	3	3,0	260	217	0,6
	100	4	3,0	330	248	0,7
	125	5	3,0	330	262	0,7
	150	6	3,0	330	279	0,7

Lever SP

Lever SP ▪ Can be locked in all positions	DN	NPS	Max. velocity [m/s]	Lever SP with all fluids		
				l2 [mm]	h2 [mm]	Weight ⁵⁾ [kg]
	40	1½	3,0	260	205	0,7
	50	2	3,0	260	210	0,7
	65	2½	3,0	260	236	0,7
	80	3	3,0	260	242	0,7
	100	4	3,0	330	263	0,8
	125	5	3,0	330	277	0,8
	150	6	3,0	330	294	0,8

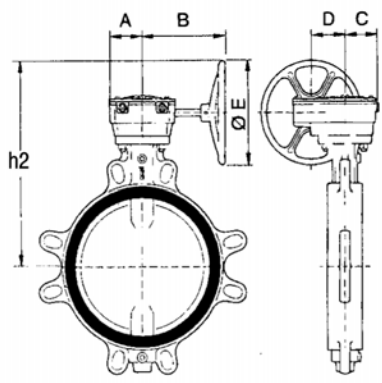
⁵⁾ The weights given refer to the actuating element.

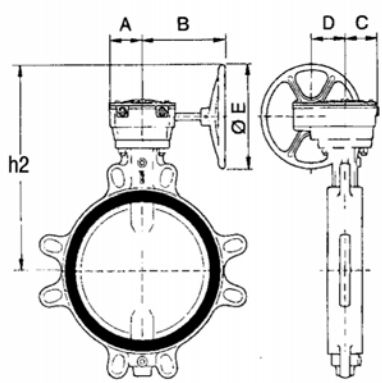
Levers CR - CM

	DN	NPS	Max. velocity	Levers CR - CM				
				l1	d1	l2	h5	Weight ⁵⁾
			[m/s]	[mm]	[mm]	[mm]	[mm]	[kg]
	40	1½	3,0	33	108	CR165	175	0,8
	50	2	3,0	43	118	CR165	179	0,8
	65	2½	3,0	46	132	CR165	206	0,8
	80	3	3,0	46	138	CR165	212	0,8
	100	4	3,0	52	150	CR230	246	1,2
	125	5	3,0	56	234	CR300	272	1,7
	150	6	3,0	56	260	CR300	290	1,7
	200	8	3,0	60	322	CR510 ⁶⁾	332	3,1
	250	10	3,0	68	394	CR510 ⁶⁾	365	3,1
	300	12	3,0	78	462	CR510 ⁶⁾	392	3,1

⁶⁾ High actuating torque, manual gearbox recommended

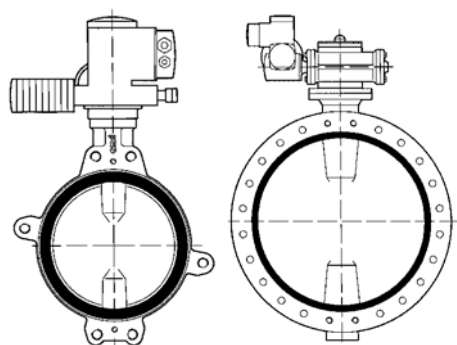
Manual gearbox MR

With lubricating fluids with liners XA, XC, XV and K											
	DN	NPS	Max. velocity	Actuator	A	B	C	D	E	h2	Weight ⁵⁾
			[m/s]		[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[kg]
	40	1½	3,0	MR25	62	184	66	64	225	256	7
	50	2	3,0	MR25	62	184	66	64	225	261	7
	65	2½	3,0	MR25	62	184	66	64	225	287	7
	80	3	3,0	MR25	62	184	66	64	225	293	7
	100	4	3,0	MR25	62	184	66	64	225	314	7
	125	5	3,0	MR25	62	184	66	64	225	328	7
	150	6	3,0	MR25	62	184	66	64	225	345	7
	200	8	3,0	MR25	62	184	66	64	225	373	7
	250	10	3,0	MR25	62	184	66	64	225	406	7
	300	12	3,0	MR50	74	184	77	76	225	445	10
	350	14	3,0	MR50	74	184	77	76	225	498	10
	400	16	3,0	MR100	86	233	88	88	350	617	15
	450	18	2,5	MR100	86	233	88	88	350	647	15
	500	20	2,5	MR100	86	233	88	88	350	677	15
	550	22	2,0	MR200	120	270	108	117	350	723	24
	600	24	2,5	MR200	120	270	108	117	350	743	24
	650	26	2,0	MR200	120	270	108	117	350	783	24
	700	28	2,0	MR200	120	270	108	117	350	808	24
	750	30	2,0	MR400	229	332	115	125	350	860	58
	800	32	2,0	MR400	229	332	115	125	350	885	58
	900	36	1,5	MR400	229	332	115	125	350	898	58
	1000	40	1,5	MR400	229	332	115	125	350	1005	58

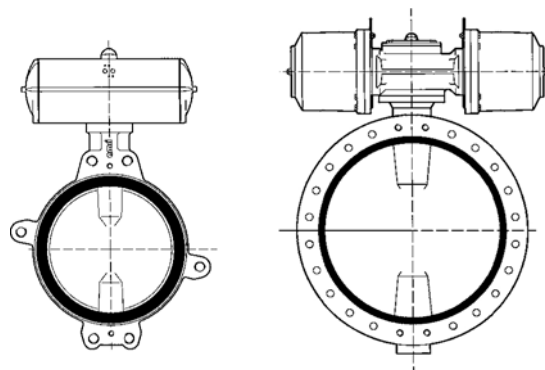
With non-lubricating fluid, with all liners											
With lubricating fluid, with liners other than XA, XC, XV and K (velocity see table)											
	DN	NPS	Max. velocity	Actuator	A	B	C	D	E	h2	Weight ⁵⁾
			[m/s]		[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[kg]
	40	1½	*	MR25	62	184	66	64	225	256	7
	50	2	*	MR25	62	184	66	64	225	261	7
	65	2½	*	MR25	62	184	66	64	225	287	7
	80	3	*	MR25	62	184	66	64	225	293	7
	100	4	*	MR25	62	184	66	64	225	314	7
	125	5	*	MR25	62	184	66	64	225	328	7
	150	6	*	MR25	62	184	66	64	225	345	7
	200	8	*	MR25	62	184	66	64	225	373	7
	250	10	*	MR50	74	184	77	76	225	418	10
	300	12	*	MR50	74	184	77	76	225	445	10
	350	14	*	MR100	86	233	88	88	350	572	15
	400	16	*	MR100	86	233	88	88	350	617	15
	450	18	*	MR200	120	270	108	117	350	658	24
	500	20	*	MR200	120	270	108	117	350	688	24
	550	22	*	MR200	120	270	108	117	350	723	24
	600	24	*	MR200	120	270	108	117	350	743	24
	650	26	*	MR400	229	332	115	125	350	805	58
	700	28	*	MR400	229	332	115	125	350	830	58
	750	30	*	MR400	229	332	115	125	350	860	58
	800	32	*	MR400	229	332	115	125	350	885	58
	900	36	*	MR600	271	511	155	140	600	1074	105
	1000	40	*	MR600	271	511	155	140	600	1144	105

* 50 [m/s] with non-lubricating fluid (gas)

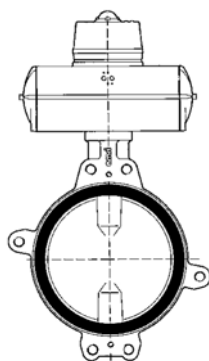
Variants



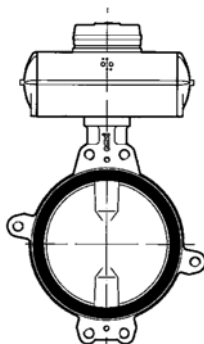
ACTELEC



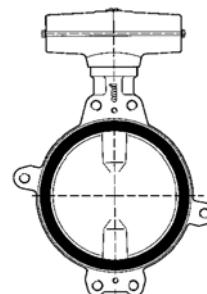
ACTAIR / DYNACTAIR



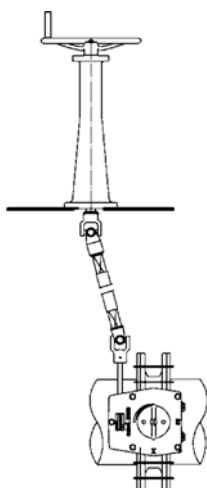
**ACTAIR +
AMTRONIC / SMARTRONIC**



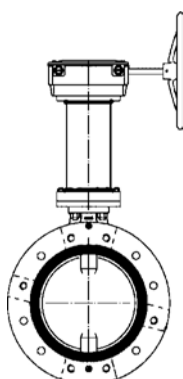
**ACTAIR +
AMTROBOX**



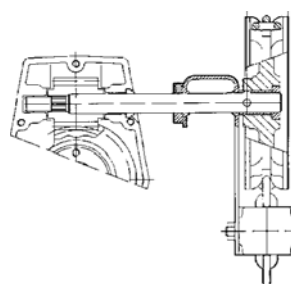
ACTO



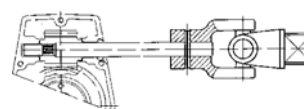
Deck stand



Extension



Chain wheel



Cardan joint

Notes on installation

Connections

The valves can be installed between the following line connections (other line connections on request):

- EN 1092 PN 6, 10 and 16
- ASME B16.1 Cl.125 and B16.5 Cl.150
- ASME B16.47 Cl.150 Series A
- MSS SP 44 Cl.150
- AWWA C207 Cl. B, D and E
- AS 2129 Tables D and E
- BS 10 Tables D and E
- JIS B2220, B2238 and B2239 5K, 10K and 16K

Wafer-type body - T1

Wafer-type bodies - T1 can be installed between all the above-mentioned line connections.

Semi-lug body - T2

DN	NPS	EN 1092			ASME		MSS SP44 Cl.150	JIS B2220, B2238, B2239			AWWA C207 B,D,E	BS10		AS2129	
		PN 6	PN 10	PN 16	B16.1 Cl.125	B16.5 Cl.150		5K	10K	16K		Table D	Table E	Table D	Table E
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	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
550	22	●	●	●	●	●	✓	✓	✓	✓	✓	✓	✓	✓	✓
600	24	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

Full-lug body with flat faces -T3

DN	NPS	EN 1092		ASME		MSS SP44 Cl.150	JIS B2220, B2238, B2239			AWWA C207 B,D,E
		PN 10	PN 16	B16.1 Cl.125	B16.5 Cl.150		5K	10K	16K	
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	✓	✓	✓	✓	✓	✓	✓	✓	✓
550	22	•	•	•	•	✓	✓	✓	✓	✓
600	24	✓	✓	✓	✓	✓	✓	✓	✓	✓

Full-lug body with raised faces -T4

DN	NPS	EN 1092			ASME		MSS SP44 Cl.150	JIS B2220, B2238, B2239			AWWA C207 B,D,E	BS10		AS2129	
		PN 6	PN 10	PN 16	B16.1 Cl.125	B16.5 Cl.150		5K	10K	16K		Table D	Table E	Table D	Table E
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	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	♦	♦	♦	♦
550	22	•	•	•	•	•	✓	✓	✓	✓	✓	♦	♦	♦	♦
600	24	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	♦	♦	♦	♦

Flanged body with flat faces -T5

DN	NPS	EN 1092			ASME			MSS SP44 Cl.150	JIS B2220, B2238, B2239			AWWA C207 B,D,E	BS10		AS2129	
		PN 6	PN 10	PN 16	B16.1 Cl.125	B16.5 Cl.150	B16.47 Cl.150		5K	10K	16K		Table D	Table E	Table D	Table E
150	6	✓	✓	✓	✓	✓	•	•	✓	✓	✓	✓	✓	✓	✓	✓
200	8	✓	✓	✓	✓	✓	•	•	✓	✓	✓	✓	✓	✓	✓	✓
250	10	✓	✓	✓	✓	✓	•	•	✓	✓	✓	✓	♦	✓	♦	✓
300	12	✓	✓	✓	✓	✓	•	✓	✓	✓	✓	✓	✓	✓	✓	✓
350	14	✓	✓	✓	✓	✓	•	✓	✓	✓	✓	✓	✓	✓	✓	✓
400	16	✓	✓	✓	✓	✓	•	✓	✓	✓	✓	✓	✓	✓	✓	✓
450	18	✓	✓	✓	✓	✓	•	✓	✓	✓	♦	✓	✓	✓	✓	✓
500	20	✓	✓	✓	✓	✓	•	✓	✓	✓	✓	✓	✓	✓	✓	✓
550	22	•	•	•	•	•	•	✓	✓	✓	♦	✓	✓	✓	✓	✓
600	24	✓	✓	✓	✓	✓	•	✓	✓	✓	✓	✓	✓	✓	✓	✓
650	26	•	•	•	•	•	✓	✓	✓	✓	⚠	✓	•	•	•	•
700	28	✓	✓	✓	•	•	✓	✓	✓	✓	⚠	✓	✓	✓	✓	✓
750	30	•	•	•	✓	•	✓	✓	✓	✓	⚠	✓	✓	✓	✓	✓
800	32	✓	✓	✓	•	•	✓	✓	✓	✓	⚠	✓	•	•	✓	✓
900	36	✓	✓	✓	✓	•	✓	✓	✓	✓	♦	✓	✓	✓	✓	✓
1000	40	✓	✓	✓	•	•	✓	✓	✓	✓	♦	✓	✓	✓	✓	✓

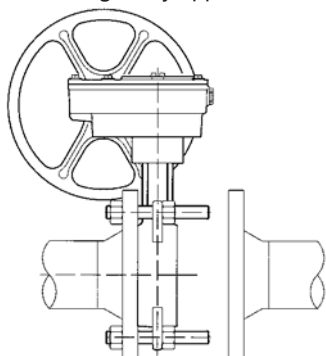
Description

Symbol	Description	Symbol	Description
✓	Installation possible	•	Non-standardised connection
■	Downstream dismantling not possible	♦	Installation not possible
▨	Flanged installation permitted	▲	Fit washer between nut and valve rib.
⚠	Contact us.		

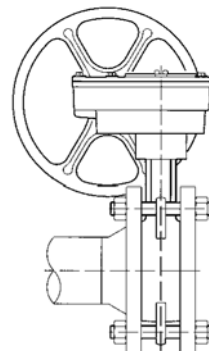
Dead-end service and downstream dismantling

Downstream dismantling

For downstream dismantling,
successively loosen diagonally opposed tie rods

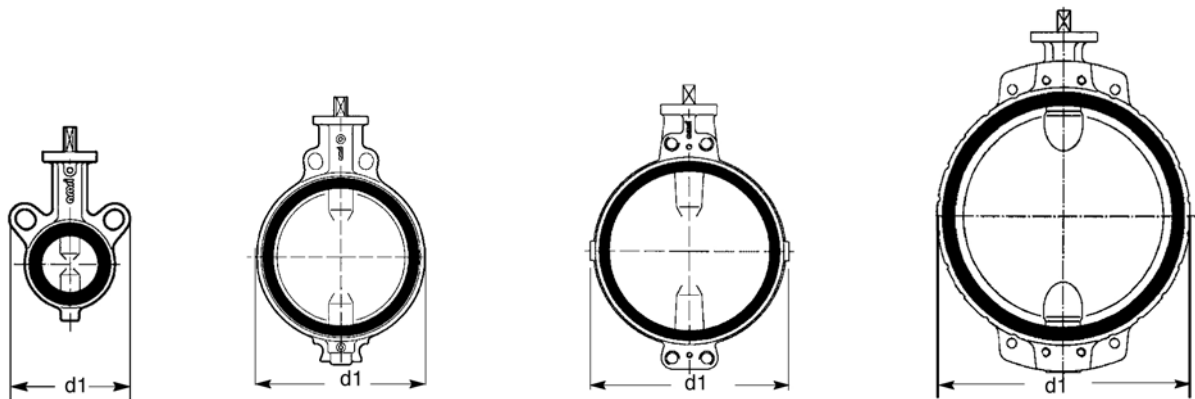


Dead-end service



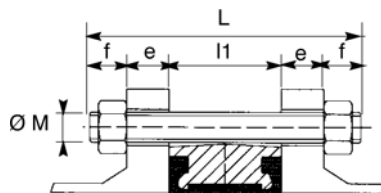
Bolting and weights

Wafer-type body - T1



The drawings do not indicate the exact product design
(number of tapped lugs/through-holes)

N.B.: Bolting is not included in our standard scope of supply.



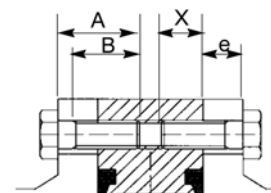
Length of tie rod $L = l1 + 2e + 2f$

L: minimum length of tie rods

l1: face-to-face length of valve

e: flange thickness (customer-specific)

f: thickness of nut + standardised overhang of tie rod



Bolt length at stem passage

$$A = e + X$$

A: max. bolt length

X: max. thread engagement depth

e: flange thickness (customer-specific)

B: min. thread length > A-e

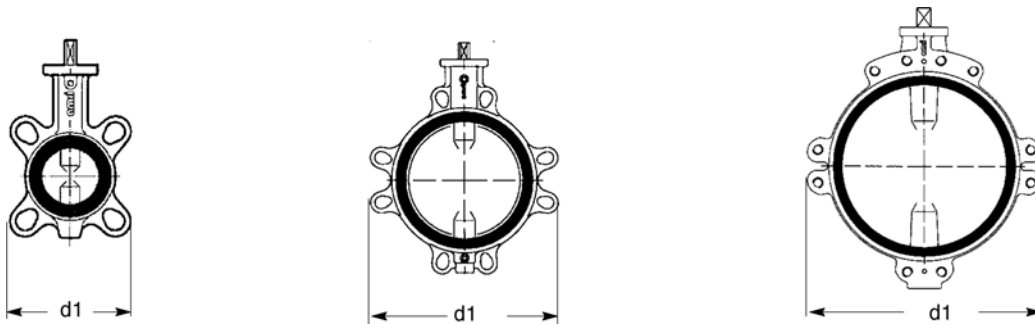
Wafer-type body - T1

DN	NPS	I1	d1	EN 1092-1 PN 10					EN 1092-1 PN 16					Weight [kg]
				Ø M	Tie rod*		Bolt		Ø M	Tie rod*		Bolt		
					f	Qty.	X	Qty. **		f	Qty.	X	Qty. **	
40	1½	33	108	M16	20	4	-	-	M16	20	4	-	-	1,1
50	2	43	118	M16	20	4	-	-	M16	20	4	-	-	1,3
65	2½	46	133	M16	20	4/8	-	-	M16	20	4/8	-	-	1,9
80	3	46	138	M16	20	8	-	-	M16	20	8	-	-	2,5
100	4	52	144	M16	20	8	-	-	M16	20	8	-	-	3,9
125	5	56	174	M16	20	8	-	-	M16	20	8	-	-	4,7
150	6	56	198	M20	24	8	-	-	M20	24	8	-	-	6,9
200	8	60	252	M20	24	8	-	-	M20	24	12	-	-	10,5
250	10	68	310	M20	24	12	-	-	M24	29	12	-	-	16,4
300	12	78	362	M20	24	12	-	-	M24	29	12	-	-	30
350	14	78	433	M20	24	16	-	-	M24	29	16	-	-	50
400	16	102	490	M24	29	16	-	-	M27	32	16	-	-	72
450	18	114	546	M24	29	16	24	4	M27	32	16	27	4	96
500	20	127	600	M24	29	20	-	-	M30	35	20	-	-	130
550	22	154	645	●	●	●	●	●	●	●	●	●	●	-
600	24	154	714	M27	32	20	-	4	M33	38	20	-	-	190
650	26	165	745	●	●	●	●	●	●	●	●	●	●	-
700	28	165	795	M27	32	20	30	4	M33	38	20	25	4	315
750	30	190	853	●	●	●	●	●	●	●	●	●	●	-
800	32	190	903	M30	35	20	33	4	M36	42	20	36	4	475
900	36	203	1111	M30	35	24	33	4	M36	42	24	36	4	545
1000	40	216	1118	M33	38	24	36	4	M39	45	24	29	4	670

DN	NPS	I1	d1	ASME B16.5 Class 150 *** ASME B16.1 Class 125 *** MSS SP 44 Class 150 *** ASME B16.47 Class 150 Series A ***					JIS B2220, B2238, B2239 10K					Weight
				UNC	Tie rod*		Bolt		Ø M	Tie rod*		Bolt		[kg]
					f	Qty.	X	Qty. **		f	Qty.	X	Qty. **	
40	1½	33	108	1/2"	17	4	-	-	M16	20	4	-	-	1,1
50	2	43	118	5/8"	20	4	-	-	M16	20	4	-	-	1,3
65	2½	46	133	5/8"	20	4	-	-	M16	20	4	-	-	1,9
80	3	46	138	5/8"	20	4	-	-	M16	20	8	-	-	2,5
100	4	52	144	5/8"	20	8	-	-	M16	20	8	-	-	3,9
125	5	56	174	3/4"	24	8	-	-	M20	24	8	-	-	4,7
150	6	56	198	3/4"	24	8	-	-	M20	24	8	-	-	6,9
200	8	60	252	3/4"	24	8	-	-	M20	24	12	-	-	10,5
250	10	68	310	7/8"	29	12	-	-	M22	26	12	-	-	16,4
300	12	78	362	7/8"	29	12	-	-	M22	26	16	-	-	30
350	14	78	433	1"	32	12	-	-	M22	26	16	-	-	50
400	16	102	490	1"	32	16	-	-	M24	29	16	-	-	72
450	18	114	546	1" 1/8	35	16	-	-	M24	29	16	24	4	96
500	20	127	600	1" 1/8	35	16	30	4	M24	29	20	-	-	130
550	22	154	645	1" 1/4	38	16	33	4	M30	35	16	30	4	160
600	24	154	714	1" 1/4	38	20	-	-	M30	35	20	30	4	190
650	26	165	745	1" 1/4	38	20	25	4	M30	35	20	37	4	270
700	28	165	795	1" 1/4	38	24	25	4	M30	45	20	34	4	315
750	30	190	853	1" 1/4	38	24	33	4	M30	35	20	37	4	380
800	32	190	903	1" 1/2	45	24	29	4	M30	35	20	37	4	475
900	36	203	1111	1" 1/2	45	28	29	4	M30	35	24	37	4	545
1000	40	216	1118	1" 1/2	45	32	35	4	M36	42	24	37	4	670

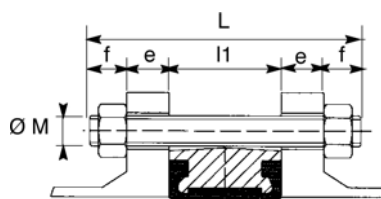
- * Quantity of nuts = Quantity of tie rods x 2
 ** Quantity of bolts x 2
 *** DN's concerned, see connection standards
 • Non-standardised connection

Semi-lug type body - T2



The drawings do not indicate the exact product design
(number of tapped lugs/through-holes)

N.B.: Bolting is not included in our standard scope of supply.



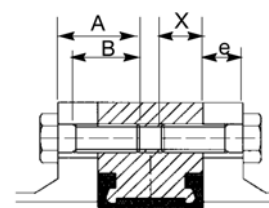
Length of tie rod $L = l1 + 2e + 2f$

L: minimum length of tie rods

l1: face-to-face length of valve

e: flange thickness (customer-specific)

f: thickness of nut + standardised overhang of tie rod



Bolt length at stem passage

$A = e + X$

A: max. bolt length

X: max. thread engagement depth

e: flange thickness (customer-specific)

B: thread length > A-e

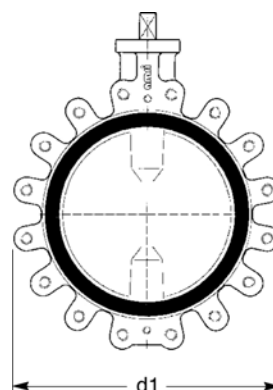
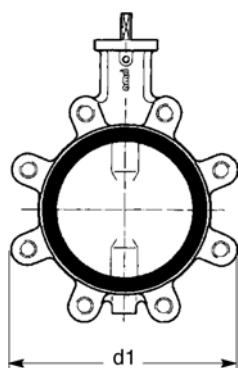
Semi-lug body - T2

DN	NPS	I1	d1	EN 1092-1 PN 10					EN 1092-1 PN 16					Weight
				Ø M	Tie rod*		Bolt		Ø M	Tie rod*		Bolt		[kg]
					f	Qty.	X	Qty. **		f	Qty.	X	Qty. **	
40	1½	33	108	M16	20	4	-	-	M16	20	4	-	-	1,1
50	2	43	118	M16	20	4	-	-	M16	20	4	-	-	1,3
65	2½	46	132	M16	20	4/8	-	-	M16	20	4/8	-	-	1,9
80	3	46	138	M16	20	8	-	-	M16	20	8	-	-	2,5
100	4	52	150	M16	20	8	-	-	M16	20	8	-	-	3,9
125	5	56	234	M16	20	8	-	-	M16	20	8	-	-	4,7
150	6	56	260	M20	24	8	-	-	M20	24	8	-	-	6,9
200	8	60	322	M20	24	8	-	-	M20	24	12	-	-	10,5
250	10	68	394	M20	24	12	-	-	M24	29	12	-	-	16,4
300	12	78	462	M20	24	12	-	-	M24	29	12	-	-	30
350	14	78	538	M20	24	10	20	6	M24	29	10	24	6	60
400	16	102	604	M24	29	10	24	6	M27	32	10	27	6	80
450	18	114	656	M24	29	14	24	6	M27	32	14	27	6	110
500	20	127	716	M24	29	12	24	8	M30	35	12	30	8	145
550	22	154	804	•	•	•	•	•	•	•	•	•	•	•
600	24	154	836	M27	32	10	27	10	M33	38	10	33	10	220

DN	NPS	I1	d1	ASME B16.5 Class 150 *** ASME B16.1 Class 125 *** MSS SP 44 Class 150 *** ASME B16.47 Class 150 Series A ***					JIS B2220, B2238, B2239 10K					Weight
				UNC	Tie rod*		Bolt		Ø M	Tie rod*		Bolt		
					f	Qty.	X	Qty. **		f	Qty.	X	Qty. **	[kg]
40	1½	33	108	1/2"	17	4	-	-	M16	20	4	-	-	1,1
50	2	43	118	5/8"	20	4	-	-	M16	20	4	-	-	1,3
65	2½	46	132	5/8"	20	4	-	-	M16	20	4	-	-	1,9
80	3	46	138	5/8"	20	4	-	-	M16	20	8	-	-	2,5
100	4	52	150	5/8"	20	8	-	-	M16	20	8	-	-	3,9
125	5	56	234	3/4"	24	8	-	-	M20	24	8	-	-	4,7
150	6	56	260	3/4"	24	8	-	-	M20	24	8	-	-	6,9
200	8	60	322	3/4"	24	8	-	-	M20	24	12	-	-	10,5
250	10	68	394	7/8"	29	12	-	-	M22	26	12	-	-	16,4
300	12	78	462	7/8"	29	12	-	-	M22	26	16	-	-	30
350	14	78	538	1"	32	6	27	6	M22	26	10	22	6	60
400	16	102	604	1"	32	10	27	6	M24	29	10	24	6	80
450	18	114	656	1" 1/8	35	10	30	6	M24	29	12	24	6	110
500	20	127	716	1" 1/8	35	12	30	8	M24	29	12	24	8	145
550	22	154	804	1" 1/4	38	12	32	8	M24	35	12	30	8	180
600	24	154	836	1" 1/4	38	10	32	10	M30	35	14	30	10	220

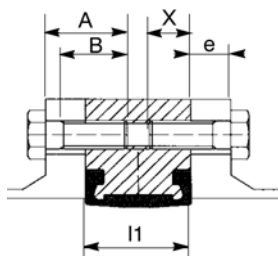
- * Quantity of nuts = Quantity of tie rods x 2
- ** Quantity of bolts x 2
- *** DN's concerned, see connection standards
- Non-standardised connection

Full-lug body with flat faces -T3



The drawings do not indicate the exact product design (number of lugs).

N.B.: Bolting is not included in our standard scope of supply.



Max. bolt length

$$A = e + X$$

A: max. bolt length

X: max. thread engagement depth

e: flange thickness (customer-specific)

B: min. thread length > A-e

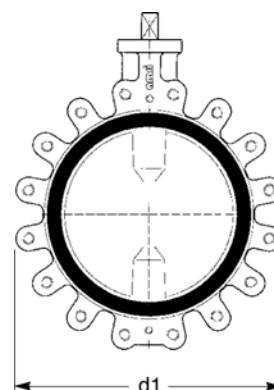
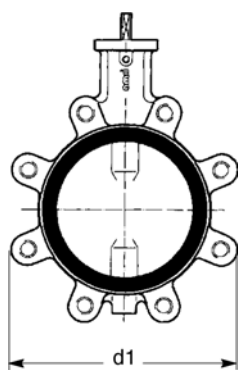
l1: face-to-face length of valve

Full-lug body with flat faces -T3

DN	NPS	I1	d1	EN 1092-1 PN 10			EN 1092-1 PN 16			ASME B16.5 Class 150 ASME B16.1 Class 125 MSS SP 44 Class 150 ASME B16.47 Class 150 Series A **			JIS B2220, B2238, B2239 10K			Weight [kg]
				Ø M	Bolt		Ø M	Bolt		UNC	Bolt		Ø M	Bolt		
					X	Qty.*		X	Qty. *		X	Qty. *		X	Qty. *	
40	1½	33	108	M16	14	4	M16	14	4	1/2"	14	4	M16	14	4	2
50	2	43	120	M16	18	4	M16	18	4	5/8"	18	4	M16	18	4	2,5
65	2½	46	134	M16	20	4/8	M16	20	4/8	5/8"	20	4	M16	20	4	3
80	3	46	140	-	-	-	-	-	-	5/8"	20	4	•	•	•	4
80	3	46	178	M16	20	8	M16	20	8	•	•	•	M16	20	8	4,5
100	4	52	210	M16	22	8	M16	22	8	5/8"	22	8	M16	22	8	5,5
125	5	56	236	M16	22	8	M16	22	8	3/4"	23	8	M20	23	8	9
150	6	56	260	M20	26	8	M20	26	8	3/4"	26	8	M20	26	8	11
200	8	60	312	M20	26	8	-	-	-	3/4"	26	8	•	•	•	24
200	8	60	322	-	-	-	M20	26	12	•	•	•	M20	26	12	25
250	10	68	396	M20	26	12	M24	29	12	7/8"	28	12	M22	28	12	39
300	12	78	466	M20	26	12	M24	30	12	7/8"	28	12	•	•	•	46
350	14	78	510	-	-	-	-	-	-	1"	30	12	•	•	•	62
350	14	78	530	M20	26	16	M24	30	16	•	•	•	M22	28	16	70
400	16	102	598	M24	31	16	M27	34	16	1"	34	16	M24	31	16	101
450	18	114	622	•	•	•	•	•	•	1"1/8	37	16	•	•	•	122
450	18	114	654	M24	31	20	M27	34	20	•	•	•	M27	34	20	139
500	20	127	708	M24	24	8	M30	30	8	1"1/8	37	20	M27	34	20	145
550	22	154	774	•	•	•	•	•	•	1"1/4	39	20	M27	34	20	179
600	24	154	822	M27	27	10	M33	33	10	1"1/4	42	20	•	•	•	233
600	24	154	830	•	•	•	•	•	•	•	•	•	M30	32	24	233

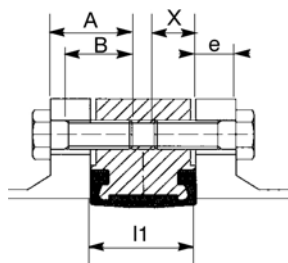
- * Quantity of bolts x 2
- ** DN's concerned, see connection standards
- Non-standardised connection

Full-lug body with raised faces -T4



The drawings do not indicate the exact product design (number of lugs).

N.B.: Bolting is not included in our standard scope of supply.



Max. bolt length

$$A = e + X$$

A: max. bolt length

X: max. thread engagement depth

e: flange thickness (customer-specific)

B: min. thread length > A-e

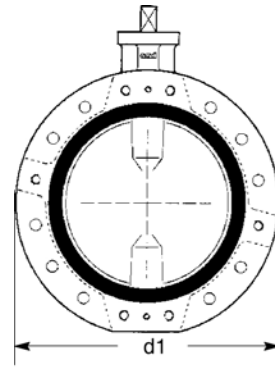
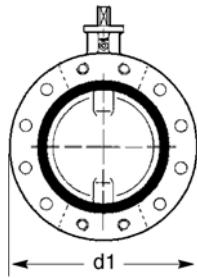
Full-lug body with raised faces -T4

DN	NPS	I1	d1	EN 1092-1 PN 10			EN 1092-1 PN 16			ASME B16.5 Class 150 ASME B16.1 Class 125 MSS SP 44 Class 150 ASME B16.47 Class 150 Series A **			JIS B2220, B2238, B2239 10K			Weight
				Ø M	Bolt		Ø M	Bolt		UNC	Bolt		Ø M	Bolt		
					X	Qty. *		X	Qty. *		X	Qty. *		X	Qty. *	
40	1½	33	108	M16	14	4	M16	14	4	1/2"	14	4	M16	14	4	2
50	2	43	120	M16	18	4	M16	18	4	5/8"	18	4	M16	18	4	2,5
65	2½	46	134	M16	-	-	M16	20	4	5/8"	20	4	M16	20	4	3
80 ⁷⁾	3	46	140	-	-	-	-	-	-	5/8"	20	4	-	-	-	4
80 ⁸⁾	3	46	178	M16	20	8	M16	20	8	-	-	-	M16	20	8	4,5
100	4	52	210	M16	22	8	M16	22	8	5/8"	22	8	M16	22	8	5,5
125	5	56	236	M16	22	8	M16	22	8	3/4"	23	8	M20	23	8	9
150	6	56	260	M20	26	8	M20	26	8	3/4"	26	8	M20	26	8	11
200 ⁹⁾	8	60	312	M20	26	8	-	-	-	3/4"	26	8	-	-	-	24
200 ¹⁰⁾	8	60	322	-	-	-	M20	26	12	-	-	-	M20	26	12	25
250	10	68	396	M20	26	12	M24	29	12	7/8"	28	12	M22	28	12	39
300	12	78	466	M20	26	12	M24	30	12	7/8"	28	12	●	●	●	46
350 ⁷⁾	14	78	510	-	-	-	-	-	-	1"	30	12	-	-	-	62
350 ⁸⁾	14	78	530	M20	26	16	M24	30	16	●	●	●	M22	28	16	70
400	16	102	598	M24	31	16	M27	34	16	1"	34	16	M24	31	16	101
450 ⁷⁾	18	114	622	●	●	●	●	●	●	1 1/8"	37	16	●	●	●	122
450 ⁸⁾	18	114	654	M24	31	20	M27	34	20	●	●	●	M27	34	20	139
500	20	127	708	M24	24	8	M30	30	8	1 1/8"	37	20	M27	34	20	145
550	22	154	774	●	●	●	●	●	●	1 1/4"	39	20	M27	34	20	179
600 ¹¹⁾	24	154	822	M27	27	10	M33	33	10	1 1/4"	42	20	-	-	-	233
600 ¹²⁾	24	154	830	-	-	-	-	-	-	-	-	-	M30	32	24	233

- * Quantity of bolts x 2
 ** DN's concerned, see connection standards
 ● Non-standardised connection

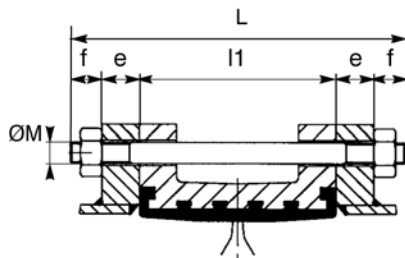
- 7) Installed between flanges EN 1092 PN 6, ASME B16.5 Cl.150, JIS B2220, B2238 and B2239-5K, BS 10 Tables D and E and AS 2129 Tables D and E
 8) Installed between flanges EN 1092 PN 10, PN 16 and JIS B2220, B2238 and B2239 - 10K and 16K
 9) Installed between flanges EN 1092 PN 6 und 10, ASME B16.5 Cl.150, AWWA C 207 B, D and E, BS 10 Tables D and E, AS 2129 Tables D and E and JIS B2220, B2238 and B2239-5K
 10) Installed between flanges EN 1092 PN 16 and JIS B2220, B2238 and B2239 -10K
 11) Installed between flanges EN 1092 PN 10, PN 16, ASME B16.5 Cl.150 and JIS B2220, B2238 and B2239-5K
 12) Installed between flanges JIS B2220, B2238 and B2239-10K

Flanged body with flat faces - T5 - DN 150-600



The drawings do not indicate the exact product design
(number of tapped lugs/through-holes)

N.B.: Bolting is not included in our standard scope
of supply.



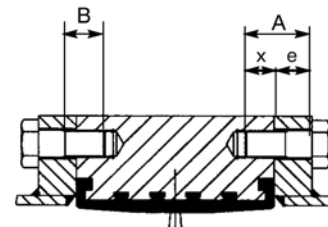
Length of tie rod $L = l1 + 2e + 2f$

L: minimum length of tie rods

l1: face-to-face length of valve

e: flange thickness (customer-specific)

f: thickness of nut + standardised overhang of tie
rod



Bolt length at stem passage

$$A = e + X$$

A: max. bolt length

X: max. thread engagement depth

e: flange thickness (customer-specific)

B: min. thread length > A-e

Flanged body with flat faces - T5 - DN 150-600

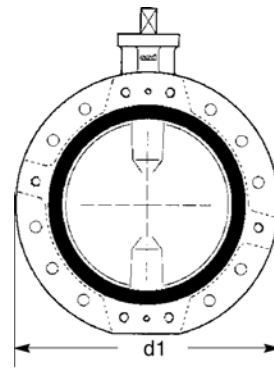
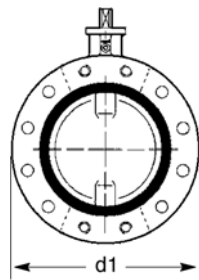
DN	NPS	I1	d1	EN 1092-1 PN 10					EN 1092-1 PN 16					Weight
				Ø M	Tie rod*		Bolt		Ø M	Tie rod*		Bolt		
					f	Qty.	X	Qty. **		f	Qty.	X	Qty. **	[kg]
150	6	56	260	M20	24	4	20	4	M20	24	4	16	4	11
200	8	60	322	M20	24	4	20	4	M20	24	8	16	4	23
250	10	68	394	M20	24	8	20	4	M24	29	8	24	4	40
300	12	78	462	M20	24	6	20	6	M24	29	6	24	6	60
350	14	78	538	M20	24	10	20	6	M24	29	10	24	6	80
400	16	102	604	M24	29	10	24	6	M27	32	10	27	6	105
450	18	114	656	M24	29	14	24	6	M27	32	14	27	6	130
500	20	127	716	M24	29	12	24	8	M30	35	12	30	8	180
550	22	154	804	•	•	•	•	•	•	•	•	•	•	•
600	24	154	836	M27	32	10	27	10	M33	38	10	33	10	260

DN	NPS	I1	d1	ASME B16.5 Class 150 ASME B16.1 Class 125 MSS SP 44 Class 150 ASME B16.47 Class 150 Series A ***					JIS B2220, B2238, B2239 10K					Weight [kg]
				UNC	Tie rod*		Bolt		Ø M	Tie rod*		Bolt		
					f	Qty.	X	Qty. **		f	Qty.	X	Qty. **	
150	6	56	260	3/4"	24	4	20	4	M20	24	4	20	4	11
200	8	60	322	3/4"	24	4	20	4	M20	24	8	20	4	23
250	10	68	394	7/8"	29	8	24	4	M22	26	8	22	4	40
300	12	78	462	7/8"	29	6	24	6	M22	26	10	22	6	60
350	14	78	538	1"	32	6	27	6	M22	26	10	22	6	80
400	16	102	604	1"	32	10	27	6	M24	29	10	24	6	105
450	18	114	656	1 1/8	35	10	30	6	M24	29	12	24	6	130
500	20	127	716	1 1/8	35	12	30	8	M24	29	12	24	8	180
550	22	154	804	1 1/4	38	12	32	8	M30	35	12	30	8	230
600	24	154	836	1 1/4	38	10	32	10	M30	35	14	30	10	260

- * Quantity of nuts = Quantity of tie rods x 2
- ** Quantity of bolts x 2
- *** DN's concerned, see connection standards
- Non-standardised connection

Flanged body with flat faces - T5 - DN 650-1000

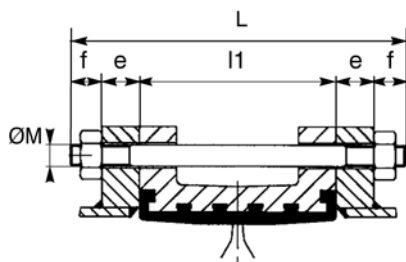
Installation between flanges permitted up to a max. differential pressure of 10 bar



The drawings do not indicate the exact product design (number of tapped holes/through-holes).

N.B.: Bolting is not included in our standard scope of supply.

Installation between flanges



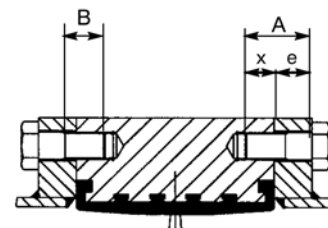
$$\text{Length of tie rod } L = l1 + 2e + 2f$$

L: minimum length of tie rods

l1: face-to-face length of valve

e: flange thickness (customer-specific)

f: thickness of nut + standardised overhang of tie rod



Bolt length at stem passage

$$A = e + X$$

A: max. bolt length

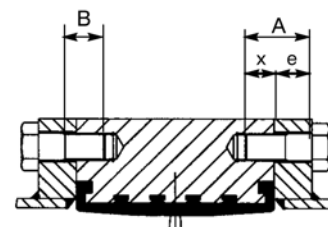
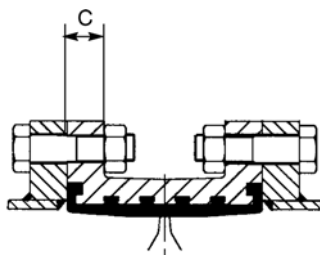
X: max. thread engagement depth

e: flange thickness (customer-specific)

B: min. thread length > A-e

C: flange thickness

Flanged installation



Information on fasteners available on request

Flanged body with flat faces - T5 - DN 650-1000

DN	NPS	I1	Ø d1	C	EN 1092-1 PN 10					EN 1092-1 PN 16					Weight
					Ø M	Tie rod*		Bolt		Ø M	Tie rod*		Bolt		
						f	Qty	X	Qty**		f	Qty	X	Qty**	[kg]
650	26	165	835 ¹³⁾	31	●	●	●	●	●	●	●	●	●	●	-
650	26	165	869 ¹⁴⁾	31	●	●	●	●	●	●	●	●	●	●	-
700	28	165	895 ¹³⁾	32,5	M27	32	20	27	4	-	-	-	-	-	330
700	28	165	925 ¹⁵⁾	32,5	-	-	-	-	-	M33	38	20	25	4	350
750	30	190	965 ¹³⁾	33,5	-	-	-	-	-	-	-	-	-	-	405
750	30	190	985 ¹⁵⁾	33,5	-	-	-	-	-	-	-	-	-	-	425
800	32	190	1015 ¹³⁾	35	M30	35	20	30	4	-	-	-	-	-	505
800	32	190	1075 ¹⁵⁾	35	-	-	-	-	-	M36	42	20	36	4	525
900	36	203	1115 ¹³⁾	37,5	M30	35	24	30	4	-	-	-	-	-	590
900	36	203	1160 ¹⁵⁾	37,5	-	-	-	-	-	M36	42	24	36	4	620
1000	40	216	1230 ¹³⁾	40	M33	38	24	33	4	-	-	-	-	-	740
1000	40	216	1275 ¹⁵⁾	40	-	-	-	-	-	M39	45	24	29	4	780

DN	NPS	I1	Ø d1	C	ASME B16.5 Class 150 ASME B16.1 Class 125 MSS SP 44 Class 150 ASME B16.47 Class 150 Series A ***					JIS B2220, B2238, B2239 10K					Weigh t
					UNC	Tie rod*		Bolt		Ø M	Tie rod*		Bolt		
						f	Qty	X	Qty**		f	Qty	X	Qty**	[kg]
650	26	165	835 ¹³⁾	31	-	-	-	-	-	M30	35	20	37	4	285
650	26	165	869 ¹⁴⁾	31	1"¼	38	20	25	4	-	-	-	-	-	305
700	28	165	895 ¹³⁾	32,5	-	-	-	-	-	M30	35	20	37	4	330
700	28	165	925 ¹⁵⁾	32,5	1"¼	38	24	25	4	-	-	-	-	-	350
750	30	190	965 ¹³⁾	33,5	-	-	-	-	-	M30	35	20	37	4	405
750	30	190	985 ¹⁵⁾	33,5	1"¼	38	24	33	4	-	-	-	-	-	425
800	32	190	1015 ¹³⁾	35	-	-	-	-	-	M30	35	24	37	4	505
800	32	190	1075 ¹⁵⁾	35	1"½	45	24	29	4	-	-	-	-	-	525
900	36	203	1115 ¹³⁾	37,5	-	-	-	-	-	M30	35	24	37	4	590
900	36	203	1160 ¹⁵⁾	37,5	1"½	45	28	29	4	-	-	-	-	-	620
1000	40	216	1230 ¹³⁾	40	-	-	-	-	-	M36	42	24	37	4	740
1000	40	216	1275 ¹⁵⁾	40	1"½	45	32	35	4	-	-	-	-	-	780

- * Quantity of nuts = Quantity of tie rods x 2
- ** Quantity of bolts x 2
- *** DN's concerned, see connection standards
- Non-standardised connection

¹³⁾ Installed between flanges EN 1092 PN 6, 10, JIS B2220, B2238 and B2239-5K and 10K

¹⁴⁾ Installed between flanges EN 1092 PN 16, MSS SP 44 Cl. 150, ASME B16.1 Cl.125

¹⁵⁾ Installed between flanges EN 1092 PN 16, MSS SP 44 Cl. 150, ASME B16.1 Cl.125, AS 2129 Cl.D and E and BS 10 Cl. D and E

Flange dimensions

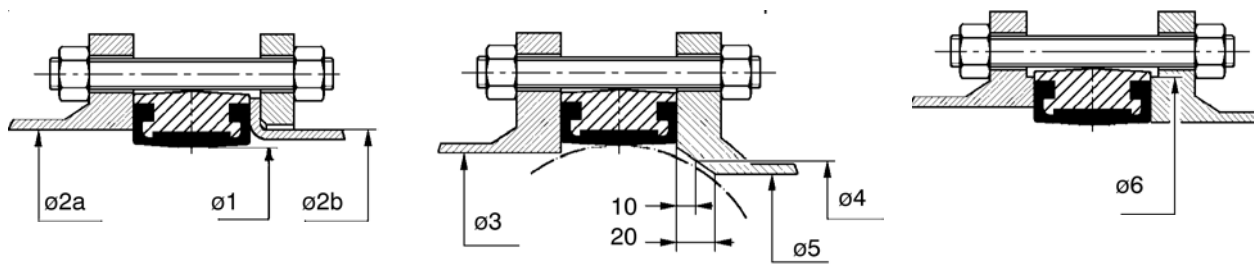
The valves can be installed between all commercial mating flanges and line connections without requiring any flange gaskets.

The elastomer liner alone provides a tight seal at the flange connections.

The drawings below show a valve of body type T1 installed between flanges.

Please verify that the connection meets the requirements given below.

The flange dimensions indicated in the table apply to all body types.



Ø2a and Ø3: flange face diameter

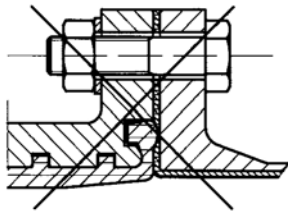
Ø2b: pipe OD with loose plate flange to DIN 2642 and NF E 29-251.

Dimensions

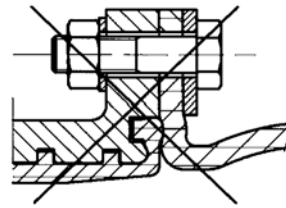
DN	NPS	Optimum ø	Max. permissible ø		Min. permissible ø on flange face	Min. ø at a distance of 10 mm from the flange face	Min. ø at a distance of 20 mm from the flange face	Min. permissible Ø of flange shoulder (flange with raised face)
		Ø1	Ø2a	Ø2b	Ø3	Ø4	Ø5	Ø6
40	1½	40	54	49	32	-	-	77
50	2	49	63	61	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 ¹⁶⁾	169	144	134	120	196
200	8	196	222 ¹⁶⁾	220	196	189	178	250
250	10	249	276,5 ¹⁶⁾	273	249	243	234	306
300	12	298	327,5 ¹⁶⁾	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

¹⁶⁾ Verify that body is correctly centred between the tie rods

Coated flange



Flange with rubber coating



Expansion bellows

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

Installation between flanges made of polyethylene

- Installation between flanges with flat faces is permitted.
- Installation between flanges with grooved faces is not permitted.



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