

## Centered disc butterfly valves with AMRING® elastomer liner

1 1/2 to 40 inch  
232 psig Rated (16 Bar)

Design in accordance with EN 593 and ISO 10631

### Applications

- Flow shut-off or regulation functions in all sectors of industry and energy.

### Working conditions

- Temperature: from -10° C minimum up to +200° C maximum. The working temperature depends on the media and the nature of elastomer used.
- Allowable pressure (PS): 16 bar at room temperature.

### Materials

See page 2.

### Design

- Wafer type body (Type 1): DN 40 to 1000
- Semi lug type body (Type 2): DN 40 to 600
- Full-lug type body with raised faces (Type 4): DN 40 to 600
- Flanged body with flat faces (Type 5): DN 150 to 1000
- Possible downstream dismantling and end of line for bodies Types 2, 4 and 5.
- Face-to-face in accordance with: ISO 5752 series 20, EN 558-1 series 20.
- Connection standard defined page 9.
- Mounting plate meeting the ISO 5211 standards.
- Marking in accordance with EN 19.
- Valves perfectly tight shut-off (no visible leakage at the naked eye) in either flow direction, in accordance with the following standards:  
EN 12266-1/leak level A and ISO 5208 category A.

- Body coated with polyurethane paint, thickness 80 µm, colour blue ref. RAL 5002.
- Discs: spheroidal graphite cast iron coated with epoxy paint, thickness 80 µm, colour brown ref. RAL 8012.
- The valves meet the safety requirements of the pressure Equipments Directive 97/23/EC (PED) appendix I for fluids of the groups 1 and 2.

### Standard variants

- Pneumatic actuator ACTAIR / DYNACTAIR
- Electric actuator ACTELEC
- Hydraulic actuator ACTO
- Limit switches AMTROBOX
- Positioner AMTRONIC / SMARTRONIC
- ATEX version in accordance with 94/9/EC directive

### Remarks

- Actuator selection 8445.11-10
- Operating instructions 8449.8-10

### Data to be supplied when ordering

- ISORIA 16 series valve in accordance with type series booklet 8445.1/8 - 10.
- Size.
- Working conditions:
  - nature of fluid,
  - Pressure,
  - Flow,
  - Temperature.
- Connection.
- Actuation.



**Materials**

Body		KSB code
Type 1 : Grey cast iron JL 1040	DN 40 to 600	3t
Spheroidal graphite cast iron JS 1030 / ASTM A536 gr. 60.40.18	DN 650 to 1000	3g
Type 2 : Spheroidal graphite cast iron JS 1030	DN 40 to 600	3g
Type 4 : Spheroidal graphite cast iron JS 1030	DN 40 to 600	3g
Type 5 : Spheroidal graphite cast iron JS 1030 / ASTM A536 gr. 60.40.18	DN 150 to 1000	3g
Shafts		KSB code
Stainless steel 1.4029 (13 % Cr)	DN 40 to 600	6k
Stainless steel 1.4028 (13 % Cr)	DN 650 to 1000	6k
Stainless steel 1.4057 (17 % Cr)	DN 40 to 600	6e
Disc		KSB code
Spheroidal graphite cast iron JS 1030	DN 40 to 600	3g
Spheroidal graphite cast iron JS 1030 / ASTM A536 gr. 60.40.18	DN 650 to 1000	3g
Stainless steel 1.4401 / 1.4408 (18-12):	DN 40 to 200	6
Stainless steel 1.4408 / ASTM A351 gr. CF8M	DN 250 to 1000	6
Stainless steel 1.4401, polished	DN 650 to 1000	6i
Stainless steel 1.4408 / ASTM A351 gr. CF8M (18-12), polished	DN 250 to 600	6i
Aluminium-bronze CC333G/C95800	DN 40 to 1000	2
AMRING® liner		KSB code
E.P.D.M		XA
E.P.D.M drinking water		XC
Heat E.P.D.M		XV
High content nitrile		K
HYPALON® chlorosulphoned polyethylene		Y

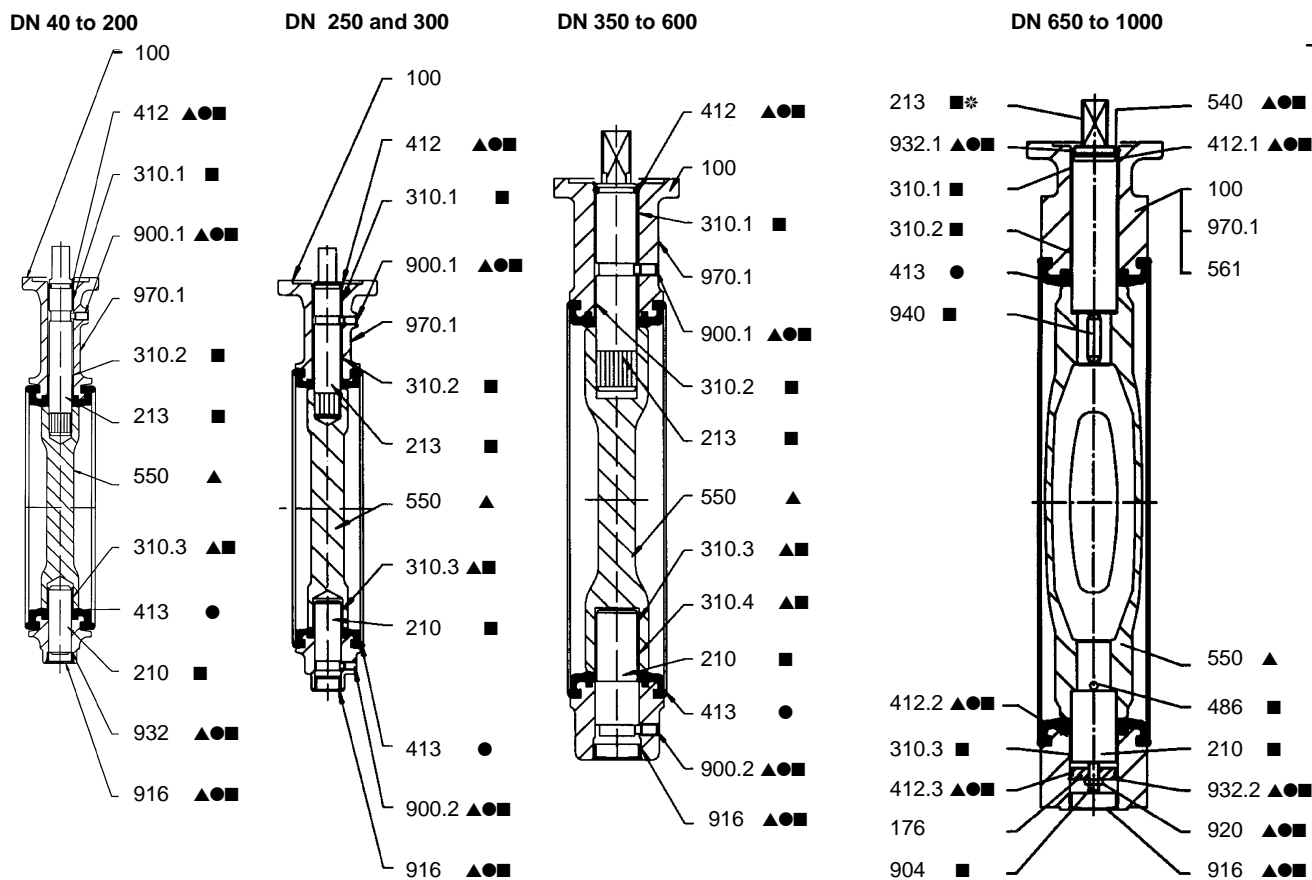
**Working pressure limits of AMRING® liners**

		Allowable pressure PS in bar – Standard liners	
DN	NPS	XA-XC-XV-K	Y
40 to 600	1 ½ to 20	16	16
650 to 1000	26 to 40		

**Vacuum limits**

DN	NPS	Liner mounting	Minimum pressure (in absolute bar)	Vacuum limits	
				XV	Other liners
40 to 150	1 ½ to 6	Without sticking (Standard)	$1,33 \cdot 10^{-5}$ ( $10^{-2}$ torr)	130° C	80° C
200 to 1000	8 to 40	Without sticking (Standard)	0,3 bar	130° C	80° C
		With sticking* (Option)	$1,33 \cdot 10^{-5}$ ( $10^{-2}$ torr)	80° C	80° C

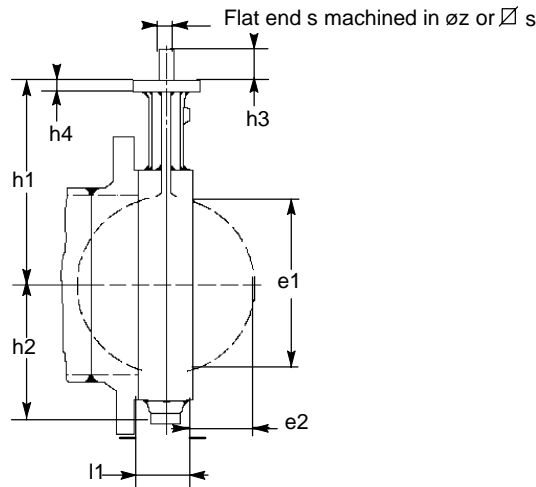
\*Nota: The maximum pressure allowed for sticked liners is 10 bar.

**Construction**


● Spare parts included in the liner kit ▲ Spare parts included in the disc kit ■ Spare parts in the shaft kit

Item	Designation	DN	Materials
100	Body	40 to 1000	Refer to materials paragraph page 2
176	Bottom	650 to 1000	Steel
210	Shaft	40 to 1000	Stainless steel
213	Operating shaft	40 to 1000	Stainless steel
310.1	Plain bearing	200 to 1000	PTFE filled on steel casing
310.2	Plain bearing	200 to 1000	PTFE filled on steel casing
310.3	Plain bearing	200 to 1000	PTFE filled on steel casing
310.4	Plain bearing	350 to 600	PTFE filled on steel casing
412	O-ring	40 to 1000	Nitrile
412.1	O-ring	650 to 1000	Nitrile
412.2	O-ring	650 to 1000	Nitrile
412.3	O-ring	650 to 1000	Nitrile
413	Liner	40 to 1000	In accordance with fluid
486	Ball	650 to 1000	Stainless steel
540	Split bush	650 to 1000	Acetal
550	Disc	40 to 1000	In accordance with fluid
561	Grooved nail	650 to 1000	Stainless steel
900.1	Anti blow-out screw	40 to 600	Stainless steel
900.2	Anti blow-out screw	250 to 600	Stainless steel
904	Adjusting screw	650 to 1000	Steel
916	Plug	40 to 1000	Polyethylene
920	Nut	650 to 1000	Steel
932	Self locking	40 to 200	Steel
932.1	Spring retaining ring	650 to 1000	Steel
932.2	Spring retaining ring	650 to 1000	Steel
940	Key	650 to 1000	Steel
970.1	Identity plate	40 to 600 650 to 1000	Polyester + adhesive Stainless steel

To order spare parts in the kit, it is necessary to valve codification mentioned on the identity plate.

**Dimensions**


mm

DN	NPS	Face to face l1	Mounting plate ISO 5211		Flat shaft end			Square shaft end		Disc clearance			
			h1	h2	n°	h4	s	$\varnothing z$	h3	$\varnothing s$	h3	e1	e2
40	1 1/2	33	105	51	F05	10	11	14	24			32	4
50	2	43	109	55	F05	10	11	14	24			33	4
65	2 1/2	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	24	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

**Hydraulic characteristics**

DN	NPS	Flow coefficient valve in fully open position		Zeta
		Kvo	Cvo	
40	1 ½	53	62	1,46
50	2	133	154	0,56
65	2 ½	240	280	0,49
80	3	410	475	0,39
100	4	655	760	0,37
125	5	900	1 044	0,48
150	6	1 800	2 090	0,25
200	8	3 550	4 120	0,20
250	10	7 350	8 453	0,12
300	12	9 100	10 465	0,16
350	14	8 060	9 269	0,37
400	16	10 500	12 075	0,37
450	18	13 300	15 295	0,37
500	20	17 400	20 010	0,33
550	22	21 000	24 150	0,33
600	24	25 000	28 750	0,33
650	26	37 700	43 730	0,20
700	28	47 500	55 100	0,17
750	30	51 500	59 740	0,19
800	32	63 500	73 660	0,16
900	36	84 700	98 250	0,15
1000	40	108 500	125 860	0,14

**Operating torques\***

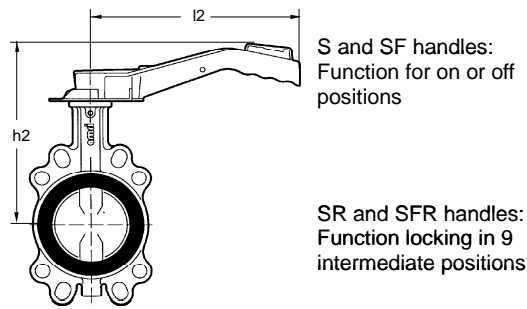
DN	NPS	Operating torques* for applications on lubricated medium (in Nm)
40	1 ½	20
50	2	30
65	2 ½	40
80	3	50
100	4	70
125	5	100
150	6	140
200	8	210
250	10	330
300	12	520
350	14	720
400	16	980
450	18	1 200
500	20	1 500
550	22	1 800
600	24	2 100
650	26	3 200
700	28	3 600
750	30	3 900
800	32	4 000
900	36	5 000
1000	40	6 000

\* The safety coefficient to define the adapted actuator is included in the torque value.

### Manual control

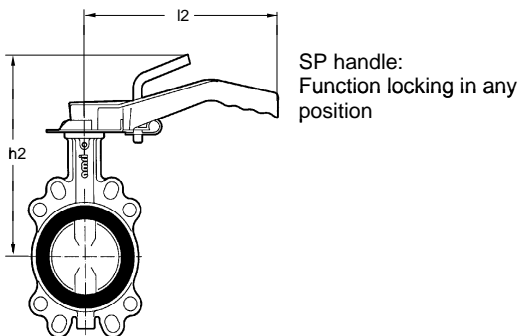
The actuator selection for lubricated medium proposed in the table below are defined for the maximum fluid velocity mentioned. According to the working conditions and the hydraulic characteristics, upper fluid velocities can be admitted, therefore other actuators selections can be proposed: please consult us.

#### S, SR, SF and SFR handles



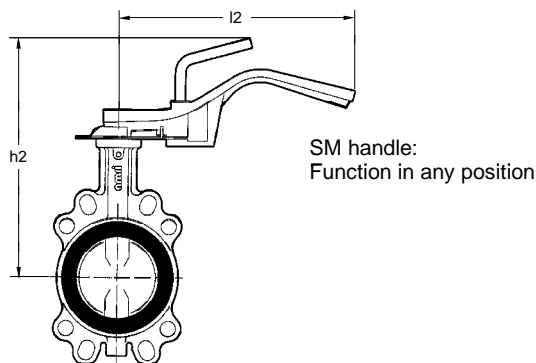
DN	NPS	Maxi. fluid velocity (m/s)	S + SR handles on lubricated medium			SF+ SFR handles on lubricated medium		
			l2 (mm)	h2 (mm)	Weight S/SR (kg)	l2 (mm)	h2 (mm)	Weight SF/SFR (kg)
40	1 1/2	3,0	180	160	0,5			
50	2			165				
65	2 1/2			191				
80	3 1/2			197				
40	1 1/2		260	180	0,6	260	180	1,4
50	2			185			185	
65	2 1/2			211			211	
80	3		330	217	0,7	330	217	1,8
100	4			248			248	
125	5			262			262	
150	6		279			279		

#### SP handle



DN	NPS	Maxi. fluid velocity (m/s)	SP handle on lubricated medium		
			l2 (mm)	h2 (mm)	Weight SP (kg)
40	1 1/2	3,0	260	205	0,7
50	2			210	
65	2 1/2			236	
80	3			242	
100	4		330	263	0,8
125	5		330	277	
150	6		330	294	

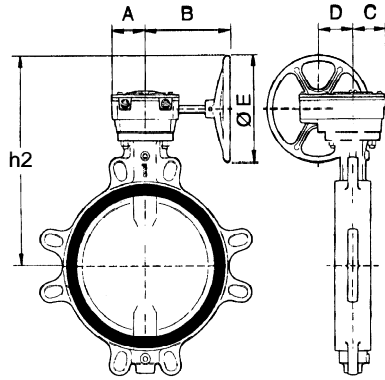
#### SM handle



DN	NPS	Maxi. fluid velocity (m/s)	SM handle on lubricated medium		
			l2 (mm)	h2 (mm)	Weight SM (kg)
40	1 1/2	3,0	260	215	1,3
50	2			220	
65	2 1/2			246	
80	3			252	
100	4		330	273	1,6
125	5			287	
150	6			304	
200	8		530	322	3,3
250	10		530*	355	

\* Important effort to be exerted, manual actuator recommended.

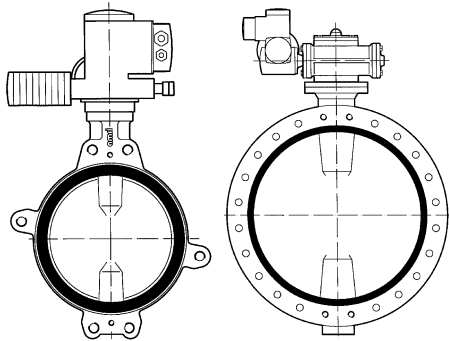
MR reducers



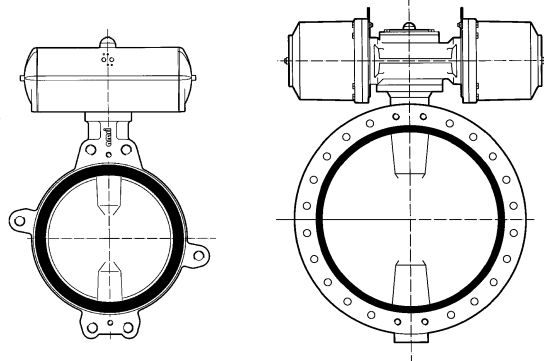
DN	NPS	Maxi. fluid velocity (m/s)	On lubricated medium							Weight MR (kg)	
			Actuator	A (mm)	B (mm)	C (mm)	D (mm)	Ø E (mm)	h2 (mm)		
40	1 1/2	3,0	MR 25	62	184	66	64	225	256	7,0	
50	2								261		
65	2 1/2								287		
80	3								293		
100	4								314		
125	5								328		
150	6								345		
200	8								373		
250	10								418		10,0
300	12								445		
350	14	2,5	MR 100	86	233	88	88	350	572	15,0	
400	16								617		
450	18								658		
500	20	2,0	MR 200	120	270	108	117	350	688	24,0	
550	22								723		
600	24								743		
650	26	2,5	MR 400	115	303	229	300	350	805	58,0	
700	28								830		
750	30								860		
800	32								885		
900	36								107		
1000	40	2,0	MR 600	271	511	155	140	600	1144	105,0	

Standard variants

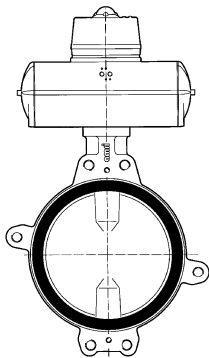
Electric actuator ACTELEC



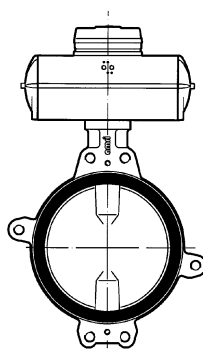
Pneumatic actuator ACTAIR / DYNACTAIR



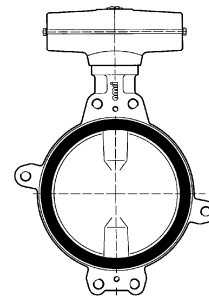
Positioner  
AMTRONIC / SMARTRONIC



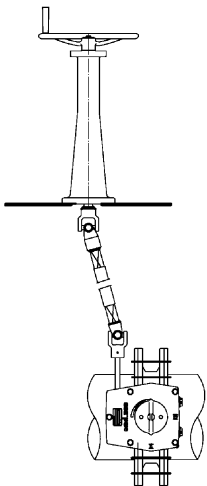
Limit switches  
AMTROBOX



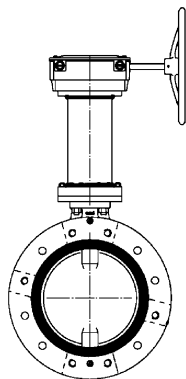
Hydraulic actuator ACTO



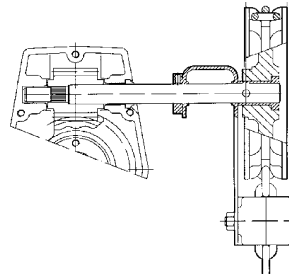
Deck stand



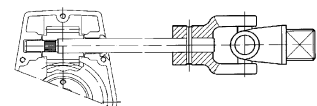
Valve neck extension



Chain wheel



Cardan joint





## Connections

The ISORIA 16 valves can be fitted between all the connections defined hereafter (others connections on request).

- EN 1092 PN 10 and 16
- ASME B16-1 class125 et B16-5 class150
- MSS SP 44 cl.150
- AWWA C207 class B, D and E
- AS 2129 tables D and E
- JIS B2238 and B2239 5K, 10K, 16K and 20K
- BS 10 tables D and E

**Wafer type body - Type 1:** can be fitted between all the connections defined above

**Semi-lug type body - Type 2**

DN	NPS	Connection													
		EN 1092		ASME		MSS SP 44 cl. 150	JIS B2238-B2239				AWWA C 207 B, D and E	BS 10		AS 2129	
		PN 10	PN 16	B16.1 cl. 125	B 16.5 cl. 150		5 K	10 K	16 K	20 K		Table D	Table E	Table D	Table E
40	1 1/2	✓	✓	✓	✓		✓	✓	✓	✓		✓	✓	✓	✓
50	2	✓	✓	✓	✓		✓	✓	✓■	✓■		✓	✓	✓	✓
65	2 1/2	✓	✓	✓	✓		✓	✓	✓■	✓■		✓	✓	✓	✓
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	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

- Fitting allowed
- Downstream dismantling not allowed
- Connection not defined by this standard
- Insert a washer between the nut and the rib of the valve

## Full-lug body with raised faces - Type 4

DN	NPS	Connection													
		EN 1092		ASME		MSS SP 44 cl. 150	JIS B2238-B2239				AWWA C 207 B, D et E	BS 10		AS 2129	
		PN 10	PN 16	B16.1 cl. 125	B 16.5 cl. 150		5 K	10 K	16 K	20 K		Table D	Table E	Table D	Table E
40	1 1/2	✓	✓	✓	✓		✓	✓	✓	✓		✓	✓	✓	✓
50	2	✓	✓	✓	✓		✓	✓	-	-		✓	✓	✓	✓
65	2 1/2	✓	✓	✓	✓		✓	✓	-	-		✓	✓	✓	✓
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	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	-	-	-	-

- Fitting allowed
- Fitting not allowed
- Connection not defined by this standard

**Flanged body with flat faces - Type 5**

DN	NPS	Connection															
		EN 1092		ASME		MSS SP 44	JIS B2238-B2239				AWWA C 207	BS 10		AS 2129			
		PN 10	PN 16	B16.1 cl. 125	B 16.5 cl. 150	cl. 150	5 K	10 K	16 K	20 K	B, D and E	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	24					✓●	✓●	✓●	☎	-	✓●						
700	28	✓●	✓●			✓●	✓●	✓●	☎	-	✓●	✓●	✓●	✓●	✓●	✓●	✓●
750	30			✓●		✓●	✓●	✓●	☎	-	✓●	✓●	✓●	✓●	✓●	✓●	✓●
800	32	✓●	✓●			✓●	✓●	✓●	☎	-	✓●				✓●	✓●	✓●
900	36	✓●	✓●	✓●		✓●	■	✓●	-	-	✓●	✓●	✓●	✓●	✓●	✓●	✓●
1000	40	✓●	✓●			✓●	■	✓●	-	-	✓●	✓●	✓●	✓●	✓●	✓●	✓●

- Fitting allowed
- Fitting not allowed
- Downstream dismantling not allowed
- Flange fitting allowed
- Connection not defined by this standard
- Please consult us

**End of line and downstream dismantling**

Use as end of line and downstream dismantling of the standard valves at room temperature for DN and the differential pressure ( $\Delta PS$ ) defined hereafter:

Gas or liquids		Liquids*	
Hazardous**	Non hazardous**	Hazardous**	Non hazardous**
All sizes: not authorized	Sizes $\leq 350$ : $\Delta PS = 10$ bar maxi Greater sizes: on request	All sizes: $\Delta PS = 10$ bar maxi	All sizes: $\Delta PS = 10$ bar maxi

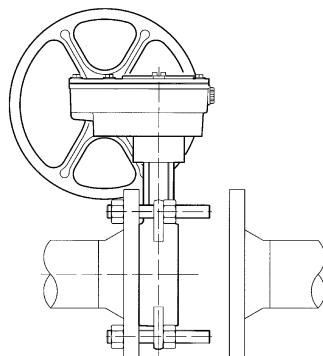
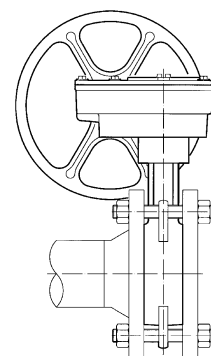
\* Liquids having a vapour pressure at the maximum allowable temperature of not more than 0,5 bar above atmospheric pressure 1013 mbar.

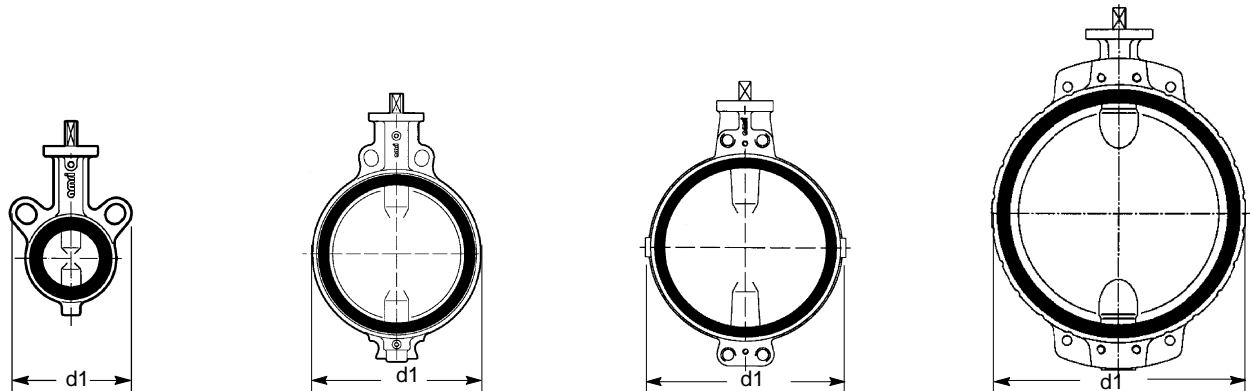
\*\* Fluids hazardous and not hazardous according to PED.

**NB:** A valve fitted at the end of a pipe with a blind flange downstream ins not to be considered as an end of pipe service.

**Downstream dismantling**

Dismantling phase: working successively on diametrically opposite tie-rods.

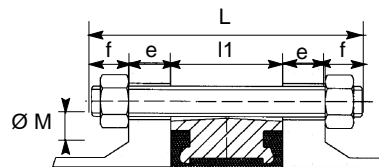

**End of line mounting**


**Bolting and weight for wafer type body - Type 1**


The drawings are not the correct representation concerning our manufacture (quantities for semi lug and plain holes)

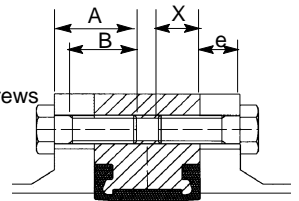
$$L = l1 + 2e + 2f$$

- L : Mini length of tie-rods
- l1 : Face to face of the valve
- e : Flange thickness (customer specification)
- f : Nut thickness + overlength of the tie-rod



$$A = e + X$$

- A : Maxi length of screws
- X : Maxi implantation of screws
- B : Threaded length > A-e
- e : Flange thickness (customer specification)



**NB: We do not supply the bolting**

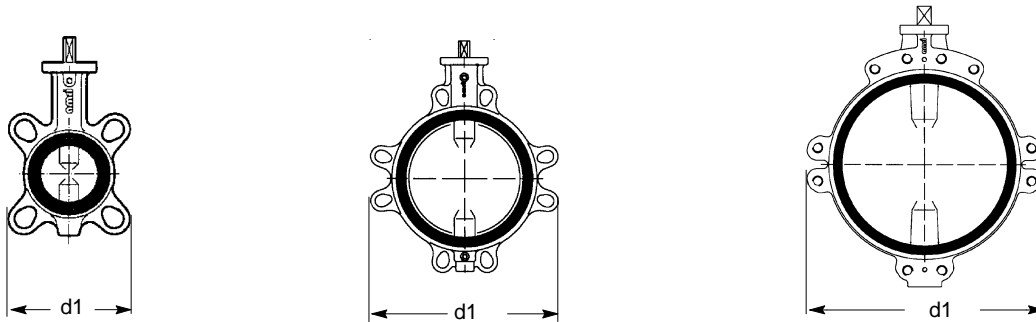
mm

DN	NPS	d1	l1	EN 1092 PN 10				EN 1092 PN 16				ASME B16-5 cl 150				JIS B2238-B2239 16K				Weight kg				
				ØM	f	Qty	X	Qty**	ØM	f	Qty	X	Qty**	UNC	f	Qty	X	Qty**	Ø M		f	Qty	X	Qty**
40	1 1/2	108	33	M16	20	4			M16	20	4			1/2"	17	4			M16	20	4			1,1
50	2	118	43	M16	20	4			M16	20	4			5/8"	20	4			M16	20	8			1,3
65	2 1/2	133	46	M16	20	4			M16	20	4			5/8"	20	4			M16	20	8			1,9
80	3	138	46	M16	20	8			M16	20	8			5/8"	20	4			M20	24	8			2,5
100	4	144	52	M16	20	8			M16	20	8			5/8"	20	8			M20	24	8			3,9
125	5	174	56	M16	20	8			M16	20	8			3/4"	24	8			M22	26	8			4,7
150	6	198	56	M20	24	8			M20	24	8			3/4"	24	8			M22	26	12			6,9
200	8	252	60	M20	24	8			M20	24	12			3/4"	24	8			M22	26	12			10,5
250	10	310	68	M20	24	12			M24	29	12			7/8"	29	12			M24	29	12			16,4
300	12	362	78	M20	24	12			M24	29	12			7/8"	29	12			M24	29	12			30
350	14	433	78	M20	24	16			M24	29	16			1"	32	12			M30X3	35	16			50
400	16	490	102	M24	29	16			M27	32	16			1"	32	16			M30X3	35	16			72
450	18	546	114	M24	29	16	24	4	M27	32	16	27	4	1*1/8	35	16			M30X3	35	16	30	4	96
500	20	600	127	M24	29	20			M30	35	20			1*1/8	35	16	30	4	M30X3	35	20			130
550	22	645	154											1*1/4	38	16	33	4	M36X3	42	16	36	4	160
600	24	714	154	M27	32	20			M33	38	20			1*1/4	38	20			M36X3	42	20	36	4	190
650	26	745	165											1*1/4	38	20	25	4	M36x3	42	20	34	4	270
700	28	795	165	M27	32	20	30	4	M33	38	20	25	4	1*1/4	38	24	25	4	M36x3	45	20	34	4	315
750	30	853	190											1*1/4	38	24	33	4	M36x3	45	20	34	4	380
800	32	903	190	M30	35	20	33	4	M36	42	20	36	4	1*1/2	45	24	29	4	M36x3	50	20	35	4	475
900	36	1111	203	M30	35	24	33	4	M36	42	24	36	4	1*1/2	45	28	29	4						545
1000	40	1118	216	M33	38	24	36	4	M39	45	24	29	4	1*1/2	45	32	35	4						670

\* Quantity nuts = quantity tie-rods x 2

\*\* Quantity of screws by face\*

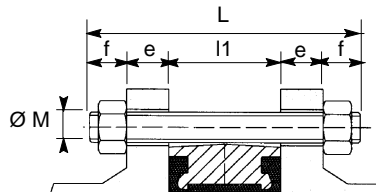
## Bolting and weight for semi-lug type body - Type 2



The drawings are not the correct representation concerning our manufacture (quantities for semi lug and plain holes)

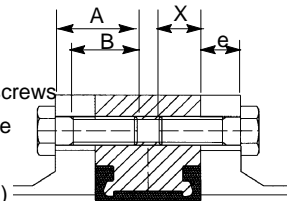
$$L = l1 + 2e + 2f$$

- L : Mini length of tie-rods
- l1 : Face to face of the valve
- e : Flange thickness  
(customer specification)
- f : Nut thickness  
+ overlength of the tie-rod



$$A = e + X$$

- A : Maxi length of screws
- X : Maxi implantation of screws
- B : Threaded length > A-e
- e : Flange thickness  
(customer specification)



**NB: We do not supply the bolting**

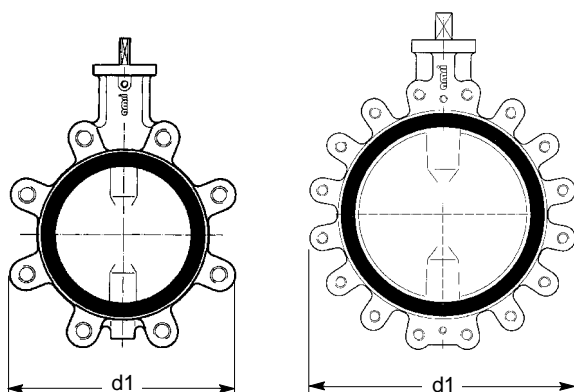
mm

DN	NPS	d1	l1	EN 1092 PN 10				EN 1092 PN 16				ASME B16-5 cl 150				JIS B2238-B2239 16K				Weight kg
				ØM	Tie-rod* f Qty	Screw X Qty**	ØM	Tie-rod* f Qty	Screw X Qty**	UNC	Tie-rod* f Qty	Screw X Qty**	Ø M	Tie-rod* f Qty	Screw X Qty**					
40	1 1/2	108	33	M16	20 4		M16	20 4		1/2"	17 4		M16	20 4		1,1				
50	2	118	43	M16	20 4		M16	20 4		5/8"	20 4		M16	20 8		1,3				
65	2 1/2	132	46	M16	20 4		M16	20 4		5/8"	20 4		M16	20 8		1,9				
80	3	138	46	M16	20 8		M16	20 8		5/8"	20 4		M20	24 8		2,5				
100	4	150	52	M16	20 8		M16	20 8		5/8"	20 8		M20	24 8		3,9				
125	5	234	56	M16	20 8		M16	20 8		3/4"	24 8		M22	26 8		4,7				
150	6	260	56	M20	24 8		M20	24 8		3/4"	24 8		M22	26 12		6,9				
200	8	322	60	M20	24 8		M20	24 12		3/4"	24 8		M22	26 12		10,5				
250	10	394	68	M20	24 12		M24	29 12		7/8"	29 12		M24	29 12		16,4				
300	12	462	78	M20	24 12		M24	29 12		7/8"	29 12		M24	29 12		30				
350	14	538	78	M20	24 10 20 6		M24	29 10 24 6		1"	32 6 27 6		M30X3	35 10 30 6		60				
400	16	604	102	M24	29 10 24 6		M27	32 10 27 6		1"	32 10 27 6		M30X3	35 16 30 6		80				
450	18	656	114	M24	29 14 24 6		M27	32 14 27 6		1 1/8"	35 10 30 6		M30X3	35 14 30 6		110				
500	20	716	127	M24	29 12 24 8		M30	35 12 30 8		1 1/8"	35 12 30 8		M30X3	35 12 30 8		145				
550	22	804	154							1 1/4"	38 12 32 8		M36X3	42 12 36 8		180				
600	24	836	154	M27	32 10 27 10		M33	38 10 33 10		1 1/4"	38 10 32 10		M36X3	42 14 36 10		220				

\* Quantity nuts = quantity tie-rods x 2

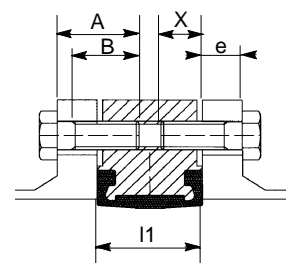
\*\* Quantity of screws by face\*

## Bolting and weight for full-lug type body with raised faces – Type 4



**A = e + X**

A : Maxi length of screws  
X : Maxi implantation of screws  
B : Threaded length > A-e  
e : Flange thickness  
(customer specification)



The drawings are not the correct representation concerning our manufacture (quantities for full-lug holes)

**NB: We do not supply the bolting**

mm

DN	NPS	d1	l1	EN 1092 PN 10				EN 1092 PN 16				ASME B16-5 cl. 150				JIS B2238-B2239 16K				Weight kg				
				ØM	Tie-rod* f	Qty	Screw X	Qty**	ØM	Tie-rod* f	Qty	Screw X	Qty**	UNC	Tie-rod* f	Qty	Screw X	Qty**	Ø M		Tie-rod* f	Qty	Screw X	Qty**
40	1 ½	108	33	M16			14	4	M16			14	4	1/2"			14	4	M16			14	4	2,0
50	2	120	43	M16			18	4	M16			18	4	5/8"			18	4						2,5
65	2 ½	134	46	M16			20	4	M16			20	4	5/8"			20	4						3,0
80 (1)	3	140	46											5/8"			20	4						4,0
80 (2)	3	178	46	M16			20	8	M16			20	8						M20			20	8	4,5
100	4	210	52	M16			22	8	M16			22	8	5/8"			22	8	M20			24	8	5,5
125	5	236	56	M16			22	8	M16			22	8	3/4"			23	8						9
150	6	260	56	M20			26	8	M20			26	8	3/4"			26	8						11
200 (3)	8	312	60	M20			26	8						3/4"			26	8						24
200 (4)	8	322	60						M20			26	12											25
250	10	396	68	M20			26	12	M24			29	12	7/8"			28	12						39
300	12	466	78	M20			26	12	M24			30	12	7/8"			28	12	M24			30	16	46
350 (1)	14	510	78											1"			30	12						62
350 (2)	14	530	78	M20			26	16	M24			30	16						M30x3			34	16	70
400	16	598	102	M24			31	16	M27			34	16	1"			34	16	M30x3			37	16	101
450 (1)	18	622	114											1 1/8"			37	16						122
450 (2)	18	654	114	M24			31	20	M27			34	20						M30x3			37	20	139
500	20	708	127	M24			31	20	M30			37	20	1 1/8"			37	20	M30x3			37	20	179
550	22	774	154											1 1/4"			39	20	M36x3			42	20	233
600 (5)	24	822	154	M27			36	20	M33			42	20	1 1/4"			42	20						256
600 (6)	24	830	154																M36X3			34	24	283

\* Quantity nuts = quantity tie-rods x 2

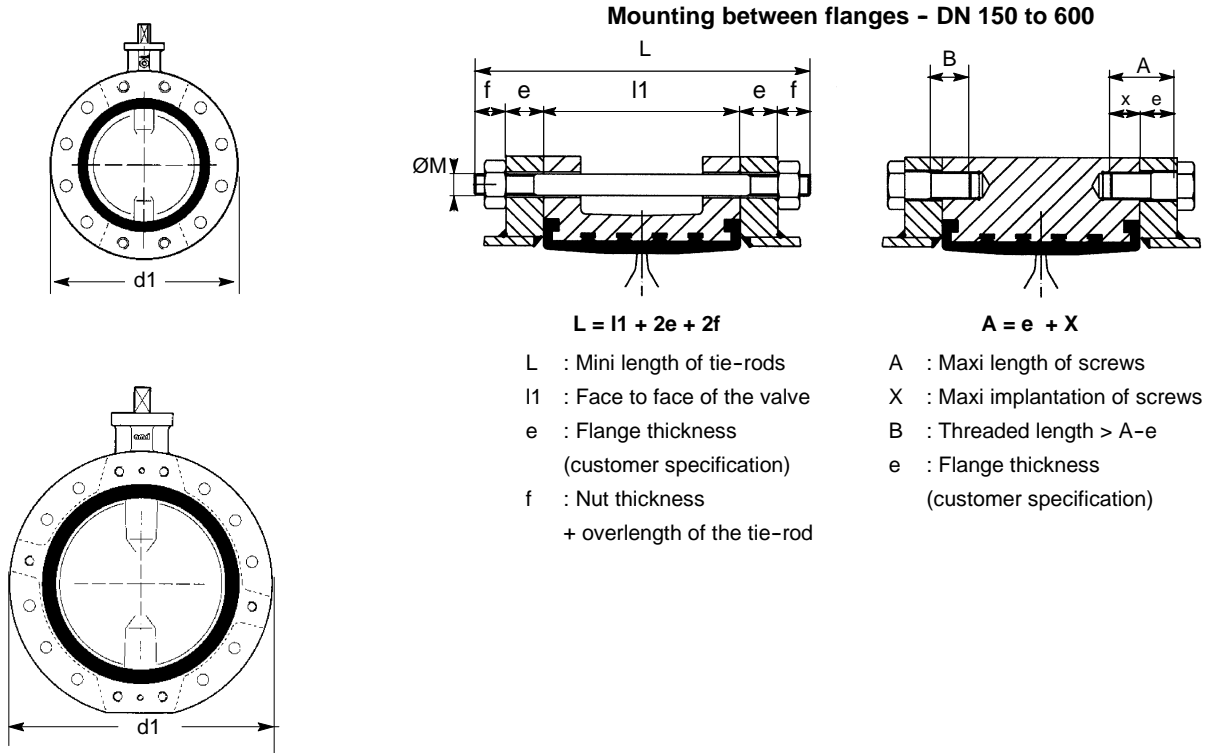
\*\* Quantity of screws by face\*

- (1) Connection between PN 6, ASME B16-5 class 150, JIS B2238 and B2239-5K, BS 10 tables D and E and AS 2129 tables D and E flanges.
- (2) Connection between PN 10, PN 16 and JIS B2238 and B2239 -10K and 16K flanges.
- (3) Connection between PN 6 and 10, ASME B16-5 class 150, AWWA C 207 B, D and E, BS 10 tables D and E, AS 2129 tables D and E and JIS B2238 and B2239-5K flanges.
- (4) Connection between PN 16 and JIS B2238 and B2239-10K flanges.
- (5) Connection between PN 10, PN 16, ASME B16-5 class 150 and JIS B2238 and B2239-5K flanges.
- (6) Connection between JIS B2238 and B2239-10K flanges.

**Bolting and weight for flanged body with flat faces - Type 5**

**DN 150 to 600**

**Flanged mounting not authorized**



The drawings are not the correct representation concerning our manufacture (quantities for threaded and plain holes).

**NB: We do not supply the bolting**

mm

DN	NPS	ød1	l1	EN 1092 PN 10					EN 1092 PN 16					ASME B16-1 class 125 ASME B16-5 class 150 MSS SP 44 class 150					JIS B2238-B2239 16K					Weight kg
				Tie-rod*		Screw			Tie-rod*		Screw			Tie-rod*		Screw			Tie-rod*		Screw			
				ØM	f	Qty	X	Qty**	ØM	f	Qty	X	Qty**	UNC	f	Qty	X	Qty**	Ø M	f	Qty	X	Qty**	
150	6	298	56	M20	24	4	20	4	M20	24	4	16	4	3/4"	24	4	20	4	M22	26	8	22	4	11
200	8	343	60	M20	24	4	20	4	M20	24	8	16	4	3/4"	24	4	20	4	M22	26	8	22	4	23
250	10	406	68	M20	24	8	20	4	M24	29	8	24	4	7/8"	29	8	24	4	M24	29	8	24	4	40
300	12	483	78	M20	24	6	20	6	M24	29	6	24	6	7/8"	29	6	24	6	M24	29	10	24	6	60
350	14	533	78	M20	24	10	20	6	M24	29	10	24	6	1"	32	6	27	6	M30x3	35	10	30	6	80
400	16	597	102	M24	29	10	24	6	M27	32	10	27	6	1"	32	10	27	6	M30x3	35	16	30	6	105
450	18	640	114	M24	29	14	24	6	M27	32	14	27	6	1 1/8"	35	10	30	6						130
500	20	715	127	M24	29	12	24	8	M30	35	12	30	8	1 1/8"	35	12	30	8	M30x3	35	12	30	8	180
550	22	749	154											1 1/4"	38	12	32	8						230
600	24	840	154	M27	32	10	27	10	M33	38	10	33	10	1 1/4"	38	10	32	10	M30x3	42	14	36	10	260

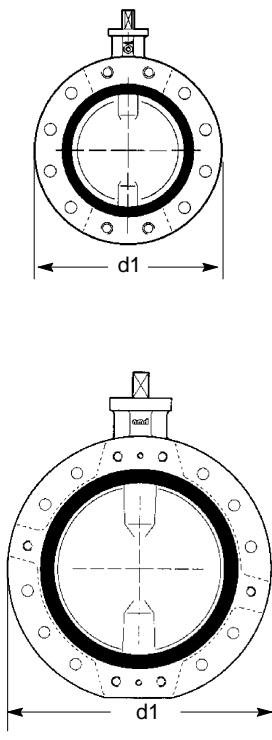
\* Quantity nuts = quantity tie-rods x 2

\*\* Quantity of screws by face\*\*

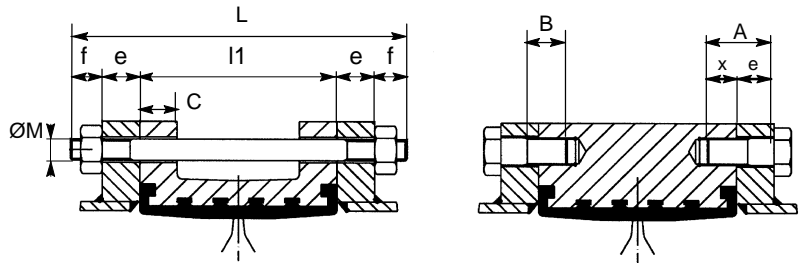
## Bolting and weight for flanged body with flat faces – Type 5

### DN 650 to 1000

Flanged mounting authorized for the differential maximum pressure for 10 bar



#### Mounting between flanges - DN 650 to 1000



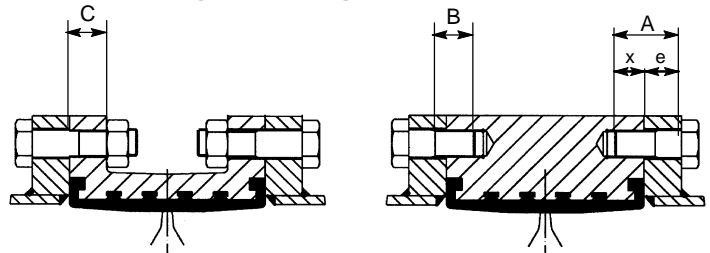
$$L = l1 + 2e + 2f$$

- L : Mini length of tie-rods
- l1 : Face to face of the valve
- e : Flange thickness  
(customer specification)
- f : Nut thickness  
+ overlength of the tie-rod

$$A = e + X$$

- A : Maxi length of screws
- X : Maxi implantation of screws
- B : Threaded length > A-e
- e : Flange thickness  
(customer specification)

#### Flanged mounting - DN 650 to 1000



Bolting definition: Please, consult us

The drawings are not the correct representation concerning our manufacture (quantities for threaded and plain holes).

**NB: We do not supply the bolting**

mm

DN	NPS	ød1	l1	C	EN 1092 PN 10					EN 1092 PN 16					ASME B16-1 cl. 125 ASME B16-5 cl. 150 MSS SP 44 cl. 150				JIS B2238-B2239 16K					Weight kg	
					ØM	Tie-rod* f	Screw Qty	X	Qty**	ØM	Tie-rod* f	Screw Qty	X	Qty**	UNC	Tie-rod* f	Screw Qty	X	Qty**	Ø M	Tie-rod* f	Screw Qty	X		Qty**
650	26	835 (1)	165	31																				285	
650	26	869 (2)	165	31										1"1/4	38	20	25	4							305
700	28	895 (1)	165	32.5	M27	32	20	27	4															330	
700	28	925 (3)	165	32.5						M33	38	20	25	4	1"1/4	38	24	25	4						350
750	30	965 (1)	190	33.5																				405	
750	30	985 (3)	190	33.5										1"1/4	38	24	33	4							425
800	32	1 015 (1)	190	35	M30	35	20	30	4															505	
800	32	1 075 (3)	190	35						M36	42	20	36	4	1"1/2	45	28	29	4						525
900	36	1 115 (1)	203	37.5	M30	35	24	30	4															590	
900	36	1 160 (3)	203	37.5						M36	42	24	36	4	1"1/2	45	28	29	4						620
1000	40	1 230 (1)	216	40	M33	38	24	33	4															740	
1000	40	1 275 (3)	216	40						M39	45	24	29	4	1"1/2	45	32	35	4						780

\* Quantity nuts = quantity tie-rods x 2

\*\* Quantity of screws by face\*\*

(1) Connection between EN 1092 PN 6, 10, JIS B2238 and B2239-5K and 10K flanges.

(2) Connection between EN 1092 PN 16, MSS SP 44 class 150, ASME B 16-1 class 125 flanges.

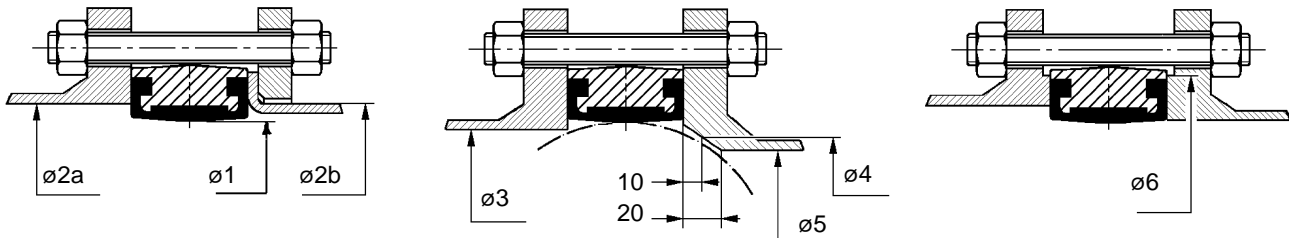
(3) Connection between EN 1092 PN 16, MSS SP 44 class 150, ASME B 16-1 class 125, AS 2129 class D and E and BS 10 class D and E flanges.

## Flanging dimensions

ISORIA 16 valves are designed for assembly between any type of flanges and connection standards currently used. The liner allows directly the tightness concerning the flanges. It is necessary to verify the general compatibility of the connection by checking against the dimensions shown in the table below.

The following drawings show the valve Type 1 mounted between flanges.

The flanging dimensions mentioned in this table are the same for all types body.



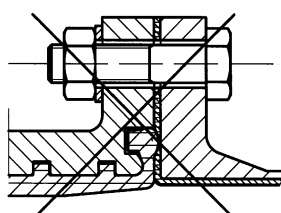
- $\varnothing 2a$  and  $\varnothing 3$ : diameter on the supporting area of the flange face.
- $\varnothing 2b$ : external diameter of the butt-weld ends with lapped pipe end according to standards DIN 2642 and NFE 29-251.

mm

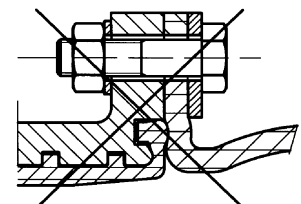
DN	NPS	Optimum dia.	Max. dia tolerated		Min. dia. tolerated face of flange	Min. dia. 10 mm from face of flange	Min. dia. 20 mm from face of flange	Min. dia. tolerated of shoulder of raised face flange
		$\varnothing 1$	$\varnothing 2a$	$\varnothing 2b$	$\varnothing 3$	$\varnothing 4$	$\varnothing 5$	$\varnothing 6$
40	1 1/2	40	54	49	32	---	---	77
50	2	49	63	61	33	---	---	86
65	2 1/2	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 *	169	144	134	120	196
200	8	196	222 *	220	196	189	178	250
250	10	249	276,5 *	273	249	243	234	306
300	12	298	327,5 *	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	1 027		970	965	960	1 094

\* Please check the body is well centred between the tie-rods.

**NB:**  
Direct fitting on rubber coated flange and with dilatation joint is not authorized. Please, consult us.



Rubber coated flange



Dilatation joint

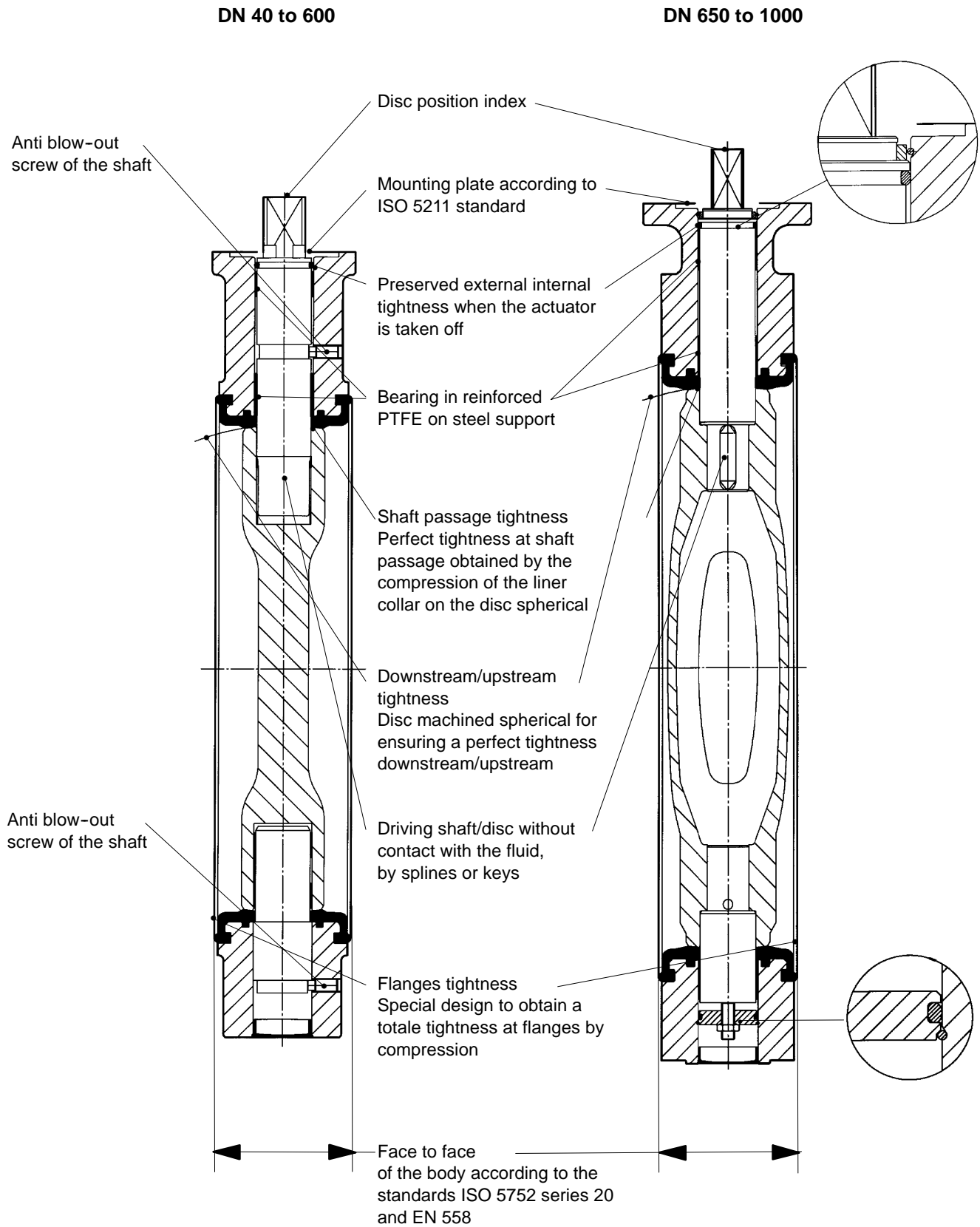








Product features - to our customers' benefit



This leaflet is not contractual and may be amended without notice.

07.01.05

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