TRIODIS 150 MT

Triple offset disc butterfly valve with metallic seat

DN 200 to 600 (8 to 24”)
Pressure class: Class 150 and B 25
Design in accordance with EN 12516 and ASME B16-34

Applications

- Oil and gas, chemicals, petrochemicals.

Working conditions

- Temperature:
  from -50 ° C min. up to +260 ° C max. for stainless steel body,
  from -29 ° C min. up to +260 ° C max. for carbon steel body,
  +380 ° C in HT version.
  The working temperature depends on the media and on the material of the seat.
- Allowable pressure (PS): depends on the body material and the working temperature, see page 2.
- Operating under ΔP = PS (except PN 25: ΔP limited to 20 bar).
- Vacuum service down to 0 absolute bar.
- Maximum fluid velocity under allowable pressure:
  4 m/s for liquids and 50 m/s for clean gases.

Materials

See page 2.

Design

- Wafer type body (Type 1): DN 50 to 600
- Full-lug type body with raised faces (Type 4): DN 50 to 600
- Flanged type body (Type 7): DN 50 to 600
- Possible downstream dismantling and end of line for bodies types 4 and 7.
- Fire safe safety in accordance with BS 6755 Part 2 standard.
- Face-to-face in accordance with standards defined pages 8, 9 and 10.
- Possible mounting between flanges according to EN 1092-1, ASME and JIS B2220. See page 14.
- Actuation mounting plate in accordance with ISO 5211 and NF E 29-402 standard.
- Marking in accordance with EN 19 standard.
- Perfectly tight shut-off valves (zero leakage visible to the naked eye) in the two flow directions in accordance with EN 12266-1 leak level A and ISO 5208 category A standards.
- Steel body: anticorrosion surface treatment, thickness 35 µm, in option = painting 2 or 3 layers.
  Stainless steel body: pickling and passivation.
- 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.
- A remote valve can be considered as a partly completed machine in compliance with the requirements of the machinery directive 2006/42/EC.
- The valves comply with the requirements of the REACH regulation . See page 12.

Standard variants

- Pneumatic actuator ACTAIR / DYNACTAIR
- Electric actuator ACTELEC
- Hydraulic actuator ACTO
- Position detection AMTROBOX
- Pneumatic distribution for On-Off function AMTRONIC
- Positioner and control unit SMARTRONIC
- ATEX version in accordance with 94/9/EC directive

Remarks

- Operating instructions 8450.810/.-10

Data to be supplied when ordering

- TRIODIS 150 MT valve in accordance with type series booklet 8465.52/1-10.
- Size.
- Materials (body, disc, seat).
- Working conditions: nature of fluid, pressure, flow, etc.
- Connection, flange facing finish and type of contact faces.
- Actuation.

CE

amri

KSB

Materials

Body	Temperature see § Pression / temperature below	KSB code
Steel ASTM A 216 gr. WCC / 1.0619	-29 °C to +260 °C	1
Stainless steel ASTM A 351 gr. CF 8M / 1.4408	-50 °C to +260 °C	6
Stainless steel ASTM A 351 gr. CF 3M Mo > 2.75 for marine application	-50 °C to +150 °C	6m
Shaft		KSB code
Stainless steel ASTM A 479 gr. 431 / 1.4057	-29 °C to +260 °C	6e
Stainless steel ASTM A 479 gr. 316L / 1.4404, PS limited to 10 bar	-50 °C to +260 °C	6
Stainless steel 1.4462, PS limited to 16 bar	-50 °C to +260 °C	7e
Disc		KSB code
Stainless steel ASTM A 351 gr. CF 8M / 1.4408	-50 °C to +260 °C	6
Stainless steel ASTM A 351 gr. CF 3M Mo > 2.75 for marine application	-50 °C to +150 °C	6m
AMRING® seat		KSB code
PTFE reinforced (for temperature < -29 °C and pressure > 8 bar, consult us)	-50 °C to +220 °C	FA
Copper	-50 °C to +150 °C	CU
Nickel	-50 °C to +260 °C	NI
Stainless steel type 316L	-50 °C to +260 °C	IX

The materials selection depends on the nature of the fluid and its temperature.

- Corrosive fluids:
  - Body and disc: stainless steel (code 6),
  - Seat: according to the fluid (agressiveness degree, working temperature). Please refer to the above table.
- Non-corrosive fluids
  - Body: steel (code1) or stainless steel (code 6)
  - Disc: stainless steel (code 6)
  - Seat: according to the working temperature. Please refer to the above table.

Pressure / temperature

In pressure class B 25 (european materials), TRIODIS 150 MT valves are in accordance with EN 12516-1 standard.
The values in the table below must be used for valves which have to comply with PED 97/23/CE:

Pressure class	Material		Working pressure in bar at temperature °C									
	Body	Seat	-50	-10	20	100	135	150	180	200	220	260
B 25	1.0619	PTFE *	forbidden	24.4	24.4	21.3	20.3	15.8	10.0	3.3	0.0	0.0
		Metallic	forbidden	24.4	24.4	21.3	20.3	19.8	18.6	17.8	17.2	15.9
	1.4408	PTFE *	24.3	24.3	24.3	20.7	19.3	15.8	10.0	3.3	0.0	0.0
		Metallic	24.3	24.3	24.3	20.7	19.3	18.7	17.8	17.2	16.7	15.8

* for temperature < -29° C and pressure > 8bar, please consult us.

In pressure class 150 (ASTM materials), TRIODIS 150 MT valves meet ASME B 16-34 cl.150 “Standard class” requirements, according to the following table:

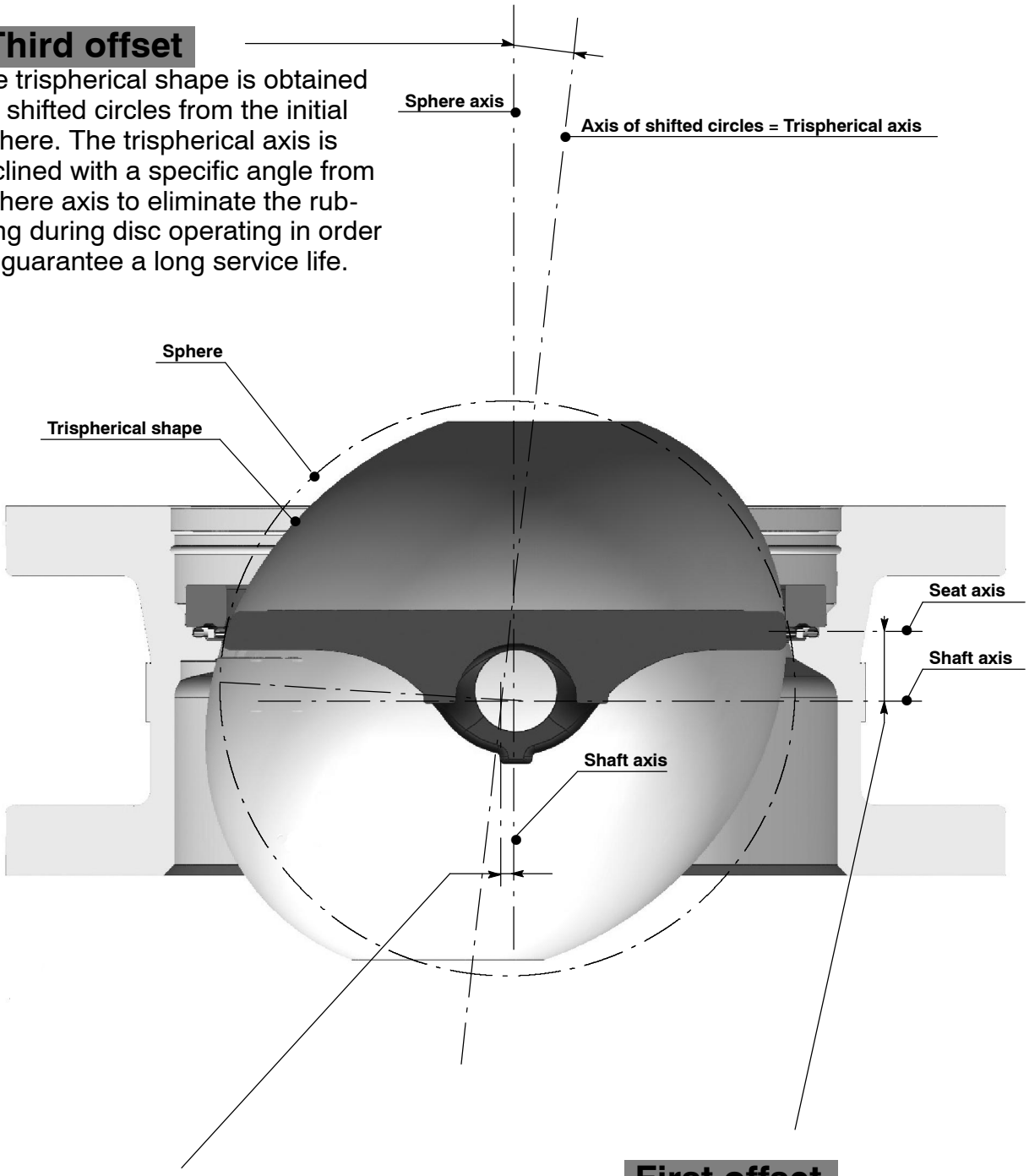
Pressure class	Material		Working pressure in bar at temperature °C									
	Body	Seat	-50	-29	38	100	135	150	180	200	220	260
Class 150	A 216 gr. WCC	PTFE *	forbidden	20.0	20.0	17.7	16.4	15.8	10.0	3.3	0.0	0.0
	A 216 gr. WCC	Metallic	forbidden	20.0	20.0	17.7	16.4	15.8	14.7	14.0	13.2	11.7
	A 351 gr. CF8M	PTFE *	19.0	19.0	19.0	16.0	15.2	14.8	10.0	3.3	0.0	0.0
	A 351 gr. CF8M	Metallic	19.0	19.0	19.0	16.0	15.2	14.8	15,6	13.5	13.0	11.7

* for temperature < -29° C and pressure > 8bar, please consult us.

Sealing System Design TRIODIS 150

Third offset

the trispherical shape is obtained by shifted circles from the initial sphere. The trispherical axis is inclined with a specific angle from sphere axis to eliminate the rubbing during disc operating in order to guarantee a long service life.



Second offset

the shaft axis is offset from the sphere axis to limit the rubbing between disc seat and body seal ring.

First offset

The seal is offset from the shaft axis to allow upstream/downstream tightness without interference with the shaft passage.

Upstream / downstream sealing

The TRIODIS 150 MT valve conforms to the following sealing standards.

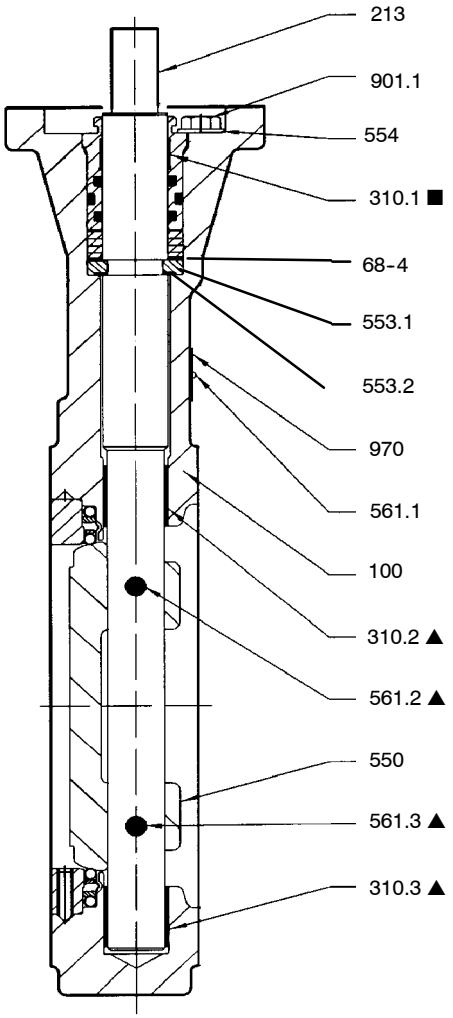
The TRIODIS 150 MT valve is a bi-directional valve with a preferential flow direction shown by an arrow on the body.

Valve	With metallic seat	
	Standard version	On specification in final inspection
On liquids	EN 12266-1 rate < D ISO 5208, category C API 598 MSS SP 61	EN 12266-1 rate B ISO 5208, category B API 598 ANSI / FCI 70.2 class V
On gas	EN 12266-1 rate < D ISO 5208 leakage < cat. D MSS SP 61	EN 12266-1 rate B ISO 5208, category B API 598 ANSI / FCI 70.2 class VI

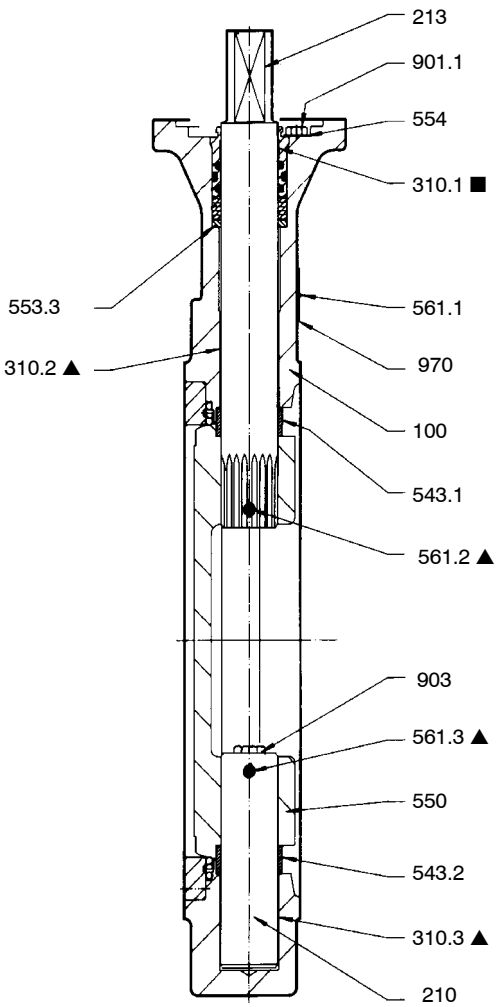
Construction

WAFER TYPE BODY AND FULL-LUG TYPE BODY

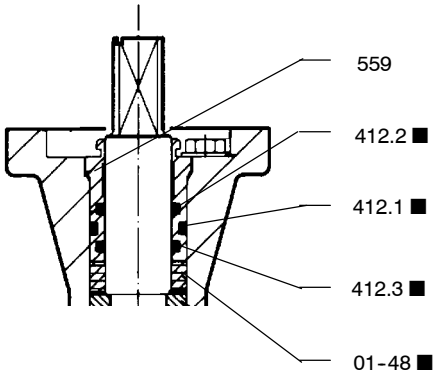
DN 200 and 250 (8” and 10”)



DN 300 to 600 (12” to 24”)



Fire-safe packing gland version

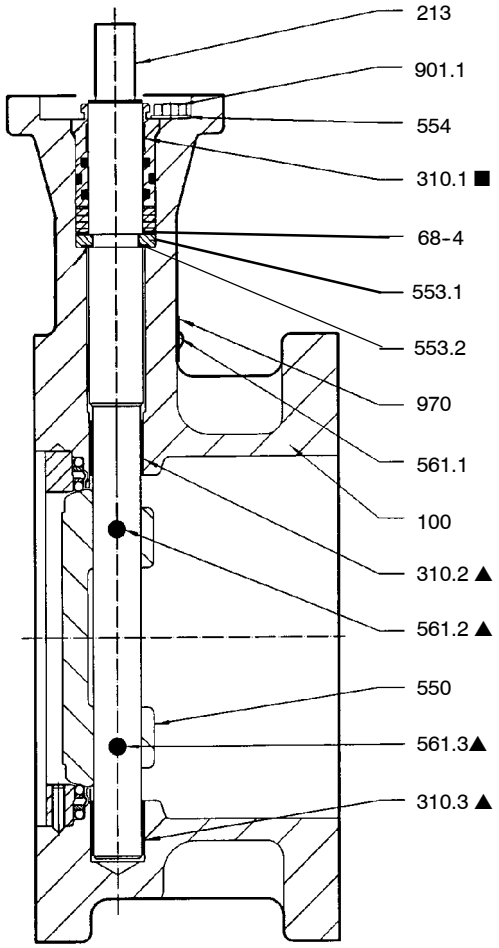


■ Spare parts kit for shaft sealing
▲ Bearing kit

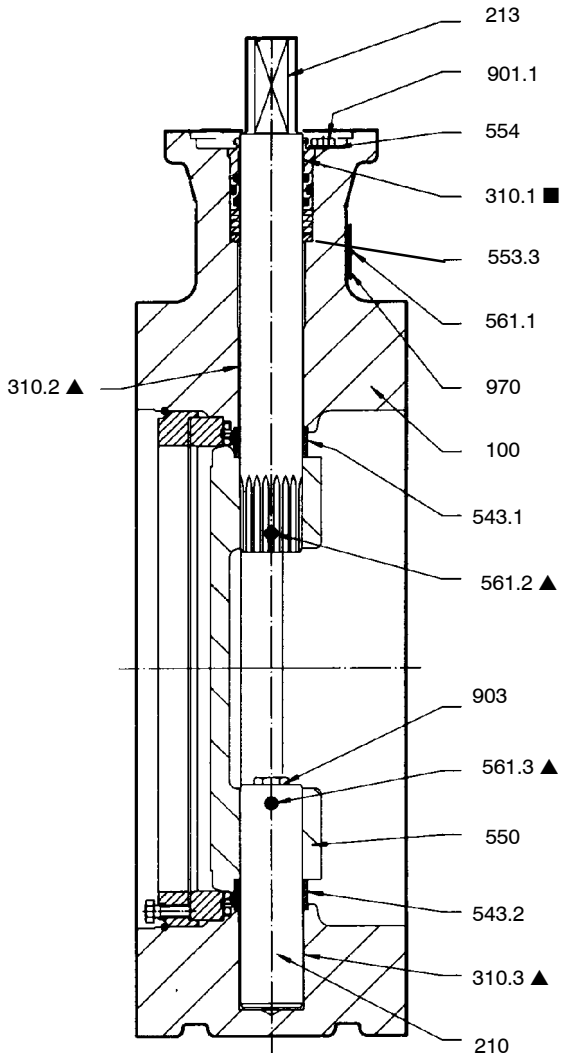
Construction

FLANGED TYPE BODY

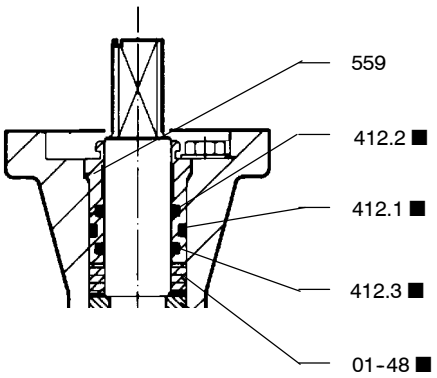
DN 200 and 250 (8” and 10”)



DN 300 to 600 (12” to 24”)



Fire-safe packing gland version



■ Spare parts kit for shaft sealing
▲ Bearing kit

Parts list

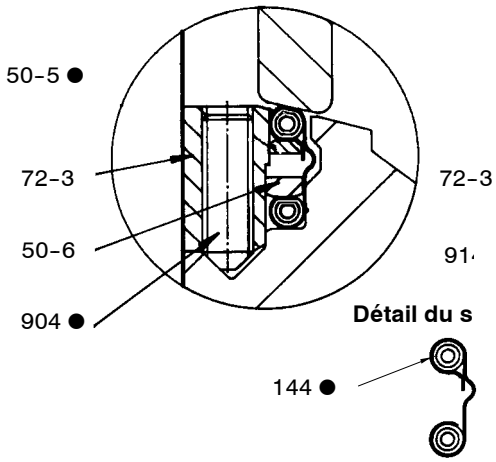
Item	Designation	DN	Materials
68-4	Foil	200 and 250	Stainless steel
100	Body	200 to 600	Carbon steel Stainless steel
210	Shaft	300 to 600	Stainless steel
213	Operating shaft	200 to 600	Stainless steel
310.1	Plain bearing	200 to 600	Stainless steel + PTFE
310.2	Plain bearing	200 to 600	Stainless steel + PTFE
310.3	Plain bearing	200 to 600	Stainless steel + PTFE
543.1	Spacer bush	300 to 600	Stainless steel
543.2	Spacer bush	300 to 600	Stainless steel
550	Disc	200 to 600	Stainless steel
553.1	Thrust	200 to 250	Stainless steel
553.2	Thrust	200 to 250	Stainless steel + PTFE
553.3	Thrust	300 to 600	Stainless steel
554	Washer	200 to 600	Stainless steel
561.1	Grooved nail	200 to 600	Stainless steel
561.2	Grooved pin	200 to 600	Stainless steel
561.3	Grooved pin	200 to 600	Stainless steel
901.1	Hexagon-head screw	200 to 600	Stainless steel cl. A4.70
903	Threaded plug	300 to 600	Stainless steel cl. A4.70
970	Identity plate	200 to 600	Stainless steel
Fire-safe packing (see page 12)			
01-48	Fire-safe packing	200 to 600	Expanded graphite
412.1	O-Ring	200 to 600	VITON ®
412.2	O-Ring	200 to 600	VITON ®
412.3	O-Ring	200 to 600	VITON ®
559	Gasket holder	200 to 600	Stainless steel
TA-Luft packing (see page 12)			
01-48	TA-Luft packing	200 to 600	Expanded graphite SUPAGRAF CONTROL ®
412.1	O-Ring	200 to 600	VITON ®
412.2	O-Ring	200 to 600	VITON ®
559	Gasket holder	200 to 600	Stainless steel

When ordering a spare parts kit, please give the valve commerciel codification marked on the identity plate.

Flexible metallic seat

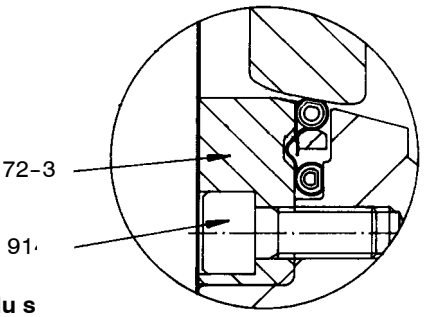
DN 200 and 250 (8" to 10")

All types of body

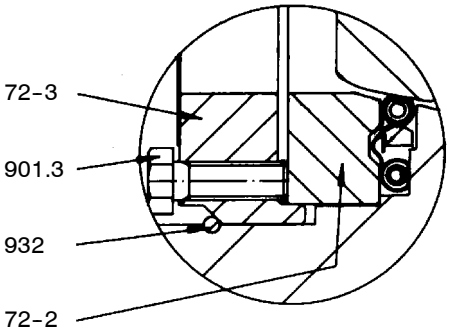


DN 300 to 600 (12" to 24")

Wafer type body
Full-lug type body



Flanged type body



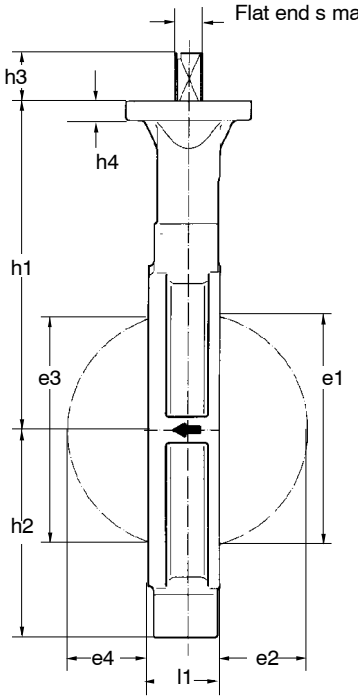
Détail du s

● Kit seat

Item	Designation	DN	Materials
50-5	Reaction ring	200 to 600	Stainless steel
50-6	Tightening ring	200 and 250	Stainless steel
72-2	Centring flange	300 to 600	Stainless steel
72-3	Tightening flange	200 to 600	Stainless steel
144	Metallic seat	200 to 600	In accordance whith fluid (nickel in standard)
901	Hexagon-head screw	300 to 600	Stainless steel cl. A4.70
904	Grub screw	200 and 250	Stainless steel cl. A4.70
914	Cheese-head screw	300 to 600	Stainless steel cl. A4.70
932	Retaining ring	300 to 600	Stainless steel cl. A4.70

Dimensions

Wafer type body – Type 1



mm

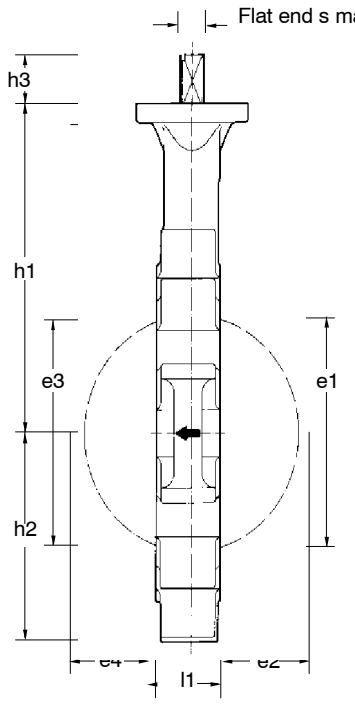
DN	NPS	Face to face l1	h1	h2	Mounting plate ISO 5211 no.	Mounting plate ISO 5211 h4	Square shat end ⍁ s	Square shat end h3	Flat shaft end s	Flat shaft end Ø Z	Flat shaft end h3	Disc clearance e1	Disc clearance e2	Disc clearance e3	Disc clearance e4
200	8	60	290	151	F10	18	-	-	22	28	40	177	70	163	51
250	10	68	325	182	F12	20	25	40	-	-	-	226	91	212	70
300	12	78	375	237	F14	22	30	55	-	-	-	266	106	254	87
350	14	92	405	274	F14	22	36	60	-	-	-	309	123	297	103
400	16	102	440	300	F16	26	40	75	-	-	-	360	145	346	121
450	18	114	475	329	F16	26	40	75	-	-	-	420	169	408	147
500	20	127	510	355	F25	30	50	85	-	-	-	456	182	444	160
600	24	154	585	449	F25	30	50	85	-	-	-	546	213	537	197

Face to face

DN	NPS	Wafer type
200 to 300	8” to 12”	EN 558-1 series 20 ; API 609 table 2 class 150 and ISO 5752 series 20
350	14”	EN 558-1 series 20 ; API 609 table 2 class 150 and ISO 5752 series 25
400 to 600	16” to 24”	EN 558-1 series 20 ; API 609 table 2 class 150 and ISO 5752 series 20

Dimensions

Full-lug type body - Type 4



mm

DN	NPS	Face to face l1	h1	h2	Mounting plate ISO 5211 n°	h4	Square shaft end ⍁ s	h3	Flat shaft end s	Ø Z	h3	Disc clearance e1	e2	e3	e4
200	8	60	290	155	F10	18	-	-	22	28	40	177	70	163	51
250	10	68	325	202	F12	20	25	40	-	-	-	226	91	212	70
300	12	78	375	237	F14	22	30	55	-	-	-	266	106	254	87
350	14	92	405	274	F14	22	36	60	-	-	-	309	123	297	103
400	16	102	440	300	F16	26	40	75	-	-	-	360	145	346	121
450	18	114	475	329	F16	26	40	75	-	-	-	420	169	408	147
500	20	127	510	356	F25	30	50	85	-	-	-	456	182	444	160
600	24	154	585	449	F25	30	50	85	-	-	-	546	213	537	197

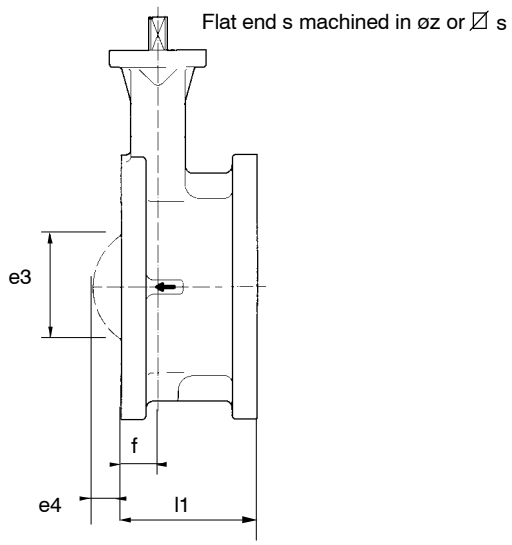
Face to face

DN	NPS	Full-lug type
200 to 300	8" to 12"	EN 558-1 series 20 ; API 609 table 2 class 150 and ISO 5752 series 20
350	14"	EN 558-1 series 20 ; API 609 table 2 class 150 and ISO 5752 series 25
400 to 600	16" to 24"	EN 558-1 series 20 ; API 609 table 2 class 150 and ISO 5752 series 20

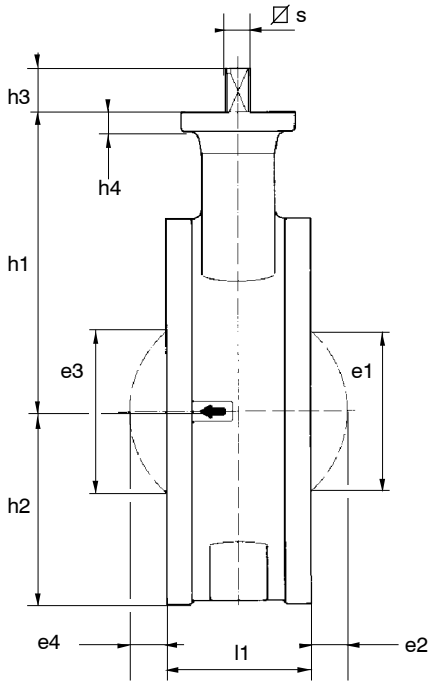
Dimensions

Flanged type body – Type 7

DN 200 and 250 - 8” and 10”



DN 300 to 600 - 12” to 24”



		Face to face				Mounting plate ISO 5211		Square shaft end		Flat shaft end			Disc clearance			
DN	NPS	l1	f	h1	h2	n°	h4	⍁ s	h3	s	Ø Z	h3	e1	e2	e3	e4
200	8	152	42,5	290	172	F10	18	-	-	22	28	40	-	-	158	46
250	10	165	46,5	325	203	F12	20	25	40	-	-	-	27	1	208	65
300	12	178	-	375	242	F14	22	30	55	-	-	-	214	52	197	42
350	14	190	-	405	274	F14	22	36	60	-	-	-	263	70	245	58
400	16	216	-	440	300	F16	26	40	75	-	-	-	306	82	289	70
450	18	222	-	475	329	F16	26	40	75	-	-	-	376	111	359	97
500	20	229	-	510	356	F25	30	50	85	-	-	-	417	128	399	112
600	24	267	-	585	449	F25	30	50	85	-	-	-	505	157	487	141

Face to face

The face to face dimensions of TRIODIS 150 MT valves with flanged type body are in accordance with ISO 5752 series 13, EN 558-1 series 13 standards.

Operating torque

DN	NPS	Operating torque * for applications on lubricated medium (in Nm) - Flexible metallic seat										
		0	2	4	6	8	10	12	14	16	18	20
200	8	280	280	280	280	280	280	310	340	370	400	420
250	10	500	500	500	500	500	500	560	610	670	720	780
300	12	770	770	770	770	770	770	850	950	1 040	1 130	1 220
350	14	1 160	1 160	1 160	1 160	1 160	1 160	1 300	1 450	1 590	1 740	1 880
400	16	1 640	1 640	1 640	1 640	1 640	1 640	1 840	2 040	2 240	2 440	2 640
450	18	2 140	2 140	2 140	2 140	2 140	2 450	2 770	3 080	3 400	3 710	4 030
500	20	2 300	2 300	2 300	2 300	2 720	3 140	3 550	3 970	4 390	4 810	5 220
600	24	2 820	2 820	2 820	3 450	4 080	4 710	5 340	5 970	6 600	7 230	7 860

DN	NPS	Operating torque * for applications on non lubricated medium (in Nm) - Flexible metallic seat										
		0	2	4	6	8	10	12	14	16	18	20
200	8	500	500	500	500	500	500	550	590	630	660	700
250	10	860	860	860	860	860	860	930	1 000	1 070	1 140	1 200
300	12	1 260	1 260	1 260	1 260	1 260	1 260	1 370	1 480	1 590	1 700	1 800
350	14	1 860	1 860	1 860	1 860	1 860	1 860	2 030	2 200	2 370	2 530	2 700
400	16	2 680	2 680	2 680	2 680	2 680	2 680	2 920	3 150	3 390	3 620	3 850
450	18	3 550	3 550	3 550	3 550	3 550	3 900	4 260	4 620	4 980	5 340	5 700
500	20	3 900	3 900	3 900	3 900	4 370	4 840	5 310	5 790	6 260	6 730	7 200
600	24	5 150	5 150	5 150	5 840	6 550	7 260	7 970	8 680	9 390	10 100	10 800

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

Hydraulic characteristics

DN	NPS	Flow coefficient in full open position		Zeta
		Kv_0	Cv_0	
200	8	1 850	2 150	0.75
250	10	3 350	3 880	0.56
300	12	4 870	5 650	0.55
350	14	7 070	8 200	0.48
400	16	10 350	12 000	0.38
450	18	12 500	14 500	0.42
500	20	15 090	17 500	0.44
600	24	22 410	26 000	0.41

Fire-Safe version

Metallic seated valves are Fire-Safe approved in accordance with BS 6755 Part 2 standard.
This certification covers the upstream/downstream tightness (metallic seat) and the shaft sealing system (Fire-Safe graphite packing).
Fire-Safe version is advised for the full lug type bodies T4 or flanged type bodies T7.

REACH regulation

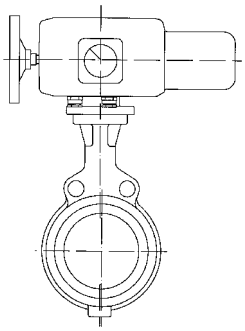
The valves comply with the requirements of the REACH regulation. None of substances included in the candidate list and in Annex XIV of this regulation are present in our valves above a concentration of 0.1% weight by weight (article 33/REACH).

ATEX Option

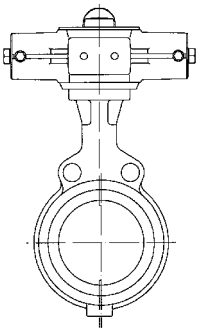
Adapted construction (option) for ATEX Group II - Category 2 - Zones 1+21 in accordance with 94/9/CE Directive .

Standard variants

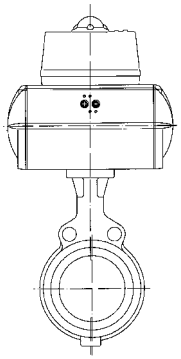
ACTELEC electric actuator



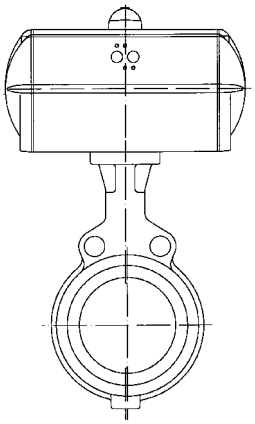
ACTO hydraulic actuator



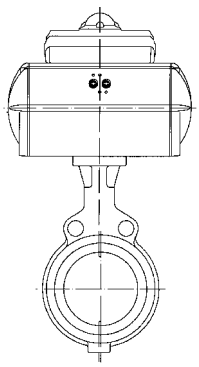
Pneumatic distribution for On-Off function AMTRONIC
Positioner and control unit SMARTRONIC



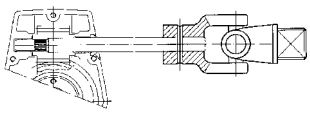
Pneumatic actuators ACTAIR / DYNACTAIR



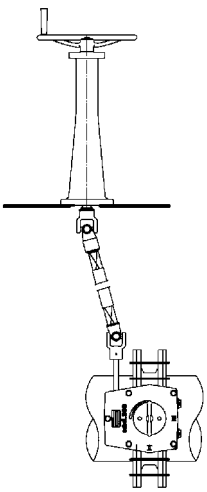
Position detection AMTROBOX, AMTROBOX S, AMTROBOX R, AMTROBOX EEx-ed, AMTROBOX EEx-ia



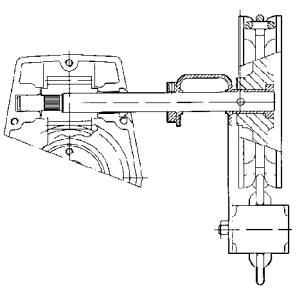
Cardan joint



Deck stand



Chain wheel



Connections

The valves can be fitted between flanges according to EN 1092-1 PN 10, PN 16 and PN 25 ; ASME B16.5 class 150 ; JIS B2220 10K , 16K and 20K standards. Other connections on request.
CAUTION : The ISO 7005 PN 20 connection is in process of disappearence, use preferably ASME B16-5 class 150 standard.

Wafer type body - Type 1 -

DN	NPS	EN 1092-1			ASME	ISO 7005	JIS B2220		
		PN 10	PN 16	PN 25	B16.5 cl. 150	PN 20	10K	16K	20K
200	8	✓	✓	✓	✓	✓	✓	✓	✓
250	10	✓	✓	✓	✓	✓	✓	✓	✓
300	12	✓	✓	✓	✓	✓	✓	✓	✓
350	14	✓	✓	✓	✓	✓	✓	✓	✓
400	16	✓	✓	✓	✓	✓	✓	✓	✓
450	18	✓	✓	✓	✓	✓	✓	✓	✓
500	20	✓	✓	✓	✓	✓	✓	✓	✓
600	24	✓	✓	✓	✓	✓	✓	✓	✓

Full-lug type body - Type 4 -

DN	NPS	EN 1092-1			ASME B16.5	ISO 7005	JIS B2220		
		PN 10	PN 16	PN 25	cl. 150	PN 20	10K	16K	20K
200	8	✓	✓	✓	✓	✓	✓	✓	✓
250	10	✓	✓	✓	✓	✓	✓	✓	✓
300	12	✓	✓	✓	✓	✓	✓	✓	✓
350	14	✓	✓	✓	✓	✓	✓	✓	✓
400	16	✓	✓	✓	✓	✓	✓	✓	✓
450	18	✓	✓	✓	✓	✓	✓	✓	✓
500	20	✓	✓	✓	✓	✓	✓	✓	✓
600	24	✓	✓	✓	✓	✓			

Flanged type body - Type 7

DN	NPS	EN 1092-1			ASME	ISO 7005	JIS B2220		
		PN 10	PN 16	PN 25	B16.5 cl150	PN 20	10K	16K	20K
200	8	✓	✓		✓	✓	✓	✓	✓
250	10	✓	✓		✓	✓	✓		
300	12	✓	✓	✓	✓	✓	✓	✓	✓
350	14	✓	✓		✓	✓	✓	✓	✓
400	16	✓	✓	✓	✓	✓	✓	✓	✓
450	18	✓	✓	✓	✓	✓	✓		
500	20	✓	✓		✓	✓	✓		
600	24	✓	✓	✓	✓	✓	✓	✓	✓

✓ Fitting allowed

Please consult us

End of line and downstream dismantling

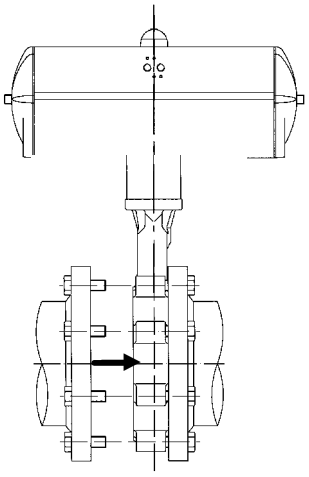
Use as end of line and downstream dismantling of the standard valves Type 4 and Type 7 at room temperature for DN and the differential pressure (ΔPS) are defined hereafter.
End of line and downstream dismantling are not allowed for valves Type 1 (wafer body).

TRIODIS 150 MT ***	Gases or liquids		Liquids*	
	hazardous **	non hazardous **	hazardous **	non hazardous **
class 150	All DN: on request	All DN: ΔPS = 15 bar max.	All DN: ΔPS = 15 bar max.	All DN: ΔPS = 15 bar max.
B 25	All DN: on request	All DN: ΔPS = 19 bar max.	All DN: ΔPS = 19 bar max.	All DN: ΔPS = 19 bar max.

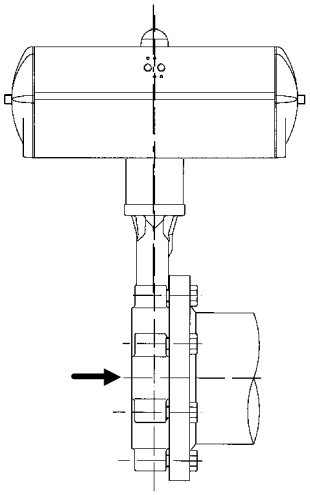
* Liquids having a vapour pressure at the maximum allowable temperature of not more than 0,5 bar above atmospheric pressure (1013 mbar).
** Fluids hazardous and not hazardous according to PED.
*** With shaft ASTM A 479 gr. 316L / 1.4404 : ΔPS limited to 10 bar
ΔPS : Differential pressure

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

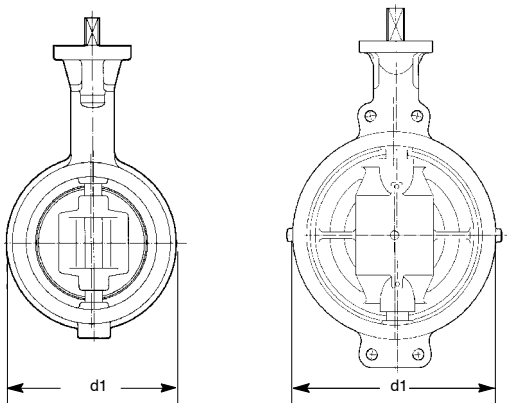
Downstream dismantling



End of line mounting

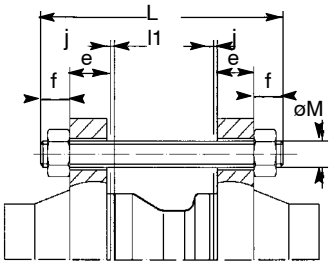


Bolting and weight for wafer type body - Type 1



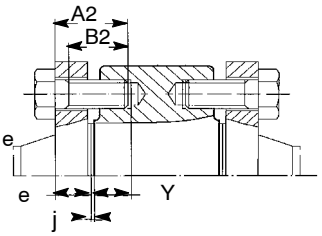
Tie-rod length
L = l1 + 2e + 2f + 2j

l1 : Valve face to face
e : Flange thickness (customer specification)
f : Overlength of the tie-rod
j : Thickness of the flange gasket



Screw length at shaft passages
A2 max. = e + Y + j

e : Flange thickness (customer specification)
Y : Max. implantation of the screw
j : Thickness of the flange gasket
B2 : Min. threaded length of the screw B2 > A2-e



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

NB: We do not supply the bolting

DN	NPS	d1	l1	EN 1092-1 PN 10 (1)					EN 1092-1 PN 16 (1)					EN 1092-1 PN 25					ISO 7005 PN 20					weight kg
					Tie-rod **		Screw A2			Tie-rod **		Screw A2			Tie-rod **		Screw A2			Tie-rod **		Screw A2		
				ØM	f	Qty	Y	Qty*	ØM	f	Qty	Y	Qty*	Ø M	f	Nb	Y	Qty*	Ø M	f	Qty	Y	Qty*	
200	8	275	60	M20	24	8			M20	24	12			M24	29	12			M20	24	8			24. 0
250	10	330	68	M20	24	12			M24	29	12			M27	32	12			M24	29	12			36. 0
300	12	376	78	M20	24	12			M24	29	12			M27	32	12	26	4	M24	29	12			58. 0
350	14	413	92	M20	24	12	33	4	M24	29	12	33	4	M30	35	12	27	4	M27	27	12			79 0
400	16	470	102	M24	29	12	44	4	M27	32	12	44	4	M33	38	12	44	4	M27	27	12	44	4	110.0
450	18	530	114	M24	29	16	24	4	M27	32	16	24	4	M33	39	16	22	4	M30	31	12	40	4	146.0
500	20	572	127	M24	29	16	32	4	M30	35	16	31	4	M33	38	16	31	4	M30	31	16	31	4	188.0
600	24	680	154	M27	32	16	43	4	M33	38	16	48	4	M36	42	16	47	4	M33	34	16	47	4	293.0

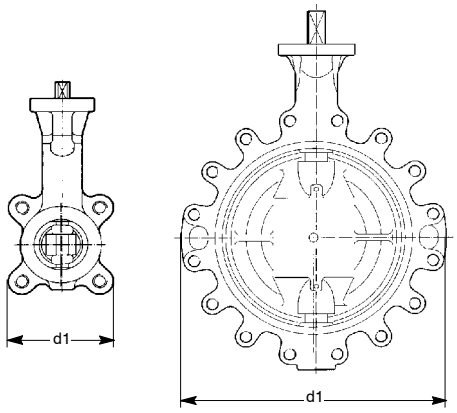
DN	NPS	d1	l1	ASME B16-5 cl.150					JIS B2220 10K					JIS B2220 16K and 20K					weight kg
					Tie-rod **		Screw A2			Tie-rod **		Screw A2			Tie-rod **		Screw A2		
				UNC	f	Qty	Y	Qty*	ØM	f	Qty	Y	Qty*	ØM	f	Qty	Y	Qty*	
200	8	275	60	3/4"	24	8			M20	24	12			M22	26	12			24. 0
250	10	330	68	7/8"	29	12			M22	26	12			M24	29	12			36. 0
300	12	376	78	7/8"	29	12			M22	26	12	24	4	M24	29	12	26	4	58. 0
350	14	413	92	1"	32	12			M22	26	12	39	4	M30x3	35	12	41	4	79. 0
400	16	470	102	1"	32	12	44	4	M24	29	12	42	4	M30x3	35	12	44	4	110.0
450	18	530	114	1"1/8	35	12	40	4	M24	29	16	24	4	M30x3	35	16	24	4	146.0
500	20	572	127	1"1/8	35	16	31	4	M24	29	16	32	4	M30x3	35	16	32	4	188.0
600	24	680	154	1"1/4	38	16	47	4	M30	35	20	37	4	M36x3	42	20	36	4	293.0

* Quantity of screws at shaft passages by face

** Quantity of nuts = quantity of tie-rods x 2

(1) Variant 4 tie-rods possible for DN 65

Bolting and weight for full-lug type body - Type 4

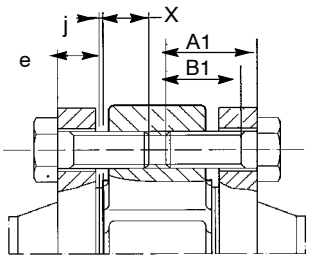


The drawings are not the correct representation of our manufacture (quantity for full-lug holes).

NB: We do not supply the bolting

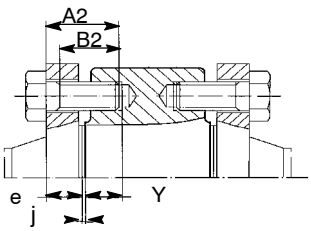
Screw length
A1 max. = e + X + j

e : Flange thickness (customer specification)
X : Max. implantation of the screw
j : Thickness of the flange gasket
B1 : Min. threaded length of the screw B1 > A1-e



Screw length at shaft passages
A2 max. = e + Y + j

e : Flange thickness (customer specification)
Y : Max. implantation of the screw
j : Thickness of the flange gasket
B2 : Min. threaded length of the screw B2 > A2-e



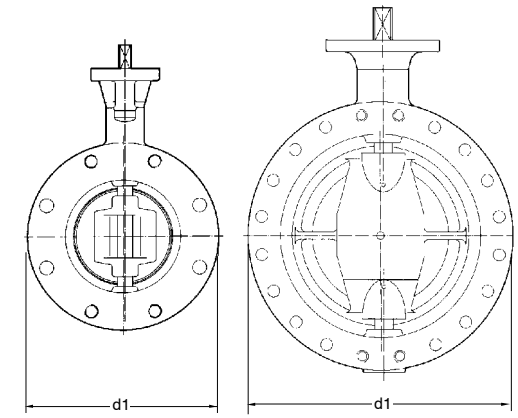
DN	NPS	d1	EN 1092-1 PN 10 (1)					EN 1092-1 PN 16 (2)					EN 1092-1 PN 25					ISO 7005 PN 20					weight kg
				Screw A1		Screw A2			Screw A1		Screw A2			Screw A1		Screw A2			Screw A1		Screw A2		
			ØM	X	Qty*	Y	Qty*	ØM	X	Qty*	Y	Qty*	Ø M	X	Qty*	Y	Qty*	Ø M	X	Qty*	Y	Qty*	
200	8	310	M20	26	8													M20	26	8			30. 0
200	8	340						M20	26	12			M24	29	12								31. 0
250	10	417	M20	26	12			M24	30	12			M27	33	12			M24	30	12			48. 0
300	12	478	M20	26	12			M24	30	8	35	4						M24	26	12			70. 0
300	12	476											M27	33	12	26	4						72. 5
350	14	523																M27	39	12			99. 0
350	14	542	M20	37	16			M24	37	16			M30	42	16								108.0
400	16	606	M24	42	16			M27	44	16			M33	44	16			M27	44	16			130.0
450	18	630																M30	51	12	40	4	167.0
450	18	657	M24	40	16	24	4	M27	44	16	24	4	M33	39	16	22	4						207.0
500	20	716	M24	42	16	32	4	M30	51	16	31	4	M33	55	16	31	4	M30	51	16	31	4	237.0
600	24	834	M27	43	20			M33	52	16	48	4	M36	57	16	47	4	M33	52	16	47	4	363.0

DN	NPS	d1	ASME B16-5 class 150					JIS B2220 10K					JIS B2220 16K and 20K					weight kg
				ScrewA1		ScrewA2			ScrewA1		ScrewA2			ScrewA1		ScrewA2		
			UNC	X	Qty*	Y	Qty*	ØM	X	Qty*	Y	Qty*	ØM	X	Qty*	Y	Qty*	
200	8	310	3/4"	26	8													30. 0
200	8	340						M20	29	12			M22	29	12			31. 0
250	10	417	7/8"	30	12			M22	32	12			M24	31	12			48. 0
300	12	478	7/8"	26	12													70. 0
300	12	476						M22	24	16			M24	30	16			72. 5
350	14	523	1"	39	12													99. 0
350	14	542						M22	36	16			M30x3	34	16			108.0
400	16	606	1"	44	16			M24	42	16			M30x3	44	16			130.0
450	18	630	1"1/8	51	12	40	4											167.0
450	18	657						M24	40	16	24	4	M30x3	49	16	26	4	207.0
500	20	716	1"1/8	51	16	31	4	M24	42	16	32	4	M30x3	51	16	32	4	237.0
600	24	834	1"1/4	52	16	47	4											363.0

* Quantity of screws by face

(1) Variant 4 screws by face possible for DN 65

Bolting and weight for flanged type body - Type 7

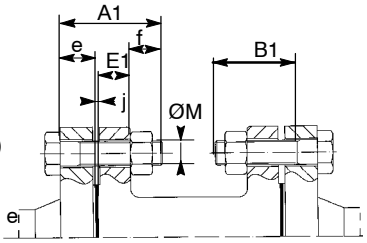


The drawings are not the correct representation of our manufacture (quantity for threaded and plain holes).

Screw length on flanges

A1 max. = e + j + E1 maxi + f

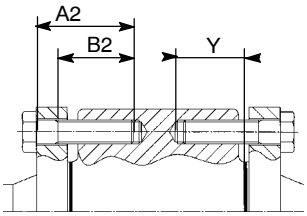
E1 : Thickness of valve flange
e : Thickness of flange (customer specification)
f : Overlength of the screw
j : Thickness of flange gasket
B1 : Min. threaded length of the screw B1 > A1 - e



Screw length at shaft passages

A2 max. = e + j + Y

e : Thickness of flange (customer specification)
Y : Max. implantation of the screw at shaft passages
j : Thickness of the flange gasket
B2 : Min. threaded length of the screw B 2> A2 - e



NB: We do not supply the bolting

DN	NPS	d1	E1	EN 1092-1 PN 10 (1)					EN 1092-1 PN 16 (1)					EN 1092-1 PN 25					ISO 7005 PN 20					weight kg
					Screw A1		Screw A2			Screw A1		Screw A2			Screw A1		Screw A2			Screw A1		Screw A2		
				ØM	f	Qty*	Y	Qty*	ØM	f	Qty*	Y	Qty*	Ø M	f	Qty*	Y	Qty*	ØM	f	Qty*	Y	Qty*	
200	8	343	31,5	M20	24	4	28	4	M20	24	8	28	4						M20	24	4	28	4	52. 0
250	10	406	33,5	M20	24	8	30	4	M24	29	8	30	4						M24	29	8	30	4	73. 0
300	12	483	35,0	M20	24	8	32	4	M24	29	8	32	4	M27	32	12	32	4	M24	29	8	32	4	115.0
350	14	535	38,0	M20	24	12	35	4	M24	29	12	35	4						M27	32	8	35	4	147.0
400	16	600	40,0	M24	29	12	37	4	M27	32	12	37	4	M33	38	12	37	4	M27	32	12	37	4	207. 0
450	18	635	42,5	M24	29	16	39	4	M27	32	16	39	4	M33	38	16	39	4	M30	35	12	39	4	243. 0
500	20	700	46,0	M24	29	16	42	4	M30	35	16	42	4						M30	35	16	42	4	335. 0
600	24	826	52,0	M27	32	16	48	4	M33	38	16	48	4	M36	42	16	48	4	M33	38	16	48	4	463. 0

DN	NPS	d1	E1	ASME B16-5 cl 150					JIS B2220 10K					JIS B2220 16K and 20K					weight kg
					Screw A1		Screw A2			Screw A1		Screw A2			Screw A1		Screw A2		
				UNC	f	Qty*	Y	Qty*	ØM	f	Qty*	Y	Qty*	ØM	f	Qty*	Y	Qty*	
200	8	343	31,5	3/4"	24	4	28	4	M20	24	8	4	28	M22	27	8	28	4	52. 0
250	10	406	33,5	7/8"	29	8	30	4	M22	27	8	4	30						73. 0
300	12	483	35,0	7/8"	29	8	32	4	M22	27	12	4	32	M24	29	12	32	4	115. 0
350	14	535	38,0	1"	32	8	35	4	M22	27	12	4	35	M30X3	35	12	35	4	147. 0
400	16	600	40,0	1"	32	12	37	4	M24	29	12	4	37	M30X3	35	12	37	4	207.0
450	18	635	42,5	1"1/8	35	12	39	4	M24	29	16	4	39						243. 0
500	20	700	46,0	1"1/8	35	16	42	4	M24	29	16	4	42						335. 0
600	24	826	52,0	1"1/4	38	16	48	4	M30	35	20	4	48	M36X3	42	20	48	4	463.0

* Quantity of screws by face

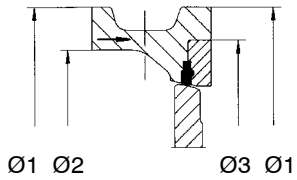
(1) Variant 4 screws by face possible for DN 65

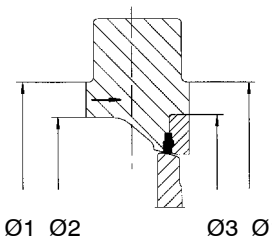
Flanging dimensions

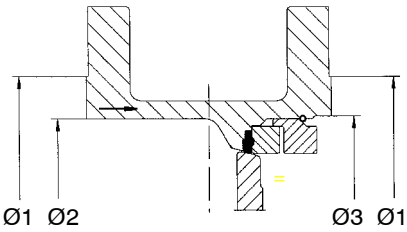
TRIODIS 150 MT valves are designed to be fitted with flat gaskets or spiral-wound gaskets between any type of flanges and connection standards currently used.

SEALING AREA ON FLANGE FACES

In order to ensure a correct connection, the dimensions of flange gaskets must be compatible with the dimensions mentionned in the table below.





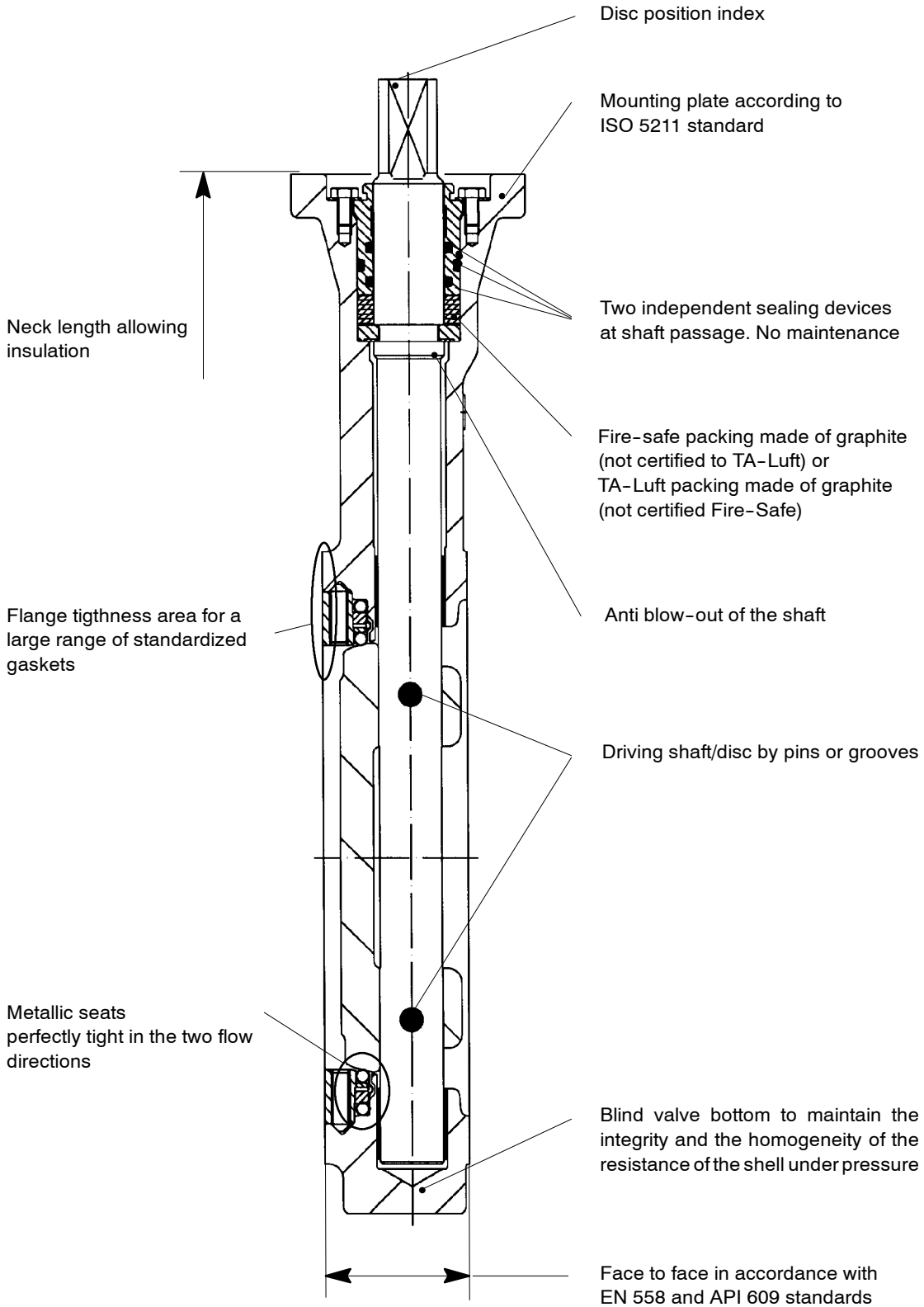


DN	NPS	Wafer type body			Full-lug type body			Flanged type body		
		Ø1	Ø2	Ø3	Ø1	Ø2	Ø3	Ø1	Ø2	Ø3
200	8	260	219	226	269.7	219	226	269.7	226	226
250	10	315	273	274	323.9	273	274	323.9	277	274
300	12	364 *	320	331	381.0	327	331	381.0	326	324
350	14	413	355	386	412.8 **	363	386	412.8	375	372
400	16	470	408	438	469.9	414	438	469.9	430	425
450	18	530	464	498	533.4	468	498	533.4	468	489
500	20	572	510	538	584.2	518	538	584.2	526	529
600	24	680	610	644	692.2	623	644	692.2	630	625

* Ø1: 375 for EN 1092-1 PN 25 and JIS B2220 10K, 16K, 20K

** Ø1: 438 for EN 1092-1 PN 10, 16, 25 and JIS B2220 10K, 16K, 20K

Product features - to our customer's benefit



06.12.11
8465.52/1-10

KSB S.A.S
4, allée des Barbanniers • 92635 Gennevilliers Cedex (France)
Tel. : +33 1 41 47 75 00 • Fax : +33 1 41 47 75 10 • www.ksb.com