

Butterfly Valve

TRIODIS 600

Type Series Booklet



Legal information/Copyright

Type Series Booklet TRIODIS 600

All rights reserved. The contents provided herein must neither be distributed, copied, reproduced, edited or processed for any other purpose, nor otherwise transmitted, published or made available to a third party without the manufacturer's express written consent.

Subject to technical modification without prior notice.

© KSB S.A.S, Gennevilliers (Paris), France 31/05/2021

Contents

Butterfly Valves.....	4
Triple-offset Butterfly Valves	4
TRIODIS 600	4
Main applications.....	4
Fluids handled	4
Operating data.....	4
Design details.....	4
Valve body materials.....	5
Product benefits.....	5
Product information	5
Certifications	6
Related documents	6
Purchase order specifications	6
Pressure/temperature table	7
Technical data	8
Materials.....	10
Dimensions and weights.....	18
Connections.....	20
Installation information.....	21

Butterfly Valves

Triple-offset Butterfly Valves

TRIODIS 600



Main applications

- Mining
- Chemical industry
- Petrochemical industry
- Pressure boosting
- Shipbuilding
- Pipelines and tank farms
- Process engineering
- Gas tanks
- Industrial recirculation systems
- Nuclear power stations
- Air-conditioning systems
- Fossil-fuelled power stations
- Paper industry / pulp industry
- Hot-water heating systems

Fluids handled

- Gas
- Liquefied gas
- Liquefied natural gas
- Aggressive fluids
- Steam
- Solids-laden fluids
- Solids (ore, sand, gravel, ash)
- Flammable fluids
- High-temperature hot water
- Corrosive fluids
- Fuels
- Volatile fluids

- Fluids containing mineral oils
- Oil
- Polymerising/crystallising fluids
- Radioactive fluids
- Vacuum
- Thermal oil

Operating data

Table 1: Operating properties

Parameter	Value	
	TRIODIS 600 TBT	TRIODIS 600 MT
Nominal pressure	Class 600	
Nominal size	DN 150 - 1000	DN 150 - 1000
Max. permissible pressure [bar]	100	
Min. permissible temperature [°C]	≥ -196	-50
Max. permissible temperature [°C]	+200	≤ +450
Vacuum operation down to	0 bar absolute	
Max. permissible flow velocity at operating pressure	4 m/s for liquids 50 m/s for clean gases Higher flow velocities on request	

The permissible operating temperature depends on the fluid handled and on the seat used. Higher temperatures on request

Design details

Design

- Full-lug body with raised faces – T4: DN 150 - 1000 (6 - 40 in.)
- Flanged body with raised/flat faces – T7: DN 150 - 1000 (6 - 40 in.)
- Body with butt weld ends – BW: DN 150 - 1000 (6 - 40 in.)
- Face-to-face length in accordance with standards:
 - Class 600 T4: API 609-B (A) Class 600
 - Class 600 T7: ISO 5752 Series 14, EN 558-1 Series 14, API 609-B (C) Class 600
- Connections:
 - ASME B16-5 Class 600 UN/UNC: DN 150 - 600 (6 - 24 in.),
 - ASME B16-47 Series A Class 600: DN 700 - 1000 (28 - 40 in.),
 - ASME B16-47 Series B Class 600: DN 700 - 1000 (28 - 40 in.)
- Fire-safe design approved to ISO 10497 (equivalent to API 607 and BS 6755)
- Fugitive emissions performance certified in accordance with EN ISO 15848-1, leakage rate A C03, and in accordance with TA Luft (German Technical Guidelines on Air Quality Control, VDI Directive 2440)
- The valves meet the requirements of EN ISO 15847-1 Leakage rate B C3 and TA Luft (German Technical Guidelines on Air Quality Control, VDI guideline 2440)
- The valves meet SIL 3 safety requirements in accordance with IEC 61508.

- Marking in accordance with EN 19
- Steel body with anti-corrosive surface treatment
- Stainless steel body: pickled and passivated
- AMTROBOX for open/closed position signalling
- AMTRONIC position signalling and control air supply
- SMARTRONIC positioner and process controller
- Vent hole for additional tightness at shaft passage
- Drain plug
- NACE to MR0175 / ISO15156
- ATEX-compliant version in accordance with Directive 2014/34/EU
- Body with two-coat or three-coat paint system
- Anti-static design to EN 12266-2

Variants

- MR manual gearbox
- ACTAIR NG / DYNACTAIR NG pneumatic actuators
- HQ hydraulic actuators
- Electric quarter-turn actuators

Valve body materials

TRIODIS 600TBT

Table 2: Overview of available materials

Material to ASTM	Material to EN	Temperature limit	KSB code	Body design
ASTM A351 Gr. CF8M and EN 10213 + Stellite	EN 10213 1.4408	-196 °C to +200 °C	6	T7

TRIODIS 600 MT

Table 3: Overview of available materials

Material to ASTM	Material to EN	Temperature limit	KSB code	Body design
ASTM A216 Gr. WCC and EN 10213 + Stellite	EN 10213 1.0619	-29 °C to +260 °C	1	T4 / T7
Steel ASTM A216 Gr. WCC + Stellite			1p	
Steel ASTM A352 Gr. LCB + Stellite			1n	
ASTM A352 Gr. LCC and EN 10213 + Stellite	EN 10213 1.6220	-50 °C to +260 °C	1m	
ASTM A351 Gr. CF8M and EN 10213 + Stellite	EN 10213 1.4408		6	

Product benefits

- Tight shut-off
 - Perfect bi-directional shut-off: zero leakage to API 598, EN 12266, FCI 70-2, ISO 5208, ISO 28921-1, BS 6364
- Positioning and locking of actuator flange
 - Actuator easy to remove and reinstall in the system
- Ease of service
 - Seat can be replaced easily.
 - Innovative maintenance-free sealing system at the shaft passage
- Operating reliability
 - Anti-blowout design protects operators.
- Lifting lugs
 - for ease of lifting and handling
- Resistance depending on the number of open/closed cycles
 - Compliant with EN 12567 (equivalent to EN 28921)

EC Machinery Directive 2006/42/EC

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

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

For information as per chemicals Regulation (EC) No. 1907/2006 (REACH), see <https://www.ksb.com/ksb-en/About-KSB/Corporate-responsibility/reach/>.

Product information as per Directive 2014/34/EU (ATEX)

The valves do not have a potential internal source of ignition and can be used in potentially explosive atmospheres, Group II, category 2 (zones 1+21) to ATEX 2014/34/EU.

Product information

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

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

8613.1786/08-EN

Certifications

Table 4: Overview

Label	Effective in:	Comment
	Worldwide	Approved for marine applications
	Worldwide	Approved for marine applications
	Worldwide	Approved for marine applications
	Worldwide	Approved for marine applications (on request)
	China	TSG D7002-2006

Related documents

Table 5: Information/documents

Document	Reference number
Operating manual	8613.81

Purchase order specifications

Please specify the following information in all enquiries or purchase orders:

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

Pressure/temperature table

In pressure class Class 600 (European materials) the TRIODIS 600 valve meets the requirements of ASME B16.34 and EN 12516-1 as shown in the table below.

The values given in the table must be adhered to if the valves are to comply with Pressure Equipment Directive 2014/68/EU.

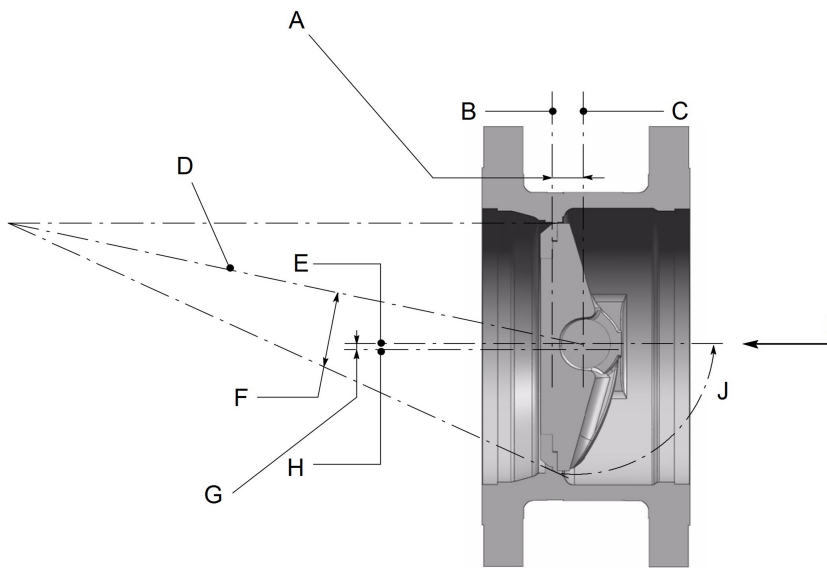
Table 6: Test pressure and operating pressure

ASTM and European materials	Operating pressure [bar]									
	[°C]									
Body and extension	-196	-50	-29	-10	50	100	150	200	250	260
ASTM A216 Gr. WCC / EN 10213 1.0619	Not permitted	Not permitted	103,4	103,4	103,4	103,0	100,3	97,2	92,6	91,2
ASTM A216 Gr. WCB	Not permitted	Not permitted	102,1	102,1	100,1	92,7	90,2	87,6	83,4	82,2
ASTM A352 Gr. LCB	Not permitted	95,7 ¹⁾	95,7 ¹⁾	95,7	94,6	90,2	87,9	85,1	81,1	79,9
ASTM A352 Gr. LCC / EN 10213 1.6220	Not permitted	103,4 ¹⁾	103,4 ¹⁾	103,4	103,4	103,0	100,3	97,2	92,6	91,2
ASTM A51 Gr. CF8M / EN 10213 1.4408	99,3	99,3	99,3	99,3	96,2	84,4	77,0	71,3	66,8	66,0

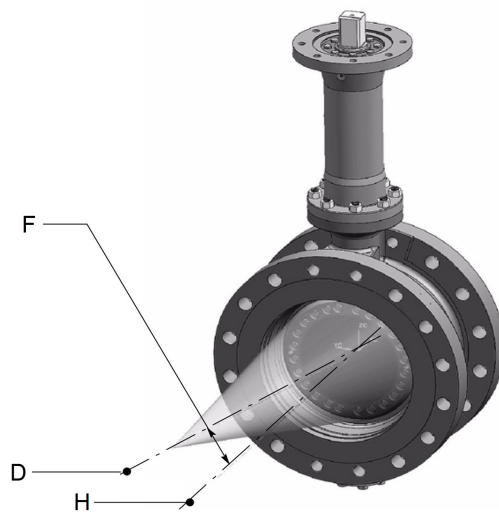
¹ For standard ASME B16.34 only

Technical data

Sealing system design



Function schematic



3D view

- | | |
|----------------------------|---------------------------------------|
| A - First offset | F - Third offset |
| B - Seat axis | G - Second offset |
| C - Shaft plane | H - Pipe centreline |
| D - Axis of cone over seat | I - Preferred flow direction |
| E - Shaft axis | J - Direction of rotation for opening |

First offset

The axis of the seal is offset from the shaft axis, enabling tight shut-off without interfering with the shaft passage.

Second offset

The shaft plane is offset from the axis of the sphere, reducing friction between the valve disc seat and the body seal.

Third offset

The tri-conical shape results from the offset circles of the initial sphere. The tri-conical axis is inclined at a defined angle from the axis of the sphere, preventing friction during valve actuation and thus increasing the service life.

Hydraulic characteristics

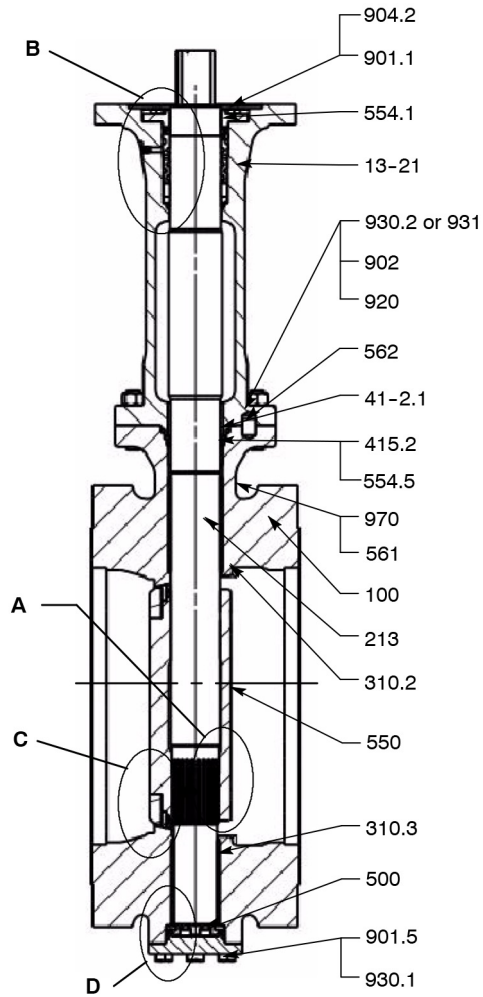
Table 7: [Kv0 in m³/h / bar^{0.5}] and [Cv0 in GUS/min / psi^{0.5}]

DN	NPS	Flow coefficient with valve disc fully open		Zeta
		Kv0	Cv0	
150	6	480	560	3,51
200	8	670	780	5,69
250	10	1200	1400	4,33
300	12	1890	2200	3,62
350	14	2640	3070	3,44
400	16	3880	4510	2,72
450	18	4580	5320	3,12
500	20	5990	6950	2,78
600	24	9750	11310	2,18
700	28	10310	11960	3,61
750	30	13010	15100	2,98
800	32	14390	16700	3,16
900	36	17630	20460	3,37
1000	40	21430	24860	3,48

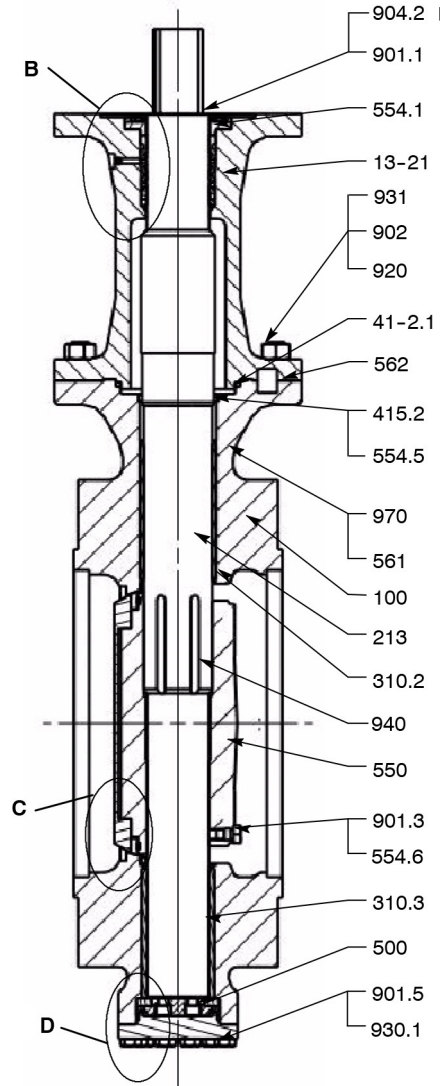
Materials

TRIODIS 600 TBT

Sectional drawing of a flanged body (T7) - TRIODIS 600 TBT

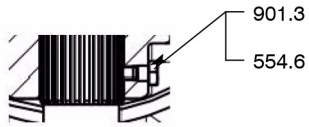


Valve disc with spline
DN 6 - 10 in.

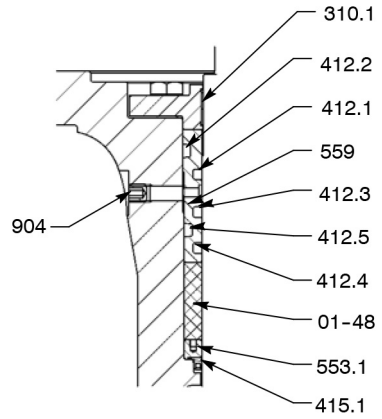


Valve disc with cylindrical keys
DN 12 - 40 in.

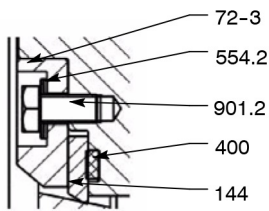
Details: flanged body – TRIODIS 600 TBT



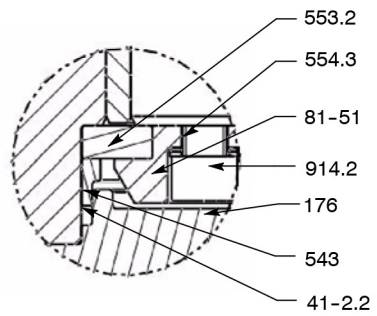
Detail A



Detail B



Detail C



Detail D

List of components: flanged body – TRIODIS 600 TBT

Part No.	Description	DN	Materials	KSB code
100	Body	150 - 1000	Stainless steel ASTM A351 Gr. CF8M / EN 10213 1.4408 + Stellite	6
13-21	Extension	150 - 1000	Stainless steel ASTM A351 Gr. CF8M / EN 10213 1.4408	6
213	Shaft	150 - 1000	Stainless steel ASTM A479 Gr. XM19	6r
			Stainless steel ASTM A479 Gr. 316L EN 10213 / 1.4404 (for reduced operating pressure)	6
			Stainless steel ASTM A638 Gr. 660 (for special operating conditions)	6f
310.2 ²⁾	Upper plain bearing	150 - 1000	Stainless steel 316L + PTFE	
310.3 ²⁾	Lower plain bearing	150 - 1000	Stainless steel 316L + PTFE	
41-2.1	Static sealing element for extension	150 - 1000	Graphite	
415.2	Lip seal	150 - 1000	PTFE + Elgiloy	
500	Anti-static ring	150 - 1000	Stainless steel EN 10213 1.4310	
550	Valve disc	150 - 1000	Stainless steel ASTM A351 Gr. CF8M / EN 10213 1.4408	6
554.1	Washer, flat	150 - 1000	Stainless steel 316L	
554.5	Spacer ring	150 - 1000	Stainless steel 316L	
554.6	Nord Lock® washer	300 - 1000	Stainless steel 316L	
561	Half round head grooved pin	150 - 1000	Stainless steel EN 10213 1.4303	
562	Pin	150 - 1000	Stainless steel ASTM A638 Gr. 660	
901.1	Hexagon head bolt	150 - 1000	Stainless steel Cl. A4-70	
901.3	Tie bolt	300 - 1000	Stainless steel Cl. A4-70	
901.5	Hexagon head bolt	150 - 1000	Stainless steel ASTM A320 Gr. B8M Cl. 2	
902	Stud	150 - 1000	Steel ASTM A320 Gr. B8M Cl. 2	
904.2	Hexagon socket head cap screw	150 - 1000	Stainless steel Cl. A4-70	
920	Nut	150 - 1000	Stainless steel ASTM A194 Gr. 8M	
930.1	Safety device	150 - 1000	Stainless steel 316L	
930.2	Locknut	150 - 250	Stainless steel 316L	
931	Lock washer	150 - 1000	Stainless steel 316L	
940	Cylindrical key	300 - 1000	Stainless steel ASTM A638 Gr. 660	
970	Name plate	150 - 1000	Stainless steel 316 or equivalent	

²⁾ Bearing kit

List of components: flanged body, detail A

Part No.	Description	DN	Materials	KSB code
554.6	Washer	150 - 1000	Stainless steel 316L	
901.3	Tie bolt	150 - 1000	Stainless steel Cl. A4-70	

List of components: flanged body, detail B

Part No.	Description	DN	Materials	KSB code
01-48	Gland packing	150 - 1000	Graphite, expanded	
310.1 ³⁾	Plain bearing	150 - 1000	Stainless steel + PTFE	
412.1	O-ring	150 - 1000	Nitrile HC	
412.2	O-ring	150 - 1000	Nitrile HC	
412.3	O-ring	150 - 1000	Nitrile HC	
412.4	O-ring	150 - 1000	Nitrile HC	
412.5	O-ring	150 - 1000	Nitrile HC	
415.1	Lip seal	150 - 1000	PTFE + Elgiloy	
553.1	Thrust insert	150 - 1000	Stainless steel 316L	
559	Seal retainer	150 - 1000	Stainless steel 316L	
904	Hexagon socket head cap screw	150 - 1000	Stainless steel Cl. A4-70	

List of components: flanged body, detail C

Part No.	Description	DN	Materials	KSB code
144	Seat	150 - 1000	Nickel-based alloy	8j
400	Static sealing element	150 - 1000	Stainless steel 316L+ graphite	
554.2	Nord Lock® washer	150 - 1000	Stainless steel 316	
72-3	Retaining flange	150 - 1000	Stainless steel EN 10025 S355 or EN 10088-2 1.4462	
901.2	Hexagon head bolt	150 - 1000	Steel Cl. 8.8 or stainless steel A4-80	

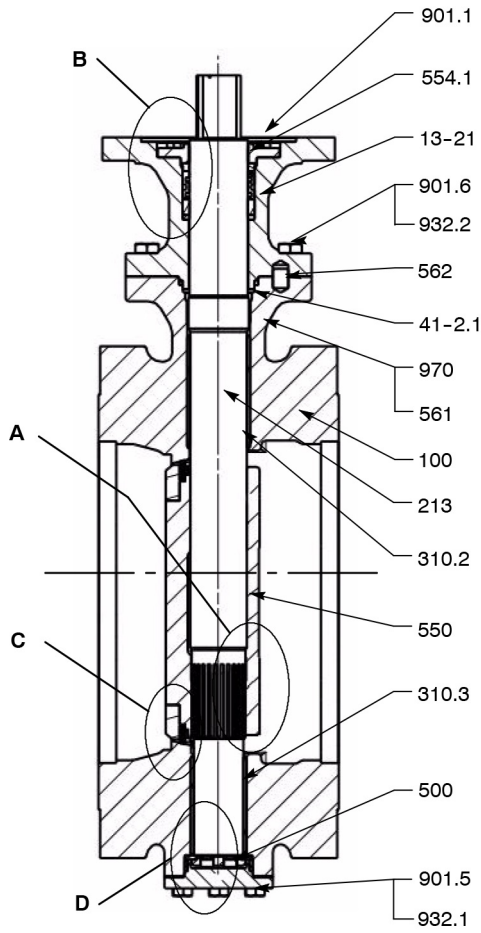
List of components: flanged body, detail D

Part No.	Description	DN	Materials	KSB code
176	Bottom	150 - 1000	Stainless steel ASTM A516 Gr. 70 or stainless steel 316L	
41-2.2	Static sealing element for bottom	150 - 1000	Graphite	
543	Spacer bush	150 - 1000	Stainless steel 316L	
553.2	Thrust insert	150 - 1000	Stainless steel 316L	
554.3	Washer	150 - 1000	Stainless steel 316	
81-51	Clamping element	150 - 1000	Stainless steel 316L	
914.2	Hexagon socket head cap screw	150 - 1000	Stainless steel Cl. A4-70	

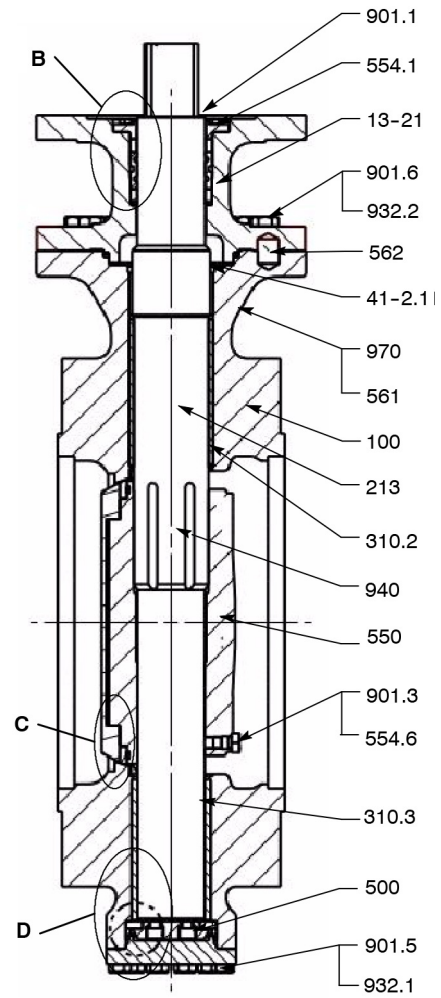
³ Shaft seal kit

TRIODIS 600 MT

Sectional drawing of a flanged body (T7) - TRIODIS 600 MT

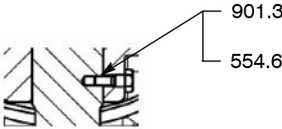


Valve disc with spline
DN 6 - 10 in.

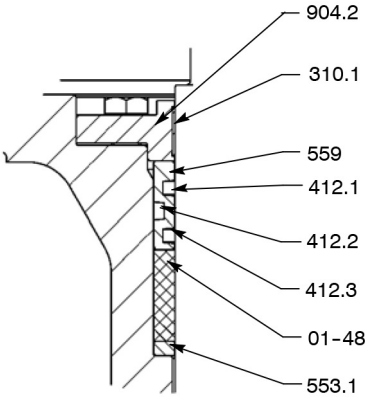


Valve disc with cylindrical keys
DN 12 - 40 in.

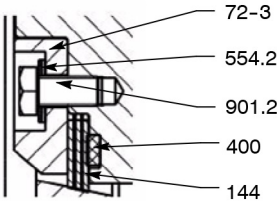
Detail: flanged body – TRIODIS 600 MT



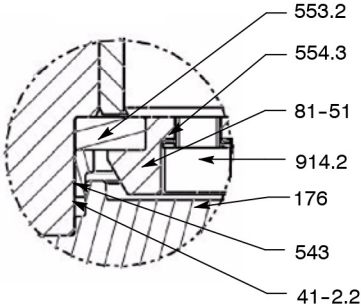
Detail A



Detail B



Detail C



Detail D

List of components: flanged body – TRIODIS 600 MT

Part No.	Description	DN	Materials	KSB code
100	Body	150 - 1000	Steel ASTM A216 Gr. WCC / EN 10213 1.0619 + Stellite	1
			Steel ASTM A216 Gr. WCC + Stellite	1p
			Steel ASTM A352 Gr. LCB + Stellite	1n
			Steel ASTM A352 Gr. LCC / EN 10213 1.6220 + Stellite	1m
			Stainless steel ASTM A351 Gr. CF8M / EN 10213 1.4408 + Stellite	6
13-21	Extension	150 - 1000	Steel ASTM A216 Gr. WCC // EN 10213 1.0619	1
			Steel ASTM A216 Gr. WCB	1p
			Steel ASTM A352 Gr. LCB	1n
			Steel ASTM A352 Gr. LCC / EN 10213 1.6220	1m
			Stainless steel ASTM A351 Gr. CF8M / EN 10213 1.4408	6
213	Shaft	150 - 1000	Stainless steel ASTM 431 and EN 10272 1.4057 (0 °C min. to +250 °C)	6h
			Stainless steel ASTM A564 Gr. 630 and EN 10088-3 1.4542 (-50 °C min. to +260 °C)	6e
310.2 ⁴⁾	Upper plain bearing	150 - 1000	Stainless steel 316L + PTFE	
310.3 ⁴⁾	Lower plain bearing	150 - 1000	Stainless steel 316L + PTFE	
41-2.1	Static sealing element for extension	150 - 1000	Graphite	
500	Anti-static ring	150 - 1000	Stainless steel EN 10213 1.4310	
550	Valve disc	150 - 1000	Steel ASTM A216 Gr. WCC // EN 10213 1.0619	1
			Steel ASTM A216 Gr. WCB	1p
			Steel ASTM A352 Gr. LCB	1n
			Steel ASTM A352 Gr. LCC / EN 10213 1.6220	1m
			Stainless steel ASTM A351 Gr. CF8M / EN 10213 1.4408	6
554.1	Washer, flat	150 - 1000	Stainless steel 316L or EN 10025 S235	
554.6	Nord Lock® washer	300 - 1000	Stainless steel 316L	
561	Half round head grooved pin	150 - 1000	Stainless steel EN 10213 1.4303	
562	Pin	150 - 1000	Stainless steel ASTM A638 Gr. 660	
901.1	Hexagon head bolt	150 - 1000	Steel Cl. 8.8 or stainless steel A4-70	
901.3	Tie bolt	300 - 1000	Stainless steel Cl. A4-70	
901.5	Hexagon head bolt	150 - 1000	Stainless steel Cl. A4-70	
901.6	Hexagon head bolt	150 - 1000	Stainless steel Cl. A4-70	
932.1	Lock washer	150 - 1000	Stainless steel 316L	
932.2	Lock washer	150 - 1000	Stainless steel 316L	
940	Cylindrical key	300 - 1000	Stainless steel ASTM A638 Gr. 660	
970	Name plate	150 - 1000	Stainless steel 316 or equivalent	

⁴ Bearing kit

List of components: flanged body, detail A

Part No.	Description	DN	Materials	KSB code
554.6	Washer	150 - 1000	Stainless steel 316L	
901.3	Tie bolt	150 - 1000	Stainless steel Cl. A4-70	

List of components: flanged body, detail B

Part No.	Description	DN	Materials	KSB code
01-48	Gland packing	150 - 1000	Graphite, expanded	
310.1 ⁵⁾	Plain bearing	150 - 1000	Stainless steel + PTFE	
412.1	O-ring	150 - 1000	Nitrile HC	
412.2	O-ring	150 - 1000	Nitrile HC	
412.3	O-ring	150 - 1000	Nitrile HC	
553.1	Thrust insert	150 - 1000	Stainless steel 316L	
559	Circlip	150 - 1000	Stainless steel 316L or EN 10025 S235	
904	Hexagon socket head cap screw	150 - 1000	Stainless steel Cl. A4-70	

List of components: flanged body, detail C

Part No.	Description	DN	Materials	KSB code
144	Seat	150 - 1000	Duplex stainless steel	7e
			Duplex stainless steel + PCTFE	FE
400	Static sealing element	150 - 1000	Stainless steel 316L+ graphite	
554.2	Washer	150 - 1000	Stainless steel 316	
72-3	Retaining flange	150 - 1000	Stainless steel EN 10025 S355 or EN 10088-2 1.4462	
901.2	Hexagon head bolt	150 - 1000	Steel Cl. 8.8 or stainless steel A4-80	

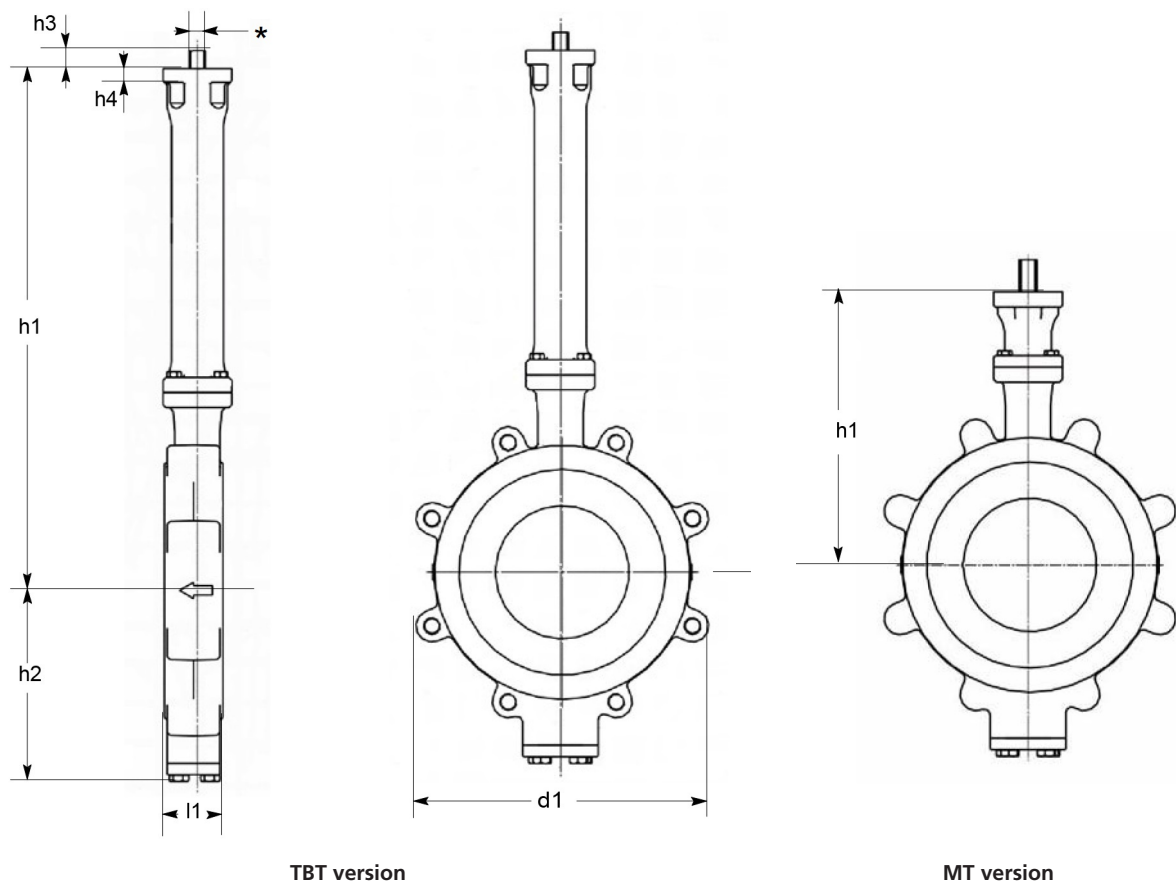
List of components: flanged body, detail D

Part No.	Description	DN	Materials	KSB code
176	Bottom	150 - 1000	Stainless steel 316L	
41-2.2	Static sealing element for bottom	150 - 1000	Graphite	
543	Spacer bush	150 - 1000	Stainless steel 316L	
553.2	Thrust insert	150 - 1000	Stainless steel 316L	
554.3	Nord Lock® washer	150 - 1000	Stainless steel 316	
81-51	Clamping element	150 - 1000	Stainless steel 316L	
914.2	Hexagon socket head cap screw	150 - 1000	Stainless steel Cl. A4-70	

⁵ Shaft seal kit

Dimensions and weights

Full-lug body – T4

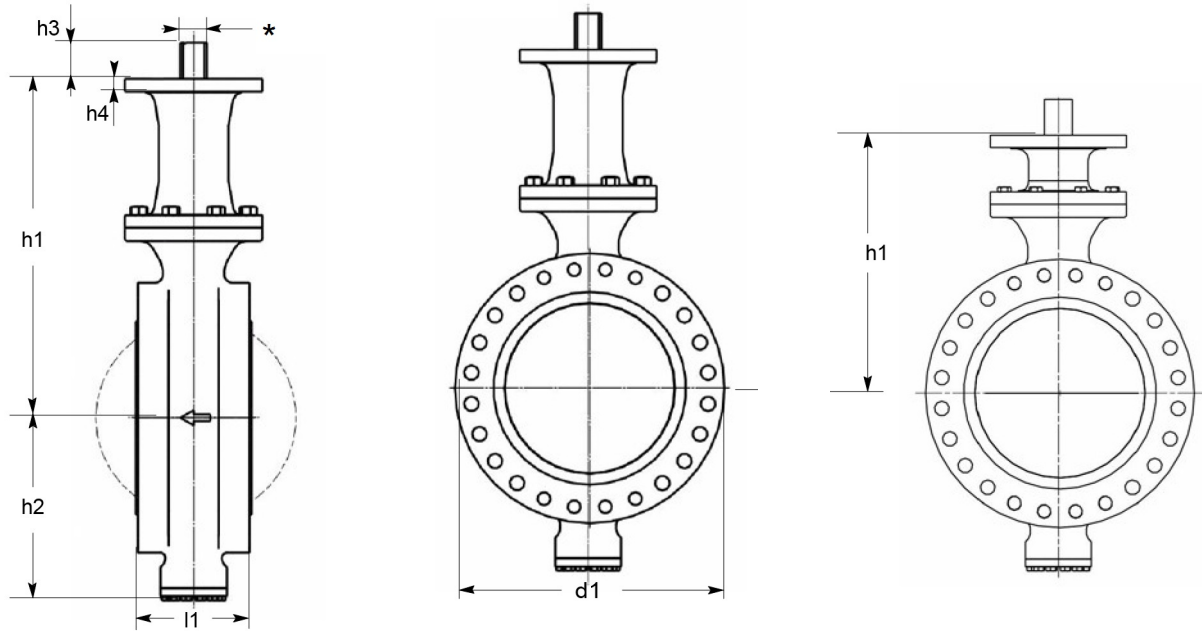


* Flat end s in $\emptyset z$ or $\emptyset z s$

Table 8: Dimensions [mm] and weights [kg]

DN	NPS	d1	Face-to-face length l1	TBT	MT	h2	Top flange to ISO 5211		Square shaft end		Flat shaft end			[kg]	
				h1	No.		h4	$\emptyset s$	h3	$\emptyset s$	$\emptyset Z$	h3	TBT	MT	
150	6	328	78	610	320	198	F12	23	27	45	-	-	-	50	40
200	8	388	102	690	390	245	F14	23	36	55	-	-	-	94	77
250	10	477	120	760	455	289	F16	27	46	65	-	-	-	154	133
300	12	484	140	770	550	329	F25	30	60	80	-	-	-	251	221
350	14	577	157	895	595	384	F25	30	60	80	-	-	-	323	293
400	16	662	178	925	650	421	F30	34	70	90	-	-	-	469	419
450	18	717	200	995	720	496	F30	34	70	100	-	-	-	607	541
500	20	789	218	1025	785	534	F35	38	80	110	-	-	-	787	715
600	24	914	235	1165	918	619	F40	45	110	130	-	-	-	1196	1110
700	28	Contact KSB.													
750	30	Contact KSB.													
800	32	Contact KSB.													
900	36	Contact KSB.													
1000	40	Contact KSB.													

Flanged body – T7



TBT version

MT version

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

Table 9: Dimensions [mm] and weights [kg]

DN	NPS	d1	Face-to-face length	TBT	MT	h2	Top flange to ISO 5211		Square shaft end		Flat shaft end			[kg]	
							No.	h4	$\square s$	h3	$\square s$	$\varnothing Z$	h3	TBT	MT
150	6	355	210	610	320	197	F12	23	27	45	-	-	-	102	88
200	8	420	233	690	390	242	F14	24	36	55	-	-	-	164	146
250	10	510	253	760	455	289	F16	27	46	65	-	-	-	260	239
300	12	560	273	770	550	326	F25	30	60	80	-	-	-	400	326
350	14	606	293	895	595	384	F25	30	60	80	-	-	-	438	407
400	16	687	313	925	650	421	F30	34	70	90	-	-	-	614	568
450	18	746	333	995	720	496	F30	34	70	100	-	-	-	855	717
500	20	818	350	1025	785	534	F35	38	80	110	-	-	-	1005	933
600	24	940	390	1165	918	621	F40	45	110	130	-	-	-	1506	1421
700	28	950	430	1210	720	641	F40	45	110	130	-	-	-	2010	1775
750	30	1020	430	1252	762	661	F40	45	110	130	-	-	-	2200	2010
800	32	1085	470	1280	790	694	F40	45	110	130	-	-	-	2642	2457
900	36	1215	510	1380	900	777	F48	50	144	140	-	-	-	3419	3035
1000	40	1320	550	1580	1100	907	F48	50	140	140	-	-	-	4316	4000

Connections

The valves can be installed between flanges to ASME B16.5 Class 600 (other line connections on request).

Table 10: Full-lug body (T4) and flanged body (T7)

DN	NPS	ASME B16.5 Class 600	ASME B16.47-A and ASME B16.47-B
	[inch]		
150	6	✓	-
200	8	✓	-
250	10	✓	-
300	12	✓	-
350	14	✓	-
400	16	✓	-
450	18	✓	-
500	20	✓	-
600	24	✓	-
700	28	-	✓
750	30	-	✓
800	32	-	✓
900	36	-	✓
1000	40	-	✓

Table 11: Symbols key

Symbol	Description
✓	Installation possible
•	Not available

Installation information

Flange face

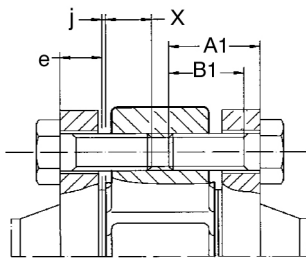
Definition	Raised face RF	Flat face FF
Smooth finish	Standard	On request
Stock finish	On request	On request
RTJ (T7 only)	On request	On request

Dead-end service and downstream dismantling

Possible, on request

Bolting

Bolting for full-lug body – T4



Bolt length for tapped lugs

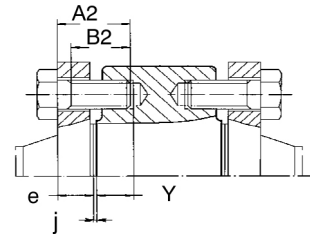
$$A1 \text{ max.} = e + X + j$$

e: flange thickness (customer-specific)

X: max. thread engagement depth

j: flange gasket thickness

B1: min. bolt thread length $B1 > A1 - e$



Bolt length at shaft passage

$$A2 \text{ max.} = e + Y + j$$

e: flange thickness (customer-specific)

Y: max. thread engagement depth

j: flange gasket thickness

B2: min. bolt thread length $B2 > A2 - e$

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

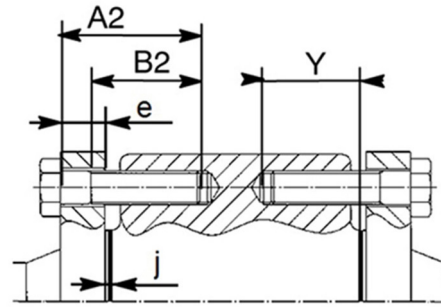
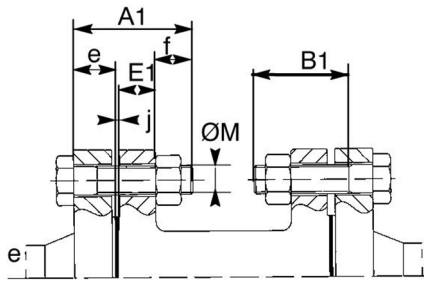
N.B.: Bolting is not included in our standard scope of supply.

Table 12: Dimensions [mm] for full-lug body T4 – Connections to ASME B16.5 Class 600

DN	NPS	ASME B16.5 Class 600				
		UN or UNC	Bolt A1		Bolt A2	
		[inch]	X	Qty ⁶⁾	Y	Qty ⁶⁾
150	6	Contact KSB.				
200	8	1" 1/8	47	8	37	4
250	10	1" 1/4	56	12	28,5	4
300	12	1" 1/4	56	16	32	4
350	14	1" 3/8	62	16	32	4
400	16	1" 1/2	65	16	40	4
450	18	1" 5/8	70	16	41	4
500	20	1" 5/8	70	20	42	4
600	24	1" 7/8	80	20	40,5	4
700	28	Contact KSB.				
750	30	Contact KSB.				
800	32	Contact KSB.				
900	36	Contact KSB.				
1000	40	Contact KSB.				

⁶⁾ Number of bolts per side

Bolting for flanged body – T7



Bolt length for flanges

$$A1 \text{ max.} = e + j + E1 \text{ max.} + f$$

- E1: valve flange thickness
- e: flange thickness (customer-specific)
- f: bolt overhang
- j: flange gasket thickness
- B1: min. bolt thread length $B1 > A1 - e$

Bolt length at shaft passage

$$A2 \text{ max.} = e + Y + j$$

- e: flange thickness (customer-specific)
- Y: max. thread engagement depth at shaft passage
- j: flange gasket thickness
- B2: min. bolt thread length $B2 > A2 - e$

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

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

Table 13: Dimensions [mm] for flanged body T7 – Connections to ASME B16.5 Class 600

DN	NPS	ASME B16.5 Class 600				
		UN or UNC	Bolt A1		Bolt A2	
		[inch]	f	Qty ⁷⁾	Y	Qty ⁷⁾
150	6	1"	35	8	45	4
200	8	1" 1/8	32	8	46	4
250	10	1" 1/4	34	12	51	4
300	12	1" 1/4	34	16	55	4
350	14	1" 3/8	38	16	57	4
400	16	1" 1/2	41	16	57	4
450	18	1" 5/8	48	16	63	4
500	20	1" 5/8	48	16	69	8
600	24	1" 7/8	58	16	72	8
700	28	2"	69	20	75	8
750	30	2"	69	20	82	8
800	32	2" 1/4	77	20	87	8
900	36	2" 1/2	86	20	80	8
1000	40	2" 1/4	77	24	87	8

⁷⁾ Number of bolts per side



KSB SE & Co. KGaA
Johann-Klein-Straße 9 • 67227 Frankenthal (Germany)
Tel. +49 6233 86-0
www.ksb.com