

Butterfly Valve

DANAÏS CRYO

Type Series Booklet



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Type Series Booklet DANAÏS CRYO

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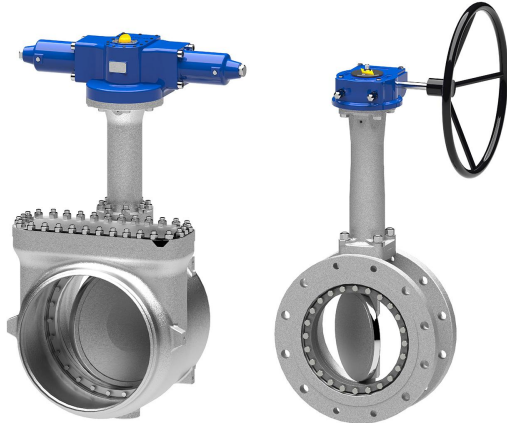
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Butterfly Valves

Offset-disc Butterfly Valves

DANAÏS CRYO



Main applications

- Liquefied natural gas process
- Shipbuilding
- Gas pipelines
- Gas storage facilities
- Process engineering

Fluids handled

- Gas
- Liquefied gas
- Liquefied natural gas
- Oxygen

Operating data

Table 1: Operating properties

Characteristic	Value
Nominal pressure	Class 150
Nominal size	With flanged ends (T7): 80 - 1400 (3 - 56)
	With butt weld ends (BW): 100 - 1200 (4 - 48)
Max. permissible pressure [bar]	20 (Class 150)
Min. permissible temperature [°C]	≥ -253
Max. permissible temperature [°C]	≤ +200
Actuation at ΔP [bar]	20 (25 on request)
Vacuum operation down to	0 bar absolute

Design details

Design

Valves to type series booklet 8460.1241

- Body with butt weld ends (BW): DN 100-1200 (4-48 in.)
- Flanged body with raised faces – T7: DN 80-1400 (3-56 in.)
- Suitable for downstream dismantling and as dead-end valve
- Approved fire-safe design to BS 6755 Part 2 (equivalent to API 6FA)
- Face-to-face length to EN 558-13 and ISO 5752-13 for flanged body with raised faces (T7)
- Design to ASME B16.34 and EN 12516
- Installation between flanges to ISO 7005, ASME B16.5 and ASME B16.47 possible
- Top flange and square valve shaft end to ISO 5211
- Marking in accordance with EN 19

Variants

- MS / MC manual gearboxes
- ACTAIR EVO / DYNACTAIR EVO pneumatic actuators
- HQ EVO hydraulic actuators
- Electric quarter-turn actuators
- AMTROBOX for open/closed position signalling
- AMTRONIC U on/off control unit
- SMARTRONIC U positioner
- Lip seal at lower extension end for valve installation in any position (> 75° off the vertical)
- Insulating plate (drip plate)
- Electrical continuity
- Vent plug (DN ≥ 8 in.)
- Anti-static design to EN 12266-2

Body materials

Table 2: Overview of available materials

Material	Material number	Temperature limit	KSB code	Body design
ASTM A351 Gr. CF8M	1.4408	-253 °C to +200 °C	6	T7
ASTM A351 Gr. CF3M	1.4409			BW

Product benefits

- Thermal insulation
 - The neck extension protects the actuator from cryogenic temperatures.
 - The valve can be optionally protected in the system by a drip plate.
- Perfect tightness
 - The plain bearings ensure outstanding shaft guidance. Triple sealing at the shaft passage meets the requirements for emissions performance in accordance with ISO 15848, Class AH (most stringent requirement).
 - Tight shut-off in both directions – at ambient as well as cryogenic temperatures
- Easy to install
 - Easier handling thanks to lifting lugs on the body
 - Lip seal at the lower end of the neck extension facilitates installation in any position – even "upside down".

- Maintenance-free
 - No retightening of the cable gland
 - Cover can be removed to check joint ring and valve disc.
 - No special tools required to replace seal
- Long service life
 - Wear-free seat
 - End stops protect the seat and valve disc should the actuator not be properly installed.

Product information

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

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

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

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

EC Machinery Directive 2006/42/EC

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

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

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

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) and category 3 (zone 2+22) to ATEX 2014/34/EU.

Certifications

Table 3: 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
	Worldwide	Approved for marine applications (on request)
	China	TSG D7002-2006
	Eurasian Economic Union	Technical Regulations of the Eurasian Economic Union TR CU 052/2013

Related documents

Document	Reference number
Operating manual	8450.810

Purchase order specifications

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

Pressure/temperature ratings

Pressure class: Class 150

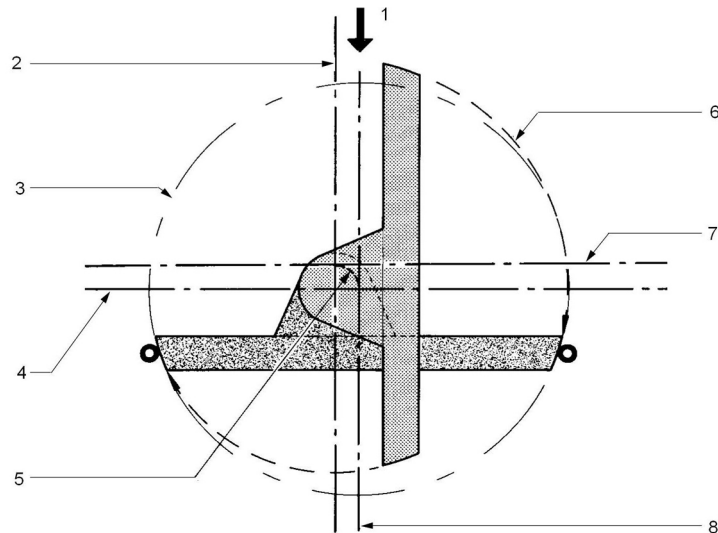
Table 4: In Class 150 (ASTM materials), the DANAIS CRYO valve complies with ASME B16.34 Class 150 "Standard Class" as per the following table.

Pressure class	Materials	Operating pressure [bar] at temperature [°C]								
	Body	-253	-196	-50	-29	38	50	100	150	200
Class 150	A351 Gr. CF8M	19,0	19,0	19,0	19,0	19,0	18,4	16,2	14,8	13,7
	A351 Gr. CF3M	19,0	19,0	19,0	19,0	19,0	18,4	16,2	14,8	13,7

Technical data

Kinematics

- The valve disc is pressed onto the seat by double-offset kinematics.
- Double offset:
 - The axis of rotation is offset from the seat/disc interface.
 - The axis of rotation is offset from the piping centreline.
- This design prevents friction between the seat and the sealing surface of the valve disc as the valve disc opens and closes.
- The valve's shut-off capability is maintained even after a very large number of actuating cycles.
- The butterfly valve's shut-off capability meets the most stringent specifications and standards.



- 1 - Preferred flow direction
- 2 - Centreline of shaft and centreline of circular arc of valve disc in open position
- 3 - Circular arc of closed valve disc
- 4 - Centreline of shaft and centreline of valve disc in closed position
- 5 - Trajectory of circle centre
- 6 - Travel of valve disc towards closure
- 7 - Centreline of valve disc in open position
- 8 - Centreline of valve disc in closed position

Tight shut-off

- The valve complies with the standards listed below.
- This valve is a bi-directional valve; the preferential flow direction is indicated by the arrow on the body (differential pressure is applied from the shaft side).

Table 5: Overview of applicable standards and leakage rates

Test temperature	Test type	Tight shut-off (seat/disc interface)
Ambient	Liquids (High pressure)	EN 12266-1 Leakage rate A ISO 5208 Category A API 598 ANSI/FCI 70.2 Class VI IEC 60534-4 Class VI
	Gases (High pressure)	EN 12266-1 Leakage rate B ISO 5208 Category B API 598 ANSI/FCI 70.2 Class VI IEC 60534-4 Class VI
Cryogenic temperatures	Gases (High pressure) Preferred flow direction	10 Ncc/minute/inch (better leakage rate on request) BS 6364 ISO 28921-1 EN 12567 L1
	Gases (High pressure) Reverse flow direction	30 Ncc/minute/inch (better leakage rate on request) BS 6364 ISO 28921-1 EN 12567 L2

Tight sealing to atmosphere
Table 6: Overview of applicable standards and leakage rates

Test temperature	Test type	Sealing to atmosphere (shaft passage)
Ambient	Sniffing test at 6 barg	EN ISO 15848-2 – Class AH ($5 \cdot 10^{-5}$ mbar.l/s) (better leakage rate on request)
	Sniffing test at 20 barg	$1 \cdot 10^{-4}$ mbar.l/s (better leakage rate on request)
Cryogenic temperatures	Sniffing test at 20 barg	BS 6364 $1 \cdot 10^{-4}$ mbar.l/s (better leakage rate on request)

Hydraulic characteristics

Table 7: [Kv0 in m³/h / bar^{0,5}] and [Cv0 in GUS / min / psi^{0,5}]

DN	NPS [inch]	Flow coefficient with valve disc fully open		Zeta
		Kv0	Cv0	
80	3	190	220	1,81
100	4	340	394	1,38
125	5	340	394	1,38
150	6	980	1137	0,84
200	8	1850	2146	0,75
250	10	3350	3886	0,56
300	12	4870	5649	0,55
350	14	7070	8201	0,48
400	16	10350	12006	0,38
450	18	12500	14500	0,42
500	20	15090	17504	0,44
550	22	18280	21205	0,44
600	24	22410	25996	0,41
650	26	26300	30508	0,41
700	28	29650	34394	0,44
750	30	32820	38071	0,47
800	32	37330	43303	0,47
850	34	37330	43303	0,47
900	36	53840	62454	0,36
950	38	53840	62454	0,36
1000	40	58290	67616	0,47
1050	42	67390	78172	0,43
1100	44	67390	78172	0,43
1200	48	80000	92800	0,52
1400	56	117600	136416	0,44

Materials

Body with butt weld ends (BW)

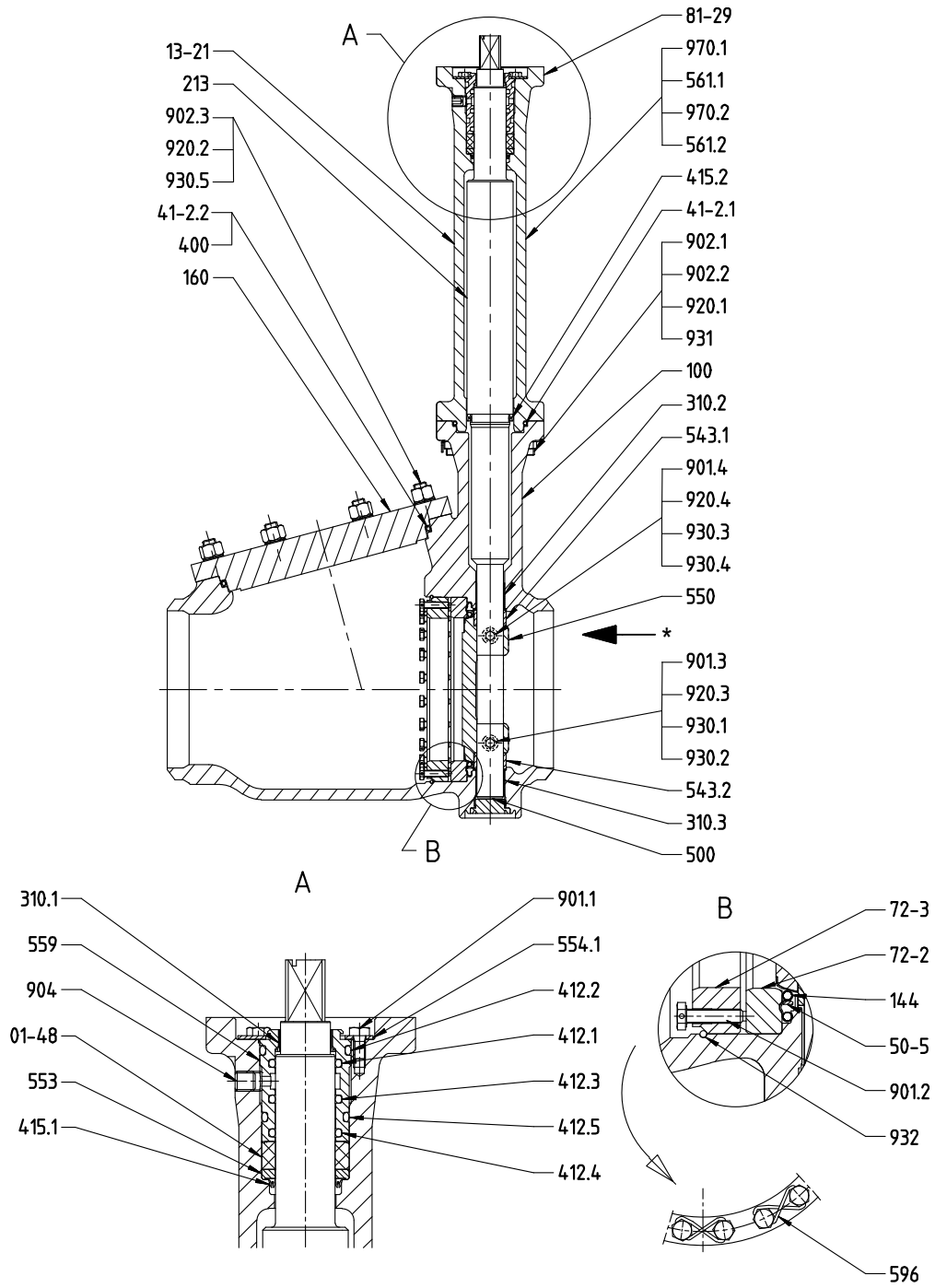


Fig. 1: Sectional drawing of DANAIS CRYO BW - DN 100-150 (4-6 in.)

* Preferred flow direction

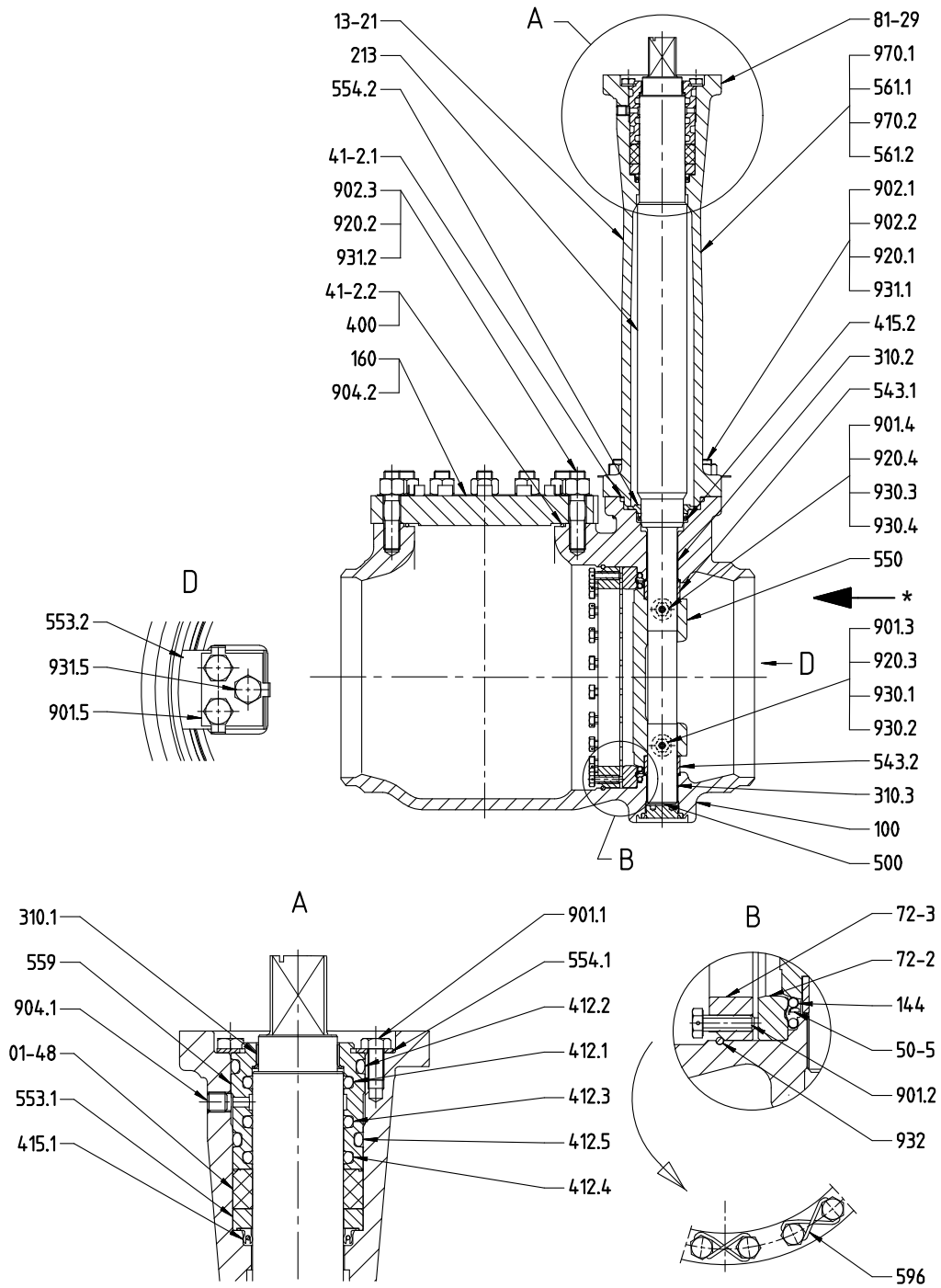


Fig. 2: Sectional drawing of DANAIS CRYO BW - DN 200-250 (8-10 in.)

* Preferred flow direction

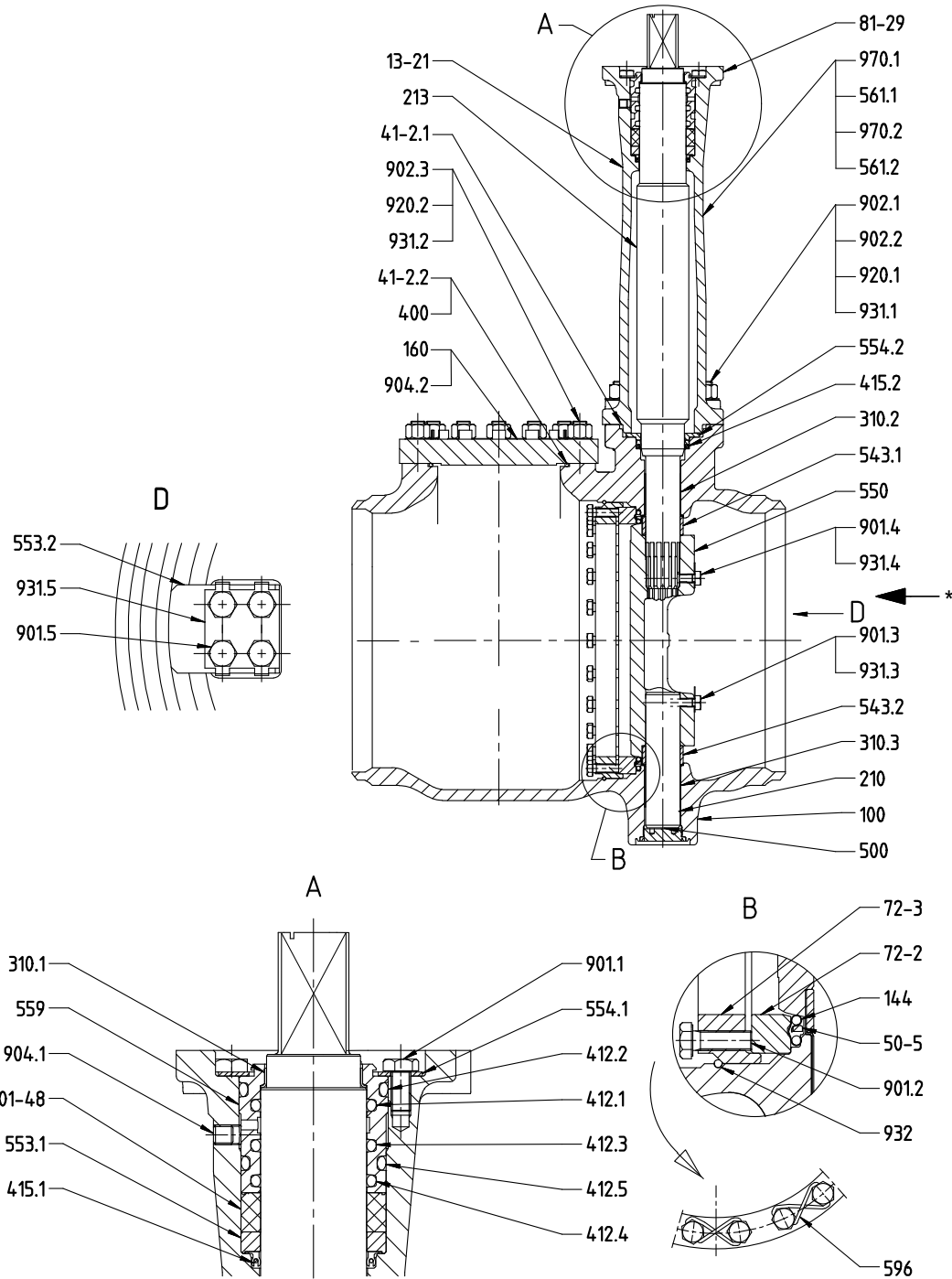


Fig. 3: Sectional drawing of DANAIS CRYO BW - DN 300-600 (12-24 in.)

* Preferred flow direction

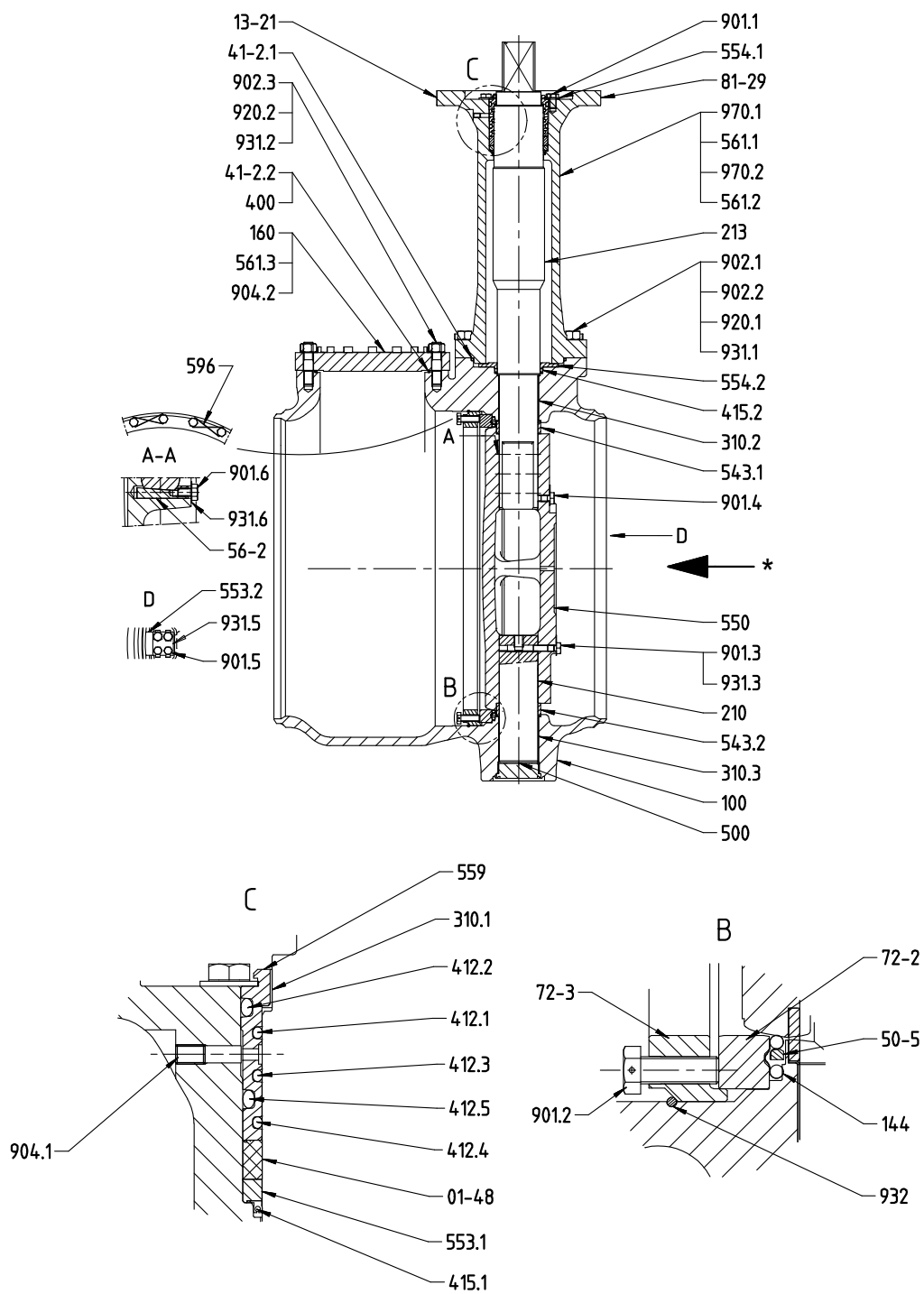


Fig. 4: Sectional drawing of DANAIS CRYO BW - DN 650-1200 (26-48 in.)

* Preferred flow direction

Table 8: List of components

Part No.	Description	DN	Materials	KSB code
01-48 ¹⁾	Gland packing	100-1200	Graphite, expanded	
13-21	Extension	100-1200	Stainless steel ASTM A351 Gr. CF8M / 1.4408	
41-2.1 ²⁾	Static sealing element	100-1200	Nickel	
41-2.2 ³⁾	Joint ring	100-1200	Copper	
50-5 ⁴⁾	Compression ring	100-150	Stainless steel 1.4980	
50-5 ⁴⁾	Compression ring	200-1200	Stainless steel ASTM A638 Gr. 660	
56-2	Taper pin	650-1200	Stainless steel 1.4980	
72-2	Centring flange	100-1200	Stainless steel Z3 CND 17-11-02 / 316L	
72-3	Retaining flange	100-1200	Stainless steel Z3 CND 17-11-02 / 316L	
81-29	Earth terminal	100-1200	Steel	
100	Body	100-1200	Stainless steel ASTM A351 Gr. CF3M / 1.4409	6 t
144 ⁴⁾	Seat	100-1200	Copper	Cu
		100-1200	Stainless steel	IX
160	Cover	100-1200	Stainless steel ASTM A240 Gr. 316L / 1.4404	
210	Shaft	300-1200	Stainless steel ASTM A479 Gr. 316L	
213	Actuating shaft	100-1200	Stainless steel ASTM A479 Gr. 316L 10 bar max.	6
		200-1200	Stainless steel ASTM A638 Gr. 660	6f
		200-1200	Stainless steel ASTM A479 Gr. XM19	6r
310.1 ¹⁾	Plain bearing	100-1200	Stainless steel + PTFE	
310.2	Plain bearing	100-1200	Steel with reinforced PTFE coating	
310.3	Plain bearing	100-1200	Steel with reinforced PTFE coating	
400 ³⁾	Gasket	100-1200	PTFE	
412.1 ¹⁾	O-ring	100-1200	Nitrile HC	
412.2 ¹⁾	O-ring	100-1200	Nitrile HC	
412.3 ¹⁾	O-ring	100-1200	Nitrile HC	
412.4 ¹⁾	O-ring	100-1200	Nitrile HC	
412.5 ¹⁾	O-ring	100-1200	Nitrile HC	
415.1 ¹⁾	Lip seal ⁵⁾	100-1200	PTFE + Elgiloy	
415.2 ²⁾	Lip seal ⁵⁾	100-1200	PTFE + Elgiloy	
500	Anti-static ring	100-1200	Stainless steel 1.4310	
543.1	Spacer bush	100-1200	Stainless steel Z3 CND 17-11-02 / 316L	
543.2	Spacer bush	100-1200	Stainless steel Z3 CND 17-11-02 / 316L	
550	Valve disc	100-1200	Stainless steel ASTM A351 Gr. CF8M / 1.4408 with hard chrome plated sealing edge	6
			Stainless steel ASTM A351 Gr. CF8M / 1.4408 with stellite sealing edge	6s
553	Upper thrust insert	100-150	Stainless steel 1.4404	
553.1	Upper thrust insert	200-1200	Stainless steel 1.4404	
553.2 ⁶⁾	Thrust insert	200-1200	Stainless steel 316L	
554.1	Washer	100-1200	Stainless steel	
554.2	Washer	200-1200	Stainless steel	
559	Seal retainer	100-1200	Stainless steel Z3 CND 17-11-02 / 316L	
561.1	Bolt/screw	100-1200	Stainless steel 1.4980	
561.2	Bolt/screw	100-1200	Stainless steel 1.4980	
561.3	Bolt/screw	650-1200	Stainless steel 1.4980	
596 ⁴⁾	Wire	100-1200	Stainless steel 1.4404	
901.1	Hexagon head bolt	100-1200	Stainless steel A4	
901.3	Bolt/screw	100-1200	Stainless steel 1.4980	
901.4	Hexagon head bolt	100-1200	Stainless steel A4	
901.5 ⁶⁾	Hexagon head bolt	200-1200	Stainless steel A4	

- 1 Part from shaft seal spare parts kit
- 2 Part from extension spare parts kit
- 3 Part from cover spare parts kit
- 4 Part from seat spare parts kit
- 5 Standard for marine applications / optional for other applications
- 6 Optional

Part No.	Description	DN	Materials	KSB code
901.6	Hexagon head bolt	650-1200	Stainless steel A4	
902.1	Stud	100-1200	Stainless steel ASTM A320 Gr. B8M Cl. 2	
902.2	Stud	100-1200	Stainless steel ASTM A320 Gr. B8M Cl. 2	
902.3	Stud	100-1200	Stainless steel ASTM A320 Gr. B8M Cl. 2	
904	Grub screw	100-150	Stainless steel A4	
904.1	Grub screw	100-1200	Stainless steel A4	
904.2	Hexagon socket head cap screw	200-1200	Stainless steel A4	
920.1	Nut	200-1200	Stainless steel ASTM A194 Gr. 8M	
920.2	Hexagon nut	100-1200	Stainless steel ASTM A194 Gr. 8M	
920.3	Hexagon nut	200-250	Stainless steel A4	
920.4	Hexagon nut	100-250	Stainless steel A4	
930.1	Holder	100-250	Stainless steel 316 or equivalent	
930.2	Locknut	100-250	Stainless steel 1.4404	
930.3	Lock washer	100-250	Stainless steel 316L	
930.4	Locknut	100-250	Stainless steel 316 or equivalent	
930.5	Locknut	100-150	Stainless steel 316 or equivalent	
931	Lock washer with tabs	100-150	Stainless steel 316L	
931.1 ²⁾	Lock washer	300-1200	Stainless steel 1.4404	
931.2 ³⁾	Lock washer	200-1200	Stainless steel 1.4404	
931.3	Lock washer with tabs	300-1200	Stainless steel 316L	
931.4	Lock washer	300-600	Stainless steel 1.4404	
931.5 ⁶⁾	Lock washer	200-1200	Stainless steel 316L	
931.6	Lock washer	650-1200	Stainless steel 316L	
901.2	Hexagon head bolt	100-1200	Stainless steel A4	
932	Internal circlip	200-1200	Stainless steel 316 or equivalent	
970.1	Name plate	100-1200	Stainless steel 316 or equivalent	
970.2	Name plate	100-1200	Stainless steel 316 or equivalent	

Flanged body (T7)

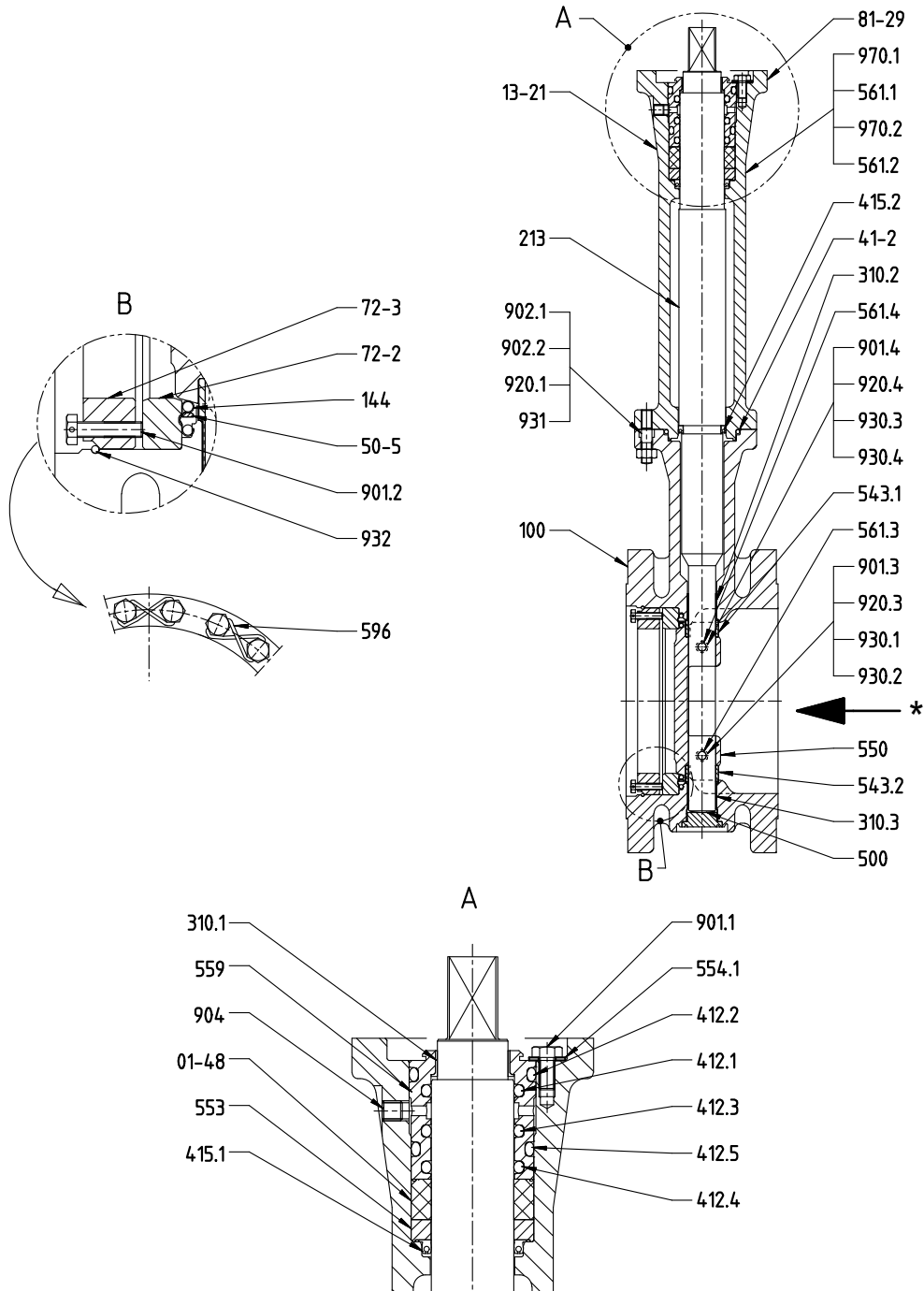


Fig. 5: Sectional drawing of DANAIS CRYO T7 - DN 80-150 (3-6 in.)

* Preferred flow direction

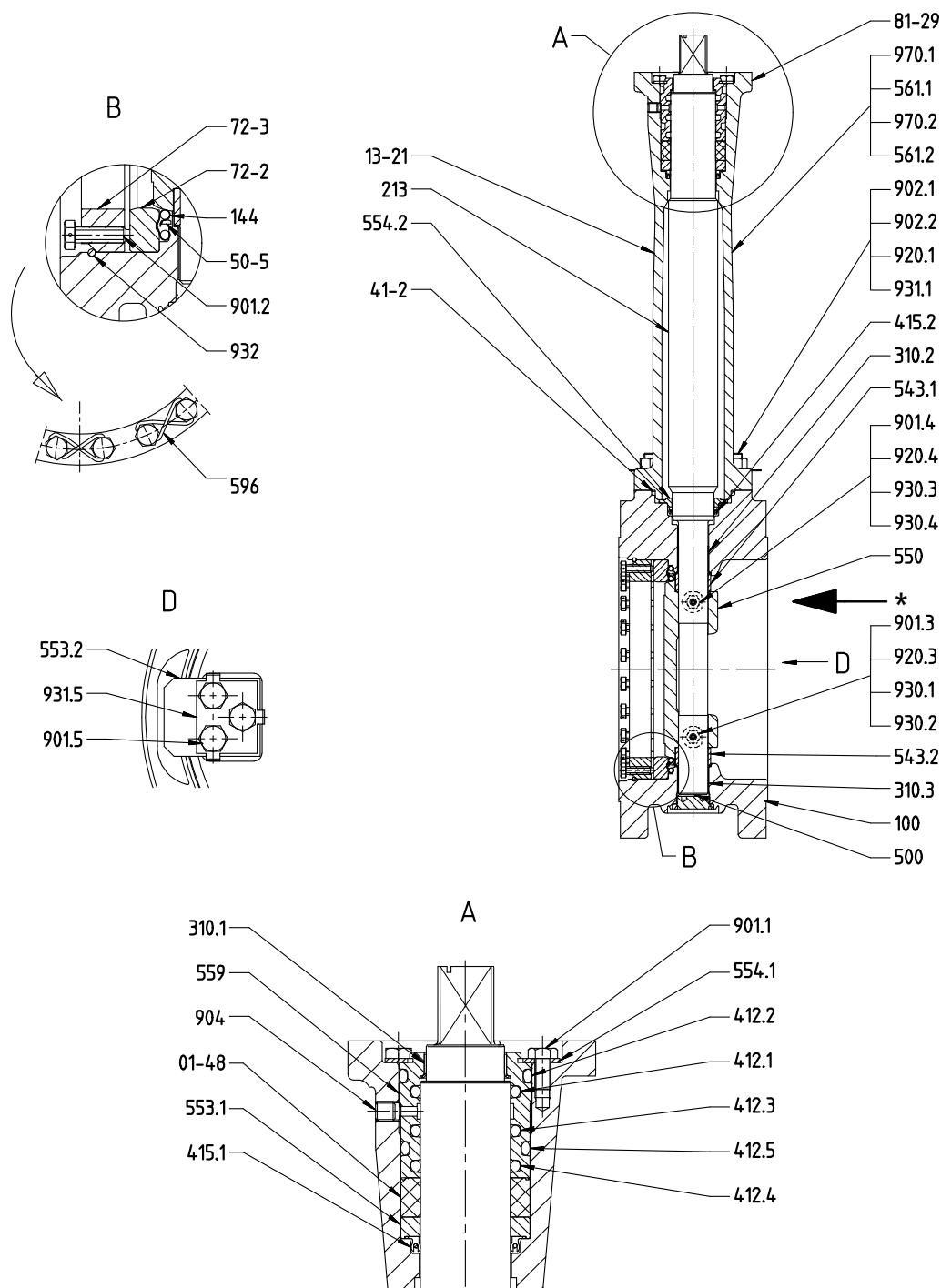


Fig. 6: Sectional drawing of DANAIS CRYO T7 - DN 200-250 (8-10 in.)

* Preferred flow direction

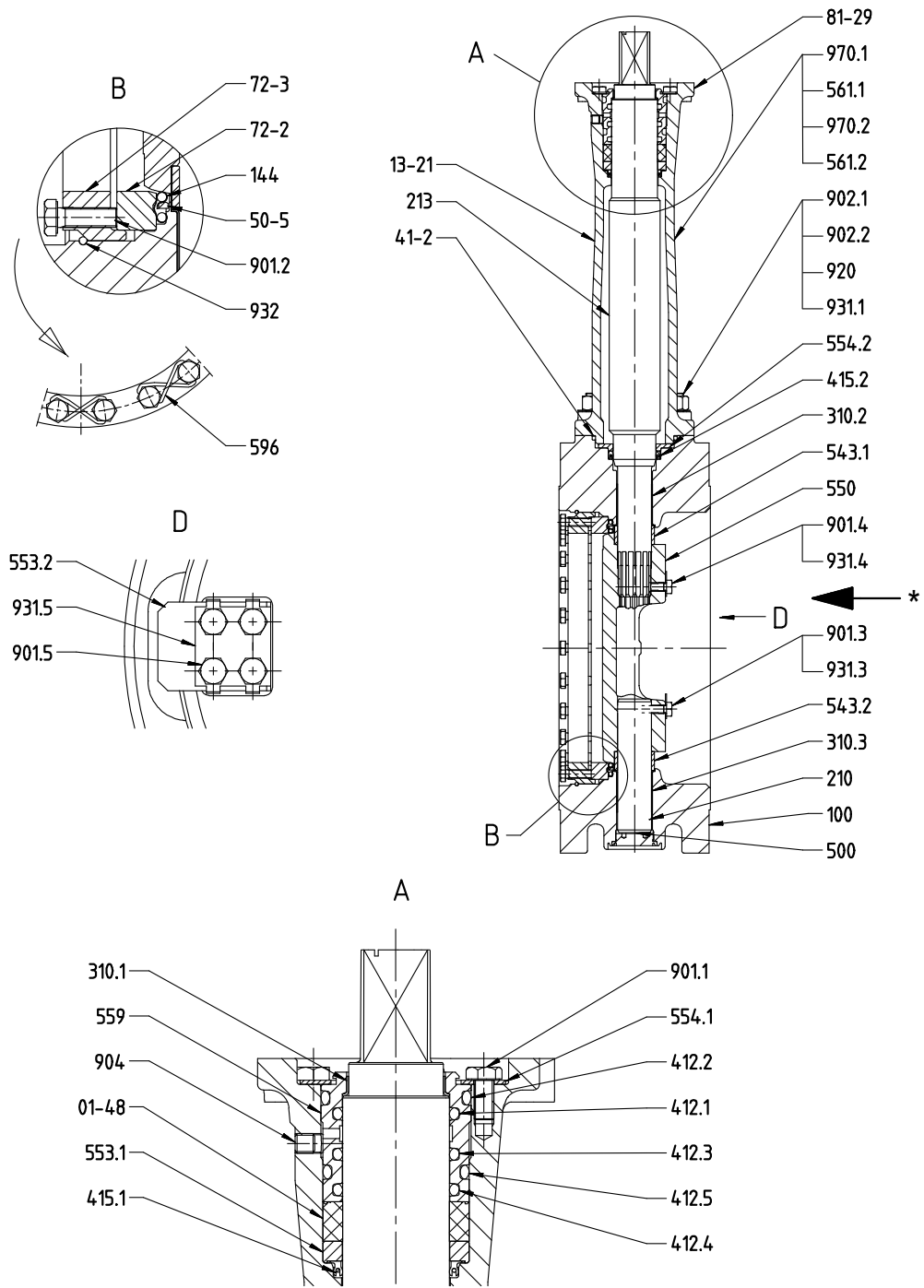


Fig. 7: Sectional drawing of DANAIS CRYO T7 - DN 300-600 (12-24 in.)

* Preferred flow direction

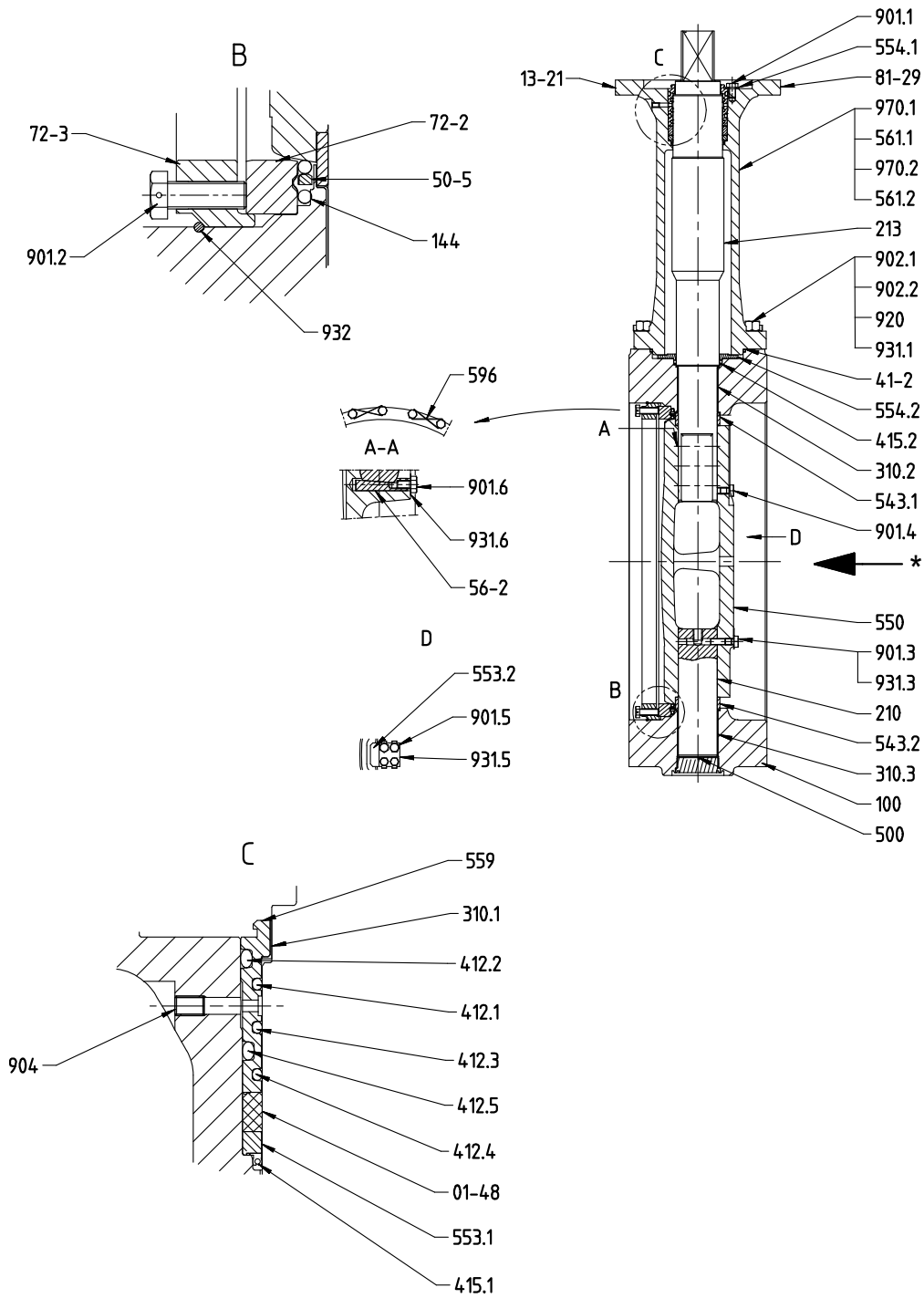


Fig. 8: Sectional drawing of DANAIS CRYO T7 - DN 650-1400 (26-56 in.)

* Preferred flow direction

Table 9: List of components

Part No.	Description	DN	Materials	KSB code
01-48 ⁷⁾	Gland packing	80-1400	Graphite, expanded	
13-21	Extension	80-1400	Stainless steel ASTM A351 Gr. CF8M / 1.4408	
41-2 ⁸⁾⁹⁾	Static sealing element	80-1400	Nickel	
50-5 ¹⁰⁾	Compression ring	80-1400	Stainless steel ASTM A638 Gr. 660	
56-2	Taper pin	650-1400	Stainless steel 1.4980	
72-2	Centring flange	80-1400	Stainless steel Z3 CND 17-11-02 / 316L	
72-3	Retaining flange	80-1400	Stainless steel Z3 CND 17-11-02 / 316L	
81-29	Earth terminal	80-	Steel	
100	Body	80-1400	Stainless steel ASTM A351 Gr. CF8M / 1.4408	6
144 ¹⁰⁾	Seat	80-1400	Copper	Cu
			Stainless steel AISI 316L	IX
210	Shaft	300-1400	Stainless steel ASTM A479 Gr. 316L	
213	Actuating shaft	80-1400	Stainless steel ASTM A479 Gr. 316L (10 bar max.)	6
			Stainless steel ASTM A638 Gr. 660	6f
			Stainless steel ASTM A479 Gr. XM19	6r
310.1 ⁷⁾	Plain bearing	80-1400	Stainless steel + PTFE	
310.2 ⁹⁾	Plain bearing	80-1400	Steel with reinforced PTFE coating	
310.3 ⁹⁾	Plain bearing	80-1400	Steel with reinforced PTFE coating	
412.1 ⁷⁾	O-ring	80-1400	Nitrile HC	
412.2 ⁷⁾	O-ring	80-1400	Nitrile HC	
412.3 ⁷⁾	O-ring	80-1400	Nitrile HC	
412.4 ⁷⁾	O-ring	80-1400	Nitrile HC	
412.5 ⁷⁾	O-ring	80-1400	Nitrile HC	
415.1 ⁷⁾	Lip seal ¹¹⁾	80-1400	PTFE + Elgiloy	
415.2 ⁸⁾	Lip seal ¹¹⁾	80-1400	PTFE + Elgiloy	
500	Anti-static ring	80-1400	Stainless steel 1.4310	
543.1	Spacer bush	80-1400	Stainless steel Z3 CND 17-11-02 / 316L	
543.2	Spacer bush	80-1400	Stainless steel Z3 CND 17-11-02 / 316L	
550	Valve disc	80-1400	Stainless steel ASTM A351 Gr. CF8M / 1.4408 with hard chrome plated sealing edge	6
			Stainless steel ASTM A351 Gr. CF8M / 1.4408 with stellite sealing edge	6s
553	Thrust insert	80-250	Stainless steel 1.4404	
553.1	Upper thrust insert	300-1400	Stainless steel 1.4404	
553.2 ¹²⁾	Thrust insert	200-1400	Stainless steel 316L	
554.1	Washer	80-1400	Stainless steel	
554.2	Washer	300-1400	Stainless steel	
559	Seal retainer	80-1400	Stainless steel Z3 CND 17-11-02 / 316L	
561.1	Half round head grooved pin	80-1400	Stainless steel 1.4303	
			Stainless steel 1.4303	
561.2	Half round head grooved pin	80-1400	Stainless steel 1.4303	
561.3	Half round head grooved pin	80-1400	Stainless steel 1.4303	
561.4	Half round head grooved pin	80-250	Stainless steel 1.4303	
596 ¹⁰⁾	Wire	80-1400	Stainless steel 1.4404	
901.1	Hexagon head bolt	80-1400	Stainless steel A4	
901.2	Hexagon head bolt	80-1400	Stainless steel A4	
901.3	Hexagon head bolt	80-1400	Stainless steel 1.4980	
901.4	Hexagon head bolt	80-1400	Stainless steel A4	
901.5 ¹²⁾	Hexagon head bolt	200-1400	Stainless steel A4	
901.6	Hexagon head bolt	650-1400	Stainless steel A4	

⁷⁾ Part from shaft seal spare parts kit

⁸⁾ Part from extension spare parts kit

⁹⁾ Part from bearing spare parts kit

¹⁰⁾ Part from seat spare parts kit

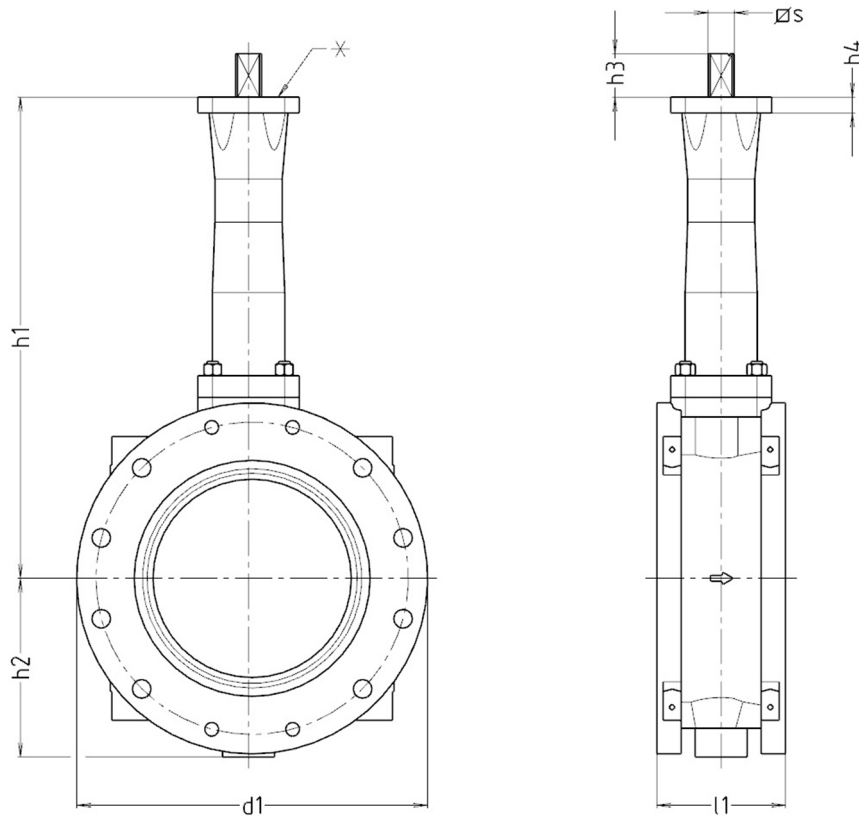
¹¹⁾ Standard for marine applications / optional for other applications

¹²⁾ Optional

Part No.	Description	DN	Materials	KSB code
902.1	Stud	80-1400	Stainless steel ASTM A320 Gr. B8M Cl. 2	
902.2	Stud	80-1400	Stainless steel ASTM A320 Gr. B8M Cl. 2	
904	Grub screw	80-1400	Stainless steel A4	
920	Hexagon nut	300-1400	Stainless steel ASTM A194 Gr. 8M	
920.1	Nut	80-250	Stainless steel ASTM A194 Gr. 8M	
920.3	Hexagon nut	80-250	Stainless steel A4	
930.1	Holder	80-250	Stainless steel 316 or equivalent	
930.2	Locknut	80-250	Stainless steel 1.4404	
930.3	Lock washer	80-250	Stainless steel 316L	
930.4	Locknut	80-250	Stainless steel 316 or equivalent	
931	Lock washer with tabs	80-250	Stainless steel 316L	
931.1 ⁸⁾⁹⁾	Lock washer	300-1400	Stainless steel 1.4404	
931.3 ⁹⁾	Lock washer	300-600	Stainless steel 1.4404	
931.4 ⁸⁾⁹⁾	Lock washer	300-600	Stainless steel 1.4404	
931.5 ¹²⁾	Lock washer	200-1400	Stainless steel 316L	
931.6	Lock washer	650-1400	Stainless steel 316L	
932	Internal circlip	80-1400	Stainless steel 316 or equivalent	
970.1	Name plate	80-1400	Stainless steel 316 or equivalent	
970.2	Name plate	80-1400	Stainless steel 316 or equivalent	

Dimensions

Flanged body - T7



*: Actuator flange to ISO 5211

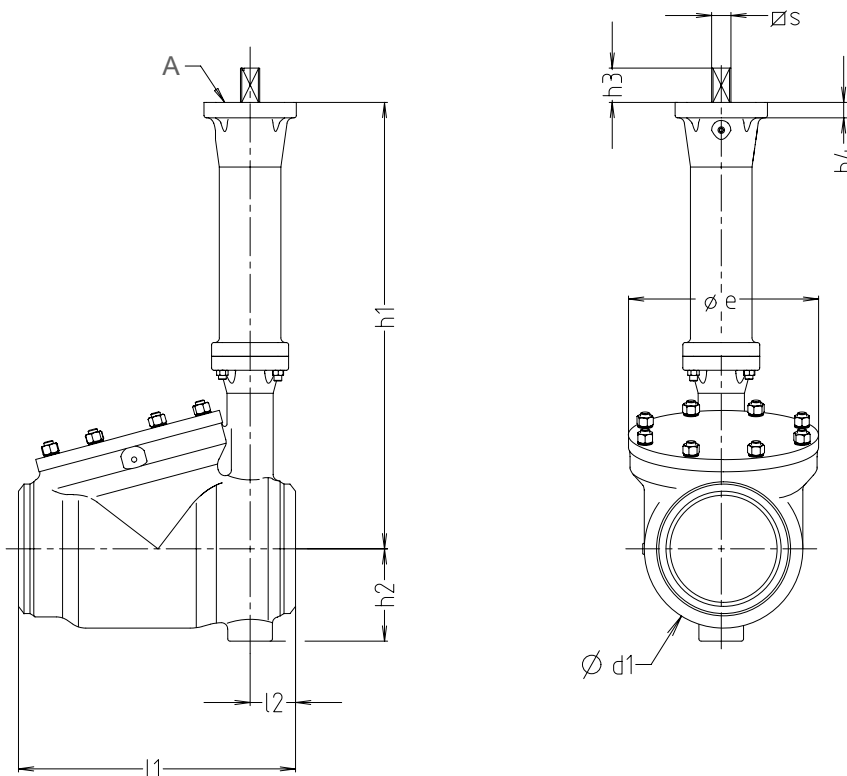
Table 10: Dimensions in mm

DN	NPS	Face-to-face length	h1	h2	d1 ⁽²⁾	Actuator flange to ISO 5211		Square shaft end $\varnothing s$		h3	Weight
						No.	h4	6 ⁽¹⁾	6f / 6r		
80	3	114	510	96	191	F10	18	L14	L14	24	20
100	4	127	530	115	229	F10	18	L14	L14	24	30
150	6	140	580	140	279	F10	20	L19	L19	29	41
200	8	152	610	172	343	F12	18	L27	L27	38	53
250	10	165	640	203	406	F12	18	L27	L27	45	97
300	12	178	665	242	483	F14	22	L36	L36	60	135
350	14	190	700	267	533	F14	22	L36	L36	60	150
400	16	216	750	300	597	F16	26	L46	L46	76	221
450	18	222	800	333	635	F16	26	L46	L46	76	245
500	20	229	850	356	699	F25	28	L55	L55	85	461
550	22	267	885	382	750	F25	28	L55	L55	85	477
600	24	267	975	449	826	F25	28	L55	L55	85	525
650	26	292	1020	454	870	F30	32	L75	L75	104	786
700	28	292	1050	472	927	F30	32	L75	L75	104	1044
750	30	292	1100	532	985	F30	34	L75	L75	104	1165
800	32	318	1135	547	1060	F30	34	L75	L75	108	1287
900	36	330	1175	591	1168	F35	37	L80	L80	109	1750
1000	40	410	1280	698	1290	F40	44	L110	L110	130	2100
1050	42	410	1440	705	1346	F40	44	L110	L110	130	2662
1200	48	470	1490	810	1511	F40	44	L110	L110	130	3891
1400	56	530	1680	960	1746	F48	45	L120	L120	140	4200

(1): Operating pressure limit applies. Contact the manufacturer.

(2): To MSS SP44 Class 150 or ASME B16.47 Series A Class 150 or ISO 7005 PN20

Body with butt weld ends DN 100-150 (4-6 in.) – BW

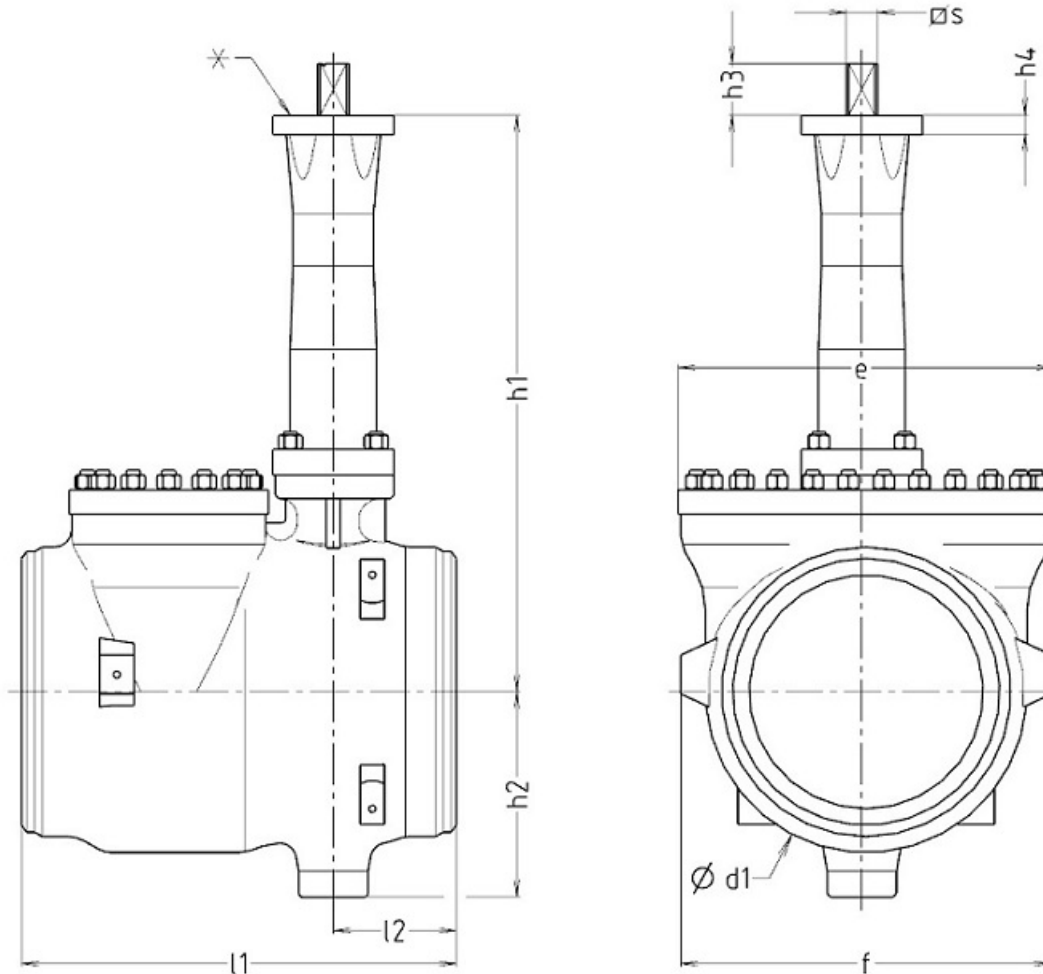


*: Actuator flange to ISO 5211

Table 11: Dimensions [mm] and weights [kg] for body with butt weld ends DN 100-150 – BW

DN	NPS [inch]	Face-to-face length l1	h1	h2	Ø d1	l2	Ø e	Actuator flange to ISO 5211		Square shaft end \square s	h3	Weight kg
								No.	h4			
100	4	300	530	90	160	57	194	F10	18	L14	24	35
125	5	300	530	90	160	52	194	F10	18	L14	24	38
150	6	360	580	120	206	60	247	F10	20	L19	29	60

Body with butt weld ends DN 200-1100 (8-44 in.) – BW



*: Actuator flange to ISO 5211

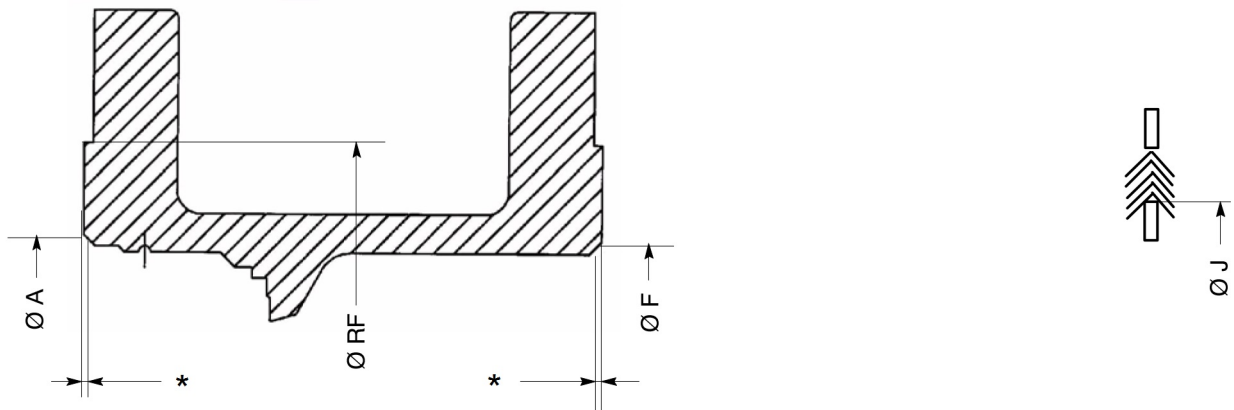
Table 12: Dimensions in mm

DN	NPS	Face-to-face length	h1	h2	d1	l2	e	f	Actuator flange to ISO 5211		Square shaft end \varnothing s			Weight	
									No.	h4	6 ⁽¹⁾	6r	6f		kg
	[inch]	l1													
200	8	419	610	147	268	94	334	324	F12	18	L27	L27	L27	38	101
250	10	455	640	174	316	119	382	372	F12	18	L27	L27	L27	45	128
300	12	502	665	237	372	142	434	428	F14	22	L36	L36	L36	60	162
350	14	530	700	254	430	149	491	498	F14	22	L36	L36	L36	60	198
400	16	550	750	300	472	159	538	544	F16	26	L46	L46	L46	76	250
450	18	600	800	333	547	170	609	618	F16	26	L46	L46	L46	76	367
500	20	620	850	356	592	180	672	670	F25	28	L55	L55	L55	85	468
550	22	650	885	382	644	178	706	720	F25	28	L55	L55	L55	85	554
600	24	670	975	449	696	200	776	796	F25	28	L55	L55	L55	85	670
650	26	710	1020	454	755	187	826	854	F30	32	L75	L75	L75	104	694
700	28	795	1050	472	800	213	956	900	F30	32	L75	L75	L75	104	885
750	30	795	1100	512	867	213	956	964	F30	32	L75	L75	L75	104	1028
800	32	840	1100	512	867	235	956	980	F30	32	L75	L75	L75	104	1319
850	34	840	1135	547	913	235	966	1020	F30	32	L75	L75	L75	108	1400
900	36	900	1175	625	1013	252	1064	1156	F35	35	L80	L80	L80	109	1540
950	38	900	1175	625	1013	252	1064	1156	F35	35	L80	L80	L80	109	1600
1000	40	1150	1460	716	1132	325	1210	1308	F40	44	L110	L110	L110	130	2210
1050	42	1250	1485	728	1179	370	1256	1356	F40	44	L110	L110	L110	130	2580
1100	44	1250	1485	728	1179	370	1256	1356	F40	44	L110	L110	L110	130	2725

(1): Operating pressure is limited to 10 bar.

Dimensions of gasket for flanged body (T7)

To ensure proper connection the flange gasket dimensions must be compatible with the dimensions specified below:



- *: 45° chamfer
- Ø A: Minimum inside diameter of the inner ring of the seal, left side
- Ø F: Minimum inside diameter of the inner ring of the seal, right side
- Ø J: Minimum inside diameter of the seal
- Ø RF: Minimum outside diameter of the seal

DN	NPS [inch]	Ø A ^{+/-0,5}	Ø F ^{0/-10}	Ø J	RF
					PN 20 ASME B16.5 Cl. 150 or ASME B16.47-A Cl. 150
80	3	94,5	90,5	101	127
100	4	128,5	125	135	157,2
150	6	177	174	185	215,9
200	8	230	228	239	269,9
250	10	278	279	287	323,8
300	12	326	330	339	381
350	14	376,5	377	387	412,8
400	16	426,5	432	439	469,9
450	18	490,5	477	499	533,4
500	20	530,5	528	540	584,2
550	22	581	587	594	641,4
600	24	627	638	647	692,2
650	26	673	679	688	749,3
700	28	707	710	724	800
750	30	760,5	760	774	857
800	32	813	815	826	914
900	36	918	924	930	1022
1000	40	1023	1010	1029	1124
1050	42	1066	1060	1079	1194
1200	48	1184	1205	1219	1359
1400	56	1404	1400	1422	1575

Flange face finish

Spiral serrated to ASME B16.5 Class 150 (DN ≤ 600 (24 in.)) or ASME B16.47 Class 150 Series A (DN > 600 (24 in.)).

Standard: stock finish (Ra 6.3 to Ra 12.5)

Optional: smooth finish (Ra 3.2 and Ra 6.3)

Butt weld end dimensions of body with butt weld ends (BW)

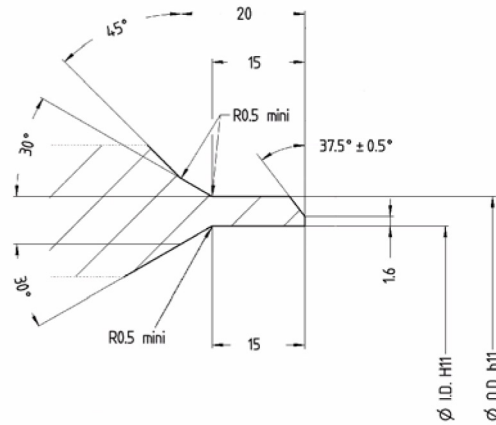


Table 13: Overview of butt weld end dimensions [mm]

DN	NPS [inch]	Outside dia- meter (OD)	Inside diameter (ID)				
			Schedule 10S	Schedule 10	Schedule 40S	Schedule STD	Schedule XS
100	4	114,30	108,20		102,26		-
125	5	141,30	134,49		128,19		-
150	6	168,28	161,47		154,05		-
200	8	219,08	211,56		202,72		-
250	10	273,05	264,67		254,51		-
300	12	323,85	314,71		304,80		-
350	14	355,60	346,05	Contact KSB.	336,55		-
400	16	406,40	396,85		387,35		-
450	18	457,20	447,65		438,15		-
500	20	508,00	496,93		488,95		-
550	22	558,80	547,73		-	539,75	-
600	24	609,60	596,90		590,55		-
650	26	660,40	-	644,55	-	641,35	-
700	28	711,20	-	695,35	-	692,15	-
750	30	762,00	746,15		-	742,95	-
800	32	812,80	-	796,95	-	793,75	-
850	34	863,80	-	847,75	-	844,55	-
900	36	914,40	-	898,55	-	895,35	-
950	38	965,20	-	-	-	946,15	939,80
1000	40	1016,00	-	-	-	996,95	990,60
1050	42	1066,80	-	-	-	1047,75	1041,40
1100	44	1117,60	-	-	-	1098,55	1092,20

Installation information

Connections

The valves can be installed between flanges to EN 1092-1 PN 10 and PN 16, to ASME B16.5 Class 150 and to ASME B16.47 (other line connections on request).

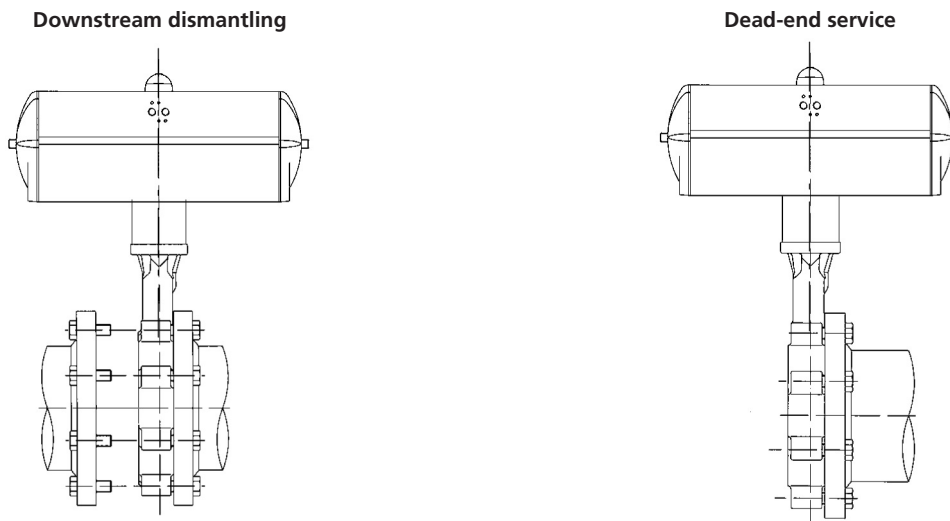
Flanged body - T7

DN	NPS	EN 1092-1		ISO 7005	ASME		
		PN 10	PN 16	PN 20	B16.5 Cl.150	B16.47 Cl.150 Series A	B16.47 Cl. 150 Series B
80	3	☒	☒	✓	✓	•	•
100	4	☒	☒	✓	✓	•	•
150	6	☒	☒	✓	✓	•	•
200	8	☒	☒	✓	✓	•	•
250	10	☒	☒	✓	✓	•	•
300	12	☒	☒	✓	✓	•	•
350	14	☒	☒	✓	✓	•	•
400	16	☒	☒	✓	✓	•	•
450	18	☒	☒	✓	✓	•	•
500	20	☒	☒	✓	✓	•	•
600	24	☒	☒	✓	✓	•	•
650	26	•	•	•	•	✓	☒
700	28	☒	☒	✓	•	✓	☒
750	30	•	•	•	•	✓	☒
800	32	☒	☒	✓	•	✓	☒
900	36	☒	☒	✓	•	✓	☒
1000	40	☒	☒	✓	•	✓	☒
1200	48	☒	☒	✓	•	✓	☒
1400	56	☒	☒	✓	•	✓	☒

Table 14: Symbols key

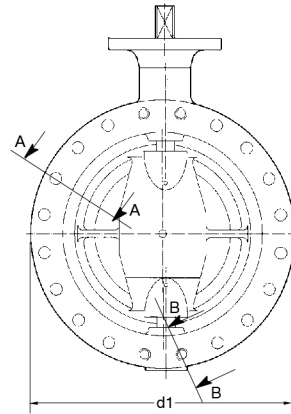
Symbol	Description	Symbol	Description
✓	Installation possible	•	Not available
☒	Contact the manufacturer.		

Dead-end service and downstream dismantling



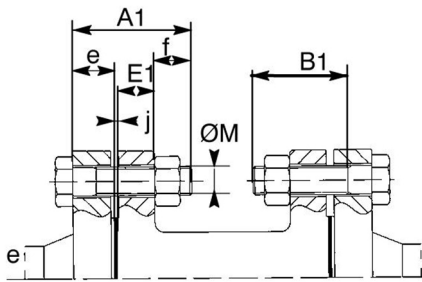
Bolts

Drawings for flanged body - type 7



A-A

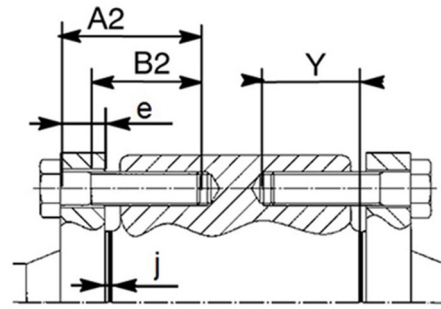
B-B



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).

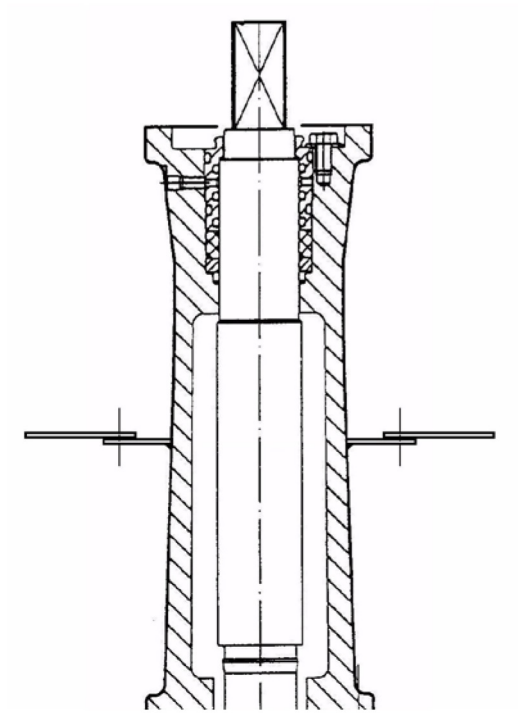
N.B.: Bolting is not included in our standard scope of supply.

Flanged body - T7

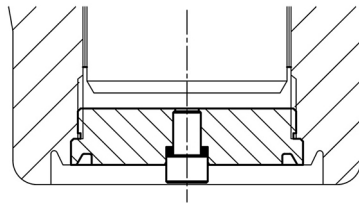
DN	NPS	d1	E1	ISO 7005 PN 20				ASME B16.5 / ASME B16.47 Series A / MSS SP 44 Class 150			
				Ø M	Bolt A1	Bolt A2		UN/UNC	Bolt A1	Bolt A2	
					Qty	Y	Qty		Qty	Y	Qty
80	3	191	26,9	M16	4	-	-	5/8"	4	-	4
100	4	229	26,9	M16	4	24	4	5/8"	4	24	4
150	6	279	28,5	M20	4	25	4	3/4"	4	25	4
200	8	343	31,3	M20	4	28	4	3/4"	4	28	4
250	10	406	33	M24	8	30	4	7/8"	8	30	4
300	12	483	33,8	M24	8	32	4	7/8"	8	32	4
350	14	533	38	M27	8	35	4	1"	8	35	4
400	16	597	39,6	M27	12	22	4	1"	12	22	4
450	18	635	42,7	M30	12	24	4	1 1/8"	12	24	4
500	20	699	46,8	M30	16	26	4	1 1/8"	16	26	4
550	22	750	50,5	M33	16	28,5	4	1 1/4"	16	28,5	4
600	24	826	52	M33	16	28,5	4	1 1/4"	16	28,5	4
650	26	870	73,0	M33	20	46,5	4	1 1/4"	20	46,5	4
700	28	927	75,8	M33	20	47	8	1 1/4"	20	47	8
750	30	985	79	M33	20	50	8	1 1/4"	20	50	8
800	32	1060	85,5	M39	20	58	8	1 1/2"	20	58	8
900	36	1168	95,0	M39	24	58	8	1 1/2"	24	58	8
1000	40	1290	95	M39	28	58	8	1 1/2"	28	58	8
1050	42	1346	102	M39	28	58	8	1 1/2"	28	58	8
1200	48	1511	113	M39	36	58	8	1 1/2"	36	58	8
1400	56	1746	129	M45	40	69	8	1 3/4"	40	69	8

Option

Insulating plate (drip plate)



Vent plug





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