

Applications

- LNG process / All liquefied gases.

Working conditions

- Temperature: from $-250\text{ }^{\circ}\text{C}$ to $+200\text{ }^{\circ}\text{C}$.
- Maximum working pressure: 20 bar.
- Rating: ASME B16.34 Class 150.

Materials

See page 2.

Design

Flanged version

- With raised faces (Type 6): DN 200 (8") to DN 1200 (48").
- Fire-safe agreement according to BS 6755 part 2 and API 6FA.
- The valves meet the safety requirements of the pressure Equipments Directive 97/23EC (PED) Appendix I for fluids of the groups 1 and 2.
- Face to face according to ISO 5752 series 13 and EN 558.1 series 13 Standards (Specific Flanged body).

Buttweld Side entry version

- DN 200 (8") to DN 1050 (42").
- Fire-safe agreement according to BS 6755 part 2 and API 6FA.
- The valves meet the safety requirements of the pressure Equipments Directive 97/23EC (PED) Appendix I for fluids of the groups 1 and 2.

Connections

Flanged version

- PN10 / PN 16 in accordance with ISO 7005,
- ASME B 16.5 Class 150,
- ASME B16.47 Class 150 serie A,
- MSS SP 44 Class 150,
- Other drilling patterns on request.

Buttweld Side entry version

- Buttweld versions according to ASME B16.25,
- Schedule up to 40 S or STD according to NPS,
- Other ends on request.

Standard option

- Lip Seal Ring for installation in any position (standard for marine applications).
- Drip plate for insulation.
- Electrical continuity.
- Transition piece (100 mm) for welding on pipe (Specific Side entry).

Standard variants

- Manual actuator MR
- Pneumatic actuator ACTAIR / DYNACTAIR
- Electric actuator ACTELEC
- Hydraulic actuator ACTO / DYNACTO / ENNACTO
- Limit switches box AMTROBOX R

Materials

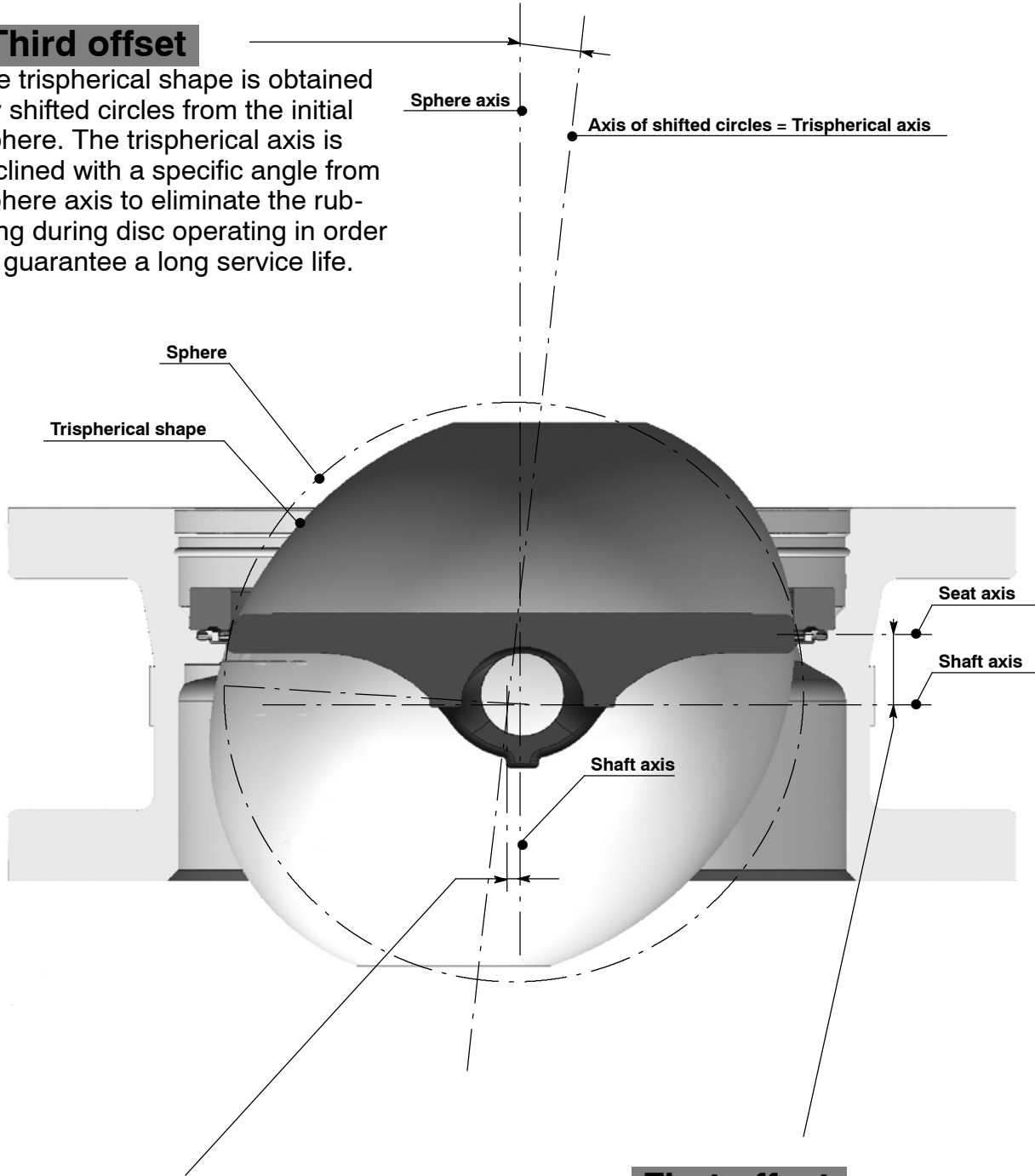
Body	KSB code
Stainless steel ASTM A 351 gr. CF 3M / 1.4409 or CF 8M / 1.4408	6
Disc	KSB code
Stainless steel ASTM A 351 gr. CF 8M / 1.4408 with hard chromium overlay on edge	6
Operating shaft	KSB code
Stainless steel A479 gr. 316L *	6 *
Stainless steel A638 gr. 660	6f
Stainless steel A479 gr. XM19	6r
Cover	KSB code
Stainless steel 316L	6
Bonnet extension	KSB code
Stainless steel ASTM A 351 gr. CF 8M / 1.4408	6
Seat	KSB code
Copper	CU

* Caution: The working pressure is limited. 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

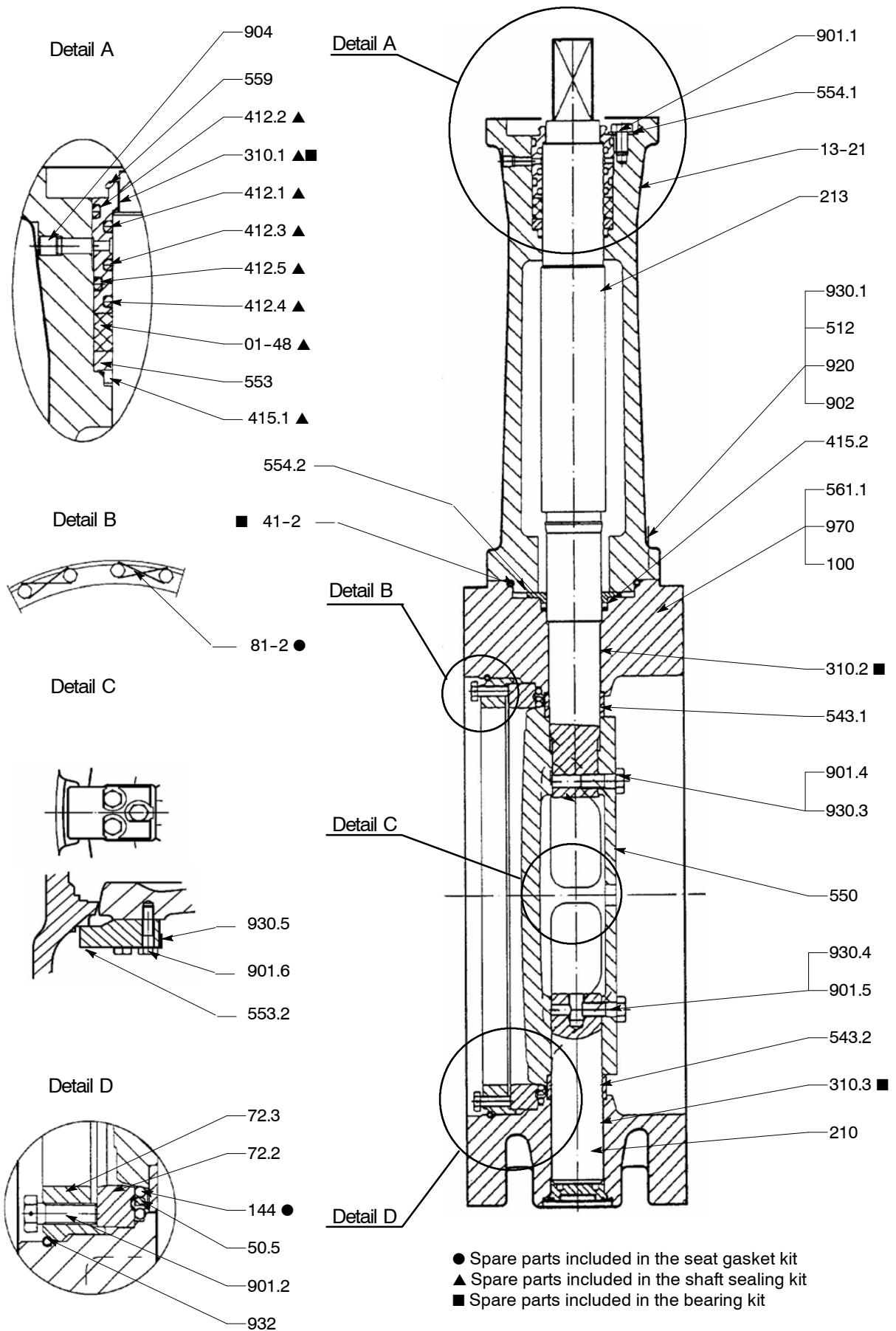
The seal is offset from the shaft axis to allow upstream/downstream tightness without interference with the shaft passage.

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
550	22	18 280	21 200	0.44
600	24	22 410	26 000	0.41
650	26	26 300	30 500	0.41
700	28	29 650	34 400	0.44
750	30	32 820	38 070	0.47
800	32	37 330	43 300	0.47
850	34	42 790	49 600	0.46
900	36	53 840	62 450	0.36
1000	40	58 290	67 600	0.47
1050	42	67 390	78 170	0.43
1200	48	80 000	92 800	0.52

Flanged version DN 200 - 1200 (8" - 48")

Construction:



Flanged version DN 200 - 1200 (8" - 48")

Part list

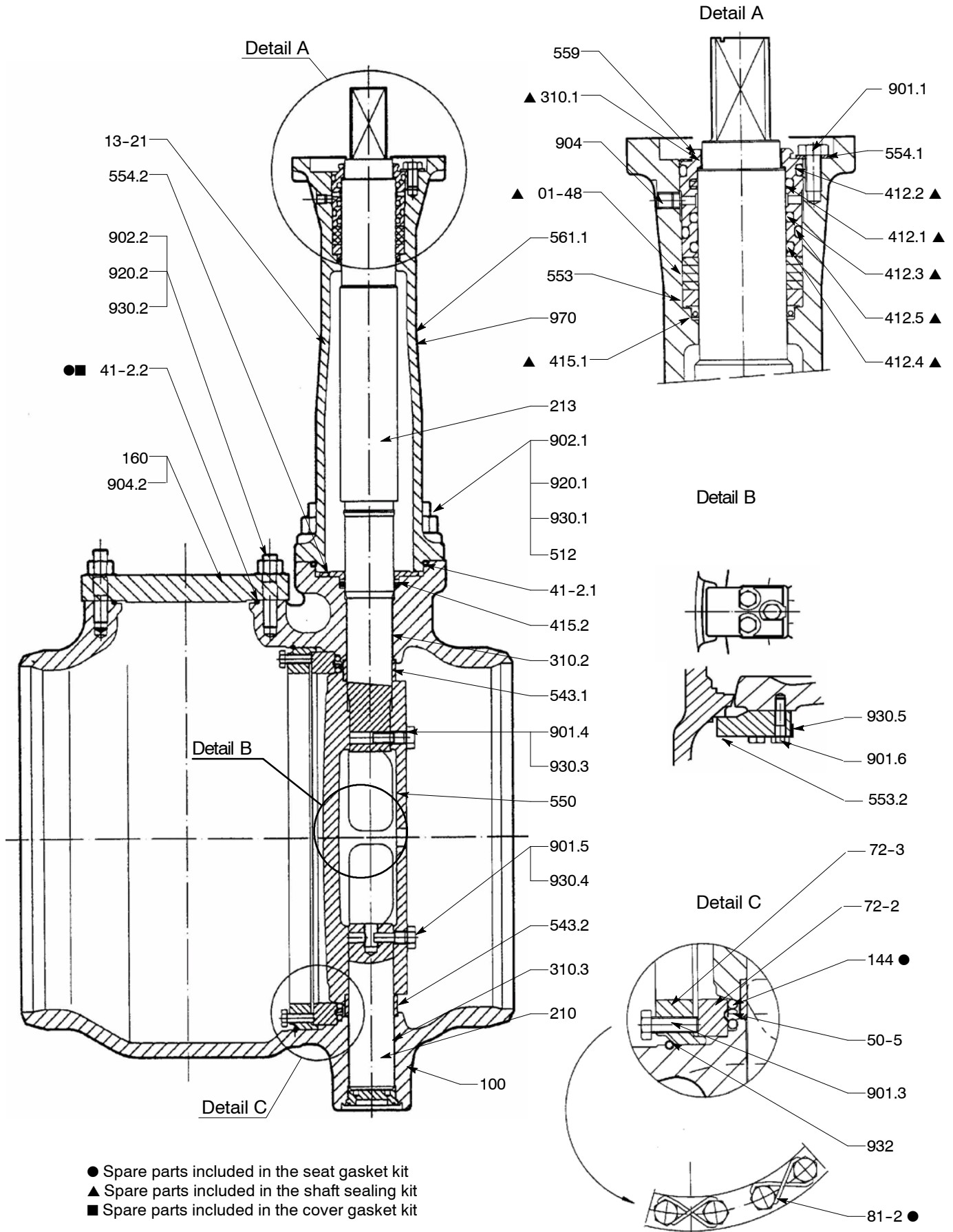
Item	Designation	Materials
01-48	Sealing packing	Expanded graphite
100	Body	Stainless steel A351 gr CF8M (1.4408)
13-21	Extension	Stainless steel A351 gr CF8M (1.4408)
144	Seat	Copper
210	Shaft	Stainless steel A479 gr. 316L
213	Operating shaft	Stainless steel A479 gr. 316L or A638 gr. 660 (*) or A479 gr. XM19
310.1	Self lubricating strip	Stainless steel + PTFE
310.2	Self lubricating strip	Stainless steel + PTFE
310.3	Self lubricating strip	Stainless steel + PTFE
41-2	Static joint	Nickel
412.1	O-ring	HC Nitrile(**)
412.2	O-ring	HC Nitrile(**)
412.3	O-ring	HC Nitrile(**)
412.4	O-ring	HC Nitrile(**)
412.5	O-ring	HC Nitrile(**)
415.1	Lip seal ring	PTFE + Elgiloy
415.2	Lip seal ring (Standard for marine applications) (Optional for others applications)	PTFE + Elgiloy
50-5	Reaction ring	A638 gr. 660
512	Adjusting ring	Z 3 CND 17-11-02 / 316L
543.1	Spacer bush	Z 3 CND 17-11-02 / 316L
543.2	Spacer bush	Z 3 CND 17-11-02 / 316L
550	Disc	Stainless steel A351 gr CF8M (1.4408) with hard chromium overlay on edge
553	Thrust insert	Z3 CND 17-11-02 / 316L
553.2	Thrust	Stainless steel 316L
554.1	Washer	Stainless steel
554.2	Plain washer	Stainless steel
559	Gasket holder	Z3 CND 17-11-02 / 316L
561.1	Grooved pin	Z3 CND 17-12-02 / 316L
72-2	Centering flange	Z3 CND 17-11-01 / 316L
72-3	Tightening flange	Z3 CND 17-11-01 / 316L
81-2	Wire	Z3 CN 18-09
901.1	Hexagon head screw	A4-80 Stainless steel
901.2	Hexagon head screw	A4-80 Stainless steel
901.4	Hexagon head screw	A4-80 Stainless steel
901.5	Hexagon head screw	A4-80 Stainless steel
901.6	Hexagon head screw	A4-70 Stainless steel
902	Stud	A320 gr. B8 M cl. 2
904	Socket screw	A4-70 Stainless steel
920	Hexagon nut	A 194 gr. 8 M
930.1	Retainer	Stainless steel 316 or equivalent
930.3	Retainer	Stainless steel 316 or equivalent
930.3	Nut lock	Stainless steel 316
930.4	Nut lock	Stainless steel 316 or equivalent
930.5	Retainer (DN ≥ 700) or wire (DN 450 to 650)	Stainless steel 316 or equivalent
932	Inner ring	Stainless steel 316 or equivalent
970	Identity plate	Stainless steel 316 or equivalent

(*) For DN550, only A638 gr. 660 or A479 gr. XM19 is available

(**) HC Nitrile: Epichlorohydrin for ambient temperature below minus 25 °C.

Buttweld Side Entry version DN 200 - 1050 (8" - 42")

Construction



Buttweld Side Entry version DN 200 - 1050 (8" - 42")

Part list

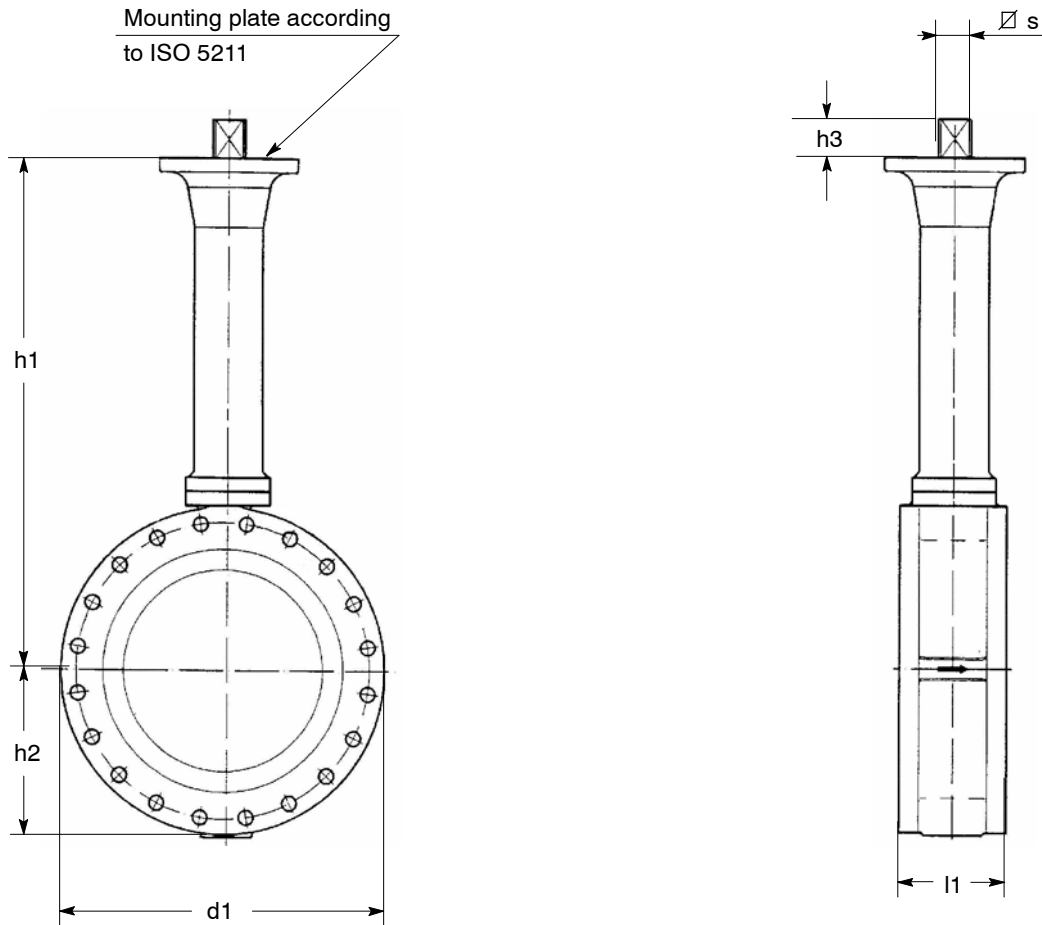
Item	Designation	Materials
01-48	Sealing packing	Expanded graphite
100	Body	Stainless steel A351 gr CF3M (1.4409) or CF8M (1.1108)
13-21	Extension	Stainless steel A351 gr CF8M (1.4408)
144	Seat	Copper
160	Cover	Stainless steel 316L
210	Shaft	Stainless steel A479 gr. 316L
213	Operating shaft	Stainless steel A479 gr. 316L or A638 gr. 660 (*)
310.1	Self lubricating strip	Stainless steel + PTFE
310.2	Self lubricating strip	Stainless steel + PTFE
310.3	Self lubricating strip	Stainless steel + PTFE
41-2.1	Static joint	Nickel
41-2.2	Static joint	Copper
412.1	O-ring	HC Nitrile (**)
412.2	O-ring	HC Nitrile (**)
412.3	O-ring	HC Nitrile (**)
412.4	O-ring	HC Nitrile (**)
412.5	O-ring	HC Nitrile (**)
415.1	Lip seal ring	PTFE + ELGILOY
415.2	Lip seal ring (Standard for marine application) (Optional for others applications)	PTFE + ELGILOY
50-5	Reaction ring	Z5 NCTDV 26-15-B / A638 gr. 660
512	Adjusting ring	Z3 CND 17-11-02 / 316L
543.1	Spacer bush	Z3 CND 17-11-02 / 316L
543.2	Spacer bush	Z3 CND 17-11-02 / 316L
550	Disc	Stainless steel A351 gr CF8M (1.4408) with hard chromium overlay on edge
553	Thrust insert	Z3 CND 17-11-02 / 316L
553.2	Thrust	Stainless steel 316L
554.1	Washer	Stainless steel
554.2	Plain washer	Stainless steel
559	Gasket holder	Z3 CND 17-11-02 / 316L
561.1	Grooved nail	Stainless steel
72-2	Centering flange	Z3 CND 17-11-01 / 316L
72-3	Tightening flange	Z3 CND 17-11-01 / 316L
81-2	Wire	Z3 CN 18-09
901.1	Hexagon head screw	A4-70 Stainless steel
901.3	Hexagon head screw	A4-70 Stainless steel
901.4	Hexagon head screw	A4-70 Stainless steel
901.5	Hexagon head screw	A4-70 Stainless steel
901.6	Hexagon head screw	A4-70 Stainless steel
902.1	Stud	A320 gr. B8 M cl. 2
902.2	Stud	A320 gr. B8 M cl. 2
904	Socket screw	Stainless steel A4-70
920.1	Hexagon nut	A 194 gr. 8 M
920.2	Hexagon nut	A 194 gr. 8 M
930.1	Retainer	Stainless steel 316 or equivalent
930.2	Retainer	Stainless steel 316 or equivalent
930.3	Retainer	Stainless steel 316 or equivalent
930.4	Retainer	Stainless steel 316 or equivalent
930.5	Retainer (DN ≥ 700) or wire (DN 450 to 650)	Stainless steel 316 or equivalent
932	Outer ring	Stainless steel 316 or equivalent
970	Identity plate	Stainless steel 316 or equivalent

(*) For DN550, only A638 gr. 660 is available

(**) HC Nitrile: Epichlorohydrin for ambient temperature below minus 25 °C. .

Flanged version

Overall dimensions for flanges - DN 200 to 600



mm

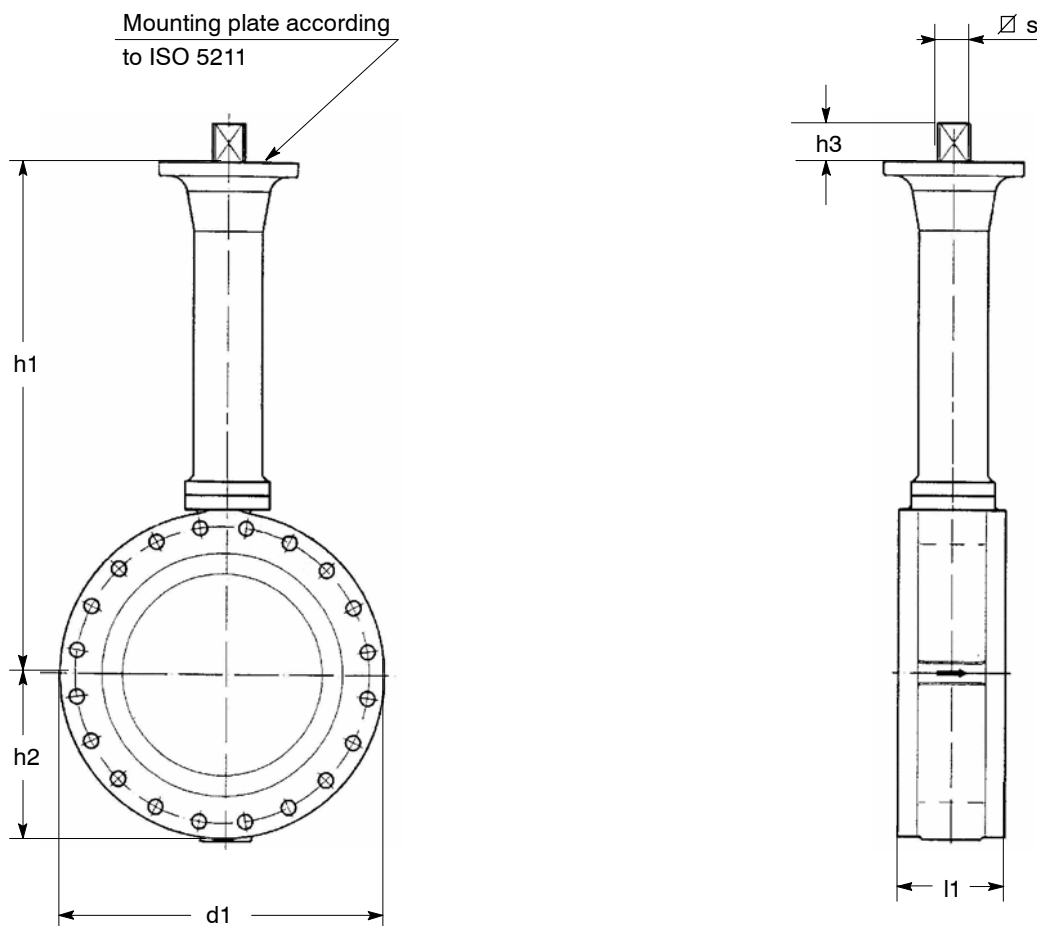
DN	NPS	h1	h2	d1	l1	z	ISO plate	∅ s		h3	Weight Kg
								6*	6f		
200**	8	610	172	343	152	525	F12	30	30	55	51
250**	10	640	203	406	165	500	F12	30	30	55	95
300	12	665	242	483	178	495	F14	36	36	60	133
350	14	700	274	535	190	520	F14	36	36	60	147
400	16	750	300	600	216	515	F16	40	40	76	218
450	18	800	329	635	222	532	F16	46	46	76	242
500	20	850	356	700	229	558	F25	50	50	85	457
550	22	885	382	756	267	585	F25		50	85	472
600	24	975	449	826	267	630	F25	55	50	85	520

* The working pressure is limited. Please consult us.

** Please consult us.

Flanged version

Overall dimensions for flanges - DN 650 to 1200



mm

DN	NPS	h1	h2	API (1)		MSS (2)		l1	ISO plate	∅ s		h3	Weight kg
				d1						6*	6f / 6r		
650	26	1020	446	786	870	292	F30	70	70	104	774		
700	28	1050	472	837	927	292	F30	70	70	104	1032		
750	30	1100	532	887	985	292	F30	70	70	104	1153		
800	32	1135	547	941	1061	318	F30	70	70	104	1274		
850	34	1200	565	1005	1112	318	F35	80	80	**	1520		
900	36	1175	591	1057	1169	330	F35	80	80	109	1736		
1000	40	1280	698	1175	1289	410	F40		90	**	2287		
1050	42	1440	705	1226	1346	410	F40		90	112	2621		
1200***	48	1490	810	1392	1512	470	F40		110	132	3840		

- (1) API 605 class 150 or ASME B16.47 series B class 150
- (2) MSS SP44 class 150 or ASME B16.47 series A class 150

* The working pressure is limited. Please, consult us.

** According to actuator.

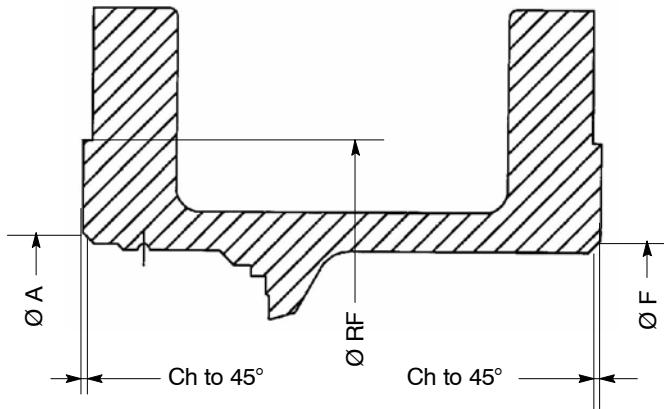
*** The working pressure is limited to 14 bar with 6r material.

Flanged version

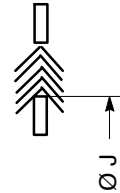
Dimensions for flange gasket definition

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

Connection according to ASME B16.5 class 150 and ASME B16.47 class 150 série A.



NB: We do not supply the gasket



DN	NPS	Ø A ^{±0.5}	Ø F ⁰ ₋₁₀
200	8	230	228
250	10	278	279
300	12	326	330
350	14	376,5	377
400	16	426,5	432
450	18	490,5	477
500	20	530,5	528
550	22	581	587
600	24	627	638
650	26	673	679
700	28	707	713
750	30	760,5	760
800	32	813	816,5
850	34		
900	36	918	924
1000	40		
1050	42	1066	1054
1200	48	1184	1176

Ø J
240
286
337
387
439
499
541
594
647
690
725
773
828,5
936
1078
1196

Please consult us

Flange facing finish

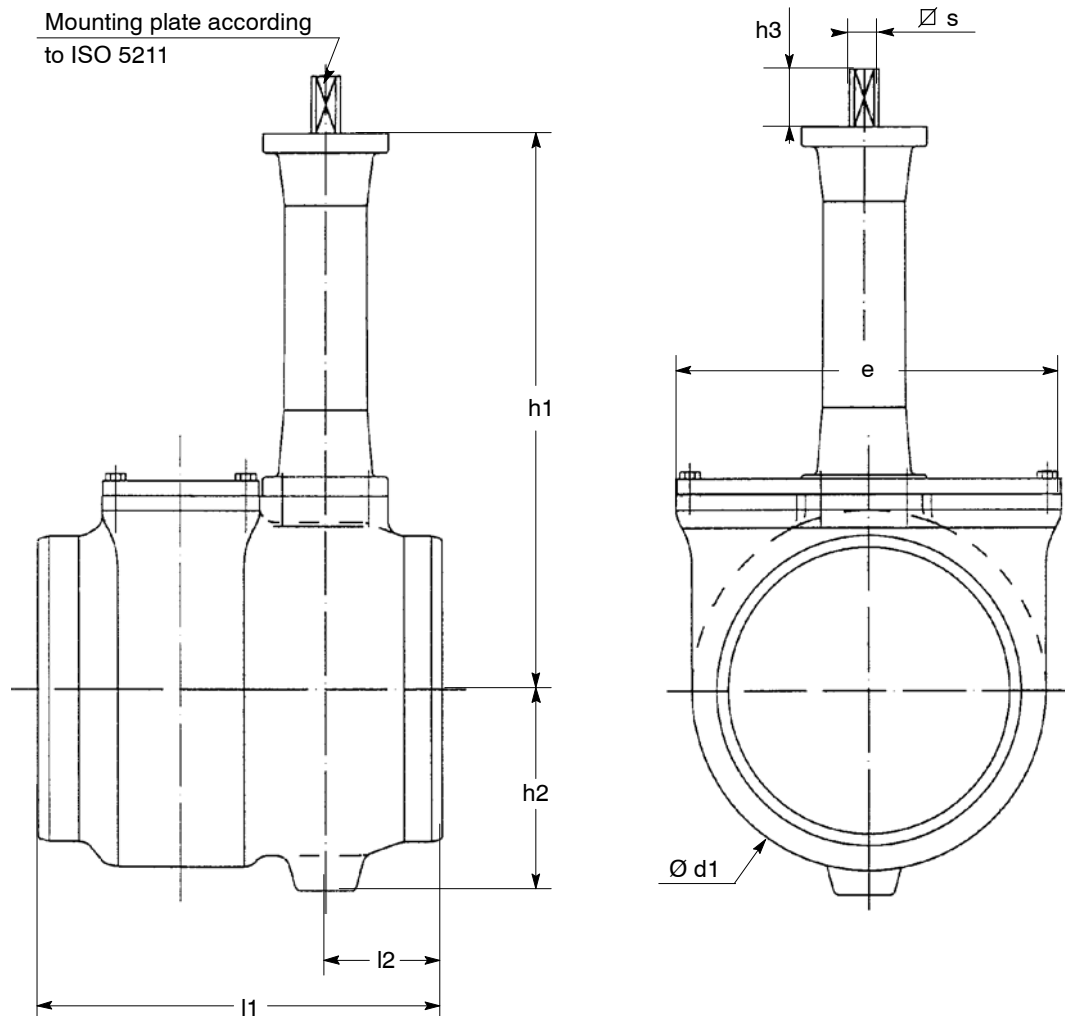
Serrated spiral finish according to ASME B16.5 class 150 or ASME B16.47 class 150 série A.

Standard: Stock finish (Ra 6,3 to Ra 12,5)

Optional: Smooth finish (Ra 3,2 and Ra 6,3)

Buttweld Side Entry version

Dimensions



mm

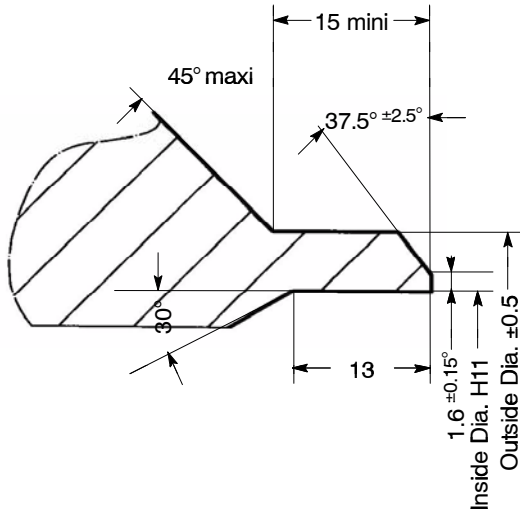
DN	NPS	h1	h2	Ød1	l1	l2	e	ISO plate	∅ s		h3	Weight Kg
									6*	6 f / 6r		
200**	8	610	147	268	419	94	334	F12	30	30	55	99
250**	10	640	174	316	457	120	382	F12	30	30	55	125
300	12	665	237	372	502	135	434	F14	36	36	60	159
350	14	700	274	431	530	149	491	F14	36	36	60	194
400	16	750	300	480	550	159	538	F16	40	40	76	247
450	18	800	333	553	600	170	609	F16	46	46	76	363
500	20	850	356	592	620	180	672	F25	50	50	85	464
550	22	885	382	644	650	178	706	F25		50	85	461
600	24	975	449	697	670	200	776	F25	55	50	85	658
650	26	975	449	697	710	220	776	F25	55	50	85	683
700	28	1050	472	800	795	213	956	F30	70	70	104	874
750	30	1100	532	878	795	213	956	F30	70	70	104	1017
800	32	1100	532	874	840	235	956	F30	70	70	104	1304
900	36	1175	585	1024	900	252	1064	F35	80	80	109	1540
1000	40	1350	665	1125	1150	230	1170	F40	90	90	110	1800
1050	42	1440	705	1180	1250	320	1220	F40	90	90	110	2800

* The working pressure is limited. Please consult us.

** Please consult us.

Buttweld Side Entry version

Buttweld ends dimensions



DN	NPS	O.D.	I.D. Schedule 10S	I.D. Schedule 10	I.D. Schedule 40S	I.D. Schedule STD
200	8	219.08	211.56	-	202.72	202.72
250	10	273.05	264.67	-	254.51	254.51
300	12	323.85	314.71	-	304.8	304.8
350	14	355.6	346.05	-	-	336.55
400	16	406.4	396.85	-	-	387.35
450	18	457.2	447.65	-	-	438.15
500	20	508	496.93	-	-	488.95
550	22	558.8	547.73	-	-	539.75
600	24	609.6	596.9	-	-	590.55
650	26	660.4	-	644.55	-	641.35
700	28	711.2	-	695.35	-	692.15
750	30	762	746.15	-	-	742.95
800	32	812.8	-	796.95	-	793.75
850	34					
900	36	914.4	-	898.55	-	895.35
1000	40	1016				996.85
1050	42	1066.8				1047.75

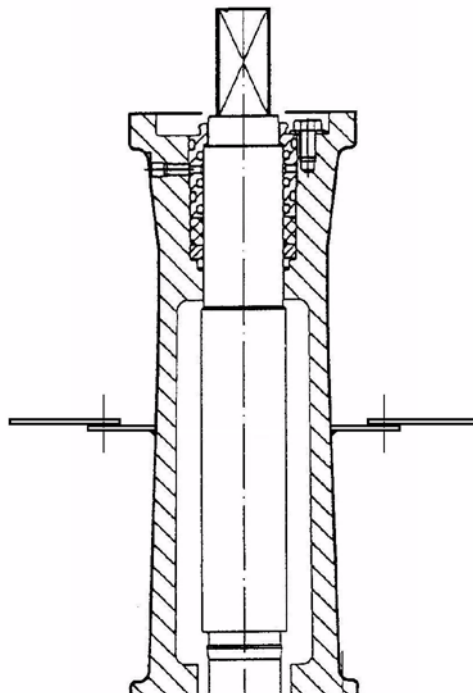
Other bevel ends profile upon requests.

O.D.: Outside Diameter I.D.: Inside Diameter

Flanged and Buttweld Side Entry versions

Option

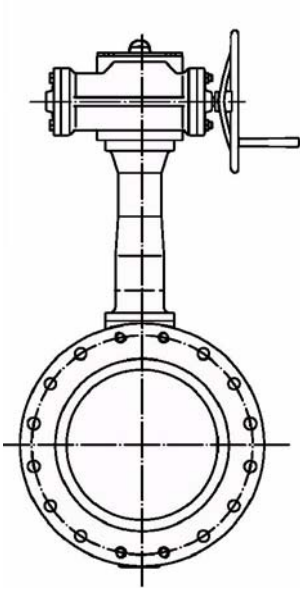
Drip Plate for insulation



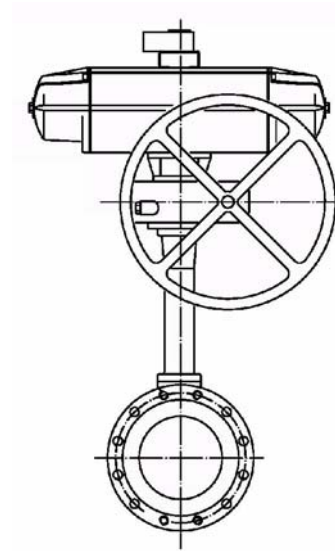
Flanged Version

Standard variants

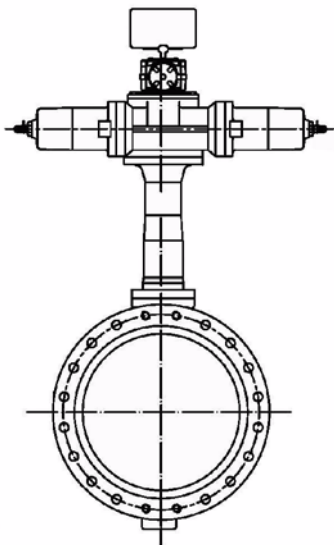
MR manual reducer



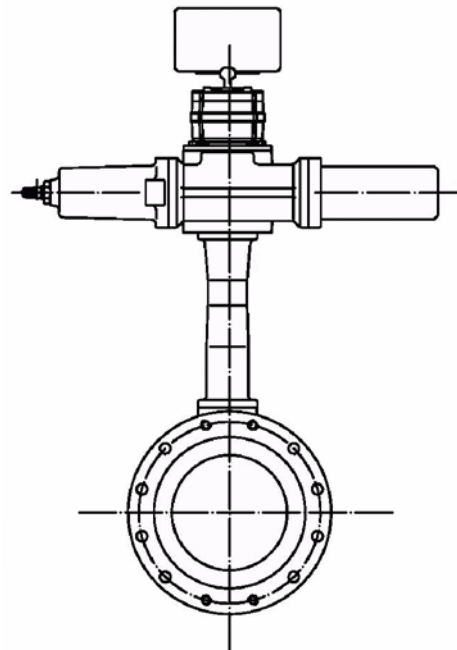
ACTAIR / DYNACTAIR pneumatic actuator with manual override



ACTO hydraulic actuator



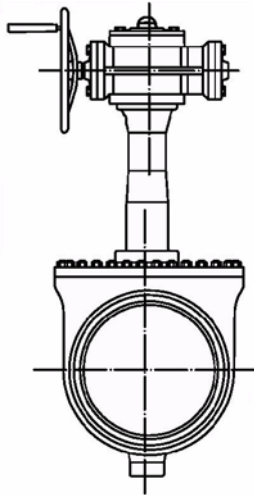
ENNACTO hydraulic actuator



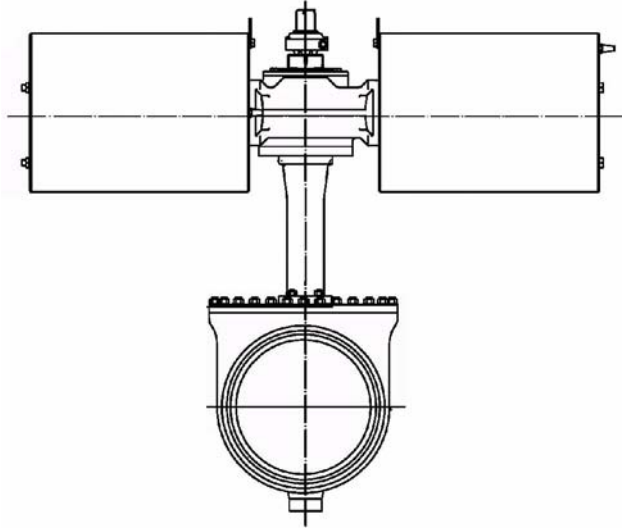
Buttweld Side Entry version

Standard variants

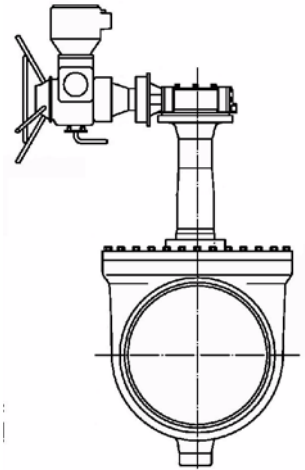
MR manual reducer



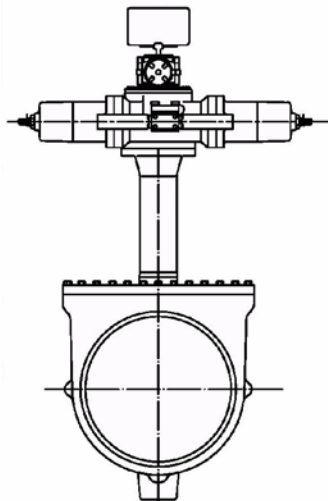
ACTAIR / DYNACTAIR pneumatic actuator



ACTELEC electric actuator



ACTO hydraulic actuator



ENNACTO hydraulic actuator

