



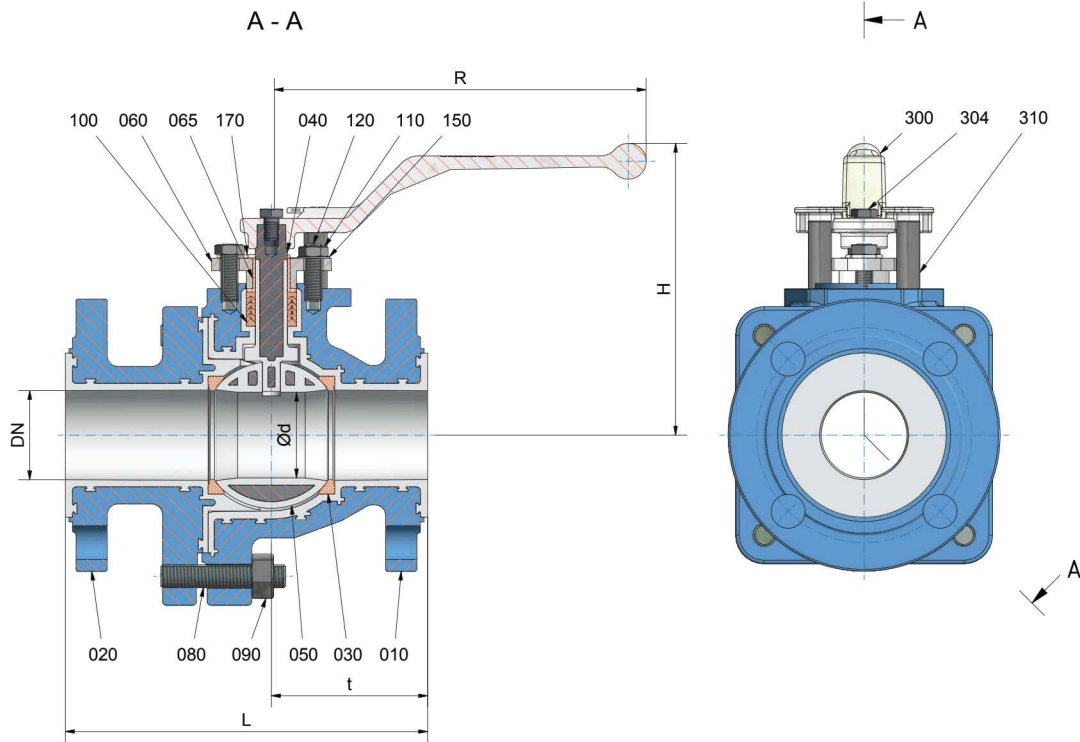
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Register 13 CONTENTS - AKH2A

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Technical Data AKH2A



Face-to-Face Dimensions ISO 5752 Tab. 6, short
 ASME B 16.10, short
 Flange Connections ASME B 16.5 Cass 150,
 Min. flange thickness acc.
 to ASME B 16.5 Cass 150,
 Table 9 (Flanged Fittings)

DN / ANSI		L	H	R	t	Ød	weight	
1"	inch	5	4,88	6,3	2,26	0,94	lbs	9,1
	mm	127	124	160	57,5	24	kg	4,2
1½"	inch	6,5	5,91	8,27	2,95	1,5	lbs	17,2
	mm	165	150	210	75	38	kg	7,8
2"	inch	7	6,5	8,27	3,23	1,89	lbs	25,5
	mm	178	165,5	210	82	48	kg	11,6
3"	inch	8	8,19	12,32	3,96	2,83	lbs	56,7
	mm	203	208	313	100,5	72	kg	25,7
4"	inch	9	8,78	12,32	4,37	3,74	lbs	81,4
	mm	229	223	313	111	95	kg	36,9
6"	inch	10,51	11,89	13,27*	5,28	5,12	lbs	172,0
	mm	267	302	337*	134	130	kg	78,0

* pass-through handlelever ø 26,54 inch standard

Material specification AKH2A

No.	Designation	Quantity	Material	Material-No. / DIN	ASTM / AISI	
010	body	1	ductile iron / PFA	EN-JS1049 (GGG-40.3) / DIN EN 1563	A 395	
		1	ductile iron / PFA conductive	EN-JS1049 (GGG-40.3) / DIN EN 1563	A 395	
020	side piece	1	ductile iron / PFA	EN-JS1049 (GGG-40.3) / DIN EN 1563	A 395	
		1	ductile iron / PFA conductive	EN-JS1049 (GGG-40.3) / DIN EN 1563	A 395	
030	seat ring	2	PTFE			
		2	PTFE conductive			
040	stem	1	stainless steel / PFA	1.4470 / DIN EN 10283	A 890 CD3MN	
		1	stainless steel / PFA conductive	1.4470 / DIN EN 10283	A 890 CD3MN	
		1	Hastelloy C4 / PFA °°	2.4610 / DIN 17744		
050	ball	DN 1" - 2"	1	cast steel / PFA	1.0619 / DIN EN 10213-2	A 216 Grade WCB
			1	cast steel / PFA conductive	1.0619 / DIN EN 10213-2	A 216 Grade WCB
		DN 3" - 6"	1	ductile iron / PFA	EN-JS1049 (GGG-40.3) / DIN EN 1563	A 395
			1	ductile iron / PFA conductive	EN-JS1049 (GGG-40.3) / DIN EN 1563	A 395
			1	ceramic Al ₂ O ₃ *		
060	gland follower	1	stainless steel	1.4308 / DIN EN 10283	A 743 CF-8	
065	gland insert	1	PTFE-graphite			
080	stud bolt	1 set	stainless steel	1.4301-K70 / DIN EN 10088-3	A 193 B8	
090	hexagon nut	1 set	stainless steel	1.4301-K70 / DIN EN 10088-3	A 194 8	
100	packing material (chevron)	1 set	PTFE ° PTFE-graphite °			
110	hexagon nut	2	stainless steel	1.4301 / DIN EN 10088-3	A 194 8	
120	stud bolt	2	stainless steel	1.4301 / DIN EN 10088-3	A 193 B8	
150	serrated lock washer	1	stainless steel	1.4301 / DIN EN 10088-3	AISI 304	
170	grounding device	1	stainless steel	1.4310 / DIN EN 10270-3	AISI 301	
300	hand lever	DN 1" - 4"	1	die cast metall	ZP0410 / DIN EN 12844	
		DN 6": adapter; level	1	stainless steel;	1.4308 / DIN EN 10283;	A 743 CF-8
			1	steel (chromated)	1.0037 / DIN EN 10025-2	A283 B
304	hexagon bolt	1	stainless steel	1.4301 / DIN EN 10088-3	A 193 B8	
310	stop	DN 1" - 4"	2	stainless steel	1.4301 / DIN EN 10088-3	AISI 304
		DN 6"	1	stainless steel	1.4104 / DIN EN 10088-3	AISI 430 F

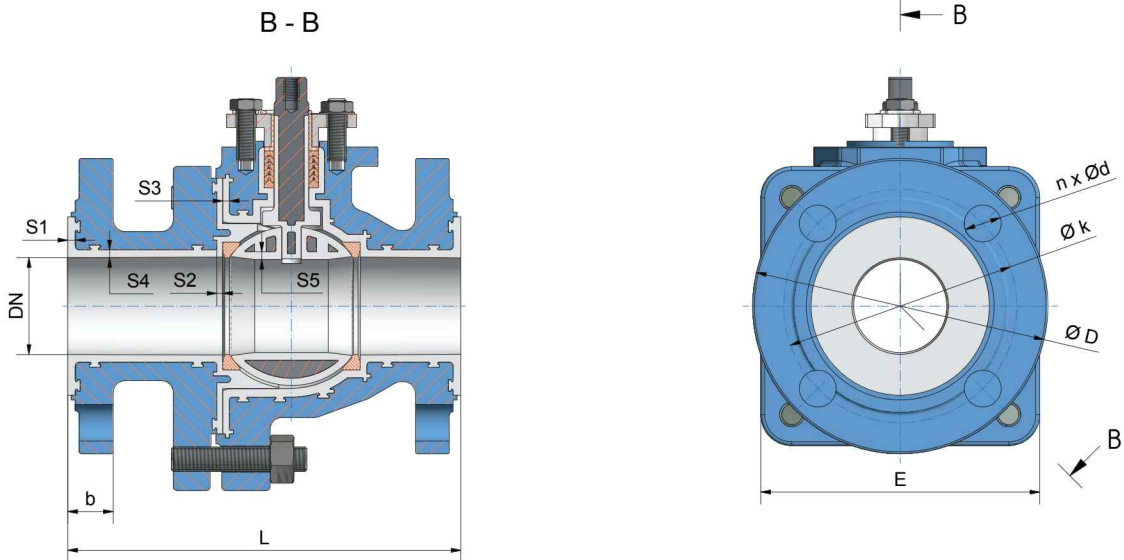
Valves with conductive lining only contain components with conductive materials

* ceramic ball on request

°° Hastelloy stem on request

° optional

Dimensions AKH2A



DN / ANSI		L	E °	b	D	k	nxØd	S1	S2	S3	S4	S5
1"	inch	5	3,82	0,65	4,25	3,12	4x0,63	0,16	0,1	0,12	0,12	0,1
	mm	127	97	16,5	107,9	79,2	4x16	4	2,5	3	3	2,5
1½"	inch	6,5	4,65	0,79	5	3,88	4x0,63	0,16	0,12	0,12	0,12	0,12
	mm	165	118	20	127	98,5	4x16	4	3	3	3	3
2"	inch	7	5,51	0,85	6	4,74	4x0,75	0,16	0,12	0,12	0,12	0,12
	mm	178	140	21,5	152,4	120,5	4x19	4	3	3	3	3
3"	inch	7,99	8,66	1,04	7,5	6	4x0,75	0,16	0,14	0,16	0,14	0,16
	mm	203	220	26,5	190,5	152,5	4x19	4	3,5	4	3,5	4
4"	inch	9,02	9,65	1,04	9	7,5	8x0,75	0,16	0,14	0,16	0,14	0,16
	mm	229	245	26,5	228,6	190,5	8x19	4	3,5	4	3,5	4
6"	inch	10,51	12,32	1,14	11	9,51	8x0,87	0,16	0,2	0,16	0,2	0,18
	mm	267	313	29	279,4	241,5	8x22	4	5	4	5	4,5

stem lining DN 1" 0,059 inch
 all other sizes at least 0,098 inch
 ° DN1" to DN2" quadrangular, DN3" to DN6" octagonal

Technical Manual

Spare Parts (item n°) - AKH2A Standard Version

ANSI	Ball		Seat Rings
	PFA	Ceramic [°]	PTFE
1"	0000323	0002317	0000159
1½"	0000325	0002319	0000160
2"	0000326	0002320	0000161
3"	0009172	--	0009425
4"	0009173	--	0009426
6"	0009341	--	0009427

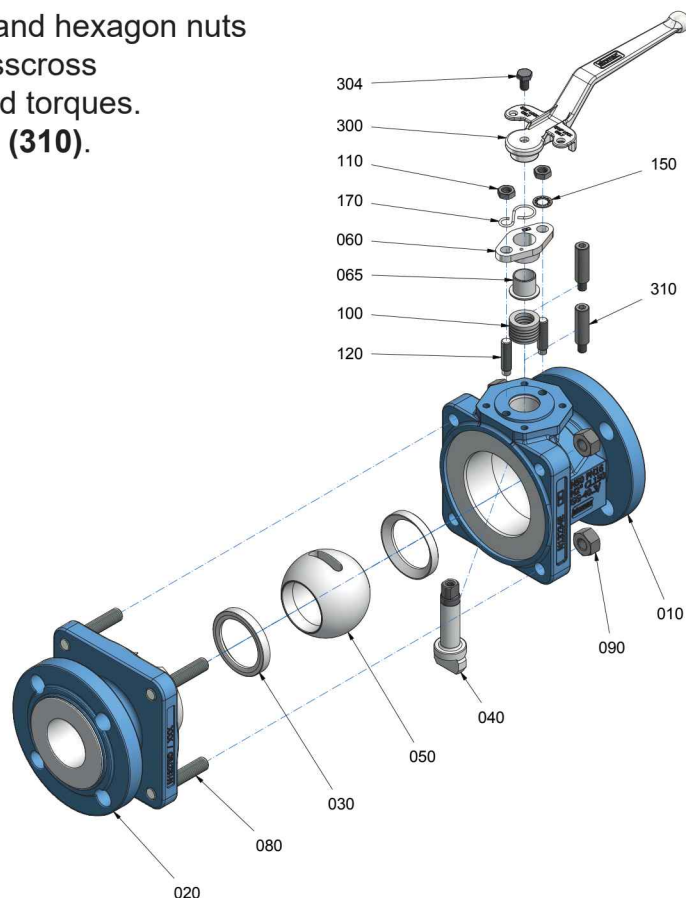
ANSI	Stem		Packing (set)	
	Stainless Steel / PFA	Hastelloy / PFA	PTFE	PTFE / Graphite
1"	0000115	0000116	0000167	0000174
1½"	0000117	0000118	0000168	0000175
2"	0000119	0000120	0000169	0000176
3"	0000121	0000122	0000170	0000177
4"	0000121	0000122	0000170	0000177
6"	0000123	0000124	0000172	0000179

[°] Al₂O₃

Assembly Instructions AKH2A

The general installation and maintenance instructions must be observed.

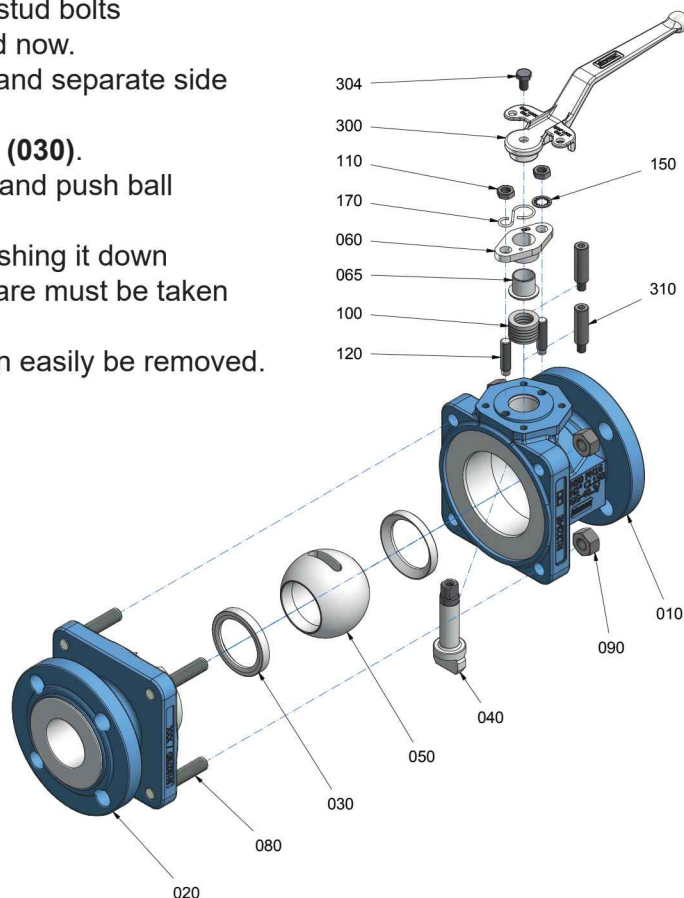
1. Screw stud bolts (**120**) into body (**010**).
2. Insert stem (**040**) from inside of body in such a way that the flat side is parallel to body longitudinal axis.
3. Insert chevron packing (**100**).
4. Install gland insert (**065**), gland follower (**060**), safety washer (**150**), hexagon nuts (**110**) and grounding strap (**170**).
5. Install hand lever (**300**) on to stem (**040**) with the hexagon bolt (**304**).
6. Insert first seat ring (**030**) into body (**010**).
7. Insert ball (**050**) to valve stem by pushing the ball in a downward motion through valve body.
8. Turn hand lever (**300**) 90° of longitudinal axis of body.
9. Install second ball seat ring (**030**) on to ball (**050**).
10. Install side piece (**020**) on to body (**010**), making sure that recess for stem is on the correct side.
11. Install body bolts (**080**) and hexagon nuts (**090**) and tighten by crisscross method to recommended torques.
12. Assemble the two stops (**310**).



Disassembly Instructions for AKH2A

For all jobs which are to be carried out on an installed valve, the works safety requirements and the general accident prevention instructions must be observed. Moreover, the general installation and maintenance instructions for atomac fluorocarbon resin lined valves must be considered.

1. Prior to disassembly, the valve must be cleared of all fluid according to the above-mentioned instructions. Particular care must be taken that during rinsing and draining of the piping, the valve is opened and closed repeatedly. These cycles (opening and closing) are to be repeated during draining of the piping. Only when following this procedure, is it ensured that all remaining pressure inside the body (stem guide and ball seats) is eliminated.
2. For disassembly of the valve, put body on a work bench with a soft cover (rubber mat). If necessary, remove the stops (**310**). Remove hexagon bolt (**110**) and lock washer (**150**) and grounding device (**170**).
3. Open valve completely. Remove hand lever (**300**).
4. Disassemble gland follower (**060**) and gland insert (**065**). If necessary, stud bolts (**120**) can also be removed now.
5. Remove body bolts (**080**) and separate side piece from body.
6. Remove first ball seat ring (**030**).
7. Put ball in closed position and push ball out of the body.
8. Remove stem (**040**) by pushing it down through the body (**010**). Care must be taken not to damage body liner.
9. Chevron packing (**100**) can easily be removed.



AKH2A - recommended tightening torques*

DN	tie rods (080/090)		connection flange		gland bolts (110/120/150)	
	Nm	lbf · in	Nm	lbf · in	Nm	lbf · in
1"	19	168	15	133	4	35
1½"	38	336	26	230	7	62
2"	66	584	60	531	7	62
3"	116	1027	100	885	8	71
4"	140	1239	76	673	8	71
6"	161	1425	129	1142	12	106

* maximum value

When bolting together dissimilar materials, always tighten to the lowest recommended torque of the components in the joint. Using higher torques may cause excessive deformation of the „softer“ material in the joint

Gear Operator

(worm gear)

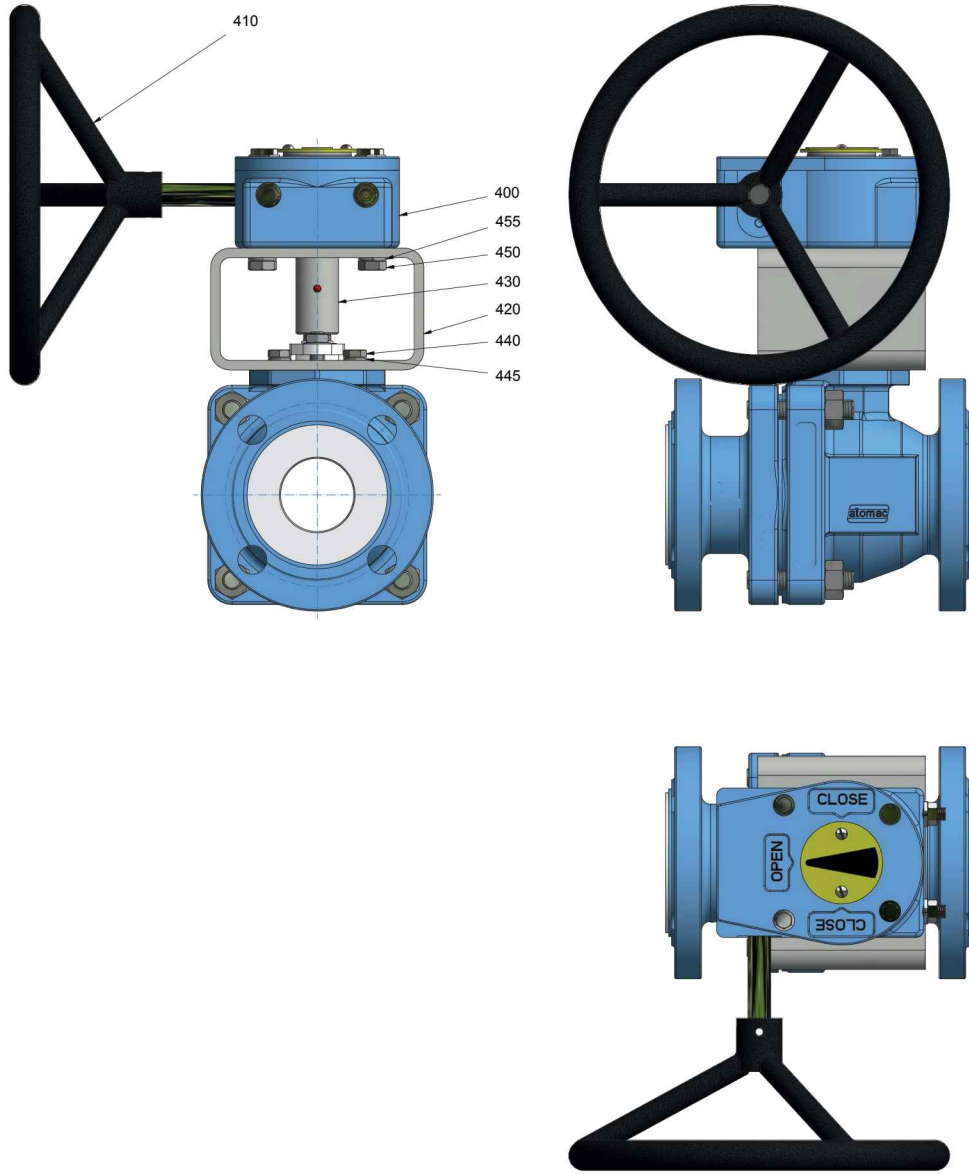
The fully closed, waterproof actuator consists of a body with lid, worm gear, input shaft and hand wheel. For the correct adjustment of the ball position, there are two adjustable stops mounted in the body.

The gear is fully greased and does not need any further lubrication.

The actuator with hand wheel is mounted on a bracket with four stainless steel bolts. The on/off position is indicated through a pointer. The actuator is self-locked.

Designation	Material
Body	Gray Iron
Worm	Spheroidal Graphite Cast Iron
Input Shaft	AISI 410
Hand Wheel	Steel

Material specification - AKH2A with manual Gear



No.	Designation	Quantity	Material	Material-No.	DIN	ASTM / AISI
400	gear	1				
410	handwheel	1				
420	bracket	1	steel (yellow chromated)	1.0037	DIN EN 10025-2	A 283 B
430	adapter	1	stainless steel	1.4104	DIN EN 10088-3	AISI 430 F
440	hexagon bolt	4	stainless steel	1.4301	DIN EN 10088-3	A 193 B8
445	serrated lock washer	4	stainless steel	1.4301	DIN EN 10088-3	AISI 304
450	hexagon bolt	4	stainless steel	1.4301	DIN EN 10088-3	A 193 B8
455	serrated lock washer	4	stainless steel	1.4301	DIN EN 10088-3	AISI 304

AKH2A - Actuator Sizing Torques

Packingmaterial: chevron PTFE or PTFE-graphite

- **for clean and clear application**

Size	0 bar Δ p Nm	0 psi Δ p lbf · in	10 bar Δ p Nm	150 psi Δ p lbf · in	19 bar Δ p Nm	275 psi Δ p lbf · in	MAST	
							Nm	lbf · in
1"	7	62	8	71	8	71	40	354
1½"	20	177	27	239	34	301	115	1018
2"	27	239	34	301	45	398	130	1151
3"	54	478	67	593	89	788	420	3717
4"	63	558	97	859	124	1097	420	3717
6"	160	1416	240	2124	310	2744	1107	9798

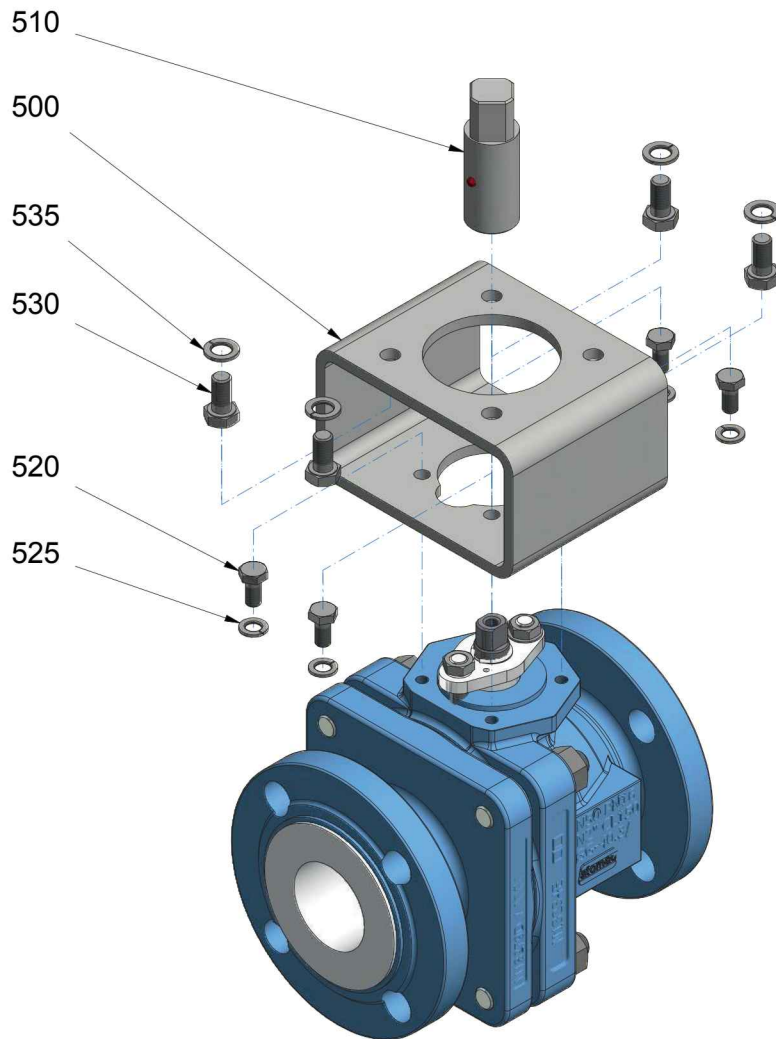
- **for dry and slurry application**

Size	0 bar Δ p Nm	0 psi Δ p lbf · in	10 bar Δ p Nm	150 psi Δ p lbf · in	19 bar Δ p Nm	275 psi Δ p lbf · in	MAST	
							Nm	lbf · in
1"	9	81	10	92	10	92	40	354
1½"	26	230	35	311	44	391	115	1018
2"	35	311	44	391	59	518	130	1151
3"	70	621	87	771	116	1024	420	3717
4"	82	725	126	1116	161	1427	420	3717
6"	208	1841	312	2761	403	3567	1107	9798

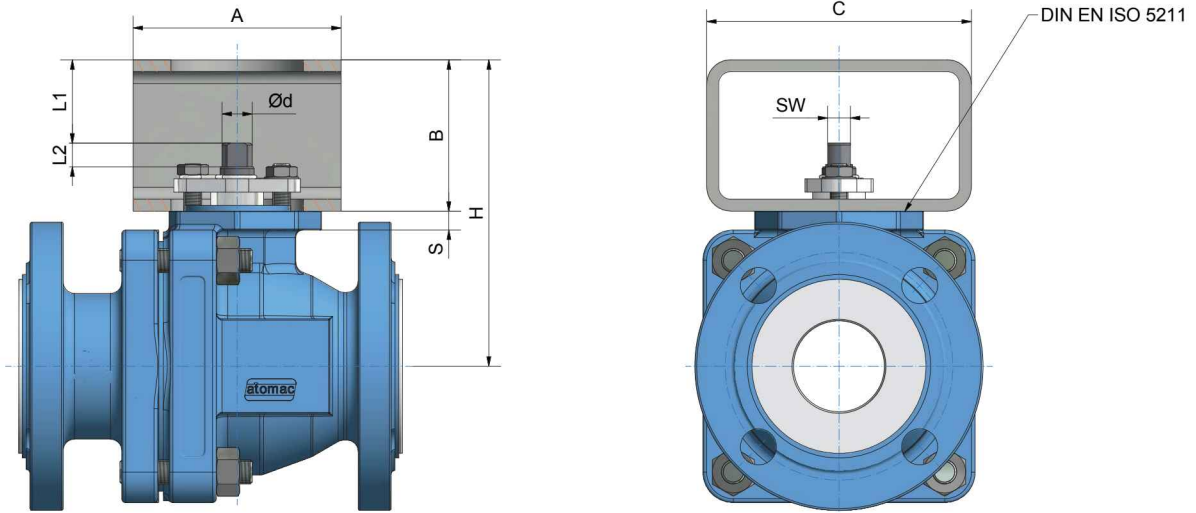
- Stated torques are sizing torques. No further safety factors are to be applied against these torques.
- The use of ceramic balls in lined valves will result in 15% higher sizing torques.
- The use of C-Balls or V-Balls does not result in change in sizing torques.
- Stated sizing torques are „Break-Open“ and „Re-Seating“ torques. Running torques are typically 35% below sizing torques.
- The stated „MAST“ value is the Maximum Allowable Stem Torque. Beyond this value permanent deformation / destruction of liner is to be expected.
- Please note the service conditions of the pressure- / vacuum-temperature-diagrams: register 1, page 13.

AKH2A with kit for actuator mounting

No.	Designation	Quantity	Material	Material-No.	DIN	ASTM / AISI
500	bracket	1	steel (yellow chromated)	1.0037	DIN EN 10025-2	A 283-B
510	adapter	1	stainless steel	1.4101	DIN EN 10088-3	AISI 430 F
520	hexagon bolt	4	stainless steel	1.4301	DIN EN 10088-3	A 193 B8
525	serrated lock washer	4	stainless steel	1.4301	DIN EN 10088-3	AISI 304
530	hexagon bolt	1 set	stainless steel	1.4301	DIN EN 10088-3	A 193 B8
535	serrated lock washer	1 set	stainless steel	1.4301	DIN EN 10088-3	AISI 304



AKH2A - Dimension sheet for actuator mounting acc. to NAMUR - recommendation

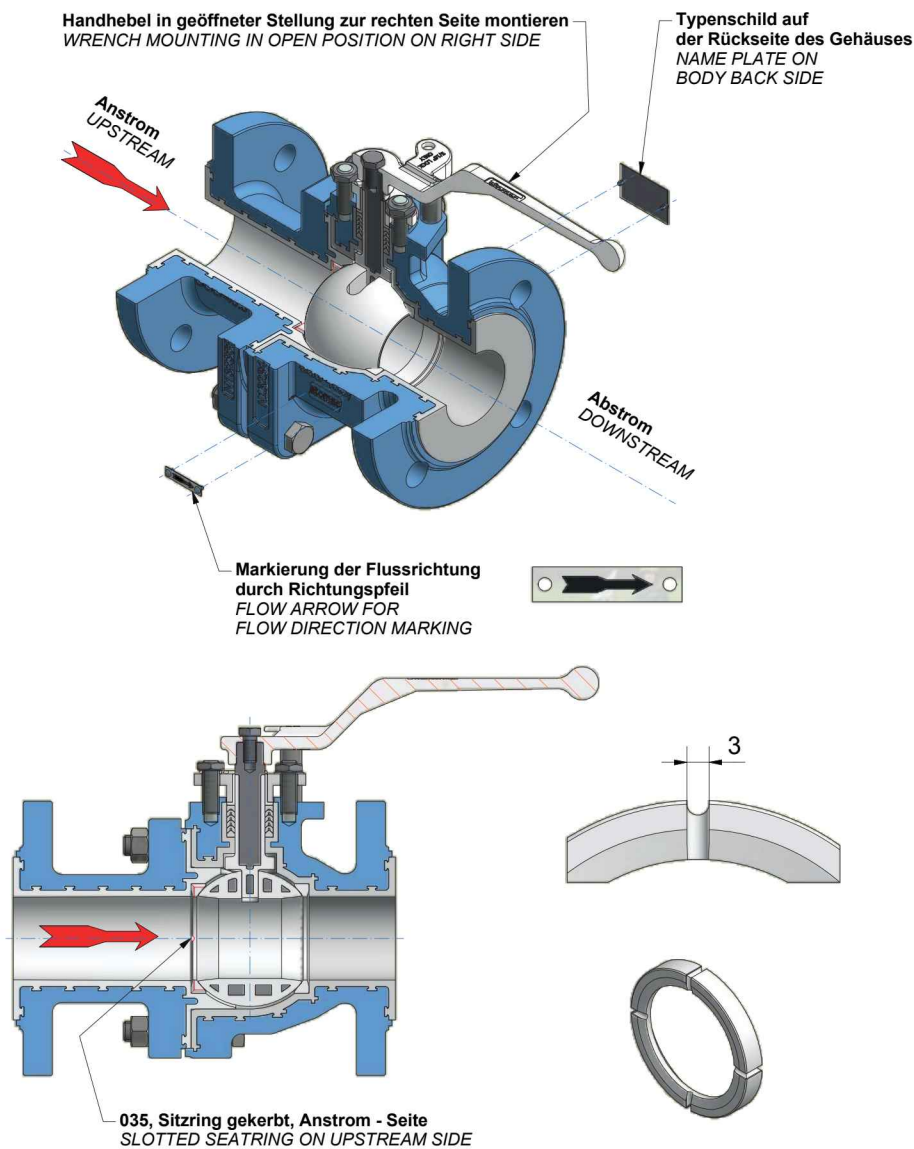


ANSI		H	A	B	C	SW ^{+0,1 -0,1}	Ød ^{+0 -0,1}	S	L1	L2	DIN EN ISO
											5211
											ISO 5211
1"	mm	109	75	60	100	8	10	-	30,5	9,3	F05
	inch	4,29	2,95	2,36	3,94	0,315	0,393	-	1,2	0,37	
1½"	mm	129	100	60	100	12	16	-	25,5	12,5	F07
	inch	5,08	3,94	2,36	3,94	0,472	0,63	-	1	0,49	
2"	mm	142	100	60	100	12	16	-	23	12,5	F07
	inch	5,59	3,94	2,36	3,94	0,472	0,63	-	0,91	0,49	
3"	mm	203	135	80	140	16	22	13	34	15,5	F10
	inch	8	5,31	3,15	5,51	0,63	0,866	0,51	1,34	0,61	
4"	mm	218	135	80	140	16	22	13	34	15,5	F10
	inch	8,58	5,31	3,15	5,51	0,63	0,866	0,51	1,34	0,61	
6"	mm	271	135	80	140	20	30	14	23	19,5	F12
	inch	10,67	5,31	3,15	5,51	0,787	1,181	0,55	0,91	0,77	

AKH2A with pressure compensation grooves by slotted seat ring

See material specification AKH2A page 3.

No.	Designation	Pieces	Material	Material-No. / DIN	ASTM / AISI
035	seat ring with pressure compensation grooves	1	PTFE	pure - PTFE	



See Assembly Instructions AKH2A page 6.

Attention, please take care of the tight direction of indicator while assembly.

9. Install ball seat ring with pressure compensation grooves (035) on to ball (050).
 Disassembly instruction see AKH2A page 7

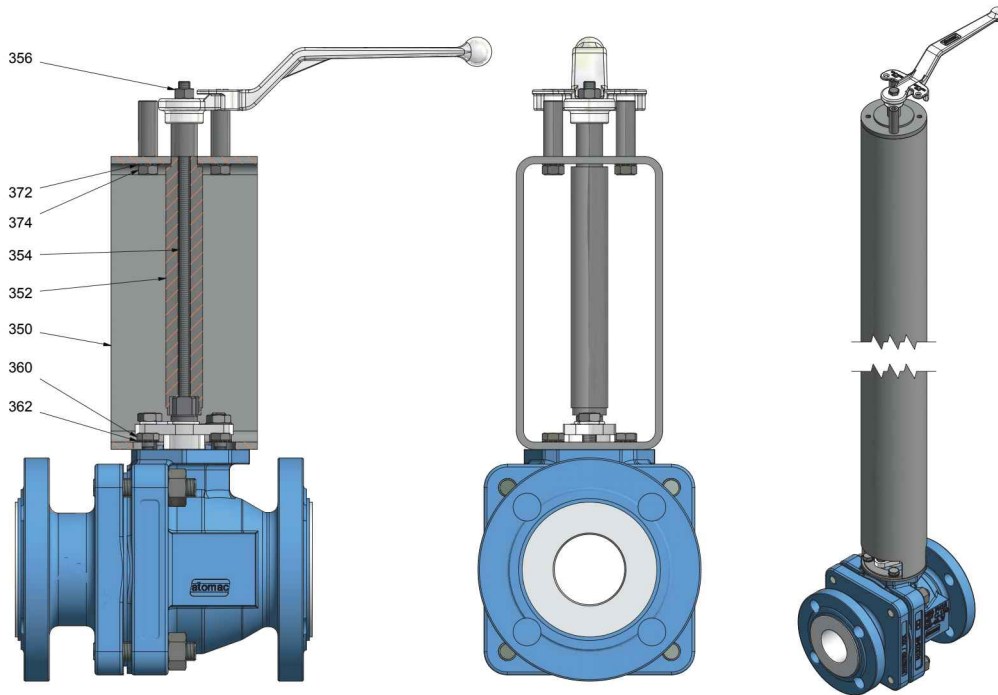
Special cleaning and packaging procedures

1. Recleaning

The ball valve should be thoroughly cleaned with a clean, dry, lint-free towel and blown off with dry nitrogen gas. This will assure that the valve is free from moisture, grease and other media before packing.

2. Packing

Prior to packing, the ball valve should be jig welded in a PE-foil (0.2 mm thick). The bag contains desiccants acc. to DIN 55473, quantity acc. to DIN 55474 and a moisture indicator.

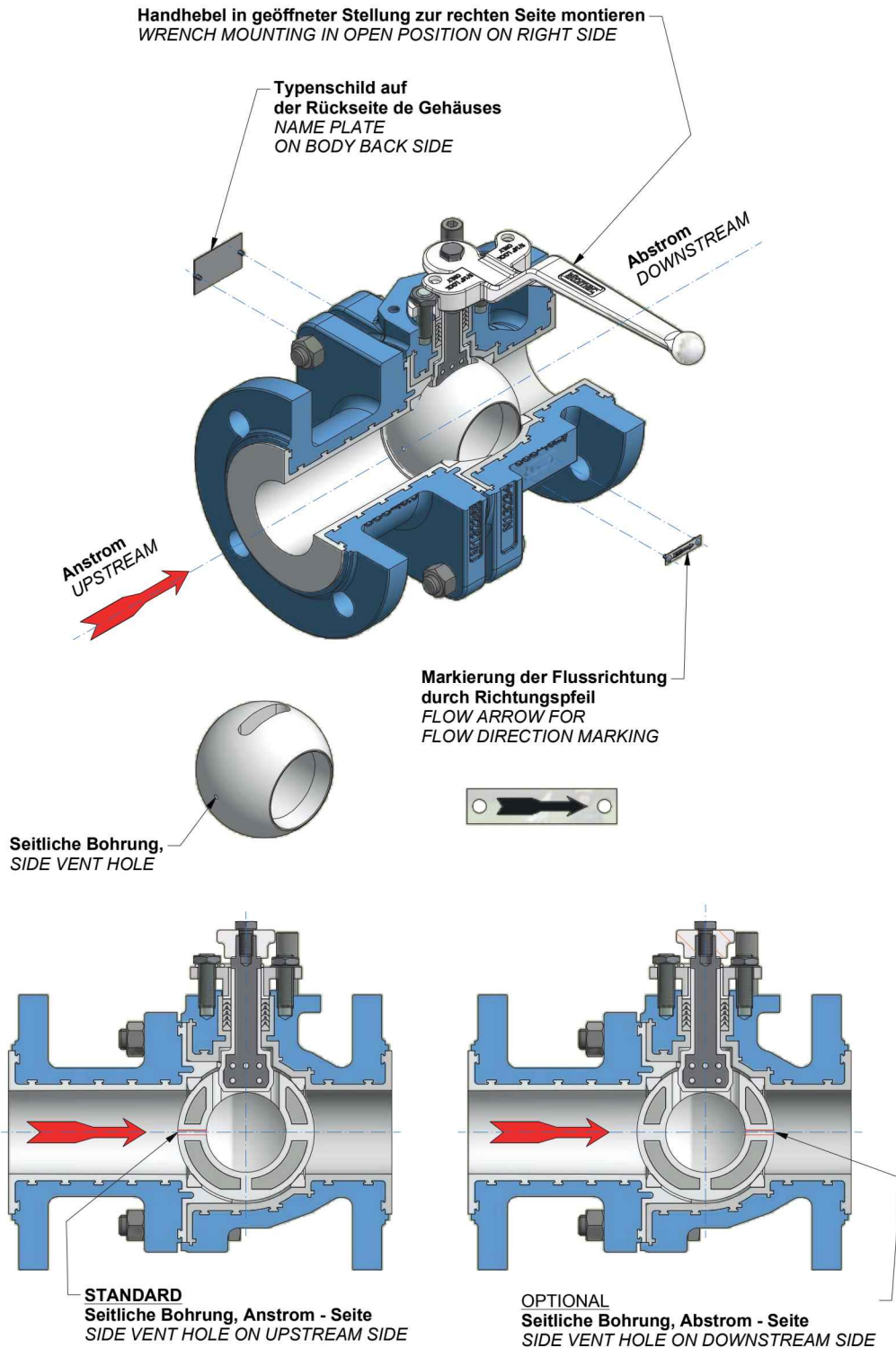


No.	Designation	Pieces	Material	Material-No.	DIN	ASTM / AISI
350	bracket	1	steel, yellow chromated	1.0037	DIN EN 10025-2	A 283 B
352	adapter	1	stainless steel	1.4104	DIN EN 10088-3	AISI 430 F
354	stud bolt	1	stainless steel	1.4301	DIN EN 10088-3	A 193 B8
356	hexagon nut	1	stainless steel	1.4301	DIN EN 10088-3	A 194 8
360	hexagon bolt	2	stainless steel	1.4301	DIN EN 10088-3	A 193 B8
362	serrated lock washer	2	stainless steel	1.4301	DIN EN 10088-3	AISI 304
372	serrated lock washer	2	stainless steel	1.4301	DIN EN 10088-3	AISI 304
374	hexagon nut	2	stainless steel	1.4301	DIN EN 10088-3	A 194 8

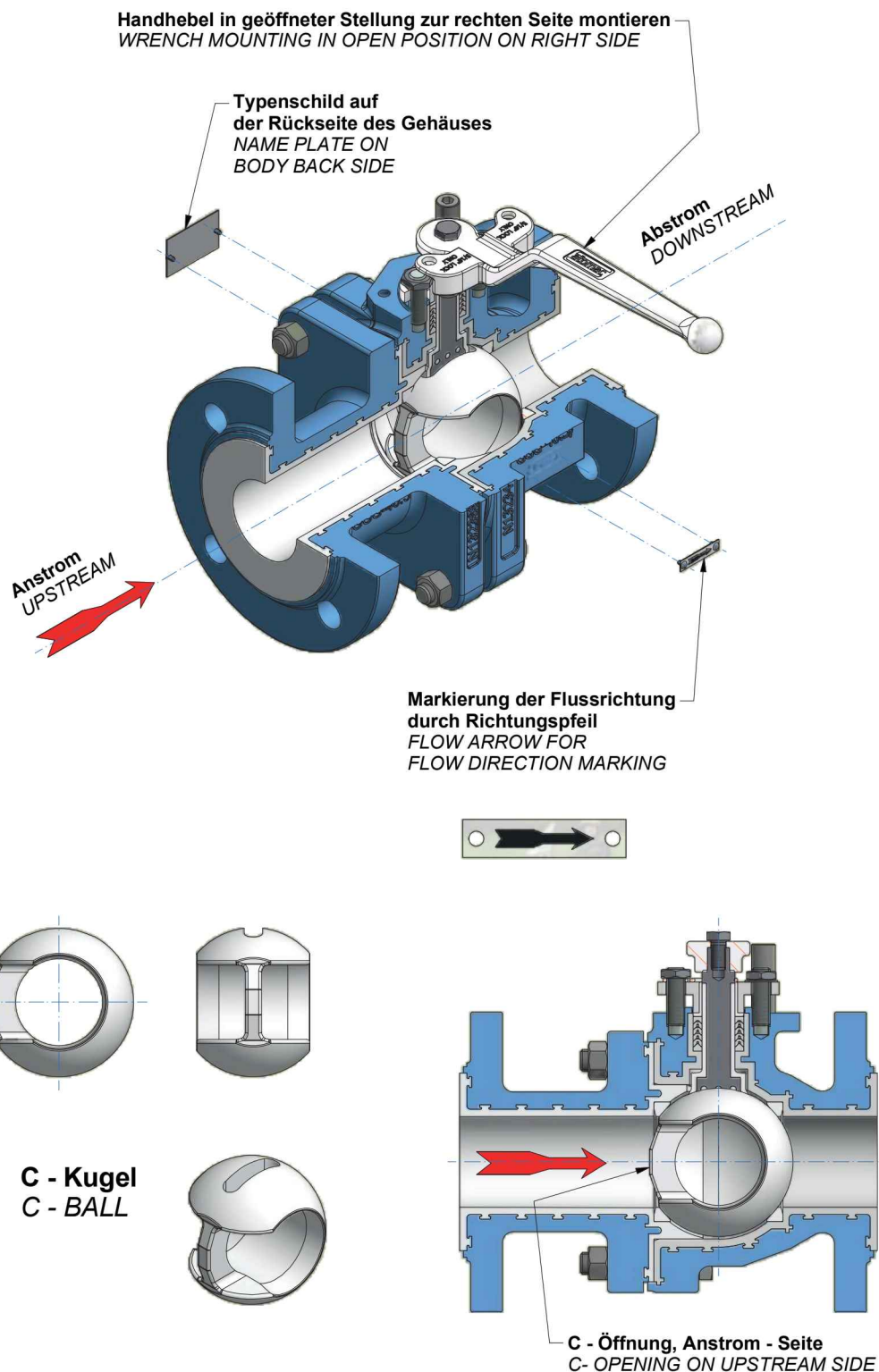
AKH2A - K_v DATA and C_v Data (DIN EN 60534-2-3)

ANSI	K_v m ³ /h	C_v gal/min
1"	46,6	54,1
1 1/2"	126,9	147,5
2"	202,5	235,4
3"	507,8	590,2
4"	953,4	1108,1
6"	1577,7	1833,8

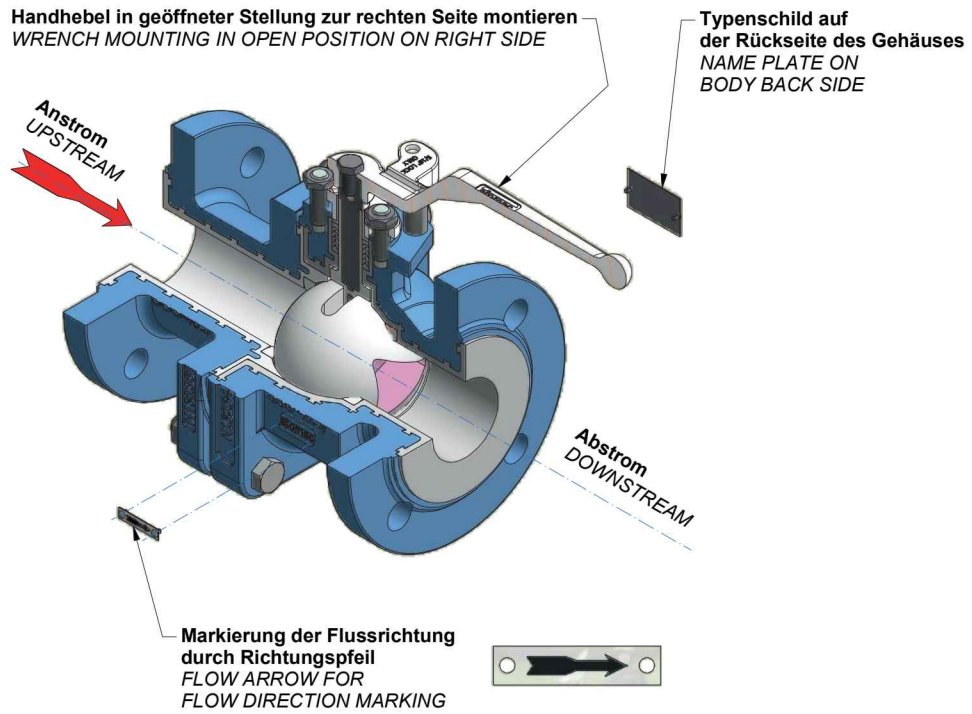
Optional ball with side vent hole



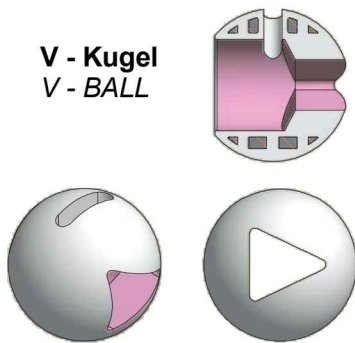
Optional with C-ball



Optional with V-ball or S-ball



V - Kugel
 V - BALL



S - Kugel
 S - BALL

