

Swing Check Valve

STAAL 40 AKK/AKKS

Type Series Booklet



Legal information/Copyright

Type Series Booklet STAAL 40 AKK/AKKS

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Check Valves and Strainers

Swing Check Valves to DIN/EN

STAAL 40 AKK/AKKS



Main applications

- Chemical industry
- Boiler feed applications
- Boiler recirculation
- Cooling circuits
- Condensate transport
- Petrochemical industry
- Process engineering
- Heat recovery systems
- Sugar industry
- Mining
- Descaling units
- Fossil-fuelled power stations
- Paper industry / pulp industry
- Shipbuilding
- Snow-making systems
- Nuclear power stations

Fluids handled

- Water
- Steam
- Other non-aggressive fluids such as gas or oil on request.

Operating data

Table 1: Operating properties

Characteristic	Value
Nominal pressure	PN 10 - 40
Nominal size	DN 80 - 400
Max. permissible pressure [bar]	40
Min. permissible temperature [°C]	≥ -10
Max. permissible temperature [°C]	≤ +450

Selection as per pressure/temperature ratings (⇒ Page 5)

Valve body materials

DN 80 - 200

Table 2: Overview of available materials

Material	Material number	Temperature limit
P 235 GH	1.0345	≤ 450 °C

DN 250 - 400

Table 3: Overview of available materials

Material	Material number	Temperature limit
P 265 GH	1.0425	≤ 450 °C

Design details

Design

- Body of forged or welded steel construction
- Bolted cover
- Internally mounted hinge pin

Variants

- Extended hinge pin from DN 300 (for lever and weight)
- Other flange designs
- Other butt weld end versions
- Drain branch
- Seat/disc interface made of wear-resistant and corrosion-proof Stellite
- Inspections to technical codes such as TRD/TRB/AD2000 – German Steam Boiler / Pressure Vessel Regulations – or to customer specification
- DN 500 and above on request.

Product benefits

- Additional features ensure safe sealing to atmosphere: Risk of leakage is reduced by internally mounted hinge pin. The hinge pin mounting bracket is welded directly to the inside of the cover, so no additional seal to atmosphere is required.
- Reliable, tight shut-off and service-friendly design due to flexibly mounted valve disc. Precise alignment of valve disc with body seat; valve disc is easy to replace.
- Hard-faced seat/disc interface made of wear-resistant and corrosion-proof 17 % chrome steel or Stellite for long service life and high functional reliability.

Product information
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.

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.

Product information as per UK Equipment and Protective Systems Intended for Use in Potentially Explosive Atmospheres Regulations 2016

The valves do not have a potential internal source of ignition and can be used in accordance with the UK's Equipment and Protective Systems Intended for Use in Potentially Explosive Atmospheres Regulations 2016 in potentially explosive atmospheres, Group II, category 2 (zones 1+21) and category 3 (zone 2+22).

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.

Related documents
Table 4: Information/documents

Document	Reference number
STAAL 40 AKD/AKDS type series booklet (gate valves with bolted bonnet)	7364.1
Operating manual	0570.81

Purchase order specifications

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

1. Type
2. Nominal pressure
3. Nominal size
4. Operating pressure
5. Differential pressure
6. Operating temperature
7. Material
8. Fluid handled
9. Flow rate
10. Pipe connection
11. Variants
12. Reference number

Always indicate the original serial number and the year of construction when ordering spare parts.

Pressure/temperature ratings
Table 5: Permissible operating pressure [bar] (to EN 1092-1) ¹⁾

PN	Material	[°C]									
		RT ²⁾	100	150	200	250	300	350	400	450	
10	P 235 GH / P 265 GH	10,0	9,2	8,8	8,3	7,6	6,9	6,4	5,9	3,2	
16		16,0	14,8	14,0	13,3	12,1	11,0	10,2	9,5	5,2	
25		25,0	23,2	22,0	20,8	19,0	17,2	16,0	14,8	8,2	
40		40,0	37,1	35,2	33,3	30,4	27,6	25,7	23,8	13,1	

¹⁾ Operating pressures to DIN 2401 are also permissible.

²⁾ RT: room temperature (-10 °C to +50 °C)

Materials

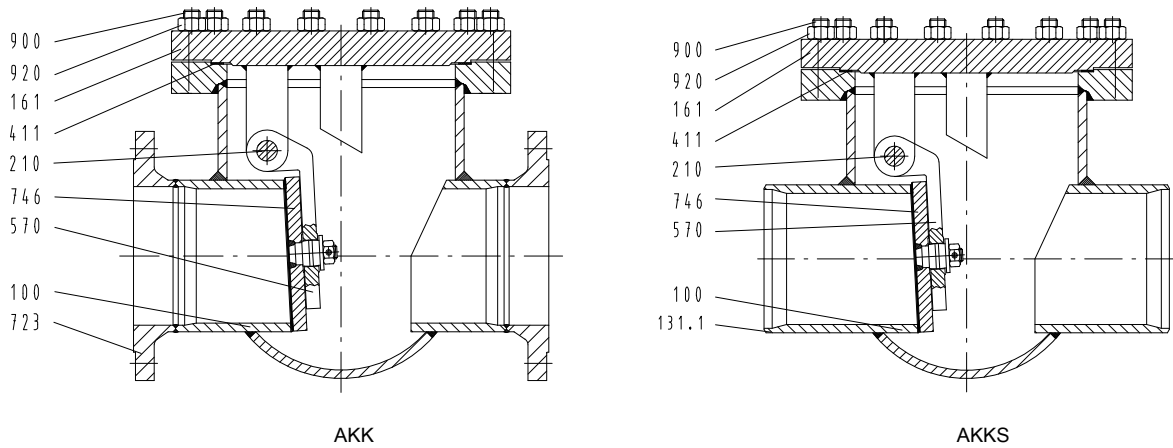


Fig. 1: Sectional drawings of STAAL 40 AKK/AKKS

Table 6: Parts list

Part No.	Description	Material	Material number	Note
100	Body	P 235 GH	1.0345	-
		P 265 GH	1.0425	-
131.1	Connection branch	P 235 GH	1.0305	-
161	Body cover	P 265 GH	1.0425	-
210 ³⁾	Hinge pin	X 20 Cr 13	1.4021	-
Seat/disc interface	Body	X 20 CrMo 17 1	1.4115	17 % chrome steel
	Valve disc	X 8 CrTi 18	1.4502	
411 ³⁾	Joint ring	Pure graphite	-	-
570 ³⁾	Hanger arm	P 265 GH	1.0425	-
723	Flange	P 250 GH	1.0460	-
746 ³⁾	Valve disc	P 265 GH	1.0425	-
900	Bolt	25 CrMo 4	1.7218	-
920	Hexagon nut	C 35 E	1.1181	-

³ Recommended spare parts

Dimensions and weights

Dimensions and weights of STAAL 40 AKK

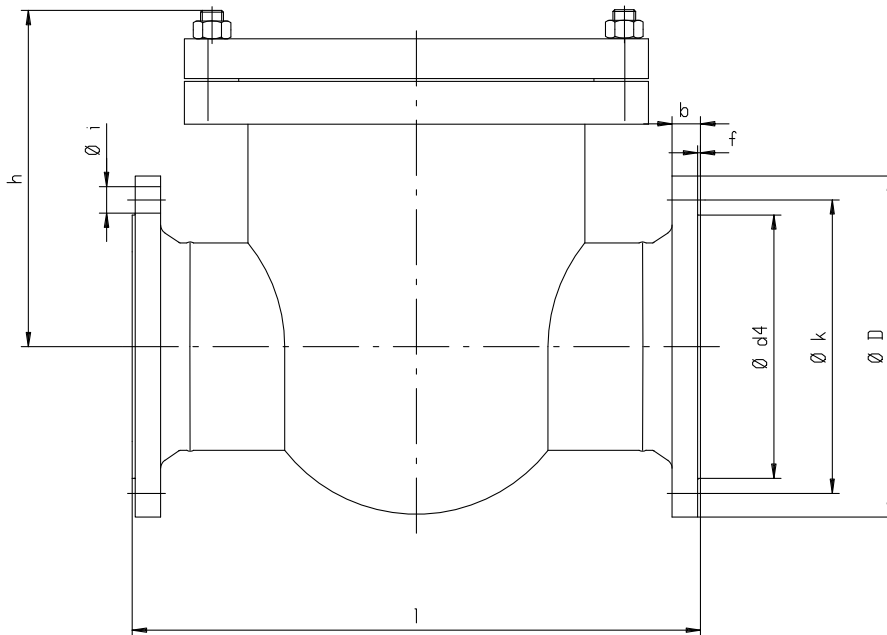


Fig. 2: Sectional drawing of STAAL 40 AKK

Table 7: Dimensions [mm] and weights [kg]

PN	DN	l	Ø D	Ø k	No. of bolt holes z	Bolt hole dia. i	Ø d ₄ × f	b	h	[kg]
10	80	310	200	160	8	18	138 × 3	20	218	38
	100	350	220	180	8	18	158 × 3	20	253	62
	125/100	400	250	210	8	18	188 × 3	22	253	63
	150	480	285	240	8	22	212 × 3	22	286	120
	200	600	340	295	8	22	268 × 3	24	355	205
	250	730	395	350	12	22	320 × 3	26	335	220
	300	850	445	400	12	22	370 × 4	26	370	285
	350	980	505	460	16	22	430 × 4	26	400	380
	400	1100	565	515	16	26	482 × 4	26	430	500
16	80	310	200	160	8	18	138 × 3	20	218	38
	100	350	220	180	8	18	158 × 3	20	253	62
	125/100	400	250	210	8	18	188 × 3	22	253	63
	150	480	285	240	8	22	212 × 3	22	286	120
	200	600	340	295	12	22	268 × 3	24	355	205
	250	730	405	355	12	26	320 × 3	26	335	220
	300	850	460	410	12	26	378 × 4	28	370	285
	350	980	520	470	16	26	438 × 4	30	400	380
	400	1100	580	525	16	30	490 × 4	32	430	500
25	80	310	200	160	8	18	138 × 3	24	218	38
	100	350	235	190	8	22	162 × 3	24	253	62
	125/100	400	270	220	8	26	188 × 3	26	253	63
	150	480	300	250	8	26	218 × 3	28	286	120
	200	600	360	310	12	26	278 × 3	30	355	205
	250	730	425	370	12	30	335 × 3	32	335	270
	300	850	485	430	16	30	395 × 4	34	370	300
	350	980	555	490	16	33	450 × 4	38	400	430
	400	1100	620	550	16	36	505 × 4	40	445	680
40	80	310	200	160	8	18	138 × 3	24	218	38
	100	350	235	190	8	22	162 × 3	24	253	63

PN	DN	l	ø D	ø k	No. of bolt holes z	Bolt hole dia. i	ø d ₄ × f	b	h	[kg]
40	125/100	400	270	220	8	26	188 × 3	26	253	67
	150	480	300	250	8	26	218 × 3	28	286	135
	200	600	375	320	12	30	285 × 3	34	355	205
	250	730	450	385	12	33	345 × 3	38	355	320
	300	850	515	450	16	33	410 × 4	42	400	430
	350	980	580	510	16	36	465 × 4	46	430	585
	400	1100	660	585	16	39	535 × 4	50	470	820

Mating dimensions as per standard

Face-to-face lengths: PN 10-25: EN 558-1/15
PN 40: EN 558-1/26
ISO 5752/T1

Flanges: Mating dimensions to DIN 2501,
ISO 2084, BS 4504

Flange facing: Type B

Other flange designs

- E.g. groove (type D), tongue (type C), recess (type F), spigot (type E) to EN 1092-1 at both ends
- Other flange designs on request

Dimensions and weights of STAAL 40 AKKS

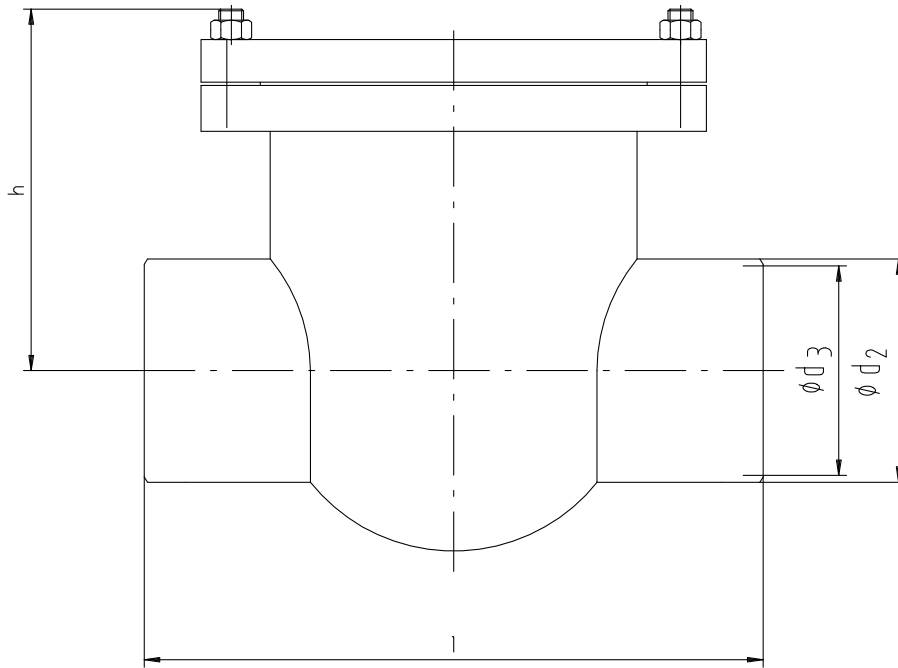


Fig. 3: Sectional drawing of STAAL 40 AKKS

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

PN	DN	l	Butt weld ends, machined		Associated pipe dimensions	h	[kg]
			ø d ₂	ø d ₃			
10/16	80	310	88,9	82,0	88,9 × 3,2	218	35
	100	350	114,3	106,5	114,3 × 3,6	253	49
	125/100	400	139,7	131,0	139,7 × 4,0	253	60
	150	480	168,3	158,5	168,3 × 4,5	286	100
	200	600	219,1	205,5	219,1 × 6,3	355	185
	250	730	273,0	260,0	273,0 × 6,3	335	260
	300	850	323,9	309,0	323,9 × 7,1	370	285
	350	980	355,6	339,0	355,6 × 8,0	400	348
	400	1100	406,4	389,5	406,4 × 8,0	430	455
25	80	310	88,9	82,0	88,9 × 3,2	218	35
	100	350	114,3	106,5	114,3 × 3,6	253	49
	125/100	400	139,7	131,0	139,7 × 4,0	253	60
	150	480	168,3	158,5	168,3 × 4,5	286	100
	200	600	219,1	205,5	219,1 × 6,3	355	185
	250	730	273,0	260,5	273,0 × 6,3	335	260
	300	850	323,9	309,5	323,9 × 7,1	370	300
	350	980	355,6	339,0	355,6 × 8,0	400	345
	400	1100	406,4	389,5	406,4 × 8,0	445	550
40	80	310	88,9	82,0	88,9 × 3,2	218	35
	100	350	114,3	106,5	114,3 × 3,6	253	49
	125/100	400	139,7	131,0	139,7 × 4,0	253	60
	150	480	168,3	158,5	168,3 × 4,5	286	100
	200	600	219,1	205,5	219,1 × 6,3	355	185
	250	730	273,0	260,5	273,0 × 6,3	355	270
	300	850	323,9	309,5	323,9 × 7,1	400	360
	350	980	355,6	336,5	355,6 × 8,8	430	410
	400	1100	406,4	387,0	406,4 × 8,8	470	690

Mating dimensions as per standard

Face-to-face lengths: PN 10-40: EN 12982/64
Butt weld ends: see table
Weld groove form: DIN EN ISO 9692-1 (1.3 + 1.5)

Different designs of butt weld ends and weld groove forms are possible, but only within the dimensions A_{\max} and B_{\min} .
Butt weld ends to EN 12627 are possible.



KSB SE & Co. KGaA
Bahnhofplatz 1 • 91257 Pegnitz (Germany)
Tel. +49 9241 71-0
www.ksb.com