

Swing Check Valve

STAAL 100 AKK/AKKS

Type Series Booklet



Legal information/Copyright

Type Series Booklet STAAL 100 AKK/AKKS

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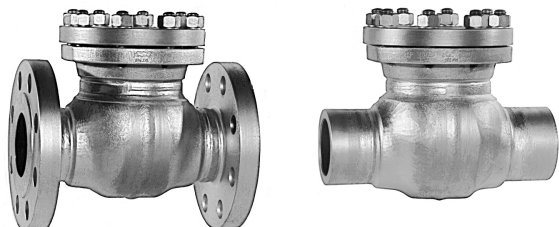
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Check Valves and Strainers

Swing Check Valves to DIN/EN

STAAL 100 AKK/AKKS



Main applications

- Chemical industry
- Boiler feed applications
- Boiler recirculation
- Condensate transport
- Petrochemical industry
- Process engineering
- 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 63 - 100
Nominal size	DN 80 - 400
Max. permissible pressure [bar]	100
Min. permissible temperature [°C]	≥ -10
Max. permissible temperature [°C]	≤ +530

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

Valve body materials

Overview of available materials DN 80/80 - 250/250 ¹⁾

Table 2: Overview of available materials

Material	Material number	Temperature limit
P 250 GH	1.0460	≤ 450 °C
13 CrMo 4-5	1.7335	≤ 530 °C

Overview of available materials DN 300/300 - 400/400

Table 3: Overview of available materials

Material	Material number	Temperature limit
P 265 GH	1.0425	≤ 450 °C
16 Mo 3	1.5415	≤ 500 °C
13 CrMo 4-5	1.7335	≤ 530 °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
- Inspections to technical codes such as TRD/TRB/AD2000 – German Steam Boiler / Pressure Vessel Regulations – or to customer specification
- DN 400 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.
 - Serrated cover gasket, fully confined to prevent creep.
- 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.

¹ DN 65/80 in PN 100 with butt weld ends on request

- 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 100 AKD/AKDS type series booklet (gate valves with bolted bonnet)	7331.1
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)²⁾

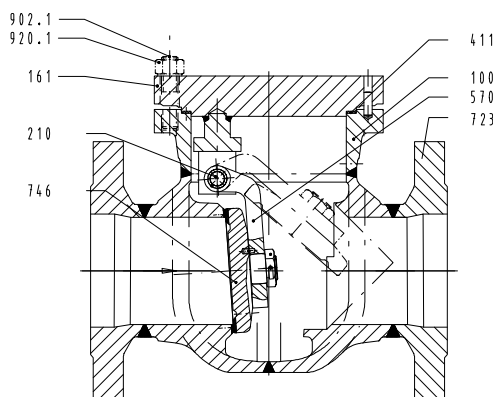
N	Material		[°C]																
	Designation	Number	RT ³⁾	100	150	200	250	300	350	400	450	460	470	480	490	500	510	520	530
63	P 250 GH	1.0460	63,0	58,5	55,5	52,5	48,0	43,5	40,5	37,5	20,7	-	-	-	-	-	-	-	-
	P 265 GH	1.0425	63,0	58,5	55,5	52,5	48,0	43,5	40,5	37,5	20,7	-	-	-	-	-	-	-	-
	16 Mo 3	1.5415	63,0	63,0	63,0	63,0	61,5	54,0	51,0	47,1	43,5	40,3	37,2	34,1	31,0	27,9	-	-	-
	13 CrMo 4-5	1.7335	63,0	63,0	63,0	63,0	63,0	60,0	56,7	53,1	50,5	47,9	45,4	42,8	41,1	34,8	28,2	23,4	
100	P 250 GH	1.0460	100,0	92,8	88,0	83,3	76,1	69,0	64,2	59,5	32,8	-	-	-	-	-	-	-	-
	P 265 GH	1.0425	100,0	92,8	88,0	83,3	76,1	69,0	64,2	59,5	32,8	-	-	-	-	-	-	-	-
	16 Mo 3	1.5415	100,0	100,0	100,0	100,0	100,0	97,6	80,9	74,7	69,0	64,0	59,1	54,2	49,2	44,2	-	-	-
	13 CrMo 4-5	1.7335	100,0	100,0	100,0	100,0	100,0	100,0	95,2	90,0	84,2	80,2	76,1	72,0	68,0	65,2	55,2	44,7	37,1

²⁾ Operating pressures to DIN 2401 are also permissible.

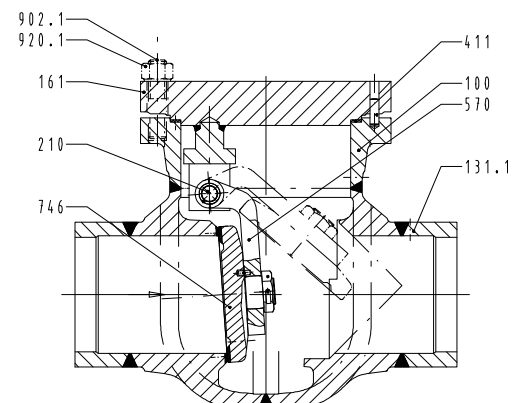
³⁾ RT: room temperature (-10 °C to +50 °C)

Materials

DN 80/80 - 250/250

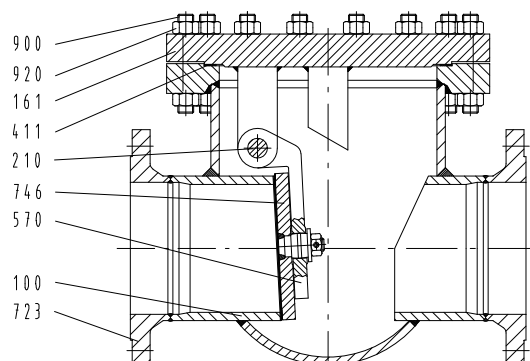


AKK

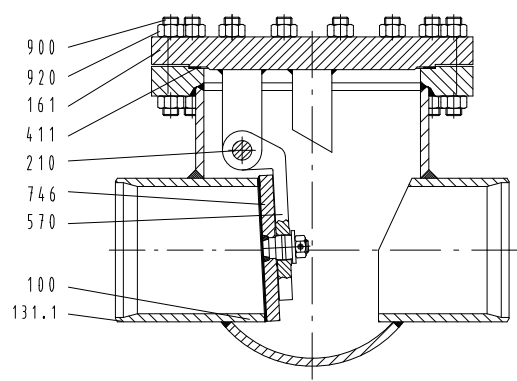


AKKS

DN 300/300 - 400/400



AKK



AKK

Fig. 1: Sectional drawings of STAAL 100 AKK/AKKS

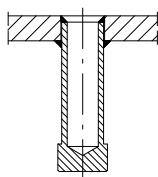
Table 6: Parts list DN 80/80-250/250

Part No.	Description	Temperature [°C]	Material	Material number	Note
100	Body	≤ 450	P 250 GH	1.0460	Body die-forged and welded
		≤ 530	13 CrMo 4-5	1.7335	
723	Flange	≤ 450	P 250 GH	1.0460	-
		≤ 530	13 CrMo 4-5	1.7335	
131.1	Connection branch	≤ 450	P 250 GH	1.0460	Material can be matched to piping material
		≤ 530	13 CrMo 4-5	1.7335	
161	Body cover	≤ 450	P 250 GH	1.0460	-
		≤ 530	13 CrMo 4-5	1.7335	
746 ⁴⁾	Valve disc	≤ 450	P 250 GH	1.0460	-
		≤ 530	13 CrMo 4-5	1.7335	
Seat/disc interface	Body	≤ 450	X 20 CrMo 17-1	1.4115	Hard-faced
		≤ 530	Stellite	-	
	Valve disc	≤ 530	X 15 CrNiMn 18-8	1.4370	
411 ⁴⁾	Joint ring	≤ 530	1.4541/graphite	-	Serrated gasket
570 ⁴⁾	Hanger arm		13 CrMo 4-5	1.7335	-
210	Hinge pin		X 39 CrMo 17-1	1.4122	-
902.1	Stud		21 CrMoV 5-7	1.7709	-
920.1	Hexagon nut		25 CrMo 4	1.7218	-

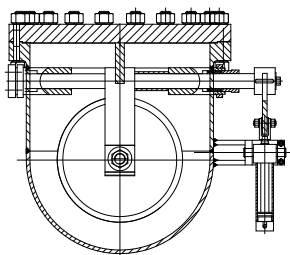
⁴ Recommended spare parts

Table 7: Parts list DN 300/300 - 400/400

Part No.	Description	Temperature [°C]	Material	Material number	Note
100	Body	≤ 450	P 265 GH	1.0425	Body of welded steel construction
		≤ 500	16 Mo 3	1.5415	
		≤ 530	13 CrMo 4-5	1.7335	
723	Flange	≤ 450	P 250 GH/ P 265 GH	1.0460/1.0425	-
		≤ 500	16 Mo 3	1.5415	-
		≤ 530	13 CrMo 4-5	1.7335	-
131.1	Connection branch	≤ 450	P 265 GH	1.0425	Material can be matched to piping material
		≤ 500	16 Mo 3	1.5415	-
		≤ 530	13 CrMo 4-5	1.7335	-
161	Body cover	≤ 450	P 265 GH	1.0425	-
		≤ 500	16 Mo 3	1.5415	-
		≤ 530	13 CrMo 4-5	1.7335	-
746 ⁴⁾	Valve disc	≤ 450	P 250 GH/ P 265 GH	1.0460/1.0425	-
		≤ 500	16 Mo 3	1.5415	-
		≤ 530	13 CrMo 4-5	1.7335	-
Seat/disc interface	Body	≤ 450	X 20 CrMo 17-1	1.4115	Hard-faced
		≤ 530	Stellite	-	
	Valve disc	≤ 450	X 8 CrTi 18	1.4502	
		≤ 530	Stellite	-	
411 ⁴⁾	Joint ring	≤ 530	1.4541/graphite	-	Serrated gasket
570 ⁴⁾	Hanger arm	≤ 450	P 250 GH/ P 265 GH	1.0460/1.0425	-
		≤ 530	16 Mo 3	1.5415	-
		≤ 530	13 CrMo 4-5	1.7335	-
210 ⁴⁾	Hinge pin	≤ 450	X 20 Cr13	1.4021	-
		≤ 530	X 39 CrMo 17-1	1.4122	-
900	Bolt/screw	≤ 450	25 CrMo 4	1.7218	-
		≤ 530	21 CrMoV 5-7	1.7709	-
920	Hexagon nut	≤ 450	25 CrMo 4	1.7218	-
		≤ 530	25 CrMo 4	1.7218	-

Variants


Drain branch



Extended hinge pin from DN 300 (lever and weight)

Dimensions and weights

Dimensions and weights of STAAL 100 AKK

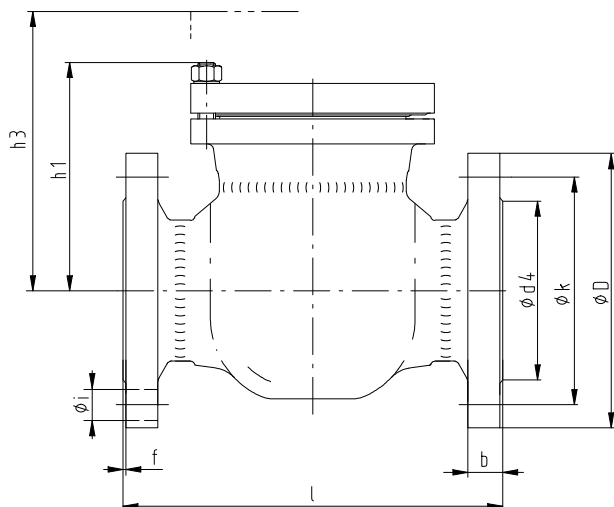


Fig. 2: Sectional drawing of STAAL 100 AKK

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

PN	DN/S ⁵⁾⁶⁾	l	ø D	ø k	No. of bolt holes z	Bolt hole dia. i	ø d ₄ × f	b	h ₁	h ₃ ⁷⁾	[kg]
63	80/80	310	215	170	8	22	138 × 3	28	180	260	45
	100/100	350	250	200	8	26	162 × 3	30	210	310	60
	125/125	400	295	240	8	30	188 × 3	34	240	365	102
	150/150	450	345	280	8	33	218 × 3	36	280	430	160
	200/200	550	415	345	12	36	285 × 3	42	350	550	240
	250/250	650	470	400	12	36	345 × 3	46	470	750	470
	300/300	850	530	460	16	36	410 × 4	52	410	710	440
	350/350	1050	600	525	16	39	465 × 4	56	480	830	650
	400/400	1150	670	585	16	42	535 × 4	60	530	930	970
100	80/80	310	230	180	8	26	138 × 3	32	180	260	50
	100/100	350	265	210	8	30	162 × 3	36	210	310	66
	125/125	400	315	250	8	33	188 × 3	40	240	365	105
	150/150	450	355	290	12	33	218 × 3	44	280	430	230
	200/200	550	430	360	12	36	285 × 3	52	350	550	400
	250/250	650	505	430	12	39	345 × 3	60	470	760	510
	300/300	850	585	500	16	42	410 × 4	68	465	765	750
	350/350	1050	655	560	16	48	465 × 4	74	500	850	930
	400/400	1150	715	620	16	48	535 × 4	78	555	955	1280

Mating dimensions as per standard

Face-to-face lengths: EN 558-1/26 (except DN 300 - 400)

Flanges: DIN EN 1092-1

Flange facing: Type B

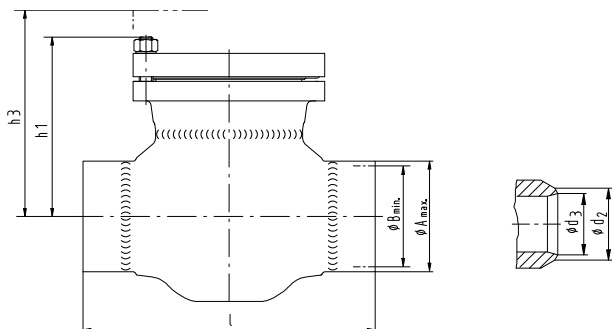
Other flange designs

- For example, undrilled with groove (type D) or recess (type F) to EN 1092-1 at both ends
- Flanges to DIN
- Other flange designs on request

⁵ Nominal size / seat diameter

⁶ Model with reduced bore on request

⁷ Vertical clearance for removal

Dimensions and weights of STAAL 100 AKKS

Fig. 3: Sectional drawing of STAAL 100 AKKS
Table 9: Dimensions [mm] and weights [kg]

PN	DN/S ⁽⁸⁾⁹⁾	I	Butt weld ends, unmachined		Butt weld ends, machined						h ₁	h ₃ ⁽¹⁰⁾	[kg]
			ø A _{max.}	ø B _{min.}	PN 63			PN 100					
					ø d ₂	ø d ₃	Pipe dimensions	ø d ₂	ø d ₃	Pipe dimensions			
63/100	80/80	310	95	70	90,0	81,0	88,9 × 4,0	90,0	80,0	88,9 × 4,5	180	260	37
	100/80	350	117	70	115,0	104,0	114,3 × 5,0	115,0	103,0	114,3 × 5,6	180	260	40
	100/100	350	117	92	115,0	104,0	114,3 × 5,0	115,0	103,0	114,3 × 5,6	210	310	49
	125/100	400	145	115	141,0	130,0	139,7 × 5,0	141,5	127,0	139,7 × 6,3	210	310	63
	125/125	400	145	115	141,0	130,0	139,7 × 5,0	141,5	127,0	139,7 × 6,3	240	365	78
	150/125	450	172	135	170,0	156,5	168,3 × 5,6	170,5	152,0	168,3 × 8,0	240	365	86
	150/150	450	172	135	170,0	156,5	168,3 × 5,6	170,5	152,0	168,3 × 8,0	280	430	110
	175/150	500	200	160	195,0	180,5	193,7 × 6,3	197,0	176,0	193,7 × 8,8	280	430	118
	200/150	550	225	180	222,0	204,5	219,1 × 7,1	222,0	199,0	219,1 × 10,0	280	430	128
	200/200	550	225	180	222,0	204,5	219,1 × 7,1	222,0	199,0	219,1 × 10,0	350	550	150
	250/200	650	276	230	276,0	255,0	273,0 × 8,8	276,0	247,5	273,0 × 12,5	350	550	185
	250/250	650	276	230	276,0	255,0	273,0 × 8,8	276,0	247,5	273,0 × 12,5	470	750	400
63	300/300	850	330	280	323,9	301,0	323,9 × 11,0	-	-	-	410	710	449
	350/350	1050	360	320	355,6	333,0	355,6 × 12,5	-	-	-	480	830	635
	400/400	1150	420	370	406,4	377,0	406,4 × 14,2	-	-	-	530	930	1220
100	300/300	850	335	285	-	-	-	323,9	295,5	323,9 × 14,2	465	765	800
	350/350	1050	365	315	-	-	-	355,6	324,0	355,6 × 16,0	500	850	855
	400/400	1150	420	360	-	-	-	406,4	367,0	406,4 × 20,0	555	955	870

Mating dimensions as per standard

Face-to-face lengths: EN 12982/26

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.

⁸ Nominal size / seat diameter

⁹ Model with reduced bore on request

¹⁰ Vertical clearance for removal



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