

Swing Check Valve

AKR/AKRS

Type Series Booklet



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Type Series Booklet AKR/AKRS

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Check Valves and Strainers

Swing Check Valves to DIN/EN

AKR/AKRS



Main applications

- Fossil-fuelled power stations
- Process engineering
- Boiler feed applications
- Boiler recirculation
- Chemical industry
- Petrochemical industry
- Sugar industry
- Mining
- Descaling units
- 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 - 160
Nominal size	DN 80/80-300/250
Max. permissible pressure [bar]	160
Min. permissible temperature [°C]	≥ -10
Max. permissible temperature [°C]	≤ +550

Selection as per pressure/temperature ratings (⇒ Page 6)

Valve body materials

Table 2: Overview of available materials

Material	Material number	Temperature limit
P 250 GH	1.0460	≤ 450 °C
13 CrMo 4-5	1.7335	≤ 550 °C

Design details

Design

- Body of forged or welded steel construction
- Pressure seal design
- Internally mounted hinge pin

Variants

- Other butt weld end versions
- Inspections to technical codes such as AD2000 or to customer specification

Product benefits

- Added safety due to pressure seal design providing increased sealing to atmosphere: The higher the pressure in the valve body, the tighter the cover joint. Very low risk of leakage, particularly at high pressures and temperatures. Compact design.
- 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 3: Information/documents

Document	Reference number
AKG-A/AKGS-A type series booklet (gate valve in pressure seal design)	7338.1
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 4: Butt weld ends, machined, type AKRS
Permissible operating pressures [bar]¹⁾

PN	Material		[°C]																		
	Designation	Number	RT ⁽²⁾	100	150	200	250	300	350	400	450	460	470	480	490	500	510	520	530	540	550
63	P 250 GH	1.0460	63,0	58,5	55,5	52,5	48,0	43,5	40,5	37,5	20,7	-	-	-	-	-	-	-	-	-	-
	13 CrMo 4-5	1.7335	63,0	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	18,3	14,7
100	P 250 GH	1.0460	100,0	92,8	88,0	83,3	76,1	69,0	64,2	59,5	32,8	-	-	-	-	-	-	-	-	-	-
	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	29,0	23,3
160	P 250 GH	1.0460	160,0	148,5	140,9	133,3	121,9	110,4	102,8	95,2	52,5	-	-	-	-	-	-	-	-	-	-
	13 CrMo 4-5	1.7335	160,0	160,0	160,0	160,0	160,0	160,0	152,3	144,0	134,8	128,3	121,8	115,3	108,8	104,3	88,3	71,6	59,4	46,4	37,3

Table 5: Butt weld ends, unmachined, type AKRS
Permissible operating pressures [bar]¹⁾

PN	Material		[°C]															
	Designation	Number	Up to 120	200	250	300	350	400	425	450	475	500	510	520	530	540	550	
160	P 250 GH	1.0460	160	160	140	120	100	80	72	60	-	-	-	-	-	-	-	
	13 CrMo 4-5	1.7335	160	160	160	160	160	150	147	145	140	118	100	80	67	52	42	

¹⁾ Operating pressures to DIN 2401 are also permissible.

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

Materials

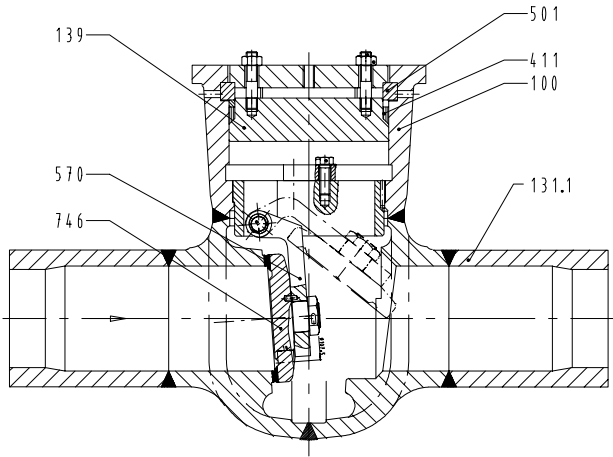


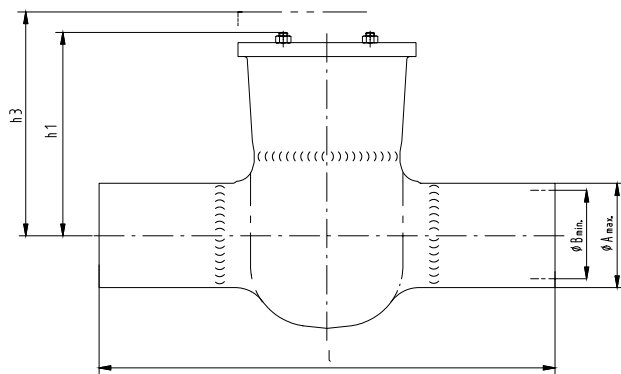
Fig. 1: Sectional drawing of AKRS

Table 6: Parts list

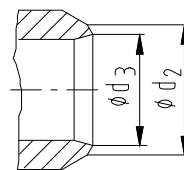
Part No.	Description	Temperature [°C]	Material	Material number	Note
100	Body	≤ 450 °C	P 250 GH	1.0460	Body die-forged and welded
		≤ 550 °C	13 CrMo 4-5	1.7335	
131.1	Connection branch	≤ 450 °C	P 250 GH	1.0460	Material can be matched to piping material
		≤ 550 °C	13 CrMo 4-5	1.7335	
746 ³⁾	Valve disc	≤ 450 °C	P 250 GH	1.0460	-
		≤ 550 °C	13 CrMo 4-5	1.7335	
139	Bonnet	≤ 450 °C	P 250 GH	1.0460	-
		≤ 550 °C	13 CrMo 4-5	1.7335	
Seat/disc interface	Body	≤ 450 °C	Hard-faced	1.4115	Hard-faced
		≤ 550 °C	Stellite hard-faced	-	
	Valve disc	≤ 550 °C	Stainless steel hard-faced	1.4370	
411 ³⁾	Joint ring	≤ 550 °C	Pure graphite	-	-
501	Segmental ring		13 CrMo 4-5	1.7335	-
570	Hanger arm		13 CrMo 4-5	1.7335	-

³ Recommended spare parts

Dimensions and weights



AKRS



Butt weld end

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

PN	DN/S ⁴⁾⁵⁾	I	Butt weld ends, unmachined		Butt weld ends, machined							h ₁	h ₃ ⁶⁾	[kg]
			ø A _{max.}	ø B _{min.}	ø d ₂	PN 63		PN 100		PN 160				
						ø d ₃	Pipe dimensions	ø d ₃	Pipe dimensions	ø d ₃	Pipe dimensions			
63/160	80/80	390	95	74	90	81	88,9 × 4,0	81	88,9 × 4,0	76,5	88,9 × 6,3	190	290	49
	100/80	450	120	92	115	104	114,3 × 5,0	104	114,3 × 5,0	98,5	114,3 × 8,0	190	290	53
	100/100	450	120	92	115	104	114,3 × 5,0	104	114,3 × 5,0	98,5	114,3 × 8,0	215	335	70
	125/100	525	145	105	141	130,5	139,7 × 4,5	127	139,7 × 6,3	120,5	139,7 × 10,0	215	335	83
	125/125	525	145	115	141	130,5	139,7 × 4,5	127	139,7 × 6,3	120,5	139,7 × 10,0	265	415	103
	150/125	600	175	138	170	156,5	168,3 × 5,6	154	168,3 × 7,1	144,5	168,3 × 12,5	265	415	108
	150/150	600	175	138	170	156,5	168,3 × 5,6	154	168,3 × 7,1	144,5	168,3 × 12,5	315	495	140
	175/150	675	195	160	195	180,5	193,7 × 6,3	176,5	193,7 × 8,8	167	193,7 × 14,2	315	495	155
	200/150	750	225	180	222	204,5	219,1 × 7,1	199,5	219,1 × 10,0	189	219,1 × 16,0	315	495	166
	200/200	750	225	180	222	204,5	219,1 × 7,1	199,5	219,1 × 10,0	189	219,1 × 16,0	410	635	210
	250/200	900	280	225	276	255	273,0 × 8,8	248,5	273,0 × 12,5	231,5	273,0 × 22,2	410	635	250
	250/250	900	280	225	276	255	273,0 × 8,8	248,5	273,0 × 12,5	231,5	273,0 × 22,2	585	825	520
	300/250	1050	330	260	325	301	323,9 × 11,0	295,5	323,9 × 14,2	276,5	323,9 × 25,0	585	825	560

Mating dimensions as per standard

Face-to-face lengths: EN 12982/26

Butt weld ends: see table

Weld grooves: 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.

⁴ Nominal size/seat diameter
⁵ Model with reduced bore on request
⁶ Vertical clearance for removal



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