

Swing Check Valve

ECOLINE SCC 150-600

Class 150-600
NPS 2"-24"
Cast Steel / Stainless Steel
Bolted Cover
Flanged Ends

Type Series Booklet



Legal information/Copyright

Type Series Booklet ECOLINE SCC 150-600

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Check Valves and Strainers

Swing Check Valves

ECOLINE SCC 150-600



Main applications

- Boiler feed applications
- Fossil-fuelled power stations
- Petrochemical industry
- Pipelines and tank farms
- Refineries
- Process engineering

Fluids handled

- Steam
- Fluids containing gas
- Gas
- High-temperature hot water
- Volatile fluids
- Feed water

Operating data

Operating properties

Characteristic	Value
Nominal pressure	Class 150 - 600
Nominal size	NPS 2" - 24"
Max. permissible pressure	106 bar / 1500 PSI
Max. permissible temperature	816 °C / 1500 °F

Selection as per pressure/temperature ratings (⇒ Page 4)

Body materials

Overview of available materials

Material	Temperature limit
ASTM A 216 WCB	Up to 427 °C / 800 °F
ASTM A 217 WC6	Up to 593 °C / 1100 °F
ASTM A 217 WC9	Up to 593 °C / 1100 °F
ASTM A 217 C5	Up to 649 °C / 1200 °F
ASTM A 217 C12	Up to 649 °C / 1200 °F
ASTM A 352 LCB	Up to 343 °C / 650 °F
ASTM A 352 LCC	Up to 343 °C / 650 °F
ASTM A 351 CF8	Up to 816 °C / 1500 °F
ASTM A 351 CF8M	Up to 816 °C / 1500 °F

Other materials on request.

Design details

Design

- Swing check valve to BS 1868
- Tested to API 598
- Body made of cast steel or stainless steel
- Bolted cover
- Internal hinge pin up to 12"
- External hinge pin for 14" and above
- Stainless steel/graphite gaskets
- Fully confined cover gasket
- Valve seat made of wear-resistant and corrosion-proof materials
- Disc protected against rotation
- Anti-rotation pin up to 12"
- Adjusting bolt up to 12"
- The valves satisfy the safety requirements of Annex I of the European Pressure Equipment Directive 97/23/EC (PED) for fluids in Groups 1 and 2.
- 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 (zones 2+22) to ATEX 94/9/EC.

Variants

- Counterweight and dampening device
- TA-Luft-compliant model (with or without spring loading) for applications to VDI 2440 at temperatures up to 250 °C and above 250 °C (400 °C max.)
- Non-destructive testing, e.g. radiographic testing
- Inspections to technical codes such as AD2000 or IBR
- NACE standard
- Other flanged end designs or butt weld ends to ASME B16.25
- Larger nominal sizes and other variants on request

Product benefits

Long service life and high functional reliability

- Special anti-rotation pin between disc and hanger arm prevents the seating area from changing as a result of occasional disc rotation.
- Uniquely designed screwed connection between disc and hanger arm enables distance adjustment in order to ensure long-term tight shut-off.

Reliable sealing and longer service life

- Hard-faced body seat and solid disc seat made of wear-resistant and corrosion-proof materials for handling all kinds of corrosive and erosive fluids.
- Male/female joint between body and bonnet prevents excessive compression of fully confined gasket, resulting in longer gasket life and improved sealing performance.
- Internal hinge pin design eliminates additional leakage points, substantially improving sealing reliability.

Reliable protection against unintentional loosening of valve disc and hanger arm

- Hexagon nut on valve disc stem prevents unintentional loosening of hanger arm. Nut secured by washer and tack welding, preventing it from working loose as a result of repeated and abrupt fluid impact.

Extended maintenance-free service life

- Hard-facing applied to disc and seat rings by deposit welding provides extra wear allowance and ensures reliable long-term shut-off even with frequent opening/closing cycles.

On all enquiries/orders please specify

- Type
- Class
- Nominal size
- Pressure rating
- Temperature rating
- Differential pressure
- Fluid handled
- Material
- Trim material (API trim number)
- Line connection
- Pipe schedule (for butt weld ends)
- Variants
- Number of type series booklet

Related documents

- Operating manual 7362.81

Pressure/temperature ratings

Permissible operating pressures in bar at a temperature of °C (to ASME B16.34)

Class	Material	-29 to 38	93	149	204	260	316	343	371	399	427	454	482	510	538	566	593	621	649	677	704	732	760	788	816
150	A 216 WCB 1)	19,7	17,9	15,9	13,8	11,7	9,7	8,6	7,6	6,6	5,5	4,5	3,4	2,4	1,4										
300		51,0	46,9	45,2	43,8	41,7	39,3	37,9	36,5	34,8	28,3	22,1	15,9	9,3	5,9										
600		102,0	93,8	90,3	87,2	83,1	78,3	75,8	73,1	70,0	56,9	44,1	31,7	19,0	11,7										
150	A 217 WC6 2)	20,0	17,9	15,9	13,8	11,7	9,7	8,6	7,6	6,6	5,5	4,5	3,4	2,4	1,4	1,4 3)	1,4 3)								
300		51,7	51,7	49,6	47,9	45,9	41,7	40,7	39,3	36,5	35,2	33,4	31,0	22,1	14,8	10,0	6,6								
600		103,4	103,4	99,6	95,5	91,7	83,4	81,0	78,3	73,4	70,0	67,2	62,1	44,1	29,6	20,0	13,1								
150	A 217 WC9	20,0	17,9	15,9	13,8	11,7	9,7	8,6	7,6	6,6	5,5	4,5	3,4	2,4	1,4	1,4 3)	1,4 3)								
300		51,7	51,7	50,3	48,6	45,9	41,7	40,7	39,3	36,5	35,2	33,4	31,0	26,5	18,3	12,1	7,6								
600		103,4	103,4	100,3	97,2	91,7	83,4	81,0	78,3	73,4	70,0	67,2	62,1	52,1	36,9	24,1	15,2								
150	A 217 C5	20,0	17,9	15,9	13,8	11,7	9,7	8,6	7,6	6,6	5,5	4,5	3,4	2,4	1,4	1,4 3)	1,4 3)	1,4 3)	1,0 3)						
300		51,7	51,7	50,3	48,6	45,9	41,7	40,7	39,3	36,5	35,2	33,4	25,9	19,0	13,8	10,0	6,9	4,1	2,4						
600		103,4	103,4	100,3	97,2	91,7	83,4	81,0	78,3	73,4	70,0	67,2	51,4	37,9	27,6	20,0	13,8	8,6	4,8						
150	A 217 C12	20,0	17,9	15,9	13,8	11,7	9,7	8,6	7,6	6,6	5,5	4,5	3,4	2,4	1,4	1,4 3)	1,4 3)	1,4 3)	1,4 3)						
300		51,7	51,7	50,3	48,6	45,9	41,7	40,7	39,3	36,5	35,2	33,4	31,0	25,9	17,6	11,7	7,9	5,2	3,4						
600		103,4	103,4	100,3	97,2	91,7	83,4	81,0	78,3	73,4	70,0	67,2	62,1	52,1	34,8	23,8	15,5	10,3	7,2						
150	A 352 LCB 4)	18,3	17,6	15,9	13,8	11,7	9,7	8,6																	
300		47,9	45,5	44,1	42,4	40,3	37,9	36,9																	
600		96,2	91,0	87,9	84,8	81,0	76,2	73,4																	
150	A 352 LCC	20,0	17,9	15,9	13,8	11,7	9,7	8,6																	
300		51,7	51,7	50,3	48,6	45,9	41,7	40,7																	
600		103,4	103,4	100,3	96,6	91,7	83,4	81,0																	
150	A 351 CF8 5)	19,0	15,9	14,1	13,1	11,7	9,7	8,6	7,6	6,6	5,5	4,5	3,4	2,4	1,4	1,4 3)	1,4 3)	1,4 3)	1,4 3)	1,4 3)	1,4 3)	1,4 3)	1,4 3)	1,4 3)	1,0 3)
300		49,6	41,4	37,2	34,1	32,1	30,3	29,6	29,0	28,6	27,9	27,2	26,9	26,2	24,5	22,4	17,6	14,1	11,4	9,3	7,9	6,6	5,2	4,1	2,8
600		99,3	82,7	74,1	68,6	64,1	61,0	59,6	58,3	56,9	55,8	54,5	53,8	52,7	49,0	44,8	35,5	28,3	22,8	18,3	15,5	12,8	10,3	7,9	5,9
150	A 351 CF8M 5)	19,0	16,2	14,8	13,4	11,7	9,7	8,6	7,6	6,6	5,5	4,5	3,4	2,4	1,4	1,4 3)	1,4 3)	1,4 3)	1,4 3)	1,4 3)	1,4 3)	1,4 3)	1,4 3)	1,4 3)	1,0 3)

- 1) Permissible but not recommended for prolonged usage above 427 °C (800 °F).
- 2) Cannot be used for temperatures above 593 °C (1100 °F).
- 3) For butt weld end valves only. Flanged end ratings terminate at 538 °C (1000 °F).
- 4) Cannot be used for temperatures above 343 °C (650 °F).
- 5) At temperatures over 538 °C (1000 °F), use only when carbon content is 0.04% or higher.

Class	Material	-29 to 38	93	149	204	260	316	343	371	399	427	454	482	510	538	566	593	621	649	677	704	732	760	788	816
300		49,6	42,7	38,6	35,5	33,1	31,0	30,3	30,0	29,3	29,0	29,0	28,6	26,5	25,2	24,8	21,0	16,2	12,8	10,0	7,9	6,6	5,2	4,1	2,8
600		99,3	85,5	77,2	70,7	65,8	62,1	61,0	60,0	59,0	58,3	57,6	57,2	53,4	50,0	49,6	42,1	32,8	25,5	20,3	16,2	13,1	10,3	7,9	5,9

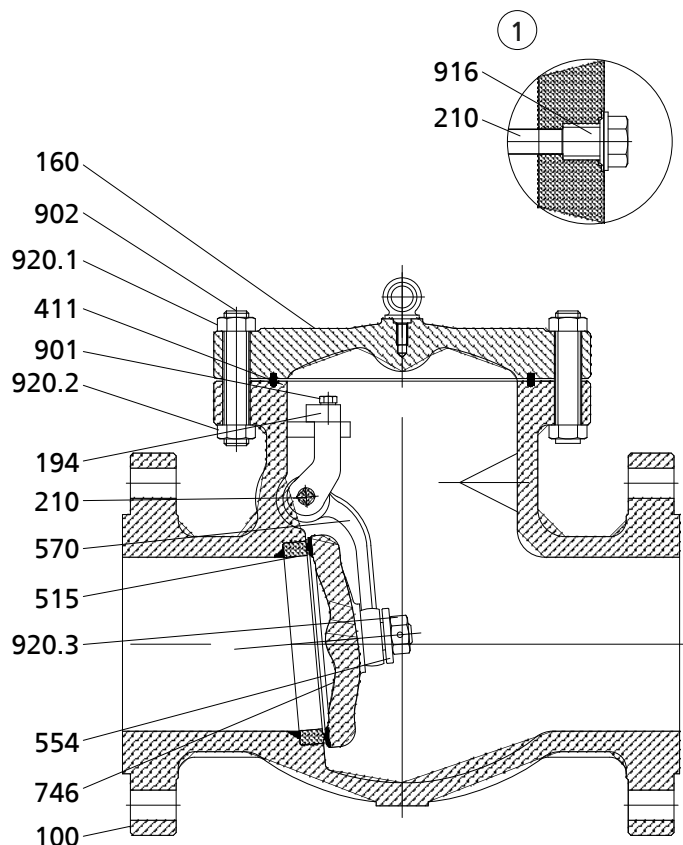
Permissible operating pressures in PSI at a temperature of °F (to ASME B16.34)

Class	Material	-20 to 100	200	300	400	500	600	650	700	750	800	850	900	950	1000	1050	1100	1150	1200	1250	1300	1350	1400	1450	1500
150	A 216 WCB 1)	285	260	230	200	170	140	125	110	95	80	65	50	35	20										
300		740	680	655	635	605	570	550	530	505	410	320	230	135	85										
600		1480	1360	1310	1265	1205	1135	1100	1060	1015	825	640	460	275	170										
150	A 217 WC6 2)	290	260	230	200	170	140	125	110	95	80	65	50	35	20	20 3)	20 3)								
300		750	750	720	695	665	605	590	570	530	510	485	450	320	215	145	95								
600		1500	1500	1445	1385	1330	1210	1175	1135	1065	1015	975	900	640	430	290	190								
150	A 217 WC9	290	260	230	200	170	140	125	110	95	80	65	50	35	20	20 3)	20 3)								
300		750	750	730	705	665	605	590	570	530	510	485	450	385	265	175	110								
600		1500	1500	1455	1410	1330	1210	1175	1135	1065	1015	975	900	755	535	350	220								
150	A 217 C5	290	260	230	200	170	140	125	110	95	80	65	50	35	20	20 3)	20 3)	20 3)	15 3)						
300		750	750	730	705	665	605	590	570	530	510	485	375	275	200	145	100	60	35						
600		1500	1500	1455	1410	1330	1210	1175	1135	1065	1015	975	745	550	400	290	200	125	70						
150	A 217 C12	290	260	230	200	170	140	125	110	95	80	65	50	35	20	20 3)	20 3)	20 3)	20 3)						
300		750	750	730	705	665	605	590	570	530	510	485	450	375	255	170	115	75	50						
600		1500	1500	1455	1410	1330	1210	1175	1135	1065	1015	975	900	755	505	345	225	150	105						
150	A 352 LCB 4)	265	255	230	200	170	140	125																	
300		695	660	640	615	585	550	535																	
600		1395	1320	1275	1230	1175	1105	1065																	
150	A 352 LCC	290	260	230	200	170	140	125																	
300		750	750	730	705	665	605	590																	
600		1500	1500	1455	1405	1330	1210	1175																	
150	A 351 CF8 5)	275	230	205	190	170	140	125	110	95	80	65	50	35	20	20 3)	20 3)	20 3)	20 3)	20 3)	20 3)	20 3)	20 3)	20 3)	15 3)
300		720	600	540	495	465	440	430	420	415	405	395	390	380	355	325	255	205	165	135	115	95	75	60	40
600		1440	1200	1075	995	930	885	865	845	825	810	790	780	765	710	650	515	410	330	265	225	185	150	115	85
150	A 351 CF8M 5)	275	235	215	195	170	140	125	110	95	80	65	50	35	20	20 3)	20 3)	20 3)	20 3)	20 3)	20 3)	20 3)	20 3)	20 3)	15 3)
300		720	620	560	515	480	450	440	435	425	420	420	415	385	365	360	305	235	185	145	115	95	75	60	40
600		1440	1240	1120	1025	955	900	885	870	855	845	835	830	775	725	720	610	475	370	295	235	190	150	115	85

Test pressures

Test	Test medium	Class 150		Class 300		Class 600	
		bar	psi	bar	psi	bar	psi
Shell	Water	32	450	78	1125	153	2225
Leak test (seat)		23	315	56	815	112	1630

Materials



① External hinge pin (NPS 14" and above)

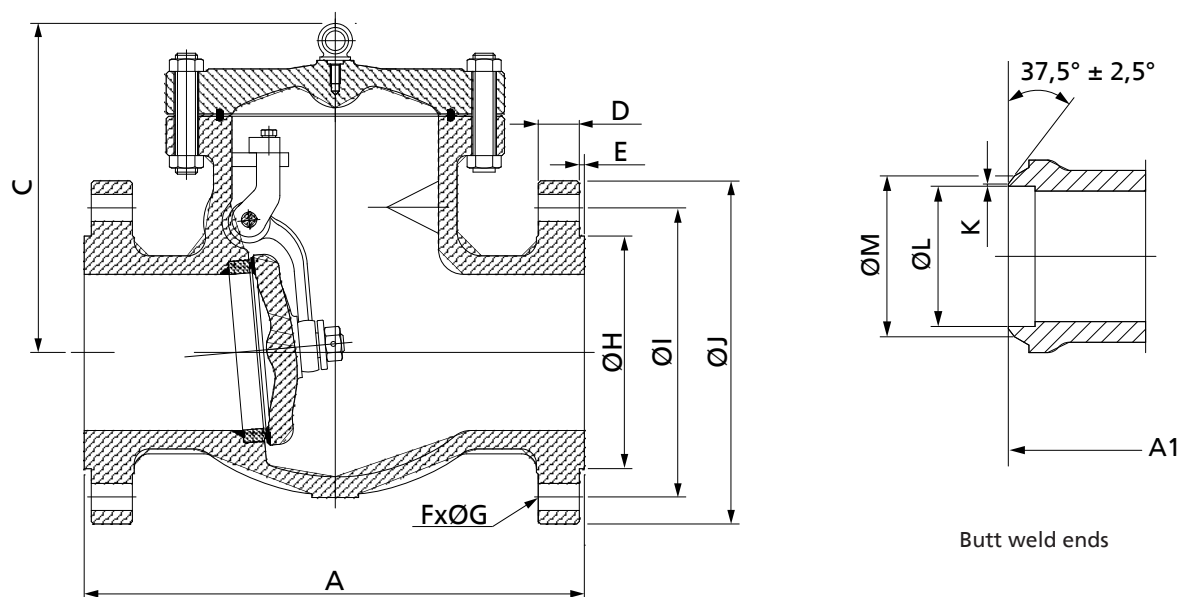
Overview of available materials

Part No.	Description	Material								
		A 216 WCB	A 217 WC6	A 217 WC9	A 217 C5	A 217 C12	A 352 LCB	A 352 LCC	A 351 CF8	A 351 CF8M
100	Body	A 216 WCB	A 217 WC6	A 217 WC9	A 217 C5	A 217 C12	A 352 LCB	A 352 LCC	A 351 CF8	A 351 CF8M
160	Cover	A 216 WCB	A 217 WC6	A 217 WC9	A 217 C5	A 217 C12	A 352 LCB	A 352 LCC	A 351 CF8	A 351 CF8M
746	Disc	A 216 WCB	A 217 WC6	A 217 WC9	A 217 C5	A 217 C12	A 352 LCB	A 352 LCC	A 351 CF8	A 351 CF8M
515	Seat ring	A 105	A 182 F11	A 182 F22	A 182 F5	A 182 F9	A 182 LF2	A 350 LF2	A 182 F304	A 182 F316
554	Washer	304	304	304	304	304	304	304	304	316
920.3	Nut	Stainless steel	Stainless steel	Stainless steel	Stainless steel	Stainless steel	Stainless steel	Stainless steel	Stainless steel	Stainless steel
570	Hanger arm	A 216 WCB	A 217 WC6	A 217 WC9	A 217 C5	A 217 C12	A 352 LCB	A 352 LCC	A 351 CF8	A 351 CF8M
210	Hinge pin	See "Trim materials" table								
194	Bracket	A 216 WCB	A 217 WC6	A 217 WC9	A 217 C5	A 217 C12	A 352 LCB	A 352 LCC	A 351 CF8	A 351 CF8M
901	Bolt	Carbon steel	Carbon steel	Carbon steel	Carbon steel	Carbon steel	Carbon steel	Carbon steel	Stainless steel	Stainless steel
411	Joint ring	Graphite + stainless steel	Graphite + stainless steel	Graphite + stainless steel	Graphite + stainless steel	Graphite + stainless steel	Graphite + stainless steel	Graphite + stainless steel	Graphite + stainless steel	Graphite + stainless steel
920.2	Nut	A 194 2H	A 194 Gr. 7	A 194 Gr. 7	A 194 Gr. 7	A 194 Gr. 7	A 194 Gr. 7	A 194 Gr. 7	A 194 Gr. 8	A 194 Gr. 8
920.1	Nut	A 194 2H	A 194 Gr. 7	A 194 Gr. 7	A 194 Gr. 7	A 194 Gr. 7	A 194 Gr. 7	A 194 Gr. 7	A 194 Gr. 8	A 194 Gr. 8
902	Stud	A 193 B7	A 193 B16	A 193 B16	A 193 B16	A 193 B16	A 320 L7	A 320 L7	A 193 B8	A 193 B8
916	Plug	Carbon steel	Carbon steel	Carbon steel	Carbon steel	Carbon steel	Carbon steel	Carbon steel	Stainless steel	Stainless steel

Trim materials

Part No.	Description	Trim 1	Trim 2	Trim 5	Trim 8	Trim 10
		13% chrome steel (Cr) / 13% chrome steel (Cr)	304 / 304	Stellite / stellite	Stellite / 13% chrome steel (Cr)	316 / 316
746	Disc	13% chrome steel (Cr)	304 stainless steel	Stellite	13% chrome steel (Cr)	316 stainless steel
515	Seat ring	13% chrome steel (Cr)	304 stainless steel	Stellite	Stellite	316 stainless steel
210	Hinge pin	13% chrome steel (Cr)	304 stainless steel	13% chrome steel (Cr)	13% chrome steel (Cr)	316 stainless steel

Dimensions



Dimensions in mm

Class	NPS	A	C	D	E	ØH	ØI	ØJ	F	ØG	A1	[kg]
150	2"	203	144	14,3	2	92,1	120,7	150	4	19,1	203	16
	2 ½"	216	170	15,9	2	104,8	139,7	180	4	19,1	216	26
	3"	241	185	17,5	2	127,0	152,4	190	4	19,1	241	35
	4"	292	212	22,3	2	157,2	190,5	230	8	19,1	292	47
	6"	356	232	23,9	2	215,9	241,3	280	8	22,4	356	80
	8"	495	375	27,0	2	269,9	298,5	345	8	22,4	495	125
	10"	622	442	28,6	2	323,8	362,0	405	12	25,4	622	220
	12"	698	497	30,2	2	381,0	431,8	485	12	25,4	698	345
	14"	787	551	33,4	2	412,8	476,3	535	12	28,4	787	440
	16"	864	607	35,0	2	469,9	539,8	595	16	28,4	864	590
	18"	978	665	38,1	2	533,4	577,9	635	16	31,8	978	765
	20"	978	712	41,3	2	584,2	635,0	700	20	31,8	978	955
	24"	1295	807	46,1	2	692,2	749,3	815	20	35,1	1295	1400
300	2"	267	144	20,7	2	92,1	127,0	165	8	19,1	267	22
	2 ½"	292	185	23,9	2	104,8	149,2	190	8	22,4	292	30
	3"	318	200	27,0	2	127,0	168,3	210	8	22,4	318	41
	4"	356	225	30,2	2	157,2	200,0	255	8	22,4	356	63
	6"	444	265	35,0	2	215,9	269,9	320	12	22,4	444	120
	8"	533	399	39,7	2	269,9	330,2	380	12	25,4	533	265
	10"	622	447	46,1	2	323,8	387,4	445	16	28,4	622	280
	12"	711	504	49,3	2	381,0	450,8	520	16	31,8	711	390
	14"	838	629	52,4	2	412,8	514,4	585	20	31,8	838	680
	16"	864	715	55,6	2	469,9	571,5	650	20	35,1	864	890
	18"	978	600	58,8	2	533,4	628,6	710	24	35,1	978	1025
	20"	1016	670	62,0	2	584,2	685,8	775	24	35,1	1016	1320
	24"	1346	750	68,3	2	692,2	812,8	915	24	41,1	1346	1960
600	2"	292	175	25,4	7	92,1	127,0	165	8	19,1	292	28
	2 ½"	330	200	28,6	7	104,8	149,4	190	8	22,4	330	49
	3"	356	220	31,8	7	127,0	168,1	210	8	22,4	356	55
	4"	432	252	38,1	7	157,2	215,9	275	8	25,4	432	97
	6"	559	284	47,7	7	215,9	292,1	355	12	28,4	559	160
	8"	660	457	55,6	7	269,9	349,3	420	12	31,8	660	310
	10"	787	534	63,5	7	323,8	431,8	510	16	35,1	787	490
	12"	838	640	66,7	7	381,0	489,0	560	20	35,1	838	640
	14"	889	572	69,9	7	412,8	527,1	605	20	38,1	889	944
	16"	991	660	76,2	7	469,9	603,3	685	20	41,1	991	1220

Class	NPS	A	C	D	E	ØH	ØI	ØJ	F	ØG	A1	[kg]
	18"	1092	720	82,6	7	533,4	654,1	745	20	44,5	1092	1620
	20"	1194	746	88,9	7	584,2	723,9	815	24	44,5	1194	2120
	24"	1397	960	101,6	7	692,2	838,2	940	24	50,8	1397	3100

Butt weld end dimensions in mm

NPS	Pipe OD	K	ØM	ØL for various pipe schedules												
				10	20	30	40	60	80	100	120	140	160	STD	XS	XXS
2 ½"	73,03	1,6 ±0,8	75,2	66,93			62,71		59,00				53,98	Sch 40	Sch 80	44,98
3"	88,90	1,6 ±0,8	91,2	82,80			77,93		73,66				66,65	Sch 40	Sch 80	58,42
4"	114,30	1,6 ±0,8	117,3	108,20			102,26		97,18		92,05		87,07	Sch 40	Sch 80	80,06
6"	168,28	1,6 ±0,8	172,2	161,47			154,05		146,33		139,73		131,75			
8"	219,08	1,6 ±0,8	223,0	211,56	206,38		202,72	198,45	193,68	188,90	182,55	177,83	173,05	Sch 40	Sch 80	174,63
10"	273,05	1,6 ±0,8	277,9	264,67	260,35		254,51	247,65	242,87	236,52	230,17	222,25	215,90	Sch 40	Sch 60	Sch 140
12"	323,85	1,6 ±0,8	329,4	314,71	311,15		303,23	295,30	288,90	280,97	273,05	266,70	257,20	304,80	298,45	Sch 120
14"	355,60	1,6 ±0,8	362,0	342,90	339,75	336,55	333,35	325,42	317,50	307,95	300,02	292,10	284,18	Sch 30	330,20	
16"	406,40	1,6 ±0,8	412,8	393,70	390,55	387,35	381,00	373,08	363,52	354,03	344,47	333,35	325,42	Sch 30	Sch 40	
18"	457,20	1,6 ±0,8	464,3	444,50	441,35		428,65	419,10	409,55	398,48	387,35	377,85	366,73	438,15	431,80	
20"	508,00	1,6 ±0,8	515,9	495,30	488,95	482,60	477,82	466,75	455,63	442,93	431,80	419,10	407,97	Sch 20	Sch 30	
24"	609,60	1,6 ±0,8	619,3	596,90	590,55	581,05	574,65	560,37	547,67	531,83	517,55	504,85	490,52	Sch 20	584,20	

Mating dimensions - Standards

Face-to-face lengths: ASME B16.10
 Flanges: ASME B16.5
 Butt weld ends: ASME B16.25

Swing check valves should preferably be installed in horizontal pipes. When installing them in vertical pipes, make sure that the flow direction is upward, so that in the unpressurised condition the disc will be closed by its own weight.

Notes on installation

The valve bodies are marked with an arrow indicating the flow direction.



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