

# Swing check valve type ZR01/ZR02/ZR03/ZR04/ZR09/ZR10



**description:**

Swing check valves allow the medium to flow just in one direction. If the flow of the medium changes the direction, the check valve will close automatically.

**features:**

- suitable for neutral and not neutral **gaseous & liquid media**  
Group 1 & 2
- very short length
- low opening pressure
- mounting between flanges
- integrated sealed by an O-ring
- direction of flow horizontal (disc must be free-hanging), vertical from below

**connection:**

DN 32, 40, 50, 65, 80, 100, 125, 200, 250, 300, 350, 400, 450, 500, 600

**temperature:**

-196°C to +400°C  
- depending on design

**pressure:**

0,0 bar to 40,0 bar  
- depending on design

**Material:**

Part	Type ZR01	ZR02	ZR03	ZR04	ZR09	ZR10
<b>Body</b>	Steel A 105, zinc plated	A 351 CF8M	Steel A 105, zinc plated	A 351 CF8M	Alu-Bronze C958	Alu-Bronze C958
<b>Disc</b>	Steel A 105, zinc plated	A 351 CF8M	Steel A 105, zinc plated	A 351 CF8M	A 890 Grade 5A	A 890 Grade 5A
<b>Spring</b>	Without	Without	AISI 316 Ti	AISI 316 Ti	Without	Hastelloy C4 2.4610

Type	Seal	Temperature range
<b>ZR01 / ZR03 – Steel / Steel</b>	NBR	-10°C to +100°C
	EPDM	-10°C to +150°C
	FKM	-10°C to +230°C
	PTFE	-10°C to +250°C
<b>ZR02 / ZR04 – Stainless steel / Stainless steel</b>	Metal seated	-196°C to +400°C (ZR04 only up to +300°C)
	NBR	-30°C to +100°C
	EPDM	-65°C to +150°C
	FKM	-30°C to +230°C
	PTFE	-196°C to +250°C
<b>ZR09 / ZR10 – Alu-Bronze / Duplex</b>	NBR	-10°C to +100°C
	EPDM	-10°C to +150°C
	FKM	-10°C to +230°C
	PTFE	-10°C to + 250°C

**Seal with standard approvals/conformities up to and including DN300:**

seal:	approvals and conrofmities:
NBR	DIN EN 549, BAM, REACH, RoHS
EPDM	KTW UBA, DVGW W 270, WRAS, NSF, FDA, BfR XXI Kat. 4, ADI-frei, 3A, USP CI.6, BAM, REACH, RoHS
FKM	DIN EN 549, ADI-frei, REACH, RoHS
PTFE	KTW UBA, DVGW W 270, WRAS, FDA, BfR, ADI-frei, EU10/2011, 3A, USP CI. 6, REACH, RoHS

Max. allowable pressure (see 20°C) / Pressure-temperature-rating:

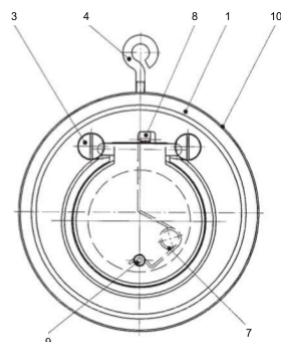
TYPE ZR01 and ZR03					
	Temperature in °C				
	20	100	150	200	250
DN32	40	40	40	40	40
DN40	40	40	40	40	38,7
DN50	25	25	22,8	20	17,9
DN65	16	16	14,6	12,9	11,5
DN80	16	14,4	13,2	12	10,8
DN100	16	14,4	13,1	12	10,8
DN125	16	16	14,9	13,1	11,7
DN150	16	16	14,6	12,8	11,5
DN200	16	16	14,9	13,1	11,7
DN250	16	15,1	13,8	12,1	10,8
DN300	16	16	16	15	13,4
DN350	16	16	16	16	15,8
DN400	16	16	15,8	13,9	12,4
DN450	16	16	16	16	16
DN500	16	16	16	16	16
DN600	16	16	16	15,2	13,6

TYPE ZR02 and ZR04								
	Temperature in °C							
	20	100	150	200	250	300	350	400
40	40	40	40	40	40	40	40	40
40	40	40	40	40	40	40	40	40
40	40	39,9	35,9	32,7	30,6	29,1	27,9	
30	26,9	23,7	21,3	19,4	18,2	17,3	16,6	
20	18,5	16,4	14,7	13,4	12,5	11,9	11,4	
20	20	20	18,1	16,5	15,4	14,7	14,1	
16	14,3	12,7	11,4	10,4	9,7	9,2	8,8	
16	12,9	11,4	10,2	9,3	8,7	8,3	8	
16	13,1	11,6	10,4	10	8,8	8,4	8,1	
16	13,1	11,5	10,4	9,5	8,8	8,4	8,1	
16	13,2	11,6	10,4	9,5	8,9	8,5	8,1	
16	13,6	12	10,8	9,8	9,2	8,7	8,4	
16	13,2	11,7	10,5	9,6	8,9	8,5	8,2	
16	16	16	16	14,6	13,7	13	12,5	
16	16	16	16	16	16	16	16	
16	16	16	16	16	16	16	16	

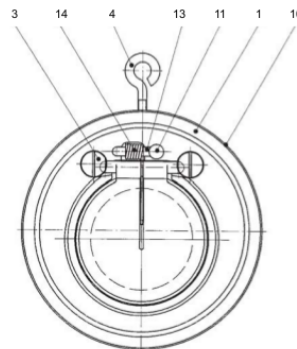
TYPE ZR09 and ZR10					
	Temperature in °C				
	20	100	150	200	250
DN32	40	40	40	40	40
DN40	40	40	40	40	40
DN50	40	40	40	40	40
DN65	30	30	30	30	30
DN80	30	30	30	30	30
DN100	30	14,4	13,1	12	10,8
DN125	30	30	30	27,9	25,4
DN150	20	20	20	20	20
DN200	20	20	20	20	20
DN250	20	20	20	20	20
DN300	20	20	20	20	20

Parts:

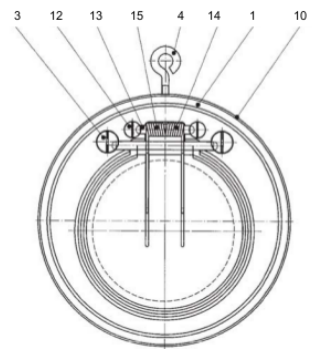
- 1 Body
- 2 Disc
- 3 Screw
- 4 Ring screw
- 5 O-ring
- 6 O-ring
- 7 spring (OPTIONAL)
- 8 Pivot
- 9 Jig
- 10 Plate
- 11 Jig for pin
- 12 Srews
- 13 Pin for spring
- 14 Spring right
- 15 Spring left



DN32 - DN40 optional mit Feder



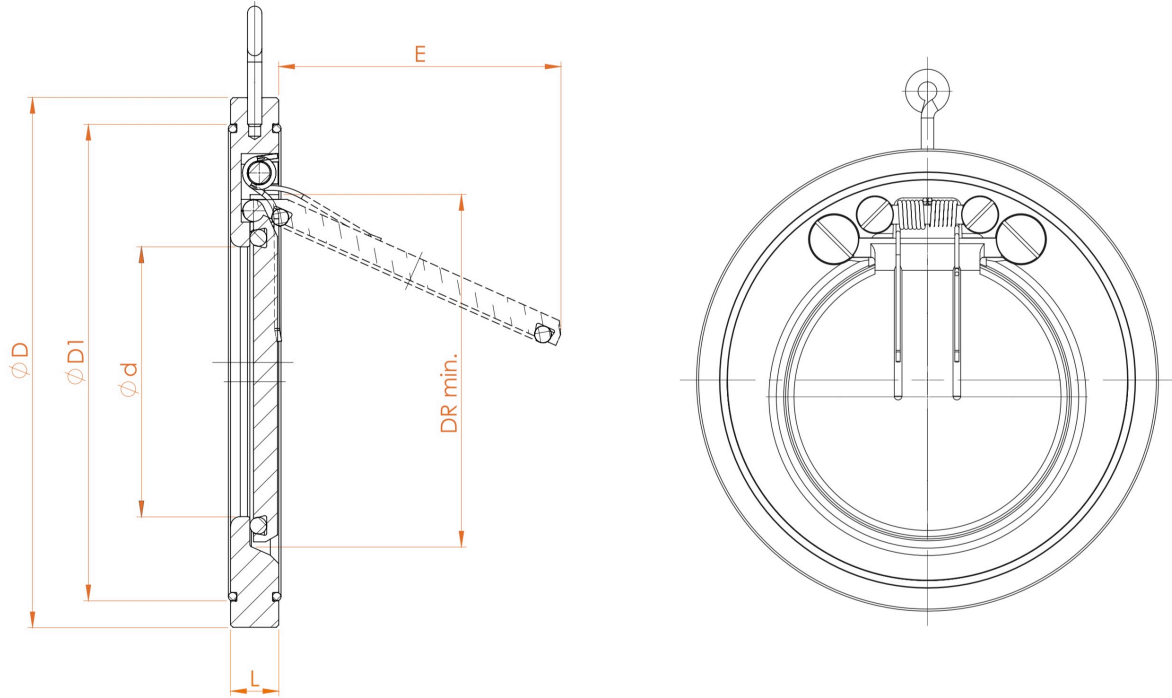
DN32 - DN40 optional with spring



DN50 - DN125 optional with spring

>DN150 op

Dimensions:



DN		ØD					L		Ød	ØD1	E	DR
SIZE		PN10	PN16	PN25	PN40	ANSI 150	without spring	with spring				
32	1 1/4"	85				74	15	15	18	59	22	37
40	1 1/2"	95				83	16	16	22	72	25	43
50	2"	109				105	14	14	32	86	37	54
65	2 1/2"	129				124	14	14	40	109	50	70
80	3"	144				137	14	14	54	119	61	82
100	4"	164		-		175	18	18	70	146	77	106
125	5"	195		-		197	18	18	92	173	98	131
150	6"	220		-		222	20	20	112	197	120	159
200	8"	275		-	-	279	22	22	154	255	160	207
250	10"	-	331	-	-	340	26	26	192	312	190	260
300	12"	380	-	-	-	410	32	32	227	363	220	309
350	14"	440	-	-	-	451	38	38	266	416	250	341
400	16"	491	-	-	-	514	44	44	310	467	290	392
450	18"	541	-	-	-	549	52	-	350	520	340	442
500	20"	596	-	-	-	606	58	-	400	550	390	493
600	24"	698	-	-	-	718	62	-	486	660	470	594

Face to Face: short  
 Flange acc. to: DIN EN 1092-1 PN10 / PN16 / PN25 / PN40  
 ASME B16.5 ANSI 150

DN	32	40	50	65	80	100	125	150	200	250	300	350	400	450	500	600
Type:	Flange PN10/16/25/40					Flange PN10/16					Flange PN10					

**Installation Instruction:**

The personnel must pay special attention, when swing check valves are unpacked and transported. The valve is to be held in a horizontal position in a way that it can open at the top only. This is to avoid, that the valve unintentionally drops down and is damaged. The following aspects are to be considered during the installation of swing check valves:

- Possible damages to the swing check valves and O-rings are to be checked prior to installation. Check if the valve can be moved. Damaged parts must not be installed.
- Make sure that only those swing check valves are being installed, that meet the operational requirements regarding pressure category, chemical resistance, connection and dimensions.
- Make sure to install a minimum of 5 x nominal diameter of straight pipeline in front of and behind the swing check valve.
- Exit supports allow a greater opening angle and higher throughput values.
- Do not install the valves directly onto a pump flange.
- Avoid pulsation and pressure impact.
- Vertical throughput is allowable only if the valve can open at the top.
- In case of horizontal throughput, the ring screw must be at the top.
- Watch throughput direction (see arrow on the plate)!
- The swing check valves are placed between the flanges by means of a ring screw. They are put in their central position according to the outer diameter of the case and the flange screw inner side.
- Tighten the flange screws crosswise regarding the torque required.

**General safety advices:**

The safety advices for the pipe system, in which the valves are to be mounted, are to be followed. The same applies to the dual plate check valves.

In pipe systems, where our dual plate check valves are to be used, the planning/installing person and the operator are responsible for the following issues:

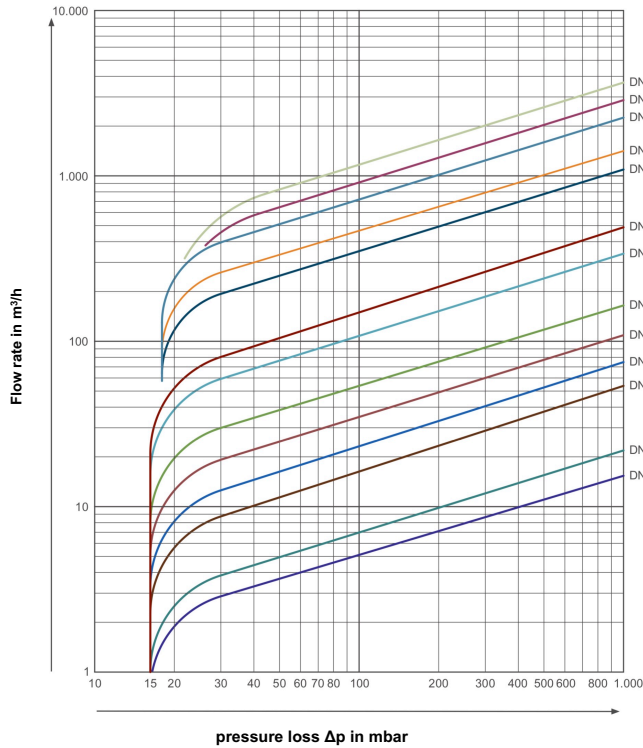
- The dual plate check valves is to be used according to the regulation in p.1
- The pipe system is to be installed correctly and its operation is to be checked regularly
- The dual plate check valves is to be mounted, removed and repaired by qualified personnel only. The staff is to be regularly instructed according to all relevant regulations concerning working safety and environmental protection, especially in the field of pipes under pressure.
- These staff members have to be informed about the manual and the advices included.

**Opening pressure:**

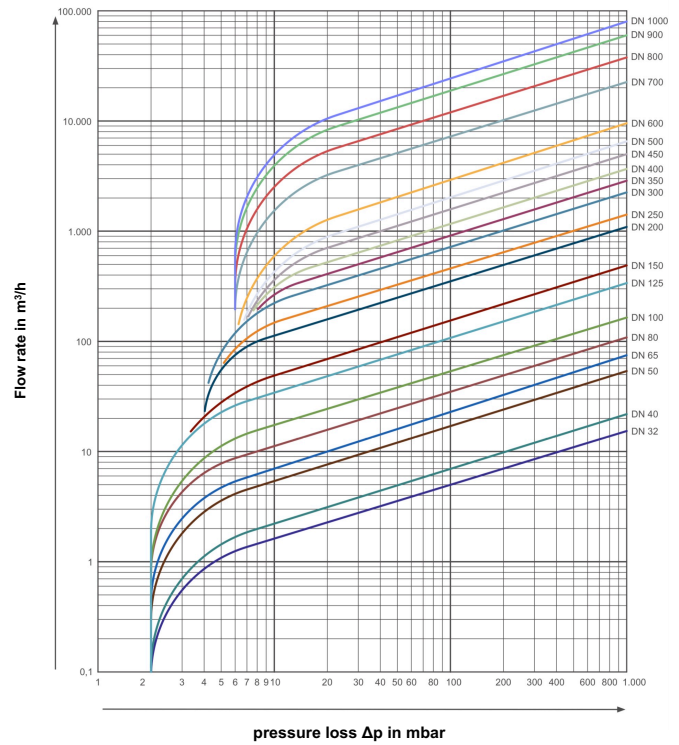
DN SIZE	Kv-Value m3/h	Opening pressure at flow direction in mbar				
		Without spring 	With spring 	Without spring 	With spring 	
32	1 1/4"	16,2	~ 2	~ 15	~ 10	~ 25
40	1 1/2"	22,2	~ 2	~ 15	~ 10	~ 25
50	2"	54	~ 2	~ 15	~ 10	~ 25
65	2 1/2"	75	~ 2	~ 15	~ 10	~ 25
80	3"	112	~ 2	~ 15	~ 10	~ 25
100	4"	172	~ 2	~ 15	~ 10	~ 25
125	5"	342	~ 2	~ 15	~ 10	~ 25
150	6"	490	~ 2	~ 15	~ 10	~ 25
200	8"	1.128	~ 4	~ 17	~ 14	~ 25
250	10"	1.500	~ 4	~ 17	~ 14	~ 25
300	12"	2.290	~ 4	~ 17	~ 14	~ 25
350	14"	2.890	~ 6	~ 18	~ 18	~ 27
400	16"	3.700	~ 6	~ 18	~ 18	~ 28
450	18"	5.000	~ 6	-	~ 18	-
500	20"	6.550	~ 6	-	~ 24	-
600	24"	9.550	~ 6	-	~ 26	-

**Pressure loss:**

**with spring:**



**without spring:**



The values in the diagram refer to water at 20°C.  
 If you need information on other fluids please contact us.  
 In the area of the valve opening, the characteristics for installation in horizontal pipelines apply.

**Test meeting the requirement of PED acc. to DIN EN 12266:**

The tightness corresponds to the specified leakage rates:

Type	Soft seat*	Metal seat
ZR01	A	≥ G
ZR02	A	≥ G
ZR03	A	≥ G
ZR04	A	≥ G
ZR09	A	≥ G
ZR10	A	≥ G

\* Necessary back pressure for the tightness of the check valve:

NBR, EPDM & FKM → 0,3 bar  
 PTFE → 1,0 bar

**Structure Article number:**

Part	Type ZR01	ZR02	ZR03	ZR04	ZR09	ZR10
Body	Steel A 105, zinc plated	A 351 CF8M	Steel A 105, zinc plated	A 351 CF8M	Alu-Bronze C958	Alu-Bronze C958
Disc	Steel A 105, zinc plated	A 351 CF8M	Steel A 105, zinc plated	A 351 CF8M	A 890 Grade 5A	A 890 Grade 5A
Spring	Without	Without	AISI 316 Ti	AISI 316 Ti	Without	Hastelloy C4 2.4610

Type*	design	seal	size**
ZR01	00 – DIN	01 – EPDM	<b>06 – DN32</b>
ZR02	<b>10 – ANSI 150</b>	02 – FPM	07 – DN40
ZR03		<b>03 – PTFE</b>	08 – DN50
<b>ZR04</b>		04 – NBR	09 – DN65
ZR09***		05 – metal seated****	10 – DN80
ZR10***			11 – DN100
			12 – DN125
			13 – DN150
			14 – DN200
			15 – DN250
			16 – DN300
			17 – DN350
			18 – DN400
			19 – DN450
			20 – DN500
			21 – DN600

**Example no. ZR04100306:**

**ZR04 | 10 | 03 | 06**

Article no. ZR04100306

Swing check valve

Body: Stainless steel  
 Disc: Stainless steel  
 Spring: Stainless steel  
 Model: ANSI 150  
 Seal: PTFE  
 Diameter: DN32

- \* Design with spring is available up to DN400, larger nominal sizes on request.
- \*\* Version without spring larger than DN600 on request
- \*\*\* Types ZR09 and ZR10 available up to DN300
- \*\*\*\* Metal seated version available for types ZR02, ZR04

Image similar, subject change without notice.