Swing check valve type 33

Body material	HI-PVC	PP	PVDF
Sealing material (optionally)	• EPDM	• CSM • PTFE / FKM-F	• PTFE / PFA
Working temperature[1)]	0 °C up to 50 °C[2)]	-20 °C up to 80 °C[2)]	-20 °C up to 100 °C[2)]
Nominal size	DN 15 up to DN 200		
Connection with pipe	Flange connection acc. to DIN EN 1092-1 - PN 10[3)]		
Length	DIN EN 558 - 1 series FTF 48 (DIN 3202 - series F 6)		
Accessories	Adjustable weight[4)]		

[1)] Designed for 10 years of use with a neutral medium (water)

[2)] Working temperatures for sealing materials:
EPDM: -20 up to 80 °C
CSM: -20 up to 80 °C
PTFE / PFA / FKM-F: -20 up to 100 °C

[3)] Flange connection also acc. to ANSI available

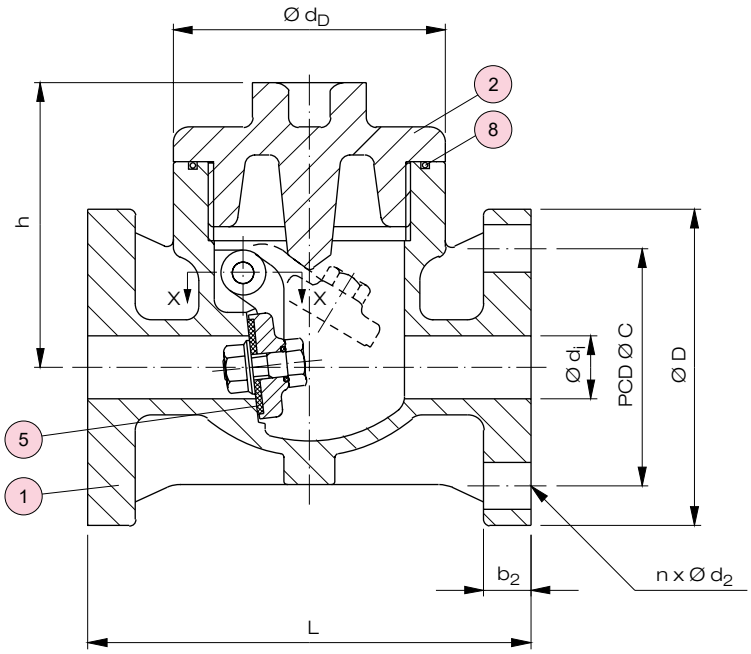
[4)] Special version on request

Example for an invitation to tender text:
Swing check valve type 33, DN 80, PN 10, PP / EPDM, flange connection acc. to DIN EN 1092-1 - PN 10, length acc. to DIN EN 558-1 series FTF 48, with removable bonnet lid for on-site-maintenance

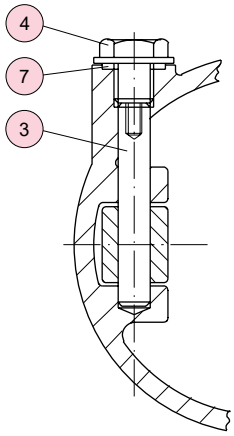
Document: *FRANK_DB_L5_Rückschlagklappe Typ 33_01-2024_EN*

Swing check valve type 33

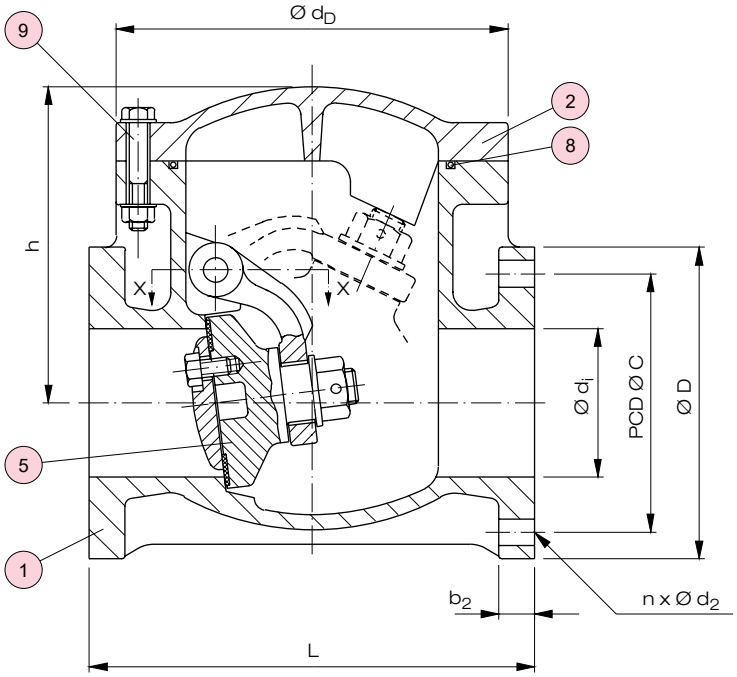
DN 15 - DN 20



Section X-X



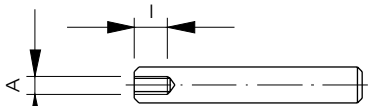
DN 25 - DN 200



Quantity[1] of bonnet bolts pos. 9

DN	Schraube Mutter	Scheibe
25 - 40	6	12
50 - 80	8	16
100 - 150	12	24
200	16	32

[1] PFA O-ring double piece at bolt, nut and washer



Thread for shaft pos. 3

DN	A	l
15 - 40	M 4	8
50	M 5	10
65 - 80	M 6	10
100	M 8	15
125 - 200	M 8	20

No.	Description	Number	Material
1	Body	1	HI-PVC, PP, PVDF
2	Bonnet	1	HI-PVC, PP, PVDF
3	Shaft*)	1	HI-PVC, PP, PVDF
4	Plug	1	HI-PVC, PP, PVDF

No.	Description	Number	Material
5	Arm*,2)	1	HI-PVC, PVDF
7	Seat holder*)	1	EPDM, CSM, PTFE, FKM-F
8	O-ring*)	1	EPDM, CSM, PFA, FKM-F
9	Bolt, nut, washer	as above	A2 - 1.4301 (SUS 304)

*) Wearing parts
2) with EPDM, CSM, or PTFE sealings

Swing check valve type 33

Dimensions and weights

Dimensions in mm											Weight in kg / pc.		
DN	d_i	C	D	d_D	L	h	b_2 HI-PVC	b_2 PP	b_2 PVDF	n x d_2	HI-PVC	PP	PVDF
15	20	65	95	86	140	87	15	15	15	4 x 14	0,9	0,7	1,1
20	20	75	105	86	140	87	15	15	15	4 x 14	1,0	0,7	1,1
25	25	85	115	130	160	117	16	16	16	4 x 14	1,8	1,3	2,1
32	40	100	140	145	180	135	18	17	18	4 x 18	3,1	2,2	3,5
40	40	110	150	145	180	135	18	17	18	4 x 18	3,1	2,2	3,5
50	50	125	165	180	200	161	20	20	20	4 x 18	4,5	3,2	5,1
65	65	145	185	200	240	165	22	22	23	4 x 18	6,0	4,0	7,0
80	80	160	200	205	260	168	22	22	23	8 x 18	6,5	4,5	8,0
100	100	180	220	265	300	210	24	24	26	8 x 18	11,5	8,0	13,0
125	125	210	250	330	350	245	24	25	26	8 x 18	17,0	13,0	21,0
150	150	240	285	370	400	280	25	26	27	8 x 22	23,0	17,0	28,0
200	200	295	340	425	500	333	30	31	33	8 x 22	36,5	26,5	44,0

Minimum required shut and opening pressures in bar

DN	Vertical installation		Horizontal installation	
	Open	Close	Open	Close
15	0,1 0,1	0,2 0,3	0,1 0,1	0,2 0,3
20	0,1 0,1	0,2 0,35	0,1 0,1	0,2 0,35
25	0,1 0,1	0,3 0,5	0,1 0,1	0,35 0,6
32	0,1 0,1	0,3 0,5	0,1 0,1	0,35 0,6
40	0,1 0,1	0,3 0,5	0,1 0,1	0,35 0,6
50	0,1 0,1	0,3 0,5	0,1 0,1	0,35 0,6
65	0,1 0,1	0,3 0,5	0,1 0,1	0,35 0,6
80	0,1 0,1	0,35 0,55	0,1 0,1	0,4 0,6
100	0,1 0,1	0,35 0,6	0,1 0,1	0,4 0,65
125	0,1 0,1	0,35 0,6	0,1 0,1	0,4 0,65
150	0,15 0,15	0,4 0,65	0,1 0,1	0,45 0,7
200	0,2 0,2	0,4 0,7	0,15 0,15	0,45 0,7

Swing check valve type 33

Flow rate characteristic value[1] k_{VS} in m^3/h

DN	15	20	25	32	40	50	65	80	100	125	150	200
k_{VS} [m^3/h]	12,1	12,1	20,8	70,1	70,1	121,2	216,5	242,5	441,7	643	942	1600

[1] Definition k_{VS}-value see chapter T2 / technical information

Vacuum resistance[2] in bar for HI-PVC, PP, PVDF

DN 15 - 200
1,0

[2] Valid within the range of working temperatures

Working pressure[3] p_B in bar

Body-material	T_B in °C	DN 15 - 80	DN 100 - 150	DN 200
HI-PVC	0 up to 20	10	7	5
	50	7	5	4
PP	-20 up to 30	10	7	5
	60	7	5	3
	80	6	4	2
PVDF	-20 up to 30	10	7	5
	80	7	5	3,5
	100	6	4	3

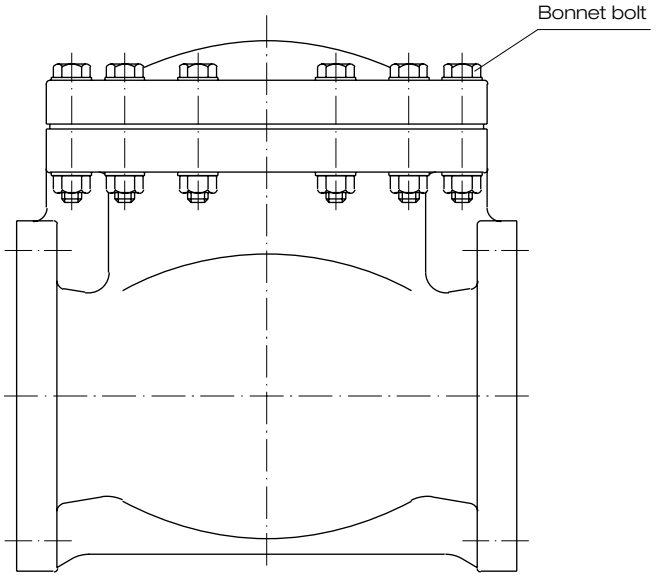
[3] Definition siehe Abschnitt T2 / Technische Informationen

Hydrostatic bursting pressure[4] in bar for HI-PVC at 22 °C

DN	15	20	25	32	40	50	65	80	100	125	150	200
	110	110	110	95	95	95	90	85	80	65	45	45

[4] Definition see chapter T2 / technical information

Tightening torque $Md_{min/max}$ in Nm for bonnet bolts

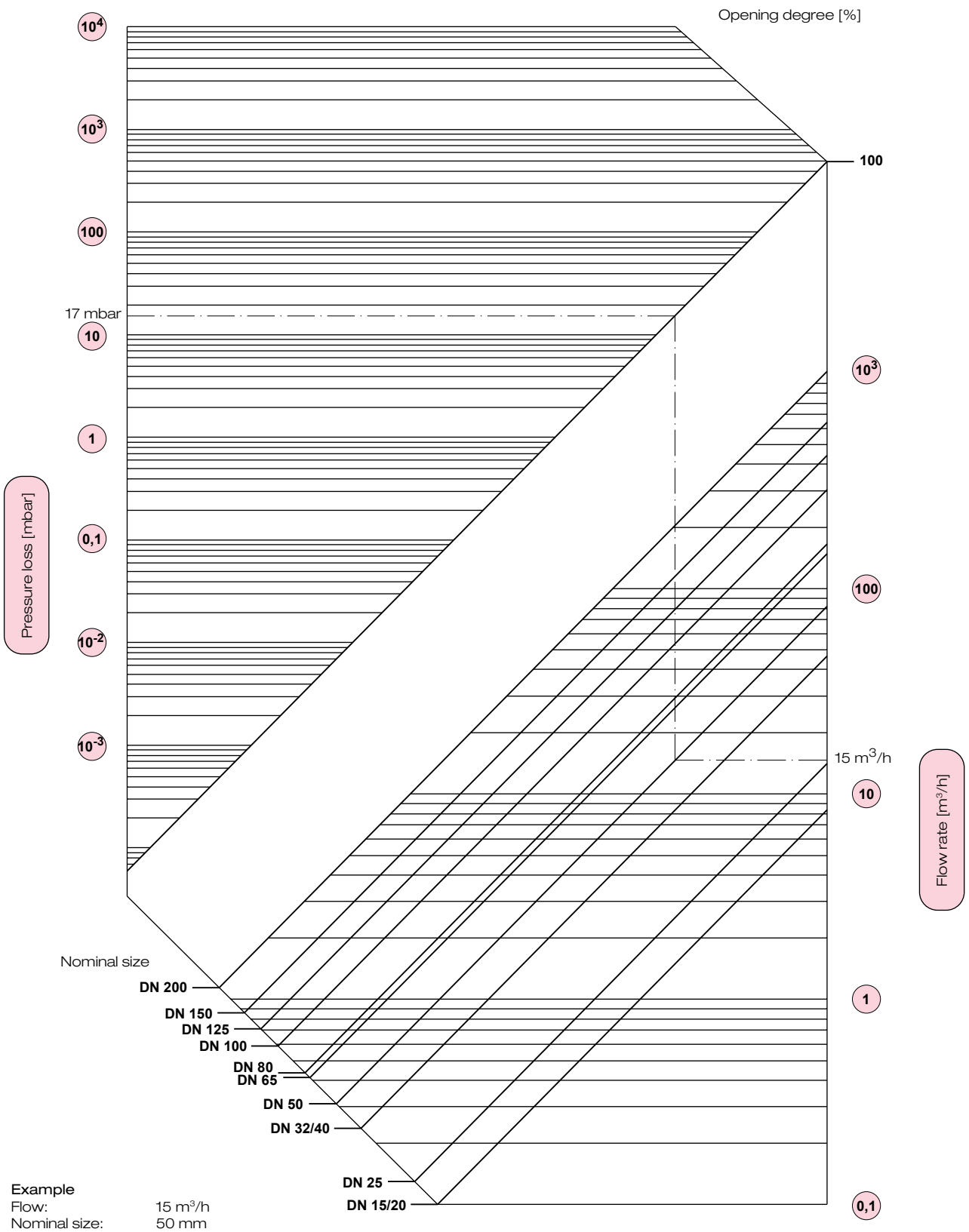


DN	Bonnet gasket (O-ring) EPDM, CSM, FKM-F		Bonnet gasket (O-ring) PFA	
	Md_{min}	Md_{max}	Md_{min}	Md_{max}
15[5]	30	31	35	36
20[5]	30	31	35	36
25	6	7	10	11
32	8	9	15	16
40	8	9	15	16
50	10	11	20	21
65	10	11	20	21
80	15	17	25	27
100	20	22	35	37
125	20	22	40	42
150	25	27	40	43
200	25	27	40	43

[5] Torque Bonnet

Swing check valve type 33

Pressure loss diagram

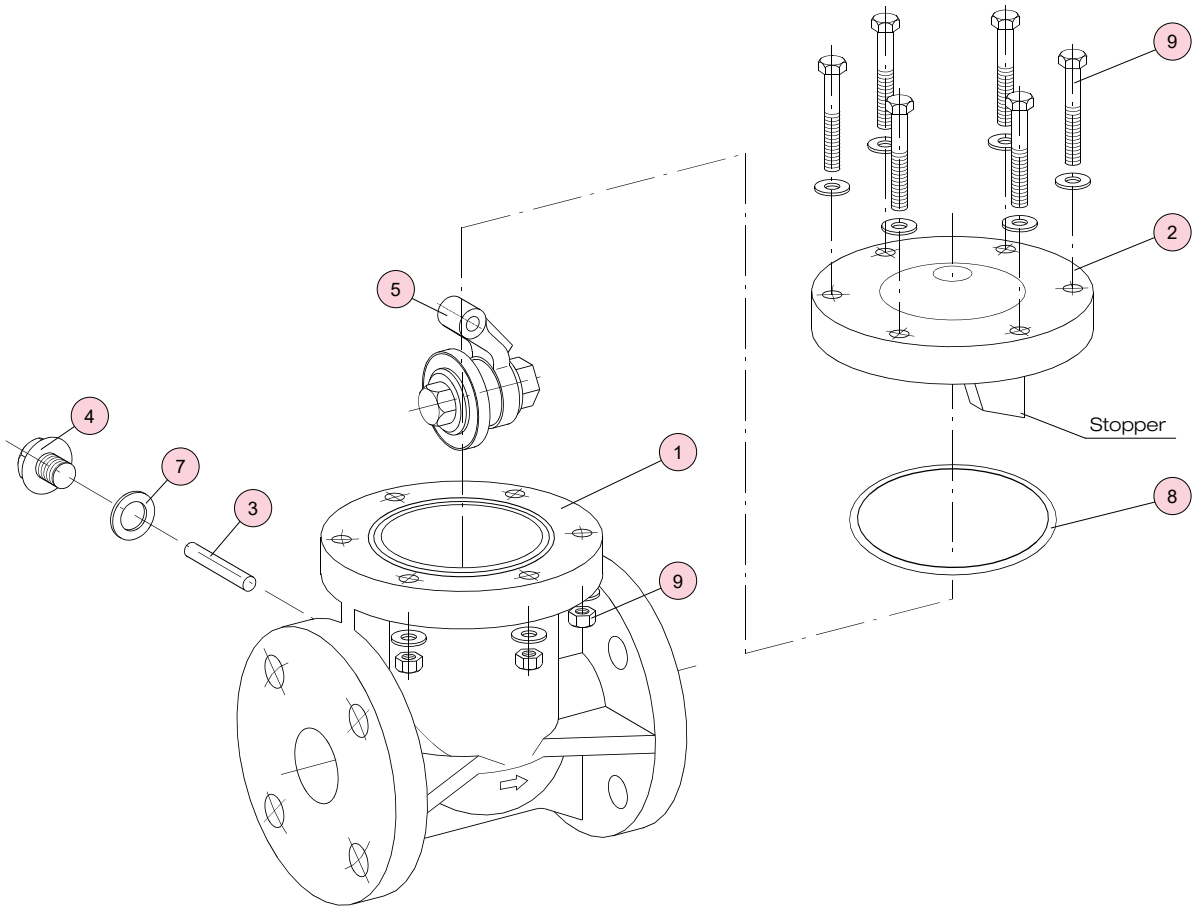


Example

Flow:	15 m³/h
Nominal size:	50 mm
Opening degree:	100 %
Pressure loss:	17 mbar

Swing check valve type 33

Assembly and disassembly



all sizes

Disassembly of the valve

Attention: *Never dismantle the valve when the pipe is under pressure.*

- Dismantle the valve from the piping by loosening the flange bolts.
- Loosen the bonnet bolts **9** and remove the bonnet **2** from the body (DN 20: screw bonnet **2** off body **1**).
- Loosen plug **4** and seat holder **7**.
- Pull shaft **3** with a suitable tool out of the body. Prevent arm **5** from falling into the body.
- Check all parts for wearout and replace them if necessary.

Assembly of the valve

- The valve assembly is to be performed in reverse order to the disassembly.
- Before the assembly all parts have to be checked for damages.
- All parts have to be clean.
- The bonnet **2** has to be positioned with the stopper pointing to flow direction.
- Tighten the bonnet bolts **9** equably with a torque wrench acc. to the table on page L5-10.
- After assembly carry out a pressure test acc. to DIN EN 12266-1.

Notes for correct installation

- The valve must be installed stress-free in the pipe (plane parallelism, axial, overall length).
- The valve has to be installed with direction indicator pointing in flow direction.
- The flange bolts have to be tightened equably (tightening torques look at T2 - 10). In general, use washers for the nuts and bolts in plastic flanges.
- Avoid direct assembly on a flange of a pump.