

Diaphragm valve type 14



material of body	PVC-U	PVC-C	PP	PVDF
material of diaphragm	• NBR	• EPDM	• CSM	• PTFE with EPDM cushion
working temperature ¹⁾	0 °C to 60 °C ³⁾	0 °C to 90 °C ³⁾	-20 °C to 90 °C ³⁾	-40 °C to 120 °C ³⁾
nominal size	DN 15 to DN 100			
connection with pipe	• flange acc. to DIN 2501 - PN 10 ²⁾		• socket or spigot end	
length	• EN 558-1 series FTF 1 / DIN 3202 - F1		• company standard	
actuator	handwheel, optionally pneumatic or electric actuator			
accessories	limit switches			

¹⁾ designed for 10 years of use with a neutral medium (water)

²⁾ also available acc. to ANSI

³⁾ material of diaphragm:

CSM: -20 to 80 °C

EPDM: -40 to 90 °C

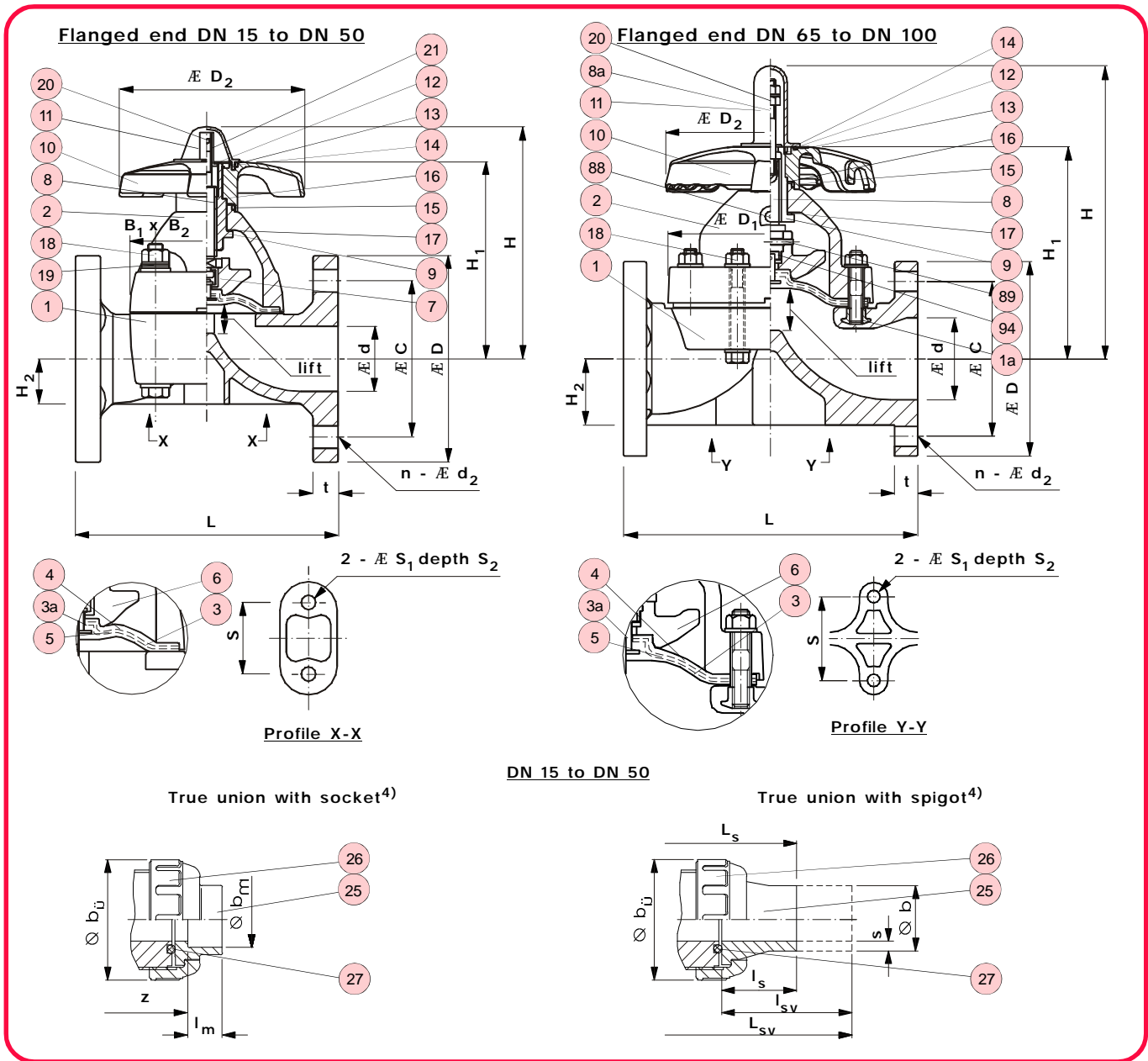
NBR: -30 to 100 °C

PTFE: -40 to 120 °C

example for an advertised bidding:

Diaphragm valve type 14 DN 50, PN 10, PVC-U/PTFE, flanged connection acc. to DIN 2501-PN 10, length acc. EN 558-1 series FTF 1, optical position indicator, adjustable stopper

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no.	name	qty.	material
1	body	1	PVC/PVC, PVC-C/PP, PP/PP
2	bonnet	1	PVDF/PP-G, PVDF/PVDF
1a	inserted nut ¹⁾	1	C 3604
3	diaphragm ^{*,2)}	1	EPDM, CSM, NBR, PTFE ^{**)}
3a	inserted metal of diaphragm	1	m.-nr. 1.4301
4	cushion ³⁾	1	EPDM
5	diffusion stop inlay	1	m.-nr. 1.4301
6	compressor	1	PVDF
7	joint ⁴⁾	1	m.-nr. 1.4301
8	stem	1	C 3604
8a	indicator rod	1	m.-nr. 1.4301
9	sleeve	1	C 3604
10	hand wheel	1	PP
11	gauge cover	1	PC
12	name plate	1	PVC
13	retaining ring c-type	1	m.-nr. 1.4301
14	O-ring (A)	1	EPDM

no.	name	qty.	material
15	O-ring (B)	1	EPDM
16	thrust ring (A)	1	UHMWPE
17	thrust ring (B)	1	UHMWPE
18	bolt, nut, washer	4	m.-nr. 1.4301
19	spring washer ⁵⁾	4	m.-nr. 1.4301
20	stopper	1	C 3604 ⁴⁾ /m.-nr. 1.4301 ¹⁾
21	screw ⁴⁾	1	m.-nr. 1.4301
25	end connector (spigot, socket) ⁴⁾	2	PVC-U/-C, PEHD, PP, PVDF
26	union nut ⁴⁾	2	PVC-U/-C, PP, PVDF
27	O-ring ^{*,4)}	2	EPDM, FPM
88	grease nipple ¹⁾	1	C 3604
89	compressor pin ¹⁾	1	m.-nr. 1.4301
90	stud bolt, nut, washer ¹⁾	4	m.-nr. 1.4301
94	metal of compressor ¹⁾	1	m.-nr. 1.4301

*) wearing parts
 **) with EPDM cushion
 1) DN 65 - DN 100 only
 2) with stainless steel pin
 3) with PTFE diaphragm only
 4) DN 15 - DN 50 only
 5) with PVDF body only

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Dimensions and weights - flanged end

dimensions in mm																weight in kg/pc.				
DN	d	k	D	B ₁	B ₂	D ₁	D ₂	L	H	H ₁	t	S	S ₁	S ₂	lift	n x d ₂	PVC-U	PVC-C	PP	PVDF
15	16	65	95	54	66	-	88	130	104	86	12	25	7	13	10	4 x 14	0,7	0,7	0,6	0,8
20	20	75	105	54	66	-	88	150	106	88	13	25	7	13	10	4 x 14	0,8	0,8	0,6	0,9
25	25	85	115	67	80	-	88	160	111	93	13	25	7	13	12	4 x 14	1,1	1,1	0,8	1,3
32	32	100	140	67	80	-	88	180	116	97	16	25	7	13	12	4 x 18	1,4	1,4	1,0	1,6
40	40	110	150	108	108	-	156	200	177	144	20	45	9	15	21	4 x 18	2,8	2,7	2,2	3,1
50	52	125	165	123	123	-	156	230	191	158	22	45	9	15	25	4 x 18	3,6	3,5	2,8	4,1
65	67	145	185	-	-	175	220	290	266	188	22/23 ¹⁾	85	11	20	34	4 x 18	5,6	5,3	4,2	6,5
80	78	160	200	-	-	201	220	310	280	202	22/23 ¹⁾	100	15	28	42	8 x 18	7,1	6,9	5,4	8,0
100	100	180	220	-	-	241	257	350	329	241	22/24 ¹⁾	120	15	28	50	8 x 18	10,5	8,9	8,7	11,7

¹⁾ PVC-U, PVC-C-/PP-, PVDF-version

Dimensions and weights - true union with socket

dimensions in mm																weight in kg/pc.				
		PVC socket		PP, PVDF socket												socket end				
DN	d	d _ü	z	d _m	l _m	d _m	l _m	B ₁	B ₂	D ₂	H	H ₁	S	S ₁	S ₂	lift	PVC-U	PVC-C	PP	PVDF
15	16	48	96	20	16	19,50	14,5	54	66	88	104	86	25	7	13	10	0,5	0,5	0,4	0,6
20	20	60	109	25	19	24,50	16,0	54	66	88	106	88	25	7	13	10	0,6	0,6	0,5	0,7
25	25	70	128	32	22	31,50	18,0	67	80	88	111	93	25	7	13	12	0,9	0,9	0,7	1,0
32	32	82	136	40	26	39,45	20,5	67	80	88	116	97	25	7	13	12	1,1	1,1	0,8	1,2
40	40	100	184	50	31	49,45	23,5	108	108	156	177	144	45	9	15	21	2,6	2,5	2,0	2,7
50	50	106	219	63	38	62,50	27,5	123	123	156	191	158	45	9	15	25	2,9	2,8	2,3	3,1

Dimensions and weights - true union with spigot (butt weld or electric weld spigot)

dimensions in mm																weight in kg/pc.					
		s ²⁾		s ²⁾																	
DN	d	d _ü	SDR 17,6	SDR 11	l _S ⁴⁾	L _S ⁴⁾	l _{SV} ⁴⁾	L _{SV} ⁴⁾	B ₁	B ₂	D ₂	H	H ₁	S	S ₁	S ₂	lift	PVC-U	PVC-C	PP	PVDF
15	16	48	-	2,5	30	188	47	246	54	66	88	104	86	25	7	13	10	0,5	0,5	0,4	0,6
20	20	60	-	2,7	25	198	64	272	54	66	88	106	88	25	7	13	10	0,6	0,6	0,5	0,7
25	25	70	-	3,0	18	216	61	296	67	80	88	111	93	25	7	13	12	0,9	0,9	0,7	1,0
32	32	82	-	3,6	20	222	65	320	67	80	88	116	97	25	7	13	12	1,1	1,1	0,8	1,2
40	40	100	2,9	4,6	20	268	69	372	108	108	156	177	144	45	9	15	21	2,6	2,5	2,0	2,7
50	52	106	3,6	5,8	18	297	87	447	123	123	156	191	158	45	9	15	25	2,9	2,8	2,3	3,1

²⁾ PVDF spigot

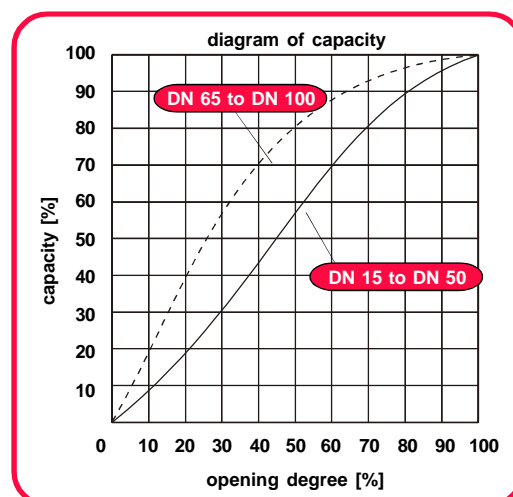
³⁾ spigot, short (PEHD, PP-R, PVDF)

⁴⁾ spigot, long (PEHD, PP-R)

Capacity coefficient⁵⁾ k_v in m³/h

DN	lift of stem			
	25 %	50 %	75 %	100 %
15	0,98	2,34	3,53	4,10
20	1,09	2,58	3,90	4,53
25	1,74	4,14	6,25	7,26
32	2,26	5,36	8,09	9,40
40	5,33	12,67	19,11	22,22
50	8,82	20,95	31,61	36,75
65	34,51	57,39	68,29	72,65
80	46,69	77,65	92,39	98,29
100	75,11	124,91	148,63	158,12

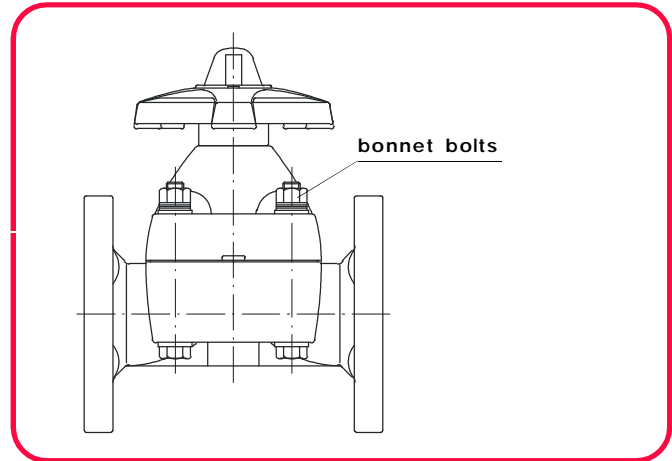
⁵⁾ definition k_v-value please look at chapter T2/technical information



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Tightening torque $M_{Tmin/max}$ in Nm for bonnet bolts

DN	Elastomer-Diaphragm • EPDM • CSM • NBR)		PTFE-diaphragm with EPDM cushion cover	
	M_{Tmin}	M_{Tmax}	M_{Tmin}	M_{Tmax}
15 - 20	3	5	5	7
25 - 32	5	7	8	10
40	12	14	15	17
50	15	17	20	23
65	13	15	15	17
80	18	20	20	22
100	35	38	40	43



Operating torque¹⁾ M_O in Nm for stem movement

DN	rot./lift	M_O A ²⁾	M_O B ³⁾
15	5	3	4
20	5	3	4
25	6	4	5
32	6	4	5
40	5	10	12
50	6	10	12
65	8	19	23
80	10	26	31
100	10	32	38

- 1) referring to maximum working pressure
 2) Elastomer diaphragm
 3) PTFE diaphragm

Hydrostatic bursting pressure⁴⁾ in bar⁵⁾

DN	20 °C (PVC-U)	50 °C (PVC-U)
15	165	178
20	184	153
25	175	130
32	177	160
40	155	125
50	133	108
65	103	85
80	108	65
100	84	75

- 4) definition of bursting pressure look at T2 / techn. information
 5) 1,0 atm = 1013,25 hPa = 1,01325 bar

Maximum working pressure⁶⁾ p_w in bar

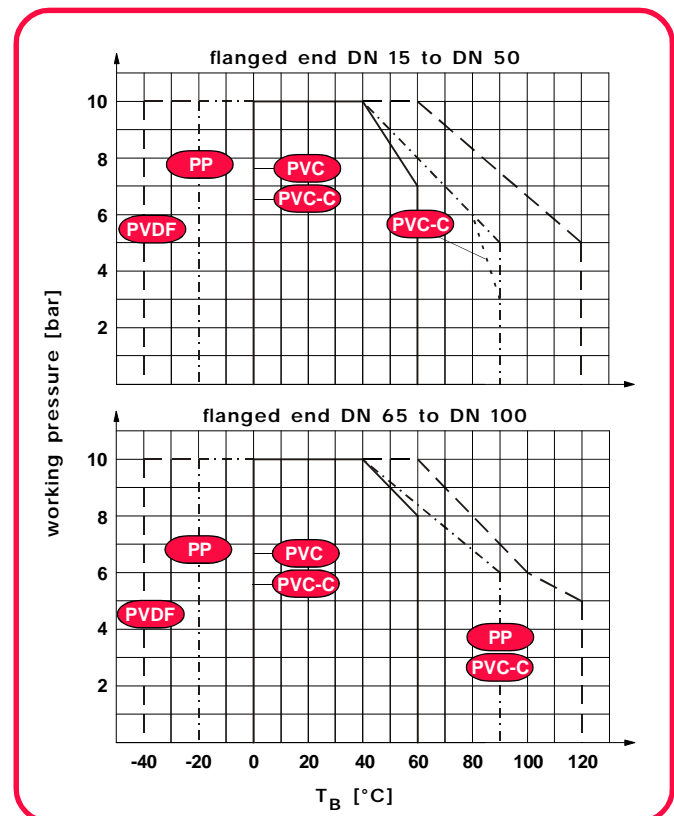
body material	T_B in °C	DN 15 - 50		DN 65 - 100	DN 15 - 50 TU ⁷⁾
		DN 15 - 50	DN 65 - 100		
PVC-U	0 to 40	10	10	10	10
	50	8,5	9	9	9
	60	7	8	-	-
PVC-C	0 to 40	10	10	10	10
	50	9	9,2	9	9
	60	8	8	8	8
	80	6	6,8	6	6
PP	90	3	6	3	3
	-20 to 40	10	10	10	10
	60	8	8,4	8	8
PVDF	80	6	6,8	6	6
	90	5	6	-	-
	-40 to 60	10	10	10 ⁸⁾	10 ⁸⁾
	80	8,3	8	8	8
PVDF	100	6,7	6	6	6
	120	5	5	-	-

- 6) definition of max. allowable working pressure: T2 / techn. information
 7) True Union
 8) -20 to 60 °C

Vacuum resistance⁹⁾ in bar

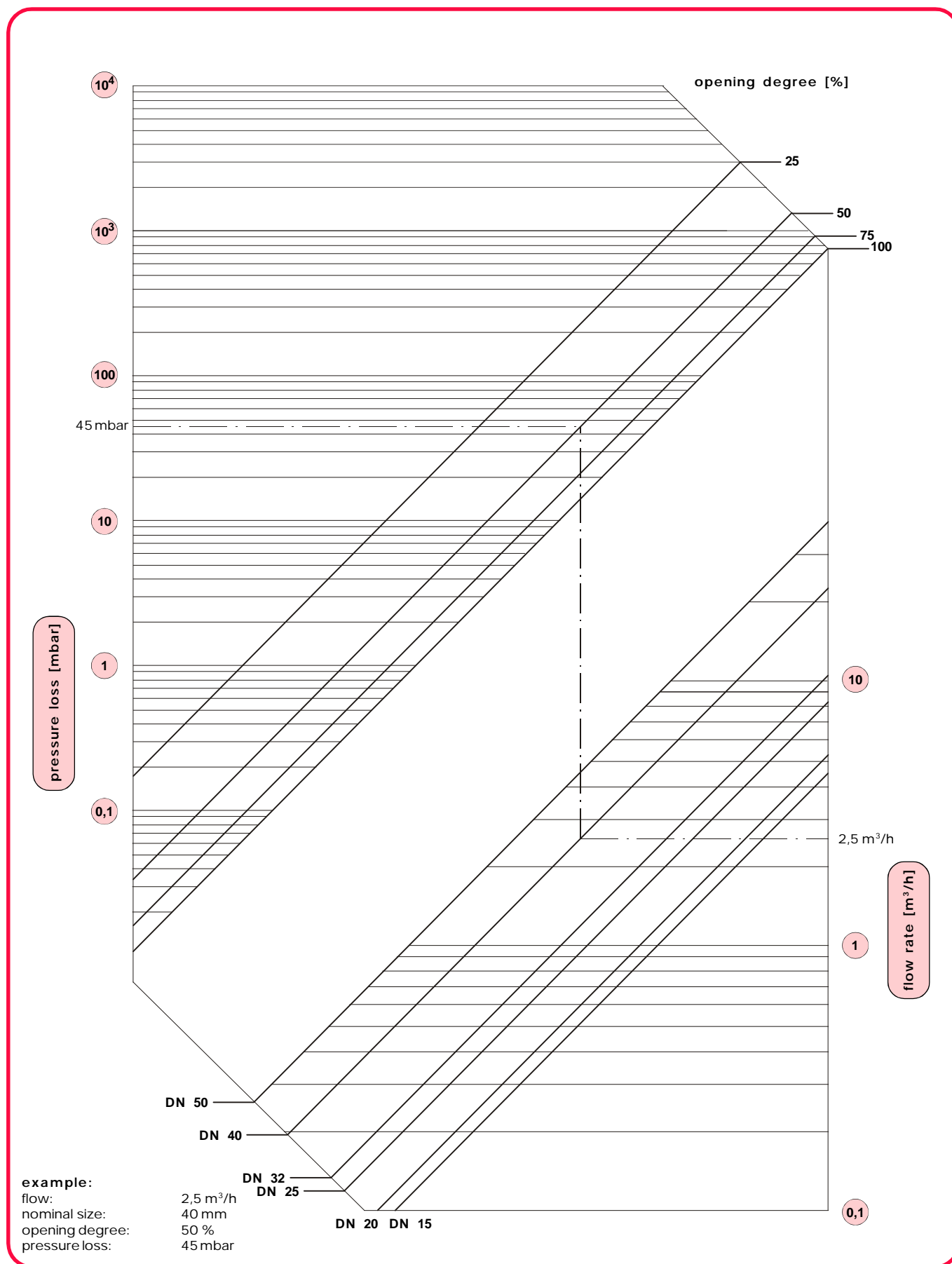
DN	vacuum resistance
15 - 50	1,0
65 - 100	0,5 ¹⁰⁾

- 9) referring to maximum working temperature
 10) special version with higher vacuum resistance: 1,0 bar on request



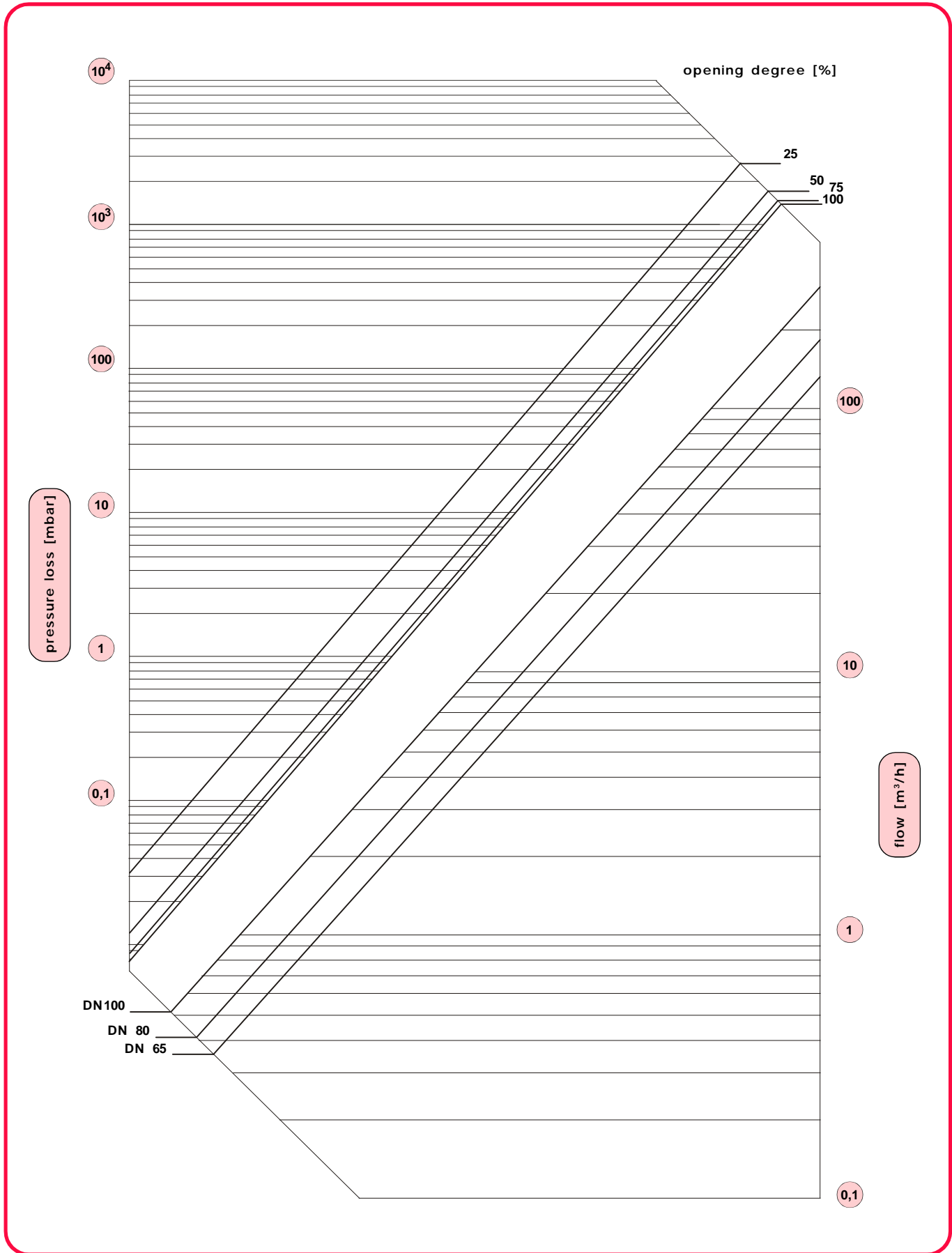
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Pressure loss diagram for DN 15 to DN 50



Diaphragm valve type 14

Pressure loss diagram for DN 65 to DN 100



Diaphragm valve type 14

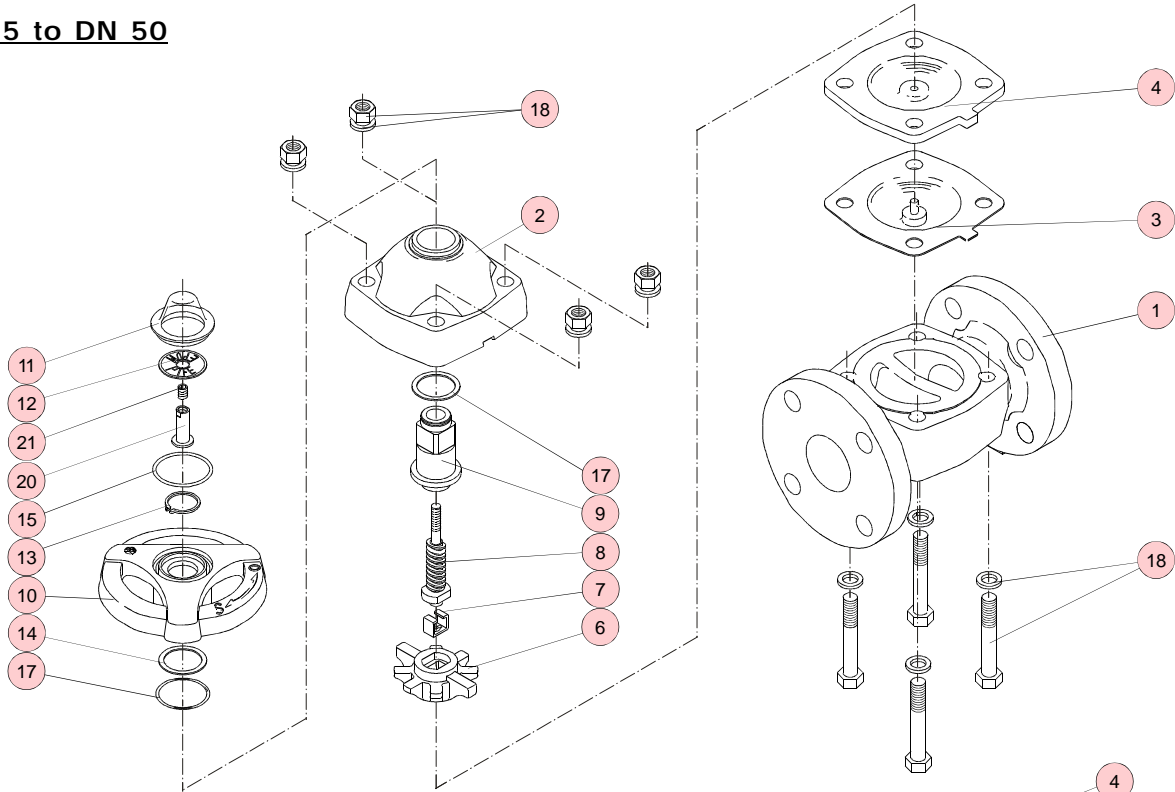
Maintenance and Installation

DN 15-50				DN 65-100			
required tools:				required tools:			
DN	15-32	40, 50		DN	65	80	100
allen key	3	4		allen key	-	-	-
spanner	8; 2x13	10; 2x19		spanner	2x17	2x17; 19	2x17; 24
circlip-pliers	19-60	19-60		circlip-pliers	19-60	19-60	19-60
pin driver	-	-		pin driver	5	5	5
Disassembly of the valve							
<i>Caution: Never dismantle the valve when the pipe is under pressure.</i>							
<ul style="list-style-type: none"> ■ Dismantle the valve from the pipe (flanged version: remove flange bolts; True Union version: remove union nut 26 (s. L1-10/99)). ■ Bring the valve in half opened position. Loosen the bonnet bolts 18 and remove the bonnet 2. 				alike DN 15-50			
<ul style="list-style-type: none"> ■ Remove gauge cover 11. 				<ul style="list-style-type: none"> ■ Unscrew gauge cover 11 counterclockwise. 			
<ul style="list-style-type: none"> ■ Remove O-Ring 14 and name plate 12. ■ Turn the handwheel 10 clockwise to the stopper, then turn it back slightly. ■ Turn the diaphragm 3 of 90°, pull diaphragm 3 and compressor 6 off the stem 8. 				alike DN 15-50			
<ul style="list-style-type: none"> ■ Pull joint 7 off stem 8. ■ Hold stopper 20 with spanner to prevent it from turning and loosen screw 21 with an allen key. Unscrew the stopper from the stem. 				<ul style="list-style-type: none"> ■ Drive compressor pin 89 out of compressor 6, so that the compressor can be removed from stem 8. ■ Remove group of parts 20, consisting of stopper, red washer, nut and blank washer, from the stem. Loosen the nut first. 			
<ul style="list-style-type: none"> ■ Remove the retaining c-type ring 13 with the circlip-pliers from sleeve 9. ■ Pull the handwheel 10 off the sleeve 9. ■ Remove the thrust rings 16 + 17 and O-ring 14 from the bonnet. 				alike DN 15-50			
Assembly of the valve							
<ul style="list-style-type: none"> ■ The valve assembly ist to be performed in reverse order to the assembly. ■ Before the assembly all parts have to be checked for damages. ■ All parts have to be clean. 							
<ul style="list-style-type: none"> ■ To mount the diaphragm, put the joint 7 on the stem 8. The slot must be in 90° position to the axle between the guiding slots in the inner side of bonnet 2. 				<ul style="list-style-type: none"> ■ To mount the diaphragm, put the compressor 6 on the stem 8. Drive pin 89 into compressor 6 so that it is flush with it. 			
<ul style="list-style-type: none"> ■ The diaphragm flag must be positioned in the clearances of body and bonnet. 							
Stopper adjustment							
<ul style="list-style-type: none"> ■ Close the valve by turning the handwheel 10 clockwise by hand. Check the diaphragm's position in the valve body: In closed position it must completely cover the nose piece of the body. 				alike DN 15-50			
<ul style="list-style-type: none"> ■ Tighten the stopper 20 with medium force and hold it with a spanner to prevent it from turning. Tighten screw 21 with an allen key. 				<ul style="list-style-type: none"> ■ Mount group of parts 20: put the blank washer on stem 8, put the red washer between the stopper and the nut and lock it by tightening the nut. 			

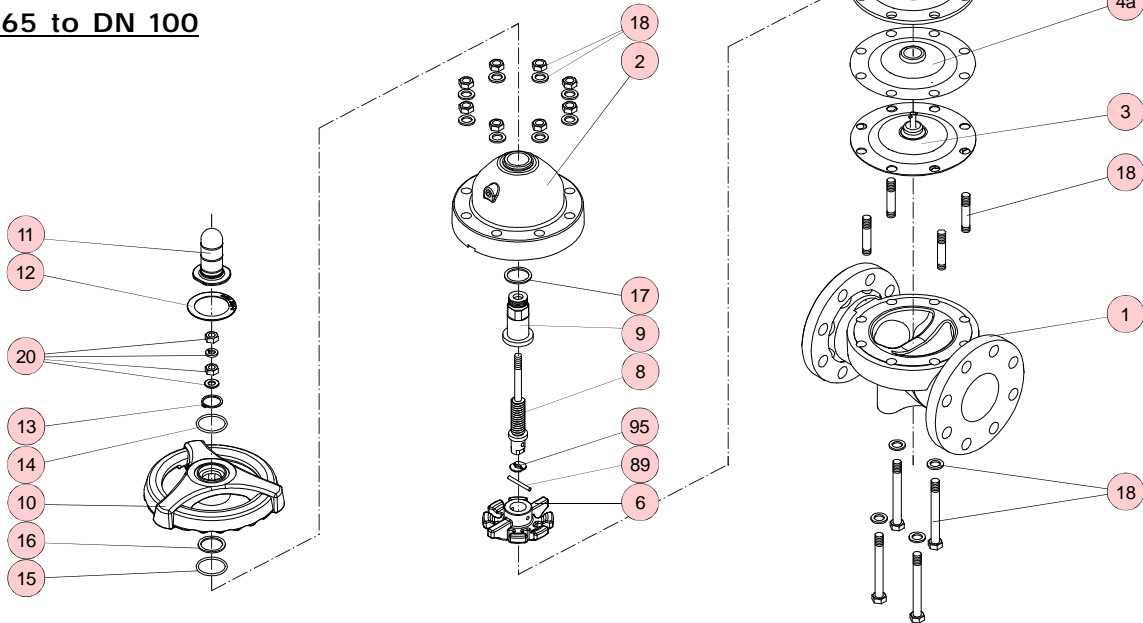
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Assembly and maintenance procedure

DN 15 to DN 50



DN 65 to DN 100



all DN

Installation instructions

- Install the valve without invoking material stress, therefore be aware of flange face parallelism, axial misalignment and valve length.
- Flange version: Tighten the flange bolts to the specified torque. Using plastic flanges the flange bolts are to be used with washers for both the bolt and the nut.
- Spigot end and socket end version: Connect valve and pipe according to the relevant specifications for gluing and welding.