3/2-way ball valve type 23

Body material	PVC-U	PVC-C	PP	PVDF
Ball seat	PTFE			
Other seats	• EPDM	• FKM	• *)	• FKM-F
Working temperature	0 °C up to 50 °C[1)]	0 °C up to 90 °C[1)]	-20 °C up to 80 °C[1)]	-20 °C up to 100 °C[1)]
Nominal size	DN 15 up to DN 100			
Connection with pipe	• Cement socket or spigot • Flange connection acc. to DIN EN 1092-1 - PN 10 (16)		• Welding socket or spigot • Threaded socket	
Length	DIN EN 558 - 1 series FTF 1 (DIN 3202 - series F 1)			
Actuator	Lever, optional pneumatic or electric actuator			
Accessories	Limit switches, stem extensions			

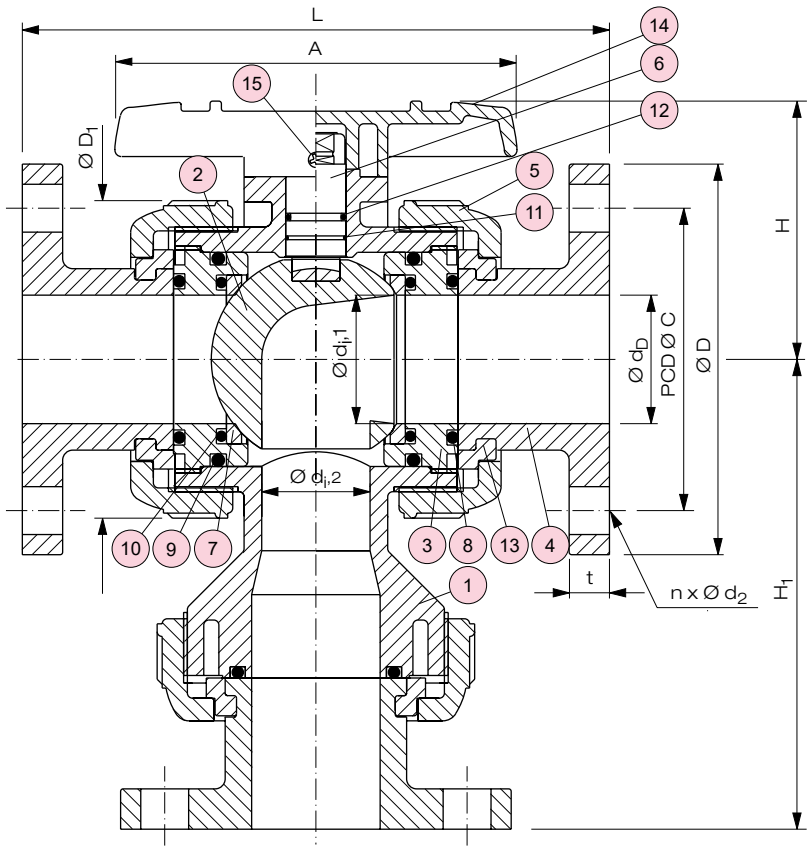
*) Special version: CSM, NBR, FKM-F, FEP / Parofluor on request

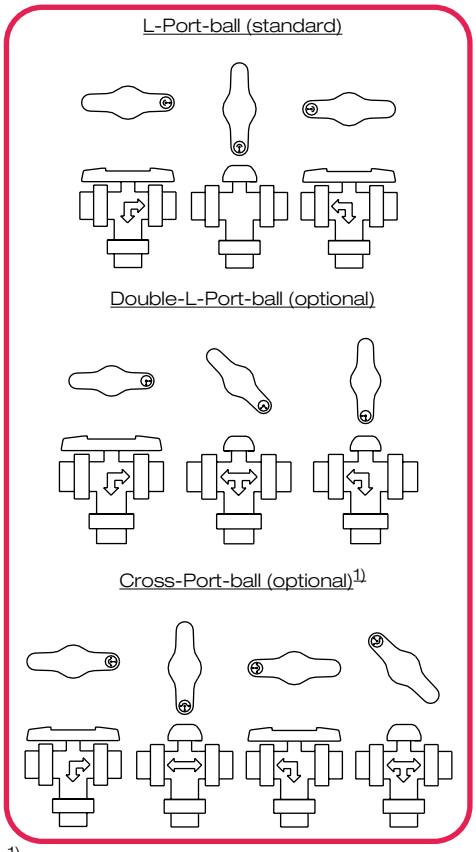
1) Working temperatures for sealing materials:
EPDM: -20 up to 90 °C
FKM / FKM-F: -8 up to 100 °C

Example for an invitation to tender text:
3/2-way ball valve type 23, DN 50, PN 10, PVC-U / EPDM, union with cement socket d 63, true union

Document: *FRANK_DB_L4_Kugelhahn 3-2-Wege Typ 23_01-2024_EN*

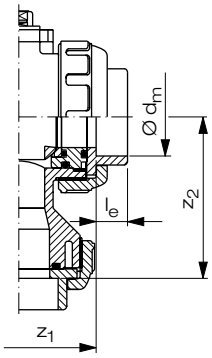
3/2-way ball valve type 23



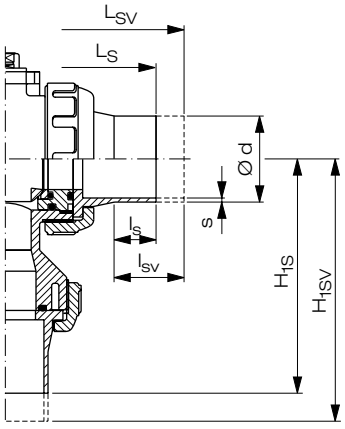


1) only DN 15 up to DN 50

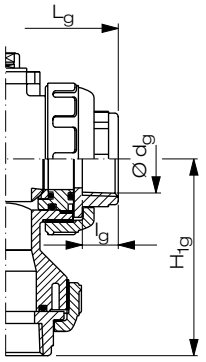
Cement- / welding socket



Welding spigot (normal or long)
Cement spigot



Threaded socket



No.	Description	Number	Material
1	Body	1	PVC-U, PVC-C, PP, PVDF
2	Ball*)	1	PVC-U, PVC-C, PP, PVDF
3	Carrier	2	PVC-U, PVC-C, PP, PVDF
4	End connector		
	(socket, spigot, flange)	3	PVC-U, PVC-C, PE, PP, PVDF
5	Union nut	3	PVC-U, PVC-C, PP-G, PVDF
6	Stem*)	1	PVC-U, PVC-C, PP, PVDF
7	Ball seat*)	2	PTFE

No.	Description	Number	Material
8	O-ring (A)*)	3	EPDM, FKM1)
9	O-ring (B)*)	2	EPDM, FKM1)
10	O-ring (C) / flat seat*,2)	2	EPDM, FKM1)
11	O-ring (D)*)	1	EPDM, FKM1)
12	O-ring (E)*)	1	EPDM, FKM1)
13	Stop ring3)	2	EPDM, FKM1)
14	Hand lever	1	ABS
15	Screw4)	1	A2 - 1.4301 (SUS 304)

*) Wearing parts
1) Special version: CSM, NBR, FKM-F, FEP / Parofluor on request
2) Flat seat for DN 80 and above
3) with flanged version only
4) DN 80 and above

3/2-way ball valve type 23

Dimensions and weights - flange connection

Dimensions in mm													Weight in kg / pc.			
DN	$d_{i,1}$	$d_{i,2}$	d_D	D_1	C	D	L	H_1	H	A	t	n x d_2	PVC-U	PVC-C	PP	PVDF
15	15	15	15	48	65	95	130	88	51,5	92	12	4 x 14	0,69	0,76	0,52	0,83
20	20	20	20	60	75	105	150	104	59,5	100	14	4 x 14	0,93	0,96	0,73	1,13
25	25	25	25	70	85	115	160	120	68	110	14	4 x 14	1,36	1,55	1,01	1,59
40	40	32	40	100	110	150	200	159	89	131	16	4 x 18	2,48	2,56	1,96	3,04
50	51	43	51	126	125	165	230	185	102,5	159	16	4 x 18	3,39	3,52	2,58	3,88
80	78	68,5	78	152	160	200	310	259	140	240	21	8 x 18	5,83	7,93	5,63	9,02
100	100	90	100	210	180	220	350	305	178	300	18	8 x 18	15,87	16,36	10,85	17,87

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

Dimensions in mm													Weight in kg / pc.			
DN	d	$d_{i,1}$	$d_{i,2}$	D_1	$s^{3)}$ SDR 17	$s^{3)}$ SDR 11	l_{SV}[2)]	l_S[1)]	L_{SV}[2)]	L_S[1)]	H_{1S}	H_{1SV}	PVC-U	PVC-C	PP	PVDF
15	20	15	15	48	-	1,9	64	30	239	167	94	135	0,25	0,27	0,17	0,29
20	25	20	20	60	-	2,3	61	25	244	170	101	137	0,42	0,44	0,28	0,50
25	32	25	25	72	-	2,9	61	25	252	176	114	150	0,67	0,69	0,41	0,75
40	50	38	32	100	3,0	4,6	69	22	295	196	150	186	1,49	1,49	0,91	1,69
50	63	45	38	126	3,8	5,8	78	20	352	214	170	241	2,04	2,05	1,23	2,50
80	90	68,5	58	152	5,4	8,2	101	40	442	322	266	325	3,89	5,91	3,49	6,56
100	110	90	78	210	6,6	10,0	115	38	512	350	306	387	13,04	13,50	8,55	16,15

[1)] Weld spigot (PE 100, PP-R, PVDF) [2)] long weld spigots (PE 100, PP-R) for electric welding
[3)] PVDF-weld spigot SDR 33 / SDR 21 with differing wall thickness

Dimensions and weights - true union with cement socket / welding socket

Dimensions in mm												Weight in kg / pc.			
				Cement socket				Welding socket				Cement socket		Welding socket	
DN	$d_{i,1}$	$d_{i,2}$	D_1	d_m	l_e	z_1	z_2	d_m	l_e	z_1	z_2	PVC-U	PVC-C	PP	PVDF
15	15	15	48	20	16	70	58	19,5	16	72	59	0,22	0,25	0,16	0,31
20	20	20	60	25	19	82	71	24,5	18	77	68	0,40	0,45	0,26	0,51
25	25	25	72	32	22	87	84	31,5	19	84	82	0,62	0,70	0,38	0,74
40	38	32	100	50	31	101	110	49,5	24	103	110	1,34	1,50	0,82	1,60
50	45	38	126	63	38	121	131	62,5	27	124	131	1,82	2,04	1,12	2,19
80	68,5	58	152	90	51	180	195	89,2	35	177	293	5,26	5,91	3,24	6,34
100	90	78	210	110	61	227	244	109,0	41	203	232	12,80	14,38	7,80	15,26

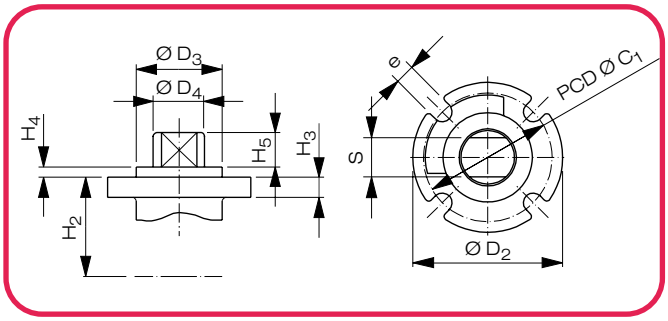
Dimensions and weights - true union with threaded socket / cement spigot

Dimensions in mm												Weight in kg / pc.				
				Threaded socket				Cement spigot				Threaded socket				Cement spigot
DN	$d_{i,1}$	$d_{i,2}$	D_1	d_g	l_g	L_g	H_{1g}	d	l_s	L_s	H_{1S}	PVC-U	PVC-C	PP	PVDF	PVC-U
15	15	15	48	Rp 1/2“	14	96	70	20	16	124	85	0,26	0,29	0,17	0,31	0,22
20	20	20	60	Rp 3/4“	16	120	83	25	19	144	102	0,43	0,47	0,29	0,51	0,40
25	25	25	72	Rp 1“	19	134	101	32	22	154	117	0,68	0,75	0,43	0,77	0,62
40	38	32	100	Rp 1 1/2“	25	168	153	50	31	194	156	1,51	1,57	0,97	1,78	1,34
50	45	38	126	Rp 2“	28	196	163	63	38	224	182	2,07	2,17	1,32	2,41	1,82
80	68,5	58	152	-	-	-	-	90	51	300	255	-	-	-	-	5,26
100	90	78	210	-	-	-	-	110	61	384	322	-	-	-	-	12,80

3/2-way ball valve type 23

Top flange dimensions (DIN EN ISO 5211) for actuator assembly

DN	Type	C1	D2	D3	D4	e	H2	H3	H4	H5	S
15	F03	36	42	25	13,5	5,5	30	6	3	8	10,5
20	F03	36	42	25	15	5,5	36,5	6	3	10	11
25	F03	36	42	25	15	5,5	43,5	6	3	10	11
40	F05	50	57	35	23	6,5	61	10	3	12	18
50	F05	50	57	35	23	6,5	72,5	10	3	12	18
80	F07	70	81	55	30	9	94	13	3	19	24
100	F10	102	116	70	40	11	126	16	3	23	34



Drive torque[1] M_A in Nm for ball movement

DN	PVC-U, PVC-C, PP, PVDF
15	2,0
20	2,5
25	3,2
40	8,0
50	10,0
80	40,0
100	80,0

[1] all values refer to the maximum differential pressure

Flow rate characteristic value[2] k_{VS} in m³/h

DN	k_{VS}
15	6,4
20	8,7
25	20
40	37
50	51
80	112
100	225

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

Working pressure[3] p_B in bar

Body material	T_B in °C	DN	
		15 - 50	80 - 100
PVC-U	0 up to 50	10	10
PVC-C	0 up to 50	10	10
	60	8	6
	80	6	4
	90	4	3
PP	-20 up to 30	10	10
	60	6	5
	80	4	3
PVDF	-20 up to 60	10	10
	80	8,5	7
	90	7,5	6
	100	6	5

[3] Definition see chapter T2 / technical information

Hydrostatic bursting pressure[4] in bar at 22 °C

DN	PVC-U
15	97
20	48
25	105
40	88
50	75
80	55
100	27

[4] all values refer to the range of allowed working pressures

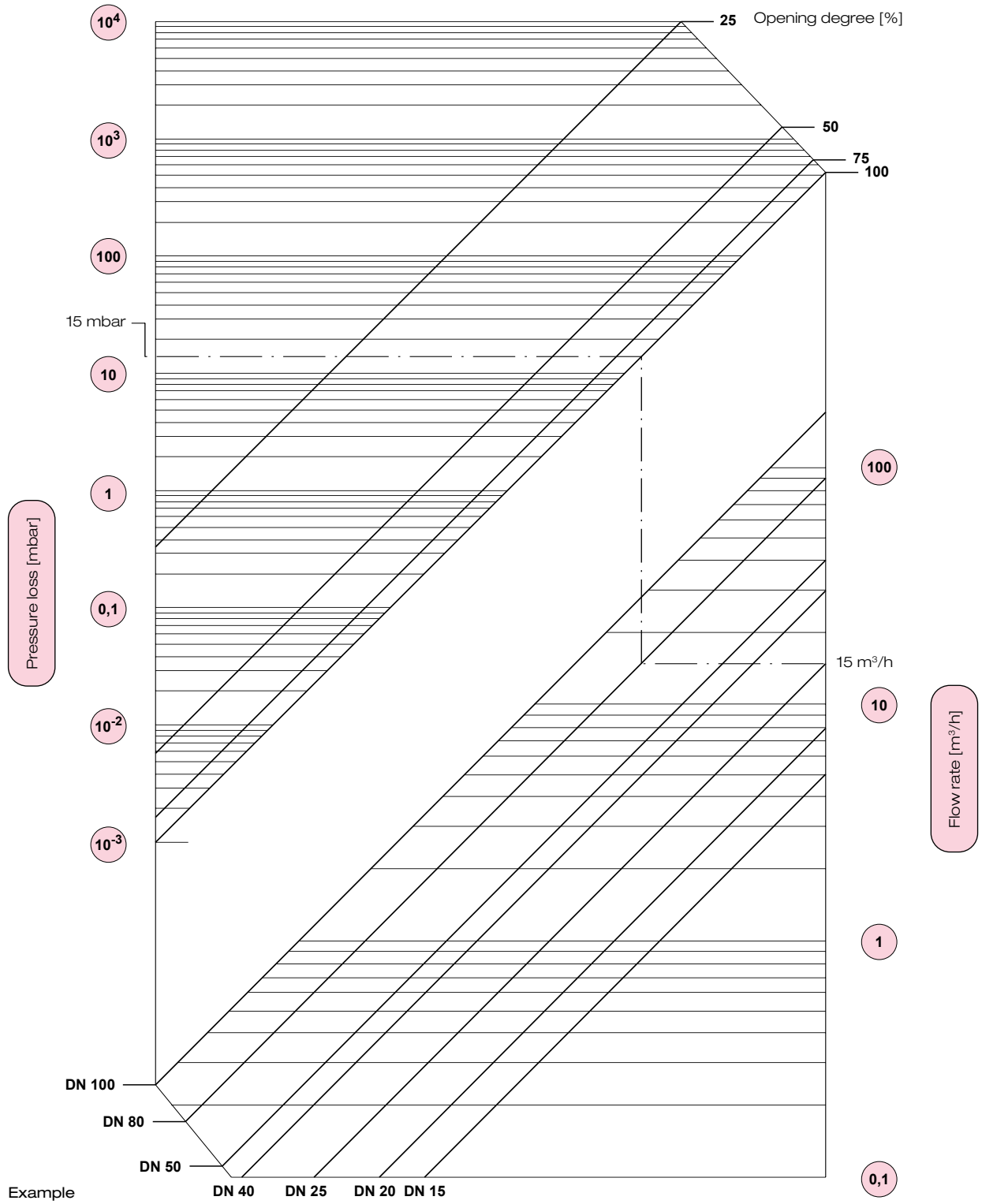
Vacuum resistance[5] in bar

DN	PVC-U, PVC-C, PP, PVDF
15 - 100	1,0

[5] all values refer to the range of allowed working pressures

3/2-way ball valve type 23

Pressure loss diagramm

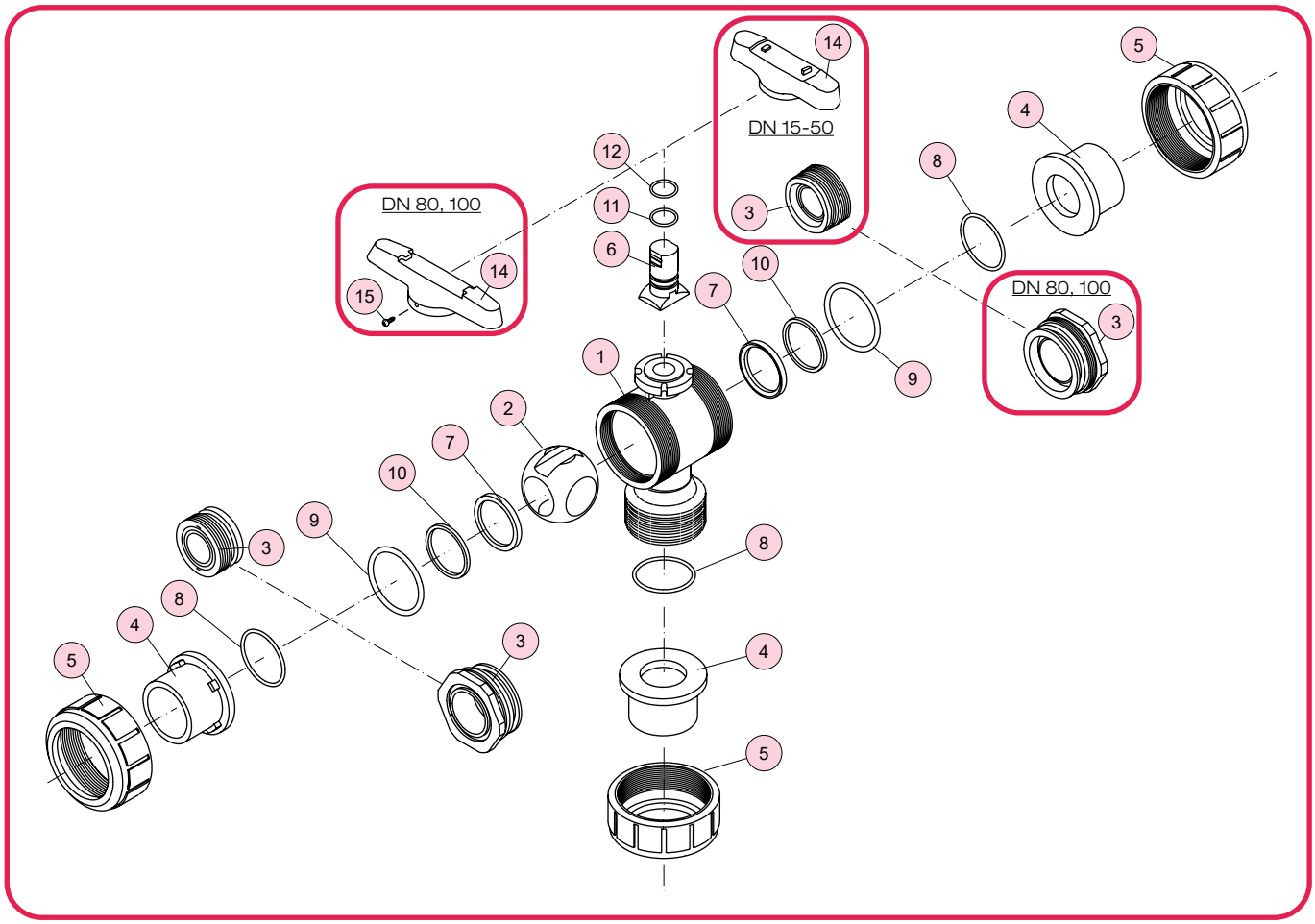


Example

Flow:	15 m³/h
Nominal size:	80 mm
Pressure loss:	100 %
Druckverlust:	15 mbar

3/2-way ball valve type 23

Maintenance and assembly instructions



all sizes

Disassembly of the valve

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

- Bring the valve in closed position. (Handle has to be in perpendicular position to pipe).
- Caution: The union nuts have to be loosened and tightened by hand or by a strap wrench. Handling by force has to be avoided.
- Loosen the union nuts **5**, disconnect the joints and remove the body **1** part from the pipe.
- DN 65 to DN 100: Loosen the handle screw **15**.
- Pull the hand lever **14** off the stem **6**. Set the handle with its cams into the carrier **3** and turn it counter-clockwise off the body **1**.
- Push the ball **2** carefully out of the body **1**.
- Push the stem **6** from the top side into the body **1** and take it out of the body.
- Take the ball seats **7** and the o-ring **10** out of the body.

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.

Attention: uneven screwing of the carriers can lead to the destruction of the fitting when actuated.

- It is important that the carriers **3** are mounted carefully into the body **1** and are tightened continuously with reasonable force.
- If necessary, apply a silicone free lubricant on the o-rings.
- Before mounting the union nuts **5** check if the handle works smoothly. If necessary, loosen or adjust the carriers to achieve smooth operation.
- 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).
- Flange connection:
  Tighten the connecting screws evenly and crosswise (observe tightening torques). In general, use washers for the nuts and bolts in plastic flanges.
- Socket and spigot type:
  Gluing and welding have to be carried out according to the relevant standards (e.g. DVS).