

U110x (B/E/C/M/R/K/L)

NB 100 – NB 4000



- ▶ **Type U110x** (B/E/C/M/R/K/L)
without vacuum support ring
- ▶ **Type U111x** (B/E/C/M/R/K/L)
with internal vacuum support ring
- ▶ **Type U112x** (B/E/C/M/R/K/L)
with embedded vacuum support ring

Type key ▶ page 20

U 1 1 0 M

- Tie rod variant
- Support ring variants
- Number of arches
- Type

Lateral expansion joint with one arch

- Design:** Highly elastic, hydrodynamic, single-arch rubber bellows with full faced rubber flanges and backing flanges with support collar and tie rods
Optionally with vacuum support ring
- Nominal diameters:** NB 100 to NB 4000, intermediate sizes possible
- Installation length:** Standard $L_E = 200$ to 500 mm (▶ page 176–181)
Other installation lengths on request
- Pressure:** Depending on the nominal diameter up to 25 bar
Vacuum-proof up to 0.8 bar absolute, with vacuum support ring up to 0.05 bar absolute
Design in accordance with Pressure Equipment Directive PED 97/23/EC
- Movement:** For lateral movements
Installation gap tolerances possible in the context of axial compression and extension (▶ page 176–181)
- Stiffness rate:** Lateral stiffness rates (▶ page 279)

Application:

Cooling water systems, desalination plants, drinking water supply, plant constructions e.g. in pipelines, on pumps, as dismantling joints, on condensers and vessels



Rubber bellows

Rubber grades			Carrier
up to 100 °C:	EPDM	Cooling water, hot water, seawater, acids, dilute chlorine compounds	Nylon fabric Polyester fabric Kevlar fabric Glass fibre fabric Steel mesh
	EPDM, drinking water approved	Drinking water	
	EPDM, white, food grade	Foodstuffs	
	EPDM, abrasion-resistant	Abrasive materials, Water-sand extraction	
	EPDM, insulating	Electrical systems construction	
	IIR	Hot water, acids, bases, gases	
	CSM	Strong acids, bases, chemicals	
	NBR	Oils, petrol, solvents, compressed air	
	NBR, bright, food grade	Oil, fatty foods	
up to 80 °C:	CR	Cooling water, slightly oily water, seawater	
up to 70 °C:	NR	Abrasive materials	
up to 150 °C:	HNBR	Oils, petrol, solvents, compressed air	
up to 180 °C:	FPM	Corrosive chemicals, petroleum distillates	
up to 200 °C:	Silicon (Q)	Air, saltwater atmosphere	
	Silicon (Q), white, food grade	Foodstuffs, medical technology	
PTFE lining:	Permanently embedded against chemical attacks on the interior at the rubber bellows, available starting at NB 300; Take the restriction on the specified movement into account (► page 176–181)		

Flanges

Design: Single-part or multi-part backing flanges with support collar, clearance holes and holder for tie rods (control unit type B, E, C, M)

Single-part or multi-part round backing flanges with support collar, clearance holes and control unit plates (control unit type R, K, L)

Flange norms: DIN, ANSI, AWWA, BS, JIS, special measurements (► page 280)

Materials: Carbon steel: 1.0038 (S235JRG2)
1.0570 (S355J2G3)
Stainless steel: 1.4301 (X5CrNi18-10)
1.4571 (X6CrNiMoTi17-12-2)
Aluminium: AlMg3
Other materials on request

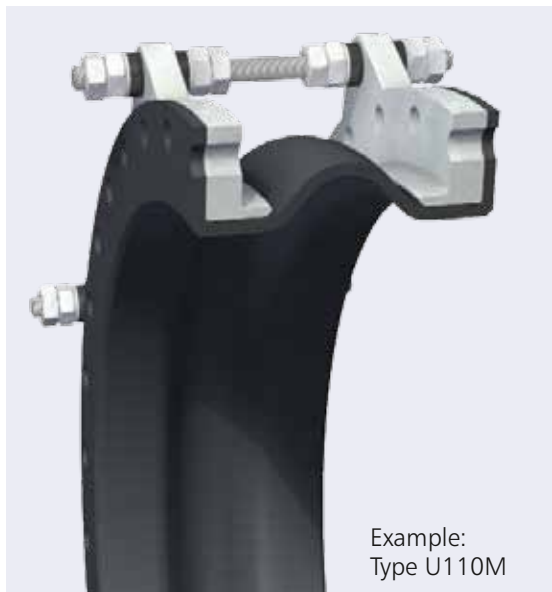
Coating: Primed, hot-dip galvanised, special paint

Optional accessories

Protective hood: UV protection cover
Ground protective cover
Fire protection cover
(► page 50)

Flow liners: Cylindrical flow liner
Conical flow liner
Telescoping flow liner
(► page 49)

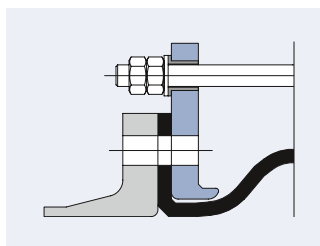
Tie rods



Design: Dimensioning according to design pressure (test pressure) based on the Pressure Equipment Directive

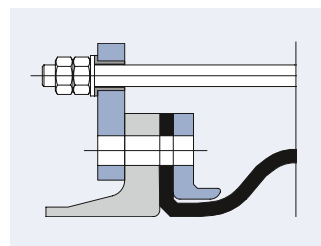
Materials: Carbon steel in strength class 8.8 or stainless steel

Coating: Spherical bearings and ball disks PTFE-coated
Tie rods galvanised or hot-dip galvanised



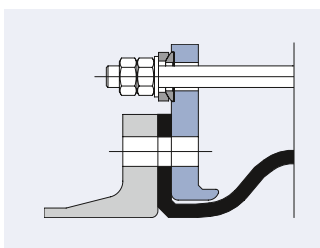
Type U110B

Tie rods mounted outside in rubber bushing to accommodate reaction forces in the event of pressure (up to NB 300)



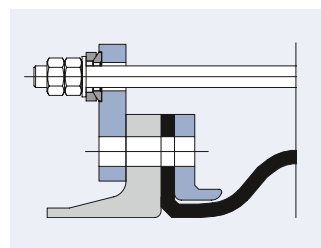
Type U110R

Control unit plates: Tie rods mounted outside in rubber bushing to accommodate reaction forces in the event of pressure (up to NB 300)



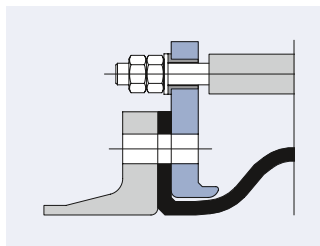
Type U110E

Tie rods mounted outside in spherical bearings and ball disks to accommodate the reaction forces in the event of pressure



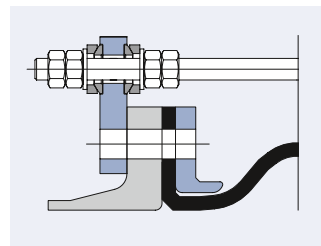
Type U110K

Control unit plates: Tie rods mounted outside in spherical bearings and ball disks to accommodate the reaction forces in the event of pressure



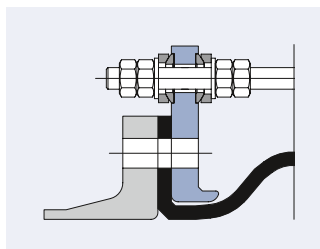
Type U110C

Tie rods mounted outside in rubber bushing and inside in the thrust limiter to accommodate stresses in the event of pressure and vacuum (up to NB 300)



Type U110L

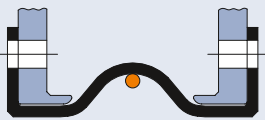
Control unit plates: Tie rods mounted outside and inside in spherical bearings and ball disks to accommodate the reaction forces in the event of pressure and vacuum



Type U110M

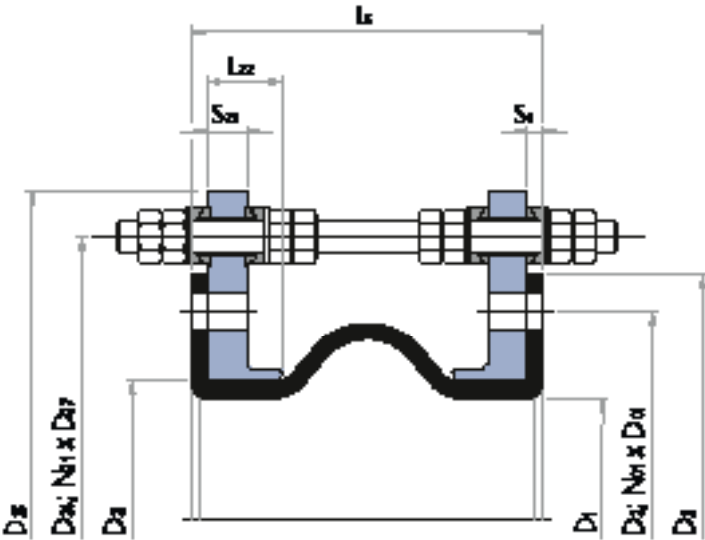
Tie rods mounted outside and inside in spherical bearings and ball disks to accommodate the reaction forces in the event of pressure and vacuum

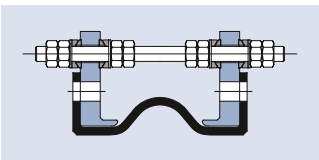
Support rings

TYPE		Vacuum support ring	Pressure	Movement
U110x (B/E/C/M/ R/K/L)		Without	Depending on the nominal diameter up to 25 bar, for vacuum up to 0.8 bar absolute	▶ page 176–177
U111x (B/E/C/M/ R/K/L)		Medium contact, inside the arch apex	Depending on the nominal diameter up to 25 bar, for vacuum up to 0.05 bar absolute	▶ page 178–179
U112x (B/E/C/M/ R/K/L)		No medium contact, embedded into the arch apex of the rubber bellows	Depending on the nominal diameter up to 25 bar, for vacuum up to 0.05 bar absolute	▶ page 180–181

Materials		
Stainless steel:	1.4301 (X5CrNi18-10) 1.4539 (X1NiCrMoCu25-20-5) 1.4571 (X6CrNiMoTi17-12-2)	Other materials on request
Carbon steel:	1.0570 (S355J2G3) rubber coated	

Planning help U110M





U110x (B/E/C/M/R/K/L)
▶ without vacuum support ring



Installation length (L _E) at design pressure															
	up to 4 bar L _E = 200 mm up to 6 bar L _E = 200 mm up to 10 bar L _E = 250 mm					up to 4 bar L _E = 200 mm up to 6 bar L _E = 250 mm up to 10 bar L _E = 300 mm					up to 4 bar L _E = 250 mm up to 6 bar L _E = 300 mm up to 10 bar L _E = 350 mm				
	higher pressures on request														
NB	Movement				A cm ²	Movement				A cm ²	Movement				A cm ²
															
	mm	mm	±mm	±°		mm	mm	±mm	±°		mm	mm	±mm	±°	
100	27	13	19	0	177	31	10	19	0	177	40	20	28	0	254
125	27	13	19	0	241	31	10	19	0	241	40	20	28	0	330
150	27	13	18	0	314	31	10	18	0	314	40	20	27	0	415
175	27	13	18	0	415	31	10	18	0	415	40	20	27	0	531
200	27	13	18	0	491	31	10	18	0	491	40	20	26	0	616
250	27	13	17	0	707	31	10	18	0	707	40	20	26	0	855
300	27	13	17	0	973	31	10	17	0	973	40	20	26	0	1,146
350	27	13	17	0	1,288	31	10	17	0	1,288	40	20	25	0	1,486
400	27	13	17	0	1,605	31	10	17	0	1,605	40	20	25	0	1,825
450	27	13	16	0	1,987	31	10	17	0	1,987	40	20	25	0	2,231
500	27	13	16	0	2,402	31	10	17	0	2,402	40	20	24	0	2,669
550						31	10	16	0	2,827	40	20	24	0	3,117
600						31	10	16	0	3,349	40	20	24	0	3,664
650						31	10	16	0	3,848	40	20	24	0	4,185
700						31	10	16	0	4,465	40	20	24	0	4,827
750						31	10	16	0	5,027	40	20	23	0	5,411
800						31	10	16	0	5,741	40	20	23	0	6,151
850						31	10	16	0	6,362	40	20	23	0	6,793
900						31	10	16	0	7,163	40	20	23	0	7,620
950						31	10	16	0	7,854	40	20	23	0	8,332
1000						31	10	16	0	8,742	40	20	23	0	9,246
1050											40	20	23	0	10,029
1100											40	20	23	0	11,047
1150											40	20	23	0	11,882
1200											40	20	22	0	12,969
1250											40	20	22	0	13,893
1300											40	20	22	0	15,066
1350											40	20	22	0	16,061
1400											40	20	22	0	17,320
1450											40	20	22	0	18,385
1500											40	20	22	0	19,731
1600											40	20	22	0	22,299
1650											40	20	22	0	23,506
1700											40	20	22	0	25,025
1800											40	20	22	0	27,937
1900											40	20	22	0	30,946
1950											40	20	22	0	32,365
2000											40	20	21	0	34,143
2100															
2200															
2250															
2300															
2400															
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2550															
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2700															
2800															
2850															
2900															
3000															
3100															
3150															
3200															
3300															
3400															
3450															
3600															
3800															
4000															

Recommended sizes
Additional possible sizes

Reduction of movement for expansion joints with PTFE lining:
axial compression: -33 %; axial extension: -66 %; lateral displacement: -50 %.
In the event of lateral displacement and simultaneous axial extension (due to installation gap tolerance) the above movements are reduced (▶ page 29). For larger movements see type U120x.

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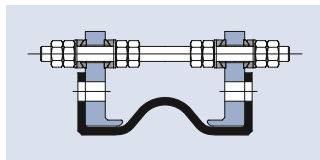


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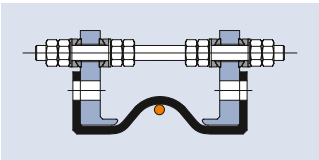
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Installation length (L _E) at design pressure															
up to 4 bar L _E = 300 mm up to 6 bar L _E = 350 mm up to 10 bar L _E = 400 mm					up to 4 bar L _E = 350 mm up to 6 bar L _E = 400 mm up to 10 bar L _E = 450 mm					up to 4 bar L _E = 400 mm up to 6 bar L _E = 450 mm up to 10 bar L _E = 500 mm					
higher pressures on request															
Movement				A	Movement				A	Movement				A	NB
															
mm	mm	± mm	± °	cm²	mm	mm	± mm	± °	cm²	mm	mm	± mm	± °	cm²	
44	20	30	0	260	53	31	39	0	353	69	43	53	0	491	100
44	20	30	0	337	53	31	39	0	441	69	43	51	0	594	125
44	20	29	0	423	53	31	38	0	539	69	43	51	0	707	150
44	20	29	0	539	53	31	37	0	670	69	43	50	0	855	175
44	20	29	0	625	53	31	37	0	765	69	43	49	0	962	200
44	20	28	0	866	53	31	36	0	1,029	69	43	48	0	1,257	250
44	20	27	0	1,158	53	31	36	0	1,346	69	43	48	0	1,605	300
44	20	27	0	1,500	53	31	35	0	1,713	69	43	47	0	2,003	350
44	20	27	0	1,840	53	31	35	0	2,075	69	43	46	0	2,393	400
44	20	26	0	2,248	53	31	34	0	2,507	69	43	46	0	2,856	450
44	20	26	0	2,688	53	31	34	0	2,971	69	43	45	0	3,349	500
44	20	26	0	3,137	53	31	34	0	3,442	69	43	45	0	3,848	550
44	20	26	0	3,685	53	31	33	0	4,015	69	43	45	0	4,453	600
44	20	26	0	4,208	53	31	33	0	4,560	69	43	44	0	5,027	650
44	20	25	0	4,852	53	31	33	0	5,230	69	43	44	0	5,728	700
44	20	25	0	5,437	53	31	33	0	5,836	69	43	44	0	6,362	750
44	20	25	0	6,179	53	31	33	0	6,604	69	43	43	0	7,163	800
44	20	25	0	6,822	53	31	32	0	7,268	69	43	43	0	7,854	850
44	20	25	0	7,651	53	31	32	0	8,123	69	43	43	0	8,742	900
44	20	25	0	8,365	53	31	32	0	8,858	69	43	43	0	9,503	950
44	20	25	0	9,280	53	31	32	0	9,799	69	43	43	0	10,477	1000
44	20	25	0	10,064	53	31	32	0	10,605	69	43	42	0	11,310	1050
44	20	24	0	11,085	53	31	32	0	11,652	69	43	42	0	12,390	1100
44	20	24	0	11,921	53	31	32	0	12,509	69	43	42	0	13,273	1150
44	20	24	0	13,009	53	31	31	0	13,623	69	43	42	0	14,420	1200
44	20	24	0	13,935	53	31	31	0	14,569	69	43	42	0	15,394	1250
44	20	24	0	15,109	53	31	31	0	15,770	69	43	42	0	16,627	1300
44	20	24	0	16,106	53	31	31	0	16,787	69	43	41	0	17,671	1350
44	20	24	0	17,366	53	31	31	0	18,074	69	43	41	0	18,991	1400
44	20	24	0	18,433	53	31	31	0	19,162	69	43	41	0	20,106	1450
44	20	24	0	19,781	53	31	31	0	20,536	69	43	41	0	21,512	1500
44	20	24	0	22,352	53	31	31	0	23,154	69	43	41	0	24,190	1600
44	20	24	0	23,561	53	31	31	0	24,384	69	43	41	0	25,447	1650
44	20	23	0	25,081	53	31	30	0	25,930	69	43	41	0	27,026	1700
44	20	23	0	27,996	53	31	30	0	28,893	69	43	40	0	30,049	1800
44	20	23	0	31,009	53	31	30	0	31,952	69	43	40	0	33,168	1900
44	20	23	0	32,429	53	31	30	0	33,394	69	43	40	0	34,636	1950
44	20	23	0	34,209	53	31	30	0	35,199	69	43	40	0	36,474	2000
44	20	23	0	37,565	53	31	30	0	38,603	69	43	40	0	39,938	2100
44	20	23	0	41,079	53	31	30	0	42,164	69	43	40	0	43,558	2200
44	20	23	0	42,712	53	31	30	0	43,818	69	43	40	0	45,239	2250
44	20	23	0	44,750	53	31	30	0	45,882	69	43	40	0	47,336	2300
44	20	23	0	48,578	53	31	29	0	49,757	69	43	39	0	51,271	2400
44	20	23	0	52,563	53	31	29	0	53,789	69	43	39	0	55,363	2500
44	20	23	0	54,408	53	31	29	0	55,655	69	43	39	0	57,256	2550
44	20	23	0	56,706	53	31	29	0	57,979	69	43	39	0	59,612	2600
44	20	23	0	61,005	53	31	29	0	62,325	69	43	39	0	64,018	2700
44	20	22	0	65,461	53	31	29	0	66,829	69	43	39	0	68,581	2800
44	20	22	0	67,518	53	31	29	0	68,906	69	43	39	0	70,686	2850
44	20	22	0	70,075	53	31	29	0	71,489	69	43	39	0	73,301	2900
44	20	22	0	74,845	53	31	29	0	76,307	69	43	39	0	78,179	3000
44	20	22	0	79,773	53	31	29	0	81,282	69	43	38	0	83,213	3100
44	20	22	0	82,041	53	31	29	0	83,571	69	43	38	0	85,530	3150
44	20	22	0	84,857	53	31	29	0	86,413	69	43	38	0	88,405	3200
44	20	22	0	90,099	53	31	29	0	91,702	69	43	38	0	93,753	3300
44	20	22	0	95,498	53	31	29	0	97,148	69	43	38	0	99,259	3400
44	20	22	0	97,979	53	31	29	0	99,650	69	43	38	0	101,788	3450
44	20	22	0	106,767	53	31	28	0	108,511	69	43	38	0	110,741	3600
44	20	22	0	118,664	53	31	28	0	120,503	69	43	38	0	122,852	3800
44	20	22	0	131,190	53	31	28	0	133,123	69	43	38	0	135,591	4000

Individual fabrication possible



U111x (B/E/C/M/R/K/L)
▶ with internal vacuum support ring

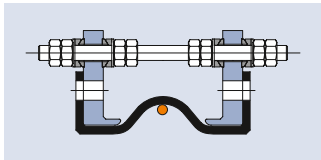


Installation length (L _E) at design pressure															
	up to 4 bar L _E = 200 mm up to 6 bar L _E = 200 mm up to 10 bar L _E = 250 mm					up to 4 bar L _E = 200 mm up to 6 bar L _E = 250 mm up to 10 bar L _E = 300 mm					up to 4 bar L _E = 250 mm up to 6 bar L _E = 300 mm up to 10 bar L _E = 350 mm				
	higher pressures on request														
NB	Movement				A cm ²	Movement				A cm ²	Movement				A cm ²
															
100	27	4	12	0	177	31	3	13	0	177	40	7	19	0	254
125	27	4	12	0	241	31	3	12	0	241	40	7	18	0	330
150	27	4	12	0	314	31	3	12	0	314	40	7	18	0	415
175	27	4	12	0	415	31	3	12	0	415	40	7	18	0	531
200	27	4	12	0	491	31	3	12	0	491	40	7	17	0	616
250	27	4	11	0	707	31	3	12	0	707	40	7	17	0	855
300	27	4	11	0	973	31	3	11	0	973	40	7	17	0	1,146
350	27	4	11	0	1,288	31	3	11	0	1,288	40	7	17	0	1,486
400	27	4	11	0	1,605	31	3	11	0	1,605	40	7	16	0	1,825
450	27	4	11	0	1,987	31	3	11	0	1,987	40	7	16	0	2,231
500	27	4	11	0	2,402	31	3	11	0	2,402	40	7	16	0	2,669
550						31	3	11	0	2,827	40	7	16	0	3,117
600						31	3	11	0	3,349	40	7	16	0	3,664
650						31	3	11	0	3,848	40	7	16	0	4,185
700						31	3	11	0	4,465	40	7	16	0	4,827
750						31	3	11	0	5,027	40	7	15	0	5,411
800						31	3	10	0	5,741	40	7	15	0	6,151
850						31	3	10	0	6,362	40	7	15	0	6,793
900						31	3	10	0	7,163	40	7	15	0	7,620
950						31	3	10	0	7,854	40	7	15	0	8,332
1000						31	3	10	0	8,742	40	7	15	0	9,246
1050											40	7	15	0	10,029
1100											40	7	15	0	11,047
1150											40	7	15	0	11,882
1200											40	7	15	0	12,969
1250											40	7	15	0	13,893
1300											40	7	15	0	15,066
1350											40	7	15	0	16,061
1400											40	7	15	0	17,320
1450											40	7	15	0	18,385
1500											40	7	15	0	19,731
1600											40	7	14	0	22,299
1650											40	7	14	0	23,506
1700											40	7	14	0	25,025
1800											40	7	14	0	27,937
1900											40	7	14	0	30,946
1950											40	7	14	0	32,365
2000											40	7	14	0	34,143
2100															
2200															
2250															
2300															
2400															
2500															
2550															
2600															
2700															
2800															
2850															
2900															
3000															
3100															
3150															
3200															
3300															
3400															
3450															
3600															
3800															
4000															

Recommended sizes
Additional possible sizes

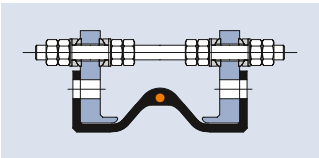
Reduction of movement for expansion joints with PTFE lining:
axial compression: -33 %; axial extension: -0 %; lateral displacement: -25 %.
In the event of lateral displacement and simultaneous axial extension (due to installation gap tolerance) the above movements are reduced (▶ page 29). For larger movements see type U121x.





Installation length (L _E) at design pressure															
up to 4 bar L _E = 300 mm up to 6 bar L _E = 350 mm up to 10 bar L _E = 400 mm					up to 4 bar L _E = 350 mm up to 6 bar L _E = 400 mm up to 10 bar L _E = 450 mm					up to 4 bar L _E = 400 mm up to 6 bar L _E = 450 mm up to 10 bar L _E = 500 mm					
higher pressures on request															
Movement				A	Movement				A	Movement				A	NB
															
mm	mm	± mm	± °	cm ²	mm	mm	± mm	± °	cm ²	mm	mm	± mm	± °	cm ²	
44	7	20	0	260	53	10	26	0	353	69	14	35	0	491	100
44	7	20	0	337	53	10	25	0	441	69	14	34	0	594	125
44	7	19	0	423	53	10	25	0	539	69	14	33	0	707	150
44	7	19	0	539	53	10	25	0	670	69	14	33	0	855	175
44	7	19	0	625	53	10	24	0	765	69	14	33	0	962	200
44	7	18	0	866	53	10	24	0	1,029	69	14	32	0	1,257	250
44	7	18	0	1,158	53	10	24	0	1,346	69	14	31	0	1,605	300
44	7	18	0	1,500	53	10	23	0	1,713	69	14	31	0	2,003	350
44	7	18	0	1,840	53	10	23	0	2,075	69	14	31	0	2,393	400
44	7	17	0	2,248	53	10	23	0	2,507	69	14	30	0	2,856	450
44	7	17	0	2,688	53	10	22	0	2,971	69	14	30	0	3,349	500
44	7	17	0	3,137	53	10	22	0	3,442	69	14	30	0	3,848	550
44	7	17	0	3,685	53	10	22	0	4,015	69	14	29	0	4,453	600
44	7	17	0	4,208	53	10	22	0	4,560	69	14	29	0	5,027	650
44	7	17	0	4,852	53	10	22	0	5,230	69	14	29	0	5,728	700
44	7	17	0	5,437	53	10	22	0	5,836	69	14	29	0	6,362	750
44	7	17	0	6,179	53	10	22	0	6,604	69	14	29	0	7,163	800
44	7	16	0	6,822	53	10	21	0	7,268	69	14	29	0	7,854	850
44	7	16	0	7,651	53	10	21	0	8,123	69	14	28	0	8,742	900
44	7	16	0	8,365	53	10	21	0	8,858	69	14	28	0	9,503	950
44	7	16	0	9,280	53	10	21	0	9,799	69	14	28	0	10,477	1000
44	7	16	0	10,064	53	10	21	0	10,605	69	14	28	0	11,310	1050
44	7	16	0	11,085	53	10	21	0	11,652	69	14	28	0	12,390	1100
44	7	16	0	11,921	53	10	21	0	12,509	69	14	28	0	13,273	1150
44	7	16	0	13,009	53	10	21	0	13,623	69	14	28	0	14,420	1200
44	7	16	0	13,935	53	10	21	0	14,569	69	14	28	0	15,394	1250
44	7	16	0	15,109	53	10	21	0	15,770	69	14	27	0	16,627	1300
44	7	16	0	16,106	53	10	21	0	16,787	69	14	27	0	17,671	1350
44	7	16	0	17,366	53	10	20	0	18,074	69	14	27	0	18,991	1400
44	7	16	0	18,433	53	10	20	0	19,162	69	14	27	0	20,106	1450
44	7	16	0	19,781	53	10	20	0	20,536	69	14	27	0	21,512	1500
44	7	16	0	22,352	53	10	20	0	23,154	69	14	27	0	24,190	1600
44	7	16	0	23,561	53	10	20	0	24,384	69	14	27	0	25,447	1650
44	7	15	0	25,081	53	10	20	0	25,930	69	14	27	0	27,026	1700
44	7	15	0	27,996	53	10	20	0	28,893	69	14	27	0	30,049	1800
44	7	15	0	31,009	53	10	20	0	31,952	69	14	27	0	33,168	1900
44	7	15	0	32,429	53	10	20	0	33,394	69	14	26	0	34,636	1950
44	7	15	0	34,209	53	10	20	0	35,199	69	14	26	0	36,474	2000
44	7	15	0	37,565	53	10	20	0	38,603	69	14	26	0	39,938	2100
44	7	15	0	41,079	53	10	20	0	42,164	69	14	26	0	43,558	2200
44	7	15	0	42,712	53	10	20	0	43,818	69	14	26	0	45,239	2250
44	7	15	0	44,750	53	10	20	0	45,882	69	14	26	0	47,336	2300
44	7	15	0	48,578	53	10	19	0	49,757	69	14	26	0	51,271	2400
44	7	15	0	52,563	53	10	19	0	53,789	69	14	26	0	55,363	2500
44	7	15	0	54,408	53	10	19	0	55,655	69	14	26	0	57,256	2550
44	7	15	0	56,706	53	10	19	0	57,979	69	14	26	0	59,612	2600
44	7	15	0	61,005	53	10	19	0	62,325	69	14	26	0	64,018	2700
44	7	15	0	65,461	53	10	19	0	66,829	69	14	26	0	68,581	2800
44	7	15	0	67,518	53	10	19	0	68,906	69	14	26	0	70,686	2850
44	7	15	0	70,075	53	10	19	0	71,489	69	14	26	0	73,301	2900
44	7	15	0	74,845	53	10	19	0	76,307	69	14	25	0	78,179	3000
44	7	15	0	79,773	53	10	19	0	81,282	69	14	25	0	83,213	3100
44	7	15	0	82,041	53	10	19	0	83,571	69	14	25	0	85,530	3150
44	7	15	0	84,857	53	10	19	0	86,413	69	14	25	0	88,405	3200
44	7	15	0	90,099	53	10	19	0	91,702	69	14	25	0	93,753	3300
44	7	15	0	95,498	53	10	19	0	97,148	69	14	25	0	99,259	3400
44	7	15	0	97,979	53	10	19	0	99,650	69	14	25	0	101,788	3450
44	7	14	0	106,767	53	10	19	0	108,511	69	14	25	0	110,741	3600
44	7	14	0	118,664	53	10	19	0	120,503	69	14	25	0	122,852	3800
44	7	14	0	131,190	53	10	19	0	133,123	69	14	25	0	135,591	4000

Individual fabrication possible



U112x (B/E/C/M/R/K/L)
▶ with embedded vacuum support ring

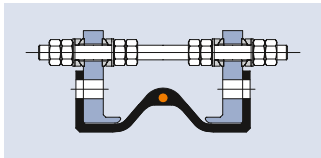


Installation length (L _E) at design pressure															
	up to 4 bar L _E = 200 mm up to 6 bar L _E = 200 mm up to 10 bar L _E = 250 mm					up to 4 bar L _E = 200 mm up to 6 bar L _E = 250 mm up to 10 bar L _E = 300 mm					up to 4 bar L _E = 250 mm up to 6 bar L _E = 300 mm up to 10 bar L _E = 350 mm				
	higher pressures on request														
NB	Movement				A cm ²	Movement				A cm ²	Movement				A cm ²
															
100	18	4	9	0	177	20	3	10	0	177	26	7	14	0	254
125	18	4	9	0	241	20	3	9	0	241	26	7	14	0	330
150	18	4	9	0	314	20	3	9	0	314	26	7	14	0	415
175	18	4	9	0	415	20	3	9	0	415	26	7	13	0	531
200	18	4	9	0	491	20	3	9	0	491	26	7	13	0	616
250	18	4	9	0	707	20	3	9	0	707	26	7	13	0	855
300	18	4	9	0	973	20	3	9	0	973	26	7	13	0	1,146
350	18	4	8	0	1,288	20	3	9	0	1,288	26	7	13	0	1,486
400	18	4	8	0	1,605	20	3	8	0	1,605	26	7	12	0	1,825
450	18	4	8	0	1,987	20	3	8	0	1,987	26	7	12	0	2,231
500	18	4	8	0	2,402	20	3	8	0	2,402	26	7	12	0	2,669
550						20	3	8	0	2,827	26	7	12	0	3,117
600						20	3	8	0	3,349	26	7	12	0	3,664
650						20	3	8	0	3,848	26	7	12	0	4,185
700						20	3	8	0	4,465	26	7	12	0	4,827
750						20	3	8	0	5,027	26	7	12	0	5,411
800						20	3	8	0	5,741	26	7	12	0	6,151
850						20	3	8	0	6,362	26	7	12	0	6,793
900						20	3	8	0	7,163	26	7	12	0	7,620
950						20	3	8	0	7,854	26	7	11	0	8,332
1000						20	3	8	0	8,742	26	7	11	0	9,246
1050											26	7	11	0	10,029
1100											26	7	11	0	11,047
1150											26	7	11	0	11,882
1200											26	7	11	0	12,969
1250											26	7	11	0	13,893
1300											26	7	11	0	15,066
1350											26	7	11	0	16,061
1400											26	7	11	0	17,320
1450											26	7	11	0	18,385
1500											26	7	11	0	19,731
1600											26	7	11	0	22,299
1650											26	7	11	0	23,506
1700											26	7	11	0	25,025
1800											26	7	11	0	27,937
1900											26	7	11	0	30,946
1950											26	7	11	0	32,365
2000											26	7	11	0	34,143
2100															
2200															
2250															
2300															
2400															
2500															
2550															
2600															
2700															
2800															
2850															
2900															
3000															
3100															
3150															
3200															
3300															
3400															
3450															
3600															
3800															
4000															

Recommended sizes
Additional possible sizes

Reduction of movement for expansion joints with PTFE lining:
axial compression: -0 %; axial extension: -0 %; lateral displacement: -0 %.
In the event of lateral displacement and simultaneous axial extension (due to installation gap tolerance) the above movements are reduced (▶ page 29). For larger movements see type U122x.





Installation length (L _E) at design pressure															
up to 4 bar L _E = 300 mm up to 6 bar L _E = 350 mm up to 10 bar L _E = 400 mm					up to 4 bar L _E = 350 mm up to 6 bar L _E = 400 mm up to 10 bar L _E = 450 mm					up to 4 bar L _E = 400 mm up to 6 bar L _E = 450 mm up to 10 bar L _E = 500 mm					
higher pressures on request															
Movement				A	Movement				A	Movement				A	NB
															
mm	mm	± mm	± °	cm²	mm	mm	± mm	± °	cm²	mm	mm	± mm	± °	cm²	
29	7	15	0	260	35	10	20	0	353	46	14	26	0	491	100
29	7	15	0	337	35	10	19	0	441	46	14	26	0	594	125
29	7	15	0	423	35	10	19	0	539	46	14	25	0	707	150
29	7	14	0	539	35	10	19	0	670	46	14	25	0	855	175
29	7	14	0	625	35	10	18	0	765	46	14	25	0	962	200
29	7	14	0	866	35	10	18	0	1,029	46	14	24	0	1,257	250
29	7	14	0	1,158	35	10	18	0	1,346	46	14	24	0	1,605	300
29	7	14	0	1,500	35	10	18	0	1,713	46	14	23	0	2,003	350
29	7	13	0	1,840	35	10	17	0	2,075	46	14	23	0	2,393	400
29	7	13	0	2,248	35	10	17	0	2,507	46	14	23	0	2,856	450
29	7	13	0	2,688	35	10	17	0	2,971	46	14	23	0	3,349	500
29	7	13	0	3,137	35	10	17	0	3,442	46	14	22	0	3,848	550
29	7	13	0	3,685	35	10	17	0	4,015	46	14	22	0	4,453	600
29	7	13	0	4,208	35	10	17	0	4,560	46	14	22	0	5,027	650
29	7	13	0	4,852	35	10	16	0	5,230	46	14	22	0	5,728	700
29	7	13	0	5,437	35	10	16	0	5,836	46	14	22	0	6,362	750
29	7	13	0	6,179	35	10	16	0	6,604	46	14	22	0	7,163	800
29	7	12	0	6,822	35	10	16	0	7,268	46	14	22	0	7,854	850
29	7	12	0	7,651	35	10	16	0	8,123	46	14	22	0	8,742	900
29	7	12	0	8,365	35	10	16	0	8,858	46	14	21	0	9,503	950
29	7	12	0	9,280	35	10	16	0	9,799	46	14	21	0	10,477	1000
29	7	12	0	10,064	35	10	16	0	10,605	46	14	21	0	11,310	1050
29	7	12	0	11,085	35	10	16	0	11,652	46	14	21	0	12,390	1100
29	7	12	0	11,921	35	10	16	0	12,509	46	14	21	0	13,273	1150
29	7	12	0	13,009	35	10	16	0	13,623	46	14	21	0	14,420	1200
29	7	12	0	13,935	35	10	16	0	14,569	46	14	21	0	15,394	1250
29	7	12	0	15,109	35	10	16	0	15,770	46	14	21	0	16,627	1300
29	7	12	0	16,106	35	10	16	0	16,787	46	14	21	0	17,671	1350
29	7	12	0	17,366	35	10	15	0	18,074	46	14	21	0	18,991	1400
29	7	12	0	18,433	35	10	15	0	19,162	46	14	21	0	20,106	1450
29	7	12	0	19,781	35	10	15	0	20,536	46	14	21	0	21,512	1500
29	7	12	0	22,352	35	10	15	0	23,154	46	14	20	0	24,190	1600
29	7	12	0	23,561	35	10	15	0	24,384	46	14	20	0	25,447	1650
29	7	12	0	25,081	35	10	15	0	25,930	46	14	20	0	27,026	1700
29	7	12	0	27,996	35	10	15	0	28,893	46	14	20	0	30,049	1800
29	7	12	0	31,009	35	10	15	0	31,952	46	14	20	0	33,168	1900
29	7	12	0	32,429	35	10	15	0	33,394	46	14	20	0	34,636	1950
29	7	12	0	34,209	35	10	15	0	35,199	46	14	20	0	36,474	2000
29	7	12	0	37,565	35	10	15	0	38,603	46	14	20	0	39,938	2100
29	7	11	0	41,079	35	10	15	0	42,164	46	14	20	0	43,558	2200
29	7	11	0	42,712	35	10	15	0	43,818	46	14	20	0	45,239	2250
29	7	11	0	44,750	35	10	15	0	45,882	46	14	20	0	47,336	2300
29	7	11	0	48,578	35	10	15	0	49,757	46	14	20	0	51,271	2400
29	7	11	0	52,563	35	10	15	0	53,789	46	14	20	0	55,363	2500
29	7	11	0	54,408	35	10	15	0	55,655	46	14	20	0	57,256	2550
29	7	11	0	56,706	35	10	15	0	57,979	46	14	20	0	59,612	2600
29	7	11	0	61,005	35	10	15	0	62,325	46	14	19	0	64,018	2700
29	7	11	0	65,461	35	10	15	0	66,829	46	14	19	0	68,581	2800
29	7	11	0	67,518	35	10	15	0	68,906	46	14	19	0	70,686	2850
29	7	11	0	70,075	35	10	14	0	71,489	46	14	19	0	73,301	2900
29	7	11	0	74,845	35	10	14	0	76,307	46	14	19	0	78,179	3000
29	7	11	0	79,773	35	10	14	0	81,282	46	14	19	0	83,213	3100
29	7	11	0	82,041	35	10	14	0	83,571	46	14	19	0	85,530	3150
29	7	11	0	84,857	35	10	14	0	86,413	46	14	19	0	88,405	3200
29	7	11	0	90,099	35	10	14	0	91,702	46	14	19	0	93,753	3300
29	7	11	0	95,498	35	10	14	0	97,148	46	14	19	0	99,259	3400
29	7	11	0	97,979	35	10	14	0	99,650	46	14	19	0	101,788	3450
29	7	11	0	106,767	35	10	14	0	108,511	46	14	19	0	110,741	3600
29	7	11	0	118,664	35	10	14	0	120,503	46	14	19	0	122,852	3800
29	7	11	0	131,190	35	10	14	0	133,123	46	14	19	0	135,591	4000

Individual fabrication possible