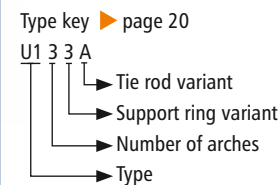


## U130A U140A U150A

NB 100 – NB 4000



- ▶ **Type U130A U140A U150A**  
without vacuum support rings
- ▶ **Type U131A U141A U151A**  
with internal vacuum support rings
- ▶ **Type U132A U142A U152A**  
with embedded vacuum support rings
- ▶ **Type U133A U143A U153A**  
without vacuum support rings,  
with pressure support rings in the arch  
trough
- ▶ **Type U134A U144A U154A**  
with inner vacuum support rings,  
with pressure support rings in the arch  
trough
- ▶ **Type U135A U145A U155A**  
with embedded vacuum support rings,  
with pressure support rings in the arch  
trough



## Universal expansion joint with three or more arches

- Design:** Highly elastic, hydrodynamic, triple or more arched rubber bellows with full faced rubber flanges and backing flanges with support collar  
Optionally with vacuum support rings and/or pressure support rings in the arch trough
- Nominal diameters:** NB 100 to NB 4000, intermediate sizes possible
- Installation length/ Arches:**  
Standard  $L_E = 650$  with 3 arches, type U130A (▶ p. 82–84)  
Standard  $L_E = 850$  with 4 arches, type U140A (▶ p. 82–84)  
Standard  $L_E = 1050$  with 5 arches, type U150A (▶ p. 82–84)  
Other installation lengths on request
- Pressure:** Depending on the nominal diameter up to 6 bar  
Vacuum not allowed without vacuum support rings, with vacuum support rings up to 0.05 bar absolute. Design in accordance with Pressure Equipment Directive PED 97/23/EC
- Movement:** For extremely large axial, lateral and angular movements (▶ page 82–84)

### Application:

Cooling water systems, desalination plants, drinking water supply, plant construction, 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 of the listed movement into account (▶ page 82–84)		






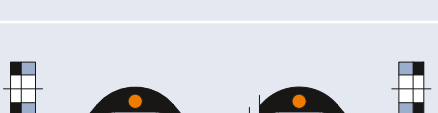
## Flanges

<b>Design:</b>	Single-part or multi-part, round backing flanges with support collars and clearance holes
<b>Flange norms:</b>	DIN, ANSI, AWWA, BS, JIS, special measurements (▶ page 280)
<b>Materials:</b>	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
<b>Coating:</b>	Primed, hot-dip galvanised, special paint

## Optional accessories

<b>Protective hood:</b>	UV protection cover Ground protective cover Fire protection cover (▶ page 50)
<b>Flow liners:</b>	Cylindrical flow liner Conical flow liner Telescoping flow liner (▶ page 49)

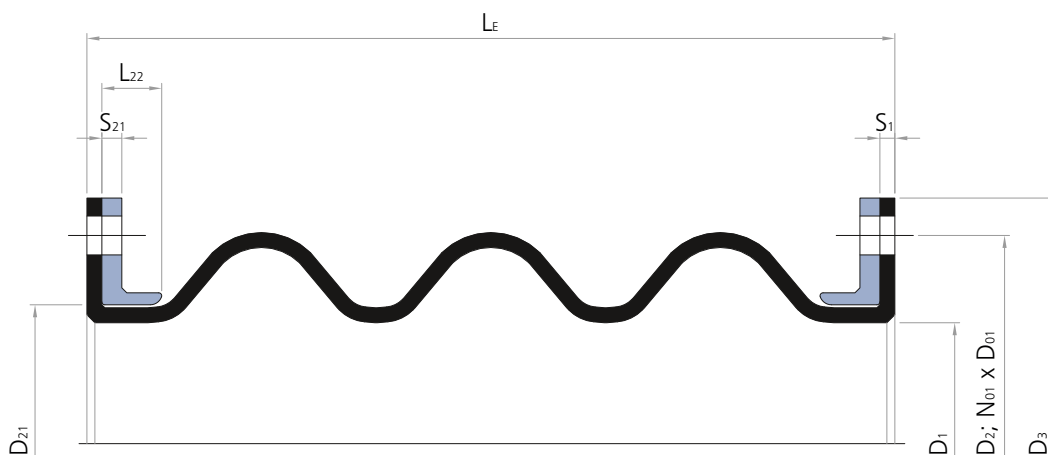
## Support rings

TYPE		Vacuum support ring	Pressure support ring	Pressure	Movement
U130A U140A U150A		Without	Without	Slight pressure, slight vacuum	▶ page 82
U131A U141A U151A		Medium contact, inside the arch apex	Without	Slight pressure, for vacuum up to 0.05 bar absolute	▶ page 83
U132A U142A U152A		No medium contact, embedded into the arch apex of the rubber bellows	Without	Slight pressure, for vacuum up to 0.05 bar absolute	▶ page 84
U133A U143A U153A		Without	External in the arch trough	Depending on the nominal diameter up to 6 bar, slight vacuum	▶ page 82
U134A U144A U154A		Medium contact, inside the arch apex	External in the arch trough	Depending on the nominal diameter up to 6 bar, for vacuum up to 0.05 bar absolute	▶ page 83
U135A U145A U155A		No medium contact, embedded into the arch apex of the rubber bellows	External in the arch trough	Depending on the nominal diameter up to 6 bar, for vacuum up to 0.05 bar absolute	▶ page 84

### Materials

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

### Planning help U130A





Universal expansion joint, type U130A  
for a slag pipe in a steel mill  
NB 500, 0.5 bar



**U130A U140A U150A**

▶ without vacuum support rings



**HENNLICH**



**U133A U143A U153A**

▶ without vacuum support rings, with pressure support rings in the arch trough

Installation length (L <sub>E</sub> ) at design pressure															
NB	up to 6 bar L <sub>E</sub> = 650 mm – U130A U133A					up to 6 bar L <sub>E</sub> = 850 mm – U140A U143A					up to 6 bar L <sub>E</sub> = 1,050 mm – U150A U153A				
	Movement				A	Movement				A	Movement				A
	mm	mm	±mm	±°	cm <sup>2</sup>	mm	mm	±mm	±°	cm <sup>2</sup>	mm	mm	±mm	mm	cm <sup>2</sup>
100	159	92	118	61.5	353	212	123	158	67.9	353	265	154	197	72.0	353
125	159	92	116	55.8	441	212	123	154	63.1	441	265	154	193	67.9	441
150	159	92	114	50.8	539	212	123	152	58.6	539	265	154	190	64.0	539
175	159	92	112	46.4	670	212	123	150	54.6	670	265	154	187	60.4	670
200	159	92	111	42.6	765	212	123	148	50.9	765	265	154	185	57.0	765
250	159	92	109	36.4	1,029	212	123	145	44.5	1,029	265	154	181	50.9	1,029
300	159	92	107	31.5	1,346	212	123	143	39.4	1,346	265	154	178	45.8	1,346
350	159	92	105	27.7	1,713	212	123	141	35.1	1,713	265	154	176	41.3	1,713
400	159	92	104	24.7	2,075	212	123	139	31.6	2,075	265	154	174	37.6	2,075
450	159	92	103	22.2	2,507	212	123	137	28.7	2,507	265	154	172	34.4	2,507
500	159	92	102	20.2	2,971	212	123	136	26.2	2,971	265	154	170	31.6	2,971
550	159	92	101	18.5	3,442	212	123	135	24.1	3,442	265	154	169	29.2	3,442
600	159	92	100	17.0	4,015	212	123	134	22.3	4,015	265	154	167	27.2	4,015
650	159	92	100	15.8	4,560	212	123	133	20.7	4,560	265	154	166	25.4	4,560
700	159	92	99	14.7	5,230	212	123	132	19.4	5,230	265	154	165	23.7	5,230
750	159	92	98	13.8	5,836	212	123	131	18.2	5,836	265	154	164	22.3	5,836
800	159	92	98	13.0	6,604	212	123	130	17.1	6,604	265	154	163	21.1	6,604
850	159	92	97	12.2	7,268	212	123	130	16.1	7,268	265	154	162	19.9	7,268
900	159	92	97	11.6	8,123	212	123	129	15.3	8,123	265	154	161	18.9	8,123
950	159	92	96	11.0	8,858	212	123	128	14.5	8,858	265	154	160	18.0	8,858
1000	159	92	96	10.4	9,799	212	123	128	13.8	9,799	265	154	160	17.1	9,799
1050	159	92	95	9.9	10,605	212	123	127	13.2	10,605	265	154	159	16.3	10,605
1100	159	92	95	9.5	11,652	212	123	127	12.6	11,652	265	154	158	15.6	11,652
1150	159	92	95	9.1	12,509	212	123	126	12.1	12,509	265	154	158	15.0	12,509
1200	159	92	94	8.7	13,623	212	123	126	11.6	13,623	265	154	157	14.4	13,623
1250	159	92	94	8.4	14,569	212	123	125	11.1	14,569	265	154	156	13.8	14,569
1300	159	92	94	8.1	15,770	212	123	125	10.7	15,770	265	154	156	13.3	15,770
1350	159	92	93	7.8	16,787	212	123	124	10.3	16,787	265	154	155	12.9	16,787
1400	159	92	93	7.5	18,074	212	123	124	10.0	18,074	265	154	155	12.4	18,074
1450	159	92	93	7.2	19,162	212	123	124	9.6	19,162	265	154	154	12.0	19,162
1500	159	92	92	7.0	20,536	212	123	123	9.3	20,536	265	154	154	11.6	20,536
1600	159	92	92	6.6	23,154	212	123	122	8.7	23,154	265	154	153	10.9	23,154
1650	159	92	92	6.4	24,384	212	123	122	8.5	24,384	265	154	153	10.6	24,384
1700	159	92	91	6.2	25,930	212	123	122	8.2	25,930	265	154	152	10.3	25,930
1800	159	92	91	5.8	28,893	212	123	121	7.8	28,893	265	154	151	9.7	28,893
1900	159	92	90	5.5	31,952	212	123	121	7.4	31,952	265	154	151	9.2	31,952
1950	159	92	90	5.4	33,394	212	123	120	7.2	33,394	265	154	150	9.0	33,394
2000	159	92	90	5.3	35,199	212	123	120	7.0	35,199	265	154	150	8.8	35,199
2100	159	92	90	5.0	38,603	212	123	119	6.7	38,603	265	154	149	8.3	38,603
2200	159	92	89	4.8	42,164	212	123	119	6.4	42,164	265	154	149	8.0	42,164
2250	159	92	89	4.7	43,818	212	123	119	6.2	43,818	265	154	148	7.8	43,818
2300	159	92	89	4.6	45,882	212	123	118	6.1	45,882	265	154	148	7.6	45,882
2400	159	92	88	4.4	49,757	212	123	118	5.9	49,757	265	154	147	7.3	49,757
2500	159	92	88	4.2	53,789	212	123	118	5.6	53,789	265	154	147	7.0	53,789
2550	159	92	88	4.1	55,655	212	123	117	5.5	55,655	265	154	147	6.9	55,655
2600	159	92	88	4.0	57,979	212	123	117	5.4	57,979	265	154	146	6.8	57,979
2700	159	92	88	3.9	62,325	212	123	117	5.2	62,325	265	154	146	6.5	62,325
2800	159	92	87	3.8	66,829	212	123	116	5.0	66,829	265	154	145	6.3	66,829
2850	159	92	87	3.7	68,906	212	123	116	4.9	68,906	265	154	145	6.2	68,906
2900	159	92	87	3.6	71,489	212	123	116	4.8	71,489	265	154	145	6.1	71,489
3000	159	92	87	3.5	76,307	212	123	116	4.7	76,307	265	154	145	5.9	76,307
3100	159	92	86	3.4	81,282	212	123	115	4.5	81,282	265	154	144	5.7	81,282
3150	159	92	86	3.3	83,571	212	123	115	4.5	83,571	265	154	144	5.6	83,571
3200	159	92	86	3.3	86,413	212	123	115	4.4	86,413	265	154	144	5.5	86,413
3300	159	92	86	3.2	91,702	212	123	115	4.3	91,702	265	154	143	5.3	91,702
3400	159	92	86	3.1	97,148	212	123	114	4.1	97,148	265	154	143	5.2	97,148
3450	159	92	86	3.1	99,650	212	123	114	4.1	99,650	265	154	143	5.1	99,650
3600	159	92	85	2.9	108,511	212	123	114	3.9	108,511	265	154	142	4.9	108,511
3800	159	92	85	2.8	120,503	212	123	113	3.7	120,503	265	154	141	4.6	120,503
4000	159	92	84	2.6	133,123	212	123	113	3.5	133,123	265	154	141	4.4	133,123

Reduction of movement for expansion joints with PTFE lining: axial compression: -33 %; axial extension: -66 %; lateral displacement: -50 %; angular movement: -66 %. Angular movement only possible with guided pressure support ring.

In the event of axial extension and simultaneous lateral displacement the above movements are reduced (▶ page 29). Larger movements on request.

**Individual fabrication possible**



**Installation length (L<sub>E</sub>) at design pressure**

up to 6 bar L <sub>E</sub> = 650 mm – U131A U134A					up to 6 bar L <sub>E</sub> = 850 mm – U141A U144A					up to 6 bar L <sub>E</sub> = 1,050 mm – U151A U154A					NB
higher pressures on request															
Movement		A		Movement				A				Movement		A	
mm	°	± mm	± °	cm <sup>2</sup>	mm	mm	± mm	± °	cm <sup>2</sup>	mm	mm	± mm	± °	cm <sup>2</sup>	
159	30	78	31.0	353	212	41	104	39.4	353	265	51	130	45.6	353	100
159	30	76	25.6	441	212	41	102	33.3	441	265	51	127	39.2	441	125
159	30	75	21.8	539	212	41	100	28.7	539	265	51	125	34.2	539	150
159	30	74	18.9	670	212	41	99	25.1	670	265	51	123	30.2	670	175
159	30	73	16.7	765	212	41	98	22.3	765	265	51	122	27.0	765	200
159	30	72	13.5	1,029	212	41	96	18.2	1,029	265	51	120	22.2	1,029	250
159	30	71	11.3	1,346	212	41	94	15.3	1,346	265	51	118	18.8	1,346	300
159	30	70	9.7	1,713	212	41	93	13.2	1,713	265	51	116	16.2	1,713	350
159	30	69	8.5	2,075	212	41	92	11.6	2,075	265	51	115	14.3	2,075	400
159	30	68	7.6	2,507	212	41	91	10.3	2,507	265	51	113	12.8	2,507	450
159	30	67	6.8	2,971	212	41	90	9.3	2,971	265	51	112	11.5	2,971	500
159	30	67	6.2	3,442	212	41	89	8.5	3,442	265	51	111	10.5	3,442	550
159	30	66	5.7	4,015	212	41	88	7.8	4,015	265	51	110	9.6	4,015	600
159	30	66	5.3	4,560	212	41	88	7.2	4,560	265	51	110	8.9	4,560	650
159	30	65	4.9	5,230	212	41	87	6.7	5,230	265	51	109	8.3	5,230	700
159	30	65	4.6	5,836	212	41	87	6.2	5,836	265	51	108	7.7	5,836	750
159	30	65	4.3	6,604	212	41	86	5.9	6,604	265	51	108	7.3	6,604	800
159	30	64	4.0	7,268	212	41	86	5.5	7,268	265	51	107	6.8	7,268	850
159	30	64	3.8	8,123	212	41	85	5.2	8,123	265	51	106	6.5	8,123	900
159	30	64	3.6	8,858	212	41	85	4.9	8,858	265	51	106	6.1	8,858	950
159	30	63	3.4	9,799	212	41	84	4.7	9,799	265	51	105	5.8	9,799	1000
159	30	63	3.3	10,605	212	41	84	4.5	10,605	265	51	105	5.5	10,605	1050
159	30	63	3.1	11,652	212	41	84	4.3	11,652	265	51	104	5.3	11,652	1100
159	30	62	3.0	12,509	212	41	83	4.1	12,509	265	51	104	5.1	12,509	1150
159	30	62	2.9	13,623	212	41	83	3.9	13,623	265	51	104	4.9	13,623	1200
159	30	62	2.7	14,569	212	41	83	3.8	14,569	265	51	103	4.7	14,569	1250
159	30	62	2.6	15,770	212	41	82	3.6	15,770	265	51	103	4.5	15,770	1300
159	30	62	2.5	16,787	212	41	82	3.5	16,787	265	51	103	4.3	16,787	1350
159	30	61	2.5	18,074	212	41	82	3.4	18,074	265	51	102	4.2	18,074	1400
159	30	61	2.4	19,162	212	41	82	3.2	19,162	265	51	102	4.0	19,162	1450
159	30	61	2.3	20,536	212	41	81	3.1	20,536	265	51	102	3.9	20,536	1500
159	30	61	2.1	23,154	212	41	81	2.9	23,154	265	51	101	3.6	23,154	1600
159	30	60	2.1	24,384	212	41	81	2.8	24,384	265	51	101	3.5	24,384	1650
159	30	60	2.0	25,930	212	41	80	2.8	25,930	265	51	100	3.4	25,930	1700
159	30	60	1.9	28,893	212	41	80	2.6	28,893	265	51	100	3.2	28,893	1800
159	30	60	1.8	31,952	212	41	80	2.5	31,952	265	51	99	3.1	31,952	1900
159	30	60	1.8	33,394	212	41	79	2.4	33,394	265	51	99	3.0	33,394	1950
159	30	59	1.7	35,199	212	41	79	2.3	35,199	265	51	99	2.9	35,199	2000
159	30	59	1.6	38,603	212	41	79	2.2	38,603	265	51	99	2.8	38,603	2100
159	30	59	1.6	42,164	212	41	78	2.1	42,164	265	51	98	2.7	42,164	2200
159	30	59	1.5	43,818	212	41	78	2.1	43,818	265	51	98	2.6	43,818	2250
159	30	59	1.5	45,882	212	41	78	2.0	45,882	265	51	98	2.5	45,882	2300
159	30	58	1.4	49,757	212	41	78	2.0	49,757	265	51	97	2.4	49,757	2400
159	30	58	1.4	53,789	212	41	78	1.9	53,789	265	51	97	2.3	53,789	2500
159	30	58	1.3	55,655	212	41	77	1.8	55,655	265	51	97	2.3	55,655	2550
159	30	58	1.3	57,979	212	41	77	1.8	57,979	265	51	97	2.2	57,979	2600
159	30	58	1.3	62,325	212	41	77	1.7	62,325	265	51	96	2.2	62,325	2700
159	30	58	1.2	66,829	212	41	77	1.7	66,829	265	51	96	2.1	66,829	2800
159	30	57	1.2	68,906	212	41	77	1.6	68,906	265	51	96	2.0	68,906	2850
159	30	57	1.2	71,489	212	41	77	1.6	71,489	265	51	96	2.0	71,489	2900
159	30	57	1.1	76,307	212	41	76	1.6	76,307	265	51	95	1.9	76,307	3000
159	30	57	1.1	81,282	212	41	76	1.5	81,282	265	51	95	1.9	81,282	3100
159	30	57	1.1	83,571	212	41	76	1.5	83,571	265	51	95	1.9	83,571	3150
159	30	57	1.1	86,413	212	41	76	1.5	86,413	265	51	95	1.8	86,413	3200
159	30	57	1.0	91,702	212	41	76	1.4	91,702	265	51	95	1.8	91,702	3300
159	30	57	1.0	97,148	212	41	75	1.4	97,148	265	51	94	1.7	97,148	3400
159	30	57	1.0	99,650	212	41	75	1.4	99,650	265	51	94	1.7	99,650	3450
159	30	56	1.0	108,511	212	41	75	1.3	108,511	265	51	94	1.6	108,511	3600
159	30	56	0.9	120,503	212	41	75	1.2	120,503	265	51	93	1.5	120,503	3800
159	30	56	0.9	133,123	212	41	74	1.2	133,123	265	51	93	1.5	133,123	4000

Reduction of movement for expansion joints with PTFE lining: axial compression: -33 %; axial extension: -0 %; lateral displacement: -25 %; angular movement: -0 %.  
Angular movement only possible with guided pressure support ring.  
In the event of axial extension and simultaneous lateral displacement the above movements are reduced (▶ page 29). Larger movements on request.

**Individual fabrication possible**



**U132A U142A U152A**  
▶ with embedded vacuum support rings



**U135A U145A U155A**  
▶ with embedded vacuum support rings, with pressure support rings in the arch trough

Installation length (L <sub>E</sub> ) at design pressure															
	up to 6 bar L <sub>E</sub> = 650 mm – U132A U135A					up to 6 bar L <sub>E</sub> = 850 mm – U142A U145A					up to 6 bar L <sub>E</sub> = 1,050 mm – U152A U155A				
	higher pressures on request														
NB	Movement				A cm <sup>2</sup>	Movement				A cm <sup>2</sup>	Movement				A cm <sup>2</sup>
	mm	mm	±mm	±°		mm	mm	±mm	±°		mm	mm	mm	±°	
100	105	30	59	31.0	353	140	41	79	39.4	353	175	51	98	45.6	353
125	105	30	58	25.6	441	140	41	77	33.3	441	175	51	96	39.2	441
150	105	30	57	21.8	539	140	41	76	28.7	539	175	51	95	34.2	539
175	105	30	56	18.9	670	140	41	75	25.1	670	175	51	94	30.2	670
200	105	30	55	16.7	765	140	41	74	22.3	765	175	51	92	27.0	765
250	105	30	54	13.5	1,029	140	41	72	18.2	1,029	175	51	91	22.2	1,029
300	105	30	53	11.3	1,346	140	41	71	15.3	1,346	175	51	89	18.8	1,346
350	105	30	53	9.7	1,713	140	41	70	13.2	1,713	175	51	88	16.2	1,713
400	105	30	52	8.5	2,075	140	41	69	11.6	2,075	175	51	87	14.3	2,075
450	105	30	52	7.6	2,507	140	41	69	10.3	2,507	175	51	86	12.8	2,507
500	105	30	51	6.8	2,971	140	41	68	9.3	2,971	175	51	85	11.5	2,971
550	105	30	51	6.2	3,442	140	41	67	8.5	3,442	175	51	84	10.5	3,442
600	105	30	50	5.7	4,015	140	41	67	7.8	4,015	175	51	84	9.6	4,015
650	105	30	50	5.3	4,560	140	41	66	7.2	4,560	175	51	83	8.9	4,560
700	105	30	49	4.9	5,230	140	41	66	6.7	5,230	175	51	82	8.3	5,230
750	105	30	49	4.6	5,836	140	41	66	6.2	5,836	175	51	82	7.7	5,836
800	105	30	49	4.3	6,604	140	41	65	5.9	6,604	175	51	81	7.3	6,604
850	105	30	49	4.0	7,268	140	41	65	5.5	7,268	175	51	81	6.8	7,268
900	105	30	48	3.8	8,123	140	41	64	5.2	8,123	175	51	81	6.5	8,123
950	105	30	48	3.6	8,858	140	41	64	4.9	8,858	175	51	80	6.1	8,858
1000	105	30	48	3.4	9,799	140	41	64	4.7	9,799	175	51	80	5.8	9,799
1050	105	30	48	3.3	10,605	140	41	64	4.5	10,605	175	51	79	5.5	10,605
1100	105	30	47	3.1	11,652	140	41	63	4.3	11,652	175	51	79	5.3	11,652
1150	105	30	47	3.0	12,509	140	41	63	4.1	12,509	175	51	79	5.1	12,509
1200	105	30	47	2.9	13,623	140	41	63	3.9	13,623	175	51	79	4.9	13,623
1250	105	30	47	2.7	14,569	140	41	63	3.8	14,569	175	51	78	4.7	14,569
1300	105	30	47	2.6	15,770	140	41	62	3.6	15,770	175	51	78	4.5	15,770
1350	105	30	47	2.5	16,787	140	41	62	3.5	16,787	175	51	78	4.3	16,787
1400	105	30	46	2.5	18,074	140	41	62	3.4	18,074	175	51	77	4.2	18,074
1450	105	30	46	2.4	19,162	140	41	62	3.2	19,162	175	51	77	4.0	19,162
1500	105	30	46	2.3	20,536	140	41	62	3.1	20,536	175	51	77	3.9	20,536
1600	105	30	46	2.1	23,154	140	41	61	2.9	23,154	175	51	77	3.6	23,154
1650	105	30	46	2.1	24,384	140	41	61	2.8	24,384	175	51	76	3.5	24,384
1700	105	30	46	2.0	25,930	140	41	61	2.8	25,930	175	51	76	3.4	25,930
1800	105	30	45	1.9	28,893	140	41	61	2.6	28,893	175	51	76	3.2	28,893
1900	105	30	45	1.8	31,952	140	41	60	2.5	31,952	175	51	75	3.1	31,952
1950	105	30	45	1.8	33,394	140	41	60	2.4	33,394	175	51	75	3.0	33,394
2000	105	30	45	1.7	35,199	140	41	60	2.3	35,199	175	51	75	2.9	35,199
2100	105	30	45	1.6	38,603	140	41	60	2.2	38,603	175	51	75	2.8	38,603
2200	105	30	45	1.6	42,164	140	41	59	2.1	42,164	175	51	74	2.7	42,164
2250	105	30	45	1.5	43,818	140	41	59	2.1	43,818	175	51	74	2.6	43,818
2300	105	30	44	1.5	45,882	140	41	59	2.0	45,882	175	51	74	2.5	45,882
2400	105	30	44	1.4	49,757	140	41	59	2.0	49,757	175	51	74	2.4	49,757
2500	105	30	44	1.4	53,789	140	41	59	1.9	53,789	175	51	73	2.3	53,789
2550	105	30	44	1.3	55,655	140	41	59	1.8	55,655	175	51	73	2.3	55,655
2600	105	30	44	1.3	57,979	140	41	59	1.8	57,979	175	51	73	2.2	57,979
2700	105	30	44	1.3	62,325	140	41	58	1.7	62,325	175	51	73	2.2	62,325
2800	105	30	44	1.2	66,829	140	41	58	1.7	66,829	175	51	73	2.1	66,829
2850	105	30	44	1.2	68,906	140	41	58	1.6	68,906	175	51	73	2.0	68,906
2900	105	30	43	1.2	71,489	140	41	58	1.6	71,489	175	51	72	2.0	71,489
3000	105	30	43	1.1	76,307	140	41	58	1.6	76,307	175	51	72	1.9	76,307
3100	105	30	43	1.1	81,282	140	41	58	1.5	81,282	175	51	72	1.9	81,282
3150	105	30	43	1.1	83,571	140	41	58	1.5	83,571	175	51	72	1.9	83,571
3200	105	30	43	1.1	86,413	140	41	57	1.5	86,413	175	51	72	1.8	86,413
3300	105	30	43	1.0	91,702	140	41	57	1.4	91,702	175	51	72	1.8	91,702
3400	105	30	43	1.0	97,148	140	41	57	1.4	97,148	175	51	71	1.7	97,148
3450	105	30	43	1.0	99,650	140	41	57	1.4	99,650	175	51	71	1.7	99,650
3600	105	30	43	1.0	108,511	140	41	57	1.3	108,511	175	51	71	1.6	108,511
3800	105	30	42	0.9	120,503	140	41	57	1.2	120,503	175	51	71	1.5	120,503
4000	105	30	42	0.9	133,123	140	41	56	1.2	133,123	175	51	70	1.5	133,123

Reduction of movement for expansion joints with PTFE lining: axial compression: -0 %; axial extension: -0 %; lateral displacement: -0 %; angular movement: -0 %. Angular movement only possible with guided pressure support ring.

In the event of axial extension and simultaneous lateral displacement the above movements are reduced (▶ page 29). Larger movements on request.

**Individual fabrication possible**



Universal expansion joint, type U152A  
with PTFE lining in a GFK pipe in a copper mill  
NB 2000, -0.17 bar, Earthquake movements all sides  $\pm 150$  mm



Universal expansion joint, type U142A  
with PTFE lining for a sulphuric acid reclamation plant  
NB 2800, -0.15 bar, 80 °C