

U400A

NB 300 – NB 4000



► **Type U400A**
without pressure support ring

► **Type U403A**
with pressure support ring

Type key ► page 20

U4 0 0 A
 └─ Tie rod variant
 └─ Support ring variant
 └─ Number of arches
 └─ Type

Universal expansion joint with one arch facing inward

- Design:** Rubber bellows with one arch facing inward along the entire installation length, full faced rubber flanges and single or multi-part backing flanges
 Note: The arch reduces the pipe cross-section (please request flange connection measurements)
 Optionally for pressure, external pressure support ring in the arch trough
- Nominal diameters:** NB 300 to NB 4000, intermediate sizes possible
- Installation length:** Standard $L_E = 250$ to 350 mm (► page 100–101)
 Other installation lengths on request
- Pressure:** Applications with permanent vacuum
 Pressure not allowed without external pressure support ring in the arch trough
- Movement:** For axial, lateral and angular movements
 (► page 100–101)

Application:

Cooling water systems, plant construction, petrochemical and refinery technology e. g. in vacuum lines, acid lines and on vessels



Rubber bellows

Rubber grades			Carrier
up to 100 °C:	EPDM	Cooling water, hot water, seawater, acids, dilute chlorine compounds	Nylon fabric Kevlar fabric Polyester 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	

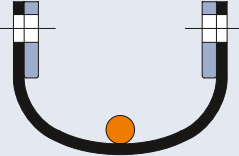
Flanges

Design:	Single-part or multi-part, round backing flanges with clearance holes
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

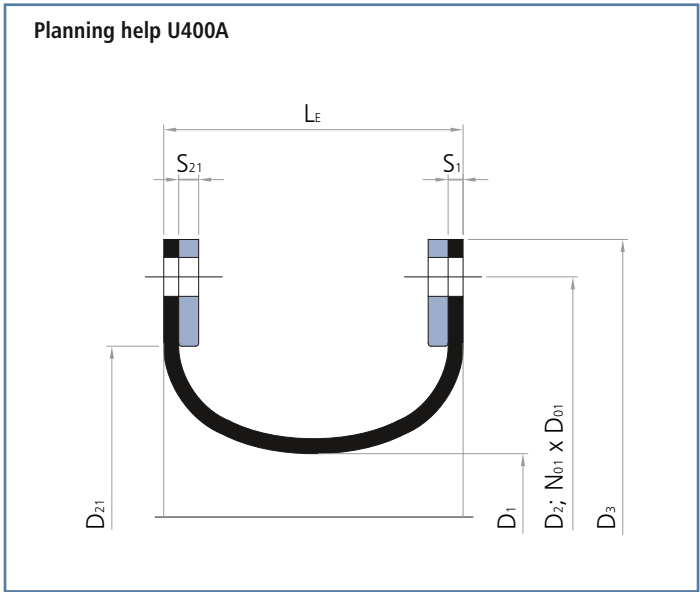
Optional accessories

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)

Support rings

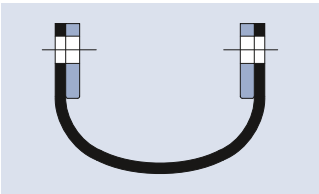
TYPE		Pressure support ring	Pressure	Movement
U400A		Without	For vacuum up to 0.05 bar absolute Pressure not allowed	▶ page 100
U403A		External in the arch trough	Depending on the nominal diameter up to 10 bar, for vacuum up to 0.05 bar absolute	▶ page 101

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





Universal expansion joint, type 100A
with PTFE lining for the desulphurisation plant
of a copper mill
NB 3100, -0.17 bar



U400A
▶ without pressure support ring



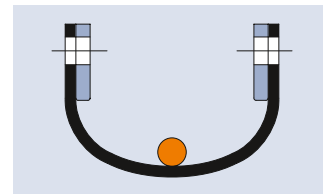
Installation length (L _E) at design pressure												
	up to 4 bar L _E = 250 mm				up to 4 bar L _E = 300 mm				up to 4 bar L _E = 350 mm			
	higher pressures on request											
NB	Movement			A	Movement			A	Movement			A
												
	mm	mm	± mm	cm²	mm	mm	± mm	cm²	mm	mm	± mm	cm²
300	30	15	18	707	40	20	25	707	50	25	31	707
350	30	15	18	962	40	20	24	962	50	25	30	962
400	30	15	18	1,257	40	20	24	1,257	50	25	30	1,257
450	30	15	17	1,590	40	20	23	1,590	50	25	29	1,590
500	30	15	17	1,964	40	20	23	1,964	50	25	29	1,964
550	30	15	17	2,376	40	20	23	2,376	50	25	28	2,376
600	30	15	17	2,827	40	20	22	2,827	50	25	28	2,827
650	30	15	17	3,318	40	20	22	3,318	50	25	28	3,318
700	30	15	17	3,849	40	20	22	3,849	50	25	28	3,849
750	30	15	16	4,418	40	20	22	4,418	50	25	27	4,418
800	30	15	16	5,027	40	20	22	5,027	50	25	27	5,027
850	30	15	16	5,675	40	20	22	5,675	50	25	27	5,675
900	30	15	16	6,362	40	20	21	6,362	50	25	27	6,362
950	30	15	16	7,088	40	20	21	7,088	50	25	27	7,088
1000	30	15	16	7,854	40	20	21	7,854	50	25	26	7,854
1050	30	15	16	8,659	40	20	21	8,659	50	25	26	8,659
1100	30	15	16	9,503	40	20	21	9,503	50	25	26	9,503
1150	30	15	16	10,387	40	20	21	10,387	50	25	26	10,387
1200	30	15	15	11,310	40	20	21	11,310	50	25	26	11,310
1250	30	15	15	12,272	40	20	21	12,272	50	25	26	12,272
1300	30	15	15	13,273	40	20	20	13,273	50	25	26	13,273
1350	30	15	15	14,314	40	20	20	14,314	50	25	25	14,314
1400	30	15	15	15,394	40	20	20	15,394	50	25	25	15,394
1450	30	15	15	16,513	40	20	20	16,513	50	25	25	16,513
1500	30	15	15	17,672	40	20	20	17,672	50	25	25	17,672
1600	30	15	15	20,106	40	20	20	20,106	50	25	25	20,106
1650	30	15	15	21,383	40	20	20	21,383	50	25	25	21,383
1700	30	15	15	22,698	40	20	20	22,698	50	25	25	22,698
1800	30	15	15	25,447	40	20	20	25,447	50	25	24	25,447
1900	30	15	15	28,353	40	20	19	28,353	50	25	24	28,353
1950	30	15	15	29,865	40	20	19	29,865	50	25	24	29,865
2000	30	15	15	31,416	40	20	19	31,416	50	25	24	31,416
2100	30	15	14	34,636	40	20	19	34,636	50	25	24	34,636
2200	30	15	14	38,013	40	20	19	38,013	50	25	24	38,013
2250	30	15	14	39,761	40	20	19	39,761	50	25	24	39,761
2300	30	15	14	41,548	40	20	19	41,548	50	25	24	41,548
2400	30	15	14	45,239	40	20	19	45,239	50	25	24	45,239
2500	30	15	14	49,087	40	20	19	49,087	50	25	24	49,087
2550	30	15	14	51,071	40	20	19	51,071	50	25	23	51,071
2600	30	15	14	53,093	40	20	19	53,093	50	25	23	53,093
2700	30	15	14	57,256	40	20	19	57,256	50	25	23	57,256
2800	30	15	14	61,575	40	20	19	61,575	50	25	23	61,575
2850	30	15	14	63,794	40	20	18	63,794	50	25	23	63,794
2900	30	15	14	66,052	40	20	18	66,052	50	25	23	66,052
3000	30	15	14	70,686	40	20	18	70,686	50	25	23	70,686
3100	30	15	14	75,477	40	20	18	75,477	50	25	23	75,477
3150	30	15	14	77,931	40	20	18	77,931	50	25	23	77,931
3200	30	15	14	80,425	40	20	18	80,425	50	25	23	80,425
3300	30	15	14	85,530	40	20	18	85,530	50	25	23	85,530
3400	30	15	14	90,792	40	20	18	90,792	50	25	23	90,792
3450	30	15	14	93,482	40	20	18	93,482	50	25	23	93,482
3600	30	15	13	101,788	40	20	18	101,788	50	25	22	101,788
3800	30	15	13	113,412	40	20	18	113,412	50	25	22	113,412
4000	30	15	13	125,664	40	20	18	125,664	50	25	22	125,664

Recommended sizes
Additional possible sizes

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 _E) at design pressure												
	up to 4 bar L _E = 250 mm				up to 4 bar L _E = 300 mm				up to 4 bar L _E = 350 mm			
	higher pressures on request											
NB	Movement			A	Movement			A	Movement			A
												
	mm	mm	±mm	cm ²	mm	mm	±mm	cm ²	mm	mm	±mm	cm ²
300	30	15	18	6	40	20	25	8	50	25	31	10
350	30	15	18	5	40	20	24	7	50	25	30	8
400	30	15	18	4	40	20	24	6	50	25	30	7
450	30	15	17	4	40	20	23	5	50	25	29	6
500	30	15	17	3	40	20	23	5	50	25	29	6
550	30	15	17	3	40	20	23	4	50	25	28	5
600	30	15	17	3	40	20	22	4	50	25	28	5
650	30	15	17	3	40	20	22	4	50	25	28	4
700	30	15	17	3	40	20	22	3	50	25	28	4
750	30	15	16	2	40	20	22	3	50	25	27	4
800	30	15	16	2	40	20	22	3	50	25	27	4
850	30	15	16	2	40	20	22	3	50	25	27	3
900	30	15	16	2	40	20	21	3	50	25	27	3
950	30	15	16	2	40	20	21	2	50	25	27	3
1000	30	15	16	2	40	20	21	2	50	25	26	3
1050	30	15	16	2	40	20	21	2	50	25	26	3
1100	30	15	16	2	40	20	21	2	50	25	26	3
1150	30	15	16	2	40	20	21	2	50	25	26	3
1200	30	15	15	1	40	20	21	2	50	25	26	2
1250	30	15	15	1	40	20	21	2	50	25	26	2
1300	30	15	15	1	40	20	20	2	50	25	26	2
1350	30	15	15	1	40	20	20	2	50	25	25	2
1400	30	15	15	1	40	20	20	2	50	25	25	2
1450	30	15	15	1	40	20	20	2	50	25	25	2
1500	30	15	15	1	40	20	20	2	50	25	25	2
1600	30	15	15	1	40	20	20	1	50	25	25	2
1650	30	15	15	1	40	20	20	1	50	25	25	2
1700	30	15	15	1	40	20	20	1	50	25	25	2
1800	30	15	15	1	40	20	20	1	50	25	24	2
1900	30	15	15	1	40	20	19	1	50	25	24	2
1950	30	15	15	1	40	20	19	1	50	25	24	2
2000	30	15	15	1	40	20	19	1	50	25	24	1
2100	30	15	14	1	40	20	19	1	50	25	24	1
2200	30	15	14	1	40	20	19	1	50	25	24	1
2250	30	15	14	1	40	20	19	1	50	25	24	1
2300	30	15	14	1	40	20	19	1	50	25	24	1
2400	30	15	14	1	40	20	19	1	50	25	24	1
2500	30	15	14	1	40	20	19	1	50	25	24	1
2550	30	15	14	1	40	20	19	1	50	25	23	1
2600	30	15	14	1	40	20	19	1	50	25	23	1
2700	30	15	14	1	40	20	19	1	50	25	23	1
2800	30	15	14	1	40	20	19	1	50	25	23	1
2850	30	15	14	1	40	20	18	1	50	25	23	1
2900	30	15	14	1	40	20	18	1	50	25	23	1
3000	30	15	14	1	40	20	18	1	50	25	23	1
3100	30	15	14	1	40	20	18	1	50	25	23	1
3150	30	15	14	1	40	20	18	1	50	25	23	1
3200	30	15	14	1	40	20	18	1	50	25	23	1
3300	30	15	14	1	40	20	18	1	50	25	23	1
3400	30	15	14	1	40	20	18	1	50	25	23	1
3450	30	15	14	1	40	20	18	1	50	25	23	1
3600	30	15	13	1	40	20	18	1	50	25	22	1
3800	30	15	13	1	40	20	18	1	50	25	22	1
4000	30	15	13	0	40	20	18	1	50	25	22	1

Recommended sizes
Additional possible sizes

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

Individual fabrication possible