

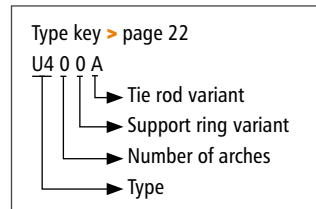
130 Universal expansion joints with full faced rubber flange

U400A ∅ 300 - 4,000 mm
 ∅ up to 4,000 x 4,000 mm
 ∅ up to 6,000 x 3,000 mm



> **Type U400A**
 without support ring

> **Type U403A**
 with support ring



Vacuum donut with one arch facing inward

Design: High elastic, facing inwards single wide arch rubber bellows with full faced rubber flanges, designed to compensate all-directional movements, have a cycle life in the tens of millions, constructed with a high-grade leak-proof tube, multiple layers of high-strength cord, a seamless cover, and single- or multi-part backing flanges. For pressure external support ring optional. In compliance with PED 2014/68/EU, FSA Technical Handbook and ASTM F1123 - 87. Note: The arch reduces the pipe cross-section (ask for mating flange dimensions).

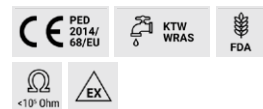
Dimensions: ∅ 300 to 4,000 mm
 ∅ up to 4,000 x 4,000 mm or ∅ up to 6,000 x 3,000 mm
 Custom diameters / rectangular cross-sections possible

Length: Standard $L_E = 100$ to 500 mm (> page 134–135)
 Custom length on request

Pressure: For permanent vacuum operations
 Over-pressure only allowed with external support ring




















Movement: For axial, lateral and angular movements
 (> page 134–135)

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



Request assembly
 instructions at:
[www.ditec-adam.de/
 en/contact](http://www.ditec-adam.de/en/contact)

Bellows elastomers and reinforcements

Elastomer	Fabric	Marking	°C	Application
EPDM	Polyamid		-40 +100	Cooling water, hot water, seawater, acids, dilute chlorine compounds
EPDM	Aramid		-40 +100	Cooling water, hot water, seawater, acids, dilute chlorine compounds
EPDMht	Aramid		-40 +120	Cooling water, hot water, seawater, acids, dilute chlorine compounds
EPDMwras	Polyamid		-40 +100	Drinking water, foodstuffs
EPDMwras	Aramid		-40 +100	Drinking water, foodstuffs
EPDMbeige	Polyamid		-40 +100	Foodstuffs
EPDMbeige	Aramid		-40 +100	Foodstuffs
IIR	Polyamid		-20 +100	Hot water, acids, bases, gases
IIR	Aramid		-20 +100	Hot water, acids, bases, gases
CSM	Polyamid		-20 +100	Strong acids, bases, chemicals
CSM	Aramid		-20 +100	Strong acids, bases, chemicals
NBR	Polyamid		-30 +100	Oils, petrol, solvents, compressed air
NBR	Aramid		-30 +100	Oils, petrol, solvents, compressed air
NBRbeige	Polyamid		-30 +100	Oil, fatty foods
NBRbeige	Aramid		-30 +100	Oil, fatty foods
CR	Polyamid		-20 +90	Cooling water, slightly oily water, seawater
CR	Aramid		-20 +90	Cooling water, slightly oily water, seawater
FPM	Aramid		-20 +180	Corrosive chemicals, petroleum distillates
FPMbeige	Aramid		-20 +180	Oil, fatty foods
NR	Polyamid		-20 +70	Abrasive materials
Silicon	Aramid Glass		-60 +200	Air, saltwater atmosphere, foodstuffs, medical technology

Backing flanges

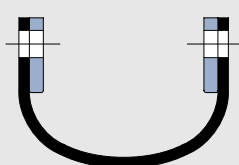
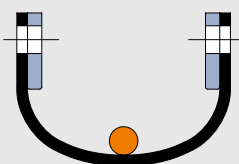
- Design:** Single- or multi-part, round backing flanges with clearance holes
- Flange norms:** DIN, EN, ANSI, AWWA, BS, JIS, special measurements (> page 298)
- Materials:** Carbon steel, stainless steel or aluminium
- Coating:** Primed, hot-dip galvanised, special paint

Accessories

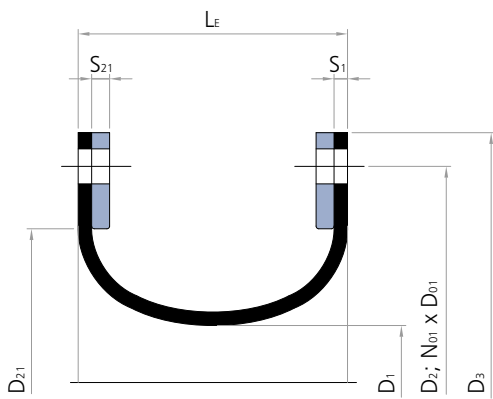
- Protective covers:** Ground protective shield
Protective shield or cover
Fire protective cover (> page 58)
- Flow liners:** Cylindrical flow liner
Conical flow liner
Telescoping flow liner (> page 57)

132 Universal expansion joints with full faced rubber flange

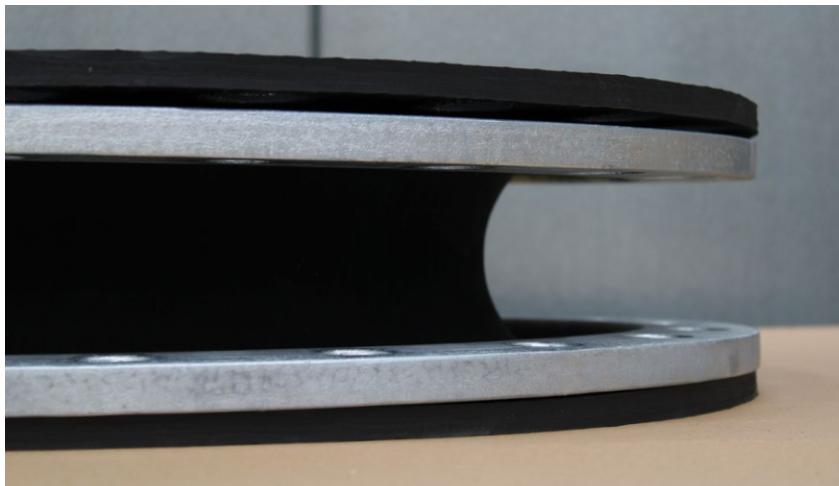
Support rings

TYPE	Support rings	Support ring	Pressure	Movement
U400A		None	For vacuum up to 0.05 bar absolute Over-pressure not allowed	> page 134
U403A		External in the arch	Depending on the diameter up to 6 bar, for vacuum up to 0.05 bar absolute	> page 135
Materials				
Carbon steel, hot-dip galvanised		Stainless steel		

Cross section U400A

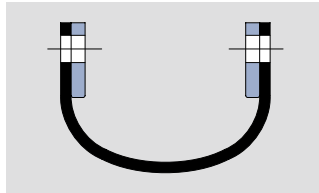


Example: Type U403A





U400A for permanent vacuum operation,
size \varnothing 800 mm



U400A

> without support ring

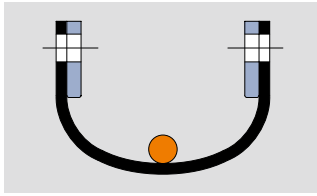
Installation length (L _E) at design pressure												
∅ mm	up to 6 bar L _E = 250 mm				up to 6 bar L _E = 300 mm				up to 6 bar L _E = 350 mm			
	Movement			A cm ²	Movement			A cm ²	Movement			A cm ²
	mm	mm	± mm		mm	mm	± mm		mm	mm	± mm	
300	30	15	18	707	40	20	25	707	50	25	31	707
350	30	15	18	962	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
Further possible sizes

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

The movement capability of the expansion joints given in the tables is determined for flange dimensions according to DIN PN6. In case of deviating flange dimensions, please contact us.

Customised products available



U403A

> with support ring



Installation length (L _E) at design pressure													
∅ mm	up to 6 bar L _E = 250 mm				up to 6 bar L _E = 300 mm				up to 6 bar L _E = 350 mm				
	Movement			A cm ²	Movement			A cm ²	Movement			A cm ²	
	mm	mm	±mm		mm	mm	±mm		mm	mm	±mm		
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
Further possible sizes

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

The movement capability of the expansion joints given in the tables is determined for flange dimensions according to DIN PN6. In case of deviating flange dimensions, please contact us.

Customised products available