D120A

NB 200 – NB 1200

- **Type D120A**
  without vacuum support rings
- **Type D121A**
  with internal vacuum support rings
- **Type D122A**
  with embedded vacuum support rings
- **Type D123A**
  without vacuum support rings, with pressure support ring in the arch trough
- **Type D124A**
  with internal vacuum support rings, with pressure support ring in the arch trough
- **Type D125A**
  with embedded vacuum support rings, with external pressure support ring in the arch trough

Type key ▶ page 20

D1 2 3 A
- D1 → Type
- 2 → Number of arches
- 3 → Support ring variant
- A → Tie rod variant

Universal expansion joint with two arches

Design: Highly elastic, hydrodynamic, double-arch rubber bellows with self-sealing rubber bulges and swivel backing flanges with support collar
Optionally with vacuum support rings and/or external pressure support ring in the arch trough

Nominal diameters: NB 200 to NB 1200, intermediate sizes possible

Installation length: Standard L_E = 350 to 600 mm (▶ page 121–123)
Other installation lengths on request

Pressure: Depending on the nominal diameter up to 10 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 large axial, lateral and angular movements (▶ page 121–123)

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

CE PED 97/23/EC · KTW · FDA · Ω <10⁵ Ohm · EX

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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 121–123)		

Flanges

Design: Single-part, swivel, round backing flanges with support collar, clearance holes and groove to accommodate the rubber bulges

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

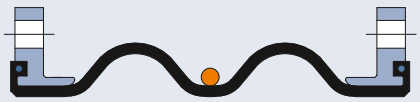
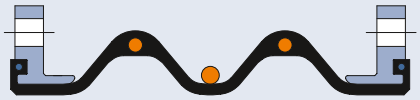
Coating: Primed, hot-dip galvanised, special paint

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

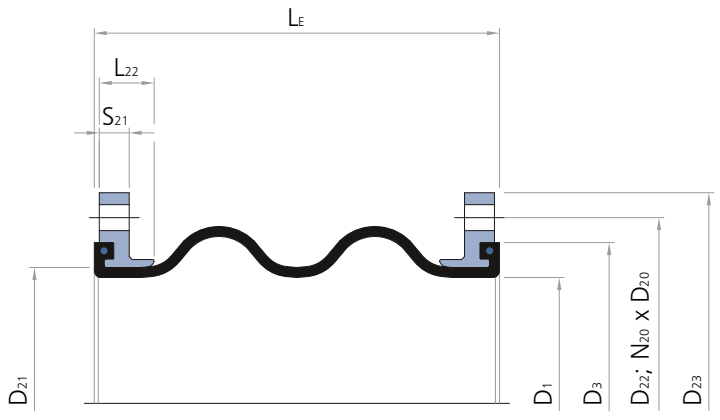
TYPE		Vacuum support ring	Pressure support ring	Pressure	Movement
D120A		Without	Without	Slight pressure, slight vacuum	▶ page 121
D121A		Medium contact, inside the arch apex	Without	Slight pressure, for vacuum up to 0.05 bar absolute	▶ page 122
D122A		No medium contact, embedded into the arch apex of the rubber bellows	Without	Slight pressure, for vacuum up to 0.05 bar absolute	▶ page 123
D123A		Without	External in the arch trough	Depending on the nominal diameter up to 10 bar, slight vacuum	▶ page 121
D124A		Medium contact, inside the arch apex	External in the arch trough	Depending on the nominal diameter up to 10 bar, for vacuum up to 0.05 bar absolute	▶ page 122
D125A		No medium contact, embedded into the arch apex of the rubber bellows	External in the arch trough	Depending on the nominal diameter up to 10 bar, for vacuum up to 0.05 bar absolute	▶ page 123

Materials

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

Other materials on request

Planning help D120A

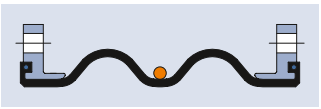


D120A

▶ without vacuum support rings

D123A

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



Installation length (L_E) at design pressure

NB	up to 10 bar L_E = 350 mm					up to 10 bar L_E = 400 mm					up to 10 bar L_E = 450 mm				
	higher pressures on request														
	Movement				A	Movement				A	Movement				A
	mm	mm	±mm	±°	cm²	mm	mm	±mm	±°	cm²	mm	mm	±mm	±°	cm²
200	62	20	36	11.3	445	80	40	53	11.3	445	30	30	30	12.0	573
250	62	20	35	9.1	656	80	40	52	9.1	799	30	30	30	12.0	809
300	62	20	35	7.6	903	80	40	51	7.6	1,069	49	17	28	6.5	1,081
350	62	20	34	6.5	1,134	80	40	50	12.9	1,320	98	33	55	10.7	1,333
400	62	20	34	5.7	1,521	80	40	50	11.3	1,735	98	33	54	9.4	1,750
450	62	20	33	5.1	1,878	80	40	49	10.1	2,116	98	33	54	8.3	2,132
500	62	20	33	4.6	2,290	80	40	49	9.1	2,552	98	33	53	7.5	2,570
600	62	20	33	3.8	3,187	80	40	48	7.6	3,494	98	33	52	6.3	3,515
700	62	20	32	3.3	4,312	80	40	47	6.5	4,669	98	33	52	5.4	4,693
800	62	20	32	2.9	5,555	80	40	47	5.7	5,958	98	33	51	4.7	5,986
900	62	20	31	2.5	6,910	80	40	46	5.1	7,359	98	33	50	4.2	7,390
1000	62	20	31	2.3	8,462	80	40	46	4.6	8,958	98	33	50	3.8	8,992
1100	62	20	31	2.1	10,171	80	40	45	4.2	10,715	98	33	50	3.4	10,751
1200	62	20	31	1.9	12,037	80	40	45	3.8	12,628	98	33	49	3.1	12,668

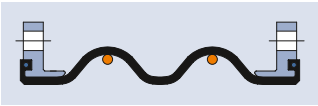
Installation length (L_E) at design pressure

NB	up to 10 bar L_E = 500 mm					up to 10 bar L_E = 550 mm					up to 10 bar L_E = 600 mm				
	higher pressures on request														
	Movement				A	Movement				A	Movement				A
	mm	mm	±mm	±°	cm²	mm	mm	±mm	±°	cm²	mm	mm	±mm	±°	cm²
200	106	61	74	31.4	707	124	82	91	39.4	855	138	85	99	39.4	897
250	106	61	72	26.0	968	124	82	89	33.3	1,140	138	85	97	33.3	1,188
300	106	61	71	22.1	1,263	124	82	88	28.7	1,459	138	85	95	28.7	1,514
350	106	61	70	19.2	1,534	124	82	86	25.1	1,750	138	85	94	25.1	1,810
400	106	61	69	17.0	1,979	124	82	85	22.3	2,223	138	85	93	22.3	2,290
450	106	61	69	15.2	2,384	124	82	84	20.0	2,651	138	85	92	20.0	2,725
500	106	61	68	13.7	2,846	124	82	84	18.2	3,137	138	85	91	18.2	3,217
600	106	61	67	11.5	3,837	124	82	82	15.3	4,174	138	85	89	15.3	4,266
700	106	61	66	9.9	5,064	124	82	81	13.2	5,450	138	85	88	13.2	5,555
800	106	61	65	8.7	6,404	124	82	80	11.6	6,837	138	85	87	11.6	6,955
900	106	61	64	7.7	7,854	124	82	79	10.3	8,332	138	85	86	10.3	8,462
1000	106	61	64	7.0	9,503	124	82	79	9.3	10,029	138	85	85	9.3	10,171
1100	106	61	63	6.3	11,310	124	82	78	8.5	11,882	138	85	84	8.5	12,037
1200	106	61	63	5.8	13,273	124	82	77	7.8	13,893	138	85	84	7.8	14,061

Recommended sizes
Additional possible sizes

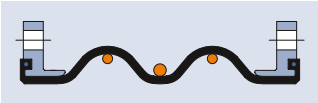
Reduction of movement for expansion joints with PTFE lining:
axial compression: -33 %; axial extension: -66 %; lateral displacement: -50 %; angular movement: -66 %.
Angular movement only possible with guided pressure support ring.
In the event of axial extension and simultaneous lateral displacement the above movements are reduced
(▶ page 29)
Larger movements on request.

Individual fabrication possible



D121A

▶ with internal vacuum support rings



D124A

▶ with internal vacuum support rings, with pressure support ring in the arch trough

Installation length (L_E) at design pressure

	up to 10 bar L_E = 350 mm					up to 10 bar L_E = 400 mm					up to 10 bar L_E = 450 mm				
	higher pressures on request														
NB	Movement				A	Movement				A	Movement				A
	mm	mm	±mm	±°	cm²	mm	mm	±mm	±°	cm²	mm	mm	±mm	±°	cm²
200	62	7	24	4.0	445	80	13	35	4.0	445	30	30	30	12.0	573
250	62	7	23	3.2	656	80	13	34	3.2	799	30	30	30	12.0	809
300	62	7	23	2.7	903	80	13	34	2.7	1,069	49	6	18	2.3	1,081
350	62	7	23	2.3	1,134	80	13	33	4.2	1,320	98	11	36	3.6	1,333
400	62	7	22	2.0	1,521	80	13	33	3.7	1,735	98	11	36	3.1	1,750
450	62	7	22	1.8	1,878	80	13	32	3.3	2,116	98	11	35	2.8	2,132
500	62	7	22	1.6	2,290	80	13	32	3.0	2,552	98	11	35	2.5	2,570
600	62	7	22	1.3	3,187	80	13	32	2.5	3,494	98	11	35	2.1	3,515
700	62	7	21	1.1	4,312	80	13	31	2.1	4,669	98	11	34	1.8	4,693
800	62	7	21	1.0	5,555	80	13	31	1.9	5,958	98	11	34	1.6	5,986
900	62	7	21	0.9	6,910	80	13	30	1.7	7,359	98	11	33	1.4	7,390
1000	62	7	21	0.8	8,462	80	13	30	1.5	8,958	98	11	33	1.3	8,992
1100	62	7	20	0.7	10,171	80	13	30	1.4	10,715	98	11	33	1.1	10,751
1200	62	7	20	0.7	12,037	80	13	30	1.2	12,628	98	11	32	1.1	12,668

Installation length (L_E) at design pressure

	up to 10 bar L_E = 500 mm					up to 10 bar L_E = 550 mm					up to 10 bar L_E = 600 mm				
	higher pressures on request														
NB	Movement				A	Movement				A	Movement				A
	mm	mm	±mm	±°	cm²	mm	mm	±mm	±°	cm²	mm	mm	±mm	±°	cm²
200	106	20	49	11.3	707	124	27	60	15.1	855	138	28	65	15.1	897
250	106	20	48	9.1	968	124	27	59	12.2	1,140	138	28	64	12.2	1,188
300	106	20	47	7.6	1,263	124	27	58	10.2	1,459	138	28	63	10.2	1,514
350	106	20	46	6.5	1,534	124	27	57	8.8	1,750	138	28	62	8.8	1,810
400	106	20	46	5.7	1,979	124	27	56	7.7	2,223	138	28	61	7.7	2,290
450	106	20	45	5.1	2,384	124	27	56	6.8	2,651	138	28	60	6.8	2,725
500	106	20	45	4.6	2,846	124	27	55	6.2	3,137	138	28	60	6.2	3,217
600	106	20	44	3.8	3,837	124	27	54	5.1	4,174	138	28	59	5.1	4,266
700	106	20	44	3.3	5,064	124	27	54	4.4	5,450	138	28	58	4.4	5,555
800	106	20	43	2.9	6,404	124	27	53	3.9	6,837	138	28	57	3.9	6,955
900	106	20	43	2.5	7,854	124	27	52	3.4	8,332	138	28	57	3.4	8,462
1000	106	20	42	2.3	9,503	124	27	52	3.1	10,029	138	28	56	3.1	10,171
1100	106	20	42	2.1	11,310	124	27	51	2.8	11,882	138	28	56	2.8	12,037
1200	106	20	41	1.9	13,273	124	27	51	2.6	13,893	138	28	55	2.6	14,061

Recommended sizes
Additional possible sizes

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.

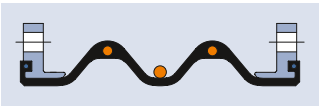
Individual fabrication possible

D122A

▶ with embedded vacuum support rings

D125A

▶ with embedded vacuum support rings, with pressure support ring in the arch trough



Installation length (L_E) at design pressure

	up to 10 bar L_E = 350 mm					up to 10 bar L_E = 400 mm					up to 10 bar L_E = 450 mm				
	higher pressures on request														
NB	Movement				A	Movement				A	Movement				A
	mm	mm	±mm	±°	cm²	mm	mm	±mm	±°	cm²	mm	mm	±mm	±°	cm²
200	41	7	18	4.0	445	52	13	26	4.0	445	30	30	30	12.0	573
250	41	7	18	3.2	656	52	13	26	3.2	799	30	30	30	12.0	809
300	41	7	17	2.7	903	52	13	26	2.7	1,069	32	6	14	2.3	1,081
350	41	7	17	2.3	1,134	52	13	25	4.2	1,320	64	11	28	3.6	1,333
400	41	7	17	2.0	1,521	52	13	25	3.7	1,735	64	11	27	3.1	1,750
450	41	7	17	1.8	1,878	52	13	25	3.3	2,116	64	11	27	2.8	2,132
500	41	7	17	1.6	2,290	52	13	24	3.0	2,552	64	11	27	2.5	2,570
600	41	7	16	1.3	3,187	52	13	24	2.5	3,494	64	11	26	2.1	3,515
700	41	7	16	1.1	4,312	52	13	24	2.1	4,669	64	11	26	1.8	4,693
800	41	7	16	1.0	5,555	52	13	23	1.9	5,958	64	11	26	1.6	5,986
900	41	7	16	0.9	6,910	52	13	23	1.7	7,359	64	11	25	1.4	7,390
1000	41	7	16	0.8	8,462	52	13	23	1.5	8,958	64	11	25	1.3	8,992
1100	41	7	15	0.7	10,171	52	13	23	1.4	10,715	64	11	25	1.1	10,751
1200	41	7	15	0.7	12,037	52	13	22	1.2	12,628	64	11	25	1.1	12,668

Installation length (L_E) at design pressure

	up to 10 bar L_E = 500 mm					up to 10 bar L_E = 550 mm					up to 10 bar L_E = 600 mm				
	higher pressures on request														
NB	Movement				A	Movement				A	Movement				A
	mm	mm	±mm	±°	cm²	mm	mm	±mm	±°	cm²	mm	mm	±mm	±°	cm²
200	70	20	37	11.3	707	82	27	45	15.1	855	91	28	49	15.1	897
250	70	20	36	9.1	968	82	27	45	12.2	1,140	91	28	48	12.2	1,188
300	70	20	36	7.6	1,263	82	27	44	10.2	1,459	91	28	48	10.2	1,514
350	70	20	35	6.5	1,534	82	27	43	8.8	1,750	91	28	47	8.8	1,810
400	70	20	35	5.7	1,979	82	27	43	7.7	2,223	91	28	46	7.7	2,290
450	70	20	34	5.1	2,384	82	27	42	6.8	2,651	91	28	46	6.8	2,725
500	70	20	34	4.6	2,846	82	27	42	6.2	3,137	91	28	45	6.2	3,217
600	70	20	33	3.8	3,837	82	27	41	5.1	4,174	91	28	45	5.1	4,266
700	70	20	33	3.3	5,064	82	27	41	4.4	5,450	91	28	44	4.4	5,555
800	70	20	33	2.9	6,404	82	27	40	3.9	6,837	91	28	43	3.9	6,955
900	70	20	32	2.5	7,854	82	27	40	3.4	8,332	91	28	43	3.4	8,462
1000	70	20	32	2.3	9,503	82	27	39	3.1	10,029	91	28	43	3.1	10,171
1100	70	20	32	2.1	11,310	82	27	39	2.8	11,882	91	28	42	2.8	12,037
1200	70	20	31	1.9	13,273	82	27	39	2.6	13,893	91	28	42	2.6	14,061

Recommended sizes
Additional possible sizes

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