Producto distribuido por

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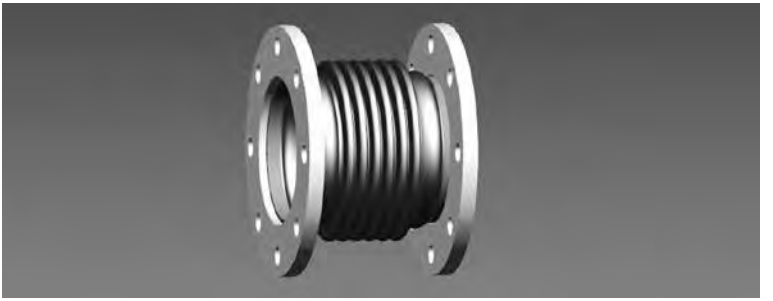
AXIAL EXPANSION JOINTS FOR LOW PRESSURE (EXHAUST) WITH FLANGES TYPE ABN, AFN



Type designation
The type designation consists of 2 parts
1. Type series, defined by 3 letters
2. Nominal size, defined by 10 digits

Example
Type ABN: HYDRA low pressure expansion joint with loose flanges
Type AFN: HYDRA low pressure expansion joint with plain fixed flanges

Standard design/Materials
Multi-ply bellows made of 1.4541
Flange made of S235JRG2 (1.0038) or P250GH (1.0460)
Operating temperature: up to 550 °C

Type designation (example)

ABN	01	·	0150	·	126	·	0
Type	Nominal pressure (PN1)		Nominal diameter (DN150)		Movement absorption, nominal ($2\delta = \pm 63$ = 126 mm)		Inner sleeve (0 = without, 1 = with)

Order text
Please state the following with your order:

For standard versions
- Type designation or order number

With material variation
- Type designation
- Details of materials

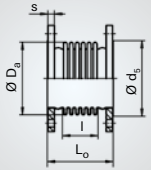
The expansion joints for low pressure (exhaust-gas) are designed for unpressurized applications (PS < 0.5 bar gauge pressure).

The Pressure Equipment Directive (PED) does not apply to this operating condition.

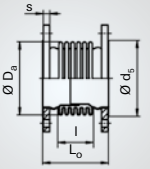
Information
Tell us the dimensions that deviate from the standard and we customize the expansion joint to your specification.

AXIAL EXPANSION JOINTS FOR LOW PRESSURE WITH LOOSE FLANGES

Type ABN without inner sleeve



Type ABN with inner sleeve



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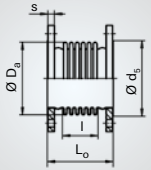
Nominal diameter	Nominal axial movement absorption	Type	Order No. standard version		Overall length	Weight approx.		Flange		
		ABN 01...	without inner sleeve	with inner sleeve		without inner sleeve	with inner sleeve	drilling template as per EN 1092	rim diameter	thickness
DN	2δN	–	–	–	L_o	G	G	PN	d5	s
–	mm	–	–	–	mm	kg	kg	-	mm	mm
50	20	.0050.020.0	419285	419411	117	3.3	3.4	6	90	16
50	56	.0050.056.0	419286	419412	198	3.6	3.8	6	90	16
50	80	.0050.080.0	419287	419413	252	3.8	4.2	6	90	16
65	23	.0065.023.0	419289	419414	117	4.3	4.4	6	107	16
65	64	.0065.064.0	419290	419415	198	4.6	5	6	107	16
65	92	.0065.092.0	419291	419416	252	4.8	5	6	107	16
80	37	.0080.037.0	419292	419417	146	7	7	6	122	18
80	69	.0080.069.0	419293	419418	206	7	7	6	122	18
80	101	.0080.101.0	419294	419419	266	7	8	6	122	18
100	40	.0100.040.0	419295	419420	142	7	8	6	147	18
100	79	.0100.079.0	419296	419421	208	8	8	6	147	18
100	112	.0100.112.0	419297	419422	263	8	9	6	147	18
125	63	.0125.063.0	419298	419423	181	10	10	6	178	20
125	117	.0125.117.0	419299	419424	259	10	11	6	178	20
125	180	.0125.180.0	419300	419425	350	11	12	6	178	20
150	54	.0150.054.0	419301	419426	168	11	11	6	202	20
150	126	.0150.126.0	419302	419427	272	12	13	6	202	20
150	180	.0150.180.0	419303	419428	350	12	14	6	202	20
200	70	.0200.070.0	419304	419429	199	15	17	6	258	22
200	120	.0200.120.0	419305	419430	274	16	18	6	258	22
200	200	.0200.200.0	419306	419431	394	17	20	6	258	22

Bellows			Nominal movement absorption[1] for 1000 load cycles		Vibrations in all planes	Spring rate			Natural frequency of bellows	
outside diameter	corrugated length	effective cross-section	angular	lateral		axial	angular	lateral	axial	radial
Da	l	A	2αN	2λN	â	cδ	cα	cλ	ωa	ωr
mm	mm	cm²	degree	mm	mm	N/mm	Nm/deg	N/mm	Hz	Hz
89	45	46	30	3.9	0.3	104	1.3	451	420	1800
89	126	46	50	31	1	37	0.5	20	150	230
89	180	46	50	63	1	26	0.3	7	105	110
107	45	68.7	28	3.7	0.3	101	1.9	654	350	1840
107	126	68.7	50	29	1	36	0.7	30	125	235
107	180	68.7	50	59	1	25	0.5	10	90	115
121	70	89.1	39	8.1	0.5	67	1.7	233	220	840
121	130	89.1	50	28	1	36	0.9	36	165	340
121	190	89.1	50	60	1	25	0.6	12	80	115
148	66	137	34	6.6	0.5	72	2.8	432	210	1050
148	132	137	50	26	1	36	1.4	54	90	220
148	187	137	50	53	1	26	1	19	60	110
174	91	187	45	12	0.5	41	2.1	177	120	520
174	169	187	50	43	1	22	1.1	28	70	150
174	260	187	50	101	1	14	0.7	7.4	40	65
203	78	264	33	7.7	0.7	56	4.1	465	140	830
203	182	264	50	42	1	24	1.8	37	60	150
203	260	264	50	85	1	17	1.2	13	40	75
255	105	432	33	10	1	53	6.4	397	110	600
255	180	432	50	31	1	31	3.7	79	60	210
255	300	432	50	85	1	19	2.3	17	40	75

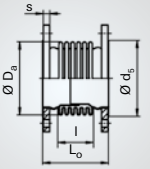
1) Inner sleeve, movement absorption: The inner sleeve is designed for axial movement only.
The movements (axial, angular, lateral) are to be regarded as alternatives, i.e. the sum of their proportions in percentages should not exceed 100 %.

AXIAL EXPANSION JOINTS FOR LOW PRESSURE WITH LOOSE FLANGES

Type ABN without inner sleeve



Type ABN with inner sleeve



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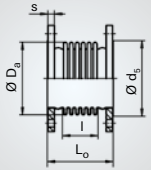
Nominal diameter	Nominal axial movement absorption	Type	Order No. standard version		Overall length	Weight approx.		Flange		
		ABN 01...	without inner sleeve	with inner sleeve		without inner sleeve	with inner sleeve	drilling template as per EN 1092	rim diameter	thickness
DN	2δN	–	–	–	L_o	G	G	PN	d5	s
–	mm	–	–	–	mm	kg	kg	-	mm	mm
250	72	.0250.072.0	419307	419432	210	20	21	6	312	24
250	132	.0250.132.0	419308	419433	295	21	23	6	312	24
250	204	.0250.204.0	419310	419434	397	22	25	6	312	24
300	56	.0300.056.0	419309	419435	184	26	27	6	365	24
300	140	.0300.140.0	419311	419436	298	27	30	6	365	24
300	210	.0300.210.0	419312	419437	393	29	32	6	365	24
350	60	.0350.060.0	419313	419449	192	36	37	6	410	26
350	120	.0350.120.0	419314	419450	272	37	40	6	410	26
350	210	.0350.210.0	419315	419451	392	39	43	6	410	26
400	65	.0400.065.0	419316	419452	232	45	47	6	465	28
400	104	.0400.104.0	419318	419453	295	47	50	6	465	28
400	195	.0400.195.0	419319	419463	442	52	57	6	465	28
450	56	.0450.056.0	419320	419464	219	55	57	6	520	30
450	112	.0450.112.0	419321	419465	307	58	62	6	520	30
450	196	.0450.196.0	419322	419466	439	63	69	6	520	30
500	68	.0500.068.0	419323	419467	223	59	62	6	570	30
500	119	.0500.119.0	419324	419468	292	62	66	6	570	30
500	221	.0500.221.0	419325	419469	430	68	74	6	570	30
600	76	.0600.076.0	419326	419470	239	78	81	6	670	32
600	133	.0600.133.0	419327	419471	317	82	87	6	670	32
600	228	.0600.228.0	419328	419472	447	88	96	6	670	32

Bellows			Nominal movement absorption[1] for 1000 load cycles		Vibrations in all planes	Spring rate			Natural frequency of bellows	
outside diameter	corrugated length	effective cross-section	angular	lateral		axial	angular	lateral	axial	radial
Da	l	A	2αN	2λN	â	cδ	cα	cλ	ωa	ωr
mm	mm	cm²	degree	mm	mm	N/mm	Nm/deg	N/mm	Hz	Hz
312	102	661	28	8.4	0.7	62	11	752	110	780
312	187	661	47	28	1	34	6.2	123	60	230
312	289	661	50	68	1	22	4	33	40	100
365	76	916	18	4.2	0.4	91	23	2756	140	1610
365	190	916	43	26	1	36	9.2	174	60	260
365	285	916	50	58	1	24	6.1	52	40	115
400	80	1104	18	4.3	0.4	82	25	2703	120	1490
400	160	1104	34	17	1	41	13	338	65	375
400	280	1104	50	52	1	23	7.4	62	35	120
458	105	1445	17	5.3	0.5	211	85	5283	120	1260
458	168	1445	27	14	1	132	53	1291	80	500
458	315	1445	45	48	1	70	29	195	40	140
513	88	1825	13	3.4	0.3	243	123	10935	130	1850
513	176	1825	32	17	1	121	62	1361	70	460
513	308	1825	41	42	1	69	35	253	40	150
569	92	2252	14	3.9	0.3	214	135	10875	115	1690
569	161	2252	24	12	1	122	77	2025	70	550
569	299	2252	42	41	1	66	41	318	35	160
674	104	3202	14	4.1	0.3	214	191	12099	100	1570
674	182	3202	23	13	1	122	109	2252	60	510
674	312	3202	36	37	1	71	64	446	35	175

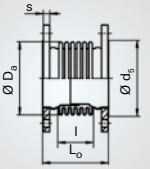
1) Inner sleeve, movement absorption: The inner sleeve is designed for axial movement only.
The movements (axial, angular, lateral) are to be regarded as alternatives, i.e. the sum of their proportions in percentages should not exceed 100 %.

AXIAL EXPANSION JOINTS FOR LOW PRESSURE WITH LOOSE FLANGES

Type ABN without inner sleeve



Type ABN with inner sleeve



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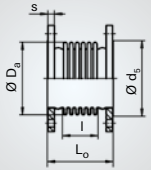
Nominal diameter	Nominal axial movement absorption	Type	Order No. standard version		Overall length	Weight approx.		Flange		
		ABN 01...	without inner sleeve	with inner sleeve		without inner sleeve	with inner sleeve	drilling template as per EN 1092	rim diameter	thickness
DN	$2\delta_N$	–	–	–	L_o	G	G	PN	d_5	s
–	mm	–	–	–	mm	kg	kg	-	mm	mm
700	80	.0700.080.0	419329	419473	218	63	68	6	775	20
700	120	.0700.120.0	419330	419474	274	66	72	6	775	20
700	220	.0700.220.0	419331	419475	414	74	83	6	775	20
800	84	.0800.084.0	419332	419476	230	78	83	6	880	20
800	126	.0800.126.0	419333	419477	288	81	88	6	880	20
800	231	.0800.231.0	419334	419478	433	90	101	6	880	20
900	84	.0900.084.0	419335	419479	234	82	88	6	980	20
900	126	.0900.126.0	419336	419481	294	87	95	6	980	20
900	210	.0900.210.0	419337	419482	414	95	107	6	980	20
1000	72	.1000.072.0	419338	419483	220	87	93	6	1080	20
1000	144	.1000.144.0	419339	419484	316	94	104	6	1080	20
1000	240	.1000.240.0	419340	419485	444	104	118	6	1080	20
1200	72	.1200.072.0	419341	419486	225	108	123	2	1280	20
1200	120	.1200.120.0	419342	419487	287	114	134	2	1280	20
1200	216	.1200.216.0	419343	419488	411	126	156	2	1280	20
1400	48	.1400.048.0	419344	419490	136	125	138	2	1466	20
1400	108	.1400.108.0	419345	419491	266	137	162	2	1466	20
1400	180	.1400.180.0	419346	419492	422	151	191	2	1466	20
1600	48	.1600.048.0	419347	419493	136	155	170	2	1666	20
1600	108	.1600.108.0	419385	419494	266	169	198	2	1666	20
1600	180	.1600.180.0	419386	419495	422	185	231	2	1666	20

Bellows			Nominal movement absorption[1] for 1000 load cycles		Vibrations in all planes	Spring rate			Natural frequency of bellows	
outside diameter	corrugated length	effective cross-section	angular	lateral		axial	angular	lateral	axial	radial
D_a	l	A	$2\alpha_N$	$2\lambda_N$	â	c_δ	c_α	c_λ	ω_a	ω_r
mm	mm	cm²	degree	mm	mm	N/mm	Nm/deg	N/mm	Hz	Hz
780	112	4324	12	4	0.3	203	244	13365	90	1480
780	168	4324	18	9.1	0.8	135	162	3950	60	660
780	308	4324	30	30	1	74	89	644	30	195
882	116	5588	11	3.9	0.3	220	341	17449	85	1570
882	174	5588	16	8.7	0.8	147	228	5182	60	700
882	319	5588	28	29	1	80	124	839	30	210
992	120	7133	9.9	3.5	0.2	237	472	22421	80	1650
992	180	7133	15	7.9	0.7	158	313	6643	60	730
992	300	7133	23	22	1	95	188	1438	30	260
1095	96	8750	7.7	2.2	0.2	335	814	60745	105	2940
1095	192	8750	15	8.7	0.7	167	408	7570	50	740
1095	320	8750	23	24	1	100	245	1632	30	265
1295	93	12331	6.5	1.8	0.1	330	1134	89855	95	3210
1295	155	12331	11	4.9	0.4	198	678	19409	60	1160
1295	279	12331	18	16	1	110	377	3328	30	360
1456	104	16016	3.8	1.2	0.1	911	4053	257632	150	5320
1456	234	16016	8.4	5.9	0.5	405	1802	22624	70	1050
1456	390	16016	13	16	1	243	1081	4887	40	380
1656	104	20816	3.4	1	0.1	1035	5990	380429	150	6040
1656	234	20816	7.4	5.2	0.5	460	2660	33398	70	1200
1656	390	20816	12	14	1	276	1596	7214	40	430

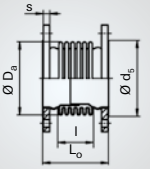
1) Inner sleeve, movement absorption: The inner sleeve is designed for axial movement only.
The movements (axial, angular, lateral) are to be regarded as alternatives, i.e. the sum of their proportions in percentages should not exceed 100 %.

AXIAL EXPANSION JOINTS FOR LOW PRESSURE WITH LOOSE FLANGES

Type ABN without inner sleeve



Type ABN with inner sleeve



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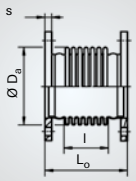
Nominal diameter	Nominal axial movement absorption	Type	Order No. standard version		Overall length	Weight approx.		Flange		
		ABN 01...	without inner sleeve	with inner sleeve		without inner sleeve	with inner sleeve	drilling template as per EN 1092	rim diameter	thickness
DN	$2\delta_N$	–	–	–	L_o	G	G	PN	d_5	s
–	mm	–	–	–	mm	kg	kg	-	mm	mm
1800	48	.1800.048.0	419387	419496	136	174	190	2	1866	20
1800	108	.1800.108.0	419388	419498	266	189	222	2	1866	20
1800	180	.1800.180.0	419389	419499	422	208	259	2	1866	20
2000	48	.2000.048.0	419390	419500	136	192	210	2	2066	20
2000	108	.2000.108.0	419391	419501	266	209	245	2	2066	20
2000	180	.2000.180.0	419392	419502	422	230	286	2	2066	20
2200	48	.2200.048.0	419393	419503	136	226	246	2	2266	20
2200	108	.2200.108.0	419394	419505	266	245	285	2	2266	20
2200	180	.2200.180.0	419396	419506	422	267	332	2	2266	20
2400	48	.2400.048.0	419397	419507	136	246	268	2	2466	20
2400	108	.2400.108.0	419398	419508	266	266	310	2	2466	20
2400	180	.2400.180.0	419399	419509	422	291	361	2	2466	20
2600	48	.2600.048.0	419400	419510	136	265	290	2	2666	20
2600	108	.2600.108.0	419401	419511	266	288	335	2	2666	20
2600	180	.2600.180.0	419402	419513	422	315	391	2	2666	20
2800	48	.2800.048.0	419403	419514	136	319	345	2	2866	20
2800	108	.2800.108.0	419404	419516	266	343	395	2	2866	20
2800	180	.2800.180.0	419405	419518	422	372	454	2	2866	20
3000	48	.3000.048.0	419406	419519	136	341	369	2	3066	20
3000	108	.3000.108.0	419407	419520	266	367	422	2	3066	20
3000	180	.3000.180.0	419408	419521	422	398	486	2	3066	20

Bellows			Nominal movement absorption[1] for 1000 load cycles		Vibrations in all planes	Spring rate			Natural frequency of bellows	
outside diameter	corrugated length	effective cross-section	angular	lateral		axial	angular	lateral	axial	radial
D_a	l	A	$2\alpha_N$	$2\lambda_N$	â	c_δ	c_α	c_λ	ω_a	ω_r
mm	mm	cm²	degree	mm	mm	N/mm	Nm/deg	N/mm	Hz	Hz
1856	104	26245	3	0.9		1158	8449	536643	150	6760
1856	234	26245	6.6	4.6	0.4	515	3754	47143	70	1340
1856	390	26245	11	13	1	309	2253	10183	40	480
2056	104	32302	2.7	0.8		1281	11503	730650	150	7480
2056	234	32302	6	4.2	0.4	569	5114	64107	70	1480
2056	390	32302	9.6	12	1	342	3069	13872	40	530
2256	104	38987	2.5	0.7		1403	15205	965857	150	8200
2256	234	38987	5.4	3.8	0.3	623	6758	84718	70	1620
2256	390	38987	8.8	11	1	374	4050	18309	40	580
2456	104	46301	2.3	0.7		1524	19613	1245968	150	8900
2456	234	46301	5	3.5	0.3	677	8720	109332	70	1760
2456	390	46301	8.1	9.6	1	406	5235	23604	40	630
2656	104	54243	2.1	0.6		1646	24816	1576541	150	9620
2656	234	54243	4.6	3.2	0.3	731	11029	138302	70	1900
2656	390	54243	7.5	8.9	0.8	439	6615	29900	40	680
2856	104	62813	1.9	0.6		1767	30848	1959837	150	10330
2856	234	62813	4.3	3	0.2	785	13714	171984	65	2040
2856	390	62813	7	8.3	0.8	471	8218	37149	40	740
3056	104	72011	1.8	0.5		1888	37786	2400702	150	11050
3056	234	72011	4	2.8	0.2	839	16803	210733	65	2180
3056	390	72011	6.5	7.7	0.7	504	10082	45573	40	790

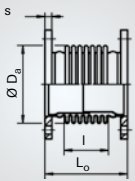
1) Inner sleeve, movement absorption: The inner sleeve is designed for axial movement only.
The movements (axial, angular, lateral) are to be regarded as alternatives, i.e. the sum of their proportions in percentages should not exceed 100 %.

AXIAL EXPANSION JOINTS FOR LOW PRESSURE WITH PLAIN FIXED FLANGES

Type AFN without inner sleeve



Type AFN with inner sleeve



06

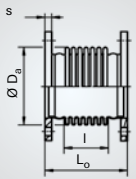
Nominal diameter	Nominal axial movement absorption	Type	Order No. standard version		Overall length	Weight approx.		Flange	
		AFN 01...	without inner sleeve	with inner sleeve		without inner sleeve	with inner sleeve	drilling template as per EN 1092	thickness
DN	$2\delta_N$	–	–	–	L_o	G	G	PN	s
–	mm	–	–	–	mm	kg	kg	-	mm
50	20	.0050.020.0	420180	420272	129	3.2	3.4	6	16
50	56	.0050.056.0	420181	420273	210	3.5	3.9	6	16
50	80	.0050.080.0	420182	421598	264	3.6	4	6	16
65	23	.0065.023.0	420183	421599	129	4.1	4.3	6	16
65	64	.0065.064.0	420184	421600	210	4.4	4.8	6	16
65	92	.0065.092.0	420185	421601	264	4.7	5	6	16
80	37	.0080.037.0	420186	421602	156	6	7	6	18
80	69	.0080.069.0	420187	421603	216	7	7	6	18
80	101	.0080.101.0	420188	421604	276	7	8	6	18
100	40	.0100.040.0	420189	421605	152	7	8	6	18
100	79	.0100.079.0	420190	421606	218	8	8	6	18
100	112	.0100.112.0	420191	421607	273	8	9	6	18
125	63	.0125.063.0	420192	421608	189	9	10	6	20
125	117	.0125.117.0	420193	421609	267	10	11	6	20
125	180	.0125.180.0	420194	421610	358	11	12	6	20
150	54	.0150.054.0	420195	421611	176	11	11	6	20
150	126	.0150.126.0	420196	421612	280	11	13	6	20
150	180	.0150.180.0	420197	421613	358	12	14	6	20
200	70	.0200.070.0	420198	421614	205	15	16	6	22
200	120	.0200.120.0	420199	421615	280	16	18	6	22
200	200	.0200.200.0	420200	421617	400	17	20	6	22

Bellows			Nominal movement absorption[1] for 1000 load cycles		Vibrations in all planes	Spring rate			Natural frequency of bellows	
outside diameter	corrugated length	effective cross-section	angular	lateral		axial	angular	lateral	axial	radial
D_a	l	A	$2\alpha_N$	$2\lambda_N$	â	c_δ	c_α	c_λ	ω_a	ω_r
mm	mm	cm²	degree	mm	mm	N/mm	Nm/deg	N/mm	Hz	Hz
89	45	46	30	3.9	0.3	104	1.3	451	420	1800
89	126	46	50	31	1	37	0.5	20	150	230
89	180	46	50	63	1	26	0.3	7	105	110
107	45	68.7	28	3.7	0.3	101	1.9	654	350	1840
107	126	68.7	50	29	1	36	0.7	30	125	235
107	180	68.7	50	59	1	25	0.5	10	90	115
121	70	89.1	39	8.1	0.5	67	1.7	233	220	840
121	130	89.1	50	28	1	36	0.9	36	165	340
121	190	89.1	50	60	1	25	0.6	12	80	115
148	66	137	34	6.6	0.5	72	2.8	432	210	1050
148	132	137	50	26	1	36	1.4	54	90	220
148	187	137	50	53	1	26	1	19	60	110
174	91	187	44	12	0.5	41	2.1	177	120	520
174	169	187	50	43	1	22	1.1	28	70	150
174	260	187	50	101	1	14	0.7	7.4	40	65
203	78	264	32	7.7	0.7	56	4.1	465	140	830
203	182	264	50	42	1	24	1.8	37	60	150
203	260	264	50	85	1	17	1.2	13	40	75
255	105	432	33	10	1	53	6.4	397	110	600
255	180	432	50	31	1	31	3.7	79	60	210
255	300	432	50	85	1	19	2.3	17	40	75

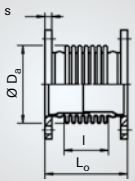
1) Inner sleeve, movement absorption: The inner sleeve is designed for axial movement only.
The movements (axial, angular, lateral) are to be regarded as alternatives, i.e. the sum of their proportions in percentages should not exceed 100 %.

AXIAL EXPANSION JOINTS FOR LOW PRESSURE WITH PLAIN FIXED FLANGES

Type AFN without inner sleeve



Type AFN with inner sleeve



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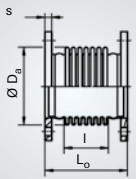
Nominal diameter	Nominal axial movement absorption	Type	Order No. standard version		Overall length	Weight approx.		Flange	
		AFN 01...	without inner sleeve	with inner sleeve		without inner sleeve	with inner sleeve	drilling template as per EN 1092	thickness
DN	$2\delta_N$	–	–	–	L_o	G	G	PN	s
–	mm	–	–	–	mm	kg	kg	-	mm
250	72	.0250.072.0	420201	421618	214	20	21	6	24
250	132	.0250.132.0	420202	421619	299	21	23	6	24
250	204	.0250.204.0	420203	421620	401	22	25	6	24
300	56	.0300.056.0	420204	421621	188	25	28	6	24
300	140	.0300.140.0	420205	421622	302	27	31	6	24
300	210	.0300.210.0	420206	421623	397	28	34	6	24
350	60	.0350.060.0	420207	421624	194	35	38	6	26
350	120	.0350.120.0	420208	421625	274	37	41	6	26
350	210	.0350.210.0	420209	421626	394	39	45	6	26
400	65	.0400.065.0	420210	421627	230	44	48	6	28
400	104	.0400.104.0	420211	421628	293	46	51	6	28
400	195	.0400.195.0	420212	421629	440	51	59	6	28
450	56	.0450.056.0	420213	421630	217	54	58	6	30
450	112	.0450.112.0	420214	421631	305	57	63	6	30
450	196	.0450.196.0	420215	421632	437	62	71	6	30
500	68	.0500.068.0	420216	421633	221	58	63	6	30
500	119	.0500.119.0	420217	421634	290	61	67	6	30
500	221	.0500.221.0	420218	421635	428	67	77	6	30
600	76	.0600.076.0	420219	421636	237	76	82	6	32
600	133	.0600.133.0	420220	421637	315	80	88	6	32
600	228	.0600.228.0	420223	421638	445	87	98	6	32

Bellows			Nominal movement absorption[1] for 1000 load cycles		Vibrations in all planes	Spring rate			Natural frequency of bellows	
outside diameter	corrugated length	effective cross-section	angular	lateral		axial	angular	lateral	axial	radial
D_a	l	A	$2\alpha_N$	$2\lambda_N$	â	c_δ	c_α	c_λ	ω_a	ω_r
mm	mm	cm²	degree	mm	mm	N/mm	Nm/deg	N/mm	Hz	Hz
312	102	661	27	8.4	0.7	62	11	752	110	780
312	187	661	45	28	1	34	6.2	123	60	230
312	289	661	50	68	1	22	4	33	40	100
365	76	916	18	4.2	0.4	91	23	2756	140	1610
365	190	916	41	26	1	36	9.2	174	60	260
365	285	916	50	58	1	24	6.1	52	40	115
400	80	1104	18	4.3	0.4	82	25	2703	120	1490
400	160	1104	33	17	1	41	13	338	65	375
400	280	1104	46	52	1	23	7.4	62	35	120
458	105	1445	17	5.3	0.5	211	85	5283	120	1260
458	168	1445	27	14	1	132	53	1291	80	500
458	315	1445	46	48	1	70	29	195	40	140
513	88	1825	13	3.4	0.3	243	123	10935	130	1850
513	176	1825	26	14	1	121	62	1361	70	460
513	308	1825	41	42	1	69	35	253	40	150
569	92	2252	14	3.9	0.3	214	135	10875	115	1690
569	161	2252	24	12	1	122	77	2025	70	550
569	299	2252	42	41	1	66	41	318	35	160
674	104	3202	14	4.1	0.3	214	191	12099	100	1570
674	182	3202	23	13	1	122	109	2252	60	510
674	312	3202	36	37	1	71	64	446	35	175

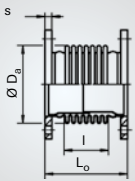
1) Inner sleeve, movement absorption: The inner sleeve is designed for axial movement only.
The movements (axial, angular, lateral) are to be regarded as alternatives, i.e. the sum of their proportions in percentages should not exceed 100 %.

AXIAL EXPANSION JOINTS FOR LOW PRESSURE WITH PLAIN FIXED FLANGES

Type AFN without inner sleeve



Type AFN with inner sleeve



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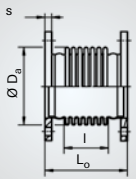
Nominal diameter	Nominal axial movement absorption	Type AFN 01...	Order No. standard version		Overall length	Weight approx.		Flange	
			without inner sleeve	with inner sleeve		without inner sleeve	with inner sleeve	drilling template as per EN 1092	thickness
DN	$2\delta_N$	–	–	–	L_o	G	G	PN	s
–	mm	–	–	–	mm	kg	kg	-	mm
700	80	.0700.080.0	420225	421639	230	62	69	6	20
700	120	.0700.120.0	420227	421640	286	65	74	6	20
700	220	.0700.220.0	420228	421641	426	73	87	6	20
800	84	.0800.084.0	420229	421642	244	76	85	6	20
800	126	.0800.126.0	420230	421643	302	79	90	6	20
800	231	.0800.231.0	420231	421644	447	89	105	6	20
900	84	.0900.084.0	420232	421645	248	80	91	6	20
900	126	.0900.126.0	420233	421646	308	85	98	6	20
900	210	.0900.210.0	420234	421647	428	93	112	6	20
1000	72	.1000.072.0	420235	421648	234	85	96	6	20
1000	144	.1000.144.0	420236	421649	330	92	108	6	20
1000	240	.1000.240.0	420237	421650	458	102	124	6	20
1200	72	.1200.072.0	420238	421651	241	105	123	2	20
1200	120	.1200.120.0	420239	421652	303	111	134	2	20
1200	216	.1200.216.0	420240	421653	427	123	156	2	20
1400	48	.1400.048.0	420241	421654	152	122	134	2	20
1400	108	.1400.108.0	420243	421655	282	134	158	2	20
1400	180	.1400.180.0	420244	421656	438	149	186	2	20
1600	48	.1600.048.0	420246	421657	152	152	166	2	20
1600	108	.1600.108.0	420247	421658	282	166	193	2	20
1600	180	.1600.180.0	420248	421659	438	182	225	2	20

Bellows			Nominal movement absorption[1] for 1000 load cycles		Vibrations in all planes	Spring rate			Natural frequency of bellows	
outside diameter	corrugated length	effective cross-section	angular	lateral		axial	angular	lateral	axial	radial
D_a	l	A	$2\alpha_N$	$2\lambda_N$	â	c_δ	c_α	c_λ	ω_a	ω_r
mm	mm	cm^2	degree	mm	mm	N/mm	Nm/deg	N/mm	Hz	Hz
780	112	4324	12	4	0.3	203	244	13365	90	1480
780	168	4324	18	9.1	0.8	135	162	3950	60	660
780	308	4324	30	30	1	74	89	644	30	195
882	116	5588	11	3.9	0.3	220	341	17449	85	1570
882	174	5588	17	8.7	0.8	147	228	5182	60	700
882	319	5588	28	29	1	80	124	839	30	210
992	120	7133	10	3.5	0.2	237	472	22421	80	1650
992	180	7133	15	7.9	0.7	158	313	6643	60	730
992	300	7133	23	22	1	95	188	1438	30	260
1095	96	8750	7.7	2.2	0.2	335	814	60745	105	2940
1095	192	8750	15	8.7	0.7	167	408	7570	50	740
1095	320	8750	24	24	1	100	245	1632	30	265
1295	93	12331	6.5	1.8	0.1	330	1134	89855	95	3210
1295	155	12331	11	4.9	0.4	198	678	19409	60	1160
1295	279	12331	18	16	1	110	377	3328	30	360
1456	104	16016	3.9	1.2	0.1	911	4053	257632	150	5320
1456	234	16016	8.5	5.9	0.5	405	1802	22624	70	1050
1456	390	16016	14	16	1	243	1081	4887	40	380
1656	104	20816	3.4	1	0.1	1035	5990	380429	150	6040
1656	234	20816	7.5	5.2	0.5	460	2660	33398	70	1200
1656	390	20816	12	14	1	276	1596	7214	40	430

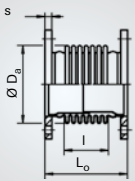
1) Inner sleeve, movement absorption: The inner sleeve is designed for axial movement only.
The movements (axial, angular, lateral) are to be regarded as alternatives, i.e. the sum of their proportions in percentages should not exceed 100 %.

AXIAL EXPANSION JOINTS FOR LOW PRESSURE WITH PLAIN FIXED FLANGES

Type AFN without inner sleeve



Type AFN with inner sleeve



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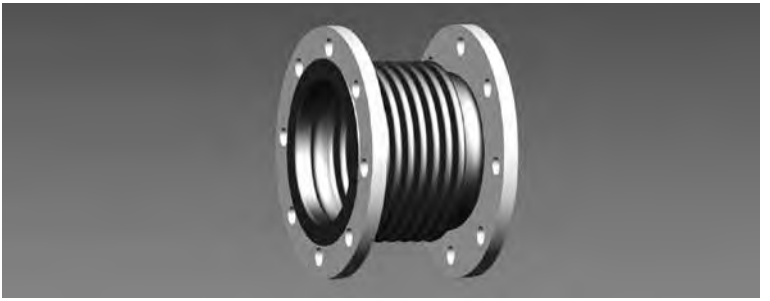
Nominal diameter	Nominal axial movement absorption	Type AFN 01...	Order No. standard version		Overall length	Weight approx.		Flange	
			without inner sleeve	with inner sleeve		without inner sleeve	with inner sleeve	drilling template as per EN 1092	thickness
DN	$2\delta_N$	–	–	–	L_o	G	G	PN	s
–	mm	–	–	–	mm	kg	kg	-	mm
1800	48	.1800.048.0	420250	421660	152	170	186	2	20
1800	108	.1800.108.0	420251	421661	282	185	216	2	20
1800	180	.1800.180.0	420252	421662	438	204	252	2	20
2000	48	.2000.048.0	420253	421663	152	188	206	2	20
2000	108	.2000.108.0	420255	421664	282	205	239	2	20
2000	180	.2000.180.0	420256	421665	438	226	279	2	20
2200	48	.2200.048.0	420257	421666	152	221	241	2	20
2200	108	.2200.108.0	420258	421667	282	240	279	2	20
2200	180	.2200.180.0	420259	421668	438	263	323	2	20
2400	48	.2400.048.0	420260	421669	152	241	262	2	20
2400	108	.2400.108.0	420261	421670	282	262	304	2	20
2400	180	.2400.180.0	420262	421671	438	286	351	2	20
2600	48	.2600.048.0	420263	421672	152	260	283	2	20
2600	108	.2600.108.0	420264	421673	282	283	328	2	20
2600	180	.2600.180.0	420265	421674	438	309	380	2	20
2800	48	.2800.048.0	420266	421675	152	313	338	2	20
2800	108	.2800.108.0	420267	421676	282	338	387	2	20
2800	180	.2800.180.0	420268	421677	438	367	443	2	20
3000	48	.3000.048.0	420269	421678	152	335	362	2	20
3000	108	.3000.108.0	420270	421679	282	361	414	2	20
3000	180	.3000.180.0	420271	421680	438	392	474	2	20

Bellows			Nominal movement absorption[1] for 1000 load cycles		Vibrations in all planes	Spring rate			Natural frequency of bellows	
outside diameter	corrugated length	effective cross-section	angular	lateral		axial	angular	lateral	axial	radial
D_a	l	A	$2\alpha_N$	$2\lambda_N$	â	c_δ	c_α	c_λ	ω_a	ω_r
mm	mm	cm^2	degree	mm	mm	N/mm	Nm/deg	N/mm	Hz	Hz
1856	104	26245	3	0.9	0	1158	8449	536643	150	6760
1856	234	26245	6.7	4.6	0.4	515	3754	47143	70	1340
1856	390	26245	11	13	1	309	2253	10183	40	480
2056	104	32302	2.7	0.8	0	1281	11503	730650	150	7480
2056	234	32302	6	4.2	0.4	569	5114	64107	70	1480
2056	390	32302	9.9	12	1	342	3069	13872	40	530
2256	104	38987	2.5	0.7	0	1403	15205	965857	150	8200
2256	234	38987	5.5	3.8	0.3	623	6758	84718	70	1620
2256	390	38987	9	11	1	374	4050	18309	40	580
2456	104	46301	2.3	0.7	0	1524	19613	1245968	150	8900
2456	234	46301	5	3.5	0.3	677	8720	109332	70	1760
2456	390	46301	8.2	9.6	1	406	5235	23604	40	630
2656	104	54243	2.1	0.6	0	1646	24816	1576541	150	9620
2656	234	54243	4.7	3.2	0.3	731	11029	138302	70	1900
2656	390	54243	7.7	8.9	0.8	439	6615	29900	40	680
2856	104	62813	1.9	0.6	0	1767	30848	1959837	150	10330
2856	234	62813	4.3	3	0.2	785	13714	171984	65	2040
2856	390	62813	7.2	8.3	0.8	471	8218	37149	40	740
3056	104	72011	1.8	0.5	0	1888	37786	2400702	150	11050
3056	234	72011	4	2.8	0.2	839	16803	210733	65	2180
3056	390	72011	6.7	7.7	0.7	504	10082	45573	40	790

1) Inner sleeve, movement absorption: The inner sleeve is designed for axial movement only.
The movements (axial, angular, lateral) are to be regarded as alternatives, i.e. the sum of their proportions in percentages should not exceed 100 %.

AXIAL EXPANSION JOINTS WITH FLANGES TYPE ABN, AFN



Type designation
The type designation consists of 2 parts
1. Type series, defined by 3 letters
2. Nominal size, defined by 10 digits

Example
Type ABN: HYDRA Axial expansion joint with loose flanges
Type AFN: HYDRA Axial expansion joint with plain fixed flanges

Standard version/materials
Multi-ply bellows made of 1.4541
Flange made of S235JRG2 (1.0038) or P250GH (1.0460)
Operating temperature: up to 300 °C / 450 °C

Type designation (example)

ABN	10	·	0150	·	064	·	0
Type	Nominal pressure (PN10)		Nominal diameter (DN150)		Movement absorption, nominal (2δ = ±32 = 64 mm)		Inner sleeve (0 = without, 1 = with)

Order text according to guideline 2014/68/EU "Pressure Equipment Directive"

Please state the following with your order:

For standard versions
- Type designation or order number

With material variation
- Type designation
- Details of the materials

According to the Pressure Equipment Directive, the following information is required for testing and documentation:

Type of pressure equipment according to Art. 1 & 2:
- Vessel - volume V [l] _____
- Piping - nominal diameter DN _____

Medium property according to Art. 13:
- Group 1 – dangerous
- Group 2 – all other fluids

State of medium
- Gaseous or liquid if PD > 0.5 bar
- Liquid if PD ≤ 0.5 bar

Design data:
- Max. allowable pressure [bar] _____
- Max./min. allowable temperature [°C] _____
- Test pressure PT [bar] _____

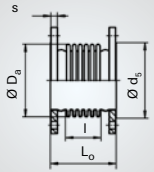
Optional:
- Category _____

Note

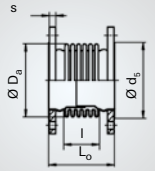
Tell us the dimensions that deviate from the standard and we customize the expansion joint to your specification.

AXIAL EXPANSION JOINTS WITH LOOSE FLANGES

Type ABN without inner sleeve



Type ABN with inner sleeve



06

Nominal diameter	Nominal axial movement absorption	Type	Order No. standard version		Overall length	Weight approx.		Flange		
		ABN 02...	without inner sleeve	with inner sleeve		without inner sleeve	with inner sleeve	drilling as per EN 1092	rim diameter	thickness
DN	$2\delta_N$	–	–	–	L_o	G	G	PN	d_5	s
–	mm	–	–	–	mm	kg	kg	-	mm	mm
50	20	.0050.020.0	419538	419635	117	3.3	3.4	6	90	16
50	40	.0050.040.0	419539	419636	162	3.5	3.7	6	90	16
50	70	.0050.070.0	419540	419637	244	4.1	4.5	6	90	16
65	23	.0065.023.0	419541	419638	117	4.3	4.5	6	107	16
65	60	.0065.060.0	419542	419639	189	4.6	5	6	107	16
65	87	.0065.087.0	419543	419640	263	5	6	6	107	16
80	27	.0080.027.0	419545	419641	126	7	7	6	122	18
80	64	.0080.064.0	419546	419642	196	7	7	6	122	18
80	92	.0080.092.0	419547	419643	275	8	8	6	122	18
100	46	.0100.046.0	419548	419644	153	7	8	6	147	18
100	73	.0100.073.0	419549	419645	197	8	8	6	147	18
100	98	.0100.098.0	419550	419646	286	10	11	6	147	18
125	45	.0125.045.0	419551	419647	155	9	10	6	178	20
125	81	.0125.081.0	419552	419648	207	10	10	6	178	20
125	140	.0125.140.0	419553	419649	372	14	15	6	178	20
150	45	.0150.045.0	419554	419650	155	11	11	6	202	20
150	81	.0150.081.0	419555	419651	207	11	12	6	202	20
150	160	.0150.160.0	419556	419652	392	16	18	6	202	20
200	60	.0200.060.0	419557	419653	184	15	16	6	258	22
200	110	.0200.110.0	419558	419654	271	17	19	6	258	22
200	190	.0200.190.0	419559	419655	419	23	25	6	258	22

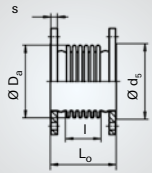
TYPE ABN 02...
PN 2.5

Bellows			Nominal movement absorption[1] at 1000 load cycles		Spring rate		
outside diameter	corrugated length	effective cross-section	angular	lateral	axial	angular	lateral
D_a	l	A	$2\alpha_N$	$2\lambda_{-N}$	c_δ	c_α	c_λ
mm	mm	cm^2	degree	mm	N/mm	Nm/deg	N/mm
89	45	46	29	3.9	104	1.3	451
89	90	46	50	16	52	0.7	56
89	171	46	50	52	45	0.6	14
107	45	68.7	28	3.7	101	1.9	654
107	117	68.7	50	25	39	0.7	37
108	190	69.4	50	59	39	0.8	14
121	50	89.1	28	4.1	94	2.3	640
121	120	89.1	50	24	39	1	46
121	198	89.1	50	57	42	1	18
148	77	137	38	9	62	2.4	273
148	121	137	50	22	40	1.5	71
150	208	139	50	51	70	2.7	43
174	65	187	32	6.3	58	3	492
174	117	187	50	20	32	1.7	84
172	280	185	50	85	52	2.7	23
203	65	264	27	5.3	67	4.9	801
203	117	264	46	17	37	2.7	137
203	300	264	50	87	51	3.7	29
255	90	432	28	7.7	62	7.4	631
256	176	434	47	27	50	6	134
257	323	436	50	87	51	6.2	41

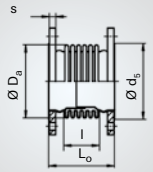
1) Inner sleeve, movement absorption: The inner sleeve is designed for axial movement only. The movements (axial, angular, lateral) are to be regarded as alternatives, i.e. the sum of their proportions in percentages should not exceed 100 %.

AXIAL EXPANSION JOINTS WITH LOOSE FLANGES

Type ABN without inner sleeve



Type ABN with inner sleeve



06

Nominal diameter	Nominal axial movement absorption	Type	Order No. standard version		Overall length	Weight approx.		Flange		
		ABN 02...	without inner sleeve	with inner sleeve		without inner sleeve	with inner sleeve	drilling as per EN 1092	rim diameter	thickness
DN	$2\delta_N$	–	–	–	L_o	G	G	PN	d_5	s
–	mm	–	–	–	mm	kg	kg	-	mm	mm
250	72	.0250.072.0	419560	419656	210	20	21	6	312	24
250	120	.0250.120.0	419561	419659	279	22	24	6	312	24
250	204	.0250.204.0	419562	419660	416	29	32	6	312	24
300	56	.0300.056.0	419563	419661	184	26	27	6	365	24
300	126	.0300.126.0	419564	419662	279	27	29	6	365	24
300	210	.0300.210.0	419565	419663	390	36	40	6	365	24
350	60	.0350.060.0	419566	419665	192	36	38	6	410	26
350	120	.0350.120.0	419567	419666	273	39	41	6	410	26
350	210	.0350.210.0	419568	419667	408	47	51	6	410	26
400	65	.0400.065.0	419569	419668	232	45	48	6	465	28
400	104	.0400.104.0	419570	419669	295	47	50	6	465	28
400	182	.0400.182.0	419571	419670	421	51	56	6	465	28
450	56	.0450.056.0	419572	419672	219	55	57	6	520	30
450	112	.0450.112.0	419573	419673	307	58	61	6	520	30
450	182	.0450.182.0	419574	419674	417	62	68	6	520	30
500	68	.0500.068.0	419575	419675	223	59	62	6	570	30
500	119	.0500.119.0	419576	419677	292	62	66	6	570	30
500	204	.0500.204.0	419577	419678	407	67	73	6	570	30
600	76	.0600.076.0	419578	419680	239	78	82	6	670	32
600	114	.0600.114.0	419579	419682	291	80	84	6	670	32
600	209	.0600.209.0	419580	419683	421	87	94	6	670	32

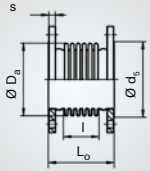
TYPE ABN 02...
PN 2.5

Bellows			Nominal movement absorption[1] at 1000 load cycles		Spring rate		
outside diameter	corrugated length	effective cross-section	angular	lateral	axial	angular	lateral
D_a	l	A	$2\alpha_N$	$2\lambda_{-N}$	c_δ	c_α	c_λ
mm	mm	cm^2	degree	mm	N/mm	Nm/deg	N/mm
312	102	661	27	8.4	62	11	752
315	170	667	42	23	48	8.9	212
316	306	670	50	71	49	9.1	67
365	76	916	18	4.2	91	23	2756
365	171	916	36	21	40	10	239
371	280	932	50	57	52	13	118
400	80	1104	18	4.3	82	25	2703
402	160	1110	33	17	58	18	480
402	294	1110	50	55	60	19	147
458	105	1445	17	5.3	211	85	5283
458	168	1445	26	14	132	53	1291
458	294	1445	38	42	75	30	240
513	88	1825	13	3.4	243	123	10935
513	176	1825	31	17	121	61	1361
513	286	1825	37	39	75	38	320
569	92	2252	14	3.9	214	134	10875
569	161	2252	24	12	122	76	2025
569	276	2252	35	35	71	44	401
674	104	3202	13	4.1	214	190	12099
674	156	3202	19	9.3	143	127	3593
674	286	3202	30	31	78	69	583

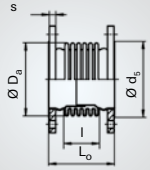
1) Inner sleeve, movement absorption: The inner sleeve is designed for axial movement only. The movements (axial, angular, lateral) are to be regarded as alternatives, i.e. the sum of their proportions in percentages should not exceed 100 %.

AXIAL EXPANSION JOINTS WITH LOOSE FLANGES

Type ABN without inner sleeve



Type ABN with inner sleeve



06

Nominal diameter	Nominal axial movement absorption	Type	Order No. standard version		Overall length	Weight approx.		Flange		
		ABN 02...	without inner sleeve	with inner sleeve		without inner sleeve	with inner sleeve	drilling as per EN 1092	rim diameter	thickness
DN	$2\delta_N$	–	–	–	L_o	G	G	PN	d_5	s
–	mm	–	–	–	mm	kg	kg	-	mm	mm
700	80	.0700.080.0	419581	419684	242	94	100	6	775	32
700	120	.0700.120.0	419582	419685	298	97	104	6	775	32
700	220	.0700.220.0	419583	419686	438	105	116	6	775	32
800	63	.0800.063.0	419584	419688	229	121	126	6	880	34
800	126	.0800.126.0	419585	419689	316	126	134	6	880	34
800	210	.0800.210.0	419586	419690	432	134	146	6	880	34
900	63	.0900.063.0	419587	419692	234	130	137	6	980	35
900	126	.0900.126.0	419588	419693	324	137	146	6	980	35
900	210	.0900.210.0	419589	419695	444	146	160	6	980	35
1000	72	.1000.072.0	419590	419697	254	149	156	6	1080	37
1000	120	.1000.120.0	419591	419698	318	154	164	6	1080	37
1000	240	.1000.240.0	419592	419699	478	166	183	6	1080	37
1200	72	.1200.072.0	419593	419700	269	204	223	2	1280	40
1200	120	.1200.120.0	419594	419701	333	213	237	2	1280	40
1200	216	.1200.216.0	419595	419703	461	231	270	2	1280	40

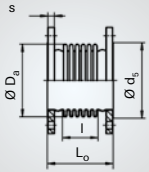
TYPE ABN 02...
PN 2.5

Bellows			Nominal movement absorption[1] at 1000 load cycles		Spring rate		
outside diameter	corrugated length	effective cross-section	angular	lateral	axial	angular	lateral
D_a	l	A	$2\alpha_N$	$2\lambda_{-N}$	c_δ	c_{α}	c_λ
mm	mm	cm^2	degree	mm	N/mm	Nm/deg	N/mm
780	112	4324	12	4	203	244	13365
780	168	4324	17	9.1	135	162	3950
780	308	4324	27	30	74	89	644
882	87	5588	8.4	2.2	293	455	41313
882	174	5588	16	8.7	147	228	5182
882	290	5588	23	24	88	137	1117
992	90	7133	7.4	2	316	626	53147
992	180	7133	14	7.9	158	313	6643
992	300	7133	21	22	95	188	1438
1095	96	8750	7.7	2.2	335	814	60745
1095	160	8750	12	6.1	201	489	13121
1095	320	8750	21	24	100	243	1632
1295	96	12331	6.5	1.8	511	1750	130579
1295	160	12331	11	5.1	306	1048	28150
1295	288	12331	18	17	170	582	4827

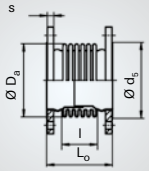
1) Inner sleeve, movement absorption: The inner sleeve is designed for axial movement only. The movements (axial, angular, lateral) are to be regarded as alternatives, i.e. the sum of their proportions in percentages should not exceed 100 %.

AXIAL EXPANSION JOINTS WITH LOOSE FLANGES

Type ABN without inner sleeve



Type ABN with inner sleeve



06

Nominal diameter	Nominal axial movement absorption	Type	Order No. standard version		Overall length	Weight approx.		Flange		
		ABN 06...	without inner sleeve	with inner sleeve		without inner sleeve	with inner sleeve	drilling as per EN 1092	rim diameter	thickness
DN	$2\delta_N$	–	–	–	L_o	G	G	PN	d_5	s
–	mm	–	–	–	mm	kg	kg	-	mm	mm
50	20	.0050.020.0	419706	419767	117	3.3	3.4	6	90	16
50	52	.0050.052.0	419707	419769	199	3.9	4.2	6	90	16
65	23	.0065.023.0	419708	419770	117	4.3	4.5	6	107	16
65	41	.0065.041.0	419710	419771	153	4.4	4.6	6	107	16
65	72	.0065.072.0	419711	419772	273	7	7	6	107	16
80	27	.0080.027.0	419712	419773	126	7	7	6	122	18
80	42	.0080.042.0	419713	419774	156	7	7	6	122	18
80	77	.0080.077.0	419714	419775	283	9	10	6	122	18
100	33	.0100.033.0	419715	419776	131	7	8	6	147	18
100	59	.0100.059.0	419716	419777	185	8	9	6	147	18
100	87	.0100.087.0	419717	419778	274	11	12	6	147	18
125	36	.0125.036.0	419718	419779	142	9	10	6	178	20
125	63	.0125.063.0	419719	419780	181	10	10	6	178	20
125	98	.0125.098.0	419720	419781	303	13	14	6	178	20
150	40	.0150.040.0	419721	419782	161	11	11	6	202	20
150	72	.0150.072.0	419722	419783	227	13	14	6	202	20
150	124	.0150.124.0	419723	419784	366	19	21	6	202	20
200	40	.0200.040.0	419724	419785	159	15	16	6	258	22
200	80	.0200.080.0	419725	419786	232	18	20	6	258	22
200	140	.0200.140.0	419726	419787	350	25	27	6	258	22

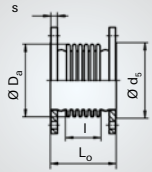
TYPE ABN 06...
PN 6

Bellows			Nominal movement absorption[1] at 1000 load cycles		Spring rate		
outside diameter	corrugated length	effective cross-section	angular	lateral	axial	angular	lateral
D_a	l	A	$2\alpha_N$	$2\lambda_{-N}$	c_δ	c_{α}	c_λ
mm	mm	cm^2	degree	mm	N/mm	Nm/deg	N/mm
89	45	46	28	3.9	104	1.3	451
89	126	46	50	28	61	0.8	34
107	45	68.7	27	3.7	101	1.9	654
107	81	68.7	42	12	56	1.1	112
110	198	70.9	50	50	88	1.7	30
121	50	89.1	27	4.1	94	2.3	640
121	80	89.1	38	11	58	1.4	154
123	204	90.8	50	48	95	2.4	40
148	55	137	27	4.6	87	3.3	752
149	108	138	43	16	71	2.7	160
151	195	140	50	42	89	3.5	63
174	52	187	25	4	72	3.7	953
174	91	187	39	12	41	2.1	177
173	210	186	50	45	88	4.6	71
202	70	263	23	5.1	116	8.5	1189
203	135	264	39	18	113	8.3	313
205	272	267	50	61	102	7.6	70
256	64	434	19	3.6	138	17	2791
257	136	436	34	15	120	15	540
260	252	441	50	50	109	13	145

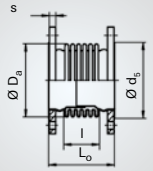
1) Inner sleeve, movement absorption: The inner sleeve is designed for axial movement only. The movements (axial, angular, lateral) are to be regarded as alternatives, i.e. the sum of their proportions in percentages should not exceed 100 %.

AXIAL EXPANSION JOINTS WITH LOOSE FLANGES

Type ABN without inner sleeve



Type ABN with inner sleeve



06

Nominal diameter	Nominal axial movement absorption	Type	Order No. standard version		Overall length	Weight approx.		Flange		
		ABN 06...	without inner sleeve	with inner sleeve		without inner sleeve	with inner sleeve	drilling as per EN 1092	rim diameter	thickness
DN	$2\delta_N$	–	–	–	L_o	G	G	PN	d_5	s
–	mm	–	–	–	mm	kg	kg	-	mm	mm
250	48	.0250.048.0	419727	419788	182	22	23	6	312	24
250	84	.0250.084.0	419728	419789	236	23	25	6	312	24
250	144	.0250.144.0	419729	419790	352	32	34	6	312	24
300	60	.0300.060.0	419730	419791	190	29	30	6	365	24
300	90	.0300.090.0	419731	419792	230	30	32	6	365	24
300	135	.0300.135.0	419732	419793	310	38	41	6	365	24
350	45	.0350.045.0	419733	419794	177	38	40	6	410	26
350	105	.0350.105.0	419734	419795	261	42	44	6	410	26
350	165	.0350.165.0	419735	419796	369	52	56	6	410	26
400	52	.0400.052.0	419736	419797	216	47	49	6	465	28
400	104	.0400.104.0	419737	419798	304	51	55	6	465	28
400	169	.0400.169.0	419738	419799	428	62	67	6	465	28
450	56	.0450.056.0	419739	419800	224	58	60	6	520	30
450	98	.0450.098.0	419740	419801	293	61	65	6	520	30
450	182	.0450.182.0	419741	419802	445	76	82	6	520	30
500	66	.0500.066.0	419742	419803	233	66	69	6	570	30
500	116	.0500.116.0	419743	419804	308	72	77	6	570	30
500	198	.0500.198.0	419744	419805	459	97	104	6	570	30
600	76	.0600.076.0	419746	419806	249	86	90	6	670	32
600	114	.0600.114.0	419747	419807	305	91	97	6	670	32
600	198	.0600.198.0	419748	419808	458	122	130	6	670	32

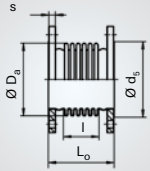
TYPE ABN 06...
PN 6

Bellows			Nominal movement absorption[1] at 1000 load cycles		Spring rate		
outside diameter	corrugated length	effective cross-section	angular	lateral	axial	angular	lateral
D_a	l	A	$2\alpha_N$	$2\gamma_N$	c_δ	c_α	c_γ
mm	mm	cm^2	degree	mm	N/mm	Nm/deg	N/mm
316	72	670	18	3.9	209	39	5156
316	126	670	29	12	120	22	967
319	240	677	45	39	109	20	245
371	80	932	19	4.6	182	47	5062
371	120	932	27	10	121	31	1496
374	198	940	39	26	127	33	582
402	63	1110	13	2.5	281	87	15014
402	147	1110	28	14	120	37	1178
405	253	1119	40	37	119	37	397
461	88	1456	13	3.5	359	145	12887
461	176	1456	23	14	179	72	1606
462	299	1459	32	39	148	60	461
514	92	1828	13	3.6	364	185	15018
514	161	1828	23	12	208	106	2802
515	312	1832	30	39	150	76	539
572	100	2265	14	4.1	411	259	17778
572	175	2265	22	13	235	148	3319
574	324	2273	33	40	207	131	856
677	112	3217	13	4.4	412	368	20180
677	168	3217	19	10	275	246	5986
678	319	3222	29	33	235	210	1421

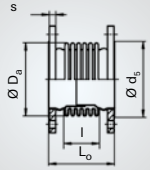
1) Inner sleeve, movement absorption: The inner sleeve is designed for axial movement only. The movements (axial, angular, lateral) are to be regarded as alternatives, i.e. the sum of their proportions in percentages should not exceed 100 %.

AXIAL EXPANSION JOINTS WITH LOOSE FLANGES

Type ABN without inner sleeve



Type ABN with inner sleeve



06

Nominal diameter	Nominal axial movement absorption	Type	Order No. standard version		Overall length	Weight approx.		Flange		
		ABN 06...	without inner sleeve	with inner sleeve		without inner sleeve	with inner sleeve	drilling as per EN 1092	rim diameter	thickness
DN	$2\delta_N$	–	–	–	L_o	G	G	PN	d_5	s
–	mm	–	–	–	mm	kg	kg	-	mm	mm
700	60	.0700.060.0	419749	419809	224	111	114	6	775	36
700	120	.0700.120.0	419750	419810	308	120	127	6	775	36
700	200	.0700.200.0	419751	419811	442	151	160	6	775	36
800	63	.0800.063.0	419753	419812	251	148	152	6	880	37
800	105	.0800.105.0	419755	419813	317	160	167	6	880	37
800	210	.0800.210.0	419757	419814	482	189	201	6	880	37
900	63	.0900.063.0	419758	419815	253	162	167	6	980	38
900	105	.0900.105.0	419759	419816	319	175	184	6	980	38
900	210	.0900.210.0	419760	419817	484	209	222	6	980	38
1000	66	.1000.066.0	419761	419818	277	192	198	6	1080	42
1000	110	.1000.110.0	419762	419819	347	207	217	6	1080	42
1000	198	.1000.198.0	419763	419820	487	237	252	6	1080	42
1200	69	.1200.069.0	419764	419821	295	306	321	6	1290	47
1200	115	.1200.115.0	419765	419822	365	324	350	6	1290	47
1200	207	.1200.207.0	419766	419823	505	361	398	6	1290	47

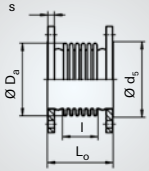
TYPE ABN 06...
PN 6

Bellows			Nominal movement absorption[1] at 1000 load cycles		Spring rate		
outside diameter	corrugated length	effective cross-section	angular	lateral	axial	angular	lateral
D_a	l	A	$2\alpha_N$	$2\gamma_N$	c_δ	c_α	c_γ
mm	mm	cm^2	degree	mm	N/mm	Nm/deg	N/mm
780	84	4324	9.1	2.3	583	700	68235
780	168	4324	17	9.1	292	351	8544
783	300	4342	25	27	253	305	2331
887	99	5621	8.4	2.5	852	1330	93326
887	165	5621	14	6.8	511	798	20150
887	330	5621	23	27	256	400	2524
996	99	7163	7.4	2.2	949	1888	132463
996	165	7163	12	6	569	1132	28592
996	330	7163	20	24	285	567	3580
1100	105	8791	7	2.2	970	2369	147726
1100	175	8791	11	6.1	582	1421	31909
1100	315	8791	18	20	323	789	5466
1296	105	12341	6.2	1.9	1088	3730	232590
1296	175	12341	10	5.4	653	2238	50255
1296	315	12341	16	17	363	1244	8622

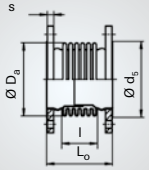
1) Inner sleeve, movement absorption: The inner sleeve is designed for axial movement only. The movements (axial, angular, lateral) are to be regarded as alternatives, i.e. the sum of their proportions in percentages should not exceed 100 %.

AXIAL EXPANSION JOINTS WITH LOOSE FLANGES

Type ABN without inner sleeve



Type ABN with inner sleeve



06

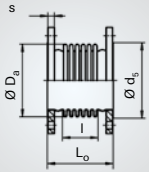
Nominal diameter	Nominal axial movement absorption	Type	Order No. standard version		Overall length	Weight approx.		Flange		
		ABN 10...	without inner sleeve	with inner sleeve		without inner sleeve	with inner sleeve	drilling as per EN 1092	rim diameter	thickness
DN	$2\delta_N$	–	–	–	L_o	G	G	PN	d_5	s
–	mm	–	–	–	mm	kg	kg	-	mm	mm
50	24	.0050.024.0	419824	419901	134	6	6	16	92	20
50	46	.0050.046.0	419825	419902	222	7	7	16	92	20
65	18	.0065.018.0	419826	419903	116	7	7	16	107	20
65	48	.0065.048.0	419827	419904	215	9	9	16	107	20
80	20	.0080.020.0	419828	419905	125	8	8	16	122	20
80	41	.0080.041.0	419829	419906	169	8	9	16	1	20
80	54	.0080.054.0	419830	419907	227	10	11	16	2.7	20
100	26	.0100.026.0	419831	419908	133	10	10	16	1	22
100	46	.0100.046.0	419832	419909	169	10	11	16	1.3	22
100	80	.0100.080.0	419833	419910	298	15	16	16	5.8	22
125	30	.0125.030.0	419834	419911	151	12	12	16	1	22
125	45	.0125.045.0	419835	419912	179	12	13	16	1.2	22
125	85	.0125.085.0	419836	419913	306	17	18	16	5.8	22
150	32	.0150.032.0	419837	419914	160	16	17	16	2	24
150	64	.0150.064.0	419838	419915	220	17	18	16	3.1	24
150	95	.0150.095.0	419839	419916	310	22	23	16	7.4	24
200	40	.0200.040.0	419840	419917	168	21	22	10	2.8	24
200	80	.0200.080.0	419841	434624	236	23	25	10	4.4	24
200	110	.0200.110.0	419842	419919	300	28	30	10	9.3	24
250	48	.0250.048.0	419843	419920	186	28	29	10	3.9	26
250	84	.0250.084.0	419855	419921	240	29	31	10	5.6	26
250	130	.0250.130.0	419856	419922	420	42	45	10	18.6	26

Bellows			Nominal movement absorption[1] at 1000 load cycles		Spring rate		
outside diameter	corrugated length	effective cross-section	angular	lateral	axial	angular	lateral
D_a	l	A	$2\alpha_N$	$2\gamma_N$	c_δ	c_α	c_γ
mm	mm	cm^2	degree	mm	N/mm	Nm/deg	N/mm
89	54	46	30	5.6	86	1.1	259
90	140	46.6	48	28	112	1.4	51
107	36	68.7	21	2.4	126	2.4	1275
110	132	70.9	44	22	133	2.6	103
121	44	89.1	21	2.8	190	4.7	1670
121	88	89.1	34	11	95	2.4	209
123	144	90.8	43	24	135	3.4	113
149	48	138	21	3.2	159	6.1	1817
149	84	138	31	9.8	91	3.5	340
152	210	141	42	42	128	5	78
171	56	184	20	3.7	147	7.5	1646
171	84	184	27	8.2	98	5	488
174	208	187	40	38	136	7.1	113
203	60	264	19	3.5	254	19	3564
203	120	264	31	14	127	9.3	445
205	208	267	38	36	133	9.9	157
257	68	436	18	3.8	240	29	4318
257	136	436	28	15	120	15	540
260	198	441	35	31	138	17	297
316	72	670	17	3.9	209	39	5156
316	126	670	25	12	120	22	967
319	304	677	33	45	199	37	278

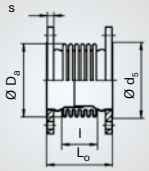
1) Inner sleeve, movement absorption: The inner sleeve is designed for axial movement only. The movements (axial, angular, lateral) are to be regarded as alternatives, i.e. the sum of their proportions in percentages should not exceed 100 %.

AXIAL EXPANSION JOINTS WITH LOOSE FLANGES

Type ABN without inner sleeve



Type ABN with inner sleeve



06

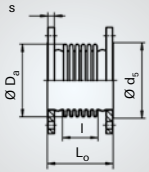
Nominal diameter	Nominal axial movement absorption	Type	Order No. standard version		Overall length	Weight approx.		Flange		
		ABN 10...	without inner sleeve	with inner sleeve		without inner sleeve	with inner sleeve	drilling as per EN 1092	rim diameter	thickness
DN	$2\delta_N$	–	–	–	L_o	G	G	PN	d_5	s
–	mm	–	–	–	mm	kg	kg	-	mm	mm
300	45	.0300.045.0	419857	419923	178	32	33	10	5.1	26
300	90	.0300.090.0	419858	419924	241	35	37	10	7.8	26
300	137	.0300.137.0	419859	419925	447	54	58	10	26.8	26
350	60	.0350.060.0	419882	419926	211	50	52	10	6.8	30
350	105	.0350.105.0	419883	419927	277	53	56	10	9.8	30
350	150	.0350.150.0	419884	419928	487	86	91	10	42.5	30
400	48	.0400.048.0	419885	419929	235	70	72	10	14.8	32
400	96	.0400.096.0	419886	419930	331	79	82	10	23.5	32
400	156	.0400.156.0	419887	419931	479	102	108	10	46.9	32
450	70	.0450.070.0	419888	419932	272	87	90	10	20.1	36
450	98	.0450.098.0	419889	419933	322	93	97	10	25.3	36
450	182	.0450.182.0	419890	419934	472	108	114	10	40.8	36
500	66	.0500.066.0	419891	419935	259	101	104	10	20.4	38
500	116	.0500.116.0	419892	419936	340	110	115	10	29.7	38
500	192	.0500.192.0	419893	419937	489	141	149	10	60.9	38
600	72	.0600.072.0	419894	419938	275	135	139	10	25.7	42
600	108	.0600.108.0	419895	419939	333	143	148	10	33.6	42
600	198	.0600.198.0	419896	419940	491	181	190	10	71.8	42
700	57	.0700.057.0	419897	419941	248	163	167	10	35.3	40
700	114	.0700.114.0	419898	419942	344	183	190	10	55	40
700	190	.0700.190.0	419899	419943	472	209	220	10	81.3	40

Bellows			Nominal movement absorption[1] at 1000 load cycles		Spring rate		
outside diameter	corrugated length	effective cross-section	angular	lateral	axial	angular	lateral
D_a	l	A	$2\alpha_N$	$2\gamma_N$	c_δ	c_α	c_γ
mm	mm	cm^2	degree	mm	N/mm	Nm/deg	N/mm
372	63	935	14	2.7	290	75	13045
372	126	935	24	11	145	38	1631
374	330	940	31	44	237	62	391
403	88	1113	17	4.7	250	77	6864
403	154	1113	24	14	143	44	1282
412	360	1140	32	47	285	90	479
464	96	1466	12	3.6	723	294	21961
464	192	1466	22	14	362	147	2749
467	338	1476	30	41	287	118	708
518	125	1844	12	4.8	560	287	12620
518	175	1844	24	13	400	205	4599
518	325	1844	26	38	215	110	717
574	108	2273	13	4.4	620	392	23078
574	189	2273	21	14	354	224	4303
576	336	2282	29	40	279	177	1077
678	116	3222	12	4.3	645	577	29497
678	174	3222	17	9.8	430	385	8740
680	330	3232	26	34	316	284	1791
785	96	4353	8.6	2.4	1134	1371	102304
785	192	4353	16	9.8	567	686	12788
785	320	4353	22	27	340	411	2761

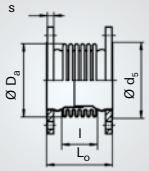
1) Inner sleeve, movement absorption: The inner sleeve is designed for axial movement only. The movements (axial, angular, lateral) are to be regarded as alternatives, i.e. the sum of their proportions in percentages should not exceed 100 %.

AXIAL EXPANSION JOINTS WITH LOOSE FLANGES

Type ABN without inner sleeve



Type ABN with inner sleeve



06

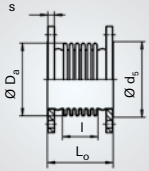
Nominal diameter	Nominal axial movement absorption	Type	Order No. standard version		Overall length	Weight approx.		Flange		
		ABN 16...	without inner sleeve	with inner sleeve		without inner sleeve	with inner sleeve	drilling as per EN 1092	rim diameter	thickness
DN	$2\delta_N$	–	–	–	L_o	G	G	PN	d_5	s
–	mm	–	–	–	mm	kg	kg	-	mm	mm
50	22	.0050.022.0	419944	419984	135	6	6	16	92	20
50	42	.0050.042.0	419945	419985	226	7	8	16	92	20
65	28	.0065.028.0	419946	419986	141	7	7	16	107	20
65	48	.0065.048.0	419947	419987	215	9	9	16	107	20
80	23	.0080.023.0	419948	419988	142	9	9	16	122	20
80	50	.0080.050.0	419949	419989	215	10	10	16	122	20
100	31	.0100.031.0	419950	419990	151	11	11	16	147	22
100	53	.0100.053.0	419951	419991	228	13	14	16	147	22
125	21	.0125.021.0	419952	419992	138	12	13	16	178	22
125	42	.0125.042.0	419953	419993	180	13	13	16	178	22
125	59	.0125.059.0	419954	419994	242	15	16	16	178	22
150	24	.0150.024.0	419955	419995	145	16	16	16	208	24
150	48	.0150.048.0	419956	419996	190	17	18	16	208	24
150	66	.0150.066.0	419957	419997	246	20	21	16	208	24
200	30	.0200.030.0	419958	419998	160	23	24	16	258	26
200	60	.0200.060.0	419959	419999	214	25	27	16	258	26
200	97	.0200.097.0	419960	420000	377	35	37	16	258	26
250	32	.0250.032.0	419961	420001	197	34	35	16	320	29
250	56	.0250.056.0	419962	420002	254	36	38	16	320	29
250	103	.0250.103.0	419963	420003	383	47	50	16	320	29

Bellows			Nominal movement absorption[1] at 1000 load cycles		Spring rate		
outside diameter	corrugated length	effective cross-section	angular	lateral	axial	angular	lateral
D_a	l	A	$2\alpha_N$	$2\gamma_N$	c_δ	c_α	c_γ
mm	mm	cm^2	degree	mm	N/mm	Nm/deg	N/mm
89	54	46	28	5.2	143	1.8	430
91	143	47.2	40	26	149	2	66
108	60	69.4	27	5.9	124	2.4	457
110	132	70.9	37	22	133	2.6	103
122	60	89.9	22	4.3	273	6.8	1302
123	132	90.8	35	20	147	3.7	146
150	65	139	23	5	223	8.6	1400
152	140	141	33	18	192	7.5	264
172	42	185	15	1.9	346	18	6932
172	84	185	25	7.7	173	8.9	867
174	144	187	31	18	196	10	338
203	45	264	14	2	339	25	8455
203	90	264	24	7.8	169	12	1054
205	144	267	29	17	193	14	475
260	54	441	14	2.3	508	62	14678
260	108	441	24	9.1	254	31	1835
262	270	445	29	37	271	33	316
318	76	674	12	2.8	634	119	14135
318	133	674	19	8.5	362	68	2635
320	260	679	27	30	296	56	568

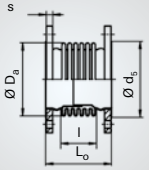
1) Inner sleeve, movement absorption: The inner sleeve is designed for axial movement only. The movements (axial, angular, lateral) are to be regarded as alternatives, i.e. the sum of their proportions in percentages should not exceed 100 %.

AXIAL EXPANSION JOINTS WITH LOOSE FLANGES

Type ABN without inner sleeve



Type ABN with inner sleeve



06

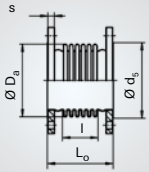
Nominal diameter	Nominal axial movement absorption	Type	Order No. standard version		Overall length	Weight approx.		Flange		
		ABN 16...	without inner sleeve	with inner sleeve		without inner sleeve	with inner sleeve	drilling as per EN 1092	rim diameter	thickness
DN	$2\delta_N$	–	–	–	L_o	G	G	PN	d_5	s
–	mm	–	–	–	mm	kg	kg	-	mm	mm
300	30	.0300.030.0	419964	420004	191	46	47	16	375	32
300	80	.0300.080.0	419965	420005	296	52	55	16	375	32
300	120	.0300.120.0	419966	420006	476	75	79	16	375	32
350	30	.0350.030.0	419967	420007	197	65	66	16	410	35
350	80	.0350.080.0	419968	420008	302	72	75	16	410	35
350	130	.0350.130.0	419969	420009	449	94	99	16	410	35
400	48	.0400.048.0	419970	420010	257	92	94	16	465	38
400	84	.0400.084.0	419971	420011	335	101	105	16	465	38
400	132	.0400.132.0	419972	420012	439	113	118	16	465	38
450	52	.0450.052.0	419974	420014	265	116	119	16	520	42
450	91	.0450.091.0	419975	420015	343	127	131	16	520	42
450	143	.0450.143.0	419976	420016	447	141	146	16	520	42
500	48	.0500.048.0	419977	420017	253	152	155	16	570	46
500	96	.0500.096.0	419978	420018	337	165	169	16	570	46
500	144	.0500.144.0	419979	420019	421	177	183	16	570	46

Bellows			Nominal movement absorption[1] at 1000 load cycles		Spring rate		
outside diameter	corrugated length	effective cross-section	angular	lateral	axial	angular	lateral
D_a	l	A	$2\alpha_N$	$2\gamma_N$	c_δ	c_α	c_γ
mm	mm	cm^2	degree	mm	N/mm	Nm/deg	N/mm
374	63	940	9.6	1.8	930	243	42077
374	168	940	22	13	349	91	2220
376	345	946	24	40	322	85	489
408	63	1128	8.8	1.7	911	285	49455
408	168	1128	20	12	342	107	2611
412	312	1140	25	35	329	104	736
467	104	1476	12	3.8	934	383	24342
467	182	1476	19	12	534	219	4544
467	286	1476	24	29	340	139	1172
520	104	1851	12	3.7	943	485	30826
520	182	1851	21	13	539	277	5753
520	286	1851	23	28	343	176	1483
576	84	2282	9.9	2.5	1117	708	68986
576	168	2282	18	10	558	354	8616
576	252	2282	23	22	372	236	2553

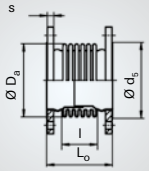
1) Inner sleeve, movement absorption: The inner sleeve is designed for axial movement only. The movements (axial, angular, lateral) are to be regarded as alternatives, i.e. the sum of their proportions in percentages should not exceed 100 %.

AXIAL EXPANSION JOINTS WITH LOOSE FLANGES

Type ABN without inner sleeve



Type ABN with inner sleeve



06

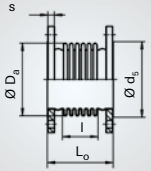
Nominal diameter	Nominal axial movement absorption	Type	Order No. standard version		Overall length	Weight approx.		Flange		
		ABN 25...	without inner sleeve	with inner sleeve		without inner sleeve	with inner sleeve	drilling as per EN 1092	rim diameter	thickness
DN	$2\delta_N$	–	–	–	L_o	G	G	PN	d_5	s
–	mm	–	–	–	mm	kg	kg	-	mm	mm
50	13	.0050.013.0	420020	420071	122	6	6	40	92	20
50	29	.0050.029.0	420021	420072	182	7	7	40	92	20
65	17	.0065.017.0	420022	420073	130	8	8	40	107	22
65	40	.0065.040.0	420023	420074	220	10	10	40	107	22
80	23	.0080.023.0	420024	420075	151	10	11	40	122	24
80	42	.0080.042.0	420025	420076	222	12	12	40	122	24
100	23	.0100.023.0	420044	420077	147	14	15	40	147	26
100	48	.0100.048.0	420045	420078	222	16	17	40	147	26
125	26	.0125.026.0	420046	420079	174	19	20	40	178	28
125	52	.0125.052.0	420049	420080	238	21	21	40	178	28
150	29	.0150.029.0	420052	420081	178	24	25	40	208	30
150	58	.0150.058.0	420053	420082	242	26	27	40	208	30
200	26	.0200.026.0	420054	420083	190	34	35	25	258	32
200	46	.0200.046.0	420056	420098	244	36	37	25	258	32
200	71	.0200.071.0	420057	420099	317	41	43	25	258	32
250	24	.0250.024.0	420058	420100	195	47	49	25	320	35
250	48	.0250.048.0	420059	420101	255	51	53	25	320	35
250	79	.0250.079.0	420061	420102	335	56	58	25	320	35
300	27	.0300.027.0	420062	420103	207	62	64	25	375	38
300	55	.0300.055.0	420063	420104	273	67	69	25	375	38
300	82	.0300.082.0	420064	420107	339	72	75	25	375	38

Bellows			Nominal movement absorption[1] at 1000 load cycles		Spring rate		
outside diameter	corrugated length	effective cross-section	angular	lateral	axial	angular	lateral
D_a	l	A	$2\alpha_N$	$2\lambda_{-N}$	c_δ	c_{α}	c_λ
mm	mm	cm^2	degree	mm	N/mm	Nm/deg	N/mm
90	40	46.6	19	2.3	391	5.1	2173
91	99	47.2	32	12	215	2.8	198
109	44	70.1	19	2.6	334	6.5	2311
111	132	71.6	33	18	212	4.2	166
123	60	90.8	22	4.2	323	8.1	1555
125	130	92.5	32	17	217	5.6	227
151	52	140	18	3	334	13	3302
152	126	141	30	15	213	8.3	361
174	64	187	18	3.6	442	23	3864
174	128	187	29	14	221	12	483
205	64	267	17	3.4	434	32	5410
205	128	267	27	14	217	16	676
261	72	443	12	2.6	843	104	13759
261	126	443	18	8	482	59	2569
262	198	445	23	20	370	46	802
320	60	679	9	1.6	1281	242	46135
320	120	679	16	6.5	640	121	5762
320	200	679	21	18	384	72	1245
374	66	940	8.7	1.7	1186	310	48892
374	132	940	16	7	593	155	6112
374	198	940	19	16	395	103	1809

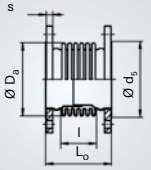
1) Inner sleeve, movement absorption: The inner sleeve is designed for axial movement only. The movements (axial, angular, lateral) are to be regarded as alternatives, i.e. the sum of their proportions in percentages should not exceed 100 %.

AXIAL EXPANSION JOINTS WITH LOOSE FLANGES

Type ABN without inner sleeve



Type ABN with inner sleeve



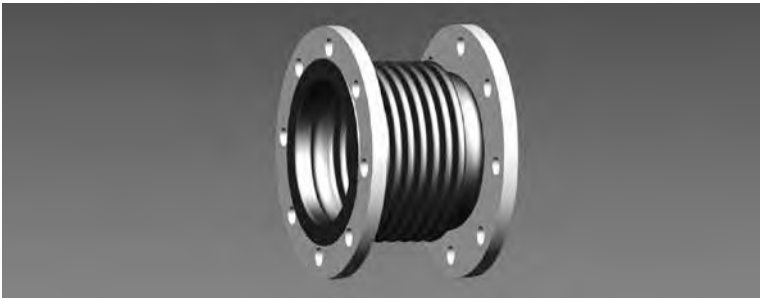
06

Nominal diameter	Nominal axial movement absorption	Type	Order No. standard version		Overall length	Weight approx.		Flange		
		ABN 25...	without inner sleeve	with inner sleeve		without inner sleeve	with inner sleeve	drilling as per EN 1092	rim diameter	thickness
DN	$2\delta_N$	–	–	–	L_o	G	G	PN	d_5	s
–	mm	–	–	–	mm	kg	kg	-	mm	mm
350	30	.0350.030.0	420065	420108	223	98	100	25	410	42
350	50	.0350.050.0	420066	420109	271	103	105	25	410	42
350	80	.0350.080.0	420067	420110	343	110	113	25	410	42
400	32	.0400.032.0	420068	420111	273	137	140	25	465	48
400	56	.0400.056.0	420069	420112	348	147	150	25	465	48
400	96	.0400.096.0	420070	420113	499	171	177	25	465	48

Bellows			Nominal movement absorption[1] at 1000 load cycles		Spring rate		
outside diameter	corrugated length	effective cross-section	angular	lateral	axial	angular	lateral
D_a	l	A	$2\alpha_N$	$2\lambda_{-N}$	c_δ	c_α	c_λ
mm	mm	cm^2	degree	mm	N/mm	Nm/deg	N/mm
412	72	1140	8.8	1.9	1425	451	59854
412	120	1140	14	5.2	855	271	12928
412	192	1140	19	13	534	169	3154
466	100	1473	8.1	2.5	1908	780	53659
466	175	1473	13	7.5	1090	446	10010
469	324	1483	18	24	689	284	1859

1) Inner sleeve, movement absorption: The inner sleeve is designed for axial movement only. The movements (axial, angular, lateral) are to be regarded as alternatives, i.e. the sum of their proportions in percentages should not exceed 100 %.

AXIAL EXPANSION JOINTS WITH FLANGES TYPE ABN, AFN



Type designation
The type designation consists of 2 parts
1. Type series, defined by 3 letters
2. Nominal size, defined by 10 digits

Example
Type ABN: HYDRA Axial expansion joint with loose flanges
Type AFN: HYDRA Axial expansion joint with plain fixed flanges

Standard version/materials
Multi-ply bellows made of 1.4541
Flange made of S235JRG2 (1.0038) or P250GH (1.0460)
Operating temperature: up to 300 °C / 450 °C

Type designation (example)

ABN	10	·	0150	·	064	·	0
Type	Nominal pressure (PN10)		Nominal diameter (DN150)		Movement absorption, nominal (2δ = ±32 = 64 mm)		Inner sleeve (0 = without, 1 = with)

Order text according to guideline 2014/68/EU "Pressure Equipment Directive"

Please state the following with your order:

For standard versions
- Type designation or order number

With material variation
- Type designation
- Details of the materials

According to the Pressure Equipment Directive, the following information is required for testing and documentation:

Type of pressure equipment according to Art. 1 & 2:
- Vessel - volume V [l] _____
- Piping - nominal diameter DN _____

Medium property according to Art. 13:
- Group 1 – dangerous
- Group 2 – all other fluids

State of medium
- Gaseous or liquid if PD > 0.5 bar
- Liquid if PD ≤ 0.5 bar

Design data:
- Max. allowable pressure [bar] _____
- Max./min. allowable temperature [°C] _____
- Test pressure PT [bar] _____

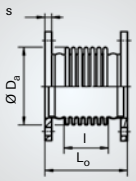
Optional:
- Category _____

Note

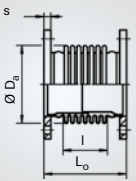
Tell us the dimensions that deviate from the standard and we customize the expansion joint to your specification.

AXIAL EXPANSION JOINTS WITH PLAIN FIXED FLANGES

Type AFN without inner sleeve



Type AFN with inner sleeve



06

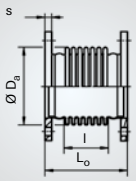
Nominal diameter	Nominal axial movement absorption	Type AFN 02...	Order No. standard version		Overall length	Weight approx.		Flange	
			without inner sleeve	with inner sleeve		without inner sleeve	with inner sleeve	drilling as per EN 1092	thickness
DN	$2\delta_N$	–	–	–	L_o	G	G	PN	s
–	mm	–	–	–	mm	kg	kg	-	mm
50	20	.0050.020.0	421681	421833	129	3.2	3.4	6	16
50	40	.0050.040.0	421682	421834	174	3.4	3.6	6	16
50	70	.0050.070.0	421683	421835	255	3.9	4.3	6	16
65	23	.0065.023.0	421684	421836	129	4.1	4.3	6	16
65	60	.0065.060.0	421685	421837	201	4.4	4.8	6	16
65	87	.0065.087.0	421686	421838	274	5	6	6	16
80	27	.0080.027.0	421687	421839	136	6	7	6	18
80	64	.0080.064.0	421688	421840	206	7	7	6	18
80	92	.0080.092.0	421689	421841	284	7	8	6	18
100	46	.0100.046.0	421690	421842	163	7	8	6	18
100	73	.0100.073.0	421691	421843	207	8	8	6	18
100	98	.0100.098.0	421692	421844	294	10	11	6	18
125	45	.0125.045.0	421693	421845	163	9	10	6	20
125	81	.0125.081.0	421694	421846	215	10	10	6	20
125	140	.0125.140.0	421695	421847	378	14	15	6	20
150	45	.0150.045.0	421696	421848	163	10	11	6	20
150	81	.0150.081.0	421697	421849	215	11	12	6	20
150	160	.0150.160.0	421698	421850	398	16	18	6	20
200	60	.0200.060.0	421699	421851	190	15	16	6	22
200	110	.0200.110.0	421700	421852	276	17	19	6	22
200	190	.0200.190.0	421701	421853	423	22	25	6	22

Bellows			Nominal movement absorption[1] at 1000 load cycles		Spring rate		
outside diameter	corrugated length	effective cross-section	angular	lateral	axial	angular	lateral
D_a	l	A	$2\alpha_N$	$2\lambda_{-N}$	c_δ	c_α	c_λ
mm	mm	cm^2	degree	mm	N/mm	Nm/deg	N/mm
89	45	46	29	3.9	104	1.3	451
89	90	46	50	16	52	0.7	56
89	171	46	50	52	45	0.6	14
107	45	68.7	28	3.7	101	1.9	654
107	117	68.7	50	25	39	0.7	37
108	190	69.4	50	59	39	0.8	14
121	50	89.1	28	4.1	94	2.3	640
121	120	89.1	50	24	39	1	46
121	198	89.1	50	57	42	1.1	18
148	77	137	37	9	62	2.4	273
148	121	137	50	22	40	1.5	71
150	208	139	50	51	70	2.7	43
174	65	187	31	6.3	58	3	492
174	117	187	49	20	32	1.7	84
172	280	185	50	85	52	2.7	23
203	65	264	27	5.3	67	5	801
203	117	264	43	17	37	2.8	137
203	300	264	50	87	51	3.7	29
255	90	432	27	7.7	62	7.4	631
256	176	434	44	27	50	6	134
257	323	436	50	87	51	6.2	41

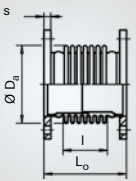
1) Inner sleeve, movement absorption: The inner sleeve is designed for axial movement only. The movements (axial, angular, lateral) are to be regarded as alternatives, i.e. the sum of their proportions in percentages should not exceed 100 %.

AXIAL EXPANSION JOINTS WITH PLAIN FIXED FLANGES

Type AFN without inner sleeve



Type AFN with inner sleeve



06

Nominal diameter	Nominal axial movement absorption	Type	Order No. standard version		Overall length	Weight approx.		Flange	
		AFN 02...	without inner sleeve	with inner sleeve		without inner sleeve	with inner sleeve	drilling as per EN 1092	thickness
DN	$2\delta_N$	–	–	–	L_o	G	G	PN	s
–	mm	–	–	–	mm	kg	kg	-	mm
250	72	.0250.072.0	421702	421854	214	20	21	6	24
250	120	.0250.120.0	421703	421855	282	22	24	6	24
250	204	.0250.204.0	421704	421856	418	29	32	6	24
300	56	.0300.056.0	421705	421857	188	25	28	6	24
300	126	.0300.126.0	421706	421858	283	27	31	6	24
300	210	.0300.210.0	421707	421859	392	35	41	6	24
350	60	.0350.060.0	421708	421860	194	35	38	6	26
350	120	.0350.120.0	421709	421861	274	38	42	6	26
350	210	.0350.210.0	421710	421863	408	46	53	6	26
400	65	.0400.065.0	421711	421864	230	44	48	6	28
400	104	.0400.104.0	421712	421865	293	46	51	6	28
400	182	.0400.182.0	421713	421866	419	50	58	6	28
450	56	.0450.056.0	421714	421867	217	54	57	6	30
450	112	.0450.112.0	421715	421868	305	57	63	6	30
450	182	.0450.182.0	421716	421869	415	61	69	6	30
500	68	.0500.068.0	421717	421870	221	58	63	6	30
500	119	.0500.119.0	421718	421871	290	61	67	6	30
500	204	.0500.204.0	421719	421872	405	66	75	6	30
600	76	.0600.076.0	421720	421873	237	76	82	6	32
600	114	.0600.114.0	421721	421874	289	79	86	6	32
600	209	.0600.209.0	421722	421875	419	85	96	6	32

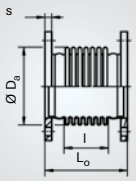
TYPE AFN 02...
PN 2.5

Bellows			Nominal movement absorption[1] at 1000 load cycles		Spring rate		
outside diameter	corrugated length	effective cross-section	angular	lateral	axial	angular	lateral
D_a	l	A	$2\alpha_N$	$2\lambda_{-N}$	c_δ	c_α	c_λ
mm	mm	cm^2	degree	mm	N/mm	Nm/deg	N/mm
312	102	661	26	8.4	62	11	752
315	170	667	39	23	48	8.9	212
316	306	670	50	71	49	9.3	67
365	76	916	18	4.2	91	23	2756
365	171	916	34	21	40	10	239
371	280	932	50	57	52	13	118
400	80	1104	17	4.3	82	25	2703
402	160	1110	32	17	58	18	480
402	294	1110	49	55	60	19	147
458	105	1445	17	5.3	211	85	5283
458	168	1445	26	14	132	53	1291
458	294	1445	39	42	75	31	240
513	88	1825	13	3.4	243	123	10935
513	176	1825	25	14	121	62	1361
513	286	1825	35	36	75	38	320
569	92	2252	14	3.9	214	135	10875
569	161	2252	24	12	122	77	2025
569	276	2252	35	35	71	45	401
674	104	3202	13	4.1	214	191	12099
674	156	3202	19	9.3	143	127	3593
674	286	3202	31	31	78	69	583

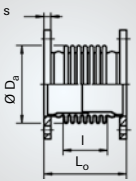
1) Inner sleeve, movement absorption: The inner sleeve is designed for axial movement only. The movements (axial, angular, lateral) are to be regarded as alternatives, i.e. the sum of their proportions in percentages should not exceed 100 %.

AXIAL EXPANSION JOINTS WITH PLAIN FIXED FLANGES

Type AFN without inner sleeve



Type AFN with inner sleeve



06

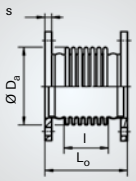
Nominal diameter	Nominal axial movement absorption	Type AFN 02...	Order No. standard version		Overall length	Weight approx.		Flange	
			without inner sleeve	with inner sleeve		without inner sleeve	with inner sleeve	drilling as per EN 1092	thickness
DN	$2\delta_N$	–	–	–	L_o	G	G	PN	s
–	mm	–	–	–	mm	kg	kg	-	mm
700	80	.0700.080.0	421723	421876	240	94	101	6	32
700	120	.0700.120.0	421724	421877	296	97	106	6	32
700	220	.0700.220.0	421725	421878	436	105	119	6	32
800	63	.0800.063.0	421727	421879	227	120	126	6	34
800	126	.0800.126.0	421728	421880	314	126	137	6	34
800	210	.0800.210.0	421729	421881	430	133	149	6	34
900	63	.0900.063.0	421730	421882	232	130	136	6	35
900	126	.0900.126.0	421731	421883	322	137	150	6	35
900	210	.0900.210.0	421732	421884	442	145	164	6	35
1000	72	.1000.072.0	421733	421885	252	148	156	6	37
1000	120	.1000.120.0	421734	421886	316	153	167	6	37
1000	240	.1000.240.0	421735	421887	476	165	187	6	37
1200	72	.1200.072.0	421736	421888	266	19	216	2	40
1200	120	.1200.120.0	421737	421889	330	28	237	2	40
1200	216	.1200.216.0	421738	421890	458	47	264	2	40
1400	48	.1400.048.0	421739	421891	178	245	257	2	42
1400	108	.1400.108.0	421740	421892	308	257	280	2	42
1400	180	.1400.180.0	421741	421893	464	271	310	2	42
1600	48	.1600.048.0	421742	421894	186	333	347	2	46
1600	108	.1600.108.0	421743	421895	316	347	374	2	46
1600	180	.1600.180.0	421744	421896	472	364	408	2	46

Bellows			Nominal movement absorption[1] at 1000 load cycles		Spring rate		
outside diameter	corrugated length	effective cross-section	angular	lateral	axial	angular	lateral
D_a	l	A	$2\alpha_N$	$2\lambda_{-N}$	c_δ	c_{α}	c_λ
mm	mm	cm^2	degree	mm	N/mm	Nm/deg	N/mm
780	112	4324	12	4	203	244	13365
780	168	4324	17	9.1	135	162	3950
780	308	4324	27	30	74	89	644
882	87	5588	8.4	2.2	293	456	41313
882	174	5588	16	8.7	147	228	5182
882	290	5588	24	24	88	137	1117
992	90	7133	7.4	2	316	628	53147
992	180	7133	14	7.9	158	313	6643
992	300	7133	21	22	95	188	1438
1095	96	8750	7.7	2.2	335	814	60745
1095	160	8750	13	6.1	201	489	13121
1095	320	8750	22	24	100	245	1632
1295	96	12331	6.5	1.8	511	1750	130579
1295	160	12331	11	5.1	306	1052	28150
1295	288	12331	18	17	170	582	4827
1456	104	16016	3.8	1.2	911	4053	257632
1456	234	16016	8.4	5.9	405	1802	22624
1456	390	16016	13	16	243	1081	4887
1656	104	20816	3.3	1	1035	5990	380429
1656	234	20816	7.4	5.2	460	2660	33398
1656	390	20816	12	14	276	1596	7214

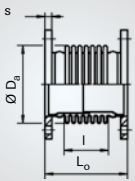
1) Inner sleeve, movement absorption: The inner sleeve is designed for axial movement only. The movements (axial, angular, lateral) are to be regarded as alternatives, i.e. the sum of their proportions in percentages should not exceed 100 %.

AXIAL EXPANSION JOINTS WITH PLAIN FIXED FLANGES

Type AFN without inner sleeve



Type AFN with inner sleeve



06

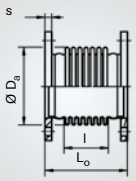
Nominal diameter	Nominal axial movement absorption	Type AFN 02...	Order No. standard version		Overall length	Weight approx.		Flange	
			without inner sleeve	with inner sleeve		without inner sleeve	with inner sleeve	drilling as per EN 1092	thickness
DN	$2\delta_N$	–	–	–	L_o	G	G	PN	s
–	mm	–	–	–	mm	kg	kg	-	mm
1800	48	.1800.048.0	421752	421897	194	404	420	2	50
1800	108	.1800.108.0	421753	421898	324	420	450	2	50
1800	180	.1800.180.0	421754	421899	480	438	488	2	50
2000	48	.2000.048.0	421755	421900	198	465	482	2	52
2000	108	.2000.108.0	421757	421901	328	482	516	2	52
2000	180	.2000.180.0	421759	421902	484	502	558	2	52

Bellows			Nominal movement absorption[1] at 1000 load cycles		Spring rate		
outside diameter	corrugated length	effective cross-section	angular	lateral	axial	angular	lateral
D_a	l	A	$2\alpha_N$	$2\lambda_{-N}$	c_δ	c_α	c_λ
mm	mm	cm^2	degree	mm	N/mm	Nm/deg	N/mm
1856	104	26245	3	0.9	1158	8449	536643
1856	234	26245	6.6	4.6	515	3754	47143
1856	390	26245	11	13	309	2253	10183
2056	104	32302	2.7	0.8	1281	11503	730650
2056	234	32302	6	4.2	569	5114	64107
2056	390	32302	9.6	12	342	3069	13872

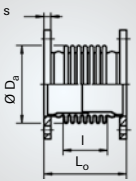
1) Inner sleeve, movement absorption: The inner sleeve is designed for axial movement only. The movements (axial, angular, lateral) are to be regarded as alternatives, i.e. the sum of their proportions in percentages should not exceed 100 %.

AXIAL EXPANSION JOINTS WITH PLAIN FIXED FLANGES

Type AFN without inner sleeve



Type AFN with inner sleeve



06

Nominal diameter	Nominal axial movement absorption	Type	Order No. standard version		Overall length	Weight approx.		Flange	
		AFN 06...	without inner sleeve	with inner sleeve		without inner sleeve	with inner sleeve	drilling as per EN 1092	thickness
DN	$2\delta_N$	–	–	–	L_o	G	G	PN	s
–	mm	–	–	–	mm	kg	kg	-	mm
50	20	.0050.020.0	421903	421960	129	3.2	3.4	6	16
50	52	.0050.052.0	421904	421961	210	3.7	4.1	6	16
65	23	.0065.023.0	421905	421962	129	4.1	4.3	6	16
65	41	.0065.041.0	421906	421963	165	4.2	4.6	6	16
65	72	.0065.072.0	421907	421964	282	6	7	6	16
80	27	.0080.027.0	421908	421965	136	6	7	6	18
80	42	.0080.042.0	421909	421966	166	7	7	6	18
80	77	.0080.077.0	421910	421967	290	9	10	6	18
100	33	.0100.033.0	421911	421968	141	7	7	6	18
100	59	.0100.059.0	421912	421969	194	8	8	6	18
100	87	.0100.087.0	421913	421970	281	10	11	6	18
125	36	.0125.036.0	421914	421971	150	9	10	6	20
125	63	.0125.063.0	421915	421972	189	9	10	6	20
125	98	.0125.098.0	421916	421973	308	13	14	6	20
150	40	.0150.040.0	421917	422009	168	11	11	6	20
150	72	.0150.072.0	421918	422010	233	13	14	6	20
150	124	.0150.124.0	421919	422011	370	18	20	6	20
200	40	.0200.040.0	421920	422012	164	15	16	6	22
200	80	.0200.080.0	421921	422013	236	18	19	6	22
200	140	.0200.140.0	421922	422014	352	25	27	6	22

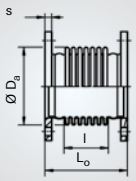
TYPE AFN 06...
PN 6

Bellows			Nominal movement absorption[1] at 1000 load cycles		Spring rate		
outside diameter	corrugated length	effective cross-section	angular	lateral	axial	angular	lateral
D_a	l	A	$2\alpha_N$	$2\lambda_{-N}$	c_δ	c_{α}	c_λ
mm	mm	cm^2	degree	mm	N/mm	Nm/deg	N/mm
89	45	46	28	3.9	104	1.3	451
89	126	46	50	28	61	0.8	34
107	45	68.7	27	3.7	101	1.9	654
107	81	68.7	42	12	56	1.1	112
110	198	70.9	50	50	88	1.8	30
121	50	89.1	27	4.1	94	2.3	640
121	80	89.1	38	11	58	1.5	154
123	204	90.8	50	48	95	2.4	40
148	55	137	27	4.6	87	3.3	752
149	108	138	43	16	71	2.7	160
151	195	140	50	42	89	3.5	63
174	52	187	25	4	72	3.7	953
174	91	187	39	12	41	2.1	177
173	210	186	50	45	88	4.6	71
202	70	263	23	5.1	116	8.5	1189
203	135	264	39	18	113	8.4	313
205	272	267	50	61	102	7.7	70
256	64	434	19	3.6	138	17	2791
257	136	436	34	15	120	15	540
260	252	441	50	50	109	13	145

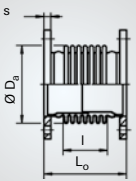
1) Inner sleeve, movement absorption: The inner sleeve is designed for axial movement only. The movements (axial, angular, lateral) are to be regarded as alternatives, i.e. the sum of their proportions in percentages should not exceed 100 %.

AXIAL EXPANSION JOINTS WITH PLAIN FIXED FLANGES

Type AFN without inner sleeve



Type AFN with inner sleeve



06

Nominal diameter	Nominal axial movement absorption	Type	Order No. standard version		Overall length	Weight approx.		Flange	
		AFN 06...	without inner sleeve	with inner sleeve		without inner sleeve	with inner sleeve	drilling as per EN 1092	thickness
DN	$2\delta_N$	–	–	–	L_o	G	G	PN	s
–	mm	–	–	–	mm	kg	kg	-	mm
250	48	.0250.048.0	421923	422015	184	21	22	6	24
250	84	.0250.084.0	421924	422016	238	23	25	6	24
250	144	.0250.144.0	421925	422017	352	31	34	6	24
300	60	.0300.060.0	421926	422018	192	28	30	6	24
300	90	.0300.090.0	421927	422019	232	29	33	6	24
300	135	.0300.135.0	421928	422020	310	37	41	6	24
350	45	.0350.045.0	421929	422022	177	37	39	6	26
350	105	.0350.105.0	421930	422023	261	41	44	6	26
350	165	.0350.165.0	421931	422024	367	51	56	6	26
400	52	.0400.052.0	421932	422025	213	46	48	6	28
400	104	.0400.104.0	421933	422026	301	50	55	6	28
400	169	.0400.169.0	421934	422027	424	61	68	6	28
450	56	.0450.056.0	421935	422029	221	56	59	6	30
450	98	.0450.098.0	421936	422030	290	60	65	6	30
450	182	.0450.182.0	421937	422031	441	74	82	6	30
500	66	.0500.066.0	421938	422033	229	64	68	6	30
500	116	.0500.116.0	421939	422034	304	70	77	6	30
500	198	.0500.198.0	421941	422036	453	94	104	6	30
600	76	.0600.076.0	421942	422037	245	83	89	6	32
600	114	.0600.114.0	421943	422038	301	89	96	6	32
600	198	.0600.198.0	421944	422039	452	118	130	6	32

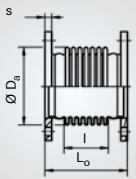
TYPE AFN 06...
PN 6

Bellows			Nominal movement absorption[1] at 1000 load cycles		Spring rate		
outside diameter	corrugated length	effective cross-section	angular	lateral	axial	angular	lateral
D_a	l	A	$2\alpha_N$	$2\lambda_{-N}$	c_δ	c_α	c_λ
mm	mm	cm^2	degree	mm	N/mm	Nm/deg	N/mm
316	72	670	18	3.9	209	39	5156
316	126	670	29	12	120	22	967
319	240	677	45	39	109	21	245
371	80	932	19	4.6	182	47	5062
371	120	932	27	10	121	32	1496
374	198	940	39	26	127	33	582
402	63	1110	13	2.5	281	87	15014
402	147	1110	28	14	120	37	1178
405	253	1119	40	37	119	37	397
461	88	1456	13	3.5	359	146	12887
461	176	1456	23	14	179	73	1606
462	299	1459	32	39	148	60	461
514	92	1828	13	3.6	364	186	15018
514	161	1828	20	11	208	106	2802
515	312	1832	30	39	150	76	539
572	100	2265	14	4.1	411	260	17778
572	175	2265	22	13	235	148	3319
574	324	2273	33	40	207	131	856
677	112	3217	13	4.4	412	370	20180
677	168	3217	19	10	275	247	5986
678	319	3222	29	33	235	211	1421

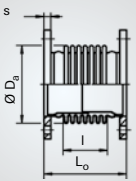
1) Inner sleeve, movement absorption: The inner sleeve is designed for axial movement only. The movements (axial, angular, lateral) are to be regarded as alternatives, i.e. the sum of their proportions in percentages should not exceed 100 %.

AXIAL EXPANSION JOINTS WITH PLAIN FIXED FLANGES

Type AFN without inner sleeve



Type AFN with inner sleeve



06

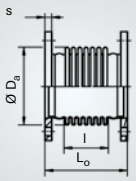
Nominal diameter	Nominal axial movement absorption	Type AFN 06...	Order No. standard version		Overall length	Weight approx.		Flange	
			without inner sleeve	with inner sleeve		without inner sleeve	with inner sleeve	drilling as per EN 1092	thickness
DN	$2\delta_N$	–	–	–	L_o	G	G	PN	s
–	mm	–	–	–	mm	kg	kg	-	mm
700	60	.0700.060.0	421945	422040	220	107	111	6	36
700	120	.0700.120.0	421946	422041	304	117	126	6	36
700	200	.0700.200.0	421947	422042	436	146	159	6	36
800	63	.0800.063.0	421948	422044	245	142	147	6	37
800	105	.0800.105.0	421949	422046	311	153	164	6	37
800	210	.0800.210.0	421950	422047	476	183	199	6	37
900	63	.0900.063.0	421951	422048	247	155	162	6	38
900	105	.0900.105.0	421952	422049	313	169	180	6	38
900	210	.0900.210.0	421953	422050	478	202	221	6	38
1000	66	.1000.066.0	421954	422051	271	184	192	6	42
1000	110	.1000.110.0	421955	422053	341	199	213	6	42
1000	198	.1000.198.0	421956	422054	481	229	250	6	42
1200	69	.1200.069.0	421957	422055	289	295	308	6	47
1200	115	.1200.115.0	421958	422056	359	313	337	6	47
1200	207	.1200.207.0	421959	422057	499	349	384	6	47

Bellows			Nominal movement absorption[1] at 1000 load cycles		Spring rate		
outside diameter	corrugated length	effective cross-section	angular	lateral	axial	angular	lateral
D_a	l	A	$2\alpha_N$	$2\lambda_{-N}$	c_δ	c_α	c_λ
mm	mm	cm^2	degree	mm	N/mm	Nm/deg	N/mm
780	84	4324	9.1	2.3	583	703	68235
780	168	4324	17	9.1	292	352	8544
783	300	4342	25	27	253	308	2331
887	99	5621	8.4	2.5	852	1337	93326
887	165	5621	14	6.8	511	803	20150
887	330	5621	23	27	256	401	2524
996	99	7163	7.4	2.2	949	1896	132463
996	165	7163	12	6	569	1138	28592
996	330	7163	20	24	285	569	3580
1100	105	8791	7	2.2	970	2379	147726
1100	175	8791	11	6.1	582	1426	31909
1100	315	8791	18	20	323	794	5466
1296	105	12341	6.2	1.9	1088	3743	232590
1296	175	12341	10	5.4	653	2245	50255
1296	315	12341	16	17	363	1248	8622

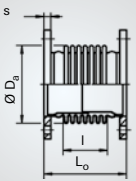
1) Inner sleeve, movement absorption: The inner sleeve is designed for axial movement only. The movements (axial, angular, lateral) are to be regarded as alternatives, i.e. the sum of their proportions in percentages should not exceed 100 %.

AXIAL EXPANSION JOINTS WITH PLAIN FIXED FLANGES

Type AFN without inner sleeve



Type AFN with inner sleeve



06

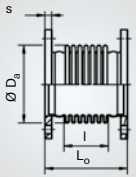
Nominal diameter	Nominal axial movement absorption	Type AFN 10...	Order No. standard version		Overall length	Weight approx.		Flange	
			without inner sleeve	with inner sleeve		without inner sleeve	with inner sleeve	drilling as per EN 1092	thickness
DN	$2\delta_N$	–	–	–	L_o	G	G	PN	s
–	mm	–	–	–	mm	kg	kg	-	mm
50	24	.0050.024.0	422058	422104	142	6	6	16	20
50	46	.0050.046.0	422059	422105	228	7	7	16	20
65	18	.0065.018.0	422060	422106	124	7	7	16	20
65	48	.0065.048.0	422061	422107	220	8	9	16	20
80	20	.0080.020.0	422062	422108	132	8	8	16	20
80	41	.0080.041.0	422063	422109	176	8	8	16	20
80	54	.0080.054.0	422064	422110	232	9	10	16	20
100	26	.0100.026.0	422065	422111	138	9	10	16	22
100	46	.0100.046.0	422066	422112	174	10	10	16	22
100	80	.0100.080.0	422067	422113	300	14	15	16	22
125	30	.0125.030.0	422068	422115	156	12	12	16	22
125	45	.0125.045.0	422069	422116	184	12	12	16	22
125	85	.0125.085.0	422070	422117	308	16	17	16	22
150	32	.0150.032.0	422071	422118	162	16	16	16	24
150	64	.0150.064.0	422072	422119	222	17	18	16	24
150	95	.0150.095.0	422073	422120	310	21	23	16	24
200	40	.0200.040.0	422074	422121	170	21	22	10	24
200	80	.0200.080.0	422075	422122	238	23	24	10	24
200	110	.0200.110.0	422076	422123	300	27	29	10	24
250	48	.0250.048.0	422077	422124	186	27	28	10	26
250	84	.0250.084.0	422078	422125	240	29	30	10	26
250	130	.0250.130.0	422079	422126	418	41	44	10	26

Bellows			Nominal movement absorption[1] at 1000 load cycles		Spring rate		
outside diameter	corrugated length	effective cross-section	angular	lateral	axial	angular	lateral
D_a	l	A	$2\alpha_N$	$2\lambda_{-N}$	c_δ	c_{α}	c_λ
mm	mm	cm^2	degree	mm	N/mm	Nm/deg	N/mm
89	54	46	30	5.6	86	1.1	259
90	140	46.6	48	28	112	1.5	51
107	36	68.7	21	2.4	126	2.4	1275
110	132	70.9	44	22	133	2.7	103
121	44	89.1	21	2.8	190	4.8	1670
121	88	89.1	34	11	95	2.4	209
123	144	90.8	43	24	135	3.5	113
149	48	138	21	3.2	159	6.2	1817
149	84	138	31	9.8	91	3.5	340
152	210	141	42	42	128	5.1	78
171	56	184	20	3.7	147	7.6	1646
171	84	184	27	8.2	98	5.1	488
174	208	187	40	38	136	7.2	113
203	60	264	19	3.5	254	19	3564
203	120	264	31	14	127	9.4	445
205	208	267	38	36	133	10	157
257	68	436	18	3.8	240	29	4318
257	136	436	28	15	120	15	540
260	198	441	35	31	138	17	297
316	72	670	17	3.9	209	39	5156
316	126	670	25	12	120	22	967
319	304	677	33	45	199	38	278

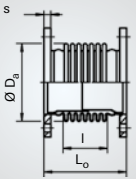
1) Inner sleeve, movement absorption: The inner sleeve is designed for axial movement only. The movements (axial, angular, lateral) are to be regarded as alternatives, i.e. the sum of their proportions in percentages should not exceed 100 %.

AXIAL EXPANSION JOINTS WITH PLAIN FIXED FLANGES

Type AFN without inner sleeve



Type AFN with inner sleeve



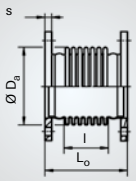
Nominal diameter	Nominal axial movement absorption	Type	Order No. standard version		Overall length	Weight approx.		Flange	
		AFN 10...	without inner sleeve	with inner sleeve		without inner sleeve	with inner sleeve	drilling as per EN 1092	thickness
DN	$2\delta_N$	–	–	–	L_o	G	G	PN	s
–	mm	–	–	–	mm	kg	kg	-	mm
300	45	.0300.045.0	422080	422127	177	31	33	10	26
300	90	.0300.090.0	422081	422128	240	34	37	10	26
300	137	.0300.137.0	422082	424785	444	52	58	10	26
350	60	.0350.060.0	422083	422130	207	49	52	10	30
350	105	.0350.105.0	422084	422131	273	52	56	10	30
350	150	.0350.150.0	422085	422132	479	83	90	10	30
400	48	.0400.048.0	422086	422133	229	67	70	10	32
400	96	.0400.096.0	422087	422134	325	76	81	10	32
400	156	.0400.156.0	422088	422135	471	98	106	10	32
450	70	.0450.070.0	422090	422136	266	84	89	10	36
450	98	.0450.098.0	422091	422137	316	89	95	10	36
450	182	.0450.182.0	422092	422138	466	105	113	10	36
500	66	.0500.066.0	422093	422139	253	97	102	10	38
500	116	.0500.116.0	422094	422140	334	106	113	10	38
500	192	.0500.192.0	422095	422141	481	136	146	10	38
600	72	.0600.072.0	422096	422142	269	130	136	10	42
600	108	.0600.108.0	422098	422143	327	138	145	10	42
600	198	.0600.198.0	422099	422144	483	174	186	10	42
700	57	.0700.057.0	422100	422145	240	156	160	10	40
700	114	.0700.114.0	422101	422146	336	175	185	10	40
700	190	.0700.190.0	422103	422147	464	202	215	10	40

Bellows			Nominal movement absorption[1] at 1000 load cycles		Spring rate		
outside diameter	corrugated length	effective cross-section	angular	lateral	axial	angular	lateral
D_a	l	A	$2\alpha_N$	$2\lambda_{-N}$	c_δ	c_α	c_λ
mm	mm	cm^2	degree	mm	N/mm	Nm/deg	N/mm
372	63	935	14	2.7	290	76	13045
372	126	935	24	11	145	38	1631
374	330	940	31	44	237	63	391
403	88	1113	17	4.7	250	78	6864
403	154	1113	24	14	143	45	1282
412	360	1140	32	47	285	92	479
464	96	1466	12	3.6	723	297	21961
464	192	1466	22	14	362	149	2749
467	338	1476	30	41	287	119	708
518	125	1844	16	6	560	289	12620
518	175	1844	21	12	400	206	4599
518	325	1844	28	41	215	111	717
574	108	2273	13	4.4	620	395	23078
574	189	2273	21	14	354	225	4303
576	336	2282	29	40	279	179	1077
678	116	3222	12	4.3	645	581	29497
678	174	3222	17	9.8	430	388	8740
680	330	3232	26	34	316	286	1791
785	96	4353	8.6	2.4	1134	1381	102304
785	192	4353	16	9.8	567	690	12788
785	320	4353	22	27	340	415	2761

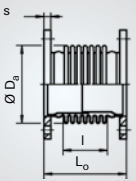
1) Inner sleeve, movement absorption: The inner sleeve is designed for axial movement only. The movements (axial, angular, lateral) are to be regarded as alternatives, i.e. the sum of their proportions in percentages should not exceed 100 %.

AXIAL EXPANSION JOINTS WITH PLAIN FIXED FLANGES

Type AFN without inner sleeve



Type AFN with inner sleeve



06

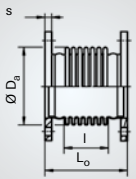
Nominal diameter	Nominal axial movement absorption	Type	Order No. standard version		Overall length	Weight approx.		Flange	
		AFN 16...	without inner sleeve	with inner sleeve		without inner sleeve	with inner sleeve	drilling as per EN 1092	thickness
DN	$2\delta_N$	–	–	–	L_o	G	G	PN	s
–	mm	–	–	–	mm	kg	kg	-	mm
50	22	.0050.022.0	422148	422183	142	6	6	16	20
50	42	.0050.042.0	422149	422184	231	7	7	16	20
65	28	.0065.028.0	422150	422185	148	7	7	16	20
65	48	.0065.048.0	422151	422186	220	8	9	16	20
80	23	.0080.023.0	422152	422187	148	8	8	16	20
80	50	.0080.050.0	422153	422188	220	9	10	16	20
100	31	.0100.031.0	422154	422189	155	10	10	16	22
100	53	.0100.053.0	422155	422190	230	12	13	16	22
125	21	.0125.021.0	422156	422191	142	12	12	16	22
125	42	.0125.042.0	422157	422192	184	13	13	16	22
125	59	.0125.059.0	422158	422193	244	15	16	16	22
150	24	.0150.024.0	422159	422194	147	16	16	16	24
150	48	.0150.048.0	422160	422195	192	16	17	16	24
150	66	.0150.066.0	422161	422196	246	19	20	16	24
200	30	.0200.030.0	422162	422197	158	23	23	16	26
200	60	.0200.060.0	422163	422198	212	25	26	16	26
200	97	.0200.097.0	422164	422199	374	34	36	16	26
250	32	.0250.032.0	422165	422200	193	33	34	16	29
250	56	.0250.056.0	422166	422202	250	35	37	16	29
250	103	.0250.103.0	422167	422203	377	46	48	16	29

Bellows			Nominal movement absorption[1] at 1000 load cycles		Spring rate		
outside diameter	corrugated length	effective cross-section	angular	lateral	axial	angular	lateral
D_a	l	A	$2\alpha_N$	$2\lambda_{-N}$	c_δ	c_{α}	c_λ
mm	mm	cm^2	degree	mm	N/mm	Nm/deg	N/mm
89	54	46	28	5.2	143	1.9	430
91	143	47.2	40	26	149	2	66
108	60	69.4	27	5.9	124	2.4	457
110	132	70.9	37	22	133	2.7	103
122	60	89.9	22	4.3	273	6.9	1302
123	132	90.8	35	20	147	3.8	146
150	65	139	23	5	223	8.8	1400
152	140	141	33	18	192	7.7	264
172	42	185	15	1.9	346	18	6932
172	84	185	25	7.7	173	9	867
174	144	187	31	18	196	10	338
203	45	264	14	2	339	25	8455
203	90	264	24	7.8	169	13	1054
205	144	267	29	17	193	15	475
260	54	441	14	2.3	508	63	14678
260	108	441	24	9.1	254	31	1835
262	270	445	29	37	271	34	316
318	76	674	12	2.8	634	120	14135
318	133	674	19	8.5	362	69	2635
320	260	679	27	30	296	57	568

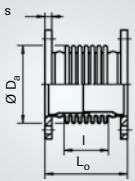
1) Inner sleeve, movement absorption: The inner sleeve is designed for axial movement only. The movements (axial, angular, lateral) are to be regarded as alternatives, i.e. the sum of their proportions in percentages should not exceed 100 %.

AXIAL EXPANSION JOINTS WITH PLAIN FIXED FLANGES

Type AFN without inner sleeve



Type AFN with inner sleeve



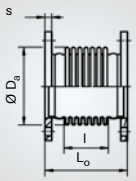
Nominal diameter	Nominal axial movement absorption	Type	Order No. standard version		Overall length	Weight approx.		Flange	
		AFN 16...	without inner sleeve	with inner sleeve		without inner sleeve	with inner sleeve	drilling as per EN 1092	thickness
DN	$2\delta_N$	–	–	–	L_o	G	G	PN	s
–	mm	–	–	–	mm	kg	kg	-	mm
300	30	.0300.030.0	422168	422204	186	44	46	16	32
300	80	.0300.080.0	422169	422205	291	50	54	16	32
300	120	.0300.120.0	422170	422206	468	72	78	16	32
350	30	.0350.030.0	422171	422207	192	63	65	16	35
350	80	.0350.080.0	422172	422208	297	70	74	16	35
350	130	.0350.130.0	422173	422209	441	91	97	16	35
400	48	.0400.048.0	422174	422210	249	88	91	16	38
400	84	.0400.084.0	422175	422211	327	97	102	16	38
400	132	.0400.132.0	422176	422212	431	109	116	16	38
450	52	.0450.052.0	422177	422213	257	111	114	16	42
450	91	.0450.091.0	422178	422214	335	122	127	16	42
450	143	.0450.143.0	422179	422215	439	136	144	16	42
500	48	.0500.048.0	422180	422216	245	146	149	16	46
500	96	.0500.096.0	422181	422217	329	159	165	16	46
500	144	.0500.144.0	422182	422218	413	171	179	16	46

Bellows			Nominal movement absorption[1] at 1000 load cycles		Spring rate		
outside diameter	corrugated length	effective cross-section	angular	lateral	axial	angular	lateral
D_a	l	A	$2\alpha_N$	$2\lambda_{-N}$	c_δ	c_{α}	c_λ
mm	mm	cm^2	degree	mm	N/mm	Nm/deg	N/mm
374	63	940	9.6	1.8	930	246	42077
374	168	940	22	13	349	92	2220
376	345	946	24	40	322	86	489
408	63	1128	8.8	1.7	911	288	49455
408	168	1128	20	12	342	108	2611
412	312	1140	25	35	329	106	736
467	104	1476	12	3.8	934	388	24342
467	182	1476	19	12	534	222	4544
467	286	1476	24	29	340	141	1172
520	104	1851	12	3.7	943	491	30826
520	182	1851	19	11	539	280	5753
520	286	1851	23	28	343	178	1483
576	84	2282	9.9	2.5	1117	715	68986
576	168	2282	18	10	558	357	8616
576	252	2282	23	22	372	238	2553

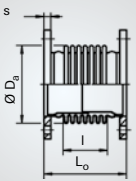
1) Inner sleeve, movement absorption: The inner sleeve is designed for axial movement only. The movements (axial, angular, lateral) are to be regarded as alternatives, i.e. the sum of their proportions in percentages should not exceed 100 %.

AXIAL EXPANSION JOINTS WITH PLAIN FIXED FLANGES

Type AFN without inner sleeve



Type AFN with inner sleeve



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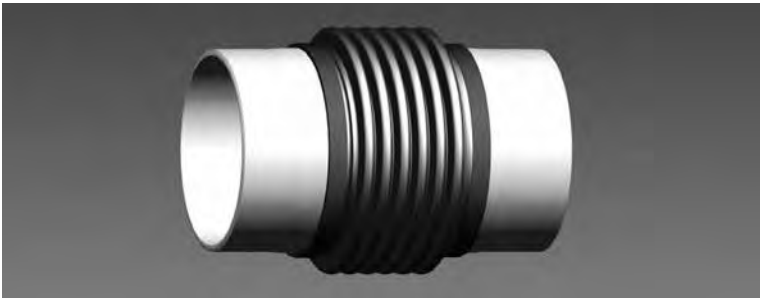
Nominal diameter	Nominal axial movement absorption	Type	Order No. standard version		Overall length	Weight approx.		Flange	
		AFN 25...	without inner sleeve	with inner sleeve		without inner sleeve	with inner sleeve	drilling as per EN 1092	thickness
DN	$2\delta_N$	–	–	–	L_o	G	G	PN	s
–	mm	–	–	–	mm	kg	kg	-	mm
50	13	.0050.013.0	422219	422248	128	6	6	40	20
50	29	.0050.029.0	422220	422249	187	6	7	40	20
65	17	.0065.017.0	422221	422250	134	8	8	40	22
65	40	.0065.040.0	422222	422251	222	9	10	40	22
80	23	.0080.023.0	422223	422252	152	10	10	40	24
80	42	.0080.042.0	422224	422253	222	11	12	40	24
100	23	.0100.023.0	422225	422254	146	13	14	40	26
100	48	.0100.048.0	422227	422255	220	15	16	40	26
125	26	.0125.026.0	422228	422256	169	19	19	40	28
125	52	.0125.052.0	422230	422257	233	20	21	40	28
150	29	.0150.029.0	422231	422258	173	23	24	40	30
150	58	.0150.058.0	422232	422259	237	25	26	40	30
200	26	.0200.026.0	422233	422260	185	33	34	25	32
200	46	.0200.046.0	422234	422261	239	35	36	25	32
200	71	.0200.071.0	422235	422262	311	40	41	25	32
250	24	.0250.024.0	422236	422263	189	46	47	25	35
250	48	.0250.048.0	422237	422264	249	49	51	25	35
250	79	.0250.079.0	422238	422265	329	54	56	25	35
300	27	.0300.027.0	422239	422266	201	60	62	25	38
300	55	.0300.055.0	422240	422267	267	65	67	25	38
300	82	.0300.082.0	422241	422268	333	69	73	25	38

AXIAL EXPANSION JOINTS FOR LOW PRESSURE (EXHAUST) WITH WELD ENDS TYPE ARN



Type designation
The type designation consists of 2 parts
1. Type series, defined by 3 letters
2. Nominal size, defined by 10 digits

Example
Type ARN: HYDRA axial expansion joint with weld ends

Standard version/materials:
Multi-ply bellows made of 1.4541
Weld end made of P235TR1 (1.0254) or P265GH (1.0425)
Operating temperature: up to 550 °C

Type designation (example)

ARN	01	·	0150	·	126	·	0
Type	Nominal pressure (PN1)		Nominal diameter (DN150)		Movement absorption, nominal (2δ = ±63 = 126 mm)		Inner sleeve (0 = without, 1 = with)

Order text
Please state the following with your order:

For standard versions
- Type designation or order number

With material variation
- Type designation
- Details of materials

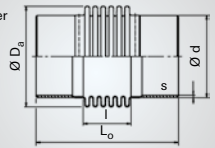
The expansion joints for low pressure (exhaust-gas) are designed for unpressurized applications (PS < 0.5 bar gauge pressure).

The Pressure Equipment Directive (PED) does not apply to this operating condition.

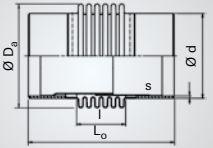
Information
Tell us the dimensions that deviate from the standard and we customize the expansion joint to your specification.

AXIAL EXPANSION JOINTS FOR LOW PRESSURE WITH WELD ENDS

Type ARN without inner sleeve



Type ARN with inner sleeve



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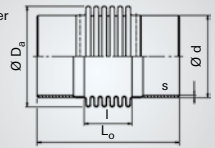
Nominal diameter	Nominal axial movement absorption	Type	Order No. standard version		Overall length	Weight approx.		Weld end	
		ARN 01...	without inner sleeve	with inner sleeve		without inner sleeve	with inner sleeve	outside diameter	wall thickness
DN	$2\delta_N$	–	–	–	L_o	G	G	d	s
–	mm	–	–	–	mm	kg	kg	-	mm
50	24	.0050.024.0	417751	417842	214	1	1.2	60.3	4
50	56	.0050.056.0	417753	417843	286	1.2	1.5	60.3	4
50	80	.0050.080.0	417754	417844	340	1.4	1.8	60.3	4
65	28	.0065.028.0	417755	417845	214	1.5	1.7	76.1	4
65	64	.0065.064.0	417756	417846	286	1.8	2.2	76.1	4
65	92	.0065.092.0	417757	417847	340	2	2.6	76.1	4
80	37	.0080.037.0	417758	417848	230	1.8	2.1	88.9	4
80	74	.0080.074.0	417759	417849	300	2.1	2.7	88.9	4
80	106	.0080.106.0	417760	417850	360	2.4	3.1	88.9	4
100	40	.0100.040.0	417761	417851	226	2.3	2.7	114.3	4
100	86	.0100.086.0	417762	417852	303	2.7	3.5	114.3	4
100	119	.0100.119.0	417763	417853	358	3.1	4.1	114.3	4
125	63	.0125.063.0	417764	417854	251	2.9	3.5	139.7	4
125	126	.0125.126.0	417765	417855	342	3.6	4.7	139.7	4
125	180	.0125.180.0	417766	417856	420	4.1	6	139.7	4
150	63	.0150.063.0	417767	417857	251	3.5	4.2	168.3	4
150	126	.0150.126.0	417768	417858	342	4.3	6	168.3	4
150	180	.0150.180.0	417769	417860	420	5	7	168.3	4
200	70	.0200.070.0	417770	417861	265	4.6	6	219.1	4
200	140	.0200.140.0	417771	417862	370	6	8	219.1	4
200	200	.0200.200.0	417772	417863	460	7	9	219.1	4

Bellows			Nominal movement absorption[1] at 1000 load cycles		Vibrations in all planes	Spring rate			Natural frequency of the bellows	
outside diameter	corrugated length	effective cross-section	angular	lateral		axial	angular	lateral	axial	radial
D_a	l	A	$2\alpha_N$	$2\lambda_{-N}$	â	c_δ	c_α	c_λ	ω_a	ω_r
mm	mm	cm^2	degree	mm	mm	N/mm	Nm/deg	N/mm	Hz	Hz
89	54	46	36	5.6	0.5	87	1.1	259	350	1250
89	126	46	78	31	1	37	0.5	20	150	230
89	180	46	102	63	1	26	0.3	7	105	110
107	54	68.7	33	5.3	0.5	85	1.6	378	290	1280
107	126	68.7	73	29	1	36	0.7	30	125	235
107	180	68.7	96	59	1	25	0.5	10	90	115
121	70	89.1	39	8.1	0.5	67	1.7	233	220	840
121	140	89.1	73	33	1	34	0.8	29	110	210
121	200	89.1	96	66	1	24	0.6	9.8	75	105
148	66	137	34	6.6	0.5	73	2.8	432	210	1050
148	143	137	68	31	1	34	1.3	42	100	225
148	198	137	87	59	1	24	0.9	16	70	115
174	91	187	45	12	0.5	41	2.1	177	120	520
174	182	187	83	49	1	21	1.1	23	60	130
174	260	187	103	101	1	14	0.7	7.4	40	65
203	91	264	38	10	1	48	3.5	293	120	610
203	182	264	69	42	1	24	1.8	37	60	150
203	260	264	86	85	1	17	1.2	13	40	75
255	105	432	33	10	1	53	6.4	397	110	600
255	210	432	59	42	1	27	3.2	51	55	150
255	300	432	72	85	1	19	2.3	17	40	75

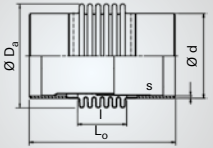
1) Inner sleeve, movement absorption: The inner sleeve is designed for axial movement only. The movements (axial, angular, lateral) are to be regarded as alternatives, i.e. the sum of their proportions in percentages should not exceed 100 %.

AXIAL EXPANSION JOINTS FOR LOW PRESSURE WITH WELD ENDS

Type ARN without inner sleeve



Type ARN with inner sleeve



06

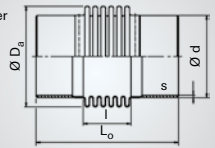
Nominal diameter	Nominal axial movement absorption	Type	Order No. standard version		Overall length	Weight approx.		Weld end	
		ARN 01...	without inner sleeve	with inner sleeve		without inner sleeve	with inner sleeve	outside diameter	wall thickness
DN	$2\delta_N$	–	–	–	L_o	G	G	d	s
–	mm	–	–	–	mm	kg	kg	-	mm
250	72	.0250.072.0	417773	417864	262	6	7	273	4
250	144	.0250.144.0	417774	417865	364	7	9	273	4
250	216	.0250.216.0	417775	417867	466	8	12	273	4
300	70	.0300.070.0	417777	417868	255	7	9	323.9	4
300	154	.0300.154.0	417778	417869	369	8	13	323.9	4
300	210	.0300.210.0	417779	417870	445	9	15	323.9	4
350	75	.0350.075.0	417780	417871	260	7	10	355.6	4
350	150	.0350.150.0	417781	417872	360	9	14	355.6	4
350	210	.0350.210.0	417782	417873	440	10	16	355.6	4
400	65	.0400.065.0	417783	417874	265	10	13	406.4	4
400	117	.0400.117.0	417784	417875	349	13	18	406.4	4
400	195	.0400.195.0	417785	417876	475	17	25	406.4	4
450	56	.0450.056.0	417786	417877	248	11	14	457	4
450	140	.0450.140.0	417787	417878	380	16	22	457	4
450	196	.0450.196.0	417789	417879	468	19	27	457	4
500	68	.0500.068.0	417790	417880	292	14	18	508	4
500	136	.0500.136.0	417791	417881	384	18	25	508	4
500	221	.0500.221.0	417792	417882	499	23	33	508	4
600	76	.0600.076.0	417793	417883	304	17	22	610	4
600	152	.0600.152.0	417794	417884	408	22	32	610	4
600	228	.0600.228.0	417795	417885	512	27	40	610	4

Bellows			Nominal movement absorption[1] at 1000 load cycles		Vibrations in all planes	Spring rate			Natural frequency of the bellows	
outside diameter	corrugated length	effective cross-section	angular	lateral		axial	angular	lateral	axial	radial
D_a	l	A	$2\alpha_N$	$2\lambda_{-N}$	â	c_δ	c_α	c_λ	ω_a	ω_r
mm	mm	cm^2	degree	mm	mm	N/mm	Nm/deg	N/mm	Hz	Hz
312	102	661	28	8.4	0.7	62	11	752	110	780
312	204	661	50	34	1	31	5.7	94	55	190
312	306	661	64	76	1	21	3.9	28	35	90
365	95	916	23	6.5	0.5	73	19	1415	110	1030
365	209	916	46	31	1	33	8.4	132	50	210
365	285	916	56	58	1	24	6.1	52	40	115
400	100	1104	22	6.7	0.5	66	20	1392	100	950
400	200	1104	41	27	1	33	10	174	50	240
400	280	1104	52	52	1	24	7.4	62	35	120
458	105	1445	17	5.3	0.5	212	85	5283	120	1260
458	189	1445	30	17	1	118	47	904	70	390
458	315	1445	45	48	1	71	29	195	40	140
513	88	1825	13	3.4	0.3	243	123	10935	130	1850
513	220	1825	31	21	1	97	49	698	55	300
513	308	1825	41	42	1	70	35	253	40	150
569	92	2252	14	3.9	0.3	215	135	10875	115	1690
569	184	2252	28	16	1	107	67	1359	55	420
569	299	2252	42	41	1	66	41	318	35	160
674	104	3202	14	4.1	0.3	215	191	12099	100	1570
674	208	3202	26	17	1	107	95	1512	50	390
674	312	3202	36	37	1	72	64	446	35	175

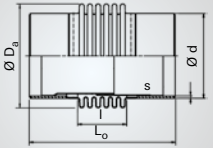
1) Inner sleeve, movement absorption: The inner sleeve is designed for axial movement only. The movements (axial, angular, lateral) are to be regarded as alternatives, i.e. the sum of their proportions in percentages should not exceed 100 %.

AXIAL EXPANSION JOINTS FOR LOW PRESSURE WITH WELD ENDS

Type ARN without inner sleeve



Type ARN with inner sleeve



06

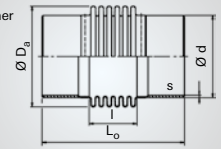
Nominal diameter	Nominal axial movement absorption	Type	Order No. standard version		Overall length	Weight approx.		Weld end	
		ARN 01...	without inner sleeve	with inner sleeve		without inner sleeve	with inner sleeve	outside diameter	wall thickness
DN	$2\delta_N$	–	–	–	L_o	G	G	d	s
–	mm	–	–	–	mm	kg	kg	-	mm
700	80	.0700.080.0	417796	417886	312	21	27	711	4
700	140	.0700.140.0	417797	417887	396	26	36	711	4
700	220	.0700.220.0	417798	417888	508	32	46	711	4
800	84	.0800.084.0	417799	417889	316	24	33	813	4
800	147	.0800.147.0	417800	417890	403	29	42	813	4
800	231	.0800.231.0	417801	417891	519	37	54	813	4
900	84	.0900.084.0	417802	417892	320	27	38	914	4
900	168	.0900.168.0	417805	417893	440	36	52	914	4
900	231	.0900.231.0	417807	417894	530	43	62	914	4
1000	72	.1000.072.0	417808	417895	296	28	36	1016	4
1000	144	.1000.144.0	417809	417896	392	35	51	1016	4
1000	240	.1000.240.0	417811	417898	520	45	67	1016	4
1200	72	.1200.072.0	417812	417899	293	34	46	1220	4
1200	144	.1200.144.0	417813	417900	386	43	67	1220	4
1200	240	.1200.240.0	417814	417901	510	55	89	1220	4
1400	48	.1400.048.0	417815	417902	304	39	53	1420	4
1400	108	.1400.108.0	417816	417903	434	51	80	1420	4
1400	180	.1400.180.0	417817	417904	590	65	109	1420	4
1600	48	.1600.048.0	417818	417905	304	44	61	1620	4
1600	108	.1600.108.0	417819	417906	434	58	92	1620	4
1600	180	.1600.180.0	417820	417907	590	75	124	1620	4

Bellows			Nominal movement absorption[1] at 1000 load cycles		Vibrations in all planes	Spring rate			Natural frequency of the bellows	
outside diameter	corrugated length	effective cross-section	angular	lateral		axial	angular	lateral	axial	radial
D_a	l	A	$2\alpha_N$	$2\lambda_{-N}$	â	c_δ	c_α	c_λ	ω_a	ω_r
mm	mm	cm^2	degree	mm	mm	N/mm	Nm/deg	N/mm	Hz	Hz
780	112	4324	12	4	0.3	203	244	13365	90	1480
780	196	4324	21	12	1	116	139	2494	50	480
780	308	4324	30	30	1	74	89	644	30	195
882	116	5588	11	3.9	0.3	220	341	17449	85	1570
882	203	5588	19	12	1	126	196	3263	50	510
882	319	5588	28	29	1	80	124	839	30	210
992	120	7133	9.9	3.5	0.2	238	472	22421	80	1650
992	240	7133	19	14	1	119	236	2815	40	410
992	330	7133	25	27	1	86	170	1076	30	220
1095	96	8750	7.7	2.2	0.2	335	814	60745	105	2940
1095	192	8750	15	8.7	0.7	168	408	7570	50	740
1095	320	8750	23	24	1	101	245	1632	30	265
1295	93	12331	6.5	1.8	0.1	331	1134	89855	95	3210
1295	186	12331	13	7.1	0.6	165	565	11232	45	800
1295	310	12331	20	20	1	99	339	2426	30	290
1472	104	16377	3.8	1.2	0.1	932	4190	266329	150	5320
1472	234	16377	8.3	5.8	0.5	414	1865	23362	70	1050
1472	390	16377	13	16	1	249	1119	5038	40	380
1672	104	21227	3.3	1	0.1	1056	6168	391692	150	6040
1672	234	21227	7.3	5.1	0.5	470	2742	34354	70	1200
1672	390	21227	12	14	1	282	1645	7437	40	430

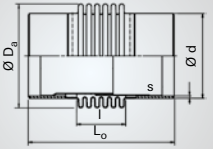
1) Inner sleeve, movement absorption: The inner sleeve is designed for axial movement only. The movements (axial, angular, lateral) are to be regarded as alternatives, i.e. the sum of their proportions in percentages should not exceed 100 %.

AXIAL EXPANSION JOINTS FOR LOW PRESSURE WITH WELD ENDS

Type ARN without inner sleeve



Type ARN with inner sleeve



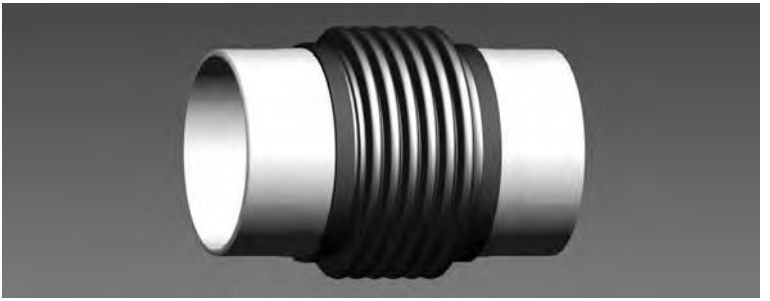
06

Nominal diameter	Nominal axial movement absorption	Type	Order No. standard version		Overall length	Weight approx.		Weld end	
		ARN 01...	without inner sleeve	with inner sleeve		without inner sleeve	with inner sleeve	outside diameter	wall thickness
DN	$2\delta_N$	–	–	–	L_o	G	G	d	s
–	mm	–	–	–	mm	kg	kg	-	mm
1800	48	.1800.048.0	417821	417908	304	49	68	1820	4
1800	108	.1800.108.0	417822	417909	434	65	103	1820	4
1800	180	.1800.180.0	417823	417910	590	84	140	1820	4
2000	48	.2000.048.0	417824	417911	304	55	76	2020	4
2000	108	.2000.108.0	417825	417912	434	72	115	2020	4
2000	180	.2000.180.0	417826	417913	590	93	155	2020	4
2200	48	.2200.048.0	417827	417914	304	82	105	2220	6
2200	108	.2200.108.0	417828	417915	434	101	149	2220	6
2200	180	.2200.180.0	417829	417917	590	124	194	2220	6
2400	48	.2400.048.0	417830	417918	304	89	114	2420	6
2400	108	.2400.108.0	417831	417919	434	110	163	2420	6
2400	180	.2400.180.0	417832	417920	590	135	211	2420	6
2600	48	.2600.048.0	417833	417921	304	97	124	2620	6
2600	108	.2600.108.0	417834	417922	434	119	176	2620	6
2600	180	.2600.180.0	417835	417923	590	146	228	2620	6
2800	48	.2800.048.0	417836	417924	304	104	133	2820	6
2800	108	.2800.108.0	417837	417926	434	128	190	2820	6
2800	180	.2800.180.0	417838	417927	590	158	246	2820	6
3000	48	.3000.048.0	417839	417928	304	112	143	3020	6
3000	108	.3000.108.0	417840	417929	434	137	203	3020	6
3000	180	.3000.180.0	417841	417930	590	169	264	3020	6

Bellows			Nominal movement absorption[1] at 1000 load cycles		Vibrations in all planes	Spring rate			Natural frequency of the bellows	
outside diameter	corrugated length	effective cross-section	angular	lateral		axial	angular	lateral	axial	radial
D_a	l	A	$2\alpha_N$	$2\lambda_{-N}$	â	c_δ	c_α	c_λ	ω_a	ω_r
mm	mm	cm^2	degree	mm	mm	N/mm	Nm/deg	N/mm	Hz	Hz
1872	104	26706	3	0.9	0	1180	8672	550794	150	6760
1872	234	26706	6.6	4.6	0.4	524	3858	48345	70	1340
1872	390	26706	10	13	1	315	2315	10463	40	480
2072	104	32813	2.7	0.8	0	1302	11767	747440	150	7480
2072	234	32813	5.9	4.1	0.4	579	5232	65695	70	1480
2072	390	32813	9.5	11	1	347	3136	14174	40	530
2272	104	39549	2.5	0.7	0	1424	15523	986064	150	8200
2272	234	39549	5.4	3.8	0.3	633	6899	86629	70	1620
2272	390	39549	8.8	10	1	380	4142	18722	40	580
2472	104	46913	2.3	0.7	0	1545	20003	1270727	150	8900
2472	234	46913	5	3.4	0.3	687	8887	111595	70	1760
2472	390	46913	8	9.6	1	412	5330	24093	40	630
2672	104	54905	2.1	0.6	0	1667	25256	1604521	150	9620
2672	234	54905	4.6	3.2	0.3	741	11225	140948	70	1900
2672	390	54905	7.4	8.9	0.8	444	6741	30403	40	680
2872	104	63526	1.9	0.6	0	1788	31375	1993293	150	10330
2872	234	63526	4.3	3	0.2	795	13940	175043	65	2040
2872	390	63526	7	8.2	0.8	477	8364	37809	40	740
3072	104	72774	1.8	0.5	0	1909	38389	2438990	150	11050
3072	234	72774	4	2.8	0.2	849	17062	213982	65	2180
3072	390	72774	6.5	7.7	0.7	509	10229	46238	40	790

1) Inner sleeve, movement absorption: The inner sleeve is designed for axial movement only. The movements (axial, angular, lateral) are to be regarded as alternatives, i.e. the sum of their proportions in percentages should not exceed 100 %.

AXIAL EXPANSION JOINTS WITH WELD ENDS TYPE ARN



Type designation
The type designation consists of 2 parts
1. Type series, defined by 3 letters
2. Nominal size, defined by 10 digits

Example
Type ARN: HYDRA axial expansion joint with weld ends

Standard version/materials:
Multi-ply bellows made of 1.4541
Weld ends up to DN 300: P235GH (1.0345)
Weld ends from DN 350: P265GH (1.0425)
Operating temperature: up to 400 °C

Type designation (example)

ARN	10	·	0150	·	064	·	0
Type	Nominal pressure (PN10)		Nominal diameter (DN150)		Movement absorption, nominal ($2\delta = \pm 32$ = 64 mm)		Inner sleeve (0 = without, 1 = with)

Order text according to guideline 2014/68/EU "Pressure Equipment Directive"

Please state the following with your order:

For standard versions
- Type designation or order number

With material variation
- Type designation
- Details of the materials

According to the Pressure Equipment Directive, the following information is required for testing and documentation:

Type of pressure equipment according to Art. 1 & 2:
- Vessel - volume V [l] _____
- Piping - nominal diameter DN _____

Medium property according to Art. 13:
- Group 1 – dangerous
- Group 2 – all other fluids

State of medium
- Gaseous or liquid if PD > 0.5 bar
- Liquid if PD ≤ 0.5 bar

Design data:
- Max. allowable pressure [bar] _____
- Max./min. allowable temperature [°C] _____
- Test pressure PT [bar] _____

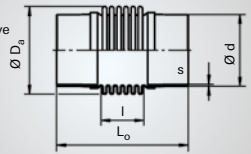
Optional:
- Category _____

Note

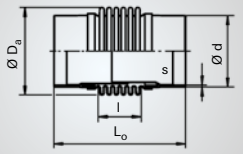
Tell us the dimensions that deviate from the standard and we customize the expansion joint to your specification.

AXIAL EXPANSION JOINTS WITH WELD ENDS

Type ARN without inner sleeve



Type ARN with inner sleeve



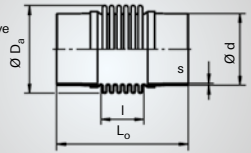
Nominal diameter	Nominal axial movement absorption	Type	Order No. standard version		Overall length	Weight approx.		Weld end	
		ARN 02...	without inner sleeve	with inner sleeve		without inner sleeve	with inner sleeve	outside diameter	wall thickness
DN	$2\delta_N$	–	–	–	L_o	G	G	d	s
–	mm	–	–	–	mm	kg	kg	-	mm
50	24	.0050.024.0	417751	417842	214	1	1.2	60.3	4
50	56	.0050.056.0	417753	417843	286	1.2	1.5	60.3	4
50	80	.0050.080.0	417754	417844	340	1.4	1.8	60.3	4
65	28	.0065.028.0	417755	417845	214	1.5	1.7	76.1	4
65	64	.0065.064.0	417756	417846	286	1.8	2.2	76.1	4
65	92	.0065.092.0	417757	417847	340	2	2.6	76.1	4
80	37	.0080.037.0	417758	417848	230	1.8	2.1	88.9	4
80	74	.0080.074.0	417759	417849	300	2.1	2.7	88.9	4
80	106	.0080.106.0	417760	417850	360	2.4	3.1	88.9	4
100	40	.0100.040.0	417761	417851	226	2.3	2.7	114.3	4
100	86	.0100.086.0	417762	417852	303	2.7	3.5	114.3	4
100	119	.0100.119.0	417763	417853	358	3.1	4.1	114.3	4
125	63	.0125.063.0	417764	417854	251	2.9	3.5	139.7	4
125	126	.0125.126.0	417765	417855	342	3.6	4.7	139.7	4
125	180	.0125.180.0	417766	417856	420	4.1	6	139.7	4
150	63	.0150.063.0	417767	417857	251	3.5	4.2	168.3	4
150	126	.0150.126.0	417768	417858	342	4.3	6	168.3	4
150	180	.0150.180.0	417769	417860	420	5	7	168.3	4
200	70	.0200.070.0	417770	417861	265	4.6	6	219.1	4
200	140	.0200.140.0	417771	417862	370	6	8	219.1	4
200	200	.0200.200.0	417772	417863	460	7	9	219.1	4

Bellows			Nominal movement absorption[1] at 1000 load cycles		Spring rate		
outside diameter	corrugated length	effective cross-section	angular	lateral	axial	angular	lateral
D_a	l	A	$2\alpha_N$	$2\lambda_{-N}$	c_δ	c_{α}	c_λ
mm	mm	cm^2	degree	mm	N/mm	Nm/deg	N/mm
89	54	46	35	5.6	86	1.1	259
89	99	46	60	19	47	0.6	42
89	171	46	88	52	45	0.6	14
107	54	68.7	33	5.3	84	1.6	378
107	117	68.7	64	25	39	0.7	37
108	190	69.4	87	59	39	0.8	14
121	50	89.1	28	4.1	94	2.3	640
121	120	89.1	60	24	39	1	46
121	198	89.1	80	57	42	1	18
148	77	137	38	9	62	2.4	273
148	143	137	63	31	33	1.3	42
150	260	139	87	79	56	2.2	22
174	65	187	32	6.3	58	3	492
174	130	187	59	25	29	1.5	61
172	280	185	85	85	52	2.7	23
203	78	264	32	7.7	56	4.1	465
203	143	264	53	26	31	2.3	77
203	300	264	79	87	51	3.7	29
255	105	432	32	10	53	6.4	397
256	208	434	53	38	42	5.1	80
257	323	436	72	87	51	6.2	41

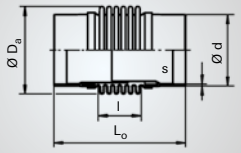
1) Inner sleeve, movement absorption: The inner sleeve is designed for axial movement only. The movements (axial, angular, lateral) are to be regarded as alternatives, i.e. the sum of their proportions in percentages should not exceed 100 %.

AXIAL EXPANSION JOINTS WITH WELD ENDS

Type ARN without inner sleeve



Type ARN with inner sleeve

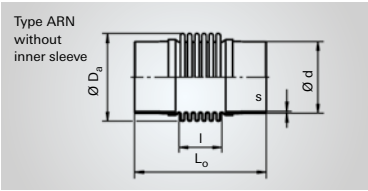


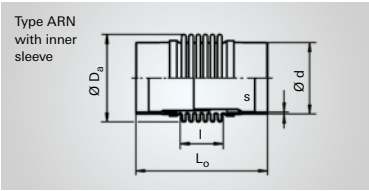
Nominal diameter	Nominal axial movement absorption	Type	Order No. standard version		Overall length	Weight approx.		Weld end	
		ARN 02...	without inner sleeve	with inner sleeve		without inner sleeve	with inner sleeve	outside diameter	wall thickness
DN	$2\delta_N$	–	–	–	L_o	G	G	d	s
–	mm	–	–	–	mm	kg	kg	-	mm
250	72	.0250.072.0	417062	417143	282	9	11	273	7.1
250	144	.0250.144.0	417063	417144	384	12	14	273	7.1
250	204	.0250.204.0	417064	417145	486	17	21	273	7.1
300	70	.0300.070.0	417065	417146	279	12	14	323.9	8
300	126	.0300.126.0	417066	417147	355	13	17	323.9	8
300	210	.0300.210.0	417067	417148	464	21	26	323.9	8
350	75	.0350.075.0	417068	417149	284	10	13	355.6	6
350	150	.0350.150.0	417069	417150	384	13	18	355.6	6
350	210	.0350.210.0	417070	417151	478	20	26	355.6	6
400	65	.0400.065.0	417071	417152	289	13	16	406.4	6
400	117	.0400.117.0	417072	417153	373	16	21	406.4	6
400	195	.0400.195.0	417073	417154	499	20	28	406.4	6
450	56	.0450.056.0	417074	417155	272	14	18	457	6
450	140	.0450.140.0	417075	417156	404	19	26	457	6
450	196	.0450.196.0	417076	417157	492	23	31	457	6
500	68	.0500.068.0	417089	417158	320	19	23	508	6
500	136	.0500.136.0	417090	417159	412	23	31	508	6
500	221	.0500.221.0	417091	417160	527	28	39	508	6
600	76	.0600.076.0	417092	417161	332	23	29	610	6
600	152	.0600.152.0	417093	417162	436	28	38	610	6
600	228	.0600.228.0	417094	417163	540	33	47	610	6

Bellows			Nominal movement absorption[1] at 1000 load cycles		Spring rate		
outside diameter	corrugated length	effective cross-section	angular	lateral	axial	angular	lateral
D_a	l	A	$2\alpha_N$	$2\lambda_{-N}$	c_δ	c_α	c_λ
mm	mm	cm^2	degree	mm	N/mm	Nm/deg	N/mm
312	102	661	27	8.4	62	11	752
315	204	667	47	34	40	7.4	123
316	306	670	64	71	49	9.1	67
365	95	916	22	6.5	73	19	1415
365	171	916	36	21	40	10	239
371	280	932	59	57	52	13	118
400	100	1104	22	6.7	66	20	1392
402	200	1110	39	27	46	14	244
402	294	1110	54	55	60	19	147
458	105	1445	17	5.3	211	85	5283
458	189	1445	28	17	117	47	904
458	315	1445	39	48	70	28	195
513	88	1825	13	3.4	243	123	10935
513	220	1825	29	21	97	49	698
513	308	1825	36	42	69	35	253
569	92	2252	14	3.9	214	134	10875
569	184	2252	26	16	107	67	1359
569	299	2252	37	41	66	41	318
674	104	3202	13	4.1	214	190	12099
674	208	3202	25	17	107	95	1512
674	312	3202	32	37	71	63	446

1) Inner sleeve, movement absorption: The inner sleeve is designed for axial movement only. The movements (axial, angular, lateral) are to be regarded as alternatives, i.e. the sum of their proportions in percentages should not exceed 100 %.

AXIAL EXPANSION JOINTS WITH WELD ENDS





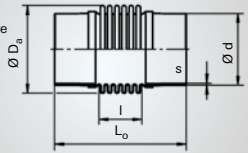
Nominal diameter	Nominal axial movement absorption	Type	Order No. standard version		Overall length	Weight approx.		Weld end	
		ARN 02...	without inner sleeve	with inner sleeve		without inner sleeve	with inner sleeve	outside diameter	wall thickness
DN	$2\delta_N$	–	–	–	L_o	G	G	d	s
–	mm	–	–	–	mm	kg	kg	-	mm
700	80	.0700.080.0	417095	417164	340	28	34	711	6
700	140	.0700.140.0	417096	417165	424	33	44	711	6
700	220	.0700.220.0	417097	417166	536	39	54	711	6
800	84	.0800.084.0	417098	417167	348	32	42	813	6
800	147	.0800.147.0	417099	417168	435	37	51	813	6
800	231	.0800.231.0	417100	417169	551	45	63	813	6
900	84	.0900.084.0	417101	417170	352	36	48	914	6
900	168	.0900.168.0	417102	417171	472	45	62	914	6
900	231	.0900.231.0	417103	417172	562	51	72	914	6
1000	72	.1000.072.0	417104	417173	332	38	47	1016	6
1000	144	.1000.144.0	417105	417175	428	45	62	1016	6
1000	240	.1000.240.0	417106	417174	556	55	78	1016	6
1200	72	.1200.072.0	417107	417176	332	62	77	1220	8
1200	144	.1200.144.0	417108	417177	428	76	102	1220	8
1200	240	.1200.240.0	417109	417178	556	94	131	1220	8
1400	48	.1400.048.0	417110	417179	304	66	81	1420	8
1400	108	.1400.108.0	417111	417181	434	78	108	1420	8
1400	180	.1400.180.0	417112	417182	590	93	136	1420	8
1600	48	.1600.048.0	417113	417183	304	76	92	1620	8
1600	108	.1600.108.0	417114	417184	434	89	123	1620	8
1600	180	.1600.180.0	417115	417185	590	106	156	1620	8

Bellows			Nominal movement absorption[1] at 1000 load cycles		Spring rate		
outside diameter	corrugated length	effective cross-section	angular	lateral	axial	angular	lateral
D_a	l	A	$2\alpha_N$	$2\lambda_{-N}$	c_δ	c_{α}	c_λ
mm	mm	cm^2	degree	mm	N/mm	Nm/deg	N/mm
780	112	4324	12	4	203	244	13365
780	196	4324	20	12	116	139	2494
780	308	4324	27	30	74	89	644
882	116	5588	11	3.9	220	341	17449
882	203	5588	18	12	126	196	3263
882	319	5588	25	29	80	124	839
992	120	7133	9.8	3.5	237	470	22421
992	240	7133	18	14	119	236	2815
992	330	7133	22	27	86	170	1076
1095	96	8750	7.7	2.2	335	814	60745
1095	192	8750	14	8.7	167	406	7570
1095	320	8750	21	24	100	243	1632
1295	96	12331	6.5	1.8	511	1750	130579
1295	192	12331	13	7.4	255	873	16290
1295	320	12331	19	20	153	524	3519
1472	104	16377	3.8	1.2	921	4190	266329
1472	234	16377	8.1	5.8	409	1861	23362
1472	390	16377	12	16	245	1115	5038
1672	104	21227	3.3	1	1045	6162	391692
1672	234	21227	7.2	5.1	464	2736	34354
1672	390	21227	11	14	279	1645	7437

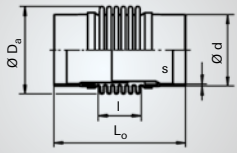
1) Inner sleeve, movement absorption: The inner sleeve is designed for axial movement only. The movements (axial, angular, lateral) are to be regarded as alternatives, i.e. the sum of their proportions in percentages should not exceed 100 %.

AXIAL EXPANSION JOINTS WITH WELD ENDS

Type ARN without inner sleeve



Type ARN with inner sleeve



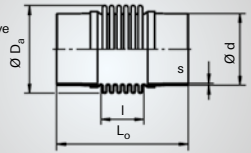
Nominal diameter	Nominal axial movement absorption	Type	Order No. standard version		Overall length	Weight approx.		Weld end	
		ARN 02...	without inner sleeve	with inner sleeve		without inner sleeve	with inner sleeve	outside diameter	wall thickness
DN	$2\delta_N$	–	–	–	L_o	G	G	d	s
–	mm	–	–	–	mm	kg	kg	-	mm
1800	48	.1800.048.0	417116	417186	304	85	103	1820	8
1800	108	.1800.108.0	417117	417187	434	100	139	1820	8
1800	180	.1800.180.0	417118	417188	590	119	175	1820	8
2000	48	.2000.048.0	417119	417189	304	94	115	2020	8
2000	108	.2000.108.0	417120	417190	434	111	154	2020	8
2000	180	.2000.180.0	417121	417191	590	132	194	2020	8

Bellows			Nominal movement absorption[1] at 1000 load cycles		Spring rate		
outside diameter	corrugated length	effective cross-section	angular	lateral	axial	angular	lateral
D_a	l	A	$2\alpha_N$	$2\lambda_{-N}$	c_δ	c_α	c_λ
mm	mm	cm^2	degree	mm	N/mm	Nm/deg	N/mm
1872	104	26706	3	0.9	1168	8665	550794
1872	234	26706	6.4	4.6	519	3850	48345
1872	390	26706	9.8	13	312	2315	10463
2072	104	32813	2.7	0.8	1290	11758	747440
2072	234	32813	5.8	4.1	574	5232	65695
2072	390	32813	9	11	344	3136	14174

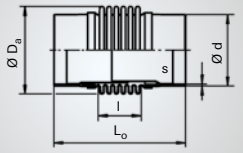
1) Inner sleeve, movement absorption: The inner sleeve is designed for axial movement only. The movements (axial, angular, lateral) are to be regarded as alternatives, i.e. the sum of their proportions in percentages should not exceed 100 %.

AXIAL EXPANSION JOINTS WITH WELD ENDS

Type ARN without inner sleeve



Type ARN with inner sleeve

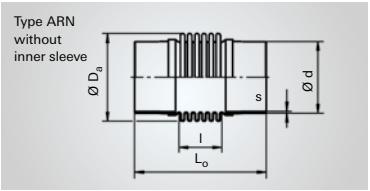


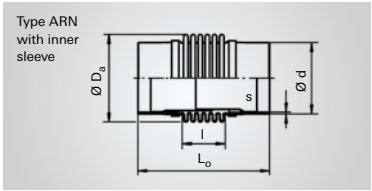
Nominal diameter	Nominal axial movement absorption	Type	Order No. standard version		Overall length	Weight approx.		Weld end	
		ARN 06...	without inner sleeve	with inner sleeve		without inner sleeve	with inner sleeve	outside diameter	wall thickness
DN	$2\delta_N$	–	–	–	L_o	G	G	d	s
–	mm	–	–	–	mm	kg	kg	-	mm
50	24	.0050.024.0	417283	417402	214	1	1	60.3	4
50	52	.0050.052.0	417284	417403	286	1.4	1.7	60.3	4
65	28	.0065.028.0	417286	417404	214	1.5	1.7	76.1	4
65	46	.0065.046.0	417298	417405	250	1.6	1.9	76.1	4
65	72	.0065.072.0	417299	417406	358	3.6	4.2	76.1	4
80	27	.0080.027.0	417300	417407	210	1.7	2	88.9	4
80	48	.0080.048.0	417301	417408	250	1.9	2.2	88.9	4
80	77	.0080.077.0	417302	417409	364	4	4.7	88.9	4
100	33	.0100.033.0	417303	417410	215	2.2	2.6	114.3	4
100	59	.0100.059.0	417304	417411	268	2.8	3.3	114.3	4
100	93	.0100.093.0	417305	417412	368	5	6	114.3	4
125	36	.0125.036.0	417306	417413	228	2.6	3.1	139.7	4
125	63	.0125.063.0	417307	417414	267	2.9	3.6	139.7	4
125	98	.0125.098.0	417308	417415	386	6	7	139.7	4
150	40	.0150.040.0	417309	417416	246	3.7	4.4	168.3	4.5
150	88	.0150.088.0	417310	417417	341	6	8	168.3	4.5
150	124	.0150.124.0	417311	417418	448	11	13	168.3	4.5
200	40	.0200.040.0	417312	417419	244	6	7	219.1	6.3
200	90	.0200.090.0	417313	417420	333	9	11	219.1	6.3
200	140	.0200.140.0	417314	417422	432	15	18	219.1	6.3

Bellows			Nominal movement absorption[1] at 1000 load cycles		Spring rate		
outside diameter	corrugated length	effective cross-section	angular	lateral	axial	angular	lateral
D_a	l	A	$2\alpha_N$	$2\lambda_{-N}$	c_δ	c_{α}	c_λ
mm	mm	cm^2	degree	mm	N/mm	Nm/deg	N/mm
89	54	46	33	5.6	86	1.1	259
89	126	46	57	28	61	0.8	34
107	54	68.7	31	5.3	84	1.6	378
107	90	68.7	44	15	50	1	81
110	198	70.9	65	50	88	1.7	30
121	50	89.1	27	4.1	94	2.3	640
121	90	89.1	41	13	52	1.3	109
123	204	90.8	61	48	95	2.4	40
148	55	137	27	4.6	87	3.3	752
149	108	138	43	16	71	2.7	160
151	208	140	59	48	84	3.3	52
174	52	187	25	4	72	3.7	953
174	91	187	39	12	41	2.1	177
173	210	186	55	45	88	4.6	71
202	70	263	23	5.1	116	8.5	1189
203	165	264	45	26	92	6.8	171
205	272	267	56	61	102	7.6	70
256	64	434	19	3.6	138	17	2791
257	153	436	37	19	107	13	380
260	252	441	52	50	109	13	145

1) Inner sleeve, movement absorption: The inner sleeve is designed for axial movement only. The movements (axial, angular, lateral) are to be regarded as alternatives, i.e. the sum of their proportions in percentages should not exceed 100 %.

AXIAL EXPANSION JOINTS WITH WELD ENDS





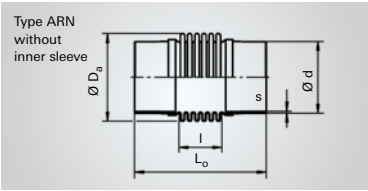
Nominal diameter	Nominal axial movement absorption	Type	Order No. standard version		Overall length	Weight approx.		Weld end	
		ARN 06...	without inner sleeve	with inner sleeve		without inner sleeve	with inner sleeve	outside diameter	wall thickness
DN	$2\delta_N$	–	–	–	L_o	G	G	d	s
–	mm	–	–	–	mm	kg	kg	-	mm
250	48	.0250.048.0	417315	417423	252	10	11	273	7.1
250	96	.0250.096.0	417316	417424	324	12	14	273	7.1
250	144	.0250.144.0	417317	417425	420	19	22	273	7.1
300	60	.0300.060.0	417318	417426	264	13	16	323.9	8
300	120	.0300.120.0	417319	417427	344	16	20	323.9	8
300	165	.0300.165.0	417320	417428	426	24	29	323.9	8
350	60	.0350.060.0	417321	417429	268	12	14	355.6	6
350	120	.0350.120.0	417322	417430	352	15	20	355.6	6
350	165	.0350.165.0	417331	417431	437	24	29	355.6	6
400	52	.0400.052.0	417333	417432	272	14	17	406.4	6
400	117	.0400.117.0	417334	417433	382	19	25	406.4	6
400	169	.0400.169.0	417335	417434	483	29	36	406.4	6
450	56	.0450.056.0	417336	417435	276	16	19	457	6
450	112	.0450.112.0	417337	417436	368	21	27	457	6
450	182	.0450.182.0	417338	417437	496	33	42	457	6
500	66	.0500.066.0	417339	417438	328	24	28	508	6
500	149	.0500.149.0	417340	417439	453	34	42	508	6
500	215	.0500.215.0	417341	417440	579	56	68	508	6
600	76	.0600.076.0	417342	417441	340	29	35	610	6
600	133	.0600.133.0	417343	417442	424	37	47	610	6
600	216	.0600.216.0	417344	417443	576	66	80	610	6

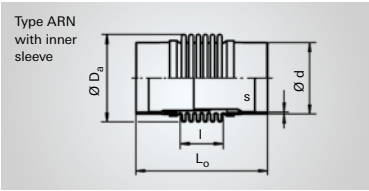
TYPE ARN 06...
PN 6

Bellows			Nominal movement absorption[1] at 1000 load cycles		Spring rate		
outside diameter	corrugated length	effective cross-section	angular	lateral	axial	angular	lateral
D_a	l	A	$2\alpha_N$	$2\lambda_{-N}$	c_δ	c_{α}	c_λ
mm	mm	cm^2	degree	mm	N/mm	Nm/deg	N/mm
316	72	670	18	3.9	209	39	5156
316	144	670	32	16	105	20	648
319	240	677	45	39	109	20	245
371	80	932	19	4.6	182	47	5062
371	160	932	34	19	91	24	633
374	242	940	44	38	104	27	319
402	84	1110	18	4.5	210	65	6311
402	168	1110	31	18	105	32	789
405	253	1119	40	37	119	37	397
461	88	1456	13	3.5	359	145	12887
461	198	1456	25	18	160	65	1135
462	299	1459	32	39	148	60	461
514	92	1828	13	3.6	364	185	15018
514	184	1828	22	14	182	92	1877
515	312	1832	30	39	150	76	539
572	100	2265	14	4.1	411	259	17778
572	225	2265	26	21	183	115	1564
574	351	2273	35	47	191	121	673
677	112	3217	13	4.4	412	368	20180
677	196	3217	21	14	236	211	3774
678	348	3222	30	39	215	192	1092

1) Inner sleeve, movement absorption: The inner sleeve is designed for axial movement only. The movements (axial, angular, lateral) are to be regarded as alternatives, i.e. the sum of their proportions in percentages should not exceed 100 %.

AXIAL EXPANSION JOINTS WITH WELD ENDS





06

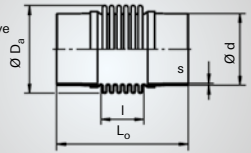
Nominal diameter	Nominal axial movement absorption	Type	Order No. standard version		Overall length	Weight approx.		Weld end	
		ARN 06...	without inner sleeve	with inner sleeve		without inner sleeve	with inner sleeve	outside diameter	wall thickness
DN	$2\delta_N$	–	–	–	L_o	G	G	d	s
–	mm	–	–	–	mm	kg	kg	-	mm
700	80	.0700.080.0	417345	417444	340	41	48	711	8
700	140	.0700.140.0	417388	417445	424	51	62	711	8
700	220	.0700.220.0	417389	417446	558	82	98	711	8
800	84	.0800.084.0	417390	417447	364	57	67	813	8
800	168	.0800.168.0	417391	417448	496	80	96	813	8
800	231	.0800.231.0	417392	417449	595	97	117	813	8
900	84	.0900.084.0	417393	417450	364	64	76	914	8
900	168	.0900.168.0	417394	417451	496	91	109	914	8
900	231	.0900.231.0	417395	417452	595	111	133	914	8
1000	66	.1000.066.0	417396	417453	341	64	74	1016	8
1000	132	.1000.132.0	417397	417454	446	87	104	1016	8
1000	220	.1000.220.0	417398	417455	586	117	141	1016	8
1200	69	.1200.069.0	417399	417456	341	89	104	1220	10
1200	138	.1200.138.0	417400	417457	446	116	144	1220	10
1200	230	.1200.230.0	417401	417458	586	153	191	1220	10

Bellows			Nominal movement absorption[1] at 1000 load cycles		Spring rate		
outside diameter	corrugated length	effective cross-section	angular	lateral	axial	angular	lateral
D_a	l	A	$2\alpha_N$	$2\lambda_{-N}$	c_δ	c_{α}	c_λ
mm	mm	cm^2	degree	mm	N/mm	Nm/deg	N/mm
780	112	4324	12	4	437	525	28770
780	196	4324	19	12	250	300	5374
783	330	4342	27	33	230	277	1751
887	132	5621	11	4.4	639	998	39372
887	264	5621	20	17	319	498	4914
887	363	5621	24	33	232	362	1890
996	132	7163	9.8	3.9	712	1417	55902
996	264	7163	18	15	356	708	6988
996	363	7163	21	29	259	515	2689
1100	105	8791	7	2.2	970	2369	147726
1100	210	8791	13	8.7	485	1184	18466
1100	350	8791	19	24	291	711	3989
1296	105	12341	6.2	1.9	1088	3730	232590
1296	210	12341	12	7.7	544	1865	29074
1296	350	12341	17	21	327	1121	6291

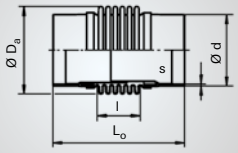
1) Inner sleeve, movement absorption: The inner sleeve is designed for axial movement only. The movements (axial, angular, lateral) are to be regarded as alternatives, i.e. the sum of their proportions in percentages should not exceed 100 %.

AXIAL EXPANSION JOINTS WITH WELD ENDS

Type ARN without inner sleeve



Type ARN with inner sleeve



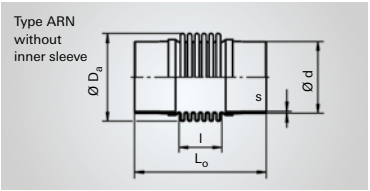
Nominal diameter	Nominal axial movement absorption	Type	Order No. standard version		Overall length	Weight approx.		Weld end	
		ARN 10...	without inner sleeve	with inner sleeve		without inner sleeve	with inner sleeve	outside diameter	wall thickness
DN	$2\delta_N$	–	–	–	L_o	G	G	d	s
–	mm	–	–	–	mm	kg	kg	-	mm
50	24	.0050.024.0	417459	417506	214	1	1	60.3	4
50	46	.0050.046.0	417460	417507	300	1.9	2.2	60.3	4
65	23	.0065.023.0	417461	417508	205	1.4	1.6	76.1	4
65	37	.0065.037.0	417462	417509	232	1.5	1.8	76.1	4
65	60	.0065.060.0	417463	417510	325	3.2	3.6	76.1	4
80	20	.0080.020.0	417464	417511	204	1.7	1.9	88.9	4
80	41	.0080.041.0	417465	417512	248	2	2.3	88.9	4
80	63	.0080.063.0	417466	417513	328	3.6	4.1	88.9	4
100	26	.0100.026.0	417467	417514	208	2.3	2.6	114.3	4
100	53	.0100.053.0	417468	417515	256	2.7	3.2	114.3	4
100	80	.0100.080.0	417469	417516	370	6	7	114.3	4
125	30	.0125.030.0	417470	417517	232	2.8	3.3	139.7	4
125	53	.0125.053.0	417471	417518	274	3.2	3.9	139.7	4
125	85	.0125.085.0	417472	417519	384	7	8	139.7	4
150	32	.0150.032.0	417473	417520	236	4.1	4.7	168.3	4.5
150	64	.0150.064.0	417474	417521	296	5	6	168.3	4.5
150	95	.0150.095.0	417475	417522	384	9	11	168.3	4.5
200	40	.0200.040.0	417476	417523	248	7	8	219.1	6.3
200	80	.0200.080.0	417477	417524	316	9	10	219.1	6.3
200	110	.0200.110.0	417478	417525	378	13	15	219.1	6.3
250	48	.0250.048.0	417479	417526	252	10	11	273	7.1
250	84	.0250.084.0	417480	417527	306	12	14	273	7.1
250	130	.0250.130.0	417481	417528	484	24	27	273	7.1

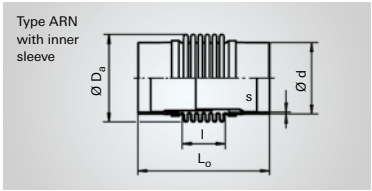
TYPE ARN 10...
PN 10

Bellows			Nominal movement absorption[1] at 1000 load cycles		Spring rate		
outside diameter	corrugated length	effective cross-section	angular	lateral	axial	angular	lateral
D_a	l	A	$2\alpha_N$	$2\lambda_{-N}$	c_δ	c_{α}	c_λ
mm	mm	cm^2	degree	mm	N/mm	Nm/deg	N/mm
89	54	46	31	5.6	86	1.1	259
90	140	46.6	50	28	112	1.4	51
107	45	68.7	26	3.7	101	1.9	654
107	72	68.7	35	9.4	63	1.2	159
110	165	70.9	51	35	106	2.1	53
121	44	89.1	21	2.8	190	4.7	1670
121	88	89.1	36	11	95	2.4	209
123	168	90.8	48	33	115	2.9	71
149	48	138	22	3.2	159	6.1	1817
149	96	138	36	13	80	3.1	229
152	210	141	48	42	128	5	78
171	56	184	21	3.7	147	7.5	1646
171	98	184	32	11	84	4.3	307
174	208	187	46	38	136	7.1	113
203	60	264	19	3.5	254	19	3564
203	120	264	33	14	127	9.3	445
205	208	267	43	36	133	9.9	157
257	68	436	19	3.8	240	29	4318
257	136	436	31	15	120	15	540
260	198	441	41	31	138	17	297
316	72	670	18	3.9	209	39	5156
316	126	670	27	12	120	22	967
319	304	677	32	45	199	37	278

1) Inner sleeve, movement absorption: The inner sleeve is designed for axial movement only. The movements (axial, angular, lateral) are to be regarded as alternatives, i.e. the sum of their proportions in percentages should not exceed 100 %.

AXIAL EXPANSION JOINTS WITH WELD ENDS



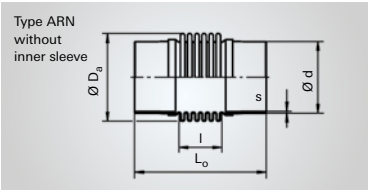


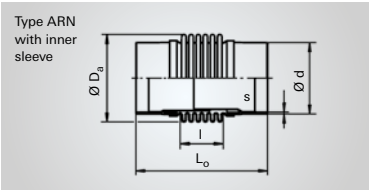
Nominal diameter	Nominal axial movement absorption	Type	Order No. standard version		Overall length	Weight approx.		Weld end	
		ARN 10...	without inner sleeve	with inner sleeve		without inner sleeve	with inner sleeve	outside diameter	wall thickness
DN	$2\delta_N$	–	–	–	L_o	G	G	d	s
–	mm	–	–	–	mm	kg	kg	-	mm
300	45	.0300.045.0	417482	417529	247	13	15	323.9	8
300	90	.0300.090.0	417483	417530	310	16	19	323.9	8
300	137	.0300.137.0	417484	417531	514	34	39	323.9	8
350	60	.0350.060.0	417486	417532	272	13	15	355.6	6
350	105	.0350.105.0	417487	417533	338	16	20	355.6	6
350	160	.0350.160.0	417488	417534	568	48	55	355.6	6
400	48	.0400.048.0	417489	417535	280	19	22	406.4	6
400	120	.0400.120.0	417490	417536	424	32	38	406.4	6
400	168	.0400.168.0	417491	417537	548	53	61	406.4	6
450	56	.0450.056.0	417492	417538	284	25	29	457	8
450	112	.0450.112.0	417493	417539	384	36	42	457	8
450	168	.0450.168.0	417494	417540	484	46	54	457	8
500	66	.0500.066.0	417495	417541	336	33	38	508	8
500	116	.0500.116.0	417497	417542	417	42	50	508	8
500	192	.0500.192.0	417499	417543	564	71	82	508	8
600	72	.0600.072.0	417500	417544	344	41	46	610	8
600	144	.0600.144.0	417501	417545	460	56	67	610	8
600	216	.0600.216.0	417502	417546	588	89	103	610	8
700	76	.0700.076.0	417503	417547	356	56	63	711	8
700	152	.0700.152.0	417504	417548	484	82	96	711	8
700	209	.0700.209.0	417505	417549	580	102	118	711	8

Bellows			Nominal movement absorption[1] at 1000 load cycles		Spring rate		
outside diameter	corrugated length	effective cross-section	angular	lateral	axial	angular	lateral
D_a	l	A	$2\alpha_N$	$2\lambda_{-N}$	c_δ	c_α	c_λ
mm	mm	cm^2	degree	mm	N/mm	Nm/deg	N/mm
372	63	935	15	2.7	290	75	13045
372	126	935	26	11	145	38	1631
374	330	940	31	44	237	62	391
403	88	1113	17	4.7	250	77	6864
403	154	1113	26	14	143	44	1282
412	384	1140	33	54	267	85	394
464	96	1466	12	3.6	723	294	21961
464	240	1466	26	22	289	118	1405
467	364	1476	32	47	267	109	568
518	100	1844	13	3.9	699	358	24613
518	200	1844	23	15	350	179	3081
518	300	1844	28	35	233	119	912
574	108	2273	14	4.4	620	392	23078
574	189	2273	22	14	354	224	4303
576	336	2282	30	40	279	177	1077
678	116	3222	12	4.3	645	577	29497
678	232	3222	21	17	323	289	3693
680	360	3232	28	40	289	259	1377
785	128	4353	11	4.4	850	1028	43134
785	256	4353	20	17	425	514	5392
785	352	4353	24	33	309	374	2073

1) Inner sleeve, movement absorption: The inner sleeve is designed for axial movement only. The movements (axial, angular, lateral) are to be regarded as alternatives, i.e. the sum of their proportions in percentages should not exceed 100 %.

AXIAL EXPANSION JOINTS WITH WELD ENDS



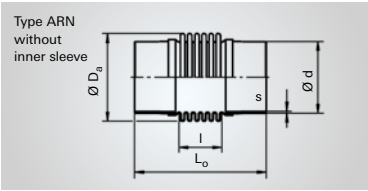


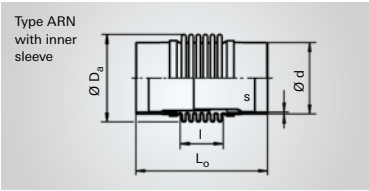
Nominal diameter	Nominal axial movement absorption	Type	Order No. standard version		Overall length	Weight approx.		Weld end	
		ARN 16...	without inner sleeve	with inner sleeve		without inner sleeve	with inner sleeve	outside diameter	wall thickness
DN	$2\delta_N$	–	–	–	L_o	G	G	d	s
–	mm	–	–	–	mm	kg	kg	-	mm
50	22	.0050.022.0	417550	417585	214	1	1	60.3	4
50	42	.0050.042.0	417551	417586	303	2.1	2.4	60.3	4
65	28	.0065.028.0	417552	417587	220	1.6	1.8	76.1	4
65	48	.0065.048.0	417553	417588	292	2.8	3.2	76.1	4
80	23	.0080.023.0	417554	417589	220	2.1	2.4	88.9	4
80	50	.0080.050.0	417555	417590	292	3.2	3.6	88.9	4
100	31	.0100.031.0	417556	417591	225	2.8	3.2	114.3	4
100	58	.0100.058.0	417557	417592	314	5	6	114.3	4
125	21	.0125.021.0	417558	417593	218	3	3.4	139.7	4
125	42	.0125.042.0	417559	417594	260	3.7	4.3	139.7	4
125	65	.0125.065.0	417560	417595	336	6	7	139.7	4
150	24	.0150.024.0	417561	417596	221	3.8	4.3	168.3	4.5
150	48	.0150.048.0	417562	417597	266	4.7	6	168.3	4.5
150	73	.0150.073.0	417563	417598	336	8	9	168.3	4.5
200	30	.0200.030.0	417564	417599	234	8	8	219.1	6.3
200	60	.0200.060.0	417565	417600	288	10	11	219.1	6.3
200	97	.0200.097.0	417566	417601	450	19	21	219.1	6.3
250	32	.0250.032.0	417567	417602	256	11	12	273	7.1
250	64	.0250.064.0	417568	417603	332	14	16	273	7.1
250	103	.0250.103.0	417569	417604	440	23	26	273	7.1

Bellows			Nominal movement absorption[1] at 1000 load cycles		Spring rate		
outside diameter	corrugated length	effective cross-section	angular	lateral	axial	angular	lateral
D_a	l	A	$2\alpha_N$	$2\lambda_{-N}$	c_δ	c_{α}	c_λ
mm	mm	cm^2	degree	mm	N/mm	Nm/deg	N/mm
89	54	46	29	5.2	143	1.8	430
91	143	47.2	42	26	149	2	66
108	60	69.4	29	5.9	124	2.4	457
110	132	70.9	40	22	133	2.6	103
122	60	89.9	23	4.3	273	6.8	1302
123	132	90.8	38	20	147	3.7	146
150	65	139	24	5	223	8.6	1400
152	154	141	37	22	174	6.8	198
172	42	185	15	1.9	346	18	6932
172	84	185	27	7.7	173	8.9	867
174	160	187	36	22	177	9.2	248
203	45	264	14	2	339	25	8455
203	90	264	25	7.8	169	12	1054
205	160	267	34	21	173	13	345
260	54	441	14	2.3	508	62	14678
260	108	441	26	9.1	254	31	1835
262	270	445	29	37	271	33	316
318	76	674	12	2.8	634	119	14135
318	152	674	20	11	317	59	1767
320	260	679	27	30	296	56	568

1) Inner sleeve, movement absorption: The inner sleeve is designed for axial movement only. The movements (axial, angular, lateral) are to be regarded as alternatives, i.e. the sum of their proportions in percentages should not exceed 100 %.

AXIAL EXPANSION JOINTS WITH WELD ENDS





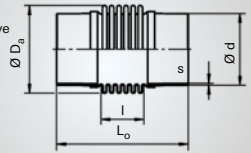
Nominal diameter	Nominal axial movement absorption	Type	Order No. standard version		Overall length	Weight approx.		Weld end	
		ARN 16...	without inner sleeve	with inner sleeve		without inner sleeve	with inner sleeve	outside diameter	wall thickness
DN	$2\delta_N$	–	–	–	L_o	G	G	d	s
–	mm	–	–	–	mm	kg	kg	-	mm
300	40	.0300.040.0	417570	417605	268	16	18	323.9	8
300	80	.0300.080.0	417571	417606	352	21	25	323.9	8
300	120	.0300.120.0	417572	417607	529	42	48	323.9	8
350	40	.0350.040.0	417573	417608	268	18	20	355.6	8
350	90	.0350.090.0	417574	417609	373	25	29	355.6	8
350	130	.0350.130.0	417575	417611	496	43	50	355.6	8
400	48	.0400.048.0	417576	417612	288	26	29	406.4	8
400	96	.0400.096.0	417577	417613	392	38	43	406.4	8
400	132	.0400.132.0	417578	417614	470	47	54	406.4	8
450	52	.0450.052.0	417579	417615	288	29	33	457	8
450	104	.0450.104.0	417580	417616	392	43	50	457	8
450	143	.0450.143.0	417581	417617	470	54	62	457	8
500	48	.0500.048.0	417582	417618	312	34	37	508	8
500	96	.0500.096.0	417583	417619	396	46	53	508	8
500	144	.0500.144.0	417584	417620	480	59	68	508	8

Bellows			Nominal movement absorption[1] at 1000 load cycles		Spring rate		
outside diameter	corrugated length	effective cross-section	angular	lateral	axial	angular	lateral
D_a	l	A	$2\alpha_N$	$2\lambda_{-N}$	c_δ	c_α	c_λ
mm	mm	cm^2	degree	mm	N/mm	Nm/deg	N/mm
374	84	940	13	3.2	698	182	17764
374	168	940	21	13	349	91	2220
376	345	946	25	40	322	85	489
408	84	1128	12	3	683	214	20856
408	189	1128	20	15	304	95	1834
412	312	1140	26	35	329	104	736
467	104	1476	12	3.8	934	383	24342
467	208	1476	22	15	467	191	3043
467	286	1476	25	29	340	139	1172
520	104	1851	12	3.7	943	485	30826
520	208	1851	21	15	472	243	3857
520	286	1851	24	28	343	176	1483
576	84	2282	9.9	2.5	1117	708	68986
576	168	2282	18	10	558	354	8616
576	252	2282	24	22	372	236	2553

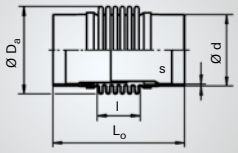
1) Inner sleeve, movement absorption: The inner sleeve is designed for axial movement only. The movements (axial, angular, lateral) are to be regarded as alternatives, i.e. the sum of their proportions in percentages should not exceed 100 %.

AXIAL EXPANSION JOINTS WITH WELD ENDS

Type ARN without inner sleeve



Type ARN with inner sleeve



Nominal diameter	Nominal axial movement absorption	Type	Order No. standard version		Overall length	Weight approx.		Weld end	
		ARN 25...	without inner sleeve	with inner sleeve		without inner sleeve	with inner sleeve	outside diameter	wall thickness
DN	$2\delta_N$	–	–	–	L_o	G	G	d	s
–	mm	–	–	–	mm	kg	kg	-	mm
50	17	.0050.017.0	417621	417650	210	1	1	60.3	4
50	32	.0050.032.0	417622	417651	270	1.8	2	60.3	4
65	21	.0065.021.0	417623	417652	215	1.8	2	76.1	4
65	40	.0065.040.0	417624	417653	292	3.2	3.6	76.1	4
80	23	.0080.023.0	417625	417654	220	2.3	2.6	88.9	4
80	42	.0080.042.0	417626	417655	290	3.6	4	88.9	4
100	23	.0100.023.0	417627	417656	212	2.8	3.1	114.3	4
100	48	.0100.048.0	417629	417657	286	4.6	5	114.3	4
125	26	.0125.026.0	417630	417658	240	3.9	4.4	139.7	4
125	52	.0125.052.0	417631	417659	304	5	6	139.7	4
150	29	.0150.029.0	417632	417660	240	4.9	6	168.3	4.5
150	58	.0150.058.0	417633	417661	304	7	8	168.3	4.5
200	26	.0200.026.0	417635	417662	252	9	9	219.1	6.3
200	52	.0200.052.0	417636	417663	324	11	13	219.1	6.3
200	71	.0200.071.0	417637	417664	378	15	17	219.1	6.3
250	24	.0250.024.0	417638	417665	240	12	13	273	7.1
250	48	.0250.048.0	417639	417666	300	15	17	273	7.1
250	79	.0250.079.0	417640	417667	380	20	22	273	7.1
300	27	.0300.027.0	417641	417668	250	15	17	323.9	8
300	55	.0300.055.0	417642	417669	316	20	23	323.9	8
300	82	.0300.082.0	417643	417670	382	24	29	323.9	8