

HYDRA

6 | STANDARD RANGES

Axial expansion joint
for low pressure (exhaust-gas) with flanges

Type ABG
Type AFG

Designation

The designation consists of two parts:

1. the series, defined by 3 letters
2. the nominal size, defined by 10 digits

Example:

Typee ABG: HYDRA exhaust-gas expansion joint with swivel flanges

Typee AFG: HYDRA exhaust-gas expansion joint with plain fixed flanges

Standard version/materials:

multi-ply bellows: 1.4541

flange: S 235 JRG2 (1.0038)

operating temperature: up to 550°C

Designation (example):

A	B	G	0	1	.	0	1	5	0	.	1	2	6	.	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
-> order number
- for different materials
-> designation
-> details of materials

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

The Pressure Equipment Directive 97/23/EC does not apply to this operating condition.

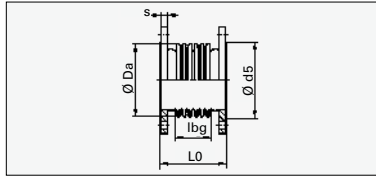
Note: Tell us the dimensions that deviate from the standard dimensions and we can match the expansion joint to your specification.

Axial expansion joints

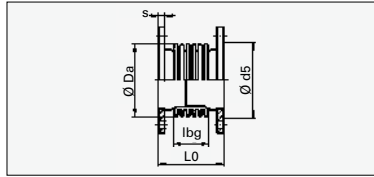
for low pressure with swivel lap-joint flanges

Type ABG 01...

PN 1



Type ABG without inner sleeve



Type ABG with inner sleeve

Nominal diameter	Nominal axial movement absorption	Type ABG 01 ...	Order No. standard version		Overall length	Weight approx.		Flange		
			without inner sleeve	with inner sleeve		without inner sleeve	with inner sleeve	drilling EN 1092	rim diameter	thickness
DN	2δ _N	—	—	—	L ₀	G	G	PN	d ₅	s
—	mm	—	—	—	mm	kg	kg	—	mm	mm
50	20	.0050.020.0	419285	419411	103	2	2.1	6	90	10
50	56	.0050.056.0	419286	419412	184	2.3	2.6	6	90	10
50	80	.0050.080.0	419287	419413	238	2.5	2.9	6	90	10
65	23	.0065.023.0	419289	419414	103	2.5	2.6	6	107	10
65	64	.0065.064.0	419290	419415	184	2.8	3.2	6	107	10
65	92	.0065.092.0	419291	419416	238	3.1	3.6	6	107	10
80	37	.0080.037.0	419292	419417	127	3.7	4	6	122	10
80	69	.0080.069.0	419293	419418	187	3.9	4.4	6	122	10
80	101	.0080.101.0	419294	419419	247	4.2	4.9	6	122	10
100	40	.0100.040.0	419295	419420	123	4.2	4.6	6	147	10
100	79	.0100.079.0	419296	419421	189	4.6	5.3	6	147	10
100	112	.0100.112.0	419297	419422	244	4.9	5.8	6	147	10
125	63	.0125.063.0	419298	419423	158	5.3	6	6	178	10
125	117	.0125.117.0	419299	419424	236	5.8	6.7	6	178	10
125	180	.0125.180.0	419300	419425	327	6.5	7.8	6	178	10
150	54	.0150.054.0	419301	419426	145	5.7	6.4	6	202	10
150	126	.0150.126.0	419302	419427	249	6.7	8	6	202	10
150	180	.0150.180.0	419303	419428	327	7.3	9	6	202	10
200	70	.0200.070.0	419304	419429	183	11.9	13.1	6	258	16
200	120	.0200.120.0	419305	419430	258	12.7	14.5	6	258	16
200	200	.0200.200.0	419306	419431	378	14	16.6	6	258	16

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 swivel lap-joint flanges

Type ABG 01...

PN 1

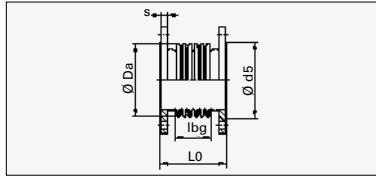
Bellows			Nominal movement absorption ¹⁾		Vibrations in all planes	Adjusting force rate			Natural frequency of bellows	
outside diameter	corrugated length	effective cross-section	nominal for 1000 loading cycles angular ¹⁾	lateral ¹⁾		axial	angular	lateral	axial	radial
Da	lbg	A	2α _N	2λ _N	â	c _δ	c _α	c _λ	ω _a	ω _r
mm	mm	cm ²	degrees	mm	mm	N/mm	Nm/degrees	N/mm	Hz	Hz
89	45	45.2	30	3.9	0.3	126	1.6	543	420	1800
89	126	45.2	50	30.7	1	45	0.6	26	150	230
89	180	45.2	50	62.7	1	31	0.4	8.5	105	110
107	45	67.8	28	3.7	0.3	122	2.3	781	350	1840
107	126	67.8	50	28.9	1	43	0.8	35	125	235
107	180	67.8	50	59	1	30	0.6	13	90	115
121	70	88.1	39	8.1	0.5	87	2.2	309	220	840
121	130	88.1	50	28	1	46	1.1	49	165	340
121	190	88.1	50	59.9	1	32	0.8	15	80	115
148	66	135.6	33	6.6	0.5	96	3.6	584	210	1050
148	132	135.6	50	26.4	1	48	1.8	71	90	220
148	187	135.6	50	53	1	34	1.3	26	60	110
174	91	186	45	12.4	0.5	81	4.2	349	120	520
174	169	186	50	42.7	1	43	2.2	55	70	150
174	260	186	50	101	1	28	1.5	15	40	65
203	78	263	33	7.7	0.7	90	6.6	746	140	830
203	182	263	50	41.7	1	38	2.8	58	60	150
203	260	263	50	85	1	27	2	20	40	75
255	105	430	33	10.4	1	77	9.2	574	110	600
255	180	430	50	30.7	1	45	5.4	115	60	210
255	300	430	50	85.3	1	27	3.2	24	40	75

Axial expansion joints

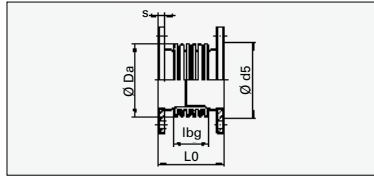
for low pressure with swivel lap-joint flanges

Type ABG 01...

PN 1



Type ABG without inner sleeve



Type ABG with inner sleeve

Nominal diameter	Nominal axial movement absorption	Type ABG 01 ...	Order No. standard version		Overall length	Weight approx.		Flange		
			without inner sleeve	with inner sleeve		without inner sleeve	with inner sleeve	drilling EN 1092	rim diameter	thickness
DN	2δ _N	—	—	—	L ₀	G	G	PN	d5	s
—	mm	—	—	—	mm	kg	kg	—	mm	mm
250	72	.0250.072.0	419307	419432	190	14.3	16	6	312	16
250	132	.0250.132.0	419308	419433	275	15.4	17.7	6	312	16
250	204	.0250.204.0	419310	419434	377	16.8	20	6	312	16
300	56	.0300.056.0	419309	419435	164	18.4	20.1	6	365	16
300	140	.0300.140.0	419311	419436	278	20	22.8	6	365	16
300	210	.0300.210.0	419312	419437	373	21.4	25.1	6	365	16
350	60	.0350.060.0	419313	419449	168	23.4	25.2	6	410	16
350	120	.0350.120.0	419314	419450	248	24.7	27.3	6	410	16
350	210	.0350.210.0	419315	419451	368	26.6	30.6	6	410	16
400	65	.0400.065.0	419316	419452	203	28.5	31.2	6	465	16
400	104	.0400.104.0	419318	419453	266	30.5	34.1	6	465	16
400	195	.0400.195.0	419319	419463	413	35.3	40.8	6	465	16
450	56	.0450.056.0	419320	419464	186	32.4	35.2	6	520	16
450	112	.0450.112.0	419321	419465	274	35.7	39.8	6	520	16
450	196	.0450.196.0	419322	419466	406	40.7	46.7	6	520	16
500	68	.0500.068.0	419323	419467	190	35.3	38.3	6	570	16
500	119	.0500.119.0	419324	419468	259	38.2	42.3	6	570	16
500	221	.0500.221.0	419325	419469	397	44.2	50.4	6	570	16
600	76	.0600.076.0	419326	419470	210	53	57	6	670	20
600	133	.0600.133.0	419327	419471	288	56.8	62.3	6	670	20
600	228	.0600.228.0	419328	419472	418	63.1	71	6	670	20

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 swivel lap-joint flanges

Type ABG 01...

PN 1

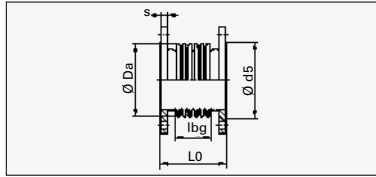
Bellows			Nominal movement absorption ¹⁾		Vibrations in all planes	Adjusting force rate			Natural frequency of bellows	
outside diameter	corrugated length	effective cross-section	nominal for 1000 loading cycles angular ¹⁾	lateral ¹⁾		axial	angular	lateral	axial	radial
Da	lbg	A	2α _N	2λ _N	â	c _δ	c _α	c _λ	ω _a	ω _r
mm	mm	cm ²	degrees	mm	mm	N/mm	Nm/degrees	N/mm	Hz	Hz
312	102	658	28	8.4	0.7	86	16	1057	110	780
312	187	658	47	28.4	1	47	8.6	171	60	230
312	289	658	50	67.8	1	30	5.5	46	40	100
365	76	913	18	4.2	0.4	127	32	3809	140	1610
365	190	913	43	26	1	51	13	248	60	260
365	285	913	50	58.4	1	34	8.7	74	40	115
400	80	1101	18	4.3	0.4	122	37	4082	120	1490
400	160	1101	34	17.1	1	61	19	510	65	375
400	280	1101	50	52.3	1	35	11	96	35	120
458	105	1439	17	5.3	0.5	186	75	4677	120	1260
458	168	1439	27	13.6	1	116	47	1145	80	500
458	315	1439	45	47.7	1	62	25	173	40	140
513	88	1817	13	3.4	0.3	220	112	9944	130	1850
513	176	1817	26	13.6	1	110	56	1243	70	460
513	308	1817	41	41.7	1	62	31	232	40	150
569	92	2244	14	3.9	0.3	210	131	10641	115	1690
569	161	2244	24	11.9	1	120	75	1989	70	550
569	299	2244	42	41.1	1	64	40	308	35	160
674	104	3192	14	4.1	0.3	205	182	11569	100	1570
674	182	3192	23	12.6	1	117	104	2159	60	510
674	312	3192	36	37.1	1	68	60	431	35	175

Axial expansion joints

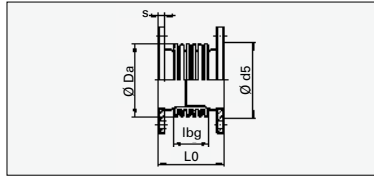
for low pressure with swivel lap-joint flanges

Type ABG 01...

PN 1



Type ABG without inner sleeve



Type ABG with inner sleeve

Nominal diameter	Nominal axial movement absorption	Type ABG 01 ...	Order No. standard version		Overall length	Weight approx.		Flange		
			without inner sleeve	with inner sleeve		without inner sleeve	with inner sleeve	drilling EN 1092	rim diameter	thickness
DN	2δ _N	—	—	—	L ₀	G	G	PN	d5	s
—	mm	—	—	—	mm	kg	kg	—	mm	mm
700	80	.0700.080.0	419329	419473	218	62.8	67.7	6	775	20
700	120	.0700.120.0	419330	419474	274	66	72.2	6	775	20
700	220	.0700.220.0	419331	419475	414	74	83.2	6	775	20
800	84	.0800.084.0	419332	419476	230	77.3	83.2	6	880	20
800	126	.0800.126.0	419333	419477	288	80.9	88.4	6	880	20
800	231	.0800.231.0	419334	419478	433	90.2	101.2	6	880	20
900	84	.0900.084.0	419335	419479	234	81.8	88.7	6	980	20
900	126	.0900.126.0	419336	419481	294	86.2	94.9	6	980	20
900	210	.0900.210.0	419337	419482	414	94.9	107.2	6	980	20
1000	72	.1000.072.0	419338	419483	220	86.4	93.8	6	1080	20
1000	144	.1000.144.0	419339	419484	316	93.7	104	6	1080	20
1000	240	.1000.240.0	419340	419485	444	103.4	117.6	6	1080	20
1200	72	.1200.072.0	419341	419486	225	107	124.6	2	1280	20
1200	120	.1200.120.0	419342	419487	287	113.1	135.1	2	1280	20
1200	216	.1200.216.0	419343	419488	411	125.2	156.4	2	1280	20
1400	48	.1400.048.0	419344	419490	136	124.9	137.4	2	1466	20
1400	108	.1400.108.0	419345	419491	266	136.9	163.3	2	1466	20
1400	180	.1400.180.0	419346	419492	422	151.4	191.7	2	1466	20
1600	48	.1600.048.0	419347	419493	136	155	169.3	2	1666	20
1600	108	.1600.108.0	419385	419494	266	168.8	198.9	2	1666	20
1600	180	.1600.180.0	419386	419495	422	185.3	231.4	2	1666	20

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 swivel lap-joint flanges

Type ABG 01...

PN 1

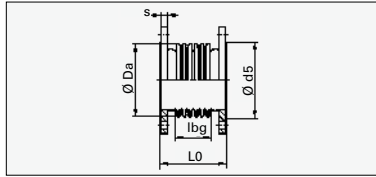
Bellows			Nominal movement absorption ¹⁾		Vibrations in all planes	Adjusting force rate			Natural frequency of bellows	
outside diameter	corrugated length	effective cross-section	nominal for 1000 loading cycles angular ¹⁾	lateral ¹⁾		axial	angular	lateral	axial	radial
Da	lbg	A	2α _N	2λ _N	â	c ₀	c _α	c _λ	ω _a	ω _r
mm	mm	cm ²	degrees	mm	mm	N/mm	Nm/degrees	N/mm	Hz	Hz
780	112	4312	12	4	0.3	197	237	12990	90	1480
780	168	4312	18	9.1	0.8	131	157	3849	60	660
780	308	4312	30	30.4	1	71	85	623	30	195
882	116	5575	11	3.9	0.3	197	306	15687	85	1570
882	174	5575	16	8.7	0.8	131	203	4633	60	700
882	319	5575	28	29.1	1	71	110	750	30	210
992	120	7118	9.9	3.5	0.2	200	396	18908	80	1650
992	180	7118	15	7.9	0.7	133	264	5602	60	730
992	300	7118	23	22	1	80	159	1215	30	260
1095	96	8733	7.7	2.2	0.2	270	656	48940	105	2940
1095	192	8733	15	8.7	0.7	135	328	6118	50	740
1095	320	8733	23	24.3	1	81	197	1323	30	265
1295	93	12311	6.5	1.8	0.1	260	891	70830	95	3210
1295	155	12311	11	4.9	0.4	156	534	15282	60	1160
1295	279	12311	18	16	1	86	295	2623	30	360
1456	104	15993	3.8	1.2	0.1	492.5	2191	139277	150	5320
1456	234	15993	8.4	5.9	0.5	218.9	974	12230	70	1050
1456	390	15993	13	16.4	1	131.3	584	2640	40	380
1656	104	20791	3.4	1	0.1	550	3180	202146	150	6040
1656	234	20791	7.4	5.2	0.5	244.4	1413	17742	70	1200
1656	390	20791	12	14.4	1	146.7	848	3833	40	430

Axial expansion joints

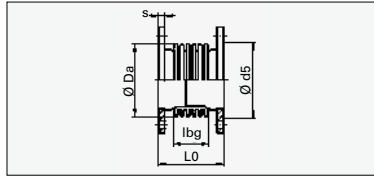
for low pressure with swivel lap-joint flanges

Type ABG 01...

PN 1



Type ABG without inner sleeve



Type ABG with inner sleeve

Nominal diameter	Nominal axial movement absorption	Type ABG 01 ...	Order No. standard version		Overall length	Weight approx.		Flange		
			without inner sleeve	with inner sleeve		without inner sleeve	with inner sleeve	drilling EN 1092	rim diameter	thickness
DN	2δ _N	—	—	—	L ₀	G	G	PN	d5	s
—	mm	—	—	—	mm	kg	kg	—	mm	mm
1800	48	1800.048.0	419387	419496	136	173.5	189.6	2	1866	20
1800	108	1800.108.0	419388	419498	266	189	222.9	2	1866	20
1800	180	1800.180.0	419389	419499	422	207.6	259.4	2	1866	20
2000	48	2000.048.0	419390	419500	136	192	209.8	2	2066	20
2000	108	2000.108.0	419391	419501	266	209.2	246.9	2	2066	20
2000	180	2000.180.0	419392	419502	422	229.9	287.4	2	2066	20
2200	48	2200.048.0	419393	419503	136	225.7	245.3	2	2266	20
2200	108	2200.108.0	419394	419505	266	244.7	286.2	2	2266	20
2200	180	2200.180.0	419396	419506	422	267.4	332.9	2	2266	20
2400	48	2400.048.0	419397	419507	136	245.7	267.1	2	2466	20
2400	108	2400.108.0	419398	419508	266	266.3	311.6	2	2466	20
2400	180	2400.180.0	419399	419509	422	291.1	362.6	2	2466	20
2600	48	2600.048.0	419400	419510	136	265.4	288.6	2	2666	20
2600	108	2600.108.0	419401	419511	266	287.8	336.8	2	2666	20
2600	180	2600.180.0	419402	419513	422	314.7	392.1	2	2666	20
2800	48	2800.048.0	419403	419514	136	319.1	344.1	2	2866	20
2800	108	2800.108.0	419404	419516	266	343.2	396	2	2866	20
2800	180	2800.180.0	419405	419518	422	372.2	455.5	2	2866	20
3000	48	3000.048.0	419406	419519	136	341.2	368	2	3066	20
3000	108	3000.108.0	419407	419520	266	367.1	423.6	2	3066	20
3000	180	3000.180.0	419408	419521	422	398.1	487.4	2	3066	20

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Axial expansion joints

for low pressure with swivel lap-joint flanges

Type ABG 01...

PN 1

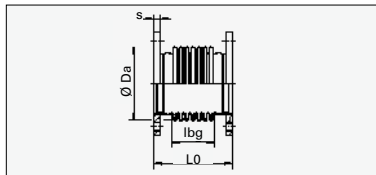
Bellows			Nominal movement absorption ¹⁾		Vibrations in all planes	Adjusting force rate			Natural frequency of bellows	
outside diameter	corrugated length	effective cross-section	nominal for 1000 loading cycles angular ¹⁾	lateral ¹⁾		axial	angular	lateral	axial	radial
Da	lbg	A	2α _N	2λ _N	â	c ₀	c _α	c _λ	ω _a	ω _r
mm	mm	cm ²	degrees	mm	mm	N/mm	Nm/degrees	N/mm	Hz	Hz
1856	104	26216	3	0.9	0	607.5	4429	281542	150	6760
1856	234	26216	6.6	4.6	0.4	270	1968	24711	70	1340
1856	390	26216	11	12.8	1	162	1181	5339	40	480
2056	104	32270	2.7	0.8	0	667.5	5989	380708	150	7480
2056	234	32270	6	4.2	0.4	296.7	2662	33426	70	1480
2056	390	32270	9.6	11.5	1	178	1597	7219	40	530
2256	104	38952	2.5	0.7	0	730	7906	502567	150	8200
2256	234	38952	5.4	3.8	0.3	324.4	3513	44111	70	1620
2256	390	38952	8.8	10.5	1	194.7	2109	9533	40	580
2456	104	46263	2.3	0.7	0	782.5	10064	639746	150	8900
2456	234	46263	5	3.5	0.3	347.8	4473	56166	70	1760
2456	390	46263	8.1	9.6	1	208.7	2684	12133	40	630
2656	104	54201	2.1	0.6	0	842.5	12694	806930	150	9620
2656	234	54201	4.6	3.2	0.3	374.4	5641	70832	70	1900
2656	390	54201	7.5	8.9	0.8	224.7	3386	15306	40	680
2856	104	63392	1.9	0.6	0	902.5	15747	1001002	150	10330
2856	234	63392	4.3	3	0.2	401.1	6998	87871	65	2040
2856	390	63392	7	8.3	0.8	240.7	4200	18986	40	740
3056	104	71964	1.8	0.5	0	962.5	19253	1223871	150	11050
3056	234	71964	4	2.8	0.2	427.8	8557	107447	65	2180
3056	390	71964	6.5	7.7	0.7	256.7	5135	23212	40	790

Axial expansion joints

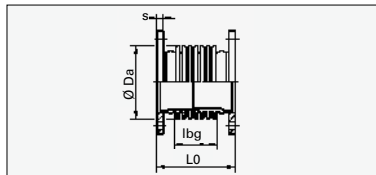
for low pressure with plain fixed flanges

Type AFG 01...

PN 1



Type AFG without inner sleeve



Type AFG with inner sleeve

Nominal diameter	Nominal axial movement absorption	Type AFG 01 ...	Order No. standard version		Overall length	Weight approx.		Flange	
			without inner sleeve	with inner sleeve		without inner sleeve	with inner sleeve	drilling EN 1092	thickness
DN	2δ _N	–	–	–	Lo	G	G	PN	s
–	mm	–	–	–	mm	kg	kg	–	mm
50	20	.0050.020.0	420180	420272	123	2	2.1	6	10
50	56	.0050.056.0	420181	420273	204	2.3	2.6	6	10
50	80	.0050.080.0	420182	421598	258	2.4	2.8	6	10
65	23	.0065.023.0	420183	421599	123	2.5	2.7	6	10
65	64	.0065.064.0	420184	421600	204	2.8	3.2	6	10
65	92	.0065.092.0	420185	421601	258	3.1	3.6	6	10
80	37	.0080.037.0	420186	421602	148	3.6	3.8	6	10
80	69	.0080.069.0	420187	421603	208	3.9	4.3	6	10
80	101	.0080.101.0	420188	421604	268	4.2	4.8	6	10
100	40	.0100.040.0	420189	421605	144	4.1	4.3	6	10
100	79	.0100.079.0	420190	421606	210	4.5	5.1	6	10
100	112	.0100.112.0	420191	421607	265	4.9	5.7	6	10
125	63	.0125.063.0	420192	421608	179	5.2	5.6	6	10
125	117	.0125.117.0	420193	421609	257	5.8	6.6	6	10
125	180	.0125.180.0	420194	421610	348	6.4	7.6	6	10
150	54	.0150.054.0	420195	421611	166	5.7	6.2	6	10
150	126	.0150.126.0	420196	421612	270	6.6	7.6	6	10
150	180	.0150.180.0	420197	421613	348	7.3	8.7	6	10
200	70	.0200.070.0	420198	421614	199	11.8	13	6	16
200	120	.0200.120.0	420199	421615	274	12.6	14.2	6	16
200	200	.0200.200.0	420200	421617	394	13.8	16	6	16

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 AFG 01...

PN 1

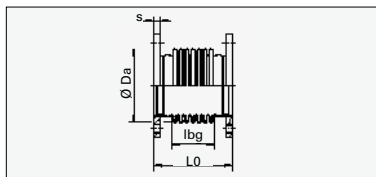
Bellows			Nominal movement absorption ¹⁾		Vibrations in all planes	Adjusting force rate			Natural frequency of bellows	
outside diameter	corrugated length	effective cross-section	nominal for 1000 loading cycles angular ¹⁾	lateral ¹⁾		axial	angular	lateral	axial	radial
Da	lbg	A	2α _N	2λ _N	â	c ₀	c _α	c _λ	ω _a	ω _r
mm	mm	cm ²	degrees	mm	mm	N/mm	Nm/degrees	N/mm	Hz	Hz
89	45	45.2	30	3.9	0.3	126	1.6	543	420	1800
89	126	45.2	50	31	1	45	0.6	26	150	230
89	180	45.2	50	63	1	31	0.4	8.5	105	110
107	45	67.8	28	3.7	0.3	122	2.3	781	350	1840
107	126	67.8	50	29	1	43	0.8	35	125	235
107	180	67.8	50	59	1	30	0.6	13	90	115
121	70	88.1	39	8.1	0.5	87	2.2	309	220	840
121	130	88.1	50	28	1	46	1.1	49	165	340
121	190	88.1	50	59	1	32	0.8	15	80	115
148	66	135.6	33	6.5	0.5	96	3.6	584	210	1050
148	132	135.6	50	26	1	48	1.8	71	90	220
148	187	135.6	50	53	1	34	1.3	26	60	110
174	91	186	45	12	0.5	81	4.2	349	120	520
174	169	186	50	43	1	43	2.2	55	70	150
174	260	186	50	101	1	28	1.5	15	40	65
203	78	263	33	7.7	0.7	90	6.6	746	140	830
203	182	263	50	42	1	38	2.8	58	60	150
203	260	263	50	85	1	27	2	20	40	75
255	105	430	33	10	1	77	9.2	574	110	600
255	180	430	50	31	1	45	5.4	115	60	210
255	300	430	50	85	1	27	3.2	24	40	75

Axial expansion joints

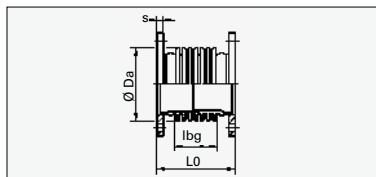
for low pressure with plain fixed flanges

Type AFG 01...

PN 1



Type AFG without inner sleeve



Type AFG with inner sleeve

Nominal diameter	Nominal axial movement absorption	Type AFG 01 ...	Order No. standard version		Overall length	Weight approx.		Flange	
			without inner sleeve	with inner sleeve		without inner sleeve	with inner sleeve	drilling EN 1092	thickness
DN	2δ _N	–	–	–	Lo	G	G	PN	s
–	mm	–	–	–	mm	kg	kg	–	mm
250	72	.0250.072.0	420201	421618	206	14.1	16	6	16
250	132	.0250.132.0	420202	421619	291	15	18	6	16
250	204	.0250.204.0	420203	421620	393	17	19	6	16
300	56	.0300.056.0	420204	421621	180	18	20	6	16
300	140	.0300.140.0	420205	421622	294	20	22	6	16
300	210	.0300.210.0	420206	421623	389	21	25	6	16
350	60	.0350.060.0	420207	421624	184	23	25	6	16
350	120	.0350.120.0	420208	421625	264	24	27	6	16
350	210	.0350.210.0	420209	421626	384	26	30	6	16
400	65	.0400.065.0	420210	421627	219	28	30	6	16
400	104	.0400.104.0	420211	421628	282	30	33	6	16
400	195	.0400.195.0	420212	421629	429	35	40	6	16
450	56	.0450.056.0	420213	421630	202	32	34	6	16
450	112	.0450.112.0	420214	421631	290	35	39	6	16
450	196	.0450.196.0	420215	421632	422	40	46	6	16
500	68	.0500.068.0	420216	421633	206	34	37	6	16
500	119	.0500.119.0	420217	421634	275	37	42	6	16
500	221	.0500.221.0	420218	421635	413	43	52	6	16
600	76	.0600.076.0	420219	421636	222	52	56	6	20
600	133	.0600.133.0	420220	421637	300	56	62	6	20
600	228	.0600.228.0	420223	421638	430	62	73	6	20

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 AFG 01...

PN 1

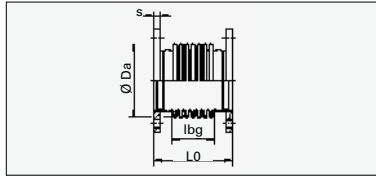
Bellows			Nominal movement absorption ¹⁾		Vibrations in all planes	Adjusting force rate			Natural frequency of bellows	
outside diameter	corrugated length	effective cross-section	nominal for 1000 loading cycles angular ¹⁾	lateral ¹⁾		axial	angular	lateral	axial	radial
Da	lbg	A	2α _N	2λ _N	â	c ₀	c _α	c _λ	ω _a	ω _r
mm	mm	cm ²	degrees	mm	mm	N/mm	Nm/degrees	N/mm	Hz	Hz
312	102	658	28	8.4	0.7	86	16	1057	110	780
312	187	658	47	28	1	47	8.6	171	60	230
312	289	658	50	68	1	30	5.5	46	40	100
365	76	913	18	4.2	0.4	127	32	3809	140	1610
365	190	913	43	26	1	51	13	248	60	260
365	285	913	50	58	1	34	8.7	74	40	115
400	80	1101	18	4.3	0.4	122	37	4082	120	1490
400	160	1101	34	17	1	61	19	510	65	375
400	280	1101	50	52	1	35	11	96	35	120
458	105	1439	17	5.3	0.5	186	75	4677	120	1260
458	168	1439	27	14	1	116	47	1145	80	500
458	315	1439	45	48	1	62	25	173	40	140
513	88	1817	13	3.4	0.3	220	112	9944	130	1850
513	176	1817	26	14	1	110	56	1243	70	460
513	308	1817	41	42	1	62	31	232	40	150
569	92	2244	14	3.9	0.3	210	131	10641	115	1690
569	161	2244	24	12	1	120	75	1989	70	550
569	299	2244	42	41	1	64	40	308	35	160
674	104	3192	14	4.1	0.3	205	182	11569	100	1570
674	182	3192	23	13	1	117	104	2159	60	510
674	312	3192	36	37	1	68	60	431	35	175

Axial expansion joints

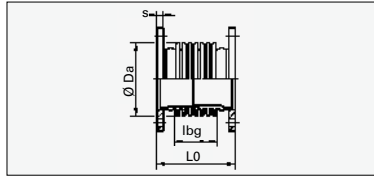
for low pressure with plain fixed flanges

Type AFG 01...

PN 1



Type AFG without inner sleeve



Type AFG with inner sleeve

Nominal diameter	Nominal axial movement absorption	Type AFG 01 ...	Order No. standard version		Overall length	Weight approx.		Flange	
			without inner sleeve	with inner sleeve		without inner sleeve	with inner sleeve	drilling EN 1092	thickness
DN	2δ _N	—	—	—	L ₀	G	G	PN	s
—	mm	—	—	—	mm	kg	kg	—	mm
700	80	.0700.080.0	420225	421639	230	62	66	6	20
700	120	.0700.120.0	420227	421640	286	65	72	6	20
700	220	.0700.220.0	420228	421641	426	73	85	6	20
800	84	.0800.084.0	420229	421642	244	76	84	6	20
800	126	.0800.126.0	420230	421643	302	79	88	6	20
800	231	.0800.231.0	420231	421644	447	89	103	6	20
900	84	.0900.084.0	420232	421645	248	80	90	6	20
900	126	.0900.126.0	420233	421646	308	85	97	6	20
900	210	.0900.210.0	420234	421647	428	93	109	6	20
1000	72	.1000.072.0	420235	421648	234	85	92	6	20
1000	144	.1000.144.0	420236	421649	330	92	104	6	20
1000	240	.1000.240.0	420237	421650	458	102	121	6	20
1200	72	.1200.072.0	420238	421651	241	105	116	2	20
1200	120	.1200.120.0	420239	421652	303	111	128	2	20
1200	216	.1200.216.0	420240	421653	427	123	152	2	20
1400	48	.1400.048.0	420241	421654	152	122	134	2	20
1400	108	.1400.108.0	420243	421655	282	134	154	2	20
1400	180	.1400.180.0	420244	421656	438	149	179	2	20
1600	48	.1600.048.0	420246	421657	152	152	165	2	20
1600	108	.1600.108.0	420247	421658	282	166	189	2	20
1600	180	.1600.180.0	420248	421659	438	182	217	2	20

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 AFG 01...

PN 1

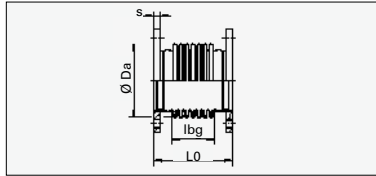
Bellows			Bewegungs- aufnahme ¹⁾ nominal bei 1000 Lastspielen		Vibrations in all planes	Adjusting force raterate			Natural frequency of bellows	
outside diameter	corruga- ted length	effective cross- section	angular ¹⁾	lateral ¹⁾		axial	angular	lateral	axial	radial
Da	lbg	A	2α _N	2λ _N	â	c ₀	c _α	c _λ	ω _a	ω _r
mm	mm	cm ²	degrees	mm	mm	N/mm	Nm/degrees	N/mm	Hz	Hz
780	112	4312	12	4	0.3	197	237	12990	90	1480
780	168	4312	18	9.1	0.8	131	157	3849	60	660
780	308	4312	30	30	1	71	85	623	30	195
882	116	5575	11	3.9	0.3	197	306	15687	85	1570
882	174	5575	16	8.7	0.8	131	203	4633	60	700
882	319	5575	28	29	1	71	110	750	30	210
992	120	7118	9.9	3.5	0.2	200	396	18908	80	1650
992	180	7118	15	7.9	0.7	133	264	5602	60	730
992	300	7118	23	22	1	80	159	1215	30	260
1095	96	8733	7.7	2.2	0.2	270	656	48940	105	2940
1095	192	8733	15	8.7	0.7	135	328	6118	50	740
1095	320	8733	23	24	1	81	197	1323	30	265
1295	93	12311	6.5	1.8	0.1	260	891	70830	95	3210
1295	155	12311	11	4.9	0.4	156	534	15282	60	1160
1295	279	12311	18	16	1	86	295	2623	30	360
1470	104	15993	3.8	1.2	0.1	492	2189	139277	150	5320
1470	234	15993	8.4	5.9	0.5	218	970	12230	70	1050
1470	390	15993	13	16	1	131	583	2640	40	380
1670	104	20791	3.4	1	0.1	550	3180	202146	150	6040
1670	234	20791	7.4	5.2	0.5	244	1411	17742	70	1200
1670	390	20791	12	14	1	146	844	3833	40	430

Axial expansion joints

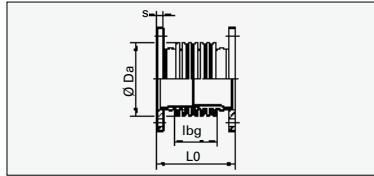
for low pressure with plain fixed flanges

Type AFG 01...

PN 1



Type AFG without inner sleeve



Type AFG with inner sleeve

Nominal diameter	Nominal axial movement absorption	Type AFG 01 ...	Order No. Standardausführung		Overall length	Weight approx.		Flange	
			without inner sleeve	with inner sleeve		without inner sleeve	with inner sleeve	drilling EN 1092	thickness
DN	2δ _N	—	—	—	Lo	G	G	PN	s
—	mm	—	—	—	mm	kg	kg	—	mm
1800	48	.1800.048.0	420250	421660	152	170	185	2	20
1800	108	.1800.108.0	420251	421661	282	186	212	2	20
1800	180	.1800.180.0	420252	421662	438	204	243	2	20
2000	48	.2000.048.0	420253	421663	152	188	205	2	20
2000	108	.2000.108.0	420255	421664	282	205	234	2	20
2000	180	.2000.180.0	420256	421665	438	226	269	2	20
2200	48	.2200.048.0	420257	421666	152	221	242	2	20
2200	108	.2200.108.0	420258	421667	282	241	274	2	20
2200	180	.2200.180.0	420259	421668	438	263	313	2	20
2400	48	.2400.048.0	420260	421669	152	241	264	2	20
2400	108	.2400.108.0	420261	421670	282	262	299	2	20
2400	180	.2400.180.0	420262	421671	438	287	340	2	20
2600	48	.2600.048.0	420263	421672	152	260	285	2	20
2600	108	.2600.108.0	420264	421673	282	283	323	2	20
2600	180	.2600.180.0	420265	421674	438	310	368	2	20
2800	48	.2800.048.0	420266	421675	152	314	340	2	20
2800	108	.2800.108.0	420267	421676	282	338	381	2	20
2800	180	.2800.180.0	420268	421677	438	367	429	2	20
3000	48	.3000.048.0	420269	421678	152	335	364	2	20
3000	108	.3000.108.0	420270	421679	282	361	407	2	20
3000	180	.3000.180.0	420271	421680	438	392	459	2	20

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 AFG 01...

PN 1

Bellows			Nominal movement absorption ¹⁾		Vibrations in all planes	Adjusting force rate			Natural frequency of bellows	
outside diameter	corrugated length	effective cross-section	nominal for 1000 loading cycles angular ¹⁾	nominal for 1000 loading cycles lateral ¹⁾		axial	angular	lateral	axial	radial
Da	lbg	A	2α _N	2λ _N	â	c ₀	c _α	c _λ	ω _a	ω _r
mm	mm	cm ²	degrees	mm	mm	N/mm	Nm/degrees	N/mm	Hz	Hz
1870	104	26216	3	0.9	0	607	4425	281542	150	6760
1870	234	26216	6.6	4.6	0.4	270	1968	24711	70	1340
1870	390	26216	11	13	1	162	1181	5339	40	480
2070	104	32270	2.7	0.8	0	667	5985	380708	150	7480
2070	234	32270	6	4.2	0.4	296	2656	33426	70	1480
2070	390	32270	9.6	12	1	178	1597	7219	40	530
2270	104	38952	2.5	0.7	0	730	7906	502567	150	8200
2270	234	38952	5.4	3.8	0.3	324	3509	44111	70	1620
2270	390	38952	8.8	11	1	194	2101	9533	40	580
2470	104	46263	2.3	0.7	0	782	10058	639746	150	8900
2470	234	46263	5	3.5	0.3	347	4463	56166	70	1760
2470	390	46263	8.1	9.6	1	208	2675	12133	40	630
2670	104	54201	2.1	0.6	0	842	12687	806930	150	9620
2670	234	54201	4.6	3.2	0.3	374	5635	70832	70	1900
2670	390	54201	7.5	8.9	0.8	224	3375	15306	40	680
2870	104	63392	1.9	0.6	0	902	15738	1001002	150	10330
2870	234	63392	4.3	3	0.2	401	6997	87871	65	2040
2870	390	63392	7	8.3	0.8	240	4188	18986	40	740
3070	104	71964	1.8	0.5	0	962	19243	1223871	150	11050
3070	234	71964	4	2.8	0.2	427	8541	107447	65	2180
3070	390	71964	6.5	7.7	0.7	256	5121	23212	40	790