

A. AXIAL EXPANSION JOINT

MEGAFLEXON standard axial expansion joint are available in types MAXW, with weld ends, and MAXF with flanges.

Axial Expansion joints are used in pipeline systems for absorption of movements along the longitudinal axis of the pipeline.

MEGAFLEXON standard axial expansion joints are to be installed so that there is only 1 expansion joint between each fixing point. Pipeline systems where axial expansion joints are used must be protected against sideways bending. This is done by fitting guide types.

a) Advantage

- Simple way to absorb thermal growth on pipe-work as per the temperature variation
- The flow direction unchanged
- The efficient way to save installation space

b) Disadvantage

- The solid fix point required
- The good sliding bearing required for the movement axially
- A lot of fix points is required on a long pipe run

A-1, Single Joints, Free Type

Generally, the ends on both side can be fabricated as not only a fixed flange end or free type, but also butt weld end.

Application

This type of expansion joints is well fitted with low pressure gas pipe, exhaust pipe, duct, flue, etc, for the purpose of absorbing thermal growth and contraction, or preventing vibration in exhaust pipe of engine, blower, inlet and outlet of pump, and so on. Applicable pressure rating : max. 20 kgf/cm²-full vacuum

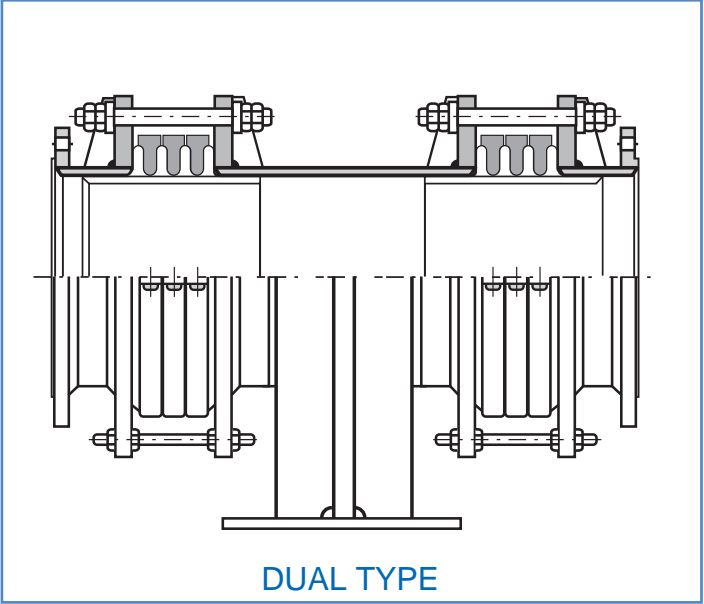
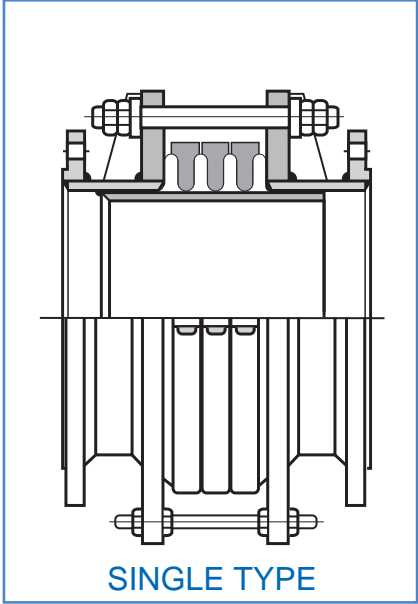
A-2, Reinforced expansion joint(Control Ring Type)

Normally, the reinforcing, or equalizing ring, is installed on the convolution root of bellows to reinforce the bellows against a high internal pressure.

MEGAFLEXON standard material for control ring : GC 20, SS400

- maximum service pressure : 40kgf/cm²
- maximum service temperature : 300 Deg.C
- test pressure : 1.5 x maximum service pressure

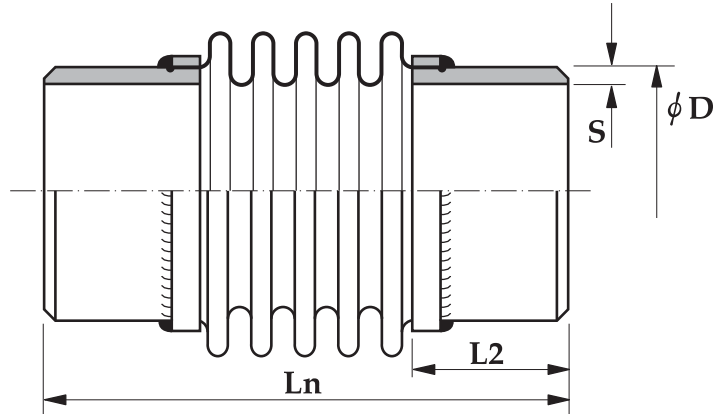
Control Ring Type Expansion Joint



DN	Overall Length(mm)		Movement(mm)		Spring Rate(kg/mm)		Effective Dia(mm)	Effective Sectional Area(cm ²)
	Single Type	Dual Type	Single Type	Dual Type	Single Type	Dual Type		
32	360	680	+10 -40	+20 -80	1	0.5	44.8	16
40	380	700			2	1	54.8	24
50		740			3	1.5	68.0	36
65	450	840			5	2.5	83.0	54
80					3	1.5	102.0	82
100					4	2	122.0	117
125	480	900			16	8	153.0	185
150					16	8	180.0	255
200	520	1010			22	11	239.0	449
250					30	15	292.0	670
300					38	19	346.0	942

Product that aren't described above table will be manufactured case by case up to 500A.

Axial-expansion joints with welding ends

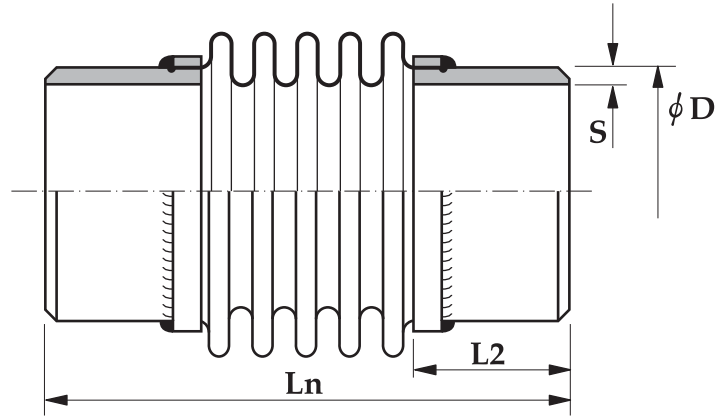


■ Design Pressure

150Lbf/in²

DN	TYPE	Movement		Ln	Spring rates		Welding ends			Bellows		Bellow-areas	Weight
		+/-AX	+/-LA		AX	LA	ϕD	L2	S	Di	Do		
		(mm)	(mm)	(mm)	kgf/mm	kgf/mm	(mm)	(mm)	(mm)	(mm)	(mm)	(mm ²)	<kg>
40	MAXW-0040-013-10	13	7	160	13.78	8.74	48.3	40	2.6	40.5	57.7	1893	0.3
40	MAXW-0040-028-10	28	30	235	6.43	1.02	48.3	40	2.6	40.5	57.7	1893	0.5
50	MAXW-0050-014-10	14	6	160	15.31	14.39	60.3	40	2.9	52.5	59.7	2472	0.5
50	MAXW-0050-030-10	30	25	235	7.14	1.73	60.3	40	2.9	52.5	59.7	2472	0.6
65	MAXW-0065-018-10	18	6	160	12.55	19.70	76.1	40	3.2	68.3	87.5	4766	0.7
65	MAXW-0065-038-10	38	25	230	5.82	2.24	76.1	40	3.2	68.3	87.5	4766	0.9
80	MAXW-0080-022-10	22	8	180	18.67	24.8	88.9	40	3.2	79.1	100.9	6362	1.1
80	MAXW-0080-047-10	47	33	275	8.67	2.86	88.9	40	3.2	79.1	100.9	6362	1.5
100	MAXW-0100-022-10	22	6	175	17.24	41.50	114.3	40	3.6	104.6	130.2	10825	1.5
100	MAXW-0100-048-10	48	25	265	8.06	4.90	114.3	40	3.6	104.6	130.2	10825	2.0
125	MAXW-0125-025-10	25	5	170	16.43	60.70	139.7	40	3.6	130.2	157.8	16286	1.9
125	MAXW-0125-053-10	53	22	265	7.65	7.24	139.7	40	3.6	130.2	157.8	16286	2.7
150	MAXW-0150-025-10	25	4	195	19.70	99.39	168.3	50	4.0	155.0	186.6	22912	2.8
150	MAXW-0150-054-10	54	20	285	8.98	11.43	168.3	50	4.0	155.0	186.6	22912	3.6
175	MAXW-0175-025-10	25	4	195	21.63	114.70	193.7	50	4.5	180.6	212.2	30295	3.7
175	MAXW-0175-054-10	54	17	285	9.90	16.63	193.7	50	4.5	180.6	212.2	30295	4.6
200	MAXW-0200-027-10	27	3	195	19.90	173.78	219.1	50	4.5	206.1	239.7	39022	4.3
200	MAXW-0200-058-10	58	16	285	8.98	20.10	219.1	50	4.5	206.1	239.7	39022	5.3
250	MAXW-0250-026-10	26	3	195	24.0	324.90	273.0	50	5.0	260.0	293.6	60176	5.8
250	MAXW-0250-066-10	66	17	315	9.29	23.37	273.0	50	5.0	260.0	293.6	60176	7.5
300	MAXW-0300-028-10	28	2	240	35.8	606.22	323.9	70	6.0	311.1	347.5	85167	10.8
300	MAXW-0300-086-10	86	22	400	11.94	28.88	323.9	70	6.0	311.1	347.5	85167	17.9

Axial-expansion joints with welding ends

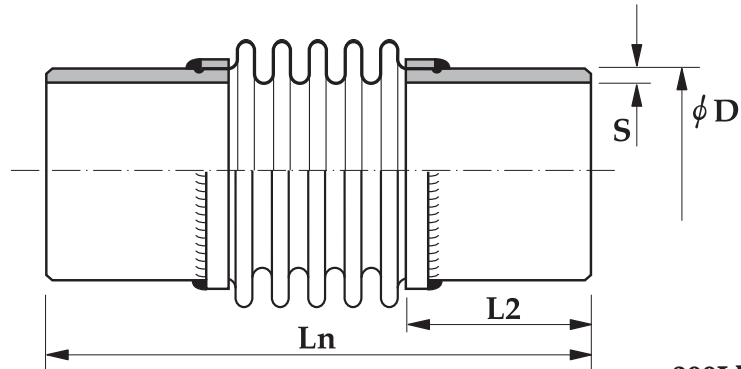


■ Design Pressure

150Lbf/in²

DN	TYPE	Movement		Ln	Spring rates		Welding ends			Bellows		Bellow-areas	Weight Approx
		+/-AX	+/-LA		AX	LA	φ D	L2	S	Di	Do		
		(mm)	(mm)	(mm)	kgf/mm	kgf/mm	(mm)	(mm)	(mm)	(mm)	(mm)	(mm ²)	<kg>
350	MAXW-0350-028-10	28	2	240	39.08	793.6	355.6	70	6.0	342.8	379.2	102354	13.1
350	MAXW-0350-086-10	86	20	400	12.96	37.76	355.6	70	6.0	342.8	379.2	102354	20.7
400	MAXW-0400-037-10	37	4	265	28.98	477.35	406.4	70	6.0	389.9	437.1	134289	17.2
400	MAXW-0400-096-10	96	22	430	11.12	34.18	406.4	70	6.0	389.9	437.1	134289	27.9
450	MAXW-0450-036-10	36	3	265	40.41	866.53	457.2	70	6.0	440.5	489.5	169823	19.1
450	MAXW-0450-084-10	84	15	390	18.37	96.02	457.2	70	6.0	440.5	489.5	169823	30.2
500	MAXW-0500-050-10	50	5	305	39.29	585.41	508.0	70	6.0	485.4	536.4	205004	22.0
500	MAXW-0500-110-10	110	23	465	17.86	67.04	508.0	70	6.0	485.4	536.4	205004	33.4
550	MAXW-0550-050-10	50	5	305	42.55	765.31	558.0	70	6.0	536.4	587.4	247975	25.7
550	MAXW-0550-088-10	88	14	410	23.57	153.47	558.0	70	6.0	536.4	587.4	247975	31.0
600	MAXW-0600-041-10	41	3	275	72.24	2217.04	609.6	70	6.0	585.6	645.6	297637	30.1
600	MAXW-0600-124-10	124	22	480	24.08	119.39	609.6	70	6.0	585.6	645.6	297637	49.6
700	MAXW-0700-040-10	40	2	280	70.10	2838.57	711.0	70	8.0	687.5	756.5	409415	39.9
700	MAXW-0700-121-10	121	19	485	23.37	153.37	711.0	70	8.0	687.5	756.5	409415	67.2
800	MAXW-0800-040-10	40	2	280	76.73	4040.82	813.0	70	8.0	789.5	858.5	533267	49.1
800	MAXW-0800-121-10	121	16	485	25.65	218.37	813.0	70	8.0	789.5	858.5	533267	80.2
900	MAXW-0900-040-10	40	2	280	84.18	5580.61	914.0	70	8.0	890.5	959.5	672006	55.1
900	MAXW-0900-121-10	121	15	485	28.06	301.53	914.0	70	8.0	890.5	959.5	672006	90.1
1000	MAXW-1000-040-10	40	2	280	91.94	7513.47	1016.0	70	8.0	992.5	1061.5	828382	61.3
1000	MAXW-1000-121-10	121	13	485	30.61	406.02	1016.0	70	8.0	992.5	1061.5	828382	100.1

Axial-expansion joints with welding ends

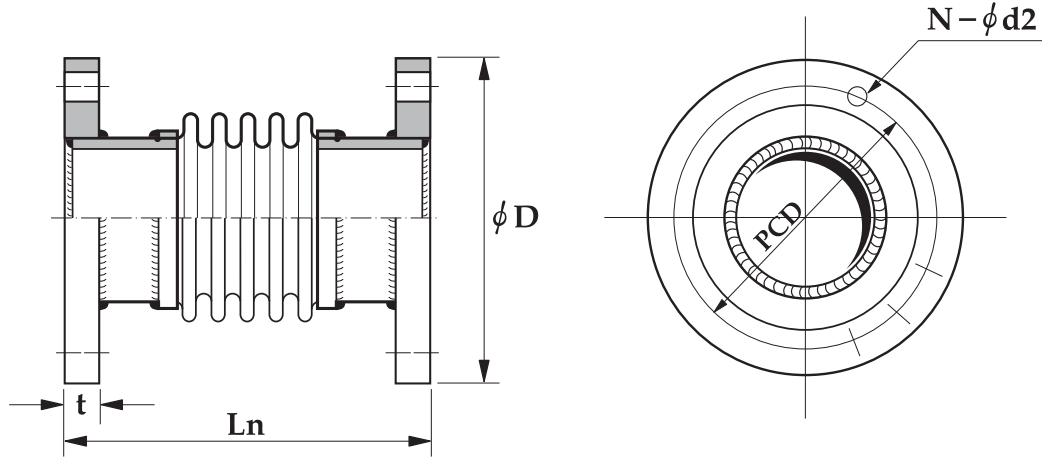


■ Design Pressure

300Lbf/in²

DN	TYPE	Movement		L _n	Spring rates		Welding ends			Bellows		Bellow-areas	Weight Approx
		+/-AX	+/-LA		AX	LA	φ D	L2	S	Di	Do		
		(mm)	(mm)	(mm)	kgf/mm	kgf/mm	(mm)	(mm)	(mm)	(mm)	(mm)	(mm ²)	<kg>
40	MAXW-0040-009-20	9	3	150	19.28	20.95	48.3	40	2.6	40.5	57.7	1893	0.3
40	MAXW-0040-025-20	25	10	185	10.71	4.18	48.3	40	2.6	40.5	57.7	1893	0.4
50	MAXW-0050-010-20	10	4	155	3.98	51.73	60.3	40	2.9	52.5	70.3	2961	0.5
50	MAXW-0050-026-20	26	20	240	12.27	3.67	60.3	40	2.9	52.5	70.3	2961	0.8
65	MAXW-0065-012-20	12	3	165	27.45	68.06	76.1	40	2.9	68.3	88.1	4803	0.7
65	MAXW-0065-027-20	27	14	225	12.45	7.76	76.1	40	2.9	68.3	88.1	4803	1.0
80	MAXW-0080-012-20	12	3	190	33.88	80.31	88.9	40	3.2	79.1	100.7	6348	1.0
80	MAXW-0080-026-20	26	14	265	15.45	9.18	88.9	40	3.2	79.1	100.7	6348	1.2
100	MAXW-0100-016-20	16	3	205	37.35	139.18	114.3	40	3.6	104.6	131.0	10899	1.6
100	MAXW-0100-035-20	35	14	280	17.04	16.02	114.3	40	3.6	104.6	131.0	10899	2.2
125	MAXW-0125-016-20	16	3	210	43.37	238.27	139.7	40	4.0	130.2	156.6	16151	2.1
125	MAXW-0125-040-20	40	16	310	16.63	17.04	139.7	40	4.0	130.2	156.6	16151	3.1
150	MAXW-0150-023-20	23	5	255	50.92	20.327	168.3	50	4.5	155.0	186.2	22859	3.7
150	MAXW-0150-050-20	50	20	360	23.16	23.27	168.3	50	4.5	155.0	186.2	22859	5.2
175	MAXW-0175-023-20	23	4	255	55.10	289.90	193.7	50	5.6	180.6	211.8	30233	4.7
175	MAXW-0175-050-20	50	18	360	25.00	33.16	193.7	50	5.6	180.6	211.8	30233	6.4
200	MAXW-0200-028-20	28	4	270	52.80	347.55	219.1	50	6.3	206.2	242.2	39479	6.7
200	MAXW-0200-063-20	63	20	380	23.98	38.98	219.1	50	6.3	206.2	242.2	39479	9.4
250	MAXW-0200-028-20	28	3	285	61.12	603.12	273.0	50	7.1	260.3	296.3	60830	8.8
250	MAXW-0250-060-20	60	16	395	27.26	69.18	273.0	50	7.1	260.3	296.3	60830	12.3
300	MAXW-0300-024-20	24	2	295	88.98	1249.69	323.9	70	8.0	311.2	349.2	85634	13.9
300	MAXW-0300-042-20	42	8	365	49.39	251.94	323.9	70	8.0	311.2	349.2	85634	16.7
350	MAXW-0350-023-20	23	2	310	96.84	163.53	355.6	70	8.0	343.0	381.0	102922	15.3
350	MAXW-0350-042-20	42	7	380	53.77	331.02	355.6	70	8.0	343.0	381.0	102922	18.4
400	MAXW-0400-023-20	23	1.8	235	136.02	3807.04	406.4	70	10.0	390.4	440.4	135526	22.2
400	MAXW-0400-040-20	40	2	365	81.73	1022.35	406.4	70	10.0	390.4	440.4	135526	24.0
450	MAXW-0450-023-20	23	1.6	240	156.32	5132.24	457.2	70	10.0	441.5	494.5	172021	27.0
450	MAXW-0450-039-20	39	4	290	93.78	1378.37	457.2	70	10.0	441.5	494.5	172021	29.7
500	MAXW-0500-032-20	32	2.6	265	162.55	4154.18	508.0	70	10.0	486.5	541.5	207499	30.7
500	MAXW-0500-054-20	54	6	330	97.55	1112.96	508.0	70	10.0	486.5	541.5	207499	36.6
550	MAXW-0550-032-20	32	2.4	265	172.04	5309.59	559.0	70	10.0	537.8	592.8	250985	33.8
550	MAXW-0550-053-20	53	6	330	103.27	1422.55	559.0	70	10.0	537.8	592.8	250985	40.3
600	MAXW-0600-042-20	42	3.5	295	180.10	4241.63	508.0	70	12.0	586.6	651.6	301031	52.1
600	MAXW-0600-070-20	70	8	485	107.96	1135.41	508.0	70	12.0	586.6	651.6	301031	61.3

Axial-expansion joints with fixed flange ends

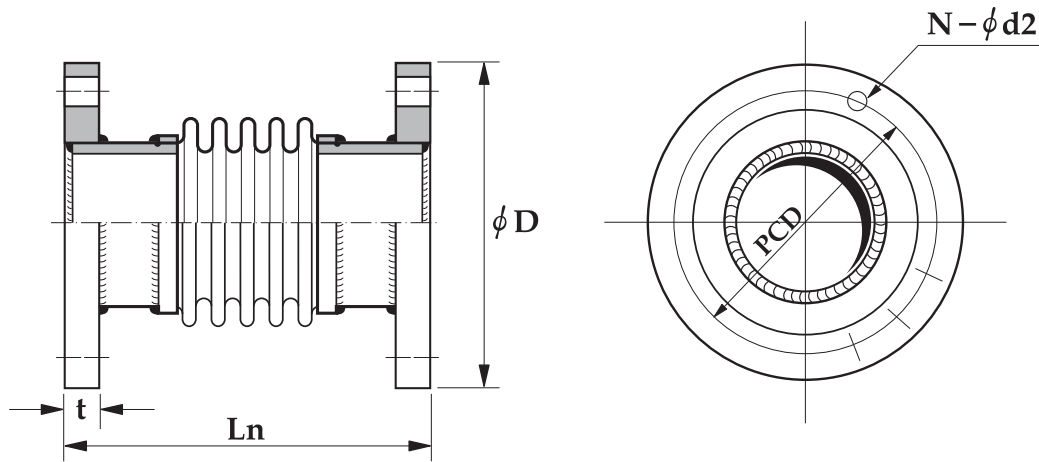


■ Design Pressure

150Lbf/in²

DN	TYPE	Movement		Ln	Spring rates		Flanges acc.to ANSI B16.5				Bellows		Bellow-areas	Weight Approx	
		+/-AX	+/-LA		AX	LA	φ D	t	PCD	N	d2	Di			Do
		(mm)	(mm)	(mm)	kgf/mm	kgf/mm	(mm)	(mm)	(mm)	(EA)	(mm)	(mm)	(mm ²)	<kg>	
40	MAXF-0040-013-10	13	7	110	13.78	8.47	127	17.5	98.4	4	16	40.5	57.7	1893	3.8
40	MAXF-0040-028-10	28	30	185	6.43	1.02	127	17.5	98.4	4	16	40.5	57.7	1893	4.0
50	MAXF-0050-014-10	14	6	115	15.31	14.39	152	19.5	120.6	4	20	52.5	59.7	2472	5.1
50	MAXF-0050-030-10	30	25	190	7.14	1.73	152	19.5	120.6	4	20	52.5	59.7	2472	5.2
65	MAXF-0065-018-10	18	6	115	12.55	19.69	178	22.5	139.7	4	20	68.3	87.5	4766	6.3
65	MAXF-0065-038-10	38	25	185	5.82	2.24	178	22.5	139.7	4	20	68.3	87.5	4766	6.5
80	MAXF-0080-022-10	22	8	140	18.67	21.18	191	24.0	152.4	4	20	79.1	100.9	6362	8.1
80	MAXF-0080-047-0	47	33	235	18.67	2.86	191	24.0	152.4	4	20	79.1	100.9	6362	8.5
100	MAXF-0100-022-10	22	6	135	17.24	10.92	229	24.0	190.5	8	20	104.6	130.2	10825	8.8
100	MAXF-0100-048-10	48	25	225	8.06	4.90	229	24.0	190.5	8	20	104.6	130.2	10825	9.3
125	MAXF-0125-025-10	25	5	135	16.43	60.71	254	24.0	215.9	8	23	130.2	157.8	16286	11.7
125	MAXF-0125-053-10	53	22	230	7.65	7.24	254	24.0	215.9	8	23	130.2	157.8	16286	12.5
150	MAXF-0150-025-10	25	4	140	19.69	99.39	279	25.5	241.3	8	23	155.0	186.6	22912	14.0
150	MAXF-0150-054-10	54	20	230	8.78	11.43	279	25.5	241.3	8	23	155.0	186.6	22912	14.8
200	MAXF-0200-027-10	27	3	145	19.90	173.78	343	29.0	298.4	8	23	206.1	239.7	39022	19.9
200	MAXF-0200-058-10	58	16	235	8.98	20.10	343	29.0	298.4	8	23	206.1	239.7	39022	20.9
250	MAXF-0250-026-10	26	3	145	24.08	324.90	406	30.5	361.9	12	26	260.0	293.6	60176	25.4
250	MAXF-0250-066-10	66	17	265	9.29	23.37	406	30.5	361.9	12	26	260.0	293.6	60176	27.1

Axial-expansion joints with fixed flange ends

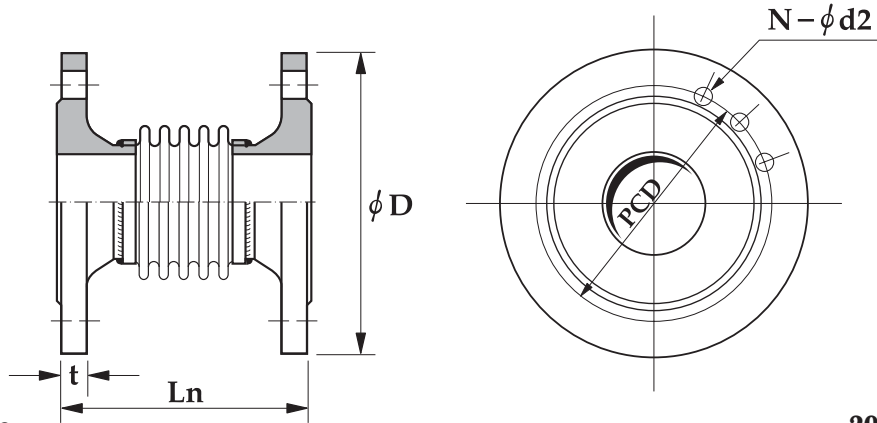


■ Design Pressure

150Lbf/in²

DN	TYPE	Movement		Ln	Spring rates		Flanges acc.to ANSI B16.5				Bellows		Bellow-areas	Weight Approx	
		+/-AX	+/-LA		AX	LA	φ D	t	PCD	N	d2	Di			Do
		(mm)	(mm)	(mm)	kgf/mm	kgf/mm	(mm)	(mm)	(mm)	(EA)	(mm)	(mm)	(mm)	(mm ²)	<kg>
300	MAXF-0300-028-10	28	2	150	35.82	606.22	483	32	431.8	12	26	311.1	347.5	85167	30.5
300	MAXF-0300-086-10	86	22	310	11.94	28.88	483	32	431.8	12	26	311.1	347.5	85167	37.6
350	MAXF-0350-028-10	28	2	155	39.08	793.16	535	35	476.2	12	29	342.8	379.2	102354	44.5
350	MAXF-0350-086-10	86	20	315	12.96	37.76	535	35	476.2	12	29	342.8	379.2	102354	52.1
400	MAXF-0400-037-10	37	4	190	28.98	477.35	595	37	539.7	16	29	389.9	437.1	134289	61.8
400	MAXF-0400-096-10	96	22	355	11.12	34.18	595	37	539.7	16	29	389.9	437.1	134289	72.5
450	MAXF-0450-036-10	36	3	200	40.41	866.53	635	40	577.8	16	32	440.5	489.5	169823	77.7
450	MAXF-0450-084-10	84	15	325	18.37	96.02	635	40	577.8	16	32	440.5	489.5	169823	88.8
500	MAXF-0500-050-10	50	5	240	39.29	585.41	700	43	635	20	32	485.4	536.4	205004	90.1
500	MAXF-0500-110-10	110	23	400	17.86	67.04	700	43	635	20	32	485.4	536.4	205004	101.5
600	MAXF-0500-041-10	41	3	295	103.23	3160.24	815	48	749.3	20	35	585.6	645.6	297637	99.7
600	MAXF-0500-124-10	124	22	500	34.39	170.61	815	48	749.3	20	35	585.6	645.6	297637	120.2

Axial-expansion joints with fixed flange ends



■ Design Pressure

300Lbf/in²

DN	TYPE	Movement		Ln	Springrates		Flanges acc.to ANSI B16.5				Bellows		Bellow-areas	Weight Approx	
		+/-AX	+/-LA		AX	LA	φ D	t	PCD	N	d2	Di			Do
		(mm)	(mm)	(mm)	kgf/mm	kgf/mm	(mm)	(mm)	(mm)	(EA)	(mm)	(mm)	(mm)	(mm ²)	<kg>
40	MAXF-0040-009-20	9	3	150	19.29	20.92	156	21.0	114.3	4	23	40.5	57.7	1893	4.8
40	MAXF-0040-025-20	25	10	185	10.71	4.18	156	21.0	114.3	4	23	40.5	57.7	1893	4.9
50	MAXF-0050-010-20	10	4	155	34.59	51.73	165	22.5	127	8	20	52.5	70.3	2961	5.8
50	MAXF-0050-026-20	26	20	240	13.27	3.67	165	22.5	127	8	20	52.5	70.3	2961	6.1
65	MAXF-0065-012-20	12	3	165	27.45	68.06	191	25.5	149.2	8	23	68.3	88.1	4803	7.8
65	MAXF-0065-027-20	27	14	225	12.45	7.76	191	25.5	149.2	8	23	68.3	88.1	4803	8.1
80	MAXF-0080-012-20	12	3	190	33.88	80.30	210	29.0	168.3	8	23	79.1	100.7	6348	9.9
80	MAXF-0080-026-20	26	14	265	15.41	9.18	210	29.0	168.3	8	23	79.1	100.7	6348	10.1
100	MAXF-0100-016-20	16	3	205	7.35	139.18	254	32.0	200	8	23	104.6	131.0	10899	13.8
100	MAXF-0100-035-20	35	14	280	17.04	16.02	254	32.0	200	8	23	104.6	131.0	10899	14.4
125	MAXF-0125-016-20	16	3	210	43.37	238.3	279	35.0	234.9	8	23	130.2	156.6	16151	19.1
125	MAXF-0125-040-20	40	16	310	16.63	17.04	279	35.0	234.9	8	23	130.2	156.6	16151	20.1
150	MAXF-0150-023-20	23	5	255	50.92	203.27	318	37.0	269.9	12	23	155.0	186.2	22859	25.4
150	MAXF-0150-050-20	50	20	360	23.16	23.27	318	37.0	269.9	12	23	155.0	186.2	22859	26.9
200	MAXF-0200-028-20	28	4	270	52.86	347.55	381	41.5	330.2	12	26	206.2	242.2	39479	37.3
200	MAXF-0200-063-20	63	20	380	23.98	38.98	381	41.5	330.2	12	26	206.2	242.2	39479	40.0
250	MAXF-0250-028-20	28	3	285	61.12	603.16	445	48.0	387.3	16	29	260.3	296.3	60830	52.9
250	MAXF-0250-060-20	60	16	395	27.76	69.18	445	48.0	387.3	16	29	260.3	296.3	60830	56.4
300	MAXF-0300-024-20	24	2	295	88.98	1249.69	520	51.0	450.8	16	32	311.2	349.2	85634	67.4
300	MAXF-0300-042-20	42	8	365	49.39	251.74	520	51.0	450.8	16	32	311.2	349.2	85634	70.2
350	MAXF-0350-023-20	23	2	310	96.84	163.53	585	54.0	514.3	20	32	343.0	381.0	102922	99.9
350	MAXF-0350-042-20	42	7	380	53.78	328.98	585	54.0	514.3	20	32	343.0	381.0	102922	103.0
400	MAXF-0400-023-20	23	1.8	235	136.22	3807.04	650	57.5	571.5	20	35	390.4	440.4	135526	133.3
400	MAXF-0400-040-20	40	2	265	81.73	1022.35	650	57.5	571.5	20	35	390.4	440.4	135526	135.1
500	MAXF-0500-032-20	32	2.6	265	172.04	4154.18	775	63.5	685.8	24	35	486.5	541.5	207499	192.4
500	MAXF-0500-054-20	54	6	440	97.55	1112.96	775	63.5	685.8	24	35	486.5	541.5	207499	198.3
600	MAXF-0600-042-20	42	3.5	295	180.1	4241.63	915	70.0	812.8	24	42	586.6	651.6	301031	236.9
600	MAXF-0600-070-20	70	8	485	107.96	1135.41	915	70.0	812.8	24	42	586.6	651.6	301031	246.1