

# List of components



**Welded Bellows**

Material 316L

Material AM350

Noncircular membrane bellows (special shapes)

**Technical Manual**

Bellows movements (axial, lateral, angular)

Construction of the bellows:  
rotations points Angular

Premachining of the end piece N-15000

**Standard End Pieces**

End pieces, one-part

End pieces, two-part

**Standard CF Flanges**

CF flange, fixed

CF flange, rotating

**Standard ISO Flanges**

ISO-KF flanges (DIN 28403)

ISO-K flanges (DIN 28404)

## Material 316L

For higher operating temperatures | up to 500.000 load alternation | not magnetic | extremely corrosion-resistant | max. temperature 450°C

### Analysis

Metal	Fe	C	Si	Mn	P	S	Cr	Mo	Ni
[%]	Rest	≤0.03	≤1.0	≤2.0	≤0.045	≤0.03	16.0–18.0	2.0–3.0	10.0–14.0

### Characteristics

Rp 0.2 [N/mm <sup>2</sup> ]	Rm [N/mm <sup>2</sup> ]	E-Module [N/mm <sup>2</sup> ]	Density [kg/dm <sup>3</sup> ]	Temp. [°C]	Permeab. [μr]
300	600	200 000	8.0	-250/+350	1.003-1.005

### Types

DN	Inside diameter	Outside diameter	Inside diameter	Outside diameter	Compressed bellows length	Free bellows length	Axial stroke	Wall thickness of membranes	Effective area	Spring constant (axial direction)	Welding lip	Form
	ID [mm]	OD [mm]	ID [inch]	OD [inch]	lc [mm]	lf [mm]	z [mm]	t [mm]	EA [cm <sup>2</sup> ]	SRCz [N/mm]	Gr	
10	4.8	12.7	0.189	0.500	0.27	0.53	0.36	0.08	0.7	80.0	1	S
	6	13	0.236	0.512	0.27	0.50	0.32	0.08	0.8	105.0	1	S
	8	16	0.315	0.630	0.27	0.65	0.48	0.08	1.3	60.0	1	S
	8.6	16.2	0.339	0.638	0.20	0.55	0.55	0.05	1.3	25.0	1	S
	9	20	0.354	0.787	0.35	0.80	0.60	0.08	1.9	55.0	1	S
	9	31.5	0.354	1.240	0.36	1.35	1.18	0.10	4.3	55.0	3	S
	10	20	0.394	0.787	0.33	0.60	0.50	0.10	2.0	45.0	1	G
16	13	26	0.512	1.024	0.32	0.90	0.80	0.08	3.4	55.0	3	S
	16	31.5	0.630	1.240	0.45	1.20	1.15	0.13	5.0	95.0	3	S
	16	35	0.630	1.378	0.43	1.15	1.35	0.13	5.9	49.0	3	Z
	18.5	31.5	0.728	1.240	0.37	0.90	0.85	0.10	5.3	95.0	3	S
25	19	37	0.748	1.457	0.40	1.60	1.55	0.13	6.9	70.0	3	S
	21	39	0.827	1.535	0.43	1.10	1.40	0.13	7.8	49.0	3	Z
	21	41	0.827	1.614	0.50	1.85	1.90	0.13	8.4	75.0	3	S
	21	49	0.827	1.929	0.55	2.30	2.10	0.15	11.3	65.0	3	S
	21.1	34.9	0.831	1.374	0.35	1.05	1.10	0.10	6.6	75.0	3	S
	22	40.7	0.866	1.602	0.43	1.25	1.40	0.13	8.5	50.0	3	S
	24	35	0.945	1.378	0.33	0.70	0.70	0.10	7.2	82.0	3	G
	26	41	1.024	1.614	0.44	1.25	1.40	0.13	9.4	135.0	3	S
	26	46	1.024	1.811	0.45	1.80	1.90	0.13	11.1	75.0	3	S
40	31	49	1.220	1.929	0.43	1.10	1.40	0.13	13.4	48.0	3	Z
	31	51	1.220	2.008	0.50	1.80	1.90	0.13	14.2	65.0	4	S
	35	48	1.378	1.890	0.33	0.90	0.80	0.10	14.0	90.0	1	G
	35	49	1.378	1.929	0.33	0.90	0.90	0.10	14.4	90.0	3	G
	35.6	56	1.402	2.205	0.43	1.20	1.45	0.13	17.5	60.0	3	Z
	36	56	1.417	2.205	0.50	1.80	2.00	0.13	17.6	65.0	4	S
	36	72	1.417	2.835	0.75	2.50	3.43	0.20	25.8	90.0	4	S
	38	51	1.496	2.008	0.35	1.10	1.05	0.10	16.1	85.0	3	S
	39	59	1.535	2.323	0.50	2.00	2.00	0.13	19.9	65.0	4	S

For sizes above DN 40 see next pages.

### Sizes, technical data, materials

All stated values refer to the following conditions of use:

Differential pressure: Pi=0, Pa=1 bar

Operating temperature: OT=Raumtemperatur

Baking temperature: HT=80°C

Number of cycles: Nz=10'000 cycles

For other operating conditions please use our "Checklist for bellows inquiries".

Other sizes, shapes (racetrack or rectangular) and materials available on request.

## Material 316L

For higher operating temperatures | up to 500.000 load alternation | not magnetic | extremely corrosion-resistant | max. temperature 450°C

### Analysis

Metal	Fe	C	Si	Mn	P	S	Cr	Mo	Ni
[%]	Rest	≤0.03	≤1.0	≤2.0	≤0.045	≤0.03	16.0–18.0	2.0–3.0	10.0–14.0

### Characteristics

Rp 0.2 [N/mm²]	Rm [N/mm²]	E-Module [N/mm²]	Density [kg/dm³]	Temp. [°C]	Permeab. [μr]
300	600	200 000	8.0	-250/+350	1.003-1.005

### Types

DN	Inside diameter	Outside diameter	Inside diameter	Outside diameter	Compressed bellows length	Free bellows length	Axial stroke	Wall thickness of membranes	Effective area	Spring constant (axial direction)	Welding lip	Form
	ID [mm]	OD [mm]	ID [inch]	OD [inch]	lc [mm]	lf [mm]	z [mm]	t [mm]	EA [cm²]	SRCz [N/mm]	Gr	
50	46	62.5	1.811	2.461	0.50	1.45	1.50	0.13	24.0	130.0	3	S
	46	71	1.811	2.795	0.50	2.30	2.40	0.13	28.5	60.0	4	S
	46	72	1.811	2.835	0.43	1.50	1.75	0.13	29.1	49.0	4	Z
	46	88	1.811	3.465	0.70	3.30	3.00	0.20	39.2	96.0	4	S
63	51	76	2.008	2.992	0.50	2.40	2.60	0.15	33.3	85.0	4	S
	52	62	2.047	2.441	0.33	0.85	0.60	0.10	26.1	120.0	1	G
	52	95	2.047	3.740	0.75	3.60	3.40	0.20	46.7	75.0	4	S
	60	88	2.362	3.465	0.55	2.70	2.80	0.15	45.1	80.0	5	S
	65	90	2.559	3.543	0.50	2.40	2.80	0.15	49.0	95.0	4	S
100	65	108	2.559	4.252	0.80	2.65	2.75	0.20	63.2	35.0	5	Z
	70	94	2.756	3.701	0.55	2.35	2.65	0.15	54.7	95.0	4	S
	75	100	2.953	3.937	0.60	2.40	2.90	0.15	62.2	95.0	4	S
	77.5	120	3.051	4.724	0.75	3.50	3.60	0.20	81.2	85.0	5	S
	80	108	3.150	4.252	0.55	2.25	2.50	0.15	71.9	80.0	5	S
	82	125	3.228	4.921	0.75	3.70	3.80	0.20	88.9	80.0	5	S
	90	110	3.543	4.331	0.50	1.45	1.40	0.15	80.4	145.0	5	Z
	90	120	3.543	4.724	0.60	2.80	2.80	0.15	89.5	70.0	5	S
	90.5	135	3.563	5.315	0.70	4.20	4.20	0.20	105.1	80.0	5	S
	92	149	3.622	5.866	0.85	4.75	4.60	0.25	122.0	95.0	6	S
	100	150	3.937	5.906	0.66	2.20	2.50	0.20	129.3	66.0	5	G
	160	102	128	4.016	5.039	0.50	1.50	1.90	0.15	106.6	145.0	5
102		132	4.016	5.197	0.60	2.60	3.10	0.15	110.7	75.0	5	S
102.5		150	4.035	5.906	0.90	4.40	4.60	0.25	131.4	135.0	5	S
110		140	4.331	5.512	0.50	1.50	2.00	0.15	126.2	115.0	5	Z
110		160	4.331	6.299	0.80	4.25	3.00	0.20	150.0	40.0	5	S
115		145	4.528	5.709	0.55	2.60	3.10	0.15	136.3	75.0	5	S
120		140	4.724	5.512	0.50	1.25	1.70	0.15	135.3	125.0	5	Z
127		157	5.000	6.181	0.70	2.60	3.20	0.20	162.3	100.0	5	S
135		165	5.315	6.496	0.66	1.90	2.00	0.20	180.9	140.0	5	Z
150		180	5.906	7.087	0.66	1.75	2.00	0.20	218.5	175.0	5	Z
150	185	5.906	7.283	0.75	2.60	3.40	0.20	225.7	140.0	5	S	
156	186	6.142	7.323	0.75	2.60	3.30	0.20	234.5	200.0	5	S	

For sizes below DN 50 see previous page, for sizes above DN 160 see next page.

### Sizes, technical data, materials

All stated values refer to the following conditions of use:

Differential pressure: Pi=0, Pa=1 bar

Operating temperature: OT=Raumtemperatur

Baking temperature: HT=80°C

Number of cycles: Nz=10'000 cycles

For other operating conditions please use our "Checklist for bellows inquiries".

Other sizes, shapes (racetrack or rectangular) and materials available on request.

## Material 316L

For higher operating temperatures | up to 500.000 load alternation | not magnetic | extremely corrosion-resistant | max. temperature 450°C

### Analysis

Metal	Fe	C	Si	Mn	P	S	Cr	Mo	Ni
[%]	Rest	≤0.03	≤1.0	≤2.0	≤0.045	≤0.03	16.0–18.0	2.0–3.0	10.0–14.0

### Characteristics

Rp 0.2 [N/mm <sup>2</sup> ]	Rm [N/mm <sup>2</sup> ]	E-Module [N/mm <sup>2</sup> ]	Density [kg/dm <sup>3</sup> ]	Temp. [°C]	Permeab. [μr]
300	600	200 000	8.0	-250/+350	1.003-1.005

### Types

	Inside diameter	Outside diameter	Inside diameter	Outside diameter	Compressed bellows length	Free bellows length	Axial stroke	Wall thickness of membranes	Effective area	Spring constant (axial direction)	Welding lip	Form
DN	ID [mm]	OD [mm]	ID [inch]	OD [inch]	lc [mm]	lf [mm]	z [mm]	t [mm]	EA [cm <sup>2</sup> ]	SRCz [N/mm]	Gr	
200	170	210	6.693	8.268	0.66	2.00	2.25	0.20	290.5	120.0	5	Z
	173	203	6.811	7.992	0.65	2.50	3.20	0.15	283.1	100.0	5	S
	180	209	7.087	8.228	0.65	2.15	3.10	0.15	302.8	95.0	5	S
	180	215	7.087	8.465	0.75	2.80	3.40	0.20	312.9	148.0	5	S
	200	235	7.874	9.252	0.75	3.00	3.50	0.20	379.0	160.0	5	S
250	230	265	9.055	10.433	0.70	2.80	3.50	0.20	490.0	160.0	5	S
	250	280	9.843	11.024	0.66	2.00	2.00	0.20	560.7	333.0	5	Z
	250	285	9.843	11.220	0.80	3.20	3.20	0.20	572.0	200.0	5	S
300	280	330	11.024	12.992	0.90	3.30	3.50	0.20	745.4	150.0	5	S
	300	340	11.811	13.386	0.80	3.20	3.60	0.20	818.2	200.0	5	S
400	360	440	14.173	17.323	2.00	7.50	6.00	0.30	1286.2	150.0	6	S
	400	480	15.748	18.898	1.45	5.00	4.50	0.40	1553.6	350.0	6	Z

For sizes below DN 200 see previous pages.

### Sizes, technical data, materials

All stated values refer to the following conditions of use:

Differential pressure: Pi=0, Pa=1 bar

Operating temperature: OT=Raumtemperatur

Baking temperature: HT=80°C

Number of cycles: Nz=10'000 cycles

For other operating conditions please use our "Checklist for bellows inquiries".

Other sizes, shapes (racetrack or rectangular) and materials available on request.

## Material AM350

Smallest installation dimension | up to 10 million load alternation | slightly magnetic | corrosion-resistant | max. temperature 250°C

### Analysis

Metal	Fe	C	Si	Mn	P	S	Cr	Mo	Ni	N
[%]	Rest	0.07-0.11	≤0.5	0.5–1.25	≤0.04	≤0.03	16.0–17.0	2.5–3.25	4.0–5.0	0.07–0.13

### Characteristics

Rp 0.2 [N/mm <sup>2</sup> ]	Rm [N/mm <sup>2</sup> ]	E-Module [N/mm <sup>2</sup> ]	Density [kg/dm <sup>3</sup> ]	Temp. [°C]	Permeab. [μr]
500	1 150	200 000	8.0	+20/+200	10-15

### Types

DN	Inside diameter	Outside diameter	Inside diameter	Outside diameter	Compressed bellows length	Free bellows length	Axial stroke	Wall thickness of membranes	Effective area	Spring constant (axial direction)	Welding lip	Form
	ID [mm]	OD [mm]	ID [inch]	OD [inch]	lc [mm]	lf [mm]	z [mm]	t [mm]	EA [cm <sup>2</sup> ]	SRCz [N/mm]	Gr	
10	6	13	0.236	0.512	0.30	0.65	0.50	0.06	0.8	75.0	1	S
	8	20	0.315	0.787	0.30	1.20	1.10	0.08	1.8	49.0	1	S
	8.6	16.2	0.339	0.638	0.27	0.75	0.65	0.06	1.3	34.0	1	S
	9	19.05	0.354	0.750	0.27	1.05	1.00	0.06	1.8	37.0	1	S
	9	20	0.354	0.787	0.32	1.10	1.15	0.08	1.9	65.0	1	S
	9	31.5	0.354	1.240	0.40	1.75	1.80	0.10	4.3	60.0	3	S
16	9.4	23	0.370	0.906	0.27	1.35	1.40	0.06	2.5	25.0	1	S
	13	26	0.512	1.024	0.32	1.35	1.60	0.08	3.4	52.0	3	S
25	16	31.5	0.630	1.240	0.45	1.65	1.70	0.10	5.0	60.0	3	S
	18.5	31.5	0.728	1.240	0.32	1.30	1.60	0.08	5.3	55.0	3	S
	19	37	0.748	1.457	0.45	1.90	2.15	0.10	6.9	52.0	3	S
	21	41	0.827	1.614	0.50	2.40	2.60	0.10	8.4	52.0	3	S
	21	49	0.827	1.929	0.50	3.10	3.50	0.13	11.3	52.0	3	S
	23	43	0.906	1.693	0.45	2.40	2.65	0.10	9.5	47.0	3	S
	26	41	1.024	1.614	0.40	1.70	1.90	0.10	9.4	90.0	3	S
	26	46	1.024	1.811	0.45	2.15	2.60	0.10	11.1	65.0	3	S
40	31	51	1.220	2.008	0.50	2.40	2.80	0.10	14.2	45.0	4	S
	36	56	1.417	2.205	0.50	2.50	3.00	0.10	17.6	40.0	4	S
	38	51	1.496	2.008	0.40	1.50	1.85	0.10	16.1	100.0	3	S
	39	59	1.535	2.323	0.50	2.50	3.00	0.10	19.9	40.0	4	S
50	46	62.5	1.811	2.461	0.40	1.75	2.25	0.10	24.0	90.0	3	S
	46	71	1.811	2.795	0.50	2.85	3.60	0.13	28.5	60.0	4	S
	46	88	1.811	3.465	0.65	4.00	4.00	0.15	39.2	65.0	5	S
	51	76	2.008	2.992	0.50	2.95	3.80	0.13	33.3	65.0	4	S
63	60	88	2.362	3.465	0.50	3.20	4.20	0.13	45.1	60.0	5	S
	63.5	77	2.500	3.031	0.35	1.40	2.00	0.10	39.6	120.0	3	S
	65	90	2.559	3.543	0.54	2.80	3.80	0.13	49.0	65.0	4	S

For sizes above DN 63 see next page.

### Sizes, technical data, materials

All stated values refer to the following conditions of use:

Differential pressure: Pi=0, Pa=1 bar

Operating temperature: OT=Raumtemperatur

Baking temperature: HT=80°C

Number of cycles: Nz=10'000 cycles

For other operating conditions please use our "Checklist for bellows inquiries".

Other sizes, shapes (racetrack or rectangular) and materials available on request.

## Material AM350

Smallest installation dimension | up to 10 million load alternation | slightly magnetic | corrosion-resistant | max. temperature 250°C

### Analysis

Metal	Fe	C	Si	Mn	P	S	Cr	Mo	Ni	N
[%]	Rest	0.07-0.11	≤0.5	0.5-1.25	≤0.04	≤0.03	16.0-17.0	2.5-3.25	4.0-5.0	0.07-0.13

### Characteristics

Rp 0.2 [N/mm <sup>2</sup> ]	Rm [N/mm <sup>2</sup> ]	E-Module [N/mm <sup>2</sup> ]	Density [kg/dm <sup>3</sup> ]	Temp. [°C]	Permeab. [μr]
500	1 150	200 000	8.0	+20/+200	10-15

### Types

	Inside diameter	Outside diameter	Inside diameter	Outside diameter	Compressed bellows length	Free bellows length	Axial stroke	Wall thickness of membranes	Effective area	Spring constant (axial direction)	Welding lip	Form
DN	ID [mm]	OD [mm]	ID [inch]	OD [inch]	lc [mm]	lf [mm]	z [mm]	t [mm]	EA [cm <sup>2</sup> ]	SRCz [N/mm]	Gr	
100	70	94	2.756	3.701	0.50	2.70	3.50	0.13	54.7	70.0	4	S
	71.4	84.1	2.811	3.311	0.37	1.25	1.75	0.10	48.4	155.0	3	S
	75	100	2.953	3.937	0.54	2.80	3.80	0.13	62.2	65.0	4	S
	80	108	3.150	4.252	0.60	2.70	3.60	0.15	71.9	77.0	5	S
	89.6	133.4	3.528	5.252	0.85	4.50	5.00	0.20	102.8	85.0	6	S
	90	120	3.543	4.724	0.60	3.00	4.20	0.13	89.5	55.0	5	S
	90.5	135	3.563	5.315	0.85	4.90	5.20	0.20	105.1	80.0	5	S
	101.6	139.7	4.000	5.500	0.55	3.25	4.30	0.15	118.7	43.0	6	S
	102	132	4.016	5.197	0.70	3.00	4.40	0.15	110.7	80.0	5	S
102.5	150	4.035	5.906	0.85	5.10	6.00	0.20	131.4	90.0	5	S	
160	115	145	4.528	5.709	0.70	2.85	3.50	0.15	136.3	80.0	5	S
	127	157	5.000	6.181	0.75	2.95	4.20	0.15	162.3	85.0	5	S
	150	185	5.906	7.283	0.90	3.20	4.00	0.20	225.7	166.0	5	S
	160	185	6.299	7.283	0.65	2.65	3.80	0.13	238.1	87.0	4	S
	160	210	6.299	8.268	1.10	5.15	5.80	0.25	277.4	120.0	6	S
200	180	215	7.087	8.465	0.70	2.75	4.10	0.15	312.9	80.0	5	S
	200	235	7.874	9.252	0.70	3.20	4.30	0.15	379.0	74.0	5	S
250	250	285	9.843	11.220	0.70	3.20	4.20	0.15	572.0	74.0	5	S
320	270	310	10.630	12.205	0.80	3.30	4.00	0.20	672.6	140.0	5	S
	300	340	11.811	13.386	0.80	3.50	4.60	0.20	818.2	90.0	5	S
400	430	480	16.929	18.898	1.10	4.50	5.60	0.25	1652.7	280.0	6	S

For sizes below DN 100 see previous page.

### Sizes, technical data, materials

All stated values refer to the following conditions of use:

Differential pressure: Pi=0, Pa=1 bar

Operating temperature: OT=Raumtemperatur

Baking temperature: HT=80°C

Number of cycles: Nz=10'000 cycles

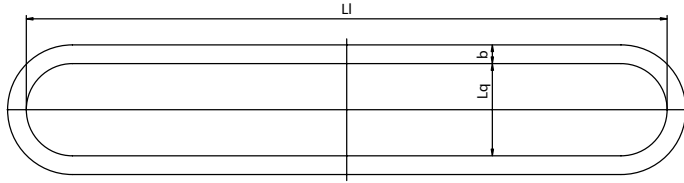
For other operating conditions please use our "Checklist for bellows inquiries".

Other sizes, shapes (racetrack or rectangular) and materials available on request.

Issue 0814. Technical specifications are subject to change.

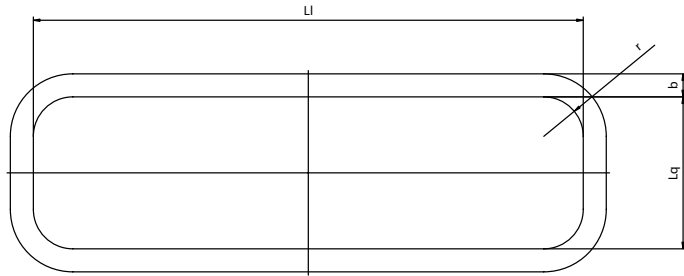
## Noncircular membrane bellows (special shapes)

### Racetrack profile



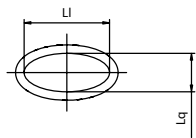
Type	Length (lengthwise)	Length (crossways)	Profile width	Material
	Li	Lq	b	
150-80-RS	150	80	9	316L
210-30-RS	210	30	15	316L
240-120-RS	240	120	15	316L
292-38-RS	292	38	12,5	AM350
959-138-RZ	959	138	28	316L

### Rectangle profile



Type	Length (lengthwise)	Length (crossways)	Profile width	Corner radius	Material
	Li	Lq	b	r	
300-190	300	190	19,5	20	316L
836-231	836	231	35	60	316L

### Elliptical profile

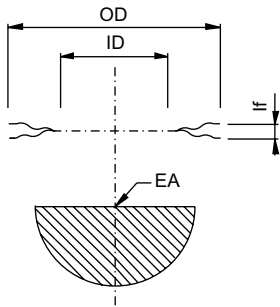


Type	Length (lengthwise)	Length (crossways)	Profile width	Material
	Li	Lq	b	
127-57,2	127	57,16	12,7	316L



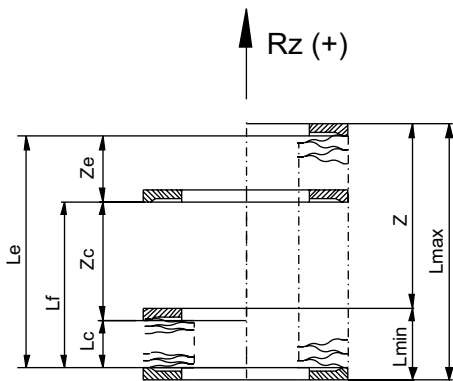
Bellows movements (axial, lateral, angular) / Abbreviations

General



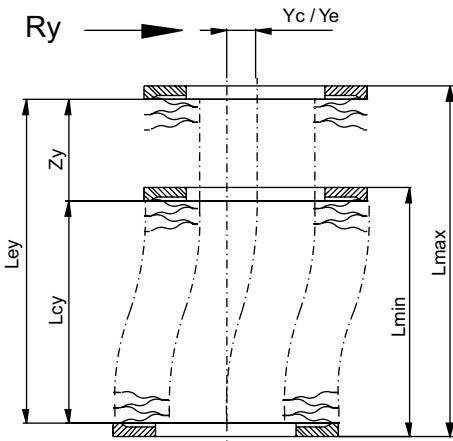
- ID Inside diameter [mm]
- OD Outside diameter [mm]
- n Number of convolutions [pairs of membranes]
- t Wall thickness of membranes [mm]
- EA Effekive area [cm<sup>2</sup>]
- G Weight of edge welded bellow [g]
- lc Compressed length per convolution [mm]
- lf Free length per convolution [mm]
- le Extended length per convolution [mm]
- z Axial stroke per convolution [mm]

Axial stroke



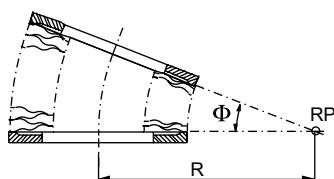
- Lf Free bellows length [mm] (= manufactured length)
- Lc Compressed bellows length [mm]
- Le Extended bellows length [mm]
- Z Axial stroke of edge welded bellows [mm]
- Zc Compression stroke of edge welded bellows [mm]
- Ze Extension stroke of edge welded bellows [mm]
- SRCz Spring constant per convolution in axial direction [N/mm]
- SRz Spring rate of edge welded bellows in axial direction [N/mm]
- Fsrz Tensile force of edge welded bellows in axial direction [N]
- Fzpc Compressive force in axial direction [N]
- Rz Resulting axial force [N]
- Lmin Minimum installed length from flange to flange [mm]
- Lmax Maximum installed length from flange to flange [mm]

Lateral stroke



- Lcy Minimum installed length for a given lateral stroke [mm]
- Ley Maximum installed length for a given lateral stroke [mm]
- Zy Axial stroke of edge welded bellows for lateral offset [mm]
- Yc Lateral stroke of edge welded bellows at Lcy [mm]
- Ye Lateral stroke of edge welded bellows at Ley [mm]
- SRCy Spring constant per convolution in lateral direction [N/mm]
- SRy Spring rate of edge welded bellows in lateral direction [N/mm]
- Fsry Tensile force of edge welded bellows in lateral direction [N]
- Fyp Compressive force in lateral direction [N]
- Ry Resulting lateral force [N]
- Lmin Minimum installed length from flange to flange [mm]
- Lmax Maximum installed length from flange to flange [mm]

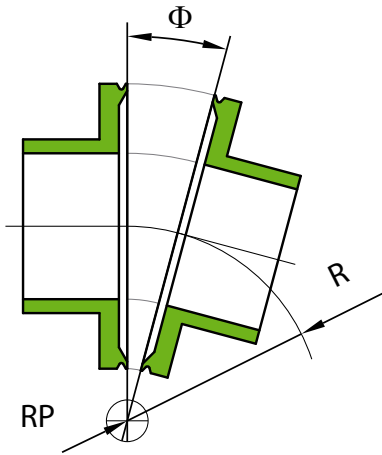
Angular stroke



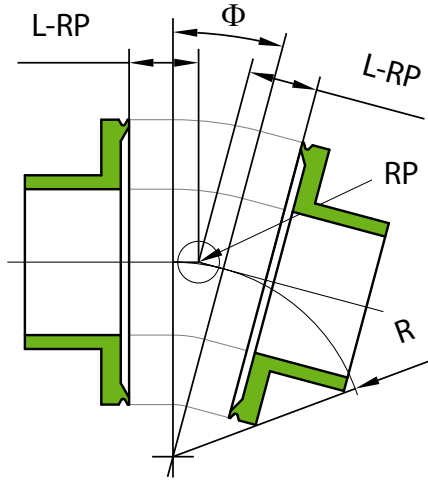
- RP Rotation point of angular movement
- R Bending radius [mm]
- Phi Bending angle of edge welded bellows [°]

Construction of the bellows: rotations points Angular

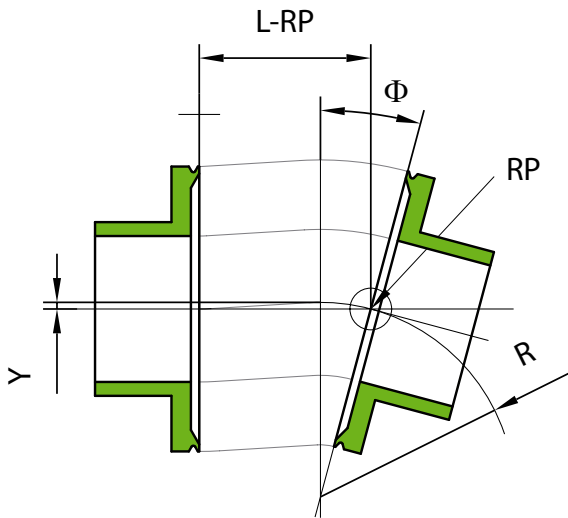
In bellows radius (standard acc. to data sheet)



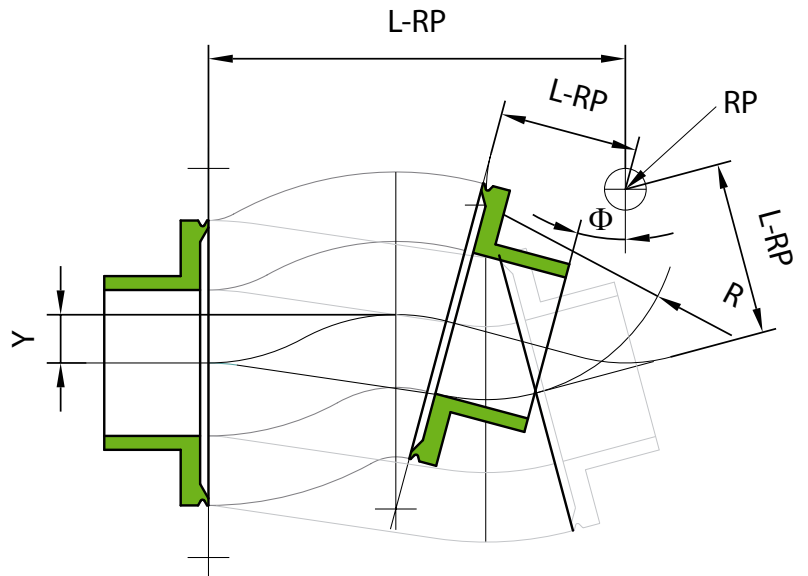
Middle of the bellows



Middle of end piece



Outside of the bellows

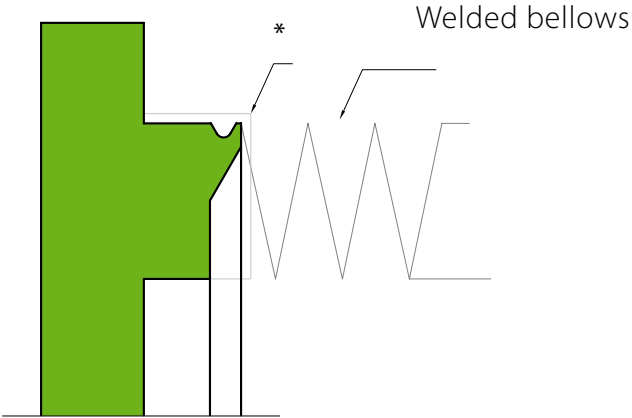
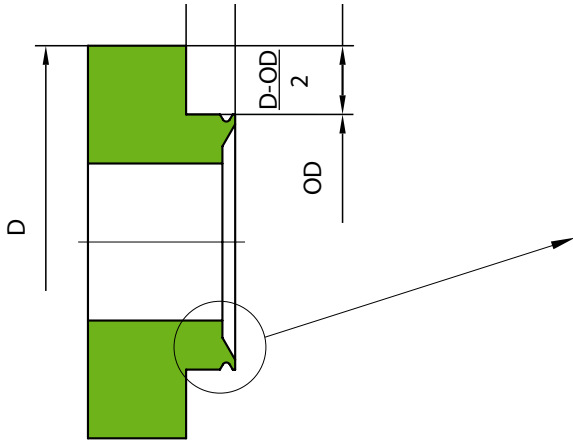


- RP: Rotations point
- R: Radius (Technical Manual)
- Y: Lateral movement
- L-RP: Displacement from end piece to rotations point RP

Premachining of the end piece N-15000

Minimum lip distance

Customer end piece

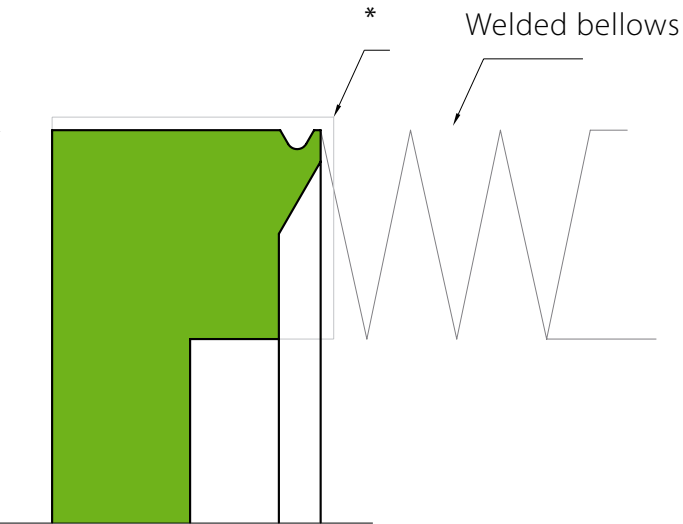
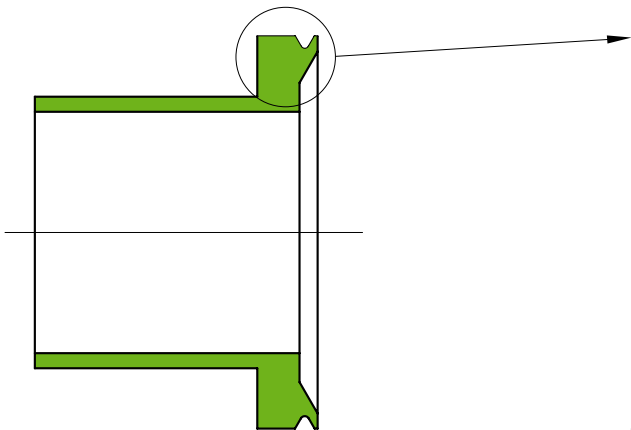


$$\frac{D-OD}{2} < 15 \Rightarrow b \geq 3$$

$$\frac{D-OD}{2} \geq 15 < 60 \Rightarrow b \geq 5$$

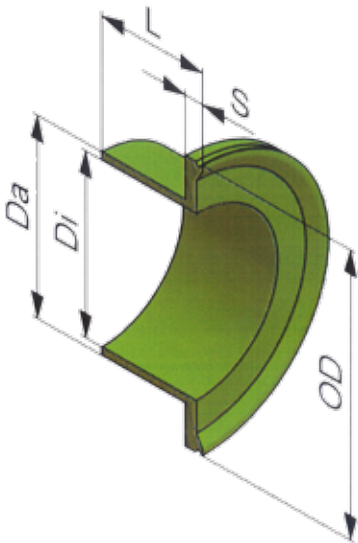
$$\frac{D-OD}{2} > 60 \Rightarrow b \geq 7$$

Customer end piece



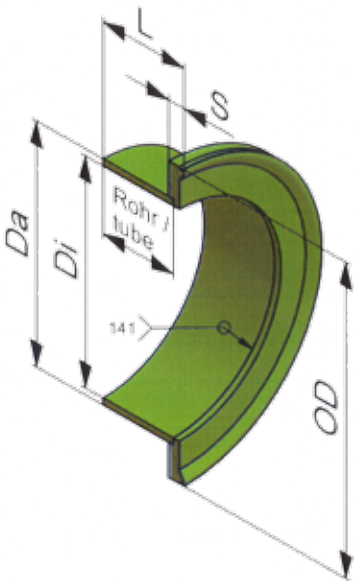
\* Premachining the end pieces according to drawing with  $0.5^{+0.2}_0$  mm overmeasure.

## End piece, one-part



DN	ID [mm]	OD [mm]	ID [Inch]	OD [Inch]	Di [mm]	Da [mm]	S [mm]	L CF [mm]	L ISO-K [mm]	A CF [mm]	A ISO-K [mm]
10	8	16	0.315	0.630	8,0	10,0	4,0	15,0	-	18,0	-
16	16	31.5	0.630	1.240	16,0	18,0	4,0	15.8	-	20,0	-
25	26	46	1.024	1.811	24,0	28,0	4,0	23.2	-	29,0	-
40	39	59	1.535	2.323	38,0	41.3	4,0	23.5	34.5	29,0	40,0
50	51	76	2.008	2.992	53,0	57,0	4,0	28.3	34.5	34,0	40,0

## End piece, two-part



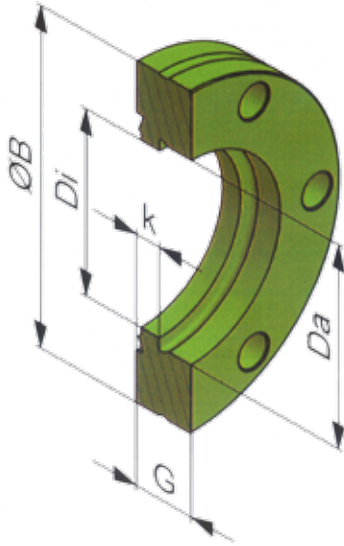
DN	ID [mm]	OD [mm]	ID [Inch]	OD [Inch]	Di [mm]	Da [mm]	S [mm]	L CF [mm]	L ISO-K [mm]	A CF [mm]	A ISO-K [mm]
63	65	90	2.559	3.543	66.0	70.0	5.0	26.5	33.0	36.0	40.0
75	75	100	2.953	3.937	72.1	76.1	5.0	26.5	33.0	36.0	40.0
100	102	132	4.016	5.197	104.0	108.0	5.0	30.0	33.0	41.0	40.0
130	127	157	5.000	6.181	123.0	129.0	5.0	30.5	37.0	42.0	44.0
160	150	185	5.906	7.283	150.0	156.0	5.0	31.0	37.0	43.0	44.0
200	200	235	7.874	9.252	200.0	206.0	6.0	38.0	37.0	50.5	44.0
250	250	285	9.843	11.22	250.0	256.0	6.0	38.5	37.0	51.0	44.0
300	300	340	11.811	13.386	300.0	306.0	6.0	42.3	44.0	55.0	54.0
350	360	440	14.173	17.323	350.0	356.0	10.0	47.3	-	60.0	-
400	400	480	15.748	18.898	400.0	406.0	10.0	44.0	48.0	60.0	58.0
500	520	640	20.472	25.197	500.0	506.0	15.0	-	52.0	-	62.0
630	690	810	27.165	31.89	650.0	662.0	15.0	-	55.5	-	68.0

Other end piece lengths, pipe diameters and materials available on request.  
Two-part end pieces are also available as one-part end pieces.

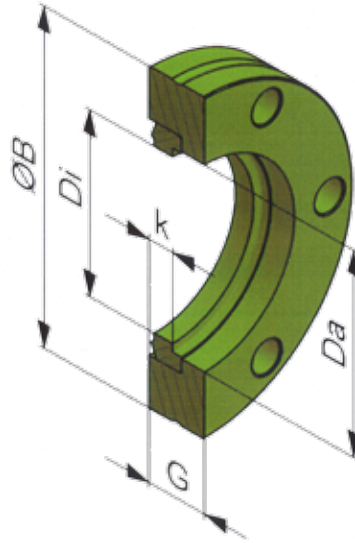
\*) All linear measures refer to the COMVAT-"A-Dimension".

Standard material one-piece: 316L  
Standard material two-piece: 316L (bellows connection), 304 (pipe)

CF flange, fixed



CF flange, rotating

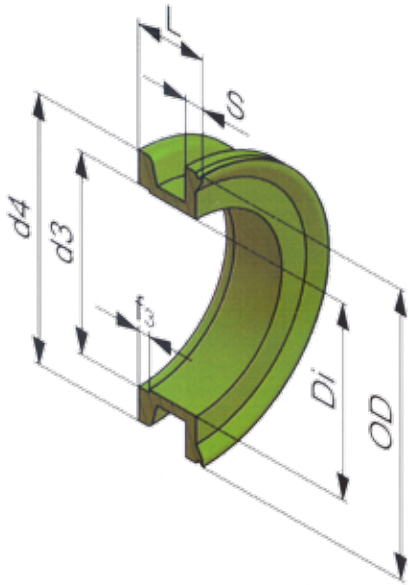


DN	ØB Flange [mm]	ØB Flange [inch]	Di [mm]	Da [mm]	G [mm]	k [mm]
10*	25.4	1"	9.0	18.0	6.0	3.0
16	34.0	1 1/3"	16.0	27.0	7.5	4.2
25	54.0	2 1/8"	24.0	41.3	12.0	4.8
40	69.5	2 3/4"	38.0	58.7	13.0	5.5
50	85.6	3 3/8"	47.6	72.4	15.7	5.7
63	113.5	4 1/2"	66.0	92.2	17.5	9.5
75	117.5	4 5/8"	72.1	76.4	17.5	9.5
100	152.0	6"	104.0	130.3	20.0	11.0
130	171.4	6 3/4"	123.0	129.0	21.0	11.5
160	202.5	8"	150.0	181.0	22.0	12.0
200	253.0	10"	200.0	231.8	24.5	12.5
250	305.0	12"	250.0	284.0	24.5	12.5
300	355.6	14 1/2"	300.0	325.4	28.5	12.7
350	419.1	16 1/2"	350.0	388.9	28.5	12.7
400	457.0	18"	400.0	431.8	28.5	16.0

\*Flange DN10 is only available as fixed flange.  
Standard material: 304L / on request 316LN also available

All CF flanges can be delivered both with threaded bolt holes and as blind flange.

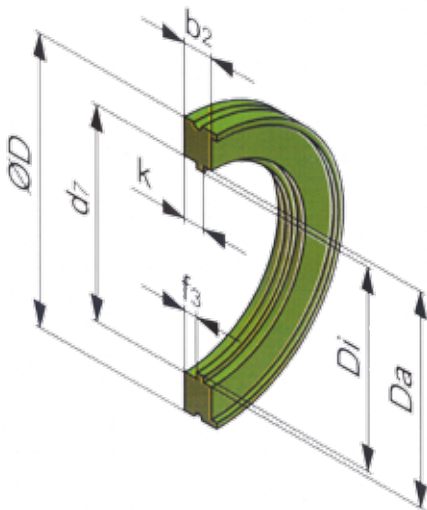
## ISO-KF flange (DIN 28403)



DN	d4 [mm]	d3 [mm]	Di [mm]	OD [mm]	S [mm]	f3 +0.2/0 [mm]	L [mm]
10	30.0	12.2	10.0	20.0	4.0	2.5	14.0
16	30.0	17.2	16.0	31.5	4.0	2.5	14.0
20	40.0	22.2	20.0	41.0	4.0	2.5	14.0
25	40.0	26.2	25.0	46.0	4.0	2.5	14.0
32	55.0	34.2	31.0	51.0	4.0	2.5	15.0
40	55.0	41.2	39.0	59.0	4.0	2.5	15.0
50	75.0	52.4	50.0	76.0	4.0	2.5	18.5

DIN 28403 / Standard material: 316L  
Other lengths available on request

## ISO-K flange (DIN 28404)



DN	ØD [mm]	Di [mm]	Da [mm]	k [mm]	b2 [mm]	d7 [mm]	f3 [mm]
40	65.0	38.0	41.3	5.5	10.0	41.2	2.5
50	75.0	53.0	57.0	5.5	10.0	52.2	2.5
63	95.0	66.0	70.0	7.0	10.0	70.0	4.5
80	110.0	72.1	76.1	7.0	10.0	83.0	4.5
100	130.0	104.0	108.0	7.0	10.0	102.0	4.5
125	155.0	123.0	129.0	7.0	10.0	127.0	4.5
160	180.0	150.0	156.0	7.0	10.0	153.0	4.5
200	240.0	200.0	206.0	7.0	10.0	213.0	4.5
250	290.0	250.0	256.0	7.0	10.0	261.0	4.5
320	370.0	300.0	306.0	10.0	15.0	318.0	4.5
400	450.0	400.0	406.0	10.0	15.0	400.0	4.5
500	550.0	500.0	506.0	10.0	15.0	501.0	4.5
630	690.0	600.0	608.0	12.0	20.0	651.0	4.5

DIN 28404 / Standard material: 304  
Membrane bellow mounting with one-part or two-part end piece.



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