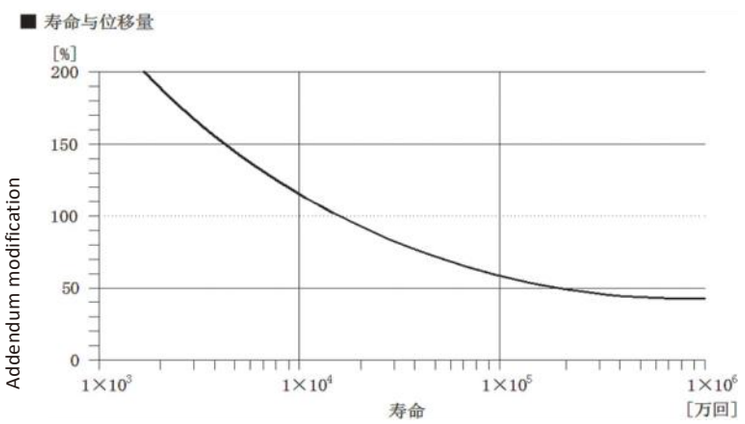
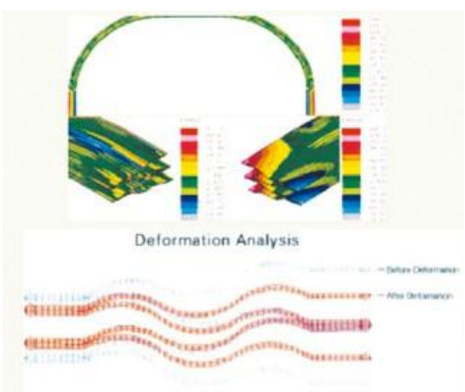
ALPHA Tech
Dachang Hui Autonomy County Alpha Technology Service Co.,Ltd
Tel:+86(316)8361532
Website:https://www.welded-bellow.com Email:info@welded-bellow.com

Welded Bellows Material Selection and Design

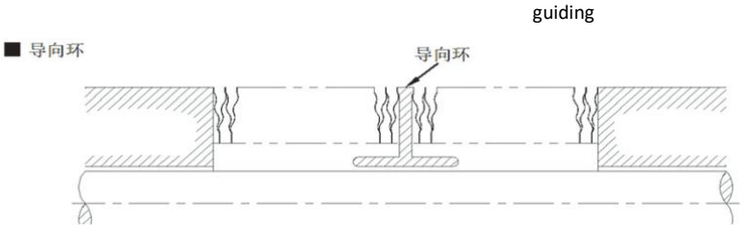
Material	Temperature	Feature	Heat resistance	Durability	Corrosion resistance
Austenitic stainless steel					
SUS316L	-251~426	Corrosion resistance, heat resistance, HCl corrosion resistance	B	B	B+
PH Stainless Steel					
AM350	-73~426	High strength,weakly magnetic, universal relevance, worse resistance to corrosive gas	B	A+	B
On the basis of nickel heat resistance, corrosion resistant steel					
Hastelloy C-276	-251~537	Excellent corrosion resistance, oxidation resistance	A	A	A
Inconel 625	-251~815	Acid resistance, high temperature resistance	A	A	A
Haynes 242	-251~698	Fluoride-resistance, excellent stability in high temperature environment	A	Guidering A+	A+
***A+:Excellent A:Good B+:Far B:Acceptable C:Poor**					



durable times



guiding



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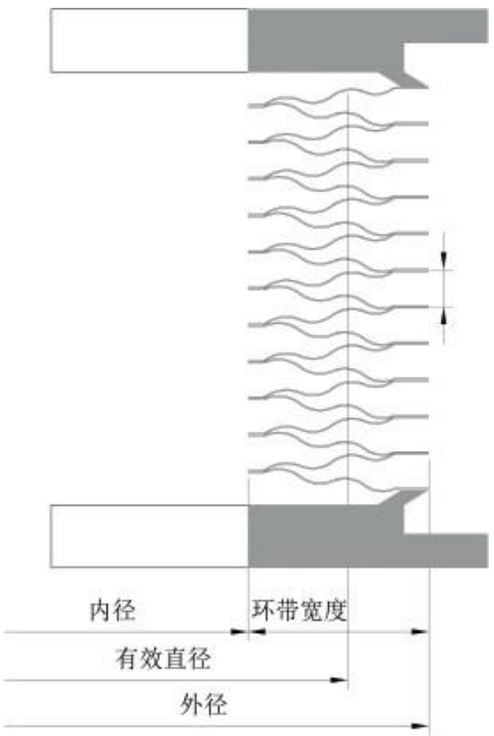
Welded Bellows Structure and Scope



Flange

Flange shape as customers' requirement

Flange periphery preset groove, welded with bellows (Material is better to accord with bellows)

Bellows

Metal plate is punched into circle ring, plate thickness and sectional drawing as using condition.

Pitch

Effect pressure resistance, durability, spring rate, etc.

Annule width

Effect flexibility, yielding, pressure resistance, durability, and spring rate, etc.

Distance=(OD-ID)/2

Effective diameter= (OD+ID)2

Effective area = π * D/2

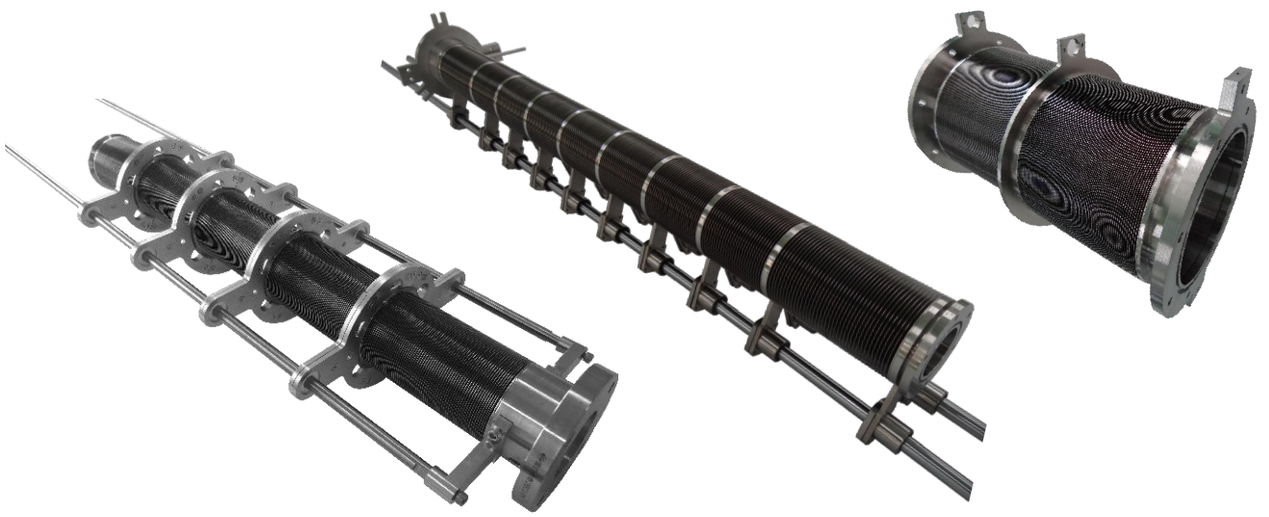
Welding:	Testing range	Characteristics	Design and manufacture
Electronic beam (EBW) reach up to150kilovolt Gas tungsten-arc GTAW Laser MBPA (PAW MBPA) Orbit gas tungsten-arc	Life cycle(with pressure and temperature as the indicator) Load Mass spectrometer test (MST) Average effective area Metallurgy Pressure(rupture,pulse)	sealing and leak-proof, with a leakage per second of 1*10^{-10} standard cm3 Helium. The longest product life cycle (the standard 1000,000+) Tolerant of extreme temperature Low gas relief Corrosion resistance	(Bellows design procedure) (Computer aided design) (finite element analysis) Entity modeling Extensible 100、1000 and 10000 grade cleaning room

Product Display

Welded bellows for semicon equipment

PVD, CVD, etching machine, ion implantation, TFT-LCD, etc.

Welded bellows for LED equipment



PECVD, LPCVD, MOCVD, monocrystal silicon furnace, polycrystal silicon furnace

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Welded bellows for valve

Welded bellows for particle accelerator and aerospace

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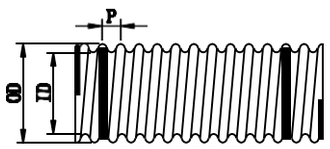
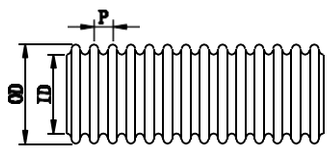
Formed Bellows

Bellow is one of the indispensable components of vacuum equipment and vacuum system, it is widely used in damping, installation and debugging, instead of vacuum sealing, etc. At present, it has been widely used in such as vacuum equipment, OLED, LCD, semiconductor, gas, fluid, solar energy, photovoltaic, aerospace and high-tech industries.



螺旋金属软管



环型金属软管

Model	I.D	O.D	Thickness	Temperature	Leakage rate	Expansion	Length
16A	15.7	24.8	0.15	-200℃~800℃	<1.0x10^{-9}atm-cc/sec	30~40%	3M
20A	20.0	28.5	0.15				
25A	25.0	35.5	0.156				
32A	31.5	43.0	0.15				
40A	39.0	54.0	0.15				
50A	49.8	67.54	0.18				
65A	65.0	86.5	0.20				
80A	79.0	101.0	0.20				
100A	100.3	126.5	0.25				
125A	126.0	155.0	0.25				
150A	150.0	175.0	0.25				

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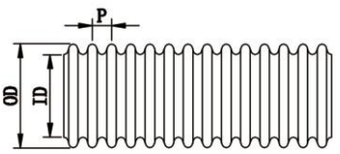
Flexible Formed Bellows

We produce all kinds of 16A~150A diameter bellows and hydraulic molding technology.With excellent flexibility and good corrosion resistance, heat resistance, excellent elasticity. It is applied to convey the air, all kinds of industrial gas and steam, water, oil, medicine and other kinds of fluid, it plays an important role for the reciprocating movement of the piping, thermal expansion absorption, the vibration absorption and the center adjustment of the piping.



环型金属软管

Mode l	I. D	O. D	Thickness	Temperature	Leakage rate	Expansion	Length
10 A	10 . 3	16 . 5	0 . 15	- 200℃ ~ 800℃	< 1 . 0 x 10- 9 atm- cc/ sec	30 ~40	3 M
16 A	15 . 7	24 . 8	0 . 15				
20 A	20 . 0	28 . 5	0 . 15				
25 A	25 . 0	35 . 5	0 . 156				
32 A	31 . 5	43 . 0	0 . 15				
40 A	39 . 0	54 . 0	0 . 15				
50 A	49 . 8	67 . 54	0 . 18				
65 A	65 . 0	86 . 5	0 . 20				
80 A	79 . 0	101 . 0	0 . 20				
100 A	100 . 3	126 . 5	0 . 25				
125 A	126 . 0	155 . 0	0 . 25				
150 A	150 . 0	175 . 0	0 . 25				

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Metal Bellows Seals

1.Working Conditions

Mediums:Oil, light hydrocarbon, aromatic hydrocarbon, organic solvents, weak acids, alkali, Ammonia, etc.

Temperature: 20℃ to 200℃

Pressure: ≤2.0MPa

Speed:≤23m/s

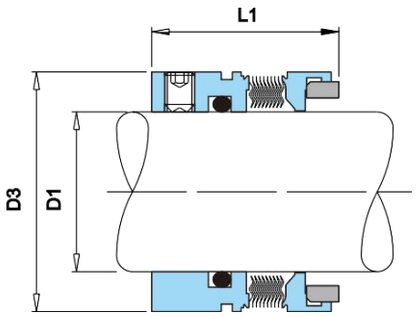
2.Materials

Stationary Ring: Sic/TC

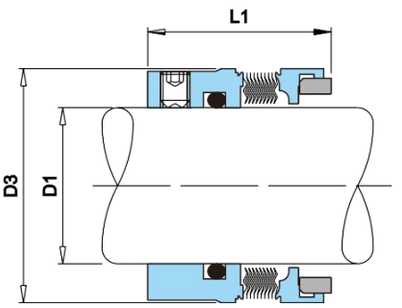
Rotary Ring: Carbon/Sic/TC

Secondary Seal: NBR/EPDM/Viton

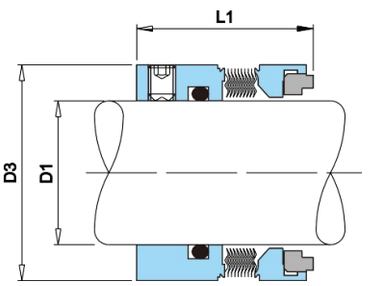
Spring and Metal Part: Stainless Steel



AT680



AT670



AT676

D1(inch)	Size Code	D3	L1	2.875	0730	92.08	42.85
0.750	0191	33.32	31.75	3.000	0762	95.25	42.85
0.875	0222	36.50	31.75	3.125	0794	98.43	44.45
0.937	0238	38.10	31.75	3.250	0826	101.60	44.45
1.000	0254	39.67	31.75	3.375	0857	104.78	44.45
1.125	0286	42.85	31.75	3.500	0889	107.95	47.63
1.250	0317	46.02	33.32	3.625	0921	111.13	47.63
1.375	0349	49.20	36.50	3.750	0953	114.30	47.63
1.500	0381	52.37	36.50	3.875	0984	117.48	47.63
1.625	0412	55.55	36.50	4.000	1016	120.65	47.63
1.750	0444	58.72	36.50	4.250	1080	131.75	48.34
1.875	0476	61.90	38.10	4.500	1143	138.13	48.34
2.000	0508	65.07	38.10	4.750	1207	144.48	48.34
2.125	0539	68.25	38.10	5.000	1270	150.70	48.34
2.250	0571	71.42	39.67	5.250	1334	157.81	48.34
2.375	0603	74.60	39.67	5.500	1397	164.16	48.34
2.500	0635	80.95	39.67	5.750	1461	170.54	48.34
2.625	0666	84.12	41.28	6.000	1524	176.89	48.34
2.750	0698	87.30	41.28	6.000	1524	176.89	48.34

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1.Working Conditions

Mediums: Oil, light hydrocarbon, aromatic hydrocarbon, organic solvents, weak acids, alkali, Ammonia, etc.

Temperature: -75℃ to 400℃

Pressure: ≤2.0MPa（Single）、≤6.0 MPa（Double）

Speed:≤23m/s

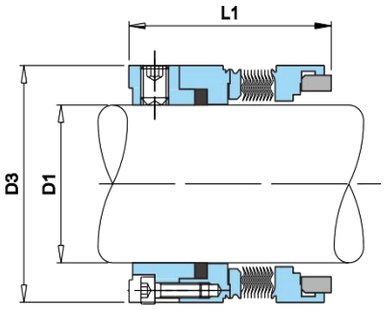
2.Materials

Stationary Ring: Sic/TC

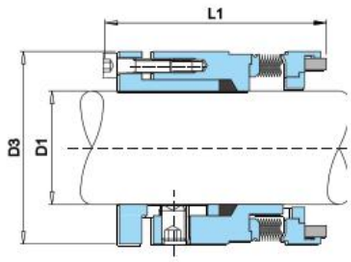
Rotary Ring : Carbon/Sic/TC

Secondary Seal: Graphite

Spring and Metal Part: Stainless Steel



609



606

D1(inch) 609	Size Code	D3	L1	D1(inch)606	Size Code	D3	L1
1.000	0254	41.28	38.89	0.750	0191	41.28	58.72
1.125	0286	44.45	39.67	0.875	0222	44.45	59.51
1.250	0317	47.63	40.46	1.000	0254	47.63	59.51
1.375	0349	50.80	40.46	1.125	0286	50.80	60.33
1.500	0381	53.98	40.46	1.250	0317	53.98	60.33
1.625	0412	57.15	40.46	1.375	0349	57.15	62.69
1.750	0444	60.33	41.28	1.500	0381	60.33	63.50
1.875	0476	63.50	41.28	1.625	0412	63.50	63.50
2.000	0508	66.68	42.06	1.750	0444	66.68	64.29
2.125	0539	69.85	42.06	1.875	0476	69.85	64.29
2.250	0571	73.03	43.66	2.000	0508	73.03	65.07
2.375	0603	76.20	43.66	2.125	0539	76.20	65.07
2.500	0635	82.55	44.45	2.250	0571	82.55	69.85
2.625	0666	85.73	45.24	2.375	0603	85.73	70.64
2.750	0698	88.90	45.24	2.500	0635	88.90	70.64
2.875	0730	93.65	47.63	2.625	0666	93.65	73.03
3.000	0762	96.82	47.63	2.750	0698	96.82	76.20
3.125	0794	101.60	47.63	2.875	0730	101.60	76.20
3.250	0826	104.78	47.63	3.000	0762	104.78	76.20
3.375	0857	107.95	47.63	3.125	0794	107.95	76.20
3.500	0889	111.13	47.63	3.250	0826	111.13	76.20
3.625	0921	114.30	47.63	3.375	0857	114.30	76.20
3.750	0953	117.48	47.63	3.500	0889	117.48	76.20
3.875	0984	120.65	47.63	3.625	0921	120.65	76.20
4.000	1016	123.83	47.63	3.750	0953	123.83	76.20