

RTC TAIWAN ATYCO FLUID CONTROL

TAIWAN ATYCO FLUID CONTROL
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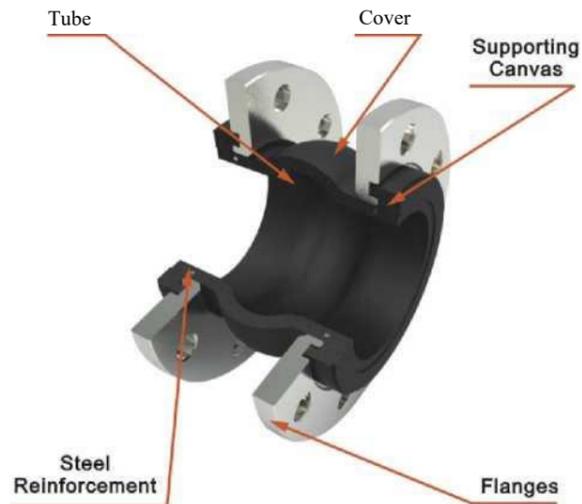


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RTC
Lead the smart flow

Spherical Molded Design Series

Basic Constructure



Steel Reinforcement

-High quality spiral steel wire in both grooved end, giving maximum strength to the expansion joint while under pressure or vacuum service.

Tube

-The inside rubber liner, it is a leak-proof lining extending flange to flange, made from synthetic or natural rubber for different applications.

Cover

-The outside rubber liner, which has the similar characteristic like tube, made from synthetic or natural rubber for different applications.

Supporting Canvas

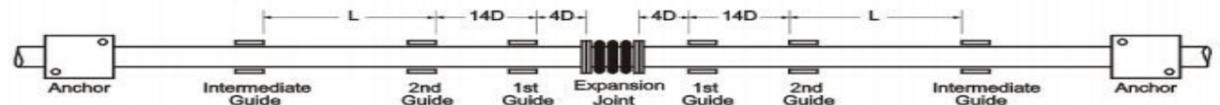
-This layer is pressure supporting canvas made of high-strength reinforcing nylon or polyester fabric.

Flanges

-Flanges are floating full faced, make an integral parts of the joint to insure a reliable seals. No gaskets needed.

Material Identification

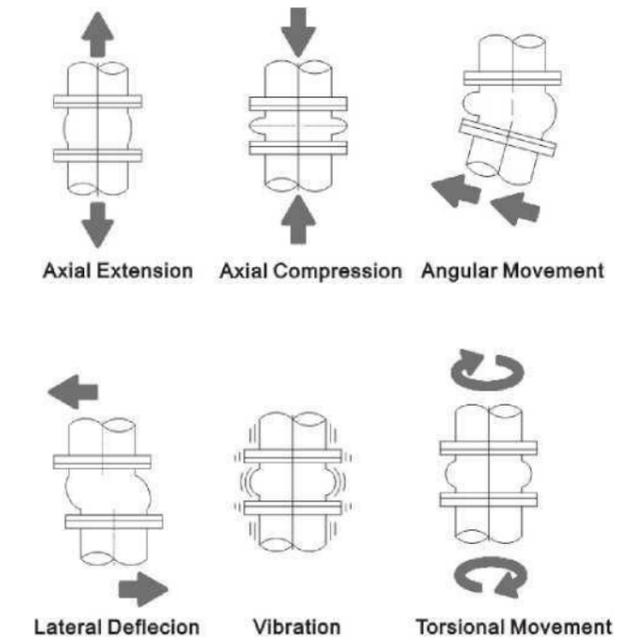
Tube and Cover	Temp. (Min/max°C)	Suitable Material	Non-Suitable Material
Ethylene Propylene (EPDM)	-10°C to +130°C	Outstanding ozone-and sunlight-resistance and suitable for most chemicals, alkaline waste-water, compressed air (oil free). Excellent electrical insulation.	Not suitable for oil, gasoline and greases.
Hypalon(CSM)	-25°C to +80°C	Outstanding ozone-and sunlight-resistance and suitable for most chemicals. Good oil- and gasoline-resistance.	Ketones, esters, certain chlorinated oxidizing acids, nitro and aromatic hydrocarbons.
Neoprene(CR)	-20°C to +70°C	Excellent weather-resistance. Good oil & gasoline-resistance.	Oxidizing acids, esters, ketones, aromatic nitro hydrocarbons.
Buna N(NBR)	-20°C to +80°C	Very good oil- and gasoline-resistance and suitable for gases, solvents and greases. Good abrasion-resistance.	Not suitable for steam and hot water.
Viton (FKM)	-10°C to +180°C	Suitable for chemicals, oil, gasoline and solvents. Not suitable for chlorines and ketones.	Ketones, esters and chlorine.
PTFE+EPDM	-20°C to +150°C	Outstanding resistance for all media, with the exception of alkali metals at melting point and amides formed from the reaction of a carboxylic acids	



Spherical Molded Design Series



Definition of Movement



Spherical Rubber Expansion Joint

-The spherical rubber expansion joint made from high tensile synthetic fabric, each layer is impregnated with a rubber or synthetic compound, with reinforcement metal ring on both grooved end. So it inherently stronger than the conventional hand-made series spool arch type. Internal pressure with a "sphere" is exerted in all directions, distributing forces evenly over a large area. Also the spherical design "Flowing arch" reduces turbulence and sediment buildup. So SF series expansion joint is the most economic choice when it comes to rubber expansion joints.

- Dimensions: DN25-DN2800
- Temperature range: From -50°C up to 180°C
- Pressure: PN10,PN16,PN25

Features & Advantages

- Precision Moulded Spherical Design.
 - Multiple Plies of Nylon or Polyester Cord Reinforcement.
 - Wide Variety of Tube & Cover Elastomers.
 - High Tensile Reinforced steel wire is Embedded in the
 - Grooved Rubber Ends to prevent pull out
 - No Gaskets required.
 - Accommodates pressure loads.
 - Neutralises axial, lateral, angular and torsional stresses.
 - Isolates sources of vibration.
 - Compensates for misalignment.
 - Prolongs life of motive equipment.
 - Absorbs pulsation of fluid, preventing water hammering, to some extent
- SF Rubber Expansion Joints are used in piping systems that transports fluids, slurries or gases under pressure, or under vacuum in a wide range of temperatures.

Applications

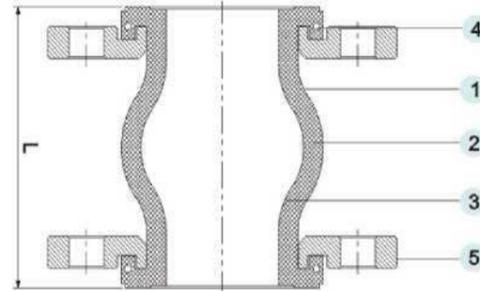
- Feed water and draining lines for water works, sewage, Sanitary piping systems etc.
- Piping systems for chilled or hot water in industrial plants.
- Pump lines and turbine lines used in power generating plantings, shipbuilding yards, industrial machinery and universal pump blowers, etc.
- Air conditioning, heating and ventilating systems in industrial buildings and vessels.
- Cooling systems for power generation
- Oil lines for industrial plants, phosphate plants etc.
- Central and ancillary power generating stations in industrial buildings, factories, ships..applications. -Food & Potable water applications.

Working Pressure Against Material Temperature(e.g.EPDM)

Temperature(°C)	80	90	100	110	120	130
Allowed Working Pressure(Bar)for PN10	10	8.9	7.9	6.8	5.8	4.7
Allowed Working Pressure(Bar) for PN16	16	14.1	12.3	10.4	8.6	6.7

Single Sphere Rubber Expansion Joint

Fig.P101



Burst Pressure

- 55Bar for Size DN25-DN300
- 40Bar for Size DN350

Features

- Allow for 4 way movements.
- Precision molded of synthetic rubber & nylon.
- Excellent ability to absorb vibration and sound.
- Perfect corrosion resistant.
- Using floating flange, easy to install.

Dimensions(mm/in)

Nominal Diameter mm	inch	Length (L)	Allowable Movement (mm)				Max. Pressure Bar	Vacuum mm Hg
			Axial Comp.	Axial Ext.	Lateral.	Angular.(°)		
25	1	95	6	8	8	15°	16	660
32	1 1/4	95	8	4	8	15°	16	660
40	1 1/2	95	8	4	8	15°	16	660
50	2	105	8	5	8	15°	16	660
65	2 1/2	115	12	6	10	15°	16	660
80	3	130	12	6	10	15°	16	660
100	4	135	18	10	12	15°	16	660
125	5	170	18	10	12	15°	16	660
150	6	180	18	10	12	15°	16	660
200	8	205	25	14	22	15°	16	660
250	10	240	25	14	22	15°	10	660
300	12	260	25	14	22	15°	10	660
350	14	265	25	16	22	15°	10	660
400	16	265	25	16	22	15°	7	660
450	18	265	25	16	22	15°	7	660
500	20	265	25	16	22	15°	7	660
600	24	265	25	16	22	15°	7	660
700	28	265	25	16	22	15°	7	660
800	32	265	25	16	22	12°	7	660
900	36	265	25	16	22	10°	7	660
1000	40	265	25	16	22	10°	7	660
1200	48	265	25	16	22	8°	7	660

.Available Flange Drilling: DIN PN10.PN16, others flange drilling as BS EN1092 PN10;PN16; AS21297able D,E;ANSI150,JIS10K also available on request. see page 16.

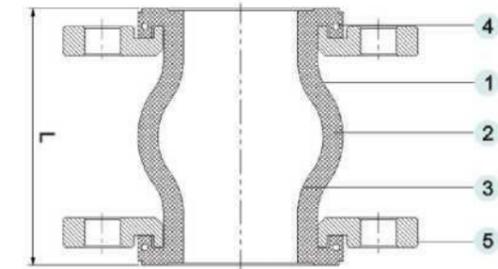
- Note:
- Movements shown in above tables are non-concurrent.
 - Control Rods must be installed when pressure exceeds the above rating pressure.
 - Temperature change affect joint movement and pressure, the pressure rating is reduced along with the temperature rising.
 - Pressures shows are recommended" operating" pressure, test pressure

- is 1.5 times "operating".
- Vacuum rating is based on neutral installed length, without external load. Products should not be installed in extension for vacuum applications. Flattening of the arch in extended mode will cause the arch to collapse.
- For higher vacuum than indicated in the sheet above, a vacuum spiral or ring must be used.

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Single Sphere Rubber Expansion Joint

Fig.P102



Burst Pressure

- 55Bar for Size DN25-DN300
- 40Bar for Size DN350

Features

- Allow for 4 way movements.
- Precision molded of synthetic rubber & nylon.
- Excellent ability to absorb vibration and sound.
- Perfect corrosion resistant.
- Using floating flange, easy to install.

Dimensions(mm/in)

Nominal Diameter mm	inch	Length (L)	Allowable Movement (mm)				Max. Pressure Bar	Vacuum mm Hg
			Axial Comp.	Axial Ext.	Lateral.	Angular.(°)		
25	1	150	1/2"	3/8"	1/2"	15°	16	660
32	1 1/4	150	1/2"	3/8"	1/2"	15°	16	660
40	1 1/2	150	1/2"	3/8"	1/2"	15°	16	660
50	2	150	1/2"	3/8"	1/2"	15°	16	660
65	2 1/2	150	1/2"	3/8"	1/2"	15°	16	660
80	3	150	1/2"	3/8"	1/2"	15°	16	660
100	4	150	5/8"	3/8"	1/2"	15°	16	660
125	5	150	5/8"	3/8"	1/2"	15°	16	660
150	6	150	5/8"	3/8"	1/2"	15°	16	660
200	8	150	5/8"	3/8"	1/2"	15°	16	660
250	10	200	3/4"	1/2"	3/4"	15°	10	660
300	12	200	3/4"	1/2"	3/4"	15°	10	660
350	14	200	3/4"	1/2"	3/4"	15°	10	660
400	16	200	3/4"	1/2"	3/4"	15°	7	660
450	18	200	3/4"	1/2"	3/4"	15°	7	660
500	20	200	3/4"	1/2"	3/4"	15°	7	660
600	24	200	3/4"	1/2"	3/4"	15°	7	660

*Available Flange Drilling: DIN PN10, PN16, others flange drilling as BS EN1092 PN10,PN16; AS21297Table D,E;ANSI150,JIS10K also available on request. see page 16.

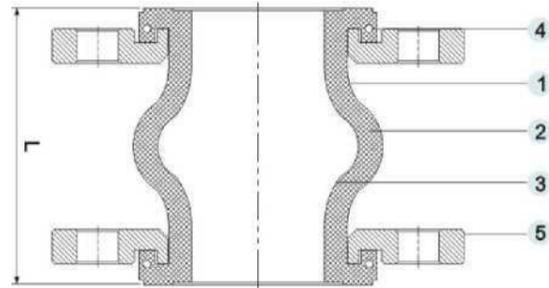
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 - Temperature change affect joint movement and pressure, the pressure rating is reduced along with the temperature rising.
 - Pressures shows are recommended" operating" pressure, test pressure

- is 1.5 times "operating".
- Vacuum rating is based on neutral installed length, without external load. Products should not be installed in extension for vacuum applications. Flattening of the arch in extended mode will cause the arch to collapse.
- For higher vacuum than indicated in the sheet above, a vacuum spiral or ring must be used.

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Single Sphere Rubber Expansion Joint

Fig.P103



■ Burst Pressure

-55Bar for Size DN25-DN300

■ Features

- Allow for 4 way movements.
- Precision molded of synthetic rubber & nylon.
- Excellent ability to absorb vibration and sound.
- Perfect corrosion resistant.
- Using floating flange, easy to install.

■ Dimensions(mm/in)

Nominal Diameter		Length (L)	Allowable Movement (mm)				Max. Pressure Bar	Vacuum mm Hg
mm	inch		Axial Comp.	Axial Ext.	Lateral.	Angular.(°)		
32	1 1/4	130	30	20	20	35°	16	660
40	1 1/2	130	30	20	20	35°	16	660
50	2	130	30	20	20	35°	16	660
65	2 1/2	130	30	20	20	30°	16	660
80	3	130	30	20	20	30°	16	660
100	4	130	30	20	20	25°	16	660
125	5	130	30	20	20	25°	16	660
150	6	130	30	20	20	15°	16	660
200	8	130	30	20	20	15°	16	660
250	10	130	30	20	20	10°	10	660
300	12	130	30	20	20	10°	10	660

*Available Flange Drilling: DIN PN10,PN16, others flange drilling as BS EN1092 PN10,PN16; AS2129Table D,E;ANSI150,JIS10K also available on request, see page 16.

Note:

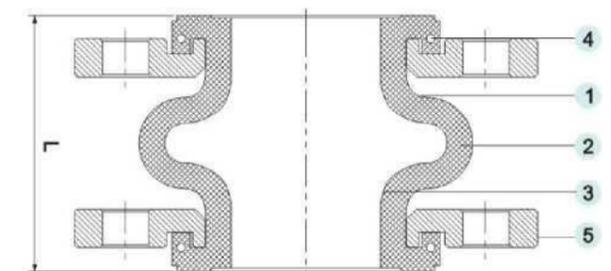
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- Control Rods must be installed when pressure exceeds the above rating pressure.
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- Pressures shows are recommended" operating" pressure, test pressure

- is 1.5 times "operating".
- Vacuum rating is based on neutral installed length, without external load. Products should not be installed in extension for vacuum applications. Flattening of the arch in extended mode will cause the arch to collapse.
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Single Sphere Rubber Expansion Joint

Fig.P104



■ Burst Pressure

-55Bar for Size DN32-DN150
-40Bar for Size DN200-DN300

■ Features

- Allow for 4 way movements.
- Precision molded of synthetic rubber & nylon.
- Excellent ability to absorb vibration and sound.
- Perfect corrosion resistant.
- Using floating flange, easy to install.

■ Dimensions(mm/in)

Nominal Diameter		Length (L)	Allowable Movement (mm)				Max. Pressure Bar	Vacuum mm Hg
mm	inch		Axial Comp.	Axial Ext.	Lateral.	Angular.(°)		
32	1 1/4	105	30	20	15	7.5°	16	660
40	1 1/2	105	30	20	15	7.5°	16	660
50	2	105	30	20	15	7.5°	16	660
65	2 1/2	105	30	20	15	7.5°	16	660
80	3	105	30	20	15	7.5°	16	660
100	4	105	30	20	15	7.5°	16	660
125	5	105	30	20	15	7.5°	16	660
150	6	105	30	20	15	7.5°	16	660
200	8	105	30	20	15	5°	16	660
250	10	105	30	20	15	5°	10	660
300	12	105	30	20	15	5°	10	660

*Available Flange Drilling: DIN PN 10,PN 16,others flange drilling as BS EN 1092 PN10,PN 16;AS2129Table D,E;ANSI150,JIS10K also available on request. see page 16.

Note:

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- Control Rods must be installed when pressure exceeds the above rating pressure.
- Temperature change affect joint movement and pressure, the pressure rating is reduced along with the temperature rising.
- Pressures shows are recommended" operating" pressure, test pressure

- is 1.5 times "operating".
- Vacuum rating is based on neutral installed length, without external load. Products Should not be installed in extension for vacuum applications. Flattening of the arch in extended mode will cause the arch to collapse.
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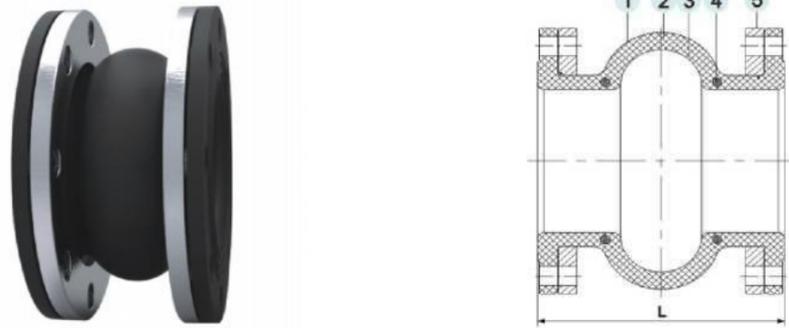
■ Material List

No.	Parts Name	Parts Material
1	Cover	EPDM
2	Reinforcing Fabric	Nylon
3	Tube	EPDM
4	Retain Ring	Steel
5	Flange	Carbon Steel

*Other rubber material such as Nitrile, Hypalon, CSM etc. also available on request.

Full Faced Spherical Rubber Expansion Joint

Fig.P300



■ Features

- Full Rubber Flange surfaces provides a fluid & gas tight seal to make unnecessary for gasket.
- Allow for 4 way movements.
- Precision molded of synthetic rubber & nylon.
- Excellent ability to absorb vibration and sound.
- Perfect corrosion resistant.

■ Material List

No.	Parts Name	Parts Material I
1	Cover	EPDM
2	Reinforcing Fabric	Nylon
3	Tube	EPDM
4	Retain Ring	Steel
5	Flange	Carbon Steel

*Other rubber material such as Nitrile, Hypalon, CSM etc. also available on request.

■ Dimensions(mm/in)

Nominal Diameter		Length (L)	Allowable Movement (mm)				Max. Pressure Bar
mm	inch		Axial Comp.	Axial Ext.	Lateral.	Angular.(°)	
700	28	260	16	25	22	15°	10
800	32	260	16	25	22	15°	10
900	36	260	16	25	22	15°	10
1000	40	260	16	25	22	15°	6
1200	48	260	16	25	22	15°	6
1400	56	350/400	20	28	26	15°	6
1500	60	350	20	28	26	15°	6
1600	64	350	20	28	26	15°	6
1800	72	400/450	20	28	26	15°	6
2000	80	450	20	28	26	15°	6
2200	88	400/500	25	35	30	10°	6
2400	96	400/360/500	25	35	30	10°	6
2600	104	500	25	35	30	10°	6
2800	112	580	25	35	30	10°	6

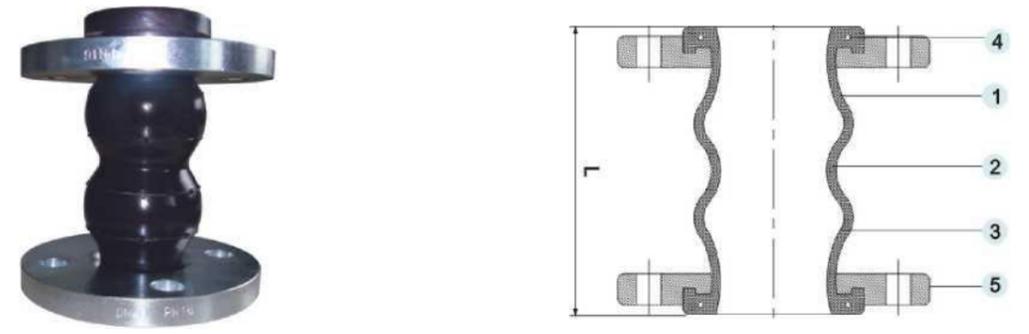
*Available Flange Drilling: DIN PN10.PN16, others flange drilling as BS EN1092 PN10,PN16; AS2129Table D,E;ANSI150;JIS10Kalso available on request, see page 16.

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 - Pressures shows are recommended "operating" pressure, test pressure is 1.5 times "operating".
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Twin Sphere Rubber Expansion Joint

Fig.P200



■ Burst Pressure

- 55Bar for Size DN40-DN200
- 24BarforSizeDN250-DN300

■ Features

- Double Sphere allows more compression, elongation and deflection.
- Small force required to cause movement
- Precision molded of synthetic rubber & nylon.
- Excellent ability to absorb vibration and sound.
- Perfect corrosion resistant.
- Using floating flange, easy to install.

■ Material List

No.	Parts Name	Parts Material
1	Cover	EPDM
2	Reinforcing Fabric	Nylon
3	Tube	EPDM
4	Retain Ring	Steel
5	Flange	Carbon Steel

*Other rubber material such as Nitrile,Hypalon.CSM etc. also available on request.

■ Dimensions(mm/in)

Nominal Diameter		Length(L)	Allowable Movement (mm)				Max. Pressure		Vacuum mm Hg
mm	inch		Axial Comp.	Axial Ext.	Lateral.	Angular.(°)	Bar		
40	1 1/2	175	50	25	40	40°	16	660	
50	2	175	50	25	40	40°	16	660	
65	2 1/2	175	50	25	40	40°	16	660	
80	3	175	50	25	40	40°	16	660	
100	4	225	55	30	40	35°	16	660	
125	5	225	55	30	40	35°	16	660	
150	6	225	55	30	40	35°	16	660	
200	8	325	65	30	35	30°	16	660	
250	10	325	65	30	35	30°	16	660	
300	12	325	65	30	35	30°	16	660	
350	14	350	40	30	30	20°	10	660	
400	16	350	40	30	30	20°	7	660	
450	18	350	40	30	30	20°	7	400	
500	20	350	40	30	30	20°	7	400	
600	24	350	40	30	30	20°	7	400	

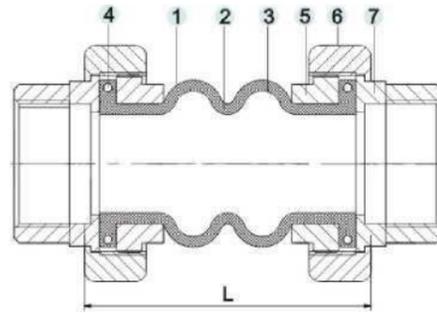
*Available Flange Drilling: DIN PN10.PN16, others flange drilling as BS EN1092 PN10,PN16; AS2129Table D,E;ANSI150;JIS10Kalso available on request, see page 16.

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Twin Sphere Union Rubber Expansion Joint

Fig.P500



■ Burst Pressure

-55Bar for Size DN25-DN80

■ Features

- Perfect absorption vibration.
- Effective for large eccentricity thermal and bending angle.
- Low-cost installation and operation.
- BSPP, BSPT and NPT threaded unions available.

■ Dimensions(mm/in)

Nominal Diameter		Length (L)	Allowable Movement (mm)				Max. Pressure	Vacuum
mm	inch		Axial Comp.	Axial Ext.	Lateral.	Angular(°)		
20	3/4	200	6	22	22	45°	16	660
25	1	200	6	22	22	45°	16	660
32	1 1/4	200	6	22	22	45°	16	660
40	1 1/2	200	6	22	22	45°	16	660
50	2	200	6	22	22	45°	16	660
65	2 1/2	240	6	22	24	45°	16	660
80	3	240	6	22	24	45°	16	660

*BSPP,BSPT and NPT threaded unions are all available on request.

Note:

- Movements shown in above tables are non-concurrent.
- Control Rods must be installed when pressure exceeds the above rating pressure.
- Temperature change affect joint movement and pressure, the pressure rating is reduced along with the temperature rising.
- Pressures shows are recommended " operating" pressure, test pressure

■ Material List

No.	Parts Name	Parts Material
1	Cover	EPDM
2	Reinforcing Fabric	Nylon
3	Tube	EPDM
4	Retain Ring	Steel
5	Union Flange	Steel
6	Union Nut	Carbon Steel
7	Union Screw	Carbon Steel

*Other rubber material such as Nitrile, Hypalon, CSM etc. also available on request.

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Single Arch Rubber Expansion Joint

Fig.P400

400 Single Arch Expansion Joint is moulded construction, the reinforcement consists of nylon tire cord, no metal rings are imbeded. The design of the single arch expansion joint allows to compensate of large movements due to its low inherent resistance. The joint can be furnished with filled or unfilled arch. Filled arch prevents material from obstruction the arch, however the allowable movement is reduced to 50% of the original specification.

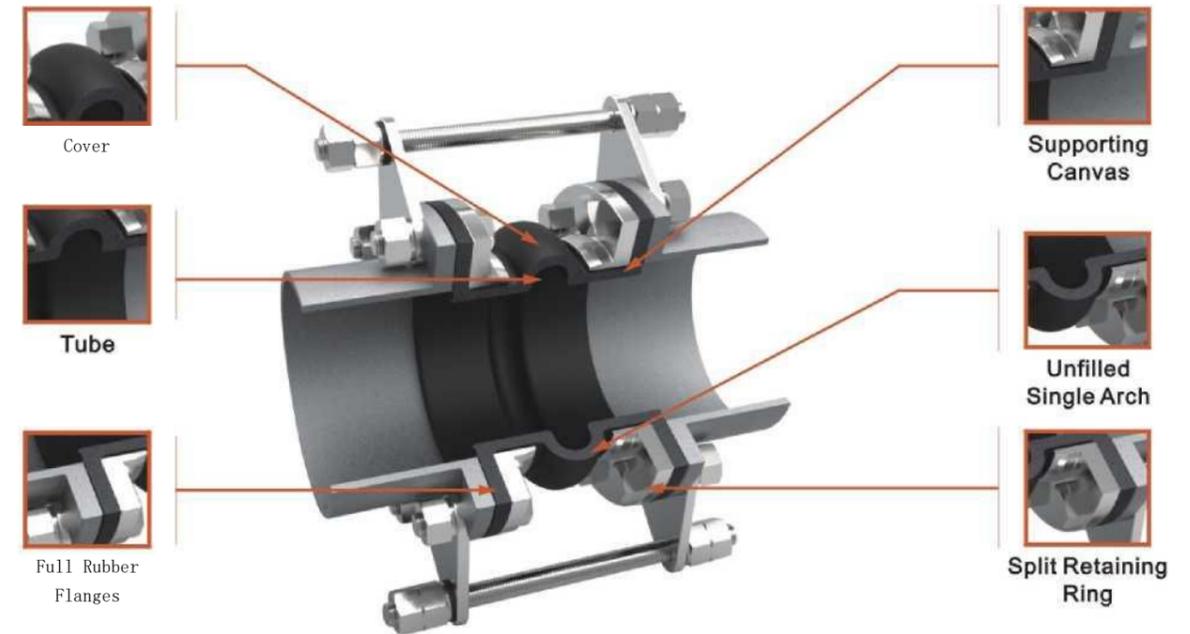
■ Bastic Constructure

■ Split Retaining Ring

The split retaining rings are provided with sleeves to support the cylindrical parts, the normal material of it is ductile iron.

■ Full Rubber Flanges

Full Rubber Flange surfaces provides a fluid & gas tight seal to make unnecessary for gasket, flanges drilling can be according to DIN, ANSI, BS, JIS etc..



■ Tube

-The inside rubber liner, it is a leak-proof lining extending flange to flange, made from synthetic or natural rubber for different applications.

■ Single Arch

-Both filled & unfilled arch are all available on request.

■ Cover

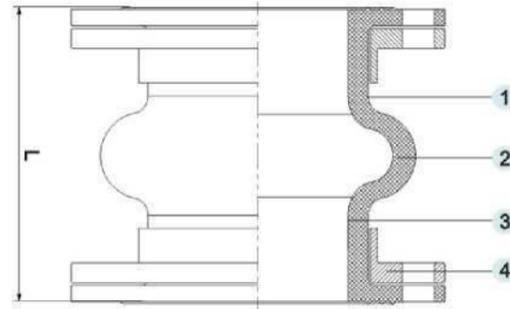
-The outside rubber liner, which has the similar characteristic like tube, made from synthetic or natural rubber for different applica-Tions.

■ Supporting Canvas

-This layer is pressure supporting canvas made of high-strength reinforcing nylon or polyester fabric.

Single Arch Rubber Expansion Joint

Fig.P400



■ Features & Benefits

- Working pressure ratings up to 150 psi.Temperature ratings to 250°F.
- Vacuum ratings to 15 in.Hg
- Allows for greater motion capabilities than general expansion joints.
- Excellent for absorbing thermal expansion, eliminating vibration & sound.
- Gaskets and packing not required.
- Absorbs water pulsation and protects against start-up surge force.

■ Material List

No.	Parts Name	Parts Material
1	Cover	EPDM
2	Reinforcing Fabric	Nylon
3	Tube	EPDM
4	Split Retaining Rings	Carbon Steel

*Other rubber material such as Nitrile,Hypalon,CSM etc. also available on request.

Dimensions(mm/in)

DN	Inch	mm	(in.)	(P.S.I.G)	(In.Hg)	F	Comp. (in.)	Ext. (in.)	Lateral (in.)	Angular (°)
DN50	2	150	6	150	15	250	1 3/4	3/4	3/4	35°
DN65	2 1/2	150	6	150	15	250	1 3/4	3/4	3/4	30°
DN80	3	150	6	150	15	250	1 3/4	3/4	3/4	30°
DN100	4	150	6	150	15	250	1 3/4	3/4	3/4	25°
DN125	5	150	6	150	15	250	1 3/4	3/4	3/4	25°
DN150	6	150	6	150	15	250	1 3/4	3/4	1	20°
DN200	8	150	6	150	15	250	1 3/4	3/4	1	20°
DN250	10	200	8	150	15	250	1 3/4	3/4	1	15°
DN300	12	200	8	150	15	250	1 3/4	3/4	1	15°
DN350	14	200	8	130	10	250	2	7/8	1 1/8	12°
DN400	16	200	8	110	10	250	2	7/8	1 1/8	12°
DN450	18	200	8	110	10	250	2	7/8	1 1/8	9°
DN500	20	200	8	110	10	250	2	7/8	1 1/8	9°
DN600	24	250	10	100	10	250	2 1/4	1	1 1/8	9°

*Available Flange Drilling : DIN PN10,PN16, others flange drilling as BS EN1092 PN10,PN16; AS2129Table D,E;ANSI150,JIS10Kalso available on request, see page 16.

Note:

- Movements shown in above tables are non-concurrent.
- Control Rods must be installed when pressure exceeds the above ratingpressure.
- Temperature change affect joint movement and pressure, the pressure rating is reduced along with the temperature rising.
- Pressures shows are recommended " operating" pressure, test pressure

- is 1.5 times "operating".
- Vacuum rating is based on neutral installed length, without external load. Products should not be installed in extension for vacuum applications. Flattening of the arch in extended mode will cause the arch to collapse.
- For higher vacuum than indicated in the sheet above, a vacuum spiral or ring must be used.

RTC product specification in this catalogue for reference only the product construction subject to RTC's design, RTC reserve the right to change the design, construction, specification without prior notice and without incurring any obligation. Any definite information kindly contact with RTC directly.

Physical and Chemical Properties of Elastomers

Dimensions(mm/in)

Elastomers	Neoprene	Nat.Rubber	Butyl	Nitrile	Hypalon	EPDM	Viton	Silicone
ANSI/ASTM D1418-77 Alkali,conc.	CR	IR	IIR	NBR	CSM	EPDM	FKM	SI
Animal & Veg.oil	4	X	5	5	4	5	6	5
Chemicals	3	3	6	3	6	6	6	5
Water	4	5	5	4	5	5	5	5
Oxygenated Hydro	1	4	4	0	1	6	0	2
Lacquers	0	0	3	2	0	3	1	0
Oil & Gasoline	4	0	0	5	4	0	6	X
Alkali Dilute	4	X	4	4	4	6	4	2
Acid,dilute	6	3	6	4	6	6	6	6
Acid,conc.	4	3	4	4	4	4	6	2
Aliphatic hydro	3	0	0	6	3	0	6	0
Aromatic hydro	2	0	0	4	2	0	5	0
Electr.insulation	3	5	5	1	3	6	3	6
Water absorption	4	5	5	4	4	6	5	6
Radiation	5	6	4	5	5	7	5	5
Swelling in oil	4	0	0	5	4	0	6	2
Rebound cold	4	6	0	4	2	9	2	6
Comp, set	2	4	3	5	2	4	6	3
Tensile strength	4	6	4	5	2	5	5	0
Dielectric str.	5	6	5	0	5	7	5	4
Abrasion	5	6	4	4	4	5	5	6
Impermeability	4	2	6	4	4	4	5	0
Dynamic	2	2	2	5	2	5	5	2
Rebound hot	5	6	5	4	4	6	4	0
Heat	4	2	5	4	4	6	7	7
Cold	4	5	4	3	4	5	2	6
Flame	4	0	0	0	4	0	6	2
Tear	4	5	4	3	3	4	2	2
Ozone	5	0	6	2	7	7	7	6
Weather	6	2	5	2	6	6	7	6
Sunlight	5	0	5	0	7	7	7	6
Oxidation	5	4	6	4	6	6	7	6

■ Remark

- 0 = Poor
- 1 = Poor to fair
- 2 = Fair
- 3 = Fair to good
- 4 = Good
- 5 = Very good
- 6 = Excellent
- 7 = Outstanding

Control Units

-A control unit assembly is a system of two or more control rods placed across an expansion joint from flange to flange to protect expansion joint for over-expansion and over-compression in pipeline. Such way supply an additional safety factor, minimizing possible failure of the expansion joint and possible damage to the equipment. Control Units must be used when non-anchor points in piping system. The following 3 control units configurations for you reference:

■ Fig.: 1

-The normal standard control unit is the limit rods to restrict the axial movement of expansion joint during normal operation. In the event of a main anchor failure, they are designed to prevent expansion joint over-extension while restraining the full pressure loading and dynamic forces generated by the anchor failure.



Fig. 1

■ Fig.: 2 & 3

-The Fig.2 (Control Rods) & 3 (Compression Sleeve) control unit should be used for specified pipe expansion(axial extension and compression of the expansion joint) in piping system,. Both the 2 & 3 control units will accomplish the same end result. The fig.2 utilizes inside nuts where the fig.3 utilizes a pipe sleeve cut to a predetermined length. We recommend the Fig.2 for connection.



Fig. 2



Fig.3

As an option spherical washers can be utilized on the control unit when significant lateral offsets are encountered.

■ Parts Name

1	2	3	4	5	6	7	8	9	10
Outside Nuts	Inside Nuts	Rubber Washer	Metal Washer	Control Rod	Triangular Plate	Compression Sleeve	Floating Flange	Mating Flange	Flange Bolt & Nut

*Special Washers for Optional.

■ Dimension of Triangle Plate

N.P.S		Qty.(set)	P.T.(mm)	P.H.D (mm)		
ND	Inch			DIN PN10	DIN PN16	ANSI150
40	1.5	2	10	18	18	18
50	2	2	10	18	18	18
65	2.5	2	10	18	18	18
80	3	2	10	18	18	18
100	4	2	10	18	18	18
125	5	2	10	18	18	18
150	6	2	12	18	18	18
200	8	2	12	23	23	23
250	10	3	18	23	23	23
300	12	3	18	23	23	23
350	14	4	20	23	23	23
400	16	4	20	23	23	23
450	18	4	20	23	23	23
500	20	4	20	23	23	23
600	24	4	22	27	27	27

Note

Qty.= Quantity of Control Rods

PT. =Triangle Plate Thickness.

P.H.D. = Plate Hole Diameters

■ Control Unit Installation

- Control units should be evenly distributed around the bolt circle of the expansion joint. The triangular plate of the control unit is bolted to the outside of the steel pipe flange by bolts.
- Insert control rods with washers through the top hole of the first triangular plate. Place compression sleeve (if required) over control rod. Insert control rod through second triangular plate. Then place washers and hex nuts on the end of control rod.
- The control rod settings is equal to the combined dimensions of the expansion joint face to face, two mating flange thickness, two triangular plates thickness, four washer thickness, plus maximum elongation of the expansion joint.
- After control units are fully assembled, the exposed threads at the end of the control unit rod should be staked to prevent any loosening of the setting.

Installation

RTCflow Rubber Expansion Joint

■ Check Service Conditions

-Make sure the permissible temperature,pressure,movements & rubber materials match the system requirements before installation.

■ Alignment

-Make sure the expansion joint is alignment with piping. Piping misalignment will reduce the rated movements and can induce severe stress of the material properties, so to reduce service life of the expansion joint

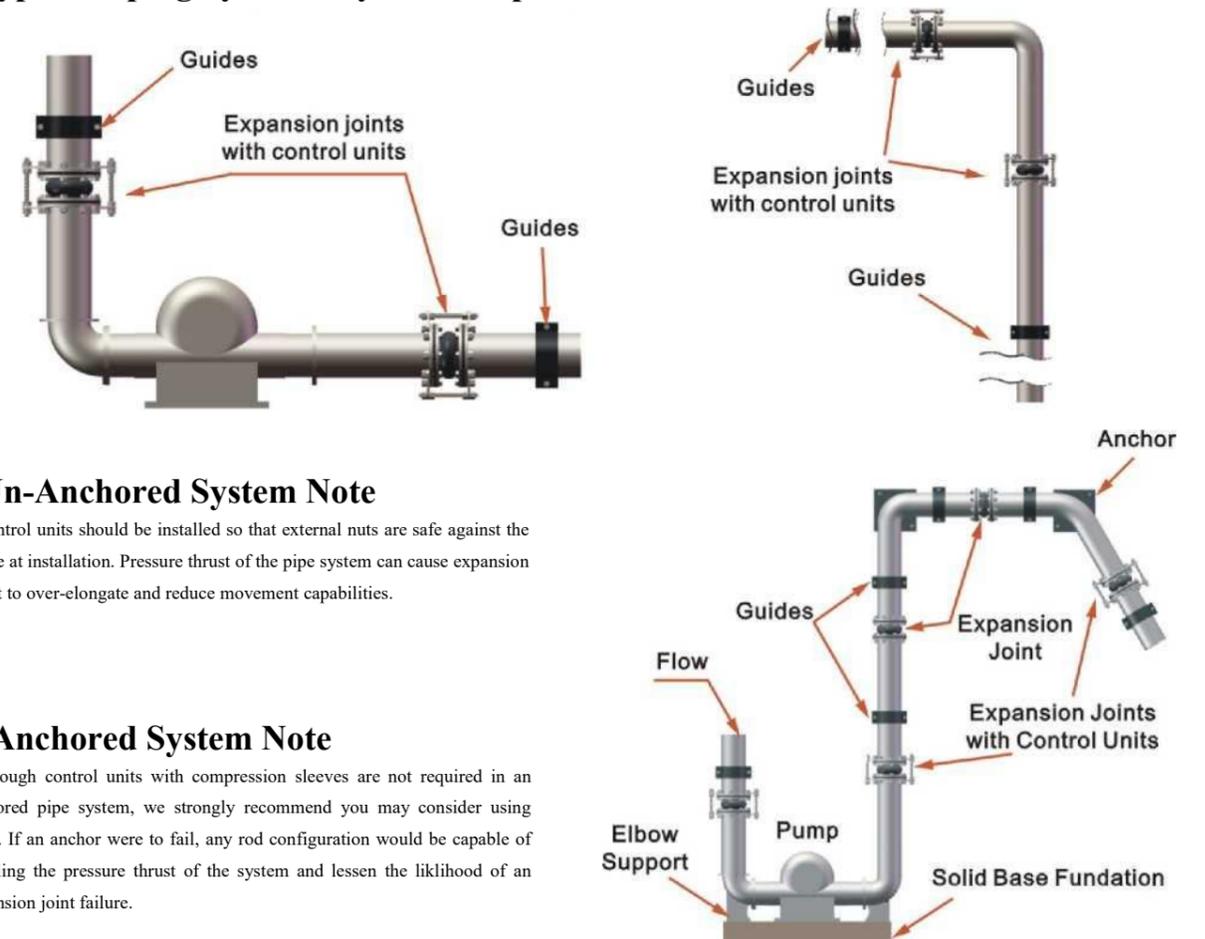
■ Anchor Points

-Elastomeric expansion joints normally need to installed between two fixed anchor points in a piping system. An expansion joint acts as a piston By the forces arising from the internal pressure.To prevent the pipes from damage they are to be properly anchored in order to take care of these reaction forces. For un-Anchor Point installation system, control units must be taken into consideration for safety.

■ Installed Pipe Support

-Piping must be supported so expansion joints do not carry any pipe weight

■ Typical Piping System Layout examples



■ Un-Anchored System Note

-Control units should be installed so that external nuts are safe against the plate at installation. Pressure thrust of the pipe system can cause expansion joint to over-elongate and reduce movement capabilities.

■ Anchored System Note

-Although control units with compression sleeves are not required in an anchored pipe system, we strongly recommend you may consider using them. If an anchor were to fail, any rod configuration would be capable of handling the pressure thrust of the system and lessen the likelihood of an expansion joint failure.

■ Bolts Installation

-Tighten bolts in stages by altering around the flange. Use the recommended torque values as the following to achieve a good seal. Never tighten an expansion joint to the point that there is metal to metal contact between the expansion joints flanges and the mating flanges. Strongly tightened might cause crushing sealing surface to cause improper function.

-For expansion joints up to DN80,the maximum torque is 60 N.M.

-For expansion joints above DN80,the maximum torque is 80 N.M.

■ Mating flange selection

-Using floating flanges make installation easier and eliminate twist. For a proper, durable and safe connection the inner diameter of the mating flange should not be large than the inner diameter of the rubber joint and should be flat to ensure maximum sealing.

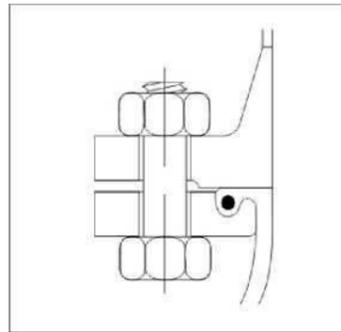


Fig.2 Flange provide with smooth sealing

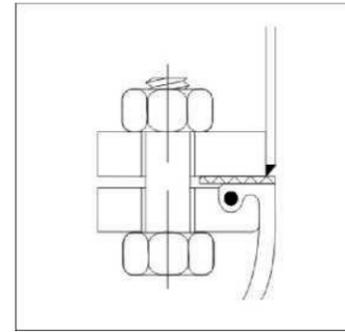


Fig.4 Flange provided with flat sealing gasket to protect the rubber surface.

Right

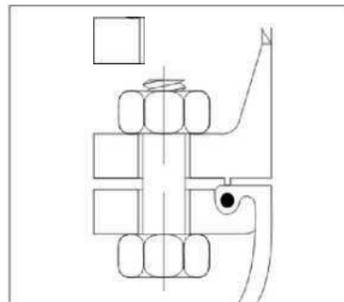


Fig.3 Do not use flange with tongue or groove which will damage the rubber.

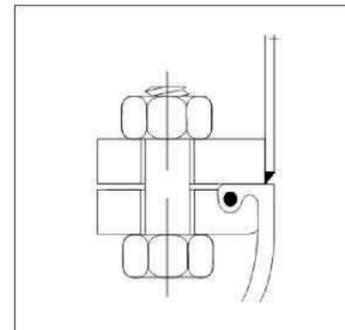


Fig.5 Sharp edge pipe ends will damage the rubber face.

Wrong

Note: _____

■ Mating Flanges Precaution

-It is very important for the safe operating and life expectancy of the expansion joint to make a proper installation of the mating flanges (Fig. 2 to 5).

-The sealing face of the mating flange must be machined smooth and cover most of the rubber sealing face (or at least 60%) to ensure a good sealing.(Fig.2)

■ Precaution

-Do not paint or lubricate rubber parts of expansion joints!

-When welding work is to take place the bellow has to be protected from welding heat and sparks!

Note:

A large grid area for taking notes, divided into two columns by a vertical line. The grid consists of small squares, typical of graph paper. The left column is approximately 48 columns wide, and the right column is approximately 48 columns wide. The grid covers most of the page area below the header and above the footer.