POFCO

RUBBER FLEXIBLE JOINT

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POFCO Rubber flexible joint are designed for tough demanding industrial application, as found in : Air conditioning-heating and ventilating systems, chemical-petrochemical and industrial process piping systems, power generating systems, marine service, pulp & paper systems, water-wastewater sewage and pollution control systems. Installed next to mechanical equipment or between the anchor point of piping system, specify the POFCO Rubber flexible joint to :

1. Absorb pipe / movement / stress
2. Decrease systems noise
3. Isolate vibration
4. Compensate alignment / offset
5. Eliminate electrolysis
6. Protect against start up / Surge forces

FEATURES

VIBRATION, SOUND AND SHOCK ABSORPTION

Noises, vibration of motor and compressor, water hammer,pumping impulses and water born noises can be absorbed. Also withstands surge pressures without shattering owing to their tensile strength.

HIGHER BURST STRENGTH

Spherical shape is stronger than cylindrical shape or other configuration. Under pressure, POFCO joint is 4 times as strong as a cylindrical joint. Also our products are made of the most suitable materials resulting in burst pressures much higher than those of other makes.

GREATER RECOVERY FROM MOVEMENT

They will neither crack nor fracture under repeated flexing. They have a remarkable long life expectancy even under adverse conditions due to the finest grades of rubber and other materials used in their manufacture.

FREE FROM CORROSION

They are made to withstand corrosive chemicals and can be supplied to resist acid fumes and ozone attack.

SECURITY ASSURED IN USAGE

Special spherical design prevents the body of the coupling coming into contact with the bolt heads when subjected to high pressure and expansion. The robust coupling provide a sense of security as a result of the damage proof design.

LOW DEFORMATION UNDER PRESSURE

Internal pressure is exerted in all directions distributing forces evenly over a large area. This results in very low deformation of the joints.

SUITABLE FOR SUCTION AND DELIVERY

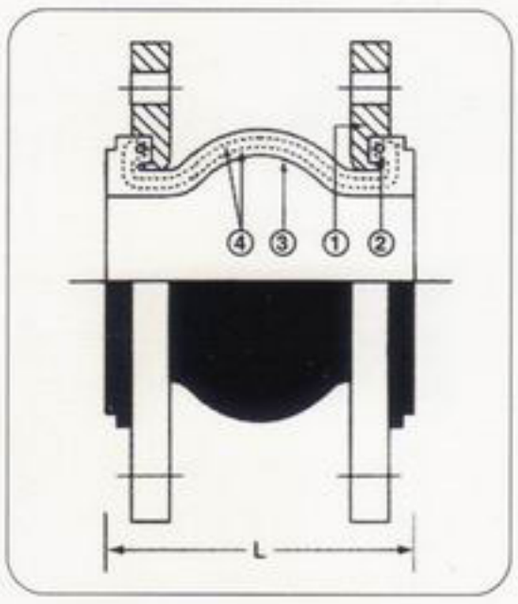
Because of the excellent moulding technique with its tough chemical fibre, the joints can satisfactorily withstand the suction and discharge. Vacuum rating can stand up to 650 mm/Hg

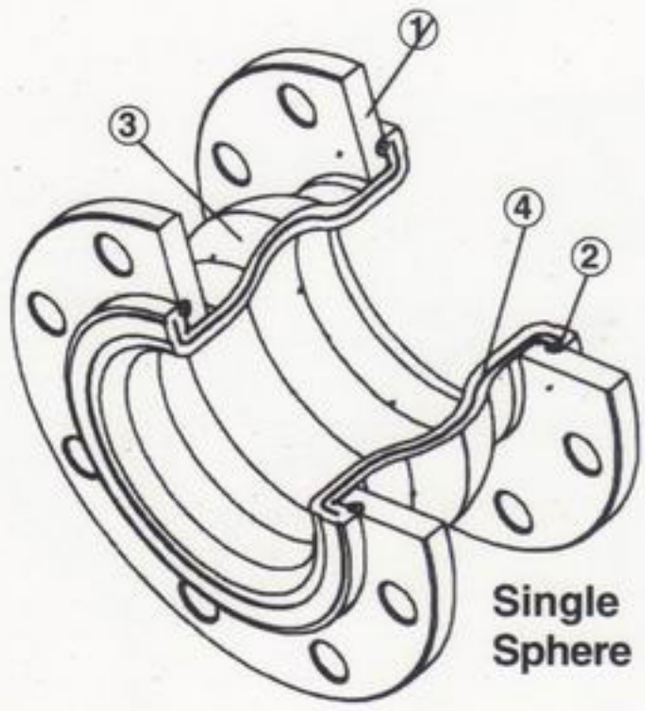
GREATER MOVEMENTS ARE AVAILABLE

Four-way movements-axial compression and extension, Lateral movement and angular deflections provide a high level of installation flexibility.

POFCO Series S

SINGLE SPHERE RUBBER FLEXIBLE JOINT C/W FLANGES



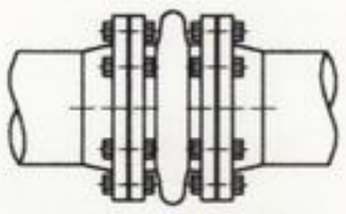


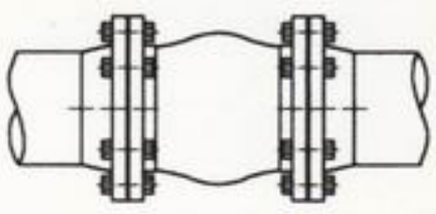
Elastomer : EPDM, NEOPRENE, NITRILE , ETC.

Item	Part Name	Material
1	Flange	Carbon steel
2	Wire	Carbon steel wires strand
3	Elastomer	Synthetic rubber
4	Reinforcing fabric	Synthetic Fiber

- Flange drilling : ANSI, JIS, DIN, ETC.
- Applicable fluids : Water, Warm water , Seawater , Weak acids , Alkalis, ETC.

ALLOWABLE MOVEMENTS


Axial Compression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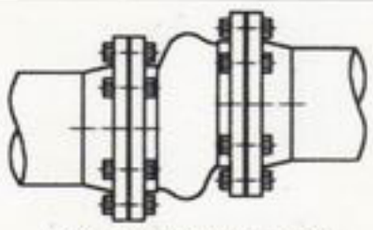
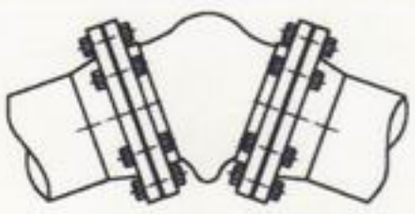
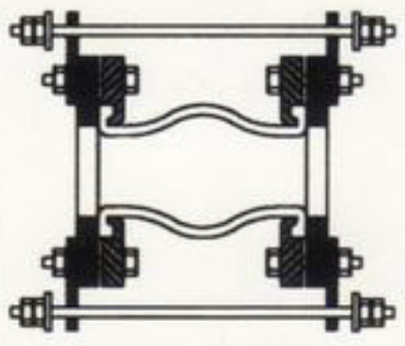
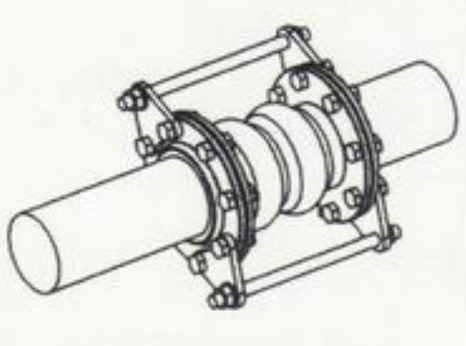

Lateral Movement


Angular Deflection

OPERATING CONDITIONS

Size	1"-12"	14"-24"
Working pressure	250 PSI	150 PSI
Test Pressure	380 PSI	230 PSI
Burst pressure	870 PSI	680 PSI
Vacuum rating	650 mm / Hg	
Temperature range	-20 °C to +120 °C	


With Control RODS


With Control RODS

Note : Working pressure 300 PSI (Test pressure 450 PSI) can be produced on request

CONTROL RODS RECOMMENDATION

In case of either or both side (s) of the rubber expansion joint has no firm anchor , control rods must be installed when pressure (Test surge, operating, starting a pump , etc) exceed the rating below.

Size	1" - 4"	5" - 10"	12" - 14"	16"-24"
Pressure (PSI)	150	135	90	45

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POFCO FIG. J

Size		L	Compression	Extension	Lateral	Angular
inch	mm	mm	mm	mm	mm	
1	25	95	8	4	8	15 °
1.1/4"	32	95	8	4	8	15 °
1.1/2"	40	95	8	4	8	15 °
2"	50	105	8	5	8	15 °
2.1/2"	65	115	12	6	10	15 °
3"	80	130	12	6	10	15 °
4"	100	135	18	10	12	15 °
5"	125	170	18	10	12	15 °
6"	150	180	18	10	12	15 °
8"	200	205	25	14	22	15 °
10"	250	240	25	14	22	15 °
12"	300	260	25	14	22	15 °
14"	350	265	25	16	22	15 °
16"	400	265	25	16	22	15 °
18"	450	265	25	16	22	15 °
20"	500	265	25	16	22	15 °
24"	600	254	19	13	19	15 °

POFCO FIG. A

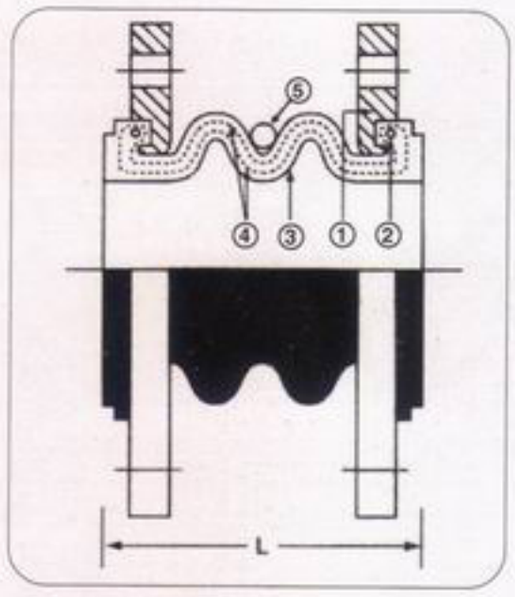
Size		L	Compression	Extension	Lateral	Angular
inch	mm	inch	inch	inch	inch	
1	25	6"	1/2"	3/8"	1/2"	15 °
1.1/4"	32	6"	1/2"	3/8"	1/2"	15 °
1.1/2"	40	6"	1/2"	3/8"	1/2"	15 °
2"	50	6"	1/2"	3/8"	1/2"	15 °
2.1/2"	65	6"	1/2"	3/8"	1/2"	15 °
3"	80	6"	1/2"	3/8"	1/2"	15 °
4"	100	6"	5/8"	3/8"	1/2"	15 °
5"	125	6"	5/8"	3/8"	1/2"	15 °
6"	150	6"	5/8"	3/8"	1/2"	15 °
8"	200	6"	5/8"	3/8"	1/2"	15 °
10"	250	8"	5/8"	1/2"	3/4"	15 °
12"	300	8"	3/4"	1/2"	3/4"	15 °
14"	350	8"	3/4"	1/2"	3/4"	15 °
16"	400	8"	3/4"	1/2"	3/4"	15 °
18"	450	8"	3/4"	1/2"	3/4"	15 °
20"	500	8"	3/4"	1/2"	3/4"	15 °
24"	600	10"	3/4"	1/2"	3/4"	15 °

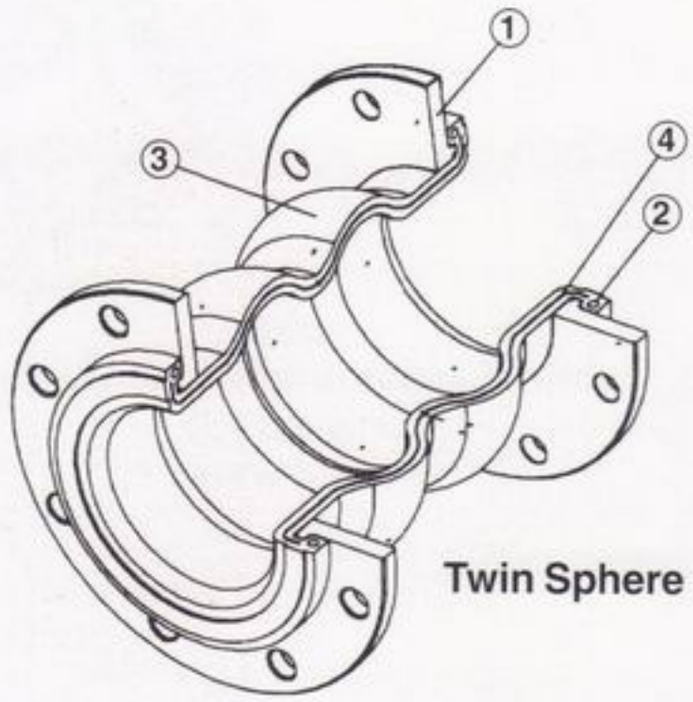
POFCO FIG. G

Size		L	Compression	Extension	Lateral	Angular
inch	mm	mm	mm	mm	mm	
1"	25	130	12	9	12	15 °
1.1/4"	32	130	12	9	12	15 °
1.1/2"	40	130	12	9	12	15 °
2"	50	130	12	9	12	15 °
2.1/2"	65	130	12	9	12	15 °
3"	80	130	12	9	12	15 °
4"	100	130	14	9	14	15 °
5"	125	130	14	9	14	15 °
6"	150	130	14	9	14	15 °
8"	200	130	14	9	14	15 °
10"	250	130	14	9	14	15 °
12"	300	130	16	9	16	15 °

POFCO Series T

TWIN SPHERE RUBBER FLEXIBLE JOINT C/W FLANGES



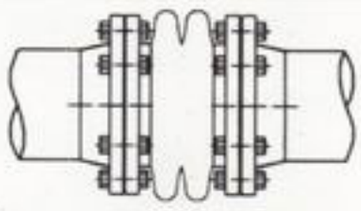


Twin Sphere

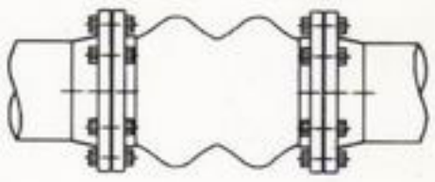
Item	Part Name	Material
1	Flange	Carbon steel
2	Wire	Carbon steel wires strand
3	Elastomer	Synthetic rubber
4	Reinforcing fabric	Synthetic fiber
5	Ring	Carbon steel

- Elastomer : EPDM , NEOPRENE, NITRILE, ETC
- Flange drilling : ANSI , JIS, DIN , ETC
- Applicable fluids : Water , Warm water , Seawater, Weak acids , Alkalis, Etc.

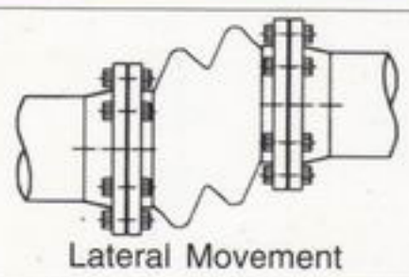
ALLOWABLE MOVEMENTS



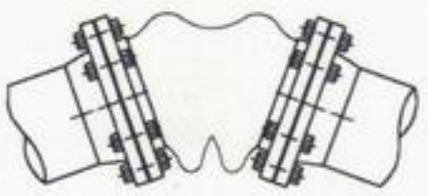
Axial Compression



Axial Extension



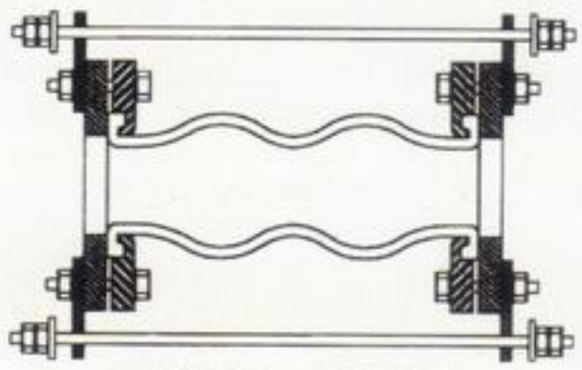
Lateral Movement



Angular Deflection

OPERATING CONDITIONS

Size	1.1/2"-12"	14"-20"
Working pressure	250 PSI	150 PSI
Test Pressure	380 PSI	230 PSI
Burst pressure	725 PSI	600 PSI
Vacuum rating	650 mm / Hg	
Temperature range	-20 °C to +120 °C	



With Control RODS

Note : Working pressure 300 PSI (Test pressure 450 PSI) can be produced on request

CONTROL RODS RECOMMENDATION

Installed with control rods to prevent internal pressue and motion by over limit usage and vacuum for dropping. Control rods and reinforcing ring unit must be installed when pressure (test surge, operating, starting a pump , etc) exceeds the rating below:

Size	1.1/2" - 4"	5" - 10"	12" - 14"	16"-20"
Pressure (PSI)	150	135	90	45

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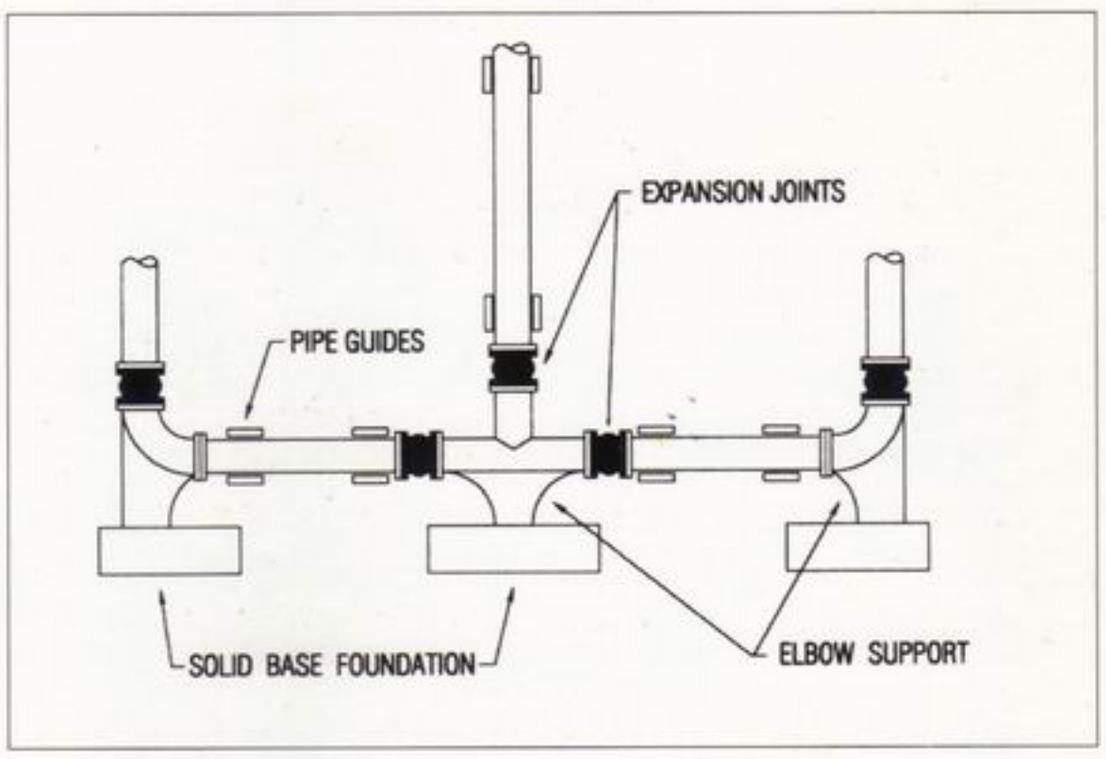
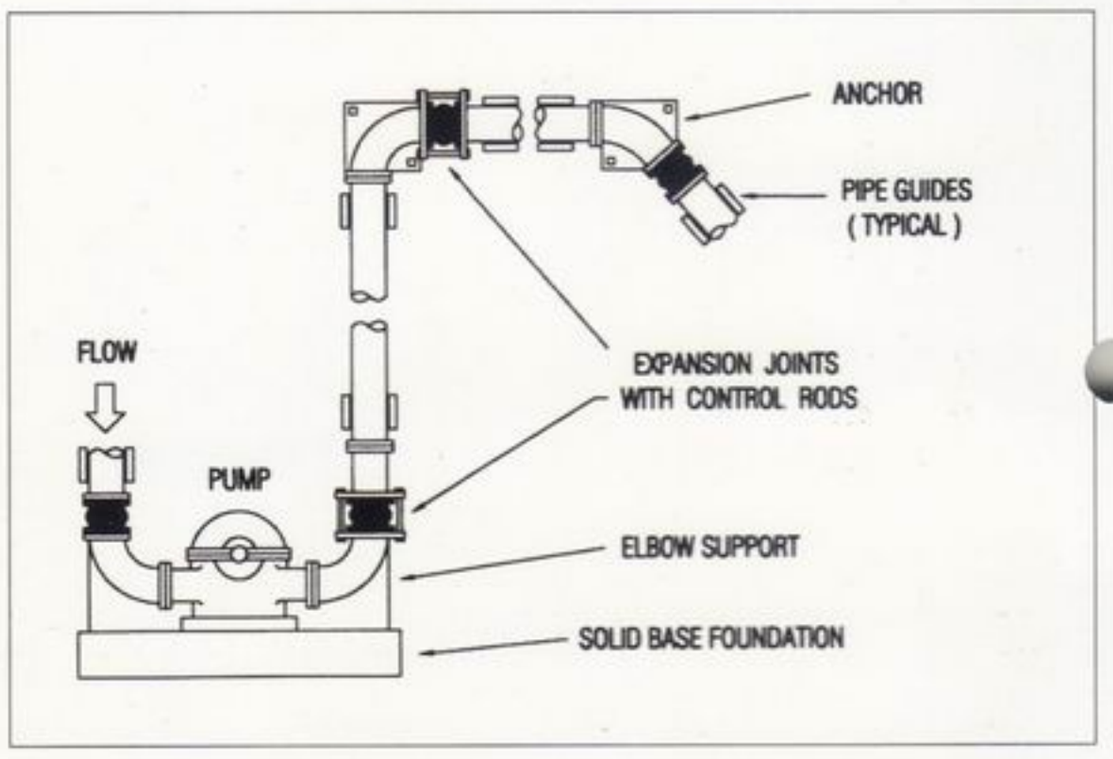
POFCO SERIES T

Size		L	Compression	Extension	Lateral	Angular
inch	mm	mm	mm	mm	mm	
1.1/2"	40	175	50	30	45	35 °
2"	50	175	50	30	45	35 °
2.1/2"	65	175	50	30	45	35 °
3"	80	175	50	30	45	35 °
4"	100	225	50	35	40	35 °
5"	125	225	50	35	40	35 °
6"	150	225	50	35	40	35 °
8"	200	325	60	35	35	30 °
10"	250	325	60	35	35	30 °
12"	300	325	60	35	35	30 °
14"	350	350	40	30	30	20 °
16"	400	350	40	30	30	20 °
18"	450	350	40	30	30	20 °
20"	500	350	40	30	30	20 °

PIPING APPLICATION





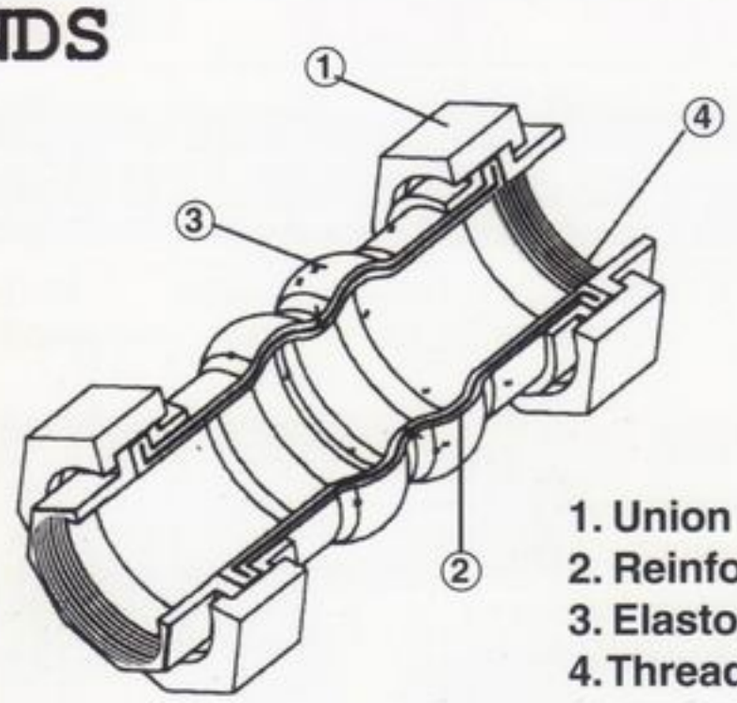
MOUNTING INSTRUCTIONS

- The pipes guides must be installed on pipe at a distance less than 3 times of the pipes nominal diameter from joint to support and guide the pipe.
- Because of the weight of upstream or downstream pipe, the joint do not support compression or extension when installing. Mounting order : (a) upstream pipe - anchor (b) downstream pipe-anchor (c) expansion joint.
- Verify that the upstream and downstream pipe alignment does not deviate more than 1/8 inches (3 mm) and the joint does not support heavy weight.
- The joint must not be twisted in any case (especially for type TU) . The precompression should not exceed 5 mm.
- Insert the bolts on the arch side of the joint to avoid contacting with the rubber directly. Check the bolt tightness daily within the first month (at least one week) after services and check periodically thereafter . Also verify that the surfaces coming on contact with the joint are perfectly clean and without cutting edges(pipe) for avoiding damage to the joint.
- Cover or dismount the joint if welding is nearby it. Also do not paint or coat the joint with insulation (material)
- Store the joints in flat position to avoid humidity and extreme temperature.

POFCO Series TU

TWIN SPHERE RUBBER FLEXIBLE JOINT

C/W UNION-THREADED ENDS



1. Union
2. Reinforcing Fabric
3. Elastomer
4. Thread

Item	Part Name	Material
1	UNION	FCD 40
2	Reinforcing fabric	Synthetic Fiber
3	Elastomer	Synthetic Rubber
4	Thread	FCD 40

POFCO Series TU is designed for supply/distribution pipeline service or to connect piping to specific equipment application such as : Pumps, Chillers, Cooling Towers, Compressors, Blowers, Fans , Absorption Machines, Etc. Installed next to mechanical equipment or between the anchor points of piping System, specify the POFCO Series TU to:

(1) Absorb Pipe / Movement / Stress.
(2) Decrease System Noise
(3) Isolate Vibration.
(4) Compensate alignment / offset.
(5) Eliminate Electrolysis
(6) Protect Against Start up / Surge Forces.

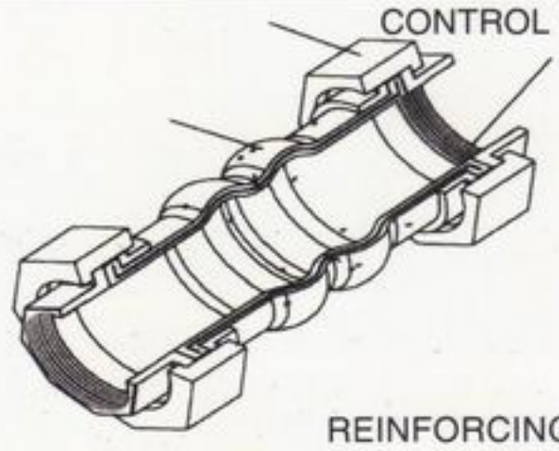
Size		L	Compression	Extension	Lateral	Angular
inch	mm	mm	mm	mm	mm	mm
1/2	15	203	22	6	22	30°
3/4	20	203	22	6	22	30°
1	25	203	22	6	22	25°
1.1/4	32	203	22	6	22	25°
1.1/2	40	203	22	6	22	20°
2	50	203	22	6	22	15°
2.1/2	65	225	22	6	22	12°
3	80	225	22	6	22	10°

Note : Working pressure 200 PSI (Test pressure 300 PSI) can be produced on request.

The POFCO SERIES TU is engineered for tough, demanding industrial and commercial application, as found in : Air Conditioning Heating and Ventilating Systems, Chemical-Petrochemical and Industrial Process Piping Systems, Power Generating Plants, Steel Mills, Marine Service, Pulp & Paper Systems, Water-Wastewater Sewage and Pollution Control Systems.

OPERATING CONDITIONS

Size	1/2" - 3"
Working pressure	200 PSI
Test Pressure	300 PSI
Burst pressure	1030 PSI
Vacuum rating	400 mm / Hg
Temperature range	-20 °C to +120 °C



Note : Working pressure more than 200 PSI can be produced on request.

- Control Unit cable and Reinforcing ring must be installed when pressure (test surge, operating, Starting a pump, etc) exceeds the rating.
- Elastomer : EPDM , NEOPRENE, NITRILE , ETC.
- Union-Standard item employs BS UNION
- Applicable fluids-water, warm water, seawater, weak acids, alkalis, etc.

Table 1 : This list of elastomers is used in POFCO RUBBER FLEXIBLE JOINTS , is only a general guide. Special elastomer compounds producted by member manufacturers may have different properties.

Rating scale code : 7-Outstanding 6-Excellent 5-Very Good 4-Good 3-Fair to good 2-Fair 1-Poor to Fair 0-Poor X-Not Suitable

MATERIAL DESIGNATION	ANSI/ASTM D1418-77	CR	IR	IIR	NBR	CSM	EPDM
	ASTM D-2000 SAE J-200	BC,BE	AA	AA	BF,BK,CH	CE	BA,CA,DA
COMMON NAME Chemical Group Name		NEOPRENE Chloroprene	NATURAL RUBBER Polyisoprene, Synthetic	BUTYL Isobutene-Isoprene	BUNA-N/NITRILE Nitrile-Butadiene	HYPALON Chloro-Sulfonyl-polyethylene	EPDM Ethylene-Propylene Diene-Terpolymer
ELASTOMER PHYSICAL AND CHEMICAL PROPERTIES COMPARISION							
OZONE		5	0	6	2	7	7
WEATHER		6	2	5	2	6	6
SUNLIGHT		5	0	5	0	7	7
OXIDATION		5	4	6	4	6	6
HEAT		4	2	5	4	4	6
COLD		4	5	4	3	4	5
FLAME		4	0	0	0	4	0
TEAR		4	5	4	3	3	4
ABRASION		5	6	4	4	4	5
IMPERMEABILITY		4	4	2	6	4	4
DYNAMIC		2	2	2	5	2	5
REBOUND-HOT		5	6	5	4	4	6
REBOUND-COLD		4	6	0	4	2	6
COMP.SET		2	4	3	5	2	4
TENSILE STRENGTH		4	6	4	5	2	5
DIELECTRIC STR.		5	6	5	0	5	7
ELE.INSULATION		3	5	5	1	3	6
WATER ABSORP		4	5	5	4	4	6
RADIATION		5	6	4	5	5	7
SWELLING IN OIL		4	0	0	5	4	0
ACID, DILUTE		6	3	6	4	6	6
ACID,CONC.		4	3	4	4	4	4
ALIPHATIC HYDRO.		3	0	0	6	3	0
AROMATIC HYDRO.		2	0	0	4	2	0
OXYGENATED HYDRO.		1	4	4	0	1	6
LACQUERS		0	0	3	2	0	3
OIL&GASOLINE		4	0	0	5	4	0
ALKALI,DILUTE		4	X	4	4	0	6
ALKALI,CONC		0	X	4	0	4	6
ANIMAL &VEG.OIL		4	X	5	5	4	5
CHEMICAL		3	3	6	3	6	6
WATER		4	5	5	4	5	5

Table 2 : Guide of Manufacturing Material and Applications.

Material	Max.Temp.	Application
NEOPRENE (CR)	80 °C / 176 °F	Offering similar qualities to natural rubber with increased ozone resistance.
EPDM	120 °C / 248 °F	Specially for : Higher temperature and ozone resistance, Hot water, Vapour, Alkalis, Esters, Ketones, Weak Acids (except Nitric Acid),not suitable with oil based corrosion protection agents or other oil products.
NITRILE (NBR)	90 °C /194 °F	Resistant to many hydrocarbons,alkalis,salt solutions,butane,propane and acetylene gas, fats,oils and hydraulic fluid,weak acids (except Nitric Acid).
HYPALON (CSM)	80 °C /176 °F	Strong or concentrated acids (except Nitric Acid) and alkalis.
BUTYL(IIR)	130 °C /266 °F	Offers weather,ozone , impermeability resistance.Also offers excellent dissolvent resistance.
NBR/NR	70 °C /158 °F	Offers high abrasion and moderate chemical resistance. Such as Drinking-water or Food