

PROCO™

SERIES

240/242

molded expansion joints



PROCO™ Series 240 and Series 242 Non-Metallic Expansion Joints are designed for tough demanding industrial applications, as found in: Air Conditioning-Heating and Ventilating Systems, Chemical-Petrochemical and Industrial Process Piping Systems, Power Generating Systems, Marine Services, Pulp & Paper Systems, Water-Wastewater-Sewage and Pollution Control Systems. Installed next to mechanical equipment or between the anchor points of a piping system, specify the PROCO™ 240 or 242 to: (1) Absorb Pipe/Movement/Stress, (2) Reduce System Noise, (3) Isolate Vibration, (4) Compensate Alignment/Offset, (5) Eliminate Electrolysis, (6) Protect Against Start-UP/Surge Forces. Our history in the manufacture of expansion joint products dates back to 1930. When you need an engineered rubber solution to a piping system problem, call PROCO.

Spherical Shapes-Stronger-More Efficient. Featuring an engineered molded style single or twin sphere designed bellows, the PROCO™ Series 240 and Series 242 are inherently stronger than the conventional hand-built "spool Arch" types. Internal pressure within a sphere is exerted in all directions, distributing forces evenly over a larger area. The spherical design "flowing-arch" reduces turbulence, sediment build-up, thrust area and the effects of thrust on the piping system equipment when compared to the "high-arch" design of Hand Fabricated-Old Standard products.

Greater Movements Are Available with the PROCO™ Series 240 and Series 242 when compared to the movements of conventional hand-built products. Axial compression, elongation, deflection and angular movements in the system are more readily absorbed by spherical types. These products are more forgiving and thus easier to install in non-standard openings, caused by equipment shifting or settling. By precompressing or pre-extending the bellows to the required length, there will still be enough movement capabilities for operation. (See Tables 2 and 6.)

Easy Installation With Alignable Metallic Flanges. The floating metallic flanges freely rotate on the bellows, compensating for mating flange misalignment, thus speeding up installation time (see figures 1, 2, 3 & 4). Gaskets are also not required with the Series 240 or Series 242. Tapped Holes on flanges are standard for the series 240 and Series 242 designs (up to 12" I.D.) which eliminate the added cost of nuts for bolting requirements.

Less System Strain With Thin Wall Design. Manufactured by high pressure molding of elastomer and high-tensile fabric reinforcement, the Series 240 and Series 242 have a thinner wall section and lighter weight when compared to conventional hand-built products. Lower spring forces are therefore required, reducing piping/flange/equipment stress-strain-damage. PROCO™ Styles 240 A and C or Styles 242 A and C are acceptable for use with plastic piping systems where even lower deflection forces are required.

Specifications Met. The PROCO™ Series 240 and Series 242 are designed to meet or exceed the pressure, movement and dimensional rating of the "Spool" Arch Types as shown in the Rubber Expansion Joint Division, Fluid Sealing Association "Technical Handbook - Sixth Edition" Table V.

Absorbs Vibration-Noise-Shock. The PROCO™ quiet operating Series 240 and Series 242 are a replacement for "sound transmitting" metallic expansion joints. Sound loses energy traveling axially through the elastomer bellows. Water hammer pumping impulses and water-born noises are cushioned and absorbed by the molded lightweight thin-wall structure. Install the Series 240 or Series 242 in a system to enable isolated equipment to move freely on its vibration mountings; or to reduce vibration transmission when the piping section beyond the expansion joint is anchored or sufficiently rigid.

Flange Materials/Drilling. All PROCO™ Spherical 240 and 242 connectors are furnished complete with plated carbon steel flanges for corrosion protection and are tapped (up to 12" I.D.) to ANSI 150# standards (see Table 7 and Figures 3 & 4). Stainless steel flanges are also available on special order. Other drilling standards such as: ANSI 250/300#, British Standard 10, DIN and JIS are also available from stock and are listed in Table 7.

Chemical Service Capability At Minimal Cost. Expensive, exotic metal expansion joints for chemical service can be replaced with the PROCO™ Series 240 or Series 242. Molded with low cost chemical resistant elastomers such as Neoprene, Nitrile, Hypalon, EPDM and Chlorobutyl; insures an expansion joint is compatible with the fluid being pumped or piped. (See Table 1). Use the PROCO™ "Chemical/Rubber Guide" to specify an elastomer recommendation compatible for your requirement.

Wide Service Range With Low Cost. Engineered to operate up to 300 PSIG and 265°F, the PROCO™ Series 240 and Series 242 can be specified for a wide range of piping requirements. Compared to conventional hand-built "Spool Arch" types, you will invest less money when specifying the mass-produced, consistent high quality, molded single or twin sphere expansion joints.

Large Inventories Mean Same-Day Shipment. PROCO maintains the largest inventory of spherical expansion joints in the Americas. Every size listed is in stock on several elastomers and comes with a choice of drilling patterns. Shipment is based on customer need. PROCO can ship same day as order placement. In fact, when it comes to rubber expansion joints, **if PROCO doesn't have your requirement...nobody does!**

Information - Ordering - Pricing - Delivery. Day or night, weekends and holidays...the PROCO phones are monitored 24-hours round-the-clock. When you have a question, call us. Toll free: 800 / 344-3246 USA/CANADA
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Website www.procoproducts.com

Weekday Office Hours: 5:30 a.m. - 5:15 p.m. (PST)

TABLE 1: Available Styles/Materials

For Specific Elastomer PROCO™ "Chemical To Elastomer Guide" Recommendations, See:

240-A	240-C	240-ND/EM	242-A,B,C	PROCO™ Material Code	Cover Elastomer	Tube Elastomer	Maximum Operating Temp. °F	Identifying Color Band/Label
X	X	X	X	/BB	Butyl	Butyl	250°	Black
X	X	X	X	/EE	EPDM	EPDM	250°	Red
X	X	X	X	/EE-9	EPDM	EPDM	265°	Red
X	X	X	X	/ET-9	EPDM	Teflon	265°	Red
X	X	X	X	/HH	Hypalon	Hypalon	230°	Green
X	X	X	X	/NH	Neoprene	Hypalon	230°	Green
X	X	X	X	/NJ	Neoprene	FDA-Nitrile	230°	White
X	X	X	X	/NN	Neoprene	Neoprene	230°	Blue
X	X	X	X	/NP	Neoprene	Nitrile	230°	Yellow
X	X	X	X	/NT	Neoprene	Teflon	230°	

NOTES: 1. Hypalon is a registered trademark of DuPont Dow Elastomers. Teflon is a registered trademark of the DuPont Company.
2. Expansion joint "cover" (outside) can be Hypalon painted on special order.
3. Products with Teflon "tube" (inside) are not recommended for vacuum service.
4. All elastomers include nylon reinforcing, except EE-9 which is steel cord.
5. All materials meet or exceed the Rubber Expansion Joint Division, Fluid Sealing Association requirements for Standard Class I and II. EE-9 also meets Special Class II. For more information see The FSA Technical Handbook, Table 1.
6. Materials NN, NP and NH meet all requirements of U.S.C.G.
7. Materials good for up to 300°F for pressures is PSI or less.



Protecting Piping And Equipment Systems From Stress/Motion

control units

TABLE 3: Control Units/Unanchored

Control Units must be installed when pressures (test • design • surge • operating) exceed rating below:

Pipe Size	#240 PS.I.G.	#242 PS.I.G.
1" thru 4"	180	135
5" thru 10"	135	135
12" thru 14"	90	90
16" thru 24"	45	45
26" thru 30"	35	35

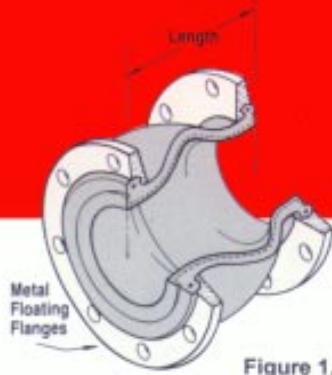


Figure 1.

Style 240
Single Sphere Connector

TABLE 4: Control Units

Style #491 — Add On Type						
Pipe I.D.	Pipe Width	Rod Diameter	Maximum Surge of Test Pressure of System/PSIG			
			Number of Rods Required:			
			2	3	4	
1	.375	.5	949	—	—	
1¼	.374	.5	830	—	—	
1½	.375	.5	510	—	—	
2	.375	.63	661	—	—	
2½	.375	.63	529	—	—	
3	.375	.63	441	—	—	
3½	.375	.63	365	547	729	
4	.375	.63	311	467	622	
5	.375	.63	235	353	470	
6	.5	.63	186	278	371	
8	.5	.75	163	244	326	
10	.75	.88	163	244	325	
12	.75	1.0	160	240	320	
14	.75	1.0	112	167	223	
16	.75	1.13	113	170	227	
18	.75	1.13	94	141	187	
20	.75	1.13	79	118	159	
22	1.0	1.25	85	128	171	
24	1.0	1.25	74	110	147	
26	1.0	1.25	62	105	141	
28	1.25	1.38	65	103	138	
30	1.25	1.5	70	—	—	

Notes:

1. Rod pressure ratings are based on metal conforming to F.S.A. standards and dimensions

TABLE 5: Special Construction Pressures

Pipe Size	#240 & #242 Heavyweight PS.I.G.
1" thru 2½"	300
5" thru 5"	300
6" thru 8"	300
10" thru 12"	300
14" thru 16"	225
18" thru 24"	225
26" thru 30"	200

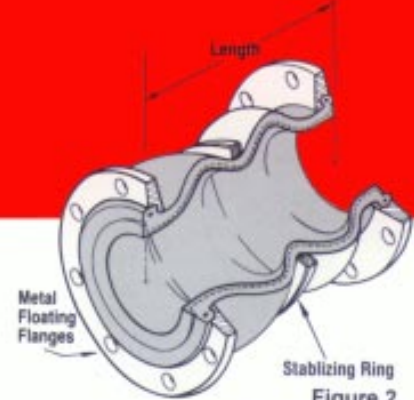
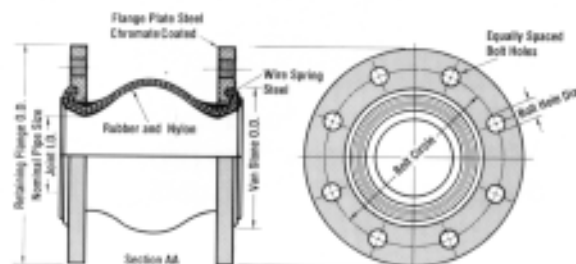


Figure 2.

Style 242
Twin Sphere Connector

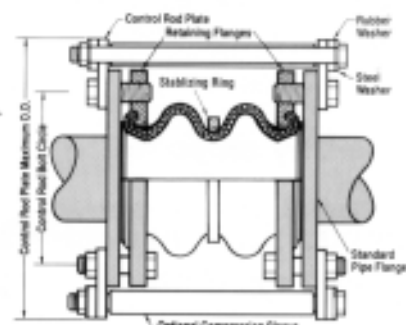
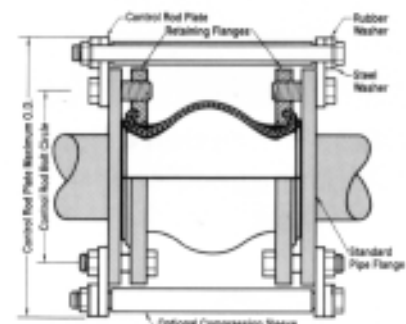
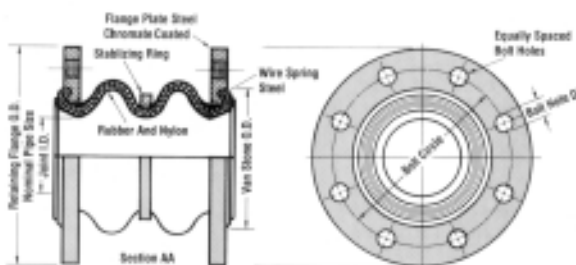
Style 240
Single Sphere
Connector

Figure 3.



Style 242
Twin Sphere
Connector

Figure 4.



Control Rod/Unit Applications. Control unit assemblies are designed to absorb static pressure thrust developed at the expansion joint. When used in this manner, control unit assemblies are an additional safety factor, minimizing possible failure of the expansion joint or damage to equipment. (See Table 4).

1. **Anchored Systems:** Control unit assemblies are not required in piping systems that are anchored on both sides of the expansion joint, provided piping movements are within the rated movements as shown in Tables 2 & 6.
2. **Unanchored Systems:** Control unit assemblies are always recommended in unanchored systems. Additionally, control unit assemblies must be used when maximum pressure exceeds the limit shown in Table 3, or the movement exceeds the rated movements as shown in Tables 2 & 6.

3. **Spring-Mounted Equipment:** Control unit assemblies are always recommended for spring-mounted equipment. Control units must be used when the maximum pressure is higher than the ratings shown in Table 3, or the movement as shown in Tables 2 & 6. Additionally, when control units are not used, the expansion joint must be installed "extended" in accordance with PROCOTM installation instructions.

Special Applications. Certain Style 240 (Single Sphere) and 242 (Twin Sphere) expansion joints are available in High-Pressure Designs. For specific pressures, see Table 5. Style designations are listed as 240-HW (sizes stocked in Table 2) and 242-HA, 242-HB & 242-HC (sizes stocked in Table 6.) The High-Pressure Design is recommended when the connector is to be installed into ANSI 250/300# piping systems.