PROCO™

SERIES 315

threaded metal/rubber connectors

The PROCO Series 315 Rubber Connector is designed for supply/distribution pipeline service or to connect piping to specific equipment applications such as: Pumps, Chillers, Cooling Towers, Compressors, Blowers, Fans, Absorption Machines, etc. Installed next to mechanical equipment or between the anchor points of a piping system, specify the PROCO Series 315 to: (1) Absorb Pipe Movement Stress, (2) Reduce System Noise, (3) Isolate Mechanical Vibration, (4) Compensate Alignment/Offset, (5) Eliminate Electrolysis, (6) Protect Against Start-Up/Surge Forces. The PROCO Series 315 is engineered for tough, demanding industrial and commercial applications, as found in: Air Conditioning-Heating and Ventilating Systems, Chemical-Petrochemical and Industrial Process Piping Systems, Power Generating Plants, Steel Mills, Marine Services, Pulp/Paper Systems, Water-Wastewater-Sewage and Pollution Control Systems, where spherical expansion joints or flexible metal hose may have been previously used or specified. Our history in the manufacture of expansion joint products dates back to 1930. PROCO Products is a member of the Rubber Expansion Joint Division, Fluid Sealing Association. When you need an engineered rubber solution to a piping system problem, call PROCO.

Engineered for your Application. The PROCO Series 315 Connector materials of rubber and fabric are formed and cured in a heated compression mold using an exclusive high-pressure press. The thick outer-cover and interior-tube are of an elastomer especially compounded to satisfy the Chemical-Temperature requirements of your application. The multiple plies of tough, reinforcing fabric are molded in place during manufacture to provide a product designed for your Pressure-Vacuum requirements. Available styles include:

Style 315: Precision molded to a true sphere based upon the pipe size, for optimum noise/vibration absorption (See Figure 1)

Style 315-A: Exactly the same as Style 315, except the sphere shape is slightly modified to produce each size in a standard 8" length for ease of installation. (See Figure 1)

Style 315-HP: A heavyweight design for very high pressure applications; this connector is manufactured similar to Style 315. An additional ductile stabilizing ring is bonded between the two spheres to maintain the spherical shape at maximum pressure. (See Figure 3)

Choice of Installation Hardware. Only PROCO gives you a choice of connector attachment methods. Easy to install, all you need is a piece of threaded pipe. Standard Series 315 Connectors are furnished complete with threaded female unions for attachment to your application. (See Figure 1) An optional attachment method incorporates a threaded mating flange to which the connector is bolted. (See Figure 2) Standard connection hardware is galvanized ductile iron. Bronze, 304 and 316 Stainless materials are available on special order. Adapters are available to connect the Series 315 to copper tubing or PVC piping. (See Table 3 and Figure 4)

Chemical Or Abrasive Service Capability At Minimal Cost. Expensive, exotic metal connectors for chemical service can be replaced with the PROCO Series 315. Fabricated with low-cost chemical resistant elastomers such as: Chlorobutyl, EPDM, SBR, Hypalon, Neoprene and Nitrile; insures a rubber connector compatible with the fluid being pumped or piped. (See Table 1) Our Neoprene products should be specified when handling abrasive slurries. Use the PROCO "Chemical to Elastomer Guide" to specify an elastomer for your requirement.

Absorbs Pipe-Wall and Fluid-Borne Noise. The PROCO quiet-operating Series 315 is a replacement for "sound transmitting" metallic connectors. Pipe-Wall sound loses energy and is absorbed as the noise carried by the piping both enters and leaves the rubber section. Fluid-borne noise is absorbed by the volumetric expansion (breathing) of the connector. This action cushions water hammer and smooths out pumping impulses.

Isolates Vibrations And Motion. Vibration originating from mechanical equipment is absorbed by the PROCO Series 315. Rubber connectors should be installed right after and ahead of the equipment generating the vibration, thus isolating the equipment. As most machinery vibrates in a radial direction from the main shaft, for optimum performance, the PROCO connector should be installed horizontally and parallel to this shaft. For major two-plane vibration/motion it is best to use two flexible rubber connectors installed at right angles, one to absorb the horizontal vibration and one the vertical vibration. A tension anchor is usually advisable to stabilize the elbow between the connectors. Note: For maximum vibration transmission reduction the piping section beyond the rubber connector must be anchored or sufficiently rigid.

Prevents Electrolysis and Electrolytic Action. In chemical applications when metallic connectors are used, they are generally of a metal dissimilar from the pipe-line. This could create an electrolytic galvanic action that could be destructive to the connector, equipment or piping system. The use of the rubber PROCO Series 315 eliminates this potential hazard. Additionally, because the all-rubber connector eliminates metal-to-metal contact at the flange face, electrolysis is stopped.

Reduces System Stress And Strain/Compensate For Misalignment. Rigid attachment of piping to critical or mechanical equipment can produce excessive loading. Thermal or mechanically created strain-stress-shock is cushioned and absorbed with the installation of a low "force-to-deflect" flexible rubber PROCO 315 Connector. The PROCO Connector adds a flexible component that is automatically self-correcting for misalignment created by structural movements caused by settling, expansion or ground shifts.

Full Flow With Less Turbulence Or Material Entrapment. The smooth bore of The PROCO Connector allows full flow without turbulence. Metallic connectors depend upon bellows or convolutions to absorb motion. These bellows/convolutions could create flow turbulence and provide an area for material entrapment or bacteria growth.

Wide Size Range/Complete Engineering Data. We have the size you need! The series 315 includes 19 units representing 7 I.D. sizes. The widest selection of sizes available in the Americas. For engineering data review Table 2. Only PROCO provides you with (1) Recommended pipe opening, (2) Complete connector dimensions, (3) Connector weights, and (4) Accurate allowable movements. If you are concerned with tested engineering, contact PROCO!

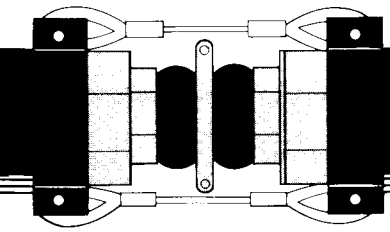
Table 1: Available Styles • Materials • Stock

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

Style #			PROCO™ Material Code	Cover Elastomer	Tube Elastomer	Maximum Operating Temp. F	Label Color	F.S.A. Material Class
315	315-A	315-HP						
X	S	X	BB	Butyl	Butyl	250°	Black	Special II
X	S	S	EE	EPDM	EPDM	250°	Red	Special II
X	S	X	NH	Neoprene	Hypalon[1]	212°	Green	Std. II
X	X	X	NJ	Neoprene	FDA-NIT.	212°	White	Std. II
S	S	X	NN	Neoprene	Neoprene	225°	Blue	Std. II
S	S	X	NP	Neoprene	Nitrile	212°	Yellow	Std. II
X	X	X	NR	Neoprene	Natural	180°	White	Std. I
X	X	X	NS	Neoprene	SBR	180°	Orange	Std. I

NOTES:
1. Hypalon is a trademark of E.I. duPont Dow Elastomers
2. In applications where pressure is less than 15 PSIG, temperature can be increased. See Table 4.
3. All products are reinforced with synthetic fabric plies.
4. Material NN meets all requirements of U.S.C.G.
5. Material Availability: X=Special Order, S=Standard Stock.
6. To order, provide: 1. Size, 2. Style Number, 3. Material Code.

Visit Our Website: http://www.procoproducts.com
email: sales@procoproducts.com



Protecting Piping And Equipment Systems From Stress/Motion

Water Environment Federation
Preserving & Enhancing the Global Water Environment

threaded metal/ rubber connectors

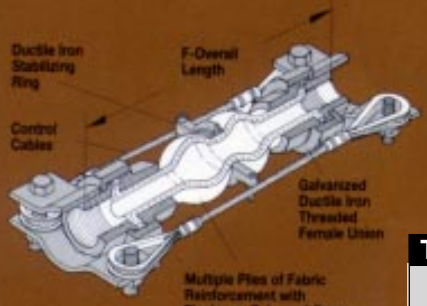


Figure 1: Style 315
With Threaded Female Unions

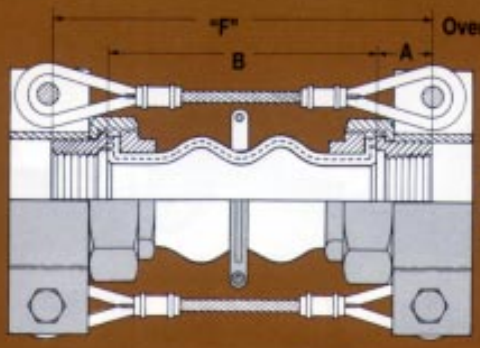


Figure 5: Product Detail

Table 2: Styles • Sizes • Movements • Dimensions • Weights

Nominal Pipe Size/ Connector I.D.	PROCO Style Number	"F" Installed Length				Total Travel		Allowable Movement From Neutral				Dimensions		Weights/Lbs.	
		"F" Overall Neutral Length	Minimum Installed	Maximum Installed	Recommended Pipe Opening	Total Compressed	Total Extended	In. Of Axial Compression	In. Of Axial Extension	± In. Of Lateral Deflection	± Angular Deflection [1]	"A" - Length Of Fitting	"B" - Length Of Rubber	With Bolt On Threaded Flanges	With Screw On Unions
¾	315	6.54	5.88 — 6.65		4.79	5.67 — 6.77		.87	.23	.87	32.2°	1.06	4.42	2.4	1.5
	315-A	8.00	7.34 — 8.11		6.25	7.13 — 8.23		.87	.23	.87	32.2°	1.06	5.88	2.6	1.6
	315-HP	7.00	6.44 — 7.11		5.25	6.25 — 7.23		.75	.23	.63	32.2°	1.06	4.88	2.7	1.7
1	315	6.77	6.11 — 6.88		5.02	5.90 — 7.00		.87	.23	.87	25.3°	1.14	4.49	3.2	2.4
	315-A	8.00	7.34 — 8.11		6.25	7.13 — 8.23		.87	.23	.87	25.3°	1.14	5.72	3.3	2.6
	315-HP	7.00	6.44 — 7.11		5.25	6.25 — 7.23		.75	.23	.63	25.3°	1.14	4.72	3.4	2.7
1¼	315	6.93	6.27 — 7.04		5.18	6.06 — 7.16		.87	.23	.87	20.7°	1.26	4.41	4.0	3.1
	315-A	8.00	7.34 — 8.11		6.25	7.13 — 8.23		.87	.23	.87	20.7°	1.26	5.48	4.2	3.3
	315-HP	7.00	6.44 — 7.11		5.25	6.25 — 7.23		.75	.23	.63	20.7°	1.26	4.48	4.3	3.4
1½	315	7.17	6.51 — 7.28		5.42	6.30 — 7.40		.87	.23	.87	17.5°	1.30	5.57	5.1	3.9
	315-A	8.00	7.34 — 8.11		6.25	7.13 — 8.23		.87	.23	.87	17.5°	1.30	5.40	5.2	4.0
	315-HP	7.00	6.44 — 7.11		5.25	6.25 — 7.23		.75	.23	.63	17.5°	1.30	4.40	5.3	4.1
2	315	8.35	7.69 — 8.46		6.60	7.48 — 8.58		.87	.23	.87	13.3°	1.42	5.51	7.4	5.5
	315-A	8.00	7.34 — 8.11		6.25	7.13 — 8.23		.87	.23	.87	13.3°	1.42	5.16	7.4	5.5
	315-HP	7.00	6.44 — 7.11		5.25	6.25 — 7.23		.75	.23	.63	13.3°	1.42	4.16	7.5	5.6
2½	315	8.82	8.16 — 8.93		7.07	7.95 — 9.05		.87	.23	.87	10.7°	1.69	5.44	11.6	9.6
	315-A	8.00	7.34 — 8.11		6.25	7.13 — 8.23		.87	.23	.87	10.7°	1.69	4.62	11.5	9.5
3	315	8.90	8.24 — 9.01		7.15	8.03 — 9.13		.87	.23	.87	8.9°	1.69	5.52	13.4	10.7
	315-A	8.00	7.34 — 8.11		6.25	7.13 — 8.23		.87	.23	.87	8.9°	1.69	4.62	13.3	10.6

NOTES: 1. The amount of Angular Movement is based on the maximum allowable Extension Movement from neutral. Angular Movement can be increased if it is in conjunction with Compression. PROCO is aware that some manufacturers of similar products list ratings of 45-50°. It is noted these companies do not give any parameters to justify their rating. PROCO questions that different I.D. sizes, each with the same Compression/Extension Movement can have the same Angular Movement.

OTHER HVAC PRODUCTS AVAILABLE FROM PROCO...


Style 240 & 242


Style FF-6201


Style TTS-6201


Style SEB-6201

Table 3: Temperature/Pressure Relationship

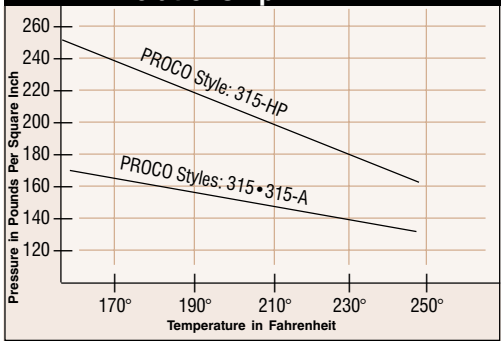


Table 4: Pressures

PROCO Style	Maximum Operating		Minimum	
	Positive PSIG	Negative In. of Hg.	Test PSIG	Burst PSIG
315	150	26"	225	600
315-A	150	26"	225	600
315-HP	250	26"	375	1000

NOTE: See Table 4 for Temperature/Pressure Relationship

Table 5: Available Metal Materials

Order Codes Prefix to Style Number		Materials Selections
Screw On Female Unions	Bolt-On Floating Flanges[2]	Unions • Flanges
[1]	F	Ductile Iron, Galvanized
304	F-304	304 Stainless Steel
316	F-316	316 Stainless Steel
B	F-B	Bronze

NOTES: 1. All Standard styles furnished complete with galvanized ductile iron female unions, with ends threaded NPT (IPT) to ANSI B-2.1. For other materials, see above table. Other threading, including: BS, DIN, JIS, etc. are available on special order.
2. This floating flange design can be furnished with end piece adaptors to connect to: copper tubing, threaded brass or PVC and cementable PVC piping.

Wide Service Range With Low Cost. Engineered to operate up to 250 PSIG and 250°F the PROCO 315 Series can be specified for a wide range of piping system requirements. Compared to competitive products, you will invest less money when specifying the engineered design industrial quality PROCO Series 315.

Large Inventories Mean Same-Day Shipment. We maintain the largest inventory of elastomer connectors and expansion joints in the Americas. Every size cataloged is in stock in several elastomers. We can ship your requirement when you need it. In fact, when it comes to rubber pipe fittings, **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-around-the-clock. When you have a question, call us toll-free **(800) 344-3246.** Weekday office hours: 8:30 a.m. - 8:15 p.m. Eastern Time.

Distributed By:

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PROCO PRODUCTS, INC.

2431 Wigwam Dr. (95205)
P.O. Box 590 • Stockton, CA
95201-0590 • USA

TOLL FREE PHONE: (800) 344-3246 NATIONWIDE AND CANADA
FACSIMILE: (209) 943-0242
(209) 943-6088 INTERNATIONAL
email: sales@procoproducts.com
website: http://www.procoproducts.com