

The image features a close-up, high-angle view of two braided hoses. The hose on the left is a vibrant red color, while the hose on the right is a metallic silver. Both hoses exhibit a complex, interlocking braided pattern. The lighting is dramatic, highlighting the texture and sheen of the braiding. The hoses are arranged in a way that they appear to be part of a larger assembly or are simply coiled together.

PRECISION
HOSE & EXPANSION JOINTS

**CORRUGATED
HOSE & BRAID**

A LONG LEGACY OF PRECISION PRODUCTS

Precision Hose & Expansion Joints is one of a very few American companies that manufacture a complete line of metal hose, wire braid, round metal expansion joints, metallic flue duct expansion joints, non-metallic flue duct expansion joints and rubber pressure piping expansion joints. With over 65 years of being in the metal hose and expansion joint business—dating back to the early 1950's—the owners of Precision Hose & Expansion Joints have over 130 years combined experience in this industry.

Our 105,000 square foot manufacturing facility is located on 6 acres in Stone Mountain, Georgia. The plant was designed totally for the state of the art manufacturing of metal hose and expansion joints. We would certainly welcome you to visit our company on your next visit to the Atlanta area.

Quality, service and fair pricing is the basis on how we operate our business.

CORRUGATED METAL HOSE

When rigid connections are impractical, flexible metal hose provides non-rigid connections for conveying liquids, gases and semi-solids.

Metal hose offers a number of advantages, including high strength, resistance to high or low temperature extremes and corrosion resistance. It absorbs vibrations and noise, connects misaligned rigid piping, connects moving parts of machinery or equipment, and is practical for hooking up frequently moved or dismantled equipment.

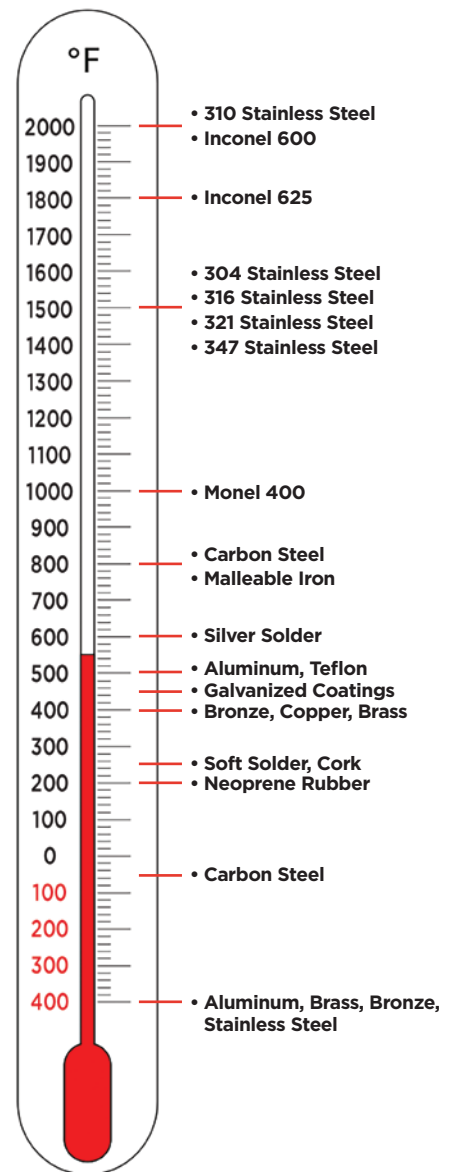
Corrugated metal hose is manufactured in two basic styles: Annular and Helical. The metal choices are: Bronze, Steel, Stainless Steel, Monel and Inconel.

Annular Corrugated Hose Material

| | |
|--|---|
| 1/4" I.D. thru 24" I.D. | <p>Type 321 Stainless Steel The industry standard, this chromium-nickel (18-8) steel is chemically stabilized to resist intergranular corrosion and is suitable for service from 1500°F to cryogenic (-320°F) temperatures.</p> <p>Type 316 Stainless Steel This chromium-nickel-molybdenum (18-8-2) steel has improved corrosion resistance and is suitable for service from 900°F to cryogenic (-320°F) temperatures.</p> |
| 1/2" I.D. thru 3" I.D. | <p>Monel The nickel-copper (70-30) alloy has excellent corrosion resistance to chlorine and salt water service. This alloy is suitable for service from 900°F to cryogenic (-320°F) temperatures.</p> |
| 1/4" I.D. thru 2" I.D. | <p>Bronze The copper-tin (95-5) alloy has good general corrosion resistance and is widely used in water and steam systems. This alloy is suitable for service from 400°F to cryogenic (-320°F) temperatures.</p> |

TEMPERATURE RANGE

Maximum/Minimum



Metal hose offers a number of advantages, including high strength, resistance to high or low temperature extremes and corrosion resistance.

PL Series Braided Hose

Precision Series: Light Weight with High Flexibility
 Materials: Hose: 304L, 321, 316L Stainless
 Braid: 304 and 316L Stainless
 Construction: Annular Hose available in Standard Pitch
 High Coverage Braid

ISO 10380
 Qualified

| NOM. I.D. (IN.) | PART NUMBER (See Chart) | BRAID LAYERS | BRAID CONSTRUCTION | BRAID COVERAGE (%) | NOM. O.D. (IN.) | MAXIMUM PRESSURE @70°F (PSIG) | | | CENTERLINE BEND RADIUS (IN.) | | WEIGHT PER FOOT (LBS.) | BRAID SLEEVE PART NUMBER |
|-----------------|-------------------------|--------------|--------------------|--------------------|-----------------|-------------------------------|-------|--------------|------------------------------|--------|------------------------|--------------------------|
| | | | | | | Working | Test | Normal Burst | Dynamic | Static | | |
| 1/4" | 04PL-xA00 | 0 | | | 0.38 | 72 | ---- | ---- | | | 0.05 | ---- |
| | 04PL-xA1x | 1 | 24 x 6 x 0.010 | 95 | 0.43 | 2,386 | 3,579 | 9,544 | 3.00 | 1.00 | 0.10 | 8-304 |
| | 04PL-xA2x | 2 | | | 0.48 | 2,863 | 4,295 | 11,453 | | | 0.15 | 16-304 |
| 3/8" | 06PL-xA00 | 0 | | | 0.56 | 72 | ---- | ---- | | | 0.07 | ---- |
| | 06PL-xA1x | 1 | 24 x 7 x 0.012 | 93 | 0.62 | 1,714 | 2,571 | 6,856 | 5.00 | 1.50 | 0.16 | 32-304 |
| | 06PL-xA2x | 2 | | | 0.68 | 2,057 | 3,086 | 8,228 | | | 0.25 | 42-304 |
| 1/2" | 08PL-xA00 | 0 | | | 0.66 | 72 | ---- | ---- | | | 0.08 | ---- |
| | 08PL-xA1x | 1 | 24 x 8 x 0.012 | 92 | 0.72 | 1,281 | 1,921 | 5,124 | 5.25 | 1.75 | 0.18 | 46-304 |
| | 08PL-xA2x | 2 | | | 0.78 | 1,537 | 2,306 | 6,148 | | | 0.28 | 54-304 |
| 3/4" | 12PL-xA00 | 0 | | | 1.05 | 43 | ---- | ---- | | | 0.19 | ---- |
| | 12PL-xA1x | 1 | 36 x 8 x 0.014 | 96 | 1.12 | 1,056 | 1,584 | 4,224 | 6.50 | 2.50 | 0.39 | 100-304 |
| | 12PL-xA2x | 2 | | | 1.19 | 1,267 | 1,900 | 5,068 | | | 0.59 | 110-304 |
| 1" | 16PL-xA00 | 0 | | | 1.27 | 43 | ---- | ---- | | | 0.24 | ---- |
| | 16PL-xA1x | 1 | 48 x 7 x 0.014 | 95 | 1.34 | 817 | 1,225 | 3,268 | 7.50 | 3.25 | 0.48 | 130-304 |
| | 16PL-xA2x | 2 | | | 1.41 | 980 | 1,470 | 3,920 | | | 0.72 | 140-304 |
| 1-1/4" | 20PL-xA00 | 0 | | | 1.62 | 43 | ---- | ---- | | | 0.33 | ---- |
| | 20PL-xA1x | 1 | 48 x 9 x 0.014 | 95 | 1.69 | 618 | 922 | 2,472 | 10.00 | 4.00 | 0.66 | 176-304 |
| | 20PL-xA2x | 2 | | | 1.76 | 741 | 1,112 | 2,964 | | | 0.99 | 186-304 |
| 1-1/2" | 24PL-xA00 | 0 | | | 1.95 | 28 | ---- | ---- | | | 0.51 | ---- |
| | 24PL-xA1x | 1 | 48 x 9 x 0.016 | 94 | 2.03 | 571 | 856 | 2,284 | 11.75 | 5.00 | 0.91 | 222-304 |
| | 24PL-xA2x | 2 | | | 2.11 | 685 | 1,028 | 2,740 | | | 1.31 | 232-304 |
| 2" | 32PL-xA00 | 0 | | | 2.38 | 28 | ---- | ---- | | | 0.64 | ---- |
| | 32PL-xA1x | 1 | 48 x 9 x 0.020 | 94 | 2.48 | 591 | 886 | 2,364 | 12.50 | 6.25 | 1.27 | 282-304 |
| | 32PL-xA2x | 2 | | | 2.58 | 709 | 1,064 | 2,836 | | | 1.90 | 296-304 |
| 2-1/2" | 40PL-xA00 | 0 | | | 3.23 | 15 | 22 | ---- | | | 0.80 | ---- |
| | 40PL-xA1x | 1 | 72 x 9 x 0.020 | 98 | 3.31 | 406 | 609 | 1,624 | 20.00 | 8.00 | 1.67 | RB-2.5-S16-04 |
| | 40PL-xA2x | 2 | | | 3.39 | 609 | 914 | 2,436 | | | 2.55 | RB-2.5-S16-04 |
| 3" | 48PL-xA00 | 0 | | | 3.86 | 15 | 22 | ---- | | | 0.93 | ---- |
| | 48PL-xA1x | 1 | 72 x 10 x 0.020 | 96 | 3.94 | 365 | 548 | 1,460 | 22.00 | 9.00 | 1.87 | RB-3-S16-04 |
| | 48PL-xA2x | 2 | | | 4.02 | 548 | 822 | 2,192 | | | 2.81 | RB-3-S16-04 |
| 4" | 64PL-xA00 | 0 | | | 4.88 | 12 | 18 | ---- | | | 1.28 | ---- |
| | 64PL-xA1x | 1 | 72 x 12 x 0.020 | 95 | 4.96 | 300 | 450 | 1,200 | 27.00 | 13.00 | 2.59 | RB-4-S16-04 |
| | 64PL-xA2x | 2 | | | 5.04 | 450 | 675 | 1,800 | | | 3.90 | RB-4-S16-04 |

PL- _____ A _____
 Hose Alloy Code Braid Code Braid Alloy Code

Hose Alloy Code: Braid Code: Braid Alloy Code:
 A = 321 Stainless 0 = No Braid 0 = No Braid
 B = 304L Stainless 1 = Single Braid 1 = 304 Stainless
 C = 316L Stainless 2 = Double Braid 6 = 316L Stainless

Example: O4PL-AA11 =
 1/4" PL Series 321 Hose with Single 304 Braid

PLC Series Braided Hose

Precision Series: Light Weight with Extreme Flexibility
 Materials: Hose: 304L, 321, 316L Stainless
 Braid: 304 and 316L Stainless
 Construction: Annular Hose available in Compressed Pitch
 High Coverage Braid

ISO 10380
 Qualified

| NOM. I.D. (IN.) | PART NUMBER (See Chart) | BRAID LAYERS | BRAID CONSTRUCTION | BRAID COVERAGE (%) | NOM. O.D. (IN.) | MAXIMUM PRESSURE @ 70°F (PSIG) | | | CENTERLINE BEND RADIUS (IN.) | | WEIGHT PER FOOT (LBS.) | BRAID SLEEVE PART NUMBER |
|-----------------|-------------------------|--------------|--------------------|--------------------|-----------------|--------------------------------|-------|--------------|------------------------------|--------|------------------------|--------------------------|
| | | | | | | Working | Test | Normal Burst | Dynamic | Static | | |
| 1/4" | 04PLC-xA00 | 0 | | | 0.38 | 72 | ---- | ---- | | | 0.08 | ---- |
| | 04PLC-xA1x | 1 | 24 x 6 x 0.010 | 95 | 0.43 | 2,386 | 3,579 | 9,544 | 2.30 | 0.75 | 0.13 | 8-304 |
| | 04PLC-xA2x | 2 | | | 0.48 | 2,863 | 4,295 | 11,453 | | | 0.18 | 16-304 |
| 3/8" | 06PLC-xA00 | 0 | | | 0.56 | 72 | ---- | ---- | | | 0.11 | ---- |
| | 06PLC-xA1x | 1 | 24 x 7 x 0.012 | 93 | 0.62 | 1,714 | 2,571 | 6,856 | 3.80 | 1.15 | 0.20 | 32-304 |
| | 06PLC-xA2x | 2 | | | 0.68 | 2,057 | 3,086 | 8,228 | | | 0.29 | 42-304 |
| 1/2" | 08PLC-xA00 | 0 | | | 0.66 | 72 | ---- | ---- | | | 0.12 | ---- |
| | 08PLC-xA1x | 1 | 24 x 8 x 0.012 | 92 | 0.72 | 1,281 | 1,921 | 5,124 | 3.75 | 1.25 | 0.22 | 46-304 |
| | 08PLC-xA2x | 2 | | | 0.78 | 1,537 | 2,306 | 6,148 | | | 0.32 | 54-304 |
| 3/4" | 12PLC-xA00 | 0 | | | 1.05 | 43 | ---- | ---- | | | 0.29 | ---- |
| | 12PLC-xA1x | 1 | 36 x 8 x 0.014 | 96 | 1.12 | 1,056 | 1,584 | 4,224 | 3.00 | 1.50 | 0.49 | 100-304 |
| | 12PLC-xA2x | 2 | | | 1.19 | 1,267 | 1,900 | 5,068 | | | 0.69 | 110-304 |
| 1" | 16PLC-xA00 | 0 | | | 1.27 | 43 | ---- | ---- | | | 0.36 | ---- |
| | 16PLC-xA1x | 1 | 48 x 7 x 0.014 | 95 | 1.34 | 817 | 1,225 | 3,268 | 4.75 | 2.35 | 0.60 | 130-304 |
| | 16PLC-xA2x | 2 | | | 1.41 | 980 | 1,470 | 3,920 | | | 0.84 | 140-304 |
| 1-1/4" | 20PLC-xA00 | 0 | | | 1.62 | 43 | ---- | ---- | | | 0.50 | ---- |
| | 20PLC-xA1x | 1 | 48 x 9 x 0.014 | 95 | 1.69 | 618 | 922 | 2,472 | 5.30 | 3.00 | 0.83 | 176-304 |
| | 20PLC-xA2x | 2 | | | 1.76 | 741 | 1,112 | 2,964 | | | 1.16 | 186-304 |
| 1-1/2" | 24PLC-xA00 | 0 | | | 1.95 | 28 | ---- | ---- | | | 0.77 | ---- |
| | 24PLC-xA1x | 1 | 48 x 9 x 0.016 | 94 | 2.03 | 571 | 856 | 2,284 | 6.00 | 3.50 | 1.17 | 222-304 |
| | 24PLC-xA2x | 2 | | | 2.11 | 685 | 1,028 | 2,740 | | | 1.57 | 232-304 |
| 2" | 32PLC-xA00 | 0 | | | 2.38 | 28 | ---- | ---- | | | 0.96 | ---- |
| | 32PLC-xA1x | 1 | 48 x 9 x 0.020 | 94 | 2.48 | 591 | 886 | 2,364 | 8.00 | 5.00 | 1.59 | 282-304 |
| | 32PLC-xA2x | 2 | | | 2.58 | 709 | 1,064 | 2,836 | | | 2.22 | 296-304 |

PLC- _____ A _____
 Hose Alloy Code Braid Code Braid Alloy Code

Hose Alloy Code: Braid Code: Braid Alloy Code:
 A = 321 Stainless 0 = No Braid 0 = No Braid
 B = 304L Stainless 1 = Single Braid 1 = 304 Stainless
 C = 316L Stainless 2 = Double Braid 6 = 316L Stainless

Example: 04PLC-AA11 =
 1/4" PLC Series 321 Hose with Single 304 Braid

PM Series Braided Hose

Precision Series: Medium Weight with Medium Flexibility
 Materials: Hose: 304L, 321, 316L Stainless
 Braid: 304 and 316L Stainless
 Construction: Annular Hose available in either Standard or Compressed Pitch
 High Coverage Braid

ISO 10380
 Qualified

| NOM. I.D. (IN.) | PART NUMBER (See Chart) | BRAID LAYERS | BRAID CONSTRUCTION | BRAID COVERAGE (%) | NOM. O.D. (IN.) | MAXIMUM PRESSURE @ 70°F (PSIG) | | | CENTERLINE BEND RADIUS (IN.) | | WEIGHT PER FOOT (LBS.) | BRAID SLEEVE PART NUMBER |
|-----------------|-------------------------|--------------|--------------------|--------------------|-----------------|--------------------------------|-------|--------------|------------------------------|--------|------------------------|--------------------------|
| | | | | | | Working | Test | Normal Burst | Dynamic | Static | | |
| 1/4" | 04PM-xA00 | 0 | | | 0.48 | 200 | --- | --- | | | 0.11 | ---- |
| | 04PM-xA1x | 1 | 24 x 5 x 0.014 | 98 | 0.57 | 2,500 | 3,750 | 10,000 | 5.00 | 1.00 | 0.20 | 24-304 |
| | 04PM-xA2x | 2 | | | 0.64 | 4,000 | 6,000 | 16,000 | | | 0.29 | 32-304 |
| 3/8" | 06PM-xA00 | 0 | | | 0.63 | 100 | --- | --- | | | 0.13 | ---- |
| | 06PM-xA1x | 1 | 24 x 8 x 0.014 | 98 | 0.74 | 1,530 | 2,295 | 6,120 | 5.00 | 1.25 | 0.27 | 44-304 |
| | 06PM-xA2x | 2 | | | 0.81 | 2,448 | 3,672 | 9,792 | | | 0.40 | 54-304 |
| 1/2" | 08PM-xA00 | 0 | | | 0.82 | 80 | --- | --- | | | 0.23 | ---- |
| | 08PM-xA1x | 1 | 24 x 9 x 0.014 | 94 | 0.89 | 1,200 | 1,800 | 4,800 | 5.00 | 1.50 | 0.37 | 70-304 |
| | 08PM-xA2x | 2 | | | 0.96 | 1,920 | 2,880 | 7,680 | | | 0.50 | 76-304 |
| 3/4" | 12PM-xA00 | 0 | | | 1.21 | 70 | --- | --- | | | 0.44 | ---- |
| | 12PM-xA1x | 1 | 36 x 9 x 0.014 | 95 | 1.28 | 850 | 1,275 | 3,400 | 6.50 | 2.25 | 0.64 | 120-304 |
| | 12PM-xA2x | 2 | | | 1.35 | 1,360 | 2,040 | 5,440 | | | 0.84 | 130-304 |
| 1" | 16PM-xA00 | 0 | | | 1.51 | 40 | --- | --- | | | 0.54 | ---- |
| | 16PM-xA1x | 1 | 36 x 10 x 0.014 | 92 | 1.58 | 590 | 885 | 2,360 | 7.50 | 2.75 | 0.78 | 160-304 |
| | 16PM-xA2x | 2 | | | 1.65 | 944 | 1,416 | 3,776 | | | 1.02 | 170-304 |
| 1-1/4" | 20PM-xA00 | 0 | | | 1.85 | 25 | --- | --- | | | 0.76 | ---- |
| | 20PM-xA1x | 1 | 48 x 8 x 0.016 | 92 | 1.93 | 540 | 810 | 2,160 | 9.00 | 3.50 | 1.07 | 206-304 |
| | 20PM-xA2x | 2 | | | 2.02 | 864 | 1,296 | 3,456 | | | 1.38 | 214-304 |
| 1-1/2" | 24PM-xA00 | 0 | | | 2.19 | 20 | --- | --- | | | 0.85 | ---- |
| | 24PM-xA1x | 1 | 48 x 10 x 0.016 | 93 | 2.28 | 475 | 713 | 1,900 | 10.50 | 4.00 | 1.27 | 254-304 |
| | 24PM-xA2x | 2 | | | 2.37 | 760 | 1,140 | 3,040 | | | 1.69 | 262-304 |
| 2" | 32PM-xA00 | 0 | | | 2.60 | 15 | --- | --- | | | 0.91 | ---- |
| | 32PM-xA1x | 1 | 48 x 10 x 0.020 | 95 | 2.72 | 530 | 795 | 2,120 | 13.00 | 5.00 | 1.53 | 312-304 |
| | 32PM-xA2x | 2 | | | 2.84 | 848 | 1,272 | 3,392 | | | 2.15 | 326-304 |
| 2-1/2" | 40PM-xA00 | 0 | | | 3.23 | 12 | --- | --- | | | 1.18 | ---- |
| | 40PM-xA1x | 1 | 72 x 8 x 0.020 | 94 | 3.33 | 410 | 615 | 1,640 | 18.00 | 8.00 | 1.90 | RB-2.5-S16-04 |
| | 40PM-xA2x | 2 | | | 3.43 | 656 | 984 | 2,624 | | | 2.62 | RB-2.5-S16-04 |
| 3" | 48PM-xA00 | 0 | | | 3.78 | 10 | --- | --- | | | 1.67 | ---- |
| | 48PM-xA1x | 1 | 72 x 9 x 0.020 | 93 | 3.88 | 335 | 503 | 1,340 | 19.00 | 9.00 | 2.50 | RB-3-S16-04 |
| | 48PM-xA2x | 2 | | | 3.98 | 536 | 804 | 2,144 | | | 3.33 | RB-3-S16-04 |
| 4" | 64PM-xA00 | 0 | | | 4.85 | 8 | --- | --- | | | 1.81 | ---- |
| | 64PM-xA1x | 1 | 72 x 11 x 0.020 | 91 | 4.98 | 240 | 360 | 960 | 20.00 | 13.00 | 2.86 | RB-4-S16-04 |
| | 64PM-xA2x | 2 | | | 5.08 | 384 | 576 | 1,536 | | | 3.91 | RB-4-S16-04 |

PM- _____ A _____
 Hose Alloy Code Braid Code Braid Alloy Code

Hose Alloy Code: A = 321 Stainless B = 304L Stainless C = 316L Stainless
 Braid Code: 0 = No Braid 1 = Single Braid 2 = Double Braid
 Braid Alloy Code: 0 = No Braid 1 = 304 Stainless 6 = 316L Stainless

Example: 04PM-AA11 =
 1/4" PM Series 321 Hose with Single 304 Braid

SM Series shown on page 5.

SM- _____ A _____
 Hose Alloy Code Braid Code Braid Alloy Code

Hose Alloy Code: A = 321 Stainless C = 316L Stainless
 Braid Code: 0 = No Braid 1 = Single Braid 2 = Double Braid
 Braid Alloy Code: 0 = No Braid 1 = 304 Stainless 6 = 316L Stainless

Example: 04SM-AA11 =
 1/4" SM Series 321 Hose with Single 304 Braid

*Alternate Construction: 8" Braid (Not Braided Braid)

| | | | | | | | | | | | | |
|----|------------|---|-----------------|----|------|-----|-----|-----|-------|-------|------|-------------|
| 8" | 128SM-xA1x | 1 | 96 x 12 x 0.024 | 96 | 9.19 | 160 | 240 | 640 | 40.00 | 20.00 | 2.50 | RB-8-H20-04 |
| | 128SM-xA2x | 2 | | | 9.28 | 240 | 360 | 960 | | | 5.00 | RB-8-H20-04 |

SM Series Braided Hose

Standard Series: Medium Weight with Medium Flexibility
 Materials: Hose: 321 and 316L Stainless, Bronze, Monel, and Inconel upon request
 Braid: 304 and 316L Stainless, Bronze, Monel, and Inconel upon request
 Construction: Annular Hose available in either Standard or Compressed Pitch

**ISO 10380
 Qualified**

| NOM. I.D. (IN.) | PART NUMBER (See Chart) | BRAID LAYERS | BRAID CONSTRUCTION | BRAID COVERAGE (%) | NOM. O.D. (IN.) | MAXIMUM PRESSURE @ 70°F (PSIG) | | | CENTERLINE BEND RADIUS (IN.) | | WEIGHT PER FOOT (LBS.) | BRAID SLEEVE PART NUMBER |
|-----------------|-------------------------|--------------|--------------------|--------------------|-----------------|--------------------------------|-------|--------------|------------------------------|--------|------------------------|--------------------------|
| | | | | | | Working | Test | Normal Burst | Dynamic | Static | | |
| 1/4" | 04SM-xA00 | 0 | | | 0.48 | 180 | ---- | ---- | | | 0.11 | ---- |
| | 04SM-xA1x | 1 | 24 x 5 x 0.014 | 89 | 0.57 | 2,460 | 3,690 | 9,840 | 5.00 | 1.00 | 0.20 | 28-304 |
| | 04SM-xA2x | 2 | | | 0.64 | 3,690 | 5,535 | 14,760 | | | 0.29 | 36-304 |
| 3/8" | 06SM-xA00 | 0 | | | 0.58 | 125 | ---- | ---- | | | 0.13 | ---- |
| | 06SM-xA1x | 1 | 24 x 7 x 0.014 | 91 | 0.65 | 1,860 | 2,790 | 7,440 | 5.00 | 1.25 | 0.27 | 36-304 |
| | 06SM-xA2x | 2 | | | 0.72 | 2,790 | 4,185 | 11,160 | | | 0.40 | 44-304 |
| 1/2" | 08SM-xA00 | 0 | | | 0.82 | 90 | ---- | ---- | | | 0.23 | ---- |
| | 08SM-xA1x | 1 | 24 x 7 x 0.014 | 82 | 0.90 | 1,170 | 1,755 | 4,680 | 5.00 | 1.50 | 0.37 | 70-304 |
| | 08SM-xA2x | 2 | | | 0.97 | 1,755 | 2,633 | 7,020 | | | 0.50 | 80-304 |
| 3/4" | 12SM-xA00 | 0 | | | 1.21 | 70 | ---- | ---- | | | 0.44 | ---- |
| | 12SM-xA1x | 1 | 36 x 8 x 0.014 | 90 | 1.29 | 930 | 1,395 | 3,720 | 6.50 | 2.25 | 0.64 | 122-304 |
| | 12SM-xA2x | 2 | | | 1.36 | 1,395 | 2,093 | 5,580 | | | 0.84 | 132-304 |
| 1" | 16SM-xA00 | 0 | | | 1.51 | 50 | ---- | ---- | | | 0.54 | ---- |
| | 16SM-xA1x | 1 | 36 x 9 x 0.014 | 85 | 1.58 | 640 | 960 | 2,560 | 7.50 | 2.75 | 0.78 | 162-304 |
| | 16SM-xA2x | 2 | | | 1.65 | 960 | 1,440 | 3,840 | | | 1.02 | 172-304 |
| 1-1/4" | 20SM-xA00 | 0 | | | 1.85 | 30 | ---- | ---- | | | 0.76 | ---- |
| | 20SM-xA1x | 1 | 48 x 7 x 0.016 | 83 | 1.93 | 570 | 855 | 2,280 | 9.00 | 3.50 | 1.07 | 208-304 |
| | 20SM-xA2x | 2 | | | 2.02 | 855 | 1,283 | 3,420 | | | 1.38 | 220-304 |
| 1-1/2" | 24SM-xA00 | 0 | | | 2.19 | 25 | ---- | ---- | | | 0.85 | ---- |
| | 24SM-xA1x | 1 | 48 x 9 x 0.016 | 87 | 2.28 | 500 | 750 | 2,000 | 10.50 | 4.00 | 1.27 | 254-304 |
| | 24SM-xA2x | 2 | | | 2.37 | 750 | 1,125 | 3,000 | | | 1.69 | 266-304 |
| 2" | 32SM-xA00 | 0 | | | 2.60 | 20 | ---- | ---- | | | 0.91 | ---- |
| | 32SM-xA1x | 1 | 48 x 9 x 0.020 | 89 | 2.73 | 540 | 810 | 2,160 | 13.00 | 5.00 | 1.53 | 312-304 |
| | 32SM-xA2x | 2 | | | 2.86 | 810 | 1,215 | 3,240 | | | 2.15 | 334-304 |
| 2-1/2" | 40SM-xA00 | 0 | | | 3.23 | 20 | ---- | ---- | | | 1.18 | ---- |
| | 40SM-xA1x | 1 | 72 x 7 x 0.020 | 86 | 3.33 | 400 | 600 | 1,600 | 18.00 | 8.00 | 1.90 | RB-2.5-S16-04 |
| | 40SM-xA2x | 2 | | | 3.43 | 600 | 900 | 2,400 | | | 2.62 | RB-2.5-S16-04 |
| 3" | 48SM-xA00 | 0 | | | 3.78 | 15 | ---- | ---- | | | 1.67 | ---- |
| | 48SM-xA1x | 1 | 72 x 8 x 0.020 | 85 | 3.88 | 330 | 495 | 1,320 | 19.00 | 9.00 | 2.50 | RB-3-S16-04 |
| | 48SM-xA2x | 2 | | | 3.98 | 495 | 743 | 1,980 | | | 3.33 | RB-3-S16-04 |
| 4" | 64SM-xA00 | 0 | | | 4.85 | 10 | ---- | ---- | | | 1.81 | ---- |
| | 64SM-xA1x | 1 | 72 x 10 x 0.020 | 84 | 4.98 | 240 | 360 | 960 | 20.00 | 13.00 | 2.86 | RB-4-S16-04 |
| | 64SM-xA2x | 2 | | | 5.10 | 360 | 540 | 1,440 | | | 3.91 | RB-4-S16-04 |
| 5" | 80SM-xA00 | 0 | | | 5.90 | 6 | ---- | ---- | | | 2.51 | ---- |
| | 80SM-xA1x | 1 | 96 x 10 x 0.020 | 81 | 6.03 | 210 | 315 | 840 | 28.00 | 18.00 | 3.78 | RB-5-S16-04 |
| | 80SM-xA2x | 2 | | | 6.15 | 315 | 472 | 1,260 | | | 5.05 | RB-5-S16-04 |
| 6" | 96SM-xA00 | 0 | | | 6.87 | 6 | ---- | ---- | | | 3.50 | ---- |
| | 96SM-xA1x | 1 | 96 x 12 x 0.020 | 90 | 7.10 | 180 | 270 | 720 | 33.00 | 19.00 | 4.82 | RB-6-S16-04 |
| | 96SM-xA2x | 2 | | | 7.33 | 270 | 405 | 1,080 | | | 6.14 | RB-6-S16-04 |
| * 8" | 128SM-xA00 | 0 | | | 9.09 | 6 | ---- | ---- | | | 5.58 | ---- |
| | 128SM-xA5x | 1 | 96 x (21 x 0.024) | 96 | 9.19 | 235 | 353 | 940 | 40.00 | 20.00 | 9.48 | RB-8-H20-04 |
| | 128SM-xA6x | 2 | | | 9.28 | 353 | 530 | 1,412 | | | 13.38 | RB-8-H20-04 |
| 10" | 160SM-xA00 | 0 | | | 11.18 | 5 | ---- | ---- | | | 6.85 | ---- |
| | 160SM-xA5x | 1 | 96 x (25 x 0.028) | 98 | 11.32 | 240 | 360 | 960 | 50.00 | 25.00 | 12.95 | RB-10-H20-304 |
| | 160SM-xA6x | 2 | | | 11.45 | 360 | 540 | 1,440 | | | 19.05 | RB-10-H20-304 |
| 12" | 192SM-xA00 | 0 | | | 13.23 | 3 | ---- | ---- | | | 9.11 | ---- |
| | 192SM-xA5x | 1 | 96 x (25 x 0.028) | 97 | 13.37 | 170 | 255 | 680 | 60.00 | 30.00 | 14.96 | RB-12-H20-304 |
| | 192SM-xA6x | 2 | | | 13.50 | 255 | 383 | 1,020 | | | 20.81 | RB-12-H20-304 |
| 14" | 224SM-xA00 | 0 | | | 14.70 | 3 | ---- | ---- | | | 11.50 | ---- |
| | 224SM-xA5x | 1 | 96 x (29 x 0.028) | 93 | 14.84 | 119 | 179 | 476 | 70.00 | 35.00 | 17.50 | RB-14-H20-304 |
| | 224SM-xA6x | 2 | | | 14.98 | 178 | 267 | 712 | | | 23.50 | RB-14-H20-304 |
| 16" | 256SM-xA00 | 0 | | | 16.70 | 3 | ---- | ---- | | | 13.50 | ---- |
| | 256SM-xA5x | 1 | 96 x (29 x 0.028) | 93 | 17.10 | 110 | 165 | 440 | 80.00 | 44.00 | 19.40 | RB-16-H20-304 |
| | 256SM-xA6x | 2 | | | 17.24 | 165 | 247 | 660 | | | 25.30 | RB-16-H20-304 |

SH Series Braided Hose

Standard Series: Heavy Weight with Medium Flexibility
 Materials: Hose: 321 and 316L Stainless
 Braid: 304 and 316L Stainless
 Construction: Annular Hose Close Pitch

ISO 10380
 Qualified

| NOM. I.D. (IN.) | PART NUMBER (See Chart) | BRAID LAYERS | BRAID CONSTRUCTION | BRAID COVERAGE (%) | NOM. O.D. (IN.) | MAXIMUM PRESSURE @70°F (PSIG) | | | CENTERLINE BEND RADIUS (IN.) | | WEIGHT PER FOOT (LBS.) | BRAID SLEEVE PART NUMBER |
|-----------------|-------------------------|--------------|--------------------|--------------------|-----------------|-------------------------------|-------|--------------|------------------------------|--------|------------------------|--------------------------|
| | | | | | | Working | Test | Normal Burst | Dynamic | Static | | |
| 1/4" | 04SH-xA00 | 0 | | | 0.50 | 180 | ---- | ---- | | | 0.09 | ---- |
| | 04SH-xA1x | 1 | 24 x 5 x 0.014 | 89 | 0.57 | 2,562 | 3,843 | 10,250 | 5.00 | 2.50 | 0.17 | 28-304 |
| | 04SH-xA2x | 2 | | | 0.64 | 4,099 | 6,149 | 16,400 | | | 0.26 | 36-304 |
| 3/8" | 06SH-xA00 | 0 | | | 0.67 | 100 | ---- | ---- | | | 0.13 | ---- |
| | 06SH-xA1x | 1 | 24 x 7 x 0.014 | 91 | 0.74 | 1,501 | 2,252 | 6,004 | 5.50 | 2.75 | 0.25 | 50-304 |
| | 06SH-xA2x | 2 | | | 0.81 | 2,401 | 3,602 | 9,604 | | | 0.36 | 60-304 |
| 1/2" | 08SH-xA00 | 0 | | | 0.82 | 80 | ---- | ---- | | | 0.39 | ---- |
| | 08SH-xA1x | 1 | 24 x 7 x 0.020 | 96 | 0.92 | 2,194 | 3,291 | 8,776 | 8.00 | 4.0 | 0.63 | 74-304 |
| | 08SH-xA2x | 2 | | | 1.02 | 3,510 | 5,265 | 14,040 | | | 0.87 | 88-304 |
| 3/4" | 12SH-xA00 | 0 | | | 1.21 | 70 | ---- | ---- | | | 0.48 | ---- |
| | 12SH-xA1x | 1 | 36 x 6 x 0.020 | 92 | 1.31 | 1,311 | 1,967 | 5,244 | 8.00 | 4.0 | 0.79 | 126-304 |
| | 12SH-xA2x | 2 | | | 1.41 | 2,098 | 3,147 | 8,392 | | | 1.10 | 140-304 |
| 1" | 16SH-xA00 | 0 | | | 1.50 | 40 | ---- | ---- | | | 0.79 | ---- |
| | 16SH-xA1x | 1 | 36 x 8 x 0.020 | 95 | 1.60 | 1,069 | 1,604 | 4,276 | 9.00 | 4.50 | 1.20 | 164-304 |
| | 16SH-xA2x | 2 | | | 1.70 | 1,710 | 2,565 | 6,840 | | | 1.61 | 178--304 |
| 1-1/4" | 20SH-xA00 | 0 | | | 1.85 | 33 | ---- | ---- | | | 1.02 | ---- |
| | 20SH-xA1x | 1 | 48 x 6 x 0.025 | 95 | 1.97 | 1,110 | 1,665 | 4,445 | 10.00 | 5.0 | 1.66 | 214-304 |
| | 20SH-xA2x | 2 | | | 2.10 | 1,776 | 2,664 | 7,104 | | | 2.30 | 232-304 |
| 1-1/2" | 24SH-xA00 | 0 | | | 2.17 | 20 | ---- | ---- | | | 1.36 | ---- |
| | 24SH-xA1x | 1 | 48 x 7 x 0.025 | 95 | 2.30 | 868 | 1,302 | 3,472 | 10.00 | 5.0 | 2.11 | 258-304 |
| | 24SH-xA2x | 2 | | | 2.43 | 1,388 | 2,082 | 5,552 | | | 2.86 | 276-304 |
| 2" | 32SH-xA00 | 0 | | | 2.51 | 15 | ---- | ---- | | | 1.60 | ---- |
| | 32SH-xA1x | 1 | 48 x 9 x 0.025 | 95 | 2.64 | 810 | 1,215 | 3,240 | 11.50 | 5.75 | 2.56 | 304-304 |
| | 32SH-xA2x | 2 | | | 2.76 | 1,296 | 1,944 | 5,184 | | | 3.52 | 324-304 |
| 2-1/2" | 40SH-xA00 | 0 | | | 3.23 | 10 | ---- | ---- | | | 2.00 | ---- |
| | 40SH-xA1x | 1 | 72 x 7 x 0.025 | 96 | 3.36 | 578 | 867 | 2,312 | 24.00 | 12.0 | 3.12 | RB-2.5-S16-04 |
| | 40SH-xA2x | 2 | | | 3.49 | 925 | 1,388 | 3,700 | | | 3.30 | RB-2.5-S16-04 |
| 3" | 48SH-xA00 | 0 | | | 3.78 | 10 | ---- | ---- | | | 2.97 | ---- |
| | 48SH-xA1x | 1 | 72 x 9 x 0.025 | 88 | 3.91 | 540 | 810 | 2,160 | 28.00 | 14.0 | 4.42 | RB-3-S16-04 |
| | 48SH-xA2x | 2 | | | 4.03 | 864 | 1,296 | 3,456 | | | 5.87 | RB-3-S16-04 |
| 4" | 64SH-xA00 | 0 | | | 4.81 | 8 | ---- | ---- | | | 3.10 | ---- |
| | 64SH-xA1x | 1 | 72 x 9 x 0.025 | 89 | 4.93 | 333 | 500 | 1,332 | 40.00 | 20.0 | 4.55 | RB-4-S16-04 |
| | 64SH-xA2x | 2 | | | 5.05 | 533 | 800 | 2,132 | | | 6.00 | RB-4-S16-04 |
| 6" | 96SH-xA00 | 0 | | | 6.87 | 5 | ---- | ---- | | | 3.85 | ---- |
| | 96SH-xA1x | 1 | 96 x 13 x 0.025 | 89 | 7.10 | 266 | 399 | 1,064 | 48.00 | 24.0 | 6.45 | RB-6-S16-06 |
| | 96SH-xA2x | 2 | | | 7.33 | 425 | 638 | 1,700 | | | 9.05 | RB-6-S16-06 |

SH- _____ A _____
 Hose Alloy Code Braid Code Braid Alloy Code

Hose Alloy Code: A = 321 Stainless
 C = 316L Stainless
 Braid Code: 0 = No Braid
 1 = Single Braid
 2 = Double Braid
 Braid Alloy Code: 0 = No Braid
 1 = 304 Stainless
 6 = 316L Stainless

Example: 04SH-AA11 =
 1/4" SH Series 321 Hose with Single 304 Braid

Corrugated Hose & Braid Part Numbers

04PL-AA11

| ID | Hose Size | Hose Series | Hose Alloy | Hose Type | Braid | Braid Alloy |
|-------|-----------|-------------|-------------|-------------|--------------------------|--------------|
| 0.25 | 04 | PL | A - 321 | A - ANNULAR | 0 - No Braid | 0 - No Braid |
| 0.38 | 06 | PLC | B - 304L | H - HELICAL | 1 - Single Braid | 1 - 304 |
| 0.50 | 08 | PM | C - 316L | | 2 - Double Braid | 2 - 321 |
| 0.75 | 12 | SM | D - C/S | | 3 - Triple Braid | 3 - BRONZE |
| 1.00 | 16 | SH | E - BRONZE | | 4 - Quadruple Braid | 4 - C/S |
| 1.25 | 20 | SXH | F - MONEL | | 5 - Single Braided Braid | 5 - MONEL |
| 1.50 | 24 | EB | G - INCONEL | | 6 - Double Braided Braid | 6 - 316L |
| 2.00 | 32 | EM | | | | 7 - INCONEL |
| 2.50 | 40 | EI | | | | |
| 3.00 | 48 | HL | | | | |
| 4.00 | 64 | HM | | | | |
| 5.00 | 80 | | | | | |
| 6.00 | 96 | | | | | |
| 8.00 | 128 | | | | | |
| 10.00 | 160 | | | | | |
| 12.00 | 192 | | | | | |
| 14.00 | 224 | | | | | |
| 16.00 | 256 | | | | | |
| 18.00 | 288 | | | | | |
| 20.00 | 320 | | | | | |

"C" Following 2 Letter Hose Series = Compressed Hose

Check out our other products

Precision Hose & Expansion Joints is one of very few American companies that manufactures a complete line of products designed to meet almost every industrial and commercial need.

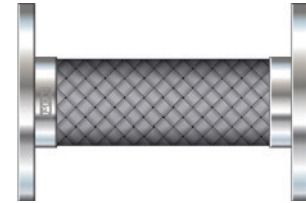
Please call the factory or visit us online to request a catalog for any of the following products:

- Corrugated Metal Hose & Braid
- Stripwound Metal Hose
- Weld Fittings & Braid Sleeves
- Metal Expansion Joints
- Rubber Expansion Joints
- Fabric Expansion Joints

If you have a special product that's not covered in one of our catalogs, please contact our engineering department for assistance. Our state of the art facility has the technology and ability to create custom products for any application requirement.

Pump Connectors

| FF SERIES: PUMP CONNECTORS | | | | | | |
|----------------------------|-----------------|----------------|-------------|---------------------------|-----------------------------|-----------------|
| HOSE I.D. | PHI Catalog No. | Overall Length | Live Length | Fitting Length (each end) | Working Pressure PSI @70°F* | Weight per unit |
| 2" | FF-32 | 9" | 5-3/4" | 5/8" | 400 | 11 |
| 2-1/2" | FF-40 | 9" | 5-3/4" | 5/8" | 285 | 14 |
| 3" | FF-48 | 9" | 5-3/4" | 5/8" | 240 | 15 |
| 4" | FF-64 | 9" | 5-3/4" | 5/8" | 260 | 22 |
| 5" | FF-80 | 11" | 7-1/2" | 3/4" | 220 | 29 |
| 6" | FF-96 | 11" | 7-1/2" | 3/4" | 200 | 36 |
| 8" | FF-128 | 12" | 8" | 1" | 190 | 60 |
| 10" | FF-160 | 13" | 9" | 1" | 165 | 85 |
| 12" | FF-192 | 14" | 10" | 1" | 125 | 120 |



SPECIFICATIONS

- Plate Flanges: ASA 150 lb. Standard Carbon Steel
- Stainless Steel Hose
- Stainless Steel Single Braid

Optional:

- 300 lb. or 600 lb. Flanges
- Double Braid

Larger sizes available. Please contact factory.

| MM SERIES: PUMP CONNECTORS | | | | | | |
|----------------------------|-----------------|----------------|-------------|---------------------------|-----------------------------|-----------------|
| HOSE I.D. | PHI Catalog No. | Overall Length | Live Length | Fitting Length (each end) | Working Pressure PSI @70°F* | Weight per unit |
| 1/2" | MM-8 | 6-1/2" | 2-1/4" | 1-1/2" | 1125 | .60 |
| 3/4" | MM-12 | 7" | 2-1/4" | 1-1/2" | 760 | .80 |
| 1" | MM-16 | 8" | 3" | 1-3/4" | 525 | 1.0 |
| 1-1/4" | MM-20 | 8-1/2" | 3" | 2" | 490 | 1.5 |
| 1-1/2" | MM-24 | 9" | 3-1/2" | 2" | 450 | 2.0 |
| 2" | MM-32 | 10-1/2" | 4-1/2" | 2-1/4" | 400 | 2.7 |
| 2-1/2" | MM-40 | 12" | 5-1/2" | 2-1/2" | 285 | 4.0 |
| 3" | MM-48 | 14" | 6-1/2" | 3" | 240 | 6.0 |
| 4" | MM-64 | 16" | 7" | 3-1/2" | 260 | 9.0 |



SPECIFICATIONS

- Male NPT End Connections, Carbon Steel Schedule 40
- Stainless Steel Hose
- Stainless Steel Single Braid

Optional:

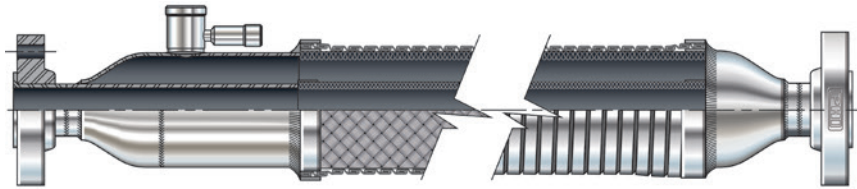
- Schedule 80 Fittings
- Stainless Steel Fittings
- Hex Nut Attachment
- Double Braid

Larger sizes available. Please contact factory.

*To calculate pressure at elevated temperatures, see page 12 for Temperature Correction Factors Table.

Special Application Assemblies

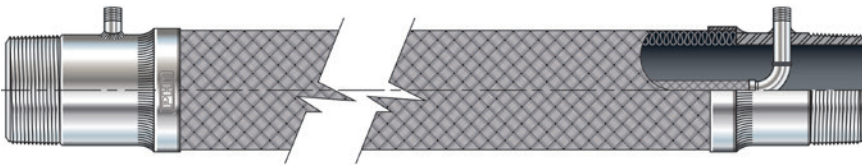
Precision Hose & Expansion Joints has the proven capability of fabricating intricate and highly sophisticated assemblies to satisfy the needs of our customers. A sampling of these quality assured assemblies are as follows:



JACKETED ASSEMBLY

Jacketed assemblies are normally used in one of the following applications:

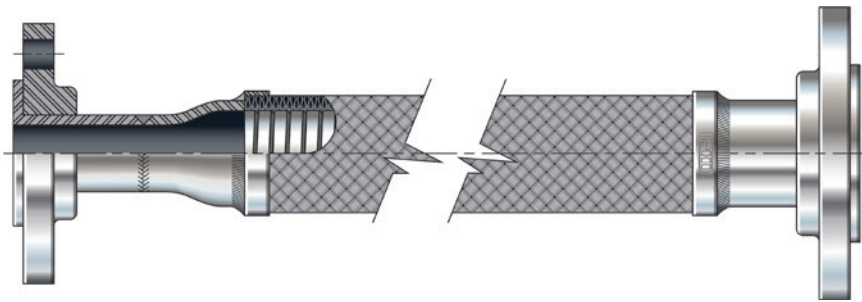
1. As a heated transfer line for those products, such as Sulphur, which must be maintained at an elevated temperature in order to flow readily. Steam or hot oil is circulated through the jacket, which in turn heats the product being conveyed in the core hose.
2. As a cryogenic transfer line, maintaining a high vacuum in the jacket effectively insulates cryogenic liquids being conveyed in the core hose.



TRACED ASSEMBLY

Traced Hose assemblies are used:

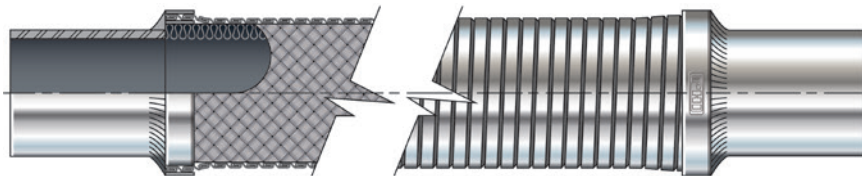
When the product being conveyed must be heated in order to flow freely. Steam or hot oil circulated through the inner tracer hose heats the product in order to maintain flow rates.



LINED ASSEMBLY

Lined hose assemblies are used:

When high flow rate of the conveyed product could cause resonant vibration in an unlined corrugate metal hose.



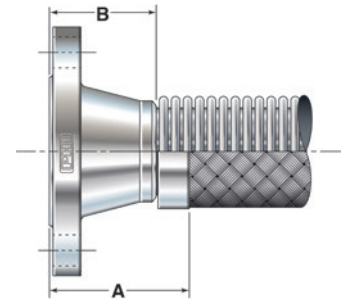
GUARDED ASSEMBLY

Guarded assemblies are used:

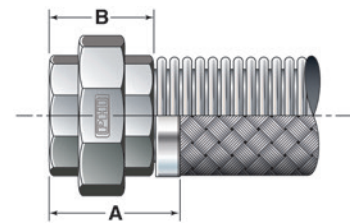
Where a corrugated metal hose could be damaged by rough handling, abrasion, or over-bending.

Hose Fittings

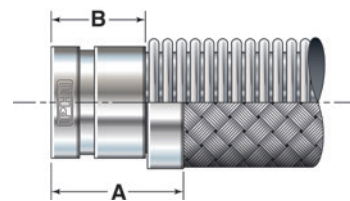
| WELDED NECK FLANGE: | | | | | | Stainless Steel / Carbon Steel | | | | | | | | |
|---------------------|------|------|------|-------|-------|--------------------------------|-------|------|------|------|------|------|------|------|
| HOSE SIZE | 1/2 | 3/4 | 1 | 1-1/4 | 1-1/2 | 2 | 2-1/2 | 3 | 4 | 5 | 6 | 8 | 10 | 12 |
| A | 2.50 | 2.81 | 2.93 | 3.00 | 3.19 | 3.25 | 3.75 | 3.75 | 4.00 | 4.50 | 4.50 | 5.00 | 5.00 | 5.50 |
| B | 1.88 | 2.06 | 2.19 | 2.25 | 2.44 | 2.50 | 2.75 | 2.75 | 3.00 | 3.50 | 3.50 | 4.00 | 4.00 | 4.50 |



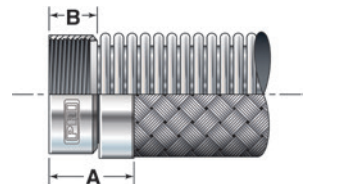
| FEMALE UNION: | | | | | | Stainless Steel / Carbon Steel | | | | | |
|---------------|------|------|------|------|------|--------------------------------|-------|------|-------|------|------|
| HOSE SIZE | 1/4 | 3/8 | 1/2 | 3/4 | 1 | 1-1/4 | 1-1/2 | 2 | 2-1/2 | 3 | 4 |
| A | 1.84 | 2.11 | 2.35 | 2.77 | 2.94 | 3.01 | 3.22 | 3.50 | 4.25 | 4.54 | 4.90 |
| B | 1.46 | 1.61 | 1.72 | 2.02 | 2.19 | 2.26 | 2.47 | 2.75 | 3.25 | 3.54 | 3.90 |



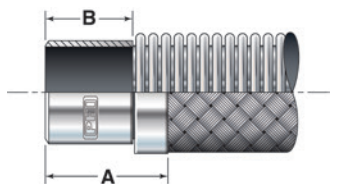
| GROOVED END FITTING: | | | | | | Stainless Steel / Carbon Steel | | | |
|----------------------|------|------|------|-------|-------|--------------------------------|-------|------|------|
| HOSE SIZE | 1/2 | 3/4 | 1 | 1-1/4 | 1-1/2 | 2 | 2-1/2 | 3 | 4 |
| A | 2.63 | 2.75 | 2.75 | 2.75 | 2.75 | 2.75 | 3.00 | 3.00 | 3.00 |
| B | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |



| FEMALE PIPE COUPLING: | | | | | | Stainless Steel / Carbon Steel | | | | | |
|-----------------------|------|------|------|------|------|--------------------------------|-------|------|-------|------|------|
| HOSE SIZE | 1/4 | 3/8 | 1/2 | 3/4 | 1 | 1-1/4 | 1-1/2 | 2 | 2-1/2 | 3 | 4 |
| A | 0.81 | 0.97 | 1.22 | 1.42 | 1.50 | 1.62 | 1.62 | 1.77 | 2.18 | 2.30 | 2.57 |
| B | 0.43 | 0.47 | 0.59 | 0.67 | 0.75 | 0.87 | 0.87 | 1.02 | 1.18 | 1.30 | 1.57 |

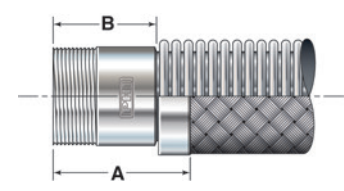


| WELD NIPPLE / 37-1/2°: | | | | | | Stainless Steel / Carbon Steel | | | | | |
|------------------------|------|------|------|------|------|--------------------------------|-------|------|-------|------|------|
| HOSE SIZE | 1/4 | 3/8 | 1/2 | 3/4 | 1 | 1-1/4 | 1-1/2 | 2 | 2-1/2 | 3 | 4 |
| A | 1.88 | 2.00 | 2.63 | 2.75 | 2.75 | 3.25 | 3.25 | 3.25 | 4.00 | 4.00 | 4.00 |
| B | 1.50 | 1.50 | 2.00 | 2.00 | 2.00 | 2.50 | 2.50 | 2.50 | 3.00 | 3.00 | 3.00 |

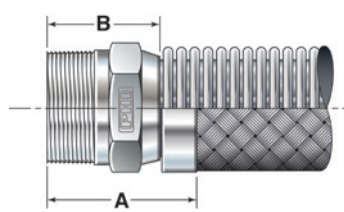


Hose Fittings

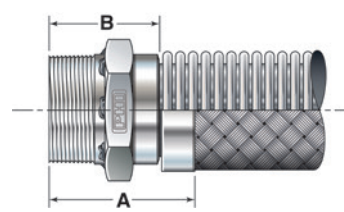
| MALE PIPE NIPPLE: Sch 40 (Sch 80 Available) | | | | | | | Stainless Steel / Carbon Steel | | | | |
|---|------|------|------|------|------|-------|--------------------------------|------|-------|------|------|
| HOSE SIZE | 1/4 | 3/8 | 1/2 | 3/4 | 1 | 1-1/4 | 1-1/2 | 2 | 2-1/2 | 3 | 4 |
| A | 1.88 | 2.00 | 2.63 | 2.75 | 2.75 | 3.25 | 3.25 | 3.25 | 4.00 | 4.00 | 4.00 |
| B | 1.50 | 1.50 | 2.00 | 2.00 | 2.00 | 2.50 | 2.50 | 2.50 | 3.00 | 3.00 | 3.00 |



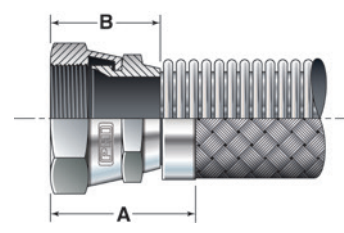
| MALE HEX NIPPLE: | | | | | Stainless Steel / Carbon Steel | | | | |
|------------------|------|------|------|------|--------------------------------|-------|-------|------|--|
| HOSE SIZE | 1/4 | 3/8 | 1/2 | 3/4 | 1 | 1-1/4 | 1-1/2 | 2 | |
| A | 1.66 | 1.78 | 2.13 | 2.31 | 2.50 | 2.53 | 2.69 | 2.72 | |
| B | 1.28 | 1.28 | 1.50 | 1.56 | 1.75 | 1.78 | 1.94 | 1.97 | |



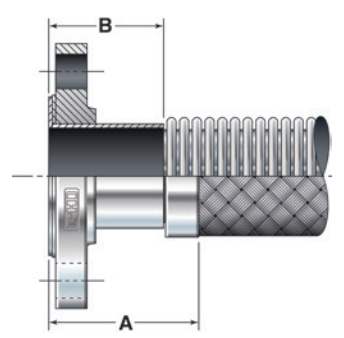
| MALE PIPE NIPPLE W/ HEX NUT: | | | | | Stainless Steel / Carbon Steel | | |
|------------------------------|------|-------|-------|------|--------------------------------|------|------|
| HOSE SIZE | 1 | 1-1/4 | 1-1/2 | 2 | 2-1/2 | 3 | 4 |
| A | 2.75 | 3.25 | 3.25 | 3.25 | 4.00 | 4.00 | 4.00 |
| B | 2.00 | 2.50 | 2.50 | 2.50 | 3.00 | 3.00 | 3.00 |



| FEMALE JIC: | | | | | | | | | | Stainless Steel / Carbon Steel | |
|-------------|------|------|------|------|------|------|-------|-------|------|--------------------------------|--|
| HOSE SIZE | 1/4 | 3/8 | 1/2 | 5/8 | 3/4 | 1 | 1-1/4 | 1-1/2 | 2 | | |
| A | 1.70 | 1.89 | 2.16 | 2.38 | 2.49 | 2.68 | 2.80 | 3.00 | 3.32 | | |
| B | 1.33 | 1.39 | 1.53 | 1.63 | 1.74 | 1.93 | 2.05 | 2.25 | 2.57 | | |



| SCH 10/TYPE C STUB END WITH FLOATING FLANGE: | | | | | | | | | | | | | Stainless Steel | |
|--|------|------|------|-------|-------|------|-------|------|------|------|------|------|-----------------|------|
| HOSE SIZE | 1/2 | 3/4 | 1 | 1-1/4 | 1-1/2 | 2 | 2-1/2 | 3 | 4 | 5 | 6 | 8 | 10 | 12 |
| A | 2.63 | 2.75 | 2.75 | 2.75 | 2.75 | 3.25 | 3.50 | 3.50 | 4.00 | 4.00 | 4.50 | 5.00 | 6.00 | 7.00 |
| B | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.50 | 2.50 | 2.50 | 3.00 | 3.00 | 3.50 | 4.00 | 5.00 | 6.00 |



Live Hose Length Bending Table

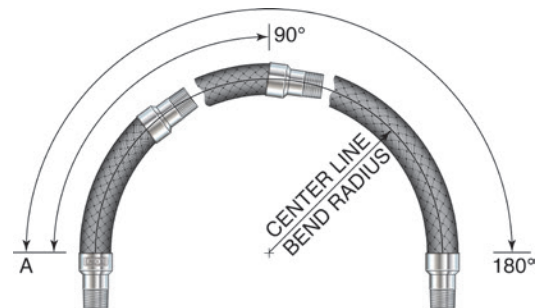
| Centerline Bend Radius in Inches | MINIMUM LIVE LENGTH | | |
|----------------------------------|---------------------|--------|------|
| | 45° | 90° | 180° |
| 1 | 1 | 2 | 4 |
| 2 | 2 | 3 1/2 | 7 |
| 3 | 2 1/2 | 5 | 10 |
| 4 | 3 1/2 | 6 1/2 | 13 |
| 5 | 4 | 8 | 16 |
| 6 | 5 | 10 | 20 |
| 7 | 5 1/2 | 11 | 22 |
| 8 | 6 1/2 | 13 | 26 |
| 9 | 7 1/2 | 14 1/2 | 29 |
| 10 | 8 | 16 | 32 |
| 11 | 9 | 18 | 36 |
| 12 | 10 | 19 1/2 | 39 |
| 13 | 10 1/2 | 21 | 42 |
| 14 | 11 1/2 | 22 1/2 | 45 |
| 15 | 12 | 24 | 48 |
| 16 | 13 | 26 | 52 |
| 17 | 13 1/2 | 27 | 54 |
| 18 | 14 1/2 | 29 | 58 |
| 19 | 15 1/2 | 30 1/2 | 61 |
| 20 | 16 | 32 | 64 |
| 21 | 17 | 33 1/2 | 67 |
| 22 | 17 1/2 | 35 | 70 |
| 23 | 18 1/2 | 36 1/2 | 73 |
| 24 | 19 | 38 | 76 |
| 25 | 20 | 40 | 80 |

| Centerline Bend Radius in Inches | MINIMUM LIVE LENGTH | | |
|----------------------------------|---------------------|--------|------|
| | 45° | 90° | 180° |
| 26 | 21 | 42 | 83 |
| 27 | 21 1/2 | 43 | 86 |
| 28 | 22 1/2 | 44 1/2 | 89 |
| 29 | 23 | 46 | 92 |
| 30 | 24 | 48 | 95 |
| 31 | 24 1/2 | 49 | 98 |
| 32 | 25 1/2 | 51 | 101 |
| 34 | 27 | 54 | 108 |
| 36 | 28 1/2 | 57 | 114 |
| 38 | 30 | 60 | 120 |
| 40 | 9 | 18 | 36 |
| 45 | 36 | 72 | 144 |
| 50 | 40 | 80 | 160 |
| 55 | 45 | 90 | 180 |
| 60 | 49 | 97 | 194 |
| 65 | 53 | 105 | 210 |
| 70 | 56 | 112 | 224 |
| 80 | 65 | 130 | 260 |
| 90 | 73 | 145 | 290 |
| 100 | 80 | 160 | 320 |
| 120 | 95 | 190 | 380 |
| 140 | 112 | 225 | 450 |
| 160 | 128 | 255 | 510 |
| 180 | 143 | 285 | 570 |
| 200 | 160 | 320 | 640 |

IMPORTANT NOTES:

Determine the centerline bend radius required for your application.

- Under the column headed "Centerline Bend Radius in Inches," find your radius and read horizontally to the desired degree of bend (45°, 90°, or 180°).
- The number in that column will be the minimum live length required to make that degree of bend along the desired centerline radius.
- Note: Add fitting and braid sleeve length to dimension "A" to each end of hose for overall length.



Live Hose Length for Lateral Offset Motion

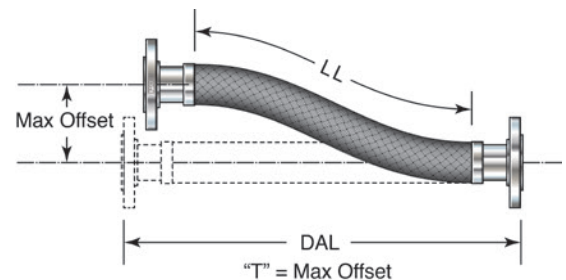
| Centerline Bend Radius in Inches | Maximun Distance "T" One Side of Centerline | | | | | | | | | | | | | |
|----------------------------------|---|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| | 1/8" | 1/4" | 3/8" | 1/2" | 3/4" | 1" | 1 1/2" | 2" | 3" | 4" | 5" | 6" | 8" | 10" |
| 5 | 2 | 3 | 3 1/2 | 4 | 5 | 6 | 7 | 7 3/4 | 10 1/4 | 12 1/4 | 13 1/2 | 15 | 18 | 20 1/2 |
| 6 | 2 1/4 | 3 1/4 | 3 3/4 | 4 1/4 | 5 1/4 | 6 1/4 | 7 1/2 | 8 1/4 | 10 3/4 | 12 3/4 | 14 1/4 | 16 | 19 | 21 1/2 |
| 7 | 2 3/8 | 3 3/8 | 4 | 4 3/4 | 5 3/4 | 6 3/4 | 8 1/4 | 9 1/4 | 11 1/2 | 13 1/2 | 15 1/4 | 17 | 19 3/4 | 23 |
| 8 | 2 1/2 | 3 1/2 | 4 1/4 | 5 | 6 | 7 | 8 3/4 | 10 | 12 1/2 | 14 1/2 | 16 1/4 | 18 | 21 1/2 | 24 1/4 |
| 9 | 2 5/8 | 3 3/4 | 4 1/2 | 5 1/4 | 6 1/2 | 7 1/2 | 9 1/4 | 10 3/4 | 13 1/4 | 15 1/4 | 17 | 19 | 22 1/2 | 25 1/2 |
| 10 | 2 3/4 | 4 | 4 3/4 | 5 1/2 | 6 3/4 | 8 | 9 3/4 | 11 1/4 | 13 3/4 | 16 | 18 | 20 | 23 1/2 | 26 1/2 |
| 11 | 2 7/8 | 4 1/8 | 5 | 5 3/4 | 7 1/4 | 8 1/4 | 10 1/4 | 11 3/4 | 14 1/2 | 16 3/4 | 18 3/4 | 20 3/4 | 24 1/2 | 27 1/2 |
| 12 | 3 | 4 1/4 | 5 1/4 | 6 | 7 1/2 | 8 1/2 | 10 1/2 | 12 1/4 | 15 | 17 1/2 | 19 1/2 | 21 1/2 | 25 1/2 | 28 3/4 |
| 13 | 3 1/8 | 4 1/2 | 5 1/2 | 6 1/4 | 7 3/4 | 9 | 10 3/4 | 12 3/4 | 15 3/4 | 18 | 20 1/4 | 22 1/2 | 26 1/4 | 29 3/4 |
| 14 | 3 1/4 | 4 3/4 | 5 3/4 | 6 1/2 | 8 | 9 1/4 | 11 1/4 | 13 1/4 | 16 1/4 | 18 3/4 | 21 | 23 1/2 | 27 1/4 | 30 3/4 |
| 15 | 3 3/8 | 4 7/8 | 5 7/8 | 6 3/4 | 8 1/4 | 9 3/4 | 11 3/4 | 13 1/2 | 16 3/4 | 19 1/4 | 21 3/4 | 24 1/4 | 28 | 31 3/4 |
| 16 | 3 1/2 | 5 | 6 | 7 | 8 1/2 | 10 | 12 1/4 | 14 | 17 1/4 | 20 | 22 1/2 | 25 | 29 | 32 3/4 |
| 17 | 3 5/8 | 5 1/8 | 6 1/4 | 7 1/4 | 8 3/4 | 10 1/4 | 12 1/2 | 14 1/2 | 17 3/4 | 2 1/2 | 23 1/4 | 25 1/2 | 29 3/4 | 33 1/2 |
| 18 | 3 3/4 | 5 1/4 | 6 1/2 | 7 1/2 | 9 | 10 1/2 | 13 | 15 | 18 1/4 | 21 1/4 | 24 | 26 | 30 1/2 | 34 |
| 19 | 3 7/8 | 5 3/8 | 6 5/8 | 7 3/4 | 9 1/4 | 10 3/4 | 13 1/4 | 15 1/4 | 18 3/4 | 21 3/4 | 24 1/2 | 26 3/4 | 31 1/4 | 35 |
| 20 | 4 | 5 1/2 | 6 3/4 | 8 | 9 1/2 | 11 | 13 1/2 | 15 3/4 | 19 1/4 | 22 1/2 | 25 | 27 1/2 | 32 1/4 | 36 1/4 |
| 22 | 4 1/8 | 5 3/4 | 7 | 8 1/4 | 9 3/4 | 11 1/2 | 14 | 16 1/4 | 20 | 23 1/4 | 25 3/4 | 28 1/2 | 33 1/2 | 37 1/2 |
| 24 | 4 1/4 | 6 | 7 1/4 | 8 1/2 | 10 | 12 | 14 1/2 | 17 | 20 3/4 | 24 | 26 1/2 | 29 1/2 | 34 3/4 | 39 |
| 26 | 4 3/8 | 6 1/4 | 7 1/2 | 8 3/4 | 10 1/2 | 12 1/2 | 15 | 17 1/2 | 21 1/2 | 25 | 27 3/4 | 30 3/4 | 36 | 40 1/4 |
| 28 | 4 1/2 | 6 1/2 | 7 3/4 | 9 | 11 | 13 | 15 3/4 | 18 1/4 | 22 1/2 | 26 | 29 | 32 | 37 1/2 | 41 1/2 |
| 30 | 4 3/4 | 6 3/4 | 8 1/4 | 9 1/2 | 11 3/4 | 13 1/2 | 16 1/2 | 19 | 23 1/2 | 27 1/4 | 30 1/2 | 33 1/2 | 39 | 43 3/4 |
| 35 | 5 1/4 | 7 1/4 | 9 | 10 1/4 | 12 1/2 | 14 1/2 | 18 | 20 3/4 | 26 1/4 | 29 1/2 | 32 3/4 | 36 | 42 | 47 |
| 40 | 5 1/2 | 7 3/4 | 9 1/2 | 11 | 13 1/2 | 15 1/2 | 19 | 22 | 27 | 31 1/4 | 35 | 38 1/2 | 44 3/4 | 50 |
| 45 | 6 | 8 1/4 | 10 | 11 3/4 | 14 1/4 | 16 1/2 | 20 3/4 | 23 1/2 | 28 1/2 | 33 1/4 | 37 | 41 | 47 1/2 | 53 |
| 50 | 6 1/4 | 8 3/4 | 10 3/4 | 12 1/4 | 15 | 17 1/2 | 21 1/2 | 24 3/4 | 30 | 35 | 39 | 43 | 50 | 56 |
| 60 | 6 3/4 | 9 1/2 | 11 3/4 | 13 1/2 | 16 1/2 | 19 | 23 1/4 | 27 | 33 | 38 1/4 | 43 | 47 | 54 1/2 | 61 |
| 70 | 7 1/4 | 10 1/4 | 12 3/4 | 14 3/4 | 17 3/4 | 20 1/2 | 25 1/4 | 29 | 35 1/2 | 41 1/2 | 46 | 51 | 58 3/4 | 65 3/4 |
| 80 | 7 3/4 | 11 | 13 1/2 | 15 1/2 | 19 | 22 | 27 | 31 | 38 | 44 | 49 1/2 | 54 | 62 3/4 | 70 |
| 90 | 8 1/4 | 11 3/4 | 14 1/4 | 16 1/2 | 20 1/4 | 23 1/2 | 28 1/2 | 33 | 40 1/2 | 46 3/4 | 52 | 57 1/4 | 66 1/4 | 74 1/4 |
| 100 | 8 3/4 | 12 1/4 | 15 | 17 1/2 | 21 1/4 | 24 1/2 | 30 | 35 | 42 1/2 | 49 1/4 | 55 | 60 1/2 | 69 3/4 | 78 1/4 |

ASSEMBLY LENGTH (Live Length and Overall Length)

The live length and overall length of the assembly must be determined to complete the design. The live length is the flexible portion of an assembly; after the live length has been determined by adding the dimensions of the end fittings.

IMPORTANT NOTES

The values shown in the shaded portion of this chart are applicable to static bends only. For intermittent flexing, the offset motion should never be greater than 25% of the centerline bend radius.



TEMPERATURE CORRECTION FACTORS

Temperature Correction Factors for Elevated Temperature Applications

As the service temperature increases, the maximum pressure a hose assembly can withstand decreases. The material from which the hose is made and the method of fitting attachment (mechanical, soldered, welded, silver brazed) determines the maximum pressure at which an assembly can be used.

Multiply the listed correction factor times the hoses room temperature rating to determine elevated temperature maximum working pressure.

| Temp °F | Material | | | | | |
|---------|---------------------|---------------|--------|-------|-----------|---------|
| | 304, 316L Stainless | 321 Stainless | Bronze | Monel | Hastelloy | Inconel |
| Room | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| 150 | 0.96 | 0.97 | 0.92 | 0.93 | 0.97 | 0.99 |
| 200 | 0.92 | 0.94 | 0.89 | 0.90 | 0.94 | 0.98 |
| 250 | 0.91 | 0.92 | 0.86 | 0.87 | 0.92 | 0.97 |
| 300 | 0.86 | 0.88 | 0.83 | 0.83 | 0.91 | 0.97 |
| 350 | 0.85 | 0.86 | 0.81 | 0.82 | 0.89 | 0.96 |
| 400 | 0.82 | 0.83 | 0.78 | 0.79 | 0.87 | 0.95 |
| 450 | 0.80 | 0.81 | 0.75 | 0.77 | 0.86 | 0.94 |
| 500 | 0.77 | 0.78 | --- | 0.73 | 0.85 | 0.94 |
| 600 | 0.73 | 0.74 | --- | 0.72 | 0.84 | 0.92 |
| 700 | 0.69 | 0.70 | --- | 0.71 | 0.82 | 0.90 |
| 800 | 0.64 | 0.66 | --- | 0.70 | 0.81 | 0.89 |
| 900 | --- | 0.62 | --- | --- | 0.79 | 0.87 |
| 1000 | --- | 0.60 | --- | --- | 0.78 | 0.86 |
| 1100 | --- | 0.58 | --- | --- | 0.75 | 0.84 |
| 1200 | --- | 0.55 | --- | --- | 0.73 | 0.82 |
| 1300 | --- | 0.50 | --- | --- | 0.69 | 0.79 |
| 1400 | --- | 0.44 | --- | --- | 0.65 | 0.77 |
| 1500 | --- | 0.40 | --- | --- | --- | 0.74 |

SATURATED STEAM PRESSURE TEMPERATURE

Vacuum HG

| Saturated Steam | Temperature °F | Saturated Steam | Temperature °F | Saturated Steam | Temperature °F | Saturated Steam | Temperature °F |
|-----------------|----------------|-----------------|----------------|-----------------|----------------|-----------------|----------------|
| ---- | 0 | 15 | 250 | 90 | 331 | 300 | 422 |
| ---- | 20 | 20 | 259 | 95 | 335 | 350 | 436 |
| 29.74 | 32 | 25 | 267 | 10 | 338 | 400 | 448 |
| 29.67 | 40 | 30 | 274 | 102 | 341 | 450 | 460 |
| 29.40 | 60 | 35 | 281 | 110 | 344 | 500 | 470 |
| 28.89 | 80 | 40 | 287 | 115 | 347 | 600 | 489 |
| 27.99 | 100 | 45 | 292 | 120 | 350 | 700 | 505 |
| 26.48 | 120 | 50 | 298 | 125 | 353 | 800 | 520 |
| 24.04 | 140 | 55 | 303 | 130 | 356 | 900 | 520 |
| 20.27 | 160 | 60 | 307 | 150 | 366 | 1000 | 546 |
| 14.63 | 180 | 65 | 312 | 175 | 377 | 1250 | 574 |
| 6.46 | 200 | 70 | 316 | 200 | 388 | 1500 | 606 |
| 0 | 212 | 75 | 320 | 225 | 397 | 2500 | 669 |
| 5 | 227 | 80 | 324 | 250 | 406 | 3000 | 696 |
| 10 | 238 | 85 | 328 | 275 | 414 | 3191 | 705 |

Technical Data

FLOW VELOCITY:

When to use Liners

Liquid or gas applications conveying media at high velocity should use an interlock liner in the hose assembly. This liner will decrease the turbulence caused by the high velocity and reduce the vibration that will occur. A liner is recommended if the velocity is greater than the following:

| Media | Hose Alignment | Maximum Velocity NO Liner (ft./sec.) |
|--------|----------------|--------------------------------------|
| liquid | straight | 70 |
| liquid | 45° bend | 55 |
| liquid | 90° bend | 35 |
| gas | straight | 140 |
| gas | 45° bend | 110 |
| gas | 90° bend | 70 |

Conversion Formulas

| Definitions | Feet Per Second (ft./sec.) |
|----------------------------|---------------------------------|
| gph: gallons per hour | $(gph \div ID^2) \times 0.0068$ |
| gpm: gallons per minute | $(gpm \div ID^2) \times 0.4083$ |
| cfh: cubic feet per hour | $(cfh \div ID^2) \times 0.0509$ |
| cfm: cubic feet per minute | $(cfm \div ID^2) \times 3.0558$ |
| cfs: cubic feet per second | $(cfs \div ID^2) \times 183.35$ |

PRESSURE:

Maximum Rated Working Pressure

The maximum pressure that a hose should be subjected to on a continuous basis. We established this rating by multiplying the nominal rated burst pressure by 25%. Our catalog pressure is calculated at 70°F.

Maximum Rate Test Pressure

The maximum pressure a hose should be subjected to during proof pressure or system testing. Hose corrugation deformation will occur if the maximum rated test pressure is exceeded. The maximum rate working pressure is multiplied by 150% to determine the maximum rated test pressure.

Nominal Rate Burst Pressure

The average pressure at which the core or braid will rupture at ambient temperature. Correct hose assembly fabrication procedure must be used to ensure the hose will meet our catalog pressures.

Pulsating or Shock Pressure

The performance of metal hose can be greatly reduced under this type of working pressure. Pressures are normally reduced by 50% in pulsating or shock pressure applications.

Pressure/Temperature Correction

Metal hose pressure capabilities decrease as the temperature increases. Consult the temperature correction factor table to determine pressure rating at elevated temperatures.

Safety Factors

The maximum working pressure should not be greater than 25% of the nominal rated burst pressure after correcting for the application temperature. The safety factor is generally expressed as a ratio of 4:1.

Pressure Drop

Pressure drop occurs in long hose runs. The amount of pressure loss is approximately 3 times that of steel pipe.

MEDIA:

Our metal hose assembly engineer must know what the hose will convey. Matching the application piping material is sometimes used as a guide in selecting the alloy for the metal hose. Metal hose is manufactured from thin wall material and may not have the same total life a heavier wall tube or pipe of the same material. Some factors to be considered when designing metal hose assemblies include corrosion, abrasion, and viscosity of the media conveyed.

Corrosion

Material selection of the core and braid should take into consideration the corrosive nature of the media conveyed by the hose assembly and the outside environment.

Abrasion

For internal abrasion, premature failure can occur if the media is abrasive. The use of interlock liner may extend the life of a hose assembly. For external abrasion, a protective cover may be used to extend hose life. This cover is normally stainless steel interlock hose. See our catalog page 7.

Viscosity

Flow of viscous media can be enhanced by incorporating the use of a jacketed hose assembly. This design utilizes an inner hose that is encapsulated by an outer hose. See our catalog page 7.

TEMPERATURE:

Operating Temperature

Each hose material had unique temperature capabilities. Consult Temperature Correction Factor table for temperatures.

TESTING:

Standard testing of the weld and structural components of the hose assembly include hydrostatic testing and pneumatic testing (All of our hose assemblies are 100% tested). Other testing methods used include mass spectrometer, cold shock and dye penetration.

CLEANING:

Precision Hose & Expansion Joints offers special cleaning of corrugated hose for oxygen service and other applications.

Corrosion Resistance

| | Bronze | Monel | Carbon Steel | 304L/321 Stainless | 316L Stainless |
|-------------------------------|----------------|----------------|----------------|--------------------|----------------|
| Acetaldehyde | C ² | A | B | A | A |
| Acetanilide | B ³ | B | B | B | B |
| Acetic Acid | C | B | C | B ¹ | A ¹ |
| Acetic Anhydride | B | B | C | B | B |
| Acetone | A | A | C | B | B |
| Acetophenone | A | A | A | B | B |
| Acetylene | C ² | A | A | A | A |
| Acrylates | B | B | B | B | B |
| Acrylic Acid | B | B | C | B | B |
| Acrylonitrile | A ⁴ | A | A | A | A |
| Alcohols | A ⁵ | A | A ⁵ | A | A |
| Alum | B | B | B | B | B |
| Alumina | A | A | A | A | A |
| Aluminum Acetate | B | B | B | B | B |
| Aluminum Chloride-Dry | B ¹ | A | B | A | A |
| Aluminum Chloride-Moist | C | B | C ³ | C ^{3,4} | C ³ |
| Aluminum Fluoride | B | B | B | C | C |
| Aluminum Hydroxide | B | B | B | A | A |
| Aluminum Sulfate | C | B | C | B ^{1,3} | A ³ |
| Ammonia-Dry | A | A | A | A | A |
| Ammonia-Moist | C ³ | C | C ³ | A | A |
| Ammonium Acetate | C | A | A | A | A |
| Ammonium Bromide | C | B | C | C ⁴ | C ⁴ |
| Ammonium Chloride-Dry | C ⁴ | A | B | A | A |
| Ammonium Chloride-Moist | C ⁴ | B | C | C ^{3,4} | C ³ |
| Ammonium Hydroxide 6 | C ³ | A | B | A | A |
| Ammonium Nitrate | C ² | C ² | C ³ | A | A |
| Ammonium Sulfate | C | B | C | C ¹ | B |
| Amyl Acetate | A | A | A | A | A |
| Amyl Alcohol | A | A | A | A | A |
| Amyl Chloride-Dry | A | A | B | A | A |
| Amyl Chloride-Moist | C | B | C | C ^{3,4} | C ³ |
| Aniline | C ³ | A | C | B | B |
| Aniline Dyes | C ³ | A | C | B | B |
| Asphalt | A | A | A | A | A |
| Atmosphere-Industrial | A | A | C | B ⁴ | A ⁴ |
| Atmosphere-Marine | A | A | C | B ⁴ | B ⁴ |
| Atmosphere-Rural | A | A | C | A | A |
| Barium Carbonate | B | B | B | B | B |
| Barium Chloride-Dry | B | A | A | A | A |
| Barium Chloride-Moist | B | B | B | C ^{3,4} | C ³ |
| Barium Hydroxide | C | B | B | B | A |
| Barium Sulfate | B | B | B | B | B |
| Barium Sulfide | C | C | C | B | B |
| Beer | A | A | C | A | A |
| Beet Sugar Syrups | A | A | B | A | A |
| Benzaldehyde | C | B | C | B | B |
| Benzene (Benzol) | A | A | A | A | A |
| Benzolc Acid | A | B | C | A | A |
| Benzylamine | C | B | B | B | B |
| Benzyl Chloride-Dry | B | A | A | A | A |
| Benzyl Chloride-Moist | B | B | C | C ^{3,4} | C ³ |
| Black Liquor, Sulfate Process | C | A | C | B | B |
| Bleaching Powder-Dry | B ¹ | A | C | A | A |

| | Bronze | Monel | Carbon Steel | 304L/321 Stainless | 316L Stainless |
|----------------------------|----------------|-------|----------------|--------------------|------------------|
| Bleaching Powder-Moist | B | B | C | C ^{1,3,4} | C ^{3,4} |
| Borax | A | A | B | A | A |
| Bordeaux Mixture | B | A | B | A | A |
| Boric Acid | B | B | C | A | A |
| Boron Trichloride-Dry | B | B | A | B | B |
| Boron Trichloride-Moist | B | B | B | C ^{3,4} | C ³ |
| Boron Trifluoride-Dry | B | B | A | B | B |
| Brines | B | B | C | C ^{3,4} | C ³ |
| Bromic Acid | C | C | C | C | C |
| Bromine-Dry | A | A | C | B | B |
| Bromine-Moist | B | B | C | C | C |
| Butladene | A | A | A | A | A |
| Butane | A | A | A | A | A |
| Butano (Butyl Alcohol) | A | A | A ⁵ | A | A |
| Butyl Phenois | B | A | B ⁵ | B | B |
| Butylamine | C ³ | A | A | A | A |
| Butric Acid | B | B | C | B | B |
| Cadmium Chloride-Moist | B | B | C | C ^{3,4} | C ³ |
| Cadmium Chloride-Dry | B | A | A | A | A |
| Cadmium Sulfate | B | A | B | A | A |
| Calcium Bisulfite | B | B | B | B ¹ | B |
| Calcium Bromide | B | B | C | C ³ | C ³ |
| Calcium Chloride-Moist | B | B | C | C ^{3,4} | C ³ |
| Calcium Chloride-Dry | B | A | A | A | A |
| Calcium Fluoride | B | B | C | C | C |
| Calcium Hydroxide | B | B | C | B | B |
| Calcium Hypochlorite-Moist | C | B | C | C ^{3,4} | C ^{3,4} |
| Calcium Hypochlorite-Dry | B | A | B | A | A |
| Calcium Nitrate | B | B | C ¹ | B ¹ | B |
| Calcium Oxide | A | A | A | A | A |
| Cane Sugar Syrups | A | A | B | A | A |
| Carbolic Acid (Phenol) | B | B | C | B | A |
| Carbon Dioxide-Dry | A | A | A | A | A |
| Carbon Dioxide-Moist | C ⁴ | A | C | A | A |
| Carbonated Beverages | B | A | C | A | A |
| Carbonated Water | B ⁴ | A | C | A | A |
| Carbon Disulfide | B | B | B | B | B |
| Carbon Tetrachloride-Dry | A | A | B | A | A |
| Carbon Tetrachloride-Moist | B | B | C | C ^{3,4} | C ⁴ |
| Castor Oil | A | A | A | A | A |
| Chlorine-Dry | A | A | B | A | A |
| Chlorine-Moist | C | B | C | C ^{3,4} | C ³ |
| Chloroacetic Acid | C | B | C | C ^{3,4} | C ³ |
| Chloric Acid | C | C | C | C ³ | C ³ |
| Chlorine Dioxide-Dry | B | A | B | A | A |
| Chlorine Dioxide-Moist | C | B | C | C ^{3,4} | C ³ |
| Chloroform-Dry | A | A | A | A | A |
| Chloroform-Moist | B | B | C | C ^{3,4} | C ³ |
| Chromic Acid | C | B | C ³ | C ^{1,4} | B |
| Chromic Fluorides | C | B | C | C | C |
| Chromic Hydroxide | B | B | B | B | B |
| Chromium Sulfate | B | B | C | B | B |
| Cider | A | A | C | A | A |
| Citric Acid | C | B | C | B | B |

| | Bronze | Monel | Carbon Steel | 304L/321 Stainless | 316L Stainless |
|-----------------------------|------------------|----------------|----------------|--------------------|------------------|
| Coffee | A | A | C | A | A |
| Copper Chloride-Dry | A | A | B | A | A |
| Copper Chloride-Moist | B | B | C | C ^{3,4} | C ³ |
| Copper Nitrate | C | C | C | A | A |
| Copper Sulfate | C | B | C | B ¹ | B |
| Corn Oil | A | A | A | A | A |
| Cottonseed Oil | A | A | A | A | A |
| Creosole | B | A | A | A | A |
| Crude Oil | B | A | C | C ¹ | B |
| Cyclohexane | B | B | B | B | B |
| DDT | B | B | C | A | A |
| Dichloroethane-Dry | A | A | A | A | A |
| Dichloroethane-Moist | C | B | C | C ⁴ | C ⁴ |
| Dichloroethylene-Dry | A | A | B | A | A |
| Dichloroethylene-Moist | C | B | C | C ⁴ | C ⁴ |
| Dichlorophenol | B | B | C | B ² | B ² |
| Diisocyanate | B | A | B | A | A |
| Dimethyl Sulfate | B | B | B | B | B |
| Epichlorohydrin-Dry | B ⁴ | A | C ⁴ | A | A |
| Epichlorohydrin-Moist | C | B | C ⁴ | C ^{3,4} | C ³ |
| Ethane | A | A | A | A | A |
| Ethers | A | A | B | A | A |
| Ethyl Acetate | A | B | B | B | B |
| Ethyl Alcohol | A | A | A | A | A |
| Ethyl Benzene | B ⁵ | B | B | B ³ | B |
| Ethyl Chloride-Dry | A | A | A | A | A |
| Ethyl Chloride-Moist | B | B | C | C ^{3,4} | C ^{3,4} |
| Ethylene | A | A | A | A | A |
| Ethylene Chlorohydrin-Dry | B | A | B | A | A |
| Ethylene Chlorohydrin-Moist | C | B | C | C ⁴ | C ⁴ |
| Ethylene Diamine | C | B | B | B | B |
| Ethylene Glycol | A | A | A | A | A |
| Ethylene Oxide | C ² | B | B | A | A |
| Fatty Acids | C | B | C | B ^{1,4} | A |
| Ferric Chloride-Dry | B | A | B | A | A |
| Ferric Chloride-Moist | A | B | C | C ^{1,3,4} | C ^{3,4} |
| Ferric Nitrate | C | C | C | B | B |
| Ferric Sulfate | C | C | C | B ¹ | A |
| Ferrus Chloride-Dry | B | A | B | A | A |
| Ferrus Chloride-Moist | C | B | C | C ^{3,4} | C ³ |
| Ferrus Sulfate | B | A | C | B ⁴ | B |
| Fluorine-Dry | B | A | A | A | A |
| Fluorine-Moist | C | B | C | C | C |
| Formaldehyde | A ⁵ | A ⁵ | B ⁵ | B | B |
| Formic Acid | B | B | C | B ¹ | A |
| Freon | A | A | A | A | A |
| Fruit Juices | C | A | C | A | A |
| Fuel Oil | B | A | C | A | A |
| Furtural | A | A | B | A | A |
| Gasoline | A | A | B | A | A |
| Gelatine | A | A | C | A | A |
| Glucose | A | A | B | A | A |
| Glue | B | A | C | A | A |
| Glutamic Acid | C ^{4,5} | B | C | B ^{3,4} | B ^{3,4} |

Corrosion Resistance

| | Bronze | Monel | Carbon Steel | 304L/321 Stainless | 316L Stainless |
|--------------------------|------------------|----------------|----------------|--------------------|----------------|
| Glycerin (Glycerol) | A | A | B ⁵ | A | A |
| Heptane | A | A | A | A | A |
| Hexachloroethane-Dry | B | A | B | A | A |
| Hexachloroethane-Moist | C | B | C | C ⁴ | C ⁴ |
| Hydrazine | C ³ | C | C | A | A |
| Hydrobromic Acid | C | C | C | C ⁴ | C |
| Hydrocarbons, Pure | A | A | A | A | A |
| Hydrochloric Acid | C | B | C | C ⁴ | C ⁴ |
| Hydrocyanic Acid | C | B | C ³ | C ^{1,3} | C ³ |
| Hydrofluoric Acid | C | B | C | C ^{1,3} | C |
| Hydrofluorosilicic Acid | C | B | C | C | C |
| Hydrogen | A | A | A | A | A |
| Hydrogen Chloride-Dry | A | A | B | A | A |
| Hydrogen Chloride-Moist | C | B | C | C ⁴ | C ⁴ |
| Hydrogen Peroxide | C | C | C | B | B |
| Hydrogen Sulfide-Dry | A ⁵ | A | B | A | A |
| Hydrogen Sulfide-Moist | C ^{4,5} | B | C ³ | B ⁴ | A |
| Hydroquinone | B | B | B ⁵ | B | B |
| Kerosine | A | A | B | A | A |
| Lacquers | A | A | A | A | A |
| Lacquer Solvents | A | A | A | A | A |
| Lactic Acid | B | B | C | B ^{3,4} | B ¹ |
| Lime | A | A | B | A | A |
| Lime Sulfur | C | B | C | B | B |
| Linseed Oil | A | A | B | A | A |
| Lithium Chloride-Dry | B | A | B | A | A |
| Lithium Chloride-Moist | B | B | B | C ^{3,4} | C ³ |
| Lithium Hydroxide | C | B | B | B | B |
| Magnesium Chloride-Dry | B | A | B | A | A |
| Magnesium Chloride-Moist | B | B | C | C ^{3,4} | C |
| Magnesium Hydroxide | A | A | A | A | A |
| Magnesium Sulfate | A | A | B | B | A |
| Maleic Acid | C | B | B | B ¹ | B |
| Mercurio Chloride-Dry | B | A | B | A | A |
| Mercurio Chloride-Moist | C | B | C | C ^{3,4} | C |
| Mercurous Nitrate | C ³ | B ³ | B | B | B |
| Mercury | C | B ³ | B | B | B |
| Methyl Alcohol | A | A | A | A | A |
| Methane | A | A | A | A | A |
| Methyl Chloride-Dry | A | A | A | A | A |
| Methyl Chloride-Moist | B | B | C | C ^{3,4} | C |
| Methyl Ethyl Ketone | B | B | B | B | B |
| Milk | B | A | C | A | A |
| Mine Water | C | B | C | B | B |
| Naphtalene | B | B | A | A | A |
| Natural Gas | A | A | A | A | A |
| Nickel Chloride-Dry | B | A | B | A | A |
| Nickel Chloride-Moist | C | B | C | C ^{3,4} | C ³ |
| Nitric Acid | C | C | C | A | A |
| NitroToluene | B | B | B | B | B |
| Nitrogen | A | A | A | A | A |
| Oleic Acid | B ⁵ | A | C | B ⁴ | B |
| Oleum (Fuming H2SO4) | C | C | B ³ | B | B |
| Oxalid Acid | B | B | C | C ¹ | B ¹ |

| | Bronze | Monel | Carbon Steel | 304L/321 Stainless | 316L Stainless |
|----------------------------|----------------|----------------|----------------|--------------------|----------------|
| Oxygen | A | A | C | A | A |
| Palmitic Acid | B | A | C | A | A |
| Parafin | A | A | B | A | A |
| Pentane | B | B | B | B | B |
| Phenol | B | B | C | B | A |
| Phosphoric Acid | C | B | C | C ¹ | B ¹ |
| Phthalic Acid | B | B | C | B ¹ | B |
| Picric Acid | C | C | C | B | B |
| Potassium | B | B | C | C | C |
| Potassium Carbonate | B | A | B | A | A |
| Potassium Chloride-Dry | A | A | A | A | A |
| Potassium Chloride-Moist | B ³ | B | C | C ^{3,4} | C ³ |
| Potassium Chromate | B | B | C | B | B |
| Potassium Cyanide | C ⁴ | A | B | B | B |
| Potassium Dichromate | C | A | C | A | A |
| Potassium Fluoride | B | B | C | C | C |
| Potassium Hidroxide | C ⁵ | A ³ | B ³ | B ³ | A |
| Potassium Nitrate | B | A | B | B | A |
| Potassium Permanganate | B | B | B | B | B |
| Potassium Sulfate | B | B | C | B | B |
| Propane | A | A | A | A | A |
| Propylene | A | A | A | A | A |
| Propylene Oxide | C | C | C | A | A |
| Propylene Dichloride-Dry | B | A | B | A | A |
| Propylene Dichloride-Moist | C | B | C | C ⁴ | C ⁴ |
| Pyridine | B ⁵ | B | B ⁵ | B | B |
| Pyrrolidine | C ³ | B | B | B | A |
| Quinine | B | B | C | B | B |
| Rosin | A ⁵ | A | C ⁵ | A | A |
| Sea Water | B | B | C | C ^{3,4} | C ³ |
| Sewage | A | A | B | A | A |
| Silver Salts | C | A | C | B | B |
| Silver Nitrate | C | C | C ³ | B | A |
| Soap Solutions | A | A | B | A | A |
| Sodium | C | A | A | A | A |
| Sodium Bicarbonate | B | A | C | A | A |
| Sodium Bisulfate | B | B | C | B ^{1,4} | A |
| Sodium Bisulfite | C ⁴ | B ⁴ | C | B | B |
| Sodium Bromine | B | B | B | C | C |
| Sodium Carbonate | B | A | B | A | A |
| Sodium Chlorate-Dry | B | A | A | A | A |
| Sodium Chlorate-Moist | B | B | C | C ^{3,4} | C ³ |
| Sodium Chloride-Dry | B | A | B | A | A |
| Sodium Chloride-Moist | B | B | C | C ^{3,4} | C ³ |
| Sodium Chromate | A | A | B | A | A |
| Sodium Citrate | C | B | B | B | B |
| Sodium Cyanide | C ⁴ | B | B | B | B |
| Sodium Dichromate | C | B | C | A | A |
| Sodium Fluoride | B | A | B | C ¹ | C |
| Sodium Hydroxide 6 | B ⁴ | A | B ³ | B ³ | B ³ |
| Sodium Hypochlorite-Dry | B | A | B | A | A |
| Sodium Hypochlorite-Moist | C | B | C | C ^{1,4} | C ⁴ |
| Sodium Metasilicate | B | A | B | A | A |
| Sodium Nitrate | B | A | B ³ | A | A |

| | Bronze | Monel | Carbon Steel | 304L/321 Stainless | 316L Stainless |
|-------------------------|----------------|----------------|----------------|--------------------|------------------|
| Sodium Nitrite | B | B | B | B | B |
| Sodium Peroxide | C | B | C | A | A |
| Sodium Phosphate | B | A | C | A | A |
| Sodium Silicate | A | A | B | A | A |
| Sodium Sulfate | A | A | B | B ³ | B |
| Sodium Sulfide | C | A | C | B ⁴ | B |
| Sodium Sulfite | B | A | C | B | B |
| Sodium Thiosulfate | C | A | C | B | B |
| Stannic Chloride-Dry | B | A | B | A | A |
| Stannic Chloride-Moist | C | B | C | C ^{3,4} | C ³ |
| Stannous Chloride-Dry | B | A | B | A | A |
| Stannous Chloride-Moist | C | B | C | C ^{3,4} | C ³ |
| Steam | A | A ³ | C | A | A |
| Stearic Acid | B | B | C ⁵ | B | B |
| Stronium Nitrate | B | B | C | B | B |
| Sulfate Black Liquor | C | B | B | B | B |
| Sulfate Green Liquor | C | B | B | B ³ | B |
| Sugar Solutions | A | A | B | A | A |
| Sulfur-Dry | C | A | B | A | A |
| Sulfur-Molten | C | C | C | C | B |
| Sulfur Chloride-Dry | B | A | C | A | A |
| Sulfur Chloride-Moist | C | B | C | C ^{3,4} | C ³ |
| Sulfur Dioxide-Dry | B | B | C | C ¹ | B |
| Sulfur Dioxide-Moist | C ⁴ | C | C | C ¹ | B |
| Sulfur Trioxide-Dry | A | A | C | A | A |
| Sulfuric Acid 95-100% | B | B | B | A | A |
| Sulfuric Acid 80-95% | B | B | C | B | A |
| Sulfuric Acid 40-80% | C | C | C | C ¹ | C ¹ |
| Sulfuric Acid 40% | C | C | C | C ¹ | C ¹ |
| Sulturous Acid | B | B | C | C ^{1,4} | C ^{1,4} |
| Tall Oil | C | B | B | B | B |
| Tannic Acid | B | B | C ⁵ | B | B |
| Tar | A | A | B | A | A |
| Tartaric Acid | C | B | C | B | B |
| Tetraphosphoric Acid | C | C | C | B | B |
| Toluene | A | A | A | A | A |
| Trichloroacetic Acid | C | B | C | C ^{3,4} | C ⁴ |
| Trichloroethane-Dry | A | A | A | A | A |
| Trichloroethane-Moist | C | B | C | C ⁴ | C ⁴ |
| Trichloroethylene-Dry | A | A | A | A | A |
| Trichloroethylene-Moist | C | B | C | C ⁴ | C ⁴ |
| Turpentine | A | A | B | A | A |
| Varnish | A | A | B | A | A |
| Vinegar | B | B | C | A | A |
| Water, Potable | A | A | C | A | A |
| Xylene | B | A | B | A | A |
| Zinc Chloride-Dry | B | A | A | A | A |
| Zinc Chloride-Moist | C ⁴ | B | C | C ^{3,4} | C ³ |
| Zinc Sulfate | B | B | C | B | A |

NOTES: 1. Susceptible to intergranular corrosion
 2. May cause explosive reaction
 3. Susceptible to stress corrosion cracking
 4. Susceptible to pitting type corrosion
 5. Discolors
 6. Concentration over 50% and/or temperature over 200°F, refer to our Engineering Dept.

The logo for Precision Hose & Expansion Joints is contained within a white rounded rectangle with a dark blue border. The word "PRECISION" is written in a bold, white, sans-serif font, with the letter "S" highlighted in red. Below "PRECISION", the words "HOSE & EXPANSION JOINTS" are written in a smaller, red, sans-serif font.

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