PROCO



BRAIDED FLEXIBLE METAL CONNECTORS

Braided Flexible Metal Pump Connectors

PROCO Products braided flexible metal pump connectors have been designed to control vibration, reduce noise, relieve stress, prevent system shock and compensate for misalignment and movement. Use of braided metal connectors for applications such as pumps, compressors, and other mechanical equipment will enhance the overall operation of the system.

Flexible metal hose by itself, when subjected to high pressure can over-extend past the ability to operate properly. It is necessary, therefore, to include an external flexible restraint (i.e., braid) to withstand the specified internal pressure and prevent excessive elongation. Braid, (woven metal) is designed to fit snugly over metal hose and is fastened to the ends of both hose and fittings. This braid is designed to be strong enough to withstand elongation for the full pressure rating of the hose.

Flexible metal hose and braid can be made from a variety of different metals to meet industry needs. Specification of the hose and braid is determined by temperature, pressure, flow media, application and external environment. Common materials used for braided flexible metal connectors are 321 stainless steel hose and a 304 stainless steel braid and are carried in stock by **PROCO** Products. The products contained in this catalog are representative of the typical sizes, lengths and materials found for pump connectors; however, other materials and lengths are available and can be ordered per customer specification.

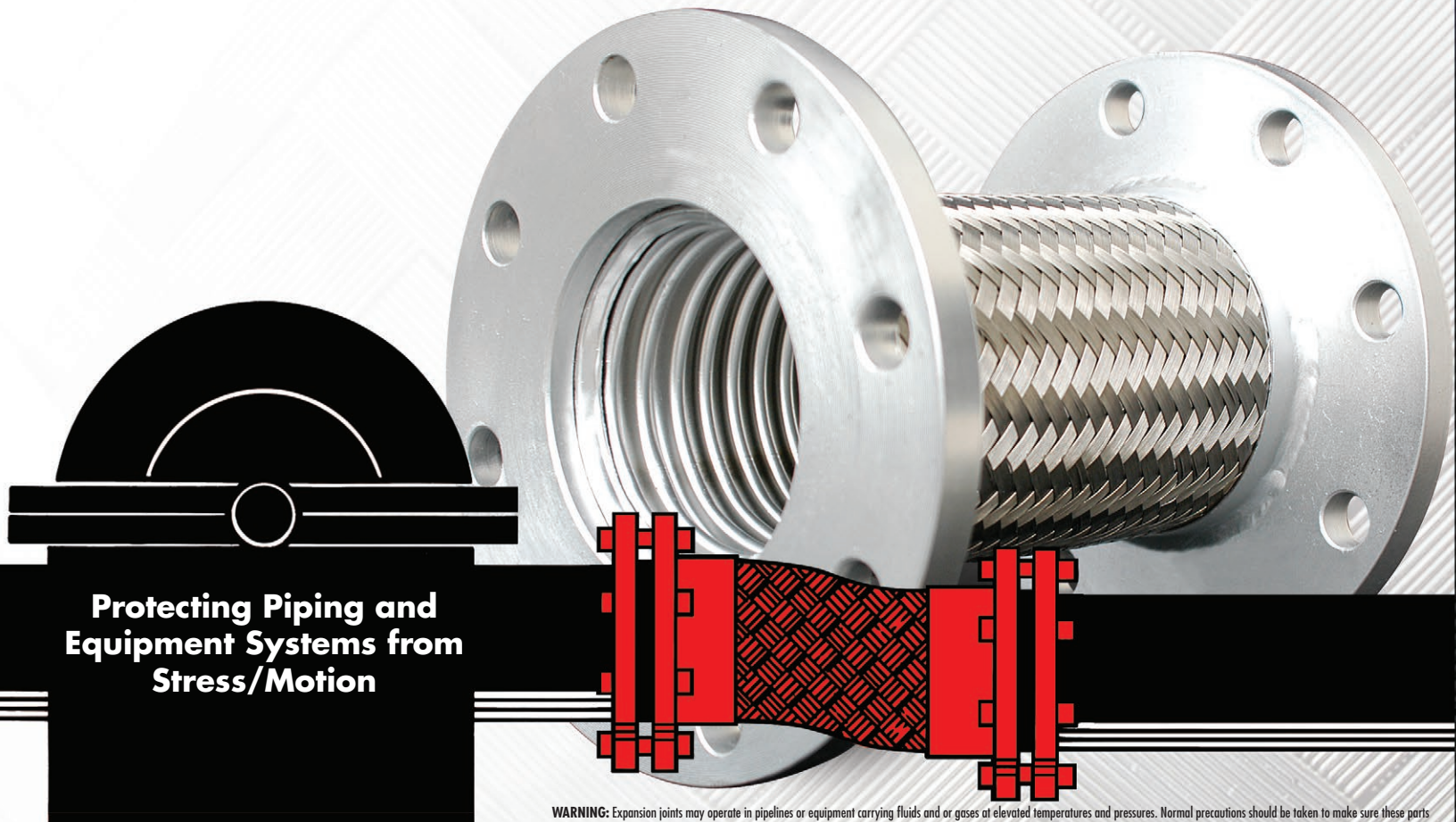
PROCO "The Expansion Joint and Check Valve People"

PROCO PRODUCTS, INC. IS HEADQUARTERED IN STOCKTON, CALIFORNIA

Our 17,144 square foot warehouse houses one of the largest inventories of expansion joint products in North America. **PROCO** is a major supplier of rubber expansion joints, PTFE expansion joints, rubber pipe vibration dampeners, low torque gaskets, threaded union rubber connectors, flexible metal pump connectors, and duck billed rubber check valves.

PROCO markets products to the power generation industry, refinery & chemical process industry, HVAC industry, pulp & paper industry, water & waste-water treatment industry and general industrial institutions **through a distribution network**.

For a complete catalog of important products offered by **PROCO**, *please contact the* **Customer Service Department at 800-344-3246** (USA/Canada), **209-943-6088** (International) *or use the attached specification sheet found on the back page of this catalog and fax your request to 209-943-0242.*



Protecting Piping and Equipment Systems from Stress/Motion

WARNING: Expansion joints may operate in pipelines or equipment carrying fluids and or gases at elevated temperatures and pressures. Normal precautions should be taken to make sure these parts are installed correctly and inspected regularly. Precautions should be taken to protect personnel in the event of leakage or splash. Note: Piping must be properly aligned and anchored to prevent damage to a flexible connector. Movement must not exceed specified ratings and piping should be properly anchored to prolong pump connector life. Properties applications shown throughout this data sheet are typical. This information does not constitute a warranty or representation and we assume no legal responsibility or obligation with respect thereto and the use to which such information may be put. Your specific application should not be undertaken without independent study and evaluation for suitability.

Largest Inventory

Proco has one of the largest inventories in North America. Our customer service staff is ready to field your request.



Emergencies Happen

When they do and you need one of **PROCO**'S various standard products, it is relieving to know we can respond with same day shipment from order placement.

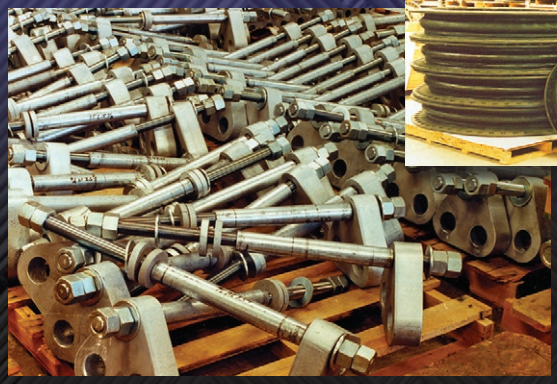
So when you or your customer have an emergency request. . .
CALL **PROCO**! Day or night, **PROCO** will respond to your request and meet your urgent need.





After Hours Service

Call our 800 Number with your Urgent Request!
We will respond to meet your urgent need. There is no other phone number to remember.



Expedite Shipping

PROCO'S Stocked Inventory can ship same day as order placement. . . .
Customer's can also count on consistent shipping costs due to our contracts with various well known carriers. Our shipment tracking system also gives customers assurance that their package is always accounted for.



We can ship Standard Surface, 2nd or Next Day Air. In addition, our experience in export shipments is second to none.

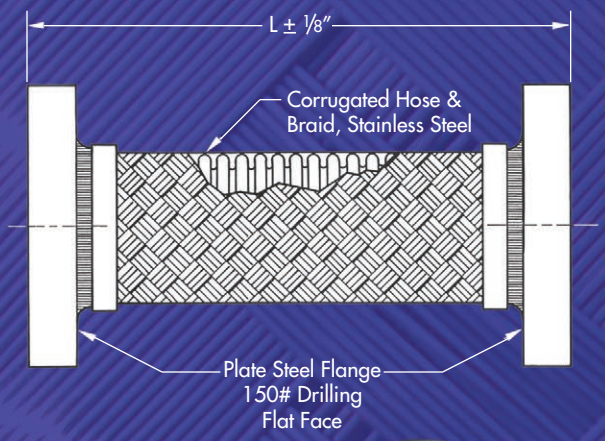
PROCO Office hours are: 5:30 am to 5:15 pm (PST) • Monday thru Friday

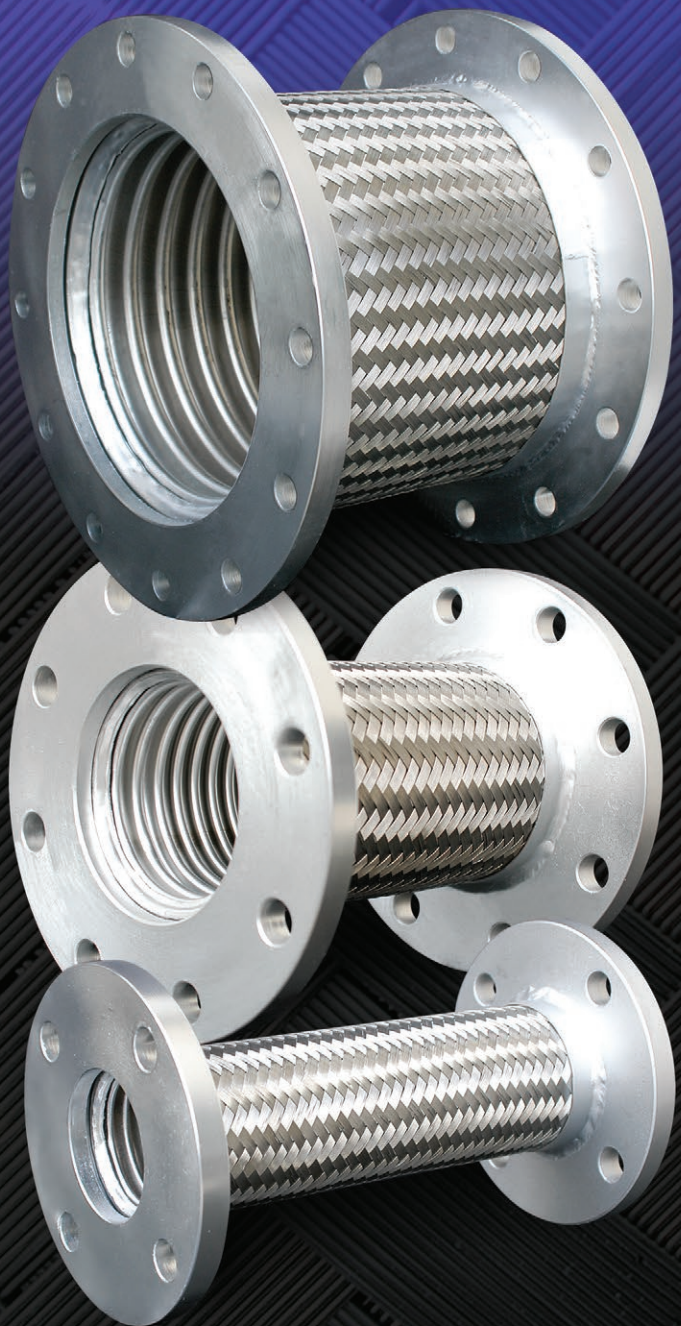
SERIES FF - 6201

Braided Flexible Metal Flanged Connectors (321 Stainless Steel Hose with 304 Stainless Steel Braid and Carbon Steel Plate Flanges).

Table 1: Sizes • Offset • Working Pressures • Weights

Expansion Joint Size: ID X Length	Stock	Lateral Offset		Working Press (PSI)		Approx. Unit Ship Weight
		Inter-mittent	Perma-nent	@70 ºF	@300 ºF	
2 x 9	S	1/8″	3/8″	455	400	9
2 x 12	S	3/4″	1″	455	400	12
2 1/2 x 9	S	1/8″	3/8″	345	303	13
2 1/2 x 10	S	1/8″	3/8″	345	303	13
2 1/2 x 10 1/4	S	3/8″	3/4″	345	303	13
2 1/2 x 12	S	3/4″	1″	345	303	13
3 x 9	S	1/8″	3/8″	289	254	14
3 x 10	S	1/8″	3/8″	289	254	14
3 x 10 5/8	S	3/8″	3/4″	289	254	14
3 x 14	S	3/4″	1″	289	254	15
4 x 9	S	1/8″	3/8″	300	264	18
4 x 10	S	1/8″	3/8″	300	264	18
4 x 11 3/4	S	3/8″	3/4″	300	264	19
4 x 16	S	3/4″	1″	300	264	20
5 x 11	S	1/8″	3/8″	220	193	25
5 x 12	S	1/8″	3/8″	220	193	25
5 x 13 5/8	S	3/8″	3/4″	220	193	27
5 x 18	S	3/4″	1″	220	193	30
6 x 11	S	1/8″	3/8″	200	176	28
6 x 12	S	1/8″	3/8″	200	176	28
6 x 14 1/8	S	3/8″	3/4″	200	176	30
6 x 20	S	3/4″	1″	200	176	34
8 x 12	S	1/8″	3/8″	190	167	52
8 x 13	S	1/8″	3/8″	190	167	52
8 x 15 3/8	S	3/8″	3/4″	190	167	64
8 x 22	S	3/4″	1″	190	167	65
10 x 13	S	1/8″	3/8″	165	145	65
10 x 14	S	1/8″	3/8″	165	145	65
10 x 17 3/4	S	3/8″	3/4′	165	145	68
10 x 24	S	3/4″	1″	165	145	75
12 x 14	S	1/8″	3/8″	125	110	105
12 x 15	S	1/8″	3/8″	125	110	105
12 x 18 3/8	S	3/8″	3/4″	125	110	110
12 x 26	S	3/4″	1″	125	110	113
14 x 14	S	1/8″	3/8″	105	92	115
14 x15	S	1/8″	3/8″	105	92	115
14 x 20	X	3/8″	3/4″	105	92	119
14 x 28	X	3/4″	1″	105	92	126





NOTES: 1. "S" Indicates stocked item.
2. "X" Denotes 1-2 week shipment time.

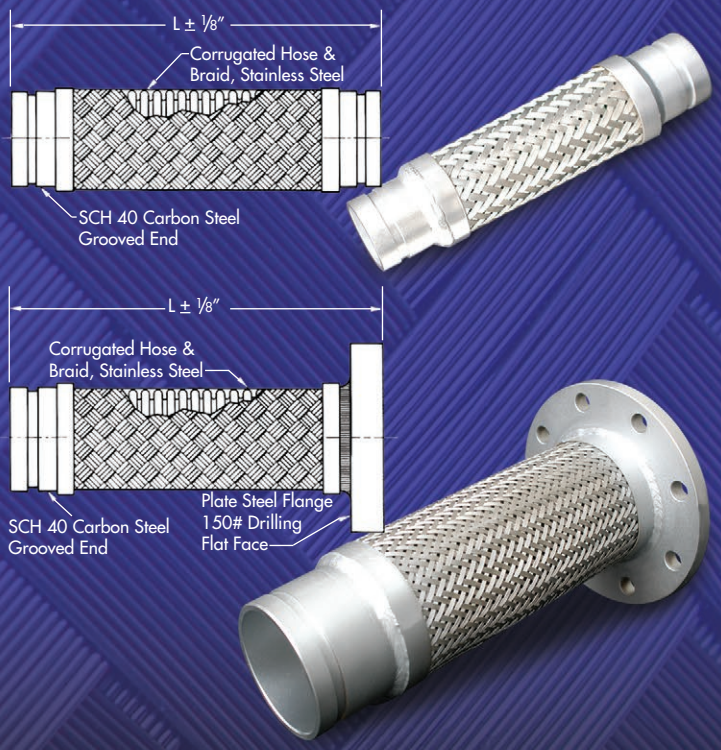
SERIES GG - 6201 or SERIES GF - 6201

Braided Flexible Metal Grooved Connectors (321 Stainless Steel Hose with 304 Stainless Braid and Grooved Ends or Grooved by Flange Ends).

Table 2: Sizes • Offset • Working Pressures • Weights

Expansion Joint Size: ID X Length	Stock	Lateral Offset		Working Press (PSI)		Approx. Unit Ship Weight
		Inter-mittent	Perma-nent	@70 ºF	@300 ºF	
2 x 12	S	1/8″	3/8″	450	396	10
2 1/2 x 14	S	1/8″	3/8″	345	303	12
3 x 14	S	1/8″	3/8″	289	254	13
4 x 16	S	1/8″	3/8″	300	264	18
5 x 17	S	1/8″	3/8″	220	193	25
6 x 18	S	1/8″	3/8″	200	176	28
8 x 20	S	1/8″	3/8″	190	167	50
10 x 24	S	1/8″	3/8″	150	132	70
12 x 25	S	1/8″	3/8″	125	110	90

NOTES: 1. Also comes in Grooved by Flange Design. Please specify series GF-6201
2. Weight based on Series GF-6201
3. "S" indicates stocked item.

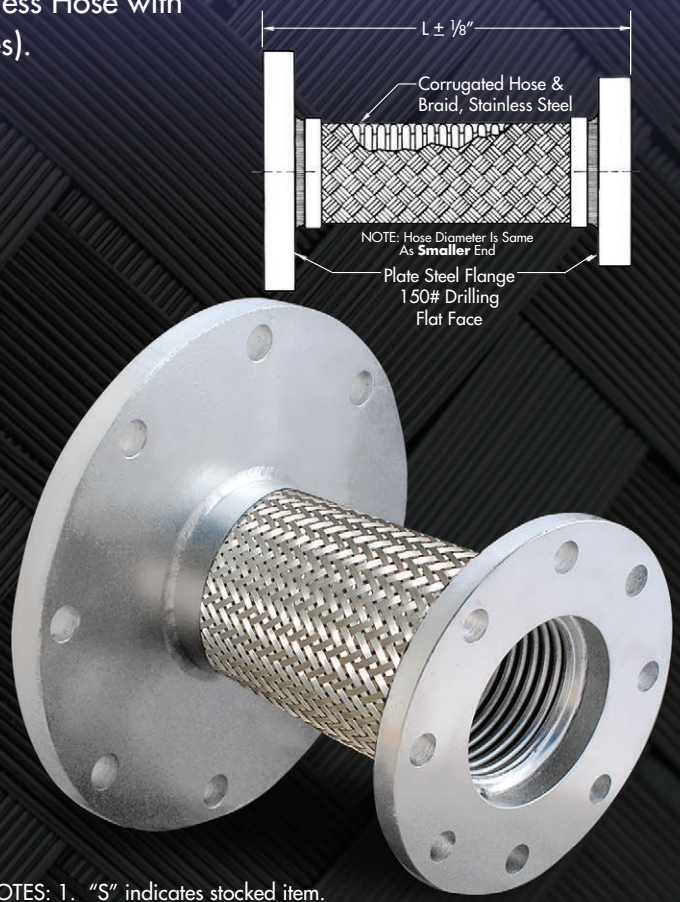


SERIES R - 6201

Braided Flexible Metal Reducing Connectors (321 Stainless Hose with 304 Stainless Steel Braid and Carbon Steel Plate Flanges).

Table 3: Sizes • Offset • Working Pressures • Weights

Expansion Joint Size: IDXID X Length	Stock	Lateral Offset		Working Press (PSI)		Approx. Unit Ship Weight
		Inter-mittent	Perma-nent	@70 ºF	@300 ºF	
3 x 2 x 9	S	1/8″	3/8″	345	303	14
4 x 2 x 9	S	1/8″	3/8″	455	400	14
4 x 3 x 9	S	1/8″	3/8″	289	254	16
5 x 3 x 9	S	1/8″	3/8″	289	254	22
5 x 4 x 9	S	1/8″	3/8″	300	264	25
6 x 3 x 9	S	1/8″	3/8″	289	254	23
6 x 4 x 9	S	1/8″	3/8″	300	264	30
6 x 5 x 11	S	1/8″	3/8″	220	193	35
8 x 4 x 9	S	1/8″	3/8″	300	264	58
8 x 5 x 11	S	1/8″	3/8″	220	193	58
8 x 6 x 11	S	1/8″	3/8″	200	176	61
10 x 6 x 11	S	1/8″	3/8″	200	176	80
10 x 8 x 12	S	1/8″	3/8″	190	167	85
12 x 8 x 12	S	1/8″	3/8″	190	167	105
12 x 10 x 13	S	1/8″	3/8″	150	132	135
14 x 10 x 13	X	1/8′	3/8″	120	105	140
14 x 12 x 14	X	1/8″	3/8″	100	88	145



NOTES: 1. "S" indicates stocked item.
2. "X" denoted 1-2 week shipment lead time.
3. Hose diameter equals smaller Flange I.D.

SERIES TTS - 6201

Braided Flexible Metal Threaded Connectors (321 Stainless Steel Hose with 304 Stainless Steel Braid and Male Carbon Steel Ends (NPT).

Table 4: Sizes • Offset • Working Pressures • Weights

Expansion Joint Size: ID X Length	Stock	Lateral Offset		Working Press (PSI)		Approx. Unit Ship Weight
		Inter-mittent	Perma-nent	@ 70 ºF	@ 300 ºF	
1/2 x 6 1/2	S	1/4″	1/2″	1300	1144	1
1/2 x 9	S	1/4″	1/2″	1300	1144	1
1/2 x 10	S	1/4″	1/2″	1300	1144	1
3/4 x 7	S	1/4″	1/2″	880	774	1
3/4 x 10	S	1/4″	1/2″	880	774	1
3/4 x 11	S	1/4″	1/2″	880	774	1
1 x 8	S	1/4″	1/2″	605	532	1
1 x 10	S	1/4″	1/2″	605	532	1
1 1/4 x 8 1/2	S	1/4″	1/2″	605	532	1
1 1/4 x 10	S	1/4″	1/2″	570	501	1 1/2
1 1/4 x 11	S	1/4″	1/2″	570	501	1 1/2
1 1/4 x 12	S	1/4″	1/2″	570	501	2
1 1/4 x 13	S	1/4″	1/2″	570	501	2
1 1/2 x 9	S	1/4″	1/2″	570	501	1 1/2
1 1/2 x 12	S	1/4″	1/2″	525	462	1 1/2
1 1/2 x 14	S	1/4″	1/2″	525	462	2
2 x 10 1/2	S	1/4″	1/2″	455	400	2
2 x 12	S	1/4″	1/2″	455	400	2 1/2
2 x 14	S	1/4″	1/2″	455	400	3
2 x 15	S	1/4″	1/2″	455	400	3
2 1/2 x 12	S	1/4″	1/2″	345	303	5
2 1/2 x 14	S	1/4″	1/2″	345	303	5 1/2
2 1/2 x 16	S	1/4″	1/2″	345	303	6
3 x 14	S	1/4″	1/2″	290	255	8
3 x 16	S	1/4″	1/2″	290	255	9
3 x 17	S	1/4″	1/2″	290	255	10





NOTES: 1. "S" indicates stocked item.
2. "X" denotes 1-2 week shipment lead time.

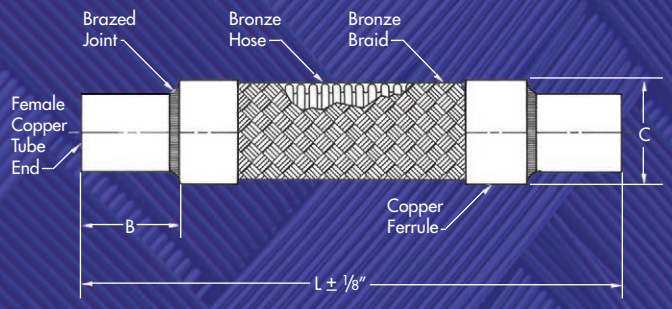
SERIES SEB - 6201

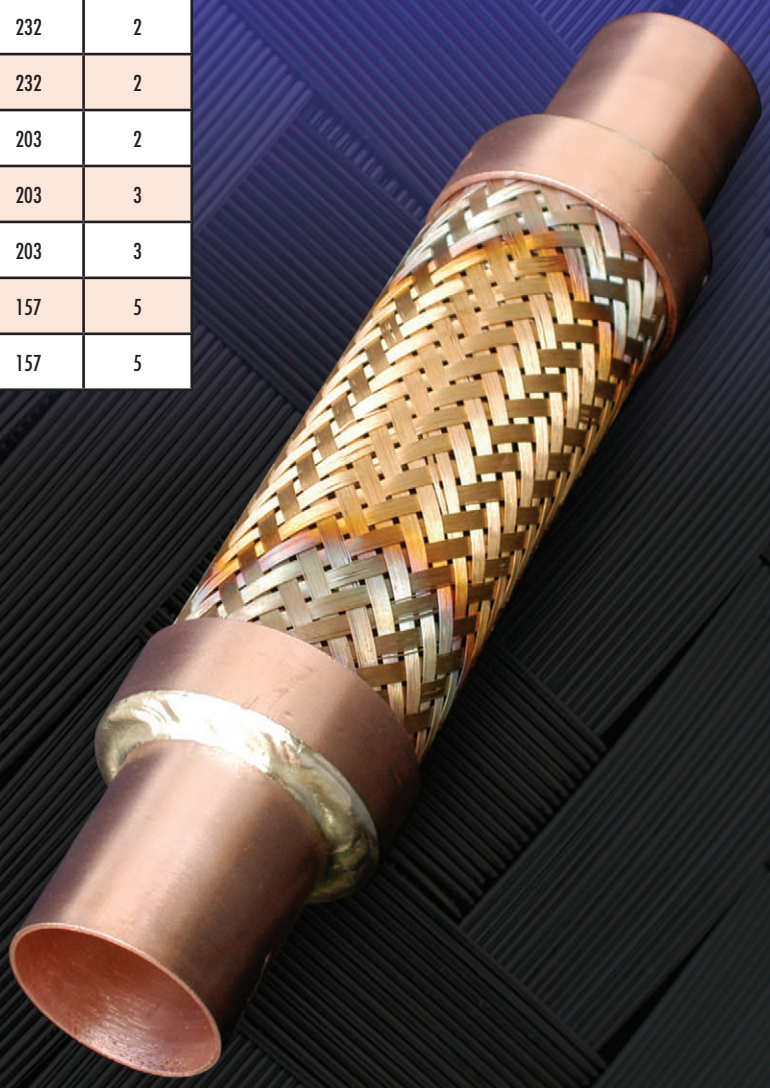
Braided Flexible Metal Sweat Connectors (Bronze Hose with Bronze Braid and Copper Female Ends).

Table 6: Sizes • Offset • Working Pressures • Weights

Expansion Joint Size: ID X Length	Stock	Lateral	Working Press (PSI)		Approx. Unit Ship Weight
		Offset Permanent	@ 70 ºF	@ 300 ºF	
1/2 x 10	S	1″	450	374	1
1/2 x 11	S	1″	450	374	1
3/4 x 10	S	3/4″	340	282	1
3/4 x 11	S	3/4″	340	282	1
1 x 10	S	1/2″	302	250	1
1 x 12	S	1/2″	302	250	1 1/2
1 1/4 x 10	S	3/8″	280	232	2
1 1/4 x 11	S	3/8″	280	232	2
1 1/4 x 13	S	3/8″	245	203	2
1 1/2 x 12	S	3/8″	245	203	3
1 1/2 x 14	S	3/8″	245	203	3
2 x 14	S	3/8″	190	157	5
2 x 15	X	3/8″	190	157	5

NOTES: 1. "S" indicates stocked item.
2. "X" denotes 1-2 week shipment lead time.





Temperature

Temperature correction factors and maximum material temperature ranges for braided flexible metal pipe connectors.

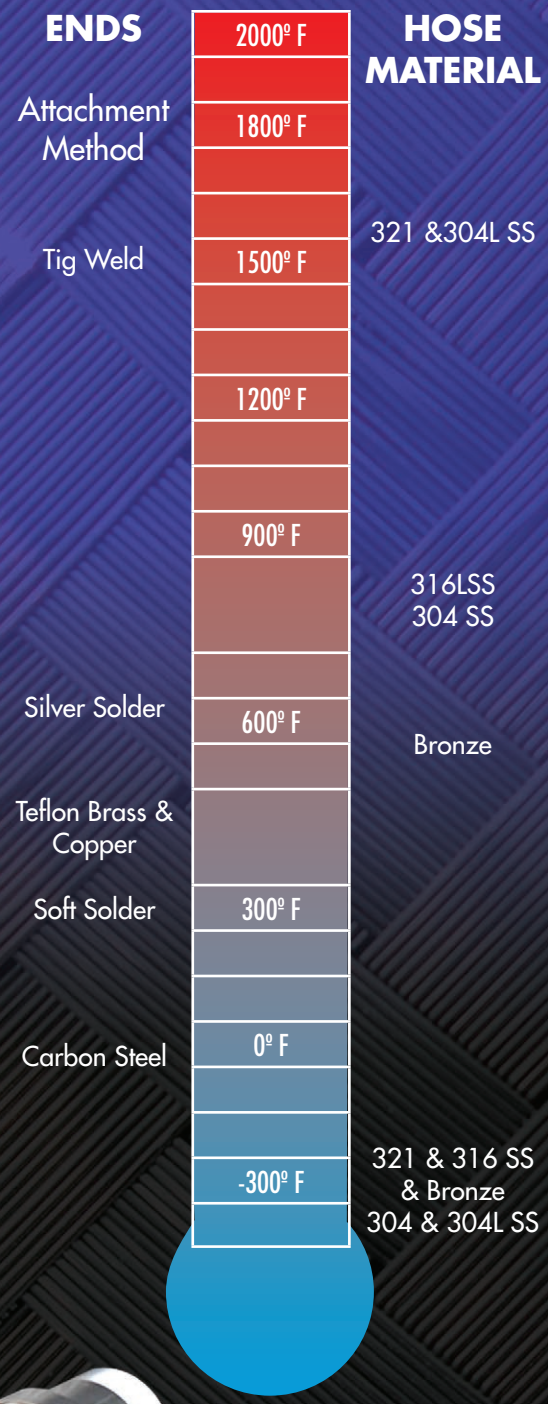
Temp ºF	Material		
	Bronze	304 SS	321 SS
Ambient	1.00	1.00	1.00
150	.92	.96	.97
200	.89	.92	.94
250	.85	.91	.92
300	.83	.86	.88
350	.81	.85	.86
400	.78	.82	.83
450	.75	.80	.81
500		.77	.78
600		.73	.74
100		.69	.70
800		.64	.66
900		.58	.62
1000			.60
1100			.58
1200			.55
1300			.50
1400			.44
1500			.40

Temperature Correction Factors

1. Determine maximum operating temperature.
2. Locate appropriate correction factor above.
3. Multiply maximum working pressure by correction factor at temperature for acceptable rating.

Service temperature for a braided flexible metal pump connector has a negative affect on the amount of maximum pressure to which it can be subjected. The table above should be used to calculate the safe working pressure based on the elevated temperature the braided metal pump connector is operating under. (Working Pressure X Elevated Temperature Conversion Figure = Safe Working Pressure.)

Contact **PROCO'S** sales office at **1-800-344-3246 (209 943-6088 outside USA/Canada)** if help is needed with using the temperature correction chart.





Installation Instructions

To obtain maximum service life from a Proco Braided Flexible Metal Connector, please consider the following:

Proper placement is essential to the operating life of a flexible connector. For best results place flexible connectors adjacent to rotating equipment, in a straight line without offset. Flexible connectors installed before and after rotating equipment will help isolate the piping system from excessive vibration and noise. Anchors should be installed immediately beyond the connector.

Braided flexible metal connectors must be installed at or below the listed permanent lateral offset values listed on pages 3-6 of this manual. Failure to stay within these parameters can reduce the operating life of the flexible connector.

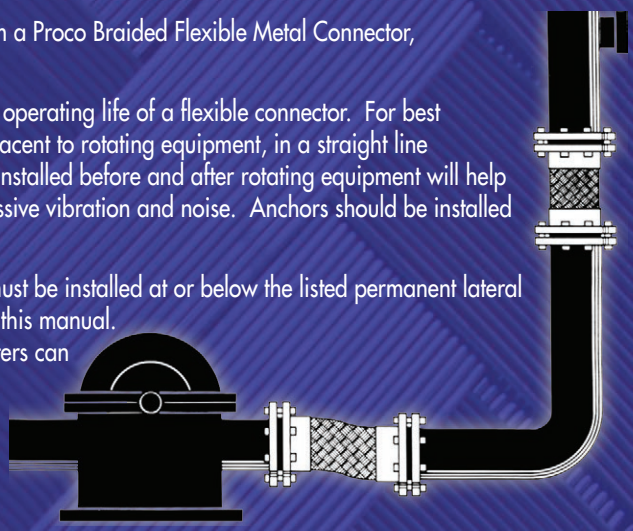


Figure 1

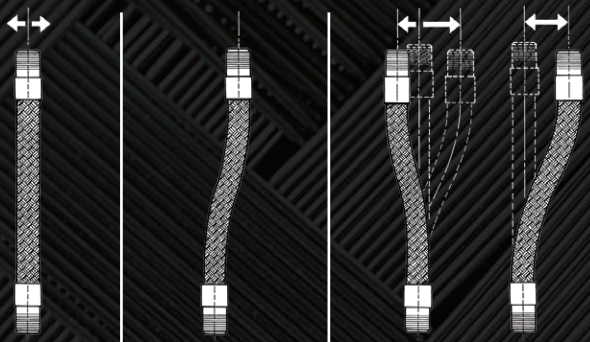
For lateral movements greater than those listed in tables on pages 3-6, it is possible to install two flexible connectors in a pipe system to achieve greater flexibility. Install two connectors at right angels to one another and between two anchor points. This scheme will allow for increased lateral offset capabilities. (See Figure 1.)

Flanged Flexible Connectors Flange alignment should be in accordance with industry standards. Bolt holes should be aligned so that braided flexible metal connectors are free of torsional movements, reduced operating life or failure will occur.

Threaded Flexible Connector Install one end of threaded connector to loose union and tighten. Install opposite threaded end of flexible connector to threaded pipe fitting and tighten. When installing union end to adjacent pipe fitting, it is important not to introduce torque to the braided flexible metal connector. If the flexible connector is subjected to torsional movements, reduced operating life or failure will occur.

Sweat End Flexible Connector Install female ends of the flexible connector to adjacent male ends of pipe inn such a manner to eliminate any torque that may be imposed during fit-up.

Types Of Offset Motion



Vibration | **Permanent Misalignment** | **Intermittent Movement**

VIBRATION Install in a straight line with a rigid support on the fixed end.

MISALIGNMENT - (PERMANENT MISALIGNMENT) Allow sufficient length to make a gradual bend.

INTERMITTENT MOVEMENT Refer to charts on pages 3-6 for maximum movement capabilities. Where offset movement occurs on both sides of the pipe centerline, the braided flexible hose live length should be based on the total stroke. For movement greater than those stated in this manual, it is suggested that a traveling loop system be used.



All information and data contained herein is subject to change at any time without notice. Because we do not supervise or control installation or use of our pump connectors. PROCO can not be held responsible for improper application and/or installation into a system.

Corrosion Evaluation Reference Table

The information contained herein this table is to be used as a guide for the selection of braided metal pump connector materials (i.e. hose and braid) suitable for chemicals listed below. This data should not be construed as advice to use or not use. Ultimate responsibility lies with the system designer or operator for correct material selection based on flow media. It is suggested that flow media be listed on the "Connector Specification Data Sheet", found on the back of this manual when requesting a quotation.

Corrosion Rate:

A - RESISTANT • • • • • • • • • • • • • • • **less than .00035 inch penetration per month.**
B - PARTIALLY RESISTANT • • • • • • • • • **0035 inch penetration per month.**
C - NON RESISTANT • • • • • • • • • • • • **greater than .0035 inch penetration per month.**

Chemical	Temp. ºF.	304, 321 S.S.	Carbon Steel	Bronze
Acetic Acid 5%, 20% Agitated or Aerated	70º	A	C	C
50%	70º	A	C	C
50%. 80%	Boiling	C	C	C
80%	70º	A	C	C
100%	70º	A	C	C
100%	Boiling	C	C	C
100%-150 lbs. Pressure	400º	C	C	C
Acetic Acid Vapors, 30%	Hot	C	C	C
100%	Hot	C	C	C
Acetyl Chloride	Cold	B [3]	C	B
	Boiling	B [3]	C	B
Acetylene Concentrated	70º	A	A	C [2]
Commercially Pure	70º	A	A	C [2]
Acid Salt Mixture				
10% H_2SO_4 Sp. G. 1.07 + 10% $CuSO_4$ • 5 H_2O	Boiling	A [3,4]	C	C
Acid Salt Mixture				
10% H_2SO_4 Sp. G. 1.07 + 2% $FeSO_4$ • 7 H_2O	Boiling	A [3,4]	C	C
Alcohol, Ethyl, 70º & Boiling	70º	A	A	A
Alcohol, Methyl	70º	A	A	A
	Boiling	C	C	A
Aluminum Acetate, Saturated	70º	A	C	C
	Boiling	A	C	C
Aluminum Chloride				
10% Quiescent	70º	C	C	C
25% Quiescent	70º	A [3,4]	C	C
Aluminum Fluoride	70º	C	C	C
Aluminum Hydroxide, Saturated	70º	A	A [4]	A
Aluminum Sulphate, 5%	150º	A	C	C
10%	70º	A	C	C
10%	Boiling	B	C	C
Saturated	70º	A	C	C
Saturated	Boiling	B	C	C
Aluminum Potassium Sulphate:				
(Alum) 2%-10%	70º	A	C	B
10%	Boiling	B	C	C
Saturated	Boiling	C	C	C
Ammonia (Anhydrous):				
All Concentrations	70º	A	A	A
Gas	Hot	C	C	C
Ammonia Liquor	70º	A	C	C
	Boiling	A	C	C
Ammonium Bicarbonate	70º	A	C	C
	Hot	A	C	C
Ammonium Bromide	70º	B	C	C
Ammonium Carbonate 1% & 5%	70º	A	A	C
Ammonium Chloride 1%	70º	A [3,4]	B	C
10%	Boiling	A [3,4]	C	C
28%	Boiling	B [3,4]	C	C
50%	Boiling	B [3,4]	C	C
Ammonium Hydroxide: All Concentrations	70º	A	B	C
Ammonium Monophosphate	70º	A	B	C
Ammonium Nitrate:				
All Concentrate Agitated	70º	A	C	C [2]
All Concentrate Aerated	70º	A	C	C [2]
All Concentrate Saturated	Boiling	A	C	C [2]
Ammonium Perchlorate 10%	Boiling	A [3,4]	B	C
Ammonium Persulphate 5%	70º	A	C	C
Ammonium Phosphate 5%	70º	A	B	C

Chemical	Temp. ºF.	304, 321 S.S.	Carbon Steel	Bronze
Ammonium Sulphate				
1% Aerated or Agitated	70º	A	C	C
5% Aerated & Agitated	70º	A	C	C
10% & Saturated	Boiling	B [4]	C	C
Ammonium Sulphite, 70% Boiling	70º	A	C	C
Barium Carbonate	70º	A	B	A
Barium Chloride 5% & Saturated	70º	A [3,4]	C	B
Barium Hydroxide Aqueous Solution	Hot	A	B	A
Barium Nitrate Aqueous Solution	Hot	A	B	
Barium Sulphate	70º	A		A
Barium Sulphide Saturated Solution	70º	A	C	C
Beer (Barley, Malt & Hops)	70º	A	C	A
3.5% - 4.5% Alcohol	160º	A	C	A
Benzene (Benzol) 70º or Hot	70º	A	B	A
Benzoic Acid	70º	A	A	A
Borax 5%	Hot	A	B	A
Boric Acid				
5% Solution, 70º or Hot	70º	A	C	A
5% Solution	Boiling	A	C	A
Saturated Solution	70º	A [3,4]	C	B
Saturated Solution	Boiling	A [3,4]	C	C
Bromine Water	70º	C	C	C
Butyl Acetate		A	B	
Calcium Chloride Dilute or Concen. Solution	70º	B [3,4]	C	B
Calcium Chlorohypochlorite				
(Bleaching Powder) 1%	70º	C	C	B
(Bleaching Powder) 5%	70º	C	C	B
Calcium Hypochlorite, 2%	70º	B [4]	C	B
Calcium Hydroxide, 10-20%	Boiling	A	C	A
Calcium Sulphate, Saturated	70º	A	C	A
Carbonic Acid Saturated Solution	70º	A	C	A
Carbolic Acid	70º	A	C	B
Carbolic Acid	Boiling	A	C	B
Carbon Bisulfide	70º	A	B	B
Carbon Monoxide Gas	1400º	A	A	C
Carbon Monoxide Gas	1600º	A	A	C
Carbon Tetrachloride				
Commercially Pure	70º	A [3,4]	B	A
Dry Commercially Pure	Boiling	A [3,4]	B	A
Commercial + 1% Water		C	C	B
Chloracetic Acid	70º	C	C	B
Chlorbenzol Concentrate Pure Dry	70º	A	B	B
Chloric Acid	70º	C	C	C
Chlorine Gas (Dry)	70º	C	B	A
(Moist)	70º	C	C	C
Chlorinated Water, Saturated		C	C	
Chloroform	70º	A	A	A
Chromic Acid				
5% Commercially Pure	70º	A	C	C
10%	70º	C	C	C
Chromic Acid				
10% Commercially Pure	Boiling	C	C	C
50% Commercially Pure	70º	C	C	C
50% Commercially Pure	Boiling	C	C	C
Commercial 50% (Cont. SO_3)	70º	C	C	C
Commercial 50% (Cont. SO_3)	Boiling	C	C	C
Chromium Plating Bath	70º	A	B	C

Chemical	Temp. ºF.	304, 321 S.S.	Carbon Steel	Bronze
Citric Acid, 5% Still	70º - 150º	A	C	A
15% Still	70º	A	C	B
15% or Concentrated	Boiling	B	C	B
Coffee RSC	Boiling	A	C	A
Copper Acetate (Saturated Solution)	70º	A	C	
Copper Carbonate (Sat. Sol.) in 50% NH_4OH		A		C
Copper Chloride,				
1% Agitated	70º	B [3,4]	C	C
1% Aerated	70º	B [3,4]	C	C
5% Agitated	70º	C	C	C
5% Aerated	70º	C	C	C
Copper Cyanide (Saturated Solution)	Boiling	A	C	C
Copper Nitrate				
1% Still, Agitated & Aerated	70º	A	C	C
5% Still, Agitated & Aerated	70º	A	C	C
50% Aqueous Solution	Hot	A	C	C
Copper Sulphate				
5% Agitated Still or Aerated	70º	A	C	B
Saturated Solution	Boiling	A	C	B
Creosote (Coal Tar)	Hot	A	B	A
Creosote Oil	Hot	A	B	B
Dichloroethane (Dry)	Boiling	A	C	C
Dyewood Liquor	70º	A [1]	C	
Epsom Salt (Magnesium Sulphate)	Hot & Cold	A [3,4]	C	A
Ethyl Acetate (Concentrated Solution)	70º	A	B	A
Ethyl Chloride	70º	A [3,4]	B	B
Ethylene Chloride	70º	A [3,4]	B	B
Ethylene Glycol	70º	A	B	A
Ferric Chloride				
1% Solution Still	70º	B [3,4]	C	C
1% Solution	Boiling	C	C	C
5% Solution, Agitated, Aerated	70º	C	C	C
Ferric Hydroxide		A	C	
Ferric Nitrate				
1-5% Quiescent or Agitated	70º	A	C	C
1-5% Aerated	70º	A	C	C
Ferric Sulphate				
1-5% Quiescent or Agitated	70º	A [4]	C	C
1-5% Aerated	70º	A [4]	C	C
10%	Boiling	A [4]	C	C
Ferrous Chloride: Saturated Solution	70º	C	C	B
Ferrous Sulphate: Dilute Solution	70º	A	C	B
Fluorine (Gas) Moist	70º	C	C	C
Formaldehyde 40% Solution		A [4]	B	A
Formic Acid, 5% Still	70º	B	C	B
5% Still	150º	B	C	B
Fuel Oil	Hot	A	B	A
Containing Sulphuric Acid		C	C	C
Gallic Acid, 5%	70º-150º	A	C	
Saturated	212º	A	C	
Gasoline	70º	A	B	A
Hydrochloric Acid: All Concentrations	70º	C	C	C
Hydrocyanic Acid	70º	A	C	C
Hydrofluric Acid	70º	C	C	C
Hydrofluosilic Acid	70º	C	C	B
Hydrogen Sulphide (Dry)	70º	A	B	A
(Wet)	70º	B [1]	C	C
Hyposulphite Soda		A	C	

Corrosion Rate:

A - RESISTANT • • • • • • • • • • • • • • • less than .00035 inch penetration per month.
B - PARTIALLY RESISTANT • • • • • • • • • .0035 inch penetration per month.
C - NON RESISTANT • • • • • • • • • • • • • greater than .0035 inch penetration per month.

Chemical	Temp. °F.	304, 321 S.S.	Carbon Steel	Bronze
Iodine	70°	C	C	C
Kerosene	70°	A	B	A
Ketchup, Quiescent	70°-150°	A[4]	C	
Lactic, Acid 1%	70°	A	C	B
1%	Boiling	A	C	C
5%	70°	A	C	B
5%	Boiling	B	C	C
10%	70°	B	C	B
10%	Boiling	C	C	C
Concentrated	70°	B	C	B
Concentrated	Boiling	C	C	C
Lead Acetate 5%	Boiling	A	C	
Linseed Oil	70°	A	B	B
Plus 3% H_2SO_4	390°	B	C	C
Magnesium Chloride				
1% Quiescent	70°	A[3,4]	C	B
1% Quiescent	Hot	C	C	B
5% Quiescent	70°	A[3,4]	C	B
5% Quiescent	Hot	C	C	B
Magnesium Oxychloride	70°	C	C	
Magnesium Sulphate	Hot & Cold	A	C	A
Malic Acid	Hot & Cold	B	C	
Mercuric Chloride Dilute Solution	70°	C	C	C
Methanol (Methyl Alcohol)		A	B	A
Mixed Acids 53% H_2SO_4 + 45% HNO_3	Cold	A	C	C
Muriatic Acid	70°	C	C	C
Naphtha, Crude	70°	A	B	B
Naphtha, Pure	70°	A	B	B
Naphthalene Sulfonic Acid	70°	A	C	
Nickel Chloride Solution	70°	A[3,4]	C	B
Nitrating Solution	Cold & Hot	B		B
Nickel Sulphate	Cold & Hot	A	C	A
Nitric Acid				
5%-50%-70%	Boiling	A	C	C
65%	70°	A	C	C
65%	Boiling	B	C	C
Concentrated	70°	A	C	C
Concentrated	Boiling	C	C	C
Fuming Concentrated	70°-110°	A	C	C
Fuming Concentrated	Boiling	C	C	C
Nitrous Acid 5%	70°	A	C	C
Oils, Crude	Cold & Hot	A[1]		
Oleic Acid	70°-400°	A[4]	B	B
5%-10%	70° & Boiling	A	C	B
10%	Boiling	C	C	B
25%-50%	Boiling	C	C	B
Phenol (See Carbolic Acid)				
Petroleum Ether		A	B	

Chemical	Temp. °F.	304, 321 S.S.	Carbon Steel	Bronze
Phosphoric Acid				
1%	70°	A	C	C
1%	Boiling	A	C	C
1%-45 lbs. Pressure	284°	A	C	C
5% Quiescent or Agitated	70°	A	C	C
5% Aerated	70°	A	C	C
10% Quiescent	70°	C	C	C
10% Agitated or Aerated	70°	C	C	C
10%-50%	Boiling	A	C	C
80%	70°	C	C	C
80%	230°	C	C	C
85%	Boiling	C	C	C
Pictic Acid	70°	A	C	C
Potassium Bichromate, 25%	70°	A	C	C
25%	Boiling	A		C
Potassium Bromide	70°	B[4]	C	B
Potassium Carbonate 1%	70°	A	B	B
Potassium Carbonate	Hot	A	B	C
Potassium Chlorate: Saturated at 212°	Boiling	A[3]	B	C
Potassium Chloride				
1% Quiescent	70°	A[3,4]	C	B
1% Agitated or Aerated	70°	A[3]	C	B
5% Quiescent	70°	A[3,4]	C	B
5% Agitated or Aerated	70°	A[3]	C	B
5%	Boiling	A[3]	C	B
Potassium Chromium Sulphate, 5%	70°	A[4]	C	B
Sp. G. 1.6	Boiling	C	C	C
Potassium Cyanide	70°	A	B	C
Potassium Ferricyanide, 5%-25%	70°	A	C	
25%	Boiling	A	C	
Potassium Ferrocyanide, 5%	70°	A	C	
Potassium Hydroxide, 5%	70°	A	C	B
27%	Boiling	A	C	B
50%	Boiling	B	C	C
Potassium Hypochlorite	70°	B	C	C
Potassium Nitrate				
1%-5% Still or Agitated	70°	A	C	B
1%-5% Aerated	70°	A	C	B
50%	70°	A	C	B
50%	Boiling	A	C	
Potassium Permanganate, 5%	70°	A	B	
Potassium Sulphate				
1%-5% Still or Agitated	70°	A	B	
1%-5% Aerated	70°	A	B	A
Potassium Sulphide (Salt)		A[3,4]	C	
Sea Water	70°	A[3,4]	C	B
Sewage		A		A
Silver Bromide		B[4]	C	C
Silver Chloride		C[3,4]	C	C
Silver Nitrate		A	C	C
Sodium Acetate (Moist)		A[4]	C	
Sodium Bicarbonate				
All Concentrations	70°	A	C	B
5%	150°	A	C	B
Sodium Bisulphate, Solution	70°	A	C	B
Saturated Solution	70°	C	C	B
2g. + 1g. H_2SO_4 liter	68°	C	C	B

Chemical	Temp. °F.	304, 321 S.S.	Carbon Steel	Bronze
Sodium Carbonate, 5%	70°-150°	A[3,4]	B	B
5%-50%	Boiling	A[3,4]	B	B
Sodium Chloride, 5% Still	70°-150°	A[3,4]	C	B
20% Aerated	70°	A[3,4]	C	B
Saturated	70°	A[3,4]	C	B
Saturated	Boiling	B[3,4]	C	B
Sodium Cyanide	70°	A[3,4]	B	C
Sodium Fluoride, 5% Solution	70°	B[3,4]	C	A
Sodium Hydroxide	70°	A[3,4]	B	B
Sodium Hypochlorite, 5% Still		B[3,4]	B	B
Sodium Nitrate	Fused	A[3,4]	B	A
Sodium Phosphate	70°	A[3,4]	B	B
Sodium Sulphate, 5% Still	70°	A[3,4]	C	A
All Concentrations	70°	C	C	A
Sodium Sulphide, Saturated		B[3,4]	C	
Sodium Sulphite, 5%	70°	A[3,4]	C	B
10%	150°	A[3,4]	C	B
Sodium Thiosulphate				
Saturated Solution	70°	A[3,4]	C	C
Acid Fixing Bath (Hypo)	70°	A[3,4]	C	C
25% Solution	70° & Boiling	A[3,4]	C	C
Sulphur, Moist	70°	B[3,4]	C	C
Sulphur Chloride (Dry)		C[3,4]	C	A
Sulphur Dioxide Gas (Moist)	70°	B[3,4]	C	B
Gas (Dry)	575°	A[3,4]	C	A
Sulphuric Acid				
5%-10%	70°	C	C	B
5%-10%	Boiling	C	C	C
50%	70°	C	C	C
50%	Boiling	C	C	C
Concentrated	70°	A[3,4]	C	B
Concentrated	Boiling	C	C	B
Concentrated	300°	C	C	B
Fuming	70°	C	C	B
Sulphurous Acid, Saturated	70°	C	C	B
Saturated - 60 lbs. Pressure	250°	C	C	B
Saturated - 70-125 lbs.	310°	C	C	B
150 lbs. Pressure	375°	C	C	B
Sulphurous Spray	70°	C	C	C
Tannic Acid	70°	A	C	A
	150°	A		A
Tartaric Acid, 10%	70°	A	C	A
10%-50%	Boiling	B	C	A
Trichloracetic Acid	70°	C	C	B
Trichlorethylene (Dry)	70°	A[4]	C	A
(Moist)				B
Water		A	B	A
Zinc Chloride, 5% Still	70°	A[3,4]	C	C
	Boiling	B[3,4]	C	C
Zinc Cyanide (Moist)	70°	A	C	
Zinc Nitrate, Solution	Hot	A	C	
Zinc Sulphate, 5%	70°	A	C	B
25%	Boiling	A	C	B
Saturated	70°	A	C	B

Notes:
The media listed herein is considered to be pure at room temperature and unless otherwise specified dry. A change in condition can affect the ratings listed above. It should be noted that this reference table is only a partial listing for corrosion evaluation.

Failure Mode:
1. Erosion · · · · · · · · · · · · · · · · subject to attack in the presence of H_2SO_4.
2. Unstable · · · · · · · · · · · · · · · · may cause explosive reaction.
3. Chloride Stress Corrosion Cracking · · · · · · · · chlorides acting on anstenetic stainless steel (i.e. T-304 & T-321) can cause cracking in hose.
4. Pitting Corrosion · · · · · · · · · · · · galvanic action can cause holes to form in hose (usually from acids when combined with air mixtures or when allowed to dry).

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Series 6201 Braided Flexible Metal Pump Connector Specification Data Sheet

Customer Name:	Date:		Page:
Address:	City:	ST.	Zip:
Phone:	Fax:		

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Inquiry / Job #

Design Data			TAG #	TAG #	TAG #
Quantity Required					
Nominal Diameter (Inches)					
Overall Length Required					
Hose Material Type: (321 S/S, BRZ) Or _____					
End Fittings	End Type (FF, GF, GG, TT, SEB) Or _____				
	Material Type (C/S, Copper) Or _____				
Maximum Continuous System Operating Temperature (MCSOT)					
Pressure/Vacuum (see conversion chart page 7)	Working Pressure @ _____ ºF				
	Working Pressure @ _____ ºF				
System Application / Location					
Flow Media / Environment					
Movement Conditions	Misalignment (List Value)				
	Intermittent	Lateral Y or N	in.	in.	in.
	Movement	Angular Y or N	Degree	Degree	Degree
	Vibration	Y or N			

Attention: *(Circle One)* Sylvia Augusto • Steve Bowman • Stacie Cummings • Richard Garcia
Gary Haxby • Kim Kimball • Ivan Martinez

For direct contact with a Customer Service Representative, please call **1-800-344-3246**
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