

# PROCO



**BRAIDED FLEXIBLE METAL CONNECTORS**

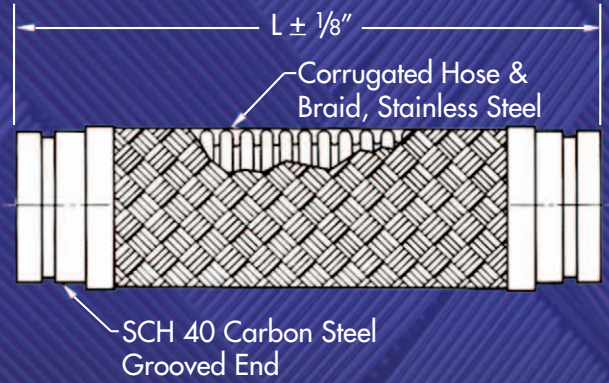


# SERIES GG - 6201

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 |
|-----------------------------------|-------|----------------|-----------|---------------------|---------|--------------------------|
|                                   |       | Intermittent   | Permanent | @70 °F              | @300 °F |                          |
| 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.





# Temperature

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

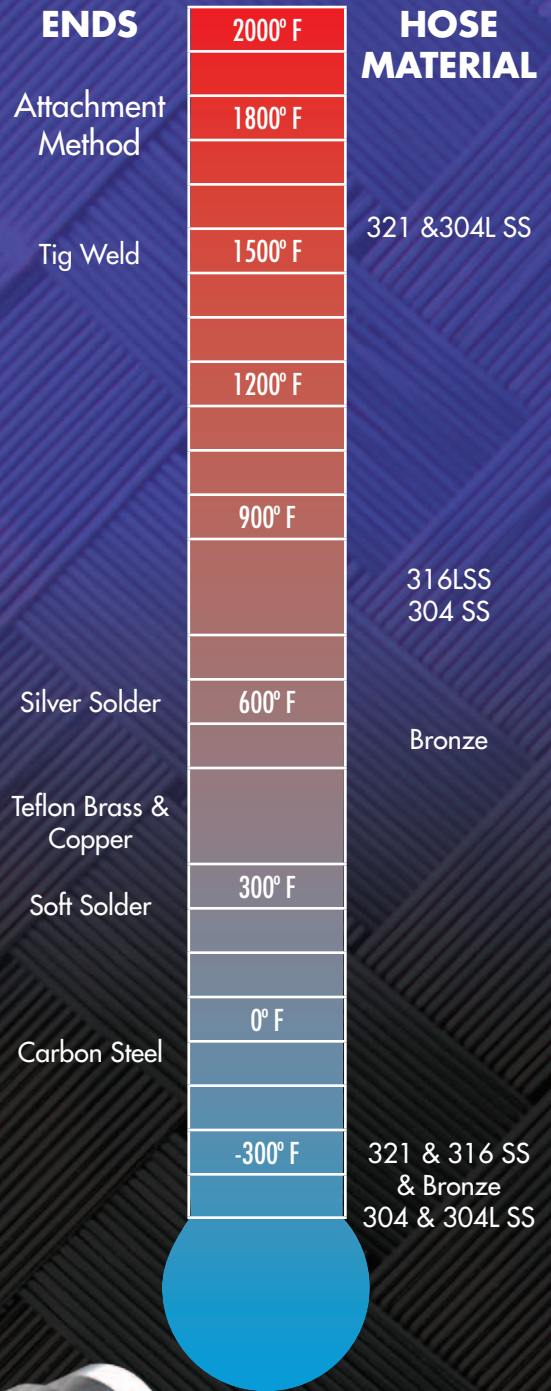
| Temp<br>°F | Material |        |        |
|------------|----------|--------|--------|
|            | Bronze   | 304 SS | 321 SS |
| Ambient    | 1.00     | 1.00   | 1.00   |
| 150        | .92      | .96    | .97    |
| 200        | .89      | .92    | .94    |
| 250        | .85      | .91    | .92    |
| 300        | .83      | .86    | .88    |
| 350        | .81      | .85    | .86    |
| 400        | .78      | .82    | .83    |
| 450        | .75      | .80    | .81    |
| 500        |          | .77    | .78    |
| 600        |          | .73    | .74    |
| 700        |          | .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.





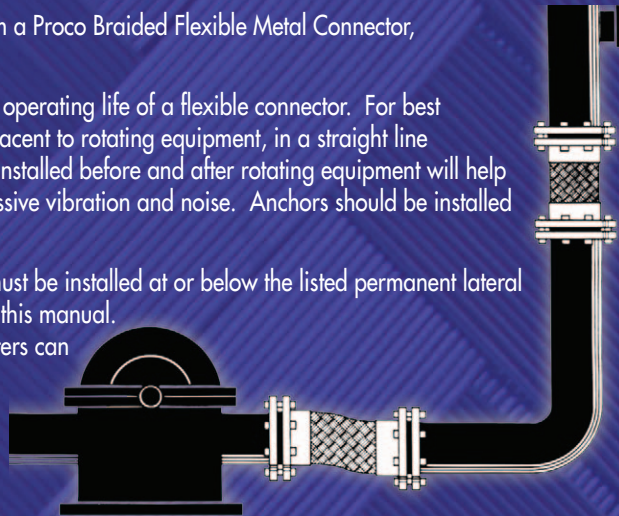
# Installation Instructions

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



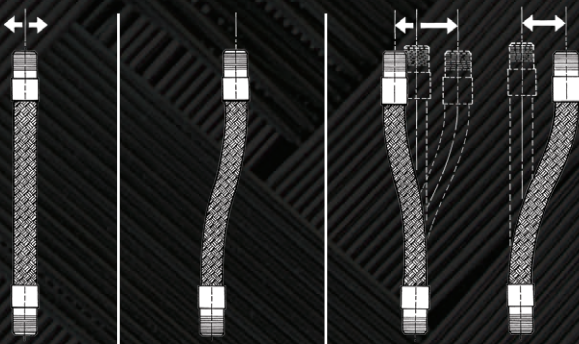
For lateral movements greater than those listed in tables on pages 3-6, it is possible to install two flexible connectors in a pipe system to achieve greater flexibility. Install two connectors at right angles to one another and between two anchor points. This scheme will allow for increased lateral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





# 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 ••••• • .00035 inch penetration per month.
- C - NON RESISTANT ••••• • greater than .00035 inch penetration per month.

| Chemical  | Temp. °F. | 304, 321 S.S.    | Carbon Steel   | Bronze         | Chemical                                    | Temp. °F. | 304, 321 S.S.    | Carbon Steel | Bronze | Chemical   | Temp. °F.  | 304, 321 S.S.    | Carbon Steel | Bronze |
|---|-----------|------------------|----------------|----------------|---|-----------|------------------|--------------|--------|--|------------|------------------|--------------|--------|
| Acetic Acid 5%, 20% Agitated or Aerated   | 70°       | A                | C              | C              | Ammonium Sulphate                           |           |                  |              |        | Citric Acid, 5% Still                                  | 70°-150°   | A                | C            | A      |
| 50%   | 70°       | A                | C              | C              | 1% Aerated or Agitated                      | 70°       | A                | C            | C      | 15% Still  | 70°        | A                | C            | B      |
| 50%, 80%  | Boiling   | C                | C              | C              | 5% Aerated & Agitated                       | 70°       | A                | C            | C      | 15% or Concentrated                                    | Boiling    | B                | C            | B      |
| 80%   | 70°       | A                | C              | C              | 10% & Saturated                             | Boiling   | B <sup>4</sup>   | C            | C      | Coffee RSC   | Boiling    | A                | C            | A      |
| 100%  | 70°       | A                | C              | C              | Ammonium Sulphite, 70% Boiling              | 70°       | A                | C            | C      | Copper Acetate (Saturated Solution)                    | 70°        | A                | C            |        |
| 100%  | Boiling   | C                | C              | C              | Barium Carbonate                            | 70°       | A                | B            | A      | Copper Carbonate (Sat. Sol.) in 50% NH <sub>4</sub> OH |            | A                |              | C      |
| 100%-150 lbs. Pressure  | 400°      | C                | C              | C              | Barium Chloride 5% & Saturated              | 70°       | A <sup>3,4</sup> | C            | B      | Copper Chloride,                                       |            |                  |              |        |
| Acetic Acid Vapors, 30%   | Hot       | C                | C              | C              | Barium Hydroxide Aqueous Solution           | Hot       | A                | B            | A      | 1% Agitated  | 70°        | B <sup>3,4</sup> | C            | C      |
| 100%  | Hot       | C                | C              | C              | Barium Nitrate Aqueous Solution             | Hot       | A                | B            |        | 1% Aerated   | 70°        | B <sup>3,4</sup> | C            | C      |
| Acetyl Chloride   | Cold      | B <sup>3</sup>   | C              | B              | Barium Sulphate                             | 70°       | A                |              | A      | 5% Agitated  | 70°        | C                | C            | C      |
|   | Boiling   | B <sup>3</sup>   | C              | B              | Barium Sulphide Saturated Solution          | 70°       | A                | C            | C      | 5% Aerated   | 70°        | C                | C            | C      |
| Acetylene Concentrated  | 70°       | A                | A              | C <sup>2</sup> | Beer (Barley, Malt & Hops)                  | 70°       | A                | C            | A      | Copper Cyanide (Saturated Solution)                    | Boiling    | A                | C            | C      |
| Commercially Pure   | 70°       | A                | A              | C <sup>2</sup> | 3.5% - 4.5% Alcohol                         | 160°      | A                | C            | A      | Copper Nitrate   |            |                  |              |        |
| Acid Salt Mixture   |           |                  |                |                | Benzene (Benzol) 70° or Hot                 | 70°       | A                | B            | A      | 1% Still, Agitated & Aerated                           | 70°        | A                | C            | C      |
| 10% H <sub>2</sub> SO <sub>4</sub> Sp. G. 1.07 + 10% CuSO <sub>4</sub> • 5 H <sub>2</sub> O | Boiling   | A <sup>3,4</sup> | C              | C              | Benzoic Acid                                | 70°       | A                | A            | A      | 5% Still, Agitated & Aerated                           | 70°        | A                | C            | C      |
| Acid Salt Mixture   |           |                  |                |                | Borax 5%                                    | Hot       | A                | B            | A      | 50% Aqueous Solution                                   | Hot        | A                | C            | C      |
| 10% H <sub>2</sub> SO <sub>4</sub> Sp. G. 1.07 + 2% FeSO <sub>4</sub> • 7 H <sub>2</sub> O  | Boiling   | A <sup>3,4</sup> | C              | C              | Boric Acid                                  |           |                  |              |        | Copper Sulphate  |            |                  |              |        |
| Alcohol, Ethyl, 70° & Boiling   | 70°       | A                | A              | A              | 5% Solution, 70° or Hot                     | 70°       | A                | C            | A      | 5% Agitated Still or Aerated                           | 70°        | A                | C            | B      |
| Alcohol, Methyl   | 70°       | A                | A              | A              | 5% Solution                                 | Boiling   | A                | C            | A      | Saturated Solution                                     | Boiling    | A                | C            | B      |
|   | Boiling   | C                | C              | A              | Saturated Solution                          | 70°       | A <sup>3,4</sup> | C            | B      | Creosote (Coal Tar)                                    | Hot        | A                | B            | A      |
| Aluminum Acetate, Saturated   | 70°       | A                | C              | C              | Saturated Solution                          | Boiling   | A <sup>3,4</sup> | C            | C      | Creosote Oil   | Hot        | A                | B            | B      |
|   | Boiling   | A                | C              | C              | Bromine Water                               | 70°       | C                | C            | C      | Dichloroethane (Dry)                                   | Boiling    | A                | C            | C      |
| Aluminum Chloride   |           |                  |                |                | Butyl Acetate                               |           | A                | B            |        | Dyewood Liquor   | 70°        | A <sup>1</sup>   | C            |        |
| 10% Quiescent   | 70°       | C                | C              | C              | Calcium Chloride Dilute or Concen. Solution | 70°       | B <sup>3,4</sup> | C            | B      | Epsom Salt (Magnesium Sulphate)                        | Hot & Cold | A <sup>3,4</sup> | C            | A      |
| 25% Quiescent   | 70°       | A <sup>3,4</sup> | C              | C              | Calcium Chlorohypochlorite                  |           |                  |              |        | Ethyl Acetate (Concentrated Solution)                  | 70°        | A                | B            | A      |
| Aluminum Fluoride   | 70°       | C                | C              | C              | (Bleaching Powder) 1%                       | 70°       | C                | C            | B      | Ethyl Chloride   | 70°        | A <sup>3,4</sup> | B            | B      |
| Aluminum Hydroxide, Saturated   | 70°       | A                | A <sup>4</sup> | A              | (Bleaching Powder) 5%                       | 70°       | C                | C            | B      | Ethylene Chloride                                      | 70°        | A <sup>3,4</sup> | B            | B      |
| Aluminum Sulphate, 5%   | 150°      | A                | C              | C              | Calcium Hypochlorite, 2%                    | 70°       | B <sup>4</sup>   | C            | B      | Ethylene Glycol  | 70°        | A                | B            | A      |
| 10%   | 70°       | A                | C              | C              | Calcium Hydroxide, 10-20%                   | Boiling   | A                | C            | A      | Ferric Chloride  |            |                  |              |        |
| 10%   | Boiling   | B                | C              | C              | Calcium Sulphate, Saturated                 | 70°       | A                | C            | A      | 1% Solution Still                                      | 70°        | B <sup>3,4</sup> | C            | C      |
| Saturated   | 70°       | A                | C              | C              | Carbonic Acid Saturated Solution            | 70°       | A                | C            | A      | 1% Solution  | Boiling    | C                | C            | C      |
| Saturated   | Boiling   | B                | C              | C              | Carbolic Acid                               | 70°       | A                | C            | B      | 5% Solution, Agitated, Aerated                         | 70°        | C                | C            | C      |
| Aluminum Potassium Sulphate:  |           |                  |                |                | Carbolic Acid                               | Boiling   | A                | C            | B      | Ferric Hydroxide                                       |            | A                | C            |        |
| (Alum) 2%-10%   | 70°       | A                | C              | B              | Carbon Bisulfide                            | 70°       | A                | B            | B      | Ferric Nitrate   |            |                  |              |        |
| 10%   | Boiling   | B                | C              | C              | Carbon Monoxide Gas                         | 1400°     | A                | A            | C      | 1-5% Quiescent or Agitated                             | 70°        | A                | C            | C      |
| Saturated   | Boiling   | C                | C              | C              | Carbon Monoxide Gas                         | 1600°     | A                | A            | C      | 1-5% Aerated   | 70°        | A                | C            | C      |
| Ammonia (Anhydrous):  |           |                  |                |                | Carbon Tetrachloride                        |           |                  |              |        | Ferric Sulphate  |            |                  |              |        |
| All Concentrations  | 70°       | A                | A              | A              | Commercially Pure                           | 70°       | A <sup>3,4</sup> | B            | A      | 1-5% Quiescent or Agitated                             | 70°        | A <sup>4</sup>   | C            | C      |
| Gas   | Hot       | C                | C              | C              | Dry Commercially Pure                       | Boiling   | A <sup>3,4</sup> | B            | A      | 1-5% Aerated   | 70°        | A <sup>4</sup>   | C            | C      |
| Ammonia Liquor  | 70°       | A                | C              | C              | Commercial + 1% Water                       |           | C                | C            | B      | 10%  | Boiling    | A <sup>4</sup>   | C            | C      |
|   | Boiling   | A                | C              | C              | Chloracetic Acid                            | 70°       | C                | C            | B      | Ferrous Chloride: Saturated Solution                   | 70°        | C                | C            | B      |
| Ammonium Bicarbonate  | 70°       | A                | C              | C              | Chlorbenzol Concentrate Pure Dry            | 70°       | A                | B            | B      | Ferrous Sulphate: Dilute Solution                      | 70°        | A                | C            | B      |
|   | Hot       | A                | C              | C              | Chloric Acid                                | 70°       | C                | C            | C      | Fluorine (Gas) Moist                                   | 70°        | C                | C            | C      |
| Ammonium Bromide  | 70°       | B                | C              | C              | Chlorine Gas (Dry)                          | 70°       | C                | B            | A      | Formaldehyde 40% Solution                              |            | A <sup>4</sup>   | B            | A      |
| Ammonium Carbonate 1% & 5%  | 70°       | A                | A              | C              | (Moist)                                     | 70°       | C                | C            | C      | Formic Acid, 5% Still                                  | 70°        | B                | C            | B      |
| Ammonium Chloride 1%  | 70°       | A <sup>3,4</sup> | B              | C              | Chlorinated Water, Saturated                |           | C                | C            |        | 5% Still   | 150°       | B                | C            | B      |
| 10%   | Boiling   | A <sup>3,4</sup> | C              | C              | Chloroform                                  | 70°       | A                | A            | A      | Fuel Oil   | Hot        | A                | B            | A      |
| 28%   | Boiling   | B <sup>3,4</sup> | C              | C              | Chromic Acid                                |           |                  |              |        | Containing Sulphuric Acid                              |            | C                | C            | C      |
| 50%   | Boiling   | B <sup>3,4</sup> | C              | C              | 5% Commercially Pure                        | 70°       | A                | C            | C      | Gallic Acid, 5%  | 70°-150°   | A                | C            |        |
| Ammonium Hydroxide: All Concentrations  | 70°       | A                | B              | C              | 10%   | 70°       | C                | C            | C      | Saturated  | 212°       | A                | C            |        |
| Ammonium Monophosphate  | 70°       | A                | B              | C              | Chromic Acid                                |           |                  |              |        | Gasoline   | 70°        | A                | B            | A      |
| Ammonium Nitrate:   |           |                  |                |                | 10% Commercially Pure                       | Boiling   | C                | C            | C      | Hydrochloric Acid: All Concentrations                  | 70°        | C                | C            | C      |
| All Concentrate Agitated  | 70°       | A                | C              | C <sup>2</sup> | 50% Commercially Pure                       | 70°       | C                | C            | C      | Hydrocyanic Acid                                       | 70°        | A                | C            | C      |
| All Concentrate Aerated   | 70°       | A                | C              | C <sup>2</sup> | 50% Commercially Pure                       | Boiling   | C                | C            | C      | Hydrofluoric Acid                                      | 70°        | C                | C            | C      |
| All Concentrate Saturated   | Boiling   | A                | C              | C <sup>2</sup> | Commercial 50% (Cont. SO <sub>3</sub> )     | 70°       | C                | C            | C      | Hydrofluosilic Acid                                    | 70°        | C                | C            | B      |
| Ammonium Perchlorate 10%  | Boiling   | A <sup>3,4</sup> | B              | C              | Commercial 50% (Cont. SO <sub>3</sub> )     | Boiling   | C                | C            | C      | Hydrogen Sulphide (Dry)                                | 70°        | A                | B            | A      |
| Ammonium Persulphate 5%   | 70°       | A                | C              | C              | Chromium Plating Bath                       | 70°       | A                | B            | C      | (Wet)  | 70°        | B <sup>1</sup>   | C            | C      |
| Ammonium Phosphate 5%   | 70°       | A                | B              | C              |   |           |                  |              |        | Hyposulphite Soda                                      |            | A                | C            |        |

# Order Form

Fax: 209.943-0242 or Email: sales@procoproducts.com

## Series 6201

Braided Flexible Metal Pump Connector Specification Data Sheet

9/1/11 • Rev.3

|                |       |       |      |
|----------------|-------|-------|------|
| Customer Name: | Date: | Page: |      |
| Address:       | City: | St.:  | Zip: |
| Phone:         | Fax:  |       |      |

### PROCO - Your Expansion Joint Source!

|   |   |                |        |
|---|---|----------------|--------|
| Inquiry / Job #   |   |                |        |
| <b>Design Data</b>                                      | 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<br>(see conversion chart<br>page 7)     | Working Pressure @ _____ °F             |                |        |
|   | Working Pressure @ _____ °F             |                |        |
| System Application / Location                           |   |                |        |
| Flow Media / Environment                                |   |                |        |
| <b>Movement<br/>Conditions</b>                          | Misalignment (List Value)               |                |        |
|   | Intermittent                            | Lateral Y or N | in.    |
|   | Movement                                | Angular Y or N | Degree |
|   | Vibration                               | Y or N         |        |

**Attention:** (Circle One) Gary Haxby • Pat Booth • Richard Garcia • Kristen Pereira • Sylvia Augusto  
Steve Bowman • Kim Kimball

For direct contact with a Customer Service Representative, please call **1-800-344-3246**  
USA / Canada. Outside USA / Canada, please call **209-943-6088**



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