

# PROCO



**BRAIDED FLEXIBLE METAL CONNECTORS**

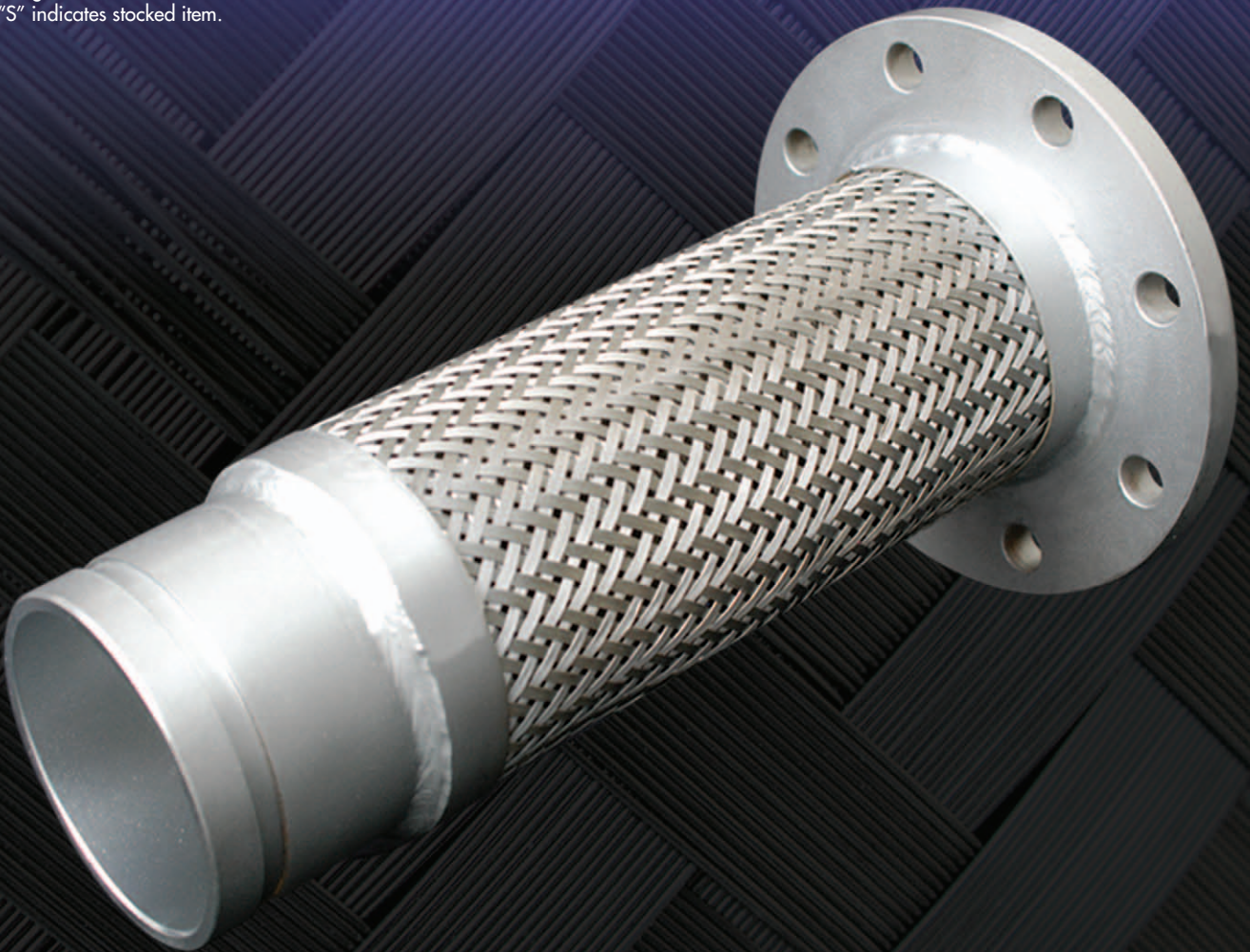
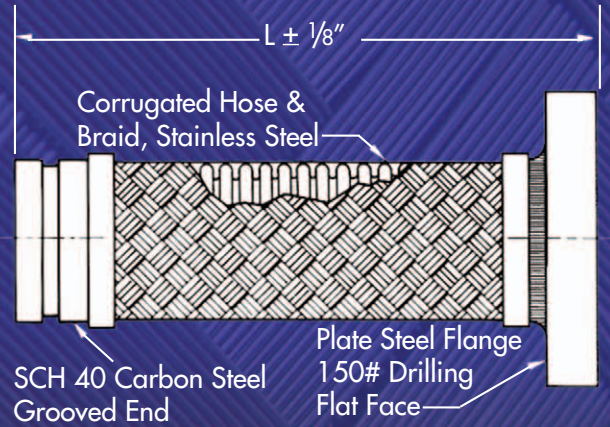
# SERIES GF - 6201

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
		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.

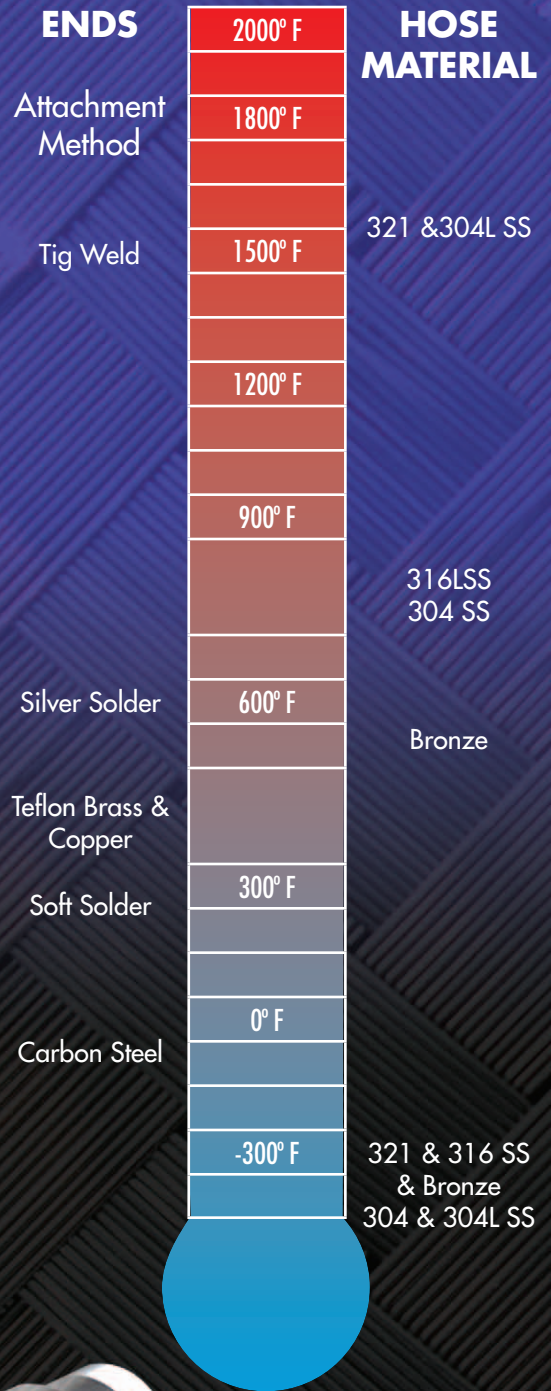
Temp °F	Material		
	Bronze	304 SS	321 SS
Ambient	1.00	1.00	1.00
150	.92	.96	.97
200	.89	.92	.94
250	.85	.91	.92
300	.83	.86	.88
350	.81	.85	.86
400	.78	.82	.83
450	.75	.80	.81
500		.77	.78
600		.73	.74
700		.69	.70
800		.64	.66
900		.58	.62
1000			.60
1100			.58
1200			.55
1300			.50
1400			.44
1500			.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.



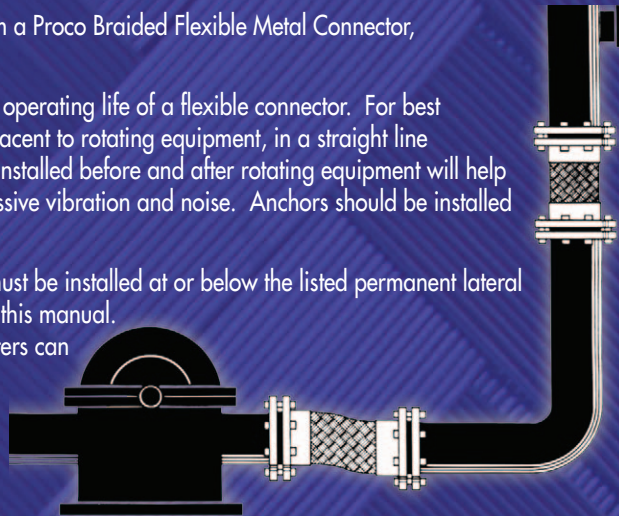
# Installation Instructions

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



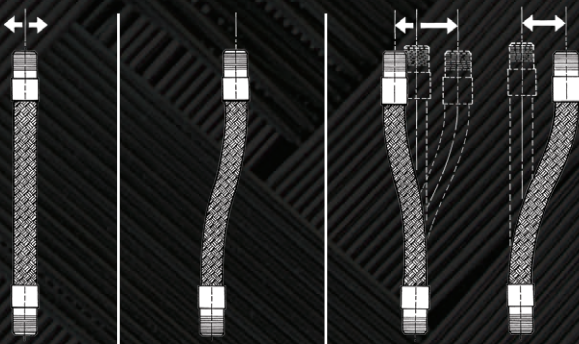
For lateral movements greater than those listed in tables on pages 3-6, it is possible to install two flexible connectors in a pipe system to achieve greater flexibility. Install two connectors at right angles to one another and between two anchor points. This scheme will allow for increased lateral 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 .0035 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	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 (see conversion chart page 7)	Working Pressure @ _____ °F		
	Working Pressure @ _____ °F		
System Application / Location			
Flow Media / Environment			
<b>Movement 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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