MGO INSULATED THERMOCOUPLES INDEX

| PAGE | 4 |
|---|---|
| General Information | |
| Part Numbering Examples | |
| Thermocouple Elements (MA) | |
| Leadwire Style Thermocouples (MB) | |
| Leadwire Style Thermocouples (MD, ME, MF, or MG - with transition fitting) M8 | |
| Standard Connector Thermocouples (MK, ML, MM, MN, MO, or MP) | |
| Miniature Connector Thermocouples (MQ, MR, or MS) | |
| Snap-Cover Connection Head Thermocouples (MT, MV, or M4) | |
| Miscellaneous Connection Head Thermocouples (MW, MX, MY, or MZ) M12 | |
| Screw-Cover Connection Head Thermocouples (M1, M2, M3, or M8) M13 | |
| Sheath Mounting Fittings | |
| Sheath Mounting Fittings and Bend Options | |

For other MgO/Thermocouple products:

See the Food, Dairy & Pharmaceutical Section of the Catalog for the following items:

- · Sanitary Connected Thermocouples (CIP)
- $\cdot \ Thermometer \ Replacement \ Thermocouples$
- $\cdot \ Penetration \ Style \ Sensors$

See the Thermowell Assemblies & Thermowells Section of the Catalog for the following items:

- $\cdot \ MgO \ Thermocouple \ Style \ Thermowells$
- $\cdot \ MgO \ Thermocouple \ Replacment \ for \ Thermowells$



GENERAL INFORMATION, MgO INSULATED THERMOCOUPLES

SensorTec, Inc. utilizes the highest quality MgO (magnesium oxide) insulated metal sheathed cable available in all MgO thermocouples. All cable meets or exceeds all applicable ANSI/ASTM standards. MgO insulated thermocouples have many desirable characteristics (i.e. fast response, compact size, broad temperature range, formability, weldability, durability, accuracy, thermal shock and vibration resistance). These characteristics make the SensorTec MgO insulated thermocouple an excellent choice for virtually all laboratory or process applications.

The standard MgO insulated thermocouple configuration consists of ANSI/ASTM standard limits of error conductor material and standard (96%) pure insulation. Each catalog page details a variety of other configurations available.

INITIAL CALIBRATION TOLERANCES FOR THERMOCOUPLES

| | (0°C/32°F REFERENCE JUNCTION) | | | | | | |
|------|-------------------------------|---------------|----------------------|----------------------|------------|--------------------------------------|-----------------|
| Type | | | • | Temperature Range | | Tolerances (whichever is greater) | |
| | | Color | Material | °C | °F | Standard | Special |
| J | + Lead - Lead | White Red | Iron Constantan | 0 to 750 | 32 to 1652 | ±2.2°C or +0.75% | ±1.1°C or ±0.4% |
| K | + Lead - Lead | Yellow Red | Chromel Alumel | 0 to 1250 | 32 to 2282 | ±2.2°C or +0.75% | ±1.1°C or ±0.4% |
| E | +Lead - Lead | Purple Red | Chromel Constantan | 0 to 900 | 32 to 1652 | ±1.7°C or +0.50% | ±1.0°C or ±0.4% |
| Т | + Lead - Lead | Blue Red | Copper Constantan | 0 to 350 | 32 to 662 | ±1.0°C or +0.75% | ±0.5°C or +0.4% |

☑ STANDARD SHEATH MATERIALS

| Туре | Code | Temperature Range |
|---------------------|------|-------------------|
| 304 Stainless Steel | Т | 899°C (1650°F) |
| 310 Stainless Steel | V | 1150°C (2100°F) |
| 316 Stainless Steel | W | 899°C (1650°F) |
| 446 Stainless Steel | S | 1150°C (2100°F) |
| Inconel Alloy 600 | | 1212°C (2150°F) |

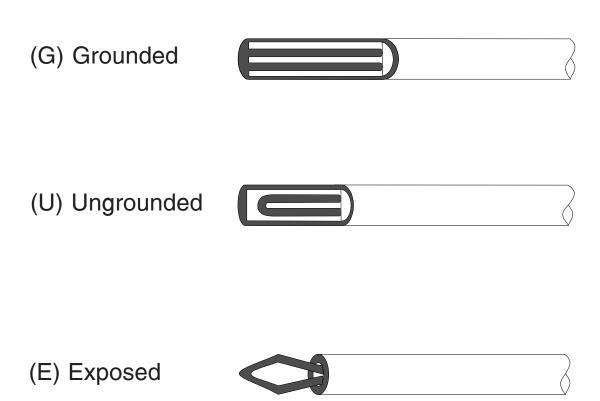
The following table gives the maximum recommended temperature for each sheath size and material type by thermocouple calibration: (Based on single element types)

MgO Sheath Size and Rating (°F)

| Calibration | Material | 1/16" | 1/8" | 3/16" | 1/4" | 3/8" |
|-------------|-----------|--------------|------|-------|------|------|
| J | _ALL | 1500 | 1500 | 1500 | 1500 | 1500 |
| | 304 SS | 1600 | 1600 | 1600 | 1600 | 1600 |
| | 310 SS | <u> 1900</u> | 2000 | 2000 | 2000 | 2000 |
| K | 316 SS | 1600 | 1600 | 1600 | 1600 | 1600 |
| | 446 SS | 1900 | 2000 | 2000 | 2100 | 2100 |
| | Alloy 600 | 2000 | 2100 | 2150 | 2150 | 2150 |
| E | ALL | 1600 | 1600 | 1600 | 1600 | 1600 |
| Т | ALL | 662 | 662 | 662 | 662 | 662 |



☑ MEASURING JUNCTION TYPES



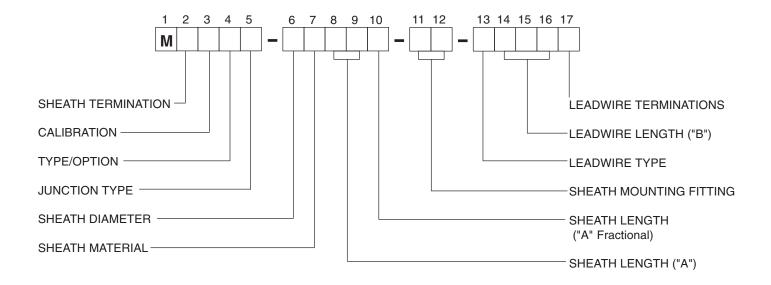
NOTE: All duplex ungrounded and exposed sensors are supplied with two thermocouples isolated from each other as standard. For diameters less than .125 OD, isolated junction must be specified. Consult factory for availability.

An ungrounded junction is recommended for small diameter thermocouples (.125" OD and under) that are to be used in high temperature applications or that are to undergo temperature calibration.

An ungrounded junction is also recommend if the thermocouple is to be used with a PLC or temperature controller that has non-isolated inputs.



PART NUMBERING EXAMPLES FOR MGO THERMOCOUPLES



MDJ0G-KW12A-00-F060B

MGO - Type "J", Transition Fitting, Grounded, 1/4" Dia. Sheath, 12" Long, 316 SS Material, No Fitting and 5 Ft. of Stranded Fiberglass Wire with SS Overbraid, 2-1/2" Split Leads. Refer to page M-2.



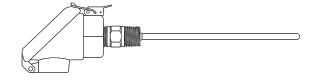
MKE0G-KT24A-2B

MGO - Type "E", Standard Male Plug, Grounded, 1/4" Dia. Sheath, 24" Long, 304 SS Material, Compression Fitting Brass 1/4" NPT. Refer to page M-3.

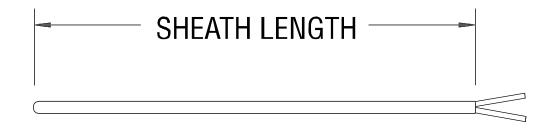


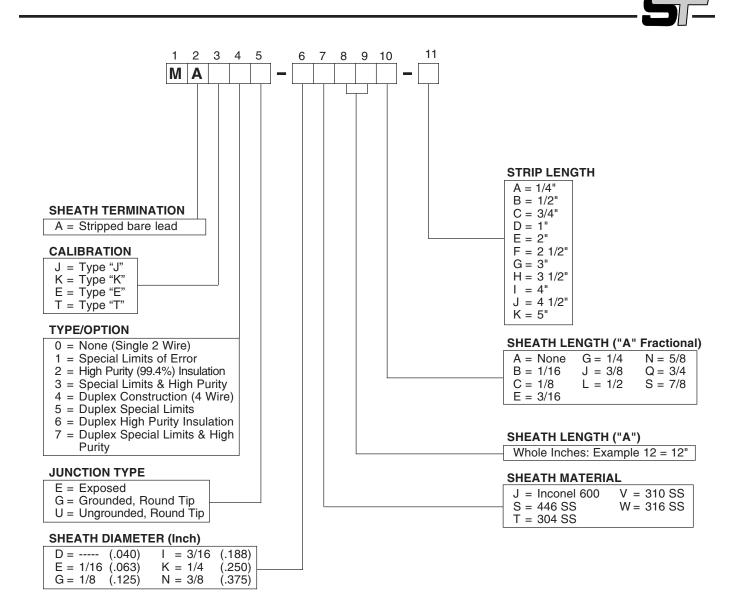
MTJ0G-KJ06L-56

MGO - Type "J", Snap-Cover, Cast Aluminum, Grounded, 1/4" Dia. Sheath, 6-1/2" Long, Inconel 600 Material, Spring Loaded 1/2 NPT Stainless Steel Hex Nipple Mounting Provision. Refer to page M-5.

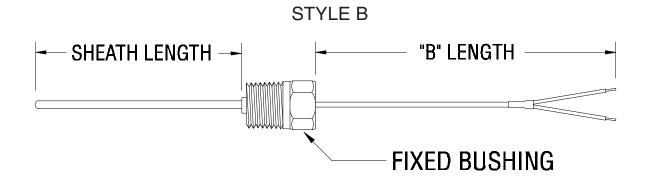


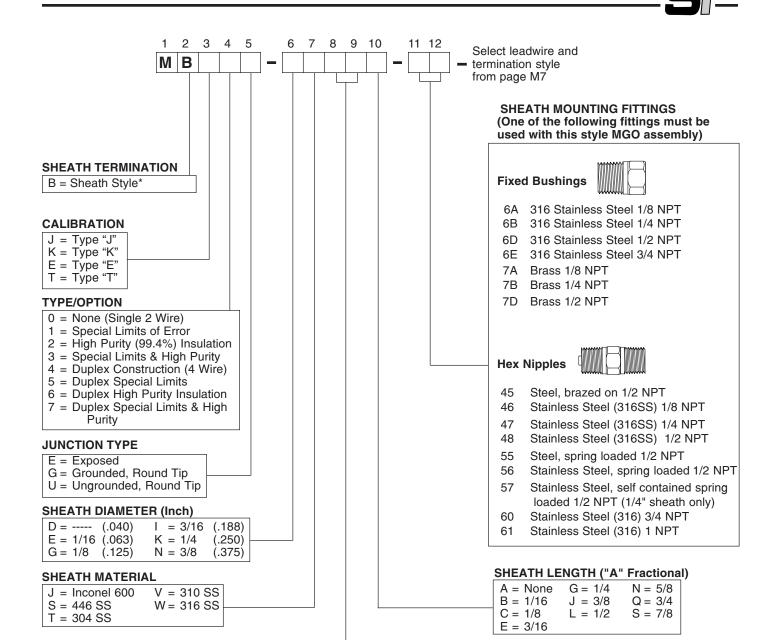
THERMOCOUPLE ELEMENTS





LEADWIRE STYLE THERMOCOUPLES





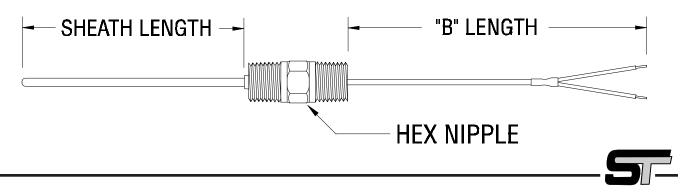
*Note: For Replaceable elements (MC) for

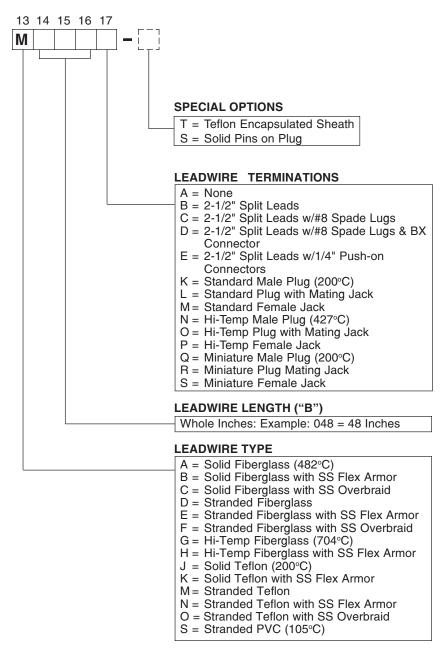
Thermowells see the Thermowell Section

SHEATH LENGTH ("A")

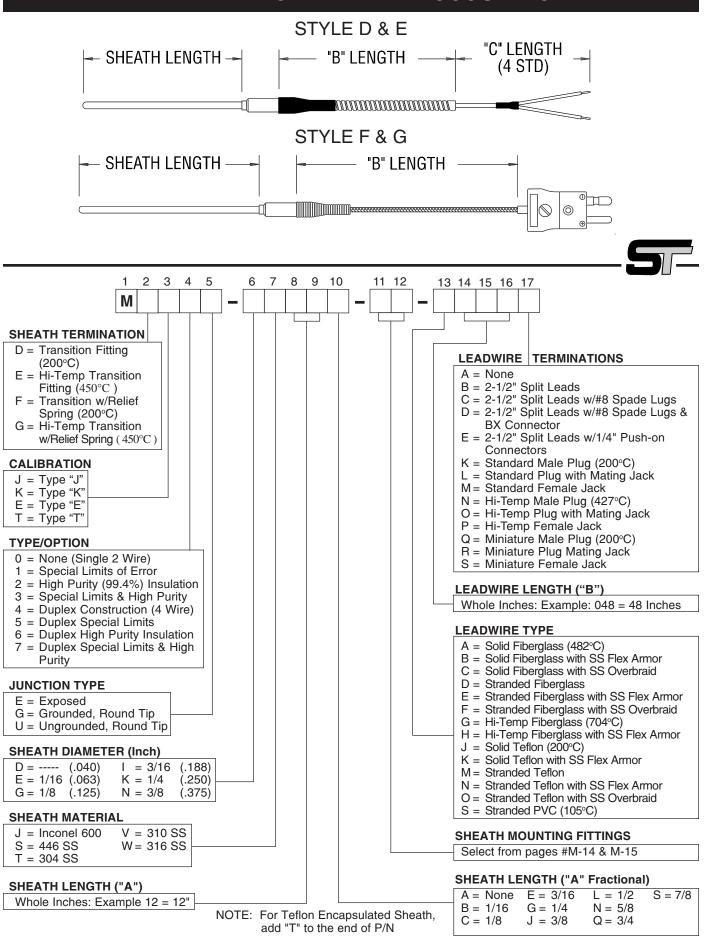
Whole Inches: Example 12 = 12"

LEADWIRE STYLE THERMOCOUPLES (CONTINUED)

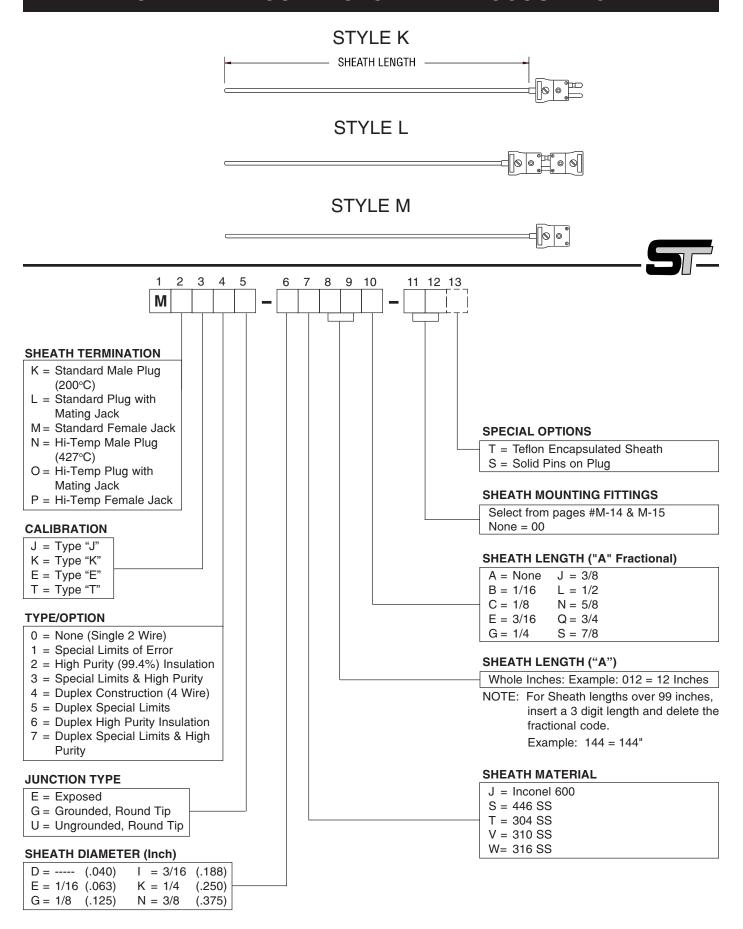




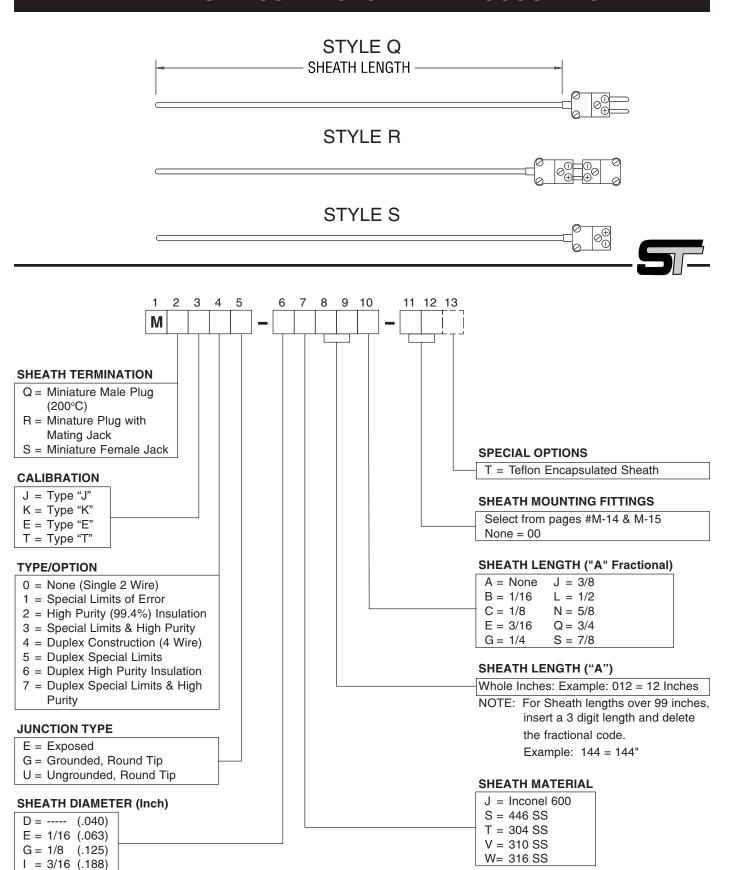
LEADWIRE STYLE THERMOCOUPLES



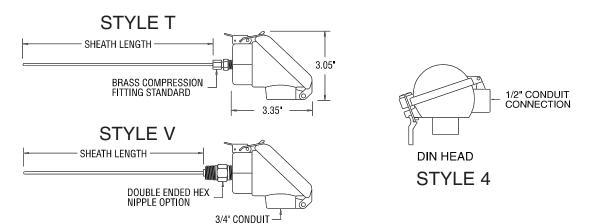
STANDARD CONNECTOR THERMOCOUPLES

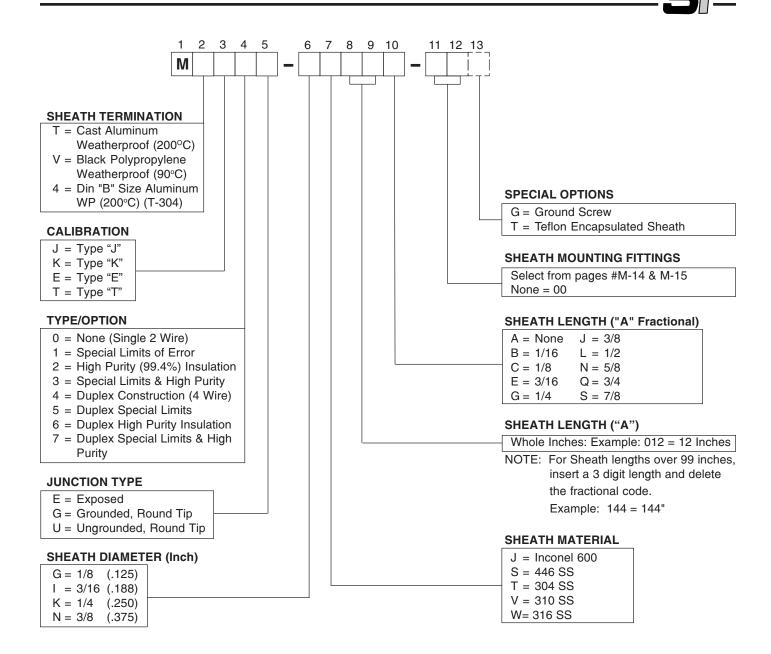


MINIATURE CONNECTOR THERMOCOUPLES

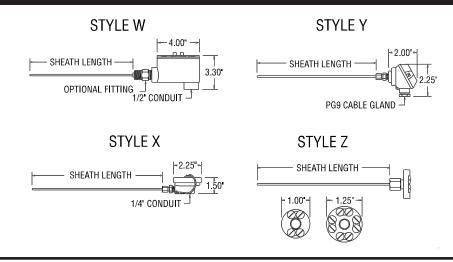


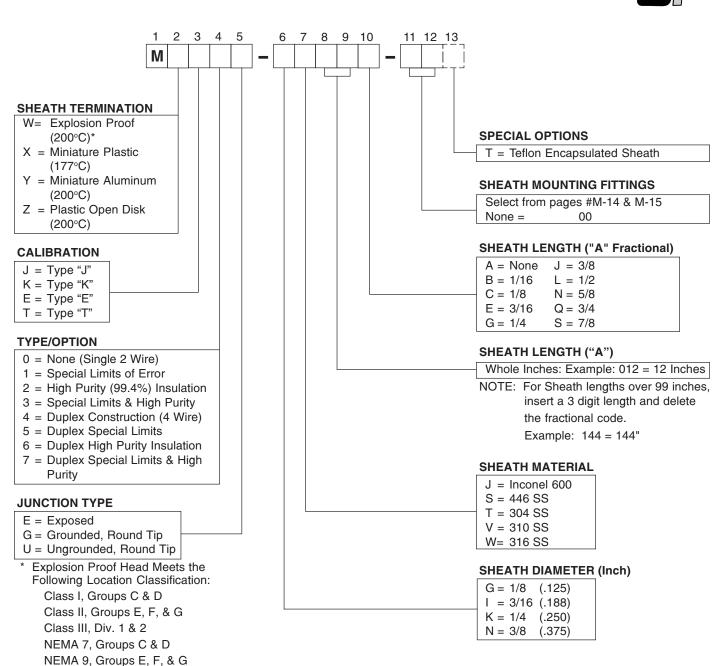
SNAP-COVER CONNECTION HEAD THERMOCOUPLES



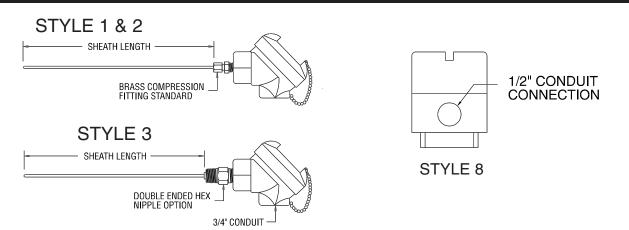


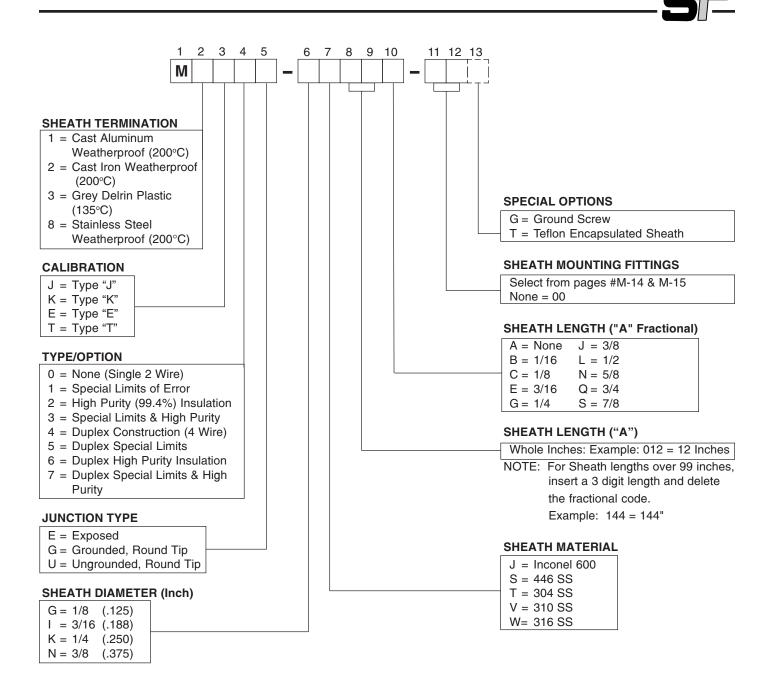
MISCELLANEOUS CONNECTION HEAD THERMOCOUPLES





SCREW-COVER CONNECTION HEAD THERMOCOUPLES

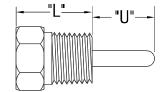




SHEATH MOUNTING FITTINGS

Fixed Brazed or Welded Bushings

| Code | Description | NPT | "L" |
|------|---------------------|-----|------|
| 6A | 316 Stainless Steel | 1/8 | .80 |
| 6B_ | 316 Stainless Steel | 1/4 | .81 |
| 6D | 316 Stainless Steel | 1/2 | 1.09 |
| 6E | 316 Stainless Steel | 3/4 | 1.20 |
| 7A | Brass | 1/8 | .80 |
| 7B_ | Brass | 1/4 | .96 |
| 7D | Brass | 1/2 | 1.20 |



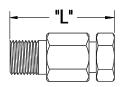
Insert "U" length

Ex. 6 D04 = $4^{"}$ "U" length

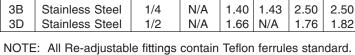


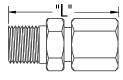
COMPRESSION FITTINGS

| One-time Adjustable* | | | Availal | ble Siz | es and | 1 "L" L | ength |
|----------------------|-----------------|-----|---------|---------|--------|---------|-------|
| Code | Description | NPT | 1/16" | 1/8" | 3/16" | 1/4" | 3/8" |
| 1A | Stainless Steel | 1/8 | 1.27 | 1.24 | 1.29 | 1.29 | N/A |
| 1B | Stainless Steel | 1/4 | 1.22 | 1.40 | 1.43 | 1.49 | 1.57 |
| 1D | Stainless Steel | 1/2 | N/A | 1.66 | N/A | 1.76 | 1.82 |
| 2A | Brass | 1/8 | 1.03 | 1.02 | 1.10 | 1.15 | N/A |
| 2B | Brass | 1/4 | 1.22 | 1.40 | 1.18 | 1.24 | 1.28 |
| 2D | Brass | 1/2 | 1.40 | 1.35 | 1.25 | 1.44 | 1.53 |



| | Re-A | djustable* | Availal | ble Siz | es and | 1 "L" L | .ength | |
|--|------|-----------------|---------|---------|--------|---------|--------|------|
| | Code | Description | NPT | 1/16" | 1/8" | 3/16" | 1/4" | 3/8" |
| | ЗА | Stainless Steel | 1/8 | 1.21 | 1.21 | 1.21 | N/A | N/A |
| | 3B | Stainless Steel | 1/4 | N/A | 1.40 | 1.43 | 2.50 | 2.50 |
| | 3D | Stainless Steel | 1/2 | N/A | 1.66 | N/A | 1.76 | 1.82 |



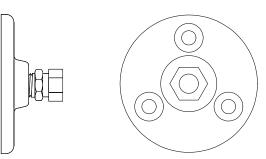


Consult Sales for Neoprene or Lava ferrules



| Code | Description |
|------|---|
| 25 | Flange w/ Brass Compression, Adjustable |
| 26 | Flange w/SS Compression, Adjustable |

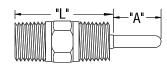




| | ble Ended | Hex | Nipples |
|------|-------------|-----|----------------|
| Code | Description | | |

| | | 00pat | | |
|------|----------------------------------|-------|------|---------------------------|
| Code | Description | NPT | "L" | Head Order Codes |
| 45 | Steel, brazed on | 1/2 | 2.10 | T, V, W, 1, 2, 3, 4, 5, 8 |
| 46 | Stainless Steel (316SS) | 1/8 | 1.01 | T, V, X, Y, 1 |
| 47 | Stainless Steel (316SS) | 1/4 | 2.10 | T, V, X, Y, 1 |
| 48 | Stainless Steel (316SS) | 1/2 | 2.10 | T, V, W, 1, 2, 3, 4, 5, 8 |
| 55 | Steel, spring loaded | 1/2 | 2.10 | T, V, 1, 2, 3, 4, 5, 8 |
| 56 | Stainless Steel, spring loaded | 1/2 | 2.10 | T, V, 1, 2, 3, 4, 5, 8 |
| 57 | Stainless Steel, self contained | 1/2 | 2.50 | T, V, W, 1, 2, 3, 4, 5, 8 |
| | spring loaded (1/4" sheath only) | | | |
| 60 | Stainless Steel (316SS) | 3/4 | 2.50 | T, V, W, 1, 2, 3, 4, 5, 8 |
| 61 | Stainless Steel (316SS) | 1 | 2.50 | T, V, W, 1, 2, 3, 4, 5, 8 |

Compatible with

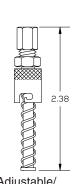


SHEATH MOUNTING FITTTINGS and BEND OPTIONS

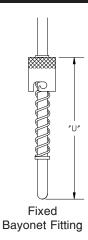
Bayonet Fittings

| Code | Description | Available Sheath Sizes |
|------|-------------------------------|------------------------|
| 27 | Adjustable Bayonet Fitting | 1/8 |
| 28 | Re-Adjustable Bayonet Fitting | 1/8 |
| 29 | Fixed Bayonet Fitting | 1/8, 3/16, 1/4 |

^{*} Insert "U" length Ex. 2904 = 4" "U" length





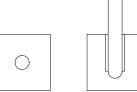




Weld Pads

| Code | Description |
|------|--|
| 35 | Perpendicular Pad, 316 SS, 1" x 1" |
| 36 | Horizontal Pad, 316 SS, 1" x 1" |
| 37* | Perpendicular Radius Pad*, 316 SS, 1" x 1" |
| 38* | Horizontal Radius Pad*, 316 SS, 1" x 1" |

^{*} Specify Radius (Ex. 37(2)=2"R)





Option 35 Perpendicular Pad 1" x 1"



Option 36 Horizontal Pad 1" x 1"





Option 37 Perpendicular Radius Pad 1" x 1"



Option 38 Horizontal Radius Pad 1" x 1"

Sheath Bends

| Code | Description |
|------|-------------|
| A* | 90° Bend |
| B* | 45° Bend |

* Insert "U" Length Ex. A04=4" "U" Length

