

# Temperature Sensing

## Industrial Thermocouple Assemblies



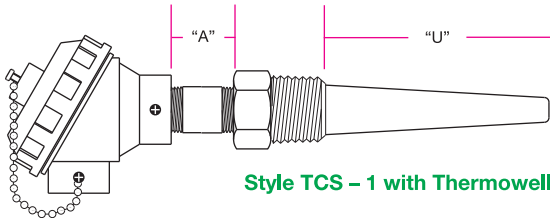
### Industrial Process Thermocouples



Tempco manufactures many styles of industrial thermocouple assemblies for a wide range of industries, from petrochemical to textile applications, where one or more protection tubes may be necessary to protect the thermocouple.

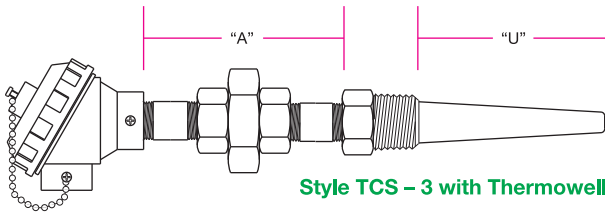
### Metal Protecting Tube Assemblies

### Thermowell Assemblies



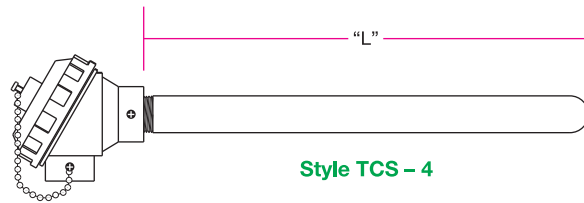
Style TCS - 1 with Thermowell

Thermocouple Head, Nipple, Thermowell

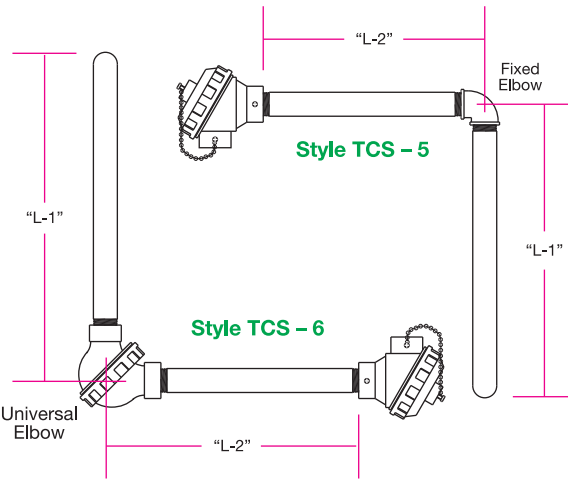


Style TCS - 3 with Thermowell

Thermocouple Head, Nipple, Union, Nipple, Thermowell



Style TCS - 4

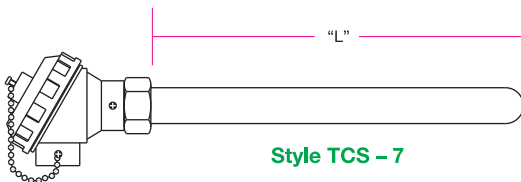


Style TCS - 5

Style TCS - 6

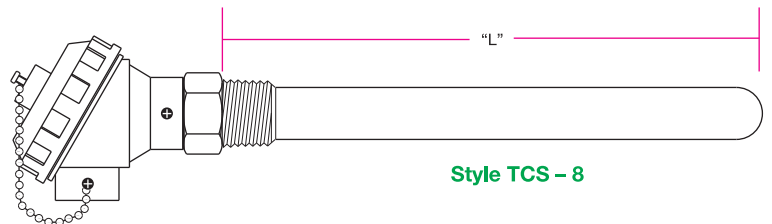
Thermocouple Head, Metal Protecting Tube

### Ceramic Tube Assemblies



Style TCS - 7

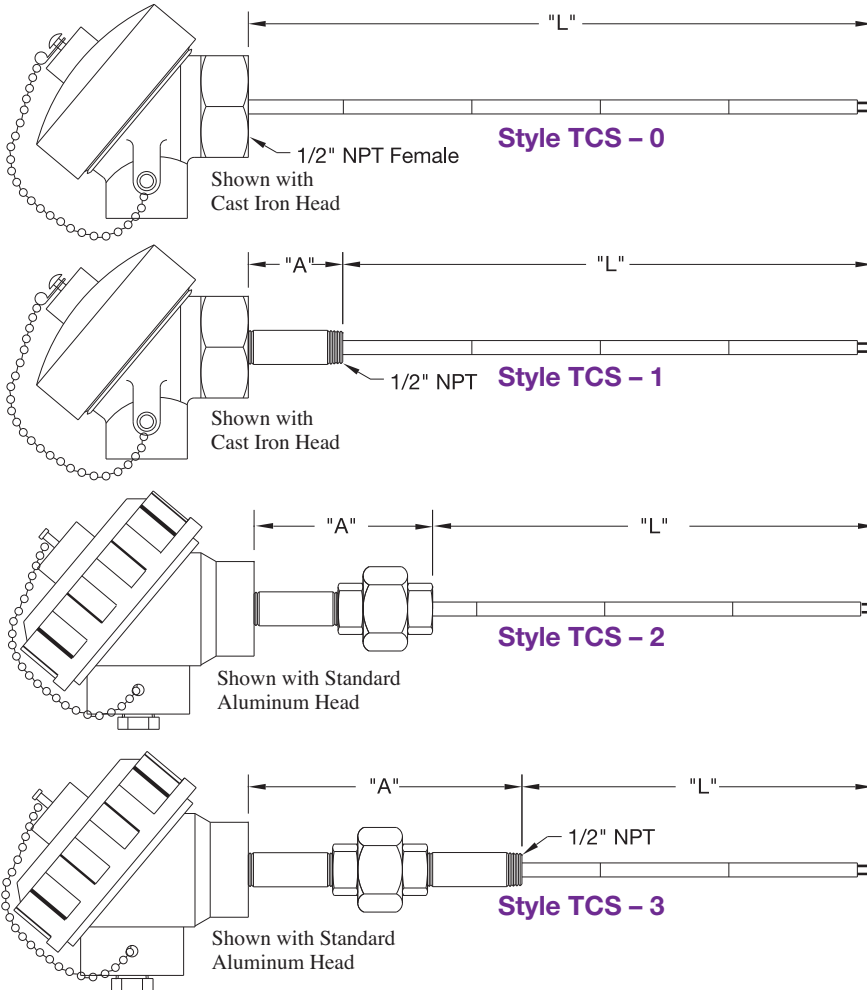
Thermocouple Head, Fixed Bushing, Ceramic Tube



Style TCS - 8

Thermocouple Head, Ceramic Tube

### Thermocouples for Thermowells and Protection Tubes



#### Design Features

- \* Ceramic Insulator to Insulate Wires
- \* Galvanized 1/2" Pipe Nipple & Union
- \* Cast Iron or Aluminum Head
- \* Used with protection tubes and thermowells shown on pages 14-76 through 14-86

#### Ordering Information

Thermocouples are offered with the options listed in the worksheet below. Create an ordering code by filling in the boxes with the appropriate number and/or letter designation for your requirements, and a part number will be assigned.

**Ordering Code:** **TCS** -

#### Style BOX 1

- 0** = Plain
- 1** = with Nipple
- 2** = with Nipple and Union
- 3** = with Nipple, Union and Nipple

#### Calibration Code BOX 2

- J** = Type J
- K** = Type K
- X** = Other (Specify)

#### Wire Gauge and Insulator Size BOX 3

- B** = 20 ga. (.172" x .118" insulator)
- C** = 14 ga. (.375" x .217" insulator)
- D** = 8 ga. (.437" x .250" insulator)
- X** = Other (Specify)

#### "L" Dimension BOX 4

- Whole inches
- 00 to 99**

#### "A" Dimension (TCS -1, TCS -2 & TCS -3 only) BOX 5

**01 to 99 inches or use Codes below for standard length**  
Enter **00** for TCS - 0 Style

TCS1	TCS2	TCS3
<b>S1</b> = 1"	<b>S1</b> = 2-1/2"	<b>S1</b> = 3-1/2"
<b>S2</b> = 2-1/2"	<b>S2</b> = 4"	<b>S2</b> = 6-1/2"
<b>S3</b> = 5-1/2"	<b>S3</b> = 7"	<b>S3</b> = 12-1/2"

#### Connection Head BOX 6

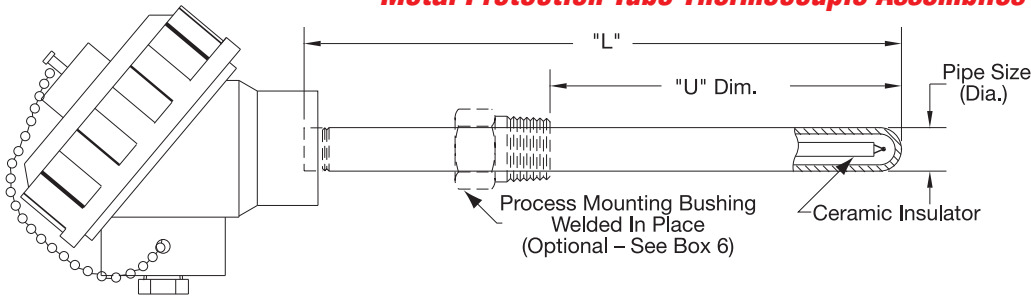
- A** = Standard Size Aluminum
- H** = Standard Cast Iron
- S** = Stainless Steel
- Note:** All have 1/2" conduit connection (3/4" available).  
For overall dimensions see pages 14-98 through 14-100.

#### Special Requirements BOX 7

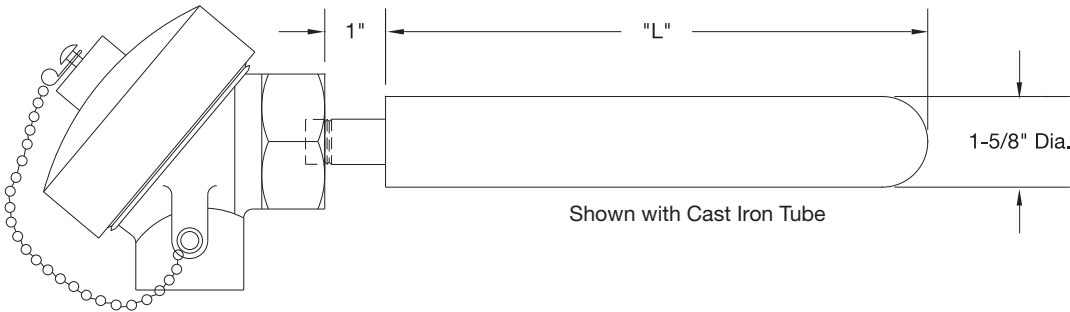
- X** = Specify
- 0** = None

**WARNING:** Cancer and Reproductive Harm - [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov).

### Metal Protection Tube Thermocouple Assemblies



Shown with Standard Die Cast Aluminum Head



Shown with Cast Iron Head

### Ordering Information

Thermocouples are offered with the options listed in the worksheet below. Create an ordering code by filling in the boxes with the appropriate number and/or letter designation for your requirements, and a part number will be assigned.

### Design Features

- \* Widely used in high temperature industrial process heating applications such as furnaces, ovens; and petrochemical and textile applications up to 2200°F (1204°C)
- \* Pipe size protection tubes made with schedule 40 pipe in various steel and nickel alloys
- \* Optional process mounting bushing welded on protection tube
- \* Thermocouple heads are available in aluminum, cast iron or stainless steel. Explosion proof heads are also available in aluminum or stainless steel

Ordering Code: **TCS4** -

#### Pipe Size Sch. 40 BOX 1

**H** = 1/2" Pipe (.84" OD x .62" ID)  
**M** = 3/4" Pipe (1.05" OD x .82" ID)  
**N** = 1" Pipe (1.31" OD x 1.05" ID)  
**R** = 1-5/8" OD x 7/8" ID (Cast Iron Only)  
**X** = Other (Specify)

#### Wire Gauge BOX 4

**B** = 20 ga.  
**C** = 14 ga.  
**D** = 8 ga.  
**X** = Other (Specify)

#### "U" Dimension BOX 7

**Whole inches 01 to 99**  
 Enter 00 for cast iron tube or if no bushing required

#### Sheath Material BOX 2

**1** = Carbon Steel (Black Pipe)  
**2** = 304 SS  
**3** = 316 SS  
**4** = 446 SS  
**5** = Cast Iron (1-5/8" OD x 7/8" ID Only)  
**6** = Alloy 601  
**X** = Other (Specify)

#### "L" Dimension BOX 5

**Whole inches 12 to 96**  
 (in 6-inch increments)  
 Cast Iron is available in limited lengths.

#### Connection Head BOX 8

**A** = Standard Size Aluminum  
**H** = Standard Cast Iron  
**S** = Stainless Steel  
**Note:** All have 1/2" conduit connection (3/4" available).  
 For overall dimensions see pages 14-98 through 14-100.

#### Calibration Code BOX 3

**J** = Type J  
**K** = Type K  
**X** = Other (Specify)

#### Process Mounting Bushing BOX 6

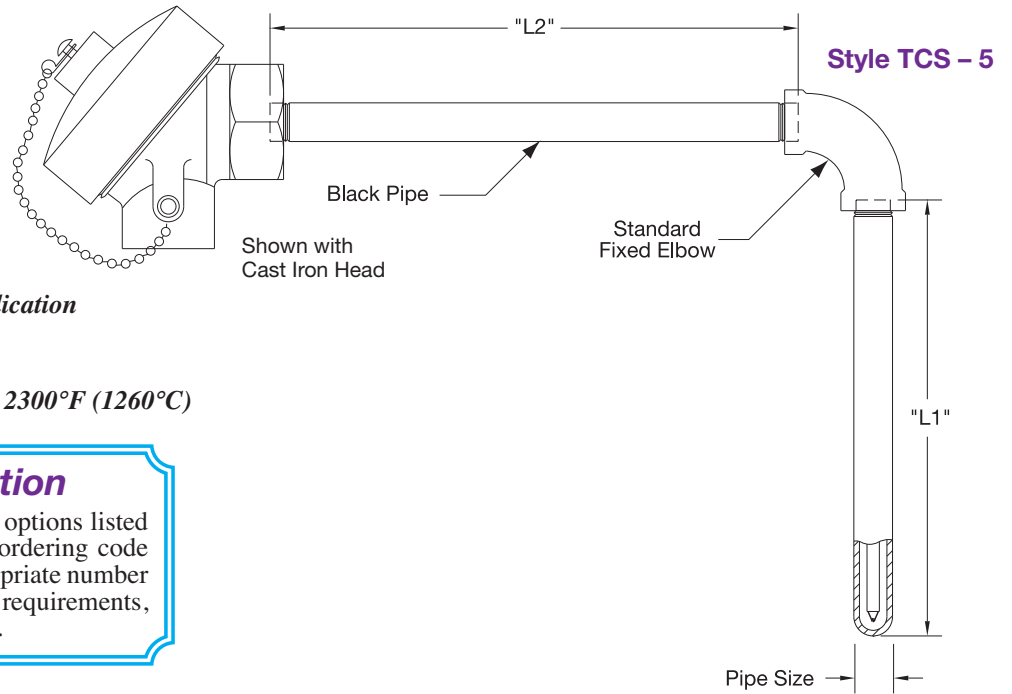
**0** = No Bushing Required  
 Enter 0 for Cast Iron Tube  
**M** = 3/4" NPT (For 1/2" pipe only)  
**N** = 1" NPT (For 1/2 and 3/4" pipe only)  
**P** = 1-1/4" NPT  
**X** = Other (Specify)

#### Special Requirements BOX 9

**X** = Specify  
**0** = None

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### Metal and Silicon Carbide Protection Tube Thermocouple Assemblies



#### Design Features

- \* Right Angle for Over-the-Side Application
- \* Cast Iron or Aluminum Head
- \* Available with Metal Pipe or Silicon Carbide (Carbon Bonded) 2300°F (1260°C)

#### Ordering Information

Thermocouples are offered with the options listed in the worksheet below. Create an ordering code by filling in the boxes with the appropriate number and/or letter designation for your requirements, and a part number will be assigned.

Ordering Code: **TCS** -

#### Elbow Type BOX 1

5 = Standard Fixed Elbow

#### Wire Gauge BOX 5

B = 20 ga.  
C = 14 ga.  
D = 8 ga.

#### Pipe and Tube Size BOX 2

H = 1/2" Pipe (.84" OD x .62" ID)  
M = 3/4" Pipe (1.05" OD x .82" ID)  
N = 1" Pipe (1.31" OD x 1.05" ID)  
R = 1-5/8" OD x 7/8" ID (Cast Iron Only)  
S = 2-1/16" OD (Silicon Carbide Only)  
X = Other (Specify)

#### "L1" Dimension BOX 6

Whole inches **12 to 96**  
(in 6-inch increments)  
Silicone Carbide and Cast Iron are available in limited lengths.

#### Sheath Material BOX 3

1 = Carbon Steel (Black Pipe)  
2 = 304 SS  
3 = 316 SS  
4 = 446 SS  
5 = Cast Iron (1-5/8" OD x 7/8" ID Only)  
6 = Alloy 601  
7 = Silicone Carbide (2-1/16" OD Only)  
X = Other (Specify)

#### "L2" Dimension BOX 7

Whole inches **12 to 96** (in 6-inch increments)

#### Connection Head BOX 8

A = Standard Size Aluminum  
H = Standard Cast Iron  
S = Stainless Steel  
**Note:** All have 1/2" conduit connection (3/4" available).  
For overall dimensions see pages 14-98 through 14-100.

#### Calibration Code BOX 4

J = Type J  
K = Type K  
X = Other (Specify)

#### Special Requirements BOX 9

X = Specify  
0 = None

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