



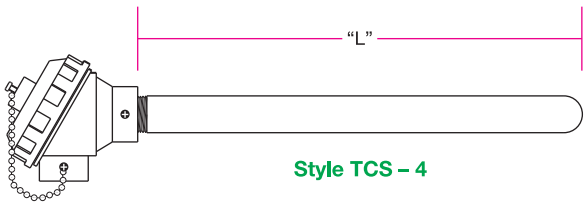
Industrial Thermocouple Assemblies

Industrial Process Thermocouples



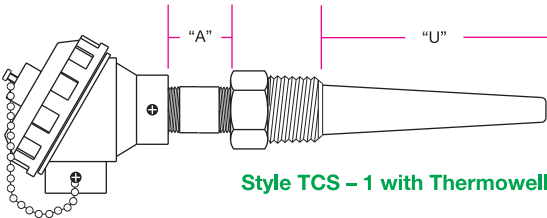
Tempco manufactures many styles of industrial thermocouple assemblies for a wide range of industries, from petrochemical to textile applications, where one or more protection tubes may be necessary to protect the thermocouple.

Metal Protecting Tube Assemblies • • • • •



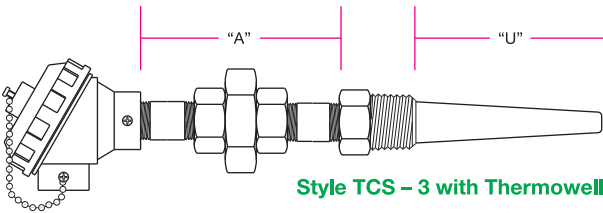
Style TCS - 4

Thermowell Assemblies • • • • •



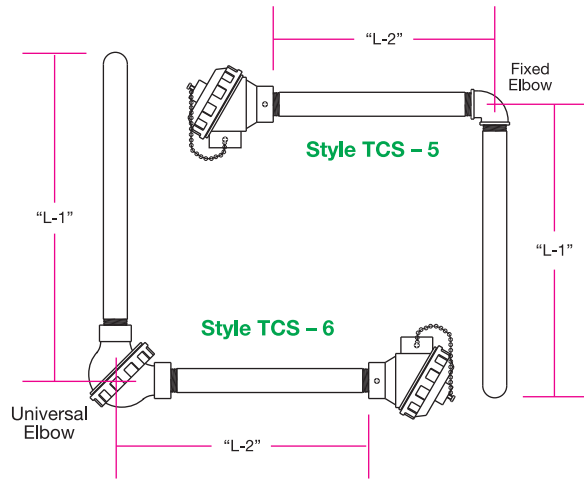
Style TCS - 1 with Thermowell

Thermocouple Head, Nipple, Thermowell



Style TCS - 3 with Thermowell

Thermocouple Head, Nipple, Union, Nipple, Thermowell

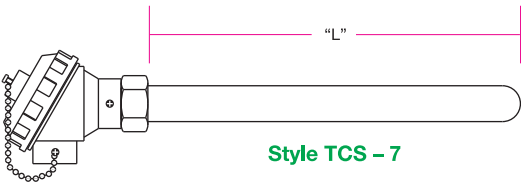


Style TCS - 5

Style TCS - 6

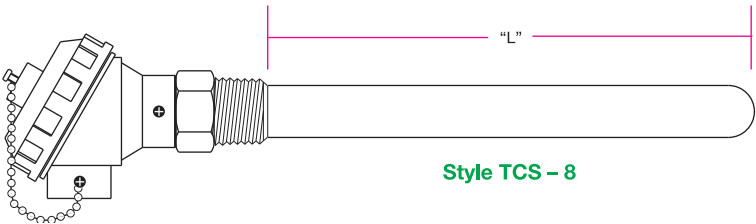
Thermocouple Head, Metal Protecting Tube

Ceramic Tube Assemblies • • • • •



Style TCS - 7

Thermocouple Head, Fixed Bushing, Ceramic Tube

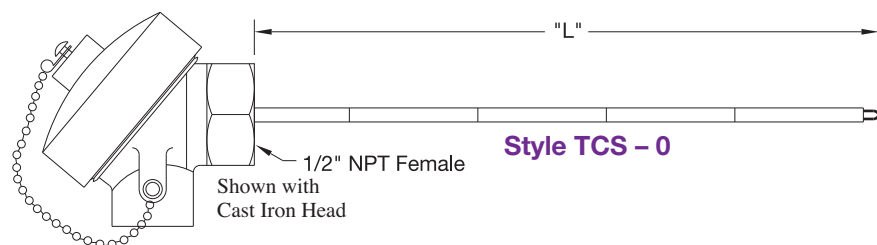


Style TCS - 8

Thermocouple Head, Ceramic Tube



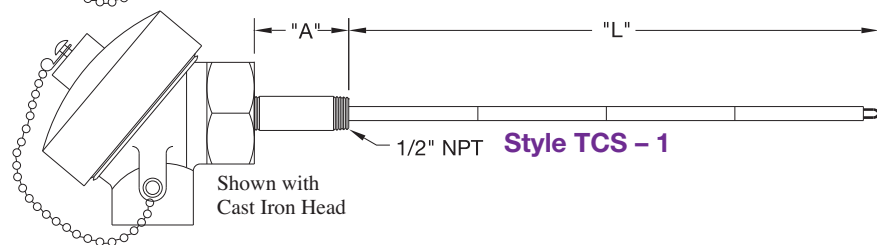
Thermocouples for Thermowells and Protection Tubes



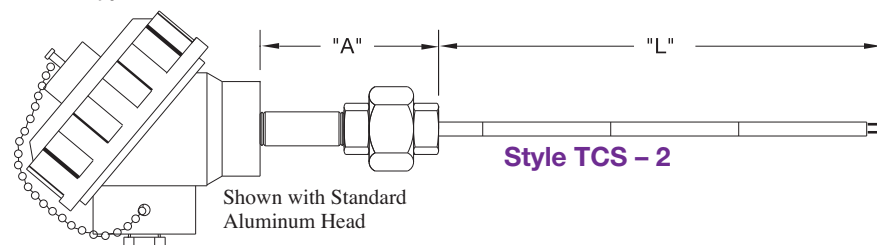
Style TCS - 0



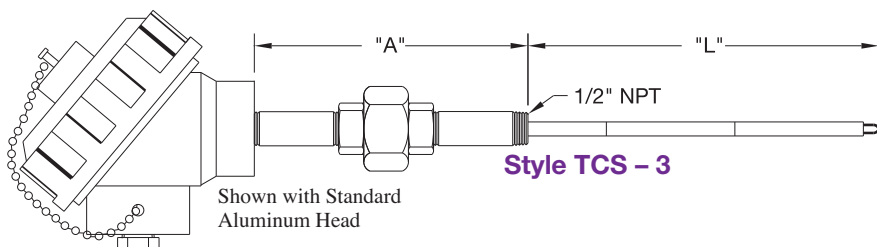
See Box 3



Style TCS - 1



Style TCS - 2



Style TCS - 3

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
S1 = 1"	S1 = 2-1/2"	S1 = 3-1/2"
S2 = 2-1/2"	S2 = 4"	S2 = 6-1/2"
S3 = 5-1/2"	S3 = 7"	S3 = 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.

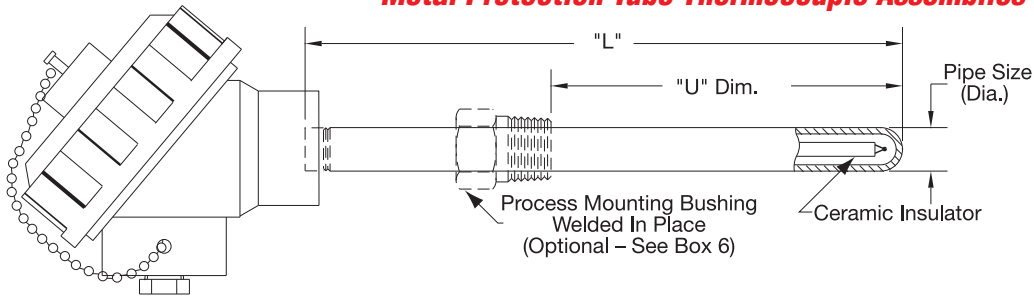
Special Requirements BOX 7

- X = Specify
- 0 = None

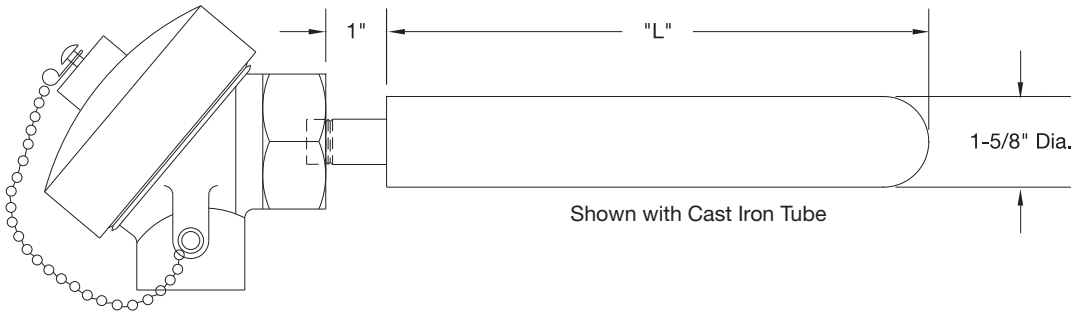


Industrial Thermocouple Assemblies

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.

Ordering Code: **TCS** -

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)

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)

Calibration Code BOX 3

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

Wire Gauge BOX 4

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

"L" Dimension BOX 5

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

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)

"U" Dimension BOX 7

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

Connection Head BOX 8

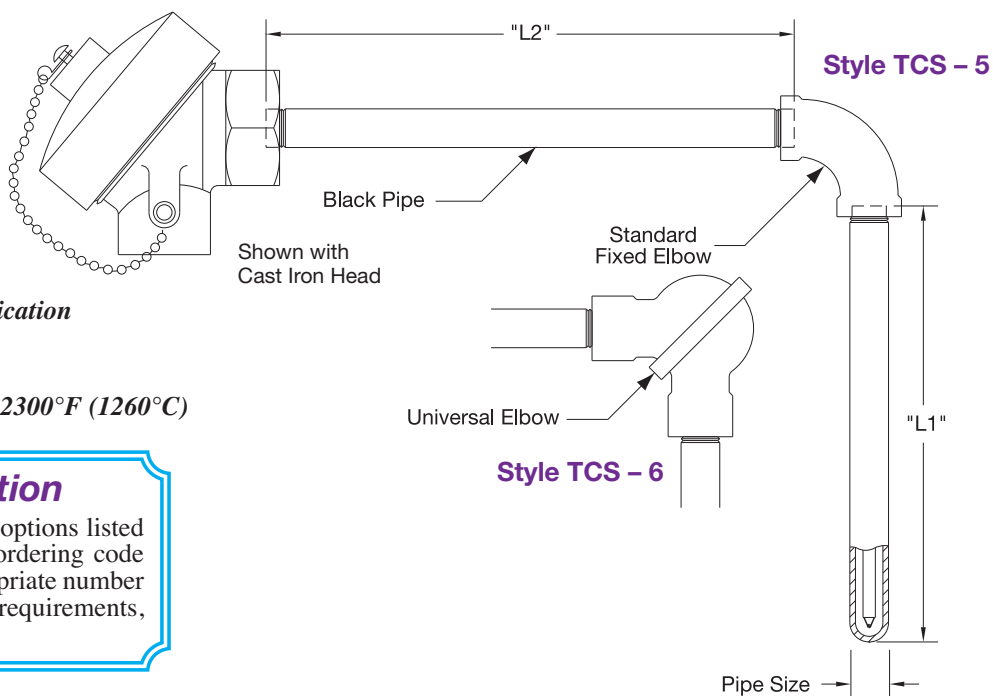
A = Standard Size Aluminum
H = Standard Cast Iron
S = Stainless Steel
Note: All have 1/2" conduit connection (3/4" available).
 For overall dimensions see pages 14-98 through 14-100.

Special Requirements BOX 9

X = Specify
0 = None



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** - 1 2 3 4 5 6 7 8 9

Elbow Type BOX 1

- 5 = Standard Fixed Elbow
- 6 = Universal 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



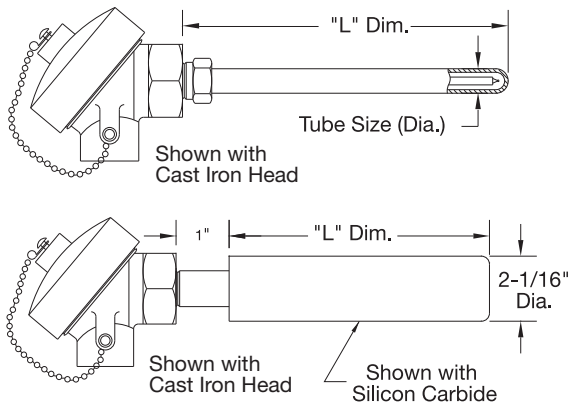
Ceramic and Silicon Carbide Protection Tube Thermocouple Assemblies

Design Features

- * Ceramic Insulator to Insulate Wires
- * Choice of Alumina 3450°F (1900°C), Mullite 3100°F (1700°C), Hexoloy SA (sintered silicon carbide) 3000°F (1650°C) or Silicon Carbide (carbon bonded) 2300°F (1260°C)
- * With or Without Threaded Process Mounting Bushing
- * Available with Double Protection Tube

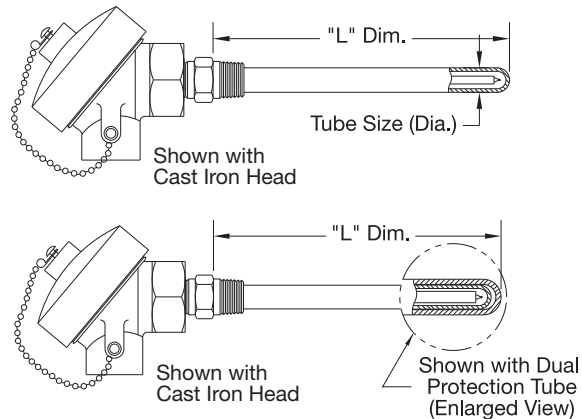
Style TCS - 7

Without Threaded Process Connection



Style TCS - 8

With Threaded Process Connection



Ordering Code: TCS -

Style BOX 1

- 7 = Plain
- 8 = w/Pipe Thread Process Connection

Sheath Material BOX 2

- A = Alumina
- H = Hexoloy SA (sintered silicone carbide)
- M = Mullite
- S = Silicon Carbide (carbon bonded)
- X = Other (Specify)

Tube & Fitting Size BOX 3

(Style TCS - 7 has no process pipe thread)

- 1 = 3/8" OD (1/4" ID) — 1/2" NPT Thread for Style TCS-8 (available in Alumina, Mullite or Hexoloy SA only)
- 2 = 5/8" OD (3/8" ID) — 1/2" NPT Thread for Style TCS-8 (available in Hexoloy SA only)
- 3 = 11/16" OD (7/16" ID) — 3/4" NPT Thread for Style TCS-8 (available in Alumina or Mullite only)
- 4 = 3/4" OD (1/2" ID) — 3/4" NPT Thread for Style TCS-8 (available in Hexoloy SA only)
- 5 = 2-1/16" OD (Style TCS-7) (available in carbon bonded silicone carbide only)
- X = Other (Specify)

Calibration Code BOX 4

- J = Type J
- K = Type K
- S = Type S
- R = Type R
- B = Type B

Wire Gauge BOX 5

- A = 24 ga. (Type S, R and B)
- B = 20 ga.
- C = 14 ga.
- D = 8 ga.
- X = Other (Specify)

"L" Dimension BOX 6

Whole inches 12 to 48
in 6-inch increments
For lengths over 48 in. consult TEMPACO.

Threaded Bushing Material

BOX 7

- S = Stainless Steel
- B = Brass
- Enter 0 for TCS-7

Protection Tube BOX 8

- 1 = Single Protection Tube (Std.)
- 2 = Double Protection Tube

Connection Head BOX 9

- 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 10

- 0 = None
- X = Specify

Ordering Information

Thermocouples are offered with the options listed in the worksheet. 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.



Base Metal — Bare and Fiberglass or Ceramic Insulated Thermocouple Wire

Tempco offers general purpose thermocouple elements in ANSI Type J and K. The general purpose elements are available with

a twisted and welded or butt-welded junction. Available in 8 ga., 14 ga. and 20 ga. with standard calibration tolerances.

Style B — Bare Thermocouple Wire



Twisted and Welded Junction



Butt-Welded Junction

Style F — Thermocouple Wire with Fiberglass Sleeving



Twisted and Welded Junction



Butt-Welded Junction

Style O — Thermocouple Wire with 2-Hole Oval Insulator



Twisted and Welded Junction



Butt-Welded Junction

• 8 ga. insulator P/N COR-120-105

• 14 ga. insulator P/N COR-120-104

• 20 ga. insulator P/N COR-120-106

* See Page 14-96 for Insulator Dimensions. *

Style R — Thermocouple Wire with 2-Hole Round Insulator



Twisted and Welded Junction



Butt-Welded Junction

• 8 ga. insulator P/N COR-127-102

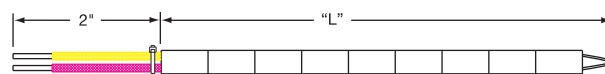
• 14 ga. insulator P/N COR-126-102

• 20 ga. insulator P/N COR-125-102

* See Page 14-96 for Insulator Dimensions. *

Ordering Information

Base Metal Thermocouple Element Styles B, F, O and R are offered with the options listed 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:

TCB - [] [] [] [] [] [] []

Design Style B, F, O or R

Calibration ANSI Type K or J

Wire Gauge Size 8 ga. (08), 14 or 20

Junction W = Twisted and Welded
B = Butt-Welded

Length "L" in whole inches — 06-99

(800) 323-6859 • Email: sales@tempco.com



Industrial Thermocouples

Base Metal Thermocouples

Style D — Dual Element (Available in 14 ga. and 20 ga. only)

Dual set of thermocouple wires with 4-hole round alumina insulators



• 14 ga. insulator P/N COR-128-102

• 20 ga. insulator P/N COR-128-101

* See Page 14-96 for Insulator Dimensions. *

Ordering Information

Base Metal Thermocouple Element Style D is offered with the options listed 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:

TCB - **D**

Design Style

Calibration ANSI Type K or J

Wire Gauge Size 14 or 20

Butt-Welded Junction

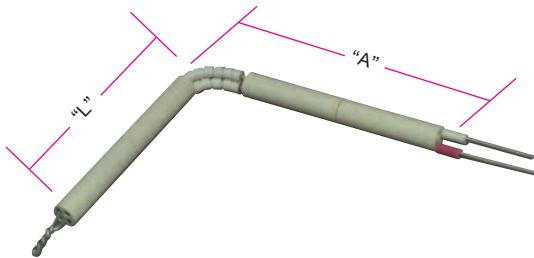
1 = Common

2 = 2 separate junctions

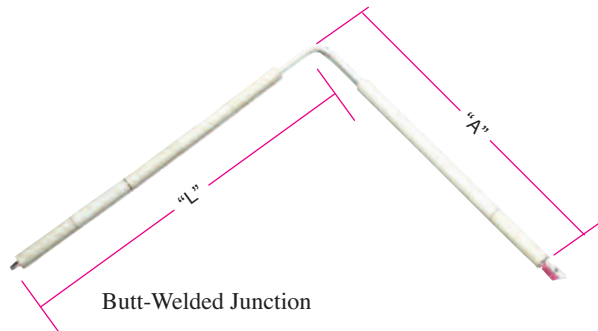
Length "L" in whole inches — 06-99"

Style A — Angle Element

Angle thermocouple wires with 2-hole round ceramic insulators.



Twisted and Welded Junction



Butt-Welded Junction

• 8 ga. insulator P/N COR-120-105

• 14 ga. insulator P/N COR-120-104

• 20 ga. insulator P/N COR-120-106

* See Page 14-96 for Insulator Dimensions. *

Ordering Information

Base Metal Thermocouple Element Style A is offered with the options listed 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:

TCB - **A**

Design Style

Calibration ANSI Type K or J

Wire Gauge Size 8 ga. (08), 14 or 20

Length "L" in whole inches — 3" min.

Junction **W** = Twisted and Welded
B = Butt-Welded

Length "A" in whole inches — 3" min.



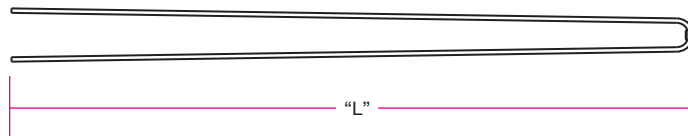
Noble Metal Thermocouples

Design Features

* **Noble Metal Thermocouple Elements ANSI Type R and S are provided in accordance with ITS90, and ANSI Type B is provided in accordance with IPTS-68.**

* **Alumina insulators are recommended with noble metal thermocouples. All noble metal elements have a butt-welded junction & are available in 20 ga. (.032"), 24 ga. (.020") and 30 ga. (.010").**

Style NB — Noble Bare Thermocouple Wire



Ordering Information

Noble Metal Thermocouple Element Style NB is offered with the options listed 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: -

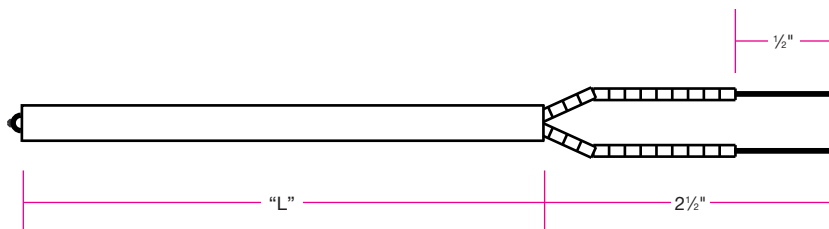
Design Style

Calibration ANSI Type R, S or B

Length "L" in whole inches — 6" min.

Wire Gauge Size 20, 24 or 30 gauge

Style NZ — Noble Thermocouple Wire with 2-Hole Round Alumina Insulator



Ordering Information

Noble Metal Thermocouple Element with 2-hole Alumina insulator Style NZ is offered with the options listed 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: -

Design Style

Calibration ANSI Type R, S or B

Length "L" in whole inches — 6" min.

Wire Gauge Size 20, 24 or 30 gauge

- 30 ga. Insulator P/N COR-124-105 and P/N CER-103-101 Ceramic Beads
- 24 ga. Insulator P/N COR-124-104 and P/N CER-103-101 Ceramic Beads
- 20 ga. Insulator P/N COR-124-106 and P/N CER-103-101 Ceramic Beads

* See Page 14-96 for Insulator Dimensions *

For Metal and Ceramic Protection Tubes
see pages 14-85 and 14-86.

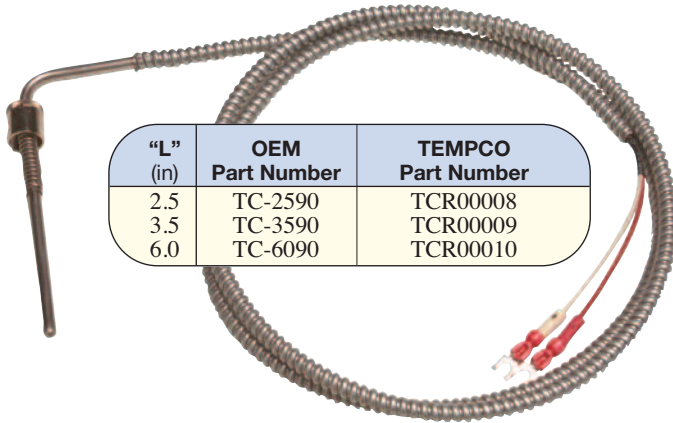


Industrial Thermocouples

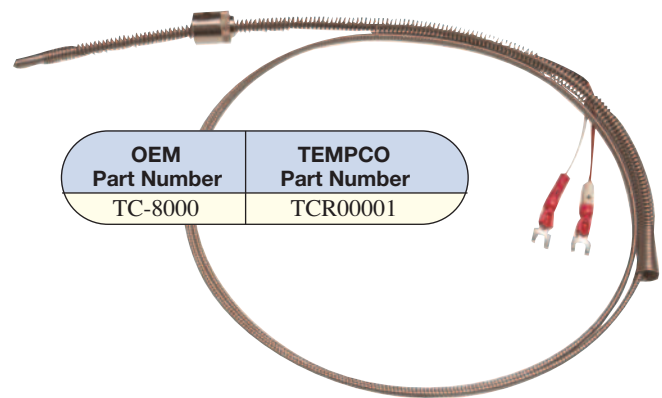
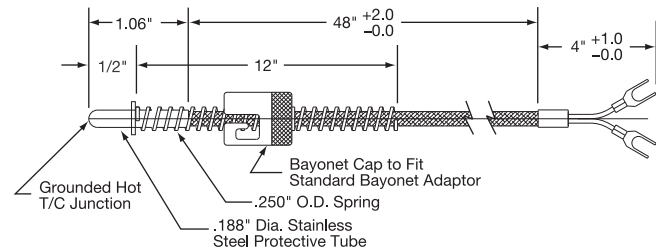
OEM Replacement Thermocouples

Direct Replacement Thermocouples

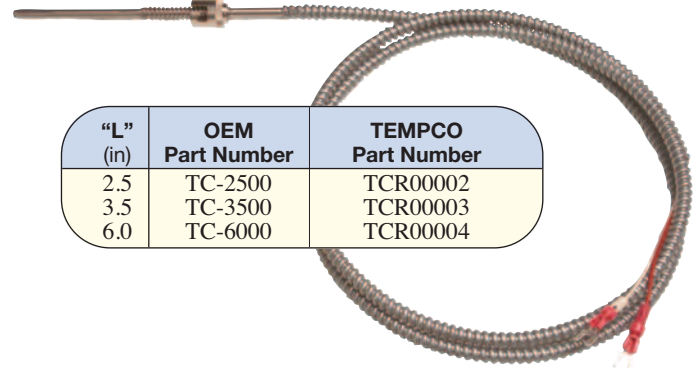
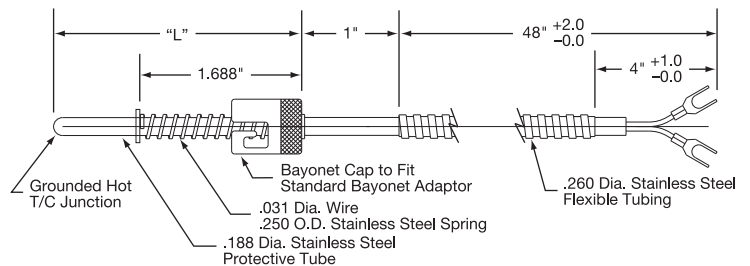
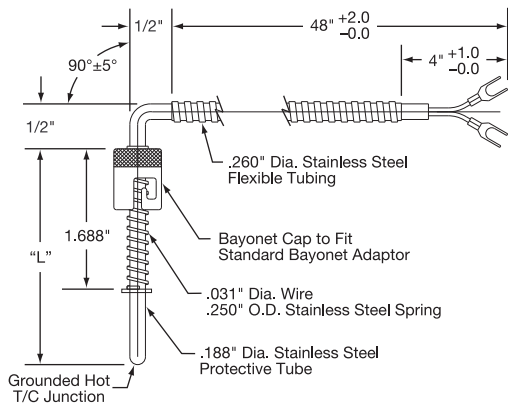
- * All the following thermocouples are manufactured with the highest quality materials and workmanship.
- * The thermocouple wire is stranded (for flexibility) ANSI Type J thermocouple grade, with ANSI color-coded fiberglass insulation (White=Positive, Red=Negative).
- * All hot junctions are grounded. Spade lugs where required are insulated and accept a No. 6 stud.



"L" (in)	OEM Part Number	TEMPCO Part Number
2.5	TC-2590	TCR00008
3.5	TC-3590	TCR00009
6.0	TC-6090	TCR00010

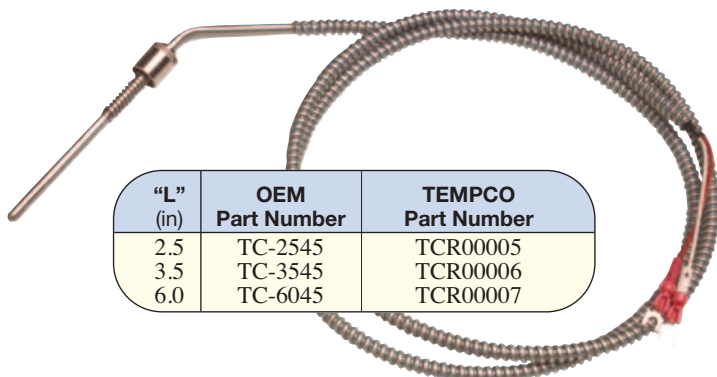


OEM Part Number	TEMPCO Part Number
TC-8000	TCR00001

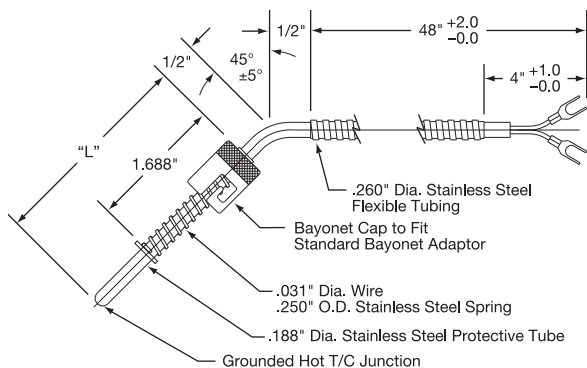


"L" (in)	OEM Part Number	TEMPCO Part Number
2.5	TC-2500	TCR00002
3.5	TC-3500	TCR00003
6.0	TC-6000	TCR00004

All Items Available from Stock



"L" (in)	OEM Part Number	TEMPCO Part Number
2.5	TC-2545	TCR00005
3.5	TC-3545	TCR00006
6.0	TC-6045	TCR00007

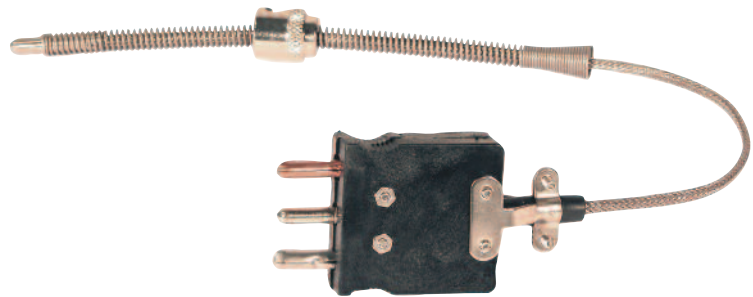




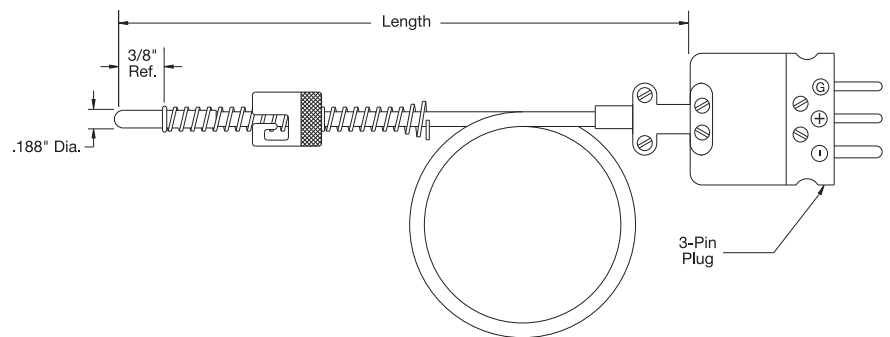
OEM Replacement Thermocouples

Spring Adjustable Thermocouples with 3-pin Male Plug

- * Ungrounded Type J Thermocouple
- * 12" Long Compression Spring
- * Grounded Stainless Steel Braided Shield
- * 900°F (482°C) Max. Operation
- * Used with the Bayonet Adapters on page 14-87



Part Number	Length (inches)
TCP18001	24
TCP18002	36
TCP18003	48
TCP18004	60
TCP18005	72
TCP18006	84
TCP18007	96
TCP18008	108
TCP18009	120
TCP18010	132
TCP18011	144

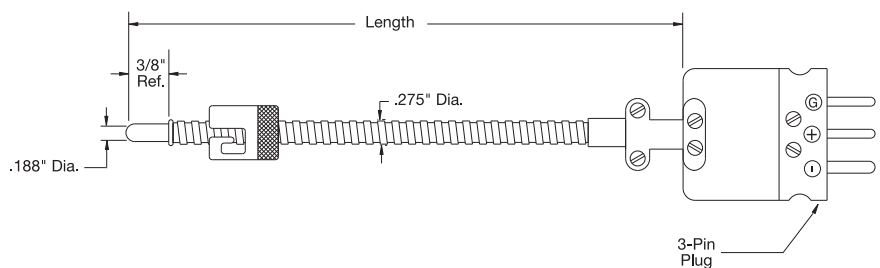


Armor Cable Adjustable Thermocouples with 3-pin Male Plug

- * Ungrounded Type J Thermocouple
- * Grounded Stainless Steel Armor Cable
- * 900°F (482°C) Max. Operation
- * Used with the Bayonet Adapters on page 14-87



Part Number	Length (inches)
TCP28001	12
TCP28002	24
TCP28003	36
TCP28004	48
TCP28005	60
TCP28006	72
TCP28007	84
TCP28008	96
TCP28009	108
TCP28010	120
TCP28011	132
TCP28012	144





Industrial Thermocouples

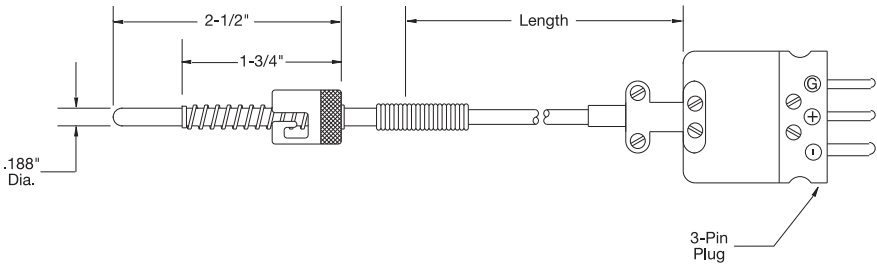
OEM Replacement Thermocouples (Type J)

Spring-Loaded Bayonet Style Thermocouples with 3-pin Male Plug

- * Ungrounded Type J Thermocouple
- * Grounded Stainless Steel Braided Shield
- * 900°F (482°C) Max. Operation
- * Used with the Bayonet Adapters on page 14-87



Part Number	Length (inches)
TCP38101	12
TCP38102	24
TCP38103	36
TCP38104	48
TCP38105	60
TCP38106	72
TCP38107	84
TCP38108	96
TCP38109	108
TCP38110	120

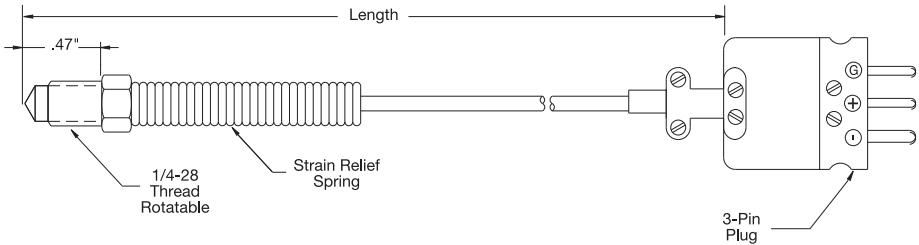


Nozzle Style Thermocouples with 3-pin Male Plug

- * Ungrounded Type J Thermocouple
- * Rotatable 1/4-28 UNF Threaded Tip with Strain Relief Spring
- * Grounded Stainless Steel Braided Shield
- * 900°F (482°C) Max. Operation

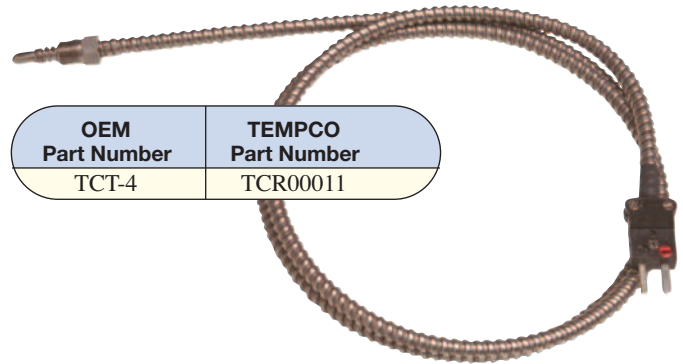
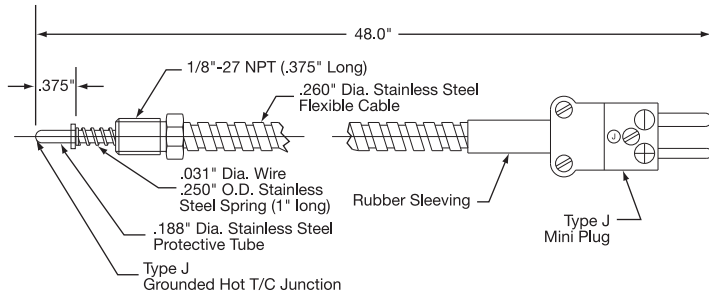


Part Number	Length (inches)
TNW81001	12
TNW81002	24
TNW81003	36
TNW81004	48
TNW81005	60
TNW81006	72
TNW81007	84
TNW81008	96
TNW81009	108
TNW81010	120
TNW81011	132
TNW81012	144
TNW81013	156
TNW81014	168
TNW81015	180
TNW81016	192

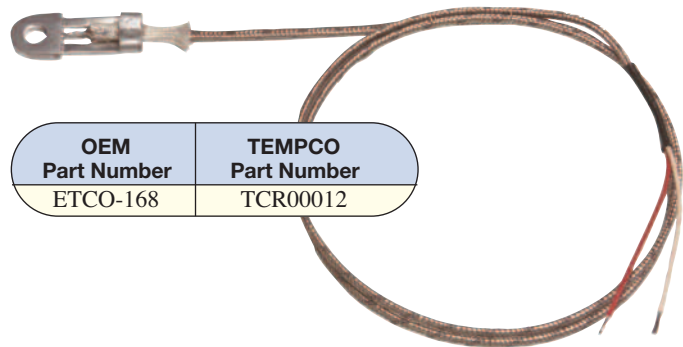
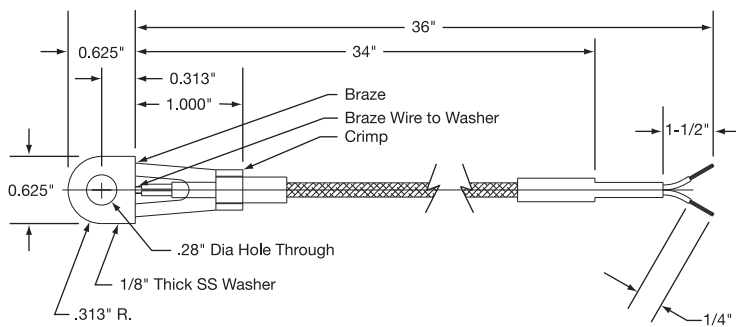




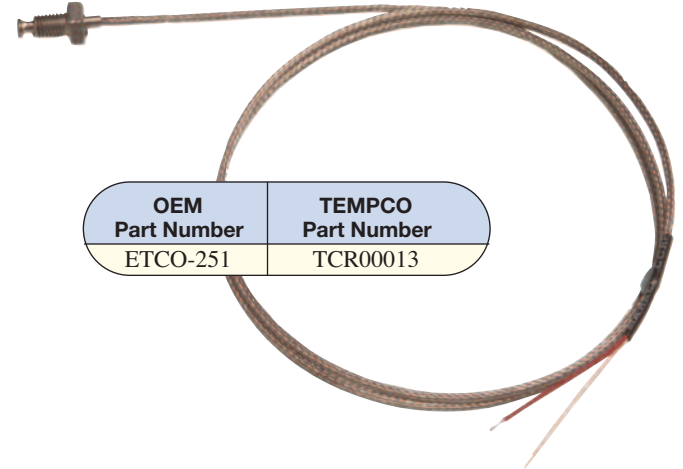
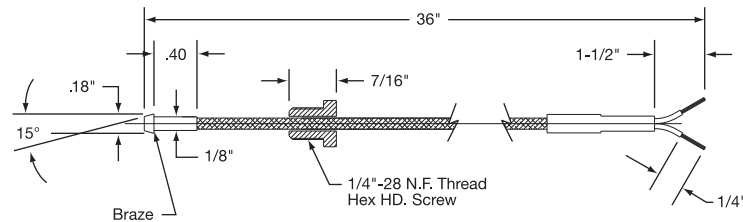
OEM Replacement Thermocouples (Type J)



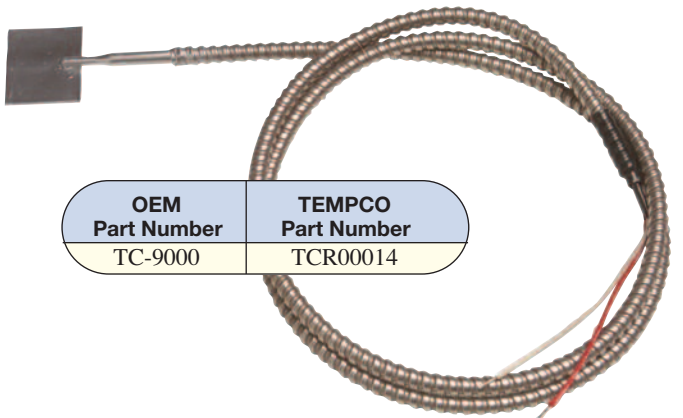
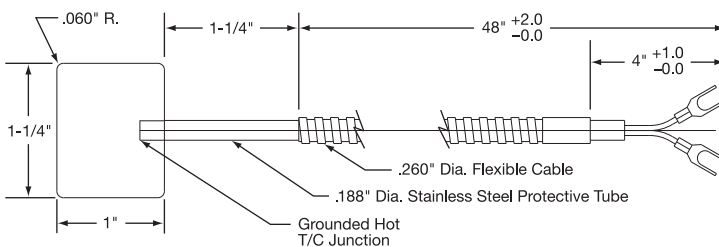
OEM Part Number	TEMPCO Part Number
TCT-4	TCR00011



OEM Part Number	TEMPCO Part Number
ETCO-168	TCR00012



OEM Part Number	TEMPCO Part Number
ETCO-251	TCR00013



OEM Part Number	TEMPCO Part Number
TC-9000	TCR00014

All Items Available from Stock



OEM Replacement Thermocouples (Type J)

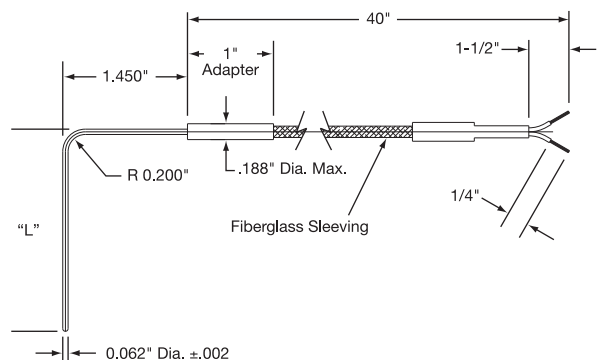
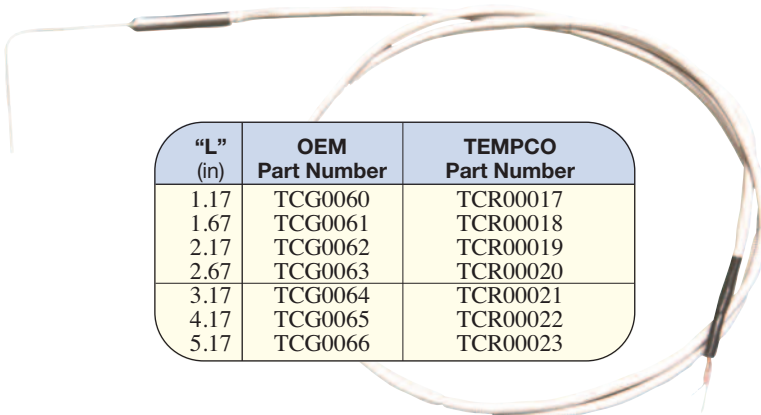
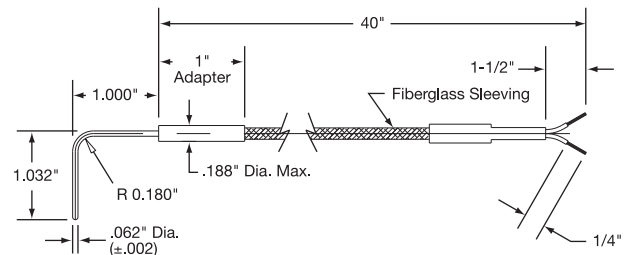
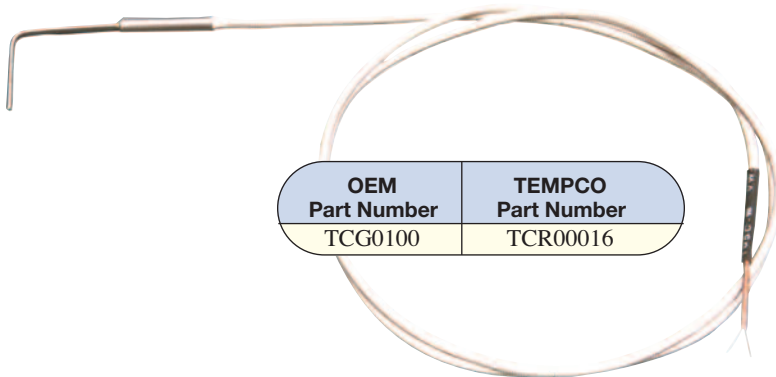
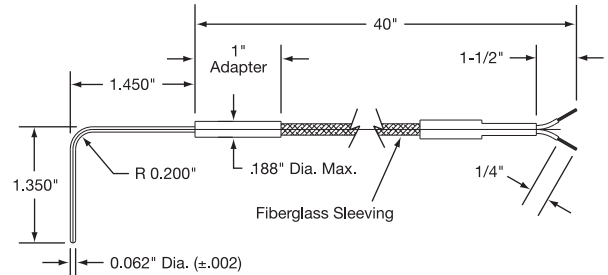
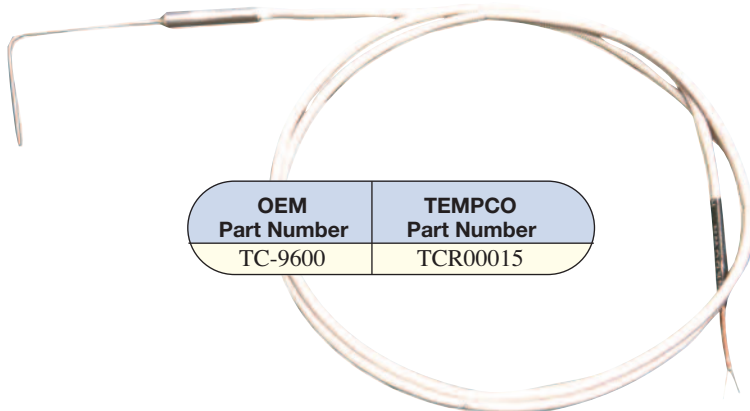
Specialty Application

The following **Runnerless Mold Thermocouples** are manufactured using Tempco's high quality, mineral insulated thermocouple wire "Tempco-Pak." The Tempco-Pak is .062" diameter 304 stainless steel sheathed, MgO insulated, ANSI Type J thermocouple wire.



Notes: All hot junctions are grounded.

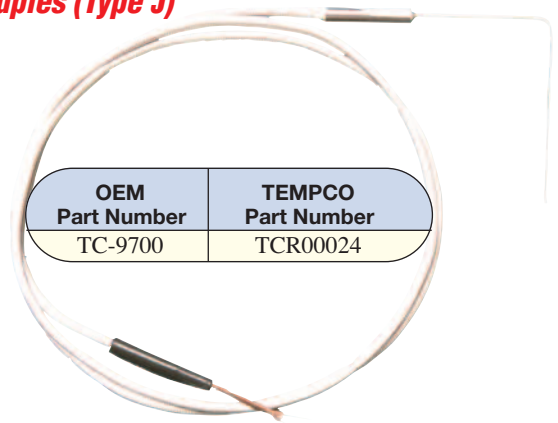
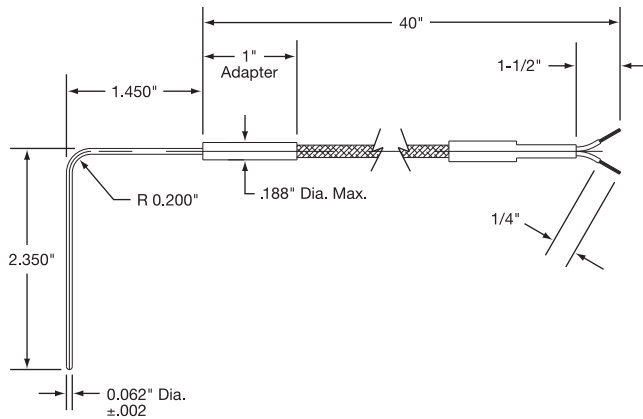
The lead wire is ANSI Type "J" thermocouple grade with ANSI color-coded fiberglass insulation and an additional high temperature outer fiberglass sleeve. The transition area (potting adapter) between the Tempco-Pak and lead wire is potted with high temperature cement rated to 900°F (482°C).



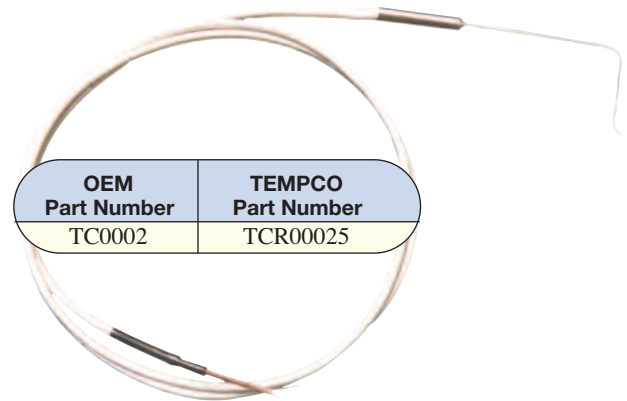
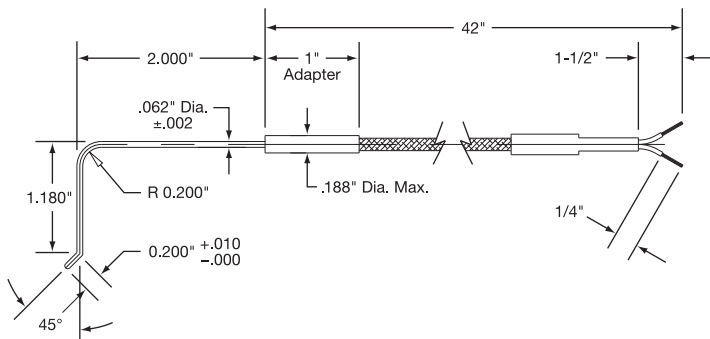
All Items Available from Stock



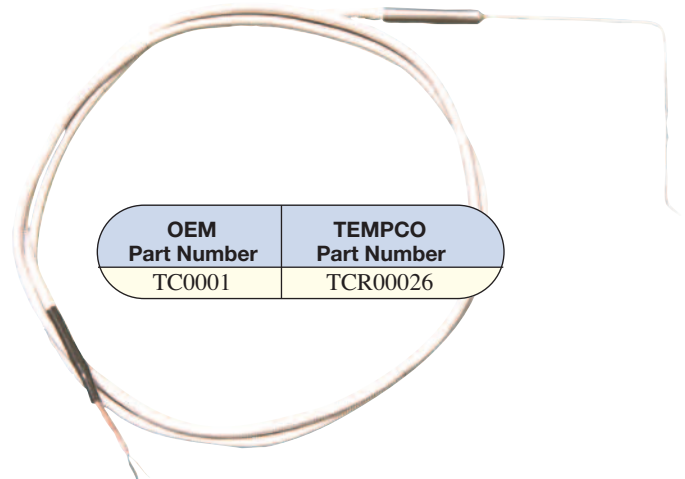
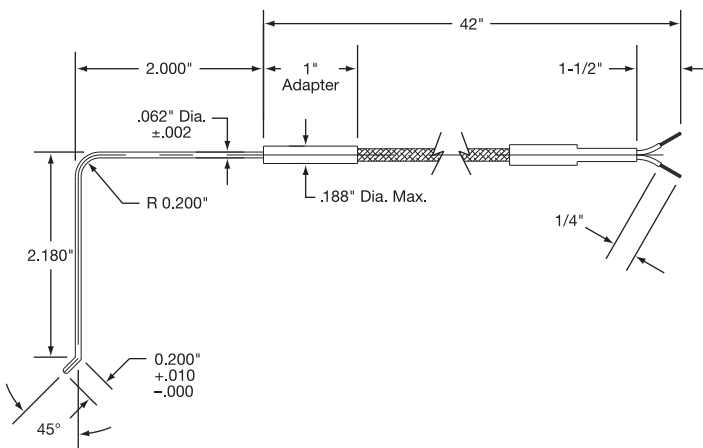
OEM Replacement Thermocouples (Type J)



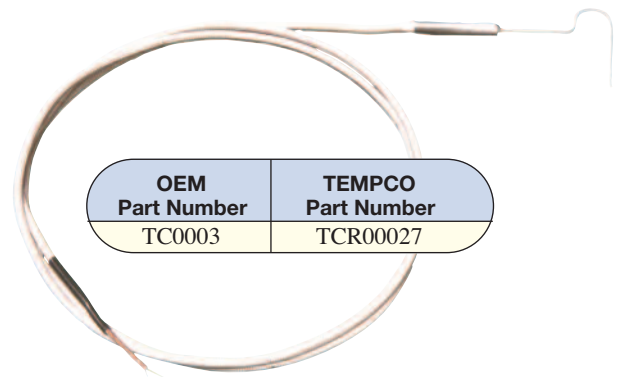
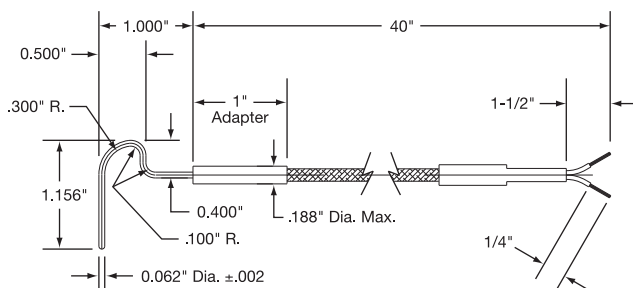
OEM Part Number	TEMPCO Part Number
TC-9700	TCR00024



OEM Part Number	TEMPCO Part Number
TC0002	TCR00025



OEM Part Number	TEMPCO Part Number
TC0001	TCR00026



OEM Part Number	TEMPCO Part Number
TC0003	TCR00027

All Items Available from Stock