

# T/C Elements

## Thermocouple Elements

### Introduction

Elements are available in both base metal and noble metal. Noble metal elements are listed near the end of this section.

Base metal thermocouples are used directly as temperature sensing elements, or as replacement or component items for insertion into a protection tube. Part numbers for elements for most common sensor configurations can be easily composed as illustrated later in this section. However, sensors with code 24, 30, 41 or 42 protection tubes (Fields 5, 6 of the sensor part number) may require special element assemblies as indicated in the table below. Complete part numbers for these special assemblies are listed immediately after the common configuration listing. (See Quick Reference Index below).

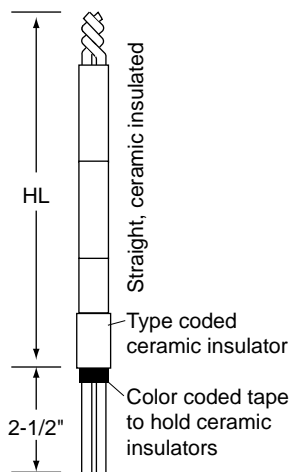
Gauge	Tube*	Straight		90°	
		Single	Dual	Single	Dual
8	24 or 30	A-11727			
	41	A-11888	A-11712	A-11809	
	42	A-11711		A-10462	
14 or 20	41	A-11888		A-11809	A-10504
	42	A-11711	A-11712	A-10462	

\*These are codes that appear in Fields 5, 6 of the sensor model number. They are defined as follows:  
 24 - 11/16" o.d. high temperature Mullite  
 30 - 11/16" o.d. aluminum oxide  
 41 - 1-1/4" o.d. ceramic coated steel  
 42 - 1-1/4" o.d. ceramic coated steel with spring

### Quick Reference Index

Base metal, common configuration .....	Page 6-18
Base metal, special configuration .....	Page 6-25
Noble metal .....	Page 6-28

### Element Construction



Element construction codes I and H (Field 4) define ceramic insulated elements on which the following insulators are used:

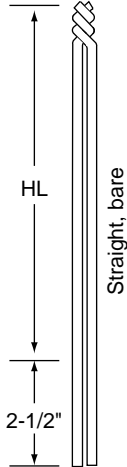
Gauge	Single Element Insulator	Dual Element Insulator
8	51-008	51-008 (two separate elements)
14	51-022	51-051
20	51-027	51-052

Compatibility between these constructions and a given protection tube depends on the inside diameter of the tube. Inside diameter must be at least as large as the maximum outside diameter listed in the following compatibility table (C = compatible):

Gauge Code (Fields 2, 3)	Thermocouple Type (Field 1)					Max o.d. w/insulators	
	J	K	T	E	N	Single	Dual
08, 09	C	C	n/a	C	C	31/64"	9/16"
14, 15	C	C	C	C	C	5/16"	5/16"
20, 21	C	C	C	C	C	9/64"	3/16"

# T/C Elements

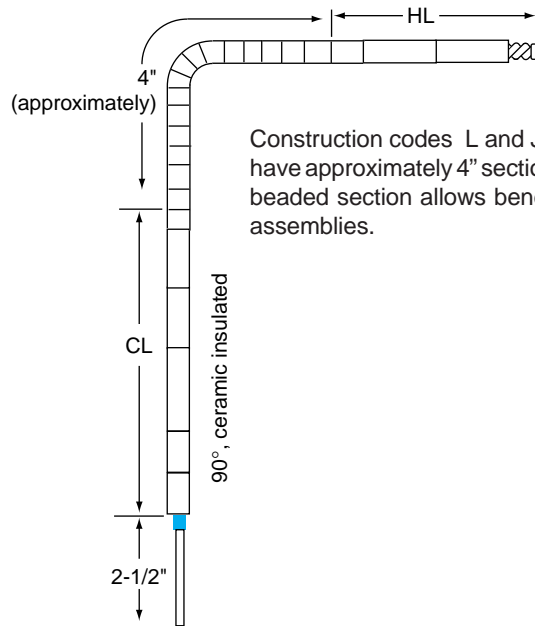
## Element Construction (continued)



Element construction code O (Field 4) defines non-insulated (bare) elements for which the user must provide suitable insulation.

Compatible base metal element codes (Field 4) are shown in the table below for each protection tube/wire gauge combination.

I = 1, 2, 3, 4  
H = H, 5, 6



Construction codes L and J (Field 4) define ceramic insulated elements which have approximately 4" section of bead insulation between hot and cold legs. This beaded section allows bending the element for placement into the 90° elbow assemblies.

## Element Compatibility

Note: "I" is the letter "I," not the numeral "1."

Field 4. Element, Junction Style Definition	Field 4 Code		
	Straight	90° Elbow	90° Bend
Single, twisted, grounded	I	L	A
Single, twisted, ungrounded	2	C	R
Single, butt welded, grounded	3	E	S
Single, butt welded, ungrounded	4	F	T
Dual, twisted, grounded	H	J	K
Dual, common butt welded, ungrounded	5	G	U
Dual, isolated butt welded, ungrounded	6	M	V

# T/C Elements

## Element Compatibility (continued)

Compatible element codes (Field 4) are shown in the table below for each protection tube/wire gauge combination.

Note: "I" is the letter "I," not the numeral "1."

Fields 5, 6. Protection Tube		Fields 2, 3. Wire Gauge Codes		
Code / Description		08 or 09	14 or 15	20 or 21
01	Cast iron coated	I, 2, 3, 4, H, 5, 6, L, C, E, F, J, G, M		
02	Black steel, 1/4" NPS	n/a		I, 2, 3, 4, H, 5, 6, L, C, E, F, J, G, M
03	Black steel, 1/2" NPS	I, 2, 3, 4, L, C, E, F, A, R, S, T		
04	Black steel, 3/4" NPS	All except K, U, V		All
05	Black steel, 1" NPS			
06	Welded steel, 1/8" NPS	n/a	n/a	I, 2, 3, 4, H, 5, 6, L, C, E, F, J, G, M
07	Welded steel, 1/4" NPS	n/a		I, 2, 3, 4, H, 5, 6, L, C, E, F, J, G, M
08	Welded steel, 1" NPS	All except K, U, V		All
09	Cast iron	I, 2, 3, 4, H, 5, 6, L, C, E, F, J, G, M		I, 2, 3, 4, H, 5, 6, L, C, E, F, J, G, M
11	446 SS, 3/4" NPS	All except K, U, V		All except A, R, S, T
12	446 SS, 1/2" NPS	I, 2, 3, 4, L, C, E, F, A, R, S, T		
13	446 SS, 1" NPS	All except K, U, V		
14	Pure nickel, 1/2" NPS	I, 2, 3, 4, L, C, E, F		
15	Pure nickel, 3/4" NPS	I, 2, 3, 4, H, 5, 6, L, C, E, F, J, G, M		
16	Inconel 601, 1/2" NPS	I, 2, 3, 4, L, C, E, F, A, R, S, T		
17	Inconel 601, 3/4" NPS	All except K, U, V		
18	304 SS, 1/4" NPS	n/a		
19	304 SS, 1/2" NPS	I, 2, 3, 4, L, C, E, F, A, R, S, T		All
21	Silicon carbide, 1-3/4" o.d.	I, 2, 3, 4, H, 5, 6, L, C, E, F		I, 2, 3, 4, H, 5, 6, L, C, E, F, J, G, M
22	Silicon carbide w/collar	I, 2, 3, 4, H, 5, 6	n/a	I, 2, 3, 4, H, 5, 6, L, C, E, F, J, G, M
23	H.T. Mullite, 3/8" o.d.	n/a	I, 4, L, F	I, 4, H, 5, 6, L, F, G, M
24	H.T. Mullite, 11/16" o.d.	I, 4, L, F		I, 4, H, 5, 6, L, F, J, G, M
25	H.T. Mullite, 1" o.d.	I, 4, H, 5, 6, L, F, J, G, M		
26	Incoloy 800, 1/2" NPS	I, 2, 3, 4, L, C, E, F, A, R, S, T		I, 2, 3, 4, H, 5, 6, L, C, E, F, J, G, M
27	Incoloy 800, 3/4" NPS	I, 2, 3, 4, H, 5, 6, L, C, E, F, J, G, M		
28	Metal ceramic, 7/8" o.d.	I, L, F		
29	Aluminum oxide, 3/8" o.d.	n/a	I, 4, L, F	I, 4, H, 5, 6, L, F, J, G, M
30	Aluminum oxide, 11/16" o.d.	I, 4, L, F		I, 4, H, 5, 6, L, F, J, G, M
31	Aluminum oxide, 1" o.d.	I, 4, H, 5, 6, L, F, J, G, M		
41	Ceramic clad	I, 2, 3, 4, L, C, E, F		I, 2, 3, 4, H, 5, 6, L, C, E, F, J, G, M
42	Ceramic clad w/spring			
44	316 SS, 1/2" NPS	I, 2, 3, 4, L, C, E, F, A, R, S, T		All
46	Silicon carbide pipe, reinforced	I, 2, 3, 4, L, C, E, F		I, 2, 3, 4, H, 5, 6, L, C, E, F, J, G, M
47	316 SS, 3/4" NPS	All except K, U, V		All
65	304 SS, 0.160" x 0.185"	n/a	n/a	I
66	304 SS, 0.194" x 0.250"			
67	304 SS, 0.305" x 0.375"	n/a	I, 4	I, 2, 3, 4, H, 5, 6
68	316 SS, 0.160" x 0.185"	n/a	n/a	I, 4
69	316 SS, 0.194" x 0.250"			
70	316 SS, 0.305" x 0.375"	n/a	I	I, 2, 3, 4, H, 5, 6
72	Inconel 601, 0.194" x 0.250	n/a	n/a	I
73	Inconel 601, 0.305" x 0.375"	n/a	I	I, 2, 3, 4, H, 5, 6

# T/C Elements

## Ordering Information

Complete this part number, then obtain price from tables on following pages. Straight element part numbers are listed first, followed by 90° element part numbers.

**Model No.**     - 0 0 0   - 0   - 0 - 0 0  
Field No. 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

**Schedule: S2**

### Field 1. THERMOCOUPLE TYPE

- J - Iron-Constantan
- K - Chromel-Alumel
- T - Copper-Constantan
- E - Chromel-Constantan

### Fields 2, 3. WIRE GAUGE; LIMITS OF ERROR

- 08 - 8 gauge; standard (not compatible with Field 1, code T)
- 09 - 8 gauge; special (not compatible with Field 1, code T)
- 14 - 14 gauge; standard
- 15 - 14 gauge; special
- 20 - 20 gauge; standard
- 21 - 20 gauge; special

### Field 4. ELEMENT CONSTRUCTION

- I - Straight single element two hole ceramic insulators
- L - 90° single element two hole ceramic insulators
- O - Bare wire element no insulators
- H -\* Straight dual element two hole ceramic insul (2 separate elements)
- J - 90° dual element two hole ceramic insulators
- 2 - Twisted single ungrounded
- B - Twisted single beaded
- 3 - Butt welded single grounded
- 4 - Butt welded single ungrounded
- 5 - Butt welded dual common ungrounded
- 6 - Butt welded dual isolated ungrounded

\*Dual 14 and 20 gauge elements are supplied with four hole insulators on straight element styles; 8 gauge uses two separate elements

### Fields 5, 6, 7. RESERVED

### Fields 8, 9. HOT LEG (DIMENSION "HL")

- HL - Length "HL" in whole inches

### Field 10. RESERVED

### Fields 11, 12. COLD LEG (DIMENSION "CL")

- 00 - None. Straight element
- CL - Length "CL" in whole inches

### Fields 13, 14, 15. RESERVED

Note: "l" is the letter "l,"  
not the numeral "1."

# T/C Elements

## T/C Element Price Table

### Straight Elements

First 12"

Ea. Add'l 6"

Note: in this list  
"l" is the letter "l,"  
not the numeral "1."

E082- 000HL-000-0-00  
E083- 000HL-000-0-00  
E084- 000HL-000-0-00  
E085- 000HL-000-0-00  
E086- 000HL-000-0-00  
E08B- 000HL-000-0-00  
E08H- 000HL-000-0-00  
E08l- 000HL-000-0-00  
E08O- 000HL-000-0-00

E092- 000HL-000-0-00  
E093- 000HL-000-0-00  
E094- 000HL-000-0-00  
E095- 000HL-000-0-00  
E096- 000HL-000-0-00  
E09B- 000HL-000-0-00  
E09H- 000HL-000-0-00  
E09l- 000HL-000-0-00  
E09O- 000HL-000-0-00

E142- 000HL-000-0-00  
E143- 000HL-000-0-00  
E144- 000HL-000-0-00  
E145- 000HL-000-0-00  
E146- 000HL-000-0-00  
E14B- 000HL-000-0-00  
E14H- 000HL-000-0-00  
E14l- 000HL-000-0-00  
E14O- 000HL-000-0-00

E152- 000HL-000-0-00  
E153- 000HL-000-0-00  
E154- 000HL-000-0-00  
E155- 000HL-000-0-00  
E156- 000HL-000-0-00  
E15B- 000HL-000-0-00  
E15H- 000HL-000-0-00  
E15l- 000HL-000-0-00  
E15O- 000HL-000-0-00

E202- 000HL-000-0-00  
E203- 000HL-000-0-00  
E204- 000HL-000-0-00  
E205- 000HL-000-0-00  
E206- 000HL-000-0-00  
E20B- 000HL-000-0-00  
E20H- 000HL-000-0-00  
E20l- 000HL-000-0-00  
E20O- 000HL-000-0-00

# T/C Elements

## T/C Element Price Table (continued)

### Straight Elements

First 12"

Ea. Add'l 6"

E212- 000HL-000-0-00  
E213- 000HL-000-0-00  
E214- 000HL-000-0-00  
E215- 000HL-000-0-00  
E216- 000HL-000-0-00  
E21B- 000HL-000-0-00  
E21H- 000HL-000-0-00  
E21I- 000HL-000-0-00  
E21O- 000HL-000-0-00

J082- 000HL-000-0-00  
J083- 000HL-000-0-00  
J084- 000HL-000-0-00  
J085- 000HL-000-0-00  
J086- 000HL-000-0-00  
J08B- 000HL-000-0-00  
J08H- 000HL-000-0-00  
J08I- 000HL-000-0-00  
J08O- 000HL-000-0-00

J092- 000HL-000-0-00  
J093- 000HL-000-0-00  
J094- 000HL-000-0-00  
J095- 000HL-000-0-00  
J096- 000HL-000-0-00  
J09B- 000HL-000-0-00  
J09H- 000HL-000-0-00  
J09I- 000HL-000-0-00  
J09O- 000HL-000-0-00

J142- 000HL-000-0-00  
J143- 000HL-000-0-00  
J144- 000HL-000-0-00  
J145- 000HL-000-0-00  
J146- 000HL-000-0-00  
J14B- 000HL-000-0-00  
J14H- 000HL-000-0-00  
J14I- 000HL-000-0-00  
J14O- 000HL-000-0-00

J152- 000HL-000-0-00  
J153- 000HL-000-0-00  
J154- 000HL-000-0-00  
J155- 000HL-000-0-00  
J156- 000HL-000-0-00  
J15B- 000HL-000-0-00  
J15H- 000HL-000-0-00  
J15I- 000HL-000-0-00  
J15O- 000HL-000-0-00

# T/C Elements

## T/C Element Price Table (continued)

### Straight Elements

First 12"

Ea. Add'l 6"

J202- 000HL-000-0-00  
J203- 000HL-000-0-00  
J204- 000HL-000-0-00  
J205- 000HL-000-0-00  
J206- 000HL-000-0-00  
J20B- 000HL-000-0-00  
J20H- 000HL-000-0-00  
J20I- 000HL-000-0-00  
J20O- 000HL-000-0-00

J212- 000HL-000-0-00  
J213- 000HL-000-0-00  
J214- 000HL-000-0-00  
J215- 000HL-000-0-00  
J216- 000HL-000-0-00  
J21B- 000HL-000-0-00  
J21H- 000HL-000-0-00  
J21I- 000HL-000-0-00  
J21O- 000HL-000-0-00

K06I- 000HL-000-0-00  
K06O- 000HL-000-0-00

K082- 000HL-000-0-00  
K083- 000HL-000-0-00  
K084- 000HL-000-0-00  
K085- 000HL-000-0-00  
K086- 000HL-000-0-00  
K08B- 000HL-000-0-00  
K08H- 000HL-000-0-00  
K08I- 000HL-000-0-00  
K08O- 000HL-000-0-00

K092- 000HL-000-0-00  
K093- 000HL-000-0-00  
K094- 000HL-000-0-00  
K095- 000HL-000-0-00  
K096- 000HL-000-0-00  
K09B- 000HL-000-0-00  
K09H- 000HL-000-0-00  
K09I- 000HL-000-0-00  
K09O- 000HL-000-0-00

K142- 000HL-000-0-00  
K143- 000HL-000-0-00  
K144- 000HL-000-0-00  
K145- 000HL-000-0-00  
K146- 000HL-000-0-00  
K14B- 000HL-000-0-00  
K14H- 000HL-000-0-00  
K14I- 000HL-000-0-00  
K14O- 000HL-000-0-00

# T/C Elements

## T/C Element Price Table (continued)

### Straight Elements

First 12"

Ea. Add'l 6"

K152- 000HL-000-0-00  
K153- 000HL-000-0-00  
K154- 000HL-000-0-00  
K155- 000HL-000-0-00  
K156- 000HL-000-0-00  
K15B- 000HL-000-0-00  
K15H- 000HL-000-0-00  
K15I- 000HL-000-0-00  
K15O- 000HL-000-0-00

K202- 000HL-000-0-00  
K203- 000HL-000-0-00  
K204- 000HL-000-0-00  
K205- 000HL-000-0-00  
K206- 000HL-000-0-00  
K20B- 000HL-000-0-00  
K20H- 000HL-000-0-00  
K20I- 000HL-000-0-00  
K20O- 000HL-000-0-00

K212- 000HL-000-0-00  
K213- 000HL-000-0-00  
K214- 000HL-000-0-00  
K215- 000HL-000-0-00  
K216- 000HL-000-0-00  
K21B- 000HL-000-0-00  
K21H- 000HL-000-0-00  
K21I- 000HL-000-0-00  
K21O- 000HL-000-0-00

N082- 000HL-000-0-00  
N083- 000HL-000-0-00  
N084- 000HL-000-0-00  
N085- 000HL-000-0-00  
N086- 000HL-000-0-00  
N08B- 000HL-000-0-00  
N08H- 000HL-000-0-00  
N08I- 000HL-000-0-00  
N08O- 000HL-000-0-00

N202- 000HL-000-0-00  
N203- 000HL-000-0-00  
N204- 000HL-000-0-00  
N205- 000HL-000-0-00  
N206- 000HL-000-0-00  
N20B- 000HL-000-0-00  
N20H- 000HL-000-0-00  
N20I- 000HL-000-0-00  
N20O- 000HL-000-0-00



# T/C Elements

## T/C Element Price Table (continued)

### Straight Elements

First 12"

Ea. Add'l 6"

T142- 000HL-000-0-00  
T143- 000HL-000-0-00  
T144- 000HL-000-0-00  
T145- 000HL-000-0-00  
T146- 000HL-000-0-00  
T14B- 000HL-000-0-00  
T14H- 000HL-000-0-00  
T14I- 000HL-000-0-00  
T14O- 000HL-000-0-00

T152- 000HL-000-0-00  
T153- 000HL-000-0-00  
T154- 000HL-000-0-00  
T155- 000HL-000-0-00  
T156- 000HL-000-0-00  
T15B- 000HL-000-0-00  
T15H- 000HL-000-0-00  
T15I- 000HL-000-0-00  
T15O- 000HL-000-0-00

T202- 000HL-000-0-00  
T203- 000HL-000-0-00  
T204- 000HL-000-0-00  
T205- 000HL-000-0-00  
T206- 000HL-000-0-00  
T20B- 000HL-000-0-00  
T20H- 000HL-000-0-00  
T20I- 000HL-000-0-00  
T20O- 000HL-000-0-00

T212- 000HL-000-0-00  
T213- 000HL-000-0-00  
T214- 000HL-000-0-00  
T215- 000HL-000-0-00  
T216- 000HL-000-0-00  
T21B- 000HL-000-0-00  
T21H- 000HL-000-0-00  
T21I- 000HL-000-0-00  
T21O- 000HL-000-0-00

# T/C Elements

## T/C Element Price Table (continued)

90° Elements

First 12"

Ea. Add'l 6"

☞ To obtain total length, add hot leg (Fields 8, 9) and cold leg (Fields 11, 12)

E08L- 000HL-0CL-0-00  
E09L- 000HL-0CL-0-00  
E14J- 000HL-0CL-0-00  
E14L- 000HL-0CL-0-00  
E15J- 000HL-0CL-0-00  
E15L- 000HL-0CL-0-00  
E20J- 000HL-0CL-0-00  
E20L- 000HL-0CL-0-00  
E21J- 000HL-0CL-0-00  
E21L- 000HL-0CL-0-00

J08L- 000HL-0CL-0-00  
J09L- 000HL-0CL-0-00  
J14J- 000HL-0CL-0-00  
J14L- 000HL-0CL-0-00  
J15J- 000HL-0CL-0-00  
J15L- 000HL-0CL-0-00  
J20J- 000HL-0CL-0-00  
J20L- 000HL-0CL-0-00  
J21J- 000HL-0CL-0-00  
J21L- 000HL-0CL-0-00

K08L- 000HL-0CL-0-00  
K09L- 000HL-0CL-0-00  
K14J- 000HL-0CL-0-00  
K14L- 000HL-0CL-0-00  
K15J- 000HL-0CL-0-00  
K15L- 000HL-0CL-0-00  
K20J- 000HL-0CL-0-00  
K20L- 000HL-0CL-0-00  
K21J- 000HL-0CL-0-00  
K21L- 000HL-0CL-0-00

N14J- 000HL-0CL-0-00  
N20L- 000HL-0CL-0-00

T14J- 000HL-0CL-0-00  
T14L- 000HL-0CL-0-00  
T15J- 000HL-0CL-0-00  
T15L- 000HL-0CL-0-00  
T20J- 000HL-0CL-0-00  
T20L- 000HL-0CL-0-00  
T21J- 000HL-0CL-0-00  
T21L- 000HL-0CL-0-00

# T/C Elements

## Thermocouple Elements Special Assemblies

### Introduction

#### Code 24, 30 Tubes

Element is insulated with a single hole 51-009 insulator on the positive leg only.

#### Code 41, 42 Tubes

Straight elements: Leads have approximately 2" of insulating beads at cold end to provide flexibility required by ceramic coated steel tubes (code 42). 8 gauge element uses 51-052 insulators

90° Elements: Code 41 protection tube requires a special 8 gauge element because of its small inside diameter. Code 42 protection tube requires special elements because of the spring extension which requires a bead section about 10" long.

### Ordering Information

Complete this part number, then obtain price from the tables on following pages.

**Model No. 0 0 0 A -**       -    -

Field No. 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

**Schedule: S6**

**Fields 1 through 3. RESERVED**

**Fields 4 through 9. BASE MODEL**

Specify Field 13 first

		Fields 4 through 9			
		Straight		90°	
Field 13	Tube	Single	Dual	Single	Dual
1	24 or 30	A-11727			
	41	A-11888	A-11712	A-11809	
	42	A-11711		A-10462	
2 or 3	41	A-11888		A-11809	A-10504
	42	A-11711	A-11712	A-10462	

**Field 10. THERMOCOUPLE TYPE**

- 1 - Type J
- 2 - Type K
- 3 - Type E
- 4 - Type T
- 5 - Type N

**Fields 11, 12. HOT LENGTH (DIMENSION "HL")**

XX - Specify in whole inches

**Field 13. WIRE GAUGE**

- 1 - 8 gauge
- 2 - 14 gauge (not Type N)
- 3 - 20 gauge

**Fields 14, 15. LIMITS OF ERROR (FOR STRAIGHT TUBES) OR  
COLD LENGTH (DIMENSION "CL" FOR 90° TUBES)**

Straight Tubes

- 00 - Standard limits of error
- 01 - Special limits of error

90° Tubes

- XX - Specify "CL" dimension in whole inches.

# T/C Elements

## Special Elements Price Table

 To obtain total length, add HL (Fields 11, 12) and CL (Fields 14, 15 – 90° only)

				<u>First 12"</u>	<u>Ea. Add'l 6"</u>	
<b>A-10462</b>	A-10462-1HL -1-CL	Type J, 8 gauge	standard limits			
	A-10462-1HL -2-CL	Type J, 14 gauge	standard limits			
	A-10462-1HL -3-CL	Type J, 20 gauge	standard limits			
	A-10462-2HL -1-CL	Type K, 8 gauge	standard limits			
	A-10462-2HL -2-CL	Type K, 14 gauge	standard limits			
	A-10462-2HL -3-CL	Type K, 20 gauge	standard limits			
	A-10462-3HL -1-CL	Type E, 8 gauge	standard limits			
	A-10462-3HL -2-CL	Type E, 14 gauge	standard limits			
	A-10462-3HL -3-CL	Type E, 20 gauge	standard limits			
	A-10462-4HL -2-CL	Type T, 14 gauge	standard limits			
	A-10462-4HL -3-CL	Type T, 20 gauge	standard limits			
	<b>A-10504</b>	A-10504-1HL -2-CL	Type J, 14 gauge	standard limits		
A-10504-1HL -3-CL		Type J, 20 gauge	standard limits			
A-10504-2HL -2-CL		Type K, 14 gauge	standard limits			
A-10504-2HL -3-CL		Type K, 20 gauge	standard limits			
A-10504-3HL -2-CL		Type E, 14 gauge	standard limits			
A-10504-4HL -2-CL		Type T, 14 gauge	standard limits			
<b>A-11711</b>	A-10504-4HL -3-CL	Type T, 20 gauge	standard limits			
	A-11711-1HL-1-00	Type J, 8 gauge	standard limits			
<b>A-11711</b>	A-11711-1HL-1-01	Type J, 8 gauge	special limits			
	A-11711-1HL-2-00	Type J, 14 gauge	standard limits			
	A-11711-1HL-2-01	Type J, 14 gauge	special limits			
	A-11711-1HL-3-00	Type J, 20 gauge	standard limits			
	A-11711-1HL-3-01	Type J, 20 gauge	special limits			
	A-11711-2HL-1-00	Type K, 8 gauge	standard limits			
	A-11711-2HL-1-01	Type K, 8 gauge	special limits			
	A-11711-2HL-2-00	Type K, 14 gauge	standard limits			
	A-11711-2HL-2-01	Type K, 14 gauge	special limits			
	A-11711-2HL-3-00	Type K, 20 gauge	standard limits			
	A-11711-2HL-3-01	Type K, 20 gauge	special limits			
	A-11711-3HL-1-00	Type E, 8 gauge	standard limits			
	A-11711-3HL-1-01	Type E, 8 gauge	special limits			
	A-11711-3HL-2-00	Type E, 14 gauge	standard limits			
	A-11711-3HL-2-01	Type E, 14 gauge	special limits			
	A-11711-3HL-3-00	Type E, 20 gauge	standard limits			
	A-11711-3HL-3-01	Type E, 20 gauge	special limits			
	A-11711-4HL-2-00	Type T, 14 gauge	standard limits			
	A-11711-4HL-2-01	Type T, 14 gauge	special limits			
	A-11711-4HL-3-00	Type T, 20 gauge	standard limits			
	A-11711-4HL-3-01	Type T, 20 gauge	special limits			
	<b>A-11712</b>	A-11712-1HL-1-00	Type J, 8 gauge	standard limits		
		A-11712-1HL-1-01	Type J, 8 gauge	special limits		
		A-11712-1HL-2-00	Type J, 14 gauge	standard limits		
A-11712-1HL-2-01		Type J, 14 gauge	special limits			
A-11712-1HL-3-00		Type J, 20 gauge	standard limits			
A-11712-1HL-3-01		Type J, 20 gauge	special limits			
A-11712-2HL-1-00		Type K, 8 gauge	standard limits			
A-11712-2HL-1-01		Type K, 8 gauge	special limits			
A-11712-2HL-2-00		Type K, 14 gauge	standard limits			
A-11712-2HL-2-01		Type K, 14 gauge	special limits			
A-11712-2HL-3-00		Type K, 20 gauge	standard limits			

# T/C Elements

## Special Elements Price Table (continued)

A-11712 (continued)			First 12"	Ea. Add'l 6"
	A-11712-2HL-3-01	Type K, 20 gauge	special limits	
	A-11712-3HL-1-00	Type E, 8 gauge	standard limits	
	A-11712-3HL-1-01	Type E, 8 gauge	special limits	
	A-11712-3HL-2-00	Type E, 14 gauge	standard limits	
	A-11712-3HL-2-01	Type E, 14 gauge	special limits	
	A-11712-3HL-3-00	Type E, 20 gauge	standard limits	
	A-11712-3HL-3-01	Type E, 20 gauge	special limits	
	A-11712-4HL-2-00	Type T, 14 gauge	standard limits	
	A-11712-4HL-2-01	Type T, 14 gauge	special limits	
	A-11712-4HL-3-00	Type T, 20 gauge	standard limits	
	A-11712-4HL-3-01	Type T, 20 gauge	special limits	
<b>A-11727</b>				
	A-11727-1HL-1-00	Type J, 8 gauge	standard limits	
	A-11727-1HL-1-01	Type J, 8 gauge	special limits	
	A-11727-2HL-1-00	Type K, 8 gauge	standard limits	
	A-11727-2HL-1-01	Type K, 8 gauge	standard limits	
	A-11727-3HL-1-00	Type E, 8 gauge	standard limits	
	A-11727-3HL-1-01	Type E, 8 gauge	special limits	
<b>A-11809</b>				
	A-11809-1HL -1-CL	Type J, 8 gauge	standard limits	
	A-11809-1HL -2-CL	Type J, 14 gauge	standard limits	
	A-11809-1HL -3-CL	Type J, 20 gauge	standard limits	
	A-11809-2HL -1-CL	Type K, 8 gauge	standard limits	
	A-11809-2HL -2-CL	Type K, 14 gauge	standard limits	
	A-11809-2HL -3-CL	Type K, 20 gauge	standard limits	
	A-11809-3HL -1-CL	Type E, 8 gauge	standard limits	
	A-11809-3HL -2-CL	Type E, 14 gauge	standard limits	
	A-11809-3HL -3-CL	Type E, 20 gauge	standard limits	
	A-11809-4HL -2-CL	Type T, 14 gauge	standard limits	
	A-11809-4HL -3-CL	Type T, 20 gauge	standard limits	
<b>A-11888</b>				
	A-11888-1HL-1-00	Type J, 8 gauge	standard limits	
	A-11888-1HL-1-01	Type J, 8 gauge	special limits	
	A-11888-1HL-2-00	Type J, 14 gauge	standard limits	
	A-11888-1HL-2-01	Type J, 14 gauge	special limits	
	A-11888-1HL-3-00	Type J, 20 gauge	standard limits	
	A-11888-1HL-3-01	Type J, 20 gauge	special limits	
	A-11888-2HL-1-00	Type K, 8 gauge	standard limits	
	A-11888-2HL-1-01	Type K, 8 gauge	special limits	
	A-11888-2HL-2-00	Type K, 14 gauge	standard limits	
	A-11888-2HL-2-01	Type K, 14 gauge	special limits	
	A-11888-2HL-3-00	Type K, 20 gauge	standard limits	
	A-11888-2HL-3-01	Type K, 20 gauge	special limits	
	A-11888-3HL-1-00	Type E, 8 gauge	standard limits	
	A-11888-3HL-1-01	Type E, 8 gauge	special limits	
	A-11888-3HL-2-00	Type E, 14 gauge	standard limits	
	A-11888-3HL-2-01	Type E, 14 gauge	special limits	
	A-11888-3HL-3-00	Type E, 20 gauge	standard limits	
	A-11888-3HL-3-01	Type E, 20 gauge	special limits	
	A-11888-4HL-2-00	Type T, 14 gauge	standard limits	
	A-11888-4HL-2-01	Type T, 14 gauge	special limits	
	A-11888-4HL-3-00	Type T, 20 gauge	standard limits	
	A-11888-4HL-3-01	Type T, 20 gauge	special limits	

# T/C Elements

## Noble Metal and Other High Temperature Thermocouple Elements

### Introduction

The elements consist of standardized and matched wires, individually checked. The hot junctions of noble metal elements are end contact welded. Cold ends are terminated with butt connectors.

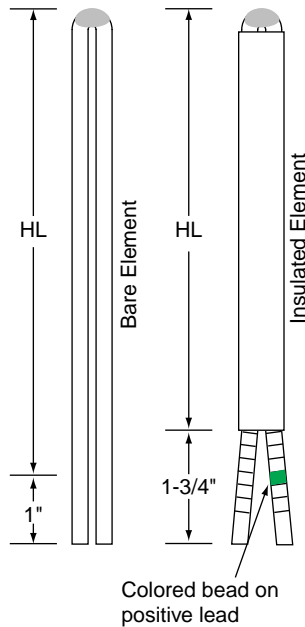
Both bare elements and insulated elements are available. The positive lead of an insulated element is identified with a colored glass bead as follows: Type R - blue or black; type S - clear; type B - yellow; type F - yellow and blue or black; and, type C - green. Insulated elements are for use with general purpose or weatherproof heads.

### Contamination

Platinum and platinum alloy thermocouple wire is extremely susceptible to contamination from elements such as silicon, iron, zinc, calcium, etc. Keep platinum and platinum alloy thermocouple wire clean both before and during use. Contamination causes negative direction drift and weakening of the wire.

### Ordering Information

Complete this part number, then obtain price from table on following page.



Note: "1" is the letter "I,"  
not the numeral "1."

**Model No.**     - 0 0 0   - 0 0 0 - 0 - 0 0  
Field No. 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

**Schedule: S3**

#### Field 1. THERMOCOUPLE TYPE

- R - Platinum, 13% Rhodium - Platinum
- S - Platinum, 10% Rhodium - Platinum
- B - Platinum, 30% Rhodium - Platinum, 6% Rhodium
- C - Tungsten, 5% Rhenium - Tungsten, 26% Rhenium
- F - Platinel II

#### Fields 2, 3. WIRE GAUGE; LIMITS OF ERROR

- See compatibility table at front of Industrial Sensors section
- 24 - 24 gauge, standard limits
  - 25 - 24 gauge, special limits (Types B, S, and R only)
  - 26 - 26 gauge, standard limits

#### Field 4. ELEMENT CONSTRUCTION

- I - Straight single element two hole ceramic insulators
- O - Bare wire element no insulators
- H - Straight dual element two hole ceramic insulators

#### Fields 5, 6, 7. RESERVED

#### Fields 8, 9. HOT LEG ("HL" DIMENSION)

- HL - Length "HL" in whole inches

#### Field 10 through 15 RESERVED

# T/C Elements

## Noble Metal T/C Elements Price Table

Note: in this list  
"l" is the letter "l,"  
not the numeral "1."

### Noble Metal Thermocouple Elements

First 12"

Ea. Add'l 1"

B24H-000HL-000-0-00  
B24l-000HL-000-0-00  
B24O-000HL-000-0-00  
B25H-000HL-000-0-00  
B25l-000HL-000-0-00  
B25O-000HL-000-0-00

C24H-000HL-000-0-00  
C24l-000HL-000-0-00  
C24O-000HL-000-0-00

F24H-000HL-000-0-00  
F24l-000HL-000-0-00  
F24O-000HL-000-0-00

R24H-000HL-000-0-00  
R24l-000HL-000-0-00  
R24O-000HL-000-0-00  
R25H-000HL-000-0-00  
R25l-000HL-000-0-00  
R25O-000HL-000-0-00  
R26H-000HL-000-0-00  
R26l-000HL-000-0-00  
R26O-000HL-000-0-00

S24H-000HL-000-0-00  
S24l-000HL-000-0-00  
S24O-000HL-000-0-00  
S25H-000HL-000-0-00  
S25l-000HL-000-0-00  
S25O-000HL-000-0-00  
S26H-000HL-000-0-00  
S26l-000HL-000-0-00  
S26O-000HL-000-0-00

# T/C Elements

## Noble Metal Thermocouples for Laboratory Head Assemblies, and Silicon Carbide Protection Tube Assemblies

### Ordering Information

Complete this part number, then obtain price from table on following page.

**Model No. 0 0 0 A -**           **-**   **0 0 - 0 -**

Field No. 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

**Schedule: S3**

**Fields 1 through 3. RESERVED**

**Fields 4 through 9. BASE MODEL**

**For Laboratory Head Assemblies**

A-10769 - 24 gauge, single element, standard limits

A-13734 - 26 gauge, single element, standard limits

**For Silicon Carbide Protection Tube Assemblies**

A-11670 - 24 gauge, single element, standard limits

A-11675 - 24 gauge, dual element, standard limits

A-13732 - 26 gauge, single element, standard limits

A-13733 - 26 gauge, dual element, standard limits

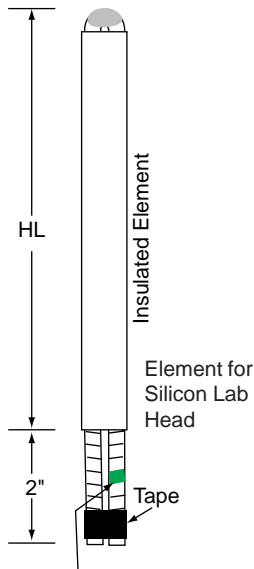
**Field 10. THERMOCOUPLE TYPE**

- 0 - Type R
- 1 - Type S
- 2 - Type B
- 3 - Type C
- 4 - Type F

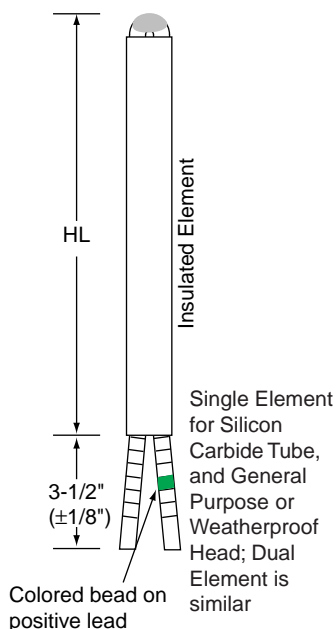
**Fields 11, 12, 13. RESERVED**

**Fields 14, 15. HOT LEG (HL DIMENSION)**

HL - "HL" length in whole inches



Colored bead on positive lead



Colored bead on positive lead

Wire & Accessories



# T/C Elements

## Price Table

### Laboratory Head Assemblies

A-10769-000-0-HL  
A-10769-100-0-HL  
A-10769-200-0-HL  
A-10769-300-0-HL  
A-10769-400-0-HL  
A-13734-000-0-HL  
A-10769-100-0-HL

First 12"

Ea. Add'l 1"

### Silicon Carbide Protection Tube Assemblies

A-11670-000-0-HL  
A-11670-100-0-HL  
A-11670-200-0-HL  
A-11670-300-0-HL  
A-11670-400-0-HL  
A-11675-000-0-HL  
A-11675-100-0-HL  
A-11675-200-0-HL  
A-11675-300-0-HL  
A-11675-400-0-HL  
A-13732-000-0-HL  
A-13732-100-0-HL  
A-13733-000-0-HL  
A-13733-100-0-HL