ISE Inc

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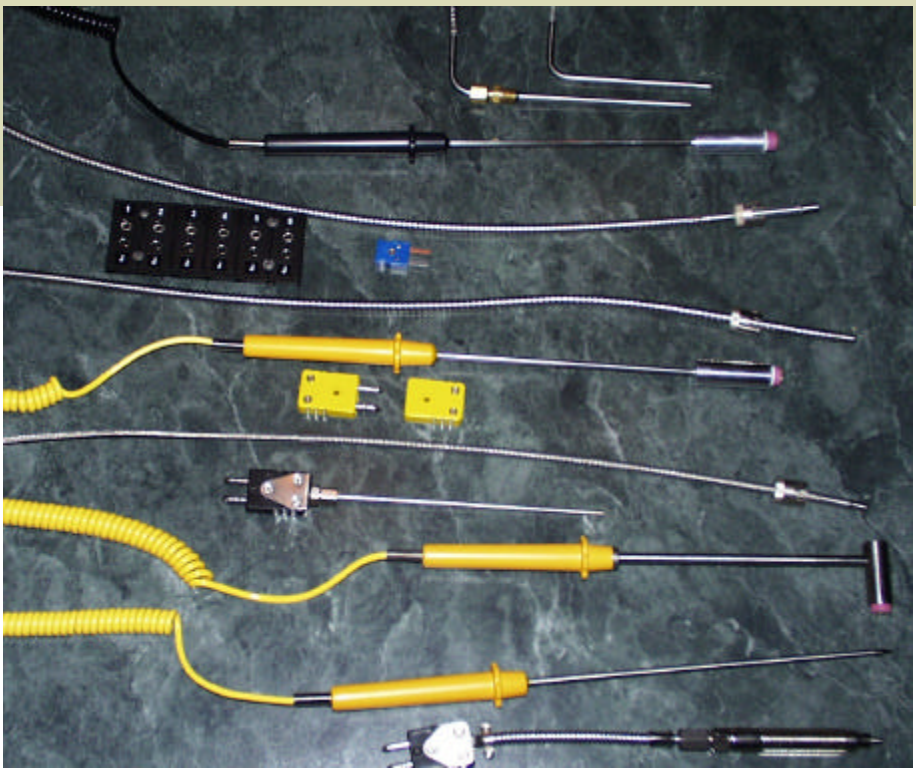
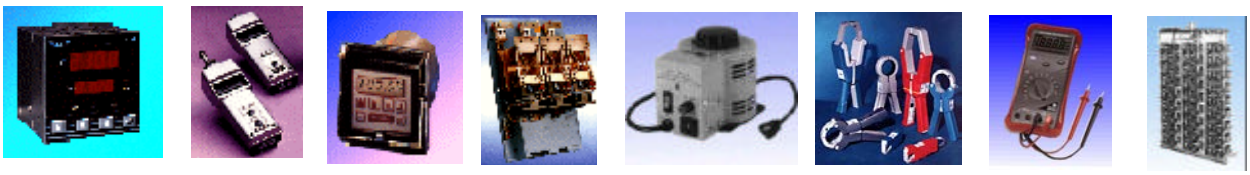
Standard Thermocouples



- Plastic Industry Thermocouples
- MGO Thermocouples
- Surface and Pipe Clamp Thermocouples
- Thermocouple Plugs & Accessories
- Thermocouple Wire
- Custom thermocouples to meet your application requirements.



ISE Company Profile

ISE provides completely engineered process control, sensor and power quality solutions to industry. With our long history, extensive application experience and superior **product range** we welcome the most difficult applications. Our personnel have experience in virtually all industries including: **Plastics, Steel, Chemical, Rubber, Heat Treating, Aluminum, Research & Development** and others.

We have the capabilities to supply detailed, application specific technical information and support for all of our product lines.

We further support our products through after the sale engineering support and through our highly qualified **Repair and Service** department. We have the capability to repair to the component level every product that we sell along with most competing products. If your process is down we can get it back and running very quickly with our low cost **Expedited Repair Pro-**

ISE, Inc.

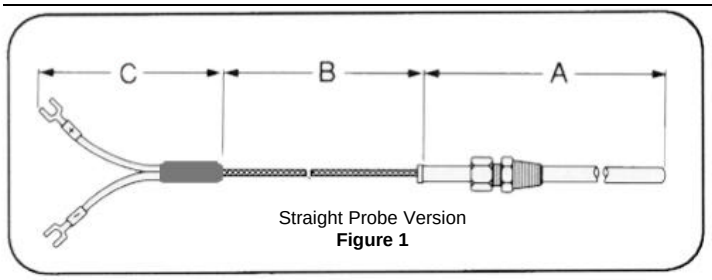
Providing Instrumentation, Sensor, Power Quality and Control Solutions Since 1946.

Table of Contents

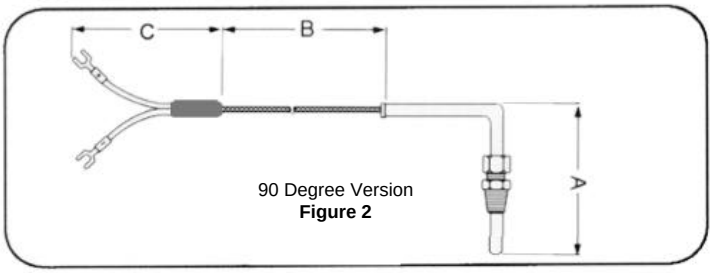
Compression Fitting T/C's

Features:

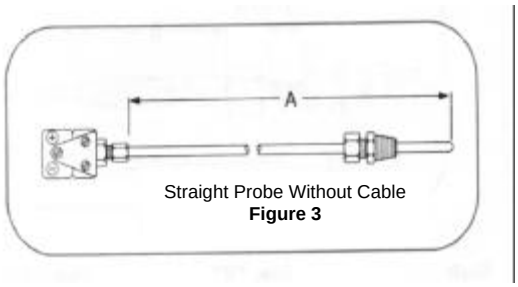
- One-time Adjustable 1/8" NPT Compression Fitting.
- Inconel Probe.
- Maximum Probe Temperature 900F.



Straight Probe Version
Figure 1



90 Degree Version
Figure 2



Straight Probe Without Cable
Figure 3

Bend	Probe Diameter	SS Flex Cable	SS Overbraid	Glass Braid	
Straight Figure 1	1/8"	☐24M28F	☐24JM28F	☐24UM28F	**Specify:** A Dim = _____ B Dim = _____ C Dim = 2-1/2" Std. Replace ☐ with J, K or T (Thermocouple Type)
	3/16"	☐20M28F	☐20JM28F	☐20UM28F	
45 Degree Figure 2	1/8"	☐24R28F	☐24JR28F	☐24UR28F	
	3/16"	☐20R28F	☐20JR28F	☐20UR28F	
90 Degree Figure 2	1/8"	☐24S28F	☐24JS28F	☐24JS28F	
	3/16"	☐20S28F	☐20JS28F	☐20JS28F	

Bend	Probe Diameter	Std. Male Plug	Std. Female Jack	
Straight Probe Without Cable Figure 3	1/8"	☐24BWM28F-B	☐24BWM28F-C	**Specify:** A Dim = _____ Replace ☐ with J, K or T (Thermocouple Type)
	3/16"	☐20BWM28F-B	☐20BWM28F-C	
	1/4"	☐20BWM42F-B	☐20BWM42F-C	

Options:

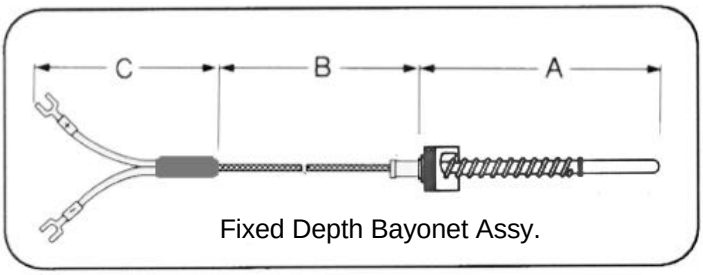
1) Remove 'F' in part number to delete the compression fitting.
2) A brass compression fitting is standard. Replace 'F' in of part number with 'S' for *SS compression Fitting.*
3) Optional Terminations: Add '-B' suffix for *Standard Male Plug* ; '-C' suffix for *Standard Jack;* '-D' suffix for *Miniature Male Plug*;; '-E' suffix for *Miniature Jack* .
4) Grounded Junctions are Standard. For an *Ungrounded Junction* add –U suffix. Use –DUAL suffix for *dual junction*.
5) Many custom features and constructions are available; Add '-X' suffix for *Special Configurations* and describe the desired options.

Example: J20S28S-BU, A= 3-1/2", B= 4' (3/16"Diameter, 90° Bend, SS Compression Fitting, Std. Male Plug, Ungrounded Junction)

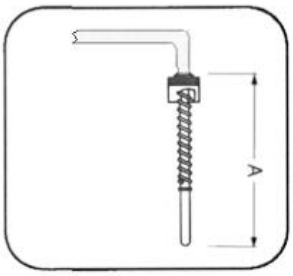
Features:

- Spring Loaded Bayonet Cap.
- Maximum Probe Temperature 900F.

Fixed Dimension Bayonet Assemblies:

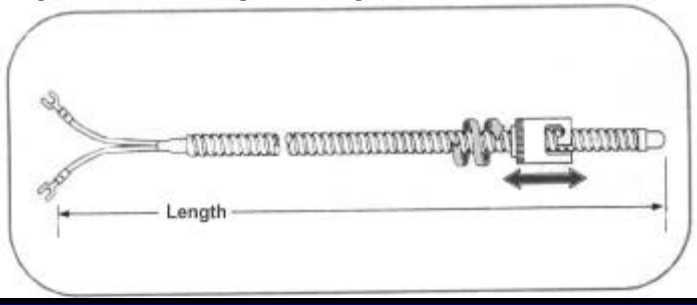


Fixed Depth Bayonet Assy.



Bend	Probe Diameter	SS Flex Cable	SS Overbraid	Glass Braid	Specify:
Straight	3/16"	☐20M28H	☐20JM28H	☐20UM28H	A Dim = _____ B Dim = _____ C Dim = 2-1/2" Std.
45 Degree	3/16"	☐20R28H	☐20JR28H	☐20UR28H	
90 Degree	3/16"	☐20S28H	☐20JS28H	☐20JS28H	Replace ☐ with J, K or T (Thermocouple Type)

Adjustable Depth Bayonet Assemblies:

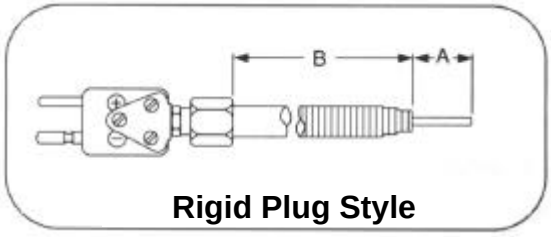


Termination	SS Overbraid With 10" Spring	SS Flex Cable (Unlimited adjustment Range)	Specify:
Split Leads With Spade Lugs	TCA-1063A	TCA-1064A	Length = _____ Type J Thermocouple standard. Add –K suffix for type K; add –T suffix for type T. Standard lengths: 2', 4', 6', 8', 10', 12' & 15' (others as required)
Standard Male Plug	TCA-1063B	TCA-1064B	
Standard Female Jack	TCA-1063C	TCA-1064C	

Options:

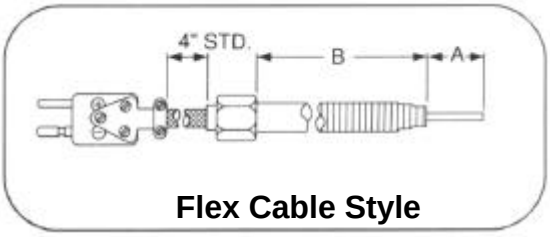
1) Optional Terminations: Add '-B' suffix for *Standard Male Plug* ; '-C' suffix for *Standard Jack;* '-D' suffix for *Miniature Male Plug*;; '-E' suffix for *Miniature Jack* .
2) Grounded Junctions are Standard. For an *Ungrounded Junction* add –U suffix. Use –DUAL suffix for *dual junction*.
3) Many custom features and constructions are available; Add '-X' suffix for *Special Configurations* and describe the desired options.

Plastic Melt Thermocouples



Rigid Plug Style

Part Number	'B'	'A'
TCA-0106A	3"	Flush
TCA-0106B	3"	1/4"
TCA-0106C	3"	1/2"
TCA-0106D	3"	3/4"
TCA-0106E	3"	1"
TCA-0100A	6"	Flush
TCA-0100B	6"	1/4"
TCA-0100C	6"	1/2"
TCA-0100D	6"	3/4"
TCA-0100E	6"	1"



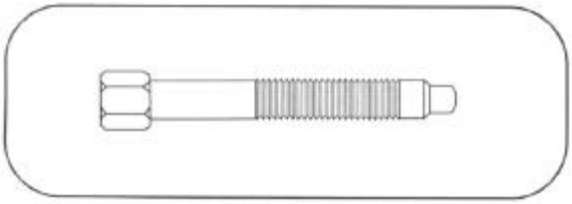
Flex Cable Style

Part Number	'B'	'A'
TCA-0108A	3"	Flush
TCA-0108B	3"	1/4"
TCA-0108C	3"	1/2"
TCA-0108D	3"	3/4"
TCA-0108E	3"	1"
TCA-0109A	6"	Flush
TCA-0109B	6"	1/4"
TCA-0109C	6"	1/2"
TCA-0109D	6"	3/4"
TCA-0109E	6"	1"

Blank Bolts

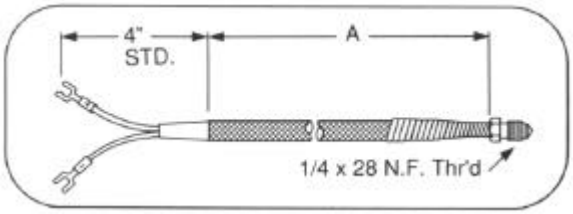
P/N 10-0285 3" Body

P/N 10-0286 6" Body



Nozzle Thermocouple

P/N TCA-0039 Specify 'A' Dimension when ordering



Options:

1) Type J thermocouple type standard on all assemblies on this page. Add –K suffix for type K; Add –T suffix for type T

Features:

- Faster response, field bendable.
- Maximum Probe Temperature up to 1800°F.

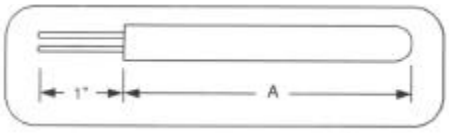


Figure 1 Thermocouple element only.

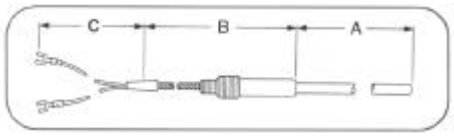


Figure 2 Thermocouple with fiberglass insulated lead with spade lugs.

Figure 3 As above with stainless steel overbraid.

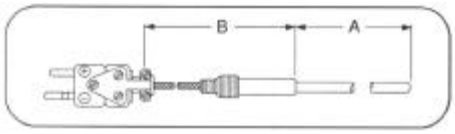


Figure 4 Thermocouple with fiberglass insulated lead with standard male plug.

Figure 5 As above with stainless steel overbraid.

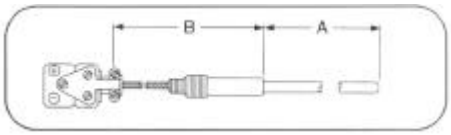


Figure 6 Thermocouple with fiberglass insulated lead with standard female jack.

Figure 7 As above with stainless steel overbraid.

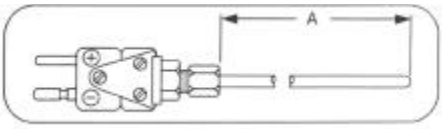


Figure 8 Thermocouple terminated with standard male plug.

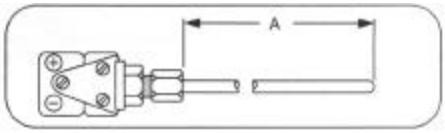


Figure 9 Thermocouple terminated with standard female jack.

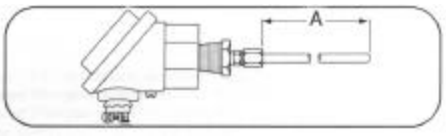


Figure 13 Thermocouple terminated with aluminum head.

Options:

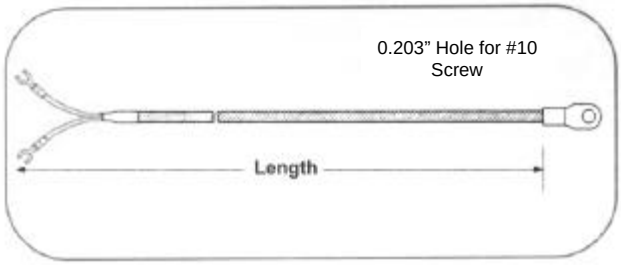
1) Grounded junctions are standard. For ungrounded junction add **–U** suffix. For exposed junction add **–EX** suffix
2) For dual junctions add **–DUAL** suffix.
3) For miniature plug or jack instead of standard, add **–MINI** suffix (Figures 4-9 only).
4) Many other configurations & options are available.

Sheath Dia.	Sheath Matrl.	T/C Type	Fig #1 Part #	Fig #2 Part #	Fig #3 Part #	Fig #4 Part #	Fig #5 Part #	Fig #6 Part #	Fig #7 Part #	Fig #8 Part #	Fig #9 Part #	Fig #13 Part #
0.063"	304SS	J	TCA-0375	TCA-0418	TCA-0404	TCA-0453	TCA-0439	TCA-0488	TCA-0474	TCA-0507	TCA-0528	TCA-0612
	Inconel	J	TCA-0376	TCA-0419	TCA-0405	TCA-0454	TCA-0440	TCA-0489	TCA-0475	TCA-0508	TCA-0529	TCA-0614
	304SS	K	TCA-0377	TCA-0420		TCA-0455		TCA-0490		TCA-0509	TCA-0530	TCA-0616
	Inconel	K	TCA-0378	TCA-0421		TCA-0456		TCA-0491		TCA-0510	TCA-0531	TCA-0618
	304SS	T	TCA-0379	TCA-0422		TCA-0457		TCA-0492		TCA-0511	TCA-0532	TCA-0620
0.125"	304SS	J	TCA-0383	TCA-0423	TCA-0406	TCA-0458	TCA-0441	TCA-0493	TCA-0476	TCA-0513	TCA-0534	TCA-0624
	Inconel	J	TCA-0384	TCA-0424	TCA-0407	TCA-0459	TCA-0442	TCA-0494	TCA-0477	TCA-0514	TCA-0535	TCA-0626
	304SS	K	TCA-0385	TCA-0425		TCA-0460		TCA-0495		TCA-0515	TCA-0536	TCA-0628
	Inconel	K	TCA-0386	TCA-0426		TCA-0461		TCA-0496		TCA-0516	TCA-0537	TCA-0630
	304SS	T	TCA-0387	TCA-0427		TCA-0462		TCA-0497		TCA-0517	TCA-0538	TCA-0632
0.188"	304SS	J	TCA-0389	TCA-0428	TCA-0408	TCA-0463	TCA-0443	TCA-0498	TCA-0478	TCA-0519	TCA-0540	TCA-0636
	Inconel	J	TCA-0390	TCA-0429	TCA-0409	TCA-0464	TCA-0444	TCA-0499	TCA-0479	TCA-0520	TCA-0541	TCA-0638
	304SS	K	TCA-0391	TCA-0430		TCA-0465		TCA-0500		TCA-0521	TCA-0542	TCA-0640
	Inconel	K	TCA-0392	TCA-0431		TCA-0466		TCA-0501		TCA-0522	TCA-0543	TCA-0642
	304SS	T	TCA-0393	TCA-0432		TCA-0467		TCA-0502		TCA-0523	TCA-0544	TCA-0644
0.250"	304SS	J	TCA-0394	TCA-0433	TCA-0410	TCA-0468	TCA-0445	TCA-0503	TCA-0480	TCA-0524	TCA-0545	TCA-0646
	Inconel	J	TCA-0395	TCA-0434	TCA-0411	TCA-0469	TCA-0446	TCA-0504	TCA-0481	TCA-0525	TCA-0546	TCA-0648
	304SS	K	TCA-0396	TCA-0435		TCA-0470		TCA-0505		TCA-0526	TCA-0547	TCA-0650
	Inconel	K	TCA-0397	TCA-0436		TCA-0471		TCA-0506		TCA-0527	TCA-0548	TCA-0652

Surface (Washer) Thermocouple

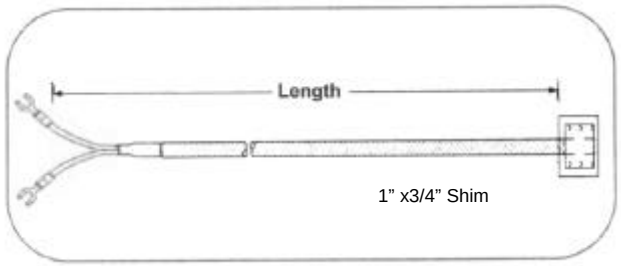
P/N TCA-0134 **Specify Length**

1) Type J thermocouple type standard. Add –K suffix for type K; Add –T suffix for type T
2) Optional Terminations: Add '-B' suffix for *Standard Male Plug* ; '-C' suffix for *Standard Jack;* '-D' suffix for *Miniature Male Plug*; '-E' suffix for *Miniature Jack* .
3) Fiberglass insulated lead with stainless steel overbraid is standard.



Surface (Shim) Thermocouple

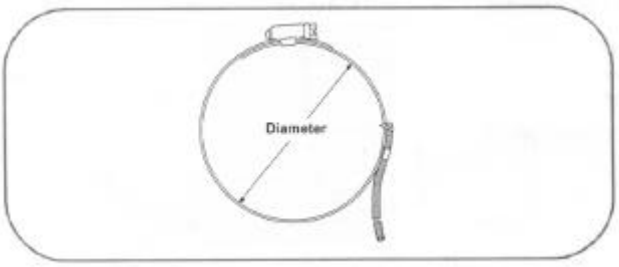
Lead Wire	Part #	
Teflon w/ SS Over-braid	☐SH1A	**Specify: Length = _____**
Fiberglass w/ SS Overbraid	☐SH2A	**Replace ☐ with J, K or T (Thermocouple Type)**
Fiberglass	☐SH3A	



Optional Terminations: Add '-B' suffix for *Standard Male Plug* ; '-C' suffix for *Standard Jack;* '-D' suffix for *Miniature Male Plug*; '-E' suffix for *Miniature Jack* .

Pipe Clamp Thermocouple Assembly

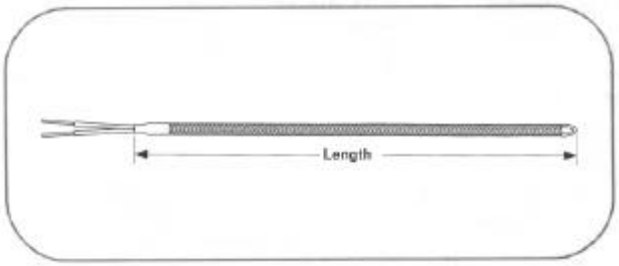
Clamp Range	Part #	
11/16 to 1-1/4"	☐PC1A	**Specify: Length = _____**
1-1/4" to 2-1/4"	☐PC1A	
2-1/4" to 3-1/4"	☐PC1A	**Replace ☐ with J, K or T (Thermocouple Type**
3-1/4" to 4-1/4"	☐PC1A	
4-1/4" to 5"	☐PC1A	
5 to 6"	☐PC1A	
6 to 7"	☐PC1A	



Optional Terminations: Add '-B' suffix for *Standard Male Plug* ; '-C' suffix for *Standard*

Wire Bead Thermocouple

Lead Wire	Part #	
Teflon Insulated	☐BDT24A	**Specify: Length = _____**
Fiberglass	☐BDG24A	**Replace ☐ with J, K or T (Thermocouple Type)** **24 AWG Standard**

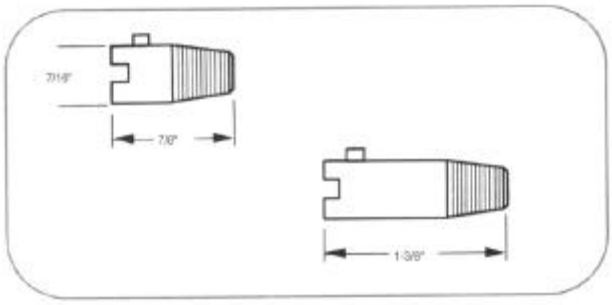


Optional Terminations: Add '-B' suffix for *Standard Male Plug* ; '-C' suffix for *Standard Jack;* '-D' suffix for *Miniature Male Plug*; '-E' suffix for *Miniature Jack* .

Bayonet Adaptors

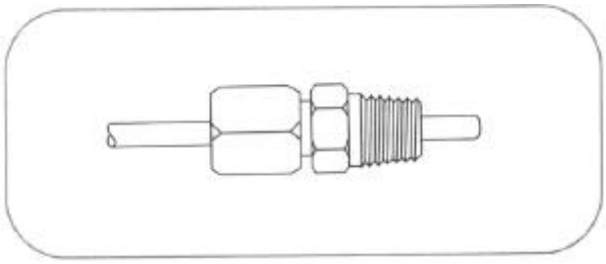
Part Number	Length	Thread
10-0023A	7/8”	1/8 27 NPT
10-0054A	1-3/8”	1/8 27 NPT
10-0103A	7/8”	3/8 24 NF-2
10-0166A	1-3/8”	3/8 24 NF-2

Note: Other sizes are available



Compression Fittings

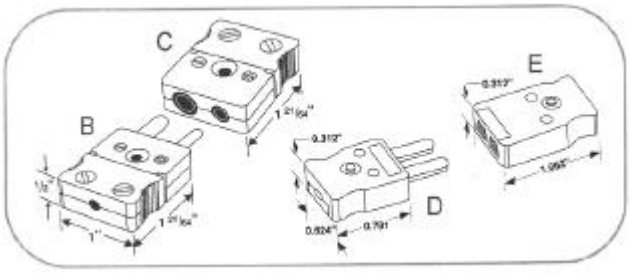
For Sheath Dia.	Brass P/N	SS P/N	Male NPT
0.063 (1/6”)		60-0038	1/8”
0.125 (1/8”)	60-0020A	60-0039	
0.188 (3/16”)	60-0021C	60-0040	
0.250 (1/4”)	60-0029A	60-0041	
0.250 (1/4”)	60-0022A	60-0112	1/4”



Note: All fittings shown have a ferrule of the same material as the body. These assemblies are one time adjustable. Other sizes, materials & ferrules are available.

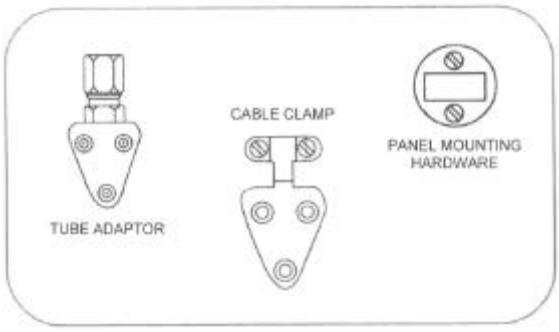
Plugs & Jacks

Type	Std. Plug Fig B	Std. Jack Fig C	Mini Plug Fig D	Mini Jack Fig E
J	AA-0401	AA-0402	AA-0401M	AA-0402M
K	AA-0403	AA-0404	AA-0403M	AA-0404M
T	AA-0405	AA-0406	AA-0405M	AA-0406M
R/S	AA-0409	AA-0410	AA-0409M	AA-0410M



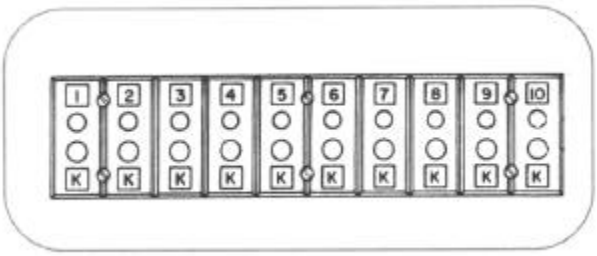
Hardware

Description	Part Number
Tube Adaptor (1/16-1/8”)	AA-0505
Tube Adaptor (3/16”)	AA-0507
Cable Clamp	AA-0509
Panel Mounting Hdw.	AA-0510



Strip Jack Panels

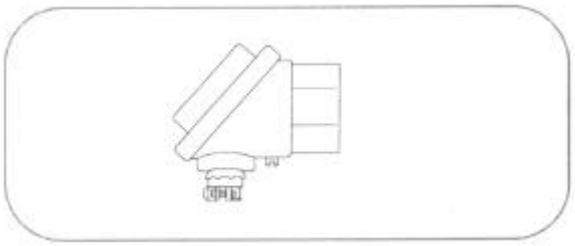
Part Number	T/C Type	Replace ☐ to specify the number of circuits:
AA-0511-☐	J	2 = 2 4 = 4 8 = 8 10 = 10 12 = 12
AA-0512-☐	K	
AA-0513-☐	T	
AA-0514-☐	R/S	



Available with 2, 4, 8, 10 or 12 circuits.

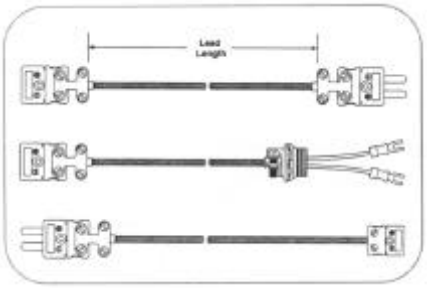
General Purpose Screw Cover Head

Part Number	Description
30-0078	**Head**
30-0012	Gasket
AA-0013	Terminal Block (Single Element)

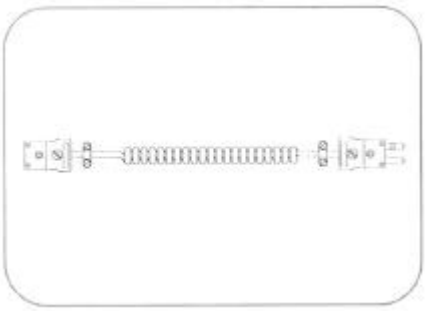


Thermocouple Extensions

T/C Type	PVC w/ SS Overbraid	Fiberglass w/ SS Overbraid	Fiberglass w/ SS Hose
J	JX1☐☐	JX2☐☐	JX3☐☐
K	KX1☐☐	KX2☐☐	KX3☐☐
T	TX1☐☐	TX2☐☐	TX3☐☐



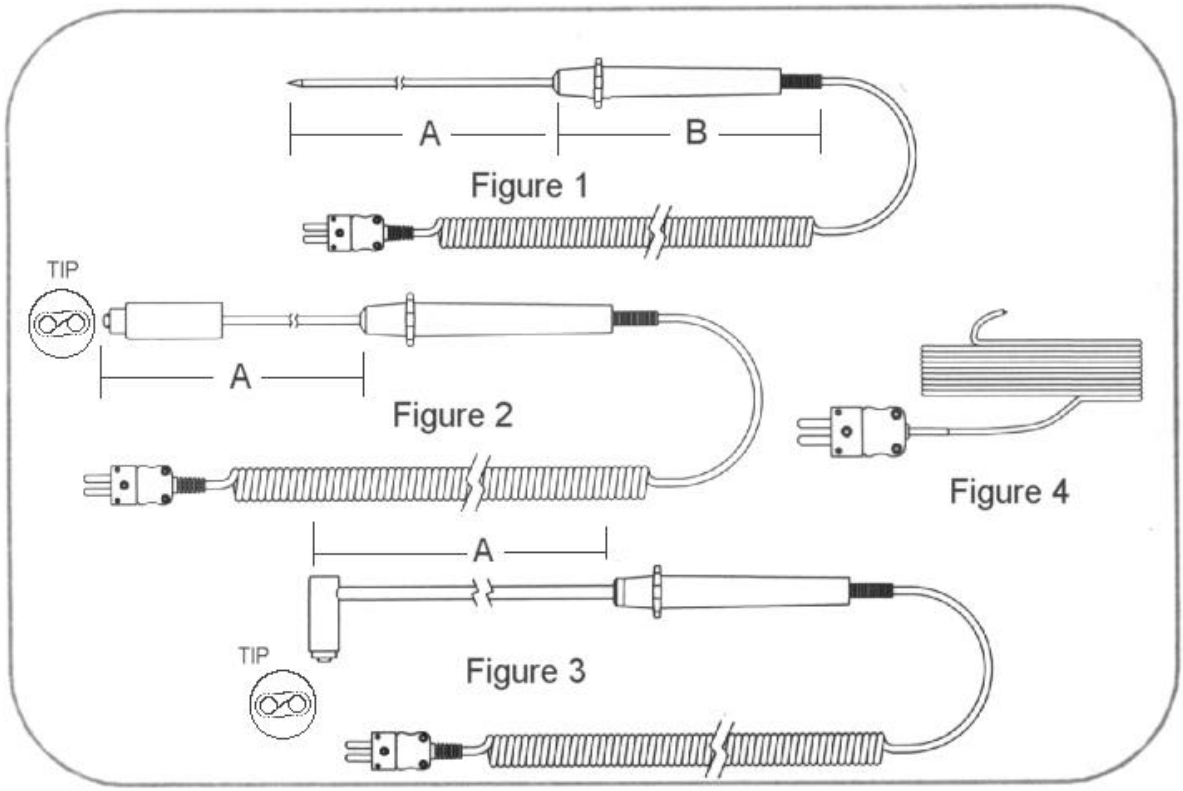
T/C Type	Coiled PVC 10" (Extended 60")	Coiled PVC 24" (Extended 120")	Coiled PVC 32" (Extended 180")	Coiled PVC 60" (Extended 360")
J	JXC1☐☐	JXC2☐☐	JXC3☐☐	JXC4☐☐
K	KXC1☐☐	KXC2☐☐	KXC3☐☐	KXC4☐☐
T	TXC1☐☐	TXC2☐☐	TXC3☐☐	TXC4☐☐



Replace each ☐ with the desired termination code from the table below and specify the length. Example: JX1BC-4'is a 4 foot long extension with PVC leads with stainless steel overbraid,. It includes a standard male plug on one end and a standard female jack at the other.

	Split Leads w/ Spade Lugs	Standard Male Plug	Standard Female Jack	Mini Male Plug	Mini Female Jack	Split Leads	Split Leads w/ Spade Lugs & BX Connector
☐☐Codes	A	B	C	D	E	F	G

Portable Pyrometer Probes



Part Number	Description	T/C Type	Figure	A Dim.	B Dim.	Lead Length	Termination
72-111	Pointed Immersion	K	1	8”	4”	12” Coiled 48” Extended	Mini Male Plug
72-112	Surface	K	2	8”	4”	12” Coiled 48” Extended	Mini Male Plug
STP147	Surface	J	2	8”	4”	12” Coiled 48” Extended	Mini Male Plug
SBK14M	Surface 90°	K	3	5.9”	4”	12” Coiled 48” Extended	Mini Male Plug
79-761	Wire bead (Fiberglass Ins.)	K	4	N/A	N/A	48”	Mini Male Plug

Thermocouple & Extension Wire

T/C Type	Conductor Insulation	Overall Insulation	Extra Protection	Conductor Gauge AWG	Conductor Size	Nominal Overall Size	Grade	Insulation Temp. Rating	Part Number
J	PVC	PVC	None	20 Solid	0.032	0.092 x 0.154"	EXT	221°F 105° C	**51-0038**
	PVC	PVC	None	20 Stranded	0.038	0.098 x 0.166"	EXT	221°F 105° C	**51-7502**
	PVC	PVC	SS Braid	20 Stranded	0.038	0.103 x 0.171"	EXT	221°F 105° C	**51J20SS502**
	FEP	FEP	None	20 Stranded	0.038	0.072 x 0.124"	T/C Std.	400°F 204° C	**51/20/3/507**
	Fiberglass	Fiberglass	None	20 Solid	0.032	0.056 x 0.096"	T/C Std.	900°F 482° C	**51-0012**
	Fiberglass	Fiberglass	None	20 Stranded	0.038	0.064 x 0.112"	T/C Std.	900°F 482° C	**51-0009**
	Fiberglass	Fiberglass	SS Braid	20 Stranded	0.038	0.069 x 0.117"	T/C Std.	900°F 482° C	**51-0027**
	PVC	Twisted w/ shield PVC overall	None	20 Solid	0.032	0.164"	EXT	221°F 105° C	**51/20/5/510**
	PVC	Twisted w/ shield PVC overall	None	16 Solid	0.051	0.222"	EXT	221°F 105° C	**51/16/5/510**
K	PVC	PVC	None	20 Solid	0.032	0.092 x 0.154"	EXT	221°F 105° C	**52-0029**
	PVC	PVC	None	20 Stranded	0.038	0.098 x 0.166"	EXT	221°F 105° C	**52-7502**
	FEP	FEP	None	20 Stranded	0.038	0.072 x 0.124"	T/C Std.	400°F 204° C	**52/20/3/507**
	Fiberglass	Fiberglass	None	20 Solid	0.032	0.056 x 0.096"	T/C Std.	900°F 482° C	**52-0009**
	Fiberglass	Fiberglass	None	20 Stranded	0.038	0.064 x 0.112"	T/C Std.	900°F 482° C	**52/20/3/304**
	Fiberglass	Fiberglass	SS Braid	20 Stranded	0.038	0.069 x 0.117"	T/C Std.	900°F 482° C	**52/20/3/304S**
	PVC	Twisted w/ shield PVC overall	None	20 Solid	0.032	0.164"	EXT	221°F 105° C	**52/20/5/510**
	PVC	Twisted w/ shield PVC overall	None	16 Solid	0.051	0.222"	EXT	221°F 105° C	**52/16/5/510**
T	PVC	PVC	None	20 Solid	0.032	0.092 x 0.154"	EXT	221°F 105° C	**53-0020**
	FEP	FEP	None	20 Stranded	0.038	0.072 x 0.124"	T/C Std.	400°F 204° C	**53/20/3/507**
	Fiberglass	Fiberglass	None	20 Solid	0.032	0.056 x 0.096"	T/C Std.	900°F 482° C	**53-0010**
	Fiberglass	Fiberglass	None	20 Stranded	0.038	0.064 x 0.112"	T/C Std.	900°F 482° C	**53/20/3/304**
	Fiberglass	Fiberglass	SS Braid	20 Stranded	0.038	0.069 x 0.117"	T/C Std.	900°F 482° C	**53/20/3/304S**
	PVC	Twisted w/ shield PVC overall	None	20 Solid	0.032	0.164"	EXT	221°F 105° C	**53/20/5/510**
	PVC	Twisted w/ shield PVC overall	None	16 Solid	0.051	0.222"	EXT	221°F 105° C	**53/16/5/510**

Numerous other constructions, alloys and sizes are available. Advise with your specific requirements.

Thermocouple Technical Reference Data

Thermocouples are temperature sensors suitable for use with any make of instrument designed or programmed for use with the same type of thermocouple. Thermocouples are based on the principle that when two dissimilar metals are joined a predictable voltage will be generated that relates to the difference in temperature between the measuring junction and the reference junction (connection to the measuring device). The selection of the optimum thermocouple type (metals used in their construction) is based on application temperature, atmosphere, required length of service, accuracy and cost. When a replacement thermocouple is required, it is of the utmost importance that the type of thermocouple type used in the replacement matches that of the measuring instrument. Different thermocouple types have very different voltage output curves. It is also required that thermocouple or thermocouple extension wire, of the proper type, be used all the way from the sensing element to the measuring element. Large errors can develop if this practice is not followed.

Wire Size of Thermocouple: Selecting the wire size used in the thermocouple sensor depends upon the application. Generally, when longer life is required for the higher temperatures, the larger size wires should be chosen. When sensitivity is the prime concern, the smaller sizes should be used.

Length of Thermocouple Probe: Since the effect of conduction of heat from the hot end of the thermocouple must be minimized, the thermocouple probe must have sufficient length. Unless there is sufficient immersion, readings will be low. It is suggested the thermocouple be immersed for a minimum distance equivalent to four times the outside diameter of a protection tube or well.

Location of Thermocouple: Thermocouples should always be in a position to have a definite temperature relationship to the work load. Usually, the thermocouple should be located between the work load and the heat source and be located approximately 1/3 the distance from the work load to the heat source.

Thermocouple Type	Names of Materials	Useful Application Range
B	Platinum30% Rhodium (+) Platinum 6% Rhodium (-)	2500 -3100F 1370-1700C
C	W5Re Tungsten 5% Rhenium (+) W26Re Tungsten 26% Rhenium (-)	3000-4200F 1650-2315C
E	Chromel (+) Constantan (-)	200-1650F 95-900C
J	Iron (+) Constantan (-)	200-1400F 95-760C
K	Chromel (+) Alumel (-)	200-2300F 95-1260C
N	Nicrosil (+) Nisil (-)	1200-2300F 650-1260C
R	Platinum 13% Rhodium (+) Platinum (-)	1600-2640F 870-1450C
S	Platinum 10% Rhodium (+) Platinum (-)	1800-2640F 980-1450C
T	Copper (+) Constantan (-)	-330-660F -200-350C

RESISTANCE IN OHMS PER COMBINED FOOT

T/C Type	16 AWG Solid	20 AWG Solid	24 AWG Solid	28 AWG Solid	30 AWG Solid	36 AWG Solid	16 AWG Stranded	20 AWG Stranded	24 AWG Stranded
J	0.145	0.367	0.928	2.347	3.731	15.000	0.133	0.335	0.848
K	0.233	0.589	1.490	3.767	5.990	24.080	0.213	0.538	1.361
R/S	0.016	0.040	0.100	0.253	0.402	1.615	0.014	0.036	0.091
T	0.120	0.304	0.768	1.942	3.088	12.415	0.110	0.277	0.701

GLOSSARY OF TERMS

Cold Junction or Reference Junction - The junction generally at the measuring device that is held at a relatively constant temperature.

Cold Junction Compensation - Measures the ambient temperature at the connection of the thermocouple wire to the measuring device. This allows for accurate computation of the temperature at the hot junction by the measuring device.

Dual Element - Two thermocouple elements housed within one thermocouple hardware assembly.

Extension Wire - Wires which connect the thermocouple itself to a reference junction, i.e. controller, receiver, recorder, etc. Extension wire must be of the same type as the thermocouple. Special plugs and jacks made of the same alloys as the thermocouple should be used if a quick disconnect is required for the application.

Grounded Junction - The internal conductors of this thermocouple are welded directly to the surrounding sheath material, forming a completely sealed integral junction.

Ungrounded Junction - Although the internal thermocouple conductors are welded together they are electrically insulated from the external sheath material and are not connected to the sheath in any way. Ungrounded junction thermocouples are ideal for use in conductive solutions or wherever circuit isolation is required. Ungrounded junctions are required where the measuring instrumentation does not provide channel to channel isolation.

Exposed Junction - The thermocouple junction or measuring point is exposed without any protection assembly or tube. Exposed junction thermocouples due to their design, offer the user the fastest response time.

Hot Junction - The measuring junction.

Immersion Length - The portion of the thermocouple which is subject to the temperature which is being measured.

Measuring Junction - The junction in a thermocouple which actually measures the temperature of the object. Often referred to as the Hot Junction.

Protection Tube - A tube like assembly in which the thermocouple is installed in order to protect the element from harsh environments.

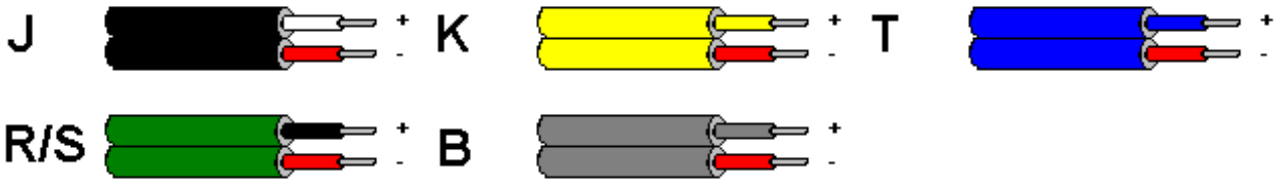
RTD - Abbreviation for Resistance Temperature Detector. It is a sensor which operates on the principle that the resistance increases with an increase in temperature at a specific rate. Commonly manufactured using a platinum resistance element. More accurate and more linear than most thermocouples and generally much more costly and slower responding.

Thermocouple - A temperature sensor based on the principle that a voltage is produced when two dissimilar metals. The junction produces a voltage in proportion to the difference in temperature between the measuring junction and the reference junction.

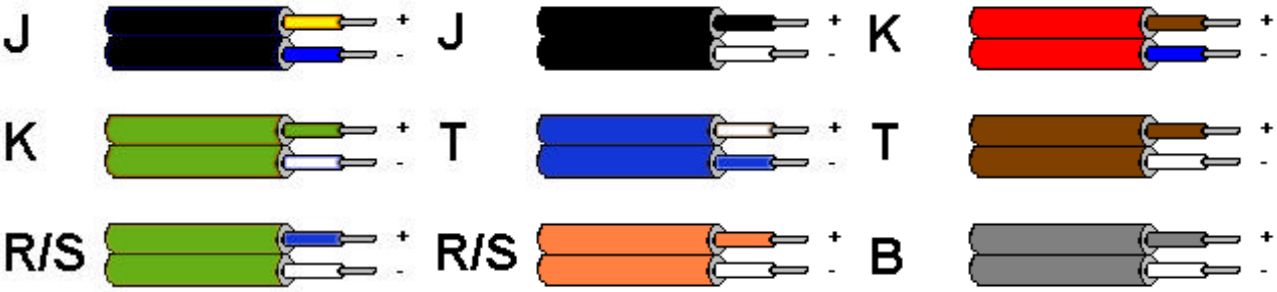
Thermowell - A threaded or flanged closed end tube which is mounted directly to the process or vessel, designed to protect the thermocouple from the process surroundings.

Common International Color Codes

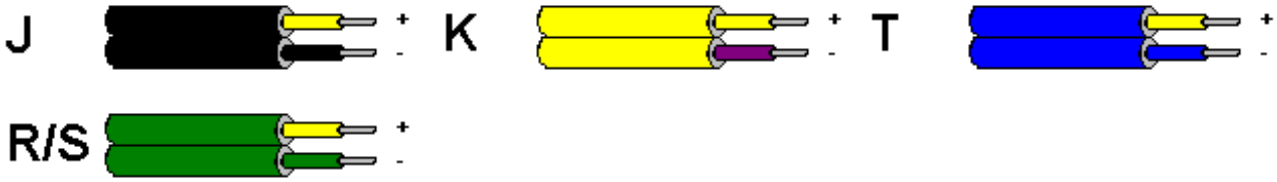
United States ASTM:



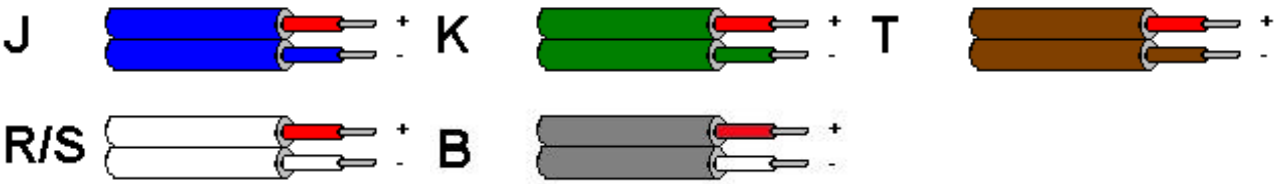
British BS1843: 1952 & BS4937:1993



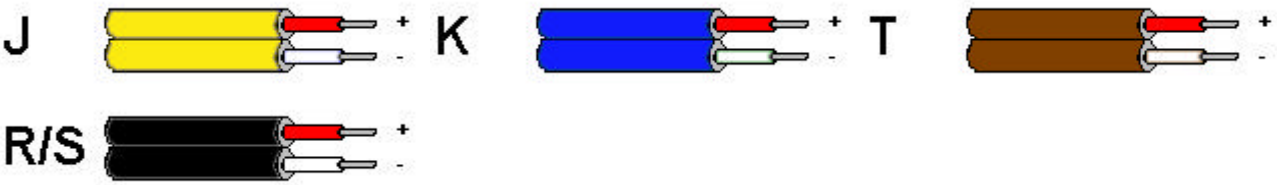
French NFE:



German DIN:



Japan:



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